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REPORT

Yukon Government

Clinton Creek
Long Term Performance
Monitoring

December 2013

CANADA'S BEST MANAGED COMPANIES

ASSOCIATED ENGINEERING

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Table of Contents

SECTION			PAGE NO.
Table of Contents			**i**
1	**Introduction**		**1**
	1.1	General	1
	1.2	Background	2
2	**Visual Inspection**		**3**
	2.1	Clinton Creek Channel	3
	2.2	Gabion Drop Structures	4
	2.3	Waste Rock Pile	5
	2.4	Wolverine creek Tailings Pile	6
	2.5	Tension Cracks on Access Road	7
	2.6	Hudgeon Lake Outlet	8
	2.7	Wolverine Creek and Ponds	8
	2.8	Aerial Imagery Comparison	8
3	**Performance Monitoring**		**9**
	3.1	General	9
	3.2	Gabion Drop Structures	9
	3.3	Clinton Creek Channel	12
	3.4	Cross-Section A, B, C, D, E	14
4	**Recommendations**		**14**
	4.1	Monitoring Recommendations	14
	4.2	Trigger Levels and Additional Investigation Recommendations	15
	4.3	Short and Long Term Action Recommendations	16
Closure			
References			
Appendix A - Underhill Geomatics Survey Results			
Appendix B - Gabion Drop Structure Movements			
Appendix C - Site Photos			

Sketches

- Sketch 2857-03-SK001 – Site Plan and Bench Mark Locations
- Sketch 2857-03-SK002 – Clinton Creek Waste Rock Pile, Movement Monitoring
- Sketch 2857-03-SK003 – Wolverine Creek Tailings Piles, Movement Monitoring
- Sketch 2857-03-SK004 – Wolverine Creek Tailings Piles, South Lobe Movement
- Sketch 2857-03-SK005 – Clinton Creek, Channel Plan
- Sketch 2857-03-SK006 – Drop Structure #1
- Sketch 2857-03-SK007 – Drop Structure #2
- Sketch 2857-03-SK008 – Drop Structure #3
- Sketch 2857-03-SK009 – Drop Structure #4
- Sketch 2857-03-SK010 – Clinton Creek, Channel Profile
- Sketch 2857-03-SK011 – Clinton Creek Channel Profile, Station 0-050 to 0+250
- Sketch 2857-03-SK012 – Clinton Creek Channel Profile, Station 0+250 to 0+550
- Sketch 2857-03-SK013 – Clinton Creek Channel Profile, Station 0+550 to 0+850
- Sketch 2857-03-SK014 – Clinton Creek Road Tension Crack
- Sketch 2857-03-SK015 – Plan Cross-Section Locations
- Sketch 2857-03-SK016 – Cross Section A
- Sketch 2857-03-SK017 – Cross Section B
- Sketch 2857-03-SK018 – Cross Section C
- Sketch 2857-03-SK019 – Cross Section D
- Sketch 2857-03-SK020 – Cross Section E
- Sketch 2857-03-SK021 – Imagery Comparison – 2008 vs. 2012

1 Introduction

1.1 GENERAL

This report provides the results of the 2013 Long Term Performance Monitoring at the former Clinton Creek Asbestos Mine located approximately 100 km northwest of Dawson City, Yukon.

The purpose of the monitoring program is to track the performance of physical mine site features including the gabion drop structures on Clinton Creek at the outlet of Hudgeon Lake, the Clinton Creek waste rock pile, the Clinton Creek channel, the Wolverine Creek channel, and the Wolverine Creek tailings piles. 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 (AECOM 2012). It also provides indications of significant ground movements, instabilities and other issues that may require mitigation.

The full scope of services for this work is outlined in our letter proposal to of the Yukon Government Assessment and Abandoned Mines (AAM) branch, dated August 9, 2013. Underhill Geomatics Limited (UGL) carried out the survey work on August 28, 2013. Ray Korpela, Project Lead, and George de Ridder, P. Eng. of Associated Engineering (AE) carried out the visual inspection of the site on September 12, 2013.

The 2013 field monitoring program includes the following tasks:

- Visual inspection of the following areas:
  - Clinton Creek channel
  - Gabion drop structures
  - Waste rock dump
  - Wolverine Creek tailings piles
  - Wolverine Creek channel and ponds
  - Tension cracks along the Clinton Creek access road
  - Hudgeon Lake outlet
- Survey of the following items:
  - Centreline survey of the Clinton Creek channel
  - Cross-section survey of the gabion drop structures
  - Survey of the tension cracks along the existing access road
  - Cross-section surveys of the Clinton Creek waste rock pile near the gabion drop structures.

This report discusses the findings of the visual inspection, and the results of the surveyed performance monitoring pins of the gabion drop structures, Clinton Creek channel, and Wolverine Creek tailings piles. Recommendations with respect to the monitoring program, additional investigation requirements, trigger levels, short and long term action items, and safety issues are also included as part of this report.

1.2 BACKGROUND

Channel degradation hazards have been previously identified on Clinton Creek near the waste rock pile and on Wolverine Creek near the tailings piles (UMA 2000). The possibility of a sudden breach of channel blockages is of particular concern due to potential risks to human safety, property, and access roads downstream. In areas with significant relief, such as the Clinton Creek valley, flooding from breaches of channel blockages can be especially dangerous. Flooding can occur even in the absence of major precipitation events.

The most immediate concern for a potential breach of channel blockages was considered to be located where Hudgeon Lake outlets into Clinton Creek. Profiles of the creek channel through the waste rock from 1986, 1999 and 2001, showed that progressive channel degradation, including erosion and down-cutting, was occurring along the first 500 m 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 an overtopping event or even normal flow 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 just downstream of the Hudgeon Lake outlet between 2002 and 2004.

Measures to stabilize the Wolverine Creek tailings piles were also 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. However, recent surveys indicate that the movements are significantly less than previously assumed and some mounding of the tailings in the valley bottom is also occurring. A better understanding of the behaviour and movements of the tailings piles is necessary to determine the most appropriate strategy to deal with previously identified hazards. A geotechnical investigation and study would be required to gather the information needed. In this regard, implementation of stabilization measures has been deferred until this information is collected. The potential for channel degradation where Wolverine Creek passes over the toe of the tailings is of particular concern. Maintaining the integrity of the rock-lined channel downstream of the tailings, shown in Photo 1, is considered essential to reduce the likelihood of mass tailings movements.

Photo 1
Rock-lined Channel

Long term performance monitoring began in 2006 (UMA 2007) and included some follow-up work in 2007. The second biennial performance monitoring event was completed in 2008 (AECOM 2009). Following this, two performance monitoring events were completed in 2010. First, the routine biennial event was completed in July 2010. In August 2010, a significant precipitation event occurred in the Clinton Creek watershed 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 gabion Drop Structure (DS) #4 and erosion of the creek channel downstream of the drop structures. A second complete round of performance monitoring was conducted in September 2010 (AECOM 2011a) to capture the effects of this event on the creek and other features of the mine site. Monitoring was continued in 2011, 2012 and 2013, to continue the long term performance monitoring as well as evaluate the longer term impacts of the 2010 precipitation event.

2 Visual Inspection

A visual inspection of the site was completed on foot by Ray Korpela and George de Ridder on September 12, 2013. The sections below outline the observations and issues identified during their site visit.

2.1 CLINTON CREEK CHANNEL

Bank instability was observed downstream of the gabion drop structures. The north bank shows signs of minor sloughing, while the south bank has experienced major failures due to erosion and undercutting of the Clinton Creek access road embankment over the Clinton Creek waste rock pile. The erosion and sloughing on the south side of the channel along the access road is shown in Photo 2. It is anticipated that the south bank will continue to collapse and intrude the creek. The Clinton Creek channel is further discussed in Section 3.3.

Photo 2
Erosion of Access Road Embankment

2.2 GABION DROP STRUCTURES

All gabion drop structures appear to be performing well with the exception of DS #4, as noted in previous monitoring reports. It was apparent from the latest inspection that further collapse of DS #4 has occurred, and is ongoing. Looking upstream from the bottom of DS #4, erosion is noticeable on both the north and south banks. Areas of both banks have collapsed into the channel and some baskets and rock fill from the gabion drop structure have been transported downstream. Photo 3 and 4 show the erosion and bank failures at the outlet of the DS #4. The condition of the drop structures and the observed changes from previous monitoring programs are further discussed in Section 3.2.

Photo 3
Drop Structure #4 Looking Downstream

Photo 4
Erosion at Outlet of Drop Structure #4, North Bank

2.3 WASTE ROCK PILE

The upper portion of the waste rock pile, above the Clinton Creek access road, has several areas of erosion. This erosion down the slope of the waste rock pile is attributed to surface water running along the roadway and flowing down the embankment. Photo 5 shows the erosion and direction of the surface water, and Photo 6 shows a culvert that has been exposed at the outlet due to the progressive erosion of the surrounding embankment. A surface water management plan should be developed to address the erosion of the waste rock pile embankment, as recommended in our 2012 Report.

Photo 5
Erosion from Surface Water Runoff Over Waste Rock Pile

Photo 6
Erosion at Exposed Culvert, North Slope of Waste Rock Pile

2.4 WOLVERINE CREEK TAILINGS PILE

The 2013 monitoring program involved a visual inspection on foot of the north lobe tailings pile, south lobe tailings pile, Wolverine Creek Channel, and the ponds located adjacent to the east side of the tailings pile.

The eastern face of the upper Wolverine Creek tailings piles shows signs of slope instability. Tension cracks and slumping along the upper portion of the tailings pile suggest ongoing slope movement. Photo 7

shows the tension cracks located on the upper portion of the tailings piles. It is expected that the cracks, and localized slope failure will continue until it reaches a stable slope angle.

The middle and lower portions of the Wolverine Creek tailings piles do not show any noticeable changes from the observations noted in the 2012 monitoring program, and appeared to be stable.

Photo 7
Tension Cracks Located on Upper Portion of Wolverine Tailings Piles

2.5 TENSION CRACKS ON ACCESS ROAD

Tensions cracks and shoulder failures along the Clinton Creek access road on the waste rock pile above the Clinton Creek channel were noted in the 2012 monitoring program. Photo 8 shows the tension cracks and shoulder failures. Visual inspection of this area indicates that the tension cracks are continuing to develop, and the road embankment is continuing to fail. UGL carried out a survey of the tension cracks and top of bank. The results of this survey are attached in Appendix A, and are also shown in sketch 112857-03-SK014. The crest of the bank has receded approximately 0.3m on the west end of the area. There is short length of five metres where the crest of the bank has receded 1.1m to the west.

The tension cracks and embankment failures are the result of Clinton Creek eroding the toe of the waste rock pile at this location. The creek survey completed by UGL shows that the channel has moved approximately five metres closer to the waste rock pile. Ongoing failures of the embankment and development of tension cracks is expected if the erosion of the waste rock pile is allowed to continue.

Photo 8
Tension Cracks and Shoulder Failure on Clinton Creek Access Road (Waste Rock Pile) Looking East

2.6 HUDGEON LAKE OUTLET

The outlet of Hudgeon Lake was inspected and found to be clear of debris. Some small timber and tree branches are deposited on shore just downstream of the outlet, but there were no obstructions to flow.

The proposed log boom location at the outlet was also inspected. The proposed log boom is located in shallow water directly upstream of the outlet. We recommend that depth soundings be performed at this location to determine the depth, and ensure that the log boom will not be rest on channel bottom during low flows; as this could obstruct creek flow during times of low water levels.

2.7 WOLVERINE CREEK AND PONDS

There were no apparent changes to Wolverine Creek channel. The channel and rock weirs appear to be stable with no signs of erosion, scour, or deposition. Two beaver dams have been removed along Wolverine Creek; one behind the south lobe tailings pile and one behind the north lobe tailings pile.

2.8 AERIAL IMAGERY COMPARISON

AAM obtained new aerial photography of the site in 2012. Sketch 2857-03-SK021 shows the 2008 and the 2012 aerial photographs. The most apparent change in the aerial photographs can be seen where the Clinton Creek channel migrated approximately 80m south after the 2010 precipitation event. Erosion and slope failure of the south lobe of the Wolverine Creek tailings piles adjacent to Wolverine Creek appears to have increased in the 2012 aerial photograph.

3 Performance Monitoring

3.1 GENERAL

The 2013 long term performance monitoring work consists of surveying movement monitors located on the gabion drop structures. Surveys are also completed for channel profiles of Clinton Creek, the tension cracks on the access road, and cross sections spanning from the waste rock pile across the Clinton Creek channel as well as across the top and bottom of all four gabion drop structures. Data is then compared to data from previous monitoring events to determine the extent of movement. Analysis of the movements can then be carried out to identify movement trends and the risk of failures.

UGL from Whitehorse, Yukon completed survey services for this project. The survey was completed on August 28, 2013 using Global Positioning Survey (GPS) referenced to the UTM NAD 83 (Zone 7) coordinate system. The horizontal accuracy of the GPS survey is within 20 to 30 mm, which is adequate for these purposes and consistent with previous monitoring events. The survey information provided by UGL can be found in Appendix A.

3.2 GABION DROP STRUCTURES

From 2004 to 2006 drop structure monitoring was limited to two horizontal measurements for each drop structure taken at the weir on the upper level and the end sill on the lower level. Change in the measurements each year indicated the extent of lateral deformation. In 2006, additional survey requirements were added to the long term performance monitoring to provide a more detailed measurement of the deformations (UMA 2006b). These requirements included four movement monitors placed at the four corners of each drop structure and surveying a cross-section at both the top and bottom 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). DS #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, an August 2010 precipitation event and the associated high creek flow resulted in the bottom end of DS #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. Unsafe 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).

3.2.1 Horizontal Measurements

The horizontal measurement locations were tagged with permanent markers in September 2006 to improve the repeatability of the measurement locations. Table 3-1, 3-2, 3-3, and 3-4 summarize the measurements taken in 2013, and the incremental change from the 2012 monitoring program. A negative change indicates that the pins are closer together, while positive indicates the pins are moving farther apart. The detailed horizontal distances are attached in Appendix B. During the 2012 monitoring survey, monitors #1453, 1454,

and 1461 were found disturbed, and monitors 1460 and 1462 were found to be lost. These monitors were replaced in August 2012. The total change for these monitors and corresponding horizontal distances are referenced to the 2012 survey.

Table 3-1
Summary of Drop Structure 1 Horizontal Measurements (Dwg 2857-03-SK006)

Drop Structure 1			Year		Incremental Change
	From Monitor	To Monitor	2012	2013	
Section 1	1450	1451	27.43	27.42	-0.01
Section 2	1452	1453	28.70	28.65	-0.05

Table 3-2
Summary of Drop Structure 2 Horizontal Measurements (Dwg 2857-03-SK007)

Drop Structure 2			Year		Incremental Change
	From Monitor	To Monitor	2012	2013	
Section 3	1454	1455	27.45	27.45	0.00
Section 4	1456	1457	28.23	28.15	-0.08

Table 3-3
Summary of Drop Structure 3 Horizontal Measurements (Dwg 2857-03-SK008)

Drop Structure 3			Year		Incremental Change
	From Monitor	To Monitor	2012	2013	
Section 5	1458	1459	26.47	26.42	-0.05
Section 6	1460	1461	29.49	29.46	-0.03

Table 3-4
Summary of Drop Structure 4 Horizontal Measurements (Dwg 2857-03-SK009)

Drop Structure 4			Year		Incremental Change
	From Monitor	To Monitor	2012	2013	
Section 7	1462	1463	28.94	28.90	-0.04
Section 8	1464	1465	30.09	30.00	-0.09

Between August 2012 and August 2013, the horizontal distance between the pairs of movement monitors decreased on average by 0.044 m. The largest change occurred on the downstream section of DS #4, which decreased by 0.09m. The closure trend is consistent with previous years.

3.2.2 Movement Monitors

In July 2006, sixteen movement monitors numbered 1450 to 1465 were installed by UGL at the four corners of each drop structure. These monitors are the same monitors used to determine the horizontal distances, as discussed Section 3.2.1. Sketch 2857-03-SK005 shows the overall plan view of the drop structures and

movement monitors, while Sketches 2857-03-SK006, SK007, SK008, and SK009 show the cross-section and detail views.

Table 3-5 summarizes each individual horizontal and vertical movement from 2012 to 2013. A negative value for vertical change indicates that the monitoring pin has settled, while a positive number indicates the pin has uplifted. Detailed data for each monitor can be found in Appendix B. Incremental movements are measured from the previous years position, while the total movement is measured from the original position of the monitoring pin.

Table 3-5
Summary of Movement Monitor Changes

Monitor Number	Side of Channel	2012 – 2013		Description
		Incremental Horizontal Change	Incremental Vertical Change	
1450	North	0.00	0.00	DS #1 Upper
1451	South	0.02	-0.03	
1452	South	0.03	-0.02	DS #1 Lower
1453	North	0.02	0.01	
1454	North	0.02	0.02	DS #2 Upper
1455	South	0.01	-0.03	
1456	South	0.07	-0.04	DS #2 Lower
1457	North	0.03	0.02	
1458	North	0.03	0.00	DS #3 Upper
1459	South	0.04	-0.06	
1460	South	0.05	-0.06	DS #3 Lower
1461	North	0.04	0.03	
1462	North	0.03	0.04	DS #4 Upper
1463	South	0.06	-0.04	
1464	South	0.10	-0.03	DS #4 Lower
1465	North	0.03	0.00	

The movements are generally consistent with the previous year's monitoring programs. The Clinton Creek waste rock pile was not surveyed in 2013 so the results cannot be compared with the waste rock movements.

DS #4 shows the greatest indication of movement. This is expected as the erosion and failure of DS #4 continues at the downstream end. Without addressing the failure of DS #4, we expect that movement of the gabion drop structure will continue, and could approach a state of total collapse or wash-out.

3.2.3 Surveyed Cross-Sections

Two cross-sections were surveyed at each drop structure between each pair of movement monitors. These cross-sections are shown on sketches 2857-03-SK006, SK007, SK008, and SK009. The current 2013 survey, as well as the previous surveys are included on the drawings.

The differences from August 2012 to August 2013 for drop structures 1, 2, 3, and 4 are relatively minor. Section 2 and Section 6 indicate some minor deposition of 0.05 – 0.10m at the outlets of DS #1 and DS #3, respectively.

The south side slope of the gabion baskets of Section 4 of DS #2 shows some minor settlement of approximately 0.10m. This appears to be uniform settlement along the slope, as no damage was noted during the visual inspection.

Similarly, the north side slope of the gabion baskets of Section 5 on DS #3 shows settlement of approximately 0.15m. This appears to be uniform settlement, as no damage was noted during the visual inspection.

The upper portion of DS #4, section 7, is consistent with the previous surveys. Section 8 shows some additional erosion on the south and north banks. The south bank has eroded an additional 0.3 m from the toe of the slope to the top of the bank. The north bank shows localized areas of erosion up to a depth of 0.3 m. Both slopes in Section 8 are approximately 1H:1V, which is steeper than the 2H:1V trigger level. From the visual inspection, it was determined that undercutting and undermining of the drop structure is continuing to migrate upstream.

3.2.4 Summary

The horizontal closure measurements follow the pattern of previous years, and can partially be attributed to the continued movement of the waste rock pile. The damage that occurred during the 2010 precipitation/flood event continues to compromise DS #4. Drop structures 1, 2, 3 and the top of DS #4 remain stable with the slope angle well below the trigger level slope of 2H:1V. The side slopes at the downstream end of DS #4 continue to be steepened due to erosion and undercutting, which are now approximately 1H:1V. The exceedence of the 2H:1V trigger level at this location is a result of the erosion and undercutting that was initiated from the 2010 flood event and is not a result of the lateral deformation of the gabion baskets.

Some minor deposition of material has occurred at the bottom of DS #1 and DS #3. The 2.01 m flow depth is still contained within the channel cross section throughout the stabilized section of Clinton Creek.

3.3 CLINTON CREEK CHANNEL

For the period between August 2012 and August 2013, some minor horizontal realignments have occurred downstream of DS #4. The channel has moved north from 0+200 to 0+220, this could be due to the

outcropping of rocks on the south side of the channel which could be directing the creek flow into the north bank during high flows. This has resulted in further bank failure and erosion on the north side of the channel directly downstream of the DS #4. The pooling behind the rock outcropping on the south side of the channel could also be contributing to the erosion of the channel bed, and south slope directly downstream of DS #4. Photo 9 shows the erosion occurring at this area.

Photo 9
Erosion on North Side of Clinton Creek Channel Downstream of DS #4

The channel continues to migrate into the south toe of the waste rock pile from 0+390 to 0+430. From 0+650 to 0+710 the channel has shifted approximately five metres to the north. A bend has developed at 0+800 that was not recorded in previous surveys. These areas are shown on sketch 2857-03-SK005.

From the outlet of Hudgeon Lake to the bottom of DS #4, the Clinton Creek profile is consistent with the 2012 survey. This is to be expected as no recent damage to the gabion drop structures were observed during the visual inspection of the site. There are some minor changes to the profile directly downstream of DS #4. These appear to be localized scour holes, or perhaps areas where large boulders or gabion baskets have been moved during high flows. There are three areas where vertical change of the channel has occurred between the 2012 and 2013 survey:

- 0+600 to 0+670 - the channel is 0.4 m – 0.5 m lower than the 2012 survey.
- 0+700 to 0+750 - the channel is 0.4 m – 0.5 m lower than the 2012 survey.
- 0+770 to 0+950 - the channel is up to 0.9 m lower than the 2012 survey.

The most significant change to the channel profile occurred from 0+770 to 0+950. Through this section of the creek, although there was no real horizontal change, the profile is now up to 0.9 m lower than in 2012. The creek is now at a similar elevation that was surveyed in 2006 – 2010; although the channel at that time was approximately 80m north of its current location. The current channel location through this reach of the creek has not changed in the last four years.

Continued erosion along the toe of the waste rock pile, downstream of the stabilized creek channel, will continue to compromise the slope stability and increase the potential of a significant slope failure of the waste rock pile blocking the creek channel.

3.4 CROSS-SECTION A, B, C, D, E

Three cross-sections extending from the Clinton Creek waste rock pile to the north side of the Clinton Creek valley were surveyed as part of the 2013 Monitoring Program. Cross section D and E were not surveyed during this year's monitoring program. The locations are shown in plan view on sketch 2857-03-SK015. The cross-sections are shown in sketches 2857-03-SK016, 2857-03-SK017, 2857-03-SK018, 2857-03-SK019, and 2857-03-SK020. Section A and B do not show any significant changes from the 2012 survey. Although section A indicates that the channel has been lowered by approximately 0.6m, this is not representative due to the lack of survey points through this area during the 2012 monitoring survey.

Section C shows increased erosion on the north side at DS #4 (ie. between 0.1 and 1.0m of erosion). The following observations at Section C were also noted:

- 0.4 – 0.5m failure at the top of the south channel slope, and a more pronounced failure at the top of the channel north slope.
- The creek bed has eroded by 0.4m and widened, compared to the 2012 survey

A pool with circulating water has formed directly downstream of DS #4, and is captured by cross-section C. The pooling of water is caused by an outcropping of rock and collapsed gabion basket material. This may be contributing to the ongoing erosion of both the north and south channel slopes downstream of DS #4. If this is not addressed, continued erosion of DS #4, and the downstream slopes is expected to continue. Photo 9 shows the area downstream of DS #4, the drop pool water, and the eroded slopes.

4 Recommendations

4.1 MONITORING RECOMMENDATIONS

The monitoring recommendations remain unchanged from the 2012 report. (a) Performance monitoring and visual inspections should be continued for the gabion drop structures, Clinton Creek channel, Wolverine Creek channel, the waste rock pile, and the Wolverine Creek tailings piles. Results should be compared with previous observations to identify trends. (b) The outlet of Hudgeon Lake, and the ponds below the Wolverine Creek tailings pile should be monitored on a regular basis for debris accumulation. (c)As suggested in the 2012 Monitoring Report, this could include installation of an automated remote water level monitor to report when lake levels rise due to debris blockage. The installation of remote cameras at the lake outlet and gabion drop structures would also assist with remote monitoring of the site.

Based on previous recommendations (AECOM 2011), the recommended monitoring frequency is listed below:

- Inspection and survey of the Clinton Creek channel should be completed on an annual basis.
- Inspection and survey of the gabion drop structures should be completed on an annual basis. This specifically would include monitoring for increased movements in comparison with the waste rock piles to determine any trends.
- Visual inspection of the waste rock pile should be completed on an annual basis.
- Inspection and survey of the tension cracks along the Clinton Creek access road should be completed on annual basis.
- Visual inspection of the Hudgeon Lake outlet, and ponds at the Wolverine Creek tailings piles should be completed on an annual basis to check for debris accumulation or blockage at these outlets.

Based on the visual inspection and surveys completed in 2013, we recommend that the following be completed on biennial basis:

- Visual inspection and survey of the rock line channel and weirs on Wolverine Creek.
- Visual inspection and survey of the Wolverine Creek channel.
- Visual inspection and survey of the Wolverine Creek tailings Piles.
- Visual inspection and survey of the Clinton Creek waste rock pile.
- Survey of cross-section A, B, C, D, and E, from Clinton Creek to the top of the waste rock pile.

In summary, the next full round of performance monitoring should be completed in 2014. In addition, the Clinton Creek channel, Clinton Creek gabion drop structures, outlet of Hudgeon Lake, and outlet of the ponds at the Wolverine Creek tailings piles should be visually inspected after any major rainfall or flood event.

4.2 TRIGGER LEVELS AND ADDITIONAL INVESTIGATION RECOMMENDATIONS

The recommendations for trigger levels and additional investigation remain the same from the 2012 Monitoring Report. Beyond the requirements for continued monitoring of the site we recommend further investigation and implementation of the trigger levels as follows.

- In some cases, additional geotechnical investigation is suggested which will serve both to further evaluate current movement rates and to provide current status of site conditions prior to the implementation of a closure program.

- Trigger level for waste rock monitors should be further investigated and implemented. This would also include the installation of additional monitoring pins adjacent to where Clinton Creek has relocated closer to the waste rock area. The location of these pins should be decided upon in relation with the development of the trigger levels.

- The 2012 monitoring results indicate that the movement rates of the gabion drop structures are higher than the waste rock monitors. Additional geotechnical investigation and evaluation should be undertaken to provide a more in-depth discussion on possible causes for differing movement rates between the gabion monitors and waste rock pile monitors.

- Additional geotechnical investigation and evaluation should be undertaken on both the north lobe and south lobe tailings piles to understand the differing rates of movement. This should include the installation of additional movement monitors to measure the movement of the tailings at the depth of the natural ground. We recommend that geotechnical drilling program also be developed to determine the depth of the placed tailings.

- Additional survey should be undertaken to confirm the freeboard along top of bank near the outlet of the lake as compared to survey data from 2007.

We recommend the development of an overall risk assessment strategy in association with the existing and proposed additional trigger levels. Although trigger levels may be exceeded, a broader view of the overall impact of such an exceedance should be assessed to provide guidance on appropriate action in such an instance. A trigger level implies action is required if reached. In some cases, no action may be required if the risk of potential failure or resultant consequences of such failure may be low and non-detrimental. The development of a risk based trigger level analysis may also provide useful in the development and timing of the overall closure plan.

4.3 SHORT AND LONG TERM ACTION RECOMMENDATIONS

The 2012 Monitoring Report provided recommendations on short term and long term action items that should be implemented. Some of these items were addressed in the 2013 construction season. The following action items are a result of the 2013 Monitoring program, as well as the on-going and items not outstanding from the 2012 recommendations.

Short Term Action Items:

Clinton Creek Access Roads

1. Construct an earth berm, or place large boulders adjacent to the access gate to obstruct unauthorized vehicles from accessing the site.

Clinton Creek and Hudgeon Lake Outflow

2. Visually inspect Clinton Creek channel and gabion drop structures on a regular basis and compared with previous inspections to identify possible trends or significant changes. A long-term stabilization plan should be developed and implemented to reduce the risk of total or incremental failure of the drop structures due to the failure of DS #4. The long term stabilization plan for the drop structures should take into account the overall stability of the site, and include additional geotechnical and environmental investigations and studies with respect to waste rock pile. This

would also include assessing, and developing an effective and safe method to access DS #4 in order to provide safe working conditions for equipment and labour.

3. Monitor the outlet of Hudgeon Lake for debris accumulations on an ongoing basis. An automatic reporting water level monitor could be installed to provide lake levels, which could indicate a debris blockage.
4. Check depths at the proposed log boom location and relocate if necessary to ensure adequate depth is provided to prevent blockage of flow during periods of low water levels.
5. Continue monitoring the over-steepened slope and embankment failure along the section of the access road that shows deep tension cracking on an ongoing basis. A sudden collapse of the waste rock slope (from the access road down to the streambed) could be expected, resulting in blockage of Clinton Creek. Since significant effort would be required to assess and stabilize the slope, it is our recommendation that an overall remediation plan be developed as soon as possible to mitigate the potential safety hazards associated with a creek blockage.

Wolverine Creek and Tailings

6. Consider placing a log boom in pond to collect floating debris to prevent outlet blockage. Maintain the boom and clear debris annually.

Site Roads

7. Scale loose rock at slide number 3 along the wet active area of the access road from Forty Mile Bridge to Wolverine Creek.
8. Install depth gauge at the Clinton Creek ford.

Long Term Action Items

The long term stabilization measures recommended in 2012 remain effective. It is recommended that additional engineering be completed to enhance the site stability and safety. These tasks include:

Access and Site Roads, and Clinton Creek Waste Rock Pile

9. Site survey of the access roads to assess current drainage patterns and develop drainage and grading plan.
10. Re-grade access roads to control and direct surface water way from downhill slopes and provide culverts / flumes with erosion protection at the outlets to manage surface water run-off.

Clinton Creek and Hudgeon Lake Outflow

11. Environmental assessment to determine the impacts of stabilization measures on Hudgeon Lake, Clinton Creek, Wolverine Creek and any other sensitive areas.
12. Geotechnical investigation and assessment of the waste rock piles, particularly in the vicinity of Clinton Creek and the stabilized channel section.
13. Review feasibility of lowering Hudgeon Lake water levels and removing the gabion drop structures. This would require substantial waste rock removal and re-grading of the Clinton Creek waste rock pile to stabilize the slopes adjacent to Clinton Creek

Wolverine Creek and Tailings Pile

14. Develop overall grading and drainage plan to control surface water run-off and minimize erosion.
15. Geotechnical investigation and assessment of the south and north lobes of the Wolverine Creek tailings piles. This should include the installation of additional monitoring stations to measure the movement of the tailings at the depth of the natural ground.
16. Re-grade unconsolidated south lobe tailings as needed following geotechnical assessment.

Closure

The services provided by Associated Engineering in preparation of this report were conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession practising under similar conditions. No other warranty expressed or implied is made.

Should you have any questions or require additional information, please call Steven Bartsch, P.Eng., at 867-456-2711.

Respectfully submitted,

Prepared by:

Matthew Bowen, P.Eng,
Project Engineer

Reviewed by:

Ray Korpela
Manager – Resource Infrastructure
Project Lead

PERMIT TO PRACTICE
ASSOCIATED ENGINEERING (BC) LTD.
SIGNATURE
Date 11-Dec-13
PERMIT NUMBER PP060
Association of Professional Engineers of Yukon

Reviewed by:

PROFESSIONAL ENGINEER
YUKON
GEORGE J. DE RIDDER
TERRITORY
12/12/2013

George de Ridder, C.Eng., P.Eng., FIStructE
Discipline Leader – Civil Structures

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2. UMA Engineering Ltd., 2002. Indian and Northern Affairs Canada, Abandoned Clinton Creek Asbestos Mine, Conceptual Design Report.

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5. UMA Engineering Ltd., 2003b. Government of Yukon, Clinton Creek Channel Stabilization (Stage II) Construction Report.

6. UMA Engineering Ltd., 2004. Government of Yukon, Former Clinton Creek Asbestos Mine – Hazard Assessment Report - June 2004.

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9. UMA Engineering Ltd., 2006a. Government of Yukon, Former Clinton Creek Asbestos Mine – 2005 Engineering Services: Site Inspection and Monitoring Results – June 2006.

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13. AECOM, 2009. Government of Yukon, Former Clinton Creek Asbestos Mine – Long Term Performance Monitoring – 2008.

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

18. AECOM, 2012. Government of Yukon, Former Clinton Creek Asbestos Mine – Long Term Performance Monitoring - 2011.

19. Associated Engineering, 2012. Yukon Government, Inspections at Clinton Creek Mine Site during August 6 to 8, 2012 - Memo.

20. Associated Engineering, 2013. Yukon Government, Former Clinton Creek Asbestos Mine – Long Term Performance Monitoring - 2012.

Sketches

- Sketch 2857-03-SK001 – Site Plan and Bench Mark Locations
- Sketch 2857-03-SK002 – Clinton Creek Waste Rock Pile, Movement Monitoring
- Sketch 2857-03-SK003 – Wolverine Creek Tailings Piles, Movement Monitoring
- Sketch 2857-03-SK004 – Wolverine Creek Tailings Piles, South Lobe Movement
- Sketch 2857-03-SK005 – Clinton Creek, Channel Plan
- Sketch 2857-03-SK006 – Drop Structure #1
- Sketch 2857-03-SK007 – Drop Structure #2
- Sketch 2857-03-SK008 – Drop Structure #3
- Sketch 2857-03-SK009 – Drop Structure #4
- Sketch 2857-03-SK010 – Clinton Creek, Channel Profile
- Sketch 2857-03-SK011 – Clinton Creek Channel Profile, Station 0-050 to 0+250
- Sketch 2857-03-SK012 – Clinton Creek Channel Profile, Station 0+250 to 0+550
- Sketch 2857-03-SK013 – Clinton Creek Channel Profile, Station 0+550 to 0+850
- Sketch 2857-03-SK014 – Clinton Creek Road Tension Crack
- Sketch 2857-03-SK015 – Plan Cross-Section Locations
- Sketch 2857-03-SK016 – Cross Section A
- Sketch 2857-03-SK017 – Cross Section B
- Sketch 2857-03-SK018 – Cross Section C
- Sketch 2857-03-SK019 – Cross Section D
- Sketch 2857-03-SK020 – Cross Section E
- Sketch 2857-03-SK021 – Imagery Comparison – 2008 vs. 2012

510,500
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514,500
515,000
515,500
516,000

7,149,000
7,148,500
7,148,000
7,147,500
7,147,000
7,146,500

WOLVERINE CREEK
TAILINGS PILE

NORTH
LOBE

SOUTH
LOBE

FORMER
MILL
SITE

TAILINGS PILE
ACCESS ROAD

U2834 (RTK BASE)

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

U1200

U1189

MINE ACCESS ROAD

HUDGEON LAKE

CLINTON CREEK
WASTE ROCK DUMP

U2836 (RTK BASE)

SNOWSHOE PIT

BEAR
CREEK

U228 (MINE)

U1836

U1182

U1193

PORCUPINE PIT

SHACK (MINE)

U280 (MINE)

PORCUPINE
CREEK

CLINTON
CREEK

N

0 150 300 m

SCALE 1:15000

UTM ZONE 7 NAD83
IMAGE DATE 2012

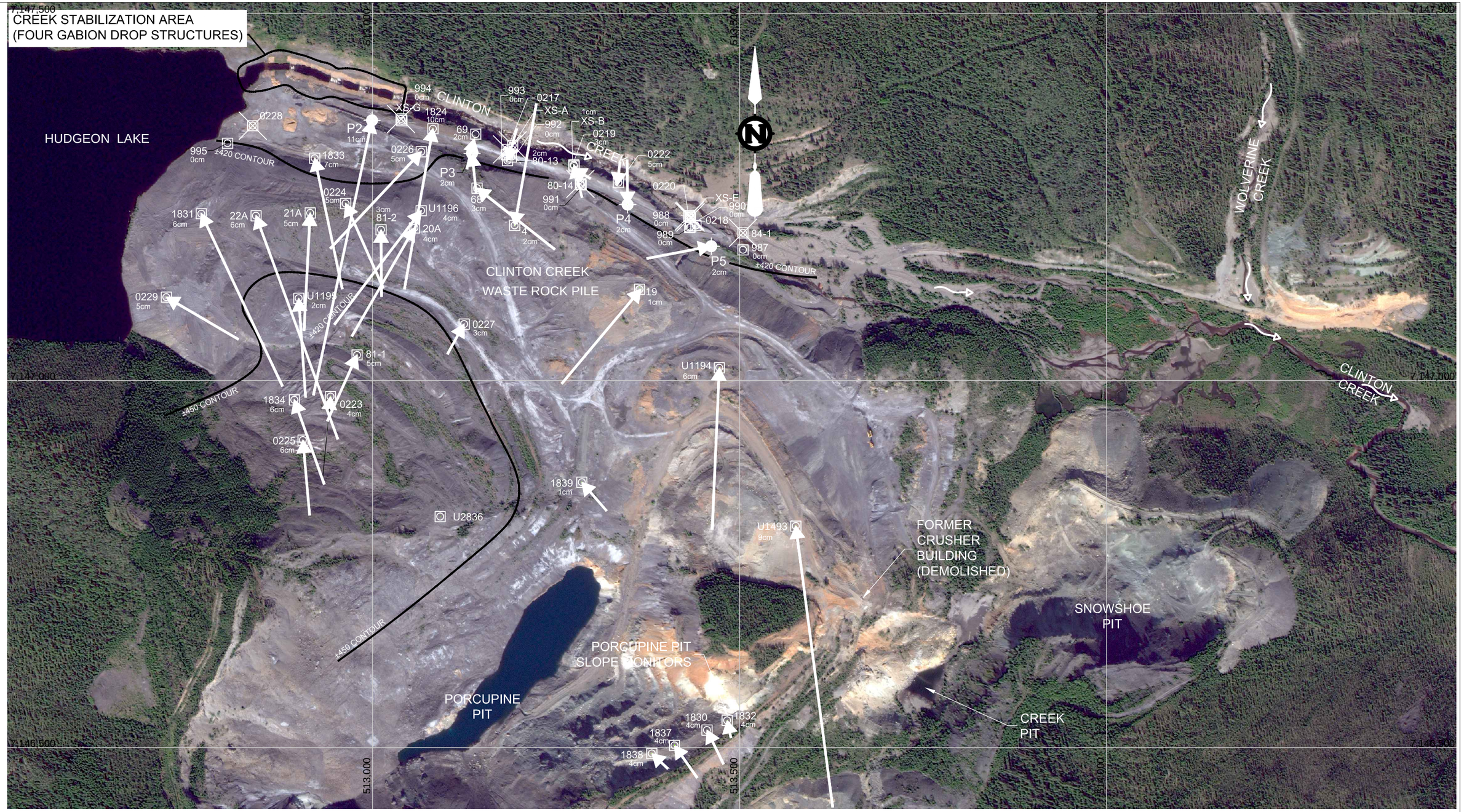
U5700 BENCHMARK

U228 (MINE) LOCAL MINE BENCHMARKS

Government of Yukon
Clinton Creek Long Term Monitoring
Site Plan and Bench Mark Locations

Dwg. No.: 2857-03-SK001
Date: December 6, 2013

Associated Engineering



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SCALE 1:5000

UTM ZONE 7 NAD83
IMAGE DATE 2012

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

0226 — MONITOR LOCATION (ACTIVE)

P2 — PIEZOMETER LOCATION

22cm — INCREMENTAL MOVEMENT (AUG 2011 TO AUGUST 2012)

10cm — TOTAL MOVEMENT VECTOR (BASELINE TO AUGUST 2012)

UPPER SLOPE AREA
- ELEVATION >450±

MID SLOPE AREA
- ELEVATION >420± <450±

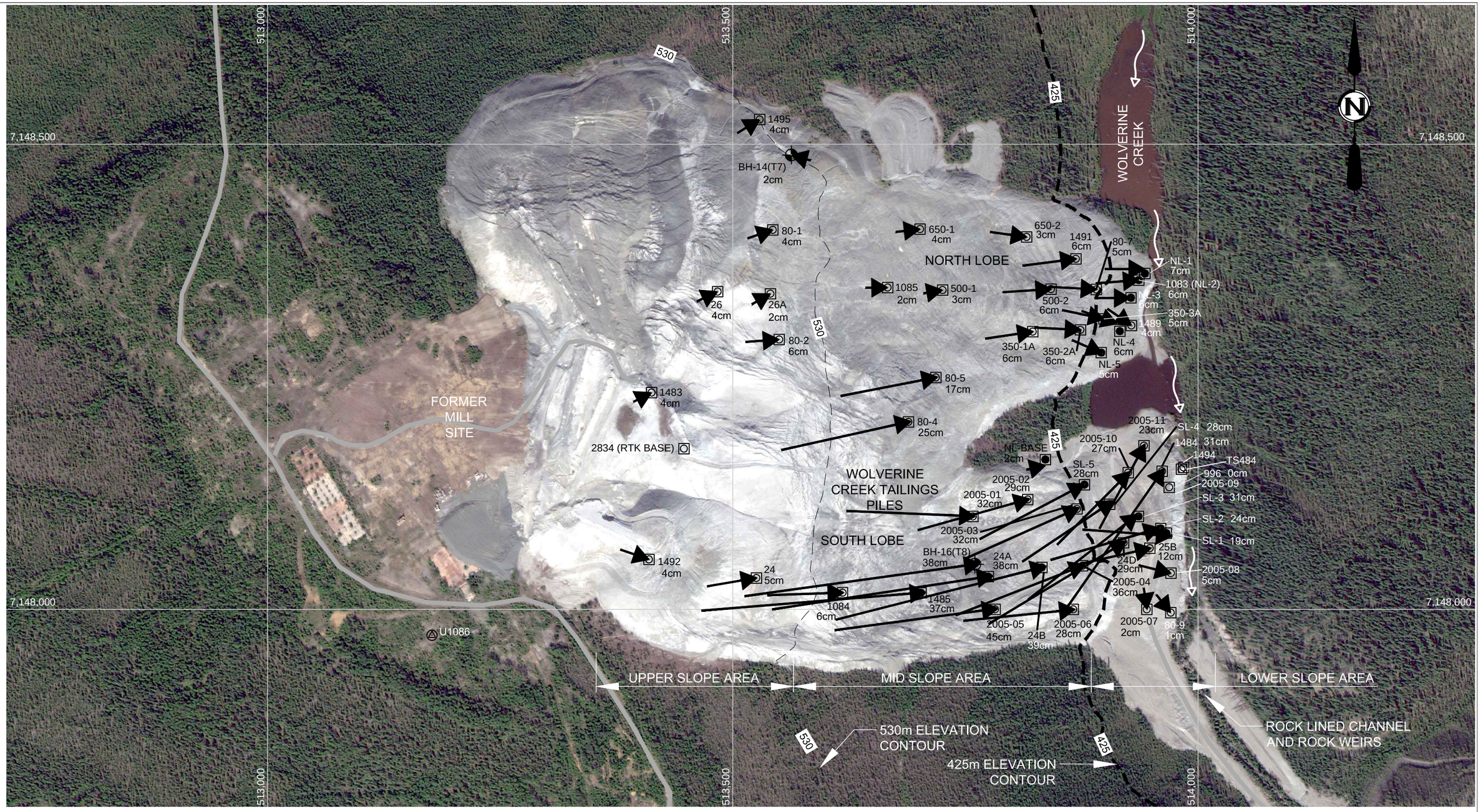
LOWER SLOPE AREA
- ELEVATION <420±

NOTE:
ALL MOVEMENT INFORMATION IS FROM THE 2012 MONITORING PROGRAM.

Government of Yukon
Clinton Creek Long Term Monitoring
2013 - Clinton Creek Waste Rock Pile Movement Monitoring

Dwg. No.: 2857-03-SK002
Date: December 6, 2013

Associated Engineering



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SCALE 1:4000

UTM ZONE 7 NAD83
IMAGE DATE 2012

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 (AUG 2011 TO AUGUST 2012)

100cm TOTAL MOVEMENT VECTOR (BASELINE TO AUGUST 2012)

NOTE:
ALL MOVEMENT INFORMATION IS FROM THE 2012 MONITORING PROGRAM.

Government of Yukon
Clinton Creek Long Term Monitoring
2013 - Wolverine Creek Tailings Piles Movement Monitoring

Dwg. No.: 2857-03-SK003
Date: December 6, 2013

Associated Engineering

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Date: 2006/3/24
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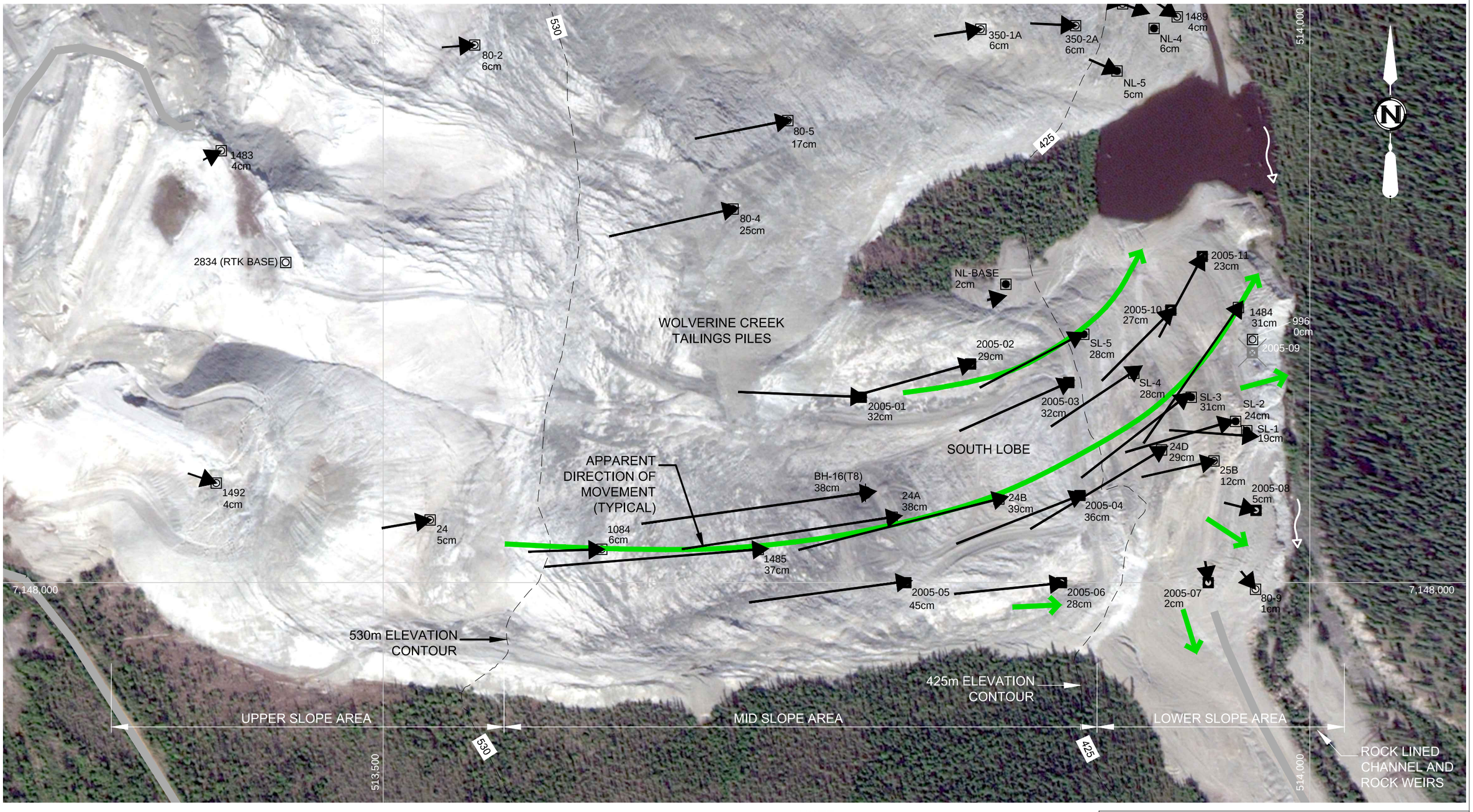


0 20 40 m

SCALE 1:2000

UTM ZONE 7 NAD83
IMAGE DATE 2012

XS-G MONITOR LOCATION (DESTROYED, NOT FOUND)

0226 MONITOR LOCATION (ACTIVE)

SL/NL-01 VISUAL ALIGNMENT PIN

P2 PIEZOMETER LOCATION

22cm INCREMENTAL MOVEMENT (AUG 2011 TO AUGUST 2012)

100cm TOTAL MOVEMENT VECTOR (BASELINE TO AUGUST 2012)

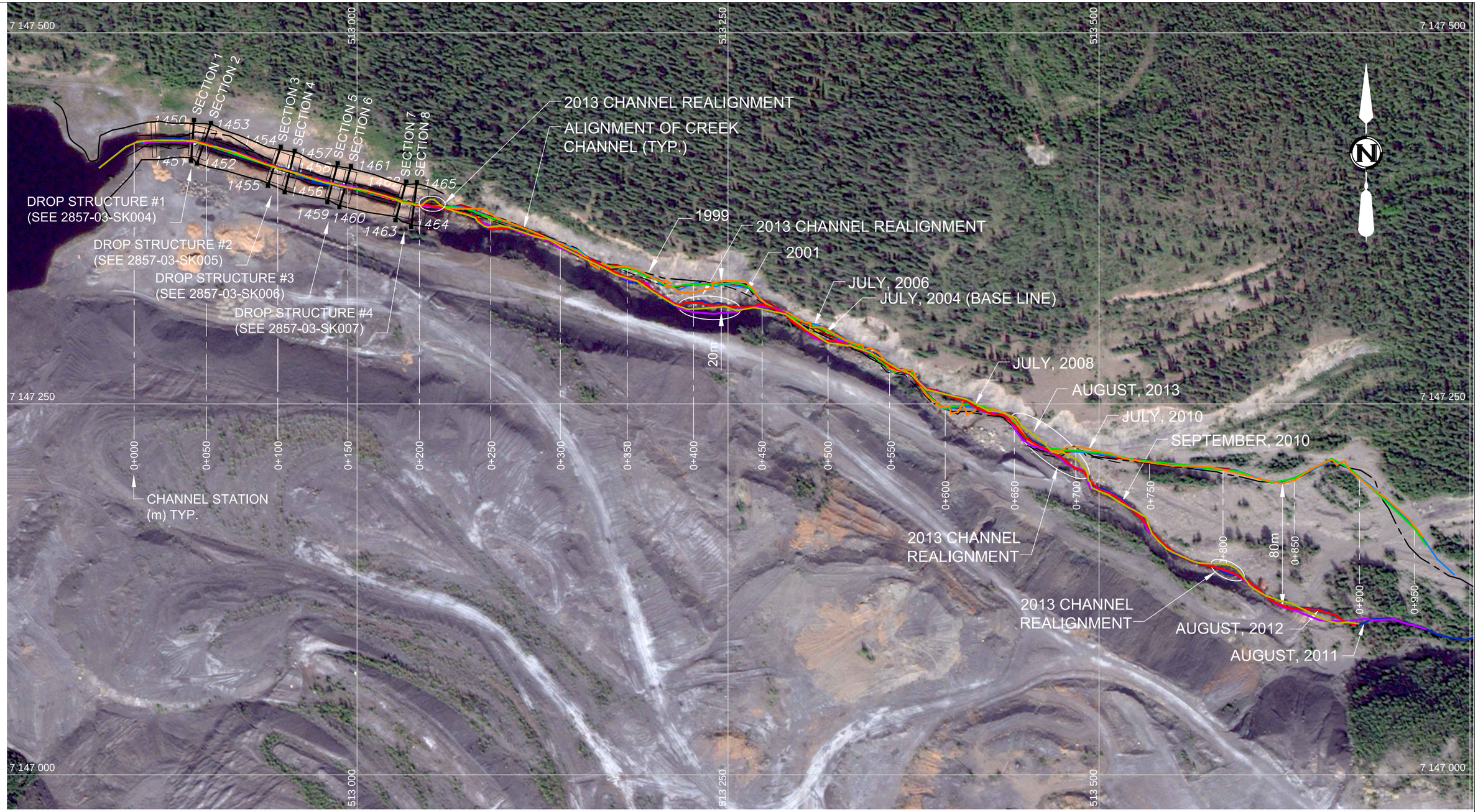
GENERAL MOVEMENT TREND

NOTE:
ALL MOVEMENT INFORMATION IS FROM THE 2012 MONITORING PROGRAM.

Government of Yukon
Clinton Creek Long Term Monitoring
2013 - Wolverine Creek Tailings Pile South Lobe Movement

Dwg. No.: 2857-03-SK004
Date: December 6, 2013

Associated Engineering



PLAN

m 0 25 50 SCALE 1:2500

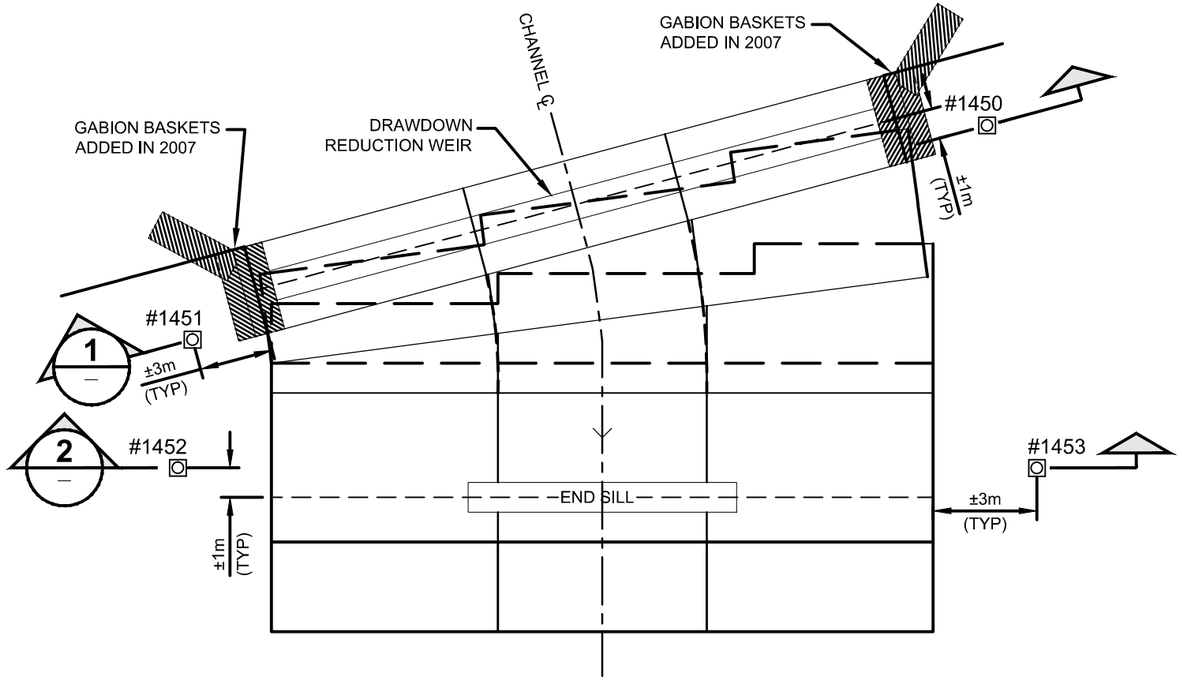
LEGEND

- 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
- CREEK CENTRELINE AUGUST 2012
- CREEK CENTRELINE AUGUST 2013

Government of Yukon
Clinton Creek Long Term Monitoring
2013 - Clinton Creek Channel Plan

Dwg. No.: 2857-03-SK005
Date: December 6, 2013

Associated Engineering



DROP STRUCTURE PLAN VIEW

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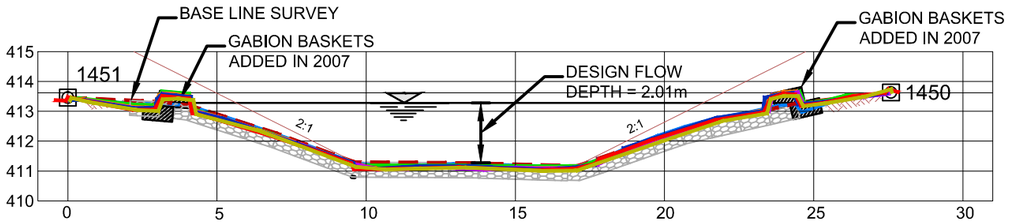

SECTION 1

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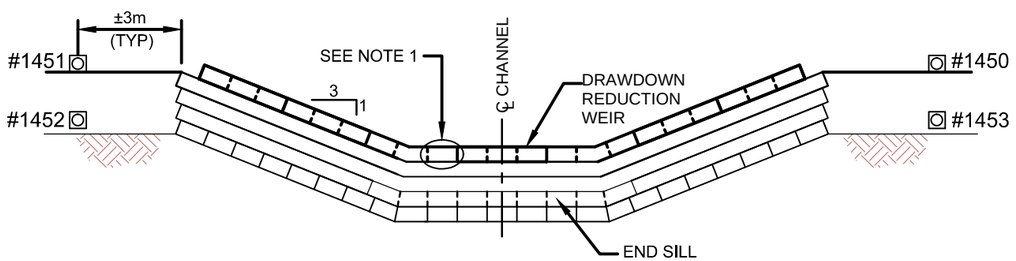

DROP STRUCTURE END VIEW

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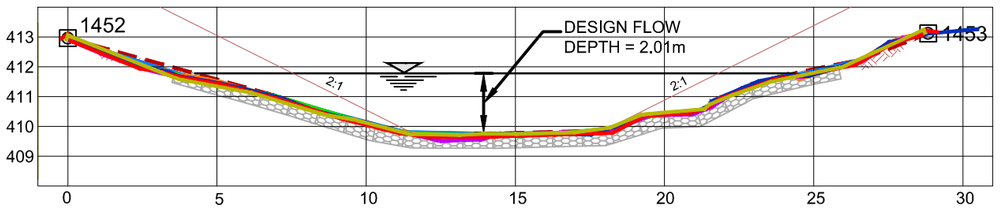

SECTION 2

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▣ 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)
- SURVEY (AUGUST 2012)
- SURVEY (AUGUST 2013)

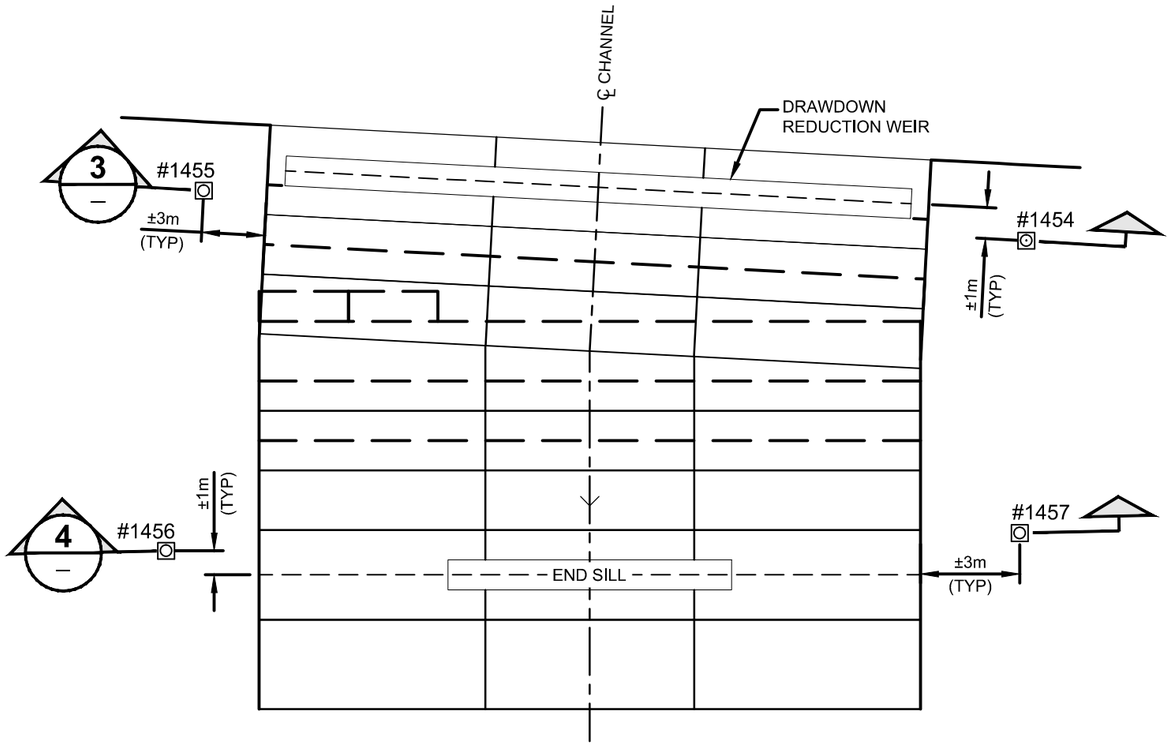
NOTE 1: GABION FILL REMOVED FROM THIS CELL OF THE DRAWDOWN WEIR IN 2007 TO FACILITATE DRAWING DOWN HUDGEON LAKE WATER LEVEL DURING LOW FLOW PERIODS.

NOTE 2: REFER TO AECOM's "FORMER CLINTON CREEK ASBESTOS MINE - EMERGENCY DROP STRUCTURE REPAIRS, CONSTRUCTION ACTIVITY REPORT, 2011" FOR 2011 REPAIR DETAILS.

Government of Yukon
Clinton Creek Long Term Monitoring
2013 - Drop Structure #1

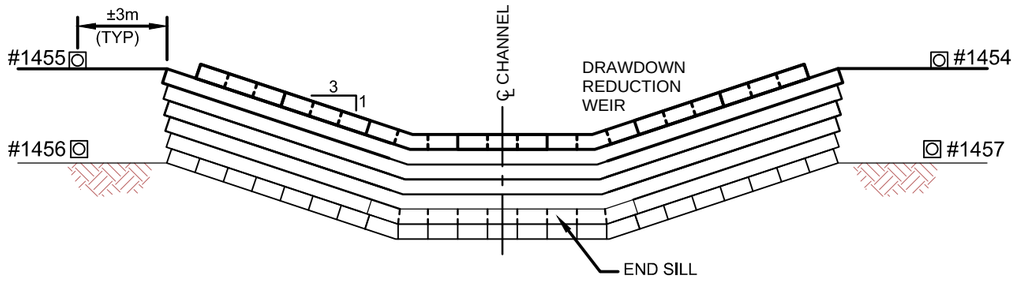
Dwg. No.: 2857-03-SK006
Date: December 6, 2013

Associated Engineering



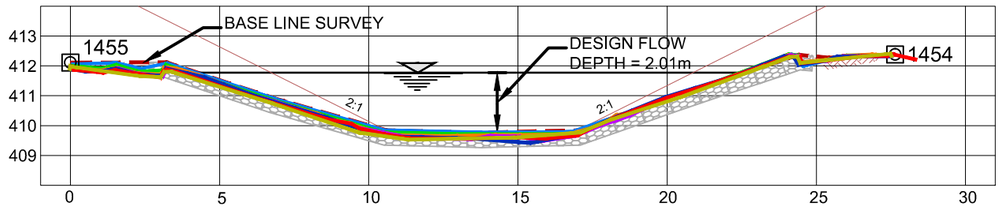
DROP STRUCTURE PLAN VIEW

0 2 4 m SCALE 1:200



DROP STRUCTURE END VIEW

0 2 4 m SCALE 1:200



SECTION 3

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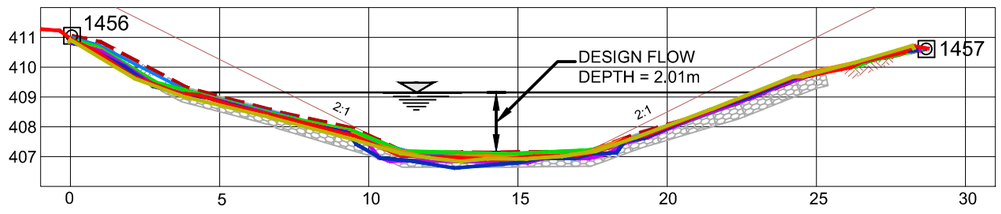


SECTION 4

0 2 4 m SCALE 1:200

- BASE LINE SURVEY (2006)
- SURVEY (2007)
- SURVEY (2008)
- SURVEY (JULY 2010)
- SURVEY (SEPTEMBER 2010)
- SURVEY (AUGUST 2011)
- SURVEY (AUGUST 2012)
- SURVEY (AUGUST 2013)

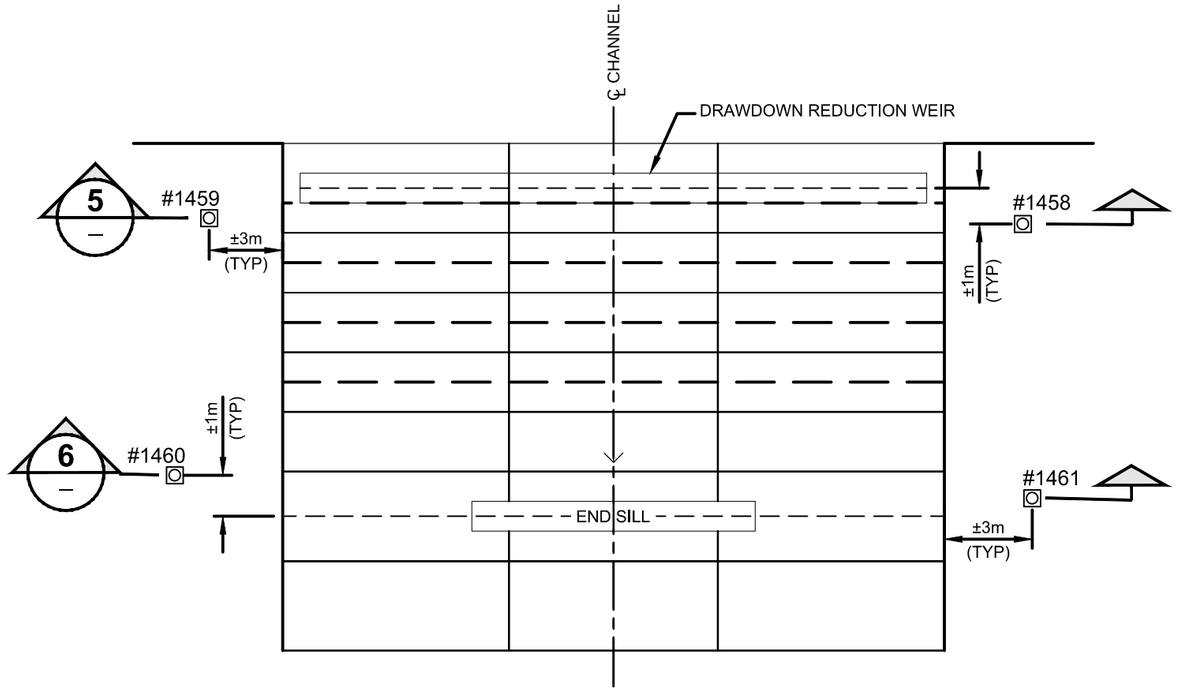
NOTE 1: REFER TO AECOM's "FORMER CLINTON CREEK ASBESTOS MINE - EMERGENCY DROP STRUCTURE REPAIRS, CONSTRUCTION ACTIVITY REPORT, 2011" FOR 2011 REPAIR DETAILS.

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

Government of Yukon
Clinton Creek Long Term Monitoring
2013 - Drop Structure #2

Dwg. No.: 2857-03-SK007
Date: December 6, 2013

Associated Engineering



DROP STRUCTURE PLAN VIEW

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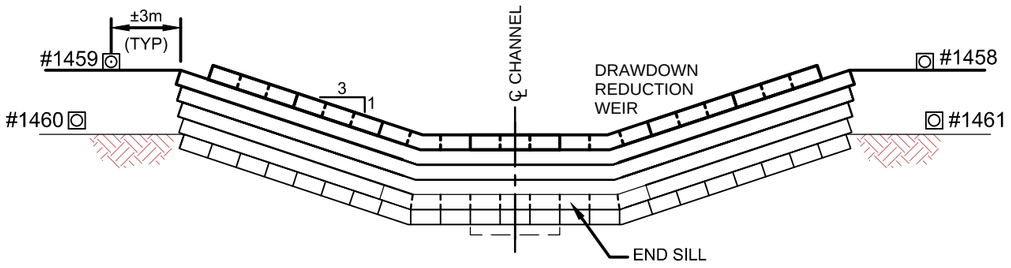

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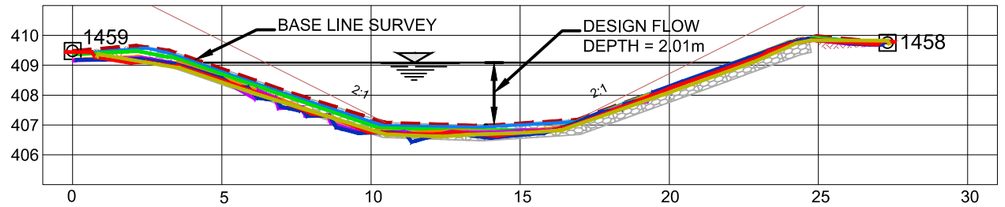
0 2 4 m SCALE 1:200



SECTION 5

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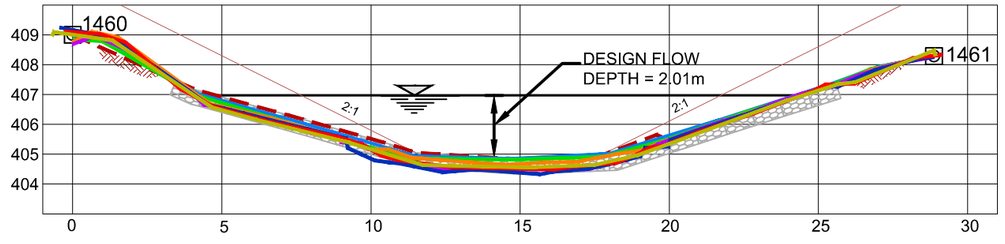


SECTION 6

0 2 4 m SCALE 1:200

NOTE 1: REFER TO AECOM's "FORMER CLINTON CREEK ASBESTOS MINE - EMERGENCY DROP STRUCTURE REPAIRS, CONSTRUCTION ACTIVITY REPORT, 2011" FOR 2011 REPAIR DETAILS.

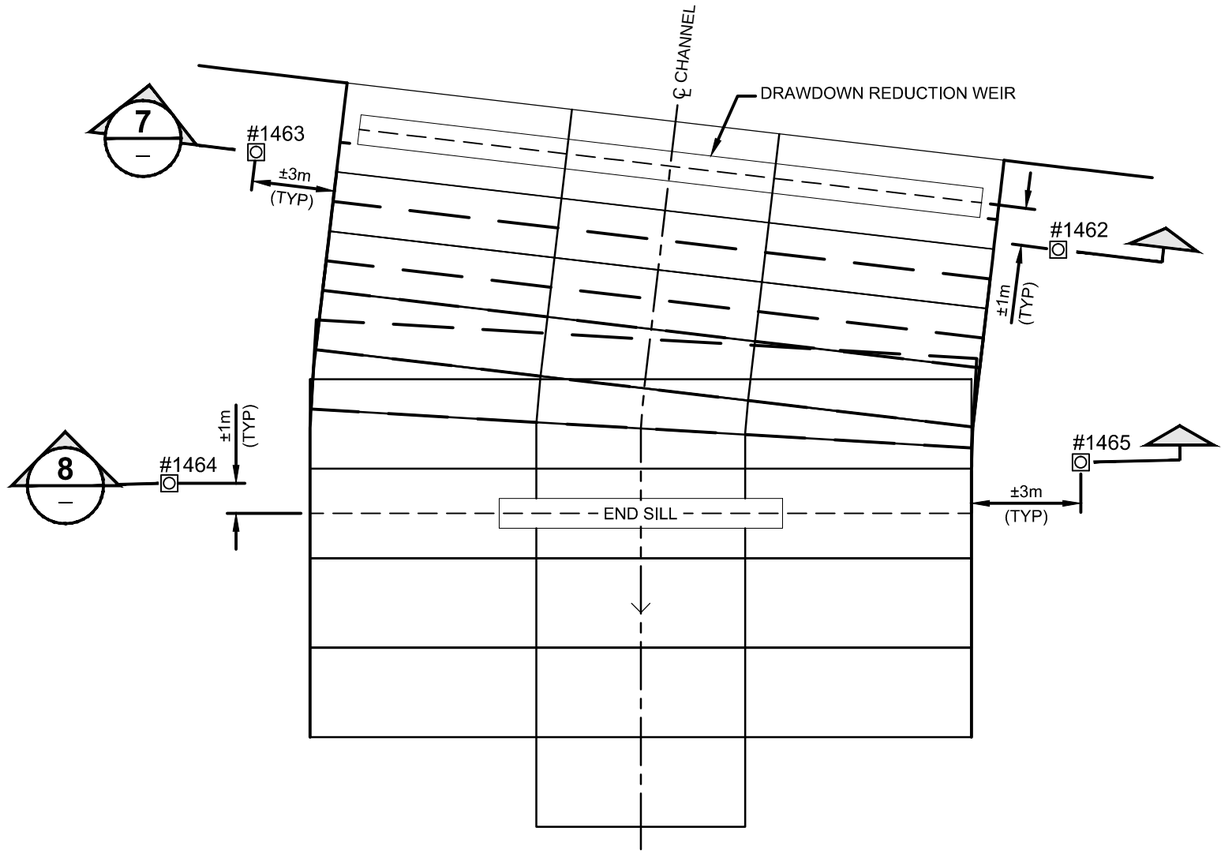
⊙ CHANNEL CLOSURE MOVEMENT MONITOR (19mm Ø STEEL PIN) INSTALLED DURING 2006 SURVEY.

- BASE LINE SURVEY (2006)
- SURVEY (2007)
- SURVEY (2008)
- SURVEY (JULY 2010)
- SURVEY (SEPTEMBER 2010)
- SURVEY (AUGUST 2011)
- SURVEY (AUGUST 2012)
- SURVEY (AUGUST 2013)

Government of Yukon
Clinton Creek Long Term Monitoring
2013 - Drop Structure #3

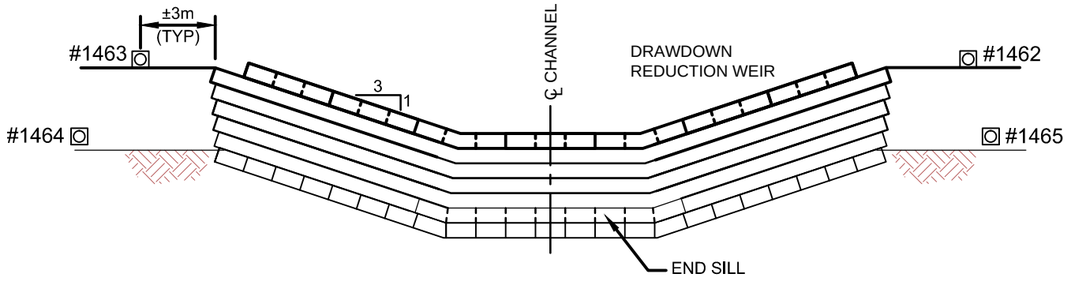
Dwg. No.: 2857-03-SK008
Date: December 6, 2013

Associated Engineering



DROP STRUCTURE PLAN VIEW

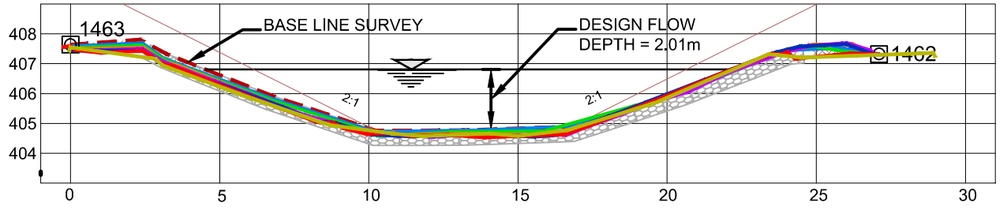
0 2 4 m SCALE 1:200



DROP STRUCTURE END VIEW

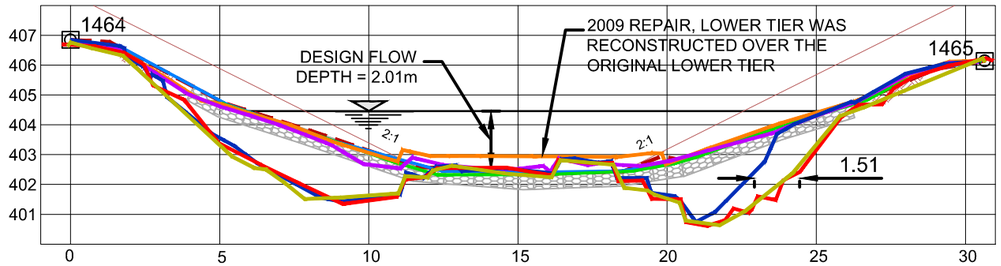
0 2 4 m SCALE 1:200

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



SECTION 7

0 2 4 m SCALE 1:200



SECTION 8

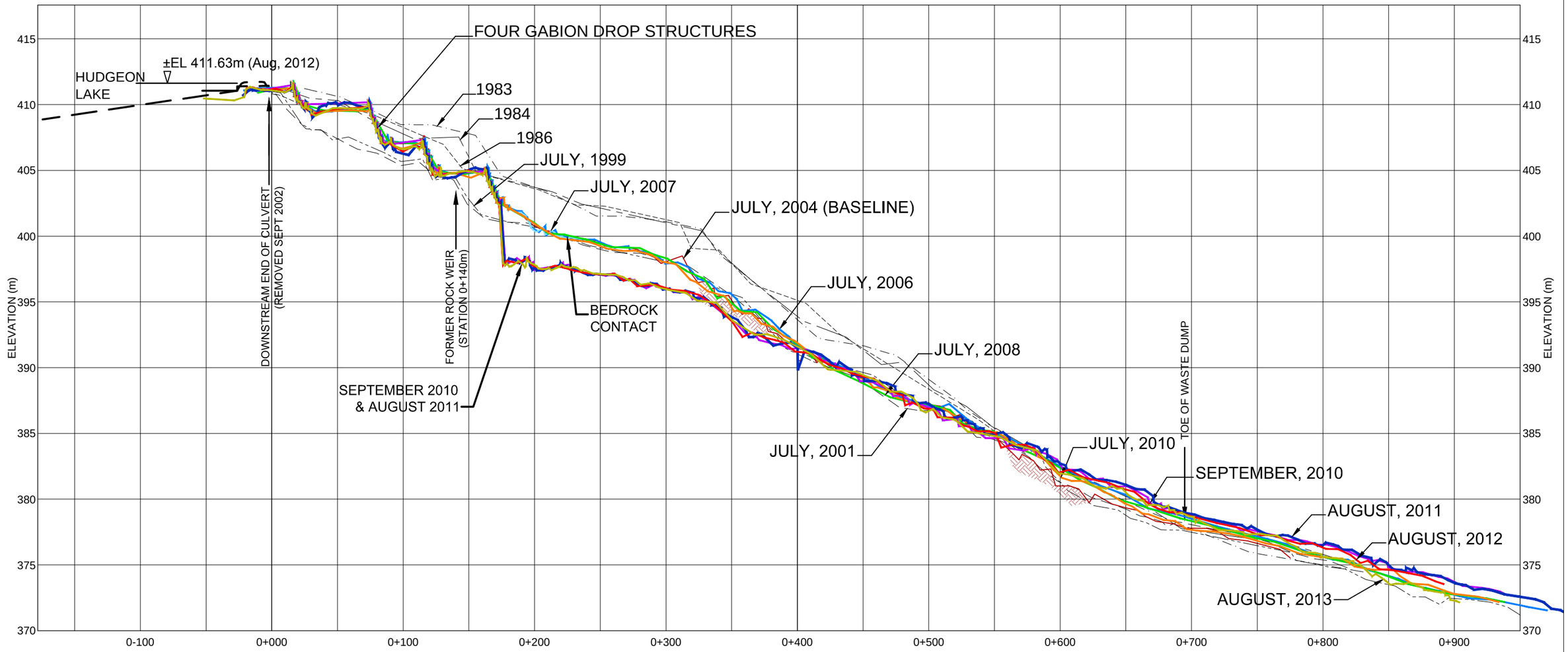
0 2 4 m SCALE 1:200

- BASE LINE SURVEY (2006)
- SURVEY (2007)
- SURVEY (2008)
- SURVEY (JULY 2010)
- SURVEY (SEPTEMBER 2010)
- SURVEY (AUGUST 2011)
- SURVEY (AUGUST 2012)
- SURVEY (AUGUST 2013)

Government of Yukon
Clinton Creek Long Term Monitoring
2013 - Drop Structure #4

Dwg. No.: 2857-03-SK009
Date: December 9, 2013

Associated Engineering



PROFILE

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0 3 6 V=1:300

STATION	NORTHING	EASTING
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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

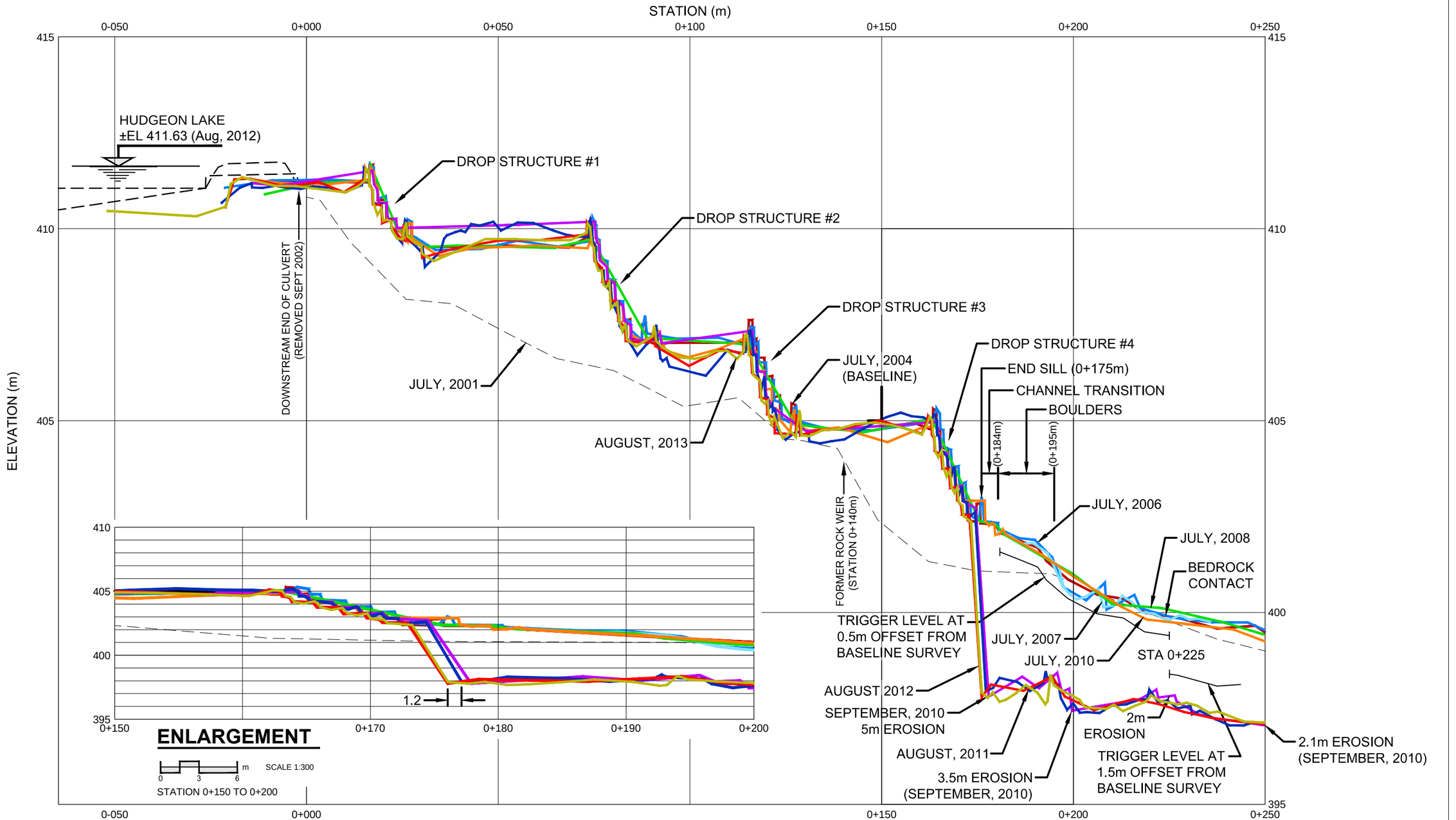
LEGEND

- 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
- PROFILE AUGUST 2012
- PROFILE AUGUST 2013

Government of Yukon
Clinton Creek Long Term Monitoring
2013 - Clinton Creek Channel Profile

Dwg. No.: 2857-03-SK010
Date: December 6, 2013

Associated Engineering



PROFILE

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H=1:1000
0 1 2
V=1:100

0-50 to 0+250

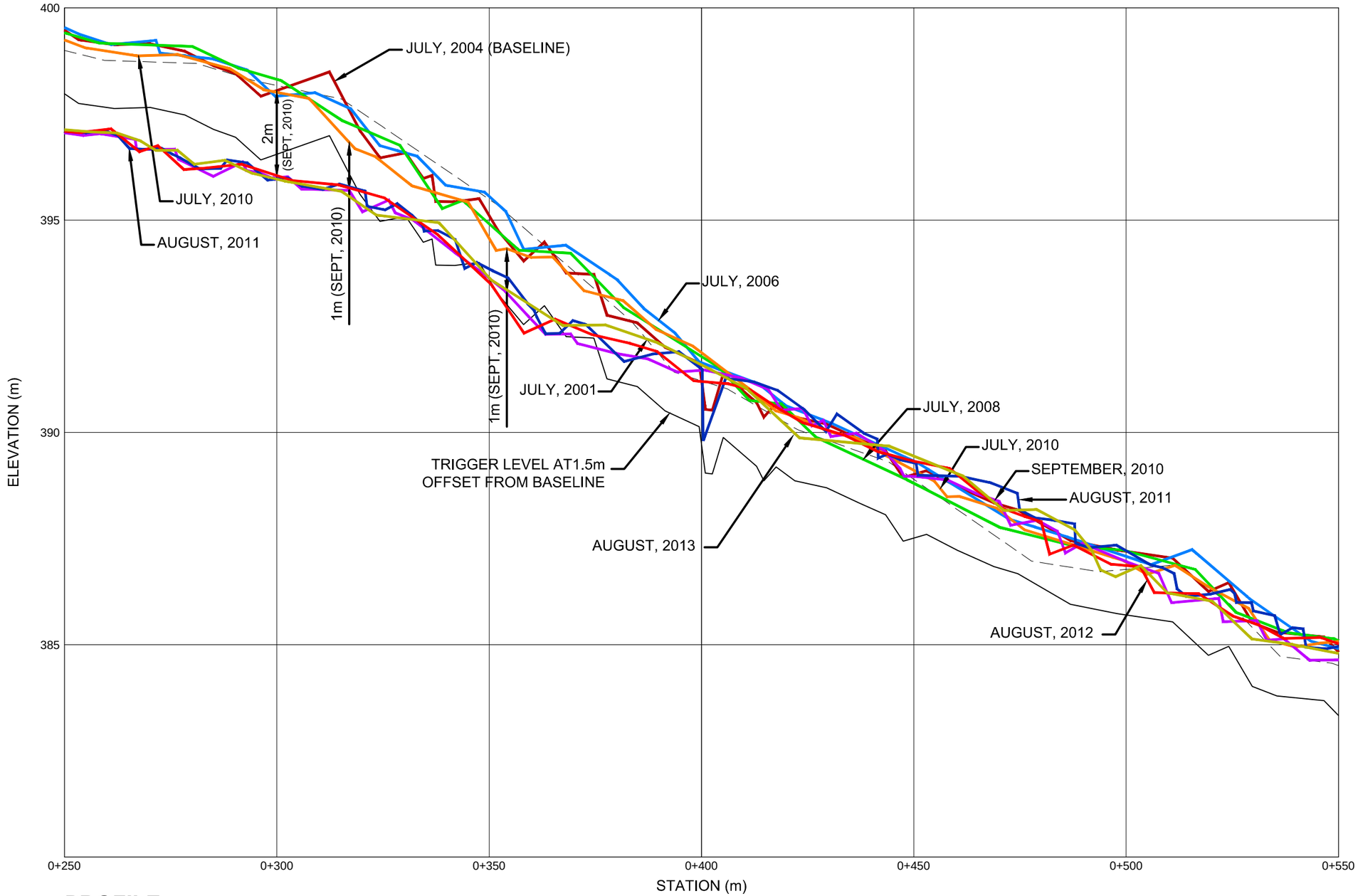
LEGEND

- PROFILE 2001
- PROFILE 2004 (BASELINE FOR LONG TERM MONITORING)
- PROFILE 2006
- PROFILE 2007
- PROFILE 2008
- PROFILE JULY 2010
- PROFILE SEPTEMBER 2010
- PROFILE 2011
- PROFILE 2012
- PROFILE 2013

Government of Yukon
Clinton Creek Long Term Monitoring
2013 - Clinton Creek Channel Profile
Station 0-050 to 0+250

Dwg. No.: 2857-03-SK011
Date: December 6, 2013

Associated Engineering



PROFILE

0 10 20 m H=1:1000

0 1 2 V=1:100

0+250 to 0+550

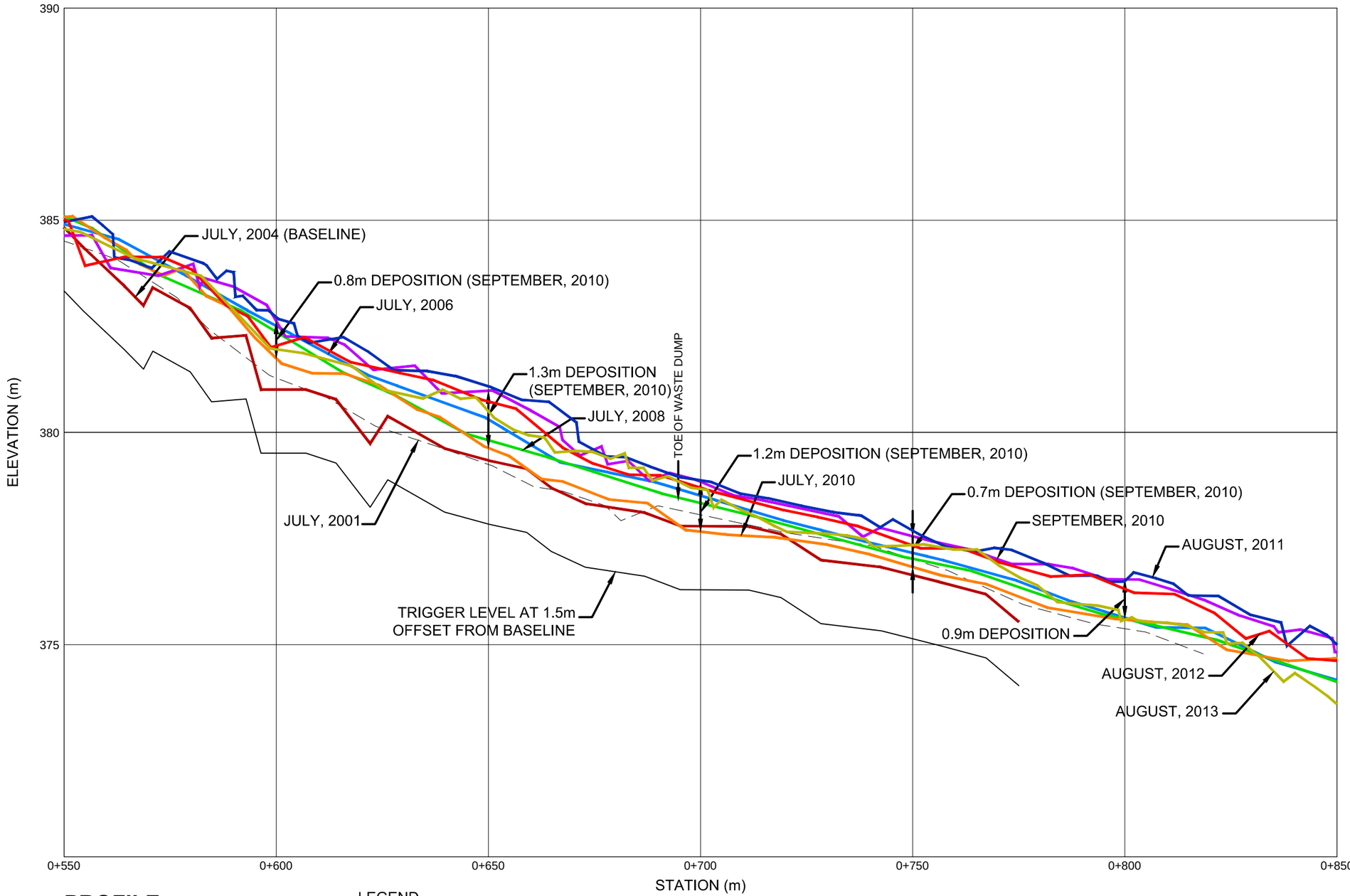
LEGEND

- PROFILE 2001
- PROFILE 2004 (BASELINE FOR LONG TERM MONITORING)
- PROFILE 2006
- PROFILE 2008
- PROFILE JULY 2010
- PROFILE SEPTEMBER 2010
- PROFILE 2011
- PROFILE 2012
- PROFILE 2013

Government of Yukon
Clinton Creek Long Term Monitoring
2013 - Clinton Creek Channel Profile
Station 0+250 to 0+550

Dwg. No.: 2857-03-SK012
Date: December 12, 2013

Associated Engineering



PROFILE

0 10 20 m H=1:1000

0 1 2 V=1:100

0+550 to 0+850

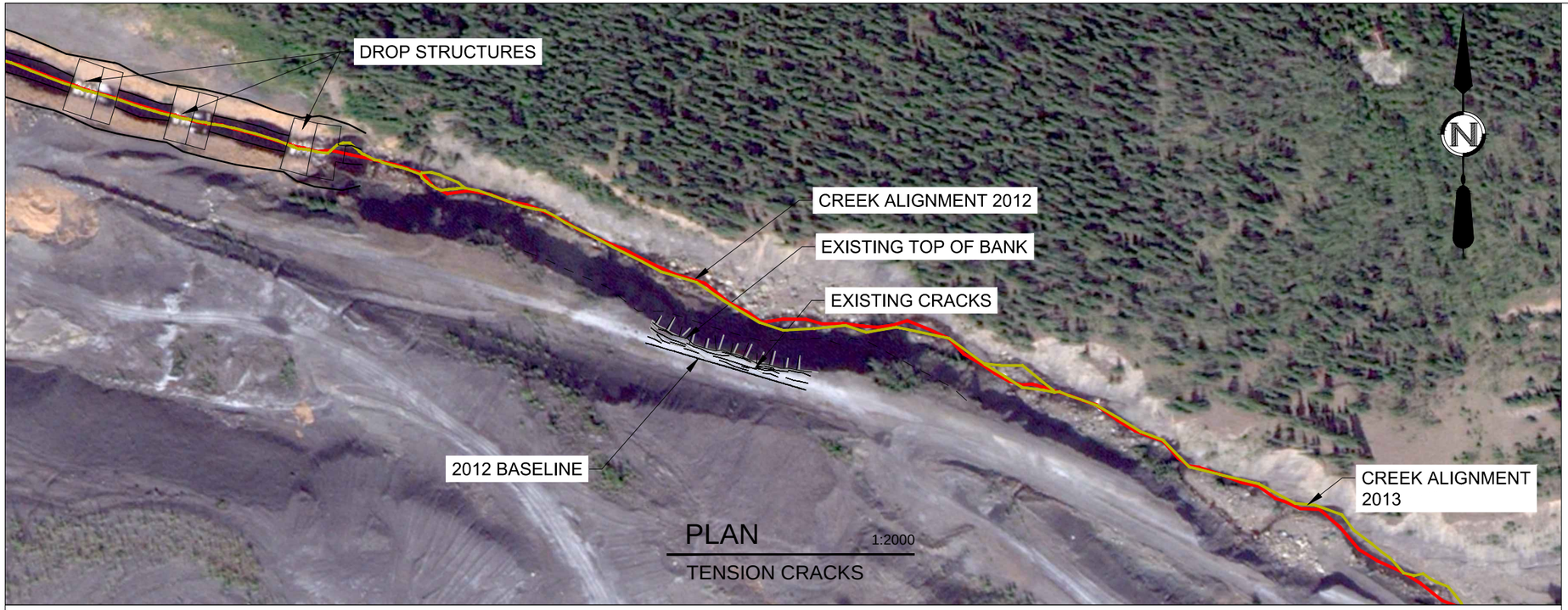
LEGEND

- PROFILE 2001
- PROFILE 2004 (BASELINE FOR LONG TERM MONITORING)
- PROFILE 2006
- PROFILE 2008
- PROFILE JULY 2010
- PROFILE SEPTEMBER 2010
- PROFILE 2011
- PROFILE 2012
- PROFILE 2013

Government of Yukon
Clinton Creek Long Term Monitoring
2013 - Clinton Creek Channel Profile
Station 0+550 to 0+850

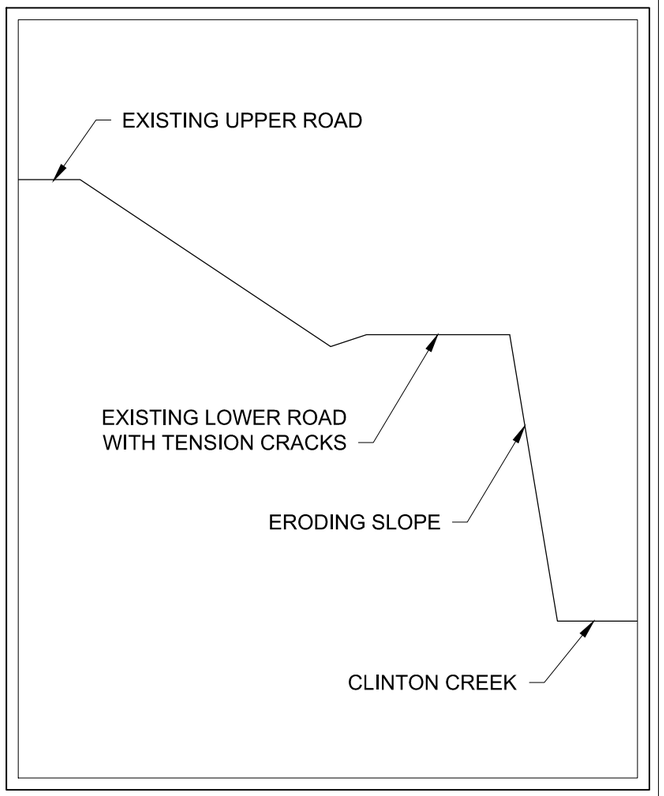
Dwg. No.: 2857-03-SK013
Date: December 6, 2013

Associated Engineering



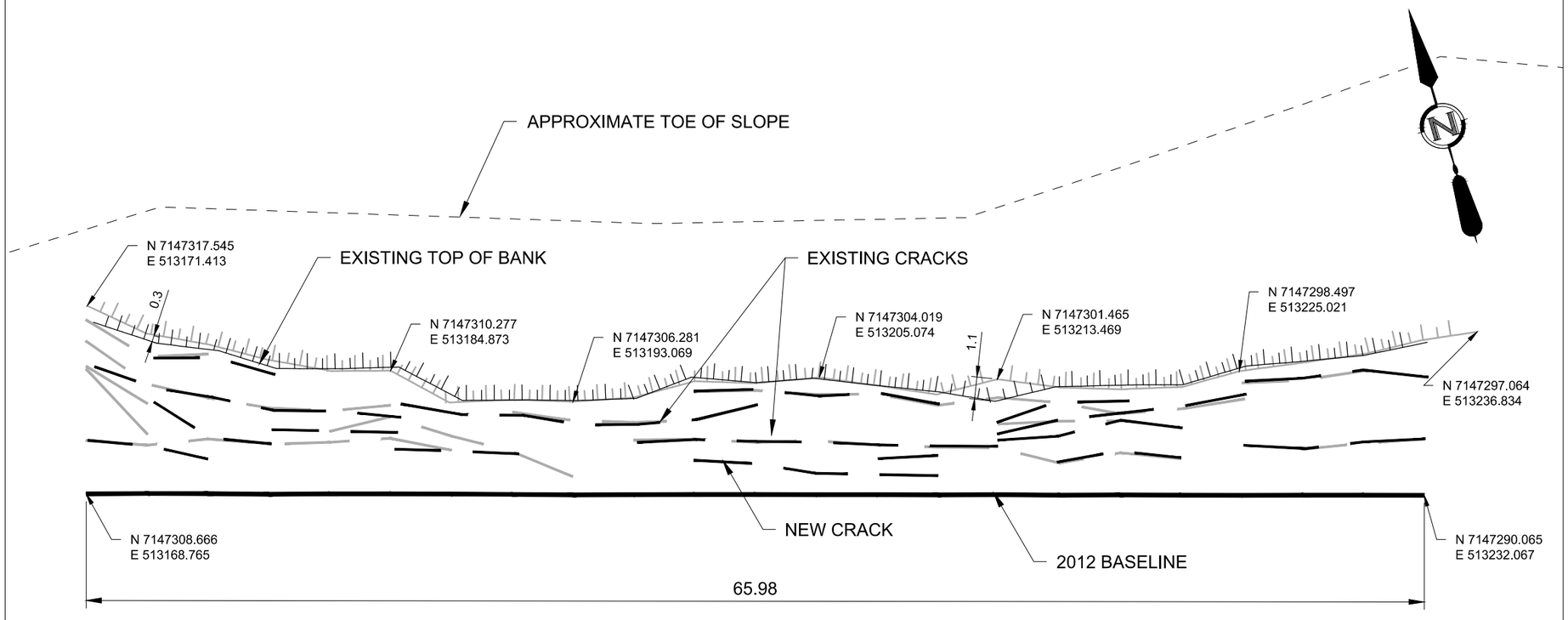
PLAN 1:2000

TENSION CRACKS



SECTION NTS

TYPICAL ROAD



PLAN 1:250

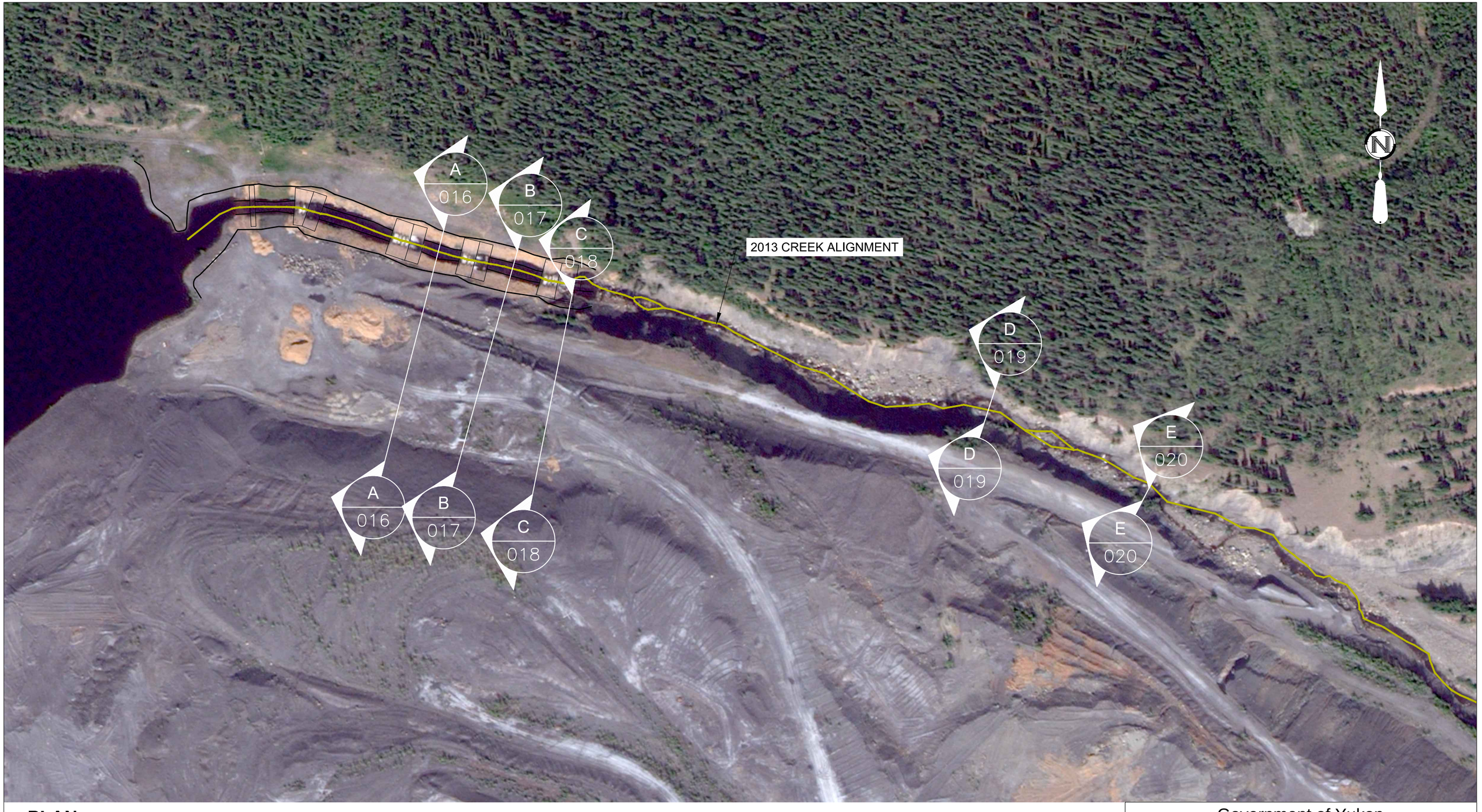
TENSION CRACKS

2012 TENSION CRACKS
2013 TENSION CRACKS
2012 TOP OF BANK
2013 TOP OF BANK

Government of Yukon
Clinton Creek Long Term Monitoring
Clinton Creek Road Tension Cracks

Dwg. No.: 2857-03-SK014
Date: December 6, 2013

Associated Engineering



PLAN

0 20 40 m SCALE 1:2000

Government of Yukon
Clinton Creek Long Term Monitoring
2013 - Plan Cross Section Locations

Dwg. No.: 2857-03-SK015
Date: December 6, 2013

Associated Engineering

SECTION A (015)

0 10 20 m

SCALE 1:1000 H
1:200 V

SURVEY (AUGUST 2012)

SURVEY (AUGUST 2013)

Government of Yukon
Clinton Creek Long Term Monitoring
2013 - Cross Section A

Dwg. No.: 2857-03-SK016
Date: December 6, 2013

Associated Engineering

SECTION B 015

0 10 20 m

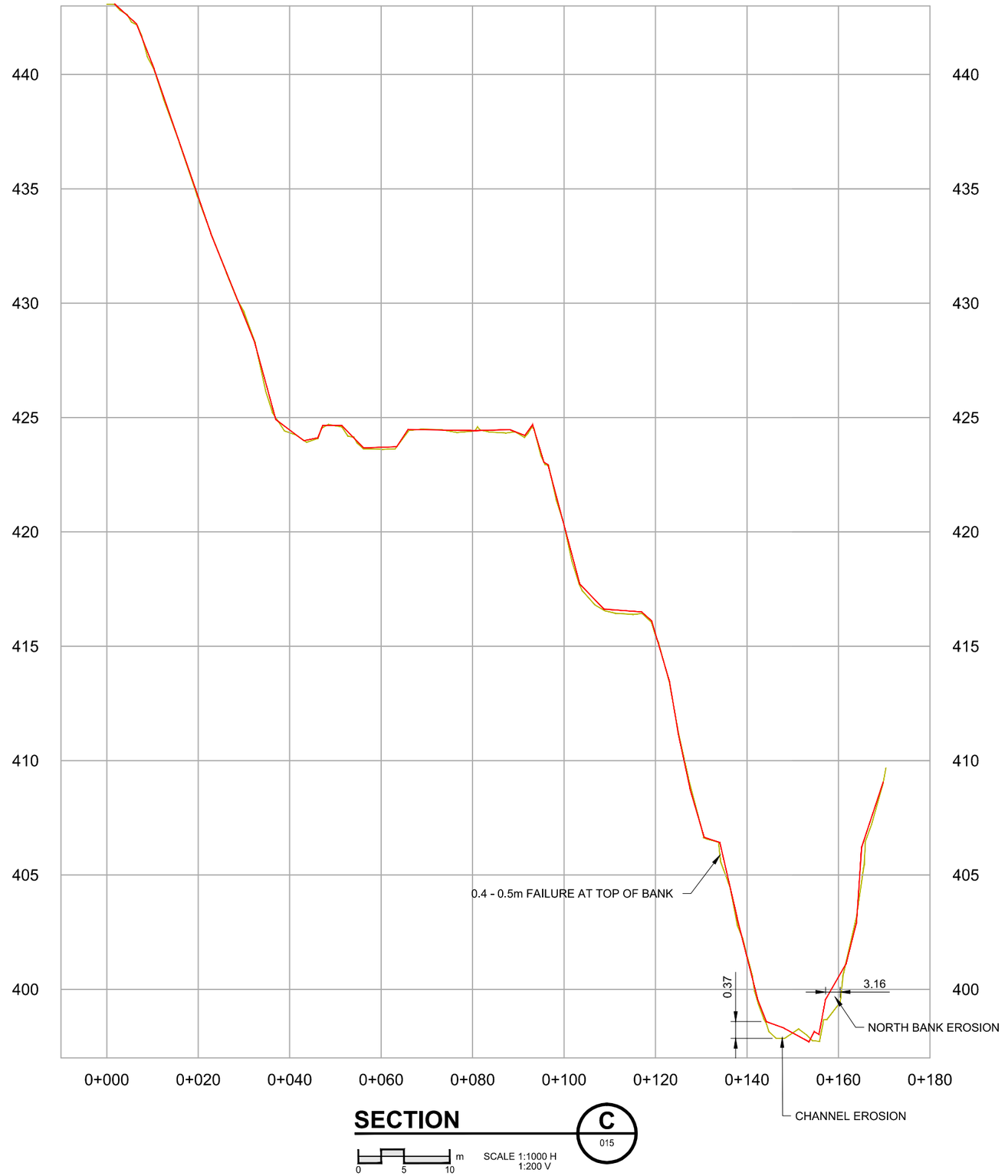
SCALE 1:1000 H
1:200 V

SURVEY (AUGUST 2012)
SURVEY (AUGUST 2013)

Government of Yukon
Clinton Creek Long Term Monitoring
2013 - Cross Section B

Dwg. No.: 2857-03-SK017
Date: December 6, 2013

Associated Engineering



SECTION C 015

0 5 10 m

SCALE 1:1000 H
1:200 V

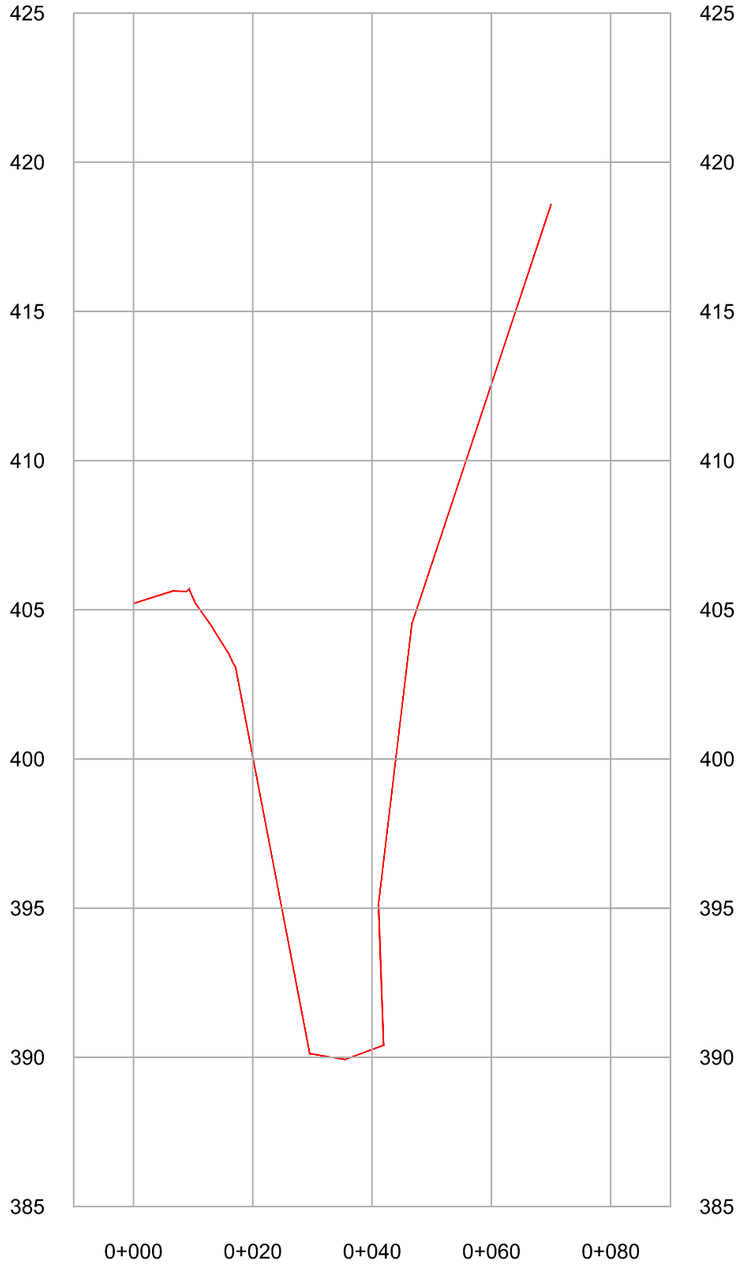
SURVEY (AUGUST 2012)

SURVEY (AUGUST 2013)

Government of Yukon
Clinton Creek Long Term Monitoring
2013 - Cross Section C

Dwg. No.: 2857-03-SK018
Date: December 6, 2013

Associated Engineering



SECTION D 015

0 5 10 m

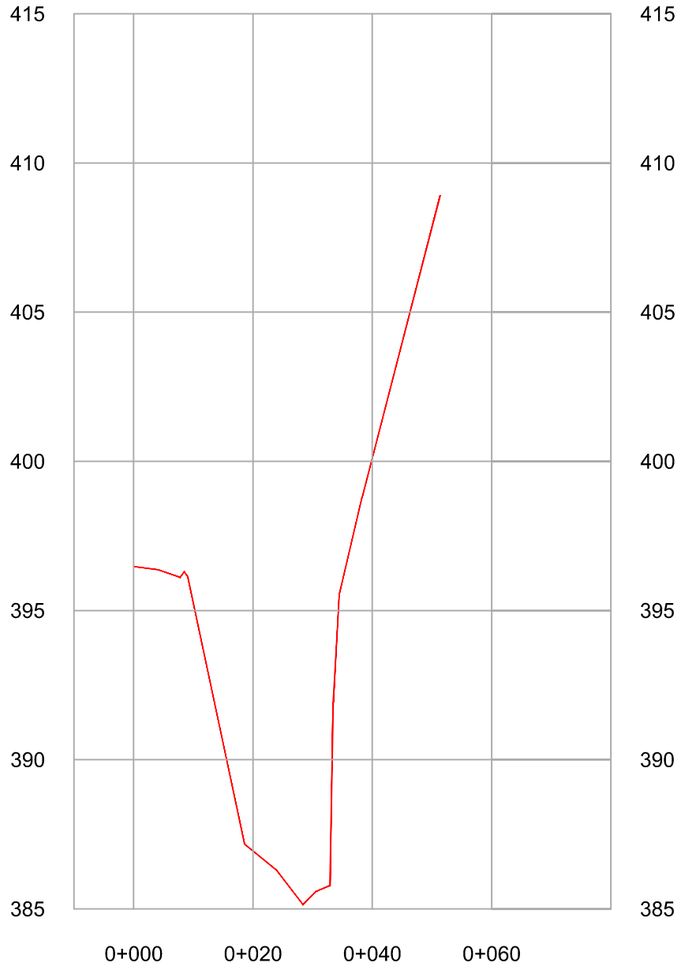
SCALE 1:1000 H
1:200 V

SURVEY (AUGUST 2012)

Government of Yukon
Clinton Creek Long Term Monitoring
2013 - Cross Section D

Dwg. No.: 2857-03-SK019
Date: December 6, 2013

Associated Engineering



SECTION E 015

0 5 10 m

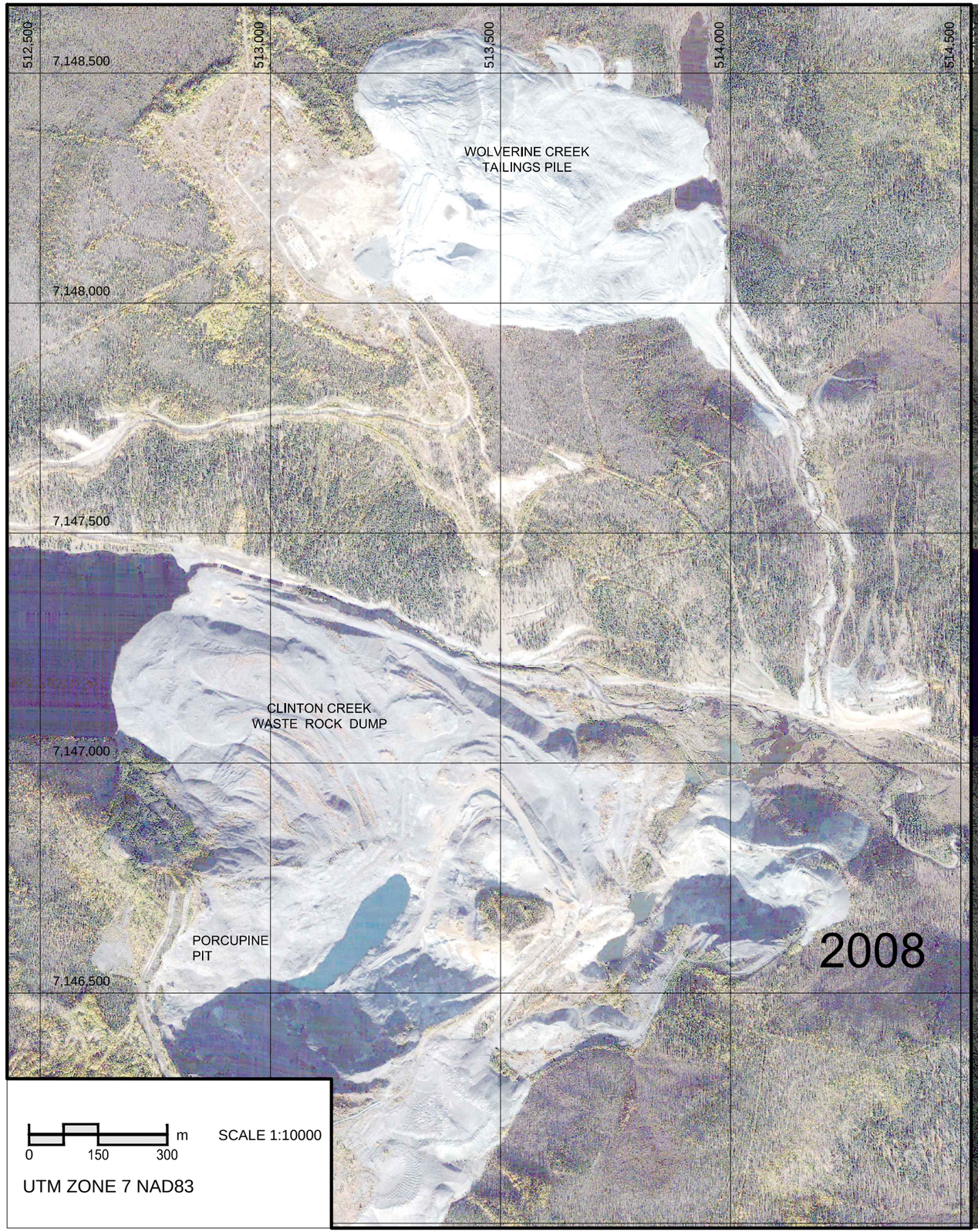
SCALE 1:1000 H
1:200 V

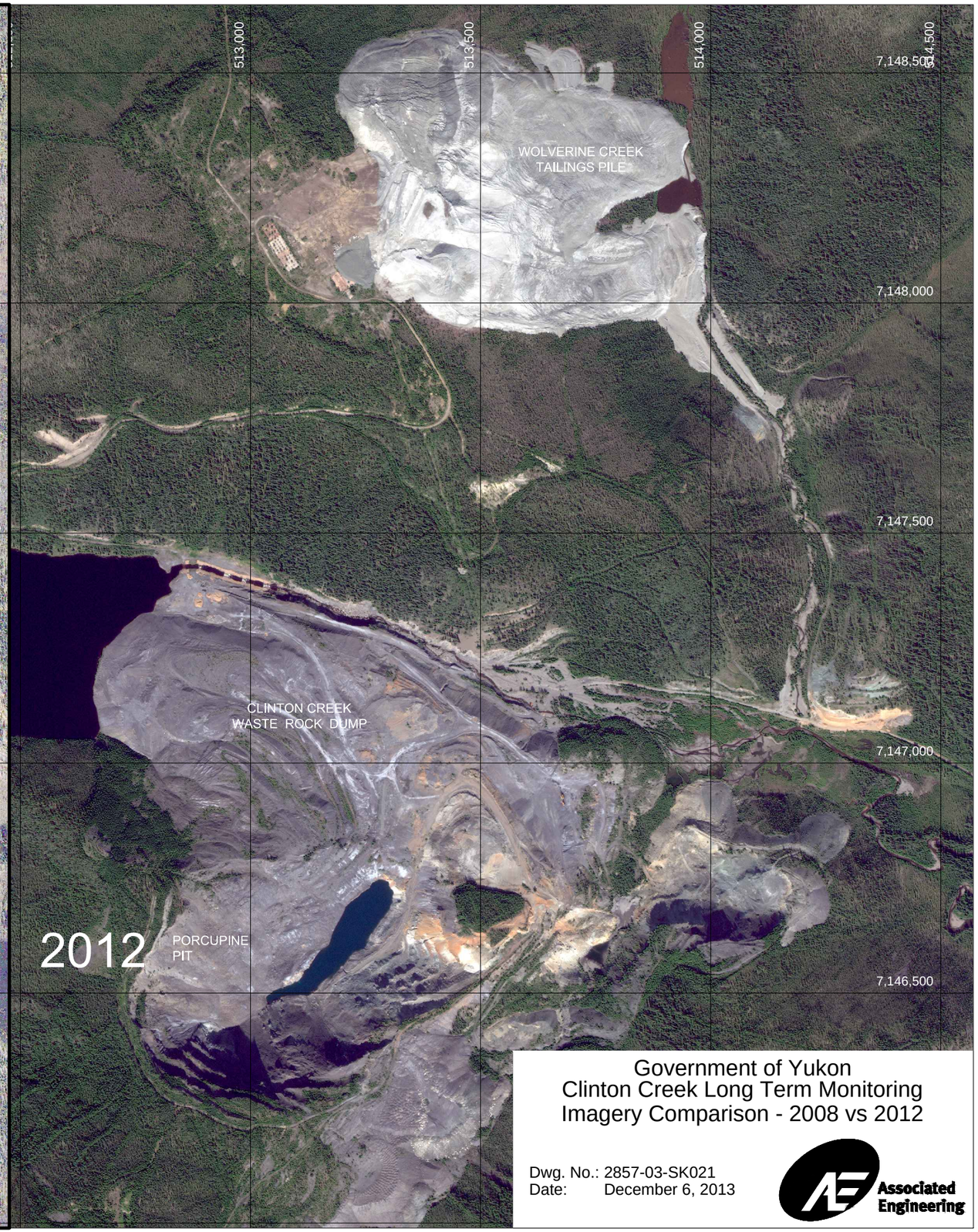
SURVEY (AUGUST 2012)

Government of Yukon
Clinton Creek Long Term Monitoring
2013 - Cross Section E

Dwg. No.: 2857-03-SK020
Date: December 6, 2013

Associated Engineering





m
0 150 300

SCALE 1:10000

UTM ZONE 7 NAD83

Government of Yukon
Clinton Creek Long Term Monitoring
Imagery Comparison - 2008 vs 2012

Dwg. No.: 2857-03-SK021
Date: December 6, 2013

Associated Engineering

Appendix A - Underhill Geomatics Survey Results

CLINTON CREEK LONG TERM PERFORMANCE MONITORING PROGRAM (August 2013)

UTM COORDINATES

NAD 83, Zone 7, 141º West

CONTROL			
	NORTHING	EASTING	OTHOMETRIC HEIGHT
1086	7147972.219	513176.710	590.955
1192	7147563.984	512278.758	441.231
2835	7147272.774	513147.075	432.691

Coordinates are NAD 83 UTM grid, derived from a least squares adjustment of GPS observations holding values of stations 1192 and 1086 fixed in 3D.

CLINTON CREEK LONG TERM PERFORMANCE MONITORING PROGRAM (August 2013)

UTM COORDINATES

NAD 83, Zone 7, 141º West

CROOS SECTION OF GABION 1 TO 8 MOVEMENT MONITORS (#1450 TO 1465)				
	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
2835	7147272.774	513147.075	432.691	Real Time Kinematic base for Gabion cross sections

GABION 1				
	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
2000	7147413.871	512888.144	413.452	1451 TOP
2001	7147413.805	512888.127	413.325	OG
2002	7147414.466	512888.245	413.308	ROCK
2003	7147416.105	512888.432	413.035	GABION
2004	7147416.761	512888.436	413.008	GABION
2005	7147416.910	512888.460	413.400	GABION
2006	7147417.402	512888.575	413.429	GABION
2007	7147417.923	512888.617	413.371	GABION
2008	7147418.003	512888.666	412.907	GABION
2009	7147420.165	512888.787	412.334	GABION
2010	7147423.320	512889.037	411.145	GABION
2011	7147424.333	512889.115	411.047	GABION
2012	7147425.469	512889.057	411.084	GABION
2013	7147427.014	512889.213	411.115	GABION
2014	7147429.520	512889.459	411.006	GABION
2015	7147430.715	512889.536	411.014	GABION
2016	7147433.622	512889.657	412.016	GABION
2017	7147435.632	512889.814	412.686	GABION
2018	7147437.082	512889.935	412.925	GABION
2019	7147437.201	512889.902	413.412	GABION
2020	7147437.627	512889.918	413.515	GABION
2021	7147438.120	512889.932	413.511	GABION
2022	7147438.286	512889.972	413.173	GABION
2023	7147439.019	512889.955	413.268	GABION
2024	7147440.351	512890.060	413.496	ROCK
2025	7147441.216	512890.143	413.738	1450 TOP
2026	7147441.256	512890.156	413.606	OG

GABION 2				
	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
2027	7147439.060	512901.514	413.098	OG
2028	7147439.005	512901.493	413.239	1453 TOP
2029	7147436.384	512900.669	411.985	ROCK
2030	7147434.822	512900.075	411.648	GABION
2031	7147434.181	512899.838	411.502	GABION
2032	7147432.977	512899.419	411.065	GABION
2033	7147432.200	512899.211	410.735	GABION
2034	7147432.034	512899.180	410.580	GABION
2035	7147430.042	512898.526	410.401	GABION
2036	7147429.051	512898.102	409.953	GABION
2037	7147427.962	512897.598	409.797	GABION
2038	7147426.129	512896.940	409.746	GABION
2039	7147425.162	512896.547	409.755	GABION
2040	7147424.339	512896.236	409.713	GABION
2041	7147422.781	512895.655	409.750	GABION
2042	7147421.144	512895.013	410.211	GABION
2043	7147420.092	512894.717	410.398	GABION
2044	7147417.786	512894.022	411.123	GABION
2045	7147415.404	512893.389	411.591	GABION
2046	7147414.939	512893.242	411.775	ROCK
2047	7147411.972	512892.002	413.056	1452 TOP
2048	7147411.923	512891.974	412.868	OG

GABION 3				
	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
2050	7147397.075	512939.918	411.853	OG
2049	7147397.111	512939.928	411.983	1455 TOP
2051	7147399.321	512940.590	411.661	ROCK
2052	7147399.999	512940.845	411.626	GABION
2053	7147400.077	512940.926	411.804	GABION
2054	7147400.288	512941.045	411.808	GABION
2055	7147403.541	512942.118	410.730	GABION
2056	7147406.233	512943.070	409.767	GABION
2057	7147407.778	512943.655	409.531	GABION
2058	7147411.150	512944.820	409.599	GABION
2059	7147413.230	512945.495	409.767	GABION
2060	7147414.276	512945.721	410.211	GABION
2061	7147416.475	512946.350	410.952	GABION
2062	7147419.175	512947.199	411.986	GABION
2063	7147419.995	512947.406	412.300	GABION
2064	7147420.228	512947.514	412.312	GABION
2065	7147420.310	512947.558	412.101	GABION
2066	7147421.084	512947.836	412.192	ROCK
2067	7147423.161	512948.574	412.410	1454 TOP
2068	7147423.209	512948.602	412.285	OG

GABION 4				
	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
2070	7147420.484	512958.007	410.588	OG
2069	7147420.426	512957.984	410.720	1457 TOP
2071	7147418.587	512957.321	410.150	ROCK
2072	7147416.872	512957.068	409.685	GABION
2073	7147416.585	512956.998	409.684	GABION
2074	7147413.885	512956.544	408.596	GABION
2075	7147411.344	512955.979	407.629	GABION
2076	7147410.050	512955.783	407.182	GABION
2077	7147408.980	512955.467	407.013	GABION
2078	7147407.765	512955.336	406.929	GABION
2079	7147406.511	512955.073	406.931	GABION
2080	7147405.665	512954.759	406.845	GABION
2081	7147404.700	512954.597	406.951	GABION
2082	7147403.708	512954.289	407.119	GABION
2083	7147402.258	512953.969	407.557	GABION
2084	7147399.425	512953.174	408.337	GABION
2085	7147396.668	512952.341	409.033	GABION
2086	7147395.152	512951.866	409.626	ROCK
2087	7147393.073	512951.325	410.916	1456 TOP
2088	7147392.990	512951.309	410.829	OG

GABION 5				
	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
2090	7147386.440	512980.325	409.264	OG
2089	7147386.498	512980.331	409.375	1459A TOP
2091	7147388.511	512980.773	409.016	ROCK
2092	7147389.177	512980.889	408.906	GABION
2093	7147391.451	512981.552	408.097	GABION
2094	7147394.071	512982.458	407.225	GABION
2095	7147395.705	512983.022	406.684	GABION
2096	7147397.526	512983.398	406.609	GABION
2097	7147398.483	512983.632	406.678	GABION
2098	7147400.301	512984.003	406.739	GABION
2099	7147401.444	512984.353	406.822	GABION
2100	7147404.779	512985.062	408.007	GABION
2101	7147407.736	512985.754	409.103	GABION
2102	7147409.145	512986.136	409.747	GABION
2103	7147409.617	512986.236	409.837	ROCK
2104	7147412.093	512986.901	409.826	1458 TOP
2105	7147412.164	512986.903	409.684	OG

GABION 6				
	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
2107	7147410.153	512995.913	408.297	OG
2106	7147410.103	512995.898	408.476	1461 TOP
2108	7147407.497	512995.376	407.411	ROCK
2109	7147407.019	512995.176	407.358	GABION
2110	7147405.342	512994.775	406.810	GABION
2111	7147401.496	512993.853	405.351	GABION
2112	7147400.414	512993.663	404.959	GABION
2113	7147399.020	512993.251	404.635	GABION
2114	7147396.934	512992.614	404.556	GABION
2115	7147395.478	512992.029	404.583	GABION
2116	7147393.525	512991.615	404.638	GABION
2117	7147391.144	512991.129	405.384	GABION
2118	7147388.170	512990.254	406.151	GABION
2119	7147386.661	512989.990	406.574	GABION
2120	7147383.470	512989.067	408.812	ROCK
2121	7147381.585	512988.513	409.094	1460A TOP
2122	7147381.521	512988.509	408.967	OG

GABION 7				
	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
2124	7147373.958	513025.977	407.392	OG
2123	7147374.007	513025.993	407.553	1463 TOP
2125	7147376.754	513026.796	407.161	ROCK
2126	7147376.956	513026.843	406.956	GABION
2127	7147379.484	513027.575	405.971	GABION
2128	7147382.315	513028.487	404.946	GABION
2129	7147384.333	513028.983	404.662	GABION
2130	7147385.256	513029.343	404.571	GABION
2131	7147387.520	513029.860	404.657	GABION
2132	7147388.410	513030.124	404.578	GABION
2133	7147389.968	513030.614	404.768	GABION
2134	7147392.834	513031.278	405.681	GABION
2135	7147396.577	513032.141	407.320	GABION
2136	7147396.851	513032.214	407.292	GABION
2137	7147397.629	513032.370	407.209	ROCK
2138	7147401.854	513033.723	407.360	1462A TOP
2139	7147401.915	513033.748	407.214	OG

GABION 8				
	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
2141	7147399.463	513040.364	406.101	OG
2140	7147399.400	513040.343	406.225	1465 TOP
2142	7147395.411	513039.726	404.562	ROCK
2143	7147394.712	513039.475	404.300	GABION
2144	7147393.215	513038.901	402.372	GABION
2145	7147391.641	513038.617	401.095	GABION
2146	7147390.828	513038.395	400.630	GABION
2147	7147389.751	513038.032	400.789	GABION
2148	7147389.559	513038.110	401.389	GABION
2149	7147388.729	513037.872	401.673	GABION
2150	7147388.540	513037.932	401.795	GABION
2151	7147387.748	513037.962	401.893	GABION
2152	7147387.411	513037.856	402.658	GABION
2153	7147385.688	513037.406	402.817	GABION
2154	7147385.395	513037.477	402.240	GABION
2155	7147383.867	513037.045	402.373	GABION
2156	7147382.129	513036.999	402.633	GABION
2157	7147381.525	513036.747	402.468	GABION
2158	7147381.355	513036.717	402.233	GABION
2159	7147380.662	513036.450	402.278	GABION
2160	7147380.459	513036.327	401.699	GABION
2161	7147378.568	513035.947	401.563	GABION
2162	7147377.424	513036.351	401.511	GABION
2163	7147376.768	513036.356	402.046	GABION
2164	7147376.125	513036.385	402.505	GABION
2165	7147375.741	513036.349	402.553	GABION
2166	7147375.002	513036.206	402.944	ROCK
2167	7147371.393	513036.713	406.318	OG
2168	7147370.285	513036.688	406.581	OG
2170	7147369.640	513036.565	406.761	1464 TOP
2169	7147369.544	513036.547	406.638	OG

CLINTON CREEK LONG TERM PERFORMANCE MONITORING PROGRAM (August 2013)

UTM COORDINATES
NAD 83, Zone 7, 141° West

CLINTON CREEK CENTRE LINE

	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
2835	7147272.774	513147.075	432.691	RTK base for Clinton Creek CL
4001	7147408.917	512826.055	410.467	CRKCL
4002	7147423.259	512844.451	410.325	CRKCL
4003	7147426.484	512851.541	410.574	CRKCL
4004	7147426.730	512852.804	411.174	CRKCL
4005	7147427.194	512855.707	411.347	CRKCL
4006	7147427.501	512864.002	411.121	CRKCL
4007	7147427.545	512869.748	411.111	CRKCL
4008	7147427.439	512876.575	411.024	CRKCL
4009	7147427.431	512882.662	410.948	CRKCL
4010	7147427.265	512885.922	411.105	CRKCL
4011	7147427.171	512887.634	411.253	CRKCL
4012	7147427.178	512887.897	411.580	CRKCL
4013	7147427.065	512888.672	411.500	CRKCL
4014	7147427.032	512888.879	411.114	CRKCL
4015	7147426.926	512889.700	411.014	CRKCL
4016	7147426.929	512889.931	410.668	CRKCL
4017	7147426.754	512890.928	410.362	CRKCL
4018	7147426.288	512891.829	410.528	CRKCL
4019	7147426.227	512892.332	410.207	CRKCL
4020	7147426.052	512893.327	410.235	CRKCL
4021	7147425.723	512894.161	410.200	CRKCL
4022	7147425.540	512894.589	409.940	CRKCL
4023	7147425.240	512895.781	409.748	CRKCL
4024	7147424.845	512897.101	409.724	CRKCL
4025	7147424.753	512897.414	409.976	CRKCL
4026	7147424.644	512898.085	410.164	CRKCL
4027	7147424.520	512898.355	409.804	CRKCL
4028	7147423.892	512900.526	409.612	CRKCL
4029	7147423.548	512901.802	409.560	CRKCL
4030	7147423.543	512902.068	409.352	CRKCL
4031	7147423.161	512905.083	409.157	CRKCL
4032	7147419.392	512918.100	409.733	CRKCL
4033	7147416.377	512925.620	409.729	CRKCL
4034	7147413.773	512932.261	409.697	CRKCL
4035	7147411.349	512938.668	409.705	CRKCL
4036	7147410.145	512942.731	409.894	CRKCL
4037	7147410.008	512942.982	410.133	CRKCL
4038	7147409.829	512943.564	410.052	CRKCL
4039	7147409.622	512944.020	409.572	CRKCL
4040	7147409.512	512944.543	409.501	CRKCL
4041	7147409.408	512944.909	409.118	CRKCL
4042	7147409.135	512945.614	408.909	CRKCL
4043	7147408.802	512946.361	408.905	CRKCL
4044	7147408.569	512946.841	408.539	CRKCL
4045	7147408.483	512947.552	408.472	CRKCL

CLINTON CREEK LONG TERM PERFORMANCE MONITORING PROGRAM (August 2013)

UTM COORDINATES
NAD 83, Zone 7, 141º West

CLINTON CREEK CENTRE LINE

	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
4046	7147408.232	512948.287	408.616	CRKCL
4047	7147408.049	512948.654	407.930	CRKCL
4048	7147408.058	512949.622	408.025	CRKCL
4049	7147407.835	512950.289	408.092	CRKCL
4050	7147407.657	512950.796	407.577	CRKCL
4051	7147407.412	512951.516	407.326	CRKCL
4052	7147407.198	512952.329	407.537	CRKCL
4053	7147407.088	512952.657	407.108	CRKCL
4054	7147406.431	512955.060	406.939	CRKCL
4055	7147405.694	512957.408	407.090	CRKCL
4056	7147405.216	512959.048	407.192	CRKCL
4057	7147405.159	512959.505	407.465	CRKCL
4058	7147405.068	512959.795	407.291	CRKCL
40590	7147404.970	512960.001	407.075	CRKCL
4060	7147404.515	512961.576	406.904	CRKCL
4061	7147403.016	512965.796	406.650	CRKCL
4062	7147401.747	512969.580	406.609	CRKCL
4063	7147400.896	512972.619	406.685	CRKCL
4064	7147400.230	512974.728	406.812	CRKCL
4065	7147399.341	512977.683	406.819	CRKCL
4066	7147398.779	512980.132	406.609	CRKCL
4067	7147398.493	512981.846	406.813	CRKCL
4068	7147398.463	512982.123	407.181	CRKCL
4069	7147398.333	512982.407	407.258	CRKCL
4070	7147398.299	512982.778	407.218	CRKCL
4071	7147398.157	512983.174	406.706	CRKCL
4072	7147397.959	512983.897	406.650	CRKCL
4073	7147397.809	512984.214	406.188	CRKCL
4074	7147397.639	512984.980	406.124	CRKCL
4075	7147397.370	512985.983	406.033	CRKCL
4076	7147397.269	512986.308	405.521	CRKCL
4077	7147397.174	512987.073	405.451	CRKCL
4078	7147397.084	512987.902	405.512	CRKCL
4079	7147397.026	512988.181	405.117	CRKCL
4080	7147396.887	512989.010	404.912	CRKCL
4081	7147396.797	512989.605	405.105	CRKCL
4082	7147396.244	512991.783	404.535	CRKCL
4083	7147395.859	512993.826	404.715	CRKCL
4084	7147395.797	512995.145	404.573	CRKCL
4085	7147395.463	512996.003	405.269	CRKCL
4086	7147395.435	512996.223	405.130	CRKCL
4087	7147395.298	512996.505	404.614	CRKCL
4088	7147394.992	512998.567	404.596	CRKCL
4089	7147394.468	513001.877	404.747	CRKCL
40900	7147393.643	513005.443	404.776	CRKCL
40910	7147393.572	513006.218	404.786	CRKCL
4092	7147392.466	513010.254	404.911	CRKCL
4093	7147391.213	513015.183	404.946	CRKCL
4094	7147389.787	513019.717	404.878	CRKCL
4095	7147388.589	513023.614	404.762	CRKCL
4096	7147387.366	513026.761	404.637	CRKCL

CLINTON CREEK LONG TERM PERFORMANCE MONITORING PROGRAM (August 2013)

UTM COORDINATES
NAD 83, Zone 7, 141º West

CLINTON CREEK CENTRE LINE

	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
4097	7147386.766	513027.963	404.904	CRKCL
4098	7147386.550	513028.622	405.096	CRKCL
4099	7147386.455	513029.249	405.017	CRKCL
4100	7147386.253	513029.449	404.651	CRKCL
4101	7147386.096	513029.781	404.560	CRKCL
4102	7147385.937	513030.038	404.169	CRKCL
4103	7147385.709	513030.712	404.044	CRKCL
4104	7147385.395	513031.529	404.212	CRKCL
4105	7147385.335	513031.754	404.072	CRKCL
4106	7147385.253	513031.938	403.787	CRKCL
4107	7147385.366	513032.775	403.540	CRKCL
4108	7147385.184	513033.653	403.705	CRKCL
4109	7147385.108	513034.040	403.266	CRKCL
4110	7147385.161	513034.768	403.119	CRKCL
4111	7147384.989	513035.587	403.262	CRKCL
4112	7147384.926	513035.812	402.881	CRKCL
4113	7147384.601	513036.797	402.784	CRKCL
4114	7147384.604	513037.089	402.509	CRKCL
4115	7147384.193	513038.978	402.363	CRKCL
4116	7147383.750	513041.723	397.916	CRKCL
4117	7147383.642	513043.270	397.773	CRKCL
4118	7147384.514	513044.310	397.915	CRKCL
4119	7147385.693	513045.608	397.673	CRKCL
4120	7147386.789	513046.814	397.721	CRKCL
4121	7147387.700	513049.180	397.885	CRKCL
4122	7147387.685	513051.872	398.107	CRKCL
4123	7147385.734	513054.245	397.904	CRKCL
4124	7147384.354	513055.694	397.610	CRKCL
4125	7147383.987	513056.116	397.676	CRKCL
4126	7147383.458	513056.757	398.383	CRKCL
4127	7147383.182	513057.521	398.103	CRKCL
4128	7147382.180	513059.477	397.955	CRKCL
4129	7147381.094	513061.626	397.846	CRKCL
4130	7147380.700	513063.702	397.723	CRKCL
4131	7147379.950	513064.844	397.530	CRKCL
4132	7147378.466	513070.179	397.485	CRKCL
4133	7147378.004	513072.190	397.592	CRKCL
4134	7147377.343	513074.482	397.428	CRKCL
4135	7147376.107	513077.638	397.579	CRKCL
4136	7147375.245	513079.878	397.666	CRKCL
4137	7147373.793	513080.542	397.838	CRKCL
4138	7147372.354	513082.234	397.695	CRKCL
4139	7147371.585	513083.085	397.670	CRKCL
4140	7147370.733	513084.338	397.643	CRKCL
4141	7147369.670	513086.058	397.600	CRKCL
4142	7147368.969	513088.231	397.642	CRKCL
4143	7147369.375	513090.957	397.570	CRKCL
4144	7147369.581	513094.112	397.380	CRKCL
4145	7147369.947	513096.211	397.416	CRKCL
4146	7147369.816	513097.738	397.362	CRKCL
4147	7147375.887	513080.445	397.677	CRKCL2

CLINTON CREEK LONG TERM PERFORMANCE MONITORING PROGRAM (August 2013)

UTM COORDINATES
NAD 83, Zone 7, 141º West

CLINTON CREEK CENTRE LINE

	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
4148	7147376.114	513083.967	397.997	CRKCL2
4149	7147375.109	513087.294	397.880	CRKCL2
4150	7147373.877	513090.362	397.684	CRKCL2
4151	7147372.026	513094.771	397.523	CRKCL2
4152	7147370.547	513096.496	397.393	CRKCL2
4153	7147368.813	513103.001	397.157	CRKCL
4154	7147366.882	513108.199	397.129	CRKCL
4155	7147364.822	513114.085	397.079	CRKCL
4156	7147362.785	513119.879	397.054	CRKCL
4157	7147361.539	513125.284	396.865	CRKCL
4158	7147360.963	513128.803	396.644	CRKCL
4159	7147358.606	513133.353	396.648	CRKCL
4160	7147356.381	513136.630	396.316	CRKCL
4161	7147353.156	513143.094	396.411	CRKCL
4162	7147350.398	513148.652	396.112	CRKCL
4163	7147346.746	513155.570	395.922	CRKCL
4164	7147340.742	513167.622	395.678	CRKCL
4165	7147336.865	513174.773	395.121	CRKCL
4166	7147332.599	513188.961	394.940	CRKCL
4167	7147325.740	513199.041	393.597	CRKCL
4168	7147316.909	513213.438	392.518	CRKCL
4169	7147313.685	513223.032	392.532	CRKCL
4170	7147314.349	513235.282	392.111	CRKCL
4171	7147315.578	513247.870	391.473	CRKCL
4172	7147312.853	513255.840	391.020	CRKCL
4173	7147314.907	513267.943	389.874	CRKCL
4174	7147310.437	513288.744	389.676	CRKCL
4175	7147300.222	513302.740	388.970	CRKCL
4176	7147300.472	513303.196	389.086	CRKCL3
4177	7147299.772	513308.884	388.613	CRKCL3
4178	7147295.234	513310.914	388.165	CRKCL
4179	7147291.115	513317.470	388.184	CRKCL
4180	7147289.953	513326.351	387.704	CRKCL
4181	7147299.735	513317.700	387.850	CRKCL3
4182	7147294.091	513324.594	387.719	CRKCL3
4183	7147289.914	513329.802	387.059	CRKCL3
4184	7147289.148	513330.307	387.214	CRKCL
4185	7147289.427	513332.286	386.763	CRKCL
4186	7147288.060	513335.556	386.604	CRKCL
4187	7147286.118	513341.208	386.862	CRKCL
4188	7147283.947	513347.045	386.221	CRKCL
4189	7147278.552	513356.194	386.025	CRKCL
4190	7147273.719	513364.089	385.138	CRKCL
4191	7147270.254	513373.107	385.006	CRKCL
4192	7147259.747	513383.387	384.718	CRKCL
4193	7147256.740	513395.461	384.113	CRKCL
4194	7147252.970	513410.964	383.689	CRKCL
4195	7147245.274	513425.265	381.980	CRKCL
4196	7147244.635	513433.133	381.866	CRKCL
4197	7147240.724	513443.803	381.560	CRKCL
4198	7147234.813	513448.304	381.002	CRKCL

CLINTON CREEK LONG TERM PERFORMANCE MONITORING PROGRAM (August 2013)

UTM COORDINATES
NAD 83, Zone 7, 141º West

CLINTON CREEK CENTRE LINE

	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
4199	7147229.210	513455.748	380.799	CRKCL
173	7147226.214	513459.330	381.008	CRKCL
172	7147223.776	513462.701	380.794	CRKCL
171	7147221.053	513465.177	380.828	CRKCL
170	7147217.854	513467.959	380.346	CRKCL
169	7147216.760	513472.395	380.064	CRKCL
168	7147217.570	513475.851	379.933	CRKCL
167	7147215.329	513478.879	379.879	CRKCL
166	7147214.230	513481.062	379.528	CRKCL
165	7147212.434	513485.645	379.567	CRKCL
164	7147209.323	513488.258	379.541	CRKCL
163	7147206.082	513490.773	379.379	CRKCL
162	7147203.025	513492.253	379.507	CRKCL
161	7147202.115	513492.447	379.166	CRKCL
160	7147198.638	513492.775	379.164	CRKCL
159	7147197.012	513494.016	378.864	CRKCL
158	7147193.506	513495.195	378.969	CRKCL
157	7147192.812	513496.467	378.893	CRKCL
156	7147191.133	513500.075	378.696	CRKCL
155	7147189.586	513503.670	378.646	CRKCL
154	7147189.142	513504.994	378.228	CRKCL
153	7147188.304	513506.680	378.414	CRKCL
152	7147185.834	513510.564	378.170	CRKCL
151	7147183.847	513513.707	378.013	CRKCL
150	7147181.775	513517.150	377.803	CRKCL
149	7147180.200	513519.751	377.658	CRKCL
148	7147178.126	513524.165	377.634	CRKCL
147	7147175.735	513527.851	377.616	CRKCL
146	7147173.207	513532.260	377.566	CRKCL
145	7147168.998	513533.087	377.482	CRKCL
144	7147167.422	513533.766	377.313	CRKCL
143	7147162.577	513535.577	377.324	CRKCL
142	7147157.386	513540.158	377.359	CRKCL
141	7147152.646	513545.062	377.239	CRKCL
140	7147149.831	513549.943	377.237	CRKCL
139	7147147.793	513554.650	376.859	CRKCL
138	7147145.753	513559.134	376.575	CRKCL
137	7147144.135	513562.883	376.396	CRKCL
136	7147142.745	513567.412	376.003	CRKCL
135	7147142.472	513572.404	375.949	CRKCL
134	7147142.301	513576.800	375.920	CRKCL
133	7147142.351	513581.785	375.815	CRKCL
132	7147142.339	513582.369	375.556	CRKCL
131	7147142.186	513584.958	375.638	CRKCL
130	7147141.666	513585.993	375.574	CRKCL
129	7147141.013	513588.790	375.529	CRKCL
128	7147138.945	513592.647	375.514	CRKCL
127	7147135.359	513595.766	375.435	CRKCL
126	7147132.173	513598.102	375.292	CRKCL
125	7147128.681	513600.766	375.283	CRKCL
124	7147127.857	513601.246	375.019	CRKCL

CLINTON CREEK LONG TERM PERFORMANCE MONITORING PROGRAM (August 2013)

UTM COORDINATES
NAD 83, Zone 7, 141º West

CLINTON CREEK CENTRE LINE

	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
123	7147125.484	513604.031	375.040	CRKCL
122	7147123.337	513607.795	374.609	CRKCL
121	7147123.365	513607.818	374.676	CRKCL
120	7147120.719	513612.394	374.127	CRKCL
119	7147119.837	513614.921	374.326	CRKCL
118	7147118.140	513619.531	373.989	CRKCL
117	7147117.169	513622.304	373.774	CRKCL
116	7147116.625	513625.561	373.487	CRKCL
115	7147115.439	513630.183	373.579	CRKCL
114	7147113.018	513634.671	373.542	CRKCL
113	7147110.843	513638.940	373.672	CRKCL
112	7147109.749	513641.064	373.587	CRKCL
111	7147108.234	513644.331	373.411	CRKCL
110	7147106.474	513647.868	373.281	CRKCL
109	7147106.100	513648.958	373.090	CRKCL
108	7147104.791	513651.354	373.075	CRKCL
107	7147103.139	513656.820	372.970	CRKCL
106	7147102.178	513661.280	372.889	CRKCL
105	7147102.420	513663.294	373.001	CRKCL
104	7147102.568	513664.385	372.682	CRKCL
103	7147102.799	513666.979	372.703	CRKCL
102	7147102.775	513668.325	372.339	CRKCL
101	7147102.104	513672.907	372.247	CRKCL
100	7147101.762	513675.151	372.138	CRKCL

CLINTON CREEK LONG TERM PERFORMANCE MONITORING PROGRAM (August 2013)

UTM COORDINATES
NAD 83, Zone 7, 141º West

Sections A - B - C at Gabion drop structure

	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
2835	7147272.774	513147.075	432.691	RTK base for XS

Section A

	Northing	**Easting**	**Elevation**	
3000	7147256.588	512931.818	440.231	OG
3001	7147257.327	512932.054	440.315	OG
3002	7147258.148	512932.220	440.533	OG
3003	7147259.549	512932.704	440.122	OG
3004	7147261.305	512933.389	439.224	OG
3005	7147264.065	512934.277	438.566	OG
3006	7147267.740	512935.261	437.021	OG
3007	7147271.787	512936.174	435.078	OG
3008	7147276.685	512937.349	432.519	OG
3009	7147280.328	512938.191	430.741	OG
3010	7147283.981	512939.065	428.923	OG
3011	7147286.377	512939.629	427.899	OG
3012	7147290.751	512940.860	425.558	OG
3013	7147295.140	512942.065	422.979	OG
3014	7147296.367	512942.624	421.881	OG
3015	7147298.414	512943.174	421.168	OG
3016	7147301.778	512944.119	421.373	OG
3017	7147307.458	512945.684	421.253	OG
3018	7147308.489	512945.965	421.654	OG
3019	7147309.308	512945.722	421.505	OG
3020	7147311.526	512946.339	422.305	OG
3021	7147312.676	512946.658	421.960	OG
3022	7147314.224	512946.971	422.415	OG
3023	7147315.838	512947.292	422.058	OG
3024	7147318.022	512947.912	422.005	OG
3025	7147322.091	512948.915	421.663	OG
3026	7147326.049	512949.771	421.403	OG
3027	7147328.205	512950.373	421.429	OG
3028	7147329.415	512950.683	421.215	OG
3029	7147331.769	512951.395	420.241	OG
3030	7147334.112	512951.933	419.623	OG
3031	7147335.129	512952.222	419.391	OG
3032	7147336.896	512952.687	419.449	OG
3033	7147338.771	512953.099	419.138	OG
3034	7147343.782	512954.417	419.113	OG
3035	7147348.998	512955.757	418.882	OG
3036	7147353.778	512956.945	418.703	OG
3037	7147357.831	512957.961	418.450	OG
3038	7147360.175	512958.604	418.271	OG
3039	7147361.320	512958.900	418.088	OG
3040	7147364.868	512960.008	416.019	OG
3041	7147365.576	512960.151	415.859	OG
3042	7147366.736	512960.411	415.840	OG

CLINTON CREEK LONG TERM PERFORMANCE MONITORING PROGRAM (August 2013)

UTM COORDINATES

NAD 83, Zone 7, 141° West

Sections A - B - C at Gabion drop structure

	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
3043	7147367.089	512960.535	414.917	OG
3044	7147368.057	512960.737	414.247	OG
3045	7147370.387	512961.293	412.816	OG
3046	7147374.455	512962.530	412.703	OG
3047	7147379.474	512963.617	412.848	OG
3048	7147380.200	512963.808	413.086	OG
3049	7147381.213	512964.111	413.707	OG
3050	7147381.517	512964.156	413.799	OG
3051	7147382.132	512964.303	413.749	OG
3052	7147385.127	512965.211	410.633	OG
3053	7147386.617	512965.578	410.459	OG
3054	7147389.562	512966.293	410.218	OG
3055	7147390.865	512966.601	409.586	ROCKS
3056	7147392.008	512966.926	409.055	ROCKS
3057	7147394.643	512967.604	408.026	ROCKS
3058	7147396.577	512968.053	407.392	WE
3059	7147398.007	512968.405	406.957	ROCKS
3060	7147399.199	512968.696	406.628	ROCKS
3061	7147401.527	512968.793	406.569	ROCKS
3062	7147403.704	512969.279	406.429	ROCKS
3063	7147405.857	512970.468	406.811	ROCKS
3064	7147407.273	512970.717	407.387	WE
3065	7147408.654	512971.065	407.868	ROCKS
3066	7147411.561	512971.799	409.198	ROCKS
3067	7147412.489	512972.056	409.347	ROCKS
3068	7147413.074	512972.126	409.518	OG
3069	7147416.993	512973.132	409.650	OG
3070	7147420.741	512974.096	409.841	OG
3071	7147426.100	512975.400	409.655	OG
3072	7147428.955	512976.148	409.777	OG
3073	7147430.529	512976.578	410.250	OG
3074	7147433.217	512977.267	411.173	OG
3075	7147436.109	512977.957	412.323	OG
3076	7147440.153	512978.776	413.706	TL

CLINTON CREEK LONG TERM PERFORMANCE MONITORING PROGRAM (August 2013)

UTM COORDINATES

NAD 83, Zone 7, 141° West

Sections A - B - C at Gabion drop structure

	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
Section B				
	Northing	**Easting**	**Elevation**	
3077	7147427.661	513020.353	414.483	TL
3078	7147425.577	513019.820	414.064	OG
3079	7147423.724	513019.264	412.990	OG
3080	7147420.693	513018.604	411.721	OG
3081	7147417.913	513017.933	410.681	OG
3082	7147416.497	513017.526	409.668	OG
3083	7147415.982	513017.359	410.029	OG
3084	7147412.131	513016.573	408.330	OG
3085	7147410.639	513016.401	407.742	OG
3086	7147407.084	513015.380	407.640	OG
3087	7147404.028	513014.574	407.593	OG
3088	7147403.026	513014.283	407.424	ROCKS
3089	7147401.628	513013.766	406.786	ROCKS
3090	7147399.647	513013.363	406.138	ROCKS
3091	7147398.045	513012.915	405.312	WE
3092	7147397.215	513012.687	404.935	ROCKS
3093	7147394.767	513011.942	404.861	ROCKS
3094	7147392.690	513011.429	404.883	ROCKS
3095	7147389.825	513010.450	404.904	ROCKS
3096	7147387.541	513010.026	405.008	ROCKS
3097	7147385.728	513010.080	405.274	WE
3098	7147383.969	513009.266	406.415	ROCKS
3099	7147381.613	513008.681	407.361	ROCKS
3100	7147379.545	513008.375	408.195	ROCKS
3101	7147378.994	513008.282	408.194	ROCKS
3102	7147375.560	513007.280	408.340	OG
3103	7147375.052	513007.042	408.512	OG
3104	7147372.498	513007.126	411.044	OG
3105	7147371.425	513006.483	412.439	OG
3106	7147368.345	513005.311	415.449	OG
3107	7147367.867	513004.997	415.293	OG
3108	7147366.885	513004.765	415.576	OG
3109	7147365.147	513004.378	415.448	OG
3110	7147363.968	513004.008	415.584	OG
3111	7147361.743	513003.218	416.221	OG
3112	7147359.400	513002.383	416.116	OG
3113	7147355.767	513000.995	415.993	OG
3114	7147354.702	513000.599	415.964	OG
3115	7147353.905	513000.266	416.066	OG
3116	7147353.517	513000.121	415.856	OG

CLINTON CREEK LONG TERM PERFORMANCE MONITORING PROGRAM (August 2013)

UTM COORDINATES

NAD 83, Zone 7, 141° West

Sections A - B - C at Gabion drop structure

	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
3117	7147352.499	512999.635	415.727	OG
3118	7147351.421	512999.289	416.975	OG
3119	7147350.014	512999.471	418.192	OG
3120	7147349.540	512999.300	418.335	OG
3121	7147347.529	512999.032	419.852	OG
3122	7147346.489	512998.836	420.211	OG
3123	7147344.242	512997.842	422.495	OG
3124	7147342.308	512997.131	422.327	OG
3125	7147339.748	512996.391	422.334	OG
3126	7147338.173	512996.030	421.996	OG
3127	7147336.643	512995.509	421.933	OG
3128	7147333.339	512994.679	422.151	OG
3129	7147332.285	512994.433	422.058	OG
3130	7147331.149	512994.106	422.416	OG
3131	7147326.581	512993.151	422.714	OG
3132	7147322.472	512991.979	423.288	OG
3133	7147319.400	512991.033	423.333	OG
3134	7147316.141	512990.082	423.543	OG
3135	7147313.084	512989.287	423.473	OG
3136	7147310.224	512988.613	423.389	OG
3137	7147304.920	512987.305	423.223	OG
3138	7147300.927	512985.849	423.244	OG
3139	7147297.607	512985.038	423.359	OG
3140	7147296.332	512984.666	423.861	OG
3141	7147295.486	512984.390	424.529	OG
3142	7147293.437	512983.856	424.054	OG
3143	7147290.426	512983.007	423.799	OG
3144	7147290.270	512982.951	423.910	OG
3145	7147289.522	512982.742	423.808	OG
3146	7147288.112	512982.534	423.174	OG
3147	7147286.268	512982.035	422.848	OG
3148	7147285.248	512981.820	423.607	OG
3149	7147283.923	512981.472	424.463	OG
3150	7147282.635	512981.046	425.110	OG
3151	7147279.907	512980.216	427.178	OG
3152	7147276.899	512978.770	429.132	OG
3153	7147273.813	512977.980	430.757	OG
3154	7147272.036	512977.594	431.732	OG
3155	7147271.001	512977.455	432.071	OG
3156	7147268.092	512976.663	433.888	OG
3157	7147265.088	512975.675	435.606	OG
3158	7147262.978	512975.125	436.724	OG
3159	7147261.760	512974.667	437.609	OG
3160	7147259.825	512974.226	438.612	OG
3161	7147257.991	512973.546	439.551	OG
3162	7147256.333	512973.155	440.754	OG
3163	7147253.674	512972.300	441.037	OG
3164	7147251.219	512971.504	441.030	OG

CLINTON CREEK LONG TERM PERFORMANCE MONITORING PROGRAM (August 2013)

UTM COORDINATES

NAD 83, Zone 7, 141° West

Sections A - B - C at Gabion drop structure

	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
Section C				
	Northing	**Easting**	**Elevation**	
3165	7147237.238	513017.242	443.071	OG
3166	7147238.946	513017.631	443.058	OG
3167	7147240.040	513017.816	442.821	OG
3168	7147241.676	513018.023	442.608	OG
3169	7147242.485	513018.202	442.302	OG
3170	7147243.846	513018.378	442.145	OG
3171	7147244.811	513018.577	441.668	OG
3172	7147245.980	513018.782	440.778	OG
3173	7147247.428	513019.149	440.187	OG
3174	7147249.317	513019.651	438.969	OG
3175	7147252.760	513020.402	437.034	OG
3176	7147256.574	513020.920	434.725	OG
3177	7147259.580	513021.413	433.067	OG
3178	7147262.961	513022.106	431.320	OG
3179	7147265.071	513022.643	430.217	OG
3180	7147266.685	513022.883	429.614	OG
3181	7147269.048	513023.497	428.269	OG
3182	7147271.134	513024.318	426.202	OG
3183	7147272.678	513024.342	425.224	OG
3184	7147275.259	513024.484	424.421	OG
3185	7147277.874	513025.067	424.226	OG
3187	7147279.965	513025.582	423.919	OG
3188	7147282.432	513025.962	424.086	OG
3189	7147283.266	513026.164	424.543	OG
3190	7147284.719	513026.470	424.698	OG
3191	7147287.584	513027.187	424.582	OG
3192	7147288.268	513027.378	424.290	OG
3193	7147288.825	513027.511	424.184	OG
3194	7147290.144	513027.611	424.138	OG
3195	7147290.741	513027.729	423.906	OG
3196	7147292.136	513028.061	423.637	OG
3197	7147296.162	513028.722	423.609	OG
3198	7147298.952	513029.367	423.625	OG
3199	7147301.993	513029.949	424.440	OG
3200	7147305.068	513030.623	424.493	OG
3201	7147309.054	513031.319	424.463	OG
3202	7147312.125	513031.992	424.345	OG
3203	7147315.572	513032.687	424.394	OG
3204	7147316.079	513032.822	424.424	OG
3205	7147316.655	513032.906	424.595	OG
3206	7147317.134	513033.051	424.468	OG
3207	7147319.002	513033.491	424.371	OG
3208	7147322.619	513034.052	424.319	OG
3209	7147324.716	513034.556	424.374	OG
3210	7147326.659	513034.929	424.133	OG
3211	7147327.336	513035.150	424.275	OG
3212	7147328.271	513035.278	424.585	OG

CLINTON CREEK LONG TERM PERFORMANCE MONITORING PROGRAM (August 2013)

UTM COORDINATES

NAD 83, Zone 7, 141° West

Sections A - B - C at Gabion drop structure

	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
3213	7147328.732	513035.388	424.497	OG
3214	7147330.146	513035.735	423.350	OG
3215	7147331.039	513035.946	422.951	OG
3216	7147331.788	513036.195	422.901	OG
3217	7147333.405	513036.490	421.438	OG
3218	7147335.061	513036.767	420.373	OG
3219	7147336.744	513037.220	418.757	OG
3220	7147338.275	513037.550	417.754	OG
3221	7147338.911	513037.723	417.454	OG
3222	7147341.680	513038.073	416.815	OG
3223	7147343.809	513038.435	416.554	OG
3224	7147346.062	513038.841	416.443	OG
3225	7147349.858	513039.673	416.391	OG
3226	7147351.894	513039.914	416.430	OG
3227	7147353.933	513040.379	416.037	OG
3228	7147354.845	513040.579	415.385	OG
3229	7147355.361	513040.839	415.160	OG
3230	7147357.725	513041.341	413.372	OG
3231	7147359.471	513041.632	411.375	OG
3232	7147361.755	513042.029	409.252	OG
3233	7147364.992	513043.103	406.625	OG
3234	7147365.414	513043.208	406.589	OG
3235	7147368.127	513043.790	406.428	OG
3236	7147368.465	513043.980	405.613	OG
3237	7147370.114	513044.310	404.687	OG
3238	7147370.572	513044.518	404.405	OG
3239	7147372.030	513044.887	402.808	OG
3240	7147373.206	513045.228	402.197	OG
3241	7147375.283	513045.521	400.567	OG
3242	7147375.570	513045.784	399.972	OG
3243	7147376.347	513045.874	399.419	OG
3244	7147377.593	513046.102	398.711	OG
3245	7147378.214	513046.230	398.477	WE
3246	7147378.648	513046.419	398.165	OG
3247	7147380.246	513046.546	397.857	OG
3248	7147382.041	513047.035	397.857	OG
3249	7147385.037	513047.871	398.265	OG
3250	7147386.802	513048.398	397.986	OG
3251	7147387.862	513048.716	397.764	OG
3252	7147389.438	513048.641	397.719	OG
3253	7147390.155	513048.851	398.456	WE
3254	7147390.246	513048.805	398.670	OG
3255	7147390.913	513049.071	398.670	OG
3256	7147393.775	513049.802	399.423	OG
3257	7147394.333	513049.365	400.686	OG
3258	7147397.115	513049.007	403.115	OG
3259	7147398.827	513049.143	405.414	OG
3260	7147399.139	513049.135	406.490	OG
3261	7147400.336	513049.494	407.152	OG
3262	7147402.787	513049.821	408.904	OG
3263	7147403.548	513049.887	409.682	OG

CLINTON CREEK LONG TERM PERFORMANCE MONITORING PROGRAM (August 2013)

UTM COORDINATES

NAD 83, Zone 7, 141° West

Base Line				
	Northing	**Easting**	**Elevation**	
5001	7147308.673	513168.757	415.436	REBAR
5002	7147307.833	513171.702	415.266	SPK
5003	7147306.998	513174.518	415.084	SPK
5004	7147306.130	513177.388	414.831	SPK
5005	7147305.319	513180.260	414.558	SPK
5006	7147304.475	513183.160	414.222	SPK
5007	7147303.623	513186.037	413.890	SPK
5008	7147302.760	513188.917	413.581	SPK
5009	7147301.905	513191.789	413.266	SPK
5010	7147301.066	513194.661	412.930	SPK
5011	7147300.242	513197.538	412.602	SPK
5012	7147299.386	513200.418	412.251	SPK
5013	7147298.544	513203.300	411.884	SPK
5014	7147297.722	513206.162	411.524	SPK
5015	7147296.855	513209.060	411.149	SPK
5016	7147296.013	513211.931	410.788	SPK
5017	7147295.154	513214.797	410.451	SPK
5018	7147294.304	513217.677	410.113	SPK
5019	7147293.468	513220.544	409.771	SPK
5020	7147292.621	513223.420	409.417	SPK
5021	7147291.767	513226.314	409.051	SPK
5022	7147290.920	513229.191	408.748	SPK
5000	7147290.076	513232.061	408.458	REBAR

CRACKS				
	Northing	**Easting**	**Elevation**	
5023	7147311.183	513169.585	415.522	FRACTION
5024	7147314.569	513170.920	415.438	8CM
5025	7147316.677	513171.483	415.381	TOP
5026	7147310.019	513172.501	415.399	FRACTION
5027	7147312.066	513173.249	415.500	FRACTION
5028	7147312.721	513173.485	415.430	4CM
5029	7147314.154	513173.839	415.421	FRACTION
5030	7147314.819	513174.173	415.488	TOP
5031	7147307.120	513174.560	415.075	FRACTION
5032	7147308.638	513174.991	415.185	FRACTION
5033	7147309.596	513175.416	415.258	FRACTION
5034	7147311.471	513176.102	415.270	8CM
5035	7147313.304	513176.814	415.263	15CM
5036	7147313.616	513176.986	415.281	TOP
5037	7147308.469	513178.216	414.968	FRACTION
5038	7147309.134	513178.438	415.025	FRACTION
5039	7147310.018	513178.797	415.054	8CM
5040	7147311.695	513179.343	415.066	6CM
5041	7147311.959	513179.505	415.058	TOP
5042	7147305.332	513180.271	414.535	FRACTION
5043	7147308.165	513181.493	414.722	FRACTION
5044	7147309.091	513181.822	414.759	9CM
5045	7147311.098	513182.397	414.806	TOP

	Northing	Easting	Elevation	
5046	7147306.508	513183.989	414.306	FRACTION
5047	7147307.255	513184.353	414.386	FRACTION
5048	7147307.929	513184.718	414.398	FRACTION
5049	7147308.561	513184.906	414.470	FRACTION
5050	7147310.339	513185.301	414.529	TOP
5051	7147305.596	513186.786	413.996	FRACTION
5052	7147307.220	513187.621	414.086	FRACTION
5053	7147307.878	513187.857	414.118	TOP
5054	7147304.565	513189.792	413.641	8CM
5055	7147306.308	513190.577	413.731	10CM
5056	7147307.000	513190.938	413.779	TOP
5057	7147302.726	513192.210	413.268	FRACTION
5058	7147304.940	513193.122	413.362	FRACTION
5059	7147305.071	513193.142	413.422	24CM
5060	7147306.275	513193.299	413.511	TOP
5061	7147303.471	513195.554	413.062	4CM
5062	7147304.332	513195.753	413.112	13CM
5063	7147305.566	513196.123	413.203	TOP
5064	7147301.108	513197.798	412.569	RUN OFF
5065	7147301.841	513197.984	412.613	3CM
5066	7147302.784	513198.399	412.714	13CM
5067	7147303.736	513198.639	412.746	9CM
5068	7147305.112	513198.948	412.832	13CM
5069	7147305.805	513199.016	412.893	TOP
5070	7147300.318	513200.737	412.219	RUN OFF
5071	7147300.825	513200.867	412.251	8CM
5072	7147301.862	513201.222	412.252	16CM
5073	7147303.583	513201.767	412.419	8CM
5074	7147304.337	513201.891	412.435	8CM
5075	7147304.649	513201.992	412.489	TOP
5076	7147299.552	513203.540	411.816	7CM
5077	7147300.976	513204.139	411.955	20CM
5078	7147303.159	513204.759	412.096	17CM
5079	7147304.064	513204.765	412.105	TOP
5080	7147297.733	513206.185	411.511	FRACTION
5081	7147298.638	513206.415	411.362	15CM
5082	7147299.369	513206.724	411.526	FRACTION
5083	7147300.001	513206.962	411.577	17CM
5084	7147302.434	513207.721	411.614	15CM
5085	7147302.788	513207.808	411.698	TOP
5086	7147296.813	513209.050	411.093	FRACTION
5087	7147297.735	513209.314	411.029	10CM
5088	7147298.685	513209.594	411.176	FRACTION
5089	7147299.137	513209.733	411.180	FRACTION
5090	7147301.093	513210.379	411.320	15CM
5091	7147301.671	513210.539	411.337	TOP
5092	7147296.877	513212.168	410.732	RUN OFF
5093	7147298.287	513212.552	410.838	FRACTION
5094	7147298.583	513212.643	410.885	FRACTION
5095	7147298.881	513212.704	410.892	FRACTION
5096	7147299.435	513212.858	410.898	FRACTION
5097	7147300.457	513213.052	411.005	TOP
5098	7147294.992	513214.707	410.418	FRACTION
5099	7147296.041	513214.977	410.368	RUN OFF
5100	7147296.723	513215.160	410.464	FRACTION
5101	7147297.936	513215.538	410.551	FRACTION
5102	7147298.692	513215.767	410.562	FRACTION

	Northing	Easting	Elevation	
5103	7147299.572	513215.866	410.656	FRACTION
5104	7147300.302	513216.112	410.709	TOP
5105	7147295.151	513217.919	410.052	RUN OFF
5106	7147296.376	513218.258	410.154	4CM
5107	7147297.816	513218.761	410.252	FRACTION
5108	7147298.148	513218.899	410.225	FRACTION
5109	7147298.615	513219.401	410.296	FRACTION
5110	7147299.367	513219.643	410.330	TOP
5111	7147294.176	513220.726	409.723	RUN OFF
5112	7147295.212	513221.074	409.835	FRACTION
5113	7147296.609	513221.537	409.925	FRACTION
5114	7147297.640	513221.810	410.013	13CM
5115	7147298.640	513222.147	410.043	TOP
5116	7147293.102	513223.575	409.379	RUN OFF
5117	7147294.931	513224.212	409.538	FRACTION
5118	7147297.313	513225.044	409.703	FRACTION
5119	7147297.943	513225.165	409.673	8CM
5120	7147298.646	513225.414	409.734	TOP
5121	7147293.925	513227.073	409.172	8CM
5122	7147297.290	513227.900	409.394	10CM
5123	7147298.114	513228.019	409.446	TOP
5124	7147293.422	513229.964	408.898	FRACTION
5125	7147296.833	513230.924	409.063	7CM
5126	7147297.510	513231.170	409.118	TOP
5127	7147292.722	513232.895	408.563	FRACTION
5128	7147295.594	513233.880	408.746	FRACTION
5129	7147297.258	513234.324	408.826	TOP

CLINTON CREEK LONG TERM PERFORMANCE MONITORING PROGRAM (August 2013)

UTM COORDINATES

NAD 83, Zone 7, 141° West

Gate				
	NORTHING	EASTING	ORTHOMETRIC HEIGHT	
1	7147089.489	514211.069	367.339	GATE
2	7147094.779	514212.212	367.661	GATE

Appendix B - Gabion Drop Structure Movements

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
Job No.: 20112857
Date: 28-Aug-13

Former Clinton Creek Asbestos Mine - Clinton Creek Drop Structure Monitoring
Channel Closure Monitor Pins #1450 to #1465 - SUMMARY

Location #1 - Across The Drawdown Weir

Drop Structure	Horizontal Distance Across Drop Structure (metres)								Incremental Change (m) Aug '12 to Aug '13	Calculated Annual Rate of Movement (m/year)					Total Change (m)	Comment
	Date	Date	Date	Date	Date	Date	Date	Date		Jul 2008	Jul 2010	Sept 2010	Aug 2011	Aug 2012		
	28-Jul-06	04-Jul-07	09-Jul-08	20-Jul-10	25-Sep-10	11-Aug-11	06-Aug-12	28-Aug-13		Jul 2010	Sept 2010	Aug 2011	Aug 2012	Aug 2013		
1	27.59	27.56	27.55	27.52	27.52	27.50	27.43	27.42	-0.01	-0.01	-0.02	-0.03	-0.01	-0.01	-0.17	survey tags 1450 & 1451
2	27.62	27.60	27.58	27.55	27.56	27.54	27.45	27.45	0.00	-0.01	0.03	-0.02	n/a	0.00	0.00	survey tags 1454 & 1455, #1454 replaced in 2012. Total change is referenced from 2012.
3	27.28	27.21	27.16	27.05	27.03	27.11	26.47	26.42	-0.05	-0.06	-0.11	0.10	n/a	-0.04	-0.05	survey tags 1458 & 1459, #1459 replaced in 2012. Total change is referenced from 2012.
4	27.09	27.11	27.05	26.97	26.96	26.90	28.94	28.90	-0.04	-0.04	-0.07	-0.06	n/a	-0.04	-0.04	survey tags 1462 & 1463, #1462 replaced in 2012. Total change is referenced from 2012.

Location #2 - Across Lower Tier

Drop Structure	Horizontal Distance Across Drop Structure (metres)								Incremental Change (m) Aug '12 to Aug '13	Calculated Annual Rate of Movement (m/year)					Total Change (m)	Comment
	Date	Date	Date	Date	Date	Date	Date	Date		Jul 2008	Jul 2010	Sept 2010	Aug 2011	Aug 2012		
	28-Jul-06	04-Jul-07	09-Jul-08	20-Jul-10	25-Sep-10	11-Aug-11	06-Aug-12	28-Aug-13		Jul 2010	Sept 2010	Aug 2011	Aug 2012	Aug 2013		
1	28.83	28.76	28.79	28.77	28.77	pin gone	28.70	28.65	-0.05	-0.01	-0.02	pin gone	n/a	-0.05	-0.05	survey tags 1452 & 1453, #1453 replaced in 2012. Total change is referenced from 2012.
2	28.62	28.58	28.54	28.44	28.44	28.36	28.23	28.15	-0.08	-0.05	0.01	-0.09	-0.08	-0.07	-0.47	survey tags 1456 & 1457
3	28.82	28.69	28.64	Not Surveyed	Not Surveyed	pin gone	29.49	29.46	-0.03	n/a	n/a	pin gone	n/a	-0.03	-0.03	survey tags 1460 & 1461, both replaced in 2012. Total change is referenced from 2012.
4	30.57	30.53	30.51	30.43	30.38	30.21	30.09	30.00	-0.09	-0.04	-0.30	-0.19	-0.09	-0.09	-0.57	survey tags 1464 & 1465

Year	Monitored By
2006	Installed by Underhill Geomatics Limited
2007	Underhill Geomatics Limited
2008	Underhill Geomatics Limited
2010	Underhill Geomatics Limited
2011	Underhill Geomatics Limited
2012	Underhill Geomatics Limited
2013	Underhill Geomatics Limited

Summary of Avg, Max, and Min Values for Combined Location #1 and #2 results

	Incremental Change (m) Aug '12 to Aug '13	Calculated Annual Rate of Movement (m/year)					Total Change (m)
		Jul 2008 Jul 2010	Jul 2010 Sept 2010	Sept 2010 Aug 2011	Aug 2011 Aug 2012	Aug 2012 Aug 2013	
Average (m)	-0.04	-0.03	-0.07	-0.05	-0.06	-0.04	-0.17
Maximum (m)	0.00	-0.01	0.03	0.10	-0.01	0.00	0.00
Minimum (m)	-0.09	-0.06	-0.30	-0.19	-0.09	-0.09	-0.57

Channel Closure Monitor Pins #1450 to #1465

Location #1 - Across The Drawdown Weir

Drop Structure	Incremental Change Summary						
	Jul 06 to Jul 07	Jul 07 to Jul 08	Jul 08 to Jul10	Jul 10 to Sept 10	Sept 10 to Aug 11	Aug 11 to Aug 12	Aug '12 to Aug '13
1	-0.03	-0.01	-0.03	0.00	-0.02	-0.07	-0.01
2	-0.02	-0.02	-0.03	0.01	-0.02	n/a	0.00
3	-0.07	-0.05	-0.11	-0.02	0.08	n/a	-0.05
4	0.02	-0.06	-0.08	-0.01	-0.06	n/a	-0.04

Location #2 - Across Lower Tier

Drop Structure	Incremental Change Summary						
	Jul 06 to Jul 07	Jul 07 to Jul 08	Jul 08 to Jul10	Jul 10 to Sep 10	Sept 10 to Aug 11	Aug 11 to Aug 12	Aug '12 to Aug '13
1	-0.07	0.03	-0.02	0.00	n/a	n/a	-0.05
2	-0.04	-0.04	-0.10	0.00	-0.08	-0.13	-0.08
3	-0.13	-0.05	Not Surveyed	Not Surveyed	n/a	n/a	-0.03
4	-0.04	-0.02	-0.08	-0.06	-0.16	-0.12	-0.09

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
Job No.: 20112857
Date: 28-Aug-13

Clinton Creek Channel - Drop Structure Closure Monitoring

Drop Structure #1 - Upper Tier, Valley Side of Channel: Monitor #1450

Monitoring Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement			Comments
	Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	incremental (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)	
28-Jul-06	7,147,441.30	512,890.12	413.63	0	0	0	0	0	0	0	0	Underhill Geomatics Ltd.
04-Jul-07	7,147,441.29	512,890.12	413.61	341	341	0.01	0.01	0.01	-0.02	-0.02	-0.02	
09-Jul-08	7,147,441.28	512,890.13	413.62	712	371	0.03	0.02	0.02	-0.02	0.00	0.00	
20-Jul-10	7,147,441.28	512,890.13	413.63	1,453	741	0.03	0.00	0.00	0.00	0.01	0.01	
25-Sep-10	7,147,441.26	512,890.14	413.60	1,520	67	0.05	0.02	0.10	-0.04	-0.03	-0.18	
11-Aug-11	7,147,441.24	512,890.14	413.62	1,840	320	0.07	0.02	0.02	-0.01	0.03	0.03	
06-Aug-12	7147441.216	512890.146	413.739	2201	361	0.09	0.02	0.02	0.11	0.11	0.12	
28-Aug-13	7,147,441.22	512,890.14	413.74	2588	387	0.09	0.00	0.00	0.11	0.00	0.00	

Notes: Originally installed July 28, 2006 by Underhill Surveys.

Drop Structure #1 - Upper Tier, Waste Rock Side of Channel: Monitor #1451

Monitoring Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement			Comments
	Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	incremental (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)	
28-Jul-06	7,147,413.79	512,888.17	413.46	0	0	0	0	0	0	0	0	Underhill Geomatics Ltd.
04-Jul-07	7,147,413.80	512,888.17	413.42	341	341	0.01	0.01	0.01	-0.04	-0.04	-0.04	
09-Jul-08	7,147,413.79	512,888.17	413.42	712	371	0.01	0.01	0.01	-0.04	0.00	0.00	
20-Jul-10	7,147,413.83	512,888.13	413.41	1,453	741	0.05	0.05	0.03	-0.05	-0.01	-0.01	
25-Sep-10	7,147,413.81	512,888.14	413.40	1,520	67	0.04	0.01	0.08	-0.06	-0.01	-0.08	
11-Aug-11	7,147,413.82	512,888.13	413.38	1,840	320	0.05	0.01	0.01	-0.07	-0.01	-0.01	
06-Aug-12	7,147,413.86	512,888.13	413.48	2,201	361	0.08	0.05	0.05	0.02	0.10	0.10	
28-Aug-13	7,147,413.87	512,888.14	413.45	2,588	387	0.09	0.02	0.01	-0.01	-0.03	-0.03	

Notes: Originally installed July 28, 2006 by Underhill Surveys.

Drop Structure #1: Closure of Monitors #1450 and #1451

Monitoring Date	Closure			Time								
	Distance (metres)	total (metres)	incremental (metres)	total (days)	incremental (days)							
28-Jul-06	27.59	0.00		0	0							
04-Jul-07	27.56	-0.02	-0.02	341	341							
09-Jul-08	27.55	-0.03	-0.01	712	371							
20-Jul-10	27.52	-0.06	-0.03	1,453	741							
25-Sep-10	27.52	-0.07	0.00	1,520	67							
11-Aug-11	27.50	-0.09	-0.02	1,840	320							
06-Aug-12	27.43	-0.16	-0.07	2,201	361							
28-Aug-13	27.42	-0.17	-0.01	2,588	387							

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
Job No.: 20112857
Date: 28-Aug-13

Clinton Creek Channel - Drop Structure Closure Monitoring

Drop Structure #1 - Lower Tier, Waste Rock Side of Channel: Monitor 1452

Monitoring Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement			Comments
	Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	incremental (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)	
28-Jul-06	7,147,411.88	512,892.07	412.96	0	0	0	0	0	0	0	0	Underhill Geomatics Ltd.
04-Jul-07	7,147,411.91	512,892.02	412.99	341	341	0.05	0.05	0.06	0.04	0.04	0.04	
09-Jul-08	7,147,411.90	512,892.04	412.95	712	371	0.04	0.02	0.02	-0.01	-0.04	-0.04	
20-Jul-10	7,147,411.93	512,892.01	412.94	1,453	741	0.08	0.04	0.02	-0.02	-0.02	-0.01	
25-Sep-10	7,147,411.93	512,892.00	412.91	1,520	67	0.08	0.01	0.05	-0.05	-0.03	-0.15	
11-Aug-11	7,147,411.92	512,892.01	412.91	1,840	320	0.07	0.02	0.02	-0.05	0.00	0.00	
06-Aug-12	7,147,411.95	512,892.00	413.08	2,201	361	0.10	0.03	0.03	0.12	0.17	0.17	
28-Aug-13	7147411.972	512892.002	413.056	2,588	387	0.11	0.03	0.02	0.10	-0.02	-0.02	

Notes: Originally installed July 28, 2006 by Underhill Surveys.

Drop Structure #1 - Lower Tier, Valley Side of Channel: Monitor #1453

Monitoring Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement			Comments
	Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	incremental (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)	
28-Jul-06	7,147,439.11	512,901.52	413.12	0	0	0	0	0	0	0	0	Underhill Geomatics Ltd.
04-Jul-07	7,147,439.06	512,901.52	413.10	341	341	0.05	0.05	0.06	-0.02	-0.02	-0.02	
09-Jul-08	7,147,439.09	512,901.51	413.11	712	371	0.03	0.03	0.03	-0.01	0.01	0.01	
20-Jul-10	7,147,439.08	512,901.51	413.11	1,453	741	0.03	0.01	0.00	-0.01	0.00	0.00	
25-Sep-10	7,147,439.08	512,901.50	413.09	1,520	67	0.04	0.01	0.04	-0.02	-0.02	-0.09	
11-Aug-11	7,147,440.91	512,901.57	413.26	1,840	320	1.80	1.84	2.09	0.15	0.17	0.19	
06-Aug-12	7,147,439.02	512,901.50	413.23	2,201	361	0.09	1.89	1.91	0.11	-0.04	-0.04	**disturbed, and replaced**
28-Aug-13	7147439.005	512901.493	413.239	2,588	387	0.11	0.02	0.02	0.12	0.01	0.01	

Notes: Originally installed July 28, 2006 by Underhill Surveys.

Clinton Creek Channel Closure Monitoring Point #1452 and #1453 (Drop Structure #1 - Lower Tier) - Closure

Monitoring Date	Closure			Time								
	Distance (metres)	total (metres)	incremental (metres)	total (days)	incremental (days)							
28-Jul-06	28.83	0.00		0	0							
04-Jul-07	28.76	-0.07	-0.07	341	341							
09-Jul-08	28.79	-0.03	0.03	712	371							
20-Jul-10	28.77	-0.06	-0.02	1,453	741							
25-Sep-10	28.77	-0.06	0.00	1,520	67							
11-Aug-11	30.53	1.70	1.77	1,840	320							
06-Aug-12	28.70	-0.13	-1.83	2,201	361							
28-Aug-13	28.65	-0.18	-0.05	2,588	387							

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
Job No.: 20112857
Date: 28-Aug-13

Clinton Creek Channel - Drop Structure Closure Monitoring

Drop Structure #2 - Upper Tier, Valley Side of Channel: Monitor #1454

Monitoring Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement			Comments
	Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	incremental (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)	
28-Jul-06	7,147,423.24	512,948.59	412.39	0	0	0	0	0	0	0	0	Underhill Geomatics Ltd.
04-Jul-07	7,147,423.23	512,948.58	412.35	341	341	0.01	0.01	0.02	-0.03	-0.03	-0.03	
09-Jul-08	7,147,423.23	512,948.58	412.36	712	371	0.02	0.01	0.01	-0.03	0.00	0.00	
20-Jul-10	7,147,423.24	512,948.57	412.36	1,453	741	0.02	0.01	0.00	-0.03	0.00	0.00	
25-Sep-10	7,147,423.22	512,948.58	412.34	1,520	67	0.03	0.02	0.13	-0.05	-0.02	-0.11	
11-Aug-11	7,147,423.21	512,948.59	412.33	1,840	320	0.03	0.01	0.01	-0.06	-0.01	-0.01	
06-Aug-12	7,147,423.17	512,948.56	412.39	2,201	361	0.08	0.05	0.05	0.01	0.06	0.07	**disturbed and replaced**
28-Aug-13	7147423.161	512948.574	412.410	2,588	387	0.08	0.02	0.02	0.02	0.02	0.02	

Notes: Originally installed July 28, 2006 by Underhill Surveys.

Drop Structure #2 - Upper Tier, Waste Rock Side of Channel: Monitor #1455

Monitoring Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement			Comments
	Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	incremental (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)	
28-Jul-06	7,147,397.03	512,939.87	412.12	0	0	0	0	0	0	0	0	Underhill Geomatics Ltd.
04-Jul-07	7,147,397.03	512,939.88	412.06	341	341	0.01	0.01	0.01	-0.05	-0.05	-0.06	
09-Jul-08	7,147,397.05	512,939.89	412.01	712	371	0.03	0.02	0.02	-0.10	-0.05	-0.05	
20-Jul-10	7,147,397.08	512,939.90	411.93	1,453	741	0.06	0.03	0.02	-0.19	-0.08	-0.04	
25-Sep-10	7,147,397.06	512,939.89	411.92	1,520	67	0.04	0.02	0.11	-0.19	-0.01	-0.05	
11-Aug-11	7,147,397.07	512,939.92	411.90	1,840	320	0.06	0.03	0.03	-0.21	-0.02	-0.02	
06-Aug-12	7,147,397.11	512,939.94	412.01	2,201	361	0.11	0.05	0.05	-0.10	0.11	0.11	
28-Aug-13	7147397.111	512939.928	411.983	2,588	387	0.10	0.01	0.01	-0.13	-0.03	-0.03	

Notes: Originally installed July 28, 2006 by Underhill Surveys.

Clinton Creek Channel Closure Monitoring Point #1454 and #1455 (Drop Structure #2 - Upper Tier) - Closure

Monitoring Date	Closure			Time								
	Distance (metres)	total (metres)	incremental (metres)	total (days)	incremental (days)							
28-Jul-06	27.62	0.00		0	0							
04-Jul-07	27.60	-0.02	-0.02	341	341							
09-Jul-08	27.58	-0.04	-0.02	712	371							
20-Jul-10	27.55	-0.07	-0.03	1,453	741							
25-Sep-10	27.56	-0.06	0.01	1,520	67							
11-Aug-11	27.54	-0.08	-0.02	1,840	320							
06-Aug-12	27.45	-0.17	-0.09	2,201	361							
28-Aug-13	27.45	-0.18	0.00	2,588	387							

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
Job No.: 20112857
Date: 28-Aug-13

Clinton Creek Channel - Drop Structure Closure Monitoring

Drop Structure #2 - Lower Tier, Waste Rock Side of Channel: Monitor #1456

Monitoring Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement			Comments
	Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	incremental (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)	
28-Jul-06	7,147,392.70	512,951.21	411.05	0	0	0	0	0	0	0	0	Underhill Geomatics Ltd.
04-Jul-07	7,147,392.75	512,951.22	410.99	341	341	0.05	0.05	0.06	-0.07	-0.07	-0.07	
09-Jul-08	7,147,392.77	512,951.25	410.95	712	371	0.08	0.03	0.03	-0.11	-0.04	-0.04	
20-Jul-10	7,147,392.86	512,951.28	410.85	1,453	741	0.18	0.10	0.05	-0.20	-0.10	-0.05	
25-Sep-10	7,147,392.85	512,951.27	410.83	1,520	67	0.16	0.02	0.10	-0.23	-0.02	-0.13	
11-Aug-11	7,147,392.92	512,951.26	410.80	1,840	320	0.23	0.08	0.09	-0.25	-0.03	-0.03	
06-Aug-12	7,147,393.00	512,951.31	410.96	2,201	361	0.32	0.09	0.10	-0.09	0.16	0.16	
28-Aug-13	7147393.073	512951.325	410.916	2,588	387	0.39	0.07	0.07	-0.14	-0.04	-0.04	

Notes: Originally installed July 28, 2006 by Underhill Surveys.

Drop Structure #2 - Lower Tier, Valley Side of Channel: Monitor #1457

Monitoring Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement			Comments
	Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	incremental (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)	
28-Jul-06	7,147,420.50	512,958.00	410.61	0	0	0	0	0	0	0	0	Underhill Geomatics Ltd.
04-Jul-07	7,147,420.52	512,958.00	410.60	341	341	0.02	0.02	0.02	-0.02	-0.02	-0.02	
09-Jul-08	7,147,420.50	512,958.01	410.59	712	371	0.01	0.02	0.02	-0.02	0.00	0.00	
20-Jul-10	7,147,420.49	512,958.02	410.59	1,453	741	0.02	0.01	0.01	-0.03	-0.01	0.00	
25-Sep-10	7,147,420.48	512,958.00	410.57	1,520	67	0.03	0.02	0.12	-0.04	-0.02	-0.09	
11-Aug-11	7,147,420.47	512,958.01	410.58	1,840	320	0.03	0.01	0.01	-0.04	0.01	0.01	
06-Aug-12	7,147,420.44	512,957.96	410.70	2,201	361	0.08	0.06	0.06	0.09	0.13	0.13	
28-Aug-13	7147420.426	512957.984	410.720	2,588	387	0.08	0.03	0.02	0.11	0.02	0.02	

Notes: Originally installed July 28, 2006 by Underhill Surveys.

Clinton Creek Channel Closure Monitoring Point #1456 and #1457 (Drop Structure #2 - Upper Tier) - Closure

Monitoring Date	Closure			Time								
	Distance (metres)	total (metres)	incremental (metres)	total (days)	incremental (days)							
28-Jul-06	28.62	0.00		0	0							
04-Jul-07	28.58	-0.04	-0.04	341	341							
09-Jul-08	28.54	-0.08	-0.04	712	371							
20-Jul-10	28.44	-0.18	-0.11	1,453	741							
25-Sep-10	28.44	-0.18	0.00	1,520	67							
11-Aug-11	28.36	-0.26	-0.08	1,840	320							
06-Aug-12	28.23	-0.39	-0.13	2,201	361							
28-Aug-13	28.15	-0.47	-0.08	2,588	387							

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
Job No.: 20112857
Date: 28-Aug-13

Clinton Creek Channel - Drop Structure Closure Monitoring

Drop Structure #3 - Upper Tier, Valley Side of Channel: Monitor #1458

Monitoring Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement			Comments
	Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	incremental (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)	
28-Jul-06	7,147,412.17	512,986.91	409.75	0	0	0	0	0	0	0	0	Underhill Geomatics Ltd.
04-Jul-07	7,147,412.17	512,986.90	409.72	341	341	0.02	0.02	0.02	-0.03	-0.03	-0.04	
09-Jul-08	7,147,412.16	512,986.91	409.71	712	371	0.01	0.01	0.01	-0.05	-0.02	-0.01	
20-Jul-10	7,147,412.15	512,986.92	409.70	1,453	741	0.02	0.02	0.01	-0.06	-0.01	0.00	
25-Sep-10	7,147,412.13	512,986.90	409.68	1,520	67	0.04	0.03	0.15	-0.08	-0.02	-0.11	
11-Aug-11	7,147,412.15	512,986.90	409.69	1,840	320	0.02	0.02	0.02	-0.07	0.01	0.01	
06-Aug-12	7,147,412.10	512,986.87	409.83	2,201	361	0.08	0.06	0.06	0.08	0.14	0.15	
28-Aug-13	7147412.093	512986.901	409.826	2,588	387	0.08	0.03	0.03	0.07	0.00	0.00	

Notes: Originally installed July 28, 2006 by Underhill Surveys.

Drop Structure #3 - Upper Tier, Waste Rock Side of Channel: Monitor #1459

Monitoring Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement			Comments
	Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	incremental (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)	
28-Jul-06	7,147,385.79	512,979.99	409.48	0	0	0	0	0	0	0	0	Underhill Geomatics Ltd.
04-Jul-07	7,147,385.84	512,980.01	409.38	341	341	0.05	0.05	0.06	-0.10	-0.10	-0.10	
09-Jul-08	7,147,385.88	512,980.04	409.36	712	371	0.11	0.05	0.05	-0.12	-0.02	-0.02	
20-Jul-10	7,147,385.98	512,980.09	409.18	1,453	741	0.21	0.11	0.05	-0.30	-0.18	-0.09	
25-Sep-10	7,147,385.97	512,980.11	409.16	1,520	67	0.22	0.02	0.11	-0.32	-0.03	-0.14	
11-Aug-11	7,147,385.92	512,980.04	409.18	1,840	320	0.14	0.08	0.10	-0.30	0.02	0.03	
06-Aug-12	7,147,386.46	512,980.31	409.44	2,201	361	0.74	0.60	0.61	-0.04	0.25	0.26	**lost and replaced**
28-Aug-13	7147386.498	512980.331	409.375	2,588	387	0.79	0.04	0.04	-0.11	-0.06	-0.06	

Notes: Originally installed July 28, 2006 by Underhill Surveys.

Clinton Creek Channel Closure Monitoring Point #1458 and #1459 (Drop Structure #3 - Upper Tier) - Closure

Monitoring Date	Closure			Time								
	Distance (metres)	total (metres)	incremental (metres)	total (days)	incremental (days)							
28-Jul-06	27.28	0.00		0	0							
04-Jul-07	27.21	-0.06	-0.06	341	341							
09-Jul-08	27.16	-0.11	-0.05	712	371							
20-Jul-10	27.05	-0.23	-0.11	1,453	741							
25-Sep-10	27.03	-0.25	-0.02	1,520	67							
11-Aug-11	27.11	-0.16	0.08	1,840	320							
06-Aug-12	26.47	-0.80	-0.64	2,201	361							
28-Aug-13	26.42	-0.85	-0.05	2,588	387							

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
Job No.: 20112857
Date: 28-Aug-13

Clinton Creek Channel - Drop Structure Closure Monitoring

Drop Structure #3 - Lower Tier, Waste Rock Side of Channel: Monitor #1460

Monitoring Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement			Comments
	Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	incremental (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)	
28-Jul-06	7,147,382.48	512,988.03	409.00	0	0	0	0	0	0	0	0	Underhill Geomatics Ltd.
04-Jul-07	7,147,382.58	512,988.07	408.97	341	341	0.11	0.11	0.12	-0.04	-0.04	-0.04	
09-Jul-08	7,147,382.64	512,988.09	408.86	712	371	0.17	0.06	0.06	-0.14	-0.11	-0.11	
20-Jul-10	**NOT SURVEYED**											
25-Sep-10	**NOT SURVEYED**											
11-Aug-11	7,147,381.82	512,988.40	409.25	1,840	1,128	0.76	0.88	0.28	0.25	0.39	0.13	**pin may be missing**
06-Aug-12	7,147,381.55	512,988.49	409.15	2,201	361	1.04	0.29	0.29	0.15	-0.10	-0.10	**lost - replaced**
28-Aug-13	7147381.585	512988.513	409.094	2,588	387	1.02	0.05	0.04	0.09	-0.06	-0.05	

Notes: Originally installed July 28, 2006 by Underhill Surveys.

Drop Structure #3 - Lower Tier, Valley Side of Channel: Monitor #1461

Monitoring Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement			Comments
	Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	incremental (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)	
28-Jul-06	7,147,410.21	512,995.90	408.29	0	0	0	0	0	0	0	0	Underhill Geomatics Ltd.
04-Jul-07	7,147,410.18	512,995.89	408.28	341	341	0.03	0.03	0.03	-0.01	-0.01	-0.01	
09-Jul-08	7,147,410.20	512,995.89	408.25	712	371	0.01	0.02	0.02	-0.04	-0.03	-0.03	
20-Jul-10	7,147,410.18	512,995.88	408.25	1,453	741	0.03	0.02	0.01	-0.04	0.00	0.00	
25-Sep-10	7,147,410.17	512,995.89	408.24	1,520	67	0.03	0.01	0.04	-0.05	-0.01	-0.06	
11-Aug-11	7,147,410.16	512,995.88	408.25	1,840	320	0.05	0.02	0.02	-0.03	0.01	0.02	
06-Aug-12	7,147,410.10	512,995.86	408.44	2,201	361	0.11	0.06	0.06	0.16	0.19	0.19	**disturbed - replaced**
28-Aug-13	7147410.103	512995.898	408.476	2,588	387	0.10	0.04	0.04	0.19	0.03	0.03	

Notes: Originally installed July 28, 2006 by Underhill Surveys.

Clinton Creek Channel Closure Monitoring Point #1460 and #1461 (Drop Structure #3 - Lower Tier) - Closure

Monitoring Date	Closure			Time								
	Distance (metres)	total (metres)	incremental (metres)	total (days)	incremental (days)							
28-Jul-06	28.82	0.00		0	0							
04-Jul-07	28.69	-0.13	-0.13	341	341							
09-Jul-08	28.64	-0.18	-0.04	712	371							
20-Jul-10	Pt. #1460 NOT SURVEYED											
25-Sep-10	Pt. #1460 NOT SURVEYED											
11-Aug-11	29.31	0.49	0.66	1,840	320							
06-Aug-12	29.49	0.67	0.18	2,201	361							
28-Aug-13	29.46	0.64	-0.03	2,588	387							

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
Job No.: 20112857
Date: 28-Aug-13

Clinton Creek Channel - Drop Structure Closure Monitoring

Drop Structure #4 - Upper Tier, Valley Side of Channel: Monitor #1462

Monitoring Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement			Comments
	Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	incremental (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)	
28-Jul-06	7,147,399.81	513,033.17	407.32	0	0	0	0	0	0	0	0	Underhill Geomatics Ltd.
04-Jul-07	7,147,399.84	513,033.18	407.31	341	341	0.03	0.03	0.03	-0.02	-0.02	-0.02	
09-Jul-08	7,147,399.81	513,033.15	407.30	712	371	0.02	0.05	0.04	-0.02	-0.01	-0.01	
20-Jul-10	7,147,399.81	513,033.16	407.29	1,453	741	0.01	0.01	0.00	-0.03	-0.01	0.00	
25-Sep-10	7,147,399.80	513,033.15	407.27	1,520	67	0.02	0.01	0.03	-0.05	-0.02	-0.13	
11-Aug-11	7,147,399.80	513,033.16	407.33	1,840	320	0.02	0.01	0.01	0.00	0.06	0.07	
06-Aug-12	7,147,401.85	513,033.69	407.32	2,201	361	2.10	2.11	2.14	-0.01	-0.01	-0.01	**lost and replaced**
28-Aug-13	7147401.854	513033.723	407.360	2,588	387	2.11	0.03	0.03	0.04	0.04	0.04	

Notes: Originally installed July 28, 2006 by Underhill Surveys.

Drop Structure #4 - Upper Tier, Waste Rock Side of Channel: Monitor #1463

Monitoring Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement			Comments
	Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	incremental (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)	
28-Jul-06	7,147,373.72	513,025.90	407.64	0	0	0	0	0	0	0	0	Underhill Geomatics Ltd.
04-Jul-07	7,147,373.73	513,025.89	407.60	341	341	0.02	0.02	0.02	-0.05	-0.05	-0.05	
09-Jul-08	7,147,373.74	513,025.94	407.54	712	371	0.04	0.05	0.05	-0.10	-0.06	-0.06	
20-Jul-10	7,147,373.82	513,025.92	407.50	1,453	741	0.11	0.09	0.04	-0.14	-0.04	-0.02	
25-Sep-10	7,147,373.83	513,025.93	407.48	1,520	67	0.11	0.01	0.08	-0.16	-0.02	-0.10	
11-Aug-11	7,147,373.88	513,025.95	407.45	1,840	320	0.17	0.06	0.06	-0.19	-0.03	-0.03	
06-Aug-12	7,147,373.95	513,025.99	407.59	2,201	361	0.25	0.08	0.08	-0.05	0.14	0.14	
28-Aug-13	7147374.007	513025.993	407.553	2,588	387	0.30	0.06	0.05	-0.09	-0.04	-0.04	

Notes: Originally installed July 28, 2006 by Underhill Surveys.

Clinton Creek Channel Closure Monitoring Point #1462 and #1463 (Drop Structure #4 - Upper Tier) - Closure

.

Monitoring Date	Closure			Time								
	Distance (metres)	total (metres)	incremental (metres)	total (days)	incremental (days)							
28-Jul-06	27.09	0.00		0	0							
04-Jul-07	27.11	0.02	0.02	341	341							
09-Jul-08	27.05	-0.04	-0.06	712	371							
20-Jul-10	26.97	-0.12	-0.07	1,453	741							
25-Sep-10	26.96	-0.13	-0.01	1,520	67							
11-Aug-11	26.90	-0.19	-0.06	1,840	320							
06-Aug-12	28.94	1.85	2.04	2,201	361							
28-Aug-13	28.90	1.81	-0.04	2,588	387							

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
Job No.: 20112857
Date: 28-Aug-13

Clinton Creek Channel - Drop Structure Closure Monitoring

Drop Structure #4 - Lower Tier, Waste Rock Side of Channel: Monitor 1464

Monitoring Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement			Comments
	Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	incremental (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)	
28-Jul-06	7,147,369.18	513,036.44	406.85	0	0	0	0	0	0	0	0	Underhill Geomatics Ltd.
04-Jul-07	7,147,369.18	513,036.45	406.83	341	341	0.01	0.01	0.01	-0.02	-0.02	-0.02	
09-Jul-08	7,147,369.20	513,036.47	406.81	712	371	0.05	0.04	0.03	-0.04	-0.02	-0.02	
20-Jul-10	7,147,369.28	513,036.46	406.80	1,453	741	0.11	0.08	0.04	-0.05	-0.01	0.00	
25-Sep-10	7,147,369.32	513,036.49	406.76	1,520	67	0.16	0.05	0.29	-0.09	-0.04	-0.22	
11-Aug-11	7,147,369.46	513,036.55	406.70	1,840	320	0.30	0.15	0.17	-0.15	-0.06	-0.07	
06-Aug-12	7,147,369.54	513,036.56	406.79	2,201	361	0.39	0.09	0.09	-0.06	0.09	0.09	
28-Aug-13	7147369.640	513036.565	406.761	2,588	387	0.48	0.10	0.09	-0.09	-0.03	-0.03	

Notes: Originally installed July 28, 2006 by Underhill Surveys.

Drop Structure #4 - Lower Tier, Valley Side of Channel: Monitor #1465

Monitoring Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement			Comments
	Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	incremental (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)	
28-Jul-06	7,147,399.49	513,040.33	406.14	0	0	0	0	0	0	0	0	Underhill Geomatics Ltd.
04-Jul-07	7,147,399.46	513,040.34	406.12	341	341	0.03	0.03	0.04	-0.02	-0.02	-0.02	
09-Jul-08	7,147,399.47	513,040.33	406.13	712	371	0.02	0.01	0.01	-0.01	0.01	0.01	
20-Jul-10	7,147,399.47	513,040.33	406.13	1,453	741	0.03	0.00	0.00	-0.01	0.00	0.00	
25-Sep-10	7,147,399.46	513,040.32	406.10	1,520	67	0.04	0.01	0.07	-0.04	-0.03	-0.16	
11-Aug-11	7,147,399.43	513,040.34	406.13	1,840	320	0.06	0.03	0.03	-0.01	0.03	0.03	
06-Aug-12	7,147,399.40	513,040.31	406.23	2,201	361	0.09	0.04	0.05	0.09	0.10	0.10	
28-Aug-13	7147399.400	513040.343	406.225	2,588	387	0.09	0.03	0.03	0.08	0.00	0.00	

Notes: Originally installed July 28, 2006 by Underhill Surveys.

Clinton Creek Channel Closure Monitoring Point #1464 and #1465 (Drop Structure #4 - Lower Tier) - Closure

.

Monitoring Date	Closure			Time								
	Distance (metres)	total (metres)	incremental (metres)	total (days)	incremental (days)							
28-Jul-06	30.57	0.00		0	0							
04-Jul-07	30.53	-0.04	-0.04	341	341							
09-Jul-08	30.51	-0.06	-0.02	712	371							
20-Jul-10	30.43	-0.13	-0.08	1,453	741							
25-Sep-10	30.38	-0.19	-0.06	1,520	67							
11-Aug-11	30.21	-0.35	-0.16	1,840	320							
06-Aug-12	30.09	-0.47	-0.12	2,201	361							
28-Aug-13	30.00	-0.57	-0.09	2,588	387							

Appendix C - Site Photos

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 1.JPG-Access road.

Photo 2.JPG-Slope failure and drainage on Clinton Creek access road.

Photo 3.JPG-Slope failure on Clinton Creek access road.

Photo 4.JPG-Slope failure on Clinton Creek access road.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 5.JPG-Warning signs at site entrance.

Photo 6.JPG-Access Gate - berm or boulders required on right hand side to prevent vehicles

Photo 7.JPG-Access Gate - berm required on right hand side to prevent vehicles from by-passing.

Photo 8.JPG-Warning signs.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 9.JPG-Warning signs and rock berms.

Photo 10.JPG-Clinton Creek access road.

Photo 11.JPG-Hudgeon Lake

Photo 12.JPG-Outlet of Hudgeon Lake.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 13.JPG-Hudgeon Lake.

Photo 14.JPG-Hudgeon Lake outlet.

Photo 15.JPG-Hudgeon Lake outlet. Location of proposed log boom.

Photo 16.JPG-Hudgeon Lake.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

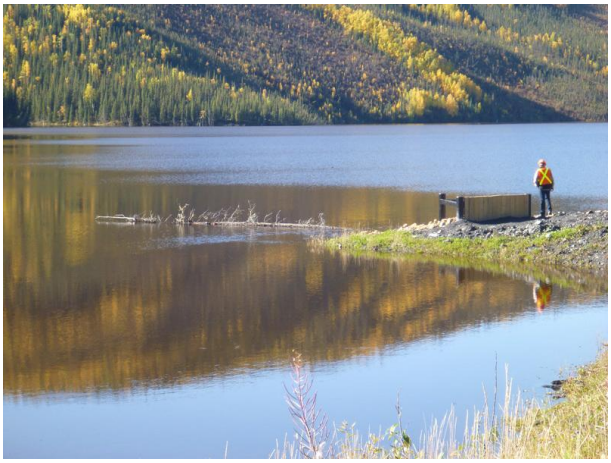


Photo 17.JPG-Hudgeon Lake.

Photo 18.JPG-Outlet of Hudgeon Lake.

Photo 19.JPG-Outlet of Hudgeon Lake.

Photo 20.JPG-Log boom anchor.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 21.JPG-DS #1

Photo 22.JPG-Looking downstream from DS#1.

Photo 23.JPG-DS #1. Photo taken from north side.

Photo 24.JPG-Stabilized channel at DS #1 - photo taken from north side.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 25.JPG-Hudgeon Lake outlet - DS #1.

Photo 26.JPG-Gabion basket drop structure.

Photo 27.JPG-Photo looking upstream to Hudgeon Lake outlet.

Photo 28.JPG-DS #2

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 29.JPG-DS #2

Photo 30.JPG-Gabion basket

Photo 31.JPG-DS #3

Photo 32.JPG-DS #3

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 33.JPG-Photo looking downstream to DS #4.

Photo 34.JPG-Photo looking downstream to DS #4.

Photo 35.JPG-Photo looking upstream to DS #2.

Photo 36.JPG-DS #3.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 37.JPG-Looking towards DS #4.

Photo 38.JPG-Stabilized channel upstream of DS #4

Photo 39.JPG-Waste Rock pile adjacent to DS #4.

Photo 40.JPG-DS #4

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 41.JPG-DS #4

Photo 42.JPG-Erosion downstream of DS #4. Note pooling water and flow directed to north bank.

Photo 43.JPG-DS #4. Erosion and failure of gabion baskets.

Photo 44.JPG-Failed gabion baskets and erosion on north side of DS #4.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 45.JPG-Gabion basket and boulders directly downstream of DS #4.

Photo 46.JPG-Clinton Creek channel directly downstream of DS #4.

Photo 47.JPG-Waste rock pile adjacent to DS #4.

Photo 48.JPG-Gabion baskets on south side of DS #4.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 49.JPG-Flow over DS #4.

Photo 50.JPG-Channel downstream of DS #4.

Photo 51.JPG-Boulder and erosion of south side of DS #4.

Photo 52.JPG-Erosion on south side of DS #4.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 53.JPG-Clinton Creek channel.

Photo 54.JPG-Outlet of DS #4.

Photo 55.JPG-Outlet of DS #4.

Photo 56.JPG-Outlet of DS #4.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 57.JPG-Boulder on failed gabion baskets.

Photo 58.JPG-Bank erosion on north side of Clinton Creek, lower end of DS #4.

Photo 59.JPG-Bank erosion on north side of Clinton Creek, lower end of DS #4.

Photo 60.JPG-Lower portion of Clinton Creek channel.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 61.JPG-Lower portion of Clinton Creek channel.

Photo 62.JPG-North bank of Clinton Creek channel downstream of DS #4.

Photo 63.JPG-North bank of Clinton Creek channel downstream of DS #4.

Photo 64.JPG-Clinton Creek.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 65.JPG-Tension cracks on Clinton Creek access road.

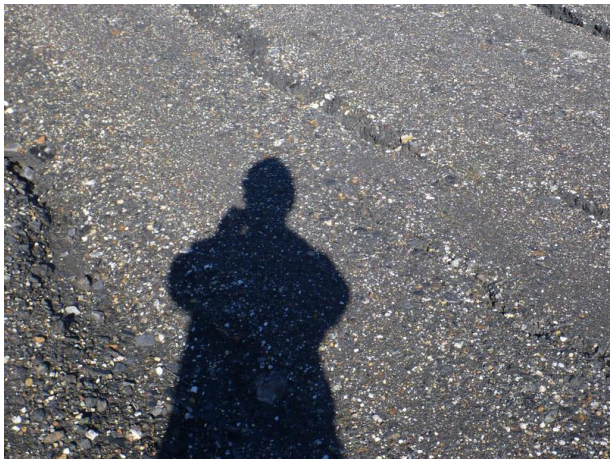


Photo 66.JPG-Tension cracks on Clinton Creek access road.

Photo 67.JPG-Tension cracks in Clinton Creek access road.

Photo 68.JPG-Tension cracks and road failure - Clinton Creek access road.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 69.JPG-Tension cracks and road failure - Clinton Creek access road.

Photo 70.JPG-Tension cracks and road failure - Clinton Creek access road.

Photo 71.JPG-Tension cracks and road failure - Clinton Creek access road.

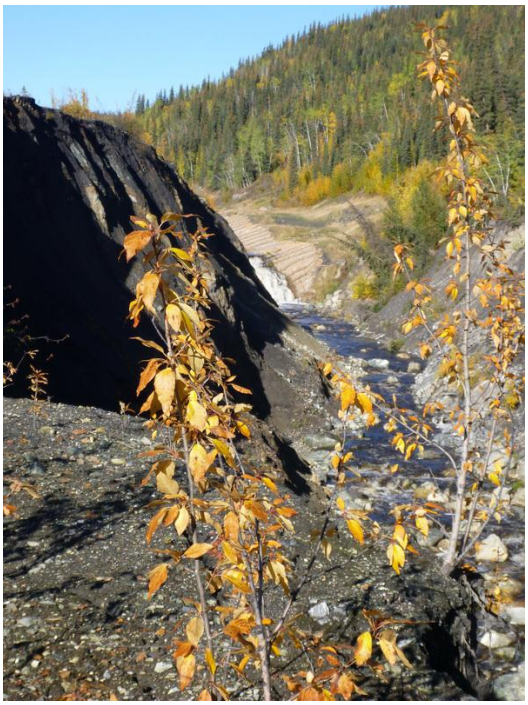


Photo 72.JPG-Failing embankment at location of tension cracks.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 73.JPG-Failing embankment at location of tension cracks.

Photo 74.JPG-Road closed at location of tension cracks.

Photo 75.JPG-Clinton Creek waste rock pile.

Photo 76.JPG-Clinton Creek waste rock pile

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 77.JPG-Surface water runoff along waste rock pile.

Photo 78.JPG-Drainage gully down Clinton Creek waste rock pile.

Photo 79.JPG-Exposed culvert and drainage gully on Clinton Creek waste rock pile.

Photo 80.JPG-Erosion gully on upper road of Clinton Creek waste rock pile.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 81.JPG-Erosion gully on upper road of Clinton Creek waste rock pile.

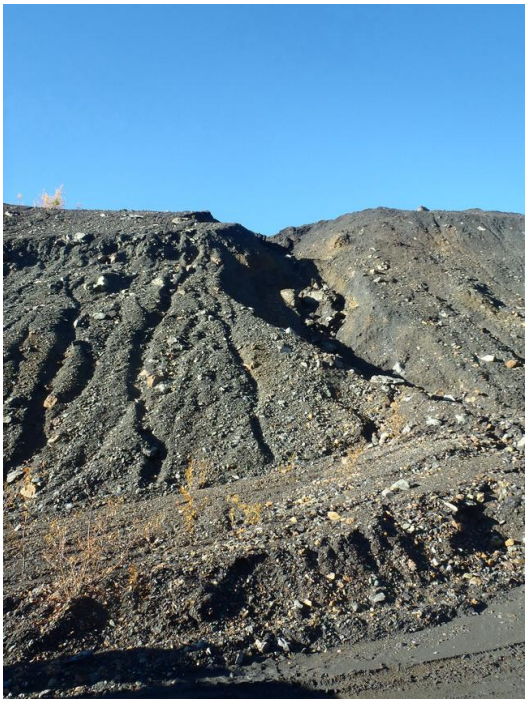


Photo 82.JPG-Erosion Gully. Photo taken from lower access road.

Photo 83.JPG-Erosion Gully. Photo taken from lower access road.

Photo 84.JPG-Clinton Creek access road.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 85.JPG-Access Road.

Photo 86.JPG-Warning sign.

Photo 87.JPG-Access road on waste rock pile.

Photo 88.JPG-Clinton Creek access road.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 89.JPG-Waste rock pile.

Photo 90.JPG-Mining equipment.

Photo 91.JPG-Wolverine Creek tailings pile.

Photo 92.JPG-Wolverine Creek tailings pile.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 93.JPG-Wolverine Creek tailings pile.

Photo 94.JPG-Wolverine Creek tailings piles.

Photo 95.JPG-Wolverine Creek tailings pile.

Photo 96.JPG-Wolverine Creek tailings pile.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 97.JPG-Tension cracks on upper portion of Wolverine Creek tailings pile.

Photo 98.JPG-Tension cracks on upper portion of Wolverine Creek tailings pile.

Photo 99.JPG-Wolverine Creek tailings pile.

Photo 100.JPG-Wolverine Creek tailings pile.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 101.JPG-Wolverine Creek tailings piles.

Photo 102.JPG-Tension cracks on upper area of Wolverine Creek tailings pile.

Photo 103.JPG-Tension cracks on upper area of Wolverine Creek tailings pile.

Photo 104.JPG-Upper are of Wolverine Creek tailings pile.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 105.JPG-Upper are of Wolverine Creek tailings pile.

Photo 106.JPG-Lower slope of south lobe tailings pile.

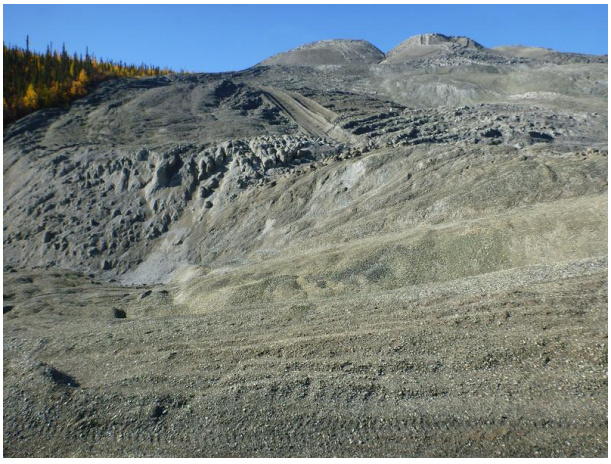


Photo 107.JPG-Wolverine Creek south lobe tailings pile.

Photo 108.JPG-Mine tailings.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 109.JPG-Mine tailings.

Photo 110.JPG-Mine tailings.

Photo 111.JPG-Mine tailings.

Photo 112.JPG-Mine tailings.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 113.JPG-Mine tailings.

Photo 114.JPG-Mine tailings with asbestos fibres on surface.

Photo 115.JPG-Mine tailings with asbestos fibres on surface.

Photo 116.JPG-Lower slope of Wolverine Creek tailings pile.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 117.JPG-Lower portion of Wolverine Creek tailings pile.

Photo 118.JPG-Monitoring pin on Wolverine Creek tailings pile.

Photo 119.JPG-Lower slope of Wolverine Creek tailings pile.

Photo 120.JPG-Lower slope of Wolverine Creek tailings pile.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 121.JPG-Mid slope area of Wolverine Creek tailings pile.

Photo 122.JPG-Mid slope area of Wolverine Creek tailings pile.

Photo 123.JPG-Lower slope of Wolverine Creek tailings pile.

Photo 124.JPG-Wolverine Creek tailings pile.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 125.JPG-Wolverine Creek.

Photo 126.JPG-Wolverine Creek and pond adjacent to tailings piles.

Photo 127.JPG-Wolverine Creek.

Photo 128.JPG-Old beaver dam on Wolverine Creek.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 129.JPG-Wolverine Creek and slope failure of tailings adjacent to creek.

Photo 130.JPG-Wolverine Creek

Photo 131.JPG-Tailings pile access road.

Photo 132.JPG-Tailings pile access road.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 133.JPG-Tailings pile access road.

Photo 134.JPG-Tailings pile access road.

Photo 135.JPG-Tailings pile access road.

Photo 136.JPG-Wolverine Creek stream crossing location.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 137.JPG-Slope failure on Wolverine Creek access road.

Photo 138.JPG-Slope failure on Wolverine Creek access road.

Photo 139.JPG-Wolverine Creek access road.

Photo 140.JPG-Wolverine Creek access road.

Clinton Creek
Site Photos - Recorded Sept 12, 2013

Photo 141.JPG-Slide along access road.

Photo 142.JPG-Leaning tree on Wolverine Creel tailings pile access road.

Photo 143.JPG-Gully on Wolverine Creek tailings pile access road.

Photo 144.JPG-Slide along access road