PRESENT VALUE ANALYSIS 4/2/14									
Life, yrs	20								
Flow Increase, %/yr	1.80%								
Discount Rate	3.60%	20 years with inflation - OMB Circ A-94 Dec 2013							
		HAMP	ARSENIC		Arsenic Treatment			HAMP w/	
			TREATMENT		Shung	SipMis	FMCV	Grid Power	
		($1000)	($1000)					($1000)	
Capital		$14,588	$13,149					$16,637	15 mile powerline at $120K/mi
O&M		$926	$765					$453	
Replace		$855	$1,565		64	185	1316	$505	
Rehab		$602	$860		200	356	304	$592	
RUL		$7,139	$3,520		876	1142	1502	$7,232	
Avg O&M	8.908	$1,074	$888		Uniform gradient series factor			$526	
PV O&M	14.085	$15,134	$12,502					$7,403	
Tot PV		**$31,179**	**$28,076**					$25,137	
Delta, % of HAMP			9.9%						
Net PV w/RUL		$24,040	$24,556					$17,905	

HAMP CAPITAL COSTS	3/20/2014				
Planning/Preconstruction					
Survey					
Geotechnical			$ 75,000		
Environmental/Cultural Assessment					
Total Preconstruction				$ 75,000	
Construction					
	Quantity	Unit Cost			
Wells	2		$ -		
Well Pumps, 100 hp	2	125000	$ 250,000		
Well Booster Pumps, 60 hp	2	90000	$ 180,000		
Diesel Generator, 375 KW	2	130000	$ 260,000		
Diesel Generator, 40 KW	2	45000	$ 90,000		
Fuel Storage Tank, 5000 gal	2	45000	$ 90,000		
Fuel Storage Tank, 1000 gal	2	15,000	$ 30,000		
HAMP Disnfection	2	30,000	$ 60,000		
12" Pipelines + Valves	75,300	48.88	$ 3,680,664		
8" Pipelines + Valves	67,850	35.6	$ 2,415,460		
6" & 4" Pipeline + Valves	33,900	28.36	$ 961,404		
Air Relief Valves	15	2750	$ 41,250		
PRV	2	20000	$ 40,000		
Altitude Valves	4	30000	$ 120,000		
Flow Control Valves	2	5000	$ 10,000		
Main Storage Tank	260000 gal		$ 338,000		
Sipaulovi Storage Tank	110000 gal		$ 165,000		
Tank Interconnects	3	20000	$ 60,000		
Booster Station	1		$ 140,000		
Village Meters	4	10000	$ 40,000		
Village Disinfection	3	30000	$ 90,000		
Telemetry System	2	50000	$ 100,000		
Power Extension	1	75000	$ 75,000		
Roads + Boring	12,150	105	$ 1,283,000		
Total Construction			$ 10,519,778	$ 10,522,000	total from HIS
O&M Support					
Start-up 1 Year			$ 12,000		
O&M Materials			$ 355,000		
O&M Manual			$ 40,000		
Total O&M Support				$ 407,000	
Contingency	10%			$ 1,100,400	
Taxes & Fees				$ 304,854	total from HIS
Engineering	18%			$ 2,178,792	
Total Capital Costs				$ 14,588,046	
			x $1,000	$ 14,588	

Arsenic Treatment Costs										
CAPITAL COSTS 3/20/14	Shungopavi			Sipaulovi/Mishongnovi			FMCV			Arsenic Trtmnt Total
Planning/Preconstruction										
Survey		$ 5,000			10000			10000		
Geotechnical					$ 30,000			$ 50,000		
Environmental/Cultural Assessment		$ 20,000			$ 25,000			$ 25,000		
Hydrogeologic Services		$ 25,000			$ 60,000			$ 85,000		
Management Plan		$ 20,000			$ 20,000			$ 20,000		
Total Preconstruction			$ 70,000			$ 145,000			$ 190,000	$ 405,000
Construction	Quantity	Unit Cost	Total	Quantity	Unit Cost	Total	Quantity	Unit Cost	Total	
New Well	1		$ 800,000	2	$ 500,000	$ 1,000,000	1	$ 1,000,000	1000000	
Well Rehab							1		65,000	
Well Equipping	2	$ 85,000	$ 170,000	2	$ 85,000	$ 170,000	1		100,000	
8" pipeline + valves							29,500	$ 35	1080000	
6" pipeline + valves	5150	$ 30	$ 166,250	19,500	$ 30	$ 598,000				
Pipeline Boring				100	$ 450	$ 45,000				
Altitude Valve + vault							1	$ 30,000	30000	
Tank Interconnect			$ 20,000	1		$ 20,000	2	$ 20,000	40000	
Powerline + drop						$ 15,000	1.1	$ 120,000	132000	
Storage Tank						$ 170,000			260000	
Arsenic Treatment Process			**$ 479,230**			**$ 497,980**			**$ 701,720**	
Arsenic Treatment Structure, sf	2000	$ 40	$ 80,000	2000	$ 40	$ 80,000	2500	$ 40	$ 100,000	

Chemical Systems	2	$ 13,000	$ 26,000	2	$ 13,000	$ 26,000	3	$ 15,000	$ 45,000	
Arsenic Process + Piping	2	$ 82,000	$ 164,000	2	$ 82,000	$ 164,000	3	$ 90,000	$ 270,000	
HVAC (% of bldg)	20%		$ 16,000	20%		$ 16,000	20%		$ 20,000	
Electrical Equip (% of equip)	25%		$ 75,750	25%		$ 79,500	25%		$ 116,000	
Booster Pumps	2	$ 17,500	$ 35,000	2	$ 25,000	$ 50,000	2	$ 31,000	$ 62,000	
BW Tank			$ 5,000			$ 5,000	1	$ 6,000	$ 6,000	
Surge Tank			$ 52,000			$ 52,000	1	$ 52,000	$ 52,000	
Fence+ Gates	540	$ 12	$ 10,480	540	$ 12	$ 10,480	560	$ 12	$ 10,720	
PRV	2	$ 2,500	$ 5,000	2	$ 2,500	$ 5,000	2	$ 2,500	$ 5,000	
Flow meters	2	$ 5,000	$ 10,000	2	$ 5,000	$ 10,000	3	$ 5,000	$ 15,000	
Standby Generators	2	$ 75,000	$ 150,000	2	$ 75,000	$ 150,000	4	$ 100,000	$ 400,000	
Telemetry			$ 50,000			$ 50,000			50000	
Flowmeter						$ 10,000				
Roadway	1400	$ 26	$ 36,400	4800		$ 470,000	2450		84,000	
Total Construction			$ 1,871,880			$ 3,195,980			$ 3,942,720	$ 9,010,580
O&M Support										
Start-up 1 Year		$ 22,500			$ 22,500			$ 22,500		
O&M Materials		$ 40,000			$ 40,000			$ 40,000		
O&M Manual		$ 30,000			$ 30,000			$ 30,000		
Total O&M Support			$ 92,500			$ 92,500			$ 92,500	$ 277,500
Contingency	10%		$ 203,438			$ 343,348			$ 422,522	$ 969,308
Engineering + A&E	18%		$ 502,807			$ 779,829			$ 936,594	$ 2,219,230
Taxes & Fees	2.75%		$ 58,000			$ 96,700			$ 113,000	$ 267,700
Total Capital Costs			$ 2,798,625			$ 4,653,357			$ 5,697,336	$ 13,149,318
									x $1,000	13149

Arsenic Treatment O&M													
				Shungopavi	Sipaulovi/ Mishongnovi	FMCV	Total						
Avg Production (2015)	gpd			29,500	26,300	141,800	197600						
Labor													
Routine Treatment Ops	hr/d	5		6	7	8		Inspect, adjust, op tests, chemicals, travel time					
Total Hr/Month				180	210	240							
FTE				1	1.2	1.5		Includes OT					
Salary	$/hr	17		35360	42432	53040							
Benefits	%	25%		8840	10608	13260							
Total Labor				**44200**	**53040**	**66300**	**163540**						
Admin Costs				**15200**	**8500**	**34500**	**58200**						
Current (2013)				30,400	17,000	69,000							
Arsenic Treatment	50%			0	0	0							
Insurance				**2500**	**2500**	**4000**	**9000**	Prorated from WSSP					
Analytical				**5500**	**5500**	**5500**	**16500**	Same as HAMP					
Power	$/KWH	0.15						Current Avg Cost					
Well TDH	ft			900	500	500			Current KWH/gal		0.0086	0.0046	0.005
Well KWH	KWH/d			278	138	743					254	121	709
Well Cost	$/yr			15225	7541	40658	63425						
Treatment Facility	KWH/d			150	150	160		From Moenkopi WTP Cost Estimate for building					
Treatment Cost	$/yr			8213	8213	8760	25185						
Booster Pumping TDH	ft			7	532	192							
Booster Pump KWH	KWH/d			2	147	285							
Booster Pump Cost	$/yr			118	8024	15613	23755						
Total Power				**23556**	**23777**	**65031**	**112364**						
Chemicals	**ppm**	**$/gal**		**$1,670**	**$1,489**	**$8,028**	**$ 11,186**						
Hypochlorite	3	$5		$1,347	$1,201	$6,475	9023	pre-ox & disinfect					
Hydrochloric Acid (35%)	5	$6		$323	$288	$1,553	2164						
Preventive Maint Supplies/Parts				$10,000	10000	15000	**$ 35,000**	Based on existing maint					
Misc Supplies				5000	5000	8000	**$ 18,000**						
Contractors													
Media Replacement				$ 4,000	$ 4,000	$ 24,000	**$ 32,000**	2 & 8 x year					
Backwash Disposal				$ 20,000	$ 20,000	$ 40,000	**$ 80,000**	3 & 6 x year					
Treatment System Maint				$ 30,000	$ 30,000	$ 40,000	**$ 100,000**	Monthly					
Generator Maint				$ 10,000	$ 10,000	$ 20,000	**$ 40,000**						

Cost/Generator				$5,000	$5,000	$5,000		
No of Generators				2	2	4		
Electrical Maint	$5,000	5		$1,000	$1,000	$1,000		incl in R&R
Well Maint	$10,000	5		$4,000	$4,000	$8,000		incl in R&R
No of wells				2	2	4		
Total Contractors				**$ 79,000**	**$ 79,000**	**$ 153,000**	**$ 311,000**	
Fees								
Vehicle Costs				9000	3500	7000	**$ 19,500**	1/2 of current Village coss
Subtotal				$171,626	$173,806	$336,359	**$681,791**	
Contingency	**10%**			**17163**	**17381**	**33636**	**$ 68,179**	
Total O&M				$188,789	$191,187	$369,994	**$749,970**	
O&M Cost Summary								
Salaries & Benefits				$ 44,200	$ 53,040	$ 66,300	$ 163,540	
Admin Costs				$ 15,200	$ 8,500	$ 34,500	$ 58,200	
Insurance				$ 2,500	$ 2,500	$ 4,000	$ 9,000	
Electricity				$ 23,556	$ 23,777	$ 65,031	$ 112,364	
Chemicals + Media				$ 5,670	$ 5,489	$ 32,028	$ 43,186	
Analytical				$ 5,500	$ 5,500	$ 5,500	$ 16,500	
Routine Maintenance				$ 10,000	$ 10,000	$ 15,000	$ 35,000	
Specialized Maintenance				$ 40,000	$ 40,000	$ 60,000	$ 140,000	
Residuals Disposal				$ 20,000	$ 20,000	$ 40,000	$ 80,000	
Vehicle O&M				$ 9,000	$ 3,500	$ 7,000	$ 19,500	
Misc Supplies				$ 5,000	$ 5,000	$ 8,000	$ 18,000	
Subtotal				$ 180,626	$ 177,306	$ 337,359	$ 695,291	
Contingency	10%			$ 18,063	$ 17,731	$ 33,736	$ 69,529	
Annual O&M Total				$ 198,689	$ 195,037	$ 371,094	$ 764,820	
						x $1,000	765	

3/28/2014								
HAMP w/o BIA			Grid Power		Primary Generator			
Avg Daily Flow (2015), gpd	197,615		Alt 2		Alt 3			
Avg Daily Flow (2035),gpd	282,343							
				Annual			Annual	
				Cost			Cost	
O&M Staff			$ 47,736					
Operator	2	$ 35,360						
Hourly Rate	$ 17.00							
Benefit Rate (25%)	25%	$ 8,840						
Overtime (10%)	10%	$ 3,536						
Management Admin Staff			$ 109,200					
Manager (FTE)	1							
Hourly Rate	$ 30.00	$ 62,400						
Admin Staff (FTE)	1							
Hourly Rate	$ 12.00	$ 24,960						
Benefit Rate (25%)	25%	$ 21,840						
Annual Staff Costs				**$156,936**			**$156,936**	
Grid Power Costs								
Power, Wells			$140,615					
Head,ft	1125							
Daily Flow, gpd	197,615							
Tot Eff. (%)	75%							
KWH/day			2335					
Cost/KWH ($)	$ 0.15							
Other (% of subtotal)	10%							
Power, 2nd Mesa BS			$7,939					
Head,ft	225							
Daily Flow, gpd	55,784							
Tot Eff. (%)	0.75							
KWH/day			132					
Cost/KWH	$ 0.15							
Other (%)	10%							
Admin/Service Bldg								
Avg KWH/day	75		$4,106				$4,106	
Cost/KWH	$ 0.15							
Village Chlorination Facilities	3		$ 1,643				$ 1,643	
Avg KWH/day	10							
Cost/KWH	$ 0.15							
Annual Power Costs				**$154,302**			**$5,749**	
Admin Costs				**$ 25,000**			**25,000**	**from WSSP**
Insurance				**$ 5,000**			**5000**	**from WSSP**
Diesel Fuel								
Wells (375 KW) gal/hr					18	$ 453,850		
Well hr/day @ 400 gpm					10.2			
Add time, hrs/day					2.0			
Booster Station (40 KW)gal/hr					3	$ 72,048		
Booster Station hr/day @ 125 gpm					9.7			
Add time, hrs/day					2.0			
Fuel cost, $/gal					$ 6.75			
Total Diesel Fuel							$ 525,899	
Chlorination				**$7,077**			**$ 7,077**	
Daily flow, gpd	197,615							
Chlorine dosage, ppm	2							1 ppm at wells, 1 at Villages
Hypochorite used, gpd		3.9						
Hypochlorite cost/gal	$5.00							
Lab Analyses				**$5,544**			**$ 5,544**	

		1st Year						
	Test Cost	#/yr	Cost					
Total Coliform	$18	36	$648					
Lead & Copper	$30	10	$300					
Nitrate	$18	8	$144					
Nitrite	$18	8	$144					
TTHM/HAA	$215	4	$860					
Inorganics	$200	8	$1,600					
SOCs and Pesticides	$370	8	$2,960					
VOCs	$250	8	$2,000					
Radionuclides	$390	8	$3,120					
Subtotal			$11,776					
		After 1st Year						
		#/yr	Cost					
		36	$648					
		5	$150					
		2	$36					
		0	$-					
		4	$860					
		3	$600					
		3	$1,110					
		3	$750					
		1	$390					
			$4,544					
Lab Contingency (Followup)			$1,000					
Vehicles Expense				**$ 11,000**			**$ 11,000**	
	Miles	$/mile						
	20,000	0.55						
ANNUAL Maintenance Expenses				**$37,000**			**$90,000**	
Parts Allowance			$10,000			$10,000		
Misc Contractors Allowance			$10,000			$10,000		
Generator Maintenance Contract			$ 17,000			$70,000		
Well Generators	2	$ 6,000		2	$ 25,000			
BS Generators	1	$ 5,000		2	$ 10,000			
Supplies Allowance				**$10,000**			**$10,000**	
O&M Subtotal				$411,863			$847,953	
Contingency	10%			$41,186			$84,795	
Total				$453,050			$932,749	
O&M Cost Summary								
Salaries & Benefits				$ 156,936			$ 156,936	
Admin Costs				$ 25,000			$ 25,000	
Insurance				$ 5,000			$ 5,000	
Electricity				$ 154,302			$ 5,749	
Chemicals + Media				$ 7,077			$ 7,077	
Fuel				$ -			$ 525,899	
Analytical				$ 5,544			$ 5,544	
Routine Maintenance				$ 10,000			$ 10,000	
Specialized Maintenance				$ 27,000			$ 80,000	
Residuals Disposal				$ -			$ -	
Vehicle O&M				$ 11,000			$ 11,000	
Misc Supplies				$ 10,000			$ 10,000	
Subtotal				$ 411,859			$ 842,205	
Contingency	10%			$ 41,186			$ 84,220	
Annual O&M Total				$ 453,045			$ 926,425	
				453		x $1,000	926	

HAMP R&R PRESENT VALUE 3/28/14

Life Cycle, years 20

Does not include replacement in last year of life cycle

Includes rehab in last year of life cycle for assets with RUL longer than last year of life cycle

HAMP R&R	Quantity	Replace Life3 (years)	Rehab Interval (years)	Replace Cost each	Rehab Cost each	No. of Replace	PW Replace	No. of Rehabs	PW Rehabs	RUL Value
Wells										
Well Pump/Motor	2	30	10	$ 35,000	$ 10,000	0	$ -	2	$ 40,000	$ 23,333
Well Booster Pump	2	20	10	$ 10,000	$ 5,000	0	$ -	1	$ 10,000	$ -
Casing&Screens	2	40	15	$ 500,000	$ 10,000	0	$ -	1	$ 20,000	$ 500,000
Pump Column	2	30	10	$ 10,000	$ 5,000	0	$ -	2	$ 20,000	$ 6,667
Valves - 8"	4	30	10	$ 1,500	$ 500	0	$ -	2	$ 4,000	$ 2,000
Well Buildings										
Structure	2	40	15	$ 35,000	$ 3,000	0	$ -	1	$ 6,000	$ 35,000
VFD/PLC/Telemetry6	2	15	0	$ 20,000	$ -	1	$ 40,000	0	$ -	$ 26,667
Electrical Equip	2	30	10	$ 35,000	$ 3,000	0	$ -	2	$ 12,000	$ 23,333
Diesel Primary Generator (400K)	2	10	5	$ 125,000	$ 10,000	1	$ 250,000	2	$ 40,000	$ -
Diesel Tank	2	30	10	$ 45,000	$ 5,000	0	$ -	2	$ 20,000	$ 30,000
HVAC	2	20	5	$ 5,000	$ 1,000	0	$ -	3	$ 6,000	$ -
Surge Tank	1	40	10	$ 10,000	$ 3,000	0	$ -	2	$ 6,000	$ 5,000
Surge Air System	1	20	10	$ 8,000	$ 2,000	0	$ -	1	$ 2,000	$ -
Chlorination System	1	20	5	$ 5,000	$ 1,000	0	$ -	3	$ 3,000	$ -
Storage Tank										
Tank, 240,000 gal	1	40	20	$ 1,500,000	$ 25,000	0	$ -	1	$ 25,000	$ 750,000
Piping	500	40	10	$ 70	$ 2	0	$ -	2	$ 2,000	$ 17,500

Altitude Valve	1	25	10	$ 10,000	$ 2,500	0	$ -	2	$ 5,000	$ 2,000
Controls6	1	15	0	$ 2,500	$ -	1	$ 2,500	0	$ -	$ 1,667
Transmission Pipelines										
12" PVC Pipe	75000	75	0	$ 48	$ -	0	$ -	0	$ -	$ 2,640,000
8" Pipe	68,000	75	0	$ 35	$ -	0	$ -	0	$ -	$ 1,745,333
4" & 6" Pipe	34000	75	0	$ 30	$ -	0	$ -	0	$ -	$ 748,000
12" Isolation Valves	22	30	15	$ 4,000	$ 500	0	$ -	1	$ 11,000	$ 29,333
8" Isolation Valves	18	30	15	$ 2,000	$ 500	0	$ -	1	$ 9,000	$ 12,000

4" & 6" Isolation Valves	21	30	15	$ 1,500	$ 500	0	$ -	1	$ 10,500	$ 10,500
Air Release/Blowoff Valves	15	20	5	$ 2,000	$ 500	0	$ -	3	$ 22,500	$ -
PRV	2	25	5	$ 5,000	$ 1,000	0	$ -	4	$ 8,000	$ 2,000
Altitude Valve	1	25	5	$ 10,000	$ 1,000	0	$ -	4	$ 4,000	$ 2,000
Paved Roadway	4350	15	5	$ 50	$ 5	1	$ 217,500	3	$ 65,250	$ 145,000
Village Connections										
Flowmeter& Vault	3	25	10	$ 5,000	$ 3,000	0	$ -	2	$ 18,000	$ 3,000
Backflow Preventer	3	25	10	$ 3,000	$ 2,000	0	$ -	2	$ 12,000	$ 1,800
Chlorination Facility	3	15	5	$ 30,000	$ 5,000	1	$ 90,000	3	$ 45,000	$ 60,000
Altitude Valves	3	25	10	$ 10,000	$ 2,500	0	$ -	2	$ 15,000	$ 6,000
Booster Station										
Structure	1	40	15	$ 40,000	$ 3,000	0	$ -	1	$ 3,000	$ 20,000
Pumps	4	25	10	$ 15,000	$ 2,000	0	$ -	2	$ 16,000	$ 12,000
8" Valves	8	30	15	$ 1,500	$ 500	0	$ -	1	$ 4,000	$ 4,000
VFD/PLC/Telemetry6	1	15	0	$ 20,000	$ -	1	$ 20,000	0	$ -	$ 13,333
Electrical Equip	1	30	10	$ 25,000	$ 5,000	0	$ -	2	$ 10,000	$ 8,333
Diesel Primary Generator (40KW)	2	10	5	$ 50,000	$ 10,000	1	$ 100,000	2	$ 40,000	$ -
Diesel Tank	1	30	10	$ 15,000	$ 5,000	0	$ -	2	$ 10,000	$ 5,000
Surge Tank	1	40	10	$ 8,000	$ 3,000	0	$ -	2	$ 6,000	$ 4,000
Surge Air System	1	20	10	$ 5,000	$ 1,000	0	$ -	1	$ 1,000	$ -
Sipaulovi/Mishongnovi Tank										
Tank, 110,000 gal	1	40	20	$ 300,000	$ 15,000	0	$ -	1	$ 15,000	$ 150,000
Piping and valves	500	40	10	$ 70	$ 1	0	$ -	2	$ 1,000	$ 17,500
Altitude Valve	1	25	5	$ 10,000	$ 2,500	0	$ -	4	$ 10,000	$ 2,000

Controls	1	15	0	$ 2,500	$ -	1	$ -	0	$ -	$ 1,667
PRV	2	25	5	$ 5,000	$ 2,500	0	$ -	4	$ 20,000	$ 2,000
Storage/Admin Building										
Structure	1	40	15	$ 75,000	$ 3,000	0	$ -	1	$ 3,000	$ 37,500
Hoist	1	30	10	$ 10,000	$ 2,000	0	$ -	2	$ 4,000	$ 3,333
HVAC	1	20	5	$ 10,000	$ 2,000	0	$ -	3	$ 6,000	$ -
Vehicles										
Service Truck	1	6	3	$ 30,000	$ 2,000	3	$ 90,000	3	$ 6,000	$ 20,000
ATV	1	6	3	$ 15,000	$ 2,000	3	$ 45,000	3	$ 6,000	$ 10,000
Totals							$ 855,000		$ 602,250	$ 7,138,800
x $1,000							855		602	7139

Arsenic Trtmnt R&R Present Value - SHUNGOPAVI					
Life Cycle, years	20				
Does not include replacement in last year of life cycle					
Includes rehab in last year of life cycle for assets with RUL longer than last year of life cycle					
SHUNGNOPAVI R&R	**Quantity**	**Replace Life3 (years)**	**Rehab Interval (years)**	**Replace Cost (2012 $)**	**Rehab Cost (2012 $)**
Wells					
Well Pump/Motor	2	30	10	$40,000	$10,000
Well Casing & Screens	2	40	15	$600,000	$10,000
Standby Diesel Generators	2	25	5	$70,000	$5,000
Pipelines					
6" PVC pipe	5,150	75	0	$35	0
6" valves	6	30	15	$1,500	$500
Air release/blowoff valves	1	20	5	$2,500	$500
Treatment Facility					
Structure	1	40	15	$75,000	$10,000
Treatment Process	2	20	5	$60,000	$5,000
Backwash Waste Tank	1	20	0		

No. of Replace	PW Replace	No. of Rehabs	PW Rehabs	RUL Value
0	$ -	2	$ 40,000	$ 26,667
0	$ -	1	$ 20,000	$ 600,000
0	$ -	4	$ 40,000	$ 28,000
0	$ -	0	$ -	$ 132,183
0	$ -	1	$ 3,000	$ 3,000
0	$ -	3	$ 1,500	$ -
0	$ -	1	$ 10,000	$ 37,500
0	$ -	3	$ 30,000	$ -
0	$ -	0	$ -	$ -

Chemical Feed Systems	2	10	5	$2,000	$500
Booster Pumps	2	20	10	$25,000	$5,000
Electrical Equip	1	30	10	$80,000	$10,000
Controls/Telemetry Equipment	1	10	0	$50,000	
HVAC	1	20	5	$20,000	$2,000
Surge Tank	1	30	10	$40,000	$2,000
Surge Air System	1	15	5	$10,000	$1,000
PRVs	2	20	5	$3,000	$1,000
Flowmeters	2	25	10	$5,000	$1,000
Totals					
x $1,000					

1	$ 4,000	2	$ 2,000	$ -
0	$ -	1	$ 10,000	$ -
0	$ -	2	$ 20,000	$ 26,667
1	$ 50,000	0	$ -	$ -
0	$ -	3	$ 6,000	$ -
0	$ -	2	$ 4,000	$ 13,333
1	$ 10,000	3	$ 3,000	$ 6,667
0	$ -	3	$ 6,000	$ -
0	$ -	2	$ 4,000	$ 2,000
	$ 64,000		$ 199,500	$ 876,017
	64		200	876

Arsenic Trtmnt R&R Present Value - SIPAULOVI/MISHONGNOVI						
Life Cycle, years	20					
Does not include replacement in last year of life cycle						
Includes rehab in last year of life cycle for assets with RUL longer than last year of life cycle						
SIPAULOVI/MISHONGNOV R&R	**Quantity**	**Replace Life3 (years)**	**Rehab Interval (years)**	**Replace Cost**	**Rehab Cost**	**No. of Replace**
Wells						
Well Pump/Motor	2	30	10	$85,000	$10,000	0
Well Casing & Screens	2	40	15	$300,000	$15,000	0
Standby Diesel Generators	2	25	5	$80,000	$5,000	0
Pipelines & Storage						
Water Storage Tank, 100,000 gal	1	40	15	$170,000	$20,000	0
6" PVC pipe	19,050	75	0	$35		0
6" valves	10	30	15	$1,500	$5,000	0
Air release/blowoff valves	4	20	5	$1,000	$500	0
Treatment Facility						
Structure	1	40	15	$90,000	$10,000	0
Treatment Process	2	20	5	$6,000	$10,000	0
Backwash Waste Tank	1	20	0	$5,000		0
Chemical Feed Systems	2	10	5	$2,500	$500	1

PW Replace	No. of Rehabs	PW Rehabs	RUL Value
$ -	2	$ 40,000	$ 56,667
$ -	1	$ 30,000	$ 300,000
$ -	4	$ 40,000	$ 32,000
$ -	1	$ 20,000	$ 85,000
$ -	0	$ -	$ 488,950
$ -	1	$ 50,000	$ 5,000
$ -	3	$ 6,000	$ -
$ -	1	$ 10,000	$ 45,000
$ -	3	$ 60,000	$ -
$ -	0	$ -	$ -
$ 5,000	2	$ 2,000	$ -

Booster Pumps	2	20	10	$25,000	$10,000	0
Electrical Equip	1	30	10	$80,000	$10,000	0
Controls/Telemetry Equipment	1	10	0	$50,000		1
HVAC	1	20	5	$20,000	$2,000	0
Surge Tank	1	30	10	$40,000	$2,000	0
Surge Air System	1	15	5	$10,000	$1,000	1
PRVs	2	20	5	$2,500	$500	0
Flowmeters	3	25	10	$5,000	$1,000	0
Road Pavement	2400	15	5	50	5	1
Totals						
x $1,000						

$ -	1	$ 20,000	$ -
$ -	2	$ 20,000	$ 26,667
$ 50,000	0	$ -	$ -
$ -	3	$ 6,000	$ -
$ -	2	$ 4,000	$ 13,333
$ 10,000	3	$ 3,000	$ 6,667
$ -	3	$ 3,000	$ -
$ -	2	$ 6,000	$ 3,000
$ 120,000	3	$ 36,000	$ 80,000
$ 185,000		$ 356,000	$ 1,142,283
185		356	1142

Arsenic Trtmnt R&R Present Value - FMCV		
Life Cycle, years	20	Existing wells & well pumps are manual calculation
Does not include replacement in last year of life cycle		
Includes rehab in last year of life cycle for assets with RUL longer than last year of life cycle		
FMCV R&R	**Quantity**	**Replace**
		Life3
		(years)
Wells		
New Well Pump/Motor	1	30
Existing Well Pump/Motor(1)	3	15
New Well Casing & Screens	1	40
Existing Well 5 & 6 Casing & Screens(2)	2	10
Existing Well 8 Casing & Screen(2)	1	20
Standby Diesel Generators	4	25
Pipelines		
Water Storage Tank, 200,000 gal	1	40
8" PVC pipe	29,500	75
8" valves	10	30
Air release/blowoff valves	2	20
Altitude valves	1	20
Treatment Facility		

Rehab Interval (years)	Replace Cost (2012 $)	Rehab Cost (2012 $)	No. of Replace	PW Replace	No. of Rehabs	PW Rehabs	RUL Value	
10	$100,000	$10,000	0	$ -	2	$ 20,000	$ 33,333	
10	$80,000	$10,000	1	$ 240,000	1	$ 30,000	$ 160,000	Manual calculation
15	$500,000	$15,000	0	$ -	1	$ 15,000	$ 250,000	
15	$500,000	$30,000	1	$ 1,000,000	0	$ -	$ -	Manual calculation
15	$500,000	$15,000	0	$ -	1	$ 15,000	$ -	Manual calculation
5	$90,000	$5,000	0	$ -	4	$ 80,000	$ 72,000	
15	$250,000	$20,000	0	$ -	1	$ 20,000	$ 125,000	
0	$35	0	0	$ -	0	$ -	$ 757,167	
15	$2,500	$500	0	$ -	1	$ 5,000	$ 8,333	
5	$2,000	$500	0	$ -	3	$ 3,000	$ -	
5	$10,000	$1,000	0	$ -	3	$ 3,000	$ -	

Structure	1	40
Treatment Process	3	20
Backwash Waste Tank	1	20
Chemical Feed Systems	4	10
Booster Pumps	2	20
Electrical Equip	1	30
Controls/Telemetry Equipment	1	10
HVAC	1	20

15	$90,000	$10,000	0	$ -	1	$ 10,000	$ 45,000	
5	$60,000	$5,000	0	$ -	3	$ 45,000	$ -	
0	$6,000	0	0	$ -	0	$ -	$ -	
5	$2,000	$500	1	$ 8,000	2	$ 4,000	$ -	
10	$30,000	$5,000	0	$ -	1	$ 10,000	$ -	
10	$100,000	$10,000	0	$ -	2	$ 20,000	$ 33,333	
0	$50,000	0	1	$ 50,000	0	$ -	$ -	
5	$20,000	$2,000	0	$ -	3	$ 6,000	$ -	

Surge Tank	1	30
Surge Air System	1	15
PRVs	2	20
Flowmeters	3	25
Paved Roadways	150	15
Totals		
x $1,000		
(1) Age of existing pumps assumed equal to 1/2 expected life		
(2) Replacement life is estimated remaining useful life of existing wells		

10	$10,000	$2,000	0	$ -	2	$ 4,000	$ 3,333
5	$10,000	$1,000	1	$ 10,000	3	$ 3,000	$ 6,667
5	$2,500	$500	0	$ -	3	$ 3,000	$ -
10	$5,000	$1,000	0	$ -	2	$ 6,000	$ 3,000
5	50	5	1	$ 7,500	3	$ 2,250	$ 5,000
				$ 1,315,500		$ 304,250	$ 1,502,167
				1316		304	1502

HAMP R&R PRESENT VALUE 3/28/14

Life Cycle, years 20
Does not include replacement in last year of life cycle
Includes rehab in last year of life cycle for assets with RUL longer than last year of life cycle

	Quantity
Wells	
Well Pump/Motor	2
Well Booster Pump	2
Casing&Screens	2
Pump Column	2
Valves - 8"	4
Well Buildings	
Structure	2
VFD/PLC/Telemetry6	2
Electrical Equip	2
Diesel Standby Generator (400K)	2

WITHOUT PRIM GENERATORS

Replace Life3 (years)	Rehab Interval (years)	Replace Cost each	Rehab Cost each	No. of Replace	PW Replace	No. of Rehabs	PW Rehabs
30	10	$ 35,000	$ 10,000	0	$ -	2	$ 40,000
20	10	$ 10,000	$ 5,000	0	$ -	1	$ 10,000
40	15	$ 500,000	$ 10,000	0	$ -	1	$ 20,000
30	10	$ 10,000	$ 5,000	0	$ -	2	$ 20,000
30	10	$ 1,500	$ 500	0	$ -	2	$ 4,000
40	15	$ 35,000	$ 3,000	0	$ -	1	$ 6,000
15	0	$ 20,000	$ -	1	$ 40,000	0	$ -
30	10	$ 35,000	$ 3,000	0	$ -	2	$ 12,000
35	5	$ 125,000	$ 10,000	0	$ -	4	$ 80,000

RUL Value
$ 23,333
$ -
$ 500,000
$ 6,667
$ 2,000
$ 35,000
$ 26,667
$ 23,333
$ 107,143

HVAC	2
Surge Tank	1
Surge Air System	1
Chlorination System	1
Storage Tank	
Tank, 240,000 gal	1
Piping	500
Altitude Valve	1
Controls6	1
Transmission Pipelines	
12" PVC Pipe	75000
8" Pipe	68,000
4" & 6" Pipe	34000
12" Isolation Valves	22
8" Isolation Valves	18

20	5	$	5,000	$	1,000	0	$	-	3	$	6,000
40	10	$	10,000	$	3,000	0	$	-	2	$	6,000
20	10	$	8,000	$	2,000	0	$	-	1	$	2,000
20	5	$	5,000	$	1,000	0	$	-	3	$	3,000
40	20	$	1,500,000	$	25,000	0	$	-	1	$	25,000
40	10	$	70	$	2	0	$	-	2	$	2,000
25	10	$	10,000	$	2,500	0	$	-	2	$	5,000
15	0	$	2,500	$	-	1	$	2,500	0	$	-
75	0	$	48	$	-	0	$	-	0	$	-
75	0	$	35	$	-	0	$	-	0	$	-
75	0	$	30	$	-	0	$	-	0	$	-
30	15	$	4,000	$	500	0	$	-	1	$	11,000
30	15	$	2,000	$	500	0	$	-	1	$	9,000

$ -
$ 5,000
$ -
$ -
$ 750,000
$ 17,500
$ 2,000
$ 1,667
$ 2,640,000
$ 1,745,333
$ 748,000
$ 29,333
$ 12,000

4" & 6" Isolation Valves	21
Air Release/Blowoff Valves	15
PRV	2
Altitude Valve	1
Paved Roadway	4350
Village Connections	
Flowmeter& Vault	3
Backflow Preventer	3
Chlorination Facility	3
Altitude Valves	3
Booster Station	
Structure	1
Pumps	4
8" Valves	8
VFD/PLC/Telemetry6	1
Electrical Equip	1
Diesel Standby Generator (25KW)	1
Surge Tank	1
Surge Air System	1
Sipaulovi/Mishongnovi Tank	
Tank, 110,000 gal	1
Piping and valves	500
Altitude Valve	1

30	15	$	1,500	$	500	0	$	-	1	$	10,500
20	5	$	2,000	$	500	0	$	-	3	$	22,500
25	5	$	5,000	$	1,000	0	$	-	4	$	8,000
25	5	$	10,000	$	1,000	0	$	-	4	$	4,000
15	5	$	50	$	5	1	$	217,500	3	$	65,250
25	10	$	5,000	$	3,000	0	$	-	2	$	18,000
25	10	$	3,000	$	2,000	0	$	-	2	$	12,000
15	5	$	30,000	$	5,000	1	$	90,000	3	$	45,000
25	10	$	10,000	$	2,500	0	$	-	2	$	15,000
40	15	$	40,000	$	3,000	0	$	-	1	$	3,000
25	10	$	15,000	$	2,000	0	$	-	2	$	16,000
30	15	$	1,500	$	500	0	$	-	1	$	4,000
15	0	$	20,000	$	-	1	$	20,000	0	$	-
30	10	$	25,000	$	5,000	0	$	-	2	$	10,000
35	5	$	50,000	$	5,000	0	$	-	4	$	20,000
40	10	$	8,000	$	3,000	0	$	-	2	$	6,000
20	10	$	5,000	$	1,000	0	$	-	1	$	1,000
40	20	$	300,000	$	15,000	0	$	-	1	$	15,000
40	10	$	70	$	1	0	$	-	2	$	1,000
25	5	$	10,000	$	2,500	0	$	-	4	$	10,000

$ 10,500
$ -
$ 2,000
$ 2,000
$ 145,000
$ 3,000
$ 1,800
$ 60,000
$ 6,000
$ 20,000
$ 12,000
$ 4,000
$ 13,333
$ 8,333
$ 21,429
$ 4,000
$ -
$ 150,000
$ 17,500
$ 2,000

Controls	1
PRV	2
Storage/Admin Building	
Structure	1
Hoist	1
HVAC	1
Vehicles	
Service Truck	1
ATV	1

Totals

x $1,000

15	0	$	2,500	$	-	1	$	-	0	$	-
25	5	$	5,000	$	2,500	0	$	-	4	$	20,000
40	15	$	75,000	$	3,000	0	$	-	1	$	3,000
30	10	$	10,000	$	2,000	0	$	-	2	$	4,000
20	5	$	10,000	$	2,000	0	$	-	3	$	6,000
6	3	$	30,000	$	2,000	3	$	90,000	3	$	6,000
6	3	$	15,000	$	2,000	3	$	45,000	3	$	6,000
							$	505,000		$	592,250
								505			592

$ 1,667
$ 2,000
$ 37,500
$ 3,333
$ -
$ 20,000
$ 10,000
$ 7,232,371
7232