

APPENDIX J

DETAILED BGR COST ESTIMATES

Injection Only Brackish Groundwater Restoration Project Costs Summary	
Project Component	Cost*
Extraction Well Sites	\$ 51,900,000
Outfall cleaning and modification	\$ 6,250,000
Extraction Distribution	\$ 56,100,000
Potable Water Distribution Transmission Mains	\$ 86,950,000
Potable Water Booster Pump	\$ 20,700,000
Injection Well Sites	\$ 45,650,000
Injection Well Laterals	\$6,950,000
ROC Storage	\$ 3,350,000
Land Costs	\$ 11,200,000
Water Treatment Plant Costs	\$ 522,000,000
Construction Subtotal	\$ 811,050,000
Engineering Planning and Design (10%)	\$ 81,110,000
Environmental Planning and Permitting (2%)	\$ 16,220,000
Administrative and Legal (1%)	\$ 8,110,000
Construction Management (4%)	\$ 32,440,000
Soft Costs Subtotal	\$ 137,880,000
Grand Total	\$ 948,930,000

Injection Only BGRP Annual O&M Costs

Power Costs	\$	0.50	per kWh
Pipeline O&M Factor		2%	of total direct costs
Site Maintenance		0.50%	of total site costs of PS
Well Pump Motor Lifecycle		20	years
Pipeline Lifecycle		75	years
Pump Station Annual Maintenance		5%	per year
Inflation %		2.25%	per year
Discount Rate		2.75%	per year
Interest Rate		4%	
Loan Term		30.00	years

Table 5.1

Offsite Facilities Annual O&M Costs

Extraction Well Sites

Pumping Power	\$	15,024,364	\$	15,025,000.00
Pumping O&M Costs	\$	1,371,038	\$	1,372,000.00
Pumping Site O&M Costs	\$	50,569	\$	51,000.00
Subtotal	\$	16,445,970	\$	16,448,000.00

Extraction Distribution

Pipeline O&M Costs		665,555	\$	666,000.00
Subtotal	\$	665,555	\$	666,000.00

Potable Water Pump Station

Pumping Power	\$	12,689,055	\$	12,690,000.00
Pumping O&M Costs	\$	400,000	\$	400,000.00
Pumping Site O&M Costs	\$	40,000	\$	40,000.00
Subtotal	\$	13,129,055	\$	13,130,000.00

Potable Water Distribution

Pipeline O&M Costs		1,170,786	\$	1,171,000.00
Subtotal	\$	1,170,786	\$	1,171,000.00

Injection Wells

Backwash Pumping Power	\$	914,526	\$	915,000.00
Pumping O&M Costs	\$	679,245	\$	680,000.00
Pumping Site O&M Costs	\$	28,130	\$	29,000.00
Subtotal	\$	1,621,901	\$	1,624,000.00
Total Offsite Annual O&M Costs	\$	33,033,267	\$	33,039,000.00

Treatment Facility Annual O&M Costs

Power Costs	\$	57,682,034	\$	57,683,000.00
Chemicals	\$	5,646,836	\$	5,647,000.00
O&M Costs	\$	16,288,526	\$	16,289,000.00
Total Treatment Facility Annual O&M Costs	\$	79,617,396	\$	79,619,000.00

Injection Only Annual O&M Grand Total	\$	112,650,663	\$	112,658,000
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Injection Only BGRP Extraction Well Site Costs			1-11		2-12		3-13		4-14		5-15		6-16		7-17		8-18		9-19		10-20	
General	Unit Costs	Unit	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
Mobilization	8.00% LS		1	\$ 161,000	1	\$ 160,500	1	\$ 162,500	1	\$ 171,000	1	\$ 178,000	1	\$ 173,500	1	\$ 183,500	1	\$ 182,500	1	\$ 182,000	1	\$ 172,000
Demobilization	2.00% LS		1	\$ 40,500	1	\$ 40,500	1	\$ 41,000	1	\$ 43,000	1	\$ 44,500	1	\$ 43,500	1	\$ 46,000	1	\$ 46,000	1	\$ 45,500	1	\$ 43,000
SWPPP BMPs	2.50% LS		1	\$ 24,500	1	\$ 24,500	1	\$ 24,500	1	\$ 27,500	1	\$ 29,000	1	\$ 24,500	1	\$ 24,500	1	\$ 24,500	1	\$ 27,000	1	\$ 24,500
Groundwater Testing and Handing	\$5,000 LS		1	\$ 5,000	1	\$ 5,000	1	\$ 5,000	1	\$ 5,000	1	\$ 5,000	1	\$ 5,000	1	\$ 5,000	1	\$ 5,000	1	\$ 5,000	1	\$ 5,000
Environmental Mitigation Measures	0.50% LS		1	\$ 5,000	1	\$ 5,000	1	\$ 5,000	1	\$ 5,500	1	\$ 6,000	1	\$ 5,000	1	\$ 5,000	1	\$ 5,000	1	\$ 5,500	1	\$ 5,000
General Subtotal				\$ 236,000	\$ 235,500	\$ 238,000	\$ 252,000	\$ 262,500	\$ 251,500	\$ 264,000	\$ 263,000	\$ 265,000	\$ 249,500									
Civil (100' by 100' site)																						
Site Vegetation removal and clearance	\$2 SF		10000	\$ 20,000	10000	\$ 20,000	10000	\$ 20,000	10000	\$ 20,000	10000	\$ 20,000	10000	\$ 20,000	10000	\$ 20,000	10000	\$ 20,000	10000	\$ 20,000	10000	\$ 20,000
Rough grading	\$4 SF		10000	\$ 40,000	10000	\$ 40,000	10000	\$ 40,000	10000	\$ 40,000	10000	\$ 40,000	10000	\$ 40,000	10000	\$ 40,000	10000	\$ 40,000	10000	\$ 40,000	10000	\$ 40,000
Gravel	\$25 SF		10000	\$ 250,000	10000	\$ 250,000	10000	\$ 250,000	10000	\$ 250,000	10000	\$ 250,000	10000	\$ 250,000	10000	\$ 250,000	10000	\$ 250,000	10000	\$ 250,000	10000	\$ 250,000
Access Road Grading and gravel paving	\$50 LF		25	\$ 1,250	25	\$ 1,250	25	\$ 1,250	2423	\$ 121,139	3790	\$ 189,483	25	\$ 1,250	25	\$ 1,250	2288	\$ 114,379	25	\$ 1,250		
Perimeter Fencing	\$150 LF		400	\$ 60,000	400	\$ 60,000	400	\$ 60,000	400	\$ 60,000	400	\$ 60,000	400	\$ 60,000	400	\$ 60,000	400	\$ 60,000	400	\$ 60,000	400	\$ 60,000
Access Gate	\$3,000 ea		1	\$ 3,000	1	\$ 3,000	1	\$ 3,000	1	\$ 3,000	1	\$ 3,000	1	\$ 3,000	1	\$ 3,000	1	\$ 3,000	1	\$ 3,000	1	\$ 3,000
Electrical and Controls Building (20' by 40' CMU building)	\$600 SF		800	\$ 480,000	800	\$ 480,000	800	\$ 480,000	800	\$ 480,000	800	\$ 480,000	800	\$ 480,000	800	\$ 480,000	800	\$ 480,000	800	\$ 480,000	800	\$ 480,000
Site Lighting	\$2,000 ea		6	\$ 12,000	6	\$ 12,000	6	\$ 12,000	6	\$ 12,000	6	\$ 12,000	6	\$ 12,000	6	\$ 12,000	6	\$ 12,000	6	\$ 12,000	6	\$ 12,000
Offsite Piping (laterals to main transmission)	\$400 LF		25	\$ 10,000	25	\$ 10,000	25	\$ 10,000	0	\$ -	0	\$ -	25	\$ 10,000	25	\$ 10,000	25	\$ 10,000	0	\$ -	25	\$ 10,000
Flood Proofing Factor	20% LS		1	\$ 96,000	1	\$ 96,000	1	\$ 96,000	1	\$ 96,000	1	\$ 96,000	1	\$ 96,000	1	\$ 96,000	1	\$ 96,000	1	\$ 96,000	1	\$ 96,000
Civil Subtotal				\$ 972,250	\$ 972,250	\$ 972,250	\$ 1,082,139	\$ 1,150,483	\$ 972,250	\$ 972,250	\$ 972,250	\$ 1,075,379	\$ 972,250									
Well																						
180' aquifer well, casing	\$ 750 VLF		180	\$ 135,000	180	\$ 135,000	180	\$ 135,000	180	\$ 135,000	180	\$ 135,000	180	\$ 135,000	180	\$ 135,000	180	\$ 135,000	180	\$ 135,000	180	\$ 135,000
(180) Motor and downhole equipping	\$ 1,000 HP		145	\$ 145,000	140	\$ 140,000	170	\$ 170,000	170	\$ 170,000	180	\$ 180,000	200	\$ 200,000	225	\$ 225,000	195	\$ 195,000	145	\$ 145,000	135	\$ 135,000
Concrete Pad and Pedestals	\$ 8,000 ea		1	\$ 8,000	1	\$ 8,000	1	\$ 8,000	1	\$ 8,000	1	\$ 8,000	1	\$ 8,000	1	\$ 8,000	1	\$ 8,000	1	\$ 8,000	1	\$ 8,000
400' aquifer well, casing, and motor	\$ 750 VLF		400	\$ 300,000	400	\$ 300,000	400	\$ 300,000	400	\$ 300,000	400	\$ 300,000	400	\$ 300,000	400	\$ 300,000	400	\$ 300,000	400	\$ 300,000	400	\$ 300,000
Concrete pads and Pedestals	\$ 8,000 ea		1	\$ 8,000	1	\$ 8,000	1	\$ 8,000	1	\$ 8,000	1	\$ 8,000	1	\$ 8,000	1	\$ 8,000	1	\$ 8,000	1	\$ 8,000	1	\$ 8,000
(400) Motor and downhole equipping	\$ 1,000 HP		210	\$ 210,000	205	\$ 205,000	200	\$ 200,000	200	\$ 200,000	210	\$ 210,000	310	\$ 310,000	410	\$ 410,000	430	\$ 430,000	365	\$ 365,000	355	\$ 355,000
Site Monitoring Well	\$ 150 VLF		580	\$ 87,000	580	\$ 87,000	580	\$ 87,000	580	\$ 87,000	580	\$ 87,000	580	\$ 87,000	580	\$ 87,000	580	\$ 87,000	580	\$ 87,000	580	\$ 87,000
Well Installation Subtotal				\$ 893,000	\$ 883,000	\$ 908,000	\$ 908,000	\$ 928,000	\$ 1,048,000	\$ 1,173,000	\$ 1,163,000	\$ 1,028,000	\$ 893,000									
Mechanical																						
CARV	\$ 2,500 ea		4	\$ 10,000	4	\$ 10,000	4	\$ 10,000	4	\$ 10,000	4	\$ 10,000	4	\$ 10,000	4	\$ 10,000	4	\$ 10,000	4	\$ 10,000	4	\$ 10,000
Sample Port	\$ 500 ea		2	\$ 1,000	2	\$ 1,000	2	\$ 1,000	2	\$ 1,000	2	\$ 1,000	2	\$ 1,000	2	\$ 1,000	2	\$ 1,000	2	\$ 1,000	2	\$ 1,000
Pressure Gauge	\$ 500 ea		4	\$ 2,000	4	\$ 2,000	4	\$ 2,000	4	\$ 2,000	4	\$ 2,000	4	\$ 2,000	4	\$ 2,000	4	\$ 2,000	4	\$ 2,000	4	\$ 2,000
Dismantling Joint	\$ 2,500 ea		6	\$ 15,000	6	\$ 15,000	6	\$ 15,000	6	\$ 15,000	6	\$ 15,000	6	\$ 15,000	6	\$ 15,000	6	\$ 15,000	6	\$ 15,000	6	\$ 15,000
Check Valve	\$ 10,000 ea		2	\$ 20,000	2	\$ 20,000	2	\$ 20,000	2	\$ 20,000	2	\$ 20,000	2	\$ 20,000	2	\$ 20,000	2	\$ 20,000	2	\$ 20,000	2	\$ 20,000
Magnetic Flowmeter	\$ 15,000 ea		2	\$ 30,000	2	\$ 30,000	2	\$ 30,000	2	\$ 30,000	2	\$ 30,000	2	\$ 30,000	2	\$ 30,000	2	\$ 30,000	2	\$ 30,000	2	\$ 30,000
Butterfly Valve	\$ 8,000 ea		4	\$ 32,000	4	\$ 32,000	4	\$ 32,000	4	\$ 32,000	4	\$ 32,000	4	\$ 32,000	4	\$ 32,000	4	\$ 32,000	4	\$ 32,000	4	\$ 32,000
90 degree reducing 90	\$ 5,000 ea		2	\$ 10,000	2	\$ 10,000	2	\$ 10,000	2	\$ 10,000	2	\$ 10,000	2	\$ 10,000	2	\$ 10,000	2	\$ 10,000	2	\$ 10,000	2	\$ 10,000
90 degree elbow	\$ 3,500 ea		2	\$ 7,000	2	\$ 7,000	2	\$ 7,000	2	\$ 7,000	2	\$ 7,000	2	\$ 7,000	2	\$ 7,000	2	\$ 7,000	2	\$ 7,000	2	\$ 7,000
Ductile Iron Pipe Spools	\$ 250 LF		40	\$ 10,000	40	\$ 10,000	40	\$ 10,000	40	\$ 10,000	40	\$ 10,000	40	\$ 10,000	40	\$ 10,000	40	\$ 10,000	40	\$ 10,000	40	\$ 10,000
Pipe Supports	\$ 750 ea		12	\$ 9,000	12	\$ 9,000	12	\$ 9,000	12	\$ 9,000	12	\$ 9,000	12	\$ 9,000	12	\$ 9,000	12	\$ 9,000	12	\$ 9,000	12	\$ 9,000
Mechanical Subtotal				\$ 146,000	\$ 146,000	\$ 146,000	\$ 146,000	\$ 146,000	\$ 146,000	\$ 146,000	\$ 146,000	\$ 146,000	\$ 146,000									
E&IC																						
Supporting Electrical, Instrumentation & Controls	1 LS		1	\$ 325,000	1	\$ 325,000	1	\$ 325,000	1	\$ 325,000	1	\$ 350,000	1	\$ 325,000	1	\$ 350,000	1	\$ 350,000	1	\$ 350,000	1	\$ 325,000
E&IC Subtotal				\$ 325,000	\$ 325,000	\$ 325,000	\$ 325,000	\$ 350,000	\$ 325,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 325,000									
Total of All Direct Costs				\$ 2,572,250	\$ 2,561,750	\$ 2,589,250	\$ 2,713,139	\$ 2,836,983	\$ 2,742,750	\$ 2,905,250	\$ 2,894,250	\$ 2,884,379	\$ 2,720,750									
Construction Contingency	30%			\$ 771,675	\$ 768,525	\$ 776,775	\$ 813,942	\$ 851,095	\$ 822,825	\$ 871,575	\$ 868,275	\$ 865,314	\$ 816,225									
Subtotal				\$ 3,343,925	\$ 3,330,275	\$ 3,366,025	\$ 3,527,080	\$ 3,688,078	\$ 3,565,575	\$ 3,776,825	\$ 3,762,525	\$ 3,749,693	\$ 3,536,975									
Sale Tax (Monterey County) Applied to 50% of costs	7.75%			\$ 129,577	\$ 129,048	\$ 130,433	\$ 136,674	\$ 142,913	\$ 138,166	\$ 146,352	\$ 145,798	\$ 145,301	\$ 137,058									
Subtotal				\$ 3,473,502	\$ 3,459,323	\$ 3,496,458	\$ 3,663,754	\$ 3,830,991	\$ 3,703,741	\$ 3,923,177	\$ 3,908,323	\$ 3,894,993	\$ 3,674,033									
Contractor General Conditions	10%			\$ 347,350	\$ 345,932	\$ 349,646	\$ 366,375	\$ 383,099	\$ 370,374	\$ 392,318	\$ 390,832	\$ 389,499	\$ 367,403									
Subtotal				\$ 3,820,852	\$ 3,805,255	\$ 3,846,104	\$ 4,030,130	\$ 4,214,090	\$ 4,074,115	\$ 4,315,495	\$ 4,299,155	\$ 4,284,493	\$ 4,041,436									
Contractor Overhead and Profit	15%			\$ 573,128	\$ 570,788	\$ 576,916	\$ 604,519	\$ 632,114	\$ 611,117	\$ 644,873	\$ 6											

M1W Ocean Outfall Improvements Cost Estimate Summary	
Number of Ports	170
Disengage Pressure Reducing Structure	\$ 50,000
Port Replacement	\$ 1,700,000
Duckbill Check Valve	\$ 204,000
Barge Handling	\$ 120,000
Marine Mammal Monitoring	\$ 108,000
Cleaning	\$ 1,360,000
Total Direct Costs	\$3,542,000.00
General Conditions (10%)	\$ 354,200
Mobilization (20%)	\$ 708,400
Contingency (30%)	\$ 1,062,600
Total Costs	\$ 6,196,781
Round up	\$ 6,250,000

Injection Only BGRP Extraction Well Conveyance Pipelines Costs

Diameter	Unit Costs		Injection C	Direct Costs
18	\$	250	19,480 \$	4,870,068
24	\$	375	9,731 \$	3,649,054
30	\$	550	19,325 \$	10,628,596
36	\$	725	4397.23 \$	3,187,992
42	\$	800	10,205 \$	8,163,672
48	\$	975	2,850 \$	2,778,350
60	\$	1,275	\$	-
Subtotals			Total of All Direct Costs	33,277,731
			Trenchless Costs	4,500,000
Contingency Already taken into consideration in Unit Cost ----->				0
Subtotal			\$	37,777,731
Sale Tax (Monterey County) App	7.75%	applied to 50% of costs		\$1,463,887
Subtotal			\$	39,241,618
Contractor General Conditions	10%		\$	3,924,162
Subtotal			\$	43,165,780
Contractor Overhead and Profit	15%		\$	6,474,867
Subtotal	%/Month	Months	Total \$	49,640,647
Escalation to Mid Point (0.25% per mon	0.25%	52.00	13.00%	\$6,453,284
Subtotal			\$	56,093,931
Total (to the nearest \$50k)				\$56,100,000

Injection Only BGRP Treated Water Pipeline Costs									
Point	Injection Volume (gpm)	A	B	C	D	E	F	G	H
Injection Well 1	1,707	1,707	1,707	1,707					
Injection Well 2	1,707	1,707	1,707	1,707					
Injection Well 3	1,707	1,707	1,707	1,707					
Injection Well 4	1,707	1,707	1,707			1,707	1,707		
Injection Well 5	1,707	1,707	1,707		1,707		1,707		
Injection Well 6	1,707	1,707	1,707		1,707		1,707		
Injection Well 7	1,707	1,707	1,707		1,707		1,707		
Injection Well 8	1,707	1,707	1,707				1,707	1,707	
Injection Well 9	909	909	909			909	909		
Injection Well 10	909	909	909		909		909		
Injection Well 11	909	909	909				909	909	
Injection Well 12	909	909							909
Injection Well 13	1,707	1,707	1,707	1,707					
Injection Well 14	1,707	1,707							1,707
Injection Well 15	1,707	1,707							1,707
Injection Well 16	1,707	1,707							1,707
Injection Well 17	909	909							909
Injection Well 18	909	909							909
Injection Well 19	909	909	909				909		
Injection Well 20	909	909	909	909					
Total (GPM)	27,756	27,756	19,908	7,737	6,030	2,616	12,171	2,616	7,848

Pipeline Unit Costs \$/LF		
4	\$	100
6	\$	110
8	\$	130
12	\$	180
16	\$	220
18	\$	250
24	\$	375
30	\$	550
36	\$	725
42	\$	800
48	\$	975
60	\$	1,275
66	\$	1,350
72	\$	1,500

Potable Water Booster Pump Station Sizing		Booster Pump Approx. Sizing	To Salinas	Headloss contingency
Total Max Headloss			272.85	25%
Elevation Gain (to overcome)			50	
Residual Pressure (20 psi)			46.2	
TDHx1.5			554	
Max Flow			27756	
Total Required HP			3885	
# of pumps			8	
Per HP (to nearest 50 HP)			500	
Booster Pump Station Cost		\$	8,000,000	
Total of All Direct Costs			\$ 8,000,000	
Construction Contingency	50%		\$ 4,000,000	
Subtotal			\$12,000,000	
Sale Tax (Monterey County)	7.75%		\$930,000	
Subtotal	%/Month	Months	\$12,930,000	
Contractor General Conditions	10%		\$1,293,000	
Subtotal			\$14,223,000	
Contractor Overhead and Profit	15%		\$2,133,450	
Subtotal			\$16,356,450	
Escalation to Mid Point (0.25% per month to July 2030)	0.25%	52.00	13.00%	\$2,126,339
Subtotal			\$18,482,789	
Total (to the nearest \$50k)			\$20,700,000	

C Value
110

Segment	Includes Flows	Length (ft)	Q - Flow (gpm - Max Day)	Q - Flow (cfs)	Diameter (in)	Inner Diameter	Area (ft²)	Velocity (fps)	C - Frictic	H - Headloss (ft)	Headloss Rate (ft/1000 f)	Unit Cost (LF)	Total Cost
ALL		11,612	27,756	61.90	42	36	7.07	8.76	110	42.39	3.65	\$ 800.00	\$ 9,289,272
See Above		4,936	19,908	44.39	36	32	5.59	7.95	110	20.64	4.18	\$ 725.00	\$ 3,578,294
See Above		34,605	7,737	17.25	24	22	2.54	6.81	110	181.43	5.24	\$ 375.00	\$ 12,976,790
See Above		22,514	6,030	13.45	24	22	2.54	5.30	110	74.43	3.31	\$ 375.00	\$ 8,442,634
See Above		15,909	2,616	5.83	16	14	1.12	5.22	110	80.83	5.08	\$ 220.00	\$ 3,500,026
See Above		14,774	12,171	27.14	30	27	3.98	6.83	110	60.41	4.09	\$ 550.00	\$ 8,125,442
		4,206	2,616	5.83	16	14	1.12	5.22	110	21.37	5.08	\$ 220.00	\$ 925,282
		31,204	7,848	17.50	24	22	2.54	6.90	110	167.97	5.38	\$ 375.00	\$ 11,701,567
Trenchless across Salinas River (main)					66							\$	97.50
Trenchless across Salinas River (Marina)					#REF!							\$	97.50
Trenchless at Copper Rd on Segment 9					#REF!							\$	97.50
CSIP Storage Tank		139,758											

Total of All Direct Pipeline Cost	\$	58,539,306.45		
Total of All Direct Costs	\$	58,539,306		
Already taken into consideration in Unit Cost ----->	\$	-		
Subtotal	\$	58,539,306		
Sale Tax (Monterey County) Applied to 50% of costs	7.75%	\$2,268,398		
Subtotal	\$	60,807,705		
Contractor General Conditions	10%	\$6,080,770		
Subtotal		\$66,888,475		
Contractor Overhead and Profit	15%	\$10,033,271		
Subtotal	%/Month	76,921,746		
Escalation to Mid Point (0.25% per month to July 2030)	0.25%	52.00	13.00%	\$9,999,827
Subtotal		\$ 86,921,573		
Total (to the nearest \$50k)		\$86,950,000		

Injection Well Treated Water Lateral Costs

Aquifer	Injection Well No	Flow (gpm)	Flow (CFS)	Length	Diameter (in)	Area (ft^2)	Velocity (fps)	C - Friction Factor (PVC)	H - Headloss (ft)	Headloss Rate (ft/1000 ft)	Unit Cost	Direct Costs
180	1	1707	3.7554	3,186.4	16	1.40	2.69	110	7.17	2.25	220.00	\$ 701,016
180	2	1707	3.7554	1,986.2	16	1.40	2.69	111	4.39	2.21	220.00	\$ 436,963
180	3	1707	3.7554	98.2	16	1.40	2.69	112	0.21	2.18	220.00	\$ 21,610
180	4	1707	3.7554	1,866.2	16	1.40	2.69	113	3.99	2.14	220.00	\$ 410,562
180	5	1707	3.7554	1,236.2	16	1.40	2.69	114	2.60	2.11	220.00	\$ 271,970
180	6	1707	3.7554	1,270.8	16	1.40	2.69	115	2.63	2.07	220.00	\$ 279,575
180	7	1707	3.7554	500.9	16	1.40	2.69	116	1.02	2.04	220.00	\$ 110,202
180	8	1707	3.7554	1,201.7	16	1.40	2.69	117	2.41	2.01	220.00	\$ 264,365
180	9	909	1.9998	965.1	12	0.79	2.55	118	2.41	2.50	180.00	\$ 173,712
400	10	909	1.9998	995.2	12	0.79	2.55	119	2.45	2.46	180.00	\$ 179,140
400	11	909	1.9998	401.9	12	0.79	2.55	120	0.97	2.42	180.00	\$ 72,342
400	12	909	1.9998	449.2	12	0.79	2.55	121	1.07	2.39	180.00	\$ 80,858
180	13	1707	3.7554	409.6	16	1.40	2.69	122	0.76	1.86	220.00	\$ 90,115
180	14	1707	3.7554	1,009.7	16	1.40	2.69	123	1.85	1.83	220.00	\$ 222,126
180	15	1707	3.7554	3,103.0	16	1.40	2.69	124	5.59	1.80	220.00	\$ 682,659
180	16	1707	3.7554	1,405.3	16	1.40	2.69	125	2.50	1.78	220.00	\$ 309,156
400	17	909	1.9998	74.0	12	0.79	2.55	126	0.16	2.21	180.00	\$ 13,323
400	18	909	1.9998	639.6	12	0.79	2.55	127	1.40	2.18	180.00	\$ 115,125
400	19	909	1.9998	194.5	12	0.79	2.55	128	0.42	2.15	180.00	\$ 35,009
400	20	909	1.9998	1,075.5	12	0.79	2.55	129	2.28	2.12	180.00	\$ 193,595

46.29196447

Subtotal					\$ 4,663,421
Sale Tax (Monterey County) Applied to 50% of costs	7.75%				\$180,708
Subtotal					\$ 4,844,129
Contractor General Conditions	10%				\$484,413
Subtotal					\$5,328,541
Contractor Overhead and Profit	15%				\$799,281
Subtotal	%/Month	Months	Total		\$ 6,127,823
Escalation to Mid Point (0.25% per month to July 2030)	0.25%		52.00	13.00%	\$796,617
Subtotal					\$ 6,924,440
Total (to the nearest \$50k)					\$6,950,000

Injection Only BGRP ROC Basin Storage

	Total Volume	106444 CY		
	Mass Earthwork	\$ 15.00 per CY	\$	1,596,667
	Infrastructure	5% of Earthwork	\$	79,833
	Concrete Liner	\$ - per SF	\$	-
	Water Proofing	\$ 2.50 per SF	\$	437,250
	Columns	\$ - each (76 total)	\$	-
	Concrete roof	\$ - per SF	\$	-
		Total Direct Costs	\$	2,113,750
Total of All Direct Costs				
Construction Contingency	30%		\$	634,125
Subtotal			\$	2,747,875
Sale Tax (Monterey County) Applied to 50% of costs	7.75%		\$	212,960
Subtotal	%/Month	Months	Total	\$ 2,960,835
Escalation to Mid Point (0.25% per month to July 2030)	0.25%	52.00	13.00%	\$ 384,909
Subtotal			\$	3,345,744
On Site Well Total (to the nearest \$50k)			\$	3,350,000

Carollo Engineers, Inc.

**Project: Salinas Extraction Wells Feasibility Study
Scenario Injection Only BGRP
Title 60,000 AFY - Feed Water Treatment Facility Costs**

	Units	Unit Costs	Quantity	Cost
Sand Separators	EA	\$350,000	9	\$3,150,000
Cartridge Filters	EA	\$120,000	17	\$2,040,000
RO Feed Pumps- Pass 1	EA	\$500,000	17	\$8,500,000
RO Systems- Pass 1	GPD	\$1.50	40460000	\$60,690,000
RO Feed Pumps- Pass 2	EA	\$250,000	17	\$4,250,000
RO Systems- Pass 2	GPD	\$1.00	36414000	\$36,414,000
RO CIP System	EA	\$350,000	1	\$350,000
RO Flush/Plant Water Pumps	EA	\$50,000	4	\$200,000
RO Flush Tank	EA	\$150,000	1	\$150,000
Product Water Storage Tank	gal	\$1.50	2000000	\$3,000,000
Finished Water Pumps	EA	\$350,000	9	\$3,150,000
Lime Feed System	EA	\$1,250,000	1	\$1,250,000
Sodium Hypochlorite Feed System	EA	\$750,000	1	\$750,000
Scale Inhibitor Storage and Feed	EA	\$500,000	1	\$500,000
CO2 Storage and Feed System	EA	\$1,000,000	1	\$1,000,000
Building, Non-Process Area ¹	FT ²	\$1,000	6000	\$6,000,000
Building, Process Area ¹	FT ²	\$960	53000	\$50,880,000
Covered Chemical Storage	FT ²	\$250	5600	\$1,400,000
Sitework ²	%	10%		\$18,367,400
Electrical & I/C ³	%	35%		\$64,285,900
Mechanical ⁴	%	30%		\$37,318,200
Direct Cost Subtotal				\$303,645,500
Contingency	%	30%		\$91,093,650
Subtotal				\$394,739,150
Sales Tax ⁵	%	9%		\$17,763,262
Subtotal				\$412,502,412
Contractor General Conditions	%	10%		\$41,250,241
Subtotal				\$453,752,653
Contractor Overhead and Profit	%	15%		\$68,062,898
Subtotal				\$521,815,551
Escalation to Midpoint	%	0.0%		\$0
TOTAL CONSTRUCTION COSTS				\$521,815,551
TOTAL PROJECT COST				\$521,815,551
			\$/gpd	\$12.897

1. Includes general building HVAC and plumbing.

2. Includes demolition, excavation, paving, sidewalks, landscaping and general site improvements. Excludes pipelines and wells.

3. Electrical for desalter site facilities only and does not include backup power. Well electrical costs included in well equipment unit cost.

4. Estimate for onsite piping, valves, supports, etc. HVAC and plumbing included in building per square foot cost.

5. Estimated as sales tax*(0.5*direct cost+contingency)