



# **AGNICO EAGLE**

**AMARUQ EXPLORATION ACCESS ROAD**

**CONCEPTUAL CLOSURE AND RECLAMATION PLAN**

**February 2015**

**Version 1**

## DOCUMENT CONTROL

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## 1. Introduction and Background

The Amaruq Exploration property is a 408-square kilometre exploration property located on Inuit Owned Land approximately 150 kilometres north of Baker Lake and approximately 50 kilometres northwest of the Meadowbank mine. Agnico Eagle purchased exploration rights to the Amaruq property from Nunavut Tunngavik Incorporated in April 2013. The Kivalliq Inuit Association issued Agnico Eagle a land use permit for exploration purposes. Similarly, the Nunavut Water Board issued Agnico Eagle a water licence for exploration purposes.

In July 2013, an exploration drilling program was initiated. The results of the drilling showed promising gold mineralization and drilling continued in October 2014 to continue to advance an inferred satellite pit deposit. Drilling will continue in 2015 as weather permits to progress the inferred deposit into a resource estimate to allow for feasibility studies to be presented in 2016.

Accelerating the year-round exploration is important to advance this site into the feasibility stages and to possibly build an exploration ramp in 2018, following the construction of the access road. Unfortunately, year-round exploration and the future fuel requirements for advanced exploration at the Amaruq property is not possible using a winter road. This caused Agnico Eagle to look at possible locations for an exploration access road between the Meadowbank mine and the Amaruq Exploration site to allow safe and efficient year-round transport of fuel, equipment, supplies, and personnel. Information related to the construction and operation of the exploration access road is presented in this main application document in support of the Type B water licence application and NIRB screening of the proposed access road.

The proposed access road route selected is 62.5 kilometres long. The road surface will be 6.5 metres wide, with 3 bridges, 8 large open bottomed arch culverts, 28 corrugated round culverts to pass watercourse crossings and many other localized drainage culverts to prevent erosion, reduce thaw susceptibility and washout of the road during freshet are proposed to be installed. The bridges, open bottom arch culverts and round culverts will allow normal river and stream flow, and fish migration at road water crossings. The Amaruq Exploration Access Road will have seven borrow areas with short spur roads, will use the Vault Pit as a Quarry and be a private access road constructed on Crown Land and Inuit Owned Land by Agnico Eagle.

After selecting the proposed route for the road, preliminary baseline studies were carried out in 2014 (and are ongoing) including a traditional knowledge study, archaeological, aquatic and wildlife surveys, water crossing assessments and gravel borrow pits appraisals. Preliminary engineering for a proposed road construction design is also underway.

The Amaruq Exploration Access road<sup>1</sup> will be decommissioned and reclaimed by Agnico Eagle if exploration on the Amaruq property fails to find sufficient ore resources to support mining, or if Agnico

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<sup>1</sup> It is Agnico Eagle's responsibility to decommission and reclaim the road once its activity in the area is complete. For a third party to take over the road, that third party would have to complete its own arrangements with the land owners (the KIA and crown) and then complete its own environmental assessment and permitting process covering future use. Agnico Eagle does not own the land on which the road is to be constructed and, thus, it cannot transfer future ownership or use privileges to any third party. Agnico Eagle must complete its obligation to

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Eagle fails to obtain the necessary authorizations to proceed with any mining development at the satellite deposit. Closure and reclamation of the road would be initiated within a year following the completion of closure and reclamation of the Amaruq camp and exploration sites.

This Plan only addresses the closure and reclamation of the Amaruq access road. A separate Closure and Reclamation Plan exists for the Amaruq property (Water Licence 2BE-MEA1318) and it is not discussed here.

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decommission and reclaim the Amaruq Exploration Access Road unless directed otherwise by a combination of the land owners and regulatory agencies who issued permits/authorizations for the road.

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## **2. Closure and Reclamation Objective and Principles**

The closure and reclamation plan for the Amaruq Access Road has the objective of mitigating, wherever practicable, the negative environmental effects of the road, its water crossings and borrow pits on the surrounding natural environment. Progressive reclamation will be employed during the operational period of the road and upon closure, negatively impacted areas will be returned to productive and lasting use by wildlife and humans as soon as possible. Reclaimed areas will be chemically and physically stable, and should ultimately support the same functions as the surrounding undisturbed land. Because of the proximity to the Meadowbank mine, particular attention will be paid to ensuring that reclaimed areas are safe for future traditional use.

Agnico Eagle's closure and reclamation objective the Amaruq Access road is guided by the following four principles<sup>2</sup>:

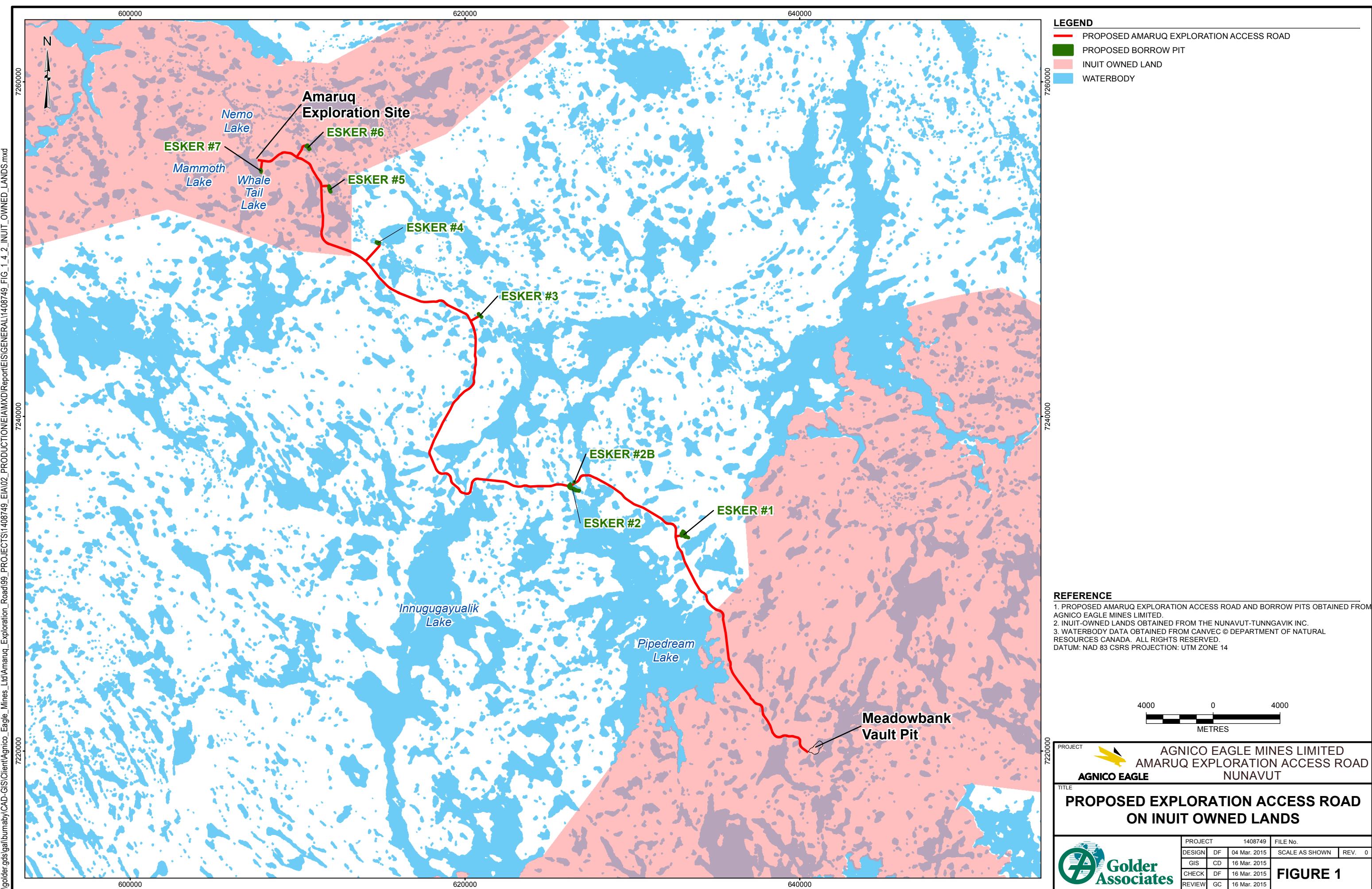
1. *Physical Stability* – Any project component that remains after closure should be constructed or modified at closure to be physically stable, ensuring it does not erode, subside, or move from its intended location under natural extreme events or disruptive forces to which it may be subjected. Closure and reclamation will not be successful in the long-term unless all physical structures are designed such that they do not pose a hazard to humans, wildlife, aquatic life, or environmental health and safety;
2. *Chemical Stability* – Any project component (including associated wastes) that remains after closure should be chemically stable. Chemical constituents released from the project components should not endanger human, wildlife, or environmental health and safety, should not result in the inability to achieve any water quality objectives set for the project, and should not adversely affect soil or air quality in the long term;
3. *No Long-Term Active Care* – Agnico Eagle will make all practical efforts to ensure that any project component that remains after closure does not require long-term active care and maintenance. Thus, any post-closure monitoring can only continue for a defined period. Physical and chemical stability will help ensure achievement of this principle; and
4. *Future Use (including aesthetics and values)* – Wherever practical, closed sites should be compatible with the surrounding lands and water bodies upon completion of the closure activities.

## **3. Closure and Reclamation of the Amaruq road**

A practical, cost-effective approach will be central to reclamation and closure of the Amaruq Access road. The intent is to pursue reclamation and closure so there are no long-term care and maintenance requirements. Progressive reclamation will be used to reclaim areas no longer needed for road construction by stabilizing disturbed land surfaces, which will promote natural re-vegetation. This

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<sup>2</sup> Principles largely adapted from the Mackenzie Valley Land and Water Board and Aboriginal Affairs and Northern Development, November 2013. *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories*



approach will employ best management practices and will ultimately advance the return of areas to natural conditions while reducing the overall cost of reclamation.

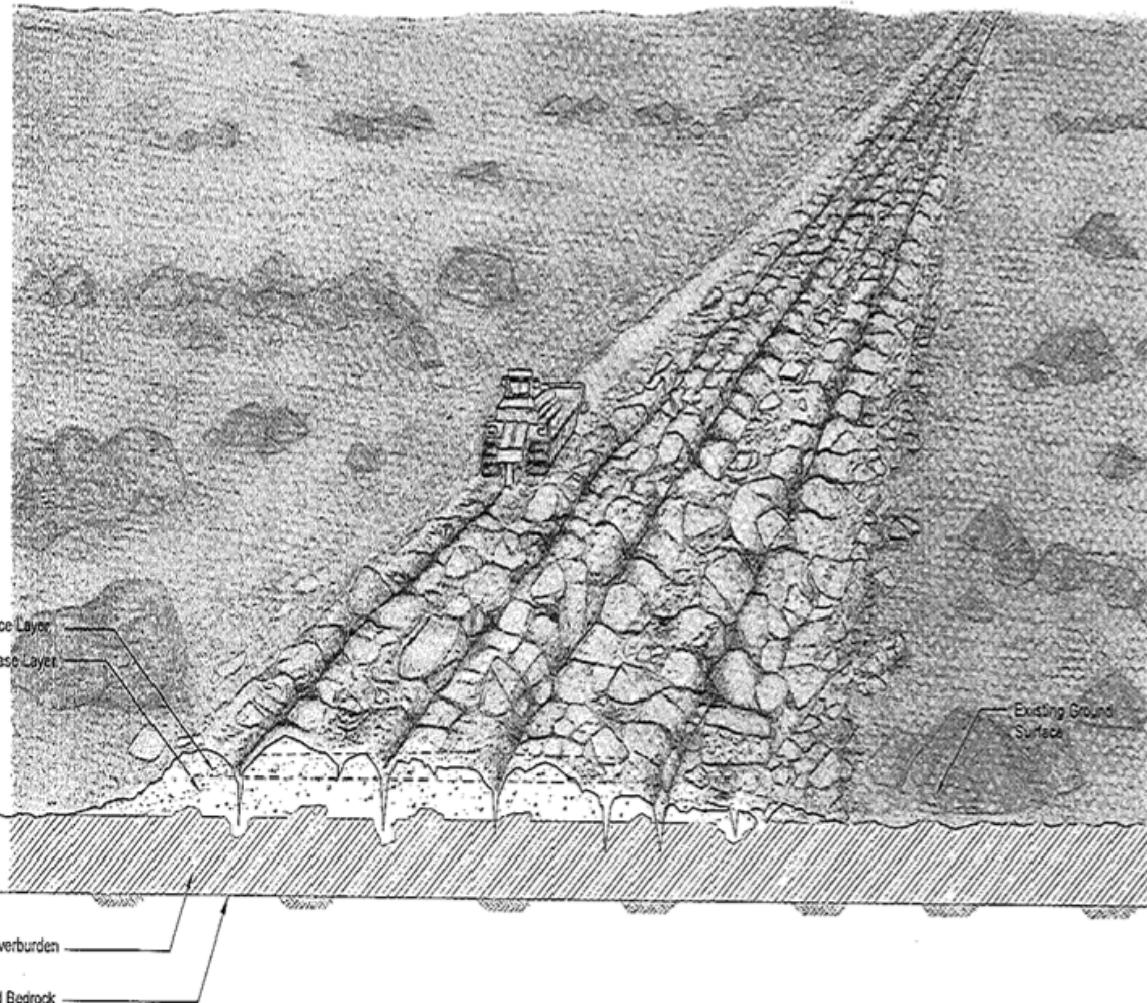
Decommissioning of the Amaruq Access road will be accomplished by loosening compacted surfaces (scarifying the road surface using a dozer mounted ripping unit), flattening side slopes, removing all culverts, arch culverts, bridges and other potential obstructions to drainages paths. The objective is to make the road surface impassable by vehicular traffic by ripping the entire roadbed and removing all culverts, arch culverts and bridges along the route.

The ripping of the roadbed will be accomplished utilizing a CAT D8 dozer or equivalent with a “ripper” attachment on the back. Successive passes with the dozer longitudinally along the road bed will eliminate the level road surface and make travel difficult (Figure 2). It is anticipated that, in this way, the abandoned former access road will not be useable by wheeled vehicles (i.e., cars, trucks, and pickups). The roadbed would still be useable by ATV or snowmobile and, thus, even after final reclamation, the reclaimed roadbed can be used by the residents of Baker Lake and points north for traditional use purposes.

The road deactivation works will be carried out as necessary to stabilize any slopes where potential for slope erosion may exist. Stabilization measures may require pulling back of side-cast fills on locally steep slopes or buttressing and/or re-contouring of steepened out slopes using non-acid generating material. These measures would also be applicable to borrow pits that remained open following construction. As much as practical, deactivated surfaces will be graded to blend with the existing topography.

To the extent practical, the decommissioning would also restore the natural pre-road hydrology. Natural drainage courses would be restored primarily through the removal of all corrugated, piped culverts, open bottom arch culverts and bridges, and through rehabilitation of channels and banks at the crossing sites. Cross-drain structures (cross-ditches) will also be installed where necessary between culvert sites. Where armouring rock is required, this rock will be non-acid generating for the protection of aquatic life. Where affected watercourses are fish bearing, the timing of work will have to be restricted to within the designated Department of Fisheries and Oceans fisheries work window. All in-stream works will be carried out using best management practices for erosion and sediment control.

Decommissioning of the road will start from the Amaruq end of the road and progress southeast towards the Meadowbank mine. Stream crossings will be rehabilitated as they are encountered during the progression of the work. The culverts, arch culverts and bridges will be removed from the crossings using a backhoe and crane, and the removed materials (i.e., culvert steel, bridge decks, abutment steel, etc.) will be transported to Agnico Eagle’s Baker Lake laydown area using a semi-tractor and a low-boy trailer, for disposal and salvage.



**Figure 2. Schematic View of the Roadbed after Dozer Ripping (not to scale)**

### 3.1 Borrow Pits

All borrow pits developed during the construction of the road have been selected to generate only non-acid generating / low metal leaching materials. Water quality monitoring and testing will be undertaken periodically during the construction and operational period of the road to measure the quality of water draining from the Vault quarry material and esker borrow sites from the road base materials.

The borrow pits will have gently sloping walls and will be designed for positive drainage wherever possible. With prudent initial design, the borrow pits should require little reclamation following completion of the road. The entrance blocked with large boulders, if available, or a mound of borrow pit material.

During decommissioning of the road, should acid-generating borrow pit or bedrock be exposed along the roadway, these areas will be covered with a minimum 2 m thick layer of non-acid generating soil or rock to direct water away from the surface, and the surface will be re-vegetated.

#### 4. Estimate of Reclamation Liability

RECLAIM 7.0 was used to calculate the reclamation liability associated with decommissioning and reclamation of the 62.5 kilometre Amaruq road between the Meadowbank mine and Amaruq exploration site. The RECLAIM model suffers from not having unit costs for the removal of bridges, arch culverts and corrugated culverts. As a result, the unit cost in removing a bridge is estimated at \$35,000, that for an open bottom arch culvert at \$10,000, and that for a corrugated culvert or a series of stacked culverts at \$4,000. These costs include, if required, the stabilization of the stream channel and placement of rip-rap. The total estimate for the decommissioning and reclamation of the Amaruq road with the breakdown shown in Table 1.

**Table 1. Estimate of Reclamation Liability for the Amaruq Exploration Access Road**

CAPITAL COSTS - Activity	Units	Quantity	Unit Cost	COST
Scarify road – 62.5 kms of road, 6.5 metres wide	hectares	41	\$6,000	\$246,000
Close Borrow Pits – 7 areas	hectares	75	\$1,500	\$112,500
Remove bridges	each	3	\$35,000	\$105,000
Remove open bottom arch culverts	each	8	\$10,000	\$80,000
Remove localized drainage culverts, corrugated culverts or stacked culverts	each	153*	\$4,000	\$612,000
	<b>SUBTOTAL Capital Costs</b>			<b>\$ 1,155,500</b>
INDIRECT COSTS	Percentages			COST
Mobilization/Demobilization				\$42,750
Post-Closure Monitoring and Maintenance	years	5	\$25,000	\$125,000
Engineering		5%		\$57,775
Project Management		5%		\$57,775
Health And Safety Plans/Monitoring & QA/QC		1%		\$11,555
Bonding/Insurance		1%		\$11,555
Contingency		20%		\$231,100
Market Price Factor Adjustment		0%		\$0
	<b>SUBTOTAL: Indirect Costs</b>			<b>\$ 537,510</b>
<b>TOTAL COSTS</b>				<b>\$ 1,693,010</b>

\*a conservative estimate based on preliminary construction designs

#### 5. Post Closure Monitoring

Environmental monitoring following closure and reclamation will evaluate stability of reclaimed areas, water quality sampling, and if necessary soil sampling. These are the primary methods of ensuring that the area has been brought back to productive habitat suitable for use by fish, wildlife and humans. Water samples will be collected at major water crossings and where there is evidence of water erosion of the roadbed or the rip-rap placed to protect the banks of the stream. The monitoring of plant growth will be documented using photographs.

Environmental monitoring will continue during and after the post-closure phase of the reclamation until it can be established that licensed criteria have been met. The amount and frequency of post closure monitoring that is required will diminish with time as natural reclamation takes hold and all parties agree that the reclamation has satisfactorily met its objectives.