

June 25, 2004

Smith Ranch - Highland Uranium Project P. O. Box 1210

Glenrock, Wyoming USA 82637

Casper: 307-235-1628 Douglas: 307-358-6541 Fax: 307-358-4533

Addressee Only Mr. Gary Janosko, Chief FCLB Fuel Cycle Licensing Branch, NMSS Mail Stop T-8A33 U.S. Nuclear Regulatory Commission Washington, D.C. 20555

RE: Smith Ranch – Highland Uranium Project

Docket No. 40-8964, SUA-1548 2004-2005 Surety Estimate Revision

Dear Mr. Janosko:

In accordance with License Condition 9.5 of Source Material License SUA-1548, please find two copies of the proposed 2004-2005 Surety Estimate Revisions for the Smith Ranch-Highland Uranium Project. As your staff is aware, because there are still separate WDEQ Mining Permits for the Highland and Smith Ranch properties, there are separate Surety Estimates for each location. Also, as discussed previously with you staff, Power Resources Inc. (PRI) has, in accordance with directive from the WDEQ, revised the Smith Ranch estimate such that it conforms with the WDEQ-LQD Standardized Surety Estimate Format that uses an Excel spreadsheet and, where applicable, the cost estimates provided in the WDEQ-LQD Guideline No.12- "Standardized Reclamation Performance Bond Format and Cost Calculation Methods", dated November 2003. The 2004-2005 Surety Estimate Revisions total \$38,097,700 for the entire Smith Ranch- Highland Uranium Project.

The 2004-2005 Surety Estimate Revision for Smith Ranch results in an estimate of \$15,695,700, which is an increase of \$1,239,400 from the currently approved Surety Estimate of \$14,456,300. The attached computer disk contains the Excel file (SRBOND2004), which contains all spreadsheets and unit cost derivations. The 2004-2005 Surety Estimate Revision for Smith Ranch reflects the change to the standardized format and costs associated with new development in the next one-year surety period. Significant development during the next period includes the installation of approximately 140 wellfield patterns at Mine Unit 15 and the commencement of production operations at them. A limited number of monitoring wells are also planned for installation at the proposed new Mine Unit K area. Additional revisions to the estimate are included with the attachment.





The 2004-2005 Surety Estimate Revision for Highland results in an estimate of \$22,402,000, which is an increase of \$1,123,900 from the currently approved Surety Estimate of \$21,278,100. The attached computer disk contains the Excel file (HUPBOND2004), which contains all spreadsheets and unit cost derivations. The 2004-2005 Surety Estimate Revision for Highland reflects the completion of construction activities and full production operations at Mine Unit-I.. This revision also reflects that ground water restoration activities have been completed at Mine Unit-A. Additional revisions to the estimate are included with the attachment.

Copies of these 2004-2005 Surety Estimate Revisions are also being forwarded to the WDEQ-LQD. Upon WDEQ-LQD and NRC approval of these revisions, PRI will revise the existing surety instruments to the applicable amounts. Until that time, the existing surety instruments will remain in place.

PRI representatives are available to meet with your staff to assist with their review of this submittal. If you or your staff have nay questions, please don't hesitate to call me at (307)358-6541, ext. 62.

Sincerely,

W.F. Kearney

Manager-Health, Safety & Environmental Affairs

Bill Gean

WFK/

cc:

S.P. Collings w/ atta

R. Knode w/o atta

K. Milmine w/o atta

File 4.6.4.1

R. Townley w/o atta

L. Spackman, WDEQ/LQD w/o atta

SMITH RANCH 2004-2005 Surety Estimate Revision

The 2004-2005 Smith Ranch Surety Estimate was revised to follow the WDEQ-LQD standardized bond format and, where applicable, the cost estimates provided in WDEQ-LQD Guideline No. 12 (dated November 2003). Additionally, assumptions and derivations of unit costs methods utilized in the approved Surety Estimate for the Highland Uranium Project that have been accepted by the WDEQ-LQD and the NRC for previous estimates were used in the standardized format for Smith Ranch to maintain consistency between the two estimates. The 2004-2005 Surety Estimate Revision results in an estimate of \$15,695,700, which is an increase of \$1,239,400 from the currently approved Surety Estimate of \$14,456,300. The attached computer disk contains the Excel file (SRBOND2004), which contains all spreadsheets and unit cost derivations.

The 2004-2005 Surety Estimate Revision reflects costs associated with new development during the report period and planned operations during the next one-year surety period. Significant development at Mine Unit-15 during this report period included the construction of the connecting access road from the Ross Road and installation of the monitor wells. Also, delineation drilling has begun in Mine Unit-K. During the next one-year surety period, PRI anticipates completion of approximately 140 wellfield patterns in Mine Unit-15 and it is assumed that production operations will occur at these patterns. It is also anticipated that approximately 20 monitor wells will be installed in Mine Unit-K. Incorporating costs for these areas added approximately \$1,256,900 (before any escalators) to the Surety Estimate.

Revising the Smith Ranch estimate using the WDEQ-LQD standardized bond format alone resulted in a decrease of approximately \$448,100 (before any escalators) to the Surety Estimate. This is largely due to the method of calculating Mine Unit groundwater restoration costs. Consistent with previous estimates for the Highland Uranium Project, PRI utilized one pore volume (PV) of groundwater sweep (GWS) and five PV's of reverse osmosis (RO) treatment (including 2 PV's of bioremediation or chemical reductant addition) for estimating ground water restoration costs. As discussed in previous submittals, such an approach should result in faster and more cost effective restoration, and less consumptive use of ground water. Groundwater restoration costs were estimated using bioremediation in place of chemical reductant. Bioremediation shows slightly higher costs than previous costs for chemical reductant addition, but has proven to be more effective.

The remaining portion of the \$1,239,400 increase in the surety estimate (approximately \$430,600) is a result of the CPI escalator, which increased from 14.5 to 15.1% (July 1998 to May 2004), and the 25% contingency.

PRI believes that the 2004-2005 Surety Estimate Revision is conservative, and exceeds potential actual restoration, reclamation, and decommissioning costs in the unlikely event of bond forfeiture for the following major reasons:

- PRI believes that ground water restoration can be accomplished in less time than the restoration technique and schedule utilized in the estimate indicate.
- The added contingency of 25% further increases the conservatism of all items included in the estimate.
- No salvage value is realized for buildings, process equipment, switch gear, electrical equipment, motors, rolling stock and other uncontaminated materials and facilities which actually have significant salvage value.
- It is likely that some buildings and roads will not require demolition, disposal, and reclamation, as area landowners may desire to retain some of these facilities for their use.

Tota	Restoration and Reclamation Cost Estimate	
	GROUNDAY A TER DESTOR ATION COST	60.036.400
<u>I.</u>	GROUNDWATER RESTORATION COST	\$8,236,400
II.	EQUIPMENT REMOVAL & DISPOSAL COST	\$146,776
III.	BUILDING DEMOLITION AND DISPOSAL COST	\$1,057,624
IV.	WELLFIELD BUILDINGS & EQUIPMENT REMOVAL & DISPOSAL COST	\$291,758
v.	WELL ABANDONMENT COST	\$762,441
VI.	WELLFIELD AND SATELLITE SURFACE RECLAMATION COST	\$56,610
VII.	TOTAL MISCELLANEOUS RECLAMATION COST	\$357,652
	SUBTOTAL RECLAMATION AND RESTORATION COST ESTIMATE	\$10,909,260
	CPI ESCALATOR- July 1,1998 to April 30, 2004 (15.1%)	\$1,647,298
	SUBTOTAL	\$12,556,558
	ADMINISTRATIVE, OVERHEAD, AND CONTINGENCY ITEMS (25%)	\$3,139,140
	TOTAL	\$15,695,698
	TOTAL CALCULATED SURETY (IN 2004 DOLLARS)	\$15,695,700

		-		Mine Unit-3 2nd		1	Mine Unit-4	
Ground Water Restoration	Mine Unit-1	Mine Unit-2	Mine Unit-3	Comp.	Mine Unit- 4	Mine Unit-4A	Extension	Mine Unit-15
PV Assumptions								1 (00 500
Wellfield Area (ft2)	1,115,229	2,260,172	1,622,462	782,800	1,334,798	1,050,576	340,421	1,698,200
Wellfield Area (acres)	25.6	51.9	37.2	18.0	30.6	24.1	7.8	39.0
Affected Ore Zone Area (ft2)	1,115,229	2,260,172	1,622,462	782,800	1,334,798	1,050,576	340,421	1,698,200
Avg. Completed Thickness	18	24	20	14	. 18	17	18	0,27
Porosity	0.27	0.27	0.27	0.27	0.27	0.27	0,27	
Flare Factor	1.7	1.5	1.5	1.5	1.5	1.5	1.7	1.5
Affected Volume (ft3)	34,126,007	81,366,192	48,673,860	16,438,800	36,039,546	26,789,688	10,416,883	56,040,600
Kgailons per Pore Volume	68,921	164,327	98,302	33,200	72,785	54,104	21,038	113,180
Number of Patterns in Unit(s)								
Current	116	146	162	76	128	101	35	0
Estimated next report period	0	0	0	0		. 0	0	140
Total Estimated	116	146	162	76	128	101	. 35	140
Number of Wells in Unit(s)	 -	-				· · · · · ·		
Production Wells	- 							
Current	115	146	145	Wells	124	101	Weils	0
Estimated next report period	1 5	0	. 0		0	0	included	140
Total Estimated	115	146	145	under	124	101	under /	140
Injection Wells				Wellfield 3			Wellfield 4	
Current	210	262	251		219	175	and	0
Estimated next report period •		0	0		0	0	Wellfield 4A	252
Total Estimated	210	262	251		219	175		252
Monitoring Wells				·				
Current	49	50	40	· · · · · · · · · · · · · · · · · ·	51	39		105
Estimated next report period	0	0	0		0	0		0
Total Estimated	49	50	40		51	39		105
Number of Wells per Wellfield	374	458	436		394	315		497
Total Number of Wells								
Average Well Depth (ft)	500	850	750		850	750		450
I. Ground Water Sweep Costs			-					
PV's Required	1	1	1	1	1	1	1	1
Total Kgals for Treatment	68,921	164,327	98,302	33,200	72,785	54,104	21,038	113,180
Ground Water Sweep Unit Cost (\$/Kgal)	\$0,57	\$0.57	\$0.57	\$0.57	\$0.57	\$0,57	\$0.57	\$0.57
Subtotal Ground Water Sweep Costs per Wellfield	\$39,483	\$94,139		\$19,019	\$41,697	\$30,995	\$12,052	\$64,838
Total Ground Water Sweep Costs	\$293,700	371,532		, , , , , , , , , , , , , , , , , , ,	9,1,011	, , , , , , , , , , , , , , , , , , ,		****
II. Reverse Osmosis Costs .		5	ς		5	ς.	•	
Total Kgals for Treatment	344,604	821,636	491,509	165,999	363,927	270,522	105,190	565,898
Reverse Osmósis Unit Cost (\$/Kgal)	\$1.26	\$1.26	\$1.26	\$1.26	\$1,26	\$1.26	\$1,26	\$1.26
Subtotal Reverse Osmosis Costs per Wellfield	\$434,822	\$1,036,740			\$459,204	\$341,345	\$132,728	\$714,050
Total Reverse Osmosis Costs per Weilield Total Reverse Osmosis Costs	\$3,234,483	31,030,740	9020,180	<u> </u>	4437,204	7,177,040	41.52,720	\$7,14,030
Total Reverse Osmosis Costs	33,234,403							

Page 1 of 3

		i		Mine Unit-3 2nd			Mine Unit-4	
Ground Water Restoration	Mine Unit-1	Mine Unit-2	Mine Unit-3	Comp.	Mine Unit- 4	Mine Unit-4A	Extension	Mine Unit-15
III. Chemical Reductant Costs	Wine Out-1	Mille Chit-2	Wille Out-2	Comp.	Mine Onit- 4	Mine Unit-4A	Extension	vine Ouit-12
Total Kgals for Treatment (2 Pore Volumes)	137842	328654	196603	66400	145571	108209	42076	226359
Chemical Reductant Unit Cost (\$/Kgal)	\$0.29	\$0.29	\$0.29	\$0.29	\$0.29	\$0.29	\$0.29	
Subtotal Chemical Reductant Costs per Wellfield	\$39,974	\$95,310	\$57,015	\$19,256	\$42,216		\$12,202	
Total Chemical Reductant Costs	\$297,354	- 4,5,5,10	331,013	317,250	342,210	\$31,361	312,202	305,044
								====
IV. Elution Costs					***************************************			
A. Elution Processing Costs								
Kgals/Elution Required	35,000	35,000	35,000	35,000	35,000	35,000	35,000	+
Number of Elutions	12	28	17	6	12	9	4	19
Processing Unit Cost (\$/Elution)	\$525	\$525	\$525	\$525	\$525	\$525	\$525	
Subtotal Processing Costs .	\$6,300	\$14,700	\$8,925	\$3,150	\$6,300	\$4,725	\$2,100	\$9,975
B. Deep Well Injection Costs								<u> </u>
Deep Well Injection Volume (Kgals/Elution)	12	12	12	12	12	12	12	
Total Kgals for Injection	144	336	204	72	144	108	. 48	
Deep Well Injection Unit Cost (\$/Kgals)	\$1.39	\$1.39	\$1,39		\$1.39	\$1.39	. \$1,39	
Subtotal Deep Well Injection Costs	\$200	\$467	\$284	\$100	\$200	\$150	\$67	
Subtotal Elution Costs per Wellfield Total Elution Costs	\$6,500	\$15,167	\$9,209	\$3,250	\$6,500	\$4,875	\$2,167	\$10,292
 	\$57,960							
V. Monitoring and Sampling Costs								
A. Active Restoration Period				,				
Estimated Restoration Period (Years)	5	. 5	5		5	5		5
1. UCL Sampling								
# of Wells	49	51	43		55	36		108
\$/sample "	\$20	\$20	\$20		\$20	\$20		\$20
Samples/Year	6	6	6		6	6		6
Sub-total Restoration Analyses	\$29,400	\$30,600	\$25,800		\$33,000	\$21,600		\$64,800
B. Stability Period							•	
Estimated Stabilization Period (Years)	1	1	1		1	1		1
1. Full Suite Analyses								
# of Wells	17	31	24		20	10		61
Samples/Year .	3	3	3		3	3		3
\$/sample	\$150	\$150	\$150		\$150	\$150		\$150
2. Short List Analyses								
# of Wells	17	31	24		20	10		61
Samples/Year	9	9	9		9	9		9
. \$/sample	\$34	\$34	\$34		\$34	\$34		\$34
Sub-total Stability Analyses	\$12,852	\$23,436	\$18,144		\$15,120	\$7,560		\$46,116
Subtotal Monitoring and Sampling Costs per Wellfield	\$42,252	\$54,036	\$43,944		\$48,120	\$29,160		\$110,916
Total Monitoring and Sampling Costs	\$328,428				I			
VI. Mechanical Integrity Test (MIT) Costs								
Five Year MIT Unit Cost (\$/well)	\$71	\$71	\$71		\$71	\$71		\$71
Number of Wells (30% of Inj. and Rest. Wells)	63	79	75		66	53	· 	76
inumber of Wells (30% of Inj. and Rest. Wells)	63	19	75		00	3.3]		1 76

				1			Mine Unit-3 2nd		T	Mine Unit-4	
Ground Water Restoration				Mine Unit-1	Mine Unit-2	Mine Unit-3	Comp.	Mine Unit- 4	Mine Unit-4A	Extension /	Mine Unit-15
Subtotal Mechanical Integrit	v Testing Co	sts per Well	field	\$4,473	\$5,581	\$5,346	•	\$4,665	\$3,728		\$5,368
Total Mechanical Integrity				\$29,161			,				
					41.400.000	0000.015	\$250,000	6402.402	6441.404	6160 140	£071.100
TOTAL RESTORATION COSTS				\$567,504	\$1,300,973	\$792,015	\$250,983	\$602,402	\$441,484	\$159,149	\$971,108
TOTAL WELLFIELD RESTOR	RATION CO	OST		\$5,085,618							
VII. Building Utility Costs		•		Central Plant	Main Office	Satellite SR-1					
Electricity (\$/Month)				\$8,500	\$1,825	\$8,500					
Natural Gas (\$/Month)				\$2,500	\$595						
Number of Months				1 48	60				· ·	• • • • • • • • • • • • • • • • • • • •	
Subtotal Utility Costs per Bu	vilding			\$528,000	\$145,200	\$333,540				-, -, -	
Total Building Utility Cost	e			\$1,006,740		, , , , , , , , , , , , , , , , , , ,			···		
Total Bullding Clinty Cost				31,000,140							
XI. Vehicle Operation Costs						·					
Number of Pickup Truck	cs/Pulling Ur	nits (Gas)	•	10							
Unit Cost in \$/hr (WDE	Q Guideline	No.12, Table	D-1)_	\$10.13					·		
Unit Cost in \$/hr (July 1)	\$8.80							
Average Operating Time	(Hrs/Year)			1000							
. Total Number of Years (Average)			• 4							
Total Vehicle Operation C	osts			\$352,042							
XII. Labor Costs						-					· · · · · · · · · · · · · · · · · · ·
Number of Environment	-1 1/2-22-	/DCO+		 							
S/Year	ai Managers	KSUS	-	\$60,000	· · · · · · · · · · · · · · · · · · ·						
	(300,000		····					
Number of Restoration N	vianagers			\$50,000							
S/Year Number of Environment	17.1.1.1.1	<u> </u>		\$30,000	<u> </u>						
S/Year	ai iecnnicia	ns		\$28,000		<u> </u>	·				
Number of Operators/La				\$20,000							
	borers	<u>-</u>		\$28,000							
S/Year S/Aid	T1	L		\$20,000							
Number of Maintenance	lechnicians			\$28,000							
S/Year				\$28,000		ļ					
Number of Years				\$1,672,000					-		
Total Labor Costs				31,072,000		 					
XIII Capital Costs	100			6120 000							
Purchase RO Units (2X8	sou gpm Uni	(3)		\$120,000							
Total Labor Costs				\$120,000						· · · · · · · · · · · · · · · · · · ·	<u> </u>
TOTAL GROUND WATER RE	STORATIO	N COSTS		\$8,236,400						,	

<u>Equi</u>	ipme	nt I	Removal and Lo	ading	•			CPP Ion	Ex. Plant	Central Plant	Dryer Building	Satellite SR-1	Pilot ISL	Water Pumphouse
	$oldsymbol{\bot}$													
			l and Loading (Costs			<u> </u>			<u></u>				
	Λ.		kage								ļ			
_1	l		Number of Tanks		·				13		0	10	15	
		1	Volume of Tank (Construcți	on Material (f	(1)	<u> </u>		835	1340	300	397	260	164
		1. I	Labor !	•										
ĺ			Number of Pe	rsons					3	3	3	. 3	3	3
	l		Ft³/Day				,		25	25	25	25	25	25
-		\top	Number of Da	avs					.33		12	16	10	
			\$/Day/Person				1	- 	\$112	· \$112	\$112	\$112	\$112	
		S	Subtotal Labor Co				<u> </u>		\$11,228	\$18,010	\$4,032	\$5,376	\$3,494	
		2. E	Equipment							,				
		<u> </u>	Number of Da	avs *					33	54	12	16	10	7
	$\overline{}$	7	\$/Day						\$338	\$338	\$338	\$338	\$338	
		S	Subtotal Equipme	nt Costs					\$11,295	\$18,117			\$3,515	
$\neg \uparrow$	7	Sub	total Tankage Re	moval and	Loading Cos	ts			\$22,523	\$36,127	\$8,088	\$10,784	\$7,009	
			C/Steel Pipe	• 1				- :						
\neg			VC Pipe Footage	e			,	,	2800	. 5000		4000	1500	- 0
\neg	T i		Average PVC Pip		er (inches)		1	1 1	3	3	3	3	. 3	3
\neg			Shredded PVC Pi			1 ³ /ft)			0.016	0.016	0.016	0.016	0.016	0.016
\neg			Volume of Shredo				•	1 :	'45	80	0	64	24	
			Steel Pipe Footage					1	1100	0	0	0	0	
			Average Steel Pip		er (inches)				6	. 0	0	0	0	
			Volume (ft ³)	. 1	,			1	216	0	0	0	0	30
			Labor											
$\neg \uparrow$		一	Number of Pe	rsons					2	2	2	2	2	
	;	.	Ft/Day		7				200	200	200	200	200	200
- †		_	Number of Da	avs				1	19.5	25	0	20	7.5	
_	一	_	\$/Day/Person				:	·	\$112	. \$112	\$112	\$112	\$112	
-		Is	Subtotal PVC/Ste		bor Costs	-	1, 1		\$4,368	\$5,600			\$1,680	
			total PVC/Steel I			ng Costs	 	· · · · · · · · · · · · · · · · · · ·	\$4,368	\$5,600	\$0	\$4,480	\$1,680	
	c.			1		<u> </u>				.4-,4				
_			Number of Pumps	s			 	 	21	43	0	13	12	, ,
			verage Volume		,			1	4.93	4.93	0	4.93	4.93	4.93
 -	\dashv		Volume of Pumps		′			1	103.53	211.99	0	64.09	59.16	9.86

Equip	omi	ent 1	Removal and	Loading				CPP Ion	Ex. Plant	Central Plant	Dryer Building	Satellite SR-1	Pilot ISL	Water Pumphouse
			Labor /											
			Number of	Persons			•		1	1	1	1	1	1
		П	Pumps/Da	у	·		· · · · · · · · · · · · · · · · · · ·		2	2	2	2	2	2
			Number of	Days			1		10.5	21.5	0	7	6	1
			\$/Day/Pers	son				1	\$112	\$112	\$112	\$112	\$112	\$112
			Subtotal Labo	r Costs	,			,	\$1,176	\$2,408	\$0	\$784	\$672	\$112
		Sub	total Pump Re	emoval and I	oading Costs				\$1,176	. \$2,408	\$0	\$784	\$672	\$112
Ī	7.	Dry	er	•.										
		Dry	er Volume (ft	3)							200			
		1.	Labor											
	:		Number of	Persons					0	0	5	0	0	0
			Ft ³ /Day						0	0	175	0	0	0
			Number of	Days			. •		0		2	. 0	. 0	0
		П	\$/Day/Pers	son		•	١		\$112	\$112	\$112	\$112	\$112	\$112
			Fotal Labor C	ost					\$0	20		\$0	\$0	\$0
		Tot	al Dryer Dism	antling and I	Loading Cost			·	∙\$0				\$0	\$0
5	Sub	total	Equipment R	emoval and	Loading Costs	per Facility		. 1	\$28,067	\$44,135	\$9,208	\$16,048	\$9,361	\$4,623
7	l'ot:	al E	quipment Re	moval and I	Loading Costs			,	\$111,442					
11.		\Box		Diametel Co	sts (NRC-Lice	need Feelli				,				
			kage	Disposar Co	SIS (MKC-LICE	nsea raciiii	y)	-					_	
'	٦.			als Constant	ion Material (f	3\		+ :-	835	1340	300	397	260	164
┝	7				ming 10% Voi			-	919	1474		436	286	
 	÷				al Unit Cost (\$			 	\$5.62	\$5.62		\$5.62	\$5.62	\$5.62
 -					ion and Dispos		•	 	\$5,165			\$2,450	\$1,607	\$1,012
			C / Steel Pipe	Transportati	lon and Dispos	at Costs	<u>'</u>	 	\$3,103	30,204	31,655	32,430	\$1,007	\$1,012
 	٠.		Volume of Shi	redded DVC	Pine (ft ³)			 	44.8	80	0	64	24	<u> </u>
-					ming 10% Void	Space (A3)		 	14.8			70	26	0
 -			Volume of Ste		ining 1076 VOIC	i space (it)		 	296	0		0	0	
 -					ming 10% Void	Space (ft ³)		+	326	0		0	0	33
├					al Unit Cost (\$			 	\$5.62	\$5.62	\$5.62	\$5.62	\$ 5.62	\$5.62
 -	-				ation and Dispo			 	\$2,108	\$495			\$146	\$185
 ,		Pun		i Tansporta	nion and 1515pt			 	\$2,100	3473	- 30	4373	\$140	3103
<u> `</u>			Volume of Pu	mps (f) ³)				·	103.53	271	0	64	59	9.86
 	∺				ming 10% Void	Space (ft ³)		†	114	298			65	. 11
		ш	TOTALIS TOT DE	13PO301 7133U	<u>6 1070 YOR</u>	· paco (it)	l			270	· · · · · · · · · · · · · · · · · · ·	, , , ,		· · · · · · · · · · · · · · · · · · ·

Equipment Removal and Loading	CPP Ion Ex. Plant	Central Plant	Dryer Building	Satellite SR-1	Pilot ISL	Water Pumphouse
Transportation and Disposal Unit Cost (\$/\text{f}^3)	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62
Subtotal Pump Transportation and Disposal Costs	\$641	\$1,675	\$0	\$393	\$365	. \$62
D. Dryer						
Dryer Volume (ft ³)	0	. 0	400	0	0	0
Volume for Disposal Assuming Dryer Remains Intact (ft ³)	0	0	400	0	0	0
Transportation and Disposal Unit Cost (\$/ft³)	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62
Total Dryer Transportation and Disposal Costs	\$0	\$0	\$2,248	\$0	\$0	\$0
Subtotal Equipment Transportation and Disposal Costs per Facility	\$7,914	. \$10,454	\$4,103	\$3,236	\$2,118	\$1,259
Total Equipment Transportation and Disposal Costs	\$29,084					
III. Health and Safety Costs						
Radiation Safety Equipment	\$1,250	\$1,250	\$1,250	\$1,250	\$1,250	0
Total Health and Safety Costs	\$6,250					
SUBTOTAL EQUIPMENT REMOVAL AND DISPOSAL COSTS PER FACILIT	\$37,231	\$55,839	\$14,561	\$20,534	\$12,729	\$5,882
TOTAL EQUIPMENT REMOVAL AND DISPOSAL COSTS	\$146,776					

		CPP Ion Ex.	Central	Dryer	Office	Office	Storage	Water Treat	Shop	Pilot ISL	Fresh Water	DDW
Bullding Demolition and Disposal		Plant	Plant	Building	Building	Annex	Building	Plant	Building	Building	Pumphouse	Buildings
												-
I. Decontamination Costs											ļ	
A. Wall Decontamination											<u> </u>	
Area to be Decontaminated (ft ²)		10,810	15,900	0	4,760	9,934	1,152	576	4,826	12,000	0	c
Application Rate (Gallons/ft²)		1	1	1	1	1	1	1	1	1	1	1
HCl Acid Wash, including labor (\$/Gall	on)	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50
Subtotal Wall Decontamination Costs		\$5,405	\$7,950	,\$0	\$2,380	\$4,967	\$576	\$288	\$2,413	\$6,000	, \$ 0	\$0
B. Concrete Floor Decontamination	· ·											
Area to be Decontaminated (ft²)		11,550	16,500	3,500	6,933	14,468	1,678	839	7,028	17,477	0	
Application Rate (Gallons/ft²)		4	4	4	- 4	4	4	4	4	4	4	4
HCl Acid Wash, including labor (\$/Gall	on)	\$0.50	\$0.50	\$0,50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0,50	\$0,50	\$0.50
Subtotal Concrete Floor Decontamination C		\$23,100	\$33,000	\$7,000	\$13,866	\$28,936	\$3,356	\$1,678	\$14,056	\$34,954	\$0	Sc
C. Deep Well Injection Costs					***************************************						i	
Total Kgals for Injection	1.	57.01	81.9	14	32,492	67.806	7,864	3.932	32.938	81.908	0	0
Deep Well Injection Unit Cost (\$/Kgals)	\ 	\$4.12	\$1.39	\$1.39	\$1,39	\$1.39	\$1.39	\$1,39	\$1.39			\$1,39
Subtotal Deep Well Injection Costs	'}	\$235	\$114	\$19	\$45	\$94	\$11		\$46			
· Subtotal Decontamination Costs per Building		\$28,740	\$41,064	\$7,019	\$16,291	\$33,997	\$3,943	\$1,971	\$16,515	\$41,068		
Total Decontamination Costs	·	\$215,889		0.,,000			33,5 13					
		33.5455										
II. Demolition Costs			<u>. </u>							<u> </u>		
A. Building	.	_										
Assumptions:		_						L				
Dryer bldg, demolition unit cost of \$	0.73/ft ³ for additional			1						l		
radiation safety equipment	·									l	<u> </u>	
Volume of Building (ft ³)		346,500	577,500	122,500	103,995	361,700	16,780	8,390	175,700	314,586		
Demolition Unit Cost per WDEQ Guide	line No.12, App.K (\$/ft3)	\$0.171	\$0.171	\$0,171	\$0.171	\$0.171	\$0.171	\$0,171	\$0,171	\$0.171		
Unit Cost in \$/ft3 (July 1998 dollars w/o	escalator)	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15
Subtotal Building Demolition Costs		\$51,478	\$85,797	\$18,199	\$15,450	\$53,736	\$2,493	\$1,246	\$26,103	\$46,737	\$1,236	\$98
B. Concrete Floor				•								
, Area of Concrete Floor (ft²)	·	11,550	16,500	-3500	6933	14468	1678	839	7028	17477	832	C
Demolition Unit Cost per WDEQ Guide	line No.12, App.K (\$/ft2)	\$3.17	\$3.17	\$3.17	\$3.17	\$3.17	\$3.17	\$3,17	\$3.17			
Unit Cost in \$/ft2 (July 1998 dollars w/o	escalator) .	\$2.75	\$2.75	\$2.75	\$2.75	\$2,75	\$2.75	\$2.75	\$2.75	\$2.75		\$2.75
· Subtotal Concrete Floor Demolition Costs		\$31,810	\$45,443	\$9,639	\$19,094	\$39,847	\$4,621	\$2,311	\$19,356	\$48,134	\$2,291	\$0
C. Concrete Footing												
Length of Concrete Footing (ft)		430	514	237	333	481	164	116	335	529	115	C
Demolition Unit Cost per WDEQ Guide	. No.12, App.K (\$/lin. ft)	\$11.45	\$11.45	\$11.45	\$11.45	\$11.45	\$11.45	\$11.45	\$11.45	\$11.45	\$11.45	\$11.45
Unit Cost in \$/lin, ft (July 1998 dollars	w/o escalator)	\$9.95	\$9.95	\$9.95	\$9.95	\$9.95	\$9.95	\$9.95	\$9.95			\$9.95
Subtotal Concrete Footing Demolition Cost		\$4,276	\$5,111	\$2,354	\$3,313	\$4,786	\$1,630	\$1,153	\$3,336	\$5,260	\$1,144	\$0
Subtotal Demolition Costs per Building	-	\$87,564	\$136,351	\$30,192	\$37,857	\$98,369	\$8,744		\$48,795	\$100,131	\$4,671	\$98
Total Demolition Costs	1	\$674,690								1	1	T
III. Disposal Costs	 									ļ	ļ	
A. Building	 	_								ļ	 	
Volume of Building (cy)		12833	21389	4537	3852	13396	621	311	6507	11651	308	24
1. On-Site	 	_								<u> </u>	 	ļ
Assumptions:										ļ	<u> </u>	l
On-site disposal cost of \$0.54/c	у	_			l		L			ļ	ļ	<u> </u>
Percentage (%)	1	100	100	100	100	100	100		100	100		
Volume for Disposal (cubic yards)	ll	12833	21389	4537	3852	. 13396	621	311	6507	11651		
Disposal Unit Cost (\$/cy)		\$0.54	\$0.54	\$0.54	\$0.54	\$0.54	\$0.54	\$0.54	\$0.54	\$0.54		\$0.54
Subtotal On-Site Disposal Costs		\$6,930	\$11,550	\$2,450	\$2,080	\$7,234	\$336	\$168	\$3,514	\$6,292	\$166	\$13

File Prince Pri			CPP Ion Ex.	Central	Dryer	Office	Office	Storage	Water Treat	Shop ·	Pilot ISL	Fresh Water	DDW
2 NNC-Licenset Facility	Ruliding Demolition and Disposal											Pumphouse	Buildings
Percentage (%)													
Volume for Diposal (ft)			0	0	0	0	0	0	0	0	0	0	0
Volume for Disposal Assuming 1975 Vold Space (ft)			0	0	0	. 0	0	0	0	0	O	. 0	0
Subtoal Building Disposal Unit Cost (SPT) \$5,02 \$5,02 \$5,02 \$5,02 \$5,02 \$5,02 \$5,02 \$5,02 \$5,02 \$5,03		/oid Space (ft ³)	0	0	' 0	0	o	0	0	0	Ó	/ 0	0
Substitut Builden Disposal Costs \$5,900 \$11,550 \$2,450 \$2,080 \$77,234 \$336 \$164 \$33,514 \$6,202 \$166			\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	
Subtoral Building Disposal Costs \$6,900 \$11,550 \$22,450 \$22,000 \$72,244 \$336 \$316 \$33,514 \$6,292 \$3166 \$33,514 \$6,292 \$3166 \$33,514 \$6,292 \$3166 \$33,514 \$6,292 \$3166 \$33,514 \$6,292 \$3166 \$33,514 \$6,292 \$3166 \$33,514 \$6,292 \$3166 \$33,514 \$6,292 \$3166 \$33,514 \$6,292 \$3166 \$33,514 \$6,292 \$3166 \$33,514 \$6,292 \$3166 \$33,514 \$6,292 \$3166 \$33,514 \$33,514 \$6,292 \$3167 \$33,514 \$33,5	Subtotal NRC-Licensed Facility Disposal	Costs	\$0		\$0	\$0	. \$0						
Area of Concrete Floor (ft') 0.75			\$6,930	\$11,550	\$2,450	\$2,080	\$7,234	\$336	\$168	\$3,514	\$6,292	\$166	\$13
Average Thickness of Connecte Floor (ft) 0.75	B. Concrete Floor												ļ
Volume of Concrete Floor (t) \$665.5 12275 2625 5199.75 10851 1258.5 629.25 5271 1310.75 889.5	Area of Concrete Floor (ft ²)		11550				14468	1678					
Volume of Contrete Floor (cy) 321 458 97 199 402 47 23 195 485 33													0.75
No. Size		'											0
Percentage (%)			321	458	97	193	402	47	23	195	485	33	0
Volume for Disposal (17)												ļ	L
Disposal Unit Cost per WDEQ Guideline No.12,App.K (5/cy) \$3.69 \$4.69 \$													
Unit Cost in E/ry (July 1978 dollars w/o escalator)													
Subtoral On-Site Disposal Costs 5980 51,401 5297 5785 51,638 5190 595 5795 51,844 5134													
2. NRC-Licensed Facility		/o escalator)											
Assumptions:			\$980	\$1,401	\$297	.\$785	\$1,638	\$190	\$95	\$795	\$1,484	\$134	\$0
Additional \$2.00/n' for segregation of concrete 25 25 25 25 25 0 0 0 0 0 25 0 0 0 0 0 0 0 0 0											ļ	/	
Percentage (%)												 	
Volume for Disposal (ft)		on of concrete											
Segregation and Loading Unit Cost (\$\sigma(s)^2\) \$2.00													<u> </u>
Transportation and Disposal Unit Cost (Sft) S5.62													
Subtotal NRC-Licensed Facility Disposal Costs \$22,007 \$23,574 \$35,001 \$30													
Subforal Concrete Floor Disposal Costs \$22,987 \$24,975 \$55,298 \$785 \$51,638 \$5190 \$95 \$795 \$26,454 \$5134													
C. Concrete Footing		Costs											
Length of Concrete Footing (ft)			\$22,987	\$24,975	\$5,298	\$785	\$1,638	\$190	\$95	\$795	\$26,454	\$134	\$0
Average Depth of Concrete Footing (ft)								164		225	630		
Average Width of Concrete Footing (ft) 1 1 1 1 1 1 1 1 1					7, 237	333						124	
Volume of Concrete Footing (R³) 1720 2055 947 1332 1925 655 463 1341 2115 496	Average Depth of Concrete Footing (ft)		4		<u>*</u>		4	4					
Volume of Concrete Footing (cy) 64 76 35 49 71 24 17 50 78 18			, 1		013		1026		462	1241	2116	406	
Disposal Unit Cost per WDEQ Guideline No.12,App. K (S/ey) \$4.69													
Unit Cost in \$\(\sigma\) (July 1998 dollars \(w\) \(\oters\) escalator\) \$4.07		No. 12 April V (S/m)											:
Subtotal Concrete Footing Disposal Costs \$260 \$310 \$143 \$201 \$290 \$99 \$70 \$202 \$319 \$75													
Subtotal Disposal Costs per Building \$30,177 \$36,835 \$7,891 \$3,066 \$9,162 \$625 \$333 \$4,511 \$33,065 \$375 \$7,000 \$1,000 \$		scatator).											
Solution Suppose Costs Si Si Si Si Si Si Si S													
III.					37,071	33,000	47,102	- 4023	4333	34,512			***
Radiation Safety Equipment S1,000 S1,000 S1,000 S1,000 S1,000 S0			3100,043										
Total Health and Safety Costs S7,000 SUBTOTAL BUILDING DEMOLITION AND DISPOSAL COSTS \$147,481 \$215,250 \$46,102 \$58,214 \$142,528 \$13,312 \$7,014 \$69,821 \$174,264 \$5,046 \$5									ļ		ļ	 	
SUBTOTAL BUILDING DEMOLITION AND DISPOSAL COSTS \$147,481 \$215,250 \$46,102 \$58,214 \$142,528 \$13,312 \$7,014 \$69,821 \$174,264 \$5,046 \$				\$1,000	\$1,000	\$1,000	\$1,000	\$0	\$0	\$0	\$0	\$0	\$0
	Total Health and Safety Costs	•	\$7,000										l
	CURTOTAL PULL DING DEMOLITION AND DISPO	STOO IAS	\$147.491	\$215.250	\$46 102	\$58 214	\$142 528	\$13.312	\$7.014	\$69.871	\$174.264	25 046	\$111
	TOTAL BUILDING DEMOLITION AND DISPOS		\$1,057,624	9217,270	\$40,102		3172,320	9.0,312	9,,514	505,021	4.,,207		

	L		L	L	l	Ī	1	·	Satellite	Yellowcake
Buil	ding	Dem	dition	and	Disposal				SR-1	Warehouse
ī.	The s	ontan	lace!				-			
	A.			ntamir		 		 	 	·
	 ^-				contaminate	4 (62)			0	3100
	╁				ate (Gallons				i	7.5
	一					labor (\$/Gallo	n) '	 	\$0,50	\$0.50
I	_				contamination				\$0	
	B.				econtaminat					
	1	A	ca to	be De	contaminate	$d(\Omega^2)$			9000	2750
	1	A	plica	tion R	ate (Gallons	/ft²)			4	4
		H	Cl Aci	id Wa	sh, including	labor (\$/Gallo	n)		\$0.50	\$0.50
		Subto	tal Co	oncret	e Floor Deco	ntamination Co	osts		\$18,000	\$5,500
	C				ion Costs	•				
					r Injection				36	14.1
<u> </u>						Cost (\$/Kgals)	<u> </u>	<u>'</u>	\$4.60	
 	L.				ell Injection			<u> </u>	\$166	
<u> </u>					tion Costs p	er Building	ļ	ļ	-\$18,166	\$7,115
_	Tot	al Dec	ontar	ninati	on Costs	<u> </u>	ļ	ļ	ļ	
lii.	Den	nolitia	n Cos	its		 		 		
	Ā.	Build		Ī					<u> </u>	
			sump	tions:	 					
I	\Box		Dry	er bldg	g. demolition	unit cost of \$0	.73/ft for ad	ditional		
			radia	ation s	afety equipr					
匚	\Box				ilding (ft³)	i			402,000	
		D	molit	ion U	nit Cost per	WDEQ Guidel	ne No.12,Ar	p.K (\$/ft')	\$0,171	
=						98 dollars w/o	scalator)		\$0.15	
<u> _</u>					Demolition	Costs		 	\$59,724	. \$8,171
	В.		rete F		<u>L</u>	<u> </u>		<u> </u>	l	ļ
<u> </u>	<u> </u>				ete Floor (ft		l		13400	
	<u> </u>					WDEQ Guidel		p.K (\$/ft²)	\$3.05	
	 					98 dollars w/o	scalator) -	 	\$2.65	\$2.65
<u> </u>	_					olition Costs			\$35,508	\$7,287
<u> </u>	C.			ooting		- (0)	 	 		
	⊢	114	ngtn	or Cor	crete Footin	v (11) WDEQ Guide.	No 12 Arm	/ (\$A:- A)	\$11.15	\$11.15
<u> </u>	 	- 	mont	ion U	Ain A / Inter	1998 dollars w	lo mecalator	(Nur ii)	\$9.69	
! —	-	6	111 CO	or in a	Footing D	molition Costs	o escarator)		\$4,486	
1-	51				Costs per Bu		 	-	\$99,718	\$17,490
<u> </u>		al Der						 	477,118	317,490
=	=									
III.		posal		! —		<u> </u>	ļ	ļ	<u> </u>	
<u> </u>	Α	Build		<u></u>	!	ļ	ļ	ļ	ļ	
<u></u>	 				ing (cy)	ļ	<u> </u>	 	14889	2037
 	┞	<u> </u>	n-Site		!	 	 	ļ	 	
<u> </u>	 	- -	Assı	mptic	ons:	550.53	<u> </u>		ļ	
 	 -	 - -	 			cost of \$0.54/cy		 		
	-	⊢ −		entage					100	100 2037
<u> </u>	 —	├ ├			or Disposal (Unit Cost (\$/	cubic yards)	 		\$0.54	\$0,54
1-	-	 -			ite Disposal		 	ļ	\$8,040	\$1,100
L	<u>.</u>	1 130	OIOIA	(JII-3	ne maborat	COSIS		' -	30,040	31,100

		_	1		1	1	,			
<u> </u>	! -	<u></u>	ــــــــــــــــــــــــــــــــــــــ		<u> </u>	l—				Yellowcake
Bull	ding				Disposal	ļ	 		SR-1	Warehouse
_	├	2.			d Facility	ļ <u>. </u>	ļ			
 	-	 _	III Pe	rcentag	e (%)	<u></u>	 		0	0
<u> —</u>	 	١.	<u> ∨</u>	lume fo	or Disposal (ft')	<u> </u>	<u> </u>	0	0
٠	 	╄				Assuming 10%		ft²)	0	0
l—	ļ	↓_				sposal Unit Co		 	\$5.62	\$5.62
<u> </u>	ļ	Ļ				acility Disposa	Costs		\$0	50
I	ــــا				g Disposal C	osts	ļ		\$8,040	\$1,100
<u> </u>	B.	Co	ncrete		<u> </u>	J	!			
! —		ļ.			rete Floor (ft			ļ	13400	2750
 	ļ	L.,				crete Floor (ft)			0.75	0.75
<u> </u>	<u>L.</u>	L			oncrete Floor		<u> </u>		10050	2062,5
l	<u> </u>	Ш			oncrete Floor	(cx)	<u> </u>	<u> </u>	372	76
l	1	1.	On-Si							
J		L		rcentag					75	75
l			V	lume fo	or Disposal (cy)			279	57
			D	sposal l	Unit Cost per	WDEQ Guide	line No.12,A	pp.K (\$/cy)	\$4.69	\$4.69
			U	it Cost	in \$/cy (July	1998 dollars v	v/o escalator)		\$4.07	\$4.07
	L^{-}		Subto	al On-S	ite Disposal	Costs	•		\$1,138	\$233
		2.	NRC-	License	d Facility					
	\Box		A:	sumption	ons:					_
				Addi	tibnal \$2.00/	ft for segregat	on of concre	te		
			Pe	rcentage	c (%)	T	I		25	7 25
			V	lume fo	or Disposal (ft ³)			2513	516
	Ι	П	Se	gregatio	on and Loadi	ng Unit Cost (1	/ft³)	i	\$2.00	\$2.00
		П	Tı	ansport	ation and Dis	sposal Unit Cos	t (\$/fl³)		\$5.62	\$5.62
1						cility Disposal			\$19,145	\$3,929
i —	1	Su	btotal	Concret	e Floor Disp	osal Costs		,	\$20,283	\$4,162
	C.	Co	ncrete	Footing		T				
_	_		Lengt	of Cor	acrete Footin	g (ft)	· ·		463	210
-	1					e Footing (ft)			4	4
_	1	1-1				e Footing (ft)			1	
-					oncrete Footi				1852	839
I —	1	П			ncrete Footi		·		69	31
_	_					DEQ Guideline	No.12 App	K (\$/ev)	\$4.69	\$4.69
·		1				8 dollars w/o		130.22	\$4.07	\$4.07
<u> </u>	_	Sp				sposal Costs			\$280	\$127
 	Suh				sts per Build				\$28,603	\$5,389
_				I Costs						
=										
III.	Hes			afety C		ļ				
<u> _</u>	 _				Equipment	<u> </u>			\$1,000	\$1,000
<u> </u>	Tot	al I	lealth	and Sa	fety Costs					
SUP	TO	LA!	BUTT	DING	DEMOLITIC	N AND DISP	TOO JAZO		\$147,487	\$30,994
						AND DISPO			****,701	\$30,274
ببنيا	<u> </u>	***	,, 6,,, 1	*** 1/6/		with history	C0313	<u>. </u>		

Well	field	d Buildings and Equipment Removal and Disposal	Mine Unit-1	Mine Unit-2	Mine Unit-3	Mine Unit-4	Mine Unit-4A	Mine Unit-15
Ī.	W	ellfield Piping		<u> </u>				<u> </u>
•	_	Assumptions:		,		· · · · · · · · · · · · · · · · · · ·		· ·
		Number of Header Houses per Wellfield	, 6	5	8	6	5	7
	Г	Length of Piping per Header House (ft)	2000	2000	2000	2000	2000	2000
		Total Length of Piping (ħ)	12000	10000	16000	12000	10000	14000
	A.	Removal and Loading						
		Wellfield Piping Removal Unit Cost (\$/ft of pipe)	\$0.31	\$0.31	\$0,31	\$0.31	\$0.31	\$0.31
		Subtotal Wellfield Piping Removal and Loading Costs	\$3,720	\$3,100	\$4,960	\$3,720	\$3,100	\$4,340
	B.	Transport and Disposal Costs (NRC-Licensed Facility)						
		Average Diameter of Piping (inches)	. 2	2	2	2	2	. 2
		Chipped Volume Reduction (1777)	0.005	0.005	0.005	0.005	0.005	0.005
		Chipped Volume per Wellfield (ft³)	60			60	50	1
		Volume for Disposal Assuming 10% Void Space (ft ³)	66	55		66	55	77
•		Transportation and Disposal Unit Cost (\$/ft³),	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62
		Subtotal Wellfield Piping Transport and Disposal Costs	\$371	\$309	\$495	\$371	\$309	\$433
		ellfield Piping Costs per Wellfield	\$4,091	\$3,409	\$5,455	\$4,091	\$3,409	\$4,773
	C.	Capitol Costs		<u> </u>				
		PVC Pipe Shredder	\$40,000					
	To	otal Wellfield Piping Costs .	\$65,228	<u>'</u>				
II.	w.	ell Pumps and Tubing		•				
· ·	_	Assumptions:		·				
	-	Pump and tubing removal costs included under ground water	r restoration labor co	te .				
	-	60% of production/injection wells contain pumps and/or tubi						
_	Δ	Pump and Tubing Transportation and Disposal						
	:	Number of Production Wells	115	146	. 145	124	101	140
	-	Number of Injection Wells	210	262	251	219	175	252
	-	1. Pump Volume	210	202	251	217	173	
		Number of Production Wells with Pumps	69	88	87	74.	61	84
		Average Pump Volume (ft³)	1	1	1	1	1	1
	i -	Pump Volume per Wellfield (ft³)	69	88	87	74	61	84
	- 1	2: Tubing Volume		- 00	- 07			- 64
	-	Assumptions:					·	
;		Average tubing length/wellfield based on average well	denth minus 25 0					
-		Number of Production Wells with Tubing	\ 69	88	87	74	61	84

Vellfic	eld	Buildings and Equipment Removal:	and Dispos	al	Mine Unit-1	Mine Unit-2	Mine Unit-3	Mine Unit-4	Mine Unit-4A	Mine Unit-15
	7	Number of Injection Wells with T			126	157	151	131	105	151
	٦	Average Tubing Length per Well	(ft)		475	825	725	825	725	425
	٦	Tubing Length per Wellfield (ft)			92625	202125	172550	169125	120350	99875
		Diameter of Production Well Fibe	rglass Tubi	ng (inches)	2	2	2	2	2	
	7	Diameter of Injection Well HDPE	Tubing (in	ches)	1.25	1.25	1.25	1.25	1.25	1.25
		Chipped Volume Reduction (ft³/ft			0.005	0.005	0.005	0.005	0.005	0.00
		- Chipped Volume per Wellfield (ft	13)		463	1011	863	846	602	499
		Volume of Pump and Tubing (ft3)			532	1099	950	920	663	58:
		Volume for Disposal Assuming 10%		e (ft³)	585	1209	1045	1012	729	64
		Transportation and Disposal Unit Co			\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62
_		Subtotal Pump and Tubing Transport ar	nd Disposal	Costs_	\$3,288		\$5,873	\$5,687	\$4,097	\$3,602
		np and Tubing Costs per Wellfield			\$3,288		\$5,873	\$5,687	\$4,097	\$3,603
. T	ot	tal Pump and Tubing Costs			\$29,342	L				
II. B	 	ried Trunkline	 			ļ			 	
	_	Assumptions:								
		Length of Trunkline Trench (ft)			5075	7600	4790	7105	5460	5280
A		Removal and Loading		-		:			3.00	
	7	Main Pipeline Removal Unit Cost (\$	/ft of trench	<u>)</u>	\$0.85	; \$0.85	\$0.85	\$0.85	\$0.85	\$0.83
_	٦	Subtotal Trunkline Removal and Loadin			\$4,314	\$6,460	\$4,072	\$6,039		\$4,48
$\overline{\mathbf{B}}$		Transport and Disposal Costs (NRC-Lie		lity)						
	7	1. 3" HDPE Trunkline		· /		:				,
	7	Piping Length (ft)			5075	7600	4790	7105	5460	10560
	7	Chipped Volume Reduction (ft³/ft	1)		0.022	0.022	0.022	0.022	0.022	0.023
	7	Chipped Volume (ft ³)			111.65	167.2	105.38	156.31	120.12	232.33
	٦	2. 6" HDPE Trunkline	;							
	T	Piping Length (ft)			2410	10000	4820	3520	3800	700
	٦	Chipped Volume Reduction (13/11	1)		0.078	0.078	0.078	0.078	0.078	0.07
	Ţ	Chipped Volume (ft³)			187.98	780	375.96	274.56	296.4	54
		3. 8" HDPE Trunkline						*		
	;	Piping Length (ft)			4100		1100	2400	1840	
\Box		Chipped Volume Reduction (13/11	1)		0.15	0.15	0.15	0.15	0.15	0.13
		Chipped Volume (ft3)			615	0	165	360	276	
]:	3. 10" HDPE Trunkline								
	\Box	Piping Length (ft)			0	5200	3660	2280	2400	(
	T	Chipped Volume Reduction (ft³/ft	n		0.277	0.277	0.277	0.277	0.277	0.277

					•		<u> </u>		·	· · · · · ·	l	<u> </u>
Well	field	i B	uildings and Equipment Remo	val and Dis	sposal		Mine Unit-1	Mine Unit-2	Mine Unit-3	Mine Unit-4	Mine Unit-4A	Mine Unit-15
			Chipped Volume (ft³)				0	1440.4	1013.82	631.56	664.8	0
		4.	12" HDPE Trunkline									
	T-	-	Piping Length (ft)				1460	0	0	3210	2060	0
			Chipped Volume Reduction ((Ω³/Ω)			0.293	0.293	0.293	0.293	0.293	0.293
		-	Chipped Volume (ft3)				427.78	0	0	940.53	603,58	0
	\Box	5.	14" HDPE Trunkline									
			Piping Length (ft)			1	740	0	· 0	0	0	
			Chipped Volume Reduction (Ω^3/Ω)		\	0.359	0.359	0.359	0.359	0.359	0.359
			Chipped Volume (ft3)				265.66	0	0	0	0	0
		5.	16" HDPE Trunkline									
			Piping Length (ft)		-		1440	' 0	0	2800	820	10560
	П		Chipped Volume Reduction (ft³/ft)			0.4	0.4	0.4	0.4	0.4	0.4
			Chipped Volume (ft ³)				576	. 0	0	1120	328	4224
			Total Trunkline Chipped Volum	e (ft³)			2184.07	2387.6	1660.16	3482,96	2288.9	5002.32
			Volume for Disposal Assuming	10% Void S	Space (ft	3)	2402	2626	1826	3831	2518	5503
			Transportation and Disposal Un				\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62
		Su	btotal Trunkline Transport and D	Disposal Cos	sts		\$13,499	. \$14,758	\$10,262	\$21,530	\$14,151	\$30,927
			line Decommissioning Costs per				\$17,813	, \$21,218	\$14,334	\$27,569	\$18,792	\$35,415
	To	tal	Trunkline Decommissioning C	osts		•	\$135,141	6 '	•			
īv.	W		Iouses .	- 4								
-			Quantity				315	408	396	343	276	392
<u> -</u> -			ge Well House Volume (ft ³)				12.5	12.5	12.5	12.5	12.5	12.5
			moval				12.5	1 12.5	12.3	12.3	12.3	12.3
<u> </u>	-		Total Volume (ft³)				3937.5	5100	4950	4287.5	3450	4900
	-		Demolition Unit Cost per WDE	O Guideline	No 12	Ann K (\$/ft³)	\$0.165	\$0.165	\$0.165	\$0.165	\$0.165	
	-	H	Unit Cost in \$/ft ³ (July 1998 dol			1pp.ic (4/11)	\$0.14	\$0.14	\$0.14	\$0.14	\$0.14	\$0.14
	 - 	Sn	btotal Well House Demolition Co		u.u.u.		\$564	\$731	\$710	\$615	\$495	\$702
 -			rvey and Decontamination	73.3			\$307	3,31	37.10	\$015		3702
			Assumptions:									
	\vdash	-	Cost per Well House				\$5	\$5	· \$5	\$5	\$5	. \$5
		Su	btotal Survey and Decontaminati	on Costs			\$1,575	\$2,040	\$1,980	\$1,715	\$1,380	\$1,960
			sposal at NRC licensed Facility	22. 000.0			3.,5,5		- 4.,,,,,,,,,		0.,500	41, 500
	~		Total Volume (cy)				146	189	183	159	128	181
	-	\vdash	Volume for Disposal Assuming	10% Void S	Space (cv	<i>(</i>)	160	208	202	175	141	200
_	\vdash	\dashv	Transportation and Disposal Uni			·	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62

Well	field	d Buildings and Equipment Removal and Disposal	Mine Unit-1	Mine Unit-2	Mine Unit-3	Mine Unit-4	Mine Unit-4A	Mine Unit-15
	Τ	Subtotal NRC Licensed Facility Disposal Costs	\$899	\$1,169	\$1,135	\$984	\$792	\$1,124
	We	ell House Removal and Disposal Costs per Wellfield	\$3,038	\$3,940	\$3,825	\$3,314	\$2,667	\$3,786
		tal Well House Removal and Disposal Costs	\$20,570					
	1							
<u>VI.</u>	He	ader Houses			· · · · · · · · · · · · · · · · · · ·			
<u> </u>	_	Total Quantity	6	5	8	6	5	
		Average Header House Volume (ft ³)	2700	2700	2700	2700	2700	2700
	۸.	Removal						
		Total Volume (ft ³).	16200	13500	21600	16200	13500	18900
		Demolition Unit Cost per WDEQ Guideline No.12, App.K (\$/ft³)	\$0.171	, \$0.171	\$0.171	\$0.171	\$0.171	\$0.17
		Unit Cost in \$/ft3 (July 1998 dollars w/o escalator)	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.13
	Г	Subtotal Building Demolition Costs	\$2,407	\$2,006	\$3,209	\$2,407	\$2,006	\$2,808
	B.	Survey and Decontamination	1					
	\dagger	Assumptions:						
	T	Cost per Header House	\$200	\$200	\$200	\$200	\$200	\$200
	Τ.	Subtotal Survey and Decontamination Costs	\$1,200	\$1,000	\$1,600	\$1,200	\$1,000	\$1,400
	C.	Disposal .	1	•				
$\overline{\cdot}$	1	Total Volume (cy)	.600	· 500	. 800	600	500	700
	⇈	Volume for Disposal Assuming 10% Void Space (cy)	660	550	880	660	550	770
	 	Disposal Unit Cost per WDEQ Guideline No.12, App.K (\$/cy)	\$5.44	\$5.44	\$5.44	\$5.44	\$5.44	\$5.44
	╁	Unit Cost in \$/cy (July 1998 dollars w/o escalator)	\$4.73	\$4.73	\$4.73	\$4.73	\$4.73	\$4.73
	 	Subtotal On-Site Disposal Costs	\$3,119					
	П	ader House Removal and Disposal Costs per Wellfield	\$6,726	\$5,605	\$8,968			
		tal Header House Removal and Disposal Costs	\$41,477		\$6,700	30,720	\$5,005	37,047
	10	tal flexibit flouse Removal and Disposal Costs	341,477					
		DELICITION AND DIGROOM AND GOODS DED WITH THE	624.055	***	#20.455	6.49.00	63.4.55 0	455.40
		REMOVAL AND DISPOSAL COSTS PER WELLFIELD	\$34,956	\$40,967	\$38,455	\$47,387	\$34,570	\$55,423
TC	ΣŢĄ	L WELLFIELD BUILDINGS AND EQUIPMENT REMOVAL AND DISPOSAL COSTS	\$291,758					

· · · · · · · · · · · · · · · · · · ·				'	Mine Unit-3 2nd			· · · · · · · · · · · · · · · · · · ·	r
l	'					3.51 . 17 14 4	3.51 - 77.14 44		
Well Abandonment	 	Mine Unit-1	Mine Unit-2	Mine Unit-3	. Comp.	Mine Unit-4	Mine Unit-4A	Mine Unit-15	Mine Unit-K
I. Well Abandonment (Wellfields)	 	 							
# of Production Wells	 	115	146	145	Wells	124	101	140	0
I ————————————————————————————————————	 	210	. 262	251	included	219	175		
# of Injection Wells	 	1 1 49	50	. 40		51	. 39		20
# of Monitoring Wells	 	374	458	436		394	315		20
Total Number of Wells		374	438	۵د4		394	313	471	20
Average Diameter of Casing (inch	cs)	500	850	. 750		850	750	450	950
Average Depth (ft)	-112	\$280	\$304	\$297		\$304	\$297	\$277	
Well Abandonment Unit Cost (\$/v						\$119,658	\$93,555		
Subtotal Abandonment Cost per Wellf		\$104,814	\$139,095	\$129,492	-	\$119,038	\$93,555	\$137,019	\$6,200
Total Wellfield Abandonment Costs	-	\$724,233						ļ. 	
II. Waste Disposal Well Abandonment		DDW#1	DDW#2						
A. Well Plugging									
Drill Rig Operation (\$/hr)		150	150						
: Number of Hours		31	31						
Drill Rig Operating Costs		\$4,650	\$4,650						
Cementing Costs		\$7,500	\$7,500					· ·	1
Equipment Transport Costs		\$1,000	\$1,000					· ·	1
Well Cap Welding Costs		\$1,000	\$1,000						
Brine Makeup and Injection	Costs	\$1,500	(\$1,500					i	1
Subtotal Well Plugging Costs per		\$15,650	\$15,650	7.					
B. Pump Dismantling and Decontami	ination '		†					<u> </u>	
Number of Persons		2	: 2						
Number of Pumps		2	2						
Pumps/Day		0.5	0.5						
Number of Days		4	4						
\$/Day/Person	f .	\$112	\$112						
Subtotal Dismantling and Decon C	Costs per Well	\$896	\$896						
C. Tubing String Disposal (NRC-Lice	ensed Facility)								
Length of Tubing String (ft)		, 10100	10100	•					
Diameter of Tubing String (in	nches)	2.875	2.875					•	
Volume of Tubing String (ft)		455	455						
Transportation and Disposal		\$5.62	\$5.62						
Subtotal Tubing String Disposal C		\$2,558	\$2,558						
Subtotal Waste Disposal Well Abando		\$19,104	\$19,104						
Total Waste Disposal Well Abandon		\$38,208							
		2000							
TOTAL WELL ABANDONMENT COS	IS	\$762,441						<u> </u>	L

Page 1 of 1

Wellfield and Satellite Surface Reclamation	Mine Unit-1	Mine Unit-2	Mine Unit-3	Mine Unit-3 2nd Comp.	Mine Unit-4	Mine Unit-4A	Mine Unit-15
I. Wellfield Pattern Area, Laydown Area, and Road Reclamation						· · · · · · · · · · · · · · · · · · ·	i
Area (acres)	27.1	53.24	38.72	18	31.43	29.6	66.8
Disking/Seeding Unit Cost (\$/acre)	\$200	\$200	\$200	\$200	\$200	\$200	\$200
Subtotal Pattern Area, Laydown Area, and Road Reclamation Costs	\$5,420	\$10,648	\$7,744	\$3,600	\$6,286	\$5,920	\$13,360
Total Wellfield Area Reclamation Costs	\$52,978					,	
	SR-1	-					
III. Satellite Area Reclamation	5R-1						
Assumptions:	2.05						
Area of Disturbance (acres)	2.03						
Average Depth of Stripped Topsoil (ft) Surface Grade: Level Ground							
Average Length of Topsoil Haul (ft)	1000						
A. Ripping Overburden with Dozer	1000						
Ripping Unit Cost per WDEQ Guideline No.12, App.11 (\$/acre)	\$663.93					• .	
Unit Cost in S/acre (July 1998 dollars w/o escalator)	\$576.83						
Subtotal Ripping Costs	\$1,182						
B. Topsoil Application with Scraper	41,102					,	
	3307					····	
Application Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$0.71	•					
Unit Cost in \$/cŷ (July 1998 dollars w/o escalator)	\$0.62						
Subtotal Topsoil Application Costs	\$2,040					·	
C. Discing and Seeding		· · · · · · · · · · · · · · · · · · ·					
Discing/Seeding Unit Cost (\$/acre)	\$200						·
Subtotal Discing/Seeding Costs	\$410						
Subtotal Surface Reclamation Costs per Satellite	\$3,632	,					
Total Satellite Building Area Reclamation Costs	\$3,632					·	
TOTAL WELLFIELD AND SATELLITE SURFACE RECLAMATION COSTS	\$56,610						

Recin		nous Deslamation		•		•
_	Т	cous Reclamation	ļ			
C	PP/	Office Area/Pilot Plant/Maint. Shop/Chem. Storage/Yard Reclamation				
T		ssumptions				
7		Concrete Pad= 0.3 acres				
<u> </u>	╅	Total Area = 10.57 acres				
İA.	. lc	Concrete Pad				
7	+	Area of Concrete Pad (ft²)	12068	-	··-	1
	+-		13068			
	1	Demolition Unit Cost per WDEQ Guideline No.12,App.K (\$/R²)	\$3.17			
1	1	Unit Cost in \$/st² (July 1998 dollars w/o escalator)	\$2.75		_	
	1	Average Thickness of Concrete Floor (ft)	0.50			
$\neg \vdash$		Volume of Concrete Floor (ft³)	6,534			
+	+	Volume of Concrete Floor (cy)	242			
	┿					
	+	On-Site Disposal Unit Cost per WDEQ Guideline No. 12, App. K (\$/cy)	\$4.69			
+	+	Unit Cost in \$/cy (July 1998 dollars w/o escalator)	\$4.07			
		ubtotal Concrete Pad Demolition and Disposal Costs	\$36,977			
B.	. G	iravel Road Base Removal				
Ц_	4	Assumptions				
- -	4	Average haul distance (ft)	1000			
1_	┸	Gravel Road Base Width (ft)				
	1.	Gravel Road Base Area (acres)	8.0			
		Average Road Base Depth (ft)	0.5			
T	Т	Volume of Road Base (cy)	6453	•		
7		Removal Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$0.71			
7	1	Unit Cost in \$/cy (July 1998 dollars w/o escalator) -	\$0,62			
1	S	ubtotal Gravel Road Base Removal Costs	\$3,981			
B		Lipping Overburden with Dozer			7.00	
+=:	+	Overburden Surface Area (acres)	10.6			•
-	+	Ripping Unit Cost per WDEQ Guideline No.12, App.I1 (\$/acre)	\$663.93			
+-	╁	Unit Cost in S/acre (July 1998 dollars w/o escalator)	\$576.83	·		
╁	-					
┪		ubtotal Ripping Overburden Costs	\$6,097			
<u> </u>	- 1	opsoil Application				
- -	4-	Assumptions:				
-		Area of surface disturbance (ft ²)	460426			
Т	Т	Average thickness of topsoil (ft)	1			-
\top	T	Average haul distance (ft)	2000			
$\neg \neg$	7	Surface grade (%)	0%			
1	\top	Volume of Topsoil (cy)	17,053		-	
1	- -	Topsoil Unit Cost per WDEQ Guideline No.12, App.C (S/cy)	\$0.92			
1	+	Unit Cost in \$/cy (July 1998 dollars w/o escalator)	\$0.80			
╅	15	ubtotal Topsoil Application Costs	\$13,630			
h		Discing/Seeding	313,030		-	
+-	+-	Assumptions -	 			
+-	+	Surface Area (acres)	10.57			
+-	+	Discing/Seeding Unit Cost (\$/acre)	10.57			
+-			\$200			
+		otal Discing/Seeding Costs	\$2,174	<u> </u>		
		CPF/Office/Yard Area Reclamation	\$58,818			
		ss Road Reclamation	CPP Access Rd.	CPP to SAT 3	Access to WF	MU-15 Acc
		ssumptions		1		1
+	++-	Surface grade	, 1%	5%	. 5%	
╁	+	ength of Road (ft)	5173	15827	15557	10
╁		Vidth of Road (ft)				10
+-			40	30	14	
-		rea of road (acres);	4.75	• 10.9	5	
B.	<u> </u>	ravel Road Base Removal				
+-	- -	Assumptions				
_		Average haul distance (ft)	1000	1000	1000	,. j
		Gravel Road Base Width (ft)	30	141	14	
$oldsymbol{\mathbb{I}}$	$oldsymbol{ol}}}}}}}}}}}}}} $	Gravel Road Base Area (acres)	3.56	5.09	5.00	3
$\overline{}$	Т	Average Road Base Depth (ft)	0.5	0.5	0.5	
1						
╁	1	Volume of Road Base (cy) Removal Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	2874	4103	4033	. 2

											
Misc	ella			teclamation				ļ			
				Cost in \$/cy (July 1998			·)	\$0.62	\$0.62	\$0.62	\$0.62
				I Gravel Road Base Ren		S		\$1,773	\$2,531	\$2,488	\$1,689
-	C:			Overburden with Doze							
				rburden Surface Area (***	4.8	10.9	5.0	7.3
	_			ping Unit Cost per WDI				\$663.93	\$663.93	\$663.93	\$663.93
-				t Cost in \$/acre (July 19 Il Ripping Overburden (w/o escala	or)	\$576.83	\$576.83		\$576.83
				Application	Joses		,	\$2,740	\$6,287	\$2,884	\$4,195
-	٠.			umptions	-			 			
	\vdash	Н		Average haul distance (A)			1500	1500	1500	1500
_		H			**/						
	-	<u> </u>		soil Surface Area (ft²) th of Topsoil (ft)				,206910	474804	217800	316800
-	Н	\vdash		ume of Topsoil (tr)			•	0.5	0.5	0.5	0.5
	-	┝		soil Unit Cost per WDE	O Cuidalia	a No 12	C (C/m)	3832 \$1.50	\$793 \$1.50	4033 \$0.82	5867
	Н			Cost in \$/cy (July 1998				\$1.30	\$1.30 \$1.30		\$0.82 \$0.71
	_			l Topsoil Application C		O ESCAIA(OI	}	\$4,993	\$11,459	\$2,873	\$4,180
				/Seeding	USIS			34,553	311,435	32,073	34,180
	<u>.</u>			umptions			·				~
	\vdash			face Area (acres)				4.8	10.9	5.0	7.3
\vdash	\vdash			cing/Seeding Unit Cost	(\$/acre)	_		\$200	\$200	\$200	\$200
-	-			Discing/Seeding Costs				\$950	\$2,180	\$1,000	\$1,455
				clamation Costs per Ac				\$10,456	\$22,457	\$9,245	\$11,519
				ss Road Reclamation				\$53,677	022,137	\$7,243	911,517
								1			
<u></u>	_		٠.	114 B 115	-		•	Trunk Line #1	Trunk Line #2	-Trunk Line #3	Trunk Line #4
III.	In	ink	Lin	es #1 and #2			 	(To MU-4)	(To SR-1)	(MU-15 to MU-4)	(O-Sand Pilot)
-			7	gth of Trench (ft)				7750	8500	10660	
	.=				_				8300	10560	5500
	A.	•		al and Loading					•		
				n Pipeline Removal Un				\$0.85	\$0.85	\$0.85	\$0.85
				l Trunkline Removal ar				\$6,588	\$7,225	\$8,976	\$4,675
				ort and Disposal Costs (NRC-Licer	sed Facilit	y)	<u> </u>			
		1.	_	IDPE Trunkline							
		_	_	Piping Length (ft)				7750	42500	10560	22000
		L		Chipped Volume Reduc	tion (ft³/ft)			0.022	0.022	0.022	0.022
				Chipped Volume (ft3)				170.5	935	232.32	484
		2.		IDPE Trunkline					· · ·		
				Piping Length (ft)				7750	17000	10560	0
				Chipped Volume Reduc	tion (ft³/ft)			0.078	0.078	0.078	0.078
		П		Chipped Volume (ft ³)	,			604.5	1326	823.68	0
		3		IDPE Trunkline				004.51	1320	623.06	
	\vdash	٠.		Piping Length (ft)			·	0	0	0	
-	-	\vdash	-		···· (0 ³ (0)		 	1			
		-		Chipped Volume Reduc	nion (it /it			0.15	0.15	0.15	0.15
	<u> </u>	L		Chipped Volume (ft3)				. 40	0	0	0
	\square	3.		HDPE Trunkline				<u> </u>		-	
\square	\square	\sqcup		Piping Length (ft)			•	0			
<u>l</u>				Chipped Volume Reduc	tion (ft³/ft)		•	0.277	0.277	0.277	0.277
				Chipped Volume (ft ³)			•	0	0	0	0
	П	4.		HDPE Trunkline				1			
		1		Piping Length (ft)				0	9000	. 0	0
		Γ		Chipped Volume Reduc	tion (ft³/ft	·	>	0.293	• 0.293	0.293	>0.293
\vdash		_		Chipped Volume (ft ³)				1	2637		5.2/5
\vdash	\vdash	5		HDPE Trunkline				0	. 2037	. 0	· · ·
	\vdash	۲.		Piping Length (ft)				0	0	0	<u>-</u>
-	\vdash							 			
	<u> </u>	_		Chipped Volume Reduc	uon (tt /ft			0.359	0.359		0.359
	Ш	$oxed{oxed}$		Chipped Volume (ft ³)				. 0	0	0	0
\square	Ш	5.		HDPE Trunkline			<u> </u>	ļ			•
		1 1	r I	Piping Length (ft)			••	15500	** 8000	21120	15500

			`			`		`		\
liscella	nec	ous Reclamation					1			
I Decina	I	Chipped Vol	uma Daduu	4:a- (9 ³ /9						
 	⊢			uon (n /n	}	 	0.4	0.4	0.4	0.4
	 	Chipped Volu					6200	3200	8448	6200
!		Total Trunkline C	hipped Vo	olume (ft³)		<u> </u>	6975	8098	9504	668
- 1	l	Volume for Dispo	osai Assun	ning 10%	Void Space	: (ft³)	7673	8908	10454	7352
	Π					censed Facility) (\$/ft3)	\$5.62	\$5.62	\$5.62	\$5.60
	Su	btotal Pipeline Di			1		\$43,122	\$50,063	\$58,751	\$41,31
C.		scing/Seeding				j	7.3,132		550,751	371,31
	Π	Assumptions:							-	
	1	Width of Pipe	line Trend	h (ft)			4	4	4	
	П	Area of Pipel	ine Trench	(acres)			0.7	0.8	1.0	0.
		Discing/Seeding	Unit Cost ((\$/acre)			\$200	\$200	\$200	\$20
	Su	btotal Discing/See	ding Costs	3			\$142	\$156	\$194	\$10
Sul	otot	al Reclamation Co	sts per Pip	eline			\$49,852	\$57,444	\$67,921	\$46,09
To	tal	Pipeline Reclama	tion Costs	1			\$221,311			
V C-4	<u> </u>	g Basin/Evap. Po	Deele	41				C 441 B 1		
					ļ		Evaporation Pond	SettlingPond		
A.		il Sampling and M Number of Soil S				 	0			
		\$/Sample	πιιδι¢2		 -	 	\$60	15 \$60		
		btotal Soil Sampli	no and Mo	nitorina C	l		\$0	\$900		
- 6		ner/Subsoil Remov			USIS	<u> </u>	30	\$900		
— B.		Assumptions:	ai ailu Dis	posar	 	-	 			<u> </u>
\dashv	H	Clay liner and	l eubeail c	onetitute b	! product :	notorial	 			
	-	Thickness of			y-product	naterial -	0.5	- 0.5		
-+	⊢	Thickness of			(A)	· · · · · · · · · · · · · · · · · · ·	0.5	0.5		
-+-	╂─					gineer's design	V.3	0.5		
	╌	report and				ignicet a design				
	╁	Width of Pond (f)		mance Ha	INDUOK	-	200	- 252		
-1-	╁╴	Length of Pond (100	432		
-+	┢	Depth of Pond (ft			 		100	20		
	├-	Surface area of po			 		20000	108864		
	 	Removal and Loa		(Settling I	ond is not	By-Product, therefore can		100004		
	۳	Volume of C			1	by-1 roduct, dicretore can	741	0		
	\vdash	Clay Liner Re			Unit Cost	(S/cv)	\$3	\$3		
\neg	1	Subtotal Liner Re	moval and	Loading	Costs	1 -	\$2,222	\$0		
$\neg \vdash$	2.	Transportation an			1					
$\neg \vdash$	-	Volume of C			-		0	0		
	1	Volume of G					50	0		
\neg	\vdash	Volume of G			% void (ft	\	83	0		
	1	Transportatio					\$5.62	\$5,62		
$\neg + \neg$	1	Subtotal Liner Tr					\$468	SO SO		
		btotal Liner Remo				. ~	\$2,690	- S 0		
C.		ade and Contour			T					
	Г	Volume of E	mbankmer	t Material	(CY)	 	7,407	80,640		
	Ī	Average Grad	le (%)		<u> </u>	i	0	0		
$\neg \neg$		Distance (ft)			i	l	- 50	100		
		Material Mov	ing Unit C	ost per W	DEQ Guid	eline No.12, App.E (\$/cy)	- \$0.092	\$0.161	•	
		Unit Cost in S					-\$0.08	\$0.14	•	
	П	Subtotal Grade ar	d Contour	Costs			\$592	\$11,280		
·C.	To	psoil Application				•			•	
1	Γ	Assumptions:			I	<u> </u>				
	Γ	Area of surfa	ce disturba	nce (ft ²)			20000	108899		
	Г	Average thick				1	1	1		
		Average haul					1000	1000		
\neg	Γ	Surface grade					.0%	3%		 -
	Γ	Volume of Topso					741	4,033		
	Γ	Topsoil Unit Cost		Q Guideli	ne No.12.	App.C (\$/cy)	\$0.71	\$0.71		
	Π	Unit Cost in \$/cy					\$0.62	\$0.62	···	
	Su	btotal Topsoil App					. \$457	\$2,488		
_ !					٠	 				

iscellaneons Reclamation	·	1	•	I
Assumptions:				
Area of surface disturbance (acres)	0.5	2.5		
Discing/Seeding Unit Cost (\$/acre)	\$200	\$200		
	\$100	\$500		
Subtotal Discing/Seeding Costs Subtotal Reclamation Costs per Pond	\$3,839	\$15,168		
		313,108		
Total Settling Basin/Evap. Ponds Reclamation Costs	\$19,007			
Miscellaneous Structures				
A. Venthole				
Hole Depth (ft)	335			ļ
Concrete Volume (cy)	270			·
Backfill (\$1.09/cy)	\$365			J
Backhoe 16 hrs (\$50/hour)	\$800 \$300			
Cement (10 cy @\$76/cy delivered)	\$760			
Labor (40 man-hours @ \$15/hour)	\$600			
Dirt Cover (100 cy @ \$1.09/cy)	\$109			
Subtotal Venthole Plugging Costs	\$2,934			
B Potable Water Wells				
Total Depth (ft) (Two 5-inch Diameter Wells, @ 750 ft)	1,500			
(Well Abandonment Unit Cost (\$/100 ft)	\$6.70			
Subtotal Potable Water Wells Abandonment Costs	\$100.50			
C. Fuel Area				
Concrete Floor				
Area of Concrete Floor (ft ²)	. 375		-	
Demolition Unit Cost per WDEQ Guideline No. 12, App. K (\$/ft	2) \$3.17			
Unit Cost in \$/ft2 (July 1998 dollars w/o escalator)	\$2.75			_
Subtotal Concrete Floor Demolition Costs	\$1,033			
Concrete Footing				
Length of Concrete Footing (ft)	77			
Demolition Unit Cost per WDEQ Guide. No.12,App.K (\$/lin. f		_		_
Unit Cost in S/lin. ft (July 1998 dollars w/o escalator)	-59.95	-		
Subtotal Concrete Footing Demolition Costs	\$771			· · · · · · · · · · · · · · · · · · ·
Subtotal Fuel Area Costs	\$1,804		-	
Total Miscellaneous Structures Reclamation Costs	\$4,838.65			
10tal Miscellaneous Structures Reclamation Costs	34,838.65			
				l
OTAL MISCELLANEOUS RECLAMATION COSTS	\$357,652			L

	1011		<u> </u>		(O)F:	~							ī		т		
GROU	NDWA	IER	2 N	VEEP	(GW	5)	·		<u> </u>			L	_		<u> </u>		<u> </u>
	<u></u>					_							<u> </u>				
	nptions		<u> </u>			<u> </u>			_				_				
1.	All pur	nps a	re:	<u>5 hp </u>	oump	ing	at 5	i.0 gp	m		i				ļ		
2.	Cost	f elec	tric	ity =	\$0.03	/kv	vh									-	
3.	All wa	er pu	mp	ed is	dispo	se	d at	WDV	Νv	vith a 20	0 hp p	un	ıρ				
4.	Repair	and	ma	inten	ance	CO	sts e	stima	ate	d at \$0.	03/10	00	ga	llons			
5.	Proces	ss sar	np	ling a	nd an	aly	sis o	costs	es	timated	at \$0.	.03	/1	000 gal	ons		
6.	Labor	costs	ar	e not	includ	dec	ı						Γ		<u> </u>		
																	
Wellfie	eld Pur	npinc	C	osts	per 1	00	0 Ga	illons	 S			-					
	1000				hp	_				0.746	kwh	-	5	0.03			
	1000	1941	Х		gpm	Х	60	min	х	h		X	٣	kwh	= \$	0.37	· · · · · · · · · · · · · · · · · · ·
				-	90111	-	-00		-	***	 -	-		KWII			
Dumni	ing to \	AIDVAI	٣	octo r	20- 10	100	L Ga	llone	<u></u>			-	\vdash		<u> </u>		
r umpi	1000									0.746	loub		6	0.03	_		
	1000	yaı	X	200	mp	Х	60	min	X	0.746	KWII	X	3		= \$	0.14	ļ
	 		-	200	gpm	-	90	min	_	· h)	_	_	kwh			
	<u> </u>								<u>L</u>				-				<u> </u>
Repair	and M	lainte	na	nce (Josts	p	er 10)00 G	iall	ons					= \$	0.03	
	1			<u> </u>			L										
Proces	ss San	pling	aı	nd Ar	ialysi	s (Cost	s pe	<u>r 1</u> (000 Gal	llons				= \$	0.03	
													••	***	 		
TOTAL	L GWS	cos	TS	PER	1000	G	ALL	ONS							= \$	0.57	
	1				-												
						_											·

REVER	SE OS	MOS	IS (RO	<u>, </u>	i .		ī	<u> </u>	i ·	<u> </u>	 	
IXEVE		711100	071) 611	 —			1	<u>. </u>		<u> </u>	-	-
Assum	ptions	::		_	 		ļ	 				-
			ctual 19	98	opera	ating costs a	at Sat	ellite No. 1.	Verified by	l		1
						esign Softw					 	
2.			tricity =				T		·			
			ate/20%				ļ					
							\$695	per membr	ane elemen	it		
						om wellfield					1	
									at actual co	st of		
	\$0.14/	1000	gallons		1							
7.					ned to	the wellfiel	d with	n a 20 hp ρι	ımp at actua	l cost of		
			gallon									
							stima	ted at \$0.03	/1000 gallo	ns		
9.	Labor	costs	are not	in	cluded	<u>i</u>	<u> </u>					
				<u> </u>		L	<u> </u>	ļ 				
Revers			Costs	pei	1000	Gallons	<u> </u>	<u> </u>	·			·
	Electri			_	·		1	0.17				
	Chemi			L_	<u> </u>			0.26				<u> </u>
			Replace				1	0.15			ļ	
			Mainter					0.26				
			m Well		d			0.37				
			Wellfie	<u>ld</u>			=\$	0.019			ļ. <u></u> .	
	Pumpi		WDW	<u> </u>								
		\$						0.0028			ļ	
	Proces	ss Sa	mpling :	and	Anal	ysis	= \$	0.03				-
TOTAL		OCTO	DED 4		0.00	1.000		4.00			-	
IOIAL	. KU C	0515	PERT	UU	U GAI	LLONS	_ = \$	1.26 -	<u> </u>	<u> </u>	<u>r</u> .	1

CHEM	ICAL RE	DUCT	ANT							П			-		
						<u> </u>	Щ			┞╌┞	 			_	
Assum	nptions:]		_t									
1.	Bioreme	diation	is utili	zed								-			
2.	Based o	n actu	al 2003	-2004	opera	ting co	sts	during re	storat	on a	activiti	es			
		-			-	 				- -	-	_			
TOTAL	L CHEMI	CAL F	EDUC	TANT	COST	S PEF	₹K	gal	-			= \$	0.33		
	-				_	 		 	-						
						╁──	-	July 1998	Doll	⊥⊥ ars	-	=\$	0.29		

<u>=LU110</u>	N PROC	ESSI	NG		_			1	-		<u> </u>	-	
Assump	otions:	++				 	-		 .				
1. E	Based on	actua	l oper	ating	costs								
						ļ					<u> </u>		
TOTAL	PROCES	SING	cos	TS PI	R ELL	ITION	= S	525					

DEEP	WELL	INJE	CT	ION						l .	-					•	
Assun	ptions	; :															
1.	Pump	75 h	pр	umpi	ng at	20	0 gp	m									
2.	Cost o	f elec	tric	ity = :	\$0.03	/kv	vh			i	1						
3.	Repair	and	ma	inten	ance	COS	sts b	ased	on	averag	e injed	tic	n v	/olume	of 8	,000,000 g	allons per year
										at \$1.2							
															allon	s per year	
	Labor											Γ					
											:			,		. ,	
Waste	Dispo	sal P	um	ping	Cost	s r	er 1	000 0	Sal	lons	 	_					
	1000										kwh	v	\$	0.03	-6	0.44	
			^	200	gpm	^	60	min	\ 	0.746 h	p	^	Γ	kwh	. = Þ	0.14	
										!	l						
Repair	and N	lainte	na	nce (Costs	p	er 10	000 G	all	ons					=\$	1.25	
						Γ			Π	T							
	· ·						-			<u> </u>				-	1	·····	
			Π												T	•	
TOTAL	DEEF	WEI	LL	INJE	CTIO	N	cos	TS PI	ĒR	1000 G	ALLC	N	S		= \$	1.39	İ

		<u></u>		,								· · · · · · · · · · · · · · · · · · ·	·	
WELL	ABAN	DON	MENT		<u> </u>			·	<u> </u>	<u> </u>		<u> </u>		<u> </u>
		<u> </u>			<u> </u>					<u> </u>			<u> </u>	
Assum			<u> </u>		<u>i </u>					<u>L_</u>		<u> </u>	<u> </u>	
1.	Use b	ackho	e for 0).5 h	ir/we	ell to dig	an	d recl	aim pit	at c	ost of \$50	/hr	<u> </u>	<u> </u>
2.	Use h	ose re	eel/tow	ver	<u>iicle</u>	for 2 h	/we	ll to p	ull hos	es a	nd pump	plug gel at o	ost of \$35/I	nr.
3.	Use c	emen	ter/tow	vel	<u>nicle</u>	for 1 h	r/we	ell to p	ump p	lug (gel at cost	of \$45/hr.	<u> </u>	
													at cost of S	
5.							<u>\$1</u>	.75 aı	nd one	sac	k of plug o	el/100 ft of	5 inch well	casing.
	Cost	of plug	gel is	<u>\$6.</u>	70/s	ack.			ļ <u>.</u>					ļ
			<u>L</u>	<u> </u>	ļ	ļ				<u> </u>				
Well Al	bando	nmer	t Cost	s	<u> </u>	ļ				<u> </u>				
		<u> </u>	<u> </u>							<u> </u>				
		Costs	<u> </u>		<u> </u>				ļ			ļ		ļ
	Backl		<u> </u>					L <u>. </u>				ļ		ļ
			hours			50	per	hour	ļ	=\$	25.00			
	Hose		Tow Ve		_	05		<u> </u>	<u> </u>		70.02			
		1	hours			35	per	hour	 	=\$	70.00		<u> </u>	
	Ceme		ow Ve					Ŀ <u> </u>		_		·		·
			hours	X	\$	45	per	hour		=\$	45.00			
	Labor		 			1			i 	_				
		7	man	X	\$	15.00				=\$	105.00			
		<u> </u>	hours		ļ		hou	ır		_			<u> </u>	
	Mater		ļ			4 35		Ļ	· ·			••		
		- 1	hole	X	- \$	1.75		hole	<u> </u>	=\$	1.75			
			plug		-	77-1-15	plu		<u> </u>	_	0.40.75			
			<u></u>			Total F	ıxe	d Cos	ts	=\$	246.75			
			<u> </u>		40	0.50		<u> </u>	<u> </u>					
		ble Co	SIS	(pe	710	0 ft of v	veii	aepın)	_	<u> </u>			· -
	Mater				1		-	0.70			0.70			
		<u> </u>	sack p			X	\$	6.70	_	=\$	6.70			
			per 10	IU TE	et			-	sack					
	Coot		/-21		:A =4			D = =41				· · · · · · · · · · · · · · · · · · ·		
	Cost	per w	en per	UI	IIL OI	Avera	ge	Debri	<u> </u>				-	
			ļ	<u> </u>	10/-1	I Danii	. /54		 	_	· · ·			
				 	vve	I Depti)	ļ — <u>.</u>		277	•	-	
		<u> </u>	 		<u> </u>	450		<u> </u>	<u> </u>		277	·		
		•	<u> </u>			500	-		<u>:</u>		280	•		
				-		550			-		284		•	<u> </u>
			<u> </u>	-		600			 		287		-	
			<u> </u>		_	650 700		-	! -		290			
<u> </u>				<u> </u>		750				_	294		 _	
		٠.	 						<u> </u>		297	·.		\
						800			 		300			
						850		<u> </u>	 		304		.,	
			<u> </u>			900		ļ		:=\$	307	<u> </u>		!

UC-WA

FIVE Y	FAR N	/ECH	ANICAL I	NTF	GR	TY TF	STS	(MIT	,			i	i ·	1		
								,,,,,,,	_		,	-		 		
Assum	ption	s:	<u> </u>											<u> </u>		 -
			999 PRI c	osts	5.	-									$\neg \uparrow$	
2.	Use F	ulling	Unit for 0	.25	hr/w	ell at co	ost o	of \$45	/hr.					1		
3.	Use N	/IT Un	it for 1.5	hr/w	ell a	t cost c	of \$2	20/hr.					1			
											rs at \$15/	hr				
5.	Labor	for op	eration o	f MI	T Ur	it will r	equi	ire 1 v	vork	er a	at \$15/hr					
MIT Co	sts p	er Wel	<u> </u>													
							<u> </u>	ļ				<u> </u>				
Equipn																
	Pullin	g Unit		.	_	15								ļ	\perp	
	1071		hours	X	\$	45	per	hour				=\$	11.25			
	MIT U		L	 		00		1				_	00.00		\dashv	
		1.5	hours	X	\$	20	per	hour	_			=\$	30.00		$-\!\!\!\!\!+$	
Labor:		- 1 l=:4		-			_									
	Pullin	g Unit	hours	X		45			V	_			67.50			
	MIT U		Houis	^	***	15	bei	hour			workers	<u>-</u> ⊅	\$7.50	ļ. <u></u>	\rightarrow	
	IVIT		hours	x	\$	15	ner	hour	-			=6	22.50		 	
		1.5	nours	+^	4	10	per	iloui				-9	22.30	 		
				-						_		 .		 	-+	
			· · · · · ·				I N	AIT C	osi	ГРІ	R WELL	=\$	71			
												-	 	<u> </u>	-+	

		•					•				`			`
MAIN F	PIPEL	INE R	EMOV.	AL		·			!					
				T										
Assum	ption	s:											7	
						t 1500 ft/c								
						ckfilling w	ith t	rackho	e at 1	500	ft/day			
3.	Track	thoe re	ental: \$	160	0/we	ek			•	r:			·	
			9/oper											
						es 1 work								
							rs a	t \$15/h	our (ii	n add	dition to tra	ckhoe op	erator)	
						neously	ļ			<u></u>		~		
			moval d					<u></u>						
9.	Oper	ating s	chedul	le: 8	hrs	/day, 5 da	ys/v	veek	İ	L		· · · · · · · · · · · · · · · · · · ·		
		i !	<u>L</u>	<u> </u>	<u>L</u>			<u></u>		<u> </u>				
<u> Main P</u>	ipelin	e Ren	noval (Cos	ts p	er ft of Tr	enc	h	ļ		<u> </u>		<u> </u>	
		<u> </u>	! !	<u> </u>	 	ļ		<u>L</u>	<u> </u>		<u> </u>			
Equipn		<u> </u>	<u> </u>		<u> </u>	<u></u>			<u> </u>	<u>. </u>	<u> </u>			
	Tracl		<u> </u>	i	! 		<u>L</u> _	·	<u></u>	<u> </u>			_	
			1600	X		week	X		days	=\$	0.43			
		We	<u>eek</u>	<u> </u>	5	days	<u> </u>	1500	ft	İ			<u> </u>	
	Fuel		! !	<u> </u>	L	-			: 	.	<u> </u>			
			9	X		hrs	X		days	=\$	0.10		 	
		ho	our	ļ	1	day		1500	lft 					
		ļ. <u> </u>		L	i				<u> </u>	<u> </u> -			<u> </u>	
Labor		<u> </u>	<u></u>	<u> </u>	ļ		<u> </u>	<u> </u>	İ			<u> </u>		
	Track		Operat	ion		ļ			ļ.,				<u> </u>	
		<u> </u>	15	X		man hrs	X		days	=\$	0.16			
			n hr	L	1	day	Ľ	1500	ft	<u> </u>	<u> </u>			
	Pipel		tractio	on	ļ	-	<u> </u>	ļ	' 	<u> </u> -				
			15	X		man hrs	X		day	=\$	0.16	•		
		ma	n hr	<u> </u>	1_1	day	<u> </u>	1500	<u>rt</u>	<u> </u>			 	_
		 -	ļ	<u> </u>	<u> </u>		_	ļ	<u> </u>	<u> </u>				
		<u> </u>		<u> </u>	ا ــــ				<u> </u>					-
MAIN	PIPE	LINE F	KEMO!	VAL	<u> co</u>	ST PER I	- T. (OF TRE	NCH	=\$	0.85		<u> </u>	
	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u>: </u>		<u> </u>	<u>i</u>	<u> </u>	<u> </u>	<u> </u>			<u>i</u>

WELLF	IELD	PIPIN	G REM	101	/AL	}	<u> </u>	1	:	!				
					i		L	i	1					
Assump									:					
1.	Trenc	hing v	vith bad	ckh	oe a	t 3000 ft/d	lay	·	:					
2.	Pipelii	ne ext	raction	an	d ba	ckfilling w	ith b	ackhoe	e at 300	0 ft/d	ay			
3. 1	Backh	ioe re	ntal: \$7	750	wee	k		i	:			<u> </u>		
4.	Fuel c	ost: \$	9/oper	atin	g ho	ur		 -	!	1				
5. 1	Backh	ioe op	eration	ı re	quire	s 1 worke	er at	\$15/hc	our			1.		
6. 1	Pipelir	ne ext	raction	rec	uire	s 2 worke	rs a	t \$15/h	our (in a	dditi	on to trackh	oe oper	ator)	 -
7.	Opera	ting s	chedul	e: 8	hrs	/day, 5 da	vs/w	reek	<u> </u>	Ţ -	[
					<u> </u>		ĺ	<u> </u>	1	 -				-
Main Pi	peline	e Ren	noval (Cos	ts p	er ft of Pi	pe		!					 - -
				I^{-}	i		i	<u></u>	<u> </u>	1	 			
Equipm	ent							Γ		†	 			
	Backl	hoe		_	!			i	 	 				
			750	.	1	week	-	2	idays	= <u>\$</u>	0.10			-
			ek	Х		days	X	3000	ft	Ť				-
.	Fuel				<u> </u>			<u> </u>	1					
		\$	9		8	hrs	_	2	days	=\$	0.05			
			our	Х		day -	Х	3000		 	-			-
			[{									
Labor					: !					 				-
	Backi	noe O	perati	on	 !		<u> </u>		ļ	·				
			15	Π-		man hrs		2	days	<u></u>	0.08	<u> </u>		
			n hr	Х		day	X	3000		i				
	Pipeli	ne Ex	tractio	on .	<u>-</u>				Ī					 -
			15		16	man hrs		1	day	=\$	0.08			
	 j		n hr	Х	-1		Х	3000		 				-
					<u>-</u>			1 22 2 3	 	<u> </u>				1
+														
	MAIN	PIPE	LINE	REI	VOV	AL COST	PF	RFTC	F PIPE	=\$	0.31			
	1				<u> </u>					-				 -
	<u> </u>		<u>' </u>			<u> </u>		!	`	-				

	l	ļ	↓				 		<u> </u>	ļ	 		ļ	
	iptions:	<u> </u>			<u> </u>		<u> </u>		<u> </u>	<u> </u>			l	
1.	Based on a	actual	200	1-2002	contra	acted o	costs	for trai	nspor	tatio	n to	and dis	posal at ar	il .
	NRC-licens	sed dis	spos	al facili	ty.						1			
2.	Includes pr	rofit fo	r trai	nsporte	r and	dispos	sal fa	cility.						
3.	All types of	waste	e shi	pped vi	bulk	contair	ner (30-yd ³	dump	ster	or 3	0-yd ³ d	ump truck).	
4.	Each shipr	nent c	onta	ins 30,0	000 lb	s of m	ateri	al.				-		
			<u> </u>]	
	·	Trans	spor	rtation	Cost		Dis	sposal	Cost		-	Total		
			\$	66.67	/yd³	+	\$	85.00	/yd³	=	\$	151.67	/yd³	
			<u> </u>		<u> </u>	<u> </u>		· · · · · · · · · · · · · · · · · · ·	<u> </u>				ļ <u>.</u>	
							<u> </u>			=	\$	5.62	/ft³	
	Ì	i .	1		,	1	1		1	1	1		1	1

DISKING/SEEDING				·		•
Assumptions:						
1. Based on	actual contrac	tor costs				
TOTAL DISKING/SE	EDING COST	S PER ACRE	E = \$ 200	0		

POWER RESOURCES INC SMITH RANCH URANIUM PROJECT 2004-2005 SURETY ESTIMATE REVISION (REVISED JUNE 2004)

Abbreviatio	ns/Acronyms ·	1 .			1
\$	Dollars				
\$/Kgal	Dollars per 1000 gallons				
	average				
avg ft	feet				
ft2 ft3	square feet				
ft3	cubic feet				
gal	gallon				
gpm	gallons per minute				
H&S	Health and Safety				
H2S	Hydrogen Sulfide				
H2SO4	Sulfuric Acid				
HCl	Hydrochloric Acid				Ì
Нр	Horsepower				
Kgal	1000 gallons				
Kwh	Kilowatt-hours		•		
NaOH	Caustic Soda	·		-	-
OD	Outside Diameter				
PPE	personal protective equipment				
PV	Pore Volume Estimate				
reqm <u>'</u> t	requirement				
RO.	Reverse Osmosis	•	· · · · · · ·		
WDW	Waste Disposal Well				
yd3	cubic yards -				
yr	year				

HIGHLAND URANIUM PROJECT 2004-2005 Surety Estimate Revision

The 2004-2005 Surety Estimate Revision is based on the current approved estimate, which utilizes the WDEQ-LQD standardized bond format and, where applicable, the cost estimates provided in WDEQ-LQD Guideline No. 12 (dated November 2003). The 2004-2005 Surety Estimate Revision results in a Surety Estimate of \$22,402,000, which is an increase of \$1,123,900 from the currently approved Surety Estimate of \$21,278,100. The attached computer disk contains the Excel file (HUPBOND2004), which contains all spreadsheets and unit cost derivations.

The 2004-2005 Surety Estimate Revision reflects costs associated with new development during the report period and planned operations during the next one-year surety period. The only significant development during this report period was construction activities in Mine Unit-I. Completed construction activities include the monitor well ring, the main trunkline from Satellite #2, completion of wellfield patterns and monitor wells associated with Headerhouse #1, and start-up of Headerhouse #1. During the next one-year surety period, PRI anticipates development and full-scale production from the entire Mine Unit-I. Updating the Surety Estimate with appropriate ground water restoration, decommissioning, and reclamation costs for pattern areas and the trunkline corridor for Mine Unit-I added approximately \$289,000 (before any escalators) to the Surety Estimate.

In addition, cost estimates based on the WDEQ-LQD Guideline No. 12 were revised to reflect the estimates in the most recent version (November 2003), and utility costs were updated based on current operating costs. Unit costs used from the current WDEQ-LQD Guideline No. 12 were de-escalated to July 1998 dollars to maintain consistency with the other unit costs used in the bond calculations. The CPI escalator is then applied to the total tabulated costs. WDEQ-LOD Guideline No. 12 unit costs are mainly used to estimate building demolition and disposal, wellfield demolition and disposal, and surface reclamation costs. Using the current, de-escalated to July 1998 dollars WDEO-LOD Guideline No. 12 unit costs, estimates for those areas listed above decreased slightly from the previous Surety Estimate. WDEQ-LQD Guideline No. 12 unit costs used in the previous Surety Estimate were not de-escalated to July 1998 dollars and, consequently, were unnecessarily inflated compared to the more accurate revised 2004-2005 Surety Estimate. Similarly, the revised utility costs were estimated by taking the current operating costs and converting them into July 1998 dollars. Utility costs for operation of the Central Processing Plant were estimated at a lower value for restoration than current costs since utility consumption will be less during restoration (i.e. less elutions, less operation of the yellowcake dryers). Revisions to the utility costs and the WDEQ-LQD Guideline No. 12 unit costs resulted in an increase of \$470,000 (before any escalators) to the Surety Estimate.

Conversely, a decrease of \$332,480 to the Surety Estimate resulted from eliminating the future construction of new restoration wells. PRI does not anticipate any more construction of restoration wells beyond what is currently in place.

Ground water restoration at Mine Unit-A has been completed and approved by the WDEQ. NRC approval was pending at the time of submittal. Therefore, in accordance with directives from the NRC, there are no groundwater restoration costs for Mine Unit-A included in the 2004-2005 Surety Estimate. Costs for removal of buildings and equipment, well abandonment, and surface reclamation for Mine Unit-A are retained in the 2004-2005 Surety Estimate.

Ground water restoration of Mine Unit-B has also been completed as of the end of June 2004 and "Stability Monitoring" began at that time. Since regulatory agency approval had not been obtained, the costs of ground water restoration activities (approximately \$800,000) were retained in this Surety Estimate. It is expected that ground water restoration of Mine Unit-B will be approved by the regulatory agencies during the next report period and these costs will be eliminated from the next (2005-2006) Surety Estimate.

The remaining portion of the \$1,123,900 increase in the Surety Estimate (approximately \$698,024) is a result of the CPI escalator, which increased from 12.4 to 15.1% (July 1998 to May 2004), and the 25% contingency.

As requested by the WDEQ-LQD, the 2004-2005 Surety Estimate Revision also reflects an estimated \$30,000 and \$42,000 (before any escalators) for potential mitigation plans for Irrigators No. 1A and No. 2, respectively, to reduce selenium levels in the vegetation after waste water disposal operations cease. PRI does not believe that such a mitigation plan will be needed. Additionally, PRI has retained \$250,000 (before any escalators) to assist with any mitigation activities potentially needed as a result of the on-going shallow casing leak investigation.

Consistent with the previous estimate, PRI utilized one pore volume (PV) of ground water sweep (GWS) and five PV's of reverse osmosis (RO) treatment (including 2 PV's for bioremediation or reductant addition) for estimating groundwater restoration costs. As discussed in previous submittals, such an approach should result in faster and more cost effective restoration, and less consumptive use of ground water. Groundwater restoration costs were estimated using bioremediation in place of chemical reductant. Bioremediation costs were based on actual current operating costs de-escalated to July 1998 dollars. Bioremediation shows higher costs than previous costs for chemical reductant addition, but has proven to be more effective.

PRI believes that the 2004-2005 Surety Estimate Revision is conservative, and exceeds potential actual restoration, reclamation, and decommissioning costs in the unlikely event of bond forfeiture for the following major reasons:

- Costs associated with the active ground water restoration of Mine Unit-B

 (approximately \$800,000) have been retained in this estimate, although restoration has been completed (regulatory agency approval has not been obtained).
- PRI believes that ground water restoration can be accomplished in less time than the restoration technique and schedule utilized in the estimate indicate.

- The added contingency of 25% further increases the conservatism of all items included in the estimate.
- No salvage value is realized for buildings, process equipment, switch gear, electrical equipment, motors, rolling stock and other uncontaminated materials and facilities which actually have significant salvage value.
- It is likely that some buildings and roads will not require demolition, disposal, and reclamation, as area landowners may desire to retain some of these facilities for their use.

Tota	Restoration and Reclamation Cost Estimate	
I.	GROUNDWATER RESTORATION COST	\$11,196,075
II.	EQUIPMENT REMOVAL & DISPOSAL COST	\$103,633
III.	BUILDING DEMOLITION AND DISPOSAL COST	\$1,011,992
IV.	WELLFIELD BUILDINGS & EQUIPMENT REMOVAL & DISPOSAL COST	\$1,143,565
<u>V.</u>	WELL ABANDONMENT COST	\$1,332,358
VI.	WELLFIELD AND SATELLITE SURFACE RECLAMATION COST	\$87,089
VII.	TOTAL MISCELLANEOUS RECLAMATION COST	\$695,734
	SUBTOTAL RECLAMATION AND RESTORATION COST ESTIMATE	\$15,570,446
	CPI ESCALATOR- July 1998 to April 30, 2004 (15.1%)	\$2,351,137
	SUBTOTAL	\$17,921,583
	ADMINISTRATIVE, OVERHEAD, AND CONTINGENCY ITEMS (25%)	\$4,480,396
	TOTAL	\$22,401,979
	TOTAL CALCULATED SURETY (IN 2004 DOLLARS)	\$22,402,000

Ground Water Restoration			Mine Unit-A	Mine Unit-B	Mine Unit-C	C-19N Pattern	C-Haul Drifts	Mine Unit-D	Mine Unit-E	Mine Unit-F	Mine Unit-H	Mine Unit-D	Mine Unit-I
PV Assumptions							<u> </u>					<u> </u>	<u> </u>
Wellfield Area (ft2)			151900	690900	1274000	32500		279500	994500	3348000	1116000		
Wellfield Area (acres)			3,49	15.86	29.25	0.75			22 83	76 86			
Affected Ore Zone Area (ft2)			151900	690900	1274000	32500	0	279500	994500	3348000	1116000		
Avg. Completed Thickness	•		15	15	15	15		15	15	15			
Porosity			0.27	1 0.27	0.27	0.27		0.27	0.27	. 0 27	0.27		
Flare Factor			2 94	2.94	2.94	2.94		2.94	2 94	2.94	2.94	2.94	2.94
Affected Volume (ft3)			6698790	30468690	56183400	1433250	1360000	12325950	43857450	147646800	49215600	9525600	39303287
Kgallons per Pore Volume			13529	61535	113468	2895	10173	24893	88575	298187	99396	19238	79377
Number of Patterns in Unit(s)	 			······									
Current			31	141	196	5	0	43	153	465	155	30	21
Estimated next report period			o		0	Ó	0		0	0		0	
Total Estimated			31	141	196	5	. 0	43	153	465	155	30	124
Number of Wells in Unit(s)													
Production Wells		 	 			-							
Current		 	27.	141	192			45	143	465	155	30	18
Estimated next report period	 	 		0						- 103			
Total Estimated		-	27	141	192			45	143	465	155	30	
Injection Wells		i —				_	 					 	
Current /	-		50	319	343			91	307	903	327	. 67	34
Estimated next report period	 	· · · ·	ō	' 0	0	We	lls	0	0	. 0	0		
Total Estimated			50	\ 319	343	inclu		91	307	903	327	67	
Monitor Wells						und							
Current		1	18	67	78	C-Well	lfield	38	86	134	81	20	39
Estimated next report period			0	0	0			0	0	0	0	o	0
Total Estimated			18	67	78'			38	86	134	81	20	39
Restoration Wells		· · ·											
Current			13	30	19			0	0	15	0	0	0
Estimated next report period			0	0	0			0	0	0	0	0	0
Total Estimated			13	30	19					15	0	0	0
Number of Wells per Wellfield			108	557	632	0	0	174	536	1517	563	117	400
Total Number of Wells			4087										
Average Well Depth (ft)			500	450	550	550	550	600	550	650	500	600	650
I. Restoration Well Installation Costs				<u> </u>						l		l	
Number of Restoration Wells	-	1	0	0	0	ó	0	0	0	0	0	. 0	0
Well Installation Unit Cost (\$/Vell)	· · · · · · · · · · · · · · · · · · ·		\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000
Subtotal Restoration Well Installation C		lfield	\$0	\$0	\$0	\$0		\$0	\$0	\$0	\$0	\$0	
Total Restoration Well Installation Co			\$0									l	

Page 1 of 4

										Mine Unit-D	
Ground Water Restoration	Mine Unit-A	Mine Unit-B	Mine Unit-C	C-19N Pattern	C-Ilaul. Drifts	Mine Unit-D	Mine Unit-E	Mine Unit-F	Mine Unit-II	Ext.	Mine Unit-I
II. Ground Water Sweep Costs								-		 	
PV's Required	0	1	1	1	1	1	1	1	1	11	
Total Kgals for Treatment	. 0	_61535	113468	2895		24893	88575	298187	99396	19238	
Ground Water Sweep Unit Cost (\$/Kgal)	\$0.77	\$0.77	\$0.77	\$0.77		\$0.77	\$0.77	\$0.77	\$0.77	\$0.77	\$0.7
Subtotal Ground Water Sweep Costs per Wellfield	\$0	\$47,114	\$86,877	\$2,216	\$7,789	\$19,060	\$67,817	\$228,307	\$76,102	\$14,729	\$60,77
Total Ground Water Sweep Costs	\$610,786	,									
III. Reverse Osmosis Costs		·									<u> </u>
PV's Required	0	5	. 5	5	5	5	5	5	5		
Total Kgals for Treatment	O	307673	567340	14473	50864	124467	442873	1490937	496979	96190	39688
Reverse Osmosis Unit Cost (\$/Kgal)	\$1.33	\$1.33	\$1.33	\$1.33	\$1.33	\$1.33	\$1.33	\$1.33			
Subtotal Reverse Osmosis Costs per Wellfield	\$0	\$407,851	\$752,066	\$19,185	\$67,425	\$164,994	\$587,072	\$1,976,387	\$658,796	\$127,509	\$526,110
Total Reverse Osmosis Costs	\$5,287,395										
IV. Bioremediation/Chemical Reductant Costs											
Total Kgals for Treatment (2 Pore Volumes)	0	123069	226936	5789		49787	177149	596375	198792	38476	15875
Chemical Reductant Unit Cost (\$/Kgal)	\$0.29	\$0.29	\$0.29	\$0.29	\$0.29	\$0.29	\$0.29	\$0.29	\$0 29	\$0.29	\$0.29
Subtotal Chemical Reductant Costs per Wellfield	\$0	\$35,690	\$65,811	\$1,679	\$5,900	\$14,438	\$51,373	\$172,949	\$57,650	\$11,158	\$46,039
Total Chemical Reductant Costs	\$462,687										
V. Elution Costs										 	
A. Elution Processing Costs	-i.							******			
. Kgals/Elution Required	35000	35000	35000	35000	35000	35000	35000	35000	35000	35000	35000
Number of Elutions	0	11	19	1	2	4	15	. 51	17	3	14
Processing Unit Cost (\$/Elution)	\$525	\$525	\$525	\$525	\$525	\$525	\$525	\$525	\$525	\$525	\$525
Subtotal Processing Costs	\$0	\$5,775	\$9,975	\$525	\$1,050	\$2,100	\$7,875	\$26,775	\$8,925	\$1,575	\$7,350
B. Deep Well Injection Costs										l	
Deep Well Injection Volume (Kgals/Elution)	12	12	12	12	12	12	12	12	12		
Total Kgals for Injection	, 0	132	228	12		48	180	612	204	36	
Deep Well Injection Unit Cost (\$/Kgals)	\$4.60	\$4.60	\$4.60	\$4.60	\$4,60	\$4 60	\$4 60	\$4.60	\$4 60	\$4 60	\$4.60
Subtotal Deep Well Injection Costs	\$0	\$607	\$1,049	\$55		\$221	\$828	\$2,816	\$939	\$166	\$773
Subtotal Elution Costs per Wellfield	\$0	\$6,382	-\$11,024	\$580	\$1,160	\$2,321	\$8,703	\$29,591	\$9,864	\$1,741	\$8,123
Total Elution Costs	\$79,489		•								
VI. Monitoring and Sampling Costs			ų								
A. Restoration Well Sampling											
Estimated Restoration Period (Years)	5	5	5		2	5	5	5	5	5	
Well Sampling prior to restoration start											
# of Wells	0	20	31	5	7	9	31	21	12		
S/sample	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$15

Revised June 2004

Page 2 of 4

				P.				<u>;</u> ;				_				
Gro		Vater Restoration				Mine Unit-A	Mine Unit-B	Mine Unit-C	C-19N Pattern	C-Haul. Drifts	Mine Unit-D	Mine Unit-E	Mine Unit-F	Mine Unit-II	Mine Unit-D Ext.	Mine Unit-I
		2. Restoration Progress	s Sampling		1					 				1		f
		# of Wells	1			0	20	31	5	7	9	31	21	12	4	6
	\prod	\$/sample				\$34	\$34	\$34	\$34	. \$34	\$34	\$34	\$34	\$34	\$34	\$34
	\Box	Samples/Year				6	. 6	6	6	6	6	6	6	6	6	6
I	1 3	3. UCL Sampling	<u> </u>	ļ		ļ	İ`			·	<u> </u>					
 	11-	# of Wells	 	<u> </u>		0										
<u> </u>	┷	\$/sample_	 	ļ	↓	\$19					\$19	\$19	\$19	\$19	\$19	\$19
<u> </u>	 - 	Samples/Year	<u> </u>		ļ	6			6	<u> </u>	6	6	6	6	. 6	6
<u> </u>		Sub-total Restoration A	Inalyses		<u> </u>	\$0	\$63,300	\$80,730	\$8,700	\$8,466	\$27,060	\$67,620	\$75,300	\$53,370	\$13,800	\$25,830
1-	B. 15	Short-term Stability	1	<u> </u>	 						ļ					
 	++	Estimated Stabilizat	ion Period (N	(Ionths)	 	12					12	12				
1	╂╼┼	# of Wells Samples/Year	 		 		56		6		19	28	89			33
	╁╌┼	\$/sample	 		 	\$19						612	\$19			919
	╁	# of Wells	 	 	 	319	20		519		319		21			
 	 - :	' Samples/Year	 	 '	 	6						6				6
-	+	\$/sample	 		-	\$34					\$34		\$34		\$34	\$34
	 	# of Wells	· 	-	 	357	20		- 6		9		21			337
 	╁	Samples/Year	1		 	2			2		2					
_	1-1	S/sample	 		 	\$150						\$150	\$150		\$150	\$150
\vdash	1-15	Sub-total Short-term St	ability Analy	ses	1	\$3,204	\$16,464	\$20,640				\$18,816	\$20,730			
		total Monitoring and Sa			eld	\$3,204	\$79,764	\$101,370					\$96,030			
	Tota	al Monitoring and San			Γ	\$540,216			1		i					123,12
-		1 1 1 1 1 1 7	(1417)	Ι	=											
VII.		chanical Integrity Test Five Year MIT Unit Co		3	ļ	\$71	\$71	\$71	\$71	\$71	\$71	· \$71	\$71	\$71	\$71	
		Number of Wells (30%		ant Malla	 	3/1						92	275			
-		total Mechanical Integr			116-14	\$0			\$0			\$6,539	\$19,553			\$5,027
		al Mechanical Integrit			I .	\$49,160		3/,/11	30	30	\$1,738	\$0,239	\$17,333	30,903	31,427	\$3,021
			1	I												
		ESTORATION COST				\$3,204	\$576,801	\$1,024,859	\$36,068	\$91,976	\$236,513	\$807,940	\$2,522,817	\$876,661	\$174,204	\$678,690
TO		VELLFIELD RESTO	RATION C	OST ·	ļ	\$7,029,733										
VIII		ding Utility Costs	 		1	Central Plant	Main Office	Satellite No.1	Satellite No.2	Satellite No.3	 				 	
````		Electricity (\$/Month)	 		1	\$8,500	\$1,825				 				 	 -
1-		Propane (\$/Month)	1		 	\$0										
		Natural Gas (\$/Month)		1.		\$2,500							·		i	
		Number of Months	1	<u> </u>		48	60	6	48	48					 	
	Subt	total Utility Costs per B	Building			\$528,000	\$145,200	\$10,380	\$82,080	\$136,080						
	Tota	al Building Utility Cos	its '			\$901,740										

•		1			•			•			
		1	4.1						•		
	T T	1	·····			1				1	1
Ground Water Restoration	1										
Ground Water Restoration	 										
IX. Irrigation Maintenance and Monitoring Costs	Irrigator No.1	Irrigator No.2	1							1	
A. Irrigation Maintenance and Repair											
Irrigation Operation Months/Year	6										
Cost per Month	\$667	\$667									
Total Number of Years	5	5					Ī				
Subtotal Maintenance and Repair Costs	\$20,010	\$20,010									
B. Irrigation Monitoring and Sampling		1			•	1					
# of Irrigation Fluid Samples/Year	6	6				1					i
Cost/sample	\$121	\$121								i	
# of Vegetation Samples/Year	4	4									
Cost/sample /	\$165	\$165									
# of Soil Samples/Year	28				İ				1	1	1
Cost/sample	\$174				i		T	l	1	1	
# of Soil Water Samples/Year	12					1	1		1	1	<u> </u>
Cost/sample	\$121				i	t	1	 	 	 	
Total Number of Years	5			,			i		1		1
Subtotal Sampling Costs	, \$38,550	\$35,980				<u> </u>				7	
Subtotal Maintenance and Monitoring Costs per Irrigator	\$58,560				i		i	i			
Total Irrigation Maintenance and Monitoring Costs	\$114,550				· · ·	 					
فنججت كالكالكات كنفاسي والمناها والمناقل والمائدا	311753										
X. Capital Costs (RO Purchase)						ļ	ļ	ļ		ļ	
Purchase/Installation Costs for 500 gpm RO Capacity	\$500,000				ļ	↓				ļ	ļ
Total Capital Costs	\$500,000	 			ļ	ļ	<u> </u>	ļ <u></u>	ļ	ļ	
XI. Vehicle Operation Costs	 	-			·		1	i-	1		<u> </u>
Number of Pickup Trucks/Pulling Units (Gas)	10	 			i	·					
Unit Cost in \$/hr (WDEQ Guideline No.12, Table D-1)	\$10.13					<u> </u>	†——	<u> </u>			
Unit Cost in \$/hr (July 1998 dollars w/o escalator)	08 82										
Average Operating Time (11rs/Year)	1000										
Total Number of Years (Average)	5	1								1	
Total Vehicle Operation Costs	\$440,052	1				1			1		
											====
XII. Labor Costs	ļ	<u></u>		<u> </u>	ļ	ļ		!		ļ	ļ
Number of Environmental Managers/RSOs	1	ļ	<u> </u>			ļ			 		<u> </u>
\$/Year	\$60,000		· · · · · · · · · · · · · · · · · · ·			ļ	 	ļ	 		
Number of Restoration Managers	1	ļ			·	ļ		 			
S/Year	\$50,000	 	<u> </u>		ļ	ļ	ļ	ļ	!	<u> </u>	-
Number of Environmental Technicians	2					ļ	 	ļ	 		ļ
\$/Year	\$28,000	-	ļ			 	 	 	 	ļ	
Number of Operators/Laborers	1 200 200	ļ	 			 	 			 	
\$/Year	\$28,000	 	ļ			 	 		 	 	 -
Number of Maintenance Technicians	2		<u></u>		ļ		 	ļ	 		
\$/Year	\$28,000		 		I		ļ	ļ	 	 	
Number of Years	5	 				ļ	 	 		 	
Total Labor Costs	\$2,090,000	 			ļ	 	 	ļ	-	 	
XIII Capital Costs	1	<u> </u>		·		-	ļ	ļ	 	 	
Purchase RO Units (2X800 gpm Units)	\$120,000					 	 	<u> </u>	 	ļ	·
Total Labor Costs	\$120,000	 			ļ	ļ	 	ļ			
TOTAL GROUND WATER RESTORATION COSTS	\$11,196,075					1	<u> </u>	1			
Come Che Chin in the Manual Charles Charles											

Page 4 of 4

				*				Cameral Diame	C-4-1114- N- 1	Catallina Na 3	C-4-1114- N- 3
quipn	nent	Rer	noval and	Loading	<u> </u>			Central Plant	Satellite No.1	Satellite No.2	Satellite No.3
			nd Loadin	g Costs	•						
Α.	T	anka		<u> </u>							
	4		mber of Ta		<u> </u>	ļ		26		14	
	- -			nk Construct	tion Material (f	[*)		, 1028	162	. 290	39
- -		Lat							ļ <u>_</u>		
-		-	Number of	Persons		 -		3	3	3	
_ _	4		Ft³/Day	<u> </u>				25	25	25	
	4		Number of					41	, 6	12	
	4		\$/Day/Pers			-		\$112		\$112	\$1
	- -		total Labo	Costs	ļ			\$13,776	\$2,016	\$4,032	\$5,3
	- 2.	Equ	ipment		-			41			 -
	-		Number of \$/Day	Days	 			\$338	\$338	\$338	\$3
	╬			oment Costs			 i	\$13,858		\$4,056	\$5,4
	- -	btot	al Tankaga	Demovel er	nd Loading Cos			\$27,634	\$4,044	\$8,088	\$10,7
B.		VC P		ACTIONAL BI	La Loading Cos	-		#£1,034	\$ 7,014	\$3,000	
— _	- -	PV	C Pipe Foo	tage	-			5000	1000	4000	40
	╁	AV	rage PVC	Pipe Diame	ter (inches)			1 3	. 3	3	
_	- -				ne Reduction (13/(1)		0.016		0.016	0.0
_ _	+-	Vo	ume of Sh	redded PVC	Pipe (ft ¹)	,		80		64	
_	1.	Lat			T						
	7	1	Number of	Persons				2	, 2	. 2	
		1	Ft/Day					200	200	200	2
	\top	T	Number of	Days				25	5	, 20	
$\neg \vdash$	7	1	\$/Day/Pers	on		1		\$112	\$112	\$112	\$1
			total Labo				ī	\$5,600	\$1,120	\$4,480	\$4,4
	. Si	ubtot	al PVC Pip	e Removal a	and Loading Co	sts		\$5,600	\$1,120	\$4,480	\$4,4
C.		umps							4		
	:	Nu	mber of Pu	mps	l			50	1. 10	14	· ·
_ _		Av	rage Volu	me (ft³/pum	p)			4.93	4.93	4.93	4.
_ _	4		ume of Pu	mps (ft')				246.5	49.3	69.02	64.
_ _	<u> 1.</u>	Lat		<u></u>	ļ	<u></u>			ļ		
	- -	1_	Number o		ļ				1	. 1	
_	- -	-	Pumps/Da			ļ		2		2	
	4-		Number o		 			25 \$112		\$112	S1
∸ -	- -		\$/Day/Pers		 	ļ		\$2,800	\$560	\$784	\$7
- -	-				Loading Costs			\$2,800	\$560	\$784	\$7
D.		ryer		CHIOVAL BIIG	Losus Costs		· ·	32,000	3,00	, 3/04	
- ''			Volume (ft			 	·	885	0	Ö	
		Lat		·	 				<u>_</u>	-	
+	+	LAL	Number of	Persone	 	 		5	0	0	
- -	17	 -	Ft ³ /Day	. 0130113	 			175	Ö	ő	
	- -	1-	Number of	Days	 			5	Ö	ő	
	\top	1-	S/Day/Pcts					\$112		\$112	\$1
\neg	┪		al Labor C		 			\$2,800	\$0	\$0	
	T				Loading Cost			\$2,800		\$0	
E.		O Ur			T						
\neg		Nu	mber of RC	Units					ı		

						·		<u> </u>	,	
Equipm	;' ent	Removal and	Loading	•		<u> </u>	Central Plant	Satellite No.1	Satcilite No.2	Satellite No.3
	_	Current.		_			. 0			(
_	_	Planned					' 0		 	1
	1_	Average Volu	me (ft³/RO L	Init)		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	250	250	250	250
_	11.	Labor				I				
	1_	Number of					2			
_	╄	Number of					0			0.:
	ļ	\$/Day/Pers			•		\$112			\$11
	1_	Subtotal Labor			l		\$0			\$11
		btotal RO Unit				<u> </u>	\$0			\$11:
		al Equipment R			per Facility		\$38,834	\$6,060	\$13,464	\$16,16
To1	all	Equipment Res	noval and L	oading Costs			\$74,518		<u> </u>	
II. Tra	ner	portation and I	Disposal Cos	ts (NRC-Lice	nsed Facilit	v)				
		nkage	515p0321 CO.	T THE BILL		{′				
— :- -		Volume of Ta	nk Construct	ion Material (f	37		1028	162	290	391
. -	 	Volume for Di	enoest Assu	ming 10% Voi	1 Space (ft ³)	 	1131	178		430
		Transportation					\$5.62	\$5.62	\$5.62	\$5.63
		btotal Tankage				 	\$6,356	\$1,000		\$2,450
— B.		/C Pipe	Transportar	ion and Dispos	ai C0313	 	20,330	31,000	31,773	\$2,430
<u></u>		Volume of Sh	edded DVC	Pine (03)			80	16	64	6-
. 		Volume for Di			1 Space (6 ¹)	 	88	18		70
		Transportation					\$5.62	\$5.62		\$5.62
$-\vdash$	6.	btotal PVC Pip	and Dispos	tion and Diene	eal Casts		\$495	\$101	\$3.02	\$393
		mps.	c Transporta	tion and Dispe	Sai Costs		3473	2101	\$373	339.
<u> </u>		Volume of Pur	(A ³ \				246,5	49.3	69.02	64,09
	╌	Volume for Di		ming 109/ Mai	1 \$2222 (63)	 	246.3	• 54	76	7(
	╁╾	Transportation				 	\$5.62	\$5.62	\$5.62	
		btotal Pump Tr				-	\$1,523	. \$303	\$427	\$5.62 \$393
-			ansportation	and Disposar	COSTS		\$1,323		3427	\$39.
D.		yer , Dryer Volume	(0)					<u> </u>		
	-	Volume for Di			<u> </u>	(0)	, 885	" 0	. 0	
	-					(n') '	885			
		Transportation					\$5.62	\$5.62	\$5.62	\$5,6
— <u>—</u>		tal Dryer Trans	portation an	d Disposal Co	15		\$4,974	\$0		\$(
- E.		O Units CDC	77 1. (01)					750	0.50	
	Н	Volume of RO				(0)	0		250	250
	-	Volume for Di				on (III)	0		125	12:
		Transportation					\$5.62	\$5.62	\$5.62	\$5.62
		btotal RO Unit				<u> </u>	\$0	\$2,108	\$703	\$70
		al Equipment T				cility	\$13,348	\$3,512	\$3,316	\$3,939
Tot	al E	Equipment Tra	nsportation	and Disposal	Costs	ļ	\$24,115			
II. IIe	lth	and Safety Co	ests	•						
		diation Safety I				<u> </u>	\$1,250	\$1,250	\$1,250	\$1,250
		lealth and Saf					\$5,000	41,200		
						<u> </u>				
						PER FACILITY	\$53,432	\$10,822	\$18,030	\$21,349
TOTAL	ΕÇ	QUIPMENT R	EMOVAL	AND DISPOS	AL COSTS		\$103,633			

		Ą,							
	Central	Dryer	Satellite	Satellite	Satellite	Sat. No.3	Yellow Cake	South	Suspended
Building Demolition and Disposal	Plant	Building	No. 1	No. 2	No. 3	Fab. Shop	Warehouse	Warehouse	Walkway
I. Decontamination Costs									
A. Wall Decontamination									
Area to be Decontaminated (ft²)	131000				- n	0	0	0	
Application Rate (Gallons/ft²)	131000		1				1	1	-
IICI Acid Wash, including labor (\$/Gallon)	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50
Subtotal Wall Decontamination Costs	\$65,500	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50
B. Concrete Floor Decontamination				<u>*</u> *					
Area to be Decontaminated (ft²)	17820	0	6000	9600	9600	0	0		
: Application Rate (Gallons/ft²)	4	4	4	7000	7000	4	4	4	A
HCl Acid Wash, including labor (\$/Gallon)	\$0.50	. \$0.50	\$0.50	\$0.50	\$0.50	\$0,50	\$0.50	\$0.50	\$0.50
Subtotal Concrete Floor Decontamination Costs	\$35,640	\$0	\$12,000	\$19,200	\$19,200	02.00	- 50.50	\$0.50	\$0.50
C. Deep Well Injection Costs	1			. 012,200			- 30		
Total Kgals for Injection	202.28	0	24	38.4	38,4	0	0	. 0	0
Deep Well Injection Unit Cost (\$/Kgals)	\$4.60	\$4,60	\$4.60	\$4.60	\$4.60	\$4,60	\$4.60	\$4.60	\$4.60
Subtotal Deep Well Injection Costs	\$931	\$0	\$110	\$177	\$177	\$0		\$0	\$0
Subtotal Decontamination Costs per Building	\$102,071	\$0	\$12,110	\$19,377	\$19,377	\$0		\$0	\$0
Total Decontamination Costs .	\$158,021								
II. Demolition Costs									
A. Building									
Assumptions: Dryer bldg. demolition unit cost of \$0.73/ft³ for additional									
	794000	30720	192000	330000	330000	27560	01000	333000	
Demolition Unit Cost per WDEQ Guideline No.12,App.K (\$/f\)	\$0.171	\$0.171		320000	320000	37560	91000	333000	5600
Unit Cost in \$/\text{R}^3 (July 1998 dollars w/o escalator)	\$0.171	\$0.171	\$0.171 \$0.15	\$0,171 . \$0,15	\$0.171 \$0.15	\$0,171 \$0,15	\$0,171 \$0,15	\$0.171	\$0.171
Subtotal Building Demolition Costs	\$117,962	.\$4,564	\$28,525	\$47,541	\$47,541	\$5,580		\$0.15	\$0.15
B. Concrete Floor	3117,902	.34,204	320,323	347,341	347,341	33,380	\$13,520	\$49,473	\$832
Area of Concrete Floor (ft²)	23760	10	8000	12800	12800		6500	18000	
Demolition Unit Cost per WDEQ Guideline No.12, App.K (\$/ft²)	\$3,17	\$3.17	\$3:17	\$3.17	\$3.17	\$3.17	\$3.17	\$3.17	S3.17
Unit Cost in \$\frac{5}{2} (July 1998 dollars w/o escalator)	\$2.75	\$2.75	\$2,75	\$2.75	\$2.75	\$2.75	\$2.75	\$2.75	\$3.17 \$2.75
Subtotal Concrete Floor Demolition Costs	\$65,438	\$0	\$22,033	\$35,253	\$35,253	\$2.73	\$17,902	\$49,574	\$2.73
C. Concrete Footing	305,438		\$22,055	*	337,233	30	317,902	347,574	30
Length of Concrete Footing (R)	622	0	360	480	480	0	360	580	
Demolition Unit Cost per WDEQ Guide, No.12, App.K (\$/lin. ft)	\$11,45	\$11.45	\$11.45	\$11.45	\$11,45	\$11.45	\$11.45	\$11.45	\$11.45
Unit Cost in \$/lin. ft (July 1998 dollars w/o escalator)	\$9.95	\$9.95	\$9.95	\$9.95	\$9.95	\$9.95	\$9.95	\$9.95	\$9.95
Subtotal Concrete Footing Demolition Costs	\$6,188	\$0	\$3,581	\$4,775	\$4,775	\$0	\$3,581	\$5,770	\$0
Subtotal Demolition Costs per Building	\$189,588	\$4,564	\$54,139	\$87,569	\$87,569	\$5,580	\$35,003	\$104,817	\$832
Total Demolition Costs	\$696,995	7.,504		207,500				2.07,017	3032
III, Disposal Costs									
A. Building									
Volume of Building (cy)	29407	1138	7111	11852	11852	1391	3370	12333	207
1. On-Site									
Assumptions:		<u></u>							
On-site disposal cost of \$0.54/cy									
Percentage (%)	100	0	100	, 100	100	100	100	100	100
Volume for Disposal (cubic yards)	29407	0	7111	11852	11852	1391	3370	12333	207
Disposal Unit Cost (\$/cy)	\$0.54	\$0.54	\$0.54	\$0.54	\$0.54	\$0.54	\$0.54	\$0.54	\$0.54
Subtotal On-Site Disposal Costs	\$15,880	\$0	\$3,840	\$6,400	\$6,400	\$751	\$1,820	\$6,660	\$112
2. NRC-Licensed Facility	<u></u>								

1	1	-			· · · · · · · · · · · · · · · · · · ·		<u>',1</u>	0 4 999	0.4.194	C 4.104	C.A.N2		C41	C
	Ц,		l l			Central	Dryer	Satellite	Satellite No. 2	Satellite No. 3	Sat. No.3 Fab. Shop	Yellow Cake Warehouse	South Warehouse	Suspended
Buildin	8	Demo	olition and Disposal	<u> </u>		Plant 0	Building	No. 1	No. 2	No. 3	rab. Shop			
	-+		Percentage (%) Volume for Disposal ((03)		0	100 2624	<u>0</u>	· 0	- 0	0		0	
$-\!\!+\!\!\!-$	+	+			Void Cases (B ³)		2886			-	0		0	
 	-+	-	Volume for Disposal A	Assuming 10%	void Space (ii)	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.6
	╬	C.,	btotal NRC-Licensed F			\$3.62	\$16,219	\$0	\$0	\$0.02	\$5.02		\$0.02	
	-+,		tal Building Disposal C		Costs	\$15,880	\$16,219	\$3,840	\$6,400	\$6,400	\$751	\$1,820	\$6,660	\$11
$- _{\overline{B}}$			rete Floor	.0313		313,880	310,219	33,040	30,400	30,400	\$731	31,020	\$0,000	311
— D.	-¦`		ea of Concrete Floor (f	 	-	23760	0	8000	12800	12800	. 0	6500	18000	
	+		rerage Thickness of Con			. 0.75	- 0	0.67	0.67	0.67	Ö		0.5	
\dashv	+		lume of Concrete Floo			17820	0	5360	8576	8576	0		9000	
	+		olume of Concrete Floo			660	. 0	199	318	318	0		333	
	+		1-Site	1 (cy)			<u>_</u>	137	310	310	U	120		<u>`</u>
\dashv	╁	<u> </u>	Percentage (%)	 		75	0	' 75	75	75	0	100	100	
- -	┽		Volume for Disposal	(mi)		495		149	238	238	0		333	
		- -	Disposal Unit Cost pe	e WOEO Guide	line No.12,App.K (\$/cy)	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69		\$4.69	
\dashv	+		Unit Cost in \$/cy (July	1 1008 dollars w	do acceletor)	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.0
-	+	6	btotal On-Site Disposal		70 escalator)	\$2,017	\$0	\$607	\$971	\$971	\$0		\$1,358	\$4.0
	+		RC-Licensed Facility	Costs		\$2,017		3007				4170	\$1,550	
	٠ť		Assumptions:	 										
	+		Additional \$2.00	/ft³ for segregati	on of concrete									
-	+		Percentage (%)	To lor begregati	1	25	0	25	25	25	Ŏ	0	0	- (
	+		Volume, for Disposal	(ft ³)		4455	0	1340	2144	2144	0		0	
-	+		Segregation and Load		/ft³)	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2,00	∙\$2.00	\$2.00	\$2.00
_	+		Transportation and Di			\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62
	+	Su	btotal NRC-Licensed F			\$33,947	\$0	\$10,211	\$16,337	\$16,337	\$0		\$0	
	-†3		tal Concrete Floor Disc			\$35,964	so	\$10,818	\$17,308	\$17,308	\$0	\$490	\$1,358	\$(
C.			rete Footing	1		333								<u>-</u>
- -	+		ngth of Concrete Footis	ng (ft)		622	0	360	480	480	0	360	580	
-	7		erage Depth of Concre			4	14	4	4	4	4	4	4	(
$\neg \vdash$	7		erage Width of Concre			1	14	1	11	1	1	1	1	
-	7		lume of Concrete Foot			2488	0	1440	1920	1920	0	1440	2320	
_	T		lume of Concrete Foot			92	0	53	71	71	Ó	53	86	
	7	Di	sposal Unit Cost per W	DEQ Guideline	No.12, App.K (\$/cy)	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.6
\neg	1		nit Cost in \$/cy (July 19			\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.0
	1		tal Concrete Footing D			\$375	\$0	\$217	\$290	\$290	\$0		\$350	\$
Su	bt	otal D	Disposal Costs per Build	ling •		\$52,219	\$16,219	\$14,875	\$23,998	\$23,998	\$751	\$2,527	\$8,368	\$11
To	ta	l Dis	posal Costs			\$151,976			•					
117 17-	Τ,	th a-	d Safety Costs	-		 								
**** 110			tion Safety Equipment	 		\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$0	\$0	\$0	\$(
- - -			ith and Safety Costs	1		\$5,000	31,000	31,000	31,000	91,000	30	30		<u>\$</u>
	Т		111	1										
SUBTO	T(AL B	UILDING DEMOLITIC	ON AND DISPO	SAL COSTS	\$344,878	\$21,783	\$82,124	\$131,944	\$131,944	\$6,331	\$37,530	\$113,185	\$94
TOTAL	L	BUIL.	DING DEMOLITIO	N AND DISPOS	SAL COSTS	\$1,011,992								
T	٦	T-		1										

		4,	<u> </u>	•				
	Changehouse	Maintenance	Main	Office	Process/Fire	Potable	Potable Water	Central Plant
Building Demolition and Disposal	and Lab Bldg.	Building	Office	Trailers	Water Bldg.	Water Bldg.	Tank Slab	Tank Slabs
I. Decontamination Costs								·
								
A. Wall Decontamination				0		ļ <u>-</u>		
Area to be Decontaminated (ft²)	ļ <u>•</u>		0		<u>-</u> <u>'</u>	ļ <u>\</u>	ļ \	
Application Rate (Gallons/ft²)	l	\$0.50	\$0,50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50
HCl Acid Wash, including labor (\$/Gallon)	\$0.50			\$0.50	\$0.50			
Subtotal Wall Decontamination Costs	\$0	\$0	\$0	30		_ \$0	30	
B. Concrete Floor Decontamination	<u></u>	ļ <u>.</u>			0		0	0
Area to be Decontaminated (ft²)	0	, 0		0		<u> </u>	1 4	
Application Rate (Gallons/ft²)	4	4	4		\$0.50	\$0.50	\$0.50	\$0,50
HCl Acid Wash, including labor (\$/Gallon)	\$0.50	\$0.50	\$0.50	\$0.50	\$0,50			
Subtotal Concrete Floor Decontamination Costs	\$0	\$0	\$0	\$0	30	- 20	30	30
C. Deep Well Injection Costs	<u> </u>	ļ	<u> </u>		0			<u> </u>
Total Kgals for Injection	0		0	\$4.60	\$4.60			
Deep Well Injection Unit Cost (\$/Kgals)	\$4.60		\$4.60		\$4.60			
Subtotal Deep Well Injection Costs	\$0			02	02			
Subtotal Decontamination Costs per Building	\$0	\$0	\$0	20	20	_\$0	30	20
Total Decontamination Costs	 					ļ		
II. Demolition Costs	,							
A. Building	-							
Assumptions:							1	
Dryer bldg, demolition unit cost of \$0.73/ft ³ for additional			•				T	
radiation safety equipment								
Volume of Building (ft³)	73000	27000	72000	20000	16500	6300	0	0
Demolition Unit Cost per WDEQ Guideline No.12, App.K (\$/ft³)	\$0.171	\$0.171	\$0.171	\$0.171	\$0.171	\$0.171	\$0.171	\$0.171
Unit Cost in \$/ft ³ (July 1998 dollars w/o escalator)	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15
Subtotal Building Demolition Costs	\$10,845	\$4,011	\$10,697	\$2,971	\$2,451	\$936	\$0	\$0
B. Concrete Floor		•						
, Area of Concrete Floor (ft²)	5400	2100	6000	0	800	180	1256	7854
Demolition Unit Cost per WDEQ Guideline No.12, App.K (\$/\Omega^2)	\$3.17	° \$3.17	\$3.17	\$3.17	\$3.17	\$3.17	\$3,17	\$3.17
Unit Cost in \$/ft² (July 1998 dollars w/o escalator)	\$2.75	\$2.75	\$2.75	\$2.75	\$2,75	\$2.75	\$2.75	\$2.75
Subtotal Concrete Floor Demolition Costs	, \$14,872	\$5,784	\$16,525	\$0	\$2,203	\$496	\$3,459	\$21,631
C. Concrete Footing	· · · · · · · · · · · · · · · · · · ·							i
Length of Concrete Footing (ft)	300	200	340	0	120	54	0	0
Demolition Unit Cost per WDEQ Guide. No.12, App.K (\$/lin. ft)	\$11.45	\$11.45	\$11.45	\$11.45	\$11.45	\$11.45	\$11,45	\$11.45
Unit Cost in \$/lin. ft (July 1998 dollars w/o escalator)	\$9.95	\$9.95	\$9.95	\$9.95	\$9.95	\$9.95	\$9.95	\$9.95
Subtotal Concrete Footing Demolition Costs	\$2,984	\$1,990	\$3,382	\$0	\$1,194	\$537		
Subtotal Demolition Costs per Building	\$28,701	\$11,785	\$30,604	\$2,971	\$5,848	\$1,969	\$3,459	\$21,631
Total Demolition Costs	1	<u> </u>					<u> </u>	
	 							
III. Disposal Costs						ļ	 	
A. Building	2704	1000	2667	741	611	233		
Volume of Building (cy) .	2704	1000	2007	/41	011	233	·	
1. On-Site		 				 	 	
Assumptions:		 	 			 	 	 .
On-site disposal cost of \$0.54/cy	 	ļ	100	100	100	100	0	
Percentage (%)	100			741	611	233		
Volume for Disposal (cubic yards)	2704			\$0.54	\$0.54	\$0.54		\$0.54
Disposal Unit Cost (\$/cy)	\$0.54		\$0.54					
Subtotal On-Site Disposal Costs	\$1,460		· \$1,440	\$400	\$330	\$126		
2. NRC-Licensed Facility	<u> </u>	<u> </u>			L	<u> </u>	<u> </u>	

	_	, ,				1	31						
 	نِل	لعك			<u> </u>	Changehouse	Maintenance	Main	Office	Process/Fire	Potable	Potable Water	Central Plant
Buildin	gΓ		lition and Disposal			and Lab Bidg.	Building	Office	Trailers	Water Bldg.	Water Bldg.	Tank Slab	Tank Slabs
 	_ _		Percentage (%)	•	<u> </u>	0			0	0			
	┸		Volume for Disposa		<u> </u>	' 0	0	.0	0	0	0	<u> </u>	0
 	┸		Volume for Disposa	Assuming 10%	Void Space (ft3)	, 0	0		0	0	0		. 0
	ᆚ		Transportation and I			\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62
		Sub	total NRC-Licensed	Facility Disposal	Costs	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	S	ubtot	al Building Disposal	Costs		\$1,460	\$540	\$1,440	\$400	\$330	\$126	\$0	, \$0
B.	C		te Floor										
	Ι.	Are	a of Concrete Floor	(ft²)		5400	2100	6000	. 0	800	180	1256	7854
	Τ	Ave	rage Thickness of C	oncrete Floor (ft)		0.5	0.5	0.5	0	0.5	0.5	1	1
		Vol	ume of Concrete Flo	or (ft³)		2700	1050	3000	0	400	90	1256	7854
	T	Vol	ume of Concrete Flo	or (cy)		100	39	111	0	15	3	47	291
	11.	. On-	Site										
	٦.		Percentage (%)			100	100	100	0	100	100	100	100
	T	7	Volume for Disposa	(cy)		100	39	111	0	15	3	47	291
	7		Disposal Unit Cost	er WDEQ Guide	line No.12, App.K (\$/cy)	\$4,69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	· \$4.69
	-1-	$\neg \neg$	Unit Cost in \$/cy (Ju	ly 1998 dollars v	v/o escalator)	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07
I	\top	Sub	total On-Site Dispos	al Costs	 	\$407	\$158	\$453	\$0	\$60	\$14	\$190	\$1,185
 	12.	. NR	C-Licensed Facility	T									,
	_	1	Assumptions:	•									· · · · · · · · · · · · · · · · · · ·
	\top	\top	Additional \$2.0	0/ft ³ for segregat	ion of concrete								
	1	17	Percentage (%)			0	. 0	0	0	0	0	0	0
	7-		Volume for Disposa	(03)		0	Ó	0	. 0	0	0	0	. 0
	-†-	1	Segregation and Los	ding Unit Cost (\$/ft³)	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
	1		Transportation and I			\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62
1-1-	1		total NRC-Licensed			02	\$0	\$0	\$0	\$0	\$0		\$0
	S		al Concrete Floor Di		T	\$407	\$158	\$453	\$0	\$60	\$14	\$190	\$1,185
I c.	Īc	oncre	te Footing	' 		-					· · · · · · · · · · · · · · · · · · ·	****	
1-1-	7	Len	gth of Concrete Foot	ing (ft)	 	300	• 200	340	0	120	54	0	0
	T		rage Depth of Conci		 	4	1 4	4		4	4	4	· 4
	╅		rage Width of Conc			1	· 1	1	0	1	1	1	1
	╁		ume of Concrete Foo		 	1200	, 800	1360	0	480	216		0
	- -		ume of Concrete Foo			44	30	50	0	18	8	0	0
} 	+-				No.12,App.K (\$/cy)	\$4.69	\$4,69	· \$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69
<u> </u>	+		t Cost in \$/cy (July 1			\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4,07	\$4.07	× \$4.07
	S		al Concrete Footing		1.	\$181	\$121	\$205	\$0	\$72	\$33	\$0	\$0
Sul			sposal Costs per Bui		 	\$2,048	\$819	\$2,098	\$400	\$462	\$173	\$190	\$1,185
			osal Costs	1		•		42,070	· • • • • • • • • • • • • • • • • • • •				31,103
III. He			Safety Costs	_									
1			on Safety Equipmen			\$0	\$0	\$0	\$0	\$0	\$0	. \$0	\$0
To	tal	Heal	th and Safety Costs		ļ	``		•					
SUBTO	TA	I. BU	ILDING DEMOLIT	ION AND DISP	SAL COSTS	\$30,749	\$12,604	\$32,702	\$3,371	\$6,310	\$2,142	\$3,649	\$22,816
			ING DEMOLITIC			350,747	\$12,004	\$32,702	17,0,0	40,510	92,192	33,049	. 322,010
1-2-17	~~	1 1		111111111111111111111111111111111111111	00010	 							
Щ.	_					I							

		1,	_	
	Exxon R&D	Exxon R&D	D, E-Wellfield	Morton No.
Building Demolition and Disposal	'RO Bidg.	Process Bldg.	Booster Stat.	1-20 Bdlg.
I. Decontamination Costs				
A. [Wall Decontamination	 			
Area to be Decontaminated (ft²)	0		0	
Application Rate (Gallons/ft²)	1		-	
HCl Acid Wash, including labor (\$/Gallon)	\$0.50	\$0,50	\$0.50	\$0.50
Subtotal Wall Decontamination Costs	\$0.50	\$0.50	\$0.30	\$0.50
B. Concrete Floor Decontamination	30	30	30	
Area to be Decontaminated (R²)	1260	1260	0	
Application Rate (Gallons/ft²)	1200	1260	4	
IICl Acid Wash, including labor (\$/Gallon)	\$0,50	· \$0,50	\$0.50	£0.60
Subtotal Concrete Floor Decontamination Costs				\$0.50
C. Deep Well Injection Costs	\$2,520	\$2,520	\$0	\$0
Total Kgals for Injection	5.04		0	
Deep Well Injection Unit Cost (\$/Kgals)	\$4.60	5.04 \$4.60	\$4.60	\$4.60
Subtotal Deep Well Injection Costs	\$23	\$23	\$4.60	
Subtotal Decontamination Costs per Building	\$2,543		\$0	
Total Decontamination Costs per Building	32,343	\$2,543		30
Total Decontamination Costs	I ————			
II. Demolition Costs				
A. Building				
Assumptions:				
Dryer bldg, demolition unit cost of \$0.73/ft ¹ for additional				
radiation safety equipment .	1			
Volume of Building (ft³)	15120	15120	8640	14400
Demolition Unit Cost per WDEQ Guideline No.12,App.K (\$/ft ³)	\$0.171	\$0.171	\$0,171	\$0,171
Unit Cost in'\$/ft3 (July 1998 dollars w/o escalator)	\$0.15	\$0.15	\$0.15	\$0.15
Subtotal Building Demolition Costs .	\$2,246	\$2,246	\$1,284	\$2,139
B. Concrete Floor .				
Area of Concrete Floor (ft ²)	1260	1260	0	600
Demolition Unit Cost per WDEQ Guideline No.12,App.K (\$/R2)	\$3,17	° \$3.17	\$3.17	\$3.17
Unit Cost in \$/ft² (July 1998 dollars w/o escalator)	\$2.75	, \$2.75	\$2.75	\$2.75
Subtotal Concrete Floor Demolition Costs	\$3,470	\$3,470	\$0	\$1,652
C. Concrete Footing				
Length of Concrete Footing (ft)	144	144	0	100
Demolition Unit Cost per WDEQ Guide. No.12, App.K (\$/lin. ft)	\$11.45	\$11.45	\$11.45	\$11.45
Unit Cost in \$/lin. ft (July 1998 dollars w/o escalator)	\$9.95	\$9.95	\$9.95	\$9.95
Subtotal Concrete Footing Demolition Costs	\$1,432	\$1,432	\$0	\$995
Subtotal Demolition Costs per Building	\$7,148	\$7,148	\$1,284	\$4,786
Total Demolition Costs				
III. Disposal Costs	I			
A. Building				
Volume of Building (cy)	560	560	320	533
1. On-Site	 			
Assumptions:				
On-site disposal cost of \$0.54/cy			.	
Percentage (%)	100	100	100	100
Volume for Disposal (cubic yards)	560	560	320	533
Disposal Unit Cost (\$/cy)	\$0.54	\$0.54	\$0.54	\$0.54
Subtotal On-Site Disposal Costs	\$302	\$302	\$173	\$288
2. NRC-Licensed Facility				

								- ''		
i_			_].		Exxon R&D	Exxon R&D	D, E-Wellfield	Morton No.
Building	g De	moliti	on and Disposal				RO Bldg.	Process Bldg.	Booster Stat.	1-20 Bdlg.
		Pe	rcentage (%)				0	0	0	
			lume for Disposal (ñ³ÿ			0	0		
\neg	1		lume for Disposal A		Void Space (f)	25	- 0	ō	0	(
	1		ensportation and Dis				\$5.62	\$5.62	\$5.62	\$5.62
	1.		al NRC-Licensed Fa				\$0	\$0	\$0	200
			Building Disposal Co		1		\$302	\$302	\$173	\$28
_{B.}			Floor,	1 2	 -			4301		450
 '':-			f Concrete Floor (ft	l	 		1260	1260		60
— —	+		ge Thickness of Con		} 		0.5	0.5		0.
	╂═╢		e of Concrete Floor		} -		630	630		30
	╁				 					
	1.1		e of Concrete Floor	(cy)	ļ		23	. 23	0	1
 	1.	On-Si		 						
	1		rcentage (%)	l 	l ` -		100	100	0	100
_	4-1		lume for Disposal (<u> </u>		23	23	0	1
	1_		sposal Unit Cost per			p.K (\$/cy)	\$4.69	\$4.69	\$4.69	\$4.6
	\perp		it Cost in \$/cy (July		v/o escalator)		\$4.07	\$4.07	\$4.07	\$4.0
Щ.			al On-Site Disposal	Costs			\$95	\$95	\$0	\$4:
l	2.		icensed Facility		ll					
		As	sumptions:							
			Additional \$2.00/	ft3 for segregat	ion of concret	e _				
		Pe	rcentage (%)				0	0	0	(
		Vo	lume for Disposal (ft ³)			' 0	0	0	(
	1	Se	gregation and Loadi	ng Unit Cost (\$	√R³)		\$2.00	\$2.00	\$2.00	\$2,00
	П		ansportation and Dis				\$5,62	\$5.62	\$5.62	\$5.62
$\neg \vdash$	П		al NRC-Licensed Fa				\$0	\$0	. 50	SC
			Concrete Floor Disp		1		\$95	. \$95	. \$0	\$4:
C.			Footing	T						
			of Concrete Footin	ø (fl)			144	144	0	100
	\vdash		ge Depth of Concret		 		4	1 4	4	
	╁╌		ge Width of Concret		 - -				<u>il</u>	
	\vdash		e of Concrete Footi		 -		576	, 576	ö	400
	1-1		e of Concrete Footi		} }-		21	21	0	1:
	1		sal Unit Cost per WI		No 12 A K	(\$/au)	\$4.69	\$4.69	\$4.69	\$4.6
 			ost in \$/cy (July 199			(3/0)	\$4.07	\$4.07	\$4.07	\$4.0
					T Scatator)		\$4.07	\$87	\$0	\$60
			Concrete Footing Di		 -		\$484	\$484	\$173	\$393
			osal Costs per Build	ing T	 		3404	3404	31/2	339.
101	al I	112 022	1 COSTS	ļ	 					
III. IIe:	alth	and S	efety Costs	1	 			·		
	Ra	diation	Safety Equipment	 	 		\$0	\$0	\$0	\$(
Tot	al T	lealth	and Safety Costs	 	 			7 7		
	T1		7 7 7	t -	<u> </u>					
			DING DEMOLITIO				\$10,175	\$10,175	· \$1,457	\$5,179
TOTAL	BŪ	ILDI	G DEMOLITION	AND DISPO	SAL COSTS					
		1.		l						

							1	<u>'\1</u>	Γ		T	1	1	Mine Unit-	1
Wellfie	ld Buil	dings and Equ	inment'Rem	oval and Di	sposal		Mine Unit-A	Mine Unit-B	Mine Unit-C	Mine Unit-D	Mine Unit-E	Mine Unit-F	Mine Unit-H		Mine Unit-I
					1					-	Transc Out. 13		Traine Cint 11		ivitine Giant 1
<u> I. \\ </u>		d Piping						ļ							ļ
ll		mptions:													
		imber of Heade			l		5	18	20		15				6
ll-		ngth of Piping		ouse (ft)			15000	15000	15000		15000				
 -		tal Length of P					75000	270000	300000	60000	225000	645000	150000	45000	90000
<u> ^ </u>		oval and Loadin			إجبيا			<u></u>			ļ	<u> </u>			
		ellsield Piping I					\$0.31	\$0.31	\$0.31	\$0.31	\$0.31	\$0.31	\$0.31	\$0.31	\$0.31
		tal Wellfield Pi					\$23,250		• \$93,000	\$18,600	\$69,750	\$199,950	\$46,500	\$13,950	\$27,900
B,		port and Dispos			Facility		<u> </u>	1							
		erage Diameter					2	2	2	2	2	2	2		2
		ripped Volume			ļ		0.005	0.005	0.005	0.005	0.005	0.005		0.005	
		nipped Volume					375	1350	1500	300		3225	750		
 -	Vc	olume for Dispo	sal Assuming	g 10% Void	Space (fi	ť)	413	1485	1650		1238			248	
	Tr	ansportation an	d Disposal U	nit Cost (\$/f	ì')		\$5.62	\$5.62	\$5.62	\$5.62	\$5.62			\$5.62	
		ital Wellfield Pi			osal Cost	<u>s</u>	\$2,321	\$8,346		\$1,855	\$6,958				
w	/ellfield	Piping Costs p	er Wellfield	•			\$25,571	\$92,046	\$102,273	\$20,455	\$76,708	\$219,890	\$51,137	\$15,344	\$30,682
<u> ` C</u> .	. Capit	ol Costs					<u> </u>				ļ <u>.</u>	<u>.</u>	<u> </u>	•	
		C Pipe Shreddo			<u> </u>		\$40,000				<u></u>	<u> </u>	<u> </u>		
T	otal W	ellfield Piping	Costs				\$674,106							l	
II. W	Zell Par	mps and Tubin					[
 		mptions:	6				 	1						,	
 		mp and tubing	removal costs	s included w	nder groi	and water resto	ration labor co	ete ·							
		% of production					l lation labor co								
<u>-</u>		and Tubing Tr				idoi tuonig	 	.,							
- ' ' '		Number of Pro			' -		27	141	192	45	143	465	155	30	125
$ \vdash$		Number of Inje					50	319	343	91	307	903	327	67	
		mp Volume	chon wens					1	343		307	703	321	07	230
		Number of Pro	fuction Wells	e with Pump			16		115	27	86	279	93	18	75
$\overline{\cdot}$		Average Pump		3 Williamp	<u>-</u>		. 10	1	113	1	1	1	1	10	- /3
		Pump Volume		(ft ³)			16		115	27	86	279	93	18	75
		bing Volume	per weinield	(111)			10	- 63	113	. 21	80	219	93	10	 '3
		Assumptions:	·												
	╌┼═┼═┼			ellfield hase	i on aver	age well depth	minus 25 ft								
	╌┼╌┼╾┼	Number of Proc				age well depai	16	85	115	27	86	279	93	18	75
-		Number of Inje			F		30	191	206	55	184	542	196	40	
		Average Tubing					475	425	525	575	525	625	475	575	625
		Tubing Length					21850	117300	168525	47150			137275	33350	
		Diameter of Pro			Tubing (inches)	21830	117300	108323	4/130	141730		137273	33330	133023
		Diameter of Inj					1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
		Chipped Volum			5 (menes	·/	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
	+++	Chipped Volum	e ner Wellfa	eld (ft ³)		**	109	587	843	236	709	2566	686	. 167	678
 - -		dume of Pump					109	672	958	263	795	2845	779	185	753
		dume for Dispo			Space /A	3	138	739	1054	289	875	3130	857	204	828
		ansportation and					\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62	\$5.62
	1 111	ansportation and	i izisposai Oi	in Cost (3/1	• 1		33.02	\$3.02	33.02	33.02	33.02	33.02	عا.دد	\$3.02	33.02

13/41/	field Buildings and Equipment Removal and Disposal	Mine Hnit. A	Mine Linit D	Mine Unit C	Mine Unit.D	Mine Unit-E	Mine Unit-F	Mine linit.U	Mine Unit- D Ext.	Mine Unit-
Wen	Subtotal Pump and Tubing Transport and Disposal Costs	\$776		\$5,923				\$4,816		
	Pump and Tubing Costs per Wellfield	\$776		\$5,923		\$4,918		\$4,816		
	Total Pump and Tubing Costs	\$45,600	·	33,723	\$1,024	\$4,210	311,371	94,010		31,055
III.	Buried Trunkline	A/B-Wellfield	is		D/E-Wellfield	ls	<u> </u>		<u> </u>	<u> </u>
	Assumptions:									
	A/B-Wellfields use the same trunkline			,						
	D/E-Wellfields use the same trunkline	1	,	,					,	
	Length of Trunkline Trench (ft)	6500		5900	12000		11700	13200	5500	10750
	A. Removal and Loading									
	Main Pipeline Removal Unit Cost (\$/ft of trench)	\$0.85		\$0.85	\$0.85		\$0.85	\$0.85	\$0.85	\$0.85
	Subtotal Trunkline Removal and Loading Costs	\$5,525		\$5,015	\$10,200		\$9,945	\$11,220	\$4,675	\$9,138
	B. Transport and Disposal Costs (NRC-Licensed Facility)		 		l					1
	1. 3" HDPE Trunkline									
	Piping Length (ft)	6500		5900	12000		11700	13200	5500	10750
_	Chipped Volume Reduction (ft³/ft)	0.022		0.022	0.022		0.022	0.022	. 0.022	0.022
	Chipped Volume (ft³)	143		129.8	264		257.4	290.4	121	236.5
	2. 6" HDPE Trunkline								i	
	Piping Length (ft)	0		0	0		0	0	11000	3000
	Chipped Volume Reduction (ft³/ft)	0.078		0.078	0.078	1	0.078	0.078	0.078	
.	Chipped Volume (ft ³)	0		0		· · · · · · · · · · · · · · · · · · ·	0	0		234
	3. 10" HDPE Trunkline							<u>_</u>		
	Piping Length (ft)	13000		Ó	0		0	0	0	750
	Chipped Volume Reduction (ft³/ft)	0.277	, ,	0.277	0.277		0.277	0.277	0.277	0.277
	Chipped Volume (ft³)	3601	,	0	0		0	0	0	207.75
	4. 12" HDPE Trunkline		.1,1				1			
	Piping Length (ft)	0	<u>[.</u>	11800	24000		0	0	0	(
	Chipped Volume Reduction (ft³/ft)	0.293	· .	0.293		1	0.293	0.293	0.293	0.293
	Chipped Volume (ft³)	.0		3457.4		 	0			
	5. 14" HDPE Trunkline					 	 		_	
	Piping Length (ft)	0		ō	0	 	23400	26400	0	8500
	Chipped Volume Reduction (ft³/ft)	0.359		0.359			0.359		0.359	
	Chipped Volume (ft ³)	0		0		-	8400.6			·
	Total Trunkline Chipped Volume (ft³)	3744		3587.2			8658			
	Volume for Disposal Assuming 10% Void Space (ft³)	4118		3946		 	9524	10745		4103
	Transportation and Disposal Unit Cost (\$\frac{1}{2}\)	\$5.62		\$5.62			\$5.62			
	Subtotal Trunkline Transport and Disposal Costs	\$23,143		\$22,177			\$53,525			
	Trunkline Decommissioning Costs per Wellfield	\$28,668		\$27,192			\$63,470			
	Total.Trunkline Decommissioning Costs	\$289,168		327,192	\$35,500	 	\$05,770	371,007	\$10,720	\$32,177
_		3202,100								
IV.	Well Houses ,								ļ	ļ
·	Total Quantity	90		554	151	480		482	97	361
	Average Well House Volume (ft³)	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
	A. Removal									
	Total Volume (ft ³)	1125	6125	, 6925	1887.5	6000		6025	1212.5	4512.5
	Demolition Unit Cost per WDEQ Guideline No.12,App.K (\$/ft³)	\$0.171	\$0.171	\$0.171	\$0.171	\$0.171	\$0.171	\$0.171	≥\$0.171	\$0.171

		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	İ					Mine Unit-	
Wellfield Buildings and Equipment Removal and Disposal			Mine Unit-C						Mine Unit-I
Unit Cost in \$/ft ¹ (July 1998 dollars w/o escalator)	\$0.15		\$0.15		\$0.15			\$0.15	
Bustotai Weil House Demonition Costs	\$167	\$910	\$1,029	\$280	\$891	\$2,628	\$895	\$180	\$670
B. Survey and Decontamination		<u> </u>				ļ			
Assumptions:		ļ	<u> </u>			<u> </u>			<u> </u>
Cost per Well House	\$5				\$5	·			
Subtotal Survey and Decontamination Costs	\$450	\$2,450	\$2,770	\$755	\$2,400	\$7,075	\$2,410	\$485	\$1,805
C. Disposal			<u> </u>		<u> </u>	<u> </u>	!		<u> </u>
Total Volume (cy)	42						223	45	
Volume for Disposal Assuming 10% Void Space (cy)	46	250					245	49	
Disposal Unit Cost per WDEQ Guideline No.12, App.K (\$/cy)	\$5.98				\$5.98			_\$5.98	
Unit Cost in \$/cy (July 1998 dollars w/o escalator)	\$5.20			\$5.20					
Subtotal On-Site Disposal Costs	\$239							\$255	
Well House Removal and Disposal Costs per Wellfield	\$856	\$4,659	\$5,264	\$1,435	\$4,559	\$13,449	\$4,578	\$920	\$3,431
Total Well House Removal and Disposal Costs	\$39,151						l		
		Į . 							
VI. lleader llouses					15	43	10	3	
Total Quantity	1600		1600						
Average Header House Volume (ft³)	1000	7 1000	1600	1000	1000	1000	1000	7_1600	1000
A. Removal		28800	32000	6400	24000	68800	16000	4800	9600
Total Volume (ft³)	8000			\$0.171			\$0.171	\$0.171	
Demolition Unit Cost per WDEQ Guideline No.12, App.K (\$/					\$0.171				
Unit Cost in \$/ft³ (July 1998 dollars w/o escalator)	\$0.15				\$0.15		\$2,377	\$713	
Subtotal Building Demolition Costs	\$1,189	\$4,279	\$4,754	\$951	\$3,566	\$10,221	\$2,377	3/13	\$1,426
B. Survey and Decontamination		 					<u> </u>		
Assumptions:			0000		5000	6200	6200		6200
Cost per Header House	\$200			\$200	\$200				
Subtotal Survey and Decontamination Costs	\$1,000	\$3,600	\$4,000	\$800	\$3,000	\$8,600	\$2,000	\$600	\$1,200
C. Disposal		1000	1105	222	000	3548	603	120	356
Total Volume (cy)	296								1
Volume for Disposal Assuming 10% Void Space (cy)	326				978				
Disposal Unit Cost per WDEQ Guideline No.12, App.K (\$/cy)									
Unit Cost in \$/cy (July 1998 dollars w/o escalator)	\$5.20								
Subtotal On-Site Disposal Costs	\$1,694							\$1,018	
Header House Removal and Disposal Costs per Wellfield	\$3,883		\$15,529	\$3,107	\$11,647	\$33,384	\$7,764	\$2,331	\$4,657
Total Header House Removal and Disposal Costs	\$96,275	1			 	 		ļ	
		 					i	j	
TOTAL REMOVAL AND DISPOSAL COSTS PER WELLFIELD	\$59,754	\$114,831	\$156,181	\$81,927	\$97,832	\$347,784	\$139,902	\$30,469	\$75,620
TOTAL WELLFIELD BUILDINGS AND EQUIPMENT REMOVA		1			,				1
AND DISPOSAL COSTS	\$1,144,300		'						J i
AND DISCOSTS	1 3191779300	1				·			

·			ĭ		1.1			-		Mine Unit-D	
Well Abandonn	ment		Mine Unit-A	Mine Unit-B	Mine Unit-C	Mine Unit-D	Mine Unit-E	Mine Unit-F	Mine Unit-H	. Ext.	Mine Unit-I
Well Abandon	ment .	 	Mine Onit-yk	Mine Onit-D	Mine Onti-C	Mine Ont-17	Mine Onit-13	Milie Oliter	Mine Onicia		Mine Onti-1
I. Well Abai	ndonment (Wellfields)	 	 				•				
	roduction Wells	 	27	141	192	45	143	465	155	30	125
	jection Wells		50			91	307	903	327	· 67	236
	fonitoring Wells		18	67	78	38	86	134	81	20	
	storation Wells		13	30	19	. 0	0	15	0	Ō	0
Total ?	Number of Wells .		108	557	632	174	536	1517	563	117	400
Averag	ge Diameter of Casing (inch	nes)	5	5	5	5	5	5	5	5	5
	ge Depth (ft)	1	500	450	550	600	550	650	500	600	650
	Abandonment Unit Cost (\$/v	well)	\$280	\$277	\$284	\$287	\$284	\$290	\$280	\$287	\$290
	bandonment Cost per Welli		\$30,267	\$154,233	\$179,235	\$49,929	\$152,010	\$440,385	\$157,781	\$33,573	\$116,120
	lifield Abandonment Costs		\$1,313,533								
TI Waste D'e	sposal Well Abandonment		Nortes No. 1 20	Vollman No.33-27	(Construction	anticinated\					
A. Well P	Sposal Well Abandonment	 	Miorton No.1-20	Voliman No.33-27	(Construction not	anticipated)					
A. Well P	Orill Rig Operation (\$/hr)	 	150	0							
l - 	lumber of Hours	 	31	0							
	Orill Rig Operating Costs	 	\$4,650								
	Cementing Costs	 	\$7,500								
	quipment Transport Costs	 	\$1,000								
l - ₩	Vell Cap Welding Costs	 	\$1,000								
	rine Makeup and Injection	Costs	\$1,500						-		
	al Well Plugging Costs per		\$15,650								
B Pump	Dismantling and Decontam	ination	4.5,050								
- N	lumber of Persons	1	2	0							
	lumber of Pumps	 		0							
	umps/Day	· · · · · · · · · · · · · · · · · · ·	0,5	0	·					•	• • • •
	lumber of Days		4	. 0							
	/Day/Person		\$112	\$0							
Subtot	tal Dismantling and Decon (Costs per Well	\$896	\$0							
C. Tubing	g String Disposal (NRC-Lice	ensed Facility)									
	ength of Tubing String (ft)		9000	0	! 1					,	
D	Diameter of Tubing String (in	nches)	2.875	0							
	olume of Tubing String (ft3)	406	. 0							
T	ransportation and Disposal	Unit Cost (\$/ft3)	\$5.62	\$0.00							
Subtot	tal Tubing String Disposal C	Costs per Well	\$2,279								
Subtotal V	Vaste Disposal Well Abando	onment Costs per Well	\$18,825	\$0							
	ste Disposal Well Abandon	ment Costs	\$18,825								
TOTAL	LABANDONMENT COS	Tre	\$1,332,358		ļ						
IOIAL MELI	CABAMDONMENT COS	18	31,332,338								
IIL		1				<u></u>					

	·			1								14.	
337.07	· *-•4					1 A 41 11 11 A 7D	N		351 . 77 1. 13			Mine Unit-D	
Welli	ield and Satellite Sur	ace Reclamati	on ·	ļ <u> </u>		Mine Unit-A/B	Mine Unit-C	Mine Unit-D	Mine Unit-E	Mine Unit-F	Mine Unit-II	Ext.	Mine Unit-I
Ī.	Wellfield Pattern A	ea Reclamatio	n	1							-		
	Pattern Area (acr		ī — —	·		20	31	6.5	23	77	26	· 5	21
<u> </u>	Disking/Seeding		re)	<u> </u>		\$200	\$200				\$200	. \$200	
	Subtotal Pattern Area	Reclamation C	osts per Wel	lfield		\$4,000	\$6,200				\$5,200	\$1,000	
	Total Wellfield Patt					\$41,900		1.7.			44,44		* 1,2-1
			-	ļ									
<u>II.</u>	Wellfield Road Reci		1 1000	 		ļ							
	A. Road Construction			 		ļ							
 -		llfield Roads (1		<u> </u>		12.2	11.3	2.4		15	0	0	
		d Reclamation				\$586						\$586	
	Subtotal Pre-199			on Costs		\$7,149	\$6,622	\$1,406	\$7,794	\$8,790	\$0	\$0	\$0
<u> </u>	B. Road Construction			 		1							
	Length of We	lifield Roads (1	(000 n)	11000 0)		0.6					15.7	. 5	
		d Reclamation				\$305	\$305	\$305	\$305	\$305	\$305	\$305	\$305
<u> </u> -	Subtotal Post-199			ion Costs		\$183	\$0			\$915	\$4,789	\$1,525	\$1,525
	Subtotal Road Reclan	ation Costs per	r Wellfield	ļ	<u> </u>	\$7,332	\$6,622	\$1,406	\$7,794	\$9,705	· \$4,789	\$1,525	\$1,525
<u> </u>	Total Wellfield Road	Reclamation	Costs	ļ <u> </u>		\$40,698	ļ					<u> </u>	
SUBT	OTAL SURFACE RE	CLAMATION	COSTS PER	WELLFIEL	D	\$11,332	\$12,822	\$2,706	\$12,394	\$25,105	\$9,989	\$2,525	\$5,725
TOT/	AL WELLFIELD SU	RFACE RECI	LAMATION	COSTS		\$82,598				. ,,,,,,,,			
<u> </u>	Satellite Area Reclai					Catallita No. 1	C-4-11/4- N- 2	Carllia Na 2					
 -		nation	 	 		Satellite No.1	Satellite No.2	Satellite No.3					
<u> </u>	Assumptions: Area of Distu	1	 	 	<u> </u>	 		'					
]			2:1(9)	 			0.67	0.67					
		h of Stripped T :: Level Ground		 			0.07	0.67				-	
		th of Topsoil H		 		1000	500	500				-	
	A. Ripping Over			ļ		1000	300	300					
<u> </u>		Jnit Cost per W		line No 12 A	mm 11 (f/22-22)	\$679.37	\$679.37	\$679.37	<u> </u>				
ļ 		in S/acre (July				\$590.24	\$590.24					!	
l	Subtotal Ripp		1998 dollars	Wo escarato	' '	\$590.24	\$390.24 \$590				`	-:	
l	B. Topsoil Appli	estion with Cor				\$390	\$390	\$390					
	Volume	f Topsoil Rem	aper_	 		1613	1081	1081					
l	Applicati	on Unit Cost pe	oved (cy)	rideline No 1	2, App.C (\$/cy)	\$0.71	\$0.60						
<u> </u>		in \$/cy (July 1			e, App.C (arcy)	\$0.62	\$0.52						
		oil Application				\$995	\$0.52 \$563	\$563					
	C. Discing and S		CUSIS	 		3993	3303	, 2303					
		eeding Unit Co	oct (S/anra)	 		\$200	\$200	\$200					·····
 -		ng/Seeding Co		 		\$200	\$200 \$200						
 	Subtotal Surface			lita		\$1,785	\$1,353						
<u> </u>	Total Satellite Build					\$1,783	\$1,333	\$1,333					
<u> </u>		-1	·			34,491		<u></u>					
TOT	L WELLFIELD AN	D SATELLIT	E SURFAC	E RECLAM	ATION COSTS	\$87,089							

Mina	-11	neous Reclamation	1				
MISCO	CIIZI	icous Reciamation	 				
L.	CP	F/Office Area Reclamation					
		Assumptions	l				
	_	Concrete, asphalt, and building material used to backfill low areas			`		
	_	No topsoil salvaged or applied (area is pre-law)					
\dashv	_	CPF/Office area = 10 acres	<u> </u>			<u> </u>	
_	Α.	Ripping and Hauling Asphalt	l				<u> </u>
		Assumptions	<u> </u>		·		
	_	Average haul distance (ft)	500				
		Surface grade (%) Average Thickness of Asphalt (R)	0%				
\rightarrow	-	Surface Area (acres)	0.5				
	_	Ripping Unit Cost per WDEQ Guideline No.12, App.I (\$/acre)	\$474,92				
		Volume of Asphalt (cy)	2743				
	\dashv	Hauling Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$0,60				
	_	Total Asphalt Ripping and Hauling Cost	\$3,260				
一	B.	Borrow Cover					
		1. Topsoil Removal/Replacement					
\neg	\equiv	Assumptions					
		Surface area of borrow area (acres)	3				
		Six inches of topsoil removed and replaced at borrow area	T				
		Volume of topsoil (cy)	2420				
1		Topsoil Removal/Replacement Unit Cost (\$/cy)	\$1.00				
		Total Topsoil Removal/Replacement Cost	\$2,420				
		2. Borrow Application					
		Assumptions	ļl				
		Final borrow cover depth will range from 0 to 4 ft, average = 1 ft					
		Average hauf distance = 1000 ft					
		Surface grade (%)	0%				
 -∤		Borrow Volume (cy)	16133				!
	_	Borrow Cover Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$0.70				
	-	Total Borrow Application Cost Total Borrow Cover Cost	\$11,293				
 }	$\overline{}$	Discing/Seeding	\$13,713				
-	٠.	Assumptions	 				
-	\dashv	Includes discing/seeding of borrow area (3 acres)	 				
 i	_	- Surface Area (acres)	. 13	~ -	-		
	-	Discing/Seeding Unit Cost (\$/acre)	\$200	* * * * * * * * * * * * * * * * * * * *			
		Total Discing/Seeding Costs	\$2,600				
	Tot	al CPF/Office Area Reclamation	\$19,573				
		ess Road Reclamation	CPF/Office Are	Sat No. 1	Sat No. 3	Connecting Road	
$\overline{}$	_	Assumptions	T Pointe Are	54110.1	341110.3	Connecting Road	
\neg	~	CPF/Office Area Road is pre-law (no topsoil applied)	 				
\dashv	_	Surface grade	5%	- 0%	0%	-0%	
\neg		Length of road (miles)	2.5	3	1	2	
_		Average road width (ft)	25	30	30		
		Ripping and Hauling Asphalt					
		Assumptions					
		Average haul distance (miles)	1.25	0	0	0	
二		Average Thickness of Asphalt (ft)	0,5	0	0		
		Asphalt Surface Area (acres)	7.6	0.0	_ 0.0		
		Ripping Unit Cost per WDEQ Guideline No.12, App.1 (\$controls of the control of the cont	\$474.92	\$474.92	\$474.92	\$474.92	
	_	Unit Cost in \$/acre (July 1998 dollars w/o escalator)	\$412.62	\$412.62	\$412.62		
		Volume of Asphalt (cy)	6111	0	0		
!		Hauling Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$1.91	\$1.91	- \$1.91	\$1.91	·
		Unit Cost in \$/cy (July 1998 dollars w/o escalator)	\$1.66	\$1.66	\$1.66	\$1.66	
	B.	Subtotal Asphalt Ripping and Hauling Costs Gravel Road Base Removal	\$13,267	\$0	\$0		ļ.
-	Δ.	Assumptions Assumptions	 			•	
	-	Average haul distance (ft)	0	1000	1000	1000	
 	-	Gravel Road Base Width (ft)	0	14	14		
一		Gravel Road Base Area (acres)	0.0	5.1	1.7		·
		Average Road Base Depth (ft)	0	0.5	0.5		
\equiv		Volume of Road Base (cy)	0	4107	1369	2738	
		Removal Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$0.00	\$0.71	\$0.71	.\$0.71	
		Unit Cost in \$/cy (July 1998 dollars w/o escalator)	\$0.00	\$0.62	\$0.62	\$0.62	
		Subtotal Gravel Road Base Removal Costs	\$ 0	\$2,533	\$844	\$1,689	
1	C.	Ripping Overburden with Dozer			•		
		Overburden Surface Area (acres)	0,0	10.9	3.6	, 7.3	
_	_!	Ripping Unit Cost per WDEQ Guideline No.12, App.I1 (\$/acre)	\$663.93	\$663.93	\$663.93	., \$ 663.93	
	1	Unit Cost in \$/acre (July 1998 dollars w/o escalator)	\$576.83	\$576.83	\$576.83		
		Subtotal Ripping Overburden Costs Topsoil Application	\$0	\$6,293	\$2,098	\$4,195	

Miccella	ansone Pastametian					
*113CE112	aneous Reclamation Assumptions	 				
	Average haul distance (ft)		5000	1500	1500	
-						
	Topsoil Surface Area (R ¹) Depth of Topsoil (R)	0		158400	316800	
 	Volume of Topsoil (cy)	0		0.5 2933	0.5	
-	Topsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$0.00			5867	
	Unit Cost in \$/cy (July 1998 dollars w/o escalator)			\$0.82	\$0.82	
	Subtotal Topsoil Application Costs	\$0.00		\$0.71	\$0.71	
	Discing/Seeding	\$0	\$11,468	\$2,090	\$4,180	
- - -	Assumptions	- 				
$-\!\!\!+\!\!\!\!-$	Surface Area (acres)		100	2.6		
		7.6		3.6	7.3	
-	Discing/Seeding Unit Cost (S/acre) Subtotal Discing/Seeding Costs	\$200		\$200		
	abtotal Reclamation Costs per Access Road	\$1,515 \$14,782		\$727	\$1,455	
	otal Access Road Reclamation Costs	\$54,536		\$5,759	\$11,519	
	MAI ACCES AND ACCIDITION COSIS		1.			
		4	SA13 to SA12	H-WF Rest.		
	astewater Pipeline Reclamation	WW Pipeline	PSR	Bypass		
A.	Pipeline Removal and Loading					
	Length of HDPE Pipe Trench (ft)	24000		2200		
	Main Pipeline Removal Unit Cost (\$/st of trench)	\$0.85		\$0.85		
	Subtotal Pipeline Removal Costs	\$20,400	\$18,700	\$1,870		
B.	Pipeline Transportation and Disposal (NRC-Licensed Facility)					
	Pipe Diameter (inches)	3	4	3		
	Chipped Volume Reduction (ft³/ft)	0.022	0.032	0.022		
	Subtotal Volume of Shredded PVC Pipe (ft³)	528	704	48.4		
\neg	Transportation and Disposal Unit Cost (\$/ft ³)	\$5.62	\$5.62	\$5.62		
\neg	Subtotal Pipeline Disposal Costs	\$2,967	\$3,956	\$272		
	Discing/Seeding	1	1			
	Assumptions:					
— 	Width of Pipeline Trench (R)	10	10	8	·	
$\neg \vdash$	Area of Pipeline Trench (acres)	5.5		0,4		
	Discing/Seeding Unit Cost (\$/acre)	\$200		\$200		
	Subtotal Discing/Seeding Costs	\$1,102		\$81		
Sul	abtotal Reclamation Costs per Pipeline	\$24,469		\$2,223		
	otal Wastewater Pipeline Reclamation Costs	\$50,358				
						
	adium Settling Basin Reclamation	E. Radium Pon	W. Radium Pon	d !		
<u> </u>	Soil Sampling and Monitoring	·	<u> </u>			
	Number of Soil Samples	10				
_	\$/Sample	\$60				
_	Subtotal Soil Sampling and Monitoring Costs	\$600	\$600			
C.	Grade and Contour	<u>i </u>	t			
	Volume of Embankment Material (CY)	6,400	6,400			
	- Average Grade (%)	- 0			-	
	Distance (ft)	₋ 50	50		۱ , ا	
	Material Moving Unit Cost per WDEQ Guideline No.12, App.E (\$/c					
			\$0.092			
	Unit Cost in \$/cy (July 1998 dollars w/o escalator)	\$0.08	\$0.092 \$0.08			
	Subtotal Grade and Contour Costs		\$0.092			
C.	Subtotal Grade and Contour Costs Topsoil Application	\$0.08	\$0.092 \$0.08			
C.	Subtotal Grade and Contour Costs Topsoil Application Assumptions:	\$0.08	\$0.092 \$0.08 \$512			
C.	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (R*)	\$0.08	\$0.092 \$0.08			
C.	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (R*) Average thickness of topsoil (R)	\$0.08 \$512	\$0.092 \$0.08 \$512		-	
C.	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (R*)	\$0.08 \$512	\$0.092 \$0.03 \$512 - 37500			
C.	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (ft') Average thickness of topsoil (ft) Average haul distance (ft) Surface grade (%)	\$0.08 \$512 37500	\$0.092 \$0.03 \$512 - 37500 1 2000		-	
C.	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (R ²) Average thickness of topsoil (R) Average haul distance (R) Surface grade (%) Volume of Topsoil (cy)	\$0.08 \$512 37500 1 2000	- 37500 - 37500 - 37500 - 37500 - 37500 - 37500 - 37500			
C.	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (R ²) Average thickness of topsoil (R) Average haul distance (R) Surface grade (%) Volume of Topsoil (cy)	\$0.08 \$512 37500 1 2000	- \$0.092 \$0.08 \$512 - 37500 1 2000 0% - 1,389		-	
C.	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (R²) [Average thickness of topsoil (ft) Average haul distance (ft) [Surface grade (%) Volume of Topsoil (cy) Topsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$0.08 \$512 37500 1 2000 0% 1,389	\$0.092 \$0.08 \$512 - 37500 1 2000 0% - 1,389 \$0.92		-	
C.	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (R ²) Average thickness of topsoil (R) Average haul distance (R) Surface grade (%) Volume of Topsoil (cy)	37500 37500 1 2000 0% 1,389 - \$0.92	- \$0.092 \$0.08 \$512 - 37500 1 2000 0'4 - 1,389 \$0.92 \$0.80		-	
	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (R*) Average thickness of topsoil (R) Average haul distance (R) Surface grade (%) Volume of Topsoil (cy) Topsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/cy) Unit Cost in \$/cy (July 1998 dollars w/o escalator) Subtotal Topsoil Application Costs	\$0.08 \$512 37500 1 1 2000 0% 1,389 - \$0.92 \$0.80	\$0.092 \$0.08 \$512 - 37500 1 2000 0% - 1,389 \$0.92 \$0.80			
	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (ft') Average thickness of topsoil (ft) Average haul distance (ft) Surface grade (%) Volume of Topsoil (cy) Topsoil Unit Cost per WDEQ Guideline No. 12, App. C (\$/cy) Unit Cost in \$/cy (July 1998 dollars w/o escalator)	37500 37500 1 2000 0% 1,389 - \$0.92	- \$0.092 \$0.08 \$512 - 37500 1 2000 0'4 - 1,389 \$0.92 \$0.80			
	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (ft') Average thickness of topsoil (ft) Average haul distance (ft) Surface grade (%) Volume of Topsoil (cy) Topsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/cy) Unit Cost in \$/cy (July 1998 dollars w/o escalator) Subtotal Topsoil Application Costs Discing/Seeding Assumptions:	37500 37500 1 2000 0% 1,389 - \$0.92	- \$0.092 \$0.08 \$512 - 37500 1 2000 0'4 - 1,389 \$0.92 \$0.80			
	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (ft') Average thickness of topsoil (ft) Average haul distance (ft) Surface grade (%) Volume of Topsoil (cy) Topsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/cy) Unit Cost in \$/cy (July 1998 dollars w/o escalator) Subtotal Topsoil Application Costs Discing/Seeding Assumptions: Area of surface disturbance (acres)	\$0.08 \$512 37500 1 2000 0% 1,389 \$0.92 \$0.80 \$1,110	\$0.092 \$0.08 \$512 - 37500 11 2000 0% 1,389 \$0.92 \$0.80 \$1,110			
D.	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (R*) Average thickness of topsoil (R) Average haul distance (R) Surface grade (%) Volume of Topsoil (cy) Topsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/cy) Unit Cost in \$/cy (July 1998 dollars w/o escalator) Subtotal Topsoil Application Costs Discing/Seeding Assumptions: Area of surface disturbance (acres) Discing/Seeding Unit Cost (\$/acre)	\$0.08 \$512 37500 1 2000 0% 1,389 - \$0.92 \$0.80 \$1,110	\$0.092 \$0.08 \$512 - 37500 11 2000 0% 1,389 \$0.92 \$0.80 \$1,110	•		
D.	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (R²) Average thickness of topsoil (R) Average haul distance (R) Surface grade (%) Volume of Topsoil (cy) Topsoil Unit Cost per WDEQ Guideline No.12, App.C (S/cy) Unit Cost in S/cy (July 1998 dollars w/o escalator) Subtotal Topsoil Application Costs Discing/Seeding Assumptions: Area of surface disturbance (acres) Discing/Seeding Unit Cost (\$\frac{1}{2}\) acres Subtotal Discing/Seeding Unit Cost (\$\frac{1}{2}\) acres Subtotal Discing/Seeding Costs	\$0.08 \$512 37500 1 2000 0% 1,389 - \$0.92 \$0.80 \$ \$1,110	\$0.092 \$0.08 \$512 - 37500 1 2000 074 - 1,389 \$0.92 \$0.80 \$1,110	-		
D.	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (R²) Average haul distance (ft) Surface grade (%) Volume of Topsoil (cy) Topsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/cy) Unit Cost in \$/cy (July 1998 dollars w/o escalator) Subtotal Topsoil Application Costs Oiscing/Seeding Assumptions: Area of surface disturbance (acres) Discing/Seeding Unit Cost (\$/acre) Subtotal Discing/Seeding Costs bototal Reclamation Costs per Radium Pond	\$0.08 \$512 37500 1 2000 0% 1,389 - \$0.92 \$0.80 \$1,110 1 1 , \$200 \$220 \$2,422	\$0.092 \$0.08 \$512 - 37500 1 2000 0% 1,389 \$0.92 \$0.80 \$1,110	-		
D. Sut	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (R*) Average thickness of topsoil (ft) Average haul distance (ft) Surface grade (%) Volume of Topsoil (cy) Topsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/cy) Unit Cost in \$/cy (July 1998 dollars w/o escalator) Subtotal Topsoil Application Costs Discing/Seeding Assumptions: Area of surface disturbance (acres) Discing/Seeding Unit Cost (\$/acre) Subtotal Discing/Seeding Costs bitotal Reclamation Costs per Radium Pond otal Radium Settling Basin Reclamation.Costs	\$0.08 \$512 37500 1 2000 0% 1,389 \$0.92 \$0.80 \$1,110 1 , \$200 \$2,422 \$3,4843	\$0.092 \$0.08 \$512 - 37500 11 2000 0% 1,389 \$0.92 \$0.80 \$1,110 - 1 \$200 \$200 \$2,422	-		
D. Sut	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (R*) Average thickness of topsoil (R) Average haul distance (R) Surface grade (%) Volume of Topsoil (cy) Topsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/cy) Unit Cost in \$/cy (July 1998 dollars w/o escalator) Subtotal Topsoil Application Costs Discing/Seeding Area of surface disturbance (acres) Discing/Seeding Unit Cost (\$/acre) Subtotal Discing/Seeding Costs bitotal Reclamation Costs per Radium Pond tal Radium Settling Basin Reclamation.Costs irge Storage Reservoir Reclamation	\$0.08 \$512 37500 1 2000 0% 1,389 \$0.92 \$0.80 \$1,110 1 , \$200 \$2,422 \$4,843 PSR-1	\$0.092 \$0.08 \$512 - 37500 1 2000 0% - 1,389 \$0.92 \$0.80 \$1,110 - 1 \$200 \$220 \$2,422	-		
D. Sut Tot	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (R²) Average thickness of topsoil (R) Average haul distance (R) Surface grade (%) Volume of Topsoil (cy) Topsoil Unit Cost per WDEQ Guideline No.12, App.C (S/cy) Unit Cost in S/cy (July 1998 dollars w/o escalator) Subtotal Topsoil Application Costs Discing/Seeding Assumptions: Area of surface disturbance (acres) Discing/Seeding Unit Cost (S/acre) Subtotal Discing/Seeding Costs bitotal Reclamation Costs per Radium Pond tal Radium Settling Basin Reclamation.Costs Irge Storage Reservoir Reclamation Soil Sampling and Analysis Costs	\$0.08 \$512 37500 1 2000 0% 1,389 - \$0.92 \$0.80 \$1,110 1 1 , \$200 \$2,422 \$3,424 \$4,843 PSR-1	\$0.092 \$0.08 \$512 - 37500 1 2000 0% 1,389 \$0.92 \$0.80 \$1,110 - 1 \$200 \$2,422 PSR-2 \$3,000	-		
D. Sut Toi	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (R*) Average hickness of topsoil (R) Average haul distance (R) Surface grade (%) Volume of Topsoil (cy) Topsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/cy) Unit Cost in \$/cy (July 1998 dollars w/o escalator) Subtotal Topsoil Application Costs Discing/Seeding Assumptions: Area of surface disturbance (acres) Discing/Seeding Unit Cost (\$/acre) Subtotal Discing/Seeding Costs bitotal Reclamation Costs per Radium Pond Datal Radium Settling Basin Reclamation.Costs Ingre Storage Reservoir Reclamation Soil Sampling and Analysis Costs Leachate Collection System Removal Costs	\$0.08 \$512 37500 1 2000 0% 1,389 \$0.92 \$0.80 \$1,110 1 , \$200 \$2,422 \$4,843 PSR-1	\$0.092 \$0.08 \$512 - 37500 1 2000 0% 1,389 \$0.92 \$0.80 \$1,110 - 1 \$200 \$2,422 PSR-2 \$3,000	-		
D. Sut Toi	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (ft') Average thickness of topsoil (ft) Average haul distance (ft) Surface grade (%) Volume of Topsoil (cy) Topsoil Unit Cost per WDEQ Guideline No. 12, App. C (\$/cy) Unit Cost in \$/cy (July 1998 dollars w/o escalator) Subtotal Topsoil Application Costs Discing/Seeding Assumptions: Area of surface disturbance (acres) Discing/Seeding Unit Cost (\$/acre) Subtotal Discing/Seeding Costs bitotal Reclamation Costs per Radium Pond otal Radium Settling Basin Reclamation.Costs Leachate Collection System Removal Costs Leachate Collection System Removal Costs Topsoil/Subsoil Application	\$0.08 \$512 37500 1 2000 0% 1,389 - \$0.92 \$0.80 \$1,110 1 1 , \$200 \$2,422 \$3,424 \$4,843 PSR-1	\$0.092 \$0.08 \$512 - 37500 1 2000 0% 1,389 \$0.92 \$0.80 \$1,110 - 1 \$200 \$2,422 PSR-2 \$3,000	-		
D. Sut Toi	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (ft') Average thickness of topsoil (ft) Average haul distance (ft) Surface grade (%) Volume of Topsoil (cy) Topsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/cy) Unit Cost in \$/cy (July 1998 dollars w/o escalator) Subtotal Topsoil Application Costs Discing/Seeding Assumptions: Area of surface disturbance (acres) Discing/Seeding Unit Cost (\$/acre) Subtotal Discing/Seeding Costs botal Reclamation Costs per Radium Pond botal Radium Settling Basin Reclamation Soil Sampling and Analysis Costs Leachate Collection System Removal Costs Topsoil/Subsoil Application Assumptions:	\$0.08 \$512 37500 1 2000 0% 1,389 - \$0.92 \$0.80 \$1,110 1 1 , \$200 \$2,422 \$3,424 \$4,843 PSR-1	\$0.092 \$0.08 \$512 - 37500 1 2000 0% 1,389 \$0.92 \$0.80 \$1,110 - 1 \$200 \$2,422 PSR-2 \$3,000	-		
D. Sut Toi	Subtotal Grade and Contour Costs Topsoil Application Assumptions: Area of surface disturbance (ft') Average thickness of topsoil (ft) Average haul distance (ft) Surface grade (%) Volume of Topsoil (cy) Topsoil Unit Cost per WDEQ Guideline No. 12, App. C (\$/cy) Unit Cost in \$/cy (July 1998 dollars w/o escalator) Subtotal Topsoil Application Costs Discing/Seeding Assumptions: Area of surface disturbance (acres) Discing/Seeding Unit Cost (\$/acre) Subtotal Discing/Seeding Costs bitotal Reclamation Costs per Radium Pond otal Radium Settling Basin Reclamation.Costs Leachate Collection System Removal Costs Leachate Collection System Removal Costs Topsoil/Subsoil Application	\$0.08 \$512 37500 1 2000 0% 1,389 - \$0.92 \$0.80 \$1,110 1 1 , \$200 \$2,422 \$3,424 \$4,843 PSR-1	\$0.092 \$0.08 \$512 - 37500 11 2000 0% 1,389 \$0.92 \$0.80 \$1,110 - 1 \$200 \$200 \$2,422 PSR-2 \$3,000			

					_
Miscellaneous Reclamation	ļ				ļ
Volume of Topsoil/Subsoil (cy)	83000	74000			<u> </u>
Topsoil/Subsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$0.71				
Unit Cost in \$/cy (July 1998 dollars w/o escalator)	\$0.62				
Topsoil/Subsoil Unit Cost per WDEQ Guideline No.12, App.E (\$/cy)	\$0.194				
Unit Cost in \$/cy (July 1998 dollars w/o escalator)	\$0.17			·	
Subtotal Topsoil/Subsoil Application Costs per Reservoir	\$65,189	\$58,120			
D. Discing/Seeding					
Surface Area (acres)	6				
Discing/Seeding Unit Cost (\$/acre)	\$200	\$200			<u> </u>
Subtotal Discing/Seeding Costs	\$1,200				<u></u>
Subtotal Reclamation Costs per Reservoir	\$74,389				
Total Purge Storage Reservoir Reclamation Costs	\$141,909				
VI. Irrigation Area Reclamation	Irrigator No. 1	Irrigator No. 2			
A. Irrigation Equipment Removal Costs	\$2,000				
B. Plowing	32,000	\$2,000			
Assumptions:	 				
Plowing Unit Cost (\$/acre)	\$30	\$30			
Irrigation Area (acres)	55	116			
Number of Cultivations	33	2			
Subtotal Plowing Costs	\$3,300	\$6,960			
	\$3,500	30,500			
C. Discing/Seeding	6300	£200			
Discing/Seeding Unit Cost (\$/acre)	\$200	\$200			ļ-
Subtotal Discing/Seeding Costs	\$11,000				ļ
Subtotal Reclamation Costs per Irrigation Area	\$16,300	\$32,160			ļ
Total Irrigation Area Reclamation Costs	\$48,460	ļ			<u> </u>
VII. Drilling Fluid Storage Cell Reclamation	<u> </u>				
Assumptions:	 				
Each cell is 100 ft (width) by 100 ft (length) by 10 ft (depth)					
Volume of each cell, discounting side slopes (cy)	3704				
Surface area disturbance associated with each cell (acres)	1				
Average haul distance (ft)	500	-			
Surface grade (%)	300		-		
IA. Topsoil/Subsoil Application	 				
Topsoil/Subsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$0,60	·			
11110 111111111111111111111111111111111	\$0.52	ļ			
					<u> </u>
Topsoil/Subsoil Application Costs per Storage Cell	\$1,931	- 			
B. Discing/Seeding	6200	ļ <u></u> -			
Discing/Seeding Unit Cost (\$/acre)	\$200				
Subtotal Discing/Seeding Costs	\$200				
Subtotal Reclamation Costs per Storage Cell	\$2,131				
Total Number of Storage Cells	5				<u> </u>
Total Drilling Fluid Storage Cell Reclamation Costs	\$10,655	ļ			
VIII Revegetation of Exxon Reclaimed Lands					
Assumptions:		 			
Resceding potential areas of erosion (\$/acre)	\$200				
Surface Area (acres)	217				
Total Exxon Reclaimed Lands Revegetation Costs	\$43,400				
IX. Potential Mitigation Plan For Irrigator No.1A (Requested by WDEQ-LQD)					
Assumptions:					-
Harvesting grass for 2 years will further reduce Se levels in vegetation.					
Harvest grass for 2 years @ \$2000/year.	\$4,000				
Analyze Se in grass for 2 years @\$165/sample X 4 samples X 2 yrs.	\$1,320				<u> </u>
Analyze Se in soil for 2 years @\$174/sample X 28 samples X 2 yrs.	\$9,744				-
Add 1 ft. of Se free water to 58 acre irrigation area @ cost of \$6000.	. \$6,000				
If desired, plow, disk and reseed area with alfalfa @ cost of \$4400.	\$4,400				
Total Potential Mitigation Plan Costs- Call \$30,000	\$30,000			•	
		ļ. 			
Assumptions:	 	 			
Harvesting grass for 2 years will further reduce Se levels in vegetation.		<u> </u>		<u> </u>	
Harvest grass for 2 years @ \$4000/year.	\$8,000				
Analyze Se in grass for 2 years @\$165/sample X 4 samples X 2 yrs.	\$1,320				
Analyze Se in soil for 2 years @\$174/sample X 32 samples X 2 yrs.	\$11,136				
Add 1 ft. of Se free water to 116 acre irrigation area @ cost of \$12000.	\$12,000			<u></u> -	
If desired, plow, disk and reseed area with alfalfa @ cost of \$8800.	\$8,800				ļ
Total Potential Mitigation Plan Costs- Call \$42,000	\$42,000				<u> </u>
XI. Potential Mitigation Plan for Shallow Well Casing Leak Investigation	T				
Assumptions:	- 	 			
Investigation and potential mitigation plan as of June 2002.	 	 			
Assume cost of \$250,000.	 	 	<u> </u>		
	6350.000	 			
Total Preliminary Cost	\$250,000	· · · · · ·	<u> </u>	<u> </u>	<u> </u>

	· · · · · · · · · · · · · · · · · · ·	i I I I I I I I I I I I I I I I I I I I	
Miscellaneous Reclamation			
TOTAL MISCELLANEOUS RECLAMATION COSTS	\$695,734		

RADIUM TREATMENT		
Assumptions:		
Based on actual 1998 operating costs from Satell	lite No. 2	
Radium Treatment Costs per 1000 Gallons		
Chemical	= \$ 0.1	77
Filtration	= \$ 0.0	21
Electricity	= \$ 0.0	19
By Product Disposal of Sludge	= \$ 0.0	97
TOTAL RADIUM TREATMENT COSTS PER 1000 GALL	ONS = \$ 0.3	1

														, -			,
<u>GROU</u>	NDWA	TER	SM	VEEP	(GW	<u>S)</u>			Ŀ						<u> </u>		
			L			<u> </u>										ļ. <u></u>	
	nptions			<u> </u>		_	<u> </u>	<u> </u>								<u> </u>	
	All pur							.0 gp	m								
2.	Cost o	f elec	tric	ity =	\$0.03	/kv	vh										
3.	All wat	er pu	mp	ed is	treate	ed	for r	adiur	n r	emoval	at act	ual	C	ost of \$0	0.31	1000 gallo	ns
4.	All wa	er pu	mp	ed is	dispo	ose	d at	irriga	atio	n facilit	with	a 2	20	hp pum	р		
										d at \$0.					İ		
														000 gall	lons		
7.	Labor	costs	ar	e not	includ	dec	1	Γ	ΤĪ					J=			
								\vdash	一			-	\vdash	 -			
Wellfic	eld Pur	nning	C	osts	per 1	00	n Ga	llon	5			-					
	1000				hp	<u> </u>		hr	T	0.746	kwh	-	8	0.03			
	1000	94.	Х		gpm	{X		min	X	hı		Х	╨	kwh	= \$	0.373	
	 		\vdash	<u> </u>	9piii		00	111111	 —			-		KAAII			
Dadiu	m Trea	tman	Ļ	octo	nor 1	00	0.6	l				H	-		- 6	0.31	
<u>·</u>	III IIea	unen		บรเร	hei i	100	0 6	alion	5			H	H		- \$	0.31	
D		:		C4		_		<u> </u>	<u></u>			-	L		-		
Pump	ing to I					1			ns		1	_	_		 		-
	1000	gai	Х		hp	X		hr	X	0.746		X	\$	0.03	= \$	0.019	
	ļ		_	400	gpm	_	60	min	▙	h		!	L.,	kwh	ļ		
	<u> </u>					_		<u> </u>							L		<u> </u>
	r and M	lainte	na	nce (Costs	p	<u>er 10</u>	<u>000 C</u>	Sal	lons				<u> </u>	= \$	0.03	
								<u> </u>					Ŀ		<u> </u>		
Proce:	ss Sam	pling	ai	nd Ar	alysi	is (Cost	s pe	r 10	000 Ga	llons				= \$	0.03	
					-												
TOTAL	L GWS	COS	TC	DED	1000	<u> </u>	ALI	ONIC	1						- 6	0.77	,

REVER	SE OS	SMOS	IS (RO)	i		ī	· ·		i			_
			,									 	-
Assum	ptions	s:					1		_		 		-
			ctual 19	98	opera	ting costs	at Sat	ellite No. 1.	Verified by	·			-
								/ersion 6.0					-
			tricity =				T		1		i .		_
			ate/20%							· · · · · · · · · · · · · · · · · · ·			-
							f \$695	per memb	rane elemer	nt			•
						om wellfield			1	1		ļ -	-
									igation at ac	tual cost of	\$0.31/1000		_
	gallon		·				1	İ	Ĭ				_
7.	The 2	0% re	ject is c	lisp	osed	at irrigation	facili	y with a 20	hp pump at	actual cost	of	<u> </u>	_
			gallon				T		T				_
8.	The p	ermea	ate is re	turr	ned to	the wellfie	ld with	a 20 hp p	ump at actua	al cost of			_
	\$0.019	9/1000	gallon	s					1	l			-
					analy	sis costs e	stima	ted at \$0.0	3/1000 gallo	ns			٠
			are no						1				_
			•							-			-
Revers	e Osn	nosis	Costs	per	1000	Gallons							•
	Electri	icity				_	=\$	0.17					
	Chem	icals					= \$	0.26					
_	Memb	rane	Replace	eme	ent _		=\$	0.15			_		
معياته	Repai	r and	Mainter	nan	ce		=\$	0.26	" بشجة "				-
			m Wel				=\$	0.37					•
	Pump	ing to	Wellfie	ld	-		=\$	0.019					
	Radiu	m Tre	atment				1						
		\$	0.31	X	0.2		=\$	0.0628					_
	Pump	ing to	Irrigato	r						-			
			0.019					0.004					_
	Proces	ss Sa	mpling	and	Anal	ysis	= \$	0.03					
							<u> </u>						_
													_
TOTAL	RO C	OSTS	PER 1	00	0 GAI	LONS	= \$	1.33			-		

CHEM	CAL F	EDU	CT	ANT				<u> </u>	-			\vdash	\dashv		_	
Assun	ptions	5 :	H						 		_	Н	\dashv	 		
1.	Bioren	nediat	ion	is util	ized							\sqcap	\Box			
2.	Based	on a	ctua	al 200	3-200	40	perat	ing co	sts	during re	estorat	ion	act	ivities		
			-		 				-			H	+			
OTAL	CHE	/ICAI	_ R	EDUC	TAN	rc	OST	S PE	ŧκ	gal			士		= \$	0.33
					-				-			$\left \cdot \right $	\dashv			
					-		<u></u>	<u> </u>	\vdash	July 199	8 Doll	⊥_ ars	+		= \$	0.29

ELUTI	ON PR	OCE	SSIN	G		ŀ					•
Assun	nptions	! s:				╁			 		
1.	Based	on a	ctual	ope	ating	СО	sts				
TOTA	L PRO	CESS	ING	COS	TS P	ER	ELL	JTION	= \$	525	

DEEP 1	WELL	INJE	СТ	ION	·									· ·		.	
						-			H								
Assum	ptions	::															
	Pump		p p	umpii	ng at	45	gpn	1									
2.	Cost o	f elec	tric	ity =	\$0.03	/kv	vh										
3.	Repair	and	ma	inten	ance	COS	sts b	ased	on	averag	e injed	ctio	י תו	volume	of 8	000,000 g	allons per year
										at \$1.2							
5.	Chemi	cal co	st	s base	ed on	av	eraç	je inje	cti	on volu	me of	8,0	000),000 ga	allon	s per year	
6.	Labor	costs	are	e not	includ	lec	1									-	
Waste									al	ions		L					
	1000	gal	Y	75	hp gpm	Y	1	hr	X	0.746	kwh	Y	\$	0.03	= @	0.62	
				45	gpm	_	60	min	_	h	o			kwh	- Ψ	0.02	
Repair	rand N	lainte	na	nce (Costs	p	er 10	000 G	all	ons					= \$	1.25	
								L	_								
Chemi					Gallo	ns			_			$oxed{oxed}$			=\$	2.73	
	Scale						_	1.20				<u></u>					
	Corros					L	_	1.16	<u> </u>				_		<u> </u>		
	Oxyge	n Sca	ve	nger		L	= \$	0.37					L		<u> </u>		
			$oxed{oxed}$			<u> </u>			_				_				
	<u> </u>		_		<u> </u>					_		Ļ	L				
TOTAL	L DEEF	WEL	<u>L</u>	INJE	CTIO	N (cos	TS P	<u>ER</u>	1000 G	ALLC)N	<u>s</u>		= \$	4.60	<u> </u>

		•						•			•		
VELL.	ABANDONI	MENT				•							
-													
ssum	ptions:												
1.	Use backho	oe for 0	.5 h	r/we	ll to dig	an	d recl	aim pit	at c	ost of \$50	/hr.		
2.	Use hose re	eel/tow	veh	icle	for 2 hi	/we	il to p	ull hos	es a	ind pump	plug gel at	cost of \$35/	hr.
3.	Use cemen	ter/tow	veh	icle	for 1 h	r/we	ell to p	ump p	lug g	gel at cost	of \$45/hr.	ŀ	
4.	Labor for b	ackhoe	, hos	se r	eel, cer	ner	iter wi	II requi	re 2	workers a	t 3.5 hr/we	ll at cost of	\$15/hr.
5.	Materials in	clude c	ne l	nole	plug a	t \$1	.75 ar	nd one	sac	k of plug g	el/100 ft of	5 inch well	casing.
	Cost of plug	g gel is	\$6.7	70/s	ack.		İ						
Well A	bandonmer	nt Cost	s					Ì					
												1	
	Fixed Costs	<u>s</u>											1
	Backhoe												
	0.5	hours	X	\$	50	pe	hour		=\$	25.00			
-	Hose Reel/	Tow Ve	ehicle	е									
	2	hours	X	\$	35	pei	hour		=\$	70.00		i -	
	Cementer/	Tow Ve	hicle	•		•							
	1	hours	X	\$	45	pei	r hour		=\$	45.00			
-	Labor							ł					}
	7	man	X	\$	15.00	pei	man		=\$	105.00		j	
		hours				ho	ur						
٠٠-	Materials										i ~:		
	1	hole	X	\$	1.75	pei	r hole	ļ	=\$	1.75.			
		plug		•		plu	g	ŀ					
					Total F	ixe	d Cos	ts	=\$	246.75			
-							ļ		1				
	Variable Co	osts	(pe	10	0 ft of v	vell	depth)					-
	Materials												
	1	sack p			Х	\$	6.70		=\$	6.70			
		per 10	00 fe	et				sack					
													1
	Cost per V	Vell per	r Un	it o	f Avera	ge	Depti	1 .			-		
=													
				We	II Dept		t)						
					450					277			
					500					280 .			<u> </u>
					550					284			
					600					287			
		· -			650		·		=\$	290	•		

FIVE Y	EAR N	/IECH	ANICAL I	NTE	GR	TY TE	STS	MIT)	ĺ	•		1	
Assum	ption	s:												1
1.	Based	d on 19	999 PRI 0	osts	5.									
			Unit for 0						/hr.					
3.	Use N	AIT Ur	nit for 1.5	hr/w	ell a	t cost c	of \$2	20/hr.						
											ers at \$15/	hr		
5.	Labor	for or	peration o	f Mi	TUn	it will r	equi	re 1 v	/ork	er a	at \$15/hr			
				<u> </u>										
MIT Co	sts p	er We	<u> </u>	<u> </u>	ļ								<u> </u>	
					<u> </u>		<u> </u>							
Equipr				ļ	ļ									
	Pullin													
			hours	X	\$	45	per	hour		<u> </u>		=\$	11.25	
	MIT L													
		1.5	hours	X	\$	20	per	hour				=\$	30.00	
Labor:				<u> </u>			1					<u> </u>		
•	Pullin													
			hours	X	\$	15	per	hour	X	2	workers	=\$	\$7.50	
	MITL													
		1.5	hours	X	\$	15	per	hour				=\$	22.50	
	<u> </u>			<u> </u>			_					<u> </u>	ļ	
	•			<u> </u>			<u> </u>			<u></u>	<u> </u>	<u> </u>		
				1			1	AIT C	<u> </u>	r Pl	ER WELL	<u> =\$</u>	<u> </u> 71	

MAIN P	IPELI	NE RI	EMOV.	AL			_	•						
l					<u> </u>	ļ	<u></u>						_ 	
Assum				با		<u> </u>								
1.	Trenc	hing v	vith tra	ckh	oe a	t 1500 ft/d	ay			L	<u> </u>			
2.	Pipeli	ne ext	raction	an	d ba	ckfilling w	ith t	rackho	e at 1	500	ft/day			
			ental: \$				<u> </u>		_	ļ				
4.	Fuel c	ost: \$	9/oper	atın	g no	ur			_					
						es 1 work				L		L		
							rs a	t \$15/h	our (ii	ado	dition to tr	ackhoe op	erator)	
						neously								
			noval				<u>۔۔۔</u>	L					_	
9.	Opera	iting s	cnedul	e: 8	nrs	/day, 5 da	ys/v	veek						
						•		•				<u></u>		
Main Pi	pelin	e Rem	iovai (Jos	ts p	er ft of Tr	enc	h						
	4			_								<u> </u>	- 	
Equipm		.l										<u> </u>		-
	Track		1600		4	week	_		4		0.40		_	
			ek	Х			Х	1500	days	=\$	0.43	•	-	-
	Fuel	We	ek	_	- 3	days		1500	11				- 	
	ruei	\$	0	_	_	heo		-	dava	-6	0.40	ļ		
			our	X		hrs	X	1500	days	=\$	0.10		-	
		110	Jui			day		1500	11		·	 	- 	
Labor					 									
	Track	hoe C	perat	ion	┝	<u> </u>	<u> </u>				•	<u> </u>	- · · · · · · · · · · · · · · · · · · 	
	Hack		15		8	man hrs		2	days	=\$	0.16	<u> </u>		
			n hr	X	_	day	X	1500			0.10	-	- 	
	Pineli		traction	Dn	┝╌		—	-		-				
	pc		15 -		16	man hrs		-1	day	=\$	0.16		+	+
			n hr	X		day	Х	1500		_Ψ	0.10		+	
			,, ,,,,	\vdash	┢	,	-	,000						
+							-						+	
					1	i								

				_			`						`
IELD	PIPIN	G REN	10\	/AL			İ					1	
							·				<u> </u>		
ptions	s:							-			 	· · · · · · · · · · · · · · · · · · ·	
		ith had	kho	ne at	3000 ft/d	av					 		
							ackhoe	2 at 3000) ft/d	21/	<u> </u>	 	
						ui D	acknoe	at 5000	luu	ay I	 		
			_					-			 		
							C450-				 	 	_
Backi	ioe op	erauor	rec	quire	S I WOIKE	rat	\$ 15/110	our	-1-1'4'		-1-1	1	
Pipeiii	ne ext	raction	rec	uire	s ∠ worke	rs a	<u>(\$15/n</u>	our (in a	aaitid	on to tra	cknoe o	perator)	
Opera	iting s	chedul	e: 8	nrs	day, 5 da	ys/w	reek				ļ <u>-</u>		
											!		<u> </u>
ipelin	e Rem	oval (os	ts p	er ft of Pi	pe	<u> </u>						
				L									
nent													
	noe												
	\$	750	V	1	week	V	2	days	=\$	0.10			
			.^	5	davs	X					-		
Fuel													
		9		8	hrs		2	davs	=\$	0.05	<u> </u>		
			X		<u> </u>	X			-Ψ	0.00	 	-	-
		Jul			uay		3000	11			 	-	
												- 	
D = -1-							ļ					 	-
Васк			on								<u> </u>		
			Х			Х	2	days	=\$	0.08	<u> </u>	<u> </u>	
				-1	day		3000	ft			ļ	<u> </u>	
Pipeli			n								ļ		
			x	16	man hrs	Y			=\$	0.08	<u> </u>		
	ma	n hr		1	day -		3000	ft		. •	<u> </u>		-
	1									-			-
MAIN	PIPE	LINE	REI	VOV	AL COST	PE	R FT C	F PIPE	=\$	0.31			
							l		<u> </u>				
		-					-				-	1	•
-							 						
								 	-		 		
		•		 			 				 .		
				<u> </u>			ļ <u>.</u>		<u>-</u>		 		
<u> </u>				<u> </u>	 						<u> </u>	1	
, ,			<u> </u>		,					·	ļ	<u> </u> ;	
			L.,				<u> </u>	<u>. </u>		<u> </u>	<u> </u>	i.	
	ptions Trenc Pipelii Backh Fuel c Backh Pipelii Opera ipeline Backl Fuel Backl Fuel Pipelii Backl	ptions: Trenching w Pipeline ext Backhoe rer Fuel cost: \$ Backhoe op Pipeline ext Operating s ipeline Rem nent Backhoe \$ wee Fuel \$ ho Backhoe O \$ ma Pipeline Ex \$ ma MAIN PIPE	ptions: Trenching with back Pipeline extraction Backhoe rental: \$7 Fuel cost: \$9/oper Backhoe operation Operating schedul ipeline Removal Conent Backhoe \$ 750	ptions: Trenching with backler Pipeline extraction and Backhoe rental: \$750/ Fuel cost: \$9/operatin Backhoe operation recompled in extraction recompled in extraction recompled in extraction recompled in extraction recompled in extraction recompled in extraction in ex	Trenching with backhoe at Pipeline extraction and bate Backhoe rental: \$750/wee Fuel cost: \$9/operating hote Backhoe operation required Operating schedule: 8 hrs. ipeline Removal Costs part of the properties of	ptions: Trenching with backhoe at 3000 ft/d Pipeline extraction and backfilling w Backhoe rental: \$750/week Fuel cost: \$9/operating hour Backhoe operation requires 1 worke Pipeline extraction requires 2 worke Operating schedule: 8 hrs/day, 5 da ipeline Removal Costs per ft of Pi ment Backhoe \$ 750	ptions: Trenching with backhoe at 3000 ft/day Pipeline extraction and backfilling with b Backhoe rental: \$750/week Fuel cost: \$9/operating hour Backhoe operation requires 1 worker at Pipeline extraction requires 2 workers at Operating schedule: 8 hrs/day, 5 days/w ipeline Removal Costs per ft of Pipe ment Backhoe \$ 750 X 1 week X	ptions: Trenching with backhoe at 3000 ft/day Pipeline extraction and backfilling with backhoe Backhoe rental: \$750/week Fuel cost: \$9/operating hour Backhoe operation requires 1 worker at \$15/ho Pipeline extraction requires 2 workers at \$15/ho Operating schedule: 8 hrs/day, 5 days/week Ipeline Removal Costs per ft of Pipe Inent Backhoe \$1750	ptions: Trenching with backhoe at 3000 ft/day Pipeline extraction and backfilling with backhoe at 3000 ft/day Pipeline extraction and backfilling with backhoe at 3000 ft/day Backhoe rental: \$750/week Fuel cost: \$9/operating hour Backhoe operation requires 1 worker at \$15/hour Pipeline extraction requires 2 workers at \$15/hour (in a operating schedule: 8 hrs/day, 5 days/week ipeline Removal Costs per ft of Pipe ment Backhoe \$ 750 X 1	ptions: Trenching with backhoe at 3000 ft/day Pipeline extraction and backfilling with backhoe at 3000 ft/day Backhoe rental: \$750/week Fuel cost: \$9/operating hour Backhoe operation requires 1 worker at \$15/hour Pipeline extraction requires 2 workers at \$15/hour (in additional contents) Operating schedule: 8 hrs/day, 5 days/week ipeline Removal Costs per ft of Pipe nent Backhoe \$ 750 X 1 week X 2 days =\$ The content X 1 day X 3000 ft Backhoe Operation \$ 15 X 8 man hrs 1 day X 2 days =\$ The content 3 15 X 8 man hrs 1 day 3 The content 3 15 X 1 day 3 The conte	ptions: Trenching with backhoe at 3000 ft/day Pipeline extraction and backfilling with backhoe at 3000 ft/day Backhoe rental: \$750/week Fuel cost: \$9/operating hour Backhoe operation requires 1 worker at \$15/hour Pipeline extraction requires 2 workers at \$15/hour (in addition to trace) Operating schedule: 8 hrs/day, 5 days/week ipeline Removal Costs per ft of Pipe nent Backhoe \$1750 week \$1750 week \$19 \$19 \$10 \$10 \$10 \$10 \$10 \$10 \$10 \$10 \$10 \$10	ptions: Trenching with backhoe at 3000 ft/day Pipeline extraction and backfilling with backhoe at 3000 ft/day Backhoe operation requires 1 worker at \$15/hour Backhoe operation requires 2 workers at \$15/hour (in addition to trackhoe operating schedule: 8 hrs/day, 5 days/week ipeline Removal Costs per ft of Pipe ment Backhoe \$ \$ 750 X 1	Pitions:

		`						`							•		`	
VELL	FIELD F	ROAD	RECI	LAMA	TIO	N					i ·		-			1		
			П	1	Т	П			_					_				
SSUN	ptions	(Road	Is co	nstru	cted	he	fore	Janu	an	71.	1997	<u>. </u>	 	_				
													IDEO G	idali	no No. 12	App. C, Level 0	Cround FOC	ft boul
														ideii	11e NO. 12,	App. C, Level (3100110, 50C	i it naui)
													h = 10 ft				<u></u>	
3.	Roads	scann	ed pri	ior to	tops	011	applic	ation	at	cos	t of \$	<u> 36.</u>	.30/acre	(WD	EQ Guidel	ine No. 12, App	endix P)	
<u> 4.</u>	Gradin	g of so	:arifie	d road	ds pr	ior	to to	soil a	app	olica	tion a	<u>ıt c</u>	ost of \$3	8.45	/acre (WD	EQ Guideline N	o. 12, Appe	ndix G)
5.	Topsoi	l applie	ed at	cost c	of \$0	.60	/cy/10	000 ft	(V)	VDE	Q Gu	ide	eline No.	12,	App. C, Le	vel Ground, 500	ft haul)	
6.	Strippe	d tops	oil: av	verage	e de	pth	= 0.6	7 ft, a	ave	erage	e wid	th:	= 25 ft		,			
7.	Discing	/seedi	ng co	st of	\$200)/a	cre is	base	d o	n ac	tual o	cor	ntractor o	osts				
				1	T								Ĭ				1	
	Gravel	Road	Rase	Rem	oval	\overline{c}	sts n	er 100	70	ft of	Road	 						
	O.a.tc.							_					\$0.60					
		1000	צــٰٰٰٰ	(0.25	711	X	10		X	27	Cy 43	X		= \$	56			
		L.,	ᆜᆜ			ليا	<u></u>	اــــا	_	21	III.	닏	су				ļ	
	Scarific	cation	Costs						_			_						
		1000	Ift I	<u> 25</u>	5 ft	x	1	асге			X	Į,	\$36.30	= \$	21		<u> </u>	
			$\perp \perp \perp$	`				56E+0	04	ft ²	<u> </u>		acre	•				
	Gradin	g Cost	s per	1000	ft of	R	oad											
		1000	ft .	(25	5 ft	U	1	acre			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		\$38.45		00		1	_
			┌	$\overline{}$	T	^		56E+0	04	ft ²	X	l	acre	= \$	22			
	Topsoi	I Applie	cation	Cost	is ne	r 1						\vdash		_				
	10000	1000	IA I	10.67	7 14	H	25				су	-	\$0.60				 	
		1000	₩Ηχ	(0.67	111	X			Х			X		= \$	372		 	
		L			Щ.	Ц	L			27	π	<u> </u>	cy				ļ	
	Discing					00						L						
		1000	ft ,	, 25	5 ft	l V	1	acre			x	1	\$200	- 4	115			
	+ .	-			ī	^	4.3	56E+(04	ft ²	^	١. ا	acre ·	- 3	110 		-	
			1	1						_		П						
	TOTAL	WEL	FIFE	DRO	OAD	RF	CI A	MATI		CC	STS	PI	FR				·	
	10171	1000												- ¢	586		 	
	 	1000	 	1107	꾸.		-i OK		-	<u> </u>	1 1, 1	53	'''		500		 	
	4.	<u> </u>	Ш		<u>ــــــــــــــــــــــــــــــــــــ</u>	لِــا	4		Ų	40			ļ	-				
	ptions								ַ ע	, 19	97):	┖						
	Gravel										<u> </u>	L	· -		<u> </u>	-	<u> </u>	
																ine No. 12, App		
3.	Gradin	g of so	arifie	d road	ds pr	ior	to tor	soil a	app	olica	tion a	t c	ost of \$3	8.45	/acre (WD	EQ Guideline N	o. 12, Appe	ndix G)
4.	Topsoi	l applie	ed at	cost c	of \$0	.60	/cy/10	000 ft	(1)	/DE	Q Gu	ide	eline No.	12, /	App. C, Le	vel Ground, 500	ft haul)	
	Strippe													Ť			<u>'</u>	
													ntractor c	nsts				
<u> </u>	D.333.15	-	<u> </u>	7		Ϋ́			_	11 00	1	~	1000010	038				
	Scarific	notion (- DOT 1	1000	4	of Po	닠	_		 	-		-			 	
	Scanile		1 4.						۳	<u> </u>	 	-	626.26	-			 	
	<u> </u>	1000	/ 	(<u> </u>) ft	X		acre			Х		\$36.30	= \$	17		ļ	
		<u> </u>		_i	1		4.3	56E+(04	ft ²		L	acre	ــــــــــــــــــــــــــــــــــــــ	•			
	Gradin	g Cost	s per	1000	ft of	R	oad				.	•	ļ			•		
•		1000	ft ,	, 20	oft.	ζ.	1	acre			,,	П	\$38.45		40]	
			<u> </u>	\ <u> </u>	1	^	43	56E+0		42	X		acre	= \$	18			
	Topsoi	l Appli	ootior.	Cost	ts no	<u>-</u> 1						-	440	-				•
	Topsu								Jac				60.60			<u> </u>	 	
		1000	π,	0.40	<u> π</u>	x	20	π	X		cy	X	\$0.60	= \$	178			
			<u> </u>	1						27	ft ³	Ľ	су				1	
	Discing	3/Seed	ing C	osts r	per 1	00	0 ft of	Road	_t				1					
٠.]	1000		, 20) ft	1	1	acre			T	Γ	\$200		00	••	1	
	1		ין	\ 	7	١×١	1 2	56E+0		f+2	X	١.	acre	= \$	92			
	 		 	+-	+-	$\vdash \vdash$	-7.5		~	<u> </u>	 	-	- 4016	\vdash		.,	 	
	!	Ļ	<u> </u>		45	닞	-01.4	1 A T	بِي		CTC	بيا	<u> </u>			ļ	 	·
	TOTAL	MAICH																
	TOTAL	1000 I													305	, <u>.</u>		

						•	T							
Assum	ptions:													
1.	Based on a	ctual	200	1-2002	contra	acted o	costs	for trai	nspor	tatio	n to	and dis	posal at an	
	NRC-licens													
	Includes pr													
3.	All types of	waste	sh	ipped vi	bulk	contai	ner (30-yd ³ (dump	ster	or 3	30-yd³ dı	ump truck).	
4.	Each shipn	nent c	onta	ins 30,0	000 lb	s of m	ater	ial.						
		Trans	spo	rtation	Cost		Dis	sposal	Cost			Total		
			\$	66.67	/yd³	+	\$	85.00	/yd³	=	\$	151.67	/yd³	
										=	\$	5.62	/ft ³	

DISKING/SEEDING	-				 - -	•	
Assumptions:			 	-			
1. Based on	actual contr	actor costs		ļ <u>.</u>			
			-	 	 		
TOTAL DISKING/SE	EDING COS	TS PER ACR	E = \$	200			

	` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` `				`
Abbreviation	ns/Acronyms ·		<u>.</u>		
\$	Dollars				
\$/Kgal	Dollars per 1000 gallons	<u> </u>			
avg	average				
ft	feet				
ft2	square feet				
ft3	cubic feet				
gal	gallon	,			
gpm	gallons per minute				
H&S	Health and Safety				
H2S	Hydrogen Sulfide				
H2SO4	Sulfuric Acid				
HCI	Hydrochloric Acid				
Нр	Horsepower				
Kgal	1000 gallons				
Kwh	Kilowatt-hours			•	-
NaOH	Caustic Soda				
OD	Outside Diameter				
PPE	personal protective equipment				•
PV	Pore Volume Estimate				
reqm't	requirement				1
RO	Reverse Osmosis		· ************		
WDW	Waste Disposal Well				1
yd3	cubic yards	•			
yr	year				