AGNICO EAGLE

MEADOWBANK GOLD MINE

WEST DIVERSION DITCH – INTERCEPTION SUMP PHASE 1 CONSTRUCTION SUMMARY REPORT

APRIL 2015

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SECTION 1 • GENERAL

1.1 OBJECTIVE

This construction summary report summarizes the works associated with the phase 1 of the construction of an interception sump connected to the West diversion ditch. Construction of Phase 1 began March 2014. The final design drawing was completed in March 2015 at the Meadowbank Gold Project (Meadowbank), located approximately 80km north of Baker Lake.

1.2 SCOPE

The preparation work and construction of Phase 1 related to the West Diversion Ditch Interception Sump was completed in March 2014. This report will include:

- A summary of the major works completed
- As-built drawing

As-built information is based on surveys performed by the owner, Agnico Eagle Mines Ltd.

1.3 DESCRIPTION OF WEST DIVERSION DITCH INTERCEPTION SUMP

The objective of the West Diversion Ditch Interception sump is to provide an area of capture, retention and decantation of the freshet water flow expected in the West Diversion Ditch. In addition, the water will be sampled on a regular basis and if the water contained in the sump area does not meet discharge requirements to the environment, the water will be pumped to the North Cell adjacent to the sump area.

1.4 DESIGN

The sump design basis is the same as was one used for the diversion ditch describled in the Detailed Design Memorandum for Surface Water Diversions Along the Northern Perimeter of the Mine Site (Golder, 2012). The diversion system was designed to collect and convey suface water runoff during the design precipitation event in accordance with the Meadowbank Water Management Plan (Golder, 2011). The design event is defined as:

- The summer rainfall event with a 100-yr return period and 2-hr duration: 74.7 mm (EC 2011); plus
- The 24-hr snowmelt corresponding to the average year spring melt (126 mm) over 30 days (Golder, 2011)

The United State Soil Conservation Service method (USDA, 1972) with a Type 1 temporal distribution and a Curve Number (CN) of 93 was used to estimate the corresponding design runoff event. This CN corresponds to a rainfall/ratio of 70%, which is in accordance with the water management design criteria (Golder, 2011).

According to Golder, design flow at this location is a peak flow of 3.3m^3/s (Golder, 2012). A sump capacity of 3000 m^3 was selected. At this flow rate the sump will fill up in 15 minutes.

The as-built drawing produced after the completion of the work is presented in the Appendix A.

SECTION 2 • WEST DIVERSION DITCH INTERCEPTION SUMP CONSTRUCTION SUMMARY

The construction activities related to Phase 1 of the West Diversion Ditch Interception Sump were carried out in March 2014 with the final desing drawings completed in March, 2015. The drilling and blasting operations required for the excavation of the sump were conducted by the contractor Dynamitage TCG, while the excavation and earthworks required were conducted by Qamanittuaq SANA. The general construction sequence consisted of:

- Access construction and site preparation
- Drill and blast of sump area
- Excavation of overburden and till contaminated blasted bedrock
- Excavation of clean blasted bedrock and rock placement along perimeter slopes of the sump
- Excavation of adjacent road for pipe installation

The completed work was subsequently surveyed by AEM.

The following section will detail the sequence of work within each above mentioned major construction step.

2.1 ACCESS CONSTRUCTION AND SITE PREPARATION

The initial work consisted of creating the access over the existing West Diversion Ditch, by placing rockfill into the ditch which would subsequently be removed once all the work had been completed. Next the area of drilling was cleared of snow and small amounts of surface preparation was conducted (dozer work) to allow the drill to work adequately. In the pictures below we see a CAT 345D loading snow into a CAT 773F (50t payload) to clear the area, and a CAT D8T clearing snow and boulders from the drilling pattern.

Figure 2.1: CAT 345D loading a CAT 773F haul truck with snow

Figure 2.2: CAT D8T clearing snow from drill pattern

2.2 DRILL AND BLAST OF SUMP AREA

Once the site preparation had been finalized, the Rockmaster Drill began drilling the sump area (Figure 2.3).

Figure 2.3: Rockmaster drilling the sump drill pattern

Drilling was interrupted by each blast to allow for the loading of explosives in each blast hole and placement of blasting mats on the pattern to prevent flyrocks due to the proximity to the Saddle Dam 1 structure which has its liner exposed to the elements. The first blast, a sinking cut, was completed on March 20th, 2014. Subsequent to this initial blast, three other blasts were completed on March 22nd, 23rd and 24th to finalize the drilling and blasting operation of this contruction work. It must be noted, that once the initial blast (sinking cut) was completed, the mucking equipment began excavating the swell material of the blasts. As seen below in Figure 2.4, we have the the CAT 345D mucking beside the muck pile covered with the blasting mats of the last blast.

Figure 2.4: March 24th blast muck pile with blasting mats and CAT 345D

2.3 SUMP EXCAVATION

Following the completion of the drilling and blasting phase, excavation of the sump area continued using the CAT 345D excavator and two Cat 773F (50t) haul trucks. Material considered adequate for sloping was kept in the sump while all the other material was hauled and dumped at the Waste Rock Storage Facility (WRSF). Rock fragmentation was satisfactory with only a few oversize blocks which had to to be broken down using the CAT 345D with the ripper attachment. Figure 2.5 shows the excavator loading a hauling truck behind a few oversize blocks of till. As seen in this picture (Figure 2.5), a top layer of overburden sat on top of the bedrock. Once the sump area had been excavated, some sections of the till overburden overhanged at the crest of the sump. In Figure 2.6, the CAT 345D with the ripper attachement is seen removing an overhang to smooth the slope of the embankment. Following this operation, slope capping was completed to ensure that the till portion would be supported as it thaws in the warmer months. Figures 2.7 and 2.8 show the CAT 345D placing material on the slopes of the sump. The majority of the material required for this operation originated from the sump blasts conducted prior while the balance was taken from the NPAG WRSF. Finally a small berm was constructed around the perimeter of the sump crest as seen in Figure 2.9.

Figure 2.5: CAT 345D loading a CAT 773F haul truck behind a few till boulders

Figure 2.6: CAT 345D with ripper attachment removing till overhangs from crest

Figure 2.7: CAT 345D placing material on the slope of the sump

Figure 2.8: CAT 345D placing material on the slope of the sump

Figure 2.9: Crest perimeter berm of the interception sump

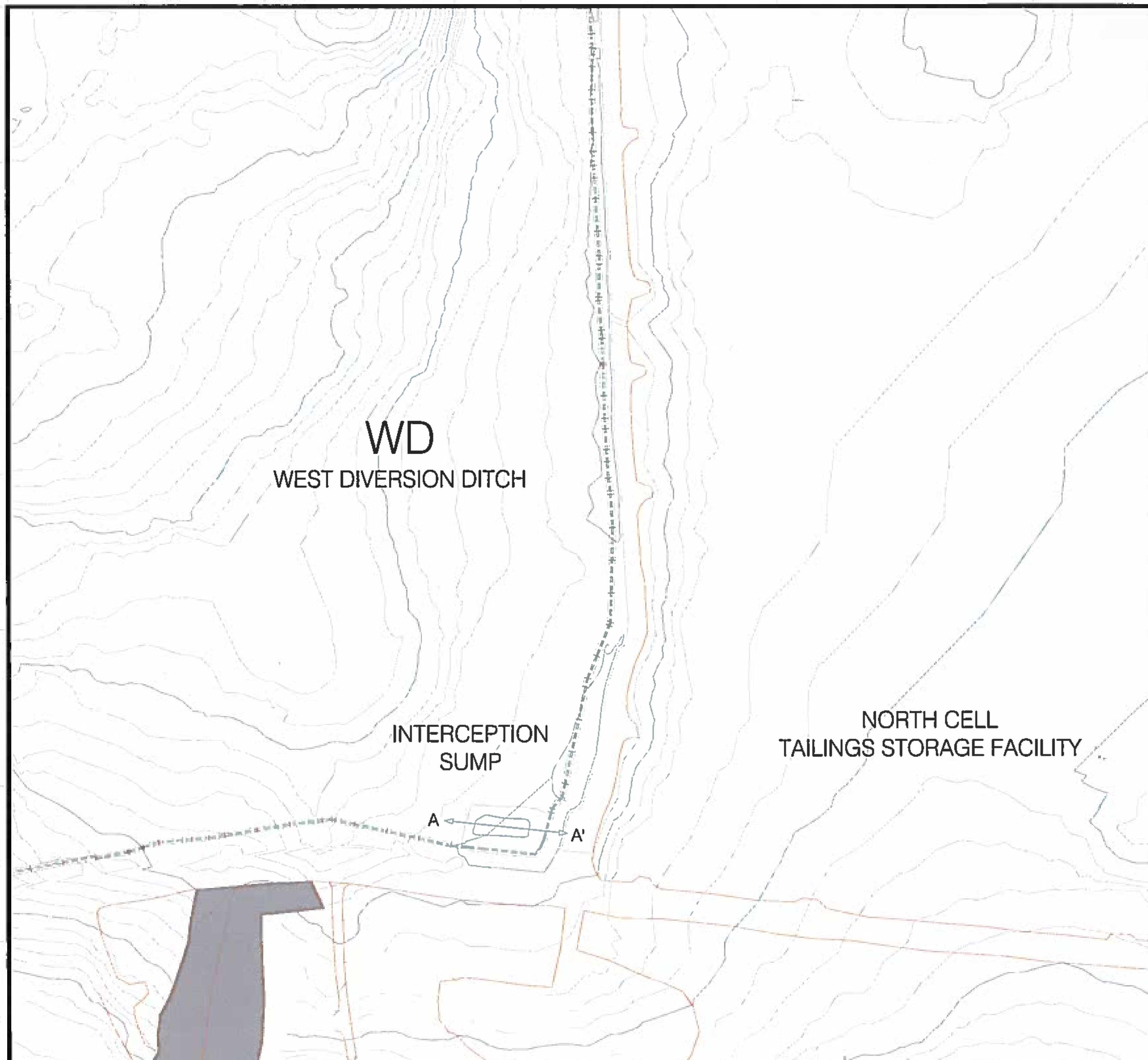
2.4 PUMPING INSTALLATION

The final stage of the construction was to set up the infrastructure required for potential future pumping; this included a pump pad and piping culvert crossing the adjacent road separating the interception sump from the North Cell Tailings Storage Facility (NC TSF). Figure 2.10 shows the finalized sump area without the piping installation requirements. This finalized sump area will allow water draining from the northern part of the West Diversion Ditches to smoothly drain itself into the sump area; as the water rises, a pump will be installed which will provide flexibility to maintain the water level below where the water will begin to drain into the western part of the West Diversion Ditch and with its outlet in Third Portage Lake. The pumping will direct the water to the North Cell tailings storage facility reclaim pond. The piping required (crossing the road separating the interception sump from the North Cell TSF) can be seen in Figure 2.11. A small trench was dug in the road to be able to pass a 14'' DR17 HDPE in the road and under the tailings pipe seen at the bottom of Figure 2.11. Once installed, the pipe was then covered with a layer of crusher reject (fine granular material) and finalized with rockfill to level the road surface.

Figure 2.10: Finalized interception sump construction

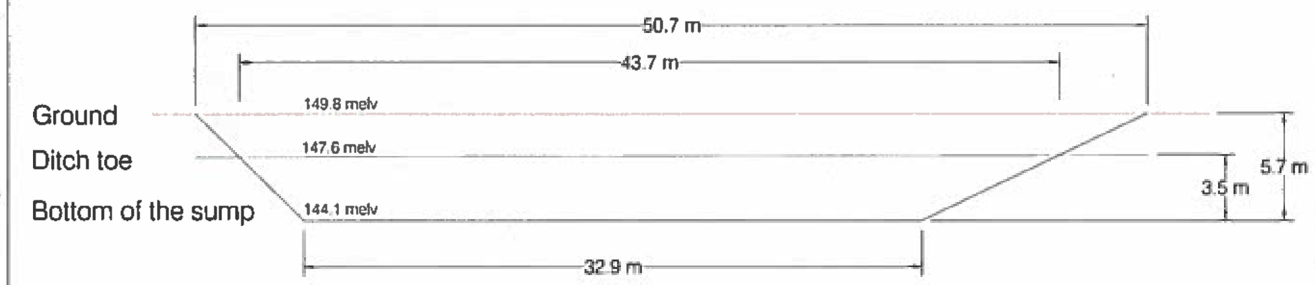
Figure 2.11: Buried 14'' DR17 HDPE pipe for interception sump pumping

APPENDIX A ● INTERCEPTION AS-BUILT DRAWING



Interception Sump

Section view A-A'



As-built description

Sump capacity of 3036 m³ before overflowing in the diversion ditch considering a maximum water level of 147.6melv.

West diversion ditches design flow is 3.3m³/s (Golder, 2012). At this rate the sump will fill up in 15 minutes.

The diversion system was designed to collect and convey suface water runoff during the design precipitation event in accordance with the Meadowbank Water Management Plan (Golder, 2011). The design event is defined as:

- the summer rainfall event with a 100-yr return period and 2-hr duration: 74.7 mm (EC 2011); plus the
- the 24-hr snowmelt corresponding to the average year spring melt (126 mm) over 30 days (Golder, 2011)

The United State Soil Conservation Service method (USDA, 1972) with a Type 1 temporal distribution and a Curve Number (CN) of 93 was used to estimate the corresponding design runoff event. This CN corresponds to a rainfall/ratio of 70%, which is in accordance with the water management design criteria (Golder, 2011).

REGISTERED PROFESSIONAL ENGINEER
L3069
P. McMULLEN
LICENSEE
NT/NU

2015/04/05

TITLE	# DWG
REFERENCE DRAWINGS	

REV	DESCRIPTION	DATE	BY
REVISIONS			

AGNICO EAGLE

		DATE
DRAWN BY	M. GROLEAU	2015-04-02
CHECKED BY	E. VOYER	2015-04-03
APPROVED BY	P. McMULLEN	2015-04-05
PROJECT NO		
DATE		

TITLE: AGNICO-EAGLE – MEADOWBANK DIVISION

INTECEPTION SUMP PHASE 1 – AS BUILT

SCALE	FILE		
N.T.S.	.DWG		
DRAWING NO.		REVISION	SHEET 1 / 1