



July 7, 2015

Deputy Director, Division of Decommissioning, Uranium Recovery,
and Waste Programs
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
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Attn: Control Documents
Office of Nuclear Safety and Safeguards
U.S. Nuclear Regulatory Commission
11545 Rockville Pike
Rockville, MD 20852

License SUA-1548, Docket No. 40-8964
Revised 2015-16 Surety Estimate Update for North Butte ISR Project, Financial Assurance
Estimates (TAC J00677)

Dear Sirs:

Pursuant to License Condition 9.5, Power Resources, Inc. d/b/a Cameco Resources (Cameco) is herein providing (2) copies of the revised 2015-16 reclamation surety estimate update for the North Butte ISR Project. The estimate resulted in a proposed surety amount of \$27,738,300.

If you have any questions or concerns regarding this estimate please feel free to contact Larry McGonagle at 307-333-7655.

Sincerely,
Cameco Resources

Larry McGonagle
Division SHEQ Manger

Enclosures:
Appendix A: 2015-16 NB Reclamation Revised Surety Bond Estimate

LM:jmw

CAMECO RESOURCES

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NM5501

**Cameco Resources
North Butte Project
2015-16 Surety Estimate**

Total Restoration and Reclamation Cost Estimate

I.	Groundwater Restoration (GWR-WF and GWR-SITE Sheets)	\$17,402,083
II.	Well & Drill Hole Abandonment (WA Sheet)	\$3,975,975
III.	Wellfield Buildings & Equipment Removal & Disposal (WF BLDGS Sheet)	\$1,011,435
IV.	Wellfield & Satellite Surface Reclamation (WF REC Sheet)	\$227,898
V.	Equipment Removal and Disposal (EQUIP Sheet)	\$221,812
VI.	Building Demolition and Disposal (BLDGS Sheet)	\$753,723
VII.	Miscellaneous Reclamation (MISC REC Sheet)	\$527,299
	Subtotal Restoration and Reclamation Cost Estimate	\$24,120,225
	Contractor Profit & Overhead (10%)¹	See Master Costs
	Contingency (15%)²	15% \$3,618,034
	TOTAL³	\$27,738,300

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.

**Cameco Resources
North Butte Project
2015-16 Surety Estimate**

	Mine Unit 1	Mine Unit 2	Mine Unit 3
Ground Water Restoration -Wellfield			
I. Ground Water Sweep Costs			
Estimated PV's	1	1	1
Total kgal for GWS	83,140	104,750	148,441
Bleed to Deep Disposal Well (%)	100%	100%	100%
Groundwater Sweep Unit Cost (\$/kgal)	\$2.22	\$2.22	\$2.22
Subtotal Ground Water Sweep Costs per Wellfield	\$184,674	\$232,675	\$329,723
Total Ground Water Sweep Costs	\$747,072		
II. Reverse Osmosis Costs			
Estimated PV's	2	2	4.5
Total Kgal for RO	166,280	209,500	667,985
Wellfield Pumping Cost	\$0.22	\$0.22	\$0.22
Reverse Osmosis Unit Cost (\$/kgal)	\$0.66	\$0.66	\$0.66
Bleed to Deep Disposal Well (%)	20%	20%	20%
Brine Volume for Disposal	33,256	41,900	133,597
DDW Disposal Cost (\$/kgal)	\$1.21	\$1.21	\$1.21
Permeate Volume for Re-Use	133,024	167,600	534,388
Satellite Pumping Cost (\$/kgal)	\$0.79	\$0.79	\$0.79
Subtotal Reverse Osmosis Costs per Wellfield	\$291,773	\$367,612	\$1,172,119
Total Reverse Osmosis Costs	\$1,831,504		
III. Reverse Osmosis with Chemical Reductant Costs			
Estimated PV's	6	6	3.5
Total kgal for RO	498,840	628,500	519,544
Wellfield Pumping Cost	\$0.22	\$0.22	\$0.22
Reverse Osmosis with Chemical Reductant Unit Cost (\$/kgal)	\$0.76	\$0.76	\$0.76
Bleed to Deep Disposal Well (%)	20%	20%	20%
Brine Volume for Disposal (kgal)	99,768	125,700	103,909
DDW Disposal Cost (\$/kgal)	\$1.21	\$1.21	\$1.21
Permeate Volume for Re-Use	399,072	502,800	415,635
Satellite Pumping Cost (\$/kgal)	\$0.79	\$0.79	\$0.79
Subtotal RO with Chemical Reductant Costs per Wellfield	\$922,130	\$1,161,813	\$960,402
Total Reverse Osmosis with Chemical Reductant Costs	\$3,044,345		
IV. Mechanical Integrity Testing (MIT) Costs			
Pre-Restoration, Restoration and Stability Period (yrs)	4.30	6.30	6.30
Number of Injection Wells	303	299	320
Number of MITs per Well	0.9	1.3	1.3
MIT Costs per Injection Well	\$140.09	\$140.09	\$140.09
Number of Production Well	193	185	180
MIT Costs per Production Well	\$216	\$216	\$216
Subtotal MIT Costs per Wellfield	\$72,338	\$103,101	\$105,448
Total Wellfield MIT Costs	\$280,887		
V. Monitoring and Sampling Costs			
A. Pre-Restoration Monitoring			
1. Excursion Monitoring (M, MO and MU wells, twice per month)			
# of Wells	42	31	50
Total # samples	0	1488	2400
UCL Parameters (\$/sample)	\$30.00	\$30.00	\$30.00
Subtotal Pre-Restoration Monitoring Costs per Mine Unit	\$0.00	\$44,640.00	\$72,000.00
Total Pre-Restoration Monitoring Costs	\$116,640.00		
B. Restoration Monitoring			
1. Sampling Prior to Start-up (MP Wells)			
# of Wells	16	18	20
Modified Guideline 8 (\$/sample)	\$335.00	\$335.00	\$335.00
2. Restoration Progress Monitoring (MP Wells, every 2 months)			
# of Wells	16	18	20
Total # samples	316.8	356.4	396
Restoration Progress Parameters (\$/sample)	\$50.00	\$50.00	\$50.00
3. Excursion Monitoring (M, MO and MU wells, every 2 months)			
# of Wells	38	31	50
Total # samples	752.4	613.8	990
UCL Parameters (\$/sample)	\$30.00	\$30.00	\$30.00
Subtotal Restoration Monitoring Costs per Mine Unit	\$43,772.00	\$42,264.00	\$56,200.00
Total Restoration Monitoring Costs	\$142,236		
C. Stability Monitoring			
1. Beginning of stability (MP wells)			
# of Wells	16	18	20
Modified Guideline 8 (\$/sample)	\$335.00	\$335.00	\$335.00
2. Quarterly sampling (MP wells)			
# of Wells	16	18	20
Total # samples	64	72	80
Modified Guideline 8 (\$/sample)	\$335.00	\$335.00	\$335.00
3. Monitor Well Sampling (M wells, every 2 months)			
# of Wells	28	24	40
Total # samples	168	144	240
UCL Parameters (\$/sample)	\$30.00	\$30.00	\$30.00
Subtotal Stability Monitoring Costs per Mine Unit	\$31,840.00	\$34,470.00	\$40,700.00
Total Stability Monitoring Costs	\$107,010.00		
D. Other Laboratory Costs			
Radon, Bioassay, etc.	\$35,191	\$51,559	\$51,559
Subtotal Monitoring and Sampling Costs per Mine Unit	\$110,803	\$172,933	\$220,459
Total Monitoring and Sampling Costs	\$504,195		
VII Header House Heating Costs			
Number of Header Houses per Unit(s)	10	9	10
Pre-Restoration and Restoration Period (yrs)	3.30	5.30	5
Electrical Heating Costs (\$/yr)	\$3,839	\$3,839	\$3,839
Subtotal Header House Heating Cost per Wellfield	\$126,700	\$183,139	\$203,488
Total Header House Heating Costs	\$513,327		
TOTAL RESTORATION COST PER WELLFIELD	\$1,708,418	\$2,221,273	\$2,991,639
TOTAL WELLFIELD RESTORATION COST	\$6,921,330		

**Cameco Resources
North Butte Project
2015-16 Surety Estimate**

Ground Water Restoration - Site Wide

I. Building Utility Costs	Satellite No. 1	DDW No. 1	DDW No. 2
Assumptions:			
Electricity Unit Cost (\$/yr)	\$31,247	\$5,034	\$5,034
Propane (\$/yr)	\$36,154	\$0	\$0
Natural Gas (\$/yr)	\$0	\$0	\$0
Number of Years	5	5	
Subtotal Utility Cost per Building	\$357,226	\$26,682	\$0
Total Building Utility Costs	\$383,907		
II. Infrastructure, Equipment Maintenance, Replacement and Repair Costs (Est. based on SR actual)			
Annual Maintenance Cost (\$/yr)	\$15,000		
Restoration Period (yrs)	5		
Total Cost	\$79,500		
III. Deep Disposal Well MIT Costs			
<u>Five-year MIT Costs for Disposal Wells</u>	\$33,843		
Number of DDWs	2		
Number of MITs per DDW	2		
Total DDW MIT Cost	\$135,372		
IV. Capital Costs			
Reverse Osmosis Unit (2-500 gpm @ \$600K each)	\$1,200,000		
Deep Disposal Well (1 @ \$3.72M each)	\$3,720,000		
Total Capital Costs	\$4,920,000		
V. Vehicle Operation Costs			
Number of Pickup Trucks (Gas)	3		
<u>Truck Cost (\$/hr)</u>	\$22.14		
Average Operating Time (hrs/yr)	1000		
Restoration and Stability Period (yrs)	6		
Total Vehicle Operation Cost	\$418,503		
VI. Labor Costs			
Assumptions:			
Number of Restoration Managers	1		
\$/hr	\$56.84		
Number of Environmental Techs/HPTs	1		
\$/hr	\$35.53		
Number of Operators/Laborers	6		
\$/hr	\$36.95		
Number of Maintenance Technicians	1		
\$/hr	\$32.68		
Hrs/yr	2080		
Restoration and Stability Period (yrs)	6		
Total Labor Cost	\$4,543,471		
TOTAL SITE-WIDE RESTORATION COSTS	\$10,480,753		

**Cameco Resources
North Butte Project
2015-16 Surety Estimate**

Well and Drill Hole Abandonment	Mine Unit 1	Mine Unit 2	Mine Unit 3	Water Wells	Misc Wells
I. Well Abandonment (Wellfields)					
A. Sealing Costs					
Total # of Wells per Wellfield	539	516	552	3	57
Well Average Depth (ft)	680	750	750	750	650
Well Abandonment (Sealing) Costs (\$/ft)	\$2.75	\$2.75	\$2.75	\$2.75	\$2.75
Subtotal Sealing Costs per Wellfield	\$1,007,930	\$1,064,250	\$1,138,500	\$6,188	\$101,888
B. Casing Removal and Disposal Costs					
Total # of Wells per Wellfield	539	516	552	3	57
Total # of Wells for Casing Removal and Disposal	539	516	552	3	57
Remove and Dispose Casing (\$/well)	\$33	\$33	\$33	\$33	\$33
Subtotal Casing Removal and Disposal Costs per Wellfield	\$17,787	\$17,028	\$18,216	\$99	\$1,881
Subtotal Well Abandonment Costs per Wellfield	\$1,025,717	\$1,081,278	\$1,156,716	\$6,287	\$103,769
Total Well Abandonment Costs	\$3,373,767				
II. Removal of Contaminated Soil Around Wells					
# of Production and Injection Wells	496	484	500		
Removal of Contaminated Soil Around Wells (\$/well)	\$83.58	\$83.58	\$83.58		
Subtotal Contaminated Soil Removal/Disposal Costs per Wellfield	\$41,455	\$40,453	\$41,790		
Total Contaminated Soil Removal/Disposal Costs	\$123,698				
III. Drill Hole Abandonment					
A. Drill Hole Plug and Abandonment					
# of Projected Drill Holes					
2015-16	25				
Total # of Drill Holes	25				
Average Depth of Fallback (feet)	200				
Total Footage Requiring Abandonment (ft)	5,000				
Hole Abandonment (\$/ft)	\$3.30				
Subtotal Plug and Abandonment Costs	\$16,500				
B. Incidental Costs					
Mobilization	\$1,000				
Total # of Drill Holes	25				
Site Location (\$/hole)	\$11				
Capping (\$/hole)	\$11				
Small Site Grading and Seeding (\$/site)	\$55				
Subtotal Incidental Costs	\$2,925				
C. Subsurface Retained Abandonment Cost					
Reclamation Cost per hole (Equipment, materials, labor)	\$77				
40% of Reclamation Costs (GL 12 Appendix L, footnote 6)	\$31				
Plugged and Abandoned Boreholes - Surface Cost 40% (2012)	537				
Plugged and Abandoned Boreholes - Surface Cost 40% (2013)	63				
Plugged and Abandoned Boreholes - Surface Cost 40% (2014)	214				
Subtotal Subsurface Retained Abandonment Cost	\$25,071.20				
Total Delineation Hole Abandonment	\$44,496				
IV. Waste Disposal Well Abandonment	BY-1 DDW	DDW No. 2			
A. Plug and Abandonment per WDEQ-WQD UIC Permit #11-468	\$217,007	\$217,007			
Total Waste Disposal Well Abandonment Costs	\$434,014				
TOTAL WELL AND DRILL HOLE ABANDONMENT COSTS	\$3,975,975				

**Cameco Resources
North Butte Project
2015-16 Surety Estimate**

Wellfield Buildings and Equipment Removal and Disposal	Mine Unit 1	Mine Unit 2	Mine Unit 3
I. Wellfield Piping			
Number of Header Houses per Wellfield	10	9	10
Approximate Length of Piping per Header House (ft)	13,800	13,800	13,800
*average 46 wells per with 300 ft pipeline/well			
Approximate Total Length of Piping (ft)	138,000	124,200	138,000
A. Removal and Loading			
Wellfield Piping Removal Unit Cost (\$/ft of mine)	\$1.57	\$1.57	\$1.57
Subtotal Wellfield Piping Removal and Loading Costs	\$216,610	\$194,949	\$216,610
B. Transport and Disposal Costs (NRC-Licensed Facility)			
Average Diameter of Piping (inches)	2	2	2
Chipped Volume Reduction (ft ³ /ft)	0.011	0.011	0.011
Chipped Volume per Wellfield (ft ³)	1480	1332	1480
Volume for Disposal Assuming 10% Void Space (ft ³)	1628	1465	1628
Transportation and Disposal Unit Cost (\$/ft ³)	\$5.77	\$5.77	\$5.77
Subtotal Wellfield Piping Transport and Disposal Costs	\$9,393	\$8,453	\$9,393
Subtotal Wellfield Piping Costs per Wellfield	\$226,003	\$203,402	\$226,003
Total Wellfield Piping Costs	\$655,408		
II. Well Pumps and Downhole Tubing			
Assumptions: Pump and tubing removal costs included under ground water restoration labor			
60% of production/injection wells contain pumps and/or tubing			
A. Pump and Tubing Transportation and Disposal			
Number of Production Wells	193	185	180
Number of Injection Wells	303	299	320
Number of Monitor Wells	42	31	50
1. Pump Volume			
Number of Production Wells with Pumps	193	185	180
Pump Volume (ft ³)	0.43	0.43	0.43
Pump Volume per Wellfield (ft ³)	83.6	80.1	78.0
2. Tubing Volume			
Average Tubing Length per Well (ft)	655	725	725
*Average tubing length/wellfield based on average well depth minus 25 ft			
Number of Production Wells with Tubing	116	111	108
Number of Injection Wells with Tubing	182	179	192
Tubing Length per Wellfield (ft)	222,700	232,725	253,750
Diameter of Production Well Fiberglass Tubing (inches)	2	2	2
Diameter of Injection Well HDPE Tubing (inches)	1.25	1.25	1.25
Chipped Volume Reduction (ft ³ /ft)	0.011	0.011	0.011
Chipped Volume per Wellfield (ft ³)	2388	2495	2721
Volume of Pump and Tubing (ft ³)	2472	2575	2799
Volume for Disposal Assuming Void Space (ft ³)	2719	2833	3079
Transportation and Disposal Unit Cost (\$/ft ³)	\$5.77	\$5.77	\$5.77
Subtotal Pump and Tubing Transport and Disposal Costs Per Wellfield	\$15,688	\$16,346	\$17,765
Total Pump and Tubing Transport and Disposal Costs	\$49,799		
III. Wellhead Cover Removal			
Number of Production and Injection Wells	496	484	500
Well Head Removal, Decontamination, and Disposal Cost	\$11.93	\$11.93	\$11.93
Subtotal Wellhead Removal Costs	\$5,918	\$5,775	\$5,966
Total Wellhead Cover Removal Costs	\$17,659		
IV. Header Houses			
Total Quantity	10	9	10
Average Header House Volume (ft ³)	1600	1600	1600
A. Removal			
Total Volume (ft ³)	16000	14400	16000
Demolition Cost	\$0.316	\$0.316	\$0.316
Subtotal Building Demolition Costs	\$5,051	\$4,546	\$5,051
B. Survey and Decontamination			
Cost per Header House	\$631	\$631	\$631
Subtotal Survey and Decontamination Costs	\$6,311	\$5,680	\$6,311
C. Disposal			
Total Volume for Disposal - Incl. 33% Factor (cy)	196	176	196
Volume for Disposal Assuming Void Space (cy)	215	194	215
Disposal Cost, Landfill (cy)	\$42.17	\$42.17	\$42.17
Subtotal County Landfill Disposal Costs	\$9,066	\$8,180	\$9,066
Headerhouse Soil Removal Volume (assumes 10'Wx20'Lx2.5'D)	500	501	502
11(e)2 Disposal Cost (ft ³)	\$5.80	\$5.80	\$5.80
Subtotal 11(e)2 Disposal Cost	\$29,024	\$26,174	\$29,140
Subtotal Header House Removal and Disposal Costs per Wellfield	\$49,452	\$44,580	\$49,568
Total Header House Removal and Disposal Costs	\$143,600		
TOTAL REMOVAL AND DISPOSAL COSTS PER WELLFIELD	\$866,466		
V. Buried Trunkline	Main Trunkline Trench		
Assumptions:			
Length of Trunkline Trench (ft)	7500		
Length of Waste Water Pipeline Trench (ft)	4600		
A. Removal and Loading			
Main Pipeline Removal Unit Cost (\$/ft of trench)	\$3.14		
Subtotal Trunkline Removal and Loading Costs	\$37,985		
B. Transport and Disposal Costs (NRC-Licensed Facility)			
1. 4" HDPE Trunkline (Wasteline)			
Piping Length (ft)	4600		
Chipped Volume per ft (ft ³ /ft)	0.038		
Chipped Volume (ft ³)	177		
2. 10" HDPE Trunkline (Restoration) (x2)			
Piping Length (ft)	15000		
Chipped Volume per ft (ft ³ /ft)	0.220		
Chipped Volume (ft ³)	3293.339433		
3. 18" HDPE Trunkline (Prod/Inject) (x2)			
Piping Length (ft)	15000		
Chipped Volume per ft (ft ³ /ft)	0.486		
Chipped Volume (ft ³)	7296		
Total Trunkline Chipped Volume (ft ³)	10766		
Volume for Disposal Assuming 10% Void Space (ft ³)	11843		
Transportation and Disposal Unit Cost (\$/ft ³)	\$5.77		
Subtotal Trunkline Transport and Disposal Costs (NRC License Facility)	\$68,331		
C. Transport and Disposal Cost (Landfill)			
1. 2" Steel Line (o2)			
Piping Length (ft)	7500		
2. 3" HDPE Trunkline (CO2)			
Piping Length (ft)	7500		
3. 1" Fiber Optics Line			
Length (ft)	7500		
Volume for Disposal Assuming 10% Void Space (cy)	917		
Disposal Cost, Landfill (cy)	\$42.17		
Subtotal Transport and Disposal Costs	\$38,652.78		
Subtotal Trunkline Decommissioning Costs per Wellfield	\$144,969		
Total Trunkline Decommissioning Costs	\$144,969		
TOTAL WELLFIELD BUILDINGS AND EQUIPMENT REMOVAL	\$1,011,435		

**Cameco Resources
North Butte Project
2015-16 Surety Estimate**

Wellfield and Satellite Surface Reclamation	Mine Unit 1	Mine Unit 2	Mine Unit 3
I. Wellfield Pattern Area Reclamation			
Pattern Area (acres)	66.3	63.5	90.0
*Assumes wellfield pattern area X 2			
<u>Discing/Seeding Unit Cost (\$/acre)</u>	\$548	\$548	\$548
Subtotal Pattern Area Reclamation Costs per Wellfield	\$36,321	\$34,777	\$49,290
Total Wellfield Pattern Area Reclamation Costs	\$120,388		
II. Wellfield Road Reclamation			
Road Construction			
Length of Wellfield Roads (1000 ft)	9	20	20
<u>Wellfield Road Reclamation Unit Cost (\$/1000 ft)</u>	\$1,436	\$1,436	\$1,436
Subtotal Wellfield Road Reclamation Costs	\$12,927	\$28,727	\$28,727
Total Wellfield Road Reclamation Costs	\$70,381		
III. Laydown area reclamation	Laydown Area	Staging Area	
Area of Disturbance (acres)	0.5	3.86	
Average Depth of Stripped Topsoil (ft)	0.5	0.67	
Surface Grade: Level Ground			
Average Length of Topsoil Haul (ft)	2000	500	
A. Ripping Overburden with Dozer			
<u>Ripping Cost (per acre)</u>	\$1,381	\$1,381	
Subtotal Ripping Costs	\$691	\$5,332	
B. Topsoil Application with Scraper			
Volume of Topsoil Removed (cy)	403	4172	
<u>Moving Materials (0% Grade)</u>	\$1.87	\$1.21	
Subtotal Topsoil Application Costs	\$753	\$5,039	
C. Discing and Seeding			
<u>Discing/Seeding Unit Cost (\$/acre)</u>	\$548	\$548	
Subtotal Discing/Seeding Costs	\$274	\$2,114	
Subtotal Surface Reclamation Costs per WF laydown area	\$1,718	\$12,485	
Total Wellfield Laydown Area Reclamation Costs	\$14,203		
IV. Fence Removal			
Length of Fencing (ft)	9,800	5,400	6,300
Fence Removal Costs	\$0.42	\$0.42	\$0.42
Subtotal Fence Removal Costs per Wellfield	\$4,096	\$2,257	\$2,633
Total Fence Removal Costs	\$8,987		
TOTAL WELLFIELD SURFACE RECLAMATION COSTS	\$213,959		
V. Satellite Area Reclamation	Satellite No.1		
Assumptions:			
Area of Disturbance (acres)	3.85		
Average Depth of Stripped Topsoil (ft)	0.5		
Surface Grade: Level Ground			
Average Length of Topsoil Haul (ft)	2000		
A. Ripping Overburden with Dozer			
<u>Ripping Cost (per acre)</u>	\$1,381.27		
Subtotal Ripping Costs	\$5,318.00		
B. Topsoil Application with Scraper			
Volume of Topsoil Removed (cy)	3106		
<u>Moving Materials (0% Grade)</u>	\$1.87		
Subtotal Topsoil Application Costs	\$5,801		
C. Discing and Seeding			
<u>Discing/Seeding Unit Cost (\$/acre)</u>	\$548		
Subtotal Discing/Seeding Costs	\$2,109		
Subtotal Surface Reclamation Costs per Satellite	\$13,228		
VI. Fence Removal			
Length of Fencing (ft)	1,700		
Fence Removal Costs	\$0.42		
Subtotal Fence Removal Costs per Wellfield	\$711		
Total Fence Removal Costs	\$711		
Total Satellite Building Area Reclamation Costs	\$13,939		
TOTAL WELLFIELD & SATELLITE SURFACE RECLAMATION COSTS	\$227,898		

**Cameco Resources
North Butte Project
2015-16 Surety Estimate**

Equipment Removal and Loading

Satellite No. 1

I. Removal and Loading Costs

A. Tankage

Number of Tanks	25
Volume of Tank Construction Material (ft ³)	1190
<u>Tank Removal Cost</u>	\$124.16
Subtotal Tankage Removal and Loading Costs	\$147,747

B. PVC/Steel Pipe

PVC Pipe Footage	6000
Average PVC Pipe Diameter (inches)	4
<u>Shredded PVC Pipe Volume Reduction (ft³/ft)</u>	0.038
Volume of Shredded PVC Pipe (ft ³)	231
<u>Pipe Removal Cost</u>	\$8.06
Subtotal PVC/Steel Pipe Labor & Equipment Costs	\$48,351

C. Pumps

Number of Pumps	16
Average Volume (ft ³ /pump)	4.93
Volume of Pumps (ft ³)	78.88
<u>Pump Removal Cost</u>	\$96.82
Subtotal Pump Removal and Loading Costs	\$7,637

D. RO Units

Number of RO Units (500 gpm)	
Current	0
Planned	2
RO Average Volume (ft ³ /Unit)	250
<u>RO Removal Cost</u>	\$4.72
Subtotal RO Unit Removal and Loading Costs	\$2,360
Subtotal Equipment Removal and Loading Costs per Facility	\$206,095

Total Equipment Removal and Loading Costs

II. Transportation and Disposal Costs (NRC-Licensed Facility)

A. Tankage

Volume of Tank Construction Material (ft ³)	1190
Volume for Disposal Assuming Void Space (ft ³)	1309
<u>Transportation and Disposal Unit Cost (\$/ft³)</u>	\$7.32
Subtotal Tankage Transportation and Disposal Costs	\$9,586

B. PVC / Steel Pipe

Volume of Shredded PVC Pipe (ft ³)	231
Volume for Disposal Assuming Void Space (ft ³)	254
Volume of Steel Pipe (ft ³)	0
Volume for Disposal Assuming Void Space (ft ³)	0
<u>Transportation and Disposal Unit Cost (\$/ft³)</u>	\$5.77
Subtotal PVC Pipe Transportation and Disposal Costs	\$1,466

C. Pumps

Volume of Pumps (ft ³)	78.88
Volume for Disposal Assuming Void Space (ft ³)	87
<u>Transportation and Disposal Unit Cost (\$/ft³)</u>	\$7.32
Subtotal Pump Transportation and Disposal Costs	\$637

D. Dryer

Dryer Volume (ft ³)	0
Volume for Disposal Assuming Dryer Remains Intact (ft ³)	0
<u>Transportation and Disposal Unit Cost (\$/ft³)</u>	\$7.32
Subtotal Dryer Transportation and Disposal Costs	\$0

E. RO/Degasser Units

Volume of RO/Degasser Units (ft ³)	500
Volume for Disposal Assuming Volume Reduction (ft ³)	550
<u>Transportation and Disposal Unit Costs</u>	\$7.32
Subtotal RO Unit Transportation and Disposal Costs	\$4,028
Subtotal Equipment Transportation and Disposal Costs per Facility	\$15,717

Total Equipment Transportation and Disposal Costs

III. Health and Safety Costs

Radiation Safety Equipment	Accounted for under GWR COSTS
Total Health and Safety Costs	

SUBTOTAL EQUIPMENT REMOVAL AND DISPOSAL COSTS PER FACILITY

\$221,812

TOTAL EQUIPMENT REMOVAL AND DISPOSAL COSTS

\$221,812

Building & Other Miscellaneous Demolition and Disposal	Satellite No. 1	DDW No. 1	DDW No. 2	DDW No. 3	Office No. 1	Office No. 2	Bankhouse No. 1	Water Tank & Pad (I)	O1 Tank Pad	CO1 Pad Satellite	Silo Pad	Acid Tank Pad
I. Demolition Costs												
A. Wall Demolition												
Area to be Demolitioned (ft ²)	4	250	550	4	0	3	0	0	0	0	0	0
Subtotal Wall Demolition Costs	\$0.95	\$0.95	\$0.95	\$0.95	\$0.95	\$0.95	\$0.95	\$0.95	\$0.95	\$0.95	\$0.95	\$0.95
B. Concrete Floor Demolition												
Area to be Demolitioned (ft ²)	17,154	1,600	450	0	0	0	0	0	0	0	0	0
Subtotal Concrete Floor Demolition Costs	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50
C. Deep Well Injection Costs												
Total Lights for Injection (1 gal used per ft ²)	17.16	1.36	1.36	0	0	0	0	0	0	0	0	0
Subtotal Deep Well Injection Costs	\$21	\$2	\$2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal Demolition Costs per Building	\$10,335	\$239	\$239	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Demolition Costs	\$12,564	\$1,124	\$1,124	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
II. Demolition Costs												
A. Building (Trucks)												
Volume of Building (ft ³)	138,158	4,890	4,890	0	16,125	16,125	2,195	199,094	0	0	0	0
Subtotal Building Demolition Costs	\$169,896	\$1,515	\$1,515	\$0	\$5,092	\$5,092	\$788	\$31,870	\$0	\$0	\$0	\$0
B. Concrete Floor												
Area of Concrete Floor (ft ²)	17,154	1,600	450	0	0	0	0	556	563	732	432	525
Subtotal Concrete Floor Demolition Costs	\$104,758	\$2,930	\$2,930	\$0	\$0	\$0	\$0	\$3,394	\$4,048	\$4,469	\$2,739	\$3,316
C. Concrete Footing												
Length of Concrete Footing (ft)	524	88	88	0	0	0	0	0	0	0	85	100
Subtotal Concrete Footing Demolition Costs	\$11,794	\$1,972	\$1,972	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,913	\$2,251
Subtotal Demolition Costs per Building	\$286,478	\$6,417	\$6,417	\$0	\$5,092	\$5,092	\$788	\$34,964	\$4,048	\$4,469	\$4,672	\$6,067
Total Demolition Costs	\$364,504											
III. Disposal Costs												
A. Building												
Volume of Building (cy)	19,212	178	178	0	597	597	32	3,714	0	0	0	0
Off-Site County Landfill												
Percentage (%)	100	100	100	100	100	100	100	100	100	100	100	100
Total Volume for Disposal - Incl. 33% Factor (cy)	6577	59	59	0	197	197	31	1222	0	0	0	0
Disposal Cost (Landfill) (cy)	\$42,17	\$42,17	\$42,17	\$42,17	\$42,17	\$42,17	\$42,17	\$42,17	\$42,17	\$42,17	\$42,17	\$42,17
Subtotal County Facility Off-Site Disposal Costs	\$277,351	\$2,474	\$2,474	\$0	\$8,312	\$8,312	\$1,286	\$51,537	\$0	\$0	\$0	\$0
B. Concrete Floor												
Area of Concrete Floor (ft ²)	17,154	1,600	450	0	0	0	0	556	563	732	432	525
Average Thickness of Concrete Floor (ft)	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Volume of Concrete Floor (ft ³)	12873	360	360	0	0	0	0	417	497	549	339	469
Volume of Concrete Floor (cy)	477	13	13	0	0	0	0	15	18	20	13	17
1. On-Site Concrete Disposal												
Percentage (%)	73	73	100	100	100	100	100	100	100	100	100	100
Volume for Disposal (cy)	335	10	13	0	0	0	0	15	18	20	13	17
Concrete Disposal (On-Site) (cy)	\$9,30	\$9,30	\$9,30	\$9,30	\$9,30	\$9,30	\$9,30	\$9,30	\$9,30	\$9,30	\$9,30	\$9,30
Subtotal County Facility Off-Site Disposal Costs	\$3,999	\$95	\$127	\$0	\$0	\$0	\$0	\$147	\$175	\$193	\$119	\$165
2. NRC Licensed Facility												
Percentage (%)	25	25	0	0	0	0	0	0	0	0	0	0
Volume for Disposal (ft ³)	3218	90	0	0	0	0	0	0	0	0	0	0
Transportation and Disposal Unit Cost (\$/ft ³)	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30	\$5.30
Subtotal NRC Licensed Facility Disposal Costs	\$16,682	\$322	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal Concrete Floor Disposal Costs	\$22,081	\$617	\$127	\$0	\$0	\$0	\$0	\$147	\$175	\$193	\$119	\$165
C. Concrete Footing												
Length of Concrete Footing (ft)	524	88	88	0	0	0	0	0	0	0	85	100
Average Depth of Concrete Footing (ft)	4	4	4	4	4	4	4	4	4	4	4	4
Average Width of Concrete Footing (ft)	1	1	1	1	1	1	1	1	1	1	1	1
Volume of Concrete Footing (ft ³)	2096	351	351	0	0	0	0	0	0	0	340	400
Volume of Concrete Footing (cy)	78	13	13	0	0	0	0	0	0	0	13	15
Concrete Disposal (On-Site) (cy)	\$9,30	\$9,30	\$9,30	\$9,30	\$9,30	\$9,30	\$9,30	\$9,30	\$9,30	\$9,30	\$9,30	\$9,30
Subtotal Concrete Footing Disposal Costs	\$738	\$123	\$123	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$120	\$141
Subtotal Disposal Costs per Building	\$300,170	\$2,214	\$2,724	\$0	\$8,312	\$8,312	\$1,286	\$51,684	\$175	\$193	\$239	\$306
Total Disposal Costs	\$376,615											
IV. Health and Safety Costs												
Accounted for under OWR COSTS												
SUBTOTAL BUILDING DEMOLITION AND DISPOSAL COSTS												
TOTAL BUILDING & OTHER MISCELLANEOUS DEMOLITION AND DISPOSAL COSTS	\$753,723											

**Cameco Resources
North Butte Project
2015-16 Surety Estimate**

Miscellaneous Reclamation

I. Access Road Reclamation (includes culverts)	N. Uranium Road
A. Assumptions	
Surface grade	0%
Length of Road (ft)	10938
Width of Road (ft)	24
Area of road (acres)	6.03
B. Gravel Road Base Removal	
Average haul distance (ft)	1000
Gravel Road Base Width (ft)	24
Gravel Road Base Area (acres)	6.03
Average Road Base Depth (ft)	0.5
Volume of Road Base (cy)	4861
Moving Materials (0% Grade)	\$1.44
Subtotal Gravel Road Base Removal Costs	\$7,011
C. Ripping Overburden with Dozer	
Overburden Surface Area (acres)	7.0
Ripping Cost (per acre)	\$1,381.27
Subtotal Ripping Overburden Costs	\$9,669
D. Topsoil Application	
Average haul distance (ft)	1000
Topsoil Surface Area (ft ²)	262512
Depth of Topsoil (ft)	0.5
Volume of Topsoil (cy)	4861
Moving Materials (0% Grade)	\$1.44
Subtotal Topsoil Application Costs	\$7,011
E. Discing/Seeding	
Surface Area (acres)	6.0
Discing/Seeding Unit Cost (\$/acre)	\$548
Subtotal Discing/Seeding Costs	\$3,300
Subtotal Reclamation Costs per Access Road	\$26,991
Total Access Road Reclamation Costs	\$26,991
II. Settling Basin/Storage Ponds Reclamation	Storage Ponds
A. Soil Sampling and Monitoring	
Number of Soil Samples	30
\$/Sample	\$315
Subtotal Soil Sampling and Monitoring Costs	\$9,450
B. Liner/Subsoil/Leak Detection Removal and Disposal	
Thickness of clay liner (ft)	0.25
Thickness of sludge (ft)	0.5
Width of Pond (ft)	280
Length of Pond (ft)	340
Surface area of pond (ft ²)	95200
1. Removal and Loading	
Volume of Clay Liner and Sludge (cy)	2644
Volume of Geotextile Liner (cy)	10
Liner and Sludge Removal and Loading Unit Cost (\$/cy)	\$4.01
Length of Piping (ft)	400
Wellfield Piping Removal Unit Cost (\$/ft of pipe)	\$1.57
Subtotal Removal and Loading Costs	\$11,281
2. Transportation and Disposal	
Volume of Clay Liner and Sludge (cy)	2655
Transportation and Disposal Unit Cost (\$/cy)	\$156.73
Volume of Geotextile Liner @ 40% void (cy)	17
Transportation and Disposal Unit Cost (\$/cy)	\$197.73
Average Diameter of Piping (inches)	2
Chipped Volume Reduction (ft ³ /ft)	0.011
Chipped Volume (ft ³)	4.3
Volume for Disposal Assuming 10% Void Space (ft ³)	5.0
Transportation and Disposal Unit Cost (\$/ft ³)	\$5.77
Subtotal Liner Transportation and Disposal Costs	\$419,590
Subtotal Liner Removal and Disposal Costs	\$430,871
C. Topsoil Application	
Area of surface disturbance (ft ²)	95200
Average thickness of topsoil (ft)	10
Average haul distance (ft)	1000
Surface grade (%)	0%
Volume of Topsoil (cy)	35,259
Topsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$1,444
Subtotal Topsoil Application Costs	\$50,925
D. Revegetation	
Area of surface disturbance (acres)	3.2
Revegetation Unit Cost (\$/acre)	\$548
Subtotal Revegetation Costs	\$1,742
E. Fence Removal	
Length of Fencing (ft)	1,500
Fence Removal Costs	\$0.42
Subtotal Fence Removal Costs	\$627
Total Settling Basin/Ponds Reclamation Costs	\$493,615
III. Removal of Monitoring Stations	
A. Air Quality Monitoring Stations	6
Removal Unit Cost	\$1,116
Subtotal Air Quality Monitoring Stations	\$6,693.19
Total Removal of Monitoring Stations	\$6,693
TOTAL MISCELLANEOUS RECLAMATION COSTS	\$527,299