

MEADOWBANK PROJECT DESCRIPTION PRELIMINARY TECHNICAL REVIEW

BACKGROUND

The proponent for the Meadowbank Gold Project, Cumberland Resources Ltd submitted to the Nunavut Water Board on March 31, 2003, the following:

- i. Completed Water License Application form;
- ii. Completed NWB Supplementary Questionnaire for Mine Development; and
- iii. The Project Description Report.

Following receipt of the information the NWB forwarded to information to the Nunavut Planning Commission for conformity review, while internally reviewing the application for completeness with respect to NWB requirements. Subsequently, the NWB has determined that the documents submitted contain sufficient deficiencies to require the Board to request additional information from the proponent prior to proceeding through regulatory process.

Cumberland Resources limited has submitted the PDR in accordance with the Nunavut Impact Review Board requirements for proposed mine development. NIRB operation procedures also require assessment of the PDR to determine if all necessary information has been provided.

A - Application
S - Supplemental Questionnaire
P - Project Description Report
F - Fee

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REQUIREMENTS	AGENCY	REFERENCE	COMMENTS
Regulatory Regime			
Minimum requirements	NWB	A, Q, F	Level of completeness still to be assessed
Conformity Review	NPC		Sent to NPC Date? Does proponent understand that this is required?
Screening/Review	NIRB		
Inuit Owned Lands	KIA	A(9), S(72)	KIA Land use application in place. Project on IOL.
<ul style="list-style-type: none"> IIBA 			
<ul style="list-style-type: none"> Compensation Negotiations 		A(11), S(108-112)	To be negotiated in IIBA and through other mechanisms in due course. Details of ongoing negotiations and other 'mechanisms need to be outlined.
<ul style="list-style-type: none"> Inuit Water Rights Article 20 		A(11), S(110)	Proponent indicates that project will substantially affect quality, quantity or flow under Art.20.
Crown Land	DIAND		
Fisheries	DFO		
<ul style="list-style-type: none"> Authorizations requirements 		S(105)	Authorization application 'being submitted. Current status unclear.
<ul style="list-style-type: none"> No-Net loss program 			
General			
Information			
<ul style="list-style-type: none"> Sources identified 			
<ul style="list-style-type: none"> Copies of unpublished references provided 			
<ul style="list-style-type: none"> Mapping Digital and/or paper format 			

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REQUIREMENTS	AGENCY	REFERENCE	COMMENTS
Proponent Information		A, Q	Craig Goodings, Environmental Manager
<ul style="list-style-type: none"> Mailing/corporate address 		A	Provided Has background and structure of company been provided?
<ul style="list-style-type: none"> Corporate/Management/Operational structure 			
<ul style="list-style-type: none"> Environmental policy 			
<ul style="list-style-type: none"> Past Experience 		S(11)	No history of property development. How long has company operated and in what capacity?
<ul style="list-style-type: none"> Ownership Rights and Interest 		S(73)	Tailing area and related facilities on company held claims.
<ul style="list-style-type: none"> Financial Security 			
Sustainable Development and Precautionary Principle			
<ul style="list-style-type: none"> Indication of future studies (full description, purpose, schedule, and end use information) 			
<ul style="list-style-type: none"> Identification of limitation (gaps) in baseline information 			
Public Participation/Consultation			
<ul style="list-style-type: none"> Conduct 		S(7)	Elders consulted between 1996-2002 some elders flown to site Additional visits to continue Details who, when?
		S(8)	Consultation w/ KIA, NTI, NWB, NPC, NIRB, and CLARC Need to clarify what is meant by consultation. Note: NWMB has not been consulted.
		S(9), S(91)	Baker, Chester, and Rankin consulted on traditional water use areas. Consultation to continue

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REQUIREMENTS	AGENCY	REFERENCE	COMMENTS
<ul style="list-style-type: none"> Results 			No results for S(7)-(9) provided or reference where information may be found.
<ul style="list-style-type: none"> Measures to address concerns 			
<ul style="list-style-type: none"> Proposed ongoing program 			
VEC/VSC			
<ul style="list-style-type: none"> Process and Criteria 			
<ul style="list-style-type: none"> Temporal and Spatial Boundaries 			
Traditional Knowledge		S(91)	To be considered in the Environmental Monitoring Program- How, form?
<ul style="list-style-type: none"> Treatment 			
<ul style="list-style-type: none"> Collection 			
<ul style="list-style-type: none"> Ownership 			
<ul style="list-style-type: none"> Incorporation into impact assessment 			
Project Description			
<ul style="list-style-type: none"> Location with maps of appropriate scale 		A, S(10),	A-Kivalliq Region, NTS maps 66A/16, 66H/1, 56 E/4, 56 D/13 Do location maps provide sufficient detail? Refer to PDR.
<ul style="list-style-type: none"> <ul style="list-style-type: none"> Boundaries of proposed site 		S(10)	Refer to PDR.
<ul style="list-style-type: none"> <ul style="list-style-type: none"> Major infrastructure 		S(10)	Refer to PDR.
<ul style="list-style-type: none"> <ul style="list-style-type: none"> Land use 		S(10)	Refer to PDR.
<ul style="list-style-type: none"> Project components 			
<ul style="list-style-type: none"> Spatial and temporal boundaries 			
<ul style="list-style-type: none"> Schedules 		A(15)	Start date 2003 End date 2017 Detailed implementation schedule of all phases required.
		S(31)	Mine life expected 10 yrs.
<ul style="list-style-type: none"> Costs 			
<ul style="list-style-type: none"> Relationship/interdependence to any 			

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REQUIREMENTS	AGENCY	REFERENCE	COMMENTS
previous and/or existing projects			
• Background			
• Context and current status			
• Relationship to other projects			
• Interdependence of related projects		S(58)	Proponent does not forecast processing ore from other properties.
• Proposed or anticipated developments (future expansion or changes, how these can be accommodated with the current proposal)		S(26)	Operational changes in mining methods Refer to PDR.
Purpose, Need and Rationale for the Project			
• Timing to meet market needs		P(i)	Strength project increase directly with gold above US\$300/oz Bankable feasibility study underway expected late 2003
• Objective relative to broader private or public sector policies, programs or plans			
Alternatives		S(106)	Alternatives for various mine components to be provided in FS and documented in EIS.
• Description of process to identify, consider and select alternative means (technical, economical and environmental affects)			
○ Tailings and waste management Options		S(65)	Study completed in 1999. Decision Matrix considered quantitative/qualitative for watershed, long-term closure, creek crossings, technical, geochemical issues etc. Three sites considered.
• Rational, criteria, and evaluation used		S(65)	Criteria, resource estimated and detailed

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REQUIREMENTS	AGENCY	REFERENCE	COMMENTS
to select preferred alternative			information to be developed in the FS.
<ul style="list-style-type: none"> Alternative facility location with reasons for acceptance or rejection 			
<ul style="list-style-type: none"> Discussion of “why” proposal submitted is best method 			
<ul style="list-style-type: none"> Discuss “no-go” alternative 			
<ul style="list-style-type: none"> Economic evaluation and cost benefit analysis of alternatives 			
<ul style="list-style-type: none"> To project 			
<ul style="list-style-type: none"> To project Components 			
<ul style="list-style-type: none"> Pace and scale of development 			
<ul style="list-style-type: none"> Timing 			
Project Components Location and phase of the project (planning to restoration) Components supported by plans, diagrams, preliminary designs, codes and results of site investigations to establish site parameters (I.e., soil bearing capacity, water impacts)			
Planning/Feasibility		S(4)	Project currently in feasibility study stage.
<ul style="list-style-type: none"> Exploration Work 			
<ul style="list-style-type: none"> Mineral Resources 		S(33)	Expected rate of production 4700 tonne/day
<ul style="list-style-type: none"> Geology/Geochemistry 		S(20)	Refer to PDR. Host rock described in S(22)
<ul style="list-style-type: none"> Physical nature of orebody 		S(21), S(23), S(24)	To be provided at end of feasibility study.
<ul style="list-style-type: none"> Permafrost variations 		S(20)	Refer to PDR
<ul style="list-style-type: none"> Geochemical testing (ores, host rock, waste rock) 		S(24)	Refer to PDR
<ul style="list-style-type: none"> ➤ ARD 			Refer to PDR
<ul style="list-style-type: none"> ➤ Leaching 			Refer to PDR
<ul style="list-style-type: none"> ➤ Methods 			Refer to PDR

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REQUIREMENTS	AGENCY	REFERENCE	COMMENTS
➤ Results			Refer to PDR
• Site Preparation			
• Groundwater patterns		S(20)	Refer to PDR
Construction			
• Earthworks			
• Blasting		S(27)	Type of explosives to be determined in FS.
• Road and airfields			
• Work Force requirements		S(5)	Operating schedule and number of employees outlined.
• Transportation of material during construction			
• Use, transportation, handling, storage of FOL during construction/operation		S(95-96), S(98-99)	Inventory hazardous materials, contingency plan, etc. Refer to PDR and detailed information to be provided following FS and submission of EIS
Operation			
• Water supply		A	Quantity uses refer to PDR and details to be provided following feasibility and documented in EIS.
		S(12)	Final design to be done after feasibility study completed. Projected water distribution system provided. (i.e. 1.3 km heat trace, insulated HDPE from Third Portage Lake to west of plant, pump capacity 250 cu.m/hr.
		S(13)	Water balance currently being developed. Refer to PDR for hydrometric information.
		S(34)	Refer to PDR, source and volumes for all uses
• Sewage Treatment			

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REQUIREMENTS	AGENCY	REFERENCE	COMMENTS
• Power Production		S(57)	Propose diesel 10 MW plant.
• Waste disposal			
• Off site facilities			
• Pits and quarries			
• Mining methods		S(25)	Open Pit and Underground. Refer to PDR
• Minewater		S(36), S(37)	Methods used to degrease. Refer to PDR. No minewater expected from U/G or Open pits. Proponent needs to assess disposal option, effluent characteristics or treatment options outlined as potential concern.
• Milling operations			
○ Water Use		S(49)	To be provided at conclusion of FS and provided in EIS.
○ Recycling of water		S(51)	Proponent indicated N/A. Options should be investigated as a mitigation measure.
○ Type/Qty Reagents		S(45)	To be provided at conclusion of FS and provided in EIS.
○ Mill berms		S(61)	Mill to be bermed to prevent spill from escaping the mill. Details not provided.
• Stockpiling of ore			
• Stockpiling of overburden			
• Stockpiling of waste rock			
• Disposal of tailings		S (52)	1, 715, 500 tn/yr
○ Liquid Solid ratio		S(53)	To be provided at conclusion of FS and provided in EIS.
○ Treatment		S(54), S(83-90)	Type of treatment, chemicals used, rate of treatment, max. treatment capacity of plant, control structures, receiving environment, rate

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REQUIREMENTS	AGENCY	REFERENCE	COMMENTS
			of release, pilot tests on effluent. Refer to PDR. To be provided at conclusion of FS and provided in EIS.
○ Chemical/Physical Characteristics		S(55), (56)	To be provided at conclusion of FS and provided in EIS.
○ Tailings Containment Area		S(64) , S(66), S(67), S(69), S(70), S(76)-S(78)	Drawings and details size elevation, retaining structures, draining modifications, decant system, disposal plan, discharge routes and location of nearby watercourses needs to be provided. Water balance, capacity of facility, runoff control, etc. Refer to PDR. Most of the information to be provided at conclusion of FS and provided in EIS
		S(82)	O & M and monitoring: refer to PDR. To be provided at conclusion of FS and provided in EIS.
• Effluents and emissions			
○ From Mill		S(50)	To be provided at conclusion of FS and provided in EIS.
Abandonment/Restoration			
• Site rehabilitation		S(97)	Conceptual AR plan. Refer to PDR. To be provided at conclusion of FS and provided in EIS.
○ Tailings Area		S(81)	Refer to PDR.
General			
• Project life expectancy		S(31)	10 years
• Potential for expansion			
• Influence of physical environment in project Design			

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REQUIREMENTS	AGENCY	REFERENCE	COMMENTS
<ul style="list-style-type: none"> Consistency with ecosystem function and integrity 			
<ul style="list-style-type: none"> Rational for project components 			
<ul style="list-style-type: none"> Pace and scale of development 			
<ul style="list-style-type: none"> Timing of development 			
<ul style="list-style-type: none"> Technology influence 			
Description of Physical Environment			
Baseline data collection		S(93-94), S(101)	Refer to PDR Extensive work done refer to PDR.
<ul style="list-style-type: none"> Geology geomorphology and soils 			
<ul style="list-style-type: none"> Permafrost 		S(14)	Continuous permafrost that will not be penetrated. Has drilling been undertaken to determine the depth of permafrost and assessment of active layer?
<ul style="list-style-type: none"> Cummulative Effects 		S(102)	Refer to PDR. Details to be provided in EIS
<ul style="list-style-type: none"> Ground instability 			
<ul style="list-style-type: none"> Hydrology 			
<ul style="list-style-type: none"> Water Quality/Quantity 			
<ul style="list-style-type: none"> Sediment quality/quantity 			
<ul style="list-style-type: none"> Climate 		S(103)	Refer to PDR. Studies ongoing. Proposals not described.
<ul style="list-style-type: none"> Socio Economic 		S(107-108)	Baseline assessment ongoing. Issues to be negotiated in the IIBA.
Description and Impacts			
General		A(10)	Refer to PDR. Details to be provided in EIS

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REQUIREMENTS	AGENCY	REFERENCE	COMMENTS
Terrain			
• Active layer of permafrost			
• Subsidence			
Water			
• Changes in Flow and resulting affects on fish			
• Release of contaminants			
• Toxicity of tailings			
• ARD from waste rock			
• Contaminations of waste rock drainage by residual nitrogen			
Fish Resources			
• Regional occurrence of species			
• Relative seasonal abundance and distribution of species			
• Estimate productive capacity of water bodies			
• Health of species and contaminant loading			
• Migratory patterns and routes and timeframes where affected by project			
• Habitat Areas			
• Management or other protected areas			
• Habitats of rare or designated status species			
• Loss or alteration of habitat			
• Changes in water quality			

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REQUIREMENTS	AGENCY	REFERENCE	COMMENTS
<ul style="list-style-type: none"> Blasting (percussion) 			
Environmental Management and Mitigation			
<ul style="list-style-type: none"> Tailings 			
<ul style="list-style-type: none"> Waste Rock 			
<ul style="list-style-type: none"> Domestic Waste 			
<ul style="list-style-type: none"> Industrial Waste 			
<ul style="list-style-type: none"> Liquid waste 			
<ul style="list-style-type: none"> Hazardous Waste 			
<ul style="list-style-type: none"> ARD 			
<ul style="list-style-type: none"> Water supply 			
<ul style="list-style-type: none"> Land 			
<ul style="list-style-type: none"> Permafrost 			
<ul style="list-style-type: none"> Water Quality 			
<ul style="list-style-type: none"> Freshwater 			
<ul style="list-style-type: none"> Fish Habitat 			
<ul style="list-style-type: none"> Emergency Response and Contingency Measures 			
<ul style="list-style-type: none"> Site rehabilitation 			
<ul style="list-style-type: none"> Cost and feasibility of proposed plans 			
Monitoring			
General		S(92)	Environmental Monitoring Program. Details to be provided in EIS.
<ul style="list-style-type: none"> Monitoring objectives and data collection schedule 			
<ul style="list-style-type: none"> Subjects and parameters monitored and selection criteria 			

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[illegible]