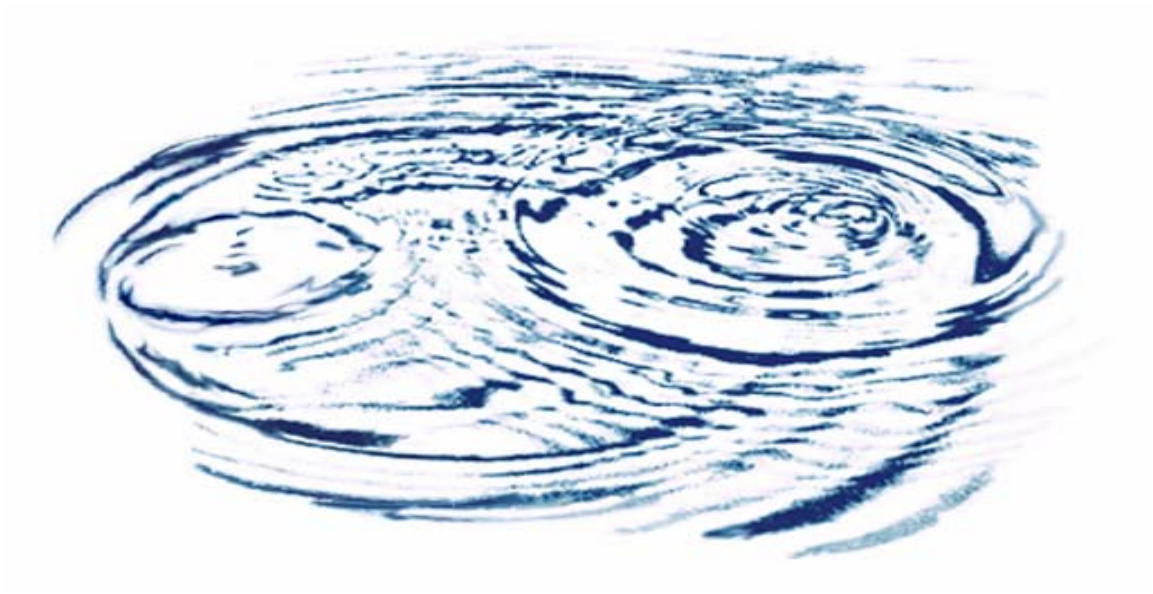
SAN GABRIEL VALLEY
MUNICIPAL
WATER DISTRICT

Urban Water Management Plan



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2005 Urban Water Management Plan "Review for Completeness" Form

For DWR Review Staff Use

Coordination with Appropriate Agencies **(Water Code § 10620 (d)(1)(2))**

Yes

[ ] Participated in area, regional, watershed or basin wide plan _____ Reference & Page Number

Name of plan _____ Lead Agency _____ _____ Reference & Page Number

[X] Describe the coordination of the plan preparation and anticipated benefits. 1-2 Reference & Page Number

Table 1
Coordination with Appropriate Agencies

Check at least one box on each row	Participated in developing the plan	Commented on the draft	Attended public meetings	Was contacted for assistance	Was sent a copy of the draft plan	Was sent a notice of intention to adopt	Not Involved / No Information
Other water suppliers					X		
Water management agencies					X		
Relevant public agencies					X		
Other							
Other							

Describe resource maximization / import minimization plan **(Water Code §10620 (f))**

[X] Describe how water management tools / options maximize resources & minimize need to imp 1-2 Reference & Page Number

Plan Updated in Years Ending in Five and Zero **(Water Code § 10621(a))**

[X] Date updated and adopted plan received _____ (enter date) 1-3 Reference & Page Number

City and County Notification and Participation **(Water Code § 10621(b))**

[X] Notify any city or county within service area of UWMP of plan review & revision 1-2 Reference & Page Number

[X] Consult and obtain comments from cities and counties within service area 1-2 Reference & Page Number

Service Area Information **Water Code § 10631 (a))**

[X] Include current and projected population 2-3 Reference & Page Number

[X] Population projections were based on data from state, regional or local agency 2-3 Reference & Page Number

Table 2
Population - Current and Projected

	2005	2010	2015	2020	2025	2030 - opt
Service Area Population						

[X] Describe climate characteristics that affect water management 2-3 Reference & Page Number

[X] Describe other demographic factors affecting water management 2-4 Reference & Page Number

Table 3
Climate

	January	February	March	April	May	June
Standard Average ETo	X	X	X	X	X	X
Average Rainfall	X	X	X	X	X	X
Average Temperature	X	X	X	X	X	X

Table 3 (continued) Climate							
	July	August	September	October	November	December	Annual
Average ETo	X	X	X	X	X	X	#VALUE!
Average Rainfall	X	X	X	X	X	X	#VALUE!
Average Temperature	X	X	X	X	X	X	#VALUE!

Water Sources		(Water Code § 10631 (b))	
X	Identify existing and planned water supply sour	3-1	Reference & Page Number
X	Provide current water supply quantities	TABLE 3	Reference & Page Number
X	Provide planned water supply quantities	3-14	Reference & Page Number

Table 4 Current and Planned Water Supplies - AFY						
Water Supply Sources	2005	2010	2015	2020	2025	2030 - opt
Water purchased from:						
U.S. Bureau of Reclamation						
Department of Water Resources						
Arcade Water District						
Calleguas Municipal Water District						
Castaic Lake Water Agency						
Central Basin Municipal Water District						
Chino Basin Municipal Water District						
Coastal Municipal Water District						
Contra Costa Water District						
Eastern Municipal Water District						
Foothill Municipal Water District						
Humboldt Bay Municipal Water District						
Inland Empire Utilities Agency						
Joint Regional Water Supply System						
Kern County Water Agency						
Metropolitan Water District of Southern Ca						
Municipal Water District of Orange County						
North of The River Municipal Water Distric						
Placer County Water Agency						
Sacramento County Water Management Di						
San Diego County Water Authority						
San Francisco City of						
San Juan Water District						
San Luis Obispo County						
Santa Clara Valley Water District						
Solano County Water Agency						
Sonoma County Water Agency						
Stockton East Water District						
Tehachapi-Cummings County Water Distri						
Three Valleys Municipal Utility District						
Upper San Gabriel Valley Municipal Water						

Water Facilities Authority						
West Basin Municipal Water District						
Western Municipal Water Dist of Riverside						
Zone 7						
Other Wholesaler 1 (enter agency name)						
Other Wholesaler 2 (enter agency name)						
Other Wholesaler 3 (enter agency name)						
Supplier produced groundwater						
Supplier surface diversions						
Transfers in or out						
Exchanges In or out						
Recycled Water (projected use)						
Desalination						
Other						
Other						
Total	0	0	0	0	0	0

If Groundwater identified as existing or planned source		(Water Code §10631 (b)(1-4))	
X	Has management plan	3-2	Reference & Page Number
X	Attached management plan (b)(1)	APP. D	Reference & Page Number
X	Description of basin(s) (b)(2)	3-8	Reference & Page Number
X	Basin is adjudicated	3-4	Reference & Page Number
X	If adjudicated, attached order or decree (b)(2)	APP. D	Reference & Page Number
X	Quantified amount of legal pumping right (b)(2)	APP. D	Reference & Page Number

Table 5 Groundwater Pumping Rights - AF Year	
Basin Name	Pumping Right - AFY
Total	0

X	DWR identified, or projected to be, in overdraft (b)(2)	3-9	Reference & Page Number
X	Plan to eliminate overdraft (b)(2)	NA	Reference & Page Number
X	Analysis of location, amount & sufficiency, last five years (b)(3)	3-13	Reference & Page Number
X	Analysis of location & amount projected, 20 years (b)(4)	3-13	Reference & Page Number

Table 6 Amount of Groundwater pumped - AFY					
Basin Name (s)	2000	2001	2002	2003	2004
	0	0	0	0	0
% of Total Water Supply					

Table 7 Amount of Groundwater projected to be pumped - AFY					
Basin Name(s)	2010	2015	2020	2025	2030 - opt
	0	0	0	0	0

% of Total Water Supply	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Reliability of Supply **(Water Code §10631 (c) (1-3)**

[X] Describes the reliability of the water supply and vulnerability to seasonal or climatic shortage 3-14 Reference & Page Number

Table 8
Supply Reliability - AF Year

		Multiple Dry Water Years			
Average / Normal Water Year	**Single Dry Water Year**	**Year 1**	**Year 2**	**Year 3**	**Year 4**
% of Normal	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Table 9
Basis of Water Year Data

Water Year Type	Source name	Source name	Source name		
Average Water Year				3-14	Reference & Page Number
Single-Dry Water Year				3-14	Reference & Page Number
Multiple-Dry Water Years				3-14	Reference & Page Number

Water Sources Not Available on a Consistent Basis **(Water Code §10631 (c))**

[ ] Describe the reliability of the water supply due to seasonal or climatic shortages _____ Reference & Page Number

[ ] Describe the vulnerability of the water supply to seasonal or climatic shortages _____ Reference & Page Number

[ ] No unreliable sources _____ Reference & Page Number

Table 10
Factors resulting in inconsistency of supply

Name of supply	**Legal**	**Environ-mental**	**Water Quality**	**Climatic**

[ ] Describe plans to supplement or replace inconsistent sources with alternative sources or DMMs _____ Reference & Page Number

[ ] No inconsistent sources _____ Reference & Page Number

Transfer or Exchange Opportunities **(Water Code §10631 (d))**

[X] Describe short term and long term exchange or transfer opportunities 3-15 Reference & Page Number

[ ] No transfer opportunities _____ Reference & Page Number

Table11
Transfer and Exchange Opportunities - AF Year

Transfer Agency	Transfer or Exchange	Short term	Proposed Quantities	Long term	Proposed Quantities
Total			0		0

Water Use Provisions **(Water Code §10631 (e)(1)(2))**

X	Quantify past water use by sector	4-1	Reference & Page Number
X	Quantify current water use by sector	4-1	Reference & Page Number
X	Project future water use by sector	4-2	Reference & Page Number

TABLE 12 - Past, Current and Projected Water Deliveries

	2000				2005			
	metered		unmetered		metered		unmetered	
Water Use Sectors	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY
Single family								
Multi-family								
Commercial								
Industrial								
Institutional/gov								
Landscape								
Agriculture								
other								
Total	0	0	0	0	0	0	0	0

TABLE12 (continued) - Past, Current and Project

	2015				2020			
	metered		unmetered		metered		unmetered	
Water Use Sectors	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY
Single family								
Multi-family								
Commercial								
Industrial								
Institutional/gov								
Landscape								
Agriculture								
other								
Total	0	0	0	0	0	0	0	0

X	Identify and quantify sales to other agencies	4-1	Reference & Page Number
X	No sales to other agencies	4-1	Reference & Page Number

Table 13
Sales to Other Agencies - AF Year

Water Distributed	2000	2005	2010	2015	2020	2025	2030 - opt
La Cumbre	0	0	0	0	0	0	0
name of agency							

name of agency							
Total	0	0	0	0	0	0	0

☐ Identify and quantify additional water uses _____ Reference & Page Number

Table 14 Additional Water Uses and Losses - AF Year							
Water Use	**2000**	**2005**	**2010**	**2015**	**2020**	**2025**	**2030 - opt**
Saline barriers							
Groundwater recharge							
Conjunctive use							
raw water							
recycled							
other (define)							
Unaccounted-for system losses							
Total	0	0	0	0	0	0	0

Table 15 Total Water Use - AF Year							
Water Use	**2000**	**2005**	**2010**	**2015**	**2020**	**2025**	**2030 - opt**
Total of Tables 12, 13, 14	0	0	0	0	0	0	0

2005 Urban Water Management Plan "Review of DMMs for Completeness" Form **(Water Code §10631 (f)**

(Water Code §10631 (f) & (g), the 2005 Urban Water Management Plan "Review of DMMs for Completeness" Form is found on Sheet 2

Planned Water Supply Projects and Programs, including non-implemented DMMs **(Water Code §10631 (g))**

☐ No non-implemented / not scheduled DMMs _____ Reference & Page Number

☐ Cost-Benefit includes economic and non-economic factors (environmental, social, health, customer impact, and technological factors) _____ Reference & Page Number

☐ Cost-Benefit analysis includes total benefits and total costs _____ Reference & Page Number

☐ Identifies funding available for Projects with higher per-unit-cost than DMMs _____ Reference & Page Number

☒ Identifies Suppliers' legal authority to implement DMMs, efforts to implement the measures and efforts to identify cost share partners 5-1 Reference & Page Number

Table 16 Evaluation of unit cost of water resulting from non-implemented / non-scheduled DMMs and planned water supply project and programs	
Non-implemented & Not Scheduled DMM / Planned Water Supply Projects (Name)	**Per-AF Cost ($)**

Planned Water Supply Projects and Programs **(Water Code §10631 (h))**

☐ No future water supply projects or programs

☒ Detailed description of expected future supply projects & programs 6-1 Reference & Page Number

☐ Timeline for each proposed project _____ Reference & Page Number

X	Quantification of each projects normal yield (AFY)	6-1	Reference & Page Number
	Quantification of each projects single dry-year yield (AFY)		Reference & Page Number
	Quantification of each projects multiple dry-year yield (AFY)		Reference & Page Number

Table 17
Future Water Supply Projects

Project Name	Projected Start Date	Projected Completion Date	Normal-year AF to agency	Single-dry year yield AF	Multiple-Dry-Year 1 AF	Multiple-Dry-Year 2 AF	Multiple-Dry-Year 3 AF

Opportunities for development of desalinated water **(Water Code §10631 (i))**

Describes opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term su

X No opportunities for development of desalinated water

Table 18
Opportunities for desalinated water

Sources of Water	Check if yes
Ocean Water	
Brackish ocean water	
Brackish groundwater	
other	
other	

District is a CUWCC signatory **(Water Code § 10631 (j))**

Urban suppliers that are California Urban Water Conservation Council members may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g). The supplier's CUWCC Best Management Practices Report should be attached to the UWMP.

	Agency is a CUWCC member		Reference & Page Number
	2003-04 annual updates are attached to plan		Reference & Page Number
	Both annual updates are considered completed by CUWCC website		Reference & Page Number

If Supplier receives or projects receiving water from a wholesale supplier **(Water Code §10631 (k))**

Yes

	Agency receives, or projects receiving, wholesale water		Reference & Page Number
	Agency provided written demand projections to wholesaler, 20 years		Reference & Page Number

Table 19
Agency demand projections provided to wholesale suppliers - AFY

Wholesaler	2010	2015	2020	2025	2030 - opt
(name 1)					
(name 2)					
(name 3)					

X	Wholesaler provided written water availability projections, by source, to agency, 20 years	1-3	Reference & Page Number

(if agency served by more than one wholesaler, duplicate this table and provide the source availability for each wholesaler)

Table 20

Wholesaler identified & quantified the existing and planned sources of water- AFY					
Wholesaler sources	2010	2015	2020	2025	2030 - opt
(source 1)					
(source 2)					
(source 3)					

[X] Reliability of wholesale supply provided in writing by wholesale agency 3-14 Reference & Page Number
(if agency served by more than one wholesaler, duplicate this table and provide the source availability for each wholesaler)

Table 21 Wholesale Supply Reliability - % of normal AFY					
	Multiple Dry Water Years				
Wholesaler sources	Single Dry	Year 1	Year 2	Year 3	Year 4
(source 1)					
(source 2)					
(source 3)					

Table 22 Factors resulting in inconsistency of wholesaler's supply				
Name of supply	Legal	Environment	Water Quality	Climatic

Water Shortage Contingency Plan Section **(Water Code § 10632)**
Stages of Action **(Water Code § 10632 (a))**

[X] Provide stages of action 7-1 Reference & Page Number
[X] Provide the water supply conditions for each stage 7-2 Reference & Page Number
[X] Includes plan for 50 percent supply shortage 7-2 Reference & Page Number

Table 23 Water Supply Shortage Stages and Conditions RATIONING STAGES		
Stage No.	Water Supply Conditions	% Shortage

Three-Year Minimum Water Supply **(Water Code §10632 (b))**

[X] Identifies driest 3-year period 7-2 Reference & Page Number
[X] Minimum water supply available by source for the next three years 7-2 Reference & Page Number

Table 24 Three-Year Estimated Minimum Water Supply - AF Year				
source**	Normal	Year 1	Year 2	Year 3

*Note: If reporting after 2005, please change the column headers (Year 1, 2, & 3) to the appropriate years

Total	0	0	0	0

Preparation for catastrophic water supply interruption **(Water Code §10632 (c))**

[X] Provided catastrophic supply interruption plan 7-3 Reference & Page Number

Table 25 Preparation Actions for a Catastrophe	
Possible Catastrophe	**Check if Discussed**
Regional power outage	
Earthquake	
Other (name event)	
Other (name event)	

Prohibitions **(Water Code § 10632 (d))**

[X] List the mandatory prohibitions against specific water use practices during water shortages 7-3 Reference & Page Number

Table 26 Mandatory Prohibitions	
Examples of Prohibitions	**Stage When Prohibition Becomes Mandatory**
Using potable water for street washing	
Other (name prohibition)	
Other (name prohibition)	
Other (name prohibition)	
Other (name prohibition)	
Other (name prohibition)	
Other (name prohibition)	

Consumption Reduction Methods **(Water Code § 10632 (e))**

[X] List the consumption reduction methods the water supplier will use to reduce water use in the most restrictive stages with up to a 50% reduction. 7-3 Reference & Page Number

Table 27 Consumption Reduction Methods		
Consumption Reduction Methods	**Stage When Method Takes Effect**	**Projected Reduction (%)**
name method	2	25
name method	3	35
name method	4	50
name method	2, 3, 4	?

name method	3, 4	?
name method		

Penalties **(Water Code § 10632 (f))**

X	List excessive use penalties or charges for excessive use	7-3	Reference & Page Number

Table 28
Penalties and Charges

Penalties or Charges	Stage When Penalty Takes Effect
Penalty for excess use	
Charge for excess use	
Other (name penalties or charges)	
Other (name penalties or charges)	
Other (name penalties or charges)	
Other (name penalties or charges)	
Other (name penalties or charges)	
Other (name penalties or charges)	

Revenue and Expenditure Impacts **(Water Code § 10632 (g))**

X	Describe how actions and conditions impact revenues	7-4	Reference & Page Number
X	Describe how actions and conditions impact expenditures	7-4	Reference & Page Number
X	Describe measures to overcome the revenue and expenditure impacts	7-4	Reference & Page Number

Table 29
Proposed measures to overcome revenue impacts

Names of measures	Check if Discussed
Rate adjustment	
Development of reserves	
name of measure	
name of measure	

Table 30
Proposed measures to overcome expenditure impacts

Names of measures	Check if Discussed
name of measure	
name of measure	
name of measure	
name of measure	

Water Shortage Contingency Ordinance/Resolution **(Water Code § 10632 (h))**

X	Attach a copy of the draft water shortage contingency resolution or ordinance.	7-4	Reference & Page Number

Reduction Measuring Mechanism		(Water Code § 10632 (i))
X	Provided mechanisms for determining actual reductions	7-4 Reference & Page Number

Table 31 Water Use Monitoring Mechanisms	
Mechanisms for determining actual reductions	**Type data expected (pop-up?)**
Name mechanism	
Name mechanism	
Name mechanism	

Recycling Plan Agency Coordination		Water Code § 10633
X	Describe the coordination of the recycling plan preparation information to the extent available	8-1 Reference & Page Number

Table 32 Participating agencies	
	participated
Water agencies	
Wastewater agencies	
Groundwater agencies	
Planning Agencies	

Wastewater System Description		(Water Code § 10633 (a))
X	Describe the wastewater collection and treatment systems in the supplier's service area	8-1 Reference & Page Number
X	Quantify the volume of wastewater collected and treated	8-2 Reference & Page Number

Table 33 Wastewater Collection and Treatment - AF Year							
Type of Wastewater	**2000**	**2005**	**2010**	**2015**	**2020**	**2025**	**2030 - opt**
Wastewater collected & treated in service area	~~6,796~~						
Volume that meets recycled water standard	~~1,030~~						

Wastewater Disposal and Recycled Water Uses			(Water Code § 10633 (a - d))
	X	Describes methods of wastewater disposal	8-2 Reference & Page Number
	X	Describe the current type, place and use of recycled water	8-2 Reference & Page Number
		None	Reference & Page Number
	X	Describe and quantify potential uses of recycled water	8-3 Reference & Page Number

Table 34 Disposal of wastewater (non-recycled) AF Year							
Method of disposal	**Treatment Level**	**2005**	**2010**	**2015**	**2020**	**2025**	**2030 - opt**
Name of method							
Name of method							
Name of method							

Name of method							
	Total	0	0	0	0	0	0

Table 35 Recycled Water Uses - Actual and Potential (AFY)							
User type	Treatment Level	2005	2010	2015	2020	2025	2030 - opt
Agriculture							
Landscape							
Wildlife Habitat							
Wetlands							
Industrial							
Groundwater Recharge							
Other (user type)							
Other (user type)							
	Total	0	0	0	0	0	0

☐ Determination of technical and economic feasibility of serving the potential uses _____ Reference & Page Number

Projected Uses of Recycled Water **(Water Code § 10633 (e))**

☒ Projected use of recycled water, 20 years 8-3 Reference & Page Number

Table 36 Projected Future Use of Recycled Water in Service Area - AF Year					
	2010	2015	2020	2025	2030 - opt
Projected use of Recycled Water					

☐ Compare UWMP 2000 projections with UWMP 2005 actual (§ 10633 (e)) _____ Reference & Page Number

☐ None _____ Reference & Page Number

Table 37 Recycled Water Uses - 2000 Projection compared with 2005 actual - AFY		
User type	2000 Projection for 2005	2005 actual use
Agriculture		
Landscape		
Wildlife Habitat		
Wetlands		
Industrial		
Groundwater Recharge		
Other (user type)		
Other (user type)		
Total	0	0

Plan to Optimize Use of Recycled Water **(Water Code § 10633 (f))**

☒ Describe actions that might be taken to encourage recycled water uses 8-3 Reference & Page Number

☐ Describe projected results of these actions in terms of acre-feet of recycled water used per year _____ Reference & Page Number

Table 38

Methods to Encourage Recycled Water Use					
	AF of use projected to result from this action				
Actions	2010	2015	2020	2025	2030 - opt
Financial incentives					
name of action					
name of action					
name of action					
name of action					
name of action					
name of action					
name of action					
Total	0	0	0	0	0

[X] Provide a recycled water use optimization plan which includes actions to facilitate the use of recycled water (dual distribution systems, promote recirculating uses) 8-4 Reference & Page Number

Water quality impacts on availability of supply **(Water Code §10634)**

[X] Discusses water quality impacts (by source) upon water management strategies and supply r 9-1 Reference & Page Number

[ ] No water quality impacts projected

Table 39 Current & projected water supply changes due to water quality - percentage						
water source	2005	2010	2015	2020	2025	2030 - opt

Supply and Demand Comparison to 20 Years **(Water Code § 10635 (a))**

[X] Compare the projected normal water supply to projected normal water use over the next 20 years, in 5-year increments. TABLE 10 Reference & Page Number

Table 40 Projected Normal Water Supply - AF Year					
(from table 4)	2010	2015	2020	2025	2030 - opt
Supply	0	0	0	0	0
% of year 2005	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Table 41 Projected Normal Water Demand - AF Year					
(from table 15)	2010	2015	2020	2025	2030 - opt
Demand	0	0	0	0	0
% of year 2005	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Table 42 Projected Supply and Demand Comparison - AF Year					
	2010	2015	2020	2025	2030 - opt
Supply totals	-	-	-	-	-
Demand totals	-	-	-	-	-
Difference	0	0	0	0	0

Difference as % of Supply	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Difference as % of Demand	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Supply and Demand Comparison: Single-dry Year Scenario **(Water Code § 10635 (a))**

[X] Compare the projected single-dry year water supply to projected single-dry year water use over the next 20 years, in 5-year increments. TABLE 11 Reference & Page Number

Table 43
Projected single dry year Water Supply - AF Year

	2010	2015	2020	2025	2030 - opt
Supply					
% of projected normal					

Table 44
Projected single dry year Water Demand - AF Year

	2010	2015	2020	2025	2030 - opt
Demand					
% of projected normal					

Table 45
Projected single dry year Supply and Demand Comparison - AF Year

	2010	2015	2020	2025	2030 - opt
Supply totals	0	0	0	0	0
Demand totals	0	0	0	0	0
Difference	0	0	0	0	0
Difference as % of Supply					
Difference as % of Demand					

Supply and Demand Comparison: Multiple-dry Year Scenario **(Water Code § 10635 (a))**

[X] Project a multiple-dry year period (as identified in Table 9) occurring between 2006-2010 and compare projected supply and demand during those years TABLE 12 Reference & Page Number

Table 46
Projected supply during multiple dry year period ending in 2010 - AF Year

	2006	2007	2008	2009	2010
Supply					
% of projected normal					

Table 47
Projected demand multiple dry year period ending in 2010 - AFY

	2006	2007	2008	2009	2010
Demand					
% of projected normal	0.0%	0.0%	0.0%	0.0%	0.0%

Table 48
Projected Supply and Demand Comparison during multiple dry year period ending in 2010- AF Year

	2006	2007	2008	2009	2010
Supply totals	0	0	0	0	0
Demand totals	0	0	0	0	0
Difference	0	0	0	0	0
Difference as % of Supply					
Difference as % of Demand					

X Project a multiple-dry year period (as identified in Table 9) occurring between 2011-2015 and compare projected supply and demand during those years — TABLE 12 Reference & Page Number

Table 49 Projected supply during multiple dry year period ending in 2015 - AF Year					
	2011	2012	2013	2014	2015
Supply					
% of projected normal					

Table 50 Projected demand multiple dry year period ending in 2015 - AFY					
	2011	2012	2013	2014	2015
Demand					
% of projected normal					

Table 51 Projected Supply and Demand Comparison during multiple dry year period ending in 2015- AF Year					
	2011	2012	2013	2014	2015
Supply totals	0	0	0	0	0
Demand totals	0	0	0	0	0
Difference	0	0	0	0	0
Difference as % of Supply					
Difference as % of Demand					

X Project a multiple-dry year period (as identified in Table 9) occurring between 2016-2020 and compare projected supply and demand during those years — TABLE 12 Reference & Page Number

Table 52 Projected supply during multiple dry year period ending in 2020 - AF Year					
	2016	2017	2018	2019	2020
Supply					
% of projected normal					

Table 53 Projected demand multiple dry year period ending in 2020 - AFY					
	2016	2017	2018	2019	2020
Demand					
% of projected normal					

Table 54 Projected Supply and Demand Comparison during multiple dry year period ending in 2020- AF Year					
	2016	2017	2018	2019	2020

Supply totals	0	0	0	0	0
Demand totals	0	0	0	0	0
Difference	0	0	0	0	0
Difference as % of Supply					
Difference as % of Demand					

[X] Project a multiple-dry year period (as identified in Table 9) occurring between 2021-2025 and compare projected supply and demand during those years — TABLE 12 Reference & Page Number

Table 55 Projected supply during multiple dry year period ending in 2025 - AF Year					
	2021	**2022**	**2023**	**2024**	**2025**
Supply					
% of projected normal					

Table 56 Projected demand multiple dry year period ending in 2025 - AFY					
	2021	**2022**	**2023**	**2024**	**2025**
Demand					
% of projected normal					

Table 57 Projected Supply and Demand Comparison during multiple dry year period ending in 2025- AF Year					
	2021	**2022**	**2023**	**2024**	**2025**
Supply totals	0	0	0	0	0
Demand totals	0	0	0	0	0
Difference	0	0	0	0	0
Difference as % of Supply					
Difference as % of Demand					

Provision of Water Service Reliability section to cities/counties within service area — **(Water Code § 10635(b))**

[ ] Provided Water Service Reliability section of UWMP to cities and counties within which it provides water supplies within 60 days of UWMP submission to DWR — Reference & Page Number

Does the Plan Include Public Participation and Plan Adoption — **(Water Code § 10642)**

[ ] Attach a copy of adoption resolution — Reference & Page Number
[ ] Encourage involvement of social, cultural & economic community groups — Reference & Page Number
[ ] Plan available for public inspection — Reference & Page Number
[ ] Provide proof of public hearing — Reference & Page Number
[ ] Provided meeting notice to local governments — Reference & Page Number

Review of implementation of 2000 UWMP — **(Water Code § 10643)**

[ ] Reviewed implementation plan and schedule of 2000 UWMP — Reference & Page Number
[ ] Implemented in accordance with the schedule set forth in plan — Reference & Page Number
[ ] 2000 UWMP not required — Reference & Page Number

Provision of 2005 UWMP to local governments — **(Water Code § 10644 (a))**

[ ] Provide 2005 UWMP to DWR, and cities and counties within 30 days of adoption — Reference & Page Number

Does the plan or correspondence accompanying it show where it is available for public review (Water Code § 10645)

☐ Does UWMP or correspondence accompanying it show where it is available for public review _____ Reference & Page Number

Chapter 1

INTRODUCTION [Section 10620]

Section 10620.

(a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d) (1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

1.1 URBAN WATER MANAGEMENT PLAN

This report was prepared in accordance with the California Urban Water Management Planning Act (Act)* which became effective on January 1, 1985. The Act requires every “urban water supplier" to prepare and adopt an Urban Water Management Plan (hereinafter Plan or Management Plan), to periodically review its plan at least once every five years and make any amendments or changes which are indicated by the review. An “Urban Water Supplier” is defined as a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. The primary objective of the Act is to direct urban water suppliers to evaluate their existing water conservation efforts and, to the extent practicable, review and implement alternative and supplemental water conservation measures. **The Act is directed primarily at retail water purveyors where programs can be immediately affected upon the consumer.**

* Water Code Sections 10610 through 10657

Sections 10610 through 10657 of the California Water Code, Urban Water Management Planning Act, were enacted in 1983. The Act, originally known as Assembly Bill 797, is included in Appendix A.1.

1.2 COORDINATION

San Gabriel Valley Municipal Water District (San Gabriel District) is a wholesale water supplier that provides untreated State Water Project (SWP) water to replenish groundwater supplies of the Main San Gabriel Basin (Main Basin). Its member agencies consist of the cities of Alhambra, Azusa, Monterey Park and Sierra Madre. San Gabriel District has informed the cities and the County of Los Angeles that it has prepared a 2010 UWMP update and has made a copy available for review, as shown in Appendix B.1. No comments were received. In addition, San Gabriel District operates consistent with the Long Beach Judgment, Main San Gabriel Basin Judgment, Main San Gabriel Basin Watermaster (Main Basin Watermaster) Rules and Regulations and the Five-year Water Quality and Supply Plan. These planning documents are described in Chapter 3 and are included in the Appendices C, D, E, and F, respectively.

San Gabriel District provided a 60-day notice of a public hearing of its 2010 Draft Plan. San Gabriel District made the 2010 Draft Plan available for public review at the District office and held a public hearing on December 13, 2010 at 8 a.m. Attached in Appendix B.2 are the notices of public hearing indicating the Draft Plan was available for public inspection for all groups and local government through notice in the newspaper. In addition, Appendix B.2 shows the notices of public hearing provided to the cities and County of Los Angeles. The representatives from the City of Alhambra, City of Sierra Madre, and City of Monterey Park were in attendance of the public hearing of San Gabriel District's 2010 Draft Plan. There were no oral comments made during the public hearing and no written comments received. San Gabriel District adopted the Draft Plan on December 13, 2010 as its Urban Water Management Plan. Attached in Appendix B.3 are the minutes of the public hearing and the minutes showing San Gabriel District adopted its Draft Plan. Within 30 days of the adoption of the Plan, San Gabriel District filed a copy of the Plan with the State of California, Department of Water Resources; the California State Library; and with the cities and counties located within San Gabriel District's service area. Within 60 days of submitting the Plan to DWR, San Gabriel District provided the Water Service Reliability section of the Plan to cities and counties within San

Gabriel District's boundaries. Copies of the letters to DWR, the State Library and the cities and counties are located in Appendix B.4. A copy of the final 2010 Plan is available for public review in the San Gabriel District office.

1.3 WATER MANAGEMENT TOOLS

This Plan describes water management tools and options used by San Gabriel District to help its member agencies maximize local resources and minimize the need to import water. These include Groundwater Basin Management Structure (Chapter 3), Demand Management Measures (Chapter 5), Potential Projects (Chapter 6), and Potential Recycled Water Use (Chapter 8).

1.4 CHANGES TO THE UWMP ACT [SECTION 10621]

a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero.

b) Every urban water supplier required to prepare a plan pursuant to this part shall notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

There have been many new amendments added to the Plan and some reorganization of the water code sections since San Gabriel District's 2005 Plan update. The additions and changes follow:

- SB 1087, Reporting of water use projections for lower income households
- AB 1376, 60 days notice of a public hearing on an UWMP
- AB 1420, Conditions state funding
- SB7, Requires 20 percent reduction in use by 2020 (see Appendix A.2)

Section 10621 (a) of the water code states, "each water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero". This 2010 Urban Water Management Plan is an update to San Gabriel District's 2005 Urban Water Management Plan.

San Gabriel District has made the draft 2010 Plan update available for public review and a public hearing was held thereon. Public notification of the hearing is made pursuant to Section 6066 of the Government Code. Upon completion of the public hearing, San Gabriel District adopted the draft Plan, including any modifications resulting from the public hearing, as its Plan. Within 30 days of adoption by San Gabriel District, a copy of the Plan will be filed with the State of California, Department of Water Resources; the California State Library; the four member agency cities; and the County of Los Angeles pursuant to Section 10644(a). A copy of San Gabriel District's 2010 resolution is located in Appendix K.

Chapter 2

DESCRIPTION OF SERVICE AREA

A plan shall be adopted in accordance with this chapter and shall do the following:
a) Describe the service area of the supplier; including current and affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

2.1 BACKGROUND

San Gabriel District was formed in 1959 to meet the supplemental water needs of its member agencies, the cities of Alhambra, Azusa, Monterey Park and Sierra Madre, which are located within the San Gabriel Valley. The location of those four cities, which comprise the San Gabriel District, is shown on Plate 1. There are about 17,400 acres (27.2 square miles) in San Gabriel District, ranging in elevation from 250 feet above mean sea level (amsl) to 2,300 feet amsl. The climate is characterized by hot, dry summers and mild winters, with an average annual rainfall of about 17 inches in Alhambra and Monterey Park and slightly more in Azusa and Sierra Madre, which are situated at the foothills of the San Gabriel Mountains. Table 1A shows historic rainfall in the San Gabriel Valley since water year 1958-59. Table 1B shows monthly averages for rainfall, temperature, and evapotranspiration.

In anticipation of its long-term supplemental water needs, San Gabriel District entered into a contract with the State of California on November 3, 1962, for the ultimate delivery of 25,000 acre-feet of water per year from the SWP. A subsequent amendment to the water supply contract dated September 28, 1964, increased the maximum annual entitlement to 28,800 acre-feet. (This quantity of water is not guaranteed each year and varies based on hydrologic conditions. San Gabriel District will be allocated a portion of its entitlement up to 100 percent.) In 1969, voters within San Gabriel District rejected a proposal of annexation to the Metropolitan Water District of Southern California (MWD). Consequently, San Gabriel District constructed a pipeline (Devil Canyon-Azusa Pipeline) to deliver untreated SWP water to the Main San Gabriel Basin (Main Basin) as supplemental water for any production in excess of Main Basin water rights by its member agencies

and to furnish San Gabriel District's portion of the Long Beach Judgment[1] Make-up Water. The Devil Canyon-Azusa Pipeline began delivery of water in mid-1974 at the Beatty Channel with a capacity of 55 cubic feet per second (cfs). In 1981 an additional outlet was added to the Devil Canyon-Azusa Pipeline at San Dimas Wash with a capacity of 40 cfs. In 1985 San Gabriel District installed a 1.05 megawatt hydroelectric power plant at the San Dimas turnout to generate electricity in conjunction with its supplemental water deliveries. On April 10, 1995 San Gabriel District completed an extension of the Devil Canyon-Azusa Pipeline from the Boyd-Kern Operations Center (in Azusa) to the County of Los Angeles Department of Public Works' (LACDPW) San Gabriel Canyon Spreading Grounds, Basin No. 1 with a capacity of about 50 cfs. The purpose of the San Dimas Outlet and the pipeline extension is to provide San Gabriel District with more flexibility in delivering SWP water to the Main Basin. In 1998 a 6 cfs outlet to Big Dalton Wash was constructed to utilize LACDPW's Citrus Spreading Grounds.

The San Gabriel District was created to provide supplemental water on behalf of its member agencies. As a result of the Main Basin Judgment[2], the San Gabriel District was named as a Responsible Agency from whom the Main Basin Watermaster shall purchase supplemental water. (The management of the Main Basin is further discussed in Section 3.2.2 of this Plan.)

2.2 DESCRIPTION OF SERVICE AREA [SECTION 10631]

San Gabriel District is located within the San Gabriel Valley, which is located in southeastern Los Angeles County and is bounded on the north by the San Gabriel Mountains, on the west by the San Rafael and Merced Hills, on the south by the Puente Hills and the San Jose Hills, and on the east by a low divide between the San Gabriel River System and the Upper Santa Ana River System.

The San Gabriel River, and its distributary, the Rio Hondo, drain an area of about 450 square miles upstream of Whittier Narrows. Whittier Narrows is a low gap between the Merced and Puente Hills, just northwest of the City of Whittier, through which the San Gabriel River and the Rio

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[1] Board of Water Commissioners of the City of Long Beach, et al, v. San Gabriel Valley Water Company, et al, Los Angeles County Case No. 722647, Judgment entered September 24, 1965.

[2] Upper San Gabriel Valley Municipal Water District v. City of Alhambra, et, al. Los Angeles County Case No. 924128, Judgment entered January 4, 1973.

Hondo flow to the coastal plain of Los Angeles County. Whittier Narrows is a natural topographic divide and a subsurface restriction to the movement of ground water between San Gabriel Valley and Coastal Plain. Of the 450 square miles of drainage area upstream of Whittier Narrows, about 115 square miles are valley lands and 335 square miles are mountains and foothills.

San Gabriel District is a wholesale water supplier. Residents within San Gabriel District receive their retail water supply from four different retail water suppliers: the Cities of Alhambra, Monterey Park, and Sierra Madre, and City of Azusa Light and Water. These retail water supplies are also required to file a Plan. The location of San Gabriel District in relation to the San Gabriel Valley is shown on Plate 2.

2.3 CURRENT AND PROJECTED POPULATION

San Gabriel District is governed by a five-member elected Board of Directors. The Directors represent three divisions encompassing Alhambra and Monterey Park, and one division in both Azusa and Sierra Madre. The cities within San Gabriel District have a 2009 population of about 217,000. The following tabulation presents the historic population of the District from 1960 to 2010 and the projected population for the years 2015 to 2030. The projections were obtained from the Southern California Association of Governments (SCAG).

Year	Total Population	Percent Increase
1960	123,000	--
1970	148,625	20.8
1980	158,137	6.4
1990	189,500	19.8
2000	202,000	6.6
2005	213,000	5.6
2010	220,000	3.0
2015 (est.)	228,000	3.7
2020 (est.)	234,000	2.9
2025 (est.)	241,000	2.7
2030 (est.)	247,000	2.6

2.4 WATER MANAGEMENT IMPACTS

The two primary factors impacting water management is population and climate.

2.4.1 Climate

The climate impacts the amount of water available for use. Less snow and rainfall produces less runoff which reduces the water available for consumption. Temperature impacts the

use of water since higher temperatures generally mean higher water consumption for keeping plant life healthy.

2.4.2 Demographics

San Gabriel District has identified no other demographic characteristics that directly impacts water management. Increased population generates increased water demand. The primary driver of water use is population.

Chapter 3

WATER SUPPLY [Section 10631(b)]

b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court of the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

3.1 EXISTING AND PLANNED SOURCES OF SUPPLY

San Gabriel District has not supplied, and does not currently supply, water directly to its member agencies. San Gabriel District delivers supplemental imported water to replenish the Main San Gabriel Basin. San Gabriel District's only source of water for this purpose is SWP. San Gabriel District constructed the Devil Canyon-Azusa Pipeline to convey SWP water to spreading grounds that are owned and operated by LACDPW. There are five turnouts from the pipeline; two located in the City of Azusa, two in the City of San Dimas, and one in the City of Glendora.

In 1947, the California State Legislature funded a water resources investigation that led to the development of the SWP. This investigation resulted in the publication of the California Water Plan, which presented preliminary plans to meet the State's ultimate water needs, including those

facility works required for transferring surplus water from northern California to water deficient southern California.

Financing for the construction of SWP facilities was authorized in 1959, when the State Legislature enacted the California Water Resources Development Act (known as the Burns-Porter Act). The initial works included Oroville Dam and Lake Oroville, B.F. Sisk San Luis Dam and San Luis Reservoir, the South Bay Aqueduct, the North Bay Aqueduct, and the California Aqueduct. The first SWP water deliveries were made in 1962, two years after construction began.

The State of California Department of Water Resources (DWR) and MWD signed the first water supply contract in 1960. Today 29 agencies have long-term water supply contracts with DWR. The service areas of these long-term water supply contractors vary widely in size, location, climate, and population. The contractors' uses for SWP water also differ. In the San Joaquin Valley, SWP water is used primarily for agriculture; in the Feather River area, San Francisco South Bay, the North Bay areas, and in Southern California, SWP water is used primarily for urban and industrial needs. According to State sources, the SWP has a current firm annual yield of about 2,100,000 acre-feet and a contracted annual yield of 4,2000,000 acre-feet based upon the SWP's original design annual yield. Existing contracts call for SWP water deliveries to eventually total 4.2 million acre-feet per year. DWR continues to plan and construct new facilities for the SWP. As noted in Section 2.1, San Gabriel District's full SWP entitlement is 28,800 acre-feet. The untreated imported water is delivered on behalf of its four cities to replenish the Main Basin.

San Gabriel District's member cities obtain most of their water from groundwater production. Alhambra, Azusa, and Monterey Park pump from the Main Basin, and Sierra Madre pump from the Raymond Basin. Alhambra diverts and treats surface flow from the San Gabriel River. Alhambra receives some direct deliveries from the Metropolitan Water District of Southern California through an exchange agreement, and Sierra Madre obtains some supplies from local springs. The Main Basin and Raymond Basin are replenished by precipitation, surface inflow, subsurface inflows, and in the Main Basin, imported water from the SWP and the Colorado River.

3.2 GROUNDWATER MANAGEMENT [SECTION 10631(b) (1)]

San Gabriel District has not adopted a specific groundwater management plan. Instead, management of the water resources in the San Gabriel Valley is based upon Watermaster

Services under two Court Judgments: San Gabriel River Watermaster (River Watermaster)[1] and Main Basin Watermaster[2]. San Gabriel District is a party to the Main Basin Watermaster Judgment. San Gabriel District's participation in Main Basin management also is described in the Main Basin Watermaster document entitled "Five-Year Water Quality and Supply Plan." These three basin management documents are described in the following sections.

3.2.1 LONG BEACH JUDGMENT

On May 12, 1959, the Board of Water Commissioners of the City of Long Beach, the Central Basin Municipal Water District (Central Municipal), and the City of Compton, as plaintiffs, filed an action against the San Gabriel Valley Water Company and 24 other producers of groundwater from the San Gabriel Valley as defendants. This action sought a determination of the rights of the defendants in and to the waters of the San Gabriel River system and to restrain the defendants from an alleged interference with the rights of plaintiffs and persons represented by the Central Municipal in such waters. After six years of study and negotiation a Stipulation for Judgment was filed on February 10, 1965, and Judgment (Long Beach Judgment) was entered on September 24, 1965. Under the terms of the Long Beach Judgment, the water supply of the San Gabriel River system was divided at Whittier Narrows, the boundary between San Gabriel Valley upstream and the coastal plain of Los Angeles County downstream. Reference to the Long Beach Judgment is included in Appendix C.

Under the terms of the Long Beach Judgment, the area downstream from Whittier Narrows (Lower Area), the plaintiffs and those they represent, are to receive a quantity of usable water annually from the San Gabriel River system comprised of usable surface flow, subsurface flow at Whittier Narrows and water exported to the Lower Area. This annual entitlement is guaranteed by the area upstream of Whittier Narrows (Upper Area), the defendants, and provision is made for the supply of Make-up Water by the Upper Area for years in which the guaranteed entitlement is not received by the Lower Area.

Make-up water is imported water purchased by the Main Basin Watermaster and delivered to agencies in Central Municipal to satisfy obligations under the Long Beach Judgment. The

1 Board of Water Commissioners of the City of Long Beach, et al, v. San Gabriel Valley Water Company, et al, Los Angeles County Case No. 722647, Judgment entered September 24, 1965.
2 Upper San Gabriel Valley Municipal Water District v. City of Alhambra, et al, Los Angeles County Case No. 924128, Judgment entered January 4, 1973.

entitlement of the Lower Area varies annually, dependent upon the 10-year average annual rainfall in San Gabriel Valley for the 10 years ending with the year for which entitlement is calculated.

The detailed operations described in the Long Beach Judgment are complex and require continuous compilation of data so that annual determinations can be made to assure compliance with the Long Beach Judgment. In order to do this, a three-member Watermaster was appointed by the Court, one representing the Upper Area parties nominated by and through Upper San Gabriel Valley Municipal Water District (Upper District), one representing the Lower Area parties nominated by and through the Central Municipal, and one jointly nominated by Upper District and Central Municipal. This 3-member board is known as the San Gabriel River Watermaster.

The River Watermaster meets periodically during the year to adopt a budget, to review activities affecting water supply in the San Gabriel River system area, to compile and review data, to make its determinations of usable water received by the Lower Area, and to prepare it annual report to the Court and to the parties. The River Watermaster has rendered annual reports for the water years 1963-64 through 2008-09 and operations of the river system under that Court Judgment and through the administration by the River Watermaster have been satisfactory since its inception.

One major result of the Long Beach Judgment was to leave the Main San Gabriel Basin free to manage its water resources so long as it meets its downstream obligation to the Lower Area under the terms of the Long Beach Judgment.

3.2.2 MAIN BASIN JUDGMENT

The Upper Area then turned to the task of developing a water resources management plan to optimize the conservation of the natural water supplies of the area. Studies were made of various methods of management of the Main Basin as an adjudicated area and a report thereon was prepared for the Upper San Gabriel Valley Water Association, an association of water producers in the Main Basin. After due consideration by the Association membership, Upper District was requested to file as plaintiff, and did file, an action on January 2, 1968, seeking an adjudication of the water rights of the Main San Gabriel Basin and its Relevant Watershed. After several years of study (including verification of annual water production) and negotiations, a stipulation for entry of Judgment was approved by a majority of the parties, by both the number of parties and the quantity of rights to be adjudicated. Trial was held in late 1972 and Judgment (Main Basin Judgment) was entered on

January 4, 1973. Reference to the Main Basin Judgment is included in Appendix D. Reference to the Main Basin Watermaster Rules and Regulations is included in Appendix E.

There are three municipal water districts overlying and partially overlying the Main Basin. The three districts are Upper District, San Gabriel District and Three Valleys Municipal Water District (Three Valleys District). The boundaries of these water districts are shown on Plate 2.

Under the terms of the Main Basin Judgment all rights to the diversion of surface water and production of groundwater within the Main Basin and its Relevant Watershed were adjudicated. The Main Basin Judgment provides for the administration of the provisions of the Main Basin Judgment by a nine-member Watermaster. Six of those members are nominated by water producers (producer members) and three members (public members) are nominated by Upper District and San Gabriel District which overlie most of the Main Basin. The nine-member board employs a staff, an attorney and a consulting engineer. The Main Basin Watermaster holds public meetings on a regular monthly basis through the year.

The Main Basin Judgment does not restrict the quantity of water which Parties may extract from the Basin. Rather, it provides a means for replacing all annual extractions in excess of a Party's annual right to extract water with Supplemental Water. The Main Basin Watermaster annually establishes an Operating Safe Yield for the Main Basin, which is then used to allocate to each Party its portion of the Operating Safe Yield which can be produced free of a Replacement Water Assessment. If a producer extracts water in excess of its right under the annual Operating Safe Yield, it must pay an assessment for Replacement Water which is sufficient to the purchase of one acre-foot of Supplemental Water to be spread in the Main Basin for each acre-foot of excess production. All water production is metered and is reported quarterly to the Main Basin Watermaster.

In addition to Replacement Water Assessments, the Main Basin Watermaster levies an Administration Assessment to fund the administration of the Main Basin management program under the Court Judgment and a Make-up Obligation Assessment in order to fulfill the requirements for any make-up Obligation under the Long Beach Judgment and to supply fifty percent of the administration costs of the River Watermaster service. The Main Basin Watermaster levies an In-lieu Assessment and may levy special Administration Assessments.

Water rights under the Main Basin Judgment are transferable by lease or purchase so long as such transfers meet the requirements of the Judgment. There is also provision for Cyclic Storage Agreements by which Parties and non-parties may store imported Supplemental Water in the

Main Basin under such agreements with the Main Basin Watermaster pursuant to uniform rules and conditions and Court approval.

The Main Basin Judgment provides that the Main Basin Watermaster will not allow imported water to be spread in the central part of the Main Basin when the groundwater elevation at the Baldwin Park Key Well (Key Well) exceeds 250 feet; and that the Main Basin Watermaster will, insofar as practicable, spread imported water in the Main Basin to maintain the groundwater elevation at the Key Well above 200 feet. One of the principal reasons for the limitation on spreading imported water when the Key Well elevation exceeds 250 feet is to reserve ample storage space in the Basin to capture native surface water runoff when it occurs and to optimize the conservation of such local water. Under the terms of the Long Beach Judgment, any excess surface flows that pass through the Main Basin at Whittier Narrows to the Lower Area (which is then conserved in the Lower Area through percolation to groundwater storage) is credited to the Upper Area as Usable Surface Flow.

Through the Long Beach Judgment and the Main Basin Judgment, operations of the Main Basin are optimized to conserve local water to meet the needs of the parties of the Main Basin Judgment.

San Gabriel District is one of the Responsible Agencies from which Main Basin Watermaster purchases supplemental water. The supplemental water purchased from San Gabriel District is for groundwater replenishment purposes (Replacement Water for excess production by a Producer) or Make-up Water for delivery to the Lower Area under the terms of the Long Beach Judgment. San Gabriel District sells imported water to the Main Basin Watermaster

Imported water for groundwater replenishment is delivered to the flood control channels and diverted and spread at spreading grounds through Main Basin Watermaster's agreement with the LACDPW. Groundwater replenishment utilizes imported water and is considered Replacement Water under the terms of the Main Basin Judgment. It can be stored in the Main Basin through Cyclic Storage agreements, authorized by terms of the Main Basin Judgment, but such stored water may be used only to supply Supplemental Water to the Main Basin Watermaster.

The Main Basin Watermaster has entered into a Cyclic Storage Agreement with each of the three municipal water districts. One is with the Metropolitan and Upper District, which permits Metropolitan to deliver and store imported water in the Basin in an amount not to exceed 100,000 acre-feet for future Replacement Water use. The second Cyclic Storage Agreement is with Three Valleys District and permits Metropolitan to deliver and store 40,000 acre-feet for future Replacement

Water use. The third is with San Gabriel District and contains generally the same conditions as the agreement with Metropolitan except that the stored quantity is not to exceed 40,000 acre-feet. As of December 31, 2009 San Gabriel District had about 28,700 acre-feet in its Cyclic Storage account.

Imported Make-up Water is often delivered to lined stream channels and conveyed to the Lower Area. Make-up Water is required to be delivered to the Lower Area by the Upper Area when the Lower Area entitlement under the Long Beach Judgment exceeds the usable water received by the Lower Area. Imported water is used to fulfill the Make-up Water Obligation when the amount of Make-up Water cannot be fulfilled by reimbursing the Lower Area interests for their purchase of recycled water. The amount of recycled water for which reimbursement may be made as a delivery of Make-up Water is limited by the terms of the Long Beach Judgment to the annual deficiency in Lower Area Entitlement water or to 14,735 acre-feet, whichever is the lesser quantity.

3.2.3 FIVE-YEAR WATER QUALITY AND SUPPLY PLAN

The Main Basin Watermaster was created in 1973 to resolve water issues that had arisen among water users in the San Gabriel Valley. The Main Basin Watermaster's mission is to manage the water supply of the Main San Gabriel Groundwater Basin. During the late 1970s and early 1980s, significant groundwater contamination was discovered in the Main Basin. The contamination was caused in part by past practices of local industries that had carelessly disposed of industrial solvents referred to as Volatile Organic Compounds, (VOCs), as well as by agricultural operations that infiltrated nitrates into the groundwater. Cleanup efforts have been undertaken at the local, state, and federal level.

Local water agencies adopted a joint resolution in 1989 regarding water quality issues that stated Main Basin Watermaster should coordinate local activities aimed at preserving and restoring the quality of groundwater in the Basin. The joint resolution also called for a cleanup plan. In 1991, the Court granted Main Basin Watermaster the authority to control pumping for water quality purposes. Accordingly, Main Basin Watermaster added Section 28 to its Rules and Regulations regarding water quality management. The new responsibilities included development of a Five-Year Water Quality and Supply Plan, updating it annually, submitting it to the California Regional Water Quality Control Board, Los Angeles Region, and making it available for public review by November 1 of each year. Reference to the Five-year Plan is included in Appendix F.

Main Basin Watermaster prepares and annually updates the Five-Year Water Quality and Supply Plan in accordance with the requirements of Section 28 of its Rules and Regulations. The objective is to coordinate groundwater-related activities so both water supply and water quality in the Main Basin are protected and improved. Many important issues are detailed in the Five-Year Plan, including how Main Basin Watermaster plans to:

1. monitor groundwater supply and quality;
2. develop projections of future groundwater supply and quality;
3. review and cooperate on cleanup projects, and provide technical assistance to other agencies;
4. assure that pumping does not lead to further degradation of water quality in the Basin;
5. address Perchlorate, N-nitrosodimethylamine (NDMA), and other emerging contaminants in the Basin;
6. develop a cleanup and water supply program consistent with the U.S. Environmental Protection Agency (USEPA) plans for its San Gabriel Basin Superfund sites; and
7. coordinate and manage the design, permitting, construction, and performance evaluation of the Baldwin Park Operating Unit (BPOU) cleanup and water supply plan.

The Main Basin Watermaster, in coordination with San Gabriel District, has worked with state and federal regulators, along with local water companies to clean up water supplies. Section 28 of Main Basin Watermaster's Rules and Regulations require all producers (including San Gabriel District sub-agencies) to submit an application to 1) construct a new well, 2) modify an existing well, 3) destroy a well, or 4) construct a treatment facility. Main Basin Watermaster prepares a report on the implications of the proposed activity.

3.3 DESCRIPTION OF GROUNDWATER BASIN [SECTION 10631(b) (2)]

3.3.1 BACKGROUND

The Main Basin includes essentially all the valley floor of San Gabriel Valley with the exception of the Raymond Basin and Puente Basin. The boundaries of the Basin are the Raymond Basin on the northwest, the base of the San Gabriel Mountains on the north, the groundwater divide between San Dimas and La Verne and the lower boundary of the Puente Basin on the east, and the

common boundaries between Upper District and Central Municipal through Whittier Narrows on the southwest. The common water supply of the Basin does not include the Raymond Basin, the area northerly of Raymond Hill Fault, which was adjudicated in the Pasadena v. Alhambra case (Superior Court of the County of Los Angeles, 1944). The Puente Basin, although tributary to the Main Basin, is not included in the Main Basin. The Main Basin (administered by the Main Basin Watermaster) is a large groundwater basin replenished by stream runoff from the adjacent mountains and hills, by rainfall directly on the surface of the valley floor, subsurface inflow from Raymond Basin and Puente Basin, and by return flow from water applied for overlying uses. Additionally, the Main Basin is replenished with imported water. The Main Basin serves as a natural storage reservoir, transmission system and filtering medium for wells constructed therein.

Urbanization of the San Gabriel Valley began in the early part of the twentieth century, but until the 1940's, agricultural land use occupied more area than residential and commercial land use. After World War II, agricultural areas reduced rapidly and are now less than two thousand acres. The agricultural areas are located in the easterly portion of the Basin and along power transmission rights of way adjacent to the San Gabriel River. Agricultural areas are discontinuous and relatively small. There are several major industrial areas adjacent to the San Gabriel River and within other portions of the valley. The greatest area of land use in the valley is for residential and commercial purposes.

The Main Basin has been adjudicated. In addition, the Department of Water Resources Bulletin 118 does not identify the Main Basin as currently being in overdraft.

3.3.2 GEOLOGY

The Main Basin consists of a roughly bowl-shaped depression in the bedrock, filled over millions of years with alluvial deposits. This bowl-shaped depression is relatively deep; the elevation of the base of the groundwater reservoir decreases from about 800 feet above mean sea level (MSL) in the vicinity of San Dimas at the northeast corner of the Main Basin to about 2,200 feel below MSL in the vicinity of South El Monte. (California Department of Water Resources, 1966, Plate 11.)

Most of the alluvium deposited within this depression is debris from the San Gabriel Mountains, washed and blown from the side of the mountains over time. This process has also resulted in materials within the Main Basin varying in size from relatively coarse gravel near the mountains to fine and medium-grained sand containing silt and clay as the distance from the

mountains increases. The principal water-bearing formations of the Main Basin are unconsolidated and semi-consolidated sediments which vary in size from coarse gravel to fine-grained sands. The interstices between these alluvial particles throughout the Main Basin fill with water and transmit water readily to wells. The thickness of the water-bearing materials in the Main Basin ranges from 200 to 300 feet in the northeaster portion of the Main Basin near the mountains to nearly 4,000 feet in the South El Monte area.

The soils overlying the Main Basin average about six feet in depth. Soil depths are generally greater at the perimeter of the valley and decrease toward the center along the San Gabriel River. These soils are residual, formed in place through chemical, mechanical and plant weathering processes. The infiltration rates of these soils are greater along the natural channels and their adjacent flood plains. Lower infiltration rates are found in the perimeter areas of the valley. Because the valley is mostly urbanized, a significant portion of the area has been paved and many miles of stream channel have been lined for flood control purposes, thus decreasing infiltration of water through streambeds. Detailed basin geology is discussed in the report entitled “Planned Utilization of Ground Water Basins, San Gabriel Valley, Appendix A: Geohydrology”.

3.3.3 HYDROGEOLOGY

The total fresh water storage capacity of the Main Basin is estimated to be about 9.5 million acre-feet. Of that, about 1,100,000 acre-feet has been used historically in Main Basin operations. The change in groundwater elevation at the Baldwin Park Key Well (Key Well) is representative of changes in groundwater in the Main Basin. One foot of elevation change at the Key Well is roughly the equivalent of about 8,000 acre-feet of water storage. The location of the Key Well is shown on Plate 3 and hydrograph of the Key Well is shown on Plate 4. The historic high groundwater elevation was recorded at over 329.1 feet in April 1916, at which time Main Basin storage was estimated to be about 8,700,000 acre-feet. The historic low was recorded in November 2009 at 189.2 feet, at which time Main Basin storage was estimated to be about 7,600,000 acre-feet. The Key Well hydrograph, shown on Plate 4, illustrates the cyclic nature of basin replenishment and depletion. The hydrograph also illustrates the dramatic replenishment capability of the Main Basin during wet periods.

Generally, water movement in the Main Basin is from the San Gabriel Mountains on the north to Whittier Narrows to the southwest, as shown on Plate 5. Groundwater movement in the northern and northeastern regions of the Main Basin is affected by faulting.

The Main Basin is an unconfined aquifer. Although clay deposits appear mixed with the sands in several locations in the Main Basin and there are various clay lenses throughout the Main Basin, they do not coalesce to form a single impermeable barrier to the movement of subsurface water. The Main Basin therefore operates as a single, unconfined aquifer. As previously mentioned, a thorough discussion of basin hydrogeology is contained in the report "Planned Utilization of Ground Water Basins, San Gabriel Valley, Appendix A: Geohydrology".

Within the Main Basin there are a number of identified sub-basins. These include the Upper San Gabriel Canyon Basin, Lower San Gabriel Canyon Basin, Glendora Basin, Foothill Basin, Way Hill Basin and San Dimas Basin. In addition, the Puente Basin is tributary to the Main Basin from the southeast, between the San Jose and Puente Hills. Plate 3 shows the location of the sub-basins within the Main Basin.

3.3.4 HYDROLOGY

The major sources of replenishment to the Main Basin are direct penetration of rainfall on the valley floor, percolation of runoff from the mountains, percolation of imported water and return flow from applied water. Table 1 shows historic annual rainfall in the San Gabriel Valley. Rainfall occurs predominantly in the winter months and is more intense at higher elevations and closer to the San Gabriel Mountains. Rainfall is also highly variable from year to year, as shown as Table 1. In water year 2006-2007 the total rainfall (four station average) was less than five inches, while in 2004-2005 the total rainfall (four station average) was over 45 inches.

The magnitude of annual replenishment from direct penetration of local rainfall and return flow from applied water is not easily quantifiable. Percolation of runoff from the mountains and valley floor along with percolation of imported water have been estimated by River Watermaster. LADPW maintains records on the amount of local and imported water conserved in water spreading facilities and stream channels.

The Main Basin is bisected by the San Gabriel River. The San Gabriel River originates at the confluence of its west and east forks in the San Gabriel Mountains. It flows through the San Gabriel Canyon and enters the Main Basin at the mouth of the canyon north of the City of Azusa (see

Plate 3). The San Gabriel River flows southwesterly across the valley to Whittier Narrows, a distance of about 15 miles. It exits the San Gabriel Valley at Whittier Narrows, and transverses the Coastal Plan in a southerly direction to reach the Pacific Ocean at Alamitos Bay near the City of Long Beach.

The San Gabriel River is joined and fed by tributary creeks and washes. In the Main Basin these include: Big Dalton Wash, which originates in the San Gabriel Mountains; Walnut Creek, which originates at the northeast end of the San Jose Hills; and San Jose Creek, which originates in the San Gabriel Mountains, but which travels around the southerly side of the San Jose Hills through the Puente Narrows before joining the San Gabriel River just above Whittier Narrows.

The channel of the San Gabriel River bifurcates in the upper middle portion of the Main Basin, forming a channel to the west of and parallel to the San Gabriel River, known as the Rio Hondo. The Rio Hondo is fed by tributaries draining the westerly portion of the Main Basin, including Sawpit Wash, Santa Anita Wash, Eaton Canyon Wash, Rubio Wash and Alhambra Wash, all of which originate in the San Gabriel Mountains or the foothills. The Santa Anita Wash, Eaton Canyon Wash, Rubio Wash and Alhambra Wash all cross the Raymond Basin area before entering the Main Basin. The Rio Hondo passes through Whittier Narrows westerly of the San Gabriel River, and then flows southwesterly to join the Los Angeles River on the Coastal Plain.

To protect residents of the San Gabriel Valley from flooding that can result during periods of intensive rainfall, the LADPW and the U.S. Army, Corps of Engineers (Corps of Engineers), have constructed an extensive system of dams, debris basins, reservoirs and flood control channels. The dams and reservoirs also operate as water conservation facilities, as shown on Plate 3. The dams and reservoirs that control the flow of the San Gabriel River and the Rio Hondo include: Cogswell Reservoir on the west fork of the San Gabriel River, San Gabriel Reservoir at the confluence of the west and east forks of the San Gabriel River, Morris Reservoir near the mouth of the San Gabriel Canyon, Santa Fe Reservoir in the northerly portion of the Basin and Whittier Narrows Reservoir at the southwestern end of San Gabriel Valley.

Many of the stream channels tributary to the San Gabriel River have been improved with concrete banks (walls) and concrete-lined bottoms. These stream channel improvements have significantly reduced the area of previous stream channels and reduced Main Basin replenishment. A number of off-stream groundwater replenishment facilities have been established along these stream channels to offset such reductions in replenishment. The locations of these water spreading facilities

are shown on Plate 3. Some of these facilities are accessible to imported water supplies, while some facilities receive only local runoff.

The paths of the surface streams are mirrored in the soils and in the direction of groundwater movement in the Main Basin. The tributary creeks and washes, carrying smaller amounts of water, generally flow toward the center of the San Gabriel Valley, while the direction of flow of the major streams, the San Gabriel River and the Rio Hondo, is from the mountains in the north to Whittier Narrows in the southwest. In similar fashion, the primary direction of groundwater movement in the Main Basin is from the north to the southwest, with contributing movement generally from the east and west toward the center of the Main Basin as shown on Plate 5. The greatest infiltration and transmissivity rates of soils in the Main Basin are from north to south, with the maximum rates found in the center of the valley along the stream channels. Generally, the Main Basin directs groundwater to the southwest through Whittier Narrows.

3.4 PAST AND PROJECTED LOCATION, AMOUNT AND SUFFICIENCY OF GROUNDWATER [SECTION 10631(b) (3) and (4)]

San Gabriel District is a wholesale water supplier and does not produce groundwater. As noted in Section 3.2 the Main Basin is managed by the Main Basin Watermaster. Section 42, Basin Operating Criteria, of the Main Basin Judgment states in part "…Watermaster shall not spread Replacement Water when the water level at the Key Well exceeds elevation two hundred fifty (250), and Watermaster shall spread Replacement Water, insofar as practicable, to maintain the water level at the Key Well above Elevation two hundred (200)." Plate 4 shows the historic fluctuation of the Key Well since the Main Basin was adjudicated in 1973 and demonstrates the Main Basin was generally operated between elevation 250 feet and 200 feet amsl. Furthermore, at elevation 200 feet amsl at the Key Well, the Main Basin has about 7,600,000 acre-feet of available storage. During the period of management under the Judgment, significant drought events have occurred from 1969 to 1977, 1983 to 1991, 1998 to 2004, and 2006-2007. In each drought cycle the Main Basin was managed to maintain water levels. **Based on historic and on-going management practices, water producers in the Main Basin will be able to rely on the Main Basin for adequate supply over the next 20 years under single year and multiple year droughts.**

3.5 VULNERABILITY TO SEASONAL OR CLIMATIC SHORTAGE [SECTION 10631(c)]

Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

1) An average water year.
2) A single dry water year.
3) Multiple dry water years.

For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

As noted in Section 3.2, the Main Basin was adjudicated in 1973 and is managed by the Main Basin Watermaster. Since 1973 the Main Basin has gone through three distinct multiple dry water cycles each lasting four years or more. **The multiple dry years sequence did not compromise San Gabriel District's member agency's ability to reliably supply water to their customers.** This will be discussed in greater detail in each of member agency's Plan.

San Gabriel District provides untreated imported SWP water for replenishment of the Main Basin. There is no requirement to provide water for a specific time frame, only that the Main Basin ultimately be replenished. San Gabriel District maintains a Cyclic Storage account in the Main Basin that may be used to satisfy groundwater replenishment requirements in the event of reduced availability from the SWP due to single or multiple dry years.

SWP Supply Reliability – Acre Feet Year

		Multiple Dry Water Years			
Average / Normal Water Year	**Single Dry Water Year**	**Year 1**	**Year 2**	**Year 3**	**Year 4**
17,280	3,168	10,080	10,080	10,080	10,080
60%	11%	35%	35%	35%	35%

The information in noted above is based on the District's SWP entitlement of 28,800 acre-feet and the percentage yield from Table 6.13 of the State Department of Water Resources (DWR) SWP Delivery Reliability Report, which is included in Appendix L.

The SWP Delivery Reliability Report identifies projected availability of supplies for an average water year, single dry water year and multiple dry water years on Table 6.13 based on historic trends. In addition, Figure 6-2 of the SWP Delivery Reliability Report indicates that as of 2029 at least 50 percent of entitlement would be available over 80 percent of the time. San Gabriel District's entitlement is 28,800 acre-feet and a fifty percent reduction is 14,400 acre-feet. It is

assumed for the purpose of this UWMP the current and planned sources of supply will be 14,400 acre-feet per year each year through 2030. Based on an average Operating Safe Yield of 200,000 acre-feet, San Gabriel District's 2030 Replacement Water obligation is estimated to be about 9,255 acre-feet, as shown on Table 2. Based on a reliable SWP supply of 14,400 acre-feet, San Gabriel District will be able to provide all of the cities' supplemental water needs.

3.6 WATER EXCHANGES [SECTION 10631(d)]

Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

3.6.1 LONG-TERM

San Gabriel District, along with the City of Alhambra, Upper District, MWD, and the Main Basin Watermaster participate in a Cooperative Water Exchange Agreement (CWEA). CWEA reduces a localized condition that exists in the westerly portion of the Main San Gabriel Basin called the "Alhambra Pumping Hole." The Pumping Hole is located in an area of the Basin that typically received insufficient replenishment due to its hydrogeologic characteristics. Seven producers extract water from the Alhambra Pumping Hole, which had resulted in decreasing water level elevation. To mitigate that condition, it is agreed The City of Alhambra, one of the producers, would receive direct delivery of water from MWD service connection USG-5 and, in exchange, would reduce its extractions from the pumping hole about 3,000 acre-feet. (All demand in excess of the 3,000 acre-feet will be satisfied by production from the Main Bain.) A provision of the CWEA also provides a mechanism for MWD to utilize unused capacity in San Gabriel District's Devil Canyon-Azusa Pipeline. CWEA is cooperatively financed by the City of Alhambra, San Gabriel District, Upper District, and Main Basin Watermaster.

San Gabriel District is also active in the Cyclic Storage of water in the Main Basin. San Gabriel District is able to deliver water for groundwater replenishment purposes in advance of a specific requirement for such water. Water delivered to the Main Basin in advance of its requirement is credited to the Cyclic Storage account with Main Basin Watermaster, in-lieu of actual delivery of imported water for that purpose, at the discretion of San Gabriel District. Because water is often stored in Cyclic Storage for many years before being required as replacement water, the Cyclic Storage program may be considered an exchange program in that it takes advantage of surplus water and stores it in the Main Basin for future use.

Additionally, a water exchange agreement was developed with the City of Arcadia, Main Basin Watermaster, and San Gabriel District to reduce the City of Sierra Madre's accumulated over extraction. This agreement consists of a water exchange whereby the City of Arcadia produces water from the Main Basin and sells that water to Sierra Madre. The metered sale is reported by Sierra Madre to the Main Basin Watermaster and also pays appropriate assessments to the Main Basin Watermaster.

In March 1995 the District entered into a water banking agreement with Dudley Ridge Water District. This agreement enables Dudley Ridge Water District to deliver and store up to 20,000 acre-feet in the Main Basin as part of the San Gabriel District's Cyclic Storage Account. In 2002, this agreement was amended to limit the amount of water stored by Dudley Ridge Water District to 12,500 acre-feet. In future years Dudley Ridge Water District will have the ability to exchange water it had previously stored in the Main Basin for a portion of the San Gabriel District's annual water allocation from the SWP.

3.6.2 SHORT-TERM

There are no short-term water exchanges at this time.

Chapter 4

PAST, CURRENT, AND PROJECTED WATER USE [Section 10631(e)]

(1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but no necessarily limited to, all of the following uses:

(A) Single-family residential.
(B) Multifamily.
(C) Commercial.
(D) Industrial.
(E) Institutional and governmental.
(F) Landscape.
(G) Sales to other agencies.
(H) Saline water intrusion barriers, groundwater replenishment, or conjunctive use, or any combination thereof.
(I) Agricultural

(2) The water use projections shall be in the same five-year increments described in subdivision (a)

4.1 BACKGROUND

The Act requires an estimate of past, current and projected water use and, to the extent available, segregates such uses among residential, industrial, commercial and governmental customers. San Gabriel District currently supplies water only for groundwater replenishment to fulfill its Replacement Water obligations, and to a Cyclic Storage account. Segregation of water sales into residential, industrial, commercial, and governmental uses of San Gabriel District water cannot be made. However, records of water deliveries from San Gabriel District member agencies are discussed in each of the member agency's Plans. San Gabriel District's water sales are segregated into Replacement Water deliveries under the Main Basin Judgment and cyclic storage deliveries. It is expected the current types of water sales by San Gabriel District will continue into the foreseeable future. There are no other current or projected types of water uses. However, the quantities of water sales in each category will vary from year to year. In addition, there are no sales to agencies other than the Basin Watermaster described in Chapter 3.2.2.

4.2 PAST AND CURRENT WATER USE

San Gabriel District is a wholesale supplier. It has no Single Family, Multifamily, Commercial, Industrial, Institutional/Governmental, Landscape or other retail customers.

Imported Supplemental Water is delivered by San Gabriel District for only groundwater replenishment through San Gabriel District's transmission pipeline and turnouts. Table 3 presents historical annual quantities of San Gabriel District water, delivered from fiscal year 1974-75 through 2008-09. San Gabriel District delivers State Water Project (SWP) water for groundwater replenishment. All water delivered is purchased from the SWP as managed by the California Department of Water Resources. SWP is the sole source of water for the District.

San Gabriel District normally utilizes its Cyclic Storage account to pre-deliver its Replacement Water Requirements to the Main Basin. Water delivered to the Main Basin and credited to San Gabriel District's Cyclic Storage account is then available to meet San Gabriel District's member agencies' future Replacement Water obligation.

When Replacement Water deliveries are required, that requirement may be made by transfer of water from San Gabriel District's Cyclic Storage account or by direct delivery of imported supplemental water to the Main Basin. Table 4 presents a summary of annual accounting in San Gabriel District's Cyclic Storage Account. Cyclic Storage credits and debits are shown along with the accumulated balance.

4.3 PROJECTED WATER USE

San Gabriel District has developed estimates of its member agencies' projected water use, which were compared to future annual production rights based upon each member agency's share of the Operating Safe Yield and water rights held in other groundwater basins (Raymond Basin). Water use projections to be made for "lower income households" will be determined by San Gabriel District's member agencies based on their retail customers. Where projected production exceeds production rights then a supplemental water requirement is incurred. Such a comparison was made using an Operating Safe Yield of 200,000 acre-feet (historic average) as shown on Table 2. The current and projected supplemental water requirement for San Gabriel District is shown on Table 5.

Chapter 5

DEMAND MANAGEMENT MEASURES [Section 10631(f) and (g)]

(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

(A) Water survey programs for single-family residential and multi-family residential customers.
(B) Residential plumbing retrofit.
(C) System water audits, leak detection, and repair.
(D) Metering with commodity rates for all new connections and retrofit of existing connections.
(E) Large landscape conservation programs and incentives.
(F) High-efficiency washing machine rebate programs.
(G) Public information programs.
(H) School education programs.
(I) Conservation programs for commercial, industrial and institutional accounts.
(J) Wholesale agency programs.
(K) Conservation pricing.
(L) Water conservation coordinator.
(M) Water waste prohibition.
(N) Residential ultra-low-flush toilet replacement programs.

(2) A schedule of implementation for all water demand management measures proposed or described in the plan.

(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or a combination or measures that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

(1) Take into account economic and non-economic factors, including environmental, social, health, customer impact, and technological factors.

(2) Include a cost-benefit analysis, identifying total benefits and total costs.

(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.

(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

5.1 BACKGROUND

San Gabriel District is a wholesale water agency that provides untreated SWP water exclusively for groundwater replenishment and not for direct use. San Gabriel District is not a member of the California Urban Water Conservation Council. Although San Gabriel District supports and encourages its member agencies to implement Demand Management Measures (DMM) to the

extent possible, as a wholesale water provider San Gabriel District has no legal authority to implement most of the DMM. San Gabriel District does assist member agencies in implementing DMM pursuant to Section 10631(f)(1)(J) "Wholesale Agency Programs". Those wholesale programs are described below and summarized on Table 6 shows past and projected assistance from San Gabriel District.

5.1.1 WATER SURVEY PROGRAMS FOR SINGLE-FAMILY AND MULTI-FAMILY RESIDENTIAL CUSTOMERS

Section 10631(f)(1)(A)
Water survey programs for single-family residential and multi family residential customers.

San Gabriel District is a wholesale water supplier and therefore, has no legal authority to, and cannot directly, implement this DMM. San Gabriel District wholesales water for only groundwater replenishment on behalf of retail water suppliers that in turn provide water to retail customers. The following table is the data related to assistance to the retail water suppliers for this DMM.

Actual	2006	2007	2008	2009	2010
Single Family Surveys	0	0	0	0	0
Multi Family Surveys	0	0	0	0	0
Actual Expenditures - $	0	0	0	0	0
Actual Water Savings – AFY	0	0	0	0	0

The tabulation below is the planned assistance to retail water suppliers for this DMM.

Planned	2011	2012	2013	2014	2015
Single Family Surveys	0	0	0	0	0
Multi Family Surveys	0	0	0	0	0
Projected Expenditures - $	0	0	0	0	0
Projected Water Savings - AFY	0	0	0	0	0

San Gabriel District has no legal authority to implement this DMM at the retail level. See discussion in part 5.1 for information regarding the number of member agencies assisted with this program.

The benefits portion of the evaluation considered both economic and non-economic factors. It also evaluated environment, social, and health factors as well as impact to the customer and technological factors.

The agencies to implement this measure or to assume the cost are the City of Azusa, City of Sierra Madre, City of Alhambra, and the City of Monterey Park. The cost of implementing this DMM is borne by the member agencies

5.1.2 RESIDENTIAL PLUMBING RETROFIT

Section 10631(f)(1)(B)
Residential plumbing retrofit.

San Gabriel District is a wholesale water supplier and therefore, has no legal authority to, and cannot directly, implement this DMM. San Gabriel District wholesales water for only groundwater replenishment on behalf of retail water suppliers that in turn provide water to retail customers. San Gabriel District has no data on the age of service accounts from its member agencies. San Gabriel District does not have a breakdown of the member agencies' retail accounts by age. The following tabulation is the data related to assistance to the retail water suppliers for this DMM.

San Gabriel District has an annual budget to purchase water conservation materials such as low flow shower heads, water nozzles for garden hoses, residential water meters for use on showers and hoses, and educational materials for children. These materials are then given to the four cities who distribute them to their customers. The District does not track the installation of the devices nor does it track expenditures for devices separate from its public information efforts.

Actual	2006	2007	2008	2009	2010
Single Family Devices	0	0	0	0	0
Multi Family Devices	0	0	0	0	0
Actual Expenditures - $	*	*	*	*	*
Actual Water Savings - AFY	0	0	0	0	0

* See Section 5.1.7 for water conservation program expenditures which includes water saving devices.

The Table below is the planned assistance to retail water suppliers for this DMM.

Planned	2011	2012	2013	2014	2015
Single Family Devices	0	0	0	0	0
Multi Family Devices	0	0	0	0	0
Projected Expenditures - $	*	*	*	*	*
Projected Water Savings - AFY	0	0	0	0	0

* See Section 5.1.7 for water conservation program expenditures which includes water saving devices.

5.1.3 SYSTEM WATER AUDITS, LEAK DETECTION, AND REPAIR

Section 10631(f)(1)(C)
System water audits, leak detection, and repair.

San Gabriel District operates its Devil Canyon-Azusa Pipeline to deliver untreated SWP water to the Main Basin for groundwater replenishment. San Gabriel District's staff maintains records of discharge from its turnouts in the San Gabriel Valley and compares that data to flow records maintained by DWR at the Devil Canyon Afterbay. Differences between the two flow measurements will cause San Gabriel District staff to investigate and correct the problem.

The following is an accounting of water within the system.

Actual	2006	2007	2008	2009	2010
Percent of Unaccounted Water	0	0	0	0	0
Miles of Mains Surveyed	52	52	52	52	52
Miles of Lines Repaired	0	0	0	0	0
Actual Expenditures - $	0	0	0	0	0
Actual Water Savings - AFY	0	0	0	0	0

Planned	2011	2012	2013	2014	2015
Percent of Unaccounted Water	0	0	0	0	0
Miles of Mains Surveyed	52	52	52	52	52
Miles of Lines Repaired	0	0	0	0	0
Projected Expenditures - $	0	0	0	0	0
Projected Water Savings - AFY	0	0	0	0	0

5.1.4 METERING WITH COMMODITY RATES

Section 10631(f)(1)(D)
Metering with commodity rebates for all new connections and retrofit of existing connections.

San Gabriel District is a wholesale water agency that provides untreated imported water exclusively for groundwater recharge and not directly to any of its member agencies. All water delivered for groundwater recharge is metered and reported to the Main Basin Watermaster. San Gabriel District's current price of untreated imported water is $130 per acre-foot.

Actual	2006	2007	2008	2009	2010
Number of Unmetered Accounts	0	0	0	0	0
Number of Retrofit Meters Installed	0	0	0	0	0
Number of Accounts w/o Commodity Rates	0	0	0	0	0
Actual Expenditures - $	0	0	0	0	0
Actual Water Savings - AFY	0	0	0	0	0

Planned	2011	2012	2013	2014	2015
Number of Unmetered Accounts	0	0	0	0	0
Number of Retrofit Meters Installed	0	0	0	0	0
Number of Accounts w/o Commodity Rates	0	0	0	0	0
Projected Expenditures - $	0	0	0	0	0
Projected Water Savings - AFY	0	0	0	0	0

5.1.5 LARGE LANDSCAPE CONSERVATION PROGRAMS AND INCENTIVES

Section 10631(f)(1)(E)
Large landscape conservation programs and incentives.

In the fiscal year 2009-2010 San Gabriel District started a pilot program with grants to its member agencies to run pilot projects for large landscape conservation. This program provided grants to member agencies up to $50,000 per project. The member agencies are then to report back to the District the actual water savings as well as the number of budgets developed for large landscape customers, the number of surveys completed, and the number of follow-up visits. San Gabriel District is a wholesale supplier and does not have any accounts that are landscape or commercial/industrial/ institutional.

Actual	2006	2007	2008	2009	2010
Number of Budgets Developed	0	0	0	0	0
Number of Surveys Completed	0	0	0	0	0
Number of Follow-up Visits	0	0	0	0	0
Actual Expenditures - $	0	0	0	0	$383,000
Actual Water Savings – AFY	0	0	0	0	TBD

TBD – To Be Determined

Future implementation of this program will be based on results of the pilot project.

The program will compare water use prior to the program with water use after the program at the specific pilot locations where the program is implemented. A cost analysis will then be performed using the projected water savings and project known fixed costs of the program.

5.1.6 HIGH-EFFICIENCY WASHING MACHINE REBATE PROGRAMS

Section 10631(f)(1)(F)
High-efficiency washing machine rebate programs.

San Gabriel District does not currently have a rebate program of high-efficiency washing machines. San Gabriel District is currently looking into a washer rebate program with possible implementation in fiscal year 2011-2012.

The District has not implemented assistance to member agencies. The only relevant agencies to implement this measure are the City of Azusa, City of Sierra Madre, City of Alhambra, and the City of Monterey Park. The cost of implementing this BMP is ultimately borne by the member agencies.

5.1.7 PUBLIC INFORMATION PROGRAMS

Section 10631(f)(1)(G)
Public information programs.

In 2003 San Gabriel District started its public information program and has expanded it in subsequent years. It currently has an ongoing public information program regarding water conservation and drought. San Gabriel District has held public workshops to address its Public

Information/School Education programs. In addition the District has a newsletter, a video presentation on water conservation for use on local cable networks, a map of San Gabriel District's service area, presentation at the Los Angeles County Fair, among others. A copy of the District's web site highlighting it Public Information/School Education program is included in Appendix G. The District mascot H2Owl teaches wise water use to younger members of the community through special events. The District provides information brochures to member agencies which promotes and explains water conservation and can be used as bill inserts. District officers and board members are available for speaking engagements regarding water conservation. In addition, the District web site has video links concerning water conservation. The District retains a private consultant to carry out components of the public information program. San Gabriel District does not track spending on individual items of their public information program.

Actual	2006	2007	2008	2009	2010
A. Paid Advertising	--	--	--	--	--
B. Public Service Announcement					
C. Bill Inserts / Newsletters / Brochures	--	--	--	--	--
D. Bill Showing Water Usage in Comparison to Previous Year's Usage	--	--	--	--	--
E. Demonstration Gardens	--	--	--	--	--
F. Special Events, Media Events	--	--	--	--	--
G. Speaker's Bureau	--	--	--	--	--
H. Program to Coordinate with Other Government Agencies, Industry and Public Interest Groups and Media	--	--	--	--	--
Actual Expenditures - $	23,934	34,461	44,305	41,201	62,000*

* Value estimate because year is not complete.

The following is a list of proposed expenditures for the next 5 years.

Planned	2011	2012	2013	2014	2015
A. Paid Advertising	--	--	--	--	--
B. Public Service Announcement	--	--	--	--	--
C. Bill Inserts / Newsletters / Brochures	--	--	--	--	--
D. Bill Showing Water Usage in Comparison to Previous Year's Usage	--	--	--	--	--
E. Demonstration Gardens	--	--	--	--	--
F. Special Events, Media Events	--	--	--	--	--
G. Speaker's Bureau	--	--	--	--	--
H. Program to Coordinate with Other Government Agencies, Industry and Public Interest Groups and Media	--	--	--	--	--
Projected Expenditures - $	70,000	75,000	80,000	85,000	90,000

5.1.8 SCHOOL EDUCATION PROGRAMS

Section 10631(f(1)(H))
School education programs.

In 2003 San Gabriel District started its school education program and has expanded it in subsequent years. It currently has an ongoing school education program regarding water conservation and drought. The program currently serves the schools in each of its four member agencies geographic area. The District retains a private consultant to carry out the school education program which consists of information throughout the District's web site as well as local outreach programs. The District mascot H2Owl teaches wise water use to younger members of the community through school visits throughout the year as well as special emphasis during Earth Day. The District provides information that meets state education framework requirements. San Gabriel District does not track spending on individual items of their school education program.

		No. of class presentations				
Actual	No. of Classes	2006	2007	2008	2009	2010
Grades K-3rd						
Grades 4th-6th						
Grades 7th-8th						
High School						
Actual Expenditures - $		23,934	34,461	44,305	41,201	62,000*

The following table on the future program

		No. of class presentations				
Actual	No. of Classes	2011	2012	2013	2014	2015
Grades K-3rd						
Grades 4th-6th						
Grades 7th-8th						
High School						
Projected Expenditures - $		70,000	75,000	80,000	85,000	90,000

5.1.9 CONSERVATION PROGRAMS FOR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL ACCOUNTS

Section 10631(f)(1)(I)
Conservation programs for commercial, industrial and institutional accounts.

San Gabriel District is a wholesale water supplier and therefore, has no legal authority to and cannot directly implement this DMM. San Gabriel District wholesales water to retail water suppliers that in turn provide water to retail customers. The following table is the data related to assistance to the retail water suppliers for this DMM.

Actual	2006	2007	2008	2009	2010
Number of Surveys Completed	0	0	0	0	0
Were Incentives Provided	no	no	no	no	no
Number of Follow-Up Visits	0	0	0	0	0
Actual Expenditures - $	0	0	0	0	0
Actual Water Savings - AFY	0	0	0	0	0

The table below is the planned assistance to retail water suppliers for this DMM.

Planned	2011	2012	2013	2014	2015
Number of Surveys Completed	0	0	0	0	0
Were Incentives Provided	no	no	no	no	no
Number of Follow-up Visits	0	0	0	0	0
Actual Expenditures - $					
Actual Water Savings - AFY	0	0	0	0	0

San Gabriel District has no legal authority to implement this DMM at the retail level. See discussion in part 5.1 for information regarding the number of member agencies assisted with this program.

San Gabriel District has not implemented assistance to member agencies. The agencies to implement this measure are the City of Azusa, City of Sierra Madre, City of Alhambra, and the City of Monterey Park. The cost of implementing this BMP is ultimately borne by the member agencies since all costs are passed on to the respective purchaser of whole sale water.

5.1.10 CONSERVATION PROGRAMS FOR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL ACCOUNTS – TOILET REPLACEMENT

Section 10631(f)(1)(I)
Conservation programs for commercial, industrial and institutional accounts.

San Gabriel District is a wholesale water supplier and therefore, has no legal authority to and cannot directly implement this DMM. San Gabriel District has a program to encourage toilet replacement within its service area. San Gabriel District does not track toilet replacement of commercial, industrial, and institutional (CII) separately from residential. See data related to toilet replacement under item 5.1.15. San Gabriel District wholesales water to retail water suppliers that in turn provide water to retail customers. The following table is the data related to assistance to the retail water suppliers for this DMM.

Actual	2006	2007	2008	2009	2010
Number of Commercial Replacements	*	*	*	*	*
Number of Industrial Replacements	*	*	*	*	*
Number of Institutional Replacements	*	*	*	*	*
Actual Expenditures - $	*	*	*	*	*
Actual Water Savings - AFY	*	*	*	*	*

*See Section 5.1.15 for toilet replacement as the District does not track replacements of CII separate from residential.

The table below is the planned assistance to retail water suppliers for this DMM.

Planned	2011	2012	2013	2014	2015
Number of Commercial Replacements	*	*	*	*	*
Number of Industrial Replacements	*	*	*	*	*
Number of Institutional Replacements	*	*	*	*	*
Actual Expenditures - $	*	*	*	*	*
Actual Water Savings - AFY	*	*	*	*	*

*See Section 5.1.15 for toilet replacement as the District does not track replacements of CII separate from residential.

San Gabriel District estimates the effectiveness of this program by the number of toilets replaced. Additional discussion regarding effectiveness is in section 5.1.15.

Water conservation is estimated based upon average savings per toilet replaced and is included in the residential replacement with is discussed in section 5.1.15.

5.1.11 CONSERVATION PRICING

Section 10631(f)(1)(K)
Conservation pricing.

San Gabriel District has no legal authority to and cannot directly implement this DMM. The water the District supplies to its member agencies is used for groundwater replenishment and as such there is often significant lag between water use and water delivery.

5.1.12 WATER CONSERVATION COORDINATOR

Section 10631(f)(1)(L)

Water conservation coordinator.

San Gabriel District's General Manager, along with support staff, functions as a water conservation coordinator. Activities include oversight of public information programs, school education programs and an ultra-low-flush toilet replacement program. In addition, the District contracts with a private consultant to carry our various water conservation activities. This is primarily due to the size of the District and the available budget for water conservation activities. The reported expenditures are covered in other activities related to water conservation and so to avoid duplicate reporting are not identified in the following table.

Actual	2006	2007	2008	2009	2010
Number of Full-time Staff		0.1	0.1	0.1	0.1
Number of Full/Part-time Staff		0.1	0.1	0.1	0.1
Actual Expenditures - $		0	0	0	0

The following table reflects the <u>future</u> program.

Planned	2011	2012	2013	2014	2015
Number of full-time Staff	0.1	0.1	0.1	0.1	0.1
Number of Full/Part-time Staff	0.1	0.1	0.1	0.1	0.1
Projected Expenditures - $	0	0	0	0	0

5.1.13 WATER WASTE PROHIBITION

Section 10631(f)(1)(M)
Water waste prohibition.

San Gabriel District is a wholesale water supplier and has no enforcement power within its boundaries. SGVMWED cannot implement this DMM. However, in 1991, San Gabriel District's Board of Directors adopted Resolution No. 3-91-421, which is included as Appendix H. Resolution No. 3-91-421 encourages water conservation by restricting the use of water to wash down driveways, sidewalks, etc; using a handheld hose with positive shut-off nozzle when conducting exterior watering; not watering in the heat of the day; and fixing water leaks.

Actual	2006	2007	2008	2009	2010
Waste Ordinance in Effect	Yes	Yes	Yes	Yes	Yes
Number of On-site Visits	0	0	0	0	0
Water Softener Ordinance	No	No	No	No	No
Actual Expenditures - $	0	0	0	0	0

The following table reflects the future implementation of this program.

Planned	2011	2012	2013	2014	2015
Waste Ordinance in Effect	Yes	Yes	Yes	Yes	Yes
Number of On-site Visits	0	0	0	0	0
Water Softener Ordinance	No	No	No	No	No
Projected Expenditures - $	0	0	0	0	0

5.1.14 RESIDENTIAL ULTRA-LOW-FLUSH TOILET REPLACEMENT PROGRAMS

Section 10631(f)(1)(N)

Residential ultra-low-flush toilet replacement programs.

San Gabriel District has entered into an agreement to distribute Ultra Low Flush toilets (ULFT) each year to retail customers within its member agencies service area starting in 2000. The program does not perform direct installations but offers free toilets. The District provides grants to service organizations within the member agencies that assist them in operating the give-away program. This program benefits community based organizations (CBOs) such as youth groups including Sierra Madre Youth Activities, Gladstone High School, Azusa High School, and the athletic teams from Mark Keppel High School and Alhambra High School. San Gabriel District's records indicate that approximately 12,000 ULFTs have been distributed for calendar 2000 through 2010, inclusive. At an estimated savings of about 9,000 gallons per toilet per year the water savings amounted 108,000,000 gallons (12,000 toilets X 9,000 gallons per toilet per year) or approximately 330 acre-ft during 2010. Averaged over the past 10 years since the program began, results in about 1,600 acre-feet for all toilets previously installed. Consequently, because most member agencies require annual delivery of untreated imported water due to overproduction, this savings reduces the imported water requirement by about 330 acre-feet with an economic savings of about $43,000 per year. See the following table for an annual breakdown of the program. The District does not have access to the number of Single Family or Multi-family accounts that are pre 1992.

	Single-Family				
Actual	2006	2007	2008	2009	2010
Number of ULF Rebates	0	0	0	0	0
Number of ULF Direct Installs	0	0	0	0	0
Number of ULF CBO Installs	1,410	1,376	1,234	1,202	1,200
Actual Expenditures - $	20,910	19,905	18,570	$17,460	18,000
Actual Water Savings – AFY	38.90	38.01	34.08	33.20	33.14

Number value estimated since year is not complete

The following table reflects the projected program.

	Single-Family				
Planned	2011	2012	2013	2014	2015
Number of ULF Rebates	0	0	0	0	0
Number of ULF Direct Installs	0	0	0	0	0
Number of ULF CBO Installs	1,200	1,200	1,200	1,200	1,200
Projected Expenditures - $	18,000	18,000	18,000	18,000	18,000
Projected Water Savings - AFY	33.00	33.00	33.00	33.00	33.00

Due to the nature of the give away program it is anticipated that the majority of the toilets were installed in single family residences. There was no separate tracking of toilets installed in multi-family properties.

	Multi-Family				
Actual	2006	2007	2008	2009	2010
Number of ULF Rebates	0	0	0	0	0
Number of ULF Direct Installs	0	0	0	0	0
Number of ULF CBO Installs	0	0	0	0	0
Actual Expenditures - $	0	0	0	0	0
Actual Water Savings - AFY	0	0	0	0	0

The following table reflects the future program for Multi-family installations.

	Multi-Family				
Planned	2011	2012	2013	2014	2015
Number of ULF Rebates	0	0	0	0	0
Number of ULF Direct Installs	0	0	0	0	0
Number of ULF CBO Installs	0	0	0	0	0
Projected Expenditures - $	0	0	0	0	0
Projected Water Savings - AFY	0	0	0	0	0

There is not currently a retrofit on resale ordinance in effect within the District service area. Ultimately this program will have diminishing returns as the number pre 1992 of toilets will decrease as well as the number of people willing to replace those toilets. Additional data is needed to evaluate the point in time where CBO programs will cease to be effective.

5.2 PROPOSED CONSERVATION MEASURES AND IMPLEMENTATION SCHEDULE

San Gabriel District has adopted a resolution to encourage additional water conservation measures (Appendix H). San Gabriel District's resolution recommended each of the cities adopt the water conservation resolution which included the following areas; irrigation, exterior washing practices, and ornamental or recreational water uses. San Gabriel District will also continue to participate in the management of the Main Basin through its role in the Main Basin Watermaster. Main Basin management will continue to include all practicable water conservation measures. A brief review of these activities that promote water conservation follows:

1. Establishment of annual Main Basin Operating Safe Yield.
2. Assessments on excess production of water to purchase imported water for replenishment.
3. Cyclic storage agreements to store available imported water.
4. Testing of flow meters at water production facilities at least once every two years.
5. Coordinating the delivery of usable water and make-up water to the Lower Area.
6. Working with LACDPW to maximize utilization of water conservation facilities.
7. Continued participation in the Ground Water Replenishment Coordinating Group.
8. Continued participation in WQA.

9. Continued participation in the GRIP Project with the option to participate in its construction.

5.3 OTHER CONSERVATION MEASURES

In 2005, San Gabriel District provided a $62,000 grant to the City of Azusa for installation of a water recirculation system for the City's newly constructed splash park. It is estimated that the water recirculation system will conserve about 16.5 acre-feet of water each year.

In 2010, San Gabriel District provided $383,000 in grants for various pilot projects to reduce water consumption. These projects included landscaping demonstration projects that show landscape alternatives for lower water consumption. In addition, the District funded a pilot project that installs sophisticated water meters that provide detailed accounting of water which can be used to isolate and identify water leaks which reduces overall losses in the water system.

Chapter 6

WATER SUPPLY OPPORTUNITIES [Section 10631 (h)]

(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water uses as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of water supply available to the urban water supplier in average, single dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

6.1 BACKGROUND

San Gabriel District is a wholesale agency that provides untreated imported water for groundwater basin replenishment. San Gabriel District participates in a variety of programs intended to enhance regional water supply as described below.

6.2 STATE WATER PROJECT

San Gabriel District's only source of supply is untreated imported water from the SWP. Potential SWP water supply projects are identified by the Department of Water Resources in its 2009 Delivery Reliability Report, which is incorporated by reference, and excerpts are included in Appendix M.

6.3 SAN GABRIEL DISTRICT/LOCAL PROGRAMS

6.3.1 MAIN SAN GABRIEL BASIN MANAGEMENT PROGRAMS

Management practices in the Main Basin result in the conservation of water supplies. The Main Basin Judgment established the individual rights of water producers and requires the Operating Safe Yield of the Main Basin be reviewed and established each year and Replacement Water be provided for overproduction. The Main Basin Judgment also permits Cyclic Storage agreements to be entered with the Main Basin Watermaster.

The Operating Safe Yield is established by Watermaster each year after reviewing a number of factors. Among the most important factors considered are the current groundwater and

natural water supply conditions. Replacement Water is required to be delivered to the Main Basin in an amount equal to the overproduction from the Main Basin. Overproduction is that quantity of water which producers extract from the Main Basin in excess of their net production rights for a particular year.

The concept of the Operating Safe Yield and replacement of overproduction conserves water supplies. Water producers within the Main Basin are cognizant of their production rights and generally try to minimize Replacement Water assessments which otherwise result in higher costs to the producer. It creates a consciousness that water conservation measures should be aggressively pursued at the retail water delivery level.

San Gabriel District has a Cyclic Storage agreement to store up to 40,000 acre-feet with the Main Basin Watermaster whereby ownership of the water remains in an account until San Gabriel District incurs a Replacement Water obligation. Water delivered into Cyclic Storage may be used only for Replacement Water purposes in accordance with the terms of the Main Basin Judgment. The cyclic storage of water in the Main Basin conserves water supplies because water is delivered into cyclic storage at times when surplus SWP water or surplus delivery capacity is available. The storage of such surplus SWP water for later use provides efficient utilization of available water supplies. Utilization of water from the Cyclic Storage account during water shortage years reduces the demand for delivery of water from the SWP.

6.3.2 IMPROVEMENTS AND MODIFICATION TO CONSERVATION FACILITIES

Currently, San Gabriel District does not own or operate any groundwater replenishment facilities. However, San Gabriel District has completed two projects to its Devil Canyon-Azusa Pipeline. In 1995, San Gabriel District completed an extension to its existing pipeline and construction of a 55 cfs turnout to the LACDPW San Gabriel Canyon Spreading Grounds. In 1998, San Gabriel District modified the Big Dalton Pressure Reducing Station to enable it to discharge 6 cfs to LACDPW Citrus Spreading Grounds. In 1998, San Gabriel District explored the possibility of purchasing an abandoned gravel mining pit for use as a groundwater replenishment facility. However, due to side slope stability concerns, the project was found to be infeasible. During 2005, San Gabriel District added a 20 cfs turnout to the Live Oak Spreading Grounds. San Gabriel District also contributed to a project with LACDPW for an interconnection between Ben Lomond Spreading Grounds and Citrus

Spreading Grounds. This interconnection allows for greater flexibility for deliveries and replenishment of imported water for groundwater replenishment. San Gabriel District will continue to explore opportunities to expand groundwater replenishment capabilities or to modify its own delivery system, which will better utilize existing facilities.

6.3.3 COOPERATIVE COMMITTEES

San Gabriel District participates in an informal committee organized to coordinate groundwater replenishment activities, called the Groundwater Replenishment Coordinating Group. Participants in the group include; San Gabriel District, Main Basin Watermaster, River Watermaster, MWD, Upper District, TVMWD, Water Replenishment District of Southern California, LACDPW, L.A. County Sanitation District, and others. The purpose of the group is to ensure all parties are informed of current and future water supply and water conservation activities. San Gabriel District's participation in the group serves to effectively manage the water supplies.

6.3.4 POTENTIAL EFFECTIVE REPLENISHMENT CAPABILITIES STUDY

In a report entitled "Potential Effective Replenishment Capabilities (PERC)," dated June 17, 1992, the Upper District identified the replenishment capabilities of existing facilities within the Main Basin and the potential for enhancement of replenishment. That report identified sand and gravel pits as viable locations of future replenishment facilities, although no new facilities have been developed.

Subsequently, several water agencies, including San Gabriel District, sponsored a second study to coordinate future demand for supplemental water with available replenishment and to identify actions that could be taken to ensure adequate replenishment capability. The "PERC II Study," dated March 1995 identified replenishment capabilities of existing spreading facilities and examined the availability of those facilities for supplemental water after local water had been replenished. The study also considered the impacts of the Main Basin Judgment, particularly supplemental water replenishment limitations as a result of the groundwater level at the Baldwin Park Key Well exceeding 250 feet. San Gabriel District will continue to work with other water agencies to coordinate supplemental water replenishment schedules and development of new replenishment facilities.

6.3.5 SUPPLEMENTAL SUPPLY TO SIERRA MADRE

The City of Sierra Madre is one of San Gabriel District's member agencies and produces water from the Santa Anita subarea of the Raymond Basin. This portion of Raymond Basin historically has experienced significant changes in water levels. Although Sierra Madre has not (and is not expected to) experience water supply issues (it has existing interconnections and is entitled to produce an unlimited amount from the Main Basin), San Gabriel District is investigating the ability of extending its pipeline into Raymond Basin. In doing so, San Gabriel District will have the ability to deliver untreated imported water to replenishment Santa Anita subarea of Raymond Basin and Sierra Madre may not need to rely on the Main Basin for supply. No time table has been established. For the purpose of this report, it is assumed Sierra Madre's ultimate annual demand of 2,800 acre-feet can be provided. In addition the District has provided a $95,000 grant to the City for a Raymond Basin Water Supply Study.

6.3.6 ALTERNATIVE SUPPLY TO ALHAMBRA

The City of Alhambra is a member of San Gabriel District and produces water from the southwesterly portion of the Main Basin commonly referred to as the "Alhambra Pumping Hole". The City of Alhambra, along with six other producers, historically pumped water from this area in excess of natural replenishment abilities, creating a pumping depression. Although this pumping depression does not adversely impact water supplies, it does result in greater pumping costs. San Gabriel District is working with other agencies in the San Gabriel Valley to investigate alternatives to shift pumping from the Alhambra Pumping Hole to other portions of the Main Basin. These alternatives will involve decreasing reliance on treated imported water.

6.4 USE OF DESALINATED WATER [SECTION 10631 (i)]

Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

San Gabriel District's member agencies produce groundwater primarily from the Main Basin. Production in excess of water rights requires San Gabriel District to provide untreated imported water to replenish the groundwater basin. The Main Basin Watermaster prepares an annual "Area Agency Water Quality Monitoring Report." The 2008-09 annual report indicates the Total Dissolved Solids (TDS) or salt concentration in groundwater wells within San Gabriel District's member agency's wells range from 190 milligrams per liter (mg/l) to 570 mg/l. The California Department of Health Services (CDHS) recommended level is 500 mg/l and water can be provided for long-term domestic use with TDS concentrations of up to 1,000 mg/l. Due to the high quality (low TDS concentration) of the groundwater, San Gabriel District and its member agencies do not need to investigate the use of desalination to develop or reestablish a new long-term supply.

6.5 WATER USE PROJECTIONS

(k) Urban water suppliers that rely upon a wholesale agency for a source of water, shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

San Gabriel District has prepared this UWMP pursuant to the UWMP Act and has included a discussion of the existing and planned sources of water, including its involvement in groundwater basin management. A copy of this UWMP was provided to our member agencies. In addition, the Department of Water Resources has provided water use projections of SWP water, which are included in Appendix M.

Chapter 7

URBAN WATER SHORTAGE CONTINGENCY PLAN [SECTION 10632]

The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier:

(a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.

(b) Actions to be undertaken by the urban water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

(d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

(e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

(f) Penalties or charges for excessive use, where applicable.

(g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

(h) A draft water shortage contingency resolution or ordinance.

(i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

7.1 INTRODUCTION

The conservation and efficient use of urban water supplies can best be accomplished at local levels. As discussed in Chapter 2 San Gabriel District provides untreated SWP water only for groundwater replenishment purposes, and does not provide water for direct use. This chapter addresses actions that San Gabriel District would take in response to a reduction of supply from the SWP.

7.2 STAGES OF ACTION TO BE UNDERTAKEN BY THE URBAN WATER SUPPLIER IN RESPONSE TO WATER SUPPLY SHORTAGES, INCLUDING UP TO A 50 PERCENT REDUCTION IN WATER SUPPLY [SECTION 10632 (a)]

The Main Basin Watermaster typically requests San Gabriel District to deliver supplemental imported water to replenish the Main Basin within one year of San Gabriel District's

member agencies incurring a Replacement Water assessment. Such deliveries could be made as surface flow, deducted from San Gabriel District's Cyclic Storage account, or deferred to the future at such time sufficient water is available.

Due to the significant amount of groundwater in storage (as noted in Section 3.3.3), even after multiple dry years, Main Basin Watermaster can exercise its discretion to grant San Gabriel District an extension to deliver Supplemental Water over more than a one-year period. San Gabriel District stages of action consist of storing water in its cyclic storage account with the Main Basin Watermaster. San Gabriel District would also work with its member agencies to inform retail water users of the need to expand water conservation measures. A fifty percent allocation of San Gabriel District's SWP entitlement would yield 14,400 acre-feet. This amount of water, plus the water in San Gabriel District's Cyclic Storage should be sufficient to meet San Gabriel District's future needs during a single and multiple (three-year) year reduction.

7.3 AN ESTIMATE OF THE MINIMUM WATER SUPPLY AVAILABLE DURING EACH OF THE NEXT THREE WATER YEARS BASED ON THE DRIEST THREE-YEAR HISTORIC SEQUENCE OF THE AGENCY'S WATER SUPPLY [SECTION 10632 (b)]

San Gabriel District's sole source of water supply is the SWP. As a contractor with SWP, San Gabriel District is entitled to 28,800 acre-feet per year. Based upon the current DWR allocation policy and worst case supply conditions, which occurred in 1977, San Gabriel District would be allotted 11 percent of its entitlement (Table 6.13 of 2009 SWP Reliability Report). This would provide San Gabriel District 3,170 acre-feet annually, or a total of 9,500 acre-feet over a three-year period. San Gabriel District had 28,700 acre-feet in its Cyclic Storage account as of December 31, 2009, for a total of 38,200 acre-feet (3,170 (3) + 28,700) available to satisfy the current annual Supplemental Water demand of 6,700 acre-feet, or about 20,100 over three years. As noted in Section 7.2 San Gabriel District is not required to deliver Supplemental Water for groundwater replenishment in the following year. Consequently, the potential accumulated deficit may be delivered in subsequent years.

7.4 ACTIONS TO BE UNDERTAKEN BY THE URBAN WATER SUPPLIER TO PREPARE FOR, AND IMPLEMENT DURING, A CATASTROPHIC INTERRUPTION OF WATER SUPPLIES [SECTION 10632 (c)]

San Gabriel District does not supply water for retail use and Main Basin Management does not require delivery of supplemental water in subsequent years. Consequently, interruption of

supply from SWP would not have adverse effects upon San Gabriel District or the Main Basin. San Gabriel District is not required to deliver its Supplemental Water requirement when it is incurred. If water is not available to San Gabriel District at the time when the Supplemental Water is requested by Main Basin Watermaster, it can be delivered when it becomes available and/or can be deducted from San Gabriel District's Cyclic Storage account.

7.5 MANDATORY PROVISIONS TO REDUCE WATER USE [SECTION 10632 (d)]

Although this section does not apply to San Gabriel District because it does not provide water for direct use, San Gabriel District adopted Resolution 3-91-421 (see Appendix H), which encourages water conservation and recommends minimum restrictions be placed on water use. In addition, San Gabriel District's member agencies implement additional water conservation measures, as described in those agency's UWMPs.

7.6 CONSUMPTION LIMITS IN THE MOST RESTRICTIVE STAGES [SECTION 10632 (e)]

San Gabriel District is a wholesale water agency that provides untreated imported water exclusively for groundwater replenishment. Consequently, San Gabriel District is not in a position to implement/enforce consumption reduction methods at the retail level. San Gabriel District has passed Resolution 3-91-421 (see Appendix H) encouraging water use restrictions and sponsors water conservation programs described in Chapter 5. To the extent these programs enable our member agencies to reduce retail usage, the demand from San Gabriel District on SWP water is also reduced.

7.7 PENALTIES OR CHARGES FOR EXCESSIVE USE [SECTION 10632 (f)]

San Gabriel District is a wholesale water agency that provides untreated imported water exclusively for groundwater replenishment. San Gabriel District has passed Resolution 3-91-421 (see Appendix H) encouraging water use restrictions. However, San Gabriel District is not in a position to control retail water use. San Gabriel District has not developed penalties or charges and has left implementation penalties or charges for excessive retail use to our member agencies.

7.8 IMPACTS TO REVENUE AND EXPENDITURES [SECTION 10632 (g)]

San Gabriel District is a wholesale water agency that provides untreated imported water for groundwater replenishment. San Gabriel District is invoiced for fixed and variable costs associated with the SWP. The fixed expenditures of San Gabriel District's operations, administration and SWP repayment are funded through fixed income from property taxes, including repayment of bonded indebtedness. The cost of imported water for groundwater replenishment is based on the quantity delivered and that cost is passed on to its member agencies. Consequently, a reduction of revenue will be correspondingly matched by a reduction in expenditures and will not impact the ability of San Gabriel District to conduct business.

7.9 A DRAFT WATER SHORTAGE CONTINGENCY RESOLUTION OR ORDINANCE [SECTION 10632 (h)]

In 1991 the San Gabriel District adopted a resolution to encourage additional water conservation measures (Appendix H). This resolution was a result of a five-year drought, which affected most of California. A similar resolution will be adopted in the future as conditions warrant.

7.10 MECHANISM TO DETERMINE REDUCTION IN WATER USE [SECTION 10632 (i)]

San Gabriel District is a wholesale water agency that provides untreated imported water for groundwater replenishment only. As such, San Gabriel District cannot impact or directly quantify actual reductions in retail water use. However, San Gabriel District maintains records of our member agency's total water use and can develop trends to assist with determination of actual reductions. These trends are also impacted by seasonal precipitation and population growth.

Chapter 8

RECYCLED WATER [Section 10633]

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:

- *(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.*
- *(b) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.*
- *(c) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater replenishment, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.*
- *(d) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.*
- *(e) A description of actions, including financial incentive, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.*
- *(f) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.*

8.1 BACKGROUND

Reclamation of wastewater in the Main Basin has been extensively reviewed in both local and regional studies. In 1976 San Gabriel District and Upper District completed a study entitled "Potential Use of Reclaimed Water for Ground-Water Replenishment in the Main San Gabriel Basin." This study was updated at the request of the Main Basin Watermaster in 1980 and again in 1987. This study along with others concluded water reuse in the Main Basin could be feasible.

8.2 WASTEWATER COLLECTION AND TREATMENT SYSTEMS [SECTION 10633(a)]

Los Angeles County Sanitation District (CSD) has two reclamation plants, which can be utilized by the Main Basin. The Whittier Narrows Water Reclamation Plant (WNWRP), which began operation in 1962, currently has a capacity of 15 million gallons per day (MGD) and provides coagulated, filtered, and disinfected tertiary treatment. The San Jose Creek Water Reclamation Plant (SJCWRP), which began operation in 1971, currently has a treatment capacity of about 100 MGD and provides coagulated, filtered, and disinfected tertiary effluent. According to records provided by

the CSD approximately two thirds of the combined effluent for the WNWRP and the SJCWRP is reused as recycled water. The balance of wastewater effluent currently is discharged to the San Gabriel River and eventually flows to the ocean. As stated earlier, recycled water used by the Lower Area for groundwater replenishment may be used to fulfill a portion of the Upper Area's Make-up Water obligation to the Lower Area under the terms of the Long Beach Judgement.

In 1984, the CSD released a Health Effects Study on the proposed use of recycled water for groundwater replenishment. That report recommended that existing quantities of recycled water allowed for groundwater replenishment be increased. As a result, increased uses of recycled water from the SJCWRP for groundwater replenishment are now being considered.

8.3 DESCRIPTION OF POTENTIAL USES AND PROJECTED USES [SECTION 10633 (b), (c), and (d)]

8.3.1 GROUNDWATER REPLENISHMENT

The Main Basin Judgment originally did not allow the use recycled water for groundwater replenishment without Court approval, but did permit the Main Basin Watermaster to study the feasibility of using such water. In April 1991, an amendment to the Main Basin Judgment was passed allowing a maximum of 30,000 acre-feet per year of recycled water, for replenishment, Replacement Water, and Cyclic Storage purposes in the Main Basin. Subsequently, in the early 1990s, Upper District and San Gabriel District, in cooperation with the Main Basin Watermaster, proposed to implement a water recycling/groundwater replenishment program referred to as the San Gabriel Valley Recycled Water Demonstration Project (the Demonstration Project). The Demonstration Project proposed to replenishment up to 10,000 acre-feet per year of tertiary treated recycled water in the Main San Gabriel Basin using the San Gabriel River as the point of replenishment.

San Gabriel District, in conjunction with Upper District, is developing the "Groundwater Reliability Improvement Plan" (GRIP) Project. San Gabriel District will receive 20 percent of the yield of the GRIP Project and Upper District will receive the remaining 80 percent. Phase I of the GRIP Project will have a yield of about 9,000 acre-feet (about 1,800 acre-feet for San Gabriel District), while the ultimate yield will be for 25,000 acre-feet (about 5,000 acre-feet for San Gabriel District). The Project will use tertiary treated water for SJCWRP and provide advanced treatment (reverse osmosis,

microfiltration and ultraviolet light) to make the recycled water more suitable for groundwater replenishment activities. The water will be delivered in a dedicated 42-inch transmission pipeline along the easterly side of the San Gabriel River from SJCWRP to the vicinity of the Santa Fe Dam, a distance of about seven miles. Plate 6 shows the proposed pipeline alignment and replenishment area.

8.3.2 POTENTIAL DIRECT USE

During calendar year 1994 San Gabriel District co-sponsored a study to determine potential direct users of recycled water. In October 1994, a draft study entitled “Direct Reuse Study” was released that identified 612 potential users in the Main Basin. At the time the draft study noted although there were over 600 potential recycled water users in the Main Basin, delivering water to many of these users would be cost prohibitive because of their distance from the reclamation plants and the relatively low quantity of recycled water use. The study concluded the most economical use of recycled water would be to provide water to several large users located in close proximity to the Demonstration Project water transmission main.

During calendar year 2005, San Gabriel District entered into a Memorandum of Understanding (MOU) with the Upper District and Central Municipal to identify the potential to expand use of recycled water. A copy of that MOU is included as Appendix J. The Cities of Alhambra and Monterey Park will be the only two San Gabriel District member agencies that may benefit from this particular study. Subsequently, a report entitled “Recycled Water Master Plan Update,” dated October 2007, was developed. That report identified potential recycled water uses. A summary of potential recycled water uses in the four cities within San Gabriel District is shown on Table 7.

8.4 ACTIONS TO ENCOURAGE USE OF RECYLCED WATER [SECTION 10633 (e)]

San Gabriel District is a wholesale water agency and has entered into agreements with Upper District and Central Municipal to develop recycled water projects that will enable San Gabriel District’s member agencies to have access to recycled water. Because none of these projects have been constructed, it is premature to quantify financial incentives.

8.5 OPTIMIZATION OF RECYLCED WATER [SECTION 10633 (f)]

San Gabriel District is a wholesale agency and does not have retail customers. As described above, San Gabriel District is cooperating on a variety of projects that may facilitate recycled water use for its member agencies. San Gabriel District is participating in the GRIP Project that will provide reliability for groundwater replenishment to supplement untreated imported water deliveries. Upon completion of the current investigations, a determination will be made by the participants on the merits to proceed with the proposed GRIP Project.

Chapter 9

GROUNDWATER QUALITY [Section 10634]

10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

9.1 BACKGROUND

San Gabriel District is a wholesale water agency that currently provides untreated imported SWP water exclusively for groundwater recharge. The SWP water meets all state and federal standards for use for groundwater recharge. San Gabriel District is dependent on the State of California DPW to continue to provide untreated imported water that will be appropriate for groundwater recharge.

9.2 STATE WATER PROJECT

San Gabriel District delivers untreated imported water exclusively for groundwater replenishment and obtains all of its imported water supply from the SWP. The water quality of SWP water, delivered over the next 20 years, will meet water quality standards for groundwater recharge.

9.3 GROUNDWATER QUALITY

Groundwater quality of the Main Basin has been monitored for many years. In December of 1979, VOC contaminants were found in the Main Basin. This resulted in intensive efforts being directed toward groundwater quality monitoring and development of plans to clean up the contamination.

San Gabriel District, Upper District, Main Basin Watermaster, and San Gabriel Valley Water Association adopted a Joint Resolution regarding groundwater quality in the San Gabriel Valley, in February 1989. Under this resolution, the adopting entities affirmed their commitment to participate in a coordinated federal, state, and local response to contamination of groundwater supplies within the Main Basin for both the purpose of preventing additional contamination and the purpose of cleaning up and limiting the spread of existing contamination. Each of the adopting

entities proclaimed its agreement and intent to diligently pursue the principles set forth in the Joint Resolution to control groundwater contamination within the Main Basin.

Subsequently, San Gabriel District, WQA and Main Basin Watermaster, among others, have coordinated with San Gabriel District's member agencies with development groundwater treatment facilities. This participation has been important because San Gabriel District member agencies rely on groundwater supplies and do not have direct access to treated imported water. A more detailed explanation of member agency efforts to address water quality issues specific to their water system is included in their plans.

Chapter 10

WATER SUPPLY RELIABILITY

Section 10635
(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry year water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

10.1 RELIABILTY OF SAN GABRIEL DISTRICT'S WATER SUPPLY

This chapter discusses San Gabriel District's water service reliability assessment. San Gabriel District's supply and demand are compared over the next 20 years during normal, dry and multiple dry years. In addition, the water service reliability assessment takes into account Senate Bill No. 7. In November 2009, Senate Bill No. 7 was approved and requires all urban retail suppliers to reduce per capita water use by 20 percent by 2020. As an Urban Wholesale Water Supplier, San Gabriel District identifies in the following sections how Senate Bill No. 7 was applied to its water supply reliability calculations and how Senate Bill No. 7 was assessed in present and proposed future measures, programs and policies.

10.2 SENATE BILL NO. 7 REQUIREMENTS

Senate Bill 7 requires the state of California to "…achieve 20 percent reduction in urban per capita water use in California by December 31, 2020. The state would be required to make incremental progress towards this goal by reducing per capita water use by at least 10 percent on or before December 31, 2015." In addition, Senate Bill No. 7 requires for Urban Wholesale

Water Suppliers to "…include in the urban water management plans…an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part."

San Gabriel District has implemented water conservation measures that will assist its retail agencies with reducing per capita water demands and ultimately achieve the Senate Bill 7 requirements. Water conservation activities are addressed in Chapter 5 (Demand Management Measures) and Chapter 8 (Recycled Water Opportunities). For the purpose of this plan, San Gabriel District has assumed its sub-agencies' per capita water use may be reduced by 10 percent by 2015 and by 20 percent by 2020, which has been applied to Table 8. Senate Bill No. 7 requires urban retail water suppliers to first "…estimate its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010." Consequently, San Gabriel District estimated its sub-agencies' highest gallon per capita per day based on the required periods, which was estimated to be 157 gallons per capita per day (gpcd), as shown on Table 8. San Gabriel District assumed the estimated average capita water use of 157 gpcd may be reduced by 10 percent in 2015 and by 20 percent in 2020, as shown on Table 9. With the reduced capita water use, the estimated local demand (production) from San Gabriel District's sub-agencies has also been assumed to be reduced in 2015 and 2020.

As previously discussed in Chapter 3, San Gabriel District's sub-agencies produce groundwater from the Main Basin and Raymond Basin, but rely on San Gabriel District to provide untreated SWP to replenish. The following sections will discuss the reliability of imported water supply from the SWP.

10.3 STATE WATER PROJECT

San Gabriel District is a wholesale agency that supplies untreated imported water from the SWP for groundwater replenishment. Table 10 compares San Gabriel District's demand and supply of untreated imported water

during a normal year. Table 10 shows that San Gabriel District will be able to provide SWP water for the next 20 years during a normal year.

Tables 11 and 12 compares San Gabriel District's demand and supply of imported water from the SWP during single dry and multiple dry years. As shown in Tables 11 and 12, San Gabriel District will be able to provide untreated imported water for Replacement Water for the next 20 years during single dry and multiple dry years.

TABLE 1A

ANNUAL RAINFALL IN THE SAN GABRIEL VALLEY
FROM 1958-59 THROUGH 2008-09*

WATER YEAR	RAINFALL IN INCHES
1958-59	8.5
1959-60	10.6
1960-61	5.9
1961-62	22.4
1962-63	12.3
1963-64	9.4
1964-65	15.2
1965-66	19.6
1966-67	25.0
1967-68	15.0
1968-69	30.5
1969-70	11.1
1970-71	13.3
1971-72	8.5
1972-73	22.4
1973-74	16.8
1974-75	14.9
1975-76	12.1
1976-77	14.5
1977-78	38.4
1978-79	23.9
1979-80	34.8
1980-81	10.3
1981-82	18.9
1982-83	39.3
1983-84	10.6
1984-85	14.6
1985-86	22.0
1986-87	9.1
1987-88	14.9
1988-89	11.2
1989-90	12.4
1990-91	15.1
1991-92	22.8
1992-93	35.9
1993-94	11.6
1994-95	30.4
1995-96	15.6
1996-97	17.5
1997-98	36.1
1998-99	8.6
1999-00	14.4
2000-01	15.5
2001-02	6.4
2002-03	19.4
2003-04	12.7
2004-05	45.3
2005-06	16.8
2006-07	4.9
2007-08	16.4
2008-09	14.0
TOTAL	**907.8**
51-YEAR AVERAGE	**17.8**

*Annual rainfall determined as the average of rainfall at San Dimas (station 95), Pomona† (station 356C), El Monte (station 108D), and Pasadena (station 610B).

†Pomona (station 356C) replaced Walnut (station 102D) in 2000-01.

Table 1B
Climate

	January	February	March	April	May	June	July	August	September	October	November	December	Annual
Average Rainfall (in.)	3.6	5.5	1.9	1.2	0.5	0.1	0.0	0.0	0.2	1.0	1.4	2.4	17.8
Average Temperature (^{o}F)	54	54	56	59	61	69	72	77	76	70	61	57	63.8
Evapotranspiration (in.)	2.2	2.8	4.0	5.1	5.9	6.6	7.4	6.8	5.7	4.0	2.7	1.9	55.1

Source: Rainfall data from average of four LA County Department of Public Works rainfall stations. Temperature data from www.city-data.com for San Gabriel Valley. Evapotranspiration data from California Irrigation Management Information System.

TABLE 2

ESTIMATED ULTIMATE REPLACEMENT WATER REQUIREMENTS OF SAN GABRIEL DISTRICT MEMBER CITIES FOR AVERAGE CONDITIONS WITH AN OPERATING SAFE YIELD OF 200,000[1] ACRE-FEET (ACRE-FEET)

PRODUCER	Main Basin % Pumping Right [2]	WATER RIGHTS Main Basin (ac-ft/yr)[3]	WATER RIGHTS Raymond Basin (ac-ft/yr)[4]	WATER RIGHTS Total	ESTIMATED ULTIMATE WATER USAGE[4]	2030 SUPPLEMENTAL WATER REQUIREMENT
City of Alhambra	4.45876%	8,917	0	8,917	14,000	5,083
City of Azusa [5]	6.91287%	7,044	0	7,044	9,000	1,956
City of Monterey Park	3.39216%	6,784	0	6,784	9,000	2,216
City of Sierra Madre	0.00000%	0	2,924	2,924 [6]	2,800	0
TOTAL						**9,255**

[1] Average Historical OSY
[2] From Main Basin Judgment
[3] Includes Diversion Rights
[4] Decreed amount
[5] Represents 40 percent of total water right and demand
[6] Sierra Madre produces water exclusively from the Raymond Basin. Includes an average of 1,160 acre-feet of salvage credit during the period 1990-91 through 2003-04.

TABLE 3

ANNUAL IMPORTED WATER DELIVERIES

FISCAL YEAR	WATER DELIVERY (ACRE-FEET)
1974-75	832
1975-76	8,275
1976-77	7,530
1977-78	5,586
1978-79	6,968
1979-80	1,064
1980-81	0
1981-82	1,798
1982-83	2,221
1983-84	79
1984-85	66
1985-86	5,457
1986-87	12,598
1987-88	9,827
1988-89	6,714
1989-90	14,764
1990-91	10,508
1991-92	8,903
1992-93	13,685
1993-94	15,245
1994-95	10,438
1995-96	13,095
1996-97	17,460
1997-98	15,654
1998-99	10,034
1999-00	19,204
2000-01	11,693
2001-02	13,388
2002-03	20,095
2003-04	18,632
2004-05	12,462
2005-06	13,711
2006-07	17,476
2007-08	2,003
2008-09	6,607
TOTAL	**334,072**

TABLE 4

SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT

ANNUAL IMPORTED WATER DELIVERIES AND CYCLIC STORAGE (ACRE-FEET)

	Imported Water Deliveries							Cyclic Storage Account				
Fiscal Year	Replenishment	Replacement Water	USG-5 Exchange Replacement	Direct Deliveries M & I Water	Cyclic Storage	Producer Cyclic Storage	Total	Transfer To Replacement Water	Transfer To USG-5 Exchange Replacement Water	Transfer To Producer Cyclic Storage	Net To Cyclic Storage	Cyclic Storage At End Of Year
1974-75	--	787.10	--	--	44.90	--	832.00	**0.00**	**0.00**	--	44.90	**44.90**
1975-76	--	1,302.90	--	--	6,972.10	--	8,275.00	0.00	0.00	--	6,972.10	7,017.00
1976-77	--	3,814.95	992.93	--	2,722.12	--	7,530.00	0.00	0.00	--	2,722.12	9,739.12
1977-78	--	4,470.85	1,115.15	--	**0.00**	--	5,586.00	2,287.23	0.00	--	-2,287.23	7,451.89
1978-79	--	4,112.25	1,303.79	--	1,551.96	--	6,968.00	0.00	0.00	--	1,551.96	9,003.85
1979-80	--	**0.00**	1,064.00	--	0.00	--	1,064.00	2,803.98	129.42	--	-2,933.40	6,070.45
1980-81	--	0.00	**0.00**	--	0.00	--	**0.00**	190.24	**1,170.88**	--	-1,361.12	4,709.33
1981-82	--	81.84	1,067.28	--	648.88	--	1,798.00	0.00	0.00	--	648.88	5,358.21
1982-83	--	0.00	843.87	--	1,377.13	--	2,221.00	0.00	0.00	--	1,377.13	6,735.34
1983-84	--	0.00	79.00	--	0.00	**0.00**	79.00	1,036.93	634.25	--	-1,671.18	5,064.16
1984-85	--	0.00	66.00	--	0.00	0.00	66.00	0.00	829.91	--	-829.91	4,234.25
1985-86	--	4,484.30	972.70	--	0.00	0.00	5,457.00	**3,886.23**	0.00	--	-3,886.23	348.02
1986-87	--	4,368.59	929.09	--	7,300.32	0.00	12,598.00	0.00	0.00	--	7,300.32	7,648.34
1987-88	--	7,763.11	**1,402.99**	--	660.90	0.00	9,827.00	0.00	0.00	--	660.90	8,309.24
1988-89	--	5,320.25	1,393.75	--	0.00	0.00	6,714.00	3,844.04	0.00	--	-3,844.04	4,465.20
1989-90	--	11,296.63	641.82	--	2,825.55	0.00	14,764.00	0.00	0.00	--	2,825.55	7,290.75
1990-91	--	9,485.43	1,022.57	--	0.00	0.00	10,508.00	3,298.53	0.00	--	-3,298.53	3,992.22
1991-92	--	8,074.96	828.04	--	0.00	0.00	8,903.00	2,400.42	0.00	--	-2,400.42	1,591.80
1992-93	--	11,418.17	1,202.03	--	1,064.80	0.00	13,685.00	0.00	0.00	--	1,064.80	2,656.60
1993-94	--	8,620.14	1,205.80	--	5,419.06	0.00	15,245.00	0.00	0.00	--	5,419.06	8,075.66
1994-95	--	5,691.49	1,188.61	--	3,557.90	0.00	10,438.00	0.00	0.00	--	3,557.90	11,633.56
1995-96	--	8,484.59	1,178.05	--	3,432.36	0.00	13,095.00	0.00	0.00	--	3,432.36	15,065.92
1996-97	--	**14,525.94**	1,235.89	--	1,698.17	0.00	17,460.00	0.00	0.00	--	1,698.17	16,764.09
1997-98	--	14,061.60	1,268.85	--	323.55	0.00	15,654.00	0.00	0.00	5,700.00	-5,376.45	11,387.64
1998-99	--	6,158.61	1,254.19	--	2,621.20	0.00	10,034.00	0.00	0.00	3,200.00	-578.80	10,808.84
1999-00	--	9,286.01	1,312.09	--	8,605.90	0.00	19,204.00	0.00	0.00	3,800.00	4,805.90	15,614.74
2000-01	--	10,464.30	1,228.70	--	0.00	0.00	11,693.00	3,237.77	0.00	3,800.00	-7,037.77	8,576.97
2001-02	--	10,929.17	1,286.13	--	1,172.70	0.00	13,388.00	0.00	0.00	7,100.00	-5,927.30	2,649.67
2002-03	--	3,938.39	1,128.84	--	15,027.77	0.00	**20,095.00**	0.00	0.00	8,300.00	6,727.77	9,377.44
2003-04	--	672.60	1,143.80	--	**16,815.60**	0.00	18,632.00	0.00	0.00	9,800.00	7,015.60	16,393.04
2004-05	--	500.66	1,121.25	--	10,840.09	0.00	12,462.00	500.66	0.00	**13,100.00**	-2,259.91	14,133.13
2005-06	--	0.00	1,052.99	--	12,658.01	0.00	13,711.00	0.00	0.00	**944.38**	**11,713.63**	25,846.76
2006-07	--	573.59	1,108.29	--	15,794.12	0.00	17,476.00	573.59	0.00	3,832.00	11,388.53	**37,235.29**
2007-08	--	91.76	1,132.17	--	779.07	0.00	2,003.00	91.76	0.00	12,712.67	**-12,025.36**	25,209.93
2008-09	--	788.73	1,146.29	--	4,671.98	0.00	6,607.00	788.73	0.00	11,619.40	-7,736.15	17,473.78
TOTALS	--	171,568.91	33,916.95	--	128,586.14	0.00	334,072.00	22,652.88	2,764.46	83,908.45	17,473.78	--

Note: The minimum and maximum values are bolded.

TABLE 5

PROJECTED SUPPLEMENTAL WATER REQUIREMENTS (ACRE-FEET)

FISCAL YEAR	AVERAGE OSY (200,000 AF)
2007-08	6,225
2008-09	6,500
2009-10	6,775
2014-15	8,015
2019-20	9,255
2024-25	9,255
2029-30	9,255

OSY = Operating Safe Yield
AF = Acre-feet

TABLE 6

SUMMARY OF DEMAND MANAGEMENT MEASURE ACTIVITY

	Calendar Year Number of Agencies Assisted				
Demand Management Measure	**2006**	**2007**	**2008**	**2009**	**2010**
Water Surveys	0	0	0	0	0
Residential Retrofit	4	4	4	4	4
System Audits	1	1	1	1	1
Metering-Commodity Rates	0	0	0	0	0
Landscape Programs	0	0	0	0	1
Washing Machines	0	0	0	0	0
Public Information	4	4	4	4	4
School Education	4	4	4	4	4
CII WC	0	0	0	0	0
CII ULF	4	4	4	4	4
Pricing	0	0	0	0	0
WC Coordinator	1	1	1	1	1
Water Waste	4	4	4	4	4
UFLT Replacement	4	4	4	4	4
Actual Expenditures	**$44,844**	**$54,365**	**$62,875**	**$58,661**	***$80,000**

- Projected Value

TABLE 7

SUMMARY OF POTENTIAL RECYCLED WATER USE

DESCRIPTION	ESTIMATED VOLUME (ACRE-FEET/YEAR)
City of Alhambra	1,580
City of Azusa	620
City of Monterey Park	1,100
City of Sierra Madre	390
TOTAL	**3,690**

TABLE 8

HISTORIC WATER USE WITHIN DISTRICT BOUNDARIES
FROM 1993-94 THROUGH 2008-09

Year	Alhambra		Azusa		Monterey Park		Sierra Madre	Total Water Use (ac-ft)	Total Water Use (gal)	Total Population	Per Capita Water Use	Ten-Year Average
1990										189,500	gal/cap/day	
1993-1994	12,156.72	**1/**	**9,075.21**	**2/**	10,119.40			31,351.33	10,215,166,232	194,500	144	
1994-1995	13,086.56	**1/**	**9,579.82**	**2/**	9,942.32		2,464.10	35,072.80	11,427,728,337	195,750	160	
1995-1996	13,692.80	**1/**	**9,200.67**	**3/**	10,679.19		2,269.00	35,841.66	11,678,245,719	197,000	162	
1996-1997	14,117.20	**1/**	**9,547.62**	**3/**	7,123.54		2,553.20	33,341.56	10,863,639,182	198,250	150	
1997-1998	13,355.46	**1/**	**8,608.57**	**3/**	10,294.39		2,244.30	34,502.72	11,241,979,203	199,500	154	
1998-1999	13,730.62	**1/**	**8,763.21**	**3/**	10,661.63		2,302.10	35,457.56	11,553,094,877	200,750	158	
1999-2000	14,381.86	**1/**	**9,128.55**	**3/**	11,126.59		2,897.10	37,534.10	12,229,690,110	202,000	166	
2000-2001	14,231.12	**1/**	**8,973.96**	**3/**	10,287.77		2,755.50	36,248.35	11,810,755,079	204,200	158	
2001-2002	14,434.59	**1/**	**8,795.74**	**3/**	10,273.64		2,969.30	36,473.27	11,884,041,796	206,400	158	
2002-2003	13,821.83	**1/**	**7,809.58**	**3/**	7,893.85		2,762.80	32,288.06	10,520,381,147	208,600	138	155
2003-2004	14,003.00	**1/**	**10,469.02**	**3/**	**10,136.90**	**4/**	3,229.60	37,838.52	12,328,878,262	210,800	160	157
2004-2005	12,782.72	**1/**	**9,719.37**	**3/**	**9,093.60**	**5/**	2,043.10	33,638.79	10,960,485,927	213,000	141	155
2005-2006	12,950.88	**1/**	**10,185.69**	**3/**	10,391.01		2,401.80	35,929.38	11,706,827,422	214,400	150	153
2006-2007	13,551.11	**1/**	**10,855.99**	**3/**	9,912.61		3,417.80	37,737.51	12,295,966,947	215,800	156	154
2007-2008	12,974.67	**1/**	**7,852.47**	**3/**	9,865.55		3,159.90	33,852.59	11,030,148,125	217,200	139	152
2008-2009	12,275.61	**1/**	7,927.44		9,481.23		2,953.60	32,637.88	10,634,361,275	218,600	133	150
2010										220,000		

Notes:

1/ City of Alhambra total water production includes total water delivered from USG-5 connection.
2/ Assumes total water production from City of Azusa and Azusa Agricultural Water Company.
3/ Assumes 40 percent of total water production from City of Azusa, Azusa Agricultural Water Company and Azusa Valley Water Company is delivered to the City of Azusa.
4/ Assumes City of Monterey Park received 3,800 acre-feet of water from San Gabriel Valley Water Company by leasing their water rights to San Gabriel Valley Water Company.
5/ Assumes City of Monterey Park received 1,400 acre-feet of water from San Gabriel Valley Water Company by leasing their water rights to San Gabriel Valley Water Company.

TABLE 9

PROJECTED PER CAPITA WATER USE WITHIN DISTRICT BOUNDARIES FROM 2010 THROUGH 2030

Year	Per Capita Water Use gpd	Population	Water Use (ac-ft/yr)
2010	157	220,000	38,692.41
2015	141.3	228,000	36,089.46
2020	125.6	234,000	32,923.72
2025	125.6	241,000	33,908.62
2030	125.6	247,000	34,752.81

TABLE 10

PROJECTED WATER DEMAND AND SUPPLY
DURING A NORMAL YEAR
(ACRE-FEET)

Year	2010	2015	2020	2025	2030
Imported Water SWP					
Demand 1/					
Replacement/Replenishment	6,775	8,015	9,225	9,225	9,225
Supply	17,280	17,280	17,280	17,280	17,280

1/ Includes information from Table 5

TABLE 11

PROJECTED WATER DEMAND AND SUPPLY
DURING A SINGLE DRY YEAR
(ACRE-FEET)

Year	2010	2015	2020	2025	2030
Imported Water SWP					
Demand 1/					
Replacement/Replenishment	6775	8015	9255	9255	9255
Supply 2/					
Cyclic Storage	3,168	3,168	3,168	3,168	3,168
Surplus	0	0	0	0	0

1/ Includes information from Table 5

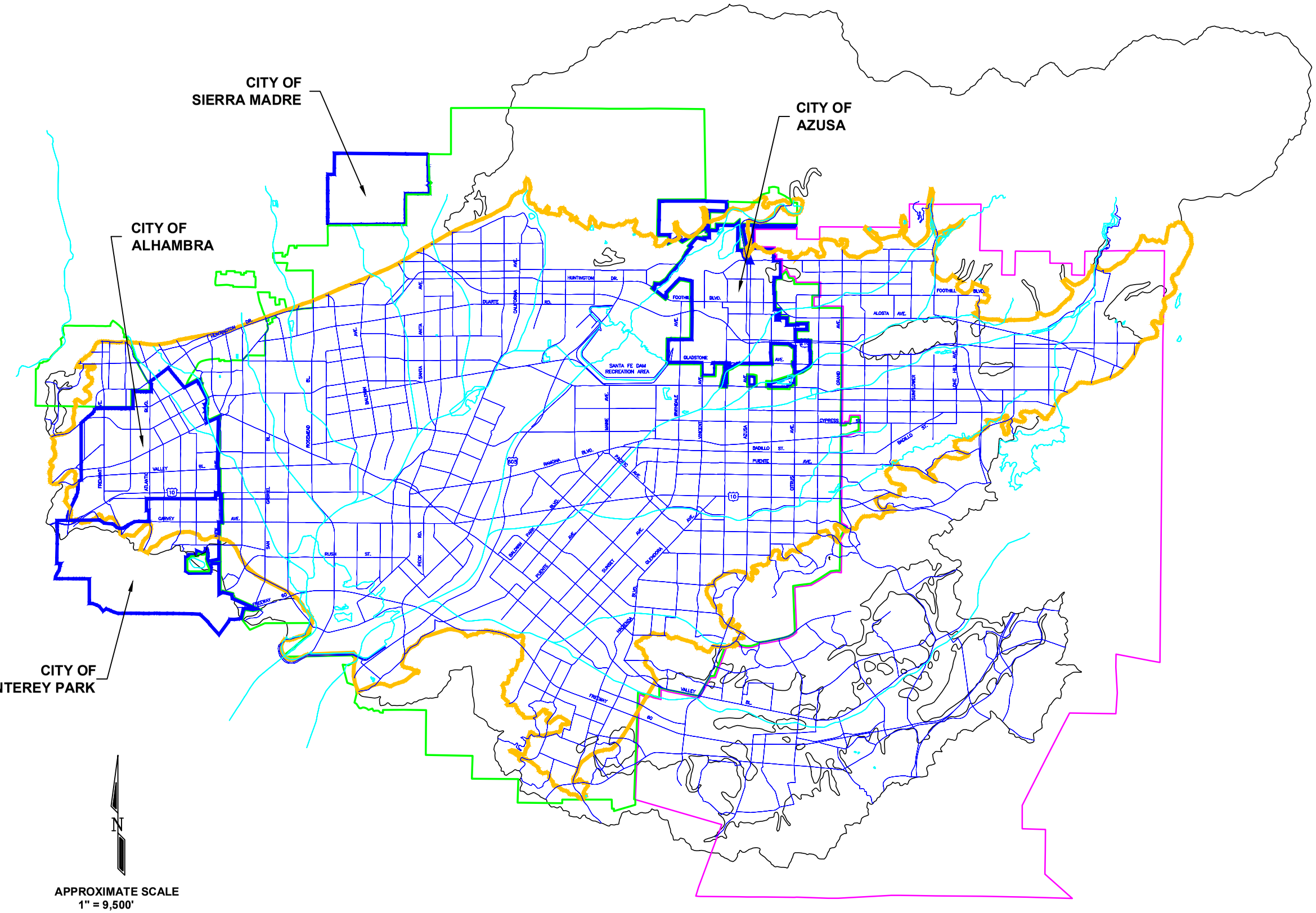
2/ San Gabriel District will withdraw water from its cyclic storage account to address the balance as noted in Section 7.3.

TABLE 12

PROJECTED WATER DEMAND AND SUPPLY
DURING MULTIPLE DRY YEARS
(ACRE-FEET)

	2010			2015			2020			2025			2030		
	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
Imported Water SWP															
Demand 1/															
Untreated Imported Water for Replacement /Replenishment	6,775	6,775	6,775	8,015	8,015	8,015	9,255	9,255	9,255	9,255	9,255	9,255	9,255	9,255	9,255
Supply	10,080	10,080	10,080	10,080	10,080	10,080	10,080	10,080	10,080	10,080	10,080	10,080	10,080	10,080	10,080

1/ Includes information from Table 5



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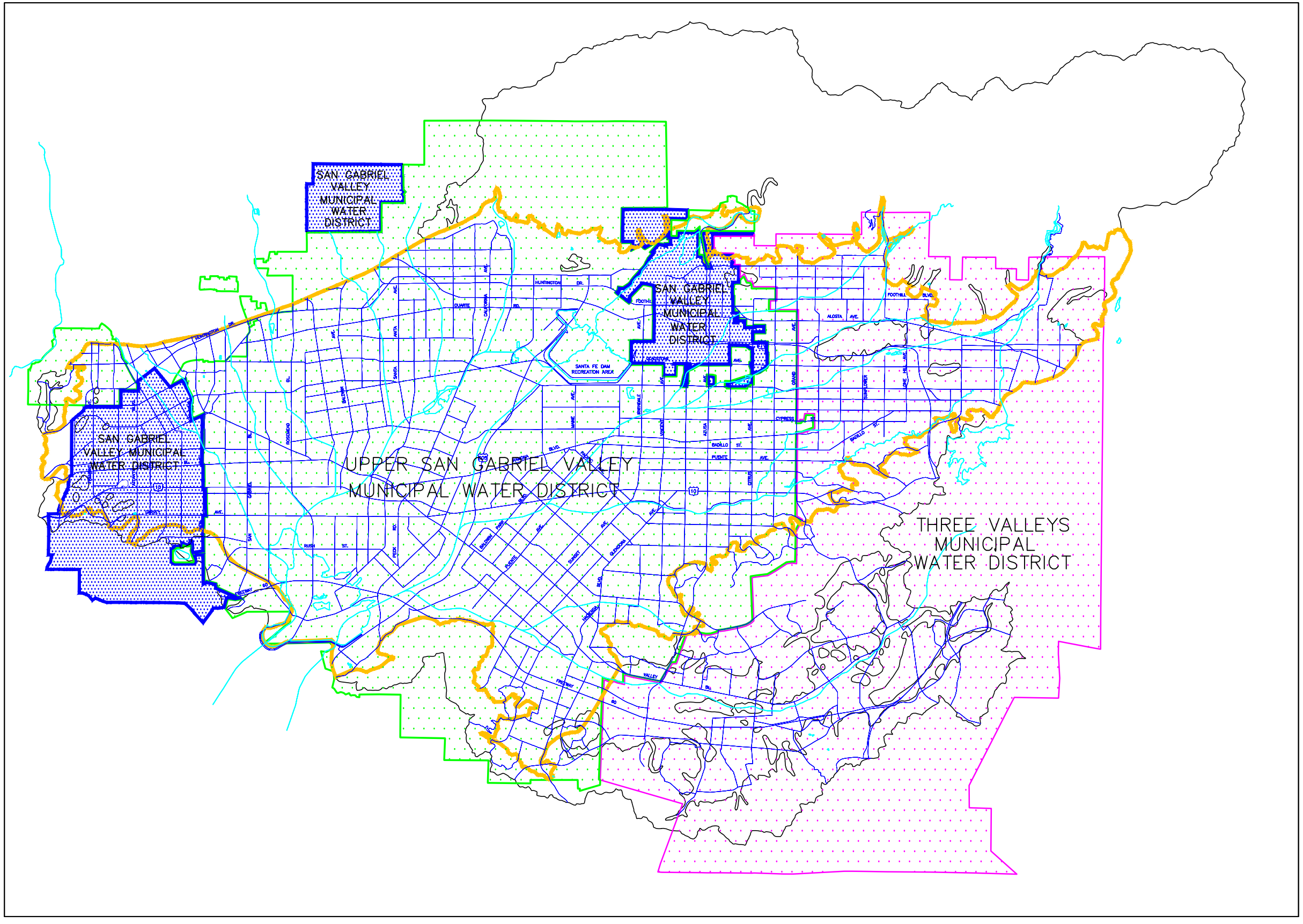
San Rafael California 94901

2651 W Guadalupe Rd., Suite A209
Mesa Arizona 85202

SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT

MEMBER AGENCIES



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APPROXIMATE SCALE
1" = 9,500'

LEGEND

- UPPER SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT
- THREE VALLEYS MUNICIPAL WATER DISTRICT
- SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT
- MAIN SAN GABRIEL BASIN BOUNDARY

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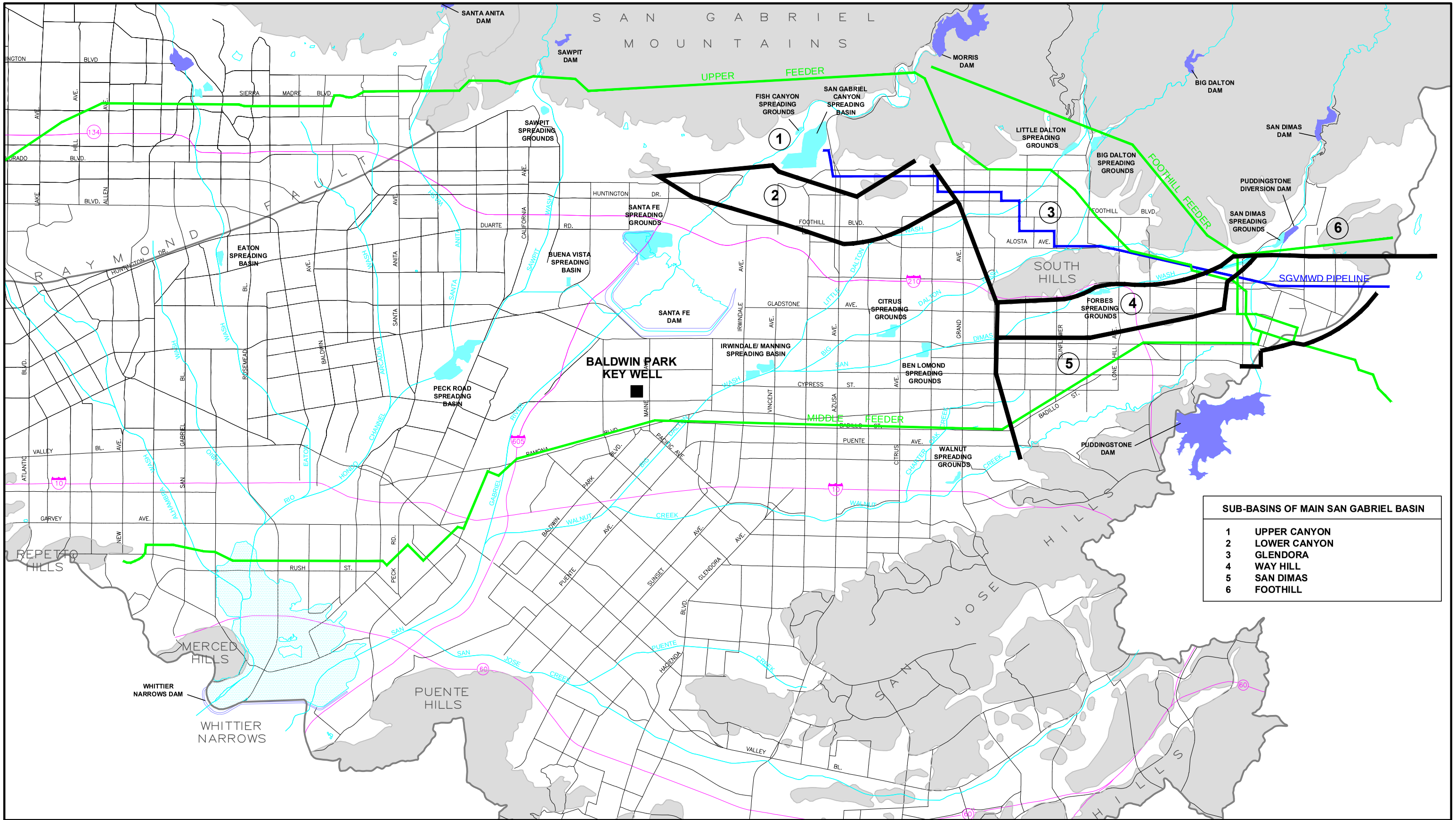
SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT

WATER DISTRICT BOUNDARIES



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N

APPROXIMATE SCALE
1" = 7,000'

SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT

GROUNDWATER BASINS AND RECHARGE FACILITIES

E:\JOBS\1157\1157-37.1\draft plan 2010-08-11\Plates\PLATE 3.DWG
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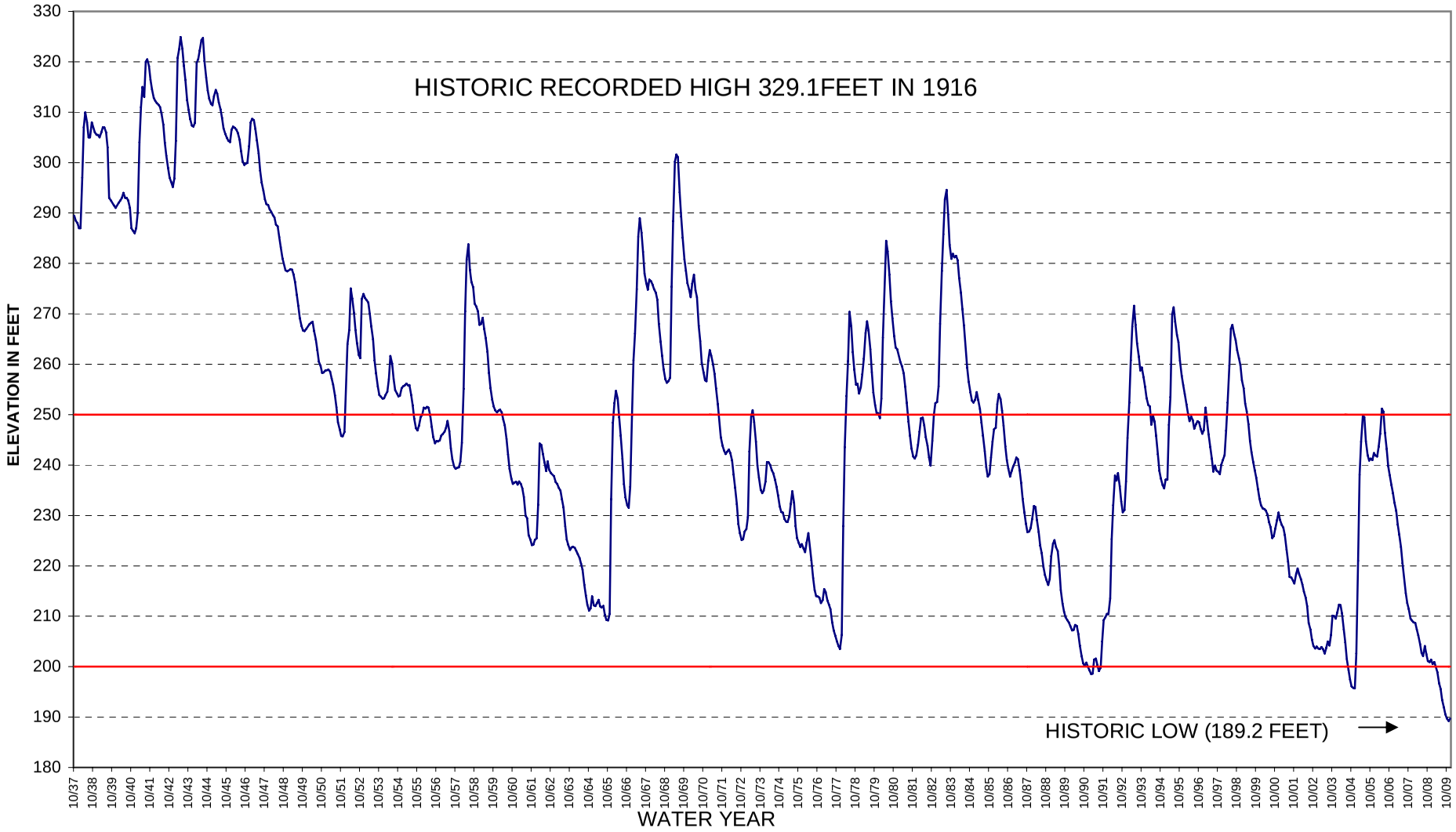


STETSON ENGINEERS INC.

Covina San Rafael Mesa, Arizona

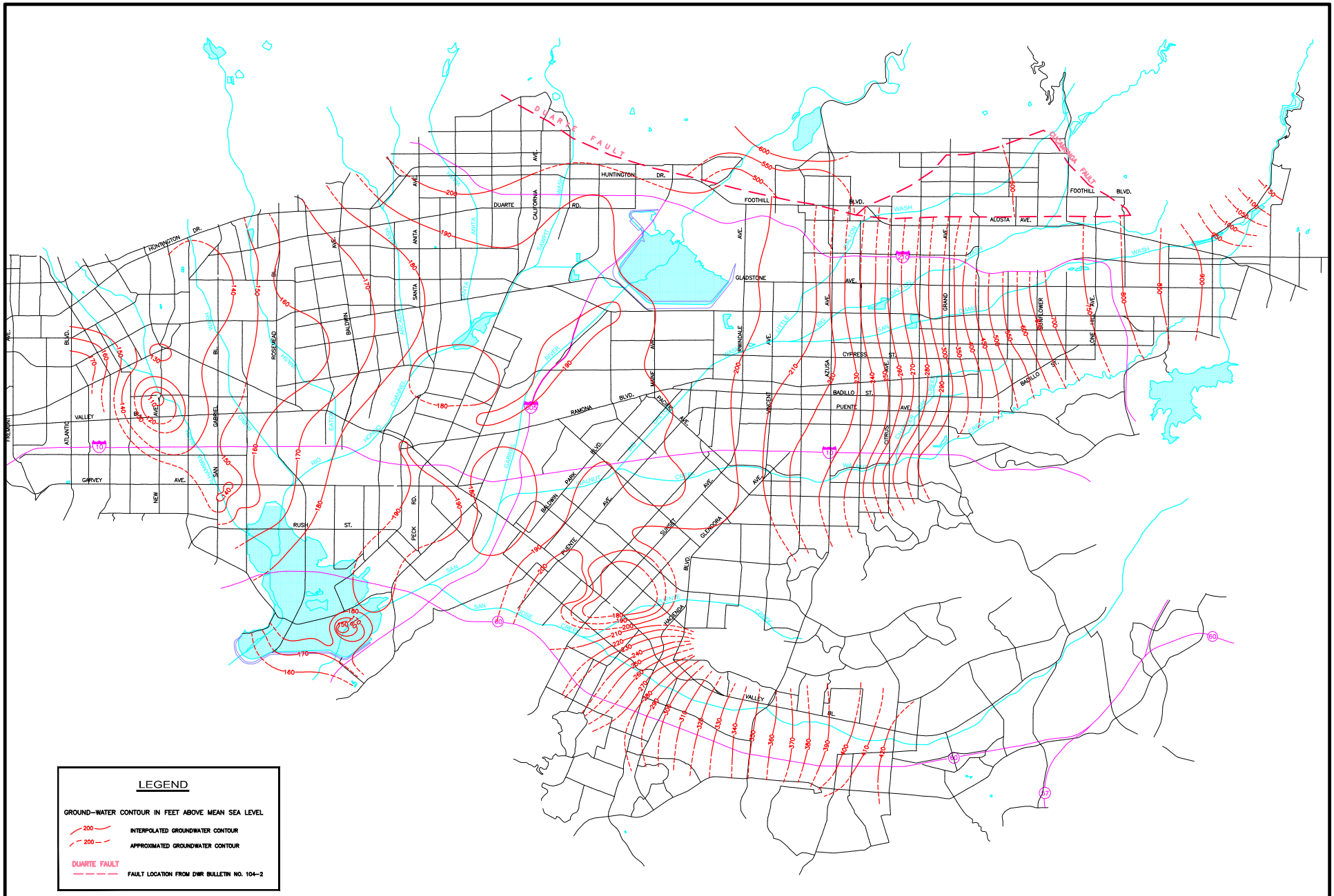
WATER RESOURCE ENGINEERS

SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT

HISTORIC BALDWIN PARK KEY WELL ELEVATION

PLATE 4

Z:\Jobs\1157\1157-37.1\draft plan 2010-08-11\plates\Plate 4 Key Well Elevation



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N

APPROXIMATE SCALE
6,000' 0 6,000'

SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT

GROUNDWATER CONTOUR MAP FOR SAN GABRIEL BASIN - JANUARY 2010

PLATE 5

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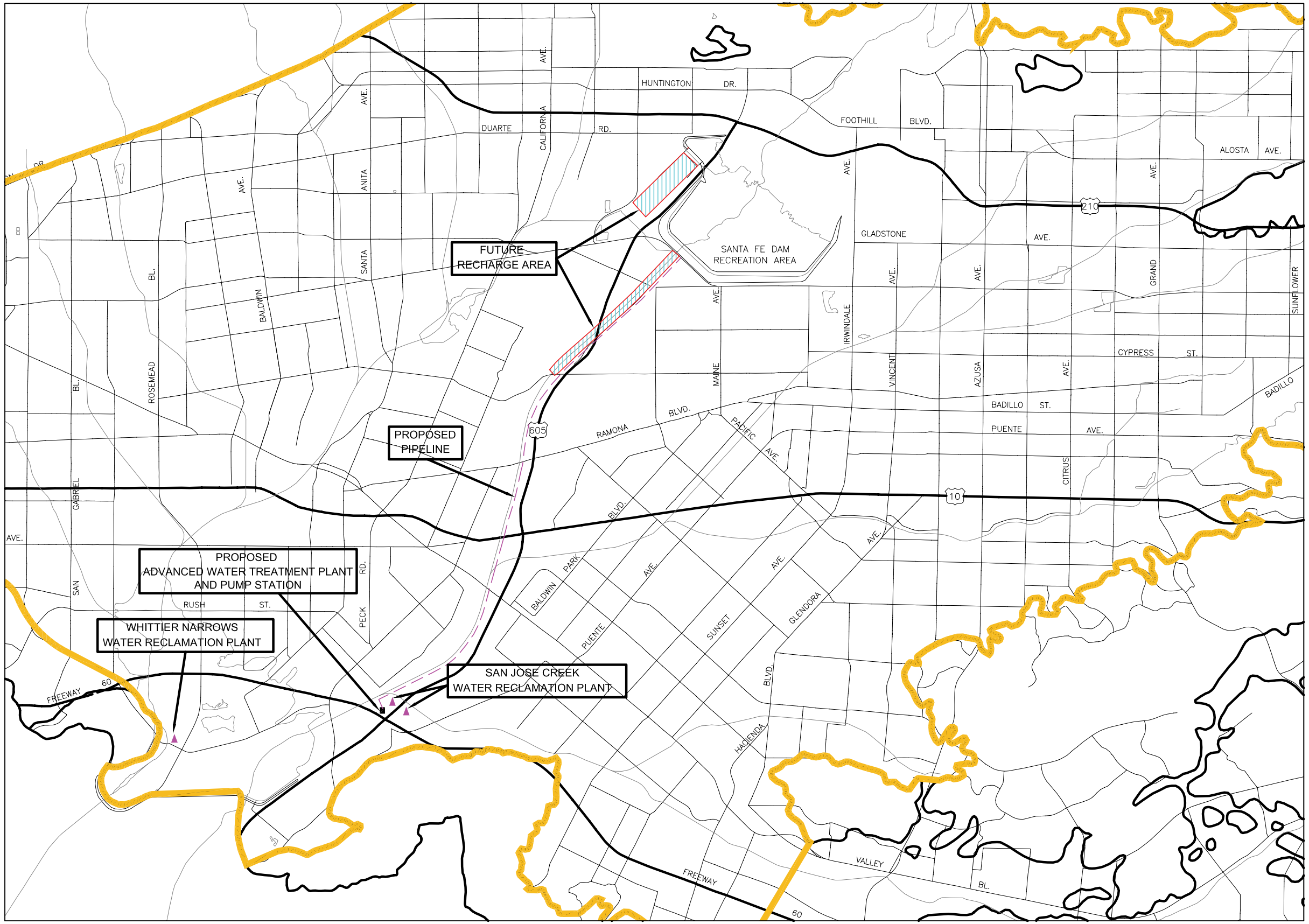

N

APPROXIMATE SCALE
1" = 9,500'

LEGEND

- PROPOSED PIPELINE ALIGNMENT
- EXISTING WATER RECLAMATION PLANT
- PROPOSED PUMP STATION
- BASIN BOUNDARY AND WATERSHED

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SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT

WATER RECLAMATION PLANT LOCATIONS

APPENDIX A

URBAN WATER MANAGEMENT ACT

CALIFORNIA WATER CODE
Division 6
Part 2.6
URBAN WATER MANAGEMENT PLANNING

Text showing changes in underline and strikeout from 2004 to 2009 legislative sessions.

CHAPTER 1. General Declaration and Policy

§ 10610. Citation

This part shall be known and may be cited as the "Urban Water Management Planning Act."

§ 10610.2. Legislative findings

(a) The Legislature finds and declares all of the following:

(1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.

(2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.

(3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.

(4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.

(5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.

(6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.

(7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.

(8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.

(9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.

(b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.

§ 10610.4. State policy

The Legislature finds and declares that it is the policy of the state as follows:

(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.

(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.

(c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

Chapter 2. Definitions

§ 10611. Definitions to govern construction

Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

§ 10611.5. "Demand management"

"Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

§ 10612. "Customer"

"Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

§ 10613. "Efficient use"

"Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

§ 10614. "Person"

"Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

§ 10615. "Plan"

"Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The components of the plan may vary according to an individual community or area' s characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

§ 10616. "Public agency"

"Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.

§ 10616.5. "Recycled water"

"Recycled water" means the reclamation and reuse of wastewater for beneficial use.

§ 10617. "Urban water supplier"

"Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with *Section 116275) of Part 12 of Division 104 of the Health and Safety Code.*

Chapter 3. Urban Water Management Plans

ARTICLE 1. General Provisions

§ 10620. Mandatory adoption of urban water management plan

(a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d) (1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

§ 10621. Periodic plan update

(a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero.

(b) Every urban water supplier required to prepare a plan pursuant to this part shall<u>, at least 60 days prior to the public hearing on the plan required by Section 10642,</u> notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

ARTICLE 2. Contents of Plans

§ 10630. Level of planning

It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

§ 10631. Elements contained in plan

A plan shall be adopted in accordance with this chapter and shall do all of the following:

(a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments~~as~~ described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(c)(1) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

(~~1~~A) An average water year.

(~~2~~B) A single dry water year.

(~~3~~C) Multiple dry water years.

(2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

(e)(1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:

(A) Single-family residential.

(B) Multifamily.

(C) Commercial.

(D) Industrial.

(E) Institutional and governmental.

(F) Landscape.

(G) Sales to other agencies.

(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.

(I) Agricultural.

(2) The water use projections shall be in the same five-year incrementsas described in subdivision (a).

(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

(A) Water survey programs for single-family residential~~,~~ and multifamily residential~~,~~ customers.

(B) Residential plumbing retrofit.

(C) System water audits, leak detection, and repair.

(D) Metering with commodity rates for all new connections and retrofit of existing connections.

(E) Large landscape conservation programs and incentives.

(F) High-efficiency washing machine rebate programs.

(G) Public information programs.

(H) School education programs.

(I) Conservation programs for commercial, industrial, and institutional accounts.

(J) ~~New commercial and industrial water use review.~~Wholesale agency programs.

(K) Conservation pricing.

(L) Water conservation coordinator.

(M) Water waste prohibition~~s~~.

(N) Residential ultra-low-flush toilet replacement programs.

(2) A schedule of implementation for all water demand management measures proposed or described in the plan.

(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

(1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.

(2) Include a cost-benefit analysis, identifying total benefits and total costs.

(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.

(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

~~(j) Urban water suppliers that are members of the California Urban Water Conservation Council and submit annual reports to that council in accordance with the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated September 1991, may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g).~~

(j) For purposes of this part, urban water suppliers that are members of the California Urban Water Conservation Council shall be deemed in compliance with the requirements of subdivisions (f) and (g) by complying with all the provisions of the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated December 10, 2008, as it may be amended, and by submitting the annual reports required by Section 6.2 of that memorandum.

(k) Urban water suppliers that rely upon a wholesale agency for a source of water, shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided

by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

§ 10631.1. Inclusion of projected water use for low-income housing; Legislative intent

(a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

(b) It is the intent of the Legislature that the identification of projected water use for single-family and multifamily residential housing for lower income households will assist a supplier in complying with the requirement under Section 65589.7 of the Government Code to grant a priority for the provision of service to housing units affordable to lower income households.

§ 10631.5. ~~Consideration of implementation or scheduled implementation of water demand management activities~~ Water management grant or loan conditioned on implementation of water demand management measures

~~The department shall take into consideration whether the urban water supplier is implementing or scheduled for implementation, the water demand management activities that the urban water supplier identified in its urban water management plan, pursuant to Section 10631, in evaluating applications for grants and loans made available pursuant to Section 79163. The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities.~~

(a)(1) Beginning January 1, 2009, the terms of, and eligibility for, a water management grant or loan made to an urban water supplier and awarded or administered by the department, state board, or California Bay-Delta Authority or its successor agency shall be conditioned on the implementation of the water demand management measures described in Section 10631, as determined by the department pursuant to subdivision (b).

(2) For the purposes of this section, water management grants and loans include funding for programs and projects for surface water or groundwater storage, recycling, desalination, water conservation, water supply reliability, and water supply augmentation. This section does not apply to water management projects funded by the American Recovery and Reinvestment Act of 2009 (Public Law 111-5).

(3) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all

of the water demand management measures described in Section 10631, if the urban water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the water demand management measures. The supplier may request grant or loan funds to implement the water demand management measures to the extent the request is consistent with the eligibility requirements applicable to the water management funds.

(4)(A) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if an urban water supplier submits to the department for approval documentation demonstrating that a water demand management measure is not locally cost effective. If the department determines that the documentation submitted by the urban water supplier fails to demonstrate that a water demand management measure is not locally cost effective, the department shall notify the urban water supplier and the agency administering the grant or loan program within 120 days that the documentation does not satisfy the requirements for an exemption, and include in that notification a detailed statement to support the determination.

(B) For purposes of this paragraph, "not locally cost effective" means that the present value of the local benefits of implementing a water demand management measure is less than the present value of the local costs of implementing that measure.

(b)(1) The department, in consultation with the state board and the California Bay-Delta Authority or its successor agency, and after soliciting public comment regarding eligibility requirements, shall develop eligibility requirements to implement the requirement of paragraph (1) of subdivision (a). In establishing these eligibility requirements, the department shall do both of the following:

(A) Consider the conservation measures described in the Memorandum of Understanding Regarding Urban Water Conservation in California, and alternative conservation approaches that provide equal or greater water savings.

(B) Recognize the different legal, technical, fiscal, and practical roles and responsibilities of wholesale water suppliers and retail water suppliers.

(2)(A) For the purposes of this section, the department shall determine whether an urban water supplier is implementing all of the water demand management measures described in Section 10631 based on either, or a combination, of the following:

(i) Compliance on an individual basis.

(ii) Compliance on a regional basis. Regional compliance shall require participation in a regional conservation program consisting of two or more urban water suppliers that achieves the level of conservation or water efficiency savings equivalent to the amount of conservation or savings achieved if each of the participating urban water suppliers implemented the water demand management measures. The urban water supplier administering the regional program

shall provide participating urban water suppliers and the department with data to demonstrate that the regional program is consistent with this clause. The department shall review the data to determine whether the urban water suppliers in the regional program are meeting the eligibility requirements.

(B) The department may require additional information for any determination pursuant to this section.

(3) The department shall not deny eligibility to an urban water supplier in compliance with the requirements of this section that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the water demand management measures described in Section 10631.

(c) In establishing guidelines pursuant to the specific funding authorization for any water management grant or loan program subject to this section, the agency administering the grant or loan program shall include in the guidelines the eligibility requirements developed by the department pursuant to subdivision (b).

(d) Upon receipt of a water management grant or loan application by an agency administering a grant and loan program subject to this section, the agency shall request an eligibility determination from the department with respect to the requirements of this section. The department shall respond to the request within 60 days of the request.

(e) The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities. In addition, for urban water suppliers that are signatories to the Memorandum of Understanding Regarding Urban Water Conservation in California and submit biennial reports to the California Urban Water Conservation Council in accordance with the memorandum, the department may use these reports to assist in tracking the implementation of water demand management measures.

(f) This section shall remain in effect only until July 1, 2016, and as of that date is repealed, unless a later enacted statue, that is enacted before July 1, 2016, deletes or extends that date.

§ 10631.7. Panel to convene on new demand management measures, technologies and approaches

The department, in consultation with the California Urban Water Conservation Council, shall convene an independent technical panel to provide information and recommendations to the department and the Legislature on new demand management measures, technologies, and approaches. The panel shall consist of no more than seven members, who shall be selected by the department to reflect a balanced representation of experts. The panel shall have at least one, but no more than two, representatives from each of the following: retail water suppliers,

environmental organizations, the business community, wholesale water suppliers, and academia. The panel shall be convened by January 1, 2009, and shall report to the Legislature no later than January 1, 2010, and every five years thereafter. The department shall review the panel report and include in the final report to the Legislature the department's recommendations and comments regarding the panel process and the panel's recommendations.

§ 10632. Elements of urban water shortage contingency analysis

The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

(a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.

(b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

(d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

(e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

(f) Penalties or charges for excessive use, where applicable.

(g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

(h) A draft water shortage contingency resolution or ordinance.

(i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

§ 10633. Information on recycled water; Coordination with designated agencies; Contents of plan

The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the

plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:

(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

(d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

(e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems andsystems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

§ 10634. Included plan information

The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

ARTICLE 2.5. Water Service Reliability

§ 10635. Assessment of water service reliability; Provision of plan; Construction of article

(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply

sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

(c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

(d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

ARTICLE 3. Adoption and Implementation of Plans

§ 10640. Requirements for plan adoption

Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630).

The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

§ 10641. Use of consultants and experts

An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.

§ 10642. Involvement of diverse population; Public inspection; Hearing

Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to *Section 6066 of the Government Code*. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an

equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

§ 10643. Implementation of plan

An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

§ 10644. Filing of plan

(a) An urban water supplier shall file with the department and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be filed with the department and any city or county within which the supplier provides water supplies within 30 days after adoption.

(b) The department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part. The report prepared by the department shall identify the ~~outstanding~~ exemplary elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has filed its plan with the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

(c)(1) For the purpose of identifying the exemplary elements of the individual plans, the department shall identify in the report those water demand management measures adopted and implemented by specific urban water suppliers, and identified pursuant to Section 10631, that achieve water savings significantly above the levels established by the department to meet the requirements of Section 10631.5.

(2) The department shall distribute to the panel convened pursuant to Section 10631.7 the results achieved by the implementation of those water demand management measures described in paragraph (1).

(3) The department shall make available to the public the standard the department will use to identify exemplary water demand management measures.

§ 10645. Availability of plan for public review

Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

CHAPTER 4. Miscellaneous Provisions

§ 10650. Action to challenge acts or decisions of urban water supplier; Time limit

Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part .

(b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.

§ 10651. Scope of action

In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

§ 10652. Exemption from Environmental Quality Act

The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

§ 10653. Conservation requirements for plan

The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board and the Public Utilities Commission, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board or the Public Utilities Commission requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management

plan which includes the contents of a plan required under this part.

§ 10654. Costs of plan

An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the "Memorandum of Understanding Regarding Urban Water Conservation in California" is deemed to be reasonable for the purposes of this section.

§ 10655. Severability of provisions

If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

§ 10656. Eligibility for drought assistance

An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26 (commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

~~§ 10657. (Operative until January 1, 2006) Funding eligibility of urban water supplier~~

~~(a) The department shall take into consideration whether the urban water supplier has submitted an updated urban water management plan that is consistent with Section 10631, as amended by the act that adds this section, in determining whether the urban water supplier is eligible for funds made available pursuant to any program administered by the department.~~

~~(b) This section shall remain in effect only until January 1, 2006, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2006, deletes or extends that date.~~

CALIFORNIA WATER CODE
Division 6. Conservation, Development, and Utilization of State Water Resources
Part 2.55. Sustainable Water Use and Demand Reduction
Chapter 3. Urban Retail Water Suppliers

Text showing excerpted changes relevant to UWMPs in underline from Senate Bill 7 (also referred to as SBX7-7) enacted as part of the Delta legislative package in the Seventh Extraordinary Legislative Session of 2009.

§ 10608.20. Urban water use targets; Methodology

(a)

(1) Each urban retail water supplier shall develop urban water use targets and an interim urban water use target by July 1, 2011. Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis, as provided in subdivision (a) of Section 10608.28, and may determine the targets on a fiscal year or calendar year basis.

(2) It is the intent of the Legislature that the urban water use targets described in subdivision (a) cumulatively result in a 20-percent reduction from the baseline daily per capita water use by December 31, 2020.

(b) An urban retail water supplier shall adopt one of the following methods for determining its urban water use target pursuant to subdivision (a):

(1) Eighty percent of the urban retail water supplier's baseline per capita daily water use.

(2) The per capita daily water use that is estimated using the sum of the following performance standards:

(A) For indoor residential water use, 55 gallons per capita daily water use as a provisional standard. Upon completion of the department's 2016 report to the Legislature pursuant to Section 10608.42, this standard may be adjusted by the Legislature by statute.

(B) For landscape irrigated through dedicated or residential meters or connections, water efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in Chapter 2.7 (commencing with Section 490) of Division 2 of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992. An urban retail water supplier using the approach specified in this subparagraph shall use satellite imagery, site visits, or other best available technology to develop an accurate estimate of landscaped areas.

(C) For commercial, industrial, and institutional uses, a 10-percent reduction in water use from the baseline commercial, industrial, and institutional water use by 2020.

(3) Ninety-five percent of the applicable state hydrologic region target, as set forth in the state's draft 20x2020 Water Conservation Plan (dated April 30, 2009). If the service area of an urban water supplier includes more than one hydrologic region, the supplier shall apportion its service area to each region based on population or area.

(4) A method that shall be identified and developed by the department, through a public process, and reported to the Legislature no later than December 31, 2010. The method developed by the department shall identify per capita targets that cumulatively result in a statewide 20-percent reduction in urban daily per capita water use by December 31, 2020. In developing urban daily per capita water use targets, the department shall do all of the following:

(A) Consider climatic differences within the state.

(B) Consider population density differences within the state.

(C) Provide flexibility to communities and regions in meeting the targets.

(D) Consider different levels of per capita water use according to plant water needs in different regions.

(E) Consider different levels of commercial, industrial, and institutional water use in different regions of the state.

(F) Avoid placing an undue hardship on communities that have implemented conservation measures or taken actions to keep per capita water use low.

(c) If the department adopts a regulation pursuant to paragraph (4) of subdivision (b) that results in a requirement that an urban retail water supplier achieve a reduction in daily per capita water use that is greater than 20 percent by December 31, 2020, an urban retail water supplier that adopted the method described in paragraph (4) of subdivision (b) may limit its urban water use target to a reduction of not more than 20 percent by December 31, 2020, by adopting the method described in paragraph (1) of subdivision (b).

(d) The department shall update the method described in paragraph (4) of subdivision (b) and report to the Legislature by December 31, 2014. An urban retail water supplier that adopted the method described in paragraph (4) of subdivision (b) may adopt a new urban daily per capita water use target pursuant to this updated method.

(e) An urban retail water supplier shall include in its urban water management plan required pursuant to Part 2.6 (commencing with Section 10610) due in 2010 the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.

(f) When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and

projections.

(g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).

(h)

(1) The department, through a public process and in consultation with the California Urban Water Conservation Council, shall develop technical methodologies and criteria for the consistent implementation of this part, including, but not limited to, both of the following:

(A) Methodologies for calculating base daily per capita water use, baseline commercial, industrial, and institutional water use, compliance daily per capita water use, gross water use, service area population, indoor residential water use, and landscaped area water use.

(B) Criteria for adjustments pursuant to subdivisions (d) and (e) of Section 10608.24.

(2) The department shall post the methodologies and criteria developed pursuant to this subdivision on its Internet Web site, and make written copies available, by October 1, 2010. An urban retail water supplier shall use the methods developed by the department in compliance with this part.

(i)

(1) The department shall adopt regulations for implementation of the provisions relating to process water in accordance with subdivision (l) of Section 10608.12, subdivision (e) of Section 10608.24, and subdivision (d) of Section 10608.26.

(2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

(j) An urban retail water supplier shall be granted an extension to July 1, 2011, for adoption of an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) due in 2010 to allow use of technical methodologies developed by the department pursuant to paragraph (4) of subdivision (b) and subdivision (h). An urban retail water supplier that adopts an urban water management plan due in 2010 that does not use the methodologies developed by the department pursuant to subdivision (h) shall amend the plan by July 1, 2011, to comply with this part.

§ 10608.36. Assessment of urban wholesale water suppliers

Urban wholesale water suppliers shall include in the urban water management plans required pursuant to Part 2.6 (commencing with Section 10610) an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part.

§ 10608.56. Eligibility for water grants or loans

(a) On and after July 1, 2016, an urban retail water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

(b) On and after July 1, 2013, an agricultural water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

(c) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for achieving the per capita reductions. The supplier may request grant or loan funds to achieve the per capita reductions to the extent the request is consistent with the eligibility requirements applicable to the water funds.

(d) Notwithstanding subdivision (b), the department shall determine that an agricultural water supplier is eligible for a water grant or loan even though the supplier is not implementing all of the efficient water management practices described in Section 10608.48, if the agricultural water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the efficient water management practices. The supplier may request grant or loan funds to implement the efficient water management practices to the extent the request is consistent with the eligibility requirements applicable to the water funds.

(e) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval documentation demonstrating that its entire service area qualifies as a disadvantaged community.

(f) The department shall not deny eligibility to an urban retail water supplier or agricultural water supplier in compliance with the requirements of this part and Part 2.8 (commencing with Section 10800), that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the requirements of this part or Part 2.8 (commencing with Section 10800).

APPENDIX B

COORDINATION

SAN GABRIEL VALLEY
MUNICIPAL
WATER DISTRICT

Board Members:
Mark R. Paulson
John S. Leung
Joseph C. Reichenberger
Thomas Love
Carol Montano

Darin Kasamoto
General Manager

Dave Johnson
Assistant Manager

MEMORANDUM

TO: **County of Los Angeles, Registrar Recorder/County Clerk**

FROM: **San Gabriel Valley Municipal Water District**

SUBJECT: **2010 Urban Water Management Plan Update**

DATE: **April 1, 2010**

The Urban Water Management Planning Act requires every "urban water supplier[1]" to prepare and adopt an Urban Water Management Plan (UWMP) and periodically update that plan at least once every five years on or before December 31, in years ending in five and zero. The UWMP is a planning document and a source document to direct urban water suppliers to evaluate and compare their water supply and reliability to their existing water conservation efforts. San Gabriel Valley Municipal Water District (SGVMWD) is currently in the process of updating our 2010 UWMP.

As an urban water supplier, SGVMWD is required pursuant to Section 10620(d)(2) of the UWMP Act to coordinate with water management agencies, relevant public agencies and other water suppliers on the preparation of the UWMP. SGVMWD will be reviewing the UWMP and will make amendments and changes, as appropriate. SGVMWD invites you to submit comments in anticipation of the development of our 2010 UWMP.

Please provide written comments within the next 30 days to SGVMWD.

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[1]Section 10617 of the Urban Water Management Planning Act states, ""*Urban Water Supplier*" *means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually.*

APPENDIX B.2
60-Day Notice of Public Hearing

Public Notices 51 | Public Notices 51

NOTICE OF TRUSTEE'S SALE T.S No. 1274050-10 APN: 8243-033-005 TRA: 004407 LOAN NO. Xxxxxx1500 REF.: Bao, Min IMPORTANT NOTICE TO PROPERTY OWNER: YOU ARE IN DEFAULT UNDER A DEED OF TRUST, DATED June 09, 2005. UNLESS YOU TAKE ACTION TO PROTECT YOUR PROPERTY, IT MAY BE SOLD AT A PUBLIC SALE. IF YOU NEED AN EXPLANATION OF THE NATURE OF THE PROCEEDING AGAINST YOU, YOU SHOULD CONTACT A LAWYER. On October 18, 2010, at 10:00am, Cal-Western Reconveyance Corporation, as duly appointed trustee under and pursuant to Deed of Trust recorded June 21, 2005, as Inst. No. 05 1450050 in book XX, page XX of Official Records in the office of the County Recorder of Los Angeles County, State of California, executed by Min Hua Bao, A Married Woman As Her Sole and Separate Property, will sell at public auction to highest bidder for cash, cashier's check drawn on a state or national bank, a check drawn by a state or federal credit union, or a check drawn by a state or federal savings and loan association, savings association, or savings bank At the west side of the los angeles county courthouse, Southeast District, 12720 Norwalk Blvd., Norwalk, California, all right, title and interest conveyed to and now held by it under said Deed of Trust in the property situated in said County and State described as: Completely described in said deed of trust The street address and other common designation, if any, of the real property described above is purported to be: 1508 Hinnen Avenue Hacienda Heights, CA 91745 The undersigned Trustee disclaims any liability for any incorrectness of the street address and other common designation, if any, shown herein. Said sale will be held, but without covenant or warranty, express or implied, regarding title, possession, condition or encumbrances, including fees, charges and expenses of the Trustee and of the trusts created by said Deed of Trust, to pay the remaining principal sums of the note(s) secured by said Deed of Trust. The total amount of the unpaid balance of the obligation secured by the property to be sold and reasonable estimated costs, expenses and advances at the time of the initial publication of the Notice of Sale is: $351,591.27. If the Trustee is unable to convey title for any reason, the successful bidder's sole and exclusive remedy shall be the return of monies paid to the Trustee, and the successful bidder shall have no further recourse. The

Public Notices 51 | Public Notices 51

NOTICE TO CREDITORS OF BULK SALE

(Division 6 of the Commercial Code)

Escrow No. 102419-MC

(1) NOTICE IS HEREBY GIVEN to creditors of the within named Seller(s) that a bulk sale is about to be made on personal property hereinafter described.
(2) The name and business addresses of the seller are: SAMER SABA, P.O. BOX 1034, GLENDORA, CA 91740.
(3) The location in California of the Chief Executive Office of the seller is: SAME AS ABOVE.
(4) The names and business address of the buyer(s) are: AL RAYES, 12466 LEWIS ST. #103, GARDEN GROVE, CA 92840
(5) The location and general description of the assets to be sold are: STOCK IN TRADE, FURNITURE, FIXTURES, EQUIPMENT AND GOODWILL of that certain business located at: 760 E. ROUTE 66, GLENDORA, CA 91740
(6) The business name used by the seller(s) at the said location is: AL-AKHBAR NEWSPAPER
(7) The anticipated date of the bulk sale is OCTOBER 28, 2010, at the office of R ESCROW, 1205 E. CHAPMAN AVE, ORANGE, CA 92866, Escrow No. 102419-MC, Escrow Officer MILLIE CORK
(8) Claims may be filed the same as 7 above.
(9) The last date for filing claims is: OCTOBER 27, 2010
(10) This Bulk Sale is subject to Section 6106.2 of the Uniform Commercial
(11) As listed by the Seller, all other business names and addresses used by the Seller within three years before the date such list was sent or delivered to the Buyer are as: PROVIDED TO BUYER BY SELLER
Dated: OCTOBER 5, 2010
AL RAYES, Buyer(s)
PCTS LA155869-10/12/10
San Gabriel Valley Tribune Ad#126866

NOTICE INVITING BIDS

Sealed bids will be received by the County of Los Angeles Department of Public Works, Construction Division, for the trimming of parkway trees under Project ID No. RMD1146047, Parkway Tree Trimming - Road Divisions 116, 118, 514, and 518, Cycle A, in the unincorporated communities of Altadena, Bassett, Charter Oak (Islands), Citrus (Islands), and East Azusa (Islands).

The bids must be submitted at the Cashier's Office, located on the Mezzanine level, 900 South Fremont Avenue, Alhambra, California 91803-1331, before 11 a.m. on Tuesday, November 2, 2010. The bids will then be publicly opened and read in the

Public Notices 51 | Public Notices 51

NOTICE OF PUBLIC HEARING

San Gabriel Valley Municipal Water District (District) will hold a PUBLIC HEARING on **December 13, 2010** at 8 a.m. for the purpose of adopting its 2010 draft Urban Water Management Plan.

The 2010 draft Urban Water Management Plan (Plan) was prepared pursuant to the Urban Water Management Planning Act, California Water Code, Sections 10608 through 10656. The State Department of Water Resources requires every urban water supplier to prepare and adopt a Plan and periodically update that plan at least once every five years on or before December 31, in years ending in five and zero.

Information regarding the District's PUBLIC HEARING follows:

Date: December 13, 2010

Time: 8 a.m.

Place: 1402 N. Vosburg Drive, Azusa CA, 91702-1299

The District invites all interested parties and groups to attend and present their comments. A copy of the draft 2010 Plan is available at the District's office. To obtain a copy of the 2010 draft Plan prior to the PUBLIC HEARING, contact the District office at (626) 969-7911. If you cannot attend the PUBLIC HEARING, you may submit written comments by **5 p.m.** on **December 13, 2010**, to the District at 1402 N. Vosburg Drive, Azusa CA, 91702-1299.
Publish: October 12, December 6, 2010
San Gabriel Valley Tribune Ad#127159

NOTICE INVITING BIDS

Sealed bids will be received by the County of Los Angeles Department of Public Works, Construction Division, for the trimming of parkway trees under Project ID No. RMD1146048, Parkway Tree Trimming - Road Divisions 116, 117, 118, 119, 517, 518, and 519, Cycle F, in the unincorporated communities of Avocado Heights, Citrus (Islands), Hacienda Heights, North Claremont (Islands), South San Gabriel, South San Jose Hills, and West Arcadia (Islands).

The bids must be submitted at the Cashier's Office, located on the Mezzanine level, 900 South Fremont Avenue, Alhambra, California 91803-1331, before 11 a.m. on Thursday, November 4, 2010. The bids will then be publicly opened and read in the location posted in the main lobby.

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NOTICE OF TRUSTEE'S SALE TS No. 10-0071739 Title Order No. 10-8-306131 Investor/Insurer No. APN No. 8467-040-008 YOU ARE IN DEFAULT UNDER A DEED OF TRUST, DATED 02/21/2006. UNLESS YOU TAKE ACTION TO PROTECT YOUR PROPERTY, IT MAY BE SOLD AT A PUBLIC SALE. IF YOU NEED AN EXPLANATION OF THE NATURE OF THE PROCEEDING AGAINST YOU, YOU SHOULD CONTACT A LAWYER." Notice is hereby given that RECONTRUST COMPANY, N.A., as duly appointed trustee pursuant to the Deed of Trust executed by EDUARDO GOZUN, A WIDOWER AND, AND PETER RYAN GOZUN, A SINGLE MAN, AS JOINT TENANTS, dated 02/21/2006 and recorded 02/28/06, as Instrument No. 06 0429259, in Book , Page), of Official Records in the office of the County Recorder of Los Angeles County, State of California, will sell on 11/02/2010 at 10:30AM, At the West side of the Los Angeles County Courthouse, directly facing Norwalk Blvd., 12720 Norwalk Blvd., Norwalk, CA 90650 at public auction, to the highest bidder for cash or check as described below, payable in full at time of sale, all right, title, and interest conveyed to and now held by it under said Deed of Trust, in the property situated in said County and State and as more fully described in the above referenced Deed of Trust. The street address and other common designation, if any, of the real property described above is purported to be: 1407 S SUNSET AVE, WEST COVINA, CA, 917904525. The undersigned Trustee disclaims any liability for any incorrectness of the street address and other common designation, if any, shown herein. The total amount of the unpaid balance with interest thereon of the obligation secured by the property to be sold plus reasonable estimated costs, expenses and advances at the time of the initial publication of the Notice of Sale is $327,194.72. It is possible that at the time of sale the opening bid may be less than the total indebtedness due. In addition to cash, the Trustee will accept cashier's checks drawn on a state or national bank, a check drawn by a state or federal credit union, or a check drawn by a state or federal savings and loan association, savings association, or savings bank specified in Section 5102 of the Financial Code and authorized to do business in this state. Said sale will be made, in an "AS IS" condition, but without covenant or warranty, express or implied, regarding title, possession or encumbrances, to satisfy the indebtedness secured by said Deed of Trust, advances

Public Notices 51 | Public Notices 51

NOTICE OF TRUSTEE'S SALE TS # CA-10-371200-AL Order # 508281 YOU ARE IN DEFAULT UNDER A DEED OF TRUST DATED 2/4/2008. UNLESS YOU TAKE ACTION TO PROTECT YOUR PROPERTY, IT MAY BE SOLD AT A PUBLIC SALE. IF YOU NEED AN EXPLANATION OF THE NATURE OF THE PROCEEDING AGAINST YOU, YOU SHOULD CONTACT A LAWYER. A public auction sale to the highest bidder for cash, cashier's check drawn on a state or national bank, check drawn by state or federal credit union, or a check drawn by a state or federal savings and loan association, or savings association, or savings bank specified in Section 5102 to the Financial code and authorized to do business in this state, will be held by duly appointed trustee. The sale will be made, but without covenant or warranty, expressed or implied, regarding title, possession, or encumbrances, to pay the remaining principal sum of the note(s) secured by the Deed of Trust, with interest and late charges thereon, as provided in the note(s), advances, under the terms of the Deed of Trust, interest thereon, fees, charges and expenses of the Trustee for the total amount (at the time of the initial publication of the Notice of Sale) reasonably estimated to be set forth below. The amount may be greater on the day of sale. BENEFICIARY MAY ELECT TO BID LESS THAN THE TOTAL AMOUNT DUE. Trustor(s): LARRY C. COOPER, AN UNMARRIED MAN Recorded: 2/13/2008 as Instrument No. 20080261249 in book XXX, page XXX of Official Records in the office of the Recorder of LOS ANGELES County, California; Date of Sale: 10/25/2010 at 10:30 AM Place of Sale: At the West side of the Los Angeles County Courthouse, directly facing Norwalk Blvd., 12720 Norwalk Blvd., Norwalk, CA 90650 Amount of unpaid balance and other charges: $145,041.64 The purported property address is: 3027 E VALLEY VIEW AVE WEST COVINA, CA 91792 Assessors Parcel No. 8724-002-044 The undersigned Trustee disclaims any liability for any incorrectness of the property address or other common designation, if any, shown herein. If no street address or other common designation is shown, please refer to the referenced legal description for property location. In the event no common address or common designation of the property is provided herein directions to the location of the property may be obtained within 10 days of the date of first publication of this Notice of Sale by sending a written request to JPMorgan Chase Bank, N.A. 7301 Baymeadows Way Jacksonville FL

Public Notices 51 | Public Notices 51

Notice is hereby given that pursuant to Section 21700 of the Business and Professions Code State of California, the undersigned will sell at Public Auction by competitive bidding, at

9:30 A.M. ON DECEMBER 14, 2010 AT 540 W. FOOTHILL BLVD.,

City of Glendora, County of Los Angeles, State of California, the goods, the chattels, orPersonal property of the Tenant's Units listed below:

UNIT#.	TENANT NAME:
#239	GRAVES, MARY
#528	SAKOVITCH, TATYANA
#673	ALVARADO, JOHN
#800	AMPARANO, YANAH
#889	CHAN, JENNY
#913	CHAVEZ, DAVID

Purchased goods are sold as is and must be removed within one day. Purchases to be madeWith **CASH ONLY**. The sale of any unit is subject to cancellation, without notice, in the event of settlement between Security Public Storage and the tenant.

Publish: Nov. 29, Dec. 6, 2010
San Gabriel Valley Tribune Ad#191522

NOTICE OF PUBLIC HEARING

San Gabriel Valley Municipal Water District (District) will hold a PUBLIC HEARING on **December 13, 2010** at 8 a.m. for the purpose of adopting its 2010 draft Urban Water Management Plan.

The 2010 draft Urban Water Management Plan (Plan) was prepared pursuant to the Urban Water Management Planning Act, California Water Code, Sections 10608 through 10656. The State Department of Water Resources requires every urban water supplier to prepare and adopt a Plan and periodically update that plan at least once every five years on or before December 31, in years ending in five and zero.

Information regarding the District's PUBLIC HEARING follows:

Date: December 13, 2010

Time: 8 a.m.

Place: 1402 N. Vosburg Drive, Azusa CA 91702-1299

The District invites all interested parties and groups to attend and present their comments. A copy of the draft 2010 Plan is available at the District's office. To obtain a copy of the 2010 draft Plan prior to the PUBLIC HEARING, contact the District office at (626) 969-7911. If you cannot attend the PUBLIC HEARING, you may submit written comments by **5 p.m.** on **December 13, 2010**, to the District at 1402 N. Vosburg Drive, Azusa CA 91702-1299.

Publish: October 12, December 6, 2010
San Gabriel Valley Tribune Ad#127159

TSG No. 4022399 TS No. 20099070802933 FHA/VA/PMI No. APN 8535-003-022 NOTICE OF TRUSTEE'S SALE YOU ARE IN DEFAULT UNDER A DEED OF TRUST, DATED 4/24/2007. UNLESS YOU TAKE ACTION TO PROTECT YOUR PROPERTY, IT MAY BE SOLD AT A PUBLIC SALE. IF YOU NEED AN EXPLANATION OF THE NATURE OF THE PROCEEDING AGAINST YOU, YOU SHOULD CONTACT A LAWYER. On 12/20/2010 at 10:30 AM, First American Trustee Services Solutions LLC, as duly appointed Trustee under and pursuant to Deed of Trust recorded 05/10/2007, as Instrument No. 20071136903, in book

Public Notices 51 | Public Notices 51

NOTICE OF TRUSTEE'S SALE TS No. 10-0099320 Title Order No. 10-8-386730 Investor/Insurer No. 1703757191 APN No. 8487-017-007 YOU ARE IN DEFAULT UNDER A DEED OF TRUST, DATED 04/26/2007. UNLESS YOU TAKE ACTION TO PROTECT YOUR PROPERTY, IT MAY BE SOLD AT A PUBLIC SALE. IF YOU NEED AN EXPLANATION OF THE NATURE OF THE PROCEEDING AGAINST YOU, YOU SHOULD CONTACT A LAWYER. Notice is hereby given that RECONTRUST COMPANY, N.A., as duly appointed trustee pursuant to the Deed of Trust executed by PAULO CRUZ AN UNMARRIED MAN AND LISA A. ORTIZ A SINGLE WOMAN AS JOINT TENANTS, dated 04/26/2007 and recorded 05/03/07, as Instrument No. 20071070583, in Book , Page), of Official Records in the office of the County Recorder of Los Angeles County, State of California, will sell on 12/27/2010 at 10:30AM, At the West side of the Los Angeles County Courthouse, directly facing Norwalk Blvd., 12720 Norwalk Blvd., Norwalk, CA 90650 at public auction, to the highest bidder for cash or check as described below, payable in full at time of sale, all right, title, and interest conveyed to and now held by it under said Deed of Trust, in the property situated in said County and State and as more fully described in the above referenced Deed of Trust. The street address and other common designation, if any, of the real property described above is purported to be: 928 SOUTH RUSSELEE DRIVE, WEST COVINA, CA 91790. The undersigned Trustee disclaims any liability for any incorrectness of the street address and other common designation, if any, shown herein. The total amount of the unpaid balance with interest thereon of the obligation secured by the property to be sold plus reasonable estimated costs, expenses and advances at the time of the initial publication of the Notice of Sale is $406,548.35. It is possible that at the time of sale the opening bid may be less than the total indebtedness due. In addition to cash, the Trustee will accept cashier's checks drawn on a state or national bank, a check drawn by a state or federal credit union, or a check drawn by a state or federal savings and loan association, savings association, or savings bank specified in Section 5102 of the Financial Code and authorized to do business in this state. Said sale will be made, in an "AS IS" condition, but without covenant or warranty, express or implied, regarding title, possession or encumbrances, to satisfy the indebtedness secured by said Deed of Trust, advances thereunder, with interest as provided, and the unpaid principal of the Note secured by said Deed of Trust with interest thereon as provided in said Note, plus fees, charges and expenses of the Trustee and of the trusts created by said Deed of Trust. DATED: 11/24/2010 RECONTRUST COMPANY, N.A. 1800 Tapo Canyon Rd., CA6-914-01-94 SIMI VALLEY, CA 93063 Phone: (800) 281 8219 Sale Information (626) 927-4399 By: Trustee's Sale Officer RECONTRUST COMPANY, N.A. is a debt collector attempting to collect a debt. Any information obtained will be used for that purpose. ASAP# FNMA3802835 11/29/2010, 12/06/2010, 12/13/2010
San Gabriel Valley Tribune Ad#35715

Public Notices 51 | Public Notices 51

NOTICE OF TRUSTEE'S SALE TS No. 10-0095725 Title Order No. 10-8-375471 Investor/Insurer No. 1701523825 APN No. 8470-009-001 YOU ARE IN DEFAULT UNDER A DEED OF TRUST, DATED 06/22/2006. UNLESS YOU TAKE ACTION TO PROTECT YOUR PROPERTY, IT MAY BE SOLD AT A PUBLIC SALE.

Public Notices 51 | Public Notices 51

NOTICE OF TRUSTEE'S SALE TS No. 10-0098328 Title Order No. 10-8-383391 Investor/Insurer No. 1703250550 APN No. 8490-006-005 YOU ARE IN DEFAULT UNDER A DEED OF TRUST, DATED 02/15/2007. UNLESS YOU TAKE ACTION TO PROTECT YOUR PROPERTY, IT MAY BE SOLD AT A PUBLIC SALE. IF YOU NEED AN EXPLANATION OF THE NATURE OF THE PROCEEDING AGAINST YOU, YOU SHOULD CONTACT A LAWYER. Notice is hereby given that RECONTRUST COMPANY, N.A., as duly appointed trustee pursuant to the Deed of Trust executed by ROGELIO NUNEZ AND DEBORAH NUNEZ, HUSBAND AND WIFE, AS JOINT TENANTS, dated 02/15/2007, and recorded 02/22/07, as Instrument No. 20070383475, in Book , Page , of Official Records in the office of the County Recorder of Los Angeles County, State of California, will sell on 12/27/2010 at 10:30AM, At the West side of the Los Angeles County Courthouse, directly facing Norwalk Blvd., 12720 Norwalk Blvd., Norwalk, CA 90650 at public auction, to the highest bidder for cash or check as described below, payable in full at time of sale, all right, title, and interest conveyed to and now held by it under said Deed of Trust, in the property situated in said County and State and as more fully described in the above referenced Deed of Trust. The street address and other common designation, if any, of the real property described above is purported to be: 1324 EAST MICHELLE STREET, WEST COVINA, CA 91790. The undersigned Trustee disclaims any liability for any incorrectness of the street address and other common designation, if any, shown herein. The total amount of the unpaid balance with interest thereon of the obligation secured by the property to be sold plus reasonable estimated costs, expenses and advances at the time of the initial publication of the Notice of Sale is $427,747.92. It is possible that at the time of sale the opening bid may be less than the total indebtedness due. In addition to cash, the Trustee will accept cashier's checks drawn on a state or national bank, a check drawn by a state or federal credit union, or a check drawn by a state or federal savings and loan association, savings association, or savings bank specified in Section 5102 of the Financial Code and authorized to do business in this state. Said sale will be made, in an "AS IS" condition, but without covenant or warranty, express or implied, regarding title, possession or encumbrances, to satisfy the indebtedness secured by said Deed of Trust, advances thereunder, with interest as provided, and the unpaid principal of the Note secured by said Deed of Trust with interest thereon as provided in said Note, plus fees, charges and expenses of the Trustee and of the trusts created by said Deed of Trust. DATED: 11/27/2010 RECONTRUST COMPANY, N.A. 1800 Tapo Canyon Rd., CA6-914-01-94 SIMI VALLEY, CA 93063 Phone: (800) 281 8219 Sale Information (626) 927-4399 By: Trustee's Sale Officer RECONTRUST COMPANY, N.A. is a debt collector attempting to collect a debt. Any information obtained will be used for that purpose. ASAP# FNMA3807424 11/29/2010, 12/06/2010, 12/13/2010
San Gabriel Valley Tribune Ad#191685

Public Notices 51 | Public Notices 51

NOTICE OF TRUSTEE'S SALE TS No. 10-0100334 Title Order No. 10-8-388901 Investor/Insurer No. 1703601050 APN No. 8441-022-018 YOU ARE IN DEFAULT UNDER A DEED OF TRUST, DATED 04/25/2007. UNLESS YOU TAKE ACTION TO PROTECT YOUR PROPERTY, IT MAY BE SOLD AT A PUBLIC SALE.

Public Notices 51 | Public

NOTICE OF TRUSTEE'S
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12/06/2010, 12/13/2010, 12/20/20
San Gabriel Valley Tribune

Public Notices 51 | Public N

NOTICE OF TRUSTEE'S
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NOTICE OF PUBLIC HEARING

San Gabriel Valley Municipal Water District (District) will hold a PUBLIC HEARING on December 13, 2010 at 8 a.m. for the purpose of adopting its 2010 draft Urban Water Management Plan.

The 2010 draft Urban Water Management Plan (Plan) was prepared pursuant to the "Urban Water Management Planning Act", California Water Code, Sections 10608 through 10656. The State Department of Water Resources requires every urban water supplier to prepare and adopt a Plan and periodically update that plan at least once every five years on or before December 31, in years ending in five and zero.

Information regarding the District's PUBLIC HEARING follows:

Date: December 13, 2010
Time: 8 a.m.
Place: 1402 N. Vosburg Drive, Azusa CA, 91702-1299

The District invites all interested parties and groups to attend and present their comments. A copy of the draft 2010 Plan is available at the District's office. To obtain a copy of the 2010 draft Plan prior to the PUBLIC HEARING, contact the District office at (626) 969-7911. If you cannot attend the PUBLIC HEARING, you may submit written comments by 5 p.m. on December 13, 2010 to the District at 1402 N. Vosburg Drive, Azusa CA, 91702-1299.

STETSON
ENGINEERS INC.

861 Village Oaks Drive, Suite 100 • Covina, California 91724
Phone: (626) 967-6202 • FAX: (626) 331-7065 • Web site: www.stetsonengineers.com

Northern California • Southern California • New Mexico • Arizona • Nevada • Colorado

Reply to: Covina

MEMORANDUM

TO: CITY OF ALHAMBRA (MARY K. SWINK)
CITY OF AZUSA (CHET ANDERSON)
CITY OF MONTEREY PARK (VICTOR MEZA)
CITY OF SIERRA MADRE (BRUCE INMAN)

FROM: SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT

SUBJECT: DRAFT 2010 URBAN WATER MANAGEMENT PLAN

JOB NO.: 1157-37.1

DATE: OCTOBER 12, 2012

San Gabriel Valley Municipal Water District (San Gabriel District) has requested Stetson Engineers Inc. to provide you with the enclosed draft 2010 Urban Water Management Plan (UWMP) for your review. Pursuant to Section 10642, San Gabriel District's Board of Directors has set a time and place for the public hearing on December 13, 2010 at 8am at the San Gabriel District's office.

Z:\Jobs\1157\1157-37.1\notifications\Member Draft Transmittal.doc

NOTICE OF PUBLIC HEARING

San Gabriel Valley Municipal Water District (District) will hold a PUBLIC HEARING on December 13, 2010 at 8 a.m. for the purpose of adopting its 2010 draft Urban Water Management Plan.

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The District invites all interested parties and groups to attend and present their comments. A copy of the draft 2010 Plan is available at the District's office. To obtain a copy of the 2010 draft Plan prior to the PUBLIC HEARING, contact the District office at (626) 969-7911. If you cannot attend the PUBLIC HEARING, you may submit written comments by 5 p.m. on December 13, 2010 to the District at 1402 N. Vosburg Drive, Azusa CA, 91702-1299.

STETSON
ENGINEERS INC.

861 Village Oaks Drive, Suite 100 • Covina, California 91724
Phone: (626) 967-6202 • FAX: (626) 331-7065 • Web site: www.stetsonengineers.com

Northern California • Southern California • New Mexico • Arizona • Nevada • Colorado

Reply to: Covina

MEMORANDUM

TO: COUNTY OF LOS ANGELES, COUNTY CLERK

FROM: SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT

SUBJECT: NOTICE OF PUBLIC HEARING

JOB NO.: 1157-37.1

DATE: OCTOBER 12, 2012

San Gabriel Valley Municipal Water District (District) has requested Stetson Engineers Inc. to provide the County with information on its Public Hearing.

The District will hold a PUBLIC HEARING on December 13, 2010 at 8 a.m. for the purpose of adopting its 2010 draft Urban Water Management Plan.

The 2010 draft Urban Water Management Plan (Plan) was prepared pursuant to the "Urban Water Management Planning Act", California Water Code, Sections 10608 through 10656. The State Department of Water Resources requires every urban water supplier to prepare and adopt a Plan and periodically update that plan at least once every five years on or before December 31, in years ending in five and zero.

Information regarding the District's PUBLIC HEARING follows:

Date: December 13, 2010
Time: 8 a.m.
Place: 1402 N. Vosburg Drive, Azusa CA, 91702-1299

The District invites all interested parties and groups to attend and present their comments. A copy of the draft 2010 Plan is available at the District's office. To obtain a copy of the 2010 draft Plan prior to the PUBLIC HEARING, contact the District office at (626) 969-7911. If you cannot attend the PUBLIC HEARING, you may submit written comments by 5 p.m. on December 13, 2010 to the District at 1402 N. Vosburg Drive, Azusa CA, 91702-1299.

WATER RESOURCE PROFESSIONALS
LICENSED BY THE STATE BOARD OF CONSUMER AFFAIRS

APPENDIX B.3
Adopted Resolution

MINUTES
BOARD OF DIRECTORS
SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT
REGULAR MEETING
MONDAY, DECEMBER 13, 2010
8:00 A.M.

At 8:05 a.m. on December 13, 2010, the Board of Directors met in the Board Room of the District office at 1402 N. Vosburg Drive, Azusa, California.

CALL TO ORDER:

President Reichenberger called the meeting to order.

ROLL CALL:

Directors Present at Roll Call: Love (arrived later), Montano, Paulson, Reichenberger

Directors Absent: Leung

ALSO PRESENT:

Darin Kasamoto, General Manager; David Johnson, Assistant Manager; Linda Flowers-Armour, Administrative Assistant; Wayne Lemieux, Attorney; Martin Ray, Deputy Director of Utilities, City of Alhambra; Jose Reynoso, Water Superintendent, City of Sierra Madre; Elias Saykali, Director of Public Works, City of Monterey Park; Bob Morales & Dave DePinto, DePinto Morales Communications Inc.; Kevin Smead, Engineer, Stetson Engineers, Inc.; Susan Hoskins, Sierra Madre Elementary School; Lisa Novick, Theodore Payne Foundation.

PUBLIC COMMENTS ON NON AGENDA ITEMS

There were no public comments made.

CONSENT CALENDAR:

On motion of Director Paulson, seconded by Director Montano, and unanimously carried by those in attendance, the following items on the consent calendar were approved, and further reading thereof waived:

Minutes of the Regular Meeting of November 8, 2010
Financial Statements – November 2010
Treasurers Investment Report dated November 30, 2010
Disbursements of the Revolving Fund Check Nos. 9939-9944 dated November 18, 2010 in the amount of $34,728.02; Check Nos. 9945-9950 dated December 2, 2010 in the amount of $34,034.93
Disbursements of the General Fund Check No. 33499-33518 dated November 24, 2010 and Check No. 33519 VOID, Check No. 33520 to DWR dated November 29, 2010 for a total amount of $421,340.84
Disbursements of the General Fund Check No. 33521-33567 dated December 13, 2010 in the amount of $508,290.34with Check Nos. 33550 and 33558 VOIDED

ACTION ITEMS

Public Hearing to Adopt Urban Water Management Plan

The General Manager advised an update to the District's Urban Water Management Plan is required by the Department of Water Resources every 5 years.

Director Love arrived during this discussion.

Kevin Smead, Engineer, Stetson Engineers, Inc. reported two public notices were published in the San Gabriel Valley Tribune on October 12, 2010 and December 6, 2010 and the report updates the hope to accomplish a 20% reduction in water usage by 2020. This plan has to be approved and signed off by the Department of Water Resources for any application to be considered for any grants or future loans.

The public hearing was opened. There were no written comments. There are no public oral comments. The public hearing was closed.

On motion of Director Paulson, seconded by Director Montano, and unanimously carried, adopting the Urban Water Management Plan.

DePinto Morales Public Relations Update

Dave DePinto introduced Susan Hogkins to present a video on the landscaping at the Sierra Madre Elementary School undertaking with the assistance of the District.

The City of Monterey Park's Automatic Meter Reading workshop was at the headquarters last Thursday. The District granted $65,000 to install 280 meters throughout the City showing usage. This has made meter reading quicker, reports leaks and allows the water department to replace meters.

The draft annual report on district operations was reviewed and changes made. On motion of Director Love, seconded be Director Paulson, and unanimously carried, the Annual Report was approved for final printing and distribution in late January and 200 in February.

Presentation by Theodore Payne Foundation

Dave De Pinto introduced Lisa Novak, Theodore Payne Foundation, who gave a power point presentation on the "California Native Plants: The Most "California Friendly" Plants on Earth". In addition, she thanked the Board for the donation to the upcoming "Garden Demonstration" in April and that the foundation worked closely with the Sierra Madre Elementary School landscaping and hopes to partner with the District in future endeavors.

Proposal from Brown, Lloyd & Stevenson for Annual Audit & Travel Expense Report for 2011

The General Manager presented the annual audit proposal for 2011 from Brown, Lloyd & Stevenson with a slight increase in fees over last year.

Although the District is satisfied with the current audit services, it was the consensus of the Board to request for proposals to local firms for the annual audit change.

UNFINISHED BUSINESS

Report on Basin Management

Director Love reported on the latest actions taken at the Watermaster meeting of December 8th. Due to the recent election Upper District will have to appoint a new representative in January.

Report on WQA

Director Montano reported the latest the latest media news within the Water Quality Authority. Grace Kast, the Executive Director will leave at the end of the year and an interim Director will be hired. Meanwhile the WQA continue to review Proposition 84 project applications.

Report of the Attorney

Attorney Lemieux advised he may not be in attendance at the January meeting due to the beginning of an 8 week trial for Antelope Valley adjudicated basin.

Report of the General Manager

The General Manager reported the Department of Water resources has issued an initial 2011 allocation of 25% which is higher than last year's 5%.

The District is taking water for Dudley Ridge Water District, cyclic storage is full and replacement water is available.

Report of the State Water Contractors

The General Manager advised Westlands Water District has withdrawn from the BDCP because of the Federal and EIR requirements, jeopardizing water supply.

Report of the Assistant Manager
The Assistant Manager wished the Board and staff a Merry Christmas and Happy New Year.

DIRECTOR COMMENTS

Director Paulson commended Director Montano on your 20 years of service to the District.

Director Montano reported she attended the ACWA Conference in Indian Wells "Visions for the Future" and was very informative.

Resolution No. 12-2010-677 Thank you Carol Montano for Outstanding Service

On motion of Director Paulson, seconded by Director Love, and unanimously carried, Resolution No. 12-2010-677 entitled, "RESOLUTION OF THE BOARD OF DIRECTORS OF SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT THANKING CAROL A. MONTANO FOR HER LONG AND OUTSTANDING SERVICE AS A MEMBER OF THE BOARD OF DIRECTORS" was adopted. Reference is hereby made to Resolution No. 10-2010-677 in the District's Resolution Book and by this reference the same is incorporated herein and made a part of as though fully set forth at length.

The Board presented Director Montano with a presentation copy of this resolution and congratulatory thank you for your 20 years of service.

Informational Items

- Tribune 11/22/10 article, "State Water politics ever more complex"; 11/30/10 "Newcomer Urias wins seat"; 12/6/10 "Wave of changes"
- Daily News editorial 11/21/10 "This is no time to relax on water conservation in Southern California"

CLOSED SESSION

The review of the General Manager (Govt. Code 54957) was tabled for the January meeting when there is a full Board present.

ADJOURNED

There being no further business, upon motion made, seconded, and carried, the meeting was duly adjourned at 9:54 a.m. The next regular meeting will be on Monday, January 10, 2011, at 8:00 a.m. in the Board Room of the San Gabriel Valley Municipal Water District.

s/ Joseph C. Reichenberger
President

ATTEST:

s/ John S. Leung
Secretary

APPENDIX B.4
Letters Sending the Final 2010 UWMP to DWR, State Library and Cities/Counties

STETSON
ENGINEERS INC.

861 Village Oaks Drive, Suite 100 • Covina, California 91724
Phone: (626) 967-6202 • FAX: (626) 331-7065 • Web site: www.stetsonengineers.com

Northern California • Southern California • New Mexico • Arizona • Nevada • Colorado

1157.37.1

Reply to: Covina

January 11, 2011

Department of Water Resources
Statewide Integrated Water Management
Water Use Efficiency Branch
P.O. Box 942836
Sacramento, California 94236-0001
Attn: Coordinator, Urban Water Management Plans

Subject: San Gabriel Valley Municipal Water District
2010 Urban Water Management Plan

Dear Coordinator, Urban Water Management Plans:

San Gabriel Valley Municipal Water District's (San Gabriel District) has authorized this office to provide you with San Gabriel District's 2010 Urban Water Management Plan in accordance with Section 10644 of the California Water Code. As part of the Urban Water Management Plan process, San Gabriel District took the following actions:

- Notified Cities within its service area of the preparation of its 2010 Urban Water Management Plan Update and encouraged participation and the submittal of comments
- Gave 60-day notice of its public hearing according to Section 6066 of the Government Code and made the plan available to the public for review prior to holding a public hearing on December 13, 2010
- Adopted the draft Urban Water Management Plan as its 2010 Urban Water Management Plan at its December 13, 2010 meeting
- Submitted its Urban Water Management Plan to all Cities and County within its service area.

Please, feel free to contact Mr. Dave Johnson of San Gabriel Valley Municipal Water District at (626) 969-7911 or me at (626) 967-6202 should you have any questions.

Sincerely,

Kevin R. Smead

Kevin R. Smead, P.E.
Stetson Engineers Inc.

cc: Mr. Dave Johnson, San Gabriel Valley Municipal Water District

Z:\Jobs\1157\1157-37.1\Transmittal to DWR.doc

STETSON
ENGINEERS INC.

861 Village Oaks Drive, Suite 100 • Covina, California 91724
Phone: (626) 967-6202 • FAX: (626) 331-7065 • Web site: www.stetsonengineers.com

Northern California • Southern California • New Mexico • Arizona • Nevada • Colorado

1157.37.1

Reply to: Covina

January 11, 2011

California State Library
P.O. Box 942837
Sacramento, CA 94237-0001

Subject: San Gabriel Valley Municipal Water District
2010 Urban Water Management Plan

California State Library:

San Gabriel Valley Municipal Water District (San Gabriel District) has authorized this office to provide the California State Library with a copy of San Gabriel District's 2010 Urban Water Management Plan in accordance with Section 10644 of the California Water Code.

Please, feel free to contact Mr. Dave Johnson of San Gabriel District at (626) 969-7911 or me at (626) 967-6202 should you have any questions.

Sincerely,

Kevin R. Smead, P.E.
Stetson Engineers Inc.

cc: Mr. Dave Johnson, San Gabriel Valley Municipal Water District

Z:\Jobs\1157\1157-37.1\Transmittal to StateLibrary.doc

STETSON
ENGINEERS INC.

861 Village Oaks Drive, Suite 100 • Covina, California 91724
Phone: (626) 967-6202 • FAX: (626) 331-7065 • Web site: www.stetsonengineers.com

Northern California • Southern California • New Mexico • Arizona • Nevada • Colorado

Reply to: Covina

MEMORANDUM

TO: CITY OF ALHAMBRA (MS. MARY K. SWINK)
CITY OF AZUSA (MR. CHET ANDERSON)
CITY OF MONTEREY PARK (MR. ELIAS SAYKALI)
CITY OF SIERRA MADRE (MR. BRUCE INMAN)
COUNTY OF LOS ANGELES (COUNTY CLERK)

FROM: SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT

SUBJECT: FINAL 2010 URBAN WATER MANAGEMENT PLAN

JOB NO.: 1157-37.1

DATE: JANUARY 11, 2011

San Gabriel Valley Municipal Water District (San Gabriel District) has adopted its 2010 Urban Water Management Plan (UWMP) on December 13, 2010. San Gabriel District has requested Stetson Engineers Inc. to provide you with the enclosed electronic Final 2010 UWMP for your files. Please let the San Gabriel District office know if you would like a hard copy in addition to the electronic copy.

Z:\Jobs\1157\1157-37.1\City and County Draft Transmittal.doc

APPENDIX C

LONG BEACH JUDGEMENT

Superior Court of the State of California
For the County of Los Angeles

BOARD OF WATER COMMISSIONERS OF THE CITY OF LONG BEACH, et al., *Plaintiffs* vs. SAN GABRIEL VALLEY WATER COMPANY, et al., *Defendants*	No. 722647 **SETTLEMENT DOCUMENTS**

STIPULATION FOR JUDGMENT
JUDGMENT
MAP OF WHITTIER NARROWS
ENGINEERING APPENDIX
REIMBURSEMENT CONTRACT

Approved by Joint Negotiating Committees July 6, 1964.

EXHIBIT NO. 7

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

BOARD OF WATER COMMISSIONERS OF THE CITY OF LONG BEACH, a municipal corporation; CENTRAL BASIN MUNICIPAL WATER DISTRICT, a municipal water district; and CITY OF COMPTON, a municipal corporation, Plaintiffs, vs. SAN GABRIEL VALLEY WATER COMPANY, a corporation; AZUSA AGRICULTURAL WATER COMPANY, a corporation; AZUSA VALLEY WATER COMPANY, a corporation; CALIFORNIA WATER & TELEPHONE COMPANY, a corporation; THE COLUMBIA LAND AND WATER COMPANY, a corporation; COVINA IRRIGATING COMPANY, a corporation; CROSS WATER COMPANY, a corporation; DUARTE WATER COMPANY, a corporation; EAST PASADENA WATER CO. LTD., a corporation; GLENDORA IRRIGATING COMPANY, a corporation; SAN DIMAS WATER COMPANY, a corporation; SOUTHERN CALIFORNIA WATER COMPANY, a corporation; SUBURBAN WATER SYSTEMS, a corporation; SUNNY SLOPE WATER CO., a corporation; VALLECITO WATER CO., a corporation; CITY OF ALHAMBRA, a municipal corporation; CITY OF ARCADIA, a municipal corporation; CITY OF AZUSA, a municipal corporation; CITY OF COVINA, a municipal corporation; CITY OF EL MONTE, a municipal corporation; CITY OF GLENDORA, a municipal corporation; CITY OF MONROVIA, a municipal corporation; CITY OF MONTEREY PARK, a municipal corporation; CITY OF SOUTH PASADENA, a municipal corporation; BALDWIN PARK COUNTY WATER DISTRICT, a county water district; and SAN GABRIEL COUNTY WATER DISTRICT, a county water district, Defendants, UPPER SAN GABRIEL VALLEY MUNICIPAL WATER	NO. 722,647 STIPULATION FOR JUDGMENT

DISTRICT, a municipal water district, and CALIFORNIA DOMESTIC WATER COMPANY, a corporation,

Intervenors.

Plaintiffs Central Basin Municipal Water District, a municipal water district (herein sometimes referred to as Central Municipal); City of Long Beach, a municipal corporation, acting by and through the Board of Water Commissioners of the City of Long Beach; and City of Compton, a municipal corporation; and defendants City of Alhambra, a municipal corporation; City of Arcadia, a municipal corporation; City of Azusa, a municipal corporation; Azusa Agricultural Water Company, a corporation, sued herein as DOE 1; Azusa Valley Water Company, a corporation, for itself and as successor by merger to Azusa Irrigating Company, a corporation; Baldwin Park County Water District, a county water district; California Water and Telephone Company, a corporation; Columbia Land and Water Company, a corporation; City of Covina, a municipal corporation; Covina Irrigating Company, a corporation; Cross Water Company, a corporation, sued herein as DOE 2; Duarte Water Company (formerly Duarte Domestic Water Company), a corporation; East Pasadena Water Company, Ltd., a corporation, for itself and as successor by merger to California-Michigan Land and Water Company, a corporation; City of El Monte, a municipal corporation; City of Glendora, a municipal corporation; Glendora Irrigating Company, a corporation; City of Monrovia, a municipal corporation; City of Monterey Park, a municipal corporation; San Dimas Water Company, a corporation, sued herein as DOE 3; San Gabriel County Water District, a county water district; San Gabriel Valley Water Company, a corporation; Southern California Water Company, a corporation; City of South Pasadena, a municipal corporation; Suburban Water Systems, a corporation; Sunny Slope Water Company, a corporation; and Vallecito Water Company, a corporation; and

intervening defendant Upper San Gabriel Valley Municipal Water District, a municipal water district (herein sometimes referred to as Upper District); and intervening defendant California Domestic Water Company, a corporation; stipulate and agree as follows:

1. A Judgment in the form attached hereto as Exhibit I may be made and entered by the Court in the above-entitled action.

2. The following facts, considerations and objectives, among others, provide the basis for this Stipulation for Judgment:

(a) By their complaint plaintiffs seek a determination of the rights of the defendants, other than Upper District, in and to the waters of the San Gabriel River System and further seek to restrain defendants, other than Upper District, from an alleged interference with the rights of plaintiffs and persons represented by Central Municipal in and to said waters.

(b) At the present time, and for some time prior to the commencement of this action, the water supply of the San Gabriel River System has been inadequate to supply the diversions and extractions of both plaintiffs and defendants other than Central Municipal and Upper District but including the persons represented by Central Municipal and by Upper District, and as a result said diversions and extractions have exceeded, and still exceed, the natural replenishment of the water supply of the San Gabriel River System.

(c) The parties recognize and agree that the natural outflow from the San Gabriel Valley

to the Lower Area as defined in the Judgment has varied, and will vary from year to year, depending on the amount of precedent rainfall and other conditions.

(d) The parties recognize and agree that there is a need for a declaration of rights and a physical solution for the problems resulting from the inadequate and varying water supplies of the San Gabriel River System.

(e) The parties agree that the physical solution contained in said Judgment will bring about a fair division of the water of the San Gabriel River System as between plaintiffs and defendants other than Central Municipal and Upper District but including the persons represented by Central Municipal and by Upper District.

(f) The parties recognize that it may be necessary for defendants or some of them to use supplemental water in order to comply with the obligations imposed under said physical solution.

(g) Defendant Upper District is now a member unit of The Metropolitan Water District of Southern California, which will be supplied with water from sources in northern California under an existing contract with the State of California. Certain of the defendants not within the area of defendant Upper District are within the area of San Gabriel Valley Municipal Water District, which district also has contracted with the State of California for delivery of water from sources in northern California. It is anticipated that the

importation of this water will augment the natural supply of ground water within Upper Area as defined in the Judgment. Defendant Upper District intends to replenish the San Gabriel Valley with supplemental supplies.

3. The parties hereto hereby waive any and all Findings of Fact, Conclusions of Law, and any and all notice of the making or entry herein of the attached form of Judgment, and all rights of appeal, if any, from such Judgment.

4. Plaintiffs and defendants agree that during the period prior to entry of the attached form of Judgment, they will cooperate in endeavoring to collect such information as the Watermaster would obtain if the attached form of Judgment had been entered and the Watermaster had been appointed by the Court pursuant to paragraph 6 of the Judgment, which information is herein referred to as "said information." To that end, the parties hereto hereby agree that promptly following the complete execution of this stipulation by all parties, Upper District and Central Municipal shall each notify the other in writing as to the identity of the person who it expects will be nominated as the representative of Upper Area Parties or Lower Area Parties, as the case may be, under paragraph 6 of the Judgment. Upon receiving such notice, Upper District and Central Municipal shall each instruct its designated nominee that until the attached form of Judgment is entered and the Watermaster has been appointed pursuant to paragraph 6 of the Judgment he shall in cooperation with the other designated nominee do all things reasonably necessary to obtain such of said information as is available from the parties hereto or any public agency.

5. Judgment shall not be rendered pursuant hereto unless and until the execution of this stipulation by Central Basin Municipal Water District and by Upper San Gabriel Valley

Municipal Water District shall have been validated by a decree or decrees rendered in a proceeding or proceedings instituted in a court of competent jurisdiction of the State of California, and either such decree or decrees shall have become final or both of said Districts shall have further stipulated that said Judgment shall be rendered.

6. This stipulation may be executed in counterparts (each counterpart being an exact copy or duplicate of the original) and all counterparts collectively shall be considered as constituting one complete Stipulation for Judgment.

DATED: _____, 1964.

Attorneys (for the respective party listed opposite and to the right of the respective attorneys listed below)	Signature of Stipulating Party and Its Designation of Mailing Address
Leonard Putnam City Attorney Clifford E. Hayes Principal Deputy City Attorney City of Long Beach	Board of Water Commissioners of the City of Long Beach
By _____	By _____ Its _____ President
	By _____ Its _____ Secretary
Burris & Lagerlof Stanley C. Lagerlof H. Jess Senecal Jack T. Swafford	1800 East Wardlow Road Long Beach 7, California
By _____	

Burris & Lagerlof
Stanley C. Lagerlof
H. Jess Senecal
Jack T. Swafford

By _____

Central Basin Municipal Water District

By _____

Its President

By _____

Its Secretary

7439 East Florence Avenue
Downey, California

Lloyd A. Bulloch
City Attorney
City of Compton

_____

City of Compton

By _____

Its Mayor

205 South Willowbrook Avenue
Compton, California

Burris & Lagerlof
Stanley C. Lagerlof
H. Jess Senecal
Jack T. Swafford

By _____

Don D. Bercu
City Attorney
City of Alhambra

_____

City of Alhambra

By _____

Its Mayor

City Hall
111 South First Street
Alhambra, California

Taylor & Smith

By _____

James A. Nicklin
City Attorney
City of Arcadia

_____

Surr & Hellyer

By _____

Clayson, Stark, Rothrock
& Mann

By _____

City of Arcadia

By _____

Its Mayor

City Hall
Arcadia, California

Harry C. Williams
City Attorney
City of Azusa

_____

Taylor & Smith

By _____

City of Azusa

By _____

Its Mayor

City Hall
213 East Foothill Boulevard
Azusa, California

Taylor & Smith

By _____

Azusa Agricultural Water Company

By _____

Its ____ President

By _____

Its _____ Secretary

18352 East Foothill Boulevard
Azusa, California

Surr & Hellyer

By _____

Clayson, Stark, Rothrock
& Mann

By _____

Azusa Valley Water Company

By _____

Its ____ President

By _____

Its _____ Secretary

P. O. Box "W"
Azusa, California

Surr & Hellyer

By _____

Clayson, Stark, Rothrock & Mann

By _____

Baldwin Park County Water District

By _____

Its ____ President

By _____

Its _____ Secretary

14521 East Ramona Boulevard
Baldwin Park, California

Bacigalupi, Elkus & Salinger

By _____

Surr & Hellyer

By _____

Clayson, Stark, Rothrock & Mann

By _____

California Water & Telephone Company

By _____

Its ____ President

By _____

Its _____ Secretary

300 Montgomery Street
San Francisco, California

Allard, Shelton & O'Connor

By _____

Surr & Hellyer

By _____

Clayson, Stark, Rothrock & Mann

By _____

Columbia Land & Water Company

By _____

Its ____ President

By _____

Its _____ Secretary

P. O. Box 296
San Dimas, California

Allard, Shelton & O'Connor

By _____

Surr & Hellyer

By _____

Clayson, Stark, Rothrock
& Mann

By _____

Kerckhoff & Kerckhoff

By _____

Surr & Hellyer

By _____

Clayson, Stark, Rothrock
& Mann

By _____

George C. Gillette

_____

Henry W. Shatford
Shatford & Shatford

By _____

Surr & Hellyer

By _____

Clayson, Stark, Rothrock
& Mann

By _____

City of Covina

By _____

Its Mayor

City Hall
Covina, California

Covina Irrigating Company

By _____

Its ____ President

By _____

Its _____ Secretary

146 East College Street
Covina, California

Cross Water Company

By _____

Its ____ President

By _____

Its _____ Secretary

15825 East Main Street
La Puente, California

Duarte Water Company

By _____

Its ____ President

By _____

Its _____ Secretary

1101 South Oak Avenue
Duarte, California

Gray & Maddox

By _____

Surr & Hellyer

By _____

Clayson, Stark, Rothrock
& Mann

By _____

East Pasadena Water Company, Ltd.

By _____

Its ____ President

By _____

Its _____ Secretary

269 South Rosemead
Pasadena, California

James A. Nicklin
City Attorney
City of El Monte

_____

Surr & Hellyer

By _____

Clayson, Stark, Rothrock
& Mann

By _____

City of El Monte

By _____

Its Mayor

City Hall
El Monte, California

Leonard A. Shelton
City Attorney
City of Glendora

_____

Surr & Hellyer

By _____

Clayson, Stark, Rothrock
& Mann

By _____

City of Glendora

By _____

Its Mayor

City Hall
Glendora, California

Allard, Shelton & O'Connor

By _____

Surr & Hellyer

By _____

Clayson, Stark, Rothrock
& Mann

By _____

Glendora Irrigating Company

By _____

Its ____ President

By _____

Its _____ Secretary

224 North Michigan Avenue
Glendora, California

Homer H. Bell
City Attorney
City of Monrovia

_____

Surr & Hellyer

By _____

Clayson, Stark, Rothrock
& Mann

By _____

City of Monrovia

By _____

Its Mayor

City Hall
Monrovia, California

Charles R. Martin
City Attorney
City of Monterey Park

_____

Taylor & Smith

By _____

City of Monterey Park

By _____

Its Mayor

City Hall
320 West Newmark Avenue
Monterey Park, California

Allard, Shelton & O'Connor

By _____

Surr & Hellyer

By _____

Clayson, Stark, Rothrock
& Mann

By _____

Surr & Hellyer

By _____

Clayson, Stark, Rothrock
& Mann

By _____

J. E. Skelton

_____

Surr & Hellyer

By _____

Clayson, Stark, Rothrock
& Mann

By _____

San Dimas Water Company

By _____

Its ____ President

By _____

Its _____ Secretary

P. O. Box 181
San Dimas, California

San Gabriel County Water District

By _____

Its ____ President

By _____

Its _____ Secretary

8229 East Las Tunas Drive
San Gabriel, California

San Gabriel Valley Water Company

By _____

Its ____ President

By _____

Its _____ Secretary

11142 Garvey Avenue
El Monte, California

O'Melveny & Myers

By _____

Surr & Hellyer

By _____

Clayson, Stark, Rothrock
& Mann

By _____

Charles R. Martin
City Attorney
City of South Pasadena

_____

Surr & Hellyer

By _____

Clayson, Stark, Rothrock
& Mann

By _____

Frank E. Gray

_____

Surr & Hellyer

By _____

Clayson, Stark, Rothrock
& Mann

By _____

Hahn & Hahn

By _____

Southern California Water Company

By _____

Its ____ President

By _____

Its _____ Secretary

11911 South Vermont Avenue
Los Angeles 44, California

City of South Pasadena

By _____

Its Mayor

825 Mission Street
South Pasadena, California

Suburban Water Systems

By _____

Its ____ President

By _____

Its _____ Secretary

16340 East Maplegrove Street
La Puente, California

Sunny Slope Water Company

By _____

Its ____ President

By _____

Its _____ Secretary

1040 El Campo Drive
Pasadena, California

Surr & Hellyer

By _____

Clayson, Stark, Rothrock & Mann

By _____

Vallecito Water Company

By _____

Its ____ President

By _____

Its _____ Secretary

749 South Ninth Avenue
City of Industry, California

Stearns, Gross and Moore

By _____

California Domestic Water Company

By _____

Its ____ President

By _____

Its _____ Secretary

P. O. Box 1026, Perry Annex
Whittier, California

Ralph B. Helm

_____

Upper San Gabriel Valley Municipal Water District

By _____

Its ____ President

By _____

Its _____ Secretary

11229 East Valley Boulevard
El Monte, California

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

BOARD OF WATER COMMISSIONERS OF THE CITY OF LONG BEACH, a municipal corporation; CENTRAL BASIN MUNICIPAL WATER DISTRICT, a municipal water district; and CITY OF COMPTON, a municipal corporation, Plaintiffs, vs. SAN GABRIEL VALLEY WATER COMPANY, a corporation; AZUSA AGRICULTURAL WATER COMPANY, a corporation; AZUSA VALLEY WATER COMPANY, a corporation; CALIFORNIA WATER & TELEPHONE COMPANY, a corporation; THE COLUMBIA LAND AND WATER COMPANY, a corporation; COVINA IRRIGATING COMPANY, a corporation; CROSS WATER COMPANY, a corporation; DUARTE WATER COMPANY, a corporation; EAST PASADENA WATER CO. LTD., a corporation; GLENDORA IRRIGATING COMPANY, a corporation; SAN DIMAS WATER COMPANY, a corporation; SOUTHERN CALIFORNIA WATER COMPANY, a corporation; SUBURBAN WATER SYSTEMS, a corporation; SUNNY SLOPE WATER CO., a corporation; VALLECITO WATER CO., a corporation; CITY OF ALHAMBRA, a municipal corporation; CITY OF ARCADIA, a municipal corporation; CITY OF AZUSA, a municipal corporation; CITY OF COVINA, a municipal corporation; CITY OF EL MONTE, a municipal corporation; CITY OF GLENDORA, a municipal corporation; CITY OF MONROVIA, a municipal corporation; CITY OF MONTEREY PARK, a municipal corporation; CITY OF SOUTH PASADENA, a municipal corporation; BALDWIN PARK COUNTY WATER DISTRICT, a county water district; and SAN GABRIEL COUNTY WATER DISTRICT, a county water district, Defendants, UPPER SAN GABRIEL VALLEY MUNICIPAL WATER	NO. 722,647 **JUDGMENT**

DISTRICT, a municipal water district, and CALIFORNIA DOMESTIC WATER COMPANY, a corporation,

Intervenors.

The original complaint herein was filed by Plaintiffs on May 12, 1959, and an amended complaint was filed herein on June 8, 1961. Each Defendant in this action filed an answer to the amended complaint denying the material allegations therein. On _____, 1964, and _____, 1964, respectively, Upper San Gabriel Valley Municipal Water District, a municipal water district, and California Domestic Water Company, a corporation, intervened in the action as Defendants. On _____, 1964, there was filed herein a Stipulation for Judgment signed by all of the parties to this action.

After due examination and consideration of the pleadings, said Stipulation for Judgment and other documents and papers on file herein, it appears to the Court that:

(a) In bringing and maintaining this action, plaintiff Central Basin Municipal Water District, a municipal water district, has done so as a representative of and for the benefit of all owners of water rights within, all owners of land within, and all inhabitants of, the district, except to the extent that defendant California Domestic Water Company is representing itself.

(b) In intervening in this action, defendant Upper San Gabriel Valley Municipal Water District, a municipal water district, has done so as representative of and for the benefit of all owners of water rights within, all owners of land within, and all inhabitants of, the district, except to the extent that other Defendants who are within the district are representing themselves.

(c) There is a need for a physical solution to the complex water problems which have given rise to this action.

(d) The physical solution embodied in this Judgment is a feasible, equitable and just resolution of the issues presented by the amended complaint and answers thereto on file herein, and it will bring about a fair division of the water supply of the San Gabriel River System between Upper Area and Lower Area, as those terms are hereinafter defined.

(e) On the basis of the Stipulation for Judgment filed herein and the consent of all Plaintiffs and Defendants it is in the interests of justice and in furtherance of the water policy of the State of California to proceed without trial and to make and enter this Judgment.

Now, therefore, it is hereby ORDERED, ADJUDGED AND DECREED:

JURISDICTION 1. The Court has jurisdiction of the subject matter of this action and of the Upper Area Parties and Lower Area Parties, as those terms are hereinafter defined.

EXHIBITS 2. The following Exhibits marked A and B, are attached to this Judgment and made a part hereof:

(a) Exhibit A -- Map entitled "Rio Hondo and San Gabriel River in Vicinity of Whittier Narrows Dam".

(b) Exhibit B -- Engineering Appendix.

DEFINITIONS 3. As used in this Judgment, the following terms shall have the meanings assigned to them:

(a) Central Municipal -- Central Basin Municipal Water District.

(b) Upper District -- Upper San Gabriel Valley Municipal Water District.

(c) Lower Area Parties -- the Plaintiffs, and

all persons, firms and corporations, public or private, who are represented by Central Municipal.

(d) Upper Area Parties -- the Defendants, and all persons, firms and corporations, public or private, who are represented by Upper District.

(e) Upper Area -- the area (exclusive of the Raymond Basin and the portion of San Gabriel Mountains tributary thereto) wherein surface and subsurface waters are tributary to Whittier Narrows upstream from the common boundary of Upper District and Central Municipal through Whittier Narrows.

(f) Lower Area -- the area which lies downstream from the common boundary of Central Municipal and Upper District through Whittier Narrows and which is included within the incorporated limits of the Plaintiffs.

(g) Whittier Narrows -- a gap between Merced Hills and Puente Hills shown on Exhibit A.

(h) Montebello Forebay -- the area designated as such on Exhibit A.

(i) Export to Lower Area -- water diverted from surface streams in Upper Area or pumped or developed from underground sources in Upper Area, and in either case conveyed by conduit through Whittier Narrows.

(j) Subsurface Flow -- all water which passes as ground water through Whittier Narrows at the "narrowest section" as shown on Exhibit A.

(k) Surface Flow -- all water other than Export to Lower Area and Subsurface Flow, which passes from Upper Area to Lower Area through Whittier Narrows.

(l) Usable Water -- all Surface Flow, Subsurface Flow and Export to Lower Area, but excluding:

(1) that portion of Surface Flow, if any, which crosses the southerly boundary of Montebello Forebay as surface runoff less the amount of Surface Flow which has been caused to flow out of Montebello Forebay as surface runoff by any spreading of water in Montebello Forebay by or on behalf of Lower Area Parties, or any of them;

(2) water imported by or on behalf of Lower Area Parties from outside of the watershed of the San Gabriel River System;

(3) Reclaimed Water, as defined in subparagraph (o) herein, provided, however, that Reclaimed Water (other than that reclaimed by or on behalf of Lower Area Parties) which is percolated and commingled with ground water in Upper Area shall be deemed Subsurface Flow, Surface Flow, or Export to Lower Area as the case may be, when and if it passes through Whittier Narrows;

(4) that portion, if any, of Export to Lower Area which in any Water Year after September 30, 1966, exceeds 23,395 acre-feet;

(5) Make-up Water, as defined in subpara-

graph (m) herein; and

(6) any water whether flowing on the surface or beneath the surface of the ground which has passed any of the points of surface measurement in Whittier Narrows shown on Exhibit B and prior to its passing from Upper Area to Lower Area is intercepted and returned upstream by conduit or otherwise so that it could again pass any such points of measurement.

(m) Make-up Water -- water of usable quality for ground water recharge required to be delivered to Lower Area under terms of paragraph 5 of this Judgment.

(n) Water Year -- October 1 through the following September 30.

(o) Reclaimed Water -- water reclaimed from sewage generated in the watershed of the San Gabriel River System above Whittier Narrows.

DECLARATION OF RIGHT

4. Lower Area Parties have rights in the water supply of the San Gabriel River System. The nature and extent of such rights is not known; however, Lower Area Parties and all other persons downstream from Whittier Narrows who receive water from the San Gabriel River System or have rights in and to such water, shall have, as against Upper Area Parties and all other pumpers of water in the San Gabriel Valley, a right to receive from Upper Area an average annual usable supply of ninety-eight thousand four hundred fifteen (98,415) acre-feet of water over a long-term period of normal rainfall derived as set forth in Exhibit B, consisting

of Surface Flow, Subsurface Flow, Export to Lower Area and Make-up Water. If in the future a court of competent jurisdiction shall decree that any person downstream from Whittier Narrows within Central and West Basin Water Replenishment District who is not bound by this Judgment, shall have, as against Upper Area Parties and substantially all other pumpers in the San Gabriel Valley, a right to receive from Upper Area a stated amount of usable supply consisting of Surface Flow, Subsurface Flow, Export to Lower Area or Make-up Water, which right arose out of and is based upon the ownership of land or the production of water downstream from Whittier Narrows and within Central and West Basin Water Replenishment District, then and in that event the stated amount of such right so decreed shall not increase the declared rights as set forth in this paragraph 4.

PHYSICAL SOLUTION

5. In recognition of the complexities of annual supply and demand and variations in the components thereof, the Court hereby declares the following physical solution to be a fair and equitable basis for satisfaction of the declared right set forth in paragraph 4 hereof. Compliance with this paragraph 5 shall constitute full and complete satisfaction of said declared right.

AVERAGE ANNUAL ENTITLEMENT

(a) It is determined that the amount of Lower Area average annual entitlement to Usable Water is ninety-eight thousand four hundred fifteen (98,415) acre-feet.

BASIS OF ANNUAL ENTITLEMENT

(b) The outflow of water from Upper Area through Whittier Narrows to Lower Area has

varied from year to year and will vary from year to year in the future depending on changing conditions of supply and demand; and as to any Water Year, the average annual rainfall for the San Gabriel Valley during the ten (10) consecutive Water Years ending with that Water Year, is a reasonable basis for determining the entitlement of Lower Area to Usable Water for such Water Year.

DETERMINATION OF RAINFALL

(c) The rainfall in each Water Year for the San Gabriel Valley shall be determined by application of the procedures described in Exhibit B.

RAINFALL ADJUSTMENT TABLE

(d) The quantity of water which Lower Area is entitled to receive in any Water Year (hereinafter called Lower Area Annual Entitlement) shall be determined in accordance with the following table, except that no determination of Lower Area Annual Entitlement shall be made for the last year of any Long-term Accounting Period as hereinafter defined.

TABLE A

LOWER AREA ANNUAL ENTITLEMENT
BASED ON 10-YEAR AVERAGE RAINFALL
FOR SAN GABRIEL VALLEY

(In Acre-feet)

Inches of Rain-fall	0	.1	.2	.3	.4	.5	.6	.7	.8	.9
14	64,200	64,900	65,700	66,500	67,200	68,000	68,700	69,500	70,300	71,100
15	71,800	72,600	73,400	74,100	74,900	75,600	76,400	77,200	77,900	78,700
16	79,500	80,200	81,000	81,800	82,600	83,300	84,000	84,800	85,600	86,400
17	87,100	87,900	88,700	89,400	90,200	91,000	91,500	92,500	93,200	94,000
18	94,800	95,300	96,200	96,900	97,600	98,300	98,800	99,500	100,100	100,800
19	101,400	102,000	102,700	103,300	103,900	104,500	105,100	105,700	106,300	107,000
20	107,600	108,200	108,800	109,400	110,100	110,700	111,300	111,900	112,500	113,100
21	113,700	114,300	115,000	115,600	116,200	116,800	117,400	118,100	118,600	119,300
22	119,900	120,400	121,000	121,600	122,200	122,700	123,300	123,900	124,400	125,000
23	125,500	126,100	126,700	127,200	127,800	128,400	128,900	129,500	130,100	130,600
24	131,200	131,700	132,200	132,700	133,100	133,700	134,100	134,700	135,100	135,600

DETERMINATION OF ACCRUED DEBIT OR CREDIT

(e) The difference between the aggregate of water entitlements determined as provided in this Judgment and the aggregate of Usable Water and delivered Make-up Water shall be computed as of the end of each Water Year. Any excess of water entitlements over the quantity of Usable Water and Make-up Water received by Lower Area after September 30, 1963, is hereinafter referred to as Accrued Debit of Upper Area. Any excess of Usable Water and Make-up Water received by Lower Area after September 30, 1963, over water entitlements, is hereinafter referred to as Accrued Credit of Upper Area.

ACCRUED DEBIT

(f) If at the end of any Water Year it is determined pursuant to subparagraph (e) of this paragraph 5 that there is an Accrued Debit of Upper Area, then Upper District shall cause Make-up Water to be delivered to Lower Area during the following Water Year in an amount not less than the sum of (1) one-third of such Accrued Debit of Upper Area, and (2) that portion, if any, of such Accrued Debit of Upper Area over 25,000 acre-feet which remains after deducting said one-third. If Upper District shall fail to deliver Make-up Water as next above provided and Plaintiffs shall have diligently pursued their legal and equitable remedies to cause Upper District to so deliver, and either: (1) it shall be finally determined that Upper District is not obligated to so deliver, or (2) it shall appear that Upper District will not thereafter deliver Make-up Water, then Defendants and any successor or successors in interest by title to a Defendant's water right in Upper Area shall be obligated to so deliver Make-up Water. The provisions of this paragraph are subject to the provisions of paragraph 5(h) below.

ACCRUED CREDIT

(g) If at the end of any Water Year it is determined pursuant to subparagraph (e) of this paragraph 5 that there is an Accrued Credit of Upper Area, then there shall be no obligation to deliver Make-up Water to Lower Area during the following Water Year.

LONG-TERM ACCOUNTING

(h) Following September 30, 1963, a Long-term Accounting shall be made from time to time but not sooner than at the end of 15 Water Years, nor later than 25 Water Years after September 30, 1963, or after the last such accounting, whichever is later. A Long-term Accounting shall be made sooner than said 25-year period whenever the average annual rainfall in the San Gabriel Valley for a period of 15 Water Years or more after September 30, 1963, or after the last such accounting, whichever is later, is at least 18 inches but not more than 19 inches.

In making such Long-term Accounting for any such period (herein called Long-term Accounting Period), the aggregate of all Usable Water and Make-up Water received by Lower Area during such period shall be determined and (a) there shall be deducted from said aggregate the amount of Make-up Water, if any, delivered during such period by reason of the existence of an Accrued Debit of Upper Area at the end of the immediately preceding Long-term Accounting Period, or (b) there shall be added to said aggregate the amount of any Accrued Credit of Upper Area determined to exist at the end of the immediately preceding Long-term Accounting Period. The net aggregate amount of Usable Water and Make-up Water so computed shall be compared to the result to be obtained by (1) multiplying the 98,415 acre-feet of water to be received by

Lower Area as its average annual usable supply by the number of Water Years in the Long-term Accounting Period, and (2) adjusting the product by the percentage by which the average annual rainfall (to the nearest one hundredth of an inch) for the Long-term Accounting Period involved exceeds or is less than 18.52 inches. (i.e.:

$$98{,}415 \times (\text{number of Water Years in Period}) \times \left(\frac{\text{average rainfall for the Period}}{18.52}\right).)$$

If as a result of such comparison it is determined that there is a deficiency in the net aggregate amount of Usable Water and Make-up Water received during the Long-term Accounting Period, then such deficiency shall be compensated in the following Water Year by delivery of Make-up Water to Lower Area in the manner and by the means provided herein. If it is determined as a result of such comparison that there is an excess of net aggregate Usable Water and Make-up Water received, then the amount of such excess shall be carried forward as an Accrued Credit of Upper Area.

MAKE-UP WATER DELIVERY

(i) Make-up Water which Defendants are obligated to deliver through Upper District may be delivered by any one or more of the following means:

SURFACE FLOW DELIVERY

(1) By causing water other than Reclaimed Water to flow on the surface into Montebello Forebay by any means and from any source, provided that such deliveries shall

be at such rates or flows and at such times as may be scheduled by the Watermaster.

RECLAIMED WATER CREDIT

(2) By paying to Central Municipal for the benefit of all Lower Area Parties the total amount or any portion of the total amount which Central and West Basin Water Replenishment District or any Plaintiff shall have expended in reclaiming water or for the purchase of Reclaimed Water in the preceding Water Year, and which water when so reclaimed or purchased shall have been passed through Whittier Narrows to Lower Area. Upon written request made by Upper District not later than three months after the end of a Water Year, Central Municipal shall give a written notice to Upper Distric and the Watermaster of the total number of acre-feet of such Reclaimed Water so reclaimed or purchased during the preceding Water Year and of the cost per acre-foot therefor at the existing Whittier Narrows Water Reclamation Plant for reclamation of waste water, and at any future additions thereto, and payment therefor at said cost, or costs, may be made not later than one year after receipt of such written notice. Such payment shall be made for the total production of Reclaimed Water from the existing plant in the preceding Water Year before Upper District shall be entitled to make payment for all, or any portion of,

Reclaimed Water produced in that year by any future addition to that plant. Such payment by Upper District on behalf of Defendants shall be deemed a delivery of Make-up Water equal to the quantity of Reclaimed Water for which the expenditure of a like sum would have paid at the cost, or costs, per acre-foot so paid for such Reclaimed Water. In no event, however, shall any payment by Upper District under this subparagraph (i)(2) be deemed a delivery of Make-up Water in excess of 14,735 acre-feet in any Water Year during which the amount of Make-up Water required to be furnished by Upper Area is available to it at ground water replenishment rates for delivery to Lower Area, except with the prior written consent of Plaintiffs.

DIRECT DELIVERY

(3) By delivering, or causing to be delivered, water to any of Lower Area Parties with consent of Plaintiffs for use in Lower Area.

WATER RIGHTS BOUND

(j) It is further determined and adjudicated that the obligations provided above in subparagraphs (f) and (h) of this paragraph 5 for each Defendant shall constitute and be a servitude upon the existing water rights of each Defendant in and to the water supply of the San Gabriel River System upstream from Lower Area and shall run with and forever bind said water rights for the benefit of the water

rights of Lower Area Parties.

TRANSFER OF WATER RIGHTS

(k) If any Defendant, other than Upper District, shall desire to transfer all or any of its said water rights to a person, firm or corporation, public or private, who or which is not then bound by this Judgment as a Defendant, such Defendant shall as a condition to being discharged as hereinafter provided cause such transferee to appear in this action and file a valid and effective express assumption of the obligations imposed upon such Defendant under this Judgment as to such transferred water rights. Such appearance and assumption of obligations shall include the filing of a designation of the address to which shall be mailed all notices, requests, objections, reports and other papers permitted or required by the terms of this Judgment.

If any Defendant shall have transferred all of its said water rights and each transferee not theretofore bound by this Judgment as a Defendant shall have appeared in this action and filed a valid and effective express assumption of the obligations imposed upon such Defendant under this Judgment as to such transferred water rights, such transferring Defendant shall thereupon be discharged from all obligations hereunder. If any Defendant other than Upper District shall cease to own any rights in and to the water supply of the San Gabriel River System upstream from Lower Area, and shall have caused the appearance

and assumption provided for in the third preceding sentence with respect to each voluntary transfer, then upon application to this Court and after notice and hearing such Defendant shall thereupon be relieved and discharged from all further obligations hereunder. Any such discharge of any Defendant hereunder shall not impair the aggregate rights of Lower Area Parties or the responsibility hereunder of the remaining Defendants or any of the successors.

WATERMASTER PROVISIONS

WATERMASTER APPOINTMENT

6. A Watermaster comprised of three persons to be nominated as hereinafter provided shall be appointed by and serve at the pleasure of and until further order of this Court. One shall be a representative of Upper Area Parties nominated by and through Upper District, one shall be a representative of Lower Area Parties nominated by and through Central Municipal, and one shall be jointly nominated by Upper District and Central Municipal. If a dispute arises in choosing the joint appointee, the Court shall make the appointment. If Central Municipal or Upper District shall at any time or times nominate a substitute appointee in place of the appointee last appointed to represent Lower Area Parties, in the case of Central Municipal, or to represent Upper Area Parties, in the case of Upper District, or if Central Municipal and Upper District shall at any time or times jointly nominate a substitute appointee in place of the joint appointee last appointed,

such substitute appointee shall be appointed by the Court in lieu of such last appointee or joint appointee. Each such nomination shall be made in writing, served upon the other parties to this action and filed with the Court. The Watermaster when so appointed shall administer and enforce the provisions of this Judgment and the instructions and subsequent orders of this Court.

POWERS AND DUTIES

7. The Watermaster shall have the following powers and duties and shall take all steps necessary to make the following determinations for each Water Year promptly after the end of such Water Year:

(a) the amount of Surface Flow,

(b) the amount of Subsurface Flow,

(c) the amount of Export to Lower Area,

(d) the amount of water which passed as Surface Flow or Subsurface Flow across the boundary between Upper Area and Lower Area through Whittier Narrows and which was imported by or on behalf of Lower Area Parties from outside of the watershed of the San Gabriel River System above Whittier Narrows,

(e) the amount and quality of Reclaimed Water reclaimed by or on behalf of Lower Area,

(f) the total amount of Make-up Water delivered to Lower Area, together with the respective amounts delivered by each method specified in paragraph 5 of this Judgment,

(g) the amount of Usable Water received by Lower Area,

(h) the amount of local storm inflow, originating in Lower Area, to the channel of

each of Rio Hondo and San Gabriel River within Montebello Forebay,

(i) the surface outflow from Montebello Forebay in the channel of each of the Rio Hondo and San Gabriel River,

(j) the number of inches of depth of average rainfall in the San Gabriel Valley,

(k) the average annual rainfall in the San Gabriel Valley for the ten consecutive Water Years just ended,

(l) Lower Area Annual Entitlement or the entitlement for the Long-term Accounting Period, determined pursuant to subparagraph (d) or (h), respectively, of paragraph 5 of this Judgment,

(m) Accrued Debit of Upper Area, if any, or Accrued Credit of Upper Area, if any, as it exists at the end of such Water Year, and

(n) the amount, if any, of Make-up Water which Upper District is obligated to deliver during the following Water Year.

DETERMINATIONS TO BE BASED ON EXHIBIT B

8. Each of the above required determinations shall be based on and conform to the procedures specified in this Judgment and in Exhibit B insofar as said exhibit provides a procedure.

REPORTS MEASUREMENTS AND DATA

9. The Watermaster shall report to the Court and to each party in writing at the same time and not more than five months after the end of each Water Year the determinations required by paragraph 7 above.

The Watermaster shall cause to be installed and maintained in good working order such measuring

devices in Whittier Narrows and elsewhere as are necessary or required and not otherwise available for the making of the determinations required by paragraph 7 above.

The Watermaster shall collect and assemble from each of the parties, and the parties shall make available to the Watermaster, such records, reports and other data as may reasonably be required in the making of the determinations required of the Watermaster under paragraph 7 above. All records, reports and data received, maintained or compiled by the Watermaster shall be open to inspection by any party or its representative.

OBJECTIONS

10. Any party who objects to any determination made by the Watermaster pursuant to paragraph 7 above, may make such objection in writing to the Watermaster within thirty (30) days after the Watermaster gives the required written notice of such determination. Within thirty (30) days after expiration of the time within which objection may be made to such determination, the Watermaster shall consider all objections thereto and shall amend, modify or affirm the determination and give notice thereof at the same time to all parties and shall file a copy of such final determination with the Court. If the Watermaster denies any objection in whole or in part, the party whose objection was so denied may within thirty (30) days after service of the final determination upon it, make written objection to such denial by filing its objections with the Court after first mailing a copy of such objections to the

Watermaster and to each party, and such party shall bring its objections on for hearing before the Court upon notice and motion and at such time as the Court may direct. If the Watermaster shall change or modify any determination, then any party may within fifteen (15) days after service of such final determination upon it object to such change or modification by following the procedure prescribed above in the case of a denial of an objection to the first determination. If objection to a final determination is filed with the Court as herein provided and brought on for hearing, then such final determination may be confirmed or modified in whole or in part as the Court may deem proper.

CHANGE IN METHOD OF MEASUREMENT

11. If the Watermaster shall deem it advisable to make a change in the method of making any measurement required under the terms of this Judgment, the Watermaster shall notify all parties of such proposed change, and if within sixty (60) days of such notification no party shall file written objections to such change with the Watermaster, the Watermaster may put such proposed change into effect. If, however, any party files its written objection to the proposed change, it shall by notice of motion filed not later than fifteen (15) days after the expiration of said 60-day period and served on the Watermaster and all parties bring its objection on for hearing before the Court at such time as the Court may direct, and the Court shall rule on whether the Watermaster may make such proposed change.

BUDGET

12. In addition to the above-specified administrative powers and duties, the Watermaster shall prepare a tentative budget for each Water Year, stating the estimated expense for discharging the duties of the Watermaster set forth in this Judgment. The Watermaster shall mail a copy of the tentative budget to each of the parties at the same time at least sixty (60) days before the beginning of each Water Year. However, with respect to the first Water Year following the entry of this Judgment, the tentative budget shall be mailed not later than one hundred and twenty (120) days from the entry of this Judgment. If any party has an objection to a tentative budget, or any suggestions with respect thereto, that party shall present the same in writing to the Watermaster within fifteen (15) days after service of the tentative budget upon it. If no objections are received, the tentative budget shall become the final budget. If objections to the tentative budget are received, the Watermaster shall, within fifteen (15) days after the expiration of the time for presenting objections, consider all such objections, prepare a final budget, and mail a copy thereof to each party, together with a statement of the amount assessed, if any, to each party, computed as provided in paragraph 13. If the Watermaster denies any objection in whole or in part, the party whose objection was so denied may, within fifteen (15) days after service of the final budget upon it, make written objection to such denial by filing

its objections with the Court after first mailing a copy of such objections to each party, and such party shall bring its objections on for hearing before the Court upon notice and motion and at such time as the Court may direct. If the Watermaster makes a change in the tentative budget, then any party may within fifteen (15) days after service of the final budget upon it object to any such change by following the procedure prescribed above in the case of a denial of an objection to the tentative budget. If objection to the final budget is filed with the Court as herein provided and brought on for hearing, then such final budget may be confirmed or adjusted in whole or part as the Court may deem proper.

FEES AND EXPENSES

13. The fees, compensation and expenses of the Watermaster hereunder shall be borne by the parties in the following proportions: 50% by Upper District, 41.2% by Central Municipal, 7.125% by the City of Long Beach, and 1.675% by the City of Compton, or such other division among the Plaintiffs as they may agree upon in writing and file with the Watermaster.

Payment of the amount assessed to a party, whether or not subject to adjustment by the Court as provided in paragraph 12, shall be paid on or prior to the beginning of the Water Year to which the final budget and statement of assessed costs is applicable. If such payment by any party is not made on or before said date, the Watermaster shall add a penalty of 5% thereof to such party's

statement. Payment required of any party hereunder may be enforced by execution issued out of this Court, or as may be provided by order hereinafter made by this Court. All such payments and penalties received by the Watermaster shall be expended by him for the administration of this Judgment. Any money remaining at the end of any Water Year shall be available for use in the following Water Year.

SUCCESSOR OF UPPER DISTRICT

14. If a public agency or district shall be formed hereafter which shall include the present area of Upper District and shall have ability equal to or greater than that which Upper District now has to perform the obligations under this Judgment, and shall appear in this action and file a valid and effective assumption of such obligations, then Upper District upon application to this Court, and after notice and hearing, shall thereupon be relieved and discharged from all further obligations hereunder.

CONTINUING JURISDICTION OF THE COURT

15. Full jurisdiction, power and authority is retained and reserved by the Court for the purpose of enabling the Court upon application of any party by motion and upon at least thirty (30) days notice thereof, and after hearing thereon (i) to make such further or supplemental orders or directions as may be necessary or appropriate for the construction, enforcement or carrying out of this Judgment, and (ii) to modify, amend or amplify any of the provisions of this Judgment whenever substantial developments affecting the physical, hydrological or other conditions dealt

with herein may, in the Court's opinion, justify or require such modification, amendment or amplification.

If at any time Plaintiffs and at least two-thirds of the Defendants including any two of the cities of Alhambra, Azusa and Monterey Park, shall file with the Court a written stipulation (i) that henceforth in determining any one or more of the component parts of Usable Water received by Lower Area in any Water Year, the Watermaster shall not use the method specified in this Judgment but shall use instead a new, different or altered method as specified and described in such stipulation, and (ii) that such new, different or altered method or methods shall be applied to redetermine the average annual amount of Usable Surface Flow, Subsurface Flow and Export to Lower Area which Lower Area received each Water Year during the period October 1, 1934 to September 30, 1959, referred to as the base period, and that on the basis of such redetermination the Court may modify paragraphs 4 and 5 of this Judgment to establish a new and different water entitlement and yearly adjustment thereto which shall thereafter control, then and in that event, after hearing pursuant to motion and notice to all parties, held at such time as the Court may direct, the Court may deny the motion or it may grant it and (a) approve the future use of the stipulated new, different or altered method or methods, by the Watermaster, and (b) by use of the stipulated new, different or altered method or

methods, redetermine the average annual amount of Usable Surface Flow, Subsurface Flow and Export to Lower Area received each Water Year during the base period, and on the basis thereof modify paragraphs 4 and 5 of this Judgment to provide for a new and different water entitlement and yearly adjustment thereto, which modifications shall be effective and control commencing with the Water Year following the entry of the order so modifying paragraphs 4 and 5.

REPORT OF TRANSFER OF WATER RIGHTS

16. Every transfer of any of those water rights of Defendants which are the subject of Paragraph 5(j) of this Judgment, whether such transfer is voluntary or involuntary, shall be reported promptly in writing by the transferor to the Watermaster; and the Watermaster shall give prompt written notice of such transfer to each party and to each transferee involved in every other transfer of any of those water rights. Such report by the transferor and notice by the Watermaster shall contain the following information as to each such transfer:

(a) The identity of the transferor;

(b) The identity of the transferee;

(c) The effective date of the transfer;

(d) A brief description of the document by which such transfer is made, and the recording data, if any;

(e) A statement as to whether the transfer was voluntary or involuntary;

(f) A statement whether or not after such transfer the transferor still has or

claims to have any of the water rights which are the subject of Paragraph 5(j) of this Judgment.

NOTICES

17. All notices, requests, objections, reports and other papers permitted or required by the terms of this Judgment shall be given or made by written document and shall be served by mail on each party and on each transferee of water rights who has appeared and filed the assumption of obligations required by paragraph 5(k) of this Judgment, and where required or appropriate, on the Watermaster. For all purposes of this paragraph the mailing address of each party shall be that set forth below its signature to the Stipulation for Judgment, and the mailing address of each transferee of water rights shall be that set forth in the appearance and assumption of obligations required by paragraph 5(k) of this Judgment, until changed as provided below. No further notice of any kind as to any matter arising hereunder, including notice to attorneys of record for any party or such transferee, need be given, made or served.

If any party or any such transferee of water rights shall desire to change its designation of mailing address, it shall file a written notice of such change with the clerk of this court and shall serve a copy thereof by mail on the Watermaster. Upon the receipt of any such notice the Watermaster shall promptly give written notice thereof to each party and to each transferee of water rights.

EFFECTIVE DATE

18. The rights decreed and the obligations imposed by this Judgment shall be effective October 1, 1963, and shall accrue from that date.

COSTS

19. None of the parties shall recover any costs from any other party.

Dated: _____, 1964.

_____
Judge

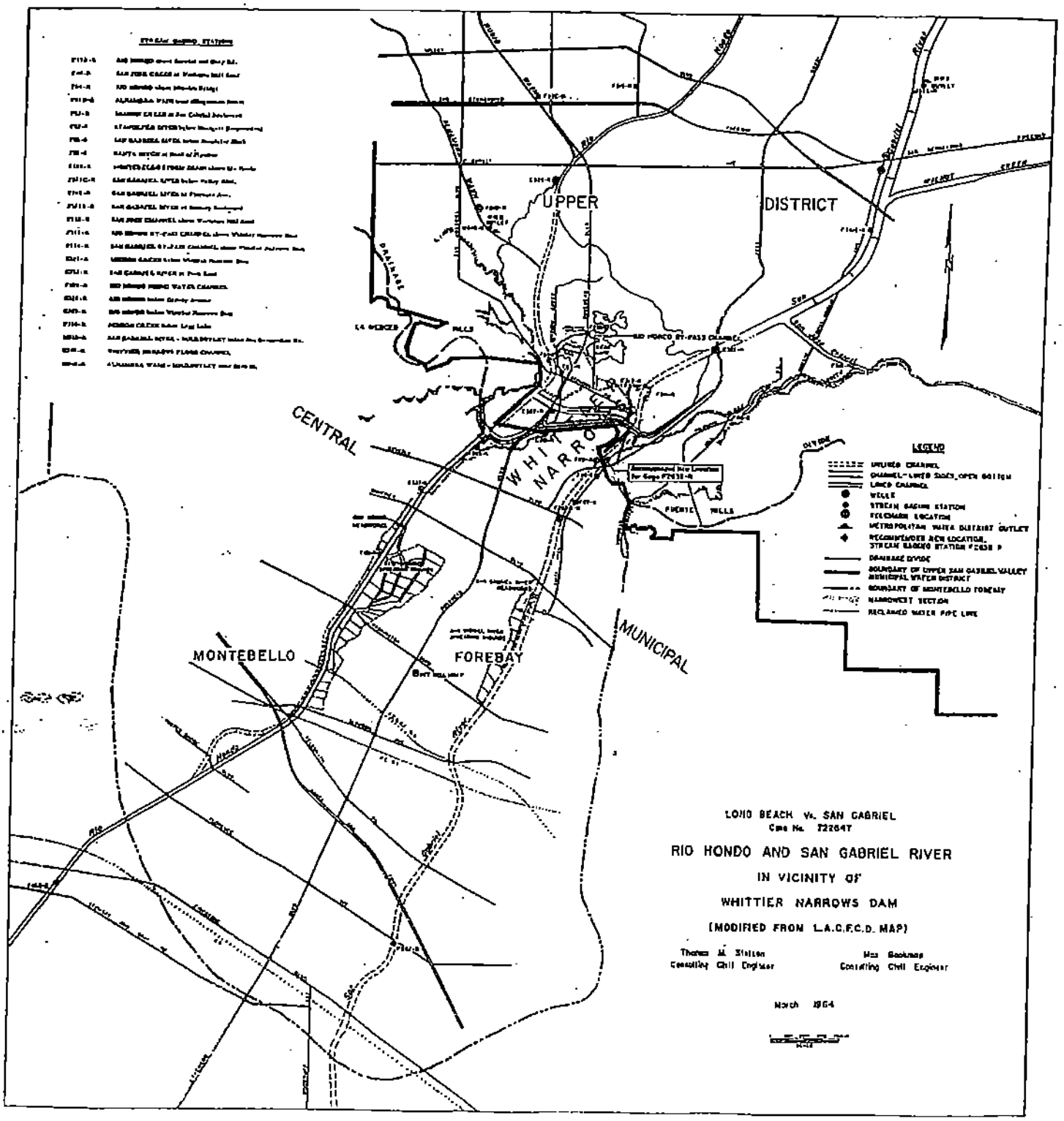
UPPER
DISTRICT
CENTRAL
MUNICIPAL
MONTEBELLO
FOREBAY
WHITTIER NARROWS
LEGEND
LONG BEACH vs. SAN GABRIEL
Case No. 722647
RIO HONDO AND SAN GABRIEL RIVER
IN VICINITY OF
WHITTIER NARROWS DAM
(MODIFIED FROM L.A.C.F.C.D. MAP)
Thomas M. Stetson
Consulting Civil Engineer
Max Beckman
Consulting Civil Engineer
March 1964

EXHIBIT A

LONG BEACH v. SAN GABRIEL

ENGINEERING APPENDIX

EXHIBIT B

ENGINEERING APPENDIX

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ENGINEERING APPENDIX

INTRODUCTION

Pursuant to the declaration of rights contained in paragraph 4 of the Judgment and the physical solution contained in paragraph 5 of the Judgment, the purpose of this exhibit is to establish the basis for calculations and measurements to provide for operation of the Judgment in the future.

Unless otherwise provided in this exhibit, all terms used herein are used in the same sense as defined or used in the Judgment.

The derivation of the Lower Area average annual entitlement is based upon the data presented herein covering the base period. However, if a more accurate method of determining Subsurface Flow is developed at some future time, it will be acceptable for use in carrying out the terms of this Judgment so long as it can also apply to the base period and to the years over which the Judgment shall have operated to that time.

I. DERIVATION OF LOWER AREA AVERAGE ANNUAL ENTITLEMENT

The Lower Area average annual entitlement is stipulated in paragraph 5 (a) of the Judgment to be 98,415 acre-feet. It was derived from three components of water supply over the base period, October 1, 1934, through September 30, 1959. Said components were: (1) Usable Surface Flow, (2) Subsurface Flow, and (3) Export to Lower Area.

A. Usable Surface Flow

For the base period, Usable Surface Flow was calculated as that portion of Surface Flow which percolated

in Montebello Forebay, less the calculated amounts of Lower Area Replenishment Water (hereby defined as water imported from outside of the watershed of the San Gabriel River system by or on behalf of Lower Area Parties for replenishment of Montebello Forebay and passing from Upper Area to Lower Area), and less one-half of the Raymond Basin sewage discharged in Upper Area from the Tri-City Sewage Treatment Plant.

Table 1 presents the calculation of Usable Surface Flow during the base period. The average annual quantity was calculated to be 51,620 acre-feet. Its derivation is summarized in the following tabulation.

		Average annual quantity in acre-feet
1. Surface Flow		108,560
2. Montebello Forebay surface outflow	45,000	
3. Local storm inflow within Montebello Forebay	1,660	
4. Portion of Surface Flow leaving Montebello Forebay (2 minus 3)		43,340
5. Surface Flow percolated in Montebello Forebay (1 minus 4)		65,220
6. Lower Area Replenishment Water (Colorado River water) passing through Whittier Narrows	11,870	
7. One-half of Raymond Basin sewage discharged in Upper Area	1,730	
8. Usable Surface Flow (5 minus 6 minus 7)		51,620

TABLE

CALCU ‹ OF US. URFACE

G BASE)

.cre-Fe

(1) Water Year	3) Hondo .64	Su (4) Rio H Bypa F-3	Flo (5) rcamore Canyon	6) abriel at num g water	(7) ıl (5+6)	Montebe (9) San Gabri River F-26	(10) bbtotal (8+9)	1 Hello Drain 81	2) ow of rface low -11)	(13) ue Flo lated in cobalto rebay (-12)	(14) olorado vater pa ultiar N	One-I Basin in	aymond Recharg Area	(16) Usable rface Fl (13-14-1
1934-3	9,230		390	2,410	170	4,7	10,700	.50	9,050	52,120				),470
3	0,700		70	6,140	720	1,7	8,970	.90	5,080	41,640				),905
3	0,900		260	7,750	750	21,(	47,870	.70	5,700	64,050				,185
3	9,330		510	9,220	660	60,(	132,100	.50	0,050	103,610				),650
3	0,650		200	8,380	560	2,8	12,080	.80	1,100	74,460				,490
1939-4	7,660		110	9,510	490	1,9	6,750	.90	5,860	67,630				),645
4	0,650		1,070	2,440	280	75,7	169,040	.90	4,950	97,330				,125
4	8,810		80	3,770	400	13,8	20,300	.60	9,340	72,060				,920
4	9,470		150	2,670	700	186,4	128,330	.80	5,750	73,950				,715
4	1,390		220	1,420	880	79,9	106,750	.90	4,360	87,520				,975
1944-4	2,300		70	7,130	520	26,1	34,570	.70	3,800	73,720				,230
4	3,160		70	1,580	440	16,4	27,760	.70	6,890	83,550				,915
4	8,410		110	6,790	540	27,8	45,680	.50	2,330	77,210				,425
4	5,370		20	0,970	030		3,510	.10	2,600	56,430				,365
4	1,100		40	3,590	370		1,490	.60	630	34,740				,740
1949-5	2,280		110	1,780	950		2,840	.40	1,600	31,350				,350
5	7,880		0	8,420	000		780	.90	-110	23,110				,110
5	4,570		530	6,800	990	24,2	50,290	.30	6,960	51,030				,030
5	6,120		50	2,350	730	9	4,430	.30	3,000	41,730				,730
5	3,390	7,2	100	8,130	430	3,7	14,550	.90	2,360	40,070	15,6			,380
1954-5	1,350	9,7	70	4,630	880	1,0	9,000	.10	7,790	31,090	23,1			,960
5	6,180	14,9	150	8,930	560	10,3	24,900	.10	2,790	39,770	42,8			,100
5	8,840	20,4	50	2,220	350	1,3	6,030	.20	4,910	56,440	51,8			,570
5	9,320	15,3	540	1,320	140	23,9	54,220	.50	0,970	78,170	103,9			,270
1958-5	9,800		10	9,790	520	3,1	7,030	.30	5,800	77,720	59,3			,330
TOTAL	6,860	67,6	4,980	8,040	060	586,8	124,970	.10	3,560	30,500	296,8			,385
Averag	1,870	2,7	200	1,120	560	23,4	45,000	.60	3,340	65,220	11,87			,620

B. Subsurface Flow

The State of California, Department of Water Resources, published in April 1962, Appendix B, "Safe Yield Determinations", of Bulletin No. 104, a report entitled "Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County". That report included estimates of the seasonal Subsurface Flow through Whittier Narrows for each Water Year during the period 1934-35 through 1956-57. By applying the same methods of computation, the estimates have been extended through the Water Year 1958-59 and a 25-year average of 28,400 acre-feet derived.

Table 2 sets out the Subsurface Flow for each Water Year in the base period and the average annual Subsurface Flow during the base period.

TABLE 2

SUBSURFACE FLOW
DURING BASE PERIOD

Water Year	Acre-Feet
1934-35	33,500
36	33,500
37	31,100
38	25,600
39	25,000
1939-40	23,900
41	23,300
42	21,800
43	21,900
44	23,700
1944-45	23,500
46	23,100
47	22,400
48	25,700
49	30,300
1949-50	34,000
51	32,800
52	32,100
53	32,800
54	33,200
1954-55	33,600
56	32,200
57	32,600
58	30,500
1958-59	27,800
TOTAL	709,900
Average	28,400

C. Export to Lower Area

During the base period there were a number of water producers or water service agencies which produced water by surface diversions or wells in Upper Area and exported it to Lower Area. At the present time, and for the past several years, all such water has been pumped from wells in Upper Area.

There are four water service agencies which currently so export water. They are the Rincon Ditch Company, California Domestic Water Company, Suburban Water Systems, and the City of Whittier.

Table 3 sets forth Export to Lower Area for each Water Year during the base period and the average annual Export to Lower Area during the base period.

TABLE 3

EXPORT TO LOWER AREA
DURING BASE PERIOD

Water Year	Acre-Feet
1934-35	15,049
35-36	21,644
36-37	22,668
37-38	25,151
38-39	27,532
1939-40	22,566
40-41	24,191
41-42	27,514
42-43	30,484
43-44	31,182
1944-45	25,953
45-46	27,456
46-47	29,877
47-48	30,165
48-49	25,515
1949-50	18,363
50-51	21,651
51-52	16,302
52-53	18,141
53-54	18,360
1954-55	18,796
55-56	20,728
56-57	19,686
57-58	22,031
58-59	23,881
TOTAL	584,886
Average	23,395

D. Derivation of Lower Area Average Annual Entitlement

Table 4 presents the derivation of the Lower Area average annual entitlement.

TABLE 4

LOWER AREA AVERAGE ANNUAL ENTITLEMENT

(In acre-feet for base period)

Usable Surface Flow (Table 1)	51,620
Subsurface Flow (Table 2)	28,400
Export to Lower Area (Table 3)	23,395
Sub-total	103,415
Stipulated deduction	5,000
Lower Area average annual entitlement	98,415

II. DETERMINATION OF FUTURE LOWER AREA ANNUAL ENTITLEMENT

In determining a future Lower Area Annual Entitlement, as set forth in paragraph 5 (d) of the Judgment, the annual rainfall for San Gabriel Valley shall be determined in accordance with procedures set forth below, which are those presently utilized by the Los Angeles County Flood Control District. The 90-year (1872-73 through 1961-62) average rainfall for San Gabriel Valley has been calculated by said District to be eighteen and fifty-two one-hundredths (18.52) inches. For purposes of this Judgment, this quantity shall be the long-term average annual rainfall for San Gabriel Valley and shall not be subject to change.

The arithmetic average of the annual rainfall recorded at the four precipitation stations listed below shall constitute the rainfall for San Gabriel Valley for the respective Water Year.

Station No.	Location
95	114 East First Street, San Dimas
102C	19711 East Valley Blvd., Walnut
108C	119 South Hoyt Avenue, El Monte
610B	City Hall, Pasadena

Table 5 presents the annual rainfall for San Gabriel Valley for the Water Years 1954-55 through 1962-63.

TABLE 5

ANNUAL RAINFALL FOR SAN GABRIEL VALLEY

Water Year	Rainfall, Inches
1954-55	13.9
56	16.7
57	13.7
58	30.2
59	8.5
1959-60	10.6
61	5.9
62	22.4
63	12.3

The average rainfall in inches for the ten (10) consecutive Water Years ending with the year for which entitlement is being calculated shall be used as the basis for determining Lower Area Annual Entitlement.

Lower Area Annual Entitlements have been computed for 10-year average rainfall in increments of one-tenth (0.1) inch between fourteen (14) and twenty-five (25) inches and are set forth in Table A in paragraph 5 (d) of the Judgment. The following outlines the procedure for determining Lower Area Annual Entitlement from Table A:

(1) Derive the 10-year average rainfall for San Gabriel Valley to the nearest one-tenth (0.1) inch;

(2) Enter Table A in left-hand column at whole number of inches of rainfall; and

(3) Read horizontally to the vertical column representing the appropriate tenth of an inch of rainfall to obtain the quantity of Lower Area Annual Entitlement in acre-feet.

III. FUTURE MEASUREMENTS

It will be necessary to maintain records of measurement of stream flow, flow in pipelines, rainfall and depth to ground water at a number of locations. The purpose of this Part III is to locate and identify those measurement stations and to specify the manner in which the measurements are to be used in the future operation of the Judgment. The line through Whittier Narrows shown on Exhibit A as "narrowest section" is the line at which accounting shall be made of the water to be received in the future by Lower Area Parties. The Watermaster shall, insofar as practicable, utilize measurement data available from existing sources. When such data are not available the Watermaster may make such measurements as may be necessary or reasonably required for the purposes of this Judgment. The Watermaster is hereby authorized to re-establish, rebuild or replace measuring stations whenever necessary for the operation of this Judgment.

A. Surface Water Measurements and Calculations.

There may be several categories of water flowing on the surface through Whittier Narrows. Among them may be local stream flow, Lower Area Replenishment Water, Reclaimed Water and Make-up Water. The Watermaster shall have the responsibility of determining the quantities of each category of water flowing through Whittier Narrows in the future.

The approximate locations of stream measuring stations in and near Whittier Narrows are shown on Exhibit A. The surface

water measurements and calculations shall include the following:

1. Measurements of Surface Flow.
   a. Rio Hondo above Mission Bridge, Station F64-R.
   b. Mission Creek at San Gabriel Boulevard, Station F83-R.
   c. Rio Hondo By-pass Channel, Station F313-R.
   d. Whittier Narrows Flood Channel, Station E337-R.
   e. Calculation of Sycamore Canyon runoff based on annual rainfall to nearest inch at Station 170-C as shown on Table 6.
   f. San Gabriel River near Parkway Bridge. This is to be a new station to replace the existing station on San Gabriel River at Beverly Boulevard, Station F263B-R.
   g. The portion of Reclaimed Water from Whittier Narrows Reclamation Plant diverted to Rio Hondo.
2. Measurement of local storm inflow to the channel of each of the Rio Hondo and San Gabriel River within Montebello Forebay.
   a. Montebello storm drain, Station F181-R.
   b. Calculation of unmeasured local storm inflow.
3. Measurements of diversions to spreading grounds Montebello Forebay.
4. Measurement of surface outflow from Montebello Forebay in the channel of each of Rio Hondo and

San Gabriel River.

a. Rio Hondo above Stewart and Gray Road, Station F458-R.

b. San Gabriel River at Florence Avenue, Station F262-R.

5. Measurement of Lower Area Replenishment Water imported to Upper Area from outside the watershed of the San Gabriel River system.

a. Rio Hondo By-pass Channel, Station F313-R.

b. San Gabriel By-pass Channel, Station F314-R.

c. San Gabriel River MWD Outlet, Station M335-R.

d. Alhambra Wash MWD Outlet, Station M340-R.

e. Any other measuring point or points in Upper Area at which such replenishment water is released.

6. Measurement of total Reclaimed Water from Whittier Narrows Reclamation Plant reclaimed by or on behalf of Lower Area Parties.

In the event that any of the aforementioned gaging stations are inoperative for any reason and for any period of time the Watermaster shall estimate the quantity that would have been measured at the station had it been operative. The estimate shall be based on correlation to nearby operative measuring stations or on other reasonable engineering methods.

TABLE 6

RAINFALL - RUNOFF RELATIONSHIP OF SYCAMORE CANYON*

Annual rainfall, in inches at Precipitation Station No. 170-C	Estimated runoff in acre-feet
6	5
7	10
8	15
9	25
10	35
11	45
12	60
13	75
14	90
15	105
16	125
17	145
18	170
19	200
20	240
21	275
22	315
23	355
24	400
25	445
26	490
27	535
28	580
29	630
30	685

Extrapolate for rainfall values in excess of 30 inches.

* Located on Westerly side of Whittier Narrows, upstream from dam and downstream from stream gaging Station F64-R. Approximate drainage area is 2.77 square miles.

B. Subsurface Flow

The determination of Subsurface Flow involves certain measurements and procedures which are set forth in this section. In connection with a recent comprehensive study made by the State of California, Department of Water Resources, for Bulletin No. 104, "Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County", estimates were made of Subsurface Flow through Whittier Narrows. The State concluded that a reasonable method of determining Subsurface Flow was by the transmissibility method, which is based on Darcy's Law applied

at the location shown on Exhibit A as "narrowest section". Darcy's Law states that Q = PIA, in which

Q = Subsurface Flow

P = Permeability, in gallons per day per square foot under unit hydraulic gradient

I = Slope of water table

A = Cross-sectional area

Under this Judgment calculations shall be made by the Watermaster for the spring and fall of each year and because of slight variations due to the nature of the data available, Subsurface Flow for any one year will be equal to the tri-annual average of the quantities calculated for the three years ending with the year of calculation. In this manner, annual Subsurface Flow shall be based on the average of six calculations, the first of which shall be the spring of 1962.

The elevation of the ground surface at the "narrowest section" of Whittier Narrows is deemed to be 208 feet above sea level, and the width of the section is deemed to be 7,900 feet. Water levels fluctuate at Whittier Narrows and the cross-sectional area of the ground water at Whittier Narrows will vary with fluctuations in ground water elevation.

It should be noted that T = PD, where T = transmissibility in gallons per day per foot of width under unit hydraulic gradient and D = saturated depth in feet. Therefore PA = TW and Q = PAI = TWI. The product TW (or PA) for the entire cross-sectional area was determined to be 4,739.5 x 1,000,000 gallons per day, or 7,333.6 cfs. The actual slope of the water table, I, would then be applied to the calculated quantity of TW (or PA).

The average permeability of the material to a depth of 100 feet below the ground surface has been determined to be equal to 2,000 gallons per day per square foot, which is

equal to .003095 cubic feet per second per square foot. This represents the average permeability in the zone of water level fluctuation.

In order to correct for the unsaturated depth, the equation $Q = TWI$ is modified to $Q = (TW - C)I$ where

$C = P_I Wd$,

C = The flow which would occur in the unsaturated section if it were saturated, in cubic feet per second under unit hydraulic gradient.

P_I = Average permeability for a distance of 100 feet below the ground surface.

W = The cross-sectional width, or 7,900 feet.

d = The distance from the water surface to the top of the ground, or 208 feet minus ground water elevation.

Utilizing the values of permeability shown above, then

$C = 24.45\ d$, in cubic feet per second, for values of "d" to a depth of 100 feet below the ground surface.

The "effective transmissibility" is equal to the total transmissibility times the width at the narrowest section minus C, or,

$$Tw_e = TW - C$$

$$Tw_e = 7{,}334 - C, \text{ in cubic feet per second.}$$

Subsurface Flow is equal to the effective transmissibility times the average slope of the water table. The formula derived from the foregoing, may be stated as follows:

$$Q = 724\ I\ [7{,}334 - 24.45\ (208 - E)]$$

Where: Q = Subsurface Flow in acre-feet per year,

I = Average adjusted slope of ground water surface at narrowest section, and

E = Ground water elevation of the water surface in feet above sea level at the narrowest cross-section.

The detailed steps to be carried out by the Watermaster are as follows:

(1) Ground water level contour maps in the vicinity of Whittier Narrows are drawn on the basis of water level measurements.

(2) A line representing the narrowest cross-section is drawn on the ground water contour maps.

(3) This line is subdivided into four equal lengths.

(4) The average slope of the water table at each of the three points within the narrowest section is determined along a line perpendicular to the ground water contours in the manner heretofore used by the State of California, Department of Water Resources.

(5) Adjustment is made to the ground water slope at each of the three points so that it is perpendicular to the narrowest section by:

(a) measuring the angle, in degrees, between the line representing the narrowest cross-section and the tangent to the flow line at the narrowest cross-section,

(b) applying the sine of that angle to the previously determined slope to determine the adjusted slope, and

(c) obtaining an average of the three adjusted slopes to represent the average slope through the narrowest cross-section.

(6) The elevation of the water surface at the narrowest cross-section is determined by interpolating between the ground water contours.

(7) The distance to the ground water surface is computed from the top of the ground by the formula: $d = 208 - E$, where E represents the average water level elevation of the narrowest cross-section, in feet.

(8) The correction factors for the transmissibility for the area from the top of ground to the water surface is computed by the formula $C = 24.45\ d$, in cubic feet per second,

(9) The effective transmissibility is computed by the formula $Tw_e = 7,334 - C$, in cubic feet per second.

(10) Subsurface Flow is computed by multiplying the effective transmissibility by the average adjusted slope.

(11) The computed Subsurface Flow, in cubic feet per second, is converted to acre-feet per year by multiplying it by 724.

The selected wells within the vicinity of Whittier Narrows which have been used for drawing the ground water contours are as follows:

Location No.	State No.
2927B	2S 11W 06M01S
2927D	06K01S
2928	07B01S
2936	06A01S
2936A	1S 11W 31J03S
2938A	2S 11W 07H1S
2938D	05N05S
2939	08N01S
2939B	18B01S
2939G	07R01S
2947C	-
2947F	05L01S
2947N	05P01S
2948	05N04S
2948E	08B02S
2948F	08L03S
2957H	-

The Watermaster shall obtain measurements of ground water elevations in the spring and fall of each year when they are at their approximate high and low levels, respectively. Such measurements may be made at, but need not be limited to, all of the above listed wells.

C. Export to Lower Area

If present measuring devices on existing conduits are inadequate, the Watermaster shall install or cause to be installed adequate measuring devices to determine the amount of Export to Lower Area.

IV. ACCOUNTING

Utilizing the appropriate measurements described in the previous portion of this Exhibit B, the Watermaster shall maintain accounts for the determination of Lower Area Annual Entitlement, the annual amount of Usable Water, Make-up Water to be delivered, Make-up Water received, the annual total amount of Usable Water and Make-up Water, the accumulated Lower Area Annual Entitlements, the accumulated amounts of Usable Water and Make-up Water received subsequent to September 30, 1963, Accrued Debit of Upper Area or Accrued Credit of Upper Area, and records necessary for accomplishing the Long-term Accounting.

In maintaining the accounting records listed above, the Watermaster shall establish the necessary accounting procedures to accomplish the recordation of data and required calculations for accomplishment of the provisions set forth in paragraph 5 of the Judgment.

A. Components of Usable Water

1. Surface Flow. Surface Flow shall be measured as set forth in Part III.A. of this exhibit to include all water other than Export to Lower Area and Subsurface Flow which passes from Upper Area to Lower Area through Whittier Narrows. When the new station to be constructed on the San Gabriel River near Parkway Bridge is completed, it shall replace the gaging station on the San Gabriel River at Beverly Boulevard, Station F263B-R. Until such new station is in operation, Surface Flow as measured at Station F263B-R shall be increased by the amount of Surface Flow which has percolated or been diverted between Station F263B-R and the point of maximum rising water. The Watermaster shall determine the quantity so percolated or diverted based upon available measurements by the Los Angeles County Flood Control District.

2. Subsurface Flow. Subsurface Flow shall be calculated in accordance with the procedures heretofore set forth.

3. Export to Lower Area. The Watermaster shall reduce to acre-feet the meter readings on each of the conduits transporting through Whittier Narrows water diverted from surface streams in Upper Area or pumped or developed from underground sources in Upper Area. These quantities shall be used to determine Export to Lower Area except that after September 30, 1966, Export to Lower Area used for determination of Usable Water shall not exceed 23,395 acre-feet per year. (Paragraph 3(1) of this Judgment.)

B. Calculation of Usable Water

After determining the amounts of Surface Flow, Subsurface Flow and Export to Lower Area during a Water Year, as provided above, the Watermaster, in order to determine the extent to which such water constitutes the receipt of Usable Water by Lower Area during such Water Year, shall deduct from the total of such amounts, the following:

1. Lower Area Replenishment Water. An amount equal to the total quantity of Lower Area Replenishment Water released in Upper Area in each Water Year subsequent to September 30, 1963, less such amount, if any, as the Watermaster determines to be lost due to evaporation or transpiration prior to the receipt of such water in Lower Area;

2. Reclaimed Water. An amount equal to the total quantity of Reclaimed Water which is reclaimed by or on behalf of Lower Area Parties;

3. Make-up Water. An amount equal to the quantity of Make-up Water delivered to Lower Area during such Water Year, calculated as hereafter provided, to the extent included in

Surface Flow or Export to Lower Area;

4. Paragraph 3(1)(6) Water. An amount equal to the quantity of any water which falls within the scope of paragraph 3(1)(6) of the Judgment; and

5. Unusable Surface Flow. An amount equal to the quantity of Unusable Surface Flow, which is determined by deducting from the total outflow as measured at Stations F45B-R and F262-R: (1) Local Storm Outflow and (2) the portion of Surface Flow which has been caused to pass said stations by reason of any spreading of water in Montebello Forebay by or on behalf of Lower Area Parties.

Local Storm Outflow is a portion of local storm inflow originating in Montebello Forebay upstream from said measuring stations, the amount of which outflow is to be determined as hereinafter provided. When actual measurements of local storm inflow are not available, the amount thereof discharging to the channels of Rio Hondo or San Gabriel River within Montebello Forebay upstream from stations F45B-R and F262-R shall be estimated by correlation with the local storm inflow measured at Montebello Storm Drain, Station F181-R. Such quantities shall be estimated on the basis of the individual drainage areas of storm drain projects and the runoff per unit area determined from the Montebello Storm Drain, Station F181-R, during the particular time interval under consideration. When water is flowing out of Montebello Forebay on the surface in the Rio Hondo or San Gabriel River channels, the Watermaster shall determine Local Storm Outflow as follows:

a. Local Storm Outflow from Rio Hondo. When outflow occurs at Station F45B-R, all local storm inflow, both measured and estimated, which enters the Rio Hondo channel between that station and Upper Area shall constitute Local Storm Outflow from Rio Hondo, but the amount thereof shall not exceed the amount of

outflow at Station F45B-R for such periods.

b. Local Storm Outflow from San Gabriel River. At such times as local storm inflow does not join Surface Flow in San Gabriel River, the portion of such local storm inflow passing Station F262-R shall constitute Local Storm Outflow. In addition, at such times as Surface Flow in the San Gabriel River commingles with the local storm inflow, then the Watermaster shall determine Local Storm Outflow as follows:

(1) Calculate the total amount of local storm inflow to the San Gabriel River during such times, but such amount to be used in the determination of Local Storm Outflow shall not exceed the amount of San Gabriel River outflow passing Station F262-R during such periods.

(2) Calculate the Local Storm Outflow passing Station F262-R during such times, which calculation shall be based on the Surface Flow and local storm inflow to the San Gabriel River channel, giving appropriate weight to the quantities involved and the distance the respective quantities of water traverse Montebello Forebay in said channel.

(3) These two calculations shall then be averaged arithmetically and the resulting amount shall be Local Storm Outflow from San Gabriel River.

C. Determination and Delivery of Make-up Water

1. By Additions to Surface Flow (paragraph 5(i)(1) of Judgment). The determination of the amount of Make-up Water which is delivered to Lower Area as an addition to Surface Flow shall be based upon (a) measurements of Make-up Water at the

delivery outlet of such water upstream from Whittier Narrows, (b) measurements of water consisting in whole or in part of Make-up Water passing the applicable stations listed in Part III.A.1. of this Exhibit B, and (c) such deductions from the measurements of Make-up Water at said stations so listed as are necessary to take into account (i) the amount of any water other than Make-up Water included in the measurements at said stations so listed, (ii) any losses due to evaporation or transpiration of Make-up Water after such measurement and prior to its receipt in Lower Area, and (iii) any percolation of Make-up Water after such measurement and prior to the time it reaches the "narrowest section" in Whittier Narrows.

As changing conditions may require, the Watermaster shall change the points of measurement of Make-up Water in order to obtain those measurements necessary to determine the amount of Make-up Water delivered to Lower Area Parties by means of increasing Surface Flow.

2. By Payment for Reclaimed Water (paragraph 5(i)(2) of the Judgment). The Watermaster shall determine (a) the quantity of Reclaimed Water reclaimed at the Whittier Narrows Water Reclamation Plant as it existed October 1, 1963, and which when so reclaimed shall have been passed through Whittier Narrows, and (b) the quantity, if any, of Reclaimed Water reclaimed at any future additions to said plant after September 30, 1963, and which when so reclaimed shall have been passed through Whittier Narrows. Such quantities shall be ascertained from the records of Los Angeles County Flood Control District.

Upon being advised that a payment has been made by Upper District or Defendants to Central Municipal pursuant to the provisions of paragraph 5(i)(2) of the Judgment, the Watermaster shall credit Upper Area Parties with the delivery of Make-up Water computed according to said paragraph of the

Judgment.

3. By Deliveries to a Lower Area Party (paragraph 5(i)(3) of the Judgment). Any Make-up Water delivered directly to a Lower Area Party with the consent of Plaintiffs shall be metered and the meter records reduced to acre-feet per year. Upon being advised that a Lower Area Party has received a direct delivery of Make-up Water pursuant to the provisions of paragraph 5(i)(3) of the Judgment, the Watermaster shall credit Upper Area Parties with delivery of such Make-up Water in the Water Year in which it was so delivered.

D. Long-term Accounting

The Watermaster shall maintain a record of the annual rainfall in the San Gabriel Valley, including a running average of such rainfall, so that the Watermaster will be informed when a Long-term Accounting shall be carried out as specified in paragraph 5(h) of the Judgment, and shall thereafter perform the necessary calculations for accomplishment of the adjustment, if any, between the aggregate amount of water received compared to the aggregate entitlement for the period.

E. Water Usable for Ground Water Replenishment

With respect to any delivery of Make-up Water the Watermaster shall determine the suitability of such water for ground water replenishment. The Watermaster shall gather, insofar as readily available from public and private agencies, data relating to the quality of all categories of water, Surface Flow, Subsurface Flow, Export to Lower Area, Reclaimed Water, Lower Area Replenishment Water and Make-up Water.

REIMBURSEMENT CONTRACT

LONG BEACH v. SAN GABRIEL

REIMBURSEMENT CONTRACT

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ed.

REIMBURSEMENT CONTRACT

THIS CONTRACT is made by and between UPPER SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT, herein called "Upper District", and the cities of ALHAMBRA, ARCADIA, AZUSA, COVINA, EL MONTE, GLENDORA, MONTEREY PARK, MONROVIA, SOUTH PASADENA, and WHITTIER; BALDWIN PARK COUNTY WATER DISTRICT, and SAN GABRIEL COUNTY WATER DISTRICT; AZUSA AGRICULTURAL WATER COMPANY, AZUSA VALLEY WATER COMPANY, CALIFORNIA DOMESTIC WATER COMPANY, CALIFORNIA WATER & TELEPHONE COMPANY, COLUMBIA LAND AND WATER COMPANY, COVINA IRRIGATING COMPANY, CROSS WATER COMPANY, DUARTE WATER COMPANY, EAST PASADENA WATER COMPANY, LTD., GLENDORA IRRIGATING COMPANY, SAN DIMAS WATER COMPANY, SAN GABRIEL VALLEY WATER COMPANY, SOUTHERN CALIFORNIA WATER COMPANY, SUBURBAN WATER SYSTEMS, SUNNYSLOPE WATER COMPANY, and VALLECITO WATER COMPANY, corporations, herein collectively called "Pumpers."

ed.

RECITALS

1. The Action. In the matter of Board of Water Commissioners of the City of Long Beach, et al. v. San Gabriel Valley Water Company, et al., (L. A. Superior Court No. 722,647) the water rights of substantially all major water producers in the main San Gabriel Valley are sought to be restricted.

2. Judgment. The parties named above, except City

of Whittier, are concurrently executing a Stipulation that a Judgment substantially in the form annexed hereto shall be rendered and it is anticipated that such Judgment will be rendered in the action.

3. Public Interest in Settlement. It is in the best interests of the Pumpers and in the best interests of the water users and taxpayers within the corporate boundaries of those Pumpers which are public agencies, of the consumers of those Pumpers which are utilities or mutual water companies, and of all residents and taxpayers of Upper District, that said action be settled and disposed of in accordance with the terms of said judgment in order to preserve the water supplies within Upper Area.

DEFINITIONS

1. "Contract Costs" -- All costs hereafter paid by Upper District:

ed.

(a) In providing Make-up Water under the terms of the Judgment. In computing such cost of providing Make-up Water, any cost which Upper District shall pay which it would have paid even though it had not provided Make-up Water shall be excluded; and particularly but not exclusively, no amount which shall be paid to The Metropolitan Water District of Southern California as a condition to any past or future annexation shall be

deemed a cost of providing Make-up Water. Such costs may include interest paid by Upper District upon money borrowed for advancements made by it or interest which would have been received by the District, but which it lost by reason of making such advancements.

(b) In complying with the terms of said judgment.

(c) In keeping the records, making the determinations and collecting the moneys required by the later provisions of this contract.

2. "Assessable Pumpage" -- The amount of ground water produced in the applicable calendar year by or on behalf of any Pumper by pumping or extraction thereof from the Upper Area, including ground water produced under rights hereafter acquired from any source.

3. Common Terms With Judgment -- All terms specially defined in said judgment are used herein in the sense in which they are therein defined, and said special definitions are incorporated herein by this reference.

OPERATIVE PROVISIONS

1. Consideration for Execution. The great majority of the defendants in the action are situated in whole or in part within Upper District and pump water therein. Certain defendants, including the Cities of Alhambra, Azusa and

Monterey Park, as well as the City of Whittier which is not a defendant, lie outside Upper District. Execution of this agreement by all parties to it is essential to induce each party hereto to execute this agreement, and likewise, execution of the Stipulation for Judgment by all defendants in the action is necessary to induce each party hereto to execute this contract. Each party executes this contract in consideration of its execution by the other parties, and in consideration of the execution of the Stipulation by the parties thereto. Moreover, by this contract each party other than City of Whittier waives its right to cross-complain in the action so as to bring City of Whittier into the action as a party.

2. Intervention by Upper District. In consideration of the execution of this contract by Pumpers and to contribute to the physical solution of providing adequate water for its inhabitants, Upper District has intervened as a defendant in the action and agrees to execute the stipulation for said judgment.

3. Administration. Upper District shall administer the provisions of Paragraphs 6 through 9, below, as to all Pumpers, including additional parties hereto mentioned in Paragraph 16.

4. Covenant to Reimburse. Each Pumper hereby agrees to pay to Upper District such Pumper's share of Contract

Costs allocated and determined as provided below.

5. Allocation of Costs Among Pumpers. Pumpers agree among themselves, each for the benefit of all other Pumpers, to share and participate in the payment of any sums due Upper District hereunder in such proportion as the Assessable Pumpage of each Pumper bears to the total Assessable Pumpage of all Pumpers for the applicable period covered by any assessment as hereinafter provided, subject to the provisions of Paragraph 9 below.

6. Reports by Pumpers. Pumpers shall file under penalty of perjury the reports hereinafter specified in the form provided by Upper District, as follows:

(a) Time and Procedure for Filing. Each year, on or before March 1, each Pumper shall file with Upper District a written report of its extractions of water from Upper Area for the preceding calendar year containing the information set forth in subparagraph (b) of this paragraph.

ed.

(b) Contents of the Report. Such annual reports to Upper District shall set forth:

(1) The name and address of the Pumper; and

(2) The number of acre feet of water which was pumped or extracted from Upper Area by or on behalf of the Pumper during

the calendar year covered.

(c) Determination in Lieu of Report. In the event any Pumper fails to so file such report, Upper District may make a determination of the Assessable Pumpage of such Pumper, which determination shall be final and binding.

7. Notice of Assessment. On or before June 1 of each year, Upper District shall serve a Notice of Assessment on each Pumper covering the preceding calendar year which will contain a statement of:

(a) The amount of Assessable Pumpage by each Pumper;

(b) A detailed statement of Contract Costs during the preceding calendar year, if any; and

(c) A statement of the amount of such Contract Costs which are assessable to and payable by the Pumper to whom such notice is sent.

ed.

8. Payment--Delinquency and Default. All assessments herein provided for shall be due and payable on the following July 31. In the event of nonpayment of any assessment, Upper District may bring an action and shall have the right to recover such assessment, together with interest thereon at the rate of 7% per annum from the date of delinquency and costs of suit, including any reasonable attorneys' fees incurred.

If, after due diligence, Upper District is unable to collect a Pumper's allocated cost, such uncollectible amount (including interest, costs and attorneys' fees) shall be prorated among and paid by the other Pumpers in the same proportions as they paid assessments for the year or years in question. Said proration shall be billed and payable with the next succeeding assessment.

9. Redetermination of Assessable Pumpage. Any Pumper may at any time within 90 days after receipt of any Notice of Assessment request a redetermination of the Assessable Pumpage of such Pumper or of any other Pumper or Pumpers reflected in such notice. Such request shall be addressed in writing to Upper District and shall set forth the basis of the requesting Pumper's belief that such data are incorrect. Upon the receipt of any request, the following procedures shall be undertaken by Upper District:

ed.

(a) Notice of Request for Redetermination. Upper District shall forthwith notify in writing any Pumper whose Assessable Pumpage has been questioned, of the fact of such request and the name of the requesting Pumper. Notice shall further be sent to all Pumpers that procedures will be undertaken pursuant to this paragraph, and shall state briefly the issues to be determined.

(b) Availability of Records. Subsequent to such notice, the records of the Pumper whose Assessable Pumpage is subject to a request for redetermination shall be made available at reasonable hours and upon reasonable demand to Upper District, insofar as such records are relevant to a determination of the Assessable Pumpage of the Pumper during the period involved.

(c) Investigation and Notice of Hearing. Upper District shall conduct an investigation and shall by written decision served on all Pumpers redetermine or affirm such Assessable Pumpage. Upper District may at its option set a date for hearing. In such event, at least ten days' notice in writing of said hearing date shall be given to all Pumpers.

ed.

(d) Conduct of Hearing and Decision. If hearing be held, Upper District shall not be bound therein by strict rules of evidence, but may rely on any evidence which it deems of probative value. Any Pumper may present evidence and arguments thereat. The written decision of Upper District, with or without such hearing, shall be served on all Pumpers and shall be conclusive for purposes of this contract, unless said issue is submitted

to a court of competent jurisdiction within 90 days from notice of such decision.

(e) Reallocation of Contract Costs. If Assessable Pumpage is modified by any such decision, Contract Costs shall be reallocated in accordance therewith. Said reallocation shall be billed and payable with the next succeeding assessment.

10. Water Rights Unaffected. This contract relates solely to the equitable allocation of Contract Costs and does not involve or constitute an admission or agreement as to the water rights of any Pumper. Execution of this contract shall not prevent any party hereto from bringing or maintaining any action or proceeding to determine rights to pump, extract or store water, or to limit or curtail any pumping, extraction or storage of water in or from Upper Area or elsewhere, except as limited by Paragraphs 1 and 16 of the Operative Provisions hereof.

ed.

11. Changed Conditions. It is recognized that conditions in Upper Area may hereafter change to such an extent that it may become equitable to modify either the total obligation of Pumpers to Upper District hereunder or the allocation of Contract Costs. While this contract is entered into to assure Upper District of reimbursement of an amount up to its entire Contract Costs, it is not intended hereby, and this contract shall not be deemed, to prevent Upper District

from modifying and reducing such obligation or from applying other relief which may reduce the burden on Pumpers. Without limitation upon the power of Upper District to otherwise reduce the aggregate amount payable under this contract, the following specific instances of changed conditions are contemplated:

(a) Allocation of Portion of Burden to Taxes. It may at some future date appear equitable and fair to allocate all or a portion of Contract Costs to ad valorem taxes or other revenues of Upper District. In such event, Upper District may, in the discretion of its Board of Directors, allocate all or a portion of Contract Costs to such revenue sources and the remainder, if any, thereof, shall be payable under the terms of this contract.

(b) Imposition of Pump Tax. If Upper District should acquire and exercise the right to levy a tax upon the pumping or extraction of ground water, then the aggregate of such tax shall be credited proportionally amongst Pumpers with respect to Assessable Pumpage within Upper District.

(c) Adjudication of Rights. If all or substantially all of the water rights within Upper Area shall be adjudicated (including the rights of all Pumpers), and its natural and safe yield

determined, then this contract shall be deemed modified to the extent that Assessable Pumpage shall include only that amount of water produced over and above the safe yield portion of adjudicated rights owned by any Pumper; provided that this subparagraph (c) shall not apply to any year in which the aggregate of all Assessable Pumpage as so modified is less than 25,000 acre feet.

12. Effective Date. This contract shall be effective ten (10) days after notice in writing of execution thereof by all parties, which notice shall be given to all Pumpers by Upper District, but shall cease and terminate on July 1, 1966, unless by said date (a) this contract shall have been validated as provided below, and (b) the Judgment shall have been rendered.

ed.

13. Validation. Within four months after this contract becomes effective, a proceeding or proceedings shall be instituted by Upper District in a court of competent jurisdiction by an appropriate action or actions for determination of the validity of this contract.

14. Term. The term of this contract shall commence upon its effective date and continue so long as the Judgment, as entered or as modified, shall remain in effect, subject, however, to the provisions of Paragraph 12 above.

15. Notices. Any notice to be served upon any party hereunder may be served either personally or by mail. If served by mail, such notice shall be mailed in the County of Los Angeles, State of California, by certified mail, postage prepaid, return receipt requested, or by registered mail, and shall be addressed to the party to be served at its address as set forth below, or (in the case of Upper District) at such other address as it may have last specified in writing to the Pumper or Pumpers involved for the service of notices hereunder, or (in the case of a Pumper) at such other address as it may have last specified in writing to Upper District for the service of notices hereunder. Any notice so served by mail shall be deemed to have been served upon the first business day (excluding Saturdays, Sundays and holidays) after such mailing.

ed.

16. Additional Parties. In addition to Pumpers and their successors and assigns referred to in Paragraph 17 below, any other person or entity who or which shall pump or extract water in or from Upper Area (herein referred to as an "additional party"), may become a party to this contract, provided (a) Upper District shall give its written consent thereto, and (b) no Pumper or additional party shall serve upon Upper District its written objection thereto. If Upper District shall give its written consent to execution of this contract by an applying additional party, it shall

then give written notice of such application and consent by Upper District to each Pumper and each additional party, and if within thirty (30) days after such notice no Pumper or additional party shall have served upon Upper District its written objection to execution of this contract by the applying additional party, such additional party's application shall be deemed to have been accepted and it may become a party to this contract by delivery to Upper District of a duly executed instrument in writing stating that such person or entity joins in and becomes a party to this contract.

Any additional party so joining shall become bound by all obligations of this contract, becoming due or which should be performed within the terms of this contract on and after the ensuing January 1. Such obligations include the duty to make the report of extractions during the preceding calendar year (i.e., the year in which the contract is executed) required by Paragraph 6, and to make the payment based upon such extractions as required by Paragraph 5, provided, however, that such additional party shall have no liability under Paragraph 8 with respect to any nonpayments of an assessment based upon extractions by a Pumper or other additional party prior to the year in which such additional party joins in this contract.

As to each Pumper who executes this contract after it becomes effective, Upper District agrees that for a

period of 90 days after giving its said written consent, it will bring no action against such additional party to limit or define its rights to pump water in or from Upper Area. Further, if more than one such Pumper shall become a party to this agreement at the same time as any other pumper, each will execute and shall be deemed to have executed this contract and to have joined therein in consideration of the joinder in this contract by the other or others concurrently joining in this contract.

Any such additional party shall be deemed a Pumper for all purposes of this agreement.

17. Successors and Assigns. This contract shall inure to the benefit of and bind the successors in ownership of the water rights of the parties. If any Pumper shall sell or transfer or agree to sell or transfer its water rights in Upper Area or any part of such water rights, such Pumper shall require as a condition of any such sale, transfer or agreement that the purchaser or transferee, if not already a party to this contract, shall execute this contract and become a party thereto. Upon a full transfer of such rights by a Pumper and assumption by the assignee as above provided, the assigning Pumper shall be discharged of obligation hereunder. If such Pumper fails to obtain such assumption (except in cases of a transfer under order of court or by operation of law) the assigning Pumper shall

remain bound by the contract and production of water by said assignee by the exercise of the right assigned shall be treated as production by such Pumper.

18. Execution in Counterparts. This contract may be executed in counterparts (each counterpart being an exact copy or duplicate of the original) and all counterparts collectively shall be considered as constituting one complete contract.

IN WITNESS WHEREOF this contract is executed by the undersigned by its duly authorized officer.

Dated: _____.

_____

(SEAL) By _____

By _____

ed.

APPENDIX D

MAIN SAN GABRIEL BASIN JUDGMENT

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

UPPER SAN GABRIEL VALLEY
MUNICIPAL WATER DISTRICT

Plaintiff,

vs.

CITY OF ALHAMBRA, et al,

Defendants.

No. 924128

AMENDED JUDGMENT
(and Exhibits Thereto),

Honorable Florence T. Pickard
Assigned Judge Presiding

Original Judgment
Signed and Filed: December 29, 1972;
Entered: January 4, 1973
Book 6741, Page 197

JUDGMENT AS AMENDED AUGUST 24, 1989

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SUPERIOR COURT OF CALIFORNIA, COUNTY OF LOS ANGELES

UPPER SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT, Plaintiff, vs. CITY OF ALHAMBRA, et al., Defendants.	No. 924128 AMENDED JUDGMENT (And Exhibits Thereto)

HONORABLE FLORENCE T. PICKARD

Assigned Judge Presiding

DEPARTMENT 38

August 24, 1989

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SUPERIOR COURT OF CALIFORNIA, COUNTY OF LOS ANGELES

UPPER SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT, Plaintiff, vs. CITY OF ALHAMBRA, et al., Defendants.	No. 924128 AMENDED JUDGMENT Hearing: August 24, 1989 Department 38, 9:00 A.M.

The Petition of the MAIN SAN GABRIEL BASIN WATERMASTER for this AMENDED JUDGMENT herein, came on regularly for hearing in this Court before the HONORABLE FLORENCE T. PICKARD, ASSIGNED JUDGE PRESIDING, on August 24, 1989; Ralph B. Helm appeared as attorney for Watermaster - Petitioner; and good cause appearing, the following ORDER and AMENDED JUDGMENT are, hereby, made:

I. INTRODUCTION

1. Pleadings, Parties, and Jurisdiction. The complaint herein was filed on January 2, 1968, seeking an adjudication of water rights. By amendment of said complaint and dismissals of certain parties, said adjudication was limited to the Main San Gabriel Basin and its Relevant Watershed. Substantially all

defendants and the cross-defendant have appeared herein, certain defaults have been entered, and other defendants dismissed. By the pleadings herein and by Order of this Court, the issues have been made those of a full inter se adjudication of water rights as between each and all of the parties. This Court has jurisdiction of the subject matter of this action and of the parties herein.

2. Stipulation for Entry of Judgment. A substantial majority of the parties, by number and by quantity of rights herein Adjudicated, Stipulated for entry of a Judgment in substantially the form of the original Judgment herein.

3. Lis Pendens. (New) A Lis Pendens was recorded August 20, 1970, as Document 2650, in Official Records of Los Angeles County, California, in Book M 3554, Page 866.

4. Findings and Conclusions. (Prior Judgment Section 3) Trial was had before the Court, sitting without a jury, John Shea, Judge Presiding, commencing on October 30, 1972, and Findings of Fact and Conclusions of Law have been entered herein.

5. Judgment. (New) Judgment (and Exhibits Thereto), Findings of Fact and Conclusions of Law (and Exhibits thereto), Order Appointing Watermaster, and Initial Watermaster Order were signed and filed December 29, 1972, and Judgment was entered January 4, 1973, in Book 6791, Page 197.

6. Intervention After Judgment. (New) Certain defendants have, pursuant to the Judgment herein and the Court's continuing jurisdiction, intervened and appeared herein after entry of Judgment.

7. Amendments to Judgment. (New) The original Judgment herein was previously amended on March 29, 1979, by: (1) adding definition (r [1]) thereto, (2) amending definition (bb) therein, (3) adding Exhibit "K" thereto, (4) adding Sections 14.5 and 16.5 thereto, and (5) amending Sections 37(b), 37(c), 37(d), and Section 47 therein; it was again amended on December 21, 1979, by amending Section 38(c) thereof; again amended on February 21, 1980, by amending Section 24 thereof; again amended on September 12, 1980, by amending Sections 35(a), 37(a), and 38(a); again amended on December 22, 1987, by adding Section 37(e) thereto; and last amended on July 22, 1988 by amending Section 37(e) thereof and Ordering an Amended Judgment herein.

8. Transfers. (New) Since the entry of Judgment herein there have been numerous transfers of Adjudicated water rights. To the date hereof, said transfers are reflected in Exhibits "C", "D", and "E".

9. Producers and Their Designees. (New) The current status of Producers and their Designees is shown on Exhibit "L".

10. Definitions. (Prior Judgment Section 4) As used in this Judgment, the following terms shall have the meanings herein set forth:

(a) Base Annual Diversion Right -- The average annual quantity of water which a Diverter is herein found to have the right to Divert for Direct Use.

(b) Direct Use --Beneficial use of water other than for spreading or Ground Water recharge.

(c) Divert or Diverting -- To take waters of any surface stream within the Relevant Watershed.

(d) Diverter -- Any party who Diverts.

(e) Elevation -- Feet above mean sea level.

(f) Fiscal Year -- A period July 1 through June 30, following.

(g) Ground Water -- Water beneath the surface of the ground and within the zone of saturation.

(h) Ground Water Basin -- An interconnected permeable geologic formation capable of storing a substantial Ground Water supply.

(i) Integrated Producer -- Any party that is both a Pumper and a Diverter, and has elected to have its rights adjudicated under the optional formula provided in Section 18 of this Judgment.

(j) In-Lieu Water Cost -- The differential between a Producer's non-capital cost of direct delivery of Supplemental Water and the cost of Production of Ground Water (including depreciation on Production facilities) to a particular Producer who has been required by Watermaster to take direct delivery of Supplemental Water in lieu of Ground Water.

(k) Key Well -- Baldwin Park Key Well, being elsewhere designated as State Well No. 1S/10W-7R2, or Los Angeles County Flood Control District Well No. 3030-F. Said well has a ground surface Elevation of 386.7.

(l) Long Beach Case -- Los Angeles Superior Court Civil Action No. 722647, entitled, "Long Beach, et al., v. San Gabriel Valley Water Company, et al."

(m) Main San Gabriel Basin or Basin -- The Ground Water Basin underlying the area shown as such on Exhibit "A".

(n) Make-up Obligation -- The total cost of meeting the obligation of the Basin to the area at or below Whittier Narrows, pursuant to the Judgment in the Long Beach Case.

(o) Minimal Producer -- Any party whose Production in any Fiscal Year does not exceed five (5) acre feet.

(p) Natural Safe Yield -- The quantity of natural water supply which can be extracted annually from the Basin under conditions of long term average annual supply, net of the requirement to meet downstream rights as determined in the Long Beach Case (exclusive of Pumped export), and under cultural conditions as of a particular year.

(q) Operating Safe Yield -- The quantity of water which the Watermaster determines hereunder may be Pumped from the Basin in a particular Fiscal Year, free of the Replacement Water Assessment under the Physical Solution herein.

(r) Overdraft -- A condition wherein the total annual Production from the Basin exceeds the Natural Safe Yield thereof.

(s) Overlying Rights -- (Prior Judgment Section 4 (r) [1]) The right to Produce water from the Basin for use on Overlying Lands, which rights are exercisable only on specifically defined Overlying Lands and which cannot be separately conveyed or transferred apart therefrom.

(t) Physical Solution -- (Prior Judgment Section 4 (s)) The Court decreed method of managing the waters of the Basin so as to achieve the maximum utilization of the Basin and its water supply, consistent with the rights herein declared.

(u) Prescriptive Pumping Right -- (Prior Judgment

Section 4 (t)) The highest continuous extractions of water by a Pumper from the Basin for beneficial use in any five (5) consecutive years after commencement of Overdraft and prior to filing of this action, as to which there has been no cessation of use by that Pumper during any subsequent period of five (5) consecutive years, prior to the said filing of this action.

(v) Produce or Producing -- (Prior Judgment Section 4 (u)) To Pump or Divert water.

(w) Producer -- (Prior Judgment Section 4 (v)) A party who Produces water.

(x) Production -- (Prior Judgment Section 4 (w)) The annual quantity of water Produced, stated in acre feet.

(y) Pump or Pumping -- (Prior Judgment Section 4 (x)) To extract Ground Water from the Basin by Pumping or any other method.

(z) Pumper -- (Prior Judgment Section 4 (y)) Any party who Pumps water.

(aa) Pumper's Share -- (Prior Judgment Section 4 (z)) A Pumper's right to a percentage of the entire Natural Safe Yield, Operating Safe Yield and appurtenant Ground Water storage.

(bb) Relevant Watershed -- (Prior Judgment Section 4(aa)) That portion of the San Gabriel River watershed tributary to Whittier Narrows which is shown as such on Exhibit "A", and the exterior boundaries of which are described in Exhibit "B".

(cc) Replacement Water -- (Prior Judgment Section 4 (bb)) Water purchased by Watermaster to replace:

(1) Production in excess of a Pumper's Share of Operating Safe Yield; (2) The consumptive use portion resulting from the exercise of an Overlying Right; and (3) Production in excess of a Diverter's right to Divert for Direct Use.

(dd) Responsible Agency -- (Prior Judgment Section 4 (cc)) The municipal water district which is the normal and appropriate source from whom Watermaster shall purchase Supplemental Water for replacement purposes under the Physical Solution, being one of the following:

(1) Upper District -- Upper San Gabriel Valley Municipal Water District, a member public agency of The Metropolitan Water District of Southern California (MWD).

(2) San Gabriel District -- San Gabriel Valley Municipal Water District, which has a direct contract with the State of California for State Project Water.

(3) Three Valleys District -- Three Valleys Municipal Water District, formerly, "Pomona Valley Municipal Water District", a member public agency of MWD.

(ee) Stored Water -- (Prior Judgment Section 4 (dd)) Supplemental Water stored in the Basin pursuant to a contract with Watermaster as authorized by Section 34(m).

(ff) Supplemental Water -- (Prior Judgment Section 4 (ee)) Nontributary water imported through a Responsible Agency.

(gg) Transporting Parties -- (Prior Judgment Section 4 (ff)) Any party presently transporting water (i.e., during the 12 months immediately preceding the making of the findings herein) from the Relevant Watershed or Basin to an area outside

thereof, and any party presently or hereafter having an interest in lands or having a service area outside the Basin or Relevant Watershed contiguous to lands in which it has an interest or a service area within the Basin or Relevant Watershed. Division by a road, highway, or easement shall not interrupt contiguity. Said term shall also include the City of Sierra Madre, or any party supplying water thereto, so long as the corporate limits of said City are included within one of the Responsible Agencies and if said City, in order to supply water to its corporate area from the Basin, becomes a party to this action bound by this Judgment.

(hh) Water Level -- (Prior Judgment Section 4 (gg)) The measured Elevation of water in the Key Well, corrected for any temporary effects of mounding caused by replenishment or local depressions caused by Pumping.

(ii) Year -- (Prior Judgment Section 4 (hh)) A calendar year, unless the context clearly indicates a contrary meaning.

11. Exhibits. (Prior Judgment Section 5) The following exhibits are attached to this Judgment and incorporated herein by this reference:

Exhibit "A" -- Map entitled "San Gabriel River Watershed Tributary to Whittier Narrows", showing the boundaries and relevant geologic and hydrologic features in the portion of the watershed of the San Gabriel River lying upstream from Whittier Narrows.

Exhibit "B" -- Boundaries of Relevant Watershed.

Exhibit "C" -- Table Showing Base Annual Diversion

Rights of Certain Diverters.

Exhibit "D" -- Table Showing Prescriptive Pumping Rights and Pumper's Share of Each Pumper.

Exhibit "E" -- Table Showing Production Rights of Each Integrated Producer.

Exhibit "F" -- Table Showing Special Category Rights.

Exhibit "G" -- Table Showing Non-consumptive Users.

Exhibit "H" -- Watermaster Operating Criteria.

Exhibit "J" -- Puente Narrows Agreement.

Exhibit "K" -- Overlying Rights, Nature of Overlying Right, Description of Overlying Lands to which Overlying Rights are Appurtenant, Producers Entitled to Exercise Overlying Rights and their Respective Consumptive Use Portions, and Map of Overlying Lands.

Exhibit "L" -- (New) List of Producers And Their Designees, as of June 1988.

Exhibit "M" -- (New) Watermaster Members, Officers and Staff, Including Calendar Year 1989.

II. DECREE

NOW, THEREFORE, IT IS HEREBY DECLARED, ORDERED, ADJUDGED AND DECREED:

A. DECLARATION OF HYDROLOGIC CONDITIONS

12. Basin as Common Source of Supply. (Prior Judgment Section 6) The area shown on Exhibit "A" as Main San Gabriel Basin overlies a Ground Water basin. The Relevant Watershed is the watershed area within which rights are herein adjudicated. The waters of the Basin and Relevant Watershed constitute a common source of natural water supply to the parties herein.

13. Determination of Natural Safe Yield. (Prior Judgment Section 7) The Natural Safe Yield of the Main San Gabriel Basin is found and declared to be one hundred fifty-two thousand seven-hundred (152,700) acre feet under Calendar Year 1967 cultural conditions.

14. Existence of Overdraft. (Prior Judgment Section 8) In each and every Calendar Year commencing with 1953, the Basin has been and is in Overdraft.

B. DECLARATION OF RIGHTS

15. Prescription. (Prior Judgment Section 9) The use of water by each and all parties and their predecessors in interest has been open, notorious, hostile, adverse, under claim of right, and with notice of said overdraft continuously from January 1, 1953 to January 4, 1973. The rights of each party herein declared are prescriptive in nature. The following aggregate consequences of said prescription within the Basin and Relevant Watershed are hereby declared:

(a) Prior Prescription. Diversions within the Relevant Watershed have created rights for direct consumptive use within the Basin, as declared and determined in Sections 16 and 18 hereof, which are of equal priority *inter se*, but which are prior and paramount to Pumping Rights in the Basin.

(b) Mutual Prescription. The aggregate Prescriptive Pumping Rights of the parties who are Pumpers now exceed, and for many years prior to filing of this action, have exceeded, the Natural Safe Yield of the Basin. By reason of said condition, all rights of said Pumpers are declared

to be mutually prescriptive and of equal priority, inter se.

(c) Common Ownership of Safe Yield and Incidents Thereto. By reason of said Overdraft and mutual Prescription, the entire Natural Safe Yield of the Basin, the Operating Safe Yield thereof and the appurtenant rights to Ground Water storage capacity of the Basin are owned by Pumpers in undivided Pumpers' Shares as hereinafter individually declared, subject to the control of Watermaster, pursuant to the Physical Solution herein decreed. Nothing herein shall be deemed in derogation of the rights to spread water pursuant to rights set forth in Exhibit "G".

16. Surface Rights. (Prior Judgment Section 10) Certain of the aforesaid prior and paramount prescriptive water rights of Diverters to Divert for Direct Use stream flow within the Relevant Watershed are hereby declared and found in terms of Base Annual Diversion Right as set forth in Exhibit "C". Each Diverter shown on Exhibit "C" shall be entitled to Divert for Direct Use up to two hundred percent (200%) of said Base Annual Diversion Right in any one (1) Fiscal Year; provided that the aggregate quantities of water Diverted in any consecutive ten (10) Fiscal Year period shall not exceed ten (10) times such Diverter's Base Annual Diversion Right.

17. Ground Water Rights. (Prior Judgment Section 11) The Prescriptive Pumping Right of each Pumper, who is not an Integrated Producer, and his Pumper's Share are declared as set forth in Exhibit "D".

18. Optional Integrated Production Rights. (Prior Judgment Section 12) Those parties listed on Exhibit "E" have elected to be treated as Integrated Producers. Integrated Production Rights have two (2) historical components:

(1) a fixed component based upon historic Diversions for Direct Use; and

(2) a mutually prescriptive Pumper's Share component based upon Pumping during the period 1953 through 1967.

Assessment and other Watermaster regulation of the rights of such parties shall relate to and be based upon each such component. So far as future exercise of such rights is concerned, however, the gross quantity of the aggregate right in any Fiscal Year may be exercised, in the sole discretion of such party, by either Diversion or Pumping or any combination or apportionment thereof; provided, that for Assessment purposes the first water Produced in any Fiscal Year (other than "carry-over", under Section 49 hereof) shall be deemed an exercise of the Diversion component, and any Production over said quantity shall be deemed Pumped water, regardless of the actual method of Production.

19. Special Category Rights. (Prior Judgment Section 13) The parties listed on Exhibit "F" have water rights in the Relevant Watershed which are not ordinary Production rights. The nature of each such right is as described in Exhibit "F".

20. Non-consumptive Practices. (Prior Judgment Section 14) Certain Producers have engaged in Water Diversion and spreading practices which have caused such Diversions to have a

non-consumptive or beneficial impact upon the aggregate water supply available in the Basin. Said parties, and a statement of the nature of their rights, uses and practices, are set forth in Exhibit "G". The Physical Solution decreed herein, and particularly its provisions for Assessments, shall not apply to such non-consumptive uses. Watermaster may require reports on the operations of said parties.

21. Overlying Rights. (Prior Judgment Section 14.5) Producers listed in Exhibit "K" hereto were not parties herein at the time of the original entry of Judgment herein. They have exercised in good faith Overlying Rights to Produce water from the Basin during the periods subsequent to the entry of Judgment herein and have by self-help initiated or maintained appurtenant Overlying Rights. Such rights are exercisable without quantitative limit only on specifically described Overlying Land and cannot be separately conveyed or transferred apart therefrom. As to such rights and their exercise, the owners thereof shall become parties to this action and be subject to Watermaster Replacement Water Assessments under Section 45 (b) hereof, sufficient to purchase Replenishment Water to offset the net consumptive use of such Production and practices. In addition, the gross amount of such Production for such overlying use shall be subject to Watermaster Administrative Assessments under Section 45 (a) hereof and the consumptive use portion of such Production for overlying use shall be subject to Watermaster's In-Lieu Water Cost Assessments under Section 45 (d) hereof. The Producers presently entitled to exercise Overlying Rights, a description of the Overlying Land to which

Overlying Rights are appurtenant, the nature of use and the consumptive use portion thereof are set forth in Exhibit "K" hereto. Watermaster may require reports and make inspections of the operations of said parties for purposes of verifying the uses set forth in said Exhibit "K", and, in the event of a material change, to redetermine the net amount of consumptive use by such parties as changed in the exercise of such Overlying Rights. Annually, during the first two (2) weeks of June in each Calendar Year, such Overlying Rights Producers shall submit to Watermaster a verified statement as to the nature of the then current uses of said Overlying Rights on said Overlying Lands for the next ensuing Fiscal Year, whereupon Watermaster shall either affirm the prior determination or redetermine the net amount of the consumptive use portion of the exercise of such Overlying Right by said Overlying Rights Producer.

C. INJUNCTION

22. Injunction Against Unauthorized Production. (Prior Judgment Section 15) Effective July 1, 1973, each and every party, its officers, agents, employees, successors and assigns, to whom rights to waters of the Basin or Relevant Watershed have been declared and decreed herein is ENJOINED AND RESTRAINED from Producing water for Direct Use from the Basin or the Relevant Watershed except pursuant to rights and Pumpers' Shares herein decreed or which may hereafter be acquired by transfer pursuant to Section 55, or under the provisions of the Physical Solution in this Judgment and the Court's continuing jurisdiction, provided that no party is enjoined from Producing up to five (5) acre feet per Fiscal Year.

23. Injunction re Non-consumptive Uses. (Prior Judgment Section 16) Each party listed in Exhibit "G", its officers, agents, employees, successors and assigns, is **ENJOINED AND RESTRAINED** from materially changing said non-consumptive method of use.

24. Injunction Re Change in Overlying Use Without Notice Thereof To Watermaster. (Prior Judgment Section 16.5) Each party listed in Exhibit "K", its officers, agents, employees, successors and assigns, is **ENJOINED AND RESTRAINED** from materially changing said overlying uses at any time without first notifying Watermaster of the intended change of use, in which event Watermaster shall promptly redetermine the consumptive use portion thereof to be effective after such change.

25. Injunction Against Unauthorized Recharge. (Prior Judgment Section 17) Each party, its officers, agents, employees, successors and assigns, is **ENJOINED AND RESTRAINED** from spreading, injecting or otherwise recharging water in the Basin except pursuant to: (a) an adjudicated non-consumptive use, or (b) consent and approval of or Cyclic Storage Agreement with Watermaster, or (c) subsequent order of this Court.

26. Injunction Against Transportation From Basin or Relevant Watershed. (Prior Judgment Section 18) Except upon further order of Court, all parties, other than Transporting Parties and MWD in its exercise of its Special Category Rights, to the extent authorized therein, are **ENJOINED AND RESTRAINED** from transporting water hereafter Produced from the Relevant Watershed or Basin outside the areas thereof. For purposes of

this Section, water supplied through a city water system which lies chiefly within the Basin shall be deemed entirely used within the Basin. Transporting Parties are entitled to continue to transport water to the extent that any Production of water by any such party does not violate the injunctive provisions contained in Section 22 hereof; provided that said water shall be used within the present service areas or corporate or other boundaries and additions thereto so long as such additions are contiguous to the then existing service area or corporate or other boundaries; except that a maximum of ten percent (10%) of use in any Fiscal Year may be outside said then existing service areas or corporate or other boundaries.

D. CONTINUING JURISDICTION

27. Jurisdiction Reserved. (Prior Judgment Section 19) Full jurisdiction, power and authority are retained by and reserved to the Court for purposes of enabling the Court upon application of any party or of the Watermaster, by motion and upon at least thirty (30) days notice thereof, and after hearing thereon, to make such further or supplemental orders or directions as may be necessary or appropriate for interim operation before the Physical Solution is fully operative, or for interpretation, enforcement or carrying out of this Judgment, and to modify, amend or amplify any of the provisions of this Judgment or to add to the provisions thereof consistent with the rights herein decreed. Provided, that nothing in this paragraph shall authorize:

(1) modification or amendment of the quantities specified in the declared rights of any party;

(2) modification or amendment of the manner of exercise of the Base Annual Diversion Right or Integrated Production Right of any party; or

(3) the imposition of an injunction prohibiting transportation outside the Relevant Watershed or Basin as against any Transporting Party transporting in accordance with the provisions of this Judgment or against MWD as to its Special Category Rights.

E. WATERMASTER

28. Watermaster to Administer Judgment. (Prior Judgment Section 20) A Watermaster comprised of nine (9) persons, to be nominated as hereinafter provided and appointed by the Court, shall administer and enforce the provisions of this Judgment and any subsequent instructions or orders of the Court thereunder.

29. Qualification, Nomination and Appointment. (Prior Judgment Section 21) The nine (9) member Watermaster shall be composed of six (6) Producer representatives and three (3) public representatives qualified, nominated and appointed as follows:

(a) Qualification. Any adult citizen of the State of California shall be eligible to serve on Watermaster; provided, however, that no officer, director, employee or agent of Upper District or San Gabriel District shall be qualified as a Producer member of Watermaster.

(b) Nomination of Producer Representatives. A meeting of all parties shall be held at the regular meeting of Watermaster in November of each year, at the offices of Watermaster. Nomination of the six (6) Producer

representatives shall be by cumulative voting, in person or by proxy, with each Producer entitled to one (1) vote for each one hundred (100) acre feet, or portion thereof, of Base Annual Diversion Right or Prescriptive Pumping Right or Integrated Production Right.

(c) Nomination of Public Representatives. On or before the regular meeting of Watermaster in November of each year, the three (3) public representatives shall be nominated by the boards of directors of Upper District (which shall select two [2]) and San Gabriel District (which shall select one [1]). Said nominees shall be members of the board of directors of said public districts.

(d) Appointment. All Watermaster nominations shall be promptly certified to the Court, which will in ordinary course confirm the same by an appropriate order appointing said Watermaster; provided, however, that the Court at all times reserves the right and power to refuse to appoint, or to remove, any member of Watermaster.

30. Term and Vacancies. (Prior Judgment Section 22) Each member of Watermaster shall serve for a one (1) year term commencing on January 1, following his appointment, or until his successor is appointed. In the event of a vacancy on Watermaster, a successor shall be nominated at a special meeting to be called by Watermaster within ninety (90) days (in the case of a Producer representative) or by action of the appropriate district board of directors (in the case of a public representative).

31. Quorum. (Prior Judgment Section 23) Five (5) members

of the Watermaster shall constitute a quorum for the transaction of affairs of the Watermaster. Action by the affirmative vote of five (5) members shall constitute action by Watermaster, <u>except</u> that the affirmative vote of six (6) members shall be required:

(a) to approve the purchase, spreading or injection of water for Ground Water recharge, or

(b) to enter in any Agreement pursuant to Section 34 (m) hereof.

32. <u>Compensation.</u> (Prior Judgment Section 24) Each Watermaster member shall receive compensation of One Hundred Dollars ($100.00) per day for each day's attendance at meetings of Watermaster or for each day's service rendered as a Watermaster member at the request of Watermaster, together with any expenses incurred in the performance of his duties required or authorized by Watermaster. No member of the Watermaster shall be employed by or compensated for professional services rendered by him to Watermaster, other than the compensation herein provided, and any authorized travel or related expense.

33. <u>Organization.</u> (Prior Judgment Section 25) At its first meeting in each year, Watermaster shall elect a chairman and a vice chairman from its membership. It shall also select a secretary, a treasurer and such assistant secretaries and assistant treasurers as may be appropriate, any of whom may, but need not be, members of Watermaster.

(a) <u>Minutes</u>. Minutes of all Watermaster meetings shall be kept which shall reflect all actions taken by Watermaster. Draft copies thereof shall be furnished to

any party who files a request therefor in writing with Watermaster. Said draft copies of minutes shall constitute notice of any Watermaster action therein reported; failure to request copies thereof shall constitute waiver of notice.

(b) Regular Meetings. Watermaster shall hold regular meetings at places and times to be specified in Watermaster's rules and regulations to be adopted by Watermaster. Notice of the scheduled or regular meetings of Watermaster and of any changes in the time or place thereof shall be mailed to all parties who shall have filed a request therefor in writing with Watermaster.

(c) Special Meetings. Special meetings of Watermaster may be called at any time by the chairman or vice chairman or by any three (3) members of Watermaster by written notice delivered personally or mailed to each member of Watermaster and to each party requesting notice, at least twenty-four (24) hours before the time of each such meeting in the case of personal delivery, and forty-eight (48) hours prior to such meeting in the case of mail. The calling notice shall specify the time and place of the special meeting and the business to be transacted at such meeting. No other business shall be considered at such meeting.

(d) Adjournments. Any meeting of Watermaster may be adjourned to a time and place specified in the order of adjournment. Less than a quorum may so adjourn from time to time. A copy of the order or notice of adjournment

shall be conspicuously posted on or near the door of the place where the meeting was held within twenty-four (24) hours after adoption of the order of adjournment.

34. Powers and Duties. (Prior Judgment Section 26) Subject to the continuing supervision and control of the Court, Watermaster shall have and may exercise the following express powers, and shall perform the following duties, together with any specific powers, authority and duties granted or imposed elsewhere in this Judgment or hereafter ordered or authorized by the Court in the exercise of its continuing jurisdiction.

(a) Rules and Regulations. To make and adopt any and all appropriate rules and regulations for conduct of Watermaster affairs. A copy of said rules and regulations and any amendments thereof shall be mailed to all parties.

(b) Acquisition of Facilities. To purchase, lease, acquire and hold all necessary property and equipment; provided, however, that Watermaster shall not acquire any interest in real property in excess of year-to-year tenancy for necessary quarters and facilities.

(c) Employment of Experts and Agents. To employ such administrative personnel, engineering, geologic, accounting, legal or other specialized services and consulting assistants as may be deemed appropriate in the carrying out of its powers and to require appropriate bonds from all officers and employees handling Watermaster funds.

(d) Measuring Devices, etc. To cause parties, pursuant to uniform rules, to install and maintain in good

operating condition, at the cost of each party, such necessary measuring devices or meters as may be appropriate; and to inspect and test any such measuring device as may be necessary.

(e) Assessments. To levy and collect all Assessments specified in the Physical Solution.

(f) Investment of Funds. To hold and invest any and all funds which Watermaster may possess in investments authorized from time to time for public agencies in the State of California.

(g) Borrowing. To borrow in anticipation of receipt of Assessment proceeds an amount not to exceed the annual amount of Assessments levied but uncollected.

(h) Purchase of and Recharge with Supplemental Water. To purchase Supplemental Water and to introduce the same into the Basin for replacement or cyclic storage purposes, subject to the affirmative vote of six (6) members of Watermaster.

(i) Contracts. To enter into contracts for the performance of any administrative powers herein granted, subject to approval of the Court.

(j) Cooperation With Existing Agencies. To act jointly or cooperate with agencies of the United States and the State of California or any political subdivision, municipality or district to the end that the purposes of the Physical Solution may be fully and economically carried out. Specifically, in the event Upper District has facilities available and adequate to accomplish any of the

administrative functions of Watermaster, consideration shall be given to performing said functions under contract with Upper District in order to avoid duplication of facilities.

(k) Assumption of Make-up Obligation. Watermaster shall assume the Make-up Obligation for and on behalf of the Basin.

(m) Water Quality. Water quality in the Basin shall be a concern of Watermaster, and all reasonable steps shall be taken to assist and encourage appropriate regulatory agencies to enforce reasonable water quality regulations affecting the Basin, including regulation of solid and liquid waste disposal.

(n) Cyclic Storage Agreements. To enter into appropriate contracts, to be approved by the Court, for utilization of Ground Water storage capacity of the Basin for cyclic or regulatory storage of Supplemental Water by parties and non-parties, for subsequent recovery or Watermaster credit by the storing entity, pursuant to uniform rules and conditions, which shall include provision for:

(1) Watermaster control of all spreading or injection and extraction scheduling and procedures for such stored water;

(2) calculation by Watermaster of any special costs, damages or burdens resulting from such operations;

(3) determination by Watermaster of, and

accounting for, all losses in stored water, assuming that such stored water floats on top of the Ground Water supplies, and accounting for all losses of water which otherwise would have replenished the Basin, with priorities being established as between two or more such contractors giving preference to parties over non-parties; and

(4) payment to Watermaster for the benefit of the parties hereto of all special costs, damages or burdens incurred (without any charge, rent, assessment or expense as to parties hereto by reason of the adjudicated proprietary character of said storage rights, nor credit or offset for benefits resulting from such storage); provided, that no party shall have any direct interest in or control over such contracts or the operation thereof by reason of the adjudicated right of such party, the Watermaster having sole custody and control of all Ground Water storage rights in the Basin pursuant to the Physical Solution herein, and subject to review of the Court.

(o) Notice List. Maintain a current list of party designees to receive notice hereunder, in accordance with Section 54 hereof.

35. Policy Decisions -- Procedure. (Prior Judgment Section 27) It is contemplated that Watermaster will exercise discretion in making policy decisions relating to Basin management under the Physical Solution decreed herein. In order to assure full participation and opportunity to be heard for

those affected, no policy decision shall be made by Watermaster until thirty (30) days after the question involved has been raised for discussion at a Watermaster meeting and noted in the draft of minutes thereof.

36. Reports. (Prior Judgment Section 28) Watermaster shall annually file with the Court and mail to the parties a report of all Watermaster activities during the preceding year, including an audited statement of all accounts and financial activities of Watermaster, summary reports of Diversions and Pumping, and all other pertinent information. To the extent practical, said report shall be mailed to all parties on or before November 1.

37. Review Procedures. (Prior Judgment Section 29) Any action, decision, rule or procedure of Watermaster (other than a decision establishing Operating Safe Yield, see Section 43[c]) shall be subject to review by the Court on its own motion or on timely motion for an Order to Show Cause by any party, as follows:

(a) Effective Date of Watermaster Action. Any order, decision or action of Watermaster shall be deemed to have occurred on the date that written notice thereof is mailed. Mailing of draft copies of Watermaster minutes to the parties requesting the same shall constitute notice to all such parties.

(b) Notice of Motion. Any party may, by a regularly noticed motion, petition the Court for review of said Watermaster's action or decision. Notice of such motion shall be mailed to Watermaster and all parties. Unless so

ordered by the Court, such petition shall not operate to stay the effect of such Watermaster action.

(c) Time for Motion. Notice of motion to review any Watermaster action or decision shall be served and filed within ninety (90) days after such Watermaster action or decision.

(d) De Novo Nature of Proceeding. Upon filing of such motion for hearing, the Court shall notify the parties of a date for taking evidence and argument, and shall review de novo the question at issue on the date designated. The Watermaster decision or action shall have no evidentiary weight in such proceeding.

(e) Decision. The decision of the Court in such proceeding shall be an appealable Supplemental Order in this case. When the same is final, it shall be binding upon the Watermaster and the parties.

F. PHYSICAL SOLUTION

38. Purpose and Objective. (Prior Judgment Section 30) Consistent with the California Constitution and the decisions of the Supreme Court, the Court hereby adopts and Orders the parties to comply with this Physical Solution. The purpose and objective of these provisions is to provide a legal and practical means for accomplishing the most economic, long term, conjunctive utilization of surface, Ground Water, Supplemental Water and Ground Water storage capacity to meet the needs and requirements of the water users dependent upon the Basin and Relevant Watershed, while preserving existing equities.

39. Need for Flexibility. (Prior Judgment Section 31) In

Ralph B. Helm - Bar No. 022004
4605 Lankershim Boulevard, #214
North Hollywood, CA 91602

Telephone (818) 769-2002

Attorney for Watermaster - Petitioner

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STETSON ENGINEERS INC.

SUPERIOR COURT OF CALIFORNIA, COUNTY OF LOS ANGELES

UPPER SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT, Plaintiff, vs. CITY OF ALHAMBRA, et al., Defendants.	No. 924129 ORDER AMENDING JUDGMENT TO EXPAND WATERMASTER'S POWERS TO INCLUDE MAINTENANCE, IMPROVEMENT, AND CONTROL OF BASIN WATER QUALITY WITH ALLOWABLE FUNDING THROUGH IN-LIEU ASSESSMENTS Hearing: August 7, 1990 Department 38, 9:15 A. M.

The Petition of the Main San Gabriel Basin Watermaster (Watermaster) for Amendment to Judgment herein to expand its powers to include maintenance, improvement, and control of Basin water quality by controlling pumping in the Basin, with allowable funding for associated costs to be paid through its In-Lieu Assessments, was continued on July 31, 1990, to August 7, 1990, when it duly and regularly came on for hearing, at 9:15 o'clock A. M. in Department 38 of the above entitled Court, the Honorable FLORENCE T. PICKARD, Assigned Judge Presiding. Ralph B. Helm appeared as Attorney for Watermaster - Petitioner; Wayne K. Lemieux appeared for Defendant, San Gabriel Valley Municipal Water District, in support of the Petition; Fred Vendig, General

Counsel, Karen L. Tachiki, Assistant General Counsel, and Victor E. Gleason, Senior Deputy General Counsel, by Victor E. Gleason, appeared for Defendant, The Metropolitan Water District of Southern California, in support of the Petition; Timothy J. Ryan appeared for Defendant, San Gabriel Valley Water Company, in opposition to the Petition; Lagerlof, Senecal, Drescher & Swift, by H. Jess Senecal, appeared for Defendants, Calmat Company, Livingston-Graham, Owl Rock Products, AZ-Two, Inc., and Sully-Miller Contracting Company, in opposition to the Petition; Ira Reiner, Los Angeles County District Attorney, by Jan Chatten-Brown, Special Assistant to the District Attorney, appeared in opposition to the Petition; and Sarah F. Bates and Laurens H. Silver, by Sarah F. Bates, appeared on behalf of Amicus Curiae Sierra Club, in opposition to the Petition.

The Court acknowledged receipt and consideration of: letters in support of the Petition by the California Regional Water Quality Control Board - Los Angeles Region and by the State Water Resources Control Board; a copy of a letter addressed to the Attorney for Petitioner, from the US Environmental Protection Agency - Region IX, by Mark J. Klaiman, Assistant Regional Counsel, regarding several matters of federal law which EPA believed might ultimately affect the subject Petition; a letter in opposition to the Petition by East Valleys Organization; and a FAX communication to the Court, in opposition to the Petition, from Congressman Esteban E. Torres, which was not communicated to nor seen by the parties.

Members of the public, present in Court, were invited to, and did, present oral testimony during the hearing.

Under date of December 10, 1990 the Court entered its Intended Decision Re Amendment To Judgment and, by minute order duly entered and mailed to Counsel for Petitioner, ordered copies thereof mailed forthwith to all appearing parties, including those appearing as friends of the court, and to all other affected parties on the case's current mailing list.

A Proof Of Service by mail on December 13, 1990, Of Intended Decision Re Amendment To Judgment, as ordered, has been filed with the Court.

Opposition to Petitioner's Proposed Order were filed by Amicus Curiae Sierra Club, Amicus Curiae Los Angeles District Attorney, and by Producer Parties Calmat Co., Livingston-Graham, Owl Rock Products Company, AZ-Two, Inc., and Sully-Miller Contracting Company.

Proof being made to the satisfaction of the Court and good cause appearing:

IT IS, HEREBY, ORDERED:

1. That the Amended Judgment herein be further amended by amending Subsection (j) of Section 10 thereof, Definitions, and Section 40 thereof, Division F, Physical Solution, to read as follows:

"10 (j) <u>In-Lieu Water Cost</u> - - The differential between a particular Producer's cost of Watermaster directed produced, treated, blended, substituted, or Supplemental Water delivered or substituted to, for, or taken by, such Producer in-lieu of his cost of otherwise normally Producing a like amount of Ground Water from the Basin.

"40. <u>Watermaster Control.</u> (Prior Judgment Section 32)

In order to develop an adequate and effective program of Basin management, it is essential that Watermaster have broad discretion in the making of Basin management decisions within the ambit hereinafter set forth. The maintenance, improvement, and control of the water quality and quantity of the Basin, withdrawal and replenishment of supplies of the Basin and Relevant Watershed, and the utilization of the water resources thereof, must be subject to procedures established by Watermaster in implementation of the Physical Solution provisions of this Judgment. Both the quantity and quality of said water resource are thereby preserved and its beneficial utilization maximized.

"(a) Watermaster shall develop an adequate and effective program of Basin management. The maintenance, improvement, and control of the water quality and quantity of the Basin, withdrawal and replenishment of supplies of the Basin and Relevant Watershed, and the utilization of the water resources thereof, must be subject to procedures established by Watermaster in implementation of the Physical Solution provisions of this Judgment. All Watermaster programs and procedures shall be adopted only after a duly noticed public hearing pursuant to Sections 37 and 40 of the Amended Judgment herein.

"(b) Watermaster shall have the power to control pumping in the Basin by water Producers therein for Basin cleanup and water quality control so that specific well production can be directed as to a lesser amount, to total cessation, as to an increased amount, and even to require pumping in a new location in the

Basin. Watermaster's right to regulate pumping activities of Producers shall be subordinate to any conflicting Basin cleanup plan established by the EPA or other public governmental agency with responsibility for ground water management or clean up.

"(c) Watermaster may act individually or participate with others to carry on technical and other necessary investigations of all kinds and collect data necessary to carry out the herein stated purposes. It may engage in contractual relations with the EPA or other agencies in furtherance of the clean up of the Basin and enter into contracts with agencies of the United States, the State of California, or any political subdivision, municipality, or district thereof, to the extent allowed under applicable federal or state statutes. Any cooperative agreement between the Watermaster and EPA shall require the approval of the appropriate Agency(s) of the State of California.

"(d) For regulation and control of pumping activity in the Basin, Watermaster shall adopt Rules and Regulations and programs to promote, manage and accomplish clean up of the Basin and its waters, including, but not limited to, measures to confine, move, and remove contaminants and pollutants. Such Rules and Regulations and programs shall be adopted only after a duly Noticed Public Hearing by Watermaster and shall be subject to Court review pursuant to Section 37 of the Amended Judgment herein.

"(e) Watermaster shall determine whether funds from local, regional, state or federal agencies are available for regulating pumping and the various costs associated with, or arising from such activities. If no public funds are available from local,

regional, state, or federal agencies, the costs shall be obtained and paid by way of an In-Lieu Assessment by Watermaster pursuant to Section 10 (j) of the Amended Judgment herein. Provided such In-Lieu Assessments become necessary, the costs shall be borne by all Basin Producers.

"(f) Watermaster is a Court empowered entity with limited powers, created pursuant to the Court's Physical Solution Jurisdiction under Article X, Section 2 of the California Constitution. None of the Powers granted herein to Watermaster shall be construed as designating Watermaster a political subdivision of the State of California or authorizing Watermaster to act as 'lead agency' to administer the federal Superfund for clean up of the Basin."

2. This Amended Judgment shall continue in full force and effect as hereby Ordered and Amended.

Dated: January 29, 1991.

/s/Florence T. Pickard
FLORENCE T. PICKARD
Judge of the Superior Court,
Specially Assigned

order that Watermaster may be free to utilize both existing and new and developing technological, social and economic concepts for the fullest benefit of all those dependent upon the Basin, it is essential that the Physical Solution hereunder provide for maximum flexibility and adaptability. To that end, the Court has retained continuing jurisdiction to supplement the broad discretion herein granted to the Watermaster.

40. Watermaster Control. (Prior Judgment Section 32) In order to develop an adequate and effective program of Basin management, it is essential that Watermaster have broad discretion in the making of Basin management decisions within the ambit hereinafter set forth. Withdrawal and replenishment of supplies of the Basin and Relevant Watershed and the utilization of the water resources thereof, and of available Ground Water storage capacity, must be subject to procedures established by Watermaster in implementation of the provisions of this Judgment. Both the quantity and quality of said water resource are thereby preserved and its beneficial utilization maximized.

41. General Pattern of Contemplated Operation. (Prior Judgment Section 33) In general outline (subject to the specific provisions hereafter and to Watermaster Operating Criteria set forth in Exhibit "H"), Watermaster will determine annually the Operating Safe Yield of the Basin and will notify each Pumper of his share thereof, stated in acre feet per Fiscal Year. Thereafter, no party may Produce in any Fiscal Year an amount in excess of the sum of his Diversion Right, if any, plus his Pumper's Share of such Operating Safe Yield, or his

Integrated Production Right, or the terms of any Cyclic Storage Agreement, without being subject to Assessment for the purpose of purchasing Replacement Water. In establishing the Operating Safe Yield, Watermaster shall follow all physical, economic, and other relevant parameters provided in the Watermaster Operating Criteria. Watermaster shall have Assessment powers to raise funds essential to implement the management plan in any of the several special circumstances herein described in more detail.

42. Basin Operating Criteria. (Prior Judgment Section 34) Until further order of the Court and in accordance with the Watermaster Operating Criteria, Watermaster shall not spread Replacement Water when the water level at the Key Well exceeds Elevation two hundred fifty (250), and Watermaster shall spread Replacement Water, insofar as practicable, to maintain the water level at the Key Well above Elevation two hundred (200).

43. Determination of Operating Safe Yield. (Prior Judgment Section 35) Watermaster shall annually determine the Operating Safe Yield applicable to the succeeding Fiscal Year and estimate the same for the next succeeding four (4) Fiscal Years. In making such determination, Watermaster shall be governed in the exercise of its discretion by the Watermaster Operating Criteria. The procedures with reference to said determination shall be as follows:

(a) Preliminary Determination. On or before Watermaster's first meeting in April of each year, Watermaster shall make a Preliminary Determination of the Operating Safe Yield of the Basin for each of the succeeding five Fiscal Years. Said determination shall be

made in the form of a report containing a summary statement of the considerations, calculations and factors used by Watermaster in arriving at said Operating Safe Yield.

(b) Notice and Hearing. A copy of said Preliminary Determination and report shall be mailed to each Pumper and Integrated Producer at least ten (10) days prior to a hearing to be held at Watermaster's regular meeting in May, of each year, at which time objections or suggested corrections or modifications of said determinations shall be considered. Said hearing shall be held pursuant to procedures adopted by Watermaster.

(c) Watermaster Determination and Review Thereof. Within thirty (30) days after completion of said hearing, Watermaster shall mail to each Pumper and Integrated Producer a final report and determination of said Operating Safe Yield for each such Fiscal Year, together with a statement of the Producer's entitlement in each such Fiscal Year stated in acre feet. Any affected party, within thirty (30) days of mailing of notice of said Watermaster determination, may, by a regularly noticed motion, petition the Court for an Order to Show Cause for review of said Watermaster finding, and thereupon the Court shall hear such objections and settle such dispute. Unless so ordered by the Court, such petition shall not operate to stay the effect of said report and determination. In the absence of such review proceedings, the Watermaster determination shall be final.

44. Reports of Pumping and Diversion. (Prior Judgment

Section 36) Each party (other than Minimal Producers) shall file with the Watermaster quarterly, on or before the last day of January, April, July and October, a report on a form to be prescribed by Watermaster showing the total Pumping and Diversion (separately for Direct Use and for non-consumptive use, if any,) of such party during the preceding calendar quarter.

45. Assessments -- Purpose. (Prior Judgment Section 37) Watermaster shall have the power to levy and collect Assessments from the parties (other than Minimal Producers, non-consumptive users, or Production under Special Category Rights or Cyclic Storage Agreements) based upon Production during the preceding Fiscal Year. Said Assessments may be for one or more of the following purposes:

(a) Watermaster Administration Costs. Within thirty (30) days after completion of the hearing on the Preliminary Determination of the Operating Safe Yield of the Basin and Watermaster's determination thereof, pursuant to Section 43 hereof, Watermaster shall adopt a proposed budget for the succeeding Fiscal Year and shall mail a copy thereof to each party, together with a statement of the level of Administration Assessment levied by Watermaster which will be collected for purposes of raising funds for said budget. Said Assessment shall be uniformly applicable to each acre foot of Production.

(b) Replacement Water Costs. Replacement Water Assessments shall be collected from each party on account of such party's Production in excess of its Diversion

Rights, Pumper's Share or Integrated Production Right, and on account of the consumptive use portion of Overlying Rights, computed at the applicable rate established by Watermaster consistent with the Watermaster Operating Criteria.

(c) Make-Up Obligation. An Assessment shall be collected equally on account of each acre foot of Production, which does not bear a Replacement Assessment hereunder, to pay all necessary costs of Administration and satisfaction of the Make-Up Obligation. Such Assessment shall not be applicable to water Production for an Overlying Right.

(d) In-Lieu Water Cost. Watermaster may levy an Assessment against all Pumping to pay reimbursement for In-Lieu Water Costs except that such Assessment shall not be applicable to the non-consumptive use portion of an Overlying Right.

(e) Basin Water Quality Improvement. For purposes of testing, protecting or improving the water quality in the Basin, Watermaster may, after a noticed hearing thereon, fix terms and conditions under which it may waive all or any part of its Assessments on such ground water Production and if such Production, in addition to his other Production, does not exceed such Producer's Share or entitlement for that Fiscal Year, such stated Production shall be allowed to be carried over for a part of such Producer's next Fiscal Year's Producer's Share or entitlement. In connection therewith, Watermaster may also

waive the provisions of Sections 25, 26 and 57 hereof, relating to Injunction Against Unauthorized Recharge, Injunction Against Transportation From Basin or Relevant Watershed, and Intervention After Judgment, respectively. Nothing in this Judgment is intended to allow an increase in any Producer's annual entitlement nor to prevent Watermaster, after hearing thereon, from entering into contracts to encourage, assist and accomplish the clean up and improvement of degraded water quality in the Basin by non-parties herein. Such contracts may include the exemption of the Production of such Basin water therefor from Watermaster Assessments and, in connection therewith, the waiver of the provisions of Judgment Sections 25, 26, and 57 hereof.

46. Assessments -- Procedure. (Prior Judgment Section 38) Assessments herein provided for shall be levied and collected as follows:

(a) Levy and Notice of Assessment. Within thirty (30) days of Watermaster's annual determination of Operating Safe Yield of the Basin for each Fiscal Year and succeeding four (4) Fiscal Years, Watermaster shall levy applicable Administration Assessments, Replacement Water Assessments, Make-up Water Assessments and In-Lieu Water Assessments, if any. Watermaster shall give written notice of all applicable Assessments to each party on or before August 15, of each year.

(b) Payment. Each Assessment shall be payable, and each party is Ordered to pay the same, on or before

September 20, following such Assessment, subject to the rights reserved in Section 37 hereof.

(c) Delinquency. Any Assessment which becomes delinquent after January 1, 1980, shall bear interest at the annual prime rate plus one percent (1%) in effect on the first business day of August of each year. Said prime interest rate shall be that fixed by the Bank of America NT&SA for its preferred borrowing customers on said date. Said prime interest rate plus one percent (1%) shall be applicable to any said delinquent Assessment from the due date thereof until paid. Provided, however, in no event shall any said delinquent Assessment bear interest at a rate of less than ten percent (10%) per annum. Such delinquent Assessment and interest may be collected in a Show Cause proceeding herein or any other legal proceeding instituted by Watermaster, and in such proceeding the Court may allow Watermaster its reasonable costs of collection, including attorney's fees.

47. Availability of Supplemental Water From Responsible Agencies. (Prior Judgment Section 39) If any Responsible Agency shall, for any reason, be unable to deliver Supplemental Water to Watermaster when needed, Watermaster shall collect funds at an appropriate level and hold them in trust, together with interest accrued thereon, for purchase of such water when available.

48. Accumulation of Replacement Water Assessment Proceeds. (Prior Judgment Section 40) In order to minimize fluctuation in Assessments and to give Watermaster flexibility in Basin

management, Watermaster may make reasonable accumulations of Replacement Water Assessments. Such moneys and any interest accrued thereon shall only be used for the purchase of Replacement Water.

49. Carry-over of Unused Rights. (Prior Judgment Section 41) Any Pumper's Share of Operating Safe Yield, and the Production right of any Integrated Producer, which is not Produced in a given Fiscal Year may be carried over and accumulated for one Fiscal Year, pursuant to reasonable rules and procedures for notice and accounting which shall be adopted by Watermaster. The first water Produced in the succeeding Fiscal Year shall be deemed Produced pursuant to such Carry-over Rights.

50. Minimal Producers. (Prior Judgment Section 42) In the interest of Justice, Minimal Producers are exempted from the operation of this Physical Solution, so long as such party's annual Production does not exceed five (5) acre feet. Quarterly Production reports by such parties shall not be required, but Watermaster may require, and Minimal Producers shall furnish, specific periodic reports. In addition, Watermaster may conduct such investigation of future operations of any Minimal Producer as may be appropriate.

51. Effective Date. (Prior Judgment Section 43) The effective date for commencing accounting and operation under this Physical Solution, other than for Replacement Water Assessments, shall be July 1, 1972. The first Assessment for Replacement Water shall be payable on September 20, 1974, on account of Fiscal Year 1973-74 Production.

G. MISCELLANEOUS PROVISIONS

52. Puente Narrows Flow. (Prior Judgment Section 44) The Puente Basin is tributary to the Main San Gabriel Basin. All Producers within said Puente Basin have been dismissed herein, based upon the Puente Narrows Agreement (Exhibit "J"), whereby Puente Basin Water Agency agreed not to interfere with surface inflow and to assure continuance of historic subsurface contribution of water to Main San Gabriel Basin. The Court declares said Agreement to be reasonable and fair and in full satisfaction of claims by Main San Gabriel Basin for natural water from Puente Basin.

53. San Gabriel District - Interim Order. (Prior Judgment Section 45) San Gabriel District has a contract with the State of California for State Project Water, delivered at Devil Canyon in San Bernardino County. San Gabriel District is HEREBY ORDERED to proceed with and complete necessary pipeline facilities as soon as practical.

Until said pipeline is built and capable of delivering a minimum of twenty-eight thousand eight-hundred (28,800) acre feet of State Project water per year, defendant cities of Alhambra, Azusa, and Monterey Park shall pay to Watermaster each Fiscal Year a Replacement Assessment at a uniform rate sufficient to purchase Replenishment Water when available, which rate shall be declared by San Gabriel District. When water is available through said pipeline, San Gabriel District shall make the same available to Watermaster, on his reasonable demand, at said specified rate per acre foot. Interest accrued on such funds shall be paid to San Gabriel

District.

54. Service Upon and Delivery to Parties of Various Papers. (Prior Judgment Section 46) Service of the Judgment on those parties who have executed the Stipulation for Judgment shall be made by first class mail, postage prepaid, addressed to the Designee and at the address designated for that purpose in the executed and filed counterpart of the Stipulation for Judgment, or in any substitute designation filed with the Court.

Each party who has not heretofore made such a designation shall, within thirty (30) days after the Judgment shall have been served upon that party, file with the Court, with proof of service of a copy thereof upon Watermaster, a written designation of the person to whom and the address at which all future notices, determinations, requests, demands, objections, reports and other papers and processes to be served upon that party or delivered to that party are to be so served or delivered.

A later substitute designation filed and served in the same manner by any party shall be effective from the date of filing as to the then future notices, determinations, requests, demands, objections, reports and other papers and processes to be served upon or delivered to that party.

Delivery to or service upon any party by Watermaster, by any other party, or by the Court, of any item required to be served upon or delivered to a party under or pursuant to the Judgment may be made by deposit thereof (or by copy thereof) in the mail, first class, postage prepaid, addressed to the Designee of the party and at the address shown in the latest

designation filed by that party.

55. Assignment, Transfer, etc., of Rights. (Prior Judgment Section 47) Any rights Adjudicated herein except Overlying Rights, may be assigned, transferred, licensed or leased by the owners thereof; provided however, that no such assignment shall be complete until the appropriate notice procedures established by Watermaster have been complied with. No water Produced pursuant to rights assigned, transferred, licensed, or leased may be transported outside the Relevant Watershed except by:

(1) a Transporting Party, or

(2) a successor in interest immediate or mediate to a water system on lands or portion thereof, theretofore served by such a Transporting Party, for use by such successor in accordance with limitations applicable to Transporting Parties, or

(3) a successor in interest to the Special Category rights of MWD.

The transfer and use of Overlying Rights shall be limited, as provided in Section 21 hereof, as exercisable only on the specifically defined Overlying Lands and they cannot be separately conveyed or transferred apart therefrom.

56. Abandonment of Rights. (Prior Judgment Section 48) It is in the interest of reasonable beneficial use of the Basin and its water supply that no party be encouraged to take and use more water in any Fiscal Year than is actually required. Failure to Produce all of the water to which a party is entitled hereunder shall not, in and of itself, be deemed or constitute

an abandonment of such party's right, in whole or in part. Abandonment and extinction of any right herein Adjudicated shall be accomplished only by:

(1) a written election by the party, filed in this case, or

(2) upon noticed motion of Watermaster, and after hearing.

In either case, such abandonment shall be confirmed by express subsequent order of this Court.

57. Intervention After Judgment. (Prior Judgment Section 49) Any person who is not a party or successor to a party and who proposes to Produce water from the Basin or Relevant Watershed, may seek to become a party to this Judgment through a Stipulation For Intervention entered into with Watermaster. Watermaster may execute said Stipulation on behalf of the other parties herein but such Stipulation shall not preclude a party from opposing such Intervention at the time of the Court hearing thereon. Said Stipulation For Intervention must thereupon be filed with the Court, which will consider an order confirming said Intervention following thirty (30) days' notice to the parties. Thereafter, if approved by the Court, such Intervenor shall be a party bound by this Judgment and entitled to the rights and privileges accorded under the Physical Solution herein.

58. Judgment Binding on Successors, etc. (Prior Judgment Section 50) Subject to specific provisions hereinbefore contained, this Judgment and all provisions thereof are applicable to and binding upon and inure to the benefit of not

only the parties to this action, but as well to their respective heirs, executors, administrators, successors, assigns, lessees, licensees and to the agents, employees and attorneys in fact of any such persons.

59. Water Rights Permits. (Prior Judgment Section 51) Nothing herein shall be construed as affecting the relative rights and priorities between MWD and San Gabriel Valley Protective Association under State Water Rights Permits Nos. 7174 and 7175, respectively.

60. Costs. (Prior Judgment Section 52) No party shall recover any costs in this proceeding from any other party.

61. Entry of Judgment. (New) The Clerk shall enter this Judgment.

DATED: August 24, 1989.

s/ Florence T. Pickard
Florence T. Pickard, Judge
Specially Assigned

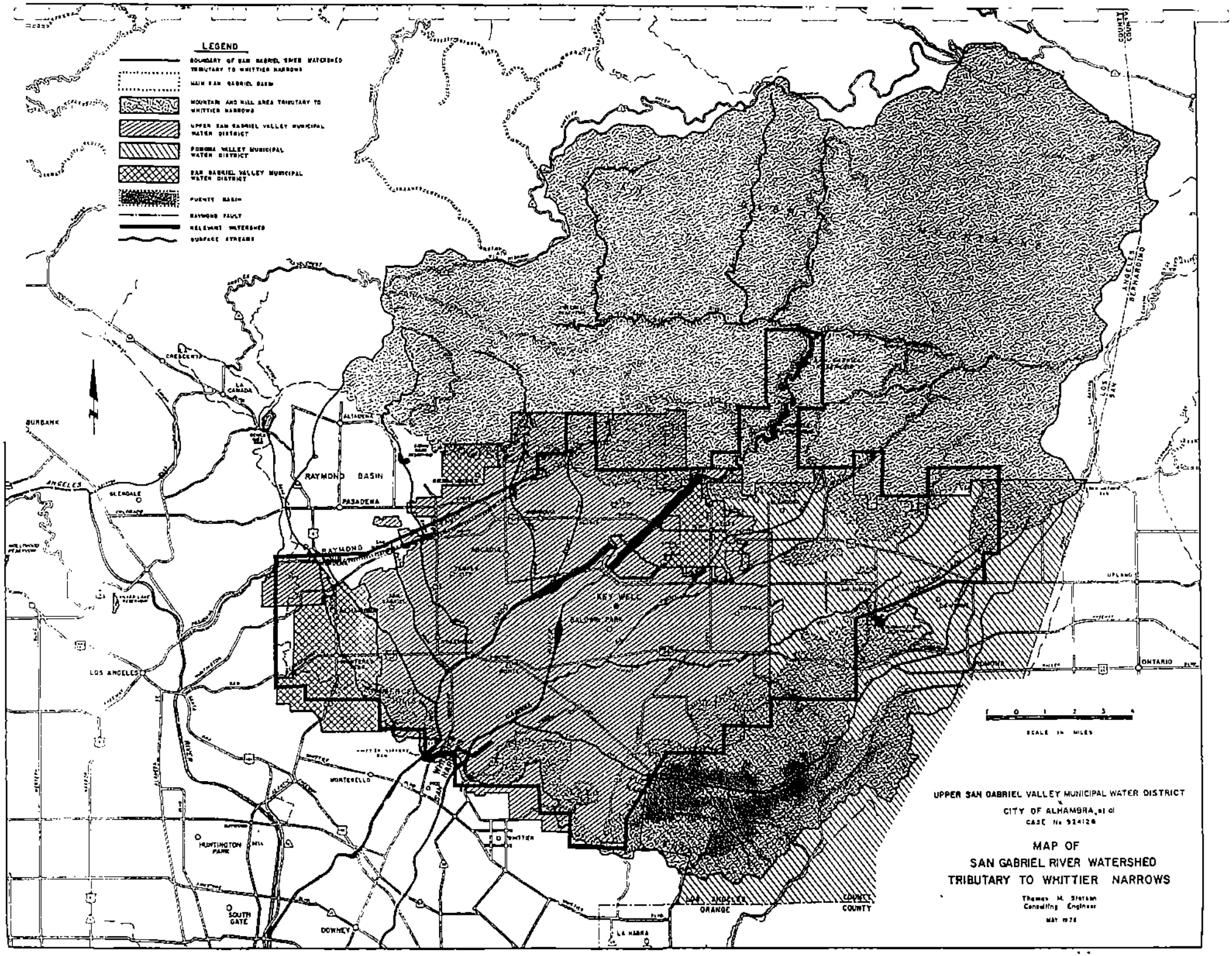

LEGEND
BOUNDARY OF SAN GABRIEL RIVER WATERSHED TRIBUTARY TO WHITTIER NARROWS
MAIN SAN GABRIEL BASIN
MOUNTAIN AND HILL AREA TRIBUTARY TO WHITTIER NARROWS
UPPER SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT
POMONA VALLEY MUNICIPAL WATER DISTRICT
SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT
PUENTE BASIN
RAYMOND FAULT
RELEVANT WATERSHED
SURFACE STREAMS
RAYMOND BASIN
PASADENA
ALHAMBRA
KEY WELL
SALOON PARK
MONTEREY PARK
MONTEBELLO
WHITTIER
HUNTINGTON PARK
SOUTH GATE
DOWNEY
LA HABRA
ORANGE COUNTY
LOS ANGELES COUNTY
ONTARIO
UPLAND
LOS ANGELES
GLENDALE
BURBANK
LA CRESCENTA
LA CANADA
SCALE IN MILES
UPPER SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT
v.
CITY OF ALHAMBRA, et al
CASE No. 924128
MAP OF
SAN GABRIEL RIVER WATERSHED
TRIBUTARY TO WHITTIER NARROWS
Thomas M. Stetson
Consulting Engineer
MAY 1978

Exhibit "B"

BOUNDARIES OF RELEVANT WATERSHED

The following described property is located in Los Angeles County, State of California:

Beginning at the Southwest corner of Section 14, Township 1 North, Range 11 West, San Bernardino Base and Meridian;

Thence Northerly along the West line of said Section 14 to the Northwest corner of the South half of said Section 14;

Thence Easterly along the North line of the South half of Section 14 to the East line of said Section 14;

Thence Northerly along the East line of said Section 14, Township 1 North, Range 11 West and continuing Northerly along the East line of Section 11 to the Northeast corner of said Section 11;

Thence Easterly along the North line of Section 12 to the Northeast corner of said Section 12;

Thence Southerly along the East line of said Section 12 and continuing Southerly along the East line of Section 13 to the Southeast corner of said Section 13, said corner being also the Southwest corner of Section 18, Township 1 North, Range 10 West;

Thence Easterly along the South line of Sections 18, 17, 16 and 15 of said Township 1 North, Range 10 West to the Southwest corner of Section 14;

Thence Northerly along the West line of Section 14 to the Northwest corner of the South half of Section 14;

Thence Easterly along the North line of the South half of Section 14 to the East line of said section;

Thence Northerly along the East line of said Section 14, and continuing Northerly along the West line of Section 12 of said Township 1 North, Range 10 West to the North line of said Section 12;

Thence Easterly along the North line of said Section 12, to the Northeast corner of said Section 12, said corner being also the Southwest corner of Section 6, Township 1 North, Range 9 West;

Thence Northerly along the West line of said Section 6 and continuing Northerly along West line of Sections 31 and 30, Township 2 North, Range 9 West to the Westerly prolongation of the North line of said Section 30;

Thence Easterly along said Westerly prolongation of the North line of said Section 30 and continuing Easterly along the North line of Section 29 to the Northeast corner of said Section 29;

Thence Southerly along the East line of said Section 29 and continuing Southerly along the East line of Section 32, Township 2 North, Range 9 West, and thence continuing Southerly along the East line of Section 5, Township 1 North, Range 9 West to the Southeast corner of said Section 5;

Thence Westerly along the South line of said Section 5 to the Southwest corner of said Section 5, said point being also the Northwest corner of Section 8;

Thence Southerly along the West line of said Section 8 and continuing Southerly along the West line of Section 17, to the Southwest corner of said Section 17, said corner being also the Northwest corner of Section 20;

Thence Easterly along the North line of Sections 20 and 21 to the Northwest corner of Section 22, said corner being also the Southwest corner of Section 15;

Thence Northerly along the West line of said Section 15 to the Northwest corner of the South half of said Section 15;

Thence Easterly along the North line of said South half of Section 15 to the Northeast corner of said South half of Section 15;

Thence Southerly along the East line of Section 15 and continuing Southerly along the East line of Section 22 to the Southeast corner of said Section 22, said point being also the Southwest corner of Section 23;

Thence Easterly along the South line of Sections 23 and 24 to the East line of the West half of said Section 24;

Thence Northerly along said East line of the West half of Section 24 to the North line thereof;

Thence Easterly along said North line of Section 24 to the Northeast corner thereof, said point also being the Northwest corner of Section 19, Township 1 North, Range 8 West;

Thence continuing Easterly along the North line of Section 19 and Section 20 of said Township 1 North, Range 8 West to the Northeast corner of said Section 20;

Thence Southerly along the East line of Sections 20, 29 and 32 of said Township 1 North, Range 8 West to the Southeast corner of said Section 32;

Thence Westerly along the South line of Section 32 to the Northwest corner of the East half of Section 5, Township 1 South, Range 8 West;

Thence Southerly along the West line of the East half of said Section 5 to the South line of said Section 5;

Thence West to the East line of the Northerly prolongation of Range 9 West;

Thence South 67° 30′ West to an intersection with the Northerly prolongation of the West line of Section 27, Township 1 South, Range 9 West;

Thence Southerly along the Northerly prolongation of said West line of Section 27 and continuing Southerly along the West line of Section 27 to the Southwest corner of said Section 27, said point being also the Southeast corner of Section 28;

Thence Westerly along the South line and Westerly projection of the South line of said Section 28 to the Northerly prolongation of the West line of Range 9 West;

Thence Southerly along said prolongation of the West line of Range 9 West to the Westerly prolongation of the North line of Township 2 South;

Thence Westerly along said Westerly prolongation of the North line of Township 2 South, a distance of 8,500 feet;

Thence South a distance of 4,500 feet;

Thence West a distance of 10,700 feet;

Thence South 29° West to an intersection with the Northerly prolongation of the West line of Section 20, Township 2 South, Range 10 West;

Thence Southerly along said Northerly prolongation of the West line of said Section 20 and continuing Southerly along the West line of Section 20 to the Southwest corner of said Section 20;

Thence South a distance of 2,000 feet;

Thence West a distance of two miles, more or less, to an intersection with the East line of Section 26, Township 2 South, Range 11 West;

Thence Northerly along said East line of Section 26 and continuing Northerly along the East line of Section 23, Township 2 South, Range 11 West to the Northeast corner of said Section 23;

Thence Westerly along the North line of said Section 23 to the Northwest corner thereof, said point being also the Southeast corner of Section 15, Township 2 South, Range 11 West;

Thence Northerly and Westerly along the East and North lines, respectively, of said Section 15, Township 2 South, Range 11 West, to the Northwest corner thereof;

Thence continuing Westerly along the Westerly prolongation of said North line of Section 15, Township 2 South, Range 11 West to an intersection with a line parallel to and one mile East of the West line of Range 11 West;

Thence Northerly along said parallel line to an intersection with the Northerly boundary of the City of Pico Rivera as said City of Pico Rivera existed on July 17, 1970;

Thence Westerly along said City boundary to an intersection with the East line of Range 12 West;

Thence Northerly along said East line of Range 12 West to the North line of Township 2 South;

Thence Westerly along the North line of Township 2 South to an intersection with the Southerly prolongation of the East line of the West half of Section 26, Township 1 South, Range 12 West;

Thence Northerly along said Southerly prolongation of said East line of the West half of said Section 26 to the Southeast corner of said West half;

Thence Westerly along the South line of Sections 26, 27 and 28, Township 1 South, Range 12 West, to the Southeast corner of Section 29, Township 1 South, Range 12 West;

Thence Northerly along the East line of said Section 29 to the Northeast corner of the South half of said Section 29;

Thence Westerly along the North line of the South half of said Section 29 to the Northwest corner thereof;

Thence Northerly along the West line of Sections 29, 20, 17 and 8, Township 1 South, Range 12 West;

Thence continuing Northerly along the Northerly prolongation of the West line of Section 8, Township 1 South, Range 12 West to an intersection with the North line of Township 1 South;

Thence Easterly along said North line of Township 1 South to the Northeast corner of Section 3, Township 1 South, Range 12 West;

Thence North 64° 30′ East to an intersection with the West line of Section 23, Township 1 North, Range 11 West;

Thence Northerly along the West line of said Section 23 to the Northwest corner thereof, said point being the Southwest corner of Section 14, Township 1 North, Range 11 West and said point being also the point of beginning.

Exhibit "C"

TABLE
SHOWING BASE
ANNUAL DIVERSION
RIGHTS OF CERTAIN
DIVERTERS

	Base Annual Diversion Right Acre-Feet
Covell, Ralph (Successor to Rittenhouse, Catherine and Rittenhouse, James)	2.12
Maddock, A. G.	3.40
Rittenhouse, Catherine (Transferred to Covell, Ralph)	0
Rittenhouse, James (Transferred to Covell, Ralph)	0
Ruebhausen, Arline (Held in common with Ruebhausen, Victor) (Transferred to City of Glendale)	0
Ruebhausen, Victor (See Ruebhausen, Arline, above)	0
TOTAL	5.52

Exhibit "D"

TABLE
SHOWING PRESCRIPTIVE PUMPING RIGHTS
AND PUMPER'S SHARE OF EACH PUMPER
AS OF JUNE, 1988

Pumper	Prescriptive Pumping Right Acre-feet	Pumper's Share Percent (%)
Adams Ranch Mutual Water Company	100.00	0.05060
A & E Plastik Pak Co., Inc. (Transferred to Industry Properties, Ltd.)	0	0
Alhambra, City of	8,812.05	4.45876
Amarillo Mutual Water Company	709.00	0.35874
Anchor Plating Co., Inc. (Successor to Bodger & Sons) (Transferred to Crown City Plating Co.)	0	0
Anderson, Ray L. and Helen T., Trustees (Successor to Covina-Valley Unified School District)	50.16	0.02538
Andrade, Marcario and Consuelo; and Andrade, Robert and Jayne (Successor to J. F. Isbell Estate, Inc.)	8.36	0.00423
Arcardia, City of	9,252.00	4.68137
(Successor to First National Finance Corporation)	60.90	0.03081
(Transferred to City of Monrovia)	951.00	0.48119
	8,361.90	4.23099
Associated Southern Investment Company (Transferred to Southern California Edison Company)	0	0
AZ-Two, Inc. (Lessee of Southwestern Portland Cement Co.)	0	0
Azusa, City	3,655.99	1.84988
Azusa-Western Inc. (Transferred to Southwestern Portland Cement Co.)	0	0
Bahnsen & Beckman Ind., Inc. (Transferred to Woodland, Richard)	0	0

Pumper	Prescriptive Pumping Right Acre-feet	Pumper's Share %
Bahnsen, Betty M. (Transferred to Dawes, Mary Kay)	0	0
Baldwin Park County Water District (See Valley County Water District)	-	-
Banks, Gale C. (Successor to Doyle, Mr. and Mrs.; and Madruga, Mr. and Mrs.)	50.00	0.02530
Base Line Water Company	430.20	0.21767
Beverly Acres Mutual Water Company	93.00	0.04706
Birenbaum, Max (Held in common with Birenbaum, Sylvia; Schneiderman, Alan; Schneiderman, Lydia; Wigodsky, Bernard; Wigodsky, Estera) (Transferred to City of Whittier)	0	0
Birenbaum, Sylvia (See Birenbaum, Max)	-	-
Blue Diamond Concrete Materials Div., The Flintkote Company (Transferred to Sully-Miller Contracting Co.)	0	0
Bodger & Sons DBA Bodger Seeds Ltd. (Transferred to Anchor Plating Co., Inc.)	0	0
Botello Water Company	0	0
Burbank Development Company	50.65	0.02563
Cadway, Inc. (Successor to:		
Corcoran, Jack S. and R. L.)	100.00	0.05060
Corcoran, Jack S. and R. L.)	100.00	0.05060
	200.00	0.10120
Cal Fin (Transferred to Suburban Water Systems)	0	0
California-American Water Company (San Marino System)	7,868.70	3.98144
California Country Club	0	0

Pumper	Prescriptive Pumping Right Acre-feet	Pumper's Share %
California Domestic Water Company	11,024.82	5.57839
(Successor to:		
Cantrill Mutual Water Company	42.50	0.02150
Industry Properties, Ltd.	73.50	0.03719
Modern Accent Corporation	256.86	0.12997
Fisher, Russell)	19.00	0.00961
	11,416.68	5.77666
California Materials Company	0	0
Cantrill Mutual Water Company (Transferred to California Domestic Water Co.)	0	0
Cedar Avenue Mutual Water Company	121.10	0.06127
Champion Mutual Water Company	147.68	0.07472
Chronis, Christine (See Polopolus, et al)	-	-
Clayton Manufacturing Company	511.80	0.25896
Collison, E. O.	0	0
Comby, Erma M. (See Wilmott, Erma M.)	-	-
Conrock Company		
(Formerly Consolidated Rock Products Co.)	1,465.35	0.74144
(Successor to Manning Bros. Rock & Sand Co.)	328.00	0.16596
	1,793.35	0.90740
Consolidated Rock Products Co. (See Conrock Company)	-	-
Corcoran, Jack S.		
(Held in common with Corcoran, R. L.)		
(Transferred to:	747.00	0.37797
Cadway, Inc.	100.00	0.05060
Cadway, Inc.)	100.00	0.05060
	547.00	0.27677
Corcoran, R. L. (See Corcoran, Jack S.)	-	-
County Sanitation District No. 18 of Los Angeles County	4.50	0.00228

Pumper	Prescriptive Pumping Right Acre-feet	Pumper's Share %
Covell, et al. (Successor to Rittenhouse, Catherine and Rittenhouse, James) (Held in common with Jobe, Darr; Goedert, Lillian E.; Goedert, Marion W.; Lakin, Kendall R.; Lakin, Kelly R.; Snyder, Harry)	111.05	0.05619
Covina, City of	2,507.89	1.26895
(Transferred to Covina Irrigating Company)	1,734.00	0.87737
(Transferred to Covina Irrigating Company)	300.00	0.15179
	473.89	0.23979
Covina-Valley Unified School District (Transferred to Anderson, Ray)	0	0
Crevolin, A. J.	2.25	0.00114
Crocker National Bank, Executor of the Estate of A. V. Handorf (Transferred to Modern Accent Corp.)	0	0
Cross Water Company (Transferred to City of Industry)	0	0
Crown City Plating Company	190.00	0.09614
(Successor to Anchor Plating Co., Inc.)	10.00	0.00506
	200.00	0.10120
Davidson Optronics, Inc.	22.00	0.01113
Dawes, Mary Kay (Successor to Bahnsen, Betty M.)	441.90	0.22359
Del Rio Mutual Water Company	199.00	0.10069
Denton, Kathryn W., Trustee for San Jose Ranch Company (Transferred to White, June G., Trustee of the June G. White Share of the Garnier Trust)	0	0
Doyle, Mr. and Mrs.; and Madruga, Mr. and Mrs. (Successor to Sawpit Farms, Ltd.) (Transferred to Banks, Gale C.)	0	0
Driftwood Dairy	163.80	0.08288
Duhalde, L. (Transferred to El Monte Union High School District)	0	0

Pumper	Prescriptive Pumping Right Acre-feet	Pumper's Share %
Dunning, George (Held in common with Dunning, Vera H.) (Successor to Vera H. Dunning)	324.00	0.16394
Dunning, Vera H. (Transferred to George Dunning)	-	-
East Pasadena Water Company, Ltd.	1,407.69	0.71227
Eckis, Rollin (Successor to Sawpit Farms, Ltd.) (Transferred to City of Monrovia)	0	0
El Encanto Properties (Transferred to La Puente Valley County Water District)	0	0
El Monte, City of	2,784.23	1.40878
El Monte Cemetary Association	18.50	0.00936
El Monte Union High School District (Successor to Duhalde, L.) (Transferred to City of Whittier)	0	0
Everett, Mrs. Alda B. (Held in common with Everett, W. B., Executor of the Estate of I. Worth Everett)	0	0
Everett, W. B., Executor of the Estate of I. Worth Everett (See Everett, Mrs. Alda B.)	-	-
Faix, Inc. (Successor to Frank F. Pellissier & Sons, Inc.) (Transferred to Faix, Ltd.)	0	0
Faix, Ltd. (Successor to Faix, Inc.)	6,490.00	3.28384
First National Finance Corporation (Transferred to City of Arcadia)	0	0
Fisher, Russell (Held in common with Hauch, Edward and Warren, Clyde) (Transferred to California Domestic Water Company)	0	0

Pumper	Prescriptive Pumping Right Acre-feet	Pumper's Share %
Frank F. Pellissier & Sons, Inc. (Transferred to Faix, Inc.)	0	0
Fruit Street Water Company (Transferred to: Gifford, Brooks, Jr. City of La Verne)	0	0
Gifford, Brooks, Jr. (Successor to: Fruit Street Water Co., Mission Gardens Mutual Water Company) (Transferred to City of Whittier)	0	0
Gilkerson, Frank B. (Transferred to Jobe, Darr)	-	-
Glendora Unified High School District (Transferred to City of Glendora)	0	0
Goedert, Lillian E. (See Covell, et al)	-	-
Goedert, Marion W. (See Covell, et al)	-	-
Graham, William (Transferred to Darr Jobe)	-	-
Green, Walter	71.70	0.03628
Grizzle, Lissa B. (Held in common with Grizzle, Mervin A.; Wilson, Harold R.; Wilson, Sarah C.) (Transferred to City of Whittier)	0	0
Grizzle, Mervin A. (See Grizzle, Lissa B.)	0	0
Hansen, Alice	0.75	0.00038
Hartley, David	0	0
Hauch, Edward (See Fisher, Russell)	0	0
Hemlock Mutual Water Company	166.00	0.08399

Pumper	Prescriptive Pumping Right Acre-feet	Pumper's Share %
Hollenbeck Street Water Company (Transferred to Suburban Water Systems)	0	0
Hunter, Lloyd F. (Successor to R. Wade)	4.40	0.00223
Hydro-Conduit Corporation	0	0
Industry Waterworks System, City of (Successor to Cross Water Company)	1,103.00	0.55810
Industry Properties, Ltd. (Successor to A & E Plastik Pak Co., Inc.) (Transferred to California Domestic Water Co.)	0	0
J. F. Isbell Estate, Inc. (Transferred to Andrade, Macario and Consuelo; and Andrade, Robert and Jayne)	0	0
Jerris, Helen (See Polopolus, et al)	-	-
Jobe, Darr (See Covell, et al)	-	-
Kirklen Family Trust (Formerly Kirklen, Dawn L.)		
(Held in common with Kirklen, William R.)	375.00	0.18974
(Successor to San Dimas-La Verne Recreational Facilities Authority)	62.50	0.03162
	437.50	0.22136
Kirklen, Dawn L. (See Kirklen Family Trust)	-	-
Kirklen, William R. (See Kirklen, Dawn L.)	-	-
Kiyan, Hideo (Held in common with Kiyan, Hiro)	30.00	0.01518
Kiyan, Hiro (See Kiyan, Hideo)	-	-
Knight, Kathryn M. (Successor to William Knight)	227.88	0.11530
Knight, William (Transferred to Kathryn M. Knight)	0	0

Pumper	Prescriptive Pumping Right Acre-feet	Pumper's Share %
Lakin, Kelly R. (See Covell, et al)	-	-
Lakin, Kendall R. (See Covell, et al)	-	-
Landeros, John	0.75	0.00038
La Grande Source Water Company (Transferred to Suburban Water Systems)	0	0
Lang, Frank (Transferred to San Dimas-La Verne Recreational Facilities Authority)	0	0
La Puente Cooperative Water Company (Transferred to Suburban Water Systems)	0	0
La Puente Valley County Water District (Successor to El Encanto Properties)	1,097.00 33.40 1,130.40	0.55507 0.01690 0.57197
La Verne, City of (Successor to Fruit Street Water Co.)	250.00 105.71 355.71	0.12650 0.05349 0.17999
Lee, Paul M. and Ruth A.; Nasmyth, Virrginia; Nasmyth, John	0	0
Little John Dairy	0	0
Livingston-Graham, Inc.	1,824.40	0.92312
Los Flores Mutual Water Company (Transferred to City of Monterey Park)	0	0
Loucks, David	3.00	0.00152
Manning Bros. Rock & Sand Co. (Transferred to Conrock Company)	0	0
Maple Water Company	118.50	0.05996
Martinez, Frances Mercy (Held in common with Martinez, Jaime)	0.75	0.00038
Martinez, Jaime (See Martinez, Frances Mercy)	-	-
Massey-Ferguson Company	0	0

Pumper	Prescriptive Pumping Right Acre-feet	Pumper's Share %
Miller Brewing Company	111.01	0.05617
(Successor to:		
Maechtlen, Estate of J. J.	151.50	0.07666
Phillips, Alice B., et al)	50.00	0.02530
	312.51	0.15813
Mission Gardens Mutual Water Company (Transferred to Gifford, Brooks, Jr.)	0	0
Modern Accent Corporation (Successor to Crocker National Bank, Executor of the Estate of A. V. Handorf) (Transferred to California Domestic Water Co.)	0	0
Monterey Park, City of	6,677.48	3.37870
(Successor to Los Flores Mutual Water Co.)	26.60	0.01346
	6,704.08	3.39216
Murphy Ranch Mutual Water Company (Transferred to Southwest Suburban Water)	0	0
Namimatsu Farms (Transferred to California Cities Water Company)	0	0
Nick Tomovich & Sons	0.02	0.00001
No. 17 Walnut Place Mutual Water Co. (Transferred to San Gabriel Valley Water Company)	0	0
Orange Production Credit Association	0	0
Owl Rock Products Co.	715.60	0.36208
Pacific Rock & Gravel Co. (Transferred to: City of Whittier Rose Hills Memorial Park Association)	0	0
Park Water Company (Transferred to Valley County Water District)	0	0
Penn, Margaret (See Polopolus, et al)	-	-
Pico County Water District	0.75	0.00038
Polopolus, John (See Polopolus, et al)	-	-

Pumper	Prescriptive Pumping Right Acre-feet	Pumper's Share %
Polopolus, et al (Successor to Polopolus, Steve) (Held in common with Chronis, Christine; Jerris, Helen; Penn, Margaret; Polopolus, John)	22.50	0.01138
Polopolus, Steve (Transferred to Polopolus, et al)	-	-
Rados, Alexander (Held in common with Rados, Stephen and Rados, Walter)	43.00	0.02176
Rados, Stephen (See Rados, Alexander)	-	-
Rados, Walter (See Rados, Alexander)	-	-
Richwood Mutual Water Company	192.60	0.09745
Rincon Ditch Company	628.00	0.31776
Rincon Irrigation Company	314.00	0.15888
Rittenhouse, Catherine (Transferred to Covell, Ralph)	0	0
Rittenhouse, James (Transferred to Covell, Ralph)	0	0
Rose Hills Memorial Park Association	594.00	0.30055
(Successor to Pacific Rock & Gravel Co.)	200.00	0.10120
	794.00	0.40175
Rosemead Development, Ltd. (Successor to Thompson, Earl W.)	1.00	0.00051
Rurban Homes Mutual Water Company	217.76	0.11018
Ruth, Roy	0.75	0.00038
San Dimas-La Verne Recreational Facilities Authority (Successor to Lang, Frank) (Transferred to Kirklen, Dawn L. and William R.)	0	0
San Gabriel Country Club	286.10	0.14476
San Gabriel County Water District	4,250.00	2.15044

Pumper	Prescriptive Pumping Right Acre-feet	Pumper's Share %
San Gabriel Valley Municipal Water District	0	0
San Gabriel Valley Water Company	16,659.00	8.42920
(Successor to:		
Vallecito Water Co.	2,867.00	1.45066
No. 17 Walnut Place Mutual Water Co.)	21.50	0.01088
	19,547.50	9.89074
Sawpit Farms, Limited		
(Transferred to:		
Eckis, Rollin		
Doyle and Madruga)	0	0
Schneiderman, Alan		
(See Birenbaum, Max)	-	-
Schneiderman, Lydia		
(See Birenbaum, Max)	-	-
Security Pacific National Bank, Co-Trustee for the Estate of Winston F. Stoody		
(See Stoody, Virginia A.)		
(Transferred to City of Whittier)	0	0
Sierra Madre, City of	0	0
Sloan Ranches	129.60	0.06558
Smith, Charles	0	0
Snyder, Harry		
(See Covell, et al)	-	-
Sonoco Products Company	311.60	0.15766
South Covina Water Service	992.30	0.50209
Southern California Edison Company	155.25	0.07855
(Successor to: Associated		
Southern Investment Company)	16.50	0.00835
	171.75	0.08690
Southern California Water Company, San Gabriel Valley District	5,773.00	2.92105
South Pasadena, City of	3,567.70	1.80520
Southwest Suburban Water		
(See Suburban Water Systems)	-	-

Pumper	Prescriptive Pumping Right Acre-feet	Pumper's Share %
Southwestern Portland Cement Company (Successor to Azusa Western, Inc.)	742.00	0.37544
Speedway 605, Inc.	0	0
Standard Oil Company of California	2.00	0.00101
Sterling Mutual Water Company	120.00	0.06072
Stoody, Virginia A., Co-Trustee for the Estate of Winston F. Stoody (See Security Pacific National Bank, Co-Trustee)	-	-
Suburban Water Systems (Formerly Southwest Suburban Water) (Successor to:	20,462.47	10.35370
Hollenbeck Street Water Company	646.39	0.32706
La Grande Source Water Company	1,078.00	0.54545
La Puente Cooperative Water Co.	1,210.90	0.61270
Valencia Valley Water Company	651.50	0.32965
Victoria Mutual Water Company	469.60	0.23761
Cal Fin	118.10	0.05976
Murphy Ranch Mutual Water Co.	223.23	0.11295
	24,860.19	12.57888
Sully-Miller Contracting Company (Successor to Blue Diamond Concrete Materials Division, The Flintkote Co.)	1,399.33	0.70804
Sunny Slope Water Company	2,228.72	1.12770
Taylor Herb Garden (Transferred to Covina Irrigating Company)	0	0
Texaco, Inc.	50.00	0.02530
Thompson, Earl W. (Held in common with Thompson, Mary) (Transferred to Rosemead Development, Ltd.)	0	0
Thompson, Mary (See Thompson, Earl W.)	-	-
Tyler Nursery	3.21	0.00162
United Concrete Pipe Corporation (See U. S. Pipe & Foundry Company)	-	-

Pumper	Prescriptive Pumping Right Acre-feet	Pumper's Share %
U. S. Pipe & Foundry Company (Formerly United Concrete Pipe Corporation)	376.00	0.19025
Valencia Heights Water Company	861.00	0.43565
Valencia Valley Water Company (Transferred to Suburban Water Systems)	0	0
Vallecito Water Company (Transferred to San Gabriel Valley Water Company)	0	0
Valley County Water District (Formerly Baldwin Park County Water District)	5,775.00	2.92206
(Successor to Park Water Company)	184.01	0.09311
	5,959.01	3.01517
Valley Crating Company	0	0
Valley View Mutual Water Company	616.00	0.31169
Via, H. (See Via, H., Trust of)	-	-
Via, H., Trust of (Formerly Via, H.)	46.20	0.02338
Victoria Mutual Water Company (Transferred to Suburban Water Systems)	0	0
Wade, R. (Transferred to Lloyd F. Hunter)	0	0
Ward Duck Company	1,217.40	0.61599
Warren, Clyde (See Fisher, Russell)	-	-
W. E. Hall Company	0.20	0.00010
White, June G., Trustee of the June G. White Share of the Garnier Trust (Successor to Denton, Kathryn W., Trustee for the San Jose Ranch Company)	185.50	0.09386

Pumper	Prescriptive Pumping Right Acre-feet	Pumper's Share %
Whittier, City of	7,620.23	3.85572
(Successor to:		
Grizzle, Lissa B.	184.00	0.09310
Pacific Rock and Gravel Co.)	208.00	0.10524
Security Pacific National Bank, Co-Trustee for the Estate of Winston F. Stoody	38.70	0.01958
El Monte Union High School District	16.20	0.00820
Gifford, Brooks, Jr.	198.25	0.10031
Birenbaum, Max)	6.00	0.00304
	8,271.38	4.18519
Wigodsky, Bernard (See Birenbaum, Max)	-	-
Wigodsky, Estera (See Birenbaum, Max)	-	-
Wilmott, Erma M. (Formerly Comby, Erma M.)	0.75	0.00038
Wilson, Harold R. (See Grizzle, Lissa B.)	-	-
Wilson, Sarah C. (See Grizzle, Lissa B.)	-	-
Woodland, Frederick G.	-	-
Woodland, Richard (Successor to: Bahnsen and Beckman Ind., Inc.)	840.50	0.42528
Totals for Exhibit "D"	155,800.68	78.83276
Totals from Exhibit "E"	41 833.75 ~~38,826.25~~	21.16724 ~~19.54431~~
GRAND TOTALS	197,634.43	100.00000

TABLE
SHOWING PRODUCTION RIGHTS
OF EACH
INTEGRATED PRODUCER
AS OF JUNE 1988

Party	Diversion Component Acre-feet	Prescriptive Pumping Component Acre-feet	Pumping Component Share Percent (%)
Azusa Agricultural Water Company	1,000.00	1,732.20	0.87647
Azusa Foot-Hill Citrus Water Company (Transfered to Monrovia Nursery Company)	0	0	0
Azusa Valley Water Company	2,422.00	8,274.00	4.18652
California-American Water Company (Duarte System)	1,672.00	3,649.00	1.84634
California Cities Water Company (See Southern California Water Company, San Dimas District)	-	-	-
Covina Irrigating Company	2,514.00	4,140.00	2.09478
(Successor to:			
City of Covina,		1,734.00	0.87737
City of Covina, and		300.00	0.15179
Taylor Herb Garden)		6.00	0.00304
	2,514.00	6,180.00	3.12698
Glendora, City of	17.00	8,258.00	4.17842
(Successor to:			
Maechtlen, Estate of J. J.,		150.00	0.07590
Maechtlen, Trust of P. A.,		50.00	0.02530
Ruebhausen, Arline, and	18.34		
Glendora Unified High School District)		9.00	0.05009
	35.34	8,557.00	4.32971
Los Angeles, County of	310.00	3,721.30	1.88292
Maechtlen, Estate of J. J.	0	301.50	0.15256
(Transferred to:			
City of Glendora		-150.00	-0.07590
Miller Brewing Company)		-151.50	-0.07666
	0	0	0

Party	Diversion Componet Acre-feet	Prescriptive Pumping Component Acre-feet	Pumping Component Share %
Maechtlen, Estate of J. J.	1.49	0	0
Maechtlen, Trust of P. A.	0.50	100.50	0.05085
(Transferred to:			
City of Glendora		-50.00	-0.02530
Alice B. Phillips, et al)	-0.50	-50.50	-0.02555
	0	0	0
The Metropolitan Water District of Southern California	9.59	165.00	0.08349
Monrovia, City of	1,098.00	5,042.22	2.55129
(Sucessor to:			
Eckis, Rollin		123.00	0.06224
City of Arcadia)		951.00	0.48119
	1,098.00	6,116.22	3.09472
Monrovia, Nursery Company	239.50	0	0
(Successor to:			
Azusa Foot-Hill Citrus Co.)	718.50	0	
Phillips, Alice B., et al			
(Successor to:			
Maechtlen, Trust of P. A.)	0.50	50.50	0.02530
(Transferred to:			
Miller Brewing Company)		-50.00	-0.02530
	0.50	0.50	0.00025
Southern California Water Company (San Dimas Dist.)	500.00	3,242.53	1.64076
(Formerly California Cities Water Company)			
(Successor to:			
Namimatsu Farms)		196.00	0.09917
	500.00	3,438.53	1.73984
TOTAL for Exhibit "E"	10,520.92	41,833.75	21.16724

Exhibit "F"

TABLE SHOWING
SPECIAL CATAGORY RIGHTS

PARTY	Nature of Right
The Metropolitan Water District of Southern California	Morris Reservoir Storage and Withdrawal (a) A right to divert, store and use San Gabriel River Water, pursuant to Permit No. 7174. (b) Prior and paramount right to divert 72 acre-feet annually to offset Morris Reservoir evaporation and seepage losses and to provide the water supply necessary for presently existing incidential Morris Dam facilities.
Los Angeles County Flood Control District (Now Los Angeles County Department of Public Works)	Puddingstone Reservoir Prior Prescriptive right to divert water from San Dimas Wash for storage in Puddingstone Reservoir in quantities sufficient to offset annual evaporation and seepage losses of the reservoir at approximate elevation 942.

Exhibit "G"

TABLE SHOWING
NON-CONSUMPTIVE USERS

Party	Nature of Right
Covina Irrigating Company Azusa Valley Water Company Azusa Agricultural Water Co. Azusa Foot-Hill Citrus Co. Monrovia Nursery Company	"Committee-of-Nine" Spreading Right To continue to divert water from the San Gabriel River pursuant to the 1888 Settlement, and to spread in spreading grounds within the Basin all water thus diverted without the right to recapture water in excess of said parties' rights as adjudicated in Exhibit "E".
California-American Water Company (Duarte System)	Spreading Right To continue to divert water from the San Gabriel River pursuant to the 1888 Settlement, and to continue to divert water from Fish Canyon and to spread said waters in its spreading grounds in the Basin without the right to recapture water in excess of said party's rights as adjudicated in Exhibit "E".
City of Glendora	Spreading Right To continue to spread the water of Big and Little Dalton Washes, pursuant to License No. 2592 without the right to recapture water in excess of said party's rights as adjudicated in Exhibit "E".
San Gabriel Valley Protective Association	Spreading Right To continue to spread San Gabriel River water pursuant to License Nos. 9991 and 12,209, without the right to recapture said water.
California Cities Water Company	Spreading Right To continue to spread waters from San Dimas Wash without the right to recapture water in excess of said party's rights as adjudicated in Exhibit "E".
Los Angeles County Flood Control District	Temporary storage of storm flow for regulatory purposes; Spreading and conservation for general benefit in streambeds, reservoirs and spreading grounds without the right to recapture said water. Maintenance and operation of dams and other flood control works.

EXHIBIT "H"

WATERMASTER OPERATING CRITERIA

1. Basin Storage Capacity. The highest water level at the end of a water year during the past 40 years was reached at the Key Well on September 30, 1944 (elevation 316). The State of California, Department of Water Resources, estimates that as of that date, the quantity of fresh water in storage in the Basin was approximately 8,600,000 acre-feet. It is also estimated by said Department that by September 30, 1960, the quantity of fresh water in storage had decreased to approximately 7,900,000 acre-feet (elevation 237) at the Key Well).

The lowest water level at the end of a water year during the past 40 years was reached at the Key Well on September 30, 1965 (elevation 209). It is estimated that the quantity of fresh water in storage in the Basin on that date was approximately 7,700,000 acre-feet.

Thus, the maximum utilization of Basin storage was approximately 900,000 acre-feet, occurring between September 30, 1944, and September 30, 1965 (between elevations 316 and 209 at the Key Well). This is not to say that more than 900,000 acre-feet of storage space below the September 30, 1944 water levels cannot be utilized. However, it demonstrates that pumpers have deepened their wells and lowered their pumps so that such 900,000 acre-feet of storage can be safely and economically utilized.

The storage capacity of the Basin between elevations of 200 and 250 at the Key Well represents a usable volume of approximately 400,000 acre-feet of water.

2. Operating Safe Yield and Spreading. Watermaster in determining Operating Safe Yield and the importation of Replacement Water shall be guided by water level elevations in the Basin. He shall give recognition to, and base his operations on, the following general objectives insofar as practicable:

(a) The replenishment of ground water from sources of supplemental water should not cause excessively high levels of ground water and such replenishment should not cause undue waste of local water supplies.

(b) Certain areas within the Basin are not at the present time capable of being recharged with supplemental water. Efforts should be made to provide protection to such areas from excessive ground water lowering either through the "in lieu" provisions of the Judgment or by other means.

(c) Watermaster shall consider and evaluate the long-term consequences on ground water quality, as well as quantity, in determining and establishing Operating Safe Yield. Recognition shall be given to the enhancement of ground water quality insofar as practicable, especially in the area immediately upstream of Whittier Narrows where degradation of water quality may occur when water levels at the Key Well are maintained at or below elevation 200.

(d) Watermaster shall take into consideration the comparative costs of supplemental and Make-up Water in determining the savings on a present value basis of temporary or permanent lowering or raising of water levels and other economic data and analyses indicating both the short-term and long-term

propriety of adjusting Operating Safe Yield in order to derive optimum water levels during any period. Watermaster shall utilize the provisions in the Long Beach Judgment which will result in the least cost of delivering Make-up Water.

3. Replacement Water -- Sources and Recharge Criteria. The following criteria shall control purchase of Replacement Water and Recharge of the Basin by Watermaster.

(a) Responsible Agency From Which to Purchase. Watermaster, in determining the Responsible Agency from which to purchase supplemental water for replacement purposes, shall be governed by the following:

(1) Place of Use of Water which is used primarily within the Basin or by cities within San Gabriel District in areas within or outside the Basin shall control in determining the Responsible Agency. For purposes of this subparagraph, water supplied through a municipal water system which lies chiefly within the Basin shall be deemed entirely used within the Basin; and

(2) Place of production of water shall control in determining the Responsible Agency as to water exported from the Basin, except as to use within San Gabriel District.

Any Responsible Agency may, at the request of Watermaster, waive its right to act as the source for such supplemental water, in which case Watermaster shall be free to purchase such water from the remaining Responsible Agencies which are the most beneficial and appropriate sources; provided, however, that a Responsible Agency shall not

authorize any sale of water in violation of the California Constitution.

(b) Water Quality. Watermaster shall purchase the best quality of supplemental water available for replenishment of the Basin, pursuant to subsection (a) hereof.

(c) Reclaimed Water. It is recognized that the technology and economic and physical necessity for utilization of reclaimed water is increasing. The purchase of reclaimed water in accordance with the Long Beach Judgment to satisfy the Make-up Obligation is expressly authorized. At the same time, water quality problems involved in the reuse of water within the Basin pose serious questions of increased costs and other problems to the pumpers, their customers and all water users. Accordingly, Watermaster is authorized to gather information, make and review studies, and make recommendations on the feasibility of the use of reclaimed water for replacement purposes; provided that no reclaimed water shall be recharged in the Basin by Watermaster without the prior approval of the court, after notice to all parties and hearing thereon.

4. Replacement Assessment Rates. The Replacement Assessment rates shall be in an amount calculated to allow Watermaster to purchase one acre-foot of supplemental water for each acre-foot of excess Production to which such Assessment applies.

EXHIBIT "J"

PUENTE NARROWS AGREEMENT

THIS AGREEMENT is made and entered into as of the 8th day of May, 1972, by and between PUENTE BASIN WATER AGENCY, herein called "Puente Agency", and UPPER SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT, herein called "Upper District".

A. RECITALS

1. Puente Agency. Puente Agency is a joint powers agency composed of Walnut Valley Water District, herein called "Walnut District", and Rowland Area County Water District, herein called "Rowland District". Puente Agency is formed for the purpose of developing and implementing a ground water basin management program for Puente Basin. Pursuant to said purpose, said Agency is acting as a representative of its member districts and of the water users and water right claimants therein in the defense and maintenance of their water rights within Puente Basin.

2. Upper District. Upper District is a municipal water district overlying a major portion of the Main San Gabriel Basin. Upper District is plaintiff in the San Gabriel Basin Case, wherein it seeks to adjudicate rights and implement a basin management plan for the Main San Gabriel Basin.

3. Puente Basin is a ground water basin tributary to the Main San Gabriel Basin. Said area was included within the scope of the San Gabriel Basin Case and substantially

all water rights claimants within Puente Basin were joined as defendants therein. The surface contribution to the Main San Gabriel Basin from Puente Basin is by way of the paved flood control channel of San Jose Creek, which passes through Puente Basin from the Pomona Valley area. Subsurface outflow is relatively limited and moves from the Puente Basin to the Main San Gabriel Basin through Puente Narrows.

4. Intent of Agreement. Puente Agency is prepared to assure Upper District that no activity within Puente Basin will hereafter be undertaken which will (1) interfere with surface flows in San Jose Creek, or (2) impair the subsurface flow from Puente Basin to the Main San Gabriel Basin. Walnut District and Rowland District, by operation of law and by express assumption endorsed hereon, assume the covenants of this agreement as a joint and several obligation. Based upon such assurances and the covenants hereinafter contained in support thereof, Upper District consents to the dismissal of all Puente Basin parties from the San Gabriel Basin Case. By reason of said dismissals, Puente Agency will be free to formulate a separate water management program for Puente Basin.

B. DEFINITIONS AND EXHIBITS

5. Definitions. As used in this Agreement, the following terms shall have the meanings herein set forth:

(a) Annual or Year refers to the fiscal year July 1 through June 30.

(b) Base Underflow. The underflow through

Puente Narrows which Puente Agency agrees to maintain, and on which accrued debits and credits shall be calculated.

(c) Make-up Payment. Make-up payments shall be an amount of money payable to the Watermaster appointed in the San Gabriel Basin Case, sufficient to allow said Watermaster to purchase replacement water on account of any accumulated deficit as provided in Paragraph 9 hereof.

(d) Puente Narrows. The subsurface geologic constriction at the downstream boundary of Puente Basin, located as shown on Appendix "B".

(e) Main San Gabriel Basin, the ground water basin shown and defined as such in Exhibit "A" to the Judgment in the San Gabriel Basin Case.

(f) San Gabriel Basin Case. Upper San Gabriel Valley Municipal Water District v. City of Alhambra, et al., L. A. Sup. Ct. No. 924128, filed January 2, 1968.

6. Appendices. Attached hereto and by this reference made a part hereof are the following appendices:

"A" -- Location Map of Puente Basin, showing major geographic, geologic, and hydrologic features.

"B" -- Map of Cross-Section Through Puente Narrows, showing major physical features and location of key wells.

"C" -- Engineering Criteria, being a description of a method of measurement of subsurface outflow to be utilized for Watermaster purposes.

C. COVENANTS

7. Watermaster. There is hereby created a two member Watermaster service to which each of the parties to this agreement shall select one consulting engineer. The respective representatives on said Watermaster shall serve at the pleasure of the governing body of each appointing party and each party shall bear its own Watermaster expense.

a. Organization. Watermaster shall perform the duties specified herein on an informal basis, by unanimous agreement. In the event the two representatives are unable to agree upon any finding or decision, they shall select a third member to act, pursuant to the applicable laws of the State of California. Thereafter, until said issue is resolved, said three shall sit formally as a board of arbitration. Upon resolution of the issue in dispute, the third member shall cease to function further.

b. Availability of Information. Each party hereto shall, for itself and its residents and water users, use its best efforts to furnish all appropriate information to the Watermaster in order that the required determination can be made.

c. Cooperation With Other Watermasters. Watermaster hereunder shall cooperate and coordinate activities with the Watermasters appointed in the San Gabriel Basin Case and in Long Beach v. San Gabriel Valley Water Company, et al.

d. Determination of Underflow. Watermaster shall annually determine the amount of underflow from Puente Basin to the San Gabriel Basin, pursuant to Engineering Criteria.

e. Perpetual Accounting. Watermaster shall maintain a perpetual account of accumulated base underflow, accumulated subsurface flow, any deficiencies by reason of interference with surface flows, and the offsetting credit for any make-up payments. Said account shall annually show the accumulated credit or debit in the obligation of Puente Agency to Upper District.

f. Report. Watermaster findings shall be incorporated in a brief written report to be filed with the parties and with the Watermaster in the San Gabriel Basin Case. Said report shall contain a statement of the perpetual account heretofore specified.

8. Base Underflow. On the basis of a study and review of historic underflow from Puente Basin to the Main San Gabriel Basin, adjusted for the effect of the paved flood control channel and other relevant considerations, it is

mutually agreed by the parties that the base underflow is and shall be 580 acre feet per year, calculated pursuant to Engineering Criteria.

9. Puente Agency's Obligation. Puente Agency covenants, agrees and assumes the following obligation hereunder:

a. Noninterference with Surface Flow. Neither Puente Agency nor any persons or entities within the corporate boundaries of Walnut District or Rowland District will divert or otherwise interfere with or utilize natural surface runoff now or hereafter flowing in the storm channel of San Jose Creek; provided, however, that this covenant shall not prevent the use, under Watermaster supervision, of said storm channel by the Puente Agency or Walnut District or Rowland District for transmission within Puente Agency of supplemental or reclaimed water owned by said entities and introduced into said channel solely for transmission purposes. In the event any unauthorized use of surface flow in said channel is made contrary to the covenant herein provided, Puente Agency shall compensate Upper District by utilizing any accumulated credit or by make-up payment in the same manner as is provided for deficiencies in subsurface outflow from Puente Basin.

b. Subsurface Outflow. To the extent that

the accumulated subsurface outflow falls below the accumulated base underflow and the result thereof is an accumulated deficit in the Watermaster's annual accounting, Puente Agency agrees to provide make-up payments during the next year in an amount not less than one-third of the accumulated deficit.

c. Purchase of Reclaimed Water. To the extent that Puente Agency or Walnut District or Rowland District may hereafter purchase reclaimed water from the facilities of Sanitation District 21 of Los Angeles County, such purchaser shall use its best efforts to obtain waters originating within San Gabriel River Watershed.

10. Puente Basin Parties Dismissal. In consideration of the assumption of the obligation hereinabove provided by Puente Agency, Upper District consents to entry of dismissals as to all Puente Basin parties in San Gabriel Basin Case. This agreement shall be submitted for specific approval by the Court and a finding that it shall operate as full satisfaction of any and all claims by the parties within Main San Gabriel Basin against Puente Basin parties by reason of historic surface and subsurface flow.

IN WITNESS WHEREOF the parties hereto have caused this Agreement to be executed as of the day and date first above written.

Approved as to form:
CLAYSON, STARK, ROTHROCK & MANN

By _____
Attorneys for Puente Agency

PUENTE BASIN AGENCY

By _____
EDWARD M. BIEDERMAN
President

Approved as to form:

By _____
Attorney for Upper District

UPPER SAN GABRIEL VALLEY
MUNICIPAL WATER DISTRICT

By _____
Howard H. Hawkins
President

The foregoing agreement is approved and accepted, and the same is acknowledged as the joint and several obligation of the undersigned.

Approved as to form:

_____
Attorney for Walnut District

WALNUT VALLEY WATER DISTRICT

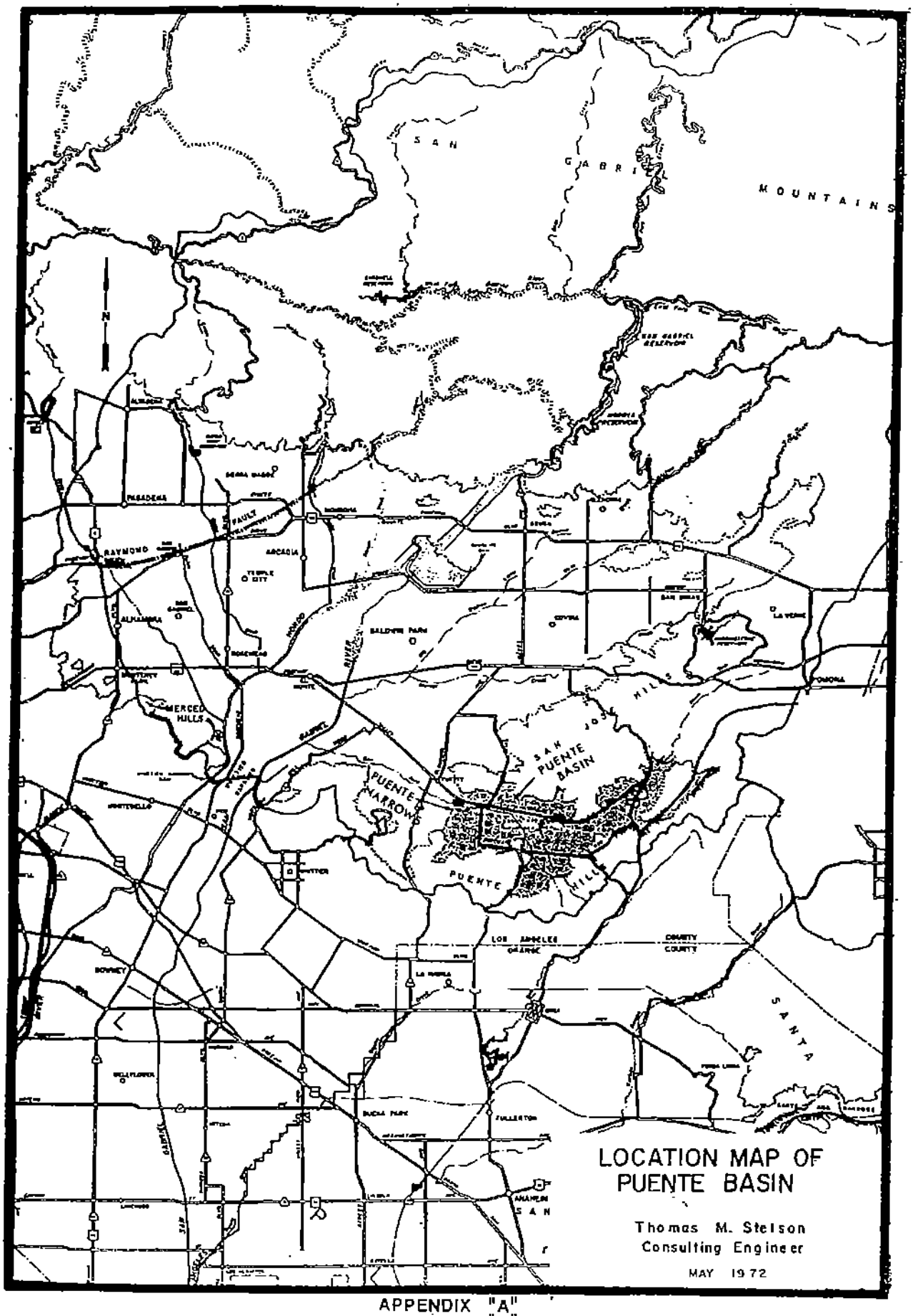
By _____
J. P. BOURDET
Vice President

Approved as to form:

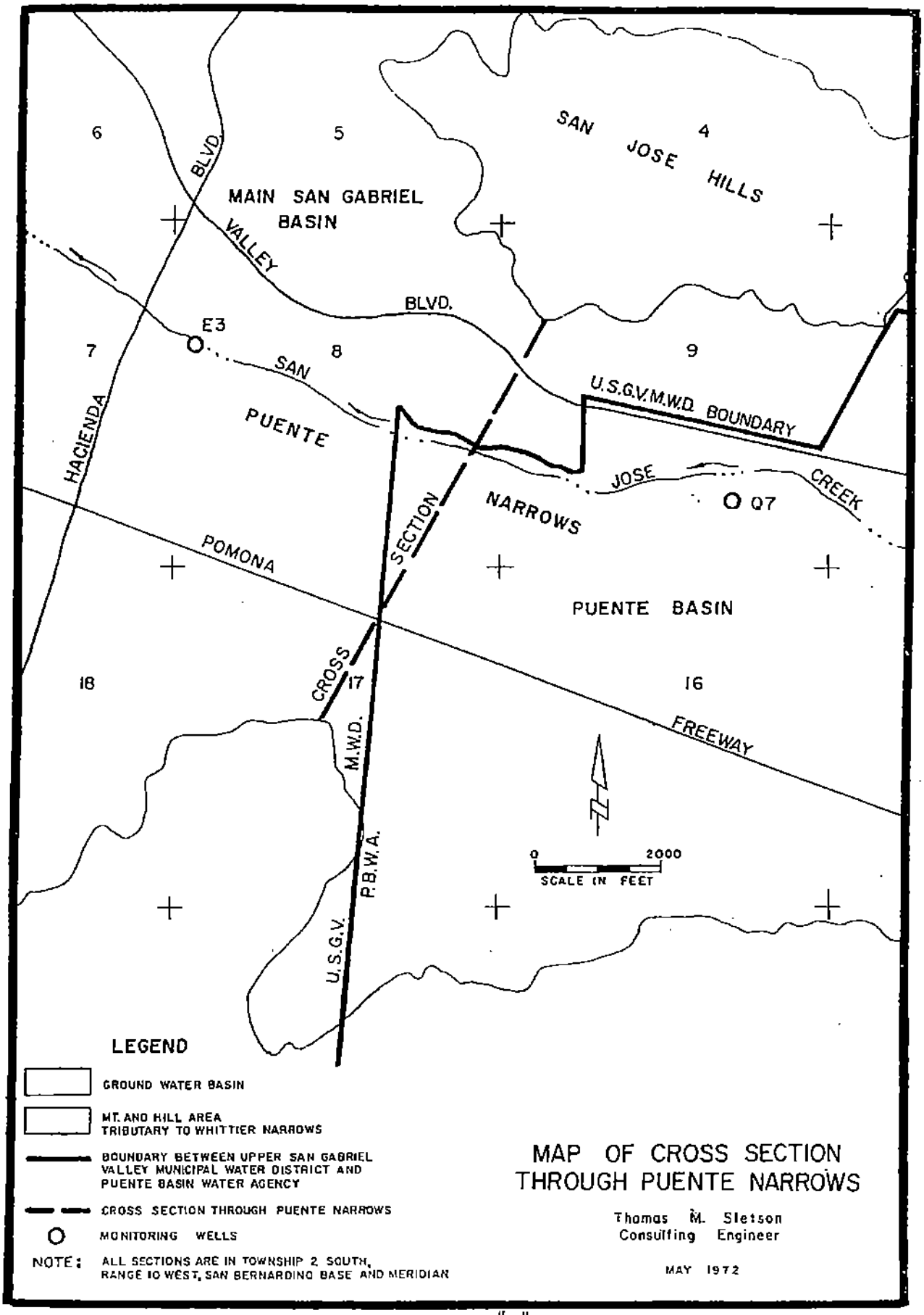
_____
Attorneys for Rowland District

ROWLAND AREA COUNTY WATER
DISTRICT

By _____
President
Wm. A. Simmons



APPENDIX "A"
EXHIBIT "J"



APPENDIX "B"
EXHIBIT "J"
J - 10

ENGINEERING CRITERIA

APPENDIX "C"

1. Monitoring Wells. The wells designated as State Wells No. 2S/10W-9Q7 and 2S/10W-8E3 and Los Angeles County Flood Control District Nos. 3079M and 3048B, respectively, shall be used to measure applicable ground water elevations. In the event either monitoring well should fail or become unrepresentative, a substitute well shall be selected or drilled by Watermaster. The cost of drilling a replacement well shall be the obligation of the Puente Agency.

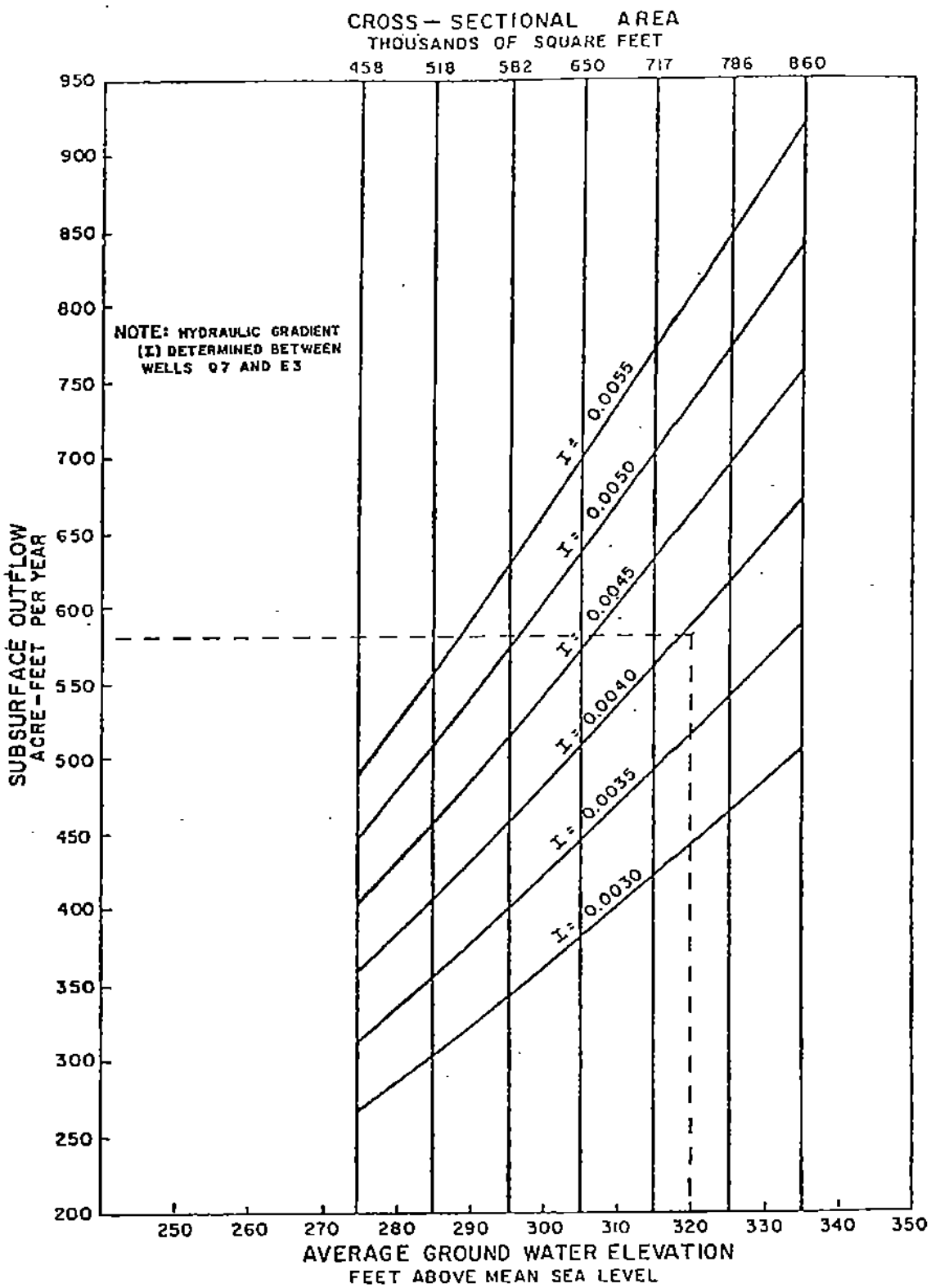
2. Measurement. Each monitoring well shall be measured and the ground water elevation determined semi-annually on or about April 1 and October 1 of each year. Prior to each measurement, the pump shall be turned off for a sufficient period to insure that the water table has recovered to a static or near equilibrium condition.

3. Hydraulic Gradient. The hydraulic gradient, or slope of the water surface through Puente Narrows, shall be calculated between the monitoring wells as the difference in water surface elevation divided by the distance, approximately 9,000 feet, between the wells. The hydraulic gradient shall be determined for the spring and fall and the average hydraulic gradient calculated for the year.

4. Ground Water Elevation at Puente Narrows Cross Section. The ground water elevation at the Puente Narrows

cross section midway between the monitoring wells shall be the average of the ground water elevation at the two wells. This shall be determined for the spring and fall and the average annual ground water elevation calculated for the year.

5. Determination of Underflow. The chart attached is a photo-reduction of a full scale chart on file with the Watermaster. By applying the appropriate average annual hydraulic gradient (I) to the average annual ground water elevation at the Puente Narrows cross section (involving the appropriate cross-sectional area [A]), it is possible to read on the vertical scale the annual acre feet of underflow.



RELATIONSHIP OF AVERAGE GROUND WATER ELEVATION AT PUENTE NARROWS AND APPLICABLE CROSS-SECTIONAL AREA WITH SUBSURFACE OUTFLOW THROUGH PUENTE NARROWS FOR VARIOUS HYDRAULIC GRADIENTS

Thomas M. Stetson
Consulting Engineer
MAY 1972

EXHIBIT "K"

OVERLYING RIGHTS

I. NATURE OF OVERLYING RIGHT

An "Overlying Right" is the right to Produce water from the Main San Gabriel Basin for use on the overlying lands hereinafter described. Such rights are exercisable without quantitative limit only on said overlying land and cannot be separately conveyed or transferred apart therefrom. The exerciser of such right is assessable by Watermaster as provided in Paragraph 21 of the Amended Judgment herein (prior Paragraph 14.5 of the Judgment herein) and is subject to the other provisions of said Paragraph.

II. OVERLYING LANDS (Description)

The overlying lands to which Overlying Rights are appurtenant are described as follows:

> "Those portions of Lots 1 and 2 of the lands formerly owned by W.A. Church, in the Rancho San Francisquito, in the City of Irwindale, County of Los Angeles, State of California, as shown on recorder's filed map No. 509, in the office of the County Recorder of said County, lying northeasterly of the northeasterly line and its southeasterly prolongation of Tract 1888, as shown on map recorded in Book 21 page 183 of Maps, in the office of the County Recorder of said County.
>
> "EXCEPT the portions thereof lying northerly and northwesterly of the center line of Arrow Highway described 'Sixth' and the center line of Live Oak Avenue described 'Third' in a final decree of condemnation, a certified copy of which was recorded August 18, 1933 as Instrument No. 354, in Book 12289, Page 277, Official Records.
>
> "ALSO EXCEPT that portion of said land described in the final decree of condemnation entered in Los Angeles County Superior Court Case No. 805008, a certified copy of which was recorded September 21, 1964, as Instrument No. 3730, in Book D-2634, Page 648, Official Records."

III. PRODUCERS ENTITLED TO EXERCISE OVERLYING RIGHTS AND THEIR RESPECTIVE CONSUMPTIVE USE PORTIONS

The persons entitled to exercise Overlying Rights are both the owners of Overlying Rights and persons and entities licensed by such owners to exercise such Overlying Rights. The persons entitled to exercise Overlying Rights and their respective Consumptive Use portions are as follows:

OWNER PRODUCERS	CONSUMPTIVE USE PORTION
BROOKS GIFFORD, SR. BROOKS GIFFORD, JR. PAUL MNOIAN JOHN MGRDICHIAN J. EARL GARRETT	3.5 acre-feet per year
Present User: Nu-Way Industries	
PRODUCERS UNDER LICENSE	
A. WILLIAM C. THOMAS and EVELYN F. THOMAS, husband and wife, and MALCOLM K. GATHERER and JACQUELINE GATHERER, husband and wife, doing business by and through B & B REDI-I-MIX CONCRETE, INC., a corporation	45.6 acre-feet per year
B. PRE-STRESS CRANE RIGGING & TRUCK CO., INC., a corporation	1.0 acre-foot per year
Present Users: Pre-Stress Crane Rigging & Truck Co., Inc., a corporation	
Total	50.1 acre-feet per year

IV. ANNUAL GROSS AMOUNT OF PRODUCTION FROM WHICH CONSUMPTIVE USE PORTIONS WERE DERIVED — 183.65 acre-feet

Exhibit "L"

LIST OF PRODUCERS AND THEIR DESIGNEES
June, 1989

Producer Name	Designee
A	
Adams Ranch Mutual Water Company	Goji Iwakiri
Alhambra, City of	T. E. Shollenberger
Amarillo Mutual Water Company	Ester Guadagnolo
Anderson, Ray	Ray Anderson
Andrade, Macario, et al.	Macario R. Andrade
Arcadia, City of	Eldon Davidson
AZ-Two, Inc.	R. S. Chamberlain
Azusa, City of	William H. Redcay
Azusa Ag. Water Company	Robert E. Talley
Azusa Valley Water Company	Edward Heck
B	
Baldwin Park County Water District (See Valley County Water District)	-
Banks, Gale C.	Gale C. Banks
Base Line Water Company	Everett W. Hughes, Jr.
Beverly Acres Mutual Water User's Assn. (Formerly Beverly Acres Mutual Water Co.)	Eloise A. Moore
Burbank Development Company	Darrell A. Wright
C	
Cadway, Inc.	P. Geoffrey Nunn
California-American Water Company (San Marino System)	Andrew A. Krueger
California-American Water Company (Duarte System)	Andrew A. Krueger
California Country Club	Henri F. Pellissier
California Domestic Water Company	P. Geoffrey Nunn
Cedar Avenue Mutual Water Company	Austin L. Knapp

Producer Name	Designee
Champion Mutual Water Company	Margaret Bauwens
Chevron, USA, Inc.	Ms. Margo Bart
Clayton Manufacturing Company	Don Jones
Conrock Company	Gene R.Block
Corcoran Brothers	Ray Corcoran
County Sanitation District No. 18	Charles W. Curry
Covell, et al.	Darr Jobe
Covell, Ralph	Ralph Covell
Covina, City of	Wayne B. Dowdey
Covina Irrigating Company	William R. Temple
Crevolin, A. J.	A. J. Crevolin
Crown City Plating Company	N. G. Gardner
D	
Davidson Optronics, Inc.	James McBride
Dawes, Mary Kay	Mary Kay Dawes
Del Rio Mutual Water Company	Gonzalo Galindo
Driftwood Dairy	James E. Dolan
Dunning, George	George Dunning
E	
East Pasadena Water Company	Robert D. Mraz
El Monte, City of	Robert J. Pinniger
El Monte Cemetery Association	Linn E. Magoffin
F	
Faix, Ltd.	Henri F. Pellissier
G	
Glendora, City of	Arthur E. Cook
Green, Walter	Dr. Walter Green
H	
Hansen, Alice	Alice Hansen

Exhibit "L"

Producer Name	Designee
Hartley, David	David Hartley
Hemlock Mutual Water Company	Bud Selander
Hunter, Lloyd F.	Lloyd F. Hunter
I	
Industry Waterworks System, City of	Mary L. Jaureguy
K	
Kiyan Farm Kiyan, Hideo	Mrs. Hideo Kiyan
Kirklen Family Trust	Dawn Kirklen
Knight, Kathryn M.	William J. Knight
L	
Landeros, John	John Landeros
La Puente Valley County Water District	Mary L. Jaureguy
La Verne, City of	N. Kathleen Hamm
Livingston-Graham	Gary O. Tompkins
Los Angeles, County of	Robert L. Larson
Loucks, David	David Loucks
M	
Maddock, A. G.	Ranney Draper, Esq.
Maechtlen, Trust of J. J.	Jack F. Maechtlen
Maple Water Company, Inc.	Charles King
Martinez, Francis Mercy	Francis Mercy Martinez
Metropolitan Water District of Southern California	Fred Vendig, Esq.
Miller Brewing Company	Dennis B. Puffer
Mnoian, Paul, et al.	Mal Gatherer
Monrovia, City of	Robert K. Sandwick
Monrovia Nursery	Miles R. Rosedale
Monterey Park, City of	Nels Palm

Exhibit "L"

Producer Name	Designee
N	
Nick Tomovich & Sons	Nick Tomovich
O	
Owl Rock Products Company	Peter L. Chiu
P	
Phillips, Alice B., et al.	Jack F. Maechtlen
Pico County Water District	Robert P. Fuller
Polopolus, et al.	Christine Chronis
R	
Rados Brothers	Alexander S. Rados
Richwood Mutual Water Company	Bonnie Pool
Rincon Ditch Company	K. E. Nungesser
Rincon Irrigation Company	K. E. Nungesser
Rose Hills Memorial Park Association	Allan D. Smith
Rosemead Development, Ltd.	John W. Lloyd
Rurban Homes Mutual Water Company	George W. Bucey
Ruth, Roy	Roy Ruth
S	
San Dimas - La Verne Recreational Facilities Authority	R. F. Griszka
San Gabriel Country Club	Fran Wolfe
San Gabriel County Water District	Philip G. Crocker
San Gabriel Valley Municipal Water District	Bob Stallings
San Gabriel Valley Water Company	Robert H. Nicholson, Jr.
Sloan Ranches	Larry R. Sloan
Sonoco Products Company	Elaine Corboy
South Covina Water Service	Anton C. Garnier
Southern California Edison Company	S. R. Shermoen

Exhibit "L"

Producer Name	Designee
Southern California Water Company -San Dimas District	J. F. Young
Southern California Water Company -San Gabriel Valley District	J. F. Young
South Pasadena, City of	John Bernardi
Southwestern Portland Cement Company	Dale W. Heineck
Standard Oil Company of California	John A. Wild
Sterling Mutual Water Company	Bennie L. Prowett
Suburban Water Systems	Anton C. Garnier
Sully-Miller Contracting Company	R. R. Munro
Sunny Slope Water Company	Michael J. Hart
T	
Taylor Herb Garden	Paul S. Taylor
Texaco, Inc.	E. O. Wakefield
Tyler Nursery	James K. Mitsumori, Esq.
U	
United Concrete Pipe Corporation	Doyle H. Wadley
United Rock Products Corporation	William S. Capps, Esq.
V	
Valencia Heights Water Company	Herman Weskamp
Valley County Water District (Formerly Baldwin Park County Water District)	Stanley D. Yarbrough
Valley View Mutual Water Company	Robert T. Navarre
Via, H., Trust of	Marverna Parton
W	
Ward Duck Company	Richard J. Woodland
W. E. Hall Company	Thomas S. Bunn, Jr., Esq.
White, June G., Trustee	June G. Lovelady
Whittier, City of	Neil Hudson
Wilmott, Erma M.	Erma M. Wilmott

Exhibit "M"

WATERMASTER MEMBERS

FOR CALENDAR YEAR 1973

ROBERT T. BALCH (Producer Member), Chairman

LINN E. MAGOFFIN (Producer Member), Vice Chairman

RICHARD L. ROWLAND (Producer Member), Secretary

BOYD KERN (Public Member), Treasurer

WALKER HANNON (Producer Member)

HOWARD H. HAWKINS (Public Member)

M. E. MOSLEY (Producer Member)

CONRAD T. REIBOLD (Public Member)

HARRY C. WILLS (Producer Member)

STAFF

Carl Fossette, Assistant Secretary-Assistant Treasurer
Ralph B. Helm, Attorney
Thomas M. Stetson, Engineer

FOR CALENDAR YEAR 1974

ROBERT T. BALCH (Producer Member), Chairman

LINN E. MAGOFFIN (Producer Member), Vice Chairman

RICHARD L. ROWLAND (Producer Member), Secretary

BOYD KERN (Public Member), Treasurer

WALKER HANNON (Producer Member)

BURTON E. JONES (Public Member)

M. E. MOSLEY (Producer Member)

CONRAD T. REIBOLD (Public Member)

HARRY C. WILLS (Producer Member)

STAFF

Carl Fossette, Assistant Secretary-Assistant Treasurer
Ralph B. Helm, Attorney
Thomas M. Stetson. Engineer

FOR CALENDAR YEAR 1975

ROBERT T. BALCH (Producer Member), Chairman

LINN E. MAGOFFIN (Producer Member), Vice Chairman

HARRY C. WILLS (Producer Member), Secretary

BOYD KERN (Public Member), Treasurer

WALKER HANNON (Producer Member)

BURTON E. JONES (Public Member)

D. J. LAUGHLIN (Producer Member)

M. E. MOSLEY (Producer Member)

CONRAD T. REIBOLD (Public Member)

STAFF

Carl Fossette, Assistant Secretary-Assistant Treasurer
Ralph B. Helm, Attorney
Thomas M. Stetson, Engineer

FOR CALENDAR YEAR 1976

ROBERT T. BALCH (Producer Member), Chairman

LINN E. MAGOFFIN (Producer Member), Vice Chairman

HARRY C. WILLS (Producer Member), Secretary

BOYD KERN (Public Member), Treasurer

WALKER HANNON (Producer Member)

BURTON E. JONES (Public Member)

D. J. LAUGHLIN (Producer Member)

M. E. MOSLEY (Producer Member)

CONRAD T. REIBOLD (Public Member)

STAFF

Jane M. Bray, Assistant Secretary-Assistant Treasurer
Ralph B. Helm, Attorney
Thomas M. Stetson, Engineer

FOR CALENDAR YEAR 1977

ROBERT T. BALCH (Producer Member), Chairman

LINN E. MAGOFFIN (Producer Member), Vice Chairman

HARRY C. WILLS (Producer Member), Secretary

CONRAD T. REIBOLD (Public Member), Treasurer

WALKER HANNON (Producer Member)

BURTON E. JONES (Public Member)

BOYD KERN (Public Member)

D. J. LAUGHLIN (Producer Member)

R. H. NICHOLSON, JR. (Producer Member)

STAFF

Jane M. Bray, Assistant Secretary-Assistant Treasurer)
Ralph B. Helm, Attorney
Thomas M. Stetson, Engineer

FOR CALENDAR YEAR 1978

ROBERT T. BALCH (Producer Member), Chairman

LINN E. MAGOFFIN (Producer Member), Vice Chairman

D. J. LAUGHLIN (Producer Member), Secretary

CONRAD T. REIBOLD (Public Member), Treasurer

WALKER HANNON (Producer Member)

BURTON E. JONES (Public Member)

L. E. MOELLER (Producer Member)

R. H. NICHOLSON, JR. (Producer Member)

WILLIAM M. WHITESIDE (Public Member)

STAFF

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FOR CALENDAR YEAR 1979

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FOR CALENDAR YEAR 1985

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STAFF

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Ralph B. Helm, Attorney
Thomas M. Stetson, Engineer

FOR CALENDAR YEAR 1986

LINN E. MAGOFFIN (Producer Member), Chairman

R. H. NICHOLSON, JR. (Producer Member), Vice Chairman

ROBERT G. BERLIEN (Producer Member), Secretary

CONRAD T. REIBOLD (Public Member), Treasurer

ROBERT T. BALCH (Producer Member)

DONALD F. CLARK (Public Member)

L. E. MOELLER (Producer Member)

REGINOLD A. STONE (Producer Member)

ALFRED R. WITTIG (Public Member)

STAFF

Jane M. Bray, Assistant Secretary-Assistant Treasurer
Ralph B. Helm, Attorney
Thomas M. Stetson, Engineer

FOR CALENDAR YEAR 1987

LINN E. MAGOFFIN (Producer Member), Chairman

REGINALD A. STONE (Producer Member), Vice Chairman

L. E. MOELLER (Producer Member), Secretary

ALFRED R. WITTIG (Public Member), Treasurer

ROBERT T. BALCH (Producer Member)

GERALD J. BLACK (Producer Member)

DONALD F. CLARK (Public Member)

EDWARD R. HECK (Producer Member)

JOHN E. MAULDING (Public Member)

STAFF

Robert G. Berlien, Assistant Secretary-Assistant Treasurer
Ralph B. Helm, Attorney
Thomas M. Stetson, Engineer

FOR CALENDAR YEAR 1988

LINN E. MAGOFFIN (Producer Member), Chairman

REGINALD A. STONE (Producer Member), Vice Chairman

L. E. MOELLER (Producer Member), Secretary

ALFRED R. WITTIG (Public Member), Treasurer

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FOR CALENDAR YEAR 1989

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REGINALD A. STONE (Producer Member), Vice Chairman

GERALD G. BLACK (Producer Member), Secretary

ALFRED R. WITTIG (Public Member), Treasurer

ROBERT T. BALCH (Producer Member) *

DONALD F. CLARK (Public Member)

EDWARD R. HECK (Producer Member)

BURTON E. JONES (Public Member)

NELS PALM (Producer Member) **

THOMAS E. SCHOLLENBERGER (Producer Member)

STAFF

Robert G. Berlien, Assistant Secretary-Assistant Treasurer
Ralph B. Helm, Attorney
Thomas M. Stetson, Engineer

* DECEASED APRIL 25, 1989

** Appointed August 24, 1989, for the balance of the calendar year term, to replace deceased member, Robert T. Balch.

APPENDIX E

MAIN SAN GABRIEL BASIN WATERMASTER RULES AND REGULATIONS

MainSanGabrielBasin
WATERMASTER

Rules and Regulations

Upper San Gabriel Valley Municipal Water District v. City of Alhambra, et al.
Case No. 924128 -- Superior Court of Los Angeles County

As amended December 7, 2005 and June 6, 2007
Resolutions 12-05-201 and 6-07-213

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RULES AND REGULATIONS OF
MAIN SAN GABRIEL BASIN WATERMASTER

(As Revised, Amended, and Readopted by Resolution No.12-05-201, adopted December 7, 2005, and Resolution No. 6-07-213, adopted June 6, 2007.)

The definitions set forth in the Judgment in Los Angeles County Superior Court Civil Action No. 924128, entitled, "Upper San Gabriel Valley Municipal Water District v. City Alhambra. et al," as amended (Judgment herein), as well as additional definitions relating specifically to Section 28 of these Rules and Regulations, are used herein with the same meanings and are listed in Appendix "A" hereof.

1. Offices and Records. Watermaster's records shall be maintained at its offices, currently located at:

725 North Azusa Avenue
Azusa, California 91702
Telephone (626) 815-1300
Fax (626) 815-1303

Said records shall be available for inspection by any Party during regular business hours. Copies of said records may be had upon payment of the costs of the duplication thereof and of any preparation costs pertaining thereto.

2. Watermaster Meetings and Holidays. Regular meetings of Watermaster shall be held at 3:00 p.m. on the first Wednesday of each and every month in the conference room of the City of Azusa Light and Water Administration Facility, 729 North Azusa Avenue, Azusa, California 91072, or at such time and place as otherwise determined by Watermaster.

(a) Holidays. The following holidays shall be observed by Watermaster:

- January 1 (New Year's Day);

- The third Monday in January (Martin Luther King's Birthday);

- The third Monday in February (Presidents' Day);

- The last Monday in May (Memorial Day);

- July 4 (Independence Day);

- The first Monday in September (Labor Day);

- The second Monday in October (Columbus Day);

- November 11 (Veterans' Day);

-The fourth Thursday and the following Friday in November (Thanksgiving);

- December 25 (Christmas Day);

- Each employee's individual birthday, to be taken as a holiday during the month of such birthday as approved by the Executive Officer; and one floating holiday each year, to be designated by the Executive Officer.

(1) If January 1, July 4, November 11, or December 25 falls on a Sunday, the Monday following shall be that holiday and if any of said dates fall on a Saturday, the preceding Friday shall be that holiday.

(2) When any regular meeting of Watermaster shall fall on a hereinabove designated Watermaster holiday (excepting employees' birthdays and said floating holiday), said regular meeting shall be held on the next succeeding regular business day at the same time and at the same place as the said regularly scheduled meeting, unless otherwise determined by Watermaster.

(b) Meeting Changes. Any changes in the time or place of said regular meeting shall be in compliance with the Judgment.

(c) Special Meetings. Special meetings of Watermaster may be called at any time by the Chairman or Vice-Chairman or by any three (3) members of Watermaster, by written notice in compliance with the Judgment. The calling notice shall specify the time and place of the special meeting and the business to be transacted. No other business shall be considered at such meetings.

(d) Adjournment. Any meeting of Watermaster may be adjourned to a time and place specified in the Order of Adjournment. Less than a quorum of Watermaster, Watermaster's Secretary, or the Executive Officer may so adjourn from time to time. A copy of the Order or Notice of Adjournment shall be conspicuously posted on or near the door of the place where the meeting was held or to be held, within twenty-four (24) hours after the adoption of the Order of Adjournment.

3. Quorum of Watermaster, Necessary Votes for Action and Roll Call of Votes. Five (5) members of Watermaster shall constitute a quorum for the transaction of its affairs. Action by the affirmative vote of five (5) members shall constitute action by the Watermaster, except that the affirmative vote of six (6) members shall be required: (a) to enter into any Cyclic Storage Agreement; or (b) to approve the purchase, spreading or injection of Supplemental Water for Ground Water recharge.

Any member of Watermaster may request a roll call vote on any question or motion considered and the ayes and noes thereon shall be recorded in the minutes of the meeting.

4. Agenda of Watermaster Meetings. Any person requesting that a matter be considered by Watermaster for action thereon shall request the same in writing

directed to Watermaster's Executive Officer for inclusion on the Agenda of the next scheduled meeting to be held at least ten (10) days after receipt of said request.

5. Conduct of Meetings -- Roberts' Rules of Order. For the conduct of Watermaster meetings, Roberts' Rules of Order shall be followed and, without consent of Watermaster, the priorities of Watermaster business shall be that stated in the Agenda for a particular meeting.

6. Organization of Watermaster. At its first meeting each year, Watermaster shall elect a Chairman and Vice Chairman from its membership. It shall also select a Secretary and a Treasurer and may select such assistants as may be appropriate, any of whom may, but need not be, members of Watermaster.

7. Minutes. Minutes of all Watermaster meetings shall be kept, which shall reflect all actions taken. Draft copies thereof shall be furnished to any Party who files a request therefor in writing with Watermaster. Said draft copies of minutes shall constitute notice of any Watermaster action therein reported and failure of a Party herein to request copies thereof shall constitute his waiver of notice.

8. Designee to Receive Future Notices. Each Party who has not heretofore made a designation of the name and address of the person who shall receive service upon and delivery to Parties of various papers shall file with the Court, with proof of service of a copy thereof upon Watermaster, a written designation of the person to whom and the address at which all future notices, determinations, requests, demands, objections, reports and other papers and processes to be served upon that Party or delivered to the Party are to be so served or delivered.

(a) Substitute Designee. A later substitute designation filed and served in the same manner by any Party shall be effective from the date of filing as to any future notices, determinations, requests, demands, objections, reports and other papers and processes to be served upon or delivered to that Party.

(b) Service upon Designee. Delivery to or service upon any Party by Watermaster, by any other Party, or by the Court, of any item required to be served upon or delivered to a Party under or pursuant to the Judgment herein may be by deposit in the mail, first class, postage prepaid, addressed to the latest Designee of the Party to be served and at the address of said latest designation filed by that Party.

(c) List of Designees. Watermaster shall maintain a current list of Party Designees to receive notices under the Judgment.

9. Election of Producer Representatives.

(a) Notice of Nomination Election. Watermaster shall annually give thirty (30) days notice to all Parties that an election shall be held at Watermaster's regularly scheduled meeting in November of each year, for the purpose of nominating Producer representatives to Watermaster.

(b) Voting. Nominations of six (6) Producer representatives shall be by cumulative voting in person or by proxy, with each Producer entitled to one (1) vote for each one hundred (100) acre-feet, or portion thereof, owned by him, of Base Annual Diversion Right, Prescriptive Pumping Right or Integrated Production Right, as defined in the Judgment. When the names placed in nomination exceed the number of representatives to be elected, votes shall be cast by ballot using official ballot forms provided by Watermaster. Each ballot form must list the Producer and Designee or proxy holder casting the vote, the Producer's voting entitlement, the names of the nominees for whom the votes have been cast, and the number of votes cast for each nominee.

(c) Conduct of Elections. Prior to the nomination of Producer representatives, the Chairman shall appoint tellers to conduct the election. Such tellers may include any member of Watermaster staff to monitor the canvassing

and counting of votes. The tellers shall distribute the ballots, and, at the conclusion of the balloting, collect the ballots, retire to tabulate the votes, and promptly report the results of the election to the Parties present at the election.

(1) In the event there is a challenge to the declared election results, the Chairman shall appoint three (3) Producer Parties as election inspectors who shall recount the election ballots and immediately certify the results of such election to Watermaster and others present at the election.

(2) All ballots shall be considered confidential, and no ballot or information thereon shall be disclosed except to the appointed tellers and election inspectors, without the express permission of the Producer casting the ballot.

10. Vacancy on Watermaster and Replacement. In the event of a vacancy on Watermaster, a successor shall be nominated at a special meeting of Watermaster and Producers to be called by Watermaster within ninety (90) days in the case of a Producer representative or by the action of the appropriate District Board of Directors in the case of a Public Representative. Subject to approval and appointment by the Court, such successor Watermaster shall fill the unexpired term of the Watermaster member replaced.

11. Watermaster Action Subject to Court Review. Any action, decision, rule or procedure of Watermaster shall be subject to review by the Court on its own motion or on timely petition or motion for an Order to Show Cause by any Party, as follows:

(a) Effective Date of Watermaster Action. Any order, decision or action of Watermaster shall be deemed to have occurred on the date that written notice thereof is mailed. Mailing of draft copies of Watermaster minutes which contain such order, decision, action, or contemplated action, to the Parties

requesting the same shall constitute such notice to all Parties, as of the date of such mailing.

(b) Notice of Motion. Any Party may, by a regularly noticed motion, petition the Court for a review of any Watermaster action or decision. Notice of such motion shall be mailed to Watermaster and to the Designees of all Parties. Unless ordered by the Court, such petition shall not operate to stay the effect of such Watermaster action.

(c) Time for Motion. Within thirty (30) days of mailing of Notice of Watermaster Determination of Operating Safe Yield together with a statement of each Producer's entitlement thereunder, any affected Party may, by a regularly noticed motion, Petition the Court for an Order to Show Cause for review of said Watermaster findings, determination or entitlement and thereupon the Court shall hear Objections thereto and settle such dispute.

Notice of motion to review any other Watermaster action or decision shall be served and filed within ninety (90) days after such Watermaster action or decision.

(d) *De Novo* Nature of Proceedings. Upon filing of such motion for hearing, the Court shall notify the Parties of the date for taking evidence and argument, and shall review *de novo* the question at issue on the date designated. The Watermaster decision or action shall have no evidentiary weight in such proceedings.

(e) Decision. The decision of the Court in such proceedings shall be an appealable Supplemental Order in this case. When the same is final, it shall be binding upon the Watermaster and the Parties.

12. Water Measuring Devices and Meter Test Program. Parties producing in excess of five (5) acre-feet per year shall, pursuant to these uniform rules, install and

maintain in good operating condition, at the cost of each such Party, such necessary water measuring devices or meters as may be appropriate. Any such measuring device is subject to such inspection and testing as Watermaster may, from time to time, deem necessary. Upon testing, the meters shall be sealed by Watermaster and remain so sealed. Watermaster will conduct a formal meter-testing program to help the Parties accurately report their Production. Watermaster intends to test every meter under its jurisdiction at least once every two (2) years.

(a) Tests of Meters Which Supply Watermaster. At least once every two (2) years, Watermaster shall request certified meter tests of all meters of Responsible Agencies through which Supplemental Water is furnished to Watermaster and of the meters which measure all Cyclic Storage deliveries authorized by Watermaster.

(b) Wells. Water wells shall be equipped with a positive displacement, velocity impeller, venturi, orifice-type or electromagnetic flow meter with a totalizer. The totalizer on positive displacement, velocity impeller, venturi and orifice-type meters shall be correctable only by changing mechanical gear equipment. Producers using electromagnetic flow meters shall ensure that electronic access to meter data is user-defined and password-protected to prevent unauthorized resetting of the totalizer. Additionally, all wells equipped with electromagnetic flow meters shall also have a run-hour meter installed to provide verification of production in the event the totalizer is inappropriately or accidentally reset or its accuracy is otherwise disputed. The meter shall be accessible and installed according to good design practices. Watermaster personnel shall assist any Party having any question as to installation requirements.

(c) Calibrated Test Equipment. Watermaster or its approved meter tester will maintain a complete line of carefully calibrated test equipment. This equipment is the standard with which all water meters must be compared. The tolerance for each meter is plus (+) or minus (-) five percent (5%) of the standard. Watermaster may require any Producer with multiple wells and meters to maintain an aggregate accuracy of plus (+) or minus (-) two percent (2%).

(d) Repair or Replacement of Inaccurate Meters. Defective or inaccurate meters must be repaired within thirty (30) days of receipt of notice thereof from Watermaster.

(e) Surface Diversions. Surface Water Diversions shall be measured with a weir and recorder or meter capable of accurately measuring and recording such Diversions.

(f) Interim Meter Tests. Should a Producer discover that the meter which measures the water Production from his well is measuring inaccurately, he shall first notify Watermaster thereof, have the meter retested and, if measuring inaccurately, then have the same repaired at the earliest practical and reasonable time. Upon the completion of such repair, such Producer shall immediately have such meter tested and sealed by Watermaster and it shall remain so sealed. Such testing and sealing will be accomplished by Watermaster upon request therefor by said Producer or said repaired meter may be tested and sealed by any meter tester authorized by Watermaster, as provided in Subsection (g) of this Section 12. Results of such meter tests shall be furnished to Watermaster within ten (10) days of testing, on forms provided by Watermaster.

(g) Watermaster Approved Meter Testers. Persons, firms or corporations in the business of repairing and/or testing water measuring devices

may be approved by Watermaster to test and seal meters on behalf of Watermaster by submitting their qualifications therefor to Watermaster and obtaining Watermaster's approval to perform meter tests and seal such meters as agents of Watermaster. The name, address and telephone number of all such Watermaster approved meter testers shall be maintained at and be available from the office of Watermaster.

(h) Meter Seal by Watermaster and Notification of Meter Maintenance. At the completion of all meter tests Watermaster's seal shall be placed on the meter, if the meter test demonstrates that the meter is within the accuracy standard of five percent (5%).

Such sealing then requires that Watermaster be notified in writing within seven (7) days if Watermaster's seal has been broken or if any of the following events occur: (a) the meter is to be repaired or recalibrated; (b) there is any other interference affecting the meter or Watermaster's seal; (c) the meter is to be relocated even if Watermaster's seal is still intact; or (d) a new meter is to be installed.

(i) Estimation of Production Due to Meter Maintenance. When a Producer must estimate Production due to meter maintenance, he shall consult with Watermaster or its engineer for approval of the method of estimation. A copy of the estimate calculations shall be supplied to Watermaster with the corresponding Quarterly Production Report.

13. Reports of Producers to Watermaster. Each Producer with an adjudicated right in excess of five (5) acre-feet per year and each Producer with an Overlying Right in any amount shall file with Watermaster a quarterly report of water Produced from the Basin or Relevant Watershed, on forms provided by Watermaster. Producers using electromagnetic flow meters shall report run hours in addition to

totalizer readings. Quarterly Production Reports shall be so filed no later than the last day of the month next succeeding the end of the relevant quarter, i.e. April 30, July 31, October 31 and January 31.

(a) Adjudicated Right in Excess of Five (5) Acre-Feet Not to be Reduced to Minimal Producer by Transfer. Any portion of: (1) the Base Annual Diversion Right of a Diverter; (2) the Prescriptive Pumping Right of a Pumper; or (3) the Diversion Component and Prescriptive Pumping Component of an Integrated Producer, adjudicated in any amount in excess of five (5) acre-feet per year [at the time that Judgment herein was entered, January 4, 1973], that is or may be reduced to five (5) acre-feet or less by assignment or transfer of rights, as permitted by Section 55 of the Judgment, shall not enjoy the status of a Minimal Producer as defined in Section 10 (o) of the Judgment.

(b) Notice to Watermaster of Transfers of Water Rights. Within fifteen (15) days thereof all Parties shall notify Watermaster of any transfer, assignment, license or lease of any water right, or portion thereof, not shown in the Judgment or previously filed with Watermaster and such transferee must be or become a Party to the action (as provided in Section 57 of the Judgment). All Parties are required to notify Watermaster of any subsequent assignment, transfer, license or lease of water rights granted or acquired by them and they shall file a duly acknowledged copy of the document(s) therefor with Watermaster, within fifteen (15) days after execution and acknowledgement of such document(s).

For such assignment, transfer, license or lease of water rights to be effective for, or be deemed by Watermaster to apply to, Production in a particular Fiscal Year (July 1 - June 30), the document(s) therefor shall be executed and acknowledged prior to the end of said Fiscal Year (June 30) and

copies thereof showing such acknowledgement must be received by Watermaster prior to July 15, following the end of said particular Fiscal Year. The transferee must be, or petition to become, a Party to the action within ninety (90) days following such assignment, transfer, license or lease of water rights.

When the term of a temporary assignment, transfer, license or lease of water rights extends beyond the end of the current Fiscal Year, it shall be the obligation of the transferee thereof to annually, during the month of July of each Fiscal Year during said term, notify Watermaster of said transferee's intention to exercise said water right during the then current applicable Fiscal Year.

(c) Conveyance of Water Right with Conveyance of Property. Parties are advised that when a water right owner conveys the property where a water right was developed, the said water right shall not be conveyed with such property unless and until the appropriate notice procedures established by Watermaster have been complied with. When it is intended to transfer or acquire adjudicated water rights in the Basin or Relevant Watershed, the Parties thereto are advised to use the appropriate forms contained in exhibits to these Rules and Regulations and to notify Watermaster of such transfers by furnishing a copy of such transfer documents(s) within fifteen (15) days of execution and acknowledgement thereof.

(d) Conveyance of Water Right without Conveyance of Property. Parties are also advised that the owner of an adjudicated water right herein (except an Overlying Right) may transfer the same (temporarily or permanently) without conveyance of the property where the water right was developed.

(e) Transfer of Overlying Right. The transfer and use of Overlying Rights shall be limited (as provided in Section 21 of the Judgment) as

exercisable only on specifically defined Overlying Lands and they cannot be separately conveyed or transferred apart therefrom.

(f) Intervention Stipulation Required. No conveyance of water rights to a person who is not a Party to the subject action shall be recognized by Watermaster unless the transferee thereof files with Watermaster a Stipulation in Intervention to the subject action (Exhibit "E") agreeing to be bound by the Judgment herein, and until the Court approves said Stipulation and Intervention.

(g) Notice Required. Any transfer of water rights shall be effective only when the requirements of this Section 13 are met and when the Parties file with Watermaster, within fifteen (15) days of such transfer, a copy of the transfer document(s) which:

(1) Identifies both the transferee(s) and the transferor(s);

(2) Accurately recites the total quantity (in acre-feet) of water rights transferred;

(3) Is executed by both the transferee(s) and the transferor(s);

(4) Is acknowledged by both transferee(s) and transferor(s) in a form sufficient for recordation;

(5) Lists the Designee(s) of both the transferor(s) and transferee(s) to receive future service and notice of papers and process; and

(6) Is accompanied by a map of the service area where the water was used by transferor(s) (assignors) and a map of the service area where the water is intended to be used by the transferee(s) (assignees), if requested by Watermaster.

(h) Approved Forms of Transfer Documents and Other Forms. Approved forms of such transfer documents and other approved Watermaster

forms are attached hereto, marked and identified as follows:

Exhibit "A"	Permanent Transfer of Water Rights--Prescriptive Pumping Right
Exhibit "B"	Permanent Transfer of Water Rights--Base Annual Diversion Right
Exhibit "C"	Permanent Transfer of Water Rights--Integrated Production Right
Exhibit "D"	Temporary Assignment or Lease of Water Right
Exhibit "E"	Stipulation Re Intervention After Judgment
Exhibit "F"	Designee to Receive Future Notices for and on Behalf of Defendant(s)
Exhibit "G"	Notice of Transfer of Overlying Rights With Property to Which They are Appurtenant.
Exhibit "H"	Application To Drill Water Well
Exhibit "I"	Application To Modify Existing Water Well
Exhibit "J"	Application To Destroy Water Well
Exhibit "K"	Application For Water Treatment Facility

(i) Presumption as to Unexercised Rights. Unless otherwise noted on the above mentioned transfer documents(s), it will be presumed by Watermaster that the permanent transfer of water rights will include all unexercised rights thereunder, including authorized carry-over of unused rights.

14. Operating Safe Yield. Watermaster shall annually determine the Operating Safe Yield applicable to the succeeding Fiscal Year and estimate the same for the next succeeding four (4) Fiscal Years. Said determination shall be made at the close of the hearing thereon, which shall be commenced at Watermaster's regular meeting in May of each year. Watermaster shall notify each Pumper and Integrated Producer of his

share thereof, stated in acre-feet per Fiscal Year. Thereafter, no Party may produce in any Fiscal Year any Consumptive Use Portion of any Overlying Right, or an amount in excess of the sum of his Diversion Right, if any, plus his Pumper's Share of such Operating Safe Yield, or his Integrated Production Right, or the terms of any Cyclic Storage Agreement, without being subject to Assessment for the purpose of purchasing Replacement Water. The rate of such Assessment shall be established at the same meeting at which the Operating Safe Yield is established, and it may be estimated for the years for which Operating Safe Yield is estimated. In establishing the Operating Safe Yield, the Watermaster shall follow all physical, economic, and other relevant parameters provided in the Judgment herein. Said determination shall be made in accordance with the following:

(a) Preliminary Determination. At Watermaster's regular meeting in April of each year, Watermaster shall make a Preliminary Determination of the Operating Safe Yield of the Basin for each of the succeeding five (5) Fiscal Years. Said determination shall be made in the form of a report containing a summary statement of the considerations, calculations and factors utilized by Watermaster in arriving at the said Operating Safe Yield.

(b) Notice of Hearing. A copy of said Preliminary Determination Report shall be mailed to all Parties at least ten (10) days prior to a hearing thereon to be commenced at Watermaster's regular meeting in May of each year, at which time objections or suggested corrections or modifications of said determination shall be considered.

(c) Watermaster Final Determination and Review Thereof. Within thirty (30) days after completion of said hearing, Watermaster shall mail to each Pumper, Diverter, Overlying User and Integrated Producer a Final Report and Determination of said Operating Safe Yield for each such Fiscal Year, together

with a statement of the Producer's entitlement in each such Fiscal Year stated in acre-feet. Any affected Party, within thirty (30) days of mailing of notice of said Watermaster determination, may petition the Court for an Order to Show Cause for Review of said determination in accordance with Section 11 hereof.

15. Carry-over Rights.

(a) Pumping. Any Pumper's Share of Operating Safe Yield, and the Production right of any Integrated Producer which is not Produced in a given year may be carried over and accumulated for one (1) year.

(b) Diversions. Diverters shall be entitled to Divert for direct use up to two hundred percent (200%) of their Base Annual Diversion Right in any Fiscal Year, provided that the aggregate quantities of water Diverted in any consecutive ten (10) Fiscal Year period shall not exceed ten (10) times such Diverter's Base Annual Diversion Right.

(c) Overlying Rights. By definition, there is no carry-over of Overlying Rights.

(d) Presumption as to Carry-over Rights. The first water Produced in the succeeding Fiscal Year shall be deemed Produced pursuant to such Producer's Carry-over Rights.

16. Special Hearings. Watermaster shall conduct such special hearings as deemed appropriate upon thirty (30) days notice to the Parties hereto.

17. Policy Decisions. No policy decision shall be made by Watermaster until its next regular meeting after the question involved has been raised for discussion at a Watermaster meeting and noted in the draft of minutes thereof.

18. Assessments. Watermaster may levy and collect Assessments from the Producer Parties based upon Production during the preceding Fiscal Year. Said Assessments may be for one or more of the following purposes:

(a) Administration Costs. At its regular May meeting Watermaster shall adopt a proposed budget for the succeeding Fiscal Year and within fifteen (15) days shall mail a copy thereof to each Party, together with a statement of the level of Administration Assessment levied by Watermaster and which will be collected for purposes of raising funds for said budget. Said Assessments shall be uniformly applicable to each acre-foot of Production.

(b) Replacement Water Costs. Replacement Water Assessments shall be collected from each Producer on account of such Party's Production in excess of its Diversion Rights, Pumper's Share or Integrated Production Right, and on account of the consumptive use portion of Overlying Rights, computed at the applicable rates established by Watermaster, consistent with Watermaster's Operating Criteria (Exhibit "H" to the Judgment).

(c) Make-up Obligation. An Assessment shall be levied and collected equally on account of each acre-foot of Production, which does not bear a Replacement Water Assessment hereunder, to pay all necessary costs of administration and satisfaction of the Make-up Obligation. Such Assessment shall not be applicable to water Production of an Overlying Right.

(d) In-Lieu Water Cost. An Assessment may be levied against all Pumping to pay reimbursement for In-Lieu Water Cost except that such Assessments shall not be applicable to the non-consumptive use portion of Overlying Rights.

(e) Waivers Possible for Water Quality Improvement or Protection. In accordance with Section 45 (e) of the Judgment, a Producer of water from the Basin for the purpose of testing, protecting, or improving water quality, may apply in writing by verified petition or application (hereinafter "Application") to Watermaster, for approval of such water Production free of all or any part of

Watermaster Assessments thereon, and for waiver of one or more of the provisions of Sections 25, 26, and 57 of said Judgment, where appropriate, upon terms and conditions to be established by Watermaster after a noticed hearing on such Application.

A waiver of Assessment shall not be granted for the purpose of removal of contamination or improvement of the quality of Basin water which has, or could have, resulted from the activity of the Applicant for such waiver.

In the event cleanup or Treatment Facilities are installed in the Basin by or for the benefit of a Producer, and the Basin water receiving treatment from said Treatment Facilities is subsequently delivered by or used for beneficial purposes of such Producer, the Production of such water shall not be entitled to waiver or modification of Watermaster Assessments thereon.

Notwithstanding the above, if Basin water is treated and immediately percolated or reintroduced to the Basin by way of spreading, injection, or otherwise, for purposes of this Section 18 (e), its Production may, upon Watermaster's approval of an Application to waive or modify its Assessments on the same, be entitled thereto. In any event, such water shall only be percolated or reintroduced to the Basin with the consent of Watermaster and said water shall be of a quality acceptable to Watermaster.

Although all Production from the Basin must be reported to Watermaster on a timely basis in accordance with these Rules and Regulations, Production which is granted a waiver of Assessment hereunder may, by reason of certain circumstances as specifically determined by Watermaster, be deemed an unused right and entitled to carry-over, in accordance with Section 49 of the Judgment.

(f) Application for Waiver of Assessment. An Application for Waiver of Assessment, as above set forth, shall contain all relevant information

relied upon by Applicant which he believes justifies the granting of said Application. All such Applications shall explain the special needs and circumstances for such Production and specify the approximate amounts to be Produced, the time frame of such Production, the specific location(s) of the points(s) of extraction(s), and the place of intended disposal of such water, as well as any supplemental or additional information requested by Watermaster. All such extractions shall be metered and reported quarterly to Watermaster, along with all other Basin Production, in accordance with these Rules and Regulations.

Should an Application contain incomplete information or should Watermaster desire additional, other, or further information in relation thereto, the same shall also be furnished and verified by Applicant.

(g) Hearing and Effective Date. Within thirty (30) days of the filing of any such Watermaster accepted Application, Watermaster shall give at least thirty (30) days notice to the Designees of all Parties that it will hold a hearing on said Application. Watermaster may, after the conclusion of said hearing, under then existing conditions, waive all or any part of its Assessments on such Production, such waiver shall not be effective prior to the date of the filing of said accepted Application, and may also waive the provisions of Sections 25, 26, and 57 of the Judgment herein.

The effective date for the granting of an Application to waive or modify Watermaster Assessments shall be no later than ten (10) days after approval thereof by Watermaster and it shall continue for the period of time specified therein, unless sooner terminated or extended by Watermaster. Nothing herein is intended to allow an increase in any Producer's annual entitlement under the Judgment.

19. Levy, Notice and Adjustment of Assessments. At its regular May meeting Watermaster shall also fix the rate(s) of or levy applicable Administration Assessments, Replacement Water Assessments, Make-up Obligation Assessments, and In-Lieu Water Cost Assessments, if any. Watermaster shall give written notice of all applicable Assessments to each Party on or before August 15 of each year.

(a) Payment. All Watermaster Assessments shall be due and payable on or before September 20, following such Assessment levy or Assessment rate fixing, subject to the rights reserved in Section 37 of the Judgment, and such Assessment shall be paid or become delinquent after September 20.

(b) Delinquency. Any Assessment payment which becomes delinquent shall bear interest at the annual prime interest rate in effect on the first business day of August of each year, plus one percent (1 %). Said prime interest rates shall be that fixed by the Bank of America NT&SA for its preferred borrowing on said date. Said prime interest rate plus one percent (1%) shall be applicable to any said delinquent Assessment payment from the due date thereof until paid, provided, however, in no event shall any said delinquent Assessment bear interest at a rate of less than ten percent (10%) per annum. Such delinquent Assessment and said interest thereon may be collected in a Show Cause proceeding in the subject action or in any other legal proceeding instituted by Watermaster, and in such proceeding the Court may allow Watermaster its reasonable costs of collection, including attorney's fees.

(c) Adjustments. By reason of Watermaster's inability to control the direct costs and other charges incurred for Supplemental Water obtained from Responsible Agencies, it may be necessary from time to time for Watermaster to adjust the foregoing Assessments. Such Assessments may only be adjusted after

giving at least 15 days Notice to all Parties of the meeting at which such adjustments will be considered by Watermaster.

20. Responsibility for Watermaster Assessments. Parties Producing water from the Relevant Watershed shall be responsible for Watermaster Assessments levied upon all Production.

21. Over and/or Under Reporting.

(a) Over Reporting. Watermaster shall make refunds, in whole or in part, of Assessments theretofore paid, to any Producer who has erroneously overstated his Production in any sworn statement for a quarterly period required hereunder and who has overpaid any Assessment for that quarter, but only upon compliance by the Producer with the procedure hereinafter set forth and within the time hereinafter provided.

Any such Producer, within one (1) year of the last day for filing of the said sworn statement for the quarterly period in question, may file a verified application with Watermaster requesting a refund of that portion of any Assessment claimed to have been paid by reason of that Producer's erroneous overstatement of Production. If incomplete information is contained in said application, or if Watermaster desires other, further, or additional information than that set forth in said application, the same shall also be furnished by a verified statement mailed to Watermaster on behalf of Applicant within thirty (30) days of the mailing of the written notice or request therefor from Watermaster to the Producer's Designee, at his address as shown by Watermaster records, or the application shall be deemed abandoned. Such request by Watermaster shall not cause any application otherwise timely filed to be considered as not filed within said one (1) year period. The Watermaster may pay any refund claimed without a hearing thereon, but no application shall be

denied, in whole or in part, without a hearing being accorded to the Applicant, in which said hearing the Applicant shall have the burden of proof. Any determination by Watermaster on any matter in connection with said application shall be final and conclusive upon the said Producer.

Any refund authorized to be paid under the provisions of this Section may be paid only out of moneys realized from the appropriate Watermaster Assessment levied or thereafter raised. Under election of the Producer, any refund determined by Watermaster to be owing may be credited to the Producer against any subsequent Assessments which might become due and owing from him to Watermaster. No refunds shall be made except as authorized by this section and this section may not apply to over reporting unless there has been compliance with the provisions of Section 12 hereof.

(b) Under Reporting. If Watermaster shall have probable cause to believe that the Production of water from any water Producing facility is in excess of that disclosed by the sworn statements covering such water Producing facility, Watermaster may cause an investigation and report to be made concerning the same. Watermaster may fix the amount of water Production from such facility at an amount not to exceed the maximum Production capacity thereof, provided, however, where a Watermaster tested water measuring device is permanently attached to such facility; the record of Production as so disclosed by such measuring device shall be presumed to be accurate and the burden of proof shall be upon Watermaster to establish the contrary.

A determination by Watermaster that a Producer has under reported Production shall require Watermaster to give written notice thereof to such Producer by mailing such notice to his Designee, at the address shown by Watermaster records. A determination of under reporting made by Watermaster

shall be conclusive on any Producer who has Produced water from the facility in question and the Watermaster Assessments based thereon, together with interest as set forth in Section 19 (b) hereof, shall be payable forthwith, unless such Producer shall file with Watermaster within ten (10) days after the mailing of such notice, a written protest setting forth the ground or grounds for protesting the amount of Production so fixed or the Assessments and interest thereon.

Upon the filing of such protest, Watermaster shall hold a hearing at which time the total amount of water Production and the Assessments and interest thereon shall be determined, which action shall be conclusive if based upon substantial evidence. A notice of such hearing shall be mailed to protestant at least ten (10) days before the date fixed for the hearing. Notice of the determination by the Watermaster at the close of such hearing shall be mailed to the protestant. The Producer shall have twenty (20) days from the date of mailing of such notice to pay the Assessments fixed by Watermaster and interest thereon, as fixed herein, before the same becomes delinquent.

(c) Delinquent Assessments; Interest; Costs; and Attorney's Fees. Watermaster may bring suit in the Court having jurisdiction against any Producer of water from the Basin or Relevant Watershed for the collection of any delinquent Assessment and interest thereon. The Court having jurisdiction of the suit may, in addition to any delinquent Assessment, award interest and reasonable costs, including attorney's fees.

22. Information Concerning Offers to Purchase, Sell or Lease Water Rights. Watermaster shall maintain a record of any offer to purchase, sell or lease water rights reported to Watermaster, for the purpose of encouraging the orderly transfer of such rights by acting as a clearing house for such information. Any person desiring to purchase, sell, or lease such rights may examine such Watermaster records.

23. Watermaster Control of Spreading and Ground Water Storage. Except for the exercise of non-consumptive uses, no Party shall spread water within the Basin or Relevant Watershed for subsequent recovery or Watermaster credit without prior Watermaster written permission to do so because Watermaster has sole custody and control of all Ground Water storage rights in the Basin.

(a) Replacement Water and Cyclic Storage Deliveries. Deliveries of water for replenishment or cyclic storage shall be made either pursuant to Watermaster's duly authorized order for Replacement Water or in accordance with terms and conditions of a valid Cyclic Storage Agreement with Watermaster. All such water deliveries shall be subject to the conditions and priorities set forth in Section 26 herein.

(b) Supplemental Water Quality. In an effort to prevent degradation of Basin groundwater quality, and in accordance with Section 40 of the Judgment, Watermaster may establish criteria for the quality of Supplemental Water delivered for Basin replenishment or Cyclic Storage. Such criteria shall consider applicable Basin Plan objectives as set forth by the California Regional Water Quality Control Board - Los Angeles Region, but shall also balance the need to maintain adequate water supplies with the need to preserve Basin water quality.

Watermaster may review and update its Criteria for Supplemental Water Quality as needed to address changes in regulations or hydrologic conditions. Watermaster shall provide the Responsible Agencies with at least 30 days notice of its intent to adopt or modify such criteria, along with the proposed draft or changes, and shall consider comments from those agencies prior to adoption. Watermaster shall also provide the Responsible Agencies with the final, adopted Criteria for Supplemental Water Quality.

24. Watermaster Annual Report. Watermaster shall annually file with the Court and mail to the Parties a report of all Watermaster activities during the preceding Fiscal Year, including an audited statement of all accounts and financial activities of Watermaster, summaries of Diversions and Pumping, and all other pertinent information. To the extent practical, said report shall be mailed to all Parties and filed with the Court on or before November 1 of each Year.

25. Watermaster Stipulation Re Intervention After Judgment. Attached hereto and marked "Exhibit E" is a form of Stipulation for Intervention After Judgment which Watermaster will execute, file with the Court if accompanied by the necessary filing fee, obtain a Court hearing date thereon, give Notice thereof and attempt to obtain an approving Court Order thereon.

26. Uniform Rules and Conditions of Cyclic Storage Agreements.

(a) Application for Cyclic Storage Agreements. Any person or entity, private or public, desiring to spread and store Supplemental Water within the Basin for subsequent recovery and use or for Watermaster credit shall make application to Watermaster for a Cyclic Storage Agreement pursuant to these Uniform Rules and Conditions. Watermaster shall have first call on Supplemental Water for Replacement Water, Make-up Water and for the "Alhambra Exchange" before such water is made available for Cyclic Storage Agreements.

(b) Purpose of Cyclic Storage Agreements. All Cyclic Storage Agreements shall be for the utilization of Ground Water storage capacity of the Basin and for cyclic or regulatory storage of Supplemental Water.

(c) Available Storage Capacity. In considering the available Ground Water storage capacity of the Basin for such Agreements, Watermaster shall

take into account the operation of the Basin under the Physical Solution provisions of the Judgment.

(d) Provisions of Cyclic Storage Agreements. Any such Agreement shall include provisions for:

(1) Watermaster control of all spreading (or injection) and extraction scheduling and procedures for such stored waters:

a) The time, place, and amount of said spreading shall be approved in advance by Watermaster provided, however, that when the water level of the Baldwin Park Key Well is at or above elevation two-hundred fifty (250) feet, spreading activities shall be restricted to the easterly portion of the Basin at water spreading facilities designated in advance by Watermaster, unless otherwise approved by the Court;

(2) Calculations by Watermaster of any special costs, damages or burdens resulting from such operation;

(3) Priorities for Cyclic Storage Agreements in the following order:

a) Responsible Agencies on the basis of their relative requirements for Replacement Water within their respective corporate boundaries,

b) Other Parties on the basis of priority of application to Watermaster for such Agreements, and

c) Non-parties;

(4) Determinations by Watermaster of, and accounting for, all losses in stored water, assuming that such stored water floats on top of the Ground Water supplies, and accounting for all losses of water which

otherwise would have replenished the Basin. Such losses of stored water shall be assigned by Watermaster as follows:

a) First losses by non-parties in the reverse priority of the earliest original dates of their respective Cyclic Storage Agreements, to the whole of such non-parties' stored water,

b) The next losses by Parties who are not Responsible Agencies in reverse priority of the earliest original dates of their respective Cyclic Storage Agreements, to the whole of their stored water, and

c) The last losses by Responsible Agencies to be shared on the basis of water actually in storage in the Basin at the time of the loss of such stored water;

(5) The priorities for spreading of Supplemental Water are hereby established as follows, in the order of their priority:

First: Supplemental .Water ordered by Watermaster from Responsible Agencies for direct delivery to the Basin as Replacement Water,

Second: Supplemental Water for delivery to the Basin for storage under Cyclic Storage Agreements between Watermaster and Responsible Agencies. In the event that more than one Responsible Agency wishes to deliver water to Cyclic Storage simultaneously and there is inadequate spreading capacity available, deliveries by each Responsible Agency so desiring to deliver Supplemental Water shall be scheduled so that the total quantity of water in Cyclic Storage of those Agencies can be

increased proportionately in percent of their maximum allowed Cyclic Storage,

Third: Supplemental Water for delivery to Individual Cyclic Storage accounts of Parties to the Judgment. In the event that more than one Party wishes to deliver water to such Cyclic Storage accounts simultaneously and there is inadequate spreading capacity available, deliveries for each such Party shall be scheduled so that the total quantity of water in such Parties' Individual Cyclic Storage accounts can be increased proportionately in percent of their maximum allowed Cyclic Storage, and

Fourth: Non-Parties as established by Watermaster at the time; and

(6) Payment to Watermaster for the benefit of Parties in said action of all special costs, damages or burdens incurred (without any charge, rent, assessment or expense as to Parties to said action by reason of the adjudicated proprietary character of said storage rights, nor credit for offset for benefits resulting from such storage); provided, no Party shall have any direct interest in or control over such contracts or the operation thereof by reason of the adjudicated right of such Party. Watermaster has sole custody and control of all Ground Water storage rights in the Basin pursuant to the Physical Solution in the Judgment and all said Agreements are subject to review and approval of the Court.

(e) Terms of Cyclic Storage Agreements and Extensions. The term of such Agreements shall not exceed five (5) years but may be extended for additional terms, not to exceed

five (5) years each, provided Watermaster shall report its intention to consider an extension of any such Agreement in minutes of its meeting held prior to its meeting when any such extension request shall be acted upon.

(f) Maximum Storage. Such Agreements shall fix the maximum amount of Supplemental Water to be stored in the Basin at any point in time by a particular storing entity.

(g) Watermaster to be Held Harmless. The storing entity of such Agreement shall save and hold harmless Watermaster, its officers, agents and employees from any and all costs, damages or liability resulting from said Agreement and shall provide Watermaster with the defense or costs of the defense of any action brought against Watermaster, its officers, agents or employees arising or alleged to arise by reason of such Agreement for storage of Supplemental Water in the Basin.

(h) Reports of Stored Water. The storing entity, if not a Producer, shall quarterly report to Watermaster the amount of Supplemental Water which it spreads and withdraws each quarter under such Agreement. Such reports shall be due on the last day of the month next succeeding the end of the relevant quarter, i.e. April 30, July 31, October 31, and January 31. Such reports shall be cumulative and shall indicate the credit balance of the relevant quarter. If the storing entity is a Producer storing water pursuant to an Individual Producer Cyclic Storage Account whereby Watermaster has purchased the stored water on the Producer's behalf and credited the Producer's account, then Watermaster

shall provide the Producer with a quarterly accounting of storage credit in the regular quarterly production report form. The Producer shall be responsible for verifying the credit and notifying Watermaster of any dispute or discrepancy.

(i) Court Approval of Cyclic Storage Agreements. Upon its approval of a Cyclic Storage Agreement, Watermaster shall Petition the Court for approval thereof and said Agreement shall become effective only upon such Court approval.

27. Responsible Agency from Whom Watermaster Shall Purchase Replacement Water.

(a) Responsible Agencies. There are three Responsible Agencies within or partially within the Basin. Two of such Agencies, Upper San Gabriel Valley Municipal Water District (Upper District) and Three Valleys Municipal Water District (Three Valleys District) are member agencies of The Metropolitan Water District of Southern California (Metropolitan) and supply Watermaster with Replacement Water purchased from Metropolitan. The third Responsible Agency is San Gabriel Valley Municipal Water District (San Gabriel District) which has contracted with the State of California and has constructed facilities to deliver water from the State Water Project and, thus, can directly supply Watermaster with Replacement Water.

(b) Water Used Within the Basin. For water used within the Basin, the Responsible Agency within whose boundaries is located the place of use of water Produced from the Basin will determine the Responsible Agency from whom Watermaster shall purchase Replacement Water.

(c) Water Exported from the Basin. Except for water Produced from the Basin and used within the City of Sierra Madre (for which San Gabriel

District shall be the Responsible Agency), the place of such Production of water exported from the Basin shall determine the Responsible Agency from whom Watermaster shall purchase Replacement Water.

(d) Computations of the Amount of Replacement Water to be Purchased from Responsible Agencies. In computing the amount of Replacement Water to be provided by a Responsible Agency, Watermaster shall:

(1) Determine the Replacement Water requirement of each Party to the Judgment and apportion such Replacement Water requirement as required in (b) and (c) above;

(2) Calculate the total Replacement Water requirement for each Responsible Agency as determined in (1) above;

(3) Tabulate Interagency Transfers of water rights as described in (e) (1) below;

(4) Calculate the Net Interagency Transfer adjustment as described in (e) (2) below;

(5) Determine the adjusted Replacement Water requirements, calculated for each Responsible Agency as required in (e) below; and

(6) Determine the effect of deferred Replacement Water requirements as calculated in (h) below.

(e) Net Interagency Transfer Adjustment and Replacement Water Requirement. Replacement Water requirements as heretofore calculated shall be modified by a "Net Interagency Transfer Adjustment." "Interagency Transfer" shall mean the aggregate amount of Production Right resulting from the temporary transfer of all or a portion of a Pumper's Share of Operating Safe Yield, or a Base Annual Diversion Right, or the Diversion Component or

Pumping Component of an Integrated Production Right for use within the boundaries of a Responsible Agency other than the Responsible Agency within which such water rights were developed and adjudicated.

The annual Replacement Water requirement resulting from Net Interagency Transfers for each Responsible Agency shall be calculated as follows:

(1) Net Interagency Transfers shall be calculated for each Responsible Agency as the difference between such rights transferred for use outside or partially outside that Responsible Agency and such rights transferred for use within or partially within that Responsible Agency.

(2) Tabulate the total Interagency Transfers of water rights, calculated for each of the Responsible Agencies in (1) above. The sum of said total Interagency Transfers for each of the three Responsible Agencies is that Responsible Agency's Net Interagency Transfer Adjustment. The total of such adjustments for all Responsible Agencies shall equal zero. The Responsible Agency(s) having a positive amount shall have this Net Interagency Transfer Adjustment added to the Replacement Water requirement computed for it in (d) (2) above. The Responsible Agency(s) having a negative amount shall have this Net Interagency Transfer Adjustment subtracted from the Replacement Water requirement calculated for it in (d) (2) above.

(f) Special Provisions.

(1) The Replacement Water requirement calculated for each of the Responsible Agencies in (e) (2) above cannot exceed the total quantity of Replacement Water obligation calculated for all Responsible Agencies, and/or;

(2) If the Replacement Water requirement calculated in (e) (2) above results in a negative value, that negative value shall be adjusted to zero, as described in (h) below.

(g) Special Provisions Re Alhambra Exchange. An adjustment shall be made to San Gabriel District's calculated Replacement Water requirement, if necessary, to allow Upper District to deliver an amount of Replacement Water to the City of Alhambra equal to the quantity delivered through connection USG-5 for the previous year, the year in which the Replacement Water requirement was incurred.

(h) Adjustments to Calculated Replacement Water Requirements. Adjustments to Replacement Water requirements resulting from the calculations in (f) (2) or (g) above shall be apportioned as follows:

(1) As between Upper District and Three Valleys District, the district with a negative value shall have added to it an amount sufficient to equal zero, that amount shall be subtracted from the Replacement Water requirement of the other Responsible Agency, but it shall not be reduced to less than zero. If a negative balance still exists, then it shall be subtracted from San Gabriel District.

(2) If San Gabriel District's Replacement Water requirement is less than zero, it shall be adjusted to zero by deducting equal amounts of San Gabriel District's adjustment from both Upper District and Three Valleys District.

(3) All adjustments shall be accumulated in a Deferred Replacement Water Requirement Account for each of the Responsible Agencies. In future years when deliveries of Replacement Water may be made by a Responsible Agency, up to the amount, or any portion of the

amount, in the Deferred Replacement Water Requirement Account, such deliveries will be equally subtracted from the Replacement Water requirement of the Responsible Agency(s) from which it was derived in (1) and/or (2) above for that year so long as such deliveries shall not cause total deliveries of all Responsible Agencies to exceed the amounts provided for in paragraph (f) (1) and/or paragraph (f) (2) above. At the time that deliveries are made by a Responsible Agency from its Deferred Replacement Water Requirement Account, Watermaster shall pay to that Responsible Agency its price prevailing at that time for Replacement Water.

(i) Advanced Delivery Account. Whenever the total quantity calculated in (e) (1) above, is less than that delivered to the City of Alhambra through USG-5 for the previous year, an accounting of the difference shall be maintained in an "Advanced Delivery Account" and such difference, or as much as possible thereof, shall be subtracted from the Replacement Water Requirement of Upper District in the next year when an obligation to deliver Replacement Water exists for Upper District.

28. Ground Water Quality Management. The Watermaster, Upper District, San Gabriel District, and San Gabriel Valley Water Association, through a Joint Resolution dated February-March 1989, affirmed their commitment to participate in a coordinated federal, state and local response to contamination of Ground Water supplies of the Basin for both the purpose of preventing additional contamination and the purpose of cleaning up and limiting the spread of existing contamination. The entities adopting that Joint Resolution designated and accepted Watermaster as the entity to coordinate local involvement in the efforts to preserve and restore the quality of Ground Water within the Basin. Watermaster sought and received additional powers from the

Court to regulate extractions of water from the Basin for water quality control purposes, and this Section 28 is to implement the same. These efforts shall be that any New or Increased Extraction to meet water needs from the Basin shall include planned treatment in existing areas of High Level Degradation or Contamination. An important part of exercising these additional powers and coordinating federal, state and local responses to contamination of the Basin's water supplies is the collection and compilation of essential data from Producers and the expeditious distribution of such data to the proper state and federal regulatory agencies involved in water quality matters in the Basin.

(a) Watermaster Approvals. Each Producer shall, after the effective date of this amendment to these Rules and Regulations (June 28, 1991), apply to Watermaster, on forms provided by Watermaster, for a permit to do any of the following:

- Construct any well;
- Deepen any existing well;
- Modify the perforations of the casing of any existing well;
- Notwithstanding natural fluctuations in Basin water levels, physically increase or decrease the Effective Extraction Capacity of any existing well, including that which may occur due to installation or modification of pipelines, booster pumps or other distribution system components, as of said effective date of these Rules and Regulations;
- Abandon any existing well; or
- Construct, relocate or abandon Ground Water Treatment Facilities.

Such application will be acted upon by Watermaster no later than at its first regular meeting following sixty (60) days after receipt of the complete application. If an emergency exists, Watermaster shall expedite its actions to the maximum extent practicable.

(b) Watermaster Directed Change in Water Production.

(1) Based on available data, Watermaster's Five-Year Plan, and/or Ground Water modeling, Watermaster will, for water quality protection

purposes, direct any Producer to increase, decrease or cease Production from existing wells, initiate new well Production or deliver water to or accept water from another water system or direct a Producer to obtain water from another source in-lieu of Pumping from its own wells, or take other appropriate actions in compliance with an approved Watermaster plan by giving such Producer advanced written notice thereof, specifying a time certain for compliance.

(2) The increase in cost to a Producer resulting from a Watermaster directed change in water Production shall not be borne by the Producer, but will be reimbursed to the Producer by Watermaster through In-Lieu Water Assessments levied by Watermaster, unless such funding is made available from other sources such as federal, state or local governmental entities or by those found to be responsible for the contamination in the Basin which caused Watermaster to direct the change in Production by the Producer.

(c) Producer Data, Initial Submittal. After June 28, 1991, Producers shall submit, within sixty (60) days of Watermaster's request, initial data in a form acceptable to Watermaster, to update and ensure the accuracy of the existing Basin database. The data shall include:

(1) Identification and location of all Active, Inactive or Abandoned Wells;

(2) Water quality data concerning organic compounds, nitrates and any other water quality parameters as specified by Watermaster, including all data from other sampling Producers may conduct in addition to governmental requirements;

(3) Available construction details of each well owned or operated by Producer, as well as all logs (driller's, electric, etc.);

(4) Depths or zones from which water is extracted from each

well, if available; and

(5) A current map of the main water transmission system of Producer's distribution system showing the location and sizes of transmission mains and storage reservoirs, all interconnections with other systems and their sizes and capacities, and any other data pertinent to the transmission (but not distribution to customers) of water through the Producer's system.

(d) Quarterly Reports. After the initial submittal of data per subparagraph (c) above, the following data shall be submitted by all Producers to Watermaster quarterly, on or before the last day of January, April, July and October:

(1) Chemical water quality data collected during the quarter and provided to any state, federal or local public agency;

(2) Data described under Section 28 (c) (3), (4) and (5) hereof which supplement, amend or change the data previously submitted by a Producer; and

(3) All data from other sampling which Producers may conduct in addition to governmental requirements.

(e) Operating Principles. Any New or Increased Extraction by a Producer in the Basin to meet water supply needs shall have prior Watermaster approval, shall not contribute to contaminant migration, and shall include planned treatment in existing areas of High-level Degradation and Contamination. In giving such approval, Watermaster shall consider the cumulative effects of multiple actions by all Producers in the area of concern by using available information, the Five-Year Plan, and Ground Water modeling. If Watermaster determines that a proposed new well is a Replacement Well and

is not a New or Increased Extraction, the requirement for Planned Treatment in existing areas of High-level Degradation and Contamination may be waived.

(f) Emergency Exemptions. Where a Producer's water supply or water quality problem is so urgent that the viable option for maintaining an adequate short-term supply that meets drinking water standards involves an action in conflict with the operating principles outlined in Section 28 (e) hereof, Watermaster may approve a short-term action contingent upon the Applicant Producer concurrently submitting an acceptable long-term action plan with acceptable deadlines for implementation. In general, the long-term action plan must be approved prior to or concurrently with the short-term action.

(g) Water Quality and Supply Plans. To assure that Pumping does not lead to further degradation of water quality in the Basin, a Five- Year Water Quality and Supply Plan must be prepared and updated annually by Watermaster, projecting water supply requirements and water quality conditions for each period of five (5) calendar years beginning November 1, 1991, and each November 1 thereafter. This Plan will also include a water quality monitoring element to obtain supplemental information as needed to assist in projecting contamination levels. Watermaster will supply the Producers with projections of contaminant migration by June 1 of each year for the preparation of these Water Quality and Supply Plans.

Each purveyor of potable water produced from the Basin shall submit the following information to Watermaster by July 31 of each year:

(1) Projected quarterly water supply requirements for each of the following five calendar years and the proposed pumping rates, in gallons per minute, for each well;

(2) Identification of each Production well known to contain

contaminants and the contaminant levels;

(3) Proposed methods for meeting the water supply requirements of the system if contaminant levels are, or are projected by Watermaster to become, greater than drinking water standards; and

(4) Any intended treatment facility.

Watermaster shall analyze the information submitted by Producers and develop an overall draft Basin Water Quality and Supply Plan. A draft Plan will be submitted by Watermaster to the Los Angeles Regional Water Quality Control Board, and for public review and comment per Section 28 (i) hereof, by November 1. Appropriate modifications resulting from comments received will be reflected in the final draft, and a staff report providing an explanation of decisions will be made available.

(h) Ground Water Treatment Facilities.

(1) Producers in the Basin shall notify Watermaster in advance at the initial stages of planning of their intent to construct any Facility to remove volatile organic compounds (VOCs), nitrates, or other contaminants from water Produced from the Basin. Such notice shall include the following information:

- the intended location and a description of the Treatment Facility;
- the water production capacity;
- the rate of contaminant removal capacity;
- the expected concentration of all identified contaminants in the water to be treated;
- the expected concentration of all identified contaminants in the water after treatment;
- the intended disposition of all water to be treated;
- the expected initiation date and period of time over which the Treatment Facility will operate; and
- the expected capital and operating costs of the Treatment Facility.

(2) In addition, the Producer shall describe all necessary

permits and/or all permits for which it has applied or has received from all regulatory agencies with regard to such Treatment Facility and shall supply to Watermaster copies of all environmental documents required under the California Environmental Quality Act and/or the National Environmental Protection Act. No construction of such Treatment Facilities shall be initiated without the prior written approval of Watermaster. Watermaster shall promptly examine each submittal for compatibility with available information, the Five- Year Plan and the operating principles, and notify the Applicant of its findings and decision regarding such proposed Treatment Facility no later than at its first regular meeting following sixty (60) days after receipt of a complete submittal by the Producer. Watermaster will also report its determination to the Los Angeles Regional Water Quality Control Board.

(3) All operators of Treatment Facilities shall report quarterly to Watermaster at least the following information:

- name or other designation of the Treatment Facility;
- quantity of water treated during quarter;
- quantity of each contaminant removed;
- quality of water before treatment, at beginning and end of each quarter;
- quality of water after treatment, at beginning and end of each quarter; and
- operation and maintenance costs for each quarter.

(i) Decision Making Process. Hearings and Appeals.

(1) All Watermaster determinations relating to the control of Pumping for water quality purposes shall be based upon a staff recommendation and information and recommendations received from or furnished by affected Producers. Staffs recommendation shall result from staff's analysis of information presented by interested Parties, all

available water quality data, Watermaster's Five-Year Plan, Ground Water modeling and other water quality trend analysis reports, and will be based on the operating principles set forth in these rules. Staff shall provide supporting data to document each recommendation that it makes to Watermaster. After consideration of the staff recommendation and public comment provided at the Watermaster meeting, Watermaster shall make a final decision.

(2) Public hearings on Watermaster's draft annual Five-Year Water Quality and Supply Plan will be held following a thirty (30) day public review and comment period. A notice of the availability of such draft will be sent to all Parties to the Judgment as well as to all other interested Parties following the regular Watermaster meeting in November of each year, along with a notice of the date, time and place of the public hearing, to be scheduled not less than thirty (30) days after the mailing date of the notice of availability of the draft Plan. A notice of public hearing will also be published in the San Gabriel Valley's key local newspaper(s) at the beginning of the public review period. Consideration of comments received is described in Section 28 (g) hereof.

(3) Appeal of a Watermaster decision may be made to the Watermaster who shall notice and consider the same at a public hearing. Actions by the Watermaster are subject to review by the Court. Any Party may, by a regularly noticed motion, petition the Court for review of Watermaster's action or decision. Notice of such motion shall be served and filed within ninety (90) days after such Watermaster action or decision.

29. Watermaster-directed Groundwater Management Programs. Upon written request by any Party, or on recommendation of Watermaster staff, Watermaster may initiate an investigation of existing or proposed pumping activities, groundwater levels, recharge potential and other factors that influence groundwater supply in any specific area of the Basin. Based on the findings of the investigation, and in accordance with Section 40(a) of the Judgment, Watermaster may determine that a groundwater management program is needed to assure equitable water supply availability to all affected Parties in the investigation area. Such a program may require that Producers reduce pumping from one or more wells, take water from another source in lieu of pumping groundwater, or a combination of those and/or other measures; however, no program adopted by Watermaster pursuant to this section shall effect a modification or amendment of the quantities specified in the declared rights of any Party under the Judgment.

If Watermaster determines such a management program is needed within a specific area of the Basin, Watermaster will develop the program with review and comment by affected Parties, and will first attempt to facilitate its implementation through voluntary agreements among the various affected Parties. Watermaster may also participate in such agreements as appropriate, subject to court approval.

If any affected Party refuses voluntary participation in the groundwater management program, or if the affected Parties cannot reach agreement within a reasonable time not to exceed 12 months from the date that Watermaster receives the draft program at a regular meeting, Watermaster will consider adoption of the program at a duly noticed public hearing and, if the program is adopted, will seek court approval of the program as part of the Watermaster Operating Criteria set forth in the Judgment. Watermaster will implement the program upon court approval and may use funds collected through the In-lieu Assessment to reimburse a Producer for costs incurred

beyond normal operating costs to comply with the Watermaster-directed groundwater management program.

APPENDIX "A"

DEFINITIONS

(a) Base Annual Diversion Right -- The average annual quantity of water which a Diverter has the right to Divert for Direct Use.

(b) Direct Use -- Beneficial use of water other than for spreading or Ground Water recharge.

(c) Divert or Diverting -- To take waters of any surface stream within the Relevant Watershed.

(d) Diverter -- Any Party who Diverts.

(e) Elevation -- Feet above mean sea level.

(f) Fiscal Year -- The period July 1 through June 30, following.

(g) Ground Water -- Water beneath the surface of the ground and within the zone of saturation.

(h) Ground Water Basin -- An interconnected permeable geologic formation capable of storing a substantial Ground Water supply.

(i) Integrated Producer -- Any Party that is both a Pumper and a Diverter, and has elected to have its rights adjudicated under the optional formula provided in Section 18 of the Amended Judgment.

(j) In-Lieu Water Cost -- The differential between a particular Producer's cost of Watermaster directed Produced, treated, blended, substituted or Supplemental Water delivered or substituted to, for, or taken by such Producer in-lieu of his cost of otherwise normally producing a like amount of Ground Water.

(k) Judgment -- Judgment entered in Los Angeles Superior Court Civil Action No. 924128, entitled "Upper San Gabriel Valley Municipal Water District v. City of Alhambra, et al," as amended.

(l) Key Well -- Baldwin Park Key Well, being elsewhere designated as

State Well No. IS/lOW-7R2, or Los Angeles County, Department of Public Works, Well No. 3030-F. Said well has a ground surface elevation of 386.7.

(m) Long Beach Case -- Los Angeles Superior Court Case No. 722647, entitled "The Board of Water Commissioners of the City of Long Beach, et al, v. San Gabriel Valley Water Company, et al."

(n) Main San Gabriel Basin or Basin -- The Ground Water Basin underlying the area shown as such on Exhibit "A" of the Judgment.

(o) Make-up Obligation -- The total cost of meeting the obligation of the Basin to the area at or below Whittier Narrows, pursuant to the Judgment in the Long Beach Case.

(p) Minimal Producer -- Any Producer whose Production in any Fiscal Year does not exceed five (5) acre-feet.

(q) Natural Safe Yield -- The quantity of natural water supply which can be extracted annually from the Basin under conditions of the long-term average annual supply, net of the requirement to meet downstream rights as determined in the Long Beach Case (exclusive of Pumped export), and under cultural conditions as of a particular year.

(r) Operating Safe Yield -- The quantity of water which Watermaster determines may be Pumped from the Basin in a particular Fiscal Year, free of the Replacement Water Assessment under the Physical Solution of the Judgment.

(s) Overdraft -- A condition wherein the total annual Production from the Basin exceeds the Natural Safe Yield thereof.

(t) Overlying Rights -- The right to Produce water from the Basin for use on Overlying Lands, which rights are exercisable only on specifically defined Overlying Lands and which cannot be separately conveyed or transferred apart therefrom.

(u) Physical Solution -- The Court-decreed method of managing the waters

of the Basin so as to achieve the maximum utilization of the Basin and its water supply, consistent with the rights declared in the Judgment.

(v) Prescriptive Pumping Right -- The highest continuous extraction of water by a Pumper from the Basin for beneficial use in any five (5) consecutive years after commencement of Overdraft and prior to filing of the action, as to which there has been no cessation of use by that Pumper during any subsequent period of five (5) consecutive years prior to the filing of said action.

(w) Produce or Producing -- To Pump or Divert water from the Basin.

(x) Producer -- A Party who Produces water from the Basin.

(y) Production -- The annual quantity of water Produced from the Basin, stated in acre-feet.

(z) Pump or Pumping -- To extract ground water from the Basin by Pumping or by any other method.

(aa) Pumper -- A Party who Pumps water.

(bb) Pumper's Share -- A Pumper's right to a percentage of the entire Natural Safe Yield, Operating Safe Yield and appurtenant Ground Water storage of the Basin.

(cc) Reclaimed Water -- Water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur.

(dd) Relevant Watershed -- That portion of the San Gabriel River Watershed tributary to Whittier Narrows which is shown as such on Exhibit "A" to the Judgment and the exterior boundaries of which are described in Exhibit "B" of the Judgment.

(ee) Replacement Water -- Water purchased by Watermaster to replace: (1) Production in excess of a Pumper's Share of Operating Safe Yield; (2) the consumptive use portion resulting from the exercise of an Overlying Right; and (3) Production in excess of a Diverter's right to Divert for Direct Use.

(ff) Responsible Agency -- The municipal water district which is the normal

and appropriate source from whom Watermaster shall purchase Supplemental Water for replacement purposes under the Physical Solution of the Judgment, being one of the following:

(1) Upper District -- Upper San Gabriel Valley Municipal Water District, a member public agency of The Metropolitan Water District of Southern California (MWD).

(2) San Gabriel District -- San Gabriel Valley Municipal Water District, which has a direct contract with the State of California for State Project water.

(3) Three Valleys District -- Three Valleys Municipal Water District, a member public agency of MWD.

(gg) Stored Water -- Supplemental Water stored in the Basin pursuant to a Cyclic Storage Agreement with Watermaster as authorized by Section 34(n) of the Judgment herein.

(hh) Supplemental Water -- Non-tributary water imported through a Responsible Agency and Reclaimed Water.

(ii) Transporting Parties -- Any Party who has transported water from the Relevant Watershed or Basin to an area outside thereof within the Year immediately preceding the entry of Judgment, and any Party presently or hereafter having an interest in lands or having a service area outside the Basin or Relevant Watershed contiguous to lands in which it has an interest or a service area within the Basin or Relevant Watershed. Division by a road, highway, or easement shall not interrupt contiguity. Said term shall also include the City of Sierra Madre, or any Party supplying water thereto, so long as the corporate limits of said City are included within one of the Responsible Agencies.

(jj) Water Level -- The measured Elevation of water in the Key Well, corrected for any temporary effects of mounding caused by replenishment or local

depressions caused by Pumping.

(kk) Year -- A calendar year, unless the context clearly indicates a contrary meaning.

The following are supplemental definitions relating to Section 28 of these rules and regulations.

(ll) New Extraction -- Any extraction from the Main San Gabriel Basin using a well or other Ground Water extraction facility that becomes active for the first time for water supply purposes on ,or after June 28, 1991.

(mm) Increased Extraction (Decreased) -- Any modification to an existing well or extraction facility that physically increases (or decreases) the Effective Extraction Capacity of that well or extraction facility. Such modifications may include: (1) changing the well depth, (2) modifying the perforation intervals, (3) modifying the pump and/or motor, (4) installing or modifying distribution pipelines, (5) installing or modifying booster pumps, and (6) installing or modifying other distribution system components. Normal maintenance work would be excluded.

(nn) Effective Extraction Capacity -- The actual capacity of a well or extraction facility to extract Ground Water from the Basin using the pumping equipment and system appurtenances in good working order as they existed on June 28, 1991.

(oo) Treatment Facility -- Any facility that provides treatment for contaminated Ground Water in order to meet drinking water standards.

(pp) Planned Treatment -- A specific Treatment Facility with a designated source of Ground Water supply and schedule for development.

(qq) Active Well -- Any well used or that could be used without modifications to extract Ground Water.

(rr) Inactive Well -- Any well that is not in service at the time of filing of an

application hereinunder.

(ss) Abandoned Well -- A well that has been abandoned in accordance with the provisions of state, county or local laws and regulations.

(tt) High-level Degradation and Contamination -- Ground Water containing contaminants in excess of the federal or state maximum contaminant level. Some areas of the Basin contain higher contaminant concentrations than others and Treatment Facilities shall be planned to extract Ground Water from the higher level areas of contamination in the Basin.

(uu) Replacement Well -- A new well that will replace an existing well due to structural or mechanical failure, which is located in the same general vicinity and which has the same physical characteristics (size, depth, perforation intervals) and design extraction capacity as the well it is replacing.

APPENDIX "B"

SUMMARY OF CRITICAL DATES AND ACTIONS FOR WATERMASTER

This summary of critical dates and actions for Watermaster is presented for the convenience of Watermaster members, the Parties and others in carrying out the provisions of the Court Judgment. It does not necessarily include all critical dates and actions under the Judgment.

SUMMARY OF CRITICAL DATES AND ACTIONS FOR WATERMASTER

1. Watermaster members' terms of office.

January 1 - December 31.

2. Watermaster's first meeting in January.

(a) Election of Watermaster Chairman and Vice-Chairman (from Watermaster membership) and selection of Secretary, Treasurer and assistants (who may, but need not, be Watermaster members). Watermaster Rules and Regulations, Section 6 (R/R 6)

(b) Order Engineering Report for Preliminary Determination of Operating Safe Yield. (R/R 14(a))

3. January 31 - Quarterly Reports, as required by the Rules and Regulations, of Production (R/R 13), Cyclic Storage (R/R 26(h)) and data required by Section 28 (d), due to Watermaster.

4. March - Receive San Gabriel River Watermaster Report.

5. Watermaster's first meeting in April.

Watermaster shall make a Preliminary Determination of the Operating Safe Yield of the Basin for the next five Fiscal Years and mail a copy thereof to all Parties at least ten (10) days prior to a hearing thereon and which said hearing shall commence at Watermaster's first meeting in May. (R/R 14(a))

6. April 30 - Quarterly Reports, as required by the Rules and Regulations, of Production (R/R 13), Cyclic Storage (R/R 26(h)) and data required by Section 28 (d), due to Watermaster.

7. Watermaster's first meeting in May.

(a) Hearing on Preliminary Determination for Watermaster to make Final Determination of Operating Safe Yield. (R/R 14(b)) Within thirty (30) days of the Final Determination of the Operating Safe Yield a copy of the Final Report

and Determination must be mailed to each Pumper and Integrated Producer, including a statement of their entitlements under such Determination.(R/R 14(c))

(b) Budget.

Adopt a proposed Administration Budget for the succeeding Fiscal Year and within fifteen (15) days mail a copy thereof together with a statement of the level of the Administration Assessment levied by Watermaster which will be collected for purposes of raising the necessary funds for said budget. (R/R 18(a))

(c) Assessments.

In addition to the Administration Assessment, Watermaster shall levy the Replacement Water Assessment, Make-up Obligation Assessment and the In-lieu Water Assessments, if any. (R/R 19)

8. June 1 - Watermaster to supply Producers with projections of contaminant migration by June 1. (R/R 28(g))

9. July - Authorize preparation of Annual Watermaster Report. Receive tentative budget from San Gabriel River Watermaster.

10. July 31 - Quarterly Reports, as required by the Rules and Regulations, of Production (R/R 13), Cyclic Storage (R/R 26(h)) and data required by Section 28 (d), due to Watermaster. Producers of potable water from the Basin must submit to Watermaster the data required by Section 28(g).

11. August 15 - On or before this date Watermaster must give written notice of all applicable Assessments to all Parties. (R/R 19)

12. September 20 - All Assessments payable to Watermaster. (R/R 19(a))

13. September 30 - Must pay Upper Area share of San Gabriel River Watermaster budget by this date.

14. October 1 - Mail Notice of Nomination Election of Producer representatives to be held at Watermaster's November meeting. (R/R 19(a))

15. October 31 - Quarterly Reports, as required by the Rules and Regulations, of Production (R/R 13), Cyclic Storage (R/R 26(h)) and data required by Section 28 (d), due to Watermaster.

16. November

(a) Watermaster Annual Report filed with the Court and copies mailed to each Party by November 1. (R/R 24)

(b) Draft Annual Five-Year Water Quality and Supply Plan under Section 28 (g) to be filed with the Los Angeles Regional Quality Control Board and circulated for public review and comment by November 1.

(c) Prior to Watermaster's meeting in November, nomination of Public Representatives to Watermaster by Upper District and San Gabriel District.

(d) Watermaster's meeting in November--election of six Producer Representatives for nomination to Watermaster. (R/R 9(b)) Petition Court for confirmation of nominees and give notice of hearing on Petition to all Parties. Within ninety (90) days of a vacancy on Watermaster, it shall be filled by nomination by Upper District or San Gabriel District if for a Public Representative and by a special election at a Watermaster meeting for a Producer Representative, after notice thereof to all Parties, and Watermaster Petition (and notice thereof to all parties) for Court confirmation of nominee. (R/R 10)

PERMANENT TRANSFER OF WATER RIGHTS - PRESCRIPTIVE PUMPING RIGHT

For a valuable consideration, receipt of which is hereby acknowledged, _____ _____ ("Seller") does hereby assign and transfer in perpetuity to _____, ("Buyer") all rights to the quantity of _____ acre-feet of the "Prescriptive Pumping Right" and the appropriate % of "Pumper's Share" adjudicated to Seller or his predecessor in the Judgment in the case of Upper San Gabriel Valley Municipal Water District, v. City of Alhambra, et al, Los Angeles Superior Court No. 924128, together with all the attendant rights, powers and privileges pertaining thereto.

(Check appropriate provision)

This transfer does ☐ does not ☐ include_____acre-feet of "carry-over of unused rights" associated with said transferred rights and in existence on the date hereof.

DATED:_____

BUYER	SELLER
_____	_____
_____	_____
_____	_____
_____ (Signature)	_____ (Signature)
Name of Designee (of Buyer) to receive service of Processes and Notices:	Name of Designee (of Seller) to receive service of Processes and Notices:
_____	_____
_____	_____
_____ Address	_____ Address
Telephone No.:_____	Telephone No.: _____

To be executed by both Buyer and Seller and, if separately requested by Watermaster, be accompanied by a map of the service area where the water was used by Seller and a map of the service area where the water is intended to be used by the Buyer.

(Have the appropriate individual(s) or corporate attached acknowledgments completed by both Buyer and Seller as part of the transfer.)

A TRUE COPY HEREOF MUST BE FILED WITH WATERMASTER WITHIN 15 DAYS OF EXECUTION.

(To be accompanied by completed "Stipulation Re Intervention After Judgment" if Buyer is not a party to the Judgment)

EXHIBIT A-1

CORPORATE ACKNOWLEDGMENT

STATE OF CALIFORNIA)§
COUNTY OF LOS ANGELES)

On this _____ day of _____, 20___, before me, the undersigned Notary Public, personally appeared _____

_____ known to me
_____ proved to me on the basis of satisfactory evidence to be the person(s) who executed the within Instrument as

_____,
or on behalf of the Corporation therein named, and acknowledged to me that the Corporation executed it.

WITNESS my hand and official seal.

Signature _____

_____
Name (Typed or Printed)
Notary Public in and for said
County and State

(SEAL)

INDIVIDUAL(S) ACKNOWLEDGMENT

STATE OF CALIFORNIA)§
COUNTY OF LOS ANGELES)

On this _____ day of _____, 20___, before me, the undersigned Notary Public, personally appeared _____,

_____ known to me
_____ proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) _____ subscribed to the within instrument and acknowledged to me that _____executed the same.

WITNESS my hand and official seal.

Signature _____

_____
Name (Typed or Printed)
Notary Public in and for said
County and State

(SEAL)

PERMANENT TRANSFER OF WATER RIGHTS – BASE ANNUAL DIVERSION RIGHT

For a valuable consideration, receipt of which is hereby acknowledged, _____ _____ ("Seller") does hereby assign and transfer in perpetuity to _____, ("Buyer") all rights to the quantity of _____ acre-feet of the "Base Annual Diversion Right" adjudicated to Seller or his predecessor in the Judgment in the case of Upper San Gabriel Valley Municipal Water District, v. City of Alhambra, et al, Los Angeles Superior Court No. 924128, together with all the attendant rights, powers and privileges pertaining thereto.

DATED:_____

BUYER	SELLER
_____	_____
_____	_____
_____	_____
_____ (Signature)	_____ (Signature)
Name of Designee (of Buyer) to receive service of Processes and Notices:	Name of Designee (of Seller) to receive service of Processes and Notices:
_____	_____
_____	_____
_____ Address	_____ Address
Telephone No.:_____	Telephone No.: _____

To be executed by both Buyer and Seller and, if separately requested by Watermaster, be accompanied by a map of the service area where the water was used by Seller and a map of the service area where the water is intended to be used by the Buyer.

(Have the appropriate individual(s) or corporate attached acknowledgments completed by both Buyer and Seller as part of the transfer.)

A TRUE COPY HEREOF MUST BE FILED WITH WATERMASTER WITHIN 15 DAYS OF EXECUTION.

(To be accompanied by completed "Stipulation Re Intervention After Judgment" if Buyer is not a party to the Judgment)

CORPORATE ACKNOWLEDGMENT

STATE OF CALIFORNIA)§
COUNTY OF LOS ANGELES)

On this _____ day of _____, 20___, before me, the undersigned Notary Public, personally appeared _____

_____ known to me
_____ proved to me on the basis of satisfactory evidence to be the person(s) who executed the within Instrument as

_____,
or on behalf of the Corporation therein named, and acknowledged to me that the Corporation executed it.

WITNESS my hand and official seal.

Signature _____

_____
Name (Typed or Printed)
Notary Public in and for said
County and State

(SEAL)

INDIVIDUAL(S) ACKNOWLEDGMENT

STATE OF CALIFORNIA)§
COUNTY OF LOS ANGELES)

On this _____ day of _____, 20___, before me, the undersigned Notary Public, personally appeared _____,

_____ known to me
_____ proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) _____ subscribed to the within instrument and acknowledged to me that _____executed the same.

WITNESS my hand and official seal.

Signature _____

_____
Name (Typed or Printed)
Notary Public in and for said
County and State

(SEAL)

PERMANENT TRANSFER OF WATER RIGHTS – INTEGRATED PRODUCTION RIGHT

For a valuable consideration, receipt of which is hereby acknowledged, _____ _____ ("Seller") does hereby assign and transfer in perpetuity to _____, ("Buyer") all rights to the quantity of _____ acre-feet of the "Diversion Component" adjudicated to Seller or his predecessor in the Judgment in the case of Upper San Gabriel Valley Municipal Water District, v. City of Alhambra, et al, Los Angeles Superior Court No. 924128, together with all the attendant rights, powers and privileges pertaining thereto.

(Check appropriate provision)

This transfer does ☐ does not ☐ include_____acre-feet of "carry-over of unused rights" associated with said transferred rights and in existence on the date hereof.

DATED:_____

BUYER	SELLER
_____	_____
_____	_____
_____	_____
_____ (Signature)	_____ (Signature)
Name of Designee (of Buyer) to receive service of Processes and Notices:	Name of Designee (of Seller) to receive service of Processes and Notices:
_____	_____
_____	_____
_____ Address	_____ Address
Telephone No.:_____	Telephone No.: _____

To be executed by both Buyer and Seller and, if separately requested by Watermaster, be accompanied by a map of the service area where the water was used by Seller and a map of the service area where the water is intended to be used by the Buyer.

(Have the appropriate individual(s) or corporate attached acknowledgments completed by both Buyer and Seller as part of the transfer.)

A TRUE COPY HEREOF MUST BE FILED WITH WATERMASTER WITHIN 15 DAYS OF EXECUTION.

(To be accompanied by completed "Stipulation Re Intervention After Judgment" if Buyer is not a party to the Judgment)

EXHIBIT C-1

CORPORATE ACKNOWLEDGMENT

STATE OF CALIFORNIA)§
COUNTY OF LOS ANGELES)

On this _____ day of _____, 20___, before me, the undersigned Notary Public, personally appeared _____

_____ known to me
_____ proved to me on the basis of satisfactory evidence to be the person(s) who executed the within Instrument as

_____,
or on behalf of the Corporation therein named, and acknowledged to me that the Corporation executed it.

WITNESS my hand and official seal.

Signature _____

_____
Name (Typed or Printed)
Notary Public in and for said
County and State

(SEAL)

INDIVIDUAL(S) ACKNOWLEDGMENT

STATE OF CALIFORNIA)§
COUNTY OF LOS ANGELES)

On this _____ day of _____, 20___, before me, the undersigned Notary Public, personally appeared _____,

_____ known to me
_____ proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) _____ subscribed to the within instrument and acknowledged to me that _____executed the same.

WITNESS my hand and official seal.

Signature _____

_____
Name (Typed or Printed)
Notary Public in and for said
County and State

(SEAL)

TEMPORARY ASSIGNMENT OR LEASE OF WATER RIGHT

For a valuable consideration, receipt of which is hereby acknowledged, _____ ("Assignor") does hereby assign and transfer to _____, ("Assignee") commencing on _____ and terminating _____, on the following water right(s):

(Check following appropriate category)

☐ Production Right _____AF

☐ Prescriptive Pumping Right _____AF

☐ Base Annual Diversion Right _____AF

☐ Integrated Production Right (consisting of _____AF of "Prescriptive Pumping Component" and _____AF of "Diversion Component")

☐ Carryover Right_____AF

adjudicated to Assignor or his predecessor in the Judgment in the case of "Upper San Gabriel Valley Municipal Water District, v. City of Alhambra, et al," Los Angeles Superior Court No. 924128.

Said assignment is made upon condition that:

(1) Assignee shall exercise said right on behalf of Assignor for the period described hereinabove and the first water produced by Assignee from the Relevant Watershed of the Main San Gabriel Basin after the date hereof shall be that produced hereunder;

(2) Assignee shall put all waters utilized pursuant to said transfer to reasonable beneficial use; and

(3) Assignee shall pay all Watermaster assessments on account of the water production hereby assigned or leased.

DATED: _____

ASSIGNEE	ASSIGNOR
_____	_____
_____	_____
_____	_____
Signature	Signature
Name of Designee (of Assignee) to receive service of Processes and Notices:	Name of Designee (of Assignor) to receive service of Processes and Notices:
_____	_____
_____	_____
_____	_____
Address	Address
Tel. No.: _____	Tel. No.: _____

To be executed by both Assignee and Assignor and, if separately requested by Watermaster, be accompanied by a map of the service area where the water was used by Assignor and a map of the service area where the water is intended to be used by the Assignee.

(Have the appropriate individual(s) or corporate attached acknowledgments completed as part of the temporary transfer.)

A TRUE COPY HEREOF MUST BE FILED WITH WATERMASTER WITHIN 15 DAYS OF EXECUTION
(To be accompanied by completed "Stipulation Re Intervention After Judgment" if Assignee is not a party to the Judgment)

CORPORATE ACKNOWLEDGMENT

STATE OF CALIFORNIA)§
COUNTY OF LOS ANGELES)

On this _____ day of _____, 20___, before me, the undersigned Notary Public, personally appeared _____

_____ known to me
_____ proved to me on the basis of satisfactory evidence to be the person(s) who executed the within Instrument as

_____,
or on behalf of the Corporation therein named, and acknowledged to me that the Corporation executed it.

WITNESS my hand and official seal.

Signature _____

_____
Name (Typed or Printed)
Notary Public in and for said
County and State

(SEAL)

INDIVIDUAL(S) ACKNOWLEDGMENT

STATE OF CALIFORNIA)§
COUNTY OF LOS ANGELES)

On this _____ day of _____, 20___, before me, the undersigned Notary Public, personally appeared _____,

_____ known to me
_____ proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) _____ subscribed to the within instrument and acknowledged to me that _____executed the same.

WITNESS my hand and official seal.

Signature _____

_____
Name (Typed or Printed)
Notary Public in and for said
County and State

(SEAL)

NOSSAMAN, GUTHNER, KNOX & ELLIOTT, LLP
FREDERIC A. FUDACZ, State Bar No. 050546
ALFRED E. SMITH, State Bar No. 186257
445 South Figueroa Street, 31st Floor
Los Angeles, CA 90071-1602
Telephone: (213) 612-7800
Facsimile: (213) 612-7801
Attorneys for Main San Gabriel Basin Watermaster

EXEMPT FROM FILING FEES
GOVERNMENT CODE § 6103

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

Upper San Gabriel Valley Municipal Water District, Plaintiff, vs. City of Alhambra, et al, Defendant	Case No.: C 924128 STIPULATION RE INTERVENTION AFTER JUDGMENT OF _____

IT IS HEREBY STIPULATED by and between the Main San Gabriel Basin Watermaster for and on behalf of all parties to the instant action (pursuant to Section 57 of the amended Judgment) and _____, the proposed Intervenor(s) herein, that said proposed Intervenor(s) may intervene in the instant action and become entitled to all of the benefits and bound by all of the burdens of the Judgment herein.

The Court will consider the attached proposed Order confirming said Intervention at _____ o'clock _____ on _____ 20___, in Department 38, located at 111 North Hill Street, Los Angeles, California 90012.

EXHIBIT E-1

Watermaster shall give at least 30 days notice to the parties herein of said hearing.

DATED: WATERMASTER

By _____
Chairman

Attest:

_____
Secretary

DATED: _____ INTERVENOR(S)

_____

By _____

By _____

Name of Intervenor's Designee:

_____

Address of Designee:

_____

_____

Telephone Number of Designee:

_____

FREDERIC A. FUDACZ, State Bar No. 050546
ALFRED E. SMITH, State Bar No. 186257
NOSSAMAN, GUTHNER, KNOX & ELLIOTT, LLP
445 South Figueroa Street, 31st Floor
Los Angeles, CA 90071-1602
Telephone: (213) 612-7800
Facsimile: (213) 612-7801
Attorneys for Main San Gabriel Basin Watermaster

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

Upper San Gabriel Valley Municipal Water District, Plaintiff, vs. City of Alhambra, et al, Defendant	Case No.: C 924128 DESIGNEE TO RECEIVE FUTURE NOTICES FOR AND ON BEHALF OF DEFENDANT(S)

Defendant(s)_____
hereby designates:_____
whose address is _____
and whose telephone number is _____ as said Defendant's Designee to receive service of all future notices, determinations, requests, demands, objections, reports and other papers and processes to be served upon said defendant(s) or delivered to said defendant(s) herein.

A copy hereof has been served upon the Watermaster herein, by mail, on _____, 20___.

EXHIBIT F-1

Executed under penalties of perjury at _____, California, this _____day of _____, 20___.

_____

_____

EXHIBIT F-2

NOTICE OF TRANSFER OF OVERLYING RIGHTS
WITH PROPERTY TO WHICH THEY ARE APPURTENANT

On _____, 20____, the undersigned (or his predecessor), adjudged Overlying Rights on the property described in Exhibit 1 attached hereto and by this inference incorporated herein, in the case of "UPPER SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT, v. CITY OF ALHAMBRA, ET AL," Los Angeles Superior Court No. 924128, transferred said property and said Overlying Rights appurtenant thereto to _____, whose address is _____, and whose telephone number is _____.

That said transferee hereby names _____ Whose address is _____ and whose telephone number is _____ as his/her Designee to receive all future notices and processes in said action.

DATED:_____

BUYER	SELLER
_____	_____
_____	_____
_____	_____
_____	_____
(Signature)	(Signature)

To be executed by both Buyer and Seller and, if separately requested by Watermaster, be accompanied by a map of the service area where the water was used by Seller and a map of the service area where the water is intended to be used by the Buyer.

(Have the appropriate individual(s) or corporate attached acknowledgments completed as part of the transfer, and include Exhibit 1)

A TRUE COPY HEREOF MUST BE FILED WITH WATERMASTER WITHIN 15 DAYS OF EXECUTION.

(To be accompanied by completed "Exhibit E" if Buyer is not a party to the Judgment)

CORPORATE ACKNOWLEDGMENT

STATE OF CALIFORNIA)§
COUNTY OF LOS ANGELES)

On this _____ day of _____, 20___, before me, the undersigned Notary Public, personally appeared _____

_____ known to me
_____ proved to me on the basis of satisfactory evidence to be the person(s) who executed the within Instrument as

_____,
or on behalf of the Corporation therein named, and acknowledged to me that the Corporation executed it.

WITNESS my hand and official seal.

Signature _____

_____
Name (Typed or Printed)
Notary Public in and for said
County and State

(SEAL)

INDIVIDUAL(S) ACKNOWLEDGMENT

STATE OF CALIFORNIA)§
COUNTY OF LOS ANGELES)

On this _____ day of _____, 20___, before me, the undersigned Notary Public, personally appeared _____,

_____ known to me
_____ proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) _____ subscribed to the within instrument and acknowledged to me that _____executed the same.

WITNESS my hand and official seal.

Signature _____

_____
Name (Typed or Printed)
Notary Public in and for said
County and State

(SEAL)

Mailing Address:
725 North Azusa Ave.
Azusa, CA 91702

MAIN SAN GABRIEL BASIN WATERMASTER

SUPERIOR COURT CASE NO. 924128-LOS ANGELES COUNTY

(State Well Number)

(Recordation Number)

(Owner's Designation)

APPLICATION TO DRILL WATER WELL

(To Be Completed by Watermaster)

(1) APPLICANT:
Name_____
Address_____

(2) LOCATION OF PROPOSED WELL:
*Well Address:*_____
Township, Range, and Section_____
Thomas Brothers Guide *(Please indicate year, page number and coordinates.)*_____

Assessor's Parcel No._____
(Please attach copy of a map or sketch showing well location relative to streets or other major landmarks.)

(3) NAME OF WELL DRILLING CONTRACTOR:_____

(4) PROPOSED USE:
Municipal ( ) Irrigation ( )
Domestic ( ) Industrial ( )
Water Quality Cleanup ( )
Other ( )_____

(5) DRILLING EQUIPMENT:
Rotary ( )
Cable ( )
Other ( )_____

(6) PROPOSED WELL CHARACTERISTICS:

A. Casing Installed:
STEEL ( ) PLASTIC ( )
OTHER ( )

Gravel Packed:
Yes ( ) No ( ) Size_____

From ft.	To ft.	Diam.	Gage or Wall	Diameter of Bore	Packed From ft.	Packed To ft.

Size of shoe or well ring:_____
Describe joint_____

B. Perforations or Screen:
Type of perforation or size of screen

From ft.	To ft.	Perf. per row	Rows per ft.	Slot Size

C. Construction:
Will a surface sanitary seal be provided? Yes ( ) No ( )
To what depth? _____ft.
Is any strata anticipated to be sealed against pollution?
Yes ( ) No ( )
If yes, note anticipated depth of strata
from _____ft. to _____ft.
from _____ft. to _____ft.
Proposed method sealing_____

(7) WELL TESTS:
Will a pump test be made? Yes ( ) No ( ) If yes by whom?

Anticipated Well Yield_____
Will a chemical analysis be made? Yes ( ) No ( )
Will an electric log be made of well? Yes ( ) No ( ) (If yes, file Copy with Watermaster upon well completion)

(8) PROPOSED PUMPING EQUIPMENT:
(A) Pump
Electric ( ) Natural Gas ( )
Propane ( ) Diesel ( )
Other ( )_____
(B) Make_____
(C) Pump Size (hp)_____(gpm)_____
(D) Design Efficiency_____

(9) PROXIMITY TO POTENTIAL SOURCES OF CONTAMINATION:
(A) Distance to nearest sewer line or septic tank_____(ft.)
(B) Wells (Please provide distance, direction and name of nearest upgradient well(s) with volatile organic chemical or nitrate levels above a maximum contaminant level, if known.)

(10) Please provide copy of County of Los Angeles permits and State Department of Water Resources Water Well Driller Reports and any other permits for construction of a new well upon completion of proposed well.

(11) Please provide Watermaster with copies of all feasibility studies, alternative water supply sources, water quality studies or other reports which validate the Applicant's need to drill a new well. Applicant must provide supporting data to show compliance with the requirements of Section 28 with particular reference to Section 28(e) of Watermaster's Rules and Regulations.

I hereby agree to comply with all regulations of the Main San Gabriel Basin Watermaster pertaining to well construction, repair, modification, destruction and inactivation. The applicant will furnish the Watermaster a complete well log upon completion of well construction.

Submitted for Applicant by:_____

Signature:_____

Title:_____

Date:_____

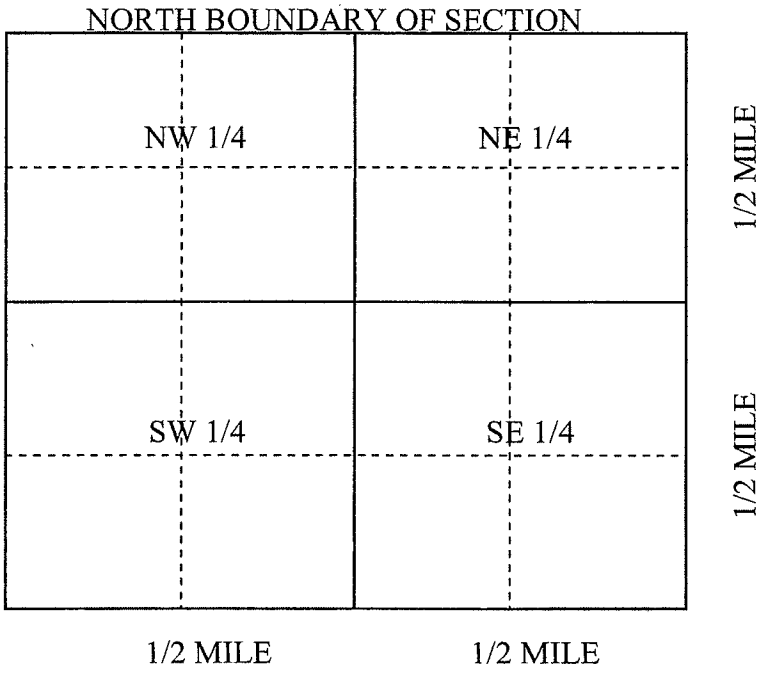
Date Received by Watermaster:_____
Watermaster Action: Approved ( ) Denied ( )
Date of Action:_____
Permit Number:_____
By:_____
(Name)

(Title)

EXHIBIT H-1

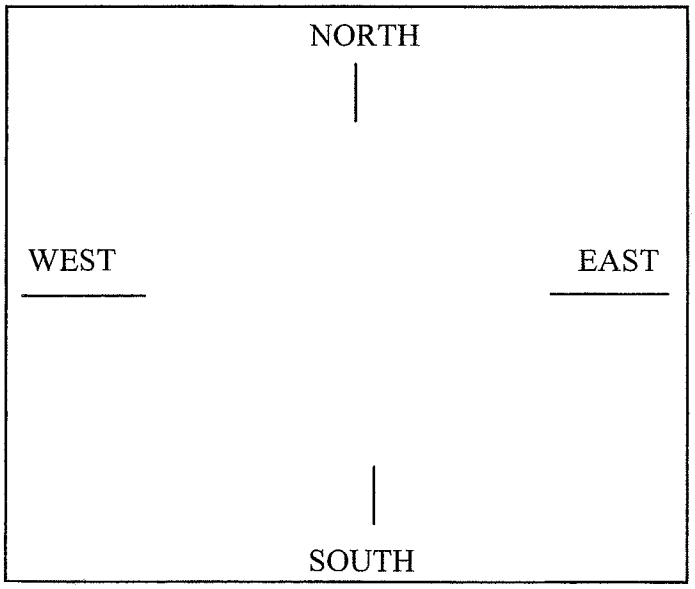
Form No. RR 28-03 – 08/00

WELL LOCATION SKETCH



Township _____ **N/S**
Range_____**E/W**
Section No._____

A. Location of well in sectionized areas. Sketch roads, railroads, streams, or other features as necessary.



B. Location of well in areas not sectionized. Sketch roads, railroads, streams, or other features as necessary. Indicate distances.

EXHIBIT H-2

Mailing Address:
725 North Azusa Ave.
Azusa, CA 91702

MAIN SAN GABRIEL BASIN WATERMASTER

SUPERIOR COURT CASE NO. 924128-LOS ANGELES COUNTY

APPLICATION TO MODIFY EXISTING WATER WELL

(State Well Number)
(Recordation Number)
(Owner's Designation)

(1) APPLICANT:
Name_____
Address_____
_____

(2) LOCATION OF PROPOSED WELL:
*Well Address:*_____
*Township, Range, and Section*_____
*Thomas Brothers Guide (Please indicate year, page number and coordinates.)*_____
_____
*Assessor's Parcel No.*_____
(Please attach copy of a map or sketch showing well location relative to streets or other major landmarks.)

(3) NAME OF WELL DRILLING CONTRACTOR:_____
_____

(4) TYPE OF WORK:
Deepening ( ) Modify Perforations ( ) Increase Yield ( )
Reconditioning ( ) Other ( )_____

(5) PROPOSED USE:
Municipal ( ) Irrigation ( )
Domestic ( ) Industrial ( )
Water Quality Cleanup ( )
Other ( )_____

(6) DRILLING EQUIPMENT:
Rotary ( )
Cable ( )
Other ( )

(7A) CASING INSTALLED (existing):
STEEL ( ) PLASTIC ( )
OTHER ( )

Gravel Packed:
Yes ( ) No ( ) Size_____

From ft.	To ft.	Diam.	Gage or Wall	Diameter of Bore	Packed From ft.	Packed To ft.

Size of shoe or well ring:_____
Describe joint_____

(7B) CASING INSTALLED (proposed):
STEEL ( ) PLASTIC ( )
OTHER ( )

Gravel Packed:
Yes ( ) No ( ) Size_____

From ft.	To ft.	Diam.	Gage or Wall	Diameter of Bore	Packed From ft.	Packed To ft.

Size of shoe or well ring:_____
Describe joint_____

(8A) PERFORATIONS OR SCREEN (existing):
Type of perforation or size of screen

From ft.	To ft.	Perf. per row	Rows per ft.	Slot Size

(8B) PERFORATIONS OR SCREEN (proposed):
Type of perforation or size of screen

From ft.	To ft.	Perf. per row	Rows per ft.	Slot Size

(9A) EXISTING CONSTRUCTION:
Was a surface sanitary seal provided? Yes ( ) No ( )
To what depth? _____ft.
Were any strata sealed against pollution? Yes ( ) No ( )
If yes, note depth of strata
from _____ft. to _____ft.
from _____ft. to _____ft.
Method of sealing _____

(9B) PROPOSED CONSTRUCTION:
Will a surface sanitary seal be provided? Yes ( ) No ( )
To what depth? _____ft.
Is any strata anticipated to be sealed against pollution? Yes ( ) No ( )
If yes, note depth of strata
from _____ft. to _____ft.
from _____ft. to _____ft.
Method of sealing _____

(10) WELL TESTS:
Was a pump test made? Yes ( ) No ( ) (If yes, attach most recent copy)
_____gal. min. with _____ft. drawdown after _____hrs.
Temperature of water_____
Was a chemical analysis made? Yes ( ) No ( )
Was electric log made of well? Yes ( ) No ( ) (If yes, attach most recent copy)

(11) WELL LOG:
Total depth_____ft. Depth of completed well_____ft.
Formation: Describe by color, character, size of material and structure_____ft. to_____ft.
(Please attach copy of existing well log. If well log is not available, describe well lithology in space provided or on attached page.)
_____
_____

(12) HISTORIC WELL MODIFICATIONS:
(On an attached page, please provide a chronology of all historic well modifications which may have affected well yield or water quality.)

(13A) EXISTING WELL PUMP DATA:
A. Pump Type:
Electric ( ) Natural Gas ( ) Other ( )
Propane ( ) Diesel ( )
B. Pump Performance:
Horsepower_____(GPM)_____
Design Efficiency_____

(13B) PROPOSED WELL PUMP DATA:
A. Pump Type:
Electric ( ) Natural Gas ( ) Other ( )
Propane ( ) Diesel ( )
B. Pump Performance:
Horsepower_____(GPM)_____
Design Efficiency_____

(14) Please provide copy of County of Los Angeles permits and State Department of Water Resources Water Well Driller Reports and any other permits for modification of an existing well upon completion of modification of well.

(15) Please provide Watermaster with copies of all feasibility studies, alternative water supply sources, water quality studies or other reports which validate the Applicant's need to modify this well. Applicant must provide supporting data to show compliance with the requirements of Section 28 with particular reference to Section 28(e) of Watermaster's Rules and Regulations.

I hereby agree to comply with all regulations of the Main San Gabriel Basin Watermaster pertaining to well construction, operation, repair, modification, destruction and inactivation. The Applicant will furnish the Watermaster a complete well log upon completion of well modification.

Submitted for Applicant by:_____

Signature:_____

Title:_____

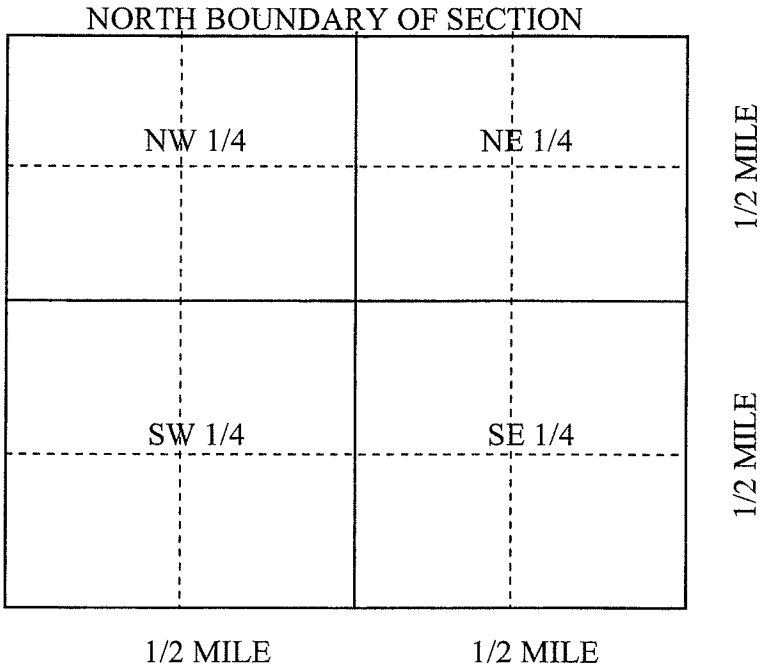
Date:_____

Date Received by Watermaster:_____
Watermaster Action:
Approved ( ) Denied ( )
Date of Action:_____
Permit Number:_____
By:_____
(Name)
_____
(Title)

Form No. RR 28-03 – 08/00

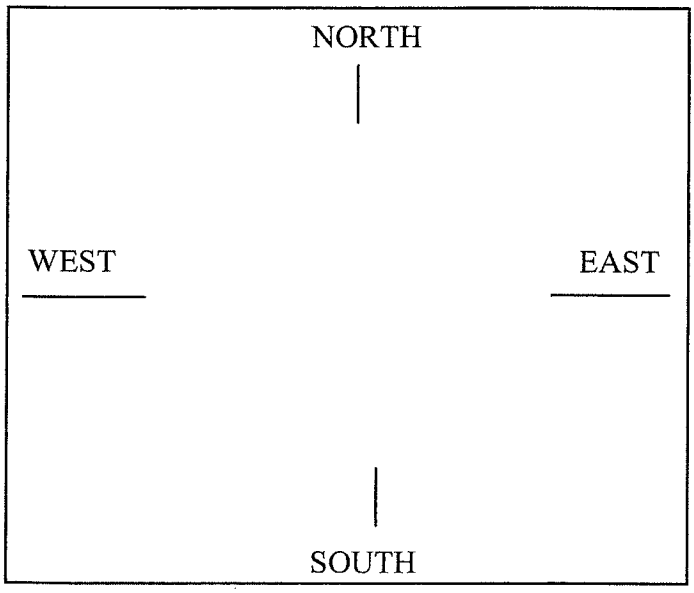
EXHIBIT I-1

WELL LOCATION SKETCH



Township _____ **N/S**
Range_____**E/W**
Section No._____

A. Location of well in sectionized areas. Sketch roads, railroads, streams, or other features as necessary.



B. Location of well in areas not sectionized. Sketch roads, railroads, streams, or other features as necessary. Indicate distances.

EXHIBIT I-2

Mailing Address:
725 North Azusa Ave.
Azusa, CA 91702

MAIN SAN GABRIEL BASIN WATERMASTER

SUPERIOR COURT CASE NO. 924128-LOS ANGELES COUNTY

_____ (State Well Number)

_____ (Recordation Number)

_____ (Owner's Designation)

APPLICATION TO DESTROY WELL

(1) APPLICANT:
Name_____
Address_____
_____

(2) LOCATION OF WELL:
*Well Address:*_____
*Township, Range, and Section*_____
*Thomas Brothers Guide (Please indicate year, page number and coordinates.)*_____
_____
*Assessor's Parcel No.*_____
(Please attach copy of a map or sketch showing well location relative to streets or other major landmarks.)

(3) NAME OF WELL DRILLING CONTRACTOR:_____
_____

(4) PURPOSE FOR DESTROYING WELL
Water Quality ( ) Physical ( )
Other ( )_____

(5) CURRENT USE:
Municipal ( ) Irrigation ( )
Domestic ( ) Industrial ( )
Water Quality Cleanup ( )
Other ( )_____

(6) EXISTING CASING INSTALLED:
STEEL ( ) PLASTIC ( )
OTHER ( )

Gravel Packed:
Yes ( ) No ( ) Size_____

From ft.	To ft.	Diam.	Gage or Wall	Diameter of Bore	Packed From ft.	Packed To ft.

Size of shoe or well ring:
_____
Describe joint_____

(7) EXISTING PERFORATIONS OR SCREEN:
Type of perforation or size of screen

From ft.	To ft.	Perf. per row	Rows per ft.	Slot Size

(8) CONSTRUCTION:
Was a surface sanitary seal provided? Yes ( ) No ( )
To what depth? _____ft.
Were any strata sealed against pollution? Yes ( ) No ( )
If yes, note depth of strata
from _____ft. to _____ft.
from _____ft. to _____ft.
Method of sealing_____

(9) WELL LOG: (Please provide a copy of well log.)
Total depth _____ft. Depth of completed well _____ft.
Formation: *Describe by color, character, size of material and structure if well log cannot be provided.*
_____ft. to _____ft._____
_____

(10) METHOD OF DESTROYING: (Please provide an explanation of how the well is to be destroyed including drawings showing the proposed method of destroying. Please provide copy of County of Los Angeles permits and State Department of Water Resources Water Well Drillers reports and any other permits for destruction of well following destruction of the well.)

_____
_____
_____
_____
_____

I hereby agree to comply with all regulations of the Main San Gabriel Basin Watermaster pertaining to well construction, operation, repair, modification, destruction and inactivation. The Applicant will notify the Watermaster upon completion of well destruction.

Submitted for Applicant by:_____
_____

Signature:_____

Title:_____

Date:_____

Date Received by Watermaster:_____

Watermaster Action:
Approved ( ) Denied ( )

Date of Action:_____

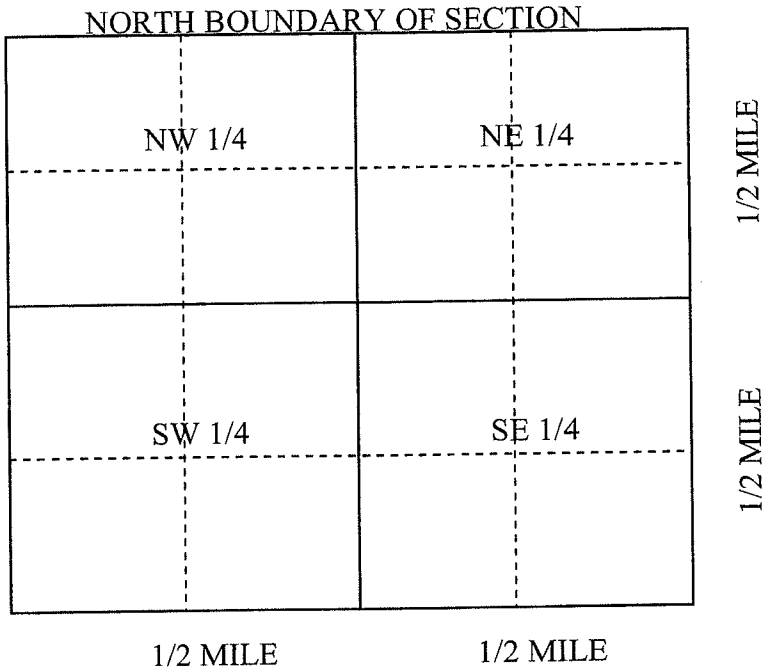
Permit Number:_____

By:_____
(Name)
_____
(Title)

EXHIBIT J-1

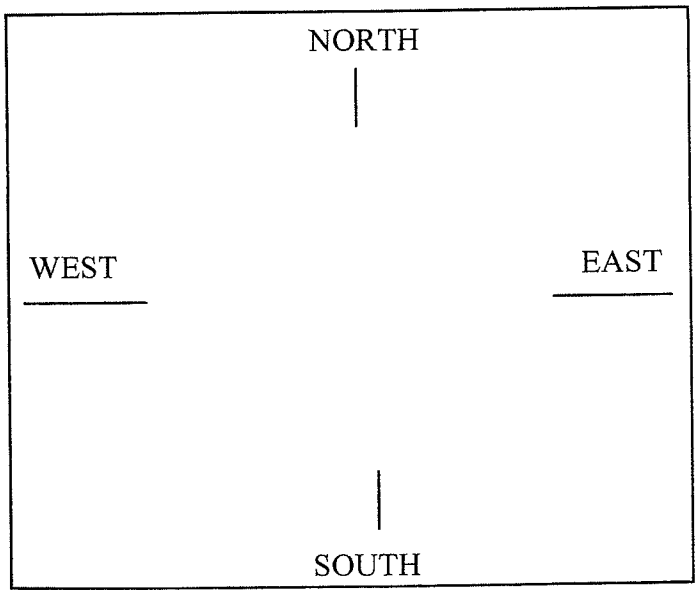
Form No. RR 28-03 – 08/00

WELL LOCATION SKETCH



Township _____ **N/S**
Range _____ **E/W**
Section No. _____

A. Location of well in sectionized areas. Sketch roads, railroads, streams, or other features as necessary.



B. Location of well in areas not sectionized. Sketch roads, railroads, streams, or other features as necessary. Indicate distances.

Mailing Address:
725 North Azusa Ave.
Azusa, CA 91702

MAIN SAN GABRIEL BASIN WATERMASTER

SUPERIOR COURT CASE NO. 924128-LOS ANGELES COUNTY

APPLICATION FOR WATER TREATMENT FACILITY

(1) APPLICANT:
Name_____
Address_____
_____

(2) LOCATION OF TREATMENT FACILITY:
Address_____
Thomas Brothers Guide (Please indicate year, page number and coordinates.)_____
_____

(Please include a map showing the location of the treatment facility relative to streets, buildings, water system facilities and other points of reference.)

(3) (A) NAME OF WATER TREATMENT FACILITY CONTRACTOR:_____
(B) NAME OF DESIGN ENGINEER AND STATE REGISTRATION NUMBER:_____

(4) PROPOSED ACTION AT TREATMENT FACILITY
Construction ( ) Modification ( ) Removal ( )
Destruction ( ) Other ( )

(5) DESCRIPTION OF FACILITY:
(A) Type of treatment:
Volatile Organic Chemical ( ) Nitrate ( ) Other ( )
(B) Please describe the treatment process to be used at the proposed treatment plant.
_____
_____
_____

(C) Please list, by Owner Designation, all wells to be treated:
_____
_____
_____

(6) ANTICIPATED TREATMENT FACILITY CAPACITY:
_____Gallons Per Minute
_____Acre-feet Per Year

(7) EXPECTED CONCENTRATION OF CONTAMINANTS:

Contaminant	Influent Concentration (Parts per Billion)	Effluent Concentration (Parts per Billion)	Contaminant Removal Rate (Percent)
Trichloroethylene (TCE)	_____	_____	_____
Tetrachloroethylene (PCE)	_____	_____	_____
1,1,1-Trichloroethane (1,1,1-TCA)	_____	_____	_____
Carbon Tetrachloride (CTC)	_____	_____	_____
1,1-Dichloroethylene (1,1-DCE)	_____	_____	_____
1,1-Dichloroethane (1,1-DCA)	_____	_____	_____
1,2-Dichloroethane (1,2-DCA)	_____	_____	_____
Others:			
_____	_____	_____	_____
_____	_____	_____	_____

(8) DISPOSITION OF ALL TREATED WATER:
(Please describe disposition of all treated water, and the corresponding annual amount of discharge.)
_____
_____

(9) INITAIL START-UP DATE:
_____

(10) EXPECTED OPERATING SCHEDULE:
(A) Daily schedule_____
(*B*) Number of days each month (*Please specify if operating schedule varies month-to-month)*
_____
_____

(11) EXPECTED COSTS
(A) Capital cost:$_____
(B) Operation and maintenance:$_____/AF.

(12) REGULATORY PERMITS: Please describe all necessary permits and/or all permits for which you have applied or have received from all regulatory agencies with regard to the proposed treatment facility. Please supply to Watermaster, copies of all environmental documents required under the California Environmental Quality Act and/or the National Environmental Protection Act.

(13) Applicant acknowledges it will comply with all portions of Section 28 of Watermaster's Rules and Regulations pertaining to quarterly data submittal, for treatment plant operation, to Watermaster. Specifically, at least the following data shall be provided on a quarterly basis:

- Name or other designation of treatment facility;
- Quantity of water treated during quarter;
- Quantity of each contaminant removed;
- Quality of water before treatment, at beginning and end of each quarter;
- Quality of water after treatment, at beginning and end of each quarter; and
- Operation and maintenance costs for each quarter.

(14) Please provide Watermaster with copies of all feasibility studies, alternative water supply sources, water quality studies or other reports which validate the Applicant's need to install a water treatment facility.

Applicant must provide supporting data to show compliance with the requirements of Section 28 with particular reference to Section 28(h) of Watermaster's Rules and Regulations.

I hereby agree to comply with all regulations of the Main San Gabriel Basin Watermaster pertaining to treatment plant construction, operation, repair, modification, destruction and inactivation.

Submitted for Applicant by:_____

Signature:_____

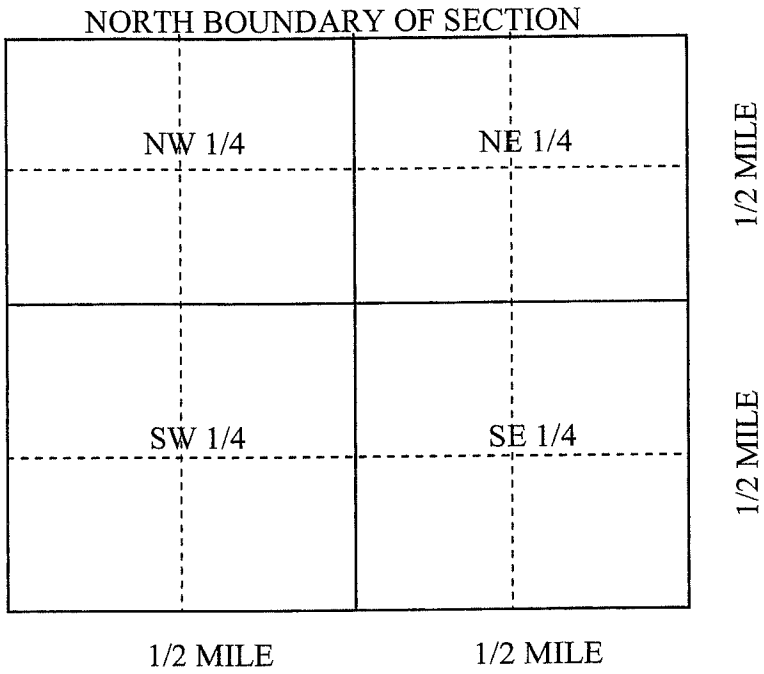
Title:_____

Date:_____

Date Received by Watermaster:_____
Watermaster Action:
Approved ( ) Denied ( )
Date of Action:_____
Permit Number:_____
By:_____
(Name)
_____
(Title)

EXHIBIT K-1

WELL LOCATION SKETCH



Township _____ **N/S**
Range_____**E/W**
Section No._____

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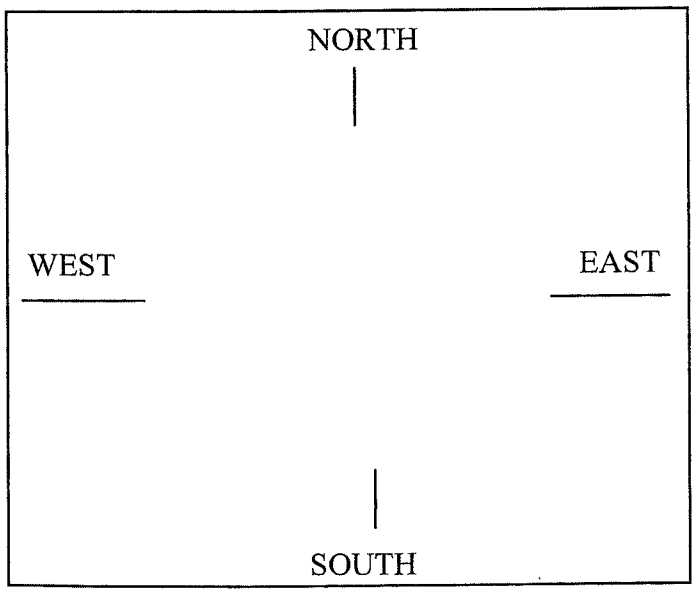


B. Location of well in areas not sectionized. Sketch roads, railroads, streams, or other features as necessary. Indicate distances.

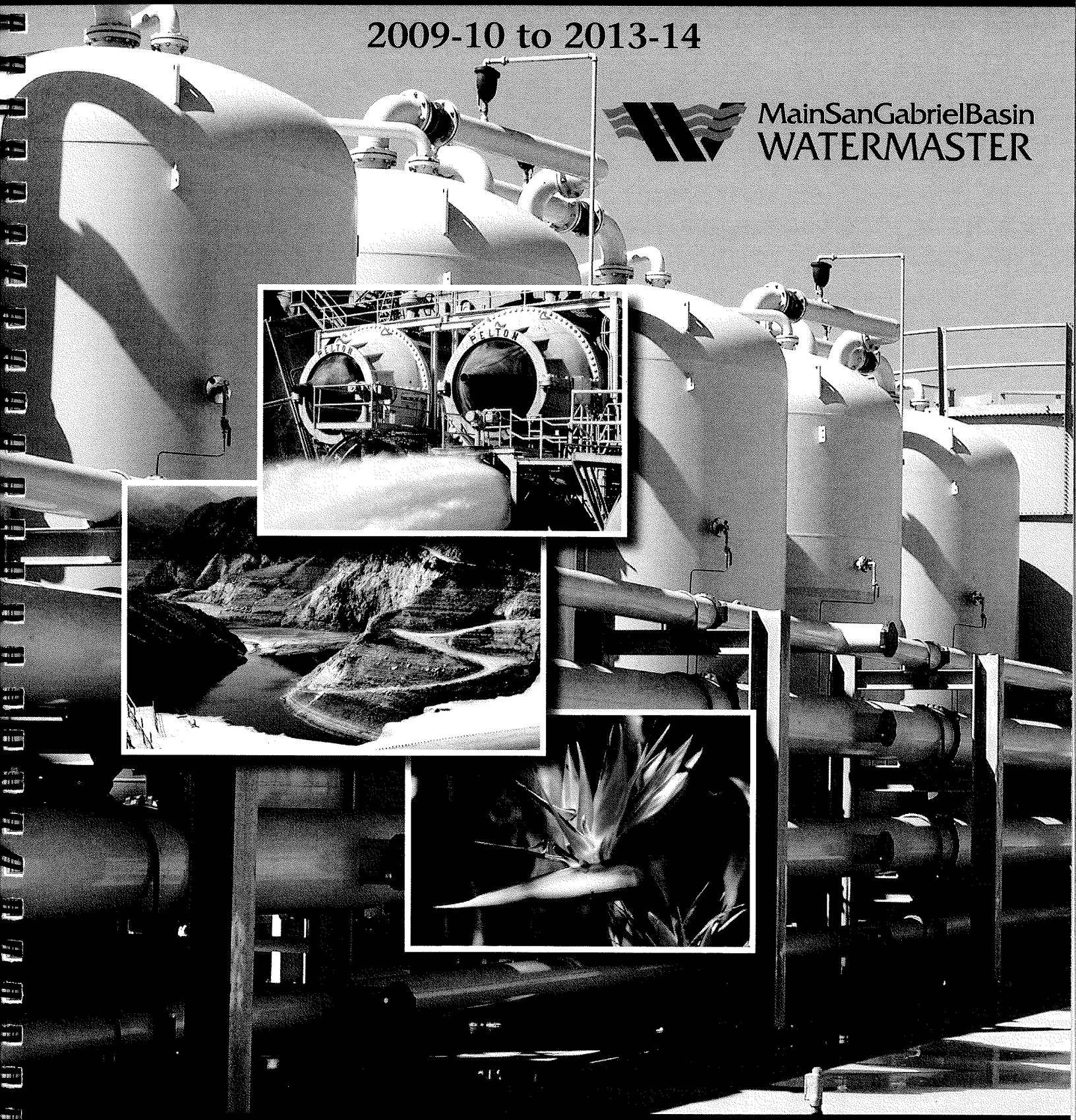
APPENDIX F

FIVE-YEAR WATER QUALITY AND SUPPLY PLAN

Five-Year Water Quality and Supply Plan

2009-10 to 2013-14

MainSanGabrielBasin
WATERMASTER



Five-Year Water Quality and Supply Plan

November 2009

MainSanGabrielBasin
WATERMASTER

Telephone (626) 815-1300 • Fax (626) 815-1303
725 North Azusa Avenue • Azusa, California 91702
www.watermaster.org

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- Appendix G: Simulated Basin Groundwater Contours 2008-09 and 2013-14 (Figures 9 and 10)

INTRODUCTION

Watermaster prepares and annually updates this Five-Year Water Quality and Supply Plan (Five-Year Plan) in accordance with the requirements of Section 28 of its Rules and Regulations. The objective is to coordinate groundwater-related activities so that both water supply and water quality in the Main San Gabriel Basin (Basin) are protected and improved.

PURPOSE OF THE FIVE-YEAR PLAN

Many important issues are detailed in the Five-Year Plan, including how Watermaster plans to:

1. monitor groundwater supply and quality;
2. develop projections of future groundwater supply and quality;
3. ensure adequate supplemental water is available for groundwater replenishment
4. review and cooperate on cleanup projects, and provide technical assistance to other agencies;
5. assure that pumping does not lead to further degradation of water quality in the Basin;
6. address emerging contaminants in the Basin;
7. develop a cleanup and water supply program consistent with the U.S. Environmental Protection Agency (USEPA) plans for its San Gabriel Basin Superfund sites; and
8. coordinate and manage the design, permitting, construction, and performance evaluation of the Baldwin Park Operable Unit (BPOU) cleanup and water supply plan.

WATERMASTER BACKGROUND

The Los Angeles County Superior Court created the Main San Gabriel Basin Watermaster in 1973 to resolve water issues that had arisen among water users in the San Gabriel Valley. Watermaster's mission was to generally manage the water supply of the Main San Gabriel Groundwater Basin.

During the late 1970s and early 1980s, significant groundwater contamination was discovered in the Basin. The contamination was caused in part by past practices of local industries that had inappropriately disposed of industrial solvents, as well as by agricultural operations that infiltrated nitrates into the groundwater. Cleanup efforts for industrial contamination were undertaken at the local, state, and federal levels.

WATERMASTER RECEIVES WATER QUALITY RESPONSIBILITIES

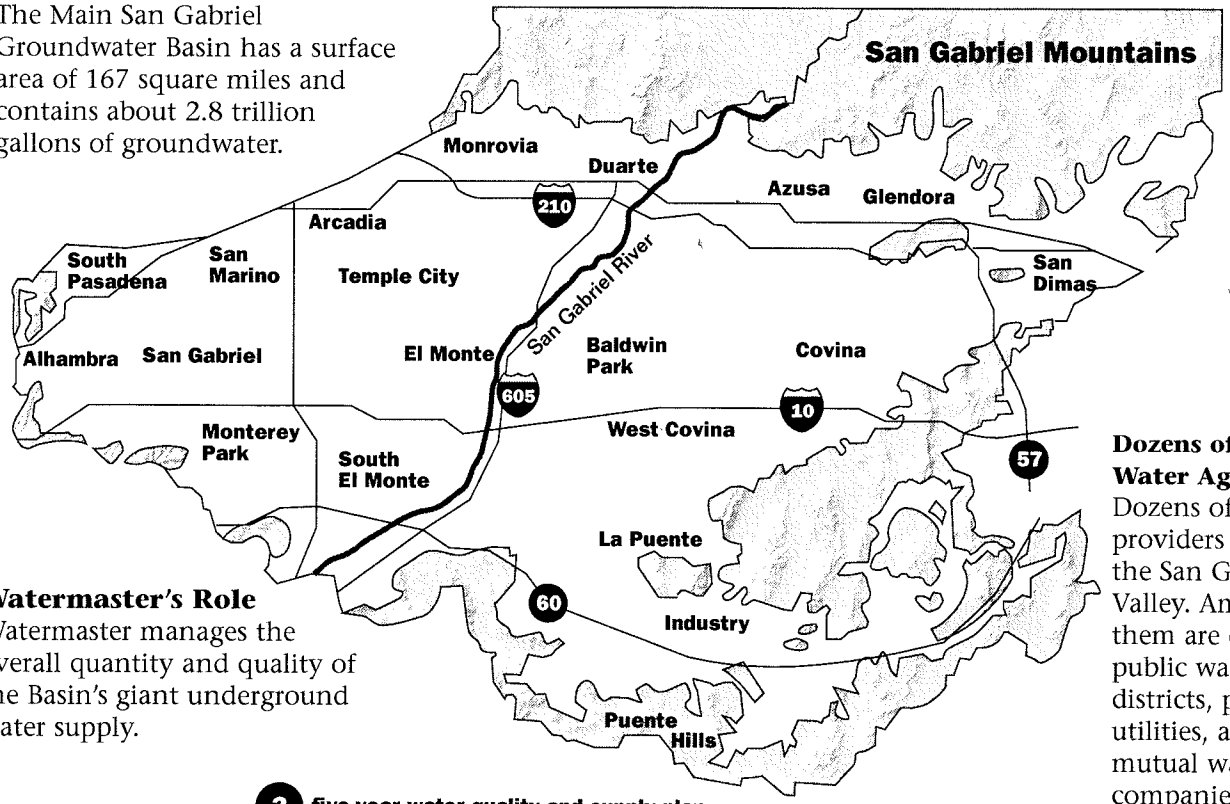
By 1989, local water agencies adopted a joint resolution regarding water quality issues that stated that Watermaster should coordinate local activities aimed at preserving and restoring the quality of groundwater in the Basin. The joint resolution also called for a cleanup plan.

In 1991, the Los Angeles County Superior Court granted Watermaster the authority to control pumping for water quality purposes. Accordingly, Watermaster added Section 28 to its Rules and Regulations regarding water quality management. The new responsibilities included: developing this Five-Year Water Quality and Supply Plan; updating it annually, and submitting it to the California Regional Water Quality Control Board, Los Angeles Region (Regional Board); and making it available for public review by November 1 of each year.

Figure 1. AREA COVERED BY MAIN SAN GABRIEL BASIN

Precious Underground Water Supply
The Main San Gabriel Basin provides up to 90 billion gallons of groundwater annually, enough to meet 80 percent or more of San Gabriel Valley's 1.4 million residents' demand for water.

2.8 Trillion Gallons
The Main San Gabriel Groundwater Basin has a surface area of 167 square miles and contains about 2.8 trillion gallons of groundwater.



Watermaster's Role
Watermaster manages the overall quantity and quality of the Basin's giant underground water supply.

Dozens of Water Agencies
Dozens of water providers serve the San Gabriel Valley. Among them are cities, public water districts, private utilities, and mutual water companies.

CURRENT WATER SUPPLY CONDITIONS

Rainfall in the San Gabriel Valley averaged about 14 inches during 2008-09, or about 76 percent of the long-term average. As a result of the below average rainfall, the groundwater level decreased by about seven feet during fiscal year 2008-09.

WATER SUPPLY INFLOWS DURING 2008-09

VALLEY RECEIVES BELOW AVERAGE RAINFALL

In 2008-09, the San Gabriel Valley received about 14 inches of rain, which is about 76 percent of the long-term average of 18.52 inches.

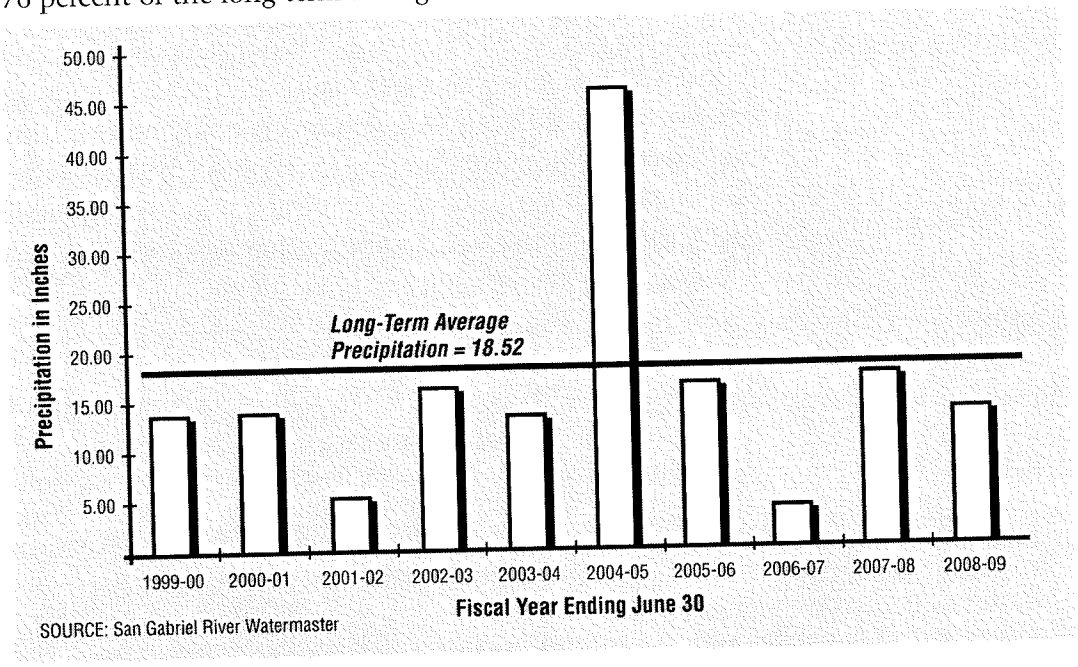


Figure 2. AVERAGE RAINFALL DURING THE LAST TEN YEARS
Rainfall in 2008-09 was about 14 inches. Average precipitation in the Main San Gabriel Basin for the 10-year period from 1999-00 to 2008-09 was 16.7 inches. The long-term average rainfall is 18.52 inches. The rainfall total is made up of an average taken from four stations located in San Dimas, Diamond Bar, El Monte, and Pasadena.

LOCAL STORMWATER CAPTURE 30 PERCENT OF AVERAGE

During fiscal year 2008-09 rainfall was about 76 percent of normal and contributed to runoff of about 70,000 acre-feet, which is about 67 percent of normal. Fiscal year 2008-09 represents the fourth consecutive year of below average rainfall and the third consecutive year of below average storm water runoff. As a result, conservation of local storm runoff between 2006-07 and 2008-09 totaled about 150,000 acre-feet, while the long-term average would have represented about 315,000 acre-feet. The deficit of about 165,000 acre-feet (315,000 - 150,000) represents about 21 feet of groundwater elevation at the Baldwin Park Key Well. Had rainfall and local storm runoff been near normal, the Baldwin Park Key Well groundwater level as of June 30, 2009 could have been about 21 feet higher or about elevation 216 feet instead of the recorded elevation of about 195 feet.

BASIN DEMANDS BELOW AVERAGE

The total Main San Gabriel Basin water demand consists of groundwater production, treated local runoff, and treated imported water deliveries. During fiscal year 2008-09 total water demand was about 272,000 acre-feet consisting of about 236,800 acre-feet of groundwater production, 13,700 acre-feet of treated local surface water and 21,500 acre-feet of treated imported water. The total quantity is about 6 percent lower than the 10-year average of about 290,000 acre-feet despite having below average rainfall in 2008-09, which would tend to increase water demands. The reduction is a result of Watermaster's and others' efforts to promote and encourage water conservation. The Main San Gabriel Basin Watermaster annually establishes an Operating Safe Yield, which is based on prevailing hydrologic conditions in the San Gabriel Valley. Production in excess of the Operating Safe Yield is subject to an assessment used to purchase untreated imported water to replenish the Main San Gabriel Basin. Overproduction during fiscal year 2008-09 was 58,100 acre-feet, which is above the 10-year average of 43,900 acre-feet. Untreated replenishment water deliveries have not been made available by the Metropolitan Water District of Southern California (MWD) since May 2007. The lack of replenishment water combined with dry conditions created historic low water levels even with reduced production due to conservation efforts.

KEY WELL BELOW OPERATING RANGE

The Baldwin Park Key Well is used as the benchmark for determining the groundwater level for the entire Basin. Pursuant to the Judgment, Watermaster works to keep the Key Well water level between 200 feet and 250 feet to the extent possible. Below average rainfall over the past four years, coupled with below average storm runoff contributed to the Baldwin Park Key Well water level falling from about 248.4 feet in June 2005 to 195.6 feet in June 2009. The below average rainfall of 14 inches during 2008-09 contributed to the continued decrease in the groundwater elevation at the Key Well to about 195.6 feet as of June 30, 2009, which is 4.4 feet below the bottom of the operating range.

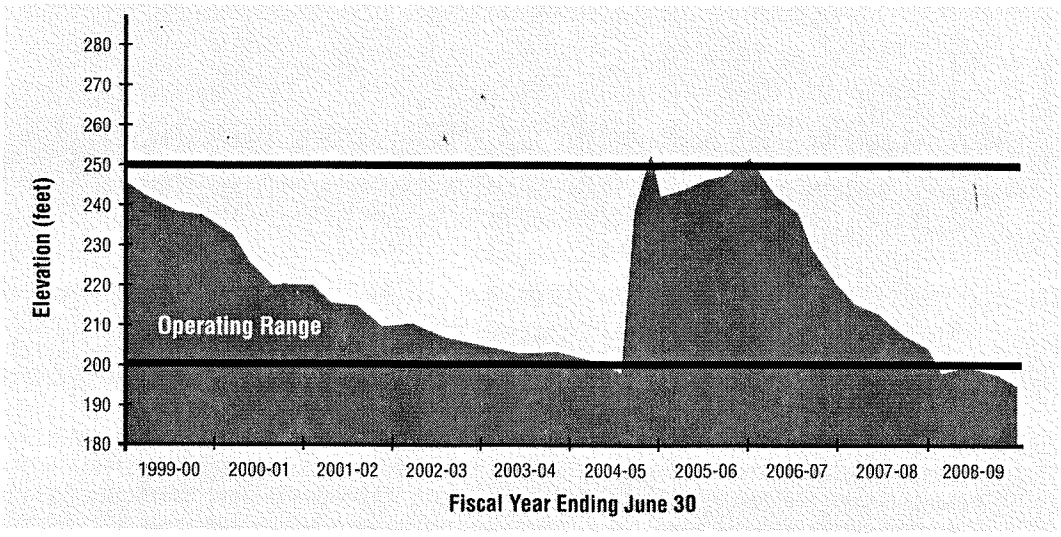


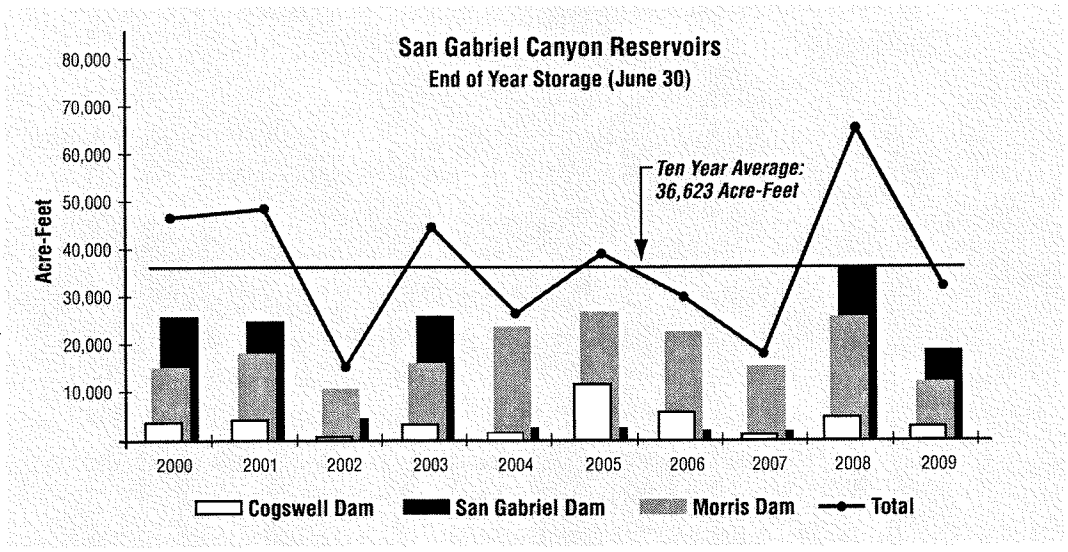
Figure 3. KEY WELL ELEVATIONS DURING THE LAST TEN YEARS
The groundwater elevation at the Key Well on June 30, 2009 was about 195.6 feet, which is below the bottom of the Basin's operating range of 200 to 250 feet.

DECREASE IN WATER STORED IN CANYON RESERVOIRS

Cogswell, San Gabriel, and Morris Reservoirs have a combined maximum storage capacity of about 85,000 acre-feet. At the end of the 2008-09 fiscal year, about 31,800 acre-feet of water was stored in these reservoirs. This is a decrease from the previous year and represents about 87 percent of the 10-year average of about 36,600 acre-feet of water in storage at the end of the fiscal year. In addition, about 70,000 acre-feet of local runoff was released from storage in local reservoirs for recharge into the groundwater basin during fiscal year 2008-09.

Total water stored in San Gabriel Canyon reservoirs at the end of the fiscal year was 31,800 acre-feet and is 87 percent of the 10-year average.

Figure 4. WATER STORED IN SAN GABRIEL CANYON RESERVOIRS



BASIN REPLENISHMENT ACTIVITIES

Basin management continues to encourage producers to maximize groundwater production instead of relying on treated imported water. Under normal conditions Watermaster quantifies groundwater production in excess of Producers' water rights and arranges to have an equal amount of untreated imported water delivered to replenish the overproduction from the Basin. This practice takes advantage of historically lower cost water and allows water agencies to deliver untreated imported water on a flexible basis instead of requiring a continuous flow, as is the case of treated water demands. Currently, deliveries of untreated imported water for groundwater replenishment by MWD have been suspended. This suspension of deliveries has been in place since May 2007. MWD has indicated untreated imported water may be available in only three out to 10 years in the future. Watermaster is actively pursuing alternative means of Basin replenishment including:

- shifting groundwater production to treated imported water deliveries to reduce overproduction from the Basin;
- encouraging reduced groundwater production through conservation efforts;

- securing alternative supplemental supplies including maximizing delivery of imported water from State Water Project contractors; and
- securing a firm supply of advanced treated recycled water.

PROJECTED GROUNDWATER DEMANDS

PRODUCER ESTIMATES

Section 28 requires that each Producer submit a report to Watermaster detailing its projected water supply and water production requirements over the following five years. Projections were received from 16 Producers, accounting for about 65 percent of the groundwater production from the Basin.

For those Producers who did not submit projections, Watermaster provided an estimate based on the assumption that each Producer had an aggregate projected growth rate that was the same as those Producers who did submit projections. Projected groundwater production is shown in Appendix A.

Figure 5 shows the total projected and historical groundwater production from the Basin since 2002-03.

Water production has decreased over the prior year, due in part to Basinwide water conservation efforts.

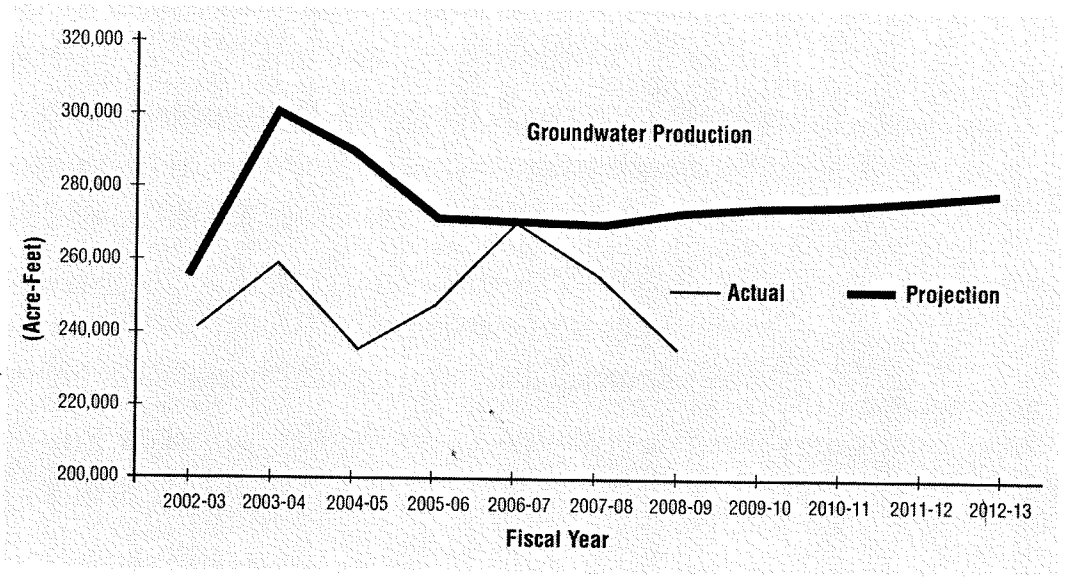


Figure 5. PROJECTED AND HISTORICAL WATER PRODUCTION
Total groundwater production for the 2008-09 fiscal year from the Basin was 236,800 acre-feet, which is lower than the previous year's production of 253,000 acre-feet. The decrease in groundwater production is due partially to Basin-wide water conservation.

Groundwater production is influenced by a variety of conditions, including population, seasonal precipitation, groundwater contamination, and availability of surface water. Excluding the impacts of seasonal precipitation, groundwater production had been experiencing a gradual increase. The impacts of groundwater contamination since the 1980s had caused several water agencies to reduce groundwater production and temporarily increase reliance on treated imported water. In recent years, various groundwater production and treatment facilities have become operational, enabling water purveyors to resume use of groundwater.

CURRENT WATER QUALITY CONDITIONS

Groundwater delivered to customers continues to be of high quality and always meets state and federal drinking water standards. However, a number of contaminants in areas of the Basin require careful monitoring and treatment before the water is served for domestic use. These contaminants include a variety of industrial solvents referred to as volatile organic compounds, or VOCs. Another common contaminant found in the Basin is nitrate, primarily from fertilizers used during the Valley's agricultural period. Since 1997, additional contaminants have been detected: perchlorate, a solid rocket fuel ingredient; N-nitrosodimethylamine (NDMA), associated with liquid rocket fuel; 1,2,3-trichloropropane (1,2,3-TCP), a degreasing agent; and 1,4-dioxane, a stabilizer for chlorinated solvents.

In response to the detection of these contaminants, Watermaster and local water entities aggressively pursued construction of treatment facilities to control the spread of contaminants and continue providing high quality water to consumers. This policy of remediation and reuse both preserves a valuable resource and reduces the overall cost of groundwater cleanup. Initially, a number of VOC treatment facilities were constructed, while excessive nitrate concentrations were blended down to acceptable levels. Since the detection of perchlorate and NDMA, Watermaster has been instrumental in the successful operation of treatment facilities to treat VOCs, perchlorate, and NDMA.

While only present in limited parts of the Basin, these chemicals pose difficult challenges to water Producers. Watermaster responded vigorously by working closely with the local water community to sponsor research, as well as to design, fund, and construct cleanup projects ahead of the USEPA and the firms named as responsible for the contamination. Watermaster also led negotiations that resulted in the Baldwin Park Operable Unit (BPOU) Project Agreement, including an initial reimbursement for groundwater cleanup costs from certain parties responsible for the contamination. Under the agreement, Watermaster is responsible for overall project coordination and administration, groundwater monitoring, and compliance with USEPA reporting requirements. Watermaster also participates in decisions regarding technology selection, construction, and operations. Now that all of the BPOU treatment facilities are operational, Watermaster also monitors the BPOU project's performance in containing and removing contamination.

PRIMARY CONTAMINANTS IN THE GROUNDWATER BASIN

VOLATILE ORGANIC COMPOUNDS AND NITRATES

VOCs and nitrates are the most prevalent contaminants found in the Basin. Intensive monitoring and research concerning these two types of contaminants have been underway for many years. The location and cleanup methods for VOCs are generally well understood; during fiscal year 2008-09, 30 plants treated about 26 billion gallons of VOC-contaminated water. Water containing nitrates above the Maximum Contaminant Level (MCL) is either blended with other sources or not used.

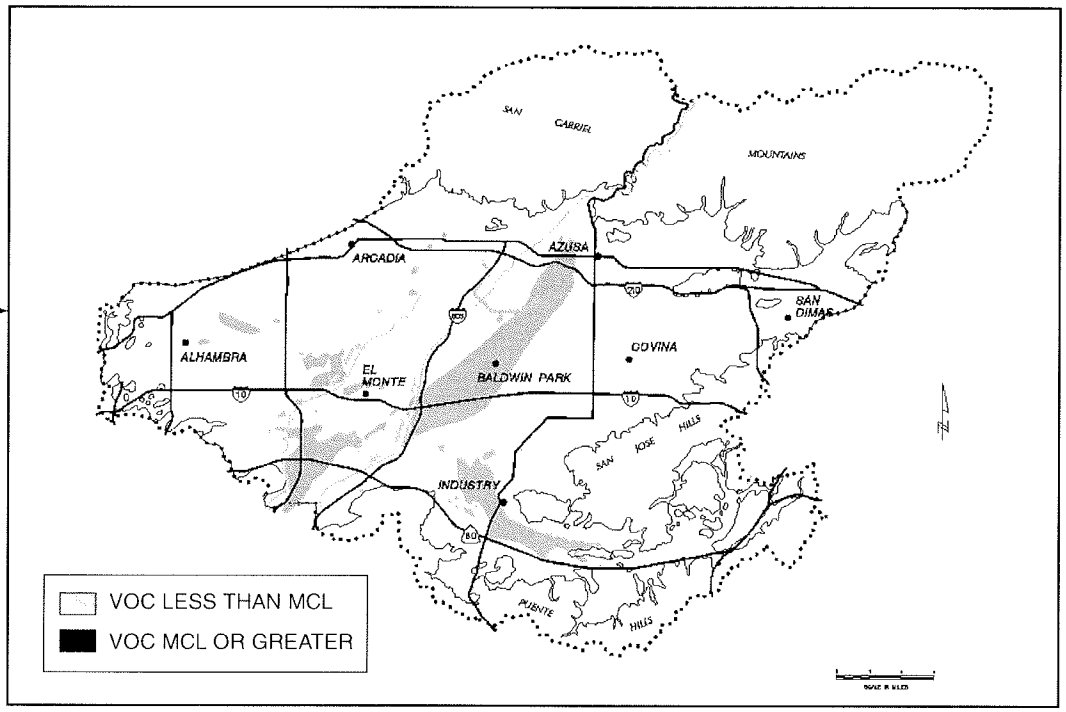
Note in Figure 6 that although VOC contamination is substantial, it is centered in just a few areas, leaving a good portion of the Basin unaffected. The same is true for nitrates, which have the highest concentrations in the eastern portion of the Basin, away from the most productive pumping areas (see Figure 7).

PERCHLORATE

In January 2002, California Department of Public Health (CDPH), formerly the California Department of Health Services, lowered the Notification Level (NL) for perchlorate from 18 to 4 parts per billion, and a total of 22 wells were removed from service due to unacceptable levels of perchlorate. CDPH subsequently raised the NL to 6 parts per billion in March 2004 and later established an MCL of 6 parts per billion during October 2007. Watermaster played a key role in development of the first treatment technology to remove perchlorate from drinking water; ion exchange technology is now operational at five sites in the BPOU and at two facilities in other parts of the Basin.

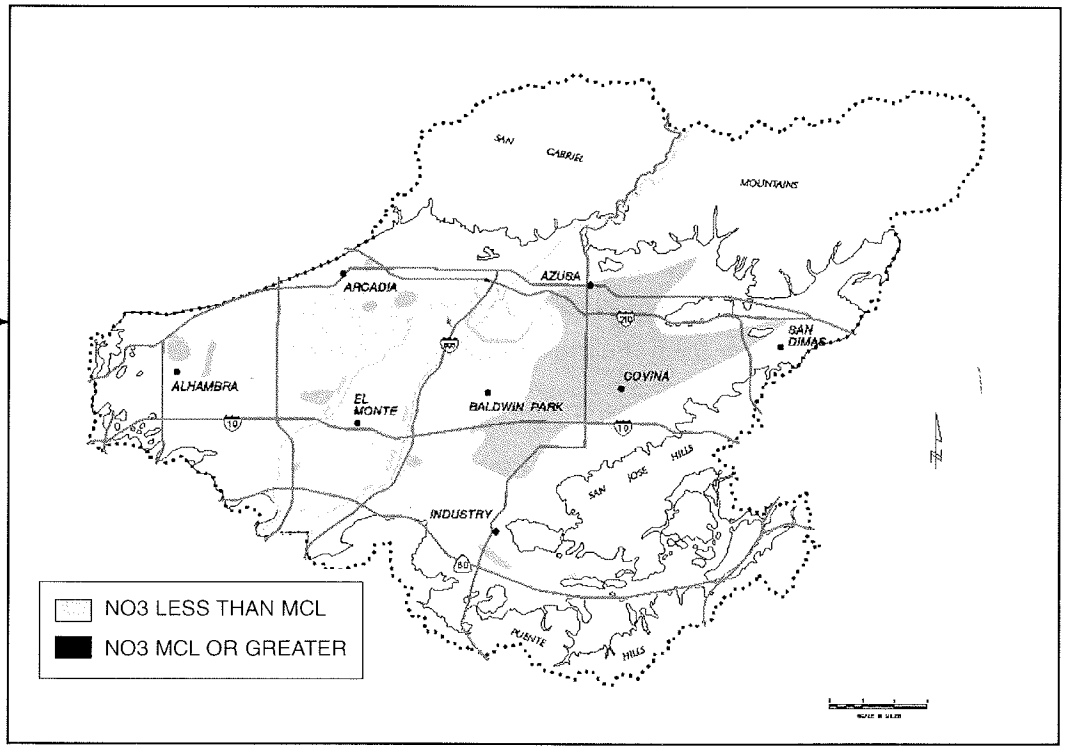
Extensive cleanup programs are underway in the areas affected by VOC contamination. Because the main plumes of contamination are centered in just a few areas, much of the Basin remains unaffected.

Figure 6. VOLATILE ORGANIC COMPOUND LEVELS IN GROUNDWATER THROUGHOUT THE BASIN



Nitrate (NO3) contamination is highest in the eastern portion of the Basin, away from the San Gabriel River, the area of most intensive groundwater pumping.

Figure 7. NITRATE LEVELS IN GROUNDWATER THROUGHOUT THE BASIN



NDMA

During 1998, eight local wells were found to contain levels of NDMA above the NL at that time of 2 parts per trillion. Five of the wells with measurable levels of NDMA had already been taken out of service for other reasons, and the other three were put on inactive status once NDMA was detected. CDPH subsequently raised the NL to 10 parts per trillion. As with perchlorate, Watermaster played a key role in the construction of NDMA treatment facilities in the BPOU area of the Basin. Five facilities were operational, during fiscal year 2008-09.

1,2,3-TRICHLOROPROPANE

The compound 1,2,3-trichloropropane is a degreasing agent that has been detected in the groundwater above the NL of 5 parts per trillion, primarily in the BPOU and the Area 3 OU. It was detected in the BPOU during the winter of 2006, and its presence delayed use of one treatment facility for potable purposes. Following detection, CDPH indicated the appropriate treatment technology is liquid phase granular activated carbon. Subsequently, Watermaster, in cooperation with its BPOU project partners, worked to construct treatment facilities to remove 1,2,3-TCP from the groundwater to make it suitable for potable uses. That treatment facility was operational during fiscal year 2008-09.

WELLS ASSESSED FOR VULNERABILITY TO CONTAMINATION

One of the primary purposes of the Five-Year Plan is to identify wells in the Basin that are vulnerable to contamination. A well is considered vulnerable if the concentration of contaminants reaches 50 percent of the NL or MCL allowed by state drinking water regulations. Watermaster reviews water quality tests performed on each well, regional water quality conditions, and contaminant migration patterns in an effort to project which wells may be vulnerable over the next five years and prepare plans to construct treatment facilities, as needed. (See Figures 8a, 8b and 8c in Appendix F).

Watermaster maintains a Water Quality Protection Plan that provides an early warning to Producers of potential increases in contaminant levels. The Water Quality Protection Plan also provides suggested alternative sources of supply, and proposes long-term actions to solve the contamination problem(s) without contributing to the migration of contaminants in the Basin.

FIVE-YEAR WATER QUALITY AND SUPPLY PLAN

The Main San Gabriel Basin's designation as a federal Superfund site was prompted by the discovery of widespread VOC contamination. Cleanup plans were developed to contain and remove VOCs from groundwater, and Watermaster, along with various other local water agencies, water producers and regulators, has worked to develop the expertise, financing and treatment technologies to effectively address Basinwide cleanup of VOCs.

The discovery of perchlorate and NDMA, however, complicated the existing VOC cleanup approach by creating a number of challenges. Most important, these new contaminants could not be removed using existing treatment facilities, and new, additional treatment methods had to be identified, financed and implemented.

Watermaster facilitates groundwater cleanup projects that also meet water supply needs.

This report outlines a combined cleanup and water supply plan for each of the USEPA Operable Units. Watermaster's plan for each area is consistent with the USEPA plans, and its goal is to implement cleanup as promptly as possible, with or without the cooperation of the Responsible Parties.

GROUNDWATER MONITORING PROGRAMS

Monitoring involves measuring groundwater levels, groundwater quality, and groundwater flow. Watermaster continuously refines its understanding of the groundwater Basin to increase the safe yield of the Basin, and to protect and improve local water quality.

GROUNDWATER ELEVATION MONITORING

CONTINUE KEY WELL AND SUPPLEMENTAL KEY WELL OPERATION AND DATA PROCESSING

The entire 167-square-mile groundwater Basin is managed as one unit based on the groundwater levels as measured at a single Key Well in Baldwin Park. Water levels have been measured at this well since 1903 and are currently measured every three hours by an automated recorder.

Additional groundwater level recorders have been installed near the Santa Fe Spreading Grounds; adjacent to the San Gabriel River above the I-210 Freeway; in the City of Rosemead; in the City of Covina; and near the Whittier Narrows Dam. These water level records are synchronized with the record in the Key Well. Collectively, water level data from these wells provide a better understanding of impacts of recharge operations at the Santa Fe Spreading Grounds on Basin hydrogeology. Water elevation data are collected semi-annually at about 170 additional wells throughout the Basin, and water level recorders may be installed in those wells over the next five years.

CONTINUE BASINWIDE GROUNDWATER ELEVATION MONITORING PROGRAM (BGWEMP)

The purpose of the BGWEMP is to obtain groundwater level measurements from a large number of wells across the Basin. The information is used to prepare groundwater contour maps showing the direction of groundwater flow. The data are also used in the Basin computer model to simulate future groundwater flow patterns.
The BGWEMP plan for the coming years includes:

- taking weekly measurements of water levels in nine primary wells;
- gathering semi-annual measurements of water levels in 170 primary wells;
- obtaining water levels in secondary wells from well owners or water Producers, the San Gabriel Valley Protective Association, Regional Board, USEPA, and others;
- updating the database with water level data; and
- preparing semi-annual groundwater contour maps of the entire Basin.

GROUNDWATER QUALITY MONITORING

CONTINUE BASINWIDE GROUNDWATER QUALITY MONITORING PROGRAM (BGWQMP)

Under the BGWQMP, all production wells in the Basin are sampled at least once a year for VOCs and nitrates. The frequency of BGWQMP sampling complements the monitoring requirements under state law and supplements information gathered through Regional Water Quality Control Board source investigations and USEPA remedial investigations. The data collected by BGWQMP are used to identify and evaluate the current locations and magnitude of contaminant levels.

CONTINUE TITLE 22 WATER QUALITY TESTING

Watermaster continues to perform CDPH-mandated Title 22 water quality sampling of groundwater from approximately 200 active wells in the Basin. Watermaster also continues to track regulations and inform local water purveyors about regulatory issues and requirements. Information from centralized water quality testing is added to Watermaster's water quality database, which contains data from many sources. The centralized testing enables Watermaster to identify water quality trends on a regional scale that might otherwise go unnoticed at a specific well and also lowers monitoring costs to Producers.

GROUNDWATER FLOW AND CONTAMINANT MIGRATION STUDIES

Groundwater level and quality data are entered into the Basin computer model, which simulates where contamination is projected to flow in the future. The goal is to project contaminant levels by areas in advance of the actual event, and identify remedial steps to be taken.

GROUNDWATER ELEVATION SIMULATIONS SHOW FUTURE PUMPING WILL NOT SIGNIFICANTLY CHANGE GROUNDWATER MOVEMENT

To determine the direction of groundwater flow through the Basin, Watermaster compiles the daily average 2008-09 production for each well, enters the data into the groundwater model, and simulates how production impacts water levels throughout the Basin. A computer simulation is then run using estimated production for 2013-14. These simulations indicate that the estimated increase in groundwater production during the next five years will not significantly change the overall direction of Basin groundwater movement, which continues to flow generally from east to west to a pumping trough in the western portion of the Basin, and also northeast to southwest,

Simulations of the direction of groundwater flow in 2008-09 and projections for 2013-14 show that the estimated increase in groundwater pumping during this period would not significantly change the overall direction of Basin groundwater movement.

exiting through Whittier Narrows. The simulation for 2013-14 also shows localized pumping depressions in the Baldwin Park area, which are expected to be created by continuous pumping from groundwater extraction wells associated with the BPOU contaminant cleanup project to contain and control groundwater contaminant movement. Contaminated groundwater from those wells is treated at several treatment facilities and the CDPH-permitted water is provided for potable use.

SIMULATE IMPACTS OF GROUNDWATER PUMPING ON CONTAMINANT MIGRATION

Simulations similar to the ones described above were used to make the finding that pumping particularly from USEPA mandated cleanup projects and managed by Watermaster helps to control and contain contaminant migration.

Groundwater quality data collected during 2008-09 and projected quality data for 2013-14 were entered into the groundwater model for the contamination migration studies. The computer model is used to simulate how the flow of water would affect the migration of contamination. The simulation showed that changes in groundwater flow did not have major impacts on the migration of contaminants (refer to Figures 9 and 10 in Appendix G).

GROUNDWATER CLEANUP PROJECTS

Watermaster coordinates and provides technical assistance on many cleanup projects in the Basin, although the cleanup facilities are owned and operated by local water utilities. Watermaster's involvement includes coordinating proposed USEPA cleanup programs such that treated water is retained In the Basin to well water demands and providing assurance that projects are consistent with the Judgment.

REVIEW OF SECTION 28 APPLICATIONS

Watermaster reviews every proposal to construct, destroy, or modify a well or build a treatment plant pursuant to Section 28 of its Rules and Regulations.

Watermaster's review ensures that any new or increased extractions from the Basin or any changes in production patterns are consistent with contamination cleanup efforts and will not adversely affect Basin water quality. In conjunction with the evaluation of an application to construct a new well or a treatment facility, Watermaster uses a computer model to predict the potential future impacts of each project on contaminant migration and Basin cleanup.

BASIN CLEANUP PROJECTS/USEPA OPERABLE UNIT PLANS

The USEPA established Operable Units for the various areas within the Basin that have been contaminated and require groundwater cleanup. The Operable Units are Area 3 (Alhambra area), Baldwin Park, Puente Valley, El Monte, South El Monte, and Whittier Narrows (See Figure 11). USEPA has established a methodical process that includes a review of the extent of contamination (Remedial Investigation), development of cleanup alternatives (Feasibility Study) and selection of the most appropriate cleanup plan (Proposed Plan). Following these activities, the USEPA issues a report identifying the agreed upon Cleanup Plan (Record of Decision). Subsequently, the project facilities are designed and constructed.

With USEPA plans generally in place, Watermaster is working with others to ensure cleanup plans also address local water supply needs.

The USEPA has identified cleanup plans for nearly all the Operable Units. Unlike the USEPA, Watermaster is not only concerned with cleaning up the Basin, but also wants to ensure that the water supply needs of the region are met. With USEPA plans generally in place, Watermaster continues to work with affected Producers, Responsible Parties, and others to implement solutions that not only provide effective cleanup and conform to the USEPA plans, but also meet local water supply needs.

This Five-Year Plan describes each of the Operable Units along with the USEPA proposed cleanup plan. In addition, Appendix A identifies current and projected groundwater production to address the contamination and to implement the cleanup plans. Wells that pump to an existing or planned treatment facility are shown in bold.

In areas where the groundwater supply has been affected by contamination, Watermaster works with affected Producers and other local water agencies to implement cleanup as quickly as possible, with or without the cooperation of the Responsible Parties. Watermaster and affected Producers continue to seek cost recovery from the Responsible Parties for any cleanup costs they incur.

BALDWIN PARK OPERABLE UNIT (BPOU)

The BPOU is a seven-mile-long, one-mile-wide area of groundwater contamination that lies east of the San Gabriel River, stretching from an area north of the I-210 freeway in Azusa to south of the I-10 freeway in Baldwin Park (see Figure 12). The contamination has primarily resulted from improper use and disposal of industrial chemicals in the Azusa area, and it continues to spread generally in a southwesterly direction.

The USEPA originally issued its Record of Decision (ROD), or cleanup plan, for the BPOU in the mid-1990s. The ROD calls for pumping and treating groundwater in the northern area, where contaminant concentrations are highest, and also in the southern area to limit further migration of contaminants. The ROD involves pumping and treating an average of about 7,000 gallons per minute in the northern area and 16,000 gallons per minute in the southern area. The ROD also recommends the use of existing water supply wells, treatment systems, and pipelines when feasible. Importantly, the plan encourages adding the treated water to the potable supply, rather than simply recharging it back into the ground or disposing of it to storm drains.

Figure 11. LOCATION MAP OF USEPA OPERABLE UNITS

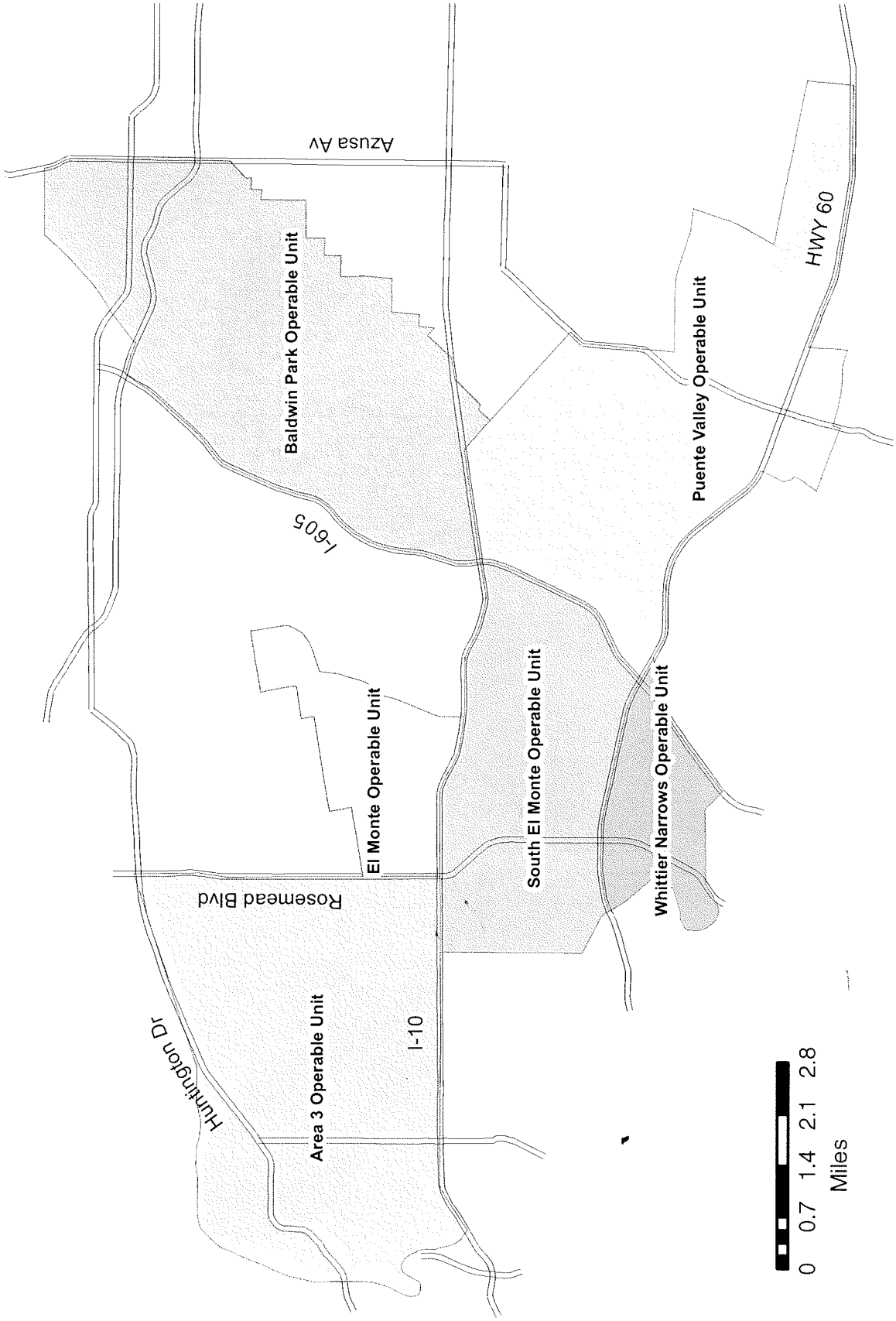


Figure 12. VOC PLUME MAP IN BPOU

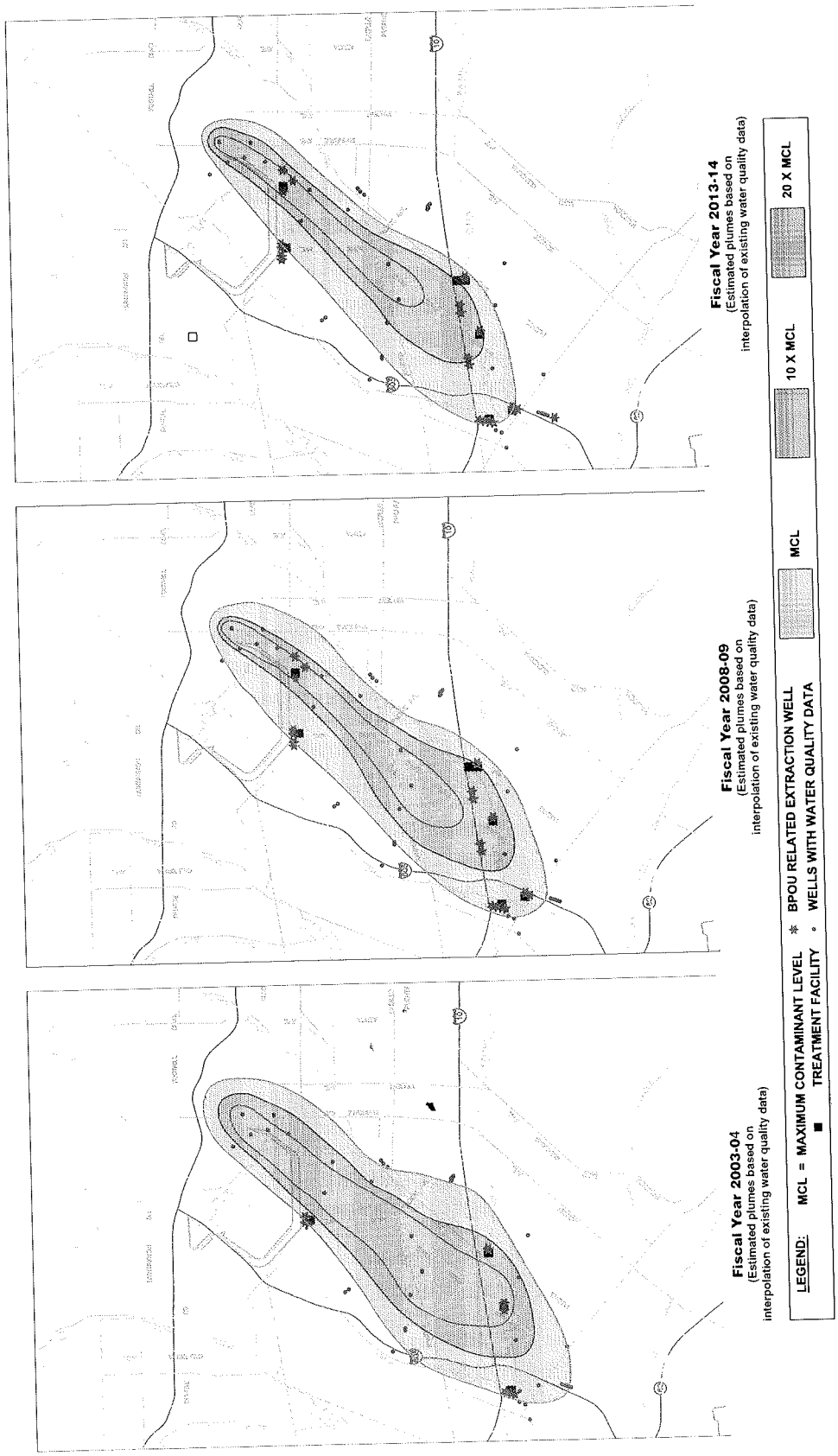


Figure 13. PERCHLORATE PLUME MAP IN BPOU

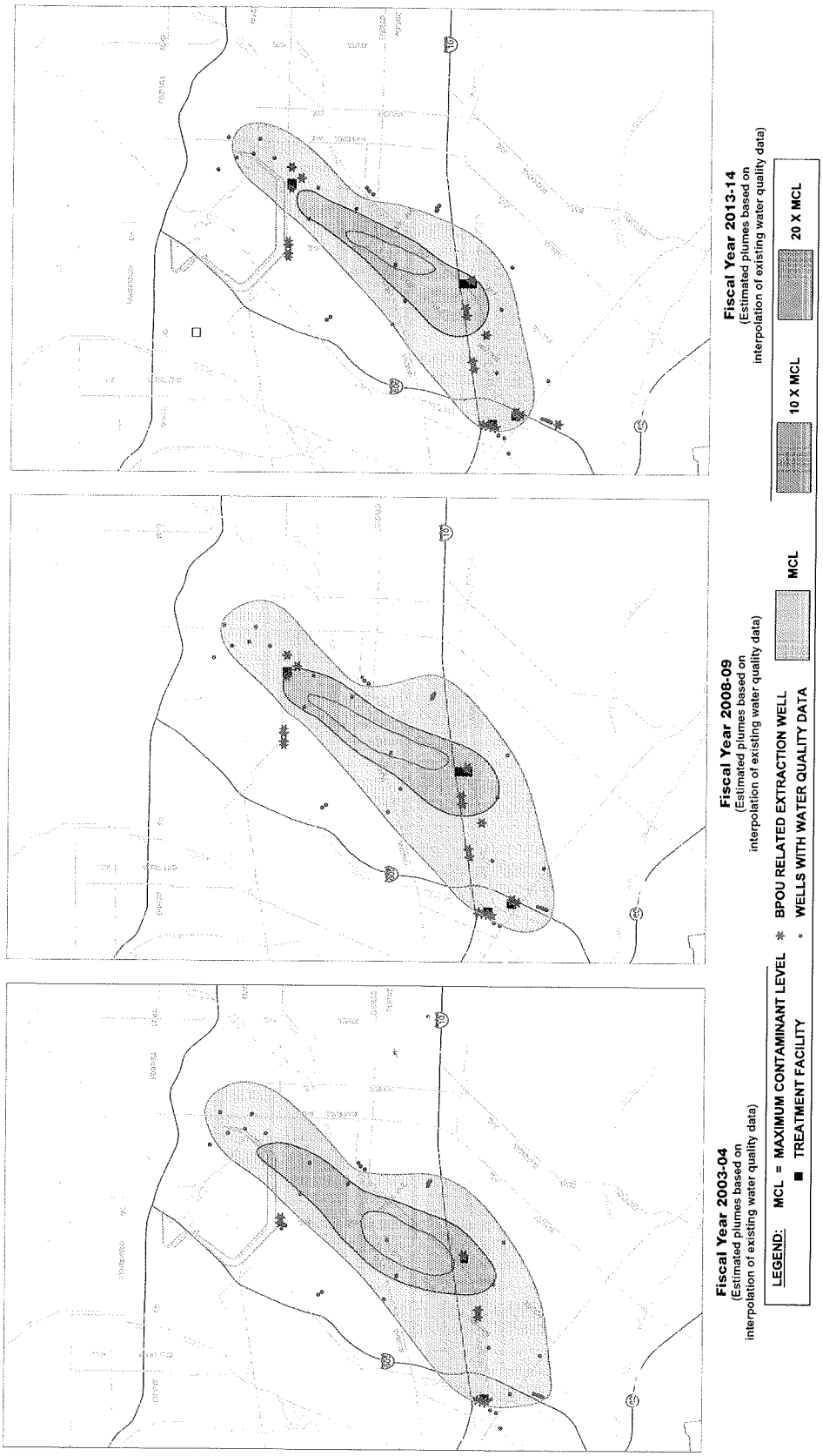


Figure 14. LOCATION MAP OF BPOU

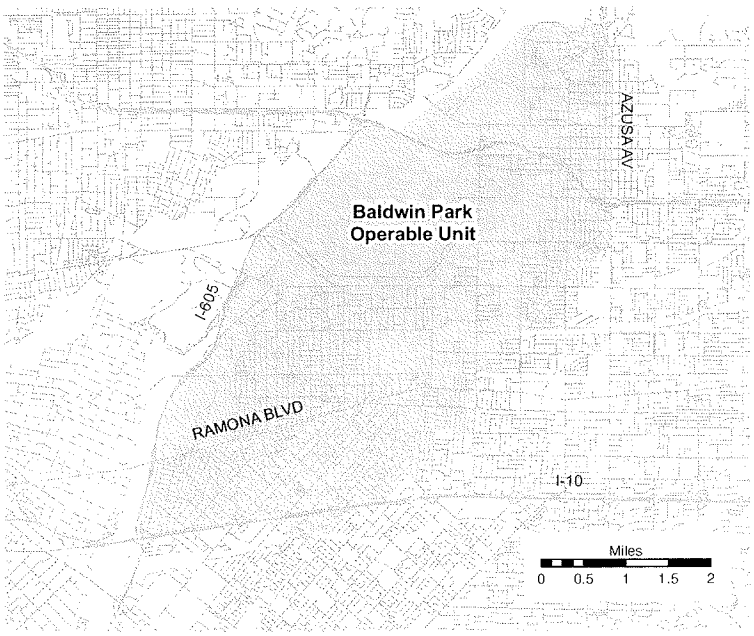


Figure 15. LOCATION MAP OF SEMOU

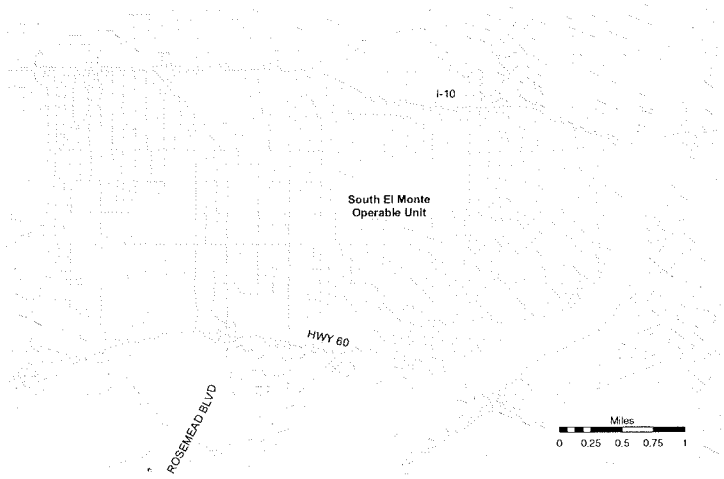


Figure 16. LOCATION MAP OF EMOU

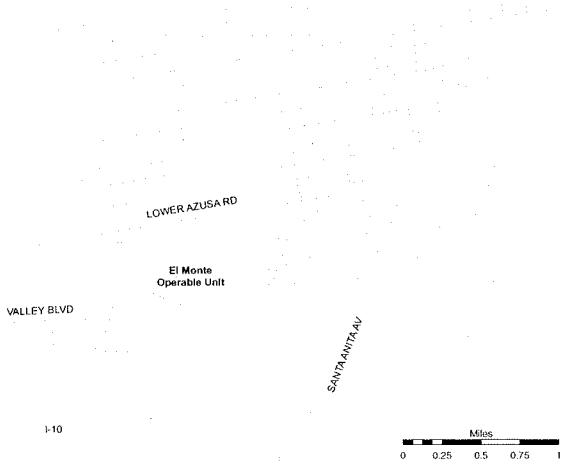


Figure 17. LOCATION MAP OF PVOU

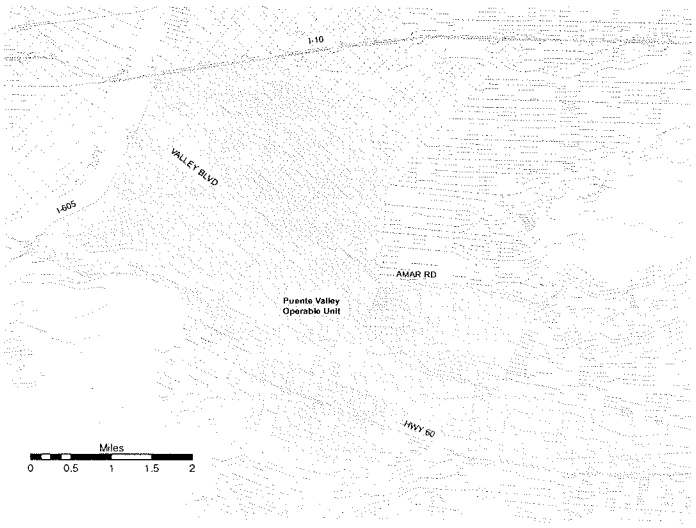


Figure 18. LOCATION MAP OF WNOU

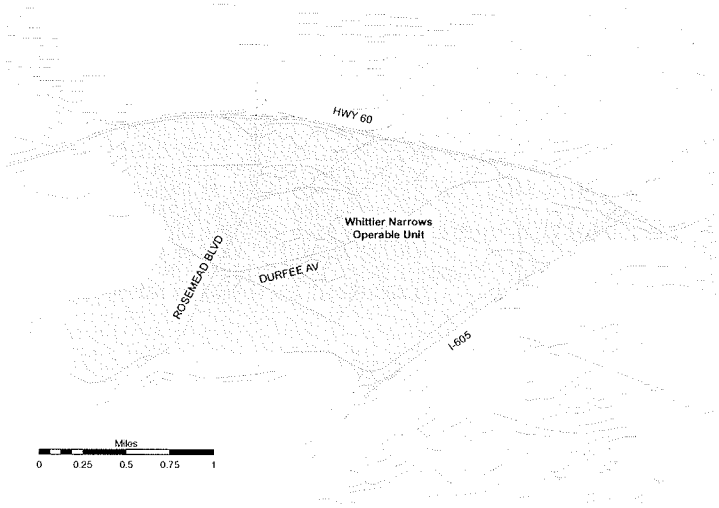
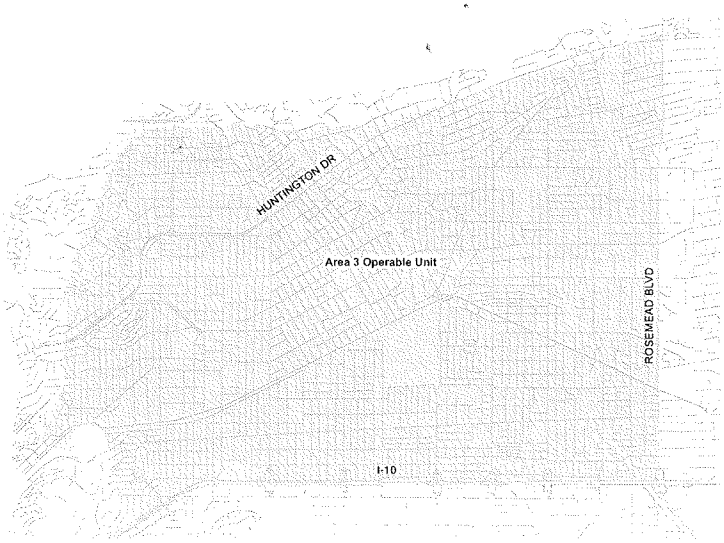


Figure 19. LOCATION MAP OF AREA 3



The discovery of perchlorate and NDMA during the late 1990s resulted in the shutdown of numerous treatment facilities, including the La Puente Valley County Water District (LPVCWD) Plant and San Gabriel Valley Water Company (SGVWC) Plant B6 that were designed by local water agencies to remove VOCs but not the new contaminants. Shutting down the VOC treatment plants allowed contaminants to migrate southward into previously unaffected areas, in turn forcing the shutdown of other water supply wells.

In 2002, after several years of negotiation led by Watermaster, eight of the BPOU Responsible Parties (called Cooperating Respondents, or CRs) and seven water entities signed the BPOU Project Agreement. Under this landmark agreement, Watermaster continues to provide overall project management and project coordination services. The CRs have paid the cost to construct and will provide funding to operate the USEPA-required BPOU cleanup facilities for about 15 years. Several water purveyors own and operate the facilities and use the highly treated water in their water systems. The San Gabriel Basin Water Quality Authority (WQA) has obtained outside funds to help construct necessary treatment facilities, extraction wells and pipelines.

The BPOU Project consists of four centralized treatment facilities with a combined extraction and treatment capacity of up to 25,900 gpm. Those treatment facilities are located at Valley County Water District's Lante Plant (7,800 gpm), San Gabriel Valley Water Company's Plant B6 (7,800 gpm) and Plant B5 (7,800 gpm), and La Puente Valley County Water District's (LPVCWD) site (2,500 gpm). The location of these treatment facilities is shown on Figure 12.

VCWD PROJECT

In the northerly portion of the BPOU, the VCWD Project consists of three extraction wells, including two new wells, pumping up to 7,800 gpm (average annual rate of 7,000 gpm) to a centralized treatment facility at the VCWD Lante Plant. The VCWD Project consists of separate facilities to treat VOCs, 1,2,3-TCP, perchlorate, NDMA, and 1,4-dioxane. In addition, a treated water pipeline provides up to 6,000 gpm of fully treated water to Suburban Water Systems (SWS) to offset production lost due to contamination of some of its wells; VCWD will use the remaining portion of the treated water. The VCWD Project began operation for contamination cleanup in 2006 and received its CDPH operating permit in July 2007 to provide potable water to customers, and is operational. Since operation began in 2006, the VCWD treatment facility has treated about 25,500 acre-feet and has removed about 14,100 pounds of contaminants.

VCWD and its BPOU partners are coordinating the construction of a new ion exchange facility that will remove perchlorate more cost effectively. Construction and startup testing of the new ion exchange facility is anticipated to be completed during fiscal year 2009-10 while the existing VCWD treatment facility continues to provide treated water for municipal use.

LPVCWD PROJECT

The LPVCWD consists of three existing production wells. Well pumping capacity is limited to 2,500 gpm to equal the capacity of the treatment facility. The LPVCWD project consists of separate facilities to treat VOCs, perchlorate, NDMA and 1,4-dioxane. The LPVCWD project is permitted by CDPH and has been operating since March 2001. Treated water in excess of LPVCWD's needs is provided to SWS to enable the treatment facility to be operated on a continuous basis. Since operation began, the LPVCWD treatment facility has treated about 39,000 acre-feet (including prior operations with only VOC treatment) and removed about 7,900 pounds of contaminants.

During fiscal year 2008-09, LPVCWD constructed a new ion exchange facility that will remove perchlorate more cost effectively. The ion exchange facility operational testing, CDPH permitting and full scale operation for potable use is anticipated to occur during fiscal year 2009-2010.

SGVWC B6 PROJECT

The SGVWC B6 project is permitted by CDPH and has been operational since July 2005. The B6 project consists of four new extraction wells and a centralized treatment facility that treats up to 7,800 gpm (average annual rate of 7,000 gpm). The treatment facility treats the contaminated groundwater for VOCs, perchlorate, NDMA, and 1,4-dioxane. The treated water is provided to SGVWC customers. Since operation began, the SGVWC B6 treatment facility has treated about 61,000 acre-feet, (including prior operations with only VOC treatment), and removed about 9,100 pounds of contaminants.

The BPOU project partners are coordinating the construction of a new ion exchange facility, similar to the ones at the LPVCWD project and the VCWD Project. Construction of the new ion exchange facility began during fiscal year 2008-09 while the existing treatment facility continues to provide treated water for municipal use. Treatment facility operational testing, CDPH permitting and full scale operation for municipal use is anticipated to occur during fiscal year 2009-10.

SGVWC B5 PROJECT

The SGVWC B5 Project consists of one new extraction well along with two existing wells that will provide up to 7,800 gpm (average annual rate of 7,000 gpm) to a centralized treatment facility located at the SGVWC B5 site. The treatment facility will treat the contaminated water for VOCs, perchlorate, NDMA, and 1,4-dioxane. Following receipt of a permit from CDPH, the treated water will be provided to City of Industry customers (1,200 gpm) and the balance (6,600 gpm) provided to SGVWC customers. The SGVWC B5 Project was permitted by CDPH in fiscal year 2007-08. Since operation began in 2007 the SGVWC B5 treatment facility has treated about 18,700 acre-feet and has removed about 460 pounds of contaminants.

PURVEYOR PROJECTS

In addition to the USEPA-required BPOU facilities, several water purveyors have built treatment facilities at other wells within the BPOU area to meet water supply needs until the USEPA remedy prevents the continued spread of contamination. California Domestic Water Company (CDWC) has constructed facilities at its wellfield to remove VOCs, perchlorate and NDMA. Similarly, Watermaster has issued permits under its Section 28 to SWS to construct new wells that also are being used to blend with wells impacted by contaminants. These activities reduce reliance on expensive imported water and contribute to contaminant removal.

BPOU CLEANUP PROGRESS

Watermaster regularly reviews water quality data to evaluate the impact the production wells and specially constructed extraction wells have on control of contamination migration. It is difficult to develop a precise picture of the geographic extent of contamination because water quality is obtained from numerous wells that produce water from different depths below the groundwater table. Figure 12 shows the approximate geographic extent of VOC contamination and operating VOC treatment facilities from about five years ago, and from current data. In addition, the anticipated treatment facilities and the approximate geographic extent of VOC contamination, using engineering judgment, for five years in the future is also shown on Figure 12. The 2008-09 plume indicates the addition of supplemental treatment has enabled several VOC treatment facilities to resume operation, which has in turn, begun to control plume movement. It also indicates that, as a result of below average groundwater replenishment, groundwater flow has shifted VOC contamination to the west in the northwesterly portion of the plume. In the future, Watermaster anticipates the area of the VOC plume will begin to decrease, as shown on the 2013-14 plume. Similarly, Figure 13 shows the approximate geographic extent of perchlorate. The series of three plume characterizations and facility indicators show that in 2003-04 treatment existed at only one site. With the construction and operation of treatment facilities (2008-09), plume movement is expected to be controlled and, similar to VOCs, begin to decrease in the future (2013-14).

Watermaster will continue to coordinate BPOU cleanup activities among the various parties to the BPOU Project Agreement over the next 10 years, including interfacing with USEPA, overseeing agreements between water purveyors to use the treated water, and providing accounting services to track BPOU Project costs and funds received. With all of the BPOU facilities now operational, Watermaster is also coordinating collection of field data, such as water production, water quality and water levels, and is providing BPOU Project performance reports to USEPA in cooperation with the CRs.

The projects will ensure that there is an adequate water supply for the BPOU area. These projects are consistent with the USEPA ROD, meet contaminant removal and containment requirements, and meet local water supply needs.

SOUTH EL MONTE OPERABLE UNIT

The South El Monte Operable Unit (SEMOU) covers approximately eight square miles in the south-central portion of the Basin. It is bounded by the I-10 Freeway, the 60 Freeway, the I-605 Freeway, and San Gabriel Boulevard. (See Figure 11). A ROD for the SEMOU was issued in 2000 addressing VOC contamination in a limited area. Subsequently, additional water supply wells became contaminated and new contaminants, including perchlorate, were detected in wells in the SEMOU area. In November 2005, USEPA revisited its ROD and issued an Explanation of Significant Differences (ESD) indicating that SEMOU cleanup projects would also address treatment of perchlorate. Since a perchlorate source has not yet been identified in that area, the Responsible Parties (RPs) objected to a requirement to pay for perchlorate treatment, and negotiations for the RPs to fund SEMOU groundwater cleanup activities have been moving slowly.

In the meantime, area water purveyors who were impacted by contaminant migration and new perchlorate detections were forced to construct new or additional treatment facilities to maintain safe, reliable water supplies. The City of Monterey Park, San Gabriel Valley Water Company, and Golden State Water Company (GSWC) have all constructed new or additional treatment facilities within SEMOU. The San Gabriel Basin Water Quality Authority (WQA) has assisted these Producers by providing outside funding to help offset project costs.

Monterey Park Project. Monterey Park constructed a water treatment facility at its Delta Plant to treat VOCs and perchlorate. Monterey Park Well No. 9 (which only had detectable concentrations of VOC) began operating through the VOC treatment facility in April 2002. Following construction and permitting of the perchlorate treatment facility, Monterey Park Well No. 12 began operation in spring 2005. Monterey Park began operation of Well No. 15 in summer 2006. Future production primarily will be from Monterey Park Wells No. 12 and No. 15 to operate consistent with the SEMOU ROD. Watermaster and Monterey Park maintain data on water quality in monitoring wells located upgradient of Wells No. 9, 12, and 15. Since the treatment facility began operation, over 27,200 acre-feet of water has been treated and about 3,500 pounds of contaminants removed from the groundwater.

San Gabriel Valley Water Company (SGVWC) Plant 8 Project. SGVWC Plant 8 VOC Treatment Facility has a capacity of 5,000 gpm and has been in operation since fiscal year 2001-02. In response to increasing VOC concentrations, SGVWC voluntarily constructed supplemental VOC treatment at Plant 8. The supplemental VOC treatment facility was permitted by CDPH in September 2006 and went on line in December 2006. Since the original VOC treatment facility operation, over 22,500 acre-feet of water has been treated and about 2,000 pounds of contaminants have been removed from the groundwater.

Golden State Water Company (GSWC) Project. GSWC VOC treatment facility at San Gabriel Wells No. 1 and 2 had been permitted and operating. However, with the establishment of the revised Perchlorate NL in 2002, GSWC voluntarily removed the wells from operation. Subsequently, GSWC installed an ion exchange system to remove perchlorate and has resumed operation at its San Gabriel Well No. 1. The treatment facility has treated about 6,700 acre-feet of water and removed about 290 pounds of contaminants.

EL MONTE OPERABLE UNIT

The El Monte Operable Unit (EMOU) covers an area of about 10 square miles in the south-central portion of the Basin. It is bounded by the I-10 Freeway in the south, Rosemead Boulevard in the west, and Santa Anita Avenue and Rio Hondo on the east. The northern boundary generally follows Lower Azusa Road (see Figure 11). While shallow contamination is found throughout the EMOU, deep (intermediate zone) contamination is found in the northwest and easterly area of the EMOU.

The USEPA's ROD for the EMOU includes numerous small, shallow extraction wells and treatment, along with two areas of deep extraction and treatment. Due to generally poor water quality in the area, the shallow groundwater will not be used for a potable supply. The deep extractions are recommended for potable use by local water purveyors. The remediation efforts are separated into "Westside" and "Eastside" activities.

Westside Projects. On the Westside there are plans for cleanup contaminants occurring in the shallow aquifer. Watermaster is coordinating with the Westside entities to address the disposition of the treated water. The deep zone extraction and treatment in the northwest area is being accomplished by the existing Encinita Wellfield and Treatment Facility owned by GSWC, which began operation during 1998. During July 2002, USEPA issued an Explanation of Significant Differences (ESD), which indicated that perchlorate, NDMA, 1,4-dioxane, and hexavalent chromium had been detected in excess of CDPH notification levels. In the event water from extraction wells cannot be blended to acceptable levels, additional treatment facilities will need to be installed, significantly increasing cleanup costs. Thus far, extraction and treatment of VOCs at GSWC Encinita Plant have not been impacted.

Eastside Projects. The remediation on the Eastside will also involve cleanup of contaminants in the shallow aquifer. Final disposition of the water has not yet been determined and is still being coordinated by the Watermaster. The VOC contamination in the deep aquifer is anticipated to be produced from three wells and the fully treated water will be provided to the City of El Monte. Watermaster will continue to assist with data collection and permitting of facilities over the next five years.

PUENTE VALLEY OPERABLE UNIT

The Puente Valley Operable Unit (PVOU) lies in the southeastern portion of the Basin, essentially bounded by the 60 Freeway in the south, Azusa Avenue in the east, and the I-10 Freeway in the north (see Figure 11). The PVOU encompasses the Puente Valley, which is tributary to the southeasterly portion of the Basin. Contamination in the PVOU includes various VOCs. All aquifers within the PVOU (shallow, intermediate, and deep) are considered sources for municipal water supplies. The USEPA has issued a ROD for the PVOU. The plan identified in the ROD includes extraction and treatment of groundwater within the shallow and intermediate zones from wells located in the center of the PVOU.

Shallow Zone Project. The cleanup plan for shallow zone contamination includes nine wells that will collectively produce about 1,000 gpm. Due to the poor quality of shallow zone water (which is high in naturally-occurring dissolved solids), the water will not be used as drinking water, but will instead be treated to remove VOCs and will then be recharged back into the Basin. Watermaster is currently working with USEPA, Carrier Corporation and the Responsible Party to develop an agreement to allow production and discharge of the PVOU shallow zone water. The shallow zone project is currently anticipated to be operational during fiscal year 2010-11.

Intermediate Zone. The proposed location of the intermediate zone treatment facility is also shown on Figure 17. Watermaster is working with USEPA, PRPs and local water entities to develop a cleanup solution that meets potable water supply needs. Approximately 1,000 gpm will be produced from the intermediate zone extraction wells, treated and used for potable purposes by a local water purveyor. The intermediate zone project is currently anticipated to be operational during fiscal year 2010-11.

WHITTIER NARROWS OPERABLE UNIT

The USEPA has declared that the WNOU is a "fund-lead" project, meaning that the USEPA (with the state) has funded the design, construction, and operation of the remedy and will seek cost recovery from Responsible Parties later. The USEPA cleanup plan involves a series of shallow and intermediate zone extraction wells with treatment. The total extractions are estimated to be about 11,000 gallons per minute (5,000 gpm shallow and 6,000 gpm intermediate zone).

Intermediate Zone Project. The City of Whittier has obtained a CDPH permit to use the 6,000 gpm of treated intermediate zone water for municipal use instead of producing water from its existing wells. Since production began in late 2005, about 16,500 acre-feet of groundwater has been treated and about 750 pounds of contaminants removed.

Shallow Zone Project. During fiscal year 2002-03 NDMA was detected in some of the shallow extraction wells, prolonging the testing and review process for the shallow zone water through June 2007. Studies indicate the shallow zone contamination could be adequately contained at an extraction rate of 2,500 gpm. The production agreement between USEPA and Watermaster to pump and discharge shallow zone water expired as of June 30, 2007, and further shallow zone treatment was temporarily suspended while the parties worked to determine an acceptable and appropriate long-term use of the water. Following several meetings, Watermaster entered into a production agreement with USEPA and the County of Los Angeles. Treated shallow zone water is being discharged to Legg Lake. A portion of the treated water is reported by the County of Los Angeles to Watermaster as production and the balance of the treated water will flow out of Legg Lake and percolate into the Basin. The shallow zone wells resumed operation in March 2008.

Since production began at the WNOU facility, over 23,000 acre-feet of groundwater has been treated, and over 1,600 pounds of contaminants have been removed.

AREA 3 OPERABLE UNIT

The Area 3 Operable Unit is located in the westerly portion of the Basin. It is generally bounded on the south by the I-10 Freeway, on the east by Rosemead Boulevard, on the North by Huntington Drive and on the west by the boundary of the Main Basin (see Figure 11). USEPA has installed five monitoring wells to collect water quality data to supplement data collected from water supply wells and has initiated a Remedial Investigation and Feasibility Study to identify the extent of the contamination and to evaluate appropriate cleanup remedies. In addition, Watermaster issued a permit during 2005-06 to the City of Alhambra to construct a treatment facility to remove VOCs from wells No. 7, 8, 11 and 12. The treatment facility became operational in April 2009 prior to USEPA's development of a final remedy but is necessary for Alhambra to receive a reliable source of supply from the groundwater basin.

PRODUCERS' WATER SUPPLY PLANS

Watermaster's Water Quality Protection Plan provides early warning to Producers before their wells are found to exceed drinking water quality standards. The Plan also contains pre-analyzed suggestions to the Producers for responding to the presence of contaminants.

WATER SUPPLY PLANS TO MEET PROJECTED DEMANDS

Water Producers propose to construct 10 new wells and build 4 treatment plants during the next five years. Watermaster will continue providing the following services to assist Producers in meeting water demand:

- investigate all new or increased water extractions;
- provide computer modeling and technical support on treatment issues concerning the impact of extractions on contaminant migration;
- prioritize areas requiring further investigation, and coordinate with Producers on water supply modifications; and
- direct changes in pumping or treatment as necessary.

CONDUCT STUDIES, MONITORING AND INVESTIGATIONS

The Main San Gabriel Groundwater Basin is very complex, covering 167 square miles and holding about 2.8 trillion gallons of water. Water enters the Basin from countless natural and man-made locations, and is extracted from over 200 wells operated by dozens of independent Producers. Watermaster conducts special studies to identify projected water demands and to increase understanding of the Basin, so that it can be managed in a way that preserves and improves its water supply and quality. In addition, Watermaster routinely reviews available data and is prepared to construct new monitoring wells to obtain supplemental water level and water quality data to better manage the Basin.

LANDFILL INSPECTIONS

Watermaster routinely conducts on-site inspections of area landfills to ensure they are operated in a way that does not allow contaminants to seep into the groundwater. Watermaster reports any violations of Waste Discharge Requirements to the Regional Water Quality Control Board for enforcement.

IDENTIFY AND REDUCE POTENTIAL SOURCES OF CONTAMINATION

COOPERATE WITH THE REGIONAL WATER QUALITY CONTROL BOARD

Since 1993, Watermaster has obtained information from the Regional Board about sources of VOC contamination in the Basin as part of the Regional Board investigations of potential contaminated sites. The information includes a description of all potential sources of contamination investigated by the Regional Board, including:

- maps showing the location of all investigation sites;
- available cause-and-effect relationships between pollution sources and contaminated wells; and
- plans and tentative schedules to abate the source of pollution and to clean up the soil and water.

Watermaster has reviewed a large amount of information gathered in Regional Board files and entered it into a database. This information is used in Watermaster's Section 28 process to help evaluate changes in pumping practices in relation to known contamination sources.

AQUIFER PERFORMANCE TESTS

Watermaster has developed a groundwater flow model for the entire Basin that assists in evaluating the potential impacts of changes in groundwater production.

Although Watermaster completed its three-year Aquifer Performance Test investigation, additional tests will be conducted as required for Section 28 applications or for other needs. A tabulation of potential Aquifer Performance Test investigation sites is included in Appendix D. The sites identified include a pumping well and at least one monitoring well. The tests provide information on the characteristics of the aquifer, such as transmissivity, hydraulic conductivity, and coefficient of storage. The information gathered on aquifer characteristics will support cleanup activities including groundwater model development and calibration (see Appendix D).

DIRECTORY TO APPENDICES

The Following Appendices Are Found in This Section:

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APPENDIX A.

PROJECTED GROUNDWATER DEMANDS FROM 2009-10 TO 2013-14

APPENDIX A

PROJECTED GROUNDWATER DEMANDS FROM 2009-10 TO 2013-14

RECORDATION NUMBER	WELL NAME	WELL CAPACITY		2008-09 PRODUCTION	PROJECTED GROUNDWATER DEMANDS				
		ACRE-FEET	GPM		2009-10	2010-11	2011-12	2012-13	2013-14
ADAMS RANCH MUTUAL WATER COMPANY									
1902106	1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902689	2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000182	3	NA	NA	66.59	70.00	70.00	70.00	70.00	70.00
SUBTOTAL:		NA	NA	66.59	70.00	70.00	70.00	70.00	70.00
ALHAMBRA, CITY OF (1)									
1900010	MOELR (8)	3,145	1,950	11.74	14.45	14.73	14.74	14.69	14.69
1900011	9	887	550	621.92	765.56	780.41	780.95	778.45	778.45
1900012	10	323	200	166.32	204.73	208.71	208.85	208.18	208.18
1900013	12	968	600	2.56	3.15	3.21	3.21	3.20	3.20
1900014	13	2,371	1,470	0.00	0.00	0.00	0.00	0.00	0.00
1900015	14	2,016	1,250	1,468.75	1,807.97	1,843.05	1,844.33	1,838.43	1,838.43
1900016	15	1,823	1,130	1,814.96	2,234.14	2,277.49	2,279.07	2,271.78	2,271.78
1900017	2 LON	2,355	1,460	2,163.76	2,663.50	2,715.18	2,717.06	2,708.37	2,708.37
1900018	GARF	763	473	0.00	0.00	0.00	0.00	0.00	0.00
1902789	1 LON	1,529	948	1,225.93	1,509.07	1,538.35	1,539.42	1,534.49	1,534.49
1903014	11	839	520	867.79	1,068.21	1,088.94	1,089.69	1,086.21	1,086.21
1903097	7	2,581	1,600	866.98	1,067.22	1,087.92	1,088.68	1,085.19	1,085.19
SUBTOTAL:		19,600	12,151	9,210.71	11,338.00	11,558.00	11,566.00	11,529.00	11,529.00
AMARILLO MUTUAL WATER COMPANY (SAN GABRIEL VALLEY WATER COMPANY) (1)									
1900791	1	644	399	368.27	612.72	624.97	637.47	650.22	663.22
1900792	2	424	263	1.70	0.71	0.73	0.73	0.74	0.77
SUBTOTAL:		1,068	662	369.97	613.42	625.70	638.20	650.97	663.99
ANDERSON, RAY L. AND HELEN									
8000085	NA	18	11	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		18	11	0.00	0.00	0.00	0.00	0.00	0.00
ARCADIA, CITY OF (1)									
1901013	1 LON	3,629	2,250	778.83	1,035.88	1,038.47	1,041.06	1,043.67	1,043.67
1901014	2 LON	3,629	2,250	0.00	1,035.88	1,038.47	1,041.06	1,043.67	1,043.67
1901015	1 BAL	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902077	1 CAM	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902078	2 CAM	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902084	2 LGY	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902358	1 STJ	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902791	2 BAL	323	200	134.32	281.17	279.76	280.46	281.16	281.16
1902854	1 PEC	5,646	3,500	4,329.37	3,973.44	3,983.37	3,993.33	4,003.32	4,003.32
8000127	1 LO	7,097	4,400	4,495.57	3,385.93	3,394.39	3,402.88	3,411.39	3,411.39
8000177	2 STJ	4,839	3,000	1,041.97	896.73	898.97	901.22	903.47	903.47
SUBTOTAL:		20,324	15,600	10,780.06	10,609.02	10,633.43	10,660.02	10,686.67	10,686.67
ATTALLA, MARY L.									
8000119	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
AZUSA, CITY OF (AZUSA AGRICULTURE WATER COMPANY, AZUSA VALLEY WATER COMPANY) (1)									
1902533	5 (1)	1,613	1,000	1,461.94	1,345.00	1,345.00	1,345.00	1,345.00	1,345.00
1902535	6 (3)	4,839	3,000	264.75	229.00	229.00	229.00	229.00	229.00
1902536	GENESIS 1 (4)	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902537	GENESIS 2 (5)	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902538	GENESIS 3 (6)	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000072	1 (7)	5,242	3,250	1,723.80	2,482.00	2,482.00	2,482.00	2,482.00	2,482.00
8000086	3 (8)	4,516	2,800	2,990.03	2,772.00	2,772.00	2,772.00	2,772.00	2,772.00
1902457	2 (1 NORTH)	4,516	2,800	4,121.96	4,020.00	4,020.00	4,020.00	4,020.00	4,020.00
1902458	4 (2 SOUTH)	4,033	2,500	3,411.20	2,753.00	2,753.00	2,753.00	2,753.00	2,753.00
1902113	AVWC 1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX A

PROJECTED GROUNDWATER DEMANDS FROM 2009-10 TO 2013-14

RECORDATION NUMBER	WELL NAME	WELL CAPACITY		2008-09 PRODUCTION	PROJECTED GROUNDWATER DEMANDS				
		ACRE-FEET	GPM		2009-10	2010-11	2011-12	2012-13	2013-14
1902114	AVCW 2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902115	8 (AVWC 4)	2,984	1,850	51.57	42.00	42.00	42.00	42.00	42.00
1902116	7 (AVWC 5)	1,694	1,050	66.63	114.00	114.00	114.00	114.00	114.00
1902117	9 (AVWC 6)	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902425	AVWC 7	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000103	10 (AVWC 8)	4,194	2,600	6.25	9.00	9.00	9.00	9.00	9.00
8000178	11	3,549	2,200	1,388.34	1,761.00	1,761.00	1,761.00	1,761.00	1,761.00
8000179	12	2,581	1,600	1,182.01	1,198.00	1,198.00	1,198.00	1,198.00	1,198.00
1903119	VULCAN			26.15	50.00	50.00	50.00	50.00	50.00
SUBTOTAL:		15,001	9,300	16,694.63	16,775.00	16,775.00	16,775.00	16,775.00	16,775.00
CEMEX CONSTRUCTION MATERIALS L.P. (AZ-TWO INC.)									
1900038	2	2,305	1,429	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		2,305	1,429	0.00	0.00	0.00	0.00	0.00	0.00
B & B RED-I-MIX CONCRETE INC.									
1902589	1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
BANKS, GALE & VICKI (1)									
1900415	NA	560	347	27.46	25.00	25.00	25.00	25.00	25.00
SUBTOTAL		560	347	27.46	25.00	25.00	25.00	25.00	25.00
BASELINE WATER COMPANY									
1901200	1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901201	2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901202	3	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
BEVERLY ACRES MUTUAL									
8000004	ROSE HILLS	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
BIRENBAUM, MAX									
8000005	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
BROOKS, GIFFORD JR.									
1902144	1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
BURBANK DEVELOPMENT COMPANY									
1900093	BURB	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
CALIFORNIA-AMERICAN WATER COMPANY/DUARTE SYSTEM (1)									
1900354	STA FE	3,226	2,000	1,032.03	1,154.50	1,171.80	1,189.39	1,207.27	1,225.31
1900355	B-V	3,468	2,150	818.43	915.55	929.27	943.22	957.40	971.70
1900356	MT AVE	1,936	1,200	0.00	0.00	0.00	0.00	0.00	0.00
1900357	LAS L	1,113	690	0.00	0.00	0.00	0.00	0.00	0.00
1900358	FISH C	1,936	1,200	39.14	43.78	44.44	45.11	45.79	46.47
1902907	WILEY	2,581	1,600	1,883.94	2,107.51	2,139.08	2,171.19	2,203.84	2,236.76
1903018	CR HV	2,823	1,750	1,711.57	1,914.68	1,943.36	1,972.54	2,002.20	2,032.11
8000139	ENCTO	3,549	2,200	763.02	853.57	866.35	879.36	892.58	905.92

APPENDIX A

PROJECTED GROUNDWATER DEMANDS FROM 2009-10 TO 2013-14

RECORDATION NUMBER	WELL NAME	WELL CAPACITY		2008-09 PRODUCTION	PROJECTED GROUNDWATER DEMANDS				
		ACRE-FEET	GPM		2009-10	2010-11	2011-12	2012-13	2013-14
8000140	LASL 2	2,742	1,700	728.38	814.82	827.02	839.44	852.06	864.79
11900497	BACON	726	450	5.00	5.59	5.68	5.76	5.85	5.94
SUBTOTAL:		24,098	14,940	6,981.51	7,810.00	7,927.00	8,046.00	8,167.00	8,289.00
CALIFORNIA-AMERICAN WATER COMPANY/SAN MARINO SYSTEM(1)									
1900917	HALL	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1900918	GUESS	634	393	0.00	0.00	0.00	0.00	0.00	0.00
1900919	MISVW	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1900920	MISVW	2,571	1,594	1,851.37	1,870.31	1,898.42	1,926.75	1,955.71	1,984.88
1900921	RIC-1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1900922	RIC-2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1900923	IVR-1	1,339	830	0.00	0.00	0.00	0.00	0.00	0.00
1900924	MAR-1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1900925	MAR-2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1900926	GRAND	1,816	1,126	937.55	947.14	961.38	975.72	990.39	1,005.16
1900927	ROSE	929	576	881.75	890.77	904.16	917.65	931.44	945.34
1900934	ROAN	1,952	1,210	0.00	0.00	0.00	0.00	0.00	0.00
1900935	LONG	3,152	1,954	684.53	691.53	701.93	712.40	723.11	733.89
1901441	BR-1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902424	HOWL	1,707	1,058	279.89	282.75	287.00	291.29	295.66	300.07
1902787	BR-2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902867	IVR-2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1903019	MAR-3	2,766	1,715	1,666.55	1,683.60	1,708.91	1,734.40	1,760.47	1,786.73
1903059	DELMAR	1,571	974	1,094.22	1,105.41	1,122.03	1,138.77	1,155.89	1,173.13
8000175	HALL-2	NA	NA	1,362.54	1,376.48	1,397.17	1,418.02	1,439.33	1,460.80
SUBTOTAL:		18,437	11,430	8,758.40	8,848.00	8,981.00	9,115.00	9,252.00	9,390.00
CALIFORNIA COUNTRY CLUB									
1902529	CLUB	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902531	ARTES	1,129	700	0.06	2.73	2.73	2.73	2.73	2.73
1903084	SYC	1,290	800	0.05	2.27	2.27	2.27	2.27	2.27
SUBTOTAL:		2,420	1,500	0.11	5.00	5.00	5.00	5.00	5.00
CALIFORNIA DOMESTIC WATER COMPANY (1)									
1901181	2	5,404	3,350	881.35	929.25	1,041.40	1,078.79	1,116.17	1,148.21
1901182	1-E	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901183	5	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901185	13-N	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902967	6	6,775	4,200	3,877.61	4,088.37	4,581.79	4,746.26	4,910.74	5,051.72
1903057	3	7,581	4,700	7,000.07	7,380.54	8,271.29	8,568.21	8,865.13	9,119.63
1903081	8	5,162	3,200	717.71	756.72	848.05	878.49	908.93	935.03
8000100	5A	7,742	4,800	4,026.29	4,245.13	4,757.47	4,928.25	5,099.03	5,245.41
8000174	14	4,516	2,800	0.00	0.00	0.00	0.00	0.00	0.00
11900092		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		37,180	23,050	16,503.03	17,400.00	19,500.00	20,200.00	20,900.00	21,500.00
CEDAR AVENUE MUTUAL WATER COMPANY									
1901411	1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902783	2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		0	0	0.00	0.00	0.00	0.00	0.00	0.00
CHAMPION MUTUAL WATER COMPANY									
1900908	1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902816	2	516	320	0.69	7.92	7.92	7.92	7.92	7.92
8000121	3	145	90	98.08	79.58	79.58	79.58	79.58	79.58
SUBTOTAL:		661	410	98.77	87.50	87.50	87.50	87.50	87.50
CHEVRON USA									
1900250	TEMP1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX A

PROJECTED GROUNDWATER DEMANDS FROM 2009-10 TO 2013-14

RECORDATION NUMBER	WELL NAME	WELL CAPACITY		2008-09 PRODUCTION	PROJECTED GROUNDWATER DEMANDS				
		ACRE-FEET	GPM		2009-10	2010-11	2011-12	2012-13	2013-14
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
CLAYTON MANUFACTURING COMPANY									
1901055	2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000170	MW-4	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
COLLISON, E.O.									
1902968	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
VULCAN MATERIALS COMPANY (CALMAT COMPANY)									
1902920	E DUR	6,386	3,959	256.97	299.56	320.96	342.35	363.75	385.15
1903088	1 REL	4,068	2,522	264.79	308.67	330.72	352.77	374.82	396.87
8000063	W DUR	NA	NA	78.72	91.77	98.32	104.88	111.43	117.99
SUBTOTAL:		10,454	6,481	600.48	700.00	750.00	800.00	850.00	900.00
CORCORAN BROS.									
1902814	1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
COUNTY SANITATION DISTRICT NO. 18									
8000008	2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000009	3	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000104	LE 1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000105	LE 2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000106	LE 3	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000107	LE 4	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000128	EO8A	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000129	E09A	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000130	E10A	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000131	E11A	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000141	EX1	NA	NA	0.48	0.45	0.45	0.45	0.45	0.45
8000142	EX2	NA	NA	0.37	0.35	0.35	0.35	0.35	0.35
8000143	EX3	NA	NA	0.08	0.08	0.08	0.08	0.08	0.08
8000144	EX4	NA	NA	0.06	0.06	0.06	0.06	0.06	0.06
8000153	E16A	NA	NA	1.24	1.17	1.17	1.17	1.17	1.17
8000154	E17A	NA	NA	2.48	2.34	2.34	2.34	2.34	2.34
8000155	E18A	NA	NA	0.67	0.63	0.63	0.63	0.63	0.63
8000156	E19A	NA	NA	1.30	1.23	1.23	1.23	1.23	1.23
8000173	E20A	NA	NA	1.65	1.56	1.56	1.56	1.56	1.56
8000161	E01R	NA	NA	0.24	0.23	0.23	0.23	0.23	0.23
8000162	E03R	NA	NA	0.05	0.05	0.05	0.05	0.05	0.05
8000163	E05R	NA	NA	1.03	0.97	0.97	0.97	0.97	0.97
8000164	E07R	NA	NA	1.83	1.73	1.73	1.73	1.73	1.73
8000165	E02R	NA	NA	2.04	1.93	1.93	1.93	1.93	1.93
8000166	E04R	NA	NA	0.75	0.71	0.71	0.71	0.71	0.71
8000167	E06R	NA	NA	0.37	0.35	0.35	0.35	0.35	0.35
8000168	E08R	NA	NA	1.23	1.16	1.16	1.16	1.16	1.16
SUBTOTAL:		NA	NA	15.87	15.00	15.00	15.00	15.00	15.00
AZUSA ASSOCIATES LLC (COVELL, ET AL)									
1900390	DALTON	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
COVINA, CITY OF									
1901685	1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901686	2	968	600	0.00	0.00	0.00	0.00	0.00	0.00
1901687	3	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX A

PROJECTED GROUNDWATER DEMANDS FROM 2009-10 TO 2013-14

RECORDATION NUMBER	WELL NAME	WELL CAPACITY		2008-09 PRODUCTION	PROJECTED GROUNDWATER DEMANDS				
		ACRE-FEET	GPM		2009-10	2010-11	2011-12	2012-13	2013-14
SUBTOTAL:		968	600	0.00	0.00	0.00	0.00	0.00	0.00
COVINA IRRIGATING COMPANY (1)									
1900881	CONTR	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1900882	3 BAL	3,549	2,200	2,221.30	2,400.00	2,600.00	2,600.00	2,600.00	2,600.00
1900883	2 BAL	3,226	2,000	1,673.94	2,000.00	2,400.00	2,400.00	2,400.00	2,400.00
1900885	1 BAL	2,420	1,500	1,367.48	1,600.00	2,000.00	2,000.00	2,000.00	2,000.00
11900880	VALEN	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
21900880	VALEN	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		9,194	5,700	5,262.72	6,000.00	7,000.00	7,000.00	7,000.00	7,000.00
CREVOLIN, A.J.									
8000011	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
CROWN CITY PLATING COMPANY									
8000012	01	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
DAVIDSON OPTRONICS INC.									
8000013	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
DAWES, MARY K.									
1902952	04	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
DEL RIO MUTUAL WATER COMPANY (1)									
1900331	BURKE	261	162	117.89	125.00	125.00	125.00	125.00	125.00
1900332	KLING	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		261	162	117.89	125.00	125.00	125.00	125.00	125.00
DRIFTWOOD DAIRY									
1902924	01	298	185	149.92	150.00	150.00	150.00	150.00	150.00
SUBTOTAL:		298	185	149.92	150.00	150.00	150.00	150.00	150.00
DUNNING, GEORGE									
1900091	1910	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
EAST PASADENA WATER COMPANY, LTD. (1)									
11901508	9	2,500	1,550	1,454.34	1,773.69	1,791.43	1,809.34	1,827.43	1,827.43
SUBTOTAL:		2,500	1,550	1,454.34	1,773.69	1,791.43	1,809.34	1,827.43	1,827.43
EL MONTE, CITY OF (1)									
1901692	2A	1,532	950	383.59	424.23	424.23	424.23	424.23	424.23
1901693	3	1,936	1,200	0.00	0.00	0.00	0.00	0.00	0.00
1901694	4	2,258	1,400	0.00	0.00	0.00	0.00	0.00	0.00
1901695	5	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901699	10	2,420	1,500	454.79	502.97	502.97	502.97	502.97	502.97
1901700	11	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902612	MT VW	807	500	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX A

PROJECTED GROUNDWATER DEMANDS FROM 2009-10 TO 2013-14

RECORDATION NUMBER	WELL NAME	WELL CAPACITY		2008-09 PRODUCTION	PROJECTED GROUNDWATER DEMANDS				
		ACRE-FEET	GPM		2009-10	2010-11	2011-12	2012-13	2013-14
1903137	12	3,468	2,150	739.81	818.19	818.19	818.19	818.19	818.19
8000066		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000101	13	4,678	2,900	979.81	1,083.61	1,083.61	1,083.61	1,083.61	1,083.61
SUBTOTAL:		17,098	10,600	2,558.00	2,829.00	2,829.00	2,829.00	2,829.00	2,829.00
EL MONTE CEMETERY ASSOCIATION									
8000017	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
FRUIT STREET WATER COMPANY									
1901199	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
GLENDORA, CITY OF (1)									
1900826	11-E	1,281	794	485.04	577.66	597.24	616.82	616.82	616.82
1900827	12-G	2,957	1,833	2,524.94	3,007.09	3,109.02	3,210.96	3,210.96	3,210.96
1900828	10-E	629	390	306.42	364.93	377.30	389.67	389.67	389.67
1900829	8-E	2,258	1,400	1,559.84	1,857.70	1,920.67	1,983.64	1,983.64	1,983.64
1900830	9-E	2,757	1,709	1,285.58	1,531.07	1,582.97	1,634.87	1,634.87	1,634.87
1900831	7-G	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901523	1-E	347	215	39.97	47.60	49.22	50.83	50.83	50.83
1901524	4-E	3,549	2,200	0.00	0.00	0.00	0.00	0.00	0.00
1901525	3-G	3,307	2,050	0.00	0.00	0.00	0.00	0.00	0.00
1901526	2-E	484	300	491.37	585.20	605.04	624.87	624.87	624.87
8000003		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000149	5-E	3,039	1,884	2,166.04	2,579.65	2,667.10	2,754.54	2,754.54	2,754.54
8000184	13-E	1,168	724	1,048.83	1,249.11	1,291.45	1,333.79	1,333.79	1,333.79
SUBTOTAL:		21,774	13,499	9,908.03	11,800.00	12,200.00	12,600.00	12,600.00	12,600.00
GOEDERT, LILLIAN									
8000027	GOEDERT	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
GREEN, WALTER									
8000027	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000028	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
HANSEN, ALICE									
8000029	2946	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
HARTLEY, DAVID									
8000029	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
HEMLOCK MUTUAL WATER COMPANY									
1901178	NORTH	219	136	40.30	44.88	44.88	44.88	44.88	44.88
1902806	SOUTH	516	320	67.45	75.12	75.12	75.12	75.12	75.12
SUBTOTAL:		736	456	107.75	120.00	120.00	120.00	120.00	120.00
INDUSTRY WATERWORKS SYSTEM, CITY OF (1)									
1902581	1	2,887	1,790	0.00	0.00	0.00	0.00	0.00	0.00
1902582	2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX A

PROJECTED GROUNDWATER DEMANDS FROM 2009-10 TO 2013-14

RECORDATION NUMBER	WELL NAME	WELL CAPACITY		2008-09 PRODUCTION	PROJECTED GROUNDWATER DEMANDS				
		ACRE-FEET	GPM		2009-10	2010-11	2011-12	2012-13	2013-14
1902583	5TH AVE	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000078	3	2,420	1,500	0.00	0.00	0.00	0.00	0.00	0.00
8000096	4	3,871	2,400	0.00	0.00	0.00	0.00	0.00	0.00
8000097	5	1,936	1,200	1.59	712.00	712.00	712.00	712.00	712.00
SUBTOTAL:		11,114	6,890	1.59	712.00	712.00	712.00	712.00	712.00
KIYAN, HIDEO									
1902970	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
LA PUENTE VALLEY COUNTY WATER DISTRICT (1)									
1901459	1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901460	2	2,016	1,250	932.23	1,840.00	1,840.00	1,840.00	1,840.00	1,840.00
1902859	3	2,016	1,250	1,236.77	541.18	541.18	541.18	541.18	541.18
8000062	4	807	500	0.00	865.88	865.88	865.88	865.88	865.88
8000209	5	NA	NA	1,623.79	432.94	432.94	432.94	432.94	432.94
SUBTOTAL:		4,839	3,000	3,792.79	3,680.00	3,680.00	3,680.00	3,680.00	3,680.00
LA VERNE, CITY OF									
1902322	SNIDO	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
LAKIN, KELLY									
8000158	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
LANDEROS, JOHN									
8000031	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
HANSON AGGREGATES WEST, INC. (LIVINGSTON-GRAHAM)									
1900961	1 DUA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1900963	1 KIN	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901492	1 EL	3,302	2,047	186.96	199.94	233.27	266.59	299.91	333.24
1901493	3 EL	4,563	2,829	91.37	97.71	114.00	130.29	146.57	162.86
1903006	4 EL	356	221	2.19	2.34	2.73	3.12	3.51	3.90
SUBTOTAL:		8,221	5,097	280.52	300.00	350.00	400.00	450.00	500.00
LOS ANGELES, COUNTY OF									
1902579	1 WHI	2,710	1,680	946.63	940.04	940.04	940.04	940.04	940.04
1902580	2	1,697	1,052	0.00	0.00	0.00	0.00	0.00	0.00
1902663	3	566	351	0.00	0.00	0.00	0.00	0.00	0.00
1902664	4	832	516	0.00	0.00	0.00	0.00	0.00	0.00
1902665	5	652	404	327.55	325.27	325.27	325.27	325.27	325.27
1902666	6	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000070	1 SF	3,349	2,076	891.90	885.69	885.69	885.69	885.69	885.69
8000074	2 SF	458	284	30.29	30.08	30.08	30.08	30.08	30.08
8000088	B RED	174	108	49.89	49.54	49.54	49.54	49.54	49.54
8000089	N LK	1,323	820	1,133.86	1,125.96	1,125.96	1,125.96	1,125.96	1,125.96
8000090	600	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
11902158	BN PK	2,087	1,294	0.00	0.00	0.00	0.00	0.00	0.00
8000150	3A	1,936	1,200	252.44	250.68	250.68	250.68	250.68	250.68
NA	WNOU	NA	NA	1,906.01	1,892.74	1,892.74	1,892.74	1,892.74	1,892.74
SUBTOTAL:		15,783	9,785	5,538.57	5,500.00	5,500.00	5,500.00	5,500.00	5,500.00
LOS FLORES MUTUAL WATER COMPANY									

APPENDIX A

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RECORDATION NUMBER	WELL NAME	WELL CAPACITY		2008-09 PRODUCTION	PROJECTED GROUNDWATER DEMANDS				
		ACRE-FEET	GPM		2009-10	2010-11	2011-12	2012-13	2013-14
11902098	1-LO	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
21902098	1-HI	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
LOUCKS, DAVID									
8000032	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
MAECHTLEN, J.J. TRUSTEE									
1902321	OLD60	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902322	SNIDO	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902323	M & N	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
MANNING BROS. ROCK & SAND COMPANY									
1900117	36230	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
MAPLE WATER COMPANY (SUBURBAN WATER SYSTEMS)									
1900042	2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000109	1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
MARTINEZ, FRANCES MERCY									
8000033	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA									
1900693	2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1900694	3	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
MILLER BREWERIES WEST, L.P. (MILLER BREWING COMPANY)									
8000034		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000075	1	5,533	3,430	12.56	20.00	20.00	20.00	20.00	20.00
8000076	2	5,533	3,430	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		11,065	6,860	12.56	20.00	20.00	20.00	20.00	20.00
MONROVIA, CITY OF (1)									
1900417	1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1900418	2	3,549	2,200	845.68	950.18	961.17	972.15	983.14	994.12
1900419	3	2,581	1,600	1,020.19	1,146.26	1,159.51	1,172.76	1,186.01	1,199.26
1900420	4	3,226	2,000	1,116.19	1,254.12	1,268.62	1,283.12	1,297.62	1,312.11
1940104	5	4,678	2,900	2,596.33	2,917.16	2,950.89	2,984.61	3,018.34	3,052.06
8000171	6	4,516	2,800	2,120.27	2,382.28	2,409.82	2,437.36	2,464.90	2,492.44
SUBTOTAL:		18,550	11,500	7,698.66	8,650.00	8,750.00	8,850.00	8,950.00	9,050.00
MONROVIA NURSERY									
1902456	DIV 4	NA	NA	0.39	20.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.39	20.00	0.00	0.00	0.00	0.00
MONTEREY PARK, CITY OF (1)									
1900453	1	1,613	1,000	211.82	260.74	263.44	266.15	266.15	266.15

APPENDIX A

PROJECTED GROUNDWATER DEMANDS FROM 2009-10 TO 2013-14

RECORDATION NUMBER	WELL NAME	WELL CAPACITY		2008-09 PRODUCTION	PROJECTED GROUNDWATER DEMANDS				
		ACRE-FEET	GPM		2009-10	2010-11	2011-12	2012-13	2013-14
1900454	2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1900455	3	1,532	950	252.82	311.21	314.44	317.67	317.67	317.67
1900456	4	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1900457	5	2,903	1,800	1,890.25	2,326.82	2,350.94	2,375.11	2,375.11	2,375.11
1900458	6	968	600	0.00	0.00	0.00	0.00	0.00	0.00
1902372	7	1,290	800	417.15	513.49	518.82	524.15	524.15	524.15
1902373	8	2,903	1,800	14.50	17.85	18.03	18.22	18.22	18.22
1902690	9	2,903	1,800	9.00	11.08	11.19	11.31	11.31	11.31
1902818	10	2,903	1,800	1,772.68	2,182.10	2,204.72	2,227.38	2,227.38	2,227.38
1903033	12	3,226	2,000	3,302.19	4,064.86	4,107.00	4,149.22	4,149.22	4,149.22
1903092	14	1,129	700	0.00	0.00	0.00	0.00	0.00	0.00
8000126	FERN	1,613	1,000	169.24	208.33	210.49	212.65	212.65	212.65
8000196	15	3,226	2,000	1,441.58	1,774.53	1,792.92	1,811.35	1,811.35	1,811.35
SUBTOTAL:		26,211	16,250	9,481.23	11,671.00	11,792.00	11,913.21	11,913.21	11,913.21
NAMIMATSU FARMS INC.									
1901034	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
NICK TOMOVICH & SON									
8000037	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
NO. 17 WALNUT PLACE MUTUAL WATER COMPANY									
8000038	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
OWL ROCK PRODUCTS (ROBERTSON'S READY MIX)									
1900043	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902241	NA	3,205	1,987	0.00	0.00	0.00	0.00	0.00	0.00
1903119	NA	NA	NA		0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		3,205	1,987	0.00	0.00	0.00	0.00	0.00	0.00
PARK WATER CO.									
1901307	26-A	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000039	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
PICO COUNTY WATER DISTRICT									
8000040	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
POLOPOLUS, ET AL									
1902169	1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
CITRUS VALLEY MEDICAL CENTER, QUEEN OF THE VALLEY CAMPUS (QUEEN OF THE VALLEY HOSPITAL)									
8000138	NA	NA	NA	25.30	25.00	25.00	25.00	25.00	25.00
SUBTOTAL:		NA	NA	25.30	25.00	25.00	25.00	25.00	25.00
RICHWOOD MUTUAL WATER COMPANY									
1901521	1 SOUTH	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901522	2 NORTH	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX A

PROJECTED GROUNDWATER DEMANDS FROM 2009-10 TO 2013-14

RECORDATION NUMBER	WELL NAME	WELL CAPACITY		2008-09 PRODUCTION	PROJECTED GROUNDWATER DEMANDS				
		ACRE-FEET	GPM		2009-10	2010-11	2011-12	2012-13	2013-14
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
WORKMAN MILL INVESTMENT COMPANY (RINCON DITCH COMPANY)									
1902790	4	2,153	1,335	92.29	100.00	100.00	100.00	100.00	100.00
SUBTOTAL:		2,153	1,335	92.29	100.00	100.00	100.00	100.00	100.00
WORKMAN MILL INVESTMENT COMPANY (RINCON IRRIGATION COMPANY)									
1900132	1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
11900095	2	1,428	885	0.04	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		1,428	885	0.04	0.00	0.00	0.00	0.00	0.00
WORKMAN MILL INVESTMENT COMPANY (ROSE HILLS MEMORIAL PARK)									
1900052	3	1,192	739	0.05	0.05	0.05	0.05	0.05	0.05
1900094	1	673	417	391.85	399.95	399.95	399.95	399.95	399.95
SUBTOTAL:		1,865	1,156	391.90	400.00	400.00	400.00	400.00	400.00
RURBAN HOMES MUTUAL WATER COMPANY (1)									
1900120	1-NORTH	484	300	109.28	59.15	59.15	59.15	59.15	59.15
1900121	2-SOUTH	484	300	110.56	59.85	59.85	59.85	59.85	59.85
SUBTOTAL:		968	600	219.84	119.00	119.00	119.00	119.00	119.00
RUTH, ROY									
8000041	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
S.L.S. & N. INC.									
8000151	NA	NA	NA	65.95	70.00	80.00	80.00	80.00	80.00
SUBTOTAL:		NA	NA	65.95	70.00	80.00	80.00	80.00	80.00
SAN GABRIEL COUNTRY CLUB									
1900547	1	NA	NA	0.14	16.51	16.51	16.51	16.51	16.51
1902979	2	750	465	296.18	283.49	283.49	283.49	283.49	283.49
SUBTOTAL:		750	465	296.32	300.00	300.00	300.00	300.00	300.00
SAN GABRIEL COUNTY WATER DISTRICT (1)									
1901669	5 BRA	1,613	1,000	0.00	0.00	0.00	0.00	0.00	0.00
1901670	6 BRA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901671	7	1,048	650	955.59	1,330.00	1,330.00	1,330.00	1,330.00	1,330.00
1901672	8	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902785	9	2,258	1,400	2,079.41	2,100.00	2,100.00	2,100.00	2,100.00	2,100.00
1902786	10	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000067	11	1,532	950	721.86	1,090.00	1,110.00	1,130.00	1,150.00	1,170.00
8000123	12	3,387	2,100	1,827.20	1,770.00	1,790.00	1,810.00	1,830.00	1,850.00
8000133	14	3,549	2,200	1,458.04	1,295.00	1,315.00	1,335.00	1,355.00	1,375.00
SUBTOTAL:		13,388	8,300	7,042.10	7,585.00	7,645.00	7,705.00	7,765.00	7,825.00
SAN GABRIEL VALLEY WATER COMPANY (1)									
1900725	G4A	1,855	1,150	451.60	850.00	850.00	850.00	850.00	850.00
1900733	5A	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902635	B1	1,815	1,125	0.00	0.00	0.00	0.00	0.00	0.00
8000112	B5C	3,186	1,975	0.00	0.00	0.00	0.00	0.00	0.00
8000038		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
211900729	1B	2,742	1,700	14.28	500.00	500.00	550.00	550.00	550.00
11902946	1C	2,452	1,520	96.82	50.00	50.00	50.00	50.00	50.00
18000081	1B4	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX A

PROJECTED GROUNDWATER DEMANDS FROM 2009-10 TO 2013-14

RECORDATION NUMBER	WELL NAME	WELL CAPACITY		2008-09 PRODUCTION	PROJECTED GROUNDWATER DEMANDS				
		ACRE-FEET	GPM		2009-10	2010-11	2011-12	2012-13	2013-14
18000082	1B5	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
18000102	1D	4,678	2,900	1,657.38	350.00	350.00	350.00	350.00	350.00
21900749	2C	1,924	1,193	0.00	0.00	0.00	0.00	0.00	0.00
21902857	2D	3,226	2,000	604.42	350.00	350.00	350.00	350.00	350.00
28000065	2E	4,436	2,750	1,542.85	500.00	500.00	500.00	500.00	500.00
31900736	8A	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
31900746	8B	2,016	1,250	285.28	1,350.00	1,350.00	1,350.00	1,350.00	1,350.00
31900747	8C	2,097	1,300	136.45	1,200.00	1,200.00	1,200.00	1,200.00	1,200.00
31903103	8D	5,000	3,100	1,273.20	1,650.00	1,650.00	1,650.00	1,650.00	1,650.00
38000113	8E	4,839	3,000	63.91	600.00	600.00	600.00	600.00	600.00
41900739	11A	4,436	2,750	2,388.01	325.00	325.00	325.00	325.00	325.00
41900745	11B	2,984	1,850	1,018.11	725.00	725.00	725.00	725.00	725.00
41902713	11C	1,742	1,080	172.58	325.00	325.00	325.00	325.00	325.00
48000083	11B7	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
51902858	B4B	3,629	2,250	0.00	0.00	0.00	0.00	0.00	0.00
51902947	B4C	3,629	2,250	0.00	0.00	0.00	0.00	0.00	0.00
61900718	B5A	3,065	1,900	0.00	0.00	0.00	0.00	0.00	0.00
61900719	B5B	5,323	3,300	3,629.87	5,200.00	5,200.00	5,200.00	5,200.00	5,200.00
71900721	B6B	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
71903093	B6C	3,226	2,000	0.64	50.00	50.00	50.00	50.00	50.00
78000084	B6B2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
78000098	B6D	3,226	2,000	1.28	50.00	50.00	50.00	50.00	50.00
81902525	B2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000122	B7E	968	600	551.79	300.00	300.00	300.00	300.00	300.00
91901435		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
91901436	B8	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
91901437	B9	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
91901439	B11A	968	600	0.00	475.00	475.00	475.00	475.00	475.00
91901440	B7B	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
98000068	B7C	3,791	2,350	2,337.78	1,100.00	1,100.00	1,100.00	1,100.00	1,100.00
98000094	B7D	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
98000099	B9B	1,613	1,000	717.65	500.00	500.00	500.00	500.00	500.00
98000108	B11B	4,033	2,500	1,656.17	875.00	875.00	875.00	875.00	875.00
8000172	1E	5,283	3,275	3,529.18	500.00	500.00	500.00	500.00	500.00
8000160	B5D	4,839	3,000	985.10	200.00	200.00	200.00	200.00	200.00
8000169	8F	5,646	3,500	229.33	200.00	200.00	200.00	200.00	200.00
NA	G4B	NA	NA		0.00	0.00	0.00	0.00	0.00
NA	1F	NA	NA		350.00	350.00	350.00	350.00	350.00
8000197	2F	NA	2,200	2,273.24	500.00	500.00	500.00	500.00	500.00
NA	B11C	3,226	2,000		0.00	0.00	0.00	0.00	0.00
8000203	B24A	4,033	2,500	474.12	850.00	850.00	1,200.00	1,200.00	1,200.00
8000204	B24B	4,033	2,500	610.87	850.00	850.00	1,200.00	1,200.00	1,200.00
8000187	B25A	4,516	2,800	2,104.47	4,400.00	4,400.00	4,400.00	4,400.00	4,400.00
8000188	B25B	4,516	2,800	1,908.90	4,400.00	4,400.00	4,400.00	4,400.00	4,400.00
8000189	B26A	1,774	1,100	1,817.21	1,600.00	1,600.00	1,600.00	1,600.00	1,600.00
8000190	B26B	1,774	1,100	2,152.89	1,600.00	1,600.00	1,600.00	1,600.00	1,600.00
8000205	B5E	5,565	3,450	4,834.72	5,200.00	5,200.00	5,200.00	5,200.00	5,200.00
NA	11D				725.00	725.00	725.00	725.00	725.00
SUBTOTAL:		128,101	81,618	39,520.10	38,700.00	38,700.00	39,450.00	39,450.00	39,450.00
SLOAN RANCHES									
1901198	1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000045	2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SIERRA LA VERNE COUNTRY CLUB									
8000124	1	NA	NA	19.74	34.82	34.82	34.82	34.82	34.82
8000125	2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000192	15 OFFSITE	NA	NA	12.81	15.18	15.18	15.18	15.18	15.18
SUBTOTAL:		NA	NA	32.55	50.00	50.00	50.00	50.00	50.00
SIERRA MADRE, CITY OF									
8000193	NA	NA	NA	0.38	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.38	0.00	0.00	0.00	0.00	0.00

APPENDIX A

PROJECTED GROUNDWATER DEMANDS FROM 2009-10 TO 2013-14

RECORDATION NUMBER	WELL NAME	WELL CAPACITY		2008-09 PRODUCTION	PROJECTED GROUNDWATER DEMANDS				
		ACRE-FEET	GPM		2009-10	2010-11	2011-12	2012-13	2013-14
SONOCO PRODUCTS COMPANY									
1902786	1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902971	2	NA	NA	132.63	150.00	150.00	150.00	150.00	150.00
SUBTOTAL:		NA	NA	132.63	150.00	150.00	150.00	150.00	150.00
SOUTH COVINA WATER SERVICE									
1901606	102	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SOUTH PASADENA, CITY OF (1)									
1901679	GRAV 2	1,290	800	565.80	782.57	782.57	782.57	782.57	782.57
1901681	2 WIL	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901682	3 WIL	3,387	2,100	3,132.40	2,618.14	2,618.14	2,618.14	2,618.14	2,618.14
1903086	4 WIL	1,774	1,100	1,199.26	1,371.41	1,371.41	1,371.41	1,371.41	1,371.41
SUBTOTAL:		6,452	4,000	4,897.46	4,772.12	4,772.12	4,772.12	4,772.12	4,772.12
SOUTHERN CALIFORNIA EDISON COMPANY									
1900342	1EB86	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1900343	2EB76	211	131	0.00	0.00	0.00	0.00	0.00	0.00
8000046	110RH	NA	NA	0.43	0.47	0.47	0.47	0.47	0.47
8000047	MURAT	2,420	1,500	109.00	119.53	119.53	119.53	119.53	119.53
11900344	38EIS	1,415	877	0.00	0.00	0.00	0.00	0.00	0.00
21900344	38W	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		4,045	2,508	109.43	120.00	120.00	120.00	120.00	120.00
GOLDEN STATE WATER COMPANY (SOUTHERN CALIFORNIA WATER COMPANY)/SAN DIMAS DISTRICT (1)									
1902148	BAS-3	968	600	441.76	663.76	663.76	663.76	663.76	663.76
1902149	BAS-4	1,210	750	678.07	1,018.82	1,018.82	1,018.82	1,018.82	1,018.82
1902150	HWY	1,129	700	1,123.04	1,687.40	1,687.40	1,687.40	1,687.40	1,687.40
1902151	ART-1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902152	ART-2	484	300	0.00	0.00	0.00	0.00	0.00	0.00
1902154	L H-2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902266	COL-1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902267	COL-2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902268	COL-4	726	450	0.00	0.00	0.00	0.00	0.00	0.00
1902269	COL-5	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902270	COL-6	686	425	0.00	0.00	0.00	0.00	0.00	0.00
1902271	COL-7	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902272	COL-8	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902286	CITY	323	200	118.03	177.34	177.34	177.34	177.34	177.34
1902842	ART-3	403	250	480.38	721.78	721.78	721.78	721.78	721.78
31902287	MALON	605	375	486.45	730.90	730.90	730.90	730.90	730.90
SUBTOTAL:		6,533	4,050	3,327.73	5,000.00	5,000.00	5,000.00	5,000.00	5,000.00
GOLDEN STATE WATER COMPANY (SOUTHERN CALIFORNIA WATER COMPANY)/SAN GABRIEL DISTRICT (1)									
1900510	1 S G	1,774	1,100	1,357.27	830.52	832.15	833.79	835.43	837.07
1900511	2 S G	1,452	900	0.00	0.00	0.00	0.00	0.00	0.00
1900512	2 GAR	327	203	0.00	0.00	0.00	0.00	0.00	0.00
1900513	1 GAR	321	199	0.00	0.00	0.00	0.00	0.00	0.00
1900514	3 SAX	565	350	367.50	224.87	225.32	225.76	226.20	226.65
1900515	1 SAX	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000146	4 SAX	1,532	950	1,111.61	680.20	681.54	682.88	684.22	685.56
1902144	1 EAR	589	365	0.00	0.00	0.00	0.00	0.00	0.00
1902017	1 JEF	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902018	2 JEF	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902019	3 JEF	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902020	1 AZU	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902024	1 ENC	1,936	1,200	687.31	420.57	421.40	422.22	423.05	423.88
1902027	1 PER	697	432	92.63	56.68	56.79	56.90	57.02	57.13
1902030	1 GRA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902031	2 GID	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX A

PROJECTED GROUNDWATER DEMANDS FROM 2009-10 TO 2013-14

RECORDATION NUMBER	WELL NAME	WELL CAPACITY		2008-09 PRODUCTION	PROJECTED GROUNDWATER DEMANDS				
		ACRE-FEET	GPM		2009-10	2010-11	2011-12	2012-13	2013-14
1902032	1 GID	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902034	1 FAR	1,936	1,200	362.33	221.71	222.15	222.58	223.02	223.46
1902035	2 ENC	968	600	262.33	160.52	160.84	161.15	161.47	161.79
1902461	2 GRA	494	306	0.00	0.00	0.00	0.00	0.00	0.00
1902948	2 FAR	1,210	750	270.79	165.70	166.02	166.35	166.68	167.00
8000073	3 ENC	1,048	650	334.76	204.84	205.24	205.65	206.05	206.46
8000111	4 JEF	2,097	1,300	1,785.25	1,092.40	1,094.55	1,096.71	1,098.86	1,101.01
SUBTOTAL:		10,384	6,438	6,631.78	4,058.00	4,066.00	4,074.00	4,082.00	4,090.00
STERLING MUTUAL WATER COMPANY									
1902085	SOUTH	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902096	NORTH	397	246	66.08	81.69	81.69	81.69	81.69	81.69
8000132	NEW SO	NA	NA	55.25	68.31	68.31	68.31	68.31	68.31
SUBTOTAL:		397	246	121.33	150.00	150.00	150.00	150.00	150.00
SUBURBAN WATER SYSTEMS (1)									
1900337	152W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901429	201W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901430	201W2	2,049	1,270	0.00	0.00	0.00	0.00	0.00	0.00
1901431	201W3	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901432	201W5	3,123	1,936	0.00	0.00	0.00	0.00	0.00	0.00
1901433	201W4	4,083	2,531	545.46	0.00	0.00	0.00	0.00	0.00
1901434	201W6	3,302	2,047	0.00	0.00	0.00	0.00	0.00	0.00
1901596	147W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901597	142W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901598	139W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901599	139W2	4,049	2,510	0.00	0.00	0.00	0.00	0.00	0.00
1901600	139W3	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901602	140W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901604	148W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901608	105W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901609	106W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901610	111W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901611	112W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901612	113W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901613	114W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901614	117W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901615	120W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901616	122W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901617	123W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901618	124W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901619	125W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901620	126W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901621	131W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901622	133W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901623	134W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901624	135W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901625	136W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901627	202W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902119	149W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902519	150W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902760	147W2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902761	153W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902762	154W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902763	157W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1903067	140W3	1,774	1,100	0.00	0.00	0.00	0.00	0.00	0.00
8000069	139W4	4,749	2,944	0.00	0.00	0.00	0.00	0.00	0.00
8000077	147W3	1,860	1,153	1,568.28	1,687.33	1,687.33	1,687.33	1,687.33	1,687.33
8000087	125W2	1,286	797	0.00	0.00	0.00	0.00	0.00	0.00
8000092	126W2	1,234	765	0.00	0.00	0.00	0.00	0.00	0.00
8000093	140W4	4,286	2,657	0.00	0.00	0.00	0.00	0.00	0.00
8000145	140W5	6,468	4,010	1,794.05	1,568.17	1,568.17	1,568.17	1,568.17	1,568.17
8000095	139W5	5,323	3,300	0.00	0.00	0.00	0.00	0.00	0.00
8000152	139W6	5,647	3,501	0.00	0.00	0.00	0.00	0.00	0.00
11902518	151W1	5,162	3,200	0.00	0.00	0.00	0.00	0.00	0.00
21902518	151W2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
31902819	155W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
31902820	155W2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX A

PROJECTED GROUNDWATER DEMANDS FROM 2009-10 TO 2013-14

RECORDATION NUMBER	WELL NAME	WELL CAPACITY		2008-09 PRODUCTION	PROJECTED GROUNDWATER DEMANDS				
		ACRE-FEET	GPM		2009-10	2010-11	2011-12	2012-13	2013-14
41901605	101W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
41901607	103W1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000181	121W1	3,624	2,247	1,864.67	2,630.26	2,630.26	2,630.26	2,630.26	2,630.26
8000183	142W2	4,194	2,600	3,325.80	3,806.13	3,806.13	3,806.13	3,806.13	3,806.13
8000195	201W7	4,615	2,861	4,557.95	4,188.51	4,188.51	4,188.51	4,188.51	4,188.51
8000198	201W8	4,263	2,643	4,426.09	3,868.67	3,868.67	3,868.67	3,868.67	3,868.67
8000207	151W2	5,162	3,200	4,301.37	4,683.87	4,683.87	4,683.87	4,683.87	4,683.87
8000208	201W9	4,121	2,555	4,463.06	3,739.72	3,739.72	3,739.72	3,739.72	3,739.72
	201W10	NA	NA	234.90	2,489.84	2,489.84	2,489.84	2,489.84	2,489.84
SUBTOTAL:		80,371	49,827	27,081.63	28,662.50	28,662.50	28,662.50	28,662.50	28,662.50
SUNNY SLOPE WATER COMPANY (1)									
1900026	8	2,932	1,818	1,007.60	1,047.22	1,122.03	1,196.83	1,271.63	1,294.07
1902792	9	3,094	1,918	1,456.47	1,513.75	1,621.87	1,729.99	1,838.12	1,870.56
8000048	10	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000157	13	3,060	1,897	627.36	652.03	698.60	745.18	791.75	805.72
SUBTOTAL:		9,086	5,633	3,091.43	3,213.00	3,442.50	3,672.00	3,901.50	3,970.35
TEXACO INC.									
1900001	14	519	322	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		519	322	0.00	0.00	0.00	0.00	0.00	0.00
TYLER NURSERY									
8000049	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
UNITED CONCRETE PIPE CORPORATION									
8000067	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
UNITED ROCK PRODUCTS CORPORATION									
1900106	IRW-1	NA	NA	264.38	285.76	317.52	349.27	381.02	317.52
1902532	SIERRA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1903062	IRW-2	NA	NA	568.27	614.24	682.48	750.73	818.98	682.48
SUBTOTAL:		NA	NA	832.65	900.00	1,000.00	1,100.00	1,200.00	1,000.00
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY									
NA	EW4-3	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
NA	EW4-4	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
NA	EW4-8	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
NA	EW4-9	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		0	0	0.00	0.00	0.00	0.00	0.00	0.00
VALENCIA HEIGHTS WATER COMPANY (1)									
8000051	1	524	325	992.44	206.82	206.82	226.70	228.30	232.27
8000052	2	526	326	0.00	236.36	236.36	259.09	260.91	265.45
8000054	4	NA	NA	0.00	265.91	265.91	291.48	293.52	298.64
8000055	3A	205	127	0.00	0.00	0.00	0.00	0.00	0.00
8000120	5	1,613	1,000	0.00	590.91	590.91	647.73	652.27	663.64
8000180	6	1,331	825						
SUBTOTAL:		4,199	2,603	992.44	1,300.00	1,300.00	1,425.00	1,435.00	1,460.00
VALECITO WATER COMPANY									
1901435	1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901436	2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901437	3	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX A

PROJECTED GROUNDWATER DEMANDS FROM 2009-10 TO 2013-14

RECORDATION NUMBER	WELL NAME	WELL CAPACITY		2008-09 PRODUCTION	PROJECTED GROUNDWATER DEMANDS				
		ACRE-FEET	GPM		2009-10	2010-11	2011-12	2012-13	2013-14
1901438	4	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901439	5	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901440	6	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
VALLEY COUNTY WATER DISTRICT (1)									
1900027	E MAIN	3,387	2,100	2,022.04	2,057.33	2,077.86	2,098.87	2,119.76	2,140.90
1900028	W MAIN	2,178	1,350	1,020.62	1,038.43	1,048.79	1,059.40	1,069.94	1,080.61
1900029	MORADA	1,936	1,200	0.00	0.00	0.00	0.00	0.00	0.00
1900031	PADDY	2,360	1,463	0.00	0.00	0.00	0.00	0.00	0.00
1900032	E NIXON (JOAN)	5,162	3,200	3,101.49	3,155.62	3,187.10	3,219.33	3,251.38	3,283.80
1900034	ARROW	4,839	3,000	0.00	0.00	0.00	0.00	0.00	0.00
1900035	B DAL	4,839	3,000	0.00	0.00	0.00	0.00	0.00	0.00
1901307	11	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902356	W NIXON (JOAN)	5,242	3,250	2,318.08	2,358.54	2,382.07	2,406.16	2,430.11	2,454.34
8000039	PALM	1,194	740	0.00	0.00	0.00	0.00	0.00	0.00
8000060	LANTE (SA1-3)	5,484	3,400	3,528.56	3,590.15	3,625.96	3,662.63	3,699.09	3,735.97
8000185	SA1-1	5,484	3,400	1,587.17	1,614.87	1,630.98	1,647.48	1,663.87	1,680.46
8000186	SA1-2	3,871	2,400	2,973.16	3,025.05	3,055.23	3,086.13	3,116.85	3,147.92
SUBTOTAL:		45,975	28,503	16,551.12	16,840.00	17,008.00	17,180.00	17,351.00	17,524.00
VALLEY VIEW MUTUAL WATER COMPANY (1)									
1900363	1	768	476	42.00	43.08	43.08	43.08	43.08	43.08
1900364	2	310	192	585.88	600.92	600.92	600.92	600.92	600.92
1900365	3	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		1,077	668	627.88	644.00	644.00	644.00	644.00	644.00
VIA TRUST									
1903012	1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
VIETNAMESE AMERICAN BUDDHIST TEMPLE									
8000191	NA	NA	NA	3.32	3.00	3.00	3.00	3.00	3.00
SUBTOTAL		NA	NA	3.32	3.00	3.00	3.00	3.00	3.00
WHITTIER, CITY OF (1)									
1901745	9	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901746	10	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901747	11	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901748	12	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1901749	13	1,774	1,100	856.94	791.72	791.72	791.72	791.72	791.72
8000021	FROM	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
8000071	15	5,968	3,700	484.54	447.66	447.66	447.66	447.66	447.66
8000110	16	5,968	3,700	4,391.38	4,057.17	4,057.17	4,057.17	4,057.17	4,057.17
8000135	17	6,452	4,000	0.00	0.00	0.00	0.00	0.00	0.00
8000136	18	6,452	4,000	0.00	0.00	0.00	0.00	0.00	0.00
8000200	EW4-5	4,355	2,700	845.18	780.86	780.86	780.86	780.86	780.86
8000201	EW4-6	4,516	2,800	906.34	837.36	837.36	837.36	837.36	837.36
8000202	EW4-7	4,516	2,800	579.32	535.23	535.23	535.23	535.23	535.23
SUBTOTAL:		26,615	16,500	8,063.70	7,450.00	7,450.00	7,450.00	7,450.00	7,450.00
WILMOTT, ERMA M.									
8000006	1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
WOODLAND, RICHARD									
1902949	1	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1902950	2	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX A

PROJECTED GROUNDWATER DEMANDS FROM 2009-10 TO 2013-14

RECORDATION NUMBER	WELL NAME	WELL CAPACITY		2008-09 PRODUCTION	PROJECTED GROUNDWATER DEMANDS				
		ACRE-FEET	GPM		2009-10	2010-11	2011-12	2012-13	2013-14
SUBTOTAL:		NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
COINER, JAMES W., DBA COINER NURSERY (WOODLAND FARMS INC.)									
1902951	3	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
1903072	5R	NA	NA	91.87	90.00	90.00	90.00	90.00	90.00
SUBTOTAL:		NA	NA	91.87	90.00	90.00	90.00	90.00	90.00
TOTAL		**673,021**	**420,948**	**236,715.72**	**248,348.25**	**253,249.18**	**256,432.89**	**258,189.90**	**259,397.77**

NOTES : GROUNDWATER PRODUCTION AND DEMANDS IN ACRE-FEET
GPM : GALLONS PER MINUTE
NA : NOT AVAILABLE
(1) PROJECTED GROUND-WATER DEMANDS PROVIDED BY PRODUCER

APPENDIX B.

SIMULATED CHANGES IN GROUNDWATER ELEVATIONS AT WELLS OR WELLFIELDS IN MAIN SAN GABRIEL BASIN

APPENDIX B

SIMULATED CHANGES IN GROUNDWATER ELEVATION AT WELLS OR WELLFIELDS IN MAIN SAN GABRIEL BASIN

WELL OR WELLFIELD	RECORDATION NUMBER	WELL STATUS	SIMULATED ELEVATION (1)		CHANGE (2) (FEET)	REMARKS
			2008-09	2013-14		
ADAMS RANCH MUTUAL WATER COMPANY						
01	1902106	INACTIVE	177.37	177.59	0.22	
02	1902689	INACTIVE				
03	8000182	ACTIVE				
ALHAMBRA, CITY OF						
MOEL (08)	1900010	ACTIVE	140.59	139.21	-1.38	PRODUCTION INCREASED
09	1900011	ACTIVE	136.63	135.30	-1.33	PRODUCTION INCREASED
10	1900012	ACTIVE	142.06	140.87	-1.19	PRODUCTION INCREASED
12	1900013	INACTIVE	141.07	140.25	-0.82	
13	1900014	ACTIVE	146.37	145.26	-1.11	PRODUCTION INCREASED
14	1900015	ACTIVE	138.69	135.88	-2.81	PRODUCTION INCREASED
15	1900016	ACTIVE	150.22	149.06	-1.16	PRODUCTION INCREASED
LON 1	1903014	ACTIVE	132.50	126.99	-5.51	PRODUCTION INCREASED
LON 2	1900017	ACTIVE				
GARF	1900018	INACTIVE	140.59	140.16	-0.43	
11	1903014	ACTIVE	139.59	137.53	-2.06	PRODUCTION INCREASED
07	1903097	STANDBY	140.09	138.50	-1.59	PRODUCTION INCREASED
AMARILLO MUTUAL WATER COMPANY						
01	1900791	ACTIVE	171.89	170.31	-1.58	PRODUCTION INCREASED
02	1900792	ACTIVE				
ARCADIA, CITY OF						
LON 1	1901013	ACTIVE	210.52	209.08	-1.44	PRODUCTION INCREASED
LON 2	1901014	ACTIVE	210.93	209.02	-1.91	PRODUCTION INCREASED
CAM REAL 1	1902077	INACTIVE	204.83	204.85	0.02	
CAM REAL 2	1902078	INACTIVE				
ST JO 2	8000177	ACTIVE	208.94	209.06	0.12	
BAL 2	1902791	ACTIVE	186.42	186.08	-0.34	
PECK 1	1902854	ACTIVE	207.09	207.96	0.87	
L OAK 1	8000127	ACTIVE	201.93	203.93	2.00	PRODUCTION REDUCED
AZUSA, CITY OF (AZUSA AGRICULTURE WATER COMPANY, AZUSA VALLEY WATER COMPANY)						
05 (01)	1902533	ACTIVE	596.66	596.07	-0.59	
06 (03)	1902535	ACTIVE	598.31	597.32	-0.99	
GENESIS 1 (04)	1902536	DESTROYED	258.14	258.13	-0.01	
GENESIS 2 (05)	1902537	DESTROYED	253.10	253.08	-0.02	
GENESIS 3 (06)	1902538	DESTROYED	258.92	258.92	0.00	

APPENDIX B

SIMULATED CHANGES IN GROUNDWATER ELEVATION AT WELLS OR WELLFIELDS IN MAIN SAN GABRIEL BASIN

WELL OR WELLFIELD	RECORDATION NUMBER	WELL STATUS	SIMULATED ELEVATION (1)		CHANGE (2) (FEET)	REMARKS
			2008-09	2013-14		
01 (07)	8000072	ACTIVE	614.58	612.56	-2.02	PRODUCTION INCREASED
03 (08)	8000086	ACTIVE	615.85	615.22	-0.63	
02 (1 NORTH)	1902457	ACTIVE	613.83	613.12	-0.71	
04 (2 SOUTH)	1902458	ACTIVE	612.37	611.54	-0.83	
AVWC 01	1902113	DESTROYED	238.08	238.00	-0.08	
AVWC 02	1902114	DESTROYED	245.11	245.09	-0.02	
08 (AVWC 04)	1902115	ACTIVE	597.10	596.15	-0.95	
07 (AVWC 05)	1902116	ACTIVE	595.96	595.12	-0.84	
09 (AVWC 06)	1902117	INACTIVE	254.02	254.02	0.00	
10 (AVWC 08)	8000103	ACTIVE	252.87	252.86	-0.01	
11	8000178	ACTIVE	619.77	618.86	-0.91	
12	8000179	ACTIVE	625.11	624.77	-0.34	
BASELINE WATER COMPANY						
01	1901200	INACTIVE	973.77	973.47	-0.30	
02	1901201	INACTIVE				
03	1901202	INACTIVE	976.76	976.49	-0.27	
CALIFORNIA-AMERICAN WATER COMPANY/DUARTE SYSTEM						
STA FE	1900354	ACTIVE	227.50	227.02	-0.48	
B V	1900355	ACTIVE	224.07	223.70	-0.37	
MT AVE	1900356	DESTROYED	222.33	222.08	-0.25	
FISH C	1900358	ACTIVE	622.78	621.69	-1.09	PRODUCTION INCREASED
WILEY	1902907	ACTIVE	605.91	603.92	-1.99	PRODUCTION INCREASED
CR HV	1903018	ACTIVE	231.02	230.11	-0.91	
ENCANTO	8000139	ACTIVE	610.40	609.09	-1.31	PRODUCTION INCREASED
LAS L2	8000140	ACTIVE	604.23	603.33	-0.90	
BACON	1900497	ACTIVE	605.92	605.29	-0.63	
CALIFORNIA-AMERICAN WATER COMPANY/SAN MARINO SYSTEM						
GUESS	1900918	ACTIVE	174.35	174.28	-0.07	
MIVW 2	1900920	ACTIVE	174.99	174.69	-0.30	
RIC 1	1900921	INACTIVE	165.43	165.06	-0.37	
IVAR 1	1900923	ACTIVE	177.09	176.27	-0.82	
GRAND	1900926	ACTIVE	167.19	166.92	-0.27	
ROSEMEAD	1900927	ACTIVE	166.27	165.96	-0.31	

APPENDIX B

SIMULATED CHANGES IN GROUNDWATER ELEVATION AT WELLS OR WELLFIELDS IN MAIN SAN GABRIEL BASIN

WELL OR WELLFIELD	RECORDATION NUMBER	WELL STATUS	SIMULATED ELEVATION (1)		CHANGE (2) (FEET)	REMARKS
			2008-09	2013-14		
ROANOKE	1900934	ACTIVE	139.79	139.14	-0.65	
LONGDEN	1900935	ACTIVE	135.53	132.54	-2.99	IMPACT FROM SGCWD EXTRACTION
BR 1	1901441	INACTIVE	190.37	190.27	-0.10	
HOWLAND	1902424	ACTIVE	186.68	186.65	-0.03	
BR 2	1902787	INACTIVE	188.44	188.29	-0.15	
MAR 3	1903019	ACTIVE	184.29	184.03	-0.26	
DELMAR	1903059	ACTIVE	131.49	128.55	-2.94	PRODUCTION INCREASED
HALL 2	8000175	ACTIVE	190.93	190.78	-0.15	
CALIFORNIA COUNTRY CLUB						
ARTES	1902531	STANDBY	213.00	213.53	0.53	
SYCAMORE	1903084	STANDBY	212.75	213.25	0.50	
CALIFORNIA DOMESTIC WATER COMPANY						
02	1901181	ACTIVE	206.59	203.92	-2.67	PRODUCTION INCREASED
06	1902967	ACTIVE	204.08	200.06	-4.02	PRODUCTION INCREASED
03	1903057	ACTIVE	202.41	198.12	-4.29	PRODUCTION INCREASED
08	1903081	ACTIVE	208.51	206.57	-1.94	PRODUCTION INCREASED
05A	8000100	ACTIVE	205.10	201.39	-3.71	PRODUCTION INCREASED
14	8000174	ACTIVE	205.84	202.62	-3.22	PRODUCTION INCREASED
CHAMPION MUTUAL WATER COMPANY						
02 03	1902816 8000121	ACTIVE ACTIVE	212.14	215.26	3.12	IMPACT FROM SGVWC EXTRACTION
VULCAN MATERIALS COMPANY (CALMAT COMPANY)						
DUR E DUR W	1902920 8000063	ACTIVE ACTIVE	225.82	225.63	-0.19	
REL 1	1903088	ACTIVE	239.76	239.32	-0.44	
COVINA, CITY OF						
01	1901685	INACTIVE	272.54	272.51	-0.03	
02 (GRAND)	1901686	ACTIVE	361.22	361.21	-0.01	
COVINA IRRIGATING COMPANY						
CONTR	1900881	STANDBY	252.24	252.23	-0.01	
BAL 3	1900882	ACTIVE	231.41	231.04	-0.37	
BAL 1 BAL 2	1900885 1900883	ACTIVE ACTIVE	231.67	231.15	-0.52	
VALEN	1900880	INACTIVE	509.07	509.06	-0.01	

APPENDIX B

SIMULATED CHANGES IN GROUNDWATER ELEVATION AT WELLS OR WELLFIELDS IN MAIN SAN GABRIEL BASIN

WELL OR WELLFIELD	RECORDATION NUMBER	WELL STATUS	SIMULATED ELEVATION (1)		CHANGE (2) (FEET)	REMARKS
			2008-09	2013-14		
CROWN CITY PLATING COMPANY						
01	8000012	ACTIVE	185.76	185.77	0.01	
DEL RIO MUTUAL WATER COMPANY						
BURKETT	1900331	ACTIVE	208.13	209.11	0.98	
DRIFTWOOD DAIRY						
01	1902924	ACTIVE	197.10	197.55	0.45	
EAST PASADENA WATER COMPANY, LTD.						
09	1901508	ACTIVE	176.81	175.98	-0.83	
EL MONTE, CITY OF						
02A	1901692	ACTIVE	196.39	196.25	-0.14	
03	1901693	INACTIVE	197.97	197.89	-0.08	
04	1901694	INACTIVE	199.18	199.08	-0.10	
05	1901695	INACTIVE	194.42	194.39	-0.03	
10	1901699	STANDBY	200.42	200.28	-0.14	
MT VW	1902612	DESTROYED	207.04	207.71	0.67	
12	1903137	STANDBY	193.55	193.33	-0.22	
13	8000101	ACTIVE	193.72	193.50	-0.22	
GLENDORA, CITY OF						
11-E	1900826	ACTIVE	547.38	547.23	-0.15	
08-E 09-E 12-G	1900829 1900830 1900827	ACTIVE ACTIVE ACTIVE	604.15	600.41	-3.74	PRODUCTION INCREASED
10-E	1900828	ACTIVE	554.11	553.95	-0.16	
07-G	1900831	INACTIVE	252.89	252.88	-0.01	
01-E 13-E	1901523 8000184	ACTIVE ACTIVE	562.55	562.27	-0.28	
02-E	1901526	ACTIVE	563.46	563.22	-0.24	
03-G 04-E	1901525 1901524	INACTIVE INACTIVE	247.26	247.25	-0.01	
05-E	8000149	ACTIVE	609.79	607.32	-2.47	PRODUCTION INCREASED
HARTLEY, DAVID						
NA	8000085	ACTIVE	660.65	660.62	-0.03	
HEMLOCK MUTUAL WATER COMPANY						
NORTH SOUTH	1901178 1902806	ACTIVE ACTIVE	214.84	215.99	1.15	IMPACT FROM SGVWC EXTRACTION

APPENDIX B

SIMULATED CHANGES IN GROUNDWATER ELEVATION AT WELLS OR WELLFIELDS IN MAIN SAN GABRIEL BASIN

WELL OR WELLFIELD	RECORDATION NUMBER	WELL STATUS	SIMULATED ELEVATION (1)		CHANGE (2) (FEET)	REMARKS
			2008-09	2013-14		
INDUSTRY WATERWORKS SYSTEM, CITY OF						
01	1902581	INACTIVE	214.38	213.36	-1.02	IMPACT FROM BPOU EXTRACTION
03	8000078	STANDBY				
04	8000096	ACTIVE				
02	1902582	INACTIVE	214.79	213.72	-1.07	BPOU EXTRACTION
05	8000097	ACTIVE				
LA PUENTE VALLEY COUNTY WATER DISTRICT						
02	1901460	ACTIVE	224.56	223.68	-0.88	
04	8000062	ACTIVE				
03	1902859	ACTIVE	223.93	224.67	0.74	
05	NA	ACTIVE				
HANSON AGGREGATES WEST, INC. (LIVINGSTON-GRAHAM)						
EL 4	1903006	ACTIVE	222.20	221.89	-0.31	
EL 1	1901492	ACTIVE	222.57	222.10	-0.47	
EL 3	1901493	ACTIVE				
LOS ANGELES, COUNTY OF						
KEY WELL	3030F	MONITORING	228.71	228.63	-0.08	
WHI 1	1902579	ACTIVE	181.61	181.86	0.25	
02	1902580	ACTIVE	188.74	188.74	0.00	
03A	8000150	ACTIVE	181.15	180.70	-0.45	
04	1902664	ACTIVE	179.75	178.86	-0.89	
05	1902665	ACTIVE	178.55	177.16	-1.39	IMPACT FROM BPOU EXTRACTION
06	1902666	INACTIVE	178.05	177.21	-0.84	
SF 1	8000070	ACTIVE	235.20	235.13	-0.07	
BIG RED	8000088	ACTIVE	192.99	192.80	-0.19	
NEW LAKE	8000089	ACTIVE	179.26	179.69	0.43	
MILLER BREWERIES WEST, L.P. (MILLER BREWING COMPANY)						
01	8000075	ACTIVE	237.35	237.20	-0.15	
02	8000076	ACTIVE	236.85	236.64	-0.21	
MONROVIA, CITY OF						
02	1900418	ACTIVE	208.82	207.40	-1.42	PRODUCTION INCREASED
03	1900419	ACTIVE				
04	1900420	ACTIVE	214.32	213.20	-1.12	PRODUCTION INCREASED
05	1940104	ACTIVE	210.39	208.86	-1.53	PRODUCTION INCREASED
06	8000171	ACTIVE	209.08	207.67	-1.41	PRODUCTION INCREASED
MONROVIA NURSERY						

APPENDIX B

SIMULATED CHANGES IN GROUNDWATER ELEVATION AT WELLS OR WELLFIELDS IN MAIN SAN GABRIEL BASIN

WELL OR WELLFIELD	RECORDATION NUMBER	WELL STATUS	SIMULATED ELEVATION (1)		CHANGE (2) (FEET)	REMARKS
			2008-09	2013-14		
DIV 4	1902456	ACTIVE	509.07	509.06	-0.01	
MONTEREY PARK, CITY OF						
01	1900453	ACTIVE	164.30	162.50	-1.80	PRODUCTION INCREASED
03	1900455	ACTIVE	158.35	156.10	-2.25	PRODUCTION INCREASED
05	1900457	ACTIVE	149.22	145.44	-3.78	PRODUCTION INCREASED
06	1900458	ACTIVE	160.03	157.94	-2.09	PRODUCTION INCREASED
07	1902372	ACTIVE	176.79	175.39	-1.40	PRODUCTION INCREASED
08	1902373	ACTIVE	178.74	177.35	-1.39	PRODUCTION INCREASED
09	1902690	ACTIVE	176.53	175.08	-1.45	PRODUCTION INCREASED
10	1902818	ACTIVE	146.18	143.28	-2.90	PRODUCTION INCREASED
12	1903033	ACTIVE	174.30	172.44	-1.86	PRODUCTION INCREASED
14	1903092	ACTIVE	172.85	171.86	-0.99	
FERN	8000126	ACTIVE	158.18	155.90	-2.28	PRODUCTION INCREASED
15	8000196	ACTIVE	178.32	176.89	-1.43	PRODUCTION INCREASED
OWL ROCK PRODUCTS COMPANY						
NA	1902241	ACTIVE	226.47	226.33	-0.14	
NA	1903119	ACTIVE	617.74	616.01	-1.73	IMPACT FROM AZUSA EXTRACTION
POLOPOLUS ET AL.						
01	1902169	INACTIVE	229.85	229.73	-0.12	
CITRUS VALLEY MEDICAL CENTER, QUEEN OF THE VALLEY CAMPUS (QUEEN OF THE VALLEY HOSPITAL)						
NA	8000138	ACTIVE	230.79	230.55	-0.24	
WORKMAN MILL INVESTMENT COMPANY (RINCON DITCH COMPANY)						
04	1902790	ACTIVE	183.23	183.57	0.34	
WORKMAN MILL INVESTMENT COMPANY (RINCON IRRIGATION COMPANY)						
02	1900095	ACTIVE	185.01	185.21	0.20	
WORKMAN MILL INVESTMENT COMPANY (ROSE HILLS MEMORIAL PARK)						
03	1900052	ACTIVE	184.05	184.32	0.27	
01	1900094	ACTIVE	182.02	182.29	0.27	
RURBAN HOMES MUTUAL WATER COMPANY						
NORTH 1	1900120	ACTIVE	215.89	217.44	1.55	IMPACT FROM SGVWC REDUCTION
SOUTH 2	1900121	ACTIVE				
SAN GABRIEL COUNTRY CLUB						
01	1900547	ACTIVE	142.84	140.41	-2.43	IMPACT FROM SGCWD EXTRACTION

APPENDIX B

SIMULATED CHANGES IN GROUNDWATER ELEVATION AT WELLS OR WELLFIELDS IN MAIN SAN GABRIEL BASIN

WELL OR WELLFIELD	RECORDATION NUMBER	WELL STATUS	SIMULATED ELEVATION (1)		CHANGE (2) (FEET)	REMARKS
			2008-09	2013-14		
02	1902979	ACTIVE				
SAN GABRIEL COUNTY WATER DISTRICT						
05 BRA	1901669	ACTIVE	171.37	171.35	-0.02	
07	1901671	ACTIVE	135.16	130.80	-4.36	PRODUCTION INCREASED
08	1901672	INACTIVE	138.91	138.46	-0.45	
09	1902785	ACTIVE	150.91	150.22	-0.69	
10	1902786	INACTIVE	158.59	158.13	-0.46	
11	8000067	ACTIVE	160.61	159.39	-1.22	PRODUCTION INCREASED
12	8000123	ACTIVE	161.23	160.61	-0.62	
14	8000133	ACTIVE	150.43	150.14	-0.29	
SAN GABRIEL VALLEY WATER COMPANY						
G4A	1900725	ACTIVE	170.91	169.19	-1.72	PRODUCTION INCREASED
B1	1902635	ACTIVE	200.46	200.50	0.04	
B5A	1900718	ACTIVE	209.08	206.85	-2.23	BPOU EXTRACTION
B5B	1900719	INACTIVE				
B5C	8000112	ACTIVE				
B5D	8000160	ACTIVE	209.62	207.93	-1.69	IMPACT FROM BPOU EXTRACTION
B5E	NA	PLANNED	209.18	207.19	-1.99	BPOU EXTRACTION
B25A	8000187	ACTIVE	212.32	203.37	-8.95	BPOU EXTRACTION
B25B	8000188	ACTIVE				
B26A	8000189	ACTIVE	218.32	218.59	0.27	
B26B	8000190	ACTIVE				
8A	1900736	INACTIVE	180.22	177.98	-2.24	PRODUCTION INCREASED
8B	1900746	ACTIVE				
8C	1900747	ACTIVE				
8E	8000113	ACTIVE				
8D	1903103	ACTIVE	179.99	178.22	-1.77	PRODUCTION INCREASED
8F	8000169	ACTIVE				
1B	1900729	ACTIVE	204.94	212.38	7.44	PRODUCTION REDUCED
1C	1902946	ACTIVE				
1D	8000102	ACTIVE				
1E	8000172	ACTIVE				
2C	1900749	ACTIVE	199.22	201.13	1.91	PRODUCTION REDUCED
2D	1902857	ACTIVE				
2E	8000065	ACTIVE				
2F	8000197	ACTIVE				
11A	1900739	ACTIVE	204.85	209.24	4.39	PRODUCTION REDUCED
11B	1900745	ACTIVE				
11C	1902713	ACTIVE	207.96	209.66	1.70	PRODUCTION REDUCED
B4B	1902858	ACTIVE	219.52	217.35	-2.17	IMPACT FROM BPOU EXTRACTION
B4C	1902947	ACTIVE				

APPENDIX B

SIMULATED CHANGES IN GROUNDWATER ELEVATION AT WELLS OR WELLFIELDS IN MAIN SAN GABRIEL BASIN

WELL OR WELLFIELD	RECORDATION NUMBER	WELL STATUS	SIMULATED ELEVATION (1)		CHANGE (2) (FEET)	REMARKS
			2008-09	2013-14		
B6C	1903093	ACTIVE	225.17	224.78	-0.39	
B6D	8000098	ACTIVE				
B7C	8000068	ACTIVE	218.71	220.34	1.63	PRODUCTION REDUCED
B7E	8000122	ACTIVE				
B2	1902525	INACTIVE	199.56	199.53	-0.03	
B11A	1901439	ACTIVE	219.11	219.95	0.84	
B11B	8000108	ACTIVE				
B11C	NA	PLANNED				
B9B	8000099	ACTIVE	220.80	221.52	0.72	
B24A	8000203	ACTIVE	220.98	220.13	-0.85	
B24B	8000204	ACTIVE				
SIERRA LA VERNE COUNTRY CLUB						
01	8000124	ACTIVE	1076.22	1075.86	-0.36	
02	8000125	ACTIVE	1096.19	1095.90	-0.29	
SONOCO PRODUCTS COMPANY						
01	1912786	ACTIVE	217.39	216.52	-0.87	
02	1902971	ACTIVE				
SOUTHERN CALIFORNIA EDISON COMPANY						
110RH	8000046	ACTIVE	225.75	225.60	-0.15	
2EB76	1900343	ACTIVE	220.96	221.46	0.50	
MURAT	8000047	ACTIVE	169.07	168.03	-1.04	IMPACT FROM BPOU EXTRACTION
GOLDEN STATE WATER COMPANY (SOUTHERN CALIFORNIA WATER COMPANY)/SAN DIMAS DISTRICT						
BAS-3	1902148	ACTIVE	897.67	894.71	-2.96	PRODUCTION INCREASED
BAS-4	1902149	ACTIVE	879.57	876.35	-3.22	PRODUCTION INCREASED
HIGHWAY	1902150	ACTIVE	889.11	884.13	-4.98	PRODUCTION INCREASED
ART-2	1902152	ACTIVE	896.31	893.61	-2.70	PRODUCTION INCREASED
ART-3	1902842	ACTIVE	883.65	879.76	-3.89	PRODUCTION INCREASED
COL-4	1902268	ACTIVE	536.00	536.00	0.00	
COL-6	1902270	ACTIVE	534.49	534.49	0.00	
COL-7	1902271	ACTIVE	566.92	566.92	0.00	
COL-8	1902272	INACTIVE	745.32	745.20	-0.12	
CITY	1902286	ACTIVE	1029.32	1028.51	-0.81	
MALON	1902287	ACTIVE	995.90	994.45	-1.45	PRODUCTION INCREASED
GOLDEN STATE WATER COMPANY (SOUTHERN CALIFORNIA WATER COMPANY)/SAN GABRIEL VALLEY DISTRICT						
S G 1	1900510	ACTIVE	146.09	146.20	0.11	
S G 2	1900511					

APPENDIX B

SIMULATED CHANGES IN GROUNDWATER ELEVATION AT WELLS OR WELLFIELDS IN MAIN SAN GABRIEL BASIN

WELL OR WELLFIELD	RECORDATION NUMBER	WELL STATUS	SIMULATED ELEVATION (1)		CHANGE (2) (FEET)	REMARKS
			2008-09	2013-14		
GAR 1	1900513	ACTIVE	160.97	159.22	-1.75	IMPACT FROM SEMOU EXTRACTION
GAR 2	1900512	ACTIVE				
SAX 1	1900515	ACTIVE	153.92	155.09	1.17	PRODUCTION REDUCED
SAX 3	1900514	ACTIVE				
SAX 4	8000146	ACTIVE				
EARL 1	1902144	ACTIVE	169.03	167.57	-1.46	IMPACT FROM SEMOU EXTRACTION
JEF 1	1902017	INACTIVE	209.13	208.80	-0.33	
JEF 3	1902019	INACTIVE				
JEF 4	8000111	ACTIVE				
AZU 1	1902020	DESTROYED	193.14	193.25	0.11	
ENC 1	1902024	ACTIVE	175.72	176.32	0.60	
ENC 2	1902035	ACTIVE	174.62	175.18	0.56	
ENC 3	8000073	ACTIVE				
PER 1	1902027	STANDBY	197.08	197.57	0.49	
GRA 1	1902030	STANDBY	216.02	215.76	-0.26	
GRA 2	1902461					
GID 1	1902032	DESTROYED	193.26	193.29	0.03	
GID 2	1902031					
FAR 1	1902034	ACTIVE	205.75	206.90	1.15	PRODUCTION REDUCED
FAR 2	1902948	ACTIVE	204.67	205.77	1.10	PRODUCTION REDUCED
SOUTH PASADENA, CITY OF						
GRAV 2	1901679	ACTIVE	137.89	136.31	-1.58	PRODUCTION INCREASED
WIL 2	1901681	ACTIVE	136.46	136.39	-0.07	
WIL 3	1901682	ACTIVE	134.34	134.41	0.07	
WIL 4	1903086	ACTIVE				
STERLING MUTUAL WATER COMPANY						
NEW SO.	8000132	ACTIVE	210.17	211.16	0.99	
NORTH	1902096	ACTIVE				
SUBURBAN WATER SYSTEMS						
114W-1	1901613	INACTIVE	247.90	247.86	-0.04	
121W-1	8000181	ACTIVE	233.24	232.51	-0.73	
125W-2	8000087	INACTIVE	263.36	263.36	0.00	
126W-2	8000092	INACTIVE	266.85	266.86	0.01	
139W-2	1901599	ACTIVE	230.93	230.84	-0.09	
139W-4	8000069	ACTIVE				
139W-5	8000095	INACTIVE	230.64	230.56	-0.08	
139W-6	8000152	INACTIVE				
140W-3	1903067	ACTIVE	224.37	224.60	0.23	
140W-4	8000093	ACTIVE				

APPENDIX B

SIMULATED CHANGES IN GROUNDWATER ELEVATION AT WELLS OR WELLFIELDS IN MAIN SAN GABRIEL BASIN

WELL OR WELLFIELD	RECORDATION NUMBER	WELL STATUS	SIMULATED ELEVATION (1)		CHANGE (2) (FEET)	REMARKS
			2008-09	2013-14		
140W-5	8000145	ACTIVE				
142W-2	8000183	ACTIVE	229.88	229.35	-0.53	
147W-3	8000077	ACTIVE	219.70	219.95	0.25	
151W-2	8000207	ACTIVE	225.49	225.05	-0.44	
155W-1	1902819	INACTIVE	262.86	262.86	0.00	
201W-2	1901430	ACTIVE	178.43	179.03	0.60	
201W-4 201W-9	1901433 8000208	ACTIVE ACTIVE	175.82	177.47	1.65	PRODUCTION REDUCED
201W-5	1901432	ACTIVE	180.30	181.02	0.72	
201W-6	1901434	ACTIVE	184.47	184.26	-0.21	
201W-7	8000195	ACTIVE	176.40	177.26	0.86	
201W-8	8000198	ACTIVE	178.09	178.62	0.53	
201W-10	NA	ACTIVE	184.67	182.70	-1.97	PRODUCTION INCREASED
SUNNY SLOPE WATER COMPANY						
08 09	1900026 1902792	ACTIVE ACTIVE	160.22	158.35	-1.87	PRODUCTION INCREASED
10	8000048	INACTIVE	175.59	175.33	-0.26	
13	8000157	ACTIVE	163.20	162.11	-1.09	PRODUCTION INCREASED
TYLER NURSERY						
NA	8000049	ACTIVE	193.69	193.65	-0.04	
UNITED CONCRETE PIPE CORPORATION						
NA	8000067	INACTIVE	226.16	225.96	-0.20	
UNITED ROCK PRODUCTS CORPORATION						
IRW-1	1900106	ACTIVE	224.10	223.74	-0.36	
IRW-2	1903062	ACTIVE	223.38	222.94	-0.44	
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY						
MW4-1	NA	MONITORING	179.32	179.76	0.44	SOUTH EL MONTE OPERABLE UNIT
MW4-2	NA	MONITORING	181.32	181.48	0.16	
MW4-3	NA	MONITORING	179.23	179.64	0.41	
MW4-4	NA	MONITORING	170.54	170.56	0.02	
MW4-5	NA	MONITORING	171.11	171.13	0.02	
MW4-6	NA	MONITORING	171.68	171.70	0.02	
MW4-7	NA	MONITORING	183.98	183.96	-0.02	
MW4-8	NA	MONITORING	187.45	187.46	0.01	

APPENDIX B

SIMULATED CHANGES IN GROUNDWATER ELEVATION AT WELLS OR WELLFIELDS IN MAIN SAN GABRIEL BASIN

WELL OR WELLFIELD	RECORDATION NUMBER	WELL STATUS	SIMULATED ELEVATION (1)		CHANGE (2) (FEET)	REMARKS
			2008-09	2013-14		
MW4-9	NA	MONITORING	188.77	188.71	-0.06	
MW4-10	NA	MONITORING	196.71	196.63	-0.08	
MW4-11	NA	MONITORING	204.51	204.73	0.22	
MW5-1	NA	MONITORING	232.87	232.65	-0.22	BALDWIN PARK OPERABLE UNIT
MW5-3	NA	MONITORING	237.09	237.01	-0.08	
MW5-5	NA	MONITORING	226.24	226.08	-0.16	
MW5-8	NA	MONITORING	226.25	226.15	-0.10	
MW5-11	NA	MONITORING	237.16	237.09	-0.07	
MW5-13	NA	MONITORING	241.34	241.29	-0.05	
MW5-15	NA	MONITORING	228.47	228.41	-0.06	
MW5-17	NA	MONITORING	237.79	237.73	-0.06	
MW5-18	NA	MONITORING	239.33	239.28	-0.05	
MW5-19	NA	MONITORING	210.34	208.53	-1.81	IMPACT FROM BPOU EXTRACTION
MW5-20	NA	MONITORING	223.23	222.90	-0.33	
MW5-22	NA	MONITORING	216.58	215.55	-1.03	IMPACT FROM BPOU EXTRACTION
MW5-23	NA	MONITORING	217.14	214.81	-2.33	IMPACT FROM BPOU EXTRACTION
MW6-1	NA	MONITORING	221.00	220.91	-0.09	PUENTE VALLEY OPERABLE UINT
MW6-2	NA	MONITORING	214.09	214.26	0.17	
MW6-4	NA	MONITORING	226.64	226.65	0.01	
MW6-5	NA	MONITORING	228.62	228.61	-0.01	
MW6-6	NA	MONITORING	236.68	236.67	-0.01	
MW6-7	NA	MONITORING	317.41	317.41	0.00	
MW6-8	NA	MONITORING	427.35	427.35	0.00	
EW4-3	NA	REMEDIAL	182.00	182.15	0.15	WNOU EXTRACTION
EW4-4	NA	REMEDIAL	180.09	180.36	0.27	WNOU EXTRACTION
EW4-5 EW4-9	8000200 NA	REMEDIAL REMEDIAL	179.03	179.42	0.39	WNOU EXTRACTION
EW4-6 EW4-10	8000201 NA	REMEDIAL REMEDIAL	178.74	179.23	0.49	WNOU EXTRACTION
EW4-7	8000202	REMEDIAL	179.70	179.96	0.26	WNOU EXTRACTION
EW4-8	NA	REMEDIAL	181.93	182.07	0.14	WNOU EXTRACTION
VALENCIA HEIGHTS WATER COMPANY						
01 02	8000051 8000052	ACTIVE ACTIVE	276.36	277.52	1.16	

APPENDIX B

SIMULATED CHANGES IN GROUNDWATER ELEVATION AT WELLS OR WELLFIELDS IN MAIN SAN GABRIEL BASIN

WELL OR WELLFIELD	RECORDATION NUMBER	WELL STATUS	SIMULATED ELEVATION (1)		CHANGE (2) (FEET)	REMARKS
			2008-09	2013-14		
04	8000054	ACTIVE	264.53	264.05	-0.48	
05	8000120	ACTIVE	294.46	293.33	-1.13	PRODUCTION INCREASED
VALLEY COUNTY WATER DISTRICT						
E MAINE	1900027	ACTIVE	226.43	226.20	-0.23	
W MAINE	1900028	ACTIVE				
MORADA	1900029	STANDBY	242.54	242.50	-0.04	
E NIXON (JOAN)	1900032	ACTIVE	224.50	224.19	-0.31	
W NIXON (JOAN)	1902356	ACTIVE				
ARROW	1900034	INACTIVE	231.02	230.81	-0.21	
LANTE (SA1-3)	8000060	ACTIVE				
PALM	8000039	INACTIVE	227.61	227.56	-0.05	
B DALTON	1900035	INACTIVE	229.43	229.37	-0.06	
PADDY LN	1900031	STANDBY	227.06	226.96	-0.10	
SA1-1	8000185	ACTIVE	233.52	233.36	-0.16	
SA1-2	8000186	ACTIVE	231.80	231.60	-0.20	
VALLEY VIEW MUTUAL WATER COMPANY						
01	1900363	ACTIVE	225.82	225.63	-0.19	
02	1900364	ACTIVE				
WHITTIER, CITY OF						
13	1901749	ACTIVE	182.44	182.53	0.09	
15	8000071	ACTIVE	179.67	180.08	0.41	
16	8000110	ACTIVE	177.75	178.35	0.60	
17	8000135	ACTIVE				
18	8000136	ACTIVE	179.08	179.63	0.55	
WOODLAND, RICHARD						
01	1902949	INACTIVE	213.86	212.78	-1.08	IMPACT FROM BPOU EXTRACTION
02	1902950	INACTIVE				
COINER, JAMES W., DBA COINER NURSERY (WOODLAND FARM INC.)						
03	1902951	INACTIVE	213.90	212.90	-1.00	IMPACT FROM BPOU EXTRACTION
05R	1903072	ACTIVE	214.96	214.57	-0.39	
				AVERAGE CHANGE	**-0.53**	

(1) SIMULATED ELEVATION IN FEET ABOVE MEAN SEA LEVEL
(2) DIFFERENCE BETWEEN 2013-14 AND 2008-09 SIMULATED ELEVATIONS

APPENDIX C.

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS AND NITRATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
ADAMS RANCH MUTUAL WATER COMPANY									
01	1902106	MUNICIPAL	INACTIVE	TCE	2.2	05/88	ND	02/97	VULNERABLE
				NO3	97.0	04/92	38.9	02/97	(NO3)
				CLO4	NA	NA	NA	NA	
02	1902689	MUNICIPAL	INACTIVE	TCE	3.5	08/86	2.5	09/86	VULNERABLE
				NO3	NA	NA	NA	NA	(VOCS)
				CLO4	NA	NA	NA	NA	
03	8000182	MUNICIPAL	ACTIVE	TCE	18.5	11/06	4.2	05/09	VULNERABLE
				PCE	5.1	11/06	1.7	05/09	(VOCS) (1)
				NO3	21.0	03/04	13.0	05/09	
				CLO4	ND	08/08	ND	08/08	
ALHAMBRA, CITY OF									
07	1903097	MUNICIPAL	ACTIVE	TCE	13.4	08/91	6.1	02/09	VULNERABLE
				PCE	0.8	04/07	ND	02/09	(NO3) (1)
				C-1,2-DCE	1.6	02/05	0.7	02/09	
				CTC	0.6	02/85	ND	02/09	
				NO3	53.2	07/93	43.9	08/07	
				CLO4	2.4	10/07	ND	04/09	
09	1900011	MUNICIPAL	ACTIVE	TCE	21.1	08/08	21.1	08/08	VULNERABLE
				C-1,2-DCE	2.3	10/07	2.1	10/08	(NO3) (3)
				NO3	57.3	06/93	35.9	08/07	
				CLO4	2.2	10/07	ND	04/09	
10	1900012	IRRIGATION	ACTIVE	TCE	30.1	02/09	30.1	02/09	
				C-1,2-DCE	5.8	03/05	3.6	02/09	
				1,1-DCE	0.5	03/05	ND	02/09	
				NO3	56.3	01/07	51.0	02/09	
				CLO4	ND	08/97	ND	08/97	
11	1903014	MUNICIPAL	ACTIVE	PCE	1.9	08/02	1.1	10/08	VULNERABLE
				TCE	4.2	05/89	ND	08/08	(VOCS AND NO3) (3)
				C-1,2-DCE	1.5	04/08	1.5	04/08	
				NO3	41.3	07/90	29.0	09/06	
				CLO4	ND	08/97	ND	04/09	
12	1900013	MUNICIPAL	INACTIVE	TCE	39.4	08/08	39.4	08/08	VULNERABLE
				C-1,2-DCE	33.6	08/08	33.6	08/08	(NO3) (3)
				1,1-DCE	0.8	09/08	0.8	09/08	
				T-1,2-DCE	0.9	09/08	0.7	09/08	
				NO3	34.1	08/89	32.0	08/08	
				CLO4	ND	08/08	ND	08/08	
13	1900014	MUNICIPAL	ACTIVE	TCE	0.5	08/07	0.5	10/07	VULNERABLE
				NO3	52.0	08/01	18.0	10/07	(NO3)
				CLO4	ND	03/97	ND	04/09	
14	1900015	MUNICIPAL	ACTIVE	TCE	2.4	08/08	2.1	10/08	VULNERABLE
				NO3	42.4	08/89	16.0	10/08	(NO3)
				CLO4	ND	08/97	ND	04/09	
15	1900016	MUNICIPAL	ACTIVE	VOCS	ND	05/89	ND	11/08	
				NO3	18.0	11/02	5.9	04/07	
				CLO4	ND	08/97	ND	04/09	
GARF	1900018	MUNICIPAL	INACTIVE	TCE	11.0	08/82	ND	09/93	VULNERABLE
				PCE	0.5	11/87	ND	09/93	(VOCS)
				CTC	0.1	04/80	ND	09/93	
				1,1,2,2-PCA	1.0	11/87	ND	09/93	
				NO3	68.1	08/89	53.6	09/93	
				CLO4	NA	NA	NA	NA	
LON 1	1902789	MUNICIPAL	ACTIVE	PCE	0.3	07/81	ND	08/08	VULNERABLE
				NO3	23.0	09/04	17.0	09/08	(NO3 AND CLO4)

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				CLO4	5.0	12/97	ND	04/09	
LON 2	1900017	MUNICIPAL	ACTIVE	MC	4.3	05/87	ND	08/08	VULNERABLE
				NO3	50.4	04/86	20.3	08/07	(VOCS, NO3, AND CLO4)
				CLO4	5.6	07/97	ND	04/09	
MOEL (8)	1900010	MUNICIPAL	ACTIVE	TCE	14.1	07/08	14.1	07/08	
				PCE	1.6	07/08	1.6	07/08	
				C-1,2-DCE	0.9	04/04	0.9	07/08	
				NO3	76.0	07/08	76.0	07/08	
				CLO4	ND	12/99	ND	04/09	
AMARILLO MUTUAL WATER COMPANY									
01	1900791	MUNICIPAL	ACTIVE	PCE	5.5	10/99	1.7	05/09	VULNERABLE
				TCE	1.2	02/08	ND	05/09	(VOCS AND NO3)
				CTC	0.1	08/82	ND	08/08	
				MC	3.2	06/89	ND	08/08	
				NO3	27.4	10/99	24.0	05/09	
				CLO4	ND	08/97	ND	08/08	
02	1900792	MUNICIPAL	ACTIVE	PCE	5.7	02/02	3.7	05/09	VULNERABLE
				TCE	1.5	01/99	ND	05/09	(VOCS AND NO3)
				MC	2.0	06/89	ND	08/08	
				NO3	29.9	02/96	17.0	05/09	
				CLO4	ND	08/97	ND	08/08	
ANDERSON FAMILY MARITAL TRUST									
01	8000079	DOMESTIC	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
ARCADIA, CITY OF									
BAL 1	1901015	MUNICIPAL	INACTIVE	VOCS	ND	09/98	ND	09/98	VULNERABLE
				NO3	52.0	04/78	3.0	09/98	(NO3)
				CLO4	NA	NA	NA	NA	
BAL 2	1902791	MUNICIPAL	ACTIVE	VOCS	ND	05/89	ND	06/09	VULNERABLE
				NO3	33.4	05/08	29.0	06/09	(NO3)
				CLO4	ND	08/97	ND	07/08	
CAM REAL 1	1902077	MUNICIPAL	INACTIVE	VOCS	ND	01/85	ND	05/92	VULNERABLE
				NO3	28.1	05/91	22.4	08/92	(NO3)
				CLO4	NA	NA	NA	NA	
CAM REAL 2	1902078	MUNICIPAL	INACTIVE	VOCS	ND	05/89	ND	06/98	VULNERABLE
				NO3	58.0	05/92	39.0	05/98	(NO3)
				CLO4	ND	08/97	ND	12/97	
L OAK 1	8000127	MUNICIPAL	ACTIVE	PCE	1.4	01/08	ND	06/09	
				TCE	1.6	12/08	1.4	06/09	
				NO3	21.5	03/91	17.0	06/09	
				CLO4	ND	08/97	ND	07/08	
LGY	1902084	MUNICIPAL	INACTIVE	CF	1.0	01/08	1.0	01/08	VULNERABLE
				NO3	104.0	01/08	104.0	01/08	(CLO4)
				CLO4	6.0	01/08	6.0	01/08	
LON 1	1901013	MUNICIPAL	ACTIVE	TCE	30.0	07/87	0.7	06/09	VULNERABLE
				PCE	2.7	07/87	ND	06/09	(VOCS AND NO3) (1)
				1,1-DCE	4.1	06/87	ND	06/09	
				1,2-DCA	1.4	07/87	ND	06/09	
				1,1,1-TCA	4.6	07/87	ND	06/09	
				MC	25.0	09/87	ND	06/09	
				NO3	40.0	11/02	37.0	06/09	
				CLO4	ND	12/97	ND	07/08	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
LON 2	1901014	MUNICIPAL	ACTIVE	TCE	62.0	01/85	0.7	03/08	VULNERABLE (VOCS) (1)
				PCE	7.7	01/82	ND	03/08	
				CTC	2.6	09/87	ND	06/07	
				1,1-DCE	0.9	05/87	ND	03/08	
				1,1,1-TCA	12.0	01/85	ND	06/07	
				NO3	109.1	05/85	48.6	03/08	
				CLO4	ND	07/97	ND	06/03	
PECK 1	1902854	MUNICIPAL	ACTIVE	VOCS	ND	05/89	ND	06/09	
				NO3	3.4	02/88	2.5	06/09	
				CLO4	ND	08/97	ND	07/08	
ST JO 1	1902358	MUNICIPAL	DESTROYED	TCE	5.4	01/02	4.8	02/02	
				PCE	2.7	08/91	2.2	02/02	
				NO3	60.0	06/96	46.0	06/02	
				CLO4	1.0	08/97	ND	01/02	
ST JO 2	8000177	MUNICIPAL	ACTIVE	TCE	2.3	12/04	1.8	06/09	VULNERABLE (VOCS AND CLO4)
				PCE	3.5	06/09	3.5	06/09	
				NO3	51.0	12/04	49.0	06/09	
				CLO4	8.6	06/02	ND	07/08	
ATTALLA, MARY L.									
NA	8000119	IRRIGATION	ACTIVE	VOCS	ND	09/96	ND	04/98	
				NO3	19.4	04/98	19.4	04/98	
				CLO4	ND	04/98	ND	04/98	
AZUSA ASSOCIATES LLC									
DALTON	1900390	IRRIGATION	DESTROYED	VOCS	ND	03/98	ND	03/98	
				NO3	4.7	03/98	4.7	03/98	
				CLO4	ND	03/98	ND	03/98	
AZUSA, CITY OF									
05 (OLD 01)	1902533	MUNICIPAL	ACTIVE	TCE	1.0	12/80	ND	08/08	VULNERABLE (NO3)
				PCE	0.3	12/80	ND	08/08	
				CF	1.5	08/04	1.3	08/08	
				NO3	22.9	07/95	7.1	08/08	
				CLO4	ND	07/97	ND	08/08	
06 (OLD 03)	1902535	MUNICIPAL	ACTIVE	VOCS	ND	03/85	ND	08/08	
				NO3	14.2	03/95	3.7	08/08	
				CLO4	ND	07/97	ND	08/08	
GENESIS 1 (OLD 04)	1902536	MUNICIPAL	DESTROYED	MTBE	1.2	11/98	1.1	11/98	
				NO3	126.6	06/87	109.8	11/98	
				CLO4	7.2	11/98	7.2	11/98	
GENESIS 2 (OLD 05)	1902537	MUNICIPAL	INACTIVE	TCE	250.0	12/79	3.7	02/08	VULNERABLE (NO3)
				PCE	95.0	04/80	1.0	02/08	
				1,1-DCE	18.0	02/08	18.0	02/08	
				CF	2.6	02/08	2.6	02/08	
				1,1,1-TCA	2.5	02/08	2.5	02/08	
				NO3	105.5	02/93	15.9	02/08	
				CLO4	ND	11/98	ND	02/08	
GENESIS 3 (OLD 06)	1902538	MUNICIPAL	DESTROYED	PCE	3.5	03/97	ND	03/97	
				TCE	0.1	01/80	ND	03/97	
				NO3	112.9	06/86	ND	04/01	
				CLO4	NA	NA	NA	NA	
01 (OLD 07)	8000072	MUNICIPAL	ACTIVE	VOCS	ND	06/87	ND	11/08	
				NO3	4.5	07/97	3.8	08/08	
				CLO4	ND	07/97	ND	08/08	
03 (OLD 08)	8000086	MUNICIPAL	ACTIVE	VOCS	ND	06/87	ND	08/08	
				NO3	4.4	03/95	ND	08/08	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				CLO4	ND	07/97	ND	08/08	
02	1902457	MUNICIPAL	ACTIVE	VOCS	ND	06/89	ND	08/08	
(01 NORTH)				NO3	5.5	03/92	3.6	08/08	
				CLO4	ND	07/97	ND	08/08	
04	1902458	MUNICIPAL	ACTIVE	VOCS	ND	06/88	ND	08/08	
(02 SOUTH)				NO3	5.5	06/89	2.8	08/08	
				CLO4	ND	07/97	ND	08/08	
AVWC 01	1902113	MUNICIPAL	DESTROYED	VOCS	ND	09/97	ND	09/97	
				NO3	55.0	08/87	32.1	09/97	
				CLO4	5.6	09/97	5.6	09/97	
AVWC 02	1902114	MUNICIPAL	DESTROYED	VOCS	ND	01/98	ND	01/98	
				NO3	43.1	01/98	43.1	01/98	
				CLO4	6.9	01/98	6.9	01/98	
08	1902115	MUNICIPAL	ACTIVE	TCE	0.8	03/94	ND	08/08	
(AVWC 04)				CF	0.5	08/04	ND	08/08	
				NO3	12.1	09/94	3.7	08/08	
				CLO4	ND	07/97	ND	08/08	
07	1902116	MUNICIPAL	ACTIVE	VOCS	ND	06/88	ND	08/08	VULNERABLE
(AVWC 05)				NO3	24.7	04/95	2.4	08/08	(NO3)
				CLO4	ND	06/97	ND	08/08	
09	1902117	MUNICIPAL	INACTIVE	PCE	7.4	12/87	0.6	01/99	VULNERABLE
(AVWC 06)				NO3	117.7	12/89	84.0	01/99	(VOCS)
				CLO4	NA	NA	NA	NA	
AVWC 07	1902425	MUNICIPAL	DESTROYED	TCE	4.5	01/80	ND	03/85	
				NO3	107.0	02/77	39.4	12/85	
				CLO4	NA	NA	NA	NA	
10	8000103	MUNICIPAL	ACTIVE	PCE	0.9	02/09	0.7	05/09	
(AVWC 08)				CF	1.4	03/94	ND	11/08	
				NO3	66.0	05/08	57.0	05/09	
				CLO4	12.6	08/05	11.0	05/09	
11	8000178	MUNICIPAL	ACTIVE	VOCS	ND	06/02	ND	08/08	
				NO3	3.7	08/08	3.5	10/08	
				CLO4	ND	06/02	ND	08/08	
12	8000179	MUNICIPAL	ACTIVE	VOCS	ND	06/02	ND	08/08	
				NO3	3.9	08/08	3.6	10/08	
				CLO4	ND	06/02	ND	08/08	
B & B RED-I-MIX CONCRETE INC.									
03	1902589	INDUSTRIAL	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
BANKS, GALE & VICKI									
NA	1900415	IRRIGATION	ACTIVE	VOCS	ND	08/96	ND	10/08	
				NO3	20.7	10/98	16.0	10/08	
				CLO4	ND	09/97	ND	09/97	
BASELINE WATER COMPANY									
01	1901200	IRRIGATION	DESTROYED	VOCS	ND	02/98	ND	02/98	
				NO3	99.7	02/98	99.7	02/98	
				CLO4	12.9	02/98	12.9	02/98	
02	1901201	IRRIGATION	DESTROYED	VOCS	ND	11/98	ND	11/98	
				NO3	74.3	11/98	74.3	11/98	
				CLO4	10.6	11/98	10.6	11/98	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
03	1901202	IRRIGATION	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
BEVERLY ACRES MUTUAL WATER USERS ASSOCIATION									
ROSE HILLS	8000004	MUNICIPAL	DESTROYED	TCE .	8.4	10/88	2.5	03/93	
				PCE	6.0	10/88	2.8	03/93	
				C-1,2-DCE	8.0	08/86	2.4	03/93	
				NO3	22.5	08/86	14.6	09/90	
				CLO4	NA	NA	NA	NA	
BIRENBAUM, MAX									
NA	8000005	NON-POTABLE	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
BOTELLO WATER COMPANY									
NA	1900635	MUNICIPAL	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
BURBANK DEVELOPMENT COMPANY									
BURB	1900093	NON-POTABLE	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
CALIFORNIA-AMERICAN WATER COMPANY/DUARTE SYSTEM									
B V	1900355	MUNICIPAL	ACTIVE	VOCS	ND	02/85	ND	09/08	
				NO3	3.6	08/90	2.7	09/08	
				CLO4	ND	06/97	ND	06/08	
BACON	1900497	MUNICIPAL	ACTIVE	BF	1.8	09/08	1.8	09/08	
				DBCM	1.0	10/06	ND	09/08	
				MC	0.6	06/89	ND	09/08	
				NO3	10.0	10/81	7.5	09/08	
				CLO4	ND	06/97	ND	06/08	
CR HV	1903018	MUNICIPAL	ACTIVE	VOCS	ND	06/88	ND	09/08	
				NO3	7.8	07/86	3.4	09/08	
				CLO4	ND	06/97	ND	09/03	
ENCANTO	8000139	MUNICIPAL	ACTIVE	VOCS	ND	12/92	ND	12/08	
				NO3	11.3	12/92	5.4	09/08	
				CLO4	ND	06/97	ND	06/08	
FISH C	1900358	MUNICIPAL	ACTIVE	VOCS	ND	02/85	ND	12/08	
				NO3	6.7	11/94	2.3	12/08	
				CLO4	ND	06/97	ND	06/08	
LAS L	1900357	MUNICIPAL	DESTROYED	VOCS	ND	02/85	ND	06/91	
				NO3	12.1	08/80	4.1	09/91	
				CLO4	NA	NA	NA	NA	
LAS L2	8000140	MUNICIPAL	ACTIVE	TCE	1.6	08/96	ND	09/08	
				NO3	16.6	12/92	7.3	09/08	
				CLO4	ND	06/97	ND	06/08	
MT AVE	1900356	MUNICIPAL	DESTROYED	TCE	16.5	07/87	ND	09/93	
				PCE	1.0	08/82	ND	09/93	
				1,1,1-TCA	8.4	04/85	ND	09/93	
				1,1-DCE	3.4	07/87	ND	09/93	
				T-1,2-DCE	2.0	04/85	ND	09/93	
				NO3	65.0	05/89	10.1	09/93	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				CLO4	NA	NA	NA	NA	
STA FE	1900354	MUNICIPAL	ACTIVE	TCE	3.3	04/84	ND	09/08	VULNERABLE
				CF	0.5	07/87	ND	09/08	(VOCS AND NO3)
				MC	0.5	09/08	0.5	09/08	
				NO3	59.0	01/80	3.4	09/08	
				CLO4	ND	06/97	ND	06/08	
WILEY	1902907	MUNICIPAL	ACTIVE	CF	4.2	09/01	ND	09/08	
				NO3	11.0	03/81	6.9	09/08	
				CLO4	ND	06/97	ND	06/08	
CALIFORNIA-AMERICAN WATER COMPANY/SAN MARINO SYSTEM									
BR 1	1901441	MUNICIPAL	INACTIVE	CTC	0.5	12/96	0.5	12/96	VULNERABLE
				TCE	27.0	07/93	27.0	12/96	(NO3)
				PCE	9.0	07/93	7.7	12/96	
				NO3	31.4	12/96	31.4	12/96	
				CLO4	NA	NA	NA	NA	
BR 2	1902787	MUNICIPAL	INACTIVE	TCE	17.0	12/96	17.0	12/96	VULNERABLE
				PCE	6.4	12/96	6.4	12/96	(NO3)
				NO3	25.3	07/93	25.1	12/96	
				CLO4	NA	NA	NA	NA	
DELMAR	1903059	MUNICIPAL	ACTIVE	VOCS	ND	06/88	ND	09/08	
				NO3	13.4	09/00	13.0	09/08	
				CLO4	ND	06/97	ND	07/08	
GRAND	1900926	MUNICIPAL	ACTIVE	TCE	4.8	03/07	1.4	06/09	VULNERABLE
				PCE	2.1	12/08	0.6	06/09	(VOCS)
				NO3	10.9	09/03	6.5	09/08	
				CLO4	ND	08/97	ND	07/08	
GUESS	1900918	MUNICIPAL	INACTIVE	TCE	5.2	09/99	5.2	12/01	
				PCE	5.4	12/01	5.4	12/01	
				NO3	20.0	05/01	19.0	09/01	
				CLO4	ND	08/97	ND	03/00	
HALL	1900917	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
HALL 2	8000175	MUNICIPAL	ACTIVE	VOCS	ND	03/01	ND	06/09	VULNERABLE
				NO3	23.6	04/01	13.0	09/08	(NO3)
				CLO4	ND	03/00	ND	07/08	
HOWLAND	1902424	MUNICIPAL	ACTIVE	TCE	6.9	07/89	0.6	06/09	VULNERABLE
				PCE	3.6	03/01	ND	06/09	(VOCS)
				C-1,2-DCE	3.3	11/87	ND	09/08	
				MC	7.5	05/87	ND	09/08	
				NO3	12.4	09/91	11.0	09/08	
				CLO4	ND	08/97	ND	07/08	
IVAR 1	1900923	MUNICIPAL	DESTROYED	PCE	7.4	06/99	6.2	06/00	
				TCE	1.7	06/99	ND	06/00	
				NO3	29.2	09/94	26.0	09/01	
				CLO4	ND	08/97	ND	03/01	
IVAR 2	1902867	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	24.0	12/84	24.0	12/84	
				CLO4	NA	NA	NA	NA	
LONGDEN	1900935	MUNICIPAL	ACTIVE	PCE	7.5	03/09	6.1	06/09	VULNERABLE
				NO3	69.6	03/08	65.0	06/09	(CLO4)
				CLO4	4.1	03/03	ND	07/08	
MAR 1	1900924	MUNICIPAL	DESTROYED	VOCS	ND	01/85	ND	01/85	
				NO3	89.0	03/79	39.0	01/84	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				CLO4	NA	NA	NA	NA	
MAR 2	1900925	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	33.0	01/84	33.0	01/84	
				CLO4	NA	NA	NA	NA	
MAR 3	1903019	MUNICIPAL	ACTIVE	VOCS	ND	01/85	ND	09/08	
				NO3	5.8	09/08	5.8	09/08	
				CLO4	ND	06/97	ND	07/08	
MIVW 1	1900919	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	31.0	03/01	31.0	03/01	
				CLO4	NA	NA	NA	NA	
MIVW 2	1900920	MUNICIPAL	ACTIVE	VOCS	ND	07/87	ND	09/08	
				NO3	20.0	09/08	20.0	09/08	
				CLO4	ND	06/97	ND	07/08	
RIC 1	1900921	MUNICIPAL	INACTIVE	VOCS	ND	02/85	ND	12/90	VULNERABLE
				NO3	23.4	08/89	11.8	11/94	(NO3)
				CLO4	NA	NA	NA	NA	
RIC 2	1900922	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
ROANOKE	1900934	MUNICIPAL	INACTIVE	TCE	5.0	06/00	4.7	12/00	VULNERABLE
				PCE	1.2	04/90	ND	09/00	(VOCS, NO3, AND CLO4)
				C-1,2-DCE	0.5	09/00	ND	12/00	
				NO3	33.0	05/89	29.2	12/00	
				CLO4	5.6	06/97	ND	03/00	
ROSEMEAD	1900927	MUNICIPAL	ACTIVE	TCE	4.7	12/01	2.0	06/09	VULNERABLE
				PCE	3.4	03/09	2.3	06/09	(VOCS AND NO3)
				NO3	36.0	09/08	34.0	06/09	
				CLO4	ND	08/97	ND	07/08	
CALIFORNIA COUNTRY CLUB									
ARTES	1902531	IRRIGATION	STANDBY	VOCS	ND	05/87	ND	10/08	VULNERABLE
				NO3	23.7	10/07	17.0	10/08	(NO3)
				CLO4	NA	NA	NA	NA	
CLUB	1902529	IRRIGATION	INACTIVE	PCE	189.0	11/87	189.0	11/87	
				1,1,2,2-PCA	24.0	11/87	24.0	11/87	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
SYCAMORE	1903084	IRRIGATION	STANDBY	PCE	7.1	09/02	1.1	10/08	VULNERABLE
				TCE	0.7	09/01	ND	10/08	(VOCS)
				NO3	128.0	10/07	76.0	10/08	
				CLO4	ND	02/98	ND	02/98	
CALIFORNIA DOMESTIC WATER COMPANY									
01-E	1901182	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
02	1901181	MUNICIPAL	ACTIVE	CTC	0.7	09/96	ND	04/09	VULNERABLE
				PCE	2.0	04/08	0.6	04/09	(VOCS, NO3, AND CLO4)
				TCE	4.0	10/99	ND	04/09	
				NO3	24.3	08/96	9.2	04/09	
				CLO4	5.6	10/99	ND	05/09	
03	1903057	MUNICIPAL	ACTIVE	CTC	5.3	02/01	1.5	04/09	VULNERABLE
				PCE	10.1	01/09	8.6	04/09	(NO3) (1)
				TCE	16.0	01/09	13.0	04/09	
				1,1-DCE	2.2	01/09	1.5	04/09	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				C-1,2-DCE	1.5	10/08	1.1	04/09	
				CF	0.7	08/04	ND	04/09	
				NO3	47.6	01/07	22.0	04/09	
				CLO4	9.5	12/08	7.5	05/09	
05	1901183	MUNICIPAL	DESTROYED	PCE	2.0	02/85	ND	12/90	
				NO3	13.0	03/84	13.0	03/84	
				CLO4	NA	NA	NA	NA	
05A	8000100	MUNICIPAL	ACTIVE	CTC	1.9	08/96	0.7	04/09	VULNERABLE
				PCE	14.6	10/08	6.1	04/09	(NO3) (1)
				TCE	17.8	10/08	7.1	04/09	
				1,1-DCE	2.7	10/08	1.0	04/09	
				C-1,2-DCE	1.6	10/08	0.6	04/09	
				NO3	29.0	04/01	10.0	04/09	
				CLO4	ND	06/97	ND	05/09	
06	1902967	MUNICIPAL	ACTIVE	CTC	3.5	12/06	ND	04/09	VULNERABLE
				PCE	16.1	10/08	13.0	04/09	(NO3 AND CLO4) (1)
				TCE	23.7	10/08	16.0	04/09	
				1,1-DCE	4.5	10/08	2.3	04/09	
				C-1,2-DCE	2.6	10/08	1.4	04/09	
				NO3	29.0	06/08	27.0	04/09	
				CLO4	5.1	10/06	3.6	05/09	
08	1903081	MUNICIPAL	ACTIVE	PCE	9.8	02/09	2.0	04/09	VULNERABLE
				TCE	12.0	02/09	ND	04/09	(VOCS, NO3, AND CLO4)
				CTC	1.1	09/93	ND	04/09	
				NO3	24.0	08/02	15.0	04/09	
				CLO4	5.6	08/02	ND	05/09	
13-N	1901185	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
14	8000174	MUNICIPAL	ACTIVE	CTC	4.4	10/07	0.5	06/08	VULNERABLE
				PCE	3.9	04/01	1.9	06/08	(NO3) (1)
				TCE	18.0	05/01	5.3	06/08	
				1,2-DCA	1.0	06/08	0.7	06/08	
				C-1,2-DCE	0.7	11/01	ND	06/08	
				1,1-DCE	0.6	08/02	ND	06/08	
				CF	1.3	06/08	0.8	06/08	
				NO3	41.7	02/00	25.0	01/09	
				CLO4	14.0	11/01	13.0	06/08	
CEDAR AVENUE MUTUAL WATER COMPANY									
01 SOUTH	1901411	MUNICIPAL	DESTROYED	PCE	2.2	09/90	ND	06/94	
				NO3	26.8	08/93	8.9	06/94	
				CLO4	NA	NA	NA	NA	
02 NORTH	1902783	MUNICIPAL	DESTROYED	PCE	0.8	04/92	ND	06/94	
				NO3	20.0	01/86	7.4	08/93	
				CLO4	NA	NA	NA	NA	
CEMEX CONSTRUCTION MATERIALS L.P. (AZ TWO)									
02	1900038	INDUSTRIAL	DESTROYED	PCE	700.0	01/85	2.8	09/03	
				TCE	940.0	04/85	6.3	09/03	
				CTC	2.2	09/02	ND	09/03	
				1,1-DCE	350.0	01/87	7.2	09/03	
				1,1-DCA	1.0	08/01	ND	09/03	
				1,1,1-TCA	430.0	01/87	3.6	09/03	
				VC	19.0	12/87	ND	09/03	
				NO3	79.0	09/02	73.1	09/03	
				CLO4	4.2	06/97	ND	09/98	
CHAMPION MUTUAL WATER COMPANY									

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HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
01	1900908	MUNICIPAL	INACTIVE	PCE	3.0	09/86	2.1	09/91	VULNERABLE (VOCS)
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
02	1902816	MUNICIPAL	ACTIVE	PCE	0.6	06/88	ND	09/08	VULNERABLE (NO3)
				NO3	27.0	06/09	27.0	06/09	
				CLO4	ND	09/97	ND	09/08	
03	8000121	MUNICIPAL	ACTIVE	PCE	1.3	09/96	ND	09/08	VULNERABLE (NO3)
				FREON 113	18.0	03/07	ND	06/09	
				NO3	24.0	03/09	23.0	06/09	
				CLO4	ND	03/98	ND	09/08	
CHEVRON USA INC.									
TEMP 1	1900250	NON-POTABLE	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
CITRUS VALLEY MEDICAL CENTER, QUEEN OF THE VALLEY CAMPUS									
01	8000138	NON-POTABLE	ACTIVE	VOCS	ND	09/96	ND	10/08	
				NO3	104.8	02/98	89.0	10/08	
				CLO4	24.0	02/98	24.0	02/98	
CLAYTON MANUFACTURING COMPANY									
02	1901055	INDUSTRIAL	DESTROYED	TCE	150.0	08/01	47.0	09/03	
				PCE	30.0	08/01	ND	09/03	
				1,1-DCE	10.0	08/01	1.7	09/03	
				C-1,2-DCE	1.7	08/01	ND	09/03	
				1,1-DCA	15.0	08/01	ND	09/03	
				1,2-DCA	13.0	08/01	ND	09/03	
				1,1,1-TCA	1.1	08/01	ND	09/03	
				NO3	87.0	08/01	39.7	09/03	
				CLO4	4.0	09/97	4.0	09/97	
COINER, JAMES W., DBA COINER NURSERY									
03	1902951	NON-POTABLE	INACTIVE	PCE	293.5	02/98	170.0	10/01	VULNERABLE (NO3 AND CLO4)
				TCE	10.2	11/87	3.4	10/01	
				CTC	1.6	08/87	1.6	10/01	
				1,1-DCE	6.7	02/98	4.6	10/01	
				C-1,2-DCE	6.8	07/96	2.7	10/01	
				1,1,1-TCA	22.0	02/98	12.0	10/01	
				NO3	67.0	10/01	44.7	09/07	
				CLO4	9.0	02/98	ND	09/98	
05R	1903072	NON-POTABLE	ACTIVE	PCE	7.7	02/98	0.5	10/08	VULNERABLE (VOCS, NO3 AND CLO4)
				TCE	1.6	10/01	ND	10/08	
				CTC	2.7	07/96	ND	10/08	
				1,1-DCE	5.5	10/01	0.8	10/08	
				CF	6.7	02/98	ND	10/08	
				NO3	84.8	11/05	30.0	10/08	
				CLO4	9.0	02/98	4.0	09/98	
CORCORAN BROTHERS									
01	1902814	NON-POTABLE	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
COUNTY SANITATION DISTRICT NO. 18									
E08A	8000128	REMEDIAL	ACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
E09A	8000129	REMEDIAL	ACTIVE	VOCS	NA	NA	NA	NA	

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HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
E10A	8000130	REMEDIAL	ACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
E11A	8000131	REMEDIAL	ACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
EX1	8000141	REMEDIAL	ACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
EX2	8000142	REMEDIAL	ACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
EX3	8000143	REMEDIAL	ACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
EX4	8000144	REMEDIAL	ACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
LE1	8000104	REMEDIAL	ACTIVE	TCE	4.2	06/86	3.7	09/86	VULNERABLE
				PCE	0.8	09/86	0.8	09/86	(VOCS)
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
LE2	8000105	REMEDIAL	ACTIVE	TCE	0.1	06/86	ND	09/86	
				PCE	NA	06/86	ND	09/86	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
LE3	8000106	REMEDIAL	ACTIVE	TCE	1.5	06/86	1.2	09/86	
				PCE	1.6	06/86	0.8	09/86	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
LE4	8000107	REMEDIAL	ACTIVE	TCE	5.1	09/86	5.1	09/86	
				PCE	2.0	09/86	2.0	09/86	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
COVINA, CITY OF									
01	1901685	MUNICIPAL	INACTIVE	PCE	0.6	01/99	0.6	01/99	
				NO3	120.0	01/99	120.0	01/99	
				CLO4	NA	NA	NA	NA	
02 (GRAND)	1901686	MUNICIPAL	INACTIVE	VOCS	ND	06/88	ND	09/98	
				NO3	116.0	08/89	103.0	04/99	
				CLO4	23.0	09/97	22.0	09/98	
03	1901687	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	72.0	10/73	72.0	10/73	
				CLO4	NA	NA	NA	NA	
COVINA IRRIGATING COMPANY									
BAL 1	1900885	MUNICIPAL	ACTIVE	TCE	200.0	07/80	ND	10/08	VULNERABLE
				PCE	7.6	07/80	ND	10/08	(VOCS AND NO3)
				1,1-DCE	0.5	10/06	ND	10/08	
				MC	0.9	10/06	ND	10/08	
				NO3	35.5	12/89	5.4	01/09	
				CLO4	1.5	10/06	ND	09/08	

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WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
BAL 2	1900883	MUNICIPAL	ACTIVE	TCE	195.0	06/80	ND	10/08	VULNERABLE
				PCE	7.9	06/80	ND	10/08	(VOCS, NO3 AND CLO4)
				1,1-DCE	0.8	07/07	ND	04/09	
				NO3	42.7	12/89	33.0	04/09	
				CLO4	5.5	03/09	5.5	03/09	
BAL 3	1900882	MUNICIPAL	ACTIVE	TCE	225.0	01/80	ND	10/08	VULNERABLE
				PCE	10.0	02/85	ND	10/08	(VOCS, NO3 AND CLO4)
				CTC	3.0	04/85	ND	10/08	
				1,1-DCA	4.0	04/85	ND	10/08	
				1,2-DCA	3.7	02/85	ND	10/08	
				1,1-DCE	2.1	04/85	ND	10/08	
				T-1,2-DCE	2.9	02/85	ND	10/08	
				1,1,1-TCA	5.2	04/85	ND	10/08	
				NO3	57.3	08/89	34.0	04/09	
				CLO4	5.6	09/08	4.5	04/09	
CONTR	1900881	MUNICIPAL	INACTIVE	PCE	1.4	12/92	1.3	03/94	
				NO3	125.3	12/89	108.0	03/94	
				CLO4	NA	NA	NA	NA	
VALEN	1900880	MUNICIPAL	INACTIVE	PCE	2.4	08/85	0.6	09/97	
				NO3	73.0	06/81	69.3	09/97	
				CLO4	6.4	09/97	6.4	09/97	
CREVOLIN, A.J.									
NA	8000011	DOMESTIC	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
CROWN CITY PLATING COMPANY									
01	8000012	INDUSTRIAL	ACTIVE	TCE	1.2	09/04	1.2	09/04	
				T-1,2-DCE	1.4	05/87	ND	09/04	
				NO3	7.4	09/04	3.4	09/08	
				CLO4	ND	09/97	ND	10/07	
DAVIDSON OPTRONICS INC.									
NA	8000013	INDUSTRIAL	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
DAWES, MARY K.									
04	1902952	IRRIGATION	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
DEL RIO MUTUAL WATER COMPANY									
BURKETT	1900331	MUNICIPAL	ACTIVE	TCE	2.2	06/90	ND	09/08	VULNERABLE
				PCE	3.7	03/97	ND	09/08	(VOCS AND NO3)
				NO3	31.0	12/03	15	09/08	
				CLO4	ND	09/97	ND	09/08	
KLING	1900332	MUNICIPAL	INACTIVE	PCE	1.3	08/86	ND	02/89	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
DRIFTWOOD DAIRY									
01	1902924	INDUSTRIAL	ACTIVE	PCE	13.9	06/98	13.9	06/98	
				1,1,1-TCA	0.3	03/93	ND	06/98	
				NO3	65.1	03/93	46.8	06/98	
				CLO4	ND	06/98	ND	06/98	
DUNNING, GEORGE									

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WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
1910	1900091	IRRIGATION	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
EAST PASADENA WATER COMPANY, LTD.									
09	1901508	MUNICIPAL	ACTIVE	VOCS	ND	06/88	ND	07/08	
				NO3	4.1	03/98	3.6	03/09	
				CLO4	ND	07/97	ND	03/09	
EL MONTE, CITY OF									
02A	1901692	MUNICIPAL	ACTIVE	PCE	13.0	03/98	5.7	04/09	VULNERABLE
				TCE	5.3	01/95	1.8	04/09	(NO3) (1)
				NO3	24.5	04/08	12.0	04/09	
				CLO4	ND	07/97	ND	07/08	
03	1901693	MUNICIPAL	STANDBY	PCE	23.6	12/00	5.8	09/08	
				1,1,1-TCA	1.0	11/93	ND	07/08	
				NO3	71.6	08/89	49.0	04/09	
				CLO4	ND	07/97	ND	07/08	
04	1901694	MUNICIPAL	ACTIVE	PCE	16.2	03/84	0.6	01/08	VULNERABLE
				TCE	7.8	02/80	ND	12/07	(VOCS AND NO3)
				NO3	44.4	12/07	40.3	01/08	
				CLO4	ND	07/97	ND	07/03	
05	1901695	MUNICIPAL	DESTROYED	TCE	150.0	07/93	70.0	12/96	
				PCE	51.0	07/93	32.0	12/96	
				CTC	4.3	07/93	1.4	12/96	
				NO3	53.9	12/96	26.3	06/99	
				CLO4	5.9	06/97	5.9	06/97	
10	1901699	MUNICIPAL	ACTIVE	TCE	7.2	09/81	ND	04/09	VULNERABLE
				PCE	17.7	12/93	2.6	04/09	(VOCS) (1)
				NO3	20.0	04/09	20.0	04/09	
				CLO4	ND	06/97	ND	09/08	
11	1901700	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	21.6	07/79	21.6	07/79	
				CLO4	NA	NA	NA	NA	
12	1903137	MUNICIPAL	ACTIVE	TCE	53.2	06/92	34.0	04/09	VULNERABLE
				PCE	18.4	07/08	14.0	04/09	(NO3) (1)
				CTC	1.0	06/92	ND	04/09	
				NO3	41.0	06/05	33.0	04/09	
				CLO4	ND	06/97	ND	07/08	
13	8000101	MUNICIPAL	ACTIVE	PCE	2.7	10/08	1.2	04/09	VULNERABLE
				TCE	2.9	10/08	1.0	04/09	(VOCS)
				NO3	17.0	03/03	11.1	03/09	
				CLO4	ND	07/97	ND	07/08	
MT VW	1902612	IRRIGATION	DESTROYED	PCE	2.1	08/85	ND	01/01	
				TCE	2.0	01/85	ND	01/01	
				NO3	30.0	02/87	10.0	01/01	
				CLO4	ND	09/97	ND	11/97	
EL MONTE CEMETERY ASSOCIATION									
NA	8000017	IRRIGATION	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
FRUIT STREET WATER COMPANY									
NA	1901199	IRRIGATION	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				CLO4	NA	NA	NA	NA	
GIFFORD, BROOKS JR.									
01	1902144	NA	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
GLENDORA, CITY OF									
01-E	1901523	MUNICIPAL	ACTIVE	TCE	0.8	12/80	ND	09/07	VULNERABLE
				NO3	38.1	10/88	35.0	08/08	(NO3)
				CLO4	ND	06/97	ND	03/03	
02-E	1901526	MUNICIPAL	ACTIVE	VOCS	ND	03/85	ND	09/08	VULNERABLE
				NO3	70.0	05/78	9.4	12/08	(NO3)
				CLO4	ND	07/97	ND	09/08	
03-G	1901525	MUNICIPAL	INACTIVE	TCE	0.5	12/79	ND	05/97	
				PCE	0.5	05/97	0.5	05/97	
				NO3	162.4	08/83	111.0	08/99	
				CLO4	NA	NA	NA	NA	
04-E	1901524	MUNICIPAL	INACTIVE	TCE	0.7	08/80	ND	08/91	
				PCE	0.1	07/81	ND	08/91	
				NO3	126.0	06/83	56.8	08/91	
				CLO4	NA	NA	NA	NA	
05-E	8000149	MUNICIPAL	ACTIVE	VOCS	ND	02/95	ND	09/08	
				NO3	3.2	05/95	2.1	06/09	
				CLO4	ND	07/97	ND	09/08	
07-G	1900831	MUNICIPAL	INACTIVE	TCE	302.0	01/81	ND	04/98	VULNERABLE
				PCE	25.0	01/81	1.9	04/98	(VOCS AND CLO4) (3)
				1,1-DCE	435.0	05/84	ND	04/98	
				C-1,2-DCE	21.0	05/82	ND	04/98	
				1,1-DCA	5.0	05/84	ND	04/98	
				1,2-DCA	12.1	12/93	ND	04/98	
				1,1,1-TCA	3,200	05/84	64.0	04/98	
				NO3	106.0	04/98	75.9	04/98	
				CLO4	5.3	04/98	5.3	04/98	
08-E	1900829	MUNICIPAL	ACTIVE	MC	0.7	08/02	ND	03/09	
				NO3	6.6	08/86	ND	12/08	
				CLO4	ND	07/97	ND	09/08	
09-E	1900830	MUNICIPAL	ACTIVE	VOCS	ND	05/89	ND	09/08	
				NO3	4.1	08/96	ND	12/08	
				CLO4	ND	07/97	ND	09/08	
10-E	1900828	MUNICIPAL	ACTIVE	CF	1.9	07/97	ND	03/09	VULNERABLE
				NO3	78.0	05/77	40.0	06/09	(NO3)
				CLO4	ND	07/97	ND	09/08	
11-E	1900826	MUNICIPAL	ACTIVE	VOCS	ND	05/82	ND	10/08	
				NO3	117.5	08/73	48.0	06/09	
				CLO4	ND	07/97	ND	09/08	
12-G	1900827	MUNICIPAL	ACTIVE	TCE	0.9	12/80	ND	09/08	
				MC	2.2	05/89	ND	09/08	
				NO3	4.7	07/98	ND	12/08	
				CLO4	ND	06/97	ND	09/08	
13-E	8000184	MUNICIPAL	ACTIVE	BF	0.7	06/04	ND	03/09	VULNERABLE
				NO3	25.0	06/09	25.0	06/09	(NO3)
				CLO4	ND	06/04	ND	09/08	
GOEDERT, LILLIAN									

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
GOEDERT	8000159	IRRIGATION	DESTROYED	VOCS	ND	06/98	ND	06/98	
				NO3	7.0	06/98	7.0	06/98	
				CLO4	ND	06/98	ND	06/98	
GOLDEN STATE WATER COMPANY/SAN GABRIEL VALLEY DISTRICT									
AZU 1	1902020	MUNICIPAL	DESTROYED	TCE	15.0	07/93	0.6	01/95	
				PCE	1.9	07/93	ND	01/95	
				NO3	72.9	12/90	35.0	07/02	
				CLO4	NA	NA	NA	10/02	
EARL 1	1902144	MUNICIPAL	ACTIVE	PCE	6.0	09/03	6.0	09/03	
				NO3	7.2	08/03	7.1	09/03	
				CLO4	ND	08/97	ND	08/03	
ENC 1	1902024	MUNICIPAL	ACTIVE	TCE	21.0	04/03	5.8	06/09	VULNERABLE
				PCE	3.5	04/03	1.9	06/09	(NO3 AND CLO4) (1)
				CF	0.9	08/00	ND	11/08	
				NO3	77.6	08/91	33.0	06/09	
				CLO4	4.2	12/03	ND	11/08	
ENC 2	1902035	MUNICIPAL	ACTIVE	TCE	29.1	02/01	8.8	06/09	(1)
				PCE	6.1	02/01	4.2	06/09	
				NO3	21.0	02/09	18.0	06/09	
				CLO4	ND	08/97	ND	04/08	
ENC 3	8000073	MUNICIPAL	ACTIVE	PCE	4.7	01/02	2.9	06/09	VULNERABLE
				TCE	11.0	01/02	7.3	06/09	(NO3) (1)
				NO3	43.2	07/93	18.0	06/09	
				CLO4	ND	09/97	ND	04/08	
FAR 1	1902034	MUNICIPAL	ACTIVE	TCE	11.9	10/80	ND	02/09	VULNERABLE
				PCE	3.1	10/87	ND	02/09	(VOCS)
				NO3	13.0	07/89	ND	06/09	
				CLO4	ND	08/97	ND	06/09	
FAR 2	1902948	MUNICIPAL	ACTIVE	TCE	12.9	07/80	ND	06/09	VULNERABLE
				PCE	2.6	10/87	ND	08/08	(VOCS)
				NO3	12.2	07/90	4.2	08/08	
				CLO4	ND	08/97	ND	08/08	
GAR 1	1900513	MUNICIPAL	ACTIVE	CF	0.8	08/99	ND	07/03	VULNERABLE
				PCE	4.5	10/03	4.5	10/03	(VOCS)
				NO3	8.3	08/03	7.7	09/03	
				CLO4	ND	08/97	ND	08/03	
GAR 2	1900512	MUNICIPAL	ACTIVE	PCE	12.0	07/03	11.0	08/03	
				TCE	2.2	08/03	2.2	08/03	
				NO3	7.3	08/97	4.6	07/02	
				CLO4	ND	08/97	ND	08/03	
GID 1	1902032	MUNICIPAL	DESTROYED	TCE	6.6	04/85	4.1	09/93	
				PCE	0.9	09/93	0.9	09/93	
				NO3	40.6	09/93	40.6	09/93	
				CLO4	NA	NA	NA	NA	
GID 2	1902031	MUNICIPAL	DESTROYED	TCE	86.0	05/87	5.2	09/93	
				PCE	20.0	05/87	1.5	09/93	
				CTC	3.0	05/87	ND	09/93	
				NO3	45.8	09/93	45.8	09/93	
				CLO4	NA	NA	NA	NA	
GRA 1	1902030	MUNICIPAL	INACTIVE	TCE	33.0	09/88	25.4	11/94	VULNERABLE
				PCE	2.5	11/93	0.6	11/94	(NO3)
				NO3	86.8	08/89	44.4	07/95	
				CLO4	NA	NA	NA	NA	
GRA 2	1902461	MUNICIPAL	INACTIVE	TCE	31.3	08/89	24.6	08/94	VULNERABLE
				PCE	3.3	09/94	3.3	09/94	(NO3)

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				1,1-DCE	4.8	08/94	4.8	08/94	
				NO3	82.1	07/90	44.2	07/95	
				CLO4	NA	NA	NA	NA	
JEF 1	1902017	MUNICIPAL	INACTIVE	TCE	340.0	01/80	98.0	01/85	
				PCE	23.0	03/81	8.0	01/85	
				1,1,1-TCA	31.0	01/85	31.0	01/85	
				MC	10.0	01/85	10.0	01/85	
				NO3	52.0	07/83	48.7	03/86	
				CLO4	NA	NA	NA	NA	
JEF 2	1902018	MUNICIPAL	INACTIVE	TCE	260.0	01/80	140.0	01/85	
				PCE	15.0	03/81	6.0	01/85	
				1,1-DCE	20.0	01/85	20.0	01/85	
				1,1,1-TCA	54.0	01/85	54.0	01/85	
				MC	6.0	01/85	6.0	01/85	
				NO3	68.0	06/77	61.0	06/79	
				CLO4	NA	NA	NA	NA	
JEF 3	1902019	MUNICIPAL	INACTIVE	TCE	121.0	02/81	4.9	08/92	VULNERABLE
				PCE	12.0	03/81	0.6	08/92	(VOCS AND NO3) (3)
				1,1,1-TCA	29.0	04/85	ND	08/92	
				T-1,2-DCE	2.4	04/85	ND	08/92	
				NO3	52.0	12/84	23.5	08/92	
				CLO4	NA	NA	NA	NA	
JEF 4	8000111	MUNICIPAL	ACTIVE	VOCS	ND	08/89	ND	08/08	
				NO3	14.7	07/89	5.5	08/08	
				CLO4	ND	08/97	ND	08/08	
PER 1	1902027	MUNICIPAL	ACTIVE	TCE	25.8	10/80	1.1	06/09	VULNERABLE
				PCE	6.8	07/87	0.5	06/09	(VOCS AND NO3) (3)
				NO3	22.8	08/86	19.0	08/08	
				CLO4	ND	08/97	ND	08/08	
S G 1	1900510	MUNICIPAL	ACTIVE	TCE	6.8	12/03	ND	06/09	VULNERABLE
				PCE	46.0	04/06	7.8	06/09	(NO3 AND CLO4) (1)
				C-1,2-DCE	1.8	11/04	ND	06/09	
				1,1-DCA	1.8	06/04	ND	06/09	
				1,1-DCE	0.7	11/04	ND	06/09	
				FREON 11	1.2	08/03	ND	08/08	
				NO3	27.0	04/02	21.0	06/09	
				CLO4	8.1	08/03	ND	06/09	
S G 2	1900511	MUNICIPAL	ACTIVE	TCE	3.6	06/99	ND	10/05	VULNERABLE
				PCE	11.0	02/03	0.8	10/05	(VOCS AND CLO4) (1)
				C-1,2-DCE	1.2	02/01	ND	10/05	
				NO3	53.1	10/05	53.1	10/05	
				CLO4	7.0	02/03	ND	10/05	
SAX 1	1900515	MUNICIPAL	DESTROYED	PCE	1.4	04/97	0.9	12/97	VULNERABLE
				MC	2.2	04/89	ND	08/97	(NO3)
				NO3	33.1	10/97	33.1	10/97	
				CLO4	ND	08/97	ND	12/97	
SAX 3	1900514	MUNICIPAL	ACTIVE	VOCS	ND	04/89	ND	08/08	VULNERABLE
				NO3	27.3	11/96	2.3	08/08	(NO3)
				CLO4	ND	08/97	ND	08/08	
SAX 4	8000146	MINICIPAL	ACTIVE	VOCS	ND	03/92	ND	08/08	
				NO3	11.9	08/99	ND	08/08	
				CLO4	ND	08/97	ND	08/08	
GOLDEN STATE WATER COMPANY/SAN DIMAS DISTRICT									
ART-1	1902151	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	60.0	10/74	60.0	10/74	
				CLO4	NA	NA	NA	NA	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
ART-2	1902152	MUNICIPAL	ACTIVE	VOCS	ND	06/89	ND	05/07	VULNERABLE (NO3)
				NO3	26.2	08/07	9.4	09/07	
				CLO4	ND	08/97	ND	09/07	
ART-3	1902842	MUNICIPAL	ACTIVE	VOCS	ND	05/89	ND	05/09	VULNERABLE (NO3 AND CLO4)
				NO3	60.0	01/73	33.0	05/09	
				CLO4	4.7	02/09	4.0	05/09	
BAS-3	1902148	MUNICIPAL	ACTIVE	VOCS	ND	06/89	ND	05/09	VULNERABLE (NO3 AND CLO4)
				NO3	67.0	01/03	24.0	05/09	
				CLO4	17.0	03/03	ND	05/09	
BAS-4	1902149	MUNICIPAL	ACTIVE	VOCS	ND	03/85	ND	05/09	
				NO3	106.0	05/76	87.0	05/09	
				CLO4	20.0	01/02	13.0	05/09	
CITY	1902286	MUNICIPAL	ACTIVE	VOCS	ND	06/88	ND	05/08	VULNERABLE (NO3)
				NO3	44.7	09/93	31.0	11/08	
				CLO4	ND	08/97	ND	08/08	
COL-1	1902266	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	93.0	09/75	10.0	10/76	
				CLO4	NA	NA	NA	NA	
COL-2	1902267	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	117.5	10/76	117.5	10/76	
				CLO4	NA	NA	NA	NA	
COL-4	1902268	MUNICIPAL	ACTIVE	CF	7.5	09/97	ND	02/08	VULNERABLE (NO3)
				NO3	64.0	03/83	4.1	05/08	
				CLO4	ND	09/97	ND	04/08	
COL-5	1902269	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
COL-6	1902270	MUNICIPAL	ACTIVE	PCE	7.2	07/85	ND	05/08	VULNERABLE (VOCS AND NO3)
				CF	0.6	09/97	ND	05/08	
				NO3	56.0	06/85	38.2	05/08	
				CLO4	ND	09/97	ND	10/07	
COL-7	1902271	MUNICIPAL	ACTIVE	PCE	22.0	12/87	3.1	11/99	VULNERABLE (VOCS AND CLO4)
				TCE	9.9	01/80	ND	09/99	
				1,1-DCE	1.1	03/85	ND	09/99	
				1,1,1-TCA	1.7	07/85	ND	09/99	
				NO3	118.0	05/79	68.1	01/00	
				CLO4	4.2	01/02	4.2	01/02	
COL-8	1902272	MUNICIPAL	INACTIVE	PCE	0.2	09/80	ND	12/96	
				NO3	120.0	06/83	50.8	12/96	
				CLO4	NA	NA	NA	NA	
HIGHWAY	1902150	MUNICIPAL	ACTIVE	TCE	0.6	12/80	ND	05/09	VULNERABLE (NO3 AND CLO4)
				PCE	0.1	12/80	ND	05/09	
				NO3	42.5	10/03	12.0	05/09	
				CLO4	8.0	10/03	ND	05/09	
L HILL 2	1902154	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
MALON	1902287	MUNICIPAL	ACTIVE	CF	1.7	08/96	ND	05/09	VULNERABLE (NO3)
				NO3	42.0	09/87	19.0	05/09	
				CLO4	ND	08/97	ND	08/08	
GREEN, WALTER									
NA	8000027	IRRIGATION	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				CLO4	NA	NA	NA	NA	
NA	8000028	NON-POTABLE	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
HALL (W.E.) COMPANY									
NA	1902496	DOMESTIC	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
HANSEN, ALICE									
2946C	8000029	IRRIGATION	ACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
HANSON AGGREGATES WEST, INC.									
DUA 1	1900961	INDUSTRIAL	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
EL 1	1901492	INDUSTRIAL	ACTIVE	VOCS	ND	05/98	ND	09/02	
				NO3	17.0	02/93	2.2	09/02	
				CLO4	ND	03/98	ND	03/98	
EL 3	1901493	INDUSTRIAL	ACTIVE	VOCS	ND	06/98	ND	09/02	
				NO3	22.0	05/93	2.8	09/02	
				CLO4	ND	03/98	ND	03/98	
EL 4	1903006	INDUSTRIAL	ACTIVE	VOCS	ND	12/87	ND	09/02	
				NO3	6.3	06/98	ND	09/02	
				CLO4	NA	NA	NA	NA	
KIN 1	1900963	INDUSTRIAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
HARTLEY, DAVID									
NA	8000085	DOMESTIC	ACTIVE	VOCS	ND	10/95	ND	10/95	
				NO3	111.0	01/96	75.0	04/96	
				CLO4	NA	NA	NA	NA	
HEMLOCK MUTUAL WATER COMPANY									
NORTH	1901178	MUNICIPAL	ACTIVE	PCE	51.7	04/82	ND	06/09	VULNERABLE
				TCE	0.7	12/87	ND	06/09	(VOCS) (1)
				NO3	18.9	12/06	5.6	12/08	
				CLO4	ND	09/97	ND	09/08	
SOUTH	1902806	MUNICIPAL	ACTIVE	PCE	210.0	12/87	ND	06/09	VULNERABLE
				TCE	0.9	04/89	ND	06/09	(VOCS AND NO3) (1)
				NO3	32.7	12/94	5.0	06/09	
				CLO4	ND	09/97	ND	09/08	
INDUSTRY WATERWORKS SYSTEM, CITY OF									
01	1902581	MUNICIPAL	INACTIVE	TCE	40.0	01/80	1.7	10/92	
				PCE	9.0	04/80	5.0	10/92	
				CTC	5.7	10/92	5.7	10/92	
				1,1-DCE	15.3	10/92	15.3	10/92	
				1,2-DCA	0.6	10/92	0.6	10/92	
				NO3	60.2	10/92	60.2	10/92	
				CLO4	NA	NA	NA	NA	
02	1902582	MUNICIPAL	INACTIVE	TCE	19.0	01/80	2.3	04/81	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				PCE	10.0	04/81	10.0	04/81	
				NO3	55.5	02/86	55.5	02/86	
				CLO4	100.0	04/99	100.0	04/99	
03	8000078	MUNICIPAL	STANDBY	PCE	2.6	09/80	1.6	07/06	VULNERABLE
				TCE	12.0	07/06	12.0	07/06	(NO3, AND CLO4)
				CTC	0.5	07/06	0.5	07/06	
				1,2-DCA	0.5	07/06	0.5	07/06	
				BDCM	0.6	07/03	ND	07/06	
				BF	0.5	07/03	ND	07/06	
				CF	0.9	09/02	0.6	07/06	
				NO3	31.1	08/00	ND	07/06	
				CLO4	120.0	04/99	ND	07/06	
04	8000096	MUNICIPAL	STANDBY	PCE	2.4	08/01	0.5	07/06	VULNERABLE
				TCE	8.0	11/01	1.7	07/06	(VOCS AND NO3) (2)
				1,1-DCE	0.9	09/02	0.6	07/06	
				1,2-DCA	1.0	11/01	ND	07/06	
				CTC	0.7	11/01	ND	07/05	
				MC	0.9	06/89	ND	07/05	
				NO3	42.0	06/02	33.0	04/07	
				CLO4	14.8	06/01	6.5	01/06	
05	8000097	MUNICIPAL	ACTIVE	PCE	0.9	11/01	ND	08/08	VULNERABLE
				TCE	6.8	04/96	2.5	08/08	(VOCS AND NO3) (2)
				1,2-DCA	0.7	09/02	ND	08/08	
				CF	0.6	01/07	ND	08/08	
				NO3	28.0	08/08	28.0	08/08	
				CLO4	11.0	04/04	8.1	08/08	
05TH AVE	1902583	MUNICIPAL	DESTROYED	TCE	0.3	12/80	0.3	12/80	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
KNIGHT, KATHRYN M.									
NA	1901688	DOMESTIC	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
LANDEROS, JOHN									
NA	8000031	DOMESTIC	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
LA PUENTE VALLEY COUNTY WATER DISTRICT									
01	1901459	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
02	1901460	MUNICIPAL	ACTIVE	TCE	105.0	12/08	79.0	05/09	VULNERABLE
				PCE	6.6	03/00	3.4	05/09	(NO3) (1,4)
				CTC	8.5	12/02	4.3	05/09	
				1,1-DCA	2.1	11/03	ND	05/09	
				1,2-DCA	6.1	03/00	3.1	05/09	
				1,1-DCE	1.6	12/00	ND	05/09	
				C-1,2-DCE	1.8	12/00	1.3	05/09	
				CF	2.5	12/08	2.1	05/09	
				NO3	32.0	02/09	23.0	05/09	
				CLO4	183.0	02/98	73.0	05/09	
03	1902859	MUNICIPAL	ACTIVE	TCE	68.4	06/98	6.2	06/09	VULNERABLE
				PCE	6.3	04/85	1.4	06/09	(NO3) (1,4)
				CTC	8.5	11/04	ND	06/09	
				1,1-DCE	0.9	10/95	ND	06/09	
				1,2-DCA	6.7	02/99	ND	06/09	
				C-1,2-DCE	1.4	01/97	ND	06/09	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				1,1-DCA	0.5	09/01	ND	06/09	
				CF	1.8	09/01	ND	06/09	
				NO3	95.0	01/80	30.6	04/09	
				CLO4	174.0	02/98	16.0	04/09	
04	8000062	MUNICIPAL	STANDBY	TCE	84.3	03/00	46.0	04/04	VULNERABLE (NO3) (1,4)
				PCE	6.6	03/00	2.9	04/04	
				CTC	7.6	04/95	1.9	04/04	
				1,1-DCA	0.7	04/04	0.7	04/04	
				1,2-DCA	8.1	03/00	4.4	04/04	
				1,1-DCE	1.3	04/97	0.5	04/04	
				C-1,2-DCE	15.6	11/98	1.7	04/04	
				CF	2.3	04/04	2.3	04/04	
				NO3	24.9	04/95	18.1	04/04	
				CLO4	159.0	06/97	71.2	04/04	
05	8000209	MUNICIPAL	ACTIVE	TCE	43.0	03/08	25.0	03/09	VULNERABLE (NO3) (1,4)
				PCE	3.8	03/08	2.2	03/09	
				CTC	2.3	03/08	1.2	03/09	
				1,1-DCA	0.5	03/08	ND	03/09	
				1,2-DCA	2.7	03/08	1.2	03/09	
				1,1-DCE	0.5	03/08	ND	03/09	
				C-1,2-DCE	0.8	11/08	0.7	03/09	
				CF	1.7	03/08	ND	03/09	
				NO3	28.0	03/09	27.0	03/09	
				CLO4	65.0	03/08	32.0	04/09	
LA VERNE, CITY OF									
SNIDO	1902322	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
W15-L	1902769	MUNICUPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
W24-L	1901197	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
LEE, PAUL									
01	8000018	DOMESTIC	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
02	8000019	DOMESTIC	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
03	8000020	DOMESTIC	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
04	8000021	DOMESTIC	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
LOS ANGELES, COUNTY OF									
02	1902580	NON POTABLE	ACTIVE	PCE	6.6	09/04	6.6	09/04	
				TCE	1.3	09/04	1.3	09/04	
				1,2-DCA	0.5	01/96	ND	09/04	
				NO3	10.7	09/04	10.7	09/04	
				CLO4	ND	08/97	ND	08/97	
03	1902663	IRRIGATION	DESTROYED	PCE	2.1	06/94	2.1	06/94	
				TCE	0.7	06/94	0.7	06/94	
				NO3	4.8	06/94	4.8	06/94	

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HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				CLO4	NA	NA	NA	NA	
03A	8000150	IRRIGATION	ACTIVE	PCE	2.5	11/99	ND	10/08	
				NO3	2.1	08/96	ND	10/08	
				CLO4	ND	08/97	ND	08/97	
04	1902664	IRRIGATION	INACTIVE	1,1,1-TCA	0.7	05/87	ND	11/87	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
05	1902665	IRRIGATION	ACTIVE	PCE	39.0	09/03	35.7	10/08	
				TCE	1.3	09/03	ND	10/08	
				NO3	18.0	09/03	14.0	10/08	
				CLO4	ND	08/97	ND	08/97	
06	1902666	IRRIGATION	INACTIVE	PCE	7.4	08/96	2.8	11/99	VULNERABLE
				TCE	8.3	08/96	2.9	11/99	(VOCS)
				1,1-DCA	2.0	08/96	ND	11/99	
				1,1-DCE	1.4	08/96	ND	11/99	
				C-1,2-DCE	4.5	08/96	0.8	11/99	
				NO3	11.6	08/96	8.4	11/99	
				CLO4	NA	NA	NA	NA	
600	8000090	IRRIGATION	INACTIVE	VOCS	ND	07/98	ND	07/98	
				NO3	4.8	07/98	4.8	07/98	
				CLO4	ND	07/98	ND	07/98	
BIG RED	8000088	NON POTABLE	ACTIVE	1,2-DCA	0.6	01/96	ND	10/08	VULNERABLE
				NO3	12.0	09/02	ND	10/08	(VOCS)
				CLO4	ND	08/97	ND	08/97	
NEW LAKE	8000089	NON POTABLE	ACTIVE	PCE	19.7	02/00	ND	11/08	VULNERABLE
				TCE	0.9	02/00	ND	11/08	(VOCS)
				CF	1.3	11/08	1.3	11/08	
				NO3	22.0	02/00	12.0	11/08	
				CLO4	ND	08/97	ND	08/97	
SF 1	8000070	NON POTABLE	ACTIVE	TCE	4.3	09/04	ND	03/09	VULNERABLE
				PCE	7.6	09/04	ND	03/09	(VOCS)
				VC	1.4	12/87	ND	10/08	
				NO3	16.0	09/02	11.3	03/09	
				CLO4	ND	06/97	ND	03/09	
WHI 1	1902579	NON POTABLE	ACTIVE	PCE	3.8	09/04	2.8	10/08	VULNERABLE
				TCE	1.0	09/04	ND	10/08	(VOCS)
				NO3	6.7	09/04	5.7	10/08	
				CLO4	ND	08/97	ND	08/97	
LOS FLORES MUTUAL WATER COMPANY									
HI 1	21902098	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
LO 1	11902098	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
LOUCKS, DAVID									
NA	8000032	DOMESTIC	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
MAECHTLEN ESTATE									
M-N	1902323	DOMESTIC	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	

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HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
OLD60	1902321	DOMESTIC	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
SNIDO	1902322	DOMESTIC	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
MANNING BROTHERS ROCK AND SAND COMPANY									
36230	1900117	INDUSTRIAL	DESTROYED	TCE	520.0	12/79	100.0	01/80	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
MAPLE WATER COMPANY									
01	8000109	MUNICIPAL	DESTROYED	VOCS	ND	06/89	ND	07/96	
				NO3	68.0	09/94	55.5	07/96	
				CLO4	NA	NA	NA	NA	
02	1900042	MUNICIPAL	DESTROYED	VOCS	ND	06/89	ND	07/96	
				NO3	62.7	11/89	55.3	07/96	
				CLO4	NA	NA	NA	NA	
MARTINEZ, FRANCES M.									
NA	8000033	DOMESTIC	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA									
02	1900693	NON-POTABLE	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
03	1900694	NON-POTABLE	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
MILLER COORS LLC (MILLER BREWING COMPANY)									
01	8000075	INDUSTRIAL	INACTIVE	VOCS	ND	01/92	ND	06/08	
				NO3	9.8	01/93	4.7	06/08	
				CLO4	ND	06/97	ND	06/08	
02	8000076	INDUSTRIAL	INACTIVE	VOCS	ND	01/92	ND	05/08	
				NO3	14.0	10/92	3.4	05/08	
				CLO4	ND	06/97	ND	05/08	
N BREWER	8000034	INDUSTRIAL	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
MONROVIA, CITY OF									
01	1900417	MUNICIPAL	DESTROYED	TCE	46.8	11/92	12.0	04/02	
				PCE	3.9	03/81	0.8	04/02	
				1,1-DCE	1.2	08/96	0.9	04/02	
				1,1,1-TCA	2.1	08/87	ND	07/01	
				CF	3.2	07/01	3.2	07/01	
				NO3	78.0	02/01	60.0	03/02	
				CLO4	11.1	02/01	8.4	04/02	
02	1900418	MUNICIPAL	ACTIVE	TCE	167.0	08/82	7.8	03/09	VULNERABLE
				PCE	11.0	08/82	0.6	03/09	(CLO4) (1)
				1,1,1-TCA	7.1	02/87	ND	07/08	
				1,1-DCE	3.4	06/87	ND	03/09	

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HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				1,2-DCA	1.5	02/87	ND	07/08	
				CF	2.2	07/07	1.2	07/08	
				NO3	65.6	12/91	62.0	03/09	
				CLO4	6.0	01/05	5.5	03/09	
03	1900419	MUNICIPAL	ACTIVE	TCE	18.0	08/82	3.4	04/09	VULNERABLE
				PCE	17.0	08/82	ND	04/09	(VOCS AND NO3)
				1,1-DCE	0.8	12/08	ND	04/09	
				CF	1.8	07/08	1.8	07/08	
				NO3	49.6	05/76	19.0	04/09	
				CLO4	ND	08/97	ND	07/08	
04	1900420	MUNICIPAL	ACTIVE	TCE	6.5	02/91	ND	04/09	VULNERABLE
				PCE	1.0	02/91	ND	04/09	(VOCS AND NO3)
				1,1-DCE	1.1	01/05	ND	04/09	
				MC	2.5	05/89	ND	07/08	
				CF	0.7	07/02	ND	07/08	
				NO3	28.8	06/91	10.0	04/09	
				CLO4	ND	08/97	ND	07/08	
05	1940104	MUNICIPAL	ACTIVE	TCE	5.1	01/91	0.9	04/09	VULNERABLE
				PCE	1.0	10/02	ND	04/09	(VOCS AND NO3)
				1,1-DCE	1.0	10/02	ND	04/09	
				MC	4.9	05/89	ND	07/08	
				CF	1.2	07/02	ND	07/08	
				NO3	29.4	01/91	10.0	07/08	
				CLO4	ND	08/97	ND	07/08	
06	8000171	MUNICIPAL	ACTIVE	TCE	9.7	08/04	6.9	04/09	VULNERABLE
				PCE	1.7	02/04	0.9	04/09	(NO3)
				1,1-DCE	0.8	10/07	ND	04/09	
				CF	1.0	08/04	ND	07/08	
				NO3	37.4	10/04	28.0	04/09	
				CLO4	ND	10/99	ND	07/08	
MONROVIA NURSERY									
DIV 4	1902456	IRRIGATION	DESTROYED	VOCS	ND	08/96	ND	02/07	
				NO3	213.0	09/04	202.0	02/07	
				CLO4	ND	02/98	ND	02/98	
DIV 8	1902455	IRRIGATION	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
MONTEREY PARK, CITY OF									
01	1900453	MUNICIPAL	STANDBY	PCE	64.1	12/08	46.0	05/09	VULNERABLE
				TCE	4.1	05/04	ND	05/09	(CLO4)
				1,1-DCE	0.6	05/04	ND	05/09	
				1,1-DCA	1.0	05/04	ND	05/09	
				C-1,2-DCE	1.0	03/04	ND	05/09	
				NO3	17.0	03/09	15.0	05/09	
				CLO4	4.7	05/04	ND	08/08	
02	1900454	MUNICIPAL	DESTROYED	PCE	6.4	04/98	6.4	04/98	
				NO3	18.3	07/95	13.0	07/97	
				CLO4	3.0	07/97	ND	03/98	
03	1900455	MUNICIPAL	STANDBY	PCE	21.0	05/04	16.0	05/09	VULNERABLE
				TCE	2.7	05/04	0.6	05/09	(CLO4)
				C-1,2-DCE	0.8	05/04	ND	05/09	
				NO3	13.3	07/97	5.5	05/09	
				CLO4	4.2	05/04	ND	08/08	
04	1900456	MUNICIPAL	DESTROYED	PCE	0.4	01/80	ND	11/87	
				NO3	6.2	09/87	6.2	09/87	
				CLO4	NA	NA	NA	NA	

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WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
05	1900457	MUNICIPAL	ACTIVE	TCE	7.0	01/92	3.0	05/09	VULNERABLE
				PCE	35.8	08/08	26.0	05/09	(CLO4) (1)
				C-1,2-DCE	2.0	11/01	0.9	05/09	
				1,1-DCA	1.1	11/01	0.6	05/09	
				1,1-DCE	0.7	11/01	ND	05/09	
				NO3	20.0	08/02	18.0	05/09	
				CLO4	6.5	02/01	ND	05/09	
06	1900458	MUNICIPAL	STANDBY	TCE	6.4	05/89	3.1	05/05	VULNERABLE
				PCE	13.6	03/01	3.1	05/05	(VOCS, NO3, AND CLO4)
				C-1,2-DCE	1.3	01/99	1.2	05/05	
				1,1-DCA	0.8	11/01	0.6	05/05	
				NO3	30.0	06/03	24.7	05/05	
				CLO4	5.9	04/02	5.9	04/02	
07	1902372	MUNICIPAL	ACTIVE	PCE	4.4	08/05	3.6	05/09	VULNERABLE
				CF	3.6	07/98	ND	08/08	(VOCS)
				NO3	12.8	08/89	2.3	08/08	
				CLO4	ND	08/97	ND	08/08	
08	1902373	MUNICIPAL	ACTIVE	PCE	2.5	02/05	1.9	03/09	
				NO3	17.0	08/05	ND	11/08	
				CLO4	ND	08/97	ND	11/08	
09	1902690	MUNICIPAL	ACTIVE	PCE	11.0	03/04	2.9	05/09	VULNERABLE
				TCE	1.3	04/97	ND	05/09	(VOCS) (1)
				NO3	6.8	08/01	ND	05/09	
				CLO4	ND	08/97	ND	05/09	
10	1902818	MUNICIPAL	STANDBY	PCE	14.0	05/04	11.0	05/09	VULNERABLE
				TCE	2.6	05/04	0.6	05/09	(NO3 AND CLO4)
				C-1,2-DCE	0.8	05/04	ND	05/09	
				NO3	27.1	08/07	17.0	05/09	
				CLO4	4.3	05/04	ND	08/08	
12	1903033	MUNICIPAL	ACTIVE	PCE	85.0	05/02	38.0	05/09	VULNERABLE
				TCE	5.4	10/95	2.8	05/09	(NO3 AND CLO4) (1)
				1,1-DCA	1.0	11/08	0.7	05/09	
				C-1,2-DCE	1.1	08/05	0.8	05/09	
				NO3	27.2	08/07	14.0	05/09	
				CLO4	15.0	09/97	ND	05/09	
14	1903092	MUNICIPAL	ACTIVE	PCE	2.2	05/02	0.7	05/06	VULNERABLE
				TCE	2.9	11/02	1.5	05/06	(VOCS)
				1,1-DCA	0.8	08/02	ND	05/06	
				C-1,2-DCE	1.0	11/02	ND	05/06	
				NO3	10.0	10/06	10.0	10/06	
				CLO4	ND	08/97	ND	05/03	
15	8000196	MUNICIPAL	ACTIVE	PCE	128.0	11/08	85.0	05/09	VULNERABLE
				TCE	3.4	07/06	2.5	05/09	(NO3) (1)
				NO3	23.0	11/08	22.0	05/09	
				CLO4	2.4	07/06	ND	05/09	
FERN	8000126	MUNICIPAL	STANDBY	PCE	9.9	09/08	7.8	05/09	
				TCE	2.3	08/02	ND	05/09	
				C-1,2-DCE	0.7	03/04	ND	05/09	
				NO3	6.5	03/04	ND	03/09	
				CLO4	2.0	08/97	ND	03/09	
NAMIMATSU FARMS									
NA	1901034	IRRIGATION	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
OWL ROCK PRODUCTS COMPANY									
NA	1903119	INDUSTRIAL	INACTIVE	VOCS	ND	05/87	ND	11/08	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				NO3	8.7	08/89	2.3	11/08	
				CLO4	NA	NA	NA	NA	
NA	1900043	INDUSTRIAL	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
NA	1902241	INDUSTRIAL	ACTIVE	VOCS	ND	10/02	ND	11/04	
				NO3	ND	10/02	ND	11/04	
				CLO4	NA	NA	NA	NA	
PICO COUNTY WATER DISTRICT									
NA	8000040	MUNICIPAL	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
POLOPOLUS ET AL.									
01	1902169	IRRIGATION	INACTIVE	PCE	330.0	10/96	270.0	03/98	VULNERABLE (NO3)
				TCE	498.9	09/92	180.0	03/98	
				1,1-DCA	22.0	03/98	22.0	03/98	
				1,2-DCA	1.2	06/96	0.9	03/98	
				1,1-DCE	115.3	09/92	22.0	03/98	
				T-1,2-DCE	1.5	06/87	ND	03/98	
				1,1,1-TCA	53.0	09/92	12.0	03/98	
				CTC	0.8	06/96	0.6	03/98	
				NO3	50.8	07/91	29.7	03/98	
				CLO4	ND	03/98	ND	03/98	
RICHWOOD MUTUAL WATER COMPANY									
NORTH 2	1901522	MUNICIPAL	DESTROYED	PCE	93.0	05/83	4.0	12/93	
				TCE	3.0	03/81	ND	05/92	
				CTC	0.2	10/80	ND	05/92	
				NO3	25.0	02/84	19.7	06/99	
				CLO4	NA	NA	NA	NA	
SOUTH 1	1901521	MUNICIPAL	DESTROYED	PCE	96.0	05/83	3.4	12/93	
				TCE	0.7	12/82	ND	05/92	
				NO3	28.6	06/99	28.6	06/99	
				CLO4	NA	NA	NA	NA	
ROY, RUTH									
NA	8000041	DOMESTIC	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
RURBAN HOMES MUTUAL WATER COMPANY									
NORTH 1	1900120	MUNICIPAL	ACTIVE	PCE	16.0	11/80	ND	06/09	VULNERABLE (VOCS AND NO3)
				1,1-DCE	0.9	09/08	ND	06/09	
				CF	0.8	02/02	ND	09/08	
				FREON 11	13.3	05/04	ND	06/09	
				FREON 113	64.4	05/04	ND	06/09	
				NO3	30.0	03/01	12.0	06/09	
				CLO4	ND	09/97	ND	09/08	
SOUTH 2	1900121	MUNICIPAL	ACTIVE	PCE	24.3	02/81	ND	06/09	VULNERABLE (VOCS AND NO3)
				1,1-DCE	1.7	10/08	ND	06/09	
				CF	3.8	02/02	ND	09/08	
				FREON 11	14.1	05/04	ND	06/09	
				FREON 113	54.2	05/04	ND	06/09	
				MC	1.1	08/02	ND	09/08	
				NO3	38.2	03/07	22.0	06/09	
				CLO4	ND	09/97	ND	09/08	
SAN GABRIEL COUNTRY CLUB									

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
01	1900547	IRRIGATION	ACTIVE	VOCS	ND	05/85	ND	08/05	VULNERABLE (CLO4)
				NO3	67.0	07/96	54.0	08/05	
				CLO4	8.5	07/97	5.4	08/05	
02	1902979	IRRIGATION	ACTIVE	VOCS	ND	05/87	ND	08/05	VULNERABLE (NO3)
				NO3	23.0	10/02	20.3	08/05	
				CLO4	1.4	12/97	1.1	08/05	
SAN GABRIEL COUNTY WATER DISTRICT									
05 BRA	1901669	MUNICIPAL	INACTIVE	TCE	0.9	01/97	ND	03/01	
				PCE	1.9	02/99	1.0	03/01	
				NO3	83.9	08/89	70.7	03/01	
				CLO4	ND	09/97	ND	09/00	
06 BRA	1901670	MUNICIPAL	DESTROYED	VOCS	ND	02/99	ND	02/99	
				NO3	108.9	08/72	57.6	03/00	
				CLO4	3.0	02/99	3.0	02/99	
07	1901671	MUNICIPAL	ACTIVE	VOCS	ND	09/89	ND	10/08	VULNERABLE (NO3 AND CLO4)
				NO3	48.0	03/03	34.0	04/09	
				CLO4	5.6	03/03	ND	04/09	
08	1901672	MUNICIPAL	INACTIVE	VOCS	ND	01/90	ND	03/91	VULNERABLE (NO3)
				NO3	76.0	01/82	23.4	08/93	
				CLO4	NA	NA	NA	NA	
09	1902785	MUNICIPAL	ACTIVE	PCE	2.0	01/09	1.5	04/09	VULNERABLE (NO3)
				NO3	51.0	03/03	21.0	04/09	
				CLO4	ND	09/97	ND	07/08	
10	1902786	MUNICIPAL	INACTIVE	PCE	18.0	08/93	1.9	11/98	VULNERABLE (VOCS, NO3, AND CLO4)
				NO3	50.0	05/89	31.0	11/98	
				CLO4	5.5	11/98	5.5	11/98	
11	8000067	MUNICIPAL	ACTIVE	PCE	2.0	06/89	1.1	04/09	VULNERABLE (NO3)
				NO3	32.2	04/04	16.0	04/09	
				CLO4	ND	09/97	ND	07/08	
12	8000123	MUNICIPAL	ACTIVE	TCE	0.8	09/02	ND	07/08	
				MC	0.6	05/90	ND	07/08	
				NO3	7.0	10/01	5.4	10/08	
				CLO4	ND	09/97	ND	07/08	
14	8000133	MUNICIPAL	ACTIVE	PCE	0.6	09/02	ND	07/08	
				NO3	3.8	12/02	2.3	07/08	
				CLO4	ND	09/97	ND	07/08	
SAN GABRIEL VALLEY WATER COMPANY									
B4B	1902858	MUNICIPAL	ACTIVE	TCE	25.2	02/08	25.2	02/08	(1)
				PCE	43.0	11/07	5.8	02/08	
				CTC	10.0	11/03	6.6	02/08	
				1,2-DCA	1.0	09/07	0.5	02/08	
				1,1-DCE	3.2	11/07	2.3	02/08	
				C-1,2-DCE	4.2	11/07	2.7	02/08	
				NO3	13.1	11/07	13.1	11/07	
				CLO4	24.5	04/08	24.5	04/08	
B4C	1902947	MUNICIPAL	INACTIVE	CTC	22.3	02/01	14.0	08/01	VULNERABLE (CLO4) (1)
				TCE	15.5	02/01	9.3	08/01	
				PCE	3.4	02/01	2.2	08/01	
				1,1-DCE	2.3	09/01	2.3	09/01	
				C-1,2-DCE	2.4	09/01	2.4	09/01	
				NO3	14.2	02/01	14.2	02/01	
				CLO4	6.0	06/00	ND	07/00	
B5A	1900718	MUNICIPAL	ACTIVE	PCE	17.5	03/91	ND	11/05	VULNERABLE

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				TCE	5.2	03/98	ND	11/05	(VOCS, NO3, AND CLO4)
				1,1-DCE	2.5	03/85	ND	08/05	
				CTC	1.1	12/91	ND	11/05	
				1,1,1-TCA	3.7	03/90	ND	08/05	
				CF	1.4	08/01	1.1	08/05	
				NO3	46.1	07/96	25.3	11/05	
				CLO4	14.0	06/97	4.0	08/05	
B5B	1900719	MUNICIPAL	ACTIVE	TCE	5.8	02/97	5.6	05/09	
				PCE	3.9	02/09	3.1	05/09	
				CTC	2.3	02/85	0.6	05/09	
				1,2-DCA	0.6	09/07	0.5	05/09	
				CF	2.4	01/07	1.2	05/09	
				NO3	54.0	11/08	50.0	05/09	
				CLO4	12.0	06/97	12.0	05/09	
B5C	8000112	MUNICIPAL	ACTIVE	VOCS	ND	05/89	ND	08/07	
				NO3	3.8	05/07	3.8	05/07	
				CLO4	ND	06/97	ND	03/08	
B5D	8000160	MUNICIPAL	ACTIVE	CTC	0.7	05/09	0.7	05/09	
				NO3	4.9	08/08	3.8	05/09	
				CLO4	ND	12/97	ND	05/09	
B5E	8000205	MUNICIPAL	INACTIVE	TCE	6.2	05/09	6.2	05/09	VULNERABLE
				PCE	0.8	05/09	0.8	05/09	(NO3) (2)
				CTC	5.2	05/07	2.5	05/09	
				CF	3.9	01/07	0.4	05/09	
				NO3	23.0	08/07	15.0	05/09	
				CLO4	8.1	05/07	7.6	05/09	
B6B	1900721	MUNICIPAL	DESTROYED	TCE	111.0	02/85	35.8	09/92	
				PCE	6.4	10/81	4.3	09/92	
				CTC	17.0	02/85	5.0	09/92	
				1,1-DCE	1.1	04/85	0.5	09/92	
				1,1-DCA	0.6	09/92	0.6	09/92	
				1,2-DCA	8.3	09/92	8.3	09/92	
				NO3	85.4	02/91	57.2	09/92	
				CLO4	NA	NA	NA	NA	
B6C	1903093	MUNICIPAL	ACTIVE	TCE	84.0	03/88	6.9	02/09	(1)
				PCE	12.0	11/81	0.7	02/09	
				CTC	13.0	02/85	ND	02/09	
				1,2-DCA	9.0	05/88	0.7	02/09	
				1,1-DCE	1.5	06/94	ND	02/09	
				C-1,2-DCE	6.2	04/88	ND	02/09	
				CF	1.7	04/04	0.8	02/09	
				NO3	87.0	09/08	81.0	02/09	
				CLO4	370.0	11/05	27.0	02/09	
B6D	8000098	MUNICIPAL	ACTIVE	TCE	87.0	05/09	87.0	05/09	(1)
				PCE	7.1	05/09	7.1	05/09	
				CTC	8.8	04/96	4.5	05/09	
				1,1-DCA	1.1	05/09	1.1	05/09	
				1,2-DCA	3.5	05/09	3.5	05/09	
				1,1-DCE	1.0	08/08	1.0	05/09	
				C-1,2-DCE	2.8	05/09	2.8	05/09	
				CF	2.9	05/09	2.9	05/09	
				NO3	21.6	11/08	21.2	05/09	
				CLO4	390.0	11/05	90.0	05/09	
11A	1900739	MUNICIPAL	ACTIVE	PCE	1.5	02/08	0.9	05/09	
				NO3	14.7	07/89	3.5	09/08	
				CLO4	ND	08/97	ND	03/08	
11B	1900745	MUNICIPAL	ACTIVE	PCE	17.8	04/90	1.8	05/09	VULNERABLE
				TCE	4.0	04/90	ND	05/09	(VOCS) (1)
				1,1-DCE	0.2	04/89	ND	08/08	
				C-1,2-DCE	3.0	04/89	ND	08/08	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				NO3	18.3	08/06	14.0	08/08	
				CLO4	ND	06/97	ND	03/08	
11C	1902713	MUNICIPAL	ACTIVE	PCE	4.1	12/91	1.1	05/09	VULNERABLE
				TCE	0.6	12/91	ND	08/08	(VOCS)
				1,1-DCE	1.1	08/08	ND	05/09	
				C-1,2-DCE	2.5	03/92	ND	05/09	
				NO3	12.0	08/06	6.6	09/08	
				CLO4	ND	08/97	ND	03/08	
1B	1900729	MUNICIPAL	ACTIVE	PCE	46.0	04/81	ND	05/09	VULNERABLE
				TCE	1.8	02/80	ND	09/08	(VOCS)
				MC	7.1	04/87	ND	09/08	
				FREON 113	22.3	08/08	ND	02/09	
				NO3	22.4	05/08	16.0	05/09	
				CLO4	1.1	03/08	1.1	03/08	
1C	1902946	MUNICIPAL	ACTIVE	VOCS	ND	07/98	ND	08/08	
				NO3	5.0	07/89	3.8	08/08	
				CLO4	ND	10/99	ND	03/08	
1D	8000102	MUNICIPAL	ACTIVE	VOCS	ND	07/98	ND	08/08	
				NO3	5.0	07/89	4.1	11/08	
				CLO4	ND	08/97	ND	03/08	
1E	8000172	MUNICIPAL	ACTIVE	PCE	0.7	09/02	ND	05/09	VULNERABLE
				NO3	4.3	11/00	3.8	11/08	(CLO4)
				CLO4	5.0	06/00	ND	03/08	
2C	1900749	MUNICIPAL	ACTIVE	TCE	15.2	12/80	ND	11/05	VULNERABLE
				PCE	3.0	10/87	ND	11/05	(VOCS)
				NO3	16.4	08/04	5.2	08/05	
				CLO4	ND	08/97	ND	02/03	
2D	1902857	MUNICIPAL	ACTIVE	TCE	25.0	12/80	ND	05/09	VULNERABLE
				PCE	0.7	01/88	ND	08/08	(VOCS)
				NO3	8.2	07/86	3.2	08/08	
				CLO4	ND	08/97	ND	03/08	
2E	8000065	MUNICIPAL	ACTIVE	TCE	18.0	01/80	0.5	05/09	VULNERABLE
				PCE	0.9	01/88	ND	08/08	(VOCS)
				NO3	9.1	07/86	7.1	08/08	
				CLO4	ND	08/97	ND	03/08	
2F	8000197	MUNICIPAL	ACTIVE	TCE	0.8	06/08	0.7	06/09	
				NO3	4.3	09/06	3.7	08/08	
				CLO4	ND	09/06	ND	03/08	
8A	1900736	MUNICIPAL	INACTIVE	PCE	0.6	11/87	ND	02/97	VULNERABLE
				NO3	40.2	02/97	40.2	02/97	(NO3)
				CLO4	NA	NA	NA	NA	
8B	1900746	MUNICIPAL	ACTIVE	PCE	220.0	02/09	180.0	05/09	VULNERABLE
				TCE	0.7	05/09	0.7	05/09	(NO3) (1)
				NO3	23.0	08/08	23.0	08/08	
				CLO4	3.0	08/97	1.8	03/08	
8C	1900747	MUNICIPAL	ACTIVE	PCE	170.0	05/09	170.0	05/09	VULNERABLE
				TCE	0.8	05/09	0.8	05/09	(CLO4) (1)
				NO3	20.0	07/98	15.0	11/08	
				CLO4	4.0	03/08	4.0	03/08	
8D	1903103	MUNICIPAL	ACTIVE	PCE	62.3	02/09	44.0	06/09	VULNERABLE
				TCE	0.6	08/04	0.6	06/09	(NO3) (1)
				C-1,2 DCE	0.8	05/04	ND	06/09	
				CTC	0.6	06/88	ND	06/09	
				NO3	29.0	06/09	29.0	06/09	
				CLO4	2.3	03/08	2.3	03/08	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
8E	8000113	MUNICIPAL	ACTIVE	PCE	140.0	05/09	140.0	05/09	
				NO3	7.2	07/01	2.6	11/08	
				CLO4	ND	08/97	ND	03/08	
8F	8000169	MUNICIPAL	ACTIVE	VOCS	ND	10/98	ND	08/08	
				NO3	9.6	11/07	2.6	11/08	
				CLO4	ND	01/99	ND	03/08	
B1	1902635	MUNICIPAL	ACTIVE	TCE	12.0	04/85	ND	08/06	VULNERABLE
				PCE	7.3	05/88	ND	08/06	(VOCS)
				C-1,2-DCE	7.2	12/92	ND	08/06	
				1,1-DCE	2.1	08/89	ND	08/06	
				NO3	17.4	02/87	3.5	03/05	
				CLO4	ND	08/97	ND	02/03	
B2	1902525	MUNICIPAL	INACTIVE	TCE	17.0	03/80	ND	11/98	VULNERABLE
				PCE	15.8	06/80	0.7	11/98	(VOCS)
				CTC	1.7	05/82	ND	11/98	
				1,2-DCA	7.7	07/82	ND	11/98	
				1,1,1-TCA	7.6	07/82	ND	11/98	
				C-1,2-DCE	2.6	08/93	ND	11/98	
				NO3	8.7	11/98	8.7	11/98	
				CLO4	ND	11/98	ND	11/98	
B11A	1901439	MUNICIPAL	ACTIVE	TCE	9.8	08/01	5.8	08/04	VULNERABLE
				PCE	21.7	05/92	8.5	08/04	(NO3 AND CLO4) (1)
				1,1-DCE	14.0	08/01	2.8	08/04	
				CTC	0.9	01/88	ND	08/04	
				C-1,2-DCE	1.5	08/01	0.6	09/04	
				1,1-DCA	1.0	08/01	ND	08/04	
				NO3	37.7	03/00	36.5	08/04	
				CLO4	8.0	12/97	ND	08/04	
B11B	8000108	MUNICIPAL	ACTIVE	TCE	20.0	02/97	8.5	05/09	VULNERABLE
				PCE	34.5	06/92	9.8	05/09	(NO3 AND CLO4) (1)
				1,1-DCE	33.7	03/90	14.0	05/09	
				1,1-DCA	2.6	12/88	1.2	05/09	
				1,1,1-TCA	2.9	10/88	ND	11/08	
				C-1,2-DCE	3.6	03/05	1.3	05/09	
				NO3	35.9	02/97	19.0	05/09	
				CLO4	7.0	06/00	2.5	03/08	
B7B	1901440	MUNICIPAL	DESTROYED	TCE	2.4	03/85	2.4	03/85	
				PCE	1.4	03/85	1.2	03/85	
				NO3	12.4	08/87	12.4	08/87	
				CLO4	NA	NA	NA	NA	
B7C	8000068	MUNICIPAL	ACTIVE	TCE	11.3	12/93	2.8	05/09	VULNERABLE
				PCE	35.0	03/03	7.8	05/09	(NO3) (1)
				1,1-DCE	6.7	12/89	1.6	05/09	
				C-1,2-DCE	4.7	12/93	0.6	05/09	
				CTC	0.6	02/89	ND	08/09	
				NO3	28.4	08/92	10.0	08/08	
				CLO4	ND	06/97	ND	03/08	
B7D	8000094	MUNICIPAL	INACTIVE	PCE	5.3	07/87	3.5	09/87	VULNERABLE
				TCE	3.9	07/87	3.3	09/87	(VOCS)
				1,1-DCE	5.3	05/87	5.0	09/87	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
B7E	8000122	MUNICIPAL	ACTIVE	VOCS	ND	08/90	ND	08/08	
				NO3	16.0	11/08	2.9	05/09	
				CLO4	ND	06/97	ND	03/08	
B8	1901436	MUNICIPAL	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	

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HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
B9	1901437	MUNICIPAL	INACTIVE	TCE	37.0	02/85	34.7	01/87	
				PCE	4.9	01/87	4.9	01/87	
				CTC	8.3	01/87	8.3	01/87	
				NO3	84.7	02/86	68.1	02/87	
				CLO4	NA	NA	NA	NA	
B9B	8000099	MUNICIPAL	ACTIVE	VOCS	ND	06/87	ND	08/08	
				NO3	4.5	06/87	3.4	09/08	
				CLO4	1.2	03/08	1.2	03/08	
G4A	1900725	MUNICIPAL	ACTIVE	PCE	6.6	08/08	4.6	05/09	VULNERABLE
				TCE	1.3	11/97	1.1	05/09	(VOCS AND NO3)
				NO3	24.9	02/08	20.0	05/09	
				CLO4	1.0	03/08	1.0	03/08	
B24A	8000203	MUNICIPAL	ACTIVE	VOCS	ND	01/07	ND	02/09	
				NO3	2.2	01/07	ND	02/09	
				CLO4	ND	01/07	ND	08/08	
B24B	8000204	MUNICIPAL	ACTIVE	PCE	2.1	05/07	ND	02/09	
				TCE	0.7	05/07	ND	02/09	
				NO3	4.4	02/09	4.4	02/09	
				CLO4	ND	01/07	ND	08/08	
B25A (SA3-1S)	8000187	MUNICIPAL	ACTIVE	TCE	60.3	02/08	28.0	05/09	(1)
				PCE	28.0	05/08	18.0	05/09	
				CTC	5.9	10/07	1.1	05/09	
				1,2-DCA	1.4	10/07	ND	05/09	
				1,1-DCE	6.6	02/08	3.1	05/09	
				C-1,2-DCE	6.3	08/07	2.5	05/09	
				CF	1.7	10/07	1.2	05/09	
				NO3	78.0	05/09	78.0	05/09	
				CLO4	39.6	05/08	19.0	05/09	
B25B (SA3-1D)	8000188	MUNICIPAL	ACTIVE	TCE	21.0	03/09	0.8	05/09	VULNERABLE
				PCE	7.6	03/09	ND	05/09	(VOCS, NO3 AND CLO4) (1)
				CTC	10.0	09/04	ND	05/09	
				1,1-DCA	1.2	10/07	ND	05/09	
				1,1-DCE	2.6	03/09	ND	05/09	
				C-1,2-DCE	2.2	04/09	ND	05/09	
				NO3	27.0	05/09	27.0	05/09	
				CLO4	7.9	08/08	ND	05/09	
B26A (SA3-2S)	8000189	MUNICIPAL	ACTIVE	TCE	57.0	05/09	57.0	05/09	(1)
				PCE	5.7	05/09	5.7	05/09	
				CTC	2.8	05/09	2.8	05/09	
				1,1-DCA	0.8	05/09	0.8	05/09	
				1,2-DCA	4.3	11/04	3.3	05/09	
				1,1-DCE	1.0	02/09	1.0	05/09	
				C-1,2-DCE	3.3	05/06	2.7	05/09	
				CF	3.1	07/06	2.0	05/09	
				NO3	60.0	05/09	57.0	05/09	
				CLO4	87.0	07/06	58.0	05/09	
B26B (SA3-2D)	8000190	MUNICIPAL	ACTIVE	TCE	31.0	05/09	31.0	05/09	(1)
				PCE	1.0	05/09	1.0	05/09	
				CTC	16.6	02/09	16.0	05/09	
				1,2-DCA	1.0	05/09	1.0	05/09	
				CF	1.0	05/09	1.0	05/09	
				NO3	13.0	07/08	13.0	05/09	
				CLO4	23.0	04/09	23.0	05/09	
SIERRA LA VERNE COUNTRY CLUB									
01	8000124	IRRIGATION	ACTIVE	VOCS	ND	08/96	ND	10/07	
				NO3	10.5	05/99	ND	10/07	
				CLO4	ND	03/98	ND	03/98	
02	8000125	IRRIGATION	ACTIVE	MC	0.5	10/08	0.5	10/08	VULNERABLE

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WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				NO3	17.4	08/96	ND	10/08	(CLO4)
				CLO4	28.0	03/98	ND	04/98	
SLOAN RANCHES									
01	1901198	IRRIGATION	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
02	8000045	IRRIGATION	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
SONOCO PRODUCTS COMPANY									
01	1912786	INDUSTRIAL	ACTIVE	TCE	28.6	12/99	0.6	12/05	VULNERABLE
				PCE	8.5	12/99	ND	12/05	(VOCS)
				1,1-DCE	113.0	12/99	1.0	12/05	
				1,1,1-TCA	71.8	12/99	ND	12/05	
				CTC	1.2	07/96	ND	12/05	
				CF	1.4	07/04	0.6	12/05	
				NO3	72.8	12/05	72.8	12/05	
				CLO4	ND	06/98	ND	07/04	
02	1902971	INDUSTRIAL	ACTIVE	CTC	0.9	11/87	ND	12/05	VULNERABLE
				1,1,1-TCA	2.0	11/87	ND	12/05	(VOCS AND CLO4)
				1,1-DCE	5.9	02/98	1.0	12/05	
				PCE	1.8	10/03	0.6	12/05	
				TCE	16.0	10/03	1.0	12/05	
				CF	1.4	09/02	1.2	12/05	
				NO3	74.5	12/05	74.5	12/05	
				CLO4	10.0	02/98	ND	07/04	
SOUTH COVINA WATER SERVICE									
102W-1	1901606	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
SOUTHERN CALIFORNIA EDISON COMPANY									
110RH	8000046	NON-POTABLE	ACTIVE	VOCS	ND	08/89	ND	02/07	
				NO3	8.9	02/07	8.9	02/07	
				CLO4	ND	11/97	ND	11/97	
1EB86	1900342	NON-POTABLE	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
2EB76	1900343	IRRIGATION	ACTIVE	PCE	4.3	09/04	4.1	02/07	VULNERABLE
				TCE	1.3	09/04	0.7	02/07	(VOCS AND NO3)
				NO3	51.4	09/98	26.5	02/07	
				CLO4	2.0	11/97	2.0	11/97	
38EIS	1900344	NON-POTABLE	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
38W	1900344	NON-POTABLE	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
MURAT	8000047	IRRIGATION	ACTIVE	PCE	4.1	09/02	0.6	10/08	VULNERABLE
				TCE	0.9	09/02	ND	10/08	(VOCS AND NO3)
				NO3	26.9	09/04	14.0	10/08	
				CLO4	ND	04/98	ND	04/98	
SOUTH PASADENA, CITY OF									

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WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
GRAV 2	1901679	MUNICIPAL	ACTIVE	PCE	16.0	07/08	7.1	05/09	VULNERABLE (CLO4)
				CTC	0.9	07/08	0.6	05/09	
				NO3	58.2	04/87	52.0	05/09	
				CLO4	6.9	02/03	5.2	05/09	
WIL 2	1901681	MUNICIPAL	ACTIVE	PCE	23.0	01/88	9.1	03/01	VULNERABLE (CLO4)
				TCE	4.6	03/00	4.6	03/01	
				NO3	86.8	03/00	77.9	02/01	
				CLO4	5.0	07/97	ND	12/99	
WIL 3	1901682	MUNICIPAL	ACTIVE	PCE	9.5	08/94	3.1	05/09	VULNERABLE (VOCS AND NO3)
				TCE	1.4	05/09	1.4	05/09	
				NO3	66.0	01/83	26.0	05/09	
				CLO4	ND	07/97	ND	08/08	
WIL 4	1903086	MUNICIPAL	ACTIVE	PCE	8.1	06/00	2.3	05/09	VULNERABLE (VOCS AND NO3)
				TCE	2.1	05/07	1.0	05/09	
				NO3	30.0	02/03	21.0	05/09	
				CLO4	ND	07/97	ND	08/08	
SPEEDWAY 605 INC.									
NA	1902968	NON-POTABLE	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
STERLING MUTUAL WATER COMPANY									
NEW SO.	8000132	MUNICIPAL	ACTIVE	VOCS	ND	06/91	ND	08/08	
				NO3	22.0	08/08	22.0	08/08	
				CLO4	ND	10/97	ND	08/08	
NORTH	1902096	MUNICIPAL	ACTIVE	VOCS	ND	06/88	ND	08/08	VULNERABLE (NO3)
				NO3	43.4	02/07	33.0	05/09	
				CLO4	ND	09/97	ND	08/08	
SOUTH	1902085	MUNICIPAL	DESTROYED	VOCS	ND	01/85	ND	06/91	
				NO3	16.2	03/91	14.8	08/07	
				CLO4	NA	NA	NA	NA	
SUBURBAN WATER SYSTEMS									
101W-1	41901605	MUNICIPAL	DESTROYED	TCE	1.5	07/87	ND	08/89	
				NO3	54.2	08/89	54.2	08/89	
				CLO4	NA	NA	NA	NA	
102W-1	1901605	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
102W-2	1901606	MUNICIPAL	DESTROYED	TCE	2.0	01/80	ND	06/85	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
103W-1	1901607	MUNICIPAL	DESTROYED	TCE	2.5	06/80	ND	07/82	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
105W-1	1901608	MUNICIPAL	DESTROYED	PCE	1.4	01/96	1.4	01/96	
				NO3	46.2	04/95	46.2	04/95	
				CLO4	NA	NA	NA	NA	
106W-1	1901609	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
111W-1	1901610	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	82.5	03/73	82.5	03/73	
				CLO4	NA	NA	NA	NA	

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WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
112W-1	1901611	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	99.2	07/69	99.2	07/69	
				CLO4	NA	NA	NA	NA	
113W-1	1901612	MUNICIPAL	DESTROYED	TCE	0.7	02/80	0.5	03/85	
				NO3	85.0	10/85	67.8	02/88	
				CLO4	NA	NA	NA	NA	
114W-1	1901613	MUNICIPAL	INACTIVE	TCE	2.9	01/80	ND	07/95	VULNERABLE
				PCE	0.5	12/93	ND	07/95	(VOCS AND NO3)
				NO3	46.7	08/91	39.8	04/95	
				CLO4	NA	NA	NA	NA	
117W-1	1901614	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
120W-1	1901615	MUNICIPAL	DESTROYED	TCE	0.3	07/82	ND	08/96	
				NO3	66.0	07/88	60.5	08/96	
				CLO4	NA	NA	NA	NA	
121W-1	8000181	MUNICIPAL	ACTIVE	VOCS	ND	10/02	ND	05/09	VULNERABLE
				NO3	16.7	11/08	12.0	05/09	(CLO4)
				CLO4	4.7	11/08	3.9	05/09	
122W-1	1901616	MUNICIPAL	DESTROYED	TCE	2.6	08/96	2.6	08/96	
				NO3	90.0	05/86	60.7	08/96	
				CLO4	NA	NA	NA	NA	
123W-1	1901617	MUNICIPAL	DESTROYED	TCE	26.8	04/81	ND	08/96	
				PCE	33.0	04/81	ND	08/96	
				NO3	47.0	05/76	4.0	08/96	
				CLO4	NA	NA	NA	NA	
124W-1	1901618	MUNICIPAL	DESTROYED	TCE	0.5	06/83	ND	08/89	
				NO3	60.0	09/84	53.6	08/89	
				CLO4	NA	NA	NA	NA	
125W-1	1901619	MUNICIPAL	DESTROYED	VOCS	ND	01/80	ND	09/81	
				NO3	30.0	05/76	21.0	05/79	
				CLO4	NA	NA	NA	NA	
125W-2	8000087	MUNICIPAL	INACTIVE	VOCS	ND	03/83	ND	07/95	VULNERABLE
				NO3	50.0	08/87	40.6	03/95	(NO3)
				CLO4	NA	NA	NA	NA	
126W-1	1901620	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	18.0	05/75	18.0	05/75	
				CLO4	NA	NA	NA	NA	
126W-2	8000092	MUNICIPAL	INACTIVE	VOCS	ND	03/85	ND	08/00	VULNERABLE
				NO3	38.8	07/91	34.9	03/01	(NO3 AND CLO4)
				CLO4	4.8	07/97	ND	01/98	
131W-1	1901621	MUNICIPAL	DESTROYED	TCE	56.0	10/93	56.0	10/93	
				PCE	227.0	04/80	52.0	10/93	
				CTC	2.7	10/93	2.7	10/93	
				1,1-DCE	40.0	10/93	40.0	10/93	
				1,1,1-TCA	5.3	10/93	5.3	10/93	
				NO3	62.0	09/81	55.3	10/93	
				CLO4	NA	NA	NA	NA	
133W-1	1901622	MUNICIPAL	DESTROYED	TCE	0.5	07/87	ND	08/89	
				CTC	0.5	08/89	0.5	08/89	
				NO3	49.1	08/89	47.8	09/89	
				CLO4	NA	NA	NA	NA	
134W-1	1901623	MUNICIPAL	DESTROYED	TCE	56.0	10/93	56.0	10/93	

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WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				PCE	0.1	12/80	ND	10/93	
				1,1-DCE	8.6	10/93	8.6	10/93	
				1,1,1-TCA	13.2	03/83	ND	10/93	
				NO3	43.0	06/87	40.9	10/93	
				CLO4	NA	NA	NA	NA	
135W-1	1901624	MUNICIPAL	DESTROYED	TCE	0.8	03/85	0.3	05/85	
				NO3	59.0	02/86	47.5	09/86	
				CLO4	NA	NA	NA	NA	
136W-1	1901625	MUNICIPAL	DESTROYED	PCE	335.0	03/80	66.0	10/93	
				TCE	53.0	03/80	9.1	10/93	
				CTC	2.4	10/93	2.4	10/93	
				1,1-DCE	15.0	10/93	15.0	10/93	
				NO3	48.0	01/77	37.6	10/93	
				CLO4	NA	NA	NA	NA	
139W-1	1901598	MUNICIPAL	DESTROYED	TCE	34.8	06/81	ND	01/97	
				PCE	5.0	02/88	ND	01/97	
				CTC	0.8	09/80	ND	07/96	
				NO3	99.2	05/94	92.9	07/96	
				CLO4	NA	NA	NA	NA	
139W-2	1901599	MUNICIPAL	INACTIVE	TCE	18.7	09/80	ND	10/08	VULNERABLE
				PCE	12.1	03/80	ND	10/08	(VOCS)
				CTC	0.8	09/80	ND	10/08	
				CF	0.6	10/08	0.6	10/08	
				NO3	103.5	10/08	103.5	10/08	
				CLO4	34.0	10/08	34.0	10/08	
139W-4	8000069	MUNICIPAL	ACTIVE	TCE	4.7	04/97	ND	02/09	VULNERABLE
				MC	0.7	09/07	ND	02/09	(VOCS AND NO3)
				NO3	46.0	09/07	43.7	02/09	
				CLO4	12.0	12/03	9.4	02/09	
139W-5	8000095	MUNICIPAL	INACTIVE	TCE	19.0	08/01	19.0	08/01	
				PCE	10.8	05/99	0.7	08/01	
				CTC	1.0	08/01	1.0	08/01	
				1,2-DCA	1.0	02/00	ND	08/01	
				MC	2.4	09/97	ND	08/01	
				NO3	13.0	06/01	13.0	08/01	
				CLO4	2.0	09/97	ND	11/99	
139W-6	8000152	MUNICIPAL	INACTIVE	TCE	51.2	02/01	0.4	10/08	VULNERABLE
				PCE	2.8	02/01	ND	10/08	(VOCS AND NO3)
				CTC	1.9	02/01	ND	10/08	
				1,2-DCA	1.6	02/01	ND	10/08	
				NO3	42.8	10/08	42.8	10/08	
				CLO4	35.4	11/00	12.0	10/08	
140W-1	1901602	MUNICIPAL	DESTROYED	TCE	1.0	01/80	1.0	01/80	
				NO3	86.9	04/73	68.0	05/75	
				CLO4	NA	NA	NA	NA	
140W-3	1903067	MUNICIPAL	ACTIVE	TCE	13.6	03/80	ND	12/07	VULNERABLE
				PCE	1.0	06/88	ND	12/07	(VOCS, NO3, AND CLO4)
				CTC	1.0	09/81	ND	12/07	
				NO3	78.0	03/85	9.9	12/08	
				CLO4	16.0	12/05	4.5	12/08	
140W-4	8000093	MUNICIPAL	ACTIVE	TCE	7.0	01/96	1.5	11/06	VULNERABLE
				NO3	36.4	10/03	36.3	12/04	(VOCS AND NO3)
				CLO4	12.6	10/03	11.6	12/04	
140W-5	8000145	MUNICIPAL	ACTIVE	TCE	21.0	02/91	6.2	05/09	VULNERABLE
				PCE	1.0	06/07	ND	05/09	(NO3)
				NO3	30.0	03/09	20.0	05/09	
				CLO4	9.8	10/08	6.1	06/09	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
142W-1	1901597	MUNICIPAL	DESTROYED	VOCS	ND	02/80	ND	07/82	
				NO3	74.0	06/81	74.0	06/81	
				CLO4	NA	NA	NA	NA	
142W-2	8000183	MUNICIPAL	ACTIVE	VOCS	ND	03/04	ND	05/09	
				NO3	9.3	11/04	7.9	05/09	
				CLO4	2.7	03/09	ND	05/09	
147W-1	1901596	MUNICIPAL	DESTROYED	TCE	23.0	03/85	23.0	03/85	
				PCE	1.2	03/85	1.2	03/85	
				NO3	100.0	03/85	100.0	03/85	
				CLO4	NA	NA	NA	NA	
147W-2	1902760	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	54.0	09/74	54.0	09/74	
				CLO4	NA	NA	NA	NA	
147W-3	8000077	MUNICIPAL	ACTIVE	TCE	4.1	01/92	3.5	05/09	VULNERABLE
				PCE	4.4	04/89	2.7	05/09	(VOCS)
				1,1-DCE	8.9	01/89	3.3	05/09	
				1,1-DCA	4.8	05/89	ND	05/09	
				NO3	19.8	09/88	8.8	05/09	
				CLO4	2.7	04/09	2.2	05/09	
148W-1	1901604	MUNICIPAL	DESTROYED	TCE	0.8	06/80	ND	04/97	
				NO3	47.0	02/76	34.8	04/97	
				CLO4	NA	NA	NA	NA	
149W-1	1902119	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
150W-1	1902519	MUNICIPAL	DESTROYED	TCE	6.0	09/81	ND	08/93	
				NO3	53.0	03/86	13.4	08/94	
				CLO4	NA	NA	NA	NA	
151W-1	1902518	MUNICIPAL	DESTROYED	VOCS	ND	01/80	ND	03/98	
				NO3	116.0	03/98	116.0	03/98	
				CLO4	21.6	03/98	21.6	03/98	
151W-2	8000207	MUNICIPAL	ACTIVE	VOCS	ND	05/09	ND	05/09	
				NO3	4.4	04/09	4.4	05/09	
				CLO4	ND	04/09	ND	05/09	
152W-1	1900337	MUNICIPAL	DESTROYED	TCE	12.8	11/82	8.0	03/85	
				PCE	0.8	11/82	0.3	03/85	
				NO3	43.4	05/86	43.4	05/86	
				CLO4	NA	NA	NA	NA	
153W-1	1902761	MUNICIPAL	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
154W-1	1902762	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	81.0	05/79	81.0	05/79	
				CLO4	NA	NA	NA	NA	
155W-1	1902819	MUNICIPAL	INACTIVE	PCE	190.0	11/80	90.0	11/98	VULNERABLE
				TCE	50.0	07/81	24.0	11/98	(CLO4)
				CTC	19.0	02/82	ND	11/98	
				1,1-DCE	16.0	03/85	13.0	11/98	
				NO3	60.0	11/80	49.8	11/98	
				CLO4	5.4	11/98	5.4	11/98	
155W-2	1902820	MUNICIPAL	DESTROYED	PCE	190.0	09/93	76.0	11/98	
				TCE	39.0	04/80	22.0	11/98	
				1,1-DCE	21.0	09/93	11.0	11/98	
				1,1-DCA	3.0	09/93	1.4	11/98	
				C-1,2-DCE	16.0	03/85	1.8	11/98	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				NO3	49.0	11/98	49.0	11/98	
				CLO4	4.3	11/98	ND	11/98	
157W-1	1902763	MUNICIPAL	DESTROYED	TCE	12.2	02/80	ND	03/85	
				NO3	58.0	02/86	58.0	02/86	
				CLO4	NA	NA	NA	NA	
201W-1	1901429	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
201W-2	1901430	MUNICIPAL	DESTROYED	TCE	6.8	04/89	1.7	08/06	
				PCE	3.9	09/88	1.4	08/06	
				1,1-DCE	3.2	08/89	ND	08/06	
				C-1,2-DCE	6.1	02/91	4.3	08/06	
				NO3	6.8	08/94	6.3	08/06	
				CLO4	ND	08/97	ND	09/03	
201W-3	1901431	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
201W-4	1901433	MUNICIPAL	ACTIVE	TCE	6.4	09/89	ND	02/09	VULNERABLE
				PCE	4.1	09/88	ND	02/09	(VOCS)
				1,1-DCE	2.0	07/88	ND	02/09	
				C-1,2-DCE	5.2	05/97	ND	02/09	
				BF	4.7	11/07	2.2	02/09	
				DBCM	1.9	11/07	1.0	02/09	
				NO3	12.0	08/08	12.0	08/08	
				CLO4	ND	06/97	ND	08/08	
201W-5	1901432	MUNICIPAL	ACTIVE	TCE	6.4	09/89	ND	03/08	VULNERABLE
				PCE	3.8	09/89	ND	03/08	(VOCS)
				1,1-DCE	2.9	09/88	ND	03/08	
				C-1,2-DCE	4.9	08/88	ND	03/08	
				BDCM	1.7	11/07	ND	03/08	
				BF	6.4	11/07	0.6	03/08	
				DBCM	4.6	11/07	ND	03/08	
				NO3	12.0	08/94	12.0	08/07	
				CLO4	ND	06/97	ND	06/03	
201W-6	1901434	MUNICIPAL	DESTROYED	TCE	3.9	05/88	ND	09/05	VULNERABLE
				PCE	3.3	05/88	ND	09/05	(VOCS)
				1,1-DCE	3.2	09/88	ND	09/05	
				C-1,2-DCE	8.7	05/88	ND	09/05	
				NO3	20.0	06/85	7.7	05/05	
				CLO4	ND	06/97	ND	06/03	
201W-7	8000195	MUNICIPAL	ACTIVE	PCE	0.6	08/08	ND	05/09	
				C-1,2-DCE	0.9	08/08	ND	05/09	
				NO3	8.6	08/08	8.6	08/08	
				CLO4	ND	08/08	ND	08/08	
201W-8	8000198	MUNICIPAL	ACTIVE	TCE	0.5	05/07	ND	05/09	
				C-1,2-DCE	1.1	05/07	ND	05/09	
				EBZ	0.8	07/06	ND	05/09	
				NO3	7.3	09/06	3.6	11/08	
				CLO4	2.1	07/06	ND	08/08	
201W-9	8000208	MUNICIPAL	ACTIVE	VOCS	ND	11/08	ND	05/09	
				NO3	12.0	03/08	12.0	02/09	
				CLO4	ND	03/08	ND	08/08	
201W-10	NA	MUNICIPAL	ACTIVE	TCE	1.4	09/07	1.0	05/09	
				PCE	1.3	09/07	0.8	05/09	
				C-1,2-DCE	3.0	09/07	1.7	05/09	
				NO3	3.8	09/07	2.8	05/09	
				CLO4	ND	09/07	ND	05/09	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
202W-1	1901627	MUNICIPAL	DESTROYED	TCE	4.3	09/81	ND	01/89	
				PCE	15.0	10/88	12.1	01/89	
				NO3	24.0	07/87	23.0	10/88	
				CLO4	NA	NA	NA	NA	
SUNNY SLOPE WATER COMPANY									
08	1900026	MUNICIPAL	ACTIVE	VOCS	ND	01/87	ND	09/08	VULNERABLE
				NO3	24.0	09/94	18.0	06/09	(NO3)
				CLO4	ND	07/97	ND	09/08	
09	1902792	MUNICIPAL	ACTIVE	VOCS	ND	01/85	ND	12/08	VULNERABLE
				NO3	36.0	06/03	13.0	06/09	(NO3)
				CLO4	ND	07/97	ND	09/08	
10	8000048	MUNICIPAL	INACTIVE	VOCS	ND	01/85	ND	08/96	
				NO3	63.6	12/94	50.9	08/96	
				CLO4	NA	NA	NA	NA	
13	8000157	MUNICIPAL	ACTIVE	VOCS	ND	08/96	ND	09/08	
				NO3	6.5	09/08	6.5	09/08	
				CLO4	ND	07/97	ND	09/08	
TAYLOR HERB GARDEN									
NA	1902964	IRRIGATION	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
TEXACO INC.									
14	1900001	INDUSTRIAL	DESTROYED	PCE	40.0	07/01	2.8	09/03	
				TCE	5.0	05/85	ND	09/03	
				1,2-DCA	0.6	01/96	ND	09/03	
				MC	4.6	04/87	ND	09/03	
				NO3	33.0	07/01	6.4	09/03	
				CLO4	ND	09/97	ND	09/97	
THOMPSON, EARL W.									
01	1900680	DOMESTIC	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
TOMOVICH (NICK) & SON									
NA	8000037	DOMESTIC	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
TYLER NURSERY									
NA	8000049	IRRIGATION	ACTIVE	TCE	12.9	12/99	1.2	09/04	VULNERABLE
				PCE	44.6	12/99	1.2	09/04	(VOCS AND NO3)
				1,1-DCE	0.6	09/02	ND	09/04	
				1,1-DCA	0.9	09/02	ND	09/04	
				C-1,2-DCE	8.7	09/02	ND	09/04	
				NO3	31.0	09/02	ND	09/04	
				CLO4	NA	NA	NA	NA	
UNITED CONCRETE PIPE CORPORATION									
NA	8000067	INDUSTRIAL	INACTIVE	VOCS	ND	08/89	ND	10/08	
				NO3	4.3	08/89	4.3	08/89	
				CLO4	NA	NA	NA	NA	
UNITED ROCK PRODUCTS CORPORATION									
IRW-1	1900106	INDUSTRIAL	ACTIVE	VOCS	ND	08/89	ND	10/08	

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HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				NO3	6.4	07/96	2.7	10/08	
				CLO4	ND	02/98	ND	02/98	
IRW-2	1903062	INDUSTRIAL	ACTIVE	VOCS	ND	07/96	ND	11/05	
				NO3	4.5	10/04	2.6	11/05	
				CLO4	ND	02/98	ND	02/98	
SIERRA	1902532	INDUSTRIAL	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
VALENCIA HEIGHTS WATER COMPANY									
01	8000051	MUNICIPAL	ACTIVE	MC	0.7	06/89	ND	07/08	VULNERABLE
				NO3	46.5	04/99	32.6	07/07	(NO3 AND CLO4)
				CLO4	8.5	08/00	ND	05/09	
02	8000052	MUNICIPAL	ACTIVE	TCE	0.2	01/80	ND	07/08	VULNERABLE
				NO3	53.7	07/97	27.0	07/06	(NO3 AND CLO4)
				CLO4	8.0	10/98	4.2	07/08	
03A	8000055	MUNICIPAL	DESTROYED	VOCS	ND	03/85	ND	03/92	
				NO3	34.8	09/89	12.1	08/92	
				CLO4	NA	NA	NA	NA	
04	8000054	MUNICIPAL	INACTIVE	PCE	1.0	09/99	ND	09/01	
				NO3	90.0	11/97	78.0	03/02	
				CLO4	32.6	11/00	28.0	03/02	
05	8000120	MUNICIPAL	ACTIVE	VOCS	ND	06/90	ND	07/08	VULNERABLE
				NO3	34.0	12/99	24.5	07/07	(NO3 AND CLO4)
				CLO4	7.2	11/00	ND	05/09	
06	8000180	MUNICIPAL	ACTIVE	CF	13.0	12/02	ND	07/08	VULNERABLE
				NO3	49.3	06/04	42.0	10/08	(NO3)
				CLO4	8.9	01/07	6.5	05/09	
07	NA	MUNICIPAL	INACTIVE	VOCS	ND	05/08	ND	05/08	
				NO3	20.0	05/08	20.0	05/08	
				CLO4	ND	05/08	ND	05/08	
VALLEY COUNTY WATER DISTRICT									
ARROW	1900034	MUNICIPAL	INACTIVE	TCE	700.0	07/82	600.0	12/96	VULNERABLE
				PCE	980.0	12/96	980.0	12/96	(NO3) (3)
				1,1-DCE	64.0	12/96	64.0	12/96	
				C-1,2-DCE	59.0	12/96	59.0	12/96	
				CTC	14.5	09/92	8.0	12/96	
				1,2-DCA	9.0	02/92	7.3	12/96	
				1,1,1-TCA	45.0	12/96	45.0	12/96	
				1,1-DCA	2.9	02/95	2.7	12/96	
				NO3	26.4	08/96	26.4	08/96	
				CLO4	NA	NA	NA	NA	
B DALTON	1900035	MUNICIPAL	INACTIVE	TCE	137.0	04/85	7.5	09/07	
				PCE	8.0	04/85	1.0	09/07	
				1,1-DCA	0.9	05/96	ND	09/07	
				C-1,2-DCE	2.0	11/95	0.3	09/07	
				CTC	9.9	04/85	0.5	09/07	
				1,2-DCA	11.0	12/98	1.6	09/07	
				NO3	63.0	09/07	63.0	09/07	
				CLO4	99.1	12/98	20.0	09/07	
E NIXON (E JOAN)	1900032	MUNICIPAL	ACTIVE	TCE	7.0	11/08	1.9	06/09	(1)
				PCE	11.0	10/04	5.8	06/09	
				1,1-DCE	1.3	10/04	ND	06/09	
				C-1,2-DCE	1.7	10/04	0.5	06/09	
				NO3	13.6	02/05	5.5	08/08	
				CLO4	ND	05/97	ND	08/08	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
E MAINE	1900027	MUNICIPAL	ACTIVE	TCE	36.0	10/04	2.2	06/09	VULNERABLE
				PCE	110.0	10/04	4.8	06/09	(VOCS AND CLO4) (1)
				1,1-DCE	10.1	02/91	ND	06/09	
				1,2-DCA	1.4	10/04	ND	06/09	
				1,1,1-TCA	9.1	02/91	ND	06/09	
				C-1,2-DCE	13.0	06/03	ND	06/09	
				CF	1.1	10/04	ND	06/09	
				NO3	20.2	05/04	15.0	06/09	
				CLO4	7.8	10/04	1.6	03/09	
LANTE (SA1-3)	8000060	MUNICIPAL	ACTIVE	TCE	1315.0	04/98	110.0	04/09	VULNERABLE
				PCE	1200.0	11/96	300.0	04/09	(NO3) (3)
				1,1-DCE	110.0	11/96	16.0	04/09	
				C-1,2-DCE	90.0	11/96	13.0	04/09	
				T-1,2-DCE	110.0	04/85	ND	04/09	
				1,1-DCA	18.0	08/04	ND	04/09	
				1,2-DCA	12.5	01/92	ND	04/09	
				CTC	17.6	01/92	3.2	01/09	
				1,1,1-TCA	170.0	04/85	ND	04/09	
				MC	24.4	05/87	ND	04/09	
				CF	3.2	05/06	1.6	04/09	
				o-DCB	0.6	08/04	ND	12/08	
				p-DCB	3.1	08/04	ND	12/08	
				NO3	43.0	05/05	34.0	06/09	
				CLO4	94.0	04/98	13.0	04/09	
MORADA	1900029	MUNICIPAL	INACTIVE	TCE	770.0	03/80	0.7	10/08	VULNERABLE
				PCE	100.0	02/85	1.8	10/08	(VOCS)
				CTC	29.0	04/84	ND	10/08	
				1,1-DCE	2.5	04/88	ND	10/08	
				1,1-DCA	8.5	02/85	ND	10/08	
				1,2-DCA	0.7	04/88	ND	10/08	
				C-1,2-DCE	8.1	08/95	ND	10/08	
				CF	1.7	10/08	1.7	10/08	
				NO3	110.8	11/90	67.5	10/08	
				CLO4	21.0	02/04	9.2	10/08	
PADDY LN	1900031	MUNICIPAL	INACTIVE	TCE	166.0	04/94	25.0	10/08	
				PCE	42.0	11/93	2.8	10/08	
				CF	4.4	02/04	2.0	10/08	
				CTC	15.0	12/87	0.7	10/08	
				1,1-DCE	17.2	11/93	0.7	10/08	
				C-1,2-DCE	23.8	11/93	1.9	10/08	
				1,2-DCA	6.6	02/04	2.8	10/08	
				NO3	49.5	10/08	49.5	10/08	
				CLO4	154.0	02/98	60.0	10/08	
PALM	8000039	MUNICIPAL	INACTIVE	CTC	48.0	07/82	0.8	02/04	VULNERABLE
				TCE	56.0	02/04	56.0	02/04	(CLO4)
				PCE	51.0	02/04	51.0	02/04	
				CF	0.7	02/04	0.7	02/04	
				C-1,2-DCE	7.1	02/04	7.1	02/04	
				1,1,1-TCA	1.8	02/04	1.8	02/04	
				NO3	11.0	12/94	10.0	02/04	
				CLO4	5.6	02/04	5.6	02/04	
W NIXON (W JOAN)	1902356	MUNICIPAL	ACTIVE	TCE	4.0	11/04	ND	06/09	VULNERABLE
				PCE	8.0	11/04	ND	06/09	(VOCS) (1)
				MC	1.6	05/89	ND	08/08	
				NO3	8.5	02/05	3.8	08/08	
				CLO4	ND	05/97	ND	08/08	
W MAINE	1900028	MUNICIPAL	ACTIVE	TCE	47.3	02/91	3.6	06/09	VULNERABLE
				PCE	70.0	02/03	9.4	06/09	(CLO4) (1)
				1,1-DCE	14.2	02/91	0.6	06/09	
				1,2-DCA	0.8	08/04	ND	06/09	
				1,1,1-TCA	10.6	02/91	ND	06/09	
				C-1,2-DCE	9.0	02/03	0.7	06/09	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				NO3	20.8	05/90	9.8	06/09	
				CLO4	6.3	10/04	1.3	03/09	
SA1-1	8000185	MUNICIPAL	ACTIVE	TCE	34.0	07/05	4.1	01/09	(1)
				PCE	47.0	04/07	6.5	01/09	
				1,1-DCA	11.0	07/05	0.5	01/09	
				1,1-DCE	110.0	07/05	7.9	01/09	
				1,2-DCA	1.0	07/05	ND	01/09	
				C-1,2-DCE	4.1	07/05	0.6	01/09	
				1,1,1-TCA	6.0	05/06	ND	01/09	
				CF	1.6	12/04	0.5	01/09	
				MC	2.2	04/07	ND	01/09	
				NO3	87.0	01/05	78.0	02/09	
				CLO4	17.0	01/05	10.0	02/09	
SA1-2	8000186	MUNICIPAL	ACTIVE	TCE	25.0	04/06	4.3	04/09	(1)
				PCE	37.0	05/06	9.0	04/09	
				1,1-DCA	8.7	07/05	ND	04/09	
				1,1-DCE	62.0	04/06	3.6	04/09	
				1,2-DCA	1.0	07/05	ND	04/09	
				C-1,2-DCE	6.2	07/05	0.4	04/09	
				1,1,1-TCA	2.2	05/06	ND	04/09	
				CF	1.3	05/06	0.4	04/09	
				NO3	72.0	03/05	53.0	06/09	
				CLO4	15.0	03/05	11.0	04/09	
VALLEY VIEW MUTUAL WATER COMPANY									
01	1900363	MUNICIPAL	ACTIVE	VOCS	ND	06/89	ND	09/08	
				NO3	5.7	11/95	5.1	01/09	
				CLO4	ND	08/97	ND	09/08	
02	1900364	MUNICIPAL	ACTIVE	VOCS	ND	06/88	ND	09/08	
				NO3	6.9	09/94	4.4	09/08	
				CLO4	ND	08/97	ND	09/08	
03	1900365	MUNICIPAL	INACTIVE	TCE	1.3	01/80	ND	03/98	VULNERABLE
				NO3	26.9	03/98	26.9	03/98	(NO3)
				CLO4	18.6	03/98	18.6	03/98	
VIA TRUST									
01	1903012	NON-POTABLE	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
VULCAN MATERIALS COMPANY (CALMAT COMPANY)									
DUR E	1902920	INDUSTRIAL	ACTIVE	TCE	32.0	11/04	2.3	10/08	VULNERABLE
				PCE	27.0	11/04	3.8	10/08	(VOCS)
				1,1-DCE	5.3	11/04	ND	10/08	
				C-1,2-DCE	2.8	11/04	ND	10/08	
				1,1,1-TCA	0.7	11/04	ND	10/08	
				CF	0.7	11/04	ND	10/08	
				MC	1.1	10/06	ND	10/08	
				NO3	16.2	10/04	9.0	10/08	
				CLO4	ND	04/98	ND	10/08	
DUR W	8000063	INDUSTRIAL	ACTIVE	PCE	0.8	02/07	ND	10/08	VULNERABLE
				NO3	16.0	07/01	12.0	10/08	(CLO4)
				CLO4	4.0	05/98	4.0	05/98	
REL 1	1903088	INDUSTRIAL	ACTIVE	VOCS	ND	05/94	ND	10/08	
				NO3	6.5	09/02	6.4	10/08	
				CLO4	ND	05/98	ND	05/98	
WADE, RICHARD I.									
NA	8000056	DOMESTIC	INACTIVE	VOCS	NA	NA	NA	NA	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
WEST COVINA VENTURE LIMITED									
NA	1902970	NA	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
WILMOTT, ERMA M.									
01	8000006	DOMESTIC	ACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
WOODLAND, RICHARD									
01	1902949	NON-POTABLE	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
02	1902950	NON-POTABLE	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
ROSE HILLS MEMORIAL PARK (WORKMAN MILL INVESTMENT COMPANY)									
04	1902790	IRRIGATION	ACTIVE	PCE	5.3	08/87	ND	10/08	VULNERABLE
				TCE	11.0	04/85	ND	10/08	(VOCS AND NO3)
				1,1-DCE	14.0	04/85	ND	10/08	
				1,1,1-TCA	3.3	04/85	ND	10/08	
				NO3	52.8	02/07	39.0	10/08	
				CLO4	ND	06/98	ND	06/98	
01	1900132	IRRIGATION	INACTIVE	VOCS	NA	NA	NA	NA	
				NO3	NA	NA	NA	NA	
				CLO4	NA	NA	NA	NA	
02	1900095	IRRIGATION	ACTIVE	PCE	8.6	04/85	ND	10/04	VULNERABLE
				TCE	11.0	04/85	ND	10/04	(VOCS)
				NO3	91.4	10/04	91.4	10/04	
				CLO4	ND	06/98	ND	06/98	
01	1900094	IRRIGATION	ACTIVE	TCE	6.1	04/87	ND	10/08	VULNERABLE
				PCE	6.4	11/87	1.0	10/08	(VOCS AND NO3)
				1,2-DCA	0.8	01/96	ND	10/08	
				1,1-DCE	1.0	04/87	ND	10/08	
				C-1,2-DCE	2.6	05/85	ND	10/08	
				NO3	45.2	02/98	26.0	10/08	
				CLO4	ND	02/98	ND	02/98	
03	1900052	IRRIGATION	ACTIVE	TCE	21.0	05/85	ND	09/05	VULNERABLE
				PCE	7.4	05/85	ND	09/05	(VOCS AND NO3)
				1,1-DCE	2.7	05/85	ND	09/05	
				C-1,2-DCE	28.0	05/85	ND	09/05	
				1,1-DCA	1.1	05/85	ND	09/05	
				1,1,1-TCA	7.5	05/85	ND	09/05	
				NO3	46.4	08/00	25.7	09/05	
				CLO4	ND	02/98	ND	02/98	
WHITTIER, CITY OF									
09	1901745	MUNICIPAL	DESTROYED	TCE	1.4	04/85	ND	08/89	
				PCE	1.9	10/88	0.6	08/89	
				NO3	8.8	08/89	8.8	08/89	
				CLO4	NA	NA	NA	NA	
10	1901746	MUNICIPAL	DESTROYED	VOCS	NA	NA	NA	NA	
				NO3	6.6	01/74	6.6	01/74	

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
				CLO4	NA	NA	NA	NA	
11	1901747	MUNICIPAL	DESTROYED	VOCS	ND	06/87	ND	11/90	
				NO3	10.1	01/90	10.1	01/90	
				CLO4	NA	NA	NA	NA	
12	1901748	MUNICIPAL	DESTROYED	TCE	1.5	07/88	1.5	07/88	
				PCE	0.7	07/88	0.7	07/88	
				NO3	10.0	12/84	8.5	12/85	
				CLO4	NA	NA	NA	NA	
13	1901749	MUNICIPAL	ACTIVE	PCE	4.9	11/87	ND	06/09	VULNERABLE
				TCE	1.1	06/87	ND	06/09	(VOCS) (3)
				MTBE	6.4	03/02	ND	06/09	
				NO3	13.1	03/05	6.4	03/09	
				CLO4	ND	08/97	ND	09/08	
15	8000071	MUNICIPAL	ACTIVE	PCE	9.4	03/03	1.1	06/09	VULNERABLE
				TCE	0.7	09/04	ND	06/09	(VOCS) (3)
				C-1,2-DCE	2.5	12/93	ND	06/09	
				NO3	13.0	08/89	6.3	09/08	
				CLO4	ND	08/97	ND	09/08	
16	8000110	MUNICIPAL	ACTIVE	PCE	3.4	12/02	1.7	06/09	VULNERABLE
				TCE	1.4	01/97	ND	06/09	(VOCS) (3)
				C-1,2-DCE	2.5	10/96	ND	06/09	
				NO3	9.6	09/89	7.0	03/09	
				CLO4	ND	08/97	ND	09/08	
17	8000135	MUNICIPAL	ACTIVE	PCE	12.0	12/02	3.3	09/08	VULNERABLE
				TCE	2.2	05/92	0.5	09/08	(VOCS) (3)
				C-1,2-DCE	1.2	04/95	ND	09/08	
				NO3	13.0	03/03	9.1	03/08	
				CLO4	ND	08/97	ND	09/08	
18	8000136	MUNICIPAL	ACTIVE	PCE	9.2	09/08	8.2	06/09	
				TCE	2.4	11/95	1.6	06/09	
				C-1,2-DCE	0.7	10/96	ND	06/09	
				NO3	14.7	03/05	14.0	03/09	
				CLO4	ND	08/97	ND	09/08	
EW4-5	8000200	MUNICIPAL	ACTIVE	PCE	29.0	10/06	15.8	03/09	(1)
				TCE	4.1	10/06	1.7	03/09	
				NO3	16.0	12/05	13.0	12/08	
				CLO4	ND	12/05	ND	12/08	
EW4-6	8000201	MUNICIPAL	ACTIVE	PCE	8.1	06/06	0.3	03/09	VULNERABLE
				TCE	1.1	10/06	ND	03/09	(VOCS) (1)
				NO3	15.0	11/06	11.0	12/08	
				CLO4	ND	05/06	ND	12/08	
EW4-7	8000202	MUNICIPAL	ACTIVE	PCE	8.2	01/06	3.4	03/09	VULNERABLE
				TCE	1.8	02/06	0.3	03/09	(VOCS) (1)
				NO3	18.0	01/06	11.0	12/08	
				CLO4	ND	12/05	ND	12/08	

NOTES

ABBREVIATION	CONTAMINANT	MAXIMUM CONTAMINANT LEVEL	METHOD DETECTION LIMIT	REMARKS	
1,1-DCA	1,1-Dichloroethane	5 micrograms per liter (ug/L)	0.5 ug/L	(1)	Existing VOC treatment
1,1-DCE	1,1-Dichloroethylene	6 ug/L	0.5 ug/L	(2)	VOC treatment under construction
1,1,1-TCA	1,1,1-Trichloroethane	200 ug/L	0.5 ug/L	(3)	VOC treatment proposed.
1,1,2,2-PCA	1,1,2,2-Tetrachloroethane	1 ug/L	0.5 ug/L	(4)	Existing CLO4 treatment
1,2-DCA	1,2-Dichloroethane	0.5 ug/L	0.5 ug/L	NA	Not Available
BDCM	Bromodichloromethane	NA	0.5 ug/L	ND	Not Detected
BF	Bromoform	NA	0.5 ug/L	NL	Notification Level
CF	Chloroform	100 ug/L	0.5 ug/L	VOCS	Volatile Organic Compounds
CLO4	Perchlorate	6 ug/L	3.0 ug/L		

APPENDIX C

HIGHLIGHTS OF VOLATILE ORGANIC COMPOUNDS, NITRATE, AND PERCHLORATE CONCENTRATIONS AND WELLS VULNERABLE TO CONTAMINATION (AS OF JUNE 30, 2009)

WELL NAME	RECORDATION NUMBER	USAGE	STATUS	CONCENTRATION (NO3 IN MG/L, OTHERS IN UG/L)					REMARKS
				CONTAMINANT OF CONCERN	HISTORIC HIGH		MOST RECENT		
					VALUE	DATE	VALUE	DATE	
	CTC	Carbon Tetrachloride		0.5 ug/L		0.5 ug/L			
	C-1,2-DCE	Cis-1,2-Dichloroethylene		6 ug/L		0.5 ug/L			
	DBCM	Dibromochloromethane		NA		0.5 ug/L			
	EBZ	Ethylbenzene		300 ug/L		0.5 ug/L			
	FREON 11	Trichlorofluoromethane		150 ug/L		5.0 ug/L			
	FREON 113	Trichlorotrifluoroethane		1200 ug/L		10.0 ug/L			
	MC	Methylene Chloride		5 ug/L		0.5 ug/L			
	MTBE	Methyl Tert-Butyl Ether		5 ug/L		1.0 ug/L			
	NO3	Nitrate as Nitrate		45 milligrams per liter (mg/L)		2.0 mg/L			
	o-DCB	1,2-Dichlorobenzene		600 ug/L		0.5 ug/L			
	p-DCB	1,4-Dichlorobenzene		5 ug/L		0.5 ug/L			
	PCE	Tetrachloroethylene		5 ug/L		0.5 ug/L			
	TCE	Trichloroethylene		5 ug/L		0.5 ug/L			
	T-1,2-DCE	Trans-1,2-Dichloroethylene		10 ug/L		0.5 ug/L			
	VC	Vinyl Chloride		0.5 ug/L		0.5 ug/L			

APPENDIX D.

POTENTIAL SITES FOR AQUIFER PERFORMANCE TESTS

APPENDIX D

POTENTIAL SITES FOR AQUIFER PERFORMANCE TESTS

NAME	RECORD.	USAGE	STATUS	PERFO. (1)	FUNCTION	REMARKS
ALHAMBRA, CITY OF						
LON 1	1902789	MUNICIPAL	ACTIVE	411-800	MONITORING	
LON 2	1900017	MUNICIPAL	ACTIVE	296-563	PUMPING	
AZUSA, CITY OF						
NO. 11	8000178	MUNICIPAL	ACTIVE	200-320	PUMPING	
NO. 12	8000179	MUNICIPAL	ACTIVE	206-311	MONITORING	
CALIFORNIA DOMESTIC WATER COMPANY						
05A	8000100	MUNICIPAL	ACTIVE	?-920	PUMPING	
06	1902967	MUNICIPAL	ACTIVE	200-800	MONITORING	
CHAMPION MUTUAL WATER COMPANY						
01	1900908	MUNICIPAL	INACTIVE	100-130	MONITORING	
02	1902816	MUNICIPAL	ACTIVE	152-265	PUMPING	
03	8000121	MUNICIPAL	ACTIVE	107-299	MONITORING	
VULCAN MATERIALS COMPANY (CALMAT COMPANY						
DUR E	1902920	INDUSTRIAL	ACTIVE	238-484	PUMPING	
DUR W	8000063	INDUSTRIAL	ACTIVE	?-525	MONITORING	
GLENDORA, CITY OF						
05-E	8000149	MUNICIPAL	ACTIVE	150-400	PUMPING	
NA	1903119	INDUSTRIAL	ACTIVE	?-220	MONITORING	OWL ROCK PRODUCTS WELL
MONTEREY PARK, CITY OF						
15	8000196	MUNICIPAL	ACTIVE	200-425	PUMPING	
04	1902664	IRRIGATION	ACTIVE	260-752	MONITORING	LAC DEPARTMENT OF PUBLIC WORKS
06	1902666	IRRIGATION	ACTIVE	226-475	MONITORING	LAC DEPARTMENT OF PUBLIC WORKS
WORKMAN MILL INVESTMENT COMPANY (ROSE HILLS MEMORIAL PARK)						
-	1900094	IRRIGATION	ACTIVE	137-264	PUMPING	
-	8000004	MUNICIPAL	INACTIVE	?-200	MONITORING	BEVERLY ACRES MWC
RURBAN HOMES MUTUAL WATER COMPANY						
NORTH 1	1900120	MUNICIPAL	ACTIVE	140-190	MONITORING	
SOUTH 2	1900121	MUNICIPAL	ACTIVE	125-165	PUMPING	
SAN GABRIEL COUNTY WATER DISTRICT						
05 BRA	1901669	MUNICIPAL	ACTIVE	450-800	MONITORING	
11	8000067	MUNICIPAL	ACTIVE	350-800	PUMPING	
12	8000123	MUNICIPAL	ACTIVE	470-1320	MONITORING	
SAN GABRIEL VALLEY WATER COMPANY						
B24A	8000203	MUNICIPAL	ACTIVE	600-1150	PUMPING	
B24B	8000204	MUNICIPAL	ACTIVE	600-1150	MONITORING	

APPENDIX D

POTENTIAL SITES FOR AQUIFER PERFORMANCE TESTS

NAME	RECORD.	USAGE	STATUS	PERFO. (1)	FUNCTION	REMARKS
GOLDEN STATE WATER COMPANY (SOUTHERN CALIFORNIA WATER COMPANY)/SAN GABRIEL VALLEY DISTRIC						
FAR 1	1902034	MUNICIPAL	ACTIVE	274-455	PUMPING	
FAR 2	1902948	MUNICIPAL	ACTIVE	229-600	MONITORING	
GAR 1	1900513	MUNICIPAL	ACTIVE	?-424	MONITORING	ALTERNATE FOR MONTEREY PARK SITE
GAR 2	1900512	MUNICIPAL	ACTIVE	377-404	PUMPING	
GRA 1	1902030	MUNICIPAL	STANDBY	NA	PUMPING	
GRA 2	1902461	MUNICIPAL	STANDBY	400-475	MONITORING	
SG 1	1900510	MUNICIPAL	ACTIVE	190-411	MONITORING	
SG 2	1900511	MUNICIPAL	ACTIVE	209-393	PUMPING	
GOLDEN STATE WATER COMPANY (SOUTHERN CALIFORNIA WATER COMPANY)/SAN DIMAS DISTRIC						
COL-4	1902268	MUNICIPAL	ACTIVE	122-190	PUMPING	
COL-6	1902270	MUNICIPAL	ACTIVE	?-414	MONITORING	
SUBURBAN WATER SYSTEMS						
201W-9	8000208	MUNICIPAL	ACTIVE	260-650	PUMPING	
201W-7	8000195	MUNICIPAL	ACTIVE	200-650	MONITORING	
201W-8	8000198	MUNICIPAL	ACTIVE	200-650	MONITORING	
201W-10	NA	MUNICIPAL	NA	NA	MONITORING	
VALENCIA HEIGHTS WATER COMPANY						
05	8000120	MUNICIPAL	ACTIVE	230-720	PUMPING	
07	NA	MUNICIPAL	ACTIVE	244-724	MONITORING	
VALLEY COUNTY WATER DISTRICT						
E NIXON (JOAN)	1900032	MUNICIPAL	ACTIVE	300-586	MONITORING	ALTERNATE FOR MAINE SITE
W NIXON (JOAN)	1902356	MUNICIPAL	ACTIVE	300-584	PUMPING	
E MAINE	1900027	MUNICIPAL	ACTIVE	250-580	PUMPING	ALTERNATE FOR NIXON SITE
W MAINE	1900028	MUNICIPAL	ACTIVE	250-580	MONITORING	
VALLEY VIEW MUTUAL WATER COMPANY						
01	1900363	MUNICIPAL	ACTIVE	300-585	MONITORING	
02	1900364	MUNICIPAL	ACTIVE	300-535	PUMPING	
03	1900365	MUNICIPAL	INACTIVE	100-200	MONITORING	

NOTES

NA NOT AVAILABLE

(1) TOP OF THE TOP INTERVAL - BOTTOM OF THE BOTTOM INTERVAL (DEPTH BELOW GROUND SURFACE IN FEET)

APPENDIX E.

SUMMARY OF TREATMENT FACILITY ACTIVITY IN THE MAIN SAN GABRIEL BASIN

SUMMARY OF TREATMENT FACILITY ACTIVITY
IN THE MAIN SAN GABRIEL BASIN
AS OF JUNE 30, 2009

Operable Unit	Treatment Facility Owner	Treatment Facility(s)	Start Date 1/	Total Water Treated: Fiscal Year 2008-09 (Acre-feet)	Total Water Treated: Accum. Total (Acre-feet)	Total Contaminants Removed: Fiscal Year 2008-09 (Pounds)	Total Contaminants Removed: Accum. Total (Pounds)
AREA 3							
	ALHAMBRA, CITY OF	Well No. 7	July 2001	859.00	7,092.35	12.4	125.0
		Well No. 7, 8, 11 & 12	April 2009	12.00	12.00	0.8	0.8
BPOU							
	LA PUENTE VALLEY COUNTY WATER DISTRICT	Well No. 2, 3 & 4	August 1992	—	11,493.13	—	826.9
		Well No. 2 & 3 (BPOU)	January 2000	3,795.32	27,634.85	734.0	7,053.7
	SAN GABRIEL VALLEY WATER COMPANY	Well B6C	April 1994	—	5,194.17	—	856.2
		Well B6D	April 1994	—	14,526.27	—	421.7
		Plant B6 (BPOU)	September 2004	8,149.12	40,400.02	1,852.2	7,864.0
		Plant B5 (BPOU)	January 2007	9,428.36	18,694.61	204.5	459.5
	VALLEY COUNTY WATER DISTRICT	Lante	June 1984	—	7,719.61	—	10,356.7
		Lante, SA1-1 & SA1-2 (BPOU)	December 2004	8,088.89	25,540.27	5,934.0	14,098.2
EMOU							
	ADAMS RANCH MUTUAL WATER COMPANY	Well No. 3	November 2003	66.59	442.59	1.4	16.4
	GOLDEN STATE WATER COMPANY (SGV)	Encinita No. 1, 2 & 3	April 1998	1,155.39	12,423.91	27.8	311.2
PVOU							
	BDP - CARRIER	Carrier	April 1988	228.57	5,817.01	19.9	2,750.6
SEMOU							
	MONTEREY PARK, CITY OF	Well No. 5	September 1999	1,890.34	10,051.09	182.4	719.3
		Well No. 9 & 12, 15	April 2002	4,742.26	27,206.15	859.2	3,510.4
	SAN GABRIEL VALLEY WATER COMPANY	Well 8B, 8C, 8D & 8E	August 2002	2,148.31	22,535.47	291.6	2,006.8
WNOU							
	EPA	WNOU (Shallow Zone)	December 1999	2,073.82	23,119.47	11.8	1,610.1
	WHITTIER, CITY OF	WNOU (Intermediate Zone)	December 2005	2,325.57	16,538.91	77.1	749.7
PRODUCER FACILITY							
	ARCADIA, CITY OF	Longden 1 & 2	January 1985	778.89	62,657.80	11.4	696.3
	BOZUNG	Well B36, F38, F39 & BC34 2/	October 1994	—	233.00	—	131.3
	CALIFORNIA DOMESTIC WATER COMPANY	Well No. 3, Well No. 5A, Well No. 6 & Well No. 14	September 1993 April 1997	14,895.72	223,945.22	1,084.3	6,360.5
	EL MONTE, CITY OF	Well No. 12	February 1997	739.81	12,392.75	87.4	650.7
		Well No. 10	May 2004	454.79	3,356.07	2.9	27.8
		Well No. 2A	July 1999	383.59	5,161.07	5.0	94.2
	EPA	Richwood (North Well) 3/	April 1990	—	451.98	—	5.8
		Richwood (South Well) 3/	April 1990				
	GOLDEN STATE WATER COMPANY (SGV)	San Gabriel No.1 & 2	November 2001	1,357.30	6,663.09	31.1	289.0
	GOLDEN STATE WATER COMPANY (SD)	Art 2 & 3, Base 3 & 4, Hwy 1	May 2005	1,479.60	6,875.05	23.2	62.2
	HEMLOCK MUTUAL WATER COMPANY	Hemlock (North Well) 4/	April 1986	—	2,553.65	—	44.6
		Hemlock (South Well) 4/	April 1986				
	MONROVIA, CITY OF	Wells No. 2 & 6	March 1996	2,449.06	28,860.12	58.0	481.6
		Wells No. 3, 4 & 5	October 2007	1,043.51	1,537.45	9.5	13.9
	MONTEREY PARK, CITY OF	Well No. 1, 3 & 10	June 2004	2,404.23	13,506.89	131.8	1,152.5
	SAN GABRIEL VALLEY WATER COMPANY	Well 11B	March 1991	1,620.25	37,725.65	5.9	300.1
		Well B11B	March 1993	1,459.53	34,869.38	93.2	2,546.5
		Well B7C	March 1993	2,326.70	39,448.91	83.7	1,501.7
		Well B4B & B4C	January 1999	—	24,093.04	—	1,233.5
		Well G4A	December 2005	451.60	2,707.72	5.8	46.1
	SUBURBAN WATER SYSTEMS	Well No. 140W-4 4/	May 2001	—	2,247.59	—	16.2
	VALLEY COUNTY WATER DISTRICT	Maine East & West	June 1990	3,042.66	29,129.30	46.0	1,644.5
		Nixon East & West 4/	January 2004	—	11,307.90	—	87.0
	WATER QUALITY AUTHORITY	Arrow (Project No. 1) 4/	February 1992	—	7,250.41	—	17,423.0
		Big Dalton (Project No. 2)	March 1997	—	1,229.02	—	82.5
		Former Bozung Site	January 2008	36.46	56.69	26.9	44.8
		SEMOU	July 1999	—	3,885.19	—	1,558.5
			TOTAL	79,887.24	838,586.82	11,915.20	90,231.99

Footnotes:
1/ From date of beginning of operation.
2/ Treatment facility has been permanently dismantled.
3/ Wells destroyed in June 1999.
4/ Wellfield no longer pumps to treatment facility.

APPENDIX F.

MAPS SHOWING WELLS VULNERABLE TO VOC, NITRATE AND PERCHLORATE CONTAMINATION WITHIN FIVE YEARS (FIGURES 8A, 8B, AND 8C)

Figure 8(a)

1 of 3

STETSON ENGINEERS INC.

861 VILLAGE OAKS DRIVE, SUITE 100
COVINA, CALIFORNIA 91724
TEL: (626) 967-6202
FAX: (626) 331-7065

2171 E Francisco Blvd., Suite K
San Rafael California 94901

2651 W Guadalupe Rd., Suite A209
Mesa Arizona 85202

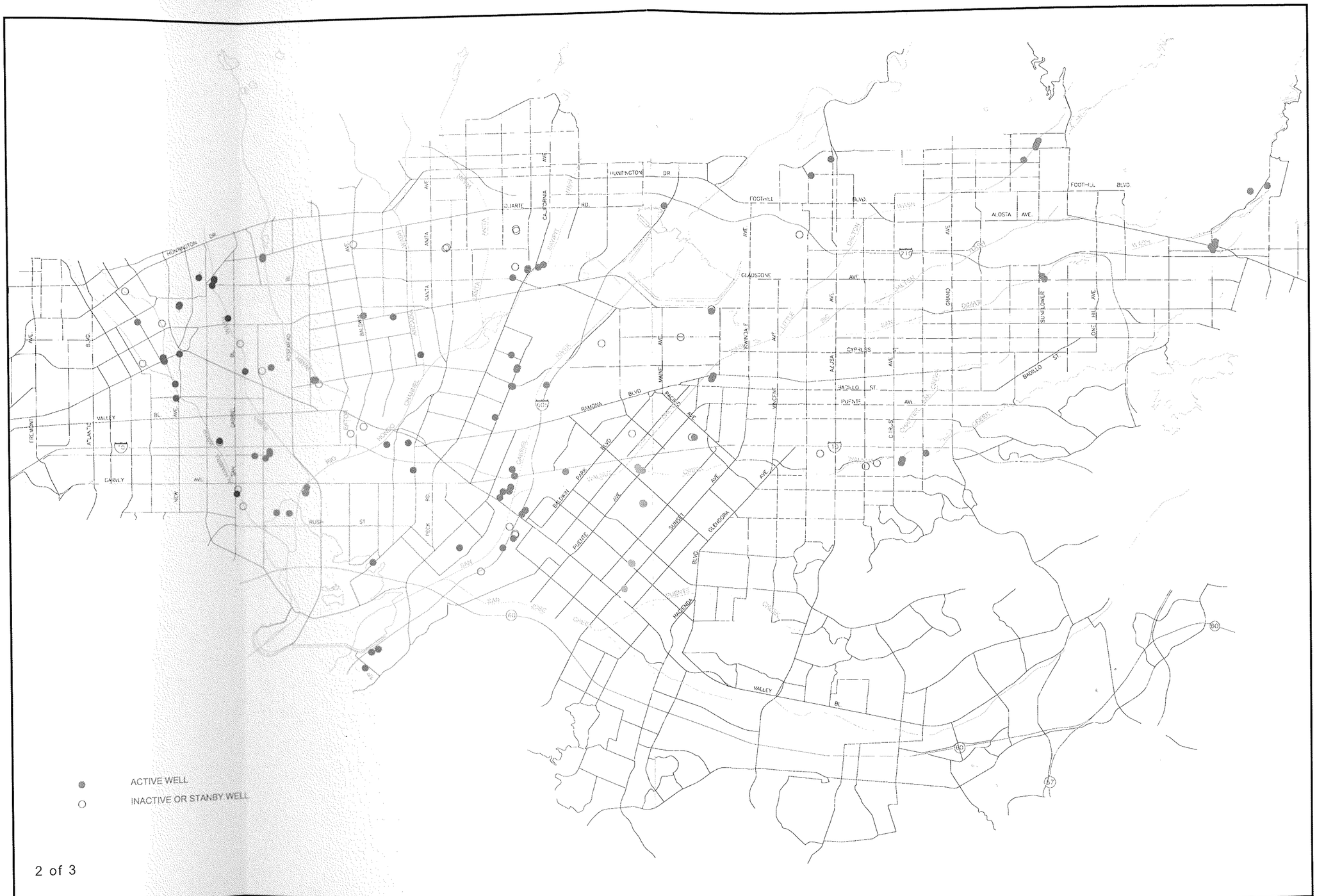
APPROXIMATE SCALE
6,000' 0 6,000'

MAIN SAN GABRIEL BASIN WATERMASTER

WELLS VULNERABLE TO VOLATILE ORGANIC COMPOUNDS CONTAMINATION WITHIN THE NEXT FIVE YEARS (2009-14)

Main San Gabriel Basin WATERMASTER

Figure 8(b)



2 of 3

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Mesa Arizona 85202

APPROXIMATE SCALE
6,000' 0 6,000'

MAIN SAN GABRIEL BASIN WATERMASTER

WELLS VULNERABLE TO NITRATE CONTAMINATION
WITHIN THE NEXT FIVE YEARS (2009-14)

Main San Gabriel Basin WATERMASTER

Figure 8(c)

3 of 3

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MAIN SAN GABRIEL BASIN WATERMASTER

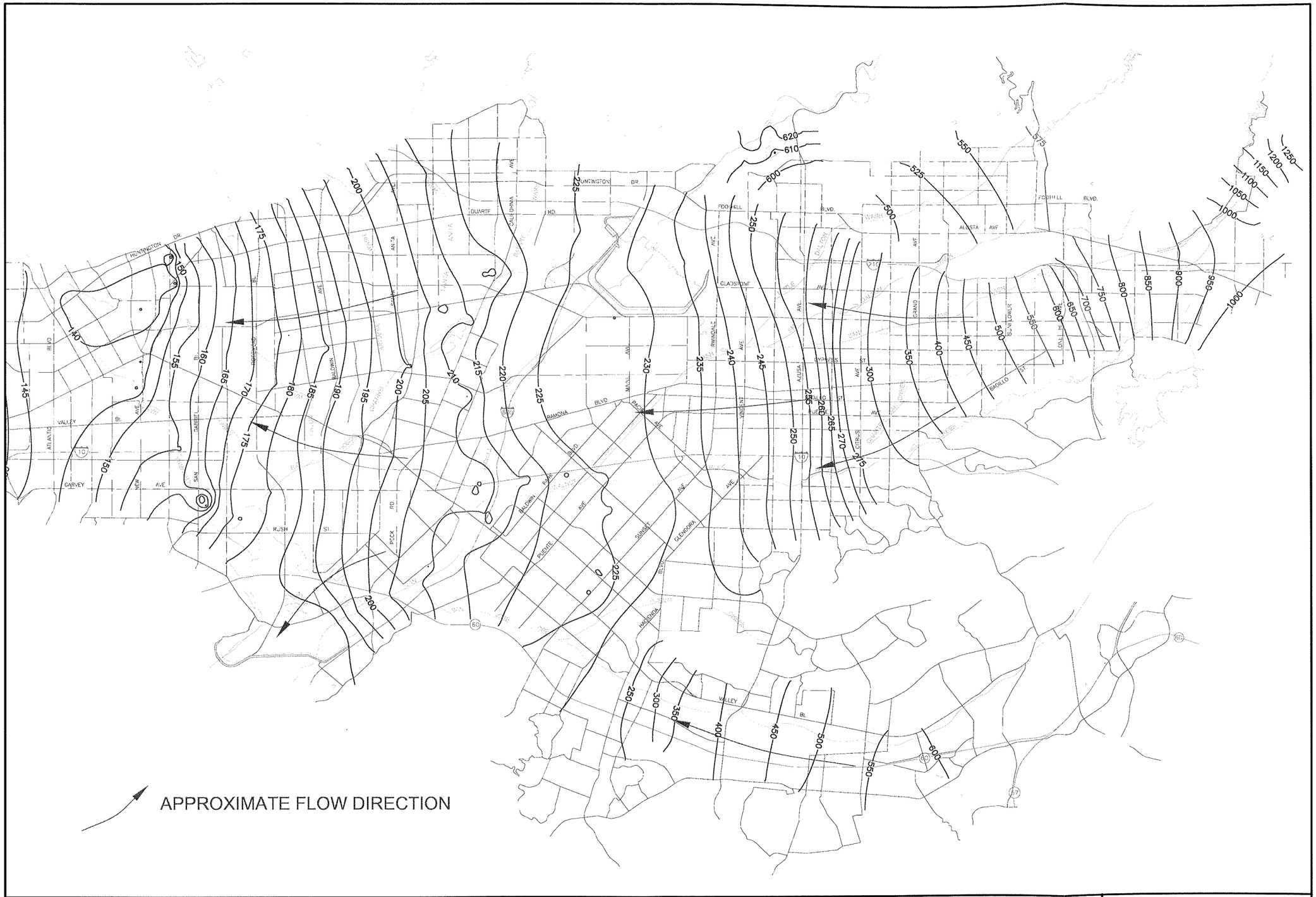
WELLS VULNERABLE TO PERCHLORATE CONTAMINATION
WITHIN THE NEXT FIVE YEARS (2009-14)

Main San Gabriel Basin WATERMASTER

APPENDIX G.

SIMULATED BASIN GROUNDWATER CONTOURS 2008-09 AND 2013-14 (FIGURES 9 AND 10)

Figure 9



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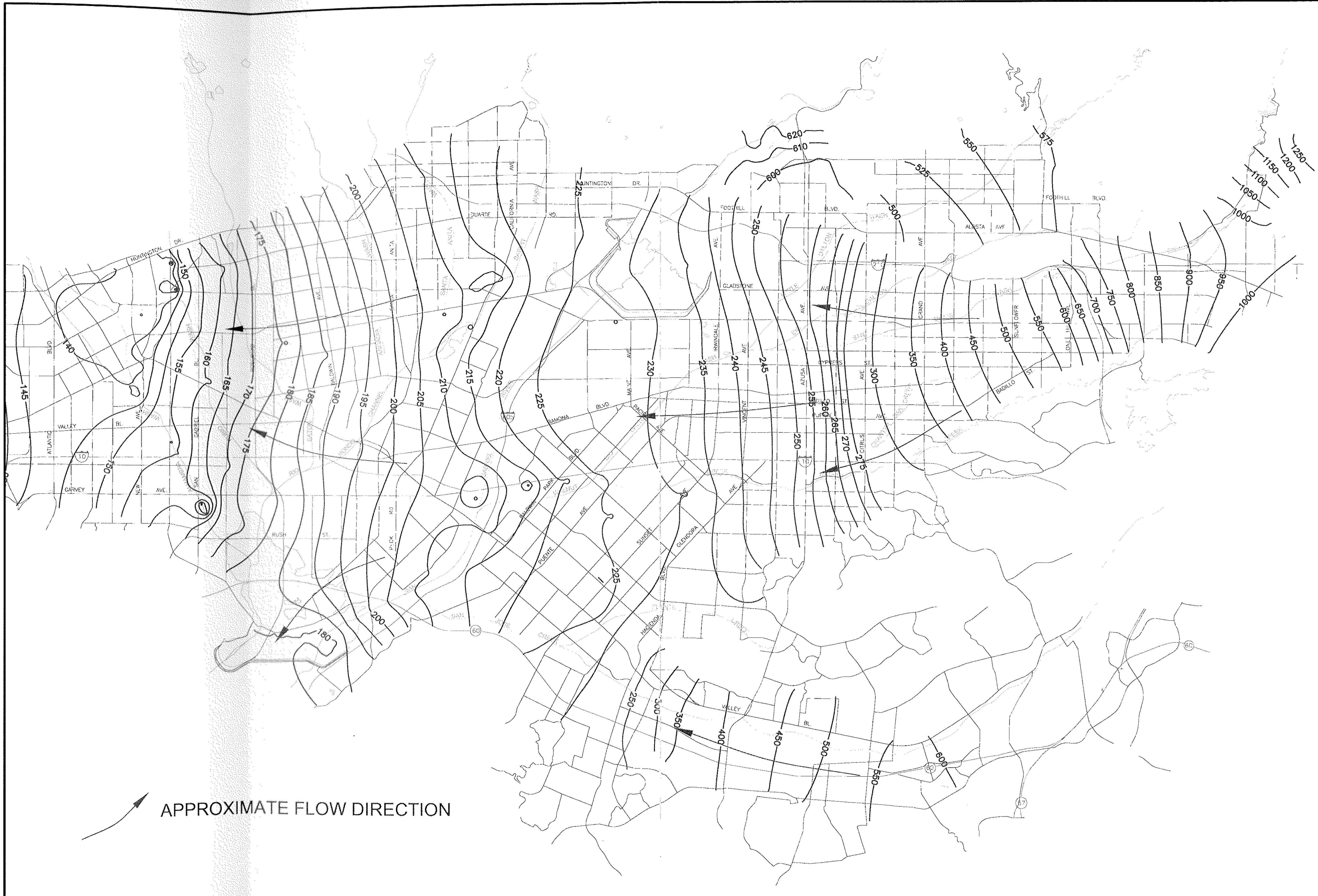
6,000' 0 6,000'

MAIN SAN GABRIEL BASIN WATERMASTER

SIMULATED 2008-09 BASIN GROUNDWATER CONTOURS

MainSanGabrielBasin WATERMASTER

Figure 10



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STETSON ENGINEERS INC.

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6,000' 0 6,000'

MAIN SAN GABRIEL BASIN WATERMASTER

SIMULATED 2013-14 BASIN GROUNDWATER CONTOURS

MainSanGabrielBasin WATERMASTER

APPENDIX G

PUBLIC INFORMATION/
SCHOOL EDUCATION PROGRAMS

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LA Rainfall : ?
Since July 1: 13.37" (135% of normal)

California Snow Levels: ?
99% of normal /81% of peak

California Reservoir Levels: ?
73% of average /52% of capacity

Watering Index: 32% ?

Key Well Elevation Chart

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EXHIBIT DISPLAY AND GUEST SPEAKERS

The Water District is pleased to provide speakers or information to help make your community or work-related meeting a success. Board members, district staff and technical or public information consultants are available to speak on a variety of water-related topics. In addition, the District recently redesigned its portable exhibit display which may be used at community, employer, school and youth events.

Please call the District at (626) 969-9611 if you would be interested in discussing how we might assist your water-related or educational events.

Display details

Display dimensions

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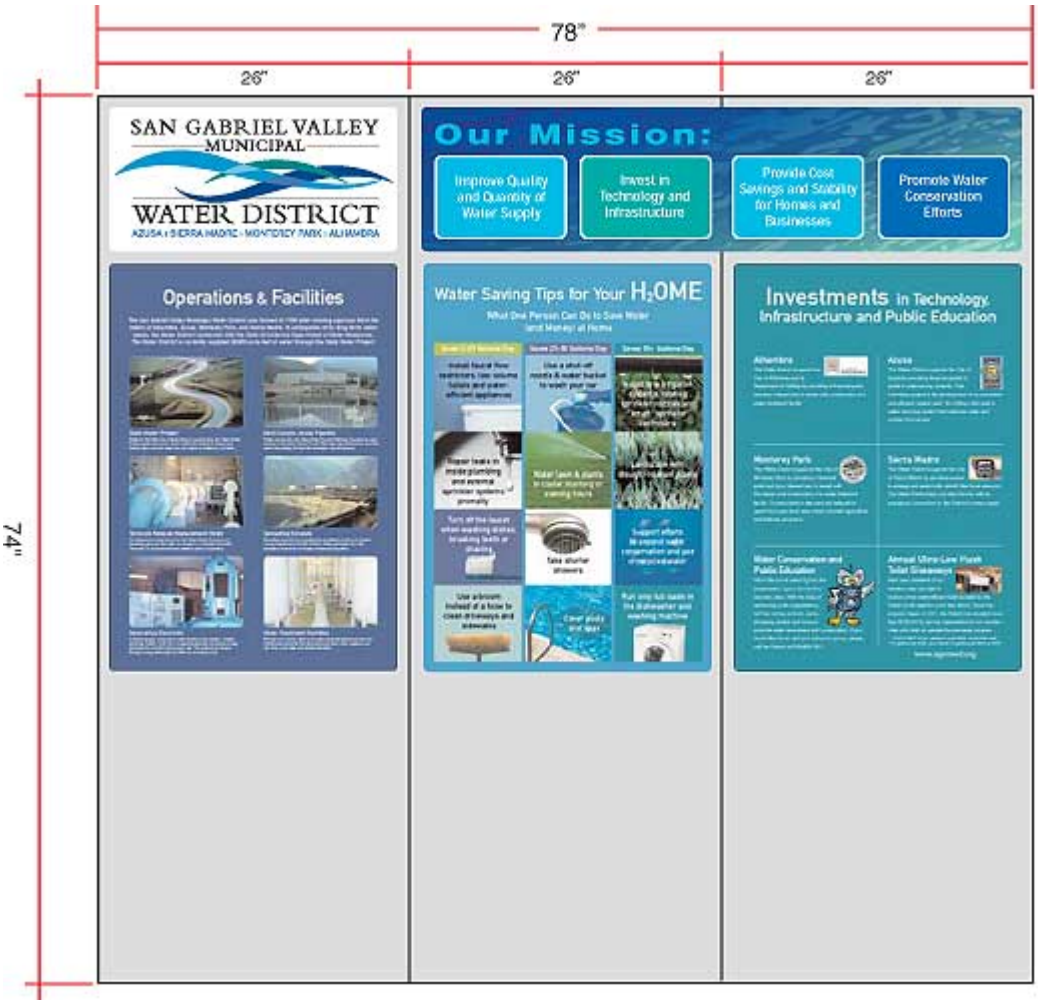
78"
26"
26"
26"
74"
SAN GABRIEL VALLEY
MUNICIPAL
WATER DISTRICT
AZUSA • SIERRA MADRE • MONTEREY PARK • ALHAMBRA
Our Mission:
Improve Quality and Quantity of Water Supply
Invest in Technology and Infrastructure
Provide Cost Savings and Stability for Homes and Businesses
Promote Water Conservation Efforts
Operations & Facilities
Water Saving Tips for Your H2OME
What One Person Can Do to Save Water and Money at Home
Investments in Technology, Infrastructure and Public Education

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WATER-WISE PLANTS AND VEGETATION

On average, most families use about 500 gallons of water per day, and over 30% is used to water their yards and gardens. By using some water-wise gardening ideas, you can reduce your water usage by 50% or more while keeping your yards and gardens green and healthy. These tips include:

- Follow the land by watching where rain runs after it falls onto your yard. The contours of the yard can be changed to catch rainwater, and speed or slow its flow, holding it in the ground for use by plants
- Give plants only as much water as they need. Use efficient watering methods such as drip systems and soaker hoses that apply water closer to the plant roots. Keep in mind that plants adapted to dry summers need less water a few years after planting
- Add compost or mulch to the soil. Compost helps the soil hold water and adds nutrients needed for plant growth. Mulch prevents the soil from overheating and drying out, as well as reduces weeds and slows erosion. Use 2"-4" underneath plants and shrubs.
- Tend patiently and keep in mind that plants will grow
- Gather rainwater in buckets and save it for later use
- Prune naturally by not forcing plants to grow into unnatural shapes
- Layer plants to make shade and use species that are native to our area
- Observe the natural shade and sun of your yard and plan your garden accordingly

The Water District is presently working with its member cities to develop pilot or demonstration programs that emphasize water-wise landscaping and water-efficient gardening equipment and techniques. As these projects get finalized and produce results, we look forward to sharing more information with you.

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WATER SAVING TIPS FOR H_2OME

We've researched dozens of ways you can save water around the home and reprinted those that are most relevant to people living in Southern California. Please feel free to download the attached water saving tips and share them with family and friends.

Please continue to check this site (see "Links"), as well as your local newspapers and city web site, for other announcements about water saving pilot or demonstration programs. If you have ideas about how to save water that you'd like to share with others, please either email your comments to **feedback@sgvmwd.org** or call us at 626-969-7911.

Water Saving Tips for a H_2OME

What One Person Can Do to Save Water (and Money) at Home.

Available in three languages as Adobe PDF files.

English
Spanish
Chinese

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WAVER SAVING TIPS FOR BUSINESS

We've researched dozens of ways you can save water at your place of employment and reprinted those that are most relevant to people living and working in Southern California. Please feel free to download the attached water saving tips and share them with family and friends.

Please continue to check this site (see "Links"), as well as your local newspapers and city web site, for other announcements about water saving pilot or demonstration programs. If you have ideas about how to save water that you'd like to share with others, please either email your comments to **feedback@sgvmwd.org** or call us at 626-969-7911.

Water Saving Tips for Businesses

Whatever the size of your company, whatever your job, one person can make a big difference. These tips save 25-50 gallons of water a day, but can save hundreds or thousands of gallons (and dollars) if all employees work together.

Available in three languages as Adobe PDF files.

English
Spanish
Chinese

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WATER RECYCLING

The Water District is working in partnership with the Upper San Gabriel Valley Municipal Water District and the Los Angeles County Sanitation Districts (LACSAN) to demonstrate the use of recycled water for groundwater recharge to increase the reliability of our supply. Recycled water is currently used by the San Gabriel Valley Water Company, which sells the recycled water to various customers for landscape irrigation.

We also are working in partnership with Central Basin on a potential Monterey Park and Alhambra connection for recycled water for park and landscape irrigation.

Purple pipes indicate recycled water

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WEEKLY WATER INDEX

The Watering Index is a scientifically based guide to help people adjust watering schedules for landscape irrigation controllers (also commonly known as "timers") that include a water budget adjustment feature. This feature - either a button or a dial - permits the watering run times for all electric valves managed by a controller to be increased or decreased with just one adjustment. The Watering Index represents the recommended percentage setting for the watering adjustment feature. The index is normally 100 percent for much of July and August. Over the course of the year the index changes to reflect the landscape's changing need for water as climatic conditions change. As new Watering Index values are published weekly, the controller's percentage adjust feature should be changed to match the current index value.

MORE INFORMATION

Note: the Watering Index does not provide watering times for each electric valve or station. Instead, it simply specifies a value that the percentage adjust feature should be set at. The watering times will automatically change across the board when the percentage adjust setting is changed.

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SCHOOL AND YOUTH PROGRAMS

The Water District is planning new outreach and education programs targeted at schools in member cities for Spring 2009. We're working with member cities, boards of education and local school staff to deliver important water-saving information in early 2009 as heavy water consumption months approach.

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INTRODUCTION

Saving water at home.

The San Gabriel Valley Municipal Water District believes in all forms of water conservation for both environmental and economic reasons. Water conservation is, in fact, the most inexpensive source of water that we have. Simply stated, a gallon of water saved, is a gallon of water that we as individuals, or as society, do not need to import or create.

Water Conservation means different things to different people. For some, it means equipment or processes, such as water timers or water-efficient appliances. For others, it means human behavior, such as the length of our showers, whether we install water efficient appliances, if we leave the faucet running while we brush our teeth, or if we use a hose, rather than a broom, to clean our driveways.

The Water District supports water conservation in a big way. We believe in public education and we help residents, businesses and government agencies in our member cities acquire water-efficient technology and equipment. We also partner with our member cities to provide funding and technical assistance for infrastructure programs and public education.

We support the Ultra Low Flush Toilet Program, and are investigating potential rebate programs that would further assist residents and businesses. Finally, we have a number of pilot or demonstration programs for water conservation planned and look forward to sharing the results of those efforts with you shortly

Items in the section include:

- Why Conserve?
- Water Saving Tips for H2ome
- Water Saving Tips for Business
- Water-wise plants and vegetation
- Rebates

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Video Pipeline

Saving water at home.

Darin Kasamoto on the Mission of the SGVMWD.

Joseph C. Reichenberger on the genesis of the District.

The history of the District at a glance..

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REBATES

The Water District supports the Ultra Low Flush Toilet Program (ULFT) in each of its member cities and is investigating potential rebate programs that would further assist residents and businesses.

Since 2001, the ULFT program has enabled member cities to make water efficient toilets available for free to residents ($200 retail value). Each April, more than 1,000 toilets which reduce water usage by 75% are given away with the help of local youth and school organizations. The Water District has now donated more than $125,000 to these fine youth/service organizations for their help in administering the program:

Sierra Madre Youth Activities
Gladstone High School
Azusa High School
Athletic teams from Mark Keppel High School and Alhambra High School

To learn more about an extensive rebate program that is offered in other parts of Southern California (not necessarily within the San Gabriel Valley Municipal Water District's service area), please visit the water conservation web site of the Metropolitan Water District of Southern California (www.bewaterwise.com).

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GENERAL WATER-RELATED NEWS ARTICLES MOST RECENT STORIES FIRST

This section references interesting or relevant water-related news from local, state-wide and national sources.

January 2010

JANUARY 25, 2010
Los Angeles Times
Is California's drought ending? It's too soon to say
Last week's storms had a healthy effect on the state's snowpack, but reservoir levels are still below normal. Forecasters disagree on the strength of El Niño conditions.

JANUARY 23, 2010
Los Angeles Times
Water conservation? The sky's the limit.
Setting up a home rain-catching system is easier than you might think.

JANUARY 11, 2010
Los Angeles Times
Gardening with the California natives
Ongoing drought underscores the reality that water-guzzling non-indigenous plants just don't belong here.

November 2009

NOVEMBER 24, 2009
Los Angeles Times
Conservation is seen as key to dealing with state's water woes
Rebates and low-flow fixtures are helping. Now comes the tough part: individual sacrifice

NOVEMBER 16, 2009
Los Angeles Time
Water still divides the state
California's biggest statewide problem is -- and always has been -- how to share water. But it's really a local issue.

NOVEMBER 11, 2009
Los Angeles County Times
Public subsidies approved for San Diego County desalination project
The vote by the Metropolitan Water District board means the private venture could get up to $350 million. Coastal groups opposed the action.

NOVEMBER 7, 2009
Los Angeles Times
Schwarzenegger signs part of water package
One of the bills establishes a statewide program to measure groundwater elevations. The other adds 25 state enforcement officers to track down illegal water diversions.

NOVEMBER 5, 2009
Los Angeles Times
California legislators strike a final water deal
The package includes an $11-billion bond measure, groundwater monitoring and a conservation plan. Some critics call the policy changes weak and harmful to salmon fisheries.

October 2009

AUGUST 5, 2008
Los Angeles Times
California water legislation at a standstill
Republicans roll out their own version of a water bill, as state legislators are being held up mostly by obscure water policy details and regional self-interests. State hopes to use storm water to counter drought

September 2009

September 6, 2009
Pasadena Star News

Purple pipes could be solution to delivering San Gabriel Valley's water

Residents have for years heard about local proposals to turn raw sewage into safe drinking water. Now, as state lawmakers contemplate spending billions of dollars on a comprehensive fix to California's perpetual water crisis, local water officials are hoping a few million dollars will come their way for the much-anticipated water-recycling project.

August 2009

AUGUST 30, 2009
San Gabriel Valley Tribune

Our View: An enduring drought

"Drought" sounds so temporary - and there's nothing temporary about the decreasing availability of water in Southern California.

AUGUST 5, 2008

California needs a radical change in water policy to deal with shortages

`DROUGHT' sounds so temporary - and there's nothing temporary about the decreasing availability of water in Southern California.

April 2009

APRIL 2, 2009
LA Daily News

Despite wetter winter, L.A. still faces drought, higher costs at the tap

Even with winter storms bringing the state's snowpack water level up to 81 percent of normal, state and local officials warned Thursday that drought conditions are continuing and Los Angeles residents will have to pay more for water this year.

June 2009

JUNE 30, 2009
LA Daily News

El Nino emerging, but it's looking like El Wimpo

Hopes for rain drying up in Los Angeles.

April 2009

APRIL 2, 2009
LA Daily News

Despite wetter winter, L.A. still faces drought, higher costs at the tap

Even with winter storms bringing the state's snowpack water level up to 81 percent of normal, state and local officials warned Thursday that drought conditions are continuing and Los Angeles residents will have to pay more for water this year.

March 2009

MARCH 3, 2009
Los Angeles Times

County Declares Water Conservation Alert

Not only have a series of February storms pushed up mountain snowpack levels, but by historical standards the current three-year dry spell is far from the most severe.

MARCH 2, 2009
Associated Press

Storms boost snowpack, but not enough

Several weeks of storms have deepened the Sierra snowpack, but California remains well below what it needs to replenish water supplies and lessen the state's drought, the state Department of Water Resources reported Monday.

February 2009

FEBRUARY 27, 2009
Los Angeles Times
By Patrick McGreevy

Schwarzenegger proclaims state of emergency because of drought

Schwarzenegger's declaration of a state of emergency comes after three years of below-average rain and snowfall in the state. "This is a crisis, just as severe as an earthquake or raging wildfire," the governor says, noting that key reservoirs are filled only to 35% of capacity. His order calls for further conservation.

FEBRUARY 27, 2009
Los Angeles Times
By Patrick McGreevy

Lawmakers seek billions to expand, improve California 's water supply

The issue has renewed urgency because of a three-year drought that has left key reservoirs at a third of their capacity.

FEBRUARY 27, 2009
By Samantha Young, Associated Press

Drought leads to state of emergency

Gov. Arnold Schwarzenegger declared a state of emergency Friday after three years of below-average rain and snowfall in California, a step that urges urban water agencies to reduce water use by 20 percent.

January 2009

JANUARY 30, 2009
Los Angeles Times

Low snowpack may mean a third dry year for California

Brian Heiland, left, and Frank Gehrke, scientists in the California Department of Water Resources, measure the snowpack south of Lake Tahoe. Statewide, the snow's water content is 61% of the average figure for this point in the season. Another La Niña may be developing, an expert says. Conservation is strongly urged..

JANUARY 30, 2009
Daily News

Days warm but drought is hot topic

If thermometers hit 80 today, Los Angeles will have had its warmest January on record - a great month for beachgoers, but a worrying reminder for water officials eyeing possibly the worst drought in California history.

December 2008

DECEMBER 4, 2008
The Associated Press

Colorado River to be focus of fight as water dwindles

Drought, climate change and an increasing population in the West are pushing the Colorado River basin toward deep trouble in the coming decades, scientists said Thursday. STORY

June 2008

JUNE 17, 2008
06/17/2008 10:19:51 PM PDT
By Dan Abendschein, Staff Writer,SGVN

Pasadena residents will pay $2 to $4 more per month for water starting in July.

*TCiting increased water purchasing and maintenance costs, the city council voted unanimously Monday night to raise water rates. Council members also green-lighted a second cost increase, which will take effect in July 2009.*STORY

JUNE 7, 2008
Los Angeles Times

Residents urged to cut water use

The public agency that distributes water to much of the Southland is urging residents to reduce consumption by 10% to 20% to protect reserves during a worsening drought. STORY

JUNE 16, 2008
Los Agneles Times

L.A. County hopes to fend off drought with cloud-seeding program

Hoping to wring water from the skies, a parched Los Angeles County plans to launch an $800,000 cloud-seeding project in the San Gabriel Mountains that officials believe will boost rainfall and raise the levels of local reservoirs. STORY

JUNE 7, 2008
Los Angeles Times

L.A. will make water a terrible thing to waste

*With vital and often-distant water sources shrinking, Los Angeles officials today will revive a controversial proposal to recycle wastewater as part of a plan to curb usage and move the city toward greater water independence.*STORY

JUNE 4, 2008
Association of California Water Agencies Newsletter

Drought Decree Underscores Statewide Problem, ACWA Says

Sacramento — Association of California Water Agencies (ACWA) Executive Director Timothy Quinn issued the following statement regarding Gov. Arnold Schwarzenegger's announcement that California is in a drought. STORY

May 2008

MAY 2, 2008

Los Angeles Times

Snowpack is at lowest level since '88, but reservoirs and aquifers are full

State hydrologists typically strap on snowshoes for their monthly survey of snow depths near South Lake Tahoe. On Tuesday, they needed only tennis shoes. STORY

April 2008

APRIL 11, 2008

Los Angeles Times

Conserving California's water

California needs to set the standard for water conservation.

Many communities have already invested in water efficiency and reaped the benefits from such programs as drought -tolerant landscaping and appliances that use less water. Last summer, water agencies throughout the state successfully implemented voluntary conservation programs to curb water use, after one of the driest winters on record. STORY

SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT

1402 N. VOSBURG DRIVE | P.O. BOX 1299
AZUSA, CALIFORNIA 91702
PHONE: (626) 969-7911, FAX: (626) 969-7397
EMAIL: **feedback@sgvmwd.org**

SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT

Public Education

VIDEO PIPELINE

- Home
- About the Water District
- Services & Facilities
- Partners & Programs
- Public Education
- Water Legislation
- Save Water & Money
- News Media

WATER STATS

LA Rainfall : ?
Since July 1: 13.37" (135% of normal)

California Snow Levels: ?
99% of normal /81% of peak

California Reservoir Levels: ?
73% of average /52% of capacity

Watering Index: 32% ?

▶ **Key Well Elevation Chart**

Downloads

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H_2OWL Program

LINKS

Listed below are links to important water-related organizations and resources.

CITY OF ALHAMBRA

CITY OF AZUSA

CITY OF MONTEREY PARK

CITY OF SIERRA MADRE

BEWATERWISE.COM

UPPER SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT

SAN GABRIEL BASIN WATER QUALITY AUTHORITY

SAN GABRIEL VALLEY WATER ASSOCIATION

BOTANIC GARDENS

CALIFORNIA DEPARTMENT OF WATER RESOURCES

MAIN SAN GABRIEL BASIN WATERMASTER

USE WATER WISELY.COM

WATER EDUCATION FOUNDATION

STATE WATER RESOURCES CONTROL BOARD

STATE WATER CONTRACTORS

FOOTHILL WATER COALITION

CALIFORNIA DEPARTMENT OF WATER RESOURCES

SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT

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INFORMATION KIT DOWNLOAD

The Water District has researched and produced ads, public information notices, flyers and other materials about water issues and public education that we make available for the public to download for their own use. Please review the information below which you may either download or print on your own personal computer.

Water saving tips for HOMES

Generic: **no City Logo**
English Spanish Chinese

With City logo: **Alhambra**
English Spanish Chinese

With City logo: **Azusa**
English Spanish Chinese

With City logo: **Monterey Park**
English Spanish Chinese

With City logo: **Sierra Madre**
English Spanish Chinese

Water saving tips for EMPLOYERS

Generic: **no City Logo**
English Spanish Chinese

With City logo: **Alhambra**
English Spanish Chinese

With City logo: **Azusa**
English Spanish Chinese

With City logo: **Monterey Park**
English Spanish Chinese

With City logo: **Sierra Madre**
English Spanish Chinese

Other informational materials

"Earth Week" informational ad

"Water Awareness Week" informational ad

"Think Environment" informational ad

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1402 N. VOSBURG DRIVE | P.O. BOX 1299
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SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT

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H_2OWL Program

H_2OWL MASCOT PARTNERSHIP PROGRAM

Would you like H_2Owl to appear at your event or location? Call (626) 969-7911, or write us at feedback@sgvmwd.org for details.

The Water District has created a new water education and conservation program in partnership with its member cities and participating youth groups. The program features H_2OWL, a new mascot that will visit schools, parks, and community and business events to increase awareness and participation in water conservation activities.

HOW THE PROGRAM WORKS

SAVE WATER WITH H_2OWL ...

SUMMARY AND HIGHLIGHTS OF 2009 MASCOT PROGRAM

City of Alhambra

Distributed conservation tips at ULFT giveaway at Mark Keppel High School

Kick-off to Water Awareness Poster Judging Contest and City Council meeting where awardees were recognized (2 separate events- one in May, (5/13), the other in June (100+ people) (6/8/09)
Literature distribution outside main Alhambra Library (75-100 people) (5/21/09)
Literature distribution at Almansor Park (200 people and cars) (5/30/09)
Briefed Alhambra School Board (at its monthly meeting) on Water Awareness Month and school education program (150 people) (6/2/09)

City of Azusa

Briefed Azusa School Board (at its monthly meeting) on Water Awareness Month and school education program (100+ people) (5/19/09)
Literature distribution outside main Azusa Main Library (25-30 people) (5/28/09)
Presentation at City Council meeting on Water Awareness Month and literature distribution and school education program (50-75 people) (6/1/09)
Literature Distribution at Dalton Park (50-75 people) (6/12/09)

City of Monterey Park

Briefed Azusa School Board (at its monthly meeting) on Water Awareness Month and school education program (100+ people) (5/19/09)
Literature distribution outside main Azusa Main Library (25-30 people) (5/28/09)
Presentation at City Council meeting on Water Awareness Month and literature distribution and school education program (50-75 people) (6/1/09)
Literature Distribution at Dalton Park (50-75 people) (6/12/09)

Literature distribution outside main Monterey Park Library (200 people) (5/20/09)
Presentation at City Council meeting on Water Awareness Month, literature distribution and school education program; and, check to Mark Keppel High School Project Green Club for their partnership with the District (50 people) (5/20/09)
Joined District's President Reichenberger at Monterey Park City Council meeting for presentation for Environmental Calendar Award recipients (150+ people) (6/3/09)

City of Sierra Madre

Distributed conservation tips at Environmental Fair and ULFT giveaway at Sierra Vista Park (200+ people) (4/25/09)
Presentation at City Council meeting on Water Awareness Month, literature distribution and school education program; and, check to Sierra Madre Interact Club for their partnership with the District (about 50 people); (5/12/09)
Distributed conservation tips at Sierra Madre Art Fair (150-200 people) (5/17/09)
Distributed conservation tips at end of Mount Wilson Trail Race (100+ people) (5/25/09)

Participated at Miramonte Reservoir ribbon-cutting ceremony with Director Love and Congressman Dreier (100 people) (5/27/09)
Distributed conservation tips at Closing Ceremonies for Sierra Madre Little League (150+ people) (5/30/09)
Literature distribution outside main Sierra Madre Library (50-75 people) (6/10/09)
Literature distribution at Kersting Court (150+ people) (6/26/09)

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SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT

Save Water & Money

VIDEO PIPELINE

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▶ Key Well Elevation Chart

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H_2OWL Program

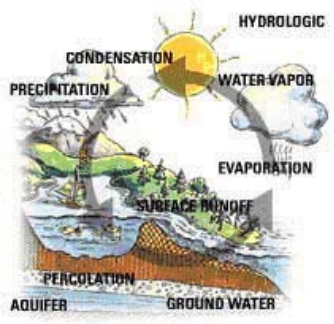
WHY CONSERVE?

Water Conservation is important for our environment and our water supply. As a precious natural resource, water supplies in the San Gabriel Valley are in increasingly short supply due to regional drought, growth in population and business locally and in the region, contamination in some areas, and global climatic change.

Water Conservation is also important for our economy. The rates that cities and water companies charge residents and employers for water, while relatively stable (compared to gasoline and fuel prices, for example), have upward pressure on them due to potential supply shortages. The Water District exists, in part, to augment water supplies in our member cities and, thus, to stabilize water pricing in the process. While we are not facing price spikes in water like we have in fuel recently, we should realize how significantly water shortages could impact the cost of living and the cost of doing business.

DO YOU KNOW that the water you use today has been around since the earth was formed? It's true. There is a limited supply of water on earth, and it is making its way through the water cycle every day.

The water cycle is made up of four stages. Evaporation is when the sun heats up water in rivers, lakes, and oceans, and turns the water into vapor, and it goes into the air. Condensation is when the vapor gets colder, turns back into liquid, and forms clouds. Precipitation happens when the air can't hold anymore condensation. Precipitation can be rain, snow, or hail. Collection is then the water falls onto the earth, and starts the cycle all over again.



This illustration shows how percipitation makes its way as groundwater, and becomes water vapor again. Source: American Water Works Association.

SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT

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APPENDIX H

RESOLUTION 3-91-421

RESOLUTION NO. 3-91-421

A RESOLUTION OF THE BOARD OF DIRECTORS OF SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT ENCOURAGING ADDITIONAL WATER CONSERVATION MEASURES

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT as follows:

Section 1. Purpose

The District obtains the water needed for replacement and make-up water for its four Cities from the Department of Water Resources of the State of California through the State Water Project. The Department of Water Resources must reduce deliveries to the District due to a water shortage caused by the near 5 year drought which is affecting most of the State of California. As a result, the supply of water available to the District for replacement will be reduced significantly. As of February 21, 1991 the reduction was 90%. The District recommends a uniform and effective water conservation program. This resolution identifies water conservation measures which the District recommends to be adopted by each of the Cities within the District.

Section 2. Use Restrictions

(a) The District recommends the following minimum restrictions concerning the use of water:

(1) With respect to irrigation practices:

(i) Lawn watering and landscape irrigation should not be permitted during the heat of the day. Agricultural users,

commercial nurseries/landscape contractors and irrigation of livestock and irrigation of propagation beds should employ best management practices and curtail all non-essential water use.

(ii) Increases in water allowances to establish new landscaping should not be permitted.

(iii) Watering with a hand-held hose should include a positive shut-off nozzle.

(2) With respect to exterior washing practices:

(i) Washing of buildings, facilities, equipment, autos, trucks, trailers, boats, airplanes and other types of mobile equipment should be prohibited except where a hand-held hose equipped with a positive shut-off nozzle for quick rinses is used. Whenever possible, such as when washing vehicles, a bucket wash should be required.

(ii) Washings should be exempted from regulations where the health, safety and welfare of the public is dependent upon frequent vehicle or other facility or equipment cleaning, such as garbage trucks and vehicles used to transport food and perishables.

(iii) Water should not be used to wash down sidewalks, driveways, parking areas, tennis courts, patios or other paved areas, except to alleviate immediate fire, sanitation or health hazards.

(3) With respect to ornamental or recreational uses:

(i) Draining and refilling swimming pools and spas should be prohibited. Adding water to swimming pools and spas to replace evaporative losses can be permitted.

(ii) Filling/refilling of decorative ponds, fountains, and artificial lakes should be prohibited.

(4) With respect to other uses:

(i) Water from fire hydrants should be used only for fire fighting and public welfare activities.

(ii) Flushing of water mains should not be permitted except as necessary to protect the public health.

(iii) Restaurants should serve water to their customers on request only.

(b) Customers shall be required to repair leaks as soon as discovered and leaks shall not be allowed to continue.

(c) The four cities of the District should adopt water use restrictions affecting their retail customers which are similar to the restrictions set forth above.

Section 3. Additional Responses

As the current drought worsens, more restrictive measures will be recommended. The District will continue to advise its cities of the status of the water supply and will continue to develop recommendations for additional use restrictions.

APPENDIX I

ULTRA-LOW-FLUSH
TOILET DISTRIBUTION PROGRAM
FOR THE YEAR 2010

San Gabriel Valley Municipal Water District
ULFT Distribution

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Totals
MP	226	558	262	578	541	342	486	478	415	489	4375
AL	522	280	280	513	473	364	610	603	514	380	4539
AZ	85	258	258	262	245	270	267	259	269	284	2457
SM	84	92	75	66	81	60	47	36	36	49	626
TOTALS	**917**	**1188**	**875**	**1419**	**1340**	**1036**	**1410**	**1376**	**1234**	**1202**	**11997**

1,036.00 +
1,410.00 +
1,376.00 +
1,234.00 +
1,202.00 +
005
6,258.00 + toilets given out

2010 Estimate is 896 toilets with Alhambra Not participating

ULFT\ulft#'s.xls 6/2/2009

SGVMWD - ULFT Program Service Groups Money Earned

YEAR	Azusa Band	Gladstone ASB	SM Youth	Alhambra HS Football	Mark Keppel Athletic
2001	2002.50	2002.50	1275.00	659.69	11205.31
2002	1935.00	1935.00	1035.00	0.00	7515.00
2003	2918.40	921.60	975.00	8340.00	7590.00
2004	1777.50	1777.50	1170.00	7320.00	7320.00
2005	1942.50	1942.50	885.00	5235.00	5235.00
2006	1950.00	1950.00	690.00	8160.00	8160.00
2007	1860.00	1860.00	525.00	7830.00	7830.00
2008	1905.00	1905.00	495.00	7132.50	7132.50
2009	2017.50	2017.50	735.00	6345.00	6345.00
TOTALS	**18308.40**	**16311.60**	**7785.00**	**51022.19**	**68332.81**

TOTAL PAID	$	161,760.00

9675.00 9675.00 3330.00 34702.50 34702.50

$ to Service Groups

0.00
9,675.00 +
9,675.00 +
3,330.00 +
34,702.50 +
34,702.50 +
92,085.00

ULTF/ServiceGroup$.exc

6/17/2009

Information for the 2010 Urban Water Management Plan

Water Conservation Materials for Cities & PR Events

Fiscal Year Ending	Budget	Actually Spent	
2005	$ 26,000	$ 26,380	
2006	$ 26,000	$ 23,934	
2007	$ 28,000	$ 34,461	
2008	$ 40,000	$ 44,305	
2009	$ 70,000	$ 41,201	
2010	$ 70,000	$ 62,000	Estimate

Ultra Low Flow Toilet Program

Fiscal Year Ending	Budget	Actually Spent	
2005	$ 135,000	$ 70,754	
2006	$ 135,000	$ 149,789	
2007	$ 135,000	$ 145,728	
2008	$ 135,000	$ 113,868	
2009	$ 135,000	$ 143,411	
2010	$ 135,000	$ 135,000	Estimate

This includes 1,500 toilets, paying service groups, Administration, and city portion reimbursed

Grants & Zero Interest Loans

Fiscal Year Ending	Budget	Actually Spent		
2005	$ -	$ 62,000		Azusa Splash Park
2006	$ 3,595,000	$ 3,915,626		Alhambra GWTP
2007	$ 1,695,000	$ 632,615		Monterey Park
2008	$ -	$ 3,001,875		Sierra Madre Reservoir
2009	$ 2,000,000	$ 2,000,000		Monterey Park Air Stripper
2010	$ 200,000	$ 383,000	Estimate *	Pilot Projects
		$ 9,995,116	TOTAL	

* Landscape Pilot Projects and Meter Reading Projects have been approved.

APPENDIX J

MEMORANDUM OF UNDERSTANDING POTENTIAL TO EXPAND USE OF RECYCLED WATER

Central Basin Municipal Water District
17140 S. Avalon Blvd • Suite 210 • Carson, CA 90746-1296
telephone 310-217-2222 • fax 310-217-2414

July 15, 2005

Tim Jochem
General Manager
Upper San Gabriel Valley Municipal Water District
11310 Valley Boulevard
El Monte, CA 91731

Darin Kasamoto
General Manager
San Gabriel Valley Municipal Water District
549 E. Sierra Madre Avenue,
P.O. Box 1299,
Azusa, CA 91702

Dear Gentlemen:

Memorandum of Understanding for Master Plan Revision

During a recent meeting, Mr. Jochem of Upper San Gabriel Valley Municipal Water District (USGVMWD) suggested that his agency and San Gabriel Valley Municipal Water District (SGVMWD) might be interested in participating in a master plan study Central Basin Municipal Water District (CBMWD) was about to initiate to determine the potential for expansion of the CBMWD recycled water distribution system. The original area of study would be expanded to include the USGVMWD and SGVMWD service areas.

To that purpose, attached is the DRAFT Memorandum of Understanding and the DRAFT Request for Proposals (RFP) for your review. CBMWD's intention is to send out the RFP next week, receive proposals in August and award the contract in September subject to your review and input.

If you have any questions regarding this matter, please contact me at (310) 660-6208.

Sincerely,

Joe Walters
Recycled Water Project Manager
West Basin Municipal Water District

CC: Art Aguilar, CBMWD
Rich Nagel, CBMWD
Paul Shoenberger, CBMWD

DRAFT

MEMORANDUM OF UNDERSTANDING
BETWEEN
SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT,
UPPER San Gabriel VALLEY MUNICIPAL WATER DISTRICT,
AND
CENTRAL BASIN MUNICIPAL WATER DISTRICT

As of July 14, 2005, the **San Gabriel Valley Municipal Water District** ("SGVMWD"), **Upper San Gabriel Valley Municipal Water District** ("USGVMWD"), and the **Central Basin Municipal Water District** ("Central Basin") hereby agree as follows:

1. **Purpose.**

a) Central Basin distributes high quality recycled water produced by the County of Los Angeles. Central Basin will be building a recycled water pipeline known as the Southeast Water Reliability Project which is capable of providing recycled water service to the service areas of USGVMWD and SGVMWD. USGVMWD and SGVMWD wish to explore the possibilities for distributing Central Basin's recycled water in their service area.

b) In July 2000, Central Basin produced a Recycled Water Master Plan which identified potential customers and recycled water sales. Central Basin has determined that the master plan should be revised before pursuing customer commitment and proceeding with capital projects.

c) Central Basin will solicit proposals from qualified firms and award a contract to the successful bidder for the development of the revised Recycled Water Master Plan.

d) USGVMWD and SGVMWD wish to share in the development, cost of development, and results of the revised Recycled Water Master Plan.

2. **Agreement.**

The parties mutually agree to participate in the development of the revised Recycled Water Master Plan, share in the cost of its development, and share in its results.

3. **Indemnification.**

a) SGVMWD shall hold harmless, defend at its own expense, and indemnify Central Basin and USGVMWD, their officers, employees, and agents against any and all liability, claims, losses, damages, or expenses, including reasonable attorneys' fees, arising from all acts or omissions to act of SGVMWD or its officers, agents, or employees in rendering services under this agreement, excluding, however, such liability, claims, losses, damages, or expenses arising solely from Central Basin's and USGVMWD's negligence or willful acts

b) USGVMWD shall hold harmless, defend at its own expense, and indemnify Central Basin and SGVMWD, their officers, employees, and agents against any and all liability, claims, losses, damages, or expenses, including reasonable attorneys' fees, arising from all acts or omissions to act of USGVMWD or its officers, agents, or employees in rendering services under this agreement; excluding, however, such liability, claims, losses, damages, or expenses arising solely from Central Basin's and SGVMWD's negligence or willful acts.

c) Central Basin shall hold harmless, defend at its own expense, and indemnify SGVMWD and USGVMWD, their officers, employees, and agents against any and all liability, claims, losses, damages, or expenses, including reasonable attorneys' fees, arising from all acts or omissions to act of Central Basin or its officers, agents, or employees in rendering services under this agreement; excluding, however, such liability, claims, losses, damages, or expenses arising solely from SGVMWD's and USGVMWD's negligence or willful acts.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the date of the latest signature below.

San Gabriel Valley Municipal Water District

By: _____ **Date:** _____

Upper San Gabriel Valley Municipal Water District

By: _____ **Date:** _____

Central Basin Municipal Water District

By: _____ **Date:** _____
Art Aguilar, Co-General Manager

By: _____ **Date:** _____
Rich Nagel, Co-General Manager

I. INTRODUCTION

Central Basin Municipal Water District (CBMWD), San Gabriel Valley Municipal Water District (SGVMWD), and Upper San Gabriel Valley Municipal Water District (USGVMWD) are requesting proposals from qualified consultants to revise a Recycled Water Master Plan originally developed in 1999-2000. This Request for Proposals (RFP) describes the scope of services, selection process, experience requirements and minimum information that must be included in the submittal. Failure to submit in accordance with the requirements and procedures of this RFP may be cause for disqualification. Failure to submit on or before the submittal deadline shall be cause for disqualification.

GENERAL INFORMATION

Over the past fifteen years, CBMWD has established a successful water recycling program that provides a reliable, local supply of water to replace some non-potable water uses such as landscape irrigation and industrial applications. In fiscal year 2003-2004, CBMWD sold over 3,500 acre-feet of recycled water. This reduces the regions dependence on imported water and the impact of drought or other water shortages.

CBMWD purchases recycled water from the Los Angeles County Sanitation District (LACSD) and transmits to customer sites via an independent distribution system. The District then wholesales the recycled water to the local retail purveyor which in turn sells it to the end user. Central Basin currently serves all or a portion of the cities of Artesia, Bell, Bell Gardens, Bellflower, Carson, Cerritos, Commerce, Compton, Cudahy, Downey, East Los Angeles, Huntington Park, La Habra Heights, La Mirada, Lakewood, Lynwood, Maywood, Montebello, Norwalk, Paramount, Pico Rivera, Santa Fe Springs, South Gate, Vernon, Whittier, and unincorporated portions of Los Angeles County (Figure 1).

The Title 22 (disinfected tertiary) recycled water produced by Los Angeles County Sanitation District serves nearly 200 customers on CBMWD's 50 mile long distribution system. Expansion of the system will continue as additional customers are identified and new distribution pipelines and facilities are deemed economically viable and technically feasible.

CBMWD is adjacent to two agencies that have expressed interest in investigating opportunities to partner with CBMWD for recycled water distributed to their service areas. Upper San Gabriel Valley Municipal Water District (USGVMWD) is positioned north of the CBMWD cities of Pico Rivera and Montebello. San Gabriel Valley Municipal Water District (SGVMWD) serves four non-contiguous cities including Monterrey Park and Alhambra which are north of CBMWD and west of USGVWD.

In July 2000, CBMWD produced a recycled water master plan which identified nearly 1,500 potential customers and over 26,853 acre-feet per year of potential new recycled water sales. With five years elapsed and the potential to partner with other agencies outside our service area, it is appropriate at this time to revise the Master Plan before pursuing customer commitment. The following Scope of Services describes the work to be completed.

The project will review existing facilities and identify additional facilities necessary to provide reliable service and adequate pressure and flow to all customers within a defined area of the master plan. Finally an economic analysis will be completed to determine the feasibility of providing recycled water to the proposed expansion areas

SCOPE OF SERVICES

The scope of services to be provided by the consulting engineer shall include; data gathering and assessment, conceptual pipeline routing, developing a customer database, hydraulic modeling, economic analysis, cost estimates and project management. These services are more specifically described as follows.

1. Data Gathering (Customer Demand)

The consultants shall update the existing data base by revising the five year average water consumption for all customers using an average of ten acre-feet (10 AFY) or more per year. To obtain the water consumption history, the consultant shall meet with the water purveyors (private and municipal). Initial meetings with the water purveyors should be coordinated so that a CBMWD representative has the opportunity to attend.

Water utilities serving water within the study area with potential for recycled water expansion are:

CBWMD

- City of Bell Gardens,
- Bellflower-Somerset Mutual Water Company,
- California Water Services Company,
- City of Commerce,
- City of Compton,
- City of Downey,
- City of Huntington Park,
- La Habra Heights County Water District,
- LADWP,
- City of Lynwood,
- Maywood Mutual Water #1,
- City of Montebello,
- Montebello Land and Water,
- City of Norwalk,
- Orchard Dale,
- City of Paramount,
- Park Water Company,
- Peerless Water Company,
- City of Pico Rivera,
- Pico Water District,
- San Gabriel Valley Water Company – Montebello,
- San Gabriel Valley Water Company – Whittier,
- City of Santa Fe Springs,
- City of South Gate,
- Southern Montebello Irrigation,
- Southern California Water Company,
- Suburban Water Systems,
- City of Vernon,
- Walnut Park Mutual Water Company, and
- City of Whittier.

USGVMWD

- South El Monte,
- South San Gabriel, and
- Rosemead

SGVMWD

- Alhambra, and
- Monterrey Park

2. Data Assessment

The consultant shall interpret the information received under the data gathering task. Data assessment includes determining:

- total demand and amount of potential recycled water,
- the demand category (irrigation / industrial),
- type of irrigation (school, park, playground, nursery, golf course, etc.),
- type of industry (refinery, dye house, concrete mixing, etc.), and
- industrial process (cooling towers, boilers, etc.).

The consultant will submit their method for assessing the data to CBMWD for review.

3. Database

The consultant shall update the customer database with information gathered in a format provided by CBMWD. Fields will include:

- Customer name,
- Facility type,
- Use type,
- Contact name and title,
- Street address,
- City / Zip,
- Estimated recycled water use,
- Phone,
- Purveyor, and
- Thomas Guide Grid location

Additional fields may be suggested by the consultant. CBMWD will review the database before implementation.

4. Conceptual Pipeline Routing

The consultant shall determine a conceptual level of mainlines and laterals to address customer recycled water demands. The routing shall be used as an estimate of pipeline length in the hydraulic model. The consultant shall submit conceptual level routing for CBMWD review.

5. Interconnections

The consultant will evaluate the water quality and hydraulic issues among possible interconnections within the service area. The consultants shall submit their interconnection analysis to CBMWD for review.

6. Hydraulic Modeling

The consultants shall develop a hydraulic model for the existing and expansion project using H2Onet. CBMWD shall provide modeling information for existing system. The hydraulic model will include pipeline routing, pipeline sizing, user demands, locating and sizing booster stations, locating and sizing storage tanks all with consideration to avoid detention times that may cause chlorine deterioration and a resulting odor in the recycled water. Consultants shall submit the hydraulic modeling criteria, the proposed peaking factor(s), and the methodology for determining system storage to CBMWD for review prior to actual system modeling. Modeling results shall be displayed on node/link map and in tables.

7. Cost Estimates

The consultant shall prepare a design, construction, and operation and maintenance cost estimate for all proposed facilities (laterals, mainlines, pump stations, storage tanks).

8. Phasing

The consultant shall prepare a phasing plan for the facilities outlined in technical memorandum numbers 3, 4, and 5. The consultant shall phase the various projects taking into account the economics, constructability, ease of user acceptance and retrofit conversion process. The consultant shall submit their approach to CBMWD for review.

9. Project Management

In addition to normal project management functions, the consultant is responsible for the following:

<u>Monthly Meetings</u>

Attend monthly meetings, prepare an agenda for the meeting and prepare minutes of the meeting.

Monthly Status Report

Consultant will prepare monthly status reports on the progress of the project. The monthly status reports should include a contract summary showing expenditures for each budgeted task.

Additional Tasks

Allocate up to fifty hours of time to be used at Districts discretion.

Schedule

Consultant will prepare a schedule outlining all the tasks and deliverables. It is anticipated that the proposed scope of services, outlined in Section III, will require three to six months to complete. The schedule should be updated monthly if there are any deviations from the original schedule. All deviations are to be explained in the monthly status report along with the schedule.

Deliverables

- Technical Memorandum 1 – Data Assessment
- Technical Memorandum 2 – Database Development
- Technical Memorandum 3 – Potential Interconnections
- Technical Memorandum 4 – Conceptual Pipeline Routing
- Technical Memorandum 5 – Hydraulic Modeling
- Technical Memorandum 6 – Economic Analysis
- Technical Memorandum 7 – Phasing Plan
- Draft Master plan (10 copies)
- Final Master Plan (25 hard copies and one electronic copy)
- Model files, GIS files, Auto CAD files, Database files

EXPERIENCE AND QUALIFICATIONS

Consultants proposing on this job should have applicable experience and qualifications to perform the tasks outlined in the Scope-of-Services. Any experience working with CBMWD, cities, or water utilities within CBMWD's service area should be briefly discussed in the proposal.

PROPOSAL REQUIREMENTS

The proposal should be concise, well organized and demonstrate the qualifications and experience as it applies to the project outline n Section IV. The proposal shall include three (3) projects of similar scope and size the consultant has worked on including three (3) references. The proposal shall consist of a report not more than 20 pages in length exclusive of appendices. The report should include a proposed schedule to include all tasks, technical memorandum, submittals, and reports and indicate any concerns meeting the proposed schedule. It is anticipated that the proposed scope of services, outlined in Section III, will require nine (9) to twelve (12 months).

Five copies of the proposal are to be submitted.

The proposal shall be tabled, organized and numbered in the order presented below:

Section 1 Identification of Respondent. Exhibit A – Business Statement

Section 2 Executive Summary

Section 3 Examples of representative engagements

Part A Provide project summary (client, project title, date, description and financial size). Representative engagements should encompass studies for public utilities, and other directly relevant project experience.

Part B Provide at least three client references (name, title, organization, address and telephone) from projects listed in Part A above. Include at least one key team member.

Section 4 Team organization and staffing

Part A Provide an organization chart and description of key project team members proposed and their respective roles.

Part B Respondent shall name the project manager from these services who will coordinate all activities with CBMWD.

Part C CBMWD reserves the right to approve any changes to key personnel during the course of the project.

Section 5 Proposed approach to accomplishing the project goals. Provide a discussion of your approach to accomplishing the project.

Section 6 Work Plan:

Part A Discuss the methodology to be used in accomplishing the tasks in the Scope of Work Section.

Part B Provide schedule by task showing key deliverables and the hours required performing each task.

Part C Improvements to work tasks

Section 7 Budget: Not to exceed costs will be negotiated at final contract. The report should include a scope of services and a cost of services for the scope of services, listing the staff and staff classification.

Proposed budget shall include a proposed not-to-exceed project cost, and rates and hours estimates.

Respondents budget shall contain a summary of costs by major task or milestone with subtotals and totals.

All estimated reimbursable expenses shall be listed in the budget. Payment for mileage is restricted to the US Internal Revenue Service published mileage rate.

Reimbursable expenses shall not be allowed unless negotiated prior to a contract.

During contract negotiations, Consultant may be asked to provide a detail of the types of expenses included in the burden labor rates.

The proposal should be separated so that work for each district is distinct. Project will be awarded to the proposal best qualified to meet the needs of the three Districts combined including consideration of combined price.

CBMWD reserves the right to select only those services necessary for the completion of the work, and to deduct the cost of any unnecessary services from the contract.

PROPOSAL SUBMITTAL

Five (5) copies of the proposal are to be submitted to the CBMWD receptionist (2nd floor) by 10:00 a.m. on Monday, August 18, 2005 at the address below.

Central Basin Municipal Water District
17140 South Avalon Boulevard, Suite 210
Carson, CA 90746-1296
Attention: Joe Walters, Senior Recycled Water Specialist

SELECTION PROCESS

RFP's received by CBMWD will be reviewed by CBMWD staff and will be evaluated on experience, qualifications, references, schedule and cost of services. Proposers may be requested to present their proposals at CBMWD's Carson office on May xx, 2005.

INSURANCE/AGREEMENT

Attached is the agreement the successful firm(s) will be required to execute. Firm(s) shall provide general and professional liability insurance in accordance with standard CBMWD contracting requirements. Please review the agreement in its entirety with special attention paid to the indemnification and insurance provision. Any comments regarding the attached Agreement must be included in Section 11 of the RFP.

SPECIAL CONDITIONS

This RFP does not commit CBMWD to award a contract, to defray any costs incurred in the preparation of submittal pursuant to this request, or to procure or contract for work.

All RFP's submitted in response to this request become the property of CBMWD and public record, and as such may be subject to public review. CBMWD reserves the right to request additional information or clarification.

EXHIBITS

Exhibit 1:	Figure 1 – map of CBMWD service area
Exhibit 2:	Table 1 – Customer Data
Exhibit 3:	Agreement Template

APPENDIX K

URBAN WATER MANAGEMENT PLAN RESOLUTION

RESOLUTION NO. 11-2005-630

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT ADOPTING A REVISED URBAN WATER MANAGEMENT PLAN

WHEREAS, the board has held a duly-noticed public hearing on November 14, 2005, concerning amendments to the District Urban Water Management Plan;

WHEREAS, the board considered oral and written comments to the draft plan;

WHEREAS, the board desires to incorporate the comments and adopt the amendments;

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT that the Urban Water Management Plan of the District dated November 14, 2005, be and the same is hereby adopted.

PASSED, APPROVED AND ADOPTED on November 14, 2005.

President

ATTEST:

Secretary

[SEAL]

APPENDIX L
State Water Project
Delivery Reliability Report

State of California
The Resources Agency
Department of Water Resources

DRAFT

The State Water Project Delivery Reliability Report 2009

December 2009

State of California
Arnold Schwarzenegger, Governor

California Natural Resources Agency
Mike Chrisman, Secretary for Natural Resources

Department of Water Resources
Lester A. Snow, Director

Susan Sims
Chief Deputy Director

Kasey Schimke
Asst. Director Legislative Affairs

Matt Notley
Asst. Director of Public Affairs

David Sandino
Chief Counsel

Mark W. Cowin
Deputy Director

Gerald E. Johns
Deputy Director

Jim Libonati
Deputy Director

Ralph Torres
Deputy Director

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Foreword

The 2009 State Water Project (SWP) Delivery Reliability Report is a bi-annual report on the current and future for SWP water supply conditions, if no significant improvements are made to convey water past the Delta or to store the more-variable run-off that is expected with climate change.

The report shows a continuing erosion of the ability of the SWP to deliver water. For current conditions, the dominant factor for these reductions is the restrictive operational requirements contained in the federal biological opinions. For future conditions, it is these requirements and the forecasted effects of climate change.

Deliveries estimated for the 2009 Report are reduced by the operational restrictions of the biological opinions issued by the U.S. Fish and Wildlife Service in December 2008 and the National Marine Fisheries Service in June 2009 governing the SWP and Central Valley Project operations. The 2007 Report incorporates the interim, and less restrictive, operation rules established by federal Judge Wanger in 2007. The 2005 Report is based upon much less restrictive operational rules contained in the biological opinions issued in 2005.

To illustrate the effect, the median value estimated for the primary component of SWP annual deliveries (Table A) for current conditions in the 2005 Report is 3,170 thousand acre-feet (taf). In the 2007 Report it is 2,980 taf, and in the 2009 Report, it is 2,680 taf. This is an overall reduction of almost 500 taf.

The studies used in this series of reports to estimate future deliveries now also include the potential effects of climate change. The studies for the 2005 report did not include any of these potential effects. For the 2007 report, the changes in run-off patterns and amounts were incorporated into the analyses. For the 2009 studies, the changes in run-off patterns and amounts are included along with a potential rise in sea level. Sea level rise has the potential to require more water to be released to repel salinity from entering the Delta in order to meet the water quality objectives established for the Delta.

The effect of the operational restrictions in addition to the incorporation of potential climate changes impacts amounts to an estimated reduction of 970 taf when the median value for annual SWP deliveries for future conditions in the 2005 report (3,570 taf) is compared to the updated value in the 2009 Report (2,600 taf).

The 2009 Report compares the updated values to those contained in the 2007 Report and provides greater detail on the analytical method used to calculate the estimates. The results of the studies are designed to assist water planners and managers in updating their water management and infrastructure development plans. These results emphasize the need for local agencies to develop a resilient and robust water supply, and a distribution and management system to maximize the efficient use of our variable supply. They also illustrate urgent need to improve the method of conveying water past the Delta in a more

sustainable manner that meets the dual goals of increasing water supply reliability and improving the conditions for endangered and threatened fish species.

Lester A. Snow
Director
California Department of Water Resources
December 2007

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Introduction 1

The SWP is primarily a water storage and delivery system intended to help close the gap in California between when and where precipitation primarily falls and when and where most water demands occur. Water from the SWP is a critical component of water supply for the 29 state water contractors, who may also receive water from other sources. While each of the water supply contracts defines the maximum amount of water to be delivered annually, the amount of water actually delivered may be less due to such factors as variable precipitation and runoff, physical and institutional limits on storage and conveyance, and contractors' variable water demands. For communities receiving SWP water, the reliability of SWP water deliveries is a key factor for local planners and government officials estimating their own water supply reliability.

The *2009 SWP Delivery Reliability Report* updates the information contained in the 2007 Report by estimating the amounts of water deliveries for current (2009) conditions and conditions twenty years in the future. These estimates incorporate restrictions on SWP and Central Valley Project (CVP) operations in accordance with the biological opinions of the U.S. Fish and Wildlife Service (USFWS) and National Marine Fishery Service (NMFS) issued on Dec. 15, 2008 and June 4, 2009, respectively. The estimates for future conditions also incorporate potential changes in hydrology due to climate change projections recommended by the Climate Action Team and sea level rise.

This report briefly describes the SWP and the Sacramento-San Joaquin Delta (Delta), the hub of water deliveries in California. It discusses the general topic of water delivery reliability and how Department of Water Resources (DWR) calculates delivery reliability for the SWP. It then summarizes key planning activities that may affect future SWP delivery reliability. Three areas of significant uncertainty for SWP delivery reliability are discussed. They are climate change and sea level rise, the vulnerability of Delta levees to failure, and operation restrictions imposed by the USFWS and NMFS in response to decreasing populations of endangered fish species. Next, the general approach taken to simulate SWP operations using CALSIM II is discussed.

The report presents the results of CALSIM II studies and compares them to previous estimates. Finally, the report provides guidance on how to apply the delivery estimates to water management plans. Presented in appendices are detailed CALSIM II simulation assumptions and results and recent SWP deliveries.

This report does not include analyses of how specific water agencies should integrate SWP water supply into their water supply equation. This topic requires extensive information about local facilities, local water resources, and local water use, which is beyond the scope of this report. Moreover, such an analysis would require decisions about water supply and use that traditionally have been made locally. DWR believes that local officials should continue to fill this role.

Background

Purpose

This report is intended to help local agencies, cities, and counties that use SWP water to develop adequate and affordable water supplies for their communities now and in the future. A water management plan, such as the Urban Water Management Plans required by Water Code Sections 10610-10656, is usually prepared by these entities to help them responsibly manage and develop their water supplies. The information in this report can be used by local agencies in preparing or amending their water management plans and identifying the new facilities or programs that may be necessary to meet future water demands. Local agencies and governments will also find in this report useful information for conducting analyses mandated by laws requiring water retailers to demonstrate whether their water supplies are sufficient for certain proposed subdivisions and development projects subject to the California Environmental Quality Act.

November 2009 legislative changes (Senate Bill X7.7, Steinberg) has amended and repealed some sections of the Water Code and may affect the reporting requirements under the Urban Water Management Planning Act and other government codes. DWR has a program to assist urban water suppliers in meeting the requirements of the Act. Program staff assists urban water suppliers with preparing comprehensive and useful water management plans, implementing water conservation programs, and understanding the requirements of the Act. The next cycle of Plans (2010) is due July 1, 2011. It is expected that the 2010 UWMP Guidebook will be available in late 2010. Information on Urban Water Management Plans (UWMP) is posted at http://www.water.ca.gov/urbanwatermanagement/. Any changes in the UWMP Act between now and 2011 will also be posted at this site.

Reporting Requirements

As a result of a court-approved settlement agreement executed by the Planning and Conservation League, DWR, state water contractors and other entities in the wake of the 3rd Circuit Court of Appeals ruling in the "Monterey Amendments" case in 2000, DWR has a legal duty to prepare SWP delivery reliability reports every two years. In that agreement, DWR committed to the following:

> Commencing in 2003, and every two years thereafter, the Department of Water Resources (DWR) shall prepare and deliver to all State Water Project (SWP) contractors, all city and county planning departments, and all regional and metropolitan planning departments within the project service area a report which accurately sets forth, under a range of hydrologic conditions, the then existing overall delivery capability of the project facilities and the allocation of that capacity to each contractor. The range of hydrologic conditions shall include the historic extended dry cycle and long-term average. The biennial report shall also disclose, for each of the ten years immediately preceding the report, the total amount of project water delivered and the amount of project water delivered to each contractor. The information presented in each report shall be presented in a manner readily understandable by the public. (Settlement Agreement Attachment B).

Previous Reports

The 2009 SWP Delivery Reliability Report is the fourth report of this type. The previous reports in 2003, 2005, and 2007 defined and calculated delivery reliability in the same manner as this report, with output from DWR's CALSIM II model. This report differs from those earlier reports because it includes revised estimates of reductions to SWP delivery reliability due to future climate changes and sea level rise and also

due to restricted operations to comply with USFWS and NMFS biological opinions. This report also discusses the risk of conveyance disruption due to Delta levee failure.

Context

The State Water Project

The SWP is a water storage and delivery system of reservoirs, aqueducts, power plants, and pumping plants that extends for more than 600 miles. Its main purpose is to divert and store surplus water during wet periods and distribute it to areas in Northern California, the San Francisco Bay area, the San Joaquin Valley, the Central Coast, and Southern California. It is also used for recreation and to control floods, generate power, protect fish and wildlife, and manage water quality in the Sacramento-San Joaquin Delta.

The keystone of the SWP is Lake Oroville, which conserves water from the Feather River watershed. It is the SWP's largest storage facility with a capacity of about 3.5 million acre-feet. Releases from Lake Oroville flow down the Feather River into the Sacramento River, which drains the northern portion of California's Central Valley. The Sacramento River flows into the Sacramento-San Joaquin Delta, comprised of 738,000 acres of land interlaced with channels that receive runoff from about 40% of the state's land area. The SWP and the federal Central Valley Project (CVP) rely on Delta channels as a conduit to move water from the Sacramento River inflow to the points of diversion in the south Delta. Thus, the Delta is actually part of the SWP conveyance system, making the Delta a key component in SWP deliveries. The significance of the Delta to SWP deliveries is described in more detail below.

From the northern Delta, Barker Slough Pumping Plant diverts water for delivery to Napa and Solano counties through the North Bay Aqueduct. Near Byron in the southern Delta, the SWP diverts water into Clifton Court Forebay for delivery south of the Delta. Banks pumping plant lifts water from Clifton Court Forebay into the California Aqueduct, which channels the water to Bethany Reservoir. The water delivered to Bethany Reservoir from Banks Pumping Plant is either delivered into the South Bay Aqueduct for use in the San Francisco Bay Area or continues down the California Aqueduct to O'Neil Forebay, Gianelli Pumping-Generating Plant, and San Luis Reservoir.

San Luis Reservoir is jointly operated by DWR and the Bureau of Reclamation and has a storage capacity of more than 2 million acre-feet (maf). DWR's share of gross storage in the reservoir is about 1.062 maf. Generally, water is pumped into San Luis Reservoir during late fall through early spring, and is temporarily stored for release back to the California Aqueduct to meet summertime peaking demands for SWP and CVP contractors.

SWP water not stored in San Luis Reservoir and water eventually released from San Luis continues to flow south through the San Luis Canal, a portion of the California Aqueduct jointly owned by DWR and the Bureau of Reclamation. As water flows through the San Joaquin Valley, deliveries of CVP water are made through numerous turnouts to farmlands in the service areas of the CVP. Near Kettleman City, the Coastal Branch Aqueduct splits from the California Aqueduct for water delivery to agricultural areas to the west and municipal and industrial water users in San Luis Obispo and Santa Barbara counties.

The remaining water conveyed by the California Aqueduct travels farther in the San Joaquin Valley to agriculture users such as Kern County Water Agency before reaching Edmonston Pumping Plant, which raises the water high enough to travel across the Tehachapi Mountains into Antelope Valley. In Antelope Valley, the Aqueduct divides into the East and West Branches. The East Branch carries water into Silverwood Lake and Lake Perris. Water in the West Branch flows to Quail Lake, Pyramid Lake, and

Castaic Lake.

Twenty-nine state water contractors have signed long-term water supply contracts with DWR for 4.173 million acre-feet (maf) per year. Signed in the 1960s, all contracts are in effect to at least 2035 and are essentially uniform. Each contract contains a schedule of the maximum amount of water the contractor can receive annually. This schedule is contained in SWP Table A. The annual amount was designed to increase each year, with most contractors reaching their maximum amount in 1990. In most cases, SWP water is an important component of local water supplies. Five contractors use SWP water primarily for agricultural purposes and the remaining 24 contractors use SWP water primarily for municipal purposes. All available water is allocated annually in proportion to each contractor's annual SWP Table A amount. Appendix C contains additional information about SWP Table A.

The Sacramento-San Joaquin Delta

The Sacramento-San Joaquin Delta is a network of natural and artificial channels and reclaimed islands at the confluence of the Sacramento and San Joaquin rivers. The Delta forms the eastern portion of the San Francisco estuary, receiving runoff from more than 40% of the state's land area. It is a low-lying region where over the years sediment from the Sacramento, San Joaquin, Mokelumne, Cosumnes, and Calaveras rivers mingled with organic matter deposited by marsh plants. Covering 738,000 acres interlaced with hundreds of miles of waterways, much of the land is below sea level and relies on more than 1,100 miles of rather fragile levees for protection against flooding.

Because the SWP and the CVP use Delta channels to convey water to the southern Delta for diversion, the Delta is the focal point for water distribution throughout the state. In fact, the Delta is one of the few estuaries in the world that is used as a major source of drinking water supply: about one-quarter of California's drinking water comes from the Delta; and two-thirds of Californians get some portion of their drinking water from the Delta. The Delta also provides a unique estuarine habitat for many resident and migratory fish and birds, some of which are listed as threatened or endangered. Most of the native fish either migrate through the Delta or move into it for spawning. Resident native fish are mainly present in areas strongly influenced by inflow from the Sacramento River.

The CVP pumps at Jones Pumping Plant have a capacity of 4,600 cubic feet per second (cfs) and divert water directly from Old River. The CVP has contracts to divert 3.3 maf annually from the Delta for primarily agricultural use south of the Delta. The SWP pumps at Banks Pumping Plant have a combined pumping capacity of 10,300 cfs; however, diversions into the buffering Clifton Court Forebay are restricted to 13,870 acre-feet (af) daily and 13,250 af per day over a three-day average. A rate of 13,250 af per day equates to an average pumping of 6,680 cfs.

CVP and SWP reservoir releases and Delta exports follow the Coordinated Operating Agreement (COA), which sets guidelines for the sharing of supply and responsibility for meeting water quality standards in the Delta. Most of the water exported by the SWP depends on water rights derived from Lake Oroville storage; however, the SWP can also divert water considered in excess in the Delta. These excess conditions in the Delta usually result when there is sufficient inflow to meet all beneficial needs and the SWP is not required to make supporting releases from Lake Oroville. Diversions during excess Delta conditions are still governed by various determinations and rules.

In addition to the state and federal projects' diversions, irrigation water for use in the Delta is taken from channels and sloughs through approximately 1,800 diversions which can total more than 5,000 cfs in July and August.

Delta water quality is primarily governed by the 1995 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta (1995 Bay-Delta Plan). This plan established beneficial uses, associated water quality objectives, and an implementation program. The State Water Resources Control Board (SWRCB) in Water Rights Decision 1641 assigned primary responsibility for meeting many of the Delta water quality objectives to the SWP and CVP. Key factors in determining water quality in the western Delta are the quality of important Delta inflows and the intrusion of ocean-derived salts associated with daily tides. The extent of this intrusion is primarily determined by the magnitude of Delta inflows, export pumping rates, and operation of the Delta Cross Channel. Delta inflows are normally regulated by upstream reservoir operations.

The water flowing in Delta channels is constrained by an extensive levee system that protects Delta islands from flooding. This protection is critical because land subsidence in the Delta, primarily due to the consuming oxidation of aerated peat soils, has placed most of the land in the Delta below sea level. In fact, the elevation of Delta islands can be more than 20 feet below sea level. The resulting difference between the elevations of Delta lands and the water surface in adjacent channels makes Delta levees vulnerable to failure. Land subsidence in the Delta is expected to continue, which will increase the vulnerability of levees to failure and subsequent island flooding.

Water Delivery Reliability

2

As mentioned in the Introduction, estimates of SWP delivery reliability are intended to help local SWP water users assess their water supply reliability, a key measure of a system's ability to match water supplies with demand. Just how water delivery reliability is assessed is critical to whether it is a meaningful guide for such an analysis. This chapter presents DWR's method for calculating SWP delivery reliability, the factors affecting SWP delivery reliability, and the limitations to estimating future water delivery reliability.

Calculating SWP Delivery Reliability

For this report, "water delivery reliability" is defined as the annual amount of water that can be expected to be delivered with a certain frequency. SWP delivery reliability is calculated using computer simulations based on 82 years of historical data. The annual amounts of SWP water deliveries are ranked from smallest to largest and a probability is calculated for each amount. These results are often displayed as a graph, commonly referred to as an exceedence plot. They can also be presented in a table.

Factors Affecting Water Delivery Reliability

The amount of the SWP water supply delivered to the state water contractors in a given year depends on the demand for the supply, amount of rainfall, snowpack, runoff, water in storage, pumping capacity from the Delta, and legal constraints on SWP operation. Expressed in more general terms, water delivery reliability depends on three general factors: the availability of water at the source, the ability to convey water from the source to the desired point of delivery, and the magnitude of demand for the water.

Availability of Source Water

The availability of water at the source depends on the amount of rain and snow and water use in the source areas. For the SWP, the size of the April 1 snowpack in the Feather River watershed and the storage in Lake Oroville are key components of the annual estimation of the SWP's delivery capabilities from April through September.

Factors of Uncertainty

The inherent yearly variable location, timing, amount, and form of precipitation in California introduce some uncertainty to the availability of future SWP source water and hence future SWP deliveries.

Simulating an 82-year sequence based on historical weather patterns restricts the analytical approach to no more extreme droughts or severe storms than have historically occurred. However, the 82-year sequence of weather patterns does produce a wide range of hydrologic events with which to evaluate the ability of the SWP to deliver water.

Climate change is another factor in source-water uncertainty. Current literature suggests that global warming is likely to significantly affect the hydrologic cycle, changing California's precipitation pattern and amount from that shown by the historical record. In fact, there is evidence that some changes have already occurred, such as Sierra snowmelt starting earlier, more runoff shifting from the spring to the winter, and an increase in winter flooding frequency. These changes would place more stress on the reliability of existing flood management and water supply systems, such as the SWP.

Treating Availability of Source Water Issues in CalSim II Studies

The State Water Project operation analyses in this report are based on operation simulations under an extended record of historical precipitation and adjusted historical runoff. The 82-year record of 1922-2003 runoff patterns in the studies simulating 2009 and 2029 scenarios have been adjusted as needed to reflect the current and future levels of development in the source areas by analyzing land use patterns and projecting future land and water use. These series of data are then used to forecast the amount of water available to the SWP under current and future (2029) conditions.

Climate change is expected to modify rainfall and runoff, which in turn will effect SWP operations. In the 2009 DWR Report, *Using Future Climate Projections to Support Water Resources Decision Making in California*, possible climate change effects to SWP and CVP operations were assessed using 12 future climate projections at mid-century and end-of-century (Chung et al., 2009). The range of results for the 12 projections is detailed throughout that report. Uncertainties in the results increase as the projections move further into the future. These studies assumed that no changes were made to the existing SWP and CVP infrastructure in the future. Future system operations used SWRCB D1641 regulations SWRCB 1995. Operations guidelines that are subject to change, such as restrictions on Delta exports contained in Endangered Species Act biological opinions, were not included in these studies due to the high uncertainty of how such restrictions may be applied 50 or 100 years from now.

In the 2009 climate change assessment, a three-step streamflow adjustment method was used to estimate inflows to major SWP and CVP reservoirs. An 82-year sequence of reservoir inflows that reflects a wide range of hydrologic variability was determined for each of the 12 future climate projections for both the mid-century and end-of-century analysis periods. Because some water allocation and water quality regulations are based on water year type designations (for example, wet or dry years), these designations were modified as necessary to reflect the future climate projections. Agricultural crop and urban outdoor water demands were adjusted to reflect changes in precipitation. Although there is a wide range of uncertainty in sea level rise projections, for simplicity's sake, sea level rise estimates of 1 foot for the mid-century and 2 feet for the end of the century were chosen for these impact studies. The reliability of the SWP and CVP water supply systems is expected to be reduced for the range of future climate projections studied.

In addition to the mid-century and end-of-the-century analysis described above, for this report DWR has estimated potential deliveries for 2029 using one future climate projection which is representative of median effects on the SWP and CVP system based on results from all 12 projections. The 2029 delivery estimates are based on the assumption that the two projects will be operated to meet the requirements of the

recently issued Biological Opinions from the USFWS and the NMFS.[1] Estimates do not assume any changes in the way water is conveyed across the Delta. These assumptions are not a prediction of the future but an assessment of the future if these factors do not change. In addition, these estimates must be viewed with caution given the uncertainty of the effects of climate change in the future and the simplifying assumptions required for the analyses.

Ability to Convey Source Water to the Desired Point of Delivery

The ability to convey source water to the desired point of delivery refers to the availability of facilities to capture and convey water and any institutional limitations placed upon the facilities. Uncertainty in SWP deliveries may be, in part, due to uncertainty in the ability to convey water. For the SWP, this uncertainty centers on the Delta.

Factors of Uncertainty

In general, SWP operations are closely regulated by Delta water quality standards established by the State Water Resources Control Board (SWRCB) in Water Rights Decision 1641. In addition SWP and CVP operations are further constrained by requirements in the USFWS and NMFS Biological Opinions (BOs). The requirements in both BOs are based on physical and biological phenomena that do not lend themselves to simulations using a monthly time step. Much scientific and modeling judgment has been employed to represent the implementation of the BOs. The modeled representation of the requirements is the best possible, given the current scientific understanding of environmental factors enumerated in the BOs and the limited historical data for some of these factors. Turbidity, water temperature, and the presence of fish are examples of environmental factors that must be approximated in the model.

Another potential uncertainty for SWP water conveyance through the Delta is the risk of interruptions in SWP diversions from the Delta due to levee failures. SWP source water enters the Delta through the Sacramento River and is conveyed to Banks Pumping Plant via Delta channels lined with fragile levees. If a levee fails, depending on the location and the size of the adjacent island, the flow of water from nearby channels onto the affected island can draw saline water from Suisun and San Pablo bays into the central Delta. In such an incident, SWP pumping at Banks Pumping Plant may have to be curtailed or stopped for a period to prevent drawing saline water into the south Delta. Additional releases from Lake Oroville may also be necessary to flush the Delta of the saline water. As discussed in Chapter 4, the likelihood of levee failures in the future is expected to increase.

Treating SWP Conveyance Issues in CalSim II Simulations

The 2009 base study in this report assumes current facilities and institutional limitations, which include Water Rights Decision 1641, export curtailments for the Vernalis Adaptive Management Plan (VAMP), as well as the operational restrictions contained in the USFWS and NMFS biological opinions. Chapter 6 has a more detailed description of these assumptions. For comparison, the 2029 studies in this report assume the same institutional limitations as the 2009 simulations regarding requirements for Delta water quality flows and fish protection will be in place in 20 years; no facility improvements, expansions, or additions will be made to the SWP; and conveying water through the Sacramento-San Joaquin Delta will not be significantly

[1] U.S. Fish and Wildlife Service Delta Smelt Biological Opinion December 15, 2008. NMFS Biological and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project June 4, 2009.

interrupted by levee failures. These assumptions are not a prediction of the future but an assessment of the future if these conditions do not change. As discussed in Chapter 3, there are several efforts focused on improving the Delta ecosystem and water supply reliability in the near and long term. The 2029 studies also incorporate assumptions about climate change and sea level rise.

Also not included in this report are CALSIM II studies that reflect risk of levee failures. The effect on SWP deliveries due to a single or multiple levee failure is highly dependent on where the levees fail and the Delta conditions at the time. As *Report, Phase 1: Risk Analysis, Delta Risk Management Strategy (DRMS)*(DWR 2009*)* indicates, the effect on SWP deliveries can range from relatively minor to catastrophic with extensive levee failures, depending on whether an earthquake occurs under dry or wet Delta conditions. However, the same report points out that if multiple Delta islands are left flooded with openings to adjacent channels, after a large-scale levee failure, the volume of water that would move in and out of the Delta over a tidal cycle could actually increase, resulting in higher salinities in the west Delta. If Delta water quality standards remain unchanged, releases from Lake Oroville would then most likely need to increase above current levels to enable the same level of SWP pumping. The DRMS report also indicates that multiple levee failures and Delta island flooding due to flood flows may not significantly affect SWP deliveries due to the fresh water Delta-wide conditions that would exist at the time of flood flows. Chapter 4 addresses in more detail Delta levee vulnerability to failure.

Demand for System Water

Water demand in the delivery service area is affected by such factors as the magnitude and types of water demands, the extent of water conservation measures, local weather patterns, and water costs. Supply from a water system may be sufficiently reliable at a low level of demand but become less reliable as the demand increases. In other cases, the reliability of a water supply system to meet a higher demand may be maintained at its past level because new facilities have been added or the operation of the system has been changed. In general, the higher and the more time-concentrated the water demands, the more need for storage and conveyance capacity to achieve the same delivery reliability. For example, if the demand occurs only three months in the summer, a water system with a sufficient annual supply but insufficient water storage may not be able to reliably meet the demand. If, however, the same total amount of demand is distributed over the year, the same system could more easily meet the demand because the need for water storage is reduced.

Demand levels for the SWP water users in this report are derived from historical data and information from the SWP contractors. Annual demand on the SWP is nearing the maximum contract amount (referred to as the "Maximum SWP Table A amount"). Each SWP contract contains a Table A, which states the maximum annual delivery amount from the SWP over the period of the contract. These annual amounts usually increase over time. Most contractors' SWP Table A amounts reached a maximum in 1990. The total of all contractors' maximum SWP Table A amounts is 4.173 maf per year. SWP Table A is used to define each contractor's portion of the available water supply that DWR will allocate and deliver to that contractor. The SWP Table A amounts in any particular contract are not guarantees of annual delivery amounts but are used to allocate individual contractors' portion of the total delivery amount available. Estimates of each contractor's amount of water delivered are determined by the factors described in this report. See Appendix C for additional explanation and listing of the maximum SWP Table A amounts.

Of the 29 SWP contractors, Yuba City, Butte County, and the Plumas County Flood Control and Water Conservation District are north of the Delta. Their total maximum SWP Table A amounts is 0.040 maf per

year. The total maximum SWP Table A amounts for the remaining 26 contractors, who all receive their supply from the Delta, is 4.133 maf per year. This report focuses on SWP deliveries from the Delta because the amount of water pumped from the Delta by the SWP is the most significant component of the total amount of SWP deliveries. The results presented in this report in terms of estimated delivered water supplies as a percent of SWP Table A deliveries apply to contractors north of the Delta in the same manner as those contractors receiving supply from the Delta.

SWP contractors may also receive water under Article 21 of their contract. It is available only if it does not interfere with SWP operations or Table A allocations, excess water is available in the Delta, and it will not be stored in the SWP system. Because an SWP contractor must have an immediate use for Article 21 supply or a place to store it outside of the SWP, not all SWP contractors can take advantage of this additional supply. For those SWP contractors who are able to store their wet weather supplies, Article 21 supply can be stored by being put directly into a reservoir or by offsetting other water that would have been withdrawn from storage, such as local groundwater. In the absence of storage, Article 21 water is not likely to contribute significantly to local water supply reliability. Incorporating supplies received under Article 21 into the assessment of water supply reliability is a local decision based on specific local circumstances, facts, and level of water supply reliability required. This report presents information on Article 21 water separately so local agencies can determine whether it is appropriate to incorporate this supply into their analyses.

Factors of Uncertainty

Estimating future demand for SWP water requires assumptions be made about population growth, water conservation, recycling efforts, other sources of supply available to the SWP contractors, and climate change. The estimates also depend on the cost to the SWP contractor for each of the components of their integrated water management plan. These factors are considered by the SWP contractors in the estimates of their current and future demands.

Treating Water Demand Issues in CalSim II Simulations

SWP Table A and Article 21 demands in the 2009 study have increased from those in the 2007 study from the 2007 SWP Delivery Reliability Report. SWP Table A and Article 21 demands in the 2029 study have also increased from those in the 2027 study from the 2007 SWP Delivery Reliability Report. Specific values used in the CalSim II studies are contained in Appendix A.

Limitations to Estimating Future Water Delivery Reliability

Studies Must Rely on Assumptions

Actual, historical water deliveries cannot always be used with a significant degree of certainty to predict future water deliveries. As discussed earlier, there are continual, significant changes over time in the determinants of water delivery for a specific water supply system. These changes include water storage and delivery facilities, water use in the source areas, water demand in the receiving areas, and the regulatory constraints on the operation of facilities for the delivery of water. Given the highly significant changes that have occurred for the SWP over the past 40 years, past deliveries are not a good predictor of SWP current deliveries, much less of future deliveries.

For example, the demand 30 years ago for water from the SWP was lower than it is now or expected to

be in the future. Lower demand for SWP water resulted in less water transported through the SWP during normal and wet times than could have been—or would have been if the demand for water had been higher. Less water was delivered then because less water was needed; the amount of source water and conveyance capabilities weren't limiting factors for deliveries. Conversely, the recently issued biological opinions' restrictions on SWP exports from the Delta are estimated to reduce annual deliveries from what has been delivered in the recent past. Analyses estimating future SWP deliveries must include assumptions about future (2029) conditions. Some assumptions are very important to the analyses and are key to understanding the resulting estimates of annual water deliveries. A discussion of the important assumptions for the studies in this report follows.

Studies Assume Repeating Historical Weather Patterns

One of the most significant assumptions for water planning in general is how wet, dry and variable the weather will be. Until recently, assuming the future weather pattern would be similar to the past was sufficient for many planning purposes. Given the evolving information on the potential effects of global climate change in the future, this approach is no longer adequate. Incorporating climate change into future projections is difficult because of the many ways the patterns of rain, snow and temperature could shift. A way to measure some of the uncertainty is to analyze many potential climate change scenarios in order to capture the range of water supply effects.

This report contains estimates of future SWP deliveries under one selected median-impacts climate change projection. The historical record of precipitation information for the Central Valley for the period 1922 through 2003 is modified to reflect the future climate projection. The amount and timing of rainfall and runoff is adjusted but the sequence of dry years or wet years is the same for all scenarios. Evaluating how water management systems will respond under severely dry periods is limited to assuming the worst droughts in the period of historical record. The worst multiyear drought on record is 1928 through 1934, although the brief drought from 1976 through 1977 was more acutely dry.

Other Important Assumptions

To identify the assumptions with the most effect on the estimates of SWP deliveries, DWR conducted a sensitivity analysis for assumptions in CalSim II model studies. In a sensitivity analysis, an assumption such as the amount of water used in the watershed above Lake Oroville is varied over several studies and the results for SWP deliveries are compared. This is done to assess how each assumption affects study results. The *2005 SWP Delivery Reliability Report* presents and discusses the results of DWR's study. The parameters having the largest net effect on SWP Delta deliveries are SWP Table A demands and Banks Pumping Plant limits. The most elastic parameters (i.e., parameters causing the most percent change in SWP deliveries per percent change in value) are SWP Table A demands and Lake Oroville inflow. The estimates for the future inflow to Lake Oroville depend on what is assumed for climate change. Legal limitations are one of the factors defining the rules for operating Banks Pumping Plant. Therefore, the assumptions for climate change and the restrictions of the FWS' and NMFS' BOs directly affecting Banks Pumping Plant operations will significantly affect SWP delivery estimates.

Status of Planning Activities That May Affect SWP Delivery Reliability

3

As discussed earlier, the Sacramento-San Joaquin Delta is an essential part of the conveyance system for the SWP. SWP pumping at Banks Pumping Plant is regulated to protect the many uses of the Delta. However, today's uses in the Delta are not sustainable over the long term under current management practices and regulatory requirements. A comprehensive plan to meet the Delta's and California's water challenges was approved by Governor Schwarzenegger in November 2009. That plan and the key planning efforts involving the Delta are discussed below.

2009 Comprehensive Water Package

In November 2009, four legislative bills and the supporting bond bill, creating a comprehensive water package designed to meet California's water challenges, were approved by Governor Schwarzenegger. The legislation establishes the governmental framework to achieve the co-equal goals of providing a more reliable water supply to California and restoring and enhancing the Delta ecosystem. The package includes requirements to improve the management of our water resources by monitoring groundwater basins, developing agricultural water management plans, reducing statewide per capita water consumption 20 percent by 2020, and reporting water diversions and uses in the Delta. It also appropriates $250 million for grants and expenditures for projects to reduce dependence on the Delta.

The Safe, Clean, and Reliable Drinking Water Supply Act of 2010 will come before the California voters in November 2010. If enacted, it would provide funding for California's aging water infrastructure and for projects and programs to improve the ecosystem and water supply reliability for California. The bond bill includes $2.25 billion for actions improving Delta sustainability. These investments will help to reduce seismic risk to Delta water supplies, protect drinking water quality, and reduce conflict between water management and environmental protection.

Delta Vision

In September 28, 2006, Gov. Schwarzenegger signed an executive order to establish an independent Blue Ribbon Task Force to develop a durable vision for sustainable management of the Sacramento-San Joaquin Bay Delta. The Delta Vision process concluded at the end of 2008 with a suite of strategic recommendations for long-term, sustainable management of the Sacramento-San Joaquin Delta. Their recommendations were based upon seven broad goals. These goals helped to guide the development of the 2009 Comprehensive Water Package and are:

- Legally acknowledge the equal goals of restoring the Delta ecosystem and creating a more reliable water supply for California.
- Recognize and enhance the unique cultural, recreational, and agricultural values of the California Delta.
- Restore the Delta ecosystem as the heart of a healthy estuary.
- Promote statewide water conservation, efficiency, and sustainable use.
- Build facilities to improve the existing water conveyance system and expand statewide storage, and operate both to achieve the equal goals.
- Reduce risks to people, property, and state interests in the Delta by effective emergency preparedness, appropriate land used, and strategic levee investments.
- Establish a new governance structure with the authority, responsibility, accountability, science support, and secure funding to achieve these goals.

Delta Risk Management Strategy

The Delta Risk Management Strategy (DRMS) was initiated as a component of the 2000 CALFED Record of Decision. In 2005, the Legislature passed and the governor signed AB 1200, which requires DWR to evaluate the potential effects on water supply derived from the Delta based on 50-, 100-, and 200-year projections for possible effects on the Delta due to subsidence, earthquakes, floods, climate change, and combinations of these. The assessment of risks and the associated consequences to the State are contained in the DRMS Phase 1 Report, completed in February 2009.

In Phase 2 of DRMS, DWR and the Department of Fish and Game (DFG) must determine the principal options for reducing the risks to, among other things, prevent the disruption of water supplies derived from the Delta, improve the water quality of drinking water supplies from the Delta, and maintain Delta water quality for Delta users. DFG is to evaluate and comparatively rate each option for its ability to restore salmon and other fisheries that use the Delta. The study is to be completed by Summer, 2010.

The DRMS is a major source of scientific and technical information on the Delta and Suisun Marsh levees for other major studies and initiatives.

CALFED Ecosystem Restoration Program Conservation Strategy

The Ecosystem Restoration Program (ERP) Conservation Strategy has been developed by the Department of Fish and Game (DFG) in collaboration with the National Marine Fisheries Service (NMFS) and US Fish and Wildlife Service (USFWS), the three implementing agencies for the program. It provides the foundation for regional implementation of the ERP guided by a science based adaptive management approach designed to improve aquatic and terrestrial habitats and improve ecological functions in the

Bay-Delta to support sustainable populations of fish and wildlife species. It represents a "single blueprint" for conservation and recovery of species and will integrate the NMFS recovery plan for Central Valley salmonids and the USFWS Delta Native Fishes Recovery Plan, once these plans are completed. While the ERP Conservation Strategy currently focuses on the Delta and Suisun Marsh it will be expanded to include the tributaries to the Delta.

The ERP Conservation Strategy represents the perspectives of the three fish and wildlife agencies on what is needed at a programmatic level to achieve biological conservation and management goals in the Delta. It serves to guide more detailed planning efforts such as the Bay Delta Conservation Plan (BDCP). The BDCP is currently evaluating specific detailed actions which would implement at least in part those described more generally in the ERP Conservation Strategy. In particular, BDCP will be addressing the issues of conveyance and flows as a component of ecosystem restoration.

Bay-Delta Conservation Plan

The Bay Delta Conservation Plan (BDCP) is being developed to promote the recovery of endangered, threatened and sensitive fish and wildlife species and their habitats in the Sacramento-San Joaquin Delta in a way that will also protect and restore water supplies.

The BDCP is:

- Identifying conservation strategies to improve the overall ecological health of the Delta.
- Identifying ecologically friendly ways to move fresh water through and/or around the Delta.
- Addressing toxic pollutants, invasive species, and impairments to water quality.
- Establishing a framework and funding to implement the Plan over time.

The BDCP is being developed in compliance with the Federal Endangered Species Act and the California Natural Communities Conservation Planning Act. When completed, the BDCP would provide the basis for the issuance of endangered species permits for the operation of the state and federal water projects. The plan would be implemented over the next 50 years. The heart of the BDCP is a long-term conservation strategy that sets guidelines for the actions needed for a healthy Delta.

State and federal agencies are developing a joint Environmental Impact Report/Statement (EIR/EIS) under the Delta Habitat Conservation and Conveyance Program. The EIR/EIS will determine the potential environmental impacts of the proposed BDCP. The draft EIR/EIS is expected to be ready for public review and comment by mid-2012 and the BDCP Habitat Conservation Plan is scheduled to be delivered early in 2011.

Delta Habitat Conservation and Conveyance Program

The DHCCP is a partnership between DWR and the U.S. Bureau of Reclamation to evaluate the ecosystem restoration and water conveyance alternative identified by the BDCP along with other conveyance alternatives. The evaluation culminates in the completion of a joint EIR/EIS. The State and federal lead agencies for the EIR/EIS are DWR, the USBR, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service. Development of the EIR/EIS is being done in cooperation with the California Department of Fish and Game, the U.S. Environmental Protection Agency, and the U.S. Army Corps of Engineers. The draft DHCCP EIR/EIS is scheduled to be completed mid-2012.

2-Gates Fish Protection Demonstration Project

The 2-Gates Fish Protection Demonstration Project (2-Gates Project) is proposed to be installed for 5 years to test its ability to control flows and thereby protect delta smelt and other sensitive aquatic species through reduced entrainment at the SWP and CVP Delta pumping facilities. The 2-Gates Project would install and operate removable gate structures in two key locations in the central Delta; in Old River between Bacon Island and Holland Tract, and in Connection Slough between Mandeville Island and Bacon Island. The structures would be opened and closed in conjunction and coordination with operation criteria established by state and federal water quality and environmental regulators. An extensive water quality and fish monitoring program is proposed, using existing and new monitoring actions, to support the validation of the project.

The structures would be temporary and removed after a five-year evaluation period. These facilities include sheet pile dikes extending from each channel bank to the gates, a pile-supported boat ramp to reduce effects to recreational boating and limited dredging and ground disturbance to minimize other biological effects. Barge-mounted gates will be fabricated off-site, floated to the site, and installed by ballasting each gate in place adjacent to the sheet pile dikes.

The project lead is the U.S. Bureau of Reclamation (USBR). Public review of the draft environmental assessment (EA) and a finding of no significant impacts (FONSI) closed on November 30, 2009. A final EA and FONSI may follow.

Areas of Significant Uncertainty for SWP Delivery Reliability

4

There are three significant factors contributing to uncertainty in the delivery reliability of the SWP: possible effects from climate change and sea level rise, the vulnerability of Delta levees to failure, and greater operation restrictions imposed by the USFWS and NMFS in response to decreasing populations of endangered fish species. Each of these uncertainties is discussed below.

Climate Change and Sea Level Rise

Climate change is identified in the draft 2009 update of the *California Water Plan (Bulletin 160-09)* as one of the key considerations in planning for the state's water management. California's reservoirs and water delivery systems were developed based on historical hydrology and, under climate change, the past may no longer be a good guide for the future. In fact, changes have already been observed in California's climate over the past 100 years (DWR, 2009). Air temperatures have risen about 1 degree Fahrenheit with the greatest changes occurring at night and at higher elevations. Early spring snowpack in the Sierra Nevada, a key natural reservoir for California's water supply, has decreased about 10% resulting in a loss of about 1.5 million acre-feet of water storage. Sea levels along the California coast have risen by about 7 inches.

The climate is expected to continue changing in the future (DWR, 2009). Mean temperatures are predicted to increase by 1.5 degrees to 5.0 degrees Fahrenheit by mid-century and 3.5 degrees to 11 degrees by the end of the century. These rising air temperatures are expected to continue to reduce snowpack, especially in low elevation watersheds where more precipitation may fall as rain rather than snow (Chung et al., 2009). Reduced snow pack is expected to lead to higher winter runoff and lower spring runoff. This could increase flooding during the winter and reduce river flows in the spring and summer, which may require water managers to evaluate the tradeoffs between flood protection and water supply. Future sea level rise estimates range from 4 to 16 inches by mid-century and 7 to 55 inches by the end of the century (DWR, 2009). Higher sea levels could threaten the existing levee system in the Sacramento-San Joaquin Delta. Salinity intrusion into the Delta could also require increased releases of freshwater from upstream reservoirs to maintain compliance with water quality standards.

For the SWP, these climate changes have the potential to simultaneously affect the availability of source water, the ability to convey water, and users' demands for water. This may exacerbate the existing mismatch in California between where and when precipitation occurs and where and when people use water.

Previous Assessment of Climate Change Impacts on SWP Delivery Reliability

To better understand how the future reliability of the SWP and CVP may be affected by climate change, DWR examined possible effects for 12 future climate scenarios in a report titled *Using Future Climate Projections to Support Water Resources Decision Making in California* (Chung et al., 2009). The 12 scenarios represent projections from six Global Climate Models for a higher and a lower future greenhouse gas emissions scenario. The studies also took into account Delta salinity intrusion due to sea level rise and resulting changes in reservoir operations to maintain Delta water quality. Shifts in both water supply and water demands were considered. Several factors related to water supply reliability were examined: annual Delta exports, reservoir carryover storage, Sacramento Valley groundwater pumping, and additional water supplies needed to reduce the frequency and extent of system vulnerability to operational interruption. For the range of future climate projections studied, the reliability of the SWP and CVP water supply systems is expected to be reduced. Although the analysis examined both mid-century and end-of-the-century effects, only mid-century effects are discussed in this report.

One indicator of the amount of water that the SWP can supply south of the Delta is annual Delta exports, which is the total amount of water transferred (exported) south of the Sacramento-San Joaquin Delta through the SWP's Banks Pumping Plant and the CVP's Jones Pumping Plant over the course of one year. At mid-century, median Delta exports are reduced by 7% for the lower greenhouse gas emissions scenario and by 10% for the higher emissions scenario. It is important to note that the full range of mid-century changes in Delta exports for the 12 future climate scenarios spans an increase of 2% to a decrease of 19%. These decreases in annual Delta exports would reduce water deliveries south of the Delta.

An important factor in California's water supply reliability is the amount of water stored in reservoirs from one year to the next. This stored water is like a water supply savings account that allows water managers flexibility during tough times. This water supply savings account is called reservoir carryover storage, and it is the amount of water remaining in a reservoir at the end of September that is available (carries over) for use the next water year. At mid-century, median reservoir carryover storage is reduced by 15% for the lower greenhouse gas emissions scenario and by 19% for the higher emissions scenario. These reductions in reservoir carryover storage would reduce the systems' flexibility during water shortages.

In the Sacramento Valley, reduced surface water supplies are assumed to be augmented by increased groundwater pumping. For agricultural and urban areas where there is access to both surface water and groundwater, surface water diversions are assumed to be used first up to the maximum amount allowed by current contracts. Any unmet demand is then supplied by groundwater pumping. For areas where there is no surface water access, all demands are met by groundwater pumping. At mid-century the median Sacramento Valley groundwater pumping increases by 5% for the lower greenhouse gas emissions scenario and by 9% for the higher emissions scenario.

Under climate change and in some years, water levels in the main supply reservoirs (Shasta, Oroville, Folsom, and Trinity) could fall below the lowest release outlets making the system vulnerable to operational interruption. By mid-century, it is expected that a water shortage worse than the one during the 1977 drought could occur in 1 out of every 6-8 years. In those years, it is estimated that an additional

575-850 thousand acre-feet of water would be needed to meet current regulatory requirements and to maintain minimum system operations. This water could be obtained through additional water supplies, reductions in water demands, or a combination of the two. For current conditions, the report concludes the system is not considered vulnerable to this type of operational interruption.

Selection of Climate Change Scenario for Updated Reliability Assessment

For the purposes of this report, the 2029 delivery estimates are based upon a single median future climate projection. To identify this projection, a separate analysis was conducted of the 12 mid-century climate projections contained in *Using Future Climate Projections to Support Water Resources Decision Making in California* (Chung et al., 2009), and their resulting water supply effects to determine which one most closely represented the "central" or "median" projection. The metrics used for comparison consisted of projected climate and hydrology variables, and their effects on CVP/SWP system exports; namely, temperature, precipitation, total inflow to major reservoirs, shifts in timing of run-off, and Delta exports. Using these metrics, the future climate projection from the MPIECHAM5 global climate model run for the higher greenhouse gas emissions scenario was selected to be representative of median SWP-CVP effects, and thus is used for the analyses presented in this report.

Vulnerability of Delta Levees to Failure

Delta levees provide constant protection from flooding because most lands in the Delta are below sea level. Most Delta levees, however, do not meet modern engineering standards and are highly susceptible to failure. Levees are subject to failure at times of high flood flows, but also at any time of the year due to seepage or the piping of water through the levee, slippage or sloughing of levee material, or sudden failure due to an earthquake. According to the URS Corp./Jack R. Benjamin & Associates report, *Report, Phase 1: Risk Analysis, Delta Risk Management Strategy (DRMS)*, December 2008, the risk of levee failure in the Delta is significant, as shown by the fact that most islands in the Delta have flooded at least once over the past 100 years, with many flooding at least twice. Since 1900, there have been 158 levee failures.

A breach of one or more levees and island flooding may affect Delta water quality and water operations. Depending on the hydrology and the size and locations of the breaches and flooded islands, a significant amount of saline water may be drawn into the interior Delta from Suisun and San Pablo bays. At the time of island flooding, exports may be drastically reduced or ceased to evaluate the salinity distribution in the Delta and to avoid drawing higher saline water toward the pumps. The introduced salinity then could become dispersed and degrade Delta water quality for a prolonged period because of complex relationships between Delta inflows, tidal mixing, and the time taken to repair the breaches.

A large earthquake in the Delta causing significant levee failures and island flooding could lead to multiyear disruptions in water supply, significant water quality degradation, as well as permanent flooding of several islands. Such permanent multi-island flooding would probably lead to increased salt water intrusion into the Delta during seasonal low inflows. Maintaining Delta water quality when several islands are flooded and breaches are open would require additional Delta inflow because the volume of water coming into the Delta on the flood tide would increase, requiring more fresh water from the rivers to prevent the saline water from extending into the Delta. When SWP and CVP pumping are restarted, Delta inflow would need to increase again beyond the pumping amount in order to prevent water quality degradation in the Delta. This chain of events would significantly affect water supply reliability by limiting pumping and requiring additional reservoir releases to generate the needed higher Delta inflows. A worst

case scenario for water supply effects would be a moderate or large earthquake causing extensive levee failure in the late summer or fall of a dry year.

The levee break on Middle River and subsequent flooding of Upper Jones Tract in 2004 is a small-scale example of this phenomenon. Following the break, Delta pumping was curtailed for several days to prevent seawater intrusion. Water shipments down the California Aqueduct were continued through unscheduled releases from San Luis Reservoir. Also, Shasta and Oroville reservoir releases were increased to provide for salinity control in the Delta.

A growing concern about the long-term viability of the Delta's levee system led to the initiation of the Delta Risk Management Strategy (DRMS).

Delta Risk Management Strategy

The Delta Risk Management Strategy is being developed in two phases. Phase 1 is the analysis of the risk of levee failures and the associated potential economic, environmental, and public health and safety effects. The final Phase 1 Report was completed in February 2009. Phase 2, expected to be completed by Summer 2010, is to develop and evaluate strategies to reduce risks from levee failures. The risk analysis includes the likely occurrence of earthquakes of varying magnitudes in the region, future rates of subsidence given continued farming practices, the likely magnitude and frequency of storms, and the potential effects associated with global climate change (sea level rise, climate change, temperature change). Estimated risks to the Delta were made for 50-, 100-, and 200-year projections since risk can be expected to increase with time.

The DRMS Phase 1 Report looks at several hazards to levees: seismic events that cause levee failures, flood flows that can overtop levees or cause levee failure by increased pressure and seepage, undetected problems during non-flood flow periods, and erosion due to high wind waves. The level of risk of failure of Delta levees was determined by considering: the frequency of different magnitudes of hazards that can challenge the integrity of Delta levees, how vulnerable different levee reaches are to hazards, how hazards and levee vulnerabilities combine to produce levee failure, and the economic and ecosystem effects due to levee failure. The analysis assumes that existing regulatory and management practices will continue.

Potential Interruption/Disruption of SWP Deliveries Due to Earthquakes

A strong earthquake affecting the Delta could cause simultaneous levee failures on several islands, with these islands flooding simultaneously. Preliminary analysis indicates that some water may not be treatable by municipal agencies for many months due to high organic carbon concentrations. This would extend the period that Delta water supply would be unavailable for urban users.

Key findings of the Phase 1 report on possible effects on SWP deliveries due to earthquakes are:

- There is about a 40% chance of 27 or more islands simultaneously failing during a major earthquake in the next 25 years.
- A moderate to large earthquake capable of causing multiple levee failures could happen in the next 25 years. Under such an earthquake, extensive levee failure would most likely occur in the west and central Delta. Levee repairs could take more than 2.5 years and exports from the Delta could be disrupted for about a year with a loss of up to 8 million acre feet of water.
- By 2050, the risk of island flooding from seismic events is expected to increase by 35% over 2005 conditions, if a seismic event has not occurred.

Potential Interruption/Disruption of SWP Deliveries Due to Floods

During an average year, about 85% of the total Delta inflow comes from the Sacramento River and 10% comes from the San Joaquin River. The remaining Delta inflow primarily comes from three eastside tributaries. Inflow from the Sacramento and San Joaquin rivers depends on reservoir releases, precipitation, and snowmelt. Over the long-term, many different combinations of high flood flows in the Sacramento and San Joaquin rivers are possible because of the large geographical extent of the two rivers' watersheds and the variability in storm paths. The Phase 1 analysis considers the magnitude and frequency of flooding in different parts of the Delta from different sources to evaluate the probability of these high flows. This approach allows the inclusion in the risk analysis of floods that, while possible, are larger than any in the historic record. If the analysis solely relied upon the historical data, the analysts believe the risk would be underestimated.

Potential disruption of Delta exports due to floods and levee failures would depend on the number of flooded islands, the timing and size of the flood flows, and the water quality in the Delta and Suisun Bay at the time of the flood. However, during such high flows, there would normally be little or no effect on the water quality of the exports due to levee failures and DRMS assumes no significant effect on Delta exports.

Key findings of the Phase 1 report on possible effects to SWP deliveries by the year 2050 due to flood flows are:

- Delta flood hazard is expected to increase due to sea level rise and more frequent high flows.
- The frequency of island flooding from floods is expected to increase over 2005 conditions.
- The frequency of floods is expected to increase by 35% and levees are expected to become more vulnerable to flooding due to increased seepage and stability problems associated with more subsidence and sea level rise.

The combined effects of increased levee vulnerability and flood flows indicate an expected 80% increase in island flooding from flood flows.

Potential Interruption/Disruption of SWP Deliveries Due to "Sunny Day" Event

A "sunny day" levee failure is a failure that occurs during non-flood times and is not caused by an earthquake. Possible causes of levee failure include wave action, animal activity, and seepage. The DRMS reports that, on average, there will be about 10 sunny-day breaches with 100 years of exposure in the Delta. These types of levee failures are not expected to involve the simultaneous multi-levee events as could happen with high flood flows or a large earthquake.

Combined Potential Interruption/Disruption of SWP Deliveries

DRMS evaluated combined risk of levee failure due to earthquakes, floods, and "sunny day events" as well as how risks may change in the future. Key findings by DRMS are:

- Levee hazards are expected to grow in the future due to such factors as sea level rise and more frequent flood flows that will put more pressure on the levees.
- The overall likelihood of a major Delta event causing extensive levee failure is increasing as is the magnitude of the consequences from a given event.
- There is a possible range of sea level rise of from 0.7 to 4.6 feet over the next 100 years, depending on the assumed future greenhouse gas emissions and the forecast model used. Current estimates by the Intergovernmental Panel on Climate Change indicate that sea level will rise from 0.6 to 1.9 feet over the next 100 years. The CALFED Independent Science Board

(ISB) has recommended that planning that incorporates sea level rise should use the full range of variability of 20-55 inches.

Delta Flood Emergency Preparedness and Response Plan

As part of its efforts to reduce effects to the SWP should a levee failure occur, DWR has initiated the development of the DWR Delta Flood Emergency Preparedness and Response Plan (DWR Delta Flood EPRP). DWR has emergency response procedures for a Delta levee failure in place but the DWR Delta Flood EPRP will enhance the state's ability to prepare for, respond to, and recover from a catastrophic Delta levee failure. This new scalable plan will provide DWR with updated techniques and procedures should a catastrophic Delta levee failure occur. This plan will be DWR's roadmap for coordinating the protection of life and property with our local, state, and federal partners in a levee disaster while protecting the state's water system.

DWR has completed the first of two phases of engineering design work intended to enhance the state's ability to respond to large-scale levee failures or floods in the Delta. In the first phase, DWR conducted a discovery process to analyze previously developed plans and procedures and to identify current DWR capabilities for response to emergencies and disasters in the Delta. In the second phase, DWR will further engage its response partners in local, state, and federal government, and in the private sector to develop a more detailed DWR Delta Flood Emergency Preparedness and Response Plan. This response plan will be consistent with and in compliance with California's Standardized Emergency Management System (SEMS) and with the National Incident Management System (NIMS)[2]. The main goal of this plan is to reduce the recovery time from a catastrophic levee failure of Delta water users. This will be achieved through the development of new response tools, enhanced response methods, and clarifying response roles in the Delta.

National Marine Fisheries Service and Fish and Wildlife Service Biological Opinions

Over the past 5 years and in response to declining fish populations, the rules defined by the federal biological opinions issued under the Endangered Species Act for the operation of the SWP and CVP in the Delta have become more and more restrictive. In December 2008, the USFWS issued a new biological opinion for delta smelt. In June 2009, the NMFS issued a new biological opinion covering winter-run and spring-run Chinook salmon, steelhead, green sturgeon, and killer whales. The biological opinions imposed additional operational requirements that restrict the amount of water supply that can be exported from the Delta. Below are some highlights of each biological opinion.

USFWS Biological Opinion

The USFWS Biological Opinion (BO) includes additional requirements in all but two months of the year. From December to June, an adaptively managed flow restriction is in place for the average Old River and Middle River (OMR) flow. The flow restriction can begin as early as December 1 based on USFWS'

[2] SEMS is an emergency management system required by California Government Code Section 8607(a) for managing incidents involving multiple jurisdictions and agencies. NIMS is a nationwide, federal emergency management approach, for managing incidents with all levels of government, private-sector, and nongovernmental organizations working together. For more SEMS/NIMS information, please visit: www.oes.ca.gov.

determination. However, the restriction is more likely to start after December 20 and is based on turbidity and salvage triggers. The restriction has three phases that are intended to protect delta smelt at various life stages. The actual OMR flow target is dependent on delta smelt survey information. The USFWS determines the required target flow. Managing to OMR flow is accomplished primarily by reducing the CVP and SWP exports. Because determining an OMR restriction is based on fish location and decisions by USFWS staff, predicting an OMR restriction and corresponding export pumping with any great certainty poses a challenge.

The USFWS BO also imposes an additional salinity requirement in the Delta for September and October in wet and above-normal water years. In these years, fresher water must be maintained at locations further west than during the other types of water years. In November during years when this requirement is in place, inflow into the SWP and CVP reservoirs will be passed downstream to augment the outflow until the prior-month's required location for the fresher water is reached.

NMFS Biological Opinion

The requirements contained in the NMFS' BO also added an OMR requirement. However, we expect that the USFWS OMR requirements will satisfy or be sufficiently protective of the listed species under the NMFS biological opinion.

The NMFS' BO also expands the duration of a Spring-time operation which combines a significant reduction in Delta exports with a pulse flow on the San Joaquin River from one month to two months. The requirement would likely result in total exports being limited to 1,500 cubic feet per second except in extremely wet cases during April and May.

Under the BO, the Delta Cross Channel gates are closed more frequently from October through December 14, and completely closed between December 15 and January 31. Previously, as defined by Water Right Decision 1641, the Delta Cross Channel was closed up to 45 days between November 1 and January 31. This operation can require additional export reductions in order to meet the water quality objectives contained in the water right permits for the SWP and CVP.

There are a number of additional actions under the BO that require temperature, flow and storage requirements on the CVP system. These additional actions or requirements could have an effect on real-time SWP operations.

General Approach for Assessing SWP Delivery Reliability

5

CalSim II, a computer model jointly developed by DWR and U.S. Bureau of Reclamation, simulates much of the water resource infrastructure in the Central Valley and Delta region of California. CalSim II models all areas that contribute flow to the Delta. The geographical coverage includes the Sacramento River Valley, the San Joaquin River Valley, the Sacramento-San Joaquin Delta, the Upper Trinity River, and the CVP and SWP service areas. CalSim II simulates operation of the CVP-SWP system using a monthly time step. The model assumes that facilities, land use, water supply contracts, and regulatory requirements are constant over this period.

General Solution Techniques and Incorporating Operational Constraints

CalSim II routes water through a CVP-SWP system network representation. The network includes more than 300 nodes and more than 900 arcs, representing 24 surface reservoirs and the interconnected flow system. CalSim II uses logic for determining deliveries to north-of-Delta and south-of-Delta CVP and SWP contractors. The delivery logic uses runoff forecast information that incorporates uncertainty and standardized rules that relate forecasted supplies to estimate the water available for delivery and reservoir carryover storage. The assumed delivery levels are updated monthly within the model for the periods January 1 through May 1 for the SWP and March 1 through May 1 for the CVP to correspond to the updated runoff forecasts. The south-of-Delta SWP and CVP deliveries are based on water supply parameters and operational constraints.

Hydrology

A range of hydrologic conditions based on the historical flow record is used to represent the possible range of water supply conditions. The hydrology used by CalSim II was developed jointly by DWR and U.S. Bureau of Reclamation by adjusting the historical flow record to account for the influence of land-use changes and upstream flow regulation. Sacramento Valley and tributary basin hydrologies are developed by

adjusting the historical sequence of monthly stream flows to represent a sequence of flows at a current or future level of development. Adjustments to historical water supplies are determined by imposing the current or future level land use on historical meteorological and hydrologic conditions. San Joaquin River basin hydrology is developed in a different manner and uses fixed annual demands and a regression analysis to develop flow accretions and depletions. The resulting hydrology represents the water supply available from Central Valley streams to the CVP and SWP at a current or future level of development. Groundwater is modeled as a series of interconnected basins. Groundwater pumping, recharge from irrigation, stream-aquifer interaction and interbasin flow are calculated dynamically by the model.

The hydrology for the 2029 level of development that was used in the studies in this report has been modified to incorporate effects of climate change for a selected median- impact future climate projection. The effects of climate change on inflows to major SWP and CVP reservoirs was estimated using the method from the 2009 Report *Using Future Climate Projections to Support Water Resources Decision Making in California* (Chung et al., 2009). This method adjusts the base hydrologic sequence to reflect projected changes in the timing and volume of inflow. For each month of the year, streamflows based on the future climate projection were compared to historical streamflows to estimate how much higher or lower future streamflows may be than historical flows. The monthly values for the reservoir inflows were then adjusted to represent the monthly trends for the future climate projection. Further adjustments are made to the hydrology to represent projected changes in annual runoff volume.

Demands

North of Delta

For both the 2009 and 2029 scenarios agricultural and outdoor urban land use based demands are calculated from an assumed cropping pattern and a soil-moisture budget. For the 2009 level study the land use based demands have been estimated using fixed 2009 land use and historical hydrology. For the 2029 level study the land use based demands have been estimated using fixed 2029 land use but the hydrology in the Sacramento Valley has been modified to incorporate effects of climate change under a selected representative climate change projection. This modification procedure is similar to what was used to modify inflows to major SWP and CVP reservoirs as discussed in the 2009 Report (Chung et al., 2009). Both land use based demands and estimated contract amounts serve as upper bounds on deliveries.

South of Delta

South of Delta demands, unlike North of Delta demands, are contract based. SWP Table A and Article 21 demands for the 2009 scenario are preprocessed independent of CalSim II and vary annually according to hydrologic conditions. SWP Table A demands for the 2029 scenario are assumed to be at maximum entitlement annually. Article 21 demands in the 2029 scenario, however, vary annually according to hydrologic conditions.

Meeting Delta Water Quality Standards

CalSim II uses DWR's Artificial Neural Network (ANN) model to simulate the flow-salinity relationships for the Delta. The ANN model correlates salinity at key locations in the Delta with Delta inflows, Delta exports, and Delta Cross Channel operations. The model estimates salinity at four locations for modeling Delta water quality standards. These locations are Old River at Rock Slough, San Joaquin River

at Jersey Point, Sacramento River at Emmaton, and Sacramento River at Collinsville.

CalSim II Priorities in Water Deliveries

CalSim II allocates water according to the four priorities shown below. Highest priority is given to prior-right water users, minimum in-stream flow requirements and water quality requirements. While CVP and SWP contractor deliveries take precedence over next year's reservoir storage, a balance between the two is struck in the allocation decision to ensure that enough water is left in storage at the end of the year in case of impending drought.

1. Prior-right water users, minimum in-stream flow requirements, and water quality requirements.
2. SWP Table A contractors and CVP contractors.
3. Reservoir storage for the next year (carryover).
4. SWP Article 21 deliveries.

SWP Table A and Article 21 Deliveries

The CalSim II simulations in this report estimate SWP delivery amounts for SWP Table A and Article 21. As mentioned in Chapter 2, SWP Table A is the contractual method for allocating available supply and the total of all maximum SWP Table A amounts for deliveries from the Delta is 4.133 million acre-feet (maf) per year. Article 21 refers to a provision in the contract for delivering water that is available in addition to SWP Table A amounts. Article 21 of SWP contracts allows contractors to receive additional water deliveries only under specific conditions. These conditions are:

1. The water is available only when it does not interfere with SWP Table A allocations and SWP operations.
2. The water is available only when excess water is available in the Delta.
3. The water is available only when conveyance capacity is not being used for SWP purposes or scheduled SWP deliveries.
4. The water cannot be stored in the SWP system. In other words, the contractors must be able to use the Article 21 water directly or be able to store it in their own system.

CalSim II Performance

Some of the comments to the *Draft 2003 SWP Delivery Reliability Report* expressed concern about the accuracy of CalSim II and the credibility of conclusions about SWP delivery reliability that are based on CalSim II simulations. To respond to these concerns, DWR conducted several CalSim II studies. In one study, results from a CalSim II simulation using historical input from 1975 to 1998 were compared to historical operations. This study is documented in the report *CalSim-II Simulation of Historical SWP/CVP Operations, Technical Memorandum Report, November 2003* and was provided in Appendix E of the *2005 SWP Delivery Reliability Report.* In a second study, a sensitivity analysis was performed to quantify the effects of various inputs on CalSim II results. Two performance measures were used, a Sensitivity Index and Elasticity Index, to quantify the sensitivity of 12 model output responses to 12 different model input parameters. This sensitivity study was also provided in Appendix E of the *2005 SWP Delivery Reliability Report.*

In a follow-up study, DWR staff conducted a more detailed analysis of the sensitivity results, focusing on the delivery reliability of the SWP system. The results of this analysis are documented in an internal

memorandum report dated April 30, 2007. The purpose of this analysis was to assist SWP contractors and other interested parties in evaluating the effect of model input parameters on SWP deliveries (SWP Delta deliveries, SWP north-of-Delta deliveries, and SWP deliveries under Article 21) with respect to a selected subset of input parameters.

Recent Improvements to CalSim II Simulations

The CalSim II model is modified in response to new in water system operational requirements, updated information, or improvements in computational methods. Changes to the model are discussed in Appendix A. Enhancements to CalSim II of note are:

- **Greater resolution in the representation of the Delta channel configuration and of the distribution of Net Delta Island Consumptive Use (Net DICU).** The representation of the Delta Channels was reconfigured to mimic the flow dynamics in the interior Delta, specifically to capture the flow effects in the Old and Middle Rivers. Channel configurations and flow regressions were taken from the paper *A Model to Estimate Combined Old & Middle River Flows – Paul Hutton, Ph.D., P.E., Metropolitan Water District of Southern California, April 2008.*
- **Article 56 Extended Carryover deliveries.** Article 56 Extended Carryover deliveries is a category of water delivery available to SWP Table A contractors that was not represented in the previous model used in the 2007 delivery reliability report. Modeling this category of water delivery gives a more realistic representation of real world export patterns throughout the delivery contract year.
- **Three-pattern deliveries.** The practice of the SWP delivering water based on three delivery patterns submitted by the SWP contractors for 30%, 50%, and 100% allocations is now modeled. Modeling the three delivery patterns based on the level of allocation gives a more realistic representation of real world export patterns throughout the delivery contract year.
- **Improved modeling of flow-salinity relationships in the Delta.** The previous Artificial Neural Network (ANN) used to estimate flow-salinity relationships has been replaced with a newer more accurate version. The new ANN and its accompanying implementation to the CalSim II model produces salinities that match more closely the Delta Simulation Model 2 (DSM2) salinities.
- **X2 positions and flow requirements estimated using an Artificial Neural Network.** The X2 positions and flow requirements were previously estimated using the Kimmerer-Monismith Equation. The new ANN used to estimate X2 position more closely matches the DSM2 model X2 position.
- **Sea Level Rise.** The phenomenon of sea level rise and its effect on Delta salinities is now modeled. Artificial Neural Networks were developed to estimate flow-salinity relationships in the Delta with an assumed increment of sea level rise for a mid-century condition.
- **SWP South of the Delta (SOD) Allocations.** The SWP SOD Allocation logic has been modified so that adjustments to the Water Supply Index-Delivery Index based allocations are made to account for the export restrictions imposed by the new Biological Opinions. The Biological Opinions dictate that San Joaquin River flows are now the determining factor for export capacity from the Delta. This new logic forecasts export capacity based on San Joaquin River wetness and then develops allocations from them.

Assessment of Present and Future SWP Delivery Reliability

6

These updated estimates of the current and future delivery reliability of the SWP reflect the changes in project operation due to the requirements contained in the USFWS' biological opinion issued in December 2008 and the NMFS' biological opinion issued in June 2009. These opinions are discussed in more detail in Chapter 4. The estimates for the future delivery amounts also incorporate assumptions regarding rainfall, runoff, and water supply demand based upon changed climatic conditions.

The updated estimates are presented alongside results from the 2007 SWP Delivery Reliability Report to help identify and explain impacts to delivery reliability due to the biological opinions' requirements and future climate change with sea level rise. At the end of the chapter, a comparison of the estimated SWP deliveries under Current (2009) Conditions to those under Future (2029) Conditions is presented. This chapter contains tables summarizing the updated estimated delivery amounts of the studies for the entire study period (1922-2003), dry years, and wet years and presents information on the estimated probability of annual SWP Table A delivery amounts currently and 20 years in the future. The annual values for SWP deliveries estimated by all the CalSim II simulations are listed in tables in Appendix B. These tables also show the annual Table A demands assumed for each study.

The results indicate potentially significant differences between the updated studies and studies done for the 2007 report under both current and future conditions for estimated deliveries during some periods. In general, updated estimates of both current and future SWP Table A deliveries are less than the deliveries presented in the 2007 report, during near-normal to wet years. The updated studies generally show slightly lower SWP Table A deliveries under Future (2029) Conditions when compared to Current (2009) Conditions. There are, however, some larger decreases in deliveries in the future during multiple dry-year periods. This is primarily due to the effects of the assumed climate change scenario that includes sea level rise. In comparison, the 2007 report showed frequent increases in future deliveries.

Assessment of SWP Delivery Reliability under Current (2009) Conditions

Current Conditions refer to those conditions in effect in 2009. They are described below. Corresponding results from the 2007 SWP Delivery Reliability Report are presented throughout this section for comparison. Appendix A presents a detailed discussion of the study assumptions for this report.

Availability of Source Water

The 2005 level of development (level of water use in the source areas) is assumed to be representative of 2009. The hydrologic sequence of simulated years is based upon historical precipitation and runoff patterns and is from water years 1922 through 2003.

Demand for Delta Water

The SWP contractors' Table A demands for deliveries from the Delta assumed for 2009 are shown in Table 6.1. A range in Table A demands is shown because the demand is assumed to vary each year with the weather. The assumed demands for 2009 are higher than the ones used in the corresponding study (2007 Study) in the 2007 report. Differences between the values in updated studies and the 2007 Study are due to increased Table A water demand for municipal uses.

Table 6. 1 SWP Table A demands from the Delta under Current Conditions

Study of Current Conditions	Average Demand		Maximum Demand		Minimum Demand	
	taf /year	% of maximum SWP Table A[1]	taf /year	% of maximum SWP Table A[1]	taf /year	% of maximum SWP Table A[1]
2007 SWP Delivery Reliability Report, Study 2007	3308	80%	3864	94%	2323	56%
Updated Studies (2009)	3711	90%	4115	100%	3007	73%

1/ 4,133 taf /year

The potential demands for SWP Article 21 water are assumed for study purposes to be very high and are more than double the amounts assumed in the 2007 SWP Delivery Reliability Report as shown in Table 6.2. The Article 21 demands are increased in the 2009 updated studies to match the amounts assumed in the studies conducted for the biological opinions. Assuming very large Article 21 demands in the studies for the biological opinions was done to capture the upper bound of the potential impact of Article 21 exports upon the Delta ecosystem. This assumption reflects a condition in which SWP contractors are able to use essentially any available Article 21 water when conveyance capacity for Article 21 water exists in the SWP delivery system.

Table 6. 2 Article 21 demands from the Delta under Current Conditions

Study of Current Conditions	Maximum Article 21 demand (taf /month)[1]	
	December - March	April - November
2007 SWP Reliability Report, Study 2007	184	84
Updated Studies (2009)	414	214

1/ The CalSim II simulations deliver up to these demands in any month in which appropriate conditions exist. However, the actual capability of SWP water contractors to take this amount of Article 21 is not the sum of these maximum monthly values.

Ability to Convey Source Water to the Desired Point of Delivery

The CalSim II simulation assumes that current Delta water quality regulations (contained in the State Water Resources Control Board's Decision 1641) are in place for the Current (2009) Condition study. The simulation also incorporates the requirements of the FWS' and NMFS' biological opinions. Additional information on the characterization of the biological opinions in the model is found in Appendix A. The amount of exports allowed while achieving the Old River and Middle River flow targets are assumed to be shared equally between the CVP and the SWP. Combined CVP and SWP exports also are assumed constrained according to the NMFS BO Action 4.2.1 during April 1 to May 31. The specific rules for this restriction are included in Appendix A.

The simulation of current conditions in the 2007 report assumes the same D-1641 requirements for Delta water quality, but instead assumes an April 15 to May 15 export restriction and Old River and Middle River flow targets from the interim operating rules ordered by the federal court.

Annual Estimates of SWP Deliveries

The CalSim II estimates for the SWP Table A and Article 21 annual deliveries for the Current (2009) Condition are presented in Appendix B. These values are analyzed in the following sections.

SWP Table A Deliveries under Different Hydrologic Scenarios

Table 6.3 contains the average, maximum, and minimum estimates of Table A deliveries from the Delta under Current Conditions from the 2007 SWP Delivery Reliability Report and under 2009 assumptions that include the biological opinions' requirements. The estimated probabilities for a given amount of annual SWP delivery under Current (2009) Conditions are presented in Figure 6.1.

Table 6. 3 SWP Table A delivery from the Delta under Current Conditions

Study of Current Conditions	Average Delivery		Maximum Delivery		Minimum Delivery	
	taf /year	% of maximum SWP Table A[1]	taf /year	% of maximum SWP Table A[1]	taf /year	% of maximum SWP Table A[1]
2007 SWP Delivery Reliability Report, Study 2007[2]	2595	63%	3711	90%	243	6%
Updated Studies (2009)	2483	60%	3338	81%	301	7%

1/ 4,133 taf /year

2/ Values reflect averaging annual deliveries from the two scenarios of Old and Middle River flow targets

Table 6.3 shows that under updated Current (2009) Conditions, average SWP annual delivery amounts may decrease 3% of maximum SWP Table A when compared to the earlier estimate, from 63% to 60%. This decrease is about 110 taf and is primarily due to the required actions in the biological opinions reducing the amount of Delta water available for export by the SWP in comparison to the effect of the Old River and Middle River flow targets in the 2007 study. The maximum delivery of 90% for the 2007 study is reduced by 370 taf to 81% for the updated study. The estimate of minimum SWP Table A delivery actually increases slightly.

Table 6.4 includes estimates of SWP Table A deliveries for Current (2009) Conditions under an assumed repetition of historical drought periods. The years are identified as dry by the Eight River Index, a good indicator of the relative amount of water supply available to the SWP. The Eight River Index is the sum of the unimpaired runoff from the four rivers in the Sacramento Basin used to define water conditions in the basin plus the four rivers in the San Joaquin Basin, which correspondingly define water conditions in that basin. The eight rivers are the Sacramento, Feather, Yuba, American, Stanislaus, Tuolumne, Merced, and San Joaquin. Table 6.4 also includes the average deliveries for comparison purposes.

Table 6. 4 Average and dry period SWP Table A deliveries from the Delta under Current Conditions

Study of Current Conditions	SWP Table A delivery from the Delta (in percent of maximum SWP Table A[1])					
	Long-term Average	Single dry year 1977	2-year drought 1976-1977	4-year drought 1931-1934	6-year drought 1987-1992	6-year drought 1929-1934
2007 SWP Delivery Reliability Report, Study 2007[2]	63%	6%	34%	35%	35%	34%
Updated Studies (2009)	60%	7%	36%	34%	35%	34%

1/ 4,133 taf /year

2/ Values reflect averaging annual deliveries from the two scenarios of Old and Middle River flow targets

Table 6.4 shows that estimates of updated SWP deliveries under Current (2009) Conditions during dry periods are about the same as earlier estimates. The four-year drought of 1931-1934 is estimated to provide 34% of maximum SWP Table A; a reduction of 41 taf/year when compared to the 2007 estimate. The two-year drought of 1976-1977 is an exception with SWP deliveries estimated to increase 2% of maximum SWP Table A, from 34% to 36%. This increase in delivery in 1976-1977 is due to the use of Article 56 carryover storage in the 2009 studies for this report. In the Current (2009) Condition study, 470 taf of water allocated in 1975 is carried over and used in January through March of 1976. Article 56 carryover storage was not modeled for 2007 report studies.

Table 6.5 summarizes SWP Table A deliveries under an assumed repetition of historical wet periods under Current (2009) Conditions. As with drought years, the Eight River Index is used to identify wet years. Table 6.5 shows that estimates of SWP deliveries under updated Current (2009) Conditions may either increase or decrease from earlier estimates during wet years. Decreases in SWP deliveries for these wet periods generally range from 0 to 5% of maximum SWP Table A (0 to 206 taf/year). These decreases are due to the requirements of the biological opinions. The increases in delivery in 1983 and 1982-1983 are due to an assumed increase in demand compared to the 2007 report.

Table 6. 5 Average and wet years SWP Table A delivery from the Delta under Current Conditions

Study of Current Conditions	SWP Table A delivery from the Delta (in percent of maximum SWP Table A[1])					
	Long-term Average	Single wet year 1983	2-year wet 1982-1983	4-year wet 1980-1983	6-year wet 1978-1983	10-year wet 1978-1987
2007 SWP Delivery Reliability Report, Study 2007[2]	63%	60%	66%	68%	73%	71%
Updated Studies (2009)	60%	68%	71%	68%	68%	67%

1/ 4,133 taf/year

2/ Values reflect averaging annual deliveries from the two scenarios of Old and Middle River flow targets

Article 21 Deliveries under Different Hydrologic Scenarios

State Water Project water delivery is a combination of both Table A deliveries and the use of Article 21 by some contractors to store water locally at times when extra water and capacity is available beyond that needed by normal SWP operations. Table 6.6 contains the average, maximum, and minimum SWP Article 21 deliveries over the 1922-2003 period for the earlier study and the updated simulation. Comparing the estimates of SWP Article 21 deliveries, the updated estimates show higher delivery amounts for the maximum delivery over the simulation period. The estimated maximum Article 21 delivery is increased by 260 taf. This increase is due to the higher Article 21 demands assumed for the 2009 studies. The minimum Article 21 delivery for the updated study is 2 taf/yr compared to 0 taf/yr for the 2007 report. This higher minimum delivery is due to a revised assumption in the updated studies that allows the diversion of Article 21 water to the North Bay Aqueduct whenever such water is available in the Delta. In the 2007 report, Article 21 deliveries to North Bay Aqueduct were assumed to be dependent on the availability of Banks pumping capacity to serve all Article 21 demands. The estimated average Article 21 deliveries are the same

under the updated Current (2009) Conditions compared to the 2007 report.

Table 6. 6 Annual SWP Article 21 delivery from the Delta under Current Conditions

Study of Current Conditions	Average delivery (taf)	Maximum delivery (taf)	Minimum delivery (taf)
2007 SWP Delivery Reliability Report, Study 2007[1]	85	590	0
Updated Studies (2009)	85	850	2

1/ Values reflect averaging annual deliveries from the two scenarios of Old and Middle River flow targets

Because Article 21 exports happen sporadically, it is best to evaluate the effects by looking at specific years. Table 6.7 shows the updated and earlier estimates of Article 21 deliveries by year during dry periods. Under the updated Current (2009) Conditions, Article 21 deliveries are estimated to be significantly increased during the years 1932 and 1933. These increases are primarily the result of the assumed higher Article 21 demand. Table 6.7 illustrates that opportunities for delivering Article 21 water exist even during drought periods,

Table 6.8 shows the updated and earlier estimates of Article 21 deliveries by year during the 1978-1987 wet period. Under Current (2009) Conditions, updated estimated Article 21 delivery can increase up to 450 taf in an individual year, compared to earlier estimates. Once again, the increases in Article 21 are due to the high level of assumed demand. In two years, 1978 and 1982, the estimated Article 21deliveries decrease when compared to earlier estimates.

Table 6. 7 Average and dry year SWP Article 21 delivery under Current Conditions (taf per year)

Year	2007 SWP Delivery Reliability Report, Study 2007[1]	Updated Studies (2009)
1929	0	10
1930	0	10
1931	0	8
1932	0	160
1933	40	390
1934	0	8
1976	5	9
1977	0	2
1987	0	9
1988	0	10
1989	0	10
1990	0	10
1991	0	12
1992	0	10
Long-term average	85	85

1/ Values reflect averaging annual deliveries from the two scenarios of Old and Middle River flow targets

Table 6. 8 Average and wet year SWP Article 21 delivery under Current Conditions (taf per year)

Year	2007 SWP Delivery Reliability Report, Study 2007[1]	Updated Studies (2009)
1978	100	2
1979	0	120
1980	190	190
1981	0	8
1982	490	460
1983	400	850
1984	460	510
1985	0	2
1986	30	140
1987	0	9
1978-87 average	170	230
Long-term average	85	85

1/ Values reflect averaging annual deliveries from the two scenarios of Old and Middle River flow targets

SWP Table A Delivery Probability

The probability that a given level of SWP Table A amount will be delivered from the Delta is shown for Current (2009) Conditions in Figure 6.1. Results from the 2007 SWP Delivery Reliability Report and updated estimates for 2009 are shown. Probability values for Current (2009) Conditions are presented in Appendix B. To use Figure 6.1, one would first locate the value for the specific percent exceedence along the horizontal axis (x-axis) of the graph, move vertically upward to the curve, then horizontally to the vertical axis (y-axis) and read the annual delivery. For example, for a 50% exceedence, the corresponding annual SWP Delta deliveries would be about 2,980 taf (72% of maximum Table A) from previous estimates and 2,675 taf (65% of maximum Table A) for the updated estimates. The numerical data for this figure is included in Appendix B and should be referenced for specific values corresponding to specific exceedences.

Figure 6.1 shows that under Current (2007) Conditions, for probabilities of exceedence less than 55%, updated annual Table A deliveries can be 300 to 400 taf less than the earlier estimates. Annual Table A deliveries associated with exceedences greater than 70% are generally more than the 2007 study by about 200 taf. Table 6.9 contains the values for SWP Delta deliveries corresponding to 25%, 50%, and 75% exceedence. The information in Table 6.9 can be stated as follows:

For any given year,

- There is a 25% chance that SWP deliveries will be at or above 2,920 taf.
- There is an equal chance (50%) that SWP deliveries will be above or below 2,675 taf.
- There is 75% chance that SWP deliveries will be above 2,397 taf. Another way to state this is that there is a 25% chance that deliveries will be below this value.

Figure 6. 1 SWP Table A delivery probability under Current Conditions

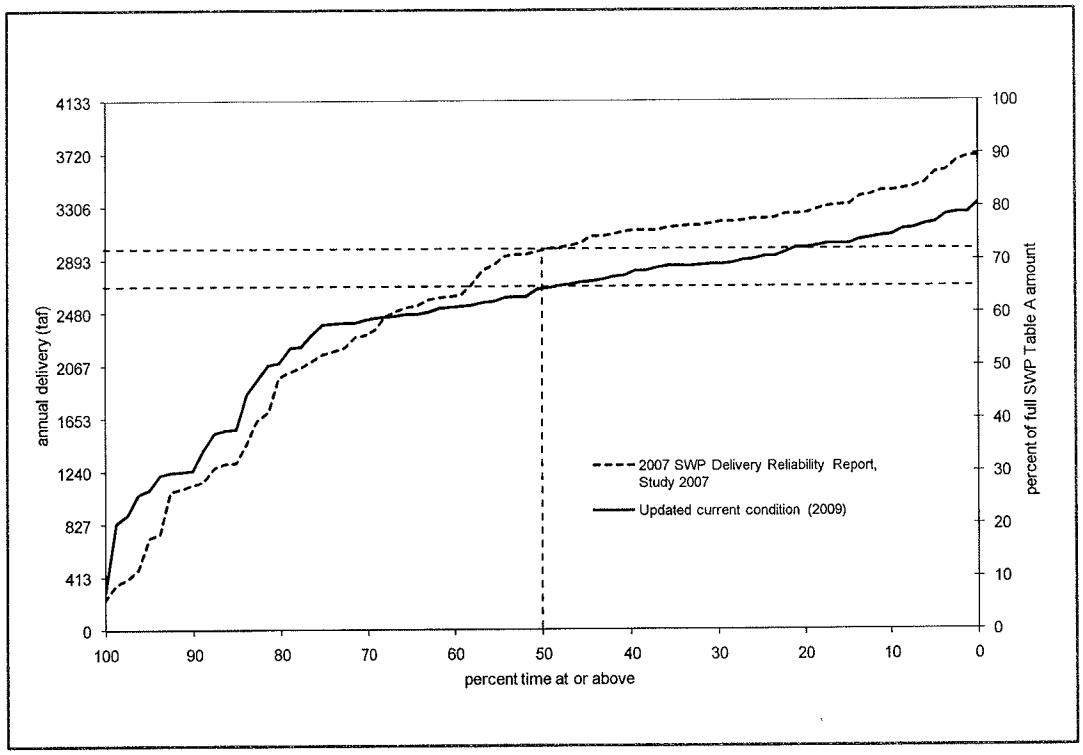

Table 6. 9 Highlighted SWP Table A delivery percent exceedence values under Current Conditions

Exceedence	Annual SWP Table A Delivery (taf)		Change in delivery compared to 2007 report (taf)
	2007 SWP Delivery Reliability Report, Study 2007[1]	Updated Studies (2009)	
25%	3218	2920	-298
50%	2976	2675	-301
75%	2168	2397	+229

1/ Values reflect averaging annual deliveries from the two scenarios of Old and Middle River flow targets

Assessment of SWP Delivery Reliability under Future (2029) conditions

Future Conditions refer to conditions that are assumed in effect in the year 2029. These conditions as described below include effects of climate change and the same requirements of the biological opinions assumed under Current Conditions. Results from the CalSim II simulations for the 2007 SWP Delivery Reliability Report under 2027 future scenario (Study 2027) are presented throughout this section for

comparison purposes. A detailed list of the study assumptions for this report is presented in Appendix A.

Availability of Source Water

DWR's 2009 report, *Using Future Climate Projections to Support Water Resources Decision Making in California* (Chung et al., 2009) evaluates possible future effects on California water supply through CalSim II simulations with hydrologic sequences which reflect different scenarios of climate change. The 82-year hydrologic sequence used to develop the delivery estimations for the 2029 study discussed below is based upon the methods used in *Using Future Climate Projections*. The method for developing the hydrologic sequence for 2029 is described in Appendix B.

It was pointed out earlier in Chapter 4 of this report that the studies in *Using Future Climate Projections* of potential climate changes by mid-century indicate a potential for operational interruptions due to one or more reservoirs reaching minimum levels of storage. The study for 2029 conditions indicates a slight increase in system vulnerability when compared with the 2009 study but it does not approach the levels forecasted in *Using Future Climate Projections*. For the 2029 study, it is assumed that actions such as a program to acquire water to meet Delta water quality objectives would be implemented to maintain system operation.

Demand for Delta Water

The SWP contractors' SWP Table A demands for deliveries from the Delta assumed for 2029 and for Study 2027 are shown in Table 6.10. The maximum annual SWP Table A demand of 4,133 taf is assumed in all 82 years of the simulation. There is no variation in demand due to different annual hydrologic conditions. The assumed demands for 2029 are the same as the demands presently developed for the Bay-Delta Conservation Plan.

Table 6. 10 SWP Table A demands from the Delta under Future Conditions

Study of Future Conditions	Average Demand		Maximum Demand		Minimum Demand	
	taf /year	% of maximum SWP Table A[1]	taf /year	% of maximum SWP Table A[1]	taf /year	% of maximum SWP Table A[1]
2007 SWP Delivery Reliability Report, Study 2027	4111	99%	4133	100%	3935	95%
Updated Studies (2029)	4133	100%	4133	100%	4133	100%

1/ 4,133 taf /year.

The assumed Article 21 demands, shown in Table 6.11, are higher than the demands assumed for study 2027 and are at the same level as the Article 21 demands assumed for the 2009 study. This assumption reflects a condition in which SWP contractors are able to use essentially any available Article 21 water when conveyance capacity for Article 21 water exists in the SWP delivery system.

Table 6. 11 Article 21 demands from the Delta under Future Conditions

Study of Future Conditions	Maximum Article 21 demand (taf/month)[1]	
	December - March	April - November
2007 SWP Delivery Reliability Report, Study 2027	184	84
Updated Studies (2029)	414	214

1/ The CalSim II simulations deliver up to these demands in any month in which appropriate conditions exist. However, the actual capability of SWP water contractors to take this amount of Article 21 is not the sum of these maximum monthly values.

Ability to Convey Source Water to the Desired Point of Delivery

One of the most significant assumptions regarding SWP conveyance is that the rules and facilities related to Delta conveyance will remain at the status quo. That is, no new facilities are assumed to be in place to convey water through or around the Delta. As noted in Chapter 3, there are several processes under way to identify modifications to the existing method of conveying water through the Delta to reduce the conflict between fishery concerns and water supply reliability. However, these programs are not at a stage where such changes can be used in this report. The CalSim II simulations for 2029 scenarios assume the current Delta water quality regulations (contained in the State Water Resources Control Board's Decision 1641) are in place as well as the requirements of the USFWS and NMFS biological opinions. The exports resulting from meeting Old River and Middle River flow targets related to delta smelt are again assumed shared equally between the CVP and the SWP.

The simulations of Future Conditions in the 2007 report (study 2027) also assumed D-1641 Delta water quality requirements but it assumed that flow restrictions for Old River and Middle River ordered by the federal court in December 2007 were in place.

To simulate the assumed 2029 conditions, two CalSim II simulations are needed: a scenario with climate change and a scenario assuming no climate change. SWP deliveries derived from these two simulations were modified as explained below before being used to describe Future (2029) Conditions.

Presentation of CalSim II Results

For the purpose of describing SWP deliveries under Future Conditions in this chapter, the annual deliveries with climate change simulated by CalSim II have been adjusted to better estimate deliveries reflecting 2029 conditions. The climate change scenario for Future Conditions assumes projections of climate and hydrology for the year 2050. Currently, 2029 climate change projections are not available. In order to estimate SWP deliveries 20 years in the future with potential changes in climate, annual SWP deliveries were interpolated between deliveries from the CalSim II simulation with the climate change scenario and deliveries from the CalSim II simulation which assumes no climate change. Both CalSim II simulations for future conditions assume a 2029 SWP demand level.

The following tables and graph contain the interpolated values from these two simulations. The annual SWP Table A and Article 21 deliveries for the two simulations upon which the information in this section is based are presented in Appendix B.

SWP Table A Deliveries under the Future Hydrologic Scenario

Table 6.12 contains the average, maximum, and minimum estimates of SWP Table A deliveries from the Delta under Future Conditions of study 2027 from the 2007 SWP Delivery Reliability Report and under the updated 2029 assumptions. The estimated probabilities for a given amount of annual SWP delivery under Future (2029) Conditions and those for the 2027 conditions are presented in Figure 6.4.

Table 6.12 shows that under the updated Future (2029) Conditions, average SWP delivery amounts may decrease from 6 to 9% of maximum SWP Table A (240 taf /yr to 360 taf/yr) when compared to the earlier estimates. This decrease in deliveries is primarily due to the effect of the biological opinions' requirements in reducing the amount of Delta water available for export by the SWP in comparison to the effect of the Old River and Middle River flow targets assumed for the 2027 study. Differences in the assumed hydrologic changes associated with climate change could also affect deliveries. The estimate of minimum annual SWP Table A delivery for the updated study is shown to increase from 4 to 5% of maximum SWP Table A amounts (165 taf/yr to 200 taf/yr). Minimum annual deliveries are associated with the conditions simulated for year 1977, the driest year on record.

Table 6.13 includes estimates of SWP Table A deliveries for a single-year and multiyear droughts. It also includes the average of the SWP Table A deliveries for comparison purposes. Estimates of updated SWP deliveries under Future (2029) Conditions during dry periods are about the same as the 2007 report for four-year and six-year droughts. The six-year drought of 1987-1992 is estimated to provide 32% of maximum SWP Table A, a reduction of 1% to 3% when compared to the 2007 estimate. Updated SWP deliveries in the 1976-1977 drought increase by 11% to 12% of maximum Table A (about 450 taf/yr) compared to the earlier studies. About 180 taf of this increase is due to water allocated in 1975 and delivered in 1976 under the Article 56 carryover program.

Table 6. 12 SWP Table A delivery from the Delta under Future Conditions

Study of Future Conditions	Average Delivery		Maximum Delivery		Minimum Delivery	
	taf /year	% of maximum SWP Table A[1]	taf /year	% of maximum SWP Table A[1]	taf /year	% of maximum SWP Table A[1]
2007 SWP Delivery Reliability Report, Study 2027[2]	2724 – 2850	66 – 69%	4133	100%	255 – 293	6 – 7%
Updated Studies (2029)	2487	60%	3999	97%	458	11%

1/ 4,133 taf /year

2/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Table 6. 13 Average and dry period SWP Table A deliveries from the Delta under Future Conditions

Study of Future conditions	SWP Table A delivery from the Delta (in percent of maximum Table A[1])					
	Long-term Average	Single dry year 1977	2-year drought 1976-1977	4-year drought 1931-1934	6-year drought 1987-1992	6-year drought 1929-1934
2007 SWP Delivery Reliability Report, Study 2027[2]	66 – 69%	6-7%	26 – 27%	32 – 37%	33 – 35%	33 – 36%
Updated Studies (2029)	60%	11%	38%	35%	32%	36%

1/ 4,133 taf /year

2/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Table 6.14 summarizes SWP Table A deliveries under an assumed repetition of historical wet periods under Future Conditions. As with drought years, the Eight River Index is used to identify wet years. SWP deliveries increase in 1983 compared to earlier studies by 3% of maximum SWP Table A due to an assumed increase in demand. Reductions in delivery amounts are significant for the two-, four-, six-, and 10-year wet periods. The highest reduction occurs in the 1978-1987 period and ranges from 8% to 11% of maximum SWP Table A. This is a reduction of 330 taf/yr to 450 taf/yr.

Table 6. 14 Average and wet period SWP Table A deliveries from the Delta under Future Conditions

Study of Future Conditions	SWP Table A delivery from the Delta (in percent of maximum Table A[1])					
	Long-term average	Single wet year 1983	2-year wet 1982-1983	4-year wet 1980-1983	6-year wet 1978-1983	10-year wet 1978-1987
2007 SWP Delivery Reliability Report, Study 2027[2]	66 – 69%	94%	97%	86 – 87%	84 – 87%	80 – 83%
Updated Studies (2029)	60%	97%	93%	82%	79%	72%

1/ 4,133 taf/year

2/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Article 21 Deliveries under Different Hydrologic Scenarios

Table 6.15 contains the average, maximum, and minimum SWP Article 21 delivery estimates over the 1922-2003 period for the updated simulations of Future (2029) Conditions. Comparing the estimates of SWP Article 21 deliveries, the updated estimates show more delivery amounts on average and for the maximum annual delivery over the simulation period. Estimated average Article 21 delivery under the updated Future (2029) Conditions is 30 taf/yr more than the corresponding estimate in the 2007 SWP

Delivery Reliability Report. Estimated maximum annual Article 21 delivery is increased about 120 taf. These increases are due to the assumed higher Article 21 demands in the 2029 studies. The minimum Article 21 delivery for the updated study is 1 taf/yr compared to 0 taf/yr for the 2007 report. This higher minimum delivery is due to a revised assumption in the updated studies that allows the diversion of Article 21 water to the North Bay Aqueduct whenever such water is available in the Delta. In the 2007 report, Article 21 deliveries to North Bay Aqueduct were assumed to be dependent on the available Harvey O. Banks pumping capacity to serve all Article 21 demands.

Table 6. 15 Annual SWP Article 21 delivery from the Delta under Future Conditions

Study of Future Conditions	Average delivery (taf)	Maximum delivery (taf)	Minimum delivery (taf)
2007 SWP Delivery Reliability Report, Study 2027[1]	30	410 – 420	0
Updated Studies (2029)	60	540	1

1/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Table 6.16 contains the estimates for Article 21 deliveries during historical dry periods. The Article 21 deliveries for the updated 2029 study have a dry period maximum of 370 taf/yr compared to 90 taf/yr for the 2027 studies. Table 6.16 illustrates that opportunities for delivering Article 21 water exist even during drought periods.

Table 6.17 shows updated and earlier estimates of Article 21 deliveries by year during the 1978-1987 wet period. The availability of Article 21 deliveries is also increased for this wet period. The average Article 21 delivery for the 1978-1987 period under Future (2029) Conditions is 140 taf/yr, compared to a range of 90 taf/yr to 100 taf/yr for the 2027 studies.

Table 6. 16 Average and dry year SWP Article 21 delivery under Future Conditions (taf per year)

Year	2007 SWP Delivery Reliability Report, Study 2027[1]	Updated Studies (2029)
1929	0	160
1930	0	10
1931	0	8
1932	0 – 40	370
1933	20 – 90	230
1934	0 – 10	70
1976	0	12
1977	0 – 10	3
1987	0	60
1988	0	60
1989	0	6
1990	0	11
1991	0	13
1992	0	9
Long-term Average	30	60

1/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Table 6. 17 Average and wet year SWP Article 21 delivery under Future Conditions (taf per year)

Year	2007 SWP Delivery Reliability Report, Study 2027[1]	Updated Studies (2029)
1978	40 – 150	70
1979	0	11
1980	90 – 130	30
1981	0	14
1982	0	100
1983	270 – 290	510
1984	410 – 420	540
1985	0	9
1986	0 – 10	50
1987	0	60
1978-87 Average	90 – 100	140
Long-term Average	30	60

1/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

SWP Table A Delivery Probability

The probability that a given level of SWP Table A amount will be delivered from the Delta is shown for Future (2029) Conditions in Figure 6.4. Results of the 2027 studies from the 2007 SWP Delivery Reliability Report and the updated 2029 study are shown. Probabilities for 2027 conditions are shown as a set of dotted lines representing the four climate change scenarios analyzed in the 2007 report.

Figure 6.2 shows that under Future (2029) Conditions, for probabilities of exceedence under 60%, updated annual SWP Table A deliveries can be significantly less than the earlier estimates. For example, a delivery estimate which has a 40% chance of being larger is reduced to about 2,700 taf/yr (65% of maximum Table A) in the updated study from the earlier estimates of about 3,260 taf to 3,450 taf annually (79-83% of maximum Table A). The information upon which Figure 6.2 is based for the updated future condition is contained in Tables B.4 and B.5 in Appendix B.

Figure 6. 2 SWP Delta Table A delivery probability under Future Conditions

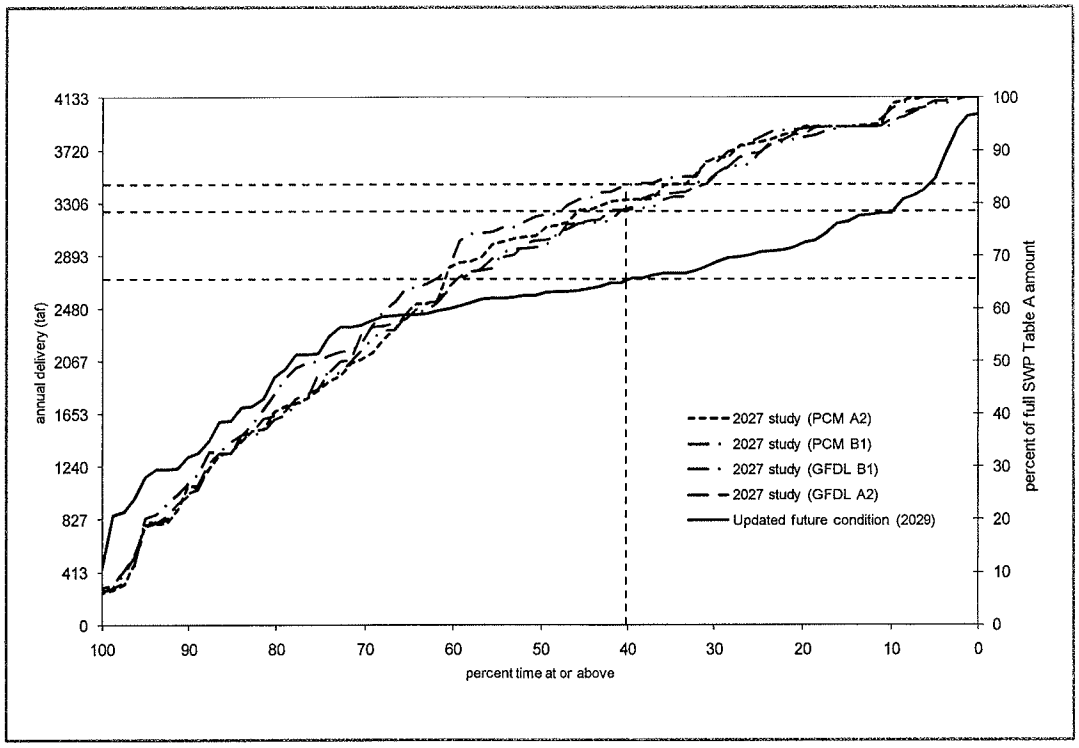

Table 6.18 presents the SWP Table A annual deliveries associated with 25%, 50%, and 75% exceedence illustrated in Figure 6.2 and contained in Table B.5. The information in this table can be stated as follows:

For any given year,

- There is 1 chance in 4 (25% chance) that SWP deliveries will be at or above 2,915 taf.
- There is an equal chance (50% chance) that SWP deliveries will be above or below 2,596 taf.
- There is 75% chance that SWP deliveries will be above 2,137 taf. Another way to state this is that there is a 25% chance that deliveries will be below this range.

Table 6. 18 Highlighted SWP Table A delivery percent exceedence values under Future Conditions

Exceedence	Annual SWP Table A Delivery (taf)		Change in delivery in updated studies compared to 2007 report (taf)
	2007 SWP Delivery Reliability Report, Study 2027[1]	Updated Studies (2029)[2]	
25%	3687 – 3815	2915	-772 to -900
50%	2967 – 3205	2596	-371 to -609
75%	1860 – 2077	2137	+60 to +277

1/ Range in value reflects four modified scenarios of climate change.

2/ Annual SWP Table A deliveries were interpolated between year 2050 with climate change and no climate change scenarios.

Comparing Current and Future SWP Delivery Reliability

The results presented earlier in this chapter compare updated delivery projections for both the current and future scenarios with those contained in the 2007 Delivery Reliability Report. The comparisons show that deliveries are estimated to be less than projected in the 2007 report due to implementing the requirements of the recent biological opinions and, for the future projection, a change in the assumed climate change scenario. This section presents the same CalSim II simulation-based results as a comparison of current reliability, projected for 2009, to the future reliability, projected for 2029. Comparisons to the results of the 2007 SWP Delivery Reliability Report are also included

SWP Table A Deliveries under Different Hydrologic Scenarios

Tables 6.19, 6.20, and 6.21 summarize the estimated Table A deliveries from the Delta under current and future conditions from the 2007 SWP Delivery Reliability Report and as derived from the updated CalSim II simulations for this report. A significant observation involves the change over the twenty-year period of the average amount of projected Table A deliveries. In the 2007 report, average future SWP deliveries are projected to increase 3 to 6 percent of maximum Table A whereas, under the updated estimate, the average delivery does not change. The updated average annual delivery is estimated to remain at 60% of maximum Table A in the future.

In both the 2007 report and this updated report, the changes between current and future deliveries fluctuate within 4 percentage points during dry periods greater than 2 years (Table 6.20), and increase during wet periods (Table 6.21). The increases during the wet periods for both sets of studies become less as the wet periods lengthen. For the 2007 report, these increases range from 34% of maximum Table A for a single year to 9% for the 10-year period. For the updated study, the increases range from 29% for the single year to 5% for the 10-year period. The amounts of the increases for the updated estimates are consistently less than those for the 2007 report. This is primarily due to the SWP demands assumed for the updated study for current conditions and the climate change scenario assumed for the updated future condition that now includes sea level rise. The assumed demands are very similar between the current and future updated studies whereas the assumed demand for the 2027 study is significantly higher than the assumed demand in the 2007 study.

The projections for the single-year and 2-year drought periods are very sensitive to the assumed

conditions immediately preceding the drought and the operational rules for the SWP. Two key factors are the reservoir storages assumed at the beginning of the period and the amount of water allocated under Table A for the previous year being carried over into the subsequent year. Under a 2-year drought condition (1976-1977), the 2007 report estimates the future SWP Table A deliveries as being lower than the projected current deliveries by as much as 8% of maximum SWP Table A (Table 6.20). The updated estimates indicate that future SWP Table A deliveries under the 2-year drought period could be slightly higher than under Current (2009) Conditions (Table 6.20). The updated future SWP Table A deliveries for a single dry year are estimated to be higher than the 2009 study by 4% of maximum SWP Table A.

Table 6. 19 SWP Table A delivery from Delta under Current and Future Conditions

	Average Delivery		Maximum Delivery		Minimum Delivery	
	taf /year	% of maximum SWP Table A[1]	taf /year	% of maximum SWP Table A[1]	taf /year	% of maximum SWP Table A[1]
2007 SWP Delivery Reliability Report						
Current (2007)	2595	63%	3711	90%	243	6%
Future (2027)[2]	2724 – 2850	66 – 69%	4133	100%	255 – 293	6 – 7%
Updated Studies						
Current (2009)	2483	60%	3338	81%	301	7%
Future (2029)	2487	60%	3999	97%	458	11%

1/ 4,133 taf /year

2/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Table 6. 20 Average and dry period SWP Table A deliveries from the Delta under Current and Future Conditions

	SWP Table A delivery from the Delta (in percent of maximum Table A[1])					
	Long-term Average	Single dry year 1977	2-year drought 1976-1977	4-year drought 1931-1934	6-year drought 1987-1992	6-year drought 1929-1934
2007 SWP Delivery Reliability Report						
Current (2007)	63%	6%	34%	35%	35%	34%
Future (2027)[2]	66 – 69%	6-7%	26 – 27%	32 – 37%	33 – 35%	33 – 36%
Updated Studies						
Current (2009)	60%	7%	36%	34%	35%	34%
Future (2029)	60%	11%	38%	35%	32%	36%

1/ 4,133 taf /year

2/ Range in values reflects four modified scenarios of climate change: annual Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Table 6. 21 Average and wet period SWP Table A deliveries from the Delta under Current and Future Conditions

	SWP Table A delivery from the Delta (in percent of maximum Table A[1])					
	Long-term Average	Single wet year 1983	2-year wet 1982-1983	4-year wet 1980-1983	6-year wet 1978-1983	10-year wet 1978-1987
2007 SWP Delivery Reliability Report						
Current (2007)	63%	60%	66%	68%	73%	71%
Future (2027)[2]	66 – 69%	94%	97%	86 – 87%	84 – 87%	80 – 83%
Updated Studies						
Current (2009)	60%	68%	71%	68%	68%	67%
Future (2029)	60%	97%	93%	82%	79%	72%

1/ 4,133 taf /year

2/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Article 21 Deliveries under Different Hydrologic Scenarios

Tables 6.22, 6.23, and 6.24 contain summaries and highlights of estimated SWP Article 21 deliveries from the Delta under current and Future Conditions from the 2007 SWP Delivery Reliability Report and as derived from updated CalSim II simulations for this report. The studies for the 2007 report and this updated report conclude lower amounts of deliveries will be made in the future under Article 21. Updated estimates of future SWP Article 21 deliveries may increase over updated current values for specific years; however, the long-term average future Article 21 delivery is reduced to about two-thirds of the estimate for the current (2009) scenario. Because the updated studies include the assumption that the SWP water contractors have a much greater ability receive water under Article 21, the updated studies show greater annual variation in the amount of Article 21 deliveries when compared to the 2007 report.

Table 6. 22 Annual SWP Article 21 delivery from the Delta under Current and Future Conditions

	Average delivery (taf)	Maximum delivery (taf)	Minimum delivery (taf)
2007 SWP Delivery Reliability Report			
Current (2007)	85	590	0
Future (2027) [1]	30	410 – 420	0
Updated Studies			
Current (2009)	85	850	2
Future (2029)	60	540	1

1/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Table 6. 23 Average and dry year SWP Article 21 delivery under Current and Future Conditions (taf per year)

Year	2007 SWP Delivery Reliability Report		Updated Studies	
	Current (2007)	Future (2027) [1]	Current (2009)	Future (2029)
1929	0	0	10	160
1930	0	0	10	10
1931	0	0	8	8
1932	0	0 – 40	160	370
1933	40	20 – 90	390	230
1934	0	0 – 10	8	70
1976	5	0	9	12
1977	0	0 – 10	2	3
1987	0	0	9	60
1988	0	0	10	60
1989	0	0	10	6
1990	0	0	10	11
1991	0	0	12	13
1992	0	0	10	9
Long-term Average	85	30	85	60

1/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Table 6. 24 Average and wet year SWP Article 21 delivery under Current and Future Conditions (taf per year)

Year	2007 SWP Delivery Reliability Report		Updated Studies	
	Current (2007)	Future (2027) [1]	Current (2009)	Future (2029)
1978	100	40 – 150	2	70
1979	0	0	120	11
1980	190	90 – 130	190	30
1981	0	0	8	14
1982	490	0	460	100
1983	400	270 – 290	850	510
1984	460	410 – 420	510	540
1985	0	0	2	9
1986	30	0 – 10	140	50
1987	0	0	9	60
1978-87 Average	170	90 – 100	230	140
Long-term Average	85	30	85	60

1/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

SWP Table A Delivery Probability

The current and future probability that a given level of SWP Table A amount will be delivered from the Delta is shown in Figure 6.3 from the 2007 SWP Delivery Reliability Report and in Figure 6.4 for updated studies for this report. In the 2007 report, future SWP Table A deliveries exceeded current deliveries at exceedence levels less than 60%. Under the updated simulations for this report, future SWP Table A deliveries exceed current estimated deliveries at exceedence levels less than 15%. Above this exceedence, future deliveries are generally smaller than current deliveries; with the most significant reduction being exceedence levels of 70% and 80%. The SWP demands are very similar for the current and future scenarios in the updated studies. Therefore, the differences in SWP Table A delivery amounts for the updated studies are primarily due to the climate change scenario that is assumed.

Figure 6. 3 Current and future SWP Table A delivery probability from the 2007 SWP Delivery Reliability Report

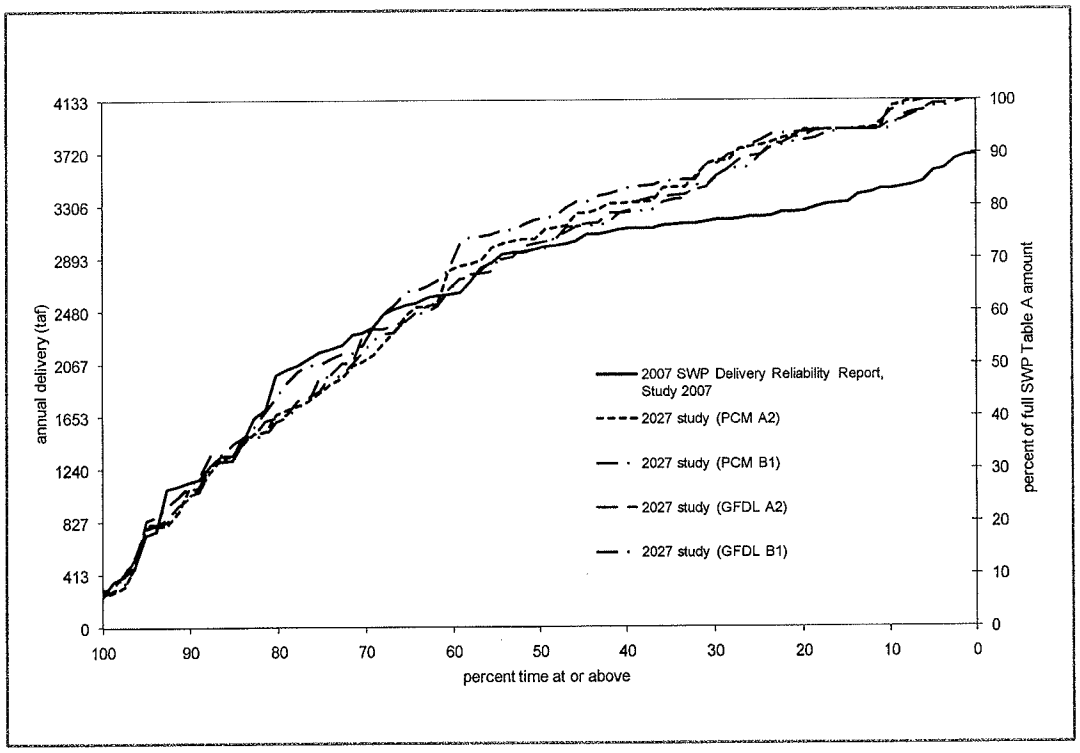

Figure 6. 4 Updated current and future SWP Table A delivery probability

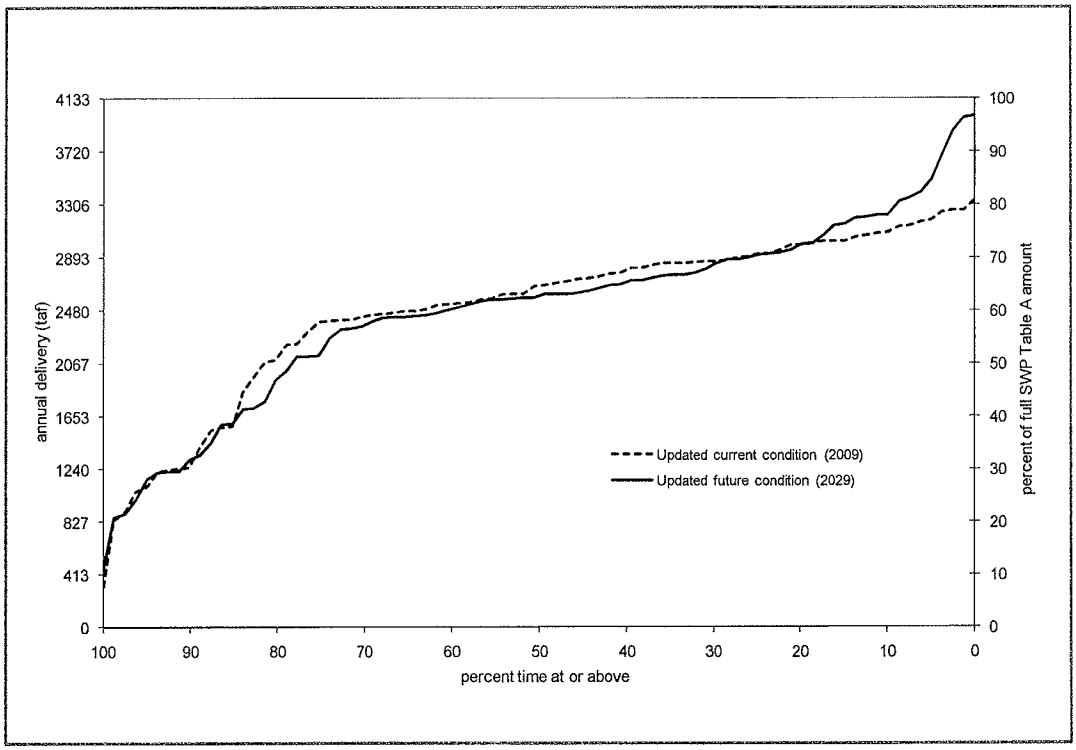

Table 6.25 presents SWP Table A delivery values which correspond to 25%, 50%, and 75% exceedence for current and future conditions. Previously in the 2007 report, future annual SWP deliveries were estimated to be larger than the estimated current deliveries by approximately 500 taf to 600 taf for 25% exceedence and 0 taf to 200 taf for 50% exceedence. At 75% exceedence, future study 2027 deliveries were estimated to be less than current 2007 study deliveries by about 100 taf to 300 taf. For the updated studies, future SWP Table A deliveries associated with the 25%, 50%, and 75% exceedence levels are about the same or lower than for the deliveries at the current level (2009). The most significant reduction in updated future deliveries occurs at the 75% exceedence level where future deliveries are about 260 taf less than under Current (2009) Conditions. As previously mentioned, this difference is primarily due to the climate change scenario included under Future (2029) Conditions.

Table 6. 25 Highlighted SWP Table A delivery percent exceedence values under Current and Future Conditions

Exceedence	Annual SWP Table A Delivery (taf)			
	2007 SWP Delivery Reliability Report		Updated Studies	
	Current (2007)	Future (2027) [1]	Current (2009)	Future (2029)
25%	3218	3687 – 3815	2920	2915
50%	2976	2967 – 3205	2675	2596
75%	2168	1860 – 2077	2397	2137

1/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Interpreting and Applying the Results for Local Planning

7

Chapter 6 presents estimates for current-level deliveries and for deliveries 20 years in the future. Chapter 6 and Appendix B explain how these estimates are developed. This chapter provides guidance on how to apply the delivery estimates to water management plans.

All results in this report are presented as percentages of the maximum Table A amount for SWP deliveries from the Delta of 4,133 taf/yr. In previous delivery reliability reports, all the percentage values of maximum Table A presented in the report were directly applicable to individual contractors. In this report however, the CalSim II simulations model the practice of certain contractors to carry over water supply from the year in which it was allocated and have it delivered in the following year, as allowed by Article 56 of their contract. See Appendix D for a discussion of Article 56 carryover storage.

The long-term average percentage values of Table A deliveries in this report continue to be directly applicable to all water contractors but values for individual years or averages over shorter periods of time, such as a dry-year period or a wet-year period, should be applied with caution as they may be affected by the amount of water assumed to be held over from one year and delivered in the next under Article 56. For values other than the long-term averages, we recommend individual contractors contact the Department of Water Resources' Bay-Delta Office at (916) 653-1099 to obtain the values specific to their water agency or download the information directly from the SWP Delivery Reliability website at http://baydeltaoffice.water.ca.gov/swpreliability/index.cfm. The Bay-Delta Office should also be contacted with other questions regarding the use of the information contained in this report.

The following example illustrates how to incorporate the long-term average values into a local water management plan. It is developed for a hypothetical SWP contractor with a maximum Table A amount of 100,000 acre-feet per year.

Example

This example uses data directly from Table 6.20 for updated current and future estimates of SWP Table A deliveries for the long-term average. Table 7.1 shows the long-term current and future averages of Delta Table A deliveries interpolated for 5-year periods. Since the long-term average Table A value is 60% of

maximum Table A for both the current and future estimates, the interpolated value for each 5-year period is also 60%. Although the values shown in Tables 7.1 and 7.2 are for the period 2009 – 2029, they are the best estimates available for use in developing water management plans for the period 2010-2030.

Table 7. 1 SWP average Table A delivery from the Delta in five-year intervals for studies 2009 and 2029

Year	2009	2014	2019	2024	2029
Average Percent of Maximum Table A 1922-2003	60%	60%	60%	60%	60%

How to Calculate Supplies

In order to estimate delivery amounts for each 5-year increment from 2009 to 2029, multiply the contractor's maximum Table A amount for a particular year by the corresponding delivery percentages for that year from Table 7.1. The maximum Table A amounts of each contractor are listed in Appendix C. Table A amounts can be amended and a contractor's Table A amount over the next 20 years may be less than its maximum over some or all of this period. In this case, the contractor should use the amended Table A amounts for the corresponding years during this period.

Table 7.2 shows the SWP Table A deliveries projected to be available to a hypothetical contractor with a maximum Table A amount of 100,000 acre-feet during average hydrologic conditions. Although the estimates for the SWP delivery amount is constant over the 20-year period, estimates for the long-term average delivery for the other sources of supply could change over the twenty-year period and, therefore, produce different estimates for the total water supply available to an individual contractor for each 5-year period.

Data for other year types can also be presented this way. As mentioned previously, State Water Project contractors should contact the Bay Delta Office for their specific percentages to be used in estimating deliveries for a specific year or for wet or dry-year periods.

Table 7. 2 Average annual SWP deliveries assuming a maximum Table A amount of 100,000 acre-feet (acre-feet)

Water Supply Source	2009	2014	2019	2024	2029
State Water Project (Table A)	60,000	60,000	60,000	60,000	60,000
State Water Project (Article 21)[1]					
Groundwater					
Local Surface Water					
Transfers					
Exchanges					
Reclaimed Water					
Other (identify)					
Total					

1/ Annual Article 21 amounts vary significantly from year to year. Without the ability to store Article 21 supply, it is not likely to contribute to local supply. See discussion of Article 21 supply in Chapter 5.

Appendix A. CalSim II Modeling Assumptions

The SWP operation simulations in this report use the CalSim II model developed for the 2009 DWR-USBR Benchmark Study that was then modified specifically for these studies. The 2009 DWR-USBR Benchmark Study model was developed from the 2008 OCAP model and the 2008 Common Assumptions model. Additional information on these models is available at http://baydeltaoffice.water.ca.gov/swpreliability/index.cfm. The main difference between the 2009 Benchmark Study and the 2008 OCAP and the 2008 Common Assumptions models is the representation of the 2008 U.S. Fish and Wildlife Service Biological Opinion for Proposed Coordinated Operation of the Central Valley Project (CVP) and the State Water Project (SWP) and the 2009 National Marine Fisheries Service Biological Opinion on the Long Term Operations of the CVP and the SWP.

The 2008 OCAP model version was also modified to include the following changes listed below.

1. Replacement of the previous Artificial Neural Network (ANN) with a more accurate version. Implementation of the new ANN in the CalSim II model produces salinities that more closely match those of Delta Simulation Model 2 (DSM2).
2. More detailed representation of Delta channel configuration. This was done to capture the flow effects in Old and Middle Rivers.
3. Modeling of Article 56 extended carryover deliveries that are available to SWP Table A contractors.
4. Use of three delivery patterns (based on 30%, 50% and 100% allocations) which provides a more accurate representation of SWP deliveries.
5. Estimation of X2 position and flow requirements using an ANN. X2 positions are now more similar to those calculated in DSM2.
6. The phenomenon of sea level rise and its effect on Delta salinities is now modeled. Artificial Neural Networks were developed to estimate flow-salinity relationships in the Delta with an assumed increment of sea level rise for a mid-century condition.
7. Modified SWP South of the Delta (SOD) allocation logic to account for export restrictions that are established by the new Biological Opinions.

All studies assume current SWP Delta diversion limits (often referred to as "Banks Pumping Plant capacity"), existing conveyance capacity of the upper Delta-Mendota Canal/California Aqueduct system, and current SWP/CVP operations agreements. The following table, A.1, is a complete list of the study assumptions. Tables A.2 and A.3 provide the assumptions for American River demands.

Table A. 1 2009 Delivery Reliability Report CalSim II modeling assumptions

	2009 Studies	2029 Studies
Period of Simulation	82 years (1922-2003)	Same
HYDROLOGY		
Level of Development (Land Use)	2005 Level, DWR Bulletin 160-98 [1]	2020 Level, DWR Bulletin 160-98 [2]
Demands		
Sacramento River Region (excluding American River)		
CVP	Land Use based, limited by Full Contract	Land Use based, full build-out of contract amounts
SWP (FRSA)	Land Use based, limited by Full Contract	Same
Non-Project	Land Use based	Same
Davis-Woodland	None	Proposal 2B from EIR/S
Antioch	Pre-1914 water right	Same
CVP Refuges	Recent Historical Level 2 water needs	Firm Level 2 water needs
American River Basin		
Water rights	2005 Level [3]	2020 Level [4]
CVP	2005 Level; including Freeport Regional Water Project (FRWP)	2020 Level, full contracts including FRWP and Sacramento River Water Reliability Project
San Joaquin River Basin		
Friant Unit	Limited by contract amounts, based on current allocation policy	Same
Lower Basin	Land-use based, based on district level operations and constraints.	Same
Stanislaus River Basin [5]	Land-use based, based on New Melones Interim Operations Plan and NMFS BO (Jun 2009) Actions III.1.2 and III.1.3 [11]	Same
South of Delta		
CVP	Full Contract	Same
CCWD	140 TAF/YR [6]	195 TAF/YR [6]
SWP (with North Bay Aqueduct)	3.0-4.1 MAF/YR	4.1 MAF/YR
SWP Article 21 Demand	MWDSC up to 200 TAF/month, Dec-Mar, KCWA demand up to 180 TAF/month and others up to 34 TAF/month	Same

	2009 Studies	2029 Studies
FACILITIES		
Red Bluff Diversion Dam	Diversion dam with gates out except Jun 15 – Aug31 based on NMFS BO (Jun 2009) Action I.3.2; assume interim facilities in place	Diversion dam with gates out all year, NMFS BO (Jun 2009) Action I.3.1; assume permanent facilities in place
Freeport Regional Water Project	Included [7]	Included [7]
Banks Pumping Capacity	Physical capacity is 10,300 cfs but 6,680 cfs permitted capacity in all months up to 8,500 cfs during Dec 15th – Mar 15th depending on Vernalis flow conditions [8]; additional capacity of 500 cfs (up to 7,180 cfs) allowed for Jul – Sep for reducing impact of NMFS BO (Jun 2009) Action IV.2.1[11] on SWP	Same
Jones (Tracy) Pumping Capacity	Permit capacity is 4,600 cfs but exports limited to 4200 cfs plus diversions upstream of DMC constriction	Exports up to 4,600 cfs permit capacity in all months (allowed for by the Delta-Mendota Canal/California Aqueduct Intertie)
REGULATORY STANDARDS		
Trinity River		
Minimum Flow below Lewiston Dam	Trinity EIS Preferred Alternative (369-815 TAF/YR)	Same
Trinity Reservoir End-of-September Minimum Storage	Trinity EIS Preferred Alternative (600 TAF as able)	Same
Clear Creek		
Minimum Flow below Whiskeytown Dam	Downstream water rights, 1963 USBR Proposal to FWS and NPS, predetermined CVPIA 3406(b)(2) flows and NMFS BO (June 2009) Action I.1.1 [11]	Same
Upper Sacramento River		
Shasta Lake End-of-September Minimum Storage	NMFS 2004 Winter-run Biological Opinion (1900 TAF), predetermined CVPIA 3406(b)(2) flows, and NMFS BO (Jun 2009) Action I.2.1 [11]	Same
Minimum Flow below Keswick Dam	Flows for SWRCB WR 90-5 and 1993 Winter-run Biological Opinion temperature control, predetermined CVPIA 3406(b)(2) flows, and NMFS BO (Jun 2009) Action I.2.2 [11]	Same
Feather River		
Minimum Flow below Thermalito Diversion Dam	2006 Settlement Agreement (700 / 800 CFS)	Same
Minimum Flow below Thermalito Afterbay outlet	1983 DWR, DFG Agreement (750 – 1700 CFS)	Same
Yuba River		

	2009 Studies	2029 Studies
Minimum flow below Daguerre Point Dam	D-1644 Operations (Lower Yuba River Accord) [9]	Same
American River		
Minimum Flow below Nimbus Dam	American River Flow Management [10] as required by NMFS BO (Jun 2009) Action II.1 [11]	American River Flow Management [10] required by anticipated SWRCB order
Minimum Flow at H Street Bridge	SWRCB D-893	Same
Lower Sacramento River		
Minimum Flow near Rio Vista	SWRCB D-1641	Same
Mokelumne River		
Minimum Flow below Camanche Dam	FERC 2916-029, 1996 (Joint Settlement Agreement) (100 – 325 CFS)	Same
Minimum Flow below Woodbridge Diversion Dam	FERC 2916-029, 1996 (Joint Settlement Agreement) (25 – 300 CFS)	Same
Stanislaus River		
Minimum Flow below Goodwin Dam	1987 USBR, DFG agreement, and flows required for NMFS BO (Jun 2009) Actions III.1.2 and III.1.3 [11]	Same
Minimum Dissolved Oxygen	SWRCB D-1422	Same
Merced River		
Minimum Flow below Crocker-Huffman Diversion Dam	Davis-Grunsky (180 – 220 CFS, Nov – Mar), and Cowell Agreement	Same
Minimum Flow at Shaffer Bridge	FERC 2179 (25 – 100 CFS)	Same
Tuolumne River		
Minimum Flow at Lagrange Bridge	FERC 2299-024, 1995 (Settlement Agreement) (94 – 301 TAF/YR)	Same
San Joaquin River		
Maximum Salinity near Vernalis	SWRCB D-1641	Same
Minimum Flow near Vernalis	SWRCB D-1641, NMFS BO (Jun 2009) Action IV.2.1 [11]	Same
Sacramento River-San Joaquin River Delta		
Delta Outflow Index (Flow and Salinity)	SWRCB D-1641, FWS BO (Dec 2008) Action 4 [11]	Same
Delta Cross Channel Gate Operation	SWRCB D-1641, NMFS BO (Jun 2009) IV.1.2 [11]	Same
Delta Exports	SWRCB D-1641, NMFS BO (Jun 2009) Action IV.2.1 [11]	Same
Combined Flow in Old and Middle River (OMR)	FWS BO (Dec 2008) Actions 1 through 3 and NMFS BO (Jun 2009) Action IV.2.3 [11]	Same

	2009 Studies	2029 Studies
OPERATIONS CRITERIA		
Subsystem		
Upper Sacramento River		
Flow Objective for Navigation (Wilkins Slough)	NMFS BO (Jun 2009) Action I.4 [11]; 3,250 – 5,000 CFS based on CVP water supply condition	Same
American River		
Folsom Dam Flood Control	Variable 400/670 (without outlet modifications)	Same
Feather River		
Flow at Mouth	Maintain the DFG/DWR flow target above Verona or 2800 cfs for Apr– Sep dependent on Oroville inflow and FRSA allocation	Same
Stanislaus River		
Flow below Goodwin Dam	NMFS BO (Jun 2009) Actions III.1.2 and III.1.3 [11]	Same
System-wide		
CVP Water Allocation		
CVP Settlement and Exchange	100% (75% in Shasta Critical years)	Same
CVP Refuges	100% (75% in Shasta Critical years)	Same
CVP Agriculture	100% - 0% based on supply; additionally limited due to D-1641, FWS BO (Dec 2008) and NMFS BO (Jun 2009) export restrictions [11]	Same
CVP Municipal & Industrial	100% - 50% based on supply; additionally limited due to D-1641, FWS BO (Dec 2008) and NMFS BO (Jun 2009) export restrictions [11]	Same
SWP Water Allocation		
North of Delta (FRSA)	Contract specific	Same
South of Delta	Based on supply, Monterey Agreement; allocations limited due to D-1641, FWS BO (Dec2008) and NMFS BO (Jun 2009) export restrictions [11]	Same
CVP/SWP Coordinated Operations		
Sharing of Responsibility for In-Basin-Use	1986 Coordinated Operations Agreement	Same
Sharing of Surplus Flows	1986 Coordinated Operations Agreement	Same
Sharing of Restricted Export Capacity	Equal sharing of export capacity under SWRCB D-1641, FWS BO (Dec 2008) and NMFS BO (Jun 2009) export restrictions [11]	Same

	2009 Studies	2029 Studies
Transfers		
Lower Yuba River Accord [12]	Yuba River acquisitions for reducing impact of NMFS BO export restrictions [11] on SWP	Same
Dry Year Program	None	Same
Phase 8	None	Same
MWDSC/CVP Settlement Contractors	None	Same
CVP/SWP Integration		
Dedicated Conveyance at Banks	None	Same
NOD Accounting Adjustments	None	Same

1. The Sacramento Valley hydrology used in the Existing Conditions CALSIM II model reflects nominal 2005 land-use assumptions. The nominal 2005 land-use was determined by interpolation between the 1995 and projected 2020 land-use assumptions associated with Bulletin 160-98. The San Joaquin Valley hydrology reflects 2005 land-use assumptions developed by USBR. Existing-level projected land-use assumptions are being coordinated with the California Water Plan Update for future models.
2. The Sacramento Valley hydrology used in the Future Conditions CALSIM II model reflects 2020 land-use assumptions associated with Bulletin 160-98. The San Joaquin Valley hydrology reflects draft 2030 land-use assumptions developed by USBR. Development of future-level projected land-use assumptions are being coordinated with the California Water Plan Update for future models.
3. Presented in attached table of 2009 Study American River Demand Assumptions.
4. Presented in attached table of 2029 Study American River Demand Assumptions.
5. The CALSIM II model representation for the Stanislaus River does not necessarily represent USBR's current or future operational policies. A suitable plan for supporting flows has not been developed for NMFS BO (Jun 2009) Action 3.1.3.
6. The actual amount diverted is operated in conjunction with supplies from the Los Vaqueros project. The existing Los Vaqueros storage capacity is 100 taf. Associated water rights for Delta excess flows are included.
7. Mokelumne River flows are modified to reflect modified operations associated with EBMUD supplies from the Freeport Regional Water Project.
8. Current ACOE permit for Harvey O. Banks PP allows for an average diversion rate of 6,680 cfs in all months. Diversion rate can increase up to 1/3 of the rate of San Joaquin River flow at Vernalis during Dec 15th – Mar 15th up to a maximum diversion of 8,500 cfs, if Vernalis flow exceeds 1,000 cfs.
9. D-1644 and the Lower Yuba River Accord are assumed to be implemented for Existing and Future Conditions. The Yuba River is not dynamically modeled in CALSIM II. Yuba River hydrology and availability of water acquisitions under the Lower Yuba River Accord are based on modeling performed and provided by the Lower Yuba River Accord EIS/EIR study team.

10. Under Existing Conditions, the flow components of the proposed American River Flow Management are as required by the NMFS BO (June 4, 2009). Under Future Conditions the American River Flow Management is treated as a SWRCB permit term.
11. In cooperation with USBR, National Marine Fisheries Service, Fish and Wildlife Service, and Ca Department of Fish and Game, the Ca Department of Water Resources has developed assumptions for implementation of the FWS BO (December 15, 2008) and NMFS BO (June 4, 2009) in CALSIM II. The FWS BO and NMFS BO assumptions are included as separate appendices.
12. Acquisitions of Component 1 water under the Lower Yuba River Accord, and use of 500 cfs dedicated capacity at Banks PP during Jul – Sep, are assumed to be used to reduce as much of the effect of the April – May Delta export actions on SWP contractors as possible.

Table A. 2 2009 Study American River Demand Assumptions

CVP CONTRACTOR	Geographic Location	CVP Water Service Contracts (TAF/yr)		Settlement/ Exchange Contractor (TAF/yr)	Water Rights/ Non-CVP (TAF/yr)	Diversion Limits (TAF/Yr) If FUI (Mar-Nov Folsom Unimpaired Inflow - TAF/Yr)			Notes
		AG	M&I			> 1600	> 950	< 400	
Placer County Water Agency	Auburn Dam Site		0.0		35.5	35.5	35.5	35.5	
Sacramento Suburban Water District	Folsom Reservoir				17.0	17.0	0.0	0.0	
City of Folsom (includes P.L. 101-514)			7.0		27.0	34.0	34.0	34.0	1
Folsom Prison					2.0	2.0	2.0	2.0	
San Juan Water District (Placer County)					17.0	17.0	17.0	17.0	
San Juan Water District (Sac County) (includes P.L. 101-514)			24.2		33.0	44.2	44.2	44.2	1
El Dorado Irrigation District			7.55		0.0	7.55	7.55	7.55	1
City of Roseville			32.0		5.0	37.0	37.0	37.0	1
Placer County Water Agency			0.0			0.0	0.0	0.0	
El Dorado County (P.L. 101-514)			15.0			4.0	4.0	4.0	1
Total		0.0	85.8	0.0	101.0	162.8	145.8	145.8	
So. Cal WC/ Arden Cordova WC	Folsom South Canal				5.0	5.0	5.0	5.0	
California Parks and Recreation			5.0			1.0	1.0	1.0	1
SMUD (export)			30.0		15.0	20.0	20.0	20.0	1
Canal Losses					1.0	1.0	1.0	1.0	
Total		0.0	35.0	0.0	21.0	27.0	27.0	27.0	
City of Sacramento	Lower American River				58.0	58.0	58.0	50.0	
Arcade Water District					0.0	0.0	0.0	0.0	
Carmichael Water District					12.0	12.0	12.0	12.0	
Total		0.0	0.0	0.0	70.0	70.0	70.0	62.0	
City of Sacramento	Lower Sacramento River				62.3	62.3	62.3	70.3	
Sacramento County Water Agency (SMUD transfer)			10.0			10.0	10.0	10.0	
			20.0			20.0	20.0	20.0	
Sacramento County Water Agency (P.L. 101-514)			15.0			15.0	15.0	15.0	
Sacramento County Water Agency - assumed Appropriated Water					31.3				2
EBMUD (export)			133.0						3
Total		0.0	178.0	0.0	93.6	107.3	107.3	115.3	
Total (American R)		0.0	298.75	0.00	321.10				

1. When the CVP Contract quantity exceeds the quantity of the Diversion Limit minus the Water Right (if any), the diversion modeled is the quantity allocated to the CVP Contract (based on the CVP contract quantity shown times the CVP M&I allocation percentage) plus the Water Right (if any), but with the sum limited to the quantity of the Diversion Limit.
2. SCWA targets 68 taf of surface water supplies annually. The portion unmet by CVP contract water is assumed to come from two sources:
   (1) Delta "excess" water- averages 16.5 taf annually, but varies according to availability. SCWA is assumed to divert excess flow when it is available, and when there is available pumping capacity.
   (2) "Other" water- derived from transfers and/or other appropriated water, averaging 14.8 taf annually but varying according remaining unmet demand.
3. EBMUD CVP diversions are governed by the Amendatory Contract, stipulating:
   (1) 133 taf maximum diversion in any given year.
   (2) 165 taf maximum diversion amount over any 3 year period.
   (3) Diversions allowed only when EBMUD total storage drops below 500 taf.
   (4) 155 cfs maximum diversion rate.

Table A. 3 2029 Study American River Demand Assumptions

CVP CONTRACTOR	Geographic Location	CVP Water Service Contracts (TAF/yr)		Settlement/ Exchange Contractor (TAF/yr)	Water Rights/ Non-CVP (TAF/yr)	Diversion Limits (TAF/Yr) If FUI (Mar-Nov Folsom Unimpaired Inflow - TAF/Yr)			Notes
		AG	M&I			> 1600	> 950	< 400	
Placer County Water Agency	Auburn Dam Site		0.0		35.5	35.5	35.5	35.5	
Sacramento Suburban Water District	Folsom Reservoir				0.0	0.0	0.0	0.0	
City of Folsom (includes P.L. 101-514)			7.0		27.0	34.0	34.0	34.0	1
Folsom Prison					5.0	5.0	5.0	5.0	
San Juan Water District (Placer County)					24.0	24.0	24.0	24.0	
San Juan Water District (Sac County) (includes P.L. 101-514)			24.2		33.0	57.2	57.2	57.2	1
El Dorado Irrigation District			7.55		17.0	24.55	24.55	24.55	1
City of Roseville			32.0		0.0	32.0	32.0	32.0	1
Placer County Water Agency			35.0			35.0	35.0	35.0	
El Dorado County (P.L. 101-514)			15.0			15.0	15.0	15.0	1
Total		0.0	120.8	0.0	106.0	226.8	226.8	226.8	
So. Cal WC/ Arden Cordova WC	Folsom South Canal				5.0	5.0	5.0	5.0	
California Parks and Recreation			5.0			5.0	5.0	5.0	1
SMUD (export)			30.0		15.0	45.0	45.0	45.0	1
Canal Losses					1.0	1.0	1.0	1.0	
Total		0.0	35.0	0.0	21.0	56.0	56.0	56.0	
City of Sacramento	Lower American River				96.3	96.3	96.3	50.0	
Arcade Water District					0.0	0.0	0.0	0.0	
Carmichael Water District					12.0	12.0	12.0	12.0	
Total		0.0	0.0	0.0	108.3	108.3	108.3	62.0	
City of Sacramento	Lower Sacramento River				51.9	51.9	51.9	98.2	
Sacramento County Water Agency			10.0			10.0	10.0	10.0	
(SMUD transfer)			20.0			20.0	20.0	20.0	
Sacramento County Water Agency (P.L. 101-514)			15.0			15.0	15.0	15.0	
Sacramento County Water Agency - assumed Appropriated Water					31.2				2
EBMUD (export)			133.0						3
Total		0.0	178.0	0.0	83.1	96.9	96.9	143.2	
Total		0.0	333.75	0.0	353.9				

1. When the CVP Contract quantity exceeds the quantity of the Diversion Limit minus the Water Right (if any), the diversion modeled is the quantity allocated to the CVP Contract (based on the CVP contract quantity shown times the CVP M&I allocation percentage) plus the Water Right (if any), but with the sum limited to the quantity of the Diversion Limit.
2. SCWA targets 68 taf of surface water supplies annually. The portion unmet by CVP contract water is assumed to come from two sources:
   (1) Delta "excess" water- averages 16.5 taf annually, but varies according to availability. SCWA is assumed to divert excess flow when it is available, and when there is available pumping capacity.
   (2) "Other" water- derived from transfers and/or other appropriated water, averaging 14.8 taf annually but varying according remaining unmet demand.
3. EBMUD CVP diversions are governed by the Amendatory Contract, stipulating:
   (1) 133 taf maximum diversion in any given year.
   (2) 165 taf maximum diversion amount over any 3 year period.
   (3) Diversions allowed only when EBMUD total storage drops below 500 taf.
   (4) 155 cfs maximum diversion rate.

575-850 thousand acre-feet of water would be needed to meet current regulatory requirements and to maintain minimum system operations. This water could be obtained through additional water supplies, reductions in water demands, or a combination of the two. For current conditions, the report concludes the system is not considered vulnerable to this type of operational interruption.

Selection of Climate Change Scenario for Updated Reliability Assessment

For the purposes of this report, the 2029 delivery estimates are based upon a single median future climate projection. To identify this projection, a separate analysis was conducted of the 12 mid-century climate projections contained in *Using Future Climate Projections to Support Water Resources Decision Making in California* (Chung et al., 2009), and their resulting water supply effects to determine which one most closely represented the "central" or "median" projection. The metrics used for comparison consisted of projected climate and hydrology variables, and their effects on CVP/SWP system exports; namely, temperature, precipitation, total inflow to major reservoirs, shifts in timing of run-off, and Delta exports. Using these metrics, the future climate projection from the MPIECHAM5 global climate model run for the higher greenhouse gas emissions scenario was selected to be representative of median SWP-CVP effects, and thus is used for the analyses presented in this report.

Vulnerability of Delta Levees to Failure

Delta levees provide constant protection from flooding because most lands in the Delta are below sea level. Most Delta levees, however, do not meet modern engineering standards and are highly susceptible to failure. Levees are subject to failure at times of high flood flows, but also at any time of the year due to seepage or the piping of water through the levee, slippage or sloughing of levee material, or sudden failure due to an earthquake. According to the URS Corp./Jack R. Benjamin & Associates report, *Report, Phase 1: Risk Analysis, Delta Risk Management Strategy (DRMS)*, December 2008, the risk of levee failure in the Delta is significant, as shown by the fact that most islands in the Delta have flooded at least once over the past 100 years, with many flooding at least twice. Since 1900, there have been 158 levee failures.

A breach of one or more levees and island flooding may affect Delta water quality and water operations. Depending on the hydrology and the size and locations of the breaches and flooded islands, a significant amount of saline water may be drawn into the interior Delta from Suisun and San Pablo bays. At the time of island flooding, exports may be drastically reduced or ceased to evaluate the salinity distribution in the Delta and to avoid drawing higher saline water toward the pumps. The introduced salinity then could become dispersed and degrade Delta water quality for a prolonged period because of complex relationships between Delta inflows, tidal mixing, and the time taken to repair the breaches.

A large earthquake in the Delta causing significant levee failures and island flooding could lead to multiyear disruptions in water supply, significant water quality degradation, as well as permanent flooding of several islands. Such permanent multi-island flooding would probably lead to increased salt water intrusion into the Delta during seasonal low inflows. Maintaining Delta water quality when several islands are flooded and breaches are open would require additional Delta inflow because the volume of water coming into the Delta on the flood tide would increase, requiring more fresh water from the rivers to prevent the saline water from extending into the Delta. When SWP and CVP pumping are restarted, Delta inflow would need to increase again beyond the pumping amount in order to prevent water quality degradation in the Delta. This chain of events would significantly affect water supply reliability by limiting pumping and requiring additional reservoir releases to generate the needed higher Delta inflows. A worst

case scenario for water supply effects would be a moderate or large earthquake causing extensive levee failure in the late summer or fall of a dry year.

The levee break on Middle River and subsequent flooding of Upper Jones Tract in 2004 is a small-scale example of this phenomenon. Following the break, Delta pumping was curtailed for several days to prevent seawater intrusion. Water shipments down the California Aqueduct were continued through unscheduled releases from San Luis Reservoir. Also, Shasta and Oroville reservoir releases were increased to provide for salinity control in the Delta.

A growing concern about the long-term viability of the Delta's levee system led to the initiation of the Delta Risk Management Strategy (DRMS).

Delta Risk Management Strategy

The Delta Risk Management Strategy is being developed in two phases. Phase 1 is the analysis of the risk of levee failures and the associated potential economic, environmental, and public health and safety effects. The final Phase 1 Report was completed in February 2009. Phase 2, expected to be completed by Summer 2010, is to develop and evaluate strategies to reduce risks from levee failures. The risk analysis includes the likely occurrence of earthquakes of varying magnitudes in the region, future rates of subsidence given continued farming practices, the likely magnitude and frequency of storms, and the potential effects associated with global climate change (sea level rise, climate change, temperature change). Estimated risks to the Delta were made for 50-, 100-, and 200-year projections since risk can be expected to increase with time.

The DRMS Phase 1 Report looks at several hazards to levees: seismic events that cause levee failures, flood flows that can overtop levees or cause levee failure by increased pressure and seepage, undetected problems during non-flood flow periods, and erosion due to high wind waves. The level of risk of failure of Delta levees was determined by considering: the frequency of different magnitudes of hazards that can challenge the integrity of Delta levees, how vulnerable different levee reaches are to hazards, how hazards and levee vulnerabilities combine to produce levee failure, and the economic and ecosystem effects due to levee failure. The analysis assumes that existing regulatory and management practices will continue.

Potential Interruption/Disruption of SWP Deliveries Due to Earthquakes

A strong earthquake affecting the Delta could cause simultaneous levee failures on several islands, with these islands flooding simultaneously. Preliminary analysis indicates that some water may not be treatable by municipal agencies for many months due to high organic carbon concentrations. This would extend the period that Delta water supply would be unavailable for urban users.

Key findings of the Phase 1 report on possible effects on SWP deliveries due to earthquakes are:

- There is about a 40% chance of 27 or more islands simultaneously failing during a major earthquake in the next 25 years.
- A moderate to large earthquake capable of causing multiple levee failures could happen in the next 25 years. Under such an earthquake, extensive levee failure would most likely occur in the west and central Delta. Levee repairs could take more than 2.5 years and exports from the Delta could be disrupted for about a year with a loss of up to 8 million acre feet of water.
- By 2050, the risk of island flooding from seismic events is expected to increase by 35% over 2005 conditions, if a seismic event has not occurred.

Potential Interruption/Disruption of SWP Deliveries Due to Floods

During an average year, about 85% of the total Delta inflow comes from the Sacramento River and 10% comes from the San Joaquin River. The remaining Delta inflow primarily comes from three eastside tributaries. Inflow from the Sacramento and San Joaquin rivers depends on reservoir releases, precipitation, and snowmelt. Over the long-term, many different combinations of high flood flows in the Sacramento and San Joaquin rivers are possible because of the large geographical extent of the two rivers' watersheds and the variability in storm paths. The Phase 1 analysis considers the magnitude and frequency of flooding in different parts of the Delta from different sources to evaluate the probability of these high flows. This approach allows the inclusion in the risk analysis of floods that, while possible, are larger than any in the historic record. If the analysis solely relied upon the historical data, the analysts believe the risk would be underestimated.

Potential disruption of Delta exports due to floods and levee failures would depend on the number of flooded islands, the timing and size of the flood flows, and the water quality in the Delta and Suisun Bay at the time of the flood. However, during such high flows, there would normally be little or no effect on the water quality of the exports due to levee failures and DRMS assumes no significant effect on Delta exports.

Key findings of the Phase 1 report on possible effects to SWP deliveries by the year 2050 due to flood flows are:

- Delta flood hazard is expected to increase due to sea level rise and more frequent high flows.
- The frequency of island flooding from floods is expected to increase over 2005 conditions.
- The frequency of floods is expected to increase by 35% and levees are expected to become more vulnerable to flooding due to increased seepage and stability problems associated with more subsidence and sea level rise.

The combined effects of increased levee vulnerability and flood flows indicate an expected 80% increase in island flooding from flood flows.

Potential Interruption/Disruption of SWP Deliveries Due to "Sunny Day" Event

A "sunny day" levee failure is a failure that occurs during non-flood times and is not caused by an earthquake. Possible causes of levee failure include wave action, animal activity, and seepage. The DRMS reports that, on average, there will be about 10 sunny-day breaches with 100 years of exposure in the Delta. These types of levee failures are not expected to involve the simultaneous multi-levee events as could happen with high flood flows or a large earthquake.

Combined Potential Interruption/Disruption of SWP Deliveries

DRMS evaluated combined risk of levee failure due to earthquakes, floods, and "sunny day events" as well as how risks may change in the future. Key findings by DRMS are:

- Levee hazards are expected to grow in the future due to such factors as sea level rise and more frequent flood flows that will put more pressure on the levees.
- The overall likelihood of a major Delta event causing extensive levee failure is increasing as is the magnitude of the consequences from a given event.
- There is a possible range of sea level rise of from 0.7 to 4.6 feet over the next 100 years, depending on the assumed future greenhouse gas emissions and the forecast model used. Current estimates by the Intergovernmental Panel on Climate Change indicate that sea level will rise from 0.6 to 1.9 feet over the next 100 years. The CALFED Independent Science Board

(ISB) has recommended that planning that incorporates sea level rise should use the full range of variability of 20-55 inches.

Delta Flood Emergency Preparedness and Response Plan

As part of its efforts to reduce effects to the SWP should a levee failure occur, DWR has initiated the development of the DWR Delta Flood Emergency Preparedness and Response Plan (DWR Delta Flood EPRP). DWR has emergency response procedures for a Delta levee failure in place but the DWR Delta Flood EPRP will enhance the state's ability to prepare for, respond to, and recover from a catastrophic Delta levee failure. This new scalable plan will provide DWR with updated techniques and procedures should a catastrophic Delta levee failure occur. This plan will be DWR's roadmap for coordinating the protection of life and property with our local, state, and federal partners in a levee disaster while protecting the state's water system.

DWR has completed the first of two phases of engineering design work intended to enhance the state's ability to respond to large-scale levee failures or floods in the Delta. In the first phase, DWR conducted a discovery process to analyze previously developed plans and procedures and to identify current DWR capabilities for response to emergencies and disasters in the Delta. In the second phase, DWR will further engage its response partners in local, state, and federal government, and in the private sector to develop a more detailed DWR Delta Flood Emergency Preparedness and Response Plan. This response plan will be consistent with and in compliance with California's Standardized Emergency Management System (SEMS) and with the National Incident Management System (NIMS)[2]. The main goal of this plan is to reduce the recovery time from a catastrophic levee failure of Delta water users. This will be achieved through the development of new response tools, enhanced response methods, and clarifying response roles in the Delta.

National Marine Fisheries Service and Fish and Wildlife Service Biological Opinions

Over the past 5 years and in response to declining fish populations, the rules defined by the federal biological opinions issued under the Endangered Species Act for the operation of the SWP and CVP in the Delta have become more and more restrictive. In December 2008, the USFWS issued a new biological opinion for delta smelt. In June 2009, the NMFS issued a new biological opinion covering winter-run and spring-run Chinook salmon, steelhead, green sturgeon, and killer whales. The biological opinions imposed additional operational requirements that restrict the amount of water supply that can be exported from the Delta. Below are some highlights of each biological opinion.

USFWS Biological Opinion

The USFWS Biological Opinion (BO) includes additional requirements in all but two months of the year. From December to June, an adaptively managed flow restriction is in place for the average Old River and Middle River (OMR) flow. The flow restriction can begin as early as December 1 based on USFWS'

[2] SEMS is an emergency management system required by California Government Code Section 8607(a) for managing incidents involving multiple jurisdictions and agencies. NIMS is a nationwide, federal emergency management approach, for managing incidents with all levels of government, private-sector, and nongovernmental organizations working together. For more SEMS/NIMS information, please visit: www.oes.ca.gov.

determination. However, the restriction is more likely to start after December 20 and is based on turbidity and salvage triggers. The restriction has three phases that are intended to protect delta smelt at various life stages. The actual OMR flow target is dependent on delta smelt survey information. The USFWS determines the required target flow. Managing to OMR flow is accomplished primarily by reducing the CVP and SWP exports. Because determining an OMR restriction is based on fish location and decisions by USFWS staff, predicting an OMR restriction and corresponding export pumping with any great certainty poses a challenge.

The USFWS BO also imposes an additional salinity requirement in the Delta for September and October in wet and above-normal water years. In these years, fresher water must be maintained at locations further west than during the other types of water years. In November during years when this requirement is in place, inflow into the SWP and CVP reservoirs will be passed downstream to augment the outflow until the prior-month's required location for the fresher water is reached.

NMFS Biological Opinion

The requirements contained in the NMFS' BO also added an OMR requirement. However, we expect that the USFWS OMR requirements will satisfy or be sufficiently protective of the listed species under the NMFS biological opinion.

The NMFS' BO also expands the duration of a Spring-time operation which combines a significant reduction in Delta exports with a pulse flow on the San Joaquin River from one month to two months. The requirement would likely result in total exports being limited to 1,500 cubic feet per second except in extremely wet cases during April and May.

Under the BO, the Delta Cross Channel gates are closed more frequently from October through December 14, and completely closed between December 15 and January 31. Previously, as defined by Water Right Decision 1641, the Delta Cross Channel was closed up to 45 days between November 1 and January 31. This operation can require additional export reductions in order to meet the water quality objectives contained in the water right permits for the SWP and CVP.

There are a number of additional actions under the BO that require temperature, flow and storage requirements on the CVP system. These additional actions or requirements could have an effect on real-time SWP operations.

General Approach for Assessing SWP Delivery Reliability

5

CalSim II, a computer model jointly developed by DWR and U.S. Bureau of Reclamation, simulates much of the water resource infrastructure in the Central Valley and Delta region of California. CalSim II models all areas that contribute flow to the Delta. The geographical coverage includes the Sacramento River Valley, the San Joaquin River Valley, the Sacramento-San Joaquin Delta, the Upper Trinity River, and the CVP and SWP service areas. CalSim II simulates operation of the CVP-SWP system using a monthly time step. The model assumes that facilities, land use, water supply contracts, and regulatory requirements are constant over this period.

General Solution Techniques and Incorporating Operational Constraints

CalSim II routes water through a CVP-SWP system network representation. The network includes more than 300 nodes and more than 900 arcs, representing 24 surface reservoirs and the interconnected flow system. CalSim II uses logic for determining deliveries to north-of-Delta and south-of-Delta CVP and SWP contractors. The delivery logic uses runoff forecast information that incorporates uncertainty and standardized rules that relate forecasted supplies to estimate the water available for delivery and reservoir carryover storage. The assumed delivery levels are updated monthly within the model for the periods January 1 through May 1 for the SWP and March 1 through May 1 for the CVP to correspond to the updated runoff forecasts. The south-of-Delta SWP and CVP deliveries are based on water supply parameters and operational constraints.

Hydrology

A range of hydrologic conditions based on the historical flow record is used to represent the possible range of water supply conditions. The hydrology used by CalSim II was developed jointly by DWR and U.S. Bureau of Reclamation by adjusting the historical flow record to account for the influence of land-use changes and upstream flow regulation. Sacramento Valley and tributary basin hydrologies are developed by

adjusting the historical sequence of monthly stream flows to represent a sequence of flows at a current or future level of development. Adjustments to historical water supplies are determined by imposing the current or future level land use on historical meteorological and hydrologic conditions. San Joaquin River basin hydrology is developed in a different manner and uses fixed annual demands and a regression analysis to develop flow accretions and depletions. The resulting hydrology represents the water supply available from Central Valley streams to the CVP and SWP at a current or future level of development. Groundwater is modeled as a series of interconnected basins. Groundwater pumping, recharge from irrigation, stream-aquifer interaction and interbasin flow are calculated dynamically by the model.

The hydrology for the 2029 level of development that was used in the studies in this report has been modified to incorporate effects of climate change for a selected median- impact future climate projection. The effects of climate change on inflows to major SWP and CVP reservoirs was estimated using the method from the 2009 Report *Using Future Climate Projections to Support Water Resources Decision Making in California* (Chung et al., 2009). This method adjusts the base hydrologic sequence to reflect projected changes in the timing and volume of inflow. For each month of the year, streamflows based on the future climate projection were compared to historical streamflows to estimate how much higher or lower future streamflows may be than historical flows. The monthly values for the reservoir inflows were then adjusted to represent the monthly trends for the future climate projection. Further adjustments are made to the hydrology to represent projected changes in annual runoff volume.

Demands

North of Delta

For both the 2009 and 2029 scenarios agricultural and outdoor urban land use based demands are calculated from an assumed cropping pattern and a soil-moisture budget. For the 2009 level study the land use based demands have been estimated using fixed 2009 land use and historical hydrology. For the 2029 level study the land use based demands have been estimated using fixed 2029 land use but the hydrology in the Sacramento Valley has been modified to incorporate effects of climate change under a selected representative climate change projection. This modification procedure is similar to what was used to modify inflows to major SWP and CVP reservoirs as discussed in the 2009 Report (Chung et al., 2009). Both land use based demands and estimated contract amounts serve as upper bounds on deliveries.

South of Delta

South of Delta demands, unlike North of Delta demands, are contract based. SWP Table A and Article 21 demands for the 2009 scenario are preprocessed independent of CalSim II and vary annually according to hydrologic conditions. SWP Table A demands for the 2029 scenario are assumed to be at maximum entitlement annually. Article 21 demands in the 2029 scenario, however, vary annually according to hydrologic conditions.

Meeting Delta Water Quality Standards

CalSim II uses DWR’s Artificial Neural Network (ANN) model to simulate the flow-salinity relationships for the Delta. The ANN model correlates salinity at key locations in the Delta with Delta inflows, Delta exports, and Delta Cross Channel operations. The model estimates salinity at four locations for modeling Delta water quality standards. These locations are Old River at Rock Slough, San Joaquin River

at Jersey Point, Sacramento River at Emmaton, and Sacramento River at Collinsville.

CalSim II Priorities in Water Deliveries

CalSim II allocates water according to the four priorities shown below. Highest priority is given to prior-right water users, minimum in-stream flow requirements and water quality requirements. While CVP and SWP contractor deliveries take precedence over next year's reservoir storage, a balance between the two is struck in the allocation decision to ensure that enough water is left in storage at the end of the year in case of impending drought.

1. Prior-right water users, minimum in-stream flow requirements, and water quality requirements.
2. SWP Table A contractors and CVP contractors.
3. Reservoir storage for the next year (carryover).
4. SWP Article 21 deliveries.

SWP Table A and Article 21 Deliveries

The CalSim II simulations in this report estimate SWP delivery amounts for SWP Table A and Article 21. As mentioned in Chapter 2, SWP Table A is the contractual method for allocating available supply and the total of all maximum SWP Table A amounts for deliveries from the Delta is 4.133 million acre-feet (maf) per year. Article 21 refers to a provision in the contract for delivering water that is available in addition to SWP Table A amounts. Article 21 of SWP contracts allows contractors to receive additional water deliveries only under specific conditions. These conditions are:

1. The water is available only when it does not interfere with SWP Table A allocations and SWP operations.
2. The water is available only when excess water is available in the Delta.
3. The water is available only when conveyance capacity is not being used for SWP purposes or scheduled SWP deliveries.
4. The water cannot be stored in the SWP system. In other words, the contractors must be able to use the Article 21 water directly or be able to store it in their own system.

CalSim II Performance

Some of the comments to the *Draft 2003 SWP Delivery Reliability Report* expressed concern about the accuracy of CalSim II and the credibility of conclusions about SWP delivery reliability that are based on CalSim II simulations. To respond to these concerns, DWR conducted several CalSim II studies. In one study, results from a CalSim II simulation using historical input from 1975 to 1998 were compared to historical operations. This study is documented in the report *CalSim-II Simulation of Historical SWP/CVP Operations, Technical Memorandum Report, November 2003* and was provided in Appendix E of the *2005 SWP Delivery Reliability Report*. In a second study, a sensitivity analysis was performed to quantify the effects of various inputs on CalSim II results. Two performance measures were used, a Sensitivity Index and Elasticity Index, to quantify the sensitivity of 12 model output responses to 12 different model input parameters. This sensitivity study was also provided in Appendix E of the *2005 SWP Delivery Reliability Report*.

In a follow-up study, DWR staff conducted a more detailed analysis of the sensitivity results, focusing on the delivery reliability of the SWP system. The results of this analysis are documented in an internal

memorandum report dated April 30, 2007. The purpose of this analysis was to assist SWP contractors and other interested parties in evaluating the effect of model input parameters on SWP deliveries (SWP Delta deliveries, SWP north-of-Delta deliveries, and SWP deliveries under Article 21) with respect to a selected subset of input parameters.

Recent Improvements to CalSim II Simulations

The CalSim II model is modified in response to new in water system operational requirements, updated information, or improvements in computational methods. Changes to the model are discussed in Appendix A. Enhancements to CalSim II of note are:

- **Greater resolution in the representation of the Delta channel configuration and of the distribution of Net Delta Island Consumptive Use (Net DICU).** The representation of the Delta Channels was reconfigured to mimic the flow dynamics in the interior Delta, specifically to capture the flow effects in the Old and Middle Rivers. Channel configurations and flow regressions were taken from the paper *A Model to Estimate Combined Old & Middle River Flows – Paul Hutton, Ph.D., P.E., Metropolitan Water District of Southern California, April 2008*.
- **Article 56 Extended Carryover deliveries.** Article 56 Extended Carryover deliveries is a category of water delivery available to SWP Table A contractors that was not represented in the previous model used in the 2007 delivery reliability report. Modeling this category of water delivery gives a more realistic representation of real world export patterns throughout the delivery contract year.
- **Three-pattern deliveries.** The practice of the SWP delivering water based on three delivery patterns submitted by the SWP contractors for 30%, 50%, and 100% allocations is now modeled. Modeling the three delivery patterns based on the level of allocation gives a more realistic representation of real world export patterns throughout the delivery contract year.
- **Improved modeling of flow-salinity relationships in the Delta.** The previous Artificial Neural Network (ANN) used to estimate flow-salinity relationships has been replaced with a newer more accurate version. The new ANN and its accompanying implementation to the CalSim II model produces salinities that match more closely the Delta Simulation Model 2 (DSM2) salinities.
- **X2 positions and flow requirements estimated using an Artificial Neural Network.** The X2 positions and flow requirements were previously estimated using the Kimmerer-Monismith Equation. The new ANN used to estimate X2 position more closely matches the DSM2 model X2 position.
- **Sea Level Rise.** The phenomenon of sea level rise and its effect on Delta salinities is now modeled. Artificial Neural Networks were developed to estimate flow-salinity relationships in the Delta with an assumed increment of sea level rise for a mid-century condition.
- **SWP South of the Delta (SOD) Allocations.** The SWP SOD Allocation logic has been modified so that adjustments to the Water Supply Index-Delivery Index based allocations are made to account for the export restrictions imposed by the new Biological Opinions. The Biological Opinions dictate that San Joaquin River flows are now the determining factor for export capacity from the Delta. This new logic forecasts export capacity based on San Joaquin River wetness and then develops allocations from them.

Assessment of Present and Future SWP Delivery Reliability

6

These updated estimates of the current and future delivery reliability of the SWP reflect the changes in project operation due to the requirements contained in the USFWS' biological opinion issued in December 2008 and the NMFS' biological opinion issued in June 2009. These opinions are discussed in more detail in Chapter 4. The estimates for the future delivery amounts also incorporate assumptions regarding rainfall, runoff, and water supply demand based upon changed climatic conditions.

The updated estimates are presented alongside results from the 2007 SWP Delivery Reliability Report to help identify and explain impacts to delivery reliability due to the biological opinions' requirements and future climate change with sea level rise. At the end of the chapter, a comparison of the estimated SWP deliveries under Current (2009) Conditions to those under Future (2029) Conditions is presented. This chapter contains tables summarizing the updated estimated delivery amounts of the studies for the entire study period (1922-2003), dry years, and wet years and presents information on the estimated probability of annual SWP Table A delivery amounts currently and 20 years in the future. The annual values for SWP deliveries estimated by all the CalSim II simulations are listed in tables in Appendix B. These tables also show the annual Table A demands assumed for each study.

The results indicate potentially significant differences between the updated studies and studies done for the 2007 report under both current and future conditions for estimated deliveries during some periods. In general, updated estimates of both current and future SWP Table A deliveries are less than the deliveries presented in the 2007 report, during near-normal to wet years. The updated studies generally show slightly lower SWP Table A deliveries under Future (2029) Conditions when compared to Current (2009) Conditions. There are, however, some larger decreases in deliveries in the future during multiple dry-year periods. This is primarily due to the effects of the assumed climate change scenario that includes sea level rise. In comparison, the 2007 report showed frequent increases in future deliveries.

Assessment of SWP Delivery Reliability under Current (2009) Conditions

Current Conditions refer to those conditions in effect in 2009. They are described below. Corresponding results from the 2007 SWP Delivery Reliability Report are presented throughout this section for comparison. Appendix A presents a detailed discussion of the study assumptions for this report.

Availability of Source Water

The 2005 level of development (level of water use in the source areas) is assumed to be representative of 2009. The hydrologic sequence of simulated years is based upon historical precipitation and runoff patterns and is from water years 1922 through 2003.

Demand for Delta Water

The SWP contractors' Table A demands for deliveries from the Delta assumed for 2009 are shown in Table 6.1. A range in Table A demands is shown because the demand is assumed to vary each year with the weather. The assumed demands for 2009 are higher than the ones used in the corresponding study (2007 Study) in the 2007 report. Differences between the values in updated studies and the 2007 Study are due to increased Table A water demand for municipal uses.

Table 6. 1 SWP Table A demands from the Delta under Current Conditions

Study of Current Conditions	Average Demand		Maximum Demand		Minimum Demand	
	taf /year	% of maximum SWP Table A[1]	taf /year	% of maximum SWP Table A[1]	taf /year	% of maximum SWP Table A[1]
2007 SWP Delivery Reliability Report, Study 2007	3308	80%	3864	94%	2323	56%
Updated Studies (2009)	3711	90%	4115	100%	3007	73%

1/ 4,133 taf /year

The potential demands for SWP Article 21 water are assumed for study purposes to be very high and are more than double the amounts assumed in the 2007 SWP Delivery Reliability Report as shown in Table 6.2. The Article 21 demands are increased in the 2009 updated studies to match the amounts assumed in the studies conducted for the biological opinions. Assuming very large Article 21 demands in the studies for the biological opinions was done to capture the upper bound of the potential impact of Article 21 exports upon the Delta ecosystem. This assumption reflects a condition in which SWP contractors are able to use essentially any available Article 21 water when conveyance capacity for Article 21 water exists in the SWP delivery system.

Table 6. 2 Article 21 demands from the Delta under Current Conditions

Study of Current Conditions	Maximum Article 21 demand (taf /month)[1]	
	December - March	April - November
2007 SWP Reliability Report, Study 2007	184	84
Updated Studies (2009)	414	214

1/ The CalSim II simulations deliver up to these demands in any month in which appropriate conditions exist. However, the actual capability of SWP water contractors to take this amount of Article 21 is not the sum of these maximum monthly values.

Ability to Convey Source Water to the Desired Point of Delivery

The CalSim II simulation assumes that current Delta water quality regulations (contained in the State Water Resources Control Board's Decision 1641) are in place for the Current (2009) Condition study. The simulation also incorporates the requirements of the FWS' and NMFS' biological opinions. Additional information on the characterization of the biological opinions in the model is found in Appendix A. The amount of exports allowed while achieving the Old River and Middle River flow targets are assumed to be shared equally between the CVP and the SWP. Combined CVP and SWP exports also are assumed constrained according to the NMFS BO Action 4.2.1 during April 1 to May 31. The specific rules for this restriction are included in Appendix A.

The simulation of current conditions in the 2007 report assumes the same D-1641 requirements for Delta water quality, but instead assumes an April 15 to May 15 export restriction and Old River and Middle River flow targets from the interim operating rules ordered by the federal court.

Annual Estimates of SWP Deliveries

The CalSim II estimates for the SWP Table A and Article 21 annual deliveries for the Current (2009) Condition are presented in Appendix B. These values are analyzed in the following sections.

SWP Table A Deliveries under Different Hydrologic Scenarios

Table 6.3 contains the average, maximum, and minimum estimates of Table A deliveries from the Delta under Current Conditions from the 2007 SWP Delivery Reliability Report and under 2009 assumptions that include the biological opinions' requirements. The estimated probabilities for a given amount of annual SWP delivery under Current (2009) Conditions are presented in Figure 6.1.

Table 6. 3 SWP Table A delivery from the Delta under Current Conditions

Study of Current Conditions	Average Delivery		Maximum Delivery		Minimum Delivery	
	taf /year	% of maximum SWP Table A[1]	taf /year	% of maximum SWP Table A[1]	taf /year	% of maximum SWP Table A[1]
2007 SWP Delivery Reliability Report, Study 2007[2]	2595	63%	3711	90%	243	6%
Updated Studies (2009)	2483	60%	3338	81%	301	7%

1/ 4,133 taf /year

2/ Values reflect averaging annual deliveries from the two scenarios of Old and Middle River flow targets

Table 6.3 shows that under updated Current (2009) Conditions, average SWP annual delivery amounts may decrease 3% of maximum SWP Table A when compared to the earlier estimate, from 63% to 60%. This decrease is about 110 taf and is primarily due to the required actions in the biological opinions reducing the amount of Delta water available for export by the SWP in comparison to the effect of the Old River and Middle River flow targets in the 2007 study. The maximum delivery of 90% for the 2007 study is reduced by 370 taf to 81% for the updated study. The estimate of minimum SWP Table A delivery actually increases slightly.

Table 6.4 includes estimates of SWP Table A deliveries for Current (2009) Conditions under an assumed repetition of historical drought periods. The years are identified as dry by the Eight River Index, a good indicator of the relative amount of water supply available to the SWP. The Eight River Index is the sum of the unimpaired runoff from the four rivers in the Sacramento Basin used to define water conditions in the basin plus the four rivers in the San Joaquin Basin, which correspondingly define water conditions in that basin. The eight rivers are the Sacramento, Feather, Yuba, American, Stanislaus, Tuolumne, Merced, and San Joaquin. Table 6.4 also includes the average deliveries for comparison purposes.

Table 6. 4 Average and dry period SWP Table A deliveries from the Delta under Current Conditions

Study of Current Conditions	SWP Table A delivery from the Delta (in percent of maximum SWP Table A[1])					
	Long-term Average	Single dry year 1977	2-year drought 1976-1977	4-year drought 1931-1934	6-year drought 1987-1992	6-year drought 1929-1934
2007 SWP Delivery Reliability Report, Study 2007[2]	63%	6%	34%	35%	35%	34%
Updated Studies (2009)	60%	7%	36%	34%	35%	34%

1/ 4,133 taf /year

2/ Values reflect averaging annual deliveries from the two scenarios of Old and Middle River flow targets

Table 6.4 shows that estimates of updated SWP deliveries under Current (2009) Conditions during dry periods are about the same as earlier estimates. The four-year drought of 1931-1934 is estimated to provide 34% of maximum SWP Table A; a reduction of 41 taf/year when compared to the 2007 estimate. The two-year drought of 1976-1977 is an exception with SWP deliveries estimated to increase 2% of maximum SWP Table A, from 34% to 36%. This increase in delivery in 1976-1977 is due to the use of Article 56 carryover storage in the 2009 studies for this report. In the Current (2009) Condition study, 470 taf of water allocated in 1975 is carried over and used in January through March of 1976. Article 56 carryover storage was not modeled for 2007 report studies.

Table 6.5 summarizes SWP Table A deliveries under an assumed repetition of historical wet periods under Current (2009) Conditions. As with drought years, the Eight River Index is used to identify wet years. Table 6.5 shows that estimates of SWP deliveries under updated Current (2009) Conditions may either increase or decrease from earlier estimates during wet years. Decreases in SWP deliveries for these wet periods generally range from 0 to 5% of maximum SWP Table A (0 to 206 taf/year). These decreases are due to the requirements of the biological opinions. The increases in delivery in 1983 and 1982-1983 are due to an assumed increase in demand compared to the 2007 report.

Table 6. 5 Average and wet years SWP Table A delivery from the Delta under Current Conditions

Study of Current Conditions	SWP Table A delivery from the Delta (in percent of maximum SWP Table A[1])					
	Long-term Average	Single wet year 1983	2-year wet 1982-1983	4-year wet 1980-1983	6-year wet 1978-1983	10-year wet 1978-1987
2007 SWP Delivery Reliability Report, Study 2007[2]	63%	60%	66%	68%	73%	71%
Updated Studies (2009)	60%	68%	71%	68%	68%	67%

1/ 4,133 taf/year

2/ Values reflect averaging annual deliveries from the two scenarios of Old and Middle River flow targets

Article 21 Deliveries under Different Hydrologic Scenarios

State Water Project water delivery is a combination of both Table A deliveries and the use of Article 21 by some contractors to store water locally at times when extra water and capacity is available beyond that needed by normal SWP operations. Table 6.6 contains the average, maximum, and minimum SWP Article 21 deliveries over the 1922-2003 period for the earlier study and the updated simulation. Comparing the estimates of SWP Article 21 deliveries, the updated estimates show higher delivery amounts for the maximum delivery over the simulation period. The estimated maximum Article 21 delivery is increased by 260 taf. This increase is due to the higher Article 21 demands assumed for the 2009 studies. The minimum Article 21 delivery for the updated study is 2 taf/yr compared to 0 taf/yr for the 2007 report. This higher minimum delivery is due to a revised assumption in the updated studies that allows the diversion of Article 21 water to the North Bay Aqueduct whenever such water is available in the Delta. In the 2007 report, Article 21 deliveries to North Bay Aqueduct were assumed to be dependent on the availability of Banks pumping capacity to serve all Article 21 demands. The estimated average Article 21 deliveries are the same

under the updated Current (2009) Conditions compared to the 2007 report.

Table 6. 6 Annual SWP Article 21 delivery from the Delta under Current Conditions

Study of Current Conditions	Average delivery (taf)	Maximum delivery (taf)	Minimum delivery (taf)
2007 SWP Delivery Reliability Report, Study 2007[1]	85	590	0
Updated Studies (2009)	85	850	2

1/ Values reflect averaging annual deliveries from the two scenarios of Old and Middle River flow targets

Because Article 21 exports happen sporadically, it is best to evaluate the effects by looking at specific years. Table 6.7 shows the updated and earlier estimates of Article 21 deliveries by year during dry periods. Under the updated Current (2009) Conditions, Article 21 deliveries are estimated to be significantly increased during the years 1932 and 1933. These increases are primarily the result of the assumed higher Article 21 demand. Table 6.7 illustrates that opportunities for delivering Article 21 water exist even during drought periods,

Table 6.8 shows the updated and earlier estimates of Article 21 deliveries by year during the 1978-1987 wet period. Under Current (2009) Conditions, updated estimated Article 21 delivery can increase up to 450 taf in an individual year, compared to earlier estimates. Once again, the increases in Article 21 are due to the high level of assumed demand. In two years, 1978 and 1982, the estimated Article 21deliveries decrease when compared to earlier estimates.

Table 6. 7 Average and dry year SWP Article 21 delivery under Current Conditions (taf per year)

Year	2007 SWP Delivery Reliability Report, Study 2007[1]	Updated Studies (2009)
1929	0	10
1930	0	10
1931	0	8
1932	0	160
1933	40	390
1934	0	8
1976	5	9
1977	0	2
1987	0	9
1988	0	10
1989	0	10
1990	0	10
1991	0	12
1992	0	10
Long-term average	85	85

1/ Values reflect averaging annual deliveries from the two scenarios of Old and Middle River flow targets

Table 6. 8 Average and wet year SWP Article 21 delivery under Current Conditions (taf per year)

Year	2007 SWP Delivery Reliability Report, Study 2007[1]	Updated Studies (2009)
1978	100	2
1979	0	120
1980	190	190
1981	0	8
1982	490	460
1983	400	850
1984	460	510
1985	0	2
1986	30	140
1987	0	9
1978-87 average	170	230
Long-term average	85	85

1/ Values reflect averaging annual deliveries from the two scenarios of Old and Middle River flow targets

SWP Table A Delivery Probability

The probability that a given level of SWP Table A amount will be delivered from the Delta is shown for Current (2009) Conditions in Figure 6.1. Results from the 2007 SWP Delivery Reliability Report and updated estimates for 2009 are shown. Probability values for Current (2009) Conditions are presented in Appendix B. To use Figure 6.1, one would first locate the value for the specific percent exceedence along the horizontal axis (x-axis) of the graph, move vertically upward to the curve, then horizontally to the vertical axis (y-axis) and read the annual delivery. For example, for a 50% exceedence, the corresponding annual SWP Delta deliveries would be about 2,980 taf (72% of maximum Table A) from previous estimates and 2,675 taf (65% of maximum Table A) for the updated estimates. The numerical data for this figure is included in Appendix B and should be referenced for specific values corresponding to specific exceedences.

Figure 6.1 shows that under Current (2007) Conditions, for probabilities of exceedence less than 55%, updated annual Table A deliveries can be 300 to 400 taf less than the earlier estimates. Annual Table A deliveries associated with exceedences greater than 70% are generally more than the 2007 study by about 200 taf. Table 6.9 contains the values for SWP Delta deliveries corresponding to 25%, 50%, and 75% exceedence. The information in Table 6.9 can be stated as follows:

For any given year,

- There is a 25% chance that SWP deliveries will be at or above 2,920 taf.
- There is an equal chance (50%) that SWP deliveries will be above or below 2,675 taf.
- There is 75% chance that SWP deliveries will be above 2,397 taf. Another way to state this is that there is a 25% chance that deliveries will be below this value.

Figure 6. 1 SWP Table A delivery probability under Current Conditions

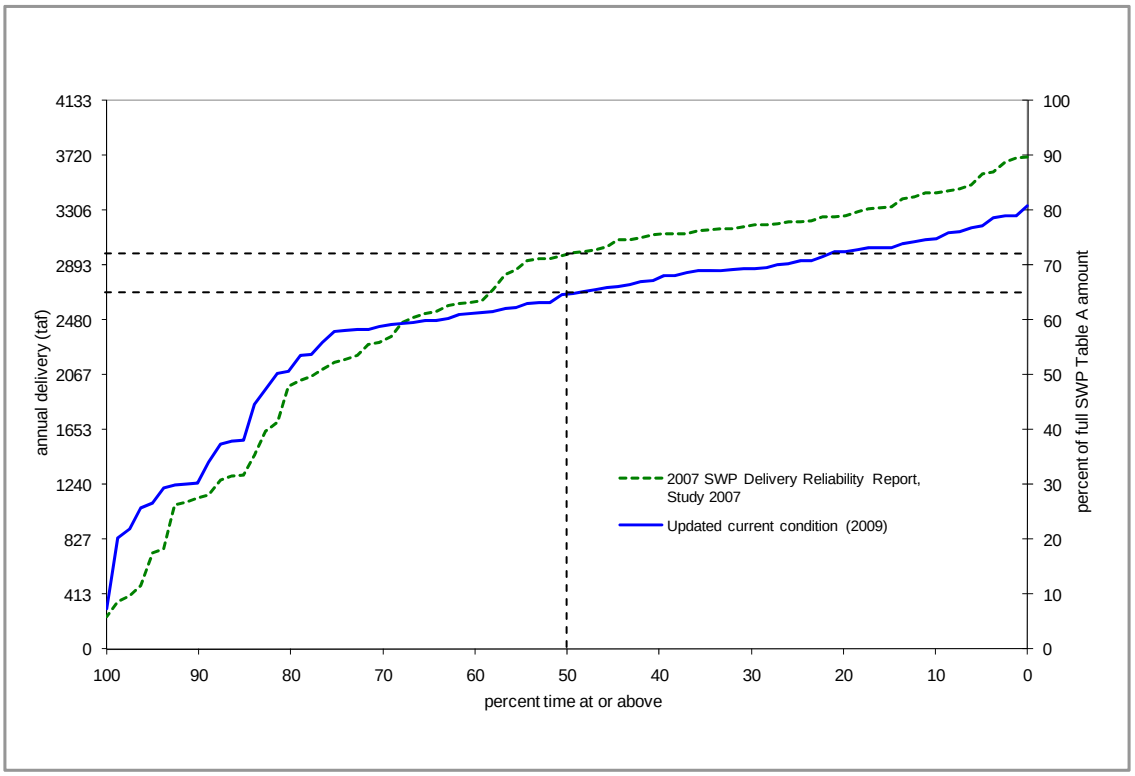

Table 6. 9 Highlighted SWP Table A delivery percent exceedence values under Current Conditions

Exceedence	Annual SWP Table A Delivery (taf)		Change in delivery compared to 2007 report (taf)
	2007 SWP Delivery Reliability Report, Study 2007[1]	Updated Studies (2009)	
25%	3218	2920	-298
50%	2976	2675	-301
75%	2168	2397	+229

1/ Values reflect averaging annual deliveries from the two scenarios of Old and Middle River flow targets

Assessment of SWP Delivery Reliability under Future (2029) conditions

Future Conditions refer to conditions that are assumed in effect in the year 2029. These conditions as described below include effects of climate change and the same requirements of the biological opinions assumed under Current Conditions. Results from the CalSim II simulations for the 2007 SWP Delivery Reliability Report under 2027 future scenario (Study 2027) are presented throughout this section for

comparison purposes. A detailed list of the study assumptions for this report is presented in Appendix A.

Availability of Source Water

DWR's 2009 report, *Using Future Climate Projections to Support Water Resources Decision Making in California* (Chung et al., 2009) evaluates possible future effects on California water supply through CalSim II simulations with hydrologic sequences which reflect different scenarios of climate change. The 82-year hydrologic sequence used to develop the delivery estimations for the 2029 study discussed below is based upon the methods used in *Using Future Climate Projections*. The method for developing the hydrologic sequence for 2029 is described in Appendix B.

It was pointed out earlier in Chapter 4 of this report that the studies in *Using Future Climate Projections* of potential climate changes by mid-century indicate a potential for operational interruptions due to one or more reservoirs reaching minimum levels of storage. The study for 2029 conditions indicates a slight increase in system vulnerability when compared with the 2009 study but it does not approach the levels forecasted in *Using Future Climate Projections*. For the 2029 study, it is assumed that actions such as a program to acquire water to meet Delta water quality objectives would be implemented to maintain system operation.

Demand for Delta Water

The SWP contractors' SWP Table A demands for deliveries from the Delta assumed for 2029 and for Study 2027 are shown in Table 6.10. The maximum annual SWP Table A demand of 4,133 taf is assumed in all 82 years of the simulation. There is no variation in demand due to different annual hydrologic conditions. The assumed demands for 2029 are the same as the demands presently developed for the Bay-Delta Conservation Plan.

Table 6. 10 SWP Table A demands from the Delta under Future Conditions

Study of Future Conditions	Average Demand		Maximum Demand		Minimum Demand	
	taf /year	% of maximum SWP Table A[1]	taf /year	% of maximum SWP Table A[1]	taf /year	% of maximum SWP Table A[1]
2007 SWP Delivery Reliability Report, Study 2027	4111	99%	4133	100%	3935	95%
Updated Studies (2029)	4133	100%	4133	100%	4133	100%

1/ 4,133 taf /year.

The assumed Article 21 demands, shown in Table 6.11, are higher than the demands assumed for study 2027 and are at the same level as the Article 21 demands assumed for the 2009 study. This assumption reflects a condition in which SWP contractors are able to use essentially any available Article 21 water when conveyance capacity for Article 21 water exists in the SWP delivery system.

Table 6. 11 Article 21 demands from the Delta under Future Conditions

Study of Future Conditions	Maximum Article 21 demand (taf/month)[1]	
	December - March	April - November
2007 SWP Delivery Reliability Report, Study 2027	184	84
Updated Studies (2029)	414	214

1/ The CalSim II simulations deliver up to these demands in any month in which appropriate conditions exist. However, the actual capability of SWP water contractors to take this amount of Article 21 is not the sum of these maximum monthly values.

Ability to Convey Source Water to the Desired Point of Delivery

One of the most significant assumptions regarding SWP conveyance is that the rules and facilities related to Delta conveyance will remain at the status quo. That is, no new facilities are assumed to be in place to convey water through or around the Delta. As noted in Chapter 3, there are several processes under way to identify modifications to the existing method of conveying water through the Delta to reduce the conflict between fishery concerns and water supply reliability. However, these programs are not at a stage where such changes can be used in this report. The CalSim II simulations for 2029 scenarios assume the current Delta water quality regulations (contained in the State Water Resources Control Board's Decision 1641) are in place as well as the requirements of the USFWS and NMFS biological opinions. The exports resulting from meeting Old River and Middle River flow targets related to delta smelt are again assumed shared equally between the CVP and the SWP.

The simulations of Future Conditions in the 2007 report (study 2027) also assumed D-1641 Delta water quality requirements but it assumed that flow restrictions for Old River and Middle River ordered by the federal court in December 2007 were in place.

To simulate the assumed 2029 conditions, two CalSim II simulations are needed: a scenario with climate change and a scenario assuming no climate change. SWP deliveries derived from these two simulations were modified as explained below before being used to describe Future (2029) Conditions.

Presentation of CalSim II Results

For the purpose of describing SWP deliveries under Future Conditions in this chapter, the annual deliveries with climate change simulated by CalSim II have been adjusted to better estimate deliveries reflecting 2029 conditions. The climate change scenario for Future Conditions assumes projections of climate and hydrology for the year 2050. Currently, 2029 climate change projections are not available. In order to estimate SWP deliveries 20 years in the future with potential changes in climate, annual SWP deliveries were interpolated between deliveries from the CalSim II simulation with the climate change scenario and deliveries from the CalSim II simulation which assumes no climate change. Both CalSim II simulations for future conditions assume a 2029 SWP demand level.

The following tables and graph contain the interpolated values from these two simulations. The annual SWP Table A and Article 21 deliveries for the two simulations upon which the information in this section is based are presented in Appendix B.

SWP Table A Deliveries under the Future Hydrologic Scenario

Table 6.12 contains the average, maximum, and minimum estimates of SWP Table A deliveries from the Delta under Future Conditions of study 2027 from the 2007 SWP Delivery Reliability Report and under the updated 2029 assumptions. The estimated probabilities for a given amount of annual SWP delivery under Future (2029) Conditions and those for the 2027 conditions are presented in Figure 6.4.

Table 6.12 shows that under the updated Future (2029) Conditions, average SWP delivery amounts may decrease from 6 to 9% of maximum SWP Table A (240 taf /yr to 360 taf/yr) when compared to the earlier estimates. This decrease in deliveries is primarily due to the effect of the biological opinions' requirements in reducing the amount of Delta water available for export by the SWP in comparison to the effect of the Old River and Middle River flow targets assumed for the 2027 study. Differences in the assumed hydrologic changes associated with climate change could also affect deliveries. The estimate of minimum annual SWP Table A delivery for the updated study is shown to increase from 4 to 5% of maximum SWP Table A amounts (165 taf/yr to 200 taf/yr). Minimum annual deliveries are associated with the conditions simulated for year 1977, the driest year on record.

Table 6.13 includes estimates of SWP Table A deliveries for a single-year and multiyear droughts. It also includes the average of the SWP Table A deliveries for comparison purposes. Estimates of updated SWP deliveries under Future (2029) Conditions during dry periods are about the same as the 2007 report for four-year and six-year droughts. The six-year drought of 1987-1992 is estimated to provide 32% of maximum SWP Table A, a reduction of 1% to 3% when compared to the 2007 estimate. Updated SWP deliveries in the 1976-1977 drought increase by 11% to 12% of maximum Table A (about 450 taf/yr) compared to the earlier studies. About 180 taf of this increase is due to water allocated in 1975 and delivered in 1976 under the Article 56 carryover program.

Table 6. 12 SWP Table A delivery from the Delta under Future Conditions

Study of Future Conditions	Average Delivery		Maximum Delivery		Minimum Delivery	
	taf /year	% of maximum SWP Table A[1]	taf /year	% of maximum SWP Table A[1]	taf /year	% of maximum SWP Table A[1]
2007 SWP Delivery Reliability Report, Study 2027[2]	2724 – 2850	66 – 69%	4133	100%	255 – 293	6 – 7%
Updated Studies (2029)	2487	60%	3999	97%	458	11%

1/ 4,133 taf /year

2/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Table 6. 13 Average and dry period SWP Table A deliveries from the Delta under Future Conditions

Study of Future conditions	SWP Table A delivery from the Delta (in percent of maximum Table A[1])					
	Long-term Average	Single dry year 1977	2-year drought 1976-1977	4-year drought 1931-1934	6-year drought 1987-1992	6-year drought 1929-1934
2007 SWP Delivery Reliability Report, Study 2027[2]	66 – 69%	6-7%	26 – 27%	32 – 37%	33 – 35%	33 – 36%
Updated Studies (2029)	60%	11%	38%	35%	32%	36%

1/ 4,133 taf /year

2/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Table 6.14 summarizes SWP Table A deliveries under an assumed repetition of historical wet periods under Future Conditions. As with drought years, the Eight River Index is used to identify wet years. SWP deliveries increase in 1983 compared to earlier studies by 3% of maximum SWP Table A due to an assumed increase in demand. Reductions in delivery amounts are significant for the two-, four-, six-, and 10-year wet periods. The highest reduction occurs in the 1978-1987 period and ranges from 8% to 11% of maximum SWP Table A. This is a reduction of 330 taf/yr to 450 taf/yr.

Table 6. 14 Average and wet period SWP Table A deliveries from the Delta under Future Conditions

Study of Future Conditions	SWP Table A delivery from the Delta (in percent of maximum Table A[1])					
	Long-term average	Single wet year 1983	2-year wet 1982-1983	4-year wet 1980-1983	6-year wet 1978-1983	10-year wet 1978-1987
2007 SWP Delivery Reliability Report, Study 2027[2]	66 – 69%	94%	97%	86 – 87%	84 – 87%	80 – 83%
Updated Studies (2029)	60%	97%	93%	82%	79%	72%

1/ 4,133 taf/year

2/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Article 21 Deliveries under Different Hydrologic Scenarios

Table 6.15 contains the average, maximum, and minimum SWP Article 21 delivery estimates over the 1922-2003 period for the updated simulations of Future (2029) Conditions. Comparing the estimates of SWP Article 21 deliveries, the updated estimates show more delivery amounts on average and for the maximum annual delivery over the simulation period. Estimated average Article 21 delivery under the updated Future (2029) Conditions is 30 taf/yr more than the corresponding estimate in the 2007 SWP

Delivery Reliability Report. Estimated maximum annual Article 21 delivery is increased about 120 taf. These increases are due to the assumed higher Article 21 demands in the 2029 studies. The minimum Article 21 delivery for the updated study is 1 taf/yr compared to 0 taf/yr for the 2007 report. This higher minimum delivery is due to a revised assumption in the updated studies that allows the diversion of Article 21 water to the North Bay Aqueduct whenever such water is available in the Delta. In the 2007 report, Article 21 deliveries to North Bay Aqueduct were assumed to be dependent on the available Harvey O. Banks pumping capacity to serve all Article 21 demands.

Table 6. 15 Annual SWP Article 21 delivery from the Delta under Future Conditions

Study of Future Conditions	Average delivery (taf)	Maximum delivery (taf)	Minimum delivery (taf)
2007 SWP Delivery Reliability Report, Study 2027[1]	30	410 – 420	0
Updated Studies (2029)	60	540	1

1/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Table 6.16 contains the estimates for Article 21 deliveries during historical dry periods. The Article 21 deliveries for the updated 2029 study have a dry period maximum of 370 taf/yr compared to 90 taf/yr for the 2027 studies. Table 6.16 illustrates that opportunities for delivering Article 21 water exist even during drought periods.

Table 6.17 shows updated and earlier estimates of Article 21 deliveries by year during the 1978-1987 wet period. The availability of Article 21 deliveries is also increased for this wet period. The average Article 21 delivery for the 1978-1987 period under Future (2029) Conditions is 140 taf/yr, compared to a range of 90 taf/yr to 100 taf/yr for the 2027 studies.

Table 6. 16 Average and dry year SWP Article 21 delivery under Future Conditions (taf per year)

Year	2007 SWP Delivery Reliability Report, Study 2027[1]	Updated Studies (2029)
1929	0	160
1930	0	10
1931	0	8
1932	0 – 40	370
1933	20 – 90	230
1934	0 – 10	70
1976	0	12
1977	0 – 10	3
1987	0	60
1988	0	60
1989	0	6
1990	0	11
1991	0	13
1992	0	9
Long-term Average	30	60

1/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Table 6. 17 Average and wet year SWP Article 21 delivery under Future Conditions (taf per year)

Year	2007 SWP Delivery Reliability Report, Study 2027[1]	Updated Studies (2029)
1978	40 – 150	70
1979	0	11
1980	90 – 130	30
1981	0	14
1982	0	100
1983	270 – 290	510
1984	410 – 420	540
1985	0	9
1986	0 – 10	50
1987	0	60
1978-87 Average	90 – 100	140
Long-term Average	30	60

1/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

SWP Table A Delivery Probability

The probability that a given level of SWP Table A amount will be delivered from the Delta is shown for Future (2029) Conditions in Figure 6.4. Results of the 2027 studies from the 2007 SWP Delivery Reliability Report and the updated 2029 study are shown. Probabilities for 2027 conditions are shown as a set of dotted lines representing the four climate change scenarios analyzed in the 2007 report.

Figure 6.2 shows that under Future (2029) Conditions, for probabilities of exceedence under 60%, updated annual SWP Table A deliveries can be significantly less than the earlier estimates. For example, a delivery estimate which has a 40% chance of being larger is reduced to about 2,700 taf/yr (65% of maximum Table A) in the updated study from the earlier estimates of about 3,260 taf to 3,450 taf annually (79-83% of maximum Table A). The information upon which Figure 6.2 is based for the updated future condition is contained in Tables B.4 and B.5 in Appendix B.

Figure 6. 2 SWP Delta Table A delivery probability under Future Conditions

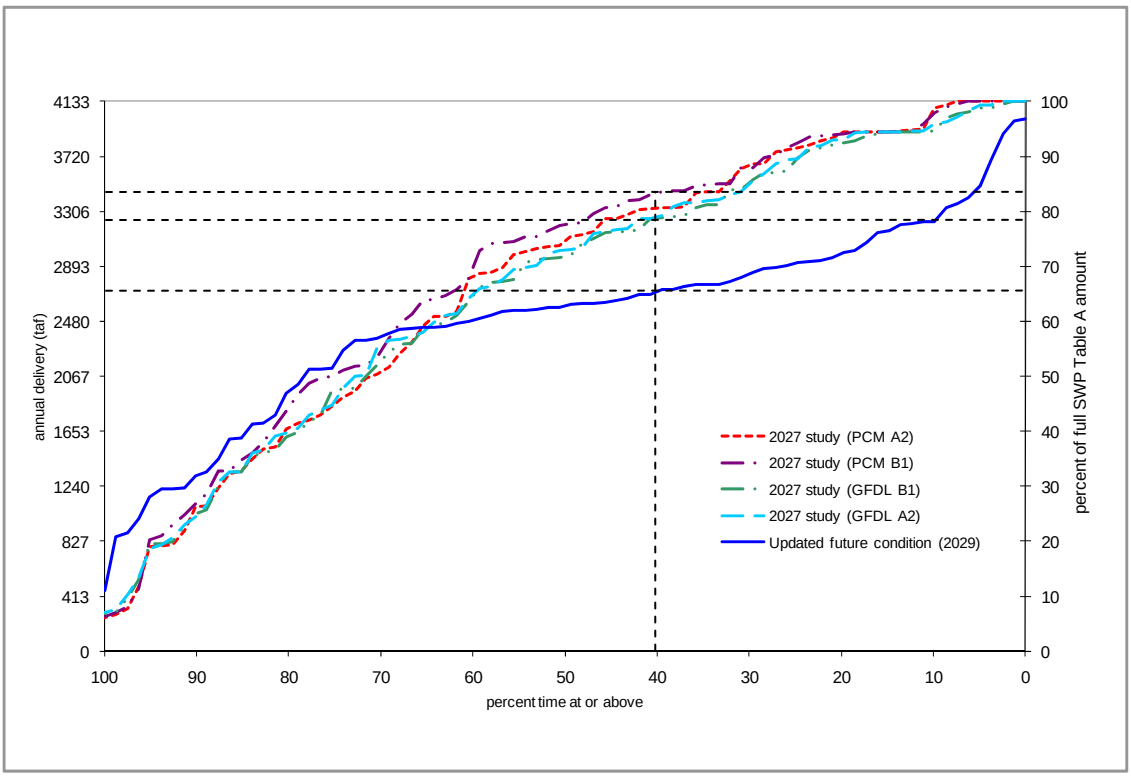

Table 6.18 presents the SWP Table A annual deliveries associated with 25%, 50%, and 75% exceedence illustrated in Figure 6.2 and contained in Table B.5. The information in this table can be stated as follows:

For any given year,

- There is 1 chance in 4 (25% chance) that SWP deliveries will be at or above 2,915 taf.
- There is an equal chance (50% chance) that SWP deliveries will be above or below 2,596 taf.
- There is 75% chance that SWP deliveries will be above 2,137 taf. Another way to state this is that there is a 25% chance that deliveries will be below this range.

Table 6. 18 Highlighted SWP Table A delivery percent exceedence values under Future Conditions

Exceedence	Annual SWP Table A Delivery (taf)		Change in delivery in updated studies compared to 2007 report (taf)
	2007 SWP Delivery Reliability Report, Study 2027[1]	Updated Studies (2029)[2]	
25%	3687 – 3815	2915	-772 to -900
50%	2967 – 3205	2596	-371 to -609
75%	1860 – 2077	2137	+60 to +277

1/ Range in value reflects four modified scenarios of climate change.

2/ Annual SWP Table A deliveries were interpolated between year 2050 with climate change and no climate change scenarios.

Comparing Current and Future SWP Delivery Reliability

The results presented earlier in this chapter compare updated delivery projections for both the current and future scenarios with those contained in the 2007 Delivery Reliability Report. The comparisons show that deliveries are estimated to be less than projected in the 2007 report due to implementing the requirements of the recent biological opinions and, for the future projection, a change in the assumed climate change scenario. This section presents the same CalSim II simulation-based results as a comparison of current reliability, projected for 2009, to the future reliability, projected for 2029. Comparisons to the results of the 2007 SWP Delivery Reliability Report are also included

SWP Table A Deliveries under Different Hydrologic Scenarios

Tables 6.19, 6.20, and 6.21 summarize the estimated Table A deliveries from the Delta under current and future conditions from the 2007 SWP Delivery Reliability Report and as derived from the updated CalSim II simulations for this report. A significant observation involves the change over the twenty-year period of the average amount of projected Table A deliveries. In the 2007 report, average future SWP deliveries are projected to increase 3 to 6 percent of maximum Table A whereas, under the updated estimate, the average delivery does not change. The updated average annual delivery is estimated to remain at 60% of maximum Table A in the future.

In both the 2007 report and this updated report, the changes between current and future deliveries fluctuate within 4 percentage points during dry periods greater than 2 years (Table 6.20), and increase during wet periods (Table 6.21). The increases during the wet periods for both sets of studies become less as the wet periods lengthen. For the 2007 report, these increases range from 34% of maximum Table A for a single year to 9% for the 10-year period. For the updated study, the increases range from 29% for the single year to 5% for the 10-year period. The amounts of the increases for the updated estimates are consistently less than those for the 2007 report. This is primarily due to the SWP demands assumed for the updated study for current conditions and the climate change scenario assumed for the updated future condition that now includes sea level rise. The assumed demands are very similar between the current and future updated studies whereas the assumed demand for the 2027 study is significantly higher than the assumed demand in the 2007 study.

The projections for the single-year and 2-year drought periods are very sensitive to the assumed

conditions immediately preceding the drought and the operational rules for the SWP. Two key factors are the reservoir storages assumed at the beginning of the period and the amount of water allocated under Table A for the previous year being carried over into the subsequent year. Under a 2-year drought condition (1976-1977), the 2007 report estimates the future SWP Table A deliveries as being lower than the projected current deliveries by as much as 8% of maximum SWP Table A (Table 6.20). The updated estimates indicate that future SWP Table A deliveries under the 2-year drought period could be slightly higher than under Current (2009) Conditions (Table 6.20). The updated future SWP Table A deliveries for a single dry year are estimated to be higher than the 2009 study by 4% of maximum SWP Table A.

Table 6. 19 SWP Table A delivery from Delta under Current and Future Conditions

	Average Delivery		Maximum Delivery		Minimum Delivery	
	taf /year	% of maximum SWP Table A[1]	taf /year	% of maximum SWP Table A[1]	taf /year	% of maximum SWP Table A[1]
2007 SWP Delivery Reliability Report						
Current (2007)	2595	63%	3711	90%	243	6%
Future (2027) [2]	2724 – 2850	66 – 69%	4133	100%	255 – 293	6 – 7%
Updated Studies						
Current (2009)	2483	60%	3338	81%	301	7%
Future (2029)	2487	60%	3999	97%	458	11%

1/ 4,133 taf /year

2/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Table 6. 20 Average and dry period SWP Table A deliveries from the Delta under Current and Future Conditions

	SWP Table A delivery from the Delta (in percent of maximum Table A[1])					
	Long-term Average	Single dry year 1977	2-year drought 1976-1977	4-year drought 1931-1934	6-year drought 1987-1992	6-year drought 1929-1934
2007 SWP Delivery Reliability Report						
Current (2007)	63%	6%	34%	35%	35%	34%
Future (2027) [2]	66 – 69%	6-7%	26 – 27%	32 – 37%	33 – 35%	33 – 36%
Updated Studies						
Current (2009)	60%	7%	36%	34%	35%	34%
Future (2029)	60%	11%	38%	35%	32%	36%

1/ 4,133 taf /year

2/ Range in values reflects four modified scenarios of climate change: annual Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Table 6. 21 Average and wet period SWP Table A deliveries from the Delta under Current and Future Conditions

	SWP Table A delivery from the Delta (in percent of maximum Table A[1])					
	Long-term Average	Single wet year 1983	2-year wet 1982-1983	4-year wet 1980-1983	6-year wet 1978-1983	10-year wet 1978-1987
2007 SWP Delivery Reliability Report						
Current (2007)	63%	60%	66%	68%	73%	71%
Future (2027) [2]	66 – 69%	94%	97%	86 – 87%	84 – 87%	80 – 83%
Updated Studies						
Current (2009)	60%	68%	71%	68%	68%	67%
Future (2029)	60%	97%	93%	82%	79%	72%

1/ 4,133 taf /year

2/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Article 21 Deliveries under Different Hydrologic Scenarios

Tables 6.22, 6.23, and 6.24 contain summaries and highlights of estimated SWP Article 21 deliveries from the Delta under current and Future Conditions from the 2007 SWP Delivery Reliability Report and as derived from updated CalSim II simulations for this report. The studies for the 2007 report and this updated report conclude lower amounts of deliveries will be made in the future under Article 21. Updated estimates of future SWP Article 21 deliveries may increase over updated current values for specific years; however, the long-term average future Article 21 delivery is reduced to about two-thirds of the estimate for the current (2009) scenario. Because the updated studies include the assumption that the SWP water contractors have a much greater ability receive water under Article 21, the updated studies show greater annual variation in the amount of Article 21 deliveries when compared to the 2007 report.

Table 6. 22 Annual SWP Article 21 delivery from the Delta under Current and Future Conditions

	Average delivery (taf)	Maximum delivery (taf)	Minimum delivery (taf)
2007 SWP Delivery Reliability Report			
Current (2007)	85	590	0
Future (2027) [1]	30	410 – 420	0
Updated Studies			
Current (2009)	85	850	2
Future (2029)	60	540	1

1/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Table 6. 23 Average and dry year SWP Article 21 delivery under Current and Future Conditions (taf per year)

Year	2007 SWP Delivery Reliability Report		Updated Studies	
	Current (2007)	Future (2027) [1]	Current (2009)	Future (2029)
1929	0	0	10	160
1930	0	0	10	10
1931	0	0	8	8
1932	0	0 – 40	160	370
1933	40	20 – 90	390	230
1934	0	0 – 10	8	70
1976	5	0	9	12
1977	0	0 – 10	2	3
1987	0	0	9	60
1988	0	0	10	60
1989	0	0	10	6
1990	0	0	10	11
1991	0	0	12	13
1992	0	0	10	9
Long-term Average	85	30	85	60

1/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Table 6. 24 Average and wet year SWP Article 21 delivery under Current and Future Conditions (taf per year)

Year	2007 SWP Delivery Reliability Report		Updated Studies	
	Current (2007)	Future (2027) [1]	Current (2009)	Future (2029)
1978	100	40 – 150	2	70
1979	0	0	120	11
1980	190	90 – 130	190	30
1981	0	0	8	14
1982	490	0	460	100
1983	400	270 – 290	850	510
1984	460	410 – 420	510	540
1985	0	0	2	9
1986	30	0 – 10	140	50
1987	0	0	9	60
1978-87 Average	170	90 – 100	230	140
Long-term Average	85	30	85	60

1/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

SWP Table A Delivery Probability

The current and future probability that a given level of SWP Table A amount will be delivered from the Delta is shown in Figure 6.3 from the 2007 SWP Delivery Reliability Report and in Figure 6.4 for updated studies for this report. In the 2007 report, future SWP Table A deliveries exceeded current deliveries at exceedence levels less than 60%. Under the updated simulations for this report, future SWP Table A deliveries exceed current estimated deliveries at exceedence levels less than 15%. Above this exceedence, future deliveries are generally smaller than current deliveries; with the most significant reduction being exceedence levels of 70% and 80%. The SWP demands are very similar for the current and future scenarios in the updated studies. Therefore, the differences in SWP Table A delivery amounts for the updated studies are primarily due to the climate change scenario that is assumed.

Figure 6. 3 Current and future SWP Table A delivery probability from the 2007 SWP Delivery Reliability Report

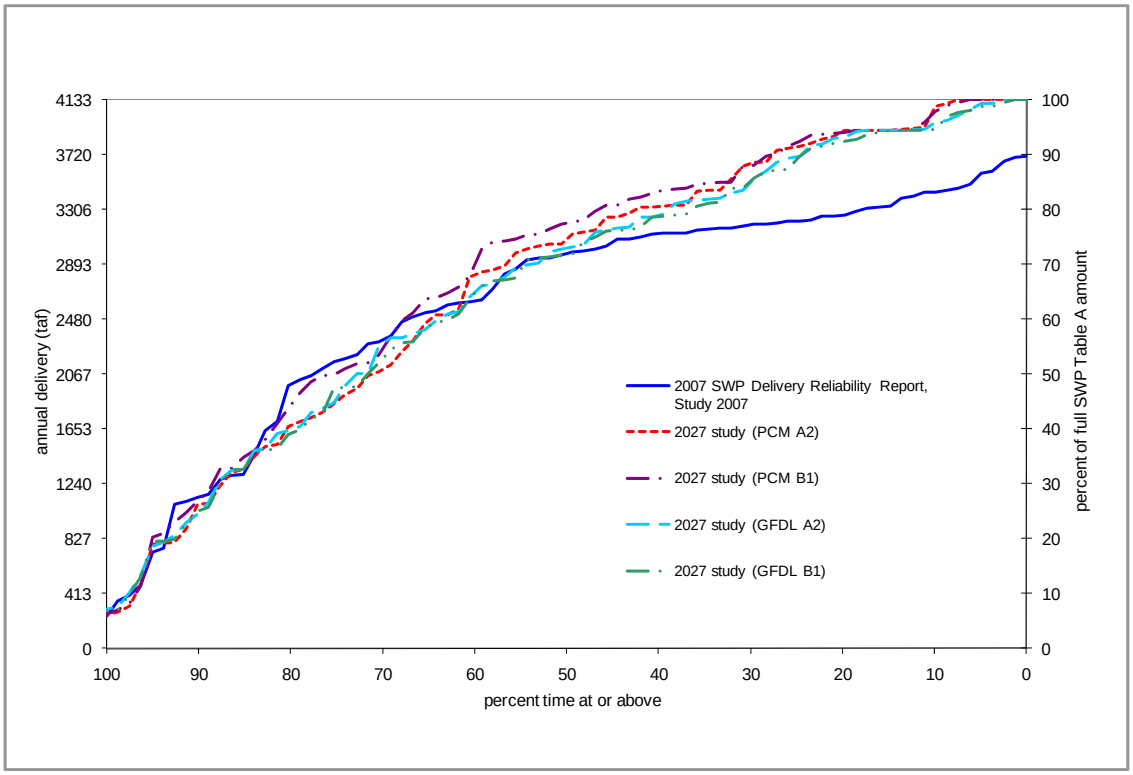

Figure 6. 4 Updated current and future SWP Table A delivery probability

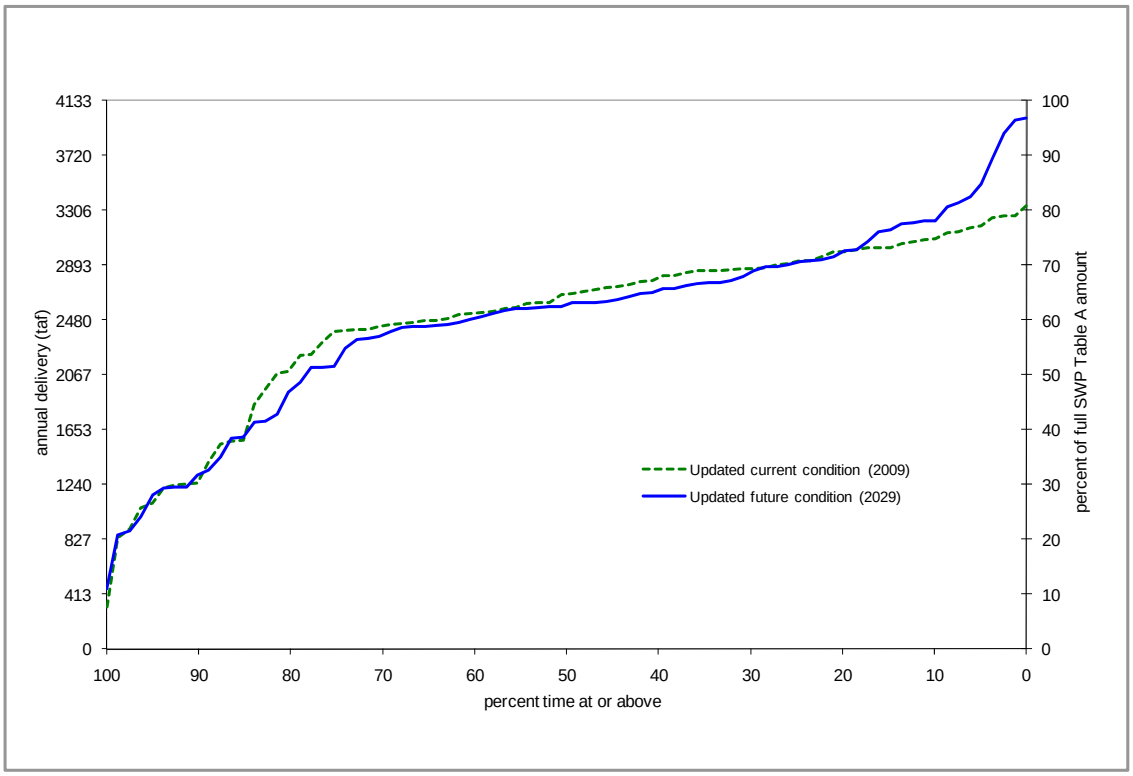

Table 6.25 presents SWP Table A delivery values which correspond to 25%, 50%, and 75% exceedence for current and future conditions. Previously in the 2007 report, future annual SWP deliveries were estimated to be larger than the estimated current deliveries by approximately 500 taf to 600 taf for 25% exceedence and 0 taf to 200 taf for 50% exceedence. At 75% exceedence, future study 2027 deliveries were estimated to be less than current 2007 study deliveries by about 100 taf to 300 taf. For the updated studies, future SWP Table A deliveries associated with the 25%, 50%, and 75% exceedence levels are about the same or lower than for the deliveries at the current level (2009). The most significant reduction in updated future deliveries occurs at the 75% exceedence level where future deliveries are about 260 taf less than under Current (2009) Conditions. As previously mentioned, this difference is primarily due to the climate change scenario included under Future (2029) Conditions.

Table 6. 25 Highlighted SWP Table A delivery percent exceedence values under Current and Future Conditions

Exceedence	Annual SWP Table A Delivery (taf)			
	2007 SWP Delivery Reliability Report		Updated Studies	
	Current (2007)	Future (2027) [1]	Current (2009)	Future (2029)
25%	3218	3687 – 3815	2920	2915
50%	2976	2967 – 3205	2675	2596
75%	2168	1860 – 2077	2397	2137

1/ Range in values reflects four modified scenarios of climate change: annual SWP Table A deliveries were first interpolated between full 2050 level and no climate change scenarios, then averaged over the two scenarios of Old and Middle River flow targets.

Interpreting and Applying the Results for Local Planning

7

Chapter 6 presents estimates for current-level deliveries and for deliveries 20 years in the future. Chapter 6 and Appendix B explain how these estimates are developed. This chapter provides guidance on how to apply the delivery estimates to water management plans.

All results in this report are presented as percentages of the maximum Table A amount for SWP deliveries from the Delta of 4,133 taf/yr. In previous delivery reliability reports, all the percentage values of maximum Table A presented in the report were directly applicable to individual contractors. In this report however, the CalSim II simulations model the practice of certain contractors to carry over water supply from the year in which it was allocated and have it delivered in the following year, as allowed by Article 56 of their contract. See Appendix D for a discussion of Article 56 carryover storage.

The long-term average percentage values of Table A deliveries in this report continue to be directly applicable to all water contractors but values for individual years or averages over shorter periods of time, such as a dry-year period or a wet-year period, should be applied with caution as they may be affected by the amount of water assumed to be held over from one year and delivered in the next under Article 56. For values other than the long-term averages, we recommend individual contractors contact the Department of Water Resources' Bay-Delta Office at (916) 653-1099 to obtain the values specific to their water agency or download the information directly from the SWP Delivery Reliability website at http://baydeltaoffice.water.ca.gov/swpreliability/index.cfm. The Bay-Delta Office should also be contacted with other questions regarding the use of the information contained in this report.

The following example illustrates how to incorporate the long-term average values into a local water management plan. It is developed for a hypothetical SWP contractor with a maximum Table A amount of 100,000 acre-feet per year.

Example

This example uses data directly from Table 6.20 for updated current and future estimates of SWP Table A deliveries for the long-term average. Table 7.1 shows the long-term current and future averages of Delta Table A deliveries interpolated for 5-year periods. Since the long-term average Table A value is 60% of

maximum Table A for both the current and future estimates, the interpolated value for each 5-year period is also 60%. Although the values shown in Tables 7.1 and 7.2 are for the period 2009 – 2029, they are the best estimates available for use in developing water management plans for the period 2010-2030.

Table 7. 1 SWP average Table A delivery from the Delta in five-year intervals for studies 2009 and 2029

Year	2009	2014	2019	2024	2029
Average Percent of Maximum Table A 1922-2003	60%	60%	60%	60%	60%

How to Calculate Supplies

In order to estimate delivery amounts for each 5-year increment from 2009 to 2029, multiply the contractor's maximum Table A amount for a particular year by the corresponding delivery percentages for that year from Table 7.1. The maximum Table A amounts of each contractor are listed in Appendix C. Table A amounts can be amended and a contractor's Table A amount over the next 20 years may be less than its maximum over some or all of this period. In this case, the contractor should use the amended Table A amounts for the corresponding years during this period.

Table 7.2 shows the SWP Table A deliveries projected to be available to a hypothetical contractor with a maximum Table A amount of 100,000 acre-feet during average hydrologic conditions. Although the estimates for the SWP delivery amount is constant over the 20-year period, estimates for the long-term average delivery for the other sources of supply could change over the twenty-year period and, therefore, produce different estimates for the total water supply available to an individual contractor for each 5-year period.

Data for other year types can also be presented this way. As mentioned previously, State Water Project contractors should contact the Bay Delta Office for their specific percentages to be used in estimating deliveries for a specific year or for wet or dry-year periods.

Table 7. 2 Average annual SWP deliveries assuming a maximum Table A amount of 100,000 acre-feet (acre-feet)

Water Supply Source	2009	2014	2019	2024	2029
State Water Project (Table A)	60,000	60,000	60,000	60,000	60,000
State Water Project (Article 21)[1]					
Groundwater					
Local Surface Water					
Transfers					
Exchanges					
Reclaimed Water					
Other (identify)					
Total					

1/ Annual Article 21 amounts vary significantly from year to year. Without the ability to store Article 21 supply, it is not likely to contribute to local supply. See discussion of Article 21 supply in Chapter 5.

Appendix A. CalSim II Modeling Assumptions

The SWP operation simulations in this report use the CalSim II model developed for the 2009 DWR-USBR Benchmark Study that was then modified specifically for these studies. The 2009 DWR-USBR Benchmark Study model was developed from the 2008 OCAP model and the 2008 Common Assumptions model. Additional information on these models is available at http://baydeltaoffice.water.ca.gov/swpreliability/index.cfm. The main difference between the 2009 Benchmark Study and the 2008 OCAP and the 2008 Common Assumptions models is the representation of the 2008 U.S. Fish and Wildlife Service Biological Opinion for Proposed Coordinated Operation of the Central Valley Project (CVP) and the State Water Project (SWP) and the 2009 National Marine Fisheries Service Biological Opinion on the Long Term Operations of the CVP and the SWP.

The 2008 OCAP model version was also modified to include the following changes listed below.

1. Replacement of the previous Artificial Neural Network (ANN) with a more accurate version. Implementation of the new ANN in the CalSim II model produces salinities that more closely match those of Delta Simulation Model 2 (DSM2).
2. More detailed representation of Delta channel configuration. This was done to capture the flow effects in Old and Middle Rivers.
3. Modeling of Article 56 extended carryover deliveries that are available to SWP Table A contractors.
4. Use of three delivery patterns (based on 30%, 50% and 100% allocations) which provides a more accurate representation of SWP deliveries.
5. Estimation of X2 position and flow requirements using an ANN. X2 positions are now more similar to those calculated in DSM2.
6. The phenomenon of sea level rise and its effect on Delta salinities is now modeled. Artificial Neural Networks were developed to estimate flow-salinity relationships in the Delta with an assumed increment of sea level rise for a mid-century condition.
7. Modified SWP South of the Delta (SOD) allocation logic to account for export restrictions that are established by the new Biological Opinions.

All studies assume current SWP Delta diversion limits (often referred to as "Banks Pumping Plant capacity"), existing conveyance capacity of the upper Delta-Mendota Canal/California Aqueduct system, and current SWP/CVP operations agreements. The following table, A.1, is a complete list of the study assumptions. Tables A.2 and A.3 provide the assumptions for American River demands.

Table A. 1 2009 Delivery Reliability Report CalSim II modeling assumptions

	2009 Studies	**2029 Studies**
Period of Simulation	82 years (1922-2003)	Same
HYDROLOGY		
Level of Development (Land Use)	2005 Level, DWR Bulletin 160-98 [1]	2020 Level, DWR Bulletin 160-98 [2]
Demands		
Sacramento River Region (excluding American River)		
CVP	Land Use based, limited by Full Contract	Land Use based, full build-out of contract amounts
SWP (FRSA)	Land Use based, limited by Full Contract	Same
Non-Project	Land Use based	Same
Davis-Woodland	None	Proposal 2B from EIR/S
Antioch	Pre-1914 water right	Same
CVP Refuges	Recent Historical Level 2 water needs	Firm Level 2 water needs
American River Basin		
Water rights	2005 Level [3]	2020 Level [4]
CVP	2005 Level; including Freeport Regional Water Project (FRWP)	2020 Level, full contracts including FRWP and Sacramento River Water Reliability Project
San Joaquin River Basin		
Friant Unit	Limited by contract amounts, based on current allocation policy	Same
Lower Basin	Land-use based, based on district level operations and constraints.	Same
Stanislaus River Basin [5]	Land-use based, based on New Melones Interim Operations Plan and NMFS BO (Jun 2009) Actions III.1.2 and III.1.3 [11]	Same
South of Delta		
CVP	Full Contract	Same
CCWD	140 TAF/YR [6]	195 TAF/YR [6]
SWP (with North Bay Aqueduct)	3.0-4.1 MAF/YR	4.1 MAF/YR
SWP Article 21 Demand	MWDSC up to 200 TAF/month, Dec-Mar, KCWA demand up to 180 TAF/month and others up to 34 TAF/month	Same

	2009 Studies	2029 Studies
FACILITIES		
Red Bluff Diversion Dam	Diversion dam with gates out except Jun 15 – Aug31 based on NMFS BO (Jun 2009) Action I.3.2; assume interim facilities in place	Diversion dam with gates out all year, NMFS BO (Jun 2009) Action I.3.1; assume permanent facilities in place
Freeport Regional Water Project	Included [7]	Included [7]
Banks Pumping Capacity	Physical capacity is 10,300 cfs but 6,680 cfs permitted capacity in all months up to 8,500 cfs during Dec 15th – Mar 15th depending on Vernalis flow conditions [8]; additional capacity of 500 cfs (up to 7,180 cfs) allowed for Jul – Sep for reducing impact of NMFS BO (Jun 2009) Action IV.2.1[11] on SWP	Same
Jones (Tracy) Pumping Capacity	Permit capacity is 4,600 cfs but exports limited to 4200 cfs plus diversions upstream of DMC constriction	Exports up to 4,600 cfs permit capacity in all months (allowed for by the Delta-Mendota Canal/California Aqueduct Intertie)
REGULATORY STANDARDS		
Trinity River		
Minimum Flow below Lewiston Dam	Trinity EIS Preferred Alternative (369-815 TAF/YR)	Same
Trinity Reservoir End-of-September Minimum Storage	Trinity EIS Preferred Alternative (600 TAF as able)	Same
Clear Creek		
Minimum Flow below Whiskeytown Dam	Downstream water rights, 1963 USBR Proposal to FWS and NPS, predetermined CVPIA 3406(b)(2) flows and NMFS BO (June 2009) Action I.1.1 [11]	Same
Upper Sacramento River		
Shasta Lake End-of-September Minimum Storage	NMFS 2004 Winter-run Biological Opinion (1900 TAF), predetermined CVPIA 3406(b)(2) flows, and NMFS BO (Jun 2009) Action I.2.1 [11]	Same
Minimum Flow below Keswick Dam	Flows for SWRCB WR 90-5 and 1993 Winter-run Biological Opinion temperature control, predetermined CVPIA 3406(b)(2) flows, and NMFS BO (Jun 2009) Action I.2.2 [11]	Same
Feather River		
Minimum Flow below Thermalito Diversion Dam	2006 Settlement Agreement (700 / 800 CFS)	Same
Minimum Flow below Thermalito Afterbay outlet	1983 DWR, DFG Agreement (750 – 1700 CFS)	Same
Yuba River		

	2009 Studies	2029 Studies
Minimum flow below Daguerre Point Dam	D-1644 Operations (Lower Yuba River Accord) [9]	Same
American River		
Minimum Flow below Nimbus Dam	American River Flow Management [10] as required by NMFS BO (Jun 2009) Action II.1 [11]	American River Flow Management [10] required by anticipated SWRCB order
Minimum Flow at H Street Bridge	SWRCB D-893	Same
Lower Sacramento River		
Minimum Flow near Rio Vista	SWRCB D-1641	Same
Mokelumne River		
Minimum Flow below Camanche Dam	FERC 2916-029, 1996 (Joint Settlement Agreement) (100 – 325 CFS)	Same
Minimum Flow below Woodbridge Diversion Dam	FERC 2916-029, 1996 (Joint Settlement Agreement) (25 – 300 CFS)	Same
Stanislaus River		
Minimum Flow below Goodwin Dam	1987 USBR, DFG agreement, and flows required for NMFS BO (Jun 2009) Actions III.1.2 and III.1.3 [11]	Same
Minimum Dissolved Oxygen	SWRCB D-1422	Same
Merced River		
Minimum Flow below Crocker-Huffman Diversion Dam	Davis-Grunsky (180 – 220 CFS, Nov – Mar), and Cowell Agreement	Same
Minimum Flow at Shaffer Bridge	FERC 2179 (25 – 100 CFS)	Same
Tuolumne River		
Minimum Flow at Lagrange Bridge	FERC 2299-024, 1995 (Settlement Agreement) (94 – 301 TAF/YR)	Same
San Joaquin River		
Maximum Salinity near Vernalis	SWRCB D-1641	Same
Minimum Flow near Vernalis	SWRCB D-1641, NMFS BO (Jun 2009) Action IV.2.1 [11]	Same
Sacramento River-San Joaquin River Delta		
Delta Outflow Index (Flow and Salinity)	SWRCB D-1641, FWS BO (Dec 2008) Action 4 [11]	Same
Delta Cross Channel Gate Operation	SWRCB D-1641, NMFS BO (Jun 2009) IV.1.2 [11]	Same
Delta Exports	SWRCB D-1641, NMFS BO (Jun 2009) Action IV.2.1 [11]	Same
Combined Flow in Old and Middle River (OMR)	FWS BO (Dec 2008) Actions 1 through 3 and NMFS BO (Jun 2009) Action IV.2.3 [11]	Same

	2009 Studies	2029 Studies
OPERATIONS CRITERIA		
Subsystem		
Upper Sacramento River		
Flow Objective for Navigation (Wilkins Slough)	NMFS BO (Jun 2009) Action I.4 [11]; 3,250 – 5,000 CFS based on CVP water supply condition	Same
American River		
Folsom Dam Flood Control	Variable 400/670 (without outlet modifications)	Same
Feather River		
Flow at Mouth	Maintain the DFG/DWR flow target above Verona or 2800 cfs for Apr– Sep dependent on Oroville inflow and FRSA allocation	Same
Stanislaus River		
Flow below Goodwin Dam	NMFS BO (Jun 2009) Actions III.1.2 and III.1.3 [11]	Same
System-wide		
CVP Water Allocation		
CVP Settlement and Exchange	100% (75% in Shasta Critical years)	Same
CVP Refuges	100% (75% in Shasta Critical years)	Same
CVP Agriculture	100% - 0% based on supply; additionally limited due to D-1641, FWS BO (Dec 2008) and NMFS BO (Jun 2009) export restrictions [11]	Same
CVP Municipal & Industrial	100% - 50% based on supply; additionally limited due to D-1641, FWS BO (Dec 2008) and NMFS BO (Jun 2009) export restrictions [11]	Same
SWP Water Allocation		
North of Delta (FRSA)	Contract specific	Same
South of Delta	Based on supply, Monterey Agreement; allocations limited due to D-1641, FWS BO (Dec2008) and NMFS BO (Jun 2009) export restrictions [11]	Same
CVP/SWP Coordinated Operations		
Sharing of Responsibility for In-Basin-Use	1986 Coordinated Operations Agreement	Same
Sharing of Surplus Flows	1986 Coordinated Operations Agreement	Same
Sharing of Restricted Export Capacity	Equal sharing of export capacity under SWRCB D-1641, FWS BO (Dec 2008) and NMFS BO (Jun 2009) export restrictions [11]	Same

	2009 Studies	2029 Studies
Transfers		
Lower Yuba River Accord [12]	Yuba River acquisitions for reducing impact of NMFS BO export restrictions [11] on SWP	Same
Dry Year Program	None	Same
Phase 8	None	Same
MWDSC/CVP Settlement Contractors	None	Same
CVP/SWP Integration		
Dedicated Conveyance at Banks	None	Same
NOD Accounting Adjustments	None	Same

1. The Sacramento Valley hydrology used in the Existing Conditions CALSIM II model reflects nominal 2005 land-use assumptions. The nominal 2005 land-use was determined by interpolation between the 1995 and projected 2020 land-use assumptions associated with Bulletin 160-98. The San Joaquin Valley hydrology reflects 2005 land-use assumptions developed by USBR. Existing-level projected land-use assumptions are being coordinated with the California Water Plan Update for future models.
2. The Sacramento Valley hydrology used in the Future Conditions CALSIM II model reflects 2020 land-use assumptions associated with Bulletin 160-98. The San Joaquin Valley hydrology reflects draft 2030 land-use assumptions developed by USBR. Development of future-level projected land-use assumptions are being coordinated with the California Water Plan Update for future models.
3. Presented in attached table of 2009 Study American River Demand Assumptions.
4. Presented in attached table of 2029 Study American River Demand Assumptions.
5. The CALSIM II model representation for the Stanislaus River does not necessarily represent USBR's current or future operational policies. A suitable plan for supporting flows has not been developed for NMFS BO (Jun 2009) Action 3.1.3.
6. The actual amount diverted is operated in conjunction with supplies from the Los Vaqueros project. The existing Los Vaqueros storage capacity is 100 taf. Associated water rights for Delta excess flows are included.
7. Mokelumne River flows are modified to reflect modified operations associated with EBMUD supplies from the Freeport Regional Water Project.
8. Current ACOE permit for Harvey O. Banks PP allows for an average diversion rate of 6,680 cfs in all months. Diversion rate can increase up to 1/3 of the rate of San Joaquin River flow at Vernalis during Dec 15th – Mar 15th up to a maximum diversion of 8,500 cfs, if Vernalis flow exceeds 1,000 cfs.
9. D-1644 and the Lower Yuba River Accord are assumed to be implemented for Existing and Future Conditions. The Yuba River is not dynamically modeled in CALSIM II. Yuba River hydrology and availability of water acquisitions under the Lower Yuba River Accord are based on modeling performed and provided by the Lower Yuba River Accord EIS/EIR study team.

10. Under Existing Conditions, the flow components of the proposed American River Flow Management are as required by the NMFS BO (June 4, 2009). Under Future Conditions the American River Flow Management is treated as a SWRCB permit term.
11. In cooperation with USBR, National Marine Fisheries Service, Fish and Wildlife Service, and Ca Department of Fish and Game, the Ca Department of Water Resources has developed assumptions for implementation of the FWS BO (December 15, 2008) and NMFS BO (June 4, 2009) in CALSIM II. The FWS BO and NMFS BO assumptions are included as separate appendices.
12. Acquisitions of Component 1 water under the Lower Yuba River Accord, and use of 500 cfs dedicated capacity at Banks PP during Jul – Sep, are assumed to be used to reduce as much of the effect of the April – May Delta export actions on SWP contractors as possible.

Table A. 2 2009 Study American River Demand Assumptions

CVP CONTRACTOR	Geographic Location	CVP Water Service Contracts (TAF/yr)		Settlement/ Exchange Contractor (TAF/yr)	Water Rights/ Non-CVP (TAF/yr)	Diversion Limits (TAF/Yr) If FUI (Mar-Nov Folsom Unimpaired Inflow - TAF/Yr)			Notes
		AG	M&I			> 1600	> 950	< 400	
Placer County Water Agency	Auburn Dam Site		0.0		35.5	35.5	35.5	35.5	
Sacramento Suburban Water District	Folsom Reservoir				17.0	17.0	0.0	0.0	
City of Folsom (includes P.L. 101-514)			7.0		27.0	34.0	34.0	34.0	1
Folsom Prison					2.0	2.0	2.0	2.0	
San Juan Water District (Placer County)					17.0	17.0	17.0	17.0	
San Juan Water District (Sac County) (includes P.L. 101-514)			24.2		33.0	44.2	44.2	44.2	1
El Dorado Irrigation District			7.55		0.0	7.55	7.55	7.55	1
City of Roseville			32.0		5.0	37.0	37.0	37.0	1
Placer County Water Agency			0.0			0.0	0.0	0.0	
El Dorado County (P.L. 101-514)			15.0			4.0	4.0	4.0	1
Total		0.0	85.8	0.0	101.0	162.8	145.8	145.8	
So. Cal WC/ Arden Cordova WC	Folsom South Canal				5.0	5.0	5.0	5.0	
California Parks and Recreation			5.0			1.0	1.0	1.0	1
SMUD (export)			30.0		15.0	20.0	20.0	20.0	1
Canal Losses					1.0	1.0	1.0	1.0	
Total		0.0	35.0	0.0	21.0	27.0	27.0	27.0	
City of Sacramento	Lower American River				58.0	58.0	58.0	50.0	
Arcade Water District					0.0	0.0	0.0	0.0	
Carmichael Water District					12.0	12.0	12.0	12.0	
Total		0.0	0.0	0.0	70.0	70.0	70.0	62.0	
City of Sacramento	Lower Sacramento River				62.3	62.3	62.3	70.3	
Sacramento County Water Agency			10.0			10.0	10.0	10.0	
(SMUD transfer)			20.0			20.0	20.0	20.0	
Sacramento County Water Agency (P.L. 101-514)			15.0			15.0	15.0	15.0	
Sacramento County Water Agency - assumed Appropriated Water					31.3				2
EBMUD (export)			133.0						3
Total		0.0	178.0	0.0	93.6	107.3	107.3	115.3	
Total (American R)		0.0	298.75	0.00	321.10				

1. When the CVP Contract quantity exceeds the quantity of the Diversion Limit minus the Water Right (if any), the diversion modeled is the quantity allocated to the CVP Contract (based on the CVP contract quantity shown times the CVP M&I allocation percentage) plus the Water Right (if any), but with the sum limited to the quantity of the Diversion Limit.
2. SCWA targets 68 taf of surface water supplies annually. The portion unmet by CVP contract water is assumed to come from two sources:
   (1) Delta "excess" water- averages 16.5 taf annually, but varies according to availability. SCWA is assumed to divert excess flow when it is available, and when there is available pumping capacity.
   (2) “Other” water- derived from transfers and/or other appropriated water, averaging 14.8 taf annually but varying according remaining unmet demand.
3. EBMUD CVP diversions are governed by the Amendatory Contract, stipulating:
   (1) 133 taf maximum diversion in any given year.
   (2) 165 taf maximum diversion amount over any 3 year period.
   (3) Diversions allowed only when EBMUD total storage drops below 500 taf.
   (4) 155 cfs maximum diversion rate.

Table A. 3 2029 Study American River Demand Assumptions

CVP CONTRACTOR	Geographic Location	CVP Water Service Contracts (TAF/yr)		Settlement/ Exchange Contractor (TAF/yr)	Water Rights/ Non-CVP (TAF/yr)	Diversion Limits (TAF/Yr) If FUI (Mar-Nov Folsom Unimpaired Inflow - TAF/Yr)			Notes
		AG	M&I			> 1600	> 950	< 400	
Placer County Water Agency	Auburn Dam Site		0.0		35.5	35.5	35.5	35.5	
Sacramento Suburban Water District	Folsom Reservoir				0.0	0.0	0.0	0.0	
City of Folsom (includes P.L. 101-514)			7.0		27.0	34.0	34.0	34.0	1
Folsom Prison					5.0	5.0	5.0	5.0	
San Juan Water District (Placer County)					24.0	24.0	24.0	24.0	
San Juan Water District (Sac County) (includes P.L. 101-514)			24.2		33.0	57.2	57.2	57.2	1
El Dorado Irrigation District			7.55		17.0	24.55	24.55	24.55	1
City of Roseville			32.0		0.0	32.0	32.0	32.0	1
Placer County Water Agency			35.0			35.0	35.0	35.0	
El Dorado County (P.L. 101-514)			15.0			15.0	15.0	15.0	1
Total		0.0	120.8	0.0	106.0	226.8	226.8	226.8	
So. Cal WC/ Arden Cordova WC	Folsom South Canal				5.0	5.0	5.0	5.0	
California Parks and Recreation			5.0			5.0	5.0	5.0	1
SMUD (export)			30.0		15.0	45.0	45.0	45.0	1
Canal Losses					1.0	1.0	1.0	1.0	
Total		0.0	35.0	0.0	21.0	56.0	56.0	56.0	
City of Sacramento	Lower American River				96.3	96.3	96.3	50.0	
Arcade Water District					0.0	0.0	0.0	0.0	
Carmichael Water District					12.0	12.0	12.0	12.0	
Total		0.0	0.0	0.0	108.3	108.3	108.3	62.0	
City of Sacramento	Lower Sacramento River				51.9	51.9	51.9	98.2	
Sacramento County Water Agency			10.0			10.0	10.0	10.0	
(SMUD transfer)			20.0			20.0	20.0	20.0	
Sacramento County Water Agency (P.L. 101-514)			15.0			15.0	15.0	15.0	
Sacramento County Water Agency - assumed Appropriated Water					31.2				2
EBMUD (export)			133.0						3
Total		0.0	178.0	0.0	83.1	96.9	96.9	143.2	
Total		0.0	333.75	0.0	353.9				

1. When the CVP Contract quantity exceeds the quantity of the Diversion Limit minus the Water Right (if any), the diversion modeled is the quantity allocated to the CVP Contract (based on the CVP contract quantity shown times the CVP M&I allocation percentage) plus the Water Right (if any), but with the sum limited to the quantity of the Diversion Limit.
2. SCWA targets 68 taf of surface water supplies annually. The portion unmet by CVP contract water is assumed to come from two sources:
   (1) Delta "excess" water- averages 16.5 taf annually, but varies according to availability. SCWA is assumed to divert excess flow when it is available, and when there is available pumping capacity.
   (2) "Other" water- derived from transfers and/or other appropriated water, averaging 14.8 taf annually but varying according remaining unmet demand.
3. EBMUD CVP diversions are governed by the Amendatory Contract, stipulating:
   (1) 133 taf maximum diversion in any given year.
   (2) 165 taf maximum diversion amount over any 3 year period.
   (3) Diversions allowed only when EBMUD total storage drops below 500 taf.
   (4) 155 cfs maximum diversion rate.

Appendix A-1. Incorporation of U.S. Fish and Wildlife Service Biological Opinions into CALSIM II

The Reasonable and Prudent Action (RPA) in the U.S. Fish and Wildlife Service Biological Opinions (FWS BO) consists of required actions based on physical and biological phenomena that do not lend themselves readily to simulations using a monthly time step. Much scientific and modeling judgment has been employed to represent the implementation of the RPA actions. The interagency staff has developed modifications to the CALSIM II model to represent the RPA actions as best as possible, given the scientific understanding of environmental factors enumerated in the BO (e.g., turbidity, water temperature, and the presence of fish) and the limited historical data for some of these factors. It is further noted that there are on-going discussions on the interpretation of some of RPA actions which have potential to change modeling assumptions, and the resulting project operations.

Given the relatively generalized representation of the RPA actions assumed for CALSIM II modeling, much caution is required when interpreting outputs from the model.

RPA Component 1

Action 1: Limit Exports so OMR flows >= -2,000 cfs (14-day avg.) w/ 5-day running avg. + 25%

Period:		Action would cover 14 day period
Trigger:		Dec 1-20 (low entrainment risk period)
	AND	FWS discretion based on turbidity, flows, Fall Midwater Trawl (FMWT), and salvage
		After Dec 20 (high entrainment risk period)
	AND	Turbidity: 3-day avg. >= 12 NTU @ Prisoner's Pt., Holland Cut & Victoria Canal (all three)
	OR	Salvage: daily salvage index value >= 0.5 (daily delta smelt salvage > 1/2 prior yr. FMWT index value)

Off-ramp:		Temperature: 3 Station daily mean water temperature (Mossdale, Antioch & Rio Vista) >= 12 degree C
	OR	Biological: Onset of spawning (presence of spent females in Spring Kodiak Trawl (SKT) or at Banks or Jones Pumping Plants (PPs))

Proposed CALSIM implementation:

Using a turbidity trigger based on a flow surrogate of Sac River Index > 20,000 cfs, Set OMR target at -2,000 cfs:

- If turbidity trigger first occurs in December, assume action starts Dec 21 (background OMR target of -8,000 cfs Dec 1-20)
- If turbidity trigger first occurs in January, assume action starts Jan 1
- If turbidity trigger first occurs in February, assume action starts Feb 1
- If turbidity trigger first occurs in March, assume action starts Mar 1

Assume action, once triggered, continues for a duration of 14 days

Uses surrogate temperature trigger for off-ramping when converting to weighted month

Implement more constraining 5-day running avg in CALSIM II by use of Hutton's (1/2/09 app 5) approach to relate 5-day to 14-day avgs

RPA Component 1

Action 2: Limit Exports so OMR flows >= -1,250 to -5,000 cfs (as determined weekly by the Smelt Working Group (SWG))

Trigger:		Immediately after Action 1
	OR	If Action 1 not implemented, SWG will determine start date
Suspension:		Flow: 3 day avg. Sacramento R. flow at Rio Vista >= 90,000 cfs
	AND	Flow: 3 day avg. San Joaquin R. flow at Vernalis >= 10,000 cfs
Off-ramp:		Temperature: 3 Station daily mean water temperature (Mossdale, Antioch & Rio Vista) >= 12 degree C
	OR	Biological: Onset of spawning (presence of spent females in SKT or at Banks or Jones PPs)

Proposed CALSIM implementation:

Action is always triggered by the end of RPA Action 1

Assume OMR criteria by condition of X2 as shown in table below (using prev mon X2)

Using surrogate conditions for suspension (> 50% frequency of 3-day events described above, Use Hutton's 12/16/08 app 4 method for determining frequency of high flows)

Assumed -5000 OMR flow criteria in 9 years the RPA Action 1 is not triggered

Uses surrogate temperature trigger for off-ramping when converting to weighted month

Implement more constraining 5-day running avg in CALSIM II by use of Hutton's 1/2/09 app 5 approach to relate 5-day to 14-day avgs

40-30-30 Year Type		OMR Criteria (cfs) X2 East of Roe	X2 West of Roe	If No Action 1
W	1	-3500	-5000	-99999
AN	2	-3500	-5000	-99999
BN	3	-3500	-5000	-99999
D	4	-3500	-5000	-99999
C	5	-3500	-5000	-99999

RPA Component 1

Action 3: **Limit Exports so OMR flows >= -1,250 to -5,000 cfs (14-day avg.) w/ 5-day running avg. + 25%**

Trigger: Temperature: 3 Station daily mean water temperature (Mossdale, Antioch & Rio Vista) >= 12 degree C

OR Biological: Onset of spawning (presence of spent females in SKT or at Banks or Jones PPs)

Off-ramp: End of period: 30-Jun

OR Temperature: daily avg. temperature of 25 degree C for 3 consecutive days @ Clifton Court Forebay

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Proposed CALSIM implementation:

Uses surrogate temperature trigger for initiating, but no later than Apr-1, specific dates used to convert to weighted month

Assume OMR criteria by water year type as shown in table (using previous month X2, using April X2 for June)

Assume more constraining OMR or VAMP for the period of Apr 15-May 15

Uses surrogate temperature trigger for off-ramping when converting to weighted month

Implement more constraining 5-day running avg in CALSIM II by use of Hutton's (1/2/09 app 5) approach to relate 5-day to 14-day avgs

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40-30-30 Year Type		OMR Criteria (cfs) X2 East of Chipps	X2 in between	X2 West of Roe
W	1	-1250	-3500	-5000
AN	2	-1250	-3500	-5000
BN	3	-1250	-3500	-5000
D	4	-1250	-3500	-5000
C	5	-1250	-3500	-5000

RPA Component 3

Action 4:	**Manage X2 Position in the Fall through increasing Delta outflow when the preceding year was wetter than normal**
Period:	Average Monthly position
Trigger:	September, October, or November
AND	Preceding water year type for Sacramento 40-30-30 is Wet or Above Normal
Off-ramp:	In November, limit monthly releases for meeting X2 position management to the volume of monthly natural inflow into the reservoirs

Proposed CALSIM implementation:

Fall Months following Wet or Above Normal Years	**Action Implementation**
September	Meet monthly average X2 requirement (74 km in Wet years, 81 km in Above Normal years)
October	Meet monthly average X2 requirement (74 km in Wet years, 81 km in Above Normal years)
November	Make reservoir releases up to natural inflow as needed to continue to meet monthly average X2 requirement (74 km in Wet years, 81 km in Above Normal years)

Appendix A-2. Incorporation of National Marine Fisheries Service Biological Opinion into CALSIM II

The Reasonable and Prudent Action (RPA) in the National Marine Fisheries Service Biological Opinion (NMFS BO) consists of required actions based on physical and biological phenomena that do not lend themselves readily to simulations using a monthly time step. Much scientific and modeling judgment has been employed to represent the implementation of the RPA actions. The interagency staff has developed modifications to CALSIM II model to represent the RPA actions as best as possible at this time, given the scientific understanding of environmental factors enumerated in the BO (e.g., turbidity, water temperature, and the presence of fish) and the limited historical data for some of these factors. It is further noted that there are on-going discussions on the interpretation of some of RPA actions which have potential to change modeling assumptions, and the resulting project operations.

Given the relatively generalized representation of the RPA actions assumed for CALSIM II modeling, much caution is required when interpreting outputs from the model.

Action Suite 1.1 Clear Creek

Action 1.1.1 Spring Attraction Flows

Action: USBR must annually conduct at least two pulse flows in Clear Creek in May and June of at least 600 cfs for at least three days for each pulse, to attract adult spring-run holding in the Sacramento River main stem.

Action 1.1.1 Assumptions for CALSIM II Modeling Purposes

Action: Model is modified to meet 600 cfs for 3 days twice in May. In the CALSIM II analysis, flows

sufficient to increase flow up to 600 cfs for a total of 6 days are added to the flows that would have otherwise occurred in Clear Creek.

Action 1.1.5. Thermal Stress Reduction

Action: USBR must manage Whiskeytown releases to meet a daily water temperature of: 1) 60°F at the Igo gage from June 1 through September 15; and 2) 56°F at the Igo gage from September 15 to October 31.

Action 1.1.5 Assumptions for CALSIM II Modeling Purposes

Action: It is assumed that temperature operations can perform reasonably well with flows included in model.

Action Suite 1.2 Shasta Operations

Action 1.2.1 Performance Measures

Action: To ensure a sufficient cold water pool to provide suitable temperatures, long-term performance measures for temperature compliance points and EOS carryover storage at Shasta Reservoir must be attained. Performance measures for EOS carryover storage at Shasta Reservoir are as follows:

- 87% of years: Minimum EOS storage of 2.2 maf.
- 82% of years: Minimum EOS storage of 2.2 maf and end-of-April storage of 3.8 maf in following year (to maintain potential to meet Balls Ferry compliance point).
- 40% of years: Minimum EOS storage 3.2 maf (to maintain potential to meet Jelly's Ferry compliance point in following year).

Performance measures (measured as a 10-year running average) for temperature compliance points during summer season are:

- Meet Clear Creek Compliance point 95% of time.
- Meet Balls Ferry Compliance point 85% of time.
- Meet Jelly's Ferry Compliance point 40% of time.
- Meet Bend Bridge Compliance point 15% of time.

Action 1.2.1 Assumptions for CALSIM II Modeling Purposes

Action: Performance measures will be met using an iterative approach where full models will be run, model results will be post-processed to assess performance, and then model will be re-run with adjustments to operations until performance measures are met.

Operations adjustments may include changes in rules for delivery allocation, Delta export operations, storage balancing between the CVP north-of Delta reservoirs, and/or triggering of other FWS and NMFS BO actions. Currently there are no reiterations of runs being performed to ensure that performance measures are being met.

Action 1.2.2 November through February Keswick Release Schedule (Fall Actions)

Action: Depending on EOS carryover storage and hydrology, USBR must develop and implement a Keswick release schedule, and reduce deliveries and exports as needed to achieve performance measures.

Action 1.2.2 Assumptions for CALSIM II Modeling Purposes

Action: Keswick flows based on operation of 3406(b)(2) releases in OCAP Study 7.1 (for Existing) and

Study 8 (for Future) are used in CALSIM II. These flows will be reviewed for appropriateness under this action. A post-process based evaluation similar to what has been explained in Action 1.2.1 will be conducted. Currently there are no reiterations of runs being performed to ensure that performance measures are being met.

Action 1.2.3 February Forecast; March – May 14 Keswick Release Schedule (Spring Actions)

Action: 1) USBR must make its February 15 forecast of deliverable water based on an estimate of precipitation and runoff within the Sacramento River basin at least as conservative as the 90% probability of exceedance. Subsequent updates of water delivery commitments must be based on monthly forecasts at least as conservative as the 90% probability of exceedance.
2) USBR must make releases to maintain a temperature compliance point not in excess of 56 degrees between Balls Ferry and Bend Bridge from April 15 through May 15.

Action 1.2.3 Assumptions for CALSIM II Modeling Purposes

Action: It is assumed that temperature operations can perform reasonably well with flows included in model.

Action 1.2.4 May 15 through October Keswick Release Schedule (Summer Action)

Action: USBR must manage operations to achieve daily average water temperatures in the Sacramento River between Keswick Dam and Bend Bridge as follows:

1) Not in excess of 56°F at compliance locations between Balls Ferry and Bend Bridge from May 15 through September 30 for protection of winter-run, and not in excess of 56°F at the same compliance locations between Balls Ferry and Bend Bridge from October 1 through October 31 for protection of mainstem spring run, whenever possible.

2) USBR must operate to a final Temperature Management Plan starting May 15 and ending October 31.

Action 1.2.4 Assumptions for CALSIM II Modeling Purposes

Action: It is assumed that temperature operations can perform reasonably well with flows included in model. If time permits, a temperature modeling and post-process based approach will be followed to verify temperatures are met at the compliance points. In the long-term approach, for a complete interpretation of the action, development of temperature model runs are needed to develop flow schedules if needed for implementation into CALSIM II.

Action Suite 1.3 Red Bluff Diversion Dam (RBDD) Operations

Action 1.3.1 Operations after May 14, 2012: Operate RBDD with Gates Out

Action: No later than May 15, 2012, USBR must operate RBDD with gates out all year to allow unimpeded passage for listed anadromous fish.

Action 1.3.1 Assumptions for CALSIM II Modeling Purposes

Action: Adequate permanent facilities for diversion are assumed; therefore no constraint on diversion

schedules is included in the future condition modeling.

Action 1.3.2 Interim Operations

Action: Until May 14, 2012, USBR must operate RBDD according to the following schedule:

•September 1 - June 14: Gates open. No emergency closures of gates are allowed.

•June 15 - August 31: Gates may be closed at USBR's discretion, if necessary to deliver water to TCCA.

Action 1.3.2 Assumptions for CALSIM II Modeling Purposes

Action: Adequate interim/temporary facilities for diversion are assumed; therefore no constraint on diversion schedules is included in the Existing condition modeling.

Action 1.4 Wilkins Slough Operations

Action: The SRTTG must make recommendations for Wilkins Slough minimum flows for anadromous fish in critically dry years, in lieu of the current 5,000 cfs navigation criterion to NMFS by December 1, 2009. In critically dry years, the SRTTG will make a recommendation.

Action 1.4 Assumptions for CALSIM II Modeling Purposes

Action: Current rules for relaxation of NCP in CALSIM II (based on OCAP BA models) will be used. In CALSIM II, NCP flows are relaxed depending on allocations for agricultural contractors. Table A.4 is used to determine the relaxation.

Table A. 4 NCP Flow Schedule with Relaxation

CVP AG Allocation (%)	NCP Flow (cfs)
<10	3250
10-25	3500
25-40	4000
40-65	4500
>65	5000

Action 2.1 Lower American River Flow Management

Action: Implement the flow schedule specified in the Water Forum's Flow Management Standard (FMS), which is summarized in Appendix 2-D of the NMFS BO.

Action 2.1 Assumptions for CALSIM II Modeling Purposes

Action: The AFRMP Minimum Release Requirements (MRR) range from 800 to 2,000 cfs based on a sequence of seasonal indices and adjustments as in 2008 OCAP BA. The minimum Nimbus Dam release requirement is determined by applying the appropriate water availability index (Index Flow). Three water availability indices (i.e., Four Reservoir Index (FRI), Sacramento River Index (SRI), and the Impaired Folsom Inflow Index (IFII)) are applied during different times of the year, which provides adaptive

flexibility in response to changing hydrological and operational conditions.

During some months, Prescriptive Adjustments may be applied to the Index Flow, resulting in the MRR. If there is no Prescriptive Adjustment, the MRR is equal to the Index Flow.

Discretionary Adjustments for water conservation or fish protection may be applied during the period extending from June through October. If Discretionary Adjustments are applied, then the resultant flows are referred to as the Adjusted Minimum Release Requirement (Adjusted MRR).

The MRR and Adjusted MRR may be suspended in the event of extremely dry conditions, represented by “conference years” or “off-ramp criteria”. Conference years are defined when the projected March through November unimpaired inflow into Folsom Reservoir is less than 400,000 acre-feet. Off-ramp criteria are triggered if forecasted Folsom Reservoir storage at any time during the next twelve months is less than 200,000 acre-feet.

Action 2.2 Lower American River Temperature Management

Action: USBR must develop a temperature management plan that contains: (1) forecasts of hydrology and storage; (2) a modeling run or runs, using these forecasts, demonstrating that the temperature compliance point can be attained (see Coldwater Management Pool Model approach in Appendix 2-D); (3) a plan of operation based on this modeling run that demonstrates that all other non-discretionary requirements are met; and (4) allocations for discretionary deliveries that conform to the plan of operation.

Action 2.2 Assumptions for CALSIM II Modeling Purposes

Action: It is assumed that temperature operations can perform reasonably well with flows included in model. The flows in the model reflect the ARFMP implemented under Action 2.1

Action Suite 3.1 Stanislaus River / Eastside Division Actions

Action 3.1.2 Provide Cold Water Releases to Maintain Suitable Steelhead Temperatures

Action: USBR must manage the cold water supply within New Melones Reservoir and make cold water releases from New Melones Reservoir to provide suitable temperatures for CV steelhead rearing, spawning, egg incubation smoltification, and adult migration in the Stanislaus River downstream of Goodwin Dam.

Action 3.1.2 Assumptions for CALSIM II Modeling Purposes

Action: It is assumed that temperature operations can perform reasonably well with flow operations resulting from the minimum flow requirements described in action 3.1.3.

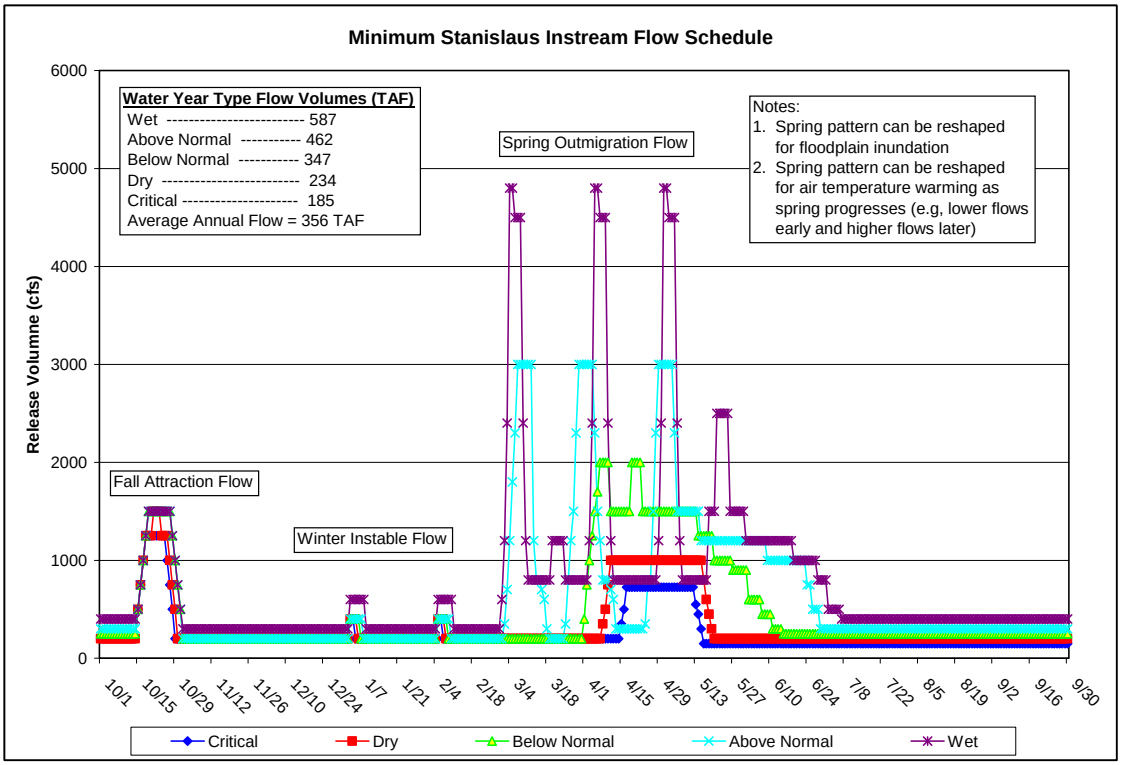
Action 3.1.3 Operate the East Side Division Dams to Meet the Minimum Flows, as Measured at Goodwin Dam

Action: USBR must operate releases from the East Side Division reservoirs to achieve a minimum flow schedule as prescribed in NMFS BO Appendix 2-E and generally described in figure 11-1. When operating at higher flows than specified, USBR must implement ramping rates for flow changes that will avoid stranding and other adverse effects on CV steelhead.

Action 3.1.3 Assumptions for CALSIM II Modeling Purposes

Action: Minimum flows based on Appendix 2-E flows (presented in Figure A.1) are assumed consistent to what was modeled by NMFS (5/14/09 and 5/15/09 CALSIM II models provided by NMFS; relevant logic merged into baselines models). The NMFS model assumes an allocation scheme for New Melones releases similar to what is included in the Interim Operations Plan.

Figure A. 1 Minimum Stanislaus instream flow schedule as prescribed in Appendix 2-E of the NMFS BO (06/04/09)



Annual allocation in New Melones is modeled to ensure availability of required instream flows (Table A.5) based on a water supply forecast that is comprised of end-of-February New Melones storage (in taf) plus forecasted inflow to New Melones from March 1 to September 30 (in taf). The "forecasted inflow" is calculated using perfect foresight in the model. Allocated volume of water is released according to water year type following the monthly flow schedule illustrated in Figure A.1.

Table A. 5 New Melones Allocations to Meet Minimum Instream Flow Requirements

New Melones index (TAF)	Annual allocation required for instream flows (TAF)
<1000	0-98.9
1,000 - 1,399	98.9
1,400 - 1,724	185.3
1,725 – 2,177	234.1
2,178 - 2,386	346.7
2,387 – 2,761	461.7
2,762 – 6,000	586.9

Action Suite 4.1 Delta Cross Channel (DCC) Gate Operation, and Engineering Studies of Methods to Reduce Loss of Salmonids in Georgiana Slough and Interior Delta

Action 4.1.2 DCC Gate Operation

Action: During the period between November 1 and June 15, DCC gate operations will be modified from the proposed action to reduce loss of emigrating salmonids and green sturgeon. From December 1 to January 31, the gates will remain closed, except as operations are allowed using the implementation procedures/modified Salmon Decision Tree.

Timing: November 1 through June 15.

Triggers: Action triggers and description of action as defined in NMFS BO are presented in Table A.6.

Table A. 6 NMFS BO DCC Gate Operation Triggers and Actions

Date	Action Triggers	Action Responses
October 1 – November 30	Water quality criteria per D-1641 are met and either the Knights Landing Catch Index (KLCI) or the Sacramento Catch Index (SCI) are greater than 3 fish per day but less than or equal to 5 fish per day.	Within 24 hours of trigger, DCC gates are closed. Gates will remain closed for 3 days.
	Water quality criteria per D-1641 are met and either the KLCI or SCI is greater than 5 fish per day	Within 24 hours, close the DCC gates and keep closed until the catch index is less than 3 fish per day at both the Knights Landing and Sacramento monitoring sites.
	The KLCI or SCI triggers are met but water quality criteria are not met per D-1641 criteria.	DOSS reviews monitoring data and makes recommendation to NMFS and WOMT per procedures in Action IV.5.
December 1 – December 14	Water quality criteria are met per D-1641.	DCC gates are closed. If Chinook salmon migration experiments are conducted during this time period (e.g., Delta Action 8 or similar studies), the DCC gates may be opened according to the experimental design, with NMFS' prior approval of the study.
	Water quality criteria are not met but both the KLCI and SCI are less than 3 fish per day.	DCC gates may be opened until the water quality criteria are met. Once water quality criteria are met, the DCC gates will be closed within 24 hours of compliance.
	Water quality criteria are not met but either of the KLCI or SCI is greater than 3 fish per day.	DOSS reviews monitoring data and makes recommendation to NMFS and WOMT per procedures in Action IV.5
December 15 – January 31	December 15-January 31	DCC Gates Closed.
	NMFS-approved experiments are being conducted.	Agency sponsoring the experiment may request gate opening for up to five days; NMFS will determine whether opening is consistent with ESA obligations.
	One-time event between December 15 to January 5, when necessary to maintain Delta water quality in response to the astronomical high tide, coupled with low inflow conditions.	Upon concurrence of NMFS, DCC Gates may be opened one hour after sunrise to one hour before sunset, for up to 3 days, then return to full closure. Reclamation and DWR will also reduce Delta exports down to a health and safety level during the period of this action.
February 1 – May 15	D-1641 mandatory gate closure.	Gates closed, per WQCP criteria
May 16 – June 15	D-1641 gate operations criteria	DCC gates may be closed for up to 14 days during this period, per 2006 WQCP, if NMFS determines it is necessary.

Action 4.1.2 Assumptions for CALSIM II Modeling Purposes

Action: The DCC gate operations for October 1 through January 31 were layered on top of the D-1641 gate operations already included in the CALSIM II model. The general assumptions regarding the NMFS DCC operations are summarized in Table A.7.

Timing: October 1 through January 31.

Table A. 7 DCC Gate Operation Triggers and Actions as Modeled in CalSim II

Date	Modeled Action Triggers	Modeled Action Responses
October 1-December 14	Sacramento River daily flow at Wilkins Slough exceeding 7,500 cfs; flow assumed to flush salmon into the Delta	Each month, the DCC gates are closed for number of days estimated to exceed the threshold value.
	Water quality conditions at Rock Slough subject to D-1641 standards	Each month, the DCC gates are not closed if it results in violation of the D-1641 standard for Rock Slough; if DCC gates are not closed due to water quality conditions, exports during the days in question are restricted to 2,000 cfs.
December 15 – January 31	December 15-January 31	DCC Gates Closed.

Flow Trigger: It is assumed that during October 1 – December 14, the DCC will be closed if Sacramento River daily flow at Wilkins Slough exceeds 7,500 cfs. It is assumed that during December 15 through January 31 that the DCC gates are closed under all flow conditions.

Water Quality: It is assumed that during October 1 – December 14 the DCC gates may remain open if water quality is a concern. Using the CALSIM II-ANN flow-salinity model for Rock Slough, current month's chloride level at Rock Slough is estimated assuming DCC closure per NMFS BO. The estimated chloride level is compared against the Rock Slough chloride standard (monthly average). If estimated chloride level exceeds the standard, the gate closure is modeled per D1641 schedule (for the entire month).

It is assumed that during December 15 through January 31 that the DCC gates are closed under all water quality conditions.

Export Restriction: During October 1 – December 14 period, if the flow trigger condition is such that additional days of DCC gates closed is called for, however water quality conditions are a concern and the DCC gates remain open, then Delta exports are limited to 2,000 cfs for each day in question. A monthly Delta export restriction is calculated based on the trigger and water quality conditions described above.

Action Suite 4.2 Delta Flow Management

Action 4.2.1 San Joaquin River Inflow to Export Ratio

Action: The Phase 1 – Interim Operations in 2010-2011 are assumed. From April 1 through May 31, Interim flow operations: 1) USBR must continue to implement the Goodwin flow schedule for the Stanislaus River prescribed in Action 3.1.3 and Appendix 2-E of the NMFS BO and increases in releases at Goodwin Reservoir, if necessary, in order to meet the flows required at Vernalis (as provided in table 1 of NMFS BO page 642); and 2) Combined CVP and SWP exports must be restricted to 1,500 cfs for Vernalis

flows from 0 – 6,000 cfs, 4:1 (Vernalis flow:export ratio) for Vernalis flows 6,000 cfs – 21,750 cfs, and unrestricted for Vernalis flows above 21,750 cfs.

Action 4.2.1 Assumptions for CALSIM II Modeling Purposes

Action: Flows at Vernalis are assumed consistent to what was modeled by NMFS (5/15/09 CALSIM II models provided by NMFS; relevant logic merged into baselines models). In addition, Delta exports are restricted as stated above.

Minimum flow schedule for Vernalis (April 1 – May 31) is modeled in NMFS CALSIM II model as illustrated in Table A.8.

Table A. 8 Minimum Flow Required at Vernalis During April and May

New Melones index (TAF)	Minimum Flow Required at Vernalis (cfs)
<1000	No new requirements
1000 - 1,399	1,500
1,400 - 1,999	3,000
2,000 - 2,499	4,500
>2,500	6,000

In addition to prescribed minimum flow requirement at Vernalis, exports are also restricted as illustrated in Table A.9

Table A. 9 Maximum Combined CVP and SWP Export during April and May

Flows at Vernalis (cfs)	Combined CVP and SWP Export
0 - 6,000	1,500 cfs
6,000 – 21,750	4:1 (Vernalis flow : export ratio)
>21,750	Unrestricted until flood recedes below 21,570 cfs

Action 4.2.3 Old and Middle River Flow Management

Action: From January 1 through June 15, reduce exports, as necessary, to limit negative flows to -2,500 to -5,000 cfs in Old and Middle Rivers, depending on the presence of salmonids. The reverse flow will be managed within this range to reduce flows toward the pumps during periods of increased salmonid presence. Refer to NMFS BO document for the negative flow objective decision tree.

Action 4.2.3 Assumptions for CALSIM II Modeling Purposes

Action: Old and Middle River flows required in this BO are assumed to be covered by OMR flow requirements developed for actions 1 through 3 of the FWS BO actions in Appendix A-2.

Appendix B. Results of Report CalSim II Studies

The model studies selected for this report are intended to estimate current SWP delivery reliability and future SWP delivery reliability in the year 2029. Estimating current SWP delivery reliability assumes that SWP and CVP operations incorporate the reasonable and prudent alternative (RPA) actions defined in two biological opinions on the proposed long-term operations of the Central Valley Project and State Water Project. The biological opinions are the U.S. Fish and Wildlife Service's (USFWS) biological opinion released on December 15, 2008, and the National Marine Fisheries Service's (NMFS) biological opinion and conference opinion released on June 4, 2009. The USFWS' biological opinion has RPA actions to protect threatened Delta smelt. The NMFS biological opinion and conference opinion have RPA actions to protect the following federally listed species:

- Endangered Sacramento River winter-run Chinook salmon.
- Threatened Central Valley spring-run Chinook salmon.
- Threatened Central Valley steelhead.
- Threatened Southern Distinct Population Segment of North American green sturgeon.
- Southern Resident killer whale.

The RPA actions from the two biological opinions are summarized below. Details regarding how the RPA actions are incorporated into CalSim II are found in Appendices A-2 and A-3.

1. Restrict upstream flow in Old River and Middle River.
2. Implement fall X2 requirements.
3. Provide spring attraction flows in Clear Creek.
4. Implement water temperature requirements for Whiskeytown Lake releases.
5. Implement end-of-September carryover storage criteria for Shasta Lake.
6. Implement November through February Keswick Dam release schedule.
7. Base USBR's February 15 forecast for Sacramento River basin runoff on 90% probability of exceedence.
8. Implement water temperature criteria between Balls Ferry and Bend Bridge from April 15

through October 31.

9. Operate Red Bluff Diversion Dam with gates out of the water.
10. Implement Wilkins Slough minimum flow criteria in critically dry years.
11. Implement Nimbus Dam minimum release requirements.
12. Provide cold water releases to maintain suitable water temperatures for steelhead downstream of Goodwin Dam.
13. Implement minimum flow schedule at Goodwin Dam.
14. Modify Delta Cross Channel gate operations.
15. Implement San Joaquin River inflow to export ratio.

Estimating future SWP delivery reliability in 2029 assumes an altered hydrology due to climate change, sea-level rise, no new facilities or improvements to existing facilities, an increased SWP water demand, and existing institutional requirements, including the RPA actions.

As listed in Table B.1, a total of three CalSim II simulations were used in this report: one for estimating current (2009) SWP delivery reliability and two for estimating future (2029) SWP delivery reliability.

Table B. 1 Summary of CalSim II simulations used to update SWP delivery estimates

Time Frame	Climate Change Model	Greenhouse Gas Emissions Scenario
Current	None	None
Future	None	None
Future	MPI-ECHAM5[1]	A2[2]

1/ MPI ECHAM5 refers to the most recent version of ECHAM which is the Global Climate Model developed by the Max Planck Institute (MPI) for Meteorology.

2/ A2 emissions scenario assumes high growth in population, regional based economic growth, and slow technological changes, which results in significantly higher greenhouse gas emissions.

Two CalSim II simulations were needed to estimate future (2029) reliability due to the need to adjust CalSim II results to account for the climate change scenario assuming a 2050 level of emissions. The two CalSim II simulations were used to generate one sequence of future (2029) SWP deliveries which is used to describe future SWP delivery reliability in Chapter 6 of this report. This process consisted of interpolating between sequences to estimate SWP deliveries under climate change affects for 2029 instead of 2050. The A2 greenhouse gas emissions scenario assumes a 2050 level of emissions. Scenarios for 2029 were not available at the time of composing this report. A key assumption in estimating 2029 SWP delivery reliability for this report is that SWP deliveries for a CalSim II simulation which assumes 2029 SWP demands and 2029 climate change, would fall somewhere between CalSim II simulations which assume 2029 SWP demands and no climate change and 2029 SWP demands and climate change corresponding to 2050 emissions. Just where these SWP deliveries would fall is estimated in this report by interpolating between each sequence from a scenario which assumes 2050 emissions and a scenario which assumes no climate change. The interpolation is as follows:

Future (2029) annual SWP delivery = NCC + (20/41) (CC – NCC)

Where
NCC = annual SWP delivery for future, no climate change scenario
CC = annual SWP delivery for future with climate change scenario which assumes 2050 emission levels

The ratio of 20/41 corresponds to the ratio of calendar years: (2029-2009)/(2050-2009).

The key study assumptions are described in detail in Chapter 6 and Appendix A.

Study Results

The annual SWP Table A delivery amounts estimated by the three CalSim II simulations are contained in Tables B.3 through B.7. The tables show the demand level, the amount of delivery from the Delta, and percent of maximum total Table A amounts for the SWP contractors receiving water from the Delta. Of the 29 SWP contractors, 26 receive their deliveries from the Delta. The total maximum Table A amount for all SWP contractors is 4.173 maf/year. Of this amount, 4,133 taf/yr is the maximum Delta Table A amount. Also presented are the results of interpolating SWP delivery sequences which provide the information used in Chapter 6 in assessing future SWP delivery reliability. Current and future SWP deliveries are presented both in time sequence and by ranking to correspond to the data presented in the summary/highlight tables and used to generate the probability curves in Chapter 6.

These values must be interpreted within the context of the assumptions upon which they are calculated. For example, for the year 1958 in the 2029 study the annual delivery is calculated to be 3,503 taf or 85% of maximum Delta Table A (see Table B.4). This result should be stated as follows:

The SWP would deliver approximately 3,503 taf, or 85% of maximum Delta Table A, given

1. Rainfall that was similar to what it was in 1958 but modified to reflect climate change effects.
2. The level of water use in the source area is increased to the level it would be in 2029.
3. SWP facilities and operation requirements are the same as they are today with the RPA actions in effect.
4. SWP contractor demands are at their maximum Delta Table A level.

Actually, the conditional statement associated with the result for any particular year is even more complicated than this because the result is also dependent upon the rainfall that has occurred in previous years. For example, if the previous year (1957) was wet, runoff for 1958 for the same amount of rainfall would be greater than if 1957 were dry. In addition, reservoir storage for the beginning of 1958 varies depending upon the weather conditions in 1957. Thus, each year's simulation is dependent on the previous year's simulation and, hence, any year in the entire historical sequence is linked to all previous years.

Table B.2 summarizes the delivery estimates for the SWP for important dry sequences computed in the studies for current (2009) and future (2029) conditions. The percentages of maximum Table A amounts are based on current deliveries and interpolating future annual SWP Table A deliveries as previously discussed.

This information can be helpful in analyzing the delivery reliability of a specific water system that receives a portion of its water supply from the SWP. The series of data contained in Tables B.3 through B.5 are also helpful in analyzing longer periods of time that contain not only dry periods but wetter periods which can replenish water supplies.

Table B.6 presents the annual SWP Article 21 deliveries under Current (2009) Conditions and Table B.7 presents the annual SWP Article 21 deliveries under Future (2029) Conditions.

Probability distribution curves derived from the CalSim II simulations used in this report are presented in Figures B.1 and B.2 to visually show the estimated percentage of years a given annual delivery is equaled or exceeded. In this report, this value represents the probability of receiving at least a given level of delivery in any particular year. As a reference, probability distribution curves for the 2007 and 2027 studies from the 2007 State Water Project Delivery Reliability Report are presented along with the curves from the 2009 and 2029 studies in this report. SWP Table A delivery values for 25%, 50%, and 75% exceedences are shown for all scenarios in Table B.8.

Finally, the SWP Table A delivery amounts under current conditions as calculated in the 2007 SWP Delivery Reliability Report and the 2009 updated report are presented in Table B.9 to show the estimated impact on SWP Table A deliveries due to the RPA actions.

Table B. 2 SWP average and dry year Table A delivery from the Delta (in percent of maximum Table A amounts[1])

Study of Current Conditions	SWP Table A delivery from the Delta (in percent of maximum SWP Table A[1])					
	Long-term Average[2]	Single dry year 1977	2-year drought 1976-1977	4-year drought 1931-1934	6-year drought 1987-1992	6-year drought 1929-1934
Updated Studies (2009)	60%	7%	36%	34%	35%	34%
Updated Studies (2029)	60%	11%	38%	35%	32%	36%

1/ 4,133 taf/year

Table B. 3 SWP Table A Deliveries under Current (2009) Conditions
Derived values for estimating probability curve

Year	Table A demands (taf)	SWP Table A deliveries for 2009 study		Probability Curve[1]			
		(taf)	Percent of Maximum Table A[2]	Year	SWP Table A Delivery (taf)	Exceedence Frequency (%)	Percent of Maximum Table A[2]
1922	3,407	2,451	59%	1998	3,338	0%	81%
1923	3,717	2,849	69%	1974	3,267	1%	79%
1924	3,961	841	20%	1938	3,262	2%	79%
1925	3,940	1,845	45%	1996	3,247	4%	79%
1926	3,777	2,080	50%	1997	3,191	5%	77%
1927	3,543	2,680	65%	1943	3,174	6%	77%
1928	3,897	2,836	69%	1942	3,142	7%	76%
1929	3,952	1,210	29%	1999	3,140	9%	76%
1930	3,922	1,571	38%	1958	3,090	10%	75%
1931	3,971	1,255	30%	1970	3,082	11%	75%
1932	3,673	1,543	37%	1984	3,070	12%	74%
1933	3,938	1,569	38%	1982	3,054	14%	74%
1934	3,981	1,239	30%	1975	3,023	15%	73%
1935	3,697	2,412	58%	1986	3,023	16%	73%
1936	3,769	2,749	67%	1939	3,021	17%	73%
1937	3,451	2,995	72%	1953	3,013	19%	73%
1938	3,418	3,262	79%	1979	2,996	20%	72%
1939	3,673	3,021	73%	1956	2,995	21%	72%
1940	3,713	2,524	61%	1937	2,954	22%	71%
1941	3,013	2,608	63%	1952	2,927	23%	71%
1942	3,583	3,140	76%	1995	2,924	25%	71%
1943	3,632	3,174	77%	1980	2,907	26%	70%
1944	3,563	2,396	58%	1968	2,894	27%	70%
1945	3,612	2,612	63%	1985	2,875	28%	70%
1946	3,710	2,875	70%	1946	2,869	30%	69%
1947	3,954	2,780	67%	1965	2,867	31%	69%
1948	3,959	2,427	59%	2000	2,858	32%	69%
1949	3,864	2,444	59%	1923	2,855	33%	69%
1950	3,812	2,222	54%	1947	2,854	35%	69%
1951	3,779	2,671	65%	1928	2,849	36%	69%
1952	3,078	2,924	71%	1983	2,836	37%	69%
1953	3,790	3,013	73%	1969	2,811	38%	68%
1954	3,833	2,535	61%	1936	2,811	40%	68%
1955	3,761	2,095	51%	1993	2,780	41%	67%
1956	3,639	2,954	71%	1967	2,768	42%	67%
1957	3,759	2,475	60%	1966	2,749	43%	67%
1958	3,481	3,090	75%	1959	2,731	44%	66%
1959	4,055	2,544	62%	1971	2,724	46%	66%
1960	4,115	2,211	54%	1927	2,712	47%	66%
1961	4,115	2,461	60%	1951	2,692	48%	65%
1962	3,689	2,494	60%	1976	2,680	49%	65%
1963	3,634	2,569	62%	2003	2,671	51%	65%
1964	3,907	2,858	69%	1945	2,612	52%	63%
1965	3,586	2,731	66%	1941	2,608	53%	63%

1/ Percent of time at or above given value

2/ 4,133 taf/year

Table B. 3 (cont.) SWP Table A Deliveries under Current (2009) Conditions
Derived values for estimating probability curve

Year	Table A demands (taf)	SWP Table A deliveries for 2009 study (taf)	Percent of Maximum Table A[2]	Probability Curve[1] Year	Table A Delivery (taf)	Exceedence Frequency (%)	Percent of Maximum Table A[2]
1966	3,722	2,867	69%	1978	2,606	54%	63%
1967	3,439	2,768	67%	1964	2,576	56%	62%
1968	3,792	2,907	70%	2002	2,569	57%	62%
1969	3,157	2,854	69%	1981	2,544	58%	62%
1970	3,714	3,082	75%	1954	2,535	59%	61%
1971	3,837	2,712	66%	1940	2,532	60%	61%
1972	4,012	2,409	58%	1973	2,524	62%	61%
1973	3,611	2,477	60%	1957	2,494	63%	60%
1974	3,649	3,247	79%	1961	2,477	64%	60%
1975	3,720	3,023	73%	1963	2,475	65%	60%
1976	4,014	2,692	65%	1962	2,461	67%	60%
1977	3,948	301	7%	1922	2,451	68%	59%
1978	3,126	2,606	63%	1949	2,444	69%	59%
1979	3,527	3,023	73%	1972	2,427	70%	59%
1980	3,197	2,869	69%	1935	2,412	72%	58%
1981	3,834	2,532	61%	1944	2,409	73%	58%
1982	3,451	3,054	74%	1989	2,399	74%	58%
1983	3,007	2,811	68%	1994	2,396	75%	58%
1984	3,692	3,070	74%	1948	2,310	77%	56%
1985	3,753	2,894	70%	1950	2,222	78%	54%
1986	3,345	2,996	72%	1960	2,211	79%	54%
1987	3,904	1,957	47%	1926	2,095	80%	51%
1988	4,026	902	22%	1955	2,080	81%	50%
1989	4,097	2,399	58%	1987	1,957	83%	47%
1990	3,961	1,241	30%	1925	1,845	84%	45%
1991	3,957	1,102	27%	1933	1,571	85%	38%
1992	3,880	1,061	26%	1932	1,569	86%	38%
1993	3,559	2,724	66%	1930	1,543	88%	37%
1994	3,739	2,310	56%	2001	1,409	89%	34%
1995	3,451	2,927	71%	1931	1,255	90%	30%
1996	3,692	3,267	79%	1929	1,241	91%	30%
1997	3,559	3,191	77%	1992	1,239	93%	30%
1998	3,451	3,338	81%	1990	1,210	94%	29%
1999	3,692	3,142	76%	1934	1,102	95%	27%
2000	3,720	2,855	69%	1991	1,061	96%	26%
2001	3,961	1,409	34%	1988	902	98%	22%
2002	4,097	2,576	62%	1924	841	99%	20%
2003	3,720	2,811	68%	1977	301	100%	7%
Avg	3,711	2,483	60%	Avg	2,483		60%
Min	3,007	301	7%	Min	301		7%
Max	4,115	3,338	81%	Max	3,338		81%

1/ Percent of time at or above given value

2/ 4,133 taf/year

Table B. 4 SWP Table A deliveries from the Delta under Future (2029) Conditions MPI-ECHAM5 Model with A2 Emissions

Year	SWP Table A Demands (TAF)	No Climate Change		MPI-ECHAM5 model with A2 Emissions		Estimated Delivery Interpolated to 2029[1]	
		SWP Table A Delivery (taf)	Percent of Maximum SWP Table A[2]	SWP Table A Delivery (taf)	Percent of Maximum SWP Table A[2]	SWP Table A Delivery (taf)	Percent of Maximum SWP Table A[2]
1922	4,133	2,633	64%	2,488	60%	2,562	62%
1923	4,133	2,692	65%	2,469	60%	2,583	63%
1924	4,133	1,017	25%	701	17%	863	21%
1925	4,133	1,822	44%	1,606	39%	1,717	42%
1926	4,133	2,384	58%	1,860	45%	2,128	51%
1927	4,133	2,695	65%	2,866	69%	2,779	67%
1928	4,133	2,783	67%	2,736	66%	2,760	67%
1929	4,133	1,243	30%	1,663	40%	1,448	35%
1930	4,133	1,754	42%	1,663	40%	1,710	41%
1931	4,133	1,257	30%	1,174	28%	1,217	29%
1932	4,133	1,605	39%	1,579	38%	1,592	39%
1933	4,133	1,599	39%	1,600	39%	1,599	39%
1934	4,133	1,138	28%	1,500	36%	1,315	32%
1935	4,133	2,711	66%	2,508	61%	2,612	63%
1936	4,133	2,893	70%	2,531	61%	2,716	66%
1937	4,133	3,533	85%	2,905	70%	3,226	78%
1938	4,133	4,088	99%	3,906	94%	3,999	97%
1939	4,133	2,409	58%	1,587	38%	2,008	49%
1940	4,133	2,577	62%	2,525	61%	2,551	62%
1941	4,133	3,162	77%	2,746	66%	2,959	72%
1942	4,133	2,791	68%	2,725	66%	2,759	67%
1943	4,133	3,079	74%	2,770	67%	2,928	71%
1944	4,133	2,559	62%	1,952	47%	2,263	55%
1945	4,133	2,882	70%	2,882	70%	2,882	70%
1946	4,133	2,755	67%	2,458	59%	2,610	63%
1947	4,133	2,631	64%	2,033	49%	2,339	57%
1948	4,133	2,359	57%	2,509	61%	2,432	59%
1949	4,133	2,454	59%	2,208	53%	2,334	56%
1950	4,133	2,312	56%	2,537	61%	2,422	59%
1951	4,133	2,964	72%	2,791	68%	2,880	70%
1952	4,133	3,724	90%	2,982	72%	3,362	81%
1953	4,133	2,408	58%	2,726	66%	2,563	62%
1954	4,133	2,368	57%	2,491	60%	2,428	59%
1955	4,133	2,106	51%	1,421	34%	1,772	43%
1956	4,133	3,347	81%	2,965	72%	3,161	76%
1957	4,133	2,484	60%	2,383	58%	2,435	59%
1958	4,133	3,656	88%	3,343	81%	3,503	85%
1959	4,133	2,089	51%	2,153	52%	2,120	51%
1960	4,133	2,170	53%	1,694	41%	1,938	47%
1961	4,133	2,556	62%	1,668	40%	2,123	51%
1962	4,133	2,525	61%	2,849	69%	2,683	65%
1963	4,133	2,435	59%	2,532	61%	2,483	60%
1964	4,133	2,526	61%	2,618	63%	2,571	62%
1965	4,133	2,707	65%	2,732	66%	2,719	66%

1/ As described in Appendix B

2/ 4,133 taf/year

Table B. 4 (cont.) SWP Table A deliveries from the Delta under Future (2029) Conditions MPI-ECHAM5 Model with A2 Emissions

Year	Table A Demand (TAF)	No Climate Change		MPI-ECHAM5 model with A2 Emissions		Estimated Delivery Interpolated to 2029[1]	
		Table A Delivery (taf)	Percent of Maximum Table A[2]	Table A Delivery (taf)	Percent of Maximum Table A[2]	Table A Delivery (taf)	Percent of Maximum Table A[2]
1966	4,133	2,765	67%	2,502	61%	2,637	64%
1967	4,133	3,731	90%	2,660	64%	3,208	78%
1968	4,133	2,234	54%	2,705	65%	2,464	60%
1969	4,133	3,862	93%	3,919	95%	3,890	94%
1970	4,133	3,130	76%	2,701	65%	2,920	71%
1971	4,133	2,707	65%	2,336	57%	2,526	61%
1972	4,133	2,349	57%	2,433	59%	2,390	58%
1973	4,133	2,691	65%	2,530	61%	2,612	63%
1974	4,133	3,354	81%	2,654	64%	3,012	73%
1975	4,133	2,885	70%	2,811	68%	2,849	69%
1976	4,133	2,560	62%	2,812	68%	2,683	65%
1977	4,133	226	5%	701	17%	458	11%
1978	4,133	2,962	72%	3,039	74%	3,000	73%
1979	4,133	2,976	72%	2,815	68%	2,897	70%
1980	4,133	3,516	85%	3,143	76%	3,334	81%
1981	4,133	2,472	60%	2,701	65%	2,583	63%
1982	4,133	3,861	93%	3,525	85%	3,697	89%
1983	4,133	3,950	96%	4,031	98%	3,990	97%
1984	4,133	3,071	74%	3,065	74%	3,068	74%
1985	4,133	2,884	70%	2,731	66%	2,810	68%
1986	4,133	3,514	85%	2,762	67%	3,147	76%
1987	4,133	1,302	32%	1,139	28%	1,223	30%
1988	4,133	927	22%	1,537	37%	1,224	30%
1989	4,133	2,665	64%	2,028	49%	2,355	57%
1990	4,133	806	19%	986	24%	894	22%
1991	4,133	986	24%	1,344	33%	1,161	28%
1992	4,133	1,192	29%	787	19%	994	24%
1993	4,133	2,806	68%	2,424	59%	2,619	63%
1994	4,133	2,356	57%	2,536	61%	2,444	59%
1995	4,133	3,304	80%	3,124	76%	3,216	78%
1996	4,133	2,890	70%	2,617	63%	2,757	67%
1997	4,133	3,503	85%	2,939	71%	3,228	78%
1998	4,133	3,271	79%	3,549	86%	3,407	82%
1999	4,133	3,046	74%	2,824	68%	2,938	71%
2000	4,133	2,767	67%	2,715	66%	2,742	66%
2001	4,133	1,491	36%	1,199	29%	1,348	33%
2002	4,133	2,827	68%	2,475	60%	2,656	64%
2003	4,133	2,583	63%	2,424	59%	2,506	61%
Avg	4,133	2,565	62%	2,406	58%	2,487	60%
Min	4,133	226	5%	701	17%	458	11%
Max	4,133	4,088	99%	4,031	98%	3,999	97%

1/ As described in Appendix B

2/ 4,133 taf/year

Table B. 5 SWP Table A deliveries from the Delta under Future (2029) Conditions
Derived values for estimating probability curve

Ranking of calculated Table A deliveries for probability curve				Ranking of calculated Table A deliveries for probability curve			
Exceedence Frequency (%)	Year	Table A Delivery (taf)	Percent of Maximum Table A[1]	Exceedence Frequency (%)	Year	Table A Delivery (taf)	Percent of Maximum Table A[1]
0%	1983	3,999	97%	54%	1964	2,563	62%
1%	1938	3,990	97%	56%	1940	2,562	62%
2%	1969	3,890	94%	57%	1953	2,551	62%
4%	1982	3,697	89%	58%	1971	2,526	61%
5%	1998	3,503	85%	59%	1993	2,506	61%
6%	1958	3,407	82%	60%	1963	2,483	60%
7%	1980	3,362	81%	62%	1948	2,464	60%
9%	1952	3,334	81%	63%	1957	2,444	59%
10%	1995	3,228	78%	64%	1954	2,435	59%
11%	1997	3,226	78%	65%	2003	2,432	59%
12%	1937	3,216	78%	67%	1968	2,428	59%
14%	1956	3,208	78%	68%	1972	2,422	59%
15%	1967	3,161	76%	69%	1994	2,390	58%
16%	1986	3,147	76%	70%	1947	2,355	57%
17%	1984	3,068	74%	72%	1950	2,339	57%
19%	1974	3,012	73%	73%	1944	2,334	56%
20%	1941	3,000	73%	74%	1949	2,263	55%
21%	1951	2,959	72%	75%	1961	2,128	51%
22%	1978	2,938	71%	77%	1959	2,123	51%
23%	1970	2,928	71%	78%	1939	2,120	51%
25%	1943	2,920	71%	79%	1926	2,008	49%
26%	1999	2,897	70%	80%	1960	1,938	47%
27%	1945	2,882	70%	81%	1925	1,772	43%
28%	1979	2,880	70%	83%	1955	1,717	42%
30%	1975	2,849	69%	84%	1930	1,710	41%
31%	1985	2,810	68%	85%	1933	1,599	39%
32%	1927	2,779	67%	86%	1932	1,592	39%
33%	1942	2,760	67%	88%	1929	1,448	35%
35%	1928	2,759	67%	89%	2001	1,348	33%
36%	1996	2,757	67%	90%	1934	1,315	32%
37%	1965	2,742	66%	91%	1988	1,224	30%
38%	2000	2,719	66%	93%	1931	1,223	30%
40%	1976	2,716	66%	94%	1987	1,217	29%
41%	2002	2,683	65%	95%	1992	1,161	28%
42%	1962	2,683	65%	96%	1991	994	24%
43%	1935	2,656	64%	98%	1924	894	22%
44%	1946	2,637	64%	99%	1990	863	21%
46%	1973	2,619	63%	100%	1977	458	11%
47%	1936	2,612	63%	Avg		2,487	60%
48%	1981	2,612	63%	Min		458	11%
49%	1923	2,610	63%	Max		3,999	97%
51%	1966	2,583	63%				
52%	1989	2,583	63%				
53%	1922	2,571	62%				

1/ 4,133 taf/year

Table B. 6 SWP Article 21 deliveries under Current (2009) Conditions

Year	Article 21 Demand (taf)	Article 21 Delivery (taf)	Year	Article 21 Demand (taf)	Article 21 Delivery (taf)
1922	3,368	16	1966	3,368	11
1923	3,368	12	1967	3,368	18
1924	3,368	56	1968	2,726	8
1925	3,368	436	1969	1,442	191
1926	3,368	7	1970	3,368	238
1927	3,368	67	1971	3,368	9
1928	3,368	8	1972	3,368	20
1929	3,368	10	1973	3,368	16
1930	3,368	10	1974	3,368	12
1931	3,368	8	1975	3,368	11
1932	3,368	156	1976	3,368	9
1933	3,368	393	1977	2,726	2
1934	3,368	8	1978	1,442	2
1935	3,368	14	1979	2,726	124
1936	3,368	12	1980	1,442	189
1937	3,368	184	1981	3,368	9
1938	3,368	443	1982	2,726	463
1939	3,368	2	1983	1,442	853
1940	2,726	14	1984	3,368	507
1941	1,442	2	1985	2,726	2
1942	3,368	6	1986	1,442	140
1943	3,368	10	1987	3,368	9
1944	3,368	7	1988	3,368	10
1945	3,368	288	1989	3,368	10
1946	3,368	14	1990	3,368	10
1947	3,368	8	1991	3,368	12
1948	3,368	12	1992	3,368	10
1949	3,368	12	1993	3,368	14
1950	3,368	17	1994	2,726	6
1951	2,726	485	1995	1,442	2
1952	1,442	50	1996	3,368	6
1953	3,368	8	1997	2,726	47
1954	3,368	14	1998	1,442	201
1955	3,368	14	1999	3,368	123
1956	3,368	704	2000	3,368	8
1957	3,368	12	2001	3,368	14
1958	3,368	18	2002	3,368	25
1959	3,368	4	2003	3,368	16
1960	3,368	12	Avg	3,086	85
1961	3,368	10	Min	1,442	2
1962	3,368	10	Max	3,368	853
1963	3,368	18			
1964	3,368	10			
1965	3,368	16			

Table B. 7 SWP Article 21 deliveries under Future (2029) Conditions MPI-ECHAM5 with A2 emissions

Year	Article 21 Demand (taf)	Article 21 Deliveries: No Climate Change (taf)	Article 21 Deliveries: MPI-ECHAM5 A2 emissions (taf)	Article 21 Deliveries: Interpolated to 2029[1] (taf)	Year	Article 21 Demand (taf)	Article 21 Deliveries: No Climate Change (taf)	Article 21 Deliveries: MPI-ECHAM5 A2 emissions (taf)	Article 21 Deliveries: Interpolated to 2029[1] (taf)
1922	3,368	16	16	16	1966	3,368	16	15	15
1923	3,368	15	16	15	1967	3,368	12	18	15
1924	3,368	22	72	46	1968	2,726	13	11	13
1925	3,368	449	431	440	1969	1,442	38	34	36
1926	3,368	15	8	11	1970	3,368	102	16	60
1927	3,368	14	14	14	1971	3,368	14	18	16
1928	3,368	12	10	11	1972	3,368	20	18	19
1929	3,368	10	324	163	1973	3,368	16	22	19
1930	3,368	10	10	10	1974	3,368	15	14	15
1931	3,368	8	8	8	1975	3,368	13	18	16
1932	3,368	401	336	369	1976	3,368	12	12	12
1933	3,368	431	21	231	1977	2,726	2	4	3
1934	3,368	10	129	68	1978	1,442	2	135	67
1935	3,368	10	10	10	1979	2,726	12	10	11
1936	3,368	12	17	15	1980	1,442	32	35	34
1937	3,368	98	114	106	1981	3,368	15	12	14
1938	3,368	9	13	11	1982	2,726	187	13	102
1939	3,368	8	8	8	1983	1,442	549	468	509
1940	2,726	14	12	13	1984	3,368	547	530	539
1941	1,442	2	2	2	1985	2,726	8	10	9
1942	3,368	14	18	16	1986	1,442	94	2	49
1943	3,368	12	16	14	1987	3,368	12	107	58
1944	3,368	10	12	11	1988	3,368	10	125	66
1945	3,368	265	240	253	1989	3,368	6	6	6
1946	3,368	18	18	18	1990	3,368	11	12	11
1947	3,368	10	10	10	1991	3,368	12	14	13
1948	3,368	10	8	9	1992	3,368	10	8	9
1949	3,368	10	17	13	1993	3,368	12	19	16
1950	3,368	18	19	19	1994	2,726	10	8	9
1951	2,726	364	24	198	1995	1,442	1	2	2
1952	1,442	1	2	1	1996	3,368	14	16	15
1953	3,368	16	17	17	1997	2,726	79	156	117
1954	3,368	14	12	13	1998	1,442	24	2	13
1955	3,368	13	12	13	1999	3,368	250	14	135
1956	3,368	383	601	490	2000	3,368	14	12	13
1957	3,368	17	19	18	2001	3,368	14	14	14
1958	3,368	9	32	20	2002	3,368	12	43	27
1959	3,368	10	12	11	2003	3,368	16	12	14
1960	3,368	10	12	11	Avg	3,086	62	58	60
1961	3,368	8	9	8	Min	1,442	1	2	1
1962	3,368	8	8	8	Max	3,368	549	601	539
1963	3,368	19	15	17					
1964	3,368	16	12	14					
1965	3,368	15	14	14					

1/ As described in Appendix B

Figure B. 1 SWP Table A delivery probability under Current Conditions

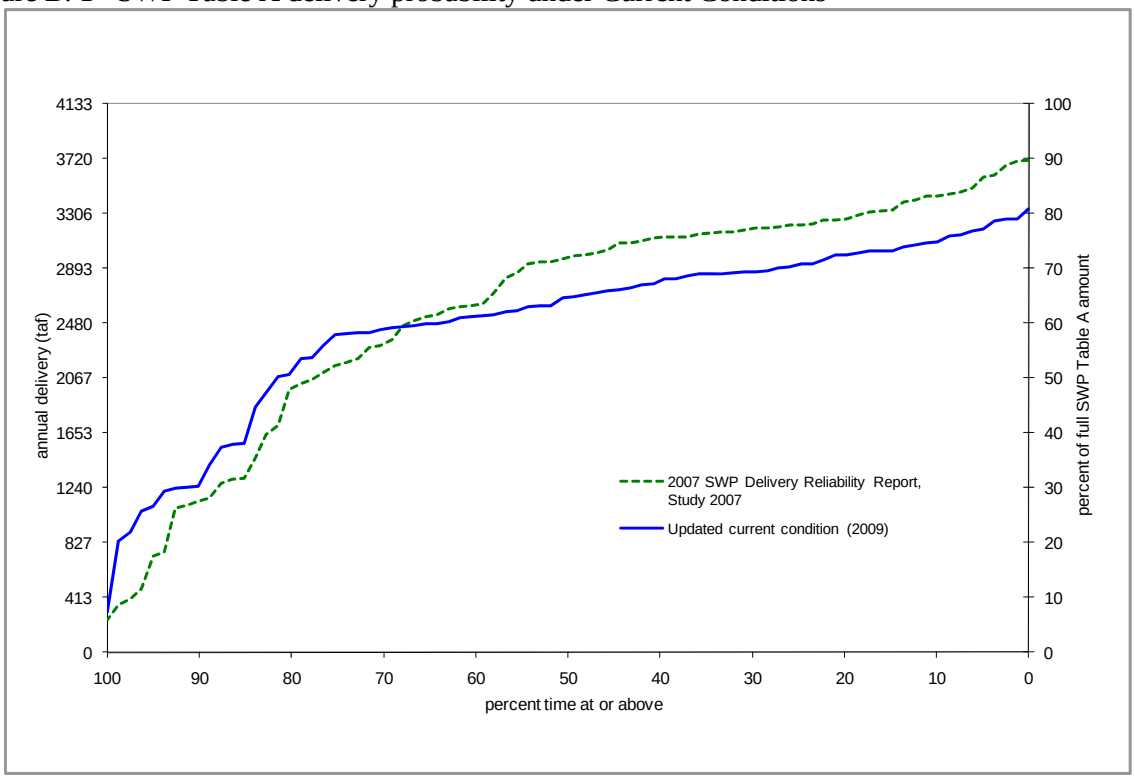


Figure B. 2 SWP Table A delivery probability under Future Conditions

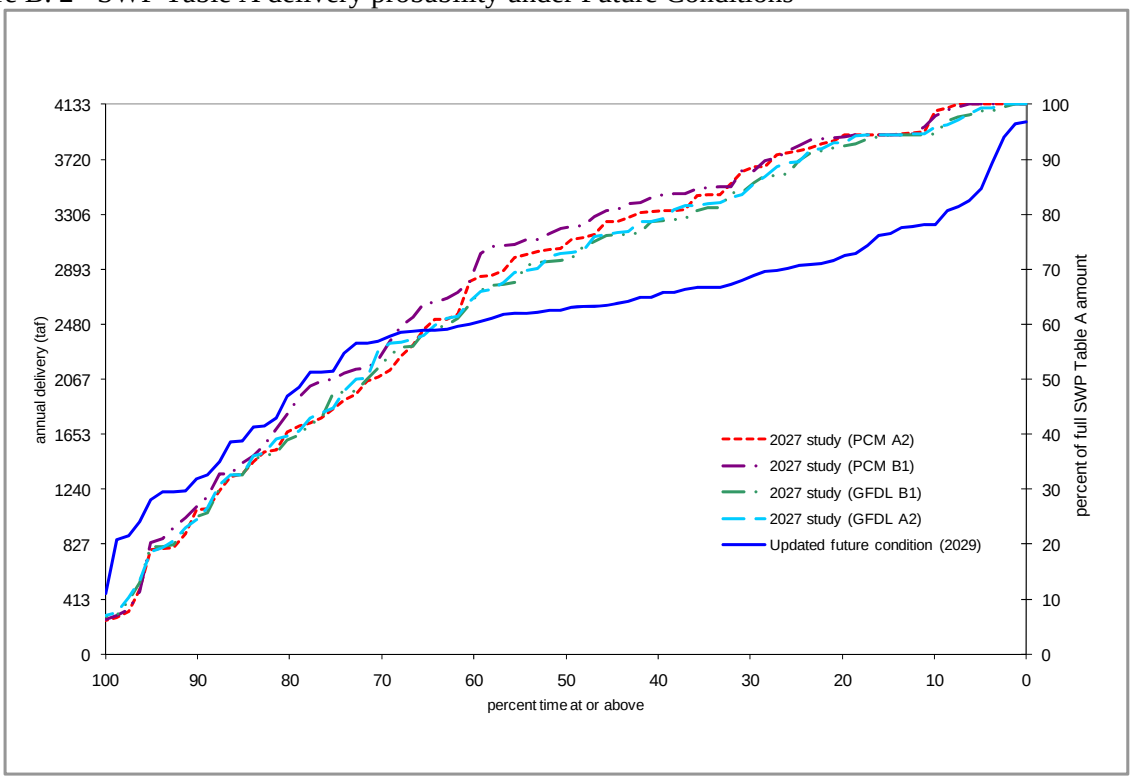


Table B. 8 Highlighted SWP Table A delivery percent exceedence values under Current and Future Conditions

	Exceedence values (taf)		
	25%	50%	75%
2007 SWP Delivery Reliability Report			
Current (2007)	3218	2976	2168
Future (2027)			
GFDL + A2	3703	3017	1883
GFDL + B1	3686	2967	1966
PCM + A2	3782	3084	1860
PCM + B1	3813	3205	2077
Updated studies			
Current (2009)	2920	2675	2397
Future (2029)	2915	2596	2137

1/ Based upon SWP Table A deliveries that have been interpolated between the "no climate change" scenario and the climate change scenarios determined by climate change model (GFDL or PCM) and greenhouse gas emissions scenario (A2 or B1). SWP Table A deliveries for two scenarios of Old and Middle River flow targets were then averaged.

2/ Based upon SWP Table A deliveries that have been interpolated between the "no climate change" scenario and the climate change scenario determined by climate change model MPI-ECHAM5 and greenhouse gas emissions scenario A2.

Table B. 9 Comparing SWP Table A deliveries under Current Conditions from updated studies to deliveries from 2007 Report

Year	SWP Table A Deliveries Study 2007 (2007 Report) (taf)	Updated Study 2009 (taf)	Change in Deliveries (taf)	Year	SWP Table A Deliveries Study 2007 (2007 Report) (taf)	Updated Study 2009 (taf)	Change in Deliveries (taf)
1922	3,674	2,451	-1,223	1963	3,406	2,569	-837
1923	3,159	2,849	-310	1964	2,211	2,858	648
1924	400	841	441	1965	2,861	2,731	-130
1925	1,644	1,845	202	1966	3,265	2,867	-399
1926	2,186	2,080	-107	1967	2,990	2,768	-222
1927	3,699	2,680	-1,019	1968	3,297	2,907	-390
1928	2,059	2,836	777	1969	2,626	2,854	228
1929	753	1,210	457	1970	3,257	3,082	-176
1930	2,028	1,571	-457	1971	3,317	2,712	-604
1931	1,105	1,255	150	1972	1,707	2,409	701
1932	1,305	1,543	238	1973	3,085	2,477	-608
1933	1,981	1,569	-412	1974	3,184	3,247	63
1934	1,315	1,239	-75	1975	3,218	3,023	-195
1935	3,334	2,412	-923	1976	2,604	2,692	88
1936	3,124	2,749	-374	1977	243	301	58
1937	3,219	2,995	-223	1978	3,599	2,606	-993
1938	3,394	3,262	-133	1979	3,128	3,023	-106
1939	3,256	3,021	-235	1980	2,710	2,869	159
1940	3,165	2,524	-641	1981	3,128	2,532	-596
1941	2,526	2,608	82	1982	2,940	3,054	114
1942	3,167	3,140	-27	1983	2,497	2,811	314
1943	3,154	3,174	20	1984	3,227	3,070	-157
1944	2,930	2,396	-533	1985	3,198	2,894	-304
1945	3,085	2,612	-472	1986	2,294	2,996	701
1946	3,199	2,875	-324	1987	2,825	1,957	-868
1947	2,314	2,780	466	1988	477	902	426
1948	2,609	2,427	-182	1989	3,130	2,399	-732
1949	1,271	2,444	1,173	1990	360	1,241	882
1950	2,462	2,222	-240	1991	729	1,102	373
1951	3,497	2,671	-827	1992	1,087	1,061	-26
1952	2,585	2,924	339	1993	3,711	2,724	-987
1953	3,323	3,013	-310	1994	2,105	2,310	206
1954	3,201	2,535	-667	1995	2,993	2,927	-66
1955	1,137	2,095	958	1996	3,440	3,267	-172
1956	3,581	2,954	-627	1997	3,101	3,191	90
1957	2,545	2,475	-70	1998	3,008	3,338	330
1958	3,030	3,090	60	1999	3,439	3,142	-297
1959	3,465	2,544	-921	2000	3,451	2,855	-596
1960	1,460	2,211	751	2001	1,164	1,409	245
1961	2,357	2,461	104	2002	2,162	2,576	414
1962	2,962	2,494	-467	2003	2,943	2,811	-133

Appendix C.
State Water Project
Table A Amounts

The contracts between the DWR and the 29 SWP water contractors define the terms and conditions governing the water delivery and cost repayment for the SWP. Table A is an exhibit to these contracts. Comprehension of Table A is important in understanding the information in this report. To understand the table, it is necessary to understand how the contracts work.

All water-supply related costs of the SWP are paid by the contractors, and Table A serves as a basis for allocating some of the costs among the contractors. In addition, Table A plays a key role in the annual allocation of available supply among contractors. When the SWP was being planned, the amount of water projected to be available for delivery to the contractors was 4,173 thousand acre-feet (taf) per year. This was referred to as the maximum project yield, and it was recognized that in some years the project would be unable to deliver that amount and in other years project supply could exceed that amount. This amount was used as the basis for apportioning available supply to each contractor and as a factor in calculating each contractor's share of the project's costs. This apportionment is accomplished by Table A in each contract. Table A lists by year and acre-feet the portion of the 4,173 taf deliverable to each contractor. Other contract provisions permit changes to an individual contractor's Table A under special circumstances. The total of the maximums in all the contracts now equals 4,173 taf.

A copy of the consolidated Table A from all the contracts follows this explanation. The amounts listed in Table A cannot be viewed as an indication of the SWP water delivery reliability, nor should these amounts be used to support an expectation that a certain amount of water will be delivered to a contractor in any particular time span. Table A is simply a tool for apportioning available supply and cost obligations under the contract. In this report, reference to "Table A amounts" means the amounts listed in Table A. Contractors also receive other classifications of water from the project, as distinguished from Table A (for example, Article 21 water, and turnback pool water). These other contract provisions are discussed in Appendix D.

Table C. 1 Maximum annual SWP Table A amounts (acre-feet)

Contractor	**Maximum SWP Table A**
NORTH BAY AREA	
Napa County FC&WCD	29,025
Solano County WA	47,756
Subtotal	*76,781*
SOUTH BAY AREA	
Alameda County FC&WCD, Zone 7	80,619
Alameda County WD	42,000
Santa Clara Valley WD	100,000
Subtotal	*222,619*
SAN JOAQUIN VALLEY AREA	
Oak Flat WD	5,700
County of Kings	9,305
Dudley Ridge WD	57,343
Empire West Side ID	3,000
Kern County WA	998,730
Tulare Lake Basin WSD	95,922
Subtotal	*1,170,000*
CENTRAL COASTAL AREA	
San Luis Obispo County FC&WCD	25,000
Santa Barbara County FC&WCD	45,486
Subtotal	*70,486*
SOUTHERN CALIFORNIA AREA	
Antelope Valley-East Kern WA	141,400
Castaic Lake WA	95,200
Coachella Valley WD	121,100
Crestline-Lake Arrowhead WA	5,800
Desert WA	50,000
Littlerock Creek ID	2,300
Mojave WA	75,800
Metropolitan WDSC	1,911,500
Palmdale WD	21,300
San Bernardino Valley MWD	102,600
San Gabriel Valley MWD	28,800
San Gorgonio Pass WA	17,300
Ventura County FCD	20,000
Subtotal	*2,593,100*
DELTA DELIVERY SUBTOTAL	*4,132,986*
FEATHER RIVER AREA	
County of Butte	27,500
Plumas County FC&WCD	2,700
City of Yuba City	9,600
Subtotal	*39,800*
GRAND TOTAL	**4,172,786**

Appendix D. Recent State Water Project Deliveries

SWP Contract Water Types

The SWP contracts define several classifications of water available for delivery to contractors under specific circumstances. All classifications are considered “project” water. Many contractors make frequent use of these additional water types to increase or decrease the amount available to them under Table A.

Table A Water

Each contract’s Table A is the amount in acre-feet that is used to determine the portion of available supply to be delivered to that contractor. Table A water is water delivered according to this apportionment methodology and is given first priority for delivery.

Article 21 Water

Article 21 of the contracts permits delivery of water excess to delivery of Table A and some other water types to those contractors requesting it. It is available under specific conditions discussed in Chapter 5. Article 21 water is apportioned to those contractors requesting it in the same proportion as their Table A.

Turnback Pool Water

Contractors may choose to offer their allocated Table A water excess to their needs to other contractors through two pools in February and March. Contributing contractors receive a reduction in charges, and taking contractors pay extra.

Carryover Water

Pursuant to the long-term water supply contracts, contractors have the opportunity to carry over a portion of their allocated water approved for delivery in the current year for delivery during the next year. Contractors can carry over water under Article 56C with advanced notice when they submit their initial request for Table A water, or within the last three months of the delivery year, under Article 12E for various reasons, including local wet conditions and exchange and transfer arrangements. The carryover program

was designed to encourage the most effective and beneficial use of water and to avoid obligating the contractors to use or lose the water by December 31 of each year. The water supply contracts state the criteria of carrying over Table A water from one year to the next. Normally, carryover water is water that has been exported during the year, has not been delivered to the contractor during that year, and has remained stored in the SWP share of San Luis Reservoir to be delivered during the following year. Storage for carryover water no longer becomes available to the contractors if it interferes with storage of SWP water for project needs.

Updated Historical Deliveries

Table D.1 through D.10 list annual historical deliveries by various water classifications for each contractor for 1999 through 2008. Similar delivery tables for years 1997 through 2006 are included in the *State Water Project Delivery Reliability Report 2007*.

Table D. 1 Historical State Water Project Deliveries: 1999
Sacramento River Index=1, Year Type=Wet

	Table A	Article 21	Turnback	Carryover	Total
County of Butte	286				286
City of Yuba City	1,096				1,096
Napa County FC&WCD	4,550	754			5,304
Solano County WA	37,753				37,753
Alameda County FC&WCD, Zone 7	46,000	2,910			48,910
Alameda County WD	34,871	2,781			37,652
Santa Clara Valley WD	67,465	15,480			82,945
Oak Flat WD	4,871				4,871
County of Kings	4,000				4,000
Dudley Ridge WD	51,870	4,990	6,566		63,426
Empire West Side ID	3,000	176			3,176
Kern County WA	1,077,755	58,241	42,154		1,178,150
Tulare Lake Basin WSD	118,500	49,898	121,337		289,735
San Luis Obispo County FC&WCD	3,743				3,743
Santa Barbara County FC&WCD	20,137				20,137
Antelope Valley-East Kern WA	69,073				69,073
Castaic Lake WA (+Rch 31A, 5 & 7)	32,899				32,899
Coachella Valley WD	23,100		27,380		50,480
Crestline-Lake Arrowhead WA	1,132				1,132
Desert WA	38,100		20,000		58,100
Littlerock Creek ID	342				342
Mojave WA	5,144				5,144
Metropolitan WDSC	829,777	22,840			852,617
Palmdale WD	13,278				13,278
San Bernardino Valley MWD	12,874				12,874
San Gabriel Valley MWD	18,000				18,000
Ventura County FCD	1,850				1,850
Totals	**2,521,466**	**158,070**	**217,437**	**0**	**2,896,973**
Total South of Delta	**2,520,084**	**158,070**	**217,437**	**0**	**2,895,591**

Table D. 2 Historical State Water Project Deliveries: 2000
Sacramento River Index=2, Year Type=Above Normal

	Table A	Article 21	Turnback	Carryover	Total
County of Butte	586				586
City of Yuba City	901				901
Napa County FC&WCD	3,136	297		1,525	4,958
Solano County WA	32,882	1,040		1,417	35,339
Alameda County FC&WCD, Zone 7	53,877	3,740			57,617
Alameda County WD	33,598	2,380			35,978
Santa Clara Valley WD	70,433	18,381		13,174	101,988
Oak Flat WD	4,494			14	4,508
County of Kings	3,600				3,600
Dudley Ridge WD	38,673	7,454	12,193	2,884	61,204
Empire West Side ID	1,271	528			1,799
Kern County WA	825,856	78,908	233,202	13,193	1,151,159
Tulare Lake Basin WSD	98,595	56,818	27,073	15,827	198,313
San Luis Obispo County FC&WCD	3,962				3,962
Santa Barbara County FC&WCD	22,741				22,741
Antelope Valley-East Kern WA	83,577				83,577
Castaic Lake WA (+Rch 31A, 5 & 7)	40,680				40,680
Coachella Valley WD	20,790	17,820	3,713		42,323
Crestline-Lake Arrowhead WA	1,194				1,194
Desert WA	34,290	17,820	6,124		58,234
Mojave WA	9,135				9,135
Metropolitan WDSC	1,273,729	103,124		169,529	1,546,382
Palmdale WD	8,221			839	9,060
San Bernardino Valley MWD	18,399				18,399
San Gabriel Valley MWD	14,000	475			14,475
Ventura County FCD	4,050				4,050
Totals	**2,702,670**	**308,785**	**282,305**	**218,402**	**3,512,162**
Total South of Delta	**2,701,183**	**308,785**	**282,305**	**218,402**	**3,510,675**

Table D. 3 Historical State Water Project Deliveries: 2001
Sacramento River Index=4, Year Type=Dry

	Table A	Article 21	Turnback	Carryover	Total
County of Butte	513				513
City of Yuba City	1,065				1,065
Napa County FC&WCD	4,293	996	82	1,723	7,094
Solano County WA	17,756	2,304		1,021	21,081
Alameda County FC&WCD, Zone 7	22,307		308	5,990	28,605
Alameda County WD	13,695	10	107	4,192	18,004
Santa Clara Valley WD	35,689			12,233	47,922
Oak Flat WD	2,089		22	101	2,212
County of Kings	1,560				1,560
Dudley Ridge WD	18,467	933	347	6,815	26,562
Empire West Side ID		253		1,107	1,360
Kern County WA	363,204	23,233	6,502	92,052	484,991
Tulare Lake Basin WSD	40,830	8,755	769	7,889	58,243
San Luis Obispo County FC&WCD	4,184		99		4,283
Santa Barbara County FC&WCD	14,285	396	296		14,977
Antelope Valley-East Kern WA	45,071		899		45,970
Castaic Lake WA (+Rch 31A, 5 & 7)	30,471	850	618		31,939
Coachella Valley WD	9,009		91		9,100
Crestline-Lake Arrowhead WA	1,057				1,057
Desert WA	14,859		151		15,010
Mojave WA	4,433				4,433
Metropolitan WDSC	686,545	10,415	7,949	200,000	904,909
Palmdale WD	8,170			2,257	10,427
San Bernardino Valley MWD	26,488				26,488
San Gabriel Valley MWD	6,534				6,534
Ventura County FCD	1,850				1,850
Totals	**1,374,424**	**48,145**	**18,240**	**335,380**	**1,776,189**
Total South of Delta	**1,372,846**	**48,145**	**18,240**	**335,380**	**1,774,611**

Table D. 4 Historical State Water Project Deliveries: 2002
Sacramento River Index=4, Year Type=Dry

	Table A	Article 21	Turnback	Carryover	Total
County of Butte	419				419
City of Yuba City	1,181				1,181
Napa County FC&WCD	2,022	827	283	3,743	6,875
Solano County WA	28,223	2,242			30,465
Alameda County FC&WCD, Zone 7	40,707	1,484	556	8,113	50,860
Alameda County WD	24,250	83	862	2,331	27,526
Santa Clara Valley WD	55,896	202	2,053	3,311	61,462
Oak Flat WD	3,841	50	76	134	4,101
County of Kings	2,800		54		2,854
Dudley Ridge WD	38,688	1,861	1,177	1,994	43,720
Empire West Side ID	1,278	26		101	1,405
Kern County WA	670,884	21,951	20,543	15,680	729,058
Tulare Lake Basin WSD	73,785	3,749	2,289	5,385	85,208
San Luis Obispo County FC&WCD	4,355				4,355
Santa Barbara County FC&WCD	24,166	436	324	3,455	28,381
Antelope Valley-East Kern WA	53,907		1,008	3,256	58,171
Castaic Lake WA (+Rch 31A, 5 & 7)	61,880	280		6,657	68,817
Coachella Valley WD	16,170	111	474		16,755
Crestline-Lake Arrowhead WA	2,189				2,189
Desert WA	26,670	189	781		27,640
Mojave WA	4,346				4,346
Metropolitan WDSC	1,273,205	9,624	14,335	97,940	1,395,104
Palmdale WD	8,359		437		8,796
San Bernardino Valley MWD	68,268			3,801	72,069
San Gabriel Valley MWD	18,353			4,698	23,051
Ventura County FCD	4,998				4,998
Totals	**2,510,840**	**43,115**	**45,252**	**160,599**	**2,759,806**
Total South of Delta	**2,509,240**	**43,115**	**45,252**	**160,599**	**2,758,206**

Table D. 5 Historical State Water Project Deliveries: 2003
Sacramento River Index=2, Year Type=Above Normal

	Table A	Article 21	Turnback	Carryover	Total
County of Butte	551				551
City of Yuba City	1,324				1,324
Napa County FC&WCD	6,026	376	180	1,055	7,637
Solano County WA	25,135	2,280		1,918	29,333
Alameda County FC&WCD, Zone 7	30,695		656	13,099	44,450
Alameda County WD	31,086		354	5,150	36,590
Santa Clara Valley WD	90,620	936	841	14,104	106,501
Oak Flat WD	4,059	19	48	140	4,266
County of Kings	3,600	58	34		3,692
Dudley Ridge WD	49,723	1,928	482	1,452	53,585
Empire West Side ID	1,074	175		187	1,436
Kern County WA	841,697	27,891	8,419	22,380	900,387
Tulare Lake Basin WSD	94,376	6,243	938	4,284	105,841
San Luis Obispo County FC&WCD	4,417	36			4,453
Santa Barbara County FC&WCD	24,312	339	43	2,274	26,968
Antelope Valley-East Kern WA	52,730		250	7,049	60,029
Castaic Lake WA (+Rch 31A, 5 & 7)	49,895	991	90	4,760	55,736
Coachella Valley WD	14,045	204	194		14,443
Crestline-Lake Arrowhead WA	1,563				1,563
Desert WA	23,168	330	321		23,819
Mojave WA	10,907			3,528	14,435
Metropolitan WDSC	1,550,356	17,622	16,920	134,845	1,719,743
Palmdale WD	9,701			1,846	11,547
San Bernardino Valley MWD	25,371	200		1,844	27,415
San Gabriel Valley MWD	13,034	200			13,234
San Gorgonio Pass WA	116				116
Ventura County FCD	5,000				5,000
Totals	**2,964,581**	**59,828**	**29,770**	**219,915**	**3,274,094**
Total South of Delta	**2,962,706**	**59,828**	**29,770**	**219,915**	**3,272,219**

Table D. 6 Historical State Water Project Deliveries: 2004
Sacramento River Index=3, Year Type=Below Normal

	Table A	Article 21	Turnback	Carryover	Total
County of Butte	1,440				1,440
City of Yuba City	1,434				1,434
Napa County FC&WCD	5,030	1,450	52	1,602	8,134
Solano County WA	17,991	7,787		47	25,825
Alameda County FC&WCD, Zone 7	39,898			11,466	51,364
Alameda County WD	20,956		214	6,714	27,884
Santa Clara Valley WD	52,867	2,983	508		56,358
Oak Flat WD	4,324		29	276	4,629
County of Kings	5,850	3,157	46		9,053
Dudley Ridge WD	36,377	7,393	291	2,185	46,246
Empire West Side ID	1,310	626		1,626	3,562
Kern County WA	640,190	86,513	5,075	40,120	771,898
Tulare Lake Basin WSD	58,575	15,299	489	5,638	80,001
San Luis Obispo County FC&WCD	4,096	69			4,165
Santa Barbara County FC&WCD	29,566		122		29,688
Antelope Valley-East Kern WA	50,532			9,199	59,731
Castaic Lake WA (+Rch 31A, 5 & 7)	46,358	1,618		35,785	83,761
Coachella Valley WD	8,631		89	6,745	15,465
Crestline-Lake Arrowhead WA	2,006				2,006
Desert WA	9,966		102	11,122	21,190
Mojave WA	11,176				11,176
Metropolitan WDSC	1,195,807	91,601	10,223	215,000	1,512,631
Palmdale WD	10,549			1,613	12,162
San Bernardino Valley MWD	35,522			20,631	56,153
San Gabriel Valley MWD	15,600				15,600
San Gorgonio Pass WA	841				841
Ventura County FCD	5,250				5,250
Totals	**2,312,142**	**218,496**	**17,240**	**369,769**	**2,917,647**
Total South of Delta	**2,309,268**	**218,496**	**17,240**	**369,769**	**2,914,773**

Table D. 7 Historical State Water Project Deliveries: 2005
Sacramento River Index=2, Year Type=Above Normal

	Table A	Article 21	Turnback	Carryover	Total
County of Butte	527				527
City of Yuba City	1,894				1,894
Napa County FC&WCD	5,322	606		1,741	7,669
Solano County WA	24,515	10,421		83	35,019
Alameda County FC&WCD, Zone 7	38,388		275	7,849	46,512
Alameda County WD	36,469	846	943	6,341	44,599
Santa Clara Valley WD	89,476	6,298	342	11,899	108,015
Oak Flat WD	4,067		127		4,194
County of Kings	8,100	11,504	202		19,806
Dudley Ridge WD	51,609	28,197	1,286	821	81,913
Empire West Side ID	1,448	1,799		587	3,834
Kern County WA	893,439	453,078	22,397	9,851	1,378,765
Tulare Lake Basin WSD	86,604	47,267	2,158	3,973	140,002
San Luis Obispo County FC&WCD	4,006	245			4,251
Santa Barbara County FC&WCD	22,981		155		23,136
Antelope Valley-East Kern WA	57,205			2,626	59,831
Castaic Lake WA (+Rch 31A, 5 & 7)	54,303	2,451		2,702	59,456
Coachella Valley WD	26,984		2,716	12,819	42,519
Crestline-Lake Arrowhead WA	807				807
Desert WA	33,168		1,122	14,799	49,089
Mojave WA	10,360			1,201	11,561
Metropolitan WDSC	1,247,183	168,300	6,530	106,032	1,528,045
Palmdale WD	10,174			1,538	11,712
San Bernardino Valley MWD	31,211	56		283	31,550
San Gabriel Valley MWD	10,500				10,500
San Gorgonio Pass WA	655	15	22		692
Ventura County FCD	1,665				1,665
Totals	**2,753,060**	**731,083**	**38,275**	**185,145**	**3,707,563**
Total South of Delta	**2,750,639**	**731,083**	**38,275**	**185,145**	**3,705,142**

Table D. 8 Historical State Water Project Deliveries: 2006
Sacramento River Index=1, Year Type=Wet

	Table A	Article 21	Turnback	Carryover	Total
County of Butte	468				468
City of Yuba City	4,148	1,194			5,342
Napa County FC&WCD	7,312	300		172	7,784
Solano County WA	12,070	18,195		390	30,655
Alameda County FC&WCD, Zone 7	50,785		491	2,252	53,528
Alameda County WD		2,375	39,373	1,331	43,079
Santa Clara Valley WD	47,344	26,769		524	74,637
Oak Flat WD	4,118		107	17	4,242
County of Kings	8,991	366	173		9,530
Dudley Ridge WD	55,343	18,515	1,068		74,926
Empire West Side ID	1,500	1,124		658	3,282
Kern County WA	961,882	256,634	18,610	5,418	1,242,544
Tulare Lake Basin WSD	48,361	59,424	1,787		109,572
San Luis Obispo County FC&WCD	3,382	827			4,209
Santa Barbara County FC&WCD	19,255	4,020			23,275
Antelope Valley-East Kern WA	76,623			3,761	80,384
Castaic Lake WA (+Rch 31A, 5 & 7)	56,758	2,089		3,905	62,752
Coachella Valley WD	121,100				121,100
Crestline-Lake Arrowhead WA	257				257
Desert WA	50,000				50,000
Mojave WA	32,496			1,518	34,014
Metropolitan WDSC	1,103,538	238,478	11,638	136,424	1,490,078
Palmdale WD	10,374	1,653	130	335	12,492
San Bernardino Valley MWD	31,902			3,427	35,329
San Gabriel Valley MWD	13,524				13,524
San Gorgonio Pass WA	4,262				4,262
Ventura County FCD	1,850				1,850
Totals	**2,727,643**	**631,963**	**73,377**	**160,132**	**3,593,115**
Total South of Delta	**2,723,027**	**630,769**	**73,377**	**160,132**	**3,587,305**

Table D. 9 Historical State Water Project Deliveries: 2007
Sacramento River Index=4, Year Type=Dry

	Table A	Article 21	Turnback	Carryover	Total
County of Butte	956				956
City of Yuba City	2,327				2,327
Napa County FC&WCD	6,362	3,597		998	10,957
Solano County WA	14,892	8,217		1,822	24,931
Alameda County FC&WCD, Zone 7	32,972	912	378	2,895	37,157
Alameda County WD	16,541	550	197	2,103	19,391
Santa Clara Valley WD	38,812	4,840	469	8,161	52,282
Oak Flat WD	3,430	41	27	69	3,567
County of Kings	4,924	474	43		5,441
Dudley Ridge WD	28,457	8,953	269	2,000	39,679
Empire West Side ID	397	1,172		515	2,084
Kern County WA	592,423	99,861	4,683	19,645	716,612
Little Rock Creek ID	1,380				1,380
Tulare Lake Basin WSD	57,272	12,902	450	16,459	87,083
San Luis Obispo County FC&WCD	3,752	24			3,776
Santa Barbara County FC&WCD	24,760	1,070		1,390	27,220
Antelope Valley-East Kern WA	74,459			4,364	78,823
Castaic Lake WA (+Rch 31A, 5 & 7)	44,974			4,216	49,190
Coachella Valley WD	72,660		568		73,228
Crestline-Lake Arrowhead WA	1,768				1,768
Desert WA	30,000		234		30,234
Mojave WA	45,372			737	46,109
Metropolitan WDSC	1,146,900	166,517	8,962	28,098	1,350,477
Palmdale WD	12,780	843	100	985	14,708
San Bernardino Valley MWD	57,116				57,116
San Gabriel Valley MWD	10,000				10,000
San Gorgonio Pass WA	4,009				4,009
Ventura County FCD	3,000				3,000
Totals	**2,332,695**	**309,973**	**16,380**	**94,457**	**2,753,505**
Total South of Delta	**2,329,412**	**309,973**	**16,380**	**94,457**	**2,750,222**

Table D. 10 Historical State Water Project Deliveries: 2008
Sacramento River Index=5, Year Type=Critical

	Table A	Article 21	Turnback	Carryover	Total
County of Butte	9,436				9,436
City of Yuba City	1,923				1,923
Plumas County FC & WCD	243				243
Napa County FC&WCD	3,636	1,219	21	7,363	12,239
Solano County WA	10,436	1,510		12,389	24,335
Alameda County FC&WCD, Zone 7	13,633			15,400	29,033
Alameda County WD	4,206		37	8,659	12,902
Santa Clara Valley WD	11,133		88	21,188	32,409
Oak Flat WD	1,929		5		1,934
County of Kings	3,187		8		3,195
Dudley Ridge WD	12,260		51	5,949	18,260
Empire West Side ID				915	915
Kern County WA	271,636		883	6,815	279,334
Little Rock Creek ID	805				805
Tulare Lake Basin WSD	32,302		85	281	32,668
San Luis Obispo County FC&WCD	8,512				8,512
Santa Barbara County FC&WCD	11,311		40	2,532	13,883
Antelope Valley-East Kern WA	31,082		125	10,381	41,588
Castaic Lake WA (+Rch 31A, 5 & 7)	18,710			12,146	30,856
Coachella Valley WD	42,385		107		42,492
Crestline-Lake Arrowhead WA	1,159			689	1,848
Desert WA	17,500		44		17,544
Mojave WA	26,288			108	26,396
Metropolitan WDSC	654,304		1,689		655,993
Palmdale WD	4,226		19		4,245
San Bernardino Valley MWD	30,562			4,444	35,006
San Gabriel Valley MWD	10,080				10,080
San Gorgonio Pass WA	5,419			300	5,719
Ventura County FCD	3,798				3,798
Totals	**1,242,101**	**2,729**	**3,202**	**109,559**	**1,357,591**
Total South of Delta	**1,230,499**	**2,729**	**3,202**	**109,559**	**1,345,989**

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