



**COGEMA**

**Mining, Inc.**

August 17, 2000

Chief, Uranium Recovery Branch  
Division of Waste Management  
Office of Nuclear Material Safety and Safeguards  
Mail Stop T 7-J-8  
Nuclear Regulatory Commission  
11545 Rockville Pike  
Rockville, MD 20852

**RE: Annual Update to Financial Surety, License SUA-1341**

Dear Sirs:

In accordance with Condition No. 9.5 of License SUA-1341, COGEMA Mining, Inc. hereby submits the annual update to the financial surety estimate for decommissioning the Irigaray and Christensen Ranch sites for NRC's review and approval.

Also attached is a copy of the State of Wyoming's review of the previous year's surety estimate (dated April 10, 2000) and the final approved surety arrangement (May 9, 2000). NRC was copied on correspondence from COGEMA to State of Wyoming regarding the surety update submittal. Please note that the State of Wyoming mandated a final surety amount of \$15,018,000, which is in excess of that previously approved by NRC (\$14,101,166).

Associated with the approval of the new financial surety amount, COGEMA requests that NRC amend Condition 9.1 of the license to reflect the most recent changes in the NRC organization and mailing addresses. We realize that the above address is incorrect, yet we are following the requirement in Condition 9.1.

Please contact me if you should have any questions.

Sincerely,

Donna L. Wichers  
General Manager

Copy: NRC – Region IV  
WWH, JMV – COGEMA

**COGEMA Mining, Inc.**  
**Year 2000 to 2001**  
**Decommissioning and Reclamation Cost Estimate Update**  
**Irigaray and Christensen Ranch Projects**  
**NRC License SUA-1341**

FINANCIAL SURETY ESTIMATE UPDATE

In the previous year's annual surety update, COGEMA recommended a bonding level of \$14,101,166. This amount was approved by the NRC through Amendment 2 to SUA-1341 dated November 15, 1999.

However, the State of Wyoming DEQ did not agree with COGEMA's cost estimate and requested an increase of \$916,834 to a new total of \$15,018,000. The increase was requested to cover the restoration of several long-term vertical monitor well excursions at Irigaray, and additional contingencies for a third party contractor to do the work (if needed). The details of WDEQ's request are covered in their correspondence of April 10, attached.

Accordingly, COGEMA's letter of credit was amended for the new amount of \$15,018,000 in May 2000 (copy of approved instrument is attached with WDEQ correspondence dated May 9, 2000).

An updated reclamation/restoration surety estimate for the period of August 2000 through August 2001 is attached. The changes made since last year's annual report are listed as follows:

- Incorporation of \$400,000 into Worksheet 1 for the restoration of long-term vertical monitor well excursions at Irigaray, as mandated by the Wyoming Department of Environmental Quality in their letter to COGEMA dated April 10, 2000.
- The reduction of byproduct disposal rates at Pathfinder's Shirley Basin Tailings facility from \$15.75/ft<sup>3</sup> to \$11.00/ft<sup>3</sup> for the majority of byproduct wastes and from \$141/yd<sup>3</sup> to \$100/yd<sup>3</sup> including demolition debris, soils and concrete. The reductions are based on new disposal contract rates established by market conditions. Worksheets 2, 3, 4, and 6 are affected by this decrease.
- New contingency requirements have been added to the cost estimate as per WDEQ mandate dated April 10, 2000. New line items for pre-construction investigation and on-site monitoring have been added (1% and 0.5% respectively). Also, a 1% increase in long-term administration is added per WDEQ, but is offset by a 1% decrease in the category of unknowns (also per WDEQ). The net contingency increase is 1.5% for a new total of 21.5%.
- An inflation factor of 15.6% has been added to the cost estimate based on the change in CPI from August 1994 through June 2000.

- The net result of the above changes is a \$766,887 decrease in the WDEQ revised cost estimate of \$15,018,000 to a new total of \$14,251,113.

No decrease to the reclamation estimate is requested at this time for the completion of restoration in Irigaray Production Units 1 through 5, although a separate submittal requesting bond release is anticipated for submittal to the WDEQ during the last half of August 2000.

NRC is requested to review and approve the new surety estimate of \$14,251,113 for the coming year of 2000 – 2001.

<b>I GROUNDWATER RESTORATION - Worksheet 1:</b>		<b>\$5,785,661</b>
<b>II DECOMMISSIONING AND SURFACE RECLAMATION:</b>		
A. Process Plant(s) Equipment Removal and Disposal Worksheet 2		\$203,501
B. Plant Building(s) Demolition and Disposal Worksheet 3		\$489,688
C. Process Pond Sludge and Liner Handling Worksheet 4		\$1,531,321
D. Well Abandonment Worksheet 5		\$680,098
E. Wellfield Equipment Removal and Disposal Worksheet 6		\$762,989
F. Topsoil Replacement and Revegation Worksheet 7		\$568,868
G. Miscellaneous Reclamation Activities Worksheet 8		\$124,336
Sub Total - Decommissioning and Surface Reclamation		<b>\$4,360,802</b>
<b>SUBTOTAL RESTORATION AND RECLAMATION</b>		<b>\$10,146,463</b>
Contingency		
Project Design	2%	
Contractor Profit & Mobilization	8%	
Pre-construction Investigation	1%	
Project Management	3%	
On-site monitoring	0.5%	
Site Security & Liability Assurance	1%	
Longterm Administration	2%	
Unknowns	<u>4%</u>	
TOTAL CONTINGENCY	21.5%	\$2,181,490
SUBTOTAL		<b>\$12,327,952</b>
15.6% Inflation Factor from August, 1994 through June, 2000		\$1,923,161
<b>TOTAL RESTORATION AND RECLAMATION</b>		<b>\$14,251,113</b>

COGEMA Mining, Inc.  
Restoration and Reclamation Costs  
Wyoming Operations  
WORKSHEET 1

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
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	30.6	36.7
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	13.0	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	25197194.9	64615534.85		
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	21958254.49	39524858.1	27417012.5	22374522.6	19568440.7	49003504.6	125664292.2		
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	87833017.96	39524858.1	27417012.5	22374522.6	19568440.7	49003504.6	125664292.2
Total KGals for Treatment	87833	39525	27417	22375	19568	49004	125664

Cost Assumptions:

Power							
Avg Connected Hp	51.30	51.30	51.30	51.30	51.30	51.30	51.30
Kwh's/Hp	1.00	1.00	1.00	1.00	1.00	1.00	1.00
\$/Kwh	\$0.051	\$0.051	\$0.048	\$0.048	\$0.048	\$0.048	\$0.048
Gallons Per Minute	200	200	200	200	200	200	200
Gallons Per Hour	12000	12000	12000	12000	12000	12000	12000
Cost Per Hour	2.62	2.62	2.46	2.46	2.46	2.46	2.46
Cost Per Gallon	0.00022	0.00022	0.00021	0.00021	0.00021	0.00021	0.00021
Cost Per KGal (\$)	\$0.218	\$0.218	\$0.205	\$0.205	\$0.205	\$0.205	\$0.205
Chemicals							
Barium Chloride (\$/KGals)	\$0.041	\$0.041	\$0.041	\$0.041	\$0.041	\$0.041	\$0.041
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	\$0.497	\$0.567	\$0.498	\$0.500	\$0.500
Total Treatment Cost	\$51,209	\$20,159	\$13,632	\$12,691	\$9,749	\$24,512	\$62,832
Utilities							
Power (\$/Month)	\$1,840	\$1,840	\$1,840	\$1,840	\$1,840	\$1,840	\$1,840
Propane (\$/Month)	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Time For Treatment							
Minutes For Treatment	439165	197624	137085	111873	97842	245018	628321
Hours For Treatment	7319	3294	2285	1865	1631	4084	10472
Days For Treatment	305	137	95	78	68	170	436
Average Days Per Month	30.4	30.4	30.4	30.4	30.4	30.4	30.4
Months For Treatment	10.0	4.5	3.1	2.6	2.2	5.6	14.3
Utilities Cost (\$)	\$28,476	\$12,814	\$8,889	\$7,254	\$6,344	\$15,887	\$40,740
TOTAL PLANT & OFFICE COST	\$79,684	\$32,973	\$22,520	\$19,945	\$16,093	\$40,399	\$103,573
						\$0	\$0

COGEMA Mining, Inc.  
Restoration and Reclamation Costs  
Wyoming Operations  
WORKSHEET 1

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)	3.86	3.86	8.02	8.02	8.02	8.02	8.02		
Avg Hp/Pump	1.50	1.50	3.00	3.00	3.00	3.00	3.00		
Avg # of Pumps Required	51.9	51.9	25.0	25.0	25.0	25.0	25.0		
Avg Connected Hp	77.8	77.8	74.9	74.9	74.9	74.9	74.9		
Kwh's/Hp	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
\$/Kwh	\$0.051	\$0.051	\$0.048	\$0.048	\$0.048	\$0.048	\$0.048		
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	\$3.60	\$3.60	\$3.60	\$3.60	\$3.60		
Cost Per Gallon (\$)	\$0.0003	\$0.0003	\$0.0003	\$0.0003	\$0.0003	\$0.0003	\$0.0003		
Cost Per KGal (\$)	0.331	0.331	0.300	0.300	0.300	0.300	0.300		
Repair & Maintenance (\$/KGals)	\$0.016	\$0.016	\$0.016	\$0.016	\$0.016	\$0.016	\$0.016		
Total Cost Per KGal	\$0.347	\$0.347	\$0.316	\$0.316	\$0.316	\$0.316	\$0.316		
<b>TOTAL WELLFIELD COST</b>	<b>\$30,447</b>	<b>\$13,701</b>	<b>\$8,653</b>	<b>\$7,061</b>	<b>\$6,176</b>	<b>\$15,466</b>	<b>\$39,660</b>	<b>\$0</b>	<b>\$0</b>
<b>TOTAL GROUND WATER SWEEP COST</b>	<b>\$110,132</b>	<b>\$46,674</b>	<b>\$31,173</b>	<b>\$27,006</b>	<b>\$22,269</b>	<b>\$55,864</b>	<b>\$143,232</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	65874763.47	197624290	137085062	111872613	97842203.3	245017523	628321460.9		
Total KGals for Treatment	65875	197624	137085	111873	97842	245018	628321		
Feed to RO (gpm)	300	300	500	500	500	500	500		
Permeate Flow (gpm)	240	240	400	400	400	400	400		
Brine Flow (gpm)	60	60	100	100	100	100	100		
Average RO Recovery	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%		
Cost Assumptions:									
Power									
Avg Connected Hp	120.00	120.00	180.00	180.00	180.00	180.00	180.00		
Kwh's/Hp	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
\$/Kwh	\$0.051	\$0.051	\$0.048	\$0.048	\$0.048	\$0.048	\$0.048		
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	\$8.64	\$8.64	\$8.64	\$8.64	\$8.64		
Cost Per Gallon (\$)	\$0.00034	\$0.00034	\$0.00029	\$0.00029	\$0.00029	\$0.00029	\$0.00029		
Cost Per KGal (\$)	\$0.340	\$0.340	\$0.288	\$0.288	\$0.288	\$0.288	\$0.288		
Chemicals									
Sulfuric Acid (\$/KGals)	\$0.076	\$0.076	\$0.076	\$0.076	\$0.076	\$0.076	\$0.076		
Caustic Soda (\$/KGals)	\$0.111	\$0.111	\$0.111	\$0.111	\$0.111	\$0.111	\$0.111		
Hydrochloric Acid (\$/KGals)	\$0.009	\$0.009	\$0.009	\$0.009	\$0.009	\$0.009	\$0.009		
Hydrogen Sulfide (\$/KGals)	\$0.304	\$0.304	\$0.304	\$0.304	\$0.304	\$0.304	\$0.304		
Repair & Maintenance (\$/KGals)	\$0.279	\$0.279	\$0.279	\$0.279	\$0.279	\$0.279	\$0.279		
Sampling & Analysis (\$/KGals)	\$0.164	\$0.091	\$0.091	\$0.161	\$0.092	\$0.094	\$0.094		
Total Cost Per KGal (\$)	\$1.283	\$1.210	\$1.158	\$1.228	\$1.159	\$1.161	\$1.161		
Total Pumping Cost (\$)	\$84,517	\$239,125	\$158,745	\$137,380	\$113,399	\$284,465	\$729,481		
Utilities									
Power (\$/Month)	\$1,840	\$1,840	\$1,840	\$1,840	\$1,840	\$1,840	\$1,840		
Propane (\$/Month)	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000		
Time For Treatment									
Minutes For Treatment	219583	658748	274170	223745	195684	490035	1256643		
Hours For Treatment	3660	10979	4570	3729	3261	8167	20944		
Days For Treatment	152	457	190	155	136	340	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	11.2	28.7		
Utilities Cost (\$)	\$14,200	\$42,600	\$17,892	\$14,484	\$12,780	\$31,808	\$81,508		
<b>TOTAL PLANT &amp; OFFICE COST</b>	<b>\$98,717</b>	<b>\$281,725</b>	<b>\$176,637</b>	<b>\$151,864</b>	<b>\$126,179</b>	<b>\$316,273</b>	<b>\$810,989</b>	<b>\$0</b>	<b>\$0</b>

COGEMA Mining, Inc.  
Restoration and Reclamation Costs  
Wyoming Operations  
WORKSHEET 1

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	8.02	8.02	8.02	8.02	8.02		
Avg Hp/Pump	1.50	1.50	3.00	3.00	3.00	3.00	3.00		
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	\$0.048	\$0.048	\$0.048	\$0.048	\$0.048		
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	\$8.98	\$8.98	\$8.98	\$8.98	\$8.98		
Cost Per Gallon (\$)	\$0.0003	\$0.0003	\$0.0003	\$0.0003	\$0.0003	\$0.0003	\$0.0003		
Cost Per KGal (\$)	\$0.331	\$0.331	\$0.299	\$0.299	\$0.299	\$0.299	\$0.299		
Repair & Maintenance (\$/KGals)	\$0.016	\$0.016	\$0.016	\$0.016	\$0.016	\$0.016	\$0.016		
Total Cost Per KGal	\$0.347	\$0.347	\$0.315	\$0.315	\$0.315	\$0.315	\$0.315		
<b>TOTAL WELLFIELD COST</b>	<b>\$22,835</b>	<b>\$68,506</b>	<b>\$43,231</b>	<b>\$35,280</b>	<b>\$30,856</b>	<b>\$77,269</b>	<b>\$198,147</b>	<b>\$0</b>	<b>\$0</b>
<b>TOTAL REVERSE OSMOSIS COST</b>	<b>\$121,553</b>	<b>\$350,232</b>	<b>\$219,868</b>	<b>\$187,144</b>	<b>\$157,035</b>	<b>\$393,542</b>	<b>\$1,009,137</b>	<b>\$0</b>	<b>\$0</b>
<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			27417012.5	22374522.6	19568440.7	49003504.6	125664292.2		
Months of RO Operation			6.3	5.1	4.5	11.2	28.7		
Average Monthly Req'm't (Gallons)			4351907	4387161	4348542	4376313	4378547		
Monthly Balance for DDW (Gals)			4192106	4227360	4188741	4215512	4218746		
Total WDW Disposal (Gallons)			26410266.2	21559537.5	18849336.2	47213733.5	121078003.5		
Total WDW Disposal (KGals)			26410	21560	18849	47214	121078		
Cost Assumptions:									
Power									
Avg Connected Hp			100.00	100.00	100.00	100.00	100.00		
Kwh's/Hp			1.000	1.000	1.000	1.000	1.000		
\$/Kwh			\$0.048	\$0.048	\$0.048	\$0.048	\$0.048		
Gallons Per Minute			150	150	150	150	150		
Gallons Per Hour			9000	9000	9000	9000	9000		
Cost Per Hour (\$)			\$4.80	\$4.80	\$4.80	\$4.80	\$4.80		
Cost Per Gallon (\$)			\$0.0005	\$0.0005	\$0.0005	\$0.0005	\$0.0005		
Cost Per KGal (\$)			\$0.533	\$0.533	\$0.533	\$0.533	\$0.533		
Chemicals (\$/KGals)									
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			\$1.112	\$1.112	\$1.112	\$1.112	\$1.112		
<b>TOTAL WASTE DISPOSAL WELL COST</b>			<b>\$29,377</b>	<b>\$23,981</b>	<b>\$20,967</b>	<b>\$52,517</b>	<b>\$134,679</b>	<b>\$0</b>	<b>\$0</b>
<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>	<b>\$0</b>

COGEMA Mining, Inc.  
 Restoration and Reclamation Costs  
 Wyoming Operations  
 WORKSHEET 1

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
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V LABOR (Irigaray and Christensen Combined)			
Cost Assumptions	Cost/Hour	Hours/Year	Cost
Crew:			
1 Supervisor	\$20.00	2080	\$41,600
4 Operators	\$15.00	2080	\$124,800
2 Maintenance	\$15.00	2080	\$62,400
2 Vehicles	\$10.00	2080	\$41,600
Cost per Year			\$270,400
Time Required - Years (See Figure 1)		6.7	
TOTAL RESTORATION LABOR COST			\$1,811,680

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 (2)		\$200,000	\$200,000
III 500 GPM Reverse Osmosis Unit		\$0	\$0
Total	\$0	\$200,000	\$200,000

	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
SUMMARY:										
I GROUNDWATER SWEEP	\$110,132	\$46,674	\$31,173	\$27,006	\$22,269	\$55,864	\$143,232	\$0		
II REVERSE OSMOSIS	\$121,553	\$350,232	\$219,868	\$187,144	\$157,035	\$393,542	\$1,009,137	\$0		
III WASTE DISPOSAL WELL	\$0	\$0	\$29,377	\$23,981	\$20,967	\$52,517	\$134,679	\$0		
IV STABILIZATION	\$10,800	\$37,800	\$37,800	\$37,800	\$37,800	\$37,800	\$37,800	\$0		
SUB TOTAL	\$242,485	\$434,706	\$318,218	\$275,931	\$238,070	\$539,724	\$1,324,848	\$0		\$3,373,981
V LABOR										\$1,811,680
VI CAPITAL										\$200,000
TOTAL GROUNDWATER RESTORATION COST										\$5,385,661
										\$400,000
GRAND TOTAL										\$5,785,661

WDEQ Mandated Estimate for Excursion Well Cleanup (April 2000)



COGEMA Mining, Inc.  
 Restoration and Reclamation Costs  
 Wyoming Operations  
 WORKSHEET 2

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	9.9	2.1	2.8	
I Decontamination Cost												
Decontamination Cost (\$/Load)	\$462	\$462	\$462	\$462	\$462	\$462		\$462	\$462	\$462	\$462	
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	\$185	\$4,620	\$4,158	\$0	\$924	\$924	\$10,811	\$2,102	\$0	\$970	\$1,271	\$4,343
II Dismantle and Loading Cost												
Cost Per Truck Load (\$)	\$600	\$600	\$600	\$600	\$600	\$600		\$600	\$600	\$600	\$600	
Total Cost	\$1,200	\$6,000	\$5,400	\$3,300	\$1,200	\$1,200	\$18,300	\$2,730	\$5,910	\$1,260	\$1,650	\$11,550
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	\$272	
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	\$528	
Total Cost	\$582	\$2,911	\$2,620	\$0	\$364	\$582		\$1,324	\$0	\$611	\$800	
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	\$3,812	\$163	\$213	
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	\$58,509	\$2,495	\$3,267	
Total Cost Licensed Site	\$2,531	\$12,654	\$11,389	\$34,799	\$6,327	\$2,531		\$5,758	\$62,321	\$2,657	\$3,480	
Total Cost Transportation & Disposal	\$3,113	\$15,565	\$14,008	\$34,799	\$6,691	\$3,113	\$77,288	\$7,082	\$62,321	\$3,269	\$4,280	\$76,952
TOTAL COST	\$4,759	\$27,489	\$24,740	\$38,099	\$9,206	\$5,498	\$109,789	\$12,507	\$68,231	\$5,773	\$7,201	\$93,712
TOTAL COST - IRIGARAY AND CHRISTENSEN												\$203,501

COGEMA Mining, Inc.  
 Restoration and Reclamation Costs  
 Wyoming Operations  
 WORKSHEET 3

Irigaray							Christensen						
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	69640		192000	95040	46720	72000	64800	11000	
Cost of Demolition Per Ft³	\$0.110	\$0.110	\$0.110	\$0.110	\$0.110	\$0.110		\$0.110	\$0.110	\$0.110	\$0.110	\$0.110	\$0.110	
Demolition Cost (\$)	\$19,734	\$11,959	\$47,344	\$42,504	\$13,860	\$7,660	\$143,062	\$21,120	\$10,454	\$5,139	\$7,920	\$7,128	\$1,210	\$52,972
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 (\$)	\$2,960	\$1,196	\$14,203	\$4,250	\$2,772	\$766	\$26,148	\$4,224	\$0	\$0	\$1,584	\$713	\$121	\$6,642
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	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00		\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	
Disposal Cost	\$2,381	\$1,443	\$5,713	\$5,129	\$1,673	\$924	\$17,264	\$2,549	\$1,000	\$420	\$956	\$582	\$146	\$5,653
<b>TOTAL COST</b>	<b>\$25,567</b>	<b>\$14,896</b>	<b>\$68,440</b>	<b>\$52,942</b>	<b>\$18,650</b>	<b>\$9,542</b>	<b>\$190,037</b>	<b>\$28,419</b>	<b>\$11,661</b>	<b>\$5,646</b>	<b>\$10,657</b>	<b>\$8,543</b>	<b>\$1,507</b>	<b>\$66,433</b>
<b>TOTAL COST IRIGARAY AND CHRISTENSEN</b>														<b>\$256,470</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)	\$0.143	\$0.143	\$0.143	\$0.143	\$0.143	\$0.143		\$0.143	\$0.000	\$0.143	\$0.143	\$0.143	\$0.143	
Decontamination Cost	\$0	\$0	\$1,888	\$1,973	\$320	\$386	\$4,567	\$1,030	\$0	\$206	\$515	\$0	\$0	\$1,750
Demolition (\$/Ft²)	\$1.584	\$1.584	\$1.584	\$1.584	\$1.584	\$1.584		\$1.584	\$1.584	\$1.584	\$1.584	\$1.584	\$1.584	
Demolition Cost	\$12,704	\$11,246	\$27,878	\$29,146	\$8,870	\$5,702	\$95,547	\$15,206	\$0	\$2,281	\$5,702	\$0	\$1,584	\$24,774
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	\$66	\$1,208	\$176	\$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>\$12,900</b>	<b>\$11,420</b>	<b>\$39,806</b>	<b>\$41,615</b>	<b>\$24,140</b>	<b>\$8,142</b>	<b>\$138,025</b>	<b>\$21,712</b>	<b>\$0</b>	<b>\$2,522</b>	<b>\$6,305</b>	<b>\$0</b>	<b>\$1,609</b>	<b>\$32,148</b>
<b>TOTAL COST IRIGARAY AND CHRISTENSEN</b>														<b>\$170,173</b>

COGEMA Mining, Inc.  
 Restoration and Reclamation Costs  
 Wyoming Operations  
 WORKSHEET 3

Irigaray							Christensen							
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

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	\$0	\$444
Quantity to be Shipped (Ft³)	0	0	4400	4600	1400	900		2400	0	0	0	0	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	\$3,153	\$3,297	\$1,003	\$645	\$8,098	\$1,720	\$0	\$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	\$3.70	
Quantity per Truckload (Ft³)	540	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	\$0	\$8,880
Total Cost	\$0	\$0	\$20,248	\$21,169	\$6,442	\$4,142	\$52,001	\$11,044	\$0	\$0	\$0	\$0	\$0	\$11,044
TOTAL COST	\$0	\$0	\$20,248	\$21,169	\$6,442	\$4,142	\$69,370	\$11,044	\$0	\$0	\$0	\$0	\$0	\$11,044
TOTAL COST IRIGARAY AND CHRISTENSEN														\$80,414

TOTAL COST	\$38,467	\$26,317	\$128,494	\$115,726	\$49,233	\$21,826	\$380,063	\$61,175	\$11,661	\$8,169	\$16,962	\$8,543	\$3,116	\$109,625
TOTAL COST IRIGARAY AND CHRISTENSEN														\$489,688

COGEMA Mining, Inc.  
Restoration and Reclamation Costs  
Wyoming Operations  
WORKSHEET 4

												Christensen				
												Brine	Brine	Brine	Brine	Permeate
												Pond 1	Pond 2	Pond 3	Pond 4	Pond
</																

COGEMA Mining, Inc.  
 Restoration and Reclamation Costs  
 Wyoming Operations  
 WORKSHEET 4

WORKSHEET 1

POND RECLAMATION COST	Irigaray							S17				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	
LEAK DETECTION SYSTEM REMOVAL																	
Volume of Gravel and Piping (Ft³) (Assume 3")			14337	13851				9261									
Quantity per Truckload (Ft³)			540	540				540									
Quantity to be Shipped (Loads)			26.6	25.7				17.2									
Distance (Miles)			150	150				150									
Cost per Mile (\$)			\$2.58	\$2.58				\$2.58									
Transportation Cost (\$)			\$10,275	\$9,927				\$6,637									
Handling Cost (\$200/Load)			\$5,310	\$5,130				\$3,430									
Disposal Fee per Cubic Foot (\$)			\$3.70	\$3.70				\$3.70									
Disposal Cost (\$)			\$53,047	\$51,249				\$34,266									
TOTAL LEAK DETECTION SYSTEM REMOVAL	\$0	\$0	\$68,632	\$66,305	\$0	\$0	\$0	\$44,333	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$179,270	
TOTAL POND RECLAMATION COST	\$216,299	\$82,988	\$284,930	\$218,479	\$14,918	\$423,207	\$46,343	\$77,355	\$46,221	\$14,592	\$7,343	\$20,144	\$20,144	\$20,144	\$20,144	\$18,070	\$1,531,321

SUMMARY - IRIGARAY:

TOTAL SLUDGE COST (\$)	\$1,072,387
TOTAL LINER COST (\$)	\$107,043
TOTAL BACKFILL COST (\$)	\$73,975
LEAK DETECTION SYSTEM REMOVAL	\$179,270
TOTAL POND RECLAMATION COST	\$1,432,675

SUMMARY - CHRISTENSEN:

TOTAL SLUDGE COST (\$)	\$10,444
TOTAL LINER COST (\$)	\$33,940
TOTAL BACKFILL COST (\$)	\$54,262
LEAK DETECTION SYSTEM REMOVAL	\$0
TOTAL POND RECLAMATION COST	\$98,646

TOTAL PROJECT COST - CR and IR (\$) **\$1,531,321**

COGEMA Mining, Inc.  
 Restoration and Reclamation Costs  
 Wyoming Operations  
 WORKSHEET 5

	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	24	315	1403	2094	327	137	2558
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 (Ft <sup>3</sup> /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 (\$)	\$4.00	\$4.00	\$4.00		\$4.00	\$4.00	\$4.00	
Cost/Well Bentonite Chips (\$)	\$60.00	\$60.00	\$60.00		\$60.00	\$60.00	\$60.00	
Gravel Fill Required (Ft <sup>3</sup> /Well)	15.7	15.7	15.7		33.6	33.6	33.6	
Gravel Fill Required (Yd <sup>3</sup> /Well)	0.6	0.6	0.6		1.2	1.2	1.2	
Cost of Gravel/Yd <sup>3</sup> (\$)	\$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	\$74.19	\$74.19	\$74.19		\$85.82	\$85.82	\$85.82	
<b>Labor</b>								
Hours Required per Well	1.0	1.0	1.0		1.0	1.0	1.0	
Labor Cost per Hour	\$60.00	\$60.00	\$60.00		\$60.00	\$60.00	\$60.00	
Total Labor Cost per Well (\$)	\$60.00	\$60.00	\$60.00		\$60.00	\$60.00	\$60.00	
<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 (\$)	\$30.00	\$30.00	\$30.00		\$30.00	\$30.00	\$30.00	
Total Equipment Cost per Well (\$)	\$30.00	\$30.00	\$30.00		\$30.00	\$30.00	\$30.00	
Total Cost per Well (\$)	\$164.19	\$164.19	\$164.19		\$175.82	\$175.82	\$175.82	
<b>TOTAL WELL ABANDONMENT COST (\$)</b>	<b>\$174,702</b>	<b>\$3,941</b>	<b>\$51,721</b>	<b>\$230,363</b>	<b>\$368,157</b>	<b>\$57,492</b>	<b>\$24,087</b>	<b>\$449,735</b>
<b>GRAND TOTAL IRIGARAY AND CHRISTENSEN</b>	<b>\$680,098</b>							

COGEMA Mining, Inc.  
Restoration and Reclamation Costs  
Wyoming Operations  
WORKSHEET 6

WELLFIELD EQUIPMENT REMOVAL & DISPOSAL

	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
<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)	\$0.162	\$0.162	\$0.162	\$0.162			
Cost of Removal (\$)	\$17,237	\$49,621	\$24,008	\$21,676			\$112,541
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>							
Percent Requiring Decontamination	0%	0%	0%	0%			
Loads for Decontamination	0.0	0.0	0.0	0.0			
Cost for Decontamination (\$/Load)	\$461.70	\$461.70	\$461.70	\$461.70			
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			\$130,969
Total Cost - Transport & Disposal	\$20,246	\$57,576	\$27,839	\$25,308			\$130,969
<b>Total Cost - WF Piping Removal &amp; Disposal</b>	<b>\$37,483</b>	<b>\$107,196</b>	<b>\$51,847</b>	<b>\$46,984</b>	<b>\$0</b>	<b>\$0</b>	<b>\$243,510</b>

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	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
<b>WELLFIELD EQUIPMENT REMOVAL &amp; DISPOSAL</b>							
<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)	\$18.00	\$18.00	\$18.00	\$18.00			
Cost of Removal (\$)	\$7,632	\$7,974	\$3,906	\$3,636			\$23,148
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)	\$461.70	\$461.70	\$461.70	\$461.70			
Cost for Decontamination (\$)	\$554	\$600	\$277	\$277			\$1,708
<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 (\$)	\$848	\$2,658	\$1,302	\$1,818			\$6,626
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			\$1,346
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			\$84,885
Total Cost - Transport & Disposal	\$15,978	\$33,296	\$16,219	\$20,739			\$86,231
<b>Total Cost - Pump Removal &amp; Disposal</b>	<b>\$25,012</b>	<b>\$44,528</b>	<b>\$21,704</b>	<b>\$26,470</b>	<b>\$0</b>	<b>\$0</b>	<b>\$117,713</b>



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	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
WELLFIELD EQUIPMENT REMOVAL & DISPOSAL							
III Surface Trunkline Piping							
A. Removal							
Total Quantity (Ft)	44700	0	0	0	0	0	
Cost of Removal (\$/Ft)	\$0.120	\$0.120	\$0.120	\$0.120	\$0.120	\$0.120	
Cost of Removal (\$)	\$5,364	\$0	\$0	\$0	\$0	\$0	\$5,364
Average OD (Inches)	8.750	8.750	0.000	0.000	0.000	0.000	
Chipped Volume Reduction (Ft³/Ft)	0.088	0.088	0.088	0.088	0.088	0.088	
Chipped Volume (Ft³)	3934	0	0	0	0	0	
Quantity Per Truck Load (Ft³)	540	540	540	540	0	0	
Total Number of Truck Loads	7.3	0.0	0.0	0.0	0.0	0.0	
B. Survey & Decontamination							
Percent Requiring Decontamination	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Loads for Decontamination	0.0	0.0	0.0	0.0	0.0	0.0	
Cost for Decontamination (\$/Load)	\$461.70	\$461.70	\$461.70	\$461.70	\$0.00	\$0.00	
Cost for Decontamination (\$)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
C. Transport & Disposal							
1.) Landfill							
a. Transportation							
Percent To Be Shipped	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Loads To Be Shipped	0.0	0.0	0.0	0.0	0.0	0.0	
Distance (Miles)	48	48	48	48	0	0	
Cost Per Mile (\$/mile)	\$2.58	\$2.58	\$2.58	\$2.58	\$0.00	\$0.00	
Transportation Cost (\$)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
b. Disposal							
Disposal Fee Per Yd³	\$12.00	\$12.00	\$12.00	\$12.00	\$0.00	\$0.00	
Yds³ Per Load	20	20	20	20	0	0	
Disposal Cost (\$)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Cost - Landfill	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.) Licensed Site							
a. Transportation							
Percent To Be Shipped	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
Loads To Be Shipped	7.3	0.0	0.0	0.0	0.0	0.0	
Distance (Miles)	150	150	150	150	0	0	
Cost Per Mile (\$/mile)	\$2.58	\$2.58	\$2.58	\$2.58	\$0.00	\$0.00	
Transportation Cost (\$)	\$2,819	\$0	\$0	\$0	\$0	\$0	\$2,819
b. Disposal							
Disposal Cost Per Ft³	\$11.00	\$11.00	\$11.00	\$11.00	\$0.00	\$0.00	
Disposal Fee Per Yd³	\$297.00	\$297.00	\$297.00	\$297.00	\$0.00	\$0.00	
Quantity Per Truck Load (Yds³)	20	20	20	20	0	0	
Disposal Cost (\$)	\$43,270	\$0	\$0	\$0	\$0	\$0	\$43,270
Total Cost - Licensed Site	\$46,089	\$0	\$0	\$0	\$0	\$0	\$46,089
Total Cost - Transport & Disposal	\$46,089	\$0	\$0	\$0	\$0	\$0	\$46,089
Total Cost - Surface Trunkline Removal & Disposal	\$51,453	\$0	\$0	\$0	\$0	\$0	\$51,453

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	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
WELLFIELD EQUIPMENT REMOVAL & DISPOSAL							
IV Buried Trunkline							
A. Removal							
Total Quantity (Ft)	7300	11565	24500	47000	0	0	
Cost of Removal (\$/Ft)	\$2.35	\$2.35	\$2.35	\$2.35	\$2.35	\$2.35	
Cost of Removal (\$)	\$17,155	\$27,178	\$57,575	\$110,450	\$0	\$0	\$212,358
Average OD (Inches)	8.750	8.750	8.750	12.000	12.000	12.000	
Chipped Volume Reduction (Ft³/Ft)	0.088	0.088	0.088	0.130	0.130	0.130	
Chipped Volume (Ft³)	642	1018	2156	6110	0	0	
Quantity Per Truck Load (Ft³)	540	540	540	540	0	0	
Number of Truck Loads	1.2	1.9	4.0	11.3	0.0	0.0	
B. Survey & Decontamination							
Percent Requiring Decontamination	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Loads for Decontamination	0.0	0.0	0.0	0.0	0.0	0.0	
Cost for Decontamination. (\$/Load)	\$461.70	\$461.70	\$461.70	\$461.70	\$0.00	\$0.00	
Cost for Decontamination. (\$)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
C. Transport & Disposal							
1.) Landfill							
a. Transportation							
Percent To Be Shipped	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Loads To Be Shipped	0.0	0.0	0.0	0.0	0.0	0.0	
Distance (Miles)	48	48	48	48	0	0	
Cost Per Mile (\$/mile)	\$2.58	\$2.58	\$2.58	\$2.58	\$0.00	\$0.00	
Transportation Cost (\$)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
b. Disposal							
Disposal Fee Per Yd³	\$12.00	\$12.00	\$12.00	\$12.00	\$0.00	\$0.00	
Yds³ Per Load	20	20	20	20	0	0	
Disposal Cost (\$)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Cost - Landfill	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.) Licensed Site							
a. Transportation							
Percent To Be Shipped	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
Loads To Be Shipped	1.2	1.9	4.0	11.3	0.0	0.0	
Distance (Miles)	150	150	150	150	0	0	
Cost Per Mile (\$/mile)	\$2.58	\$2.58	\$2.58	\$2.58	\$0.00	\$0.00	
Transportation Cost (\$)	\$464	\$735	\$1,548	\$4,373	\$0	\$0	\$7,121
b. Disposal							
Disposal Cost Per Ft³	\$11.00	\$11.00	\$11.00	\$11.00	\$0.00	\$0.00	
Disposal Fee Per Yd³	\$297.00	\$297.00	\$297.00	\$297.00	\$0.00	\$0.00	
Quantity Per Truck Load (Yds³)	20	20	20	20	0	0	
Disposal Cost (\$)	\$7,128	\$11,286	\$23,760	\$67,122	\$0	\$0	\$109,296
Total Cost - Licensed Site	\$7,592	\$12,021	\$25,308	\$71,495	\$0	\$0	\$116,417
Total Cost - Transport & Disposal	\$7,592	\$12,021	\$25,308	\$71,495	\$0	\$0	\$116,417
Total Cost - Buried Trunkline Removal & Disposal	\$24,747	\$39,199	\$82,883	\$181,945	\$0	\$0	\$328,775

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	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
<b>WELLFIELD EQUIPMENT REMOVAL &amp; DISPOSAL</b>							
<b>V Manholes</b>							
<b>A. Removal</b>							
Total Quantity	5	8	5	11	0	0	
Cost of Removal (\$ Each)	\$110.00	\$110.00	\$110.00	\$110.00	\$110.00	\$110.00	
Cost of Removal (\$)	\$550	\$880	\$550	\$1,210	\$0	\$0	\$3,190
Quantity Per Truck Load	10	10	10	10	10	10	
Number of Truck Loads	0.5	0.8	0.5	1.1	0.0	0.0	
<b>B. Survey &amp; Decontamination</b>							
Percent Requiring Decontamination	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Loads for Decontamination	0.0	0.0	0.0	0.0	0.0	0.0	
Cost for Decontamination (\$/Load)	\$461.70	\$461.70	\$461.70	\$461.70	\$0.00	\$0.00	
Cost for Decontamination (\$)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>C. Transport &amp; Disposal</b>							
<b>1.) Landfill</b>							
<b>a. Transportation</b>							
Percent To Be Shipped	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Loads To Be Shipped	0.0	0.0	0.0	0.0	0.0	0.0	
Distance (Miles)	48	48	48	48	0	0	
Cost Per Mile (\$/mile)	\$2.58	\$2.58	\$2.58	\$2.58	\$0.00	\$0.00	
Transportation Cost (\$)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>b. Disposal</b>							
Disposal Fee Per Yd³ (\$)	\$12.00	\$12.00	\$12.00	\$12.00	\$0.00	\$0.00	
Yds³ Per Load	20	20	20	20	0	0	
Disposal Cost (\$)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Cost - Landfill	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>2.) Licensed Site</b>							
<b>a. Transportation</b>							
Percent To Be Shipped	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
Loads To Be Shipped	0.5	0.8	0.5	1.1	0.0	0.0	
Distance (Miles)	150	150	150	150	0	0	
Cost Per Mile (\$/mile)	\$2.58	\$2.58	\$2.58	\$2.58	\$0.00	\$0.00	
Transportation Cost (\$)	\$194	\$310	\$194	\$426	\$0	\$0	\$1,122
<b>b. Disposal</b>							
Disposal Cost Per Ft³	\$11.00	\$11.00	\$11.00	\$11.00	\$0.00	\$0.00	
Disposal Fee Per Yd³	\$297.00	\$297.00	\$297.00	\$297.00	\$0.00	\$0.00	
Quantity Per Truck Load (Yds³)	20	20	20	20	0	0	
Disposal Cost (\$)	\$2,970	\$4,752	\$2,970	\$6,534	\$0	\$0	\$17,226
Total Cost - Licensed Site	\$3,164	\$5,062	\$3,164	\$6,960	\$0	\$0	\$18,348
Total Cost - Transport & Disposal	\$3,164	\$5,062	\$3,164	\$6,960	\$0	\$0	\$18,348
<b>Total Cost Manhole Removal &amp; Disposal</b>	<b>\$3,714</b>	<b>\$5,942</b>	<b>\$3,714</b>	<b>\$8,170</b>	<b>\$0</b>	<b>\$0</b>	<b>\$21,538</b>
<b>TOTAL COST - WELLFIELD EQUIP REMOVAL &amp; DISP</b>	<b>\$142,408</b>	<b>\$196,865</b>	<b>\$160,147</b>	<b>\$263,568</b>	<b>\$0</b>	<b>\$0</b>	<b>\$762,989</b>

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TOPSOIL REPLACEMENT & REVEGETATION

	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
<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)	\$75.00	\$75.00	\$75.00	\$75.00	\$75.00	\$75.00	
Sub Total - Survey & Analysis	\$375	\$188	\$0	\$0	\$0	\$0	\$563
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 & Crimping (\$/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 - Revegetation	\$2,459	\$1,229	\$0	\$0	\$0	\$0	\$3,688
Sub Total - Process Plant and Office Bldg.	\$11,150	\$5,575	\$0	\$0	\$0	\$0	\$16,725
<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)	\$75.00	\$75.00	\$75.00	\$75.00	\$75.00	\$75.00	
Sub Total - Survey & Analysis	\$1,500	\$900	\$0	\$0	\$0	\$0	\$2,400
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 & Crimping (\$/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 - Revegetation	\$9,834	\$5,901	\$0	\$0	\$0	\$0	\$15,735
Sub Total - Ponds	\$44,601	\$26,761	\$0	\$0	\$0	\$0	\$71,362

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TOPSOIL REPLACEMENT & REVEGETATION	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
III Wellfields							
A. Topsoil Handling & Grading							
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 (Yds <sup>3</sup> )	18822	0	0	0	0	0	
Unit Cost - Haul/Place (\$/Yd <sup>3</sup> )	\$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. Radiation Survey & Soil Analysis							
Unit Cost (\$/Ac)	\$75.00	\$75.00	\$75.00	\$75.00	\$0.00	\$0.00	
Sub Total - Survey & Analysis	\$3,000	\$4,125	\$2,250	\$3,750	\$0	\$0	\$13,125
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 & Crimping (\$/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 - Revegetation	\$19,668	\$27,044	\$14,751	\$24,586	\$17,210	\$19,668	\$122,928
Sub Total - Wellfields (\$)	\$43,491	\$33,919	\$18,501	\$30,836	\$18,960	\$19,668	\$165,375
IV Roads							
A. Topsoil Handling & Grading							
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 (Yds <sup>3</sup> )	40333	32267	24200	33880	0	0	
Unit Cost - Haul/Place (\$/Yd <sup>3</sup> )	\$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. Radiation Survey & Soil Analysis							
Unit Cost (\$/Ac)	\$75.00	\$75.00	\$75.00	\$75.00	\$0.00	\$0.00	
Sub Total - Survey & Analysis	\$1,875	\$1,500	\$1,125	\$1,575	\$0	\$0	\$6,075
C. Revegetation							
Fertilizer (\$/Ac)	\$46.49	\$46.49	\$46.49	\$46.49			
Seeding Prep & Seeding (\$/Ac)	\$168.68	\$168.68	\$168.68	\$168.68			
Mulching & Crimping (\$/Ac)	\$276.54	\$276.54	\$276.54	\$276.54			
Sub Total Cost/Acre	\$491.71	\$491.71	\$491.71	\$491.71			
Sub Total - Revegetation	\$12,293	\$9,834	\$7,376	\$10,326	\$0	\$0	\$39,829
Sub Total - Roads (\$)	\$55,751	\$44,601	\$33,451	\$46,831	\$0	\$0	\$180,634

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	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
<b>TOPSOIL REPLACEMENT &amp; REVEGETATION</b>							
<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	
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	\$50.00	\$50.00	
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)	\$75.00	\$75.00	\$75.00	\$75.00	\$0.00	\$0.00	
Sub Total - Survey & Analysis	\$3,075	\$1,425	\$375	\$375	\$0	\$0	\$5,250
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 - Revegetation	\$20,160	\$9,342	\$2,459	\$2,459	\$0	\$0	\$34,420
Sub Total - Other	\$25,285	\$11,717	\$3,084	\$3,084	\$0	\$0	\$43,170
<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 - Revegetation	\$32,207	\$26,675	\$12,293	\$18,685	\$814	\$930	\$91,603
Sub Total - Remedial Action	\$32,207	\$26,675	\$12,293	\$18,685	\$814	\$930	\$91,603
<b>TOTAL COST - TOPSOIL &amp; REVEGETATION</b>	<b>\$212,485</b>	<b>\$149,248</b>	<b>\$67,328</b>	<b>\$99,435</b>	<b>\$19,773</b>	<b>\$20,598</b>	<b>\$568,868</b>

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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
I Fence Removal & Disposal							
Quantity (Feet)	15240	35260	20000	9000	0	0	
Cost of Removal/Disposal (\$/Ft)	\$0.49	\$0.49	\$0.49	\$0.49	\$0.49	\$0.49	
Cost of Removal/Disposal (\$)	\$7,468	\$17,277	\$9,800	\$4,410	\$0	\$0	\$38,955
II Powerline Removal & Disposal							
Quantity (Feet)	9450	10565	18000	18000	0	0	
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	\$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	\$0
IV Transformer Removal & Disposal							
Quantity	3	1	0	18	0	0	
Cost of Removal/Disposal (\$/Each)	\$2,040	\$2,040	\$2,040	\$500	\$500	\$500	
Cost of Removal/Disposal (\$)	\$6,120	\$2,040	\$0	\$9,000	\$0	\$0	\$17,160
V Booster Pump Assembly Removal & Disposal							
Quantity	0	6	5	5	0	0	
Cost of Removal/Disposal (\$/Each)	\$250	\$250	\$250	\$250	\$250	\$250	
Cost of Removal/Disposal (\$)	\$0	\$1,500	\$1,250	\$1,250	\$0	\$0	\$4,000
VI Culvert Removal & Disposal							
Quantity (Feet)	150	1200	1000	1000	0	0	
Cost of Removal/Disposal (\$/Ft)	\$2.86	\$2.86	\$2.86	\$2.86	\$2.86	\$2.86	
Cost of Removal/Disposal (\$)	\$429	\$3,432	\$2,860	\$2,860	\$0	\$0	\$9,581
VII Guardrail Removal							
Quantity (Feet)	200	3000	0	0	0	0	
Cost of Removal/Disposal (\$/Ft)	\$5.20	\$5.20	\$5.20	\$5.20	\$5.20	\$5.20	
Cost of Removal/Disposal (\$)	\$1,040	\$15,600	\$0	\$0	\$0	\$0	\$16,640
VIII Low Water Stream Crossing							
Quantity	0	1	1	0	0	0	
Cost of Removal/Disposal (\$/Each)	\$7,000	\$7,000	\$7,000	\$7,000	\$7,000	\$7,000	
Cost of Removal/Disposal (\$)	\$0	\$7,000	\$7,000	\$0	\$0	\$0	\$14,000
IX Utilities Cost							
Quantity (Mos)	4	8	4	4	0	0	
Cost Per Month (\$/Month)	\$2,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	
Total Cost (\$)	\$8,000	\$8,000	\$4,000	\$4,000	\$0	\$0	\$24,000
TOTAL MISCELLANEOUS COST	\$23,057	\$54,849	\$24,910	\$21,520	\$0	\$0	\$124,336



The State  
of Wyoming

## Department of Environmental Quality

Jim Geringer, Governor

1043 Coffeen Avenue, Suite D • Sheridan, Wyoming 82801

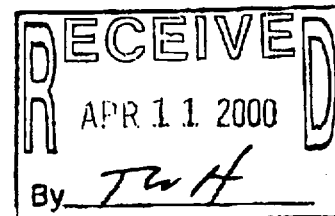
AIR QUALITY  
(307) 872-8457  
Fax (307) 874-6050

LAND QUALITY  
(307) 872-8488  
Fax (307) 872-2213

WATER QUALITY  
(307) 872-8467  
Fax (307) 874-6050

April 10, 2000

Mr. Thomas Hardgrove  
COGEMA Mining, Inc.  
P. O. Box 730  
Mills, WY 82644



**RE: Irigaray-Christensen Operations, Permit No. 478, Review of 1999  
Semiannual and Annual Reports**

Dear Mr. Hardgrove:

I have reviewed the 1999 Semiannual and Annual Reports on the Irigaray and Christensen Ranch Operations as well as the reclamation bond calculations submitted with the Annual Report and updated in October of last year.

This closes out my review of the above-referenced Reports.

In the attached memo, I find the reclamation bond should be reduced to a total of \$15,018,000.00. This amount includes a 13.0% inflation factor based on the CPI as of December 1999. I will recommend this decrease in the bond to the Director.

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

Sincerely,

A handwritten signature in cursive script, appearing to read "Glenn Mooney".  
Glenn Mooney  
Senior Geologist

\gm

Attachment

cc: R. Chancellor  
NRC-MD



**MEMORANDUM**

**TO:** File, COGEMA Mining Co's. Irigaray-Christensen Ranch In Situ Uranium Operations

**FROM:** Glenn Mooney *GM*

**DATE:** April 7, 2000

**SUBJECT:** Review of 1999 Semiannual and Annual Reports

**Introduction**

A review was conducted of the Semiannual Effluent Report, covering the period July 1, 1998, through December 31, 1998, received by District III on March 1, 1999, and the Annual and Semiannual Effluent Report, covering the period January 1, 1999, and received August 19, 1999. A revised bond estimate was received October 26, 1999.

**Chronology**

The following production and restoration milestones occurred during the past report year.

7-1-98 through

12-31-98 Irigaray Ranch (IR) Production Units 6-8 in limited groundwater sweep phase. Limited recovery in Christensen Ranch (CR) Units 2, 3, and 4 for excursion control.

CR Unit 7 wellfield development and baseline sampling continues

CR Unit 8 wellfield development, including locating and sealing exploration drillholes and delineation drilling continuing

late July All other restoration activities ceased at CR due to new NPDES selenium standard in NPDES permit issued 7-31-98

8-16-98 IR Production Unit 5 completed reverse osmosis/permeate injection phase

Sept. '98 Wellfield development of CR Unit 8 suspended.

9-29-98 Recirculation phase completed in IR Units 4 and 5

9-30-98 Modules 6-1 through 6-4 at CR temporarily shut down to reduce production

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- 11-12-98     Module 5-2 at CR shut off due to low grade
- 11-17-98     Reverse osmosis/permeate injection phase in IR Unit 9 begun
- 1-1-99 through  
6-30-99     IR Units 4 and 5 in stabilization monitoring phase (final phase) -  
                 completed in June  
                 IR Units 6 and 7 on standby until reverse osmosis/permeate injection  
                 phase (second phase) can begin)
- IR Unit 9 remained in reverse osmosis/permeate injection phase  
                 Production at CR from Unit 5, Modules 5-1, 5-3, 5-4, 5-5 and Unit 6,  
                 Modules 6-1, 6-2 and 6-3.
- 3-1-99        IR Production Unit 8 began reverse osmosis/permeate injection phase
- 4-7-99        CR Unit 3 with Module 3-1 began reverse osmosis/permeate injection  
                 phase
- 6-28-99       IR Units 4 and 5 final stabilization samples split with DEQ/LQD

**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 Irigaray or 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.

**Irigaray**

With one exception, the wells on excursion at Irigaray are completed into a shallow

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sand located above the ore zone aquifer. Most have been on excursion status for a number of years

The following Irigaray wells have been on excursion as noted:

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. The August 30, 1999, sampling found that no UCLs were exceeded, so this well may come out of excursion status.
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.

The following Christensen Ranch wells have been on excursion status at some time since mid-1998:

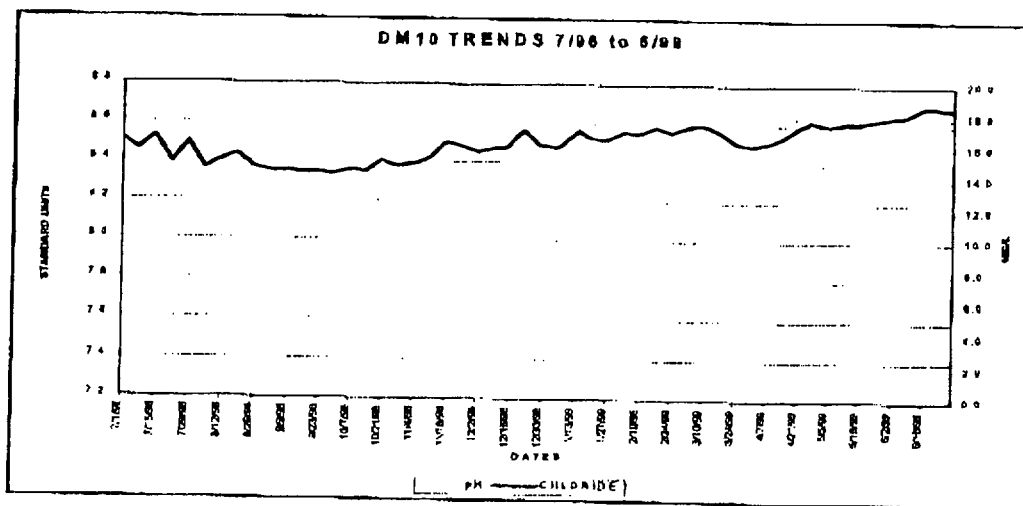
MW89	This Unit 2 perimeter monitor well went on excursion status August 7, 1998, and was removed from excursion status on August 26, 1998.
MW46S	This shallow sand interior monitor well went on excursion September 2, 1998, and off on February 3, 1999. It returned to excursion status on July 9, 1999, and was removed again on August 2, 1999.
6MW40	This perimeter monitor well in Unit 6 went on excursion status on December 23, 1998, went off excursion on January 12, 1999, went back on excursion February 19, 1999, and off again on March 15, 1999.

Data from the monitor wells on long-term excursion status was graphed for the past year, using the data supplied with each report. Any trends over the year can be spotted in this way.

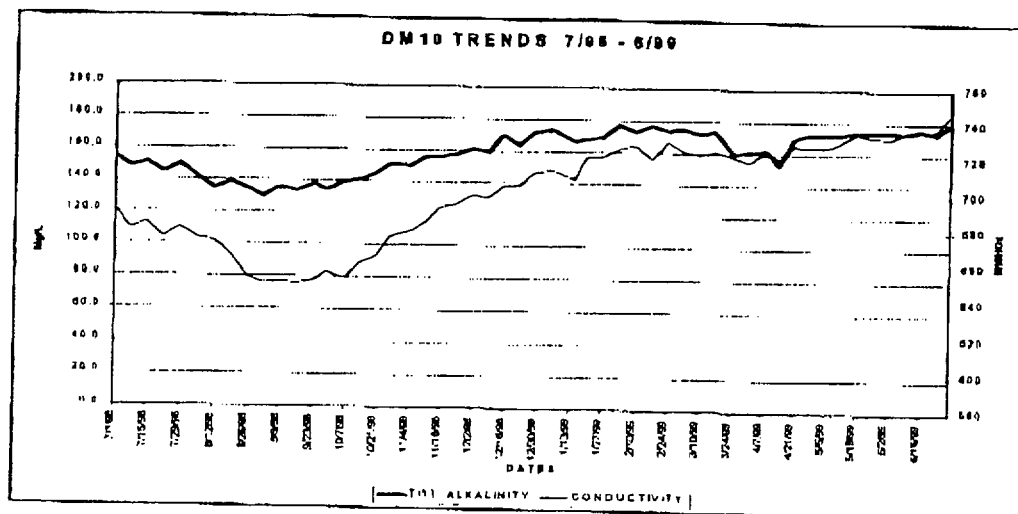
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DM10

Trends visible over the year in this deep monitor well at Irigaray are a gradual and slight increase in chloride levels along with fluctuation in pH levels over the year that resulting in no net change for the year.



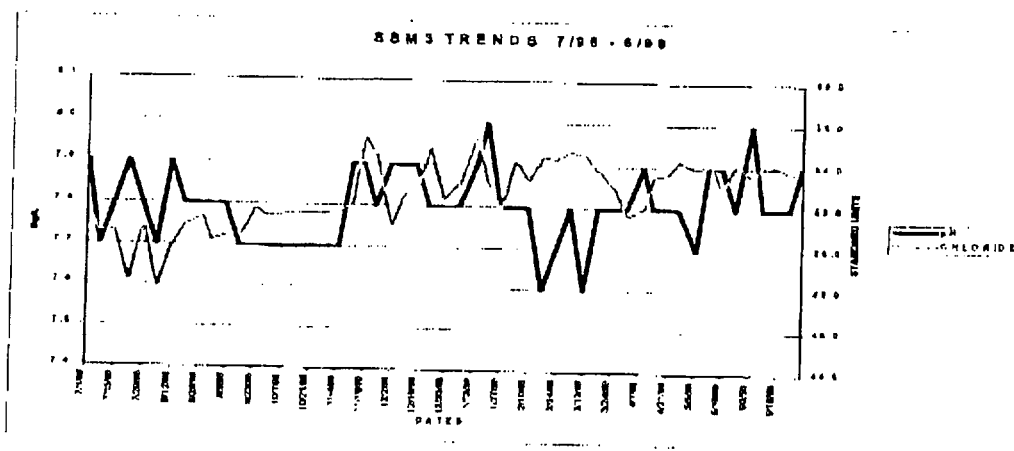
For conductivity and total alkalinity trends over the year, these mirror the chloride levels by a overall gradual increase over the report year.



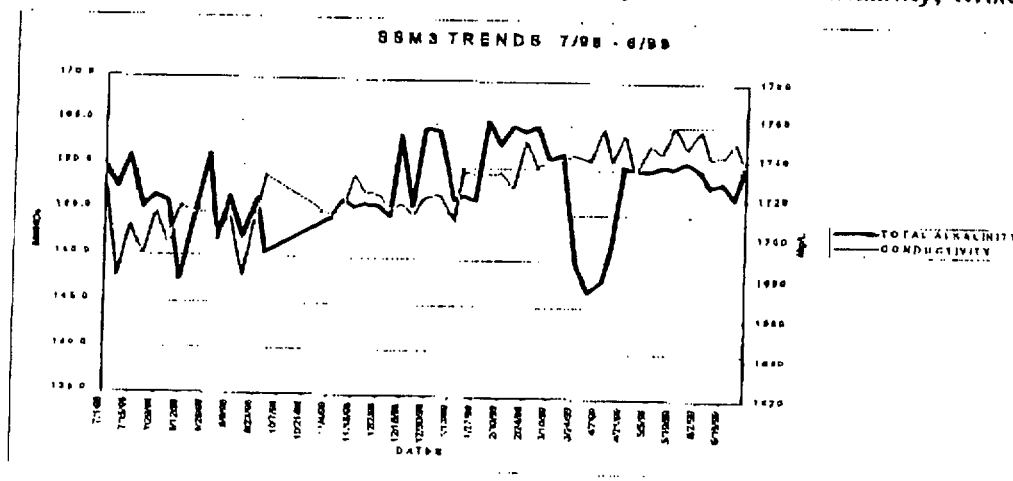
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**SSM3**

Chloride and ph for SSM3, located in Irigaray Unit 2, trended upward through the report year.



Conductivity also trended upward through the year but total alkalinity, while showing

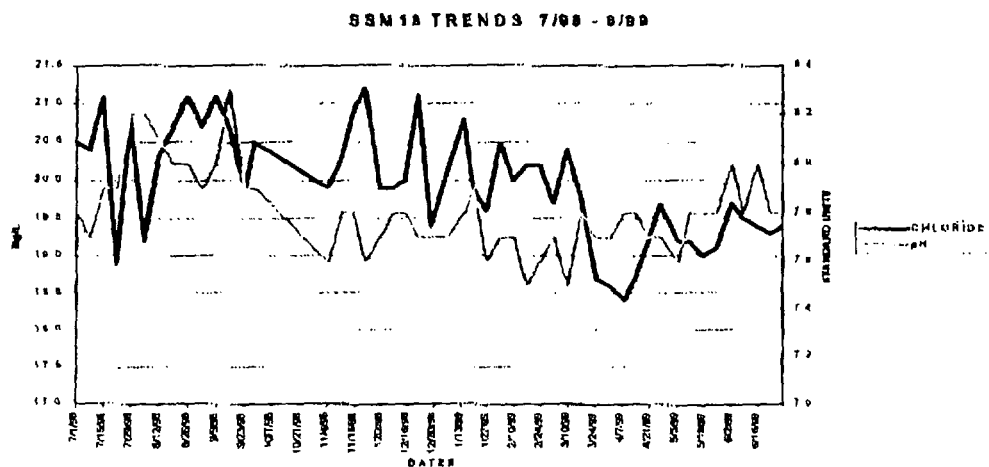


some fluctuations, ended up nearly unchanged for the report year.

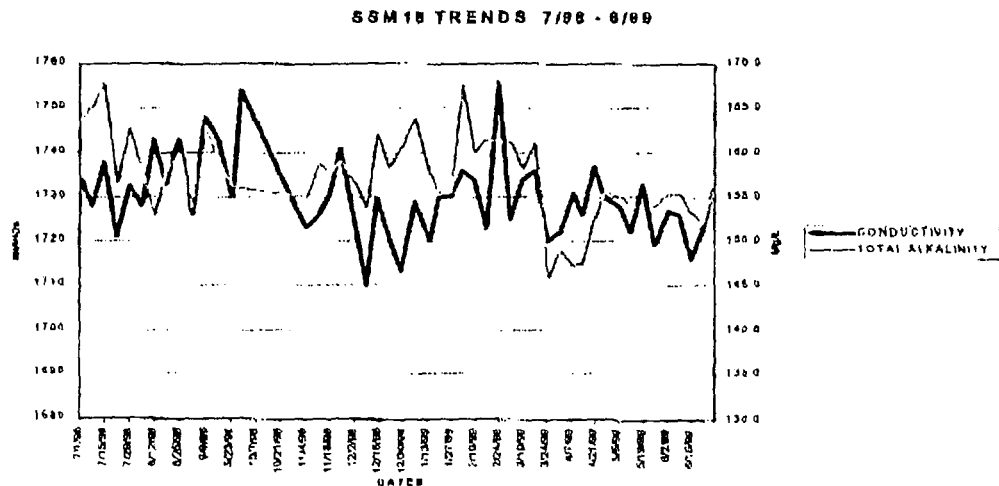
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**SSM18**

The trends for SSM18, an Irigaray Unit 8 shallow sand monitor well bucked the trends for nearly all other Irigaray shallow sand monitor wells. Chloride and pH levels were down, pH only slightly.



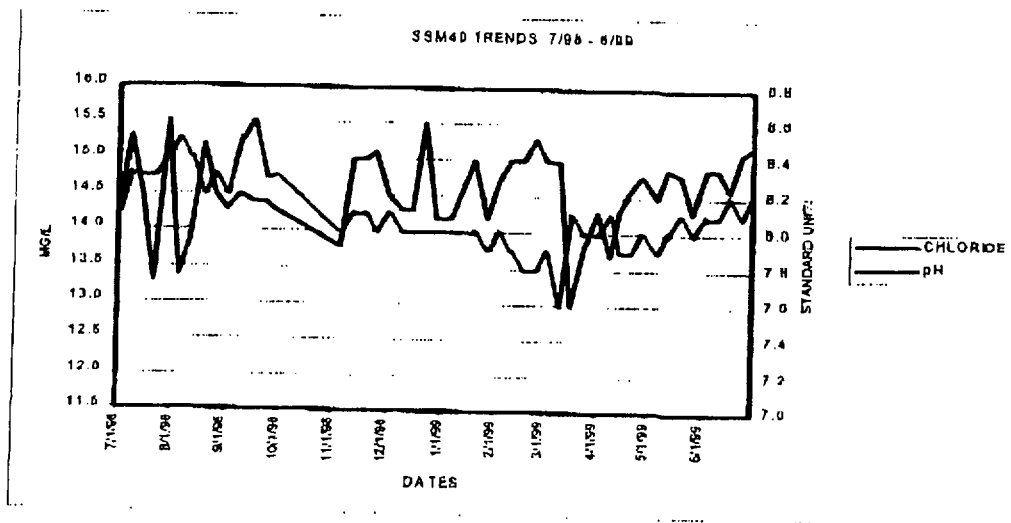
The trends for conductivity and total alkalinity for SSM18 were also down for the report year, with a greater decrease for total alkalinity.



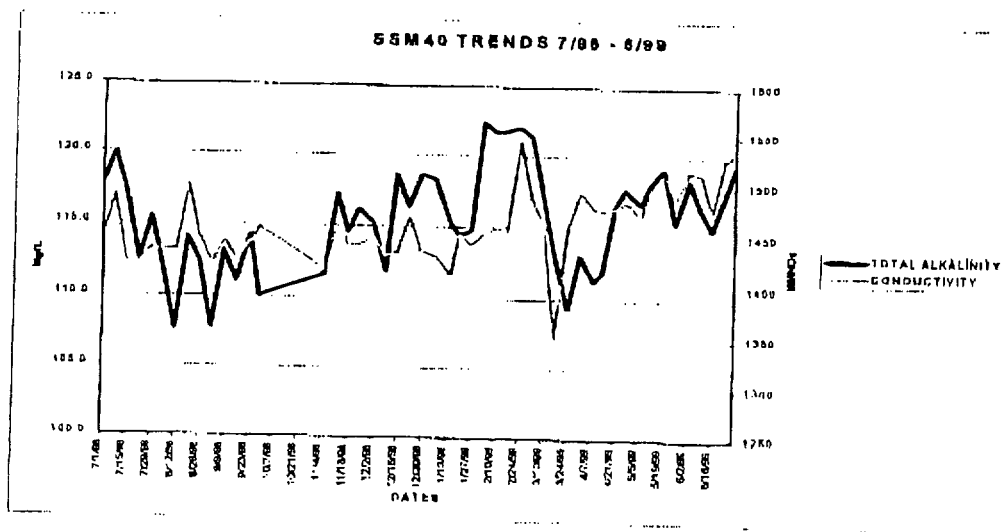
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**SSM40**

This shallow sand monitor well in Irigaray Unit 8 showed relatively wide variations throughout the report year, but ended with little changes for either pH or chloride.



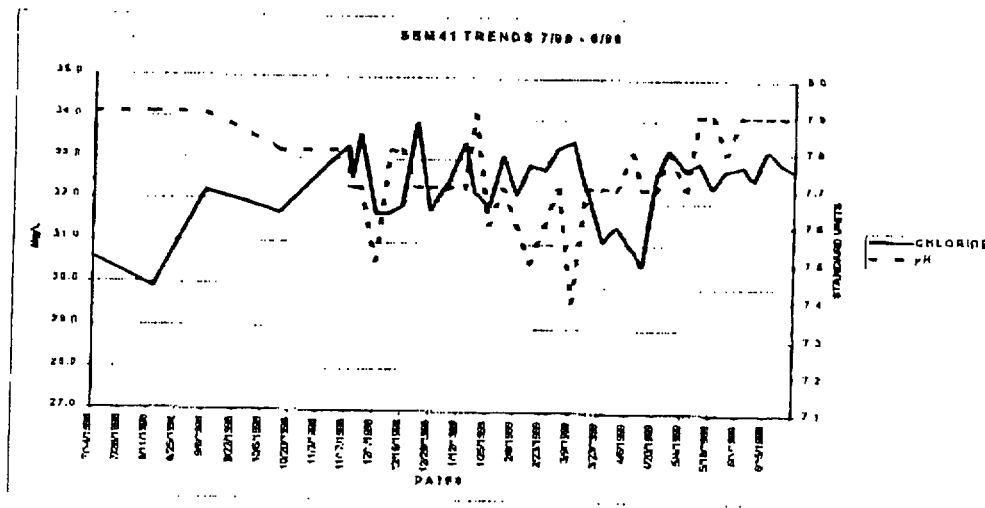
Conductivity and total alkalinity also varied throughout the report year, but only a slight gain for conductivity was recorded and none for total alkalinity.



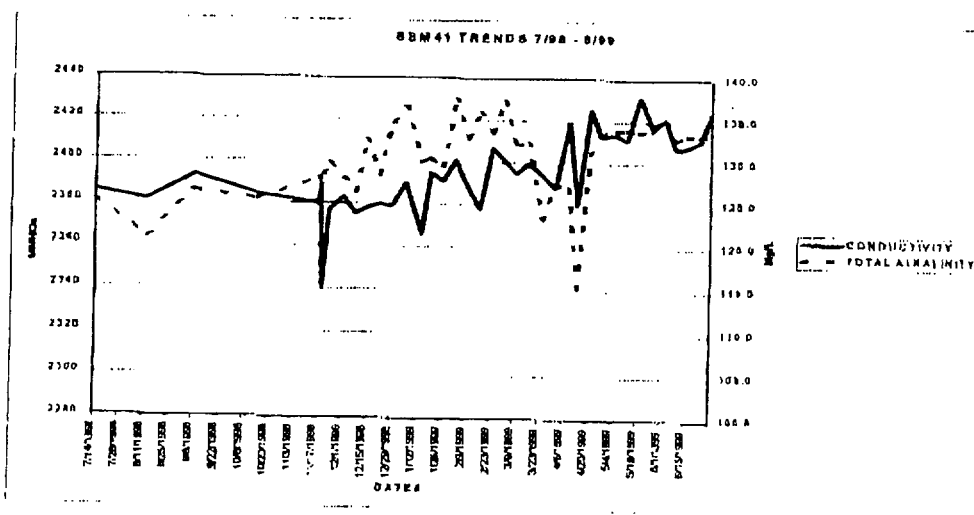
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SSM41

For SSM41, a shallow sand monitor well in Unit 4 at Irigaray, chloride trended upward through the report year but pH, while varying during the year, ended unchanged.



Conductivity at SSM41 also moved upward through the year as did total alkalinity.

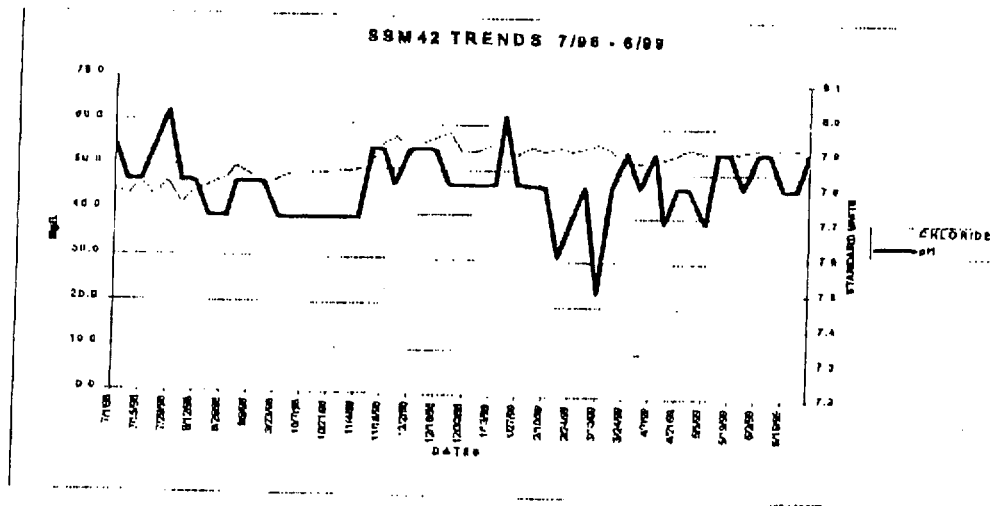




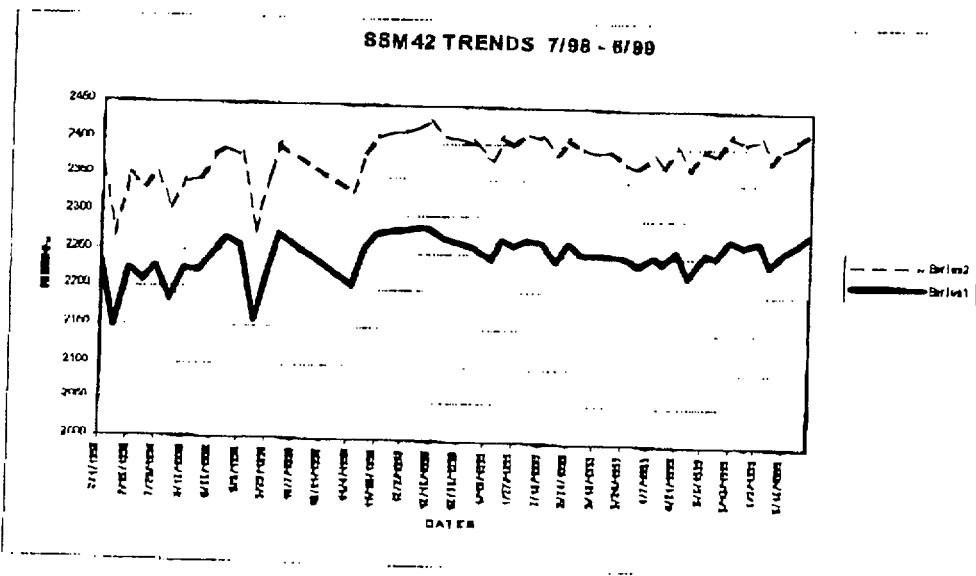
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SSM42

For SSM42, a Unit 3 shallow sand monitor well at Irigaray, only a small upward trend for chloride is apparent, while pH moved through a small range with no trend readily apparent.



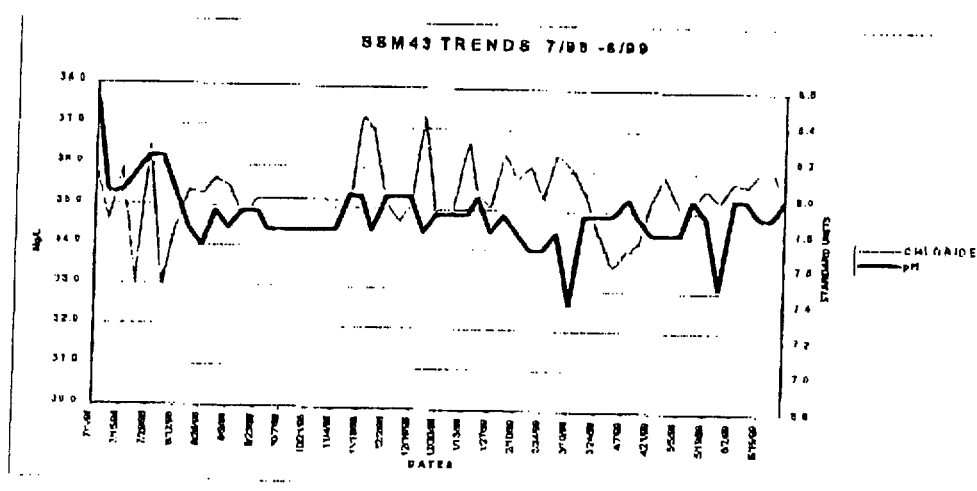
Conductivity and total alkalinity also trended upward in SSM42, a move more apparent for conductivity.



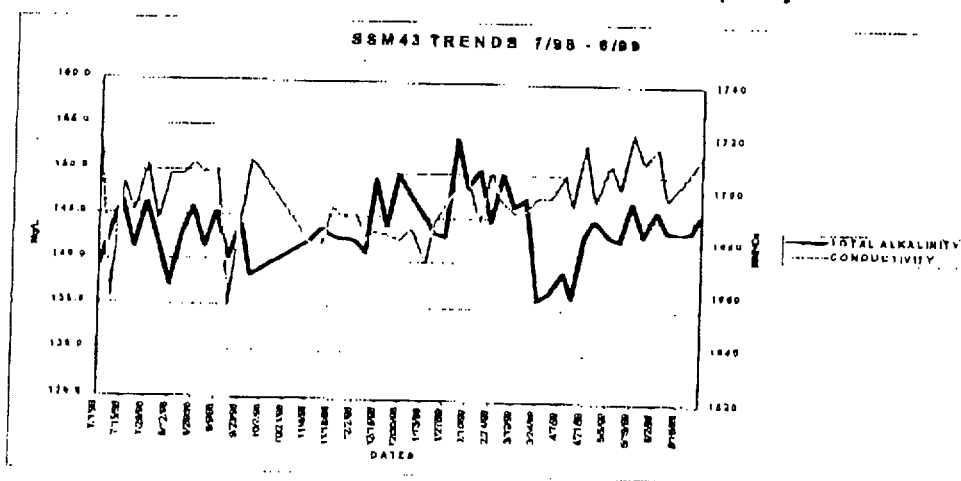
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**SSM43**

While some variation was noted for chloride and pH in SSM43, an Irigaray Unit 1 shallow sand monitor well, no trend was obvious for either parameter.



For total alkalinity, the lack of an apparent trend is also true, but conductivity seem to have moved upward throughout the second half of the report year.



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**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 restoration of Christensen Ranch Units 7 and 8 as injection has not occurred in either of these wellfields.
2. The estimate assumes no credit for wellfield restoration work already carried out, such as Irigaray Units 1 through 5 or Christensen Ranch Units 2 and 3. This is proper since credit cannot be given for restoration work without going through an incremental bond release procedure.
3. No funds were allocated for cleanup of aquifers contaminated by long-term excursions such as the shallow sand aquifer at Irigaray. In my last review of COGEMA's bond estimate in January 1998, I added an arbitrary \$50,000 per shallow monitor well that has been in excursion status for an extended period of time and \$100,000 for the one deep monitor well that has also been in excursion status for an extended length of time. In 1998, this amounted 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.
4. The estimate was corrected to reflect increased costs for disposal at the Edgerton landfill.
5. Another \$100,000 was added in October 1999, to cover plugging of the second deep disposal well.
6. COGEMA set the amount of contingency at a total of 20%. This is down from the 29% that I set during my last bond review in 1998.

For the bond estimate summary that follows, I replaced the \$400,000 to clean up the Irigaray wells that have remained in excursion status for an extended time. After conferring with Doug Emme, the District III bonding expert, I have increased the total contingency from 20% to 21.5%.

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**Bond Estimate**

1.	Groundwater Restoration	\$5,385,661
	A. Cost of shallow sand and deep well clean-up	\$400,000
	Subtotal Groundwater Restoration	\$5,785,661
2.	Decommissioning and Surface Reclamation	
	A. Process plants equipment removal and disposal	\$262,060
	B. Plant buildings demolition and disposal	\$524,967
	C. Process pond sludge and liner handling	\$2,069,181
	D. Well abandonment	\$680,098
	E. Wellfield equipment removal and disposal	\$923,817
	F. Topsoil replacement and revegetation	\$568,868
	G. Miscellaneous reclamation activities	\$124,336
	Subtotal Decommissioning and Surface Reclamation	\$10,938,988

**Contingency**

Project Design	2%	
Contractor profit and mobilization	8%	
Preconstruction Investigation and Stabiliz.	1%	
Project management	3%	
On-site monitoring	0.5%	
Site security and liability insurance	1%	
Long-term admin. and accounting	2%	
Unknowns	<u>4%</u>	
Total Contingency	21.5%	\$2,351,882

Subtotal \$13,290,870

13.0% Inflation factor from August 1994 through December 1999

\$1,528,450

Total \$15,018,684

Say \$15,018,000

**COGEMA Mining, Inc.**  
**Irigaray-Christensen Ranch Operations**  
**Report Review Memo**  
**Permit No. 478**  
**April 7, 2000**  
**Page No. 13**

### **Conclusions**

Review of the 1999 Semiannual and Annual Reports for Permit No. 478 found that mining has ceased at Irigaray Ranch and is rapidly winding down at Christensen Ranch, especially since the decision has been made not to develop the new wellfields at Christensen Ranch.

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

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. The trends over a one year period of the excursion parameters for the wells in excursion have been graphed and trends discussed.

The reclamation bond has been reviewed and some adjustments required.

\gm

478enrv.0gm



The State  
of Wyoming

## Department of Environmental Quality

Jim Geringer, Governor

Herschler Building • 122 West 25th Street • Cheyenne, Wyoming 82002

ADMIN/OUTREACH (307) 777-7758 FAX 777-3610	ABANDONED MINES (307) 777-6145 FAX 777-6462	AIR QUALITY (307) 777-7391 FAX 777-5616	INDUSTRIAL SITING (307) 777-7369 FAX 777-6937	LAND QUALITY (307) 777-7756 FAX 777-5864	SOLID & HAZ. WASTE (307) 777-7752 FAX 777-5973	WATER QUALITY (307) 777-7781 FAX 777-5973
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May 9, 2000

Ms. Donna Wichers  
General Manager  
Cogema Mining, Inc.  
P.O. Box 730  
Mills, WY 82644


**RE: Amendment to Letter of Credit No. 93/832, Permit No. 478**

Dear Ms. Wichers:

The above referenced Credit Commercial De France Bank amendment has been reviewed by this office. It has been accepted to a new aggregate of Fifteen Million, Eight Thousand Dollars (15,018,000). The decrease in amount is in accordance with the department's April 17, 2000, letter. A copy of the approved amendment is enclosed.

Should you have any questions, please feel free to contact Deanna Hill of this office.

Sincerely,

  
Richard A. Chancellor  
Administrator  
Land Quality Division

RAC:DH:dkv

Enclosure

xc: District III  
Credit Commercial de France



CREDIT COMMERCIAL DE FRANCE

New York Branch

COPY

MAY 01, 2000

BENEFICIARY:

THE STATE OF WYOMING, DEPARTMENT OF  
ENVIRONMENTAL QUALITY, LAND QUALITY  
DIVISION, HERSCHLER BLDG. # 122 WEST 25th ST.,  
CHEYENNE, WYOMING 82002

APPLICANT:

COGEMA RESOURCES, INC.  
7401 WISCONSIN AVE.  
BETHESDA, MD 20814

ON BEHALF OF:

COGEMA MINING, INC.  
P.O. BOX 730  
MILLS, WYOMING 82644



EXPIRATION DATE:

EXPIRES IN NEW YORK, NEW YORK ON (I) JULY 23, 2001  
OR (II) ANY AUTOMATICALLY EXTENDED EXPIRATION  
DATE AS HEREINBELOW SET FORTH.

AMOUNT:

USD16,868,937.00 (SIXTEEN MILLION EIGHT HUNDRED SIXTY  
EIGHT THOUSAND NINE HUNDRED THIRTY SEVEN U.S.  
DOLLARS)

RE:

IRIGARAY AND CHRISTENSEN PROJECT  
RECLAMATION/RESTORATION COSTS, PERMIT TO MINE NO.  
478 (FORMERLY PERMIT NO. 478 AND RESEARCH AND  
DEVELOPMENT LICENSE 14 RD) AND THE REQUIREMENT OF  
THE WYOMING ENVIRONMENTAL QUALITY ACT, SECTION  
35-11-421.

GENTLEMEN:

WE HEREBY AMEND OUR IRREVOCABLE STANDBY LETTER OF CREDIT NUMBER 93/832 IN  
YOUR FAVOR, FOR THE ACCOUNT OF COGEMA MINING, INC., P.O. BOX 730, MILLS,  
WYOMING 82644 AS FOLLOWS:

-THIS LETTER OF CREDIT AMOUNT IS DECREASED BY USD1,850,937.00 TO A NEW TOTAL  
AMOUNT OF USD15,018,000.00 (FIFTEEN MILLION EIGHTEEN THOUSAND U.S. DOLLARS).

ALL OTHER TERMS AND CONDITIONS REMAIN UNCHANGED.

WP-COG/STA-A832/SB

  
AUTHORIZED SIGNATURE