APPENDICES

Appendix A

This appendix section shall contain DWR related documents

Appendix A-1 DWR Recommended Tables

Appendix A-2 DWR Checklist

Appendix B

This appendix section shall contain all agency related documents

Appendix B-1 Resolution Adopting the 2010 UWMP

Appendix B-2 Copies of General Notice Publications

Appendix B-3 Copies of Notification Letters Sent

Appendix B-4 BMP Documentation

Appendix B-5 Adoption Resolution and Water Shortage Contingency Plan

Appendix B-6 CWD Population Analysis Memo

Appendix B-7 Emergency Response Plan

Appendix C

This appendix section shall contain supply related documents

Appendix C-1 Water Rights

Appendix C-2 SGA Groundwater Management Plan

Appendix C-3 North American Groundwater Basin

Appendix C-4 SGA Area of North American Groundwater Basin and Hydrographs

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Appendix A-1 – DWR Recommended Tables

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Table 1
Coordination with appropriate agencies

Coordinating Agencies[1,2]	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
Carmichael Chamber of Commerce						X	
Citrus Heights WD						X	
Fair Oaks WD						X	
Sacramento Suburban WD						X	
Sacramento Co. Planning and Community Development Office						X	
Sacramento Co. Water Agency						X	
Sacramento Ground Water Authority						X	
Sacramento Regional Co. Sanitation District						X	
Sacramento Area Sewer District						X	
San Juan Unified School District						X	
Regional Water Authority						X	
General Public			X			X	

[1] Indicate the specific name of the agency with which coordination or outreach occurred.
[2] Check at least one box in each row.

Table 2
Population — current and projected

	2010	2015	2020	2025	2030	2035 - optional	Data source[2]
Service area population[1]	37,899	38,061	38,223	39,285	40,347	41,409	2010 Census & Projected Housing Development

[1] Service area population is defined as the population served by the distribution system. See Technical Methodology 2: Service Area Population (2010 UWMP Guidebook, Section M).
[2] Provide the source of the population data provided.

Table 3
Water deliveries — actual, 2005

	2005				
	Metered		Not metered		Total
Water use sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	298	139	10,250	9,225	9,364
Multi-family	588	1,817	0	0	1,817
Commercial	484	940	0	0	940
Industrial	0	0	0	0	0
Institutional/governmental	0	0	0	0	0
Landscape	14	603	0	0	603
Agriculture	0	0	0	0	0
Other	0	0	0	0	0
Total	1,384	3,499	10,250	9,225	12,724

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

Table 4
Water deliveries — actual, 2010

	2010				
	Metered		Not metered		Total
Water use sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	8,425	4,959	1,237	1,456	6,415
Multi-family	1,171	1,527	0	0	1,527
Commercial	378	824	0	0	824
Industrial	0	0	0	0	0
Institutional/governmental	0	0	0	0	0
Landscape	34	192	0	0	192
Agriculture	0	0	0	0	0
Other	0	0	0	0	0
Total	10,008	7,502	1,237	1,456	8,958
Units (circle one):	*acre-feet per year*	*million gallons per yea cubic feet per year*			

Table 5
Water deliveries — projected, 2015

	2015				
	Metered		Not metered		Total
Water use sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	9,004	6,178	0	0	6,178
Multi-family	5,085	1,509	0	0	1,509
Commercial	378	634	0	0	634
Industrial	0	0	0	0	0
Institutional/governmental	0	180	0	0	180
Landscape	34	344	0	0	344
Agriculture	0	0	0	0	0
Other	0	0	0	0	0
Total	14,501	8,846	0	0	8,846
Units (circle one):	*acre-feet per year*	*million gallons per yea cubic feet per year*			

Table 6
Water deliveries — projected, 2020

	2020				
	Metered		Not metered		Total
Water use sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	9,064	6,138	0	0	6,138
Multi-family	5,085	1,492	0	0	1,492
Commercial	378	626	0	0	626
Industrial	0	0	0	0	0
Institutional/governmental	0	178	0	0	178
Landscape	34	342	0	0	342
Agriculture	0	0	0	0	0
Other	0	0	0	0	0
Total	14,561	8,776	0	0	8,776
Units (circle one):	*acre-feet per year*	*million gallons per yea cubic feet per year*			

Table 7
Water deliveries — projected 2025, 2030, and 2035

	2025 metered		2030 metered		2035 - optional metered	
Water use sectors	# of accounts	Volume	# of accounts	Volume	# of accounts	Volume
Single family	9,124	6,098	9,184	6,059	9,244	6,097
Multi-family	5,535	1,547	5,985	1,601	6,435	1,673
Commercial	378	618	378	610	378	610
Industrial	0	0	0	0	0	0
Institutional/governmental	0	176	0	173	0	173
Landscape	34	340	34	337	34	337
Agriculture	0	0	0	0	0	0
Other	0	0	0	0	0	0
Total	15,071	8,779	15,581	8,781	16,091	8,891

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

Table 8
Low-income projected water demands

Low Income Water Demands[1]	**2015**	**2020**	**2025**	**2030**	**2035 - opt**
Single-family residential	1,034	1,034	1,034	996	963
Multi-family residential	402	402	402	387	375
Total	1,436	1,436	1,436	1,383	1,338

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

[1]Provide demands either as directly estimated values or as a percent of demand.

Table 9
Sales to other water agencies

Water distributed	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**	**2035 - opt**
N/A	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

Table 10
Additional water uses and losses

Water use[1]	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**	**2035 -opt**
System losses	997	777	771	765	765	766	775
Groundwater Extraction and Treatment	0	1,510	1,510	1,510	1,510	1,510	1,510
Total	997	2,287	2,281	2,275	2,275	2,276	2,285

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

[1]Any water accounted for in Tables 3 through 7 are not included in this table.

Table 11
Total water use

Water Use	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**	**2035 - opt**
Total water deliveries (from Tables 3 to 7)	**12,724**	8,958	**8,846**	**8,776**	**8,779**	8,781	8,891
Sales to other water agencies (from Table 9)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Additional water uses and losses (from Table 10)	**997**	**2,287**	**2,281**	**2,275**	**2,275**	**2,276**	**2,285**
Total	13,721	11,245	11,127	11,052	11,054	11,057	11,176

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

Table 12
Retail agency demand projections provided to wholesale suppliers

Wholesaler	**Contracted Volume[3]**	**2010**	**2015**	**2020**	**2025**	**2030**	**2035 -opt**
N/A	0	0	0	0	0	0	0

Table 13 Base period ranges			
Base	**Parameter**	**Value**	**Units**
10- to 15-year base period	2008 total water deliveries	11,998	*see below*
	2008 total volume of delivered recycled water	0	*see below*
	2008 recycled water as a percent of total deliveries	0	percent
	Number of years in base period[1]	10	years
	Year beginning base period range	1995	
	Year ending base period range[2]	2004	
5-year base period	Number of years in base period	5	years
	Year beginning base period range	2006	
	Year ending base period range[3]	2010	

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

[1]If the 2008 recycled water percent is less than 10 percent, then the first base period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first base period is a continuous 10- to 15-year period.

[2]The ending year must be between December 31, 2004 and December 31, 2010.

[2]The ending year must be between December 31, 2007 and December 31, 2010.

Table 14 Base daily per capita water use — 10- to 15-year range				
Base period year		**Distribution System Population**	**Daily system gross water use (mgd)**	**Annual daily per capita water use (gpcd)**
Sequence Year	**Calendar Year**			
Year 1	1995	37,108	11	309
Year 2	1996	37,108	12	326
Year 3	1997	37,108	12	328
Year 4	1998	37,108	11	289
Year 5	1999	37,200	11	287
Year 6	2000	37,200	11	308
Year 7	2001	37,702	11	302
Year 8	2002	37,865	11	290
Year 9	2003	37,911	11	296
Year 10	2004	38,095	12	321
			Base Daily Per Capita Water Use[1]	306

[1]Add the values in the column and divide by the number of rows.

Table 15 Base daily per capita water use — 5-year range				
Base period year		**Distribution System Population**	**Daily system gross water use (mgd)**	**Annual daily per capita water use (gpcd)**
Sequence Year	**Calendar Year**			
Year 1	2006	37,911	11	294
Year 2	2007	38,095	11	291
Year 3	2008	38,042	11	281
Year 4	2009	37,989	9	246
Year 5	2010	37,954	9	227
			Base Daily Per Capita Water Use[1]	268

[1]Add the values in the column and divide by the number of rows.

Table 16
Water supplies — current and projected

Water Supply Sources	2010	2015	2020	2025	2030	2035 - opt
Water purchased from[1]:						
Supplier-produced groundwater[2]	6,646	6,646	6,646	6,646	6,646	6,646
Supplier-produced surface water	32,627	32,627	32,627	32,627	32,627	32,627
Transfers in	0	0	0	0	0	0
Exchanges In	0	0	0	0	0	0
Recycled Water	0	0	0	0	0	0
Desalinated Water	0	0	0	0	0	0
GET L-A	390	390	390	390	390	390
GET L-B	1,120	1,120	1,120	1,120	1,120	1,120
Total	**40,783**	**40,783**	**40,783**	**40,783**	**40,783**	**40,783**

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

[1] Volumes shown here should be what was purchased in 2010 and what is anticipated to be purchased in the future. If these numbers differ from what is contracted, show the contracted quantities in Table 17.

[2] Volumes shown here should be consistent with Tables 17 and 18.

Table 17
Wholesale supplies — existing and planned sources of water

Wholesale sources[1,2]	Contracted Volume[3]	2015	2020	2025	2030	2035 - opt
N/A	0	0	0	0	0	0

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

[1]Water volumes presented here should be accounted for in Table 16.

[2]If the water supplier is a wholesaler, indicate all customers (excluding individual retail customers) to which water is sold. If the water supplier is a retailer, indicate each wholesale supplier, if more than one.

[3]Indicate the full amount of water

Table 18
Groundwater — volume pumped

Basin name(s)	Metered or Unmetered[1]	2006	2007	2008	2009	2010
North American Sub Basin	metered	3,519	2,867	1,581	1,609	1,518
Total groundwater pumped		3,519	2,867	1,581	1,609	1,518
Groundwater as a percent of total water supply		**28.2%**	23.17%	13.17%	15.22%	15.22%

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

[1]Indicate whether volume is based on volumetric meter data or another method

Table 19
Groundwater — volume projected to be pumped

Basin name(s)	2015	2020	2025	2030	2035 - opt
North American Sub Basin	1,752	1,738	1,738	1,739	1,760
Total groundwater pumped	1,752	1,738	1,738	1,739	1,760
Percent of total water supply	19.80%	19.80%	19.80%	19.80%	19.80%

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

Include future planned expansion

Table 20
Transfer and exchange opportunities

Transfer agency	Transfer or exchange	Short term or long term	Proposed Volume
No Quantities Developed, No Specific Plans. See **Section 3.5**			
Total	**N/A**		

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

Table 21
Recycled water — wastewater collection and treatment

Type of Wastewater	2005	2010	2015	2020	2025	2030	2035 - opt
Wastewater collected & treated in service area	0	0	0	0	0	0	0
Volume that meets recycled water standard	0	0	0	0	0	0	0

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

Table 22
Recycled water — non-recycled wastewater disposal

Method of disposal	Treatment Level	2010	2015	2020	2025	2030	2035 - opt
N/A	N/A	0	0	0	0	0	0
	Total	0	0	0	0	0	0

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

Table 23
Recycled water — potential future use

User type	Description	Feasibility[1]	2015	2020	2025	2030	2035 - opt
Agricultural irrigation	N/A	N/A	0	0	0	0	0
Landscape irrigation[2]	N/A	N/A	0	0	0	0	0
Commercial irrigation[3]	N/A	N/A	0	0	0	0	0
Golf course irrigation	N/A	N/A	0	0	0	0	0
Wildlife habitat	N/A	N/A	0	0	0	0	0
Wetlands	N/A	N/A	0	0	0	0	0
Industrial reuse	N/A	N/A	0	0	0	0	0
Groundwater recharge	N/A	N/A	0	0	0	0	0
Seawater barrier	N/A	N/A	0	0	0	0	0
Geothermal/Energy	N/A	N/A	0	0	0	0	0
Indirect potable reuse	N/A	N/A	0	0	0	0	0
Other (user type)	N/A	N/A	0	0	0	0	0
Other (user type)	N/A	N/A	0	0	0	0	0
Total		0	0	0	0	0	0

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

[1]Technical and economic feasibility.

[2]Includes parks, schools, cemeteries, churches, residential, or other public facilities)

[3]Includes commercial building use such as

Table 24
Recycled water — 2005 UWMP use projection compared to 2010 actual

Use type	2010 actual use	2005 Projection for 2010[1]
Agricultural irrigation	0	0
Landscape irrigation[2]	0	0
Commercial irrigation[3]	0	0
Golf course irrigation	0	0
Wildlife habitat	0	0
Wetlands	0	0
Industrial reuse	0	0
Groundwater recharge	0	0
Seawater barrier	0	0
Geothermal/Energy	0	0
Indirect potable reuse	0	0
Other (user type)	0	0
Other (user type)	0	0
Total	0	0

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

categories or modified to the new categories, at the discretion of the water supplier.

[2]Includes parks, schools, cemeteries, churches, residential, or other public facilities)

[3]Includes commercial building use such as landscaping, toilets, HVAC, etc) and commercial uses (car washes, laundries, nurseries, etc)

Table 25
Methods to encourage recycled water use

Actions	Projected Results					
	2010	2015	2020	2025	2030	2035 - opt
N/A	0	0	0	0	0	0
Total	0	0	0	0	0	0

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

Table 26
Future water supply projects

Project name[1]	Projected start date	Projected completion date	Potential project constraints[2]	Normal-year supply[3]	Single-dry year supply[3]	Multiple-dry year first year supply[3]	Multiple-dry year second year supply[3]	Multiple-dry year third year supply[3]
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total			0	0	0	0	0	0

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

[1]Water volumes presented here should be accounted for in Table 16.

2Indicate whether project is likely to happen and what constraints, if any, exist for project implementation.

[3]Provide estimated supply benefits, if available.

Table 27
Basis of water year data

Water Year Type	Base Year(s)
Average Water Year	1995-2010
Single-Dry Water Year	1976-1977
Multiple-Dry Water Years	1987-1993

Table 28*
Supply reliability — historic conditions

Average / Normal Water Year	Single Dry Water Year	Multiple Dry Water Years			
		Year 1	Year 2	Year 3	Year 4
39,228	39,228	39,228	39,228	39,228	39,228
Percent of Average/Normal Year:	100.0%	100.0%	100.0%	100.0%	100.0%

* Does **NOT** included GET water

Table 29
Factors resulting in inconsistency of supply

Water supply sources[1]	Specific source name, if any	Limitation quantification	Legal	Environmental	Water quality	Climatic	Additional information
Groundwater	Wells	6,646			X		See section 3.3

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

[1]From Table 16.

Table 30
Water quality — current and projected water supply impacts

Water source	Description of condition	2010	2015	2020	2025	2030	2035 - opt
Groundwater	None expected due to remediation projects	0	0	0	0	0	0

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

Table 31
Supply reliability — current water sources

Water supply sources[1]	Average / Normal Water Year Supply[2]	Multiple Dry Water Year Supply[2]		
		Year 2011	Year 2012	Year 2013
Surface Water	32,663	32,663	32,663	32,663
Ground Water	6,646	6,646	6,646	6,646
GET water	1,510	1,510	1,510	1,510
Percent of normal year:	100.0%	100.0%	100.0%	100.0%

Units (circle one): *acre-feet per year* *million gallons per yea* *cubic feet per year*

[1]From Table 16.

[2]See Table 27 for basis of water type years.

Table 32
Supply and demand comparison — normal year

	2015	2020	2025	2030	2035 - opt
Supply totals (from Table 16)	40,783	40,783	40,783	40,783	40,783
Demand totals (From Table 11)	11,127	11,052	11,054	11,057	11,176
Difference	29,656	29,731	29,729	29,726	29,607
Difference as % of Supply	72.7%	72.9%	72.9%	72.9%	72.6%
Difference as % of Demand	266.5%	269.0%	268.9%	268.9%	264.9%

Units are in acre-feet per year.

Table 33 Supply and demand comparison — single dry year					
	2015	2020	2025	2030	2035 - opt
Supply totals[1,2]	40,783	40,783	40,783	40,783	40,783
Demand totals[2,3,4]	11,127	11,052	11,054	11,057	11,176
Difference	29,656	29,731	29,729	29,726	29,607
Difference as % of Supply	73%	73%	73%	73%	73%
Difference as % of Demand	266.5%	269.0%	268.9%	268.9%	264.9%

Units are in acre-feet per year.

[1]Consider the same sources as in Table 16. If new

[2]Provide in the text of the UWMP text that discusses how single-dry-year water supply volumes were determined.

[3]Consider the same demands as in Table 3. If new water demands are anticipated, add a column to the table and specify the source, timing, and amount of water.

[4]The urban water target determined in this UWMP will be considered when developing the 2020 water demands included in this table.

Table 34 Supply and demand comparison — multiple dry-year events						
		2015	2020	2025	2030	2035 - opt
Multiple-dry year first year supply	**Supply totals**[1,2]	40,783	40,783	40,783	40,783	40,783
	Demand totals[2,3,4]	11,127	11,052	11,054	11,057	11,176
	Difference	29,656	29,731	29,729	29,726	29,607
	Difference as % of Supply	73%	73%	73%	73%	73%
	Difference as % of Demand	267%	269%	269%	269%	265%
Multiple-dry year second year supply	**Supply totals**[1,2]	40,783	40,783	40,783	40,783	40,783
	Demand totals[2,3,4]	11,127	11,052	11,054	11,057	11,176
	Difference	29,656	29,731	29,729	29,726	29,607
	Difference as % of Supply	73%	73%	73%	73%	73%
	Difference as % of Demand	267%	269%	269%	269%	265%
Multiple-dry year third year supply	**Supply totals**[1,2]	40,783	40,783	40,783	40,783	40,783
	Demand totals[2,3,4]	11,127	11,052	11,054	11,057	11,176
	Difference	29,656	29,731	29,729	29,726	29,607
	Difference as % of Supply	73%	73%	73%	73%	73%
	Difference as % of Demand	267%	269%	269%	269%	265%

Units are in acre-feet per year.

[1]Consider the same sources as in Table 16. If new

[2]Provide in the text of the UWMP text that discusses how single-dry-year water supply volumes were determined.

[3]Consider the same demands as in Table 3. If new water demands are anticipated, add a column to the table and specify the source, timing, and amount of water.

[4]The urban water target determined in this UWMP will be considered when developing the 2020 water demands included in this table.

Table 35 Water shortage contingency — rationing stages to address water supply shortages		
Stage No.	**Water Supply Conditions**	**% Shortage**
Normal	All demands can be met by the conjunctive use of groundwater and surface water. There are no other drought declarations or water shortage conditions by other water agencies in the region.	Customer demand is within assigned normal year budget or within 12,000 af/yr per WFA.
Stage 1 - Water Alert	A shortage is predicted to occur in the coming months and customers should begin demand cutbacks. Several water agencies in the region have declared a shortage requiring up to 10% cutback.	Up to 10%
Stage 2 - Water Warning	Supply is up to 25 percent less than normal demand. Several water agencies in the region have declared a shortage requiring up to a 50% cutback.	Up to 25%
Stage 3 - Water Crisis	Supply is up to 50% less than normal demand. Another water agency in the region has declared a shortage requiring up to 50% or more in demand cutback.	Up to 50%
Stage 4 - Water Emergency	One of supply sources is unavailable. Supply more than 50% less than normal demand. Another water agency in the region has declared a shortage requiring up to 50% or more in demand cutback.	Initial cutback set at 50% pending District's evaluation of supply loss

[1] *One of the stages of action must be designed to address a 50 percent reduction in water supply.*

Table 36 Water shortage contingency — mandatory prohibitions	
Examples of Prohibitions	**Stage When Prohibition Becomes Mandatory**
No water runoff from property	Normal
Free flowing hoses for any use are prohibited	Normal
No filling of swimming pools, fountains or ponds, except for maintenance of levels	2
No turf irrigation allowed; No sprinkler irrigation allowed	3
No pasture and wild space irrigation	3
No new landscape installations allowed	3
No irrigation allowed	4

Table 37 Water shortage contingency — consumption reduction methods		
Consumption Reduction Methods	**Stage When Method Takes Effect**	**Projected Reduction (%)**
No water runoff from property	Normal	N/A
Free flowing hoses for any use are prohibited	Normal	N/A
No filling of swimming pools, fountains or ponds, except for maintenance of levels	2	1-10%
No turf irrigation allowed; No sprinkler irrigation allowed	3	5%
No pasture and wild space irrigation	3	5%
No new landscape installations allowed	3	5%
No irrigation allowed	4	25%

Table 38 Water shortage contingency — penalties and charges	
Penalties or Charges for Excessive Use	**Stage When Penalty Takes Effect**
Written or verbal warning First Violation	First Violation
$50 Fine	Second Violation
$200 Fine	Third Violation
Up to $500	Fourth Violation
Disconnection of Service	Fourth Violation (at District discretion)

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Appendix A-2 – DWR Checklist

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Table I-2 Urban Water Management Plan checklist, organized by subject

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
PLAN PREPARATION				
4	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.	10620(d)(2)		Section 1.2 as well as Section 1.5
6	Notify, at least 60 days prior to the public hearing on the plan required by Section 10642, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Any city or county receiving the notice may be consulted and provide comments.	10621(b)		Section 1.2 Appendix B-3
7	Provide supporting documentation that the UWMP or any amendments to, or changes in, have been adopted as described in Section 10640 et seq.	10621(c)		Section 1.3 Appendix B-1
54	Provide supporting documentation that the urban water management plan has been or will be provided to any city or county within which it provides water, no later than 60 days after the submission of this urban water management plan.	10635(b)	To be included in future UWMP amendments	Section 1.3
55	Provide supporting documentation that the water supplier has encouraged 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.	10642		Section 1.3 Appendix B-2
56	Provide supporting documentation that the urban water supplier made the plan available for public inspection and held a public hearing about the plan. For public agencies, the hearing notice is to be provided pursuant to Section 6066 of the Government Code. The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. Privately-owned water suppliers shall provide an equivalent notice within its service area.	10642		Section 1.3 Appendix B-2
57	Provide supporting documentation that the plan has been adopted as prepared or modified.	10642	Future resolutions to be provided for future amendments	Section 1.3 Appendix B-1
58	Provide supporting documentation as to how the water supplier plans to implement its plan.	10643		Appendix B-1

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
59	Provide supporting documentation that, in addition to submittal to DWR, the urban water supplier has submitted this UWMP to the California State Library and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. This also includes amendments or changes.	10644(a)	To be included in future UWMP amendments	Section 1.3
60	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the urban water supplier has or will make the plan available for public review during normal business hours	10645	To be included in future UWMP amendments	Section 1.3
SYSTEM DESCRIPTION				
8	Describe the water supplier service area.	10631(a)		Section 2.1.1
9	Describe the climate and other demographic factors of the service area of the supplier	10631(a)		Section 2.1.2 Section 2.1.3
10	Indicate the current population of the service area	10631(a)	Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M.	Section 2.1.2 Table 2-1 Appendix B-6
11	Provide population projections for 2015, 2020, 2025, and 2030, based on data from State, regional, or local service area population projections.	10631(a)	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Section 2.1.2 Table 2-1
12	Describe other demographic factors affecting the supplier's water management planning.	10631(a)		Section 2.1
SYSTEM DEMANDS				
1	Provide 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.	10608.20(e)		Section 4.4 Appendix B-6
2	*Wholesalers:* Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. *Retailers:* Conduct at least one public hearing that includes general discussion of the urban retail water supplier's implementation plan for complying with the Water Conservation Bill of 2009.	10608.36 10608.26(a)	Retailers and wholesalers have slightly different requirements	Section 1.3 Appendix B-2

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
3	Report progress in meeting urban water use targets using the standardized form.	10608.40		N/A form not yet available
25	Quantify past, current, and projected water use, identifying the uses among water use sectors, for the following: (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, conjunctive use, and (I) agriculture.	10631(e)(1)	Consider 'past' to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030. Provide numbers for each category for each of these years.	Appendix A-1 (Tables 3 to 7) Section 4.1 Section 4.1 Section 4.3
33	Provide documentation that either the retail agency provided the wholesale agency with water use projections for at least 20 years, if the UWMP agency is a retail agency, OR, if a wholesale agency, it provided its urban retail customers with future planned and existing water source available to it from the wholesale agency during the required water-year types	10631(k)	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	N/A No wholesale in the water district
34	Include projected water use for single-family and multifamily residential housing needed for lower income households, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)		Section 4.3.6
SYSTEM SUPPLIES				
13	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, and 2030.	10631(b)	The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided.	Section 3.7
14	Indicate whether groundwater is an existing or planned source of water available to the supplier. If yes, then complete 15 through 21 of the UWMP Checklist. If no, then indicate "not applicable" in lines 15 through 21 under the UWMP location column.	10631(b)	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	Section 3.2
15	Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	10631(b)(1)		Section 3.2.2 Appendix C-2
16	Describe the groundwater basin.	10631(b)(2)		Section 3.2.4
17	Indicate whether the groundwater basin is adjudicated? Include a copy of the court order or decree.	10631(b)(2)		N/A

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
18	Describe the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. If the basin is not adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)		N/A
19	For groundwater basins that are not adjudicated, provide information as to whether DWR 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. If the basin is adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)		Section 3.2.4
20	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	10631(b)(3)		Section 3.2.5 Table 3-3
21	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	10631(b)(4)	Provide projections for 2015, 2020, 2025, and 2030.	Section 3.2.6 Table 3-5
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)		Section 3.5
30	Include a detailed description of all water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years, excluding demand management programs addressed in (f)(1). Include specific projects, describe water supply impacts, and provide a timeline for each project.	10631(h)		Section 3.5.2 Section 3.8
31	Describe desalinated water project opportunities for long-term supply, including, but not limited to, ocean water, brackish water, and groundwater.	10631(i)		Section 3.4
44	Provide information on recycled water and its potential for use as a water source in the service area of the urban water supplier. Coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	10633		Section 3.6
45	Describe 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.	10633(a)		Section 3.6

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
46	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	10633(b)		Section 3.6
47	Describe the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.	10633(c)		N/A Section 3.6
48	Describe and quantify 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.	10633(d)		Section 3.6
49	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.	10633(e)		N/A Section 3.6
50	Describe the 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.	10633(f)		Section 3.6
51	Provide 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.	10633(g)		N/A Section 3.6
WATER SHORTAGE RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING [b]				
5	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	10620(f)		Section 1.4 Section 5
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage and provide data for (A) an average water year, (B) a single dry water year, and (C) multiple dry water years.	10631(c)(1)		Section 3.8
23	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.	10631(c)(2)		N/A Section 3.8
35	Provide an urban water shortage contingency analysis that specifies stages of action, including up to a 50-percent water supply reduction, and an outline of specific water supply conditions at each stage	10632(a)		Section 6

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
36	Provide 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.	10632(b)		Section 3.8.3 Section 3.8.6
37	Identify 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.	10632(c)		Section 6.4
38	Identify 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.	10632(d)		Section 6.2 Table 6-2
39	Specify 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.	10632(e)		Section 6.2 Table 6-4
40	Indicated penalties or charges for excessive use, where applicable.	10632(f)		Section 6.2 Table 6-3
41	Provide 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.	10632(g)		Section 6.5
42	Provide a draft water shortage contingency resolution or ordinance.	10632(h)		Appendix B-5
43	Indicate a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)		Section 5.2 (sub heading under DMMs A, B, C, E, and I)
52	Provide information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments, and the manner in which water quality affects water management strategies and supply reliability	10634	For years 2010, 2015, 2020, 2025, and 2030	Section 3.1.4 Section 3.3 Section 3.8.5

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
53	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing 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. Base the assessment on the information compiled under Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	10635(a)		Section 7
DEMAND MANAGEMENT MEASURES				
26	Describe how each water demand management measures is being implemented or scheduled for implementation. Use the list provided.	10631(f)(1)	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	Section 5.2
27	Describe the methods the supplier uses to evaluate the effectiveness of DMMs implemented or described in the UWMP.	10631(f)(3)		Section 5.2 (sub heading under DMMs A, B, C, E, and I)
28	Provide 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 ability to further reduce demand.	10631(f)(4)		Section 4.2.1 Section 4.2.4
29	Evaluate each water demand management measure that is not currently being implemented or scheduled for implementation. The evaluation should include economic and non-economic factors, cost-benefit analysis, available funding, and the water suppliers' legal authority to implement the work.	10631(g)	See 10631(g) for additional wording.	Section 5.1 Appendix B-7
32	Include the annual reports submitted to meet the Section 6.2 requirements, if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)	Signers of the MOU that submit the annual reports are deemed compliant with Items 28 and 29.	N/A

a The UWMP Requirement descriptions are general summaries of what is provided in the legislation. Urban water suppliers should review the exact legislative wording prior to submitting its UWMP.

b The Subject classification is provided for clarification only. It is aligned with the organization presented in Part I of this guidebook. A water supplier is free to address the UWMP Requirement anywhere with its UWMP, but is urged to provide clarification to DWR to facilitate review.

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Appendix B-1 – Resolution Adopting the 2010 UWMP

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CARMICHAEL WATER DISTRICT

RESOLUTION 06202011-4
A RESOLUTION ADOPTING, DIRECTING, FILING AND IMPLEMENTING THE CARMICHAEL WATER DISTRICT 2010 URBAN WATER MANAGEMENT PLAN UPDATE

WHEREAS, the California Legislature enacted Assembly Bill 797 during the 1983-1984 Regular Session of the California Legislature (Water Code §10610 et seq.), known as the Urban Water Management Planning Act, which mandates that every urban supplier of water providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre feet of water annually, prepare an Urban Water Management Plan (Plan). The primary objective of which is to plan for the conservation and efficient use of water; and

WHEREAS, SBx7-7 (Water Code §10608.20 et seq.) requires that said Plan be adopted by July 1, 2011, after public review and hearing, and filed with the California Department of Water Resources within 30 days of adoption; and

WHEREAS, SBx7-7 (Water Code §10608.20 (b)) requires that Carmichael Water District adopt a method for determining its urban water use target, and Carmichael Water District has assessed the available methods, has allowed for community input and considered the economic impacts of the methods, and has determined the appropriate method to be Method 1 (Eighty percent of baseline per-capita water use), and has prepared said Plan using this method; and

WHEREAS, Carmichael Water District did prepare and file said Plan with the California Department of Water Resources in December 2005; and

WHEREAS, AB 797 requires that said Plan be periodically reviewed at least once every five years, and that the urban water suppliers shall make any amendments or changes to its Plan which are indicated by the review; and

WHEREAS, the Carmichael Water District is an urban water supplier providing water to a population of approximately 38,000, and has therefore, prepared for public review an Urban Water Management Plan Update, in compliance with the requirements of AB 797 and SBx7-7, and a properly noticed public hearing regarding said Plan Update was held by the Board of Directors of the Carmichael Water District on May 16, 2011.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Carmichael Water District as follows:

1. The General Manager is hereby authorized and directed to file the Plan Update with the California Department of Water Resources within 30 days after this date, in accordance with AB 797 and SBx7-7; and
2. The General Manager is hereby authorized and directed to implement the Water Conservation Programs as detailed in the adopted Plan Update, including recommendations to the Board of Directors regarding necessary procedures, rules and regulations to carry out an effective and equitable water conservation program.

PASSED AND ADOPTED by the Board of Directors on this 20th day of June, 2011 by the following vote:

Mark Emmerson	Aye X	No	Absent	Abstain
Paul Selsky	Aye X	No	Absent	Abstain
Sanford Kozlen	Aye X	No	Absent	Abstain
Ron Greenwood	Aye X	No	Absent	Abstain
John Wallace	Aye X	No	Absent	Abstain

Board Totals: AYES: 5 NOES: Ø ABSENT: Ø ABSTAIN: Ø
Passed Unanimously: Yes X

Signed after its passage this 20th day of June 2011:

John A Wallace
John Wallace, President
Board of Directors

ATTEST: Steve Nugent
Steve Nugent, Secretary

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Appendix B-2 – Copies of General Notice Publications

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7837 Fair Oaks Boulevard
Carmichael, CA 95608
Phone: (916) 483-2452
Fax: (916) 483-5509

FAX

Attn: Legal Notices **From:** Chris Nelson (Acct #5009914)

Company: Sacramento Bee

Fax: 321-1110 **Pages (Including cover):** 1

Phone: 321-1541 **Date:** May 2, 2011

Re: Please run the following legal notice on the dates listed below.

☐ **Urgent** ☐ **For Your Information** ☐ **Please Call** ☐ **Per Your Request**

● **Comments:**

CARMICHAEL WATER DISTRICT
NOTICE OF AVAILABILITY OF
2010 DRAFT URBAN WATER MANAGEMENT PLAN UPDATE
AND PUBLIC HEARING TO RECEIVE COMMENTS

NOTICE IS HEREBY GIVEN that the Carmichael Water District's (CWD) Draft 2010 Urban Water Management Plan Update (Draft Update) is available for public review and comment, and that the Board of Directors of CWD has set a public hearing to receive comments on the Draft Update. The public hearing is to be conducted on May 16, 2011 at 7:00 PM at the District office at 7837 Fair Oaks Boulevard, Carmichael, CA, 95608.

NOTICE IS FURTHER GIVEN that, as part of the public hearing on the Draft Update, CWD will conduct a public hearing to: (1) adopt a method, pursuant to California Water Code (CWC) § 10608.20, for determining its urban water use target in 2020, (2) allow community input regarding its plan for achieving the water conservation provisions of its Draft Update, and (3) consider the economic impacts of its implementation plan for achieving its 2020 urban water use target.

Copies of the Draft Update are available for public review at www.carmichaelwd.org or at the District office on or after May 12, 2011. Members of the public are invited to present their views on the Draft Update, including the water conservation provisions of the Draft Update required pursuant to CWC § 10608. Comments may be presented during the public hearing or may be submitted in writing, addressed to:

CWD - Chris Nelson
7837 Fair Oaks Boulevard
Carmichael CA 95608

Run 2 times on these dates
Wednesday, May 4, 2011
Wednesday, May 11, 2011

Dated: May 11, 2011

COUNTY OF SUTTER

Steven L. Harrah, CPA

4940 sq ft along golf course, 1.5 acre lot; Information contact Reclamation Dist. 1001-530.656.2318.

OPEN HOUSE Fri., May 13, and Sat., May 14, 2011 from 10:00am-2:00pm

NO 484 **PUBLIC NOTICE**

CARMICHAEL WATER DISTRICT
NOTICE OF AVAILABILITY OF
2010 DRAFT URBAN WATER MANAGEMENT PLAN UPDATE
AND PUBLIC HEARING TO RECEIVE COMMENTS

NOTICE IS HEREBY GIVEN that the Carmichael Water District's (CWD) Draft 2010 Urban Water Management Plan Update (Draft Update) is available for public review and comment, and that the Board of Directors of CWD has set a public hearing to receive comments on the Draft Update. The public hearing is to be conducted on May 16, 2011 at 7:00 PM at the District office at 7837 Fair Oaks Boulevard, Carmichael, CA, 95608.

NOTICE IS FURTHER GIVEN that, as part of the public hearing on the Draft Update. CWD will conduct a public hearing to. (1) adopt a method, pursuant to California Water Code (CWC) § 10608.20, for determining its urban water use target in 2020, (2) allow community input regarding its plan for achieving the water conservation provisions of its Draft Update, and (3) consider the economic impacts of its implementation plan for achieving its 2020 urban water use target.

Copies of the Draft Update are available for public review at www.carmichaelwd.org or at the District office on or after May 12, 2011. Members of the public are invited to present their views on the Draft Update, including the water conservation provisions of the Draft Update required pursuant to CWC § 10608. Comments may be presented during the public hearing or may be submitted in writing, addressed to:

CWD - Chris Nelson
7837 Fair Oaks Boulevard
Carmichael CA 95608

NO 416 PUBLIC NOTICE

NOTICE OF CONTINUED PUBLIC HEARING

Folsom Plan Area Specific Plan, General Plan Amendment, Pre-zoning and Environmental Impact Report/Environmental Impact Statement

NOTICE IS GIVEN HEREWITH that the City of Folsom had noticed the above

For additional information, please call (650) 344-9072, visit www.stewardshipcouncil.org, e-mail info@stewardshipcouncil.org, or submit written requests to:

Pacific Forest and Watershed Lands Stewardship Council
15 N. Ellsworth Ave, Suite 100
San Mateo, CA 94401

NO 484 **PUBLIC NOTICE**

CARMICHAEL WATER DISTRICT
NOTICE OF AVAILABILITY OF
2010 DRAFT URBAN WATER MANAGEMENT PLAN UPDATE
AND PUBLIC HEARING TO RECEIVE COMMENTS

NOTICE IS HEREBY GIVEN that the Carmichael Water District's (CWD) Draft 2010 Urban Water Management Plan Update (Draft Update) is available for public review and comment, and that the Board of Directors of CWD has set a public hearing to receive comments on the Draft Update. The public hearing is to be conducted on May 16, 2011 at 7:00 PM at the District office at 7837 Fair Oaks Boulevard, Carmichael, CA, 95608.

NOTICE IS FURTHER GIVEN that, as part of the public hearing on the Draft Update, CWD will conduct a public hearing to: (1) adopt a method, pursuant to California Water Code (CWC) § 10608.20, for determining its urban water use target in 2020, (2) allow community input regarding its plan for achieving the water conservation provisions of its Draft Update, and (3) consider the economic impacts of its implementation plan for achieving its 2020 urban water use target.

Copies of the Draft Update are available for public review at www.carmichaelwd.org or at the District office on or after May 12, 2011. Members of the public are invited to present their views on the Draft Update, including the water conservation provisions of the Draft Update required pursuant to CWC § 10608. Comments may be presented during the public hearing or may be submitted in writing, addressed to:

CWD - Chris Nelson
7837 Fair Oaks Boulevard
Carmichael CA 95608

NO 486 PUBLIC NOTICE

NOTICE OF INTENT TO ADOPT MITIGATED NEGATIVE DECLARATION AND NOTICE OF PUBLIC MEETING

Notice is hereby given that the Lead Agency, Aspire Public Schools, has prepared an Initial Study of environmental effects and intends to adopt a Mitigated Negative Declaration for the project known as Alexander Twilight College Preparatory Academy. The project, located at 2360 El Camino Avenue, Sacramento, CA 95821, would involve the addition of portable classroom buildings to the already existing campus. The existing enrollment is 486

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Appendix B-3 – Copies of Notification Letters Sent

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CARMICHAEL WATER DISTRICT

7837 FAIR OAKS BOULEVARD
CARMICHAEL, CALIFORNIA 95608
TELEPHONE: 483-2452
FAX: 483-5509

March 16, 2011

Sacramento Ground Water Authority
c/o Robert Swartz
5620 Birdcage Street, Ste 180
Citrus Heights, CA 95610

Dear Robert Swartz,

The Carmichael Water District is preparing an Urban Water Management Plan (UWMP) as required by the California Water Code (CWC). Any city or county within which a water supplier delivers water is to be notified at least 60 days prior to the hearing that the UWMP is being reviewed and amendments and changes will be considered. Also, any city or county within which a water supplier supplies water is to be notified of the date and time of the hearing.

Also, pursuant to CWC § 10608 et seq., an urban water supplier must hold at least one public hearing to: (1) adopt a method, pursuant to CWC § 10608.20, for determining its urban water use target, (2) allow community input regarding its implementation plan for the water conservation provisions, and (3) consider the economic impacts of its implementation plan for complying with CWC § 10608 et seq.

This letter serves as notice that the Carmichael Water District is currently preparing its 2010 UWMP. The Carmichael Water District will ultimately adopt its UWMP, after its public hearing, at the Regular Board Meeting on June 20, 2011. Carmichael Water District will use the public hearing for review of its UWMP to also meet the public hearing requirements of CWC § 10608 et seq.

Public Hearing

Date: May 16, 2011 at 7:00 PM
Location: Carmichael Water District Office
7837 Fair Oaks Blvd.
Carmichael, CA 95608

If you have any questions regarding the Carmichael Water District's UWMP, please do not hesitate to contact the District's Public Information Officer - Chris Nelson.

Sincerely,

Chris Nelson
Public Information Officer

CARMICHAEL WATER DISTRICT

7837 FAIR OAKS BOULEVARD
CARMICHAEL, CALIFORNIA 95608
TELEPHONE (916) 483-2452
FAX (916) 483-5509

March 16, 2011

Carmichael Chamber of Commerce
c/o Linda Melody
6825 Fair Oaks Blvd., Suite 100
Carmichael, CA 9560

Dear Linda Melody,

The Carmichael Water District is preparing an Urban Water Management Plan (UWMP) as required by the California Water Code (CWC). Any city or county within which a water supplier delivers water is to be notified at least 60 days prior to the hearing that the UWMP is being reviewed and amendments and changes will be considered. Also, any city or county within which a water supplier supplies water is to be notified of the date and time of the hearing.

Also, pursuant to CWC § 10608 et seq., an urban water supplier must hold at least one public hearing to: (1) adopt a method, pursuant to CWC § 10608.20, for determining its urban water use target, (2) allow community input regarding its implementation plan for the water conservation provisions, and (3) consider the economic impacts of its implementation plan for complying with CWC § 10608 et seq.

This letter serves as notice that the Carmichael Water District is currently preparing its 2010 UWMP. The Carmichael Water District will ultimately adopt its UWMP, after its public hearing, at the Regular Board Meeting on June 20, 2011. Carmichael Water District will use the public hearing for review of its UWMP to also meet the public hearing requirements of CWC § 10608 et seq.

Public Hearing

Date: May 16, 2011 at 7:00 PM
Location: Carmichael Water District Office
7837 Fair Oaks Blvd.
Carmichael, CA 95608

If you have any questions regarding the Carmichael Water District's UWMP, please do not hesitate to contact the District's Public Information Officer - Chris Nelson.

Sincerely,

Chris Nelson
Public Information Officer

CARMICHAEL WATER DISTRICT

7837 FAIR OAKS BOULEVARD
CARMICHAEL, CALIFORNIA 95608
TELEPHONE (916) 483-2452
FAX (916) 483-5509

March 16, 2011

Sacramento County
Planning and Community Development Office
c/o Planning Director
827 7th Street
Room 230
Sacramento, CA 95814

To Whom It May Concern:

The Carmichael Water District is preparing an Urban Water Management Plan (UWMP) as required by the California Water Code (CWC). Any city or county within which a water supplier delivers water is to be notified at least 60 days prior to the hearing that the UWMP is being reviewed and amendments and changes will be considered. Also, any city or county within which a water supplier supplies water is to be notified of the date and time of the hearing.

Also, pursuant to CWC § 10608 et seq., an urban water supplier must hold at least one public hearing to: (1) adopt a method, pursuant to CWC § 10608.20, for determining its urban water use target, (2) allow community input regarding its implementation plan for the water conservation provisions, and (3) consider the economic impacts of its implementation plan for complying with CWC § 10608 et seq.

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Public Hearing

Date:	May 16, 2011 at 7:00 PM
Location:	Carmichael Water District Office 7837 Fair Oaks Blvd. Carmichael, CA 95608

If you have any questions regarding the Carmichael Water District's UWMP, please do not hesitate to contact the District's Public Information Officer - Chris Nelson.

Sincerely,

Chris Nelson
Public Information Officer

CARMICHAEL WATER DISTRICT

7837 FAIR OAKS BOULEVARD
CARMICHAEL, CALIFORNIA 95608
TELEPHONE (916) 483-2452
FAX (916) 483-5509

March 16, 2011

Sacramento County Water Agency
827 7th Street, Room 301
Sacramento, CA, 95814

To Whom It May Concern:

The Carmichael Water District is preparing an Urban Water Management Plan (UWMP) as required by the California Water Code (CWC). Any city or county within which a water supplier delivers water is to be notified at least 60 days prior to the hearing that the UWMP is being reviewed and amendments and changes will be considered. Also, any city or county within which a water supplier supplies water is to be notified of the date and time of the hearing.

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Date: May 16, 2011 at 7:00 PM
Location: Carmichael Water District Office
7837 Fair Oaks Blvd.
Carmichael, CA 95608

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Sincerely,

Chris Nelson
Public Information Officer

CARMICHAEL WATER DISTRICT

7837 FAIR OAKS BOULEVARD
CARMICHAEL, CALIFORNIA 95608
TELEPHONE (916) 483-2452
FAX (916) 483-5509

March 16, 2011

Sacramento Area Sewer District
c/o Stan Dean
10060 Goethe Road
Sacramento, CA 95827

Dear Stan Dean:

The Carmichael Water District is preparing an Urban Water Management Plan (UWMP) as required by the California Water Code (CWC). Any city or county within which a water supplier delivers water is to be notified at least 60 days prior to the hearing that the UWMP is being reviewed and amendments and changes will be considered. Also, any city or county within which a water supplier supplies water is to be notified of the date and time of the hearing.

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Public Hearing

Date: May 16, 2011 at 7:00 PM
Location: Carmichael Water District Office
7837 Fair Oaks Blvd.
Carmichael, CA 95608

If you have any questions regarding the Carmichael Water District's UWMP, please do not hesitate to contact the District's Public Information Officer - Chris Nelson.

Sincerely,

Chris Nelson
Public Information Officer

CARMICHAEL WATER DISTRICT

7837 FAIR OAKS BOULEVARD
CARMICHAEL, CALIFORNIA 95608
TELEPHONE (916) 483-2452
FAX (916) 483-5509

March 16, 2011

The Sacramento Regional County Sanitation District
c/o Stan Dean
10060 Goethe Road
Sacramento, CA 95827

Dear Stan Dean:

The Carmichael Water District is preparing an Urban Water Management Plan (UWMP) as required by the California Water Code (CWC). Any city or county within which a water supplier delivers water is to be notified at least 60 days prior to the hearing that the UWMP is being reviewed and amendments and changes will be considered. Also, any city or county within which a water supplier supplies water is to be notified of the date and time of the hearing.

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Public Hearing

Date: May 16, 2011 at 7:00 PM
Location: Carmichael Water District Office
7837 Fair Oaks Blvd.
Carmichael, CA 95608

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Sincerely,

Chris Nelson
Public Information Officer

CARMICHAEL WATER DISTRICT

7837 FAIR OAKS BOULEVARD
CARMICHAEL, CALIFORNIA 95608
TELEPHONE (916) 483-2452
FAX (916) 483-5509

March 16, 2011

Fair Oaks Water District
c/o Tom Gray
10326 Fair Oaks Blvd.
Fair Oaks, CA 95628-5723

Dear Tom Gray,

The Carmichael Water District is preparing an Urban Water Management Plan (UWMP) as required by the California Water Code (CWC). Any city or county within which a water supplier delivers water is to be notified at least 60 days prior to the hearing that the UWMP is being reviewed and amendments and changes will be considered. Also, any city or county within which a water supplier supplies water is to be notified of the date and time of the hearing.

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Public Hearing

Date: May 16, 2011 at 7:00 PM
Location: Carmichael Water District Office
7837 Fair Oaks Blvd.
Carmichael, CA 95608

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Sincerely,

Chris Nelson
Public Information Officer

CARMICHAEL WATER DISTRICT

7837 FAIR OAKS BOULEVARD
CARMICHAEL, CALIFORNIA 95608
TELEPHONE (916) 483-2452
FAX (916) 483-5509

March 16, 2011

Citrus Heights Water District
c/o Robert Churchill
P.O. Box 286
Citrus Heights, CA 95611-0286

Dear Robert Churchill

The Carmichael Water District is preparing an Urban Water Management Plan (UWMP) as required by the California Water Code (CWC). Any city or county within which a water supplier delivers water is to be notified at least 60 days prior to the hearing that the UWMP is being reviewed and amendments and changes will be considered. Also, any city or county within which a water supplier supplies water is to be notified of the date and time of the hearing.

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Public Hearing

Date: May 16, 2011 at 7:00 PM
Location: Carmichael Water District Office
7837 Fair Oaks Blvd.
Carmichael, CA 95608

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Sincerely,

Chris Nelson
Public Information Officer

CARMICHAEL WATER DISTRICT

7837 FAIR OAKS BOULEVARD
CARMICHAEL, CALIFORNIA 95608
TELEPHONE (916) 483-2452
FAX (916) 483-5509

March 16, 2011

Sacramento Suburban Water District
c/o Robert Roscoe
3701 Marconi Avenue, Suite 100
Sacramento, CA 95821-5346

Dear Robert Roscoe,

The Carmichael Water District is preparing an Urban Water Management Plan (UWMP) as required by the California Water Code (CWC). Any city or county within which a water supplier delivers water is to be notified at least 60 days prior to the hearing that the UWMP is being reviewed and amendments and changes will be considered. Also, any city or county within which a water supplier supplies water is to be notified of the date and time of the hearing.

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Location: Carmichael Water District Office
7837 Fair Oaks Blvd.
Carmichael, CA 95608

If you have any questions regarding the Carmichael Water District's UWMP, please do not hesitate to contact the District's Public Information Officer - Chris Nelson.

Sincerely,

Chris Nelson
Public Information Officer

CARMICHAEL WATER DISTRICT

7837 FAIR OAKS BOULEVARD
CARMICHAEL, CALIFORNIA 95608
TELEPHONE: 483-2452
FAX: 483-5509

March 16, 2011

Regional Water Authority
c/o John Woodling
5620 Birdcage Street, Ste 180
Citrus Heights, CA 95610

Dear John Woodling,

The Carmichael Water District is preparing an Urban Water Management Plan (UWMP) as required by the California Water Code (CWC). Any city or county within which a water supplier delivers water is to be notified at least 60 days prior to the hearing that the UWMP is being reviewed and amendments and changes will be considered. Also, any city or county within which a water supplier supplies water is to be notified of the date and time of the hearing.

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Location: Carmichael Water District Office
7837 Fair Oaks Blvd.
Carmichael, CA 95608

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Sincerely,

Chris Nelson
Public Information Officer

CARMICHAEL WATER DISTRICT

7837 FAIR OAKS BOULEVARD
CARMICHAEL, CALIFORNIA 95608
TELEPHONE (916) 483-2452
FAX (916) 483-5509

March 16, 2011

San Juan Unified School District
3738 Walnut Ave.
Carmichael, CA 95608

To Whom It May Concern:

The Carmichael Water District is preparing an Urban Water Management Plan (UWMP) as required by the California Water Code (CWC). Any city or county within which a water supplier delivers water is to be notified at least 60 days prior to the hearing that the UWMP is being reviewed and amendments and changes will be considered. Also, any city or county within which a water supplier supplies water is to be notified of the date and time of the hearing.

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Location: Carmichael Water District Office
7837 Fair Oaks Blvd.
Carmichael, CA 95608

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Sincerely,

Chris Nelson
Public Information Officer

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Appendix B-4 – BMP Documentation

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DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

March 25, 2011

Mr. Steve Nugent
General Manager
Carmichael Water District
7837 Fair Oaks Blvd.
Carmichael, California 95608

Dear Mr. Nugent:

The Department of Water Resources (DWR) has reviewed the Carmichael Water District's (CWD) Self-Certification Statement – Tables 1 and 2 submitted on March 17, 2011, regarding implementation of the Urban Best Management Practices (BMPs).

The purpose of DWR's review is to determine eligibility of CWD to receive water management grant or loan funds. DWR has followed the *Draft AB 1420 Compliance Requirements* dated June 1, 2009. For detailed information, please visit http://www.water.ca.gov/wateruseefficiency/finance/.

Based on DWR's review of the information in Tables 1 and 2, CWD has and is currently implementing the BMPs consistent with AB 1420 and, therefore, is eligible to receive water management grant or loan funds.

DWR reserves the right to request additional information and documentation, including reports from CWD to substantiate the accuracy of the information provided in Tables 1 and 2. DWR may reverse or modify its eligibility determination and notify you and the funding agency if inaccuracies are found in the supporting documentation or in Tables 1 and 2.

If you have any questions, please contact me at (916) 651-7025 or Betsy Vail at (916) 651-9667.

Sincerely,

Fethi BenJemaa
Ag Water Use Efficiency Section Chief

CARMICHAEL WATER DISTRICT

7837 FAIR OAKS BOULEVARD
CARMICHAEL, CALIFORNIA 95608
TELEPHONE (916) 483-2452
FAX (916) 483-5509

January 4, 2011

Mr. Baryohay Davidoff
Department of Water Resources
Office of Water Use Efficiency & Transfer
901 P Street, Third Floor
Sacramento, CA 95814

Regarding: AB 1420

Dear Mr. Davidoff:

Carmichael Water District (CWD) respectfully submits the required AB 1420 Documentation for your review. Currently CWD is not a signatory with the California Urban Water Conservation Council (CUWCC); however, the District will be seeking the Board of Director's approval for membership for fiscal year 2011-2012. CWD has been a Sacramento Area Water Forum (WF) signatory since 2000 and has been operating its water conservation program in good faith under the District's individual purveyor agreement. Until recently the BMP implementation targets differed between CUWCC and the WF. Due to the historic differences between CUWCC and the WF in BMP coverage, CWD submits Self-Certification Table 2 to demonstrate future compliance for your approval.

Attachments:

- AB 1420 Self–Certification Table 2
- Email correspondence regarding submission of AB 1420 Self–Certification Table 2
- Sacramento Water Forum high-efficiency clothes washer/WaterSense toilet deferral with an incorporated cost benefit analysis.
- Sacramento Water Forum Deferral Agreement

On Table 2 CWD is indicating compliance with CUWCC BMPs with the exception of BMPs 5, 6, 9, 11, and 14 which are clarified below.

BMP 5 Large Landscape Conservation Programs
CWD currently offers large landscape audits and system check-ups; however, the current program does not meet the CUWCC's compliance levels. CWD is seeking to participate the Prop 84 Grant opportunities and will be including funding for this program as part of the District's 2011-2012 fiscal year budget.

BMPs 6 & 14 High-Efficiency Washing Machine and Residential ULFT Rebate Programs

CWD along with the WF has reviewed the CUWCC cost effective tool for both High-Efficiency Washing Machine and ULFT rebates. The result of the subsequent analysis has deemed these programs to be not cost effective for the District and funds have been reallocated to facilitate the District's acceleration of meter retrofits. Once CWD becomes a CUWCC signatory the District will be seeking an exemption for these BMPs. See attached documents.

BMP 9 Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts

As part of CWD's WF agreement, the District offers water use reviews and audits for its CII accounts. CWD does not offer incentives and therefore the current program does not meet CUWCC implementation requirements. Since 2000 CWD has focused funding on its aggressive Meter Retrofit Program and has accelerated the program with anticipated completion by 2014. The accelerated nature of this program has considerably increased the Districts annual water savings. Once the retrofit program is complete CWD will allocate further funding for CII programs and over 10 years will meet the CUWCC coverage requirements.

BMP 11 Conservation Pricing

Currently CWD's rate structure is set at 61% volumetric and 39% fixed for customers on a metered rate. The CUWCC requires an agency signing the MOU after December 31, 1997 to implement a 70% volumetric and 30% fixed rate structure within seven years of signing the Memorandum of Understanding. CWD has been moving forward in this direction since the beginning of the meter retrofit program and anticipates compliance within the seven year period.

Additional Conservation Measures

CWD has made great efforts and strides in water conservation: adding staff to offer indoor and outdoor water audits, customer assistance, customer education, and fostering relationships with both the parks departments and local schools. CWD maintains an active public outreach program participating in various outreach events and frequently presents/speaks at local school and associations. This has been key in building positive relationships and partnerships within the community and spreading the water conservation message.

Carmichael Water District requests approval of AB 1420 Compliance by the Department of Water Resources as we are moving forward with conservation programs that support the CUWCC and State of California's water saving goals.

Sincerely,

Steve Nugent
General Manger

AB 1420 Self- Certification Statement Table 2

Provide Schedule, Budget, and Finance Plan to Demonstrate Commitment to Implement All BMP's to Become in Compliance with BMP Implementation - Commencing Within 1st Year of Agreement for Which Applicant Receives Funds.

Self-Certification Statement: The Urban Water Supplier and its authorized representative certifies, under penalty of perjury, that all information and claims, stated in this table, regarding compliance and implementation of the BMPs, including alternative conservation approaches, are true and accurate. This signed AB 1420 Self-Certification Statement Table 1 and Table 2 are the basis for granting funds by the Funding Agency. Falsification and/or inaccuracies in AB 1420 Self Certification Statement Table 1 and Table 2, and in any supporting documents substantiating such claims may, at the discretion of the funding agency, result in loss of all State funds to the applicant. Additionally, the Funding Agency, in its sole discretion, may halt disbursement of grant or loan funds, not pay pending invoices, and/or pursue any other applicable legal remedy and refer the matter to the Attorney General's Office.

Name of Signatory Steve Nugent Title of Signatory General Manger Signature of signatory Steve Nugent Date 3/17/2011

Application Date:

Proposal Identification Number:

CUWCC Member? Yes/No: No

Applicant Name: Carmichael Water District

Is the UWM Plan Deemed Complete by DWR? Yes/No: Yes

Project Info:

Applicant's Contact Information: Name: Chris Nelson 916-483-2452

Participants:	Retailer (List Below)		

C1	C2	C3	C4	C5	*C6	C7	C8	**C9	**C10	**C11	C12			C13	C14	C15	C16	C17	C18	C19
				BMP Implemented by Retailers and/or Wholesalers				Compliance Options / Alternative Conservation Approaches (1)			BMP is Exempt (2)			Implementation Scheduled to Commence within 1st Year of Agreement						
CUWCC 2010 Flex Track BMPs	BMPs required for Wholesale Supplier	BMPs required for Retail Supplier	BMPs	Retailer Yes/No	Wholesaler Yes/No	Regional Yes/No	Alternative Conservation Approaches Yes/No	BMP Checklist	Flex Track	Gallons Per Capita Per Day GPCD	Not Cost Effective	Lack of Funding	Lack of Legal Authority	Start Date (MM/YR)	Completion Level (%)	BMP Completion Date (MM/YR)	Budget (Dollars)	Funding Source & Finance Plan to Implement BMPs	Meets CUWCC Coverage Yes/No	Funds Requested & Available (See AB 1420 Compliance Table 3 Yes/No)
1. Utility Operations Programs																				
1.11	✓	✓	BMP 12 Conservation Coordinator																	
1.12		✓	BMP 13 Water Waste Prohibitions																	
1.13	✓	✓	BMP 10 Wholesale Agency Assistance Programs																	
1.20	✓	✓	BMP 3 System Water Audits, Leak Detection/Repair	Yes				X						Jul-11	0%	Jul-21	* $12450	District Budget	Yes	
1.30		✓	BMP 4 Metering with Commodity Rates for All New/Retrofit of Existing connections	Yes					X					Jan-00	80%	Jul-15	* $153270	District Budget	Yes	
1.40		✓	BMP 11 Conservation Pricing	Yes				X						Jul-15	0%	Jul-21	No budget dollars are currently allocated to this BMP. Rate study will be conducted during FY 2014/15 after completion of meter retrofit program. See cover letter	District Budget	Yes	
2. Educational Programs																				
2.10	✓	✓	BMP 7 Public Information	Yes				X						Jul-11	0%	Jul-21	* $6410	District Budget	Yes	
2.20	✓	✓	BMP 8 School Education	Yes				X						Jul-11	0%	Jul-21	* $6410	District Budget	Yes	
3. Residential																				

CUWCC 2010 Flex Track BMPs	BMPs required for Wholesale Supplier	BMPs required for Retail Supplier	BMPs	BMP Implemented by Retailers and/or Wholesalers			Alternative Conservation Approaches	Compliance Options / Alternative Conservation Approaches (1)			BMP is Exempt (2)			Implementation Scheduled to Commence within 1st Year of Agreement						
				Retailer *Yes/No*	Wholesaler *Yes/No*	Regional *Yes/No*	Alternative Conservation Approaches Yes/No	BMP Checklist	Flex Track	Gallons Per Capita Per Day GPCD	Not Cost Effective	Lack of Funding	Lack of Legal Authority	Start Date (MM/YR)	Completion Level (%)	BMP Completion Date (MM/YR)	Budget (Dollars)	Funding Source & Finance Plan to Implement BMPs	Meets CUWCC Coverage Yes/No	Funds Requested for Year 1 (See AB 1420 Compliance Requirements)
3.11		✓	BMP 1 **Indoor** Water Survey for Single/Multi-Family Residential Customers	Yes				X						Jul-11	0%	Jul-21	* $5971	District Budget	Yes	
3.12			BMP 1 **Outdoor** Water Survey for Single/Multi-Family Residential Customers	Yes				X						Jul-11	0%	Jul-21	* $5971	District Budget	Yes	
3.20		✓	BMP 2 Residential Plumbing Retrofit	Yes				X						Jul-11	0%	Jul-21	* $6513	District Budget	Yes	
3.30		✓	BMP 6 High-Efficiency Washing Machine Rebate Programs								X									
3.40		✓	BMP 14 Residential ULFT Replacement Programs								X									
4. Commercial, Industrial, Institutional																				
4.00		✓	BMP 9 Conservation programs for Commercial, Industrial, and Institutional (CII) Accounts	Yes					X					7/11	0%	7/1/2021 BMP to be met over 10 year after meter retrofit. See cover letter.	First year allocation $1,024. Funds currently allocated to meter retrofit. Future budget after 2014 to include BMP. See cover letter	District Budget	Yes	
5. Landscape																			Yes	
5.00		✓	BMP 5 Large Landscape Conservation Programs and Incentives	Yes				X						7/11	0%	Jul-21	* $2500	District Budget	Yes	

* Budget is associate with first year implementation unless noted otherwise.

*C6: Wholesaler may also be a retailer (supplying water to end water users)

**C9, ** C10, and **C11: Agencies choosing an alternative conservation approach are responsible for achieving water savings equal or greater than that which they would have achieved using only BMP list.

(1) For details, please see http://www.cuwcc.org/mou/exhibit-1-bmp-definitions-schedules-requirements.aspx.

(2) BMP is exempt based on cost-effectiveness, lack of funding, or lack of legal authority, as detailed in the CUWCC MOU.

AB 1420 Self- Certification Statement Table 1

Note: Table 1 documents Status of Past and Current BMP implementation.

Self-Certification Statement: The Urban Water Supplier and its authorized representative certifies, under penalty of perjury, that all information and claims, stated in this table, regarding compliance and implementation of the BMPs, including alternative conservation approaches, are true and accurate. This signed AB 1420 Self-Certification Statement Table 1, and Table 2 are the basis for granting funds by the Funding Agency. Falsification and/or inaccuracies in AB 1420 Self Certification Statement Table 1, and Table 2 and in any supporting documents substantiating such claims may, at the discretion of the funding agency, result in loss of all State funds to the applicant. Additionally, the Funding Agency, in its sole discretion, may halt disbursement of grant or loan funds, not pay pending invoices, and/or pursue any other applicable legal remedy and refer the matter to the Attorney General's Office.

Name of Signatory Steve Nugent Title of Signatory General Manager Signature of signatory Steve Nugent Date 3/17/2011

Application Date:

Proposal Identification Number: CUWCC Member? Yes/No No

Has Urban Water Supplier submitted a 2005 Urban Water Management Plan? Yes/No Yes Is the UWM Plan Deemed Complete by DWR? Yes/No Yes

Applicant Name: Carmichael Water District

Project Title:

Applicant's Contact Information: Name: Chris Nelson Phone: 916-483-2452 E-mail: chris@carmichaelwd.org

Participants:

Retailer (List Below)	*Wholesaler (List Below)*

C1	C2	C3	C4	C5	*C6	C7	**C8	**C9	**C10	C11	C12	C13	C14	C15	C16	C17	C18
				BMP Implemented by Retailers and/or Wholesalers / *BMP*			**Compliance Options/Alternative Conservation Approaches (1)**			**BMP Is Exempt (2)**			**BMP Implementation Requirements Met**				
BMPs required for Wholesale Supplier	BMPs required for Retail Supplier	BMPs	Retailer *Yes/No*	Wholesaler *Yes/No*	Regional *Yes/No*	BMP Checklist	Flex Track	Gallons Per Capita Per Day GPCD	Not Cost Effective	Lack of Funding	Lack of Legal Authority	CUWCC MOU Requirement Met: Retailer *Yes/No*	CUWCC MOU Requirement Met: Wholesaler *Yes/No*	Date of BMP Report Submitted to CUWCC for (2007-2008) (MOU Signatories)	Date BMP Implementation Data Submitted to DWR in CUWCC Format (Non MOU Signatories) (3)	All Supporting Documents have been Submitted Yes/No	
	✓	BMP 1 Water Survey for Single/Multi-Family Residential Customers	Yes			x						No		N/A		Yes	
	✓	BMP 2 Residential Plumbing Retrofit	Yes			x						No		N/A		Yes	
✓	✓	BMP 3 System Water Audits, Leak Detection	Yes			x						No		N/A		Yes	
✓	✓	BMP 3 Leak Repairs	Yes			x						No		N/A		Yes	
	✓	BMP 4 Metering with Commodity Rates for All New connections	Yes				x					No		N/A		Yes	
	✓	BMP 4 Retrofit of Existing Connections	Yes				x					No		N/A		Yes	

C1	C2	C3	C4	C5	*C6	C7	**C8	**C9	**C10	C11	C12	C13	C14	C15	C16	C17	C18
				BMP Implemented by Retailers and/or Wholesalers / *BMP*			**Compliance Options/Alternative Conservation Approaches (1)**			**BMP Is Exempt (2)**			**BMP Implementation Requirements Met**				
BMPs required for Wholesale Supplier	BMPs required for Retail Supplier	BMPs		Retailer *Yes/No*	Wholesaler *Yes/No*	Regional *Yes/No*	BMP Checklist	Flex Track	Gallons Per Capita Per Day GPCD	Not Cost Effective	Lack of Funding	Lack of Legal Authority	CUWCC MOU Requirement Met: Retailer *Yes/No*	CUWCC MOU Requirement Met: Wholesaler *Yes/No*	Date of BMP Report Submitted to CUWCC for (2007-2008) (MOU Signatories)	Date BMP Implementation Data Submitted to DWR in CUWCC Format (Non MOU Signatories) (3)	All Supporting Documents have been Submitted Yes/No
	✓	BMP 5 Large Landscape Conservation Programs and Incentives		Yes			x						No		N/A		Yes
	✓	BMP 6 High-Efficiency Washing Machine Rebate Programs		Yes						X			N/A		N/A		Yes
✓	✓	BMP 7 Public Information		Yes			x						No		N/A		Yes
✓	✓	BMP 8 School Education		Yes			x						No		N/A		Yes
	✓	BMP 9 Conservation programs for Commercial, Industrial, and Institutional (CII) Accounts		No				x					No		N/A		Yes
✓		BMP 10 Wholesale Agency Assistance Programs		N/A									N/A		N/A		N/A
	✓	BMP 11 Conservation Pricing		Yes			x						No		N/A		Yes
✓	✓	BMP 12 Conservation Coordinator		Yes			x						Yes		N/A		Yes
	✓	BMP 13 Water Waste Prohibitions		Yes			x						Yes		N/A		Yes
	✓	BMP 14 Residential ULFT Replacement Programs		No						X			N/A		N/A		Yes

***C6:** Wholesaler may also be a retailer (supplying water to end water users)
****C8, **C9, **, and C10:** Agencies choosing an alternative conservation approach are responsible for achieving water savings equal or greater than that which they would have achieved using only BMP list.

(1) For details, please see: http://www.cuwcc.org/mou/exhibit-1-bmp-definitions-schedules-requirements.aspx.
(2) BMP is exempt based on cost-effectiveness, lack of funding, and lack of legal authority criteria as detailed in the CUWCC MOU
(3) Non MOU signatories must submit to DWR reports and supporting documents in the same format as CUWCC

To: Water Conservation Negotiating Team
From: Steve Nugent, Carmichael Water District
Date: October 2, 2009
Subject: Proposed water conservation deferral

OVERVIEW

Under the water conservation element of the Water Forum Agreement, the Carmichael Water District (CWD) is proposing to defer rebates for high-efficiency clothes washer and WaterSense toilets. In place of these BMPs, CWD is proposing to allocate funds to accelerate the installation of residential meters (Table 1).

Figure 1 shows the savings benefits from accelerated metering compared with metering requirements and the conservation potential associated with rebates for the toilets and washers. The remainder of this proposal provides information on CWD's water conservation program and specific information on rebate programs for high-efficiency clothes washers and WaterSense toilets.

Table 1. Summary of proposed deferral of washer and toilet rebates for residential meters.

Item	**Full Implementation**	**Redesigned Program**	**Proposed Deferral**	**Unit**
	Washers and Toilet Rebates		Accelerate Meter Installs	
Cost	271,310	56,565	272,160	$
Benefits	57,001	57,002		$
Benefit to cost ratio[1]	0.21	1.01		
Lifetime savings	482	482		AF
Water cost[2]	563	117		$/AF

1 Benefit to cost ratio is the benefit ($)/cost ($)
2 Water cost: Program cost ($)/Lifetime savings

All data and information used in this analysis was provided by the CWD, except for the estimate of conservation per device. Conservation per toilet or washer was from information available through the CA Urban Water Conservation Council. In addition, Council analysis tools were used to determine total benefits and the cost-effectiveness of the BMPs.

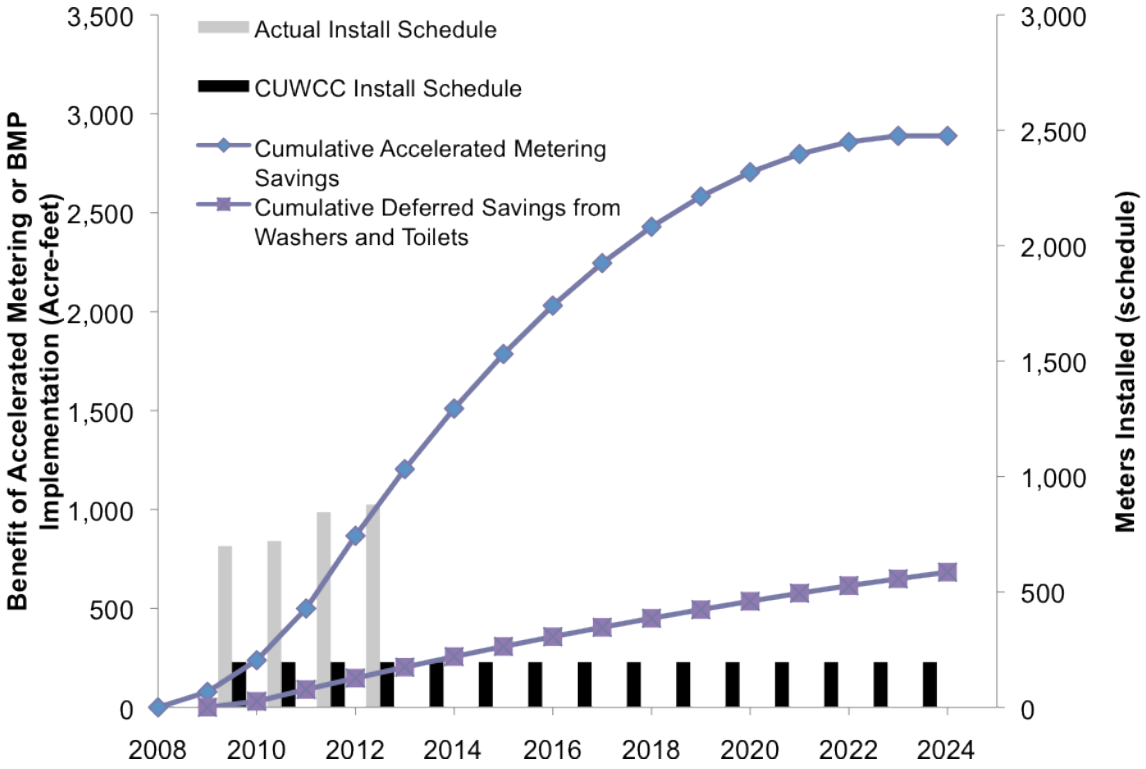

Figure 1. Metering schedule and savings benefits associated with actual metering and BMPs proposed for deferral.

SECTION 1. DEMOGRAPHICS

This section covers water use and demographics used to prepare targets and estimate conservation potential. Connection and meter information is given in Table 1.1.

Table 1.1. Total and metered connections by customer class as of Dec 2009.

Customer Class	Connections	Metered	Unmetered
Single-family	9,777	6,923	2,854
Multi-family	1,003	1,003	0
CII	378	378	0
Landscape	30	30	0

Total water production in Table 1.2 is broken down by metered (Table 1.3) and unmetered water use (Table 1.4). The unmetered supply (3,040 acre-feet) is a combination of system loss and use by unmetered, single family homes. For this analysis, system loss was assumed to be 8% of production (846 acre-feet) and the unmetered single-family use is 2,194 acre-feet or 0.77 acre-feet per unmetered connection. Assuming that metering saves 20% this equates to 0.156 acre-foot per connection per year.

Table 1.2. 2009 water production by source.

Water Production	**Acre-feet**
Surface	8,965
Ground	1,609
Total	10,574

Table 1.3. Metered water use by customer class.

Customer Class	Metered	Use per Meter (acre-foot)
Single-family	4,502	0.65
Multi-family	1,586	1.58
CII	874	2.31
Landscape	572	19.07
Total	7,534	

Table 1.4. Unmetered water use by customer class assuming system loss of 8%.

Unmetered Use (Water Production – Metered Water Use)		
Component	**Acre-feet**	**Use/Connection**
	acre-feet	
Single-family	2,194	0.768
System loss	846[1]	
Total	3,040	

[1] Assumes an 8% system loss.

Other demographics (Table 1.5) used to prepare targets for Residential Assistance Program and WaterSense toilet rebates.

Table 1.5. Other demographics used to prepare BMP targets.

	Single Family	Multi Family
1992 housing stock	9,846	6,370
Natural replacement (% of remaining stock)	4.00%	4.00%
Housing demolition (% of remaining stock)	0.50%	0.50%
Units with 3.5+ gpf Toilets in 2008	5,141	3,326
Average resale rate	4.91%	10.40%
Average persons per unit	2.60	2.60
Average toilets per unit	2.00	1.25
Percent of 1992 housing stock with pre 1980 toilets	50%	50%
Average savings per home (gpd)	39.55	44.95
Average number of units or dwellings per mult-family connection	--	5.0

SECTION 2. WATER CONSERVATION TARGETS

Table 2.1 is a summary of the foundational and programmatic BMPs for CWD. The foundational BMPs apply to all MOU signatories and are considered foundational to a water conservation program. Under the Water Forum Agreement, the programmatic BMPs are eligible for a deferral if they are determined to be not locally cost-effective. For this analysis, a BMP is not locally cost-effective if the program costs for a BMP are greater that than the monetary benefits to CWD. Table 2.2 is a summary of the BMPs to be implemented under accelerated metering and the deferral of toilets and washers.

Table 2.1. Summary of targets by BMP based on CUWCC coverage.

BMP	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Foundational (ongoing and required by all Council members)										
1. Utility Operations Programs										
Coordinator	fund coordinator position									
Water Waste Prevention	update ordinance as necessary									
Wholesale Assistance	provide assistance									
System Audits	follow system audit procedures									
Meter Retrofit (installs)	178	meters annually (2,854 total) assumes metering completed by 2024								
Retail Conservation Pricing	follows metering by one year									
2. Educational Programs										
Public Info	fund public information program									
School Education	fund school education program									
Programmatic (subject to cost-effective analysis)										
3. Residential	CUWCC Implementation Targets									
Res. Asst. Prog. (surveys)	222	222	222	222	222	222	222	222	222	222
Res. Land Surveys	147	147	147	147	147	147	147	147	147	147
High Eff. Clothes Washers	88	88	98	98	98	98	98	98	98	98
Water Sense Toilet	836	836	836	836	836	836	836	836	836	836
Water Sense Specifications	rate based on new home construction									
4. CII	Bi-annual Savings Targets (acre-feet)									
CII Savings	4		20		36		53		75	
5. Landscape	Implementation Targets									
Dedicated Land. (budgets)	3	3	3	3	3	3	3	3	3	3
Mixed Use CII with Landscape	6		8		10		12		15	

Table 2.2. Summary of targets by BMP based on CUWCC coverage, proposed deferral and CWD's metering schedule. Bold indicates changes with Table 2.1.

BMP	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Foundational (ongoing and required by all Council members)										
1. Utility Operations Programs										
Coordinator	fund coordinator position									
Water Waste Prevention	update ordinance as necessary									
Wholesale Assistance	provide assistance									
System Audits	follow system audit procedures									
Meter Retrofit (installs)	**699**	**721**	**846**	**879**	**All metering completed by 2012-13.**					
Retail Conservation Pricing	follows metering by one year									
2. Educational Programs										
Public Info	fund public information program									
School Education	fund school education program									
Programmatic (subject to cost-effective analysis)										
3. Residential	CUWCC Implementation Targets									
Res. Asst. Prog. (surveys)	222	222	222	222	222	222	222	222	222	222
Res. Land Surveys	147	147	147	147	147	147	147	147	147	147
High Eff. Clothes Washers	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Water Sense Toilet	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Water Sense Specifications	rate based on new home construction									
4. CII	Bi-annual Savings Targets (acre-feet)									
CII Savings	4		20		36		53		75	
5. Landscape	Implementation Targets									
Dedicated Land. (budgets)	3	3	3	3	3	3	3	3	3	3
Mixed Use CII with Landscape	6		8		10		12		15	

SECTION 3. PROGRAM COST

Program costs are based on providing rebates ($50/washer and $175/toilet), advertising, administration, monitoring and verification that the washers or toilets were installed. Total costs for each BMP that is affected by this proposal are presented in Table 3.1.

Table 3.1. Summary of program cost, for the deferred BMPs and accelerated metering.

BMP	2009 $	Note
Foundational (ongoing and required by all Council members)		
1. Utility Operations Programs		
Coordinator	not analyzed	
Water Waste Prevention	not analyzed	
Wholesale Assistance	not analyzed	
System Audits	not analyzed	
Meter Retrofit (installs)[1]	272,160	288 meters @ $945/meter (deferral)
Retail Conservation Pricing	not analyzed	
2. Educational Programs		
Public Info	not analyzed	
School Education	not analyzed	
Programmatic (subject to cost-effective analysis)		
3. Residential		
Res. Asst. Prog. (surveys)	not analyzed	
Res. Land Surveys	not analyzed	
High Eff. Clothes Washers	18,979	$213/rebate, includes staff time, advertise
Water Sense Toilet	252,331	$302/rebate, includes staff time, advertise
Water Sense Specifications	not analyzed	
4. CII		
CII	not analyzed	
5. Landscape		
Dedicated Land. (budgets)	not analyzed	
Mixed Use CII with Landscape	not analyzed	
Programmatic total (analyzed)	271,310	

[1] these costs are for the proposed deferral

SECTION 4. BENEFITS

Benefits are based on the amount of water conservation, the life of the water conservation action and the cost savings that occur from implementing a BMP. Table 4.1 details the avoidable cost savings, per acre-foot of water. Data in Table 4.1 is for the marginal cost of surface water production. Although CWD produces groundwater, the costs are slightly lower and therefore were not considered for the cost-effectiveness analysis. Under the Water Forum's, water

conservation element, a value of $75/acre-foot is assumed for environmental benefit. Also, the cost-effective analysis was conducted using 2008 water use information and this differs slightly from the 2009 information given in Section 1 and does not affect the results.

Table 4.1. Avoided costs of water based on the 10,418 acre-feet of surface water produced in 2008.

Avoidable Cost Component	**Cost**	**Unit Cost**
	$	**$/acre-foot**
Avoided Supply	32,920	3.16
Avoided Capacity and Distribution	0	0.00
Operations		
Utilities	707,840	67.94
Chem & Gases	79,775	7.66
Environmental Benefit		75
Total		153.76

Water savings and monetary benefits are presented in Table 4.2 for the affected BMPs. Water savings assumptions for the washers, toilets, and meters are based on information available from the CA Urban Water Conservation Council.

Table 4.2. Summary of program benefit, per BMP.

BMP	**Life-time Benefit** Conservation	Value	**Life**	**Note**
Foundational (ongoing and required by all Council members)				
1. Utility Operations Programs				
Coordinator	not quantifiable			
Water Waste Prevention	not quantifiable			
Wholesale Assistance	not quantifiable			
System Audits	not analyzed			
Meter Retrofit[1]	0.156 acre-foot per meter per year, 20 year life			
Retail Conservation Pricing	not analyzed			
2. Educational Programs				
Public Info	not quantifiable			
School Education	not quantifiable			
Programmatic (subject to cost-effective analysis)				
3. Residential				
Res. Asst. Prog.	not analyzed			
Res. Land Surveys	not analyzed			
High Eff. Clothes Washers	17.2 acre-feet	$2,248	12 years	CUWCC estimate; 5,280 g/yr/ device
WaterSense Toilet	465 acre-feet	$54,754	25 years	CUWCC est: 27.4 gpd sf & 44 gpd mf/toilet
WaterSense Specifications	not quantifiable			
4. CII	not analyzed			
5. Landscape	not analyzed			

[1] This is the proposed deferral benefit.

SECTION 5. COST EFFECTIVENESS ANALYSIS

The cost-effectiveness analysis was done using the Council's cost-effective spreadsheets with an agency environmental benefit of $75 per acre-foot (Table 4.1). The analysis shows that neither toilets or clothes washer rebates are cost-effective at the current costs (Table 5.1). Table 5.2 shows the combined costs and benefits for the BMPs.

Table 5.1. Results of the cost-effectiveness analysis for full implementation targets for High-efficiency clothes washers and WaterSense toilets.

High-efficiency washers	**Full Implementation**	**Units**
Targets	89	Count
Cost	18,979	$
Benefits	2,248	$
Benefit to cost ratio[1]	0.12	
Lifetime savings	17	AF
Water cost[2]	1,103	$/AF
Rebate Amount	50	$/washer
Unit cost	213	$/washer
WaterSense Toilets	**Full Implementation**	**Units**
Targets	836	Count
Cost	252,331	$
Benefits	54,754	$
Benefit to cost ratio[1]	0.22	
Lifetime savings	465	AF
Water cost[2]	543	$/AF
Rebate Amount	175	$/toilet
Unit cost	302	$/toilet

1 Benefit to cost ratio is the benefit ($)/cost ($)
2 Water cost Program cost ($)/Lifetime savings

Table 5.2. Combined, full program costs and benefits.

Washers & Toilets	**Full Implementation**	**Units**
Cost	271,310	$
Benefits	57,001	$
Benefit to cost ratio[1]	0.21	
Lifetime savings	482	AF
Water cost[2]	563	$/AF

1 Benefit to cost ratio is the benefit ($)/cost ($)
2 Water cost: Program cost ($)/Lifetime savings

SECTION 6. PROGRAM REDESIGN

A unit cost of $65 per toilet and $25 per washer would make the program cost-effective with a benefit to cost ratio near 1.0 (Table 6.1). However, this does not allow any CWD staff participation or advertising. No staff participation means that there is no time for, processing rebates or for verification that the units were installed. The program is not considered viable at these rebate amounts.

Table 6.1. Results of the cost-effectiveness analysis for full implementation targets for High-efficiency clothes washers and WaterSense toilets.

High-efficiency washers	**Redesigned Program**	**Units**
Targets	89	Count
Cost	2,225	$
Benefits	2,248	$
Benefit to cost ratio[1]	1.01	
Lifetime savings	17	AF
Water cost[2]	129	$/AF
Rebate Amount	25	$/washer
Unit cost	25	$/washer
WaterSense Toilets	**Redesigned Program**	**Units**
Targets	836	Count
Cost	54,340	$
Benefits	54,754	$
Benefit to cost ratio[1]	1.01	
Lifetime savings	465	AF
Water cost2	117	$/AF
Rebate Amount	65	$/toilet
Unit cost	65	$/toilet

1 Benefit to cost ratio is the benefit ($)/cost ($)
2 Water cost: Program cost ($)/Lifetime savings

Table 6.2. Combined costs and benefits for full implementation and the redesigned program.

Item	**Full Implementation**	**Redesigned Program**	**Units**
Cost	271,310	56,565	$
Benefits	57,001	57,002	$
Benefit to cost ratio[1]	0.21	1.01	
Lifetime savings	482	482	AF
Water cost[2]	563	117	$/AF

1 Benefit to cost ratio is the benefit ($)/cost ($)
2 Water cost: Program cost ($)/Lifetime savings

SECTION 7. PROPOSED DEFERRAL

As an alternative, CWD proposes that the costs required to fully implement these BMPs ($271,310, Table 5.2) be used to accelerate meter retrofits. This funding ($272,160, Table 7.1) will accelerate the installation of 288 meters, at a cost of $945/meter. The expected annual savings from the meter installations is 45 acre-feet, compared with 30.5 acre-feet of first year savings from the toilet and clothes washer rebates. The funding will offset the $4,500,000 CWD is currently spending to accelerate meter retrofits. CWD is requesting the deferral until the completion of the District's meter retrofit program in 2014.

Table 7.1. Redesigned program compared with proposed deferral.

Item	Redesigned Program	Proposed Deferral	Units
Cost	56,565	272,160	$
Benefits	57,002		$
Benefit to cost ratio[1]	1		
Lifetime savings	482		AF
Water cost[2]	117		$/AF

1 Benefit to cost ratio is the benefit ($)/cost ($)
2 Water cost: Program cost ($)/Lifetime savings

To: Water Conservation Negotiating Team
From:
Date:
Subject: Format and content of water conservation deferral

The following outline is suggested as the format to use for requesting a deferral under the Water Forum Agreement. The deferral request is designed to provide the negotiation team with adequate information for them to determine if the deferral request is in compliance with the Water Forum Agreement.

OVERVIEW

Narrative summary of proposed deferral that may include figures and tables of various components.

SECTION 1. DEMOGRAPHICS

Table 1.1. Total and metered connections by customer class.

Table 1.2. Water production by source.

Table 1.3. Metered and unmetered water use by customer class.

Table 1.4. Other demographics used to prepare BMP targets.

SECTION 2. WATER CONSERVATION TARGETS

Table 2.1. Summary of full program targets by BMP.

Table 2.2. Summary of targets by BMP with deferral.

SECTION 3. PROGRAM COST

Table 3.1. Summary of program cost by BMP.

SECTION 4. BENEFITS

Table 4.1. Avoided costs of water

Table 4.2. Summary of program benefit, per BMP.

SECTION 5. COST EFFECTIVENESS ANALYSIS

Table 5.1. Results of the cost-effectiveness analysis for full implementation of all BMPs.

SECTION 6. PROGRAM REDESIGN

SECTION 7. PROPOSED DEFERRAL

Regional Water Efficiency Program
Demand Management Measures G & H

The UWMP Act empowers DWR to determine whether the urban water supplier is implementing the identified Demand Management Measures (DMMs). The UWMP Act in 10631.5(b)(2)(A) states:

> ". . . 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 [or] (ii) Compliance on a regional basis . . ."

Regional Water Authority (RWA) has implemented a regional water conservation program for the past 10 years. Prior to 2001, a regional water conservation public outreach and school education program was coordinated by the Sacramento Area Water Works Association (SAWWA). In 2001, a full-time staff person was hired by RWA with funding supported provided through the local wholesaler, San Juan Water District. In subsequent years, the Regional Water Efficiency Program (RWEP) has been supported through member dues and federal and state grant funds.

The overall goal of the RWEP is to maximize customer participation in water conservation programs. Historically and for the foreseeable future, the regional public information and school education program elements include: school outreach materials and presentations, media advertising campaigns, commercial consumer outreach, promotional materials, community events and fairs, evapotranspiration data availability, a Web site, and allied organizations outreach.

The following descriptions are provided DMMs G and H and represent a combination of Carmichael Water District's specific program in conjunction with full participation by Carmichael Water District in the Regional Water Authority's Regional Water Efficiency Program in order to meet some or all of the DMM requirements according the UWMP Act requirements.

Summaries for DMMs G and H: Public Information and School Education

DMM G – Public Information

Description of Ongoing Regional Public Information Campaign

Carmichael Water District fully participates in the RWEP Public Information Campaign.

The Regional Water Efficiency Program has a regional outreach program coordinated with support from a Public Outreach and School Education Committee comprised of RWEP member conservation coordinators and Public Information Officers.

In 2005, the Regional Water Efficiency Program developed a new logo and theme for the "Be Water Smart" public information campaign. To kick off the campaign, RWA

undertook a host of outreach activities including a region-wide "Ultimate Garden Makeover Contest" in 2008 and 2009. Overall, goals of the Be Water Smart program are to:

- Increase the number of Water-Wise House Call requests
- Increase visibility for RWA's water conservation messages in the local media
- Drive traffic to the RWA website and Be Water Smart hotline

In 2010, the Regional Water Authority (RWA) and 19 local water providers announced a new public outreach and advertising campaign called "Blue Thumb". The campaign is designed to help residents use less water outdoors. With the Sacramento region's hot, dry climate and long summer season, more than 65 percent of a household's yearly water consumption typically goes toward landscape irrigation. Of that, 30 percent is lost due to overwatering or evaporation, and is the target of the campaign messaging with the call for customer behavioral changes in watering practices.

Goals for the Regional Public Information Campaign

- Raise awareness about the need to use water efficiently outdoors.
- Motivate target audience to undertake key behaviors that are most likely to reduce outdoor water use.

Target Audience for the Regional Public Information Campaign

- Residential water customers within the RWEP participant area.
    - In particular, RWA and ACWA surveys show women over age 50 are most willing to adopt water-efficient behaviors

The ongoing regional campaign shows residents how to use water efficiently outdoors through every-day tasks such as adjusting their irrigation system according to the season or using a shut-off nozzle on their hose. It stars well-known community influencers, including Sacramento Mayor Kevin Johnson, Meteorologist Elissa Lynn and Dinger of the Sacramento River Cats, plus six local residents showing off their "Blue Thumb" and demonstrating how they made a personal commitment to use water wisely.

The Blue Thumb Campaign has a web site (BeWaterSmart.info) where visitors can take the pledge to use water wisely and view video clips from spokespersons, such as Sacramento Mayor Kevin Johnson, and campaign participants explaining how they earned their Blue Thumb. The web site has been expanded to be a more comprehensive water conservation related site.

Steps to Implement the Regional Public Information Campaign

RWA provides avenues and tools for program participants to carry the Blue Thumb campaign in their own outreach efforts.

Tools include key messages, Web site/newsletter text, bill insert template, Blue Thumb pledge and collateral materials. Outreach avenues include the opportunity to nominate customers to star in the outreach campaign, participation in the Home Depot partnership by featuring their logo on the in-store banners and connecting with customers at events. One water provider whose customer was selected to star in television advertising posted the customer's Blue Thumb interview to YouTube with a link to their Web site. Others included campaign information on their Web sites, newsletters, billing envelopes and "on-hold" phone messages, as well as collected pledges via the form or pledge banner at community events.

Marketing Strategy for the Regional Public Information Campaign

The following marketing strategies were used as tactics to meet the goals of the Public Information Campaign.

Specifically for the program, tactics used in the period of 2005-2009 included:

- Planned and executed the 2008 and 2009 Ultimate Water Smart Garden Makeover Contest as a regional media event which included a full remake of the winner's front yard landscape with donated time and materials worth $40,000
- Public service announcements (hundreds of airings on radio and TV)
- Paid advertisements (print ad, television segments)
- Manage Be Water Smart hotline, 1-888-WTR-TIPS
- 5 Be Water Smart e-blasts to 40,000 people
- Participation at public events
- Bill inserts, brochures (e.g. River-Friendly Landscaping and Rules of Thumb for Water Wise Gardening)
- Demonstration garden support to the Fair Oaks Horticulture Center managed by the Sacramento County University of California Cooperative Extension (UCCE)
- Develop partnerships for co-promotion of programs including the following agencies:
    - Sacramento Municipal Utility District (SMUD)
    - Sacramento Regional County Sanitation District (SRCSD)
    - Sacramento Area Water Forum
    - Sacramento Bee
    - Sacramento Stormwater Quality Partnership
    - University of California Cooperative Extension

In addition, the tactics to meet the 2011 and future goals of the revised Public Information campaign include:

- Campaign web site (BeWaterSmart.info) where visitors can take the pledge to use water wisely and view video clips from campaign participants explaining how they earned their Blue Thumb
- A statistically valid telephone survey completed in 2009 of 604 adults to provide insight into attitudes, behaviors, messages and methods of communication. The survey will be repeated in September 2011 to evaluate the campaign.
- A unique and eye-catching campaign graphic identity
- Media outreach to announce the campaign and promote the opportunity for residents to star in advertising, as well as a campaign launch press event
- Television and radio advertising (paid) on KOVR (CBS TV), Comcast Cable, Capitol Public Radio and Clear Channel radio stations
- Public Service Announcements (PSAs) (no-cost placement) distributed to television and radio stations throughout the Sacramento region
- Promotional partnership with WaterSense and 16 Home Depots throughout the Sacramento region for Water Awareness Month in May. This included training by RWA on water efficient topics for Home Depot associates, promoting RWA's "Top 10 List" of water efficient products either via end-cap displays or table displays, in-store banners promoting Water Awareness Month and events where water providers connected with customers at Home Depot stores
- Partnership with the Sacramento River Cats (Sacramento's popular minor league baseball team) and Save Our Water that included placing water efficiency advertisements in 110 bathroom stalls at Raley Field, a blast e-mail by the Sacramento River Cats to 1,700 fans promoting the Blue Thumb Web site pledge and inclusion of a promotional flyer in 1,000 Save Our Water totes distributed at the California State Fair
- Collateral materials such as garden gloves, lawn signs, pledge banner and T-shirts with the Blue Thumb logo as an incentive for taking the Blue Thumb pledge online or at events

RWA also hosts a Speakers Bureau. For example in 2009-11, speaking engagements included the following by RWA staff and by Regional Water Efficiency Program participants from the Cites of Folsom and Roseville:

- Northern California Ace Hardware stores on regional water efficiency programs, Home Depot associates on water efficient products, rebates, and Water Awareness Month, LOWE's stores throughout the region on water efficient products, rebates, and Water Awareness Month promotion, Rainbird Training Academy on local efforts of AB1881, UC Davis WaterWise Symposium on Blue Thumb campaign and local efforts of AB1881, Association of Professional Landscape Architects on local landscape programs, Association of Professional Landscape Designers on local efforts of AB1881 and River Friendly Turf Management Workshop on local agency landscape efficiency rebate program
- California Green Summit on future green jobs in the water industry, River Friendly Landscaping Homeowner Workshop Series on irrigation efficiency,

irrigation controller scheduling, water efficiency in the landscape, Raley Field Turf Management Workshop on RWA programs
- Department of Water Resources training on local agency implementation of AB1881, California Association of Public Information Officials state conference about Blue Thumb Neighbors

In the future, RWA will continue to work with participating agencies on a regional outreach message appropriate for the current year's water outlook. RWA will continue to provide key messages and update water provider tools as necessary, track the number of media stories (or hits), interviews conducted, and number of impressions of audience viewings.

Tracking of participation and results of participation for the Regional Campaign

After the first year of the "Blue Thumb" program, results were tracked for 2010 and include the following outcomes:

- Nearly 30 earned media hits covering topics such as the campaign announcement/search for residents to participate, campaign launch, Home Depot events/Water Awareness Month and Blue Thumb Web site pledge.
- Interviews on multiple public service radio programs, including Clear Channel (where the host even took the Blue Thumb pledge on the air!) which broadcast on five local stations and Family radio, which aired on two local stations
- Nearly 3.9 million impressions via paid television advertising and 6.3 million impressions via paid radio advertising
- More than 1.2 million impressions for the (no-cost) television PSA (worth an estimated $24,500) and over 3 million impressions for the radio PSA (worth an estimated $96,264)

Planned Implementation Schedule and Budget for the Regional Public Information Campaign

The general schedule for the regional public information campaign follows the annual calendar with the following seasonal activities:

- Winter – planning for upcoming year's activities.

- Spring – ramping up messaging and strong focus in soliciting media coverage and paid advertising in support of May as Water Awareness Month. Messaging surrounds the traditional spring planting season and checking of irrigation systems as they are turned on and taking the "Blue Thumb Pledge" to lower outdoor water use this season.

- Summer – key messaging hits on the issues of efficient irrigation techniques, avoiding water waste, and lowering peak demands on hot summer days.

- Fall – participating in local Harvest day events and providing efficient landscape irrigation trainings for professionals that focus on selecting more water efficient plants and irrigation equipment, and when the weather cools and rains return, then messaging calls for shutting down irrigation systems for the winter months.

The implementation schedule for 2011-2015 includes plans to continue to promote water conservation through the Regional Water Efficiency Program's outreach program supplemented by our own Carmichael Water District's outreach efforts. In addition, the Carmichael Water District will continue to support community events similar to those conducted in the past as described above.

The annual budget for direct expenses to continue with the regional outreach campaign is planned for 2011-2015 to be $160,000 each fiscal year.

Method for evaluation of effectiveness of the Regional Public Information Campaign

RWA will conduct an evaluation on a minimum of a bi-annual basis to determine the campaign's effectiveness using the following means:

- Statistically valid post-campaign telephone survey (results compared to 2009 pre-campaign survey responses).
- Tracking of pledges secured both online and by individual RWEP member utility efforts.
- Web site analytics analysis.
- Tracking water provider materials that carry Blue Thumb messages.
- Media and online mentions and content analysis of hits.
- Impressions for television and radio advertising and public service announcements
- Impressions for partner activities (such as the Sacramento River Cats).
- For the Community Based Social Marketing (CBSM) program: Internet/written surveys (and potentially informal phone interviews) and water use data tracking.

In the future, RWA will conduct another random survey of Sacramento area residents, which will seek to measure if the following goals for the campaign are being achieved:

- Increase the number of residents willing to utilize various yard design and maintenance practices promoted by the campaign.
- Increase the number of residents who say they have adopted yard design and maintenance practices promoted by the campaign.
- Increase the number of residents that have seen, read or heard news stories, public information, advertisement or other messages regarding water efficiency in the past six months.
- Increase the number of residents naming key messages promoted by the campaign in verbatim responses about the advertising or messages they heard.

Based on the results of the post-campaign survey, RWA is expecting to measure the success of this DMM based on the metrics listed above. If the campaign is not proving effective based on these metrics, then RWA will update or revise the campaign, or if necessary begin a new campaign, to garner more customer participation.

Estimated Water Savings for the Regional Blue Thumb Campaign

There is no current method in the industry to evaluate water savings for this program. The popularity of public programs can be measured through the acceptance of brochures and attendance at various water conservation related events, etc.

Optional Public Information Graphics:

Source: http://www.bewatersmart.info/blue-thumb/

DMM H – School Education

(Old CUWCC BMP 8, New CUWCC BMP 2)

Description of Past and Ongoing Regional School Education Program

Carmichael Water District fully participates in the RWEP School Education Program.

The RWEP program has focused mainly on K-8 programs. RWEP has continued to use the legacy Sacramento Bee Newspapers in Education (NIE), now called Media in Education (MIE) program that originated back in the mid-1990s as part of the Sacramento Area Water Works Association (SAWWA) program in order to meet the baseline requirements for school education outreach. It includes an annual Water Conservation Pledge and Quiz Contest. It is estimated that a total of 33,932 students have been educated since inception.

Historically between 2004 and 2008, RWEP also sponsored the Great Water Mystery School Assembly program that was co-funded with the Sacramento Stormwater Quality Partnership. Over the years, a total of 60,208 students in Grades 3-6 were educated about benefits of better water management practices at home to save water resources and reduced polluted stormwater runoff.

In FY 2011, RWEP embarked on a new program, in partnership with the Bureau of Reclamation's American River Water Education Center, and the Water Education Foundation to include sponsorship of Project WET school teacher workshops. A total of 25 teachers attended the first workshop in April 2011.

Steps to Implement Regional School Education Program

The RWEP is in the process of evaluating whether a more effective school program that will reach more students is warranted. Working with the RWEP members and local educators, RWA plans to: (1) evaluate the existing program; (2) evaluate the success of other programs in the region and around the state; (3) develop objectives and a target audience (e.g., grade level); (4) materials; and (5) an implementation strategy for the school education program into the future.

Marketing Strategy for the Regional School Education Program

The current marketing strategy for the SacBee MIE program is both email to teachers that have participated in the past and direct mail campaign to local schools for the whole series of topics throughout the year. Each teacher decides on which week's topics to

participate in that cover a wide range of education topics including RWEP's sponsored week of "Be Water Smart News, Water the Never Ending Story."

The Project WET workshops are marketed to teachers and environmental educators by the local California Regional Environmental Education Community (CREEC) Network representatives, to water educators through Project WET newsletters, and by RWA through direct mail and contacts with local school administrations and teachers.

Tracking of participation and results of participation in the Regional Program

RWA continues to track by a variety of means participation in the regional school education program. For the SacBee MIE Program, the metrics tracked annually include:

- Number of teacher guides downloaded
- Number of schools
- Number of classrooms
- Number of students reached
- Number of students participating in the pledge (Grades K-3) or contest (Grades 4-8) entries received by the SacBee
- Comments back from teachers

For the Project WET teacher training program, the following metrics are also tracked annually:

- Number of teachers attending workshops
- Which school districts
- Number of schools
- Estimated number of students reached
- Teacher workshop evaluations

Planned Implementation Schedule and Budget for the Regional Program

RWEP plans to continue with regional school education program activities along with distribution of school-age educational materials and Project WET Workshops. The school schedule dictates when participation in the RWEP school education program occurs and follows the months that schools are in session from August to the following May.

The annual budgeted direct expenses for the regional school education program have been $20,000 and will continue at this level for the foreseeable future.

Method for evaluation of effectiveness of Regional School Education Program

Based on the annual results of the participation levels tracked, RWA is expecting to measure the success of this DMM based on the metrics listed above. As described above, RWA is currently conducting an evaluation process of the existing regional

school education program, which includes interviews of local school teachers at a variety of grade levels. The program will continue as currently planned until the evaluation process is complete and the program's content and/or implementation strategy may be revised in the future.

Estimated Water Savings for the Regional School Education Program

It is unknown what changes in water using behavior may arise from student and educators participating in the regional school education programs. Considering the difficulty of placing a numerical value for water savings, an intangible method of effectiveness and resulting water savings can be determined by the amount of voluntary classroom and school participation with available K-12 water conservation programs.

Since 2006 District has worked in conjunction with the Kiwanis Club of Carmichael and Barrett Middle School to develop the "Carmichael Water Conservation Calendar". The goal of the art contest is to engage the students in educating our community about the importance of water conservation in Carmichael and California as a whole while highlighting the students artwork. The resulting calendar conveys a youthful view of the value of conserving water, this great natural resource.

Optional School Education Program Graphics:

MEDIA·IN EDUCATION
A Division of THE SACRAMENTO BEE

Project WET

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Appendix B-5 – Adoption Resolution and Water Shortage Contingency Plan

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CARMICHAEL WATER DISTRICT

RESOLUTION 03152010-3
A RESOLUTION ADOPTING THE CARMICHAEL WATER DISTRICT SHORTAGE CONTINGENCY PLAN

WHEREAS, the Carmichael Water District maintains a water shortage contingency and drought plan for use during drought periods or times of supply shortages; and

WHEREAS, the plan is updated to reflect new conditions for the District or other changing supply scenarios; and

WHEREAS, this update includes considerations of the District's new surface water treatment plant, contaminant plume from Aerojet, Water Forum negotiations, American River flow standard negotiations, and the ongoing drought; and

WHEREAS, the plan serves as a guide for the District in responding to water supply shortages and responding to regional and state-wide impacts from ongoing drought and Delta conditions; and

WHEREAS, the plan serves as a regulation for the prevention of unreasonable use of water during both water shortage and normal conditions.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors herby adopt the Carmichael Water District Water Shortage Contingency Plan attached as Exhibit "A" hereto. Existing policies or resolutions in conflict with this resolution are hereby repealed.

PASSED AND ADOPTED by the Board of Directors by the following vote on this 15th day of March 2010, by the following vote:

Mark Emmerson	Aye ✓	No ____	Absent ____	Abstain ____
Paul Selsky	Aye ✓	No ____	Absent ____	Abstain ____
Sanford Kozlen	Aye ✓	No ____	Absent ____	Abstain ____
Ron Greenwood	Aye ✓	No ____	Absent ____	Abstain ____
John Wallace	Aye ✓	No ____	Absent ____	Abstain ____

Board Totals: AYES: 5 NOES: ____ ABSENT: ____ ABSTAIN: ____

Passed Unanimously: Yes ✓

Signed after its passage this 15th day of March 2010:

M. Emmerson
Mark Emmerson, President
Board of Directors

ATTEST: Steve Nugent
Steve Nugent, Secretary

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Carmichael Water District

Water Shortage Contingency and Drought Plan

March 2010

J. Crowley Group
Water Resources Planning and Engineering
Sacramento, California

Table of Contents

1.0 Summary

The Carmichael Water District maintains a water shortage contingency and drought plan for use during drought periods or times of supply shortages. The plan is updated to reflect new conditions for the District or other changing supply scenarios. This update includes the considerations of the District's new surface water treatment plant, contaminant plume from Aerojet, Water Forum negotiations, American River flow standard negotiations, and regional efforts to standardize drought stage definitions. The plan serves as a guide for the District in responding to water supply shortages and responding to regional and state-wide impacts from drought and Delta conditions.

The District identifies five levels of water conditions. Each water shortage stage presents a goal for increased demand reductions to meet the projected decreased supplies. Demand reductions are designed to minimize impacts to the District's customers and the community. The following lists the principles used to develop the demand reduction requirements for each stage.

- Maintain water quality, safe operating conditions, and fire flow capability at all times.
- Provide flexibility to residential customers to allow them to choose the best use of their water during decreased demand requirements.
- Preserve landscaping as much as possible, with permanent plantings such as trees and shrubs receiving more importance than replaceable plantings such as turf and annuals.
- Maintain public playing fields as long as possible.
- Minimize economic impact to commercial, industrial, and institutional customers.

The District's five levels of water conditions are listed below. The levels are coordinated with the other water providers in the region in order to provide a consistent drought and water cutback message throughout the region. Each water provider uses these levels as their basis, and may customize specific actions under each stage to address the special needs of their specific customer base.

Normal Water Supply
Stage 1. Water Alert (up to 10 percent reduction).
Stage 2. Water Warning (up to 25 percent reduction).
Stage 3. Water Crisis (up to 50 percent reduction)
Stage 4. Water Emergency (Health and Safety Only) (over 50 percent reduction)

2.0 Introduction

The Carmichael Water District maintains a water shortage contingency and drought plan for use during drought periods or times of supply shortages. The plan is updated to reflect new conditions for the District or other changing supply scenarios. This update includes the considerations of the District's new surface water treatment plant, contaminant plume from Aerojet, Water Forum negotiations, American River flow standard negotiations, and regional water agency coordination efforts. The plan serves as a guide for the District in responding to water supply shortages and to local, regional, and state-wide impacts from the ongoing drought. The terms "drought" and "water shortage" are used throughout to refer to different supply shortages. "Water shortage" assumes shortage from some event other than drought-related impacts.

The Sacramento Region has faced periodic drought conditions since the formation of the District in 1916. The more recent drought periods occurred during the 1976-1977 water year and from 1987 to 1994. The District has also faced water shortage conditions in recent times, such as during the flood of 1997. In this instance, the District's Ranney collectors were damaged, reducing surface water supplies more than any prior drought, forcing the District to rely heavily on groundwater to meet all demands. The District responded with mandatory conservation measures including two day a week outdoor irrigation limits and increased patrols. The District has relied on its groundwater capacity and on customer demand reduction during the previous drought periods. However, the water supply situation is more complicated compared to previous years as water supplies and demands are now evaluated on a local, regional, and state-wide basis.

This response plan is organized to give a summary of the District's current capabilities, summary of the potential threats to supplies, water shortage stages, and proposed District responses to implement during a water shortage condition. The District's supplies are summarized with a brief summary of the local, regional, and ongoing state-wide issues that now impact the District and must be factored into decisions during water shortages or drought conditions. Drought stage declarations are based on the District's supply portfolio, but also factor in the supply conditions of neighboring water agencies, groundwater basin conditions region-wide, and American River flows. Supply options and demand management strategies for each stage are listed with proposed goals. Demand reduction strategies are presented along with a listing of additional efforts, including public outreach, to meet the goals of each stage. Implementation steps and efforts are summarized in a response table to be used for public outreach efforts and to serve as a program summary for District use.

3.0 Supplies and Demands

The District utilizes surface water and groundwater supplies to meet customer demands. A comprehensive discussion of supply sources, volumes, and reliability, and current and future demands is presented in the latest version of the Urban Water Management Plan (2005 UWMP). The supply and demand information from the UWMP is summarized in this section. This section also presents other local, regional, and state-wide issues and their potential effect on District supplies.

3.1 Supplies

The District supplies a mix of surface water and groundwater to its customers. Surface water is collected in three Raney collectors from underneath the American River. The raw water is treated through membrane filtration at the Bajamont Water Treatment Plant and pumped into the distribution system. Groundwater is pumped from seven wells into the distribution system. In general, 10 percent is supplied from groundwater, and 90 percent from surface water on an annual basis. These values will vary depending on time of year, American River flow conditions, maintenance requirements, or other factors.

Surface water supplies are maintained through two water right licenses. The two water right licenses totaling 14,000 acre-feet meet the District demands. The District has a water right permit however the permit will most likely be rescinded in the future. The Bajamont WTP is rated for a maximum day capacity of 22 million gallons per day (gpd).

The District maintains seven production wells to supply groundwater. Five of the wells are normal production wells and two are standby wells. The total groundwater extraction capacity is 14,159 AFY, and 13.2 million gallons per day (mgd). The wells are generally located in the northern and western portions of the District's service area. Some of the wells contain treatment facilities for iron and manganese removal. All wells pump from the North American Groundwater Subbasin. The subbasin is used by all the region's groundwater pumping agencies north of the American River. Subbasin operations are subject to a groundwater management plan developed through the Sacramento Groundwater Authority (SGA). The District is a member of the SGA.

3.2 Interconnections with Other Agencies

The District maintains six interconnections with other neighboring agencies. These interconnections can be used by either agency to provide emergency supplies in the event of short-term outages. Although not used for long-term supply service yet, the interconnections could be used to augment supply to either agency. There are four interties with Sacramento Suburban Water District, one with Citrus Heights Water District, and one with Fair Oaks Water District.

3.3 Regional Planning Efforts

Three regional planning efforts impact the supply strategies for most of the public water agencies in the Sacramento area. The Water Forum is a stakeholder-based process that

was initiated to address water resources issues in the Sacramento region. The Water Forum process created the Water Forum Agreement (WFA) in January, 2000. Each of the water agencies participating in the process signed a purveyor-specific agreement that defines supply and demand management options for three types of hydrologic years.

The Regional Water Authority (RWA) and SGA are sister agencies that work together to implement supply and demand management efforts that help support the WFA agreements. The RWA is the lead planning agency for the integrated resources water management plan (IRWMP), which was created from previous regional planning efforts. The IRWMP provides the framework for regional conjunctive use strategies.

The SGA is the groundwater-specific regional planning agency. The SGA groundwater management plan was created, in part, to address the declining groundwater levels the basin has experienced for many years and the contamination plumes known throughout the basin. The basin is generally described to be in overdraft. The intent of the plan is to create a conjunctive use operating strategy amongst all the pumping agencies in an effort to stabilize the basin level and control the contaminate plumes. The groundwater management plan is now used as a key element in the IRWMP to support conjunctive use strategies.

3.4 WFA Supply Restrictions

Efforts from the WFA, RWA, and SGA impact the District's supply availability and reliability. As part of the planning efforts and negotiated agreements, the District agreed to certain supply limitations in order to improve the management, condition, and use of the region's water resources. The following lists the supply restrictions.

The WFA addresses three water supply scenarios and assigns water supply volumes for each agency. The District's WFA agreement is as follows:

1. **Average/Wet Year:** Projected March through November inflow to Folsom Reservoir is greater than 950,000 acre-feet.

   Supply Impact. No impact to District's surface water supply. District is allowed to divert up to 14,400 acre-feet. It is assumed that District diversions will be reduced to baseline value of 12,000 AFY by 2030.

2. **Drier Years:** Projected March through November inflow to Folsom Reservoir is less than 950,000 acre-feet and equal to or greater than 400,000 acre-feet.

   Supply Impact. No impact to District's surface water supply. District is allowed to divert up to 14,400 acre-feet. It is assumed that District diversions will be reduced to baseline value of 12,000 AFY by 2030.

3. **Driest Years (Conference Year):** Projected March through November inflow to Folsom Reservoir is less than 400,000 acre-feet.

Supply Impact. No impact to District's surface water supply. District is allowed to divert up to 14,400 acre-feet. It is assumed that District diversions will be reduced to baseline value of 12,000 AFY by 2030. However, in these years, there may not be enough water to provide to all surface water diverters on the river, and a conference may be required to develop management and allocation procedures.

The SGA groundwater management plan and other regional planning efforts by RWA and its predecessors have identified groundwater pumping limitations. For the District, the groundwater pumping limitation is set at no more than 40 percent of total system demand. The 2005 UWMP lists 2025 demand projections at 14,800 AFY. This limits the groundwater supply at a maximum of 5,920 AFY. In order to meet maximum day demand, redundancy, and reliability requirements, the District's wells have a total capacity of 14,159 AFY. Supplies and demands are summarized after the demand discussion presented below.

3.5 Other Impacts to Supply

There are many other potential impacts to supply the District will need to monitor. As these issues are better understood, the District will incorporate the potential supply or demand impacts into its water supply planning programs.

Retention of Conserved Water. The District's conservation program results in a supply surplus due to saved water. The Board of Directors has passed a resolution (05182009-1) retaining ownership and control of all conserved water. This allows the District an added flexibility in its conjunctive use strategy and potential surface water management options.

Aerojet Plume. A groundwater contamination plume attributed to Aerojet historic operations was first detected in groundwater south of the American River in 1979. Since that time, Aerojet has installed groundwater treatment facilities and has conducted other efforts to treat and control the plume migration. However, in 2005 the plume was detected north of the river, in a monitoring well located near Ancil Hoffman Park. The District responded with a coordinated effort consisting of Aerojet and Federal, state, and county regulatory agencies. Extraction and treatment facilities will be constructed near the river side of the District's service area, with the treated water used to irrigate the Ancil Hoffman Park and golf course. However, the groundwater contamination plume still serves as a threat to groundwater quality for agencies nearest the plume. If the plume contaminates these agency's production wells, the wells may be removed from service, resulting in a corresponding supply loss. Any supply loss by these agencies may impact the supplies of its neighboring agencies as they may need to purchase new water or alter pumping operations to limit losses from the plume.

Other groundwater contamination. There are other sources of groundwater contamination within the District. Gas stations and dry cleaning facilities can often times be the source, but contamination can come from a wide variety of sources. These types of contamination are usually more localized than a widespread plume, such as the Aerojet plume. However, if located near a production well, the effect is the same in that the well may be removed from service. Any loss of production capacity will impact the District's supply reliability and will require a pumping and operational strategy adjustment.

Catastrophic. Catastrophic losses are defined as sudden and complete loss of supply. Losses can be caused by floods, power outages, contaminating spills, security breaches, equipment failure, or others. However, the loss is assumed to be short term as opposed to the permanent or long-term loss of a supply. These types of events are addressed in the District's emergency response plan. Depending on the length of supply loss, the District may be required to declare water shortage or drought stages in order to reduce demands to the available supplies at that time. If the water treatment plant production capacity is lost, the District will most likely need to implement demand management measures to meet peak day requirements.

3.6 Demands

The District's service area is mostly built out with only infill development projects expected in the coming years. Population growth from 2005 to 2025 is only expected to grow by a total of 10 percent, with a 2025 demand projection of 14,800 acre-feet per year (2005 UWMP). An underlying assumption in the WFA is that the District will reduce its 2030 demands down to 12,000 AFY through demand management measures. The District has already experienced a reduction in demand halfway through its meter installation program. The District has fully met its current Water Forum Agreement reduction goals. With a full conservation program in place, including demand management measures, the District projects demands to stabilize at 12,000 acre-feet per year.

3.7 Supply to Demand

The 2009 demand is compared to supplies under the identified shortage scenarios in Table 1. Theoretically, the District has sufficient supplies to meet all but the Conference Year conditions when there is insufficient river flow to meet the District's needs. However, the District acknowledges that water resources management must consider the regional perspective in order for each agency to meet its customer demands. There are many agencies in the region that do not have as-senior water rights, or any surface water at all. Agencies with lower supply reliability rely on water transfers, increased groundwater pumping, and other exchanges that impact the region's supply picture during water shortages. For these reasons, the District's drought response triggers are equally based on regional supply requirements as well as District-only supply issues.

Table 1. Drought Supply to Demand Comparison, AFY

	Average/Wet Years	Drier Years	Driest (Conference) Years
Surface Water	14,000	14,000	14,000
Groundwater	5,400	5,400	5,400
Total Supply:	19,400	19,400	19,400
2009 Demand	12,000	12,000	12,000
Surplus	7,400	7,400	7,400
Shortage	--	--	--

Although Table 1 indicates sufficient supplies even during the Driest Years, the supply situation throughout the state is changing rapidly. The values in Table 1 reflect the 2005 UWMP. However, ongoing supply and infrastructure issues throughout the region and state may impact future supply reliability. Supply reliability will be updated in the 2010 UWMP.

4.0 Stages and Triggers

Supply scenarios are used as triggers to declare drought stages. Demand reduction goals and supply and demand management strategies are then implemented for each stage. The District also uses other factors as triggers for drought stages. The Water Forum restrictions, the regional supply scenario, or supply needs of adjacent water agencies can trigger stages. The section presents the District's drought stages, potential triggers, and recommended demand reductions.

4.1 Drought Plan Principals

The intent of this drought plan is to limit the impact to customers from reduced supply situations. Customer compliance with drought Stages 1and 2 should minimize the requirements for the severe cutbacks listed in Stages 3 and 4. The District created the requirements for each stage based on the following principals.

- Maintain water quality, safe operating conditions, and fire flow capability at all times.
- Provide flexibility to residential customers to allow them to choose the best use of their water during decreased demand requirements.
- Preserve landscaping as much as possible, with permanent plantings such as trees and shrubs receiving more importance than replaceable plantings such as turf and annuals.
- Maintain public playing fields as long as possible.
- Minimize economic impact to commercial, industrial, and institutional customers.
- Present regionally coordinated drought stage definitions to enhance public outreach and messaging simplicity.

4.2 Drought Stages and Triggers

Although the supply and demand analysis indicates the District's supply reliability is relatively high compared to other agencies, there are situations that may require the District to declare drought or water shortage stage conditions. The District's policy is to factor in Water Forum conditions or regional drought or water shortage stages when declaring its own drought stage. This supports the region's efforts to collectively manage the groundwater basin, and prepares the District for potential changes to supply sources to avoid extreme water shortages within certain neighboring districts. This approach is intended to minimize confusion among the region's many water agency customers and to promote an equitable supply management strategy for the entire region. Table 2 lists each drought stage, potential triggering events, and recommended demand reduction goals.

The region's water agencies coordinate closely with water supply planning issues, implementing conjunctive use strategies, and potential supply shortages. The stages

listed in Table 1 are used by all agencies in the region. However, each agency will declare its own drought stage based on its specific supply and demand scenario.

Table 2. Stages and Triggers

Stage	Triggering Conditions	Demand Reduction Goal
Normal Water Supply	All demands can be met by the conjunctive use of groundwater and surface water. There are no other drought declarations or water shortages conditions by other water agencies in the region.	Customer demand is within assigned normal year water budget or within 12,000 AFY per WFA.
Stage 1 – Water Alert	A shortage is predicted to occur in the coming months and customers should begin demand cutbacks. Several water agencies in the region have declared a shortage requiring up to 10 percent cutback. It is up to discretion of Board to determine if other agency stage declaration is significant enough to cause a triggering event.	Up to 10 percent.
Stage 2 – Water Warning	Supply is up to 25 percent less than normal demand. Several water agencies in the region have declared a shortage requiring up to 50 percent cutback. It is up to discretion of Board to determine if other agency stage declaration is significant enough to cause a triggering event.	Up to 25 percent.
Stage 3 – Water Crisis	Supply is up to 50 percent less than normal demand. Another water agency in the region has declared a shortage requiring up to 50 percent or more in demand cutback. It is up to discretion of Board to determine if other agency stage declaration is significant enough to cause a triggering event.	Up to 50 percent.
Stage 4 – Water Emergency (Health and Safety Only)	One of supply sources is unavailable. Supply more than 50 percent less than normal demand. Another water agency in the region has declared a shortage requiring up to 50 percent or more in demand cutback. It is up to discretion of Board to determine if other agency stage declaration is significant enough to cause a triggering event.	Demand reduction based on specific circumstance of supply failure to be determined by District. Initial minimum demand cutback set at 50 percent pending District's evaluation of supply loss.

4.3 Supply Trigger Monitoring

Water supply availability is monitored on a regular basis. There are multiple elements monitored to establish drought or water shortage stages. Each condition will have its own specific circumstances used to determine which stage to declare.

Water Forum - Folsom Reservoir Inflow. Inflow values are used by the Water Forum to determine hydrologic year type and subsequent supply availability. The District's surface water supply is currently not impacted by this trigger except during extreme droughts. In extreme droughts there may be insufficient flows in the Lower American River to meet the District's supply permit.

Bajamont WTP Capacity. The WTP is capable of diverting and treating up to 22 mgd. Available production capacity is monitored to indicate any potential decreases. Production capacity could be decreased by scheduled maintenance within the plant, mechanical failure of equipment, or if river flow is less than 1,000 cfs. The Raney collectors have also been susceptible to flood events. At high flows in the river, the collectors can either be ineffective or unusable, creating a supply shortage.

Groundwater Well Capacity. Five wells are used for regular production capacity and two more wells are considered backup. Groundwater production capacity could be decreased by scheduled maintenance for a well, mechanical failure of equipment, power outage, or other natural disaster events. Wells can also be impacted by water quality. All wells are monitored on a regular basis for water quality parameters. If water quality is decreased to below acceptable standards, a well may be placed out of service until the situation is remedied. In the case of contaminated groundwater, the well may have to be placed out of service indefinitely. The impact to overall supply reliability will be determined by the District.

Aerojet Plume. The contaminated groundwater plume from the Aerojet site in Rancho Cordova has been detected on the north side of the American River, in and around Ancil Hoffman Park. Monitoring wells have been installed to monitor the progress of the plume. Should the plume approach current production wells, the District will determine the impact to supplies and update the supply reliability analysis and strategy.

Neighboring Agency Intertie Activity. A neighboring agency may request emergency supply through one of the existing interconnections. The District will work with the requesting agency to determine the volume and duration requested and impacts to District supplies. Based on the situation, the District may decide to implement demand reduction measures.

Regional Supply Situation. Other agencies in the region may experience supply shortages that require drought stage or water shortage declarations. The District will monitor these declarations and corresponding demand reduction requirements for consideration in determining the District's drought stage.

State Supply Situation. Similar to the Regional Supply Situation, other regions in the state may suffer supply shortage and need to declare drought stages. Depending on extent and impact to statewide issues, the state may issue demand reduction goals or requirements for all water users. The District will monitor statewide issues, DWR and CVP discussions, and legislative actions to determine impacts to District's supplies.

5.0 Response Plan

Each drought or water shortage stage is assigned a water demand reduction goal. This section presents the options for implementation to achieve demand reductions with each stage. Penalties for violations are presented at the end of this section.

5.1 Water Forum Response Plan

The Carmichael Water District supplies are not impacted by Water Forum restrictions except in extreme instances. If the Folsom Reservoir inflow falls to below 400,000 acre-feet, there may not be enough water in the American River to meet all demands, and a conference will be convened to resolve supply allotment. However, the supplies of many other water agencies in the region are reduced through the various flow conditions addressed in the Water Forum Agreement. To support the Water Forum, other local water agencies, and the goals of regional water supply management, the District will implement a response plan when Water Forum restrictions are in place.

1. Public Information. Develop special message regarding Water Forum restrictions on regional water supplies. Utilize District web site, lobby notices, bill notes, newsletters, and outreach and speaking opportunities to deliver message.

5.2 Normal Water Supply

1. Prevention of Waste and Unreasonable Use of Water ordinance in effect as follows:

    a. No water runoff from property allowed.
    b. Free flowing hoses prohibited for any use, all hoses must have an automatic shutoff device.
    c. All pools, spas, fountains, and other water displays using District water must use a recirculation pump and be maintained leak free. "Dump and Fill" maintenance practice for pools is prohibited.
    d. Internal and external water leaks must be repaired in a timely manner.
    e. Watering three days a week is usually sufficient for typical landscape.
    f. Recommend irrigating in morning or late evening.
    g. Recommend using high efficiency plumbing fixtures and washing full loads of laundry and dishes.
2. Water rate structure in normal rate conditions. See rate structure for detailed information.
3. Conservation Program. Normal conditions. See implementation plan for conservation program details.
4. Public Information. Normal efforts and messages through media.

5.3 Stage 1 – Water Alert (up to 10 Percent Reduction)

All Normal Water Supply conditions are in effect unless more restrictive measures are listed for Stage 1.

1. All parcels over 1.0 acre contacted and offered outdoor landscape audit that includes development of a water budget.
2. Top 20 percent of water users in each parcel acreage category are contacted and offered water audit and plumbing retrofit BMP services (metered services only).
3. Conservation Program. Additional staff and resources allocated to conduct an expected increase in requests for water audits, plumbing retrofits, landscape budgets, and other programs offered by the standard conservation program.
4. Public Information. Increase frequency of public campaign through usual media content. Develop/revise message and content to reflect Stage 1 issues and requirements.
    a. 1-page listing of how much water is used by each use in a typical household.
    b. Push info to media outlets (radio, print, web, TV) at least bi-weekly with message and results to date.
    c. Develop and distribute drought brochure to restaurants.

5.4 Stage 2 – Water Warning (up to 25 Percent Reduction)

All Stage 1 requirements are in effect unless more restrictive measures are listed for Stage 2.

1. All parcels over 0.5 acre are contacted and offered outdoor landscape audit that includes development of a water budget.
2. Top 20 percent of water users in each parcel acreage category are contacted and offered water audit and plumbing retrofit BMP services (metered services only).
3. New landscape installations limited to drought-tolerant plants and natives. Recommend no new turf or hydro-seeding allowed.
4. No filling of swimming pools, ornamental fountains, water features, or ponds allowed, except to maintain levels.
5. Car washing must use bucket and hose with automatic shut off.
6. District to evaluate and enact drought surcharge rates if necessary.
7. Conservation Program. The District will consider retrofit programs and advertising through public outreach efforts. District to determine cost effectiveness and whether or not to offer rebates. i.e. ET-controllers, HEW, remote meter output devices, etc.
8. Public outreach. Update message for up to 25 percent demand reduction.
    a. Increase school presence by offering presentations and materials. Have schools distribute 25 percent reduction fliers to all students. Flier to include demand reduction tips and describe District conservation services.
    b. Fair Oaks Blvd, Winding Way, Marconi signboards alerting public of 25 percent reduction drought stage.
    c. Update website with 25 percent demand reduction information.
    d. Offer presentations to all local civic groups, HOAs, and neighborhood associations. Work with groups to post District literature or links on respective websites, email lists, or meetings.
    e. Publicize anonymous water waster reporting on District web site.
    f. Special mailing to customers notifying drought stage and copy of Stage 2 requirements.
    g. Coordinate message with RWA depending on purpose of stage declaration.
    h. Update drought message with local media outlets regarding requirements.

5.5 Stage 3 – Water Crisis (up to 50 Percent Reduction)

All Stage 2 requirements are in effect unless more restrictive measures are listed for Stage 3.

1. Outdoor irrigation. Outdoor irrigation only allowed once per week according to odd/even schedule. No irrigation of turf allowed. No sprinkler irrigation allowed. Irrigation between 9:00 AM and 7:00 PM is prohibited. Odd number address allowed to water on Tuesday and even number addresses allowed to water on Wednesday.
2. Main flushing program modified for only emergency needs.
3. All parcels over 0.3 acre are contacted and offered outdoor landscape audit that includes development of a water budget.
4. Top 20 percent of water users in each parcel acreage category are contacted and offered water audit and plumbing retrofit BMP services (metered services only).
5. Maintain drought surcharge rates and modify as necessary.
6. No pasture and wild space irrigation.
7. Irrigation of public spaces only allowed to maintain irreplaceable trees and shrubs. Playing field irrigation depending on case-by-case basis.
8. No new landscape installations allowed.
9. No filling of swimming pools, ornamental fountains, water features, or ponds allowed.
10. Public outreach. Update message for 50 percent demand reduction.
    a. Repeat increased school presence by offering presentations and materials. Have schools distribute 50 percent reduction fliers to all students. Flier to include demand reduction tips and describes District conservation services.
    b. Fair Oaks Blvd, Winding Way, Marconi signboards alerting public of 50 percent mandatory reduction drought stage.
    c. Update website with 50 percent demand reduction information.
    d. Repeat offer of presentations to all local civic groups, HOAs, and neighborhood associations. Work with groups to post District literature or links on respective websites, email lists, or meetings.
    e. Publicize anonymous water waster reporting on District web site.
    f. Special mailing to customers notifying drought stage and copy of Stage 3 requirements.
    g. Coordinate message with RWA depending on purpose of stage declaration.
    h. Update drought message with local media outlets regarding requirements.
11. Consider monthly meter reads depending on customer response and demand reductions.

5.6 *Stage 4 – Water Emergency (Health and Safety Only) (Over 50 Percent Mandatory Reduction)*

Under Stage 4, water should only be used for health and safety reasons. All Stage 3 requirements are in effect unless more restrictive measures are listed for Stage 4.

1. If local shortage only, attempt to obtain additional supply through emergency connections or additional surface water diversions.
2. Water use only allowed for personal health and hygiene.
3. No irrigation allowed.
4. Maintain drought surcharge rates and modify as necessary.
5. Public outreach. Update message for required mandatory demand reduction.
    a. Repeat increased school presence by offering presentations and materials. Have schools pass out 50 percent reduction fliers to all students. Flier to include demand reduction tips and describes District conservation services. Fair Oaks Blvd, Winding Way, Marconi signboards alerting public of percent mandatory reduction.
    b. Update website with required percent demand reduction information.
    c. Repeat offer of presentations to all local civic groups, HOAs, and neighborhood associations. Work with groups to post District literature or links on respective websites, email lists, or meetings.
    d. Publicize anonymous water waster reporting on District web site.
    e. Special mailing to customers notifying drought stage and copy of Stage 4 requirements.
    f. Coordinate message with RWA depending on purpose of stage declaration.
    g. Update drought message with local media outlets regarding requirements.

5.7 Penalties

The following lists the fines and fees for violation of the Drought Plan requirements. Violations and penalty assignment are at the discretion of the District. It is the District's intent to promote awareness and provides assistance to its customers to meet both normal and drought stage requirements. Should customer actions warrant, the District will issue violations and levy fees and fines as appropriate. Customer may appeal to the District, who will act in a timely manner to resolve the issue.

Each day that a violation of this ordinance occurs may be considered a separate offense. In cases of severe flooding or property damage the District may discontinue water service prior to any verbal or written communication. Fines and fees may be imposed at the District's discretion. Penalties for failure to comply with any provisions of the ordinance are as follows:

1. First Violation: The District will provide a written or verbal warning and a copy of this ordinance to the account owner. It is up to the discretion of the District to also attempt to contact the resident verbally regarding the violation.

2. Second Violation: A second violation is punishable by a fine of fifty dollars ($50). Nonpayment will be subject to the same remedies as nonpayment of basic water rates.

3. Third Violation: A third violation is punishable by a fine of two hundred dollars ($200). Nonpayment will be subject to the same remedies as nonpayment of basic water rates.

4. Fourth and Subsequent Violations: A fourth and any subsequent violation is punishable by a fine not to exceed five hundred ($500). Nonpayment will be subject to the same remedies as nonpayment of basic water rates. In addition, the District may choose to disconnect service.

   Discontinuing Service: the District may disconnect a customer's water service for willful violations of mandatory restrictions in this Drought Plan. District will send written notice of intent to disconnect service to resident. Resident will have five business days to correct violation and pay all accrued fines and fees. District will disconnect service after sixth business day after receipt of notice to resident. If service is disconnected, the following fines and fees apply:

   1. Disconnect fee: $100
   2. Reconnect fee: $100

   All fines and fees must be paid in full prior to service reconnection. Nonpayment will be subject to the same remedies as nonpayment of basic water rates.

6.0 Implementing the Drought Plan

Implementing each stage of the plan will require District pre-planning, training, budgeting, staffing, and communications. This section presents the main elements required for each stage. Implementation requirements are presented to maintain the plan and for each stage declaration. The District will develop implementation details and schedules that are specific to the circumstances for each stage declaration.

6.1 Maintaining the Drought Plan and Proactive Demand Management Measures

Achieving demand reductions during drought stages relies on maintaining a continuous proactive demand management strategy. The District's conservation program, leak detection program, and rate program provide the tools to manage demands. Maintaining these programs and efforts will greatly improve supply and demand management scenarios during droughts and water shortages.

The District prepares for water shortage stages by maintaining the drought plan current and by updating its conservation program, leak detection strategy, and rate structure. The drought plan is updated to reflect new supply and demand conditions, new supply and reliability issues, and new or modified policies. The conservation program is updated to reflect implementation results and water savings. The Water Forum Agreement requires a top-down program where the District is responsible for implementing BMPs, including retrofit services. As saturation is reached and the BMP requirements are met, the conservation program will shift to concentrate on the most cost effective BMPs and those with the most demand from customers. Once fully metered, the District can also modify the program in response to more accurate demand data.

The leak detection strategy focuses on testing 10 percent of the system every year. This program ensures water loss is kept at a minimum. The District is training staff to perform this program in-house, and will adjust the coverage rate based on initial program results.

The District's rate structure is reviewed and updated generally on a five-year cycle. Rates are meant to meet a variety of purposes. The rates must only cover the cost to deliver water to the customer. However, rates are also used to convey the value of water to the customers such that water is put to beneficial use and not wasted. There are many different types of rate structures and rate policies. The District evaluates alternative rate policies in each rate update. Currently, the District's rate structure is based on customer class types with a small adjustment for meter size. In general, the more a rate is tied to consumption, the easier it is to implement demand management strategies for conservation programs and water shortage conditions. The District will continue to evaluate rate options and select strategies that best fit the current situation at each rate adjustment period.

The District will monitor local, regional, and state-wide supply situation and policy issues for potential impacts to the District. District staff will update the Board of any new or ongoing situations.

In addition to these efforts, there are other policy and operational efforts that could improve demand management results. The following policies and procedures are not yet implemented by the District, but could be analyzed in the future if necessary.

- Drought rates – special rates developed for each drought stage, or applied to all drought stages, that increase more rapidly than normal rates.
- Water Budgets – assign specific water allocations to account types or each account. Rates are then tied to budgets such that there may significant price incentives to stay within the assigned budget, and maybe even some discount to use below the budget.
- Customer Service/Billing – data management and customer contacts will need to be modified to support the requirements from any new water budget and rate program.
- Public Information – review content and media reach results regularly and update to meet new requirements or conditions.
- Metering and Operations Data – update data collection and analysis process to reflect additional data and management opportunities from the metering program.

6.2 Drought Stage Implementation

Implementing each stage will require planning to prepare and get ready for the stage. The following lists main elements for the District to address while getting ready for each respective stage declaration.

Normal Water Supply Implementation

- Maintain conservation program, water waste ordinance, and rate structure.

Prepare for next stage as supply conditions favor Stage 1.

- Drought team – assemble team from each department and assign tasks to prepare for Stage 1.
- Financial service staff – educate on Stage 1 requirements, staffing plan for increased hours, training for new/cross-department staff providing customer service, identify additional budget requirements.
- Conservation program – staffing plan for increased audits, customer contacts, rebate programs, budget for increased customer participation in audits and rebates, assign staff to lead each task.
- Board level – update Board on supply status, assemble Stage 1 implementation plan and budget and present and gain approval for additional budget requirements, drought rate structure if necessary, and other items.
- Public Outreach – begin Stage 1 messaging at least two weeks prior to official start. Develop content and staffing assignments as necessary prior to messaging.

Establish outreach schedule with reoccurring media contact reminders, special interview opportunities, and list of potential new media outlets to incorporate.

Stage 1 Implementation

- Declare Stage 1 at Board meeting. Ensure media is notified, present Stage 1 goals, programs, and informational contacts.
- Drought team meets once per week to review respective programs, results, issues, and other items.

Prepare for next stage as supply/demand conditions favor Stage 2.

- Stage 2 Requirements – update requirements based on results from Stage 1 actions or other specific supply/demand issues at time of implementation.
- Financial service staff – educate on Stage 2 requirements, staffing plan for increased hours, training for new/cross-department staff providing customer service, identify additional budget requirements
- Conservation program – Program will focus more on outdoor landscape efforts. Create staffing plan based on results from Stage 1 for enforcement, audits, customer contacts, rebate programs, budget for increased customer participation in audits and rebates, assign staff to lead each task
- Board level – update Board on supply status, assemble Stage 2 implementation plan and budget and present and gain approval for additional budget requirements, drought rate structure if necessary, and other items.
- Public Outreach – begin Stage 2 messaging at least two weeks prior to official start. Develop content and staffing assignments as necessary prior to messaging. Establish outreach schedule with reoccurring media contact reminders, special interview opportunities, and list of potential new media outlets to incorporate.

Stage 2 Implementation

- Declare Stage 2 at Board meeting. Ensure media is notified, present Stage 2 results and supply/demand scenario, build case for Stage 2, present Stage 2 goals, programs, and informational contacts.
- Drought team meets once per week to review respective programs, results, issues, and other items.

Prepare for next stage as supply/demand conditions favor Stage 3.

- Stage 3 Requirements – update requirements based on results from Stage 2 actions or other specific supply/demand issues at time of implementation.

- Financial service staff – educate on Stage 3 requirements, staffing plan for increased hours, training for new/cross-department staff providing customer service, identify additional budget requirements
- Conservation program – Program will focus more on enforcement of mandatory irrigation restrictions and penalty assignments. Create staffing plan based on results from Stage 2 for enforcement, audits, customer contacts, rebate programs, budget for increased staff time addressing enforcement actions, customer review, and violation resolution. Assign staff to lead each task
- Board level – update Board on supply status, assemble Stage 3 implementation plan and budget and present and gain approval for additional budget requirements, drought rate structure if necessary, and other items.
- Public Outreach – begin Stage 3 messaging at least two weeks prior to official start. Develop content and staffing assignments as necessary prior to messaging. Establish outreach schedule with reoccurring media contact reminders, special interview opportunities, and list of potential new media outlets to incorporate.

Stage 3 Implementation

- Declare Stage 3 at Board meeting. Ensure media is notified, present Stage 3 results and supply/demand scenario, build case for Stage 3, present Stage 3 goals, programs, and informational contacts.
- Drought team meets once per week to review respective programs, results, issues, and other items.

Prepare for next stage as supply/demand conditions favor Stage 4.

- Stage 4 Requirements – update requirements based on results from Stage 3 actions or other specific supply/demand issues at time of implementation.
- Financial service staff – educate on Stage 4 requirements, staffing plan based on findings and experiences from previous stages, identify additional budget requirements
- Conservation program – Program will focus more on enforcement of mandatory irrigation restrictions and penalty assignments. Create staffing plan based on results from Stage 3 for enforcement, audits, customer contacts, rebate programs, budget for increased staff time addressing enforcement actions, customer review, and violation resolution. Assign staff to lead each task
- Board level – update Board on supply status, assemble Stage 4 implementation plan and budget and present and gain approval for additional budget requirements, drought rate structure if necessary, and other items.
- Public Outreach – begin Stage 4 messaging at least two weeks prior to official start. Develop content and staffing assignments as necessary prior to messaging. Establish outreach schedule with reoccurring media contact reminders, special interview opportunities, and list of potential new media outlets to incorporate.

Stage 4 Implementation

- Declare Stage 4. Scenario could be a progressive increasing of stages for a long lasting drought condition. Declaration and implementation needs are similar to Stage 3, but will be customized to meet the specific issues for declaring a Stage 4 conditions.

If Stage 4 is required due to a catastrophic supply loss, implementation will rely more on public outreach and immediate and comprehensive customer participation to reduce demands by the required amount. In this scenario, the District will need a two-stage implementation strategy. The first stage is to immediately implement public information and outreach efforts to get full customer participation. There will not be enough time to plan and implement stage restrictions and process to meet the immediate demand reduction needs. If a backup supply source cannot be obtained in a timely manner, or if the main supply cannot be restored in a timely manner, the second part of Stage 5 will be implemented. Actions taken by the District in this scenario follow the District's emergency response plan for catastrophic supply loss. The second part will compress the previous stages into one stage, with all the requirements and policies implemented at once. This will undoubtedly be difficult and time consuming to achieve, especially under the circumstances that the District has had a catastrophic supply loss, and considerable staff time will be dedicated to securing new supplies or resolving the supply loss issue. The extent and effort on drought stage requirements will be determined specific to each catastrophic event.

6.3 Drought Stage Reduction

Returning to normal supply conditions will require a transition period. Issues that may arise include the following:

- Lag time in drought rates and billing and coordinating return to normal rate structure with meter reading schedule.
- Policies regarding penalties and fines.
- Public information message should relate reduction of restrictions but encourage maintaining conservation practices.
- District should try to capitalize on demand reduction gains and maximize permanent customer behavioral and retrofit changes.
- Clearing backlog of maintenance and water quality activities.
- Clearing backlog of other tasks postponed due to staff reassignment.
- Reassigning staff back to normal positions.

Appendix B-6 – CWD Population Analysis Memo

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Tully & Young
Comprehensive Water Planning

Tully & Young, Inc.
3600 American River Drive, Suite 260
Sacramento, CA 95864

MEMORANDUM

To: Chris Nelson
Carmichael Water District

From: Tully & Young

Date: April 25, 2011

Subject: Carmichael Water District Population Analysis

The California Water Code (CWC) requires an urban retail water supplier to document "baseline daily per capita water use," develop both an "urban water use target" and an "interim water use target," and then document "compliance daily per capita water use."[1] Among the necessary data required to complete these is the historic and current population served by the retail supplier. This memo presents the population analysis using the methodology defined by the Department of Water Resources and resulting population estimates for the Carmichael Water District (CWD).

1. Categorizing Carmichael Water District

Section 10608.20(f) of the CWC states:

> *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.*

This legislation served as the basis for DWR development of methodologies for determining service area populations. The developed methodology places water purveyors into one of three categories. The three categories are a follows:

- Category 1: Water suppliers whose *actual distribution area* overlaps substantially (≥95%) with city boundaries (may be a single city or group of cities) during baseline and compliance years
- Category 2: Water suppliers not falling in Category 1 but having an electronic geographic information system (GIS) map of their distribution area, and a

[1] CWC § 10608.20 et seq. An "urban retail water supplier" is a water supplier that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually. CWC 10608.12(p).

corresponding relationship with an association of local governments that maintains population data from DOF or the U.S. Census Bureau.

- Category 3: Water suppliers not falling into Category 1 and lacking a GIS map of their distribution system.

1.1. Category 1

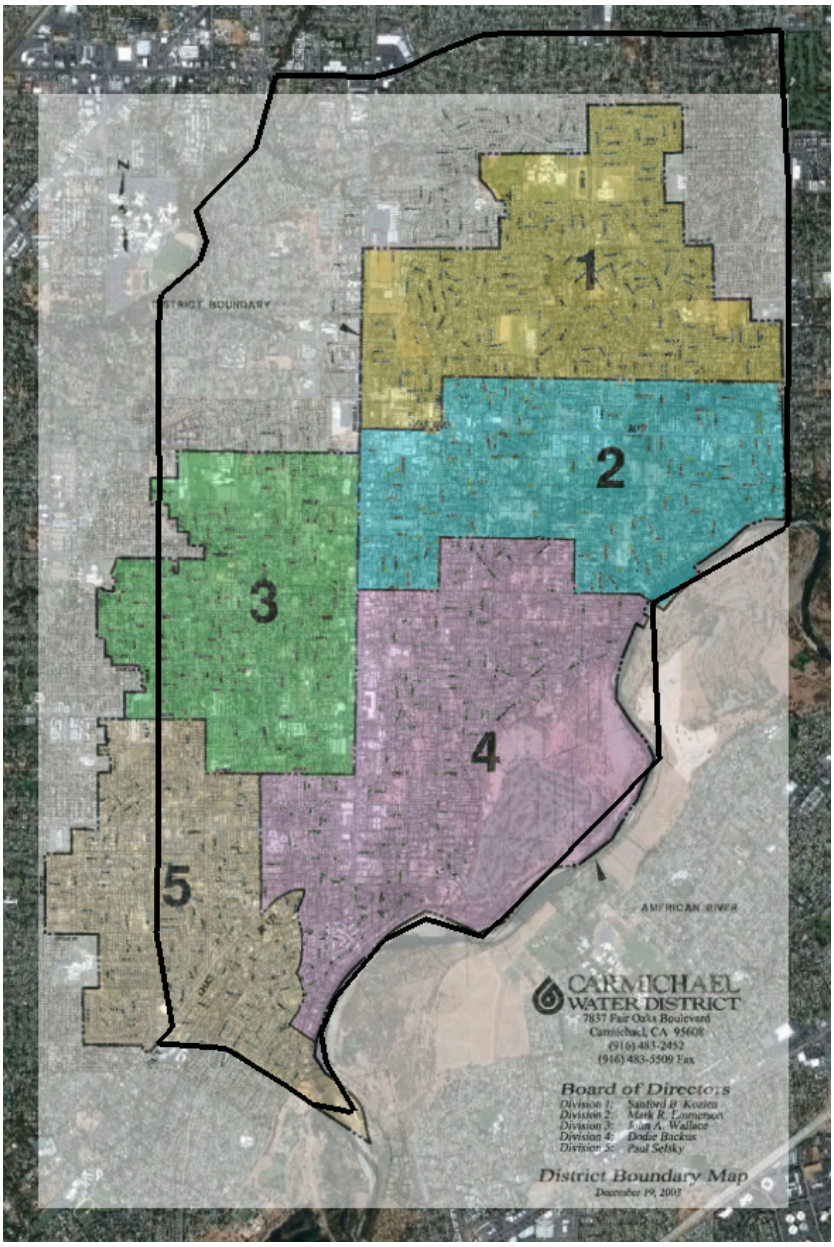
Category 1 water suppliers have the benefit of simply using Department of Finance data for population estimates. The DOF tables include yearly population estimates for cities sorted by counties and estimated of future populations. Using these numbers makes calculations easy and reduced the effort required for gathering the minimum data required for compliance. CWD does not fall into this category as Carmichael in not a city but more importantly does not share 95% of the area with CWD. This is evidenced by the difference in the Carmichael Census Designated Place (CDP) and the actual service area population visually in **Figure 1-1**.

1.2. Category 2

On first inspection CWD seems to fall into this category since Carmichael is a geographic area recognized by the Sacramento Area Council of Governments (SACOG), which maintains an extensive GIS and demographics information system. Under Category 2, water suppliers have two options for coming up with population numbers. The first is that members of an organization such as SACOG could use developed estimates using GIS data layered with DOF or Census population data. Since CWD is not a member of SACOG and has no existing relationship, this option is not available. The second option is to use data provided from an organization such as SACOG to reflect the population in the service area and adjust yearly based on CWD connection data.[2] This option, however, also is not available since the SACOG estimates are based on the Carmichael CDP, which does not correspond to CWD's service area (see **Figure 1-1)**.

[2] This adjustment based on connection numbers is know as the "Appendix A" methodology by DWR.

Figure 1-1 – Carmichael CDP vs CWD



Note: Created With Google Earth Pro.

1.3 Category 3

This method is available to all water suppliers unable to use the other categories. This method requires water suppliers to use Census data and analyze which of the "census blocks" fall into the service area. For CWD this operation was preformed manually by tracing the service area onto census block maps and gathering the census data into one excel spreadsheet. The resulting 2000 census population is then divided by the number of connections to get a coefficient for the number of people per connection. CWD anchored year 2000 residential connections to the 2000 population estimate and then scaled forward and backward in time using data for active residential connections for the corresponding years.

2 Appendix A Method[3]

Population information for all necessary census blocks was obtained from the U.S. Census Bureau web site using the procedures specified by the California Department of Water Resources.[4] The 'Total Population' and 'Group Quarters Population by Group Quarters Type' was selected from the "Census 2000 Summary File 1 (SF-1) 100-Percent Data" file. Using a CWD map that identifies the areas receiving water service, the Census Block Groups were identified.[5] Then, the specific Census Blocks in each Census Block Group were selected by identifying the treated water service areas in the map provided by CWD. Only those Census Blocks corresponding to locations where CWD provides water service to at least half of the area were included for population analysis purposes.[6] The total year 2000 population identified by the U.S. Census Bureau for each Census Block Group and the CWD population accurate to the Census Block is included in **Table 2-1.** A census block is the smallest geographical unit used by the Census Bureau. Streets, streams, and rarely property lines bound the blocks in CWD. A census block group is a cluster of blocks containing between 600 and 3000 people. These block groups do not align largely with the CWD district boundaries. The Carmichael CDP is the cluster of block groups identified as Carmichael and presented in **Figure 1-1**. This difference creates the difference presented in **Table 2-1**.

Table 2-1 – CWD Population

Block Group	Block	Difference
44,628	37,200	17%

2.1 Population Per Connection

The portion of the population in each Census Block receiving water service through a Single Family connection or Multi Family connection respectively is discussed in this section. The population was assigned to a water service connection type by using Single Family connection and Multi Family connection ratios, which were developed from the U.S. Census Bureau's 'Census 2000 Summary File 3 (SF-3) Sample Data' file.

For purposes of this analysis, the following structure types were included in the Single Family connection category:

- 1 Detached Unit (in structure)
- 1 Attached Unit (in structure)
- 2 Units (in structure)

All remaining structure types were assigned to the Multifamily connection category, including:

- 3-4 Units (in structure)

[3] Refers to the method presented in Appendix A of the Department of Water Resources, *Methodologies for Calculating Baseline and Compliance Per Capita Urban Water Use.* October 1, 2010.
[4] See Step 2 of Appendix A in *Methodologies for Calculating Baseline and Compliance Per Capita Urban Water Use.*
[5] The Carmichael Water District Boundary Map provided by Chris Nelson.
[6] All Census Blocks receiving water service are identified in an electronic spreadsheet.

- 5-9 Units (in structure)
- 10-19 Units (in structure)
- 20-49 Units (in structure)
- 50 or more Units (in structure)
- Mobile Home
- Boat, RV, Van, Etc.

Based on these assignments, the population in structure types receiving water through Single-Family and Multi-Family connections was aggregated. Then Single-Family and Multi-Family ratios were estimated for each Census Block Group by dividing the population in each category by the total population in each Census Block Group. These ratios were then used to allocate the population in the SF-1 database at the Census Block level in each Census Block Group.

Using the SF-1 database, the total population receiving water through a Single-Family connection and Multi-Family connection respectively was calculated using the ratios from the block group level, resulting in the following persons per connection estimates.

Table 2-2 – Year 2000 Persons Per Connection for CWD

Total	Single-Family	Multi-Family
3.54	2.73	14.90

While the Single-Family estimates appear reasonable, the Multi-Family estimates were deemed invalid. The Multi-Family number is typically lower than the Single-Family number as single individuals are more likely to have an apartment or occupy one Multi-Family unit. The significant difference is attributed to the fact that many of the apartment complexes or condos are served by master water meters (where multiple units are served by one connection). Though CWD has modified its tracking of the number of connections associated with multi-family dwelling units, the use of the data was not reasonable for purposes of estimating population.

To more accurately represent the changes in connections of the system, the total residential connections were used. While using total connections removes the differentiation between Single-Family and Multi-Family accounts, the CWD service area is essentially built-out and not anticipated to experience much change in the total number of connections. The only major development that could produce noticeable population change would be the Fair Oaks Boulevard portion of the SACOG Regional Blueprint, which would replace existing retail with mixed use projects. However, that development will not occur prior to the next CWD UWMP. The changes in population for CWD since 1995 as calculated from connection data are presented in **Table 2-3**.

Table 2-3 – CWD Estimated Historic Population

Year	Population
1995	37,108
1996	37,108
1997	37,108
1998	37,108
1999	37,200
2000	37,200
2001	37,702
2002	37,865
2003	37,911
2004	38,095
2005	38,042
2006	37,989
2007	37,954
2008	38,134
2009	38,357
2010	38,354

Note: 2010 value is estimated from the number of connections and is not the actual 2010 population. See **Table 3-5** for actual 2010 Population.

2.2 UWMP Compliance

The resulting population numbers from **Table 2-3** are developed using methods in compliance with the DWR's Appendix A methodology and are appropriate for baseline per-capita water use calculation described in CWD's 2010 UWMP.

3 Population Projection Accuracy

When looking for population estimates in preparing the UWMP, data from a number of sources was collected. This included data from SACOG, the Census Bureau, as well as data under license from Claritas of the Nielsen Company. Based on the pre-2010 census estimated, the block group population was estimated to remain near its 2000 value and show only a slight drop. This predicted drop did not correlate with the rise estimated from the connection data as shown in Table 2-3, which raised another question regarding the accuracy of the connection based calculations. When the 2010 Census data was released, the prediction of a drop in population for the Carmichael area was confirmed. This drop presented from Census data and SACOG in represented in **Table 3-4** on both the Carmichael CDP and relevant Block Group levels. However, this drop did not correspond to the slight increase in population predicted by the methods described in Section 2. Therefore, a comparative analysis of the underlying 2010 Census data was undertaken.

Table 3-4 – Carmichael Population

Carmichael CDP	Population
2000 Census	49,742
2005 SACOG Estimate	49,500
2010 Census	48,879
Block Group Level	
2000	44,628
2010	44,331

3.1 2010 CWD Population

In order to better understand the differences in population between what was estimated for the UWMP and the values shown in Table 3-4, a Census Block level analysis for CWD was preformed using the new 2010 Census data. The analysis followed the same methods used for the CWD population estimated from the 2000 Census data. The 2010 Census data was gathered from the PL94-171 Redistricting Data. This data represents the first block level data release and is not the SF-1 file. The 2010 population in unlikely to change with the anticipated release in summer of 2011 of the official 2010 SF-1 file.

The resulting 2010 Census Block population can be found in **Table 3-5** along with the numbers of housing units.

Table 3-5 – 2010 Census Block Population

Population	Total Housing Units	Occupied Housing Units	Unoccupied Housing Units
37,899	17,464	16,100	1,364

Note: From US Census PL94-171 for block with in CWD service area.

3.2 Comparisons

The block level shows a rise of 699 people between 2000 and 2010 where as the connection based prediction was a rise of 1,154 people (see **Table 2-3**). Given the results in **Table 3-5** it is apparent that the error in the service connection based estimation is far less than the CDP or even Block Group trends. The CDP and Block Groups predicted a decrease of 863 and 297 people respectively.

The error between the service-connection based prediction for 2010 of 38,354 and the actual 2010 Census value of 37,899 is only +1.2 percent. Given the DWR approved tolerance between service area boundaries and city boundaries of 5 percent (see Category 1 description in **Section 1**), it is safe to assume that the estimated populations shown in **Table 2-3** and used for the 2010 UWMP are of satisfactory accuracy.

Even though the trend is in the opposite direction, using the 2000 block proportion of the block group only shows an error of 1104 or 2.9 percent.[7] Based on these observations it is likely that the population of the CWD service area will not see any noticeable changes until redevelopment such as the SACOG Preferred Scenario in the SACOG Regional Blueprint come to fruition.

[7] 37899-(44331-17%)=1104

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Appendix B-7 – Emergency Response Plan

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CARMICHAEL WATER DISTRICT

Emergency Response Plan

MAY 2010

CARMICHAEL WATER DISTRICT
EMERGENCY RESPONSE PLAN
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1.0 DISTRICT OPERATIONS

1.1 Treated Water Operations

The Carmichael Water District (the District) is located in the northeast section of Sacramento County and serves an area of approximately eight square miles. The District is bounded on the north by Winding Way, on the west by Mission Avenue, on the south by Arden Way, and on the east by the American River and San Juan Avenue.

1.2 System Description

The District's water system consists of approximately 156 miles of water mains sized from 4" diameter to 48" diameter. The District has two steel storage tanks and one concrete reservoir: a one million gallon tank with three electric booster pumps and one diesel engine generator (for emergency use) located on Dewey Drive north of Winding Way; a three million gallon tank with two electric booster pumps and one natural gas engine booster pump (for emergency use) located on La Vista Avenue west of Fair Oaks Boulevard south of Robertson Avenue and a two million gallon concrete reservoir locate at the Bajamont Water Treatment Plant with stand by generator capable of sustaining power to the site for approximately 24 hours.

The primary sources of water for the District are three Ranney Collectors located on the American River on the south bank of the river at Rossmoor Bar (Rancho Cordova). The secondary sources of water are 7 deep wells that are located throughout the District's service area. Five wells are active and two wells are for emergency backup.

The Ranney Collectors gravity feed into a central caisson which travels under the American River to a raw water caisson. Water is lifted 80 feet by four 300 hp pumps to the Bajamont Water Treatment Plant. All eight of the deep well pumps are powered by electric motors. One has emergency diesel generator for backup power.

The total production capacity of District facilities is 31,192 gpm. If normal supply sources are lost, the Dewey Drive Reservoir/Booster pump station is able to deliver 4,100 gpm; the LaVista Way Reservoir/Booster Pump Station is able to deliver 1200 gpm and WTP is able to deliver 5,500 gpm for 24 hours. The two well site reservoir/booster pump stations can sustain these flows for about 4 to 6 hours before reservoir levels are below usable capacity. At this level, the booster pumps shut down to allow the on-site water well facility to refill the reservoir.

1.2.1 Water Production Security Controls and Procedures

The District's well sites and reservoirs consists of a locked, chain link fenced enclosure. The well sites are checked at least once a day for operations, maintenance and security. The District's Water Treatment Plant consists of an iron fenced enclosure with a gate code required for vehicles access. The facility has four fixed cameras mounted to view the sensitive areas of the facility. A contracted security service provides 24 hour response and on-call notification for intrusion alarms and motion detection within the

building. The facility is locked and the alarm set at the end of each day shift. Access and key control for the District's water storage, well sites and water treatment plant are limited to management and water production staff.

All employees of the District are required to carry an identification badge at all times. The badge is required to be presented during customer water quality investigations and when customer contact is made during routine flushing.

Chemical delivery procedures include checking the identification of the delivery driver against a current list provided by the chemical company before access is granted. The chemical is tested for specific gravity and color before off-loading. Production staff will then review all delivery paperwork to insure chemical identification matches what is being delivered. Staff will then unlock the influent caps of the respective chemical and allow the drivers to connect to the feed lines. Production staff will standby during the delivery to provide spill response. All water production staff personnel are Hazwhopper trained and able to provide emergency spill response and cleanup if needed.

1.2.2 Emergency Sampling and Laboratory

The District's current analytical laboratory is BSK. BSK is responsible for sampling and testing during and after natural or man-made emergencies. BSK has the ability to respond, sample and analyze all Title 22 contaminants and other unregulated contaminants. Their emergency contact information is included in appendix B. ***CDPH has Emergency Water Quality Kits (EWQSK) available at each District Office and can be utilized if needed during an emergency.***

1.3 Facilities Description

Table 1.3.1 describes each District facility and provides the following information: Name, function, address, pump type, capacity, hazardous materials on site, and other information as appropriate.

Table 1.3.1
District Facilities

Facility Name	Address	Hazardous Materials	Function	Supply Capacity	Pump Type E- electric NG-natural gas	Well Capacity
District Office/ Corp Yard	7837 Fair Oaks Blvd.	N/A	Office/ Maintenance	n/a	n/a	n/a
Bajamont Water Treatment Plant	3501 Bajamont Way	Caustic Soda, Sodium Hypochlorite	Membrane Filtration Plant	20 MGD Or 13,880 gpm	E or Diesel	n/a
Winding Way	4515 Charleston Dr. (rear)	Sodium Hypochlorite	Well N1	1316 gpm	E	Same
Garfield	3202 Garfield Ave. (rear)	Sodium Hypochlorite	Well J12	1124 gpm	E	Same
Ladera Way	Ladera Way (across from 4524 Ladera Way)	Sodium Hypochlorite	Well I/7	1400 gpm	E	Same
Barrett School	4243 Barrett Road (rear)	Sodium Hypochlorite	Well I/9	1400 gpm	E	Same
Dewey	Dewey Dr. (200 ft. N. of Winding Way)	Sodium Hypochlorite	1M gallon reservoir Well #12	3600 gpm (4 - 6 hrs)	E or Diesel	304 gpm
LaVista	LaVista Ave. (rear of Fire Station off Robertson Ave.)	Sodium Hypochlorite	3M gallon reservoir Well #13	6140 gpm (4 - 6 hrs)	E or NG	2094 gpm
Willow Park	Willow Park	Sodium Hypochlorite	Well #14	1500 gpm	E	Same
Collector #1	S. side American River (end of Rossmoor Dr.)	n/a	Ranney Collector	4627 gpm	n/a	n/a
Collector #2	S. side American River (end of Rossmoor Dr.)	n/a	Ranney Collector	3691 gpm	n/a	n/a
Collector #3	S. side American River (end of Rossmoor Dr.)	n/a	Ranney Collector	6205 gpm	n/a	n/a

2.0 EMERGENCY RESPONSE ORGANIZATION

2.1 Emergency Organizational Structure

The District utilizes an emergency organizational structure and chain of command in response to all emergencies within or affecting its service area. Emergency management positions are defined in this plan. The organizational response is divided into two levels of emergency. The two types of emergencies are categorized as follows:

Site Emergency - does not exceed the following criteria:

- Limited to one District facility AND
- Incident has no potential for serious impact on the public AND
- Incident has no potential for serious impact on water quality/delivery

District Emergency - exceeds site emergency criteria:

- Incident affects multiple District facilities OR
- Incident has the potential for serious impact on the public OR
- Incident has the potential for serious impact on water quality/delivery

The roles and responsibilities of each individual in the emergency organization are defined for both levels of emergency. See Section 2.2 below for more information. For each emergency plan position, the District employee who has primary responsibility to fill the position is named and one or more alternate employees who are qualified for the position are also named (in the event that the primary is unavailable).

2.2 Command and Control

Emergency response to actual, imminent, or threatened emergencies is directed and controlled using the organizational and operational elements of the Incident Control system. The Incident Control system has been adapted from the Incident Command system commonly used by emergency response agencies, to meet the particular requirements of the District and its response capability. The Incident Control system is intended to provide an organized approach to effectively control and manage operations during any emergency incident regardless of size or severity. The implementation of the Incident Control system will assist in providing for effective interface between the District's response personnel and outside emergency response (and other) agencies when the need arises.

The Incident Control system is applicable and should be activated once any District personnel becomes aware of an actual, imminent, or threatened emergency. The means by which personnel become aware of an emergency could be through any number of mechanisms including personal observation, automatic detection and alarm systems, being notified by another employee, visitor, member of the public, news media, or others.

Depending on the time and location of the emergency, the response may involve a single District Emergency Response Team member through a series of notifications; or it may involve the response of multiple District personnel and other outside emergency

response organizations. While individual emergency response plans can recommend and guide emergency actions for specific instances, it is the responsibility of each District employee to use their best judgment and training in determining how to best respond to any given emergency situation.

Incident Commander

The individual in charge of the incident at the scene is the Incident Commander (IC). The first trained District personnel to respond to the incident becomes the Incident Commander until a more qualified person arrives at the scene and command can be turned over. The following staff members shall act as the Incident Commander if present at the scene (in decreasing rank order):

Production Superintendent

Field Superintendent

Customer Service Supervisor

Foreman

Field Personnel

District Personnel

All District emergency responders and their communication are coordinated and controlled through the Incident Commander. The main responsibility of the Incident Commander is the assignment and delegation of the various response tasks to whatever resources or personnel are available at the time of the incident. Delegation of tasks is of primary importance so that vital emergency response activities, such as notification, evacuation, and mitigation, can proceed in parallel and not be bogged down by sequential decision making. Upon arrival of off-site response agencies, overall incident command responsibilities reside with the trained professionals. The Incident Commander will then function as a branch operation in the overall Incident Command structure providing advice, assistance, resources, and expertise to the Incident Commander as requested and as the situation dictates.

To the extent possible, the District response to emergencies shall be guided by the incident-specific emergency response plans provided in this document. These plans prescribe specific actions for anticipated emergencies; it is recognized however, that considerable judgment and discretion needs to be exercised by the Incident Controller and other responders during any emergency situation. Actual response actions may deviate from the actions described. In general, the responsibilities of the Incident Controller shall include the following:

1. Sound the alarm to notify employees/visitors of the emergency.

2. Evaluate the potential severity of the incident, and direct evacuation (conservatism should be used in making the determination of potential harm).

3. Determine immediate needs and request internal/external assistance.

4. If incident has the potential to be a District emergency, notify the District Incident Manager or Public Information Officer and request activation of the Emergency Operations Center.

5. Direct the response efforts of all District personnel at the scene; initiate mitigation/recovery actions as appropriate.

6. Coordinate with and assist off-site response agencies upon arrival.

7. Prepare or direct incident investigation or follow-up as appropriate.

Incident Command Post

The Incident Command Post (ICP) is the location where site-specific response efforts of the District emergency response team and their communications are coordinated and controlled. It is from this location that the Incident Commander (IC) directs the site response activities. The location of the Incident Command Point is discussed in individual emergency response plans but should ultimately be established based on the following criteria:

- It is safe for emergency responders and will not become unsafe from an escalation of the emergency (i.e., upwind from potential chlorine releases, away from damaged, partially collapsed structures post earthquake, away from downed power lines after major storm, clear of brush/forest for wild land fires, etc.)
- It has sufficient space for receiving and/or staging emergency vehicles nearby (i.e., fire, ambulance, LIFEFLIGHT)
- It has communications access (i.e., good radio reception, access to telephones)
- It has or can be provided with emergency utilities (Le, lighting, power, water, sanitary, etc.)

District Incident Manager

The District Incident Manager (DIM) is the individual responsible for overall coordination of District response to major emergencies. The District Incident Manager's focus is directed less on immediate Emergency Response Team actions and more towards the total District response to the incident. The District Incident Manager's primary responsibility is to address the potential impact of the emergency on the community and the District's capability to provide water to District customers. The following staff members shall act as the District Incident Manager if present at the Emergency Operations Center (in decreasing rank order):

District General Manager
Assistant General Manager
Production Superintendent
Field Superintendent

To the extent possible, the District response to emergencies shall be guided by the incident specific emergency response plans provided in this document. These plans prescribe specific actions for anticipated emergencies; it is recognized however, that considerable judgment and discretion need to be exercised by the District Incident Manager in any emergency situation. Actual response actions may deviate from the actions described. In general, the responsibilities of the District Incident Manager shall include the following:

1. Activate Emergency Operations Center and initiate call-back of District staff to support Emergency Response Team and/or Emergency Operations Center staff as needed.

2. Implement and fulfill Incident Commander's requests for internal/external assistance.

3. In conjunction with Incident Controller, determine potential impact on public and/or water supply and issue news release/public notification as appropriate.

4. Mobilize and/or authorize extraordinary measures for emergency recovery, such as emergency funding, request/purchase of bulk water deliveries, authorize use of non-potable water in system, etc.

5. Coordinate with senior levels of off-site response agencies.

6. Prepare or direct incident investigation or follow-up as appropriate.

7. Serve as Board and external agency interface in promoting emergency planning efforts, drills and capability.

Emergency Operations Center

The Emergency Operations Center (EOC) is the District's focal point for coordination and control of major emergency events.

Primary EOC: District Office
7837 Fair Oaks Boulevard
Carmichael, CA 95608
(916) 483-2452 (normal)
(916) 483-2455 (emergency)

Secondary EOC: Bajamont Water Treatment Plant
3501 Bajamont Way
Carmichael, CA 95608
(916) 944-8524 (normal and emergency)
(916) 679-0457 (Superintendent's office)

Alternate EOC: In the unlikely event that both the primary and secondary locations are unsafe and/or unusable, the District Incident Manager will designate an alternate Emergency Operations Center location (answering service office, safe area within the District where communications can be established, or other sheltered location). The alternate site will be communicated to District personnel via vehicle radio and/or Nextel telephone/direct connect.

The Emergency Operations Center will be activated at the discretion of the District Incident Manager or as requested by the Incident Controller. As general guidance, the Emergency Operations Center ***will*** be activated for District Emergencies and will not be activated for Site Emergencies.

If the Emergency Operations Center is activated during normal business hours, the following actions will be directed by the District Incident Manager:

1. Suspend all walk-in traffic

2. Make the following announcement via District radio:

"Carmichael Water District personnel - The Emergency Operations Center has been activated. We have an emergency at give location. ERT members report to the (Emergency Operations Center / Secondary Emergency Operations Center Emergency Site (as appropriate)) for further instruction. All District radio use shall be for emergency traffic only until further notice. "

2.3 Positions and Responsibilities

District Incident Manager

This position is responsible for control and coordination of all District emergency response activities. This includes the following activities:

- Directs operations at the Emergency Operations Center (EOC)
- Directs relocation to alternate Emergency Operations Center if necessary
- Performs or directs notification of off-site regulatory and response agencies as needed
- Directs the release of news/press releases and/or public notices (in consultation with Incident Controller/Public Information Officer) as appropriate
- Requests response of outside resources (outside standard Emergency Response Plan) when necessary to provide support and/or mitigation
- Determines if crew rotation is needed for round-the-clock coverage
- Initiates request for alternate water supply from other agencies/vendors
- Authorizes emergency expenditures
- Team leader for incident investigation of District emergencies

- Maintains an up-to-date tracking of water distribution system (capacity/valving) during emergencies based on actions taken/field reports

Incident Commander

This position is responsible for control and coordination of District emergency response activities at the site of the incident. This includes the following activities:

- Establishes the Incident Command Post
- Directs emergency response teams in recovery and/or mitigation actions
- Directs evacuation of District employees
- Recommends public protection actions to Incident Commander/off-site response agencies and District Incident Manager including making recommendations whether or not site neighbors/sensitive neighbors should be notified of incident and whether or not protect-in-place actions and/or evacuation are appropriate.
- Team leader for incident investigation of Site emergencies
- Requests additional District/Off-site assistance as required
- Ensures follow-up and performance of appropriate incident investigations as required by regulation and by this plan.

Public Information Officer

This position is responsible for primary media and/or public interface to serve as spokesperson and interface. This includes the following activities:

- Prepares and delivers news/press releases
- Prepares and distributes District informational notices
- Develops crew rotation/back-up schedule for protracted emergency
- Coordinates and procures emergency supplies for extended Emergency Operations Center operation
- Provides for relocation and/or protection of District vital documentation as necessary
- Ensuring proper documentation and internal distribution of reports required under this plan.
- In cooperation with Incident Controller, ensuring proper transmittal of incident reports to regulatory authorities.

District Emergency Response Team Members

- Respond to and provide mitigation/recovery activities as necessary and/or as directed by the Incident Controller
- Maintain qualification with District emergency response equipment and appropriate personal protective equipment (PPE)
- Provide response to emergencies as requested by emergency management

All District Employees

- As directed by their supervisor, maintain First Aid and CPR certification
- Review and be aware of individual responsibility under this Emergency Response Plan
- Follow instruction of District Emergency Response Team members and/or off-site agencies during emergencies
- Provide support as requested by emergency management

2.4 District Communication Systems

In the event of an emergency during normal business hours, the District would be notified either by phone or by employees at an emergency site. In the event of an emergency during normal business hours, emergency notification of Emergency Response Team members will be done through the office and/or via the radio system.

After business hours, the District would become aware of an emergency by a phone call from the answering service. For after hours emergencies, the answering service begins calling District management personnel in sequential order until a representative is reached. That management member will then direct the answering service to call the remaining Emergency Response Team members based on the appropriate emergency plan.

The District maintains the following communication systems for emergency operations:
Primary Communications: District two-way radio (47.86 MHz)
Base Transmitters: Primary Emergency Operations Center (7837 Fair Oaks Blvd.)

Alternate Radio: Professional Telephone Answering Service
(Appletree Answering Service)
3517 Marconi Avenue, Suite 101, Sacramento, CA (916) 978-2363
After-Hours On Call Nextel: (916) 869-0580

Vehicle mounted portables:

Unit #	Description
1	1998 Ford Ranger
7	1999 Ford F-350
10	2001 Ford Ranger
11	1994 Ford F-700 Dump Truck
12	1997 Ford F-450
13	2001 Dodge Ram 3500
14	2002 Ford F-150
15	1991 GMC Top Kick Dump Truck
16	1997 Ford F-700 Dump Truck
18	2003 Ford F-550
19	2001 GMC C-742 Dump Truck
20	2004 Ford F-550
21	2004 Ford F-550
22	2004 Ford F-150
23	2004 Ford F-150
24	2006 Ford Ranger
25	2006 Ford F-150
26	2005 Ford F-250
27	2005 Ford F-250
28	2007 Ford Ranger
29	2007 Ford F-150
30	2007 Ford F-150
31	2008 Ford F-150

Secondary Communications

Telephones: Primary Emergency Operations Center (7837 Fair Oaks Blvd) 4 lines – 12+ extensions Numbers: (916) 483-2452; (916) 483-2453; (916) 483-2454 (will ring after hours to answering service) (916) 483-2455 (will ring after hours in District office)

District personnel should use (916) 483-2455 primarily for emergency use and (916) 483-2455 will ring directly to the District Office for contact with the District Incident Manager.

Secondary Emergency Operations Center (3501 Bajamont Way) 1 line - 2 extensions Number: (916) 944-8524 or (916) 679-0457

In the event of power loss concurrent with another emergency condition, the District's base transmitters cannot operate on battery backup for a sufficient period of time to operate the Emergency Operations Center. In this event, the District Incident Manager will relocate the Emergency Operations Center to a vehicle adjacent to the office or other location as necessary.

2.5 External Agency Communication Systems

The District's primary means of communication with off-site response agencies is through the telephone system. In the event of a District emergency where the telephone system is out of commission, the District Incident Manager and/or Incident Controller will perform the following:

1. Attempt to raise the telephone answering service via radio and notify them to call emergency response agencies.

2. Send a runner to the nearest fire/police station to notify them that a District emergency has occurred.

For on-site incident communication between the Incident Controller and off-site response agencies, the Incident Controller will communicate directly with the responding agency's (fire, police) Incident Commander at the Incident Control Point and/or will request a portable radio from the Incident Commander if direct coordination between the Incident Controller and the agency's response teams are necessary.

2.6 Media Notification/News Releases

The District's primary means of emergency communications with its customers and the public is through the news media via public emergency authorities.

The District must maintain communication with customers/public in the event of an emergency in order to ensure that potentially affected individuals are properly notified. Examples of emergency conditions which might require notification include:

- Substandard or hazardous water quality (e.g., boil orders, do not drink/bathe orders)
- Restricted customer supply notice (e.g., low pressure, taste/odor notice)
- Emergency conservation measure requests (e.g., maintain system residual for fire flows, system capacity problem)

In the event of an emergency, the notification of customers/public should be coordinated through the public authorities via 911 or the contact list in Appendix B. For non-critical messages, the District should contact radio/TV stations directly.

In the event that an emergency requiring public notification occurs, the news media may be contacted (at the discretion of the District Incident Manager and/or Incident Commander) with pertinent information. If the District Incident Manager wants to provide supplemental and/or clarifying information to the public after the emergency agencies have done so, then the media should be contacted directly (by telephone if available or by runner).

In any instance where the news media is contacted (whether through off-site emergency agencies or directly by the District), specific and clear information should be provided. If a news release message is not provided in this emergency response plan, then a message should be prepared prior to public notification. The message should convey the following information in a CONCISE and PRECISE manner:

- WHAT has occurred (DO NOT speculate as to cause)
- WHAT the public should do for protection (Explain calmly and clearly)
- WHAT the public should NOT do (Again explain calmly and clearly and give the reason why action would be inappropriate)
- WHEN and HOW additional information will be communicated (Supplemental information, if it furthers public protection, should be communicated immediately, otherwise, wait until emergency is resolved)

Whenever radio and/or television have been contacted, a follow-up press release (written) should be prepared as soon as full details of the emergency incident are known. All written news releases shall be reviewed by the General Manager.

In the event of widespread power/telephone system failure, and if radio/television are unable to function, public communication will be made through police and fire department public address along with door-to-door District runners as necessary and available.

TABLE 2.6.1
Sacramento Area Radio/TV Stations

Radio Station	Address	Phone	Television Station	Ch.	Address	Phone
KXPR	7055 Folsom Blvd.	278-8900	KCRA-TV	3	3 Television Circle	444-7316
KFBK	1440 Ethan Way. #200	929-5325	KVIE-TV	6	2595 Capital Oak Cir.	929-5843
KWOD	1425 River Park Dr. #201	929-5000	KXTV-TV	10	400 Broadway	441-2345
KXGA	280 Commerce Circle	923-6800	KOVR-TV	13	2713 KOVR Dr.	374-1313
KSEG	5345 Madison Ave.	446-5769	KSPX-TV	29	3 Television Circle	443-2929
KYMX	280 Commerce Circle	923-6800	KMAX-TV	31	500 Media Place	925-3100
KFIA	1425 River Park Dr. #520	924-0710	KTXL-TV	40	4655 Fruitridge Rd	454-4548
			KSCH-TV	58	3 Television Circle	444-7316

Listed below are sample news releases for issue to the news media. These releases should be given to emergency response agencies/media and public as directed by the District Incident Manager. Individual emergency plans should be used as guidance.

SUSPEND USE ORDER - CONTAMINATION

"Carmichael Water District customers should suspend all water use until further notice. Due to state problem, the water/water system is currently unsafe/unusable for all uses including drinking, bathing, washing, and watering. Use bottled water or other bottled/canned liquids. Failure to comply could be harmful to your health. Provide alternate water supply information - source and location if available. Additional information will be provided at xx:xx A.M./P.M. on this station." REPEAT ENTIRE MESSAGE

SUSPEND USE ORDER - POTABILITY

"Carmichael Water District customers should not use water for drinking or bathing until further notice. Due to state problem, the water is currently unsafe for drinking or bathing. Water may be used for other purposes not involving human or animal consumption such as laundry and watering. Failure to comply could be harmful to your health. Provide alternate potable water supply information - source and location if available. - Additional information will be provided regarding the water supply at xx:xx A.M./P.M. on this station." REPEAT ENTIRE MESSAGE

SUSPEND USE/BOIL ORDER

"Carmichael Water District customers should suspend all water use until our water supply system has been inspected. Use bottled water or other bottled/canned liquids. If you must use water, first use water heater or toilet tank water. As a last resort, use boiled tap water. Additional information will be provided regarding the water supply at xx:xx A.M./P.M. on this station." REPEAT ENTIRE MESSAGE

BOIL ORDER

"Carmichael Water District customers should boil all water for drinking until further notice. Due to state problem, the water is currently unsafe for drinking without boiling. Water may be used for other purposes such as bathing, laundry and watering. Additional information will be provided regarding the water supply at xx:xx A.M./P.M. on this station." REPEAT ENTIRE MESSAGE

SYSTEM RESTORATION MESSAGE

"The state earlier problem with the Carmichael Water District system has been corrected. You may use your water without restriction. The Carmichael Water District would like to apologize for any inconvenience you experienced as a result of this problem and appreciates your patience." REPEAT ENTIRE MESSAGE

SUSPENSION REQUEST

"The Carmichael Water District is asking for its customer's assistance in limiting their water use. Due to extreme demands on the water system as a result of fire/major breaks/other cause, we are requesting that customers limit their water use to drinking or cooking only. This will help us maintain system pressures and avoid loss of service. Additional information will be provided regarding the water supply at xx:xx A.M./P.M. on this station." REPEAT ENTIRE MESSAGE

3.0 INCIDENT RESPONSE

The District has a two-tiered approach to emergency response: 1) Site Emergencies are guided by individual site emergency response plans and may or may not escalate to a District Emergency depending on their severity. For each Site Emergency response plan, there is a corresponding District Emergency response plan which may or may not be activated at the discretion of the Incident Commander. 2) Incidents which either have or have the potential for immediate and widespread affect on District personnel, facilities, or water service, are classified as District Emergencies and will necessitate implementation of both the Site and District Emergency response plans. The District Incident Manager and Incident Controller in these instances, will need to determine if they both will operate from the Emergency Operations Center, or if the Incident Controller should operate from the field. This determination should be based on the emergency conditions.

It is noted here that these Emergency Response Plans are guidance documents. No written plan can reasonably foresee every conceivable problem that could occur in an emergency. It is the intent of these plans to identify likely and/or major consequences of various types of emergencies. Likewise, activation of an emergency plan must be performed with discretion. Often, an emergency is a matter of degree. As an example, a severe earthquake would require full plan implementation; a minor earthquake might only require limited facility inspection, or no plan implementation whatsoever. When dealing with public and employee safety, conservative methodology (tending toward implementation) should be invoked; ultimately however, experience and rational decision making must be used to determine the level of plan implementation.

The following section contains the District and Site Emergency Response Plans. A summary of the emergency response agency notification requirements is also provided on page 40 in the Emergency Notification Matrix.

DISTRICT EMERGENCY – EARTHQUAKE

NOTIFICATION	**INTERNAL**	Business Hours: DIM/PIO - Report to EOC IC/ERT - Await assignment After Hours: DIM/PIO - Report to EOC IC/ERT - Report to EOC
	EXTERNAL	Agencies: Delay notification pending system inspection Public: Delay notification pending system inspection unless major system damage suspected, then issue immediate SUSPEND USE - BOIL ORDER
ACTIONS	1. Perform notification. If after hours, first management member reached should', direct answering service to notify all EOCIERT staff to secure conditions at their home and report to EOC as soon as possible. If widespread system damage is suspected (based on damage in the area), issue immediate news release (SUSPEND USE - BOIL ORDER) 2. Verify integrity and secure EOC (i.e., gas leaks, hot power lines, structural integrity). If not confident of security given likelihood of aftershocks, isolate utilities and relocate to secondary or alternate. If primary EOC is evacuated, leave note on door indicating alternate EOC location. 3. As ERT teams become available, begin damage inspections of District facilities (minimum two person teams). Use the following priority unless incoming information indicates problems at specific locations: a. Check telemetry for system pressure indicators or other alarms b. Reservoirs (Dewey and LaVista) c. Treatment facilities – Water Treatment Plant first, then chlorination well sites, then remaining wells. d. Distribution system - isolate breaks 4. In conjunction with system survey, implement other emergency response plans (e.g., FIRE, HAZARDOUS MATERIAL RELEASE, LOSS OF NORMAL WATER SUPPLY) as appropriate for field conditions. 5. Notify Fire Department of system status/segments isolated as soon as reliable information can be forwarded. Provide updates to FD for status change. 6. Initiate water quality testing at appropriate points in the system if system integrity/water quality is suspect. 7. Initiate emergency system repairs as appropriate. PIO to initiate relocation of business records/electronic media as appropriate to reestablish normal operations as soon as feasible. 8. Once system has been stabilized/secured, issue news releases as appropriate (SYSTEM RESTORATION, Continued BOIL ORDER, etc.)	
REPORTING	Prepare written report detailing damage, actions, expenditures, etc.	

SITE EMERGENCY – EARTHQUAKE

ALARM	NONE	
EVACUATION	If facility is structurally unsound or other life safety threat present, ALL EMPLOYEES & VISITORS PROCEED TO INCIDENT CONTROL POINT.	
NOTIFICATION	**EXTERNAL**	As conditions warrant
		Provide the following information: Business Name: Carmichael Water District Facility Name: ***{Fill in with location name}*** Facility Address: ***{Fill in with location address}*** Phone Number: (916) 453-2452 Any known injuries or personnel trapped
	INTERNAL	After assessment of facility, notify EOC of conditions
ACTIONS	1. During earthquake, do not leave the building (chlorine sites excepted). Take cover in doorway, under heavy desk or table, or in hallway. Stay away from windows. If outdoors, move away from power lines or other potential overhead hazards. 2. If facility has collapsed, ascertain whether or not anyone was present and/or might be trapped. Notify FD (911) and EOC (916) 483-2455 or radio if people are trapped/unaccounted for. 3. Begin inspection of facility from exterior. Look for downed power lines, structural damage, hazardous material and/or gas leaks, water leaks, fires, etc. If significant damage is present, DO NOT enter unless absolutely vital. If facility appears secure, enter and inspect interior for conditions described above. 4. If earthquake has caused any other emergency condition, implement appropriate emergency response plans (e.g., FIRE, HAZARDOUS MATERIAL RELEASE, LOSS OF NORMAL WATER SUPPLY). 5. If facility has other than cosmetic damage, or is otherwise suspect, evacuate and post DO NOT ENTER signs at all entrances until structural evaluation is performed. Remove any hazardous material containers from area if potential for further damage/collapse. Isolate all electrical, gas, and water service. 6. Upon completion of facility inspection, notify EOC of condition and status. 7. For water distribution system inspection, notify EOC of sections isolated and/or components (hydrants, main service connections) affected. Maintain valve closure list and provide description of customer areas which are without or have reduced service.	
REPORTING	Prepare written report detailing damage, actions taken, other repairs required	

DISTRICT EMERGENCY - FIRE/EXPLOSION AT DISTRICT FACILITY MAJOR FIRE IN DISTRICT SERVICE AREA

NOTIFICATION	**INTERNAL**	Business Hours: DIM/PIO - Report to EOC IC/ERT - Report to Fire Site (min. 3 ERT) After Hours: DIM/PIO - Report to EOC IC/ERT - Report to Fire Site (min. 3 ERT)
	EXTERNAL	Agencies: NONE Public: NONE
ACTIONS	1. Perform notification. If after hours, first management member reached should direct answering service to notify DIM and PIO to report to EOC, and to notify IC and minimum 3 ERT members to report to fire site. 2. Monitor fire conditions for District facility exposure through coordination with IC and ERT. Notify Fire Dept. Incident Commander through IC of any threat to pumping system and/or Hazardous Materials. 3. Monitor system pressure conditions through telemetry and inform Fire Dept. incident commander through IC. 4. If fire causes other emergency, implement other emergency response plans (e.g., FIRE, HAZARDOUS MATERIAL RELEASE, LOSS OF NORMAL WATER SUPPLY) as appropriate for field conditions. 5. If water system challenge is severe, issue SUSPENSION REQUEST news release. Rescind request when system recovers.	
REPORTING	FIRE INCIDENT REPORT	

SITE EMERGENCY – FIRE/EXPLOSION AT DISTRICT FACILITY
MAJOR FIRE IN DISTRICT SERVICE AREA

ALARM	If potential life safety threat - Intercom or verbal	
EVACUATION	If potential life safety threat ALL EMPLOYEES & VISITORS PROCEED TO INCIDENT CONTROL POINT:	
NOTIFICATION	**EXTERNAL**	Fire Department - 911
		Provide the following information: Business Name: Carmichael Water District Facility Name: ***{Fill in with location name}*** Facility Address: ***{Fill in with location address}*** Phone Number: (916) 483-2455 Type of Fire/Material Involved: Any known injuries or personnel trapped
	INTERNAL	Notify EOC at (916) 483-2455 or use radio
ACTIONS	1. Sound Alarm (by announcement over telephone PA system) 2. Initiate Evacuation as needed, account for employees at ICP. 3. Perform notification. 4. Provide or direct firefighting and/or facility exposure protection if trained ERT personnel and proper equipment are available and it can be done safely. 5. Provide assistance to the Fire Department Incident Commander as requested. 6. Take appropriate control actions if hazardous materials are threatened: • Notify FD of threat • Relocate materials if practical • If material is released, implement HAZARDOUS MATERIAL RELEASE response plan 7. If fire impacts water system operations, coordinate system operation with EOC. Keep FD Incident Commander appraised of conditions.	
REPORTING	FIRE INCIDENT REPORT	

DISTRICT EMERGENCY - MEDICAL EMERGENCY

NOTIFICATION	**INTERNAL**	Business Hours: DIM/PIO - Report to EOC IC/ERT - Await assignment
	EXTERNAL	Agencies: NONE Public: NONE
ACTIONS	NOTE: This District emergency plan will only be implemented for multiple casualty incidents, otherwise medical emergencies will be handled by the site emergency plan. 1. Perform Notification. Direct ERT team members to casualty sites as appropriate to provide support to emergency response agencies. 2. Ascertain number of casualties from IC. Contact area hospitals as appropriate to prepare the emergency room staff for multiple casualties.	
REPORTING	SUPERVISOR'S REPORT OF ACCIDENT	

SITE EMERGENCY - MEDICAL EMERGENCY

ALARM	N/A	
EVACUATION	N/A	
NOTIFICATION	**EXTERNAL**	Ambulance - 911
		Provide the following information: Business Name: Carmichael Water District Facility Name: ***{Fill in with location name}*** Facility Address: ***{Fill in with location address}*** Phone Number: (916) 453-2452 Number of people injured and type of injuries to each individual
	INTERNAL	If multiple injuries, notify EOC at (916) 483-2455 or use radio
ACTIONS	1. Perform notification. 2. Provide or direct emergency medical care in accordance with individual training and capabilities.	
REPORTING	SUPERVISOR'S REPORT OF ACCIDENT	

DISTRICT EMERGENCY – FLOOD

NOTIFICATION	**INTERNAL**	Business Hours: DIM/PIO - Report to EOC IC/ERT - Await assignment After Hours: DIM/PIO - Report to EOC IC/ERT - Report to EOC
	EXTERNAL	Agencies: NONE, unless major system damage Public: NONE, unless major system damage then issue SUSPEND USE - BOIL ORDER
ACTIONS	1. Perform notification. If after hours, first management member reached should direct answering service to notify all EOCIERT staff to secure conditions at their home and report to EOC as soon as possible. 2. Verify operability of EOC (i.e., uninhabitable, flooded equipment). If EOC non-functional or conditions indicate EOC may still flood, relocate to secondary or alternate. If primary EOC is evacuated, leave note on door indicating alternate EOC location. Salvage business records/electronic media as feasible before abandoning primary EOC. 3. As ERT teams become available begin damage inspections of District facilities (minimum two person teams). Use the following priority unless incoming information indicates problems at specific locations (i.e., flooding at specific sites). a. Treatment facilities – Water Treatment Plant first, then chlorination well sites, then remaining wells. b. Reservoirs (Dewey and LaVista) c. Distribution system - isolate breaks caused by wash-outs 4. In conjunction with system survey, implement other emergency response plans (e.g., FIRE, HAZARDOUS MATERIAL RELEASE, LOSS OF NORMAL WATER SUPPLY) as appropriate for field conditions. 5. Notify Fire Department of system status/segments isolated as soon as reliable information can be forwarded. Provide updates to FD for each status change. 6. Initiate water quality testing at appropriate points in the system if system integrity/water quality is suspect. 7. Initiate emergency system repairs as appropriate. 8. Once system has been stabilized/secured and normal (or semi-normal operation) can resume, issue news releases as appropriate (SYSTEM RESTORATION, partial restoration message, continued BOIL ORDER, etc.)	
REPORTING	Prepare written report detailing damage, actions, expenditures, etc.	

SITE EMERGENCY – FLOOD

ALARM	If potential life safety threat - Intercom or verbal	
ACTION: EVACUATION	If potential for rapidly rising water or other life safety threat: ALL EMPLOYEES & VISITORS PROCEED TO INCIDENT CONTROL POINT.	
NOTIFICATION	**EXTERNAL**	As conditions warrant
		Provide the following information: Business Name: Carmichael Water District Facility Name: ***{Fill in with location name}*** Facility Address: ***{Fill in with location address}*** Phone Number: (916) 453-2452 Provide the following information: People trapped and/or threat to hazardous materials or water supply
	INTERNAL	Notify EOC of conditions
ACTIONS	1. If facility has flooded, ascertain whether or not anyone was present and/or might be underwater. Notify FD and Sheriff's Dept. (911) and EOC (916) 483-2455 or radio if people are underwater/unaccounted for. If any significant flooding, evacuate facility until damage/hazard inspection can be made. 2. Determine extent of flooding from exterior initially. Observe area for hazardous conditions (e.g., downed power lines, floating hazardous materials. containers, etc. If flooding is minor/moderate, isolate electrical power, then enter and inspect facility for water damage. 3. If flooding has caused any other emergency condition, implement appropriate emergency response plans (e.g., HAZARDOUS MATERIAL RELEASE, LOSS OF NORMAL WATER SUPPLY). 4. Remove any hazardous material containers from area if potential for further damage due to flooding. Isolate all gas, water, and electrical service if additional flooding is expected. 5. If sufficient time is available and it can be done safely, relocate any vital equipment/records. 6. Upon completion of facility inspection, notify EOC of condition and status. 7. For water distribution system post-flooding inspection, maintain valve closure list and notify EOC of sections isolated and/or components (hydrants, main service connections) affected. Provide description of customer areas which are without or have reduced service.	
REPORTING	Prepare written report detailing damage, actions taken, other repairs required	

DISTRICT EMERGENCY - TORNADO/SEVERE WEATHER

NOTTFICATION	**INTERNAL**	Business Hours: DIM/PIO - Report to EOC IC/ERT - Await assignment After Hours: DIM/PIO - Report to EOC IC/ERT - Report to EOC
	EXTERNAL	Agencies: NONE Public: NONE
ACTIONS	1. Perform notification. If after hours, first management member reached should direct answering service to notify all EOC/ERT staff to secure conditions at their home and report to EOC as soon as possible. 2. Verify operability of EOC (i.e., uninhabitable, equipment). If EOC non-functional, relocate to secondary or alternate. If primary EOC is evacuated, leave note on door indicating alternate EOC location. Salvage business records/electronic media as feasible before abandoning primary EOC. 3. As ERT teams become available, begin damage inspections of District facilities (minimum two person teams). Priority should be on facilities in areas within District where damage appears most severe then progressing outward unless information indicates problems at specific locations (i.e., damage, leaking reservoirs, etc.). The following list is prioritized based on susceptibility to damage. a. Treatment facilities – Water Treatment Plant, chlorination well sites, then remaining wells. b. Reservoirs (Dewey and LaVista) c. Distribution system - isolate breaks caused by wash-outs and/or downed trees due to high wind. 4. In conjunction with system survey, implement other emergency response plans (e.g., FIRE, HAZARDOUS MATERIAL RELEASE, LOSS OF NORMAL WATER SUPPLY) as appropriate for field conditions. 5. Initiate emergency system repairs as appropriate.	
REPORTING	Prepare written report detailing damage, actions, expenditures, etc.	

SITE EMERGENCY - TORNADO/SEVERE WEATHER

ALARM	If potential life safety threat - Intercom or verbal	
ACTION: EVACUATION	If potential for life safety threat: ALL EMPLOYEES & VISITORS PROCEED TO INTERIOR LOCATION OF SUBSTANTIAL CONSTRUCTION: If outside when tornado approaches, lie down in depression face down with arms covering back of head (DO NOT stay in vehicle or try to outrun storm)	
NOTIFICATION	**EXTERNAL**	As conditions warrant
		Provide the following information: Business Name: Carmichael Water District Facility Name: ***{Fill in with location name}*** Facility Address: ***{Fill in with location address}*** Phone Number: (916) 483-2452 Provide the following information: People trapped or injured
	INTERNAL	Notify EOC of conditions
ACTIONS	1. If facility has collapsed, ascertain whether or not anyone was present and/or might be trapped. Notify FD (911) and EOC (916) 483-2455 or radio) if people are trapped/unaccounted for. 2. Determine extent of damage from exterior initially. Observe area for hazardous conditions (e.g., downed power lines, structural damage, etc.) If damage is severe, do not enter/sift wreckage until emergency services have arrived. If damage is moderate, isolate electrical power, then enter and inspect facility for operability/salvage. 3. If storm damage has caused any other emergency condition, implement appropriate emergency response plans (e.g., HAZARDOUS MATERIAL RELEASE, LOSS OF NORMAL WATER SUPPLY). 4. Remove any hazardous material containers from area if potential for further damage due to facility collapse. Isolate gas and water service as needed. 5. Where it can be done safely, relocate any vital equipment/records. 6. Upon completion of facility inspection, notify EOC of condition and status. 7. If water distribution system damaged, maintain valve closure list and notify EOC of sections isolated and/or components (hydrants, main service connections) affected. Provide description of customer areas which are without or have reduced service.	
REPORTING	Prepare written report detailing damage, actions taken, other repairs required	

DISTRICT EMERGENCY - BOMB THREAT

NOTIFICATION	**INTERNAL**	Business Hours: DIM/PIO - Report to EOC or safe site IC/ERT - Await assignment After Hours: DIM/PIO - Report to EOC or safe site IC - Report to EOC or safe site
	EXTERNAL	Agencies: NONE Public: NONE
ACTIONS	1. Perform notification. If after hours, first management member reached should direct answering service to notify DIM, PIO, and IC to report to EOC as soon as possible or to safe area outside of site if unsure of threat location. 2. If primary EOC is site of threat, relocate to secondary or alternate. Salvage business records/electronic media as feasible before abandoning primary EOC. Post District vehicle at Fair Oaks entrance to keep all District personnel/public out until building is cleared by police department. 3. If bomb explodes, implement other emergency response plans (e.g., FIRE, HAZARDOUS MATERIAL RELEASE, LOSS OF NORMAL WATER SUPPLY) as appropriate for conditions. 4. Initiate emergency system repairs as appropriate.	
REPORTING	BOMB THREAT INFORMATION FORM (complete during call)	

SITE EMERGENCY - BOMB THREAT

ALARM	Intercom or Verbal	
EVACUATION	ALL EMPLOYEES & VISITORS PROCEED TO INCIDENT CONTROL POINT (minimum of 1000 feet from building):	
NOTIFICATION	**EXTERNAL**	Fire Department - 911 Sheriff - 911
		Provide the following information: Business Name: Carmichael Water District Facility Name: ***{Fill in with location name}*** Facility Address: ***{Fill in with location address}*** Phone Number: (916) 453-2452 Provide the following information: Bomb threat received, supplemental information to be provided at ICP
	INTERNAL	Notify EOC at (916) 483-2455 or use radio
ACTIONS	1. Complete bomb threat report form based on as much information as caller will provide. 2. Sound Alarm (by announcing over telephone PA system) 3. Initiate Evacuation (direct another employee if threatening caller will stay on the phone AND THREAT DOES NOT APPEAR IMMEDIATE). 4. Perform notification; take bomb threat form with you. 5. Walk through facility to ensure all individuals are evacuated, then proceed to Incident Control Point with caller information for police/fire. DO NOT DISTURB UNIDENTIFIED PACKAGES/ITEMS DURING WALKTHROUGH. 6. Provide completed bomb threat information to police and notify them if any suspicious packages seen during walkthrough.	
REPORTING	BOMB THREAT INFORMATION FORM (complete during call)	

SITE EMERGENCY - HARD FREEZE

ALARM	NONE	
EVACUATION	N/A	
NOTIFICATION	**EXTERNAL**	As conditions warrant
		Provide the following information: N/A
	INTERNAL	Notify EOC AT (916) 483-2455 or use radio
ACTIONS	1. If water lines at well sites are frozen, but not broken, provide heating element as appropriate (recognize that some well enclosures are combustible and should be protected from fire by use of appropriate heating - warm air, space heaters should have proper clearance). 2. If water lines at sites are broken, isolate service. 3. For system inspection, notify EOC of sections/services/wells isolated and/or components (hydrants, main service connections) affected. Maintain valve closure list and provide description of customer areas which are without or have reduced service.	
REPORTING	Prepare written report detailing damage, actions taken, other repairs required	

DISTRICT EMERGENCY - LOSS OF NORMAL WATER SUPPLY

NOTIFICATION	**INTERNAL**	Business Hours: DIM/PIO - Report to EOC IC/ERT - Await assignment After Hours: DIM/PIO - Report to EOC IC/ERT - Report to EOC
	EXTERNAL	Agencies: Fire Department (business numbers) Sac Metro Fire (916) 566-4000 Public: None, unless other conditions warrant
ACTIONS	1. Perform notification. If after hours, first management member reached should direct answering service to notify all EOC/ERT staff to report to EOC as soon as possible. 2. If loss of electrical power is cause, obtain restoration estimate from SMUD. 3. Send work crews to the following facilities to verify electric start, diesel gas engine auto- start generator at Dewey Drive Reservoir. 4. As system conditions dictate, make arrangements to provide backup emergency generator hookup to the following wells: Barrett School Well and Willow Park Well 5. As system conditions dictate, contact the following agencies and request permission to open inter-ties: • Citrus Heights Irrigation Dist. - 8" inter-tie at Papaya Dr. & Hillridge Wy. • Fair Oaks Water Dist. - 10" inter-tie at Winding Way & Stollwood Dr. • Sacramento Suburban Water - 8" inter-tie at Engle Rd. east of Walnut Rd. • Sacramento Suburban Water - 18" inter-tie at Manzanita •* Sacramento Suburban Water - 6" inter-tie at Arden Way & Carmello Dr. (* this line is a last resort, AWD system pressure is generally lower than CWD, verify adequacy of supply and pressure before attempting feed from this line) 6. If conditions warrant, consider notification of outside water supply vendors for supply of drinking water via tank trucks if clean source is available (Chamberlain, Pure Best) or from bottled supply (i.e., Sierra, Arrowhead, etc.). Issue news release with supply/rationing location and requirements. 7. If conditions warrant, consider emergency aboveground supply shuttle using Fire Dept. pumpers or contracted pump apparatus and large diameter hose (Supply from American River into one or more system hydrants). Issue SUSPEND USE/BOIL ORDER as required.	
REPORTING	Prepare written report detailing damage, actions, expenditures, etc.	

SITE EMERGENCY - LOSS OF NORMAL WATER SUPPLY

ALARM	NONE	
EVACUATION	N/A	
NOTIFICATION	**EXTERNAL**	As conditions warrant
		Provide the following information: N/A
	INTERNAL	Notify EOC by radio as directed for different conditions
ACTIONS	1. If loss of pumping capacity due to loss of power, notify EOC. 2. If loss of normal water supply due to equipment damage, initiate repair order, notify EOC. 3. Provide interim restoration of system components where possible and in consultation with EOC.	
REPORTING	Prepare written report detailing damage, actions taken, other repairs required	

DISTRICT EMERGENCY - HAZARDOUS MATERIAL RELEASE FROM DISTRICT FACILITY

NOTIFICATION	**INTERNAL**	Business Hours: DIMIPIO - Report to EOC IC/ERT - Report to Site (min. 5 ERT) After Hours: DIM/PIO - Report to EOC ICIERT - Report to Site (min. 5 ERT)
	EXTERNAL	Agencies: Fire - 911 Police - 911 Sacramento County OES – (916) 874-4670 CA OES - 1-(800)-852-7550 US EPA 1-(800)-300-2193 Public: Determine in conjunction with IC, if possible exposure of concern notify: Downwind sensitive receptors (Appendix D) Downwind public
ACTIONS	1. Perform notification. If after hours, first management member reached should direct answering service to notify DIM and PIO to report to EOC, and to notify IC and minimum 5 ERT members to report to incident site. Agency information provided should include the following: Chemical name or identity of substance If material is an AHM (chlorine) Estimate of quantity released Time and duration of release Medium into which release occurred (ground, air, water) Known or anticipated acute or chronic health risks (and medical treatment advice - see MSDS) Proper public precautions (up to and including evacuation) Based on input from IC and coordination with Fire Department, determine need for immediate public protection announcement (refer to CHLORINE RELEASE example). An estimate of off-site impact area can be made by using the maps in App. D (each CL2 site) [2" radius quarter-circle downwind exposure area for small releases or a 3-1/2" radius quarter-circle downwind exposure area for large releases may be used for initial estimate]. Continue to evaluate conditions. 2. Monitor release conditions for off-site exposure through coordination with IC and ERT. Issue additional news/press releases as appropriate.	
REPORTING	HAZARDOUS MATERIALS RELEASE REPORT	

SITE EMERGENCY - HAZARDOUS MATERIALS RELEASE FROM DISTRICT FACILITY

ALARM	If potential life safety threat - Intercom or verbal	
ACTION: EVACUATION	If potential life safety threat ALL EMPLOYEES & VISITORS PROCEED TO INCIDENT CONTROL POINT (a minimum of 1500 feet upwind):	
NOTIFICATION	**EXTERNAL**	Fire Department - 911
		Provide the following information: Business Name: Carmichael Water District Facility Name: ***{Fill in with location name}*** Facility Address: ***{Fill in with location address}*** Phone Number: (916) 453-2452 Chemical Involved:
	INTERNAL	Notify EOC at (916) 483-2455 or use radio
ACTIONS	1. Sound Alarm (by announcing over telephone PA system) 2. Initiate Evacuation as needed, direct senior operator to account for employees at ICP. 3. Perform notification. If off-site impact is possible, notify EOC to notify sensitive receptors and/or other members of public immediately. If EOC unavailable, perform public notification from site (CHLORINE RELEASE). An estimate of off-site impact area can be made by using the maps in App. D (each CLZ site) [a 2" quarter-circle radius downwind exposure area for small releases and a 3-1/2" quarter-circle radius downwind exposure area for large releases may be used for initial estimate] Continue to evaluate conditions. 4. Assemble ERT members at ICP. Provide or direct mitigation measures if trained ERT personnel and back-up personnel (FD) are available and proper equipment is available and it can be done safely. 5. Provide assistance to the Fire Department Incident Commander as requested. 6. Take appropriate control actions if additional hazardous materials are threatened: • Notify FD of threat • Relocate materials if practical Notify EOC of need for additional resources such as heavy equipment for diking operations, additional personnel, spare breathing apparatus, etc. 7. If materials release impacts water system operations, coordinate system operation with EOC. Keep FD Incident Commander appraised of conditions.	
REPORTING	HAZARDOUS MATERIALS RELEASE REPORT	

DISTRICT EMERGENCY - HAZARDOUS MATERIALS RELEASE NEAR DISTRICT FACILITY

NOTIFICATION	**INTERNAL**	Business Hours: DIM/PIO - Report to EOC IC/ ERT - Report to Site (min. 3 ERT) After Hours: DIM/PIO - Report to EOC IC/ERT - Report to Site (min. 3 ERT)
	EXTERNAL	Agencies: NONE Public: NONE
ACTIONS	1. Perform notification. If after hours, first management member reached should direct answering service to notify DIM and PIO to report to EOC, and to notify IC and minimum 3 ERT members to report to incident site. 2. Monitor release conditions for District facility exposure through coordination with IC and ERT. Notify Fire Dept. Incident Commander through IC of any threat to pumping system and/or Hazardous Materials. 3. If release causes other emergency, implement other emergency response plans (e.g., CONTAMINATION OF DISTRICT WATER SUPPLY, LOSS OF NORMAL WATER SUPPLY) as appropriate for field conditions. 4. If water system challenge is severe, issue SUSPENSION REQUEST news release. Rescind request when system recovers.	
REPORTING	Prepare written report detailing damage, actions, expenditures, etc.	

SITE EMERGENCY - HAZARDOUS MATERIALS RELEASE NEAR DISTRICT FACILITY

ALARM	If potential life safety threat - Intercom or verbal	
ACTION: EVACUATION	If potential life safety threat ALL EMPLOYEES & VISITORS PROCEED TO INCIDENT CONTROL POINT (a minimum of 1500 feet upwind):	
NOTIFICATION	**EXTERNAL**	Fire Department - 911
		Provide the following information: Business Name: Carmichael Water District Facility Name: ***{Fill in with location name}*** Facility Address: ***{Fill in with location address}*** Phone Number: (916) 453-2452 Indicate that release has occurred adjacent to your property and identify material/quantity released if possible.
		Notify EOC at (916) 483-2455 or use radio
ACTIONS	1. Sound Alarm (by announcing over telephone PA system). 2. Initiate Evacuation as needed, direct senior operator to account for employees at ICP. 3. Perform notification. 4. Provide or direct facility exposure protection if trained ERT personnel and proper equipment is available and it can be done safely. 5. Provide assistance to the Fire Department Incident Commander as requested. 6. Take appropriate control actions if hazardous materials are threatened: • Notify FD of threat • Relocate materials if practical 7. If water system is threatened by chemical, contaminated water runoff, isolate the spread of contamination by absorbing, diking, damming, diverting, or other available means. 8. If water system is compromised or contaminated, coordinate with EOC. Keep FD Incident Commander appraised of conditions.	
REPORTING	Prepare written report detailing actions taken.	

DISTRICT EMERGENCY - CONTAMINATION OF DISTRICT WATER SUPPLIES

NOTIFICATION	**INTERNAL**	Business Hours: DIM/PIO - Report to EOC IC/ERT - Await assignment After Hours: DIM/PIO - Report to EOC IC - Report to EOC
	EXTERNAL	Agencies: Fire Department - 911 Sacramento County OES – (916) 874-4670 CA OES - 1-(800)-852-7550 US EPA 1-(800)-300-2193 CDPH (916) 449-5668 Public: Issue SUSPEND USE/BOIL ORDER as appropriate
ACTIONS	1. Perform notification. If after hours, first management member reached should direct answering service to notify DIM, IC, and PIO to report to EOC. ERT members should be called based on extent of contamination. 2. Implement LOSS OF NORMAL WATER SUPPLY emergency plan as appropriate.	
REPORTING	Prepare written report detailing damage, actions, expenditures, etc.	

SITE EMERGENCY - CONTAMINATION OF DISTRICT WATER SUPPLIES

ALARM	NONE	
EVACUATION	N/A	
NOTIFICATION	**EXTERNAL**	NONE
		Provide the following information: N/A
	INTERNAL	Notify EOC (916) 483-2455 or by radio
ACTIONS	1. If contamination is local, isolate supply from distribution by shutting down pumps, or closing of distribution supply as appropriate. 2. If contamination is widespread, take action as directed by EOC.	
REPORTING	Prepare written report detailing damage, actions taken, other repairs required	

4.0 PLAN MANAGEMENT

This section describes the District's management of this emergency response plan and its elements. The intent of plan management is to ensure that the Plan is maintained accessible to employees, is thoroughly understood by the Emergency Response Team members, and that it is maintained reasonably up-to-date.

4.1 Plan Review and Revision

This plan will be reviewed annually by the senior Emergency Response Team members. This shall include the General Manager, the Assistant General Manager, the Production Superintendent, and the Field Superintendent. This review will be conducted by each of these individuals separately with their review comments being forwarded to the Assistant General Manager for consolidation/resolution. As required in the District's Risk Management Prevention Program (RMPP), the sensitive receptors list will be verified once per year by reviewing the California Community Care Licensing Division website (www.ccld.ca.gov) and by review of schools and hospitals within the District (Tables D.1 – D.9).

In the event of an emergency, the emergency response plan actions will be evaluated as part of the post-incident investigation process. Revisions to the plan may be performed to improve its efficiency depending on the outcome of the incident and the investigation.

4.2 District Emergency Response Training

General Employee Training

All District employees have a role in ensuring his/her and his/her coworkers' safety by knowing how to fulfill their responsibilities in effective emergency response actions. At a minimum, all District employees shall receive training in identification and reporting of emergencies as well as their responsibilities for facility evacuation and accountability.

District Emergency Response Team members

These individuals are those District employees who might be called on to provide indirect or direct emergency mitigation actions in potentially harmful environments and/or provide personnel rescue in Personal Protective Equipment (PPE). These individuals shall have the required baseline physical examination to ensure their suitability to serve on the Emergency Response Team. In addition to the general employee training, these individuals receive a minimum additional 24 hours (First Responder Operations level and Hazardous Materials technician level) of hazardous materials interdiction training.

This training will include:

- What hazardous substances are and their risks
- Ability to recognize hazardous materials in emergency
- Ability to recognize need for additional resources
- Basic control, confinement, containment operations
- Relevant operating procedures
- Ability to function in Incident Control System
- Selection of proper PPE
- Basic chemical toxicological behavior
- Potential outcomes of hazardous materials emergencies
- Understanding of their role in the Emergency Response Plan
- Basic hazard and risk assessment
- Basic decontamination operations
- Implementation of the Emergency Response Plan
- Identification and classification of hazardous materials
- Advanced control, confinement, and containment

These individuals will be recertified annually with a minimum of 8 hours of training.

District Incident Manager and Incident Commander

The District Incident Manager and Incident Commander will both receive the training required for District Emergency Response Team members. In addition, they will receive supplemental instruction in the implementation of the Emergency Response Plan including the following:

- Implementation of the Incident Command System
- Coordinating with the Local Emergency Planning
- Hazards of employees working in PPE
- Implementation of Decontamination/Hazardous Waste controls

4.4 Drills and Drill Critique

The District will perform an emergency plan drill once every year to test elements of this emergency response plan, and to provide a forum for the Emergency Response Team to put into practice the skills and training that they have in responding to emergencies. The drill date will be determined by the General Manager and will be announced to the Emergency Response Team in order that normal operations functions can be planned around and/or supplemental operations coverage can be prearranged. For different years, different scenarios will be postulated to ensure that all areas of the plan are exercised periodically. Examples of these drills are: table top exercises; facility failure plans; exercising valves; exercising interties, etc.

On a biennial basis, outside response agency participation will be solicited. This request for conductance of a mutual drill may include one or multiple response agencies at the direction of the General Manager.

Both the internal and external participation drills will be mock-ups and will not involve actual notification of off-site agencies unless that agency is specifically involved and only with the affected agency(ies)'s prior knowledge and consent. The news media and public will not be notified during performance of these mock drills (except where specifically approved by the General Manager as public interest type stories).

The District will periodically request that an outside response agency representative attend drills and/or provide a critique of the District's Emergency Response Plan. The findings of the outside representative shall be forwarded to the General Manager for review and consideration.

EMERGENCY NOTIFICATION MATRIX

Phone – Emergency and Business		EARTHQUAKE	FIRE	MEDICAL	FLOOD	TORNADO	BOMB THREAT	HARD FREEZE	LOSS OF SUPPLY	HAZ MAT	CONTAMINATION
Emergency Operations Center (CWD)	(916) 483-2455 or by radio										
FIRE (Sac Metro Fire District)	911 (916) 566-4000										
POLICE (Sacramento County Sheriff) (California Highway Patrol)	911 (916) 874-5111 (800) 835-5247										
AMBULANCE	911										
Sacramento County Hazardous Materials Division (24 hrs) Office of Emergency Services (County)	(916) 875-5656 (916) 875-5000 (916) 874-4670										
Office of Emergency Services (State of CA)	1(800)852-7550										
EPA's National Response Center	1(800)300-2193										
CA Dept of Public Health (CDPH)	(916) 449-5668										

TABLE D.1
SENSITIVE RECEPTORS
CARMICHAEL – BAJAMONT WATER TREATMENT PLANT

Name	Address	Phone
CHILDREN		
Carmichael Elementary	6141 Sutter Avenue Carmichael, CA 95608	(916) 971-5727
Kids Company Preschool & Daycare	3850 California Avenue Carmichael, CA 95608	(916) 944-0706
Mary A. Deterding Elementary	6000 Stanley Avenue Carmichael, CA 95608	(916) 575-2338

ADULT/ELDERLY CARE		
Carmichael Oaks	8350 Fair Oaks Blvd Carmichael, CA 95608	(916) 944-2323
Fair Oaks Estates	8845 Fair Oaks Blvd Carmichael, CA 95608	(916) 944-2077

TABLE D.2
SENSITIVE RECEPTORS
CARMICHAEL - BARRETT ROAD WELL

Name	Address	Phone
CHILDREN		
Del Campo High School	4925 Dewey Drive Fair Oaks, CA 95628	(916) 971-5664
Via Del Campo Continuation High School	4925 Dewey Drive Fair Oaks, CA 95628	(916) 971-5666
John Barrett Middle School	4243 Barrett Road Carmichael, CA 95608	(916) 971-7842

TABLE D.3
SENSITIVE RECEPTORS
CARMICHAEL - BARRETT SCHOOL WELL

Name	Address	Phone
CHILDREN		
Del Campo High School	4925 Dewey Drive Fair Oaks, CA 95628	(916) 971-5664
Via Del Campo Continuation High School	4925 Dewey Drive Fair Oaks, CA 95628	(916) 971-5666
John Barrett Middle School	4243 Barrett Road Carmichael, CA 95608	(916) 971-7842

TABLE D.4
SENSITIVE RECEPTORS
CARMICHAEL - DEWEY TANK AND WELL

Name	Address	Phone
CHILDREN		
Will Rogers Middle School	4924 Dewey Drive Fair Oaks, CA 95628	(916) 971-7889

TABLE D.5
SENSITIVE RECEPTORS
CARMICHAEL - LA VISTA TANK SITE

Name	Address	Phone
CHILDREN		
Carmichael Presbyterian Church Pre-School	5645 Marconi Avenue Carmichael, CA 95608	(916) 486-9189
Country Acres Daycare	5544 Engle Road Carmichael, CA 95608	(916) 487-3642
Delphi Academy of Sacramento	5325 Engle Road Carmichael, CA 95608	(916) 483-2491
Garfield Elementary	3700 Garfield Avenue Carmichael, CA 95608	(916) 575-2349
Garfield State Preschool & Head Start / SJUSD Garfield School	3700 Garfield Avenue Carmichael, CA 95608	(916) 575-2349
Inverness Day School	2931 Myrtle Lane Carmichael, CA 95608	(916) 487-1167
Little Angels' Montessori School	3708 Walnut Avenue Carmichael, CA 95608	(916) 486-9779
Marvin Marshall Children's Center / SJUSD Marshall School	5309 Kenneth Avenue Carmichael, CA 95608	(916) 971-7380
Phoenix School	2921 Garfield Avenue Carmichael, CA 95608	(916) 481-6144
SJUSD Carmichael Preschool / Parent Participation Preschool	2815 Gunn Road Carmichael, CA 95608	(916) 487-0513
San Juan Unified Child Develop. Center / District Office	3738 Walnut Avenue Carmichael, CA 95608	(916) 971-7700
Victory Christian Elementary School	3045 Garfield Avenue Carmichael, CA 95608	(916) 488-6740
Victory Christian High School	3045 Garfield Avenue Carmichael, CA 95608	(916) 488-5601
Wonder-Land School	3300 Walnut Avenue Carmichael, CA 95608	(916) 481-1798
ADULT/ELDERLY CARE		
Chateau at Carmichael Park (ADC)	7125 Fair Oaks Blvd. Carmichael, CA 95608	(916) 481-7105
Walnut House	3401 Walnut Avenue Carmichael, CA 95608	(916) 483-6613
OTHER		
Sacramento Bible Church for the Deaf	5619 Marconi Avenue Carmichael, CA 95608	

TABLE D.6
SENSITIVE RECEPTORS
CARMICHAEL - WINDING WAY WELL

Name	Address	Phone
CHILDREN		
Albert Schweitzer Elementary	4350 Glenridge Drive Carmichael, CA 95608	(916) 867-2094
Storybook Cottage	7231 Lincoln Avenue Carmichael, CA 95608	(916) 944-8992

TABLE D.7
SENSITIVE RECEPTORS
CARMICHAEL – LADERA WELL

Name	Address	Phone
CHILDREN		
Albert Schweitzer Elementary	4350 Glenridge Drive Carmichael, CA 95608	(916) 867-2094
Storybook Cottage	7231 Lincoln Avenue Carmichael, CA 95608	(916) 944-8992

TABLE D.8
SENSITIVE RECEPTORS
CARMICHAEL - GARFIELD WELL

Name	Address	Phone
CHILDREN		
Carmichael Presbyterian School	5645 Marconi Avenue Carmichael, CA 95608	(916) 486-9189
Country Acres Daycare	5544 Engle Road Carmichael, CA 95608	(916) 487-3642
Delphi Academy of Sacramento	5325 Engle Road Carmichael, CA 95608	(916) 483-2491
Garfield Elementary	3700 Garfield Avenue Carmichael, CA 95608	(916) 575-2349
Garfield State Preschool & Head Start / SJUSD Garfield School	3700 Garfield Avenue Carmichael, CA 95608	(916) 575-2349
Inverness Day School	2931 Myrtle Lane Carmichael, CA 95608	(916) 487-1167
Little Angels' Montessori School	3708 Walnut Avenue Carmichael, CA 95608	(916) 486-9779
Marvin Marshall Children's Center / SJUSD Marshall School	5309 Kenneth Avenue Carmichael, CA 95608	(916) 971-7380
Phoenix School	2921 Garfield Avenue Carmichael, CA 95608	(916) 481-6144
SJUSD Carmichael Preschool / Parent Participation Preschool	2815 Gunn Road Carmichael, CA 95608	(916) 487-0513
San Juan Unified Child Develop. Center / District Office	3738 Walnut Avenue Carmichael, CA 95608	(916) 971-7700
Victory Christian Elementary School	3045 Garfield Avenue Carmichael, CA 95608	(916) 488-6740
Victory Christian High School	3045 Garfield Avenue Carmichael, CA 95608	(916) 488-5601
Wonder-Land School	3300 Walnut Avenue Carmichael, CA 95608	(916) 481-1798
ADULT/ELDERLY CARE		
Chateau at Carmichael Park (ADC)	7125 Fair Oaks Blvd. Carmichael, CA 95608	(916) 481-7105
Walnut House	3401 Walnut Avenue Carmichael, CA 95608	(916) 483-6613
OTHER		
Sacramento Bible Church for the Deaf	5619 Marconi Avenue Carmichael, CA 95608	

TABLE D.9
SENSITIVE RECEPTORS
CARMICHAEL – WILLOW PARK WELL

Name	Address	Phone
CHILDREN		
Amerimont Academy	5739 El Camino Avenue Carmichael, CA 95608	(916) 966-6288
Apple A Day Preschool & Infant Center	5013 El Camino Avenue Carmichael, CA 95608	(916) 481-5400
El Rancho Nursery School	5636 El Camino Avenue Carmichael, CA 95608	(916) 482-8656
Options for Youth – Carmichael	6110 Fair Oaks Blvd. Carmichael, CA 95608	(916) 485-5155
Ralph Richardson Preschool / SJUSD – Starr King	4848 Cottage Way Carmichael, CA 95608	(916) 971-7411
Starr King K-8	4848 Cottage Way Carmichael, CA 95608	(916) 971-7318
St. Michael's Episcopal School	2140 Mission Avenue Carmichael, CA 95608	(916) 485-3418

ADULT/ELDERLY CARE		
Atria El Camino Gardens	2426 Garfield Avenue Carmichael, CA 95608	(916) 488-5722
Hermie B Calimquim Olive Knoll Lodge	5755 El Camino Avenue Carmichael, CA 95608	(916) 487-4482
Mountain Manor	6101 Fair Oaks Blvd Carmichael, CA 95608	(916) 488-7211
Sunrise Assisted Living of Carmichael	5451 Fair Oaks Blvd. Carmichael, CA 95608	(916) 485-4500
Woodacre Family Home	6132 Kenneth Avenue Carmichael, CA 95608	(916) 489-5958

CARMICHAEL WATER DISTRICT
BOMB THREAT INFORMATION FORM

If you receive the bomb threat call:

1. DO NOT PANIC.
2. Request the caller give as much information as possible using the questions below as a guide. As soon as you have the location of the bomb, ask the threatening party to wait a moment and direct someone else to implement the BOMB THREAT emergency response plan.
3. If the threat is IMMINENT and CREDIBLE, Evacuate - DO NOT complete form.

Bomb Threat Received By:_____

QUESTIONS:

1. When will bomb explode?
2. Where is the bomb (be specific)?
3. What does it look like?
4. What kind of bomb is it?
5. What will cause it to explode?
6. Did you place the bomb? Why?
7. What is your name?
8. What is your address & phone?

Review and complete characteristics information on the next page as you talk with caller

Caller was (Circle one):

Male Female

Estimated Age (Circle One):

Pre-teen Teenage 20-40 40-50 over 50

Accent (circle one)

New York
New England
Southern
Other (describe)

Voice (circle all that apply):

Foreign
German
British/Australian
French
Irish
Slavic/Russian
Hispanic/Spanish
Middle Eastern
Far Eastern

Calm	Angry	Excited	Slow
Crying	Laughing	Nervous	Scared
Loud	Soft	Raspy	Screaming
Cracking	Clears throat	Deep Breathing	Nasal
High Pitch	Deep	Ragged	

Threat language (circle all that apply:)

Well Spoken/Educated	Incoherent	Irrational
Excessive Profanity	Directed towards individual (write name)	

Background Noises (circle all that apply):

Street noise	House noise	Office Noise	Restaurant (Plates)
Airplanes	Cars	Bus	Train
Machinery	Wind	Static Cellular	Other (describe)

Appendix A

Carmichael Water District Chain of Command (Lines of Authority)

Name and title	Responsibilities during an emergency	Contact numbers
Steve Nugent General Manager (GM)	• Overall management and decision making for the water system. • GM is lead for managing the emergency and contacting the regulatory agencies. • GM contacts the public and news media • All communications to external parties are approved by the GM	(916) 483-2452 Office (916) 275-3473 Cell (916) 973-1390 Home
Lynette Moreno Assistant Manager (AGM)	• Coordinate with all the other agencies Public Information Officers. • Report and work with the joint information center (JIC) if more than one agency is involved. • Operate as lead in absence of GM.	(916) 483-2452 Office (916) 869-1971 Cell (916) 667-9910 Home
Mark McClintock Production Superintendent (PS)	• In charge of collecting samples, having samples analyzed by certified labs, receiving the results. • Determines the quality of the water being served meets all drinking water and public health requirements. • Conducts site inspections of water pumping and treatment facilities. Assess facilities and provide recommendations to AGM/GM. • Assigns staff to deliver water quality notices or door hangers. • Provides assistance/backup to FS and CSS.	(916) 944-8524 Office (916) 679-0457 Office 2 (916) 826-8763 Cell (916) 435-8470 Home
Scott Bair Field Superintendent (FS)	• Directs and coordinates all field incident operations • Responsible for operations and maintenance of buried infrastructure. • Provides service and support to the incident or event. • Provides logistics and coordination of District owned and/or outside equipment and material vendors needed for the incident or event. • Provides assistance/backup to PS and CSS.	(916) 483-2452 Office (916) 869-8164 Cell (916) 967-7230 Home
Chris Nelson Customer Service Supervisor (CSS)	• Assess safety factors and hazardous conditions. • Anticipates, detects, and corrects unsafe situations. • Has authority to stop unsafe activities. • Provides services and support to the incident or event. • Distributes public information handouts/messages. • Provides resource management. • Provides assistance/backup to PS and FS.	(916) 483-2452 Office (916) 275-1819 Cell (530) 978-0819 Home
Laura McManigal Financial Services Supervisor (FSS)	• Monitors incident cost and maintain financial records. • Administers procurement contracts with vendors and service providers. • Processes claims and compensation requests. • Institutes public information handouts/messages. • Receives calls and maintains phone logs. • Provides assistance/backup to AGM/GM.	(916) 483-2452 Office (916) 265-8315 Cell (916) 688-7548 Home

Appendix B

Carmichael Water District Contact List

Organization	Name	Contact numbers
Fire	Emergency Sacramento Metro Fire District	Call 911 (916) 566-4000
Police	Emergency Sacramento County Sheriff (emergencies) Sacramento County Sheriff (non-emergencies) California Highway Patrol	Call 911 (916) 874-5111 (916) 874-5115 (800) 835-5247
County Hazmat	Hazardous Materials Division	(916) 875-5656 M-F 7a-9p (916) 875-5000 afterhours
CDPH District Engineer	David Lancaster - If can't get a hold of "DE", call the CA Warning Center's 24/7 phone number and ask for the CDHS Duty Officer. A CDHS manger will be contacted and call the District. CA Dept of Health Care Services	(916) 449-5668 Office (916) 217-4007 Cell (916) 445-4171 24/7
FBI Regional Office	Drew S. Parenti, Special Agent in Charge	(916) 481-9110 24/7
County Public Health Officer	County Public Health Officer, M.D.	(916) 875-5881 Office
County Director of Center for Environmental Health	Rufus Howell, Director of Center for Environmental Health	(916) 875-8484
Sac County OES	Rick Martinez	(916) 874-4670 (916) 955-1464 cell
CA OES (State OES)	Warning Center (Ask for CDHS Duty Officer-Drinking Water Program) Henry Renteria, Director	(800) 852-7550 24/7 (916) 845-8911 24/7 (916) 845-8510
Regional WQ Control Board	State Regional Water Quality Control Board	(916) 464-3291 24/7
USEPA	24 hour Environmental Emergencies Environmental Information Center (EIC)	(800) 300-2193 (415) 947-8000 or (866) 372-9378 (toll-free)
CA Dept. of Fish and Game	John McCamman, Director	(916) 653-7664 24/7
BSK Laboratory	3140 Gold Camp Dr #160 Rancho Cordova, Ca 95670 Brenda Hamilton	(916) 853-9293 ext. 110 (916) 825-0135

MUTUAL AID COORDINATORS

Agency	Name	Address	Phones	Email/Fax
County of Sacramento Operational Area	Rick Martinez	3720 Dudley Blvd	874-4670 work 955-1464 cell 797-2840 home	874-7080 fax martinezrick@saccounty.net
OA Coordinator	Roger Ince	3720 Dudley Blvd	874-7043 work 204-0123 cell 530-391-1718	874-7080 fax incer@saccounty.net
Asst. OA Coordinator	Teresa Stahl	3720 Dudley Blvd	874-4670 work 956-3085 cell 487-5993 home 875-5000 24hr	874-7080 fax stahlt@saccounty.net
Building Inspection	Russ Williams	4101 Branch Ctr	875-5567 work 870-2038 cell 530-672-0758	williamsr@saccounty.net
Care and Shelter	Kris Nelson	2433 Marconi	875-1777 work 710-3793 cell 687-7595 per cell	875-3591 fax nelsonkr@saccounty.net
Energy	Dan Mendonsa	10545 Armstrong	876-6358 work 215-6612 cell	mendonsad@saccounty.net
Fire	Don Mette	2101 Hurley Way	228-3035 24hr 616-2401 cell 876-2401 pager	566-4157 fax Mette.don@smfd.ca.gov
Flood	Mike Peterson	827 7th Street	874-8913 work 747-4061 cell 782-8518 home 768-4951 cell	874-8693 fax petersonmi@sacounty.net
Law Enforcement	Bill Myers	1000 River Walk	875-0404 work 717-2308 cell 728-1302 home	876-7447 fax bmyers@sacsheriff.com
Medical	Bruce Wagner	9616 Micron	875-9753 work 875-6900 24hr 955-1534 cell 876-1141 pager 941-9117	875-9711 Agency 363-8168 MHOAC wagnerems@msn.com wagnerb@saccounty.net

MUTUAL AID COORDINATORS (continued)

Agency	Name	Address	Phones	Email/Fax
Potable Water	Dave Underwood	827 7th Street	875-6947 work 990-8312 cell	875-6884 fax underwoodd@saccounty.net
Utilities	Selby Mohr	6201 S Street	732-6541 work 535-3670 pager 732-5334 24hr 798-6647 cell	732-6890 fax smohr@smud.org

CITY AND COUNTY JURISDICTIONS

Agency	Address	Phones	Email/Fax
County of Sacramento Operational Area Rick Martinez	3720 Dudley Blvd	874-4670 work 955-1464 cell 797-2840 home 875-5000 24hr	874-7080 fax sacoa@saccounty.net
City of Citrus Heights Henry Tingle City Manager	6237 Fountain Square	727-4709 work 870-4037 cell 707-557-8610 home	725-5799 htingle@citrusheights.net
City of Citrus Heights David Wheaton General Services Director		727-4970 work 871-0494 home	725-5799 fax dwheaton@citrusheights.net
City of Elk Grove Laura Gill City Manager	8401 Laguna Palms Elk Grove	478-2201 work 478-2200 work 549-4730 cell 939-7382 home	691-2001 fax lgill@elkgrovecity.org
City of Elk Grove Pat Blacklock Assistant City Manager		478-3656 work 479-5557 cell	691-3168 fax pblacklock@elkgrovecity.org
City of Folsom Kerry Miller City Manager	50 Natoma Street	355-7315 work 934-6088 cell	355-7328 fax kmiller@folsom.ca.us
City of Folsom Sam Spiegel Police Chief	46 Natoma Street	355-7200 work 355-7232 24hr 355-7234 office 837-1929 cell	985-7643 fax sspiegel@folsom.ca.us

CITY AND COUNTY JURISDICTIONS (continued)

Agency	Address	Phones	Email/Fax
City of Galt Ted Anderson City Manager	380 Civic Drive	209-366-7105 work 209-652-2320 cell 209-366-7100 main	209-745-4601 fax tanderson@ci.galt.ca.us
City of Galt Loren Cattolico Chief of Police	455 Industrial Dr	209-366-7045 work 209-329-5182 cell 209-366-7000 main	209-366-7093 fax LCattolico@galtpd.com
City of Isleton Ron Jole Police Chief	210 Jackson Blvd	777-7778 work 777-7774 work	777-7780 fax rjole@isletonpolice.org
City of Isleton Robert Bartley Fire Chief	100 2nd Street	777-7776 work 796-5006 cell	777-7775 fax bbartley@cityofisleton.com
City of Rancho Cordova Ted Gaebler City Manager	2729 Prospect Park	851-8800 837-1140 cell 638-5117 home 415-459-8941 home San Rafael	851-8787 Office fax 631-9254 Home fax tgaebler@cityofranchocordova.org
City of Rancho Cordova Reuben Meeks Police Chief	10361 Rockingham	875-9603 work 919-3647 cell 875-9600 public 419-6000 home	875-9673 fax rmeeks@ranchocordovapd.com
City of Rancho Cordova Rosanne Richeal Lieutenant Emergency Services Co.	10361 Rockingham	875-9601 work 606-2430 cell 933-5504 home	875-9673 fax rricheal@sacsheriff.com
City of Sacramento Rick Martinez Emergency Services Manager	3720 Dudley Blvd	874-4670 work 955-1464 cell 264-5011 24hr	874-7080 fax sacoa@saccounty.net
City of Sacramento Jason Sirney Emergency Services		874-2283 work 216-0324 cell 876-2209 pager 984-9737 home	874-7080 fax jmsirney@sfd.cityofsacramento.org

OPERATIONAL AREA COUNCIL MEMEMBERS AND ALTERNATES

Agency	Name	Address	Phones	Email/Fax
Sacramento County	Rick Martinez	3720 Dudley Blvd	874-4670 work 955-1464 cell 797-2840 home	874-7080 fax sacoa@saccounty.net
Alternate	Teresa Stahl		874-4670 work 956-3085 cell 487-5993 home	874-7080 fax stahlt@saccounty.net
City of Sacramento	Lloyd Ogan Deputy Chief	5770 Freeport Suite 200	808-1603 work 216-0303 cell 530-664-0338 876-2203 pager	808-1677 fax logan@sfd.cityofsacramento.org
Alternate	Ray Jones Fire Chief		808-1601 work 216-40301 cell 797-6100 home 876-2201 pager	808-1629 fax rjones@sfd.cityofsacamento.org
City of Folsom	Sam Spiegel Police Chief *OA Council Chair*	Folsom PD 46 Natoma Street	355-7200 work 355-7232 24hr 355-7316 EOC 355-7234 837-1929 cell	985-7643 fax sspiegel@folsom.ca.us
Alternate	Dan Haverty Fire Chief	Folsom Fire Dept 535 Glen Drive	984-2293 work	984-7081 fax dhaverty@folsom.ca.us
City of Galt	Loren Cattolico Police Chief	455 Industrial Dr Galt, CA 95632	209-366-7045 209-329-5182	209-745-9794 fax Chief@galtpd.com
Alternate	Jim Uptegrove Lieutenant		209-366-7083 209-993-9355	209-745-9794 fax juptegrove@galtpd.com
City of Isleton	VACANT	City of Isleton PO Box 716 Isleton, CA 95641	777-7778 777-7774 707-421-7090 dispatch	777-7775 fax
Alternate	VACANT			777-7775 fax

OPERATIONAL AREA COUNCIL MEMEMBERS AND ALTERNATES (continued)

Agency	Name	Address	Phones	Email/Fax
Cemetery Districts	Greg Wyatt	4800 Broadway, Suite 100	874-1696 work 591-1842 cell 530-419-5032	874-9257 fax wyattg@saccounty.net
Alternate	Ed Smith		874-9254 work 539-2530 cell 773-4340 home	874-9257 fax smithed@saccounty.net
Fire Coordinator	Geoff Miller Deputy Chief	Sacramento Metro Fire Department 2101 Hurley Way	566-4303 work 616-2403 cell 876-2403 pager 933-9370 home	566-4158 fax miller.geoff@smfd.ca.gov
Alternate	Don Mette Fire Chief		228-3035 24hr 616-2401 cell 876-2401 pager	566-4157 fax Mette.don@smfd.ca.gov
Law Coordinator	Tom McMahon Undersheriff *OA Council Vice-Chair*	Sacramento Sheriff 711 G Street	874-7953 work 606-2298 cell 530-677-0973	874-5752 fax tmcmahon@sacsheriff.com
Alternate	Tim Johnstone Lieutenant Homeland Security		920-0647 work 606-0959 cell	876-7447 fax tjohnstone@sacsheriff.com
Reclamation	Mike Peterson	Water Resources 827 7th Street	874-8913 work 747-4061 cell 782-8518 home 768-4951 cell	874-8693 fax petersonmi@sacounty.net
Alternate	George Booth		874-6484 work 784-1954 home 847-3778 cell	874-8693 fax boothg@saccounty.net
Parks District	Kelly Crowder	8820 Elk Grove Bl	405-5332 work 869-4203 cell	714-1635 fax kellycrowder@csdparks.com
Alternate	Mike Grace	2201 Cottage Way	927-3802 work 825-0197 cell	927-3805 fax mgrace@fecrecpark.com
School Districts	Tom Adams	10474 Mather Bl	228-2268 work 997-3320 cell	228-2351 fax tadams@scoe.net
Alternate	Mary Fager		228-2474 work 997-0576 cell	228-2451 fax mfager@scoe.net

OPERATIONAL AREA COUNCIL MEMBERS AND ALTERNATES (continued)

Agency	Name	Address	Phones	Email/Fax
Utility Districts	Selby Mohr		732-6541 work 535-3670 pager 732-5334 24hr 798-6647 cell	732-6890 fax smohr@smud.org
Alternate	Jeff Briggs	SMUD 6201 S Street	732-5708 work 551-7704 cell 732-5334 24hr 209-996-8186	732-6890 fax jbriggs@smud.org
Water Districts	Dave Underwood	3847 Branch Center	875-6947 work 990-8312 cell 987-1120 home	874-8693 fax underwoodd@saccounty.net
Alternate	Tom Pasterski		876-6430 work 591-0468 cell 984-1853 home	875-6884 fax pasterskit@saccounty.net

CEMETERY DISTRICTS

Agency	Address	Phones	Email/Fax
Elk Grove-Cosumnes Cemetery Michael Young	PO Box 1533 Elk Grove, CA	686-5170	686-6030 fax
Fair Oaks Cemetery Raymond Young, DM SIA Security Terri Perrin	7780 Olive S Fair Oak, CA	966-1613 office 966-1652 work Ray 530-755-0977 home 955-2828 Emergency 988-8091 Terri	966-8921 fax rayyoung.focd@gmail.com terriperrin.focd@gmail.com
Galt-Arno Cemetery Marilyn Blansett	14180 Joy Drive	209-745-2581	209-745-8801 fax galarn@softcom.net
Sylvan Cemetery Ron Clark Joseph Ramey	7401 Auburn Blvd. Citrus Heights, CA	725-3406 Ron 247-2795 990-9252 Joseph	725-6109 fax office@sylvancemetery.com rclark@sylvancemetery.com

COMMUNITY SERVICE DISTRICTS

Agency	Address	Phones	Email/Fax
Cosumnes Community Services Steve Foster	8820 Elk Grove	405-7101 direct 405-7100 general 425-0657 cell 228-3035 dispatch	685-6622 fax stevefoster@csdfire.com
Tracey Hansen		405-7102 work 799-9160 cell	traceyhansen@csdfire.com
Rancho Murieta CSD Edward Crouse General Manager	15160 Jackson Rd. PO Box 1050 Rancho Murieta	354-3700 8-5MF 354-2273 24hr 870-6402 cell	354-2082 fax ecrouse@rmcsd.com
Paul Siebensohn Director of Field Ops		870-6024 cell Paul	psiebensohn@rmcsd.com

CONSERVATION DISTRICTS

Agency	Address	Phones	Email/Fax
Florin RCD Leo Havener	9257 Elk Grove Elk Grove, CA 95624	685-3556 work Leo	685-5376 fax lhavener@egws.org
Craig Van Steinburg		897-6902 cell Craig 685-3556 work 1 687-3155 work 2 386-1636 home	craig@egws.org
Glen Gilkerson		770-6050 cell Glen 685-3556 work 1 687-3155 work 2 682-4033 home	ggilkerson@egws.org
Jose Carrillo		667-2519 cell Jose	jcarrillo@egws.org
Richard Salas		599-6869 cell	rsalas@egws.org
Lower Cosumnes RCD Mike Stokes	9701 Dino Dr. Suite 170 Elk Grove 95624	209-810-5278 Mike 209-481-2919 cell	775-0071 Doug
Doug Chan		998-2384 cell Doug 775-1622 home	dougchan@frontiernet.net
Nicole Bell – Secretary		717-2179 cell Nicole	684-7160 Nichole nbell@golyon.com
Sloughhouse RCD William M. Mosher	2001 Vesta Way	719-9526 main 982-9543 office 689-5248 home	682-6199 fax
Bettie Fox - Secretary		485-9883 office	

FIRE DISTRICTS

Agency	Address	Phones	Email/Fax
Cosumnes Community Services Steve Foster Tracey Hansen	8820 Elk Grove	405-7101 direct 405-7100 general 425-0657 cell 228-3035 dispatch 405-7102 work 799-9160 cell	685-6622 fax stevefoster@csdfire.com traceyhansen@csdfire.com
Courtland David Welch Craig Hamblin	PO Box 163 Courtland, CA 95615	776-1764 work 439-4814 cell David 775-1558 home 744-1174 home Craig 417-3411 cell	775-2123 fax davidwelch@frontiernet.net chfire@msn.com
Folsom Dan Haverty	535 Glenn Dr	984-2280 x1 x7	985-4480 fax dhaverty@folsom.ca.us
Herald Glen Hendrickson Joe Grubba	PO Box 52 12746 Ivie Rd	209-748-2361 24hr 209-748-2322	209-748-2363 fax heraldfire@heraldbroadband.net
Isleton Bob Bartley	100 2nd Street	777-7776 24hr 796-5006 cell	777-7775 fax bbartley@cityofisleton.com
River Delta Rick Carter	2360 W Twitchell Island Rio Vista, CA 94571	777-8701 Station 87 777-8700 office 257-4241 cell	777-9900 fax Station87@frontiernet.net
Sacramento City Fire Ray Jones Lloyd Ogan	5770 Freeport Suite 200	808-1601 work Ray 216-0301 cell 797-6100 home 876-2201 pager 808-1603 work Lloyd 216-0303 cell 530-664-0338 home 876-2203 pager	808-1629 fax rjones@sfd.cityofsacamento.org lbaustian@sfd.cityofsacramento.org
Sacramento County Airport System Lance McCasland Battalion Chief (Duty)	7201 Earhart Dr.	874-0651 work 663-2631 home 806-5321 cell 874-0757 work 224-8366 cell	874-0728 fax mccaslandl@saccounty.net

FIRE DISTRICTS (continued)

Agency	Address	Phones	Email/Fax
Sacramento Metro Don Mette Geoff Miller Jim Eastman	2101 Hurley Way	228-3035 24hr 616-2401 work 876-2401 pager 616-2403 cell Jeff 616-2404 cell Jim	566-4157 fax Mette.don@smfd.ca.gov Miller.geoff@smfd.ca.gov Eastman.james@smfd.ca.gov
Walnut Grove Joe Sanchez Jr. Vic Savale Mark Van Loben Sels	PO Box 41	417-4070 Joe cell 776-1214 home 776-1284 on call	776-2878 fax jlazys@msn.com
Wilton Tom Dark Brett Waddell	9800 Dillard Road	687-6920 Tom 228-3035 24hr 215-3599 cell 687-4870 home 687-6920 work 870-1215 cell 687-8477 home	687-8920 fax tom_dark@wilton-fire.org brett_waddell@wilton-fire.org

OTHER DISTRICTS

Agency	Address	Phones	Email/Fax
Port of Sacramento Mike Luken, Port Mgr Nick Conclino	1110 W. Capitol 1st Floor	371-8000 general 617-4881 direct 997-2760 work cell 275-2729 cell 869-1010 cell Nick	372-4802 fax mikel@cityofwestsacramento.org nickc@cityofwestsac.org
Sacramento Area Flood Control Agency Stein Buer	1007 7th St 7th Floor	874-8747 direct 874-7606 general 206-9721 cell 979-9361 home	874-8289 fax buers@saccounty.net
Sacramento Metro Air Quality Mngt. Larry Greene	777 12th St 3rd Floor	874-4802 work 201-8523 cell 530-758-4803 home	874-4805 fax lgreene@airquality.org
Sacramento Public Library Authority Phil Batchelor	828 I Street	264-2830 work 505-3369 cell 413-3612 home	264-2755 fax pbatchelor@saclibrary.org

OTHER DISTRICTS (continued)

Agency	Address	Phones	Email/Fax
Sacramento Regional County Sanitation Mary Snyder Stan Dean	SRCSD 10545 Armstrong Suite 101 Mather	876-6105 work Mary 531-6004 cell 971-9185 Home 875-9101 work Stan 956-4736 cell 530-757-6062 home	876-6160 fax snyderm@sacsewer.com deans@sacsewer.com
Sacramento Transportation Authority Brian Williams Norman Horn	431 I Street Suite 106	323-0895 Brian work 747-0895 Brian cell 323-0894 Norm work 248-1295 cell	323-0850 fax Brian@sacta.org norm@sacta.org
Sacramento-Yolo Mosquito & Vector Abatement District David Brown	8631 Bond Rd	685-1022 work 405-2059 direct 417-1966 cell	685-5464 fax dabrown@fightthebite.net

RECLAMATION/FLOOD CONTROL/LEVEE DISTRICTS

Agency	Address	Phones	Email/Fax
American River Flood Control Timothy Kerr Richard Marck Ron Sundberg	165 Commerce	929-4006 x102 417-4161 cell 638-2496 home 417-4163 cell 363-2719 home 417-4162 cell 726-5573 home	929-4160 fax tkerr@arfcd.org Richard@arfcd.org ron@arfcd.org
Maintenance Area #9 Russ Eckman Phil Carey	1450 Riverbank	375-6000 Work 375-6004 952-8445 Cell 799-4427 Cell Phil	375-6020 fax eckman@water.ca.gov pcarey@water.ca.gov
Reclamation Dist. #2067 Andrew Giannini Manuel Rebero	PO Box 338	952-9967 cell 981-5814 pager 707-374-6470 777-6273 home 777-4410 cell	707-374-6470 phone/fax amgiannini@citlink.net 776-1812 fax

RECLAMATION AND FLOOD CONTROL AND LEVEE DISTRICTS (continued)

Agency	Address	Phones	Email/Fax
Reclamation Dist. #3		776-1945	776-1945 call first
Bruce Pisoni		825-7039 Bruce	Bpisoni101@cs.com
Ken Pucci		777-5022 Ken	kfpucci@citlink.net
Charlie McDowell	Grand Island PO Box 1011	777-6396 Charlie	
Rich Gemignani	Walnut Grove,	456-4400 Rich	rcgemi@citlink.net
Gilbert Cosio	95690	417-7317 Gilbert	cosio@mbkengineers.com
Joey Sanchez		444-1000 Joey	
Severiano Padilla			
Armand "Buddy" Fonseca			
Reclamation District #317, 407, 2067 Brannan-Andrus Levee Maintenance District			
Andrew Giannini	Brannan-Andrus	952-9967 cell 707-374-6470 home 707-374-5857 hhome 425-1571 cell	707-374-6470 phone/fax amgiannini@citlink.net
Larry Gardiner		776-2277 work	
Gilbert Labrie			
Reclamation Dist. #341		826-8410 cell	
Gene Peck	444 North Third Sacramento	777-6604 home	777-5329 fax Gene
Henry Matsunaga		448-2821 office 417-5715 cell	448-4736 fax Henry matsunaga@jch-engr.com
Reclamation Dist. #369		684-5097 24hr	776-1661 call first
Clarence Chu	PO Box 987	776-1661 Work 813-7037 cell	Ckchu52@comcast.net
Reclamation Dist. #551			
Topper Van Loben Sels		776-1223 home Topper 439-3291 cell	776-1510 fax Topper lindavls@citlink.net
Doug Chan	Reclamation District 551 PO Box 123 Walnut Grove, CA 95690	775-1622 home Doug 998-2384 cell	775-0071 fax Doug dougchan@frontiernet.net
Kurt Jonson		775-2117 home Kurt 417-3029 cell	775-2188 Kurt jhjonson@citlink.net
Bill Reinke		775-1325 home Bill 870-3700 cell	

RECLAMATION AND FLOOD CONTROL AND LEVEE DISTRICTS (continued)

Agency	Address	Phones	Email/Fax
Reclamation Dist. #554, 563, 2111 G Tim Wilson	Dead Horse Island	776-1701 work 776-1142 209-993-0157 cell	776-1670 fax tim@kaydix.com
Daniel Wilson		776-1839 work 417-0909 cell	Daniel@kaydix.com
Reclamation Dist. #556 Christopher Lee	PO Box 1046	776-1731 work Chris 416-1709 cell	776-1732 fax
Kevin Steward		776-2092 home Kevin 812-1933 cell	fox2@citlink.net ksteward@tfewines.com
Michael Stokes		209-810-5278 cell 1 209-481-2919 cell 2 209-794-2380 work	tmikestokes@hotmail.com
Reclamation Dist. #744 Russell Van Loben Sels	9181 River Rd	744-1805	744-1806 fax
Reclamation Dist. #755 Dave Elliot Jr.	Randall Island 11845 Randall Island	775-1027 870-7466 cell	775-2183 Dave fax dave@stillwaterorchards.com
Doug Hemly		775-1379 Doug 416-4885 cell	775-1246 Doug fax doug@greeneandhemly.com
Reclamation Dist. #800 Brian Takemori	Cosumnes River	685-9461 Office 204-3709 cell	685-4276 fax bseiro@aol.com
David Utterback		682-9213 home	dutterback@telis.org
Marsha Holmes		689-5205 home 956-5205 cell	marsha@cyholmesfire.com
Reclamation Dist. #813 Tom Herzog	12350 Herzog Rd.	871-4060 cell 775-1479 home	775-1765 fax 775-4101 fax 123her@citlink.net
Reclamation Dist. #1000 Paul Devereux	1633 Garden Hw Sacramento	922-1449 office Paul 417-4170 cell 773-5852 home	922-2129 fax pdevereux@rd1000.org
Mike Blickle		530-666-3765 h Mike 997-1245 cell	mblickle@rd1000.org
Don Caldwell		997-1246 cell Don	dcaldwell@rd1000.org

RECLAMATION AND FLOOD CONTROL/LEVEE DISTRICTS (continued)

Agency	Address	Phones	Email/Fax
Reclamation Dist. #1002 Jeff McCormack	962 Lambert Rd	776-1837 work 417-1805 cell 684-4961 home	776-1309 fax mccormac@citlink.net
Robert Abercrombie		997-9644 cell	rabercrombie@tfewines.com
Reclamation Dist. #1601 Rick & Linda Carter	2360 W Twitchell Is Rio Vista	257-4241 cell 777-6992 home	777-9900 fax Station87@frontiernet.net
Reclamation Dist. #2110		776-1531	776-1018 fax Recdist38@hughes.net
Brent Tadman	23319 N Staten Island Rd	425-9693	brentt@hughes.net
Mike Conner	PO Box 408 Walnut Grove	449-2850	mconner@tnc.org
Bud Fonseca		775-1800	edda@hughes.net

RECREATION AND PARK DISTRICTS

Agency	Address	Phones	Email/Fax
Arcade Creek Jane Steele		482-8377 work Jane 261-8305 cell 485-8305 home	483-1320 fax jsteele@arcadecreekrecreation.com
Juanita Petersen	4855 Hamilton St. Sacramento	595-1912 cell Juanita	
Anna Prather		613-0372 cell Anna	
Twin Rivers USD PD		286-4875 Twin Rivers USD PD	286-4920 fax Twin Rivers USD PD
Arden Manor Jeffrey Gray	1415 Rushden Dr. Sacramento	487-7851 office 707-328-7099 cell Jeff	487-2028 fax amrpdjeff@sbcglobal.net
Warren Harding		482-7858 Warren 217-1834 cell	districtmanager@amrpd.org
Arden Park Phillip Hasemeier	1000 La Sierra	481-6086 work 267-1424 cell	483-6060 fax phasemeier@aprpd.org
Lisa Connolly		483-6069 work 873-3847 cell	lconnolly@aprpd.org

RECREATION AND PARK DISTRICTS (continued)

Agency	Address	Phones	Email/Fax
Carmichael Park Keith Maddison	5750 Grant Ave.	485-5322 x30 483-7826 work Keith 343-3962 cell	485-0805 fax keith@carmichaelpark.com
Jack Harrison	5325 Engle Rd	485-5322 x28 Jack	jharrison@carmichaelpark.com
Rich Murray		483-7826 Rich	rmurray@carmichaelpark.com
Cordova David Edmonds	2197 Chase Dr.	362-1841 x21 work 205-6807 cell	362-9602 fax david@crpd.com
Fair Oaks Rec	4150 Temescal	240-3651 Parks Services	966-9863 fax
Maureen Zamarripa		966-1036 x13 Maureen 240-4823 cell	mzamarripa@fairoakspark.org
Todd Sebastian		966-1036 x14 Todd 240-2731 cell Todd	tsebastian@fairoakspark.org
Rick Vaughan		961-9370 Rick 240-3648 cell Rick	rvaughan@fairoakspark.org
Karen Pavisich		966-1036 x19 Karen	kpavisich@fairoakspark.org
Fulton-El Camino Mike Grace	2201 Cottage	927-3802 work 825-0197 cell	927-3805 fax Mgrace@fecrecpark.com
Richard Leimbach		927-3802 work 363-8563 home	rleimbach@fecrecpark.com
Mission Oaks	3344 Mission	488-2810 office	
Debby Walker District Administrator		488-7276 x3011 Debby 439-3374 cell 485-7802 home	488-4349 fax dwalker@morpd.com
TJ Newman Parks Director		488-7276 x3007 TJ 869-6243 cell 588-6566 home	tjnewman@morpd.com tjnewman1@mac.com
Mark Koller Recreation Director		488-7276 x3010 Mark 439-2576 cell 624-2701 home	mkoller@morpd.com

RECREATION AND PARK DISTRICTS (continued)

Agency	Address	Phones	Email/Fax
North Highlands			332-1121 fax
Kay Dahill	6040 Watt Ave	332-7440 work 599-2309 cell	kay@nhrpd.org
Chuck Bernardi		723-3465 home	chuck@nhrpd.org
Theresa Muth		786-3731 home 710-2581 cell	Theresa@nhrpd.org
Orangevale			
Charles West	6826 hazel Ave	988-4373 wk Chuck 826-2723 cell	988-3496 fax westorpd@sbcglobal.net
Cindy Turner		988-6140 wk Cindy	turnerorpd@sbcglobal.net
Rio Linda-Elverta		991-8110 direct Don	911-2892 fax
Don Schatzel		991-5929 office	dons@rcip.com
Bob Gilbert	810 Oak Lane	834-0782 cell	
		991-8831 Bob 947-3695 cell	bgilbert@rcip.com
Southgate		428-1171 x11	428-7334 fax
Ward Winchell		206-8951 cell	wwinchell@southgaterecandpark.net
Scott Hokama	6000 Orange Av	447-1509 home	shokama@southgaterecandpark.net
Jeremy Yee		919-3206 cell 925-387-0348 530-219-5226	jyee@southgaterecandpark.net
Sunrise Recreation and Park District		725-1585 office	725-2541 fax sunrise@sunriseparks.com
Lisa Rudloff		725-0167 Lisa 257-7250 cell	lrudloff@sunriseparks.com
Virg Anderson	7801 Auburn Citrus Heights, 95610	725-0133 Virg 257-8936 cell	vanderson@sunriseparks.com
Noe Villa		725-0430 Noe 257-8882 cell	nvilla@sunriseparks.com

SCHOOLS

Agency	Address	Phones	Email/Fax
County Office of Education David Gordon	10474 Mather Bl	228-2410 David 804-5660 cell	228-2403 fax dgordon@scoe.net
Mary Fager		228-2474 Mary 997-0576 cell	228-2451 fax mfager@scoe.net
Arcohe Union SD Mark Cornfield	11755 Ivie Rd	209-748-2313 209-748-2603 x400	209-748-5798 fax cornfield@arcohe.net
Lori Salfen		209-748-2314 x204	salfen@arcohe.net
Chris Marciel		209-748-2313 x333	Marciel@arcohe.net
Center Unified SD Dr. Kevin J Jolly	8408 Watt Ave	338-6330 direct	338-6411 fax kevinj@centerusd.k12.ca.us
Craig Deason		338-7580 direct	cdeason@centerusd.k12.ca.us
Elk Grove Unified SD Dr. Steven Ladd	9510 Elk Grove-Florin	686-7786 24hr 686-7700	689-3804 fax sladd@egusd.net
Elverta Joint SD Elizabeth Golchert	8920 Elywn Av	991-5400 Liz 397-7120 cell 359-8669 home	991-0271 fax egolchert@elverta.k12.ca.us
Dr. Dianna Mangerich		991-4726 Dianna 397-7170 cell 725-5314 home	723-1680 fax dmangerich@elverta.k12.ca.us
Folsom Cordova Unified Patrick Godwin	125 E Bidwell	355-1111 x107 216-5355 Cell 817-6472 home 355-1111x152	985-0722 fax pgodwin@fcusd.org
Mark Rickabaugh		712-8218 cell 530-888-0724 home	mrickaba@fcusd.org
Debbie Bettencourt		355-1111x114 837-9415 cell 624-9415 home	dbettenc@fcusd.org
Galt Joint Union Elementary Dr. Karen Schauer	1018 C St Suite 210	209-744-4545 x308 209-712-1052 cell	209-744-4553 fax superintendent@galt.k12.ca.us
Jim Bauler		209-744-4545 x315 209-810-2952 cell	jbauler@galt.k12.ca.us

SCHOOLS (continued)

Agency	Address	Phones	Email/Fax
Galt Joint Union High School District Thomas A. Gemma Rickey Khader Edith Crawford	417 C St Suite B	209-745-0249 work 916-806-0335 cell 209-745-0249 wk Rick 530-391-8081 cell 209-744-5461 wk Edith 916-955-2889 cell	209-744-1560 fax tgemma@ghsd.k12.ca.us
Natomas Unified Dr. Steve Farrar Heyman Matlock	1901 Arena Bl	567-5401 direct 826-1117 cell 567-5422 direct 826-9065 cell	567-5405 fax sfarrar@natomas.k12.ca.us 567-5440 fax hmatlock@natomas.k12.ca.us
River Delta Unified Alan Newell Wayne Rebstock	445 Montezuma	707-374-1709 direct 925-963-9121 cell 707-374-1708 direct 417-3408 cell	707-374-2995 fax anewell@riverdelta.k12.ca.us 707-374-2901 fax wrebstock@riverdelta.k12.ca.us
Robla School District Ralph Friend	5248 Rose	991-1728 x507 502-0787 cell	992-0308 fax rfriend@robla.k12.ca.us
Sacramento City Unified Vincent Matranga Mellissa Truitt	5735 47th Av.	643-7444 24hr 643-7444 work 752-3620 cell 634-9227 work 752-3015 cell	643-9480 fax vincema@sac-city.k12.ca.us mellissa-truitt@sac-city.k12.ca.us
San Juan Unified Pat Jaurequi Don Myers Bob Lewis	3738 Walnut Av	971-7104 200-5371 cell 971-5740 Don 871-0087 cell 780-0889 home 971-7728 Bob 825-0514 cell	971-7788 fax pat.jaurequi@sanjuan.edu dmyers@sanjuan.edu blewis@sanjuan.edu

SCHOOLS (continued)

Agency	Address	Phones	Email/Fax
Twin Rivers Unified Frank Porter Danny Munoz Chris Breck	5107 Dudley Bl. Building 250B McClellan	566-1786 Frank 566-1786 x1395 Danny 606-1365 cell	Frank.porter@twinriversusd.org danny.munoz@twinriversusd.org chris.breck@twinriversusd.org
Los Rios Community College Dr. Brice W. Harris	1919 Spanos Ct.	568-3021 work 715-7272 cell	568-3023 fax harrisbw@losrios.edu

UTILITY DISTRICTS

Agency	Address	Phones	Email/Fax
Pacific Gas and Electric Tom Richardson Sheri Nelson	5555 Florin-Perkins Rd #147 Sacramento	800-743-5000 24hr 386-5200 office Tom 530-906-8393 cell 408-204-8894 cell	386-5404 fax tlr8@pge.com
Sacramento Municipal Utility District SMUD Selby Mohr Jeff Briggs	6201 S Street	732-6541 work Selby 535-3670 pager 798-6647 cell 732-5334 24hr 732-5708 work Jeff 209-996-8186 cell	732-6890 fax smohr@smud.org jbriggs@smud.org

WATER DISTRICTS

Agency	Address	Phones	Email/Fax
Carmichael Water Steve Nugent	7873 Fair Oaks Bl Carmichael, CA	483-2452 work Steve 973-1390 home 275-3473 cell	483-5509 fax steve@carmichaelwd.org
Lynette Moreno		483-2452 work Lynette 685-9004 home 869-1971 cell	lynette@carmichaelwd.org
Scott Bair		483-2452 work Scott 967-7230 home 869-8164 cell	scott@carmichaelwd.org
Mark McClintock		679-0457 work Mark 435-8470 home 826-8763 cell	mark@carmichaelwd.org
Chris Nelson		483-2452 work Chris 978-0819 home 275-2966 cell	chris@carmichaelwd.org
Laura McManigal		483-2452 work Laura 688-7548 home 265-8315 cell	laura@carmichaelwd.org
California American Water Company Steven J. Seidl	4701 Beloit Dr Sacramento	568-4259 office Steven 717-574-2167 cell	Steve.seidl@amwater.com
Bret Hinerman		568-4219 office Bret 869-0467 cell	Bret.hinerman@amwater.com
Joe Tanner		568-4269 office Joe 275-4767 cell	joseph.tanner@amwater.com
Citrus Heights Water Robert Churchill	6230 Sylvan Citrus Heights	962-6623 24hr 837-9958 cell Robert 987-2471 home	725-0345 fax rchurch@chwd.org
David Kane		599-5901 cell David 933-4662 home	dkane@chwd.org
John Townsel		599-3307 cell John 727-9995 home	jtownsel@chwd.org

WATER DISTRICTS (continued)

Agency	Address	Phones	Email/Fax
Clay Water Gary Silva Sr. Gary Silva Jr.	11540 Clay	209-748-2304 w 209-993-6004 Cell 209-748-2362 H 209-993-2109 cell 209-748-2638	209-748-5103 fax tildean@softcom.net
Del Paso Manor Water Debra Sedwick Rich Bolton	4268 Lusk Dr. Sacramento, CA	487-0419 24hr	487-8534 fax debrasedwick@sbcglobal.net dpmwd@sbcglobal.net richbolton@sbcglobal.net
Elk Grove Water Leo Havener Craig Van Steinburg Glen Gilkerson Jose Carrillo Richard Salas	9257 Elk Grove Elk Grove, CA 95624	685-3556 work Leo 897-6902 cell Craig 685-3556 work 1 687-3155 work 2 386-1636 home 770-6050 cell Glen 685-3556 work 1 687-3155 work 2 682-4033 home 667-2519 cell Jose 599-6869 cell Richard	685-5376 fax lhavener@egws.org craig@egws.org ggilkerson@egws.org jcarrillo@egws.org rsalas@egws.org
Fair Oaks Water Tom Gray Michael Nisenboym Shawn Huckaby	10317 Fair Oaks	967-5723 24hr 496-6721 cell Tom 961-4558 home 257-5261 cell Michael 989-5514 home 257-4981 cell Shawn 530-367-3739 home	967-0153 fax tgray@fowd.com mnisenboym@fowd.com shuckaby@fowd.com
Florin County Water Rick Bedal Dominic Petrilla	7090 McComber	383-0808 24hr	383-6149 fax scwd@sbcglobal.net

WATER DISTRICTS (continued)

Agency	Address	Phones	Email/Fax
Fruitridge Vista Water Robert Cook Jr. Stephen Cook Gregory Folena	1108 2nd Street	443-2607 24hr 709-2300 cell Robert 869-4444 cell Stephen 640-7032 cell Gregory	443-3271 fax bcook@fruitridgevista.com fvwccook@aol.com
Galt Irrigation Wendy Sparrow Leo Van Warmerdam	12716 Herald Rd Po Box 187 Herald, 95638	209-748-2324 209-749-3872 Wendy 209-914-1140 Leo	sscawa@aol.com
Golden State Water Co. **Arden-Cordova Service Area** Paul Schubert District Manager Michael Benbow Travis Anderson Scott Fort	3035 Prospect Suite 50 Rancho Cordova Coloma Operations Center 11200 Coloma Rd Rancho Cordova	800-999-4033 24hr 852-8563 office 853-3636 work Paul 801-3658 cell Paul 852-1290 work Michael 802-4175 cell Michael 635-1867 x11 Travis 796-6091 cell 853-3628 work Scott 947-8271 cell	852-0171 fax pschubert@gswater.com 635-1992 fax mwbenbow@gswater.com 635-1992 fax travisanderson@gswater.com 852-0171 fax sdfort@gswater.com
Natomas Central Mutual Water Steve Hetherington Fred Schantz Dave Fisher	2601 West Elkhorn Blvd Rio Linda	826-7673 cell Steve 568-1146 home 826-7672 cell Fred 530-668-8305 h 548-1853 cell Dave 530-671-4662 h	419-8691 fax shetherington@natomaswater.com fschantz@natomaswater.com dfisher@natomaswater.com
Omochumne-Hartnell Ronald Lowery	PO Box 211	682-5958 work 689-3900 home 802-3900 cell Ron	682-5958 fax omochumnehartnel@aol.com

WATER DISTRICTS (continued)

Agency	Address	Phones	Email/Fax
Orange Vale Water Sharon Wilcox		988-1693 work 257-8587 cell 984-4614 home 834-7133 cell	988-0627 fax swilcox@orangevalewater.com
John Wingerter	PO Box 620800	988-0102 work 257-8588 cell 987-0247 home	jwingerter@orangevalewater.com
Mark DuBose		988-0132 work 257-8591 cell 590-2872 cell 987-3466 hm	mdubose@orangevalewater.com
Regional Water Authority Nancy Marrier	5620 Birdcage	967-7692 work 521-6820 cell	967-7322 fax nancy@rwah2o.org
Rob Swartz		967-7692 work 607-9208 cell 984-1851 home	967-7322 fax rswartz@rwah2o.org
Rio Linda/Elverta Community Water Dee Dillon	PO Box 400	252-4255 on call 991-1000 work 991-8891 direct 764-5809 cell	991-6616 fax ddillon@rlecwd.com
Pat Goyet		991-8892 Pat 796-5949 cell 992-6265 home	pgoyet@rlecwd.com
Sacramento Suburban Dan York		972-7171 24hr 679-2880 work Dan 869-7349 cell Dan	332-6215 fax dyork@sswd.org
Warren Jung	3701 Marconi	679-2896 work Warren 416-5467 cell Warren	wjung@sswd.org
Ed Formosa		679-3973 work Ed 240-1598 cell Ed	eformosa@sswd.org
Robert Roscoe		679-3994 work Robert 240-2025 cell Robert	rroscoe@sswd.org

WATER DISTRICTS (continued)

Agency	Address	Phones	Email/Fax
San Juan Water Shauna Lorance		791-6936 Shauna 813-8301 cell	791-7361 fax slorance@sjwd.org
Rick Hydrick	9935 Auburn-Folsom Granite Bay	791-6912 Rick 316-3250 cell	791-6962 fax rhydrick@sjwd.org
Keith Durkin		791-6906 Keith 802-0559 cell 791-0115 on call	791-6956 fax kdurkin@sjwd.org
Tokay Park Water Elizabeth Laws		388-1860 24hr 707-386-6375 24hr 718-9773	388-1860 fax/call first tokaywc@softcom.net
Curtis Kirby	PO Box 292146	379-0663	kirbyc7741@aol.com
Dominic Accettola		531-4865 cell 381-3111 home	

PUBLIC NOTICE

CONSUMER ALERT DURING WATER OUTAGES OR PERIODS OF LOW PRESSURE

1. If you are experiencing water outages or low water pressure, immediately discontinue any non-essential water usage. This includes all outdoor irrigation and car washing. Minimizing usage will reduce the potential for the Water District to lose pressure or completely run out of water. Please notify your Water District of the outage or low pressure.

2. If the water looks cloudy or dirty, you should not drink it. Upon return of normal water service, you should flush the hot and cold water lines until the water appears clear and the water quality returns to normal.

3. If you are concerned about the water quality or are uncertain of its safety, you may add eight drops of household bleach to one gallon of water and let it sit for 30 minutes or alternatively, if you are able, water can be boiled for one minute at a rolling boil to ensure its safety.

4. Use of home treatment devices does not guarantee the water supply is safe after low pressure situations.

5. Do not be alarmed if you experience higher than normal chlorine concentrations in your water supply since the California Department of Public Health is advising public water utilities to increase chlorine residuals in areas subject to low pressure or outages.

6. The California Department of Public Health has also advised public water systems to increase the bacteriological water quality monitoring of the distribution system in areas subject to low pressure. They may be collecting samples in your area to confirm that the water remains safe. You will be advised if the sampling reveals a water quality problem.

7. Your Water District is committed to make certain that an adequate quantity of clean, wholesome, and potable water is delivered to you. We recommend that you discuss the information in this notice with members of your family to ensure that all family members are prepared should water outages or low water pressure occur.

BOIL WATER ORDER

BOIL YOUR WATER BEFORE USING
Failure to follow this advisory could result in stomach or intestinal illness

Due to the recent event ***(name event)*** the California Department of Public Health and Carmichael Water District (District) in conjunction with the Sacramento County Health Department are advising residents of Carmichael, California to boil their water and/or use bottled water for drinking and cooking purposes as a safety precaution.

DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST
Bring all water to boil for a minimum of one (1) minute, let it cool before using, or use bottled water. Boiled or bottled water should be used for drinking and food preparation until further notice.

Optional Alternatives:

- An Alternative method of purification for residents that do not have gas or electricity available is to use fresh liquid household bleach. To do so, add eight (8) drops (or ¼ teaspoon) of bleach per one (1) gallon of water or sixteen (16) drops per gallon if the water is cloudy, mix thoroughly, and allow the treated water to stand for thirty (30) minutes before using. A chlorine-like taste and odor will result from this treatment procedure and is an indication that adequate disinfection has taken place.
- Water treatment tablets may also be used by following the manufacturer's instructions.
- Potable water is available at the following locations (name locations and address). Please bring a clean water container (five (5) gallon maximum).

The District will inform you when tests indicate no harmful bacteria are present in the water supply and you no longer need to boil your water. The District anticipates resolving this issue within ***(estimate time frame)***

For more information please call or come by the Carmichael Water District
7837 Fair Oaks Blvd
Carmichael, CA 95608
Office # (916) 483- 2452
www.carmichaelwd.org

California Department of Public Health, David Lancaster
Office # (916) 449-5668

County Director of Center for Environmental Health, Rufus Howell
Office # (916) 875-8484

Please share this information with all other people who drink this water, especially those who may not have received this notice (for example: residents of apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or by distributing copies by hand or email.

UNSAFE WATER ALERT

DO NOT USE YOUR WATER

Failure to follow this advisory could result in illness

An unknown substance has been added to the drinking water supplied by Carmichael Water District (District) due to a recent event ***(name event)*** at ***(name location of event).*** The California Department of Public Health and Carmichael Water District (District) in conjunction with the Sacramento County Environmental Health Department are advising residents of Carmichael, California to **NOT USE THE TAP WATER FOR DRINKING, BATHING OR HAND WASHING UNTIL FURTHER NOTICE.**

What should you do?

DO NOT USE THE TAP WATER – USE ONLY BOTTLED WATER AT THIS TIME. Bottled water should be used for all drinking, including baby formula, juice, brushing teeth, washing dishes and food preparation of any kind until further notice.

DO NOT TRY AND TREAT THE WATER YOURSELF. Boiling, filtering, freezing, adding chlorine or other disinfectants or letting the water stand will not make it safe for use.

Potable water is available at the following locations ***(name locations with address and phone number)***. Please bring a clean water container (five (5) gallon maximum capacity).

The District will inform you when tests indicate no harmful bacteria or chemicals are present in the water supply.

The District anticipates resolving this issue within ***(estimate time frame).***

For more information please call, visit or come by the Carmichael Water District
7837 Fair Oaks Blvd
Carmichael, CA 95608
Office # (916) 483- 2452
www.carmichaelwd.org

California Department of Public Health, David Lancaster
Office # (916) 449-5668

County Director of Center for Environmental Health, Rufus Howell
Office # (916) 875-8484

Please share this information with all other people who use this water, especially those who may not have received this notice (for example: residents of apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place, calling others or by distributing copies by hand or email.

EMERGENCY SPILL NOTIFICATION

1. If you receive a call, fax or email regarding an emergency spill notification immediately complete the attached Emergency Spill Notification Phone Log.

2. When the Emergency Spill Notification Phone Log is complete, contact the next agency on the attached Emergency Notification Chart (California Department of Public Health – Drinking Water Program).

3. File the completed Emergency Spill Notification Phone Log in the Emergency Spill Notification file at the District Office.

Emergency Spill Notification Phone Log

Your Name_____ Date_____ Time_____ Phone (____) _____

Agency_____ Job Title_____

Notified By

Name_____ Date_____ Time_____ Phone (____) _____

Agency_____ Job Title_____

Spill Information

Test Run? Yes _____ No _____

Location of the spill_____

Time_____ Is the spill ongoing? Yes No N/A Amount?_____

Type/Material of spill_____

_____

Is there a likelihood of the spill entering a waterway? Yes No N/A

Will the spill enter a stormdrain? Yes No N/A

Describe_____

Has the spill been contained? Yes No N/A By Whom?_____

Phone (____) _____

Who originated the spill? Name_____

Agency_____

Phone (____) _____

Call Forwarded

Name_____ Date_____ Time_____ Phone (____) _____

Agency_____ Job Title_____

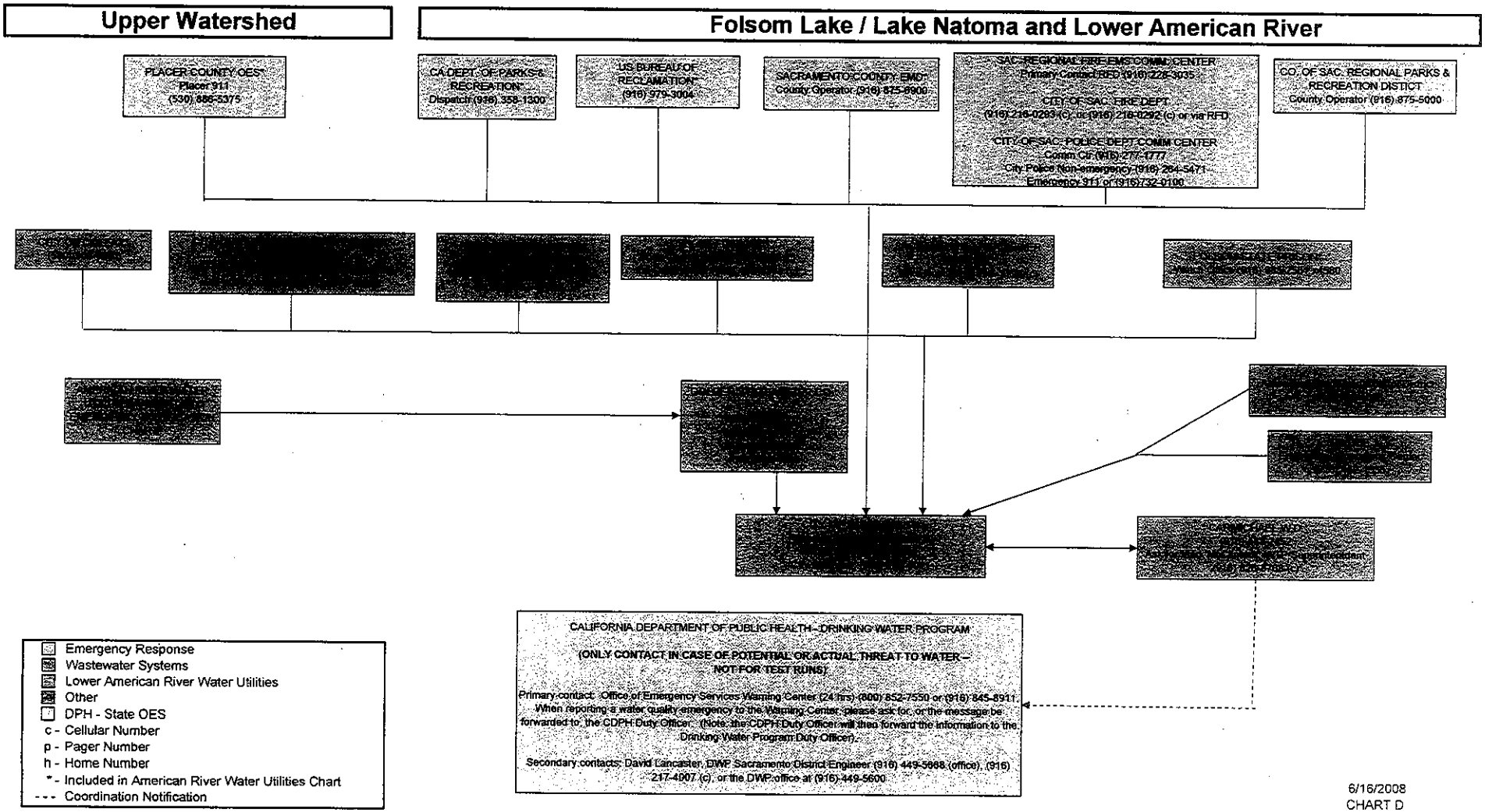
Comments

_____

_____

_____

LOWER AMERICAN RIVER WATER UTILITIES
VOLUNTARY EMERGENCY NOTIFICATION CHART



6/16/2008
CHART D

Appendix C-1 – Water Rights

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STATE OF CALIFORNIA
RESOURCES AGENCY
STATE WATER RIGHTS BOARD

ORDER

APPLICATION 138 PERMIT 67 LICENSE 1387

ORDER ALLOWING CHANGE IN POINT OF DIVERSION AND CHANGE IN PLACE OF USE

WHEREAS License 1387 was issued to Carmichael Irrigation District and was filed with the County Recorder of Sacramento County on December 18, 1933, and

WHEREAS the State Water Rights Board has found that the change in point of diversion and place of use under said license for which petition was submitted on December 28, 1964, will not operate to the injury of any other legal user of water, and

WHEREAS the Board has approved and allowed said changes and has directed that an order be issued to describe said point of diversion and place of use in accordance with said petition;

NOW THEREFORE IT IS ORDERED that permission be and the same is hereby granted to change the point of diversion under said License 1387 to a point of diversion described as follows, to wit:

A MOVABLE POINT ALONG THE LEFT AND RIGHT BANKS OF THE AMERICAN RIVER BETWEEN LIMITS AS FOLLOWS:

POINT A: AN INTERSECTION WITH THE SOUTHERLY EXTENSION OF SAN JUAN AVENUE, IN CARMICHAEL COLONY AND THE AMERICAN RIVER, N 76° E 10,700 FEET FROM THE NE CORNER OF SECTION 55, RANCHO DEL PASO, AND BEING WITHIN THE SW¼ OF PROJECTED SECTION 14, T9N, R6E, MDB&M.

POINT B: AN INTERSECTION WITH THE SOUTHEASTERLY EXTENSION OF ARDEN WAY AND THE AMERICAN RIVER S 64° E 6300 FEET FROM THE SE CORNER OF SECTION 43, RANCHO DEL PASO, AND BEING WITHIN THE S½ OF PROJECTED SECTION 33, T9N, R6E, MDB&M.

IT IS FURTHER ORDERED that permission be and the same is hereby granted to change the place of use under said License 1387 to a place of use described as follows, to wit:

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STATE OF CALIFORNIA—STATE WATER RIGHTS BOARD

ORDER

APPLICATION 138 PERMIT 67 LICENSE 1387

ORDER ALLOWING CHANGE IN POINT OF DIVERSION

Licensee having established to the satisfaction of the State Water Rights Board that the change in point of diversion under Application 138, Permit 67, License 1387 for which petition was submitted on April 23, 1959 will not operate to the injury of any other legal user of water, the Board so finds, and

IT IS ORDERED that permission be and the same is hereby granted to change the point of diversion under said Application 138, Permit 67, License 1387 to points of diversion described as follows, to wit:

(1) AT INTERSECTION OF AMERICAN RIVER AND LANDIS AVENUE OF CARMICHAEL COLONY, NORTH EIGHTY-FIVE DEGREES EAST (N85°E), SEVEN THOUSAND (7000) FEET FROM NE CORNER OF SECTION 55, RANCHO DEL PASO, BEING WITHIN LOT 123 OF CARMICHAEL COLONY AND BEING WITHIN NW¼ OF NE¼ OF PROJECTED SECTION 22, T9N, R6E, MDB&M.

(2) WITHIN A STRIP ALONG THE LEFT BANK OF AMERICAN RIVER APPROXIMATELY TWO THOUSAND (2000) FEET IN LENGTH, THE CENTER OF SAID STRIP BEING NORTH EIGHTY-FIVE DEGREES EAST (N85°E) SEVEN THOUSAND SIX HUNDRED (7600) FEET FROM NE CORNER OF SECTION 55, RANCHO DEL PASO. THIS STRIP BEING WITHIN NW¼ OF NE¼ AND NE¼ OF NE¼ OF PROJECTED SECTION 22, T9N, R6E, MDB&M.

(3) WITHIN A STRIP ALONG THE RIGHT BANK OF AMERICAN RIVER APPROXIMATELY THREE THOUSAND (3000) FEET IN LENGTH, THE CENTER OF SAID STRIP BEING SOUTH TWENTY-NINE DEGREES EAST (S29°E) EIGHT THOUSAND TWO HUNDRED (8200) FEET FROM NE CORNER OF SECTION 55, RANCHO DEL PASO, THIS STRIP BEING WITHIN SE¼ OF NW¼, SW¼ OF NW¼, AND THE NW¼ OF SW¼ OF PROJECTED SECTION 27, T9N, R6E, MDB&M, AND NE¼ OF SE¼ OF PROJECTED SECTION 28, T9N, R6E, MDB&M.

STATE OF CALIFORNIA
RESOURCES AGENCY
STATE WATER RIGHTS BOARD

ORDER

CATION 138 PERMIT 67 LICENSE 1387

4500 ACRES COMPRISING THE SERVICE AREA OF CARMICHAEL IRRIGATION DISTRICT AS SHOWN ON MAP FILED WITH STATE WATER RIGHTS BOARD ON DECEMBER 21, 1964.

WITNESS my hand and the seal of the State Water Rights Board of the State

alifornia this 2 nd day of September, 1965

L. K. Hill
Executive Officer

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LICENSE [illegible] PERMIT [illegible]

STATE OF CALIFORNIA—STATE WATER RIGHTS BOARD

ORDER

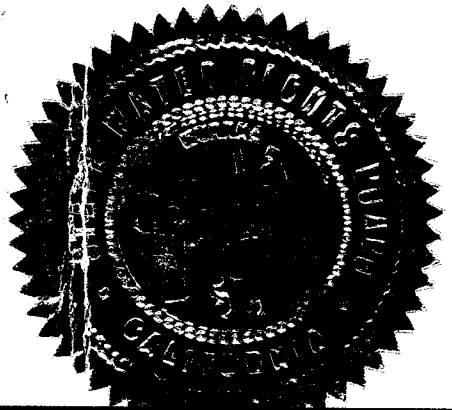
APPLICATION 138 PERMIT 67 LICENSE 1387

(4) A POINT SOUTH THIRTEEN DEGREES FIFTEEN MINUTES EAST (S13°15'E) SEVEN THOUSAND FOUR HUNDRED TWENTY (7420) FEET FROM NE CORNER OF SECTION 55, RANCHO DEL PASO, BEING WITHIN NE¼ OF SE¼ OF PROJECTED SECTION 28, T9N, R6E, MDB&M.

WITNESS my hand and the seal of the State Water Rights Board of the State of California this 29th day of July, 1959.

L. K. Hill

L. K. Hill
Executive Officer



FORM 64

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES

License for Diversion and Use of Water

LICENSE 1387 PERMIT 67 APPLICATION 138

THIS IS TO CERTIFY, *That* **Carmichael Irrigation District of Carmichael, California,** *has made proof to the satisfaction of the Division of Water Resources of California of a right to the use of the waters of* **American River in Sacramento County** *tributary of* **Sacramento River**

for the purpose of **irrigation and domestic uses** *under Permit* **67** *of the Division of Water Resources and that said right to the use of said waters has been perfected in accordance with the laws of California, the rules and regulations of the Division of Water Resources and the terms of the said permit; that the priority of the right herein confirmed dates from* **September 18, 1915;**

that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to the amount actually beneficially used for said purposes and shall not exceed **fifteen (15) cubic feet per second from January 1st to December 31st of each season provided, however, that in case of rotation the equivalent of such continuous flow allowance for any thirty day period may be diverted in a shorter time if there be no interference with other vested rights.**

The point of diversion of such water is located **within Lot 123 of Carmichael Colony and being within the NE¼ of Section 22, T 9 N, R 6 E, M.D.B.&M.**

A description of the lands or the place where such water is put to beneficial use is as follows:

Within the boundaries of Carmichael Irrigation District consisting of 3100 acres as shown on map filed on November 3, 1915, with the State Water Commission, now the Division of Water Resources, and being within projected U. S. Government Sections 14, 15, 16, 20, 21, 22, 28, 29 and 32, T 9 N, R 6 E, M.D.B.&M.

The right to the diversion and use of the water aforesaid hereby confirmed is restricted to the point of diversion herein specified and to the lands or place of use herein described.

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This license is granted and said appropriator takes all rights herein mentioned subject to the terms and conditions set forth in Section 20 of Chapter 586, Statutes 1913, which is as follows:

SEC. 20. All permits and licenses for the appropriation of water shall be under the terms and conditions of this act, and shall be effective for such time as the water actually appropriated under such permits and licenses shall actually be used for the useful and beneficial purpose for which said water was appropriated, but no longer; and every such permit or license shall include the enumeration of conditions therein which in substance shall include all of the provisions of this section and likewise the statement that any appropriator of water, to whom said permit or license may be issued, shall take the same subject to such conditions as therein expressed; *provided*, that if, at any time after the expiration of twenty years after the granting of a license, the state, or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the state shall have the right to purchase the works and property occupied and used under said license and the works built or constructed for the enjoyment of the rights granted under said license; and in the event that the said state, city, city and county, municipal water district, irrigation district, lighting district or political subdivision of the state so desiring to purchase and the said owner of said works and property can not agree upon said purchase price, said price shall be determined in such manner as is now or may hereafter be determined in eminent domain proceedings. If it shall appear to the state water commission at any time after a permit or license is issued as in this act provided that the permittee or licensee, or the heirs, successors or assigns of said permittee or licensee, has not put the water granted under said permit or license to the useful or beneficial purpose for which the permit or license was granted, or that the permittee or licensee, or the heirs, successors or assigns of said permittee or licensee, has ceased to put said water to such useful or beneficial purpose, or that the permittee or licensee, or the heirs, successors or assigns of said permittee or licensee has failed to observe any of the terms and conditions in the permit or license as issued, then and in that case the said commission, after due notice to the permittee, licensee, or the heirs, successors or assigns of such permittee or licensee, and a hearing thereon, may revoke said permit or license, and declare the water to be unappropriated and open to further appropriation in accordance with the terms of this act. And the findings and declaration of said commission shall be deemed to be prima facie correct until modified or set aside by a court of competent jurisdiction; *provided*, that any action brought so to modify or set aside such finding or declaration must be commenced within thirty days after the service of notice of said revocation on said permittee or licensee, his heirs, successors or assigns. And every licensee or permittee under the provisions of this act if he accepts such permit or license shall accept the same under the conditions precedent that no value whatsoever in excess of the actual amount paid to the state therefor shall at any time be assigned to or claimed for any permit or license granted or issued under the provisions of this act, or for any rights granted or acquired under the provisions of this act, in respect to the regulations by any competent public authority of the services or the price of the services to be rendered by any permittee or licensee, his heirs, successors or assigns or by the holder of any rights granted or acquired under the provisions of this act, or in respect to any valuation for purposes of sale to or purchase, whether through condemnation proceedings or otherwise, by the state or any city, city and county, municipal water district, irrigation district, lighting district or any political subdivision of the state, of the rights and property of any permittee or licensee, or the possessor of any rights granted, issued, or acquired under the provisions of this act. The application for a permit by municipalities for the use of water for said municipalities or the inhabitants thereof for domestic purposes shall be considered first in right, irrespective of whether they are first in time; *provided, however*, that such application for a permit or the granting thereafter of permission to any municipality to appropriate waters, shall not authorize the appropriation of any water for other than municipal purposes; *and providing, further*, that where permission to appropriate is granted by the state water commission to any municipality for any quantity of water in excess of the existing municipal needs therefor, that pending the application of the entire appropriation permitted, the state water commission shall have the power to issue permits for the temporary appropriation of the excess of such permitted appropriation over and above the quantity being applied from time to time by such municipality; *and providing, further*, that in lieu of the granting of such temporary permits for appropriation, the state water commission may authorize such municipality to become as to such surplus a public utility, subject to the jurisdiction and control of the railroad commission of the State of California for such period or periods from and after the date of the issuance of such permission to appropriate, as may be allowed for the application to municipal uses of the entire appropriation permitted; *and provided, further*, that when such municipality shall desire to use the additional waters granted in its said application it may do so upon making just compensation for the facilities for taking, conveying and storing such additional water rendered valueless for said purposes, to the person, firm or corporation which constructed said facilities for the temporary use of said excess waters, and which compensation, if not agreed upon between the municipality and said person, firm or corporation, may be determined in the manner provided by law for determining the value of property taken by and through eminent domain proceedings.

Witness my hand and the seal of the Department of Public Works of the State of California, this **eighth** *day of* **December**, *19* **33.**

[SEAL]

EDWARD HYATT
State Engineer

By Harold Conkling
Deputy

5-28-81 Name changed to Carmichael Water Dist.

LICENSE 1387

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RESOURCES

LICENSE TO APPROPRIATE WATER

ISSUED TO Carmichael Irr. District

DATED December 8, 1933

3086 5-33 1M CALIFORNIA STATE PRINTING OFFICE

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STATE OF CALIFORNIA
THE RESOURCES AGENCY
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS

License for Diversion and Use of Water

APPLICATION 4743 PERMIT 2498 LICENSE 8731

THIS IS TO CERTIFY, *That* CARMICHAEL IRRIGATION DISTRICT
P. O. BOX AB, CARMICHAEL, CALIFORNIA

HAS *made proof as of* AUGUST 22, 1967 *(the date of inspection) to the satisfaction of the State Water Resources Control Board of a right to the use of the water of* AMERICAN RIVER IN SACRAMENTO COUNTY

tributary to SACRAMENTO RIVER

for the purpose of IRRIGATION, DOMESTIC AND MUNICIPAL USES *under Permit* 2498 *of the Board and that the right to the use of this water has been perfected in accordance with the laws of California, the Regulations of the Board and the permit terms; that the priority of this right dates from* AUGUST 22, 1925 *and that the amount of water to which this right is entitled and hereby confirmed is limited to the amount actually beneficially used for the stated purposes and shall not exceed* TEN (10) CUBIC FEET PER SECOND TO BE DIVERTED FROM ABOUT MAY 1 TO ABOUT NOVEMBER 1 OF EACH YEAR.

THE EQUIVALENT OF SUCH CONTINUOUS FLOW ALLOWANCE FOR ANY THIRTY-DAY PERIOD MAY BE DIVERTED IN A SHORTER TIME IF THERE BE NO INTERFERENCE WITH OTHER VESTED RIGHTS.

THE POINTS OF DIVERSION OF SUCH WATER ARE LOCATED:

A MOVABLE POINT ALONG THE LEFT AND RIGHT BANKS OF THE AMERICAN RIVER BETWEEN LIMITS AS FOLLOWS:

POINT A: AN INTERSECTION WITH THE SOUTHERLY EXTENSION OF SAN JUAN AVENUE IN CARMICHAEL COLONY, AND THE AMERICAN RIVER, NORTH 76° EAST 10,700 FEET FROM NE CORNER OF SECTION 55, RANCHO DEL PASO, AND BEING WITHIN SW1/4 OF PROJECTED SECTION 14, T9N, R6E, MDB&M.

POINT B: AN INTERSECTION WITH THE SOUTHEASTERLY EXTENSION OF ARDEN WAY AND THE AMERICAN RIVER, SOUTH 64° EAST 6,300 FEET FROM THE SE CORNER OF SECTION 43, RANCHO DEL PASO, AND BEING WITHIN S1/2 OF PROJECTED SECTION 33, T9N, R6E, MDB&M.

A DESCRIPTION OF LANDS OR THE PLACE WHERE SUCH WATER IS PUT TO BENEFICIAL USE IS AS FOLLOWS:

DOMESTIC AND MUNICIPAL USES AND IRRIGATION OF A NET AREA OF 4,500 ACRES WITHIN AN AREA OF 4,950 ACRES COMPRISING THE SERVICE AREA OF CARMICHAEL IRRIGATION DISTRICT AS SHOWN ON MAP FILED WITH STATE WATER RESOURCES CONTROL BOARD ON JANUARY 19, 1968.

15563-957 11-67 1M ⓘ OSP

5-2881 Name chgd to Carmichael Water District

Licensee shall allow representatives of the Board and other parties, as may be authorized from time to time by the Board, reasonable access to project works to determine compliance with the terms of this license.

All rights and privileges under this license including method of diversion, method of use and quantity of water diverted are subject to the continuing authority of the Board in accordance with law and in the interest of the public welfare to prevent waste, unreasonable use, unreasonable method of use or unreasonable method of diversion of said water.

Reports shall be filed promptly by licensee on appropriate forms which will be provided for the purpose from time to time by the Board.

The right hereby confirmed to the diversion and use of water is restricted to the point or points of diversion herein specified and to the lands or place of use herein described.

This license is granted and licensee accepts all rights herein confirmed subject to the following provisions of the Water Code:

Section 1625. Each license shall be in such form and contain such terms as may be prescribed by the Board.

Section 1626. All licenses shall be under the terms and conditions of this division (of the Water Code).

Section 1627. A license shall be effective for such time as the water actually appropriated under it is used for a useful and beneficial purpose in conformity with this division (of the Water Code) but no longer.

Section 1628. Every license shall include the enumeration of conditions therein which in substance shall include all of the provisions of this article and the statement that any appropriator of water to whom a license is issued takes the license subject to the conditions therein expressed.

Section 1629. Every licensee, if he accepts a license does so under the conditions precedent that no value whatsoever in excess of the actual amount paid to the State therefor shall at any time be assigned to or claimed for any license granted or issued under the provisions of this division (of the Water Code), or for any rights granted or acquired under the provisions of this division (of the Water Code), in respect to the regulation by any competent public authority of the services or the price of the services to be rendered by any licensee or by the holder of any rights granted or acquired under the provisions of this division (of the Water Code) or in respect to any valuation for purposes of sale to or purchase, whether through condemnation proceedings or otherwise, by the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State, of the rights and property of any licensee, or the possessor of any rights granted, issued, or acquired under the provisions of this division (of the Water Code).

Section 1630. At any time after the expiration of twenty years after the granting of a license, the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State shall have the right to purchase the works and property occupied and used under the license and the works built or constructed for the enjoyment of the rights granted under the license.

Section 1631. In the event that the State, or any city, city and county, municipal water district, irrigation district, lighting district, or political subdivision of the State so desiring to purchase and the owner of the works and property cannot agree upon the purchase price, the price shall be determined in such manner as is now or may hereafter be provided by law for determining the value of property taken in eminent domain proceedings.

Dated: JUL 2 9 1968

STATE WATER RESOURCES CONTROL BOARD

K. L. Woodward

Chief, Division of Water Rights

APR 26 '68 G.A.P.

2

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

ORDER

Application 12367 Permit 7356 License _____

ORDER APPROVING A NEW DEVELOPMENT SCHEDULE AND AMENDING THE PERMIT

WHEREAS:

1. Permit 7356 was issued to Carmichael Irrigation District on April 22, 1949 pursuant to Application 12367.

2. Permit 7356 was subsequently assigned under the name of Carmichael Water District on May 28, 1981.

3. A petition for an extension of time within which to develop the project and apply the water to the proposed use has been filed with the State Water Resources Control Board.

3. The permittee has proceeded with diligence and good cause has been shown for said extension of time.

NOW, THEREFORE, IT IS ORDERED THAT:

1. A new development schedule is approved as follows:

COMPLETE APPLICATION OF THE WATER TO THE PROPOSED USE SHALL BE MADE ON OR BEFORE	December 31, 2005	(0000009)

Dated: JULY 2 1996

for Edward C. Anton, Chief
Division of Water Rights

STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

ORDER

APPLICATION 12367 PERMIT 7356 LICENSE

ORDER APPROVING A NEW DEVELOPMENT SCHEDULE
AND AMENDING THE PERMIT

WHEREAS:

1. A petition for extension of time within which to develop the project and apply the water to the proposed use has been filed with the State Water Resources Control Board.

2. The permittee has proceeded with diligence and good cause has been shown for extension of time.

NOW, THEREFORE, IT IS ORDERED THAT:

1. A new development schedule is approved as follows:

COMPLETE APPLICATION OF THE WATER TO THE PROPOSED USE SHALL BE MADE ON OR BEFORE	December 1, 1995

2. Paragraph 7 of this permit is deleted. A new Paragraph 7 is added as follows:

Pursuant to California Water Code Sections 100 and 275, and the common law public trust doctrine, all rights and privileges under this permit and under any license issued pursuant thereto, including method of diversion, method of use, and quantity of water diverted, are subject to the continuing authority of the State Water Resources Control Board in accordance with law and in the interest of the public welfare to protect public trust uses and to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

The continuing authority of the Board may be exercised by imposing specific requirements over and above those contained in this permit with a view to eliminating waste of water and to meeting the reasonable water requirements of permittee without unreasonable draft on the source. Permittee may be required to implement a water conservation plan, features of which may include but not necessarily be limited to: (1) reusing or reclaiming the water allocated; (2) using water reclaimed by another entity instead of all or part of the water allocated; (3) restricting diversions so as to eliminate agricultural tailwater or to reduce return flow; (4) suppressing evaporation losses from water surfaces; (5) controlling phreatophytic growth; and (6) installing, maintaining, and operating efficient water measuring devices to assure compliance with the quantity limitations of this permit and to determine accurately water use as against reasonable water requirements for the authorized project. No action will be taken pursuant to this paragraph unless the Board determines, after notice to affected parties and opportunity for hearing, that such specific requirements are physically and financially feasible and are appropriate to the particular situation.

The continuing authority of the Board also may be exercised by imposing further limitations on the diversion and use of water by the permittee in order to protect public trust uses. No action will be taken pursuant to this paragraph unless the Board determines, after notice to affected parties and opportunity for hearing, that such action is consistent with California Constitution Article X, Section 2; is consistent with the public interest and is necessary to preserve or restore the uses protected by the public trust.

Dated: JULY 1 1986

Lloy Johnson

Lloy Johnson, Interim Chief
Division of Water Rights

STATE OF CALIFORNIA
THE RESOURCES AGENCY
STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

ORDER

APPLICATION 12367 PERMIT 7356 LICENSE

ORDER APPROVING A NEW DEVELOPMENT SCHEDULE
AND AMENDING PERMIT

WHEREAS:

1. A petition for extension of time within which to develop the project and apply the water to the proposed use, has been filed with the State Water Resources Control Board.

2. It appears that the permittee has proceeded with diligence and that good cause has been shown for extension of time.

NOW, THEREFORE, IT IS ORDERED THAT:

1. A new development schedule is approved as follows:

CONSTRUCTION WORK SHALL BE COMPLETED ON OR BEFORE	DECEMBER 1, 1985
APPLICATION OF THE WATER TO THE PROPOSED USE SHALL BE COMPLETED ON OR BEFORE	DECEMBER 1, 1985

2. Paragraph 7 of the permit be amended to read as follows:

Pursuant to California Water Code Sections 100 and 275, all right and privileges under this permit and under any license issued pursuant thereto, including method of diversion, method of use, and quantity of water diverted, are subject to the continuing authority of the State Water Resources Control Board in accordance with law and in the interest of the public welfare to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

The continuing authority of the Board may be exercised by imposing specific requirements over and above those contained in this permit with a view to minimizing waste of water and to meeting the reasonable water requirements of permittee without unreasonable draft on the source. Permittee may be required to implement such programs as (1) reusing or reclaiming the water allocated; (2) using water reclaimed by another entity instead of all or part of the water

allocated; (3) restricting diversions so as to eliminate agricultural tailwater or to reduce return flow; (4) suppressing evapoaration losses from water surfaces; (5) controlling phreatophytic growth; and (6) installing, maintaining, and operating efficient water measuring devices to assure compliance with the quantity limitations of this permit and to determine accurately water use as against reasonable water requirements for the authorized project. No action will be taken pursuant to this paragraph unless the Board determines, after notice to affected parties and opportunity for hearing, that such specific requirements are physically and financially feasible and are appropriate to the particular situation.

3. Paragraph 8 be added to the permit as follows:

The quantity of water diverted under this permit and under any license issued pursuant thereto is subject to modification by the State Water Resources Control Board if, after notice to the permittee and an opportunity for hearing, the Board finds that such modification is necessary to meet water quality objectives in Water Quality Control plans which have been or hereafter may be established or modified pursuant to Division 7 of the Water Code. No action will be taken pursuant to this paragraph unless the Board finds that (1) adequate waste discharge requirements have been prescribed and are in effect with respect to all waste discharges which have any substantial effect upon water quality in the area involved, and (2) the water quality objectives cannot be achieved solely through the control of waste discharges.

Dated: MAY 17 1979

M. A. Campos

Michael A. Campos, Chief
Division of Water Rights

STATE OF CALIFORNIA—THE RESOURCES AGENCY

RONALD REAGAN, Governor

STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS
ROOM 1140, RESOURCES BUILDING
1416 NINTH STREET • SACRAMENTO 95814

ORDER ALLOWING CHANGE IN PLACE OF USE

Application 12367 Permit 7356

WHEREAS the State Water Resources Control Board has found that the change in place of use under Application 12367, Permit 7356, for which petition was submitted on January 19, 1968, will not operate to the injury of any other legal user of water, and

WHEREAS the Board has approved and allowed said change and has directed that an order be issued to describe said place of use in accordance with said petition;

NOW THEREFORE IT IS ORDERED that permission be and the same is hereby granted to change the place of use under said Application 12367, Permit 7356, to a place of use described as follows, to wit:

DOMESTIC AND MUNICIPAL USES AND IRRIGATION OF A NET AREA OF 4,500 ACRES WITHIN AN AREA OF 4,950 ACRES COMPRISING THE SERVICE AREA OF CARMICHAEL IRRIGATION DISTRICT AS SHOWN ON MAP FILED WITH THE STATE WATER RESOURCES CONTROL BOARD ON JANUARY 19, 1968.

Dated: APR 2 3 1968

K. L. Woodward

K. L. Woodward, Chief
Division of Water Rights

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STATE OF CALIFORNIA—THE RESOURCES AGENCY

RONALD REAGAN, Governor

STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

ROOM 1140, RESOURCES BUILDING

1416 NINTH STREET • SACRAMENTO 95814

ORDER APPROVING A NEW DEVELOPMENT SCHEDULE

APPLICATION 12367 PERMIT 7356

THE STATE WATER RESOURCES CONTROL BOARD HAVING DETERMINED THAT GOOD CAUSE HAS BEEN SHOWN FOR EXTENSION OF TIME WITHIN WHICH TO DEVELOP THE PROJECT PROPOSED UNDER PERMIT 7356; AND HAVING DIRECTED THAT THIS ORDER BE ISSUED;

NOW THEREFORE IT IS ORDERED THAT A NEW DEVELOPMENT SCHEDULE BE AND THE SAME IS HEREBY APPROVED AS FOLLOWS:

APPLICATION OF THE WATER TO THE PROPOSED USE SHALL BE COMPLETED ON OR BEFORE DECEMBER 1, 1975

DATED: APR 2 3 1968

K. L. Woodward

K. L. WOODWARD, CHIEF
DIVISION OF WATER RIGHTS

22
10

(6)

STATE OF CALIFORNIA
RESOURCES AGENCY
STATE WATER RIGHTS BOARD

ORDER

APPLICATION 12367 PERMIT 7356 LICENSE

ORDER ALLOWING CHANGE IN POINTS OF DIVERSION AND CHANGE IN PLACE OF USE

WHEREAS the State Water Rights Board has found that the change in points of diversion and place of use under Application 12367, Permit 7356, for which petitions were submitted on March 16, 1964, will not operate to the injury of any other legal user of water, and

WHEREAS the Board has approved and allowed said changes and has directed that an order be issued to describe said points of diversion and place of use in accordance with said petitions;

NOW THEREFORE IT IS ORDERED that permission be and the same is hereby granted to change the points of diversion under said Application 12367, Permit 7356, to point of diversion described as follows, to wit:

A MOVABLE POINT ALONG THE LEFT AND RIGHT BANKS OF THE AMERICAN RIVER BETWEEN LIMITS AS FOLLOWS:

POINT A: AN INTERSECTION WITH THE SOUTHERLY EXTENSION OF SAN JUAN AVENUE, IN CARMICHAEL COLONY, AND THE AMERICAN RIVER, N 76° E 10,700 FEET FROM THE NE CORNER OF SECTION 55, RANCHO DEL PASO, AND BEING WITHIN THE SW¼ OF PROJECTED SECTION 14, T9N, R6E, MDB&M.

POINT B: AN INTERSECTION WITH THE SOUTHEASTERLY EXTENSION OF ARDEN WAY AND THE AMERICAN RIVER SOUTH 64° E 6,300 FEET FROM THE SE CORNER OF SECTION 43, RANCHO DEL PASO, AND BEING WITHIN THE S½ OF PROJECTED SECTION 33, T9N, R6E, MDB&M.

IT IS FURTHER ORDERED that permission be and the same is hereby granted to change the place of use under said Application 12367, Permit 7356, to a place of use described as follows, to wit:

23

34735-957 11-64 1M OSP

STATE OF CALIFORNIA
RESOURCES AGENCY

STATE WATER RIGHTS BOARD

ORDER

APPLICATION 12957 PERMIT 7256 LICENSE

CHANGE ALLOWING CHANGES IN POINTS OF DIVERSION
AND CHANGE IN PLACE OF USE

WHEREAS the State Water Rights Board has found that the change in points of diversion and place of use under Application 12957, Permit 7256, for which petitions were submitted on March 16, 1955, will not operate to the injury of any other lawful user of water, and

WHEREAS the Board has approved and allowed said changes and has directed that an order be issued to describe said points of diversion and place of use in accordance with said petitions;

NOW THEREFORE IT IS ORDERED that permission be and the same is hereby granted to change the points of diversion under said Application 12957, Permit 7256, to points of diversion described as follows, to wit:

A DIVERSION WORKS ALONG THE WEST SIDE OF THE AMERICAN TRACT NUMBER ELEVEN AS FOLLOWS:

POINT A: An intersection with the southerly boundary of San Juan Avenue, in Carmichael Colony, and the American River, N 75° E 10,700 feet from the corner of Section 35, Rancho Del Paso, also being the SW corner of Protective Section 14, T9N, R6E, MDB&M.

POINT B: An intersection with the southerly boundary of the American River South 61° E 6,300 feet from the SE corner of Section 35, Rancho Del Paso, and being within the SW¼ of Protective Section 35, T9N, R6E, MDB&M.

IT IS FURTHER ORDERED that permission be and the same is hereby granted to change the place of use under said Application 12957, Permit 7256, to a place of use described as follows, to wit:

STATE OF CALIFORNIA
RESOURCES AGENCY
STATE WATER RIGHTS BOARD

ORDER

APPLICATION 12367 PERMIT 7356 LICENSE

4,500 ACRES COMPRISING THE SERVICE AREA OF CARMICHAEL IRRIGATION DISTRICT AS SHOWN ON THE MAP FILED WITH STATE WATER RIGHTS BOARD ON DECEMBER 21, 1964.

WITNESS my hand and the seal of the State Water Rights Board of the State of California this 2 nd day of September, 1965

L. K. Hill
L. K. Hill
Executive Officer

24
12

FORM 100

34735-957 11-64 1M OSP

STATE OF CALIFORNIA
RESOURCES AGENCY

STATE WATER RIGHTS BOARD

ORDER

APPLICATION 29267 PERMIT 7296 LICENSE

WHEREAS, FOR GOOD CAUSE APPEARING THEREFOR, THE PETITION OF CHEMICURAL CORPORATION FOR AN EXTENSION OF TIME IN WHICH TO COMPLY WITH TERMS OF PERMIT 7296 (APPLICATION 29267) IS GRANTED AS FOLLOWS:

1. Permittee may have until December 31, 1965 to complete the diversion works and to apply the water to the proposed use.

2. All other terms of Permit 7296 remain in effect.

WITNESS my hand and the seal of the State Water Rights Board this 23rd day of September, 1965.

E. K. Hall
Executive Officer

FORM 100

ORDER

APPLICATION 12367 PERMIT 7356 LICENSE

ORDER GRANTING EXTENSION OF TIME WITHIN WHICH TO COMPLETE CONSTRUCTION AND USE

The State Water Rights Board having determined that good cause has been shown for an extension of time within which to complete construction work and application of water to the proposed use under Permit 7356 , said Board having approved such extension and having directed that this order be issued;

NOW THEREFORE IT IS ORDERED that an extension of time be, and the same is, hereby granted until **December 1, 1965**, within which to complete construction work and application of water to the proposed use under said permit.

Witness my hand and the seal of the State Water Rights Board this 29th day of May, 1963

L. K. Hill
Executive Officer

25
10

67

FORM 100

(4)

36567 2-61 5M SPO

ORDER

APPLICATION 12367 PERMIT 7356 LICENSE

ORDER ALLOWING CHANGE IN CHARACTER OF USE

WHEREAS permittee has established to the satisfaction of the State Water Rights Board that the change in character of use under Application 12367, Permit 7356, for which petition was submitted on September 13, 1961, will not operate to the injury of any other legal user of water and the Board so finds;

NOW THEREFORE IT IS ORDERED that permission be and the same is hereby granted to change the character of use under said Application 12367, Permit 7356, to character of use described as follows, to wit:

IRRIGATION, DOMESTIC AND MUNICIPAL USES

WITNESS my hand and the seal of the State Water Rights Board of the State of California this 21st day of February, 1962

L. K. Hill

L. K. Hill
Executive Officer

26
MM

67

85771 10-58 10M SPO

ORDER

APPLICATION 12367 PERMIT 7356 LICENSE

ORDER GRANTING EXTENSION OF TIME WITHIN
WHICH TO COMPLETE CONSTRUCTION AND USE

The State Water Rights Board having determined that good cause has been shown for an extension of time within which to complete construction work and application of water to the proposed use under Permit 7356 ; said Board having approved such extension and having directed that this order be issued;

NOW THEREFORE IT IS ORDERED that an extension of time be, and the same is hereby granted until December 1, 1962, within which to complete construction work and application of water to the proposed use under said permit.

Witness my hand and the seal of the State Water Rights Board this 7th day of January, 1960

L. K. Hill
L. K. Hill
Executive Officer

27
15

67

FORM 100

(3)

85771 10-58 10M SPO

ORDER

APPLICATION 12367 PERMIT 7356 LICENSE

(4) A POINT S13°15'E, 7420 FEET FROM NE CORNER OF SECTION 55, RANCHO DEL PASO, BEING WITHIN NE¼ OF SE¼ OF PROJECTED SECTION 28, T9N, R6E, MDB&M.

WITNESS my hand and the seal of the State Water Rights Board of the State of California this 29th day of July, 1959

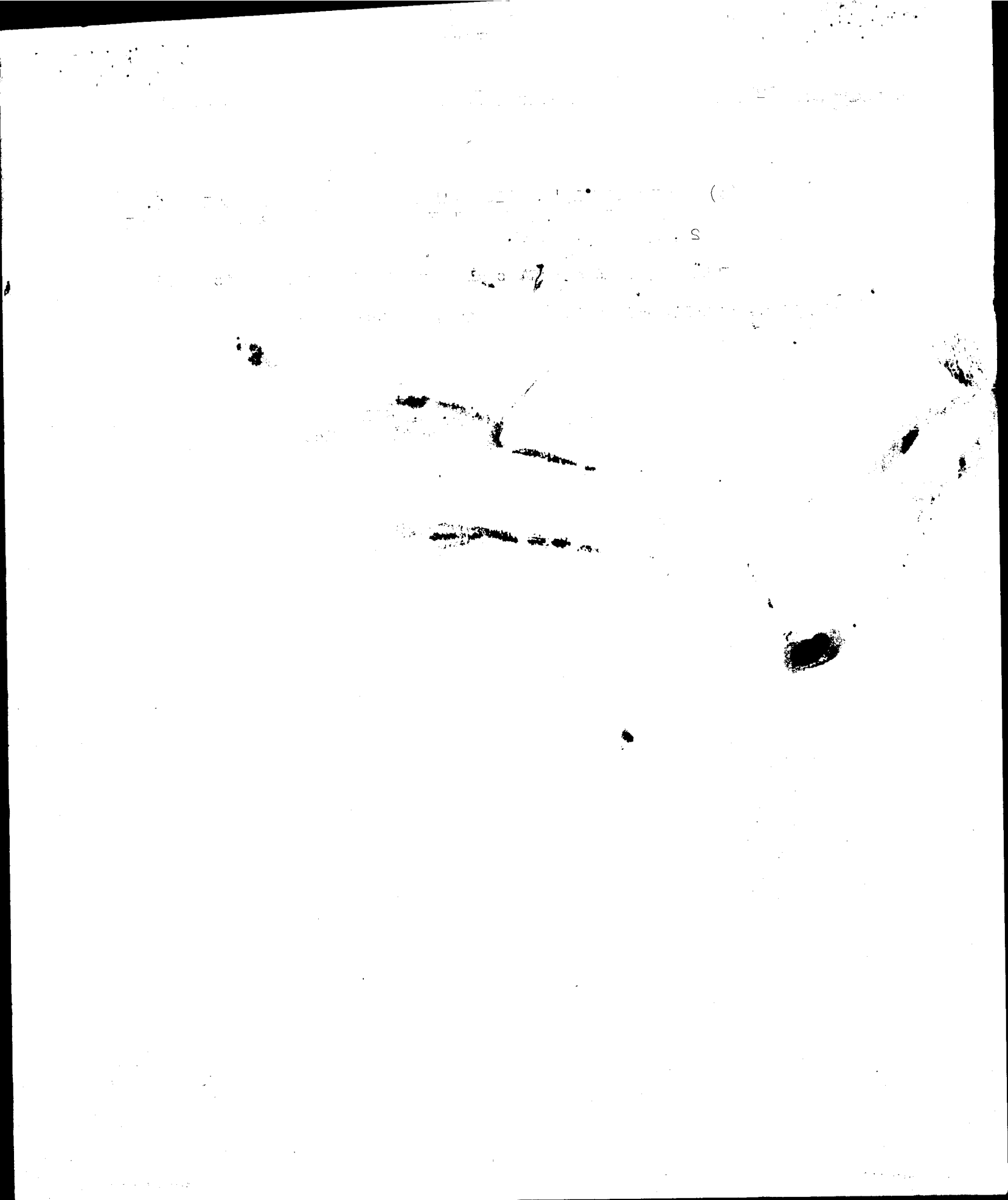
L. K. Hill
Executive Officer

29
56

FORM 100

85771 10-58 10M SPO

43



ORDER

APPLICATION 12367 PERMIT 7356 LICENSE

ORDER GRANTING EXTENSION OF TIME WITHIN WHICH TO COMPLETE CONSTRUCTION AND USE

Good cause having been shown therefor, it is ordered that an extension of time be and the same is hereby granted until December 1, 1959 within which to complete construction work and application of water to the proposed use under said permit.

Witness the hand and seal of the State Water Rights Board this 5th day of November, 1956.

STATE WATER RIGHTS BOARD

By Leslie C. Jopson
Leslie C. Jopson
Chief Engineer

30

C&U

56

APPLICATION 12367 PERMIT 7356 LICENSE

ORDER GRANTING EXTENSION OF TIME WITHIN WHICH

TO COMPLETE CONSTRUCTION AND USE

WHEREAS good cause has been shown wherefore an extension of time should be allowed for the completion of construction work and the application of the water to complete beneficial use under Application 12367, Permit 7356,

NOW THEREFORE IT IS ORDERED that an extension of time be and the same is hereby granted until December 1, 1955, within which to complete construction work and apply the water to complete beneficial use under said application and permit.

WITNESS my hand and the seal of the Department of Public Works of the State of California this 12th day of January, 1953.

A. D. Edmonston
State Engineer

FORM 100

36167 11-50 5M SPO

STATE OF CALIFORNIA—DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES
STATE ENGINEER

STATE OF CALIFORNIA—DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES
STATE ENGINEER

Application No. 12367 Filed March 1, 1948 at 12:17 P M.
(Applicant must not fill in the above blanks)
DEC 15 1948 AMENDED APPLICATION RECEIVED

APPLICATION TO APPROPRIATE UNAPPROPRIATED WATER

This application involves in no way the right to construct a dam

I, Carmichael Irrigation District (over)
Name of applicant

of Rt. 5 Box 6198 Sacramento County of Sacramento
Post office

State of California, do hereby make application for a permit to appropriate the following described unappropriated waters of the State of California, *SUBJECT TO EXISTING RIGHTS:*

Source, Amount, Use and Location of Diversion Works

1. **The source** of the proposed appropriation is American River
Give name of stream, lake, etc., if named; if unnamed state nature of source and that it is unnamed
located in Sacramento County, tributary to Sacramento River

2. **The amount of water** which applicant desires to appropriate under this application is as follows:

(*a*) For diversion to be directly applied to beneficial use without storage 25.0 cubic feet per
1 cubic foot per second equals 40 statute miner's inches or 646,317 gallons per day
second, to be diverted from January 1 to December 31 of each season.
Beginning date each season — Closing date each season

(*b*) For diversion to be stored temporarily and later applied to beneficial use _____ acre-feet
1 acre-foot equals 325,851 gallons
per annum, to be collected between _____ and _____ of each season.
Beginning date each season — Closing date each season

NOTE.—Answer (*a*) or (*b*) or both (*a*) and (*b*) as may be necessary. The amounts stated must be in definite terms of some established unit of measurement. Neither these amounts nor the season may be increased after application is filed.

Amended by order of 2-21-62

3. **The use** to which the water is to be applied is irrigation and domestic
Domestic, irrigation, power, municipal, mining, industrial, recreational
purposes.

Amended by order of 9-2-65

4. **The point of diversion** is to be located at intersection of American River
State bearing and distance or coordinate distances to section or quarter section corner
and Landis Ave. of Carmichael Colony N85°E 7000' from NE Corner sec. 35 Rancho Del Paso
being within the Lot 122a of Carmichael Colony and within the projected NE¼ of NE¼
State 40-acre subdivision of U. S. Government survey or projection thereof
of Section 22, Tp. 9N, R. 6E, MD B & M., in the County of Sacramento

5. **The main conduit** terminates in Tract 141, Carmichael Colony, of Sec. 22, Tp. 9N, R. 6E, MDB&M.
State 40-acre subdivision of U. S. Government survey or projection thereof
Projected

Description of Diversion Works

NOTE.—An application can not be approved for an amount grossly in excess of the estimated capacity of the diversion works.

6. **Intake or Headworks** (fill only those blanks which apply)

(*a*) Diversion will be made by pumping: Capacity of plant 22,500 gallons per minute.
Pumping directly from river – ~~no dam~~ Concrete sump constructed

(*b*) Diversion will be by gravity, the diverting dam being _____ feet in height (stream bed to level of overflow); _____ feet long on top; and constructed of _____
Concrete, earth, brush, etc.

(*c*) The storage dam will be _____ feet in height (stream bed to overflow level); _____ feet long on top; have a freeboard of _____ feet, and be constructed of _____
Concrete, earth, etc.

7. **Storage Reservoir** _____
Name

The storage reservoir will flood lands in _____
Indicate section or subdivisions, preferably 40-acre subdivisions unless shown upon map

It will have a surface area of _____ acres, and a capacity of _____ acre-feet.

In case of insufficient space for answers in form, attach extra sheets at top of page 3 and cross reference.

FORM 1

4/6

8. **Conduit System** (describe main conduits only)

(a) Canal, ditch, flume: Width on top (at water line) _____ feet; width at bottom _____
Cross out two not used

feet; depth of water _____ feet; length _____ feet; grade _____ feet per 1,000 feet; materials

of construction _____
Earth, rock, timber, etc.

under pressure (b) Pipe line: Diameter 30" inches; length 1600 feet; grade _____ feet per

1,000 feet; total fall from intake to outlet _____ feet; kind welded steel
Riveted steel, cement, wood-stave, etc.

NOTE.—If a combination of different sizes or kinds of conduit is to be used, attach extra sheets with complete description, also show location of each clearly on map.

9. **The estimated capacity** of the diversion works proposed is 22,500
State cubic feet per second or gallons per minute

The estimated cost of the diversion works proposed is _____
Give only cost of intake, or headworks, pumps, storage reservoirs and main conduits described herein

Completion Schedule

10. **Construction work** will begin on or before Commenced

Construction work will be completed on or before completed

The water will be completely applied to the proposed use on or before 1960

Description of Proposed Use

Amended by order of 9/2/65

11. **Place of Use.** Within boundaries of Carmichael Irrigation
State 40-acre subdivisions of the public land survey. If area is unsurveyed indicate the location as if lines of the public land

District ~~containing approximately 3300 acres~~
survey were projected. In the case of irrigation use state the number of acres to be irrigated in each 40-acre tract, if space permits. If space does not permit listing of all

as shown on map filed with State Engineer
40-acre tracts, describe area in a general way and show detail upon map. These blanks need not be filled in when municipal use is proposed.

Does applicant own the land whereon use of water will be made? No
Yes or No

Served as an Irrigation District
If applicant does not own land whereon use of water will be made, state what arrangements have been made with owner.

12. **Domestic Use.** Domestic use is proposed as follows: _____
Describe nature of use which may include stock water and the irrigation of domestic

3000 families and domestic gardens.
gardens not exceeding one-half acre with each place of residence. State number and kind of stock to be watered, number of houses and people to be served.

The amount for which application is made was determined by estimated growth of district
Describe basis of quantity needed

see map KLW 12/14/48

13. **Irrigation Use.** The area to be irrigated is ~~3300 acres~~ 3351.83 acres.
State net acreage to be irrigated

The segregation of acreage as to crops is as follows: Rice _____ acres; alfalfa _____ acres;

orchard _____ acres; general crops 3351.83 ~~3300~~ acres; pasture _____ acres.

NOTE.—Care should be taken that the various statements as to acreage are consistent with each other, with the statement in Paragraph 11, and with the map. The irrigation use will in time change almost entirely to domestic use.

The irrigation season will begin about March 15 and end about Oct 15
Beginning date each season — Closing date each season

The land to be irrigated has ~~no other~~ another water right or source of water supply other than that herein applied for. The nature

and amount of the additional supply referred to is Appl. 138 and Appl. 4743

14. **Power Use.** The total fall to be utilized is _____ feet.
Difference between nozzle or draft tube water level and first free water surface above

The maximum amount of water to be used through the penstock is _____ cubic feet per second.

The maximum theoretical horsepower capable of being generated by the works is _____ horsepower.
Second feet × fall ÷ 8.8

The use to which the power is to be applied is _____
For distribution and sale or private use, etc.

3B The nature of the works by means of which power is to be developed is _____
Turbine, Pelton wheel, etc.

The size of the nozzle to be used is _____ inches.

The water will / will not be returned to _____ in _____ of
Name stream — State 40-acre subdivision

Sec. _____, Tp. _____, R. _____, _____ M.

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DO NOT WRITE IN THIS SPACE

ATTACH EXTRA SHEETS HERE

15. **Municipal Use.** This application is made for the purpose of serving _____ (Name city or cities, town or towns. Urban areas only) _____ having a present population of _____

The estimated average daily consumption during the month of maximum use at the end of each five-year period until the full amount applied for is put to beneficial use is as follows:

_____

_____

_____

16. **Mining Use.** The name of the mining property to be served is _____ (Name of claim) _____ and the nature of the mines is _____ (Gold placer, quartz, etc.)

The method of utilizing the water is _____

It is estimated that the ultimate water requirement for this project will be _____ (Cubic feet per second, gallons per minute. State basis of estimate)

The water will / will not be polluted by chemicals or otherwise _____ (Explain nature of pollution, if any)

and it will / will not be returned to _____ (Name stream) in _____ (State 40-acre subdivision) of Sec. _____, Tp. _____, R. _____, _____ M.

17. **Industrial Use.** The nature of the use proposed is _____ (Describe nature and method of use)

_____

The amount for which application is made was determined by _____ (Describe basis of estimate of quantity needed)

_____

18. **Recreational Use.** Water will be used for _____ (Describe nature and method of use)

The amount for which application is made was determined by _____ (Describe basis of estimate of quantity needed)

_____

General

19. Are the maps as required by the Rules and Regulations filed with Application? N/o (Yes or No). If not, state specifically the time required for filing same 6 months

20. Does the applicant own the land at the proposed point of diversion? Yes (Yes or No). If not, state what steps have been taken to secure right of access thereto _____

21. What is the name of the post office most used by those living near the proposed point of diversion?

Sacramento.

22. What are the names and addresses of claimants of water from the source of supply below the proposed point of diversion? _____

_____

_____

_____

_____

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Sacramento Irrigation District

[SIGNATURE OF APPLICANT] By Ray W Sullivan

Secretary-Treasurer

4

APPLICANT MUST NOT FILL IN BLANKS BELOW

PERMIT No. 7356

This is to certify that the application of which the foregoing is a true and correct copy has been considered and is hereby approved SUBJECT TO VESTED RIGHTS and the following limitations and conditions:

1. The amount of water appropriated shall be limited to the amount which can be beneficially used, and shall not exceed twenty-five (25) cubic feet per second to be diverted as follows: (a) from about March 15 to about October 15 of each year for irrigation purposes and (b) throughout the year as required for domestic purposes.

The equivalent of such continuous flow allowance for any thirty day period may be diverted in a shorter time if there be no interference with vested rights.

2. The maximum amount herein stated may be reduced in the license if investigation so warrants.

3. Actual construction work shall begin on or before September 1, 1949 and shall thereafter be prosecuted with reasonable diligence, and if not so commenced and prosecuted this permit may be revoked.

4. Said construction work shall be completed on or before December 1, 1951

5. Complete application of the water to the proposed use shall be made on or before December 1, 1952

6. Progress reports shall be filed promptly by permittee on forms appropriate to the purpose which will be provided annually by the State Engineer until license is issued.

7. All rights and privileges under this permit including method of diversion, method of use and quantity of water diverted are subject to the continuing authority of the Department acting through the State Engineer in accordance with law and in the interest of the public welfare to prevent waste, unreasonable use, unreasonable method of use or unreasonable method of diversion of said water, [redacted]

This permit is issued and permittee takes it subject to the following provisions of the Water Code:

Section 1390. A permit shall be effective for such time as the water actually appropriated under it is used for a useful and beneficial purpose in conformity with this division (of the Water Code), but no longer.

Section 1391. Every permit shall include the enumeration of conditions therein which in substance shall include all of the provisions of this article and the statement that any appropriator of water to whom a permit is issued takes it subject to the conditions therein expressed.

Section 1392. Every permittee, if he accepts a permit, does so under the conditions precedent that no value whatsoever in excess of the actual amount paid to the State therefor shall at any time be assigned to or claimed for any permit granted or issued under the provisions of this division (of the Water Code), or for any rights granted or acquired under the provisions of this division (or the Water Code), in respect to the regulation by any competent public authority of the services or the price of the services to be rendered by any permittee or by the holder of any rights granted or acquired under the provisions of this division (of the Water Code) or in respect to any valuation for purposes of sale to or purchase, whether through condemnation proceedings or otherwise, by the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State, of the rights and property of any permittee, or the possessor of any rights granted, issued, or acquired under the provisions of this division (of the Water Code).

Witness my hand and the seal of the Department of Public Works of the State of California this 22nd *day of* April *19* 49

EDWARD HYATT, *State Engineer*

P 7356

5-28-81 Name chgd to Carmichael Water District

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Appendix C-2 – SGA Groundwater Management Plan

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Sacramento Groundwater Authority Groundwater Management Plan

SGA

December 2008

SACRAMENTO GROUNDWATER AUTHORITY

GROUNDWATER MANAGEMENT PLAN

December 2008

Sacramento Groundwater Authority
Managing Groundwater Resources in Northern Sacramento County

February 6, 2009

Sacramento Groundwater Authority
5620 Birdcage Street, Suite 180
Citrus Heights, CA 95610
Tel: (916) 967-7692
Fax: (916) 967-7322

To Interested Parties and Individuals:

The Sacramento Groundwater Authority (SGA) is pleased to release this revised Groundwater Management Plan (GMP), adopted December 11, 2008 by the SGA Board of Directors. The plan represents a continuation of the GMP initially adopted in 2003 with a goal of maintaining a sustainable groundwater basin in Sacramento County north of the American River. While the initial GMP was effective in helping to achieve this goal, SGA committed to a comprehensive review of its plan every five years to ensure that management objectives and actions remain responsive to developing needs.

SGA and its members are committed to the regional objectives established by the historic Sacramento Water Forum Agreement, and these objectives are incorporated into the plan. Since SGA's formation in 1998, SGA members have taken many steps to preserve the valuable groundwater resources underlying our region.

SGA is grateful for the partnerships with the U.S. Army Corps of Engineers and the California Department of Water Resources that have allowed us to significantly advance our understanding and enhance our management decision-making in the basin. SGA also appreciates the efforts of member agencies and their respective Board representatives that ensure successful management in the basin.

Comments and suggestions to improve our management of the basin are always welcome. To view our most recent Basin Management Report, which biennially reviews GMP actions and results, please visit the SGA web site at www.sgah2o.org.

Sincerely,

John K. Woodling
Executive Director

RESOLUTION NO. 2008-04

A RESOLUTION OF THE SACRAMENTO GROUNDWATER AUTHORITY ADOPTING AN UPDATED GROUNDWATER MANAGEMENT PLAN AND A FINDING OF EXEMPTION FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

The Board of Directors of the Sacramento Groundwater Authority (SGA) does hereby find that:

WHEREAS, the SGA was formed under the Joint Exercise of Powers Act (Chapter 5 of Division 7 of Title 1 of the California Government Code) on August 11, 1998 by the Cities of Citrus Heights, Folsom, and Sacramento, and the County of Sacramento; and

WHEREAS, the SGA was created for the purposes of protecting, preserving, and enhancing, for current and future beneficial uses, the groundwater resources in the North Area Groundwater Basin, in Sacramento County, north of the American River; and

WHEREAS, the SGA has previously adopted a Groundwater Management Plan for the North Area Groundwater Basin on December 11, 2003; and

WHEREAS, the SGA has committed to a five-year comprehensive review interval of its Groundwater Management Plan for the North Area Groundwater Basin; and

WHEREAS, the updated Groundwater Management Plan will further ongoing efforts to protect groundwater and interdependent environmental resources in the North Area Groundwater Basin, will facilitate collection of information to further understand and evaluate additional policies and programs for protection of the groundwater resources in the North Area Groundwater Basin, and will assist in other ongoing efforts to study the feasibility of conjunctive use programs utilizing the North Area Groundwater Basin.

NOW, THEREFORE, be it resolved that:

1. The SGA Board hereby adopts a Groundwater Management Plan for the North Area Groundwater Basin, in Sacramento County, north of the American River, copy attached hereto as Exhibit A.

2. The SGA Board further finds that the adoption of the Groundwater Management Plan is exempt from the requirements of the California Environmental Quality Act pursuant to CEQA Guidelines Section 15262 because the Groundwater Management Plan is a planning study which identifies potential projects, programs, and policies for possible future actions which have not yet been approved, adopted or funded; and Sections 15306, 15307, and 15308 because the Plan consists of basic data and information collection and includes possible actions, subject to future adoption and approval, which would protect natural resources and the environment.

PASSED AND ADOPTED by the Board of Directors of the Sacramento Groundwater Authority, on December 11, 2008.

By: _____
Chairperson, Sacramento Groundwater Authority

Attest: _____
Nancy Marrier, Finance and Administrative Services Officer/Clerk

TABLE OF CONTENTS

Appendices

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

AB	Assembly Bill
Aerojet	Aerojet-General Corporation facility
AF	Acre-feet
AF/year	Acre-feet per year
AFRPA	Air Force Real Property Agency
ARBCUP	American River Basin Regional Conjunctive Use Program
ARWRI	American River Water Resources Investigation
BMO	Basin Management Objective
Cal Am	California American Water
CALFED	CALFED Bay-Delta Program
CAS	California Aquifer Susceptibility
cfs	Cubic feet per second
CHWD	Citrus Heights Water District
CMP	Sacramento Coordinated Water Quality Monitoring Program
COC	Contaminants of concern
Cooperating Agencies	American River Basin Cooperating Agencies
CSUS	California State University, Sacramento
CTP	Cooperative Transmission Pipeline
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CVRWQCB	Central Valley Regional Water Quality Control Board
CWC	California Water Code
CWD	Carmichael Water District
DCA	1,2-dichloroethane
DCE	cis-1,2-dichloroethene
Delta	Sacramento/San Joaquin River Delta
DHS	Department of Health Services (now known as the Department of Public Health)
DPH	Department of Public Health (formerly known as the Department of Health Services)
DPMWD	Del Paso Manor Water District

ABBREVIATIONS AND ACRONYMS (Continued)

DMS	Data Management System
DWR	California Department of Water Resources
DWSAP Program	Drinking Water Source Assessment and Protection Program
EMD	Sacramento County Environmental Management Department
EWA	Environmental Water Account
Folsom	City of Folsom
FOWD	Fair Oaks Water District
GMP	Groundwater Management Plan
GSWC	Golden State Water Company
gpm	Gallons per minute
Groundwater Forum	Central Sacramento County Groundwater Forum
IGSM	North American River and Sacramento County Combined Integrated Groundwater and Surface Water Model
IRCTS	Inactive Rancho Cordova Test Site
ISI	Integrated Storage Investigation
JPA	Joint Powers Authority
Lincoln	City of Lincoln
LSCE	Luhdorff & Scalmanini Consulting Engineers
LUST	Leaking Underground Storage Tank
M&I	Municipal and industrial
Mather AFB	Mather Air Force Base
McClellan AFB	McClellan Air Force Base
MCL	Maximum Contaminant Level
MWH	Montgomery Watson Harza
µg/L	micrograms per liter
µmhos/cm	micromhos per centimeter
mg/L	Millgrams per liter
mgd	Million gallons per day
msl	Mean sea level
NAWQA	National Water Quality Assessment

ABBREVIATIONS AND ACRONYMS (Continued)

NCMWC	Natomas Central Mutual Water Company
NDMA	n-nitrosodimethylamine
NGS	National Geodetic Survey
North Area Basin	Sacramento County Portion of the North American Subbasin
NTP	Northridge Transmission Pipeline
OVWC	Orange Vale Water Company
PBE	Physical Barrier Effectiveness
PCAs	Potential Contaminating Activities
PCE	Tetrachloroethene
PCWA	Placer County Water Agency
PL	Public Law
POU	Place of Use (e.g., American River Water Rights)
PSA	WFA Purveyor Specific Agreement
Reclamation	U.S. Bureau of Reclamation
RLECWD	Rio Linda/Elverta Community Water District
Roseville	City of Roseville
RWA	Regional Water Authority
RWMP	Regional Water Master Plan
Sac Regional	Sacramento Regional Wastewater Treatment Plant
Sac Suburban	Sacramento Suburban Water District
SACOG	Sacramento Area Council of Governments
Sacramento	City of Sacramento
SAFCA	Sacramento Area Flood Control Agency
SCGA	Sacramento Central Groundwater Authority
SCWA	Sacramento County Water Agency
SGA	Sacramento Groundwater Authority
SJWD	San Juan Water District
SMWA	Sacramento Metropolitan Water Authority
SOP	Standard Operating Procedure
South Sutter	South Sutter Water District

ABBREVIATIONS AND ACRONYMS (Continued)

SRCSD	Sacramento Regional County Sanitation District
SWRCB	State Water Resources Control Board
TCE	Trichloroethene
TDS	Total dissolved solids
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
Water Forum	Sacramento Area Water Forum
WEP	Water Efficiency Program
WFA	Water Forum Agreement
WTP	Water treatment plant

Section 1 INTRODUCTION

The Sacramento Groundwater Authority (SGA) is a joint powers authority (JPA) created to manage the Sacramento region's North Area Groundwater Basin (North Area Basin). The SGA's formation in 1998[1] resulted from a coordinated effort by the Sacramento Metropolitan Water Authority (SMWA) and the Sacramento Area Water Forum (Water Forum) to establish an appropriate management entity for the basin. The SGA is recognized as an essential element to implement a comprehensive solution for preserving the lower American River and ensuring a reliable water supply through the year 2030.

The SGA draws its authority from a joint powers agreement signed by the cities of Citrus Heights, Folsom, and Sacramento and the County of Sacramento to exercise their common police powers to manage the underlying groundwater basin. In turn, these agencies chose to manage the basin in a cooperative fashion by allowing representatives of the 14 local water purveyors and representatives for agricultural and self-supplied pumpers to serve as the Board of Directors of the SGA[2]. The joint powers agreement is included as **Appendix A** of the GMP.

At the core of the SGA's management responsibility is a commitment to not exceed the average annual sustainable yield of the basin, which was estimated to be 131,000 acre-feet[3] in the Water Forum Agreement (WFA)[4]. To accomplish this objective and to provide a safe, reliable water supply for the rapidly growing northern Sacramento County, this groundwater management plan (GMP) provides a framework for the many actions needed in the North Area Basin. This GMP represents a renewed commitment to groundwater management in that it is a comprehensive update to the initial SGA GMP first adopted in December 2003[5]. As this GMP is a comprehensive update of 2003 SGA GMP, many of the key plan actions have changed to reflect recent conditions. A complete listing of the original 2003 action items and their status is included in **Appendix B**. The SGA's boundary, the area covered by this GMP, includes only the portion of Sacramento County north of the American River (**Figure 1**).

[1] The SGA was originally formed in 1998 as the Sacramento North Area Groundwater Management Authority. In 2002, it was renamed the Sacramento Groundwater Authority.

[2] SGA Board members include representatives of California American Water, Carmichael Water District, Citrus Heights Water District, City of Folsom, City of Sacramento, County of Sacramento, Del Paso Manor Water District, Fair Oaks Water District, Golden State Water Company, Natomas Central Mutual Water Company, Orange Vale Water Company, Rio Linda/Elverta Community Water District, Sacramento Suburban Water District, San Juan Water District, and individual representatives from agriculture and self-supplied groundwater users (principally parks and recreation districts).

[3] This value was estimated based on long term average water use, supply conditions, and facilities in the basin at the time of the WFA. This value was not intended to be a fixed value that could not be modified as conditions and assumptions changed in the basin. Examples of changed conditions include new or improved water conveyance, treatment, and storage facilities or changes in water supply contracts.

[4] The WFA is available online at http://www.waterforum.org or contact the Water Forum office at (916) 808-1999.

[5] The 2003 version of the SGA GMP is available online at http://www.sgah2o.org.

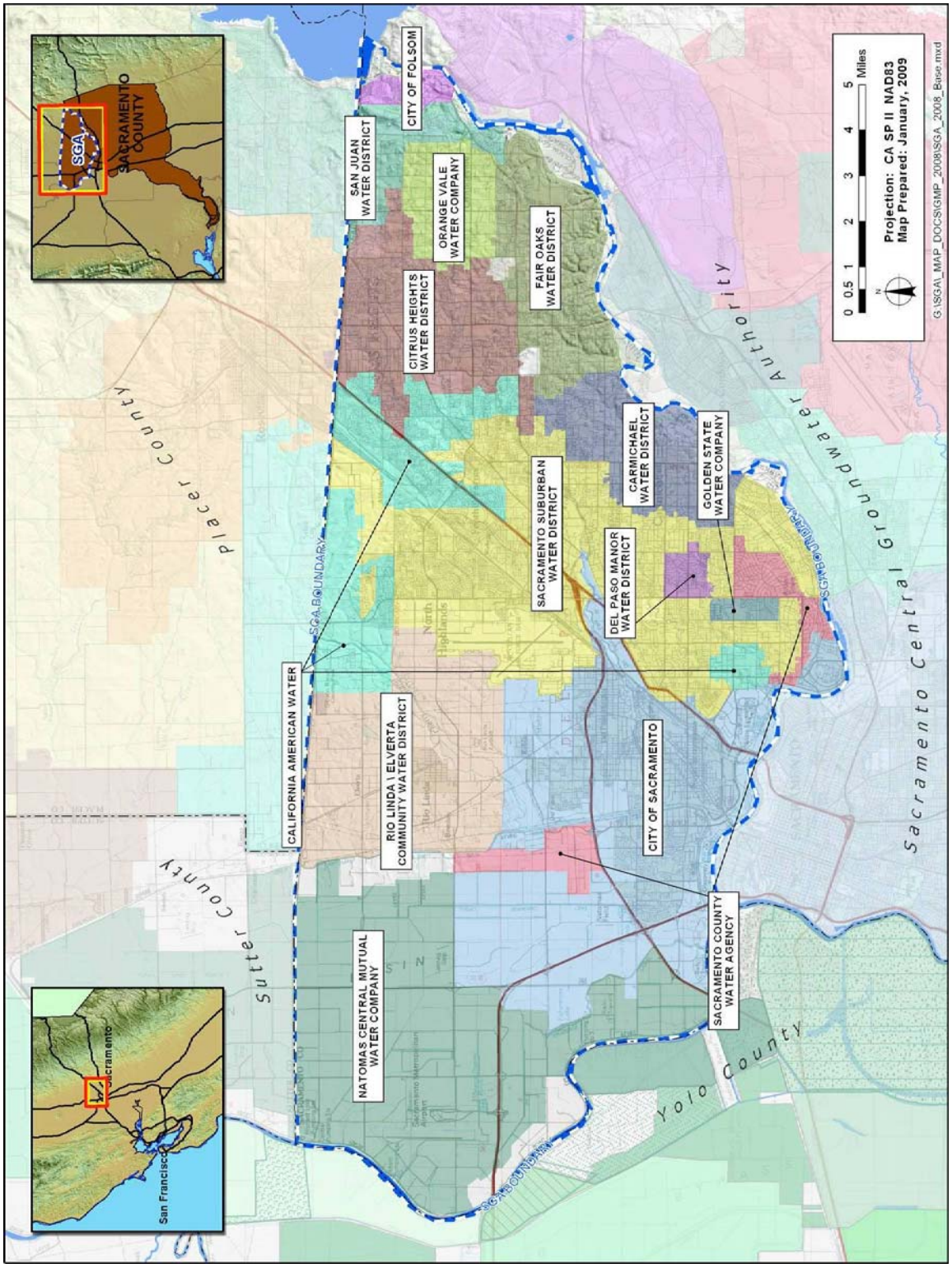

Figure 1. Boundary of the SGA North Area Basin Covered by this GMP

1.1 OTHER REGIONAL MANAGEMENT EFFORTS

Over the past several decades, the water supplies of the region have been impacted by:

- Prolonged drought and prolonged wet periods.
- Increasing pressure to dedicate surface water for environmental purposes.
- Declining groundwater levels.
- Impacts and growing threats to surface water quality and groundwater quality.

All the while, demand for water in the region has continued to grow.

To address these problems, water purveyors in the region have invested substantial time and resources in a progression of regional planning efforts. In particular, the planning efforts most directly related to the SGA's efforts include:

- The SMWA.
- The Water Forum.
- The American River Basin Cooperating Agencies (Cooperating Agencies).
- The Regional Water Authority (RWA).

Each of these regional planning efforts is discussed further below.

1.1.1 SMWA

Formed in 1990, the SMWA was a combined JPA and non-profit public benefit association of 17 public water suppliers within Sacramento County[6]. A primary objective of the SMWA was to facilitate actions needed to restore and maintain the quantity and the quality of the groundwater in the area. In support of that objective, the SMWA was a vital participant in the development of the WFA (see below). The SMWA also developed and adopted a GMP as authorized by Assembly Bill (AB) 3030 of 1992 (commonly referred to as AB 3030 Plans, see the California Water Code (CWC) § 10750 *et seq.*), but the plan was not fully implemented. In 2001, the SMWA was superceded by the RWA (see description below).

1.1.2 Water Forum

Begun in 1993, the Water Forum is a group comprised of business and agricultural leaders, citizens groups, environmentalists, water managers, and local governments in the Sacramento Region that joined together to fulfill two co-equal objectives:

- To provide a reliable and safe water supply for the region's economic health and planned development through the year 2030.
- To preserve the fishery, wildlife, recreational, and aesthetic values of the lower American River.

In April 2000, Water Forum members approved the WFA, which consists of seven integrated actions necessary to accomplish these co-equal objectives. The WFA prescribes a local conjunctive use program for Folsom Reservoir, the lower American River, and the adjacent

[6] The SMWA members were located both north and south of the American River and included: City of Folsom, City of Galt, Arden Cordova Water Service Company, Arcade Water District, Carmichael Water District, Citrus Heights Water District, Clay Water District, Del Paso Manor Water District, Elk Grove Water Works, Fair Oaks Water District, Galt Irrigation District, Northridge Water District, Omochumne-Hartnell Water District, Orange Vale Water Company, Rancho Murieta Community Services District, Rio Linda/Elverta Community Water District, and San Juan Water District (note that some purveyor names have been changed and/or undergone consolidation since the formation of the SMWA).

groundwater basins. To help facilitate this conjunctive use program, one of the seven WFA elements is groundwater management. This element divides Sacramento County groundwater basins into three subunits, the North, Central, and South areas, and recommends that the SGA (then known as the Sacramento North Area Groundwater Management Authority) serve as the governing body for the North Area Basin. The groundwater element also estimated and recommended an average annual sustainable groundwater yield for the North Area Basin of 131,000 acre-feet per year (AF/year). The Water Forum continues to function with a dedicated staff in the Water Forum Successor Effort program to coordinate with other agencies and groups, such as the SGA, to ensure that the elements of the WFA are carried out.

1.1.3 Cooperating Agencies

The Cooperating Agencies were an ad-hoc group of local water purveyors in northern Sacramento County and southern Placer County[7]. Each member of the Cooperating Agencies was a signatory of the WFA. The Cooperating Agencies formed to complete a Regional Water Master Plan (RWMP), the objective of which was to identify the facilities and operational agreements necessary to implement the WFA for the northern Sacramento/Placer area. This plan identified opportunities to improve the availability of water supplies through additional conjunctive use of surface water and groundwater in the region. Expanded conjunctive use operations are a key component to assuring a sustainable groundwater resource within the SGA area. Upon completion of the RWMP in 2003, the Cooperating Agencies dissolved as an organization. Many of the functions of the Cooperating Agencies were then assumed by the RWA.

1.1.4 RWA

The RWA superceded the SMWA in 2001 through a JPA to serve and represent the regional water supply interests and assist members in protecting and enhancing the reliability, availability, affordability, and quality of water resources. One of the principal activities of the RWA is facilitating implementation of the conjunctive use program prescribed by the WFA and the RWMP. The RWA currently has nineteen members and three associate members[8] including each of the Cooperating Agencies except the Sacramento County Water Agency (SCWA). Nearly all members are signatory to the WFA.

As with the Cooperating Agencies, the success of implementing additional conjunctive use opportunities will be an important factor in the SGA's ability to ensure a reliable groundwater supply within North Area Basin. The activities of the RWA and SGA are highly coordinated as they share a common office and staff.

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[7] The "Cooperating Agencies" included water purveyors in both Sacramento County and Placer County: California American Water, Carmichael Water District, Citrus Heights Water District, City of Folsom, City of Roseville, City of Sacramento, Del Paso Manor Water District, Fair Oaks Water District, Placer County Water Agency, Rio Linda/Elverta Community Water District, Sacramento County Water Agency, Sacramento Suburban Water District, and San Juan Water District.

[8] The membership of the RWA encompasses water users in Sacramento, Placer, El Dorado, and Yolo counties including: California American Water, Carmichael Water District, Citrus Heights Water District, City of Folsom, City of Lincoln, City of Roseville, City of Sacramento, City of West Sacramento, Del Paso Manor Water District, El Dorado Irrigation District, Fair Oaks Water District, Fruitridge Vista Water Company, Golden State Water Company, Orange Vale Water Company, Placer County Water Agency, Rancho Murieta Community Services District, Rio Linda/Elverta Community Water District, Sacramento Suburban Water District, and San Juan Water District.. Associate members do not directly retail drinking water and do not vote in RWA matters. Associate members include: El Dorado County Water Agency, Sacramento Municipal Utility District, and Sacramento Regional County Sanitation District.

1.1.5 Other Ongoing Groundwater Management-Related Activities within the SGA Area

In addition to the on-going water supply and conservation programs being implemented by individual SGA members, there are several strictly groundwater-related activities taking place that affect the North Area Basin. The activities closely related to the SGA's groundwater management efforts include, but are not limited to, the following:

- Groundwater contamination investigation and remediation activities at the former McClellan Air Force Base (McClellan AFB).
- Groundwater contamination investigation and remediation activities at the Aerojet-General Corporation facility (Aerojet).
- Monitoring of groundwater levels and quality by the California Department of Water Resources (DWR) and Sacramento County.
- Monitoring of groundwater quality by the U.S. Geological Survey (USGS) as part of its National Water Quality Assessment (NAWQA) Program.
- Monitoring of site investigations and remediation efforts at known leaking underground storage tanks (LUSTs) coordinated by the Sacramento County Environmental Management Department (EMD) and the Central Valley Regional Water Quality Control Board (CVRWQCB).
- Natomas Central Mutual Water Company (NCMWC) is currently updating its GMP for its service area in Sacramento and Sutter counties (see **Figure 1**). The plan will characterize the availability of groundwater for use during periods in which surface water supplies are insufficient to meet demands.

Coordination between these efforts and the SGA will be discussed in more detail later in this GMP.

1.2 PURPOSE OF THE SGA GMP

The groundwater management goal of the SGA is to maintain a sustainable, high-quality groundwater basin underlying Sacramento County north of the American River consistent with the objectives of the WFA. To meet that goal, the purpose of this GMP is to serve as the framework for coordinating the many independent management activities into a cohesive set of management objectives and related actions for implementation by the SGA.

1.3 AUTHORITY TO PREPARE AND IMPLEMENT A GMP

The authority of the SGA to manage the North Area Basin is provided through the joint powers agreement (see **Appendix A**). The SGA Board of Directors elected to prepare this GMP as one of the tools necessary to effectively manage the basin. The SGA is preparing this GMP consistent with the provisions of CWC § 10750 *et seq.* as amended January 1, 2003.

1.4 GMP COMPONENTS

The SGA GMP includes the following required and recommended components:

- CWC § 10750 *et seq.* (seven mandatory components). Recent amendments to the CWC § 10750 *et seq.* require GMPs to include several components to be eligible for the award of funds administered by DWR for the construction of groundwater projects or groundwater quality projects[9].

[9] These amendments to the CWC were included in Senate Bill 1938, effective January 1, 2003.

- DWR Bulletin 118 (2003) components (seven recommended components).
- CWC § 10750 *et seq.* (12 voluntary components). CWC § 10750 *et seq.* includes 12 specific technical issues that could be addressed in GMPs to manage the basin optimally and protect against adverse conditions.

Table 1 lists the section(s) in which each component is addressed.

Table 1. Location of SGA GMP Components

Description	Section(s)
A. CWC § 10750 *et seq.*, Mandatory Components	
1. Documentation of public involvement statement.	3.4.1
2. Basin Management Objectives (BMOs).	3.2
3. Monitoring and management of groundwater elevations, groundwater quality, inelastic land surface subsidence, and changes in surface water flows and quality that directly affect groundwater levels or quality or are caused by pumping.	3.5
4. Plan to involve other agencies located within groundwater basin.	3.4.2
5. Adoption of monitoring protocols by basin stakeholders.	3.5.5
6. Map of groundwater basin showing area of agency subject to GMP, other local agency boundaries, and groundwater basin boundary as defined in DWR Bulletin 118.	Figure 2
7. For agencies not overlying groundwater basins, prepare GMP using appropriate geologic and hydrogeologic principles.	
B. DWR's Suggested Components	
1. Manage with guidance of advisory committee.	3.4.3
2. Describe area to be managed under GMP.	Section 2
3. Create link between BMOs and goals and actions of GMP.	Figure 9
4. Describe GMP monitoring program.	3.5
5. Describe integrated water management planning efforts.	3.8.1
6. Report on implementation of GMP.	3.4.1
7. Evaluate GMP periodically.	3.4.3
C. CWC § 10750 *et seq.*, Voluntary Components	
1. Control of saline water intrusion.	3.7.6
2. Identification and management of wellhead protection areas and recharge areas.	3.7.3
3. Regulation of the migration of contaminated groundwater.	3.7.5
4. Administration of well abandonment and well destruction program.	3.7.2
5. Mitigation of conditions of overdraft.	3.8.1
6. Replenishment of groundwater extracted by water producers.	3.8
7. Monitoring of groundwater levels and storage.	3.5.1
8. Facilitating conjunctive use operations.	3.8
9. Identification of well construction policies.	3.7.1
10. Construction and operation by local agency of groundwater contamination cleanup, recharge, storage, conservation, water recycling, and extraction projects.	1.1 an 3.8
11. Development of relationships with state and federal regulatory agencies.	3.8.1 Action 7
12. Review of land use plans and coordination with land use planning agencies to assess activities that create reasonable risk of groundwater contamination.	3.7.3

Section 2 WATER RESOURCES SETTING

Locations of water purveyors within the North Area Basin are shown in **Figure 1**. Within the SGA boundaries, water purveyors use both surface water and groundwater. Some rely exclusively on either groundwater or surface water to meet their needs; others use a combination of surface water and groundwater. The groundwater and surface water supplies available to the region are summarized below.

2.1 GROUNDWATER SUPPLIES

This section provides a regional description of the geologic and hydrogeologic conditions of the underlying groundwater basin. A map showing the area of the groundwater basin, as defined by DWR Bulletin 118 (2003), and the SGA boundaries within this basin is presented in **Figure 2.**

The North American Subbasin is defined by DWR as the area bounded on the west by the Feather and Sacramento rivers, on the north by the Bear River, on the south by the American River, and on the east by the Sierra Nevada (DWR, 2003). DWR Bulletin 118 (2003) provides additional information about the North American Subbasin on the agency's web site[10] including:

- Surface Area: 548 square miles.
- The eastern basin boundary is a north-south line extending from the Bear River south to Folsom Reservoir. This represents the approximate edge of the alluvial basin where little or no groundwater flows into or out of the groundwater basin from the Sierra Nevada.
- The western portion of the subbasin consists of nearly flat flood basin deposits from the Bear, Feather, Sacramento and American rivers, and several small east side tributaries.

The SGA area is located in the southern portion of the North American Subbasin extending as far north as the Sacramento-Placer County line.

2.1.1 Overview of the Hydrogeologic Setting of the SGA Area

The groundwater resources of Sacramento County have been extensively investigated and reported in DWR Bulletin 118-3, Evaluation of Ground Water Resources: Sacramento County (DWR, 1974). DWR Bulletin 118-3 identifies and describes the various geologic formations that constitute the water-bearing deposits underlying Sacramento County. These formations include an upper, unconfined aquifer system consisting of the Riverbank (formerly known as Victor), and Turlock Lake (formerly known as Fair Oaks), Laguna, and a lower, semi-confined aquifer system consisting primarily of the Mehrten Formation. These formations are shown on **Figure 3** and are typically composed of lenses of inter-bedded sand, silt, and clay, interlaced with coarse-grained stream channel deposits. **Figure 3** illustrates that these deposits form a wedge that generally thickens from east to west.

[10] At: http://www.dpla2.water.ca.gov/publications/groundwater/bulletin118/basins/5-21.64_North_American.pdf.

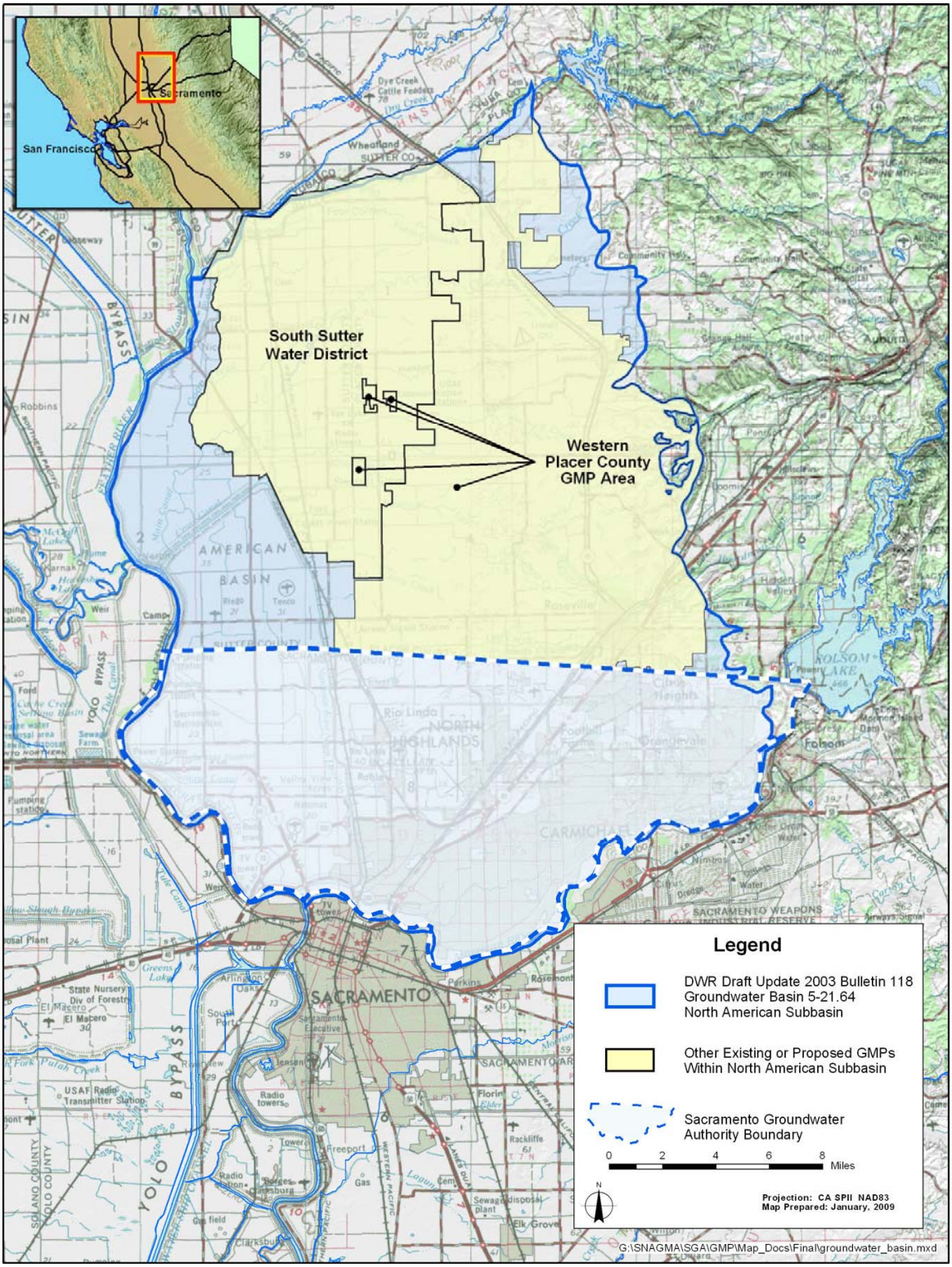

Figure 2. Location of North American Groundwater Subbasin

As described within DWR Bulletin 118-3, these formations form a maximum thickness of about 2,000 feet under the Sacramento River. The primary water-bearing formations (Laguna and Mehrten) are overlain by much younger basin, natural levee/channel, and alluvium deposits (CDMG, 1981). The Ione and Valley Springs formations exist beneath the Mehrten Formation and are thought to be a transitional aquifer system that contains a mixture of saline and fresh groundwater. There are no regionally-extensive fine grained layers in the subsurface to create a regionally confined aquifer such as is observed in the San Joaquin Valley from the Corcoran Clay layer.

2.1.1.1 Water –Bearing Formation Characteristic within the SGA Area

Groundwater occurs in unconfined to semi-confined states throughout the North American Subbasin. Semi-confined conditions occur in localized areas; the degree of confinement typically increases with depth below the ground surface. Groundwater in the Riverbank, Turlock Lake, and Laguna Formations (the "upper aquifer") is typically unconfined. However, due to the heterogeneous nature of the alluvial depositional system, semi-confined conditions can be encountered at shallow depths in the aquifer. The deeper Mehrten Formation (the "lower aquifer") typically exhibits semi-confined conditions. Provided below is a more detailed description of the water-bearing formation characteristics within the SGA area.

Turlock Lake and Riverbank Formations – Within the SGA area, these Formations, designated Qtl and Qr on **Figure 3**, overlie the Laguna Formation and have been laid down along the American River downstream of Folsom Dam. These Formations are relatively young (Pleistocene in age) and largely unconsolidated. Formation sediments are primarily derived from decomposed granite and metamorphic rock of the western Sierra (CDWR, 1974).

Laguna Formation – The Laguna Formation, designated as Tl on **Figure 3**, is late Pliocene to early Pleistocene in age and is non-volcanic, comprised of heterogeneous deposits of silt, clay, sands and fine gravels that vary from tan to brown in color. The lower portion of the Laguna Formation often consists of a gradational contact with the Mehrten Formation that has been named the Laguna-Mehrten Transitional Zone (Schlemon, 1967). This transitional zone consists of non-volcanic, micaceous Laguna sediments that are interbedded with volcanic Mehrten sediments, sometimes referred to as reworked Mehrten deposits. The Laguna formation will yield moderate quantities of water to wells screened in fine grained deposits with wells screened in well sorted Laguna granitic sands producing higher yields (DWR, 1974).

Mehrten Formation – The Mehrten Formation designated as Tm on **Figure 3**, is very different than the overlying Laguna Formation. The Mehrten Formation's gray and black andesitic sands, interbedded with blue to brown clays and gray tuff-breccia sand, are all volcanic in origin in contrast with the tan to brown color non-volcanic sediments of the Laguna Formation. The Mehrten Formation was derived from reworked andesitic volcanic mudflow deposits that are late Miocene to early Pliocene in age. The Mehrten formation can be divided into two different units: the upper sedimentary unit is composed of well sorted black andesitic sands, sometimes with cobbles and boulders, (reported by well drillers as "black sands") and interbedded blue to brown clays; the lower consolidated unit is a hard and very dense gray tuff-breccia (reported by well drillers as "lava"). The Mehrten units range in thickness from 200 to 1,200 feet and form a semi-confined aquifer, which dips toward the west at approximately 1 to 2 degrees. The most resistant beds in the Mehrten are andesite mudflow breccias that form steep cliffs where they are exposed along the lower American River north of Lake Natoma. The Mehrten formation is a major aquifer and provides copious quantities of groundwater to many wells within the North

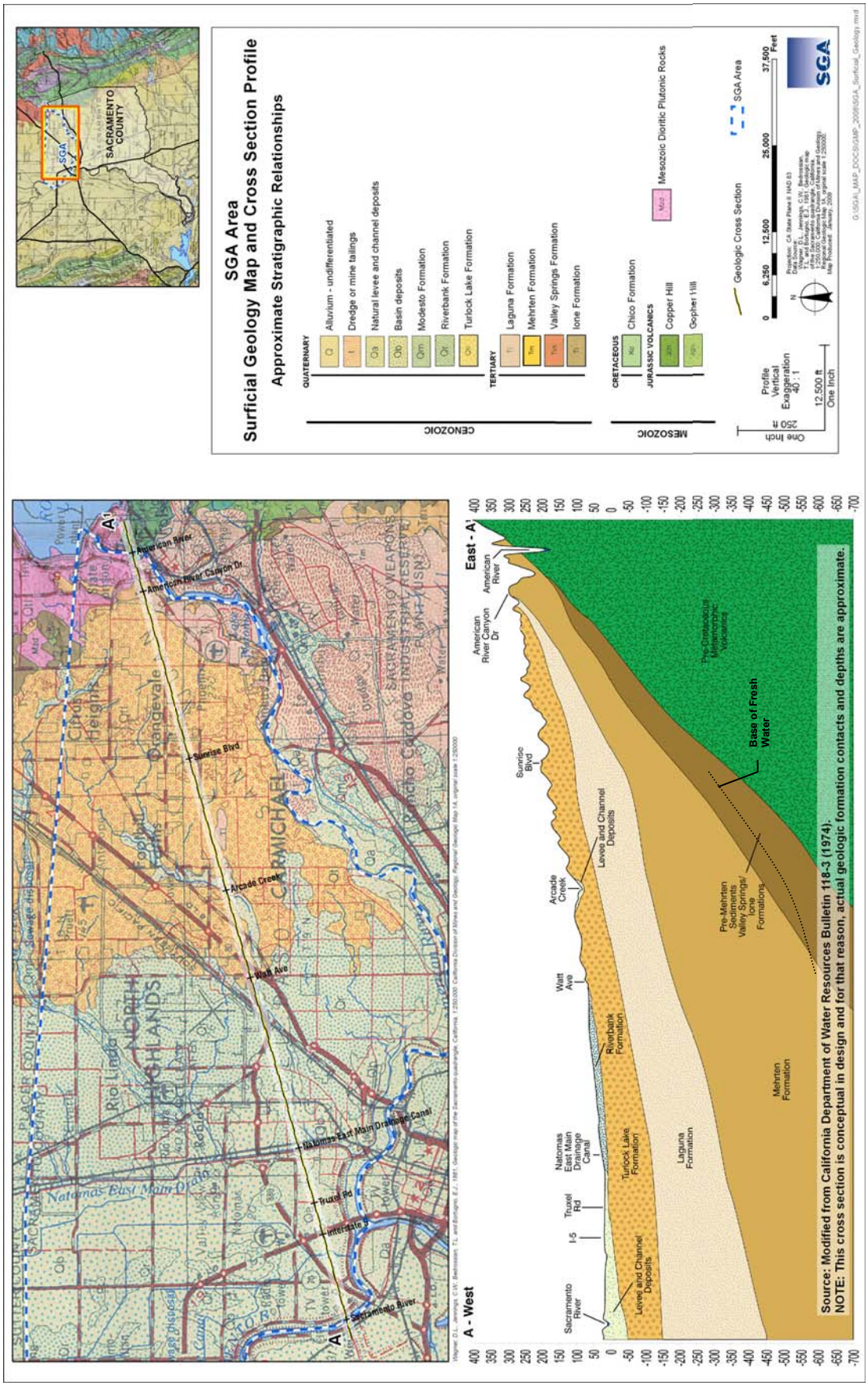

Figure 3. Regional Stratigraphic Column

Area Basin. The volcanic sands and gravels yield large quantities of water to wells, while the clays yield little water and the tuff-breccias yield low quantities (DWR, 1974).

2.1.1.2 Groundwater Quality

The water quality in the upper aquifer system is regarded as superior to that of the lower aquifer system. The upper aquifer is preferred over the lower aquifer principally because the lower aquifer system (specifically the Mehrten formation) contains higher concentrations of iron and manganese. Water from the upper aquifer generally does not require treatment (other than disinfection). The lower aquifer system is prone to having higher concentrations of total dissolved solids (TDS, a measure of salinity) than the upper aquifer. In general, at depths of approximately 1,200 feet or greater (actual depth varies throughout the basin), the TDS concentration exceeds 2,000 milligrams per liter (mg/L). At such concentrations, the groundwater is considered to be non-potable.

This description of water quality is based on data used to populate the region's Data Management System (DMS) and on contaminant information tracked by the CVRWQCB and the Sacramento County EMD. Available groundwater quality data from monitoring between 1991 and 2006 for approximately 260 public supply wells are currently in the DMS. Groundwater in the North Area Basin is highly suitable as a source of public drinking water supply from a general chemistry perspective. Specifically, the primary constituents referred to for "general chemistry" include total dissolved solids (TDS), iron, manganese, arsenic, and nitrate. The general chemistry analysis below is based on required monitoring of public supply wells during 2005 and 2006.

Despite the very good general chemistry of groundwater in the North Area Basin, there are several contaminant plumes and many point sources of contamination (e.g., leaking underground storage tanks) that local water managers must consider when managing the basin to ensure a sustainable water supply. These water quality data are discussed further below.

Total Dissolved Solids. Based on a sample size of 107 supply wells, TDS results in most wells are within the secondary drinking water standard[11] of 500 milligrams per liter (mg/L). TDS ranges from 100 mg/L to 840 mg/L, with only three wells exceeding the 500 mg/L standard. The average TDS of these samples is 266 mg/L.

Iron. Iron has a secondary MCL of 300 micrograms per liter (μg/L). This is a secondary standard, because, at elevated concentrations, iron tends to have a bad taste and can precipitate as a red-brown solid on plumbing fixtures. In general, dissolved iron is not a problem in SGA-area public supply wells. Of the 122 wells sampled from 2005 through 2006, 80 wells were below the reporting limit of 10 μg/L. Of the 42 wells with detections, 18 wells had concentrations exceeding the secondary MCL.

Manganese. Manganese has a secondary MCL of 50 μg/L. Elevated concentrations of manganese can have a bad taste and can precipitate as a black solid on plumbing fixtures. In general, dissolved manganese is not a significant issue in SGA-area public supply wells. Of the 119 wells sampled from 2005 through 2006, 89 wells were below the reporting limit of 10 μg/L g/L. Of the 30 wells with detections, 14 wells had concentrations exceeding the secondary MCL.

[11] For many of the more commonly occurring constituents found in water, primary or secondary standards are established by Federal or State agencies for drinking water. Primary standards are established to reduce health risks to consumers, while secondary deal mainly with taste and aesthetics concerns.

Arsenic. As of January 26, 2006, the federal drinking water standard for arsenic was lowered to 10 micrograms per liter (µg/L). In general, elevated arsenic in the northern Sacramento region is not the significant problem it is in many parts of the southern San Joaquin Valley. Of the 120 distinct arsenic samples from wells during the period from 2005 through 2006, 8 were below the analytical detection level of 2 µg/L. Of the remaining wells with values above the detection level, the average was only 3.7 µg/L, with two wells exceeding the new federal MCL.

Nitrate. The primary MCL for nitrate (as NO3) in drinking water is 45 mg/L. Tests have shown that nitrate levels in public supply wells are generally not of concern within the North Area Basin. Of the 185 samples from public supply wells tested during 2005 and 2006, the average concentration was 9.3 mg/L with a maximum observed concentration of 33 mg/L.

Known "Principal" Plumes. Principal groundwater contaminant plumes within or near the SGA area are known to exist from source areas identified as the former McClellan AFB, the former Mather Air Force Base (Mather AFB), Aerojet-General Corp, and the Inactive Rancho Cordova Test Site (IRCTS) are shown on **Figure 4**.

Although other localized plumes exist within the SGA area, the principal plumes shown in **Figure 4** are the largest and have the greatest current impact on existing groundwater use. The aerial extent of these plumes generally represents the composite California drinking water MCL for one or more of the primary contaminants of concern (COC).

For the McClellan AFB plumes, the COCs are trichloroethene (TCE), tetrachloroethene (PCE), cis-1,2-ichloroethene (DCE), and 1,2-dichloroethane (DCA). For the Mather AFB plumes, the primary COCs are TCE, PCE, and carbon tetrachloride. For the Aerojet and IRCTS plumes, the primary COCs are TCE, n-nitrosodimethylamine (NDMA), and perchlorate..

Point Source Contamination. There are typically about 200 active leaking underground storage tank (LUST) sites within the SGA area at any given time. A precise number is difficult to track as new sites are continually being identified while some sites are concluding cleanup activities. The latest information on the status of each LUST site is available through the State Water Resource Control Board (http://geotracker.swrcb.ca.gov). While many of these sites can be fully remediated, the aggregate impact from undetected contamination on groundwater quality in the basin cannot be determined and may ultimately be considerable.

2.1.1.3 Groundwater Levels

Intensive use of the groundwater basin has resulted in a general lowering of groundwater elevations near the center of the basin away from the sources of recharge. As early as 1968, pumping depressions were evident in northern Sacramento County. These depressions have grown and coalesced into a single cone of depression centered in the SGA area as shown in **Figure 5**. **Figure 5** is a representative contour plot of equal elevations of groundwater in the North Area Basin for Spring 2008. The low elevation in the area is approximately 40 feet below mean sea level (MSL), represented within the -40 foot contour. In general, the rest of the North Area Basin does not show any distinctive patterns with respect to regional groundwater elevations, and the water table tends to mimic the local topography. This is also reflected in the increasing density of water elevation contours as the land surface elevation gradient increases in the eastern part of the North Area Basin.

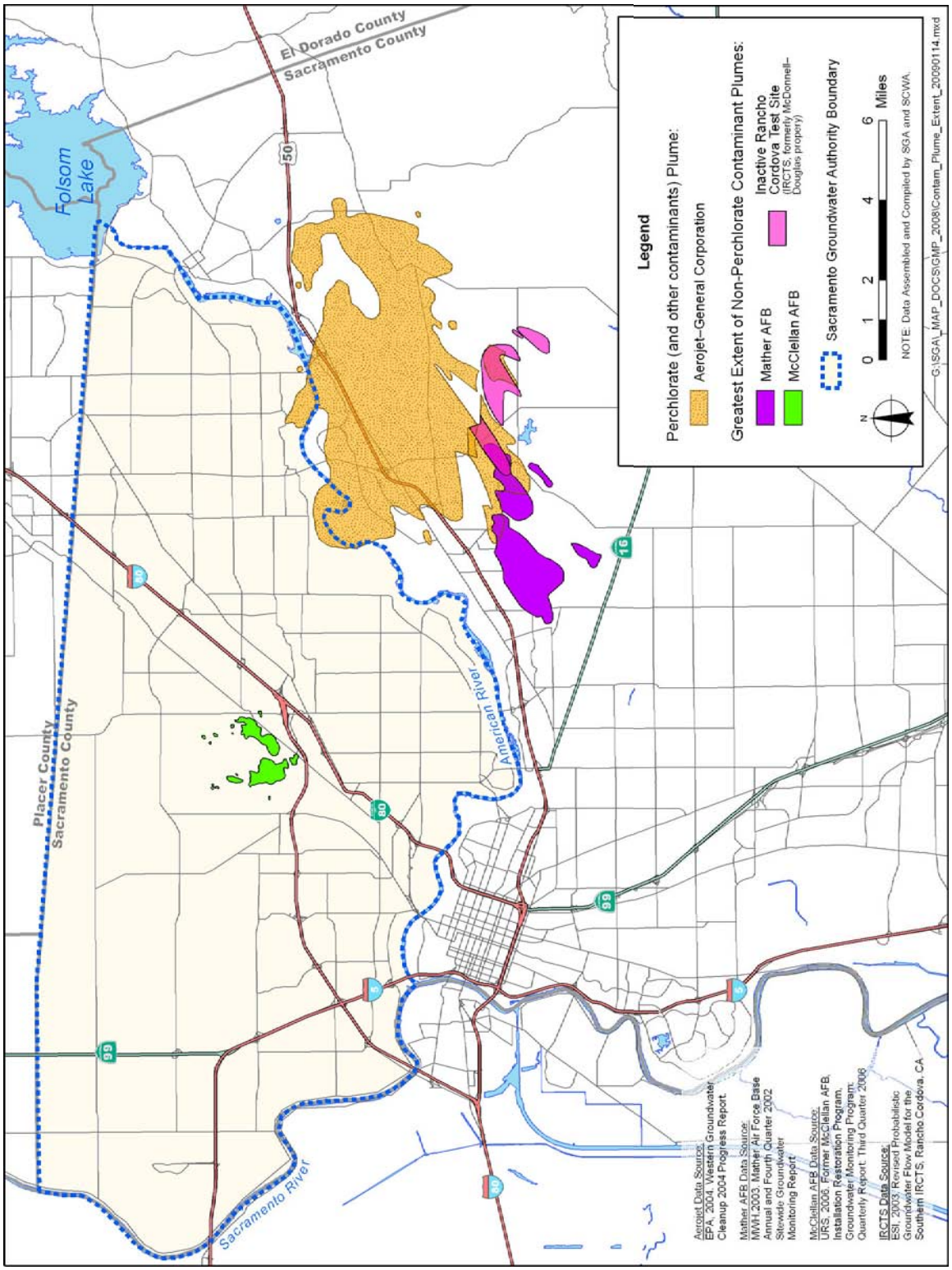

Figure 4. Principal Contaminant Plumes

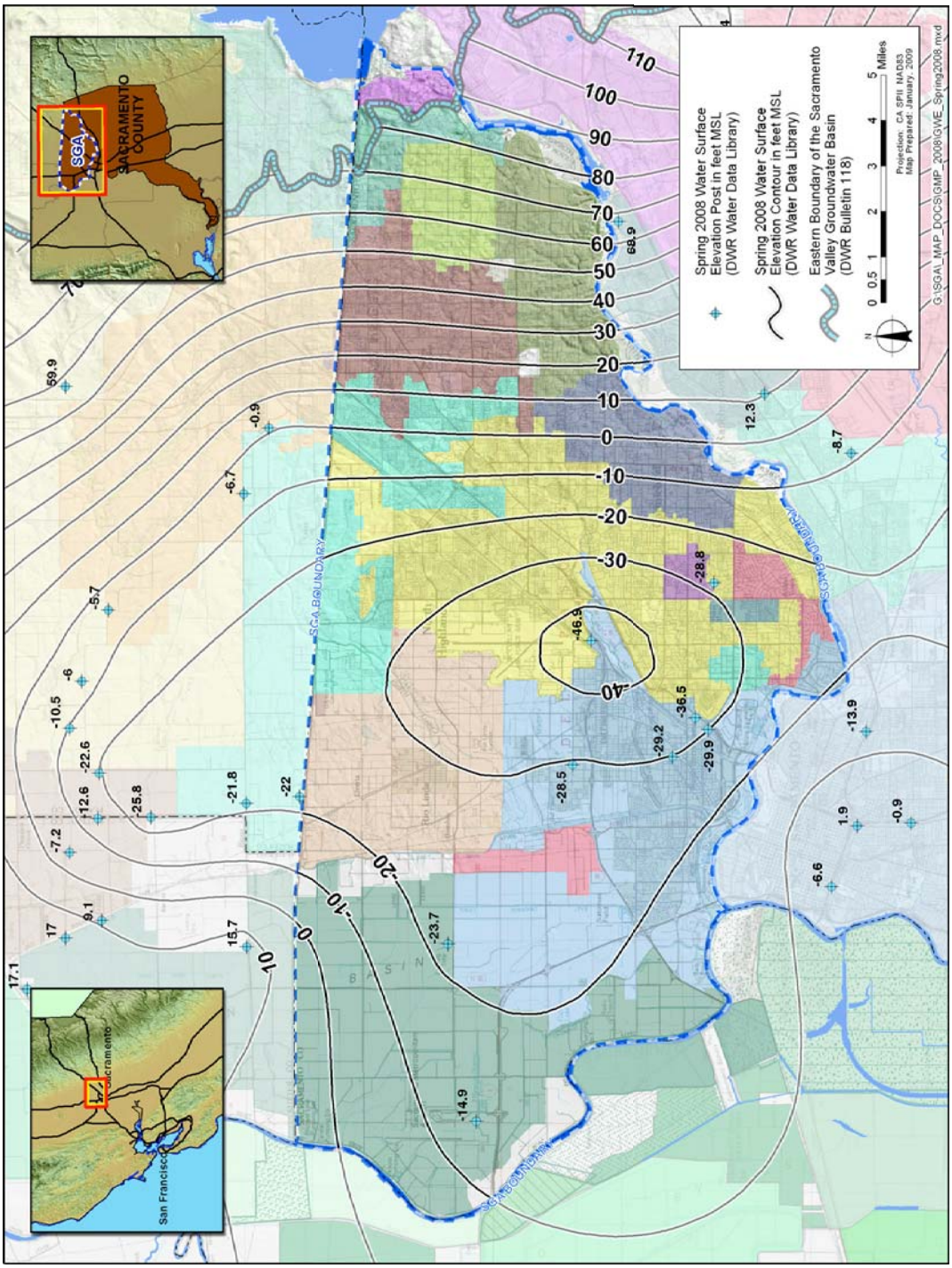

Figure 5. Spring 2008 Groundwater Elevation Contours

Groundwater Level Trends. **Figure 6** shows the locations and hydrographs of selected long-term monitoring wells in the basin. In general, past data shows that in the central portion of the North Area Basin groundwater elevations declined at a rate of nearly 1.5 feet per year from around the 1950s through the mid-1990s. Since the mid-1990s, groundwater elevations have stabilized within the regional cone of depression and, in some cases, groundwater elevations are continuing to increase slightly. This trend is largely due to operational changes as noted later in this section. For purposes of further discussion, the North Area Basin can be divided into three sub-areas.

Western Area. The western portion of the North Area Basin is bounded by the Sacramento River on the west and extends east to approximately the boundary between Natomas Central Mutual Water Company and Rio Linda/Elverta Community Water District (**Figure 6**). This area is served almost exclusively by surface water. Hydrographs for SWP-216, SWP-261, and SWP-263 show that groundwater elevations range from about five feet below MSL to 20 feet above MSL. The hydrographs show that groundwater elevations have been fairly stable over the period of record, with very modest increases in 2003 and 2004. These wells typically experience only seasonal fluctuations.

Central Area. The central portion of the North Area Basin is bounded roughly on the west by the boundary between Natomas Central Mutual Water Company and Rio Linda/Elverta Community Water District and to the east by a line running approximately along San Juan Avenue (**Figure 6**). This area currently uses a combination of surface water and groundwater, but has historically relied predominantly on groundwater. Hydrographs for SWP-220, SWP-229, SWP-232, SWP-240, SWP-270 (also shown in **Figure 7**), and SWP-276 show that groundwater elevations currently range from about 10 feet above MSL to 40 feet below MSL. The drawdown in these wells over the past 60 years has been in excess of about 70 feet. Groundwater elevations in this area continued to decline every year until around the mid-1990s, when groundwater elevations stabilized due, at least in part, to expanded conjunctive use operations. Groundwater elevations have increased slightly over previous years despite the increase in groundwater extraction in the basin in 2007. This is likely because groundwater for public supply has been reduced in the immediate vicinity of McClellan to help contain the movement of contamination.

Eastern Area. The eastern portion of the North Area Basin extends roughly east of San Juan Avenue to the eastern edge of the basin (**Figure 6**). This area has historically relied primarily on surface water. Hydrographs for wells SWP-236 and SWP-283 are typically in excess of 100 feet above MSL. Groundwater elevations can be highly varied from one well to another, as the area has rolling topography and the groundwater elevation tends to mimic ground elevations. Hydrographs indicate that groundwater elevations have not changed greatly with time, reflecting the limited use of groundwater in the area. There were no notable changes in recent groundwater elevations.

2.2 SURFACE WATER SUPPLIES

Individual water purveyors utilize both surface water and groundwater. The supply mix may include combinations of groundwater; American River water diverted pursuant to water rights, contract entitlements, or other agreements; or Sacramento River water diverted pursuant to water rights or contract entitlements. This section describes surface water supplies available to the water purveyors within the SGA.

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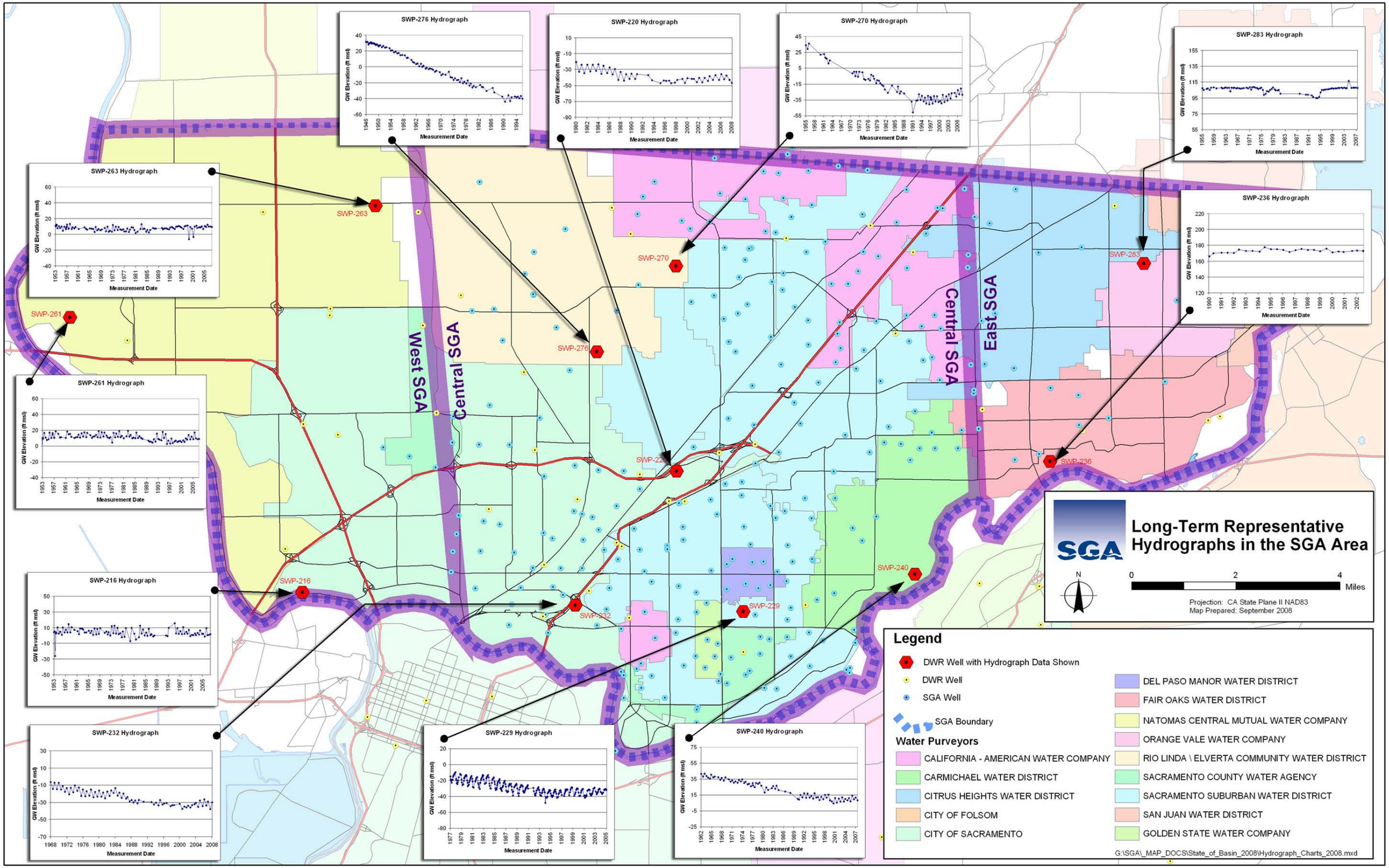

Figure 6. Representative Groundwater Hydrographs in the SGA Area

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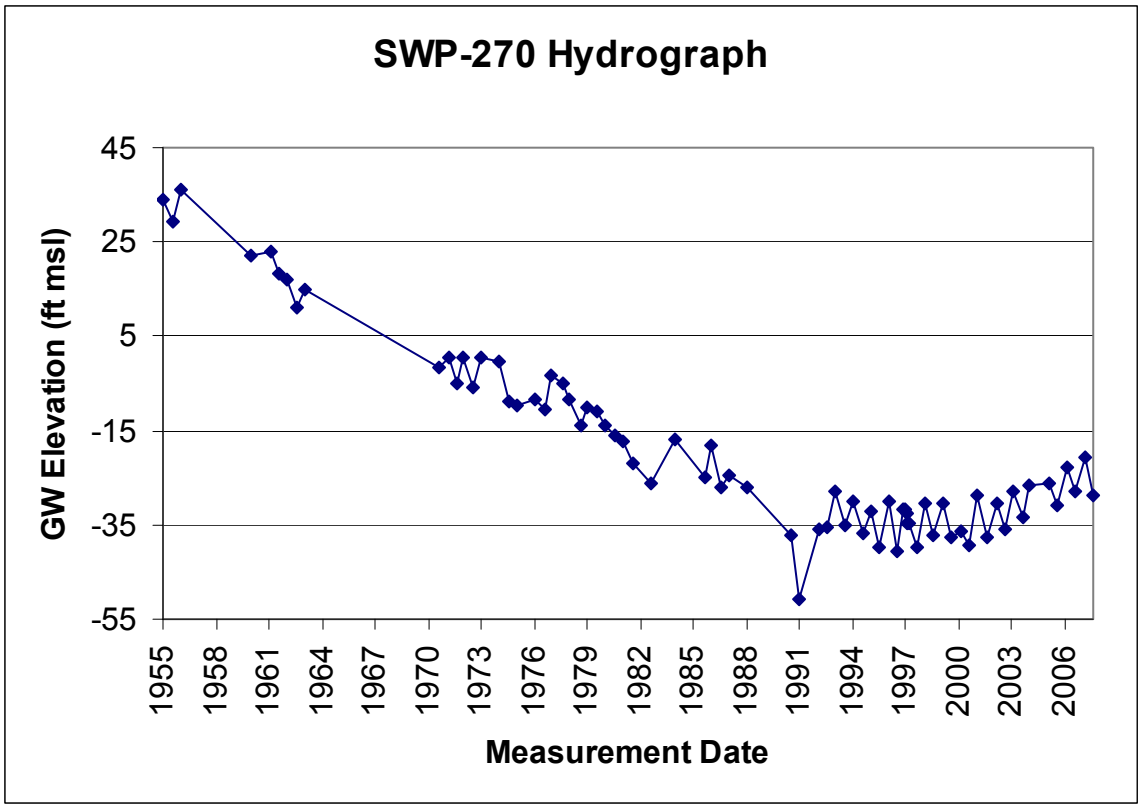

Figure 7. Single Long-Term Hydrograph in the SGA Area

2.2.1 Water Rights/Contract Entitlements

The following section provides information on water rights and contract entitlements on the American and Sacramento rivers within the SGA area.

2.2.1.1 American River Water Rights

Four of the water purveyors within the SGA boundaries have water rights on the American River: Carmichael Water District (CWD), City of Folsom (Folsom), City of Sacramento (Sacramento), and San Juan Water District (SJWD). These are described as follows:

- The place of use (POU) for CWD's water right is coincident with the boundaries of the District.
- The POU for Folsom's water right is coincident with the city limits and portions of the lands owned by Aerojet.
- The POU for Sacramento's water rights on the American River extends beyond the boundaries of the city limits. The authorized POU outside the city limits includes (1) portions of California American Water's (Cal Am) Arden service area; (2) Del Paso Manor Water District (DPMWD); (3) Sacramento Suburban Water District (Sac Suburban,) Arcade service area (Town and Country subarea) and portions of their Northridge service area; (4) SCWA, Arden Park Vista service area; (5) Golden State Water Company (GSWC), Arden Town service area; and (6) portions of CWD. In

addition, a portion of Sacramento's American River POU overlaps with the place of use for the Sacramento River water rights and contract entitlements of NCMWC.

- The POU for SJWD's water rights is the District's wholesale service area which encompasses SJWD retail service areas in Sacramento and Placer Counties, Citrus Heights Water District (CHWD), Fair Oaks Water District (FOWD), Orange Vale Water Company (OVWC), and that portion of Folsom that lies north of the American River.

2.2.1.2 American River Contract Entitlements

In Sacramento County, two water purveyors have existing water supply contract entitlements with the U.S. Bureau of Reclamation (Reclamation) Central Valley Project (CVP): Folsom and SJWD. SJWD provides CVP water to agencies within its wholesale service area.

In addition, SJWD and SCWA executed a water supply contract entitlement with Reclamation from Public Law (PL) 101-514 (commonly referred to as "Fazio Water") in 1999. However, the contract is currently being renegotiated under the CVP long-term contract renewals. SJWD's contract entitlement is for 13,000 AF/year, and this supply is used within SJWD's Sacramento County wholesale area. SCWA's contract entitlement is for 22,000 AF/year, and this supply is used within Zone 40 (south of the American River). Folsom has a subcontract with SCWA for 7,000 AF/year (out of the potentially available 22,000 AF/year).

Sac Suburban has a water sale agreement with Placer County Water Agency (PCWA). The POU for this water includes Sac Suburban's Northridge service area and Arcade service area (North Highlands subarea only) and the service areas of SJWD, FOWD, OVWC, CHWD, the former McClellan AFB, Cal Am (Antelope and Lincoln Oaks service areas), and Rio Linda/Elverta Community Water District (RLECWD).

2.2.1.3 Sacramento River Water Rights

Two of the water purveyors within the SGA boundaries have water rights on the Sacramento River: Sacramento and NCMWC. The POU for NCMWC's water rights on the Sacramento River is the water company service area that includes both the Sacramento County and Sutter County areas. The POU for Sacramento's water rights on the Sacramento River is the city limits.

2.2.1.4 Sacramento River Contract Entitlements

One water purveyor within the SGA boundaries has a CVP contract entitlement on the Sacramento River: NCMWC. The POU for this water is the water company service area that includes both the Sacramento County and Sutter County areas.

2.2.1.5 Other Agreements

Sacramento has agreements with Sac Suburban (for use within the Arcade Service Area only) and DPMWD to make surface water available for use within the portions of their service areas that lie within Sacramento's American River POU.

Sac Suburban has a temporary contract with Reclamation for surplus water (often referred to as Section 215 water). This contract has been exercised since 1991. Sac Suburban's Section 215 supplies ranged between approximately 100 AF/year and 11,880 AF/year during the period 1991 through 2000. Section 215 water is available on an intermittent basis subject to hydrologic conditions.

2.2.2 Surface Water Quality

Surface water quality is a function of the mass balance of water quality from tributary streams, diversions, agricultural return flows, subsurface drainage flows, permitted discharges from

municipal and industrial (M&I) sources, and urban runoff. Based on current Update Reports to the Watershed Sanitary Surveys for the American and Sacramento Rivers, these are both excellent supplies for drinking water in the Sacramento Metropolitan Area. The source waters can be treated to meet all Title 22 drinking water standards using conventional and direct filtration processes, as well as membranes. There are no persistent constituents in the raw waters that require additional treatment processes. However, there are sometimes seasonal treatment requirements for rice herbicides on the Sacramento River, which can be addressed through chemical oxidation processes. High turbidities during storm events are sometimes a treatment challenge, which can be managed by optimizing operations including adjusting chemical types and dosing schemes and reducing plant flow (Montgomery Watson and Archibald & Wallberg, 2000).

2.2.2.1 American River

In general, the quality of water in the American River is high from the river's headwaters to its confluence with the Sacramento River. It is low in alkalinity, low in disinfection by-product precursor materials, low in mineral content, and low in organic contamination. Limited data also indicate that the source of water is low in microbial contamination from *Giardia* and *Cryptosporidium*. Turbidity levels in the American River tend to be higher in the winter than summer because of higher flows associated with winter storms.

Folsom Reservoir. Water diverted from Folsom Reservoir is provided to the following SGA members: SJWD, CHWD, FOWD, OVWC, Folsom, and Sac Suburban[12]. Because the treatment facilities serving these areas share a common Folsom Dam intake facility, the raw water is considered to be similar with respect to quality. Characterization of Folsom Reservoir raw water quality is based on data collected by the Cities of Folsom and Roseville as well as SJWD.

Water diverted from the Folsom Dam is treated by SJWD and Folsom using conventional filtration processes with chlorine disinfection. Treated water quality varies depending on the specific type of treatment provided, but meets or exceeds all federal and state drinking water standards for both SJWD and Folsom under current operations. Both agencies include corrosion control practices in their treatment of the water.

American River at CWD's Bajamont Way Membrane Filtration Water Treatment Plant. CWD uses American River water diverted by three Ranney collectors[13] for water supply; therefore this is groundwater under the direct influence of surface water and is subject to the Environmental Protection Agency's (USEPA's) Surface Water Treatment Rule. The collectors are located within the American River floodplain and adjacent to the streambed. They serve as intake and pump structures to provide pre-filtered water to the Bajamont Way Membrane Filtration (Bajamont) Water Treatment Plant (WTP). The WTP is composed of microfiltration membrane units. After filtration, the water is chlorinated with sodium hypochlorite and the pH is adjusted with caustic soda prior to distribution. The treated water meets all current Title 22 drinking water quality standards (Archibald & Wallberg and MWH, 2003).

Lower American River at Sacramento's E.A. Fairbairn Water Treatment Plant. Water is diverted by Sacramento on the lower American River just downstream of the Howe Avenue crossing at the E.A. Fairbairn WTP. This water may be used by other entities within the American River POU on a wholesale basis. Water diverted at the plant undergoes conventional

[12] Water is also diverted, treated, and distributed by Roseville, located within Placer County.

[13] Ranney collectors capture water through a series of perforated pipelines that are drilled horizontally under (or near) a river from a large well or caisson ranging 12 to 16 feet in diameter where the water is pumped for use as a water supply.

treatment and disinfection. The treated water meets all current Title 22 drinking water quality standards (Archibald & Wallberg and MWH, 2003).

2.2.2.2 Sacramento River

In general, the quality of the Sacramento River is high in the vicinity of the SGA boundary. There are moderate amounts of alkalinity and minerals and low levels of disinfection by-product precursors. Turbidity levels in the Sacramento River are higher during the winter and early spring months, usually associated with reservoir releases or runoff from storm events. There are very infrequent detects of organic chemicals, many of which are pesticides or herbicides from agricultural operations. Data collected to date indicate that there is a low prevalence of *Giardia* and *Cryptosporidium* in the river, with protozoa only detected sporadically and at very low concentrations.

The characterization of the Sacramento River water quality in the vicinity of the SGA boundary is based on reports for the Sacramento River Water Treatment Plant (Sacramento River Watershed Sanitary Survey; 1995 Report and 2000 Update, prepared by MWH and Archibald & Wallberg).

Sacramento River at Sacramento's Sacramento River Water Treatment Plant. Water is diverted by Sacramento on the Sacramento River just downstream of the confluence with the American River. Characterization of the Sacramento River raw water quality at the Sacramento River WTP is based on data collected by Sacramento (Sacramento River Water Treatment Plant – Finalization of Preliminary Design, prepared by Montgomery Watson, 1998).

Water is treated by Sacramento using conventional filtration processes with chlorine disinfection. Treated water quality meets or exceeds all federal and state drinking water standards under current operations. Sacramento includes corrosion control in their treatment of the water.

Primary drinking water standards are set for constituents that cause an adverse impact to human health. Secondary drinking water standards are set for constituents that cause an unpleasing aesthetic impact on the water quality; these are not health-based standards. There were no violations of primary or secondary drinking water standards reported for any of the characterization points discussed above.

2.3 "OTHER" SUPPLIES

Currently, the opportunities for using recycled water north of the American River are limited. In Sacramento County, the most probable recycled water opportunity exists at the Sacramento Regional County Sanitation District's Wastewater Treatment Plant (Sac Regional) located in South Sacramento with a treated water effluent discharge on the Sacramento River near Freeport (south of the American River and outside the SGA boundaries). At this time, however, Sac Regional does not appear to be a likely source of recycled water for the area north of the American River. The cost of pumping recycled water from Sac Regional to areas north of the American River is currently prohibitive. A more economic recycled water program might include the scalping of wastewater flows north of the American River for treatment at satellite tertiary plants.

2.4 EXISTING FACILITIES AND OPERATIONS FOR MUNICIPAL AND INDUSTRIAL SUPPLIES

The SGA member agencies own, operate, and maintain numerous raw and treated water facilities to improve and sustain the delivery of drinking water to existing and future customers. Many of these facilities have a direct impact on the South Area Basin and are of interest to SGA in the implementation of its actions.

2.4.1 Major Infrastructure

For the purposes of this GMP, only the major surface water supply diversion facilities and groundwater supply facilities are described.

2.4.1.1 Surface Water Supply Facilities

There are four major diversion and treatment facilities on the American and Sacramento rivers that provide surface water within the SGA boundaries (see **Table 2**). The combined treatment capacity of these facilities is approximately 502 million gallons per day (MGD).

2.4.1.2 Groundwater Supply Facilities

The water purveyors within the SGA boundaries operate 209 groundwater wells (see Error! Reference source not found.) on an active or standby status as of late 2006. Most production capacities are in the range of 330 to 2,250 gallons per minute (gpm).

Table 2. Treatment Capacity at WTPs Providing Surface Water within the SGA Boundaries

Source Water/Facility/Owner	Treatment Capacity (million gallons per day, mgd)
Folsom Reservoir	
Peterson WTP (SJWD)	**120**
Lower American River	
Bajamont WTP (CWD)	**22**
E.A. Fairbairn WTP (Sacramento)	**200**
Sacramento River	
Sacramento River WTP (Sacramento)	**160**

Table 3. Groundwater Wells within SGA Boundaries

Water Purveyor/Agency	Number of Active or Standby Groundwater Wells
Cal Am	42
CWD	5
CHWD	3
City of Folsom	0
City of Sacramento	31
DPMWD	8
FOWD	7
GSWC	6
NCMWC	0
OVWC	2
RLECWD	11
Sac Suburban Arcade Service Area Northridge Service Area	 57 26
SCWA	11
SJWD	0
Individual representatives from agriculture and self-supplied groundwater users (principally parks and recreation districts)	-- [1]

Source: DMS, Data Current as of 2006

NOTES:
[1] SGA does not have information on these wells.

2.4.2 Operations

Recent (2000 through 2007) surface water and groundwater use within the SGA boundaries are shown in **Table 4**. **Table 4** shows that the water supplies of the individual purveyors ranges from all surface water to all groundwater, with many purveyors having access to both sources. The aggregate of these purveyors' supplies results in about a 50/50 blend of surface water and groundwater for municipal uses.

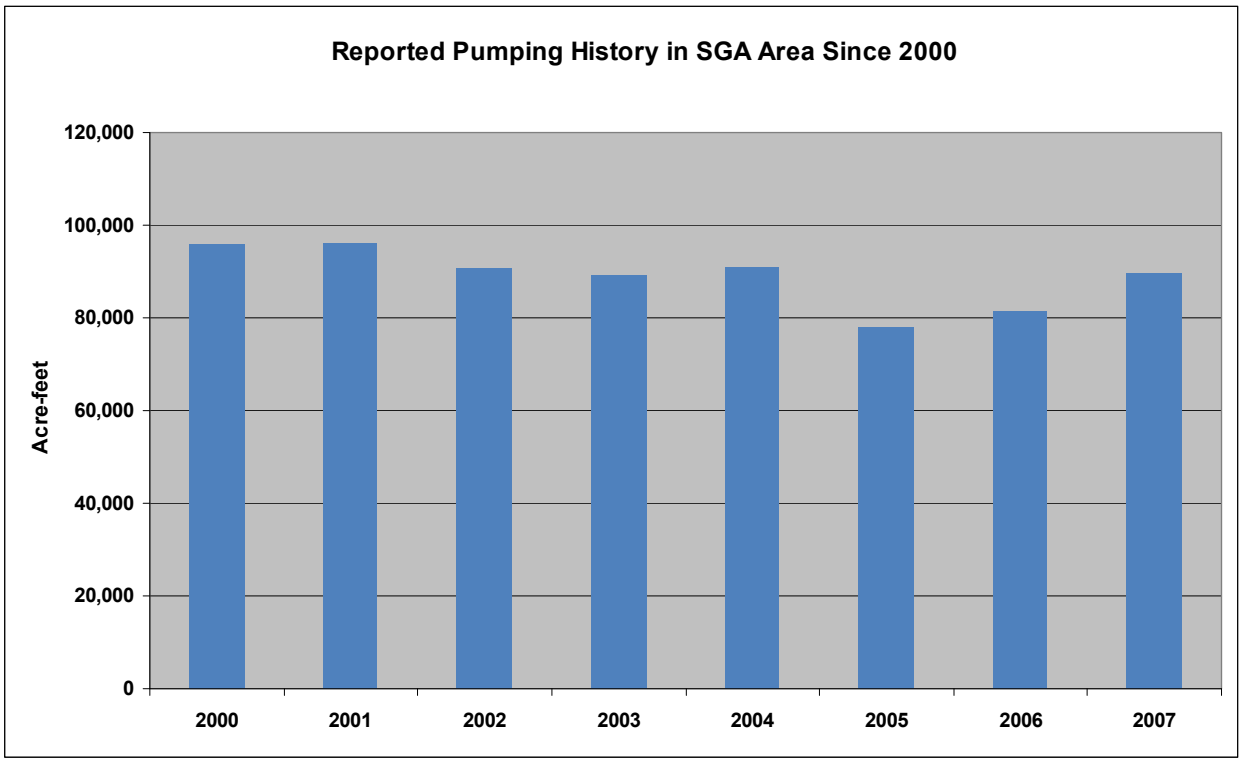

Figure 8. Total SGA Annual Groundwater Extraction in North Area Basin

The total groundwater extraction by SGA member agencies from 2000 through 2007 is summarized in **Figure 8** above. Over the period of record from 2000 to 2007, **Figure 8** shows groundwater extraction decreased as additional surface water supplies were used under conjunctive use operations implemented in the basin following the Water Forum Agreement in 2000. Groundwater use by public water suppliers dipped below 80,000 acre-feet in 2005 and increased slightly in 2006. Previously, reported groundwater use by public water suppliers had not been below 80,000 acre-feet since 1989. In 2007, groundwater extraction increased to over 89,000 acre-feet. This was expected because additional surface water was not available under the dry 2007 conditions. This shift in supply demonstrates successful implementation of a conjunctive use program in the basin.

Table 4. SGA Total Municipal and Industrial Water Deliveries in the SGA Area
2003-2007 (Calendar Years)

WATER PURVEYOR	YEAR	Surface Water (AF/year)	Ground Water (AF/year)	Total Water Deliveries (AF/year)
California American Water	2007	384	17,669	18,053
`	2006	1,024	17,973	18,997
	2005	0	17,968	17,968
	2004	0	19,784	19,784
	2003	0	19,240	19,240
Carmichael Water District	2007	9,509	2,868	12,377
	2006	8,971	3,519	12,490
	2005	9,722	2,347	12,069
	2004	9,843	3,836	13,679
	2003	9,358	3,265	12,623
Citrus Heights Water District	2007	16,237	98	16,335
	2006	18,736	100	18,836
	2005	18,994	100	19,094
	2004	19,753	1,347	21,100
	2003	17,938	573	18,511
Del Paso Manor Water District	2007	0	1,638	1,638
	2006	0	1,654	1,654
	2005	0	1,657	1,657
	2004	0	1,747	1,747
	2003	0	1,477	1,477
Fair Oaks Water District	2007	11,533	899	12,432
	2006	11,178	845	12,023
	2005	12,282	172	12,454
	2004	13,629	312	13,941
	2003	12,333	240	12,573
Folsom, City of	2007	1,820	0	1,820
	2006	1,695	0	1,695
	2005	1,561	0	1,561
	2004	1,415	0	1,415
	2003	1,107	0	1,107
Golden State Water Company	2007	0	1,252	1,252
	2006	0	1,296	1,296
	2005	0	1,248	1,248
	2004	0	1,372	1,372
	2003	0	1,311	1,311
Orange Vale Water Company	2007	4,452	0	4,452
	2006	3,642	0	3,642
	2005	3,376	0	3,376
	2004	4,165	0	4,165
	2003	3,816	0	3,816

Table 4. SGA Total Municipal and Industrial Water Deliveries in the SGA Area (Continued)
2003-2007 (Calendar Years)

WATER PURVEYOR	YEAR	Surface Water (AF/year)	Ground Water (AF/year)	Total Water Deliveries (AF/year)
Rio Linda/Elverta CWD	2007	109	3,305	3,414
	2006	0	3,378	3,378
	2005	0	3,209	3,209
	2004	0	3,407	3,407
	2003	0	3,163	3,163
Sacramento, City of	2007	25,431	18,618	44,049
	2006	22,560	20,917	43,477
	2005	25,213	19,415	44,628
	2004	42,804	20,339	63,143
	2003	31,594	22,621	54,215
Sacramento, County of	2007	0	5,353	5,353
	2006	0	5,133	5,133
	2005	0	5,111	5,111
	2004	0	5,691	5,691
	2003	0	5,034	5,034
Sacramento Suburban WD	2007	7,544	37,932	45,476
	2006	13,345	26,559	39,904
	2005	14,364	26,830	41,194
	2004	15,338	33,261	48,599
	2003	15,214	32,494	47,708
San Juan Water District	2007	4,213	0	4,213
	2006	4,038	0	4,038
	2005	3,839	0	3,839
	2004	4,379	0	4,379
	2003	4,261	0	4,261
Total for SGA Area	2007	81,232	89,632	170,864
	2006	84,165	81,374	165,539
	2005	89,351	78,057	167,408
	2004	111,326	91,096	202,422
	2003	95,621	89,418	185,039

Notes: This data does not include agricultural surface water supplies delivered by Natomas Central Mutual Water Company and groundwater extraction by agricultural and self-supplied users. It also does not include surface water supplies for portions of the San Juan Water District and the City of Folsom that are not within the SGA boundaries.

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Section 3 MANAGEMENT PLAN ELEMENTS

The elements of this GMP include an overall goal, a set of management objectives, and a series of plan components that discuss and identify the specific actions necessary for meeting the goal and objectives (see **Figure 9**).

3.1 GROUNDWATER MANAGEMENT GOAL

The goal of this GMP is to ensure a viable groundwater resource for beneficial uses including agricultural, industrial, and municipal supplies that support the WFA's co-equal objectives of providing a reliable and safe water supply and preserving the fishery, wildlife, recreational, and aesthetic values of the lower American River.

3.2 BASIN MANAGEMENT OBJECTIVES

To meet the goal stated above, the SGA has adopted eight specific basin management objectives (BMOs). These BMOs include the following:

1. **Maintain or improve groundwater quality in the SGA area to ensure sustainable use of the groundwater basin.** The groundwater supplied for public consumption meets all public health criteria. However, occurrences of large-scale groundwater contamination are documented in the basin. It is the intent of the SGA that use of groundwater by member agencies in the basin is not hindered by contamination, and that such use does not cause degradation of the quality of the resource. Where contamination is documented, or occurs in the future, the SGA will coordinate with appropriate state and federal regulatory agencies to pursue actions that result in the containment and eventual remediation of the contaminant.

2. **Maintain groundwater elevations that provide for sustainable use of the groundwater basin.** The lowering of groundwater elevations can have adverse impacts ranging from increased energy costs to the need to deepen existing wells or even construct new ones. The regional use of groundwater has and will continue to result in a persistent cone of depression within the central portion of the North Area Basin. The SGA members have and will continue to implement conjunctive use programs that reduce further declines in the regional cone-of-depression. The SGA members intend that overall groundwater elevations in the basin be improved over time, and that the groundwater basin be managed such that the impacts during drier years will be minimized when surface water supplies are curtailed and are replaced by increased groundwater supplies.

3. **Protect against potential inelastic land surface subsidence.** Land subsidence can cause significant damage to essential infrastructure. Historic land surface subsidence within the SGA area has been minimal, with no known significant impacts to existing infrastructure. Given the historical trends, the potential for land surface subsidence from groundwater extractions in the SGA portion of the groundwater basin is remote. However, the SGA intends to monitor for potential land surface subsidence. If inelastic subsidence is documented in conjunction with declining groundwater elevations, the SGA will investigate appropriate actions to avoid adverse impacts.

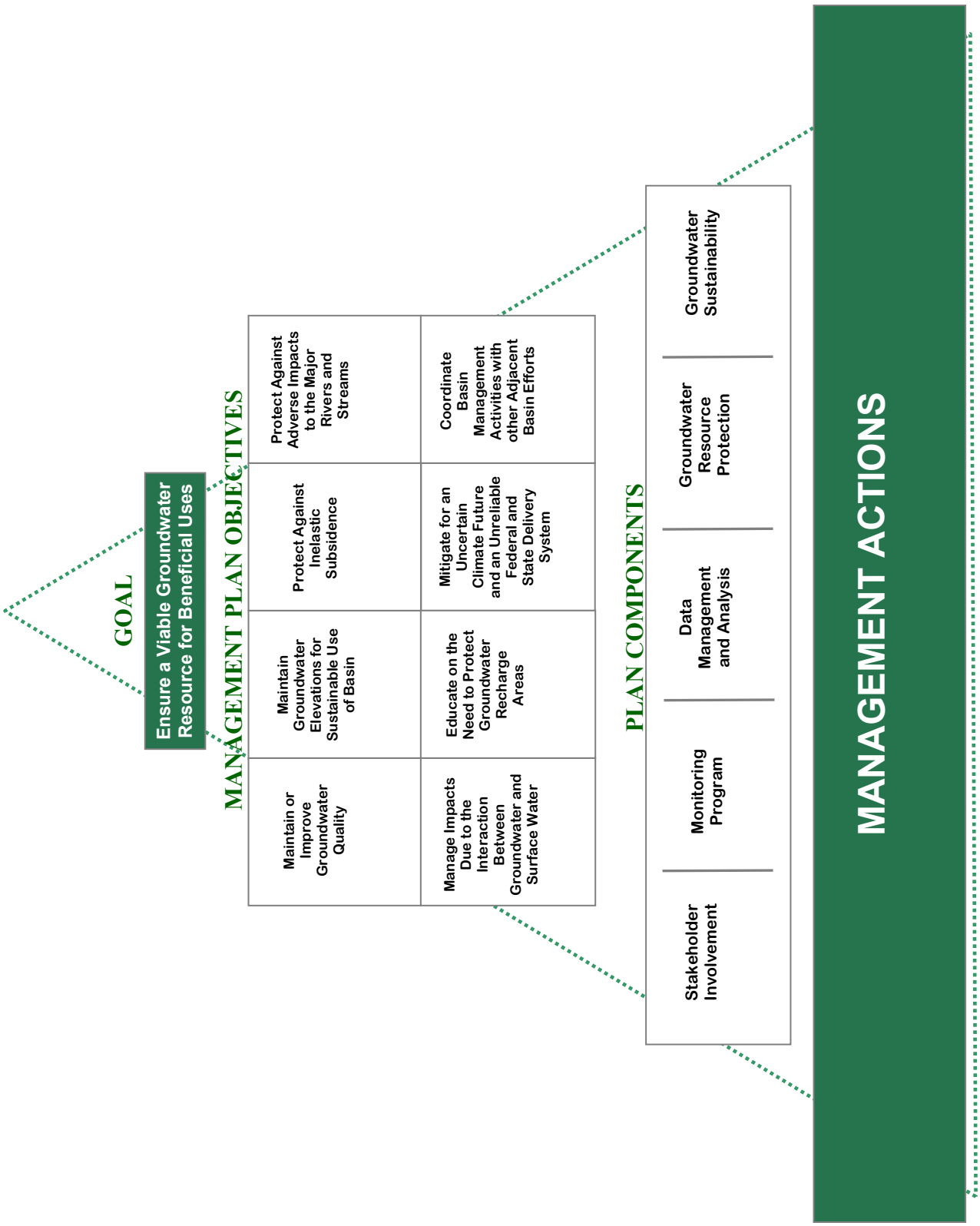

Figure 9. Organization of Management Plan Elements

4. **Manage groundwater to protect against adverse impacts to surface water flows in the American River, the Sacramento River, and other surface water bodies within the SGA area.** Among other important uses, the American and Sacramento rivers and their tributaries provide habitat for a variety of fish and wildlife species. The SGA and its members are committed to the objectives of the WFA, including the objective to protect and enhance the lower American River. Important elements of the WFA include commitments to reduce lower American River diversions and to not exceed agreed upon groundwater extractions of 131,000 AF/year on average.

5. **Protect against adverse impacts to surface or groundwater quality resulting from interaction between groundwater in the basin and surface water flows in the American River, the Sacramento River, and other surface water bodies within the SGA area.** Surface water is a primary recharge source for groundwater in the SGA portion of the regional groundwater basin. The interaction of the two water supplies is well documented and the impacts of management actions from one supply could be detrimental to the other. Because the natural flow regime is such that groundwater is not discharging to either of the major rivers or local stream systems in the SGA area, surface water quality is not impacted by the difference in water quality constituents typically found in the region's groundwater supplies. While it is possible that future SGA management actions could temporarily alter that condition, it is the SGA's intent that operation of the groundwater system will not negatively impact the water quality of the area's rivers and local streams.

6. **Educate on the need to achieve recharge to the aquifer of appropriate quality and quantity to ensure basin sustainability.** There is an important link between activities that take place on the overlying surface of the groundwater basin and the effects that these uses have on the quality and quantity of natural recharge to the aquifer. Implementation of this objective will likely be through programs that educate on the need to protect groundwater recharge areas and pay attention to practices that either impede (e.g., large pavement areas) or could pollute (e.g., proper oil disposal) water as it makes its way from the surface to the aquifer.

7. **Maintain a sustainable groundwater basin to help mitigate potential water supply impacts resulting from an uncertain climate future and an increasingly unreliable state and federal water delivery system.** Through local and statewide water planning efforts, there is an ever increasing need of placing value on groundwater as a buffer against predicted prolonged droughts. These planning efforts could call for increased conjunctive use beyond that considered under the WFA. This emphasizes the need to continue to plan for surface water in areas where use of groundwater is currently the sole source of water supply.

8. **Maintain a sustainable groundwater basin underlying the SGA area through coordination and collaboration with adjacent groundwater basin management efforts.** The SGA acknowledges that management of their portion of the groundwater basin influences, and is influenced by, the adjacent groundwater subbasins and the larger Central Valley groundwater basin. The SGA's primary delineation by county, city and water provider service boundaries does not account for the interrelationship amongst the

neighboring groundwater basins. As a result, the SGA will continue to seek coordination and collaboration with neighboring groundwater basin management programs.

3.3 GMP COMPONENTS

The GMP includes a variety of components that are required by CWC § 10753.7, recommended by DWR Bulletin 118 (2003), optional under CWC § 10753.8, and other components that SGA has initiated based on the needs of its members and their respective water service area customers. These components can be grouped into five general categories: (1) stakeholder involvement, (2) monitoring program, (3) data management and analysis, (4) groundwater resource protection, and (5) groundwater sustainability. Each category and its components are presented in this section. Under each component is a discussion, proposed actions, and identification of the objectives toward which the component is directed. As this GMP is a comprehensive update of SGA's GMP adopted in 2003, many of the actions have changed to reflect recent conditions. A complete listing of the original 2003 action items and their status is included in **Appendix B.**

3.4 COMPONENT CATEGORY 1: STAKEHOLDER INVOLVEMENT

The management actions taken by the SGA may have a wide range of impacts on a broad range of individuals and agencies that ultimately have a stake in its successful management of the basin. The local consumer may be most concerned about water rates or assurances that each time the tap is turned a steady, safe stream of water is available. To large state and federal water resource agencies, the degree to which the SGA can achieve local supply reliability and further banking and exchange programs enhances the state and federal programs' opportunity to meet statewide needs, particularly in drier years or under drought conditions. To address the needs of all of these stakeholders, the SGA has pursued several means of achieving broader involvement in the management of the SGA groundwater basin. These include: (1) involving members of the public, (2) involving other local agencies and groundwater management groups within and adjacent to the SGA area, (3) using advisory committees for development and implementation of the GMP, (4) developing relationships with state and federal water agencies, and (5) pursuing a variety of key partnerships to achieve local water supply sustainability. Each of these is discussed further below.

3.4.1 Involving the Public

Groundwater in California is a public resource, and the SGA is committed to involving the public in the ongoing implementation of its GMP. Creation of SGA was accomplished through a Joint Powers Authority signed by the cities of Citrus Heights, Folsom, and Sacramento and the County of Sacramento. The four entities chose an inclusive governance structure consisting of Board membership from all water suppliers overlying the SGA portion of the basin. Many of these Board members are elected officials representing the various water districts and the citizens they serve.

The original 2003 GMP had, as one of its goals, an update of the GMP every five years due to the constantly changing landscape for water supply and groundwater management in the State of California. In the preparation of this, the 2008 GMP, the SGA has filed two separate notices in the Sacramento Bee (**Appendix C**). In accordance with CWC § 10753.2, a notice of intent to prepare a GMP was published for the August 14, 2008 SGA Board Meeting inviting the public to attend. A second notice was published inviting the public for the adoption of the resolution to adopt the 2008 GMP at the December 11, 2008 SGA Board meeting.

Over the past five years, the SGA has demonstrated its commitment to outreach and education. In November 2003, the SGA launched a Web site (www.sgah2o.org) that has and will continue to be an effective means for public education on the status of SGA actions and its successes, and serves as a repository for downloading of all scanned public documents. The SGA will continue to use its Web site to distribute information on GMP implementation activities to the public.

Actions. The SGA will take the following actions:

1. Continue efforts to encourage public participation as opportunities arise.
2. Provide briefings, copies of Basin Management Reports, and a written annual summary to the Water Forum Successor Effort on GMP implementation progress.
3. Provide a written annual summary on GMP implementation progress to JPA signatories.
4. Work with SGA members to maximize outreach on GMP activities including the use of the SGA Web site, member Web sites, or bill inserts.

3.4.2 Involving Other Agencies Within and Adjacent to the SGA Area

The SGA's legal boundary is limited to that of the JPA signatories in Sacramento County north of the American River. This includes all of Sacramento County north of the American River. All water purveyors in northern Sacramento County are SGA members and participate in the development and implementation of this GMP. **Figure 1** shows the SGA purveyors and some of the key adjacent entities that SGA has coordinated with during implementation of the GMP. One key agency within the SGA boundary that is not a water purveyor is the Air Force Real Property Agency (AFRPA), which oversees remediation efforts of contaminated soil and groundwater at the former McClellan AFB. The SGA and the AFRPA have regularly met to discuss issues related to groundwater management and remediation efforts at the former McClellan AFB, and have integrated some of the monitoring wells at McClellan AFB into the SGA Biennial Management Report.

Other users in the basin not noted on **Figure 1** include agriculture and other self-supplied groundwater producers. The SGA will outreach to these groups as needs arise.

As noted in **Figure 1** the SGA boundary covers approximately the southern one-third of the North American Subbasin as defined by DWR (**Figure 2**). The remainder of the subbasin includes portions of Sutter and Placer counties.

In 2000, NCMWC prepared a GMP for its service area in both Sacramento and Sutter counties (Luhdorff & Scalmanini Consulting Engineers (LSCE, 2002). That GMP continues to apply to NCMWC's service area, and it is currently being updated. While the SGA GMP is intended to benefit all users within the basin, the primary focus of SGA's management efforts to date have been on municipal and industrial uses in the central portion of the basin where a persistent cone of depression and extensive groundwater contamination have existed for many years. In the western portion of the SGA area (see **Figure 1**), a large number of agricultural operations exist within and adjacent to the NCMWC service area. This primarily agricultural area has not historically experienced significant concerns with respect to groundwater conditions. SGA and NCMWC are coordinating on management issues in this portion of the basin to ensure that groundwater management needs are met throughout the North Area Basin.

In Placer County, the SGA is closely connected to groundwater management activities through the RWA. In November 2007, the City of Roseville, the City of Lincoln, Placer County Water Agency (PCWA), and California American Water (Cal AM) cooperatively developed the Western Placer County Groundwater Management Plan (WPCGMP). The SGA GMP and WPCGMP are separate and apart based on their respective overlying regions, yet both share the same groundwater basin. SGA has participated in WPCGMP development meetings and have briefed staff responsible for the WPCGMP implementation on groundwater management activities taking place as part of the SGA GMP. The WPCGMP is currently in the data collection phase with groundwater basin characterization being the next phase prior to the implementation and management phase of their GMP.

In Sutter County, much of the subbasin is managed either by South Sutter Water District (South Sutter) or by NCMWC. NCMWC is an SGA member although the Sutter County portion of the district does not fall under this GMP, because it is beyond the boundaries of the SGA's authority. South Sutter adopted an AB 3030 GMP in 1995. South Sutter provided a copy of that GMP to the SGA, and the SGA has provided briefings to the South Sutter General Manager on its GMP implementation efforts. Finally, the SGA appointed a representative from Sutter County Department of Public Works as a member of the SGA GMP Technical Review Committee during development of the original 2003 GMP. Sutter County is currently in the process of developing an updated GMP, and is coordinating with SGA during its development.

In addition to involving other agencies within the North American Subbasin, the SGA also attends public meetings and briefs representatives of Yolo County (representing the Yolo Subbasin) to the west, the Sacramento Central Groundwater Authority for the portion of Sacramento County's aquifer that lies between the American and Cosumnes rivers, and the current stakeholder effort currently developing a South Sacramento GMP for the portion of the Sacramento County groundwater basin between the Cosumnes River and South Dry Creek (i.e., southern boundary of Sacramento County).

Actions. The SGA will take the following actions:

1. To the extent practicable attend regular meetings of the Sacramento Central Groundwater Authority and the Western Placer GMP group and notify them of SGA Board meetings.
2. Provide copies of the adopted GMP and subsequent Biennial Basin Management Reports to representatives from the Western Placer, Sutter County, and Yolo County management groups as well as the Sacramento Central Groundwater Authority and the on-going stakeholder efforts taking place in South Sacramento County.

3. Meet with representatives from the Western Placer, Sutter County, and Yolo County management groups, as well as the Sacramento Central Groundwater Authority and the on-going stakeholder efforts taking place in South Sacramento County, as needed.

4. Coordinate with the Western Placer management group, and the Sacramento Central Groundwater Authority to develop a common data platform and share groundwater-related data to the greatest extent practicable to help ensure the mutual sustainability of our common groundwater resources.

3.4.3 Utilizing Advisory Committees

The SGA is committed to using advisory committees in its GMP development and implementation. Prior to beginning development of the original 2003 GMP, the SGA Board appointed an ad hoc committee to make recommendations for the composition of a Policy Committee and Technical Review Committee to guide development of the GMP. The ad hoc committee recommended that the Policy Committee be composed of SGA members representing the overall composition of the groundwater users within the SGA boundaries and that the Technical Review Committee include broader membership including agencies outside the SGA boundaries to consider technical issues related to the plan.

The updated 2008 GMP utilized the existing GMP Implementation Committee comprised of Board appointed members of SGA to provide oversight in revising objectives and action items. The product of this effort was approved by the SGA Board of Directors at their December 11, 2008 Board Hearing.

Actions. The SGA will take the following action:

1. The GMP Implementation Committee will meet at least annually to review and guide implementation of the plan. Ad-hoc use of Technical Review Committees will take place, as needed.

3.4.4 Developing Relationships with State and Federal Agencies

Working relationships between the SGA and the local, state, and federal regulatory agencies are critical to developing and implementing the various groundwater management strategies and actions detailed in this GMP.

One issue of particular importance to SGA is the presence of groundwater contamination plumes (**Figure 4**) associated primarily with federal defense-related activities. This contamination is known to limit local water purveyors' access to a significant portion of high-quality groundwater in the basin. Ultimately, this could leave surface water as the best replacement alternative, which in turn would threaten the region's ability to implement the WFA.

In February 2004, SGA learned that N-nitrosodimethylamine (NDMA) associated with a contaminant plume from the Aerojet facility near Rancho Cordova had been detected in a monitoring well within Carmichael Water District (CWD). In late June 2004, SGA representatives joined forces with the Water Forum to establish what is now known as the Regional Contamination Issues Committee (RCIC) in recognition of the Water Forum's stake in addressing regional groundwater contamination issues.

The RCIC is a forum for water purveyors, regulators and responsible parties to raise issues and discuss solutions for dealing with groundwater contamination issues that impact the region. SGA and local water purveyors have also briefed members of Congress and their staff on regional groundwater contamination issues associated with federal defense-related activities. SGA has

continued to request funding from the Department of Defense and the USEPA to support studies and other activities to protect the region's groundwater resources.

The SGA has also been working with the Sacramento Area Flood Control Agency (SAFCA) and United States Army Corps of Engineers (USACE) in understanding the effects on groundwater of placing deep slurry walls to strengthen existing levees in Sacramento County along the Sacramento and American rivers. As a result of SGA comments, groundwater experts have been called upon by SAFCA to better understand and quantify the potential loss in natural recharge that may result from the placement of impervious barriers along these two natural recharge sources.

The SGA also coordinates and develops working relationships with other local, state, and federal regulatory agencies (e.g., SAFCA, Sacramento County, California Department of Public Health, USEPA, USACE, etc.), as appropriate.

Actions. The SGA will take the following action:

1. Continue to develop working relationships with local, state, and federal regulatory agencies.

3.4.5 Pursuing Partnership Opportunities

The SGA is committed to facilitating partnership arrangements at the local, state, and federal levels. In the past two decades, the Sacramento-area water community and other local leaders have made great strides toward regional planning and collaboration on water issues. The historic WFA, which involved over 40 stakeholders and 7 years of facilitated discussions, resulted in a regional framework to balance the competing demands for increased use of surface water and groundwater with the environmental needs of the lower American River through the year 2030. Several important partnerships have been formed to implement the WFA as well as provide a host of other benefits to water agencies and the customers that they serve.

The SGA itself is a unique partnership between the cities and county entering a joint powers agreement and allowing the agency to be overseen by a board of local water purveyors and self-supplied and agricultural interests. Regionally, the SGA is closely partnered with the RWA, the Water Forum Successor Effort, and the IRWMP participating agencies. Together these activities define and support a conjunctive use program, which is critical to supporting the overall management goal of a safe and reliable water supply.

While the facilities necessary for local supply reliability through 2030 have been identified through the regional-based IRWMP, the potential exists to expand conjunctive use operations in the basin to achieve broader regional and statewide benefits. The needed facilities, however, would require substantial resources, and the change in water use would require agreement from the Water Forum Successor Effort. To investigate any further opportunities would require resources provided through partnerships from potential beneficiaries.

Actions. The SGA will take the following actions:

1. Continue to promote partnerships and work alongside the Water Forum Successor Effort to achieve both local supply reliability and broader regional and statewide benefits.
2. Continue to track grant opportunities to fund groundwater management activities and local water infrastructure projects.

3.5 COMPONENT CATEGORY 2: MONITORING PROGRAM

At the heart of this GMP is a monitoring program capable of assessing the status of the basin and responses in the basin to future management actions. The program includes the monitoring of groundwater elevations, monitoring of groundwater quality, monitoring and assessing the potential for inelastic land surface subsidence resulting from groundwater extraction, and continuing to improve our understanding of the relationship between surface water and groundwater along the American and Sacramento rivers. Also important is the continued use of monitoring protocols to ensure the accuracy and consistency of data collected.

3.5.1 Groundwater Elevation Monitoring

The SGA has compiled historic water level data measurements extending from prior to 1950 through 2008. Sources of historic water level data for the SGA area include:

- DWR/SCWA
- SGA Member Agencies
- USGS
- CSUS

DWR has maintained a multi-agency program of measuring more than 30 wells in the SGA portion of the groundwater basin. However, the wells monitored have been added to and dropped off of the network over time, so it is difficult to compare a historic contour plot to a recent one. For this reason, the SGA is working to continue the use of a standardized network of wells that combines those already monitored through the DWR program with wells from member water purveyors and other sources. It is the SGA's intent that these wells be maintained as a consistent long-term network that represents overall groundwater elevation conditions in the basin with a minimum of two measurements a year to represent spring and fall conditions. **Figure 10** shows the existing and proposed wells for this network as of 2008.

The wells have been selected to provide uniform geographic coverage throughout the 195 square mile SGA area, and in an area around the northern, western, and southern perimeter of the SGA[14]. The well network was developed by first establishing a network of sampling grids using the following method:

- Overlay a matrix of evenly spaced points over the SGA area.
- Surround matrix of points with polygons.
- Conform boundaries of polygons to the SGA boundaries and regenerate area grids.

[14] No wells were selected east of the boundary because it is in consolidated rock outside of the groundwater basin.

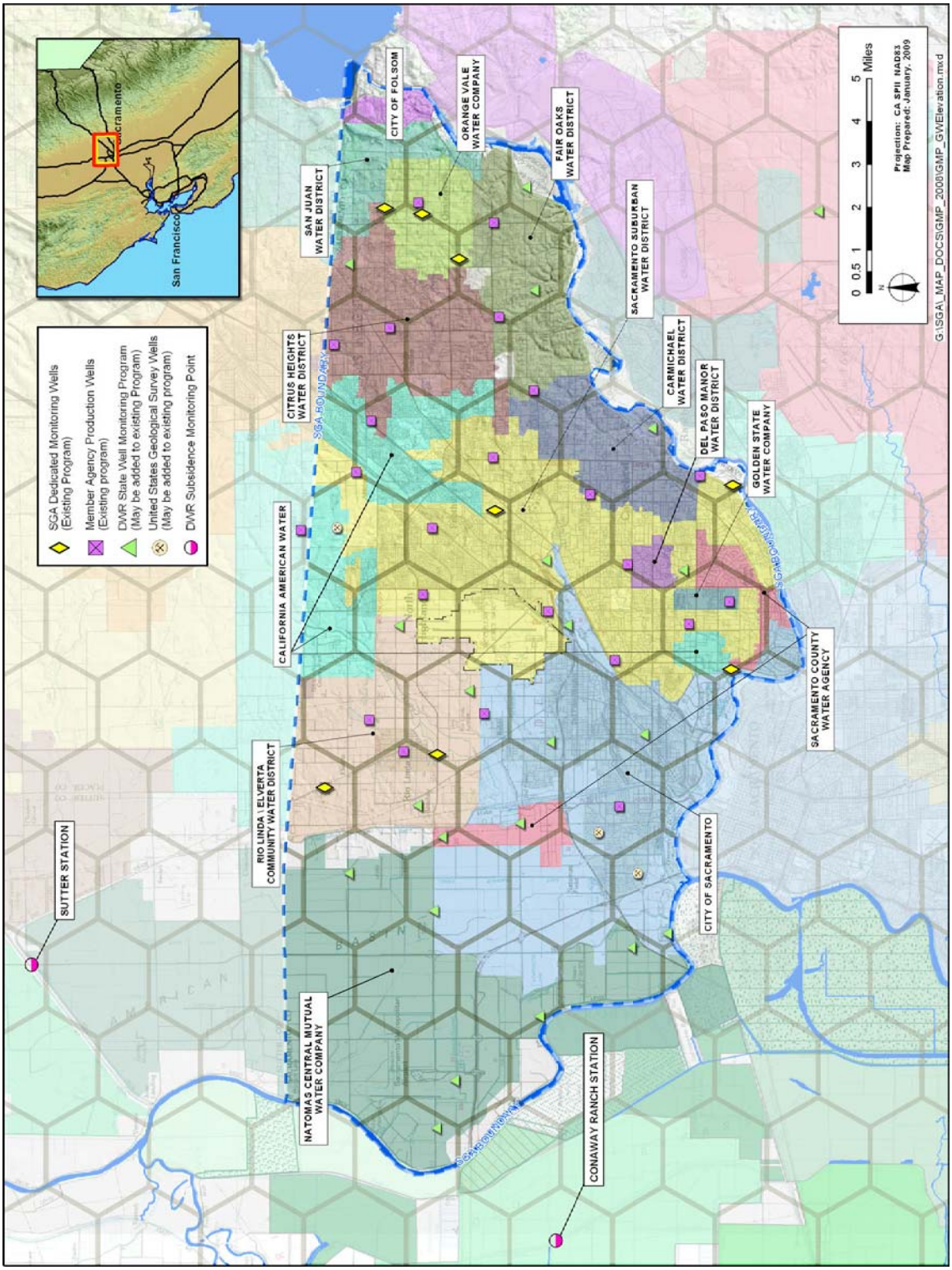

Figure 10. Existing and Proposed Wells for SGA's Groundwater Elevation Monitoring Network

The resulting grid, shown on **Figure 10,** includes 44 polygons of roughly equal area of about five square miles each. The member agency monitoring wells has been selected from the DMS to represent water levels for as many polygons as possible. Individual wells were selected by:

- Giving preference to wells currently in DWR's monitoring program. These wells were selected because (a) they have long records of historic water level data and are useful in assessing trends within the groundwater basins, (b) uniform protocols were used in measuring and recording the water level data, and (c) these are typically non-producing wells, so water level readings represent relatively static levels. Wells were screened further based on having a well completion report that identifies the depth and, if available, the well screen elevations. Additional screening is taking place on a continuous basis to insure that measurements are true indicators of the regional groundwater elevations (e.g., older wells that have historically used oils to lubricate the pump and drive assembly create a false reading unless adjustments in depth to water are made based on the depth of oil in the well column. The oil stands on top of fresh water and can accumulate to as much as 10 feet or more.)
- Identifying member agency wells with well construction information, long records of water level data and giving preference to those wells with the lowest recent extraction volumes where standard protocols are followed.
- Plotting the location of USGS wells within the SGA area and choosing wells in those areas void of DWR or member agency wells.

Actions. Additional actions by the SGA will include:

1. Coordinate with member agencies to collect data from a group of representative wells for monitoring spring and fall groundwater elevation measurements.
2. Coordinate with DWR and other well monitoring program partners, including SGA members, to ensure that the selected wells are maintained as part of a long-term monitoring network.
3. Coordinate with partners and request that the timing of water level data collection occur on or about April 15 and October 15 of each year.
4. Coordinate with partner agencies to ensure that needed water level elevations are collected and verify that uniform data collection protocols are used among the agencies.
5. Coordinate with the USGS to determine the potential for integrating USGS monitoring wells constructed for the NAWQA Program into the SGA monitoring network.
6. Maintain the existing SGA monitoring well network for purposes of groundwater elevation monitoring.
7. Provide a biennial assessment of groundwater elevation trends and conditions to SGA's member agencies, the Water Forum Successor Effort, and adjoining groundwater authorities.
8. Assess the adequacy of the groundwater elevation monitoring well network biennially.

3.5.2 Groundwater Quality Monitoring

Because most of the wells in the basin are used for public water supply, an extensive record of water quality data is available for most wells dating from about 1985 to present. The SGA has compiled available historic water quality data for constituents monitored as required by the

California Department of Public Health (DPH) under Title 22. Sources of water quality data include:

- SGA Member Agencies
- DWR
- USGS
- CSUS

This level of monitoring is sufficient under existing regulatory guidelines to ensure that the public is provided with a safe, reliable drinking water supply. It is also important to have in place a network of shallow (less than 200 feet deep) dedicated monitoring wells to serve as an early warning system for contaminants that could make their way to the greater depths in the basin where SGA members primarily extract groundwater. The SGA has installed a series of monitoring wells in the basin through a Local Groundwater Assistance Grant from DWR (see **Figure 11**). Additionally, SGA has incorporated water quality data from wells in with the USGS NAWQA program and worked with AFRPA to identify a subset of the approximately 400 monitoring wells located in and around the former McClellan AFB for integration into the SGA monitoring effort.

Figure 11 shows the existing SGA member agency production wells. Title 22 water quality reporting is required by DPH for each of these public drinking water supplies. The SGA's water quality monitoring network also includes these wells. The water quality monitoring well network will continue to be expanded to include additional DWR, USGS, McClellan, Aerojet, CVRWQCB, and privately owned wells are opportunities arise.

Actions. The following actions will be taken by the SGA to monitor and manage groundwater quality:

1. Coordinate with member agencies to verify that uniform protocols are used when collecting water quality data.
2. Maintain the existing SGA monitoring well network for purposes of groundwater quality monitoring.
3. Coordinate with the USGS to continue to obtain water quality data from NAWQA wells.
4. Coordinate with member agencies and other local, state, and federal agencies to identify where wells may exist in areas with sparse groundwater quality data. Identify opportunities for collecting and analyzing water quality samples from those wells.
5. Assess the adequacy of the groundwater quality monitoring well network in the Biennial Basin Management Report.

3.5.3 Land Surface Elevation Monitoring

Subsidence of the land surface resulting from compaction of underlying formations affected by head (water level) decline is a well-documented concern throughout much of the Central Valley.

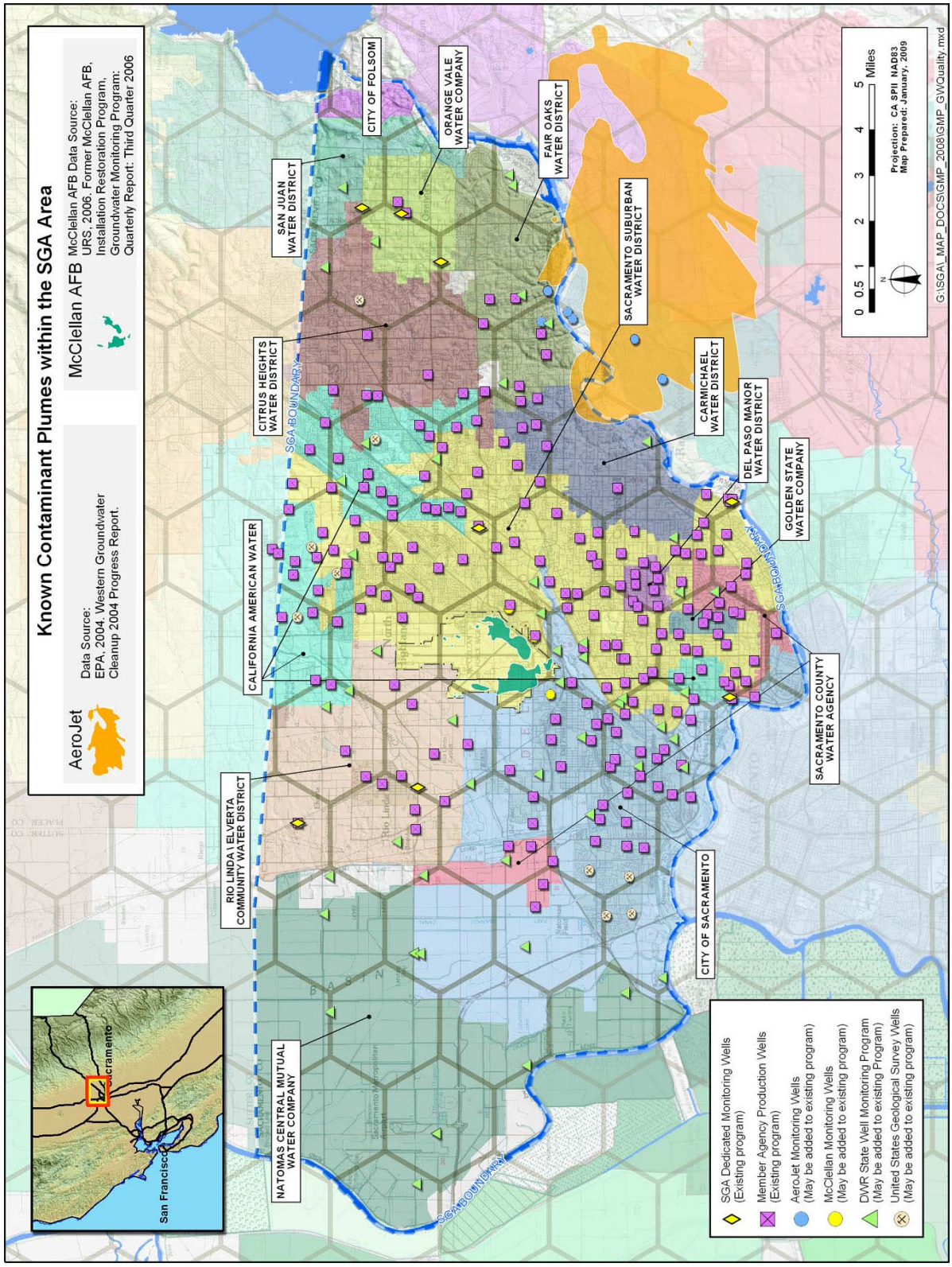

Figure 11. Existing and Proposed Wells in SGA's Groundwater Quality Monitoring Network

During a typical pumping season, changes in land surface elevation can be observed as a result of both elastic and inelastic subsidence in the underlying basin. Elastic subsidence results from the reduction of pore fluid pressures in the aquifer and typically rebounds when pumping ceases or when groundwater is otherwise recharged resulting in increased pore fluid pressure. Inelastic subsidence occurs when pore fluid pressures decline to the point that aquitard (a clay bed of an aquifer system) sediments collapse resulting in permanent compaction and reduced ability to store water in that portion of the aquifer.

While some land surface subsidence from compaction of water-bearing deposits caused by the removal of groundwater is known to have occurred west of the Sacramento River[15], the extent of subsidence east of the Sacramento River has been minimal.

DWR maintains two subsidence monitoring stations near the North Area Basin (see **Figure 10**). The Sutter Station is located just north of the SGA area, where State Highway 99 crosses the Natomas Cross-Canal. Total subsidence at the Sutter Station from spring 1995 to spring 2003 has been 0.026 feet (0.312 inch)[16]. Total subsidence at the Conaway Ranch Station, located west of the SGA area, from spring 1992 to spring 2003 has been 0.044 feet (0.526 inch)[17].

Historical benchmark elevation data for the period from 1912 through the late 1960s obtained from the National Geodetic Survey (NGS) were used to evaluate land subsidence in north Sacramento County. From 1947 to 1969 the magnitude of land subsidence measured at benchmarks north of the American River in Sacramento County ranged from 0.13 feet to 0.32 feet, with a general decrease in subsidence in a northeastward direction. This decrease is consistent with the geology of the area: formations along the eastern side of the Sacramento Valley are older than those on the western side and are subject to a greater degree of pre-consolidation making them less susceptible to subsidence. The maximum documented land subsidence of 0.32 feet was measured at benchmarks located approximately two miles northeast of the former McClellan AFB, and approximately one mile northeast of the intersection of Greenback Lane and Elkhorn Boulevard.

Another land subsidence evaluation was performed in the Arden-Arcade area[18] of Sacramento County from 1981 to 1991. Elevations of nine wells in the Arden-Arcade area were surveyed in 1981, 1986, and 1991. The 1986 results were consistently higher than the 1981 results; this was attributed to extremely high rainfall totals in early 1986 that recharged the aquifer and caused a rise in actual land surface elevations. The 1991 results were consistently lower than the 1986 results; this was attributed to five years of drought immediately preceding the 1991 measurements, which caused depletion of the aquifer and resulting land surface subsidence. Comparison of eight[19] of the locations indicates that seven benchmarks have lower elevations in 1991 than in 1981 and one benchmark has a higher elevation in 1991. Of the seven benchmarks with lower elevations in 1991, the maximum difference is 0.073 feet (less than one inch).

[15] From 1988-1992 cumulative net sediment compaction of 0.78 feet was measured at the extensometer in Yolo County between June 15, 1988 and October 1, 1992 (USGS data from the Woodland land subsidence monitoring station, Yolo County, California, water years 1988-1992, USGS Open File Report 94-494)

[16] Based on information provided by Central District of DWR to MWH on 12/11/03.

[17] Based on information provided by Central District of DWR to MWH on 12/17/03.

[18] The boundaries of the Arden-Arcade area are (1) Sacramento's city limits on the west, (2) Sacramento's city limits and the American River on the south, (3) CWD on the east, and (4) Sacramento's city limits and Sac Suburban (Northridge Service Area) on the north.

[19] One of the nine wells could not be compared between 1981 and 1991 because the benchmark was destroyed and replaced between 1981 and 1986.

Whether this is inelastic subsidence is indeterminate from the data, but it is clear that the magnitude of the potential subsidence in the benchmarks during that period is negligible.

In an effort to further the monitor land subsidence, SGA surveyed elevations of its monitoring well network and is coordinating with SSWD to monitor surveys of benchmarks established at SSWD monitoring wells..

Actions. The SGA will continue to monitor land subsidence and pursue additional possible actions, if necessary. These will include:

1. Re-survey the elevations established at SGA monitoring wells.
2. Coordinate with other agencies, particularly the City and County of Sacramento, the NGS, and SAFCA to determine if there are other available data in the SGA area to aid in the analysis of potential land surface subsidence.

3.5.4 Surface Water Groundwater Interaction Monitoring

The interaction between groundwater and surface water continues to be evaluated within the region. The SGA has and will continue to pursue activities in support of a better understanding on how these two water supplies are related. SGA is currently aware of the following:

- A draft decision by the State Water Resources Control Board (SWRCB, 2003) regarding the American River. The SWRCB concluded that from Nimbus Dam to about 6,000 feet below the dam, groundwater elevations and surface water elevations were similar enough to each other that the river could be either a losing or a gaining reach. Beyond 6,000 feet downstream from Nimbus Dam, groundwater elevations are sufficiently lower than the river channel to conclude that the American River is a losing reach down to the confluence with the Sacramento River.
- Updated higher resolution groundwater models have been developed over the past five years (See **Section 3.6.1**) and are now being used to estimate flow volumes between surface water and groundwater for various hydrologic conditions.

Actions. The SGA will pursue actions to better understand the relationship between surface and groundwater in the SGA area, including:

1. Coordinate with local, state, and federal agencies to identify available surface water quality data from the American and Sacramento rivers adjacent to the SGA area.
2. Correlate groundwater level data from wells in the vicinity of river stage data to further establish whether the river and water table are in direct hydraulic connection, and if the surface water is gaining or losing at those points. Also use this same data to calibrate groundwater models that simulate this interaction.
3. Continue to coordinate with local, state, and federal agencies and develop partnerships to investigate cost-effective methods that could be applied to better understand surface water-groundwater interaction along the Sacramento and American rivers.
4. Coordinate with CSUS to analyze data obtained from monitoring wells on the CSUS campus to better understand the relationship between the groundwater basin and surface water flows at that location.
5. Coordinate with the Corps of Engineers and SAFCA to review projects that could potentially impact recharge from rivers to the underlying groundwater basin.

3.5.5 Protocols for the Collection of Groundwater Data

The SGA has evaluated the accuracy and reliability of groundwater data collected by member agencies (MWH, 2002). The evaluation indicated a significant range of techniques, frequencies and documentation methods, for the collection of groundwater level and groundwater quality data. Although the groundwater data collection protocol may be adequate to meet the needs of the individual water districts, the lack of consistency between districts in the past yields an incomplete picture of basin-wide groundwater conditions. Other types of groundwater data collection protocols are included in **Sections 3.5.1** and **3.5.2** above.

Actions. To improve the comparability, reliability and accuracy of groundwater data, the SGA take the following actions:

1. Use a Standard Operating Procedure (SOP) for collection of water level data by each of the member agencies. **Appendix D** includes an SOP for Manual Water Level Measurements. This SOP was prepared using guidance documents available through USEPA and was included in the SGA technical memorandum summarizing the accuracy and reliability of groundwater data (MWH, 2002).
2. Provide member agencies with guidelines on the collection of water quality data developed by DPH for the collection, pretreatment, storage, and transportation of water samples (DHS, 1995).
3. Provide training on the implementation of these SOPs to member agencies, if requested.

3.6 COMPONENT CATEGORY 3: DATA MANAGEMENT AND ANALYSIS

This category will ensure that SGA maintains a centralized database of well status and construction information, groundwater quality and elevation data, and known groundwater contamination sites for application in annual reporting and use in technically appropriate model(s) for analyzing basin management activities. Three activities are taking place on a continuous basis to insure that the SGA is using current data that is screened for its quality and use in portraying the data in the biennial Basin Management Report.

3.6.1 SGA Groundwater Model

In September 2007, an update to the Integrated Groundwater and Surface Water Model (IGSM) application for the North Area Basin was successfully completed. The previous IGSM application was developed in the mid-1990s. Since that time, several improvements were made to the programming to warrant an update of the model datasets. In particular, the model is now capable of simulating daily surface water flows, which could greatly improve simulation of the interaction between groundwater and surface water systems. Additionally, improvements have been made to the algorithm that calculates the surface water/groundwater interaction. Finally, improvements to desktop computer processor speeds enable a much greater number of calculations to be made in shorter time periods. This in turn enables more model nodes, resulting in a more refined model grid and more detailed simulations in areas of particular interest.

Half of the update was funded through a $250,000 grant from the Department of Water Resources' Local Groundwater Assistance Program (AB 303) to SGA. The remaining half of the update was funded through a partnership between the Regional Water Authority (RWA), the U.S. Army Corps of Engineers, and a Proposition 50 planning grant from DWR.

The model improvements included: 1) updating the hydrology for the calibration period (1970 through 2004) from monthly to daily; 2) refining the model grid to improve the model simulation, particularly along stream nodes where recharge to the aquifer system may be

occurring; 3) identifying additional monitoring wells to increase the number of groundwater elevation measurements used in calibrating aquifer hydrogeologic parameters; and 4) developing baseline models of existing and future conditions to evaluate potential impacts of various conjunctive use scenarios.

Actions. The SGA will utilize the existing SGA IGSM application and, if necessary, other groundwater model(s) through education, improvements and continuous calibration. To achieve this, the SGA will take the following actions:

1. Assemble a committee to review the current functionality of the SGA IGSM application and to discuss the pros and cons of the existing modeling tool and other tools (e.g., IWFM or MODLFOW) that may be available for longer-term modeling needs.
2. Canvas the membership annually to determine if they have any upcoming modeling needs.
3. Work with modeling support consultant(s) to identify tools (pre- and post-processing) that can make the model more efficient to operate and to create graphics that help better present modeling results.

3.6.2 Comprehensive Data Analysis

The SGA has and will continue to update the member agencies and public at-large on the current state of the SGA portion of the groundwater basin through Biennial Basin Management Reports. The SGA has produced a 2004/05 and a 2006/07 report currently available for download on the SGA website (http://www.sgah2o.org)

Actions. The SGA will continue biennial reporting on the basin management activities and will work with member agencies to improve reporting, if necessary.

1. Prepare the biennial Basin Management Report to assess basin conditions in even numbered years.
2. Prior to preparation of the 2010 version of the Basin Management Report, review the content of the report with the GMP Implementation Committee to ensure the content of the report is addressing the needs of the SGA members.
3. If requested, conduct more focused analyses on issues of concern to SGA members (e.g., cluster of contamination emerging or declining water elevations in a particular part of the basin).

3.6.3 Data Management System

The SGA membership includes 14 public agency and investor-owned water purveyors. Historically, the member agencies have maintained a varying range of groundwater-related data in a wide variety of formats. In order for the SGA to achieve its primary objective of sustaining its groundwater resource, it is essential to develop a data storage and analysis tool, the DMS. The DMS was developed by MWH under contract with the USACE. Other local sponsors included DWR and the SGA.

Development of the DMS includes both the population of a database and the development of a user interface to easily access the database. Phase I of the DMS development was completed in January 2003 and included initial development of the user interface and population of the DMS to a demonstration level of approximately one-fourth of the water purveyor wells. Phase II fully populated the database and added further customization of the user interface with additional analysis features. The input of new data has taken place with each biennial Basin Management

Report. Quality-control measures are also implemented to remove questionable data and to verify the quality and completeness of new data.

The DMS is a public domain application developed in a Microsoft Visual Basic environment and is linked to a database of the SGA purveyor data and groundwater model data. The DMS provides the end-user with ready access to both enter and retrieve data in either tabular or graphical formats. Data in the DMS include:

- Well construction details.
- Known locations of groundwater contamination and potentially contaminating activities.
- Long-term monitoring data on:
    - Monthly extraction volumes.
    - Water elevations.
    - Water quality.
- Aquifer characteristics based on well completion reports.
- Groundwater model input and output data.

The DMS allows for the viewing of regional trends in water level and water quality not previously available to the SGA (see **Figure 12** for a DMS screen capture). The DMS has the capability of quickly generating well hydrographs and groundwater elevation contour maps using historic groundwater level data. The DMS also has the ability to view water quality data for Title 22 required constituents as a temporal concentration graph at a single well or any constituent can be plotted with respect to concentration throughout the SGA area. Some additional features include the ability to view cross-sectional data using well lithology data across the groundwater basin, and the ability to incorporate groundwater model calibration results and compare the results with actual monitored groundwater elevation data.

Presentation of groundwater elevation data and groundwater quality data in these ways are useful for making groundwater basin management decisions. The SGA is currently in the process of establishing data transfer protocols so that groundwater data within the SGA area (by member agencies, DWR, AFRPA, USGS, etc.) can be readily appended to the database and analyzed through the DMS. Annual summaries of groundwater monitoring data will be prepared using the analysis tools in the DMS and presented in the biennial update to Basin Management Report (see **Section 3.6.2**).

Actions. To maintain and improve the usability of the DMS, the SGA will take the following actions:

1. Continue to update the SGA database with current water purveyor data.
2. Make recommendations to the DMS developer on utilities to add to the DMS to increase its functionality.
3. Review the current database and recommend actions to increase the accuracy and efficiency of the SGA database.
4. Work with adjacent groundwater authorities on shared data protocols to achieve the highest level of confidence in the comprehensive data analysis.

3.7 COMPONENT CATEGORY 4: GROUNDWATER RESOURCE PROTECTION

The SGA considers groundwater protection to be one of the most critical components of ensuring a sustainable groundwater resource. In this GMP, resource protection includes both prevention of contamination from entering the groundwater basin and remediation of existing contamination. Prevention measures include proper well construction and destruction practices, development of wellhead protection measures, and protection of recharge areas.

3.7.1 Well Construction Policies

The Sacramento County EMD administers the well permitting program for Sacramento County. The standards for construction are identified in Sacramento County Code, Chapter 6.28 (Sacramento County Ordinance No. 1246) as amended on July 22, 2003. In addition to general well construction standards, Sacramento County receives and scans all well completion reports for wells constructed in Sacramento County.

The Sacramento EMD maintains a policy of special review by appropriate regulatory agencies for well permits within 2,000 feet of a known contaminant plume (referred to as Consultation Zones) and prohibits the drilling of new public supply wells at the former McClellan AFB. As part of the development of the DMS, the most recent extents of known contaminant plumes associated with the former McClellan AFB, the former Mather AFB, and Aerojet were delineated for the SGA.

Actions. The SGA will take the following actions:

1. Ensure that all member agencies are provided a copy of the county well ordinance and understand the proper well construction procedures.
2. Inform member agencies of Sacramento County's Consultation Zone and provide a copy of the boundary of the former McClellan AFB prohibition zone to appropriate member agencies.
3. Provide a copy of the most recently delineated plume extents at the former McClellan AFB, the former Mather AFB, and Aerojet to the Sacramento County EMD and SGA members for their review and possible use.
4. Coordinate with member agencies to provide guidance as appropriate on well construction. Where feasible and appropriate, this could include the use of subsurface geophysical tools prior to construction of the well to assist in well design.

3.7.2 Well Abandonment and Well Destruction Policies

The Sacramento EMD also administers the well destruction program for Sacramento County. While in its very early stages, the Sacramento County EMD is overseeing and participating in a "Special Environmental Project" (SEP) as part of an EMD enforcement action settlement that resulted in funding for the identification of an estimated 1,000 abandoned supply wells in Sacramento County. The goal is to locate abandoned wells, collect GPS coordinates for the wells, and get the wells properly destroyed, with or without financial assistance from our SEP funding source.

Historically, the north part of Sacramento County has been served by organized water districts, so there are not many privately owned domestic wells. As part of development of the DMS, DWR well records for all known wells in the basin were reviewed for reported abandonment and destruction. The wells were rated for the confidence of proper destruction based on the information provided on the report. This information was entered into the DMS. The actions

listed below will further provide improved protection of groundwater quality within the SGA area.

Actions. The SGA will take the following actions:

1. Ensure that all member agencies are provided a copy of the code and understand the proper destruction procedures and support implementation of these procedures.
2. Coordinate with the Sacramento County EMD to identify ways to ensure that wells in the SGA area are properly abandoned or destroyed.

3.7.3 Wellhead Protection Measures

Identification of wellhead protection areas is a component of the Drinking Water Source Assessment and Protection (DWSAP) Program administered by the DPH. The DPH set a goal for all water systems statewide to complete Drinking Water Source Assessments by mid-2003. All SGA member agencies have completed their required assessments by performing the three major components required by DPH:

- Delineation of capture zones around sources (wells).
- Inventory of Potential Contaminating Activities (PCAs) within protection areas.
- Vulnerability analysis to identify the PCAs to which the source is most vulnerable.

Delineation of capture zones includes using groundwater gradient and hydraulic conductivity data to calculate the surface area overlying the portion of the aquifer that contributes water to a well within specified time-of-travel periods. Typically, areas are delineated representing 2-, 5-, and 10-year time-of-travel periods. These protection areas need to be managed to protect the drinking water supply from viral, microbial, and direct chemical contamination.

Inventories of PCAs include identifying potential origins of contamination to the drinking water source and protection areas. PCAs may consist of commercial, industrial, agricultural, and residential sites, or infrastructure sources such as utilities and roads. Depending on the type of source, each PCA is assigned a risk ranking, ranging from "very high" for such sources as gas stations, dry cleaners, and landfills, to "low" for such sources as schools, lakes, and non-irrigated cropland.

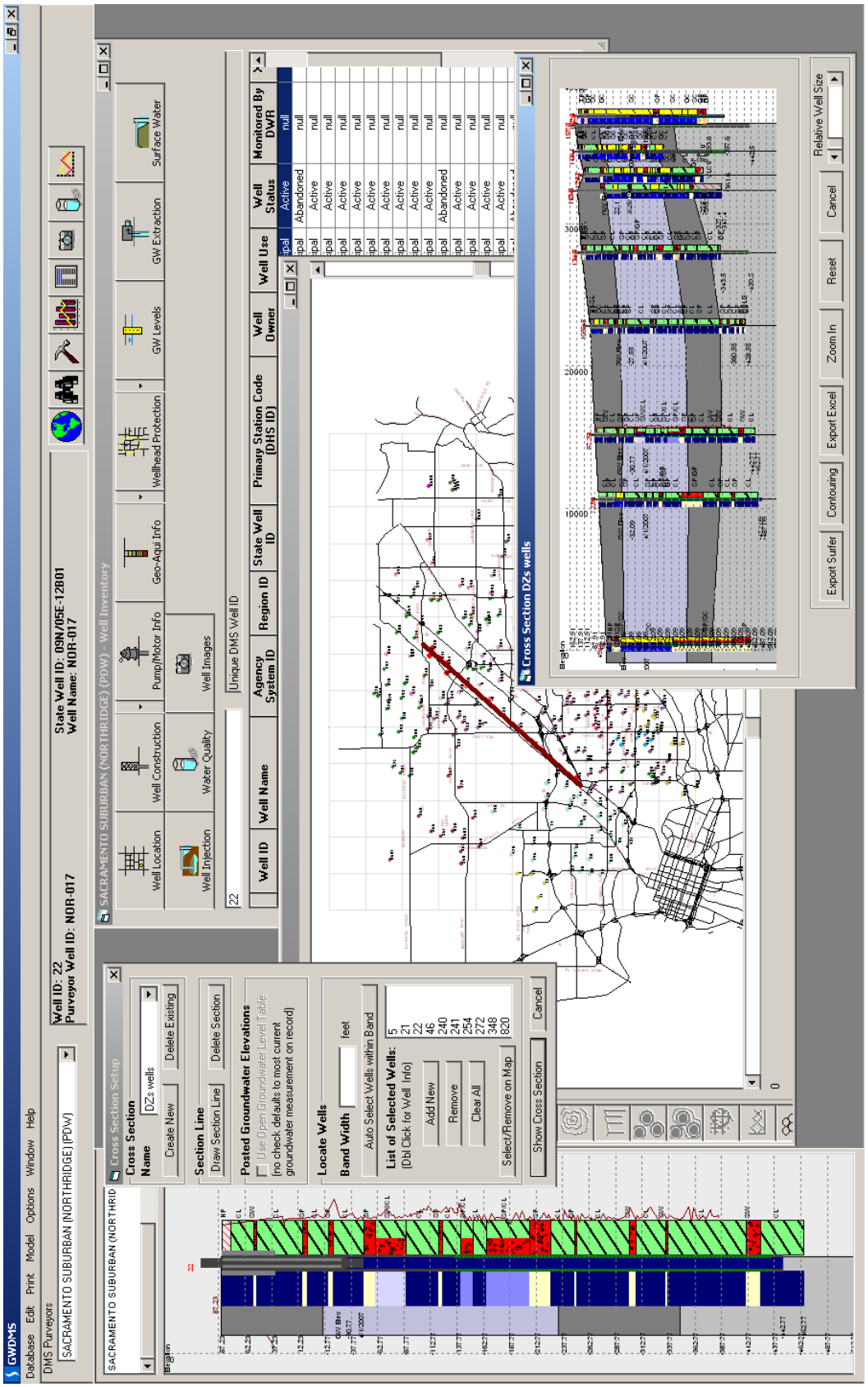

Figure 12. DMS Screen Capture

Vulnerability analysis includes determining the most significant threats to the quality of the water supply by evaluating PCAs in terms of risk rankings, proximity to wells, and Physical Barrier Effectiveness (PBE). PBE takes into account factors that could limit infiltration of contaminants including type of aquifer, aquifer material (for unconfined aquifers), pathways of contamination, static water conditions, hydraulic head (for confined aquifers), well operation, and well construction. The vulnerability analysis scoring system assigns point values for PCA risk rankings, PCA locations within wellhead protection areas, and well area PBE; the PCAs to which drinking water wells are most vulnerable are apparent once vulnerability scoring is complete.

The SGA has already added PCA and capture zone information from the DWSAP into the DMS. The DMS includes a feature that will automatically calculate wellhead protection areas if no data are available or if new well locations are proposed.

Actions. The SGA will take the following actions:

1. Obtain an updated coverage of potentially contaminating activities and provide to member agencies for their use in protecting existing wells and in siting future wells.
2. Canvas the SGA membership for current wellhead protection measures and provide a summary of actions taken by others as a tool in managing their individual wellhead protection programs.

3.7.4 Protection of Recharge Areas

The SGA recognizes the important link between activities that take place on the surface and the potential impact of these activities on the quality and quantity of groundwater recharge. Implementation for the protection of groundwater recharge areas starts with educational programs directed at groundwater and land use authorities that emphasize the need to protect groundwater recharge areas and pay special attention to overlying land use practices that either impede (e.g., large pavement areas) or could pollute (e.g., proper oil disposal) water as it makes its way from the surface to the aquifer.

In the past, the SGA has evaluated surface geology through a limited desktop study to identify and delineate areas of potentially high recharge rates. Surface geology and qualitative estimates of relative recharge rates are shown on **Figure 13**. The SGA recognizes the importance of more accurately identifying recharge areas not only within the SGA area but within adjacent groundwater subbasins in consultation with adjacent groundwater management agencies.

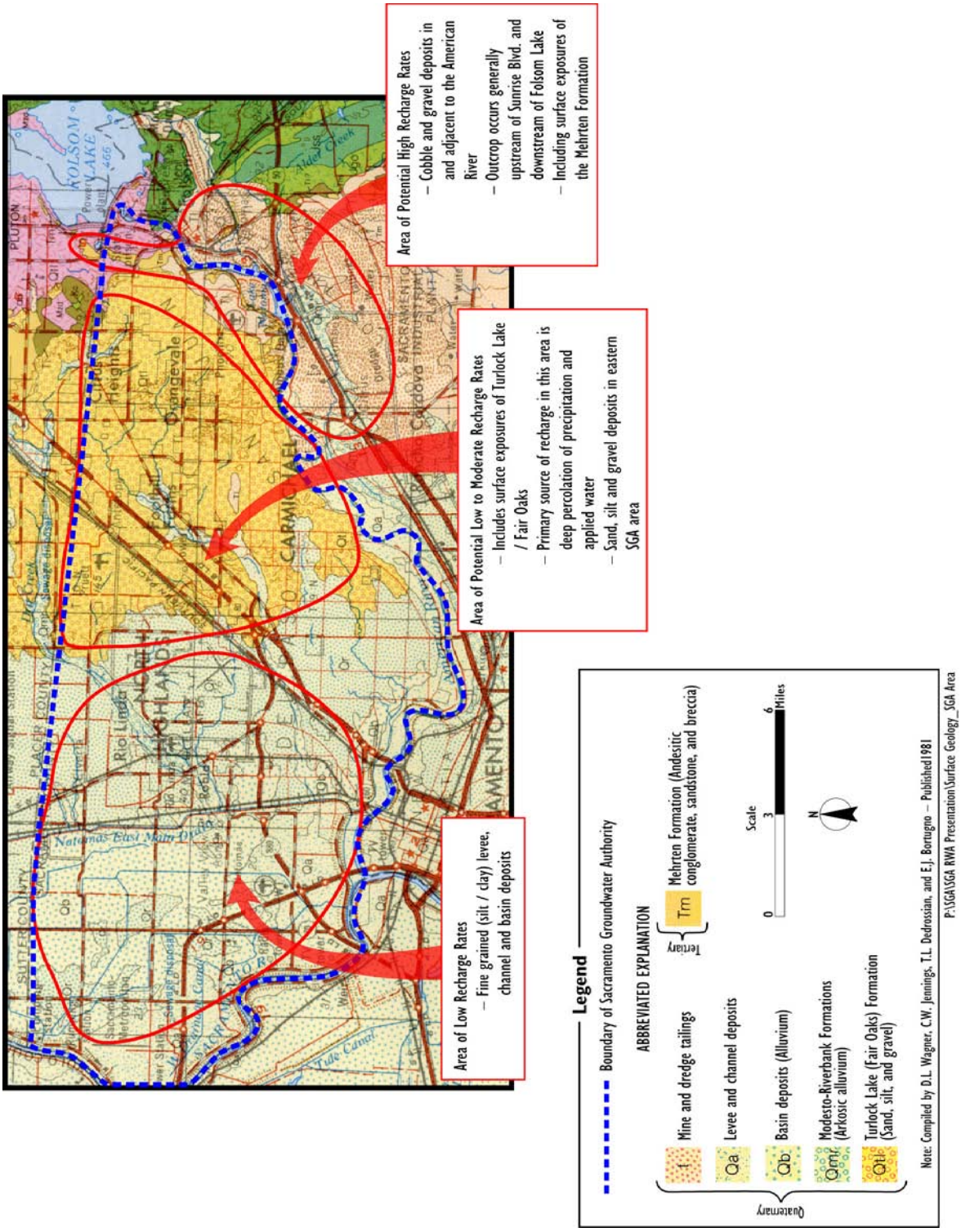

Figure 13. Surface Geology of the SGA Area – Implications for Surface Recharge Rates

Actions. The SGA will take the following action:

1. Quantify, using the existing numerical SGA groundwater model, the potential surface recharge over the SGA area.
2. Compare modeling results with existing geologic maps to develop a map of areas that are potentially contributing significant recharge in the basin.
3. Communicate with adjacent groundwater authorities and land-use planners to emphasize the need to protect prominent groundwater recharge areas and pursue mutual joint efforts in pursuing grants for the purpose of understanding the value and need for protecting undeveloped groundwater recharge areas.

3.7.5 Control of the Migration and Remediation of Contaminated Groundwater

The migration of contaminated groundwater in the SGA area is of primary concern from the McClellan and Aerojet groundwater contamination plumes as shown in **Figure 4**. Also of concern is the localized contamination of groundwater by industrial point sources such as dry cleaning facilities and numerous fuel stations throughout the SGA area.

While the SGA does not have authority or the responsibility for remediation of this contamination, it is committed to coordinating with responsible parties and regulatory agencies to keep SGA members informed on the status of known contamination in the basin. For example, the SGA has requested and entered into its DMS the coverage of known LUSTs within the basin. This information is maintained by the SWRCB and CVRWQCB.

As detailed in **Section 3.4.4,** SGA's water quality committee joined forces with the Water Forum to establish what is now known as the Regional Contamination Issues Committee (RCIC). The RCIC is a forum for water purveyors, regulators and responsible parties to raise issues and discuss solutions for dealing with groundwater contamination issues that impact the region. Also, the SGA has been in communication with the AFRPA, which is overseeing remediation efforts at McClellan (see **Section 3.4.2**).

Actions. The SGA will take the following actions:

1. Continue facilitation of the Regional Contamination Issues Committee to coordinate the efforts of regulators, responsible parties, and water purveyors to expedite the cleanup of contamination in the basin.
2. Coordinate with known responsible parties to develop a network of monitoring wells to act as an early warning system for public supply wells.
3. If detections occur in these monitoring wells, facilitate meetings between the responsible parties and the potentially impacted member agency to develop strategies to minimize the further spread of contaminants. An example of a strategy would be to consider altering groundwater extraction patterns in the area to change the directional flow of groundwater.
4. Provide SGA members with all information on mapped contaminant plumes and LUST sites for their information in developing groundwater extraction patterns and in the siting of future production and monitoring wells.

3.7.6 Control of Saline Water Intrusion

Saline water intrusion from the Sacramento/San Joaquin River Delta (Delta) is not currently a problem in Sacramento County as a whole or in the North Area Groundwater Basin, and it is not

expected to become a problem in the future. Higher groundwater elevations associated with recharge in the American and Sacramento rivers have maintained a historical positive gradient preventing significant migration of any saline water bodies associated with the Delta from migrating east into the Sacramento County region. These groundwater gradients will continue to serve to prevent any localized pumping depressions in the basin from inducing flow from the Delta into the North Area Groundwater Basin.

A more local source of saline water is beneath the base of fresh water in the North Area Groundwater Basin. Berkstresser (1973) mapped the base of fresh water (the point below which the specific conductivity of the water is greater than about 3,000 micromhos per centimeter (μmhos/cm)) for the Sacramento Valley. As noted in **Section 2.1.1** and illustrated in **Figure 3,** the North Area Basin has a minimum depth of fresh water at an elevation of about 800 feet below mean sea level near the eastern basin margin and increases to a depth of approximately 2,000 feet below mean sea level on the western margin of the basin. The SGA member agencies generally extract groundwater from depths of less than 500 feet, so their extractions are substantially above the base of fresh water. Therefore, current pumping practices would not be expected to create a situation where deeper saline water is being drawn into the fresh water aquifer.

Actions. The SGA will take the following actions:

1. Observe TDS concentrations in public supply wells that are routinely sampled under the DPH Title 22 Program. These data will be readily available in the SGA's DMS and are already an on-going task for the biennial assessment of basin conditions.
2. Inform all member water purveyor managers of the presence of the saline water interface in the deep Mehrten formation and the approximate depth of the interface below their service area for their reference when siting potential wells. The SGA will also ensure that the Sacramento County EMD, which issues well permits, is aware of the interface. The SGA will provide a map indicating the contour of the elevation of the base of fresh water in Sacramento County to the EMD for their reference when issuing well permits.

3.8 COMPONENT CATEGORY 5: GROUNDWATER SUSTAINABILITY

The SGA is committed to continuing its role in supporting regional activities relevant to the long term sustainability of the region's groundwater resources. To ensure a long-term viable supply of groundwater, SGA members are seeking To Whom It May Concern: maintain or increase the amount of groundwater stored in the basin over the long-term. The WFA's groundwater management element provides a framework by which the groundwater resource in the Sacramento County-wide area can be protected and used in a sustainable manner. It recommends an average annual sustainable groundwater yield within the SGA area of 131,000 AF/year. As documented in **Section 2** of the GMP, historic groundwater extractions have resulted in a net depletion of groundwater stored under the SGA area. To ensure a sustainable resource, SGA and RWA members have undertaken several actions toward increased conjunctive use of groundwater and surface water in the basin and will continue to do so. Historically, water purveyors in the basin away from the rivers did not have access to surface water and a large cone of depression resulted in the middle of the SGA area. Recent conjunctive use activities have resulted in providing new surface water supplies to these areas. Although water purveyors in the region will rely more heavily on groundwater during dry periods, the net increase in available surface water will result in a maintained or improved amount of groundwater in storage in the basin over the long term.

Two primary activities have and will continue to result in an improved ability to sustain the viability of the groundwater resource for the region. Conjunctive management activities include the planning and construction of facilities to increase the available surface water supply to the area as well as to create opportunities for the banking and exchange of water with partners after local needs are met. These partnerships will result in some of the necessary capital improvements to help sustain the resource in a cost-effective way. Additionally, the SGA's ability to sustain the groundwater resource will be met in part through reductions in potable water demand through conservation measures and through the use of recycled water for landscape irrigation supply. These groundwater sustainability activities are discussed below.

3.8.1 Conjunctive Management Activities

The SGA and RWA members are committed to expanded conjunctive use operations and are investigating a variety of ways of recharging water into the available storage space in the basin. Opportunities for direct recharge from overlying land in the basin are limited, because much of the land is developed or is overlain by flood basin deposits. Most of the recharge occurring through current conjunctive use is from in-lieu recharge (i.e., this is recharge that occurs naturally from rivers, streams, and surface percolation by simply reducing groundwater extractions).

The SGA has also embarked upon a Water Accounting Framework (WAF) to ensure a safe and sustainable water supply for the greater Sacramento region by encouraging water purveyors to "bank" water in the basin, when available, for use during dry periods. This includes the establishment of a WAF that supports groundwater banking programs by setting forth rules for operating a model groundwater bank, and monitoring the basin to ensure its sustainability as the program is implemented.

In June 2007, the SGA Board adopted Phase II of the WAF, which established that SGA would:

1. Maintain the various modeling and management tools needed to assess the results of conjunctive use operations in the basin.

2. Maintain an accounting of groundwater "deposits" and "withdrawals" associated with implementing a conjunctive use program.

3. Communicate with regional stakeholders on the progress of implementing the conjunctive use program.

With the adoption of the Phase II framework, the SGA Board directed staff to conduct a Phase III effort to establish the following:

1. Survey how various water banks operate in the state, and recommend criteria on how local agencies conducting conjunctive use programs could potentially participate in banking and exchange agreements with partners external to the North Area Basin.

2. Recommend monitoring criteria that would allow SGA to assess the long-term sustainability of the groundwater basin as conjunctive use and potential banking programs are operated in the North Area Basin.

Phase III was initially targeted for completion by December 2007. However, a variety of factors caused delays in the completion of this phase. In addition, the USBR and SGA Basin Management Report recently established criteria for participating in a drought water bank accounting for climate change that should be incorporated into a WAF banking and exchange program. SGA staff is reviewing these criteria and expects to complete Phase III of the Framework by mid-2009.

Actions. The SGA will take the following actions:

1. Continue to investigate conjunctive use opportunities within the SGA area. The SGA and its members will coordinate with the RWA and its members, as appropriate.
2. Continue to investigate opportunities for the development of direct recharge facilities in addition to in-lieu recharge (e.g. aquifer storage and recovery wells or surface spreading facilities, through constructed recharge basins or in river or streambeds).
3. Participate directly with the RWA IRWMP effort and ensure that SGA projects are included in the IRWMP.
4. Implement the SGA Water Accounting Framework to track the level of implementation of an appropriate conjunctive use program for the sustainability of the underlying groundwater basin.
5. Report annually, or as-needed, to the Water Forum Successor Effort on the planning and completion of projects that increase capacity to conjunctively manage the groundwater basin and also report on issues that reduce conjunctive management capacity (e.g., detection of contaminants).
6. Meet with representatives of the upper American River watershed to discuss their recently completed climate change analysis and identify opportunities for incorporating this information into a study for responding to changing future hydrologic conditions.
7. Coordinate with state and federal water agencies to determine if there are any forecasting resources available to give local water suppliers advance warning of expected water supply conditions for the upcoming year.
8. Meet with representatives of the USBR to understand the status of any studies of future climate change impacts and other operational criteria that could impact operations at Folsom Reservoir, which could impact conjunctive use operations.
9. Coordinate with representatives from Sacramento Central Groundwater Authority and existing Placer County and Sutter County groundwater management efforts to communicate expected water elevation changes resulting from conjunctive use in the SGA area and to understand the efforts and expected results of implementing conjunctive use in their respective management areas.

3.8.2 Assess Water Quality Threats to Groundwater Basin Sustainability

While the presence of contaminant plumes and point sources of contamination have been recognized in the basin for some time, no attempt at understanding which contaminants constitute the highest priority threats to a sustainable groundwater supply. To address this, SGA secured a Local Groundwater Assistance Grant from DWR to investigate the various threats and priority them based on the risk they pose to existing groundwater facilities. This study is expected to occur in 2009/2010.

Actions. The SGA will take the following actions:

1. Using the existing SGA IGSM application and the locations of known contaminant plumes in the basin, run modeling scenarios that simulate the current planned conjunctive

use program in the SGA basin to determine the potential future movement of contamination and the potential extent of threatened water supply facilities.

2. Update known potentially contaminating activities and other known point-source contaminants (e.g., leaking underground storage tanks) to determine where significant risks may exist to current or planned water supply facilities.
3. Review potential upcoming regulatory changes to water quality standards that could negatively impact water supply facilities.
4. Following completion of the actions above, recommend follow on studies where areas of significant concern or where data gaps exist.

3.8.3 Potable Supply Demand Reduction

Another way to stay within the sustainable yield of the basin and continue to achieve in-lieu recharge is by reducing demand on potable water supplies through conservation and by making recycled and remediated water available for irrigation of landscaping.

Water Conservation. The RWA has developed and implemented a regional Water Efficiency Program (WEP). The WEP assists members to meet their water conservation agreements with the Water Forum, the California Urban Water Conservation Council, and for some members the Central Valley Project Improvement Act (CVPIA). The water conserved as part of this effort is essential to the Water Forum's ability to meet its objectives of providing a safe, reliable water supply to 2030 and protecting the lower American River in two ways. First, the conserved water will serve to meet increased future demands. Second, the conserved water will reduce the overall demand on the groundwater basin in drier years and can reduce the demand for water diverted from the lower American River.

Recycled Water The SRCSD treats wastewater for the entire County of Sacramento at its wastewater treatment plant located near Freeport between Interstate 5 and Franklin Boulevard, and north of Laguna Blvd. Over the past two decades SRCSD has been developing a recycled water program that is intended to grow over the coming years as water quality restrictions of treated water effluent become more constrained. In the late 1990's, in cooperation with SCWA, SRCSD successfully constructed a 4 mgd recycled water treatment plant for commercial/industrial outdoor landscaping in two large development projects (Laguna West and Lakeside) south of the wastewater treatment plant. Looking to further expand their recycled water program, SRCSD joined the RWA as an associate member in September 2003. By joining the RWA, SRCSD can work closely with other member agencies to investigate opportunities to use recycled water throughout the area to more effectively develop recycle water on a regional scale. SRCSD is currently expanding its recycled water treatment plant to 9 mgd, and has a goal of expanding its recycled water treatment capacity to between 30 and 40 mgd within 20 years.

Remediated Groundwater Both McClellan and Aerojet facilities treat contaminated groundwater to water quality levels that meet their respective National Pollution Discharge Elimination System (NPDES) permits. Currently both clean-up sites extract contaminated groundwater, treat the water, and then discharge the treated water to local streams that eventually flow to the American and Sacramento rivers. Given the high quality of remediated water after treatment, there has been some interest in making use of the water in-basin to avoid eroding of the WFA sustainable groundwater yields both north and south of the American River. This would require infrastructure similar to recycled water where non-potable can be used for outdoor irrigation that may also include residential landscape irrigation.

Actions. The SGA will take the following actions:

1. Coordinate with the RWA and its members that have signed PSAs to the WFA to understand if agreed upon conservation efforts are on track. For members that are not signatory, the SGA will ensure that they are informed of the benefits and regional importance of RWA's WEP.
2. Coordinate with SRCSD through the RWA to investigate opportunities for expanded use of recycled water throughout the county as a non-potable supply for outdoor irrigation providing natural in-lieu recharge to the groundwater basin.
3. Encourage the appropriate application of treated remediated groundwater for beneficial uses to help reduce demands for potable water supply and to prevent the erosion of the sustainable yields of the North and Central Area Basins.

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Section 4 PLAN IMPLEMENTATION

SGA has a well-documented history of implementing GMP elements since its initial GMP adoption in December 2003 (see **Appendix B**). The following table summarizes the revised action items of the updated GMP and a planned implementation schedule. Many of these actions involve communicating and coordinating by SGA with other local, state, and federal agencies. The timeline for beginning implementation of the GMP action items range from already ongoing to up to 24 months from adoption of the GMP. The majority of the actions begin within 6 months of the GMP adoption. Updates of the status of GMP implementation will be provided at SGA Board meetings and in the biennial Basin Management Report.

Table 5. Schedule for Implementation of GMP Action Items

GMP Component Category 1 and Actions	Implementation Schedule (approx. time based upon date of adoption of the 2008 SGA GMP)
COMPONENT CATEGORY 1: STAKEHOLDER INVOLVEMENT(Section 3.4)	
Actions. These actions provide multiple opportunities for public interest and involvement and serve to continue regional partnerships and information sharing between multiple water agencies and stakeholders.	
1.1 Involving the Public (Section 3.4.1)	
1. Continue efforts to encourage public participation as opportunities arise.	ongoing
2. Provide briefings, copies of Basin Management Reports, and a written annual summary to the Water Forum Successor Effort on GMP implementation progress.	12 months
3. Provide a written annual summary on GMP implementation progress to JPA signatories.	12 months
4. Work with SGA members to maximize outreach on GMP activities including the use of the SGA Web site, member Web sites, or bill inserts.	ongoing
1.2 Involving Other Agencies Within and Adjacent to the SGA Area (Section 3.4.2)	
1. To the extent practicable attend regular meetings of the Sacramento Central Groundwater Authority and the Placer Groundwater Authority and notify them of SGA Board meetings.	ongoing
2. Provide copies of the adopted GMP and subsequent Biennial Basin Management Reports to representatives from the Western Placer, Sutter County, and Yolo County management groups as well as the Sacramento Central Groundwater Authority and the on-going stakeholder efforts taking place in South Sacramento County.	3 months
3. Meet with representatives from the Western Placer, Sutter County, and Yolo County management groups, as well as the Sacramento Central Groundwater Authority and the on-going stakeholder efforts taking place in South Sacramento County, as needed.	ongoing
4. Coordinate with the Western Placer management group, and the Sacramento Central Groundwater Authority to develop a common data platform and share groundwater-related data to the greatest extent practicable to help ensure the mutual sustainability	12 months

Table 5. Schedule for Implementation of GMP Action Items

GMP Component Category 1 and Actions	Implementation Schedule (approx. time based upon date of adoption of the 2008 SGA GMP)
of our common groundwater resources.	
1.3 Utilizing Advisory Committees (Section 3.4.3)	
1. The GMP Implementation Committee will meet at least annually to review and guide implementation of the plan. Ad-hoc use of Technical Review Committees will take place, as needed.	ongoing
1.4 Developing Relationships with State and Federal Agencies (Section 3.4.4)	
1. Continue to promote partnerships and work alongside the Water Forum Successor Effort to achieve both local supply reliability and broader regional and statewide benefits.	ongoing
1.5 Pursuing Partnership Opportunities (Section 3.4.5)	
1. Continue to promote partnerships that achieve both local supply reliability and achieve broader regional and statewide benefits.	ongoing
2. Continue to track grant opportunities to fund groundwater management activities and local water infrastructure projects.	ongoing

GMP Component Category 2 and Actions	Implementation Schedule (approx. time based upon date of adoption of the 2008 SGA GMP)
COMPONENT CATEGORY 2: MONITORING PROGRAM (Section 3.5)	
Actions. These actions are being undertaken as part of a comprehensive monitoring program that records and documents groundwater elevations, water quality, and land subsidence, and characterizes the behavior of the SGA groundwater basin with mutual sharing of data with adjoining groundwater management agencies (or authorities).	
2.1 Groundwater Elevation Monitoring (Section 3.5.1)	
1. Coordinate with member agencies to collect data from a group of representative wells for monitoring spring and fall groundwater elevation measurements.	6 months
2. Coordinate with DWR and other well monitoring program partners, including SGA members, to ensure that the selected wells are maintained as part of a long-term monitoring network.	6 months
3. Coordinate with partners and request that the timing of water level data collection occur on or about April 15 and October 15 of each year.	6 months
4. Coordinate with partner agencies to ensure that needed water level elevations are collected and verify that uniform data collection protocols are used among the agencies.	6 months
5. Coordinate with the USGS to determine the potential for integrating USGS monitoring wells constructed for the NAWQA Program into the SGA monitoring network.	12 months

GMP Component Category 2 and Actions	Implementation Schedule (approx. time based upon date of adoption of the 2008 SGA GMP)
6. Maintain the existing SGA monitoring well network for purposes of groundwater elevation monitoring.	ongoing
7. Provide a biennial assessment of groundwater elevation trends and conditions to SGA's member agencies, the Water Forum Successor Effort, and adjoining groundwater authorities.	3 months
8. Assess the adequacy of the groundwater elevation monitoring well network biennially.	12 months
2.2 Groundwater Quality Monitoring (Section 3.5.2)	
1. Coordinate with member agencies to verify that uniform protocols are used when collecting water quality data.	ongoing
2. Maintain the existing SGA monitoring well network for purposes of groundwater quality monitoring.	ongoing
3. Coordinate with the USGS to continue to obtain water quality data from NAWQA wells.	12 months
4. Coordinate with member agencies and other local, state, and federal agencies to identify where wells may exist in areas with sparse groundwater quality data. Identify opportunities for collecting and analyzing water quality samples from those wells.	12 months
5. Assess the adequacy of the groundwater quality monitoring well network in the Biennial Basin Management Report.	12 months
2.3 Land Surface Elevation Monitoring (Section 3.5.3)	
1. Re-survey the benchmarks established at SGA monitoring wells.	24 months
2. Coordinate with other agencies, particularly the City and County of Sacramento, the NGS, and SAFCA to determine if there are other available data in the SGA area to aid in the analysis of potential land surface subsidence.	6 months
3. Educate SGA member agencies of the potential for land surface subsidence and signs that could be indicators of subsidence.	ongoing
2.4 Surface Water Groundwater Interaction Monitoring (Section 3.5.4)	
1. Coordinate with local, state, and federal agencies to identify available surface water quality data from the American and Sacramento rivers adjacent to the SGA area.	12 months
2. Correlate groundwater level data from wells in the vicinity of river stage data to further establish whether the river and water table are in direct hydraulic connection, and if the surface water is gaining or losing at those points. Also use this same data to calibrate groundwater models that simulate this interaction.	12 months
3. Continue to coordinate with local, state, and federal agencies and develop partnerships to investigate cost-effective methods that could be applied to better understand surface water-groundwater interaction along the Sacramento and American rivers.	12 months
4. Coordinate with CSUS to analyze data obtained from monitoring wells on the CSUS campus to better understand the relationship between the groundwater basin and surface water flows at that location.	12 months

GMP Component Category 2 and Actions	Implementation Schedule (approx. time based upon date of adoption of the 2008 SGA GMP)
5. Coordinate with the Corps of Engineers and SAFCA to review projects that could negatively impact recharge from rivers to the underlying groundwater basin.	ongoing
2.5 Protocols for the Collection of Groundwater Data (Section 3.5.5)	
1. Use a Standard Operating Procedure (SOP) for collection of water level data by each of the member agencies. **Appendix D** of the GMP includes an SOP for Manual Water Level Measurements. This SOP was prepared using guidance documents available through USEPA and was included in the SGA technical memorandum summarizing the accuracy and reliability of groundwater data (MWH, 2002).	3 months
2. Provide member agencies with guidelines on the collection of water quality data developed by DHS for the collection, pretreatment, storage, and transportation of water samples (DPH, 1995).	6 months
3. Provide training on the implementation of these SOPs to member agencies, if requested.	ongoing

GMP Component Category 3 and Actions	Implementation Schedule (approx. time based upon date of adoption of the 2008 SGA GMP)
COMPONENT CATEGORY 3: DATA MANAGEMENT AND ANALYSIS (Section 3.6)	
Actions. Actions completed under this category will ensure that SGA maintains a centralized database of well status and construction information, groundwater quality and elevation data, and known groundwater contamination sites for application in annual reporting and use in technically appropriate model(s) for analyzing basin management activities.	
3.1 SGA Groundwater Model (Section 3.6.1)	
1. Assemble a committee to review the current functionality of the SGA IGSM application and to discuss the pros and cons of the existing modeling tool and other tools (e.g., IWFM or MODLFOW) that may be available for longer-term modeling needs.	24 months
2. Canvas the membership annually to determine if they have any upcoming modeling needs.	12 months
3. Work with modeling support consultant(s) to identify tools (pre- and post-processing) that can make the model more efficient to operate and to create graphics that help better present modeling results.	12 months
3.1.2 Comprehensive Data Analysis (Section 3.6.2)	
1. Prepare the Biennial Basin Management Report to assess basin conditions in even numbered years.	ongoing
2. Prior to preparation of the 2010 version of the Basin Management Report, review the content of the report with the GMP Implementation Committee to ensure the content of the report is addressing the needs of the SGA members.	18 months
3. If requested, conduct more focused analyses on issues of concern to SGA members (e.g., cluster of contamination emerging or declining water elevations in a particular	ongoing

part of the basin).	
3.3 Data Management System (Section 3.6.3)	
1. Continue to update the SGA database with current water purveyor data.	ongoing
2. Make recommendations to the DMS developer on utilities to add to the DMS to increase its functionality.	ongoing
3. Review the current database and recommend actions to increase the accuracy and efficiency of the SGA database.	12 months
4. Work with adjacent groundwater authorities on shared data protocols to achieve the highest level of confidence in the comprehensive data analysis.	12 months

GMP Component Category 4 and Actions	Implementation Schedule (approx. time based upon date of adoption of the 2008 SGA GMP)
COMPONENT CATEGORY 4: GROUNDWATER RESOURCE PROTECTION (Section 3.7)	
Actions. Management actions completed under this category serve to educate the water community on steps necessary in the construction, operation, and abandonment of wells for the protection and continued use of groundwater as a potable drinking water supply.	
4.1 Well Construction Policies (Section 3.7.1)	
1. Ensure that all member agencies are provided a copy of the county well ordinance and understand the proper well construction procedures.	6 months
2. Inform member agencies of Sacramento County's Consultation Zone and provide a copy of the boundary of the former McClellan AFB prohibition zone to appropriate member agencies.	6 months
3. Provide a copy of the most recently delineated plume extents at the former McClellan AFB, the former Mather AFB, and Aerojet to the Sacramento County EMD and SGA members for their review and possible use.	6 months
4. Coordinate with member agencies to provide guidance as appropriate on well construction. Where feasible and appropriate, this could include the use of subsurface geophysical tools prior to construction of the well to assist in well design.	ongoing
4.2 Well Abandonment and Well Destruction Policies (Section 3.7.2)	
1. Ensure that all member agencies are provided a copy of the code and understand the proper destruction procedures and support implementation of these procedures.	12 months
2. Coordinate with the Sacramento County EMD to identify ways to ensure that wells in the SGA area are properly abandoned or destroyed.	ongoing
4.3 Wellhead Protection Measures (Section 3.7.3)	
1. Obtain an updated coverage of potentially contaminating activities and provide to member agencies for their use in protecting existing wells and in siting future wells.	12 months
2. Canvas the SGA membership for current wellhead protection measures and provide a summary of actions taken by others as a tool in managing their individual wellhead	18 months

GMP Component Category 4 and Actions	Implementation Schedule (approx. time based upon date of adoption of the 2008 SGA GMP)
protection programs.	
4.4 Protection of Recharge Areas (Section 3.7.4)	
1. Quantify, using the existing numerical SGA groundwater model, the potential recharge over the SGA area.	18 months
2. Compare modeling results with existing geologic maps to develop a map of areas that are potentially contributing significant recharge in the basin.	18 months
3. Communicate with adjacent groundwater authorities and land-use planners to emphasize the need to protect prominent groundwater recharge areas and pursue mutual joint efforts in pursuing grants for the purpose of understanding the value and need for protecting undeveloped groundwater recharge areas.	18 months
4.5 Control of the Migration and Remediation of Contaminated Groundwater (Section 3.7.5)	
1. Continue facilitation of Regional Contamination Issues Committee to coordinate the efforts of regulators, responsible parties, and water purveyors to expedite the cleanup of contamination in the basin.	ongoing
2. Coordinate with known responsible parties to develop a network of monitoring wells to act as an early warning system for public supply wells.	ongoing
3. If detections occur in these monitoring wells, facilitate meetings between the responsible parties and the potentially impacted member agency to develop strategies to minimize the further spread of contaminants. An example of a strategy would be to consider altering groundwater extraction patterns in the area to change the directional flow of groundwater.	ongoing
4. Provide SGA members with all information on mapped contaminant plumes and LUST sites for their information in developing groundwater extraction patterns and in the siting of future production and monitoring wells.	12 months
4.6 Control of Saline Water Intrusion (Section 3.7.6)	
1. Observe TDS concentrations in public supply wells that are routinely sampled under the DPH Title 22 Program. These data will be readily available in the SGA's DMS and are already an on-going task for the biennial assessment of basin conditions.	ongoing
2. Inform all member water purveyor managers of the presence of the saline water interface in the deep Mehrten formation and the approximate depth of the interface below their service area for their reference when siting potential wells. The SGA will also ensure that the Sacramento County EMD, which issues well permits, is aware of the interface. The SGA will provide a map indicating the contour of the elevation of the base of fresh water in Sacramento County to the EMD for their reference when issuing well permits.	12 months

GMP Component Category 5 and Actions	Implementation Schedule (approx. time based upon date of adoption of the 2008 SGA GMP)
COMPONENT CATEGORY 5: GROUNDWATER SUSTAINABILITY (Section 3.8)	
Actions. These actions will allow SGA to continue its role in supporting regional activities relevant to the long term sustainability of groundwater.	
5.1 Conjunctive Management Activities (Section 3.8.1)	
1. Continue to investigate conjunctive use opportunities within the SGA area. The SGA and its members will coordinate with the RWA and its members, as appropriate.	ongoing
2. Continue to investigate opportunities for the development of direct recharge facilities in addition to in-lieu recharge (e.g. aquifer storage and recovery wells or surface spreading facilities, through constructed recharge basins or in river or streambeds).	ongoing
3. Participate directly with the RWA IRWMP effort and ensure that SGA projects are included in the IRWMP.	ongoing
4. Implement the SGA Water Accounting Framework to track the level of implementation of an appropriate conjunctive use program for the sustainability of the underlying groundwater basin.	12 months
5. Report annually, or as-needed, to the Water Forum Successor Effort on the planning and completion of projects that increase capacity to conjunctively manage the groundwater basin and also report on issues that reduce conjunctive management capacity (e.g., detection of contaminants).	12 months
6. Meet with representatives of the upper American River watershed to discuss their recently completed climate change analysis and identify opportunities for incorporating this information into a study for responding to changing future hydrologic conditions.	6 months
7. Coordinate with state and federal water agencies to determine if there are any forecasting resources available to give local water suppliers advance warning of expected water supply conditions for the upcoming year.	6 months
8. Meet with representatives of the USBR to understand the status of any studies of future climate change impacts and other operational criteria that could impact operations at Folsom Reservoir, which could impact conjunctive use operations.	12 months
9. Coordinate with representatives from Sacramento Central Groundwater Authority and existing Placer County and Sutter County groundwater management efforts to communicate expected water elevation changes resulting from conjunctive use in the SGA area and to understand the efforts and expected results of implementing conjunctive use in their respective management areas.	12 months
5.2 Assess Water Quality Threats to Groundwater Basin Sustainability (Section 3.8.2)	
1. Using the existing SGA IGSM application and the locations of known contaminant plumes in the basin, run modeling scenarios that simulate the current planned conjunctive use program in the SGA basin to determine the potential future movement of contamination and the potential extent of threatened water supply facilities.	6 months
2. Update known potentially contaminating activities and other known point-source contaminants (e.g., leaking underground storage tanks) to determine where significant risks may exist to current or planned water supply facilities.	6 months
3. Review potential upcoming regulatory changes to water quality standards that could	12 months

GMP Component Category 5 and Actions	Implementation Schedule (approx. time based upon date of adoption of the 2008 SGA GMP)
negatively impact water supply facilities.	
4. Following completion of the actions above, recommend follow on studies where areas of significant concern or where data gaps exist.	18 months
5.3 Potable Supply Demand Reduction (Section 3.8.3)	
1. Coordinate with the RWA and its members that have signed PSAs to the WFA to understand if agreed upon conservation efforts are on track. For members that are not signatory, the SGA will ensure that they are informed of the benefits and regional importance of RWA's WEP.	12 months
2. Coordinate with SRCSD through the RWA to investigate opportunities for expanded use of recycled water throughout the county as a non-potable supply for outdoor irrigation providing natural in-lieu recharge to the groundwater basin.	12 months
3. Encourage the appropriate application of treated remediated groundwater for beneficial uses to help reduce demands for potable water supply and to prevent the erosion of the sustainable yields of the North and Central Area Basins.	ongoing

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Appendix A

SGA Joint Powers Agreement

NOTE: THIS AGREEMENT SUPERCEDES AG2000-074.

JOINT POWERS AGREEMENT BETWEEN THE CITY OF CITRUS HEIGHTS, THE CITY OF FOLSOM, THE CITY OF SACRAMENTO AND THE COUNTY OF SACRAMENTO CREATING THE SACRAMENTO-GROUNDWATER AUTHORITY

This Agreement is made and entered into this 7th day of May, 2002, by and between the City of Citrus Heights, a municipal corporation, the City of Folsom, a municipal corporation, the City of Sacramento, a municipal corporation, and the County of Sacramento, a political subdivision of the State of California ("County").

RECITALS

WHEREAS, each of the parties to this Agreement is a local government entity functioning within the County of Sacramento; and

WHEREAS, pursuant to the Joint Exercise of Powers Act (Chapter 5 of Division 7 of Title 1 of the California Government Code), two or more public agencies may by agreement jointly exercise any power held in common by the agencies entering into such an agreement; and

WHEREAS, each of the parties hereto has under its police power the authority to regulate groundwater; and

WHEREAS, the parties hereto have each been either directly or indirectly involved in the process commonly referred to as the Sacramento Area Water Forum ("Water Forum"); and

WHEREAS, the Water Forum process has resulted in the development of a Groundwater Management Element, dated August, 1998 ("Groundwater Management Element"), which provides for the formation of a groundwater management authority for the north area of the County of Sacramento pursuant to a joint powers agreement between the City of Citrus Heights, the City of Folsom, the City of Sacramento and the County; and

WHEREAS, a true and correct copy of the Groundwater Management Element is attached hereto and incorporated herein as Exhibit "A"; and

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WHEREAS, the completion of the Water Forum process and the approval of the final Water Plan by the Water Forum stakeholders has been delayed for reasons unrelated to groundwater management issues; and

WHEREAS, the parties hereto and the Water Forum stakeholders who have been involved in the development of the Groundwater Management Element believe that it is in the public interest to move forward with the development of the institutional framework necessary to implement the Groundwater Management Element within the North Area Basin, rather than suspending those efforts until such time as the Water Forum process is finalized; and

WHEREAS, the formation of the joint powers authority contemplated by this Agreement is not legally dependent upon the finalization of the Water Forum process, but is independently authorized by state law; and

WHEREAS, the parties hereto find that it is to their mutual advantage and benefit to establish such a groundwater management authority pursuant to this Agreement in order to implement the groundwater management policies embodied in the Groundwater Management Element; and

WHEREAS, the parties hereto find and declare that the conservation of groundwater resources within the North Area Basin for agricultural and municipal and industrial uses is in the public interest and for the common benefit of all water users within the County of Sacramento; and

WHEREAS, the overriding purpose of the joint powers authority established pursuant to this Agreement is to maintain the sustainable yield of the North Area Basin as set forth in the Groundwater Management Element; and

WHEREAS, it is the desire of the parties hereto to use the groundwater management powers which they have in common that are necessary and appropriate to further the purposes for which the joint powers authority is being established; and

WHEREAS, the parties hereto are receptive to amending this Agreement in the future to include public agencies outside the County of Sacramento who have a specific and relevant interest in the North Area Basin.

NOW, THEREFORE, in consideration of the promises, terms, conditions, and covenants contained herein, the City of Citrus Heights, the City of Folsom, the City of Sacramento and the County hereby agree as follows:

1. **Incorporation of Recitals.** The foregoing recitals are hereby incorporated by reference.

2. **Definitions.** As used in this Agreement, the following words and phrases shall have the meanings set forth below unless the context clearly indicates otherwise.

(a) "Conjunctive use" shall mean the planned management and use of both groundwater and surface water in order to maintain the sustainable yield of the North Area Basin.

(b) "North Area Basin" shall mean the groundwater basin underlying the area within the boundaries of the Authority.

(c) "Sustainable yield" shall mean the amount of groundwater which can be safely extracted from the North Area Basin on an estimated average annual basis while maintaining groundwater elevations and groundwater quality at acceptable levels as set forth in the Groundwater Management Element. Sustainable yield requires a balance between extraction and basin recharge and is expressed as the number of acre feet of

groundwater per year which can be extracted from the North Area Basin on an average annual basis as set forth in the Groundwater Management Element.

(d) "Water Production," for purposes of determining assessments, fees or charges to support Water Costs of the Authority, means the total amount of groundwater produced within the boundaries of the Authority by each retail provider, by Agricultural Interests, and by Commercial/Industrial Self-Supplied Water Users for use within the boundaries of the Authority or other areas approved by the Board.

3. **Purpose.** This Agreement is being entered into in order to establish a joint powers authority for the following purposes:

(a) to maintain the long-term sustainable yield of the North Area Basin;

(b) to manage the use of groundwater in the North Area Basin and facilitate implementation of an appropriate conjunctive use program by water purveyors;

(c) to coordinate efforts among those entities represented on the governing body of the joint powers authority to devise and implement strategies to safeguard groundwater quality; and

(d) to work collaboratively with other entities, including groundwater management authorities that may be formed in other areas of the County of Sacramento and adjacent political jurisdictions, to promote coordination of policies and activities throughout the region.

4. **Establishment Of The Authority.** There is hereby established pursuant to the Joint Exercise of Powers Act a joint powers authority which shall be a public entity separate from the parties to this Agreement. The name of such entity shall be the Sacramento Groundwater Authority ("Authority"). The boundaries of the Authority shall be as follows: north of the American River to the Sacramento County line; bounded on the south by the

American River; on the west by the Sacramento River; on the north and east by the Sacramento County line; and including the City of Folsom. A map depicting the boundaries of the Authority is attached hereto and incorporated herein as Exhibit "B".

5. **Membership Of The Governing Board.** The governing body of the Authority shall be a Board of Directors of sixteen (16) members consisting of the following representatives who shall be appointed in the manner set forth in Section 7 of this Agreement:

(a) An elected member of the governing board or designated employee of each of the following public agencies: the City of Folsom, the City of Sacramento and the Sacramento County Water Agency.

(b) An elected member of the governing board of each of the following public agencies: the Carmichael Water District, the Citrus Heights Water District, the Del Paso Manor Water District, the Fair Oaks Water District, the Rio Linda/Elverta Community Water District, the Sacramento Suburban Water District, and the San Juan Water District.

(c) A member of the board of directors, or designee thereof, of each of the following private water purveyors or investor owned utilities: the Arden Cordova Water Company, California-American Water Company, the Natomas Central Mutual Water Company and the Orange Vale Water Company.

(d) One representative of Agricultural Interests within the boundaries of the Authority.

(e) One representative of Commercial/Industrial Self-Supplied Water Users within the boundaries of the Authority.

6. **Adjustment To Composition Of Governing Board.** Should circumstances change in the future, any person or entity may petition the parties hereto to amend this Agreement so as to add or delete representatives to the governing board to accurately reflect groundwater production within the boundaries of the Authority.

7. **Appointment Of Members Of Governing Board.**

(a) The members of the governing board of the Authority shall be appointed as follows:

(i) The City of Folsom representative shall be appointed by the Folsom City Council.

(ii) The Agricultural Interests representative shall be appointed by the County Board of Supervisors.

(iii) The representative of Commercial/Industrial Self-Supplied Water Users shall be appointed by the Sacramento City Council.

(iv) The Citrus Heights City Council shall appoint the representative of the Citrus Heights Water District.

(v) The Sacramento City Council shall appoint the representatives of the following entities: Arden Cordova Water Company, California-American Water Company, the City of Sacramento, Del Paso Manor Water District, the Natomas Central Mutual Water Company, and Sacramento Suburban Water District.

(vi) The County Board of Supervisors shall appoint the representatives of the following entities: Carmichael Water District, Fair Oaks Water District, Orange Vale Water Company, Rio Linda/Elverta Community Water District, San Juan Water District and the Sacramento County Water Agency.

(b) Prior to the appointment of the representatives of the entities described in subsections (a)(v) and (vi) above, those entities shall submit a recommended appointment for their respective representatives to the appointing authority. The appointing authority shall give consideration to such recommendations, but shall retain the absolute discretion to appoint any person satisfying the criteria for appointment set forth in Section 5 hereof.

8. **Governing Board Voting Requirements.**

(a) Each member of the governing board of the Authority shall have one vote. With the exception of fiscal items as set forth in subsections (b) and (c) below, a majority vote of all members of the governing board is required to approve any item.

(b) Fiscal items related to the **Administrative Costs** of the Authority shall require approval by a double majority consisting of the following: a majority vote of all members of the governing board and a majority vote weighted according to the financial contribution of each Retail Provider, of Agricultural Interests, or of Commercial/Industrial Self-Supplied Water Users to the total administrative budget for the last complete fiscal year. The weighted vote of each member of the governing board shall be established and fixed annually at the time the Financing Plan for the administrative budget is adopted, and shall remain in effect throughout the succeeding fiscal year and shall apply to all votes on fiscal items related to the Administrative Costs of the Authority.

(c) Fiscal items related to **Water Costs** shall require approval by a double majority consisting of the following: a majority of all members of the governing board and a majority vote weighted on the basis of Water Production as defined in Section 2(d) hereof.

(d) For purposes of subsection (c) hereof, the weighted vote of the representative of Agricultural Interests and the Commercial/Industrial Self-Supplied Water Users representative shall be weighted on the basis of groundwater production by all such interests and users within the boundaries of the Authority, adjusted to reflect any differential rate which may be paid by a particular classification of water users; e.g., if each acre-foot of water pumped equals one vote and Agricultural Interests pump 100,000

acre feet, but pay only 20% of the per acre-foot assessment, fee or charge levied on other types of pumpers, the vote of the Agricultural Interests representative would be calculated at 20,000 votes.

(e) Water Production, as defined in Section 2(d) hereof, shall be based on an annual determination by the governing body of the Authority during the previous calendar year. Until such time as the governing board of the Authority makes its annual determination of Water Production, the last complete yearly calculation shall be controlling for purposes of the double majority requirement set forth in subsection (c) above.

9. **Quorum.** A majority of the members of the governing board shall constitute a quorum for purposes of transacting business, except less than a quorum may vote to adjourn a meeting.

10. **Terms Of Office.** With the exception of the initial term of the representatives appointed by the City of Folsom and the City of Sacramento, the term of office of each member of the governing board the Authority shall be for a period of four (4) years. For the purpose of providing staggered terms of office, the term of the initial representatives appointed by the City of Folsom and the City of Sacramento shall be for a period of two (2) years. Thereafter, the term of office of each representative appointed by the City of Folsom and the City of Sacramento shall be for a period of four (4) years. Each member of the governing board shall serve at the pleasure of the appointing body and may be removed as a member of the governing board by the appointing body at any time. If at any time a vacancy occurs on the governing board, a replacement shall be appointed to fill the unexpired term of the previous representative pursuant to the provisions of Section 7 hereof within ninety (90) days of the date that such position becomes vacant.

11. **Alternates.** The City of Citrus Heights, the City of Folsom, the City of Sacramento and the County, in addition to their regular appointments, shall appoint one or more persons with the required qualifications to serve as alternate members of the governing board of the Authority. Any such alternates shall be empowered to cast votes in the absence of the regular members or, in the event of a conflict of interest preventing the regular member from voting, to vote because of such a conflict of interest.

12. **Organization Of The Authority.** The governing board of the Authority shall elect a chair, a vice chair and such other officers as the governing board shall find appropriate. Such officers shall serve for a term of one (1) year unless sooner terminated at the pleasure of the governing board.

13. **Treasurer, Controller, Clerk and Legal Counsel.** The governing board of the Authority shall appoint a treasurer, controller, clerk and legal counsel as it deems appropriate. The controller of the Authority shall cause an independent annual audit of the Authority's finances to be made by a certified public accountant in compliance with Government Code Section 6505. The treasurer of the Authority shall be the depositor and shall have custody of all money of the Authority from whatever source. The controller of the Authority shall draw warrants to pay demands against the Authority when the demands have been approved by the Authority or by its authorized representative pursuant to any delegation of authority adopted by the Authority. The treasurer and controller shall comply strictly with the provisions of statutes relating to their duties found in Chapter 5 (commencing with Section 6500) of Division 7 of Title 1 of the Government Code.

14. **Executive Director.** The governing board of the Authority shall appoint an Executive Director-who shall be responsible to the governing board for the proper and efficient administration of the Authority as directed by the governing board pursuant to the provisions of

this Agreement or of any ordinance, resolution or order of the governing board. In addition to any other duties which may be assigned, the Executive Director shall have the following authority:

(a) under the policy direction of the governing board, to plan, organize and direct all Authority activities;

(b) to authorize expenditures within the designations and limitations of the budget approved by the governing board;

(c) to make recommendations to and requests of the governing board concerning any matter which is to be performed, done or carried out by the governing board;

(d) to have the authority to appoint, discipline, assign and otherwise supervise and control the activities of any employees or contractors which may be hired or retained by the Authority; and

(e) to have charge of, handle and have access to any property of the Authority.

15. **Meetings.** The Authority shall provide for regular and special meetings in accordance with the Ralph M. Brown Act (Chapter 9 (commencing with Section 54950) of Part 1 of Division 2 of Title 5 of the Government Code) or with any successor provision.

16. **Powers and Functions.**

(a) The Authority shall have no power to regulate land use or to engage in the retail sale of water and shall be prohibited from restricting or otherwise limiting the extraction of groundwater within the boundaries of the Authority except by means of economic incentives and disincentives. The Authority shall further be prohibited from funding any capital construction projects. In addition, prior to October 13, 2003, the Authority shall be prohibited from levying annual fees or assessments to fund Water Cost payments that exceed an annual average charge during such five (5) year period of $5.00 for each acre

foot (minimum $0.00-maximum $10.00) of groundwater pumped from the North Area Basin during such five (5) year period. Further, during any individual year of such five (5) year period, the Authority shall be prohibited from levying annual fees or assessments to fund Water Cost payments that exceed a charge of $10.00 for each acre foot of groundwater pumped from the North Area Basin during any such year. For purposes of this section, Water Costs shall include the cost of water, pumping and treatment costs, and other costs related to any Conjunctive Use program administered by the Authority.

(b) Subject to the limitations set forth in subsection (a), the Authority shall have any and all powers commonly held by the parties hereto necessary or appropriate to regulate groundwater within the boundaries of the Authority including, but not limited to, the following powers:

(i) Collect and monitor data on the extraction of groundwater from, and the quality of groundwater in, the North Area Basin;

(ii) Establish and administer a Conjunctive Use program for the purpose of maintaining Sustainable yields in the North Area Basin consistent with the Groundwater Management Element;

(iii) Buy and sell water on other than a retail basis;

(iv) Exchange water;

(v) Distribute water in exchange for ceasing or reducing groundwater extractions;

(vi) Spread, sink and inject water into the North Area Basin;

(vii) Store, transport, recapture, recycle, purify, treat or otherwise manage and control water for the beneficial use of persons and property within the Authority;

(viii) To implement any Conjunctive Use program which the Authority deems necessary to maintain Sustainable yields in the North Area Basin consistent with the Groundwater Management Element; and

(ix) Study and plan ways and means to implement any or all of the foregoing powers.

(c) For purposes of exercising the authority set forth in subsection (b), and subject to the limitations set forth in subsection (a), the Authority shall have the following corporate and political powers:

(i) To sue and be sued in all actions and proceedings in all courts and tribunals.

(ii) To adopt a seal and alter it at its discretion.

(iii) To take by grant, purchase, gift, devise or lease, to hold, use and enjoy, and to lease, convey or dispose of, real and personal property of every kind, within or without the boundaries of the Authority, necessary or convenient to the full exercise of its power.

(iv) For the common benefit of the Authority, to store water in underground water basins or reservoirs within and outside the Authority, to appropriate water and acquire water rights within or outside the Authority, to import water into the Authority, and to conserve, or cause the conservation of, water within or outside the Authority.

(v) To exercise the right of eminent domain to take any property necessary to supply the Authority or any portion of it with replenishment water; provided that the right of eminent domain may not be exercised with respect to water and water rights, and may not be exercised with respect to any property owned or occupied

by any of the parties hereto or the entities represented on the governing board of the Authority.

(vi) To act jointly, or cooperate, with the United States or any agency thereof, the state, or any county or agency thereof, or any political subdivision or district therein, including flood control districts, private and public corporations, and any person, so that the powers of the Authority may be fully and economically exercised.

(vii) To cause taxes, assessments, fees or charges to be levied in accordance with applicable State law, and in a manner consistent with the Groundwater Management Element, to accomplish the purposes of the Authority.

(viii) To require the permitting of groundwater extraction facilities within the boundaries of the Authority, to maintain a record of extraction with respect to any such facilities, and to require the installation of meters on groundwater extraction facilities for the purpose of determining the amount of groundwater being extracted from the North Area Basin.

(ix) To make contracts, employ labor and to do all acts necessary for the full exercise of the Authority's powers.

(x) To carry on technical and other investigations of all kinds necessary to further the purposes of the Authority.

(xi) To fix rates at which water acquired by the Authority shall be sold for replenishment purposes, and to establish different rates for different classes of service or conditions of service, provided that the rates shall be uniform for like classes and conditions of service.

(xii) To participate in any contract under which producers may voluntarily agree to use surface water in lieu of groundwater, and to that end the Authority may become a party to the contract and pay from Authority funds that portion of the cost of the surface water as will encourage the purchase and use of that water in lieu of pumping so long as persons or property within the boundaries of the Authority are directly or indirectly benefitted by the resulting replenishment of the North Area Basin.

(xiii) To apply for, accept and receive state, federal or local licenses, permits, grants, loans or other aid from any agency of the United States, the State of California, or other public or private entity necessary or appropriate for the Authority's full exercise of its powers.

17. **Budgets.** Within ninety days after the first meeting of the governing board of the Authority, and thereafter prior to the commencement of each fiscal year (defined as July 1 through June 30), the governing board shall adopt a budget for the Authority for the ensuing fiscal year.

18. **Termination.** This Agreement shall remain in effect until terminated by one of the parties hereto pursuant to this section. This Agreement may be terminated by any of the parties hereto at any time and for any reason by providing ninety (90) days written notice of termination to the other parties. Except as provided in Section 19(b) hereof, the Authority shall automatically terminate upon the effective date of the termination of this Agreement.

19. **Disposition Of Authority Assets Upon Termination.**

(a) In the event of the termination of the Authority where there will be a successor public entity which will carry on the functions of the Authority and assume its assets, the assets of the Authority shall be transferred to the successor public entity.

(b) If there is no successor public entity which will carry on the functions of the Authority and assume its assets, the assets shall be returned to the parties hereto in proportion to the contribution of each party during the term of this Agreement.

(c) If there is a successor public entity which will carry on some of the functions of the Authority and assume some of its assets, the assets of the Authority shall be allocated by the governing board of the Authority between the successor public entity and the parties hereto.

20. **Liabilities.** The debts, liabilities and obligations of the Authority shall be the debts, liabilities and obligations of the Authority alone, and not of the parties to this Agreement.

21. **Rules.** The governing board of the Authority may adopt from time to time such rules and regulations for the conduct of its affairs as it deems necessary and appropriate.

22. **Minutes.** The clerk appointed by the governing board of the Authority shall cause to be kept minutes of all meetings of the governing board, and shall cause a copy of the minutes to be forwarded to each member of the governing board and to each of the parties hereto.

23. **Effective Date.** The Authority was created on October 13, 1998. This Agreement, which replaces and supercedes all prior Agreements and Amendments to the Joint Powers Agreement creating the Authority, shall become effective when the governing bodies of all the parties shall have authorized its execution.

24. **Amendments.** This Agreement may only be amended by the affirmative vote of the governing bodies of all of the parties hereto.

IN WITNESS WHEREOF, the parties hereto execute this Agreement on the date first

written above.

CITY OF CITRUS HEIGHTS

Dated: 6/26/02

By Roberta MacGlashe
Mayor

Attest:

City Clerk

Approved As To Form:

City Attorney

CITY OF FOLSOM

Dated: 8.19.02

By
Mayor

Attest:

Lisa Robinson
City Clerk

Approved As To Form:

City Attorney 8/16/02

CITY OF SACRAMENTO

Dated: 6-18-02

By Heather Fargo
Mayor

Attest:

Valerie C. Burrowes
City Clerk

Approved As To Form:

Joe Cohn
City Attorney

COUNTY OF SACRAMENTO

By Don Nottoli
Chairperson, Board of Supervisors

MAY 07 2002

Attest:

Cindy H. Turner
Clerk of the Board

Approved As To Form:

John F. Whit
County Counsel

CITY
AGREEMENT NO. 2000-074-A

05-07-2002 SGA Revised JPA

CITY
AGREEMENT NO. 2000-074-A

Appendix B

SGA 2003 Groundwater Management Plan Action Items Tracking Table

SGA Adopted GMP Action Items
(as of 12/11/08)

	Description of Action	Status	Comments
COMPONENT CATEGORY 1: STAKEHOLDER INVOLVEMENT			
1.1	***Involving the Public***		
1	Continue efforts to encourage public participation as opportunities arise.	On-going	Provide GMP Program status update at each publicly noticed SGA Board meeting.
2	Review and take actions from the public outreach plan as necessary during implementation of various aspects of the GMP.	On-going	SGA has not encountered any issues requiring significant public outreach since adopting the GMP. To date, the most effective ways of notifying the public have been through regular Board meetings, quarterly newsletters, and the SGA website. The SGA website includes a regularly updated announcements section on the main page. Finally, SGA's participation in regular monthly meetings of the Water Forum Successor Effort (see item below) provides opportunities to identify issues from a variety of interests throughout the region.
3	Provide briefings to the Water Forum Successor Effort on GMP implementation progress.	On-going	SGA staff participate in regular monthly meetings of both the Water Forum Successor Effort and are available to provide briefings upon request. SGA staff met with incoming WFSE Executive Director on August 7, 2007 to provide a briefing on SGA activities.
4	Work with members to maximize outreach on GMP activities including the use of the SGA website, member websites, or bill inserts.	On-going	SGA website launched in November 2003 (www.sgah2o.org). Provide updates through regular quarterly newsletter by RWA and SGA. Beginning in May 2007, SGA staff is conducting additional outreach to SGA member agencies by presenting SGA overview at regular meetings of member agencies. Between June and October, briefings were provided to nine SGA member agencies.
1.2	***Involving Other Agencies Within and Adjacent to the SGA Area***		
1	Continue high level of involvement demonstrated through the SGA GMP development into implementation of the plan by continued participation on committees described above.	On-going	SGA staff participate in regular meetings of both the Water Forum Successor Effort and the Central Sacramento County Groundwater Forum.
2	Provide copies of the adopted GMP and subsequent annual reports to representatives from Placer, Sutter, and Yolo counties, and the Groundwater Forum.	On-going	Copies of the GMP were sent to Placer County (Placer County Water Agency, City of Lincoln, City of Roseville), Sutter County (South Sutter Water District, Sutter County Public Works), Yolo County Resources Coordinator, and Sacramento County Water Agency (representing the Central Sacramento County Groundwater Forum) on January 22, 2004. The schedule for the Basin Management Report (BMR) has been modified to a biennial report. Copies of the BMR were mailed on June 26, 2006 to stakeholders representing Yolo County Water Resources Association, South Sutter Water District, Placer County Water Agency, City of Roseville, City of Lincoln, Central Sacramento County Groundwater Forum, and the Water Forum Successor Effort.

SGA Adopted GMP Action Items
(as of 12/11/08)

	Description of Action	Status	Comments
3	Meet with representatives from Placer, Sutter, and Yolo counties, and the Central Sacramento County Groundwater Forum as needed.	On-going	Left voice mail with Linda Fiack, Yolo County Resource Director (530) 666-8019 on July 30, 2004 offering to provide briefing at their request. Spoke to Brad Arnold, GM of South Sutter WD (530) 656-2242 on July 30, 2004. Brad indicated that South Sutter WD will begin updating their AB3030 plan soon. SGA offered assistance, including potentially sitting on an advisory committee for the update. On August 30, 2004, Sacramento County WA staff requested that SGA staff participate in limited review of a GMP under development for SCWA's Zone 40 area. Attended regular monthly meetings of Central Sacramento County Groundwater Forum. In August 2006, the Forum officially formed as the Central Sacramento Groundwater Authority. SGA staff attend regular meetings of the Authority as appropriate. SGA/RWA Executive Director serves on the Implementation Committee of the City of Lincoln GMP.
4	Coordinate a meeting with the agricultural groundwater pumpers in the SGA area to inform them of SGA's management responsibilities and activities, and develop a list of agricultural groundwater pumpers concerns and needs relative to SGA's management of the area.	Deferred	Met with Jack DeWit, an SGA Board member and independent agricultural groundwater pumper within SGA in May 2004. Jack agreed to facilitate setting up a meeting with what is a small number of independent pumpers in early 2005 prior to commencement of the next growing season. In June 2005, the SGA adopted a resolution to not assess fees to agricultural water pumpers. The GMP Implementation Committee recommended that staff defer action on this item until such time as specific concerns or needs are expressed.
5	Coordinate a meeting with other self-supplied pumpers in the SGA area to inform them of SGA's management responsibilities and activities, and develop a list of self-supplied groundwater pumpers concerns and needs relative to SGA's management of the area.	Deferred	Received list with contact information of 23 small water systems licensed through DHS within the SGA area from Sac County EMD (small water systems in SGA.doc) on August 31, 2004. The systems total approximately 35 wells. EMD confirmed that pumping by these systems is not reported to the EMD or DHS. Because these pumpers likely account for a very small percentage of pumping in the basin, the GMP Implementation Committee has decided to defer any actions in coordinating with them at this time.
1.3	***Utilizing Advisory Committees***		
1	Upon adoption of the GMP, the Policy Committee will meet to discuss the continuation and composition of committees to guide implementation of the plan.	Complete	A GMP Implementation Committee was established on July 8, 2004 consisting of Mitch Dion (Cal-AM WC), Rob Roscoe (SSWD), Shauna Lorance (SJWD) and Gary Reents (City of Sacramento). The first committee meeting was held August 2, 2004. Committee met January 31, 2005. Will meet as needed for future.
1.4	***Developing Relationships with State and Federal Agencies***		

SGA Adopted GMP Action Items
(as of 12/11/08)

	Description of Action	Status	Comments
1	Continue to develop working relationships with local, state, and federal regulatory agencies.	On-going	Provided regional briefing of water supply issues to the Manager of the Water Policy and Reform Team for the Government of Australia on Oct 8, 2004. The briefing was given at the request of DWR. Met with management and staff of USEPA, SWRCB, Central Valley RWQCB, DTSC, Water Forum Successor Effort, and purveyors on November 4, 2004 to express concerns over regional impacts of contamination in basin. Beginning in June 2005, set the fourth Tursday of every month as a standing meeting date with regulatory representatives of Aerojet and McClellan contaminant sites. This meeting will serve to involve other regulatory agencies as needed. Met again with regulatory agency staff to update progress in November 2006. SGA staff serve on a Joint Technical Team to evaluate groundwater remediation options at McClellan. The JTT was sunsetted in June 2006 with the successful conclusion of a remediation plan for VOCs in groundwater at McClellan. This resulted in the execution of a Record of Decision for remediation in August 2007.
1.5	***Pursuing Partnership Opportunities***		
1	Continue to promote partnerships that achieve both local supply reliability and achieve broader regional and statewide benefits.	On-going	SGA staff will promote partnerships as requested by SGA membership. SGA is closely coordinated with the RWA Integrated Regional Water Management Planning Program. Part of that effort has identified the need to update the IGSM regional model. SGA was successful in its application for an AB 303 grant from DWR to fund half of the update in June 2005.
2	Continue to track grant opportunities to fund groundwater management activities and local water infrastructure projects.	On-going	Awarded $250K AB303 grant on June 30, 2004 for regional monitoring well network. Awarded $250K AB303 grant on June 30, 2005 for update to regional groundwater model. SGA is currently preparing an AB 303 grant application due in December 11, 2007.
COMPONENT CATEGORY 2: MONITORING PROGRAM			
2.1	***Groundwater Elevation Monitoring***		
1	Coordinate with member agencies and DWR to identify an appropriate group of wells for monitoring for a spring 2004 set of groundwater elevation measurements.	Complete	SGA met DWR and SCWA on January 29, 2004 at the DWR Central District Office. The status of the existing wells in the monitoring network was discussed. Some of the wells are questionable for monitoring and the agencies will work together to look for opportunities to replace those wells in the long-term.
2	Coordinate with DWR and SCWA to ensure that the selected wells are maintained as part of a long-term monitoring network.	Complete	SGA met DWR and SCWA on January 29, 2004 at the DWR Central District Office and explained the importance of their monitoring wells to our overall network and determined that both DWR and SCWA are maintaining long-term monitoring plans in the basin.
3	Coordinate with DWR and SCWA to ensure that the timing of water level data collection by member agencies coincides within one month of DWR and SCWA data collection.	Complete	SGA met DWR and SCWA on January 29, 2004 to coordinate the timing of water elevation measurements. An April 15 goal was set for the collection of spring water elevations. An October 15 goal was set for the collection of fall water elevations. Each participating agency attempted to collect levels within +/- two weeks of these dates. The most recent request for water elevation data was sent to participants in October 2007.
4	Coordinate with member agencies to ensure that needed water level elevations are collected and verify that uniform data collection protocols are used among the agencies.	Complete	The final GMP was sent to all member agency General Managers and Directors on January 23, 2004. Water leve measurement protocols are included in Appendix D of the SGA GMP. The other important aspect with respect to protocol is the timing of measurements. SGA coordinated with member agencies to collect spring water elevations around April 15 and fall measurements around October 15.

SGA Adopted GMP Action Items
(as of 12/11/08)

	Description of Action	Status	Comments
5	Coordinate with the USGS to determine the potential for integrating USGS monitoring wells constructed for the National Water Quality Assessment (NAWQA) Program into the SGA monitoring network.	Complete	SGA spoke with Ken Belitz (California NAWQA Program Chief) of the USGS on January 7, 2004. Ken referred SGA staff to USGS staff to coordinate the collection of water elevation data from USGS monitoring wells when the timing of collection is determined. In February 2005, received water elevation data through 2004 for USGS NAWQA wells monitored in the Sacramento area. In September 2006, SGA approved to allow USGS to add two monitoring wells in SGA's monitoring well network (funded by an AB303 grant) to be added to the USGS NAWQA program. These wells have been sampled by USGS and added to their network.
6	Consider ways to fill gaps in the monitoring well network by identifying additional suitable existing wells or identifying opportunities for constructing new monitoring wells.	On-going	Secured $250K AB303 grant to install dedicated monitoring wells in the basin - award date June 30, 2004. In October 2005, completed installation of nine regional monitoring wells where critical data gaps were known. In 2005, received data on monitoring wells associated with McClellan and Aerojet. The data are mostly limited to water elevation data, but do include some water quality parameters related to contaminant monitoring. Discussed with Dana Booth at February 23, 2004 meeting about opportunities to integrate wells from existing LUST sites into our network. Had subsequent meeting with Dana Booth on Sep 7, 2004 - Mr. Booth indicated that opportunities could be available to collect split samples from these sites to analyze water quality for our information. Given the additional regional monitoring wells and more data available through McClellan, Aerojet, and the USGS NAWQA wells, SGA will not pursue this further at this time.
7	Assess groundwater elevation trends and conditions based on the network annually.	On-going	Initial State of the Basin Report for 2002 calendar year data was completed in February 2004. Electronic version of report is available on SGA website. State of Basin Report for 2003 and 2004 calendar years was completed in June 2006 (renamed as Basin Management Report). The BMR demonstrates that in general groundwater levels stabilized in the basin beginning in the mid-1990s and have even shown some recovery on the order of 0.5 feet/year over the last few years. Preparation of the BMR for 2005 and 2006 will commence in early 2008.
8	Assess the adequacy of the groundwater elevation monitoring well network annually.	On-going	The May 2006 Basin Management Report demonstrates that water elevations are stabilized or recovering in general. The BMR also documents the installation of a regional monitoring well network. Under present conditions, the monitoring network is appropriate.
9	Identify a subset of monitoring wells that will be monitored more frequently than twice annually to improve the SGA's understanding of aquifer responses to pumping throughout the year.	On-going	This will continue to be assessed through time. Dedicated pressure transducers were installed on eight of the nine regional monitoring wells constructed through funding from a DWR AB 303 grant. Recordings are currently logged four times per day.
2.2	***Groundwater Quality Monitoring***		
1	Coordinate with member agencies to verify that uniform protocols are used when collecting water quality data.	Complete	A copy of the DHS guidelines were sent to all member agency General Managers and Directors on January 23, 2004 with the GMP.
2	Coordinate with the USGS to obtain historic water quality data for NAWQA wells, determine timing and frequency of monitoring under USGS program, and to discuss the potential for integrating USGS monitoring resources with the SGA network.	On-going	Obtained 1998 water quality data from USGS for NAWQA wells. Wells were sampled again by USGS in 2003/2004. That data will be provided to SGA when it has been QA/QC checked. SGA participated in a USGS/SWRCB AB 599 water quality sampling program in early 2005. The results of that study are expected in late 2007.

SGA Adopted GMP Action Items
(as of 12/11/08)

	Description of Action	Status	Comments
3	Coordinate with member agencies and other local, state, and federal agencies to identify where wells may exist in areas with sparse groundwater quality data.	Complete	Added monitoring well data from McClellan and Aerojet.
4	Assess the adequacy of the groundwater quality monitoring well network annually.	On-going	To be assessed through preparation of the Basin Management Report.
2.3	***Land Surface Elevation Monitoring***		
1	Investigate the feasibility and costs of re-surveying the wells in the Arden-Arcade area that were last measured in 1991.	Complete	Sacramento Suburban Water District has been awarded an AB303 grant application to be conduct additional surveying of these and other locations in 2006.
2	Coordinate with the USGS to ascertain the suitability of the use of Interferometric Synthetic Aperture Radar (InSAR) images of the SGA and surrounding area. If the technology appears suitable, identify the costs of determining ground surface elevations and identify potential cost-sharing partners.	Deferred	Surveys data from benchmarks in the Arden Arcade area indicate that subsidence is not a significant concern at this time. Additionally, the uncertainties associated with InSAR in rapidly growing urban and agricultural areas makes this a low priority at this time.
3	Coordinate with other agencies, particularly the City and County of Sacramento and the National Geodetic Survey to determine if there are other suitable benchmark locations in the SGA area to aid in the analysis of potential land surface subsidence.	Deferred	Surveys data from benchmarks in the Arden Arcade area indicate that subsidence is not a significant concern at this time. Because of limited staff time at SGA, this task is being deferred.
4	Educate SGA member agencies of the potential for land surface subsidence and signs that could be indicators of subsidence.	Deferred	Surveys data from benchmarks in the Arden Arcade area indicate that subsidence is not a significant concern at this time. Because of limited staff time at SGA, this task is being deferred.
2.4	***Surface Water Groundwater Interaction Monitoring***		
1	Compile available stream gage data and information on tributary inflows and diversions from the American and Sacramento rivers to quantify net groundwater recharge or discharge between gages in the SGA area.	Complete	A memorandum report on available data on the American River was prepared for SGA by MWH on September 22 2004. This included a summary of known inputs and outputs to the stream budget of the American River. The Sacramento Coordinated Water Quality Management Program completes an annual monitoring report including water quality and flow data at several locations along the American and Sacramento Rivers. SGA has obtained the 2002-2003 version of this report. One of the objectives of the current effort to update the SGA groundwater model (IGSM) was to simulate daily flows on the American and Sacramento rivers. With the completion of the model, SGA now has a reasonable estimate of recharge/discharge along these river reaches.
2	Coordinate with local, state, and federal agencies to identify available surface water quality data from the American and Sacramento Rivers adjacent to the SGA area.	Complete	The Sacramento Coordinated Water Quality Management Program completes an annual monitoring report including water quality and flow data at several locations along the American and Sacramento Rivers. SGA has obtained the 2002-2003 version of this report. SGA recently obtained the 2006 annual report and will incorporate information into the 2008 update to the SGA BMR.
3	Correlate groundwater level data from wells in the vicinity of river stage data to further establish whether the river and water table are in direct hydraulic connection, and if the surface water is gaining or losing at those points.	Complete	In late 2003, the State Board considered stream aquifer interaction along the American River as part of a fully appropriated stream hearing. Consulting studies associated with the report indicate that the American River is a losing stream along nearly its entirety below Nimbus Dam and that the river is substantially disconnected from the groundwater basin. Because of this data becoming available, no additional studies are planned at this time.
4	Continue to coordinate with local, state, and federal agencies and develop partnerships to investigate cost-effective methods that could be applied to better understand surface water-groundwater interaction along the Sacramento River and American River.	On-going	As mentioned above, the results of the fully appropriated streams hearing on the American River in 2003 have made this a low priority item. In 2005, two monitoring wells were installed for SSWD near the American River. Data collected beginning in early 2006 will evaluated to assess these relationships in the 2008 SGA BMR.

SGA Adopted GMP Action Items
(as of 12/11/08)

	Description of Action	Status	Comments
5	Coordinate with CSUS to analyze data obtained from recently constructed monitoring wells on the CSUS campus to better understand the relationship between the groundwater basin and surface water flows at that location.	On-going	Met with Dave Evans of CSUS on September 8, 2004. Dr. Evans indicated that several wells on the south side of the river at CSUS are equipped with pressure transducers, which collect continuous water elevation measurements. The data are collected, but have not been processed to date. Dr. Evans expects to bring in a graduate student in the near future to analyze the relationship between stream stage and groundwater elevations. As of June 2007, this work has not progressed from within the university.
2.5	***Protocols for the Collection of Groundwater Data***		
1	Use a Standard Operating Procedure (SOP) for collection of water level data by each of the member agencies.	Complete	Water level measurement protocols are included in Appendix D of the SGA GMP. The final GMP was sent to all member agency General Managers and Directors on January 23, 2004.
2	Provide member agencies with guidelines on the collection of water quality data developed by DHS for the collection, pretreatment, storage, and transportation of water samples (DHS, 1995).	Complete	A copy of the DHS guidelines were sent to all member agency General Managers and Directors on January 23, 2004 with the GMP.
3	Provide training on the implementation of these SOPs to member agencies, if requested.	Complete	The cover letter for the GMP and water quality protocols sent to member agencies on January 23, 2004 extending an offer to provide training on protocols.
2.6	***Data Management System***		
	No Action Required		The initial DMS was completed in February 2004. SGA maintains an annual consulting budget item for maintenance and support of the DMS.
COMPONENT CATEGORY 3: GROUNDWATER RESOURCE PROTECTION			
3.1	***Well Construction Policies***		
1	Ensure that all member agencies are provided a copy of the county well ordinance and understand the proper well construction procedures	Complete	Provided each member agency with 2003 revised county well construction and destruction standards on April 6, 2004.
2	Inform member agencies of Sacramento County's Consultation Zone and provide a copy of the boundary of the former McClellan AFB prohibition zone to appropriate member agencies.	On-going	Met with James Taylor of CVRWQCB on September 13, 2004 and received a copy of the 2004 update to the Sacramento County Special Consultation Zone Ground Water Plume Site report. Informed member agencies at the October 14, 2005 SGA Board meeting that the report is available at SGA and that we will make a future effort scan the maps into an electronic file.
3	Provide a copy of the most recently delineated plume extents at the former McClellan AFB, the former Mather AFB, and Aerojet to the EMD and SGA members for their review and possible use.	Complete	Submitted a September 1, 2004 letter to member agency managers. Each letter included a map showing the maximum plumes extents in a 2-dimensional map view based on 2002 quarterly monitoring reports for each site (GMP letter to GMs 01sep04.doc).
4	Coordinate with member agencies to provide guidance as appropriate on well construction. Where feasible and appropriate, this could include the use of subsurface geophysical tools prior to construction of the well to assist in well design.	Complete	Offered assistance to all SGA member managers in letters dated January 23, 2004 and again on April 6, 2004.
3.2	***Well Abandonment and Well Destruction Policies***		
1	Ensure that all member agencies are provided a copy of the code and understand the proper destruction procedures and support implementation of these procedures	Complete	Provided each member agency with 2003 revised county well construction and destruction standards on April 6, 2004.
2	Follow up with member agencies on the reported abandoned and destroyed wells to confirm the information collected from DWR	Complete	Submitted a September 1, 2004 letter to member agency managers. Each letter included a table of member wells and their current status in the SGA database. The letter requested that member agencies update the well status (GMP letter to GMs 01sep04.doc). The updated status was entered into the DMS.
3	Provide a copy of the information on abandoned and destroyed wells in northern Sacramento County to fill any gaps in their records	On-going	Data received on well status requested from SGA members on September 1, 2004 were input into the SGA data management system in mid-2005 as part of the Basin Management Report update. This information on well status will be forwarded to the Central District office of DWR in 2008.

SGA Adopted GMP Action Items
(as of 12/11/08)

	Description of Action	Status	Comments
4	Meet with the EMD to discuss ways to ensure that wells in the SGA area are properly abandoned or destroyed	Complete	Spoke with Steve Kalvelage of Sac County Environmental Management Department on July 26, 2004. Discussed possibility of preparing grant application under AB 303 for a well destruction program. Met with Dana Booth of EMD on September 7, 2004. Encouraged EMD to develop an AB303 grant application for a well abandonment program. Forwarded the AB303 grant application workshop notification to Dana on October 5, 2004. Coordinated with EMD again in October 2007 to determine if they are ready to pursue a joint grant application with SGA to launch a regional program. EMD indicated that they are still completing work they feel is required to beginning such an effort, and may be ready to pursue a grant opportunity in late 2008.
5	Obtain “wildcat" map from California Division of Oil and Gas to ascertain the extent of historic gas well drilling operations in the area as these wells could function as conduits of contamination if not properly destroyed.	Complete	An electronic version of the District 6 well location database for the Sacramento area was downloaded and incorporated into a GIS coverage of the SGA area. The DOG records confirm that oil and gas development has been very limited in the SGA area. Almost all activity has been confined to the western one-third of Sacramento County. There are records for only 53 permits issued: 40 are for plugged and abandoned dry holes; 5 active gas holes exist in the vicinity of Sacramento International Airport; 1 steam flood well is active in the vicinity also near the airport; and 7 previous gas wells have been plugged and abandoned (SGA_DOG_map.pdf).
3.3	***Wellhead Protection Measures***		
1	Request that member agencies provide vulnerability summaries from the DWSAP to the SGA to be used for guiding management decisions in the basin.	Complete	This request was not sent to members, because it was unnecessary. The information for each well is available on-line at http://swap.ice.ucdavis.edu/TSinfo/TSsystemc.asp?myCounty=34.
2	Contact groundwater basin managers in other areas of the state for technical advice, effective management practices, and “lessons learned,” regarding establishing wellhead protection areas	Deferred	Because of limited SGA staff time, this item is being deferred. In 2005, SGA staff coordinated a session on local agency management for the Biennial Groundwater Conference. In addition to SGA, briefings on the activities of Orange County Water District and Eastern Municipal Water District were given. This provided insightful information on differences between management in northern and southern California.
3.4	***Protection of Recharge Areas***		
1	When CAS results are available, meet with the SWRCB to discuss those results and consider follow-on actions.	Complete	Coordinated SWRCB and LLNL presentation to SGA Board of Directors on February 12, 2004. Reviewed LLNL draft report in March 2004. Received final report in April 2004.
3.5	***Control of the Migration and Remediation of Contaminated Groundwater***		
1	Coordinate with known responsible parties to develop a network of monitoring wells to act as an early warning system for public supply wells.	On-going	Met with Craig Fegan and Steve Costello at Aerojet on August 26, 2004. Aerojet agreed to provide construction, water quality and water elevation data on approximately 77 monitoring wells within and adjacent to the SGA boundary. They will provide updated data on those wells on a semi-annual basis. Spoke to Dana Booth with Sac County Environmental Health on July 27, 2004 and again on September 7, 2004. Dana is in charge of leaking underground storage tank site investigations. He indicated that some of the locations might be willing to member agencies to collect a split water sample during active investigations for the purposes analyzing other constituents of interest to local purveyors. One result of the current 2007 AB303 grant application will be to identify priority locations for sentry wells related to contamination at Aerojet.

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(as of 12/11/08)

	Description of Action	Status	Comments
2	If detections occur in these monitoring wells, work with the responsible parties and the potentially impacted member agency to develop strategies to minimize the further spread of contaminants.	On-going	An SGA Regional Contamination Issues Committee was formed in June 2004. This committee works proactively to ensure that member purveyor needs are addressed if detections occur. The committee has meets monthly or on an as-needed basis. Committee met with regulators and Aerojet responsible parties to get briefing of status of remediation efforts at Aerojet on October 4, 2004. Met with management and staff of USEPA, SWRCB, Central Valley RWQCB, DTSC, Water Forum Successor Effort, and purveyors on November 4, 2004 and again in November 2006 to express concerns over regional impacts of contamination in basin. Developed an informational brochure entitled *Groundwater Contamination in the Sacramento Region - Legacy of the Past, Challenge to Our Future* in early 2006. Gave SGA overview presentation to McClellan Restoration Advisory Board in February 2007
3	Provide SGA members with all information on mapped contaminant plumes and LUST sites for their information in developing groundwater extraction patterns and in the siting of future production or monitoring wells	Complete	Spoke to Dana Booth with Sac County Environmental Health on July 27, 2004. He recommended that rather than prepare a static map of these locations that SGA should develop a procedure for querying the GeoTracker web site and consulting with Sac County staff when locating future wells. The directions for using Geotracker were developed by SGA staff and provided to member agency managers in a September 1, 2004 letter (GMP letter to GMs 01sep04.doc).
4	Meet with representatives of the RWQCB to establish a mutual understanding about SGA's groundwater management responsibilities	Complete	Met with Central Valley Regional Water Quality Control Board staff on February 26, 2004. Briefed them on SGA background, SGA GMP, and DMS. RWQCB added SGA to mailing list for updates on underground storage tank sites.
3.6	***Control of Saline Water Intrusion***		
1	Track the progression, if any, of saline water bodies moving toward the east from the Delta.	On-going	Will work with DWR Central District staff to determine if any representative wells are located in the north Delta area to assist in tracking of any possible saline groundwater bodies.
2	Observe TDS concentrations in public supply wells of North Area Groundwater Basin water suppliers that are routinely sampled under the DHS Title 22 Program. These data will be readily available in the SGA's DMS and are already an on-going task for the annual review of basin conditions.	On-going	To be assessed in future Basin Management Reports as more temporal data become available.
3	Inform all member water purveyor managers of the presence of the interface and the approximate depth of the interface below their service area for their reference when siting potential wells.	On-going	No action on this item will be taken until after SGA staff have had an opportunity to discuss the TDS data from the Delta with DWR Central District staff.
COMPONENT CATEGORY 4: GROUNDWATER SUSTAINABILITY			
4.1	***Conjunctive Management Activities***		
1	Continue to investigate conjunctive use opportunities within the SGA area	On-going	SGA will assist any members upon request. Currently, the Integrated Regional Water Management Planning Program is an on-going program under the RWA umbrella. This program identifies opportunities and facilities for implementing expanded conjunctive use in the region. SGA is preparing a Water Accounting Framework for the SGA area through participating members can establish groundwater banks to further promote conjunctive use by members and to acknowledge those investments by members. Phase II of this effort was adopted in June 2007, with staff currently preparing a "model" groundwater banking and exchange guidance documents for member agencies to use should they choose to operate a program.

SGA Adopted GMP Action Items
(as of 12/11/08)

	Description of Action	Status	Comments
2	Continue to investigate opportunities for the development of direct recharge facilities in addition to in-lieu recharge (e.g. injection wells or surface spreading facilities, through constructed recharge basins or in river or stream beds).	On-going	SGA has been closely coordinating with the City of Roseville in its feasibility study of an aquifer storage and recovery well. Some SGA members have indicated an interest for use of this methodology pending results of the Roseville study.
4.2	***Demand Reduction***		
1	Coordinate with the RWA and its members that have signed specific agreements to the WFA to ensure that those conservation efforts are on track. For members that are not signatory, the SGA will ensure that they are informed of the benefits and regional importance of RWA's WEP.	On-going	Signatories to the Water Forum Agreement are currently completing a review and renegotiation of existing best management practices for water conservation. That effort is expected to be completed by early 2008 with a likely conclusion of adopting BMPs developed by the California Urban Water Conservation Council.
2	Coordinate with SRCSD through the RWA to investigate opportunities for expanded use of recycled water throughout the county.	On-going	SRCSD completed a recycled water master plan effort in early 2007. One of the goals of the plan is to identify uses in the County for between 30 to 40 mgd of recycled water by the year 2020. SRCSD also joined an RWA effort to complete an Integrated Regional Water Management Plan. The results of the SRCSD effort will be integrally linked to the RWA planning effort. SGA has received a copy of the recycled water master plan.
COMPONENT CATEGORY 5: PLANNING INTEGRATION			
5.1	***Existing Integrated Planning Efforts***		
1	Prepare and adopt a formal integrated water management plan in accordance with CWC Section 10540 et seq. The SGA will form an ad hoc committee with the RWA to determine which agency would be most appropriate to prepare that plan.	Complete	RWA began an Integrated Regional Water Management Planning Program in April 2004. RWA adopted an integrated plan in May 2006. The SGA, PCWA, and City of Lincoln GMPs were each a component of the integrated plan. RWA is currently updating the plan, with an expected completion in mid-2008. SGA is closely coordinating with this effort to elevate key groundwater issues into the IRWMP.
2	Review the Water Forum Land Use procedures and make recommendations on what additional role, if any, SGA should take with respect to land use decisions within the SGA area.	Complete	Reviewed the February 2002 Final Draft: Relationship of the Water Forum Agreement to Land Use Decision-Making with the GMP Implementation Committee. At the direction of the committee, sent an August 18, 2004 letter to Leo Winternitz, Water Forum Successor Effort Executive Director, expressing our continued support of SGA's role in providing groundwater information within the SGA area as requested (land use to Winternitz 10aug04.doc).

Appendix C

Public Notices to Begin and Adopt an Updated GMP in Sacramento Bee

NO 483 PUBLIC NOTICE

NOTICE OF INTENT TO BEGIN AN UPDATE OF A GROUNDWATER MANAGEMENT PLAN

The Sacramento Groundwater Authority (SGA) is a joint powers authority charged with managing the groundwater basin underlying Sacramento County north of the American River. To maintain a sustainable groundwater resource for the more than half-million citizens that rely upon the basin for their daily water needs, SGA intends to begin an update of its groundwater management plan originally adopted in December 2003. SGA encourages any individual interested in the update of the groundwater management plan to attend the August 14, 2008 meeting of the SGA board of directors. The meeting, which is open to the public, will begin at 9 am at 5620 Birdcage Street, Suite 110 in Citrus Heights, CA. For more information on SGA Board meetings or to find out more about groundwater management planning efforts, contact Rob Swartz of SGA at (916) 967-7692.

NOTICE OF INTENT TO ADOPT AN UPDATE OF A GROUNDWATER MANAGEMENT PLAN

The Sacramento Groundwater Authority (SGA) is a joint powers authority charged with managing the groundwater basin underlying Sacramento County north of the American River. To maintain a sustainable groundwater resource for the more than half-million citizens that rely upon the basin for their daily water needs, SGA intends to adopt an update of its groundwater management plan originally adopted in December 2003. SGA encourages any individual interested in the update of the groundwater management plan to attend the December 11, 2008 meeting of the SGA board of directors. The meeting, which is open to the public, will begin at 9 am at 5620 Birdcage Street, Suite 110 in Citrus Heights, CA. For more information on SGA Board meetings or to find out more about groundwater management planning efforts, contact Rob Swartz of SGA at (916) 967-7692.

Appendix D

Standard Operating Procedures for Manual Water Level Measurements

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1.0 SCOPE AND APPLICATION

The purpose of this Standard Operating Procedure (SOP) is to set guidelines for the determination of the depth to water and separate phase chemical product (i.e., gasoline or oil) in a water supply well, monitoring well, or piezometer. These standard operating procedures may be varied or changed as required, dependent on site conditions , and equipment limitations. In all instances, the actual procedures employed will be documented and described on the field form. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

Generally, water-level measurements taken in piezometers, or wells are used to construct water table or potentiometric surface maps and to determine flow direction as well as other aquifer characteristics. Therefore, all water level measurements in a given district should preferably be collected within a 24 hour period and SGA's area within one week. However, certain situations may produce rapidly changing groundwater levels that necessitate taking measurements as close in time as possible. Large changes in water levels among wells may be indicative of such a condition . Rapid groundwater level changes may occur due to:

- Atmospheric pressure changes
- Changes in river stage, impoundments levels, or flow in unlined ditches
- Pumping of nearby wells
- Precipitation
- Tidal influences

2.0 METHOD SUMMARY

A survey mark should be placed on the top of the riser pipe or casing as a reference point for groundwater level measurements. If the lip of the riser pipe is not flat, the reference point may be located on the grout apron or the top of the outer protective casing (if present). The measurement reference point should be documented on the groundwater level data form. All field personnel must be made aware of the measurement reference point being used in order to ensure the collection of comparable data. Before measurements are made, water levels in piezometers and monitor wells should be allowed to stabilize for a minimum of 24 hours after well construction and development. Measurements in water supply wells need to be noted as questionable if pumping has or is occurring. In low yield situations, recovery of water levels to equilibrium may take longer. All measurements should be made as accurately as possible, with a minimum accuracy of 0.1 feet. Future measurements may have to be more accurate (measurements to the nearest 0.01 foot may be needed for conjunctive use projects, ect.). Ideally, the minimum measurement accuracy is 0.1 feet and the recommended accuracy is 0.01 feet.

If there is reason to suspect groundwater contamination, water level measuring equipment must be decontaminated and, in general, measurements should proceed from the least to the most contaminated wells. This SOP assumes an absence of contamination and no need for air monitoring or decontamination.

Open the well and monitor the headspace with the appropriate air monitoring instrument if the presence of volatile organic compounds is suspected. For electrical sounders lower the device into the well until the water surface is reached as indicated by a tone or meter deflection. Record the distance from the water surface to the reference point. Measurement with a chalked tape will

necessitate lowering the tape below the water level and holding a convenient foot marker at the reference point. Record both the water level as indicated on the chalked tape section and the depth mark held at the reference point The depth to water is the difference between the two readings. Remove measuring device, replace riser pipe cap, and decontaminate equipment as necessary. Note that if a separate phase is present, an oil/water indicator probe is required for measurement of product thickness and water level.

3.0 POTENTIAL PROBLEMS

1. Cascading water, particularly in open-hole or rock wells, may interfere with the measurement.
2. Some older types of electric sounders are only marked at five-foot intervals. A surveyor's tape is necessary to extrapolate between the 5-foot marks.
3. Oil or other product floating on the water column can insulate the contacts of the probe on an electric sounder and give false readings. For accurate level measurements in wells containing floating product, a special oil/water level indicator is required, and the corrected water level must be calculated.
4. Tapes (electrical or surveyor's) may have damaged or missing sections, or may be spliced inaccurately.
5. An airline may be the only available means to make measurements in sealed production wells but the method is generally accurate only to approximately 0.2 foot.
6. When using a steel tape, it is necessary to lower the tape below the water level in order to make a measurement. This assumes knowledge of the approximate groundwater level.

4.0 EQUIPMENT

The electric water level indicator and the chalked steel tape are the devices commonly used to measure

water levels. Both have an accuracy of 0.01 feet. Other field equipment may include:

- Air monitoring instrumentation
- Well depth measurement device (sounder)
- Chalk
- Ruler
- Site logbook
- Paper towels and trash bags
- Decontamination supplies (assumed unnecessary)
- Groundwater level data forms

5.0 PROCEDURES

5.1 Preparation

1. Determine the number of measurements needed, the methods to be employed, and the equipment and supplies needed.
2. Decontaminate or pre-clean equipment, and ensure that it is in working order.

3. Coordinate schedule with staff and regulatory agency, if appropriate.
4. If this is an initial visit, perform a general site survey prior to site entry in accordance with a current approved site specific Health and Safety Plan (id applicable).
5. Identify measurement locations.

5.2 Procedures

Procedures for determining water levels are as follows:

1. If possible, and when applicable, start at those wells that are least contaminated and proceed to those wells that are most contaminated.
2. Rinse all the equipment entering the well.
3. Remove locking well cap, note well ID, time of day, and date on the groundwater level data form.
4. Remove well cap.
5. If required by site-specific condition, monitor headspace of well with a photoionization detector (PID) or flame ionization detector (FID) to determine presence of volatile organic compounds, and record results in logbook.
6. Lower water-level measuring device into the well. Electrical tapes are lowered to the water surface whereas chalked steel tapes are lowered generally a foot or more below the water surface. Steel tapes are generally chalked so that a 1-to 5-foot long section will fall below the expected water level.
7. For electrical tapes record the distance from the water surface, as determined by the audio signal or meter, to the reference measuring point and record. For chalked tapes, an even foot mark is held at the reference point, once the chalked section of the tape is below the water level. Both the water level on the tape and the foot mark held at the reference point is recorded. The depth to the water is then the difference between the two readings. In addition, note the reference point used (top of the outer casing, top of the riser pipe, ground surface, or some other reproducible position on the well head). Repeat the measurement.
8. Remove all downhole equipment, replace well cap and locking steel caps.
9. Rinse all downhole equipment and store for transport to the next well.
10. Note any physical changes, such as erosion or cracks in protective concrete pad or
11. Note any physical changes, such as erosion or cracks in protective concrete pad or variation in total depth of well on groundwater level data form.

6.0 CALCULATIONS

To determine groundwater elevation above mean sea level, use the following equation:

where:

$$E_w = E - D$$

E_W = Elevation of water above mean sea level (feet) or local datum

E = Elevation above sea level or local datum at point of measurement (feet)

D = Depth to water (feet)

7.0 QUALITY ASSURANCE/QUALITY CONTROL

The following general quality assurance/quality control (QA/QC) procedures apply:

1. All data must be documented on the groundwater level data forms.
2. All instrumentation must be operated in accordance with operating instructions as supplied by the manufacturer, unless otherwise specified.
3. Each well should be tested at least twice in order to compare results. If results do not agree to within 0.02 feet, a third measurement should be taken and the readings averaged. Consistent failure of consecutive readings to agree suggests that levels are changing because of one or more conditions as indicated in Section 1, and should be noted on the field form.
4. Results should be compared to historical measurements while in the field and significant discrepancies noted and resolved if possible.
5. Wells for which no or questionable measurements are obtained need to have the codes entered on the field form as follows:

No Measurement		**Questionable Measurement**	
0	Discontinued	**0**	Caved or deepened
1	Pumping	**1**	Pumping
2	Pumphouse locked	**2**	Nearby pump operating
3	Tape hung up	**3**	Casing leaking or wet
4	Can't get tape in casing	**4**	Pumped recently
5	Unable to locate well	**5**	Air or pressure gauge measurement
6	Well destroyed	**6**	Other
7	Special	**7**	Recharge operation at nearby well
8	Casing leaking or wet	**8**	Oil in casing
9	Temporarily inaccessible		
D.	Dry well		
F.	Flowing well		

6. The surveyor(s) must complete all fields on the field form and initial. Upon return from the field, appropriate corrective actions need to be communicated and completed prior to the next survey event.
7. All data entered into electronic spreadsheet or database should be double-keyed or hard copy printed and proofed by a second person.
8. Questionable wells or measurements noted during data compilation need to result in corrective actions if applicable.

8.0 HEALTH AND SAFETY

This SOP assumes that only uncontaminated wells are being measured. If not, a current approved site Health and Safety Plan should be consulted..

9.0 REFERENCES

Driscoll, F.G. 1986. Groundwater and Wells. Second Edition. Chapter 16. *Collection and Analysis of Pumping Test Data.* pp 534-579. Johnson Filtration Systems Inc. St. Paul, Minnesota.

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Appendix C-3 – North American Groundwater Basin

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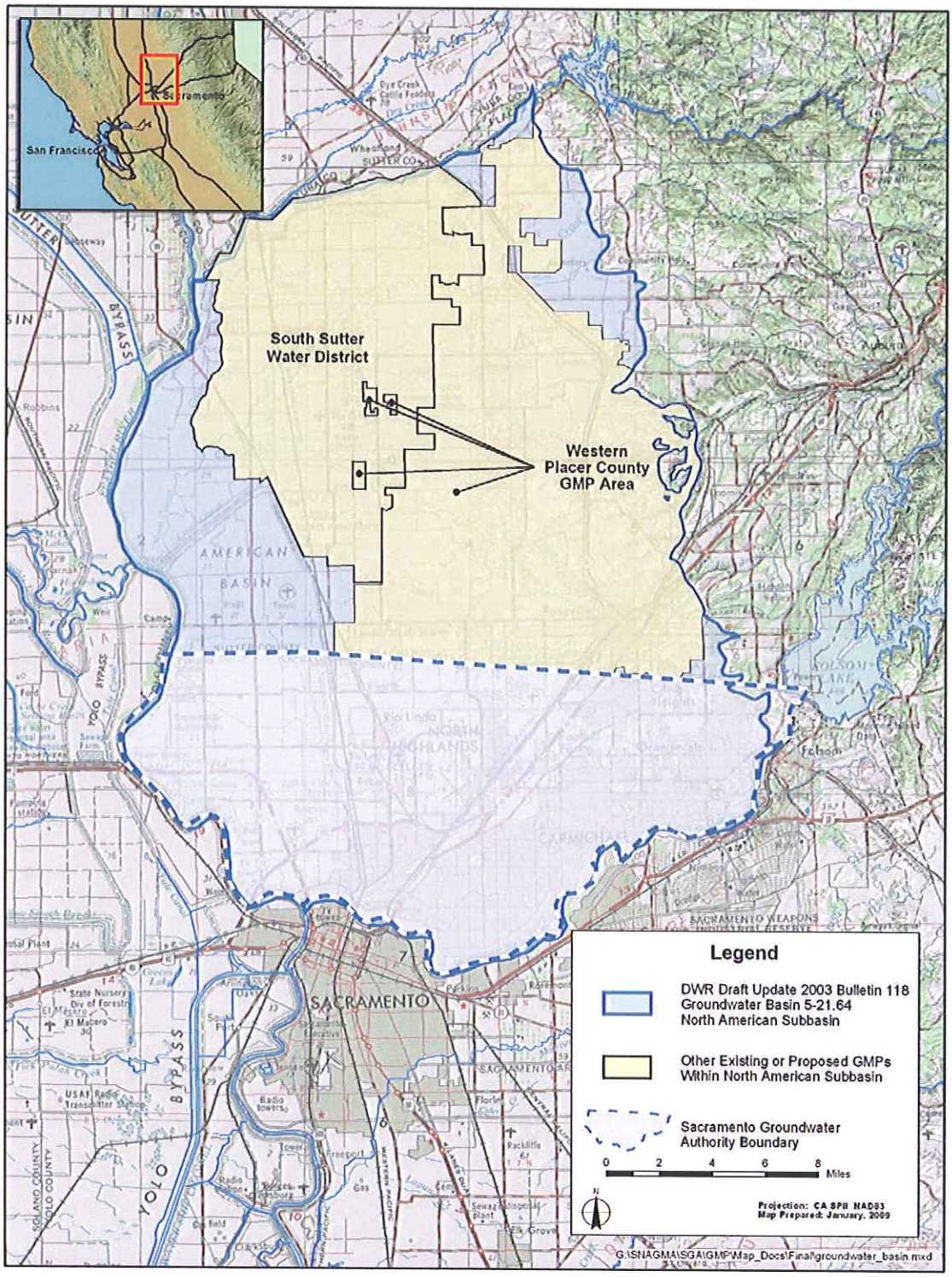

Figure 2. Location of North American Groundwater Subbasin

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Appendix C-4 – SGA Area of North American Groundwater Basin and Hydrographs

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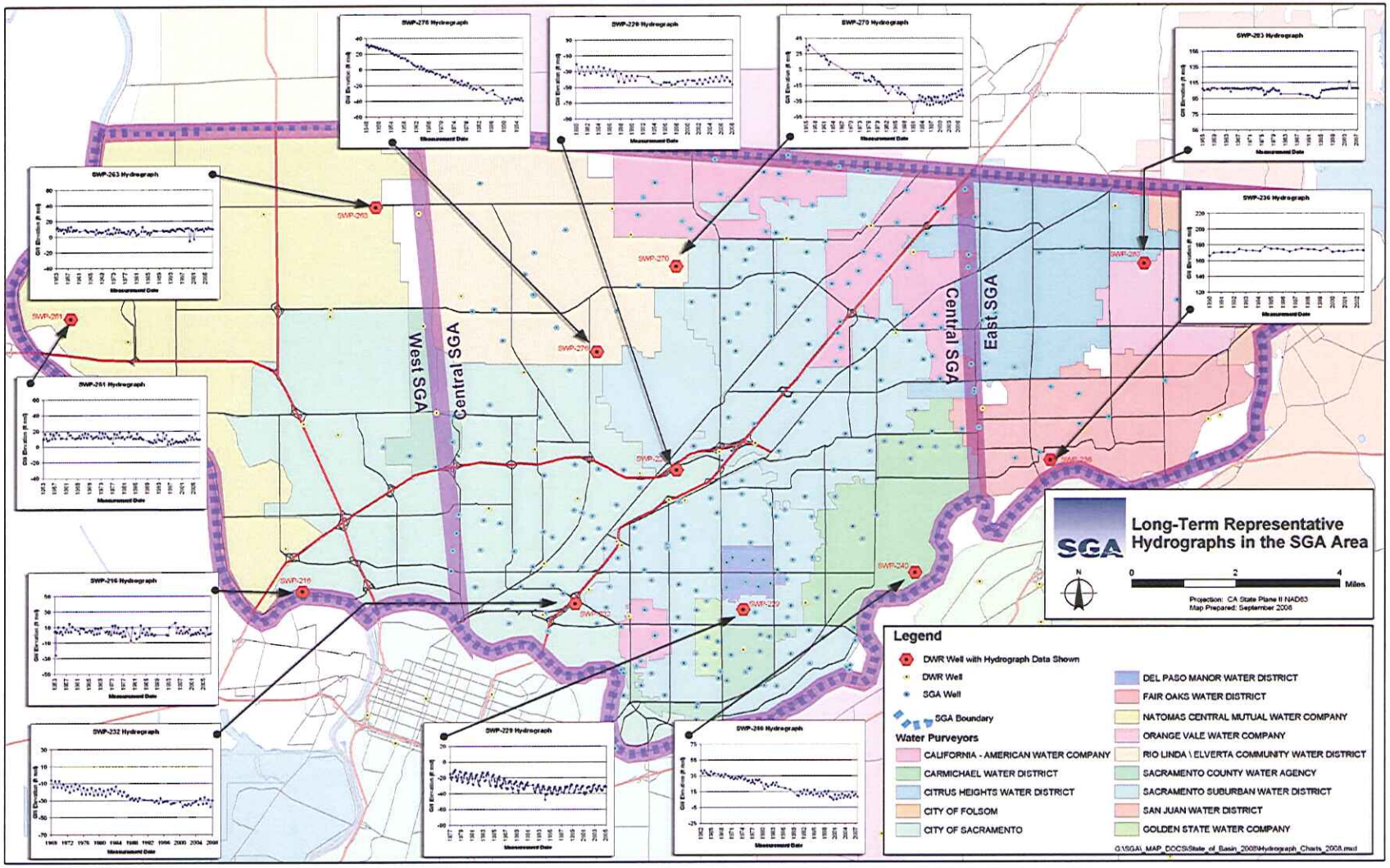

Figure 6. Representative Groundwater Hydrographs in the SGA Area