ATTACHMENT 1

COST ESTIMATE OF SUBSURFACE INTAKE ALTERNATIVES

304 MDG Intake Cost Estimates - October 2007

VERTICAL BEACH WELLS

Total Capacity =		304	MGD
Individual Intake Well Capacity =		1.5	MGD
Duty Number of Intake Wells Needed =		203	
Additional Standby Intakes Needed @ 25 % =		51	
Total Intake Wells Needed =		253	
Minimum Distance Between Wells (Best Case)=		150	ft
Length of Beach Occupied by Wells =		7.2	miles
Land Needed to Install Wells & Support Facilities		8.6	acres
Cost of Installation of Individual Well =	$ 1,200,000		per well
Total Costs of Well Installation =	$ 304,000,000		
Cost of Seawater Conveyance Pipelines @US$500/ft =	$ 18,925,000		
Cost of Intake Booster Pump Stations - =	$ 30,400,000		
Cost of Electrical Power Supply for Well Pumps =	$ 50,160,000		
Total Construction (Direct) Costs =	**$ 403,485,000**		
Indirect Costs			
Acquisition of Land to Install Wells & Support Struct. =	$ 4,304,408		
Engineering, Design and Procurement @ 25 % =	$ 100,871,250		
Environmental Mitigation Costs @ 15 % =	$ 60,522,750		
Contingency @ 20 % =	$ 80,697,000		
TOTAL INDIRECT COSTS	**$ 246,395,407.71**		
TOTAL PROJECT EPC COSTS =	**$ 649,880,408**		

SLANT WELLS - Similar to Dana Point Desal Plant

Total Capacity =		304	MGD
Individual Intake Well Capacity =		5	MGD
Duty Number of Intake Wells Needed =		61	
Additional Standby Intakes Needed @ 25 % =		15	
Total Intake Wells Needed =		76	
Minimum Distance Between Wells (Best Case)=		300	ft
Length of Beach Occupied by Wells =		4.3	miles
Land Needed to Install Wells & Support Facilities		17.4	acres
Cost of Installation of Individual Well =	$ 2,400,000		per well
Total Costs of Well Installation =	$ 182,400,000		
Cost of Seawater Conveyance Pipelines @US$500/ft =	$ 11,250,000		
Cost of Intake Booster Pump Stations - =	$ 30,400,000		
Cost of Electrical Power Supply for Well Pumps =	$ 31,920,000		
Total Construction (Direct) Costs =	**$ 255,970,000**		
Indirect Costs			
Acquisition of Land to Install Wells & Support Struct. =	$ 8,723,600		
Engineering, Design and Procurement @ 25 % =	$ 63,992,500		
Environmental Mitigation Costs @ 15 % =	$ 38,395,500		
Contingency @ 20 % =	$ 51,194,000		
TOTAL INDIRECT COSTS	**$ 162,305,600**		
TOTAL PROJECT EPC COSTS =	**$ 418,275,600**		

HORIZONTAL RANNEY WELLS

Total Capacity =		304	MGD
Individual Intake Well Capacity =		5	MGD
Duty Number of Intake Wells Needed =		61	
Additional Standby Intakes Needed @ 25 % =		15	
Total Intake Wells Needed =		76	
Minimum Distance Between Wells (Best Case)=		400	ft
Length of Beach Occupied by Wells =		5.7	miles
Land Needed to Install Wells & Support Facilities		17.4	acres
Cost of Installation of Individual Well =	$ 2,500,000		per well
Total Costs of Well Installation =	$ 190,000,000		
Cost of Seawater Conveyance Pipelines @US$500/ft =	$ 15,000,000		
Cost of Intake Booster Pump Stations - =	$ 30,400,000		
Cost of Electrical Power Supply for Well Pumps =	$ 33,060,000		
Total Construction (Direct) Costs =	**$ 268,460,000**		
Indirect Costs			
Acquisition of Land to Install Wells & Support Struct. =	$ 8,723,600		
Engineering, Design and Procurement @ 25 % =	$ 67,115,000		
Environmental Mitigation Costs @ 15 % =	$ 40,269,000		
Contingency @ 20 % =	$ 53,692,000		
TOTAL INDIRECT COSTS	**$ 169,799,600**		
TOTAL PROJECT EPC COSTS =	**$ 438,259,600**		

SUBSURFACE INFILTRATION GALLERY (FUKUOKA TYPE INTAKE)

Total Capacity =		304	MGD
Capacity of Individual Intake Galleries =		101.3	MGD
Duty Intake Galleries Needed =		3	
Additional Standby Intakes Needed @ 0 % =		0	
Total Intake Galleries Needed =		3	
Length x Width x Depth Each Gallery =		5280x400x15	ft
Total Length of Intake System =		3.0	miles
Land Needed to Install Wells & Support Facilities		17.9	acres
Cost of Installation of Individual Gallery =	$	120,000,000	per 100 MGD gallery
Total Costs of Gallery Installation =	$	360,000,000	
Cost of Seawater Conv. Pipelines @US$500/ft =	$	7,922,606	
Cost of Intake Booster Pump Stations - =	$	12,160,000	
Cost of Electrical Power Supply for Well Pumps =	$	18,608,000	
Total Construction (Direct) Costs =	**$**	**398,690,606**	
Indirect Costs			
Acquisition of Land to Install Intake & Support Struct. =		$ 8,956,114	
Engineering, Design and Procurement @ 25 % =	$	99,672,652	
Environmental Mitigation Costs @ 15 % =	$	59,803,591	
Contingency @ 20 % =	$	79,738,121	
TOTAL INDIRECT COSTS	**$**	**248,170,478**	
TOTAL PROJECT EPC COSTS =	**$**	**646,861,084**	

NEW OPEN INTAKE - 1,000 FT INTAKE LINE W/ LOW-VELOCITY INTAKE STRUCTURE

Total Capacity =		304 MGD
Length of Intake Pipe =		1000 ft
Land Needed to Install Wells & Support Facilities		2.3 acres
Cost of Installation of Intake Pipe @ US$45,000/ft =	$	45,000,000
Cost of Construction of Ocean Intake Structure =	$	10,500,000
Cost of New Intake Screens =	$	8,000,000
Cost of New Intake Pump Station =	$	24,320,000
Cost of Power Supply for New Pump Station =	$	5,223,000
Total Construction (Direct) Costs =	**$**	**93,043,000**
Indirect Costs		
Acquisition of Land to Install Intake & Support Struct. =	$	1,147,842
Engineering, Design and Procurement @ 25 % =	$	23,260,750
Environmental Mitigation @ 15 % =	$	13,956,450
Contingency @ 20 % =	$	18,608,600
TOTAL INDIRECT COSTS	**$**	**56,973,642.06**
TOTAL PROJECT EPC COSTS =	**$**	**150,016,642**