

# MANAGEMENT PLAN

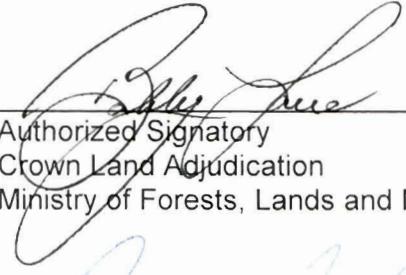
FILE # 6408448

LICENCE # *SK 904033*

DATE: September 27, 2014

## ACCEPTED BY:

SIGNED on behalf of HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF  
**BRITISH COLUMBIA** by Crown Land Adjudication, Ministry of Forests, Lands and Natural  
Resource Operations, authorized representative of the minister responsible for the *Land Act*.

  
\_\_\_\_\_  
Authorized Signatory  
Crown Land Adjudication  
Ministry of Forests, Lands and Natural Resource Operations

  
\_\_\_\_\_  
SIGNED on behalf of **SEABRIDGE GOLD INC**  
by a duly authorized signatory

# Management Plan

Roadway Interim Licence # SK 904033

Documents titled:

The Management Plan titled: "Seabridge Gold Inc. Revised Management Plan for a Land Act Licence of Occupation for the KSM Mine Project Mitchell-Treaty Tunnels (MTT) Dated July 4, 2014 – Revised at the request of the Lands Officer

AND

Road construction standard: Chapter 10 in the Handbook for Mineral and Coal Exploration in British Columbia (2008/2009 Edition)

AND

Camp and road reclaim/deactivation/decommissioning plan: MA&EMA Permit Application Chapter 5 Reclamation. Pdf page 844 (roads, gravel borrow areas, diversion ditches), page 846 (camps)

Camps Permits. Annex 7 Effluent - EMA. Annex 7-C.

AND

For PAG and NAG management standard/reclaim plan for Treaty Saddle MA&EMA Permit Application Chapter 3 Mine Plan. Appendix 3-I MTTPortals and Muck Storage-TechnicalReport.pdf. Section 2. Tunnel Design and Geotechnical. 2.1.3 Saddle Adit.

MA&EMA Permit Application Chapter 3 Mine Plan. Appendix 3-I MTTPortals and Muck Storage-TechnicalReport.pdf. Appendix V. Design of Tunnel Muck Storage Pads and Treatment Ponds

MA&EMA Permit Application Chapter 5 Reclamation. Pdf page 842. Reclamation of TWTPs.

MA&EMA Permit Application Chapter 7 Appendices. Appendix 7-C\_TWT 6 TAR.pdf (EMA Technical Assessment Report for water treatment plant effluent discharge into Treaty Creek).

Camps Permits. Annex 7 Effluent - EMA. Annex 7-C. Camp 6 Treat Saddle Camp (EMA sewage treatment effluent discharge into Treaty Creek).

AND

KSM Standard operating procedures for Clearing and construction of Batch 1 Activities (See current version on TRIM under 01 applications)

\*\*As noted in the Management Plan (MP) list above if the MP for the camps/infrastructure specs/environmental/heritage spec is NOT directly described, than the direction in the Handbook for Mineral and Coal Exploration in British Columbia (2008/2009 Edition) or MA&EMA Permit Application standard that the proponent has submitted applies.

VIA E-MAIL

September 24, 2014

Senior Land Officer  
Ministry of Forests, Lands and Natural Resource Operations, Skeena Region  
Bag 5000,  
Smithers, BC V0J 2N0

Dear Cam Bentley,

**RE: Land Act - Licence of Occupation Application for the KSM Mine Project**  
**Mitchell-Treaty Tunnel (MTT)**

Reference is made to the above-noted application for a Licence of Occupation ("LoO") under the *Lands Act* (British Columbia) made by Seabridge Gold Inc. ("**Seabridge**"). Seabridge hereby confirms and agrees that, if the LoO is granted, Seabridge will not undertake MTT construction activities within areas of the LoO in which it has not also received the applicable permits relating to such activities under the *Mines Act* (British Columbia). Seabridge agrees that this letter will be considered part of the Management Plan for the LoO.

Yours Truly,

**SEABRIDGE GOLD INC.**

By:  
C. Bruce Scott  
Vice President, Corporate Affairs and Corporate Secretary

Cc: Jessy Chaplin, Permitting Co-ordinator, Seabridge Gold Inc. ([jessy@seabridgegold.net](mailto:jessy@seabridgegold.net))  
Jen Stalker, Project Officer, MPO, FLNRO, Skeena Region ([Jen.Stalker@gov.bc.ca](mailto:Jen.Stalker@gov.bc.ca))

# SEABRIDGE GOLD

Senior Land Officer

Revised July 4, 2014

Ministry of Forests, Lands and Natural Resource Operations, Skeena Region

Bag 5000,

Smithers, BC V0J 2N0

Dear Cam Bentley,

**RE: Land Act Licence of Occupation Revised Management Plan for the KSM Mine Project Mitchell-Treaty Tunnel (MTT)**

As requested on April 17, 2014, enclosed is a Revised Licence of Occupation Management Plan for the KSM Mine Project Mitchell-Treaty Tunnels (MTT). The Mitchell-Treaty Tunnels are a key piece of infrastructure which will link the KSM Mine Site and the Processing and Tailing Management Areas (PTMA). A section of this Revised Management Plan includes a description of the activities proposed at the Saddle Portals and the regulatory authority and legislation and regulations under which we are seeking each activity to be authorized, managed and inspected.

Seabridge Gold Inc (Seabridge) proposes that the Licence of Occupation (LoO) cover the area lying within 37.5m of the proposed centre lines of each of the tunnels making up the MTT until construction of the MTT is completed, which is consistent with a resource road construction right-of-way. Once MTT construction is completed and the MTT are surveyed, the LoO will be converted into a long-term Right-of-Way (RoW) under the Land Act. The proposed area for the LoO is approximately 680 hectares (ha), including 420 ha surface for the Treaty Saddle Camp, tunnel muck storage pads and Saddle Portal. After conversion to a RoW, it is estimated that the MTT area would be equivalent to the area of the as constructed tunnel floors, including the cross-cuts, approximately 30 ha. The requested right-of-way area on mineral tenures held by third parties is estimated as approximately 16-20 ha, representing only about 0.4 % of the total area of the 11 mineral claims held by third parties through which the MTT passes.

Seabridge holds mineral tenure at the Mitchell and Treaty Portals, located at each end of the MTT, however it, does not hold mineral tenure along approximately 12.5 km of the MTT route. Included in this revised Management Plan is the proposed process by which Seabridge plans to collect and store tunnel muck excavated from the tunnels, both within Seabridge's and third party mineral tenures.

Seabridge estimates that the MTT will pass through 11 mineral claims owned by third parties. At the time of this application, we understand the other mineral claims are held by American Creek Resources Ltd (American Creek) (51%) and Teuton Resources Corp. (Teuton) (49%). Seabridge has been in contact with Teuton and American Creek before and since the original application for an LoO was made in September 2013, and has provided Teuton and American Creek copies of the original Management Plan. Seabridge has made repeated efforts to reach an agreement to secure the consent of Teuton to the MTT. Seabridge has repeatedly expressed a willingness to negotiate with American Creek for its consent to the MTT on a confidential basis but has not yet been successful at securing a confidentiality agreement under which negotiations can begin. As explained in our original application, there has been a legal dispute between Teuton and American Creek regarding ownership of the mineral claims through which the MTT passes. It is our understanding a judgment was rendered in that legal action and American Creek was awarded a 51% interest in the mineral claims but that Teuton has appealed that decision. Accordingly, there is still uncertainty regarding ownership of the mineral claims and whether Teuton or American Creek will provide consent to Seabridge conducting works on and through their mineral

claims. Included in this revised Management Plan is a description of the commitments Seabridge would make with regard to data sharing, exploration access and other material benefits that the KSM Project and the MTT would bring to Teuton and American Creek. As with previous Management Plans pertaining to the application for the LoO, the KSM EA/EIS Application and copies of all the permit applications Seabridge has applied for, Seabridge will provide a copy of this revised Management Plan to Teuton and American Creek shortly after submitting it to you.

Taking into consideration all of these factors, Seabridge suggests that the benefits the KSM Project offers the people of British Columbia make the MTT the best use of this underground corridor of land and justifies granting the LoO and the conversion of it into a Right-of-Way.

If you have any questions, please contact me at the Smithers office of Seabridge Gold at 250-847-4704, or by email, [Jessy@seabridgegold.net](mailto:Jessy@seabridgegold.net).

Sincerely Yours,



for  
Jessy Chaplin, MSc., P.Ag., RPBio,  
Permitting Coordinator

Encl:

April 21, 2014. Revised Management Plan for a Land Act Licence of Occupation for the KSM Mine Project  
Mitchell-Treaty Tunnels (MTT) Management Plan

Cc: Bruce Scott, VP Corporate Affairs and Corporate Secretary, Seabridge Gold Inc. ([bruce@seabridgegold.net](mailto:bruce@seabridgegold.net))  
Jen Stalker, Project Officer, MPO, FLNRO, Skeena Region ([Jen.Stalker@gov.bc.ca](mailto:Jen.Stalker@gov.bc.ca))

**Seabridge Gold Inc.**  
**Revised Management Plan**  
**for a Land Act Licence of Occupation for**  
**the KSM Mine Project Mitchell-Treaty Tunnels (MTT)**

**Dated July 4, 2014 – Revised at the request of the Lands Officer**

**Prepared by:**  
**Seabridge Gold Inc.,**  
**PO Box 2536**  
**Smithers, BC V0J 2N0**  
**250-847-4704**

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## SECTION 1. MANAGEMENT PLAN OVERVIEW

### 1-1 Project

Seabridge Gold Inc. (Seabridge) is proposing to develop the KSM (Kerr-Sulphurets-Mitchell) Gold/Copper Project in northwestern British Columbia. The KSM Project is located approximately 950 km northwest of Vancouver and approximately 65 km north of Stewart, British Columbia. The Project lies approximately 20 km south of Barrick Gold's Eskay Creek Mine, closed in 2008, and 30 km northeast of the Alaska border.

The Mitchell-Treaty tunnels (MTT) are a key piece of infrastructure which links the KSM Mine Area and the Process Plant Site and Tailing Management Facility Area (PTMA). Details on the proposed construction and operation of the MTT are included in an Application for a *Mines Act* Permit and *Environmental Management Act* Authorization for Limited Site Construction for the KSM Mine Project under review by Ministry of Energy and Mines since June 2013.

### 1-2 Purpose

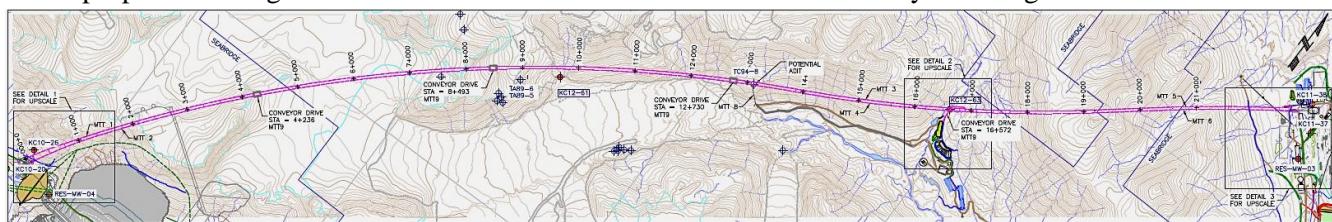
Seabridge has applied for a Licence of Occupation (LoO) to construct the MTT of 672 ha for the MTT alignment, and is now asking that it cover the area 37.5 m on either side of the proposed centre lines of the MTT, consistent with resource road construction right-of-ways. Seabridge is applying for a Licence of Occupation which converts into a Right-of-Way (RoW) for two primary reasons:

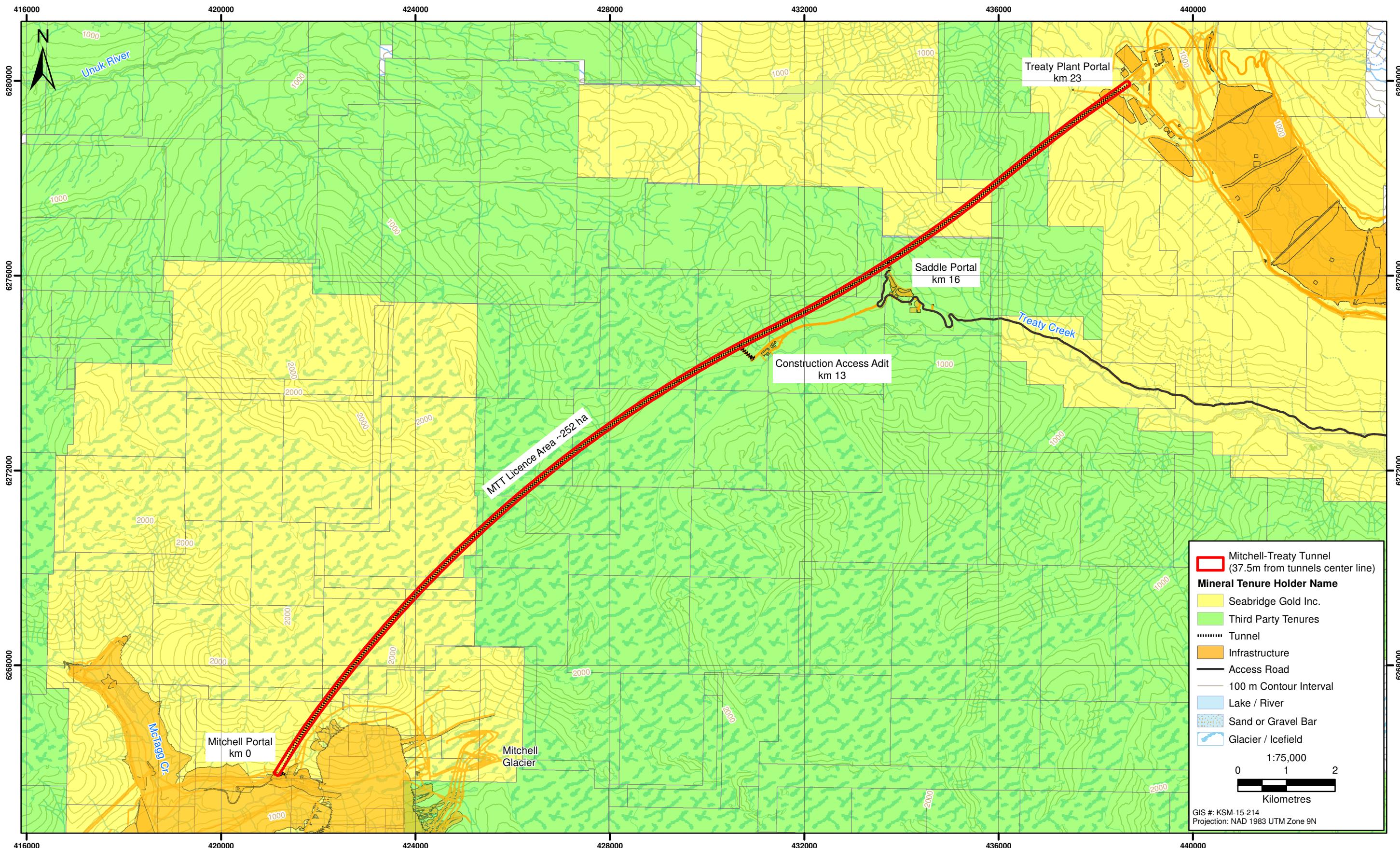
1. To obtain rights to use an area of 420 ha of surface land, temporarily, for the infrastructure required to construct the MTT and to store the waste rock generated from tunneling and to obtain rights to the area within which it proposes to construct the MTT.

For mining projects, land tenure is typically held in the form of mineral claims which are then converted to a mining lease for production of minerals. Seabridge owns mineral claims along approximately 10.2 km of the 22.7 km MTT alignment, but does not own the mineral claims along approximately 12.5 kilometers of the MTT alignment. There are 11 mineral claims through which the MTT and the related area for the LoO passes which we understand are owned jointly by Teuton Resources Corp. (Teuton) (as to 49%) and American Creek Resources Ltd. (American Creek) (as to 51%) (see Table 1). A LoO will give Seabridge the rights it needs to enable it to construct and operate the MTT. Seabridge has applied for a Mines Act permit to allow it to construct and operate the MTT.

Seabridge's consultants undertook a comprehensive assessment of possible locations for the PTMA and concluded the proposed location of the PTMA is the only viable site for the proposed volume of tailings from the KSM Project. Given the location of the Mine site and the PTMA, the proposed MTT alignment is the most direct route between the Mine site and the PTMA (Figure 1). As can be seen in Figure 2, there is no way to re-route the MTT to connect the Mine Site and PTMA that avoids tunneling through mineral claims held by third parties.

**Figure 1.** Plan view of the MTT tunnels. KSM Project infrastructure on Seabridge mineral claims is at either end of the purple MTT alignment. Blue lines show boundaries of tenures held by Seabridge.





The mineral claims along the tunnel alignment not owned by Seabridge are all registered in the name of American Creek (<http://www.americancreek.com/>). Teuton (<http://www.teuton.com/>) granted American Creek an option to acquire a 51% interest in the claims and a legal dispute regarding ownership of the mineral claims arose between Teuton and American Creek. In April, 2014 a decision was rendered in which the court held the mineral claims were owned 51% by American Creek and 49% by Teuton. We understand Teuton has appealed the court's decision. Details about the two companies and the legal dispute are publically available.

**Table 1.** Mineral Claims along the MTT alignment. Listed from west to east, as of May 14, 2014

Mapsheet: 104B070

Mineral Claim Number	Registered Owner	Claim Name	Claim area (ha)	Estimated Linear Distance across tenure (m)	Cumulative Length in (m)
516239 (west)	Seabridge Gold Inc.	-	535.51	152	152
516238	Seabridge Gold Inc.	-	624.46	1865	2017
394799	Seabridge Gold Inc.	BJ 23	500	2525	4542
394796	Seabridge Gold Inc.	BJ 20	375	160	4702
394800	Seabridge Gold Inc.	BJ 24	300	500	5202
705592	Seabridge Gold Inc.	BJ Gap2	160.46	280	5482
683483	Seabridge Gold Inc.	-	837.6	1510	6992
392436	American Creek Resources Corp.	TC 11	400	950	8127
251232	American Creek Resources Corp.	TR 8	200	1240	9367
392435	American Creek Resources Corp.	TC 10	500	222	9589
251229	American Creek Resources Corp.	TR 5	500	2240	11829
251231	American Creek Resources Corp.	TR 7	500	740	12569
251230	American Creek Resources Corp.	TR 6	375	1690	14259
390924	American Creek Resources Corp.	TC 3	500	1415	15674
392462	American Creek Resources Corp.	Treaty 3	500	561	16235
392463	American Creek Resources Corp.	Treaty 4	150	582	16817
392464	American Creek Resources Corp.	Treaty 5	500	1096	17913
401553	Seabridge Gold Inc.	Tina 6	250	1130	19043
603134	Seabridge Gold Inc.	Seabee 9	53.38	550	19593
560221	American Creek Resources Corp.	Freya 75	426.97	1473	21066
566496	Seabridge Gold Inc.	Bridge 27	391.31	1921	22987
566484(east)	Seabridge Gold Inc.	Bridge16	444.56	436	23423

Seabridge Gold has been in communication with each of Teuton and American Creek since 2009. Some communication has been in connection with obtaining their consent to Seabridge entering their mineral claims to conduct works or studies associated with advancing the KSM Project. Both companies have accommodated Seabridge's requests for access to the mineral claims for geotechnical drilling. Teuton was the registered holder of the mineral claims until May 14, 2014, when the claims were transferred to American Creek. Teuton has advised it will not sell its interest in these claims but has discussed terms for its consent to the MTT through the

claims. Seabridge has had numerous exchanges with Teuton towards reaching an agreement for its consent to construct and operate the MTT, principally by e-mail, but no agreement has been reached at this time and Teuton has terminated all discussions. Seabridge has had less communication with American Creek, their initial stance being opposition to the MTT and, therefore, complete disinterest in negotiations. However, in mid-2013, American Creek advised it was prepared to start negotiations with Seabridge. However, Seabridge and American Creek have not yet settled terms on which confidential negotiations can begin. Accordingly, negotiations have not yet commenced. A record of communications was provided to FLNRO with regard to Seabridge communications with Teuton and American Creek with our original application.

It is difficult to reach an agreement with Teuton or American Creek given the uncertainty of ownership arising from their legal dispute. It is not known how long it will take for the legal actions between these two companies regarding ownership of these mineral claims to come to an end. Once at an end, it is not clear either party will actually agree to negotiate. Seabridge believes that it is in the provincial interest to approve a \$5.3 billion mine Project and not wait for the independent resolution of mineral claim ownership over an unproven prospect.

2. Once the tunnels are constructed under the LoO, and surveyed, Seabridge requests a conversion under the *Land Act* of the LoO to a RoW for the MTT tunnels. Seabridge will use the MTT to move ore, electricity, personnel and materials during mining operations through the life of the mine, and during closure and post-closure phases. Accordingly, Seabridge is also applying for conversion of the LoO to a RoW. The RoW would consist of a much smaller area, consisting of the surveyed tunnel areas including the Saddle Portal and the area of the remaining infrastructure in the Saddle area.

More specifically, the MTT will be used for the following purposes:

- to convey ore from the Mine Area (in the west) to the process plant for milling, processing and shipment located near the TMF, where there is land with the necessary characteristics to store the required volume of tailings;
- to transport work crews, products, small parts and supplies in both directions;
- to pipe diesel west to the mining area to power mining machinery;
- to house electric transmission lines to transmit electricity from the process plant site west to the mining area; and
- for emergency access and egress from the Mine Area to Highway 37 for personnel during winter conditions in mountainous terrain which may result in the closure of other roads and even prevent emergency aircraft from flying.

In addition, Seabridge requests that the Crown raise title to the area of the Right-of-Way so that Seabridge can register its interest against title to the land.

## Section 2. Project Description – The KSM Mine Project

### 2.1 Location, size and main features of the KSM Mine Project

The KSM Project includes four large mineral deposits; Kerr, Sulphurets, Mitchell and Iron Cap, which contain significant amounts of gold and copper, as well as some silver and molybdenum. The Project includes two distinct and geographically separate areas: 1. the Mine Site and 2. the Processing and Tailings Management Area (PTMA). Mining will include open pit and/or underground mining of the four deposits. Waste rock will be stored near the open pits. Surface water that contacts disturbed areas will be collected and directed to a Water Storage Pond and treated at one or

more Water Treatment Plants. The KSM Project design includes the 22.7 km long MTT to link the Mine Area to the PTMA. Ore, mineralized rock from the deposits, will be blasted, passed through a primary crusher and fed onto conveyors. The conveyors will transport the ore through the MTT to the Treaty ore processing complex (OPC) and process plant where the metals will be extracted. The resulting tailings, comprised of sand-like materials mixed with water, will be deposited into the TMF. The TMF has capacity to hold an estimated 2.3 billion tonnes of tailings that will be produced over an estimated 50-55 year mine life. The Treaty OPC and TMF will be located in the upper Teigen Creek/ Treaty Creek valleys, which flow to the Bell-Irving River. A new road along Treaty Creek and North Treaty Creek will connect the Process Plant to Highway 37. The Process Plant will process up to 130,000 tonnes of ore per day to produce a daily average of 1,200 tonnes of concentrate, which will be trucked to the port of Stewart.

Construction of the KSM Project will take approximately five years. Initial access to the Mine Area would be via a winter road over the Frank Mackie Glacier to facilitate the construction of the Coulter Creek Access Road (CCAR), which provides long term access to the Mine Site. Construction of the CCAR would be authorized under a BC Forest Act Special Use Permit, along with timber cutting permits and road stream crossings. A Mines Act permit would allow Seabridge to install construction camps, conduct logging, clearing and grubbing activities for site preparation, and begin pioneering roads to the Water Storage Facility in the Mitchell Valley and to the MTT portals.

Road access to the PTMA and the Saddle includes construction of the Treaty Creek Access Road (TCAR). The TCAR starts at Highway 37 and provides access to the Process Plant Site and TMF. It includes the TCAR spur road leading to the Saddle Portal. Construction of the TCAR would be authorized under a BC Forest Act Special Use Permit, along with timber cutting permits and road stream crossings. The TCAR and spur road will have construction fronts at multiple locations.

At TCAR km 16.3, where the main KSM haul road heads north to the Treaty OPC, the TCAR spur road will continue west up the Treaty Creek valley, as a single lane road leading to the MTT Saddle Portal. From km 17.9 to km 33 the road standard is a 6 m finished road width. The Treaty Saddle Camp will be located at approximately km 32.2 and the Saddle Portal at km 33.

## **SECTION 3 Mitchell Treaty Twin Tunnels (MTT)**

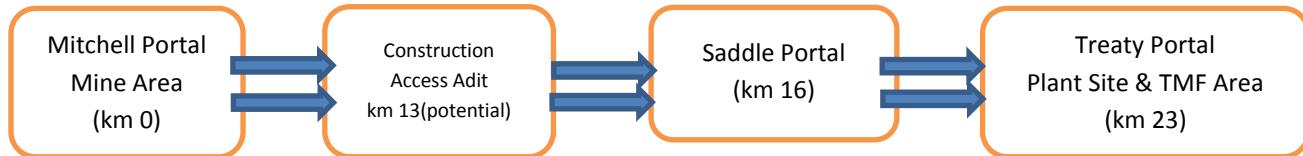
### **3.1 MTT Mitchell-Treaty Tunnels Specifics**

The Mitchell – Treaty Tunnels (MTT) are 22.7 km twin tunnels which will connect the Mitchell Mine Site with the Treaty OPC and TMF. One tunnel is for conveying ore, the other for transporting materials, personnel and power. The conveyor tunnel is designed as 6 m wide by 4.3 m high and will convey ore from the open pits in the Mitchell Valley to the Process Plant. The transport tunnel is 4.5 m wide by 4.3 m high and has been located 30m to the north of the conveyor tunnel. This tunnel will be used to transport crews and materials. Cross-cuts will connect the tunnels every 300 m. (In this Management Plan, references to the MTT include the cross-cuts.) The 30 m separation between the MTT is very important for development and operation of the MTT. 30 m is needed for geotechnical stability and the cross-cuts are needed for ventilation control, electrical sub-stations, emergency safety chambers, remuck bays, maintenance bays, ventilation control doors and water control infrastructure. A Plan and Profile drawing of the MTT are provided in Figure 4 (Drawing D-2015) attached. A diagram showing the MTT in cross-section is attached at the end of this Management Plan as Figure 9.

All tunneling activities would be permitted and authorized under the *Mines Act* and regulations, and a Mines Act Permit. This includes all activities at the Saddle Portal.

The MTT alignment runs roughly east-west, starting in the west from the Mine Site in the Mitchell valley at an elevation

of 850 masl, to a Saddle Area at km 16, where a portal will provide entry for construction works, and another 6 km section from the Saddle Area to the Treaty OPC at an elevation of 1080 masl. Five portals (two Mitchell Portals, one Saddle Portal and two Treaty Plant Site Portals) are proposed for construction of the MTT, from west to east starting with km 0. Plans include a proposed construction access adit, however, due to potential geohazards, the Construction Access adit is to be considered as a contingency only if there are significant delays at other construction fronts. The contingency plan allows for construction of a 364 m long 15.5% slope construction access adit. The location of the possible Construction Access adit is shown in Figure 3 at the west end of the surface area at the Saddle for the LoO outlined in red. This adit, if necessary, would speed MTT construction and completion by adding two more construction headings.



There will be five portals and four active construction headings on each of the MTT tunnels (assuming the potential construction access adit is not included):

- Mitchell Portals in the Mitchell Valley (heading east);
- Saddle Portal (heading east and west); and
- Treaty Plant Site Portals (heading west).
- (*Potential Construction access adit 13 km from the Mitchell portals (two directions);*)

The Mines Act and EMA Permit Application for Limited Site Construction, submitted in June 2013, is located in a folder on the KSM Concurrent Permit Applications USB stick. The Mines Act & EMA Permit Application contains more detailed information about the proposed mining of the Saddle Portal. Specifically, Saddle Portal information is located in the tunnel design criteria, and design and geotechnical information sections of the Mine Plan, with specific page references provided below.

Figure 3.3-1 MTT Tunnel Alignment	Section 3.3 pdf page 510/1003
MTT Tunnel Design Criteria	Section 3.3.5, pdf pages 511 to 518
Tunnel Design and Geotechnical Information	Section 3.3.6, pdf pages 518 to 520
Figure 3.3-6 Saddle Portals	Section 3.3.6.1, pdf page 527
Portals and Access	Section 3.3.6.4, pdf page 560
Figure 3.3-24 Saddle Adit Portal Conceptual Design	Page 561
Figure 3.3-25 Saddle Portal Conceptual Support	Page 562
Figure 3.3-26 Saddle Portal Conceptual Design with Portal Support	Page 563
Saddle Portal Spoil Management	Section 3.3.6.7, pdf Page 580

Figure 3.3-1 and 3.3-6 are included to this document as Figures 2 and 3. As a result of Seabridge's decision to segregate tunnel muck of Seabridge from tunnel muck from the mineral tenures not owned by Seabridge through which the MTT passes (the "Third Party Tenures") as described below, the configuration of the muck pads and related infrastructure at all of the Portals has changed from that shown in this material and is now proposed as shown in Figures 6A, 6B and 6C attached to this Management Plan.

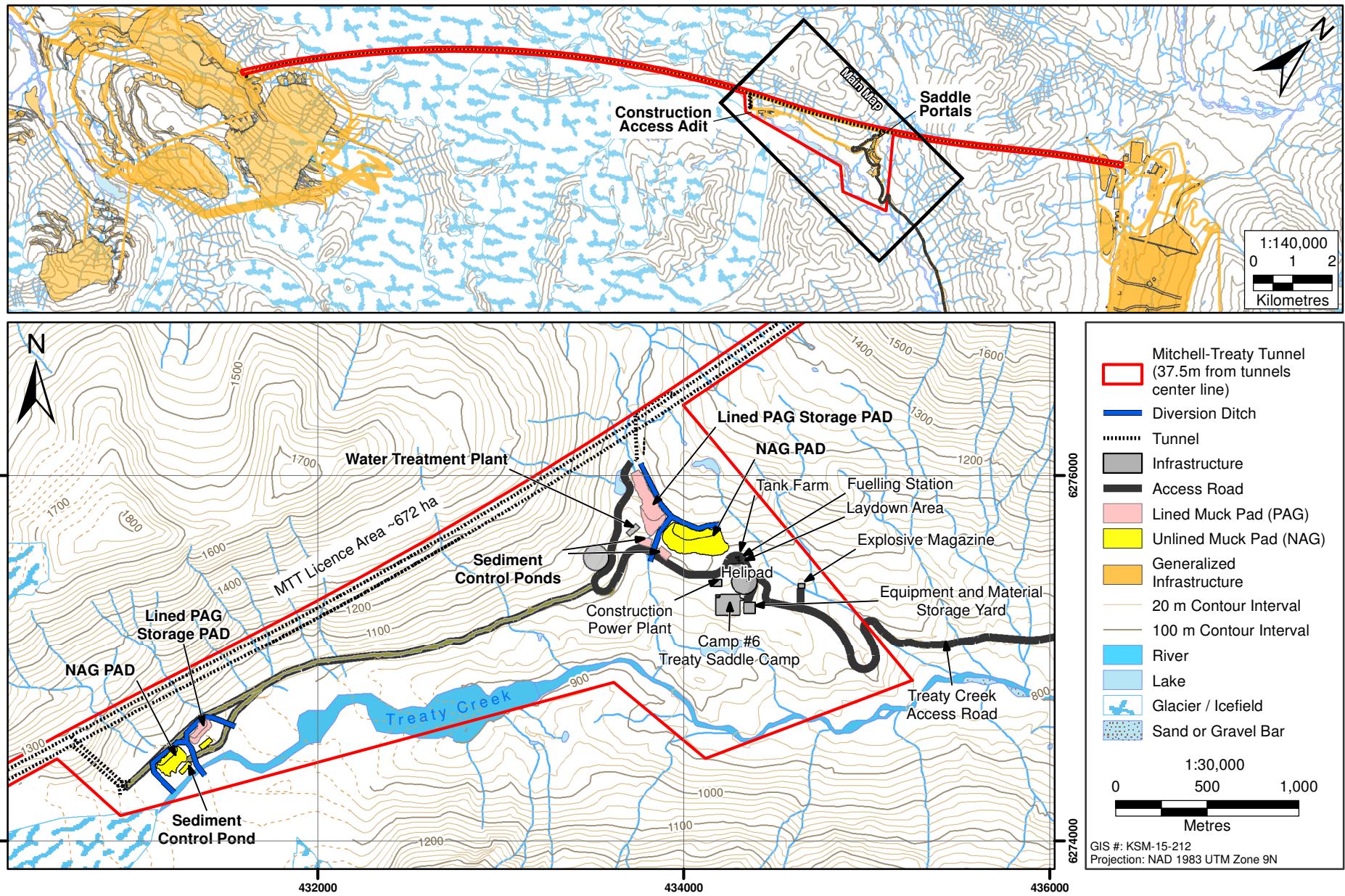


Figure 3

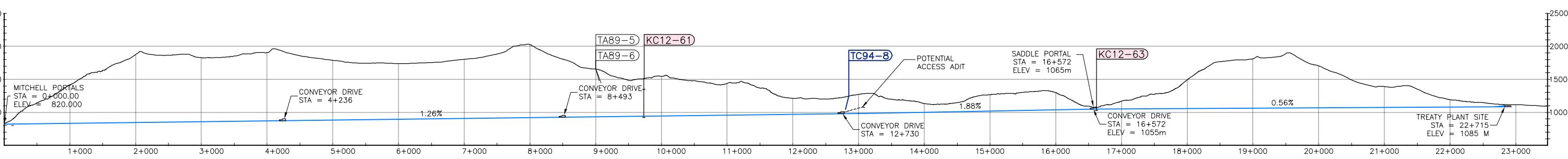
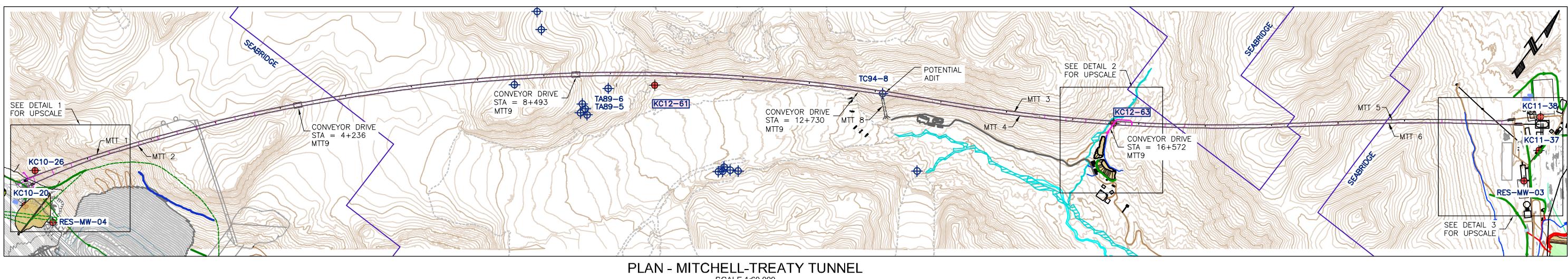
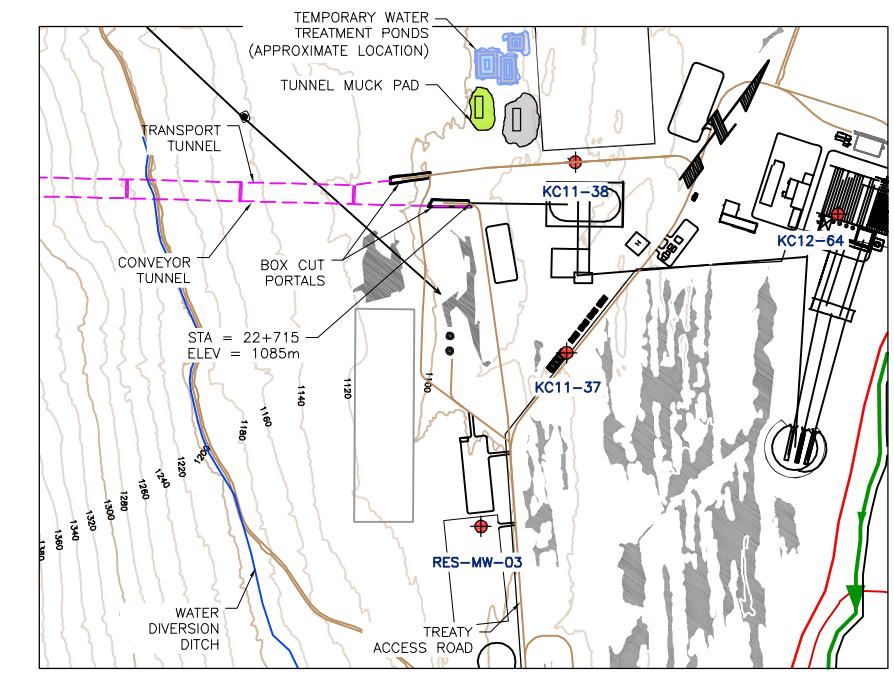
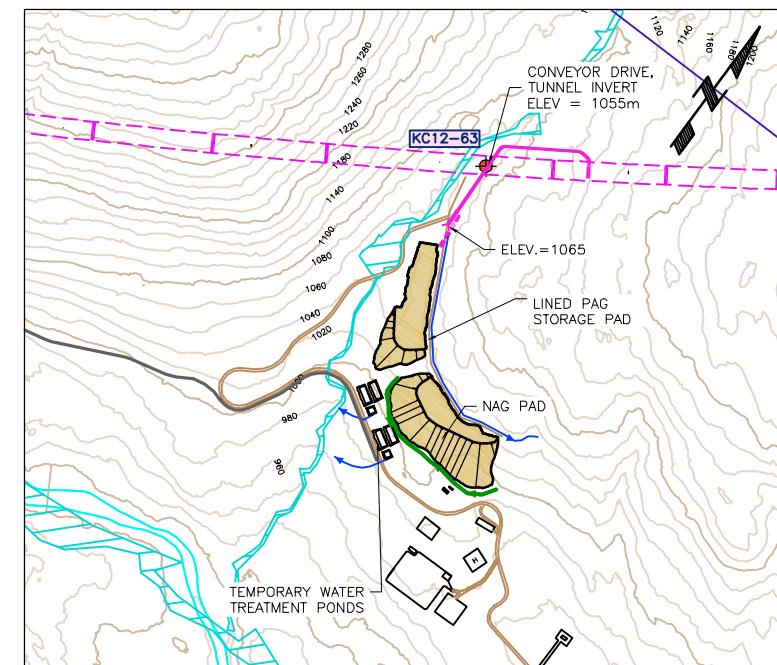
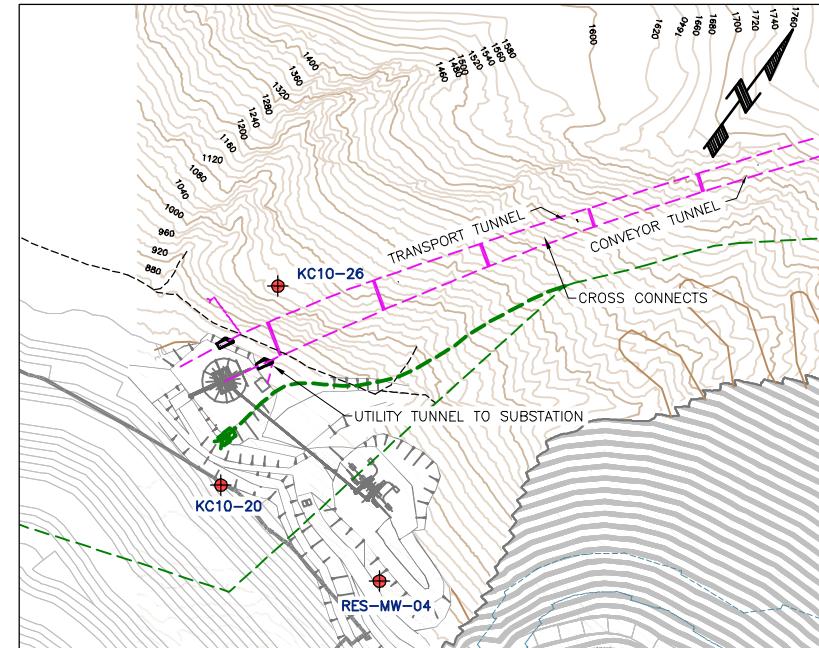
**SEABRIDGE GOLD**  
KSM PROJECT

### Mitchell-Treaty Tunnel Saddle Portal and Construction Access Adit

Figure 3

**Rescan™**  
Engineers & Scientists

FIGURE 4

**NOTES**

- TREATY PLANT SITE: H.BOSCHE HPGR OPTION LAYOUT: H.BOSCHE 10-10-1715 SAG/NO UTM REV N DEC 2/2011 CONTOURS: 2011 LIDAR (MCELHANNEY)
- CONVEYOR DRIVE STATION LOCATIONS ARE FROM H. BOSCHE.
- TWIN TUNNELS ARE JOINED BY CROSS CONNECT TUNNELS APPROXIMATELY EVERY 300M. CROSS CONNECTS ARE EQUIPPED WITH AIR/FIRE DOORS.
- TEMPORARY WATER TREATMENT POND SPECIFICATIONS BY RESCAN, SEPTEMBER 21, 2012.

**LEGEND**

- KSM GEOTECHNICAL/ENVIRONMENTAL DRILLHOLES
- HISTORICAL DRILLHOLES

**PROFILE - MITCHELL-TREATY TUNNEL****DRAFT**

SCALE: 0 500 m 2,000 m

CLIENT	SEABRIDGE GOLD	
PROJECT	KSM PROJECT MINES ACT & ENVIRONMENTAL MANAGEMENT ACT PERMIT APPLICATION FOR LIMITED SITE CONSTRUCTION	
TITLE	TUNNEL ALIGNMENT ULTIMATE CONFIGURATIONS	
SCALE	AS SHOWN	PROJECT No. M09480A04 DWG. No. D-2015 REV. B

### **3.2 MTT Geology**

Geological settings along the MTT alignment are complex; the area has been subject to normal and thrust faults, and the route traverses contacts, unconformities, folding and areas of extensive alteration. The geologic and geotechnical conditions described are based on information inferred from limited surface mapping (40% of the MTT tunnel route is beneath icefields), and from widely spaced drill holes.

### **3.3 MTT Geotechnical**

Information collected along the MTT alignment by Klohn, Crippen Berger, professional engineers, did not identify any potentially insurmountable geotechnical flaws along the tunnel routes. All of the proposed KSM tunnels are considered to be geotechnically feasible.

Based on information available to the end of 2011, it is expected that approximately 52% of the KSM tunneling will occur in rock masses that are classified as “fair to very good quality”; these areas will only require rock bolt and mesh to achieve long term support stability consistent with current standards. It is anticipated that the tunnels will encounter zones of poor quality rock, and occasional zones of extremely poor quality rock mass, and/or high water inflow zones that result in more difficult tunneling conditions.

Additional geotechnical investigations to be performed in detailed design stages will reduce geotechnical uncertainty and reduce the risk of unexpected delays in tunneling; however, some uncertainty and risk will remain, especially in areas of high rock cover and beneath glaciers where surface outcrops are limited and drilling investigations are not feasible. To address these issues, probe hole drilling is to be completed during construction of the MTT in sections approaching all known or inferred geologic structures and in areas of poor knowledge.

The observational method of geotechnical engineering will also be critical to successful tunnel development. This method requires a geotechnical engineer to make measurements and observations during construction to confirm design assumptions and, where necessary, modify support designs to ensure long-term performance and safety. Not less frequently than once each year while the construction of the MTT is ongoing, Seabridge will provide to each registered holder of the Third Party Tenures the geotechnical data it collects in respect of areas of the MTT alignment passing through Third Party Tenures.

Geologic and Geotechnical Reports available:

- Klohn Crippen Berger. 2009. Seabridge Gold KSM Tunnel Design Summary Report, prepared for Seabridge Gold Inc., prepared by Klohn Crippen Berger, Vancouver.
- Klohn Crippen Berger. 2010. Seabridge Gold KSM Project KCB Site Investigation Report, prepared for Seabridge Gold Inc., prepared by Klohn Crippen Berger, Vancouver.
- ERSi. 2011. KSM Project Area Structural Geology Assessment Report. V. Campbell, G. Abrahams (KCB), and B. Laidlaw (KCB), prepared for Seabridge Gold Inc.
- Klohn Crippen Berger. 2012. Seabridge Gold KSM Project KCB Site Investigation Report for the Mine Area, prepared for Seabridge Gold Inc., prepared by Klohn Crippen Berger, Vancouver.
- Klohn Crippen Berger. January 2014. Seabridge Gold KSM Project 2014 Update of Geotechnical Assessment of KSM Tunnel Routes, prepared for Seabridge Gold Inc., prepared by Klohn Crippen Berger, Vancouver.

### **3.4 MTT Tunnel Muck Handling**

The KSM Mines Act and EMA Permit Application for Limited Site Construction, Chapter 3.3 contains the engineered

design for the proposed tunnel muck pads. The muck pads were designed to meet the requirements for the Ministry of Energy and Mines using the design criteria, British Columbia Mine Waste Rock Pile Research Committee (BCMWRPRC) (1991). Mined Rock and Overburden Piles Investigation and Design Manual May 1991. The design memo is located in Chapter 3 Appendix I – 2012 Geotechnical Design of Rock Storage Facilities and Design of Associated Water Management Facilities, sub-appendix V – Mine Site Temporary Tunnel Muck Pads Design and Stability Assessment and Location of Treatment Pond. An overview of the muck storage is reported here.

Tunnel muck from construction of the MTT will be stored on temporary muck pads during construction, after which it will be moved to a permanent disposal location. During construction, tunnel muck will be tested on site and separated into two categories: potentially acid generating (PAG) and not potentially acid generating (NPAG). Rock classified as PAG or rock with uncertain classification will be placed on a lined pad to capture runoff which will be routed to temporary water treatment facilities. The muck pads design provides a construction configuration for the muck pads that is stable, provides separation of NPAG and PAG rock and allows collection of pad drainage for treatment. In addition, the muck on each of the muck pads will be segregated into two categories: muck from mineral tenures owned by Seabridge, and muck from Third Party Tenures.

The pads at the MTT Saddle Portal area are designed to store waste rock generated from construction of the tunnel segments on either side of the Portal. The pads at the Saddle Portals are sized large enough to hold the predicted PAG and NPAG muck volume from:

- the Saddle Portal to the midpoint of the MTT segment on the PTMA side of the Saddle Portal; and
- the Saddle Portal to the point of the MTT segment from the Saddle Portal towards the Mitchell Portal when it is predicted the MTT segment between the Saddle and the PTMA is open.

The pads at the Treaty Plant Site Portals are sized large enough to hold the predicted PAG and NPAG muck volume from:

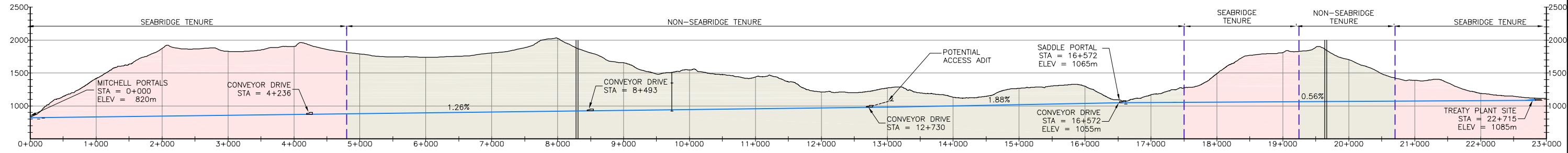
- the Treaty Plant Site Portal to the midpoint of the MTT segment from the Treaty Plant Site Portal to the Saddle Portal; and
- the point of the MTT segment from the Saddle Portal towards the Mitchell Portal when it is predicted the MTT segment between the Saddle and the PTMA is open to the midpoint of the MTT segment between the Saddle Portal and the Mitchell Portal.

The muck from Mitchell Portals to the midpoint of the MTT segment from the Mitchell Portals to the Saddle Portal will report to the Mitchell Portals pads. The volume of waste that is expected to report to the Saddle Portal is approximately 272,000 m<sup>3</sup> which, with a void ratio of 0.5, will have a placed volume of approximately 408,000 m<sup>3</sup> (Figure 5 - Drawing D-2015B). As designed, the current pads have an approximate total capacity of 787,000 m<sup>3</sup>.

As can be seen in Figure 5 (Drawing D-2015B), tunneling west from the Saddle Portal will always generate muck from the Third Party Tenures, while tunneling east will generate muck from both Seabridge owned mineral tenures and Third Party Tenures. Tunneling east from the Mitchell Portals will generate muck from mineral tenures owned by Seabridge initially, but will also generate muck from Third Party Tenures later in the construction process. Tunneling west from the Treaty Plant site Portals will generate muck from both Seabridge owned mineral tenures and Third Party Tenures.

Figure 5

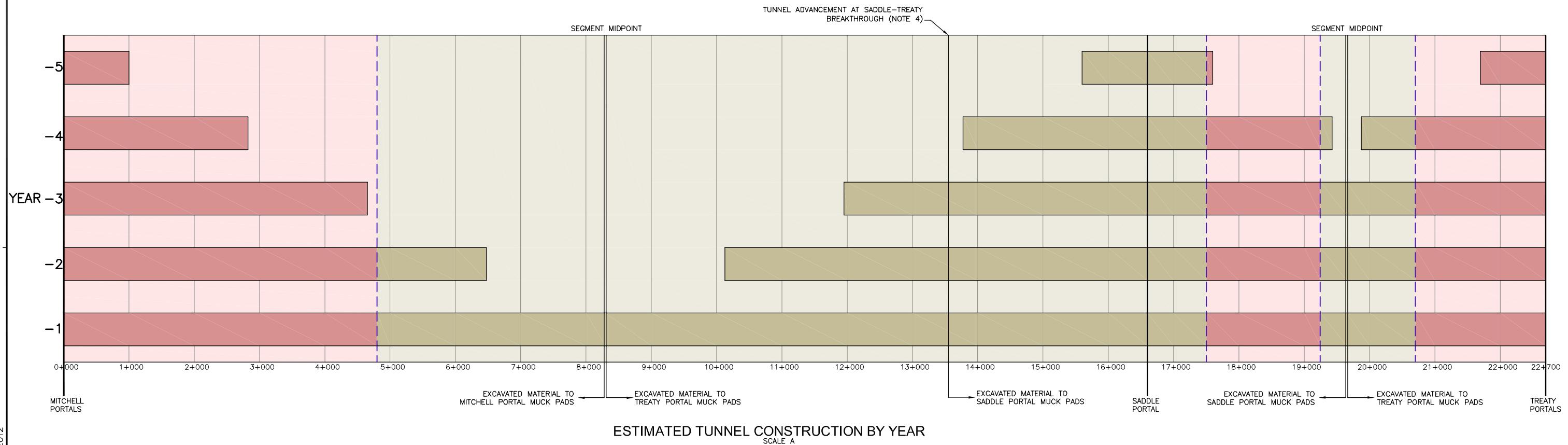
Time: 9:159  
Date: 4/23/2014  
Scale: 1=3(Ps)  
Drawing File: M:\VCR\M09-80A06 - SEA-KSM 2014\400 Drawings\CAD\MapUpdate\CAD\MapUpdate\09-80A06 - I-KCBL - Aug1\_2012  
Xrefs: CONTOURS20, I-BY-OTHERS-Aug1-2012, I-KCBL - Aug1-2012



PROFILE - MITCHELL-TREATY TUNNEL  
SCALE A

Alignment.dwg (dhegadoren)

File: M:\VCR\M09-80A06 - SEA-KSM 2014\400 Drawings\CAD\MapUpdate\CAD\MapUpdate\09-80A06 - I-KCBL - Aug1\_2012



ESTIMATED TUNNEL CONSTRUCTION BY YEAR  
SCALE A

YEAR	VOLUME OF MATERIAL TO MUCK PADS BY YEAR (m³)*											
	MITCHELL			SADDLE			TREATY					
	SEABRIDGE	NON-SEABRIDGE	TOTAL	SEABRIDGE	NON-SEABRIDGE	TOTAL	SEABRIDGE	NON-SEABRIDGE	TOTAL	SEABRIDGE	NON-SEABRIDGE	TOTAL
-5	44,000	0	44,000	4,000	94,000	98,000	42,000	0	42,000			
-4	78,000	0	78,000	70,000	85,000	155,000	43,000	35,000	78,000			
-3	82,000	0	82,000	0	19,000	19,000	0	82,000	82,000			
-2	6,000	71,000	77,000	0	0	0	0	77,000	77,000			
-1	0	78,000	78,000	0	0	0	82,000	82,000				
TOTAL	210,000	149,000	359,000	74,000	198,000	272,000	85,000	276,000	361,000			

\* EXCAVATED VOLUME

REFERENCE DRAWING

A	JUNE, 2014	ISSUED FOR PERMITTING	DH	GL	GP	
NO.	DATE	ISSUE / REVISION	DRAWN	CHK'D	DESIGN	APP'D

DRAWING NO.	REFERENCE DRAWING	CLIENT		PROJECT	TITLE
		CONTRACT	SEABRIDGE GOLD		
Kohn Crippen Berger		SCALE AS SHOWN	PROJECT No.	DWG. No.	REV.
		M09480A06	D-2015B	A	KCB-CMLD
CANCEL PRINTS BEARING PREVIOUS REVISION					

### **3.5 MTT Tunnel Rock Segregation Plan**

As described above, Seabridge will segregate for not potentially acid-generating rock (NPAG) and potentially acid-generating rock (PAG) and within the pads being used for each type of rock, segregating rock according to mineral tenure holder. This is described in greater detail below.

#### **3.5.1 NPAG/PAG Segregation**

Tunnel muck material will be sampled by advance probe drilling and or drill chips generated during drilling explosives holes for MTT construction, prior to blasting. This step-by-step process described in the KSM MA&EMA Permit Application Chapter 6, Metal Leaching and Acid Rock Drainage will be followed:

- A geologist or geological technician will regularly check the advance rock face for rock type to determine if the rock types are acid-generating.
- If rock is uncertain or identified as PAG, samples will be collected from the drill holes. At the KSM on-site laboratory, samples will be analyzed by way of paste-pH and ABA, in a four-hour turnaround. A percentage of duplicate QA/QC samples will be shipped out for testing at another laboratory.
- Blasted muck of indeterminate status will be stored temporarily at the relevant MTT portal on temporary lined pads. When analysis of drill chips is completed, muck will be re-handled and placed on either the NPAG or PAG pads, as appropriate.
- NPAG muck that is not used for construction will be stored at the Portal sites and reclaimed after the construction is completed.

Not less frequently than once each month while the construction of the MTT is ongoing, Seabridge will provide to each registered holder of the Third Party Tenures the geochemical data it collects in respect of areas of the MTT alignment passing through Third Party Tenures.

#### **3.5.2 Seabridge and Third Party Segregation**

The rate of tunnel advancement is estimated at 5 m per day. Therefore, tunneling can be expect to advance 1825 m per year. An estimated schedule is proposed for each year of tunneling as follows: (see also Figure 5).

- MTT Mitchell Portals, east toward Saddle Portal reaches tunnel muck from Third Party Tenures after three years of tunneling and generates 377,000 m<sup>3</sup> excavated volume of tunnel muck, of which 149,000 m<sup>3</sup> will be from Third Party Tenures. Tunnel muck from Third Party Tenures will be stored on the same pads but segregated from tunnel muck from Seabridge tenures at the Mitchell OPC in lined or unlined piles, depending on the rock geochemistry.
- MTT Saddle Portal, generates 198,000 m<sup>3</sup> excavated volume of tunnel muck from Third Party Tenures which will be stored separately from tunnel muck from Seabridge tenures at the Saddle Portal. 74,000 m<sup>3</sup> of tunnel muck from Seabridge tenures will also be stored at the Saddle Portal.
- MTT Treaty Plant Site Portals, west toward Saddle Portal will generate 85,000 m<sup>3</sup> excavated volume of tunnel muck from Seabridge tenures for the first two years before breakthrough. The total volume of tunnel muck excavated from Third Party Tenures reporting to the Treaty Plant Site Portals is 276,000 m<sup>3</sup>. After breakthrough, all tunnel muck excavated from Seabridge and Third Party Tenures will be stored at the Treaty Plant Site Portals. Tunnel muck from Third Party Tenures will be stored separately from tunnel muck from Seabridge tenures at the Treaty Plant Site Portals.

Use of surface GPS combined with underground surveying will enable Seabridge to determine if tunneling is on Seabridge tenures or Third Party Tenures. Areas within the NPAG and PAG tunnel muck pads will be clearly labelled as “Seabridge” or “Other” muck. In Figures 6A, 6B and 6C the separate areas for Seabridge and non-Seabridge muck are shown on the muck pads using the same colours for Seabridge and non-Seabridge muck as used in Figure 5.

From time-to-time during construction of the MTT, Seabridge, at its discretion, may give the registered owner(s) of the Third Party Tenures at the relevant time the option, exercisable for 3 months after the date Seabridge delivers notice that it is invoking this option provision, to elect to retain ownership or to relinquish ownership to Seabridge of the tunnel muck from the Third Party Tenures on the PAG pads or the NPAG pads at the MTT Portals at the time. If the registered owner(s) of the Third Party Tenures elect to relinquish ownership of tunnel muck in respect of which the notice is given, Seabridge shall thereafter be the owner of tunnel muck so relinquished and entitled to store it and use it as it decides. If the registered owner(s) of the Third Party Tenures elect to retain ownership of tunnel muck in respect of which the notice is given, Seabridge shall continue to store it in segregated areas of the muck pads for tunnel muck from the Third Party Tenures and continue to be responsible for water treatment and any other required environmental protection measures in respect thereof.

Once tunneling is completed and the MTT is operational, Seabridge will give the registered owner(s) of the Third Party Tenures at the time:

- (a) notice that tunneling has been completed and the MTT is operational;
- (b) the opportunity to sample the areas of the muck pads containing the muck from the Third Party Tenures for a period of 4 months after the date of the notice; and
- (c) an option, exercisable for 6 months after the date of the notice, to elect to retain ownership and possession of all of the tunnel muck from the Third Party Tenures, at a location off Seabridge’s tenures, provided that they agree thereafter to take responsibility for any required water treatment or other environmental protection measures associated with the tunnel muck to which they retain ownership.

If the registered owner(s) of the Third Party Tenures elect to retain ownership and possession of all of the tunnel muck from the Third Party Tenures after completion of construction, Seabridge will arrange for all tunnel muck from the Third Party Tenures on the pads at the Mitchell Portals and the Treaty Plant Site Portals to be placed on the PAG and NPAG pads at the Saddle Portal, as applicable, once the MTT is open and haul trucks are able to pass through them. (The muck pads at the Saddle Portals are being built on Third Party Tenures.) If requested by the registered owner(s) of the Third Party Tenures, Seabridge will complete reclamation of the NPAG tunnel muck material retained by the registered owner(s) of the Third Party Tenures at the Saddle Portal as described in Chapter 3.3 of the MA&EMA Permit Application for Limited Site Construction. Seabridge will leave the PAG tunnel muck from the Third Party Tenures on the lined PAG muck pads and the registered owner(s) of the Third Party Tenures will thereafter have ownership and take responsibility for all environmental management matters associated with the PAG rock on the muck pads, in particular, any necessary water treatment. Seabridge will remove its water treatment facilities at the Saddle Portals and reclaim the area unless otherwise agreed with the registered owner(s) of the Third Party Tenures.

If the registered owner(s) of the Third Party Tenures do not elect to retain ownership and possession of all of the tunnel muck from the Third Party Tenures within the period for exercise of the option after completion of construction, Seabridge shall become the owner of the tunnel muck from the Third Party Tenures, and responsible for all environmental management matters associated with the tunnel muck. If Seabridge becomes the owner of tunnel muck from the Third Party Tenures, Seabridge will only leave NPAG rock that is not used in construction of the KSM Project at the Saddle Portals and the entire area will be reclaimed as described in Section 5.2 below.

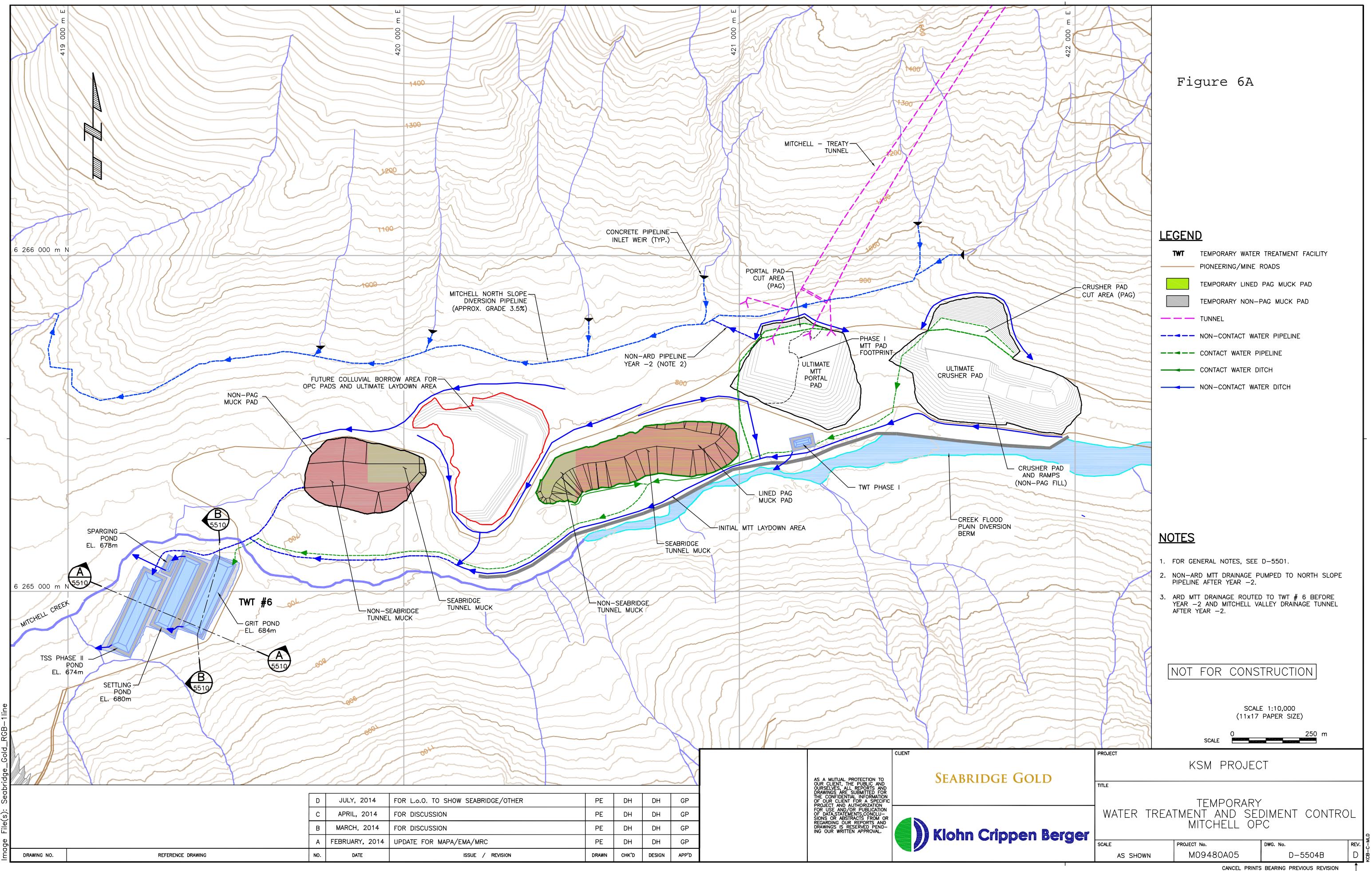
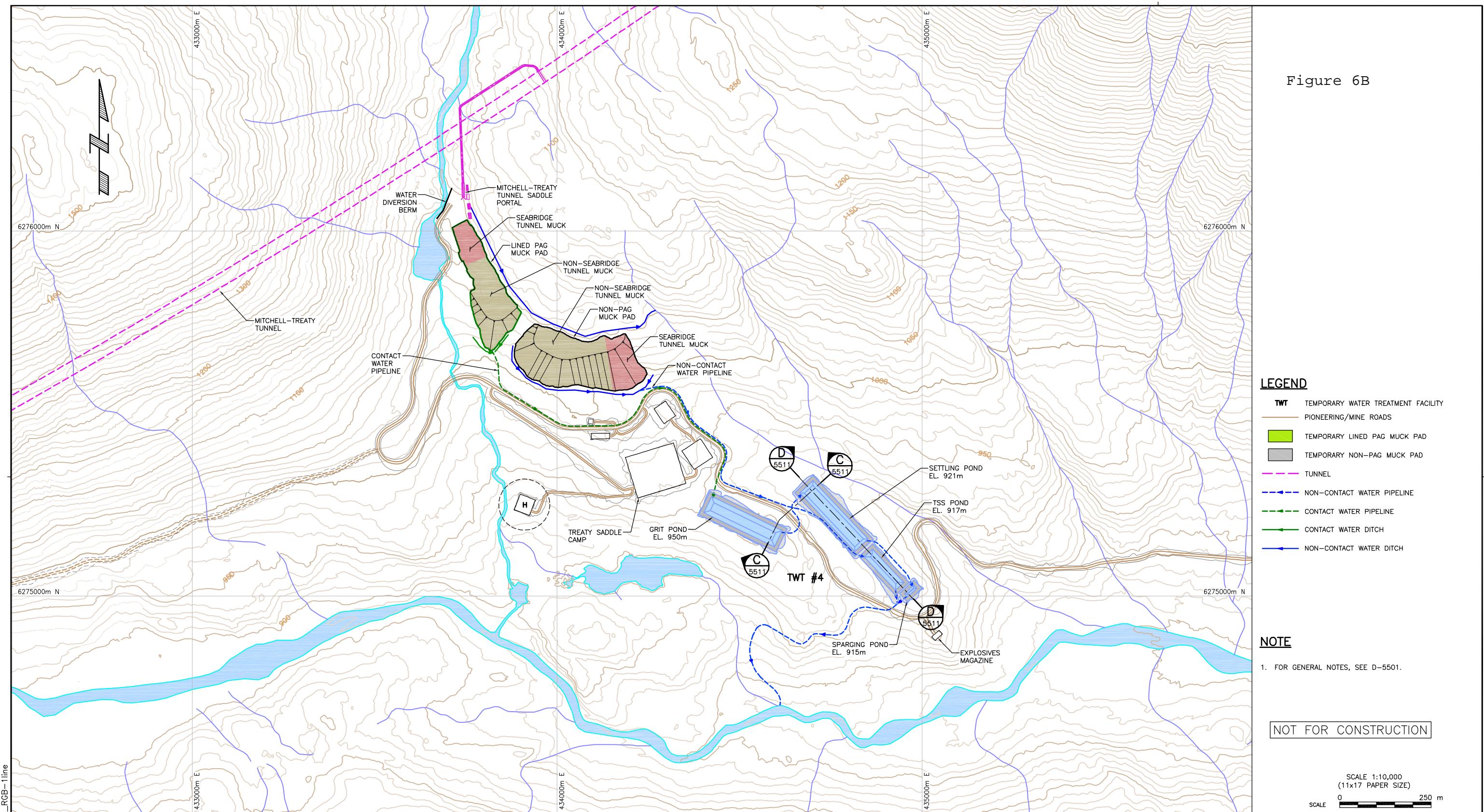


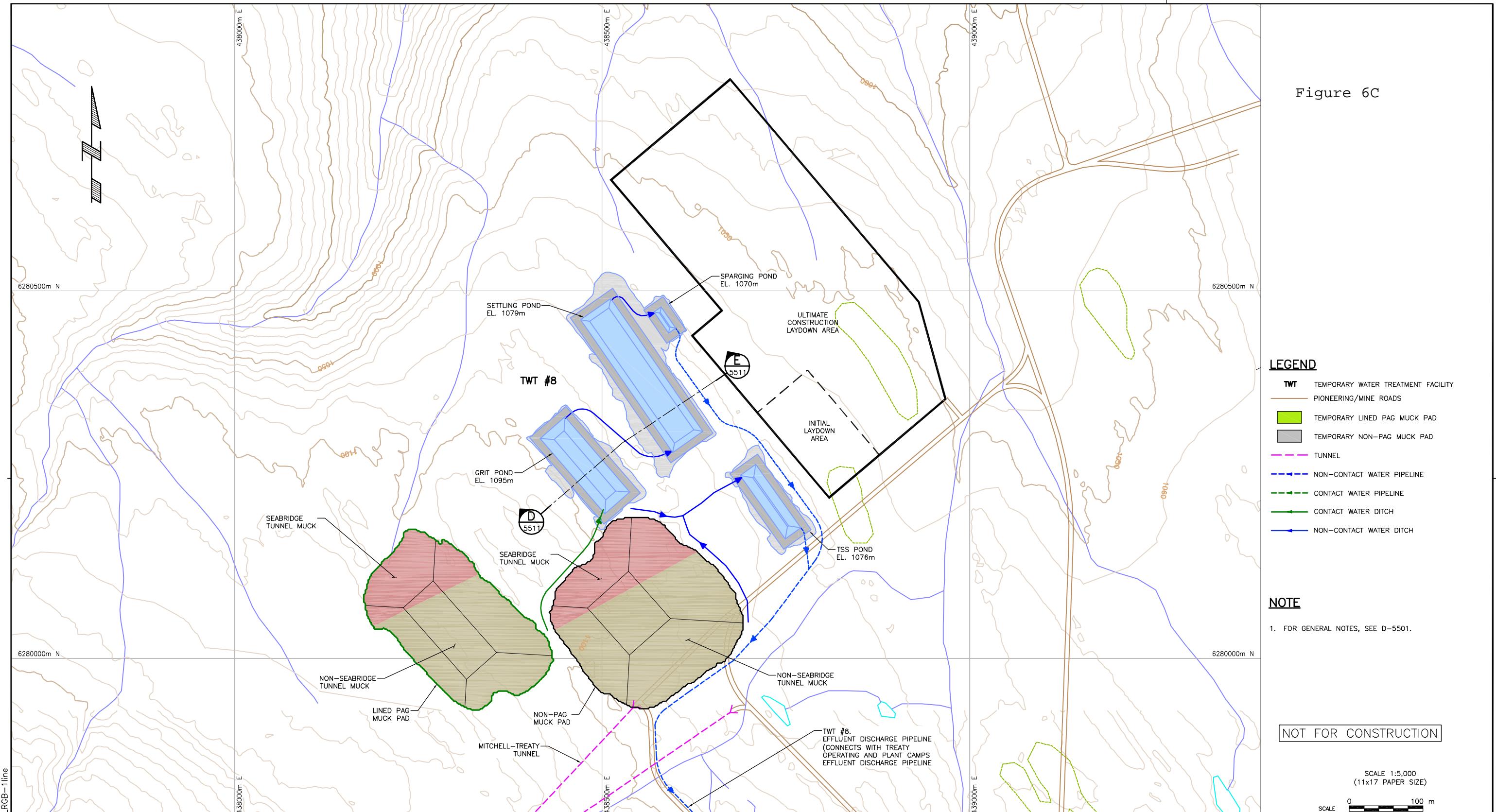
Figure 6B



		CLIENT		PROJECT	
		<b>SEABRIDGE GOLD</b>		KSM PROJECT	
TITLE					
		TEMPORARY		WATER TREATMENT AND SEDIMENT CONTROL	
		SADDLE PORTAL AREA			
SCALE	AS SHOWN	PROJECT No.	M09480A05	DWG. No.	D-5508B
REV.	D				KCB-C-MLD
CANCEL PRINTS BEARING PREVIOUS REVISION					

D	JULY, 2014	FOR L.O.O. TO SHOW SEABRIDGE/OTHER	PE	DH	DH	GP
C	APRIL, 2014	FOR DISCUSSION	PE	DH	DH	GP
B	MARCH, 2014	UPDATED	PE	DH	DH	GP
DRAWING NO.		REFERENCE DRAWING	NO.	DATE	ISSUE / REVISION	DRAWN CHK'D DESIGN APP'D

Figure 6C



LEGEND

<b>TWT</b>	TEMPORARY WATER TREATMENT FACILITY
PIONEERING/MINE ROADS	
<b>TEMPORARY LINED PAG MUCK PAD</b>	
<b>TEMPORARY NON-PAG MUCK PAD</b>	
<b>TUNNEL</b>	
<b>NON-CONTACT WATER PIPELINE</b>	
<b>CONTACT WATER PIPELINE</b>	
<b>CONTACT WATER DITCH</b>	
<b>NON-CONTACT WATER DITCH</b>	

NOTE

1. FOR GENERAL NOTES, SEE D-5501.

NOT FOR CONSTRUCTION

SCALE 1:5,000  
(11x17 PAPER SIZE)  
SCALE 0 100 m

CLIENT		PROJECT	
KSM PROJECT			
TITLE			
TEMPORARY WATER TREATMENT AND SEDIMENT CONTROL TREATY – OPC		DRAWING NO.	PROJECT No.
DWG. No.		M09480A05	D-5509B
REV.		D	D
CANCEL PRINTS BEARING PREVIOUS REVISION			



AS A MUTUAL PROTECTION TO  
OUR CLIENT, THE PUBLIC AND  
Ourselves, ALL REPORTS AND  
DRAWINGS SUBMITTED FOR  
THE CONFIDENTIAL INFORMATION  
OF OUR CLIENT FOR A SPECIFIC  
PURPOSE AND NOT FOR USE  
FOR USE AND/OR PUBLICATION  
OF DATA STATEMENTS, CONCLU-  
SIONS AND/OTHER INFORMATION  
REGARDING OUR REPORTS  
DRAWINGS IS RESERVED PEND-  
ING OUR WRITTEN APPROVAL.

D JULY, 2014 FOR L.O.O. TO SHOW SEABRIDGE/OTHER

C APRIL, 2014 FOR DISCUSSION

B MARCH, 2014 FOR DISCUSSION

PE DH DH GP

PE DH DH GP

PE DH DH GP

DRAWN CHK'D DESIGN APP'D

NO. DATE ISSUE / REVISION

### **3.6 MTT Material Analytical Procedures**

Daily assays of the rock from advance probe drilling and/or drill chips will be sent to a certified analytical laboratory, and following standard methods will be assayed for metals content. Methods for assay rock collection and handling will follow those described in the KSM Project PFS 2012, Chapter 11.2.3 Analytical Procedures. A description of the methods is included here:

#### **MTT Material Analytical Procedures**

Using Eco Tech, certified analytical laboratories, samples are sorted and dried (if necessary), crushed through a jaw crusher and cone or roll crusher to –10 mesh, then split through a Jones riffle until a –250 g sub sample was achieved. The sub sample was pulverized in a ring and puck pulverizer so that 95% of the material passed a -140 mesh screen, then rolled to homogenize. The resulting pulp sample was placed in a numbered paper envelope and securely packed in cardboard boxes. These boxes were shipped via Greyhound freight services to the Eco Tech facilities located in Kamloops, BC.

At the Eco Tech's laboratory in Kamloops, a 30 g sample size was split out from the pulp envelope and then fire assayed using appropriate fluxes. The resultant doré bead was parted and then digested with aqua regia followed by an atomic absorption (AA) finish using a Perkin Elmer AA instrument. The lower limit of detection for gold is 0.03 g/t or 0.001 oz/t. For other metals, a multi-element inductively coupled plasma (ICP) analysis was completed. For this procedure, a 0.5 g sample was digested with 3 mL mixture of HCl, HNO<sub>3</sub>, and, H<sub>2</sub>O at a ratio of 3:1:2 that contained beryllium, which acts as an internal standard for 90 minutes in a water bath at 95°C. The sample was then diluted with 10 mL of water and analyzed on a Jarrell Ash ICP unit. Eco Tech's ICP detection limits (lower and upper) are summarized in Table 11.7.

**Table 11.7      ICP Detection Limits**

<b>Element</b>	<b>Lower</b>	<b>Upper</b>
Ag	0.2 ppm	0.0 ppm
Al	0.01%	10.00%
As	5 ppm	10,000 ppm
Ba	5 ppm	10,000 ppm
Bi	5 ppm	10,000 ppm
Ca	0.01%	10.00%
Cd	1 ppm	10,000 ppm
Co	1 ppm	10,000 ppm
Cr	1 ppm	10,000 ppm
Cu	1 ppm	10,000 ppm
Fe	0.01%	10.00%
La	10 ppm	10,000 ppm
Mg	0.01%	10.00%
Mn	1 ppm	10,000 ppm

<b>Element</b>	<b>Lower</b>	<b>Upper</b>
Mo	1 ppm	10,000 ppm
Na	0.01%	10.00%
Ni	1 ppm	10,000 ppm
P	10 ppm	10,000 ppm
Pb	2 ppm	10,000 ppm
Sb	5 ppm	10,000 ppm
Sn	20 ppm	10,000 ppm
Sr	1 ppm	10,000 ppm
Ti	0.01%	10.00%
U	10 ppm	10,000 ppm
V	1 ppm	10,000 ppm
Y	1 ppm	10,000 ppm
Zn	1 ppm	10,000 ppm

Assay results are collated by computer and printed along with accompanying internal quality control data (repeats and standards). Results were printed on a laser printer and were faxed and/or mailed to appropriate personnel. Appropriate standards and repeat samples were included on the data sheet.

## Quality Control Measures

The proponent will implement the same quality control procedures as used for previous KSM programs.

- Standard reference material (SRM) sources will be used with blanks and with commercially certified standards of pre-packaged pulps. Assay quality control measures will include the insertion of a sample blank and pulp standard within each laboratory batch. The blank and pulp standards are numbered using the same number sequence used for the assay samples and inserted into each batch shipment randomly during the logging process.
- Duplicate core samples in every second batch by sawing one half of the drill core into two  $\frac{1}{4}$  core splits that will be submitted as individual samples to Eco Tech.
- Both Eco Tech and Chemex employed the same assay measurement techniques for gold. For other metals, the cross-checks compared Eco Tech ICP analyses with ALS Chemex ore grade, AAS finish analyses. Both methods utilized a triple acid digestion. For finely disseminated, low grade base metal mineralization similar to that which occurs at the Mitchell deposit, the ICP analyses are generally considered to be as reliable (or more reliable than) ore grade, AAS finish analyses.

Not less frequently than once each month while the activity described in this section 3.6 is ongoing, Seabridge will provide to each registered holder of the Third Party Tenures the assay results for metal content from the material taken from areas of the MTT alignment passing through a Third Party Tenures.

## 3.7 MTT Saddle Portals Water Management

Chapter 7 of the Mines Act and EMA Permit Application includes EMA Applications for effluent discharge, and a Technical Assessment Report for the Temporary Water Treatment Plant #4 facility at the Saddle Portals. The effluent discharge is authorized by Ministry of Environment, while the activities at the TWTP are authorized by Ministry of Energy and Mines. A brief overview is provided here.

The Temporary Water Treatment (TWT) ponds at the Saddle Portal area are located approximately 800 m southeast of the Saddle Portal PAG pad. An HDPE pipeline, buried and gravity fed, will convey water from the toe of the PAG pad to the TWT#4 grit pond. The location of the TWT#4 ponds and details of the water management are shown in Figure 6B (Drawing D-5508B).

The primary sources of contact water from the Saddle Portals MTT construction will be runoff from the lined temporary PAG rock storage pad adjacent to the tunnel portal and groundwater intercepted during tunnel excavation. The liners on the PAG muck pad will be installed at a 2% inwards sloping grade to direct water into the pad where it will be collected within a drain. This drain will drain water to the sides of each pad to lined channels, which will convey water to temporary treatment ponds.

The expected water quality of the effluent will depend on the geochemistry of the rock encountered during tunneling (presented in Chapter 3.3) and the quality of groundwater tunnel inflows, and some uncertainty exists around these characteristics. The TWT will be designed to treat water for pH, total suspended solids, dissolved metals, and residual ammonia from blasting, if required.

The TWT will include a grit pond, a reagent preparation system for lime and flocculent addition, a settling pond, an air sparging pond, and a system for pH control. Regular sampling and analysis of the water within the grit pond will be used to confirm and determine coarse treatment requirements. Automated controls within the reagent preparation units will fine tune dosage during operation. Treated effluent will be discharged into Treaty Creek, through a diffuser.

## Section 4.0 Other Infrastructure

### 4.1 Associated Infrastructure at the Treaty Saddle Portals

Infrastructure within the LoO application required on surface to support the MTTs are described in Table XX. The column to the right includes the regulatory agency for mining activities and the legislation and regulations applicable to that activity.

**Table 2.** KSM Project Infrastructure

Infrastructure at MTT Saddle Portal	Regulatory Authority
Treaty Saddle construction camp for 120 persons, with helipad, fuel storage and equipment and material storage yard, explosives magazine and diesel-fuelled construction power plant. The Treaty Saddle Camp is proposed as a construction camp, to operate for approximately five years.	Ministry of Energy and Mines, Mines Act Permit Northern Health Authority, Public Health Act, Industrial Camps Regulations
The camp water supply is planned to be sourced from a small pond south of the camp. A Water Act water licence application is currently under review for industrial camps, potable water use withdrawal from surface water.	Northern Health Authority, Public Health Act, Industrial Camps Regulations Water Act, Groundwater Protection Regulation
Camp 6: Treaty Saddle Camp sewage treatment plant effluent discharge authorization  The Treaty Saddle Camp is proposed as a construction camp, maximum capacity of 120 persons, to operate for approximately five years. Treaty Saddle Camp sewage will be treated using standard methods in a package sewage treatment plant. Permits, licences and authorizations required from BC Ministry of Environment are currently under review. Treated effluent would be discharged to Treaty Creek.  For the potential Construction Access Adit, located 2.9 km from the Treaty Saddle Camp, Port-a-potties would be used in portal and tunnel construction areas which are distant from the construction camps. Sewage disposal would include transporting the port-a-potties' effluent to the Treaty Saddle Construction camp for treatment and disposal for the duration of construction.	Ministry of Environment, Environmental Management Act Municipal Wastewater Regulations (MWR)
All roads constructed within the Saddle LoO area will meet the requirements of the <i>Mines Act</i> and the Code and current engineering standards.	
Un-lined storage pads for tunnel muck identified as not potentially acid-generating (NPAG), settling pond.	Ministry of Energy and Mines, Mines Act Permit
Lined storage pads for tunnel muck identified as potentially acid-generating (PAG), storage for non-acid-generating (NAG) tunnel muck.	Ministry of Energy and Mines, Mines Act Permit
Temporary Water Treatment Plant, grit pond, settling pond and sparging ponds and treated water suspended solids settling ponds.	Ministry of Environment, Environmental Management Act, effluent discharge permit
An application for a Ministry of Environment, EMA effluent discharge permit was submitted in June 2013. The permit would be to use, store and treat water required for tunnel construction for drilling and blasting. This water will collect in the MTT as the MTT is designed on a very gradual slope to the west, towards the Mitchell Portals. During construction, pumps will be used to pump tunnel	

water to settling ponds to be monitored prior to release. Mine contact water may be released when it meets permit requirements. Treatment such as settlement, flocculation and metals removal may be required. The permit application includes detailed plans for diverting “clean” water around construction areas, collection and storage of “contact” water coming onto construction areas and if required, treatment of water unsuitable for release downstream.	
Saddle Portal and access area with car wash, remote office, lunch room and mine dry near saddle, access road from camp. All access roads constructed in the Saddle LoO will meet the requirements of the <i>Mines Act</i> and the Code and current engineering standards.	Ministry of Energy and Mines, <i>Mines Act</i> Permit
Saddle Portal stream diversion. To construct the access road to the Saddle Portal, an authorization to divert a stream is required under the Water Act. The Water Act and regulations is managed by the Water Stewardship Division of MFLNRO.	Ministry of Forests, Land and Natural Resource Operations, Water Stewardship Branch, Water Act Licence.
A permit application for a water licence and authorization for a stream diversion will be forthcoming prior to construction. This permit application was not included in the Batch 1 Concurrent Permit Applications because not sufficient data had been collected for the application to be complete in late 2012.	
Utility (power, electrical, telecommunications) requirements and sources. As this is a remote site, diesel generators will be used to generate the electrical energy required for the tunnel construction. Electricity is primarily required for ventilation fans and lights. Blasting equipment and tunneling equipment will be diesel powered.	Ministry of Energy and Mines, <i>Mines Act</i> Permit
Potential 2.9 km access road from Treaty Saddle Camp at the Saddle Portal to the potential Construction Access Adit Portal; all access roads constructed in the Saddle LoO will meet the requirements of the <i>Mines Act</i> and the Code and current engineering standards.	Ministry of Energy and Mines, <i>Mines Act</i> Permit
Potential Construction Access Adit portal at 1020 m elevation (a tunnel 364 m long at 15.5% slope to 985 m elevation where it would intersect the MTT), and underground car wash, lunch room and mine dry at MTT elevation;	Ministry of Energy and Mines, <i>Mines Act</i> Permit

Once the MTTs are constructed, all surface areas except the Saddle Portal and access road will be assessed, reclaimed and either released or maintained for operations tunnel maintenance and safety.

## Section 5.0 Environmental

### 5.1 Environmental Baseline

Seabridge Gold has extensively studied the regional and local study area at considerable expense. The KSM EA/EIS Application, including all the KSM baseline data reports for the years 2008-2011, are available for review. Additionally, Seabridge Gold Inc. issued a succession of Pre-Feasibility Studies in 2010, 2011 and 2012. These contain all the supporting environmental baseline information documents and schedules for the KSM Project. Each pre-feasibility study builds on the prior study and all of them are available electronically at SEDAR ([www.sedar.com](http://www.sedar.com)) and also upon request from Seabridge or may be viewed at the Seabridge office in Smithers.

Plans for construction, operation and closure of the MTT are included in Chapter 3.3 of the *Mines Act* and EMA Permit Application, submitted to the BC Ministry of Energy and Mines for review in June 2013.

## **5.2 Land Impacts**

Surface disturbances as a result of the MTT construction will be minimal. The only permanent surface disturbance from the 23 km twin tunnels will be the NPAG tunnel muck excavated from the Saddle Portal, to the extent it is not used in construction, and the PAG tunnel muck if the registered owners of the Third Party Tenures elect to take ownership of, and environmental responsibility for, it. If tunnel muck remains in the NPAG stockpile, it will be re-sloped, and recovered with soil if stockpiled soil is available. Any tunnel muck that is potentially acid-generating and becomes owned by Seabridge, will be moved once the MTT is complete to be buried in the Tailings Management Facility.

The Saddle Portal and Treaty Saddle Camp are in the alpine tundra (AT) ecosystem and vegetation is sparse. Clearing will be minimized for infrastructure and camp buildings due to the long recovery time of this ecotype.

Environmental studies included an Archaeological Impact Assessment as per the *Heritage Conservation Act* (HCA) to identify and evaluate archaeological sites located within and adjacent to the footprint of the Project. No archaeological sites were found within the areas proposed to be disturbed by the MTT and no further archaeological assessment was recommended for the areas of the proposed footprint. For the protection of archaeological and cultural heritage, a Chance Find Procedure will be in place during construction and all staff will be advised of and trained in their use.

## **5.3 Land Use along the MTT alignment**

The MTT proposed license area, which includes a 37.5 m area on each side of proposed centre lines of the tunnels for construction purposes, is 672 ha, of which 252 ha is underground. Figure 5 shows the MTT alignment in cross-section and it is clear that it passes several hundred meters below surface for much of the route. The requested surface infrastructure is estimated as 420 ha (Figure 3). The actual proposed land surface disturbance, shown within the red block on Figure 3 is estimated as 121 ha, well below half of the 420 ha requested. The width of the proposed LoO is 110.25 m, calculated as 37.5 m to the centre line on the conveyor tunnel, 3 m to the wall of the conveyor tunnel, 30 m between the tunnels, 2.25 m to the centre line of the transport tunnel and 37.5 m from the centre line of the transport tunnel.

The 2012 Licence application area included a potential Construction Access Adit, another construction portal to the MTT to speed construction. It included 2.9 km of access road to connect it to the Treaty Saddle construction camp (120 persons), and area on the surface for portal infrastructure, sediment control ponds and tunnel muck pads, both lined PAG rock pads and unlined NPAG rock pads. Because of geohazards identified during mine planning, it is unlikely that the Construction Access Adit can or will be constructed, therefore the land west of the Saddle portal is not likely to be disturbed.

During the proposed conversion of the Licence of Occupation to a Right of Way the tunnels openings will be surveyed and the 37.5 m area on each side of the centre lines of the MTT will be narrowed to just the area occupied by the MTT and the infrastructure at the Portals.

# **Section 6.0 Third Party Road Access**

## **6.1 Project Roads Access**

The KSM Project infrastructure includes the TCAR and the CCAR. Seabridge will restrict access to the CCAR and the TCAR such that the only persons that will be able to use the TCAR and the CCAR will be persons using them for

purposes related to the KSM Project and others with rights under applicable legislation to use the roads. In addition, those permitted access will be required to comply with the policies, procedures and requirements that Seabridge has in place at the time of access.

## 6.2 MTT Access for Third Parties

The TCAR and the CCAR will provide road access to the Treaty Plant Site Tunnel Portals and the Mitchell Tunnel Portals.

During construction of the MTT, access by third parties to the MTT for construction or exploration activities should not be allowed. There will be high levels of traffic activity in the MTT for removing tunnel muck, delivering explosive materials and moving personnel. Safety protocols mandate the movement of personnel out of the whole tunnel for each blast, not only for the blast itself but for a period of time thereafter while blasting fumes and dust dissipate. Similarly, after driving the tunnels while in-tunnel infrastructure and utilities are installed access is too challenging. This level of activity and the safety measures required to be observed make access by third parties for construction or exploration purposes not feasible during construction. Maintaining MTT construction timelines at the fastest possible rate is also critical to the economic success of the KSM Project and delays for third party activities cannot occur.

During operations, the KSM Project will operate 24 hours a day, 7 days a week, 365 days a year. The MTT transport tunnel is only large enough to accommodate traffic travelling in one direction and traffic will not be allowed to travel at greater than 25 km/hr. Traffic will be organized in convoys of about 6 vehicles. Seabridge estimates that during operations, on average, it will have 82 vehicles travelling each way through the MTT per day and this excludes vehicles of workers working within the tunnels in monitoring and maintenance capacities. Therefore, there is very little spare capacity in the MTT transport tunnel for extra vehicles. There would not be sufficient spare capacity to accommodate another mining operation. However, Seabridge believes it could accommodate traffic associated with a limited scale exploration program (not more than 2 drill rigs at any time) by or on behalf of one of the registered owner(s) of the Third Party Tenures.

Seabridge expects that the MTT will be considered part of the “mine”, for the purposes of permits issued under the *Mines Act* (British Columbia). Therefore, the obligations imposed on the Mine Manager in respect of access, safety and workplace conditions will also apply to the MTT. Anyone wishing to gain access to the MTT for exploration by or on behalf of one of the registered owner(s) of the Third Party Tenures will therefore have to satisfy the terms and conditions imposed on access by the Mine Manager.

Once the MTT is constructed and regular mining operations commence, Seabridge is willing to allow the registered owner(s) of the Third Party Tenures and their agents access to:

- the MTT transport tunnel from the Treaty Plant Site Portal; and
- the MTT tunnel cross-cuts in the Third Party Tenures,

on not less than three weeks’ notice, subject to the conditions below. The registered owner(s) of the Third Party Tenures will only be granted access for the purposes of:

- constructing small access adits (not longer than 30 m) off the MTT cross-cuts to serve as a platform for mineral exploration drilling; or
- undertaking mineral exploration drilling activities from within the access adits not to exceed two exploration

drills in any one adit,

and provided that the registered owner(s) of the Third Party Tenures:

- do not interfere with KSM Project operations;
- accept that Seabridge will determine their schedule for access and will schedule their access and their activities which impact on KSM Project operations so as to minimize conflict with KSM Project MTT transport and maintenance schedules, with KSM Project operations to have priority;
- comply with all KSM Project safety standards and observe all other terms, conditions, policies, procedures and requirements of the Mine Manager regarding access to the MTT and the cross cuts and the activities being conducted therein;
- independently secure all necessary permits and authorizations with respect to their activities, including posting sufficient bonding to fund any required reclamation and comply with all terms of such permits and authorizations;
- independently take any necessary measures to ensure there will be no impacts to water quality or quantity within the MTT tunnels from their activities;
- independently remove from the MTT and responsibly store all muck from adit construction and all drill core off the mineral tenures owned by Seabridge and remove all waste, hazardous materials or other materials brought into the MTT;
- operate without drawing power from KSM power lines;
- only undertake construction of adits that run parallel to the MTT and in a manner that will not impair the structural stability or integrity of the MTT walls from a geotechnical standpoint;
- provide Seabridge with at least two months advance notice of adit construction activities from within the MTT cross-cuts, including details of their plans for proposed construction, and meet with Seabridge to address any concerns Seabridge may have with respect to proposed construction activity or adit design, including regarding preserving the structural integrity of the MTT, measures to avoid air quality and water quality degradation and handling of hazardous materials or other pollutants;
- ensure that their operations within the MTT do not damage or impair the operation of the materials, equipment and infrastructure in the MTT or diminish the functionality of it and allow Seabridge to continue to meet its operational criteria for safe operations in the MTT;
- pay Seabridge a reasonable portion of MTT maintenance costs in respect of their activities within the MTT;
- enter into an indemnity agreement in a form acceptable to Seabridge under which the registered owner(s) of the Third Party Tenures agree to indemnify Seabridge for all losses, damages or expenses, of any kind, it incurs, suffers or is made subject to that it would not have incurred, suffered or been made subject to if the registered owner(s) of the Third Party Tenures had not engaged in any activities within the MTT; and
- produce evidence of adequate insurance for the risks associated with their activities within the MTT covering not only liability for any injuries or deaths, repair of damage and reclamation and clean-up costs for accidents but also all liabilities, costs and losses, including economic losses of Seabridge from lost operating time.

## Section 7.0 Benefits

### 7.1 Benefits to Holders of Third Party Tenures

Seabridge holds mineral tenure at the Mitchell and Treaty Portals, located at each end of the MTT, however it, does not hold mineral tenure at the Saddle Portal or potential Construction Access Adit and along approximately 12.5 km of the

MTT route.

The KSM Project, as proposed, could not be operated without the MTT. Seabridge believes that the KSM project will provide great benefits to the registered owner(s) of the Third Party Tenures. Table 3 shows a list of information that Teuton and American Creek have received from Seabridge's development activities in respect of the KSM Project. Table 4 shows a list of benefits that construction of the KSM Project would provide to the registered owner(s) of the Third Party Tenures.

**Table 3.** Information Seabridge has already provided to the registered owner(s) of the Third Party Tenures:

<b>Benefit</b>	<b>Description</b>
2011 Geophysical survey	Geophysical data from survey of route (somewhat offset from, but generally parallel to the MTT alignment) by Quantec Geoscience
2012 geotechnical drill core at Saddle Portal	In 2012, KCB drilled a geotechnical hole at the Saddle Portal (GPS). The drill core was left at the Teuton exploration camp at the request of Teuton Resources. No assays have been completed.
KSM Project EA/EIS Application for an Environmental Assessment Certificate, August 2013	During the BC and Canadian Environmental Assessment Application and Review Process, Seabridge has collected significant baseline environmental data from 2007-2013 and included all the data in the EA/EIS Application. An electronic copy of the Application was provided.
KSM Project Concurrent Permit Application, June 2013	Seabridge Gold applied for site construction permits concurrently with the EA/EIS Application to provincial and federal agencies. Permit applications include the Saddle Portal construction camp, sewage treatment plant, Mines Act & EMA permit application for construction and operation of a temporary water treatment plant. An electronic copy of the Application was provided.

**Table 4.** List of benefits construction of the KSM Project could provide to the registered owner(s) of the Third Party Tenures

<b>Benefit</b>	<b>Description</b>
MTT rock assays	Seabridge will provide MTT Tunnel assay results from probe drilling and drill chip assays on the Third Party Tenures as described in Section 3.6 above. To obtain the same information from drilling at surface would involve significant cost.
MTT geotechnical and geochemical data	Seabridge will provide MTT Tunnel geotechnical and geochemical data in respect of the Third Party Tenures as described in Sections 3.3 and 3.5.1 above.
Road access from Highway 37	The TCAR and TCAR Spur resource road from Highway 37 to the Saddle Portal. This road would be an access-controlled, 33 km all-weather access road into the centre of the Third Party Tenures and within a few kilometers of the current camp on such claims and would cost well over \$15 million. It is understood that the registered owner(s) of the Third Party Tenures will have rights to access to the TCAR and the TCAR spur road under applicable legislation, subject to meeting

	Seabridge's policies, procedures and requirements for access and paying Seabridge for reasonable maintenance costs associated with their usage. This road should reduce costs of exploration programs and would improve the economics of any possible mine on the Third Party Claims, which could potentially reduce cut-off grades.
Potential for accessing power from the NTL at the Treaty switching station	Part of the KSM infrastructure includes building a switching station close to the junction of Highway 37 and the TCAR that will allow Seabridge to take power from the Northwest Transmission Line (NTL) for the KSM Project. If the registered owner(s) of the Third Party Tenures decide to develop their tenures into a mine, the presence of the switching station will facilitate them taking power from the NTL (if they can secure an allocation of power from the NTL). Construction of the electrical switching station along the NTL, with metering equipment, is estimated to cost approximately \$15 million.
Exploration access	Seabridge is willing to provide the registered owner(s) of the Third Party Tenures some degree of access to the MTT to construct access adits from the MTT cross cuts on the Third Party Tenures and conduct exploration as described in greater detail in Section 6.2. This could allow access to explore areas that might otherwise be inaccessible or infeasible to drill from the surface.

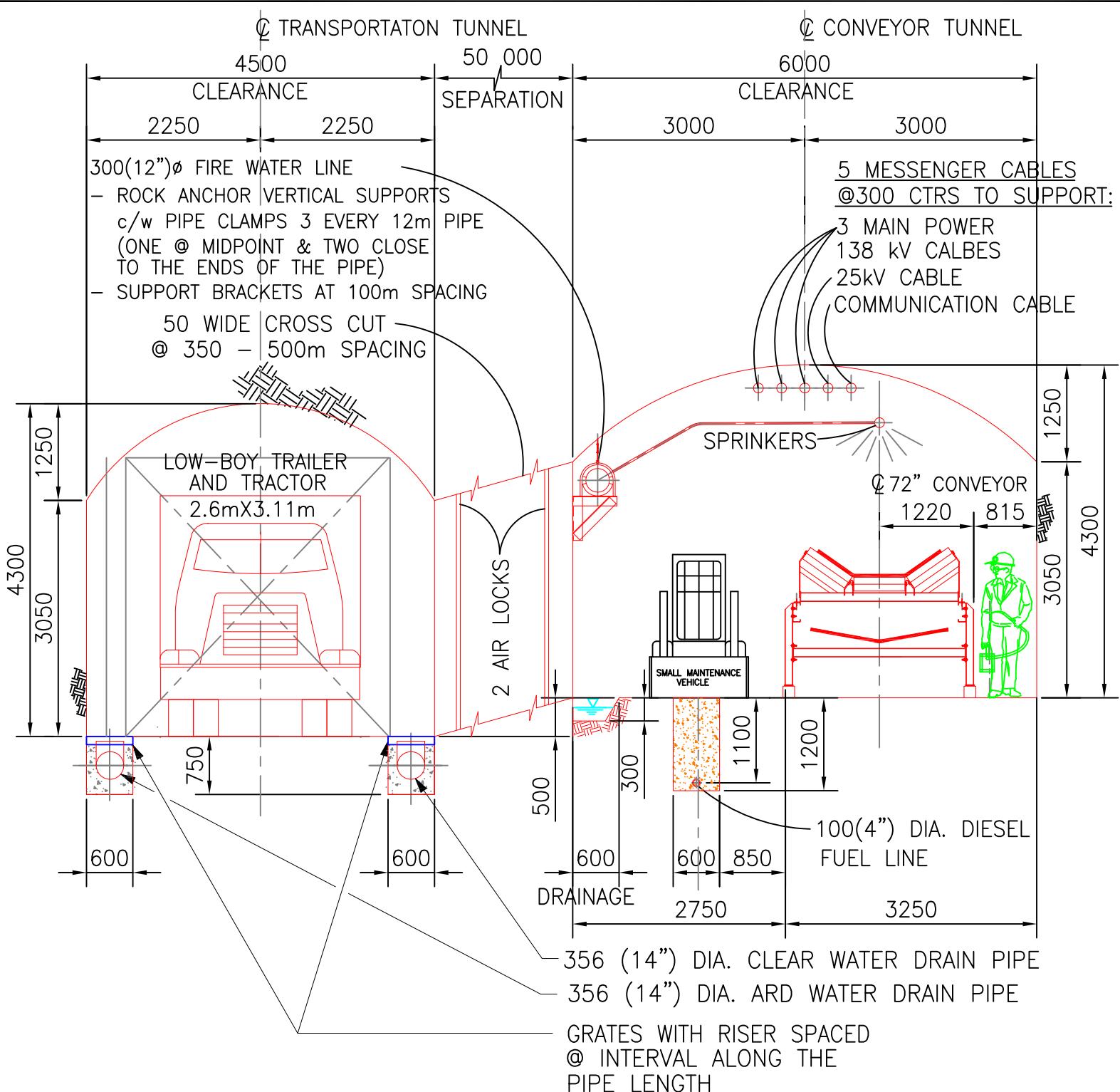
As part of the Project, Seabridge will construct and maintain infrastructure that will be of benefit to others, principally roads. The road up to the Saddle and the Treaty Access Adit, if constructed, could be used by the holders of the mineral claims through which the MTT passes for easier and cheaper access to their properties, offering potentially significant savings on future exploration programs.

As can be seen from the cross-section view of the MTT alignment in Figure 5, the MTT alignment is several hundred meters below the surface of the Third Party Tenures, including a significant segment that is below ground covered by glaciers. Seabridge is willing to provide the registered owner(s) of the Third Party Tenures access to the MTT as described in Section 6.2 above for exploration of the Third Party Tenures. This access will open up areas of the Third Party Tenures for exploration which otherwise would not be able to be drilled in an economically feasible manner due to the glacier cover or the required depth of the holes. Seabridge suggests that a far greater volume of rock is made accessible for exploration due to the presence of the MTT than the volume of rock occupied by the MTT or needed for its support.

The Third Party Tenures have been held by the current registered owner for over 25 years, during which time \$7 million has been spent exploring them with limited success. Seabridge is unaware of any mine development work on the Third Part Tenures. Certain zones of mineralization have been identified on these claims in areas that lie in proximity to the MTT alignment. However, as far as Seabridge can determine from publicly available information, the route of the MTT will pass several hundred metres away from the intercepts of mineralization in all of these mineralized zones.

The surface workings Seabridge proposes on these claims are minimal and temporary, with the activity taking place in a limited area and lasting an estimated 5 years (anticipated to be summer 2015 to summer 2020). Accordingly, it is expected that the potential adverse effects that will be experienced by the third party mineral claims owner(s) are:

- (a) at most, minimal interference with surface activities; and
- (b) an inability to explore or develop a narrow corridor through these claims in a manner that would interfere with Seabridge's mining activities or jeopardize the MTT structure until after the KSM mining operation have ended.



## MITCHELL - TEIGEN TUNNEL CROSS SECTION WITH 72" CONVEYOR

SCALE: NONE	DATE:	BOSCHE VENTURES LTD		TITLE		
DSN. H.Bosche	Mar 20 12			PFS UPDATE 2012	MITCHELL-TEIGEN TWIN TUNNEL	
DR. B.Wong	Mar 20 12			CROSS SECTION	PROJECT No.	DRAWING No.
CH.						REV No
APP.						Figure 9