MEADOWBANK
MINING CORPORATION

MEADOWBANK GOLD PROJECT

FAULT TESTING AND MONITORING PLAN

AUGUST 2007

SECTION 1 • INTRODUCTION

Meadowbank Mining Corporation (MMC), formerly Cumberland Resources Ltd. (Cumberland), is proposing to develop the Meadowbank Gold Project located approximately 70 km north of Baker Lake in Nunavut. The Project is subject to the environmental review and related licensing and permitting processes established by Part 5 of the Nunavut Land Claims Agreement (INAC and TFN, 1993).

On March 31, 2003, Cumberland submitted its Project Description Report for the Meadowbank Gold Project to the Nunavut Impact Review Board (NIRB). Following receipt of the MMC's application and NIRB's screening review, the Minister of the Department of Indian Affairs referred the Project to an environmental impact review under Part 5 or 6 of Article 12 of the Nunavut Land Claims Agreement.

Following submission of a Final Environmental Impact Statement (FEIS), and completion of the screening and environmental impact review process, NIRB recommended that the Project proposal proceed subject to certain terms and conditions. On November 17, 2006, the Minister of Indian and Northern Affairs Canada, on behalf of the federal government and pursuant to Article 12.5.7 of the NLCA, approved the Nunavut Impact Review Board's recommendation and the Meadowbank Gold Mine Project Certificate (Nunavut Land Claims Agreement Article 12.5.12) was issued (NIRB 2006).

A list of commitments that were made by Cumberland to NIRB at the close of the environmental impact review process was included as part of the NIRB submission to the Minister for approval of the Meadowbank Gold Project. The Nunavut Water Board (NWB) has compiled certain of these commitments into the terms and conditions to be met as part of the water license application for the Project (NWB 2007). The following addresses NIRB Condition #20.

The first part of Condition #20 states the following:

"Prior to construction, Cumberland shall identify mitigation measures that can be taken if groundwater monitoring around the tailings facility demonstrates that contamination from tailings has occurred through the fault."

The second part of Condition #20 states the following:

"Upon drawdown of the North arm of Second Portage Lake, Cumberland shall conduct further tests to assess the permeability of any faults and provide the results to regulators. If doubt remains Cumberland shall seal the fault and conduct further permeability testing and monitoring."

A list potential mitigative options that could be undertaken should groundwater monitoring around the tailings facility demonstrate contamination from the tailings has occurred through the fault are presented in Golder Technical Memorandum #375 Version 1 *Mitigative Measures for Potential Seepage from Tailings Facility* (Golder 2007a).

The following presents the testing and monitoring procedures that will be undertaken to determine the permeability of faults that extend through the Tailings Storage Facility (TSF), and provides a commitment to mitigate seepage through the fault should the testing indicate a zone of enhanced permeability.

The groundwater monitoring mentioned in the first part of Condition #20 refers to monitoring wells that would be installed following the identification of the location of the fault. If groundwater monitoring within these wells demonstrate that contamination from the tailings has occurred through the faults, additional mitigative measures, including sealing of the faults if necessary, will be undertaken.

SECTION 2 • FAULT TESTING AND MONITORING PLAN

Based on field investigations to date at Meadowbank, the faults and associated fractured rock zone of enhanced permeability, are typically up to 5 m wide, and have a hydraulic conductivity (K) of up to approximately 1 x 10^{-5} m/s (Golder 2006). Typically, the K value reduces substantially at depth due to increased stress; however, the depth and degree of reduction is not clearly understood at this time. The inferred locations of the faults identified to date are shown in Figure 1. One of these faults, the Portage Fault, is projected to run beneath the north arm of Second Portage Lake (Second Portage Arm) where the TSF and Central Dike are located.

MMC is committed to identifying the location(s) and hydraulic properties of faults that are present beneath the Second Portage Arm. Upon dewatering of Second Portage Arm, several investigative procedures will be utilised to address these commitments, including mapping of exposed bedrock, testing and monitoring during installation of the proposed grout curtain in the Central Dike (Golder 2007b), and geophysical logging and packer testing in boreholes. The results of these investigations will be used to situate monitoring wells that will be installed across faults beneath the TSF and downstream of the investigations described in this document between the Central Dike and the crest of the Portage Pit. These wells will be used, together with other wells installed in the area of the TSF, to provide long-term monitoring of potential seepage from the TSF. In effect, the wells would monitor the effectiveness of the Central Dike grout curtain, and any additional the grouting of zones of enhanced permeability between the dike and the pit crest, in preventing the flow of contaminants from the TSF through the faults.

MMC is also committed to completing detailed coupled seepage-thermal and solute transport modeling prior to Central Dike construction to further evaluate the potential for groundwater seepage through the Second Portage Lake Fault and the requirement for additional mitigation controls, if any.

2.1 MAPPING OF EXPOSED BEDROCK

Figure 2 presents a plan view of the construction phase for the initial dewatering of the Second Portage Lake. The East and Bay Zone dikes will be constructed first. This will be followed by the dewatering of the area behind the dikes, including Second Portage Arm. The Central Dike will be constructed in the dry. During construction, lakebed sediments will be removed over a 6 m wide footprint of the dike, thereby exposing the bedrock surface (Golder 2007b). MMC will take this opportunity to carry out detailed mapping of the exposed bedrock surface to identify areas of enhanced fracturing that may be associated with faults.

2.2 INSTALLATION OF THE GROUT CURTAIN

A series of boreholes will be drilled along the Central Dike footprint for installation of a grout curtain (Golder 2007b). Any potential faults identified during the mapping of the exposed bedrock will be grouted as the grout holes will cover the entire length of the dike to form a continuous curtain. Currently it is planned that this curtain would extend 25 m down into the fractured bedrock; however, should pressure testing identify any permeable zones (> 1 x 10^{-7} m/s), then the grouting will extend below the 25 m depth, with a maximum depth for grouting of 100 m (Golder 2007b).

2.3 ADDITIONAL DRILLING AND PACKER TESTING

Additional inclined boreholes will be drilled 50 m downstream of the TSF between the Central Dike and the crest of the Portage Pit into the fault structures identified during previous drilling investigations (Golder 2006), and during the mapping of the exposed bedrock and placement of the grout curtain during construction of the Central Dike. The boreholes will be oriented so that they intersect faults (if any) at approximately 25 m depth intervals below that of the grout curtain.

Geophysical logging (including televiewer [optical and acoustic], fluid resistivity/temperature and flow meter logging) and packer testing will be carried out in the new holes to determine hydraulic conductivity values. As discussed above, it is expected that the hydraulic conductivity of the faults will reduce with depth; therefore, drilling and testing will continue at approximately 25 m intervals until the results of testing of three successive intervals indicate hydraulic conductivity values of less than 1×10^{-7} m/s. The results of the drilling and testing will be sent to the NWB for their review.

2.4 MONITORING WELL INSTALLATION

Monitoring wells will be installed across faults (if any) downstream of the Central Dike, between the dike and the crest of the Portage Pit. The locations of these wells will be determined from the results of the logging and testing conducted in the area of the TSF (including all of the investigations discussed in this document) and during the construction of the Central Dike. For each significant fault that has been found in the area of the TSF, a multi-level monitoring well will be installed downstream of the TSF for long-term monitoring of seepage. Water samples will be collected annually from these monitoring wells, unless the measured hydraulic conductivity of the fault zone in the wells is high enough for the calculated rate of contaminant transport to warrant more frequent sampling.

During the excavation of the Portage Pit, should any seeps emanate from the west wall of the pit which is closest to the Central Dike, the flow and water quality of these seeps will also be monitored.

The results of the groundwater quality monitoring will be presented in an annual monitoring report to the NWB.

2.5 CONTINGENCY MEASURES

If the results of the packer testing indicate any zones of enhanced permeability, these zones will be sealed. Similarly, should either the monitoring wells or pit wall seepage demonstrate that contamination from the TSF has occurred through the fault, then the fault will be sealed.

Potential methods of sealing zones of enhanced permeability and the fault (i.e. grouting and/or freezing of the fault) are discussed in Technical Memorandum referenced above (Golder 2007).

MMC would evaluate the most suitable mitigative measures to be taken based upon the monitoring results, and would provide details of the decision process to NWB within the annual report. MMC would continue to monitor groundwater quality within the wells to confirm that the mitigative action taken had addressed the concern.

SECTION 3 • SUMMARY

The investigative measures that would be undertaken to locate the faults that extend beneath the TSF and to determine their hydraulic conductivity are as follows:

- Gathering and review of data from previous geotechnical and exploration drilling to-date, including those investigations conducted in 2006 (Golder 2006);
- Mapping of the bedrock surface exposed in the footprint of the Central Dike;
- Gathering and review of data collected during the placement of the grout curtain beneath the Central Dike; and
- Logging and packer testing of any faults identified during the above investigations at approximately 25 m intervals until three successive test intervals have hydraulic conductivity values of less than 1×10^{-7} m/s.

In addition to the above, a multi-level monitoring well will be installed across each fault identified during the above investigations. If the water samples collected from these wells or from seeps in the Portage Pit indicate that contamination from the TSF is flowing through the faults, than mitigative measures will be undertaken, if necessary, to seal the faults.

SECTION 4 • REFERENCES

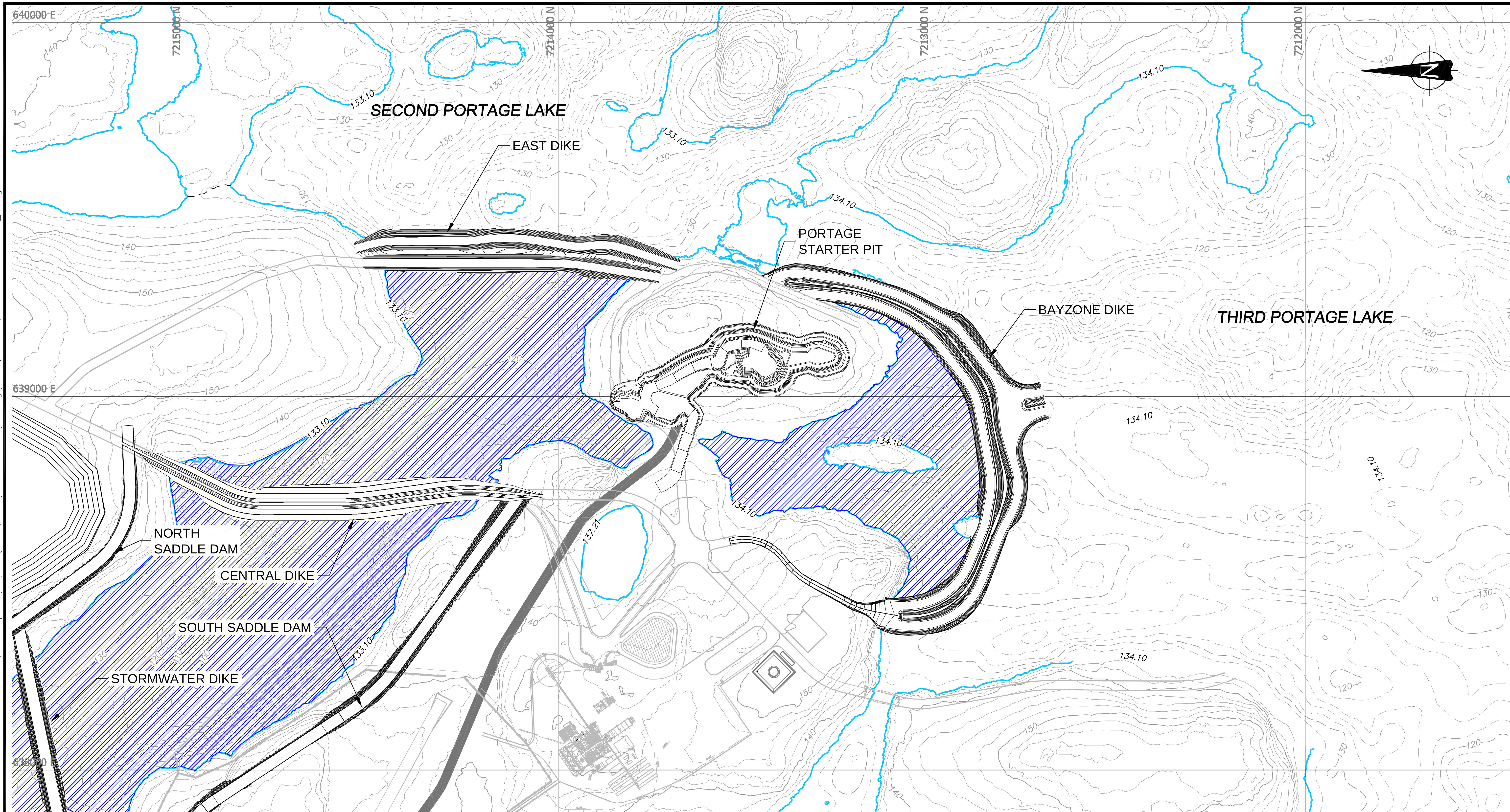
Golder Associates Ltd. (Golder), 2007a. Mitigative Measures for Potential Seepage from Tailings Facility. August, 2007.

Golder Associates Ltd. (Golder), 2007b. Detailed Design of Central Dike, Meadowbank Gold Project. March 2007.

Golder Associates Ltd. (Golder), 2006. Report on Winter 2006 Second Portage Central Dike Geotechnical Drilling, Hydrogeological, and Televiewer Investigation, Meadowbank Gold Project, Nunavut. July, 2006.

Nunavut Impact Review Board (NIRB), 2006. Project Certificate NIRB [No. 004]. Issued December 30, 2006.

Nunavut Water Board (NWB), 2007. *Nunavut Water Board Preliminary Guidelines for Applicant: Cumberland Resources Ltd. – Meadowbank Project*. Issued March 14, 2007.



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LEGEND

- LAKE SHORELINE CONTOUR
- LAND - BASED MAJOR CONTOUR
- LAND - BASED MINOR CONTOUR
- PIT DESIGN MAJOR CONTOUR
- PIT DESIGN MINOR CONTOUR
- BATHYMETRY MAJOR CONTOUR
- BATHYMETRY MINOR CONTOUR
- APPROXIMATE DEWATERED AREA

NOTES

1) ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2) ALL ELEVATIONS ARE IN METRES ABOVE SEA LEVEL (masl), UNLESS OTHERWISE NOTED.
3) GRID REFERENCE: NAD 83, UTM ZONE 14.
4) CONTOUR INFORMATION ON LAND SUPPLIED BY CUMBERLAND RESOURCES LTD.
5) CONTOUR BELOW LAKE SURFACE ARE BASED ON BATHYMETRIC SURVEYS BY GOLDER ASSOCIATES LTD., 2002, 2003, 2006. CONTOURS INTERVAL= 2m.
6) BATHYMETRY CONTOUR DATA SUBJECT TO FUTURE UPDATE.
7) LAKE CONTOURS ARE BASED ON SURVEYED LAKE SURFACE ELEVATIONS:
   2nd PORTAGE LAKE= 133.1m,
   3rd PORTAGE LAKE= 134.1m.

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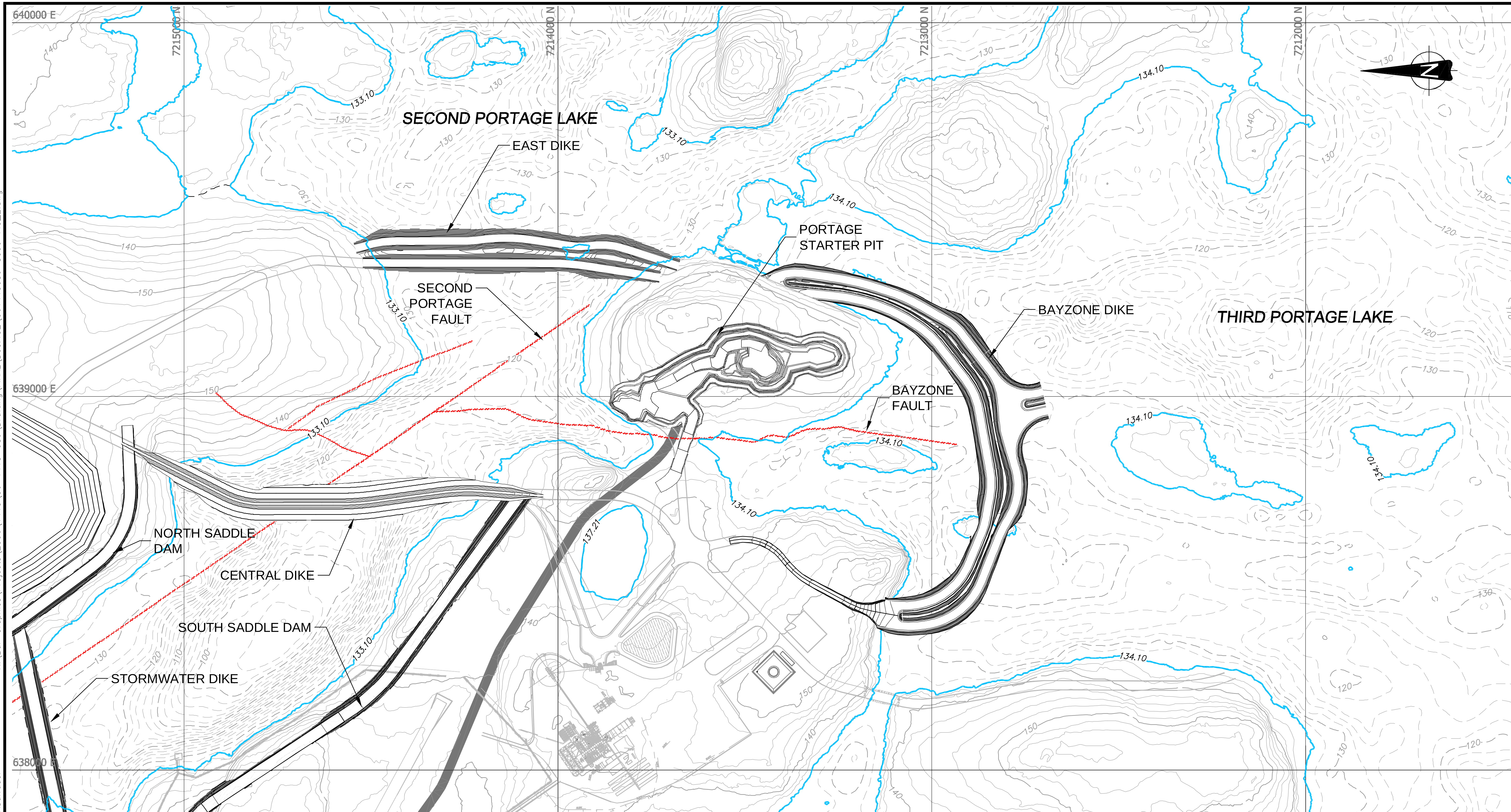
DEWATERED AREA
STARTER PIT YEAR (-1)

FIGURE 1



LEGEND

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- LAND - BASED MAJOR CONTOUR
- LAND - BASED MINOR CONTOUR
- PIT DESIGN MAJOR CONTOUR
- PIT DESIGN MINOR CONTOUR
- BATHYMETRY MAJOR CONTOUR
- BATHYMETRY MINOR CONTOUR
- INFERRED LOCATION OF FAULTS

NOTES

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0 100 200 300 400 500
Scale in Metres

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INFERRED LOCATIONS OF FAULTS	**FIGURE 2**

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