

HRI Churchrock Project
Section 17 Wellfield Equipment Tabulation

# H. Houses	# Injectors	# Extractors	# Feet 2"	# Feet 10"	# Feet 14"	Gravel Road
1	21	18	4240	360		
2	21	18	12210	520		
3	19	21	9640	580		
4	23	26	6780	1080		
5	16	30	3150	340		
6	13	18	2750	280		
Totals	113	113	38770	3160	4500	2250

Pipe Wall Volume Data

<u>Outside Diameter (in)</u>	<u>Area Inside OD (ft2)</u>	<u>Wall Volume SDR17 (ft3/ft)</u>
2	0.022	0.012
2.5	0.034	
3	0.049	0.018
3.5	0.067	
4	0.087	
4.5	0.110	
5	0.136	
5.5	0.165	
6	0.196	
6.5	0.230	
7	0.267	
7.5	0.307	
8	0.349	
8.5	0.394	
9	0.442	
9.486	0.491	
9.5	0.492	
10	0.545	0.140
10.5	0.601	
10.75	0.630	
11	0.660	
11.5	0.721	
12	0.785	
12.353	0.832	
12.5	0.852	
13	0.922	
13.5	0.994	
14	1.069	0.237
14.5	1.147	
15	1.227	
15.5	1.310	
Wall Tk		
14 " SDR 17		0.824
10 " SDR 17		0.632

Ground Water Restoration

PV Assumptions - 9 pore volumes required pursuant to license condition 9.5

ZONE	Area (ft2)	Tk (ft)	Vol (ft3)	Por	gal/ft3	PV (gal)	H-PIF	V-PIF	CPV (gal)	9 X CPV
D	123,023	7.5	922,673	0.25	7.48	1,725,398	1.5	1.3	3,364,525	30,280,727
UUPC	22,665	8.5	192,653	0.25	7.48	360,260	1.5	1.3	702,507	6,322,566
UPC	113,140	7.3	825,922	0.25	7.48	1,544,474	1.5	1.3	3,011,725	27,105,521
LPC	50,751	8	406,008	0.25	7.48	759,235	1.5	1.3	1,480,508	13,324,574
UA	36,220	5.6	202,832	0.25	7.48	379,296	1.5	1.3	739,627	6,656,642
LA	161,163	8.2	1,321,537	0.25	7.48	2,471,273	1.5	1.3	4,818,983	43,370,849
UB	160,090	9.1	1,456,819	0.25	7.48	2,724,252	1.5	1.3	5,312,290	47,810,614
LUB	186,430	8.5	1,584,655	0.25	7.48	2,963,305	1.5	1.3	5,778,444	52,006,000
LB	175,981	10.6	1,865,399	0.25	7.48	3,488,295	1.5	1.3	6,802,176	61,219,584
UC	181,120	9.1	1,648,192	0.25	7.48	3,082,119	1.5	1.3	6,010,132	54,091,189
ULC	107,214	6.8	729,055	0.25	7.48	1,363,333	1.5	1.3	2,658,500	23,926,498
LC	169,010	6.5	1,098,565	0.25	7.48	2,054,317	1.5	1.3	4,005,917	36,053,255
UD	142,694	8.6	1,227,168	0.25	7.48	2,294,805	1.5	1.3	4,474,870	40,273,826
MD	75,350	11.2	843,920	0.25	7.48	1,578,130	1.5	1.3	3,077,354	27,696,189
LD	170,394	11.2	1,908,413	0.25	7.48	3,568,732	1.5	1.3	6,959,027	62,631,245
UE	265,391	10.2	2,706,988	0.25	7.48	5,062,068	1.5	1.3	9,871,032	88,839,292
LE	361,312	7.7	2,782,102	0.25	7.48	5,202,531	1.5	1.3	10,144,936	91,304,428
SEC. 17 TOTALS	2,501,948		21,722,900			40,621,823			79,212,556	712,913,000

Area - Area of cut off grade mineralization

Tk - Thickness of cut off grade mineralization

Por - Estimated porosity of the rock

PV - Straight pore volume without any correction

H-PIF - Horizontal pore volume increase factor

V-PIF - Vertical pore volume increase factor

CPV - Corrected pore volume

Number of Wells

Extraction Wells

Header House 1	18
Header House 2	18
Header House 3	21
Header House 4	26
Header House 5	30
Header House 6	18
Total	131

Injection Wells

Header House 1	21
Header House 2	21
Header House 3	19
Header House 4	23
Header House 5	16
Header House 6	13
Total	113

MAIN PIPELINE REMOVAL

Assumptions:

1. Trenching with trackhoe at 1,500 ft/day
2. Pipeline extraction and backfilling with trackhoe at 1500 ft/day
3. Trackhoe rental: \$1600/week
4. Fuel cost: \$9/operating hour
5. Trackhoe operation requires one worker at \$15/hour
6. Pipeline extraction requires 2 workers at \$15/hour (in addition to trackhoe operator)
7. Pipelines removed simultaneously
8. Includes removal of manholes
9. Operating schedule: 8 hours/day, 5 days/week

Main Pipeline Removal Costs per ft of Pipe

Equipment & Fuel

	<u>Weekly</u>	<u>Daily</u>	<u>Hourly</u>	<u>Per Foot</u>
Trackhoe	\$1,200.00	\$240.00	\$30.00	\$0.16
Fuel		\$72.00	\$9.00	\$0.05

Labor

Trackhoe operator	\$120.00	\$15.00	\$0.08
Pipeline extractors (2)	\$240.00	\$30.00	\$0.16

Total Per Foot Cost			\$0.45
----------------------------	--	--	--------

WELLFIELD PIPING REMOVAL

Assumptions:

1. Trenching with backhoe at 1500 ft/day
2. Pipeline extraction and backfilling with backhoe at 1500 ft/day
3. Backhoe rental: \$750/week
4. Fuel cost: \$9/operating hour
5. Backhoe operation requires 1 worker at \$15/hour
6. Pipeline extraction requires 2 workers at \$15/hour (in addition to backhoe operator)
7. Operating schedule: 8 hrs/day, 5 days/week

Wellfield Pipeline Removal Costs per ft of Pipe

Equipment & Fuel

	<u>Weekly</u>	<u>Daily</u>	<u>Hourly</u>	<u>Per Foot</u>
Backhoe	\$550.00	\$110.00	\$13.75	\$0.07
Fuel		\$72.00	\$9.00	\$0.05

Labor

Backhoe operator	\$120.00	\$15.00	\$0.08
Pipeline extractors (2)	\$240.00	\$30.00	\$0.16

Totals		\$67.75	
--------	--	---------	--

Total Per Foot Cost			\$0.36
----------------------------	--	--	---------------

WELLFIELD ROAD RECLAMATION

Assumptions:

1. Gravel road base removed at cost of \$0.60/cy/1000 ft (WDEQ Guideline No. 12, Appendix C)
2. Gravel road base: average depth = 0.5 ft, average width = 15 ft
3. Roads scarified prior to topsoil application at cost of \$30.51/acre (WDEQ Guideline No. 12, Appendix P)
4. Grading of scarified roads prior to topsoil application at cost of \$33.27/acre (WDEQ Guideline No. 12, Appendix G)
5. Topsoil applied at cost of \$0.60/cy/1000 ft (WDEQ Guideline No. 12, Appendix C, surface grade: level ground)
6. Stripped topsoil: average depth = 0.67 ft, average width = 25 ft
7. Discing/seeding cost of \$200/acre

Costs per 1000 ft of road

	<u>Width (ft)</u>	<u>Thick (ft.)</u>	<u>Yd3</u>	<u>\$/Yd3</u>	<u>Total</u>
Road base removal	15	0.5	278	\$0.60	\$166.67
Topsoil application	25	0.67	620	\$0.60	\$372.22

	<u>Width (ft)</u>	<u>Acres</u>	<u>\$/Acres</u>	<u>Total</u>
Scarification	25	0.6	\$30.51	\$17.51
Grading	25	0.6	\$33.27	\$19.09
Disking/seeding	25	0.6	\$200.00	\$114.78

TOTAL WELLFIELD ROAD RECLAMATION	<u>\$690.28</u>
---	------------------------

DISKING/SEEDING

Assumption:

1. Based on actual contractor costs

TOTAL DISKING/SEEDING COSTS PER ACRE = \$200.00

TRANSPORTATION AND DISPOSAL

11.e.2 By-Product Material Transportation Disposal Costs per Ft3

Assumptions:

1. Based on contract costs for transportation to and disposal at the IUC White Mesa Mill near Blanding Utah
2. Transportation assumed a 200 mile trip at \$4.76 per mile, \$952 per trip. Bulk truck capacity 30 yds³. Drum truck capacity 64 yds³.
3. All 11.e.2 disposal fees are based upon actual current contract rates at Texas ISR facilities as itemized in 4 & 5 below
4. Drummed waste. \$2,866 per shipment of 64 drums, 7.35 cu. ft. per drum, \$6.09 per cubic foot.
5. Bulk waste. \$1975.45 per shipment of 30 cu. yds. , \$2.44 per cu. ft.
6. Per truck site unloading (\$135.00) and decontamination (\$150.00) amounts are specified in URI's current disposal site

Type of Waste: Sludge, resin, and other by-product type wastes shipped in drums.

	<u>Unit Shipment</u>			
	<u>Cost</u>	<u>Units/Drum</u>	<u>Drums/Truck</u>	<u>Total \$/ft3</u>
Disposal fee	\$2,866.00	7.35	64	\$6.09
Shipping	\$952.00			\$2.02
Site unloading	\$135.00			\$0.28
Site scanning	\$150.00			\$0.31
Total shipping and disposal				\$8.71

Type of waste: Soil, sand, demolished concrete and other bulk wastes

	<u>Unit Shipment</u>			
	<u>Cost</u>		<u>Ft3/Truck</u>	<u>Total \$/ft3</u>
Disposal fee	\$1,975.45		810	\$2.44
Shipping	\$952.00		810	\$1.18
Site unloading	\$45.00		810	\$0.06
Site scanning	\$150.00		810	\$0.19
Total shipping and disposal				\$3.85

Unrestricted Material Transportation Disposal Costs per ton

Assumptions:

1. Based on public costs disposal at the Waste Management Red Rocks Landfill. 24 \$/ton
2. 1 ton is equal to 1 yd³
2. Transportation assumed a 30 mile trip at \$2.00 per mile. Bulk truck capacity 20 yds³.

	<u>Unit Cost</u>	<u>Total \$/yds3</u>
Disposal fee (ton)	\$24.00	\$24.00
Shipping (truck trip)	\$60.00	\$3.00
Total shipping and disposal (yd3)		\$27.00

	A	B	C	D	E	F	G	H	I	J
1	<div> <div>LABOR SUMMARIES</div> <div>Rev. March 16, 2001</div> </div>									
2										
3										
4										
5										
6						Number	Hourly Rate	Yearly Salary	Annual	Monthly
7										
8	Management and Accounting									
9	Salaried	Operations Manager				1	-	\$120,000	\$120,000	\$10,000
10	Salaried	Environmental Manager				1	-	\$105,000	\$105,000	\$8,750
11	Salaried	Accounting Manager						\$105,000	\$105,000	\$8,750
12	Salaried	Accountant					-	\$65,000	\$65,000	\$5,417
13	Plant Personnel									
14	Salaried	Plant Superintendent					-	\$85,000	\$85,000	\$7,083
15	Salaried	Plant Engineer					-	\$45,000	\$45,000	\$3,750
16	Salaried	Radiation Officer				1	-	\$30,000	\$30,000	\$2,500
17	Salaried	Chemist				1	-	\$46,000	\$46,000	\$3,833
18	Salaried	Plant Foreman					-	\$28,000	\$28,000	\$2,333
19	Salaried	Maintenance Foreman					-	\$28,000	\$28,000	\$2,333
20	Wage	Lab Technicans					\$9.62	-	\$20,010	\$1,667
21	Wage	Secretary					\$9.62	-	\$20,010	\$1,667
22	Wage	Electrician				1	\$14.43	-	\$30,014	\$2,501
23	Wage	Apprentice Electrician					\$12.01	-	\$24,981	\$2,082
24	Wage	Plant Operator				1	\$11.54	-	\$24,003	\$2,000
25	Wage	Assistance Plant Operator					\$11.54	-	\$24,003	\$2,000
26	Wage	Dryer Operator					\$11.54	-	\$24,003	\$2,000
27	Wage	Maintenance					\$11.54	-	\$24,003	\$2,000
28	Wellfield Personnel									
29	Salaried	Wellfield Superintendent					-	\$41,200	\$41,200	\$3,433
30	Salaried	Drilling Engineer					-	\$40,500	\$40,500	\$3,375
31	Salaried	Foreman				1	-	\$28,000	\$28,000	\$2,333
32	Wage	Truck Driver				1	\$11.54	-	\$24,003	\$2,000
33	Wage	Electrician					\$14.43	-	\$30,014	\$2,501
34	Salaried	Data Entry Clerk					-	\$20,000	\$20,000	\$1,667
35	Wage	Secretary						\$20,000	\$20,000	\$1,667
36	Wage	Logger					\$12.01	-	\$24,981	\$2,082
37	Wage	Wellfield Operators				1	\$11.50	-	\$23,920	\$1,993
38	Wage	Assistant Wellfield Operator					\$11.50	-	\$23,920	\$1,993
39	Wage	Balancer					\$11.50	-	\$23,920	\$1,993
40	Wage	Environmental Sampler					\$11.50	-	\$23,920	\$1,993
41	Wage	Pump Hoist Operators				1	\$11.50	-	\$23,920	\$1,993
42	Wage	Backhoe Operator					\$10.49	-	\$21,819	\$1,818
43	Wage	Maintenance					\$11.50	-	\$23,920	\$1,993
44	Wage	Casing Crew					\$11.50	-	\$23,920	\$1,993
45	Engineering & Geologic Personnel									
46	Salaried	Chief Engineer					-	\$66,000	\$66,000	\$5,500
47	Salaried	RESERVOIR ENGINEER					-	\$60,000	\$60,000	\$5,000
48	Salaried	Senior Geologist				1	-	\$58,000	\$58,000	\$4,833
49	Salaried	Geologist					-	\$48,800	\$48,800	\$4,067
50	Salaried	Logging Supervisor					-	\$35,000	\$35,000	\$2,917
51	Wage	Secretary						\$20,000	\$20,000	\$1,667
52	Wage	Surveyor					\$12.02	-	\$25,002	\$2,083
53	Wage	Assistant Surveyor					\$12.02	-	\$25,002	\$2,083
54	Wage	Logger					\$10.49	-	\$21,819	\$1,818

Calculation of BC Solids Produced

Flow (g/min)	580
Flow (l/min)	2,195
Flow (l/d)	3,161,232
Solids (g/l)	4
Solids (g/d)	12,644,928
Solids (g/mo)	384,616,560
Solids (kg/mo)	384,617
Solids (lb/mo)	174,429
Solids (yd ³ /mo)*	87
Solids (ft ³ /mo)	2,355
Unit disposal cost (\$/ft ³)	\$2.78
Monthly disposal cost (\$)	\$6,541

*1 yd³ ~ 1 ton

CHURCHROCK SECTION 17 GROUNDWATER RESTORATION AND DECOMMISSIONING COSTS
COSTS ASSOCIATED WITH RO AND BRINE CONCENTRATION OPERATION AND MAINTENANCE

Rev. August 1, 2001

	Period (Sect. 8 Overlap)	5/6	6/6	7/6	8/6	9/6	10/6	11/6	12/6	1/7	2/7	3/7	4/7
	Period (Stand Alone)	1/2	2/2	3/2	4/2	5/2	6/2	7/2	8/2	9/2	10/2	11/2	12/2
1	Management and Accounting												
2	Operations Manager	1	1	1	1	1	1	1	1	1	1	1	1
3	Environmental Manager	1	1	1	1	1	1	1	1	1	1	1	1
4	Plant Personnel												
5	Radiation Officer	1	1	1	1	1	1	1	1	1	1	1	1
6	Chemist	1	1	1	1	1	1	1	1	1	1	1	1
7	Electrician	1	1	1	1	1	1	1	1	1	1	1	1
8	Plant Operator	1	1	1	1	1	1	1	1	1	1	1	1
9	Wellfield Personnel												
10	Foreman	1	1	1	1	1	1	1	1	1	1	1	1
11	Truck Driver	1	1	1	1	1	1	1	1	1	1	1	1
12	Wellfield Operators	1	1	1	1	1	1	1	1	1	1	1	1
13	Pump Hoist Operators	1	1	1	1	1	1	1	1	1	1	1	1
14	Engineering & Geologic Personnel												
15	Senior Geologist	1	1	1	1	1	1	1	1	1	1	1	1
16													
17	Total Employees												
18		11	11	11	11	11	11	11	11	11	11	11	11
19	Operations Statistics												
20	Reverse Osmosis Treatment												
21	GPM RO Capacity	580	580	580	580	580	580	580	580	580	580	580	580
22	GPM RO Product	464	464	464	464	464	464	464	464	464	464	464	464
23	GPM RO Reject	116	116	116	116	116	116	116	116	116	116	116	116
24	MM Gals. RO Processed - Month	25,891,200	24,220,800	25,891,200	25,056,000	25,891,200	25,056,000	25,891,200	25,891,200	25,056,000	25,891,200	25,056,000	25,891,200
25	MM Gals. RO Permate - Month	20,712,960	19,376,640	20,712,960	20,044,800	20,712,960	20,044,800	20,712,960	20,712,960	20,044,800	20,712,960	20,044,800	20,712,960
26	MM Gals. RO Reject - Month	5,178,240	4,844,160	5,178,240	5,011,200	5,178,240	5,011,200	5,178,240	5,178,240	5,011,200	5,178,240	5,011,200	5,178,240
27	Brine Concentration												
28	GPM BC Capacity	125	125	125	125	125	125	125	125	125	125	125	125
29	GPM Distillate	113.5	113.5	113.5	113.5	113.5	113.5	113.5	113.5	113.5	113.5	113.5	113.5
30	GPM Brine	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
31	MM Gals. BC Capacity - Month	5,580,000	5,220,000	5,580,000	5,400,000	5,580,000	5,400,000	5,580,000	5,580,000	5,400,000	5,580,000	5,400,000	5,580,000
32	MM Gals. Distillate - Month	5,066,640	4,739,760	5,066,640	4,903,200	5,066,640	4,903,200	5,066,640	5,066,640	4,903,200	5,066,640	4,903,200	5,066,640
33	MM Gals. Brine - Month	111,600	104,400	111,600	108,000	111,600	108,000	111,600	111,600	108,000	111,600	108,000	111,600
34	Process Results												
35	Beginning Gallons (9 PV Eq.)	408,547,400	382,767,800	358,651,400	332,871,800	307,923,800	282,144,200	257,196,200	231,416,600	205,637,000	180,689,000	154,909,400	129,961,400
36	Beginning PV	5.16	4.83	4.53	4.20	3.89	3.56	3.25	2.92	2.60	2.28	1.96	1.64
37	Gallons Processes Month	25,779,600	24,116,400	25,779,600	24,948,000	25,779,600	24,948,000	25,779,600	25,779,600	24,948,000	25,779,600	24,948,000	25,779,600
38	PV Processed Month	0.33	0.30	0.33	0.31	0.33	0.31	0.33	0.33	0.31	0.33	0.31	0.33
39	Cumulative Gallons Processed	330,145,200	354,261,600	380,041,200	404,989,200	430,768,800	455,716,800	481,496,400	507,276,000	532,224,000	558,003,600	582,951,600	608,731,200
40	Cumulative PV Processed	4.17	4.47	4.80	5.11	5.44	5.75	6.08	6.40	6.72	7.04	7.36	7.68
41	Remaining Gallons to Process	382,767,800	358,651,400	332,871,800	307,923,800	282,144,200	257,196,200	231,416,600	205,637,000	180,689,000	154,909,400	129,961,400	104,181,800
42	Remaining PV to Process	4.83	4.53	4.20	3.89	3.56	3.25	2.92	2.60	2.28	1.96	1.64	1.32
43	ESTIMATED COST DETAIL												
44													
45	Description	-----GW Restoration Operations-----											
46													
47	Salaries-Direct	\$32,250	\$32,250	\$32,250	\$32,250	\$32,250	\$32,250	\$32,250	\$32,250	\$32,250	\$32,250	\$32,250	\$32,250
48	Wages-Direct	\$10,487	\$10,487	\$10,487	\$10,487	\$10,487	\$10,487	\$10,487	\$10,487	\$10,487	\$10,487	\$10,487	\$10,487
49	Insurance-Workmans Compensation	\$1,368	\$1,368	\$1,368	\$1,368	\$1,368	\$1,368	\$1,368	\$1,368	\$1,368	\$1,368	\$1,368	\$1,368
50	Payroll Taxes	\$2,992	\$2,992	\$2,992	\$2,992	\$2,992	\$2,992	\$2,992	\$2,992	\$2,992	\$2,992	\$2,992	\$2,992
51	Medical Insurance	\$4,274	\$4,274	\$4,274	\$4,274	\$4,274	\$4,274	\$4,274	\$4,274	\$4,274	\$4,274	\$4,274	\$4,274
52	401K Contributions	\$1,068	\$1,068	\$1,068	\$1,068	\$1,068	\$1,068	\$1,068	\$1,068	\$1,068	\$1,068	\$1,068	\$1,068
53	Telephone/Telegraph	\$1,250	\$1,250	\$1,250	\$1,250	\$1,250	\$1,250	\$1,250	\$1,250	\$1,250	\$1,250	\$1,250	\$1,250
54	Postage/Freight	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150
55	Copy Equipment	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300
56	Other Equipment & Rental	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200
57	Office Supplies	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250
58	Office Equipment Maintenance	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50
59	Data Processing	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150
60	Maps	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50
61	Drafting & Printing	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50
62	Transportation - Air & Car	\$850	\$850	\$850	\$850	\$850	\$850	\$850	\$850	\$850	\$850	\$850	\$850
63	Meals & Entertainment	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200
64	Misc. Travel Expense	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300
65	Env-Depreciable Equipment	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100
66	Env-Operational Analyses	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
67	Environmental - Miscellaneous	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200
68	Safety	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250
69	Backhoe Maintenance	\$700	\$700	\$700	\$700	\$700	\$700	\$700	\$700	\$700	\$700	\$700	\$700
70	Misc. Chemicals	\$2,450	\$2,450	\$2,450	\$2,450	\$2,450	\$2,450	\$2,450	\$2,450	\$2,450	\$2,450	\$2,450	\$2,450
71	Utilities - Electric, Wellfield	\$12,053	\$12,053	\$12,053	\$12,053	\$12,053	\$12,053	\$12,053	\$12,053	\$12,053	\$12,053	\$12,053	\$12,053
72	Utilities - Electric, Brine Concentrator	\$32,850	\$32,850	\$32,850	\$32,850	\$32,850	\$32,850	\$32,850	\$32,850	\$32,850	\$32,850	\$32,850	\$32,850
73	Utilities - Electric, Plant and RO	\$5,896	\$5,896	\$5,896	\$5,896	\$5,896	\$5,896	\$5,896	\$5,896	\$5,896	\$5,896	\$5,896	\$5,896
74	Submersible Pumps	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500
75	Submersible Motors	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500
76	Field Piping & Valves	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400
77	Meters	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50
78	Misc. Field	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100
79	Handtools	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100
80	Plant Piping & Valves	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200
81	Plant Brine Conc Inst.	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50
82	Pumps	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500
83	Plant Electrical	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100
84	Filters	\$1,100	\$1,100	\$1,100	\$1,100	\$1,100	\$1,100	\$1,100	\$1,100	\$1,100	\$1,100	\$1,100	\$1,100
85	Evaporation Ponds	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50
86	Roads	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100
87	Gas, Oil, Grease	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150
88	Disposal - B.C. Solids	\$6,541	\$6,541	\$6,541	\$6,541	\$6,541	\$6,541	\$6,541	\$6,541	\$6,541	\$6,541	\$6,541	\$6,541
89	RO Unit	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250
90	Lab Supplies	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100
91	RO Membrane	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000
92	Field Equip. Repairs & Maint.	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150
93	Vehicle Repairs & Maint.	\$550	\$550	\$550	\$550	\$550	\$550	\$550	\$550	\$550	\$550	\$550	\$550
94	Vehicles - Pickups	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500
95	Vehicles - Tractors & Trucks	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,00			

GROUND WATER RESTORATION Sampling

	Units	Sub Total	Total
--	-------	-----------	-------

Assumptions:

Labor from staff

Routine monitoring is covered in the restoration budget

One baseline well sampled per acre of wellfield (28)

One sample taken before restoration starts

Baseline wells sampled once per year during restoration

Stability samples taken every 2 months for six months

I Monitoring and sampling costs

A. Restoration well sampling

Estimated restoration period (years)

4.4

1 Well Sampling prior to restoration start

of wells

28

\$/sample

\$380

\$10,640

2 Restoration progress sampling

of wells

28

\$/sample

\$120

Samples/year

1

\$13,440

B. Stability

Estimated stabilization period (months)

6

of wells

28

Sample freq. mos.

2

\$/sample

\$380

Total

\$31,920

Total monitoring and sampling costs**\$56,000**

1. Cement shrinkage	120%
2. Cement cost per 94 pound sack	\$6.82
3. Cost for Gel per 50 pound sack	12.65
4. Holes Plugged per day	6
5. Engineer/gelogist - per year (assume 20% time for this project)	\$50,000.00
6. Backhoe & operator - per hour	\$37.75
8. Cementer Contractor per well for cementing 800 ft hole	\$450.00
9. Pump Hoist Contractor per well for cementing 800 ft hole	\$375.00
10. Wellfield acreage fully developed	40 ac.
11. Assume Cement Mixture will be 12.5 ppg with 2% gel	
12. SX required for 800 ft (6" csg) of 12.5 ppg cement with 2% Gel (without shrinkage factor)	75.3
13. SX gel required for 75.3 SX Cmt (without shrinkage factor)	2.8
14. SX required for 800 ft (5" csg) of 12.5 ppg cement with 2% Gel (without shrinkage factor)	52.3
15. SX gel required for 52.3 SX Cmt (without shrinkage factor)	1.9
16. One Cubic Yard equals 4.80895 cu bbls.	
17. 1" Sch 40 Tremie pipe cost for circulating in cement to Total Depth (per ft.)	\$0.31

Unit of Measure	IN	# of Wells	FT	FT	Cost	CU YD	CUFT	BBLs	SXS	SXS	w/o shrinkage	with shrinkage	BACKHOE		
ITEM	WELL	QTY	AVERAGE	Tremie Pipe Required for Cementing	Tremie Pipe Required for Cementing	HOLE	HOLE	CEMENT REQ'D (w/shrinkage)	CEMENT REQ'D (wo/shrinkage)	GEL \$/ well (wo/shrinkage)	CEMENT & GEL \$/ well	CEMENT & GE \$/ well	\$/ well Assume 10 hr days	ENG/GEOL \$/ well	tract Cementer \$/Pumping Cer
	DIAMETER		DEPTH			VOLUME	VOLUME								
Injectors	6	113	900	900	\$279.00	6.542	176.6	37.7	84.7	3.2	\$617.59	\$741.10	\$62.92	\$32.05	\$506
Extractors	6	131	900	900	\$279.00	6.542	176.6	37.7	84.7	3.2	\$617.59	\$741.10	\$62.92	\$32.05	\$506
Deep Monitor	5	17	1000	1000	\$310.00	5.048	136.3	29.1	94.1	3.5	\$686.21	\$823.45	\$62.92	\$32.05	\$563
Brushy Monitor	5	7	800	800	\$248.00	4.038	109.0	23.3	75.3	2.8	\$548.97	\$658.76	\$62.92	\$32.05	\$450
Dakota Monitor	5	4	700	700	\$217.00	3.533	95.4	20.4	65.9	2.5	\$480.35	\$576.41	\$62.92	\$32.05	\$394
Recapture Monitor	5	4	1100	1100	\$341.00	5.552	149.9	32.0	103.5	3.9	\$754.83	\$905.79	\$62.92	\$32.05	\$619
Section 17 Total															

III. Buried Trunkline

Length of trunkline trench (ft)	2250	
A. Removal and Loading		
Main pipeline removal unit cost (\$/ft of trench)	\$0.45	
Subtotal trunkline removal and loading costs	\$1,013	
B. Pipe cutting		
Number of operators	2	
Operator hourly rate	\$15	
Feet pipe per hour	100	
Subtotal cutting cost	\$675	
C. Transport and disposal costs (NRC-licensed facility)		
1 10" HDPE trunkline		
Piping length (ft)	1580	
Inj and ext length	3160	
Cut volume (ft ³ /ft)	0.14	
Cut volume (ft ³)	442	
2 14" HDPE trunkline		
Piping length (ft)	2250	
Inj and ext length	4500	
Cut volume (ft ³ /ft)	0.24	
Cut volume (ft ³)	1067	
Total trunkline chipped volume (ft ³)	1509	
Volume for disposal assuming 50% void space (ft ³)	2263	
Transportation and disposal unit cost (\$/ft ³)	\$3.85	
Subtotal trunkline transport and disposal costs	\$8,714	
Trunkline decommissioning costs		\$10,401

IV. Well Houses

Total quantity	40	
Average well house volume (ft ³)	12.5	
A. Removal		
Total volume (ft ³)	500	
Demolition unit cost per WDEQ Guideline No. 12 (\$/ft ³)	\$0.15	
Subtotal well house demolition costs	\$76	
B. Survey and decontamination		
Assumptions:		
Cost per well house	\$5	
Subtotal Survey and decontamination costs	\$200	
C. Disposal		
Total volume (yd ³)	19	
Volume for disposal assuming 10% void space (cy)	20	
Unrestricted disposal cost of 26.7 \$/yd ³	\$27.00	
Subtotal unrestricted disposal costs	\$530	
Well house removal and disposal per wellfield		\$806

Wellfield Surface Reclamation

	<u>Description</u>	<u>Unit</u>	<u>Total</u>
I.	Wellfield Area Reclamation		
	Wellfields area (acres)	28	
	Disking/seeding unit cost (\$/acre)	\$200	
	Subtotal reclamation costs for wellfield		\$5,600
II.	Wellfield Road Reclamation		
	Length of wellfield roads (1000 ft)	2.25	
	Wellfield road reclamation unit cost (\$/1000 ft)	\$690	
	Subtotal wellfield road reclamation costs		\$1,553
TOTAL WELLFIELD AND SATELLITE SURFACE RECLAMATION COSTS			\$7,153

HRI CROWNPOINT URANIUM PROJECT
Financial Assurance Plan for Churchrock Section 17
Summary

Category	Project Total	Contingency/ Profit 15%	Contingency/ Profit 25%
Groundwater Restoration	\$4,089,818	\$613,473	
Groundwater Stability Analysis	\$56,000	\$8,400	
Well Plugging	\$566,087	\$84,913	
Wellfield D & D	\$60,389		\$15,097
Surface Reclamation	\$7,153		\$1,788
Totals	\$4,779,446	\$706,786	\$16,885
Contingency/Profit			\$723,671
Total Surety Proposed			\$5,503,117

ABBREVIATIONS/ACRONYMS

\$	Dollars
\$/Kgal	Dollars per 1000 gallons
avg	average
BBLS	42 Gallon Barrel
ft	feet
ft ²	square feet
ft ³ /CU FT	cubic feet
gal	gallons
gpm	gallons per minute
H&S	Health and Safety
H ₂ S	Hydrogen Sulfide
H ₂ SO ₄	Sulfuric Acid
HCl	Hydrochloric Acid
Hp	Horsepower
Kgal	1000 gallons
Kwh	Kilowatt-hours
HaOH	Caustic Soda
OD	Outside Diameter
PPE	personal protective equipment
PV	Pore Volume
reqm't	requirement
RO	Reverse Osmosis
SXS	sacks (94 lbs. cement, 50 lbs. gel)
WDEQ	Wyoming Department of Environmental Quality
WDW	Waste Disposal Well