

Project Name: <b>Reclaim Model - Overview of Program</b>	
<b>Pine Point Mining Limited</b>	<b>All users are urged to read the Reclaim Model User Manual - Scroll down for overview description of program.</b>
<b>Important! Reclaim 7.0 works better with no other excel files open. If other excel files are open ignore run time error and proceed</b>	
<b>Reclaim Menu</b>	The default Excel menu bar has an additional tab labelled "Add-Ins" that provides options specific to the Reclaim Model.
<b>Clear</b>	This option deletes all input data, deletes any duplicated elements and blanks out the project name. It also allows for segregation into land costs vs water costs if required.
<b>Duplicate</b>	This option Duplicates components of the project. E.g. if there is more than one Open Pit, use duplicate to add a second Open Pit. Quantities for the new Open Pit are erased, but the Activities and Cost Codes are carried over from the original Open Pit. The new Open Pit subtotal is added to the Summary page.
<b>Unit Costs</b>	This option opens a window of unit costs to provide easy reference. NOTE: the unit cost table has a filter in the 'UNITS' column. You can select to only see a particular unit (eg km) or multiple units (km and m3) or all units.
<b>Print All</b>	This option prints the Summary Worksheet, Unit Cost Worksheet, and the individual component worksheets having non-zero balances. Individual worksheets can be printed directly using standard printing methods, such as Ctl - P.
<b>Quit</b>	Select Quit to exit the program
<b>Help</b>	Redirects user to Instructions worksheet.
<b>WorkSheets</b>	
<b>Summary</b>	This worksheet contains a cumulative summary of costs for each component of the project. Associated costs such as engineering and project management are added as a percentage of the component costs.
<b>Components</b>	Costs are derived for individual closure and reclamation activities by multiplying a "quantity" of activity by a "unit cost". An activity can be edited, added, or deleted from worksheet. However, care should be taken not to modify cells that are defined and used elsewhere in the program. <b>Do not change the content or column width of the first column of each component worksheet</b>
<b>Unit Costs</b>	This worksheet contains a look up table with costs for typical work associated with each closure and reclamation activity
<b>Limitations</b>	<b>The Reclaim Program will NOT work if the worksheets are changed such that the following requirements are not met. Please review the following prior to modifying worksheets.</b>
<b>WorkSheet Names</b>	The names of the worksheets must not be changed.
<b>Defined Names</b>	Certain cells have defined names, which must not be changed. Where the cell is named, the name will appear in the "Name Box" to the left of the formula bar.
<b>First line of data</b>	The first line of data for any component worksheet starts on line 4. <b>Do not change the first line of a component worksheet, ie the component name.</b>
<b>Cell A1</b>	Cell A1 on the component sheet MUST always contain the count of that component for the duplicate function to operate. <b>DO NOT CHANGE.</b>
<b>Adding Lines</b>	You can add lines to components and the unit cost table, as long as they are not the last lines. The last line might fall outside the named ranges. You can check the size of the named range by selecting the name from the drop down box at the top left of the sheet. Usually this box has a cell reference, or a name.
<b>Printing</b>	A component will only be printed if its sub-total is greater than zero. In addition, a component and the summary sheet cannot be printed if there is an error. Printing has been set to print 1 page per component.
<b>Conditions of Use</b>	The Reclamation Cost Estimating Model was prepared to serve as a guide for Government Agencies, mining companies, and others to estimate the cost of mine reclamation. This model is not intended to replace reclamation planning or to be used to determine the activities required to reclaim a site or to dictate how much should be spent on reclamation.  Reclaim was prepared by Brodie Consulting Ltd. on behalf of AANDC. AANDC and Brodie Consulting Ltd. are not responsible for the completeness or accuracy of any reclamation estimate made using this model. The user agrees to check and take responsibility for all aspects of any cost estimate made using this model.

The following table provides guidance as to whether water management and treatment is considered short term or long term. Short term closure activities may be costed within a component (eg 'Open Pit' or 'Rock Pile') or 'Water Management'. Long term or post-closure water treatment is costed in 'Water Treatment' and included in "Post-closure Monitoring and Maintenance".

		Short Term/	Long term
<b>Open Pit</b>	flood pit - install/operate pumping system	x	
	construct diversion ditches	x	
	treat 1st filling	x	
	install pump/decant system	x	
	passive/biological treatment	x	
	overflow treatment		x
<b>Rock Pile/Heap Leach Facility</b>	construct diversion ditches	x	
	install groundwater collection system	x	
	install toe seepage collection system	x	
	collect and treat groundwater		x
	collect and treat seepage (ARD/ML)		x
	install passive treatment system	x	
<b>Tailings Facility</b>	operate and maintain passive treatment system		x
	operate pump and detoxify heap leach pile (cyanide destruction)	x	
	construct diversion ditches	x	
	pump supernatant (to pit, U/G)	x	
	treat supernatant	x	
	install toe seepage collection system	x	
<b>U/G Mine</b>	collect and treat seepage (ARD/ML)		x
	install passive treatment system	x	
	operate and maintain passive treatment system		x
	accelerate flooding	x	
	install seepage collection system	x	
	install dewatering/pumping system	x	
<b>Water Management</b>	operate seepage/dewatering system (ARD/ML)		x
	refill lakes		
	redirect creeks/streams	x	
	stabilize water management ponds	x	
	stabilize/close sediment ponds	x	
	fresh water supply - breach embankment	x	
	fresh water supply - remove piping system	x	
	construct water treatment plant	x	
	construct sludge pond	x	
	water control in reclamation quarry	x	
operate/maintain water treatment plant		x	

**SUMMARY OF COSTS**

<b>CAPITAL COSTS</b>	<b>COMPONENT NAME</b>	<b>COST</b>	<b>LAND LIABILITY</b>	<b>WATER LIABILITY</b>
OPEN PIT		\$120	\$0	\$120
UNDERGROUND MINE		\$0	\$0	\$0
TAILINGS FACILITY		\$0	\$0	\$0
ROCK PILE		\$0	\$0	\$0
BUILDINGS AND EQUIPMENT		\$461,905	\$362,653	\$99,253
CHEMICALS AND CONTAMINATED SOIL MANAGEMEN		\$72,011	\$34,757	\$37,255
SURFACE AND GROUNDWATER MANAGEMENT		\$0	-	\$0
INTERIM CARE AND MAINTENANCE		\$20,000	-	\$20,000
INFLATION (2014 to 2020)	8%	\$44,323	\$31,793	\$12,530
<b>SUBTOTAL: Capital Costs</b>		<b>\$598,359</b>	<b>\$429,202</b>	<b>\$169,157</b>
<b>PERCENT OF SUBTOTAL</b>			<b>72%</b>	<b>28%</b>
<b>INDIRECT COSTS</b>		<b>COST</b>	<b>LAND LIABILITY</b>	<b>WATER LIABILITY</b>
MOBILIZATION/DEMOBILIZATION		\$148,776	\$106,717	\$42,059
POST-CLOSURE MONITORING AND MAINTENANCE		\$0	\$0	\$0
INFLATION (2014 to 2020) ON ABOVE 2 LINES	8%	\$11,902	\$8,537	\$3,365
ENGINEERING	3%	\$17,951	\$12,876	\$5,075
PROJECT MANAGEMENT	3%	\$17,951	\$12,876	\$5,075
HEALTH AND SAFETY PLANS/MONITORING & QA/QC	1%	\$5,984	\$4,292	\$1,692
BONDING/INSURANCE	1%	\$5,984	\$4,292	\$1,692
CONTINGENCY	20%	\$119,672	\$85,840	\$33,831
MARKET PRICE FACTOR ADJUSTMENT	0%	\$0	\$0	\$0
<b>SUBTOTAL: Indirect Costs</b>		<b>\$328,219</b>	<b>\$235,431</b>	<b>\$92,788</b>
<b>TOTAL COSTS</b>		<b>\$926,578</b>	<b>\$664,632</b>	<b>\$261,945</b>

1		Open Pit Name:	Pit # 1					
ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	% Cost Land	Water Cost	
<b>CONTROL ACCESS</b>								
Fence		m		#N/A	\$0.00	\$0	\$0	
Signs		each		#N/A	\$0.00	\$0	\$0	
Berm at crest		m3		#N/A	\$0.00	\$0	\$0	
Block roads		m3		#N/A	\$0.00	\$0	\$0	
Other				#N/A	\$0.00	\$0	\$0	
<b>STABILITY STUDY</b>								
Conduct stability and setback study		allow		#N/A	\$0.00	\$0	\$0	
<b>STABILIZE SLOPES</b>								
Off-load crest, soil A		m3		#N/A	\$0.00	\$0	\$0	
Off-load crest, soil B		m3		#N/A	\$0.00	\$0	\$0	
Doze/trim overburden at crest		m3		#N/A	\$0.00	\$0	\$0	
Drill & blast pit crest		m3		#N/A	\$0.00	\$0	\$0	
Buttress slope		m3		#N/A	\$0.00	\$0	\$0	
Other				#N/A	\$0.00	\$0	\$0	
<b>COVER/CONTOUR SLOPES</b>								
Place fill, soil A		m3		#N/A	\$0.00	\$0	\$0	
Place fill, soil B		m3		#N/A	\$0.00	\$0	\$0	
Rip rap		m3		#N/A	\$0.00	\$0	\$0	
Vegetate slopes		ha		#N/A	\$0.00	\$0	\$0	
Vegetate pit floor		ha		#N/A	\$0.00	\$0	\$0	
Other				#N/A	\$0.00	\$0	\$0	
<b>CONSTRUCT DIVERSION DITCHES</b>								
Excavate ditches -soil		m3		#N/A	\$0.00	\$0	\$0	
Excavate ditches -rock		m3		#N/A	\$0.00	\$0	\$0	
Rip rap in channel base		m3		#N/A	\$0.00	\$0	\$0	
<b>CONSTRUCT SPILLWAY</b>								
Excavate channel		m3		#N/A	\$0.00	\$0	\$0	
Concrete		m3		#N/A	\$0.00	\$0	\$0	
Rip rap		m3		#N/A	\$0.00	\$0	\$0	
Other				#N/A	\$0.00	\$0	\$0	
<b>RECLAIM QUARRIES</b>								
Contour slopes	5 test pits @ 20 tonnes each requiring re-grading following removal of 1-2 ton	m3	50	DRH	\$2.40	\$120	\$0	
Place overburden		m3		#N/A	\$0.00	\$0	\$0	
Vegetate		m3		#N/A	\$0.00	\$0	\$0	
<b>FLOOD PIT-Captital</b>								
Remove stationary equipment (sump pumps)		each		#N/A	\$0.00	\$0	\$0	
Remove dewatering pipeline		m		#N/A	\$0.00	\$0	\$0	
Remove power lines		each		#N/A	\$0.00	\$0	\$0	
Construct diversion ditches		m3		#N/A	\$0.00	\$0	\$0	
-Ditch, mat'l A		m3		#N/A	\$0.00	\$0	\$0	
-Ditch, mat'l B		m3		#N/A	\$0.00	\$0	\$0	
Construct embankment/dam		m3		#N/A	\$0.00	\$0	\$0	
Supply/install pump station		each		#N/A	\$0.00	\$0	\$0	
Supply/install piping system		m		#N/A	\$0.00	\$0	\$0	
Remove pump post-closure		each		#N/A	\$0.00	\$0	\$0	
Remove pipeline post-closure		m		#N/A	\$0.00	\$0	\$0	
<b>FLOOD PIT-Annual Cost</b>								
Operate pumps (power)		m3		#N/A	\$0.00	\$0	\$0	
Maintain pump/pipeline		allow		#N/A	\$0.00	\$0	\$0	
Labour:fuel management, comissioning/decom		\$/h		#N/A	\$0.00	\$0	\$0	
Chemical addition, _____kg/m3 of water		tonne		#N/A	\$0.00	\$0	\$0	
Chemicals, purchase and shipping		tonne		#N/A	\$0.00	\$0	\$0	
Passive/biological additives		\$/ha		#N/A	\$0.00	\$0	\$0	
Passive additives purchase and shipping		tonne		#N/A	\$0.00	\$0	\$0	
Other				#N/A	\$0.00	\$0	\$0	
						Annual pumping costs		\$0
Number of years of pump flooding		years				Total pumping costs		\$0
						<b>Total</b>		\$120
						<b>% of Total</b>		0% 100%

1		Underground Mine Name		UG Mine # 1				
ACTIVITY/MATERIAL	Notes	Unit	Qty	Code	Cost	Cost Land	Cost	Cost
<b>CONTROL ACCESS</b>								
Fence		m		#N/A	\$0.00	\$0	\$0	\$0
Signs		each		#N/A	\$0.00	\$0	\$0	\$0
Block roads		m3		#N/A	\$0.00	\$0	\$0	\$0
Berm		m3		#N/A	\$0.00	\$0	\$0	\$0
Concrete wall in portals		m3		#N/A	\$0.00	\$0	\$0	\$0
Backfill portal #1		m3		#N/A	\$0.00	\$0	\$0	\$0
Backfill portal #2		m3		#N/A	\$0.00	\$0	\$0	\$0
Cap raise # 1		m3		#N/A	\$0.00	\$0	\$0	\$0
Cap raise #2		m3		#N/A	\$0.00	\$0	\$0	\$0
Cap shaft #1		m3		#N/A	\$0.00	\$0	\$0	\$0
Cap shaft #2		m3		#N/A	\$0.00	\$0	\$0	\$0
Backfill adits		m3		#N/A	\$0.00	\$0	\$0	\$0
Backfill open stope		m3		#N/A	\$0.00	\$0	\$0	\$0
Concrete cap over open stope		m3		#N/A	\$0.00	\$0	\$0	\$0
Other				#N/A	\$0.00	\$0	\$0	\$0
<b>REMOVE HAZARDOUS MATERIALS</b>								
Remove hazardous materials, U/G labor		mandays		#N/A	\$0.00	\$0	\$0	\$0
Remove/decontam. stationary & elect. equip		mandays		#N/A	\$0.00	\$0	\$0	\$0
Remove/decontam. mobile equipment		each		#N/A	\$0.00	\$0	\$0	\$0
Remove misc. haz. mat & explosives		kg		#N/A	\$0.00	\$0	\$0	\$0
Other				#N/A	\$0.00	\$0	\$0	\$0
<b>INSTALL BULKHEADS</b>								
Bulkheads to control water flow		each		#N/A	\$0.00	\$0	\$0	\$0
Grout bulkhead		m3		#N/A	\$0.00	\$0	\$0	\$0
<b>FLOOD MINE</b>								
Supply/install pump		each		#N/A	\$0.00	\$0	\$0	\$0
Supply/install piping system		each		#N/A	\$0.00	\$0	\$0	\$0
Operate pumps to flood workings		m3		#N/A	\$0.00	\$0	\$0	\$0
Other				#N/A	\$0.00	\$0	\$0	\$0
<b>INSTALL GROUNDWATER COLLECTION SYSTEM</b>								
Excavate/install sumps		m2		#N/A	\$0.00	\$0	\$0	\$0
Install pumping wells		m3		#N/A	\$0.00	\$0	\$0	\$0
Install pumps/pipelines/power supply		LS		#N/A	\$0.00	\$0	\$0	\$0
<b>SPECIALIZED ITEMS</b>								
Install water quality monitoring pipes		each		#N/A	\$0.00	\$0	\$0	\$0
Install permanent pumping system		each		#N/A	\$0.00	\$0	\$0	\$0
Other				#N/A	\$0.00	\$0	\$0	\$0
<b>Total</b>						\$0	\$0	\$0
<b>% of Total</b>							0%	0%

1 Tailings Impoundment Name:

Pond # 1

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	% Cost Land	Land Cost	Water Cost
<b>CONTROL ACCESS</b>								
Fence		m		#N/A	\$0.00	\$0	\$0	\$0
Signs		each		#N/A	\$0.00	\$0	\$0	\$0
Berm		m3		#N/A	\$0.00	\$0	\$0	\$0
Block roads		m3		#N/A	\$0.00	\$0	\$0	\$0
Other				#N/A	\$0.00	\$0	\$0	\$0
<b>STABILIZE EMBANKMENT(S)</b>								
Toe buttress, drainage layer		m3		#N/A	\$0.00	\$0	\$0	\$0
Toe buttress, bulk fill		m3		#N/A	\$0.00	\$0	\$0	\$0
Rip rap		m3		#N/A	\$0.00	\$0	\$0	\$0
Vegetate		ha		#N/A	\$0.00	\$0	\$0	\$0
Raise crest		m3		#N/A	\$0.00	\$0	\$0	\$0
Flatten slopes		m3		#N/A	\$0.00	\$0	\$0	\$0
Other				#N/A	\$0.00	\$0	\$0	\$0
<b>COVER TAILINGS</b>								
Grade/shape tailings surface		m3		#N/A	\$0.00	\$0	\$0	\$0
Liner bedding		m3		#N/A	\$0.00	\$0	\$0	\$0
Subgrade preparation - compact		m2		#N/A	\$0.00	\$0	\$0	\$0
Supply geotextile/geosynthetic		m2		#N/A	\$0.00	\$0	\$0	\$0
Install geotextile/geosynthetic		m2		#N/A	\$0.00	\$0	\$0	\$0
Soil cover		m3		#N/A	\$0.00	\$0	\$0	\$0
Rock cover		m3		#N/A	\$0.00	\$0	\$0	\$0
Vegetate		m2		#N/A	\$0.00	\$0	\$0	\$0
Other				#N/A	\$0.00	\$0	\$0	\$0
<b>BURY PAG ROCK</b>								
Relocate PAG rock		m3		#N/A	\$0.00	\$0	\$0	\$0
Place cover over PAG rock		m3		#N/A	\$0.00	\$0	\$0	\$0
Raise crest of dam		m3		#N/A	\$0.00	\$0	\$0	\$0
Other				#N/A	\$0.00	\$0	\$0	\$0
<b>STABILIZE DECANT SYSTEM</b>								
Excavate and replace		m3		#N/A	\$0.00	\$0	\$0	\$0
Plug/backfill with concrete or clay		m3		#N/A	\$0.00	\$0	\$0	\$0
Other				#N/A	\$0.00	\$0	\$0	\$0
<b>REMOVE TAILINGS DISCHARGE</b>								
Cyclones		m3		#N/A	\$0.00	\$0	\$0	\$0
Pipe		m3		#N/A	\$0.00	\$0	\$0	\$0
Remove reclaim barge		allow		#N/A	\$0.00	\$0	\$0	\$0
<b>CONSTRUCT DIVERSION DITCHES</b>								
Excavate ditches -soil		m3		#N/A	\$0.00	\$0	\$0	\$0
Excavate ditches -rock		m3		#N/A	\$0.00	\$0	\$0	\$0
Rip rap in channel base		m3		#N/A	\$0.00	\$0	\$0	\$0
<b>FLOOD TAILINGS</b>								
Doze tailings to final contour		m3		#N/A	\$0.00	\$0	\$0	\$0
Raise crest of dam		m3		#N/A	\$0.00	\$0	\$0	\$0
Other				#N/A	\$0.00	\$0	\$0	\$0
<b>UPGRADE SPILLWAY</b>								
Excavate channel, rock		m3		#N/A	\$0.00	\$0	\$0	\$0
Excavate channel, soil		m3		#N/A	\$0.00	\$0	\$0	\$0
Concrete		m3		#N/A	\$0.00	\$0	\$0	\$0
Rip rap		m3		#N/A	\$0.00	\$0	\$0	\$0
Other				#N/A	\$0.00	\$0	\$0	\$0
<b>CONSTRUCT SEEPAGE COLLECTION POND</b>								
Excavate seepage collection pond		m3		#N/A	\$0.00	\$0	\$0	\$0
Doze & spread excavated material		m3		#N/A	\$0.00	\$0	\$0	\$0
Vegetate spread material		ha		#N/A	\$0.00	\$0	\$0	\$0
Bedding layer		m3		#N/A	\$0.00	\$0	\$0	\$0
Supply geomembrane		m2		#N/A	\$0.00	\$0	\$0	\$0
Install geomembrane		m2		#N/A	\$0.00	\$0	\$0	\$0
Erosion protection layer		m3		#N/A	\$0.00	\$0	\$0	\$0
<b>INSTALL GROUNDWATER COLLECTION SYSTEM</b>								
Excavate/install sumps		m3		#N/A	\$0.00	\$0	\$0	\$0
Install pumping wells		m3		#N/A	\$0.00	\$0	\$0	\$0
Install pumps/pipelines/power supply		LS		#N/A	\$0.00	\$0	\$0	\$0
<b>SPECIALIZED ITEMS</b>								
Install permanent instrumentation, supply & technician		each		#N/A	\$0.00	\$0	\$0	\$0
Install permanent instrumentation, drilling		each		#N/A	\$0.00	\$0	\$0	\$0
<b>TREAT SEEPAGE - see "Water Management" and "Water Treatment"</b>								
<b>TREAT SUPERNATANT</b>								
Pump water (to pit, U/G)		m3		#N/A	\$0.00	\$0	\$0	\$0
Equipment maintenance and parts		allow		#N/A	\$0.00	\$0	\$0	\$0
Supply reagents		tonne		#N/A	\$0.00	\$0	\$0	\$0
						Annual treatment costs	\$0	
Number of years of treatment	years					Total treatment costs	\$0	\$0
						<b>Total</b>	\$0	\$0
						<b>% of Total</b>	0%	0%

\* for construction of passive treatment system refer to "Water Management"

1

Rock Pile Name:

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	% Cost	Land Cost	Water Cost
<b>STABILIZE SLOPES</b>								
Flatten slopes with dozer		m3		#N/A	\$0.00	\$0	\$0	\$0
Flatten "bubble dump" areas		m3		#N/A	\$0.00	\$0	\$0	\$0
Divert runon, ditch mat'l A		m3		#N/A	\$0.00	\$0	\$0	\$0
Divert runon, ditch mat'l B		m3		#N/A	\$0.00	\$0	\$0	\$0
Toe buttress, drain mat'l		m3		#N/A	\$0.00	\$0	\$0	\$0
Toe buttress, fill mat'l A		m3		#N/A	\$0.00	\$0	\$0	\$0
Toe buttress, fill mat'l B		m3		#N/A	\$0.00	\$0	\$0	\$0
Other				#N/A	\$0.00	\$0	\$0	\$0
<b>COVER ROCK PILE</b>								
Subgrade preparation - doze surface		m3		#N/A	\$0.00	\$0	\$0	\$0
Soil cover - excavate,haul,spread&compact		m3		#N/A	\$0.00	\$0	\$0	\$0
Rock cover - excavate,haul & spread		m3		#N/A	\$0.00	\$0	\$0	\$0
Excavate downslope drainage channel & chute		m3		#N/A	\$0.00	\$0	\$0	\$0
Rip rap drainage channel and chute		m3		#N/A	\$0.00	\$0	\$0	\$0
Vegetate		ha		#N/A	\$0.00	\$0	\$0	\$0
Other				#N/A	\$0.00	\$0	\$0	\$0
<b>VERY LOW PERMEABILITY COVER (in addition to above)</b>								
Liner subgrade preparation - compact		m2		#N/A	\$0.00	\$0	\$0	\$0
Supply geomembrane		m2		#N/A	\$0.00	\$0	\$0	\$0
Install geomembrane		m2		#N/A	\$0.00	\$0	\$0	\$0
Protective cover - excavate,haul,spread&compact		m3		#N/A	\$0.00	\$0	\$0	\$0
Vegetate		ha		#N/A	\$0.00	\$0	\$0	\$0
Install infiltration/seepage instrumentation		allow		#N/A	\$0.00	\$0	\$0	\$0
<b>CONSTRUCT DIVERSION DITCHES</b>								
Excavate ditches -soil		m3		#N/A	\$0.00	\$0	\$0	\$0
Excavate ditches -rock		m3		#N/A	\$0.00	\$0	\$0	\$0
Rip rap in channel base		m3		#N/A	\$0.00	\$0	\$0	\$0
<b>CONSTRUCT SEEPAGE COLLECTION POND</b>								
Excavate seepage collection pond		m3		#N/A	\$0.00	\$0	\$0	\$0
Doze & spread excavated material		m3		#N/A	\$0.00	\$0	\$0	\$0
Vegetate spread material		ha		#N/A	\$0.00	\$0	\$0	\$0
Bedding layer		m3		#N/A	\$0.00	\$0	\$0	\$0
Supply geomembrane		m2		#N/A	\$0.00	\$0	\$0	\$0
Install geomembrane		m2		#N/A	\$0.00	\$0	\$0	\$0
Erosion protection layer		m3		#N/A	\$0.00	\$0	\$0	\$0
<b>INSTALL GROUNDWATER COLLECTION SYSTEM</b>								
Excavate/install sumps		m3		#N/A	\$0.00	\$0	\$0	\$0
Install pumping wells		m3		#N/A	\$0.00	\$0	\$0	\$0
Install pumps/pipelines/power supply		allow		#N/A	\$0.00	\$0	\$0	\$0
<b>RELOCATE DUMPS</b>								
Load, haul, dump or doze		m3		#N/A	\$0.00	\$0	\$0	\$0
Add lime		tonne		#N/A	\$0.00	\$0	\$0	\$0
Contour reclaimed area		ha		#N/A	\$0.00	\$0	\$0	\$0
Other				#N/A	\$0.00	\$0	\$0	\$0
<b>SPECIALIZED ITEMS</b>								
Install permanent instrumentation		each		#N/A	\$0.00	\$0	\$0	\$0
Install permanent instrumentation, drilling		each		#N/A	\$0.00	\$0	\$0	\$0
<b>TREAT ROCK PILE SEEPAGE - see "Water Treatment"</b>								
<b>HEAP LEACH SEEPAGE TREATMENT - Cyanide Detox</b>								
Cyanide destruction water treatment pumping		m3		#N/A	\$0.00	\$0	\$0	\$0
Reagents		tonnes		#N/A	\$0.00	\$0	\$0	\$0
Electrician/mechanic to maintain treatment plant		allow		#N/A	\$0.00	\$0	\$0	\$0
Equipment maintenance and parts		allow		#N/A	\$0.00	\$0	\$0	\$0
						Annual treatment costs	\$0	
Number of years of treatment		years				Total treatment costs	\$0	\$0
<b>HEAP LEACH SEEPAGE TREATMENT - ARD/ML**</b>								
Upgrade/modify pumping system - report to WTP		allow		#N/A	\$0.00	\$0		\$0
						<b>Total</b>	\$0	\$0
						<b>% of Total</b>	0%	0%

\* For construction of passive treatment system refer to "Water Management". ARD/ML seepage treatment becomes post-closure water treatment cost

\*\*Heap leach ARD/ML seepage treatment becomes post-closure water treatment cost

1 Chemicals/Soil Area Name:

**Note:** The procedures, equipment and packaging for clean up and removal of chemicals or contaminated soils are highly dependent on the nature of the chemicals and their existing state of containment. Government guidelines should be consulted on an individual chemical basis. Any estimate made here should be considered very rough unless specific evaluations have been conducted.

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	% Cost Land	Land Cost	Water Cost
<b>HAZARDOUS MATERIALS AUDIT</b>								
Hazardous materials audit		mandays		#N/A	\$0.00	\$0	\$0	\$0
<b>BUILDING DECONTAMINATION &amp; CONSOLIDATION OF HAZARDOUS MATERIALS</b>								
Environmental technician/coordinator		mandays		#N/A	\$0.00	\$0	\$0	\$0
Decontaminate: oil, fuel		mandays		#N/A	\$0.00	\$0	\$0	\$0
Decontaminate maintenance shop		mandays		#N/A	\$0.00	\$0	\$0	\$0
Decontaminate power plant		mandays		#N/A	\$0.00	\$0	\$0	\$0
Decontaminate bulk fuel storage		mandays		#N/A	\$0.00	\$0	\$0	\$0
Decontaminate ANFO plant		mandays		#N/A	\$0.00	\$0	\$0	\$0
Decontaminate offices/warehouse/accom		mandays		#N/A	\$0.00	\$0	\$0	\$0
Removal of asbestos siding on buildings		m2		#N/A	\$0.00	\$0	\$0	\$0
Removal of friable asbestos on equipment		m2		#N/A	\$0.00	\$0	\$0	\$0
Other				#N/A	\$0.00	\$0	\$0	\$0
<b>HAZARDOUS MATERIALS REMOVAL</b>								
Waste oils	10% of total volume 500 (+90 from previous	litre	590	ORL	\$0.43	\$254	50%	\$127
Waste fuel	10% of total volume (16000) use 1683 from j	litre	1683	ORH	\$1.20	\$2,020	50%	\$1,010
Waste batteries		kg		PRCH	\$2.50	\$0	\$0	\$0
Assay & environmental lab reagents		kg		PRCH	\$2.50	\$0	\$0	\$0
Machine shop paints, solvents etc		litre		#N/A	\$0.00	\$0	\$0	\$0
Glycol		litre		#N/A	\$0.00	\$0	\$0	\$0
Process reagents	500 from previous permit	kg	500	PRCH	\$2.50	\$1,250	\$0	\$1,250
Nuclear sources		litre		ORH	\$1.20	\$0	\$0	\$0
Other hazardous materials	180+360 from previous plus 500l	allow	1040	ORH	\$1.20	\$1,248	\$0	\$1,248
<b>HAZARDOUS MATERIALS</b>								
Transportation to disposal facility		allow	1	#N/A	\$1,000.00	\$1,000	50%	\$500
Disposal fees		allow	1	#N/A	\$1,000.00	\$1,000	50%	\$500
Other				#N/A	\$0.00	\$0	\$0	\$0
<b>CONTAMINATED SOILS</b>								
Contam. soil investigation - Phase 1	Increased based on GNWT-ID54 comment	each	1	#N/A	\$50,000.00	\$50,000	50%	\$25,000
Contam. soil investigation - Phase 2		each		#N/A	\$0.00	\$0	\$0	\$0
<b>CONTAMINATED SOIL REMOVAL</b>								
Excavate and transport to onsite facility		m3	0	#N/A	\$0.00	\$0	\$0	\$0
Manage hydrocarbon remediation at facility		m3		#N/A	\$0.00	\$0	\$0	\$0
Reagents/stabilizing agent		m2		#N/A	\$0.00	\$0	\$0	\$0
Excavate and transport to offsite facility	previously 100 increase to 300 due to incre:	m3	300	CSRI	\$47.00	\$14,100	50%	\$7,050
Contour decontaminated area	previously 100 increase to 300 due to incre:	m3	300	DSH	\$3.80	\$1,140	50%	\$570
<b>CONTAMINATED SOIL VERY LOW PERMEABILITY COVER</b>								
Supply geomembrane, HDPE, ES3, GCL		m2		#N/A	\$0.00	\$0	\$0	\$0
Upper and lower bedding layers		m3		#N/A	\$0.00	\$0	\$0	\$0
Install geomembrane, HDPE, ES3, GCL		m2		#N/A	\$0.00	\$0	\$0	\$0
Erosion protection layer		m3		#N/A	\$0.00	\$0	\$0	\$0
Vegetate		m2		#N/A	\$0.00	\$0	\$0	\$0
Install infiltration/seepage instrumentation		allow		#N/A	\$0.00	\$0	\$0	\$0
Other				#N/A	\$0.00	\$0	\$0	\$0
OTHER				#N/A	\$0.00	\$0	\$0	\$0
<b>Total</b>						\$72,011	\$34,757	\$37,255
<b>% of Total</b>							48%	52%

1 Building / Equip Name:		Bldg / Equip #: 1							
ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	% Cost			
						Land	Land	Water	
						Cost	Cost	Cost	
<b>DISPOSE MOBILE EQUIPMENT</b>									
Decontaminate and ship off-site	includes heavy equipment, drill units, and large vehicles; 46 previously plus	allow	72	ls	\$2,000.00	\$144,000	100%	\$144,000	\$0
Decontaminate and dispose on-site		allow		#N/A	\$0.00	\$0		\$0	\$0
Decontaminate and ship off-site	light vehicles - trucks, quads, argos, skidoos, kabota's, etc. 33+42 previous	allow	75	ls	\$400.00	\$30,000	100%	\$30,000	\$0
<b>REMOVE BUILDINGS - see note below</b>									
Accommodation Complex	249 person camp (5250m2) + 532m2 (from previous LUP)	m2	5782	BRWL	\$27.50	\$159,005	50%	\$79,503	\$79,503
Process Facilities	equipment/pump shacks; add	each	10	BRS1L	\$45.00	\$450	100%	\$450	\$0
Offices, Repair, Lab, Warehouse	Coreshacks etc	m2	120	BRWL	\$27.50	\$3,300		\$0	\$3,300
Storage Facilities		m2		#N/A	\$0.00	\$0		\$0	\$0
Water and Wastewater Treatment Facilities		m2		#N/A	\$0.00	\$0		\$0	\$0
U/G Heating Plant		m2		#N/A	\$0.00	\$0		\$0	\$0
Emulsion Plant		m2		#N/A	\$0.00	\$0		\$0	\$0
AN Storage Facility	AN facility	m2	500	BRWL	\$27.50	\$13,750	100%	\$13,750	\$0
Warehouse, Shops and Other	A geological core shed, mechanical shop, cold storage tent, dewatering sh	m2	1000	BRWL	\$27.50	\$27,500	100%	\$27,500	\$0
Storage Facility at Laydown/Airstrip		m2		#N/A	\$0.00	\$0		\$0	\$0
Fuel tanks	Multiple fuel tanks at various pads; previously 9 units; increase to 15	l	15	#N/A	\$1,000.00	\$15,000	100%	\$15,000	\$0
Fuel Tanks	Assume multiple large tanks	l	3	#N/A	\$6,000.00	\$18,000	100%	\$18,000	\$0
Freshwater intake	13 km pipeline	m	13000	PSRL	\$1.00	\$13,000	100%	\$13,000	\$0
Reclaim pumps		m2		#N/A	\$0.00	\$0		\$0	\$0
Outfall & Diffuser		m2		#N/A	\$0.00	\$0		\$0	\$0
Airstrip lighting, navigation, electrician		mandays		#N/A	\$0.00	\$0		\$0	\$0
Airstrip lighting, navigation, mechanical		mandays		#N/A	\$0.00	\$0		\$0	\$0
Break foundation slabs		m2		#N/A	\$0.00	\$0		\$0	\$0
Consolidate & dump boneyard debris		m3		#N/A	\$0.00	\$0		\$0	\$0
Other	removal generators and pumps - 1 haul truck picking up multiple locations	wcation	2	#N/A	\$2,500.00	\$5,000	100%	\$5,000	\$0
<b>LANDFILL FOR DEMOLITION WASTE</b>									
Place rock cover		m3		#N/A	\$0.00	\$0		\$0	\$0
Place soil cover		m3		#N/A	\$0.00	\$0		\$0	\$0
Vegetate		ha		#N/A	\$0.00	\$0		\$0	\$0
<b>GRADE AND CONTOUR PADS</b>									
Accommodation Complex		ha		#N/A	\$0.00	\$0		\$0	\$0
Process Facilities		ha		#N/A	\$0.00	\$0		\$0	\$0
Offices, Repair, Lab, Warehouse		ha		#N/A	\$0.00	\$0		\$0	\$0
Storage Facilities		ha		#N/A	\$0.00	\$0		\$0	\$0
Water and Wastewater Treatment Facilities		ha		#N/A	\$0.00	\$0		\$0	\$0
U/G Heating Plant		ha		#N/A	\$0.00	\$0		\$0	\$0
Emulsion Plant		ha		#N/A	\$0.00	\$0		\$0	\$0
Warehouse, Shops and Other		ha		#N/A	\$0.00	\$0		\$0	\$0
Place rock cover		m3		#N/A	\$0.00	\$0		\$0	\$0
Vegetate	Previous estimate was 4.28; increase due to additional pads	ha	10	VHFs	\$2,000.00	\$20,000	50%	\$10,000	\$10,000
Other				#N/A	\$0.00	\$0		\$0	\$0
<b>PUNCTURE LINED SUMPS</b>									
Puncture liner and place soil cover		m3		#N/A	\$0.00	\$0		\$0	\$0
<b>RECLAIM ROADS</b>									
Remove culverts		each		#N/A	\$0.00	\$0		\$0	\$0
Remove bridges		each		#N/A	\$0.00	\$0		\$0	\$0
Scarify and install water breaks		ha		#N/A	\$0.00	\$0		\$0	\$0
Scarify airstrip		ha		#N/A	\$0.00	\$0		\$0	\$0
Scarify disturbed area	Previous estimate was 3; double to 6	ha	6	SCFYs	\$2,150.00	\$12,900	50%	\$6,450	\$6,450
Vegetate		ha		#N/A	\$0.00	\$0		\$0	\$0
Other				#N/A	\$0.00	\$0		\$0	\$0
<b>SPECIALIZED ITEMS</b>									
Dispose of misc. debris and laydown area refuse				#N/A	\$0.00	\$0		\$0	\$0
<b>Total</b>						\$461,905		\$362,653	\$99,253
<b>% of Total</b>								79%	21%

Note: Unit costs are based on 3m high, single storey building. Scale larger building areas accordingly. E.g. 10m high building multiply area by 3.3 (10/3)



1 Capital Expenditures and Short Term Water Treatment identified in 'Instructions' worksheet

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
<b>BREACH DYKE EMBANKMENT</b>						
Remove fill		m3		#N/A	\$0.00	\$0
Contour water intake area		m3		#N/A	\$0.00	\$0
<b>STABILIZE SEDIMENT PONDS/WATER MANAGEMENT PONDS</b>						
Place soil cover		m3		#N/A	\$0.00	\$0
Doze & spread excavated material		m3		#N/A	\$0.00	\$0
Vegetate spread material		ha		#N/A	\$0.00	\$0
Rip rap in channel base		each		#N/A	\$0.00	\$0
<b>REDIRECT RUNOFF/CONSTRUCT DIVERSION DITCHES</b>						
Excavate ditches -soil		m3		#N/A	\$0.00	\$0
Excavate ditches -rock		m3		#N/A	\$0.00	\$0
Stabilize side slopes		m3		#N/A	\$0.00	\$0
Rip rap in channel base		m3		#N/A	\$0.00	\$0
<b>BREACH DITCHES</b>						
Excavate breaches		m3		#N/A	\$0.00	\$0
Backfill/recontour		m3		#N/A	\$0.00	\$0
Install flow dissipation		m3		#N/A	\$0.00	\$0
Vegetate remainder of ditch		m2		#N/A	\$0.00	\$0
<b>DECOMMISSION FRESH WATER SUPPLY</b>						
Breach embankment		m		#N/A	\$0.00	\$0
Remove pump		LS		#N/A	\$0.00	\$0
Remove pipeline		m		#N/A	\$0.00	\$0
<b>WATER CONTROL IN RECLAMATION QUARRY</b>						
Install pumping system		LS		#N/A	\$0.00	\$0
Remove pumping system		LS		#N/A	\$0.00	\$0
<b>REMOVE PIPELINES</b>						
Remove pipes		m		#N/A	\$0.00	\$0
Concrete plug deep pipes		m3		#N/A	\$0.00	\$0
Other				#N/A	\$0.00	\$0
<b>GROUNDWATER COLLECTION SYSTEM</b>						
Excavate/install sumps		m3		#N/A	\$0.00	\$0
Install pumping wells		m3		#N/A	\$0.00	\$0
Install pumps/pipelines/power supply		LS		#N/A	\$0.00	\$0
<b>CONSTRUCT CONTAMINATED WATER STORAGE POND</b>						
Excavate pond		m3		#N/A	\$0.00	\$0
Doze & spread excavated material		m3		#N/A	\$0.00	\$0
Vegetate spread material		ha		#N/A	\$0.00	\$0
Bedding layer		m3		#N/A	\$0.00	\$0
Supply geomembrane		m2		#N/A	\$0.00	\$0
Install geomembrane		m2		#N/A	\$0.00	\$0
Erosion protection layer		m3		#N/A	\$0.00	\$0
<b>CONSTRUCT PASSIVE TREATMENT SYSTEM (e.g. Constructed Wetland)</b>						
Construct access roads		km		#N/A	\$0.00	\$0
Install HDPE piping system from collection pond		m		#N/A	\$0.00	\$0
Inter-cell flow structures		allow		#N/A	\$0.00	\$0
Install liners		m2		#N/A	\$0.00	\$0
Install growth media		m3		#N/A	\$0.00	\$0
Wetland vegetation		ha		#N/A	\$0.00	\$0
<b>CONSTRUCT WATER TREATMENT PLANT</b>						
Build treatment plant		LS		#N/A	\$0.00	\$0
Build sludge containment facility		LS		#N/A	\$0.00	\$0
<b>SHORT TERM WATER TREATMENT*</b>						
Annual water treatment cost, from "Water Treatment"						\$0
<b>Total</b>						\$0

\*Note: include water treatment cost from "Water Treatment" worksheet if treatment is considered short term and is not included in a particular component worksheet.

1 Water Treatment

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
<b>ADDITION OF REAGENTS</b>						
H2O2		kg		#N/A	\$0.00	\$0
lime		kg		#N/A	\$0.00	\$0
ferric sulphate		kg		#N/A	\$0.00	\$0
ferrous sulphate		kg		#N/A	\$0.00	\$0
flocculents		kg		#N/A	\$0.00	\$0
Other				#N/A	\$0.00	\$0
<b>LABOUR AND SUPPLIES</b>						
Annual fuel		litres		#N/A	\$0.00	\$0
Annual power		kW-h		#N/A	\$0.00	\$0
Electrician/mechanic to maintain treatment plant		allow		#N/A	\$0.00	\$0
Equipment maintenance and parts		allow		#N/A	\$0.00	\$0
Misc. supplies, hoses, tools		allow		#N/A	\$0.00	\$0
Communications		allow		#N/A	\$0.00	\$0
Other				#N/A	\$0.00	\$0
<b>WATER SAMPLING AND ANALYSES</b>						
Sampling equipment		allow		#N/A	\$0.00	\$0
Analyses		allow		#N/A	\$0.00	\$0
Shipping to laboratory		allow		#N/A	\$0.00	\$0
Reporting		allow		#N/A	\$0.00	\$0
Other				#N/A	\$0.00	\$0
<b>SITE ACCESS</b>						
Road maintenance (incl. snow removal)		allow		#N/A	\$0.00	\$0
Winter road tariff		allow		#N/A	\$0.00	\$0
Truck rental		allow		#N/A	\$0.00	\$0
Air support		allow		#N/A	\$0.00	\$0
<b>Annual water treatment costs</b>						\$0
Number of years of water treatment		years			<b>Total</b>	\$0

Note: Short term water treatment is intended to be included in "Water Management", whereas long term, or post-closure, water treatment is included in "Post-Closure Monitoring and Maintenance"

**1 Post-Closure Monitoring & Maintenance:**

ACTIVITY/MATERIAL	Notes	Unit s	Quantit y	Cost Code	Unit Cost	Cost
<b>MONITORING &amp; INSPECTIONS</b>						
Annual geotechnical inspection		each	1	#N/A	\$10,000.00	\$10,000
Survey inspection		each		#N/A	\$0.00	\$0
Regulatory costs*		each		#N/A	\$0.00	\$0
Site water monitoring (AEMP and SNP)		each		#N/A	\$0.00	\$0
- Active closure and flooding		each		#N/A	\$0.00	\$0
- Post pit flooding		each		#N/A	\$0.00	\$0
Air Quality Monitoring Program (AQMP)		each		#N/A	\$0.00	\$0
Wildlife Effects Monitoring Program (WEMP)		each		#N/A	\$0.00	\$0
Vegetation Monitoring		each		#N/A	\$0.00	\$0
Other	site inspection and monitoring of sensitive areas - sampling of soil and water landfarm	Years		#N/A	\$0.00	\$0
<b>COVER MAINTENANCE</b>						
Repair erosion - infill gullies		allow		#N/A	\$0.00	\$0
Repair erosion - upgrade diversion ditches		allow		#N/A	\$0.00	\$0
Remove problem vegetation		allow		#N/A	\$0.00	\$0
Repair animal damage		allow		#N/A	\$0.00	\$0
Repair/upgrade access controls		allow		#N/A	\$0.00	\$0
Other				#N/A	\$0.00	\$0
<b>SPILLWAY MAINTENANCE</b>						
Repair erosion		m3		#N/A	\$0.00	\$0
Clear spillway		each		#N/A	\$0.00	\$0
<b>CWTS MAINTENANCE</b>						
Maintain flow, restore vegetation		allow		#N/A	\$0.00	\$0
<b>POST-CLOSURE WATER TREATMENT**</b>						
Annual water treatment cost, from "Water Treatment"						\$0
Subtotal, Annual post-closure costs						\$10,000
Discount rate for calculation of net present value of post-closure cost, %					0.00%	
Number of years of post-closure activity					years	
<b>Present Value of payment stream</b>						\$0

\*Regulatory costs - annual reporting, management plans, progress reports etc.  
 Include water treatment cost from "Water Treatment" worksheet if treatment is considered long term, such as ARD/ML.

1 Interim Care and Maintenance

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
<b>INTERIM CARE &amp; MAINTENANCE</b>						
on-site caretaker		allow		specified	0	\$0
extra personnel		manmonths		#N/A	0	\$0
-electrician		manmonths		#N/A	0	\$0
-mechanic		manmonths		#N/A	0	\$0
annual fuel		litre		#N/A	0	\$0
misc. supplies		allow		#N/A	0	\$0
pick-up truck		each		#N/A	0	\$0
small dozer		allow		#N/A	0	\$0
small excavator		allow		#N/A	0	\$0
snow machine		allow		#N/A	0	\$0
communications		allow		#N/A	0	\$0
SNP/AEMP water sampling & reporting		each		#N/A	0	\$0
geotechnical assessment		each		#N/A	0	\$0
interim water treatment				#N/A		\$0
other	site visits to inspect, report and maintain licence compliance	each	1	#N/A	10000	\$10,000
			Annual	Interim C&M Cost		\$10,000
	Number of years of ICM	years	2	<b>Total</b>		\$20,000

1 Mobilization/Demobilization:

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
<b>MOBILIZE HEAVY EQUIPMENT</b>						
Excavators	13T x 90km	kmtonne	1170	MHERL	3.4	\$3,978
Dump trucks	20T x 90km	kmtonne	1800	MHERL	3.4	\$6,120
Dozers	20T x 90km	kmtonne	1800	MHERL	3.4	\$6,120
Demolition shears		each		#N/A	0	\$0
Crane	26T x 90km	kmtonne	2340	MHERL	3.4	\$7,956
Loader	8T x 90km	each	720	MHERL	3.4	\$2,448
Compactor		each		#N/A	0	\$0
Light duty vehicles	3T x 4 x 90km	kmtonne	1080	MHERL	3.4	\$3,672
<b>MOBILIZE MISC. EQUIPMENT</b>						
Pump shipping		each		#N/A	0	\$0
Pipe shipping		m		#N/A	0	\$0
Minor tools and equipment		allow		#N/A	0	\$0
Truck tires		allow		#N/A	0	\$0
Other				#N/A	0	\$0
<b>MOBILIZE CAMP</b>						
Reclamation activities		allow		#N/A	0	\$0
Long term reclamation activities (eg pump flooding)		allow		#N/A	0	\$0
<b>MOBILIZE WORKERS</b>						
Reclamation activities - transport -BUS travel to site	estimated number of days - 30 days; increase to 60	each	60	specified	200	\$12,000
Reclamation activities - travel time		manhours		#N/A	0	\$0
Long term reclamation activities (eg pump flooding) - transport		each		#N/A	0	\$0
Long term reclamation activities (eg pump flooding) - travel time		each		#N/A	0	\$0
Monitoring Airfare		each		#N/A	0	\$0
<b>WORKER ACCOMODATIONS</b>						
Reclamation activities		manmonths		#N/A	0	\$0
Long term reclamation activities (eg pump flooding)		manmonths		#N/A	0	\$0
Food	no camp but food will be provided - 10 staff/60 days	allow	600	#N/A	30	\$18,000
Labourer salaries	10 laborers for 60 days	allow	600	LAB-Ush	43.98	\$26,388
<b>MOBILIZE FUEL</b>						
Fuel freight - reclamation activities	20000 liters	litre	20000	FCDL	0.99	\$19,800
Fuel freight - long term reclamation activities		litre		#N/A	0	\$0
Fuel freight accomodations		litre		#N/A	0	\$0
<b>WINTER ROAD</b>						
Construction and operation		km		#N/A	0	\$0
Limited winter use		WRU		#N/A	0	\$0
Winter road tarriff		km		#N/A	0	\$0
<b>DEMOBILIZE HEAVY EQUIPMENT</b>						
Excavators	13T x 90km	kmtonne	1170	MHERL	3.4	\$3,978
Dump trucks	20T x 90km	kmtonne	1800	MHERL	3.4	\$6,120
Dozers	20T x 90km	kmtonne	1800	MHERL	3.4	\$6,120
Demolition shears		km		#N/A	0	\$0
Crane	26T x 90km	kmtonne	2340	MHERL	3.4	\$7,956
Loader	8T x 90km	kmtonne	720	MHERL	3.4	\$2,448
Compactor		each		#N/A	0	\$0
Light duty vehicles	3T x 4 x 90km	kmtonne	1080	MHERL	3.4	\$3,672
Other		km		#N/A	0	\$0
<b>DEMOBILIZE CAMP</b>						
		allow		#N/A	0	\$0
<b>DEMOBILIZE WORKERS</b>						
crew travel time		mandays		#N/A	0	\$0
crew transportation - BUS travel to site	estimated number of days 60	each	60	specified	200	\$12,000
<b>WINTER ROAD</b>						
Construction and operation		km		#N/A	0	\$0
Limited winter use		km		#N/A	0	\$0
Winter road tarriff		km		#N/A	0	\$0
<b>Total</b>						<b>\$148,776</b>

## Unit Cost Table (for refining unit costs see "Estimator" worksheet)

Filter by unit

ITEM	Detail	COST CODE	UNITS	LOW \$	HIGH \$	SPECIFIED \$	COMMENTS
<b>Accommodation</b>							
		ACCM	manday	100.00	175.00		
<b>Buildings - Decontaminate</b>							
	Asbestos	BDA	m2	25.60	51.20		Low: removal of asbestos siding & flooring; High: removal of insulated pipes, friable asbestos Unit costs are based on 3m high, single storey building. Scale areas accordingly.
<b>Buildings - Remove</b>							
	Wood	BRW	m2	27.50	41.00		
	Concrete	BRC	m2	40.00	65.00	6.00	Specified: puncture concrete foundation slabs
	Steel - teardown	BRS1	m2	45.00	65.00		
	Steel - for salvage	BRS2	m2	67.00	100.00		
<b>Concrete work</b>							
	Small pour	CSF	m3	426.50	639.75		Low: YK; High=1.5xLow
	Large pour	CLF	m3	353.50	530.25	2,130.00	Specified: concrete crown pillar
<b>Contaminated Soils</b>							
	ESA Phase 1	CS1	each	7500.00			Low: small, "clean" site
	ESA Phase 1	CS2	each	50000.00			Low: small, "clean" site
	Remediate on site	CSR	m3	47.00	146.00		
<b>Dozing</b>							
	doze rock piles	DR	m3	1.05	2.40		Low cost: doze crest off dump
	doze overburden/soil piles	DS	m3	0.95	3.80		High cost: push up to 300 m
<b>Excavate Rock; Low Spec's and QA/QC</b>							
	drill/blast/load/short haul	RB1	m3	11.40	17.05		Low:quarry operations for bulk fill
	drill/blast/load/long haul	RB2	m3	12.05	17.80		
	RB1 + spread and compact	RB3	m3	12.05	17.80		
	RB2 + spread and compact	RB4	m3	12.50	30.75		
	Specified activity	RBS	m3				
<b>Excavate Rock; High Spec's and QA/QC</b>							
	drill/blast/load/short haul	RC1	m3	12.05	17.80		(e.g. ditch/spillway excavation)
	drill/blast/load/long haul	RC2	m3	12.70	18.40		Low:foundation excavation;High:spillway excavation
	RC1 + spread and compact	RC3	m3	12.70	18.40		e.g. cover construction
	RC2 + spread and compact	RC4	m3	13.50	19.20		e.g. cover construction
	Specified activity	RCS	m3			175.00	Specified-drift excavation
<b>Excavate Rip Rap</b>							
	drill/blast/load/short haul/place	RR1	m3	13.50	17.75		High: quarry & place rip rap in channel
	drill/blast/load/long haul/place	RR2	m3	14.20	20.65		
	source is waste dump/short haul	RR3	m3	7.00			cost includes sorting
	source is waste dump/long haul	RR4	m3	7.60			
	Specified activity	RRS	m3				
<b>Excavate Soil; Low Spec's and QA/QC</b>							
	clear & grub	SBC	m2	3.40	5.00		
	excavate/load/short haul	SB1	m3	4.30	5.90		
	excavate/load/long haul	SB2	m3	4.60	7.30		
	SB1 + spread and compact	SB3	m3	5.10	8.90		Low: non-engineered; High:engineered
	SB2 + spread and compact	SB4	m3	5.50	11.00		Low: non-engineered; High:engineered
	Specified activity	SBS	m3	3.20	6.30		Low: rehandle waste rock dump by dozing; High:rehandle waste rock by hauling
	Tailings	SBT	m3	1.35	3.70	15.50	High:contour surface - wet or frozen; Specified:haul/place wet infill
<b>Excavate Soil, High Spec's and QA/QC</b>							
	excavate/load/short haul	SC1	m3	6.80	9.30		
	excavate/load/long haul	SC2	m3	7.10	11.75		
	SC1 + spread and compact	SC3	m3	8.90	14.20		Low: non-engineered; High:engineered
	SC2 + spread and compact	SC4	m3	9.30	23.20		Low: non-engineered; High:engineered (e.g. complex covers, low volume dam construction)
	Specified activity	SCS	m3			18.80	Backfill adit with waste rock
<b>Fence</b>							
		FNC	m	13.55	203.00		
<b>Fuel and Electricity</b>							
	Fuel cost - gas	FCG	litre	1.05	1.40		
	Fuel cost - diesel	FCD	litre	0.99	1.39		
	Fuel mobilization	FCM	litre	0.22	0.42		High: winter road usage
	Electricity	FCE	kW-h	0.17	0.19	0.49	Low and High:Yellowknife; Specified:diesel generator
<b>Geo-Synthetics</b>							
	geotextile	GST	m2	3.44			Supply and install
	geogrid	GSG	m2	5.75			
	liner, HDPE	GSHDPE	m2	7.95			Supply and install; large quantity
	liner, ES3	GSES3	m2	20.20			FOB Yellowknife
	geosynthetic installation	GSI	m2	3.16	14.00		Low:geotextile; High:ES3 or HDPE
	bentonite soil amendment	GGBA	tonne	308.30	348.50		FOB Edmonton, add shipping & mixing
<b>Grouting (/m3 of rock grouted)</b>							
	grout		m3	236.55	286.75		High: cement, FOB Yellowknife

**Unit Cost Table (for refining unit costs see "Estimator" worksheet)**

Filter by unit

**Labour & Equipment Rates**

Site manager	sman	\$/hr	125.00	152.00
Supervisor	super	\$/hr	52.00	91.84
Registered engineer	eng	\$/hr	95.00	220.00
Environmental coordinator	envco	\$/hr	74.16	130.00
Environmental technologist	envtech	\$/hr	36.00	
Electrician	elec	\$/hr	74.00	95.00
Journeyman - various	journey	\$/hr	44.00	71.79
Labour - skilled	lab-s	\$/hr	41.00	49.60
Labour - unskilled	lab-us	\$/hr	31.00	43.98
Equipment operator	oper	\$/hr	41.00	65.00
Heavy duty mechanic	mehc	\$/hr	49.00	72.85
Water treatment plant operator	oper-wt	\$/hr	41.00	59.86
Security / first aid	safety	\$/hr	36.00	66.97
Administrative staff	admin	\$/hr	38.00	57.89

Equipment rates include operator and fuel

Loader - 4 cu.yd (3.06m3)	load-s	\$/hr	175.00	
Loader - 7 cu.yd (5.35m3)	load-l	\$/hr	315.00	
Excavator - 26.76-30.84 tonnes	exc-s	\$/hr	190.00	
Excavator - 68.95+tonnes	exc-l	\$/hr	420.00	
Grader	grad	\$/hr	190.00	
Dump truck off hwy 30-50 tonnes	truck-s	\$/hr	225.00	
Dump truck off hwy 55-75 tonnes	truck-l	\$/hr	300.00	
dozer, small	dozers	\$/hr	205.00	260.00
dozer, large	dozerl	\$/hr	490.00	565.00
smooth drum compactor	comp	\$/hr	155.00	
scooptram, 6 yd3 bucket	scoop	\$/hr	170.00	
flat bed truck with hiab	hiab	\$/hr	155.00	
fuel truck	truck	\$/hr	150.00	
water truck	wtruck	\$/hr	58.00	150.00

**Mobilize Heavy Equipment**

Road access	MHER	kmtonne	3.40	10.25
Air access	MHEA	kmtonne	12.00	

cargo rate>500lb

**Mobilize Camp**

Road access	MCR	each	50000.00	
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refurbish existing camp

**Mobilize Workers**

flight	MW	each	4500.00	9100.00
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Low:e.g. 8 passenger; High: Dash 7

**Oil Removal**

oil removal	OR	litre	0.43	1.20
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Low:waste oil heater; High: ship offsite

**PCB Removal**

Remove from site	PCBR	litre	40.20	46.90
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Low: shipping, handling & disposal from Yellowknife

**Pipes, small (<6in dia.)**

remove/dispose on site	PSR	m	1.00	24.00
supply	PSS	m	6.10	11.10
install	PSI	m	25.00	

Low: remove/dispose on site; High: remove/re-use  
Low:supply; High:supply and ship

**Pipes, large (>6in dia.)**

remove/dispose on site	PLR	m	22.00	72.00
supply	PLS	m	129.00	143.00
install	PLI	m	50.00	

Low: remove/dispose on site; High: remove/re-use  
Low:supply; High:supply and ship

**Power Lines**

remove/dispose on site	POWR	m	25.50	
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**Process Chemicals**

Remove from site	PCR	kg	0.45	2.50
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Low: shipping, handling & disposal from Yellowknife

**Pumps**

Pump capital cost	PC	each	#####	
Pump shipping	PS	each	2500.00	
Pump operating cost	POC	m3	0.12	
Pump maintenance	PM	allow	25000.00	

pump operating costs should be calculated based on pump capacity, fuel costs, etc.

**Pump sand BackFill**

	PBF	m3	85.00	300.00
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**Scarify - road/mine site**

	SCFY	ha	4300	6030	2150
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**Shaft, Raise & Portal Closures**

Shaft & Raises	SR	m2	645.00	2132.00	
Portals	POR	m3	18.80	250.00	1200.00

Low:pre-cast concrete slabs, little site prep. Area=shaft+>1m all around  
Low:unit cost code SCS;High:excavate & backfill collapsed portal;Spec: installed pressure plug

**Site Inspection Report**

	RPT	each	10000.00	20000.00	
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**SpillWay - Clear**

	SW	each	3000.00	7000.00	
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**Survey/Instrumentation**

	SI	each	1800.00	3600.00	
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2 person crew

**Treatment Plant - Construct**

Small (< 1000 m3/d)	TPS	lump sum	9000000	15000000	
Large (> 1000 m3/d)	TPL	lump sum	15000000	46000000	
Constructed Wetland	CWTS	ha	200000	300000	

**Treatment Plant - Operate**

	TPO	m3	0.35	2.00	
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**Unit Cost Table (for refining unit costs see "Estimator" worksheet)**

Filter by unit

**Treatment Chemicals**

ferric sulphate	ferric	kg	1.19
ferrous sulphate	ferrous	kg	1.32
lime	lime	kg	0.56
hydrogen peroxide, 35%	hperox	kg	1.50
Sodium Metabisulfate	Nametab	kg	1.18
Caustic soda, 50%	caustic	kg	0.74
Sulfuric acid, 93%	sulfuric	kg	0.31
flocculant	flocc	kg	6.00
copper sulphate	copper	kg	
shipping	shipping	kg	0.20

**Vegetation**

Hydroseed, Flat	VHF	ha	4000.00
Hydroseed, Sloped	VHS	ha	4500.00
Veg. blanket/erosion mat	VB	ha	13000.00
Tree planting	VT	ha	2600.00
Wetland species	VW	ha	47.72

Specified= /m3, Wetland Growth Media Substrate mixed and installed (sand, biochar and fertilizer, woodchips)

**Water Sampling/Analysis/Reporting**

WS	each	7000.00	10000.00
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**Winter Road**

Construction	WRC	km	2000.00	11500.00
Usage	WRU	kmtone	0.29	



**Unit Cost Estimator**

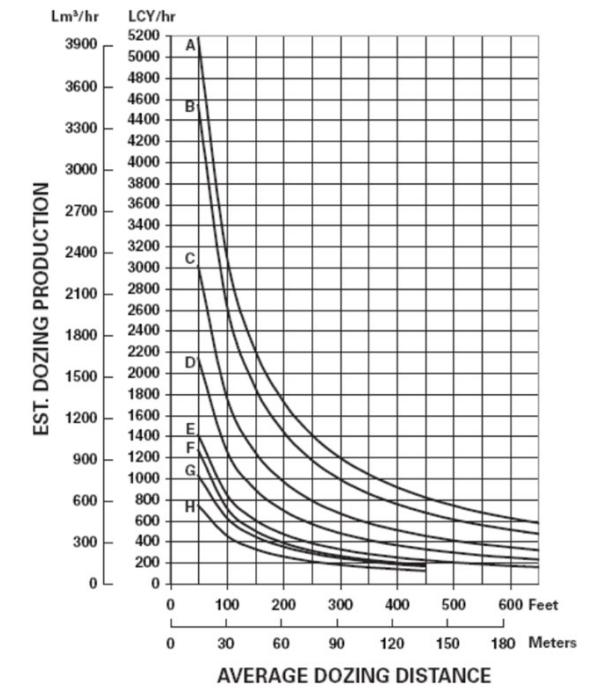
1 Equipment Productivity Figures and Graphs have been reproduced from Caterpillar Performance Handbook - Edition 42

EXCAVATION	
<b>Productivity</b>	
Machine	Cat 336EL
bucket capacity	3.16 m3
fill factor	75% %
cycle time	45 seconds
operator skill	80% %
machine availability	83% %
altitude adjustment	100% %
Hourly productivity	125.89 m3/hr
<b>Operating Costs</b>	
<b>- Contractor</b>	
Contractor hourly rate	\$180.00 \$/hr
Excavation cost - contractor rate	1.43 \$/m3
<b>- Owner</b>	
ownership, daily	\$/day
maintenance	\$/hr
fuel	\$/hr
consumables (cutters, tires)	\$/hr
operator	\$/hr
Owner hourly rate	\$0.00 \$/hr
Excavation cost - owner rate	\$0.00 \$/m3
<b>Excavation cost - select contractor or owner rate (D22 or D31)</b>	\$/m3

HAUL AND DUMPING	
<b>Productivity</b>	
Machine	Cat 770
truck capacity	25.1 m3
fill factor	80% %
load time	6.0 min.
haul distance	1.5 km
average velocity	20.0 km/hr
haul time + return time	9.0 min.
wait time	0.5 min.
dump time	1.0 min.
cycle time	16.5 min.
machine availability	83% %
altitude adjustment	100% %
	13.7 re. min/cycle
Hourly productivity	88.0 m3/hr
<b>Operating Costs</b>	
<b>- Contractor</b>	
Contractor hourly rate	\$225.00 \$/hr
Haul and Dump - contractor rate	2.56 \$/m3
<b>- Owner</b>	
ownership, daily	\$/day
maintenance	\$/hr
fuel	\$/hr
consumables (cutters, tires)	\$/hr
operator	\$/hr
Owner hourly rate	\$0.00 \$/hr
Haul/Dumping Cost - owner rate	\$0.00 \$/m3
<b>Haul/Dumping Cost - select contractor or owner rate (I22 or I31)</b>	\$/m3

SPREADING/DOZING	
<b>Productivity</b>	
Machine	Cat D8
Estimate production using example curves provided or equivalent from other supplier	600 m3/hr
Correction factors (see table provided)	
operator skill	0.75
material type, see table	0.80
slot dozing	1.00
side by side dozing	1.00
visibility	1.00
job efficiency	0.83
altitude adjustment	1.00
slope adjustment	1.00
Hourly productivity	298.8 m3/hr
<b>Operating Costs</b>	
<b>- Contractor</b>	
Hourly rate - contractor supplied	\$260.00 \$/hr
Dozing - contractor rate	0.87 \$/m3
<b>- Owner</b>	
ownership, daily	\$/day
maintenance	\$/hr
fuel	\$/hr
consumables (cutters, tires)	\$/hr
operator	\$/hr
Owner hourly rate	\$0.00
Spreading/Dozing Cost - owner rate	\$0.00 \$/hr
<b>Spreading/Dozing Cost - select contractor or owner rate (N22 or N31)</b>	\$/m3

ESTIMATED DOZING PRODUCTION • Universal Blades • D7G through D11T CD



KEY  
 A - D11T CD  
 B - D11T  
 C - D10T  
 D - D9T  
 E - D8T  
 F - D7E  
 G - D7R Series 2  
 H - D7G

NOTE: This chart is based on numerous field studies made under varying job conditions. Refer to correction factors following these charts.

Excavator			
	Cat 320	Cat 325B	Cat 375
heaped bucket capacity, m3	1.5	2.2	5.4
Typical Cycle Times (seconds)			
easy digging, shallow digging, small swing angle	16	18	20
med. to hard digging, rocky soil, swing angle to 90 deg.	23	23	25
tough digging, sandstone, caliche, at max. machine depth, swing angle > 120 deg.	27	29	35

Material	Fill Factor (% of heaped bucket capacity)
Moist loam or sandy clay	100 - 110
sand and gravel (not till)	95 - 110
hard tough clay	80 - 90
rock - will blasted	60 - 75
rock - poorly blasted	40 - 60

Operator Skill	poor	average	good
Correction factor	0.6	0.75	1

Machine availability	poor	average	good
Correction factor	0.9	0.95	1

Trucking			
	Cat 771 D	Cat 777D	Cat 789C
Truck capacity - heaped, m3	27.5	60.5	137

Dozing	
JOB CONDITION CORRECTION FACTORS	
	TRACK-TYPE TRACTOR
<b>OPERATOR -</b>	
Excellent	1.00
Average	0.75
Poor	0.60
<b>MATERIAL -</b>	
Loose stockpile	1.20
Hard to cut; frozen -	
with tilt cylinder	0.80
without tilt cylinder	0.70
Hard to drift; "dead" (dry, non-cohesive material) or very sticky material	0.80
Rock, ripped or blasted	0.60-0.80
SLOT DOZING	1.20
SIDE BY SIDE DOZING	1.15-1.25
<b>VISIBILITY -</b>	
Dust, rain, snow, fog or darkness	0.80
<b>JOB EFFICIENCY -</b>	
50 min/hr	0.83
40 min/hr	0.67
<b>BULLDOZER*</b>	
Adjust based on SAE capacity relative to the base blade used in the Estimated Dozing Production graphs.	
<b>GRADES -</b> See following graph.	

\*NOTE: Angling blades and cushion blades are not considered production dozing tools. Depending on job conditions, the A-blade and C-blade will average 50-75% of straight blade production.

