

Table 3
2017 - 2018 Surety Estimate
Ruth Uranium ISR LQD Permit No. 631 / NRC License SUA 1548
Cameco Resources

Total Restoration and Reclamation Cost Estimate:	2017	2016 Bond Estimate
I. Equipment Removal and Disposal (I EQUIP Sheet)	\$66,802	\$65,993
II. Building Demolition and Disposal (II BLDGS Sheet)	\$109,308	\$105,820
III. Miscellaneous Reclamation (III MISC REC Sheet)	\$177,673	\$175,213
Subtotal Restoration and Reclamation Cost Estimate	\$353,783	\$347,026
Contractor Profit & Overhead ¹ 10% Calc'd for Master Costs		
Contingency ² 18.4%	\$65,096	\$71,834
TOTAL³, rounded up	\$418,900	\$418,900

1 - Per WDEQ/LQD Guideline No. 12, Section 12(b)

2 - Per WDEQ/LQD Guideline No. 12, Section 12(a) and (c-h), Section 13 and NRC License Condition 9.5 (SUA-1548)

3 - Costs reflect both WDEQ & NRC requirements. No salvage value assumed.

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	2017 Estimate
I. EQUIPMENT REMOVAL AND LOADING	Process Building
A. Removal and Loading Costs	
1 Tankage	
Number of Tanks	6
Volume of Tank Construction Material (CF)	405
Tank Removal Cost	\$135.27
Subtotal Tankage Removal and Loading Costs	\$54,784
Total Equipment Removal and Loading Costs	\$54,784
B. Transportation and Disposal Costs (NRC-Licensed Facility)	
1 Tankage	
Volume of Tank Construction Material (CF)	405.0
Volume for Disposal Assuming Void Space (CF)	445.5
Transportation and Disposal Unit Cost (\$/CF)	\$14.52
Subtotal Tankage Transportation and Disposal Costs	\$6,469
Subtotal Equipment Transportation and Disposal Costs per Facility	\$6,469
Total Equipment Transportation and Disposal Costs	\$6,469
C. Health and Safety Costs	
1 Equipment Rental (Alpha, Gamma Surveys and Smear Samples)	
QTY. Weeks	2
Rental Rate	\$250
Subtotal Equipment	\$500
2 Soil Sampling and Monitoring	
Analytical Costs	\$372
Soil Samples and Monitoring	5
Subtotal Sampling	\$1,860
3 Labor (Health Physics Tech)	\$40
Hours	80
Subtotal Labor	\$3,189
Subtotal Health and Safety Costs	\$5,549
TOTAL EQUIPMENT REMOVAL + DISPOSAL	\$66,802

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	2017 Estimate		
	Process Building	Warehouse Building	Generator Bldg.
II. BUILDING DEMOLITION AND DISPOSAL			
A. Decontamination Costs			
1 Wall Decontamination			
Area to be Decontaminated (SF)	5,600	0	0
HCl Acid Wash, including labor (\$/SF)	\$0.92	\$0.92	\$0.92
Subtotal Wall Decontamination Costs	\$5,134	\$0	\$0
2 Concrete Floor Decontamination			
Area to be Decontaminated (SF)	4,000	0	0
HCl Acid Wash, including labor (\$/SF)	\$0.57	\$0.57	\$0.57
Subtotal Concrete Floor Decontamination Costs	\$2,289	\$0	\$0
Subtotal Decontamination Costs per Building	\$7,423	\$0	\$0
Total Decontamination Costs	\$7,423		
B. Demolition Costs			
1 Building			
Height of Building (ft)	20	10	10
Volume of Building (CF) to Demolish	80,000	7,480	990
Demolition Cost	\$0.328	\$0.328	\$0.328
Subtotal Building Demolition Costs	\$26,224	\$2,452	\$325
2 Concrete Floor			
Area of Concrete Floor (SF)	4,000	600	150
Demolition Cost	\$0.86	\$0.86	\$0.86
Subtotal Concrete Floor Demolition Costs	\$3,428	\$514	\$129
3 Concrete Footing			
Length of Concrete Footing (ft)	253	0	0
Demolition Cost	\$17.57	\$17.57	\$17.57
Subtotal Concrete Footing Demolition Costs	\$4,444	\$0	\$0
Subtotal Demolition Costs per Building	\$34,096	\$2,966	\$454
Total Demolition Costs	\$37,515		
C. Disposal Costs			
1 Building			
Volume of Building (CY) to Dispose	978	91	12
Off-Site County Landfill			
Percentage (%)	100	100	100
Total Volume for Disposal - Incl. 33% Factor (CY)	1300	122	16
Disposal Cost, Landfill (CY)	\$42.17	\$42.17	\$42.17
Subtotal County Facility Off-Site Disposal Costs	\$54,835	\$5,127	\$679
2 Concrete Floor			
Area of Concrete Floor (SF)	4,000	600	150
Average Thickness of Concrete Floor (ft)	0.75	0.75	0.75
Volume of Concrete Floor (CF)	3000	450	112.5
Volume of Concrete Floor (CY)	111	17	4
a. On-Site Concrete Disposal			
Percentage (%)	90	100	100
Volume for Disposal (CY)	100	17	4
Concrete Disposal On Site (CY)	\$9.68	\$9.68	\$9.68
Subtotal County Facility Off-Site Disposal Costs	\$968	\$161	\$40

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	2017 Estimate		
	Process Building	Warehouse Building	Generator Bldg.
II. BUILDING DEMOLITION AND DISPOSAL			
C. 2 b. NRC-Licensed Disposal Facility			
Percentage (%)	10	0	0
Volume for Disposal (CF)	300	0	0
Transportation and Disposal Unit Cost (\$/CF)	\$7.32	\$7.32	\$7.32
Subtotal NRC-Licensed Facility Disposal Costs	\$2,197	\$0	\$0
Subtotal Concrete Floor Disposal Costs	\$3,165	\$161	\$40
3 Concrete Footing			
Length of Concrete Footing (ft)	253	0	0
Average Depth of Concrete Footing (ft)	4	4	4
Average Width of Concrete Footing (ft)	1	1	1
Volume of Concrete Footing (CF)	1012	0	0
Volume of Concrete Footing (CY)	37	0	0
Concrete Disposal On Site (CY)	\$9.68	\$9.68	\$9.68
Subtotal Concrete Footing Disposal Costs	\$363	\$0	\$0
Subtotal Disposal Costs per Building	\$58,363	\$5,288	\$719
Total Disposal Costs	\$64,370		
D. Health and Safety Costs	Included in "I EQUIP"		
SUBTOTAL BUILDING DEMOLITION AND DISPOSAL COSTS	\$99,882	\$8,254	\$1,173
TOTAL BUILDING DEMOLITION AND DISPOSAL COSTS	\$109,308		

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III. MISCELLANEOUS RECLAMATION	2017 Estimate
A. CPF, Office Area Reclamation	
1 Ripping Overburden with Dozer	
Overburden Surface Area (acres)	2.0
Ripping Cost (per acre)	\$903.39
Subtotal Ripping Overburden Costs	\$1,807
2 Topsoil Application	
Area of surface disturbance (SF)	87120
Average thickness of topsoil (ft)	0.5
Average haul distance (ft)	2000
Surface grade (%)	0%
Volume of Topsoil (CY)	1,613
Moving Materials (0% Grade)	\$1.32
Subtotal Topsoil Application Costs	\$2,126
3 Discing/Seeding	
Surface Area (acres)	2
Discing/Seeding Unit Cost (\$/acre)	\$330
Subtotal Discing/Seeding Costs	\$660
Total CPP, Office, Yard Area Reclamation	\$4,593
B. Access Road Reclamation (includes culverts)	Road No. 1
1 Assumptions	
Surface grade	0%
Length of Road (ft)	5200
Width of Road (ft)	12
Area of road (acres)	1.4

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III. MISCELLANEOUS RECLAMATION		2017 Estimate
B.	2 Gravel Road Base Removal	
	Average haul distance (ft)	5500
	Gravel Road Base Width (ft)	12
	Gravel Road Base Area (acres)	1.43
	Average Road Base Depth (ft)	0.3
	Volume of Road Base (CY)	770
	Moving Materials (0% Grade)	\$1.02
	Subtotal Gravel Road Base Removal Costs	\$784
	3 Ripping Overburden with Dozer	
	Overburden Surface Area (acres)	1.4
	Ripping Cost (per acre)	\$903
	Subtotal Ripping Overburden Costs	\$1,294
	4 Topsoil Application	
	Average haul distance (ft)	400
	Topsoil Surface Area (SF)	62,400
	Depth of Topsoil (ft)	0.67
	Volume of Topsoil (CY)	1548
	Moving Materials	\$0.85
	Subtotal Topsoil Application Costs	\$1,312
	5 Discing/Seeding	
	Surface Area (acres)	1.4
	Discing/Seeding Unit Cost (\$/acre)	\$330
	Subtotal Discing/Seeding Costs	\$473
	Multiplier for Projected Additions	1
	Total Access Road Reclamation Costs	\$3,863

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III. MISCELLANEOUS RECLAMATION	2017 Estimate	
C. Pond Reclamation	2017 Estimate	Estimate
Settling Basin/Storage Ponds Reclamation	Pond No. 1	Pond No. 2
1 Volume of By-product Material		
Area of Pond Bottom (SF)	33,000	27,000
Area with Fill (SF)	2,813	0
Average Fill Thickness (ft)	0.29	0
Volume of Fill (CY)	30	0
Remaining Area with Pond Residue (SF)	19,325	21,947
Average Pond Residue Thickness (in)	1	0.5
Volume of Pond Residue (CY)	60	34
Area of Liner (SF)	50,000	50,000
Thickness of Liner (in)	0.036	0.036
Volume of Liner (CY)	5.6	5.6
Volume of Liner Assuming 25% Void Space (CY)	6.9	6.9
Area of Contaminated Sump and Drain (SF)	0	1
Length of Sump and Drain (ft)	0	240
Volume of Sump and Drain (CY)	0	9
Diameter of Contaminated Soil (ft)	0	10
Contaminated Soil Thickness (in)	0	6
Volume of Contaminated Soil (CY)	0	1
Subtotal Volume By-product Material (CY)	97	51
2 Soil Sampling and Monitoring		
Non-invasive surface gamma survey	\$5,000	--
Physical Soil Samples (Ra226, U-nat, Pb-210, Th-230)	20	20
\$/Sample	\$545	\$545
Physical Soil Sampling and Monitoring Costs	\$10,900	\$10,900
Subtotal Soil Sampling & Monitoring	\$15,900	\$10,900

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III. MISCELLANEOUS RECLAMATION		2017 Estimate	
C.	3 Transportation & Disposal to 11e(2) Facility	Pond #1	Pond #2
	Volume of Subsoil for Disposal (CY)	97	51
	Transportation and Disposal Unit Cost (\$/CY)	\$392.07	\$392.07
	Subtotal Byproduct Material Transportation + Disposal Costs	\$38,022	\$19,922
	4 Liner/Subsoil Removal and Disposal		
	Thickness of liner (ft)	0.0030	0.0030
	Thickness of contaminated subsoil (ft)	0.083	0.042
	Width of liner (ft)	--	--
	Length of liner (ft)	--	--
	Depth of Pond (ft)	15	15
	Surface area of pond liner (SF)	50,000	50,000
	a. Removal and Loading		
	Volume of Liner (CY)	160	83
	(Clay) Liner Removal and Loading Unit Cost (\$/CY)	\$4.24	\$4.24
	Subtotal Liner Removal and Loading Costs	\$678	\$351
	b. Transportation and Disposal		
	Volume of Geotextile Liner (CF)	4,317	2,233
	Transportation and Disposal Unit Cost (\$/CF)	\$5.80	\$5.80
	Subtotal Liner Transportation and Disposal Costs	\$25,057	\$12,964
	Subtotal Liner Removal and Disposal Costs	\$25,735	\$13,315
	5 Grade and Contour		
	Volume of Embankment Material (CY)	9,444	12,778
	Average Grade (%)	0	0
	Distance (ft)	500	500
	Material Moving Unit Cost per WDEQ Guideline No.12, App.E (\$/C	\$0.847	\$0.847
	Subtotal Grade and Contour Costs	\$7,999	\$10,823

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C. 6 Topsoil Application		Pond #1	Pond #2
Area of surface disturbance (SF)		50,000	50,000
Average thickness of topsoil (ft)		6	6
Average haul distance (ft)		500	500
Surface grade (%)		0%	0%
Volume of Topsoil (CY)		11,111	11,111
Topsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/CY)		\$0.847	\$0.847
Subtotal Topsoil Application Costs		\$9,411	\$9,411
7 Revegetation			
Area of surface disturbance (acres)		1.1	1.1
Revegetation Unit Cost (\$/acre)		\$330	\$330
Subtotal Revegetation Costs		\$379	\$379
Subtotal Pond Reclamation		\$97,446	\$64,750
Total Ponds Reclamation		\$162,196	
D. Miscellaneous Well Abandonment		2016 Estimate	
A. Well Abandonment			
Number of Wells		3	
Average Depth (ft) per well		550	
Abandonment Cost per foot		\$3.30	
Small Site Grading and Seeding (<1000 SF) per site		\$55	
Remove and Dispose Casing (top few feet) per well		\$33	
Monitoring Well Concrete Pedestal Disposal per well		\$110	
Total Miscellaneous Well Abandonment		\$6,039	
E. Fence Removal			
Length of Fencing (ft)		2,880	
Fence Removal Costs		\$0.341	
Total Fence Removal Costs		\$982	
TOTAL MISCELLANEOUS RECLAMATION COSTS		\$177,673	

		UNIT COST CALCULATIONS			
		2017 - 2018 Surety Estimate			
		Cameco Resources			
GROUNDWATER RESTORATION UNIT COSTS					
Wellfield Pumping					
Equipment					
	Wellfield Pump Sizes	5	hp		
	Wellfield Pump Flow Rate	25	gpm		
	kW to HP Conversion Factor	0.746			
	Cost of Electricity	\$0.0840	kWhr		
	Efficiency	80%			
	Wellfield Pumping Cost	\$0.26	per kgal		
Satellite Pumping					
Equipment					
	Satellite Pump Sizes	60	hp		
	Satellite Pump Flow Rate	75	gpm		
	kW to HP Conversion Factor	0.746			
	Cost of Electricity	\$0.0840	kWhr		
	Efficiency	90%			
	Satellite Pumping Cost	\$0.93	per kgal		
Deep Disposal Well Injection					
Equipment					
	Deep Disposal Well Pump Size	75	hp		
	Deep Disposal Well Flow Rate	75	gpm		
	kW to HP Conversion Factor	0.746			
	Cost of Electricity	\$0.0840	kWhr		
	Efficiency	90%			
Reagent					
	Antiscalant Cost (Scaletrol)	\$0.0000	per lb		
	Density of Water	8.34	lbs/gal		
	Specific Gravity (Scaletrol)	1.284			
	Antiscalant Cost (Scaletrol)	\$0.00	per gal		
	Antiscalant Dose (ScaleTrol)	0.0000048	gal/gal		
	Deep Disposal Well Cost	\$1.16	per kgal		
	Total Groundwater Sweep Costs	\$2.35	per kgal		
Reverse Osmosis					
Equipment					
	System Capacity	250	gpm		
	Unit Pump	60	hp		
	Injection Pump	60	hp		
	Waste Pump	15	hp		
	kW to HP Conversion Factor	0.746			
	Cost of Electricity	\$0.0840	kWhr		
	Efficiency	90%			

	UNIT COST CALCULATIONS			
	2017 - 2018 Surety Estimate			
	Cameco Resources			
Reagents				
	Tripolyphosphate Usage Rate	0.00000130	lb/gal	
	Tripolyphosphate Cost	\$0.0000	per lb	
	EDTA Usage Rate	0.00000315	lb/gal	
	EDTA Cost	\$0.0000	per lb	
	Antiscalant Cost (Hypersperse)	\$0.0000	per lb	
	Density of Water	8.34	lbs/gal	
	Specific Gravity (Hypersperse)	1.124		
	Antiscalant Cost (Hypersperse)	\$0.0000	per gal	
	Antiscalant Dose (Hypersperse)	0.0000036	gal/gal	
	Sodium Sulfide Usage Rate	0.00017	lb/gal	
	Sodium Sulfide Cost	\$0.0000	per lb	
	RO Cost (without Reductant)	\$0.63	per kgal	
	RO Cost (with Reductant)	\$0.63	per kgal	
MIT Costs for Production Wells				
Equipment				
	Pulling Unit Hours	4	hrs/day	
	Pulling Unit Cost	\$0.00	\$/hour	
	MIT Unit Hours	8	hrs/day	
	MIT Unit Cost	\$0.00	\$/hour	
Labor				
	Required Hours	8	hrs/day	
	Required Laborers	1.5	per day	
	Labor Cost	\$35.26	\$/hour	
Productivity		4	wells/day	
	MIT Cost for Production Wells	\$105.79	per well	
MIT Costs for Injection Wells				
Equipment				
	Pulling Unit Hours	0	hrs/day	
	Pulling Unit Cost	\$0.00	\$/hour	
	MIT Unit Hours	8	hrs/day	
	MIT Unit Cost	\$0.00	\$/hour	
Labor				
	Required Hours	8	hrs/day	
	Required Laborers	1	per day	
	Labor Cost	\$35.26	\$/hour	
Productivity		4	wells/day	
	MIT Cost for Injection Wells	\$70.53	per well	
Booster Pump Operating Cost				
Equipment				
	Wellfield Pump Sizes	40	hp	
	Number of Pumps Running (avg.)	2	per year	
	Hours Running	24	per day	
	kW to HP Conversion Factor	0.746		
	Cost of Electricity	\$0.0840	kWhr	
	Efficiency	90%		
	Booster Pump Operating Costs	\$48,794	per year	

		UNIT COST CALCULATIONS			
		2017 - 2018 Surety Estimate			
		Cameco Resources			
		WELL ABANDONMENT UNIT COSTS			
		Removal of Contaminated Soil Around Wells			
	Equipment				
		Cat 416 Backhoe Time	0.25	hours	
		Cat 416 Backhoe Cost	\$29.89	per hour	
	Labor				
		Radiation Technician	0.25	hours	
		Radiation Technician Cost	\$39.86	per hour	
		Operator	0.25	hours	
		Operator Cost	\$46.00	per hour	
	Disposal				
		ByProduct Disposal	0.37	cubic yard	
		Disposal Cost (incl. Transport)	\$156.73	per cubic yard	
		Removal of Contaminated Soil Cost	\$86.93	per well	
		DDW Pump Dismantling and Disposal			
	Labor				
		Number of Laborers	2	per day	
		Number of Pumps Dismantled	0.5	per day	
		Hours Per Day	8	hours	
		Laborers Cost	\$46.00		
	Disposal				
		Volume of DDW Pump	240	ft ³	
		ByProduct Disposal	\$7.32	per ft ³	
		DDW Pump Dismanteling and Disposal	\$3,230	per pump	
		WELLFIELD RECLAMATION COSTS			
		Wellfield Piping Removal			
	Equipment				
		Trackhoe	1	per day	
		Trackhoe Cost	\$76.38	per hour	
		Loader	1	per day	
		Loader Cost	\$47.18	per hour	
		Pickup Truck	1	per day	
		Pickup Cost	\$20.67	per hour	
		Chipper Cost	\$37.76	per hour	
	Labor				
		Backhoe Operator	\$46.00	per hour	
		Loader Operator	\$46.00	per hour	
		Laborer	\$35.26	per hour	
		Hours Per Day	8	per day	
	Productivity		1500	ft/day	
		Piping Removal Cost	\$1.65	per foot of pipe	
		Production Pump Volume			
		Length	66	inches	
		Diameter	3.8	inches	
		Cubic Inch to Cubic Foot Conversion	0.0006		
		Production Pump Volume	0.43	cubic feet	

		UNIT COST CALCULATIONS			
		2017 - 2018 Surety Estimate			
		Cameco Resources			
Trunk Line Removal					
Equipment					
	Trackhoe		1	per day	
	Trackhoe Cost	\$76.38		per hour	
	Loader		1	per day	
	Loader Cost	\$47.18		per hour	
	Pickup Truck		1	per day	
	Pickup Cost	\$20.67		per hour	
	Chipper Cost	\$37.76		per hour	
Labor					
	Trackhoe Operator	\$46.00		per hour	
	Loader Operator	\$46.00		per hour	
	Laborer	\$35.26		per hour	
	Hours Per Day		8	per day	
Productivity			750	ft/day	
	Buried Piping Removal Cost	\$3.30		per foot of pipe	
Removal of Well Head Covers					
	Volume of Well Head Cover (ft ³)		1.86	cubic feet	
	Demolition Cost	\$0.328		per cubic ft	
	Decontamination				
	Acid Usage		4.1	pounds per wellhead cover	
	Hydrochloric Acid	\$0.1627		per lbs	
Labor					
	Radiation Tech	\$39.86		per hour	
	Operator	\$46.00		per hour	
Productivity			10	wellheads per hour	
Disposal					
	Void space		10%		
	Transportation and Disposal Cost	\$1.56		per ft3	
	Removal of Well Head Cover Cost	\$13.06		per well	
Header House Decontamination					
	Decontamination				
	Acid Usage		20	pounds per header house	
	Hydrochloric Acid	\$0.1627		per pound	
Labor					
	Radiation Tech	\$39.86		per hour	
	Number of Operators		2	per day	
	Operator	\$46.00		per hour	
	Hours Per Day		8	per day	
Productivity			1	header house per day	
	Header House Decontamination Cost	\$ 779.06		per header house	
Header House Heating					
	Heater Power Usage		12.5	kW	
	Days Used		180	days per year	
	Electricity Cost	\$0.0840		kWhr	
	Header House Heating Cost	\$4,536		per year	

		UNIT COST CALCULATIONS		
		2017 - 2018 Surety Estimate		
		Cameco Resources		
WELLFIELD AND SATELLITE AND SURFACE RECLAMATION				
Wellfield Road Reclamation				
	Gravel Road Base			
	Average Depth	0	feet	
	Average Width	0	feet	
	<u>Material Moved (0% Grade)</u>	\$1.02	bcy	
	Cubic Yard to Cubic Feet Conversion	0.04		
	Scarification of Road			
	Scarification Costs	\$55.22	per acre	
	Average Width	12	feet	
	Acre to Sq. Foot Conversion	2.30E-05		
	Grading Cost	\$60.20	per acre	
	Topsoil Depth	0.67	feet	
	<u>Discing/Seeding Costs</u>	\$330	per acre	
	Linear Feet for Unit Cost	1000	feet	
	Wellfield Road Reclamation Cost	\$426	per 1000 feet	
EQUIPMENT COSTS				
Tank Removal				
	Equipment			
	Loader	\$47.18	per hour	
	Trackhoe	\$76.38	per hour	
	Manlift	\$43.04	per hour	
	Pickup	\$20.67	per hour	
	Lift Truck	\$51.46	per hour	
	Labor			
	Number of Operators	4		
	Operator Cost	\$46.00	per hour	
	Hours Per Day	8	per day	
	Productivity	25	ft ³ /day	
	Tank Removal Cost	\$135	per ft³	
Pipe Removal				
	Equipment			
	Manlift	\$43.04	per hour	
	Pickup	\$20.67	per hour	
	Lift Truck	\$51.46	per hour	
	Chipper	\$37.76	per hour	
	Labor			
	Number of Operators	4		
	Operator Cost	\$46.00	per hour	
	Hours Per Day	8	per day	
	Productivity	300	ft/day	
	Pipe Removal Cost (Inside Buildings)	\$8.98	per ft	
Pump Removal				
	Equipment			
	Pickup Truck	\$20.67	per hour	
	Skid Steer	\$24.99	per hour	
	Labor			
	Number of Operators	2		
	Operator Cost	\$46.00	per hour	
	Hours Per Day	8	per day	
	Productivity	10	ft ³ /day	
	Pump Removal	\$110.12	per ft³	

		UNIT COST CALCULATIONS			
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		Cameco Resources			
Dryer Removal					
Equipment					
	Pickup Truck	\$20.67	per hour		
	Lift Truck	\$51.46	per hour		
Labor					
	Number of Operators	4			
	Operator Cost	\$46.00	per hour		
	Hours Per Day	8	per day		
Productivity		125	ft ³ /day		
	Dryer Removal Cost	\$16.39	per ft³		
RO and Degasser Removal					
Equipment					
	Pickup Truck	\$20.67	per hour		
	Lift Truck	\$51.46	per hour		
Labor					
	Number of Operators	2			
	Operator Cost	\$46.00	per hour		
	Hours Per Day	8	per day		
Productivity		250	ft ³ /day		
	RO and Degasser Removal Cost	\$5.25	per ft³		
BUILDING COSTS					
Acid Wash Walls					
Acid					
	Acid Usage	0.05	per square foot		
	Hydrochloric Acid	\$0.1627	per pound		
Equipment					
	Manlift	\$43.04	per hour		
Labor					
	Laborer	2	people		
	Laborer Cost	\$35.26	per hour		
Productivity		125	square feet per hour		
	Acid Wash Walls Cost	\$0.92	per square foot		
Acid Wash Floors					
Acid					
	Acid Usage	0.05	per square foot		
	Hydrochloric Acid	\$0.1627	per pound		
Labor					
	Laborer	2	people		
	Laborer Cost	\$35.26	per hour		
Productivity		125	square feet per hour		
	Acid Wash Floors Cost	\$0.57	per square foot		
Electrical Power					
*Pumping Costs for Operating DDWs, RO, and Wellfield are included in GW Restoration Unit Costs					
Satellite - Typical					
	Miscellaneous Pumps, Fans, Sumps, etc.	22.5	HP		
	Lighting	35.0625	kW (per square ft)		
	kW to HP Conversion Factor	0.746			
	Electricity Cost	\$0.0840	per kWhr		
	Efficiency Factor	90%			
	Operating Hours Per Year	8760	hours		
	Satellite 2 Power Cost	\$36,916	per year		
DDW - Typical					

	UNIT COST CALCULATIONS			
	2017 - 2018 Surety Estimate			
	Cameco Resources			
	Miscellaneous Pumps, Fans, Sumps, etc.	2	HP	
	Lighting	0.49	kW	
	Heating	12.5	kW	
	kW to HP Conversion Factor	0.746	kW/hp	
	Electricity Cost	\$0.0840	per kWhr	
	Efficiency Factor	90%		
	Operating Hours Per Year	8760	hours	
	DDW Electrical Cost	\$5,948	per year	
	MISCELLANEOUS RECLAMATION AND RESTORATION COSTS			
	Liner and Subsoil Removal Costs			
	Equipment			
	Trackhoe Cost	\$ 76.38	per hour	
	Loader Cost	\$47.18	per hour	
	Labor			
	Operator	46.00	per hour	
	Productivity	40	cubic yards/hour	
	Total Removal	\$ 4.24	per cubic yard	
	Building Dimensions			
	Buildings On-Site	Process Building	Warehouse Building	Generator Building
	Assume Thickness of building material (ft)	0.75	0.5	0.5
	Building Length (ft)	100	34	11
	Building Width (ft)	40	22	9
	Building Height (ft)	20	10	10
	Volume of Building Materials (CY) [FEMA Demolition Est. Formula]	978	91	12
	Volume for Disposal (assume 33% swell factor) (CY)	1300	122	16
	EVAPORATION POND DECOMMISSIONING			
	By-product Material Removal and Loading	Pond No. 1	Pond No. 2	
	Volume of By-product Material			
	Area of Pond Bottom (SF)	33,000	27,000	
	Area with Fill (SF)	2,813	0	
	Average Fill Thickness (ft)	0.29	0	
	Volume of Fill (CY)	30	0	
	Remaining Area with Pond Residue (SF)	19,325	21,947	
	Average Pond Residue Thickness (ft)	0.083	0.042	
	Volume of Pond Residue (CY)	60	34	
	Area of Liner (SF)	50,000	50,000	
	Thickness of Liner (in)	0.036	0.036	

Master Costs- December 2017
Surety Estimate 2017-2018 Update
Ruth Uranium Project - Cameco Resources

[illegible]

Master Costs- December 2017
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Quoted Costs		Rate (\$)	Profit & Overhead	Units	Source		
WDEQ/LQD Guideline No. 12: Draft October 2015	Appendix	Rate (\$)	Profit & Overhead*	Units	Source		
Moving Materials w. Scraper: 1-Way Distance 500 feet, 0% grade	Appendix C	\$0.770	\$0.847	bcy	Guideline-2/2017		
Moving Materials w. Scraper: 1-Way Distance 1,000 feet, 0% grade	Appendix C	\$0.925	\$1.018	bcy	Guideline-2/2017		
Moving Materials w. Scraper: 1-Way Distance 2,000 feet, 0% grade	Appendix C	\$1.198	\$1.318	bcy	Guideline-2/2017		
Moving Materials w. Dozer: 1-Way Distance 50 feet, 0% grade	Appendix E	\$0.114	\$0.125	lcy	Guideline-2/2017		
Moving Materials w. Dozer: 1-Way Distance 100 feet, 0% grade	Appendix E	\$1.930	\$2.123	lcy	Guideline-2/2017		
Moving Materials w. Dozer: 1-Way Distance 150 feet, 0% grade	Appendix E	\$0.251	\$0.276	lcy	Guideline-2/2017		
Grading Operating Costs	Appendix G	\$54.73	\$60.20	acre	Guideline-2/2017		
Fencing Removal	Appendix H	\$0.31	\$0.34	foot	Guideline-2/2017		
Ripping Operating Costs (Asphalt)	Appendix I	\$629.53	\$692.48	acre	Guideline-2/2017		
Ripping Operating Costs (Overburden)	Appendix I1	\$821.26	\$903.39	acre	Guideline-2/2017		
Building Demolition - Mixture of Types	Appendix K	\$0.298	\$0.328	ft3	Guideline-2/2017		
Building Demo Disposal (Average)	Appendix K	\$10.10	\$11.11	cy	Guideline-2/2017		
Concrete (Floor) Demolition - 6" Thick with Rebar	Appendix K	\$0.78	\$0.86	ft2	Guideline-2/2017		
Concrete (Footings) Demolition - 2' Thick, 3' Wide	Appendix K	\$15.97	\$17.57	linear foot	Guideline-2/2017		
Concrete Disposal On-Site	Appendix K	\$8.80	\$9.68	cy	Guideline-2/2017		
Drill Hole Abandonment: Wet Exploration Holes >25 holes	Appendix L	\$3.00	\$3.30	foot	Guideline-2/2017		
Well Abandonment: Monitor, Production, and Injection Wells	Appendix L	\$2.50	\$2.75	foot	Guideline-2/2017		
Incidental Costs: Small Site Grading and Seeding (<1000 sq. feet)	Appendix L	\$50	\$55	site	Guideline-2/2017		
Incidental Costs: Capping	Appendix L	\$10	\$11	each	Guideline-2/2017		
Incidental Costs: Site Location	Appendix L	\$10	\$11	hole	Guideline-2/2017		
Incidental Costs: Remove Pump, Wiring, and Drop Pipe	Appendix L	\$0.40	\$0.44	foot	Guideline-2/2017		
Incidental Costs: Remove and Dispose Casing (top few feet)	Appendix L	\$30	\$33	well	Guideline-2/2017		
Incidental Costs: Monitoring Well Concrete Pedestal Disposal	Appendix L	\$100	\$110	each	Guideline-2/2017		
Mobilization Fee	Appendix L	\$1,000	\$1,100	Project	Guideline-2/2017		
Scarification Costs	Appendix P	\$50.20	\$55.22	acre	Guideline-2/2017		
Revegetation Costs-Total	Guideline 12A.II.i	\$300	\$330.00	acre	Guideline 12 A-4/2017		
<i>*Includes additional 10% Profit & Overhead per WDEQ/LQD Guideline No. 12, Section 12(b)</i>							
Construction & Demolition Debris Transportation & Disposal Costs							
Building Volume for Disposal	0.33						
Void Factor (for disposal)	1.1						
	Disposal (\$/ton)	C&D (cy/ton)	Transport (\$/load)	C&D (cy/load)	Total (\$/cy)	Total (\$/ft3)	
C&D Debris (county landfill)	\$62.00	2	\$335.00	30	\$42.17	\$1.56	
<i>*Transportation and disposal costs based on actual costs (2013). Transportation and disposal costs include profit and overhead of service provider. Conversion factors of 2 cy/ton and 0.33 to account for air space in buildings based on FEMA - Debris Estimating Field Guide, FEMA 320, September 2010.</i>							
11e.(2) Byproduct Material Transportation & Disposal							
Load Correction Factor: Soil, sand, etc.	1.1						
Load Correction Factor: Process materials, etc.	0.42						
White Mesa	Disposal (\$/ton)	Disposal (\$/cy)	Volume (cy)	Transport (\$/cy)	Total (\$/cy)	Total (\$/ft3)	
Type I: Soil, sand, gravel, rock, concrete rubble, etc.	\$138.97	\$152.87	13.0	\$247.95	\$400.82	\$14.85	
Type II: Process material, pumps, motors, etc.	\$160.08	\$67.23	24.7	\$130.50	\$197.73	\$7.32	
Type II: Chipped piping	\$160.08	\$67.23	36.4	\$88.55	\$155.78	\$5.77	
Pathfinder							
Type I: Soil, sand, rock, gravel, demolition masonry, concrete rubble	N/A	\$130.00	13.0	\$26.73	\$156.73	\$5.80	
Type II: Other process waste, process equipment, etc.	N/A	\$378.00	24.7	\$14.07	\$392.07	\$14.52	
Type II: Chipped piping	N/A	\$378.00	36.4	\$9.55	\$387.55	\$14.35	
<i>*Transportation and disposal costs based on contract amounts as adjusted annually. Transportation and disposal costs include profit and overhead of service provider and include all unloading and decontamination fees, waste tax, fuel surcharges, etc. Transportation costs assume 1) one truck transports one 13-cy bin of Type I waste, 2) one truck transports one 24.7-cy bin of Type II process waste (including pumps, motors, etc.) and 3) one truck transports one 36.4-cy bin of Type II chipped piping waste.</i>							