APPENDIX H

DETAILED COST ANALYSIS OF MITIGATION ALTERNATIVES

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Subtotal

240,300

329.400

\$

\$

15,000

18,700

		Quantity	Unit	Unit Cost	Extended Cost
Land Access	,				
Permitting, Surveying	:				
	Project Management	140	hours @	140	19,600
	Archeological Survey				33,000
	Endangered Species Survey				40,000
	Well Drilling Permits	18	each @	150	2,700
	404 Survey				20,000
	404 Permitting				35,000
	Access ROW/Lease			_	90,000
					240,300
Engineering	:				
	Principal	300	hours @	140	42,000
	Associate	650	hours @	110	71,500
	Project Professional II	1,600	hours @	85	136,000
	Staff Professional II	600	hours @	65	39.000

300

340

hours @

50

55

Alternative 1: IW Wellfield=4861gpm; FFS Wellfield= 3150-2400gpm; SC Wellfield=1500-750gpm

hours @ **Technical Editor** 80 hours @ 50 4,000 Word Processing/Data Entry hours @ 80 40 3,200 329,400 **Construction &** Capital Costs (Year 2009): Well Drilling & Construction: Drill Rig Mob-demob 80,000 Extraction Well Construction; 16 inch casing 8,685 feet @ 400 3,474,000 Observation Well Construction; 4 inch casing 8 each @ 53000 424,000 56000 Well Development/Testing 10 each @ 560.000 Rig Takedown/Setup 9 each @ 12300 110.700 Field Geologist 1,750 each @ 75 131,250 300 GPM Pump Assembly & Installation: **Bowl Assembly** 6500 1 each @ 6,500 **Discharge Head** 13000 1 each @ 13,000 Driver; 150 HP, 460V each @ 1 17500 17,500 each @ Lineshaft Assembly 65000 65,000 1 Oil Drum/Stand/Solenoid; 55 gal each @ 2300 2,300 1 Wellhead Fabrication each @ 4200 4,200 1 8000 Pump Installation 1 each @ 8,000 500 GPM Pump Assembly & Installation: Bowl Assembly 6 each @ 7500 45.000 **Discharge Head** 6 each @ 15000 90,000 Driver; 200 HP, 460V 6 each @ 20000 120,000 Lineshaft Assembly 6 each @ 67000 402,000 Oil Drum/Stand/Solenoid; 55 gal 6 each @ 2300 13,800 Wellhead Fabrication 6 each @ 4200 25,200 Pump Installation 6 each @ 8000 48,000 600-700 GPM Pump Assembly & Installation: Bowl Assembly; 11 stage 3 each @ 9900 29.700 Discharge Head; 20"x12" Type F 3 each @ 17000 51,000 Driver; 350HP, 460V, 389 FLA 3 each @ 25000 75,000 Lineshaft Assembly 3 each @ 67000 201,000 Oil Drum/Stand/Solenoid; 55 gal 3 each @ 2300 6,900 Wellhead Fabrication 3 each @ 4200 12,600 **Pump Installation** 3 each @ 8000 24,000

Technician II

CAD/Draftsperson

Alternative 1: IW Wellfield=4861gpm; FFS Wellfield= 3150-2400gpm; SC Wellfield=1500-750gpm

Extended		
Quantity Unit Unit Cost Cost		Subtotal
Electrical Equipment & Installation:		
Replacement Motors3each @2500075,000		
Power Supply & Distribution16,800feet @21352,800		
Transformer Sets; 500 kVA 3 each @ 25000 75,000		
Transformer Sets; 250 kVA 7 each @ 12500 87,500		
Wellhead Instrumentation10each @11500115,000		
Telemetry/Data Acquisition10each @650065,000		
Sound Reduction Enclosure6each @500030,000		
Wellhead Electrical w/ soft starts10each @52000520,000		
Effluent Piping & Installation:		
8 inch HDPE, SDR-13.5 11,000 feet @ 19.23 211,530		
12 inch HDPE, SDR-13.5 5,000 feet @ 32.98 164,900		
14 inch HDPE, SDR-13.5 2,400 feet @ 38.49 92,376		
20 inch HDPE, SDR-13.5 15,000 feet @ 67.94 1,019,100		
22 inch HDPE, SDR-13.5 3,500 feet @ 79.71 278,985		
24 inch HDPE, SDR-13.5 1.500 feet @ 92.25 138.375		
26 inch HDPE, SDR-13.5 3.500 feet @ 106.61 373.135		
8 inch HDPE, SDR-11 (distribution) 500 feet @ 20.97 10.485		
Trenching and Backfilling 18.500 feet @ 4 74.000		
Shipping 28,000		
Miscellaneous:		
Header Tie-Ins 5 each @ 8800 44.000		
Distribution Piping Tie-Ins 10 each @ 1650 16 500		
Air Relief Valves 53 each @ 1200 63 600		
Drill Site Pads 18 each @ 4850 87 300		
Access Roads 2.3 miles @ 5625 12.938		
Pineline Road Crossing 4 each @ 9500 38 000		
Construction Management 1 400 hours @ 75 105 000		
Project Management 473 hours @ 140 66 150		
Operation & Majual		
As Built Documentation 4,000		
	¢	10 222 224
10,222,024	ψ	10,222,324
Annual Operation		
& Maintenance		
(Years 2010-2042): <u>base rate</u> <u>factor</u>		
Labor 114,000 factor @ 0.48 54,720		
Supplies 35,000 factor @ 0.48 16,800		
Electrical Power (excluding IW) 15,800,000 Kw hours @ 0.07 1,106,000		
IW Electrical Power (w/ IW pump station) 10,530,000 Kw hours @ 0 0		
Additional IW Pumping Station Electrical Power 2,200,000 Kw hours @ 0.07 154,000		
Service Vehicle 12 months 720 8.640		
Inter. Well Field O&M (2006) 149.000 factor @ 0 0		
Canoa Ranch Water Use Savings (2007) 3.842.000 -4650 -1.488.775		
Groundwater Monitoring 50.000		
Hvdrologic Consultant 85 000		
-13.615	\$	(13,615)

Alternative 1:	IW Wellfield=4861gpm; FFS Wellfield= 3150-2400g	om; SC Wellfield=	:1500-750gpm			
		0		11-11 01	Extended	0
Annua	l	Quantity	Unit	Unit Cost	Cost	Subtotal
Repair/Replacement	t i i i i i i i i i i i i i i i i i i i					
(Years 2010-2042)	:					
	Labor/Materials/Equipment	210,000	factor @	0.78	163,800	
	Pipeline/Headers	75,000	factor @	0.78	58,500	
	Well/Pump/Motor	325,000	factor @	0.78	253,500	
	Replacement Materials/Instruments	97,000	factor @	0.78	75,660	
	Inter. Well Field Repair/Replacement (2006)	707,000	factor @	0	0	
	Shipping			-	5,000	
					556,460	\$ 556,460
Annual Operation 8 Maintenance						
(Years 2043-2058):		base rate		factor		
(Labor	114.000	factor @	0.48	54.720	
	Supplies	35,000	factor @	0.48	16,800	
	Electrical Power (excluding IW)	14,800,000	Kw hours @	0.07	1,036,000	
	IW Electrical Power (w/ IW pump station)	8,500,000	Kw hours @	0.07	595,000	
	Additional IW Pumping Station Electrical Power	2,100,000	Kw hours @	0.07	147,000	
	Service Vehicle	12	months	720	8,640	
	Inter. Well Field O&M (2006)	149,000	factor @	0.9	134,100	
	Groundwater Monitoring				50,000	
	FICO Water Cost				150,000	
	ADWR Water Fees	3.00	/AF	15100	45,301	
	ADWR WQARF fee	2.12	/AF	15100	32,013	
	Hydrologic Consultant			-	85,000	
					2,354,574	\$ 2,354,574
.						
Annua Renair/Replacement						
(Years 2043-2058):						
(Labor/Materials/Equipment	210,000	factor @	0.75	157,500	
	Pipeline/Headers	75,000	factor @	0.75	56,250	
	Well/Pump/Motor	325,000	factor @	0.75	243,750	
	Replacement Materials/Instruments	97,000	factor @	0.75	72,750	
	Inter. Well Field Repair/Replacement (2006)	707,000	factor @	0.81	572,670	
	Shipping			_	5,000	
				_	1,107,920	\$1,107,920
Water Treatment	t					
(Vear 2042)						
(1001 2042)	Pilot Scale Testing				175 000	
	Telemetry to Mine Operations				150,000	
	Power Supply & Distribution	10 600	feet @	21	222 600	
	RO Treatment System (9361 gpm)	23.954.000	/6000 apm	9.361	31,281.001	
		-,,	Jr		31,828,601	\$31,828,601

Alternative 1:	IW Wellfield=4861gpm; FFS Wellfield= 3150-2400gp	m; SC Wellfield=	=1500-750gpm				
Water Treatment Annual O&M		Quantity	Unit	Unit Cos	Extended t Cost	Subtotal	
(Years 2043-2058):	RO Treatment System (9361 gpm)	0.73	/1000 gals	9,361	<u>3,591,703</u> 3,591,703	\$3,591,7	703
	Alternative 1: Annual Operation, Maintenance Annual Operation, Maintenance Total Pre-Construction, Capital, O&M Pre-Construction, Capital, O&M Pre-Construction, Capital, O&M	e, Repair, Rep e, Repair, Rep I, Repair, Rep I, Repair, Rep I, Repair, Rep Extractio RO Treatmer	Initial Initial Cons lacement Co lacement Co lacement Co lacement Co lacement Co n System Co at System Co	Pre-Con struction osts (yea osts (yea osts (yea osts (yea osts (yea osts (yea	struction Cost: a Capital Costs: ars 2010-2042): ars 2043-2058): ars 2009-2058): ars 2009-2042): ars 2043-2058): ars 2043-2058): ars 2043-2058):	\$ 569,7 \$ 10,222,3 \$ 542,8 \$7,054,1 \$ 173,401,6 \$ 28,705,9 \$ 144,695,7 \$ 55,399,9 \$ 89,295,8	700 324 345 197 367 367 309 759 304 355
	Groundwater Ex Groundwater RO Tr	xtraction System	stem 50 Yea stem 50 Yea	ar Net Pr ar Net Pr	resent Value = resent Value =	\$ 25,174,3 \$ 11,941,1	80 77
Assumptions: 1) IW pump station do 2) O&M based on IW 3) Repair/Replacemen 4) Net Present Value 5) Canoa Ranch wate 6) Base Kw-hrs for IW 7) 20"-26" line from w 8) All capital equipme 9) Flows @ years 201 10) Flows @ years 201 11) Canoa Ranch Web	Des not require upgrades for total flow (assumes 3- costs for 2006 proportional to 21 wells nt based on IW costs for 2006 proportional to 6000 is calculated over 50 years assuming a 7.8 percent er use off-set proportional to total 2007 well field O8 V pump station assumed at 3,800,000 at 6000gpm rest of Esperanza junction to IW pump station nt sized for maximum flow rate 10-2042 = IW-4861gpm; FFS-3150gpm; SC-1500gp 43-2058 = IW-4861gpm; FFS-3000gpm; SC-1500gp I Field saving based on time period weighted-avera	300hp) Igpm t discount rate r &M costs om Ipm age flow, exclud	ninus a 2.4 pe ling IW	rcent esca	alation rate		
Abbreviations: ROW- right of way CAD-computer aided of HP-horse power gals-gallons V-volts FLA-full load amps A-amps kVA- kilo volt amps HDPE-high density po SDR-size dimension ra IW- interceptor well file O&M- operation and n gpm-gallons per minut Kw-kilo watts FICO-Farmers Investin WQARF-Water Quality ADWR-Arizona Dept of AF-acre-feet RO-reverse osmosis	drafting lyethylene atio id naintenance ie nent \Co. y Assurance Revolving Fund of Water Resources						

Alternative 2: IW Wellfield=4861gpm; FFS Wellfield=3100-2400gpm; SC Wellfield=1500-750gpm; PS Wellfield=2300-1500gpm						
	Quantitu	11-14		Extended		Subtetal
Land Access,	Quantity	Unit	Unit Cost	Cost		Subtotal
Permitting, Surveying:						
Project Management	160	hours @	140	22,400		
Archeological Survey				40,000		
Endangered Species Survey			150	50,000		
Well Drilling Permits	24	each @	150	3,600		
404 Survey				25,000		
				40,000		
Access NOWLease			-	301,000	\$	301,000
Engineering						
Principal	400	hours @	140	56 000		
Associate	800	hours @	110	88.000		
Project Professional II	3,000	hours @	85	255,000		
Staff Professional II	850	hours @	65	55,250		
Technician II	400	hours @	50	20,000		
CAD/Draftsperson	500	hours @	55	27,500		
Technical Editor	150	hours @	50	7,500		
Word Processing/Data Entry	100	hours @	40	4,000		
				513,250	\$	513,250
Construction & Capital Costs (Year 2009):						
Well Drilling & Construction:						
Drill Rig Mob-demob				80,000		
Extraction Well Construction; 16 inch casing	12,459	feet @	400	4,983,600		
Observation Well Construction; 4 inch casing	10	each @	53000	530,000		
Well Development/Testing	14	each @	56000	784,000		
Rig Takedown/Setup	13	each @	12300	159,900		
Piela Geologist	2,500	each @	75	167,500		
Bowl Assembly	1	each @	6500	6 500		
Discharge Head	1	each @	13000	13,000		
Driver: 150 HP, 460V	1	each @	17500	17,500		
Lineshaft Assembly	1	each @	65000	65.000		
Oil Drum/Stand/Solenoid: 55 gal	1	each @	2300	2,300		
Wellhead Fabrication	1	each @	4200	4,200		
Pump Installation	1	each @	8000	8,000		
500 GPM Pump Assembly & Installation:						
Bowl Assembly	7	each @	7500	52,500		
Discharge Head	7	each @	15000	105,000		
Driver; 200 HP, 460V	7	each @	20000	140,000		
Lineshaft Assembly	7	each @	67000	469,000		
Oil Drum/Stand/Solenoid; 55 gal	7	each @	2300	16,100		
Weilhead Fabrication	7	each @	4200	29,400		
Fump Installation	1	eacn @	8000	000,00		
Bowl Assembly: 11 stage	F	each @	9000	50 100		
Down Assentibly, 11 Slaye Discharge Head: 20"x12" Type F	6	each @	17000	102 000		
Driver 350HP 4601/ 380 FLA	6	each @	25000	150 000		
Lineshaft Assembly	0 A	each @	67000	402 000		
Oil Drum/Stand/Solenoid: 55 gal	6	each @	2300	13 800		
Wellhead Fabrication	6 6	each @	4200	25,200		
Pump Installation	6	each @	8000	48,000		

Alternative 2: IW Wellfield=4861gpm; FFS Wellfield=3100-2400gpm; SC Wellfield=1500-750gpm; PS Wellfield=2300-1500gpm

				Extended		
	Quantity	Unit	Unit Cost	Cost		Subtotal
Electrical Equipment & Installation:						
Replacement Motors	3	each @	25000	75,000		
Power Supply & Distribution	24,500	feet @	21	514,500		
Transformer Sets; 500 kVA	6	each @	25000	150,000		
Transformer Sets; 250 kVA	8	each @	12500	100,000		
Wellhead Instrumentation	14	each @	11500	161,000		
Telemetry/Data Acquisition	14	each @	6500	91,000		
Sound Reduction Enclosure	14	each @	5000	70,000		
Wellhead Electrical w/ soft starts	14	each @	52000	728,000		
Effluent Piping & Installation:						
8 inch HDPE, SDR-13.5	10,700	feet @	19.23	205,761		
12 inch HDPE, SDR-13.5	3,250	feet @	32.98	107,185		
14 inch HDPE, SDR-13.5	1,400	feet @	38.49	53,886		
16 inch HDPE, SDR-13.5	2.000	feet @	47.53	95,060		
20 inch HDPE, SDR-13.5	1,500	feet @	67.94	101,910		
22 inch HDPE, SDR-13.5	2,500	feet @	79.71	199.275		
24 inch HDPE, SDR-13.5	1.000	feet @	92.25	92,250		
28 inch HDPE, SDR-13.5	16.500	feet @	121.37	2.002.605		
30 inch HDPE, SDR-13.5	3.500	feet @	137.33	480.655		
32 inch HDPF, SDR-13.5	4,000	feet @	154.17	616,680		
8 inch HDPF, SDR-11 (distribution)	700	feet @	20.97	14,679		
Trenching and Backfilling	23 350	feet @	4	93 400		
Shinping	20,000		•	31,000		
Miscellaneous:				01,000		
IW Pump Station Upgrades				125,000		
Header Tie-Ins	6	each @	8800	52 800		
Distribution Piping Tie-Ins	14	each @	1650	23 100		
Air Relief Valves	56	each @	1200	67 200		
Drill Site Pads	24	each @	4850	116 400		
Access Roads	24	miles @	5625	19 688		
Pipeline Road Crossing	5.5	each @	9500	47 500		
Construction Management	1 500	bours @	3500 75	112 500		
Project Management	1,500	hours @	140	84 000		
Operation & Maintenance Manual	000	nouis e	140	6 500		
				30,000		
As-built bocumentation				15 178 /3/	¢	15 178 /3/
				10,170,404	Ψ	10,170,404
Annual Operation &						
Maintenance						
(Years 2010-2042):	<u>base rate</u>		<u>factor</u>			
Labor	114,000	factor @	0.67	76,380		
Supplies	35,000	factor @	0.67	23,450		
Electrical Power (excluding IW)	24,000,000	Kw hours @	0.07	1,680,000		
IW Electrical Power (w/ IW pump station)	10,530,000	Kw hours @	0	0		
Additional IW Pumping Station Electrical Powe	er 3,600,000	Kw hours @	0.07	252,000		
Service Vehicle	12	months	720	8,640		
Inter. Well Field O&M (2006)	149,000	factor @	0	0		
Canoa Ranch Water Use Savings (2007)	3,842,000		-6706	-2,147,038		
Groundwater Monitoring				50,000		
Hydrologic Consultant				85,000		
				28,432	\$	28,432

Alternative 2:	IW Wellfield=4861gpm; FFS Wellfield=3100-2400gp	m; SC Wellfield=1	500-750gpm; PS	Wellfield=23	300-1500gpm	
					Extended	0.14441
Annual		Quantity	Unit	Unit Cost	Cost	Subtotal
Repair/Replacement						
(Tears 2010-2042).	Labor/Materials/Equipment	210.000	factor @	1.15	241.500	
	Pipeline/Headers	75,000	factor @	1.15	86,250	
	Well/Pump/Motor	325,000	factor @	1.15	373,750	
	Replacement Materials/Instruments	97,000	factor @	1.15	111,550	
	Inter. Well Field Repair/Replacement (2006)	707,000	factor @	0	0	
	Shipping			-	5,000	
Annual On and in a					818,050	\$ 818,050
Maintenance						
(Years 2043-2058):		<u>base rate</u>		factor		
	Labor	114,000	factor @	0.67	76,380	
	Supplies	35,000	factor @	0.67	23,450	
	Electrical Power (excluding IW)	22,400,000	Kw hours @	0.07	1,568,000	
	IW Electrical Power (w/ IW pump station)	8,500,000	Kw hours @	0.07	595,000	
	Additional IW Pumping Station Electrical Power	3,100,000	Kw hours @	0.07	217,000	
	Service Vehicle	12	months	720	8,640	
	Inter. Well Field O&M (2006)	149,000	factor @	0.9	134,100	
	Groundwater Monitoring				50,000	
	FICO Water Cost				150,000	
	ADWR Water Fees	3.00	/AF	17681	53,044	
	ADWR WQARF fee	2.12	/AF	17681	37,485	
	Hydrologic Consultant			-	85,000	
					2,998,099	\$ 2,998,099
Annual						
Repair/Replacement (Years 2043-2058)						
(10010 2040 2000).	Labor/Materials/Equipment	210.000	factor @	1.02	214.200	
	Pipeline/Headers	75.000	factor @	1.02	76,500	
	Well/Pump/Motor	325,000	factor @	1.02	331,500	
	Replacement Materials/Instruments	97.000	factor @	1.02	98,940	
	Inter. Well Field Repair/Replacement (2006)	707,000	factor @	0.81	572,670	
	Shipping	- ,			5.000	
				-	1,298,810	\$1,298,810
Water Treatment						
Construction (Year 2042):						
· · · ·	Pilot Scale Testing				175,000	
	Telemetry to Mine Operations				150,000	
	Power Supply & Distribution	10,600	feet @	21	222,600	
	RO Treatment System (10961 gpm)	23,954,000	/6000 gpm	10,961	34,387,246	
					34,934,846	\$34,934,846

Alternative 2:	IW Wellfield=4861gpm; FFS Wellfield=	=3100-2400gpm; SC Wellfield	l=1500-750gpm; PS	S Wellfield=2300-1	500gpm	
Water Treatment Annual O&M		Quantity	Unit	Ex Unit Cost	ttended Cost	Subtotal
(Years 2043-2058):	RO Treatment System (10961 gp	om) 0.6	4 /1000 gals	10,961 <u>3</u> , 3,	. <u>687,105</u> 687,105	\$3,687,105
	Annual Operatio Annual Operatio Total Pre-Constructio Total Pre-Constructio Total Pre-Constructio	Alternative 2: on, Maintenance, Repair on, Maintenance, Repair n, Capital, O&M, Repair n, Capital, O&M, Repair n, Capital, O&M, Repair Extr RO Trea	Initia Initial Co , Replacement (, Replacement (, Replacement (, Replacement (, Replacement (action System (, tment System (al Pre-Constru onstruction Cap Costs (years 2 Costs (years 2	ction Cost: \$ pital Costs: \$ 010-2042): \$ 043-2058): \$ 009-2058): \$ 043-2058): \$ 043-2058): \$ 043-2058): \$	814,250 15,178,434 846,482 7,984,014 206,605,666 43,926,601 162,679,065 68,750,538 93,928,527
	G Grou	roundwater Extraction ndwater RO Treatmen	n System 50 Ye t System 50 Ye Total 50 Ye	ear Net Prese ear Net Prese ear Net Prese	ent Value = \$ ent Value = \$ ent Value = \$	36,477,114 12,656,945 49,134,059
Assumptions: 1) IW pump station do 2) O&M based on IW 3) Repair/Replacement 4) Net Present Value 5) Canoa Ranch wate 6) Base Kw-hrs for IW 7) 28"-32" line from w 8) All capital equipment 9) Flows @ years 201 10) Flows @ years 200 11) Canoa Ranch Well Abbreviations:	bes not require upgrades for total flow costs for 2006 proportional to 21 well in tbased on IW costs for 2006 propo- is calculated over 50 years assuming r use off-set proportional to total 200 / pump station assumed at 3,800,000 est of Esperanza junction to IW pump nt sized for maximum flow rate 10-2042 = IW-4861gpm; FFS-3100gp 43-2058 = IW-4861gpm; FFS-3100gp I Field saving based on time period v	v (assumes 3-300hp) Ils rtional to 6000gpm g a 7.8 percent discount rate 7 well field O&M costs 0 at 6000gpm p station pr, SC-1500gpm; PS-2300 pm; SC-1500gpm; PS-1500 veighted-average flow, excl	e minus a 2.4 perc gpm gpm uding IW	cent escalation ra	ate	
ROW- right of way CAD-computer aided of HP-horse power gals-gallons V-volts FLA-full load amps A-amps kVA- kilo volt amps HDPE-high density po SDR-size dimension ra IW- interceptor well fie O&M- operation and n gpm-gallons per minut Kw-kilo watts FICO-Farmers Investn WQARF-Water Quality ADWR-Arizona Dept of AF-acre-feet RO-reverse osmosis	drafting lyethylene titio Id naintenance e nent \Co. r Assurance Revolving Fund f Water Resources					

Alternative 3: IW Wellfield=4861gpm; FFS Wellfield= 5450-2500gpm; SC Wellfield=1600-750gpm; PS Wellfield=2300-0gpm; MC Wellfield=1500-0gpm

	Quantity	Unit	Unit Cost	Extended Cost		Subtotal
Land Access,	quantity					Cubiotui
Permitting, Surveying:						
Project Management	180	hours @	140	25,200		
Archeological Survey				45,000		
Endangered Species Survey Woll Drilling Pormite	28	oach @	150	55,000		
	20	each @	150	30,000		
404 Permitting				45,000		
Access ROW/Lease				140.000		
				344,400	\$	344,400
Engineering:						
Principal	650	hours @	140	91,000		
Associate	1,200	hours @	110	132,000		
Project Professional II	3,500	nours @	85	297,500		
Stall Professional II	1,200	hours @	00 50	78,000		
	500	hours @	50 55	25,000		
	200	hours @	50	10,000		
Word Processing/Data Entry	200	hours @	30 40	6,000		
Word Processing/Data Entry	150	nouis e	40	672 500	\$	672 500
				072,000	Ψ	012,000
Construction &						
Capital Costs						
(Year 2009): Woll Drilling & Construction:						
Drill Pig Mob-domob				80.000		
Extraction Well Construction: 16 inch cosing	12 6/2	fact @	400	5 456 976		
Observation Well Construction: 4 inch casing	13,042		400 53000	5,450,870 636,000		
Well Development/Testing	16	each @	56000	896,000		
Rig Takedown/Setup	15	each @	12300	184 500		
Field Geologist	2,750	each @	75	206,250		
400- 500 GPM Pump Assembly & Installation:	_,			200,200		
Bowl Assembly	5	each @	7500	37.500		
Discharge Head	5	each @	15000	75,000		
Driver; 200 HP, 460V	5	each @	20000	100,000		
Lineshaft Assembly	5	each @	67000	335,000		
Oil Drum/Stand/Solenoid; 55 gal	5	each @	2300	11,500		
Wellhead Fabrication	5	each @	4200	21,000		
Pump Installation	5	each @	8000	40,000		
550-700 GPM Pump Assembly & Installation:						
Bowl Assembly; 11 stage	3	each @	9900	29,700		
Discharge Head; 20"x12" Type F	3	each@	17000	51,000		
Driver; 350HP, 460V, 389 FLA	3	each @	25000	75,000		
Lineshaft Assembly	3	each @	67000	201,000		
Oil Drum/Stand/Solenoid; 55 gal	3	each @	2300	6,900		
	3	each @	4200	12,600		
Pump Installation	3	each @	8000	24,000		
750-1000 GPM Pump Assembly & Installation:	0	aaah @	22250	170.000		
Discharge Heady 25"x42" Type F	0	each @	19600	170,000		
Discharge Head; 25 X12 Type F	8	each @	20200	148,800 242 400		
Lineshaft Assembly	0	each @	136000	242,400 1 088 000		
Cillesiiait Asselliuiy Oil Drum/Stand/Solanoid: 55 gal	0 Q	each @	2500	20 000		
Wellhead Eabrication	O Q	each @	5200	20,000 41 600		
Pump Installation	O Q	each @	8500	68 000		
Electrical Equipment & Installation	0	ouon e	0000	00,000		
Replacement Motors	3	each @	25000	75.000		
Power Supply & Distribution	24,500	feet @	21	514,500		
	,	-		,		

Alternative 3: IW Wellfield=4861gpm; FFS Wellfield= 5450-2500gpm; SC Wellfield=1600-750gpm; PS Wellfield=2300-0gpm; MC Wellfield=1500-0gpm

					Extended		
		Quantity	Unit	Unit Cost	Cost		Subtotal
	Transformer Sets: 750 KVA	8	each @	37500	300.000		
	Transformer Sets: 500 kVA	8	each @	25000	200.000		
	Wellhead Instrumentation	16	each @	11500	184.000		
	Telemetry/Data Acquisition	16	each @	6500	104.000		
	Sound Reduction Enclosure	16	each @	5000	80.000		
	Wellhead Electrical w/ soft starts	16	each @	52000	832,000		
Effluent	Piping & Installation:				,		
	8 inch HDPE, SDR-13.5	7.000	feet @	19.23	134.610		
	12 inch HDPE. SDR-13.5	7,500	feet @	32.98	247.350		
	16 inch HDPE, SDR-13.5	2,000	feet @	47.53	95,060		
	18 inch HDPF, SDR-13.5	3,700	feet @	57.39	212,343		
	20 inch HDPE_SDR-13.5	2 000	feet @	67.94	135,880		
	22 inch HDPE_SDR-13.5	2,300	feet @	79 71	183,333		
	24 inch HDPE_SDR-13.5	3,900	feet @	92 25	359 775		
	26 inch HDPE_SDR-13.5	1 000	feet @	106.61	106 610		
	36 inch HDPE SDR-13 5	23 500	feet @	180.01	4 449 490		
	8 inch HDPE_SDR-11 (distribution)	20,000	feet @	20 97	16 776		
	Trenching and Backfilling	27 600	feet @	5	138,000		
	Shinning	27,000	1661 @	5	38,000		
Miscolla					30,000		
Miscella	IW Pump Station Upgrades				250,000		
	Header Tie Inc	0	aach @	0000	230,000		
	Distribution Diping Tio Inc	0		1650	70,400		
	Air Belief Velvee	10		1000	20,400		
	All Relief Valves	03	each @	1200	125,000		
	Access Deeds	20		4000	135,600		
	Access Roads	3.5	mies @	5025 0500	19,088		
	Pipeline Road Crossing	1	each @	9500	66,500		
	Construction Management	1,670	nours @	/5	125,250		
	Project Management	663	nours @	140	92,820		
	Operation & Maintenance Manual				7,500		
	As-Built Documentation				40,000	•	10 500 011
					19,583,311	\$	19,583,311
Annual Operation &							
Maintenance							
(Years 2010-2030):		base rate		factor			
. ,	Labor	114,000	factor @	0.76	86,640		
	Supplies	35,000	factor @	0.76	26,600		
	Electrical Power (excluding IW)	39,700,000	Kw hours @	0.07	2,779,000		
	IW Electrical Power (w/ IW pump station)	10.530.000	Kw hours @	0	0		
	Additional IW Pumping Station Electrical Power	6,200,000	Kw hours @	0.07	434,000		
	Service Vehicle	12	months	720	8.640		
	Inter, Well Field O&M (2006)	149.000	factor @	0	0		
	Canoa Ranch Water Use Savings (2007)	3.842.000		-10802	-3.458.440		
	Groundwater Monitoring	-,,			50.000		
	Hydrologic Consultant				85.000		
				-	11,440	\$	11.440
					,	+	,
Annual							
Repair/Replacement							
(Years 2010-2030):							
	Labor/Materials/Equipment	210,000	factor @	1.81	380,100		
	Pipeline/Headers	75,000	factor @	1.81	135,750		
	Well/Pump/Motor	325,000	factor @	1.81	588,250		
	Replacement Materials/Instruments	97,000	factor @	1.81	175,570		
	Inter. Well Field Repair/Replacement (2006)	707,000	factor @	0	0		
	Shipping			-	5,000		
					1,284,670	\$	1,284,670

Alternative 3: IW Wellfield=4861gpm; FFS Wellfield= 5450-2500gpm; SC Wellfield=1600-750gpm; PS Wellfield=2300-0gpm; MC Wellfield=1500-0gpm

Annual Operation 5 (Veans 2031-3042): Calamity Unit Unit Cost Subtroal (Veans 2031-3042): base ratio (Veans 2031-3042): base rati						Extended		
Ammenance (Years 2031-3042): Supples base rate Supples factor @ 114,000 factor @ factor @ 0.71 80,940 Versite Supples 35,000 factor @ 0.71 24,850 Versite Versite 0.71 24,850 Versite Versite 0.71 24,850 Service Vehicle 0.71 24,850 0.71 Inter. Well Field O&M (2006) 149,000 factor @ 149,000 0 Cancea Ranch Water Use Swings (2007) Groundwater Monitoring 530,000 Kw hours @ 5,833 0 Hydrologic Consultant 210,000 factor @ 1,59 139,300 5,838 Annual Repair/Replacement (Versi 2013-2042): Labor/Materials/Equipment Pipeline/Headers 77,000 1,59 333,900 1,12,9,130 Annual Operation & Maintenance 114,000 factor @ 1,50,000 1,59 333,900 1,12,9,130 Annual Operation & Maintenance 114,000 factor @ 1,12,9,130 1,12,9,130 Annual Operation & Maintenance 114,000 factor @ 1,12,9,130 1,12,9,130 Annual Operation & Shipping 114,000 factor @ 1,10,	Annual Operation &		Quantity	Unit	Unit Cost	Cost		Subtotal
(Years 231-2042): base rate factor factor (Years 231-2042): Labor 114,000 factor 0.71 24,450 Supplies 114,000 factor 0.71 24,450 35,000 Additional Wurpinging Station Electrical Power Service Vehicle 10,530,000 Kw hours: 80 0.07 371,000 Inter. Well Field OSM (2006) 12, months 720 8,640 114,000 factor (80 0.0 0.50,000 Groundwater Monitoring B5,000 -9550 -30,57,592 50,000 50,000 Groundwater Monitoring B5,000 factor (80 1.59 113,250 5,838 \$ 5,838 Annual RepairReplacement 210,000 factor (80 1.59 113,250 50,000 50,000 50,000 50,000 1,129,130 \$1,129,130 \$1,129,130 \$1,129,130 \$1,129,130 \$1,129,130 \$1,129,130 \$1,129,130 \$1,129,130 \$1,129,130 \$1,129,130 \$1,129,130 \$1,129,130 \$1,129,130 \$1,129,130 \$1,129,130 \$1,129,130	Maintenance							
Labor 114,000 factor @ 0.71 80,940 Supplies 3,500 factor @ 0.71 24,850 Electrical Power (w/ W pump station) Additional W Pumping Station Electrical Power Service Vehicle 1000 10,530,000 Kw hours @ 0.07 371,000 Service Vehicle 1000 10,530,000 Kw hours @ 0.07 5,538 \$ 5,838 Annual Repair/Replacement Materials/Equipment 210,000 factor @ 1.59 119,250 Well/Pump/Metor Repair/Replacement Materials/Equipment 325,000 factor @ 1.59 119,250 Shipping 114,000 factor @ 1.59 119,250 Shipping 114,000 factor @ 0.48 54,720 Supplies 2045-2059; Labor 114,000 factor @ 0.48 54,720 Supplies 2045-2059; Labor 114,000 factor @ 0.48 54,720 Supplies 2045-2059; Labor 114,000 factor @ 0.75 155,000 Additional W pumping Station Electrical Power (x/cluding IW) Inter: Well Field O&M (206) FICO Water Cost ADWR Water Fees 3,000 factor @ 0.75 157,550 FiCO Water Fees 3,000 factor @ 0.75 157,550 ADWR Water Fees 3,000 factor @ 0.75 157,550 ADWR Water Fees 3,000 factor @ 0.75 157,550 ADWR Water Fees 3,000 factor @ 0.75 157,550 FiCO Water Cost ADWR Water Fees 3,000 factor @ 0.75 157,550 Fico Water Fees 3,000 factor @ 0.75 157,550 Shipping 57,000 factor @ 0.75 157,550 Shi	(Years 2031-2042):		<u>base rate</u>		factor			
Supples 33,000 File Constraints 74,8500 IW Electrical Power (excluding IW) 10,530,000 Kw hours @ 0 0 Additional IV Pumping Statuton 10,530,000 Kw hours @ 0 0 0 Annual Repair/Replacement Canoa Ranch Water Use Savings (2007) 3,842,000 -9550 -30,000 Groundwater Monitoring 530,000 factor @ 0 -9550 -30,000 Hydrologic Consultant -550 -5,838 \$ 5,838 Annual Repair/Replacement (trans 203-2042) Labor/Materials/Equipment 70,000 factor @ 1,59 119,250 Kepta/Replacement Materials/Instruments 37,000 factor @ 1,59 159 154,230 Inter. Weil Field Repair/Replacement (2006) 707,000 factor @ 1,59 154,230 \$1,129,130 Annual Sprain Supplies 30,000 factor @ 0,07 1,155,000 \$1,129,130 Annual Depretion & Materials/Instruments 37,000 factor @ 0,07 1,155,000 \$1,129,130 Annual Depretion & Materials/Instruments 30,000 factor @ 0,07 1,155,000		Labor	114,000	factor @	0.71	80,940		
Annual Operation & Maintenance (Years 2043-2005): Additional IW Pumping Station Additional IW Pumping Station Electrical Power (Stational IW Pumping Station Electrical Power Inter: Well Field C&M (2006) 10.53,00,000 Kw hours © 0.07 2,+0,000 Service Venicle Inter: Well Field C&M (2006) 149,000 factor © 0 0 0 Caricos Ranch Water Use Savings (2007) Groundwater Monitoring Hydrologic Consultant 324,2000 -9550 -3,057,592 Annual RepainReplacement (Vers 203-2042): Labor/Materials/Equipment Pipeline/Headers 75,000 factor © 1.59 159 159 Annual Operation & Maintenance (Vers 2043-2005): Labor 325,000 factor © 1.59 54,720 Shipping 5,000 112,000 factor © 0 0 0 Shipping 54,720 114,000 factor © 0 0 Shipping 114,000 factor © 0 0 0 Shipping 114,000 factor © 0,9 1,129,130 \$1,129,130 Annual Operation & Maintenance (Vers 2043-208): 149,000 factor © 0,9 149,000 factor © 0,9 149,000 Courter Cost Hitter: Well Field C& 200() 149,000 factor © 0,75 155,000 2,473,574 Soupolos Kwhourse © 0,75 150,000 2,473,574 </td <td></td> <td>Supplies</td> <td>35,000</td> <td>factor @</td> <td>0.71</td> <td>24,850</td> <td></td> <td></td>		Supplies	35,000	factor @	0.71	24,850		
Additional UV Purping Station Electrical Power Service Vehicle 5,300,000 Kw hours © 0,07 371,000 Inter: Well Field QAM (2006) 3,842,000 -9550 -3,057,592 Croundwater Monitoring Hydrologic Consultant 3,842,000 -9550 -3,057,592 Sonzice Vehicle 3,842,000 -9550 -3,057,592 Annual PerpintReplacement (Veers 2031-2004):		IW Electrical Power (w/ IW pump station)	10,530,000	Kw hours @	0.07	2,443,000		
Service Vehicle 12 months 720 8,640 Inter: Well Field O&M (2006) 149,000 factor @ 0 0 0 Groundwater Monitoring 12,000 factor @ 0.5838 \$ 5,838 Annual Fepair/Replacement 210,000 factor @ 1.59 112,250 Pipeline/Headers 75,000 factor @ 1.59 516,750 0 Pipeline/Headers 75,000 factor @ 1.59 516,750 0		Additional IW Pumping Station Electrical Power	5,300,000	Kw hours @	0.07	371,000		
Inter, Well Field O&M (2006) 149,000 factor @ 0 0 Canca Ranch Water Use Savings (2007) 3,842,000 -9550 -3.087,592 Groundwater Monitoring -9550 -3.087,592 Hydrologic Consultant -9550 -3.087,592 Annual		Service Vehicle	12	months	720	8,640		
Canoa Ranch Water Use Savings (2007) 3.842,000 -9550 -3.057,592 Groundwater Monitoring Hydrologic Consultant		Inter. Well Field O&M (2006)	149,000	factor @	0	0		
Bit Control of the second se		Canoa Ranch Water Use Savings (2007)	3,842,000		-9550	-3,057,592		
Annual Repair/Replacement (treas 2031-2022) Solution Solution <td></td> <td>Groundwater Monitoring</td> <td></td> <td></td> <td></td> <td>50,000</td> <td></td> <td></td>		Groundwater Monitoring				50,000		
Annual Repair/Replacement (Years 2031-2042): Labor/Materials/Equipment Pipeline/Headers 210,000 75,000 factor @ 1.59 333,900 1actor 119,250 Well/Pump/Motor 322,500 factor @ 1.59 516,750 replacement Materials/Instruments Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0.9 0 0 Shipping		Hydrologic Consultant			-	5.838	\$	5.838
Annual Repair/Replacement (Years 2031-2042): Labor/Materials/Equipment 210,000 factor @ 1.59 333,900 Pipeline/Headers 75,000 factor @ 1.59 119,250 Well/Pump/Motor 325,000 factor @ 1.59 154,230 Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0 0 Shipping 5000 Annual Operation & Meintenance (Years 2043-2059): <u>base rate</u> 6ctor Labor 1114,000 factor @ 0.48 54,720 Supplies 6 0.71 114,000 factor @ 0.48 16,800 Electrical Power (excluding IW) 16,500,000 Kw hours @ 0.07 1,155,000 Replacted Power (w/ IW pump station) 8,500,000 Kw hours @ 0.07 1,155,000 Additional IW Pumping Station Electrical Power (accluding IP) Additional IW Pumping Station Electrical Power (2006) 149,000 factor @ 0.9 134,100 Groundwater Monitoring FICO Water Cost 150,000 ADWR WQARF fee 2.12 /AF 15100 32,013 ADWR WQARF fee 7,5000 factor @ 0.75 157,500 Z473,574 \$ 2,473,574 ADWR WQARF fee 7,5000 factor @ 0.75 157,500 Replacement Materials/Instruments 97,000 factor @ 0.75 157,500 Replacement Materials/Instruments 97,000 factor @ 0.75 157,500 Replacement Materials/Instruments 97,000 factor @ 0.75 157,500 Typeline/Headers 75,000 factor @ 0.75 157,500 Typeline/Headers 75,000 factor @ 0.75 157,500 Shipping 51,107,920 \$1,107,920 Water Treatment Construction (Yer 2042); Piot Scale Testing 175,000 Telemetry to Mine Operations 150,000						-,	Ŧ	-,
Kopanize Autor/Materials/Equipment 210,000 factor @ 1.59 333.900 Pipeline/Headers 75,000 factor @ 1.59 516,750 Replacement Materials/Instruments 97,000 factor @ 1.59 154,230 Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0.50 0 Shipping	Annual							
Labor/Materials/Equipment Pipeline/Headers 75,000 factor @ 1.59 333,900 Well/Pump/Motor 325,000 factor @ 1.59 154,230 Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0.59 Maintenance (Years 2043-2059): <u>base rate</u> 6 0 Shipping 51,129,130 \$1,129,130 Annual Operation & Maintenance (Years 2043-2059): <u>base rate</u> 6 0 Labor 114,000 factor @ 0.48 164,800 Electrical Power (excluding IW) 16,500,000 Kw hours @ 0.07 1,155,000 Revice Vehicle 12 months 720 8,640 Inter. Well Field Q&M (2006) 149,000 factor @ 0.9 134,100 Groundwater Monitoring 52,100 factor @ 0.9 134,100 Groundwater Monitoring 50,000 Kw hours @ 0.07 147,000 FICO Water Cost ADWR Water Fees 3.00 /AF 15100 45,301 ADWR Water Fees 3.00 /AF 15100 45,301 ADWR Water Fees 3.00 /AF 15100 45,301 ADWR Water Fees 3.00 factor @ 0.75 157,500 FICO Water Cost ADWR Water Fees 3.00 /AF 15100 45,301 ADWR Water Fees 3.00 /AF 15100 52,000 Kw hours @ 0.75 157,500 FICO Water Cost ADWR Water Fees 3.00 factor @ 0.75 157,500 Viell/Pump/Motor 325,000 factor @ 0.75 157,500 FICO Water Cost ADWR Water Fees 75,000 factor @ 0.75 157,500 FICO Water Cost ADWR Water Fees 75,000 factor @ 0.75 157,500 FICO Water Cost ADWR Water Fees 75,000 factor @ 0.75 157,500 Shipping 51,012,012,012,012,012,012,012,012,012,01	(Years 2031-2042):							
Pipeline/Headers 75,000 factor @ 1.59 519,250 Weil/Pump/Motor 325,000 factor @ 1.59 516,750 Replacement Materials/Instruments 97,000 factor @ 0 0 Inter. Weil Field Repair/Replacement (2006) 707,000 factor @ 0 0 Shipping	(Labor/Materials/Equipment	210,000	factor @	1.59	333,900		
Well/Pump/Motor 325,000 factor @ 1.59 516,750 Replacement Materials/Instruments 97,000 factor @ 1.59 154,230 Inter. Well Field Repair/Replacement (2006) 97,000 factor @ 0 0 Shipping 5,000 1,129,130 \$1,129,130 Annual Operation & Maintenance 114,000 factor @ 0.48 54,720 (Years 2043-2059): Labor 114,000 factor @ 0.48 54,720 Labor 114,000 factor @ 0.48 54,720 55,000 Additional IW Pump/station) 8,500,000 Kw hours @ 0.07 555,000 Additional IW Pumping Station Electrical Power 2,100,000 Kw hours @ 0.07 555,000 Additional IW Pumping Station Electrical Power 2,100,000 factor @ 0.9 134,100 Groundwater Monitoring 50,0000 factor @ 0.9 134,100 50,000 FICO Water Cost 30.00 /AF 15100 45,301 ADWR WOARF fee 2,122 /AF		Pipeline/Headers	75,000	factor @	1.59	119,250		
Replacement Materials/Instruments 97,000 factor @ 1.59 154,230 Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0 0 Shipping 5,000 1,129,130 \$1,129,130 \$1,129,130 Annual Operation & Maintenance factor @ 0.48 54,720 Vers 2043-2058): base rate factor @ 0.48 54,720 Labor 114,000 factor @ 0.48 54,720 Supplies 35,0000 Kw hours @ 0.07 1,155,000 IW Electrical Power (excluding IW) 16,500,000 Kw hours @ 0.07 147,000 Additional IW Pumping Station Electrical Power 2,100,000 Kw hours @ 0.07 147,000 Groundwater Monitoring 50,000 4,100 factor @ 0.75 150,000 FICO Water Cost 3.00 /AF 15100 45,301 ADWR WQARF fee 2.12 /AF 15100 45,321 Hydrologic Consultant 25,000 factor @ 0.75 157,500 Pipeline/Headers<		Well/Pump/Motor	325,000	factor @	1.59	516,750		
Annual Operation &		Replacement Materials/Instruments	97,000	factor @	1.59	154,230		
Simplify 1,129,130 \$1,129,130 Annual Operation & Maintenance Maintenance factor 1,129,130 \$1,129,130 (Years 2043-2058): base rate factor 0.48 54,720 Supplies 35,000 factor 0.48 54,720 Supplies 35,000 factor 0.48 54,720 Supplies 35,000 factor 0.48 54,720 Additional IW Pumping Station Electrical Power (excluding IW) 16,500,000 Kw hours 0.07 1,155,000 Additional IW Pumping Station Electrical Power 2,100,000 Kw hours 0.07 147,000 Groundwater Monitoring 50,000 factor 0.9 134,100 Groundwater Monitoring 50,000 factor 50,000 ADWR Water Fees 3.00 /AF 15100 32,013 Hydrologic Consultant 2,473,574 \$ 2,473,574 \$ 2,473,574 Annual Repair/Replacement 210,000 factor 0.75 157,500 Pipeline/Headers 75,000		Shipping	707,000	factor @	0	0 5 000		
Annual Operation & Maintenance (Years 2043-2058): base rate (14,000 factor (20,048) factor		Shipping			-	1,129,130		\$1,129,130
Annual Operation & Maintenance (Years 2043-2059): <u>base rate</u> <u>factor</u> Labor 114,000 factor @ 0.48 54,720 Supplies 35,000 factor @ 0.48 16,800 Electrical Power (w/IW pump station) 16,500,000 Kw hours @ 0.07 1,155,000 Additional IW Pumping Station Electrical Power Additional IW Pumping Station Electrical Power Service Vehicle 12 months 720 8,640 Inter. Well Field O&M (2006) 149,000 factor @ 0.9 134,100 Groundwater Monitoring FICO Water Cost 150,000 ADWR Water Fees 3.000 /AF 15100 45,301 ADWR WQARF fee 2.12 /AF 15100 45,301 ADWR WQARF fee 2.12 /AF 15100 45,301 ADWR WQARF fee 2.12 /AF 15100 45,301 ADWR WAter Fees 75,000 factor @ 0.75 157,500 Pipeline/Headers 75,000 factor @ 0.75 157,500 Replacement (Years 2043-2059): Labor/Materials/Instruments 97,000 factor @ 0.75 157,500 Replacement Materials/Instruments 97,000 factor @ 0.75 72,750 Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0.75 157,500 Shipping <u>5,000</u> 1,107,920 \$1,107,920 Water Treatment Construction (Year 2042): Pilot Scale Testing 175,000 Telemetry to Mine Operations 150,000						.,0,.00		¢.,. <u>_</u> 0,.00
Maintenance (Years 2043-2059): base rate [Labor factor Labor 114,000 factor 0.48 54,720 Supplies 35,000 factor 0.48 16,800 Electrical Power (excluding IW) 16,500,000 Kw hours 0.07 595,000 Additional IW Pumping Station Electrical Power 2,100,000 Kw hours 0.07 595,000 Additional IW Pumping Station Electrical Power 2,100,000 Kw hours 0.07 147,000 Groundwater Monitoring 50,000 factor 0.9 134,100 Groundwater Monitoring 50,000 factor 0.9 134,100 ADWR Water Fees 3.00 /AF 15100 45,301 ADWR WQARF fee 2.12 /AF 15100 32,013 Hydrologic Consultant 210,000 factor 0.75 157,500 Annual Labor/Materials/Equipment 210,000 factor 0.75 157,500 Vell/Pump/Motor 325,000 factor 0.75 243,750 52,670	Annual Operation &							
Labor Lectrical Power (excluding IW) 16,500,000 Kw hours @ 0.07 1,155,000 Additional IW Pumping Station Electrical Power 2,100,000 Kw hours @ 0.07 147,000 Service Vehicle 12 months 720 8,640 Inter. Well Field O&M (2006) 149,000 factor @ 0.9 134,100 Groundwater Monitoring 50,000 FICO Water Cost 50,000 ADWR Water Fees 3.00 /AF 15100 45,301 ADWR WQARF fee 2.12 /AF 15100 45,301 ADWR WQARF fee 2.12 /AF 15100 32,013 Bydrologic Consultant 210,000 factor @ 0.75 157,500 Pipeline/Headers 75,000 factor @ 0.75 56,250 Well/Pump/Motor 325,000 factor @ 0.75 72,750 Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0.75 72,750 Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0.75 157,2670 Shipping 50,000 Water Treatment Construction (Year 2042): Pilot Scale Testing 175,000 Telemetry to Mine Operations 150,000	Maintenance (Years 2043-2058):		base rate		factor			
Supplies 35,000 factor @ 0.48 16,800 Electrical Power (excluding IW) 16,500,000 Kw hours @ 0.07 1,155,000 Additional IW Pumping Station Electrical Power 2,100,000 Kw hours @ 0.07 147,000 Service Vehicle 12 months 720 8,640 Inter. Well Field 0&M (2006) 149,000 factor @ 0.9 134,100 Groundwater Monitoring 50,000 500,000 FICO Water Cost 150,000 ADWR Water Fees 3.00 /AF 15100 45,301 ADWR WQARF fee 2.12 /AF 15100 32,000 2,473,574 \$ 2,473,574 \$ 2,473,574 Kepair/Replacement 210,000 factor @ 0.75 157,500 Vell/Pump/Motor 325,000 factor @ 0.75 56,250 Well/Pump/Motor 325,000 factor @ 0.75 72,750 Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0.75 5,000 Shipping	(Labor	114,000	factor @	0.48	54,720		
Electrical Power (excluding IW) 16,500,000 Kw hours @ 0.07 1,155,000 Additional IW Pumping Station Electrical Power 2,100,000 Kw hours @ 0.07 595,000 Service Vehicle 12 months 720 8,640 Inter. Well Field O&M (2006) 149,000 factor @ 0.9 134,100 Groundwater Monitoring 50,000 50,000 50,000 FICO Water Cost 150,000 45,301 ADWR Water Fees 3.00 /AF 15100 45,301 ADWR WQARF fee 2.12 /AF 15100 32,013 Hydrologic Consultant 210,000 factor @ 0.75 157,500 Veriar 2043-2059: Labor/Materials/Equipment 210,000 factor @ 0.75 157,500 Labor/Materials/Equipment 210,000 factor @ 0.75 157,500 56,250 Weil/Pump/Motor 325,000 factor @ 0.75 52,670 5,000 Repair/Replacement 200,000 factor @ 0.75 52,670 5,000 1,107,920 Weil/Pump/Motor 325,000 factor @ 0.81 572,670 5,00		Supplies	35,000	factor @	0.48	16,800		
IW Electrical Power (w/ IW pump station) 8,500,000 Kw hours @ 0.07 595,000 Additional IW Pumping Station Electrical Power 2,100,000 Kw hours @ 0.07 147,000 Service Vehicle 12 months 720 8,640 Inter. Well Field O&M (2006) 149,000 factor @ 0.9 134,100 Groundwater Monitoring 50,000 45,301 50,000 FICO Water Cost 150,000 45,301 ADWR WQARF fee 2.12 /AF 15100 32,013 Hydrologic Consultant 21,0000 factor @ 0.75 157,500 Repair/Replacement 210,000 factor @ 0.75 157,500 (Years 2043-2058): Labor/Materials/Equipment 210,000 factor @ 0.75 157,500 Well/Pump/Motor 325,000 factor @ 0.75 72,750 1,107,920 Well/Pump/Motor 325,000 factor @ 0.75 72,670 5,000 Shipping 50,000 1,107,920 \$1,107,920 \$1,107,920 Water Treatment Construction 175,000 150,000 \$1,107,920 Water Treatment Construction 150,000 150,000		Electrical Power (excluding IW)	16,500,000	Kw hours @	0.07	1,155,000		
Additional IW Pumping Station Electrical Power 2,100,000 KW hours @ 0.07 147,000 Service Vehicle 12 months 720 8,640 Inter. Well Field O&M (2006) 149,000 factor @ 0.9 134,100 Groundwater Monitoring 50,000 150,000 150,000 FICO Water Cost 150,000 150,000 ADWR Water Fees 3.00 /AF 15100 45,301 ADWR VoARF fee 2.12 /AF 15100 32,013 Hydrologic Consultant 85,000 2,473,574 \$ 2,473,574 Annual Eabor/Materials/Equipment 210,000 factor @ 0.75 157,500 Pipeline/Headers 75,000 factor @ 0.75 243,750 Well/Pump/Motor 325,000 factor @ 0.75 72,750 Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0.75 72,750 Shipping 5,000 5,000 1,107,920 \$1,107,920 Water Treatment Construction 150,000 11,107,920 \$1,107,920 Water Treatment Construction 150,000 150,000 150,000		IW Electrical Power (w/ IW pump station)	8,500,000	Kw hours @	0.07	595,000		
Inter. Well Field O&M (2006) 149,000 factor @ 0.9 134,100 Groundwater Monitoring 50,000 150,000 150,000 ADWR Water Cost 150,000 150,000 ADWR Water Fees 3.00 /AF 15100 32,013 Hydrologic Consultant 2,12 /AF 15100 32,013 Hydrologic Consultant 2,473,574 \$ 2,473,574 Annual Repair/Replacement 210,000 factor @ 0.75 157,500 Vell/Pump/Motor 325,000 factor @ 0.75 243,750 Replacement Materials/Instruments 97,000 factor @ 0.75 72,750 Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0.81 57,600 Shipping 51,000 1,107,920 \$1,107,920 Water Treatment Construction 150,000 1,107,920 \$1,107,920 Water Treatment Construction 175,000 150,000 1,107,920		Additional IW Pumping Station Electrical Power	2,100,000	KW hours @	0.07	147,000		
Groundwater Monitoring 50,000 FICO Water Cost 150,000 ADWR Water Fees 3.00 /AF 15100 45,301 ADWR WQARF fee 2.12 /AF Hydrologic Consultant 85,000 2,473,574 \$ 2,473,574 Annual 85,000 Repair/Replacement 210,000 factor @ 0.75 157,500 Views 2043-2059): Labor/Materials/Equipment 210,000 factor @ 0.75 157,500 Pipeline/Headers 75,000 factor @ 0.75 157,500 Replacement Materials/Instruments 97,000 factor @ 0.75 72,750 Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0.81 572,670 Shipping 5,000 1,107,920 \$1,107,920 Water Treatment Construction 5,000 1,107,920 (Year 2042): Pilot Scale Testing 175,000 150,000 Telemetry to Mine Operations 150,000 150,000 150,000		Inter Well Field O&M (2006)	149 000	factor @	0.9	134 100		
FICO Water Cost ADWR Water Fees 3.00 /AF 15100 45,301 ADWR WQARF fee 2.12 /AF 15100 32,013 Hydrologic Consultant 2.12 /AF 15100 32,013 Repair/Replacement (Years 2043-2059): 2.12 /AF 15100 32,013 Labor/Materials/Equipment (Years 2043-2058): 210,000 factor @ 0.75 157,500 Pipeline/Headers 75,000 factor @ 0.75 243,750 Replacement Materials/Instruments 97,000 factor @ 0.75 72,670 Shipping 5,000 1,107,920 \$1,107,920 Water Treatment Construction (Year 2042): Pilot Scale Testing Telemetry to Mine Operations 175,000 150,000		Groundwater Monitoring	110,000		0.0	50,000		
ADWR Water Fees ADWR WQARF fee Hydrologic Consultant Annual Repair/Replacement (Years 2043-2058): Labor/Materials/Equipment Pipeline/Headers Well/Pump/Motor Replacement Materials/Instruments Inter. Well Field Repair/Replacement (2006) Shipping Water Treatment Construction (Year 2042): Pilot Scale Testing Telemetry to Mine Operations Annual Repair/Replacement Construction (Year 2042): Pilot Scale Testing Telemetry to Mine Operations Annual Repair/Replacement 3.00 2.12 /AF 15100 45,001 707,000 factor @ 0.75 157,500 6.75 72,750 175,000 175,000 175,000 150,000 (Year 2042): Pilot Scale Testing Telemetry to Mine Operations Annual Repair/Replacement (2006) Annual Repair/Replacement (2006) Replacement (2006) Replaceme		FICO Water Cost				150,000		
ADWR WQARF fee Hydrologic Consultant Annual Repair/Replacement (Years 2043-2058): Labor/Materials/Equipment 210,000 factor @ 0.75 157,500 Pipeline/Headers 75,000 factor @ 0.75 56,250 Well/Pump/Motor 325,000 factor @ 0.75 243,750 Replacement Materials/Instruments 97,000 factor @ 0.75 72,750 Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0.81 572,670 Shipping		ADWR Water Fees	3.00	/AF	15100	45,301		
Hydrologic Consultant 35,000 2,473,574 \$ 2,473,574 Annual Repair/Replacement (Years 2043-2058): Labor/Materials/Equipment 210,000 factor @ 0.75 157,500 Pipeline/Headers 75,000 factor @ 0.75 56,250 Well/Pump/Motor 325,000 factor @ 0.75 243,750 Replacement Materials/Instruments 97,000 factor @ 0.75 72,750 Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0.81 572,670 Shipping		ADWR WQARF fee	2.12	/AF	15100	32,013		
Annual Repair/Replacement (Years 2043-2058): Labor/Materials/Equipment Pipeline/Headers Well/Pump/Motor Replacement Materials/Instruments Nell Field Repair/Replacement (2006) Shipping 210,000 factor @ 0.75 56,250 0.75 72,750 Inter. Well Field Repair/Replacement (2006) Shipping 97,000 factor @ 0.75 72,750 Inter. Well Field Repair/Replacement (2006) Shipping 5,000 1,107,920 \$1,107,920 Water Treatment Construction (Year 2042): Pilot Scale Testing Telemetry to Mine Operations 175,000 150,000 175,000		Hydrologic Consultant			-	85,000	¢	2 472 574
Annual Repair/Replacement (Years 2043-2058): Labor/Materials/Equipment 210,000 factor @ 0.75 157,500 Pipeline/Headers 75,000 factor @ 0.75 56,250 Well/Pump/Motor 325,000 factor @ 0.75 243,750 Replacement Materials/Instruments 97,000 factor @ 0.75 72,750 Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0.81 572,670 Shipping 5,000 1,107,920 \$1,107,920 Water Treatment Construction (Year 2042): Pilot Scale Testing 175,000 Telemetry to Mine Operations 150,000						2,473,374	φ	2,473,374
Repair/Replacement (Years 2043-2058): Labor/Materials/Equipment 210,000 factor @ 0.75 157,500 Pipeline/Headers 75,000 factor @ 0.75 56,250 Well/Pump/Motor 325,000 factor @ 0.75 243,750 Replacement Materials/Instruments 97,000 factor @ 0.75 72,750 Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0.81 572,670 Shipping	Annual							
Labor/Materials/Equipment 210,000 factor @ 0.75 157,500 Pipeline/Headers 75,000 factor @ 0.75 56,250 Well/Pump/Motor 325,000 factor @ 0.75 243,750 Replacement Materials/Instruments 97,000 factor @ 0.75 72,750 Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0.81 572,670 Shipping	Repair/Replacement							
Pipeline/Headers 75,000 factor @ 0.75 56,250 Well/Pump/Motor 325,000 factor @ 0.75 243,750 Replacement Materials/Instruments 97,000 factor @ 0.75 72,750 Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0.81 572,670 Shipping	(Teals 2045-2056).	Labor/Materials/Equipment	210 000	factor @	0.75	157 500		
Well/Pump/Motor 325,000 factor @ 0.75 243,750 Replacement Materials/Instruments 97,000 factor @ 0.75 72,750 Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0.81 572,670 Shipping		Pipeline/Headers	75,000	factor @	0.75	56,250		
Replacement Materials/Instruments 97,000 factor @ 0.75 72,750 Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0.81 572,670 Shipping		Well/Pump/Motor	325,000	factor @	0.75	243,750		
Inter. Well Field Repair/Replacement (2006) 707,000 factor @ 0.81 572,670 Shipping 5,000 1,107,920 \$1,107,920 Water Treatment Construction (Year 2042): Pilot Scale Testing 175,000 Telemetry to Mine Operations 150,000		Replacement Materials/Instruments	97,000	factor @	0.75	72,750		
Shipping <u>5,000</u> 1,107,920 \$1,107,920 Water Treatment Construction (Year 2042): Pilot Scale Testing 175,000 Telemetry to Mine Operations 150,000		Inter. Well Field Repair/Replacement (2006)	707,000	factor @	0.81	572,670		
Water Treatment Construction (Year 2042): Pilot Scale Testing Telemetry to Mine Operations		Shipping			-	5,000		¢1 107 000
Water Treatment Construction (Year 2042): Pilot Scale Testing 175,000 Telemetry to Mine Operations 150,000						1,107,920		φ1,10 <i>1</i> ,920
Construction (Year 2042): Pilot Scale Testing 175,000 Telemetry to Mine Operations 150,000	Water Treatment							
(Tear 2042):Pilot Scale Testing175,000Telemetry to Mine Operations150,000	Construction							
Telemetry to Mine Operations 150,000	(Year 2042):	Pilot Scale Testing				175 000		
		Telemetry to Mine Operations				150,000		

Alternative 3: IW Wellfield	d=4861gpm; FFS Wellfield= 5450-2500apm: SC W	ellfield=1600-750ap	m; PS Wellfield	1=2300-0aı	om; MC Wellfield=15	i00-0gpm
					E. (
		Quantity	Unit	Unit Cos	Extended t Cost	Subtotal
	Power Supply & Distribution	10,600	feet @	21	222,600	
	RO Treatment System (9361 gpm)	23,954,000	/6000 gpm	9,361	31,281,001	
					31,828,601	\$31,828,601
Water Treatment	1					
Annual O&M	I					
(Years 2043-2058):	PO Treatment System (0261 gpm)	0.72	/1000 gold	0261	2 501 702	
	KO Treatment System (9301 gpm)	0.73	/1000 yais	9301	3,591,703	\$3,591,703
					0,000,000	<i>\\</i>
	A 14	. 2.	Initia	N Bro Co	netruction Cost	¢ 1.016.000
	Alternative	3.	Initial Co	nstructio	on Capital Costs	\$ 19.583.311
	Annual Operation, Mainten	ance, Repair, Re	placement C	Costs (ye	ears 2010-2030):	\$ 1,296,110
	Annual Operation, Maintena	ance, Repair, Re	placement C	Costs (ye	ears 2031-2042):	\$ 1,134,968
	Annual Operation, Maintena	ance, Repair, Re	placement C	Costs (ye	ears 2043-2058):	\$ 7,173,197
	Total Pre-Construction, Capital, (O&M, Repair, Re	placement C	Costs(ye	ears 2009-2058):	\$ 208,037,892
	Total Pre-Construction, Capital, (O&M, Repair, Re	placement C	Costs (ye	ears 2009-2042):	\$ 61,438,134
	Total Pre-Construction, Capital, (O&M, Repair, Re	placement C	Costs (ye	ears 2043-2058):	\$ 146,599,759
		Extracti	on System C	Costs (ye	ears 2043-2058):	\$ 57,303,904
		RO Treatme	ent System C	osts (ye	ears 2043-2058):	\$ 89,295,855
	Groundwate	er Extraction S	vstem 50 Ye	ear Net F	Present Value =	\$ 46.052.496
	Groundwater R	O Treatment S	vstem 50 Ye	ear Net I	Present Value =	\$ 11.941.177
			Total 50 Ye	ear Net I	Present Value =	\$ 57,993,672
Assumptions:	·····					
1) IVV pump station w	III require upgrades for total flow (assumes 3-30	unp)				
3) Repair/Replaceme	ent based on IW costs for 2006 proportional to 6	000apm				
4) Net Present Value	is calculated over 50 years assuming a 7.8 per	cent discount rate i	minus a 2.4 pe	ercent esc	alation rate	
5) Canoa Ranch wate	er use off-set proportional to total 2007 well field	I O&M costs				
6) Base Kw-hrs for IV	V pump station assumed at 3,800,000 at 6000g	т				
7) 36" line from west	of Esperanza junction to IW pump station					
8) All capital equipme	ent sized for maximum flow rate)0anm: PS 2200an	m: MC 1500a	nm		
10) Flows @ years 20	10-2030 = 1W-4861gpm; 11 3-3430gpm; SC-160	00gpm, 13-2300gp 00apm: PS-2000a	nm: MC-600ar	pin m		
11) Flows @ years 20	943-2058 = IW-4861gpm; FFS-3000gpm; SC-15	00gpm; PS-0gpm;	MC-0gpm			
12) Canoa Ranch We	Il Field saving based on time period weighted-a	verage flow, exclud	ding IW			
Abbreviations						
ROW- right of wav						
CAD-computer aided	drafting					
HP-horse power						
gals-gallons						
V-VOIIS FLA-full load amps						
A-amps						
kVA- kilo volt amps						
HDPE-high density po	olyethylene					
SDR-size dimension in	atio Nd					
O&M- operation and n	naintenance					
gpm-gallons per minu	te					
Kw-kilo watts						
FICO-Farmers Investr	nent \Co.					
ADWR-Arizona Dont	y Assurance Revolving Fund					
AF-acre-feet						

RO-reverse osmosis

Alternative 4: IW Wellfield =4861-1658gpm; FFS Wellfield= 3100-900gpm; SC Wellfield=1500-100gpm; PS Wellfield=2300-1400gpm

			-			
	Quantity	Unit	Unit Cost	Extended		Subtotal
Land Access,	Quantity	Onit	Unit COSt	COSI		Subtotal
Permitting, Surveying:						
Project Management	160	hours @	140	22,400		
Archeological Survey				40,000		
Endangered Species Survey			450	50,000		
	24	eacn @	150	3,600		
404 Survey				25,000		
				40,000		
Access ROW/Lease				301,000	¢	301 000
				301,000	φ	301,000
Engineering:						
Principal	400	hours @	140	56.000		
Associate	800	hours @	110	88.000		
Project Professional II	3,000	hours @	85	255,000		
Staff Professional II	850	hours @	65	55,250		
Technician II	400	hours @	50	20,000		
CAD/Draftsperson	500	hours @	55	27,500		
Technical Editor	150	hours @	50	7,500		
Word Processing/Data Entry	100	hours @	40	4,000		
				513,250	\$	513,250
Construction & Canital Costs						
(Year 2009):						
Well Drilling & Construction:						
Drill Rig Mob-demob				80,000		
Extraction Well Construction; 16 inch casing	12,459	feet @	400	4,983,600		
Observation Well Construction; 4 inch casing	10	each@	53000	530,000		
Well Development/Testing	14	each @	56000	784,000		
Rig Takedown/Setup	13	each @	12300	159,900		
Field Geologist	2,500	each @	75	187,500		
300 GPM Pump Assembly & Installation:						
Bowl Assembly	1	each @	6500	6,500		
Discharge Head	1	each @	13000	13,000		
Driver; 150 HP, 460V	1	each @	17500	17,500		
Cil Drum/Stand/Salanaidy 55 gal	1	each @	00000	65,000		
Wellboad Ephrication	1	each @	2300	2,300		
Pump Installation	1	each @	4200 8000	4,200		
500 GPM Pump Assembly & Installation	1	each	0000	0,000		
Bowl Assembly	7	each @	7500	52 500		
Discharge Head	7	each @	15000	105.000		
Driver: 200 HP, 460V	7	each @	20000	140.000		
Lineshaft Assembly	7	each @	67000	469,000		
Oil Drum/Stand/Solenoid; 55 gal	7	each @	2300	16,100		
Wellhead Fabrication	7	each @	4200	29,400		
Pump Installation	7	each @	8000	56,000		
600-700 GPM Pump Assembly & Installation:						
Bowl Assembly; 11 stage	6	each @	9900	59,400		
Discharge Head; 20"x12" Type F	6	each @	17000	102,000		
Driver; 350HP, 460V, 389 FLA	6	each @	25000	150,000		
Lineshaft Assembly	6	each @	67000	402,000		
Oil Drum/Stand/Solenoid; 55 gal	6	each @	2300	13,800		
Wellhead Fabrication	6	each @	4200	25,200		
Pump Installation	6	each @	8000	48,000		
Electrical Equipment & Installation:	<u>^</u>		25000	75 000		
Replacement Motors	3	each @	25000	75,000		
Power Supply & Distribution	24,500	reet @	21	514,500		

Alternative 4: IW Wellfield =4861-1658gpm; FFS Wellfield= 3100-900gpm; SC Wellfield=1500-100gpm; PS Wellfield=2300-1400gpm

					Extended	
		Quantity	Unit	Unit Cost	Cost	Subtotal
	Transformer Sets: 500 kVA	Guantity	each @	25000	150,000	oustotal
	Transformer Sets: 250 kVA	9	each @	12500	100,000	
	Wellbard Instrumentation	14		12500	161,000	
		14		6500	01,000	
	Cound Doduction Enclosure	14	each @	6500	91,000	
	Sound Reduction Enclosure	14	each @	5000	70,000	
	Vvellhead Electrical W/ soft starts	14	each @	52000	728,000	
Effluent	Piping & Installation:					
	8 inch HDPE, SDR-13.5	10,700	feet @	19.23	205,761	
	12 inch HDPE, SDR-13.5	3,250	feet @	32.98	107,185	
	14 inch HDPE, SDR-13.5	1,400	feet @	38.49	53,886	
	16 inch HDPE, SDR-13.5	2,000	feet @	47.53	95,060	
	20 inch HDPE, SDR-13.5	1,500	feet @	67.94	101,910	
	22 inch HDPE, SDR-13.5	2,500	feet @	79.71	199,275	
	24 inch HDPE, SDR-13.5	1,000	feet @	92.25	92,250	
	28 inch HDPE, SDR-13.5	16,500	feet @	121.37	2,002,605	
	30 inch HDPE, SDR-13.5	3,500	feet @	137.33	480,655	
	32 inch HDPE, SDR-13.5	4,000	feet @	154.17	616,680	
	8 inch HDPE, SDR-11 (distribution)	700	feet @	20.97	14.679	
	Trenching and Backfilling	23.350	feet @	4	93,400	
	Shipping	,			31,000	
Miscella	ineous:				01,000	
Wildoone	IW Pump Station Upgrades				125 000	
	Header Tie-Ins	6	each @	8800	52 800	
	Distribution Diping Tio Inc	14	each @	1650	22,000	
	Air Delief Velvee	14		1000	23,100	
		50	each @	1200	67,200	
	Drill Site Pads	24	each @	4850	116,400	
	Access Roads	3.5	miles @	5625	19,688	
	Pipeline Road Crossing	5	each @	9500	47,500	
	Construction Management	1,500	hours @	75	112,500	
	Project Management	600	hours @	140	84,000	
	Operation & Maintenance Manual				6,500	
	As-Built Documentation			-	30,000	
					15,178,434	\$ 15,178,434
Annual Operation &						
Maintenance		haaa rata		factor		
(fears 2010-2030):	Labor		factor @	0.07	70 200	
		114,000		0.67	76,380	
	Supplies	35,000	factor @	0.67	23,450	
	Electrical Power (excluding IVV)	24,000,000	Kw nours @	0.07	1,680,000	
	IVV Electrical Power (W/ IVV pump station)	10,530,000	Kw nours @	0	0	
	Additional IW Pumping Station Electrical Power	3,600,000	Kw hours @	0.07	252,000	
	Service Vehicle	12	months	720	8,640	
	Inter. Well Field O&M (2006)	149,000	factor @	0	0	
	Canoa Ranch Water Use Savings (2007)	3,842,000		-6429	-2,058,352	
	Groundwater Monitoring				50,000	
	Hydrologic Consultant			_	85,000	
					117,119	\$ 117,119
Annual						
Repair/Replacement						
(Years 2010-2030):		- · - ·			.	
	Labor/Materials/Equipment	210,000	factor @	1.15	241,500	
	Pipeline/Headers	75,000	factor @	1.15	86,250	
	Well/Pump/Motor	325,000	factor @	1.15	373,750	
	Replacement Materials/Instruments	97,000	factor @	1.15	111,550	
	Inter. Well Field Repair/Replacement (2006)	707,000	factor @	0	0	
	Shipping			-	5,000	
					818,050	\$ 818,050

Alternative 4: IW Wellfield =4861-1658gpm; FFS Wellfield= 3100-900gpm; SC Wellfield=1500-100gpm; PS Wellfield=2300-1400gpm

		Quantity	Unit	Unit Cost	Extended	Subtotal
Annual Operation &		Quantity	Onit	Unit Cost	COSI	Subtotal
Maintenance						
(Years 2031-2042):		<u>base rate</u>		factor		
	Labor	114,000	factor @	0.62	70,680	
	Supplies	35,000	factor @	0.62	21,700	
	Electrical Power (excluding IW)	16,200,000	Kw hours @	0.07	1,134,000	
	IW Electrical Power (w/ IW pump station)	10,530,000	Kw hours @	0	0	
	Additional IW Pumping Station Electrical Power	2,300,000	Kw hours @	0.07	161,000	
	Service Vehicle	12	months	720	8,640	
	Inter. Well Field O&M (2006)	149,000	factor @	0	0	
	Canoa Ranch Water Use Savings (2007)	3,842,000		-4567	-1,462,201	
	Groundwater Monitoring				50,000	
	Hydrologic Consultant			-	85,000	
					68,819	\$ 68,819
A						
Annual Renair/Renlacement						
(Years 2031-2042):						
(Labor/Materials/Equipment	210.000	factor @	0.8	168.000	
	Pipeline/Headers	75.000	factor @	0.8	60.000	
	Well/Pump/Motor	325,000	factor @	0.8	260,000	
	Replacement Materials/Instruments	97,000	factor @	0.8	77,600	
	Inter. Well Field Repair/Replacement (2006)	707,000	factor @	0	0	
	Shipping				5,000	
				-	570,600	\$570,600
Annual Operation &						
Maintenance		hann rata		factor		
(fears 2043-2056):	Labor	<u>Dase rate</u> 114 000	factor @	0.42	40.020	
	Supplies	35,000	factor @	0.43	49,020	
	Electrical Power (excluding IW)	8 100 000		0.43	567,000	
	IW Electrical Power (w/ IW nump station)	2 900 000	Kw hours @	0.07	203,000	
	Additional IW Pumping Station Electrical Power	2,300,000	Kw hours @	0.07	203,000	
	Service Vehicle	12	months	720	8 640	
	Inter Well Field O&M (2006)	149 000	factor @	0.86	128 140	
	Groundwater Monitoring	140,000		0.00	50,000	
	FICO Water Cost				150,000	
	ADWR Water Fees	3.00	/AF	6546	19.638	
	ADWR WQARF fee	2.12	/AF	6546	13.878	
	Hydrologic Consultant				85,000	
				-	1,289,366	\$ 1,289,366
Annual						
Repair/Replacement						
(Years 2043-2058):	Labor/Matariala/Equipment	210.000	factor @	0.4	84.000	
	Dipolino/Hoodore	210,000	factor @	0.4	64,000 20,000	
	Well/Pump/Meter	225,000	factor @	0.4	120,000	
	Replacement Materials/Instruments	97,000	factor @	0.4	38,800	
	Inter Well Field Renair/Replacement (2006)	707.000	factor @	0.4	197 960	
	Shinning	101,000		0.20	5 000	
	Onipping			-	485 760	\$485 760
					100,100	φ100,100
Water Treatment						
Construction						
(Year 2042):					-	
	Pilot Scale Lesting				0	
	I elemetry to Mine Operations				0	

Alternative 4:	IW Wellfield =4861-1658gpm; FFS Wellfield= 3100-	900gpm; SC Wellfie	ld=1500-100gp	m; PS Wellfie	ld=2300-1400gpm	
	Power Supply & Distribution RO Treatment System (4058 gpm)	Quantity 10,600 16,905,000	Unit feet @ /4000 gpm	Unit Cost 21 0	Extended Cost 0 0 0	Subtotal \$0
Water Treatment Annual O&M (Years 2043-2058):	RO Treatment System (4058 gpm)	1.06	/1000 gals	0 _	<u> </u>	\$0
	Alternative Annual Operation, Maintena Annual Operation, Maintena Annual Operation, Maintena Total Pre-Construction, Capital, C Total Pre-Construction, Capital, C Total Pre-Construction, Capital, C	4: ance, Repair, Rej ance, Repair, Rej ance, Repair, Rej D&M, Repair, Rej D&M, Repair, Rej D&M, Repair, Rej Extractio	Initia Initial Coo placement C placement C placement C placement C placement C placement C placement C	Il Pre-Const nstruction (costs (years costs (years costs (years costs (years costs (years costs (years	apital Costs: \$ Capital Costs: \$ S 2010-2030): \$ S 2031-2042): \$ S 2043-2058): \$ S 2009-2058): \$ S 2009-2042): \$ S 2043-2058): \$ S 2043-2058): \$ S 2043-2058): \$	5 814,250 5 15,178,434 5 935,169 5 639,419 5 1,775,126 5 71,706,259 5 43,304,248 5 28,402,011 5 28,402,011
	Groundwate	r Extraction Sy	stem 50 Ye Total 50 Ye	ear Net Pre ear Net Pre	sent Value = 3 sent Value = 3	5 32,442,228 5 32,442,228

Assumptions:

- 1) IW pump station will require upgrades for total flow (assumes 3-300hp)
- 2) O&M based on IW costs for 2006 proportional to 21 wells
- 3) Repair/Replacement based on IW costs for 2006 proportional to 6000gpm
- 4) Net Present Value is calculated over 50 years assuming a 7.8 percent discount rate minus a 2.4 percent escalation rate
- 5) Canoa Ranch water use off-set proportional to total 2007 well field O&M costs
- 6) Base Kw-hrs for IW pump station assumed at 3,800,000 at 6000gpm
- 7) 32"-28" line from west of Esperanza junction to IW pump station

8) All capital equipment sized for maximum flow rate

9) Flows @ years 2010-2030 = IW-4861gpm; FFS-3100gpm; SC-1500gpm; PS-2300gpm

10) Flows @ years 2031-2042 = IW-4861gpm; FFS-2000gpm; SC-750gpm; PS-2050gpm

11) Flows @ years 2043-2058 = IW-1658gpm; FFS-900gpm; SC-100gpm; PS-1400gpm

12) Canoa Ranch Well Field saving based on time period weighted-average flow, excluding IW

Abbreviations:

ROW- right of way CAD-computer aided drafting HP-horse power gals-gallons V-volts FLA-full load amps A-amps kVA- kilo volt amps HDPE-high density polyethylene SDR-size dimension ratio IW- interceptor well field O&M- operation and maintenance gpm-gallons per minute Kw-kilo watts FICO-Farmers Investment \Co. WQARF-Water Quality Assurance Revolving Fund ADWR-Arizona Dept of Water Resources AF-acre-feet RO-reverse osmosis

Alternative 5: IW Wellfiel	d=4861-1555gpm; FFS Wellfield= 5450-900gpm; SC Wellfield	d=1600-100gpm; PS	Wellfield=230	0-0gpm; MC W	ellfield=1500-0gp	m	
					Extended		0.1
Land Access		Quantity	Unit	Unit Cost	Cost		Subtotal
Permitting, Surveying							
	Project Management	180	hours @	140	25,200		
	Archeological Survey				45,000		
	Endangered Species Survey				55,000		
	Well Drilling Permits	28	each @	150	4,200		
	404 Survey				30,000		
	404 Permitting				45,000		
	Access ROW/Lease			_	140,000		
					344,400	\$	344,400
Engineering	: Dringing!	050	haura @	140	01 000		
		1 200	hours @	140	91,000		
	ASSOCIATE Project Professional II	1,200	hours @	110	132,000		
	Stoff Drofossional II	3,500	hours @	65 65	297,500		
		1,200	hours @	60 50	78,000		
		500	hours @	50	23,000		
	Tochnical Editor	200	hours @	50	10 000		
	Word Processing/Data Entry	200	hours @	40	6,000		
	Word Frocessing/Data Entry	150	nouis e	40 _	672 500	\$	672 500
					012,000	Ψ	072,000
Construction &	x						
Capital Costs	5						
(Year 2009)							
vveli Drillin	ng & Construction:				00.000		
	Drill Rig Mob-demod	10.040	1 @	400	80,000		
	Extraction Well Construction; 16 Inch casing	13,042		400	5,456,876		
	Well Development/Testing	12	each @	53000	806,000		
	Rig Takadawa/Satua	10	each @	56000	896,000		
	Field Coologist	2 750		75	206 250		
400- 500 G	Pleid Geologist	2,750	each @	75	200,250		
+00- 500 0	Bowl Assembly	5	each @	7500	37 500		
	Discharge Head	5	each @	15000	75,000		
	Driver: 200 HP 460V	5	each @	20000	100,000		
	Lineshaft Assembly	5	each @	67000	335,000		
	Oil Drum/Stand/Solenoid: 55 gal	5	each @	2300	11,500		
	Wellhead Fabrication	5	each @	4200	21,000		
	Pump Installation	5	each @	8000	40,000		
550-700 G	PM Pump Assembly & Installation:	0		0000	,		
	Bowl Assembly: 11 stage	3	each @	9900	29,700		
	Discharge Head; 20"x12" Type F	3	each @	17000	51,000		
	Driver; 350HP, 460V, 389 FLA	3	each @	25000	75,000		
	Lineshaft Assembly	3	each @	67000	201,000		
	Oil Drum/Stand/Solenoid; 55 gal	3	each @	2300	6,900		
	Wellhead Fabrication	3	each @	4200	12,600		
	Pump Installation	3	each @	8000	24,000		
750-1000 (GPM Pump Assembly & Installation:						
	Bowl Assembly; 13 stage	8	each @	22250	178,000		
	Discharge Head; 25"x12" Type F	8	each @	18600	148,800		
	Driver; 500HP, 2300V, 130 FLA	8	each @	30300	242,400		
	Lineshaft Assembly	8	each @	136000	1,088,000		
	Oil Drum/Stand/Solenoid; 55 gal	8	each @	2500	20,000		
	Wellhead Fabrication	8	each @	5200	41,600		
	Pump Installation	8	each @	8500	68,000		
Electrical I	Equipment & Installation:						
	Replacement Motors	3	each @	25000	75,000		
	Power Supply & Distribution	24,500	feet @	21	514,500		

Alternative 5: IW Wellfield=4861-1555gpm; FFS Wellfield= 5450-900gpm; SC Wellfield=1600-100gpm; PS Wellfield=2300-0gpm; MC Wellfield=1500-0gpm

		Quantity	Unit	Unit Cost	Extended	Subtotal
	Transformer Sets: 750 KV/A	Quantity	each @	37500	300,000	Subtotal
	Transformer Sets: 500 kV/A	8	each @	25000	200,000	
	Wellbead Instrumentation	16	each @	11500	184 000	
	Telemetry/Data Acquisition	16	each @	6500	104,000	
	Sound Reduction Enclosure	16	each @	5000	80,000	
	Wellbead Electrical w/ soft starts	16	each @	52000	832,000	
Effluent Pip	ing & Installation:	10		02000	002,000	
	8 inch HDPF_SDR-13.5	7 000	feet @	19 23	134 610	
	12 inch HDPE, SDR-13.5	7.500	feet @	32.98	247.350	
	16 inch HDPE, SDR-13.5	2.000	feet @	47.53	95.060	
	18 inch HDPE, SDR-13.5	3.700	feet @	57.39	212.343	
	20 inch HDPE, SDR-13.5	2.000	feet @	67.94	135.880	
	22 inch HDPE, SDR-13.5	2,300	feet @	79.71	183,333	
	24 inch HDPE, SDR-13.5	3,900	feet @	92.25	359,775	
	26 inch HDPE, SDR-13.5	1,000	feet @	106.61	106,610	
	36 inch HDPE, SDR-13.5	23,500	feet @	189.34	4,449,490	
52,900	8 inch HDPE, SDR-11 (distribution)	800	feet @	20.97	16,776	
	Trenching and Backfilling	27,600	feet @	5	138,000	
	Shipping				38,000	
Miscellaneo	us:					
	IW Pump Station Upgrades				250,000	
	Header Tie-Ins	8	each @	8800	70,400	
	Distribution Piping Tie-Ins	16	each @	1650	26,400	
	Air Relief Valves	63	each @	1200	75,600	
	Drill Site Pads	28	each @	4850	135,800	
	Access Roads	3.5	miles @	5625	19,688	
	Pipeline Road Crossing	7	each @	9500	66,500	
	Construction Management	1,670	hours @	75	125,250	
	Project Management	663	hours @	140	92,820	
	Operation & Maintenance Manual				7,500	
	As-Built Documentation				40,000	
					19,583,311	\$ 19,583,311
Annual Onenation 8						
Annual Operation & Maintenance						
(Years 2010-2030):		base rate		factor		
(Labor	114,000	factor @	0.76	86,640	
	Supplies	35,000	factor @	0.76	26,600	
	Electrical Power (excluding IW)	39,700,000	Kw hours @	0.07	2,779,000	
	IW Electrical Power (w/ IW pump station)	10,530,000	Kw hours @	0	0	
	Additional IW Pumping Station Electrical Power	6,200,000	Kw hours @	0.07	434,000	
	Service Vehicle	12	months	720	8,640	
	Inter. Well Field O&M (2006)	149,000	factor @	0	0	
	Canoa Ranch Water Use Savings (2007)	3,842,000		-10552	-3,378,399	
	Groundwater Monitoring				50,000	
	Hydrologic Consultant				85,000	
					91,481	\$ 91,481
Annual Renair/Replacement						
(Years 2010-2030):						
,	Labor/Materials/Equipment	210.000	factor @	1.81	380.100	
	Pipeline/Headers	75.000	factor @	1.81	135,750	
	Well/Pump/Motor	325,000	factor @	1.81	588,250	
	Replacement Materials/Instruments	97,000	factor @	1.81	175,570	
	Inter. Well Field Repair/Replacement (2006)	707,000	factor @	0	0	
	Shipping	-			5,000	
					1,284,670	\$ 1,284,670

Alternative 5: IW Wellfield	l=4861-1555gpm; FFS Wellfield= 5450-900gpm; SC Wellfiel	d=1600-100gpm; P\$	S Wellfield=2300-	0gpm; MC W	ellfield=1500-0gpn	า	
					Extended		
		Quantity	Unit	Unit Cost	Cost		Subtotal
Annual Operation &							
(Years 2031-2042):		base rate		factor			
(Labor	114,000	factor @	0.67	76,380		
	Supplies	35,000	factor @	0.67	23,450		
	Electrical Power (excluding IW)	28,500,000	Kw hours @	0.07	1,995,000		
	IW Electrical Power (w/ IW pump station)	10,530,000	Kw hours @	0	0		
	Additional IW Pumping Station Electrical Power	4,200,000	Kw hours @	0.07	294,000		
	Service Venicle	140.000	footor @	720	8,640		
	Canoa Ranch Water Use Savings (2007)	3 842 000		-7596	-2 431 986		
	Groundwater Monitoring	3,042,000		1000	50,000		
	Hydrologic Consultant				85.000		
				-	100,484	\$	100,484
Annual Renair/Renlacement							
(Years 2031-2042):							
	Labor/Materials/Equipment	210,000	factor @	1.3	273,000		
	Pipeline/Headers	75,000	factor @	1.3	97,500		
	Well/Pump/Motor	325,000	factor @	1.3	422,500		
	Replacement Materials/Instruments	97,000	factor @	1.3	126,100		
	Inter. Well Field Repair/Replacement (2006)	707,000	factor @	0	0		
	Shipping			-	924 100		\$924 100
					024,100		φ02- 1 ,100
Annual Operation &							
Maintenance		haso rato		factor			
(Tears 2043-2036).	Labor	114 000	factor @	0.24	27 360		
	Supplies	35.000	factor @	0.24	8,400		
	Electrical Power (excluding IW)	3,700,000	Kw hours @	0.07	259,000		
	IW Electrical Power (w/ IW pump station)	2,700,000	Kw hours @	0.07	189,000		
	Additional IW Pumping Station Electrical Power	0	Kw hours @	0.07	0		
	Service Vehicle	12	months	720	8,640		
	Inter. Well Field O&M (2006)	149,000	factor @	0.81	120,690		
	Groundwater Monitoring				50,000		
	FICO Water Cost	2.00		4400	150,000		
		3.00 2.12	/AF /AF	4122	8 738		
	Hydrologic Consultant	2.12		4122	85,000		
				-	919,192	\$	919,192
Annual Bonair/Poplacomont							
(Years 2043-2058):							
. ,	Labor/Materials/Equipment	210,000	factor @	0.17	35,700		
	Pipeline/Headers	75,000	factor @	0.17	12,750		
	Well/Pump/Motor	325,000	factor @	0.17	55,250		
	Replacement Materials/Instruments	97,000	factor @	0.17	16,490		
	Inter. Well Field Repair/Replacement (2006)	707,000	factor @	0.26	183,820		
	Shipping			-	5,000		¢200.010
					209,010		φ <u></u> συθ,010
Water Treatment							
Construction							
(Tear 2042):	Pilot Scale Testing				0		
	Telemetry to Mine Operations				õ		

Alternative 5: IW Wellfield=4861-1555gpm; FFS Wellfield= 5450-900gpm; SC Wellfield=1600-100gpm; PS Wellfield=2300-0gpm; MC Wellfield=1500-0gpm						
		Quantity	Unit	Unit Cost	Extended Cost	Subtotal
	Power Supply & Distribution	10,600	feet @	21	0	
	RO Treatment System (2555 gpm)	10,176,000	/2000 gpm	0	0	
				-	0	\$0
Water Treatment Annual O&M (Years 2043-2058):	RO Treatment System (2555 gpm)	1.34	/1000 gals	0	<u>0</u> 0	\$0
					-	¥ -
	Alternative 5	ce. Repair. Re	Initia Initial Co placement C	al Pre-Con nstruction costs (yea	struction Cost: Capital Costs: ors 2010-2030):	\$ 1,016,900 \$ 19,583,311 \$ 1,376,151
	Annual Operation, Maintenan	ce. Repair. Re	placement C	costs (vea	rs 2031-2042):	\$ 1.024.584
	Annual Operation, Maintenan	ce, Repair, Re	placement C	osts (yea	rs 2043-2058):	\$ 1,228,202
	Total Pre-Construction, Capital, O8	M, Repair, Re	, placement C	osts (yea	rs 2009-2058):	\$ 81,445,631
	Total Pre-Construction, Capital, O8	M, Repair, Re	placement C	osts (yea	rs 2009-2042):	\$ 61,794,397
	Total Pre-Construction, Capital, O8	M, Repair, Re	placement C	osts (yea	rs 2043-2058):	\$ 19,651,234
		Extractio	on System C	osts (yea	rs 2043-2058):	\$ 19,651,234
	Groundwater	Extraction Sy	stem 50 Ye	ear Net Pr	esent Value =	\$ 42,595,514
			Total 50 Ye	ear Net Pr	esent Value =	\$ 42,595,514

Assumptions:

- 1) IW pump station will require upgrades for total flow (assumes 3-300hp)
- 2) O&M based on IW costs for 2006 proportional to 21 wells
- 3) Repair/Replacement based on IW costs for 2006 proportional to 6000gpm
- 4) Net Present Value is calculated over 50 years assuming a 7.8 percent discount rate minus a 2.4 percent escalation rate
- 5) Canoa Ranch water use off-set proportional to total 2007 well field O&M costs
- 6) Base Kw-hrs for IW pump station assumed at 3,800,000 at 6000gpm
- 7) 36" line from west of Esperanza junction to IW pump station

8) All capital equipment sized for maximum flow rate

9) Flows @ years 2010-2030 = IW-4861gpm; FFS-5450gpm; SC-1600gpm; PS-2300gpm; MC-1500gpm

10) Flows @ years 2031-2042 = IW-4861gpm; FFS-4900gpm; SC-1200gpm; PS-1700gpm; MC-0gpm

11) Flows @ years 2043-2058 = IW-1555gpm; FFS-900gpm; SC-100gpm; PS-0gpm; MS-0gpm

12) Canoa Ranch Well Field saving based on time period weighted-average flow, excluding IW

Abbreviations:

ROW- right of way CAD-computer aided drafting HP-horse power gals-gallons V-volts FLA-full load amps A-amps kVA- kilo volt amps HDPE-high density polyethylene SDR-size dimension ratio IW- interceptor well field O&M- operation and maintenance gpm-gallons per minute Kw-kilo watts FICO-Farmers Investment \Co. WQARF-Water Quality Assurance Revolving Fund ADWR-Arizona Dept of Water Resources AF-acre-feet RO-reverse osmosis

TABLE H.6

Summary of 2006 Interceptor Wellfield Operation and Maintenance Cost

TOTAL-	\$1,640,008
Hydrogeologic Consulting-	\$56,110
Electrical Power-	\$727,361
Total Materials, Equipment, Labor Repair/Replacement-	\$707,664
M&R Labor and Equipment-	\$209,822
Additional Fabrication-	\$75,039
Well & Pump Repair/ Replacement-	\$325,447
Repair/Replace Equipment, Materials, Instruments-	\$97,357
Total Operating Labor & Supplies-	\$148,873
Operating Supplies-	\$34,821
Total Labor-	\$114,052

Notes:

Basis = 21 wells