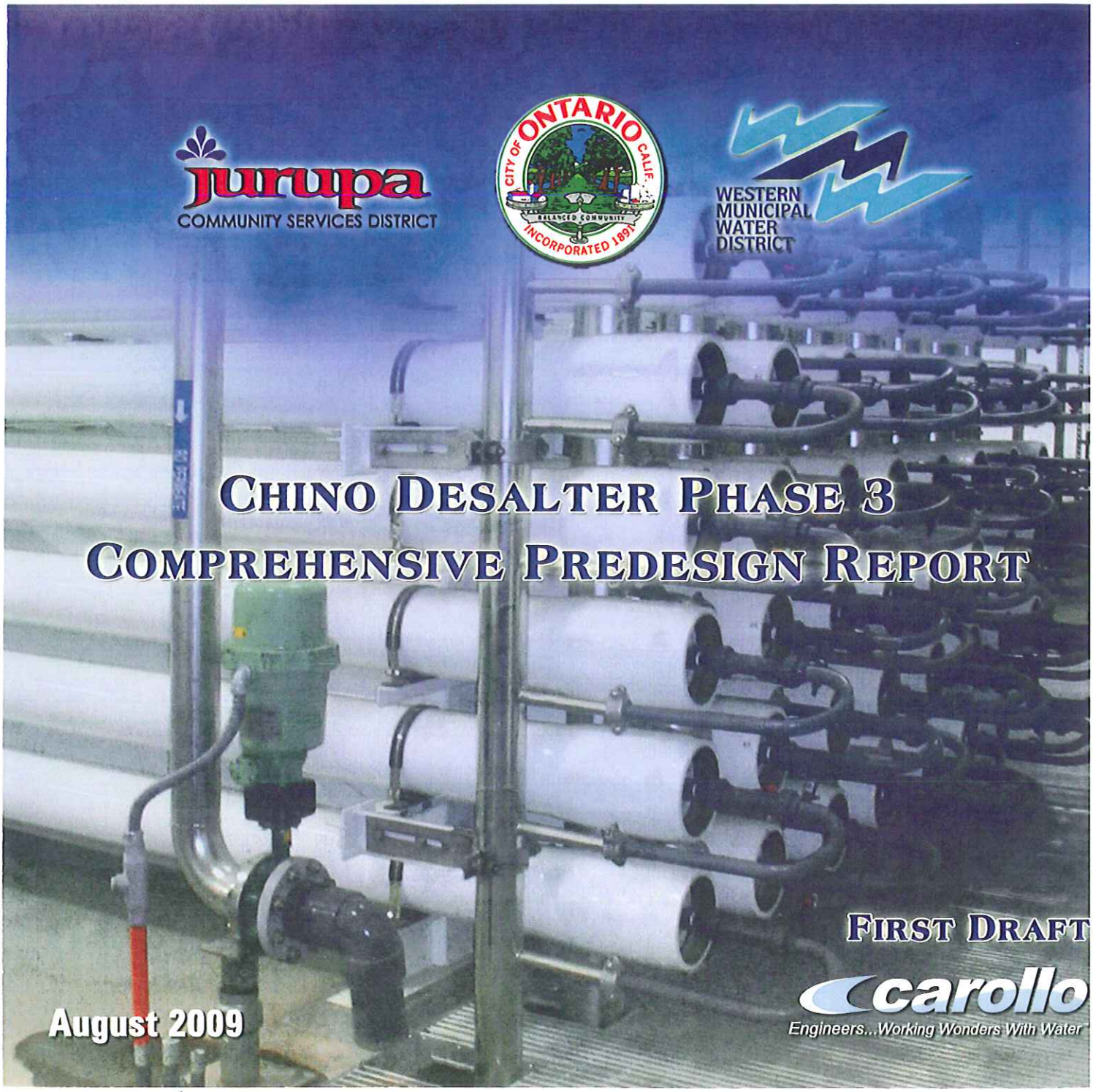

CHINO DESALTER PHASE 3
COMPREHENSIVE PREDESIGN REPORT

FIRST DRAFT

August 2009

carollo
Engineers...Working Wonders With Water

COST ESTIMATES

8.1 INTRODUCTION

The Chino Desalter Phase 3 project will require construction of new facilities and purchase of capacity in the SARI pipeline and treatment system. Construction of new facilities will result in changes to the annual operation and maintenance (O&M) costs of the CDA. There are also cost offsets, such as the reduction in capital costs through use of grant funding and the reduction in O&M costs through programs provided by agencies such as MWD and Chino Basin Watermaster.

This section presents estimates of both capital and O&M costs associated with the Chino Desalter Phase 3 project as well as the impact of grant funding and O&M cost reduction programs. A proposed allocation of capital costs between the project Sponsors as well as between non-Sponsor CDA members is presented. The effects of changes to the annual cost of water to the CDA annual budget are also shown.

It has been proposed that the project Sponsors will pay a "buy-in" cost to original CDA members for use of capacity in existing CDA facilities. Buy-in cost analysis is presented separately and not included in this report.

8.2 SARI COSTS

There are two components of SARI costs: pipeline costs and treatment costs. Pipeline costs represent the capacity acquired in the SARI pipeline system and treatment costs represent capacity in the OCSD water reclamation facility and ocean outfall. All SARI pipeline capacity was sold in 1997 at a price set by SAWPA Resolution No. 295. SARI treatment capacity is typically acquired when needed and costs are based on the current replacement value charged by OCSD through SAWPA. A summary of historical SARI treatment and pipeline capacity costs is shown in Table 8.2.

Table 8.2 Historical SARI Treatment and Pipeline Capacity Costs
Chino Desalter Phase 3 PDR
JCSD/Ontario/WMWD

	Date	Pipeline Capacity Cost ($ per mgd)	Treatment Capacity Cost[a] ($ per mgd)	Total ($ per mgd)
SAWPA Resolution No. 295	Jul 1997	3,750,000	–	–
IEUA Phase 2 Sale to CDA[b]	May 2004	3,750,000	3,100,000	6,850,000
2006 SAWPA Business Plan	Jun 2006	3,750,000	4,284,029	8,034,029
SAWPA Resolution No. 487	Sep 2007	–	4,547,250	–
Current New [c]	Aug 2009	–	11,332,000	–

Notes:
a. Brine only discharge.
b. CDA Board Meeting Memorandum dated May 11, 2004.
c. Telephone conversation with David Ruhl, Program Manager, SAWPA (8/6/09).

Using the historical SARI pipeline capacity cost of $3,750,000 per mgd and the current SARI treatment replacement cost of $11,332,000 per mgd the capital costs of SARI capacity are presented in Table 8.3 for the capacity requirements discussed in Section 5.

The Chino I Desalter currently has excess SARI capacity; however, the addition of RO treatment trains to meet nameplate capacity will require the purchase of additional SARI capacity for Chino I. The costs of additional Chino I SARI capacity should be shared by the CDA member agencies based upon the Chino I Desalter entitlements.

Table 8.3 Summary of SARI Capital Costs
Chino Desalter Phase 3 PDR
JCSD/Ontario/WMWD

	Required SARI Capacity (mgd)	SARI Pipeline Capacity			SARI Treatment Capacity			Total (Credit) or Cost ($)
		Ownership (mgd)	(Surplus) or Deficit (mgd)	(Credit) or Costa ($)	Ownership (mgd)	(Surplus) or Deficit (mgd)	(Credit) or Cost [b] ($)	
Chino I Desalter [a]		CDA	CDA	CDA	CDA	CDA	CDA	CDA
Existing	2.00	2.05	(0.05)		2.05	(0.05)		
Modified	0.94	0.05	0.89	$3,337,500	0.05	0.89	$10,085,480	$13,422,980
Chino II Desalter [c]		CDA	CDA	CDA	CDA	CDA	CDA	CDA
Existing (Buy-in)	1.60	1.62	(0.02)	($75,000)	1.3	0.30	$3,399,600	$3,324,600
		Sponsors	Sponsors	Sponsors	Sponsors	Sponsors	Sponsors	Sponsors
Expansion	1.73	0.02	1.71	$6,412,500	0.00	1.73	$19,604,360	$26,016,860

Notes:
a. SARI pipeline capacity at $3,750,000 per mgd.
b. SARI treatment capacity at $11,332,000 per mgd.
c. For Chino I SARI requirements see Table 5.2; For Chino II SARI requirements see Table 5.3.

The existing Chino II Desalter has a small amount of surplus SARI pipeline capacity (0.02 mgd) but has a SARI treatment deficit of 0.30 mgd. The Phase 3 project Sponsors will purchase the surplus pipeline capacity as part of in the facilities buy-in. The original CDA member agencies must purchase 0.3 mgd of SARI treatment capacity at current replacement rates.

The Phase 3 expansion will increase the required Chino II SARI capacity by 1.71 mgd. The Sponsors must purchase this entire treatment capacity in the SARI system at current replacement costs but the pipeline capacity purchase requirement is reduced by the surplus (0.02 mgd) purchased by the Sponsors from the CDA as part of the buy-in.

In addition to the one-time capital costs for SARI pipeline and treatment capacity, there are monthly volumetric and use charges for operation and maintenance of the SARI system. The SARI volumetric and use charges are included in the Chino Desalter O&M budgets as variable costs. For the record, the current monthly charges are shown in Table 8.4.

Table 8.4 Current SARI Volumetric and Use Charges
Chino Desalter Phase 3 PDR
JCSD/Ontario/WMWD

Fiscal Year	Flow/mgd[a]	BOD/1,000 lbs.[b]	TSS/1,000 lbs.[c]	Fixed Pipe[d]	Fixed Treatment[e]
2009-10	$850	$283	$420	$2,581	$6,452
2010-11[f]	$891	$312	$462	$2,710	$6,775

Source: Table and footnotes are from SAWPA Commission Resolution No. 513, May 12, 2009.

a. This component shall be calculated and assessed per gallon (i.e., $0.000850 in FY 2009-10) of discharge (flow) to the SARI System each month.
b. This component shall be calculated and assessed per pound (i.e., $0.2836 in FY 2009-10) of dry weight of BOD calculated from the average of sample results each month.
c. This component shall be calculated and assessed per pound (i.e., $0.420 in FY 2009-10) of dry weight of TSS calculated from the average of sample results each month.
d. This component for fixed costs (also known as Readiness to Serve) shall be assessed per mgd of owned pipeline/connection capacity per month.
e. This component for fixed costs shall be assessed per mgd of owned treatment and disposal capacity per month.
f. Future rate for planning purposes only. The Commission will separately evaluate and set the rates annually for each FY.

8.3 CAPITAL COSTS

Capital cost estimates herein are Class IV Budget Estimates as defined by the Association for the Advancement of Cost Engineering (AACE) revised classification (1999) with an expected accuracy of plus 30 to minus 15 percent. Cost estimates are based upon the engineer's perception of current conditions in the project area and are subject to variances in the costs of labor, materials, equipment, and services provided by others as well as economic conditions. The estimates reflect the engineer's professional opinion of accurate costs.

Detailed line item cost estimates for new facilities are included in Appendix G of this report. Table 8.5 presents a summary of capital improvement costs as current (August 2009) dollars and escalated to mid-point of construction.

8.4 OPERATIONS AND MAINTENANCE COSTS

The CDA uses a postage stamp rate concept for distribution of operations and maintenance (O&M) costs among the CDA member agencies. The postage stamp rate means that there is no segregation of facility costs in determining the cost sharing of annual O&M expenses. For example, the costs of operating all CDA-owned product water pump stations are shared equally by all CDA members without regard to the cost of the pump station lift. Similarly, the costs of operating the Chino I and Chino II Desalters are shared by all CDA members.

Because of the postage stamp rate, there is incentive for all CDA members to achieve economies in the operation of CDA-owned facilities. For example, the proposed Chino II product water 870 zone and 1010 zone pump stations will operate at a lower unit cost (due to lower lift) than if the Phase 3 expansion entitlement were pumped to the 1110 zone. The cost reduction in pumping to a lower pressure zone is shared by all CDA members.

8.4.1 Pipeline O&M Costs

Pipeline O&M costs include labor and equipment for the following:

- Pipeline locating
- Valve exercising
- Maintenance and repairs

Table 8.5 Summary of Construction Project Capital Costs
Chino Desalter Phase 3 PDR
JCSD/Ontario/WMWD

	Detailed Costs in Appendix	Construction ($)	Contingency and Engineering ($)	(%)	Administrative and Legal ($)	(%)	Aug-09 Dollars Total ($)	Construction Dates Start	Stop	Midpoint	Time to Midpoint From Aug-09 (years)	Escalation Factor [3.0% Annual Inflation]	Constr. Midpoint Dollars Total ($)
RAW WATER SYSTEM		$6.7M											
Wells													
Well CCWFA-1	G.2.1	2,210,000	440,000	20	110,000	5	2,760,000	May-11	Jan-14	Aug-12	3.08	1.10	3,020,000
Well CCWFA-2	G.2.2	2,210,000	440,000	20	110,000	5	2,760,000	May-11	Jan-14	Aug-12	3.08	1.10	3,020,000
Well CCWFA-3	G.2.3	2,280,000	460,000	20	110,000	5	2,850,000	May-11	Jan-14	Aug-12	3.08	1.10	3,120,000
Well CCWFA-4	G.2.4	1,940,000	390,000	20	100,000	5	2,430,000	Sep-09	Jan-12	Nov-10	1.25	1.04	2,520,000
Well CCWFA-5	G.2.5	2,060,000	410,000	20	100,000	5	2,570,000	May-11	Jan-14	Aug-12	3.08	1.10	2,820,000
Well CCWFA-6	G.2.6	2,010,000	400,000	20	100,000	5	2,510,000	Sep-09	Jan-12	Nov-10	1.25	1.04	2,600,000
Monitoring Well	G.2.7	210,000	40,000	20	10,000	5	260,000	Sep-09	Jan-12	Nov-10	1.25	1.04	270,000
Monitoring Well	G.2.8	210,000	40,000	20	10,000	5	260,000	Sep-09	Jan-12	Nov-10	1.25	1.04	270,000
Pipelines													
Pipeline from Well CCWFA-6 to Chino I	G.3.1	1,354,000	270,000	20	70,000	5	1,694,000	Aug-13	Sep-14	Feb-14	4.55	1.14	1,940,000
Raw Water Intertie Pipeline	G.3.2	4,510,000	900,000	20	230,000	5	5,640,000	Sep-10	Nov-11	Apr-11	1.73	1.05	5,940,000
Raw Water Pump Stations													
Raw Water Intertie Pump Station	G.4.1	2,870,000	570,000	20	140,000	5	3,580,000	Sep-10	Nov-11	Apr-11	1.73	1.05	3,770,000
TREATMENT FACILITIES													
Chino I													
Modifications to achieve Nameplate Capacity (14.2 mgd)	G.5.1	5,430,000	1,090,000	20	270,000	5	6,790,000	Jun-11	Sep-12	Jan-12	2.46	1.08	7,300,000
Chino II													
Phase 3 Expansion (10 to 20.5 mgd)	G.5.2	13,100,000	2,620,000	20	660,000	5	16,380,000	Sep-09	Sep-10	Mar-10	0.58	1.02	16,670,000
Transfer Pump Modifications	G.5.2	660,000	130,000	20	30,000	5	820,000	Sep-09	Sep-10	Mar-10	0.58	1.02	830,000
Chemical Modifications	G.5.2	120,000	20,000	20	10,000	5	150,000	Mar-10	Mar-11	Aug-10	1.08	1.03	150,000
Spare Parts	G.5.2	360,000	70,000	20	20,000	5	450,000	Sep-09	Sep-10	Mar-10	0.58	1.02	460,000
PRODUCT WATER SYSTEM													
Pipelines													
Pipeline from Chino II to Riverside Dr./Hamner Ave.	G.6.1	6,310,000	1,260,000	20	320,000	5	7,890,000	Jan-11	Feb-12	Jul-11	1.99	1.06	8,370,000
Pipeline from Riverside Dr./Hamner Ave. to Detroit St.	G.6.2	13,520,000	2,700,000	20	680,000	5	16,900,000	Jan-11	Feb-12	Jul-11	1.99	1.06	17,920,000
Product Water Pump Stations													
Chino II: JCSD Zone 870	G.7.1	1,020,000	200,000	20	50,000	5	1,270,000	Sep-10	Nov-11	Apr-11	1.73	1.05	1,340,000
Chino II: Ontario/WMWD Zone 1010	G.7.2	2,070,000	410,000	20	100,000	5	2,580,000	Sep-10	Nov-11	Apr-11	1.73	1.05	2,720,000
Milliken Pump Station: Ontario Zone 1010 to Zone 1212	G.7.3	2,090,000	420,000	20	100,000	5	2,610,000	Sep-10	Nov-11	Apr-11	1.73	1.05	2,750,000
Misc													
Chino I-Chino II Product Water Intertie	G.8.1	0	0	20	0	5	0	Sep-10	Nov-11	Apr-11	1.73	1.05	0
TOTAL		66,544,000	13,280,000		3,330,000		83,154,000						87,800,000

Review of previous CDA budgets shows that annual O&M costs for the existing CDA pipelines are approximately $1 per lineal foot per year. This unit cost has been applied to new pipelines to quantify additional O&M costs resulting from Phase 3 pipeline construction.

8.4.2 Well and Pump Station O&M Costs

Review of previous CDA budgets shows that annual O&M costs for the Chino Desalter wells are approximately $15,000 per well. This unit cost has been applied to new wells and pump stations; it does not included well rehabilitation or pump repairs or extraordinary maintenance.

Energy costs for additional raw water production are calculated as shown in Table 8.6.

Table 8.6 Raw Water Pumping Costs
Chino Desalter Phase 3 PDR
JCSD/Ontario/WMWD

Description	Chino I	Chino II
Electrical Costs for Wells ($)	610,340	779,424
Volume (AF) [a]	13,980	13,980
Unit Cost ($/AF)	43	55

Source: CDA Spreadsheet "FY 09-10 Budget Final"
a. Volume is budgeted product water (12,300 AF) for Chino I and Chino II divided by overall plant recovery of 88 percent.

Energy costs for offsite product water pump stations are calculated based upon design TDH and flow with an assumed wire-to-water efficiency of 75 percent. Energy costs for Chino II onsite product water pumping are included in the treatment plant O&M costs as variable costs, based upon historical pumping to the 1110 zone, and adjusted as appropriate for pumping to other pressure zones.

8.4.3 Treatment Plant O&M Costs

The annual O&M costs are divided between fixed costs, which are independent of volume treated, and variable costs, which are dependent upon volume treated. CDA has determined that the split between fixed and variable O&M costs for the existing Chino Desalters is 43 percent fixed costs and 57 percent variable costs.

Unit O&M costs ($/AF) for the operation of the expanded Chino II Desalter are calculated as the sum of constant fixed costs plus pro-rated variable costs divided by total volume treated. As a result, any increase in volume treated through the existing Chino Desalters results in a reduction of unit cost because the fixed costs are spread over a larger volume of water.

It is understood that fixed costs will increase due to the additional equipment added by the Phase 3 expansion. In order to adjust the fixed costs at the existing desalters to reflect the additional expenses resulting from the addition of equipment necessary for expansion, a percentage of added equipment cost is included to represent annual equipment O&M and reserves for eventual replacement of IX resin and RO elements.

Concentrate disposal at the existing Chino Desalters is included in the treatment plant O&M costs as variable costs.

A summary of O&M costs resulting from the implementation of the Chino Desalter Phase 3 project is shown in Table 8.7. This table assumes that the project costs are imposed upon the present (FY 09-10) CDA budget; in other words, the O&M costs are shown in current dollars.

8.5 FUNDING AND COST OFFSETS

Several methods of reducing the cost impact of construction and operation were used in the Phase 1 and 2 Chino Desalter projects. The same cost reduction methods of grant funding and operating cost offsets will be used in the Phase 3 expansion project.

8.5.1 Grant Funding

Grant funding for the Chino Desalter Phase 3 project is available using both State and Federal programs. Because there is no repayment obligation for the grant funding, it is shown as an offset to the capital cost of the project prior to calculation of the debt service.

Table 8.7 Summary of O&M Costs
Chino Desalter Phase 3 PDR
JCSD/Ontario/WMWD

	Change in Variable Costs				Change in Fixed Costs				Total Cost
	Quantity	Units	Unit Cost	Annual Cost	Quantity	Units	Unit Cost	Annual Cost	
OFF-SITE BUDGET ADJUSTMENT									
Energy									
Additional Pumping Cost of Chino II Raw Water Supply (Higher Head) [a]	23,860	AF/yr	$2.79	$67,000					
Milliken Pump Station [b]	3,500	AF/yr	$46.00	$161,000					
Maintenance									
Pipeline (RW) from Well CCWFA-6 to Chino I					7,700	LF	$1	$8,000	
Pipeline (RW) Chino II Well Field Extension (Intertie)					14,770	LF	$1	$15,000	
Pipeline (PW) from Chino II to Riverside Dr./Hamner Ave.					32,740	LF	$1	$33,000	
Pump Station Chino I-Chino II Raw Water Intertie					1	ea	$15,000	$15,000	
Pump Station Chino II (Zone 1010)					1	ea	$15,000	$15,000	
Pump Station Chino II (Zone 870)					1	ea	$15,000	$15,000	
Pump Station Milliken Res - Ontario (Zone 1010 to Zone 1212)					1	ea	$15,000	$15,000	
Wells (CCWF)					6	ea	$15,000	$90,000	
Off-site Budget Adjustment Subtotal				$228,000				$206,000	$434,000
ON-SITE BUDGET ADJUSTMENT									
Chino II Expansion Additional Equipment Maintenance/Reserves [c]								$160,000	
870 Zone Product Water Pumping -- Cost Reduction [d]									
JCSD	3,533	AF/yr	$40	($144,000)					
1010 Zone Product Water Pumping -- Cost Reduction [d]									
Ontario	7,033	AF/yr	$16	($118,000)					
Norco	1,000	AF/yr	$16	($16,000)					
WMWD	3,534	AF/yr	$16	($60,000)					
Cost of Reduced Raw Water Bypass [e]	1,230	AF/yr	$152	$187,000					
On-site Budget Adjustment Subtotal				($151,000)				$160,000	$9,000
TOTAL CDA BUDGET									
Base Budget (24,300 AF of Product Water) [f]	24,600	AF/yr	$310	$7,636,386	24,600	AF/yr	$234	$5,760,783	$13,397,169
Phase 3 Expansion (10,600 AF of Product Water)	10,600	AF/yr	$310	$3,290,475					$3,290,475
Off-Site Budget Adjustment Subtotal				$228,000				$206,000	$434,000
On-Site Budget Adjustment Subtotal				($151,000)				$160,000	$9,000
Total New Budget				$11,003,862				$6,126,783	$17,130,644

Notes:

a. Based on 5 percent average increase in well TDH resulting from greater flow in Chino II raw water pipelines.
b. Based on 230 feet design TDH at the Milliken Pump Station and energy cost of $20/AF per 100 feet of lift. Assumes pumping of the entire Ontario Phase 3 Expansion entitlement from the 1010 zone to the 1212 zone.
c. Based on 2 percent of $8M estimated equipment cost for annual O&M and reserve fund RO membrane and IX resin replacement.
d. CDA FY09/10 budget variable unit costs include product water pumping to 1110 zone. Cost reduction represents product water pumping to a lower zone (see Table 6.2).
e. Reduction in raw water bypass volume is 5 percent (based on increased TDS from Wells I-13, 14, and 15). Unit cost of treatment is assumed as FY 09/10 budget Chino II on-site total variable cost ($218/AF) less cost of product water pumping to the 1110 zone (330 feet lift at $20/AF per 100 feet of lift).
f. Base Budget is the FY09/10 Final budget.

Grant funds are applied only to the Phase 3 expansion capital improvements and not to the capital costs associated with the original Phase 1 and 2 projects, for example, the Chino I nameplate modifications.

Grant funding, both approved and pending, is summarized in Table 8.8.

Table 8.8 Grant Funding
Chino Desalter Phase 3 PDR
JCSD/Ontario/WMWD

	($Million)
Approved Grants	
State Water Resources Control Board/ARRA[a]	$5.0
CA Department of Water Resources[a]	$2.8
CA Department of Public Health[a]	$20
Pending Grants	
CA Department of Public Health[a]	$20-40
HR 146[b]	$26
Total Potential Grants	**$73.8 - 93.8**

Notes:
a. 50 percent matching grant (no grant repayment obligation).
b. 25 percent grant/75 percent Sponsor funding (no grant repayment obligation).

8.5.2 MWD LRP Funding

The Metropolitan Water District of South California (MWD) encourages development of local water supplies through Local Resource Program (LRP) funding. The LRP funds are collected by MWD through a surcharge on the sale of water. Currently, the CDA receives a LRP rebate of $250/AF for all Chino Desalter product water. It is anticipated that product water from the Phase 3 project will also qualify for the equivalent LRP rebate.

Current terms for the LRP funding program terminate the rebate after a period not to exceed 20 years. The LRP funding is also reduced so as not to exceed the calculated difference between the cost of water produced from the Desalter facility and the cost of treated MWD Tier 2 water for the same year.

8.5.3 Groundwater Replenishment

The Chino Basin Watermaster administers the use of groundwater throughout the Chino Basin, including groundwater withdrawals for treatment in the Chino Desalters. There are no appropriative rights associated with the Chino Desalters; therefore, the groundwater treated in the desalters must be replaced, which means it must be replenished by purchase of MWD water for use in groundwater recharge.

However, in order to encourage withdrawal of groundwater for treatment in the desalters, the current practice is to "forgive" the replenishment cost for groundwater pumped to the Chino desalters. Forgiveness is anticipated to continue until a cumulative total of 400,000 AF of groundwater has been treated at the desalters. Replenishment costs are currently $365/AF.

8.6 SUMMARY OF COSTS

Capital costs for the construction of the Phase 3 project elements, escalated to individual project element construction mid-point, have been presented previously. These escalated capital costs are distributed to the Phase 3 Sponsors in Table 8.9. The table also includes non-construction capital expenses such as SARI pipeline and treatment capacity purchases.

The table includes the percent of each itemized capital cost that is shared by the Sponsors. Other costs, such as modifications to Chino I to achieve nameplate capacity, are shared by the original CDA members. In each case, the capital cost sharing is based upon Sponsor or non-Sponsor CDA member entitlement volumes.

The annualized capital cost (i.e., debt service) is added to the existing CDA debt service in Table 8.10, which also includes the O&M costs resulting from the Phase 3 project. This table uses the same format as the present CDA FY 09-10 budget summary to show both the present (original) budget and the modified (new) budget with the Phase 3 expansion costs, both debt service and O&M, added to the CDA budget in today's dollars.

Table 8.9 **Capital Cost Distribution**
Chino Desalter Phase 3 PDR
JCSD/Ontario/WMWD

	Chino Phase 3 Sponsors						Non-Sponsors								TOTAL [a]	
	Ontario		JCSD		Western		Chino		Chino Hills		Norco		SARWC			
PRODUCT WATER ALLOCATION																
Phases 1 and 2 (Acre-Feet/Year)	20%	5,000	33%	8,200	0%	0	20%	5,000	17%	4,200	4%	1,000	5%	1,200	100%	24,600
Phase 3 (Acre-Feet/Year)	33%	3,533	33%	3,533	33%	3,534	0%	0	0%	0	0%	0	0%	0	100%	10,600
Total (Acre-Feet/Year)	24%	8,533	33%	11,733	10%	3,534	14%	5,000	12%	4,200	3%	1,000	3%	1,200	100%	35,200
RAW WATER SYSTEM CAPITAL COSTS:																
Wells:																
Wells CCWFA-1, 2, 3, 4, 5, and 6 + Monitoring Wells	33%	$5,879,445	33%	$5,879,445	33%	$5,881,109	0%	$0	0%	$0	0%	$0	0%	$0	100%	$17,640,000
Pipelines:																
Raw Water Pipeline from Well CCWFA-6 to Chino I	33%	$646,606	33%	$646,606	33%	$646,789	0%	$0	0%	$0	0%	$0	0%	$0	100%	$1,940,000
Raw Water Intertie Pipeline	33%	$1,979,813	33%	$1,979,813	33%	$1,980,374	0%	$0	0%	$0	0%	$0	0%	$0	100%	$5,940,000
Raw Water Pump Station																
Raw Water Intertie Pump Station	33%	$1,256,548	33%	$1,256,548	33%	$1,256,904	0%	$0	0%	$0	0%	$0	0%	$0	100%	$3,770,000
WATER TREATMENT FACILITIES CAPITAL COSTS:																
Chino I Modifications to Nameplate Capacity (14.2 mgd)	20%	$1,483,740	33%	$2,433,333	0%	$0	20%	$1,483,740	17%	$1,246,341	4%	$296,748	5%	$356,098	100%	$7,300,000
Chino II Expansion (10 to 20.5 mgd)	33%	$5,556,142	33%	$5,556,142	33%	$5,557,715	0%		0%		0%		0%		100%	$16,670,000
Chino II Transfer Pumps	28%	$231,305	33%	$276,652	19%	$160,497	9%	$70,854	7%	$59,517	2%	$14,171	2%	$17,005	100%	$830,000
Chino II Chemical System Modifications	24%	$36,362	33%	$49,999	10%	$15,060	14%	$21,307	12%	$17,898	3%	$4,261	3%	$5,114	100%	$150,000
Chino II Spare Parts	24%	$111,511	33%	$153,329	10%	$46,183	14%	$65,341	12%	$54,886	3%	$13,068	3%	$15,682	100%	$460,000
PRODUCT WATER SYSTEM CAPITAL COSTS:																
Pipelines:																
Pipeline from Chino II to Riverside Dr./Hamner Ave. (Ontario Zone 1010)	61%	$5,089,151	0%	$0	39%	$3,280,849	0%	$0	0%	$0	0%	$0	0%	$0	100%	$8,370,000
Pipeline from Riverside Dr./Hamner Ave. to Detroit St.	0%	$0	0%	$0	100%	$17,920,000	0%	$0	0%	$0	0%	$0	0%	$0	100%	$17,920,000
Pump Stations:																
Chino II - JCSD Product Water (Clearwell to Zone 870)	0%	$0	100%	$1,340,000	0%	$0	0%	$0	0%	$0	0%	$0	0%	$0	100%	$1,340,000
Chino II - Ontario/Western Product Water (Clearwell to Zone 1010)	61%	$1,653,822	0%	$0	39%	$1,066,178	0%	$0	0%	$0	0%	$0	0%	$0	100%	$2,720,000
Milliken Res - Ontario (Zone 1010 to Zone 1212)	100%	$2,750,000	0%	$0	0%	$0	0%	$0	0%	$0	0%	$0	0%	$0	100%	$2,750,000
CONCENTRATE SYSTEM CAPITAL COSTS:																
Chino I Additional SARI Pipeline Capacity @ $3.75M/mgd (CDA)	20%	$678,862	33%	$1,113,333	0%	$0	20%	$678,862	17%	$570,244	4%	$135,772	5%	$162,927	100%	$3,340,000
Chino I Additional SARI Treatment Capacity @ $11.332M/mgd (CDA)	20%	$2,050,813	33%	$3,363,333	0%	$0	20%	$2,050,813	17%	$1,722,683	4%	$410,163	5%	$492,195	100%	$10,090,000
Chino II Additional SARI Treatment Capacity @ $11.332M/mgd (CDA)	20%	$691,057	33%	$1,133,333	0%	$0	20%	$691,057	17%	$580,488	4%	$138,211	5%	$165,854	100%	$3,400,000
Chino II Additional SARI Pipeline Capacity @ $3.75M/mgd (Sponsors)	33%	$2,139,798	33%	$2,139,798	33%	$2,140,404	0%	$0	0%	$0	0%	$0	0%	$0	100%	$6,420,000
Chino II Additional SARI Treatment Capacity @ $11.332M/mgd (Sponsors)	33%	$6,536,050	33%	$6,536,050	33%	$6,537,900	0%	$0	0%	$0	0%	$0	0%	$0	100%	$19,610,000
Capital Costs Subtotal		**$38,771,026**		**$33,857,715**		**$46,489,961**		**$5,061,973**		**$4,252,057**		**$1,012,395**		**$1,214,874**		**$130,660,000**
Less Approved Grant Funding		($9,048,407)		($7,901,736)		($10,849,857)		$0		$0		$0		$0		($27,800,000)
Adjusted Capital Costs		**$29,722,619**		**$25,955,980**		**$35,640,104**		**$5,061,973**		**$4,252,057**		**$1,012,395**		**$1,214,874**		**$102,860,000**
30 Year Amortization Period																
5.0% Fixed Amortization Rate																
ANNUALIZED CAPITAL ($/YEAR)		**$1,930,000**		**$1,690,000**		**$2,320,000**		**$330,000**		**$280,000**		**$70,000**		**$80,000**		**$6,700,000**

Notes:
a. Escalated to construction midpoint.

Table 8.10 **Original and New CDA Costs (FY 09/10 Budget Year)**
Chino Desalter Phase 3 PDR
JCSD/Ontario/WMWD

	Original CDA Entitlement		New CDA Entitlement		Fixed Project Cost	Fixed Proj Costs Non-debt [a]	New Debt Service [b]	Fixed O&M Original Cost	Fixed O&M New Cost	Variable O&M Original Cost	Variable O&M New Cost	Total Cost Original Cost	Total Cost New Cost	Less MWD Rebate [d] Original Cost	Less MWD Rebate [d] New Cost	Net Cost Original Cost	Net Cost New Cost	Net Unit Cost Original Cost	Net Unit Cost New Cost
	(AF/yr)	(%)	(AF/yr)	(%)	($)	($)	($)	($)	($)	($)	($)	($)	($)	($)	($)	($)	($)	($/AF)	($/AF)
JCSD	8,200	33.3%	11,733	33.3%	$ 2,214,774	$122,745	$1,690,000	$1,920,261	$2,042,203	$2,545,462	$3,667,850	$ 6,803,242	$ 9,737,572	$2,050,000	$2,933,250	$4,753,242	$6,804,322	580	580
Ontario	5,000	20.3%	8,533	24.2%	0	74,845	1,930,000	1,170,891	1,485,223	1,552,111	2,667,499	2,797,846	6,157,566	1,250,000	2,133,250	1,547,846	4,024,316	310	472
WMWD	-	0.0%	3,534	10.0%			2,320,000	-	615,115	-	1,104,763	-	4,039,878	-	883,500	-	3,156,378	-	893
Chino	5,000	20.3%	5,000	14.2%	1,534,568	74,845	330,000	1,170,891	870,282	1,552,111	1,563,049	4,332,414	4,372,742	1,250,000	1,250,000	3,082,414	3,122,742	616	625
Chino Hills	4,200	17.1%	4,200	11.9%	1,287,671	62,869	280,000	983,548	731,037	1,303,773	1,312,961	3,637,862	3,674,538	1,050,000	1,050,000	2,587,862	2,624,538	616	625
SARWC	1,200	4.9%	1,200	3.4%	365,722	17,963	80,000	281,014	208,868	372,507	375,132	1,037,206	1,047,684	300,000	300,000	737,206	747,684	614	623
Norco	1,000	4.1%	1,000	2.8%	309,023	14,969	70,000	234,178	174,056	310,422	312,610	868,593	880,658	250,000	250,000	618,593	630,658	619	631
Total	24,600	100%	35,200	100%	$5,711,759	$368,235	$6,700,000	$5,760,783	$6,126,783	$7,636,386	$11,003,862	$19,477,163	$29,910,638	$6,150,000	$8,800,000	$13,327,163	$21,110,638	542	600
F/V O&M								43%		57%									
Unit Cost ($ Per AF)					232	15	190	234	174	310	313	792	850	250	250	542	600		

Original CDA Member Dept Service [c]

	Allocation %	Debt Service 2008 Bond	Other Expenses	Total Fixed Project Cost
JCSD	39.1%	$2,201,469	$ 13,305	$ 2,214,774
Chino	26.8%	1,525,456	9,112	1,534,568
Ontario	0.0%	-	-	-
Chino Hills	22.5%	1,280,025	7,646	1,287,671
SARWC	6.4%	363,538	2,184	365,722
Norco	5.3%	307,213	1,810	309,023
	100.0%	$ 5,677,701	$ 34,058	$ 5,711,759

Original FY09/10 Budget	
Onsite O&M	$10,565,116
Offsite O&M	$2,832,053
	$13,397,169

Notes:
a. Original CDA Budget: Fixed Project Cost Allocation excluding Ontairo (Ontario prepaid its share of debt obligation in Aug 2004):
b. Includes non-Phase 3 project costs (e.g., Chino II transfer pumps, Chino I nameplate modifcations, etc.) for non-Sponsor CDA members.
c. Original CDA Budget: Debt Service based on 'level' plan - 2008 Bonds.
d. $250/AF for all product water.