



Sewer Authority Mid-Coastside

Recycled Water Project Basis of Design Report

**Board Meeting
April 10, 2017**

Purpose of Basis of Design Report (BODR)

- Develop 25% Design
- Present Design Criteria
- Describe Facilities
- Present Opinion of Probable Cost
- Develop Implementation Schedule

Recycled Water Demand

- CCWD quantity and quality requirements
 - Peak Day = 800,000 gpd
 - Average Day = 550,000 gpd
 - 48% Reverse Osmosis Blend

RWP Facilities

- Secondary Effluent Diversion
 - 8 inch pipeline from Secondary Clarifiers to Equalization Basin
- Secondary Effluent Equalization Basin
 - Modified Primary Clarifier to 160,000 gallon capacity
- UF/RO Treatment System
 - Universal Skid-Mounted Design
 - 2 treatment trains
 - Accommodates different membrane module suppliers
 - 48% RO Blend
 - Additional space for future membrane vessels

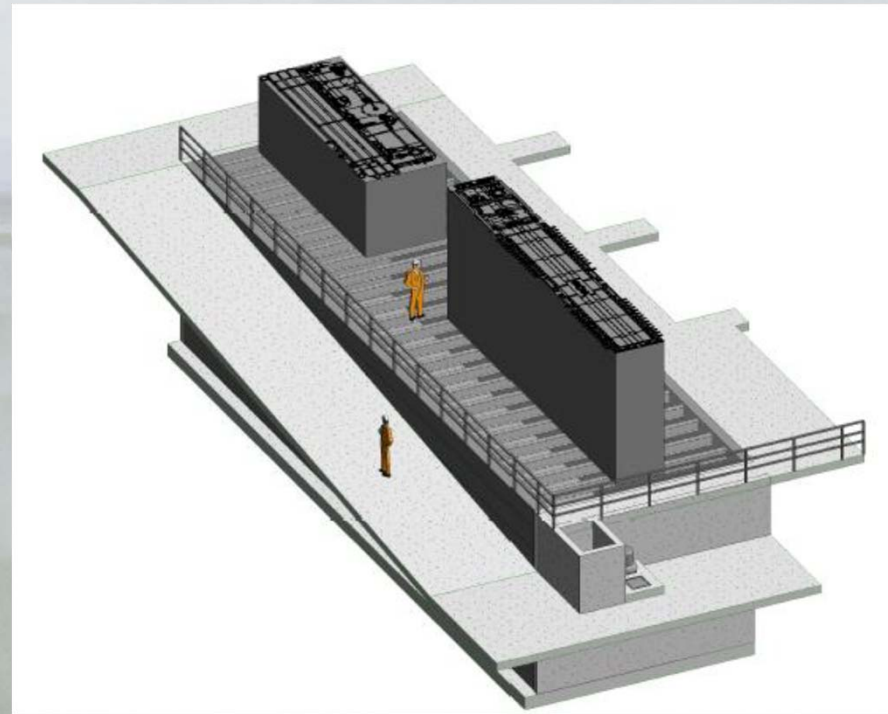
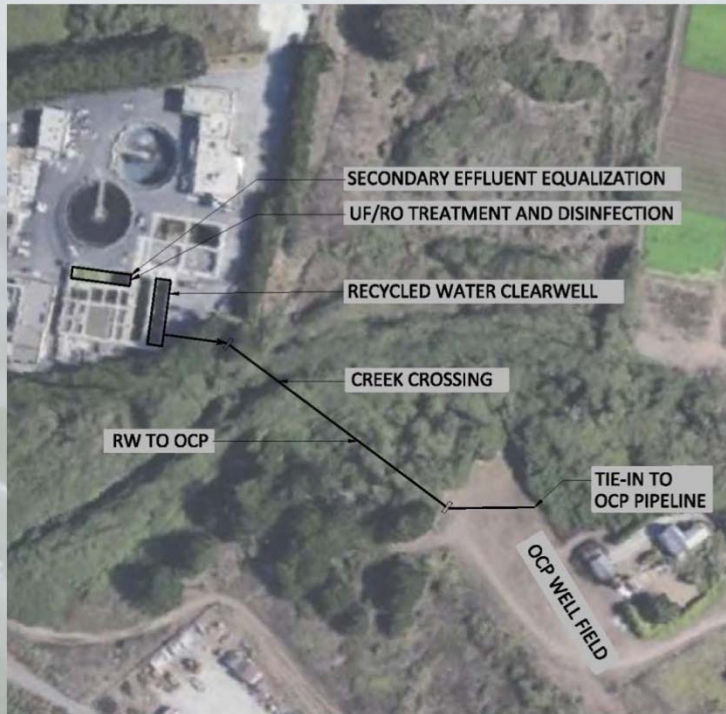
RWP Facilities

- RO Concentrate Disposal
 - 8-inch pipeline to effluent pump station
- UV Treatment
 - Disinfection per Title 22
 - Closed Vessel
- Chlorine Disinfection Residual
 - Sodium Hypochlorite
- Recycled Water Treatment Structure
 - Partially Enclosed Steel Framed Fabric Covering
 - Structural fiberglass grating

RWP Facilities

- Recycled Water Storage
 - Modified Aeration Basin No. 2
 - 260,000 gallon capacity
- Recycled Water Distribution
 - 560 gpm pump capacity
 - 6 inch diameter pipeline to OCP Wells
 - HDD Construction under Pilarcitos Creek

Proposed Project



Regulatory and Permitting

- Jurisdictional Entities
 - SWRCB Division of Drinking Water
 - San Francisco RWQCB
 - San Mateo county Department of Environmental Health
 - CCWD
 - City of Half Moon Bay
 - SAM

Regulatory and Permitting

- Regulatory Requirements
 - Title 22 of California Water Code Recycled Water Requirements
 - UV Disinfection Guidelines
- Permitting
 - CDP
 - Waste Discharge Requirements/Water Recycling Requirements
 - Construction Related Permits
- Environmental Compliance
 - CCWD CEQA Lead Agency



Opinion of Probable Cost

- Planning Level Cost Estimate
 - Based on quotes for equipment suppliers
- 25% Contingency
- O&M
 - Energy
 - Chemicals
 - Replacement Costs
 - Labor

Opinion of Probable Cost

Sewer Authority Mid-Coastside				
Recycled Water Project - 25% Design				
Engineer's Opinion of Probable Capital Cost				
Description	Quantity	Unit	Unit Cost (\$)	Total Cost (\$)
Mobilization/Demobilization/General Conditions	1	LS	10,000	10,000
Secondary Effluent Diversion	2	LS	10,000	20,000
Secondary Effluent Diversion Pipeline	110	LF	120	13,200
Existing Primary Clarifier No. 4 Rehabilitation to Equalization Basin	1	LS	200,000	200,000
Ancillary Equipment (valves, fittings, chemical dosing systems, bulk storage)	1	LS	50,000	50,000
Recycled Water Treatment (UF/RO)	1	LS	1,560,000	1,560,000
Treatment Structure	1	LS	70,000	70,000
Ultraviolet Disinfection	1	LS	285,000	285,000
Brine Discharge HDPE Pipeline	320	LF	120	38,400
Backwash/CIP HDPE Pipeline	6	LF	120	720
Recycled Water HDPE Pipeline to Storage	35	LF	120	4,200
Existing Aeration Basin Rehabilitation to Recycled Water Storage	1	LS	150,000	150,000
Electrical/Instrumentation	1	LS	25,000	25,000
Site Modifications	1	LS	50,000	50,000
Subtotal				2,476,520
25% Contingency				619,130
Total Probable Construction Cost				3,095,650
Administrative, Legal, Planning, Design, Project and Construction Management @ 30%				928,700
Total Probable Project Cost (SAM Facilities Only)				4,024,350
Recycled Water Conveyance System *				1,181,000
Total Recycled Water Treatment and Conveyance System				5,205,350

Opinion of Probable Cost

Sewer Authority Mid-Coastside	
Recycled Water Project - 25% Design	
Engineer's Opinion of Annual O&M Cost	
Description	Annual Cost (\$)
Energy	74,620
Chemicals	16,100
Labor	115,000
Filter Replacement	12,600
UV Lamp, Sleeve, Ballast, Wiper Replacement	5,210
Pump Replacement	10,000
Recycled Water Conveyance	36,000
Monitoring and Reporting	3,500
Total Probable Annual O&M Project Cost	273,030



Opinion of Probable Cost

RWP Cost (including Conveyance*)	Interest Rate				
	4.0%	3.5%	3.0%	2.5%	2.0%
Annualized Capital Cost (\$)	301,030	283,020	265,570	248,700	232,420
Annual O&M (\$)	273,030	273,030	273,030	273,030	273,030
Total Annual Cost (\$)	574,060	556,050	538,600	521,730	505,450
Total Annual \$/AF (616 AFY)	930	900	870	850	820



Current SRF Interest Rates

Calculation of True Interest Cost (TIC) for Bond Sale			
Bond Sale Date	TIC	TIC divided in half	Interest Rate*
11-Mar-10	5.327610%	2.66381%	2.7%
22-Nov-10	5.083324%	2.54166%	2.6%
20-Sep-11	3.998000%	1.99900%	2.0%
19-Oct-11	4.371000%	2.18550%	2.2%
1-Mar-12	3.557407%	1.77870%	1.8%
12-Apr-12	4.250394%	2.12520%	2.2%
23-Oct-12	3.229000%	1.61450%	1.7%
14-Mar-13	3.725735%	1.86287%	1.9%
11-Apr-13	3.789131%	1.89457%	1.9%
22-Oct-13	4.038049%	2.01902%	2.1%
13-Mar-14	3.655029%	1.82751%	1.9%
8-Oct-14	3.234795%	1.61740%	1.7%
13-Nov-14	2.949940%	1.47497%	1.5%
4-Mar-15	3.071726%	1.53586%	1.6%
20-Oct-15	3.515960%	1.75798%	1.8%
16-Dec-15	3.039604%**	1.51980%	1.6%
8-Mar-16	3.28742%	1.64371%	1.7%
9-Mar-17	3.564061%	1.78203%	1.8%
		0.00000%	
		0.00000%	

* Current Interest Rate is calculated as follows:

** Interest rate verified by State Treasurer's Office on 12/16/15.



END OF PRESENTATION

Questions?



June 29, 2015

Sewer Authority Mid-Coastside

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