
Appendix 4B
List of Candidate and Selected
Valued Components Considered in the
Environmental Assessment

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This Appendix provides:

1. List of Candidate VC considered in the EA
2. List of VCs considered through the various iterations of the AIR
3. Selected VCs as presented in the final AIR (version H) and Application

The complete rationale for the selection of VCs is summarized in the Identification and Selection of Valued Complement sections of the Application (**Sections 5.2.1, 5.3.1, 5.4.1, 6.2.1, 7.2.1, 8.2.1 and 9.2.1**).

Table 1: List of Candidate Valued Components

Valued Component Candidates				
1. Noise and vibration	2. Climate change	3. Air quality	4. Surface water flow	5. Surface water quality
6. Sediment quality	7. Groundwater quantity	8. Groundwater quality	9. Wetlands	10. Fish
11. Fish habitat	12. Acid Rock Drainage Metal / Metal Leaching	13. Mountain Whitefish	14. Char	15. Lingcod/Burbot
16. White Sturgeon (<i>Acipenser transmontanus</i>)	17. Benthic Macroinvertebrates Periphyton	18. Physiography and Topography	19. Surficial Geology and Soil Cover	20. Soil Quality
21. Ecosystem Composition	22. Plant Species and Ecosystems at Risk	23. Amphibians	24. Water Birds	25. Forest and Grassland Birds
26. Moose	27. Caribou	28. Grizzly Bear	29. Furbearers	30. Bats
31. Invertebrates	32. SARA-Listed Species	33. Reptiles	34. Woodpeckers	35. Eagles
36. Sharp-tailed Grouse	37. Deer	38. Wolf	39. Mosquitoes and Bees	40. Short-eared Owl
41. Provincial economy	42. Regional and local employment and businesses	43. Regional and local government finance	44. Contract and business opportunities	45. Labour income generated
46. Labour force qualifications	47. Demographics	48. Regional and community infrastructure	49. Regional and local services	50. Family and community well-being
51. Non-traditional land and resource use	52. Current Land and Resource Use for Traditional Purposes	53. Visual Resources	54. Culture Camps	55. Navigable Waters
56. Transportation	57. Archaeological sites	58. Historic heritage sites	59. Paleontological resources	60. Environmental exposures
61. Worker safety and health	62. Healthy living			

Table 2: Draft AIR Candidate Valued Components Iterations

Pillar	Subject Area	dAIR Version A (20 December 2012)	dAIR Version B (28 February 2013)	dAIR Version C (12 April 2013)	dAIR Version D (12 July 2013)	dAIR Version E (28 August 2013)	dAIR Version F (25 September 2013)	AIR Version G (15 May 2015)	
Environmental	Atmospheric and Acoustic Environment	1 Noise and vibration	1 Noise and vibration	1 Noise and vibration	1 Noise and vibration	1 Noise and vibration	1 Noise and vibration	1 Noise and vibration	
		2 Air quality	2 Air quality	2 Air quality	2 Air quality	2 Air quality	2 Air quality	2 Air quality	
			3 Climate change	3 Climate Change	3 Climate Change	3 Climate Change	3 Climate Change	3 Climate Change	
	Aquatic Environment	3 Surface water flow	4 Surface water flow	4 Surface water flow	4 Surface water flow	4 Surface water flow	4 Surface water flow	4 Surface water flow	4 Surface water flow
		4 Surface water and sediment quality	5 Surface water and sediment quality	5 Surface water and sediment quality	5 Surface water and sediment quality	5 Surface water and sediment quality	5 Surface water and sediment quality	5 Surface water and sediment quality	5 Surface water quality
									6 Sediment quality
		5 Groundwater flow	6 Groundwater flow	6 Groundwater flow	6 Groundwater flow	6 Groundwater flow	6 Groundwater flow	6 Groundwater flow	7 Groundwater quantify
		6 Groundwater quality	7 Groundwater quality	7 Groundwater quality	7 Groundwater quality	7 Groundwater quality	7 Groundwater quality	7 Groundwater quality	8 Groundwater quality
		7 Wetlands	8 Wetlands	8 Wetlands	8 Wetlands	8 Wetlands	8 Wetlands	8 Wetlands	9 Wetlands
		8 Fish habitat	9 Fish habitat	9 Fish habitat	9 Fish habitat	9 Fish habitat	9 Fish habitat	9 Fish habitat	10 Fish habitat
	9 Fish	10 Fish	10 Fish	10 Fish	10 Fish	10 Fish	10 Fish	11 Fish	
	Terrestrial Environment	10 Physiography and topography	11 Physiography and topography	11 Physiography and topography	11 Physiography and topography	11 Physiography and topography	11 Physiography and topography	11 Physiography and topography	12 Physiography and topography
		11 Surficial geology and soil cover	12 Surficial geology and soil cover	12 Surficial geology and soil cover;	12 Surficial geology and soil cover;	12 Surficial geology and soil cover;	12 Surficial geology and soil cover;	12 Surficial geology and soil cover;	13 Surficial geology and soil cover;
		12 Soil quality	13 Soil quality	13 Soil quality	13 Soil quality	13 Soil quality	13 Soil quality	13 Soil quality	14 Soil quality
		13 Ecosystem composition	14 Ecosystem composition	14 Ecosystem composition	14 Ecosystem composition	14 Ecosystem composition	14 Ecosystem composition	14 Ecosystem composition	15 Ecosystem composition
		14 Plant species and ecosystems at risk	15 Plant species and ecosystems at risk	15 Plant species and ecosystems at risk	15 Plant species and ecosystems at risk	15 Plant species and ecosystems at risk	15 Plant species and ecosystems at risk	15 Plant species and ecosystems at risk	16 Plant species and ecosystems at risk
		15 Amphibians	16 Amphibians	16 Amphibians	16 Amphibians	16 Amphibians	16 Amphibians	16 Amphibians	17 Amphibians
		16 Birds	17 Birds	17 Birds	17 Birds	17 Birds	17 Water birds	17 Water birds	18 Water birds
17 Mammals		18 Mammals	18 Mammals	18 Mammals	18 Mammals	18 Forest and grassland birds	18 Forest and grassland birds	19 Forest and grassland birds	
18 Invertebrates		19 Invertebrates	19 Invertebrates	19 Invertebrates	19 Invertebrates	19 Moose	19 Moose	20 Moose	
						20 Caribou	20 Caribou	21 Caribou	
					21 Grizzly Bear	21 Grizzly Bear	22 Grizzly Bear		
					22 Furbearers	22 Furbearers	23 Furbearers		
					23 Bats	23 Bats	24 Bats		
					24 Invertebrates	24 Invertebrates	25 Invertebrates		
Economic	—	19 Provincial economy and government revenues	20 Provincial economy and government revenues	20 Provincial economy and government revenues	20 Provincial economy and government revenues	25 Provincial economy	25 Provincial economy	26 Provincial economy	
		20 Regional and local employment and unemployment	21 Regional and local employment and unemployment	21 Regional and local employment and unemployment	21 Regional and local employment and unemployment	26 Regional and local employment and businesses	26 Regional and local employment and businesses	27 Regional and local employment and businesses	
		21 Contract and business opportunities	22 Contract and business opportunities	22 Contract and business opportunities	22 Contract and business opportunities	27 Regional and local government finance	27 Regional and local government finance	28 Regional and local government finance	
		22 Labour income generated	23 Labour income generated	23 Labour income generated	23 Labour income generated				
		23 Labour force qualifications	24 Labour force qualifications	24 Labour force qualifications	24 Labour force qualifications				
		24 Regional and local government finance	25 Regional and local government finance	25 Regional and local government finance	25 Regional and local government finance				

BLACKWATER GOLD PROJECT

APPLICATION FOR AN
ENVIRONMENTAL ASSESSMENT CERTIFICATE /
ENVIRONMENTAL IMPACT STATEMENT
ASSESSMENT METHODOLOGY



Pillar	Subject Area	dAIR Version A (20 December 2012)	dAIR Version B (28 February 2013)	dAIR Version C (12 April 2013)	dAIR Version D (12 July 2013)	dAIR Version E (28 August 2013)	dAIR Version F (25 September 2013)	AIR Version G (15 May 2015)
Social	—	25 Non-traditional land and resource use	26 Non-traditional land and resource use	26 Non-traditional land and resource use	26 Non-traditional land and resource use	28 Non-traditional land and resource use	28 Non-traditional land and resource use	29 Non-traditional land and resource use
		26 Visual aesthetic	27 Visual aesthetic	27 Visual aesthetic	27 Visual aesthetic	29 Visual resources	29 Visual resources	30 Visual resources
		27 Regional infrastructure and services	28 Regional infrastructure and services	28 Regional infrastructure and services	28 Regional services	30 Regional and local services	30 Regional and local services	31 Regional and local services
		28 Local infrastructure and services	29 Local infrastructure and services	29 Local infrastructure and services	29 Regional and community infrastructure	31 Regional and community infrastructure	31 Regional and community infrastructure	32 Regional and community infrastructure
					30 Demographics	32 Demographics	32 Demographics	33 Demographics
					31 Family and community well-being	33 Family and community well-being	33 Family and community well-being	34 Family and community well-being
								35 Current Land Use for Traditional Purposes
Heritage	—	29 Archaeological sites	30 Archaeological sites	30 Archaeological sites	32 Archaeological sites	34 Archaeological sites	34 Archaeological sites	36 Archaeological sites
		30 Historic sites	31 Historic sites	31 Historic sites	33 Historic sites	35 Historic heritage sites	35 Historic heritage sites	37 Historic heritage sites
		31 Paleontological resources	32 Paleontological resources	32 Paleontological resources	34 Paleontological resources	36 Paleontological resources	36 Paleontological resources	38 Paleontological resources
Health	—	32 Environmental exposures	33 Environmental exposures	33 Environmental exposures	35 Environmental exposures	37 Environmental exposures	37 Environmental exposures	39 Environmental exposures
		33 Workers health and safety	34 Workers health and safety	34 Workers health and safety	36 Workers health and safety	38 Workers health and safety	38 Workers health and safety	40 Workers health and safety
		34 Healthy living						

Table 3: Selected Valued Components and Indicators, by Assessment Pillar and Subject Area

Pillar	Valued Components	Indicators and/or Factors for Assessment
Environmental	Noise and vibration	<ul style="list-style-type: none"> Overall sound levels
	Climate change	<ul style="list-style-type: none"> Greenhouse gas emissions
	Air quality	<ul style="list-style-type: none"> Measured parameters (e.g., particulate matter and combustion gases)
	Surface water flow	<ul style="list-style-type: none"> Water flow Lake level
	Surface water and sediment quality	<ul style="list-style-type: none"> Measured parameters (e.g., pH and heavy metals) Acid Rock Drainage/Metal Leaching (ARD/ML) Geochemistry
	Groundwater quantity	<ul style="list-style-type: none"> Groundwater level Groundwater flow
	Groundwater quality	<ul style="list-style-type: none"> Measured parameters (e.g., pH and heavy metals) ARD/ML Geochemistry
	Wetlands	<ul style="list-style-type: none"> Hydrological function Biochemical function Ecological function Habitat function
	Fish habitat	<ul style="list-style-type: none"> Surface water flow Surface water and sediment quality Ecological health Riparian habitat
	Fish	<ul style="list-style-type: none"> Rainbow trout Kokanee
	Physiography and topography	<ul style="list-style-type: none"> Terrain stability
	Surficial geology and soil cover	<ul style="list-style-type: none"> Soil availability and depth
	Soil quality	<ul style="list-style-type: none"> Reclamation suitability
	Ecosystem composition	<ul style="list-style-type: none"> Ecosystem distribution Riparian Old growth Sparsely vegetated ecosystems Traditional use plants
	Plant species and ecosystems at risk	<ul style="list-style-type: none"> SARA listed whitebark pine Potential plant species-at-risk habitat Ecosystems at risk
	Amphibians	<ul style="list-style-type: none"> Western toad

BLACKWATER GOLD PROJECT

APPLICATION FOR AN
ENVIRONMENTAL ASSESSMENT CERTIFICATE /
ENVIRONMENTAL IMPACT STATEMENT
ASSESSMENT METHODOLOGY



Pillar	Valued Components	Indicators and/or Factors for Assessment
		<ul style="list-style-type: none"> Western toad habitat
	Water birds	<ul style="list-style-type: none"> Ring-necked duck Ring-necked duck habitat Yellow rail Yellow rail habitat
	Forest and grassland birds	<ul style="list-style-type: none"> Olive-sided flycatcher (songbird) Olive-sided flycatcher habitat Clark's nutcracker (songbird) Clark's nutcracker habitat Red-tailed hawk (raptor) Red-tailed hawk habitat
	Moose	<ul style="list-style-type: none"> Moose Moose habitat
	Caribou	<ul style="list-style-type: none"> Caribou Caribou habitat
	Grizzly bear	<ul style="list-style-type: none"> Grizzly bear Grizzly bear habitat
	Furbearers	<ul style="list-style-type: none"> Marten Marten habitat Beaver Beaver habitat
	Bats	<ul style="list-style-type: none"> Little brown myotis Little brown myotis habitat
	Invertebrates	<ul style="list-style-type: none"> Jutta arctic (butterfly) Jutta arctic habitat American emerald (dragonfly) American emerald habitat
	Economic	Provincial economy
Regional and local employment and businesses		<ul style="list-style-type: none"> Direct employment of local and regional residents Contract and business opportunities (Project purchasing from local contractors and businesses) Changes in regional unemployment Local and regional labour income and costs Training and education
Regional and local government finance		<ul style="list-style-type: none"> Municipal tax revenues Costs to regional and local governments
Social	Demographics	<ul style="list-style-type: none"> Population
	Regional and	<ul style="list-style-type: none"> Regional and municipal infrastructure (water supply,

BLACKWATER GOLD PROJECT

APPLICATION FOR AN
ENVIRONMENTAL ASSESSMENT CERTIFICATE /
ENVIRONMENTAL IMPACT STATEMENT
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Pillar	Valued Components	Indicators and/or Factors for Assessment
	community infrastructure	water/sewage treatment, landfills, communications, electricity, and recreational facilities) <ul style="list-style-type: none"> • Community housing and temporary accommodation • Regional transportation (road, rail, air)
	Regional and local services	<ul style="list-style-type: none"> • Regional and local services and conditions (educational, health, social, and protective services)
	Family and community well-being	<ul style="list-style-type: none"> • Economic hardship • Crime (including drug and alcohol abuse) • Family relationships
	Non-traditional land and resource use	<ul style="list-style-type: none"> • Protected areas and parks • Recreation/tourism use (e.g., all-terrain vehicle use) • Mining, exploration, and mineral tenures • Forestry and timber resource use • Hunting/trapping/guide outfitting • Fishing and aquaculture • Agriculture and grazing • Range use • Land ownership and tenures • Recreational and commercial use of waterways • Groundwater resource use • Surface water resource use
	Current Land and Resource Use for Traditional Purposes	<ul style="list-style-type: none"> • Hunting and trapping • Fishing • Plant gathering • Other cultural and traditional uses of the land (e.g., cultural and spiritual places, trails, navigation)
	Visual resources	<ul style="list-style-type: none"> • Visual record • Demonstrated aesthetic value
Heritage	Archaeological sites	<ul style="list-style-type: none"> • Landmarks • Buildings • Religious features • Human remains • Culturally modified trees • Subsistence features
	Historic heritage sites	<ul style="list-style-type: none"> • Landmarks • Buildings • Religious features • Human remains • Culturally modified trees • Subsistence features
	Paleontological	<ul style="list-style-type: none"> • Fossil sites

Pillar	Valued Components	Indicators and/or Factors for Assessment
	resources	
Health	Environmental exposures	<ul style="list-style-type: none"> • Noise and vibration • Air quality • Surface water and sediment quality • Groundwater quality • Fish • Soil quality • Contamination of country foods
	Workers health and safety	<ul style="list-style-type: none"> • Occupational exposures • Safety in the workplace • Noise when workers are at rest (construction and operations)

Note: ARD/ML = Acid Rock Drainage/Metal Leaching; GDP = Gross Domestic Product