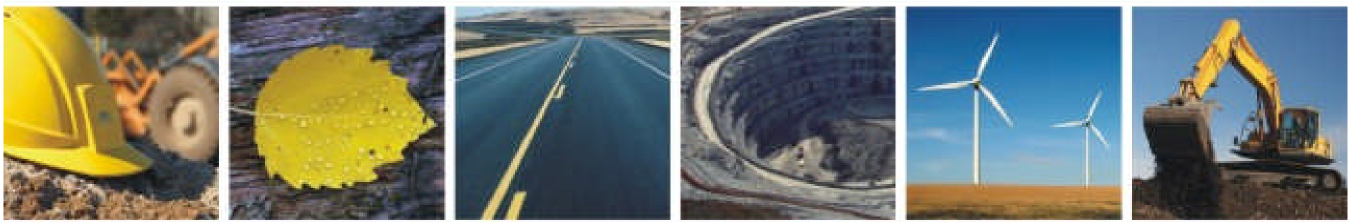
MINTO EXPLORATIONS LTD.

STAGE 1 WASTE MANAGEMENT PLAN AREA 2 OPEN PIT DEVELOPMENT MINTO MINE, YT



REPORT

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ISSUED FOR REVIEW
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EBA, A Tetra Tech Company
Calcite Business Centre, Unit 6, 151 Industrial Road
Whitehorse, YT Y1A 2V3 CANADA
p. 867.668.3068 f. 867.668.4349

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1.0 INTRODUCTION

Minto Explorations Ltd. (Minto) is proposing to expand its current operations at the Minto Mine site, located north of Carmacks, YT. This expansion includes development of the Area 2 Open Pit and associated waste management activities. Minto requested that EBA, a Tetra Tech Company (EBA) prepare a Stage 1 Waste Management Plan for the General Site Plan. Three areas shown on the Drawing WMP-01 are designated for waste disposal:

- the Mill Valley Fill Expansion;
- the Southwest Waste Dump Expansion; and
- Area 1 Open Pit South Wall Buttress.

Three additional dump areas are currently being considered by Minto for stockpiling reclamation materials. The locations of the conceptual dumps are shown as clouded areas on Drawing WMP-01.

This report summarizes the planned overburden waste management activities and associated components that will be required for Area 2 Open Pit.

2.0 PROPERTY DESCRIPTION AND BACKGROUND INFORMATION

2.1 General Location and Access

The Minto Mine is located in the Whitehorse Mining District in the central Yukon Territory. The property is located approximately 240 km northwest of Whitehorse, the Yukon capital. The project is centered on NAD 83, UTM Zone 8, coordinates 6945147N, 385443E. The mine is in commercial production, and has a Type B Water License: MS04-227.

The Minto Mine is accessed either by land via the North Klondike Highway and Minto Access Road, or by air. Access by land requires crossing the Yukon River, which is completed by barge in the summer and ice road in the winter. There are periods of time in the spring and fall that land access is not possible, as neither the ice road nor the barge is available for use.

2.2 Topography and Vegetation

The Minto Mine property lies in the Dawson Range, which is part of the Klondike Plateau, an uplifted surface that has been dissected by erosion. Topography in the area consists of rounded rolling hills and ridges with relief of up to 600 m (2,000 ft). The highest elevation on the property is 975 m (3,200 ft) above sea level, compared to elevations of 460 m (1,500 ft) along the Yukon River. The Minto Mine property consists of rolling hills, and slopes are relatively gentle. The hills and ridges often have spines of bedrock outcrops; elsewhere bedrock exposures are limited in the area.

Overburden is colluvium primarily made up of sand derived from decomposition of the largely granitic bedrock in the area and is generally thin but pervasive. In south-facing locations, this material provides a well-drained, sound foundation for buildings and roads. Vegetation in the area is sub-Arctic boreal forest made up of largely spruce evergreen trees and poplar deciduous trees. The trees prefer well-drained south-facing slopes and may be sparse on the north-facing slopes where moss and alder or 'buck brush' prevails. The area has been impacted by several wild fires, the latest of which was in 1995. Many of the burnt trees have blown down and natural regrowth of pine and alder is occurring over much of the property.

2.3 Permafrost

The mine is in a location of widespread discontinuous permafrost. In general, south facing slopes at lower elevations are unfrozen and north facing slopes contain permafrost. The Minto Creek valley bottom contains permafrost on both the north and south sides, particularly in areas with insulating moss cover. Measured ground temperatures are generally warmer than -2 degrees C, with ground ice contents ranging from non-visible-bonded (Nbn) to visible stratified ice (Vs) up to 20% by volume. The thick lacustrine clay/silt may locally contain Vs up to 60% by volume, and is frozen to depths in excess of 50 m below ground surface. Massive ice up to 4 m thick has been encountered in some boreholes.

2.4 Geology

The Minto Project is found in the eastern margin of the Yukon-Tanana Composite Terrain, which is comprised of several metamorphic assemblages and batholiths. It is broadly contemporaneous with the Omineca Belt in nearby British Columbia.

The Minto Property and surrounding area are underlain by plutonic rocks of the Granite Mountain Batholith (Early Mesozoic Age). They vary in composition from quartz diorite and granodiorite to quartz monzonite. The batholith is unconformably overlain by clastic sedimentary rocks of the Tantalus Formation and andesitic to basaltic volcanic rocks of the Carmacks Group, both are assigned a Late Cretaceous age. Immediately flanking the Granite Mountain Batholith, to the east, is a package of undated mafic volcanic rocks, outcropping on the shores of the Yukon River. The structural relationship between the batholith and the undated mafic volcanics is poorly understood because the contact zone is not exposed.

Lithologically the Property is underlain by predominantly igneous rocks of granodiorite composition. In the few available outcrops and drill core, two basic units are distinguished, an equigranular phase and a potassic feldspar megacrystic phase. The equigranular phase is relatively leucocratic, grey to whitish in colour and uniform in texture. The potassic-feldspar megacrystic phase can be slightly darker, may contain more biotite and hornblende, and may be light pink in color. In surface exposures, the latter exhibits a very weak alignment of the feldspar megacrysts, defining an interpreted magmatic foliation.

Other rock types, albeit volumetrically insignificant include dykes of simple quartz-feldspar pegmatite, aplite and an aphanitic textured intermediate composition rock. Bodies of all of these units are relatively thin and rarely exceed one-metre core intersections. These dykes are relatively late, generally postdating the peak ductile deformation event; however, some pegmatite and aplite bodies observed in a rock cut located north of the mill complex are openly folded. Conglomerate and volcanic flows have been logged in drill core by past operators but have not been confirmed by the authors as the drill core from previous campaigns was largely destroyed in forest fires and no new drilling has intersected such rocks.

2.5 Climate

The climate in the Minto region is subarctic continental characterized by long, cold winters and short, cool summers. The area experiences moderate precipitation in the form of rain and snow and a large range of temperatures on a yearly basis with a mean annual temperature below 0°C.

2.5.1 Temperature

The mean annual temperature in this region is -1.9°C. The summer period, between late-May and early-September, is characterized by temperatures that range from 10°C to 20°C. The winter period, between October and March, is characterized by a much larger day-to-day variation in air temperatures, ranging from 0°C to -40°C, although typical winter temperatures range from -10°C to -30°C. Diurnal variation in air temperatures tends to be less during the winter period than during the summer. The transitions between these seasons are characterized by a quick rise or fall in air temperatures during March/April and mid-September/early-October, respectively.

Based on the data record, air temperatures would be expected to remain above zero throughout the day between June and September, while between October and March; air temperatures would typically remain below zero. The maximum air temperature ever recorded was 30.3°C on July 29, 2009. The minimum air temperature ever recorded was -43.2°C on November 27, 2006 and again on January 8, 2009. Air temperatures in excess of 5°C have been observed in every winter month. Sub-zero temperatures have been recorded every month except July and August.

2.5.2 Wind

Severe rime ice build-up on the anemometer cups has resulted in extended periods of recorded zero or diminished wind speeds during the winter (EBA, 2010). In order to remove any uncertainty in the data, all wind speeds recorded below 0°C were omitted from analysis. As a result, the description of winds at the property excludes the majority of observations occurring November through March and does not provide a complete assessment of winds at the property.

Based only on recorded winds at temperatures above 0°C, winds predominantly blow from two directions: the south (including SSW, S, and SSE), 23.5% of the time and the northwest (including NNW, NW, and WNW), 17.8% of the time. Wind speeds are typically low, exceeding 6 m/s only 5% of the time. The mean annual wind speed is 3.4 m/s. Winds are slightly weaker during the summer months however, because the majority of winter winds have either been omitted due to inaccurate measurement or were not recorded due to rime ice, the degree of difference between summer and winter winds has not yet been fully observed.

The annual mean wind gust speed is 7.1 m/s. The highest recorded instantaneous gust was 23.8 m/s although higher wind gusts have likely occurred during the winter and have not been recorded.

2.5.3 Precipitation

Total annual precipitation recorded at Pelly Ranch and Carmacks between 1955 and 2006 were observed to determine the regional trend over central Yukon during the last half of the 20th century. The results showed a general increase in total annual precipitation over the 51-year period of 1.1 mm/year for Pelly

Ranch and 1.4 mm/year at Carmacks, on average. With 275 mm of mean annual precipitation, this equates to more than a 20% increase. The effects of climate change on precipitation patterns are quite complex as they vary locally. The proximity of the Environment Canada stations to the mine site would allow for reasonable confidence in assuming that the observed trends for Pelly Ranch and Carmacks are also applicable to the Minto site, excluding regional variability of precipitation events due to orographic effects or valley orientations.

2.5.4 Solar Radiation

As would be expected at a latitude near 62 °N, a strong seasonal pattern is evident, with maximum solar radiation being received near the summer solstice in late June (daily maximums on the order of 750 W/m^2), and values just slightly above zero around the winter solstice when the site experiences only about 3 hours of direct sunlight. Large fluctuations from the general trend during the summer are due to cloud cover.

2.6 Status

Minto has been in production since June 2007. Development of the Area 1 Open Pit commenced in April 2006, and currently operates on an ongoing basis with either ore being stockpiled for processing and/or waste materials being disposed of at one of the waste dumps. There are currently four waste dumps permitted at the Minto Mine – the Main Waste Dump (MWD), the Reclamation Overburden Dump (ROD), the Ice-Rich Overburden Dump (IROD), and the Southwest Waste Dump (SWD). The current waste dumps are used to store the following materials:

- MWD - used to store both non ice-rich overburden and waste rock materials;
- ROD - used to store non-ice rich overburden for possible use in future reclamation;
- IROD – used to store ice-rich overburden; and
- SWD – used to store non-ice rich overburden and waste rock materials.

To facilitate future operations and reclamation, Minto is proposing the design and construction of Phase IV Waste Management Plan Components (WMP) to store mined overburden and waste rock.

2.7 History

The following historical information was gathered from the Capstone Mining Corp.[1] website.

The Minto project has a history of exploration and development dating back to the early 1970's. In the mid-1990's, a feasibility study was completed by prior owners, permits obtained and construction of an open pit mine commenced. During that period, the mill foundations were poured, the ball and SAG mills were purchased and moved to site, a permanent camp constructed and the site connected to a permitted Yukon River crossing via a 29km production standard access road. Construction was suspended in 1997 after expenditures of approximately $10 million due to depressed copper prices.

[1] http://capstonemining.com/s/Minto.asp?ReportID=343895

Capstone's predecessor, Sherwood Copper, acquired the Minto Project in June 2005 and, in just two years from acquisition, re-drilled the deposit to modern reserve standards, completed a bankable feasibility study, arranged project financing, and built a $100 million open pit copper-gold mine. Commercial production commenced on October 1, 2007. The mill was expanded from its initial design throughput of 1,563 tonnes per day ("tpd") to 2,400 tpd in March 2008. The mill throughput was again increased to a design level of 3,200 tpd during the latter part of 2008, and the mill achieved the expanded design throughput in March of 2009.

3.0 OBJECTIVES OF WASTE MANAGEMENT PLAN

The objective of the Stage 1 Waste Management Plan (Stage 1 WMP) is to provide guidelines for disposal of waste material. Slope stability and surface water drainage are appraised in this Stage 1 WMP. Mined Rock and Overburden Piles Investigation and Design Manual Interim Guidelines (British Columbia Mine Waste Rock Pile Research Committee, 1991) and generally accepted engineering design practice were adopted as the design guidelines.

4.0 WASTE GENERATION AND DISPOSAL SCHEDULE

4.1 Types of Waste

During mining operations at the Minto Mine site, three types of solid waste are generated: overburden (including ice-rich and non ice-rich overburden), waste rock, and tailings. Overburden includes all unconsolidated soil above the bedrock. Waste rock consists of rock that is mined from the pit that has less than the cut-off percent of copper. At the Minto Mine the current economic cut-off is 0.64 % copper; therefore, rock that contains greater than 0.64 % copper is considered ore, and rock that contains less than 0.64 % copper is considered waste. The waste rock is further classified by %Cu (grade bin). Sulphide mineralization within the waste materials at the Minto Mine is associated with copper sulphide mineralization based on a geochemistry study by SRK. As a result, any potentially acid generating waste rock will be associated with materials containing greater than 0.10% copper. Waste rock of greater than 0.10% copper will have to be disposed at separate disposal areas in order to segregate these materials. Tailings consist of material left from processed ore. Tailings management is beyond the scope of this document.

This Stage 1 WMP addresses issues related to overburden and waste rock material disposal.

4.2 Waste Segregation Protocol

Minto waste segregation protocol is based on waste materials characteristics. Materials characterization allows mining companies to understand the different ore and waste material types present at a site and develop special handling plans based on any identified environmental concerns associated with each rock type. Minto tests all of its development rock in advance of the materials being removed from the active mining face. The waste rocks are characterized based on the acid rock drainage potential and the contained copper content.

Materials characteristics of waste rock and overburden and handling plans are briefly described below:

1. Waste Rock

The use of copper content for the development of the waste rock classification system is supported by the association of increased abundance of copper sulphide mineralization with increasing mineralization of the deposit. A review of the geologic database indicates that over 90% of the total contained metals within the geological materials at this site occur within materials with a copper content of greater than 0.1%. It should be noted that the lack of a materials characterization and handling program had resulted in potential metal leaching material being placed into the waste rock dumps which have a larger surface area.

Material handling plans are then used to instruct the mining operation crews as to where the different rock classes may be placed. The current Minto waste materials handling procedure is summarized as follows:

- Drill cuttings from every blasthole are sampled, bagged, tagged, and sent for to the Assay Lab prior to blasting;
- A representative sample of the cuttings is assayed using atomic adsorption (AA) to determine the metal content. The Minto Assay Lab, under supervision of the Chief Assay, has the ability to conduct copper, oxide, and silver assays;
- The assay results are sent to the Geology Department for interpretation;
- The Geology Department plots the results spatially, then draws polygons enclosing holes with similar assay results to identify regions of similar average grade;
- After blasting, the aforementioned polygons are laid out in the field by the Mine Surveyor working with the Production Geologist in order to inform Mine Operations of where the materials within a polygon are to be taken;
- Field layout is done with using stakes and flags of various predefined colors;
- Ore and waste are loaded out and dispatched to the appropriate locations based on the aforementioned flags;
- These locations are communicated to foremen and operators by the Production Geologist.

2. Overburden

Overburden segregation is required for mine sites where there is a need to ensure that waste materials generated by stripping and other development activities are preserved for future reclamation activities. The implementation of source control at the Minto Mine will require a large volume of fine-grained materials for engineered waste cover systems. The reclamation overburden excavated from existing operations at the Minto mine have primarily been a silty sand with some amounts of fine grained materials. Segregation of overburden has involved disposal of ice-rich material into a designated dump to minimize potential stability issues.

The results of field investigations conducted in the Area 2 pit footprint show that approximately 50% of the overburden (approximately 1.89 Mm3) to be stripped during Phase IV will be fine grained (silty or clayey) materials which will be suitable for cover construction. Overburden stripped as part of Area 2 Stage 1 will be hauled to the Reclamation Overburden Dump (ROD) and placed into clearly defined sections of the dump based on the observations of the characteristics of materials observed in the digging face.

Supervision of the overburden stripping will be required in order to achieve the required material segregation.

Samples of the material being shipped to the fine grained portion of the ROD will be collected and submitted for grain-size analysis to better characterize the materials for their use in cover construction. The frequency of sampling should be sufficient to provide information on major sources of fine-grained materials placed into this portion of the dump. It is anticipated that the total number of samples required to accomplish this will be from two to three hundred depending on the actual volume of fine-grained materials encountered during stripping.

4.3 Waste Volumes

Minto provided the Area 2 and 118 Release Schedule on April 14, 2011. Based on this information, the expected volumes of waste materials from the Stage 1 mining (the period from April 1, 2011 to the end of August 2012) are:

3. Overburden waste, including both overburden and ice rich overburden from the Area 2 Open Pit: approximately 1.3 million bank cubic meters
4. Waste rock from the Area 2 Open Pit during Stage 1 mining: approximately 4.4 million bank cubic meters. Some of the waste may be milled if the ore cut -off grade is lowered in future.

4.4 Waste Disposal Schedule

All of the waste will be disposed in the following dump sites:

- The Mill Valley Fill Expansion;
- The Southwest Waste Dump Expansion - Stages 1 and 2;
- Area 1 Southwest Pit Wall Buttress.

Dump and structure footprints can be seen on Drawing WMP-01. According to the current dump schedule EBA understands the following:

- Waste rock of 0.00 %Cu from Area 1 Open Pit will be disposed in the Mill Valley Fill Expansion area;
- Waste rock of 0.00 %Cu and non ice-rich overburden waste from Stage 1 of the Area 2 Open Pit will be disposed in the Mill Valley Fill Expansion area;
- Ice-rich overburden waste from the Area 2 Open Pit stripping will be disposed in the existing Ice-rich Overburden Dump;
- Non ice-rich overburden waste from the Area 2 Open Pit will be disposed in the Overburden Dump of the Southwest Waste Dump Expansion;
- Grade Bin 0.10 to 0.64 %Cu waste rock from the Area 2 Open Pit will be temporarily disposed in the Southwest Waste Dump Expansion Stage 2. This material will be relocated to the Area 1 Open Pit to be disposed sub-aqueously or fed through the mill as low grade ore prior to closure;

- The three clouded dump areas on Drawing WMP-01 are considered to be potential alternative dump areas for reclamation materials.

5.0 WASTE MANAGEMENT PLAN

5.1 General Design Criteria

In order to determine the level of design effort required, the waste dump sites were evaluated and assigned a stability rating in accordance with 1991 BC Mine and Waste Rock Pile Research Committee guidelines. Dump site ratings and recommended level of design effort are presented in Table 1 below.

Table 1: Dump Stability Classes and Recommended Level of Effort*

Waste Disposal Site	Range of Dump Rating	Dump Stability Class	Failure Hazard	Recommended Level of Investigation, Design and Construction
Mill Valley Fill Expansion	<300	I	Negligible	▪ Basic site reconnaissance, baseline documentation ▪ Minimal lab testing ▪ Routine check of stability, possibly using charts ▪ Minimal restrictions on construction ▪ Visual monitoring only
Southwest Waste Dump Expansion	300 - 600	II	Low	▪ Thorough site investigation ▪ Test pits, sampling may be required ▪ Limited lab index testing ▪ Stability may or may not influence design ▪ Basic stability analysis required ▪ Limited restrictions on construction ▪ Routine visual and instrument monitoring

* Table 1 is adapted from Table 5.2 in the Mined Rock and Overburden Piles Investigation and Design Manual Interim Guidelines, 1991, prepared by the British Columbia Mine Waste Rock Pile Research Committee.

Short-term, long-term, and seismic slope stability was considered in design of side slopes and foundations for the dump sites. The minimum factors of safety suggested by 1991 BC Mine and Waste Rock Pile Research Committee guidelines were adopted, and are presented in Table 2 below.

Table 2: Minimum Factor of Safety for Slope Stability

Stability Condition	Suggested Minimum Factor of Safety
Stability of Surface	
Short Term (during construction)	1.0
Long-Term (reclamation – abandonment)	1.1
Deep-Seated Stability	
Short Term (static)	1.1 – 1.3
Long-Term (static)	1.3
Seismic	1.0

General comments on the closure plan will be provided for each dump site. Detailed closure plans for each dump site are addressed in the Decommissioning and Reclamation Plan report. The closure plan for the waste disposal areas aims to return the dump sites to a state similar to surrounding lands, and to ensure long term physical stability (slope stability) and chemical stability (negligible metal transportation) of the waste. The following are considered in the closure plan:

1. Terraced slopes of the waste disposal sites will be reshaped to match with the surrounding ground topography at closure.
2. Waste rock of Grade Bin 0.10 to 0.64 %Cu will be re-deposited into the flooded Area 1 pit for sub-aqueous cover at closure. Some of the material may be milled.
3. All of the other types of waste rock will be covered by a soil cover to minimize surface water infiltration into the waste and to encourage growth of vegetation.
4. Upgrade the surface drainage system within the waste dump areas to have minimal impact on the surrounding natural drainage system.

Design of site grading and surface drainage system for the dump sites is based on operational water management plan prepared by Access Consulting Group dated July 2010 and conceptual closure water management plan prepared by EBA dated August 2010.

The design criteria are summarized in Table 3:

Table 3: General Design Criteria for Waste Management Plan

Item	Design Criteria
1.0 General	
Waste Generation	▪ Overburden ▪ Waste Rock (0.00 - 0.64%Cu)
Climate	▪ Mean annual precipitation = 275 mm ▪ Mean annual temperature = -1.9°C ▪ Design storm event - a 100 year return period
Seismic Design	▪ Peak ground acceleration (PGA) = 0.055g at an annual probability of 1 in 475 years
Dump Stability Class	▪ Class I - Mill Valley Fill Expansion ▪ Class II - Southwest Waste Dump Expansion
Fill Slope Stability Factor of Safety (F.S.)	▪ Surface Failure = short-term F.S. = 1.0 long-term F.S. = 1.1 ▪ Deep-seated Failure = short-term F.S. = 1.1 long-term F.S. = 1.3 seismic F.S. = 1.0
2.0 Waste Disposal Sites	
Design Volume	▪ Mill Valley Fill Expansion = 1.30 mm^3 ▪ Southwest Expansion = 9.22 mm^3 (including overburden and waste rock)
Waste Material	▪ Mill Valley Fill Expansion: Grade Bin 0.00 Waste Rock and/or Overburden ▪ Southwest Expansion: Overburden, Grade Bin 0.00 - 0.10 Waste Rock, and

Table 3: General Design Criteria for Waste Management Plan

Item	Design Criteria
	Grade Bin 0.10 - 0.64 Waste Rock (temporarily)
Topsoil Salvage	▪ Topsoil from site preparation will be stockpiled
3.0 Closure	
General	▪ Reclamation of disturbed areas where possible ▪ Flooded cover for the Area 1 Open Pit where potentially neutral metal leaching waste materials and tailings are placed ▪ Soil cover for the other dump sites ▪ Revegetation of dump site surfaces ▪ Remove all pipe works, sumps and pumps ▪ Decommission and reclaim all non-essential haul roads and diversion ditches

5.2 Mill Valley Fill Expansion

5.2.1 Design Considerations

The Mill Valley Fill (MVF) Expansion consists of two fills: an extension of the existing MVF and an expansion of the existing camp fill pad. The MVF Expansion will be constructed of Grade Bin 0.00 material to reduce the long-term potential for metal leaching. The design volume of the MVF Expansion is approximately 1.5 Mm^3 based on the slope crest elevation of 765 m. The construction of the MVF Expansion is also intended to provide a toe berm to reduce the ground movement occurring in the adjacent Dry Stack Tailings Storage Facility (DSTSF) area located to the south. To expedite the mitigation of the movement within the DSTSF, innocuous waste rock material will be sourced from the Area 2 Open Pit as suitable material becomes available.

Based on the geological conditions at the site, the main geotechnical issues are expected to be:

1. Foundation soil in the MVF Expansion is expected to consist of ice-rich soil. Ground movement due to creep of the ice-rich soil has been evidenced in the DSTSF area.
2. The site forms a portion of the upper Minto Creek Valley. Surface drainage must be adequately addressed in the design to ensure long-term fill slope stability and surface erosion control.

In order to address the above issues a rock toe key and a free draining layer of waste rock directly over the ice-rich soil are incorporated in the waste disposal facility. Detailed design is provided in the following section 5.2.2.

EBA used the following design assumptions in the design of the MVF Expansion:

- Any structures placed on the fill will be temporary and removed prior to closure.
- The waste rock is modeled as a cohesionless soil with a unit weight of 20 kN/m3 and an internal angle of friction of 35°.
- Removal of organic layers and vegetation.

- The existing soils to about 3 m depth are composed of thawed cohesionless soil with a unit weight of 16 kN/m^3 and an internal angle of friction of 27°.
- The existing soils below 3 m depth are composed of frozen cohesionless soil with a unit weight of 18 kN/m^3 and an internal angle of friction of 30° that will behave as a thawed soil in terms of shear resistance.
- A design seismic pseudostatic horizontal acceleration of 0.055g based on an annual probability of 1 in 475 years is used for design.
- Bedrock is 10 m deep at the toe of the expansion.
- The foundation soils will be thawed to about 3 m depth below the fill at the time of placement.

5.2.2 Waste Management Plan

The extent of the MVF Expansion can be seen on Drawing WMP-02, and typical sections and details can be seen on Drawing WMP-03. As mentioned above, the construction of the MVF Expansion is intended to provide a toe berm to reduce the ground movement occurring in the DSTSF area. The design top bench Elevation 765.0 m allows bringing the MVF surface up to Elevation 770.0 m at the toe of the DSTSF, which exceeds the minimum toe berm height (to Elevation 766 m) as determined by ground creep analyses for the DSTSF recently performed by EBA using the commercial program FLAC with a frozen soil constitutive model that accounts for creep displacements. If a higher design elevation (i.e. greater than the design top crest El 765 m) is considered in future, EBA should be contacted for additional engineering analysis. The design of the expansion involves the construction of drainage systems, excavation, and backfill of a toe key with waste rock, construction of water conveyance structures, placement of a drainage blanket, and placement of general waste rock.

Drainage systems for the MVF Expansion will consist of a drainage blanket placed directly beneath the general rock fill to prevent the build up of porewater pressures within the fill and to allow water to continue to flow down the Minto Creek valley. The drainage blanket should be a minimum of 10 m thick and constructed using select waste rock with D_{10} > 6 mm to allow free drainage. Although most of the waste rock is generally considered to be free draining and suitable for use as drain blanket material, this material should meet the gradation as indicated on Drawing WMP-03 and will require approval by the engineer prior to placement on site.

The extent of the toe key is shown on Drawing WMP-04. The toe key will extend a minimum of 10 m below the existing ground or to bedrock, whichever is shallowest. The purpose of the toe key is to provide stability against deep-seated failure into the foundation soils. The toe key will be backfilled with rock fill.

To allow for the collection and conveyance of the water flows observed at the current sampling points W-8 and W-8A water conveyance structures will be constructed at the toe of the MVF. Details of the water conveyance structures are shown on Drawings WMP-04 and 05. The key components of the water conveyance system consist of lining the toe key and a constructed dyke with a geo-synthetic liner, constructing an inverted culvert collection point, and installing an impacted water return line. Waste rock and overburden will be placed by the end-dump method and nominally packed with spreading equipment.

The general fill will not meet the specifications for engineered fill; therefore, only temporary structures can be constructed on the completed surface of the MVF Expansion.

The culvert that crosses the existing access road from the W-13a sampling point may be decommissioned. The water currently reporting to W-13a will be re-directed to a HDPE pipe to be installed along the high side (north) of the existing access road for discharge below the toe key.

The MVF Expansion will be graded to drain water from west to east. A grade of 5 percent should be maintained from the crest of the MVF Expansion to the crest of the existing Mill Valley Fill. This grade follows the grade of the existing access road.

The MVF Expansion will be constructed with two benches at Elevations 745 m and 755 m. The bench slopes will be 26.5° (2H:1V). The stability of the fill slopes was checked using GeoStudio 2007 Version 7.16. Factors of safety calculated for a typical section of slopes are shown on WMP-03.

5.2.3 Closure Plan

At closure, any buildings on the MVF Expansion will be removed. The terrace slopes on the downstream face of the MVF Extension will be re-graded to 4H:1V.

The surface of the general fill will be covered with overburden soil. The finished ground surface will be graded from west to east at approximately 5% percent to allow surface water to drain to the east at closure. The overburden will then be vegetated with local vegetation to reduce the potential for erosion.

The surface drainage system will be upgraded at closure. A west-east trunk drainage channel will be constructed to allow water to flow through the valley. Two additional channel connected to the trunk will be installed to the north and south of the trunk channel: the north channel will convey surface runoff from the north slope of the valley; and the south channel will convey surface runoff from DSTSF. Closure details are provided in the Minto Mine Decommissioning and Reclamation Plan.

5.3 Southwest Waste Dump Expansion

5.3.1 General Description of Waste Disposal

The Southwest Waste Dump Expansion is located immediately to the west of the existing Southwest Waste Dump. The purpose of the Southwest Waste Dump (SWD) Expansion is to provide additional storage area for overburden and waste rock mined from the Area 2 Open Pit.

The current data shows movement in the foundation soils at the toe of the existing dump, and it is assumed that it may be associated with the movement in the south wall of the Area 1 Open Pit. EBA is currently analyzing this movement, and a plan will be created to mitigate the movement. In light of the current assumption, and to not affect the stability of the existing dump site, Minto has elected to locate the expansion areas as far to the west as possible.

Slope movement monitoring will continue after the Area 1 Open Pit South Wall Buttress is constructed and if the noted movement is at an acceptable rate, Minto may elect to place additional waste material inside the permitted SWD along with the SWD Expansion.

The SWD Expansion consists of two stages:

- Stage 1 includes an overburden area (immediately south of the existing Reclamation Overburden Dump) and a waste rock area (the east of the overburden area).
- Stage 2 consists of a waste rock area on the south side of Stage 1 and west of the existing waste rock placement. Grade bin material (0.10 – 0.64 %Cu) will be temporarily disposed in this area.

Stage 1 Overburden Area

The overburden placed in the SWD Expansion Overburden Area will be non ice-rich overburden. It is expected that the overburden comprises approximately 50% of fine grained soil (silty and clayey soils) which will be suitable for soil cover construction and 50% of sandy soil. Thus these two types of soils will be separately disposed.

Ice-rich overburden will be disposed of in the existing Ice-Rich Overburden Dump.

Stage 1 and 2 Waste Rock Areas

The waste rock deposited in the SWD Expansion Stage 1 area will contain less than 0.10 %Cu while grade bin material (0.1 – 0.64%Cu) will be temporarily stockpiled in the SWD Expansion Stage 2 area.

The design volumes of Stage 1 and 2 can be seen in Table 4. As mentioned earlier the volume of Grade Bin material (0.10 – 0.64 %Cu) is dependent on the economic cut-off grade determined going forward and a significant portion of this material may in fact be milled, and is not included in Table 4.

Table 4: SWD Expansion Design Volumes by Stage

Stage	Design Volume (M m^3)
1	4.91 M m^3 (waste rock of less than 0.10 %Cu) + 2.78 M m^3 (overburden)
2	1.56 M m^3 (waste rock of less than 0.10 %Cu)
Total	6.47 M m^3 (waste rock of less than 0.10 %Cu) + 2.78 M m^3 (overburden)

5.3.2 Design Considerations

EBA made the following assumptions during design of the SWD Expansion:

- The waste rock is modeled as a cohesionless soil with a unit weight of 20 kN/m^3 and an internal angle of friction of 35°.
- The foundation soils are composed of cohesionless soil with a unit weight of 19 kN/m^3 and an internal angle of friction of 28°.
- The foundation soils will behave as an unfrozen soil in terms of shear resistance.
- The bedrock surface elevations are shown on Drawing WMP-07.

5.3.3 Waste Management Plan

The plan view of the SWD Expansion is shown on Drawing WMP-06. The SWD Expansion has been designed with 1.5H:1V terrace slopes (benches) with an overall slope of 2H:1V. The bench height is generally 10 m. A typical section can be seen on Drawing WMP-07. The design surface elevations at the crests of the side slopes are shown in Table 5 below.

Table 5: SWD Expansion Design Elevations

Site	Design Surface Elevation at the Crest of Top Bench
Southwest Waste Dump Expansion Stage 1 Waste Rock Area	El. 920.0 m
Southwest Waste Dump Expansion Stage 1 Overburden Area	El. 920.0 m
Southwest Waste Dump Expansion Stage 2 Waste Rock Area	El. 920.5 m

Surface water management will include drainage structures for the overburden area. Surface ditches or swales will be constructed to promote positive drainage of precipitation and run-on water off the SWD Expansion. It is expected that drainage courses will not be required in the waste rock areas as the water should infiltrate the coarse grained waste rock and drain to the natural watercourse to the east of the existing SWD. A grade of 2% for the dump surface will be maintained to allow surface water to drain to the east during the operational life of the mine.

A diversion ditch will be installed along the west (upslope) side of the temporary grade bin dump as shown on Drawing WMP-06 to prevent any surface runoff from entering into the dump. This can reduce the potential of acid rock drainage or metal leaching. Three surface water sampling points as shown on Drawing WMP-06 will be set up along the natural swale to the east of the southwest waste dump to monitor metal concentration of the water in the swale on a semi-annual basis.

The stability of the SWD design was checked using GeoStudio 2007 Version 7.16. The factors of safety calculated for a typical section of slope are shown on Drawing WMP-07.

5.3.4 Closure Plan

It is expected that some of the overburden material will be transported to the other waste disposal areas and closure units for use as surface cover material (growth media). Therefore, the final geometry of the overburden dump area will be subject to change at closure.

At closure, all of Grade Bin Material (0.1 – 0.64 %Cu) temporarily stockpiled in the southwest expansion dump site will be transported to the Area 1 Pit for sub-aqueous disposal or milled as low grade ore. All of the terrace slopes in the SWD Expansion will be re-graded to 2H:1V. The waste rock dump surface will be covered by a soil cover to allow for vegetation growth. The overburden will be vegetated with local vegetation to reduce the potential for erosion. The dump surface will be graded to 2% to allow surface water to drain to the east at closure. The final grading may be achieved by placing and compacting additional waste materials in local depression spots in order to minimize water ponding on the dump surface.

5.4 Area 1 Open Pit South Wall Buttress

5.4.1 Design Considerations

Construction of a new south wall buttress for the Area 1 Open Pit is required to mitigate on-going movement of the south pit wall, which is currently exhibiting creep deformation. Stability analyses for both the pit wall and buttress slope have been recently completed by EBA.

Both waste rock and Grade Bin 0.10 to 0.64 %Cu materials generated from Stage 1 of the Area 2 Open Pit excavation will be used to construct the south wall buttress. Other waste materials, such as overburden, will not be used for the buttress construction.

The majority of the buttress will be submerged within the flooded pit and encapsulated in tails at closure, however, any material above elevation 782 m amsl will remain above the tailings level. Surface water management for the south wall buttress is not required as the waste rock is confined by the pit.

5.4.2 Waste Management Plan

The location of the proposed Area 1 Open Pit south wall buttress can be seen on Drawings WMP-01 and WMP-08. A typical section is presented in Drawing WMP-08. The buttress has been designed with a minimum width of 70 m at the 800 m amsl elevation and will be constructed by end dump method from the 810 m bench. Larger boulders are expected to travel further from the toe of the slope, with smaller particles depositing closer to the slope. The overall slope of the buttress is 35˚ which is the assumed angle of repose for this type of waste rock. Waste material dumped into the buttress should have a minimum angle of internal friction of 35 degrees and a unit weight of 19 kN/m^3.

As mentioned above, both clean, innocuous waste rock and Grade Bin material with >0.10%Cu will be co-disposed in the south wall buttress. Grade Bin material can only be end-dumped into the buttress below an elevation of ~782 m amsl. This will ensure that the vast majority of the Grade Bin material will remain within the flooded portion of the pit at closure. Once the crest of the dump reaches 782 m amsl, all remaining buttress fill material should contain <0.10%Cu. There is the possibility that small, discreet particles of Grade Bin material with >0.10%Cu may hang-up on the pit wall during the end-dumping operation, however, this is considered to be very minimal given the steep angle of the pit wall.

Safe dumping procedures must be established prior to dump operation due to the expected dump height. The following suggestions should be included in the dumping procedures:

- A dump person should be designated. The dump person is responsible for directing all traffic on the dump site.
- A safety berm should be constructed along the crest of the dump point, with the dump person directing vehicles to the dump point.
- The height of the berm should be at least equal to the radius of the largest haul truck wheels.
- Haul truck circulation should be in a clockwise direction at the pit crest to provide drivers with an unobstructed view of the dump crest prior to backing in.

- Dozers should be available at the pit crest to maintain the safety berm and to push material over the edge as required.
- Snow should not be dumped on the dump.
- Visual observation of the dump site conditions including cracking at the crest or on the dump platform, settlement of the crest or dump platform, etc. should be performed by qualified Minto personnel on a daily basis during dumping.

5.4.3 Closure Plan

The Area 1 Open Pit will be flooded with water at closure, with a design pond water level elevation of 786.0 m amsl. It is expected that no re-contouring, re-location, or cover placement within both the flooded or un-flooded portions of the buttress will be required at closure.

5.5 General Recommendations for Site Preparation during Waste Disposal

It is expected that all waste materials will be trucked into the dump sites and unloaded using the end-dump method. Bulldozers may be utilized to spread out the materials for rough grading purposes. The dump sites are to be built up in lifts of approximately 10 m. Rough grading is required for each lift in order to facilitate surface runoff and traffic during construction. A diversion ditch should be created if a natural drainage path is intercepted by the dump sites. Details of diversion drainage ditches are provided in the drawings, and these ditches should be maintained through the mine operation period.

The final lift of waste dump should be spread out and levelled out according to the design grades. This could greatly reduce site preparation efforts required at the closure stage.

In the waste rock dump areas it is desirable to minimize surface water infiltration at mine closure. A good site preparation procedure for the final lift of waste rock prior to placement of the low permeable soil cover can make a great contribution in reducing infiltration rates. This could be achieved by maximizing trafficking on the final lift by the heavy mining equipment during dump construction.

5.6 Reclamation of Overburden Waste

The overburden materials stockpiled in the reclamation overburden dump (ROD) will be used as a source for growth media (soil cover) during reclamation of the closure units as presented in the Minto Decommissioning and Reclamation Plan report. It is expected that the overburden from Area 2 Open Pit area comprises approximately 50% fine-grained soil (silty and clayey) and 50% sandy soil, which will be disposed separately. Direct supervision by qualified personnel is required during the excavation of the overburden to ensure that the overburden materials are separately disposed. Sampling of the overburden soils is needed for laboratory tests and engineering design of the soil covers.

The overburden materials will be excavated and transported to the waste rock dump site at closure. Any overburden remaining in the ROD after closure and reclamation is completed will be resloped and revegetated according to the Minto Decommissioning and Reclamation Plan.

The reclamation overburden at the Minto mine is primarily silty sand. This report has assumed that the soil cover will be approximately 0.5 m as indicated in Minto Mine Expansion – Phase IV Decommissioning and Reclamation Plan – Revision 3. The design soil cover thickness will be further developed using grain-size information of these materials and operational trials to be conducted during Phase IV.

5.7 Monitoring Program

The current site monitoring program includes both slope stability and water quality monitoring. The slope stability monitoring is focused on the south wall of Area 1 Open Pit, DSTSF, and the Southwest Waste Dump. The water quality monitoring is performed at various water sampling points throughout the site. The current monitoring program is expected to continue through the operational life of the mine.

Additional visual monitoring of stability of the side slopes on all dump sites should be incorporated in the above mentioned monitoring program, and should be performed on a regular basis. The visual slope inspection schedule is expected to be dictated by future waste disposal schedule, and should be further discussed with Minto at a later time.

Maintenance or termination of the monitoring program in post-closure will be decided at closure.

6.0 CLOSURE

We trust this proposal/report meets your present requirements. Should you have any questions or comments, please contact the undersigned at your convenience.

EBA, A Tetra Tech Company

ISSUED FOR REVIEW

Larry Deng, M.Sc., P.Eng.
Geotechnical Engineer
Engineering Practice
Direct Line: 250.862.3026 x241
ldeng@eba.ca

ISSUED FOR REVIEW

Scott Martin, P.Eng.
Project Director
Engineering Practice
Direct Line: 250.862.3026 x260
smartin@eba.ca

ISSUED FOR REVIEW

Reviewed by:
Brian Cutts, P.Eng.
Senior Geotechnical Engineer
Engineering Practice
Direct Line: 250.505.4467
bcutts@eba.ca

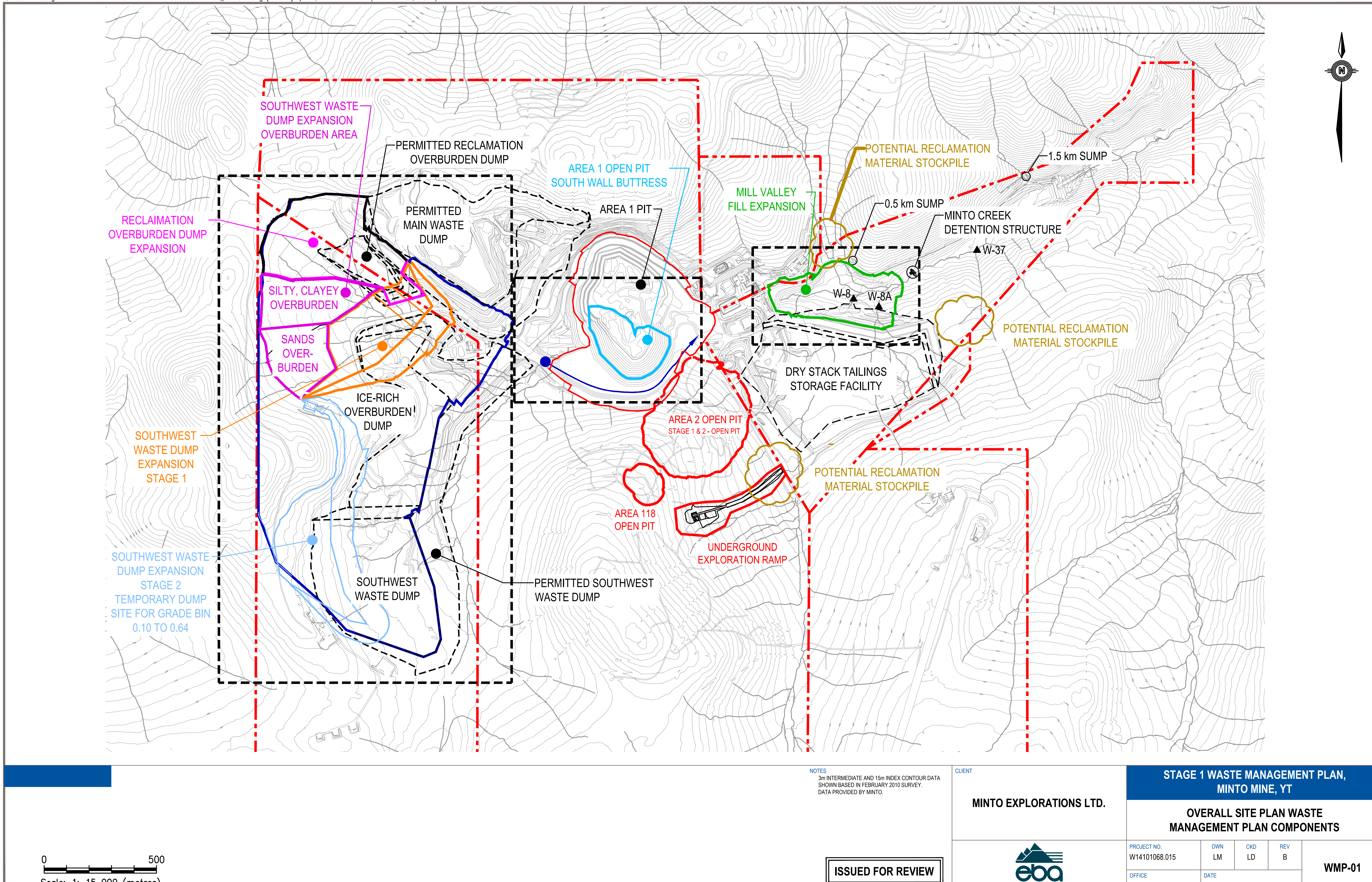
ISSUED FOR REVIEW

Reviewed by:
Richard Trimble, M.Sc., P.Eng.
Principal Consultant
Arctic Engineering
Direct Line: 867.668.2071 x222
rtrimble@eba.ca

/bi

FIGURES

Q:\Kelowna\Drafting\W141\W14101068 - Minto\KELOWNA\W14101068.015 WMP 01_JAN20111.dwg [WMP-01] April 18, 2011 - 11:43:24 am (BY: MAJETICH, LAURA)



NOTES
3m INTERMEDIATE AND 15m INDEX CONTOUR DATA SHOWN BASED IN FEBRUARY 2010 SURVEY. DATA PROVIDED BY MINTO.

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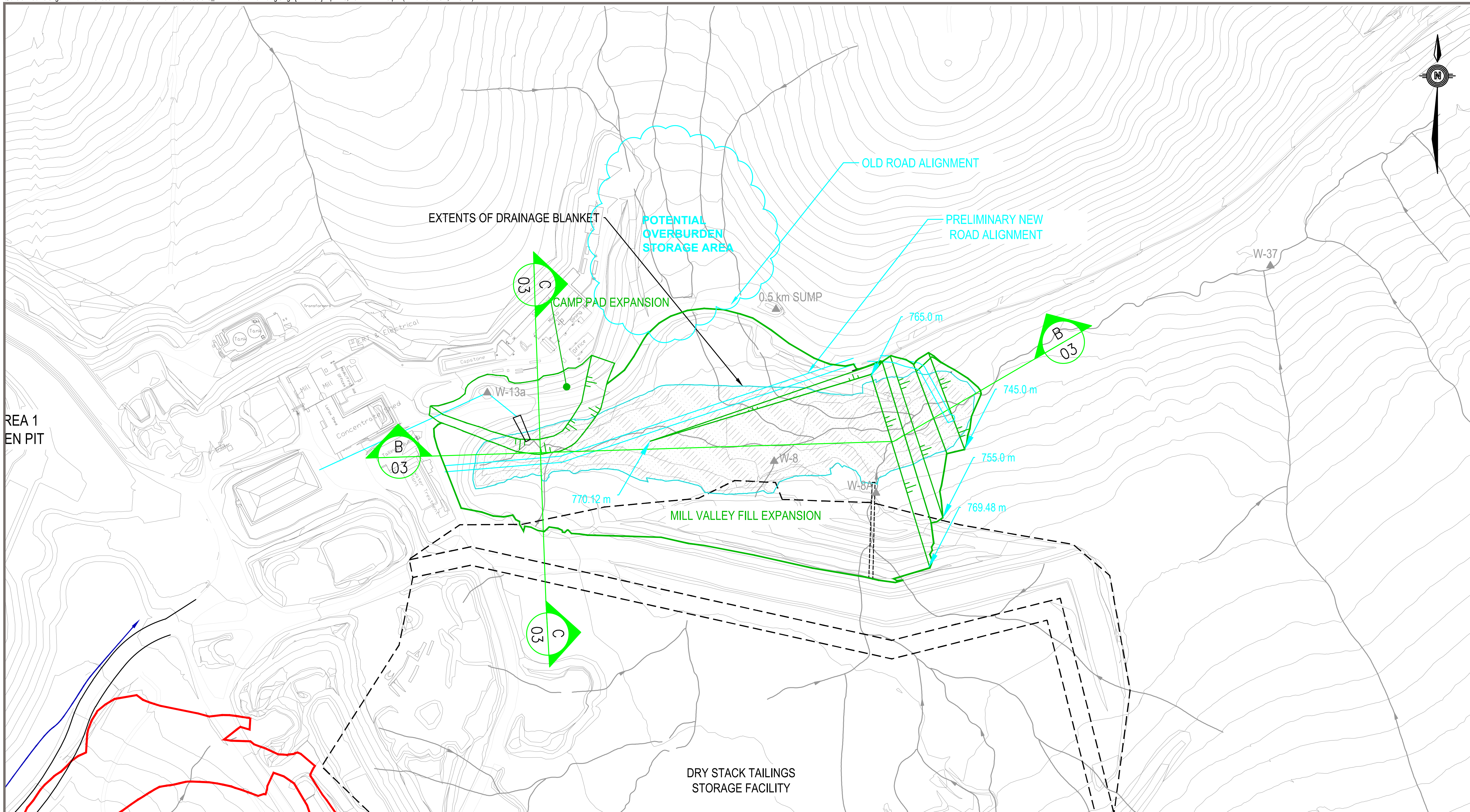
STAGE 1 WASTE MANAGEMENT PLAN, MINTO MINE, YT

OVERALL SITE PLAN WASTE MANAGEMENT PLAN COMPONENTS

PROJECT NO.	DWN	CKD	REV	
W14101068.015	LM	LD	B	WMP-01
OFFICE	DATE			
EBA-KELOWNA	April 15, 2011			



LEGEND

- MILL VALLEY FILL EXPANSION OUTLINE
- IMPACTED WATER COLLECTION AND RETURN LINE
- FRESH WATER DIVERSION PIPE LINE
- RECLAIMED WATER PIPE LIN E

0 200
Scale: 1: 4 000 (metres)

NOTES

1) IF HIGHER DESIGN ELEVATION FOR MILL VALLEY FILL EXPANSION IS CONSIDERED IN THE FUTURE EBA SHOULD BE CONTACTED TO CONDUCT ADDITIONAL ANALYSIS.
2) 3 m INTERMEDIATE AND 15 m INDEX CONTOUR DATA SHOWN BASED ON FEBRUARY 2010 SURVEY DATA PROVIDED BY MINTO.

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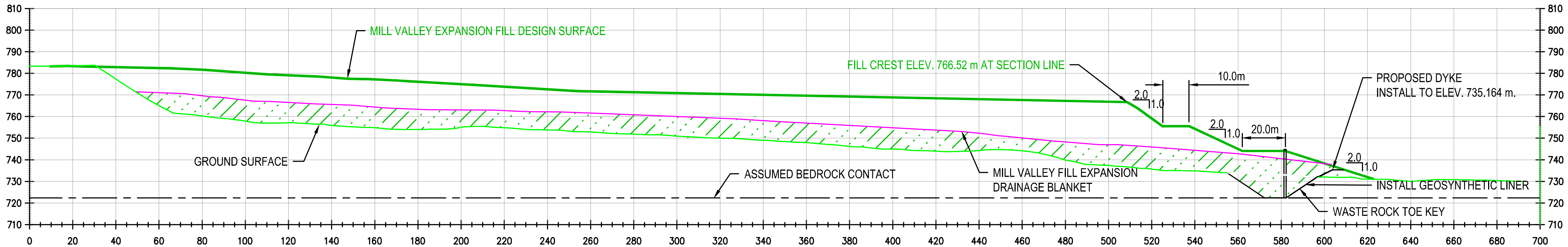
STAGE 1 WASTE MANAGEMENT PLAN, MINTO MINE, YT

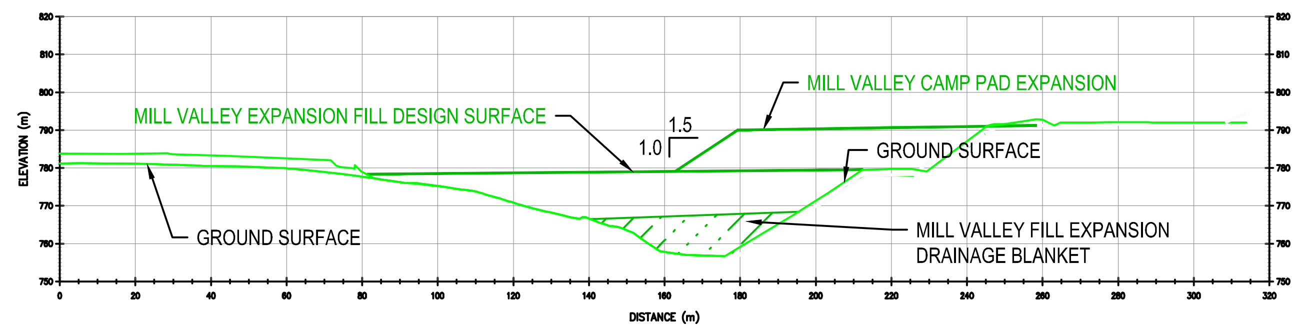
SITE PLAN - MILL VALLEY FILL EXPANSION

PROJECT NO.	DWN	CKD	REV	
W14101068.015	LM	LD	B	WMP-02
OFFICE	DATE			
EBA-KELOWNA	April 15, 2011			



B
02

Slope Stability		
Failure Type	Factor of Safety	
	Criteria	Design
Shallow	1.0	1.4
Deep Seated (Short term)	1.1-1.3	1.1
Deep Seated (Long Term)	1.3	1.4



C
02

Gradation For Drainage Blanket Fill	
Sieve Size (mm)	Percent Passing (%)
6	0-10
2	0

0 100
Scale: 1: 2 000 (metres)

NOTES
3 m INTERMEDIATE AND 15 m INDEX CONTOUR DATA SHOWN BASED ON FEBRUARY 2010 SURVEY DATA PROVIDED BY MINTO

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STAGE 1 WASTE MANAGEMENT PLAN, MINTO MINE, YT

SECTIONS "B" AND "C" - MILL VALLEY FILL EXPANSION

PROJECT NO.	DWN	CKD	REV
W14101068.015	LM	LD	B
OFFICE	DATE		
EBA-KELOWNA	April 15, 2011		

WMP-03

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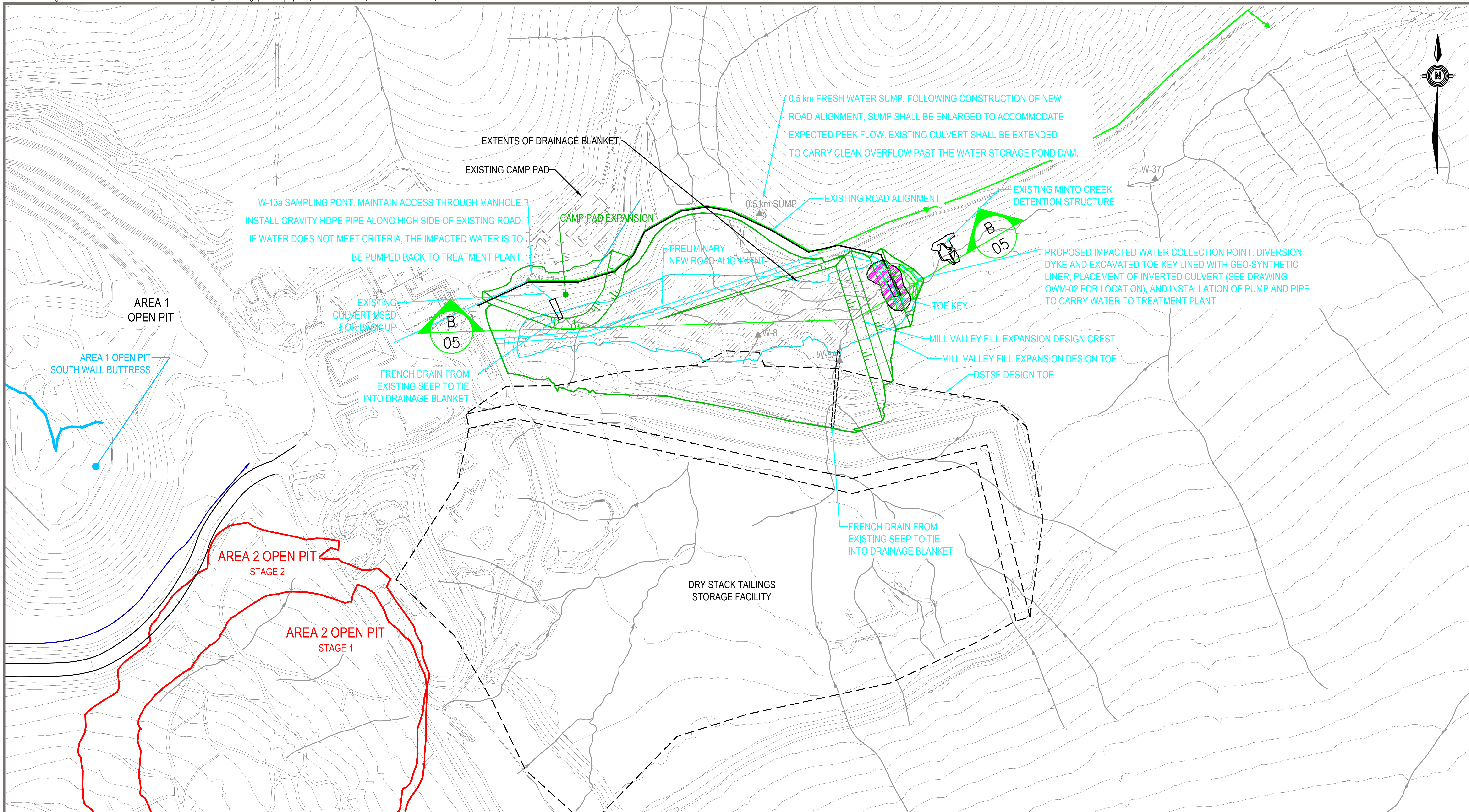

LEGEND

- MILL VALLEY FILL CRESTS AND TOES
- IMPACTED WATER COLLECTION AND RETURN LINE
- FRESH WATER DIVERSION PIPE LINE
- RECLAIMED WATER PIPE LIN E

0 — 200

Scale: 1: 4 000 (metres)

NOTES

3 m INTERMEDIATE AND 15 m INDEX CONTOUR DATA SHOWN BASED ON FEBRUARY 2010 SURVEY DATA PROVIDED BY MINTO

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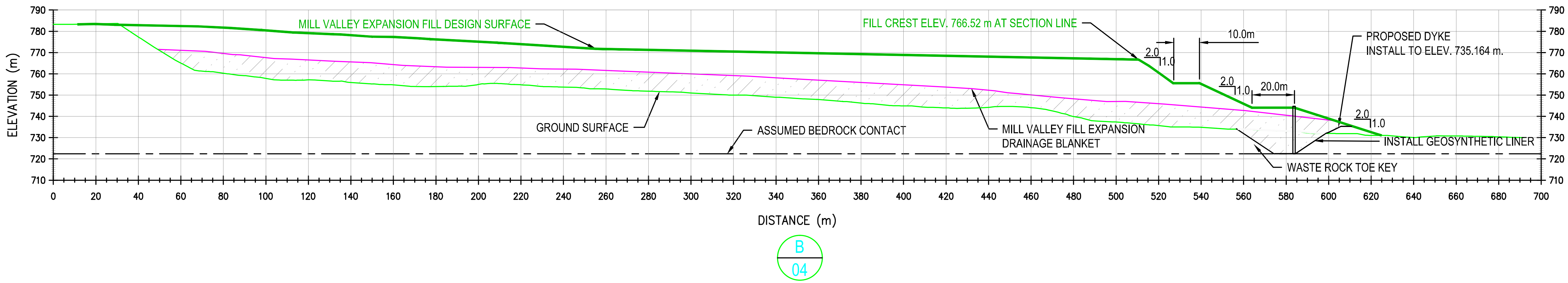
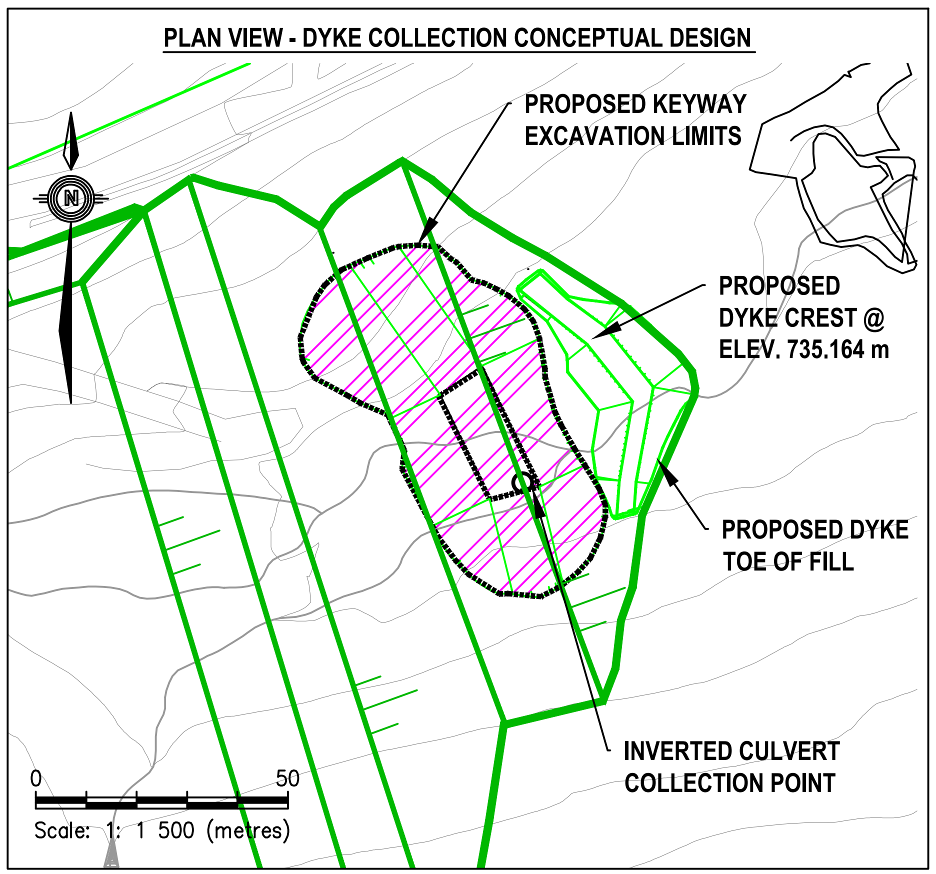
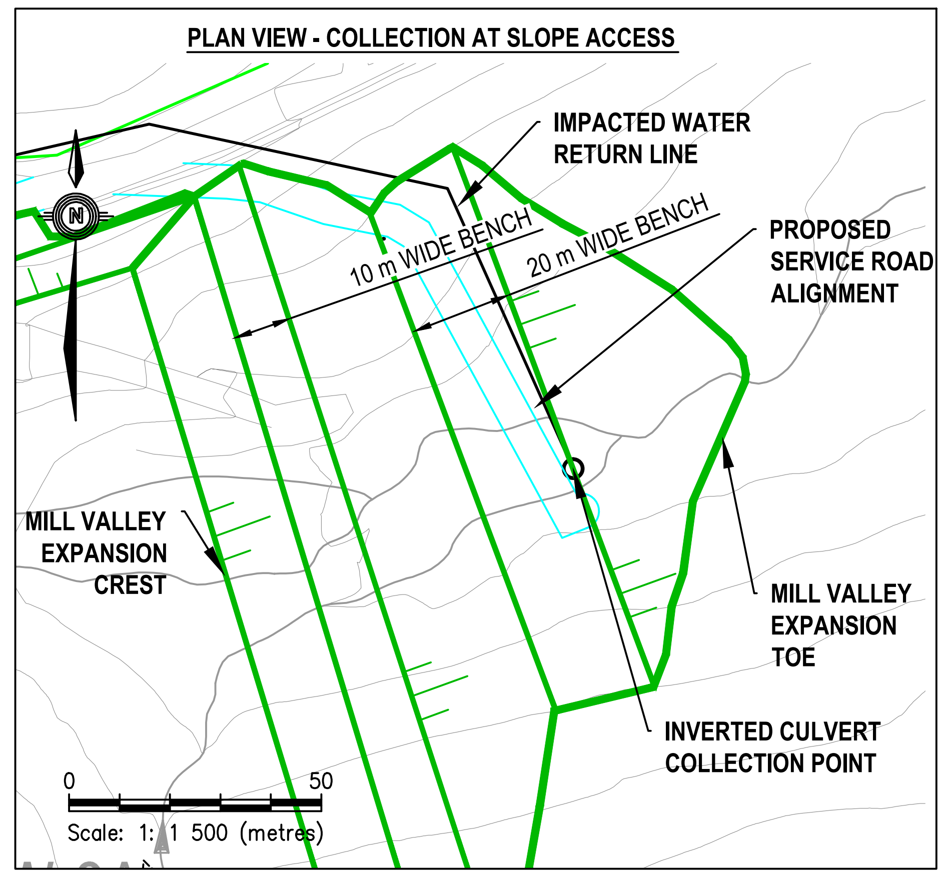
STAGE 1 WASTE MANAGEMENT PLAN, MINTO MINE, YT

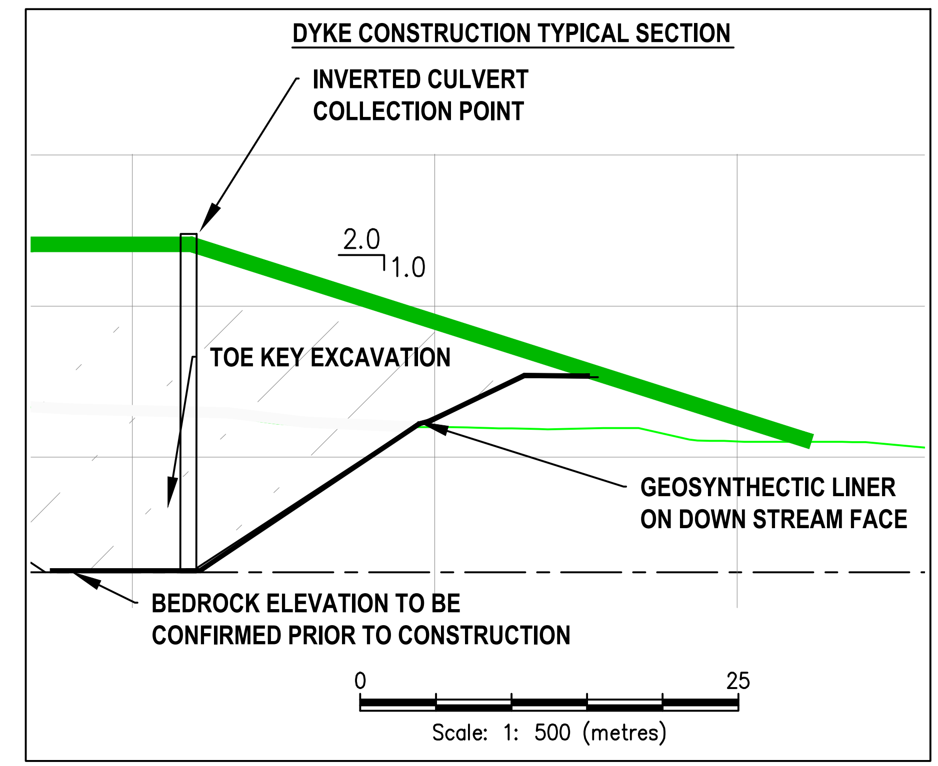
DRAINAGE AND TOE KEY DETAILS - MILL VALLEY FILL EXPANSION

PROJECT NO.	DWN	CKD	REV	
W14101068.015	LM	LD	B	WMP-04
OFFICE	DATE			
EBA-KELOWNA	April 15, 2011			









ISSUED FOR REVIEW

LEGEND

- MILL VALLEY FILL CRESTS AND TOES
- IMPACTED WATER COLLECTION AND RETURN LINE
- DYKE FILL SLOPE TOE AND CREST
- EXCAVATION LIMITS

0 — 100
Scale: 1: 2 000 (metres)

NOTES

3 m INTERMEDIATE AND 15 m INDEX CONTOUR DATA SHOWN BASED ON FEBRUARY 2010 SURVEY DATA PROVIDED BY MINTO

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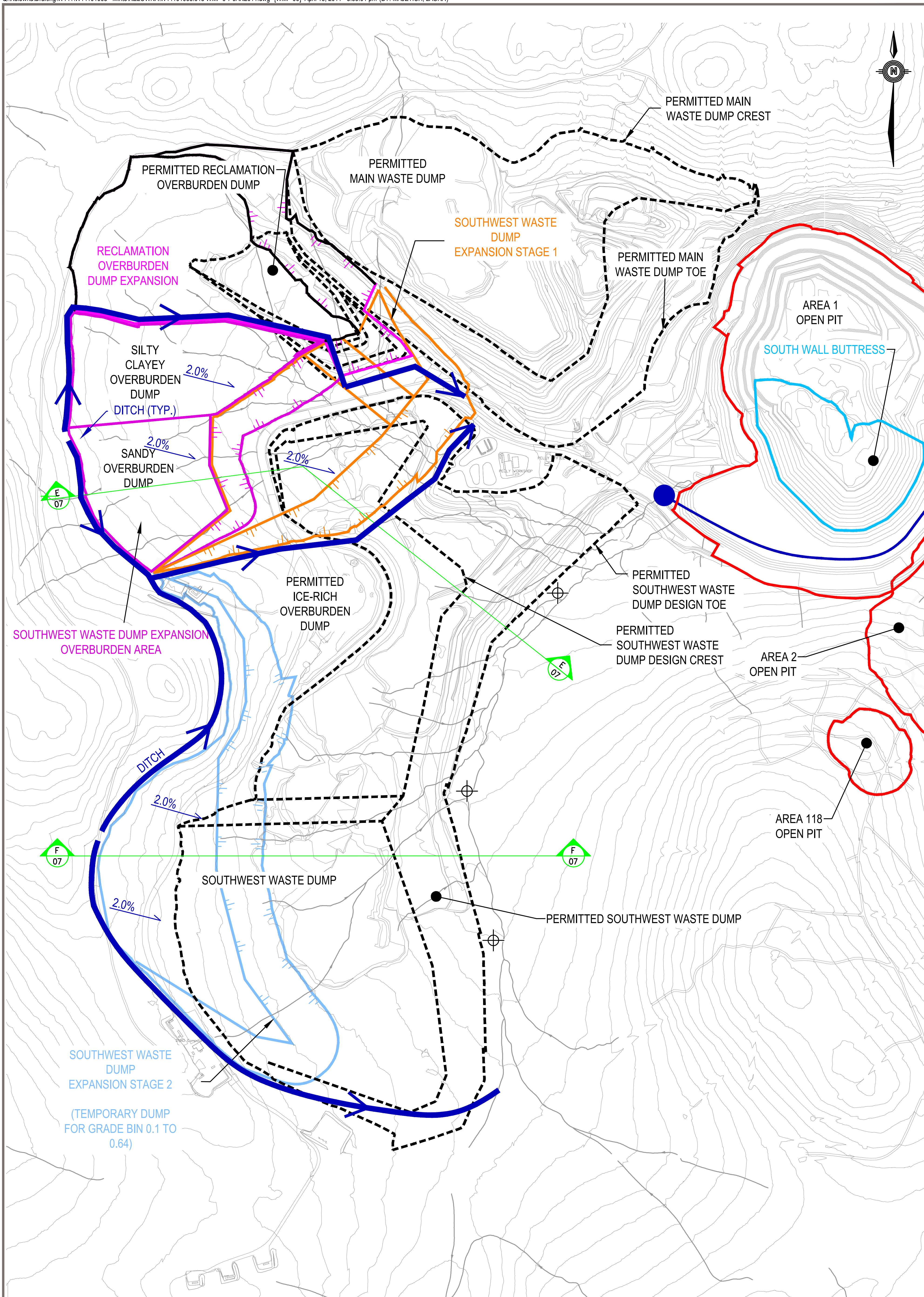
STAGE 1 WASTE MANAGEMENT PLAN, MINTO MINE, YT

SECTION B AND IMPACTED WATER COLLECTION - MILL VALLEY FILL EXPANSION

PROJECT NO.	DWN	CKD	REV
W14101068.015	LM	LD	B
OFFICE	DATE		
EBA-KELOWNA	April 15, 2011		

WMP-05



LEGEND

- PROPOSED DITCH ALIGNMENT AND DIRECTION
2.0% - PROPOSED GRADING AND DIRECTION
- WATER SAMPLING / MONITORING POINT

0 250
Scale: 1: 7 500 (metres)

NOTES
3 m INTERMEDIATE AND 15 m INDEX CONTOUR DATA SHOWN, BASED ON FEBRUARY 2010 SURVEY DATA PROVIDED BY MINTO.

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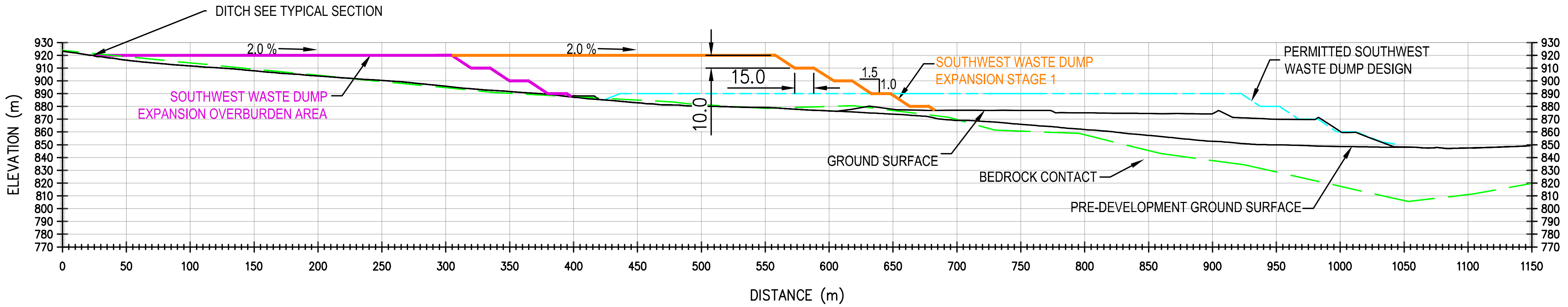
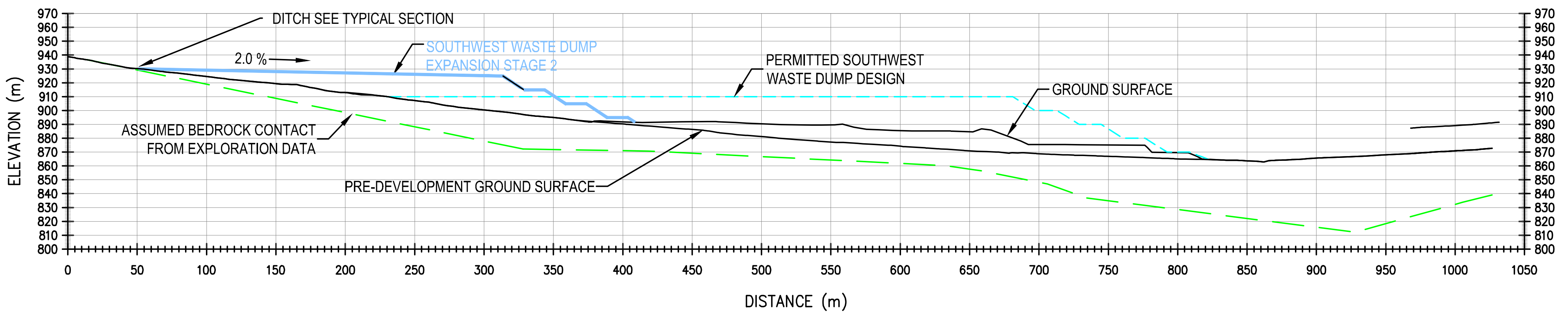
STAGE 1 WASTE MANAGEMENT PLAN, MINTO MINE, YT

SITE PLAN - SOUTHWEST DUMP OPERATIONAL

PROJECT NO.	DWN	CKD	REV	
W14101068.015	LM	LD	B	WMP-06
OFFICE	DATE			
EBA-KELOWNA	April 15, 2011			

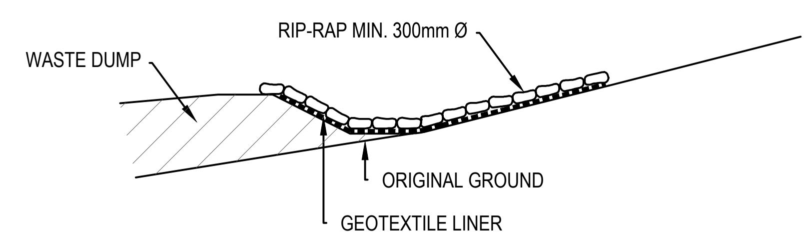


E
06



F
06

Slope Stability		
Failure Type	**Factor of Safety**	
	Criteria	**Design**
Shallow	**1.0**	**1.0**
Deep Seated (Short term)	**1.1-1.3**	**1.5**
Deep Seated (Long Term)	**1.3**	**1.7**



DITCH TYPICAL SECTION
NOT TO SCALE

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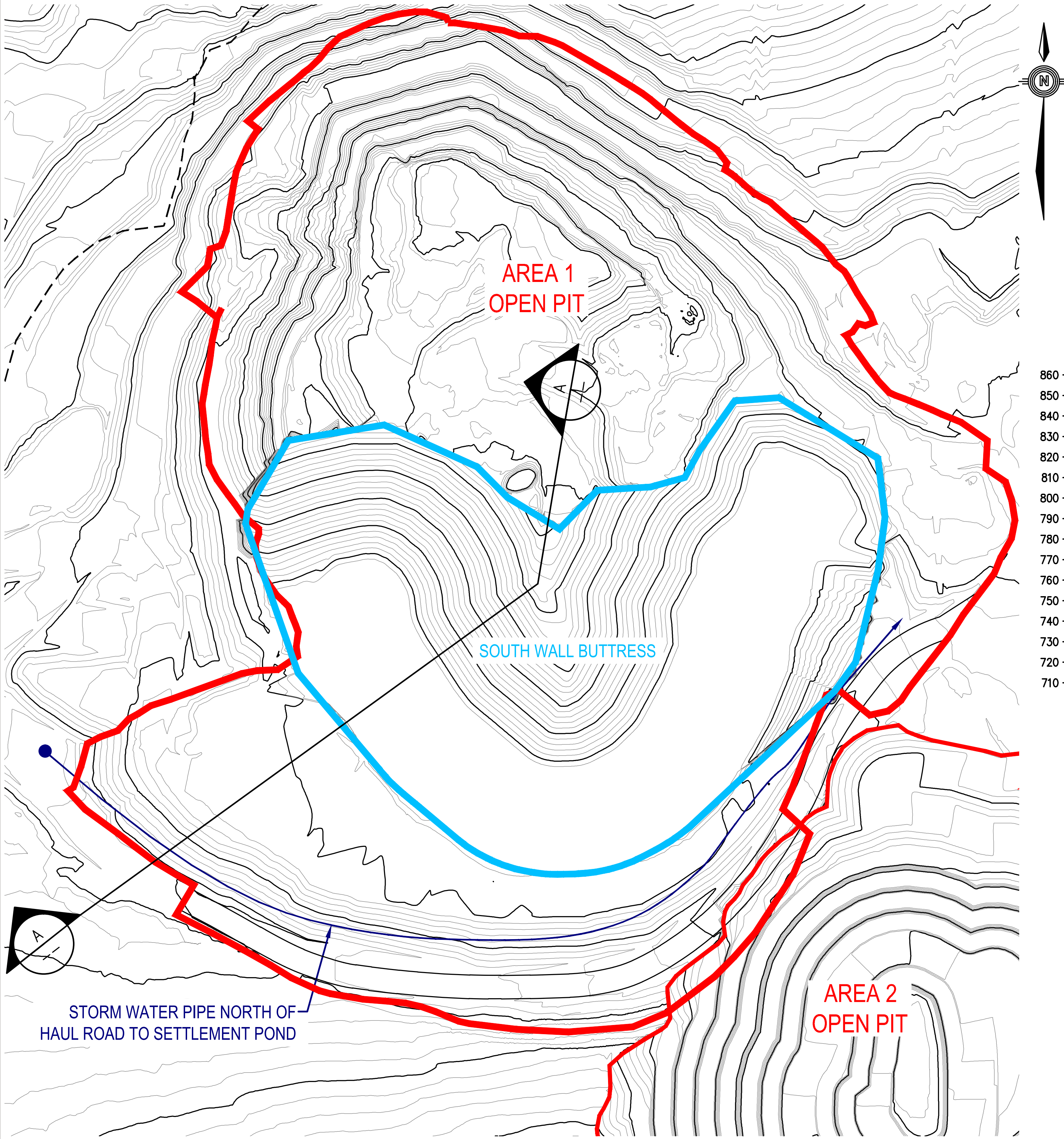
STAGE 1 WASTE MANAGEMENT PLAN, MINTO MINE, YT

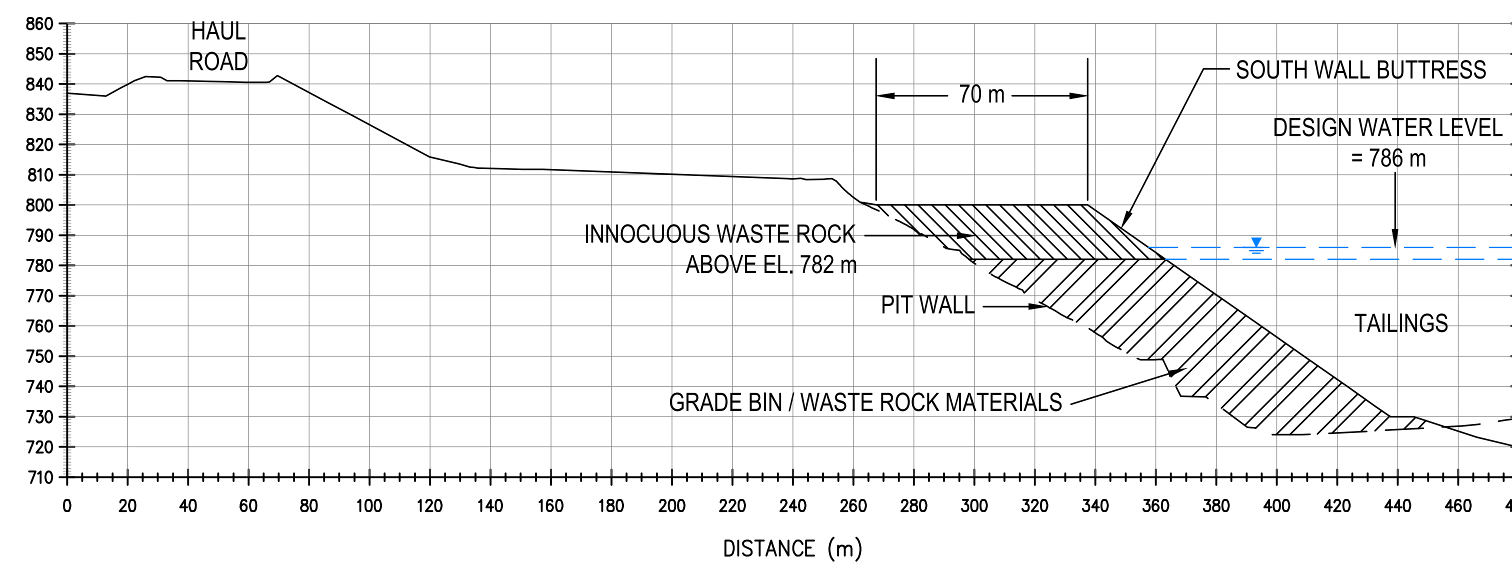
SECTION AND DITCH DETAILS - SOUTHWEST WASTE DUMP EXPANSION OPERATIONAL

PROJECT NO.	DWN	CKD	REV
W14101068.015	LM	LD	B
OFFICE	DATE		
EBA-KELOWNA	April 15, 2011		

WMP-07

Q:\Whitehorse\Data\0201drawings\Minto\Minto Mine Site\Phase 030 Minto Closure Plan\April 2011 Closure\W14101068.030 WMP-08.dwg [WMP-08] April 18, 2011 - 6:52:44 pm (BY: BUCHAN, CAMERON)





A -- SOUTH WALL BUTTRESS
SCALE 1 : 2500

LEGEND:

SOUTH WALL BUTRESS BOUNDARY

0 200
Scale: 1: 4 000 (metres)

NOTE :

3 m INTERMEDIATE AND 15 m INDEX CONTOUR DATA SHOWN BASED ON JANUARY 2011 SURVEY DATA PROVIDED BY MINTO.

STATUS
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STAGE 1 WASTE MANAGEMENT PLAN
MINTO MINE, YUKON

AREA 1 OPEN PIT
SOUTH WALL BUTTRESS PLAN & PROFILE

PROJECT NO.	DWN	CKD	REV	
W14101068.030	CB	BJC	B	WMP-08
OFFICE: EBA-WHSE	DATE: April 15, 2011			

APPENDIX A

APPENDIX A GEOTECHNICAL REPORT – GENERAL CONDITIONS

GENERAL CONDITIONS

GEOTECHNICAL REPORT

This report incorporates and is subject to these "General Conditions".

1.0 USE OF REPORT AND OWNERSHIP

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

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

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

2.0 ALTERNATE REPORT FORMAT

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

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

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

3.0 ENVIRONMENTAL AND REGULATORY ISSUES

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

4.0 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

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

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

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

5.0 LOGS OF TESTHOLES

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

6.0 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

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

7.0 PROTECTION OF EXPOSED GROUND

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

8.0 SUPPORT OF ADJACENT GROUND AND STRUCTURES

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

9.0 INFLUENCE OF CONSTRUCTION ACTIVITY

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

10.0 OBSERVATIONS DURING CONSTRUCTION

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

11.0 DRAINAGE SYSTEMS

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

12.0 BEARING CAPACITY

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

13.0 SAMPLES

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

14.0 INFORMATION PROVIDED TO EBA BY OTHERS

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