

Chino Basin Recharge Master Plan Update

Design and Cost Development Criteria

March 26, 2009

Review Planning Criteria

- Types of Facilities
- Basis of Assumptions
- Major Facility Design Criteria
- Surface Water Treatment Options
- Major Facility Cost Criteria
 - Construction
 - Annual O&M
- General Cost Criteria

Types of Facilities

- Recharge Basins
- Wells
 - ASR
 - Injection
- Surface Water Treatment
 - State Water Project Water
 - CO River Water
- Recycled Water
 - Advanced treatment

Basis of Assumptions

- Recharge Basins
 - Estimated excavation and site development
- Well Facilities
 - Agency surveys conducted during DYY
- Surface Water Treatment
 - Recent, similar project experience
- Advanced Recycled Water Treatment
 - Recent experience and GWRS

Supplemental Water Treatment Options

- State Water Project
 - CVWD Lloyd Michael WTP
 - Via Met Rialto pipeline
 - WFA Agua de Lejos WTP
 - Via Met Rialto pipeline
 - Via SGVMWD Azusa Devil Canyon pipeline?
- Colorado River Water
 - Via Met Upper Feeder
 - City of Ontario Galvin WTP?
 - Potential of sidestream RO treatment for TDS reduction
- IEUA Recycled Water
 - Via IEUA regional plants
 - Advanced treatment for TDS reduction

Major Facility Design Criteria

Facility/Component	Design Criteria
Recharge Basin Percolation Rate, feet/day	1.0 - 2.0
Recharge Basin Wall Slope; Depth, feet	2:1; 8 -16
ASR Well Production Capacity, gpm	1,500 – 2,500
ASR/Injection Well Capacity (@50%), gpm	750 – 1,250
Well Building (if used)	CMU block or pre-fab
Required Land, SF/well site	2,500 – 5,000
SWP Treatment Process	Conventional
CO River Treatment Process	Conv. w/ RO?
Advanced Recycled Water Trtmt Process	MF/RO and AOP?

Major Facility Construction Unit Cost Criteria

Facility/Component	Unit Cost Criteria
Recharge Basin Mass Excavation, \$/CY	\$10
Recharge Basin Fine Grading, \$/CY	\$15
New ASR Well (complete), each	\$2.8M
New Injection Well (complete), each	\$1.3M
Exist. Well Conversion to ASR, each	\$1.9M
Conv. Surface Water Treatment, \$/gal	\$2.50
Conv. Surface Treatment w/RO, \$/gal	\$3.00
Advanced Recycled Water Treatment, \$/gal	\$4.00
Conveyance Pipelines (installed), \$/in/LF	\$15
Booster Pump Station (installed), \$/HP	\$5,000

Major Facility Annual O&M Unit Cost Criteria

Facility/Component	Unit Cost Criteria
Recharge Basin Facilities, \$/year/basin	\$50,000
General well maintenance, \$/year	\$25,000
SWP/CRA Replenishment Rate, \$/AF	\$294*
Surface WTP Surcharge, \$/AF	\$75
Advanced Recycled Water Surcharge, \$/AF	\$250

*Met rate effective 1/1/2009. Rates expected to increase to \$365/AF, \$398/AF, and \$438/AF in years 2010 to 2012, respectively.

General Cost Criteria

Component	Criteria
Contingency, percent	25%
Engineering/Administration/CM, percent	15%
Energy, \$/kWh	\$0.14
Facility online factor, percent	90%
Project life (amortization period), years	25
Interest Rate, percent	6%