

Water Reuse Feasibility Study Supplement



BOARD PRESENTATION

November 15, 2005



SEWER AUTHORITY MID-COASTSIDE

SAM

 CAROLLO
engineers

Presentation Content

- Study Comparison Summary
- Title 22 Recycled Water
- Bench Scale Testing Results
- Reuse Options 1 and 2
- Option 1 Alternatives
- Alternative Cost Summary
- Schedule

Reuse Study Comparison Summary

- CCWD Reuse Study – August 2003
 - Estimated recycled water usage for two customers
 - Estimated production and distribution costs
 - Minimal review of WWTP facilities
- SAM Reuse Study Supplement – September 2005
 - Extensive review of on-site tertiary requirements
 - All costs estimated “to fence line only”
 - Conducted bench-scale treatment comparisons

Title 22 of Water Code

Treatment Level vs. Uses

Treatment Level	Approved Uses
Disinfected Tertiary Recycled Water	<ul style="list-style-type: none">• Spray irrigation of food crops• Landscape irrigation• Nonrestricted recreational impoundment
Disinfected Secondary – 2.2 Recycled Water	<ul style="list-style-type: none">• Surface irrigation of food crops• Restricted recreational impoundment
Disinfected Secondary – 23 Recycled Water	<ul style="list-style-type: none">• Pasture for milking animals• Landscape irrigation (restricted)• Landscape impoundment
Undisinfected Secondary Recycled Water	<ul style="list-style-type: none">• Surface irrigation of orchards and vineyards (limited harvesting)• Fodder, fiber and seed crops

Disinfected Tertiary Recycled Water

- Wastewater that has been adequately oxidized, coagulated, filtered, and disinfected to meet Title 22 requirements

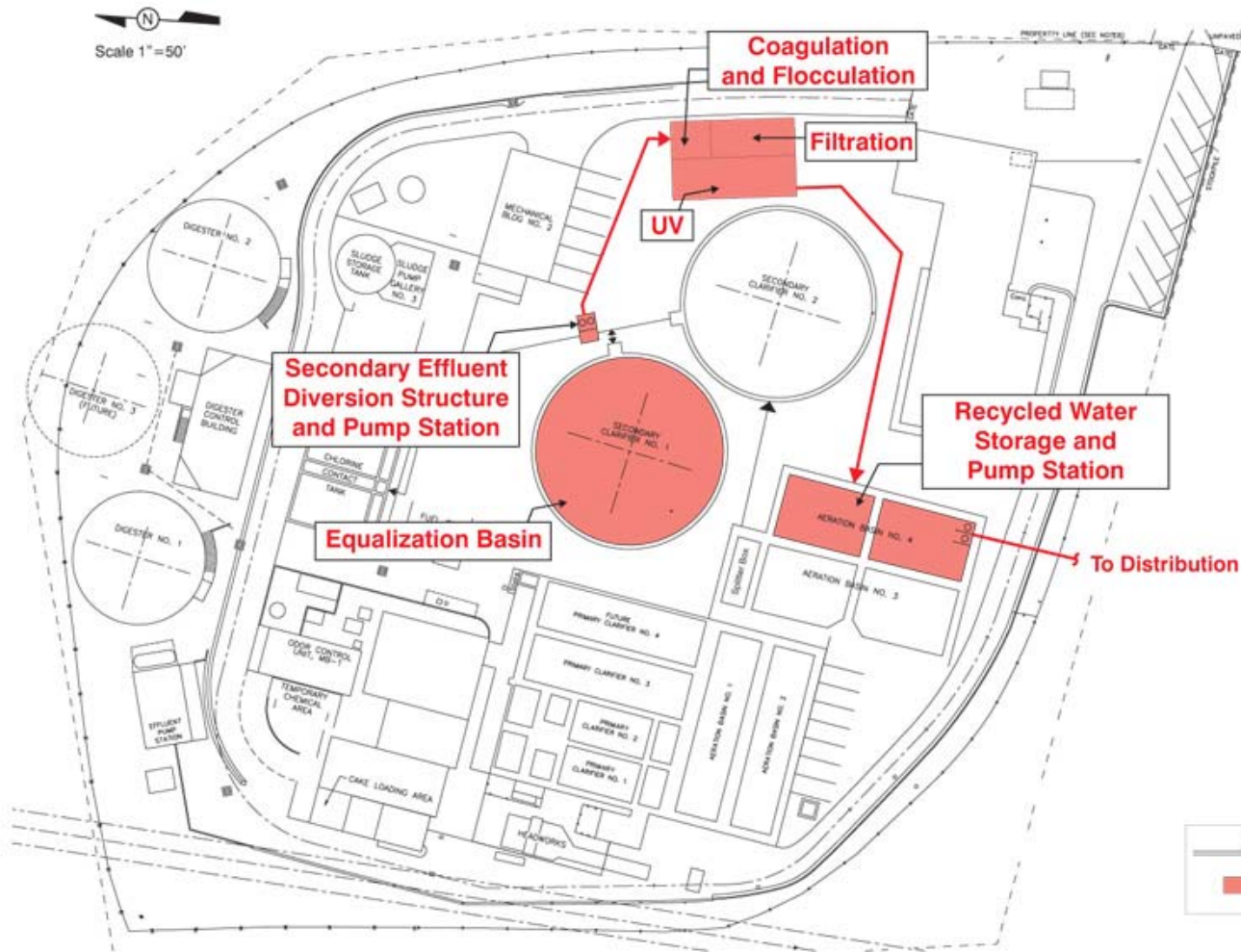
SAM Bench Scale Testing

- **Purpose:** Help with tertiary preliminary process type and sizing
- **Conclusions:**
 - SAM effluent contains high amount of small particles
 - Lots of small particles require coagulation and flocculation before filtration
 - High dose of coagulant or ballasted flocculation is probably needed

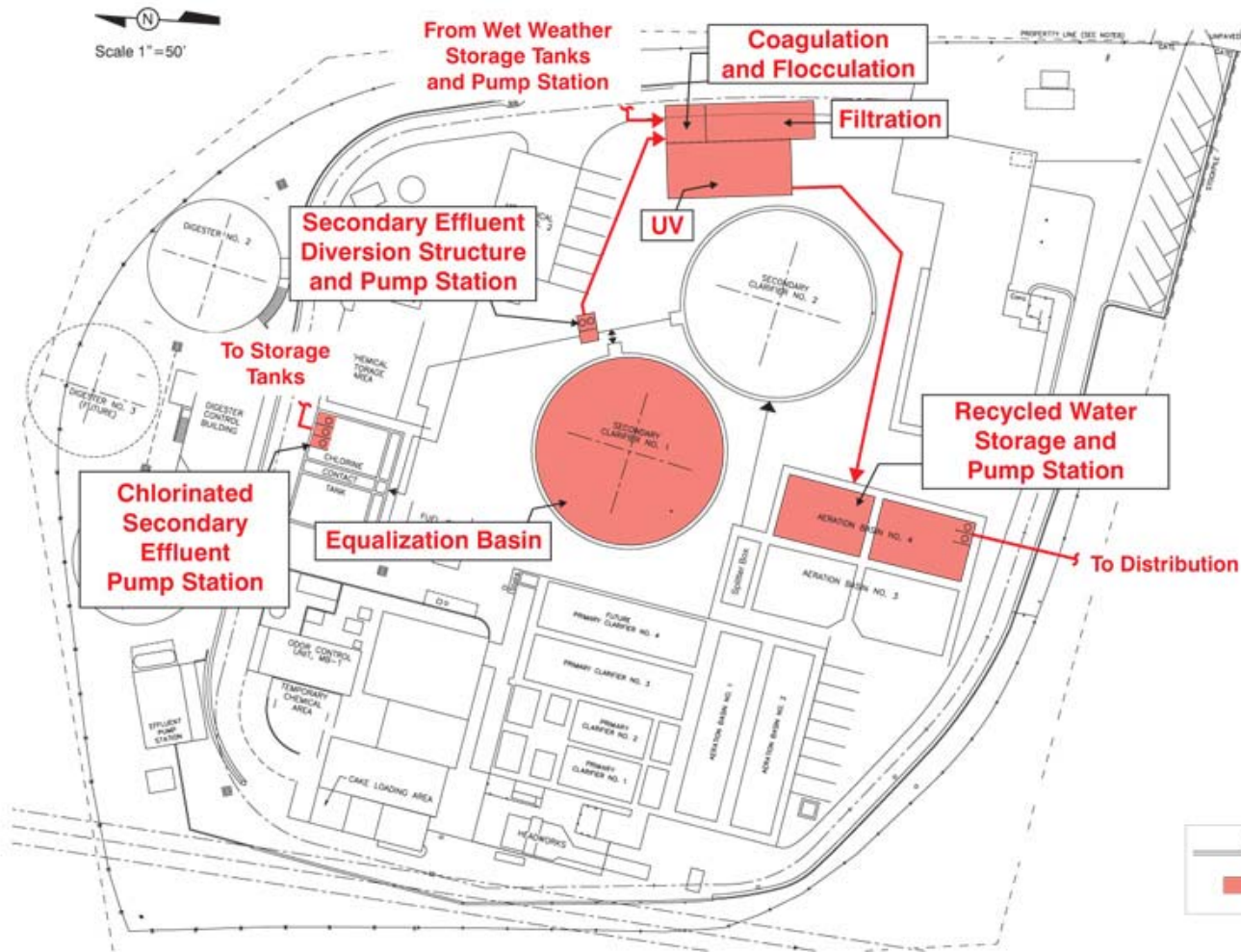
Water Recycling Options

Option	Name	Tertiary Flow (mgd)		Planned Type of Use
		Summer	Winter	
1	Seasonal Irrigation	1.65	0 (discharge to ocean)	<ul style="list-style-type: none"> • Irrigation • Stream flow enhancement
2	Seasonal Irrigation and year round stream flow augmentation	3.0	3.0 (storage then supplement creek)	<ul style="list-style-type: none"> • Irrigation • Stream flow enhancement

Option 1 Site Schematic



Option 2 Site Schematic



Option 2 Storage Tanks



Options 1 Project Includes...

- Revisions to secondary clarifiers/AB splitter box (to include equalization)
- Secondary effluent diversion structure and pump station
- Coagulation/flocculation/filtration facilities
- UV disinfection system
- Chemical systems (alum, polymer, gypsum)

Options 1 Project Includes...

(continued)

- On-site pipelines/conveyance/valving
- On-site storage (converted aeration basin)
- Recycled water pump station
- Electrical/instrumentation
- Sitework

Three Variations of Option 1 Considered

- Option 1 – Alternative 1
 - Includes UV disinfection and gypsum
- Option 1 – Alternative 2
 - Use existing chlorination system for disinfection and includes gypsum
- Option 1 – Alternative 3
 - Use exiting chlorination system for disinfection and no gypsum

Cost Breakdowns Included...

- Project costs
 - 25% Estimating contingency
 - 20% Admin/legal/design/CM contingency
 - ENR adjustment – 5%/yr to March 2007
- Operations and maintenance costs
 - Administrative need – 4 hrs/wk
 - Operations need – 2 hrs/day
 - Corrective maintenance need – 8hrs/month
 - Preventative maintenance need – 8hrs/month
 - Purchased power
 - Chemical needs

Cost Summary

Item	Alt 1	Alt 2	Alt 3
• Project Cost (present worth)	5,300,000	3,832,200	3,832,200
• Annualized Project Costs (5%-30yrs)	345,000	249,500	249,500
• O&M Costs	216,500	176,000	123,600
• Total Annual Cost	561,500	425,500	373,000
• Ac-Ft/Yr Produced	1,852	1,852	1,852
• Dollars per Ac-Ft	303	230	201

Schedule

