

Smith Ranch - Highland Uranium Project

P. O. Box 1210

Glenrock, Wyoming USA 82637

Casper: Douglas:

307-235-1628 307-358-6541

Fax:

307-358-4533

January 23, 2008

Paul Michalak U.S. Nuclear Regulatory Commission Two White Flint North 11545 Rockville Pike, T7E18 Rockville, MD 20852-2738

RE:

Reynolds Ranch Surety Estimate

Source Material License SUA-1548, Docket No. 40-8964

Permit to Mine No. 633

Dear Mr. Michalak:

Please find attached the surety estimate for Reynolds Ranch. The surety reflects the restoration and reclamation cost estimates in 2007 dollars. Also included are the justifications for values presented in the first years projected activities. This surety will be combined with the current Smith Ranch surety of \$19,405,200.00 to bring the total surety to \$25,069,800.00

If you have any questions concerning this submittal please contact me at (307) 358-6541 ext. 46.

Regards,

John McCarthy

Manager, Safety, Health and Environment, RSO

cc:

S. Magnuson w/atta

C. Foldenauer

File SR 4.3.3.1 w/atta

L. Spackman, WDEQ/LQD w/atta

CAMECO RESOURCES INC SMITH RANCH URANIUM PROJECT REYNOLDS RANCH SURETY ESTIMATE REVISION

		 		1		1	-	
Tota	I Restoration	and Recla	mation Co	ost Estima	te			
I.	GROUNDWA	TER RESTO	DRATION C	COST				\$3,538,677
II.	EQUIPMENT	REMOVAL	& DISPOS	AL COST				\$31,347
III.	BUILDING D	EMOLITIO	N AND DIS	POSAL CO	ST			\$179,464
IV.	WELLFIELD	BUILDING	S & EQUIP	MENT REN	OVAL & I	DISPOSAL	COST	\$83,531
V.	WELL ABAN	DONMENT	COST				20.80 20.60	\$406,526
VI.	WELLFIELD	AND SATE	LLITE SUR	FACE REC	LAMATIO	N COST	por al	\$46,518
VII.	TOTAL MISC	ELLANEO	US RECLA!	MATION C	OST			\$205,203
	SUBTOTAL R	RECLAMAT	ION AND F	RESTORAT	ION COST	ESTIMAT	E	\$4,491,266
	·							
CPI I	SCALATOR J	ULY 1, 2007	TO NOV 20	007 = 0.90%))			\$40,421
						,	SUBTOTAL	\$4,531,688
	AE	MINISTRA	TIVE, OVE	RHEAD, AN	D CONTIN	GENCY IT	EMS (25%)	\$1,132,922
							TOTAL	\$5,664,610
			TOTAL C	ALCULATI	D SURETY	(IN 2008 I	OOLLARS)	\$5,664,600
							<u> </u>	
<u> </u>								
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RECURRING COST				· ·
	Item	Amount (\$)	Units	Cost Basis
ELECTRICAL				
	Power Cost (current actual costs)	\$0.048	kw/hr	Cost of electricity from current contract - Pacific Power and Light
	Kilowatt to Horsepower	\$0.176	kw/hp	
	Horsepower per gpm	\$0.167	hp/gpm	
	Per 1000 gallons pumped	\$0.600	per 1000 gal	
	Cost per Month (Satellite)	\$6,000	unit	
	Cost per Month (Main Office)	\$1,825	unit	
LABOR RATES			_	
	Operator	\$136.34	day	Labor costs from current in-field charges paid by PRI
	Environmental Manager	\$100,000	year	
	Environmental Technician	\$80,000	year	-
	Maintenance Technician	\$34,000	year	
CHEMICAL				
CHEMICAL	Reductant	\$0.30	per 1000 lb	Chemical costs from current, PRI vendor purchase agreements
	Cement	\$7.62	sack	Chemical costs from current, 1 Kt vendor purchase agreements
	Plug Gel	\$6.45	sack	
	Hydrochloric Acid	\$0.1375	lb	•
	Elution Unit Chemical Cost	\$900	unit	
	Elation of the Chemical Cost	3700	unn	
ANALYTICAL				
	Guideline 8	\$200	batch	Analytical costs from current contract with Energy Labs, Casper, Wyoming
	6 Parameters	\$70	batch	
	Other In-House (Radon, Biological, Soils, etc.)	\$50	batch	In-house estimate for material and labor
•				•
SPARE PARTS				
	Restoration Spare Parts	\$20,000	year	Costs for spare parts from operator experience
TRANSPORTATION				
AND DISPOSAL				
	11 (e)(2) Material Transport	\$1.33	cubic yard	Costs for Transportation and disposal from current contracts with NRC Licensed Facility
	11 (e)(2) Material Disposal	\$11.00	cubic yard	& contract trucker
	Soil/Solid Waste Transport (11(e) (2)	\$1.33	cubic yard	Costs for Transportation and disposal from current contracts with NRC Licensed Facility
	Soil/Solid Waste Disposal (11(e) (2)	\$3.70	cubic yard	& contract trucker
	Soil/Solid Waste (non-contam., on-site)	\$1.25	cubic yard	In-house estimate based on material cost and labor
VEHICLE				
VEHICLE OPERATION	•			
OPERATION	Unit Cost	\$20.21	unit	Cost per WDEQ Guideline 12
	Unit Cost	\$20.21	unit	Cost per wide. Q Guideune 12
PLANT				
DISMANTLING	•			
DISMANTENING	Concrete Footer Demolition	\$12.22	cubic foot	Costs per WDEQ Guideline 12, App. K
	Concrete Floor Demolition	\$3,40	cubic foot	Competition of Comments of Com
		45.11		
PLANT				
DECONTAMINATION	V			
AND DISPOSAL				
	Direct Disposal Plant Floor	\$1.25	cubic yard	Costs for Transportation and disposal from current contracts with NRC Licensed Facility
	Solution (HCL) Application Rate	\$0.57	square foot	In-house estimate based on actual material cost
PIPE REMOVAL				
	2-inch SDR 13.5 inj. & prod. Removal	\$0.91	foot	Costs for pipe removal from operator experience
	Trunkline Removal	\$0.43	foot	Includes labor and equimpment

REC	URR	INC	COST

	ltem	Amount (S	S) Units	Cost Basis
EQUIPMENT	Cat Trackhoe Shredder Cat Motor Grader Drill Rig Hose Reel Cementer	\$1,125 \$50,000 \$814.22 \$110.00 \$45.00 \$45.00	week acre hour hour	Costs for equipment rental from Wyoming Machinery, Casper, Wyoming. All inclusive (labor, repairs, fuel, and Mob) Equipment owned by PRI Costs per WDEQ Guideline 12, App. 11 Costs for equipment from operator experience Costs for equipment from operator experience
RECLAMATION	Dozer Scraper Pulling Reel Manlift Belly Dump	\$814.22 \$814.22 \$45.00 \$8,900.00 \$100.00	acre acre hour month hour	Costs for equipment from operator experience Costs per WDEQ Guideline 12, App. 11 Costs per WDEQ Guideline 12, App. 11 Costs for equipment from operator experience
	Discing and Seeding Top Soil Application	\$280 \$0.71	acre acre	Operator Experience based on Current Contractor Pricing Costs per WDEQ Guideline 12, App. 11
MIT	Mechanical Integrity Testing	\$188.17	well	Operator Experience based on Current Contractor Pricing

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Ground Water Restoration	Mine Unit-27					
PV Assumptions						
Wellfield Area (ft2) (HH x 20 patterns x 10,000)	1,923,061					
Wellfield Area (acres)	44.1					-
Affected Ore Zone Area (ft2)	1,923,061				· · · · · · · · · · · · · · · · · · ·	
Avg. Completed Thickness	20					
Porosity	0.27					
Flare Factor	1.7					
Affected Volume (ft3)	65,384,074					
Kgallons per Pore Volume	132,050					
Number of Patterns in Unit(s)						
Current	205					
Estimated next report period	0					
Total Estimated	205					
Total Estimated	203					
Number of Wells in Unit(s)				· · · · · · · · · · · · · · · · · · ·		
Production Wells						
Current	205					
Estimated next report period	0					
Total Estimated	205					
Injection Wells						
Current	572					
Estimated next report period	0					
Total Estimated	572		-	· ·		
Monitoring Wells						
Current	85					
Estimated next report period	0					
Total Estimated	85					
Number of Wells per Wellfield	862				·	
Total Number of Wells	862					
Average Well Depth (ft)	860					
I. Ground Water Sweep Costs						
PV's Required	1					
Total Kgals for Treatment	132,050					
Ground Water Sweep Unit Cost (\$/Kgal)	\$1.35					
Subtotal Ground Water Sweep Costs per Wellfield	\$178,346					-
Total Ground Water Sweep Costs	\$178,346					
					-	
II. Reverse Osmosis Costs					ļ	
PV's Required	306.140				 	
Total Kgals for Treatment	396,149					
Reverse Osmosis Unit Cost (\$/Kgal)	\$0.96					
Subtotal Reverse Osmosis Costs per Wellfield	\$378,661					
Total Reverse Osmosis Costs	\$378,661				1	
III. Chemical Reductant Costs						
Total Kgals for Treatment (2 Pore Volumes)	264099	<u> </u>	-			
Chemical Reductant Unit Cost (\$/Kgal)	\$0,30					
Subtotal Chemical Reductant Costs per Wellfield	\$79,230		-		+	-
Total Chemical Reductant Costs Total Chemical Reductant Costs	\$79,230					
Total Chemical Reductant Costs	\$13,230					
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Ground Water Restoration	Mine Unit-27		·			
IV. Elution Costs						
A. Elution Processing Costs						
Kgals/Elution Required	35,000					
Number of Elutions	15					
Processing Unit Cost (\$/Elution)	\$900					
Subtotal Processing Costs per Wellfield	\$13,500					
Total Elution Costs	\$13,500					
B. Deep Well Injection Costs						
Deep Well Injection Volume (Kgals/Elution)	12					
Total Kgals for Injection	180		· ·			
Deep Well Injection Unit Cost (\$/Kgals)	\$1.40					
Subtotal Deep Well Injection Costs	\$251					
Subtotal Well Injection Costs per Wellfield	\$13,751					
Total Well Injection	\$13,751	· · · · · · · · · · · · · · · · · · ·				
Total : Elution & Deep Well	\$27,251					
V. Monitoring and Sampling Costs						-12-111
A. Active Restoration Period						
Estimated Restoration Period (Years)	2					
1. UCL Sampling						
# of Wells	85	· · · · · · · · · · · · · · · · · · ·				
S/sample	\$50				-	
Samples/Year	6					
	\$51,000		-			-
Sub-total Restoration Analyses B. Stability Period	\$31,000					
Estimated Stabilization Period (Years)						
	- 1					
1. Full Suite Analyses (Guideline 8)	40					
# of Wells Samples/Year	3					
	\$200					
\$/sample	\$200					
2. Short List Analyses	40			,		· · ·
# of Wells	9	· · · · · · · · · · · · · · · · · · ·				
Samples/Year	\$70		- · · · · · · · · · · · · · · · · · · ·			
\$\sample						
Sub-total Stability Analyses	\$49,200					<u> </u>
Subtotal Monitoring and Sampling Costs per Wellfield	\$100,200					
Total Monitoring and Sampling Costs	\$100,200					
VI. Mechanical Integrity Test (MIT) Costs						
Five Year MIT Unit Cost (\$/well)	\$188					
Number of Wells (30% of Inj. and Rest. Wells)	172					
Subtotal Mechanical Integrity Testing Costs per Wellfield	\$32,289					
Total Mechanical Integrity Testing Cost	\$32,289					-
TOTAL RESTORATION COSTS PER WELLFIELD	\$782,477					
TOTAL WELLFIELD RESTORATION COST	\$782,477					
N/II D. H.H. Hallian Conta	RR-1			1		-
VII. Building Utility Costs	\$6,000					
Electricity (\$/Month)				1		
Number of Months	36 \$216,000			-	· ·	
Subtotal Utility Costs per Building	\$210,000					<u> </u>

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	24. 17. 19.						
Ground Water Restoration	Mine Unit-27			 			
Total Building Utility Costs	\$216,000			 			<u> </u>
VIII. Vehicle Operation Costs							
Number of Pickup Trucks/Pulling Units (Gas)	5	-					
Unit Cost in \$/hr (WDEQ Guideline No.12, Table D-1)	\$20.21		-				
Average Operating Time (Hrs/Year)	1000			 			
Total Number of Years (Average)	1000						
	\$404,200						
Total Vehicle Operation Costs	3404,200						
IX. Labor Costs							
Number of Environmental Managers/RSOs	. 1			•			
\$/Year MV	\$100,000						
Number of Restoration Managers	1						
\$/Year MV	\$80,000						
Number of Environmental Technicians	1						
\$/Year MV	\$34,000						
Number of Operators/Laborers	4		"				
\$/Year MV	\$34,000						
Number of Maintenance Technicians	1						
S/Year MV	\$34,000						
Number of Years	4						
Total Labor Costs	. \$1,536,000						
IX. Capital Costs							
Purchase RO Units (1X800 gpm Units)	\$600,000						
Total Capital Costs	\$600,000						
	•						
TOTAL GROUND WATER RESTORATION COSTS	\$3,538,677				<u> </u>	1	<u> </u>

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Engineer Remoral and Loading	
A Trial-type	
A. Thouse of Table	
Number of Tracks	
Number of Persons	
Number of Process 3	
Fr/One 25 16 16 16 16 16 16 16 1	
Survivers of Dosys 10 10 10 10 10 10 10 1	
Story Person \$130 \$50 \$50 \$10	
Section Above Section Sectio	
Number of Days 16 16 16 16 16 16 16 1	
Solution	
Subsoul Equipment Coast S.5.408	
Subtoral Tunkage Removal and Landring Coas \$11.952	
PVC Pipe Footage	
Average PVC Ppg Diameter (inches) 3	
Shredded PVC Pipe ("Volume Reduction ("I") 0-116	
Volume of Shredded PVC Ptp. (1") 64	
Seel Pipe Frootage	
Volume (If*)	
1. Labor	
Number of Persons 2	
Number of Days 13	
Number of Days 13 13 13 13 15 15 15 15	
Subtotal PVC/Steel Pipe Cubor Costs \$3,345	
Subjoint PVC/Stee Pipe Renoval and Leading Costs \$3,545	
C. Pumps	
Number of Pumps 13	
Volume of Pumps (ii')	
Number of Persons 1	
Pumps/Day 2	
Number of Days 5136	
Subtotal Labor Costs \$954	
Subtotal Pump Removal and Loading Costs \$954	
Diget Volume (n²) Diget	
Dryer Volune (ft ²)	
Number of Persons 0	
Ft/Day 0 Number of Days 0	
Number of Days	
SDav/Person \$136	_
Total Lavor Cost \$0	
Subtotal Equipment Removal and Loading Costs per Facility \$22.995	
Total Equipment Removal and Loading Costs	
Transportation and Disposal Costs (NRC-Licensed Facility) A. Tankage	
A. Tankage	
Volume for Tank Construction Material (ft ²) 397	
Volume for Disposal Assuming 10% Void Space (ft ²) 436 Transportation and Disposal Unit Cost (\$/ft ²) 512.33 Subrolar Tankage Transportation and Disposal Costs 55.376 PVC / Steef Pipe 64 Volume of Stredded PVC Pipe (ft ²) 64 Volume for Disposal Assuming 10% Void Space (ft ²) 70 Volume of Steef Pipe (ft ²) 9 Volume for Disposal Assuming 10% Void Space (ft ²) 0 Transportation and Disposal Unit Cost (\$/ft ²) 512.33 Subrolar PVC Pipe Transportation and Disposal Costs \$863	_
Transportation and Disposal Unit Cost (\$/ft') \$12.33	
B. PVC / Steel Pipe	
Volume of Shredded PVC Pipe (ft') 64 Volume for Disposal Assuming 10% Vold Space (ft') 70 Volume of Steel Pipe (ft')	
Volume for Disposal Assuming 10% Void Space (ft ²) 70 Volume of Steel Pipe (ft ²)	
Volume of Steel Pipe (n²)	
Transportation and Disposal Unit Cost (\$\setimes \text{fit}^2\)	
Subtotal PVC Pipe Transportation and Disposal Costs \$863	
C. Pulms	
Volume of Pumps (ft ¹) 64	
Volume for Disposal Assuming 10% Void Space (ft ³) 70	
Transportation and Disposal Unit Cost (%fr) \$12.33	
Subtotal Pump Transportation and Disposal Costs \$863	
Dyer Volume (ft ²) 0	
Volume for Disposal Assuming Dryer Remains Intact (n') 0	
Transportation and Disposal Unit Cost (\$\mathbb{S}(1)\$) \$12.33	
Total Dryer Transportation and Disposal Costs \$0	
Sublotal Equipment Transportation and Disposal Costs per Facility \$7.102 Total Equipment Transportation and Disposal Costs	
II. Health and Safety Costs	
II. Health and Safety Costs Radiation Safety Equipment \$1,250	
Isagarton Sarcty Equipmen \$1,250	
UBTOTAL EQUIPMENT REMOVAL AND DISPOSAL COSTS PER FACILITY \$31,347 TOTAL EQUIPMENT REMOVAL AND DISPOSAL COSTS \$31,347	

Subtotal Wall Decontamination Costs B. Concrete Floor Decontamination Area to be Decontaminated (ft²) HCl Acid Wash, including labor (\$/ft²) Subtotal Concrete Floor Decontamination Costs C. Deep Well Injection Costs		0 \$0.59						
I. Decontamination Costs A. Wall Decontamination Area to be Decontaminated (ft²) HCl Acid Wash, including labor (\$\seta(ft²)\$ Subtotal Wall Decontamination Costs B. Concrete Floor Decontamination Area to be Decontaminated (ft²) HCl Acid Wash, including labor (\$\seta(ft²)\$) Subtotal Concrete Floor Decontaminated (ft²) Subtotal Concrete Floor Decontamination Costs C. Deep Well Injection Costs	0 \$0.59 \$0	0 \$0.59 \$0						
A. Wall Decontamination	\$0.59 \$0	\$0.59 \$0						
Area to be Decontaminated (ft²)	\$0.59 \$0	\$0.59 \$0				1		1
HCl Acid Wash, including labor (\$\setimes ft^2\$) Subtotal Wall Decontamination Costs	\$0.59 \$0	\$0.59 \$0				1		
Subtotal Wall Decontamination Costs	\$0	\$0			1			
B. Concrete Floor Decontamination Area to be Decontaminated (ft²) HCl Acid Wash, including labor (\$\s^2\$) Subtotal Concrete Floor Decontamination Costs C. Deep Well Injection Costs	0							
Area to be Decontaminated (ft²) HCl Acid Wash, including labor (\$\s^2\$) Subtotal Concrete Floor Decontamination Costs C. Deep Well Injection Costs								
HCl Acid Wash, including labor (\$/ft²) Subtotal Concrete Floor Decontamination Costs C. Deep Well Injection Costs								1
Subtotal Concrete Floor Decontamination Costs C. Deep Well Injection Costs	\$0.21	9000						
Subtotal Concrete Floor Decontamination Costs C. Deep Well Injection Costs		\$0.21						
C. Deep Well Injection Costs	\$0	\$1,873						
					İ			
Total Kgals for Injection	0	9						
	\$1.40	\$1.40						
Subtotal Deep Well Injection Costs	\$0	\$13						
Subtotal Decontamination Costs per Building	\$0	\$1,886						
Total Decontamination Costs			 					
					-			
II. Demolition Costs			 					
A. Building			 					
Assumptions:								
Dryer bldg. demolition unit cost of \$0.73/ft ³ for additional			 					
radiation safety equipment	·							
	660.3	402,000						
Demolition Unit Cost per WDEQ Guideline No.12, App.K (\$/ft³) \$	0.178	\$0.178						
	\$118	\$71,556						
B. Concrete Floor								
Area of Concrete Floor (ft ²)	0	13400						i
Demolition Unit Cost per WDEQ Guideline No.12, App. K (\$/ft³)	\$3.17	\$3.05						
Subtotal Concrete Floor Demolition Costs	\$0	\$40,870						,
C. Concrete Footing								
Length of Concrete Footing (ft)	0	463						
	12.22	\$12.22						
Subtotal Concrete Footing Demolition Costs	\$0	\$5,658						
	\$118	\$118,084	 		_			
Total Demolition Costs	- 1		 					
				-				
III. Disposal Costs			 					
A. Building			 				-	,I
Volume of Building (cy)	24	14889					ļ	,
1. On-Site].		 					
Assumptions:			 			ļ		
On-site disposal cost of \$1.25/cy			 					
Percentage (%)	100	100	 					
Volume for Disposal (cubic yards)	24	14889						
	\$1.25	\$1.25						
Subtotal On-Site Disposal Costs	\$31	\$18,611						

	DDW Sa	tellite				
Building Demolition and Disposal		₹-2				
2. NRC-Licensed Facility	- Sumungs 51				<u> </u>	
Percentage (%)	0	0				
Volume for Disposal (ft ³)	0	0				
Volume for Disposal Assuming 10% Void Space (ft³)		0				
Transportation and Disposal Unit Cost (\$/ft³)	\$12.33	\$12,33				
Subtotal NRC-Licensed Facility Disposal Costs	\$0	\$0				
Subtotal Building Disposal Costs	\$31	\$18,611				
B. Concrete Floor		- '				
Area of Concrete Floor (ft ²)	0	13400				
Average Thickness of Concrete Floor (ft)	0.75	0.75				
Volume of Concrete Floor (ft ³)	0	10050				,
Volume of Concrete Floor (cy)	0	372				
I. On-Site						
Percentage (%)	0	75				
Volume for Disposal (cy)	0	279				
Disposal Unit Cost per WDEQ Guideline No.12,App.K (\$/cy)	\$6.39	\$6.39				
Subtotal On-Site Disposal Costs	\$0	\$1,784	·			
2. NRC-Licensed Facility						
Assumptions:						
Additional \$2.60/cy for segregation of concrete						
Percentage (%)	0	25				
Volume for Disposal (ft ³)	0	2513				
Segregation and Loading Unit Cost (\$/ft3)	\$2,60	\$2.60				
Transportation and Disposal Unit Cost (\$/ft³)	\$12,33	\$12.33				
Subtotal NRC-Licensed Facility Disposal Costs	\$0	\$37,512				
Subtotal Concrete Floor Disposal Costs	\$0	\$39,296				
C. Concrete Footing						
Length of Concrete Footing (ft)	0	463				
Average Depth of Concrete Footing (ft)	4	4				
Average Width of Concrete Footing (ft)	1	1				
Volume of Concrete Footing (ft ³)	0	1852				,
Volume of Concrete Footing (cy)	0	69				
Disposal Unit Cost per WDEQ Guideline No.12, App.K (\$/cy)	\$6.39	\$6.39				
Subtotal Concrete Footing Disposal Costs	\$0	\$438				
Subtotal Disposal Costs per Building	\$31	\$58,345				
Total Disposal Costs						
IV. Health and Safety Costs				-		
Radiation Safety Equipment RSO removed per item cost and generated	\$0	\$1,000				
one lump sum cost!	\$0	\$1,000				
Total Health and Safety Costs		-				
		+				
SUBTOTAL BUILDING DEMOLITION AND DISPOSAL COSTS	\$149	\$179,315				
TOTAL BUILDING DEMOLITION AND DISPOSAL COSTS	\$179,464					

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Bui	lding	Demo	lition	and I	Disposal					
I.	Das	ontan	inadi	- C			-			
1.	_	,					-			
	A.	Wall				1 (02)	-			
	-				ontaminate		-			
	1					labor (\$/ft²)				
		_	_		contaminatio		ļ			
	B.				econtaminat					
	ļ				contaminate					
						labor (\$/ft ²)				
	_					ntamination C	osts			
	C.				on Costs		<u> </u>			
					r Injection					
		De	ep W	ell Inj	ection Unit (Cost (\$/Kgals)				
		Subto	tal De	ep W	ell Injection	Costs				
	Sub	total [Decont	amina	tion Costs p	er Building				
	Tot	al Dec	ontan	ninatio	on Costs					
	-							,		
<u>II.</u>	+	nolitio		ts			-			
	A.	Build		<u> </u>			ļ			
		_ As	sump				L			
	ļ	<u> </u>					0.73/ft ³ for ad	ditional		
					afety equipn	nent				
					ilding (ft³)	L				
							line No.12,Ap	p.K (\$/ft³)		
		•			Demolition	Costs				
	B.	Conc								
					ete Floor (ft					
		De	emolit	ion Ur	nit Cost per	WDEQ Guide	line No.12,Ap	p.K (\$/ft ³)		
		Subto	tal Co	ncrete	Floor Dem	olition Costs				
	C.	Conc	rete F	ooting						
		Le	ngth o	of Con	crete Footin	g (ft)				
		De	emolit	ion Ur	nit Cost per	line No.12,Ap	p.K. (\$/ft ³)			
	İ	Subtotal Concrete Footing Demolition Costs								
_	Sub	ubtotal Demolition Costs per Building								
		otal Demolition Costs								
=			\Box							
111.		posal								
	Α.	Build								
	-			Buildi	ng (cy)					
	<u> </u>	1. Oı	1-Site	L						
		$\sqcup \!\!\! \perp$	Assu	mptio						
		<u> </u>	Ľ.			ost of \$1.25/c	y		·	
				entage						
	-		Volu	ıme fo	г Disposal (cubic yards)				
			Disp	osal L	Init Cost (\$/	cy)				
	1	St	btotal	On-S	ite Disposal	Costs				

		<u> </u>		
Buil	ding		nolition and Disposal	
_	<u> </u>	2. N	NRC-Licensed Facility	
		 	Percentage (%)	
		\vdash	Volume for Disposal (ft³)	
		\perp	Volume for Disposal Assuming 10% Void Space (ft°)
		-	Transportation and Disposal Unit Cost (\$/ft³)	
	L		Subtotal NRC-Licensed Facility Disposal Costs	
	_		total Building Disposal Costs	
	В.		crete Floor	
_	-		Area of Concrete Floor (ft ²)	
			Average Thickness of Concrete Floor (ft)	
			Volume of Concrete Floor (ft ³)	
			/olume of Concrete Floor (cy)	
	ļ	1. C	On-Site On-Site	
		\vdash	Percentage (%)	
		-	Volume for Disposal (cy)	
		<u> </u>	Disposal Unit Cost per WDEQ Guideline No.12,A	pp.K (\$/cy)
	_		Subtotal On-Site Disposal Costs	
		2. N	IRC-Licensed Facility	
	-		Assumptions:	
		H	Additional \$2.60/cy for segregation of concre	ete
			Percentage (%)	
	_		Volume for Disposal (ft ³)	
	_	₩	Segregation and Loading Unit Cost (\$/ft³)	
•	_	-	Transportation and Disposal Unit Cost (\$/ft3)	
			ubtotal NRC-Licensed Facility Disposal Costs	
-			total Concrete Floor Disposal Costs	
	C.		crete Footing	
			ength of Concrete Footing (ft)	
_			Average Depth of Concrete Footing (ft)	
	-		Average Width of Concrete Footing (ft)	
_	-		/olume of Concrete Footing (ft³)	
_	-		/olume of Concrete Footing (cy)	<u> </u>
_	-		Disposal Unit Cost per WDEQ Guideline No.12,App.	K (b/cy)
	Cut		total Concrete Footing Disposal Costs	
			Disposal Costs per Building sposal Costs	
	101	ai Di	sposar Costs	
IV.	Hea		nd Safety Costs	
	L	Radi	iation Safety Equipment RSO removed per item cost	and generated
		one	lump sum cost!	
	Tot	al He	ealth and Safety Costs	
SI ID	TO	LAL!	BUILDING DEMOLITION AND DISPOSAL COST	c
			LDING DEMOLITION AND DISPOSAL COST	
. 0	AL	DUI	EDING DEMOCRITION AND DISPOSAL COSTS	· · · · · · · · · · · · · · · · · · ·

										 		,		
1						_								
Wellf	ield l	Buildings and Equip	ment Remo	val and Dis	posal	<u>N</u>	Aine Unit-27			 			ļ.,	ļ
1.	Well	field Piping								 -				
 		ssumptions:												
		Number of Header	Houses per V	Vellfield			11			 	 	1		
		Length of Piping p					2000			 				
-	-			use (II)			24000							
	A	Total Length of Pip					24000			 				
	A. K	emoval and Loading		0 (0.0			\$0.42	-		 -			 	
		Wellfield Piping R					\$10,080			 				-
		ubtotal Wellfield Pip					\$10,080			 			-	
	B. T	ransport and Disposa			acility)					 -				
		Average Diameter				1	2			 				
	-	Chipped Volume F					0.005			 				
		Chipped Volume p					120			 				
		Volume for Dispos					132					ļ		<u> </u>
		Transportation and					\$12.33			 				
		ubtotal Wellfield Pip		and Dispos	al Costs		\$1,628			 				ļ
		field Piping Costs pe	r Wellfield				\$11,708							<u></u>
	C. C	Capitol Costs								 				
		Fiberglass/ poly / I					\$50,000							
		BFI Containers (20	@\$7,800.00 €	ach) (Opera	ntor Owned)		\$15,600							
	Tota	l Wellfield Piping C	Costs				\$77,308							
												-		-
II.		Pumps and Tubing								 				
	A	ssumptions:								 -		ļ		ļ
					der ground water resto	oration labor costs				 ļ				<u> </u>
		60% of production			umps and/or tubing					 				
	<u> A. P</u>	ump and Tubing Trai		nd Disposal						 		-		
		Number of Prod					205			 				
		Number of Inject	ction Wells				572							
	1	. Punp Volume												
		Number of Prod		with Pumps	5		. 123			 				
		Average Pump					1							
		Pump Volume p	er Wellfield	(ft³)			123					1.		
	2	. Tubing Volume								 				
		Assumptions:												
	\Box				on average well depth	h minus 25 ft				 <u> </u>				
		Number of Proc	luction Wells	with Tubin	3		123			 				
		Number of Injec					343							
		Average Tubing	Length per V	Well (ft)			835	Ì		 1		T :		
		Tubing Length					389110			 -				
		Diameter of Pro			Tubing (inches)		2							
	\neg	Diameter of Inje				77.	1.25							
	\dashv	Chipped Volum			*/		0.005	-	-				l	
		Chipped Volum			· · · · · · · · · · · · · · · · · · ·	-	1946			 	1			

Wing tip 2P P. (IP)	Mine Unit-27	
Wellfield Buildings and Equipment Removal and Disposal		
Volume of Pump and Tubing (ft ³)	2069	·
Volume for Disposal Assuming 10% Void Space (ft ³)	2276	
Transportation and Disposal Unit Cost (\$/ft ³)	\$12.33	
Subtotal Pump and Tubing Transport and Disposal Costs	\$28,063	
Pump and Tubing Costs per Wellfield	\$28,063	
Total Pump and Tubing Costs	\$28,063	
III. Buried Trunkline		
Assumptions:		
Length of Trunkline Trench (ft)	7105	
A. Removal and Loading	. ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
Main Pipeline Removal Unit Cost (\$/ft of trench)	\$0.84	
Subtotal Trunkline Removal and Loading Costs	\$5,968	
B. Transport and Disposal Costs (NRC-Licensed Facility)	\$3,700	
1. 1" Carbon Steel Trunkline		
Piping Length (ft)		
Volume (ft³)		
2. 1" HDPE Trunkline		
		· · · · · · · · · · · · · · · · · · ·
Piping Length (ft)		
Chipped Volume Reduction (ft ³ /ft)		
Chipped Volume (ft ³)		
3. 3" HDPE Trunkline		
Piping Length (ft)	7105	
Chipped Volume Reduction (ft ³ /ft)	0.022	
Chipped Volume (ft ³)	156	
4. 6" HDPE Trunkline .		
Piping Length (ft)	2410	
Chipped Volume Reduction (ft³/ft)	0.078	
Chipped Volume (ft ³)	188	
5. 8" HDPE Trunkline		
Piping Length (ft)	4100	
Chipped Volume Reduction (ft ³ /ft)	0.15	
Chipped Volume (ft ³)	615	
6. 10" HDPE Trunkline		
Piping Length (ft)	0	
Chipped Volume Reduction (ft ³ /ft)	0.277	
Chipped Volume (ft ³)	0.277	
7. 12" HDPE Trunkline		
Piping Length (ft)	1460	
Chipped Volume Reduction (ft ³ /ft)	0,293	
Chipped Volume (R ³)	427.78	
8. 14" HDPE Trunkline	427,70	
Piping Length (ft)	740	
	/40	

Wellfield Buildings and Equipment Removal and Disposal	Mine Unit-27					
Chipped Volume Reduction (ft ³ /ft)	0.359			<u>.</u>		
Chipped Volume (ft ³)	266					
9. 16" HDPE Trunkline						
Piping Length (ft)	1440	•				70.77
Chipped Volume Reduction (ft ³ /ft)	0.4					
Chipped Volume (ft ³)	576					
10.18" HDPE Trunkline						
Piping Length (ft)						
Chipped Volume Reduction (ft ³ /ft)	0.62					
Chipped Volume (ft³)	. 0					
					100.004	
Total Trunkline Chipped Volume (ft ³)	2228.73					
Volume for Disposal Assuming 10% Void Space (ft ³)	2452					
Transportation and Disposal Unit Cost (\$/ft ³)	\$12.33					
Subtotal Trunkline Transport and Disposal Costs	\$30,233					
Trunkline Decommissioning Costs per Wellfield	\$36,201	 				
Total Trunkline Decommissioning Costs	. \$36,201					
	400,201					
IV. Well Houses						
Total Quantity	777					
Average Well House Volume (ft ³)	1.86					
A. Removal						
Total Volume (ft ³)	1445.22					
Demolition Unit Cost per WDEQ Guideline No.12,App.K (\$/ft³)	\$0.178					
Subtotal Well House Demolition Costs	\$257					
B. Survey and Decontamination						
Assumptions:						
Cost per Well House	3,97	•				
Subtotal Survey and Decontamination Costs	\$3,085					
C. Disposal at NRC licensed Facility						
Total Volume (cy)	54					
Volume for Disposal Assuming 10% Void Space (cy)	59					
Transportation and Disposal Unit Cost (\$/ft³)	\$12.33					
Subtotal NRC Licensed Facility Disposal Costs	\$727					
Well House Removal and Disposal Costs per Wellfield	\$4,069	 				
Total Well House Removal and Disposal Costs	\$4,069					
	37,007					
V. Header Houses (Includes Booster Stations)						
Total Quantity	11					
Average Header House Volume (fl ³)	12.5					
A. Removal						
Total Volume (ft ³)	137.5					
Demolition Unit Cost per WDEQ Guideline No.12, App.K (\$/ft³)	\$0.178		:			

Vellfield Buildings and Equipment Removal and Disposal	Mine Unit-27							ŀ	
Subtotal Building Demolition Costs	\$24			T	ĺ				
B. Survey and Decontamination		1							
Assumptions:									
Cost per Header House	\$312								
Subtotal Survey and Decontamination Costs	\$3,428								
C. Disposal									
Total Volume (cy)	5								
Volume for Disposal Assuming 10% Void Space (cy)	6					·			
Demolition Unit Cost per WDEQ Guideline No.12,App.K (\$/ft³)	\$6.39								
Subtotal On-Site Disposal Costs	\$38								
Header House Removal and Disposal Costs per Wellfield	\$3,490								
Total Header House Removal and Disposal Costs	\$3,490								
						,			
OTAL REMOVAL AND DISPOSAL COSTS PER WELLFIELD	\$83,531								
TOTAL WELLFIELD BUILDINGS AND EQUIPMENT REMOVAL AND DISPOSAL			_		Ī				
COSTS	\$83,531	ļ							

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	30 57 55								
Well Abandonment	Mine Unit-27			 	ļ	ļ			
I. Well Abandonment (Wellfields)					ļ	-			
# of Production Wells	205			 	<u> </u>				
# of Injection Wells	572				ļ				
# of Monitoring Wells	85								
Total Number of Wells	862								
Average Diameter of Casing (inches)	5								
Average Depth (ft)	860								
Well Abandonment Unit Cost (\$/well)	\$381								
Subtotal Abandonment Cost per Wellfield	\$328,482								
Total Wellfield Abandonment Costs	\$328,482				1				
II. Waste Disposal Well Abandonment	DDW RR1								
A. Well Plugging				 					
All lump sum costs									
Subtotal Well'Plugging Costs per Well - based on current DDW Permit	\$71,342			<u> </u>					
B. Pump Dismantling and Decontamination]		
Number of Persons	2								
Number of Pumps	2								
Pumps/Day	0.5								
Number of Days	4					'			
. \$/Day/Person	\$136								
Subtotal Dismantling and Decon Costs per Well	\$1,091								
C. Tubing String Disposal (NRC-Licensed Facility)				 <u> </u>				<u> </u>	
Length of Tubing String (ft)	10100								
Diameter of Tubing String (inches)	2.875			<u> </u>	-				
Volume of Tubing String (ft ³)	455								
Transportation and Disposal Unit Cost (\$/ft ³)	\$12.33			 +	-	<u> </u>			
Calear Tarking Sering Disposal Crit Cost (3/11)	\$5,611			 +	-	-			-
Subtotal Tubing String Disposal Costs per Well		60	60	 		 			-
Subtotal Waste Disposal Well Abandonment Costs per Well	\$78,044	\$0	\$0	 		-			
Total Waste Disposal Well Abandonment Costs	\$78,044			1		-	-		-
TOTAL WELL ABANDONMENT COSTS	\$406,526			 					
TOTAL WELLADANDONMENT COSTS	3400,320			1		1	!	1	1

field and Satellite Surface Reclamation	Mine Unit-27							
Wellfield Pattern Area, Laydown Area, and Road Reclan	agtion							-
Area (acres)	50	20						
Disking/Seeding Unit Cost (\$/acre)	\$2							
Subtotal Pattern Area, Laydown Area, and Road Reclamation			i				 	_
Total Wellfield Area Reclamation Costs	\$14,0							_
	374	***						
			+					-
Satellite Area Reclamation	RR	-1						
Assumptions:								
Area of Disturbance (acres)		3						
Average Depth of Stripped Topsoil (ft)		1						
Surface Grade: Level Ground								_
Average Length of Topsoil Haul (ft)	10	00	<u> </u>					
A. Ripping Overburden with Dozer								_!
Ripping Unit Cost per WDEQ Guideline No.12,	App.II (\$/acre) \$814.							
Subtotal Ripping Costs	\$2,4	43						-
B. Topsoil Application with Scraper								-
Volume of Topsoil Removed (cy)	48							!
Ripping Unit Cost per WDEQ Guideline No.12,								
Subtotal Topsoil Application Costs	\$3,4	36						
C. Discing and Seeding								
Discing/Seeding Unit Cost (\$/acre)	\$2					1		!
Subtotal Discing/Seeding Costs	\$8			1				- 1
Subtotal Surface Reclamation Costs per Satellite .	\$6,7	19						
Total Satellite Building Area Reclamation Costs	\$6,7	19						
		· · · · · · · · · · · · · · · · · · ·						
		1 1			i i			
Surface Reclamation	Mine Unit-27							
A. Removal and disposal of contaminated soil around wells								
Volume of contaminated soil (0.37 yd3 per injection a		49						1
Disposal of contaminated soil (\$/yd3) (As per Byproc						•		
Equipment (Backhoe \$65/hr)	\$9,343.							
Labor (1 man-hour (\$17.hr) per 2 Yd3 - estimate)	\$2,443.	67						
Subtotal removal and disposal of contaminated soil	\$11,799.	42						
	Total \$11,799.	42						
B. Disc and seeding								
Disc and seeding (est. \$280/acre)	\$280.	00						
Subtotal Recontour and Seeding	\$14,000		1					_
	Total \$14,000.							
Total Sur	face Reclamation \$25.7		1					
THE PROPERTY OF THE PROPERTY O			i	<u> </u>				-
Total	\$46,5	18	1					+
- I I I I I I I I I I I I I I I I I I I	340		1					-

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Miscellaneous Reclamation			
I. CPP/Office Area/Pilot Plant/Maint. Shop/Chem. Storage/Yard Reclamation			
Assumptions			
Concrete Pad= 0.3 acres Total Area = 10.57 acres			
A. Concrete Pad		+	
			 -
Area of Concrete Pad (ft²)	0		
Demolition Unit Cost per WDEQ Guideline No.12,App.K (\$/ft²)	\$3.40		
Average Thickness of Concrete Floor (ft)	0.50		
Volume of Concrete Floor (ft ³)	0		
Volume of Concrete Floor (cy)	0		
On-Site Disposal Unit Cost per WDEQ Guideline No.12,App.K (\$/cy)	\$5.00		
Subtotal Concrete Pad Demolition and Disposal Costs	\$0		· · · · · · · · · · · · · · · · · · ·
B. Gravel Road Base Removal			
Assumptions			
Average haul distance (ft)	0		
Gravel Road Base Width (ft) Gravel Road Base Area (acres)	0.0		
	0.5		
Average Road Base Depth (ft) Volume of Road Base (cy)	0.3		
Removal Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$0.87	····	
Subtotal Gravel Road Base Removal Costs	\$0.87		
B. Ripping Overburden with Dozer			
Overburden Surface Area (acres)	0.0		
Ripping Unit Cost per WDEQ Guideline No.12, App.I1 (\$/acre)	\$814.22		
Subtotal Ripping Overburden Costs	. \$0		
C. Topsoil Application			
Assumptions:			
Area of surface disturbance (ft ²)	0		
Average thickness of topsoil (ft)	1		
Average haul distance (ft)	0		
Surface grade (%)	0%		
Volume of Topsoil (cy)	0		
Topsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$1.12		
Subtotal Topsoil Application Costs	\$0		
D. Discing/Seeding			
Assumptions			
Surface Area (acres)	0		
Discing/Seeding Unit Cost (\$/acre)	\$280		
Total Discing/Seeding Costs Total CPP/Office/Yard Area Reclamation	\$0 \$0		
Total CFF/Office/Fard Area Rectamation	30		
II. Access Road Reclamation	RR-1 Access	Access to WF	
A. Assumptions			
Surface grade	1%	1%	
Length of Road (ft)	1000	12000	
Width of Road (ft)	40	14	
Area of road (acres)	0.9	3.9	
B. Gravel Road Base Removal			
Assumptions (A)	1000	1000	
Average haul distance (ft) Gravel Road Base Width (ft)	30	1000	
Gravel Road Base Width (ft) Gravel Road Base Area (acres)	0,69	2.75	
Average Road Base Depth (ft)	0.5	0.5	
Volume of Road Base (cy)	556	2222	
Removal Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$0.87	\$0.87	
Subtotal Gravel Road Base Removal Costs	\$481	\$1,924	
C. Ripping Overburden with Dozer			
Overburden Surface Area (acres)	0.9	3.9	
Ripping Unit Cost per WDEQ Guideline No.12, App.I1 (\$/acre)	\$814.22	\$814.22	
Subtotal Ripping Overburden Costs	\$741	\$3,135	
D. Topsoil Application			
Assumptions			
Average haul distance (ft)	1500	1500	
Topsoil Surface Area (ft²)	39639.6	167706	
Depth of Topsoil (ft)	0.5	0.5	
Volume of Topsoil (cy)	734	3106	
Topsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$1.50	\$0.82	
Subtotal Topsoil Application Costs	\$1,101	\$2,547	
E. Discing/Seeding			
Assumptions			

				1
Miscellaneous Reclamation				
Surface Area (acres)	0.9	3.9		
Discing/Seeding Unit Cost (\$/acre)	\$280	\$280		
Subtotal Discing/Seeding Costs	\$255	\$1,078		
Subtotal Reclamation Costs per Access Road	\$2,578	\$8,684		
Total Access Road Reclamation Costs	\$11,262			
	Trunk Line #1	Trunk Line #2		
III. Trunk Lines	(RR-1 to MU27)	(MU27 to HH)		
Length of Trench (ft)	22000	11000		
A. Removal and Loading	22000	11000		
Main Pipeline Removal Unit Cost (\$/ft of trench)	\$0.91	\$0.91		
Subtotal Trunkline Removal and Loading Costs	\$20,020	\$10,010		
B. Transport and Disposal Costs (NRC-Licensed Facility)	\$20,020	\$10,010		
1 2" HDPE Trunkline				
Piping Length (ft)	0	0		
Chipped Volume Reduction (ft³/ft)	0.005	0.005		
Chipped Volume (ft ³)	0	0		
1. 3" HDPE Trunkline	- i	<u>~</u>		
Piping Length (ft)	0	. 0		
Chipped Volume Reduction (ft³/ft)	0.022	0.022		
Chipped Volume (ft ³)	0.022	0		
2. 6" HDPE Trunkline				
Piping Length (ft)	. 0	0		
Chipped Volume Reduction (ft³/ft)	0.078	0.078		
Chipped Volume (ft³)	0	0		
3. 8" HDPE Trunkline		<u>v</u>		
Piping Length (ft)	0	11000		
Chipped Volume Reduction (ft³/ft)	0.15	0.15		
Chipped Volume (ft³)	0	1650		
3. 10" HDPE Trunkline		1030		
Piping Length (ft)	0	0		
Chipped Volume Reduction (ft³/ft)	0.277	0.277		
Chipped Volume (ft³)	0	0		
4. 12" HDPE Trunkline				
Piping Length (ft)	0	0		
Chipped Volume Reduction (ft³/ft)	0.293	0.293		
Chipped Volume (ft ³)	0	0		
5. 14" HDPE Trunkline				
Piping Length (ft)	0	0		
Chipped Volume Reduction (ft³/ft)	0.359	0.359		
Chipped Volume (R ³)	0.009	0		
5. 16" HDPE Trunkline				
Piping Length (ft)	. 0	0		
Chipped Volume Reduction (ft ³ /ft)	0.4	0.4		
	0.4	0.4		
Chipped Volume (ft ³) 6 18" HDPE Trunkline		0		
Piping Length (ft)	22000	0		
Chipped Volume Reduction (ft³/ft)	0.47	0.47		
Chipped Volume Reduction (It /It) Chipped Volume (ft ³)	10340	0.47	i	
	10340			
Volume for Disposal Assuming 10% Void Space (ft³)	11374	1815		
Transportation and Disposal Unit Cost (NRC-Licensed Facility) (\$/ft ³)	\$12.33 \$140,241	\$12.33 \$22,379		
C. Discing/Seeding	\$140,241	\$22,379		
Assumptions:				
Width of Pipeline Trench (ft)	4	4		
Area of Pipeline Trench (acres)	2.0		[
Discing/Seeding Unit Cost (\$/acre)	\$280	\$280		
Subtotal Discing/Seeding Costs	\$566			
Subtotal Reclamation Costs per Pipeline	\$160,827	\$32,672		
Total Pipeline Reclamation Costs	\$193,499			
IV. Settling Basin/Evap. Pond Reclamation	Evaporation Pond	SettlingPond		
A. Soil Sampling and Monitoring				
Number of Soil Samples	0			
\$/Sample	\$50	\$50		
Subtotal Soil Sampling and Monitoring Costs	\$0	\$0		

					1		
	laneous Reclamation						
В	Liner/Subsoil Removal and Disposal						
	Assumptions:						
	Clay liner and subsoil constitute by-pro	duct material					
	Thickness of clay liner (ft)		. 0	0			
	Thickness of contaminated subsoil (ft)		0	0			
	Removal and Loading Unit Cost based	on engineer's design					
\neg	report and Cat Performance Handbo						
_	Width of Pond (ft)		0	0			
	Length of Pond (ft)		0	0			
	Depth of Pond (ft)		0	0			
	Surface area of pond (ft²)		0	0			
		s not By-Product, therefore can stay in place)	0				
		s not by-rioduci, merelore can stay in place)	0	0			
	Volume of Clay Liner (cy)	0 . (0)		\$3.63			
	Clay Liner Removal and Loading Unit		\$3.63				
_ _	Subtotal Liner Removal and Loading Costs		\$0	\$0			
	Transportation and Disposal						
	Volume of Clay Liner (ft ³)		0	0			
	Volume of Geotextile Liner (ft ³)		. 0	0			
T	Volume of Geotextile Liner @ 40% vo	d (ft²)	0	0			
	Transportation and Disposal Unit Cost	(\$/ft³)(As per byproduct material contract)	\$12.33	\$12.33			
\neg	Subtotal Liner Transportation and Disposal		\$0	\$0			
-	Subtotal Liner Removal and Disposal Costs		\$0	\$0	İ		
	C. Grade and Contour		-				
	Volume of Embankment Material (CY)		0	0			
	Average Grade (%)		0	0			
	Distance (ft)		0	0	***		
		Cuideline No. 12. Ann E (\$/m)	\$0.092	\$0.161			
	Material Moving Unit Cost per WDEQ	Guideline No.12, App.E (5/cy)					
	Subtotal Grade and Contour Costs		\$0	. \$0			
C	C. Topsoil Application						
	Assumptions:						
	Area of surface disturbance (ft²)		0	0			
	Average thickness of topsoil (ft)		. 0	0			***************************************
	Average haul distance (ft)		0	0			
	Surface grade (%)		0%	3%			
T T	Volume of Topsoil (cy)		0	0			
	Topsoil Unit Cost per WDEQ Guideline No	12 App C (\$/cv)	\$1.12	\$1.12			
-	Subtotal Topsoil Application Costs		\$0	\$0			
	D. Discing/Seeding						
-	Assumptions:						
-			0.0	0.0			
	Area of surface disturbance (acres)		0.0	0.0			
_	Discing/Seeding Unit Cost (\$/acre)		\$280	\$280			
	Subtotal Discing/Seeding Costs		\$0	\$0			
	ubtotal Reclamation Costs per Pond		\$0	\$0			
T	Total Settling Basin/Evap. Ponds Reclamation C	Costs	\$0				
V. N	discellaneous Structures						
	A. Potable Water Wells						-
	Total Depth (ft) (1-5-inch Diameter Wells,	@ 750 ft)	700				
	Well Abandonment Unit Cost (\$/100 ft) - p	er State Engineers Office	\$63.10				
	Subtotal Potable Water Wells Abandonment C		\$441.70				
В	B. Fuel Area						
	Concrete Floor						
_	Area of Concrete Floor (ft²)						
_	Demolition Unit Cost per WDEQ Guid	eline No.12,App.K (\$/ft²)	\$3.40				
	Subtotal Concrete Floor Demolition Costs		\$0				
	Concrete Footing						
	Length of Concrete Footing (ft)		0				
	Demolition Unit Cost per WDEQ Guid	e. No.12,App.K (\$/lin. ft)	\$12.22				
	Subtotal Concrete Footing Demolition Cos		\$0				
-	Subtotal Fuel Area Costs		\$0			* ****	
	Total Miscellaneous Structures Reclamation Co	ete	\$441.70		-		
- '	total priscenaneous structures recramation Co	31.3	5441.70				
FOT	L MISCELLANEOUS RECLAMATION COS	ers	\$205.202				
IUTA	L MISCELLANEOUS RECLAMATION COS	013	\$205,203				
- 1							
		1	i I-	1			

CLAY LINER REMOVAL AND LOADING					
Clay Liner Removal and Loading Cost					
Labor =	17	per hour			Based on current labor rates
Trackhoe =	\$ 1,125.00	per week or	\$ 28.13	per hour	All Inclusive, based on current rental rates
Belly Dump with Operator =	\$ 100.00	per hour			Based on current contractor pricing
Belly Dump Size =	20	cubic yards			
Disposal Rate =	40	yards/hour			Estimate based on experience
TOTAL REMOVAL AND LOADING	\$ 3.63	per cubic yard			
·			<u> </u>		

REMOVAL ANI	D DEMO								ŀ	
							1			-
er					·					
Env. Scanner	17	per hour			Based on o	urrent labo	r rates			
Operator =	17	per hour			Based on o	urrent labo	r rates			
Total Wellhead	2300									
HCI 35% Cost	\$ 0.137	per pound			Based on c	urrent Univ	ar costs for	bulk HCl -	April 2007	
Acid Usage Ra				over	_					
Acid Unit Cost	\$ 0.56	per wellhea	ad cover							
Total Labor Ra	\$ 39.70	per hour								
Cleaning Rate	10	wellheads	per hour		Estimate b	ased on ex	perience			
Survey / Deco	\$ 3.97	per wellhe	ad cover							
	•									
					Ü.					
Env. Scanner	17	per hour			Based on c	urrent labo	r rates			
Operator =	17	per hour			Based on c	urrent labo	r rates			
Number of Op	2				Based on e	experience	[
HCI 35% Cost	\$ 0.137	per pound			Based on c	urrent Univ	ar costs for	bulk HCI -	April 2007	
Acid Usage Ra	20	pounds pe	r header ho	use	Estimate	,				
		per header	house							
Total Labor Ra	\$ 311.64	per hour								
Cleaning Rate	1	header hou	ise per day		Estimate b	ased on ex	perience			
Survey / Deco	\$ 311.64	per heade	r house							
	Env. Scanner Operator = Total Wellhead HCI 35% Cost Acid Usage Ra Acid Unit Cost Total Labor Ra Cleaning Rate Survey / Deco Env. Scanner Operator = Number of Op HCI 35% Cost Acid Usage Ra Acid Unit Cost Total Labor Ra Cleaning Rate	Env. Scanner 17 Operator = 17 Total Wellhead 2300 HCl 35% Cost \$ 0.137 Acid Usage Ra 4.1 Acid Unit Cost \$ 0.56 Total Labor Ra \$ 39.70 Cleaning Rate 10 Survey / Decd \$ 3.97 Env. Scanner 17 Operator = 17 Number of Op 2 HCl 35% Cost \$ 0.137 Acid Usage Ra 20 Acid Unit Cost \$ 2.74 Total Labor Ra \$ 311.64 Cleaning Rate 1	Env. Scanner 17 per hour Operator = 17 per hour Total Wellhead 2300 HCI 35% Cost \$ 0.137 per pound Acid Usage Ra 4.1 pounds per Acid Unit Cost \$ 0.56 per wellhead Total Labor Ra \$ 39.70 per hour Cleaning Rate 10 wellheads Survey / Decd \$ 3.97 per wellheads Survey / Decd \$ 3.97 per wellheads Env. Scanner 17 per hour Operator = 17 per hour Number of Op 2 HCI 35% Cost \$ 0.137 per pound Acid Usage Ra 20 pounds per Acid Unit Cost \$ 2.74 per header Total Labor Ra \$ 311.64 per hour Cleaning Rate 1 header hour	Env. Scanner 17 per hour Operator = 17 per hour Total Wellhead 2300 HCI 35% Cost \$ 0.137 per pound Acid Usage Ra 4.1 pounds per wellhead cover Total Labor Ra \$ 39.70 per hour Cleaning Rate 10 wellheads per hour Survey / Decd \$ 3.97 per wellhead cover Env. Scanner 17 per hour Operator = 17 per hour Number of Op 2 HCI 35% Cost \$ 0.137 per pound Acid Usage Ra 20 pounds per header house Total Labor Ra \$ 311.64 per hour Cleaning Rate 1 header house per day	Env. Scanner 17 per hour Operator = 17 per hour Total Wellhead 2300 HCI 35% Cost \$ 0.137 per pound Acid Usage Ra 4.1 pounds per wellhead cover Acid Unit Cost \$ 0.56 per wellhead cover Acid Labor Ra \$ 39.70 per hour Cleaning Rate 10 wellheads per hour Survey / Decd \$ 3.97 per wellhead cover Env. Scanner 17 per hour Operator = 17 per hour Number of Op 2 HCI 35% Cost \$ 0.137 per pound Acid Usage Ra 20 pounds per header house Acid Unit Cost \$ 2.74 per header house Total Labor Ra \$ 311.64 per hour In per hour	Env. Scanner: 17 per hour Based on comperator = 17 per hour Based on comperator = 17 per hour Based on comperator = 18 per pound Based on comperator = 18 per pound Based on comperator = 18 pounds per wellhead cover Estimate by the comperator = 18 per pound Based on comperator = 19 per hour Based on comperator =	Env. Scanner 17 per hour Based on current labor Operator = 17 per hour Based on current labor Operator = 17 per hour Based on current labor Operator = 17 per hour Based on current University Operator = 17 per hour Based on current University Operator = 17 per hour Estimate based on experience HCI 35% Cost \$ 0.137 per pound Based on current University Operator = 17 per hour Based on current labor Operator = 17 per hour Based on current labor Operator = 17 per hour Based on current labor Operator = 17 per hour Based on current labor Operator = 17 per hour Based on current labor Operator = 17 per hour Based on current labor Operator = 17 per hour Based on current labor Operator = 17 per hour Based on current labor Operator = 17 per hour Based on current labor Operator = 17 per hour Based on current University Operator = 18 per hour Based on current University Operator = 19 per hour Diversity Operator = 19 per hour Di	Env. Scanner: 17 per hour Based on current labor rates Operator = 17 per hour Based on current labor rates Total Wellhead 2300 HCI 35% Cost \$ 0.137 per pound Based on current Univar costs for Acid Usage Re 4.1 pounds per wellhead cover Acid Unit Cost \$ 0.56 per wellhead cover Total Labor Ra \$ 39.70 per hour Estimate based on experience Wellheads per hour Estimate based on experience Based on current labor rates	er Env. Scanner 17 per hour Based on current labor rates Operator = 17 per hour Based on current labor rates Total Wellhead 2300 HCI 35% Cost \$ 0.137 per pound Based on current Univar costs for bulk HCI - Acid Usage Ra 4.1 pounds per wellhead cover Estimate based on experience Acid Unit Cost \$ 0.56 per wellhead cover Total Labor Ra \$ 39.70 per hour Survey / Decc \$ 3.97 per wellhead cover Survey / Decc \$ 3.97 per wellhead cover Env. Scanner 17 per hour Based on current labor rates Operator = 17 per hour Based on current labor rates Number of Op 2 Based on experience HCI 35% Cost \$ 0.137 per pound Based on current labor rates Dased on current labor rates Env. Scanner 20 pounds per header house Estimate Based on current Univar costs for bulk HCI - Acid Usage Ra 20 pounds per header house Estimate Cost \$ 311.64 per hour Estimate Based on experience	Env. Scanner 17 per hour Based on current labor rates Operator = 17 per hour Based on current labor rates Operator = 17 per hour Based on current labor rates Operator = 17 per hour Based on current labor rates Operator = 17 per pound Based on current Univar costs for bulk HCI - April 2007 Acid Usage Ra 4.1 pounds per wellhead cover Estimate based on experience Operator = 10 wellhead cover Operator = 10 wellhead sper hour Estimate based on experience Survey / Decc 3.97 per wellhead cover Operator = 17 per hour Based on current labor rates Operator = 17 per hour Based on current labor rates Operator = 17 per hour Based on experience Number of Op 2 Based on experience Number of Op 2 Based on experience December 17 per hour Based on current labor rates Operator = 17 per hour Based on experience Sased on experience Number of Op 2 Based on current Univar costs for bulk HCI - April 2007 Acid Usage Ra 20 pounds per header house Estimate Cidening Rate 1 header house Estimate Setimate Set

ACID WASH							
Current acid cost is \$2	75/ ton or .13	75pe	r lb.				
Commercial Concentra							
Assume a 10% wash s	solution the pr	ice of	the wash s	solution is \$.	012 per gal	lon	
Assume that .25 gallor	of acid wash	is us	sed per sq f	t. to clean w	alls.		
Assume that 1 gallon of	of acid wash is	s use	d per sq ft.	to clean floo	rs.		
	•						
Using the square foota	ge supplied i	n the	bond the fo	llowing assu	imptions we	ere used to	
generate the cost per s	square ft mult	iplier.					
Using the CPP IX and	Plant square	foota	ges the ass	sumption is a	as follows		-
	-						
Acid Wash	(Walls)						
Labor		Men		Bond CPP	IX and CPF	sq. footage	9
Rate	\$17						,
Time		8hr.					
Man Lift Rental	\$8,900.00	Mon	th				
			,				
Labor Cost per sq. ft.	\$0.54						
Acid	\$0.003						
Consumables	\$0.05						
Total	\$0.59						
A a i d Maa h	(Flacus)						
Acid Wash	(Floors)	1					
Labor	2	Men		Rond CPP	IX and CDE	sq. footage	
Rate	\$17			DOING CFF	IN AIIU OPF	sq. iootage	-
Time		8hr.	L Dave				
111116	15	0111.	Days				
		 			·		
Labor Cost per sq. ft.	\$0.15	-					
Acid	\$0.13						
Consumables	\$0.01						
Corisumanies	Ψ0.00	 		 		· -	
Total	\$0.21	\vdash			,		
lotai	Ψ0.21	\vdash		 			
	l	<u> </u>					

Revised June 2007

Page 23 of 40

RADIU	M TREATMENT			
	HUP SURETY ONLY			
Assum	nptions:			
1.	Based on actual operating costs			
Radiur	m Treatment Costs per 1000 Gallons			
	Chemical	= \$	0.177	
	Filtration	= \$	0.021	
	Electricity	= \$	0.048	
	By Product Disposal of Sludge	= \$	0.097	
TOTAL	RADIUM TREATMENT COSTS PER 1000 GALLONS	= \$	0.34	

GROU	NDWA	TER	SW	/EEP	(GWS	3)			ľ								
									-	-					1		
Assun	ptions	5 :							1								
1.	All pur	nps a	re :	5 hp p	umpi	ng	at 5.0	gpm	1								
2.	Cost o	f elec	tric	ity fro	m Re	cu	rring (Cost :	She	et							
3.	All wat	er pu	mp	ed is	dispo	se	d at W	/DW	wit	h a 20 l	np pur	np	_				
																Experienc	
								sts e	stin	nated a	t \$0.0	3/1	00	0 gallons	, Op	erator Exp	erience
6.	Labor	costs	are	e not i	nclud	ed											
Nellfie	eld Pur		C	osts _l	per 10	000											
	1000	gal	х	5	hp	Y	1	hr	$ \mathbf{x} $	0.746 hj	kwh	$ _{\mathbf{X}}$	\$	0.048	_ <u>_</u> €	0.60	
				5	gpm		60	min	_	hj)			kwh	_ Ψ	0.00	
Dumni	ing to \	A/D\A/		ote n	or 10	nη	Calle	\nc	-			_	_				
umpi	1000									0.746	kwh		Œ	0.048			
	1000	yaı	X	75 200	anm	Χ	1 60	min	X	0.740 hi	NVVII	X	Ψ	kwh	 = \$	0.22	
					gpiii		- 00	111111			, 			KVVII	+		
Repair	and N	lainte	na	nce C	osts	рe	r 100	0 Ga	llo	ns					= \$	0.5	
																	-
roces	ss San	pling	ar	nd An	alysi	s C	osts	per 1	100	0 Galic	ns	·			= \$	0.03	
									<u> </u>			ļ					
ΓΟΤΑΙ	L GWS	COS	TS	PER	1000	G/	ALLO	NS							= \$	1.35	
									-			-	\vdash	<u> </u>	+ -		

REVER	RSE OSM	osis	(RO)								
								<u> </u>			
ssum	ptions:	_				ļ		<u> </u>			
	0 1 6		ا ـ ا				1 01 1		· · · · · · · · · · · · · · · · · · ·		-
						urring Cos	t Sheet			,	ļ
	75% perr										ļ
								<u> </u>	brane element		ļ
						om wellfiel				<u> </u>	
							estima	ted at \$0.	03/1000 gallons - Operator Expe	erience	
6.	Labor co	sts ar	e not	ind	clude	<u>d</u>					
overs	e Osmos	is Co	nete r	201	 - 1000) Gallons			Chemical Costs		
CVCIS	Electricity		/313 K			Junons	2 =	0.48	Onemical Godis		
	Chemica							\$0.13	Scale Inhibitor	\$2.00	\$/11
	Membrar		nlaco		ont			\$0.06	Dose Rate	6.75	
	Repair a							0.26	RO Flow	400	
	·					lucio		0.28	ROFIOW	400	gpi
	Process	samp	ning a	aric	Ana	Iysis	<u> </u>	0.03	lha anala/1000mal	0.056220727	-
OTAL	PO 000	TC D	FD 4	00	0.04	LLONG	&	0.96	lbs scale/1000gal	0.056330727	-
OTAL	RO COS	15 P	EK 1	UU	UGA	LLON5	= 2	0.96	Coot and 1000 and	60.44	
					ļ			•	Cost per 1000 gal	\$0.11	
							.				
					ļ				Cleaning Chemicals	0.02	
										00.40	
									Total Chemical Cost	\$0.13	-
·											
									Membrane Replacement		
									For 400gpm RO	400	
					<u> </u>				For 400gpm RO	400	-
					<u> </u>				Number of membranes	96	
									Cost per Membrane	\$600.00	
				_					Years of Life	φοσο.σο	
						-			Labor to Change Membrane	\$480.00	
									East to onange wembrane	Ψ-100.00	
									Cost per 1000 gal	\$0.06	
										\$3.00	
		_			-			ļ. <u></u> .			

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ERSE OSMOSIS (RO) pg2						
				•		
					ļ	
,	-					
	-					-
Electrical Costs						
for 400gpm RO						
Mine Unit						
Charge Pumps						
Mine Unit Feed	Motor HP	Motor Quantity	KW			
Deep Disposal Charge Pump	3	40				
	50	2				
	60	1				
	60	1				
	- 00	Total Installed KW	253.64			
	-	Total Ilistalled KVV	233.04			<u> </u>
	ļ	Castasallana	C14 44			
	<u> </u>	Cost per Hour	\$11.41			
,						
		Cost pre 1000gal	\$0.48			
				,		
					-	
	,					ļ
		1	1		1	

CHEM	ICAL REDUC	CTANT									
Assun	nptions:						•				
1.	Bioremediat	ion is utili	zed								
2.	Based on ac	tual oper	ating co	osts du	iring re	estora	ition ac	tivities	•		
	Added the c										
TOTAI	L CHEMICAL	REDUC	TANT (COST	S PER	Kga			= 5	0.30	
•											

ION PROC	ESSING											
nptions:		-						-				
Based on	actual ope	rating c	osts									
L PROCES	SING CO	STS PE	R ELL	JTION	= \$	900						
			ļ									
	nptions:	Based on actual ope	nptions: Based on actual operating o	nptions: Based on actual operating costs	nptions: Based on actual operating costs	nptions: Based on actual operating costs	nptions:	nptions: Based on actual operating costs	nptions: Based on actual operating costs	nptions: Based on actual operating costs	nptions: Based on actual operating costs	nptions: Based on actual operating costs

						_				r		-								
DEEP	WELL	INJE	CT	ION										(8) (8)						
Assun	nption	s:										1					•			
1.	Pump	150	hp	pum	oing a	at 1	00 g	pm											-	
2.	Cost	of elec	tric	city fro	om R	есі	ırring	Cos	t S	heet		Π								
3.	Repai	r and	ma	inten	ance	CO	sts b	ased	on	averag	e inje	ctic	n v	olume of	8,000	0,000 gallor	ns per yea	ar		
																xperience				
5.	Chem	ical co	ost	s bas	ed or	av	/era	ge inje	ecti	on volu	me of	8,0	000	,000 gallo	ons pe	er year				
6.	Labor	costs	ar	e not	inclu	dec	<u></u>													
Waste			um	ping	Cos	ts į	oer '	1000	Ga	llons										
	1000	gal	v	150	hp	v	1	hr min	V	0.746	kwh	v	\$	0.048	¢	0.90				
			_^	100	gpm		60	min	^	h	p			kwh	_ Ψ	0.30				
Repair	r and N	/lainte	ena	ınce	Costs	s p	<u>er 1</u>	000 G	all	ons					= \$	0.5				
							<u> </u>													
TOTAL	L DEE	P WE	LL	INJE	CTIO	N	cos	TS P	ER	1000 C	ALL	ON	S		= \$	1.40				
														-						

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DONM	IENI			ļ								
L			<u> </u>									
3:			<u> </u>									
	our wo											
				dig an								
						ment fro						
						ement/p						
						se reel						
									kers at 8.0 l			
									of plug gel/1	00 ft of 5"	well casing.	
						st is \$6						
nt cos	ts for 2	200	7 = 0	GCC D	akota (Cement	; Plug	gel	costs for 20	07 = Casp	er Well Prod	ucts
L												
Costs												
hoe											·	
8	hours	X	\$	28.13	per ho	our		=\$	225.00			
Reel/T	Tow Ve	hic	le									
8	hours	X	\$	45	per ho	our		=\$	360.00			
nter												
8	hours	Х	\$	45	per ho	our		=\$	360.00			
/ehicle	;											
8	hours	Χ	\$	45	per ho	our		=\$	360.00			
24	man	Х	\$	17	per m	an		=\$	409.02			
	hours				hour							
	Total F	ixe	d Co	osts pe	r 8.0 h	r/dav		=\$	1714.02			
	-			<u></u>				<u>`</u>				
ole Co	sts	,	(pei	100 ft	of wel	l depth)					
ials			<u> </u>	T		· · ·						
7.5	sack c	em	ent	Х	\$	7.62	per	=\$	57.15			
							sack					
1	sock =	- ا			Œ	6.45	por ho	_¢	6.45			
					Ψ	0.45	•		0.43		-	
 	per 10	U TE	et	ļ		ļ	piug	ļ				
	1	1 sack p	1 sack plug	per 100 feet 1 sack plug gel per 100 feet	1 sack plug gel X	1 sack plug gel X \$	1 sack plug gel X \$ 6.45	1 sack plug gel X \$ 6.45 per ho	1 sack plug gel X \$ 6.45 per ho =\$	1 sack plug gel X \$ 6.45 per ho =\$ 6.45	1 sack plug gel X \$ 6.45 per ho =\$ 6.45	1 sack plug gel X \$ 6.45 per ho =\$ 6.45

L	ABAN	DONN	/ENT	Page 2								
							ell depth)	\$	63.60			
	<u>Total</u>	numb	er of w	ells com	pleted	per/da	a <u>y</u>					
			6		***************************************							
	Cost	per W		r Unit of	Avera	ge De	epth			-		
						9				 		
				Wel	l Dept	h (ft)						
					450			=\$	333			
					500			=\$	339			
					550			=\$	344			
					600			=\$	349			
					650			=\$	355			
					700			=\$	360		Ì	
					750			=\$	365			
					800			=\$	370			
					850			=\$	376			
					900			=\$	381			
			<u> </u>		950				386			
							1					
										· .		

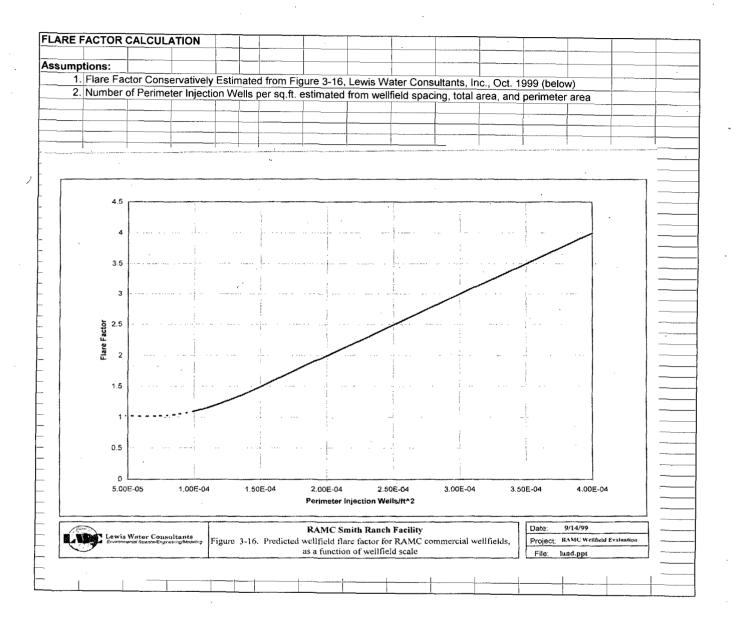
FIVE Y	EAR N	/IECH	ANICAL I	NTE	GR	ITY TE	STS	(MIT	Γ)		<u> </u>			
				Π				,	ĺ					-
Assum	ption	s:												
			for 8.0 hr	/day	per	Recur	ring	Cost	She	et				
			8.0 hr/da								***		·	
3	Labor	for op	peration o	f pu	lling	unit wil	l rec	quire :	2 w	orke	ers at \$17/	hr		
4	Labor	for op	peration o	f MI	T Ur	nit will r	equi	re 1 ر	vork	er:	at \$17/hr			
5	Avera	ge we	lls plugge	d p	er da	y is 6					,	1		
MIT Co	sts p	er We												
Equipr	nent:													
	Pullin	g Unit				,								
			hours	X	\$	45	per	hour				=\$	360.00	
	MIT													
		8	hours	X	\$	45	per	hour				=\$	360.00	
Labor:														
	Pullin	g Unit		<u>.</u>							,		·	
			hours	X	\$	17.04	per	hour	X	2	workers	=\$	\$272.68	
	MIT L													
]	8	hours	X	\$	17.04	per	hour				=\$	136.34	
						TO	TAL	MIT	CO	ST	PER DAY	=\$	1129.00	
			-	ļ										
-1-0	Wells	Comp	pleted	-		6	per	day						
				<u> </u>			MI	T CO	ST	S P	ER WELL	=\$	188.17	

/AIN F	PIPEL	NE R	EMOV	AL										
ssum	ption	s:												
			vith tra	ckh	oe a	t 750 ft/da	y							
2.	Pipeli	ne ext	raction	and	d ba	ckfilling w	ith t	rackho	e at 7	50 ft	/day			
										itena	ance, mob			
						es 1 work								
							rs a	t \$17/h	our (i	n add	dition to tra	ckhoe ope	erator)	
						neously								
			moval											
9.	Opera	ating s	chedul	le: 8	hrs	/day, 5 da	ys/\	veek						
/lain P	ipelin	e Ren	noval (Cos	ts p	er ft of Tr	enc	h						
quipr														
	Track	,										,		
			1125	Х		week	Х		days	=\$	0.30			,
		· We	eek		5	days		750	ft					
abor														
	Track		Operat	ion [,]						ļ				
			17	X		man hrs	X	1	days	=\$	0.18			
			ın hr		1	day		750	ft					
	Pipel		ctraction	on								_		
			17	χ		man hrs	X		day	=\$	0.36		-	
		ma	ın hr	-	1	day		750	tt	-				
MAIN	PIPE	LINE I	REMO	VAL	. CO	ST PER	T (OF TRE	NCH	=\$	0.84			

NELLF	FIELD	PIPIN	G REN	10\	/AL						:		
,							1				,		
ssum	ptions	s:											
1.	Trenc	hing v	vith bad	ckh	oe at	1500 ft/c	lay						
						ckfilling w							
						eek, all ind				enanc	e, mob		
						s 1 worke							
									our (in	additi	on to track	noe opera	tor)
6.	Opera	iting s	chedul	e: 8	hrs	/day, 5 da	iys/w	/eek					
/lain P	ipeline	Rem	oval (cos	ts p	er ft of Pi	ре						
quipn					ļ .								
	Backl												
			1125	Х		week	X		days	=\$	0.15		
		WE	ek		5	days		1500	ft				<u></u>
										_			
										-			
.abor				L	ļ								
	Васкі		peration	on							0.00		
	·,		17	Х		man hrs	Х	1500	days	=\$	0.09		
	Discoli		n hr		1	day		1500	π				
	Pipeii		tractio	n	40						0.40		
			17	Х		man hrs	Х		day	_ =\$	0.18		
		ma	n hr		1	day		1500	π			:	
										-			
	BEATS	. DID	-1 1815-	<u></u>	101	AL 0007		D ET C	L DIE		0.400		
	MAIN	I PIPE	LINE	KEI	MOV	AL COST	PE	KFIC)F PIPE	= =\$	0.420		

WELLFIEL	LD ROAD RECL	AMATIO	N			-		Ш							
							L	Ш	•						
Assumption	ions (Roads con	structed	l befo	ore Ja	inuary	1, 19	<u>97):</u>	\perp							
1. Gra	ravel road base re	emoved a	at cos	st of \$0	0.86/cy/	/1000) ft (\	۷D	EQ Guideline	No. 1	2, App. C.	, Level Ground,	500 ft haul)		
2. Gra	ravel road base: a	verage o	depth	= 0.2	5 ft, ave	erage	e wid	<u>th =</u>	: 10 ft						
	oads scarified pric														
	rading of scarified														
5. Tor	psoil applied at c	ost of \$0	.866/	cy/100	00 ft (V	/DEC	રે Gui	idel	ine No. 12, Ap	p. C.	Level Gro	ound, 500 ft hau	1)		
6. Str	ripped topsoil: av	erage de	pth =	0.67	ft, aver	age v	width	= 2	25 ft			1	1		
7. Dis	scing/seeding co	st of \$28	0/acre	e is ba	sed on	actu	al co	ntra	actor costs						
							1			1			1		
Gra	ravel Road Base	Removal	Cost	ts per	1000 ft	of R	oad			\top					
	1000 ft X	0.25 f	t L	10	ft	. 1	су	1.	\$0.87	1 -		1			
	X		٦×		X	27		i×i	Cy	= \$	80				
Sc	carification Costs	ner 1000) ft of	Road	'	+	1	\vdash		 					
- 100	1000 ft	25 4	* T	1	acro	+		\forall	\$41.87	+-		1			
	1000 ft X	2311	≒x¦	4 31	56E+04	152	X	¦	acre	- =\$	24		-		
	anding Conto non	1000 # 0		4.5	JOE + 04	11		-	acie	+		-	-		
Gra	rading Costs per	1000 11 0	Roa	u d	 	-		+	#45.05	-					
	1000 ft X	25 1	드x	1	acre	1.3	X		\$45.65	- = \$	26				
						ft²		11	acre						
To	opsoil Application	Costs pe	er 100	00 ft o	f Road			\sqcup		J					
	1000 ft X	0.67 f	<u>t y</u>	25	ft x	<u> 1</u>	cy	$ _{\mathbf{x}} $	\$0.87	_ = &	537				
l i						27	ft ³	$ ^{\sim} $	су	- Ψ	307				
Dis	scing/Seeding Co	sts per	1000	ft of R	oad			\sqcap							
	1000 ft X	25 f	t J	1	acre		.	П	\$280	1 .					
	X		- X	4 3!	56F+04	ft ²	Х	ΙÌ	acre	 = \$	161				
-	- .		\dashv	1.00	1	11	 	+		+-			-		
TO	OTAL WELLFIEL	D POAT	DEC	LAM	ATION	COS	TS I)))			1			
10	1000 FT OF								•	- 6	828	· '			
<u> </u>	1000 F1 OF	KOAD (DEF	OKE	JANUA	NIK I	1, 13	7/	. ,	- 3	020		ļ		
	: (5)			ليسيا		400	7)-	╢							
	ions (Roads cor					199	<u>():</u>			-					
	ravel road base w					٠		<u> </u>			ļ	ļ <u> </u>			
	oads scarified prid														
	rading of scarified														
	opsoil applied at o									o, C,	evel Grou	und, 500 ft haul)			
5. Str	ripped topsoil: av	erage de	:pth =	0.4 ft	i, avera	ge w	idth =	= 20) ft						
6. Dis	scing/seeding co	st of \$28	0/acre	e is ba	ased on	actu	al co	ntra	actor costs						
Sc	carification Costs	per 1000	ft of	Road		1		77							
1 - 1 1	1000 ft	20 f	t	1	acre	-		1	\$41.87	1					
	1000 ft X		<u>`</u> X	1 31	56E+04	f+2	X	1	acre	⊣= \$	19	<u> </u>			
C.	rading Costs per				552+04	11		1-1	aut	-		-			
Gra	1000 A	201	RUB	u _	-	-		⊣	¢45.05	-			-	-	
	1000 ft X	20 1	Чx	1	acre	- 2	Х		\$45.65	= \$	21		-		
									acre				ļ		
	nacil Analication	Costs pe	er 100	00 ft o	f Road			Ш							
Top	opsoil Application		t	20	ft	1	су]_[\$0.87	<u>-</u> و	257				
Toi	1000 ft	0.40 1	v		^	1 27	ft ³	^[су	ف –	201				
Tol	1000 ft X	0.40 1	i x			21					l———				
	1000 ft X					21	1								
	1000 ft X scing/Seeding Co	sts per	1000 1	ft of R	load	<u> </u>		-	\$280	-					
	1000 ft X scing/Seeding Co	sts per	1000 1	ft of R	toad acre		- x		\$280	-= \$	129				
	1000 ft X	sts per	1000 1	ft of R	load		×	- /	\$280 acre	-= \$	129				
Dis	scing/Seeding Co	ests per 20 f	1000 t	ft of R 1 4.35	Road acre 56E+04	ft ²		-/	acre	-= \$	129				
Dis	scing/Seeding Co	psts per 20 f	1000 t	ft of R 1 4.35	acre 56E+04	ft ²	STS F		acre						
Dis	scing/Seeding Co	psts per 20 f	1000 t	ft of R 1 4.35	acre 56E+04	ft ²	STS F		acre		129				

DISKING/	SEEDING						
Assumpti	ons:						
1.	Based on actua	I contractor c	osts in 200	7			
2.	Drill Seeding \$2						
3.	Seed cost \$30//	Acre - Based	on 5/07 se	ed co	sts at SRH	IUP	
TOTAL DI	SKING/SEEDIN	3 COSTS PE	R ACRE	= \$	280.00		,



E VOI	LUME AND RESTOR	ATION TIMING CALCU	LATION						1	
	}									
ımptic			<u> </u>							
		ed for wellfield resoration			able 3-2, Lewis Water	r Consultants, Inc.	, Oct. 1999 (below)			
		Return to Class of Use								
		nes 1PV groundwater								
. 4.	Restoration Timing is	conservatively estima	ted at 2 years for a	ll wellfields based o	n 400 gpm sweep rate	and largest wellfi	eld affected volume (V	Vellfield 15) at	Smith Ranch.	
	Table 3-2. Pr	edicted Wellfield 1 Re	storation Timing							
			•							
			Number of	Time Required		Number of	Time Required		+	
		Restoration Target	Pore Volumes	to Meet Target	Restoration Target	Pore Volumes	to Meet Target	_	+	
	Constituent	(Background)	to Meet Target	(Baseline), days	(Class of use ⁸)	to Meet Target	(Class-of-Use)days		+	
		(223.5.74)		(= 200o,) auju	, ,, ,		(+	
	+	0.168	3.2	150	5	1.8	86		++	
	Se Se	0.001	3.2	150	0.01	2.3	109		+	
	— či	4.176	4.4	210	250	0	0			
	SO ₄	113.125	3.8	179	250	2.5	117		+ ' +	
	HCO ₃	228.194	2.3	109	na	na	na			
	Са	72,617	3.8	179	na	na	na			
	Na	22.525	3.2	150	na	na	na		1	
	As	0.001	3.0	141	0.05	0	0			
	— в	0.100	3.2	150	0.75	ō	ō			
	Fe	0.065	0	0	0.3	0	0		1	
	Mn	0.022	4.4	210	0.05	3.4	160		+	
	Mg	17.364	3.2	150	na	na	na	_	++	
	−− к	7.269	3.2	150	na	na	na		+	
		0.322	3.2	150	2.4	na	na		+	
	SiO ₂	16.975	3.2	150	na	na	na		+	
	Zn	0.010	3.2	150	5	0	0		++	
					-	-	•		+	
	a standarde	isted are for Wyoming	Class Loround wat	er although baselin	e wellfield				+	
		r does not meet this sta			ioid			_	++	
	ground water	, acco not meet this ste	and due to exce	Joseph Tadidilli.				_	+	
		+ + + + + + + + + + + + + + + + + + + +	+							

Abbreviation	ns/Acronyms			
		•		
\$	Dollars			
\$/Kgal	Dollars per 1000 gallons			
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			
HCl	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			
RO	Reverse Osmosis	•		
WDW	Waste Disposal Well			
yd3	cubic yards			
yr	year			