



January 30, 2014

ATTN: Document Control Desk

Mr. Drew Persinko, Deputy Director
Decommissioning and Uranium Recovery Licensing Directorate
Division of Waste Management and Environmental Protection
Office of Federal and State Materials and Environmental Management Programs
Mailstop T8 F5
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

CERTIFIED MAIL # 7013 0600 0002 3995 3402

RE: NRC License SUA-1548, Docket No. 40-8964
North Butte Project 2014-15 Surety Estimate Update

Dear Mr. Persinko:

Pursuant to License Condition 9.5 of Source Material License SUA-1548, Power Resources, Inc. d/b/a/ Cameco Resources (Cameco) is herein submitting the 2014-15 Surety Estimate Update for the North Butte Project. This estimate results in proposed surety amount of \$22,414,400, which represents an increase of \$7,726,058 from the current approved amount of \$14,688,342.

The 2014-15 surety estimate has been updated to reflect ground water restoration, facility decommissioning and surface reclamation costs associated with the planned development and production from Mine Unit 2 during the next one-year surety period. The format and content of the estimate has been revised for consistency with Cameco's Smith Ranch-Highland 2013-14 Surety Estimate Updates that were previously submitted to and reviewed by NRC staff during 2013. To facilitate review of the North Butte 2014-15 surety estimate, a copy of an updated water balance/restoration schedule is attached showing the planned restoration sequence for Mine Units 1 and 2 at North Butte.

If you have questions or need additional information, please feel free to contact me directly at (307) 316-7586.

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Sincerely,

A handwritten signature in black ink, appearing to read 'S. Bakken', with a stylized flourish at the end.

Scott A. Bakken
Manager, SHEQ Systems & Compliance

SB/sb

Att: North Butte Project 2014-15 Surety Estimate Update
North Butte Water Balance (16-Jan-14)

cc: D. Mandeville, USNRC w/Att
ec: CR-Cheyenne

**Cameco Resources
North Butte Project
2014-15 Surety Estimate**

Total Restoration and Reclamation Cost Estimate				
I.	Groundwater Restoration (GWR-WF and GWR-SITE Sheets)			\$13,889,072
II.	Well & Drill Hole Abandonment (WA Sheet)			\$3,167,230
III.	Wellfield Buildings & Equipment Removal & Disposal (WF BLDGS Sheet)			\$774,544
IV.	Wellfield & Satellite Surface Reclamation (WF REC Sheet)			\$146,125
V.	Equipment Removal and Disposal (EQUIP Sheet)			\$251,838
VI.	Building Demolition and Disposal (BLDGS Sheet)			\$740,062
VII.	Miscellaneous Reclamation (MISC REC Sheet)			\$521,888
	Subtotal Restoration and Reclamation Cost Estimate			\$19,490,759
	Contractor Profit & Overhead (10%)¹	See Master Costs		
	Contingency (15%)²	15%		\$2,923,614
		TOTAL³		\$22,414,400
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
2014-15 Surety Estimate**

Ground Water Restoration -Wellfield		Mine Unit 1	Mine Unit 2
I. Ground Water Sweep Costs			
	Estimated PV's	1	1
	Total kgals for GWS	110,094	104,750
	Bleed to Deep Disposal Well (%)	100%	100%
	Groundwater Sweep Unit Cost (\$/kgal)	\$1.90	\$1.90
	Subtotal Ground Water Sweep Costs per Wellfield	\$209,326	\$199,165
	Total Ground Water Sweep Costs	\$408,491	
II. Reverse Osmosis Costs			
	Estimated PV's	2	2
	Total Kgals for RO	220,188	209,500
	Wellfield Pumping Cost	\$0.19	\$0.19
	Reverse Osmosis Unit Cost (\$/kgal)	\$0.58	\$0.58
	Bleed to Deep Disposal Well (%)	20%	20%
	Brine Volume for Disposal	44,038	41,900
	DDW Disposal Cost(\$/kgal)	\$1.06	\$1.06
	Permeate Volume for Re-Use	176,150	167,600
	Satellite Pumping Cost (\$/kgal)	\$0.66	\$0.66
	Subtotal Reverse Osmosis Costs per Wellfield	\$330,537	\$314,492
	Total Reverse Osmosis Costs	\$645,029	
III. Reverse Osmosis with Chemical Reductant Costs			
	Estimated PV's	6	6
	Total kgals for RO	660,564	628,500
	Wellfield Pumping Cost	\$0.19	\$0.19
	Reverse Osmosis with Chemical Reductant Unit Cost (\$/kgal)	\$0.67	\$0.67
	Bleed to Deep Disposal Well (%)	20%	20%
	Brine Volume for Disposal (kgal)	132,113	125,700
	DDW Disposal Cost(\$/kgal)	\$1.06	\$1.06
	Permeate Volume for Re-Use	528,451	502,800
	Satellite Pumping Cost (\$/kgal)	\$0.66	\$0.66
	Subtotal RO with Chemical Reductant Costs per Wellfield	\$1,053,598	\$1,002,456
	Total Reverse Osmosis with Chemical Reductant Costs	\$2,056,054	
IV. Mechanical Integrity Testing (MIT) Costs			
	Pre-Restoration, Restoration and Stability Period (yrs)	4.00	6.00
	Number of Injection Wells	303	296
	Number of MITs per Well	0.8	1.2
	MIT Costs per Injection Well	\$130.60	\$130.60
	Number of Production Well	193	185
	MIT Costs per Production Well	\$202	\$202
	Subtotal MIT Costs per Wellfield	\$62,792	\$91,155
	Total Wellfield MIT Costs	\$153,947	
V. Monitoring and Sampling Costs			
A. Pre-Restoration Monitoring			
	I. Excursion Monitoring (M, MO and MU wells, twice per month)		
	# of Wells	0	31

**Cameco Resources
North Butte Project
2014-15 Surety Estimate**

Ground Water Restoration -Wellfield		Mine Unit 1	Mine Unit 2
	Total # samples	0	1488
	UCL Parameters (\$/sample)	\$30.00	\$30.00
	Subtotal Pre-Restoration Monitoring Costs per Mine Unit	\$0.00	\$44,640.00
	Total Pre-Restoration Monitoring Costs	\$44,640.00	
B.	Restoration Monitoring		
	1. Sampling Prior to Start-up (MP Wells)		
	# of Wells	16	18
	Modified Guideline 8 (\$/sample)	\$353.00	\$353.00
	2. Restoration Progress Monitoring (MP Wells, every 2 months)		
	# of Wells	16	18
	Total # samples	288	324
	Restoration Progress Parameters (\$/sample)	\$50.00	\$50.00
	3. Excursion Monitoring (M, MO and MU wells, every 2 months)		
	# of Wells	38	31
	Total # samples	684	558
	UCL Parameters (\$/sample)	\$30.00	\$30.00
	Subtotal Restoration Monitoring Costs per Mine Unit	\$40,568.00	\$39,294.00
	Total Restoration Monitoring Costs	\$79,862	
C.	Stability Monitoring		
	1. Beginning of stability (MP wells)		
	# of Wells	16	18
	Modified Guideline 8 (\$/sample)	\$353.00	\$353.00
	2. Quarterly sampling (MP wells)		
	# of Wells	16	18
	Total # samples	64	72
	Modified Guideline 8 (\$/sample)	\$353.00	\$353.00
	3. Monitor Well Sampling (M wells, every 2 months)		
	# of Wells	28	24
	Total # samples	168	144
	UCL Parameters (\$/sample)	\$30.00	\$30.00
	Subtotal Stability Monitoring Costs per Mine Unit	\$33,280.00	\$36,090.00
	Total Stability Monitoring Costs	\$69,370.00	
D.	Other Laboratory Costs		
	Radon, Bioassay, etc.	\$52,800	\$79,200
	Subtotal Monitoring and Sampling Costs per Mine Unit	\$126,648	\$199,224
	Total Monitoring and Sampling Costs	\$325,872	
VII.	Header House Heating Costs		
	Number of Header Houses per Unit(s)	10	9
	Pre-Restoration and Restoration Period (yrs)	3.00	5.00
	Electrical Heating Costs (\$/yr)	\$3,222	\$3,222
	Subtotal Header House Heating Cost per Wellfield	\$96,657	\$144,985
	Total Header House Heating Costs	\$241,642	
	TOTAL RESTORATION COST PER WELLFIELD	\$1,879,558	\$1,951,477
	TOTAL WELLFIELD RESTORATION COST	\$3,831,035	

**Cameco Resources
North Butte Project
2014-15 Surety Estimate**

Ground Water Restoration - Site Wide			
I.	Building Utility Costs	Satellite No. 1	DDW No. 1
	Assumptions:		
	Electricity Unit Cost (\$/yr)	\$26,221	\$4,225
	Propane (\$/yr)	\$37,163	\$0
	Natural Gas (\$/yr)	\$0	\$0
	Number of Years	5	5
	Subtotal Utility Cost per Building	\$316,922	\$21,123
	Total Building Utility Costs	\$338,045	
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	\$75,000	
III.	Deep Disposal Well MIT Costs		
	Five-year MIT Costs for Disposal Wells	\$31,625	
	Number of DDWs	2	
	Number of MITs per DDW	1	
	Total DDW MIT Cost	\$63,250	
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	
	Truck Cost (\$/hr)	\$22.14	
	Average Operating Time (hrs/yr)	1000	
	Restoration and Stability Period (yrs)	6	
	Total Vehicle Operation Cost	\$398,574	
VI.	Labor Costs		
	Assumptions:		
	Number of Restoration Managers	1	
	\$/hr	\$56.00	
	Number of Environmental Techs/HPTs	1	
	\$/hr	\$35.00	
	Number of Operators/Laborers	6	
	\$/hr	\$36.40	
	Number of Maintenance Technicians	1	
	\$/hr	\$32.20	
	Hrs/yr	2080	
	Restoration and Stability Period (yrs)	6	
	Total Labor Cost	\$4,263,168	
	TOTAL SITE-WIDE RESTORATION COSTS	\$10,058,037	

**Cameco Resources
North Butte Project
2014-15 Surety Estimate**

Well and Drill Hole Abandonment				Mine Unit 1	Mine Unit 2	Water Wells	Misc Wells
I.	Well Abandonment (Wellfields)						
	A. Sealing Costs						
		Total # of Wells per Wellfield		539	531	3	57
		Well Average Depth (ft)		680	750	750	650
		Well Abandonment (Sealing) Costs (\$/ft)		\$2.75	\$2.75	\$2.75	\$2.75
		Subtotal Sealing Costs per Wellfield		\$1,007,930	\$1,095,188	\$6,188	\$101,888
	B. Casing Removal and Disposal Costs						
		Total # of Wells per Wellfield		539	531	3	57
		Total # of Wells for Casing Removal and Disposal		539	531	3	57
		Remove and Dispose Casing (\$/well)		\$33	\$33	\$33	\$33
		Subtotal Casing Removal and Disposal Costs per Wellfield		\$17,787	\$17,523	\$99	\$1,881
		Subtotal Well Abandonment Costs per Wellfield		\$1,025,717	\$1,112,711	\$6,287	\$103,769
	Total Well Abandonment Costs			\$2,248,484			
II.	Removal of Contaminated Soil Around Wells						
		# of Production and Injection Wells		496	481		
		Removal of Contaminated Soil Around Wells (\$/well)		\$85.46	\$85.46		
		Subtotal Contaminated Soil Removal/Disposal Costs per Wellfield		\$42,387	\$41,105		
	Total Contaminated Soil Removal/Disposal Costs			\$83,492			
III.	Drill Hole Abandonment						
	A. Drill Hole Plug and Abandonment						
		# of Projected Drill Holes					
		2013-14		500			
		Total # of Drill Holes		500			
		Average Depth of Fallback (feet)		200			
		Total Footage Requiring Abandonment (ft)		100,000			
		Hole Abandonment (\$/ft)		\$3.30			
		Subtotal Plug and Abandonment Costs		\$330,000			
	B. Incidental Costs						
		Mobilization		\$1,000			
		Total # of Drill Holes		500			
		Site Location (\$/hole)		\$11			
		Capping (\$/hole)		\$11			
		Small Site Grading and Seeding (\$/site)		\$55			
		Subtotal Incidental Costs		\$38,500			
	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% (2011)		500			
		Plugged and Abandoned Boreholes - Surface Cost 40% (2012)		500			
		Plugged and Abandoned Boreholes - Surface Cost 40% (2013)		63			
		Subtotal Subsurface Retained Abandonment Cost		\$32,740			
	Total Delineation Hole Abandonment			\$401,240			
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			\$3,167,230			

**Cameco Resources
Highland Uranium Project
2014-15 Surety Estimate**

Wellfield Buildings and Equipment Removal and Disposal				Mine Unit 1	Mine Unit 2
I.	Wellfield Piping				
	Number of Header Houses per Wellfield			10	9
	Approximate Length of Piping per Header House (ft)			13,800	13,800
	*average 46 wells per with 300 ft pipeline/well)				
	Approximate Total Length of Piping (ft)			138,000	124,200
	A. Removal and Loading				
	Wellfield Piping Removal Unit Cost (\$/ft of pipe)			\$1.86	\$1.86
	Subtotal Wellfield Piping Removal and Loading Costs			\$256,218	\$230,596
	B. Transport and Disposal Costs (NRC-Licensed Facility)				
	Average Diameter of Piping (inches)			2	2
	Chipped Volume Reduction (ft ³ /ft)			0.011	0.011
	Chipped Volume per Wellfield (ft ³)			1480	1332
	Volume for Disposal Assuming 10% Void Space (ft ³)			1628	1465
	Transportation and Disposal Unit Cost (\$/ft ³)			\$5.77	\$5.77
	Subtotal Wellfield Piping Transport and Disposal Costs			\$9,393	\$8,453
	Subtotal Wellfield Piping Costs per Wellfield			\$265,611	\$239,049
	Total Wellfield Piping Costs			\$504,660	
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
	Number of Injection Wells			303	296
	Number of Monitor Wells			42	49
	1. Pump Volume				
	Number of Production Wells with Pumps			193	185
	Pump Volume (ft ³)			0.43	0.43
	Pump Volume per Wellfield (ft ³)			83.6	80.1
	2. Tubing Volume				
	Average Tubing Length per Well (ft)			655	725
	*Average tubing length/wellfield based on average well depth minus 25 ft				
	Number of Production Wells with Tubing			116	111
	Number of Injection Wells with Tubing			182	178
	Tubing Length per Wellfield (ft)			222,700	245,050
	Diameter of Production Well Fiberglass Tubing (inches)			2	2
	Diameter of Injection Well HDPE Tubing (inches)			1.25	1.25
	Chipped Volume Reduction (ft ³ /ft)			0.011	0.011
	Chipped Volume per Wellfield (ft ³)			2388	2627
	Volume of Pump and Tubing (ft ³)			2472	2707
	Volume for Disposal Assuming Void Space (ft ³)			2719	2978
	Transportation and Disposal Unit Cost (\$/ft ³)			\$5.77	\$5.77
	Subtotal Pump and Tubing Transport and Disposal Costs Per Wellfield			\$15,688	\$17,182
	Total Pump and Downhole Tubing Costs			\$32,870	
III.	Buried Trunkline (Includes \$ for fiber optic cable removal)				
	Assumptions:				
	Length of Trunkline Trench (ft)			7500	3500
	A. Removal and Loading				
	Main Pipeline Removal Unit Cost (\$/ft of trench)			\$3.71	\$3.71
	Subtotal Trunkline Removal and Loading Costs			\$27,850	\$12,997
	B. Transport and Disposal Costs (NRC-Licensed Facility)				
	1. 2" HDPE Trunkline				
	Piping Length (ft)			7500	2000
	Chipped Volume per Lft (ft ³ /ft)			0.011	0.011

**Cameco Resources
Highland Uranium Project
2014-15 Surety Estimate**

Wellfield Buildings and Equipment Removal and Disposal				Mine Unit 1	Mine Unit 2
		Chipped Volume (ft ³)		80	21
	2.	3" HDPE Trunkline			
		Piping Length (ft)		7500	2000
		Chipped Volume per Lft (ft ³ /ft)		0.023	0.023
		Chipped Volume (ft ³)		175	47
	3.	6" HDPE Trunkline			
		Piping Length (ft)		4000	1500
		Chipped Volume per Lft (ft ³ /ft)		0.083	0.083
		Chipped Volume (ft ³)		334	125
	4.	8" HDPE Trunkline			
		Piping Length (ft)		18400	1000
		Chipped Volume per Lft (ft ³ /ft)		0.141	0.141
		Chipped Volume (ft ³)		2599.959775	141.3021617
	5.	20" HDPE Trunkline			
		Piping Length (ft)		15000	0
		Chipped Volume per Lft (ft ³ /ft)		0.720	0.720
		Chipped Volume (ft ³)		10800	0
		Total Trunkline Chipped Volume (ft ³)		13989	334
		Volume for Disposal Assuming 10% Void Space (ft ³)		15387	368
		Transportation and Disposal Unit Cost (\$/ft ³)		\$5.77	\$5.77
		Subtotal Trunkline Transport and Disposal Costs		\$88,779	\$2,123
		Subtotal Trunkline Decommissioning Costs per Wellfield		\$116,629	\$15,120
		Total Trunkline Decommissioning Costs		\$131,749	
	IV.	Wellhead Cover Removal			
		Number of Production and Injection Wells		496	481
		Well Head Removal, Decontamination, and Disposal Cost		\$11.74	\$11.74
		Subtotal Wellhead Removal Costs		\$5,823	\$5,647
		Total Wellhead Cover Removal Costs		\$11,470	
	IV.	Header Houses			
		Total Quantity		10	9
		Average Header House Volume (ft ³)		1600	1600
	A.	Removal			
		Total Volume (ft ³)		16000	14400
		Demolition Cost		\$0.316	\$0.316
		Subtotal Building Demolition Costs		\$5,051	\$4,546
	B.	Survey and Decontamination			
		Cost per Header House		\$621	\$621
		Subtotal Survey and Decontamination Costs		\$6,214	\$5,592
	C.	Disposal			
		Total Volume for Disposal - Incl. 33% Factor (cy)		196	176
		Volume for Disposal Assuming Void Space (cy)		215	194
		Disposal Cost, Landfill (cy)		\$42.17	\$42.17
		Subtotal County Landfill Disposal Costs		\$9,066	\$8,180
		Headerhouse Soil Removal Volume (assumes 10'Wx20'Lx2.5'D)		500	500
		11(e)2 Disposal Cost (ft ³)		\$5.80	\$5.80
		Subtotal 11(e)2 Disposal Cost		\$29,024	\$26,122
		Subtotal Header House Removal and Disposal Costs per Wellfield		\$49,355	\$44,440
		Total Header House Removal and Disposal Costs		\$93,795	
		TOTAL REMOVAL AND DISPOSAL COSTS PER WELLFIELD		\$453,106	\$321,438
		TOTAL WELLFIELD BUILDINGS AND EQUIPMENT REMOVAL		\$774,544	

**Cameco Resources
 North Butte Project
 2014-15 Surety Estimate**

Wellfield and Satellite Surface Reclamation		Mine Unit 1	Mine Unit 2
I. Wellfield Pattern Area Reclamation			
Pattern Area (acres)		66.7	63.5
*Assumes wellfield pattern area X 2			
Discing/Seeding Unit Cost (\$/acre)		\$548	\$548
Subtotal Pattern Area Reclamation Costs per Wellfield		\$36,551	\$34,777
Total Wellfield Pattern Area Reclamation Costs		\$71,328	
II. Wellfield Road Reclamation			
Road Construction			
Length of Wellfield Roads (1000 ft)		9	20
Wellfield Road Reclamation Unit Cost (\$/1000 ft)		\$1,438	\$1,438
Subtotal Wellfield Road Reclamation Costs		\$12,939	\$28,752
Total Wellfield Road Reclamation Costs		\$41,691	
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			
Ripping Cost (per acre)		\$1,381	\$1,381
Subtotal Ripping Costs		\$691	\$5,332
B. Topsoil Application with Scraper			
Volume of Topsoil Removed (cy)		403	4172
Moving Materials (0% Grade)		\$1.21	\$1.21
Subtotal Topsoil Application Costs		\$488	\$5,044
C. Discing and Seeding			
Discing/Seeding Unit Cost (\$/acre)		\$548	\$548
Subtotal Discing/Seeding Costs		\$274	\$2,114
Subtotal Surface Reclamation Costs per WF laydown area		\$1,453	\$12,490
Total Wellfield Laydown Area Reclamation Costs		\$13,943	
IV. Fence Removal			
Length of Fencing (ft)		9,800	5,400
Fence Removal Costs		\$0.43	\$0.43
Subtotal Fence Removal Costs per Wellfield		\$4,204	\$2,317
Total Fence Removal Costs		\$6,521	
TOTAL WELLFIELD SURFACE RECLAMATION COSTS		\$133,483	
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			
Ripping Cost (per acre)		\$1,381.27	
Subtotal Ripping Costs		\$5,318.00	
B. Topsoil Application with Scraper			
Volume of Topsoil Removed (cy)		3106	
Moving Materials (0% Grade)		\$1.44	
Subtotal Topsoil Application Costs		\$4,486	
C. Discing and Seeding			
Discing/Seeding Unit Cost (\$/acre)		\$548	
Subtotal Discing/Seeding Costs		\$2,109	
Subtotal Surface Reclamation Costs per Satellite		\$11,913	
VI. Fence Removal			
Length of Fencing (ft)		1,700	0
Fence Removal Costs		\$0.43	\$0.43
Subtotal Fence Removal Costs per Wellfield		\$729	\$0
Total Fence Removal Costs		\$729	
Total Satellite Building Area Reclamation Costs		\$12,642	
TOTAL WELLFIELD & SATELLITE SURFACE RECLAMATION COSTS		\$146,125	

**Cameco Resources
North Butte Project
2014-15 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
		Tank Removal Cost		\$144.12
		Subtotal Tankage Removal and Loading Costs		\$171,504
B.	PVC/Steel Pipe			
		PVC Pipe Footage		6000
		Average PVC Pipe Diameter (inches)		4
		Shredded PVC Pipe Volume Reduction (ft ³ /ft)		0.038
		Volume of Shredded PVC Pipe (ft ³)		231
		Pipe Removal Cost		\$8.93
		Subtotal PVC/Steel Pipe Labor & Equipment Costs		\$53,575
C.	Pumps			
		Number of Pumps		16
		Average Volume (ft ³ /pump)		4.93
		Volume of Pumps (ft ³)		78.88
		Pump Removal Cost		\$108.14
		Subtotal Pump Removal and Loading Costs		\$8,530
D.	RO Units			
		Number of RO Units (500 gpm)		
		Current		0
		Planned		2
		RO Average Volume (ft ³ /Unit)		250
		RO Removal Cost		\$5.02
		Subtotal RO Unit Removal and Loading Costs		\$2,512
		Subtotal Equipment Removal and Loading Costs per Facility		\$236,121
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
		Transportation and Disposal Unit Cost (\$/ft ³)		\$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
		Transportation and Disposal Unit Cost (\$/ft ³)		\$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
		Transportation and Disposal Unit Cost (\$/ft ³)		\$7.32

**Cameco Resources
North Butte Project
2014-15 Surety Estimate**

Equipment Removal and Loading				Satellite No. 1
		Subtotal Pump Transportation and Disposal Costs		\$637
D.	Dryer			
		Dryer Volume (ft ³)		0
		Volume for Disposal Assuming Dryer Remains Intact (ft ³)		0
		Transportation and Disposal Unit Cost (\$/ft ³)		\$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
		Transportation and Disposal Unit Costs		\$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 on GW REST	
		Total Health and Safety Costs		
SUBTOTAL EQUIPMENT REMOVAL AND DISPOSAL COSTS PER FACILITY				\$251,838
TOTAL EQUIPMENT REMOVAL AND DISPOSAL COSTS				\$251,838

**Cameco Resources
North Butte Project
2014-15 Surety Estimate**

		Satellite	DDW	DDW	DDW	Office	Office	Bunthouse	Water Tank	O2 Tank
Building & Other Miscellaneous Demolition and Disposal		No. 1	No. 1	No. 2	No. 3	No. 1	No. 2	No. 1	& Pad (2)	Pad
I. Decontamination Costs										
A. Wall Decontamination										
	Area to be Decontaminated (ft ²)	0	\$80	0	0	0	0	0	0	0
	HCl Acid Wash, including labor (\$/ft ²)	\$0.94	\$0.94	\$0.94	\$0.94	\$0.94	\$0.94	\$0.94	\$0.94	\$0.94
	Subtotal Wall Decontamination Costs	\$0	\$830	\$0	\$0	\$0	\$0	\$0	\$0	\$0
B. Concrete Floor Decontamination										
	Area to be Decontaminated (ft ²)	17,164	480	0	0	0	0	0	0	0
	HCl Acid Wash, including labor (\$/ft ²)	\$0.53	\$0.53	\$0.53	\$0.53	\$0.53	\$0.53	\$0.53	\$0.53	\$0.53
	Subtotal Concrete Floor Decontamination Costs	\$9,014	\$252	\$0	\$0	\$0	\$0	\$0	\$0	\$0
C. Deep Well Injection Costs										
	Total kgal for Injection (1 gal used per ft ²)	17.16	1.36	0	0	0	0	0	0	0
	Deep Well Injection Unit Cost (\$/kgals)	\$1.06	\$1.06	\$1.06	\$1.06	\$1.06	\$1.06	\$1.06	\$1.06	\$1.06
	Subtotal Deep Well Injection Costs	\$18	\$1	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Subtotal Decontamination Costs per Building	\$9,032	\$1,083	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Decontamination Costs			\$10,115							
II. Demolition Costs										
A. Building (Tanks)										
	Volume of Building (ft ³)	538,158	4,800	0	0	16,128	16,128	2,496	100,000	0
	Demolition Cost	\$0.316	\$0.316	\$0.316	\$0.316	\$0.316	\$0.316	\$0.316	\$0.316	\$0.316
	Subtotal Building Demolition Costs	\$169,896	\$1,515	\$0	\$0	\$5,092	\$5,092	\$788	\$31,570	\$0
B. Concrete Floor										
	Area of Concrete Floor (ft ²)	17,164	480	0	0	0	0	0	556	663
	Demolition Cost	\$6.03	\$6.03	\$6.03	\$6.03	\$6.03	\$6.03	\$6.03	\$6.03	\$6.03
	Subtotal Concrete Floor Demolition Costs	\$103,466	\$2,893	\$0	\$0	\$0	\$0	\$0	\$3,352	\$3,997
C. Concrete Footing										
	Length of Concrete Footing (ft)	524	88	0	0	0	0	0	0	0
	Demolition Cost	\$22.23	\$22.23	\$22.23	\$22.23	\$22.23	\$22.23	\$22.23	\$22.23	\$22.23
	Subtotal Concrete Footing Demolition Costs	\$11,650	\$1,948	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Subtotal Demolition Costs per Building	\$285,012	\$6,356	\$0	\$0	\$5,092	\$5,092	\$788	\$34,922	\$3,997
Total Demolition Costs			\$356,277							
III. Disposal Costs										
A. Building										
	Volume of Building (cy)	19,932	178	0	0	597	597	92	3,704	0
	Off-Site County Landfill									
	Percentage (%)	100	100	100	100	100	100	100	100	100
	Total Volume for Disposal - Incl. 33% Factor (cy)	6577	59	0	0	197	197	31	1222	0
	Disposal Cost, Landfill (cy)	\$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	\$0	\$0	\$8,312	\$8,312	\$1,286	\$51,537	\$0
B. Concrete Floor										
	Area of Concrete Floor (ft ²)	17,164	480	0	0	0	0	0	556	663
	Average Thickness of Concrete Floor (ft)	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	0	0	0	0	0	417	497
	Volume of Concrete Floor (cy)	477	13	0	0	0	0	0	15	18
1. On-Site Concrete Disposal										
	Percentage (%)	75	75	100	100	100	100	100	100	100
	Volume for Disposal (cy)	358	10	0	0	0	0	0	15	18
	Concrete Disposal On Site (cy)	\$9.12	\$9.12	\$9.12	\$9.12	\$9.12	\$9.12	\$9.12	\$9.12	\$9.12
	Subtotal County Facility Off-Site Disposal Costs	\$3,261	\$91	\$0	\$0	\$0	\$0	\$0	\$141	\$168
2. NRC-Licensed Facility										
	Percentage (%)	25	25	0	0	0	0	0	0	0
	Volume for Disposal (ft ³)	3218	90	0	0	0	0	0	0	0
	Transportation and Disposal Unit Cost (\$/ft ³)	\$5.80	\$5.80	\$5.80	\$5.80	\$5.80	\$5.80	\$5.80	\$5.80	\$5.80
	Subtotal NRC-Licensed Facility Disposal Costs	\$18,682	\$522	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Subtotal Concrete Floor Disposal Costs	\$21,943	\$613	\$0	\$0	\$0	\$0	\$0	\$141	\$168
C. Concrete Footing										
	Length of Concrete Footing (ft)	524	88	0	0	0	0	0	0	0
	Average Depth of Concrete Footing (ft)	4	4	4	4	4	4	4	4	4
	Average Width of Concrete Footing (ft)	1	1	1	1	1	1	1	1	1
	Volume of Concrete Footing (ft ³)	2096	351	0	0	0	0	0	0	0
	Volume of Concrete Footing (cy)	78	13	0	0	0	0	0	0	0
	Concrete Disposal On Site (cy)	\$9.12	\$9.12	\$9.12	\$9.12	\$9.12	\$9.12	\$9.12	\$9.12	\$9.12
	Subtotal Concrete Footing Disposal Costs	\$708	\$118	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Subtotal Disposal Costs per Building	\$300,002	\$3,205	\$0	\$0	\$8,312	\$8,312	\$1,286	\$51,678	\$168
Total Disposal Costs			\$373,670							
IV. Health and Safety Costs		Accounted for on GW REST								
TOTAL BUILDING & OTHER MISCELLANEOUS DEMOLITION AND DISPOSAL COSTS			\$740,062							

**Cameco Resources
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		CO2 Pad Satellite	Silo Pad	Acid Tank Pad
Building & Other Miscellaneous Demolition and Disposal				
I. Decontamination Costs				
A. Wall Decontamination				
	Area to be Decontaminated (ft ²)	0	0	0
	HCl Acid Wash, including labor (\$/ft ²)	\$0.94	\$0.94	\$0.94
	Subtotal Wall Decontamination Costs	\$0	\$0	\$0
B. Concrete Floor Decontamination				
	Area to be Decontaminated (ft ²)	0	0	0
	HCl Acid Wash, including labor (\$/ft ²)	\$0.53	\$0.53	\$0.53
	Subtotal Concrete Floor Decontamination Costs	\$0	\$0	\$0
C. Deep Well Injection Costs				
	Total kgal for Injection (1 gal used per ft ²)	0	0	0
	Deep Well Injection Unit Cost (\$/kgals)	\$1.06	\$1.06	\$1.06
	Subtotal Deep Well Injection Costs	\$0	\$0	\$0
	Subtotal Decontamination Costs per Building	\$0	\$0	\$0
Total Decontamination Costs				
II. Demolition Costs				
A. Building (Tanks)				
	Volume of Building (ft ³)	0	0	0
	Demolition Cost	\$0.316	\$0.316	\$0.316
	Subtotal Building Demolition Costs	\$0	\$0	\$0
B. Concrete Floor				
	Area of Concrete Floor (ft ²)	732	452	625
	Demolition Cost	\$6.03	\$6.03	\$6.03
	Subtotal Concrete Floor Demolition Costs	\$4.412	\$2.725	\$3.768
C. Concrete Footing				
	Length of Concrete Footing (ft)	0	85	100
	Demolition Cost	\$22.23	\$22.23	\$22.23
	Subtotal Concrete Footing Demolition Costs	\$0	\$1.890	\$2.223
	Subtotal Demolition Costs per Building	\$4.412	\$4.615	\$5.991
Total Demolition Costs				
III. Disposal Costs				
A. Building				
	Volume of Building (cy)	0	0	0
	Off-Site County Landfill			
	Percentage (%)	100	100	100
	Total Volume for Disposal - Incl. 33% Factor (cy)	0	0	0
	Disposal Cost, Landfill (cy)	\$42.17	\$42.17	\$42.17
	Subtotal County Facility Off-Site Disposal Costs	\$0	\$0	\$0
B. Concrete Floor				
	Area of Concrete Floor (ft ²)	732	452	625
	Average Thickness of Concrete Floor (ft)	0.75	0.75	0.75
	Volume of Concrete Floor (ft ³)	549	339	469
	Volume of Concrete Floor (cy)	20	13	17
1. On-Site Concrete Disposal				
	Percentage (%)	100	100	100
	Volume for Disposal (cy)	20	13	17
	Concrete Disposal On Site (cy)	\$9.12	\$9.12	\$9.12
	Subtotal County Facility Off-Site Disposal Costs	\$185	\$114	\$158
2. NRC-Licensed Facility				
	Percentage (%)	0	0	0
	Volume for Disposal (ft ³)	0	0	0
	Transportation and Disposal Unit Cost (\$/ft ³)	\$5.80	\$5.80	\$5.80
	Subtotal NRC-Licensed Facility Disposal Costs	\$0	\$0	\$0
	Subtotal Concrete Floor Disposal Costs	\$185	\$114	\$158
C. Concrete Footing				
	Length of Concrete Footing (ft)	0	85	100
	Average Depth of Concrete Footing (ft)	4	4	4
	Average Width of Concrete Footing (ft)	1	1	1
	Volume of Concrete Footing (ft ³)	0	340	400
	Volume of Concrete Footing (cy)	0	13	15
	Concrete Disposal On Site (cy)	\$9.12	\$9.12	\$9.12
	Subtotal Concrete Footing Disposal Costs	\$0	\$115	\$135
	Subtotal Disposal Costs per Building	\$185	\$229	\$293
Total Disposal Costs				
IV. Health and Safety Costs	Accounted for on GW REST			
TOTAL BUILDING & OTHER MISCELLANEOUS DEMOLITION AND DISPOSAL COSTS				

**Cameco Resources
North Butte Project
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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			\$7,021
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			\$7,021
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			\$27,011
	Total Access Road Reclamation Costs			\$27,011
II. Settling Basin/Storage Ponds Reclamation				Storage Ponds
A.	Soil Sampling and Monitoring			
	Number of Soil Samples			30
	\$/Sample			\$255
	Subtotal Soil Sampling and Monitoring Costs			\$7,650
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

**Cameco Resources
North Butte Project
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Miscellaneous Reclamation				
			Volume of Geotextile Liner (cy)	10
			Liner and Sludge Removal and Loading Unit Cost (\$/cy)	\$5.12
			Length of Piping (ft)	400
			Wellfield Piping Removal Unit Cost (\$/ft of pipe)	\$1.86
			Subtotal Removal and Loading Costs	\$14,326
	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	\$433,916
	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	\$0.43
			Subtotal Fence Removal Costs	\$644
			Total Settling Basin/Ponds Reclamation Costs	\$494,877
			TOTAL MISCELLANEOUS RECLAMATION COSTS	\$521,888

**Cameco Resources
North Butte Project
2014-15 Surety Estimate**

	Mine Unit 1	Mine Unit 2	Mine Unit 3	Mine Unit 4	Mine Unit 5
Pore Volume Calculations					
Flare Factor	1.5	1.5	0.0	0.0	0.0
Wellfield Area (ft2)	1,453,671	1,383,106	0	0	0
Wellfield Area (acres)	33.37	31.75	0.00	0.00	0.00
Affected Ore Zone Area (ft2)	1,453,671	1,383,106	0	0	0
Avg. Completed Thickness	25	25	0	0	0
Porosity	0.27	0.27	0.27	0.27	0.27
Affected Volume (ft3)	54,512,663	51,866,475	0	0	0
Kgallons per Pore Volume	110,094	104,750	0	0	0
Patterns	187	140			
Restoration Schedule (Based on Annual Water Balance/Schedule Update)					
Pre-Restoration Period (yrs)	0.00	2.00	0.00	0.00	0.00
Restoration Period (yrs)	3.00	3.00	0.00	0.00	0.00
Stability Period (yrs)	1.00	1.00	0.00	0.00	0.00
Total # of Years	4	6	0	0	0
End of Restoration (yrs)	5				
End of Stability (yrs)	6				
Number of Header Houses per Wellfield					
Current	10	0	0	0	0
Planned	0	9	0	0	0
Total Estimated	10	9	0	0	0
Average Header House Volume (ft3)	1600	1600	0	0	0
Number of Wells (In Service) per Wellfield					
Production Wells (P)					
Current	193	42	0	0	0
Planned	0	143	0	0	0
Total Estimated	193	185	0	0	0
MP-Wells (included under P-Wells)	16	18			
Injection Wells (I)					
Current	303	56	0	0	0
Planned	0	240	0	0	0
Total Estimated	303	296	0	0	0
Restoration Wells (R)					
Current	0	0	0	0	0
Planned	0	0	0	0	0
Total Estimated	0	0	0	0	0
Monitor Wells (M, MO, MU, MT)					
Current	42	49	0	0	0
Planned	0	0	0	0	0
Total Estimated	42	49	0	0	0
M-Wells	28	24			
MO-Wells	10	7			
MU-Wells	0	0			
MT-Wells	4	0			
Other Wells (Pumping Wells, etc.)					
Current	1	1	0	0	0
Planned	0	0	0	0	0
Total Estimated	1	1	0	0	0
Number of Wells per Wellfield	539	531	0	0	0
Total Number of In Service Wells	1070				
Well Completion Details					
Average Well Depth (ft)	680	750			
Average Diameter of Casing (inches)	5	5	5	5	5
Wellfield Fencing					
Length of Fencing (ft)	9,800	5400	0	0	0

**Cameco Resources
North Butte Project
2014-15 Surety Estimate**

Labor Costs		Rate (\$)	Net Benefits*	Units	Source
Environmental Manager/RSO		\$46.00	\$64.40	hour	MSEC**
Restoration Manager		\$40.00	\$56.00	hour	MSEC
Environmental Tech/HPT		\$25.00	\$35.00	hour	MSEC
Operator/Laborer		\$26.00	\$36.40	hour	MSEC
Maintenance Tech		\$23.00	\$32.20	hour	MSEC
*Includes additional 40% net benefits based on InfoMine USA cost data for Surface Metal and Industrial Mineral Mines - Western U.S. (Table 5)					
**Mountain States Employers Council. 2012 Survey. Mining Industry Compensation & Benefits					
Utility Costs		Rate (\$)	Profit & Overhead	Units	Source
Electrical Costs		\$0.0597	included	kWhr	Actual Costs-2013
Kilowatt to Horsepower		0.746	included	Kw/HP	N/A
Efficiency - Downhole Pumps		80%	included	Percent	N/A
Efficiency - Surface Pumps		90%	included	Percent	N/A
Propane - Satellite		\$37.163	included	year	Actual Costs-2013
Chemical & Material Costs		Rate (\$)	Profit & Overhead	Units	Source
Antiscalant for RO (Hypersperse)		\$3.9050	included	pound	Actual Costs (SRH)-2013
Antiscalant for RO (ScaleTrol)		\$4.5177	included	pound	Actual Costs (SRH)-2013
Sodium Tripolyphosphate		\$1.0893	included	pound	Actual Costs (SRH)-2013
EDTA Tetrasodium Dihydrate		\$1.8774	included	pound	Actual Costs (SRH)-2013
Sodium Sulfide		\$0.5520	included	pound	Quote-2013
Hydrochloric Acid		\$0.1992	included	pound	Actual Costs (SRH)-2013
Barium Chloride		\$0.7970	included	pound	Actual Costs (SRH)-2013
Analytical Costs		Rate (\$)	Profit & Overhead	Units	Source*
Guideline 4 (former Guideline 8) Parameters		\$353.00	included	analysis	Actual Costs-2013
Excursion Parameters (UCL)		\$30.00	included	analysis	Fee Schedule-2013
Restoration Progress Parameters (UCL + U + Se)		\$50.00	included	analysis	Fee Schedule-2013
Soil Sampling/Monitoring		\$315.00	included	analysis	Actual Costs-2013
Other (Radon, Bioassay, etc.)		\$1,000.00	\$1,100.00	month	Cost Estimate
*All quotes, fee schedules and actual costs based on Energy Laboratories, Inc., Casper, WY					
Equipment Costs		Rate (\$)	Profit & Overhead*	Units	Source
Bandit 1290XP Trailer Mounted Brush Chipper		\$47.93	\$52.72	hour	Equipment Watch**
Bobcat S250 Skid Steer Loader		\$36.57	\$40.23	hour	Equipment Watch
Cat 320C L Trackhoe - 1.25 cu yd bucket		\$100.03	\$110.03	hour	Equipment Watch
Cat 416E Backhoe		\$34.97	\$38.47	hour	Equipment Watch
Cat 924H Loader - 2.4 cu yd bucket		\$52.93	\$58.22	hour	Equipment Watch
Concrete Jaws Labounty - CP-60		\$18.51	\$20.36	hour	Equipment Watch
GEHL DL-8 Rough Terrain Lift Truck		\$56.44	\$62.08	hour	Equipment Watch
Manlift (JLG 600S)		\$47.54	\$52.29	hour	Equipment Watch
MIT Unit		\$30.09	\$33.10	hour	Equipment Watch
Pick-up Truck 3/4 ton 4X4		\$20.13	\$22.14	hour	Equipment Watch
Pulling Unit***		\$35.32	\$38.85	hour	Equipment Watch
*Includes additional 10% Profit & Overhead per WDEQ/LQD Guideline No. 12, Section 12(b)					
**Equipment Watch Rental Rate Blue Book; Volume 1 (1st Half 2013)					
***1 3/4 Ton 4x4 Truck with Hoist					
Quoted Costs		Rate (\$)	Profit & Overhead	Units	Source
Deep Disposal Well - Plug & Abandonment Costs		\$13.62	included	foot	UIC Permit-2012
DDW MIT		\$31,625	included	well	Quote-2013
WDEQ/LQD Guideline No. 12 Costs	Appendix	Rate (\$)	Profit & Overhead*	Units	Source
Moving Materials: One-Way Distance 500 feet, 0% grade	Appendix C	\$1,099	\$1,209	bcy	Guideline-10/2013
Moving Materials: One-Way Distance 1,000 feet, 0% grade	Appendix C	\$1,313	\$1,444	bcy	Guideline-10/2013
Moving Materials: One-Way Distance 2,000 feet, 0% grade	Appendix C	\$1,701	\$1,871	bcy	Guideline-10/2013
Moving Materials: One-Way Distance 150 feet, 0% grade	Appendix E	\$0.351	\$0.386	lcy	Guideline-10/2013
Grading Operating Costs	Appendix G	\$77.31	\$85.04	acre	Guideline-10/2013
Fencing Removal	Appendix H	\$0.39	\$0.43	foot	Guideline-10/2013
Ripping Operating Costs (Asphalt)	Appendix I	\$881.17	\$969.29	acre	Guideline-10/2013
Ripping Operating Costs (Overburden)	Appendix II	\$1,255.70	\$1,381.27	acre	Guideline-10/2013
Building Demolition - Mixture of Types	Appendix K	\$0.287	\$0.316	ft3	Guideline-10/2013
Building Demo Disposal (Average)	Appendix K	\$9.62	\$10.58	cy	Guideline-10/2013
Concrete (Floor) Demolition - 6" Thick with Rebar	Appendix K	\$5.48	\$6.03	ft2	Guideline-10/2013
Concrete (Footing) Demolition - 2' Thick, 3' Wide	Appendix K	\$20.21	\$22.23	linear foot	Guideline-10/2013
Concrete Disposal On-Site	Appendix K	\$8.29	\$9.12	cy	Guideline-10/2013
Drill Hole Abandonment: Wet Exploration Holes >25 holes	Appendix L	\$3.00	\$3.30	foot	Guideline-10/2013
Well Abandonment: Monitor, Production, and Injection Wells	Appendix L	\$2.50	\$2.75	foot	Guideline-10/2013
Scattered Wells >25	Appendix L	\$3.00	\$3.30	foot	Guideline-10/2013
Mobilization	Appendix L	\$1,000.00	\$1,100.00	location	Guideline-10/2013
Incidental Costs: Small Site Grading and Seeding (<1000 sq. feet)	Appendix L	\$50	\$55	site	Guideline-10/2013
Incidental Costs: Capping	Appendix L	\$10	\$11	each	Guideline-10/2013
Incidental Costs: Site Location	Appendix L	\$10	\$11	site	Guideline-10/2013
Incidental Costs: Remove Pump, Wiring, and Drop Pipe	Appendix L	\$0.40	\$0.44	foot	Guideline-10/2013

**Cameco Resources
North Butte Project
2014-15 Surety Estimate**

Incidental Costs: Remove and Dispose Casing (top few feet)	Appendix L	\$30.00	\$33.00	well	Guideline-10/2013	
Incidental Costs: Monitoring Well Concrete Pedestal Disposal	Appendix L	\$100.00	\$110.00	each	Guideline-10/2013	
Scarification Costs	Appendix P	\$70.91	\$78.00	acre	Guideline-10/2013	
Revegetation Costs-Seed	Appendix Q	\$106.00	\$116.60	acre	Actual Costs-2013	
Revegetation Costs-Mulch	Appendix Q	\$91.88	\$101.07	acre	Actual Costs-2013	
Revegetation Costs-Fertilizer	Appendix Q	\$300.00	\$330.00	acre	Actual Costs-2013	
Revegetation Costs-Total	Appendix Q	\$497.88	\$547.67	acre	Actual Costs-2013	
*Includes additional 10% Profit & Overhead per WDEQ/LQD Guideline No. 12, Section 12(b)						
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
*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.						
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
*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.						

**Cameco Resources
North Butte Project
2014-15 Surety Estimate**

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	\$0.0597	kWhr	
Efficiency	80%		
Wellfield Pumping Cost	\$0.19	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	\$0.0597	kWhr	
Efficiency	90%		
Satellite Pumping Cost	\$0.66	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	\$0.0597	kWhr	
Efficiency	90%		
Reagent			
Antiscalant Cost (Scaletrol)	\$4.5177	per lb	
Density of Water	8.34	lbs/gal	
Specific Gravity (Scaletrol)	1.284		
Antiscalant Cost (Scaletrol)	\$48.38	per gal	
Antiscalant Dose (ScaleTrol)	0.0000048	gal/gal	
Deep Disposal Well Cost	\$1.06	per kgal	
Total Groundwater Sweep Costs	\$1.90	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	\$0.0597	kWhr	
Efficiency	90%		
Reagents			
Tripolyphosphate Usage Rate	0.00000130	lb/gal	
Tripolyphosphate Cost	\$1.0893	per lb	
EDTA Usage Rate	0.00000315	lb/gal	
EDTA Cost	\$1.8774	per lb	
Antiscalant Cost (Hypersperse)	\$3.9050	per lb	
Density of Water	8.34	lbs/gal	
Specific Gravity (Hypersperse)	1.124		

**Cameco Resources
North Butte Project
2014-15 Surety Estimate**

	Antiscalant Cost (Hypersperse)	\$36.6061	per gal			
	Antiscalant Dose (Hypersperse)	0.0000036	gal/gal			
	Sodium Sulfide Usage Rate	0.00017	lb/gal			
	Sodium Sulfide Cost	\$0.5520	per lb			
	RO Cost (without Reductant)	\$0.58	per kgal			
	RO Cost (with Reductant)	\$0.67	per kgal			
MIT Costs for Production Wells						
Equipment						
	Pulling Unit Hours	4	hrs/day			
	Pulling Unit Cost	\$38.85	\$/hour			
	MIT Unit Hours	8	hrs/day			
	MIT Unit Cost	\$33.10	\$/hour			
Labor						
	Required Hours	8	hrs/day			
	Required Laborers	1.5	per day			
	Labor Cost	\$32.20	\$/hour			
	Productivity	4	wells/day			
	MIT Cost for Production Wells	\$201.65	per well			
MIT Costs for Injection Wells						
Equipment						
	Pulling Unit Hours	0	hrs/day			
	Pulling Unit Cost	\$38.85	\$/hour			
	MIT Unit Hours	8	hrs/day			
	MIT Unit Cost	\$33.10	\$/hour			
Labor						
	Required Hours	8	hrs/day			
	Required Laborers	1	per day			
	Labor Cost	\$32.20	\$/hour			
	Productivity	4	wells/day			
	MIT Cost for Injection Wells	\$130.60	per well			
WELL ABANDONMENT UNIT COSTS						
Removal of Contaminated Soil Around Wells						
Equipment						
	Cat 416 Backhoe Time	0.25	hours			
	Cat 416 Backhoe Cost	\$38.47	per hour			
Labor						
	Radiation Technician	0.25	hours			
	Radiation Technician Cost	\$35.00	per hour			
	Operator	0.25	hours			
	Operator Cost	\$36.40	per hour			
Disposal						
	ByProduct Disposal	0.37	cubic yard			
	Disposal Cost (incl. Transport)	\$156.73	per cubic yard			
	Removal of Contaminated Soil Cost	\$85.46	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			

**Cameco Resources
North Butte Project
2014-15 Surety Estimate**

	Laborers Cost	\$32.20			
	Disposal				
	Volume of DDW Pump	240	ft ³		
	ByProduct Disposal	\$7.32	per ft ³		
	DDW Pump Dismanteling and Disposal	\$2,788.03	per pump		
	WELLFIELD RECLAMATION COSTS				
	Wellfield Piping Removal				
	Equipment				
	Trackhoe	1	per day		
	Trackhoe Cost	\$110.03	per hour		
	Loader	1	per day		
	Loader Cost	\$58.22	per hour		
	Pickup Truck	1	per day		
	Pickup Cost	\$22.14	per hour		
	Chipper Cost	\$52.72	per hour		
	Labor				
	Backhoe Operator	\$36.40	per hour		
	Loader Operator	\$36.40	per hour		
	Laborer	\$32.20	per hour		
	Hours Per Day	8	per day		
	Productivity	1500	ft/day		
	Piping Removal Cost	\$1.86	per foot of pipe		
	Piping Reduction				
	2" Pipe	0.0107			
	3" Pipe	0.0233			
	4" Pipe	0.0385			
	6" Pipe	0.0834			
	8" Pipe	0.1413			
	10" Pipe	0.2196			
	12" Pipe	0.3088			
	14" Pipe	0.3723			
	16" Pipe	0.4864			
	20" Pipe	0.7200			
	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		
	Trunk Line Removal				
	Equipment				
	Trackhoe	1	per day		
	Trackhoe Cost	\$110.03	per hour		
	Loader	1	per day		
	Loader Cost	\$58.22	per hour		
	Pickup Truck	1	per day		
	Pickup Cost	\$22.14	per hour		
	Chipper Cost	\$52.72	per hour		
	Labor				
	Trackhoe Operator	\$36.40	per hour		
	Loader Operator	\$36.40	per hour		
	Laborer	\$32.20	per hour		
	Hours Per Day	8	per day		
	Productivity	750	ft/day		

**Cameco Resources
North Butte Project
2014-15 Surety Estimate**

	Buried Piping Removal Cost	\$3.71	per foot of pipe			
Removal of Well Head Covers						
	Volume of Well Head Cover (ft ³)	1.86	cubic feet			
	<u>Demolition Cost</u>	\$0.316	per cubic ft			
	Decontamination					
	Acid Usage	4.1	pounds per wellhead cover			
	Acid Cost	\$0.1992	per lbs			
	Labor					
	Radiation Tech	\$35.00	per hour			
	Operator	\$36.40	per hour			
	Productivity	10	wellheads per hour			
	Disposal					
	Void space	10%				
	Transportation and Disposal Cost	\$1.56	per ft ³			
	Removal of Well Head Cover Cost	\$11.74	per well			
Header House Decontamination						
	Decontamination					
	Acid Usage	20	pounds per header house			
	Acid Cost	\$0.20	per pound			
	Labor					
	Radiation Tech	\$35.00	per hour			
	Number of Operators	2	per day			
	Operator	\$36.40	per hour			
	Hours Per Day	8	per day			
	Productivity	1	header house per day			
	Header House Decontamination Cost	\$ 621.38	per header house			
Header House Heating						
	Heater Power Usage	12.5	kW			
	Days Used	180	days per year			
	Electricity Cost	\$0.0597	kWhr			
	Header House Heating Cost	\$3,222	per year			
WELLFIELD AND SATELLITE AND SURFACE RECLAMATION						
Wellfield Road Reclamation						
	Gravel Road Base					
	Average Depth	0.25	feet			
	Average Width	10	feet			
	<u>Material Moved (0% Grade)</u>	\$1.44	bcy			
	Cubic Yard to Cubic Feet Conversion	0.04				
	Scarification of Road					
	Scarification Costs	\$78	per acre			
	Average Width	25	feet			
	Acre to Sq. Foot Conversion	2.29568E-05				
	Grading Cost	\$85	per acre			
	Topsoil Depth	0.67	feet			
	<u>Discing/Seeding Costs</u>	\$548	per acre			
	Linear Feet for Unit Cost	1000	feet			
	Wellfield Road Reclamation Cost	\$1,437.62	per 1000 feet			
EQUIPMENT COSTS						

**Cameco Resources
North Butte Project
2014-15 Surety Estimate**

Tank Removal			
Equipment			
Loader	\$58.22	per hour	
Trackhoe	\$110.03	per hour	
Manlift	\$52.29	per hour	
Pickup	\$22.14	per hour	
Lift Truck	\$62.08	per hour	
Labor			
Number of Operators	4		
Operator Cost	\$36.40	per hour	
Hours Per Day	8	per day	
Productivity	25	ft ³ /day	
Tank Removal Cost	\$144	per ft³	
Pipe Removal			
Equipment			
Manlift	\$52.29	per hour	
Pickup	\$22.14	per hour	
Lift Truck	\$62.08	per hour	
Chipper	\$52.72	per hour	
Labor			
Number of Operators	4		
Operator Cost	\$36.40	per hour	
Hours Per Day	8	per day	
Productivity	300	ft/day	
Pipe Removal Cost (Inside Buildings)	\$8.93	per ft	
Pump Removal			
Equipment			
Truck	\$22.14	per hour	
Skid Steer	\$40.23	per hour	
Labor			
Number of Operators	2		
Operator Cost	\$36.40	per hour	
Hours Per Day	8	per day	
Productivity	10	ft ³ /day	
Pump Removal	\$108.14	per ft³	
RO and Degasser Removal			
Equipment			
Truck	\$22.14	per hour	
Lift Truck	\$62.08	per hour	
Labor			
Number of Operators	2		
Operator Cost	\$36.40	per hour	
Hours Per Day	8	per day	
Productivity	250	ft ³ /day	
RO and Degasser Removal Cost	\$5.02	per ft³	
BUILDING COSTS			
Acid Wash Walls			

**Cameco Resources
North Butte Project
2014-15 Surety Estimate**

Acid			
Acid Usage	0.05	per square foot	
Acid Cost	\$0.20	per pound	
Equipment			
Manlift	\$52.29	per hour	
Labor			
Laborer	2	people	
Laborer Cost	\$32.20	per hour	
Productivity	125	square feet per hour	
Acid Wash Walls Cost	\$0.94	per square foot	
Acid Wash Floors			
Acid			
Acid Usage	0.05	per square foot	
Acid Cost	\$0.20	per pound	
Labor			
Laborer	2	people	
Laborer Cost	\$32.20	per hour	
Productivity	125	square feet per hour	
Acid Wash Floors Cost	\$0.53	per square foot	
Electrical Power			
*Pumping Costs for Operating DDWs, RO, and Wellfield are included in GW Rest Costs (Based on SRH Actual 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	\$0.0597	per kWhr	
Efficiency Factor	90%		
Operating Hours Per Year	8760	hours	
Satellite 2 Power Cost	\$26,221	per year	
DDW - Typical			
Miscellaneous Pumps, Fans, Sumps, etc.	2	HP	
Lighting	0.49	kW	
Heating	12.5	kW	assume operation only 6 mos/yr
kW to HP Conversion Factor	0.746	kW/hp	
Electricity Cost	\$0.0597	per kWhr	
Efficiency Factor	90%		
Operating Hours Per Year	8760	hours	
DDW Electrical Cost	\$4,225	per year	
MISCELLANEOUS RECLAMATION AND RESTORATION COSTS			
Liner and Subsoil Removal Costs			
Equipment			
Trackhoe Cost	\$ 110.03	per hour	
Loader Cost	\$ 58.22	per hour	
Labor			
Operator	36.40	per hour	
Productivity	40	cubic yards/hour	
Total Removal	\$ 5.12	per cubic yard	

North Butte and Brown Ranch Tract 1 Water Balance

16-Jan-14
Assumes 9 Pore Volumes of Treatment (1 P.V. GWS and 8 P.V. RO)
Rev. 5

Year				2	3	4	5	6	7	8	9	10	11	12	13
				2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Production Flows															
Total Production Flow (gpm)				3459	4494	3548	2785	1433	686	300	0	0	0	0	0
Total Production Bleed (gpm)				34.6	44.9	35.5	27.8	14.3	6.9	3	0	0	0	0	0
Misc. GWS				10	10	10	10	10	10	10	10	10	0	0	0
Control Bleed (gpm)				0	0	0	20	20	20	20	20	20	0	0	0
Restoration Flows															
	PV With Flair (Kgal)	GWS PV to Finish	RO PV to Finish												
MU 1 (gal) (RO)	110,094	1	8					425	850	638					
GWS (gal)								75	150	113					
Total Disposal (gal)								75	150	113					
MU 2 (gal) (RO)	104,750	1	8							213	850	638			
GWS (gal)										38	150	113			
Total Disposal (gal)										38	150	113			
Total Restoration Disposal (gpm)				0	0	0	0	75	150	150	150	113	0	0	0
Installed RO Capacity (gpm) (feed)															
	Feed (gpm)	Feed (Future)													
		250													
		250													
		250													
		250													
Total RO Capacity (gpm)		1000													
Deep Disposal Well Capacity (gpm)															
	Permitted	Current	Future												
North Butte 1	75	75		75	75	75	75	75	75	75	75	75	75	75	75
North Butte 2	75		75	0	0	0	75	75	75	75	75	75	75	75	75
North Butte 3			75	0	0	0	0	75	75	75	75	75	75	75	75
North Butte 4			75	0	0	0	0	0	0	0	0	0	0	0	0
Total Available				75	75	75	150	225	225	225	225	225	225	225	225
Total Production Bleed (gpm)				34.6	44.9	35.5	27.8	14.3	6.9	3	0	0	0	0	0
Misc. Process Water				3	3	3	3	3	3	3	3	3	0	0	0
Misc. GWS				10	10	10	10	10	10	10	10	10	0	0	0
Control Bleed (gpm)				0	0	0	20	20	20	20	20	20	0	0	0
Total Restoration Disposal (gpm)				0	0	0	0	75	150.0	150.1	150.0	112.6	0	0	0
Total Disposal Required (gpm)				47.6	57.9	48.5	60.8	122.3	189.9	186.1	183.0	145.6	0	0	0
Total Disposal Balance				27	17	27	89	103	35	39	42	79	225	225	225