



The State  
of Wyoming



## Department of Environmental Quality

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April 3, 2003

Mrs. Donna Wichers  
COGEMA Mining, Inc.  
P. O. Box 730  
Mills, WY 82644

**RE: Irigaray-Christensen Operations, Permit No. 478, Review of 2002 Annual Report**

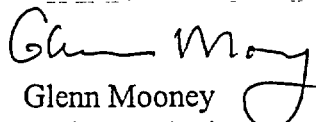
Dear Mrs. Wichers:

I have reviewed the 2002 Annual Report on the Irigaray and Christensen Ranch Operations as well as the reclamation bond calculations submitted with the Annual Report.

In the attached memo, I find the reclamation bond could be reduced to a total of \$13,539,000. A recommendation for reduction of the bond to this amount will be made to the Director.

Please feel free to call me if you have any questions.

Sincerely,

  
Glenn Mooney  
Senior Geologist

\gm

Attachments

cc: Cheyenne File w/attach.  
NRC-MD w/attach. ✓

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NMSSO1

4/3/03  
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## MEMORANDUM

**TO:** File, COGEMA Mining Co's. Irigaray-Christensen Ranch In Situ Uranium Operations, Permit No. 478

**FROM:** Glenn Mooney *GM*

**DATE:** April 3, 2003

**SUBJECT:** Review of 2002 Annual Report and 2003 Semiannual Report

### Introduction

A review was conducted of the Annual Report, covering the period July 1, 2001, to June 30, 2002, and received August 16, 2002. The Semiannual Monitoring Report covers the period July 1, 2002, through December 31, 2002, and was received by the District III Office on February 28, 2003.

Restoration work at COGEMA's operations consist of the following phases:

1. Groundwater sweep

The procedure removes the affected groundwater within the well field and replaces it with native groundwater from outside the mining zone. The affected water pumped from the well field is treated with reverse osmosis (RO) where the cleaned portion (permeate) is surface-discharged and the reject portion is disposed in evaporation ponds or deep well injection.

2. Reverse osmosis with permeate injection

Water from the well field is processed by a RO unit with the cleaned permeate reinjected into the well field and the reject portion disposed in evaporation ponds or deep well injection.

The use of chemical reductants is authorized by the restoration plan during this phase, but to date, their use has not been required.

3. Groundwater recirculation

Water from the well field is pumped from the recovery wells and reinjected into the mining zone aquifer through the injection wells. No treatment of the water is normally done. The effect is to insure the complete mixing of cleaned and partially cleaned groundwater. Up to one pore volume is involved in this procedure.

*4/8/03  
RSM*

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4. Stabilization monitoring

This is a nine-month-long period where the baseline wells are sampled for a full suite of chemical and radiological parameters at the beginning, at three-month intervals during and again at the end of the period for a total of four samples. This procedure is intended to demonstrate that the restoration effort has been complete and that the aquifer and ore zone have reached equilibrium.

**Chronology**

The following production and restoration milestones and other occurrences happened during the past report year.

August 15, 2001	Irigaray Unit 2 Monitor Well M2 goes into excursion again
August 21, 2001	Christensen Ranch Unit 5 Monitor Well 5MW66 goes into excursion
September 2001	Oxygen scavenging unit installed at Christensen Ranch
October 2001	RO filtration and permeate injection phase completed in Irigaray Unit 6 NPDES discharge ended at Irigaray RO permeate injection begun in final module of Christensen Unit 3
October 11, 2001	Excursion ends in Irigaray Unit 2 Monitor Well M2
November 2001	Well field recirculation completed in Irigaray Unit Wellfield 6 Groundwater restoration completed at Irigaray
November 30, 2001	Excursion ends in Irigaray Unit 5 Monitor Well RS27
December 2001	Irigaray staff reassigned to Christensen
January 15, 2002	Excursion ends in Christensen Unit 5 Monitor Well 5MW66
March 2002	RO phase completed in Christensen Unit 2; 10.8 pore volume displacements processed

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April 2002	RO permeate phase begins in Christensen Unit 4
May 2002	Groundwater stabilization monitoring completed in Irigaray Unit 7
June 6, 2002	Restoration confirmation samples from Irigaray Unit 7 split with DEQ/LQD
August 2002	Groundwater stabilization monitoring completed in Irigaray Unit 6  RO permeate injection suspended in Christensen Unit 3; 15.5 pore volume displacements processed
August 13, 2002	Restoration confirmation samples from Irigaray Unit 6 split with DEQ/LQD
November 2002	RO permeate injection suspended in Christensen Unit 4
November 22, 2002	Monitor Well 5MW54 in Christensen Ranch Unit 5 goes into excursion
December 2002	Recirculation of groundwater with added H <sub>2</sub> S begins in Christensen Unit 4
December 17, 2002	Monitor Well 5MW8 in Christensen Ranch Unit 5 goes into excursion

### **Excursions**

A number of monitor wells at both the Irigaray and Christensen Ranch operations are or have been on excursion status.

Excursion status in a monitor well at both Irigaray and Christensen Ranch is determined when two or more of the three excursion parameters, conductivity, chloride and total alkalinity, are found during biweekly sampling to be at or above a predetermined level known as the Upper Control Limit or UCL.

COGEMA files a monthly report listing those wells that have been in excursion status during the previous month.

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**Irigaray**

The following monitor wells at Irigaray have remained on excursion status the entire report period: SSM3, SSM18, SSM40, SSM41, SSM42 SSM43 and DM10. In addition, M-2 went on excursion status from August 15, 2001 to October 11, 2001.

With one exception, the wells on long-term excursion at Irigaray are completed into a shallow sand located above the ore zone aquifer. Most have been on excursion status for a number of years.

The following Irigaray wells on long-term excursion status are as follows:

SSM3	This Mine Unit 2 well has been on excursion since August 30, 1999.
SSM18	This Mine Unit 8 well has been on excursion since September 13, 1996.
SSM40	This Mine Unit 8 well has been on excursion since August 16, 1996.
SSM41	This Mine Unit 4 well has been on excursion since Nov. 19, 1998.
SSM42	This Mine Unit 3 well has been on excursion since October 20, 1990.
SSM43	This Mine Unit 1 well has been on excursion since October 11, 1989.
DM10	This is a deep monitor zone well, having been completed in the nearest aquifer below the ore zone. This Mine Unit 6 well has been on excursion since February 2, 1994.

**Christensen Ranch**

Monitor well 5MW54 in Christensen Mine Unit 5 has been on excursion status since November 22, 2002. Monitor well 5MW8, also in Christensen Mine Unit 5, has been on excursion status since December 17, 2002.

**Monitoring Data**

The report documents contain a large amount of monitoring data. Information from the monitoring of 327 monitor and trend wells is presented for a one-year period, January through December 2003. Data from the other six months is presented in the Semiannual Report submitted in late February. Samples are taken monthly from monitor wells not in excursion status. For those wells in excursion status, samples are taken weekly. For monitor wells located in or adjacent to restored well fields, samples are only taken quarterly. Samples taken are analyzed for the excursion parameters: chloride, specific conductance and total alkalinity, along with pH. The potentiometric elevations of the water in the wells are also measured just prior to sampling. Uranium levels are measured for those wells in excursion status.

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The results of testing regional surface water and water wells for radiometric parameters are presented on Table 2 of both reports. This information is required by the Nuclear Regulatory Commission (NRC).

**Mechanical Integrity Testing**

Results of mechanical integrity testing (MIT) for the period are presented in Appendix 4 of the Annual Report. Sixteen (16) wells, in Christensen Units 2 and 5, were tested with six (6) failed casings found.

**Surface Disturbances**

There was no additional land disturbed during the report period.

Some reclamation work has been carried out in the 5I7 site area where the evaporation ponds have been removed and the wells abandoned.

Attached as Figure 1 to the Reclamation Bond calculations, a schedule of restoration and reclamation tasks shows that Facilities Reclamation of the Irigaray Plant, Ponds and Road is to begin as early as January 2003. Plugging and abandonment of the Irigaray well field wells is shown on this figure to begin as early as June 2003.

No application for bond release of costs associated with restoration of the Irigaray well fields has been received as of early March 2003.

**Bond**

A detailed bond estimate was included with the Annual Report. Some aspects of the bond estimate are:

1. The estimate does not include any costs for groundwater restoration of Christensen Ranch Units 7 and 8 as injection never occurred in either of these well fields. The estimate does show that a total of 391 wells were drilled in Unit 7 and the cost for abandonment of these wells was included. Costs for revegetation of disturbances in both these units were also included.
2. Unlike previous estimates, this one assumes credit for most well field restoration work already carried out, such as Irigaray Units 1 through nine or Christensen Ranch Units 2 and three.

Credit has been taken for groundwater sweep in all Irigaray well field units and Units 2, 3, 4, and 5 at Christensen Ranch.

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3. COGEMA has revised the groundwater restoration costs in several areas by updating the estimate based on the actual methods and processes now in use. Some of the changes include the elimination of costs for barium chloride, hydrogen sulfide, hydrochloric acid, sulfuric acid, and addition of costs for antiscalent, sodium sulfate and elution.
4. COGEMA continues to include the \$400,000 I added, beginning in 1998, for cleanup of the monitor wells in long-term excursion status at Irigaray. This amounts to \$300,000 for the six shallow sand monitor wells plus \$100,000 for the deep monitor well for an additional bond cost of \$400,000.
5. The estimate shows a cost of \$12.00 per cubic yard for disposal of demolition debris at the Edgerton/Midwest landfill. This cost was confirmed with a telephone call to the Town of Midwest which operates this landfill.
6. The estimate continues to show disposal of radiologically contaminated material at Pathfinder's NRC-licensed Shirley Basin mill tailings pond at a cost of \$11.00 per cubic foot.
7. The estimate continues to show a cost for disposal of radiologically contaminated concrete and soil at Pathfinder's NRC-licensed Shirley Basin mill tailings pond at \$3.70 per cubic foot.
8. The estimate includes \$200,000 to cover plugging of the two deep disposal wells.
9. COGEMA set the amount of contingencies totaling 34.5%, an increase over the 21.5% contingency used over the past several years. The increase comes with increase of Project Management Costs from 3% to 5% and Unknowns, or Contingency as it is termed in this year's COGEMA estimate, from 4% to 15%.
10. Review of this estimate was made much more difficult because there was no list of assumptions around which the estimate was constructed. The sources of as many costs as possible should be given. For instance, it is believed that the costs for much of the surface reclamation are based on Land Quality Division Guideline 12 costs, but there was no mention of the sources of any costs. For the next report, a list of assumptions upon which the bond costs are based is requested.

**Review of Bond Estimate**

Attached are printouts of spreadsheets based on revisions and updating of an earlier bond estimate received from COGEMA. Values in red are those that differ from values in

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COGEMA's 2002 estimate. Other values may differ slightly, probably from differences in rounding. A computer diskette containing these spreadsheets is also included.

**Worksheet No. 1, Groundwater Restoration**

1. In Section 1.A, Groundwater Sweep, on Page 1, the cost assumptions for power have been changed back to 1.00 kilowatt/hour per horsepower (Kwh/Hp) as was the case a couple of years ago and is still the case for the Irigaray Mine calculations. The estimate used was 0.75 which is very near the theoretical efficiency of 0.746 Kwh/Hp. Review of the literature has found that downhole pumps are far less efficient.
2. In Section 1A on Page 1 the barium chloride for Christensen Ranch Unit 6 was changed from \$0.00 to \$0.041 per kgal to reflect the cost used for the other Christensen Ranch well fields.
3. In Section 1.B. on Page 2 the costs for the Wellfield Groundwater Sweep have been changed to increase the number of pumps from 5 to 10 for Christensen Ranch Units 2 through six. Given an average flow per pump of 20 g.p.m., 10 pumps are needed to accomplish a total flow of 200 g.p.m., not the 5 pumps listed in the original estimate. The Kwh/Hp has been increased to 1.0 here also for the same well fields.
4. In Section 1.B, Reverse Osmosis, on Page 3, the Kwh/Hp has been increased to 1.0 here also for Christensen well fields 2 through 6.
5. In Section III, Waste Disposal Well, the Kwh/Hp has been increased to 0.90. Review of the literature has found that the very large electric motors driving the injection pumps are capable of 90% efficiency, unlike the much smaller downhole pump motors.
6. On Page 4 the total cost for groundwater restoration has increased to \$5,499,554.00 up from \$4,842,891.00 as a result of the above changes.

**Worksheet No. 2, Plant Equipment and Disposal**

1. This spreadsheet contains a number of minor differences from COGEMA's numbers, believed to be mostly from rounding differences. The total amount has increased from \$212,109.00 to \$213,414.00.

**Worksheet No. 3, Building and Foundation Demolition, Disposal and Soil Cleanup**

1. Here again, apparent rounding differences have resulted in a total of \$587,618.00, nearly the same as COGEMA's cost of \$587,632.00.



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**Worksheet No. 4, Pond Reclamation Cost**

1. No changes were found necessary for this spreadsheet. However, because of apparent differences in rounding, some subtotals are different and the total is different, \$1,258,180.00, down from COGEMA's total of \$1,259,496.00.

**Worksheet No. 5, Well Plugging and Abandonment**

1. The total here is identical to COGEMA's total of \$760,261.00.

**Worksheet No. 6, Wellfield Equipment Removal and Disposal**

1. The total here is identical to COGEMA's total of \$832,873.00.

**Worksheet No. 7, Topsoil Replacement and Revegetation**

1. In Section II, Ponds, Page 1, the total adds up to \$87,521.00, compared to COGEMA's total of \$71,362.00. The difference appears to be from an error by COGEMA in entering a value instead of an equation in one column so the total did not increase when other values were increased.
2. In Section III, Wellfield, Page 2, the amounts in Part C, Spill Cleanup, were changed, apparently because again, instead of equations values were entered which did not update when the spreadsheet was updated. The totals changed only slightly, however.
3. In Section VI, Remedial Action, Page 3, the subtotals changed slightly in Revegetation, Section C., for an unknown reason.
4. The total for Topsoil and Revegetation changed to \$758,154.00, up slightly from COGEMA's total of \$757,774.00.

**Worksheet No. 8, Miscellaneous Reclamation**

1. Only slight differences were found here, attributable to differences in rounding. The total found was \$155,936.00, nearly the same as COGEMA's \$155,926.00 total.

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**Bond Estimate Summary**

I.	Groundwater Restoration		\$ 5,499,554
II.	Decommissioning and Surface Reclamation		
A.	Process plants equipment removal and disposal	\$	213,414
B.	Plant buildings demolition and disposal	\$	587,618
C.	Process pond sludge and liner handling	\$	1,258,180
D.	Well abandonment	\$	760,261
E.	Wellfield equipment removal and disposal	\$	832,873
F.	Topsoil replacement and revegetation	\$	758,154
G.	Miscellaneous reclamation activities	\$	155,936
	Subtotal Decommissioning and Surface Reclamation	\$	4,566,436
	Subtotal Restoration and Reclamation	\$	10,065,990
Contingency			
	Project Design	2%	
	Contractor profit and mobilization	8%	
	Preconstruction Investigation and Stabilization	1%	
	Project management	5%	
	On-site monitoring	0.5%	
	Site security and liability insurance	1%	
	Long-term admin. and accounting	2%	
	Unknowns	<u>15%</u>	
	Total Contingency	34.5%	\$ 3,472,767
			\$ 13,538,757
		Say	\$ 13,539,000

The current bond totals \$13,575,224.00.

**Conclusions**

Review of the 2002 Annual Report for Permit No. 478 found that mining has ceased both at Irigaray Ranch and at Christensen Ranch.

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Restoration of groundwater is in full swing at Christensen and has ended at Irigaray.

There has been no progress in clean up of the shallow zone aquifer at Irigaray where four monitor wells have been in long-term excursion status. The same is true of DM10, a deep zone monitor well which has also been in excursion status for an extended time.

Review of the bond estimate found the need for changes in a few areas. Significant cost increases for groundwater restoration have resulted from a requirement for a more realistic estimate for pump electric motor efficiency. This issue was discussed earlier during review of the 2001 bond estimate.

A list of assumptions and references for the bond costs is requested for the coming year's Annual Report.

\gm

Attachments  
Computer Disk

478an02rv.3gm

PRINT ALL

I GROUNDWATER RESTORATION - Worksheet 1:		\$5,499,554
II DECOMMISSIONING AND SURFACE RECLAMATION:		
A. Process Plant(s) Equipment Removal and Disposal Worksheet 2		\$213,414
B. Plant Building(s) Demolition and Disposal Worksheet 3		\$587,618
C. Process Pond Sludge and Liner Handling Worksheet 4		\$1,258,180
D. Well Abandonment Worksheet 5		\$760,261
E. Wellfield Equipment Removal and Disposal Worksheet 6		\$832,873
F. Topsoil Replacement and Revegation Worksheet 7		\$758,154
G. Miscellaneous Reclamation Activities Worksheet 8		\$155,936
Sub Total - Decommissioning and Surface Reclamation		\$4,566,436
SUBTOTAL RESTORATION AND RECLAMATION		\$10,065,990
Costs Associated with Third Party Contractors		
Project Design	2.0%	
Contractor Profit & Mobilization	8.0%	
Preconstruction Investigation	1.0%	
Project Management	5.0%	
On-site Monitoring	0.5%	
Site Security & Liability Assurance	1.0%	
Longterm Administration	2.0%	
Contingency (Unknowns)	15.0%	
TOTAL CONTINGENCY	34.5%	\$3,472,767
SUBTOTAL		\$13,538,757
TOTAL RESTORATION AND RECLAMATION		\$13,538,757

GROUNDWATER RESTORATION

	Irigaray Mine Unit(s) #1 Thru #5	Irigaray Mine Unit(s) #6 Thru #9	Christensen Mine Unit #2	Christensen Mine Unit #3	Christensen Mine Unit #4	Christensen Mine Unit #5	Christensen Mine Unit #6	Christensen Mine Unit #7	Christensen Mine Unit #8
Technical Assumptions									
Wellfield Area (Ft²)	522720	784080	890000	798944	510088	1210968	2021243	1332936	1600000
Wellfield Area (Acres)	12 00	18 00	20 43	18 34	11 71	27 80	46 40	30 60	36 70
Affected Ore Zone Area (Ft²)	522720	784080	890000	798944	550193	1346004	2058344		
Avg Completed Thickness (Ft)	15 0	18 0	11 0	10 0	12 7	19 9	21 8		
Affected Volume									
Factor For Vertical Flare	20%	20%	20%	20%	20%	20%	20%		
Factor For Horizontal Flare	20%	20%	20%	20%	20%	20%	20%		
Total Volume (Ft³)	11290752	20323353 6	14097600	11504793 6	10061929 6	38571090 6	64815534 8		
Porosity	26 0%	26 0%	26 0%	26 0%	26 0%	26 0%	26 0%		
Gallons Per Cubic Foot	7 48	7 48	7 48	7 48	7 48	7 48	7 48		
Gallons Per Pore Volume	21958254 5	39524858 08	27417012 5	22374522 6	19568440 7	75013057	125664292		
Number of Wells in Unit(s)									
Production Wells	150	274	153	185	105	217	202	155	
Injection Wells	310	330	173	277	128	277	244	170	
Monitor Wells	150	165	50	46	44	70	65	66	
Average Well Spacing (Ft)	35	35	85	70	85	85	100	100	
Average Well Depth (Ft)	250	250	345	300	430	450	520	550	

I GROUNDWATER SWEEP									
A PLANT & OFFICE									
Operating Assumptions									
Flowrate (gpm)	200	200	200	200	200	200	200		
PV's Required	4	1	1	1	1	1	1		
Total Gallons For Treatment	0	0	0	0	0	0	125664292		
Total KGals for Treatment	0	0	0	0	0	0	125664		
Cost Assumptions									
Power									
Avg Connected Hp	51 30	51 30	40 00	40 00	40 00	40 00	40 00		
Kwh's/Hp	1 00	1 00	1 00	1 00	1 00	1 00	1 00		
\$/Kwh	\$0 051	\$0 051	\$0 038	\$0 038	\$0 038	\$0 038	\$0 038		
Gallons Per Minute	200	200	200	200	200	200	100		
Gallons Per Hour	12000	12000	12000	12000	12000	12000	6000		
Cost Per Hour	2 62	2 62	1 52	1 52	1 52	1 52	1 52		
Cost Per Gallon	0 00022	0 00022	0 00013	0 00013	0 00013	0 00013	0 00021		
Cost Per KGal (\$)	\$0 218	\$0 218	\$0 127	\$0 127	\$0 127	\$0 127	\$0 205		
Chemicals									
Barium Chloride (\$/KGals)	\$0 041	\$0 041	\$0 041	\$0 041	\$0 041	\$0 041	\$0 041		
Antiscalant (\$/KGals)			\$0 108	\$0 108	\$0 108	\$0 108	\$0 108		
Elution (\$/KGals)	\$0 099	\$0 099	\$0 099	\$0 099	\$0 099	\$0 099	\$0 099		
Repair & Maintenance (\$/KGals)	\$0 061	\$0 061	\$0 061	\$0 061	\$0 061	\$0 061	\$0 061		
Analysis (\$/KGals)	\$0 164	\$0 091	\$0 091	\$0 161	\$0 092	\$0 094	\$0 094		
Total Cost Per KGal	\$0 583	\$0 510	\$0 527	\$0 597	\$0 528	\$0 530	\$0 608		
Total Treatment Cost	\$0	\$0	\$0	\$0	\$0	\$0	\$76,404		
Utilities									
Power (\$/Month)	\$1 840	\$1,840	\$200	\$200	\$200	\$200	\$200		
Propane (\$/Month)	\$1,000	\$1,000	\$200	\$200	\$200	\$200	\$200		
Time For Treatment									
Minutes For Treatment	0	0	0	0	0	0	628321		
Hours For Treatment	0	0	0	0	0	0	10472		
Days For Treatment	0	0	0	0	0	0	436		
Average Days Per Month	30 4	30 4	30 4	30 4	30 4	30 4	30 4		
Months For Treatment	0 0	0 0	0 0	0 0	0 0	0 0	14 3		
Utilities Cost (\$)	\$0	\$0	\$0	\$0	\$0	\$0	\$5,738		
TOTAL PLANT & OFFICE COST	\$0	\$0	\$0	\$0	\$0	\$0	\$82,142	\$0	\$0

GROUNDWATER RESTORATION	Irigaray Mine Unit(s) #1 Thru #5	Irigaray Mine Unit(s) #6 Thru #9	Christensen Mine Unit #2	Christensen Mine Unit #3	Christensen Mine Unit #4	Christensen Mine Unit #5	Christensen Mine Unit #6	Christensen Mine Unit #7	Christensen Mine Unit #8
<b>I GROUNDWATER SWEEP (Continued)</b>									
<b>B WELLFIELD</b>									
Cost Assumptions									
Power									
Avg Flow/Pump (gpm)	3 88	3 88	20 00	20 00	20 00	20 00	20		
Avg Hp/Pump	1 50	1 50	5 00	5 00	5 00	5 00	5 00		
Avg # of Pumps Required	51 9	51 9	10 0	10 0	10 0	10 0	10 0		
Avg Connected Hp	77 8	77 8	50 0	50 0	50 0	50 0	50 0		
Kwh's/Hp	1 000	1 000	1 000	1 000	1 000	1 000	1 000		
\$/Kwh	\$0 051	\$0 051	\$0 038	\$0 038	\$0 038	\$0 038	\$0 038		
Gallons Per Minute	200	200	200	200	200	200	200		
Gallons Per Hour	12000	12000	12000	12000	12000	12000	12000		
Cost Per Hour (\$)	\$3 97	\$3 97	\$1 90	\$1 90	\$1 90	\$1 90	\$1 90		
Cost Per Gallon (\$)	\$0 0003	\$0 0003	\$0 0002	\$0 0002	\$0 0002	\$0 0002	\$0 0002		
Cost Per KGal (\$)	0 331	0 331	0 158	0 158	0 158	0 158	0 158		
Repair & Maintenance (\$/KGals)	\$0 018	\$0 018	\$0 224	\$0 224	\$0 224	\$0 224	\$0 224		
Total Cost Per KGal	\$0 347	\$0 347	\$0 382	\$0 382	\$0 382	\$0 382	\$0 382		
<b>TOTAL WELLFIELD COST</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$48,046</b>	<b>\$0</b>	<b>\$0</b>
<b>TOTAL GROUND WATER SWEEP COST</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$130,188</b>	<b>\$0</b>	<b>\$0</b>

<b>II REVERSE OSMOSIS</b>									
<b>A PLANT &amp; OFFICE</b>									
Operating Assumptions									
Flowrate (gpm)	300	300	500	500	500	500	500		
PV's Required	3 0	5 0	5 0	5 0	5 0	5 0	5 0		
Total Gallons For Treatment	65874763 5	197624290 4	137085062	111872613	97842203 3	375065285	628321461		
Total KGals for Treatment	65875	197624	137085	111873	97842	375065	628321		
Feed to RO (gpm)	300	300	500	500	500	500	500		
Permeate Flow (gpm)	240	240	375	400	400	400	400		
Brine Flow (gpm)	60	60	125	100	100	100	100		
Average RO Recovery	80 0%	80 0%	75 0%	75 0%	75 0%	75 0%	75 0%		
Cost Assumptions									
Power									
Avg Connected Hp	120 00	120 00	560 00	560 00	560 00	560 00	560 00		
Kwh's/Hp	1 000	1 000	1 000	1 000	1 000	1 000	1 000		
\$/Kwh	\$0 051	\$0 051	\$0 038	\$0 038	\$0 038	\$0 038	\$0 038		
Gallons Per Minute	300	300	500	500	500	500	500		
Gallons Per Hour	18000	18000	30000	30000	30000	30000	30000		
Cost Per Hour (\$)	\$6 12	\$6 12	\$21 28	\$21 28	\$21 28	\$21 28	\$21 28		
Cost Per Gallon (\$)	\$0 00034	\$0 00034	\$0 00071	\$0 00071	\$0 00071	\$0 00071	\$0 00071		
Cost Per KGal (\$)	\$0 340	\$0 340	\$0 709	\$0 709	\$0 709	\$0 709	\$0 709		
Chemicals									
Sulfuric Acid (\$/KGals)	\$0 076	\$0 076	\$0 000	\$0 000	\$0 000	\$0 000	\$0 000		
Caustic Soda (\$/KGals)	\$0 111	\$0 111	\$0 015	\$0 015	\$0 015	\$0 015	\$0 015		
Hydrochloric Acid (\$/KGals)	\$0 009	\$0 009	\$0 000	\$0 000	\$0 000	\$0 000	\$0 000		
Hydrogen Sulfide (\$/KGals)	\$0 304	\$0 304	\$0 000	\$0 000	\$0 000	\$0 000	\$0 000		
Sodium sulfate (\$/KGal)			\$0 092	\$0 092	\$0 092	\$0 092	\$0 092		
Antiscalant (\$/Kgals)			\$0 108	\$0 108	\$0 108	\$0 108	\$0 108		
Elution (\$/Kgals)			\$0 099	\$0 099	\$0 099	\$0 099	\$0 099		
Repair & Maintenance (\$/KGals)	\$0 279	\$0 279	\$0 120	\$0 120	\$0 120	\$0 120	\$0 120		
Sampling & Analyses (\$/KGals)	\$0 164	\$0 091	\$0 091	\$0 161	\$0 092	\$0 094	\$0 094		
Total Cost Per KGal (\$)	\$1 283	\$1 210	\$1 234	\$1 304	\$1 235	\$1 237	\$1 237		
Total Pumping Cost (\$)	\$84,517	\$239,125	\$169,209	\$145 919	\$120 868	\$464,081	\$777,443		
Utilities									
Power (\$/Month)	\$1,840	\$1,840	\$1,000	\$1,000	\$1,000	\$1 000	\$1,000		
Propane (\$/Month)	\$1,000	\$1,000	\$800	\$800	\$800	\$800	\$800		
Time For Treatment									
Minutes For Treatment	219583	658748	274170	223745	195684	750131	1256643		
Hours For Treatment	3660	10979	4570	3729	3261	12502	20944		
Days For Treatment	152	457	190	155	138	521	873		
Average Days Per Month	30 4	30 4	30 4	30 4	30 4	30 4	30 4		
Months For Treatment	5 0	15 0	6 3	5 1	4 5	17 1	28 7		
Utilities Cost (\$)	\$14,200	\$42,600	\$11,340	\$9,180	\$8 100	\$30 780	\$51 680		
<b>TOTAL PLANT &amp; OFFICE COST</b>	<b>\$98,717</b>	<b>\$281,725</b>	<b>\$180 549</b>	<b>\$155 099</b>	<b>\$128 968</b>	<b>\$494 881</b>	<b>\$829,103</b>	<b>\$0</b>	

## GROUNDWATER RESTORATION

	Irigaray Mine Unit(s) #1 Thru #5	Irigaray Mine Unit(s) #6 Thru #9	Christensen Mine Unit #2	Christensen Mine Unit #3	Christensen Mine Unit #4	Christensen Mine Unit #5	Christensen Mine Unit #6	Christensen Mine Unit #7	Christensen Mine Unit #8
<b>II REVERSE OSMOSIS (Continued)</b>									
<b>B WELLFIELD</b>									
Cost Assumptions									
Power									
Avg Flow/Pump (gpm)	3 86	3 86	20 00	20 00	20 00	20 00	20		
Avg Hp/Pump	1 50	1 50	5 00	5 00	5 00	5 00	5 00		
Avg # of Pumps Required	77 8	77 8	62 4	62 4	62 4	62 4	62 4		
Avg Connected Hp	116 7	116 7	187 1	187 1	187 1	187 1	187 1		
Kwh's/Hp	1 000	1 000	1 000	1 000	1 000	1 000	1 000		
\$/Kwh	\$0 051	\$0 051	\$0 038	\$0 038	\$0 038	\$0 038	\$0 038		
Gallons Per Minute	300	300	500	500	500	500	500		
Gallons Per Hour	18000	18000	30000	30000	30000	30000	30000		
Cost Per Hour (\$)	\$5 95	\$5 95	\$7 11	\$7 11	\$7 11	\$7 11	\$7 11		
Cost Per Gallon (\$)	\$0 0003	\$0 0003	\$0 0002	\$0 0002	\$0 0002	\$0 0002	\$0 0002		
Cost Per KGal (\$)	\$0 331	\$0 331	\$0 237	\$0 237	\$0 237	\$0 237	\$0 237		
Repair & Maintenance (\$/KGals)	\$0 016	\$0 016	\$0 224	\$0 224	\$0 224	\$0 224	\$0 224		
Total Cost Per KGal	\$0 347	\$0 347	\$0 461	\$0 461	\$0 461	\$0 461	\$0 461		
TOTAL WELLFIELD COST	\$22,835	\$68,506	\$63 195	\$51 573	\$45 105	\$172 903	\$289 652	\$0	
TOTAL REVERSE OSMOSIS COST	\$121 553	\$350,232	\$243 744	\$208 672	\$174 072	\$667 763	\$1 118 755	\$0	

<b>III WASTE DISPOSAL WELL</b>									
Operating Assumptions									
Annual Evaporation Capacity (Gals)			1917611 9	1917611 9	1917611 9	1917611 9	1917611 9		
Avg Monthly Evap Capacity (Gals)			159801	159801	159801	159801	159801		
Total Disposal Requirement									
RO Brine Total Gallons			34271265 6	27968153 2	24480550 8	93766321 3	157080365		
RO Brine Total KGallons			34271 3	27968 2	24460 6	93766 3	157080 4		
Brine Concentration Factor			60%	60%	60%	60%	60%		
Total Concentrated Brine (Gals)			20562759 4	16780891 9	14676330 5	56259792 8	94248219 1		
Months of RO Operation			6 3	5 1	4 5	17 1	28 7		
Average Monthly Reqmt (Gallons)			3263930	5483952	5435678	5483411	5473183		
Monthly Balance for DDW (Gals)			3104129	5324151	5275877	5323610	5313382		
Total WDW Disposal (Gallons)			19556013 1	27153168 2	23741446 4	91033724 3	152494077		
Total WDW Disposal (KGals)			19556	27153	23741	91034	152494		
Cost Assumptions									
Power									
Avg Connected Hp			100 00	100 00	100 00	100 00	100 00		
WDW Av Connected Hp			180 00	180 00	180 00	180 00	180 00		
Kwh's/Hp			0 900	0 900	0 900	0 900	0 900		
\$/Kwh			\$0 038	\$0 038	\$0 038	\$0 038	\$0 038		
Gallons Per Minute			150	150	150	150	150		
Gallons Per Hour			9000	9000	9000	9000	9000		
Cost Per Hour (\$)			\$9 58	\$9 58	\$9 58	\$9 58	\$9 58		
Cost Per Gallon (\$)			\$0 0011	\$0 0011	\$0 0011	\$0 0011	\$0 0011		
Cost Per KGal (\$)			\$1 064	\$1 064	\$1 064	\$1 064	\$1 064		
Chemicals (\$/KGals)									
RO Antiscalant (\$/KGals)			0 192	0 192	0 192	0 192	0 192		
WDW Antiscalant (\$/KGals)			0 226	0 226	0 226	0 226	0 226		
Sulfuric Acid (\$/KGal)			0 28	0 28	0 28	0 28	0 28		
Corrosion Inhibitor			\$0 217	\$0 217	\$0 217	\$0 217	\$0 217		
Algacide			\$0 052	\$0 052	\$0 052	\$0 052	\$0 052		
Other			\$0 080	\$0 080	\$0 080	\$0 080	\$0 080		
Repair & Maint (\$/KGals)			\$0 230	\$0 230	\$0 230	\$0 230	\$0 230		
Total Cost Per KGal			\$2 341	\$2 341	\$2 341	\$2 341	\$2 341		
TOTAL WASTE DISPOSAL WELL COST			\$45 781	\$63 566	\$55 579	\$213 110	\$356 989	\$0	

## GROUNDWATER RESTORATION

	Irigaray Mine Unit(s) #1 Thru #5	Irigaray Mine Unit(s) #6 Thru #9	Christensen Mine Unit #2	Christensen Mine Unit #3	Christensen Mine Unit #4	Christensen Mine Unit #5	Christensen Mine Unit #6	Christensen Mine Unit #7	Christensen Mine Unit #8
<b>IV STABILIZATION MONITORING</b>									
Operating Assumptions									
Time of Stabilization (mos)	9	9	9	9	9	9	9		
Frequency of Analysis (mos)	3	3	3	3	3	3	3		
Total Sets of Analysis	3	3	3	3	3	3	3		
Cost Assumptions									
Power (\$/Month)	\$0	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000		
Total Power Cost	\$0	\$9,000	\$9,000	\$9,000	\$9,000	\$9,000	\$9,000		
Sampling & Analysis (each set)	\$3,600	\$3,600	\$3,600	\$3,600	\$3,600	\$3,600	\$3,600		
Total Sampling & Analysis Cost (\$)	\$10,800	\$10,800	\$10,800	\$10,800	\$10,800	\$10,800	\$10,800		
Utilities (\$/Month)	\$0	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000		
Total Utilities Cost (\$)	\$0	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000		
<b>TOTAL STABILIZATION COST</b>	<b>\$10,800</b>	<b>\$37,800</b>	<b>\$37,800</b>	<b>\$37,800</b>	<b>\$37,800</b>	<b>\$37,800</b>	<b>\$37,800</b>	<b>\$0</b>	

**V LABOR (Irigaray and Christensen Combined)**

Cost Assumptions	Cost/Hour	Hours/Year	Cost
Crew			
1 Supervisor	\$25.00	2080	\$52,000
4 Operators	\$20.00	2080	\$166,400
2 Maintenance	\$20.00	2080	\$83,200
2 Vehicles	\$12.00	2080	\$49,920
Cost per Year			\$351,520
Time Required - Years (See Figure 1)	2.6		
<b>TOTAL RESTORATION LABOR COST</b>	<b>\$913,952</b>		

Irigaray Mine Unit(s) #1 Thru #9	Christensen Mine Unit #2 Thru #4	Total Christensen & Irigaray
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**VI RESTORATION CAPITAL REQUIREMENTS**

I Deep Disposal Well(s)	\$0	\$0
II Plug and Abandon DDW	\$200,000	\$200,000
III 500 GPM Reverse Osmosis Unit	\$0	\$0
<b>Total</b>	<b>\$0</b>	<b>\$200,000</b>

Irigaray Mine Unit(s) #1 Thru #9	Christensen Mine Unit #2 Thru #7	Total Christensen & Irigaray
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**VII RESTORATION OF EXCURSION WELLS**

I Shallow Sand Well(s)			
Total Wells in Excursion	6	0	
Cost of Clean-Up	\$ 50,000	\$ 50,000	
Total Shallow Sand Cleanup	\$ 300,000	\$0 00	\$ 300,000
II Ore Zone Wells			
Total Wells in Excursion	0	0	
Cost of Clean-Up	\$ 50,000	\$ 50,000	
Total Ore Zone Cleanup	\$0 00	\$0 00	
III Deep Zone Wells			
Total Wells in Excursion	1	0	
Cost of Clean-Up	\$ 100,000	\$ 100,000	
Total Deep Zone Cleanup	\$100,000	\$0 00	\$ 100,000
Total Wellfield Cost	\$ 400,000	0 00	\$ 400,000
<b>TOTAL EXCURSION CLEANUP COST</b>	<b>\$ 400,000</b>	<b>0 00</b>	<b>\$ 400,000</b>

Irigaray Mine Unit(s) #1 Thru #5	Irigaray Mine Unit(s) #6 Thru #9	Christensen Mine Unit #2	Christensen Mine Unit #3	Christensen Mine Unit #4	Christensen Mine Unit #5	Christensen Mine Unit #6	Christensen Mine Unit #7	Christensen Mine Unit #8	TOTAL
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**SUMMARY**

I GROUNDWATER SWEEP	\$0	\$0	\$0	\$0	\$0	\$0	\$130,188	\$0	\$0
II REVERSE OSMOSIS	\$121,553	\$350,232	\$243,744	\$206,672	\$174,072	\$667,763	\$1,118,755	\$0	
III WASTE DISPOSAL WELL	\$0	\$0	\$45,781	\$63,566	\$55,579	\$213,110	\$356,989	\$0	
IV STABILIZATION	\$10,800	\$37,800	\$37,800	\$37,800	\$37,800	\$37,800	\$37,800	\$0	
SUB TOTAL	\$132,353	\$388,032	\$327,325	\$308,037	\$267,451	\$918,673	\$1,643,731	\$0	\$3,985,602
V LABOR									\$913,952
VI CAPITAL									\$200,000
VII EXCURSION CLEANUP									\$400,000
<b>TOTAL GROUNDWATER RESTORATION COST</b>									<b>\$5,499,554</b>



PLANT EQUIPMENT REMOVAL AND DISPOSAL	Irigaray							Christensen				
	Maint Area & Laboratory	Main Process Building	Expansion Building	Resin+Sand Filter Media	Dry Pack Area	Restoration Building	Sub Total	Satellite Plant	Resin+Sand Filter Media	Restoration Extension	Wellfield Modules	Sub Total
Volume (Yds³)	40	200	180	110	40	40		91	197	42	55	
Quantity Per Truck Load (Yds³)	20	20	20	20	20	20		20	20	20	20	
Number of Truck Loads	2.0	10.0	9.0	5.5	2.0	2.0		4.55	9.90	2.1	2.8	
I Decontamination Cost												
Decontamination Cost (\$/Load)	\$550	\$550	\$550	\$550	\$550	\$550		\$550	\$550	\$550	\$550	
Percent Requiring Decontamination	20.0%	100.0%	100.0%	0.0%	100.0%	100.0%		100.0%	0.0%	100.0%	100.0%	
Total Cost	\$220	\$5,500	\$4,950	\$0	\$1,100	\$1,100	\$12,870	\$2,503	\$0	\$1,155	\$1,540	\$5,198
II Dismantle and Loading Cost												
Cost Per Truck Load (\$)	\$715	\$715	\$715	\$715	\$715	\$715		\$715	\$715	\$715	\$715	
Total Cost	\$1,430	\$7,150	\$6,435	\$3,933	\$1,430	\$1,430	\$21,808	\$3,253	\$7,079	\$1,502	\$2,002	\$13,835
III Oversize Charges												
Percent Requiring Permits	40.0%	40.0%	40.0%	0.0%	60.0%	40.0%		40.0%	0.0%	40.0%	0.0%	
Cost Per Truck Load (\$)	\$326	\$326	\$326	\$326	\$326	\$326		\$326	\$326	\$326	\$326	
Total Cost	\$261	\$1,304	\$1,174	\$0	\$391	\$261	\$3,390	\$593	\$0	\$274	\$0	\$867
IV Transportation & Disposal												
A. Landfill												
Percent To Be Shipped	80.0%	80.0%	80.0%	0.0%	50.0%	80.0%		80.0%	0.0%	80.0%	80.0%	
Distance (Miles)	48	48	48	48	48	48		48	48	48	48	
Cost Per Mile (\$)	\$2.58	\$2.58	\$2.58	\$2.58	\$2.58	\$2.58		\$2.58	\$2.58	\$2.58	\$2.58	
Transportation Cost	\$198	\$991	\$892	\$0	\$124	\$198		\$451	\$0	\$208	\$277	
Disposal Fee Per Cubic Yard	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00		\$12.00	\$12.00	\$12.00	\$12.00	
Disposal Cost (\$)	\$384	\$1,920	\$1,728	\$0	\$240	\$384		\$874	\$0	\$403	\$538	
Total Cost	\$582	\$2,911	\$2,620	\$0	\$364	\$582		\$1,324	\$0	\$611	\$815	
B. Licensed Site												
Percent To Be Shipped	20.0%	20.0%	20.0%	100.0%	50.0%	20.0%		20.0%	100.0%	20.0%	20.0%	
Distance (Miles)	150	150	150	150	150	150		150	150	150	150	
Cost Per Mile (\$)	\$2.58	\$2.58	\$2.58	\$2.58	\$2.58	\$2.58		\$2.58	\$2.58	\$2.58	\$2.58	
Transportation Cost	\$155	\$774	\$697	\$2,129	\$387	\$155		\$352	\$3,831	\$163	\$217	
Disposal Cost Per Cubic Foot (\$)	\$11.00	\$11.00	\$11.00	\$11.00	\$11.00	\$11.00		\$11.00	\$11.00	\$11.00	\$11.00	
Quantity Per Truck Load (Yds³)	20.0	20.0	20.0	20.0	20.0	20.0		20.0	20.0	20.0	20.0	
Quantity Per Truck Load (Ft³)	540	540	540	540	540	540		540	540	540	540	
Disposal Cost	\$2,376	\$11,880	\$10,692	\$32,670	\$5,940	\$2,376		\$5,405	\$58,806	\$2,495	\$3,326	
Total Cost	\$2,531	\$12,654	\$11,389	\$34,799	\$6,327	\$2,531		\$5,758	\$62,637	\$2,657	\$3,543	
Total Cost	\$3,113	\$15,565	\$14,008	\$34,799	\$6,691	\$3,113	\$77,288	\$7,082	\$62,637	\$3,269	\$4,358	\$77,346
TOTAL COST	\$5,024	\$29,519	\$26,567	\$38,731	\$9,612	\$5,904	\$115,356	\$13,431	\$69,716	\$6,547	\$8,364	\$98,058
TOTAL COST - IRIGARAY AND CHRISTENSEN												\$213,414

Ingaray							Chrstensen						
Maint Area & Laboratory	Warehouse & Offices	Main Process Building	Expansion Building	Dry Pack Area	Restoration Building	Sub Total	Satellite Plant	Wellfield Modules	Booster Pump Bldgs	Restoration Extension	Office Building	Warehouse	Sub Total

**BUILDING DEMOLITION AND DISPOSAL**

Structural Character	1 Story Steel Frame	1 Story Steel Frame	1 Story Steel Frame	1 Story Steel Frame	3 Story Steel/Masonry	1 Story Steel Frame		2 Story Steel Frame	1 Story Pre Fab (22)	1 Story Pre Fab (4)	2 Story Steel Frame	1 Story Pre-Fab	1 Story Steel Frame	
Demolition Volume (Ft³)	179400	108720	430400	386400	126000	69840		192000	95040	46720	72000	64800	11000	
Cost of Demolition Per Ft³	\$0 131	\$0 131	\$0 131	\$0 131	\$0 131	\$0 131		\$0 131	\$0 131	\$0 131	\$0 131	\$0 131	\$0 131	
Demolition Cost (\$)	\$23,501	\$14,242	\$56,382	\$50,618	\$16,506	\$9,123	\$170,373	\$25,152	\$12,450	\$6,120	\$9,432	\$8,489	\$1,441	\$63,084
Factor For Gutting	15 0%	10 0%	30 0%	10 0%	20 0%	10 0%		20 0%	0 0%	0 0%	20 0%	10 0%	10 0%	
Cost For Gutting (\$)	\$3,525	\$1,424	\$16,915	\$5,062	\$3,301	\$912	\$31,139	\$5,030	\$0	\$0	\$1,886	\$849	\$144	\$7,910
Weight (pounds)	158761	96212	380885	341947	111504	61628		169912	66660	28032	63717	38802	9735	
Weight per Truckload	40000	40000	40000	40000	40000	40000		40000	40000	40000	40000	40000	40000	
Number of Truckloads	4 0	2 4	9 5	8 5	2 8	1 5		4 2	1 7	0 7	1 6	1 0	0 2	
Distance to Landfill	48	48	48	48	48	48		48	48	48	48	48	48	
Cost per Mile	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58		\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	
Transportation Cost	\$492	\$298	\$1,179	\$1,059	\$345	\$191	\$3,563	\$526	\$206	\$87	\$197	\$120	\$30	\$1,167
Disposal Cost per Ton	\$35 70	\$35 70	\$35 70	\$35 70	\$35 70	\$35 70		\$35 70	\$35 70	\$35 70	\$35 70	\$35 70	\$35 70	
Disposal Cost	\$2,834	\$1,717	\$6,799	\$6,104	\$1,990	\$1,100	\$20,544	\$3,033	\$1,190	\$500	\$1,137	\$693	\$174	\$6,727
<b>TOTAL COST</b>	<b>\$30,352</b>	<b>\$17,682</b>	<b>\$81,275</b>	<b>\$62,843</b>	<b>\$22,143</b>	<b>\$11,326</b>	<b>\$225,620</b>	<b>\$33,741</b>	<b>\$13,847</b>	<b>\$6,707</b>	<b>\$12,653</b>	<b>\$10,150</b>	<b>\$1,789</b>	<b>\$78,888</b>
<b>TOTAL COST IRIGARAY AND CHRISTENSEN</b>														<b>\$304,508</b>

**CONCRETE DECONTAMINATION, DEMOLITION & DISPOSAL**

Area (Ft²)	8020	7100	17600	18400	5600	3600		9600	0	1440	3600	0	1000	
Average Thickness (Ft)	0 5	0 5	0 5	0 5	1	0 5		0 5	0 0	0 5	0 5	0 0	0 5	
Volume (Ft³)	4010	3550	8800	9200	5600	1800		4800	0	720	1800	0	500	
Percent Requiring Decontamination	0 0%	0 0%	100 0%	100 0%	100 0%	100 0%		100 0%	0 0%	100 0%	100 0%	0 0%	0 0%	
Percent Decontaminated	0 0%	0 0%	75 0%	75 0%	40 0%	75 0%		75 0%	0 0%	100 0%	100 0%	0 0%	0 0%	
Decontamination (\$/Ft²)	\$0 170	\$0 170	\$0 170	\$0 170	\$0 170	\$0,170		\$0,170	\$0 170	\$0 170	\$0 170	\$0 170	\$0 170	
Decontamination Cost	\$0	\$0	\$2,244	\$2,346	\$381	\$459	\$5,430	\$1,224	\$0	\$245	\$612	\$0	\$0	\$2,081
Demolition (\$/Ft²)	\$1 887	\$1 887	\$1 887	\$1 887	\$1 887	\$1 887		\$1 887	\$1 887	\$1 887	\$1 887	\$1 887	\$1 887	
Demolition Cost	\$15,134	\$13,398	\$33,211	\$34,721	\$10,567	\$6,793	\$113,824	\$18,115	\$0	\$2,717	\$6,793	\$0	\$1,887	\$29,513
Transportation & Disposal														
A Onsite Disposal														
Percent to be Disposed Onsite	100%	100%	75%	75%	40%	75%		75%	0%	100%	100%	0%	100%	
Transportation Cost	\$0	\$0	\$0	\$0	\$0	\$0		\$0	\$0	\$0	\$0	\$0	\$0	
Disposal Cost per Cubic Foot	\$0 049	\$0 049	\$0 049	\$0 049	\$0 049	\$0 049		\$0 049	\$0 049	\$0 049	\$0 049	\$0 049	\$0 049	
Disposal Cost (\$)	\$196	\$174	\$323	\$338	\$110	\$68	\$1,208	\$178	\$0	\$35	\$88	\$0	\$25	\$324
B Licensed Site														
Percent to be Shipped	0%	0%	25%	25%	60%	25%		25%	100%	0%	0%	100%	0%	
Distance (Miles)	150	150	150	150	150	150		150	150	150	150	150	150	
Cost per Mile (\$)	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58		\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	
Transportation Cost	\$0	\$0	\$1,577	\$1,648	\$2,408	\$323	\$5,956	\$860	\$0	\$0	\$0	\$0	\$0	\$860
Disposal Cost per Cubic Foot	\$3 70	\$3 70	\$3 70	\$3 70	\$3 70	\$3 70		\$3 70	\$3 70	\$3 70	\$3 70	\$3 70	\$3 70	
Quantity Per Truck Load (Yds³)	20	20	20	20	20	20		20	20	20	20	20	20	
Quantity Per Truck Load (Ft³)	540	540	540	540	540	540		540	540	540	540	540	540	
Disposal Cost (\$)	\$0	\$0	\$8,140	\$8,510	\$12,432	\$1,665	\$30,747	\$4,440	\$0	\$0	\$0	\$0	\$0	\$4,440
<b>TOTAL COST</b>	<b>\$15,330</b>	<b>\$13,572</b>	<b>\$45,495</b>	<b>\$47,563</b>	<b>\$25,898</b>	<b>\$9,306</b>	<b>\$157,164</b>	<b>\$24,816</b>	<b>\$0</b>	<b>\$2,997</b>	<b>\$7,493</b>	<b>\$0</b>	<b>\$1,912</b>	<b>\$37,218</b>
<b>SUB</b>														<b>\$194,382</b>

Ingaray							Chrstensen						
Maint Area & Laboratory	Warehouse & Offices	Main Process Building	Expansion Building	Dry Pack Area	Restoration Building	Sub Total	Satellite Plant	Wellfield Modules	Booster Pump Bldgs	Restoration Extension	Office Building	Warehouse	Sub Total

SOIL REMOVAL & DISPOSAL													
Ingaray							Chrstensen						
Maint Area & Laboratory	Warehouse & Offices	Main Process Building	Expansion Building	Dry Pack Area	Restoration Building	Sub Total	Satellite Plant	Wellfield Modules	Booster Pump Bldgs	Restoration Extension	Office Building	Warehouse	Sub Total
Assume removal of 3" of Contaminated Soil under Primary Areas, Disposal at a Licensed facility.													
Removal, Front End Loader (\$50/hr)	\$0	\$0	\$815	\$852	\$259	\$167	\$2,093	\$444	\$0	\$0	\$0	\$0	\$444
Quantity to be Shipped (Ft³)	0	0	4400	4600	1400	900		2400	0	0	0	0	
Distance (Miles)	150	150	150	150	150	150		150	150	150	150	150	
Cost Per Mile (\$)	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58		\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	
Transportation Cost (\$)	\$0	\$0	\$3,153	\$3,297	\$1,003	\$645	\$8,098	\$1,720	\$0	\$0	\$0	\$0	\$1,720
Disposal fee Per Cubic Foot(\$)	\$3 70	\$3 70	\$3 70	\$3 70	\$3 70	\$3 70		\$3 70	\$3 70	\$3 70	\$3 70	\$3 70	
Quantity per Truckload (Ft³)	540	540	540	540	540	540		540	540	540	540	540	
Disposal Cost (\$)	\$0	\$0	\$16,280	\$17,020	\$5,180	\$3,330	\$41,810	\$8,880	\$0	\$0	\$0	\$0	\$8,880
Removal, NPDES Pts													
Quantity to be Shipped (Ft³)			559					5030					
Distance (Miles)	150	150	150	150	150	150		150	150	150	150	150	
Cost per Mile (\$)	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58		\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	
Transportation Cost (\$)	\$0 00	\$0 00	\$401	\$0 00	\$0 00	\$0 00	\$401	\$3,604 83	\$0 00	\$0 00	\$0 00	\$0 00	
Disposal fee per Cubic Foot (\$)	\$3 70	\$3 70	\$3 70	\$3 70	\$3 70	\$3 70		\$3 70	\$3 70	\$3 70	\$3 70	\$3 70	
Quantity per Truckload (Ft³)	540	540	540	540	540	540		540	540	540	540	540	
Disposal Cost (\$)	\$0	\$0	\$2,068	\$0	\$0	\$0	\$2,068	\$18,611	\$0	\$0	\$0	\$0	
Total Cost	\$0	\$0	\$22,717	\$21,169	\$6,442	\$4,142	\$54,470	\$33,260	\$0	\$0	\$0	\$0	\$33,260
TOTAL COST	\$0	\$0	\$22,717	\$21,169	\$6,442	\$4,142	\$54,470	\$33,260	\$0	\$0	\$0	\$0	\$33,260
TOTAL COST IRIGARAY AND CHRISTENSEN													\$87,730

RADIATION SURVEY													
Area required (acres)	0 18	0 16	0 4	0 42	0 13	0 08		0 22	0	0 03	0 08	0	0 02
Survey Cost (\$/acre)	\$580 00	\$580 00	\$580 00	\$580 00	\$580 00	\$580 00		\$580 00	\$580 00	\$580 00	\$580 00	\$580 00	\$580 00
TOTAL SURVEY COST	\$104 40	\$92 80	\$232 00	\$243 60	\$75 40	\$46 40	\$795	\$127 60	\$0 00	\$17 40	\$46 40	\$0 00	\$11 60

TOTAL COST	\$45,787	\$31,346	\$149,720	\$131,818	\$54,558	\$24,820	\$438,049	\$91,944	\$13,847	\$9,722	\$20,193	\$10,150	\$3,712	\$149,569
TOTAL COST IRIGARAY AND CHRISTENSEN														\$587,618

POND RECLAMATION COST

	Ingaray							517				Christensen				
	Pond A	Pond B	Pond C	Pond D	Pond E	Pond RA	Pond RB	Pond 1	Pond 2A	Pond 2B	Pond 2C	Brine Pond 1	Brine Pond 2	Brine Pond 3	Brine Pond 4	Permeate Pond
<b>POND SLUDGE</b>																
Average Sludge Depth (Ft)	0 188	0 156	0 123	0 135	0 227	0 188	0 158					0 166	0 222	0 143	0 068	0 000
Average Area of Sludge (Ft²)	50845	50604	62291	62291	29583	50845	50604					20909	20909	20909	20909	
Volume of Sludge (Ft³)	9559	7894	7662	8409	6715	9559	7894					3471	4642	2990	1422	
Volume of Sludge (Yds³)	354	292	284	311	249	354	292	0	0	0	0	129	172	111	53	0
Volume of Sludge Per Truck Load (Yds³)	20 0	20 0	20 0	20 0	20 0	20 0	20 0	20 0	20 0	20 0	20 0	20 0	20 0	20 0	20 0	20 0
# of Truck Loads of Sludge	17 7	14 6	14 2	15 6	12 5	17 7	14 6	0 0	0 0	0 0	0 0	6 5	8 6	5 6	2 7	0 0
Sludge Handling Cost Per Load (\$)	\$238 00	\$238 00	\$238 00	\$238 00	\$238 00	\$238 00	\$238 00	\$238 00	\$238 00	\$238 00	\$238 00	\$238 00	\$238 00	\$238 00	\$238 00	\$238 00
Total Sludge Handling Cost (\$)	\$4,213	\$3,475	\$3,380	\$3,713	\$2,975	\$4,213	\$3,475	\$0	\$0	\$0	\$0	\$1,547	\$2,047	\$1,333	\$643	\$0
Transportation & Disposal																
Percent To Be Shipped	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%
Distance (Miles)	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Cost Per Mile (\$)	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58
Transportation Cost (\$)	\$8,850	\$5,650	\$5,495	\$6,037	\$4,838	\$8,850	\$5,650	\$0	\$0	\$0	\$0	\$2,516	\$3,328	\$2,167	\$1,045	\$0
Disposal Cost Per Cubic Foot (\$)	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00
Quantity Per Truck Load (Yds³)	20 0	20 0	20 0	20 0	20 0	20 0	20 0	20 0	20 0	20 0	20 0	20 0	20 0	20 0	20 0	20 0
Quantity Per Truck Load (Ft³)	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540
Disposal Cost (\$)	\$105,138	\$86,724	\$84,348	\$92,664	\$74,250	\$105,138	\$86,724	\$0	\$0	\$0	\$0	\$38,610	\$51,084	\$33,284	\$16,038	\$0
Total Transportation & Disposal (\$)	\$111,988	\$92,374	\$89,843	\$98,701	\$79,088	\$111,988	\$92,374	\$0	\$0	\$0	\$0	\$41,128	\$54,412	\$35,431	\$17,083	\$0
<b>TOTAL SLUDGE COST (\$)</b>	<b>\$116,201</b>	<b>\$95,849</b>	<b>\$93,223</b>	<b>\$102,414</b>	<b>\$82,063</b>	<b>\$116,201</b>	<b>\$95,849</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$42,673</b>	<b>\$56,459</b>	<b>\$36,764</b>	<b>\$17,726</b>	<b>\$0</b>
<b>POND LINER</b>																
Total Pond Area (Acres)	1 75	1 72	1 75	1 72	0 78	2 17	2 17					1 10	1 10	1 10	1 10	0 00
Total Pond Area (Ft²)	76230	74923 2	76230	74923 2	33978 8	94525 2	94525 2	0	0	0	0	47916	47916	47916	47916	0
Factor For Sloping Sides	20 0%	20 0%	20 0%	20 0%	20 0%	20 0%	20 0%	20 0%	20 0%	20 0%	20 0%	20 0%	20 0%	20 0%	20 0%	20 0%
Total Liner Area (Ft²)	91476	89908	91476	89908	40772	113430	113430	0	0	0	0	57499	57499	57499	57499	0
Liner Thickness (Millimeters)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Liner Thickness (Inches)	0 1181	0 1181	0 1181	0 1181	0 1181	0 1181	0 1181	0 1181	0 1181	0 1181	0 1181	0 1181	0 1181	0 1181	0 1181	0 1181
Liner Thickness (Ft)	0 0098	0 0098	0 0098	0 0098	0 0098	0 0098	0 0098	0 0098	0 0098	0 0098	0 0098	0 0098	0 0098	0 0098	0 0098	0 0098
*Swell* Factor	25 0%	25 0%	25 0%	25 0%	25 0%	25 0%	25 0%	25 0%	25 0%	25 0%	25 0%	25 0%	25 0%	25 0%	25 0%	25 0%
Liner Volume (Ft³)	1121	1101	1121	1101	499	1390	1390	0	0	0	0	704	704	704	704	0
Truck Loads of Liner	2 1	2 0	2 1	2 0	0 9	2 6	2 6	0 0	0 0	0 0	0 0	1 3	1 3	1 3	1 3	0 0
Liner Handling Cost (\$)																
Labor Crew Cost per Hour (\$)	\$120	\$120	\$120	\$120	\$120	\$120	\$120	\$120	\$120	\$120	\$120	\$120	\$120	\$120	\$120	\$120
Hours per Load	2 0	2 0	2 0	2 0	2 0	2 0	2 0	2 0	2 0	2 0	2 0	2 0	2 0	2 0	2 0	2 0
Liner Handling Cost Per Load (\$)	\$240 00	\$240 00	\$240 00	\$240 00	\$240 00	\$240 00	\$240 00	\$240 00	\$240 00	\$240 00	\$240 00	\$240 00	\$240 00	\$240 00	\$240 00	\$240 00
Total Liner Handling Cost (\$)	\$504	\$480	\$504	\$480	\$216	\$624	\$624	\$0	\$0	\$0	\$0	\$312	\$312	\$312	\$312	\$0
Transportation & Disposal																
Percent To Be Shipped	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%	100 0%
Distance (Miles)	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Cost Per Mile (\$)	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58
Transportation Cost (\$)	\$813	\$774	\$813	\$774	\$348	\$1,006	\$1,006	\$0	\$0	\$0	\$0	\$503	\$503	\$503	\$503	\$0
Disposal Cost Per Cubic Foot (\$)	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00	\$11 00
Quantity Per Truck Load (Ft³)	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540
Disposal Cost (\$)	\$12,474	\$11,880	\$12,474	\$11,880	\$5,346	\$15,444	\$15,444	\$0	\$0	\$0	\$0	\$7,722	\$7,722	\$7,722	\$7,722	\$0
Total Transportation & Disposal (\$)	\$13,287	\$12,654	\$13,287	\$12,654	\$5,694	\$16,450	\$16,450	\$0	\$0	\$0	\$0	\$8,225	\$8,225	\$8,225	\$8,225	\$0
<b>TOTAL LINER COST (\$)</b>	<b>\$13,791</b>	<b>\$13,134</b>	<b>\$13,791</b>	<b>\$13,134</b>	<b>\$5,910</b>	<b>\$17,074</b>	<b>\$17,074</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$8,537</b>	<b>\$8,537</b>	<b>\$8,537</b>	<b>\$8,537</b>	<b>\$0</b>
<b>POND BACKFILL</b>																
Backfill required (Yds³)	8740	8580	8740	8580	2517	14617	16319	2345	1837	1537	163	9048	9048	9048	9048	18070
Backfill Cost (\$/Yd³)	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00
<b>TOTAL BACKFILL COST (\$)</b>	<b>\$8,740</b>	<b>\$8,580</b>	<b>\$8,740</b>	<b>\$8,580</b>	<b>\$2,517</b>	<b>\$14,617</b>	<b>\$16,319</b>	<b>\$2,345</b>	<b>\$1,837</b>	<b>\$1,537</b>	<b>\$163</b>	<b>\$9,048</b>	<b>\$9,048</b>	<b>\$9,048</b>	<b>\$9,048</b>	<b>\$18,070</b>

POND RECLAMATION COST	Ingaray							517				Chrstensen				
	Pond A	Pond B	Pond C	Pond D	Pond E	Pond RA	Pond RB	Pond 1	Pond 2A	Pond 2B	Pond 2C	Brine Pond 1	Brine Pond 2	Brine Pond 3	Brine Pond 4	Permeate Pond
RADIATION SURVEY																
Areal Required (acres)	1 75	1 72	1 75	1 72	0 78	2 17	2 17	0 00	0 00	0 00	0 00	1 10	1 10	1 10	1 10	0 00
Survey Cost (\$/acre)	\$580	\$580	\$580	\$580	\$580	\$580	\$580	\$580	\$580	\$580	\$580	\$580	\$580	\$580	\$580	\$580
TOTAL SURVEY COST (\$)	\$1,015	\$998	\$1,015	\$998	\$452	\$1,259	\$1,259	\$0	\$0	\$0	\$0	\$638	\$638	\$638	\$638	\$0
LEAK DETECTION SYSTEM REMOVAL																
Volume of Gravel and Piping (Yd³) (Assume 3")			14337	13851				\$0								
Quantity per Truckload (Ft³)			540	540				\$540								
Quantity to be Shipped			26 6	25 7				0 0								
Distance (Miles)			150	150				150								
Cost per Mile (\$)			\$2 58	\$2 58				\$2 58								
Transportation Cost (\$)			\$10,275	\$9,927				\$0								
Handling Cost (\$238/Load)			\$6,319	\$6,105				\$0								
Disposal Fee per Cubic Foot (\$)			\$3 70	\$3 70				\$3 70								
Disposal Cost (\$)			\$53,047	\$51,249				\$0								
TOTAL LEAK DETECTION SYSTEM REMOVAL	\$0	\$0	\$69,641	\$67,280	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL POND RECLAMATION COST	\$139,746	\$118,561	\$186,409	\$192,406	\$90,942	\$149,150	\$130,501	\$2,345	\$1,837	\$1,537	\$163	\$60,896	\$74,682	\$54,987	\$35,949	\$18,070
																\$1,258,180

#### SUMMARY - IRIGARAY

TOTAL SLUDGE COST (\$)  
 TOTAL LINER COST (\$)  
 TOTAL BACKFILL COST (\$)  
 TOTAL RADIATION SURVEY COST (\$)  
 LEAK DETECTION SYSTEM REMOVAL  
 TOTAL POND RECLAMATION COST

\$701,799  
 \$93,908  
 \$73,975  
 \$6,995  
 \$136,921  
 \$1,013,597

#### SUMMARY - CHRISTENSEN

TOTAL SLUDGE COST (\$)  
 TOTAL LINER COST (\$)  
 TOTAL BACKFILL COST (\$)  
 TOTAL RADIATION SURVEY COST (\$)  
 LEAK DETECTION SYSTEM REMOVAL  
 TOTAL POND RECLAMATION COST

\$153,621  
 \$34,148  
 \$54,262  
 \$2,552  
 \$0  
 \$244,583

TOTAL PROJECT COST - CR and IR (\$)

\$1,258,180

	Irigaray				Christensen			
	Mine Units #1 Thru #9	517 USMT Test Sites	Monitor/ Trend	Sub Total	Mine Units #2 Thru #7	Monitor/ Trend	Misc. Regional	Sub Total
Number of Wells	1064	11	314	1389	2062	327	137	2526
Average Depth	250	250	250		410	410	410	
Average Diameter	4.5	4.5	4.5		4.5	4.5	4.5	
<b>Materials</b>								
Bentonite Chips Required (Ft³/Well)	11.6	11.6	11.6		11.6	11.6	11.6	
Bags of Chips Required/Well	15.0	15.0	15.0		15.0	15.0	15.0	
Cost Per Bag (\$)	\$4.50	\$4.50	\$4.50		\$4.50	\$4.50	\$4.50	
Cost/Well Bentonite Chips (\$)	\$67.50	\$67.50	\$67.50		\$67.50	\$67.50	\$67.50	
Gravel Fill Required (Ft³/Well)	15.7	15.7	15.7		33.6	33.6	33.6	
Gravel Fill Required (Yd³/Well)	0.6	0.6	0.6		1.2	1.2	1.2	
Cost of Gravel/Yd³ (\$)	\$17.53	\$17.53	\$17.53		\$17.53	\$17.53	\$17.53	
Cost/Well Gravel Fill (\$)	\$10.19	\$10.19	\$10.19		\$21.82	\$21.82	\$21.82	
Cement Cone/Markers Req'd/Well	1.0	1.0	1.0		1.0	1.0	1.0	
Cost of Cement Cones/Markers (\$)	\$4.00	\$4.00	\$4.00		\$4.00	\$4.00	\$4.00	
Total Materials Cost per Well	\$81.69	\$81.69	\$81.69		\$93.32	\$93.32	\$93.32	
<b>Labor</b>								
Hours Required per Well	1.0	1.0	1.0		1.0	1.0	1.0	
Labor Cost per Hour	\$70.00	\$70.00	\$70.00		\$70.00	\$70.00	\$70.00	
Total Labor Cost per Well (\$)	\$70.00	\$70.00	\$70.00		\$70.00	\$70.00	\$70.00	
<b>Equipment Rental</b>								
Hours Required per Well	1.0	1.0	1.0		1.0	1.0	1.0	
Backhoe w/Operator Cost/Hr (\$)	\$35.00	\$35.00	\$35.00		\$35.00	\$35.00	\$35.00	
Total Equipment Cost per Well (\$)	\$35.00	\$35.00	\$35.00		\$35.00	\$35.00	\$35.00	
Total Cost per Well (\$)	\$186.69	\$186.69	\$186.69		\$198.32	\$198.32	\$198.32	
<b>TOTAL WELL ABANDONMENT COST (\$)</b>	<b>\$198,642</b>	<b>\$2,054</b>	<b>\$58,622</b>	<b>\$259,317</b>	<b>\$408,926</b>	<b>\$64,849</b>	<b>\$27,169</b>	<b>\$500,944</b>
<b>GRAND TOTAL IRIGARAY AND CHRISTENSEN</b>	<b>\$760,261</b>							

WELLFIELD EQUIPMENT REMOVAL & DISPOSAL

Ingaray Mine Unit(s) #1 Thru #9	Chnstensen Mine Units #2 Thru #4	Chnstensen Mine Unit #5	Chnstensen Mine Unit #6	Chrstensen Mine Unit #7	Chnstensen Mine Unit #8	Total Chnstensen & Irigaray
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<b>I Wellfield Piping</b>							
<b>A Removal</b>							
Length/Well (Ft)	100	300	300	300			
Total Number of Wells	1064	1021	494	446			
Total Quantity (Ft)	106400	306300	148200	133800			
Cost of Removal (\$/Ft)	\$0 193	\$0 193	\$0.193	\$0 193			
Cost of Removal (\$)	\$20,535	\$59,116	\$28,603	\$25,823			\$134,077
Average OD (Inches)	3.0	3 0	3 0	3.0			
Chipped Volume Reduction (Ft³/Ft)	0.016	0 016	0.016	0 016			
Chipped Volume (Ft³)	1,702	4,901	2,371	2,141			
Quantity Per Truck Load (Ft³)	540	540	540	540			
Total Number of Truck Loads	3 2	9 1	4.4	4 0			
<b>B. Survey &amp; Decontamination</b>			#REF!				
Percent Requiring Decontamination	0%	0%	0%	0%			
Loads for Decontamination	0 0	0 0	0.0	0 0			
Cost for Decontamination (\$/Load)	\$550 00	\$550 00	\$550.00	\$500 00			
Cost for Decontamination (\$)	\$0	\$0	\$0	\$0			\$0
<b>C Transport &amp; Disposal</b>							
1 ) Landfill							
a Transportation							
Percent To Be Shipped	0 0%	0.0%	0 0%	0 0%			
Loads To Be Shipped	0 0	0.0	0 0	0 0			
Distance (Miles)	48	48	48	48			
Transportation Cost (\$/mile)	\$2 58	\$2 58	\$2 58	\$2 58			
Transportation Cost (\$)	\$0	\$0	\$0	\$0			\$0
b Disposal							
Disposal Fee Per Yd³	\$12 00	\$12 00	\$12 00	\$12 00			
Yds³ Per Load	20	20	20	20			
Disposal Cost (\$)	\$0	\$0	\$0	\$0			
Total Cost - Landfill	\$0	\$0	\$0	\$0			\$0
2.) Licensed Site							
a. Transportation							
Percent To Be Shipped	100.0%	100 0%	100 0%	100 0%			
Loads To Be Shipped	3.2	9.1	4 4	4 0			
Distance (Miles)	150	150	150	150			
Cost Per Mile (\$/mile)	\$2.58	\$2 58	\$2 58	\$2.58			
Transportation Cost (\$)	\$1,238	\$3,522	\$1,703	\$1,548			\$8,011
b. Disposal							
Disposal Cost Per Ft³	\$11.00	\$11.00	\$11.00	\$11.00			
Disposal Fee Per Yd³	\$297.00	\$297.00	\$297.00	\$297.00			
Quantity Per Truck Load (Yds³)	20	20	20	20			
Disposal Cost (\$)	\$19,008	\$54,054	\$26,136	\$23,760			\$122,958
Total Cost - Licensed Site	\$20,246	\$57,576	\$27,839	\$25,308			
Total Cost - Transport & Disposal	\$20,246	\$57,576	\$27,839	\$25,308			
<b>Total Cost - WF Piping Removal &amp; Disposal</b>	<b>\$40,782</b>	<b>\$116,692</b>	<b>\$56,441</b>	<b>\$51,131</b>	<b>\$0</b>	<b>\$0</b>	<b>\$265,046</b>

WELLFIELD EQUIPMENT REMOVAL & DISPOSAL	Ingaray Mine Unit(s) #1 Thru #9	Chrntensen Mine Units #2 Thru #4	Christensen Mine Unit #5	Chrntensen Mine Unit #6	Christensen Mine Unit #7	Christensen Mine Unit #8	Total Christensen & Ingaray
<b>II Production Well Pumps</b>							
<b>A Pump and Tubing Removal</b>							
Number of Production Wells	424	443	217	202			
Cost of Removal (\$/well)	\$21.44	\$21.44	\$21.44	\$21.44			
Cost of Removal (\$)	\$9,091	\$9,498	\$4,652	\$4,331			\$27,572
Number of Pumps Per Truck Load	180	180	180	180			
Number of Truck Loads (Pumps)	2.4	2.5	1.2	1.1			
<b>B Survey &amp; Decontamination (Pumps)</b>							
Percent Requiring Decontamination	50.0%	50.0%	50.0%	50.0%			
Loads for Decontamination	1.2	1.3	0.6	0.6			
Cost for Decontamination (\$/Load)	\$550.00	\$550.00	\$550.00	\$550.00			
Cost for Decontamination (\$)	\$660	\$715	\$330	\$330			\$2,035
<b>C. Tubing Volume Reduction &amp; Loading</b>							
Length per Well (Ft)	100	300	300	450			
Total Quantity (Ft)	42,400	132,900	65,100	90,900			
Cost of Removal (\$/Ft)	\$0.02	\$0.02	\$0.02	\$0.02			
Cost of Removal (\$)	\$1,018	\$3,190	\$1,562	\$2,182			\$7,951
Average OD (Inches)	3.0	3.0	3.0	3.0			
Chipped Volume Reduction (Ft³/Ft)	0.016	0.016	0.016	0.016			
Chipped Volume (Ft³)	678	2,126	1,042	1,454			
Quantity per Truckload (Ft³)	540	540	540	540			
Number of Truck Loads	1.3	3.9	1.9	2.7			
<b>D Transport &amp; Disposal</b>							
1.) Landfill							
a. Transportation							
Percent To Be Shipped (Pumps)	50.0%	50.0%	50.0%	50.0%			
Loads To Be Shipped	1.2	1.3	0.6	0.6			
Distance (Miles)	48	48	48	48			
Cost Per Mile (\$/mile)	\$2.58	\$2.58	\$2.58	\$2.58			
Transportation Cost (\$)	\$149	\$161	\$74	\$74			\$458
b Disposal							
Disposal Fee Per Yd³	\$12.00	\$12.00	\$12.00	\$12.00			
Yds³ Per Load	20	20	20	20			
Disposal Cost (\$)	\$288	\$312	\$144	\$144			\$888
Total Cost - Landfill	\$437	\$473	\$218	\$218			
2 ) Licensed Site							
a Transportation							
Percent To Be Shipped (Pumps)	50.0%	50.0%	50.0%	50.0%			
Percent To Be Shipped (Tubing)	100.0%	100.0%	100.0%	100.0%			
Loads To Be Shipped	2.5	5.2	2.5	3.2			
Distance (Miles)	150	150	150	150			
Cost Per Mile (\$/mile)	\$2.58	\$2.58	\$2.58	\$2.58			
Transportation Cost (\$)	\$951	\$2,008	\$979	\$1,255			\$5,192
b Disposal							
Disposal Cost Per Ft³	\$11.00	\$11.00	\$11.00	\$11.00			
Disposal Fee Per Yd³	\$297.00	\$297.00	\$297.00	\$297.00			
Quantity Per Truck Load (Yds³)	20	20	20	20			
Disposal Cost (\$)	\$14,590	\$30,815	\$15,022	\$19,265			\$79,693
Total Cost - Licensed Site	\$15,541	\$32,823	\$16,000	\$20,521			
Total Cost - Transport & Disposal	\$15,978	\$33,296	\$16,219	\$20,739			
<b>Total Cost - Pump Removal &amp; Disposal</b>	<b>\$26,746</b>	<b>\$46,699</b>	<b>\$22,763</b>	<b>\$27,581</b>	<b>\$0</b>	<b>\$0</b>	<b>\$123,789</b>



WELLFIELD EQUIPMENT REMOVAL & DISPOSAL	Ingaray Mine Unit(s) #1 Thru #9	Chrstensen Mine Units #2 Thru #4	Chrstensen Mine Unit #5	Chrstensen Mine Unit #6	Chrstensen Mine Unit #7	Chrstensen Mine Unit #8	Total Chrstensen & Ingaray
<b>III Surface Trunkline Piping</b>							
<b>A Removal</b>							
Total Quantity (Ft)	44700	0	0	0			
Cost of Removal (\$/Ft)	\$0 143	\$0.143	\$0 143	\$0 143			
Cost of Removal (\$)	\$6,392	\$0	\$0	\$0			\$6,392
Average OD (Inches)	8.750	8.750	0 000	0 000			
Chipped Volume Reduction (Ft³/Ft)	0.088	0.088	0 088	0.088			
Chipped Volume (Ft³)	3934	0	0	0			
Quantity Per Truck Load (Ft³)	540	540	540	540			
Total Number of Truck Loads	7.3	0 0	0 0	0 0			
<b>B. Survey &amp; Decontamination</b>							
Percent Requiring Decontamination	0 0%	0 0%	0 0%	0 0%			
Loads for Decontamination	0 0	0 0	0 0	0 0			
Cost for Decontamination (\$/Load)	\$550 00	\$550 00	\$550 00	\$550 00			
Cost for Decontamination (\$)	\$0	\$0	\$0	\$0			\$0
<b>C. Transport &amp; Disposal</b>							
1.) Landfill							
a Transportation							
Percent To Be Shipped	0 0%	0.0%	0.0%	0 0%			
Loads To Be Shipped	0 0	0 0	0 0	0 0			
Distance (Miles)	48	48	48	48			
Cost Per Mile (\$/mile)	\$2.58	\$2 58	\$2 58	\$2 58			
Transportation Cost (\$)	\$0	\$0	\$0	\$0			\$0
b Disposal							
Disposal Fee Per Yd³	\$12 00	\$12 00	\$12 00	\$12 00			
Yds³ Per Load	20	20	20	20			
Disposal Cost (\$)	\$0	\$0	\$0	\$0			\$0
Total Cost - Landfill	\$0	\$0	\$0	\$0			
2 ) Licensed Site							
a. Transportation							
Percent To Be Shipped	100 0%	100.0%	100 0%	100 0%			
Loads To Be Shipped	7.3	0 0	0 0	0 0			
Distance (Miles)	150	150	150	150			
Cost Per Mile (\$/mile)	\$2 58	\$2.58	\$2 58	\$2 58			
Transportation Cost (\$)	\$2,819	\$0	\$0	\$0			\$2,819
b Disposal							
Disposal Cost Per Ft³	\$11.00	\$11.00	\$11 00	\$11.00			
Disposal Fee Per Yd³	\$297.00	\$297.00	\$297 00	\$297 00			
Quantity Per Truck Load (Yds³)	20	20	20	20			
Disposal Cost (\$)	\$43,270	\$0	\$0	\$0			\$43,270
Total Cost - Licensed Site	\$46,089	\$0	\$0	\$0			
Total Cost - Transport & Disposal	\$46,089	\$0	\$0	\$0			
<b>Total Cost - Surface Trunkline Removal &amp; Disposal</b>	<b>\$52,481</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$52,481</b>

WELLFIELD EQUIPMENT REMOVAL & DISPOSAL

	Ingaray Mine Unit(s) #1 Thru #9	Chnstensen Mine Units #2 Thru #4	Chnstensen Mine Unit #5	Chnstensen Mine Unit #6	Chnstensen Mine Unit #7	Chnstensen Mine Unit #8	Total Christensen & Ingaray
IV Buried Trunkline							
A Removal							
Total Quantity (Ft)	7300	11565	24500	47000			
Cost of Removal (\$/Ft)	\$2.80	\$2.80	\$2.80	\$2.80			
Cost of Removal (\$)	\$20,440	\$32,382	\$68,600	\$131,600			\$253,022
Average OD (Inches)	8.750	8.750	8.750	12.000			
Chipped Volume Reduction (Ft³/Ft)	0.088	0.088	0.088	0.130			
Chipped Volume (Ft³)	642	1018	2156	6110			
Quantity Per Truck Load (Ft³)	540	540	540	540			
Number of Truck Loads	1.2	1.9	4.0	11.3			
B Survey & Decontamination							
Percent Requiring Decontamination	0.0%	0.0%	0.0%	0.0%			
Loads for Decontamination	0.0	0.0	0.0	0.0			
Cost for Decontamination (\$/Load)	\$550.00	\$550.00	\$550.00	\$550.00			
Cost for Decontamination (\$)	\$0	\$0	\$0	\$0			\$0
C Transport & Disposal							
1.) Landfill							
a. Transportation							
Percent To Be Shipped	0.0%	0.0%	0.0%	0.0%			
Loads To Be Shipped	0.0	0.0	0.0	0.0			
Distance (Miles)	48	48	48	48			
Cost Per Mile (\$/mile)	\$2.58	\$2.58	\$2.58	\$2.58			
Transportation Cost (\$)	\$0	\$0	\$0	\$0			\$0
b. Disposal							
Disposal Fee Per Yd³	\$12.00	\$12.00	\$12.00	\$12.00			
Yds³ Per Load	20	20	20	20			
Disposal Cost (\$)	\$0	\$0	\$0	\$0			\$0
Total Cost - Landfill	\$0	\$0	\$0	\$0			
2.) Licensed Site							
a. Transportation							
Percent To Be Shipped	100.0%	100.0%	100.0%	100.0%			
Loads To Be Shipped	1.2	1.9	4.0	11.3			
Distance (Miles)	150	150	150	150			
Cost Per Mile (\$/mile)	\$2.58	\$2.58	\$2.58	\$2.58			
Transportation Cost (\$)	\$464	\$735	\$1,548	\$4,373			\$7,121
b. Disposal							
Disposal Cost Per Ft³	\$11.00	\$11.00	\$11.00	\$11.00			
Disposal Fee Per Yd³	\$297.00	\$297.00	\$297.00	\$297.00			
Quantity Per Truck Load (Yds³)	20	20	20	20			
Disposal Cost (\$)	\$7,128	\$11,286	\$23,760	\$67,122			\$109,296
Total Cost - Licensed Site	\$7,592	\$12,021	\$25,308	\$71,495			
Total Cost - Transport & Disposal	\$7,592	\$12,021	\$25,308	\$71,495			
Total Cost - Buried Trunkline Removal & Disposal	\$28,032	\$44,403	\$93,908	\$203,095			\$369,439

WELLFIELD EQUIPMENT REMOVAL & DISPOSAL

	Ingaray Mine Unit(s) #1 Thru #9	Christensen Mine Units #2 Thru #4	Chnstensen Mine Unit #5	Chnstensen Mine Unit #6	Chnstensen Mine Unit #7	Chnstensen Mine Unit #8	Total Christensen & Ingaray
V Manholes							
A. Removal							
Total Quantity	5	8	5	11			
Cost of Removal (\$ Each)	\$130 00	\$130 00	\$130 00	\$130 00			
Cost of Removal (\$)	\$650	\$1,040	\$650	\$1,430			\$3,770
Quantity Per Truck Load	10	10	10	10			
Number of Truck Loads	0 5	0 8	0 5	1.1			
B Survey & Decontamination							
Percent Requiring Decontamination	0 0%	0 0%	0.0%	0 0%			
Loads for Decontamination	0 0	0.0	0 0	0 0			
Cost for Decontamination (\$/Load)	\$550 00	\$550 00	\$550 00	\$550 00			
Cost for Decontamination (\$)	\$0	\$0	\$0	\$0			\$0
C Transport & Disposal							
1 ) Landfill							
a Transportation							
Percent To Be Shipped	0 0%	0 0%	0 0%	0 0%			
Loads To Be Shipped	0 0	0.0	0.0	0.0			
Distance (Miles)	48	48	48	48			
Cost Per Mile (\$/mile)	\$2 58	\$2 58	\$2 58	\$2 58			
Transportation Cost (\$)	\$0	\$0	\$0	\$0			\$0
b Disposal							
Disposal Fee Per Yd³ (\$)	\$12 00	\$12.00	\$12 00	\$12 00			
Yds³ Per Load	20	20	20	20			
Disposal Cost (\$)	\$0	\$0	\$0	\$0			\$0
Total Cost - Landfill	\$0	\$0	\$0	\$0			
2 ) Licensed Site							
a Transportation							
Percent To Be Shipped	100 0%	100 0%	100 0%	100 0%			
Loads To Be Shipped	0 5	0.8	0.5	1.1			
Distance (Miles)	150	150	150	150			
Cost Per Mile (\$/mile)	\$2 58	\$2 58	\$2 58	\$2 58			
Transportation Cost (\$)	\$194	\$310	\$194	\$426			\$1,122
b Disposal							
Disposal Cost Per Ft³	\$11 00	\$11.00	\$11.00	\$11.00			
Disposal Fee Per Yd³	\$297.00	\$297 00	\$297 00	\$297.00			
Quantity Per Truck Load (Yds³)	20	20	20	20			
Disposal Cost (\$)	\$2,970	\$4,752	\$2,970	\$6,534			\$17,226
Total Cost - Licensed Site	\$3,164	\$5,062	\$3,164	\$6,960			
Total Cost - Transport & Disposal	\$3,164	\$5,062	\$3,164	\$6,960			
Total Cost Manhole Removal & Disposal	\$3,814	\$6,102	\$3,814	\$8,390	\$0	\$0	\$22,118
TOTAL COST - WELLFIELD EQUIP REMOVAL & DISP	\$151,854	\$213,895	\$176,926	\$290,198	\$0	\$0	\$832,873

TOPSOIL REPLACEMENT & REVEGETATION

	Ingaray Mine Unit(s) #1 Thru #9	Chnstensen Mine Units #2 Thru #4	Chnstensen Mine Unit #5	Chnstensen Mine Unit #6	Chnstensen Mine Unit #7	Chnstensen Mine Unit #8	Total Chnstensen & Ingaray
<b>I Process Plant and Office Building</b>							
A Topsoil Handling & Grading							
Affected Area (Acres)	5 0	2 5	0 0	0 0	0 0	0 0	
Average Affected Thickness (Ins)	12 0	12 0	0 0	0 0	0 0	0 0	
Topsoil Volume (Yds³)	8067	4033	0	0	0	0	
Unit Cost - Haul/Place (\$/Yd³)	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	
Topsoil Handling Cost (\$)	\$8,067	\$4,033	\$0	\$0	\$0	\$0	
Unit Cost - Grading (\$/Ac)	\$50 00	\$50 00	\$50 00	\$50 00	\$50 00	\$50 00	
Grading Cost (\$)	\$250	\$125	\$0	\$0	\$0	\$0	
Sub Total - Topsoil	\$8,317	\$4,158	\$0	\$0	\$0	\$0	\$12,475
B. Radiation Survey & Soil Analysis							
Unit Cost (\$/Ac)	\$580 00	\$580 00	\$580 00	\$580 00	\$580 00	\$580 00	
Sub Total - Survey & Analysis	\$2,900	\$1,450	\$0	\$0	\$0	\$0	\$4,350
C Revegetation							
Fertilizer (\$/Ac)	\$46 49	\$46 49	\$46 49	\$46 49	\$46 49	\$46 49	
Seeding Prep & Seeding (\$/Ac)	\$168 68	\$168 68	\$168 68	\$168 68	\$168 68	\$168 68	
Mulching & Crmping (\$/Ac)	\$276 54	\$276 54	\$276 54	\$276 54	\$276 54	\$276 54	
Sub Total Cost/Acre	\$491 71	\$491 71	\$491 71	\$491 71	\$491 71	\$491 71	
Sub Total - Revegation	\$2,459	\$1,229	\$0	\$0	\$0	\$0	\$3,688
Sub Total - Process Plant and Office Bldg	\$13,675	\$6,838	\$0	\$0	\$0	\$0	\$20,513
<b>II Ponds</b>							
A Topsoil Handling & Grading							
Affected Area (Acres)	20 0	12 0	0 0	0 0	0 0	0 0	
Average Affected Thickness (Ins)	12	12	0	0	0	0	
Topsoil Volume (Yds³)	32267	19360	0	0	0	0	
Unit Cost - Haul/Place (\$/Yd³)	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	
Topsoil Handling Cost (\$)	\$32,267	\$19,360	\$0	\$0	\$0	\$0	
Unit Cost - Grading (\$/Ac)	\$50 00	\$50 00	\$50 00	\$50 00	\$50 00	\$50 00	
Grading Cost (\$)	\$1,000	\$600	\$0	\$0	\$0	\$0	
Sub Total - Topsoil	\$33,267	\$19,960	\$0	\$0	\$0	\$0	\$53,227
B Radiation Survey & Soil Analysis							
Unit Cost (\$/Ac)	\$580 00	\$580 00	\$580 00	\$580 00	\$580 00	\$580 00	
Sub Total - Survey & Analysis	\$11,600	\$6,960	\$0	\$0	\$0	\$0	\$18,560
C Revegation							
Fertilizer (\$/Ac)	\$46 49	\$46 49	\$46 49	\$46 49	\$46 49	\$46 49	
Seeding Prep & Seeding (\$/Ac)	\$168 68	\$168 68	\$168 68	\$168 68	\$168 68	\$168 68	
Mulching & Crmping (\$/Ac)	\$276 54	\$276 54	\$276 54	\$276 54	\$276 54	\$276 54	
Sub Total Cost/Acre	\$491.71	\$491 71	\$491 71	\$491 71	\$491 71	\$491.71	
Sub Total - Revegation	\$9,834	\$5,901	\$0	\$0	\$0	\$0	\$15,735
Sub Total - Ponds	\$54,701	\$32,821	\$0	\$0	\$0	\$0	\$87,521

COGEMA Mining, Inc  
 Restoration and Reclamation Costs  
 Wyoming Operations  
 WORKSHEET 7

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TOPSOIL REPLACEMENT & REVEGETATION

Ingaray Mine Unit(s) #1 Thru #9	Chnstensen Mine Units #2 Thru #4	Chnstensen Mine Unit #5	Chnstensen Mine Unit #6	Chnstensen Mine Unit #7	Chnstensen Mine Unit #8	Total Chnstensen & Ingaray
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<b>III Wellfields</b>							
<b>A. Topsoil Handling &amp; Grading</b>							
Affected Area (Acres)	40 0	55 0	30 0	50 0	35 0	40 0	
Average Affected Thickness (Ins)	3 5	0 0	0 0	0 0	0 0	0 0	
Topsoil Volume (Yds³)	18822	0	0	0	0	0	
Unit Cost - Haul/Place (\$/Yd³)	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	
Topsoil Handling Cost (\$)	\$18,822	\$0	\$0	\$0	\$0	\$0	
Unit Cost - Grading (\$/Ac)	\$50 00	\$50 00	\$50 00	\$50 00	\$50 00	\$0 00	
Grading Cost (\$)	\$2,000	\$2,750	\$1,500	\$2,500	\$1,750	\$0	
Sub Total - Topsoil	\$20,822	\$2,750	\$1,500	\$2,500	\$1,750	\$0	\$29,322
<b>B. Radiation Survey &amp; Soil Analysis</b>							
Unit Cost (\$/Ac)	\$580 00	\$580 00	\$580 00	\$580 00	\$0 00	\$0 00	
Sub Total - Survey & Analysis	\$23,200	\$31,900	\$17,400	\$29,000	\$0	\$0	\$101,500
<b>C. Spill Cleanup</b>							
Affected Area (Acres)	0 054	0 036	0	0	0	0	
Affected Area (ft²)	2352	1568	0	0	0	0	
Affected Area Thickness (ft)	0 25	0 25	0 25	0 25	0 25	0 25	
Affected Volume (ft³)	588	392	0	0	0	0	
Quantity per Truckload (ft³)	540	540	540	540	540	540	
Quantity to be Shipped (Loads)	1.1	0.7	0 0	0 0	0 0	0 0	
Distance (miles)	150	150	150	150	150	150	
Cost per Mile (\$)	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	\$2 58	
Transportation Cost (\$)	\$425 70	\$270 90	\$0 00	\$0 00	\$0 00	\$0 00	
Handling Cost (\$200/Load)	\$220 00	\$140 00	\$0 00	\$0 00	\$0 00	\$0 00	
Disposal Fee per Cubic Foot (\$)	\$3 70	\$3 70	\$3 70	\$3.70	\$3.70	\$3.70	
Disposal Cost	\$2,175 82	\$1,450 55	\$0 000	\$0 00	\$0 00	\$0 00	
Subtotal -Spill Cleanup	\$2,821 52	\$1,861 45	\$0 00	\$0 00	\$0 00	\$0 00	\$4,683
<b>D. Revegation</b>							
Fertilizer (\$/Ac)	\$46 49	\$46 49	\$46 49	\$46 49	\$46 49	\$46 49	
Seeding Prep & Seeding (\$/Ac)	\$168 68	\$168 68	\$168 68	\$168 68	\$168 68	\$168 68	
Mulching & Crmping (\$/Ac)	\$276 54	\$276 54	\$276 54	\$276 54	\$276 54	\$276 54	
Sub Total Cost/Acre	\$491 71	\$491 71	\$491 71	\$491 71	\$491.71	\$491.71	
Sub Total - Revegation	\$19,668	\$27,044	\$14,751	\$24,586	\$17,210	\$19,668	\$122,928
Sub Total - Wellfields (\$)	\$66,512	\$63,555	\$33,651	\$56,086	\$18,960	\$19,668	\$258,433
<b>IV Roads</b>							
<b>A. Topsoil Handling &amp; Grading</b>							
Affected Area (Acres)	25 0	20 0	15 0	21 0	0 0	0 0	
Average Affected Thickness (Ins)	12	12	12	12	12	12	
Topsoil Volume (Yds³)	40333	32267	24200	33880	0	0	
Unit Cost - Haul/Place (\$/Yd³)	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	
Topsoil Handling Cost (\$)	\$40,333	\$32,267	\$24,200	\$33,880	\$0	\$0	
Unit Cost - Grading (\$/Ac)	\$50 00	\$50 00	\$50 00	\$50 00	\$50 00	\$50 00	
Grading Cost (\$)	\$1,250	\$1,000	\$750	\$1,050	\$0	\$0	
Sub Total - Topsoil	\$41,583	\$33,267	\$24,950	\$34,930	\$0	\$0	\$134,730
<b>B. Radiation Survey &amp; Soil Analysis</b>							
Unit Cost (\$/Ac)	\$580 00	\$580 00	\$580 00	\$580 00	\$0 00	\$0 00	
Sub Total - Survey & Analysis	\$14,500	\$11,600	\$8,700	\$12,180	\$0	\$0	\$46,980
<b>C. Revegation</b>							
Fertilizer (\$/Ac)	\$46 49	\$46 49	\$46 49	\$46 49			
Seeding Prep & Seeding (\$/Ac)	\$168 68	\$168 68	\$168 68	\$168 68			
Mulching & Crmping (\$/Ac)	\$276 54	\$276 54	\$276 54	\$276 54			
Sub Total Cost/Acre	\$491.71	\$491.71	\$491.71	\$491 71			
Sub Total - Revegation	\$12,293	\$9,834	\$7,376	\$10,326	\$0	\$0	\$39,829
Sub Total - Roads (\$)	\$68,376	\$54,701	\$41,026	\$57,436	\$0	\$0	\$221,539

TOPSOIL REPLACEMENT & REVEGETATION

	Irigaray Mine Unit(s) #1 Thru #9	Chnstensen Mine Units #2 Thru #4	Chnstensen Mine Unit #5	Chnstensen Mine Unit #6	Chnstensen Mine Unit #7	Chnstensen Mine Unit #8	Total Chnstensen & Irigaray
<b>V Other</b>							
A Topsoil Handling & Grading							
Affected Area (Acres)	41 0	19 0	5 0	5 0	0 0	0 0	
Average Affected Thickness (Ins)	0 0	0 0	0 0	0 0	0 0	0 0	
Topsoil Volume (Yds³)	0	0	0	0	0	0	
Unit Cost - Haul/Place (\$/Yd³)	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	
Topsoil Handling Cost (\$)	\$0	\$0	\$0	\$0	\$0	\$0	
Unit Cost - Grading (\$/Ac)	\$50 00	\$50 00	\$50 00	\$50 00	\$0 00	\$0 00	
Grading Cost (\$)	\$2,050	\$950	\$250	\$250	\$0	\$0	
Sub Total - Topsoil	\$2,050	\$950	\$250	\$250	\$0	\$0	\$3,500
B Radiation Survey & Soil Analysis							
Unit Cost (\$/Ac)	\$580 00	\$580 00	\$580 00	\$580 00	\$0 00	\$0 00	
Sub Total - Survey & Analysis	\$23,780	\$11,020	\$2,900	\$2,900	\$0	\$0	\$40,600
C Revegetation							
Fertilizer (\$/Ac)	\$46 49	\$46 49	\$46 49	\$46 49	\$0 00	\$0 00	
Seeding Prep & Seeding (\$/Ac)	\$168 68	\$168 68	\$168 68	\$168 68	\$0 00	\$0 00	
Mulching & Crimping (\$/Ac)	\$276 54	\$276 54	\$276 54	\$276 54	\$0 00	\$0 00	
Sub Total Cost/Acre	\$491 71	\$491 71	\$491 71	\$491 71	\$0 00	\$0 00	
Sub Total - Revegation	\$20,160	\$9,343	\$2,459	\$2,459	\$0	\$0	\$34,420
Sub Total - Other	\$45,990	\$21,313	\$5,609	\$5,609	\$0	\$0	\$78,520
<b>VI Remedial Action</b>							
A Topsoil Handling & Grading							
Affected Area (Acres)	65 5	54 3	25 0	38 0	17 5	20 0	
Average Affected Thickness (Ins)	0 0	0 0	0 0	0 0	0 0	0 0	
Topsoil Volume (Yds³)	0	0	0	0	0	0	
Unit Cost - Haul/Place (\$/Yd³)	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	\$1 00	
Topsoil Handling Cost (\$)	\$0	\$0	\$0	\$0	\$0	\$0	
Unit Cost - Grading (\$/Ac)	\$0 00	\$0 00	\$0 00	\$0 00	\$0 00	\$0 00	
Grading Cost (\$)	\$0	\$0	\$0	\$0	\$0	\$0	
Sub Total - Topsoil	\$0	\$0	\$0	\$0	\$0	\$0	\$0
B Radiation Survey & Soil Analysis							
Unit Cost (\$/Ac)	\$0 00	\$0 00	\$0 00	\$0 00	\$0 00	\$0 00	
Sub Total - Survey & Analysis	\$0	\$0	\$0	\$0	\$0	\$0	\$0
C Revegetation							
Fertilizer (\$/Ac)	\$46 49	\$46 49	\$46 49	\$46 49	\$46 49	\$46 49	
Seeding Prep & Seeding (\$/Ac)	\$168 68	\$168 68	\$168 68	\$168 68	\$0 00	\$0 00	
Mulching & Crimping (\$/Ac)	\$276 54	\$276 54	\$276 54	\$276 54	\$0 00	\$0 00	
Sub Total Cost/Acre	\$491.71	\$491 71	\$491.71	\$491.71	\$46 49	\$46 49	
Sub Total - Revegation	\$32,207	\$26,700	\$12,293	\$18,685	\$814	\$930	\$91,628
Sub Total - Remedial Action	\$32,207	\$26,700	\$12,293	\$18,685	\$814	\$930	\$91,628
<b>TOTAL COST - TOPSOIL &amp; REVEGETATION</b>	<b>\$281,461</b>	<b>\$205,927</b>	<b>\$92,578</b>	<b>\$137,815</b>	<b>\$19,773</b>	<b>\$20,598</b>	<b>\$758,154</b>

COGEMA Mining, Inc.  
Restoration and Reclamation Costs  
Wyoming Operations  
WORKSHEET 8

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MISCELLANEOUS RECLAMATION

Irigaray Mine Unit(s) #1 Thru #9	Christensen Mine Units #2 Thru #4	Christensen Mine Unit #5	Christensen Mine Unit #6	Christensen Mine Unit #7	Christensen Mine Unit #8	Total Christensen & Irigaray
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I	Fence Removal & Disposal						
	Quantity (Feet)	15240	35260	20000	9000	0	0
	Cost of Removal/Disposal (\$/Ft)	\$0.68	\$0.68	\$0.68	\$0.68	\$0.68	\$0.68
	Cost of Removal/Disposal (\$)	\$10,363	\$23,977	\$13,600	\$6,120	\$0	\$0
II	Powerline Removal & Disposal						
	Quantity (Feet)	9450	10565	18000	18000		
	Cost of Removal/Disposal (\$/Ft)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Cost of Removal/Disposal (\$)	\$0	\$0	\$0	\$0	\$0	\$0
III	Powerpole Removal & Disposal						
	Quantity	25	30	60	60	0	0
	Cost of Removal/Disposal (\$/Each)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Cost of Removal/Disposal (\$)	\$0	\$0	\$0	\$0	\$0	\$0
IV	Transformer Removal & Disposal						
	Quantity	3	1	0	18	0	0
	Cost of Removal/Disposal (\$/Each)	\$2,428	\$2,428	\$2,428	\$595	\$595	\$595
	Cost of Removal/Disposal (\$)	\$7,284	\$2,428	\$0	\$10,710	\$0	\$0
V	Booster Pump Assembly Removal & Disposal						
	Quantity	0	6	5	5	0	0
	Cost of Removal/Disposal (\$/Each)	\$298	\$298	\$298	\$298	\$298	\$298
	Cost of Removal/Disposal (\$)	\$0	\$1,788	\$1,490	\$1,490	\$0	\$0
VI	Culvert Removal & Disposal						
	Quantity (Feet)	150	1200	1000	1000	0	0
	Cost of Removal/Disposal (\$/Ft)	\$3.48	\$3.48	\$3.48	\$3.48	\$3.48	\$3.48
	Cost of Removal/Disposal (\$)	\$522	\$4,176	\$3,480	\$3,480	\$0	\$0
VII	Guardrail Removal						
	Quantity (Feet)	200	3000	0	0		
	Cost of Removal/Disposal (\$/Ft)	\$6.19	\$6.19	\$6.19	\$6.19	\$6.19	\$6.19
	Cost of Removal/Disposal (\$)	\$1,238	\$18,570	\$0	\$0	\$0	\$0
VIII	Low Water Stream Crossing						
	Quantity	0	1	1	0	0	0
	Cost of Removal/Disposal (\$/Each)	\$8,330	\$8,330	\$8,330	\$8,330	\$8,330	\$8,330
	Cost of Removal/Disposal (\$)	\$0	\$8,330	\$8,330	\$0	\$0	\$0
IX	Utilities Cost						
	Quantity (Mos)	4	8	4	4	0	0
	Cost Per Month (\$/Month)	\$2,380	\$1,190	\$1,190	\$1,190	\$1,190	\$1,190
	Total Cost (\$)	\$9,520	\$9,520	\$4,760	\$4,760	\$0	\$0
TOTAL MISCELLANEOUS COST		\$28,927	\$68,789	\$31,660	\$26,560	\$0	\$0
							\$155,936