Lower San Joaquin River Committee

Briefing of New Melones Project and Vernalis Modeling

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Task

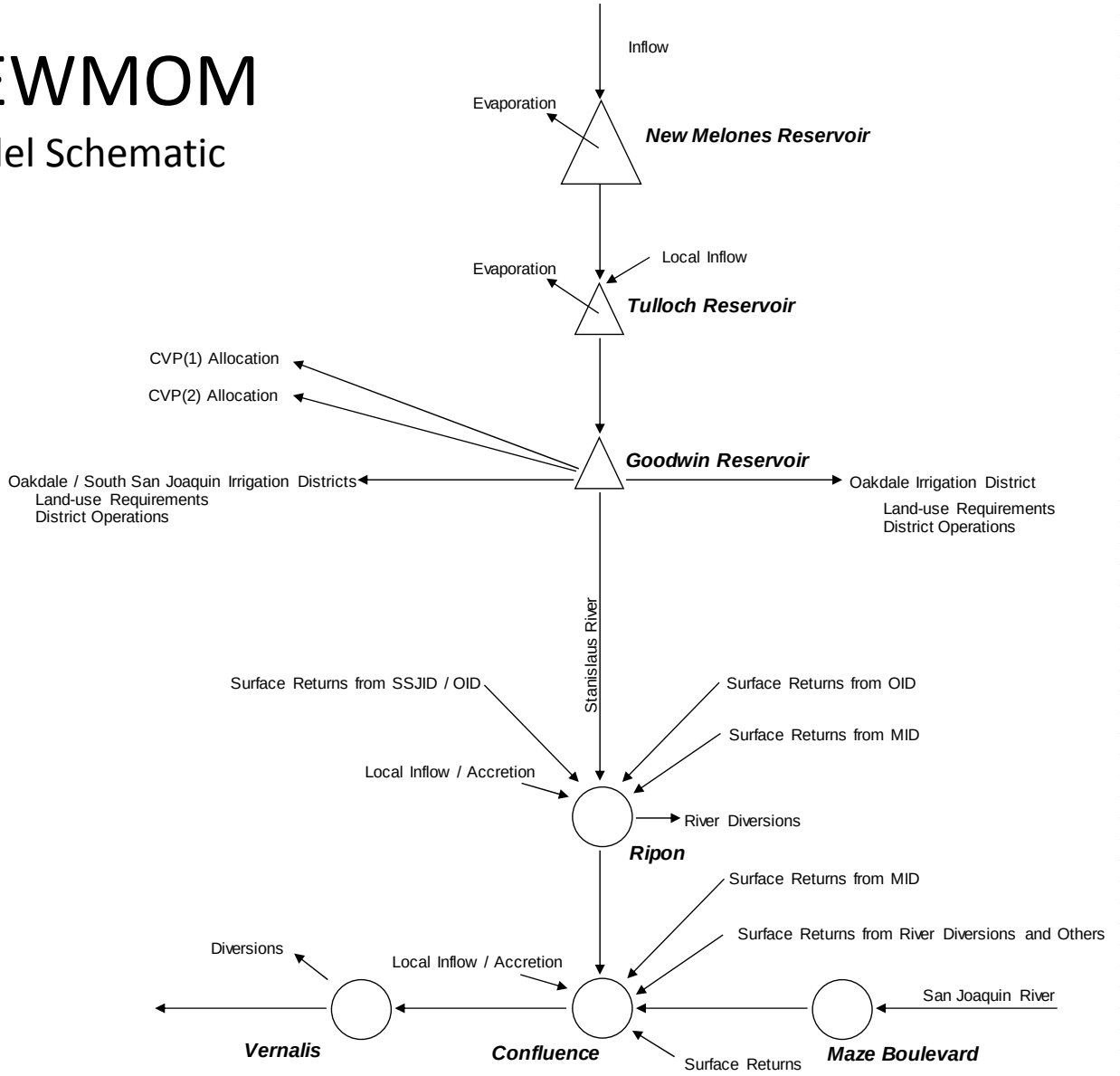
Demonstrate effects of changed flow and salinity in the San Joaquin River upon Vernalis flow and salinity and the operations of the New Melones Project.

Approach

- Flow and quality conditions of the San Joaquin River at Maze provided by WARMF.
- NEWMOM worksheet model used to simulate the river reach between Maze and Vernalis, and the operation of the New Melones Project on the Stanislaus River as affected by differing mainstem flow and quality conditions.
- Comparison of model results.

NEWMOM

Model Schematic



Settings

Base – New Melones Project

- June 2009 BO RPA (Appendix 2E) w/ extra dry year schedule
- D1641 Vernalis Base Flow Feb-Jun, & no pulse flow
- D1641 Vernalis WQ (.7/1.0)
- Stanislaus River DO (flow surrogate)
- OID/SSJID formula entitlements, up to land use requirements
- SEWD/CSJWCD up to 155 TAF, three tier District proposal

- WARMF "Base" depiction of historical flow and quality conditions at Maze

Alternative Settings – New Melones Project

- Same as Base

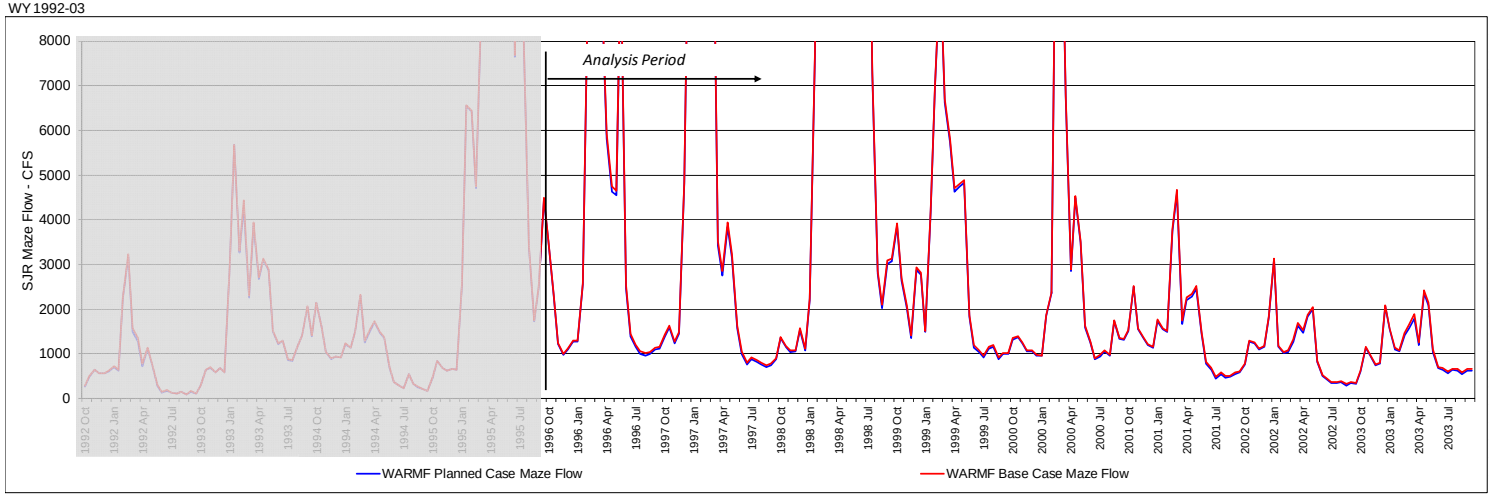
- WARMF "Bundle" depiction of flow and quality at Maze

San Joaquin River at Maze

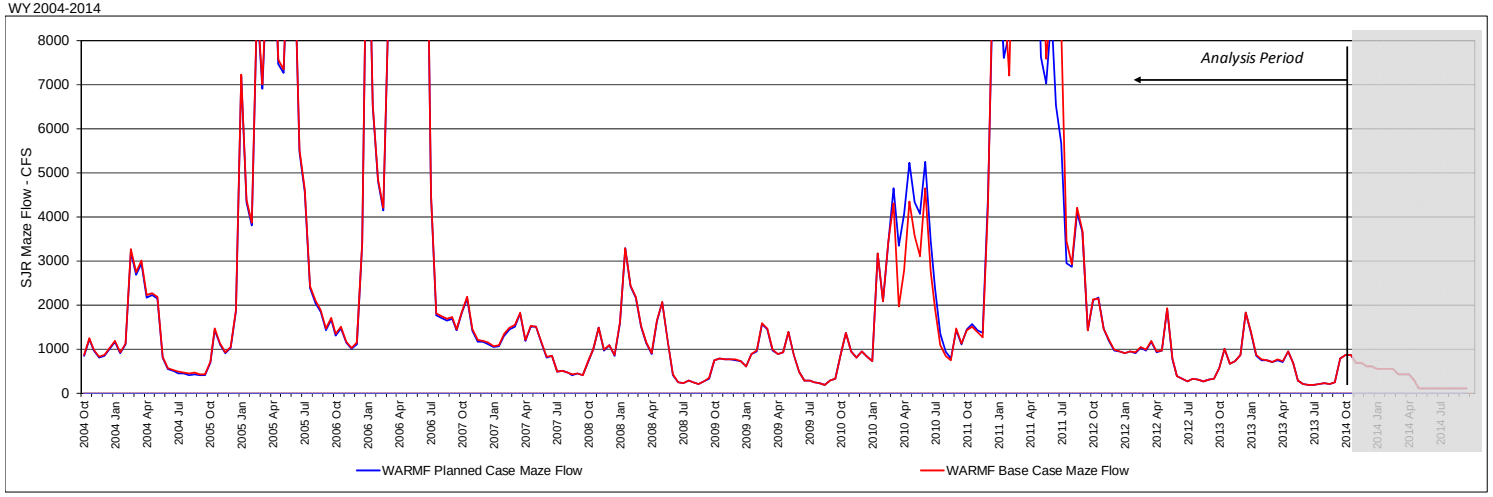
Base and “Planned Bundle” (input to NEWMON)

San Joaquin River Flow at Maze (CFS) (WARMF)

WY 1992-03



WY 2004-2014

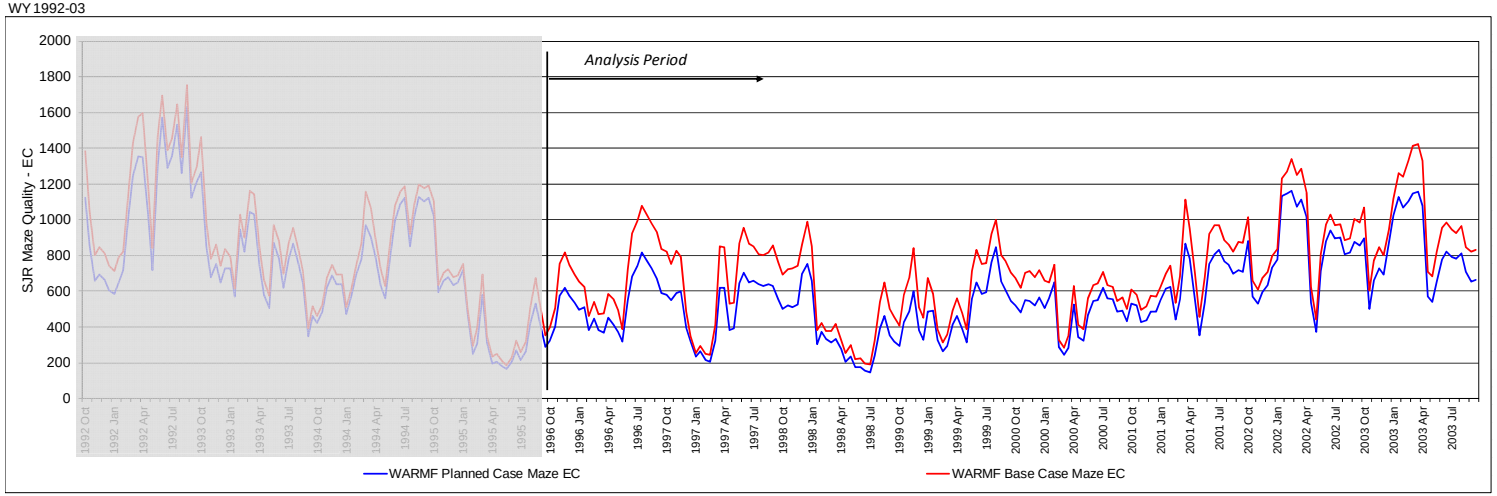


San Joaquin River at Maze

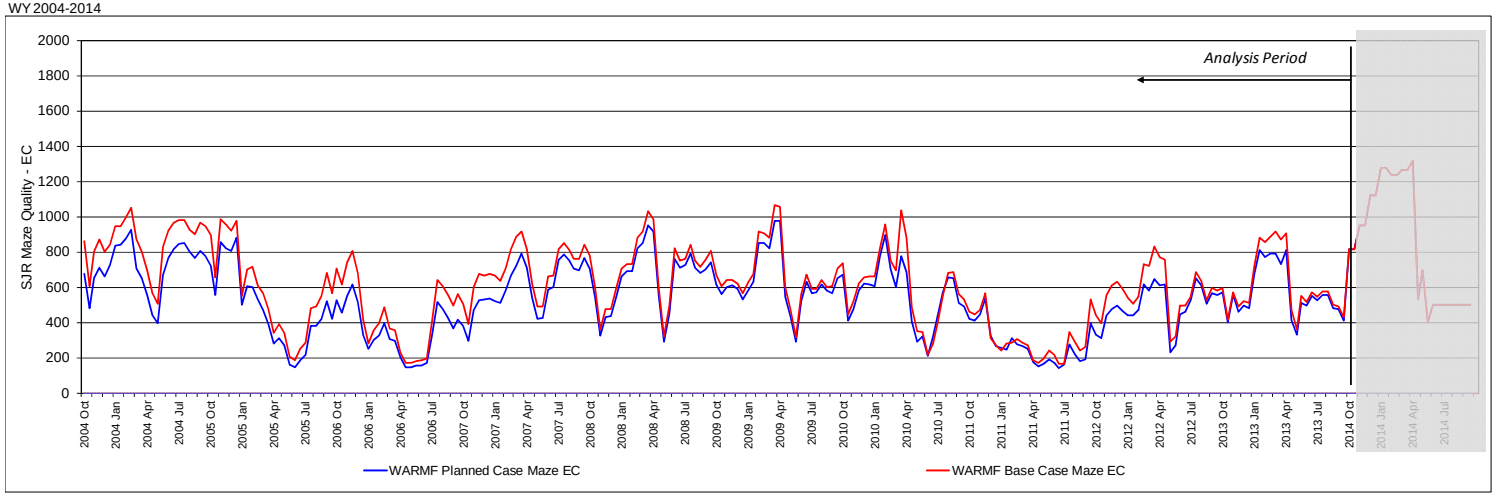
Base and “Planned Bundle” (input to NEWMON)

San Joaquin River Quality at Maze (EC) (WARMF)

WY 1992-03



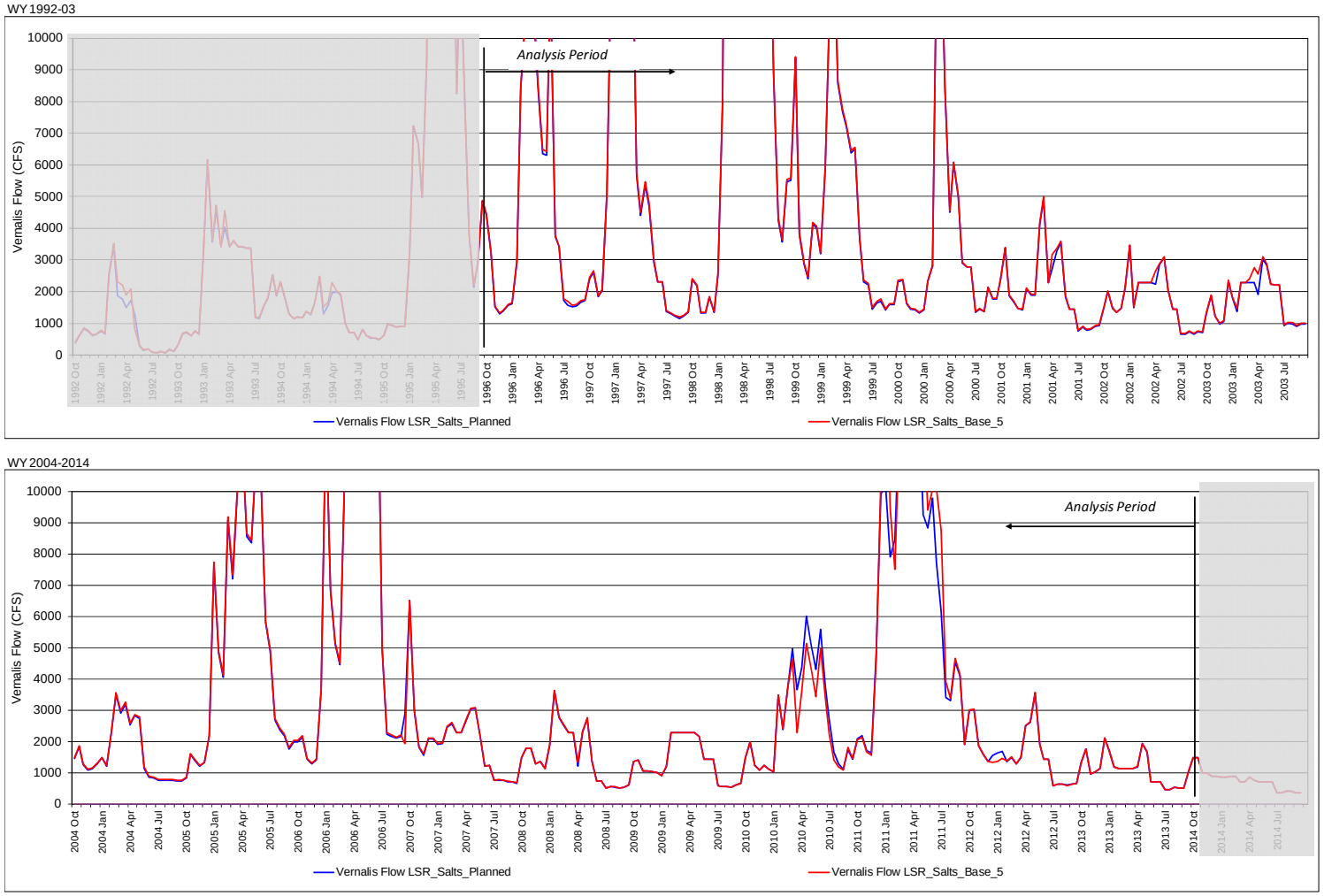
WY 2004-2014



San Joaquin River at Vernalis

Base and “Planned Bundle” (output from NEWMON)

San Joaquin River Flow at Vernalis (cfs)

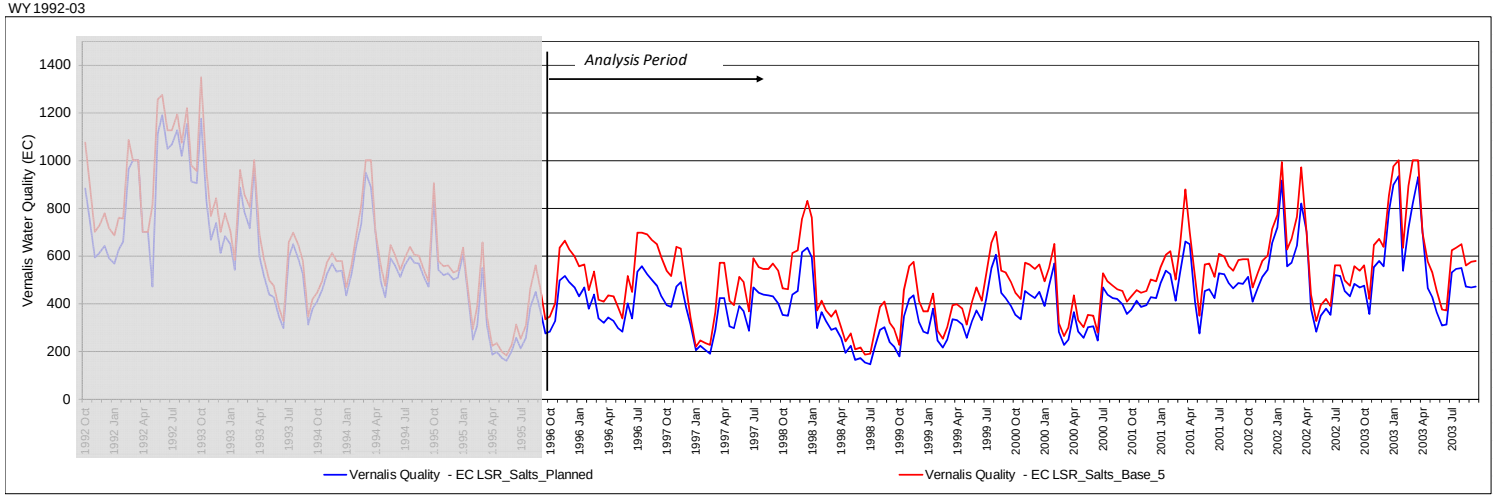


San Joaquin River at Vernalis

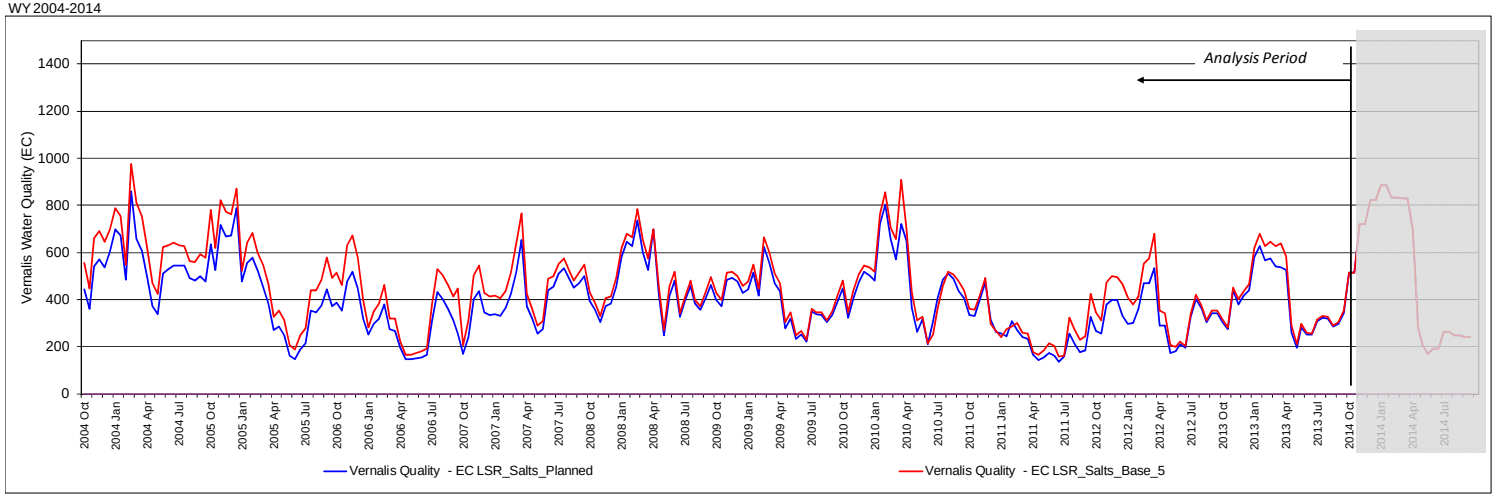
Base and “Planned Bundle” (output from NEWMON)

San Joaquin River Quality at Vernalis (EC)

WY 1992-03



WY 2004-2014



New Melones Project Operation

Base and "Planned Bundle" (output from NEWMON)

New Melones Project Operation and River Characteristics – Planned (1,000 acre-feet)

	New Melones			Goodwin										
	New Melones Inflow	New Melones Storage	Tulloch Storage	OID & SSJID Canals	Total OID & SSJID	SEWD NM Water	CSJWCD NM Water	Instream Fish	Dissolved Oxygen	Vernalis Water Quality	Vernalis Flow Objective	Total Goodwin Release to River	Release above Minimum	NM Forecast Index
Avg	1191			518	518	51	66	352	13	2	41	500	93	
	WY	EOS	EOS	WY		M-F	M-F	M-F	M-F	M-F	M-F	M-F	M-F	
1995	2,160	1,482	64	452	452	75	80	348	3	0	0	360	9	2,310
1996	1,512	1,715	64	517	517	75	80	587	0	0	23	1,380	770	2,841
1997	1,902	1,628	64	556	556	75	80	462	0	0	18	504	24	2,749
1998	1,876	2,100	64	444	444	75	80	587	0	0	0	1,247	660	3,374
1999	1,326	1,715	64	508	508	75								
2000	1,062	1,578	64	488	488	75								
2001	588	1,223	64	469	469	75								
2002	710	862	64	548	548	10								
2003	896	735	64	530	530	10								
2004	670	573	64	600	600	10								
2005	1,576	1,270	64	524	524	75								
2006	2,061	2,100	64	496	496	75								
2007	581	1,278	64	587	587	75								
2008	579	926	64	550	550	10								
2009	866	737	64	564	564	10								
2010	1,011	983	64	478	478	10								
2011	2,093	1,935	64	466	466	75								
2012	607	1,357	64	525	525	75								
2013	559	977	64	544	544	10								

New Melones Project Operation and River Characteristics – Base (1,000 acre-feet)

	New Melones			Goodwin										
	New Melones Inflow	New Melones Storage	Tulloch Storage	OID & SSJID Canals	Total OID & SSJID	SEWD NM Water	CSJWCD NM Water	Instream Fish	Dissolved Oxygen	Vernalis Water Quality	Vernalis Flow Objective	Total Goodwin Release to River	Release above Minimum	NM Forecast Index
Avg	1,191			518	518	51	66	352	11	10	37	500	90	
	WY	EOS	EOS	WY		M-F	M-F	M-F	M-F	M-F	M-F	M-F	M-F	
1995	2,160	1,482	64	452	452	75	80	348	3	0	0	360	9	2,309
1996	1,512	1,713	64	517	517	75	80	587	0	3	21	1,380	769	2,841
1997	1,902	1,630	64	556	556	75	80	462	0	0	15	504	27	2,749
1998	1,876	2,100	64	444	444	75	80	587	0	0	0	1,247	660	3,374
1999	1,326	1,714	64	508	508	75	80	588	0	1	0	588	0	2,860
2000	1,062	1,578	64	488	488	75	80	462	0	0	33	499	4	2,595
2001	588	1,217	64	469	469	75	80	234	14	19	76	343	0	2,061
2002	710	853	64	548	548	10	49	234	15	40	119	408	0	1,733
2003	896	702	64	530	530	10	49	186	20	72	126	404	0	1,575
2004	670	541	64	600	600	10	0	99	38	26	0	182	20	1,239
2005	1,576	1,240	64	524	524	75	80	234	15	0	0	249	0	2,083
2006	2,061	2,099	64	496	496	75	80	587	0	0	0	798	211	3,153
2007	581	1,280	64	587	587	75	80	348	3	0	18	369	0	2,289
2008	579	926	64	550	550	10	49	185	27	7	88	307	0	1,720
2009	866	740	64	564	564	10	49	185	27	6	141	360	0	1,623
2010	1,011	959	64	478	478	10	49	185	27	15	12	245	5	1,644
2011	2,093	1,911	64	466	466	75	80	588	0	0	0	589	2	2,967
2012	607	1,357	64	525	525	75	80	348	3	0	39	390	0	2,351
2013	559	979	64	544	544	10	49	234	15	0	24	273	0	1,771

New Melones Project Operation

Base and "Planned Bundle" (output from NEWMON)

New Melones Project Operation and River Characteristics minus

New Melones Project Operation and River Characteristics – Base (1,000 acre-feet)

	New Melones			Goodwin										
	New Melones Inflow	New Melones Storage	Tulloch Storage	OID & SSJID Canals	Total OID & SSJID	SEWD NM Water	CSJWCD NM Water	Instream Fish	Dissolved Oxygen	Vernalis Water Quality	Vernalis Flow Objective	Total Goodwin Release to River	Release above Minimum	NM Forecast Index
Avg	0			0	0	0	0	0	2	-8	4	0	3	
	WY	EOS	EOS	WY		M-F	M-F	M-F	M-F	M-F	M-F	M-F	M-F	
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	1	0	0	0	0	0	0	0	-3	2	0	1	0
1997	0	-3	0	0	0	0	0	0	0	0	3	0	-3	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	1	0	0	0	0	0	0	0	-1	0	-1	0	0
2000	0	-1	0	0	0	0	0	0	0	0	1	1	0	1
2001	0	6	0	0	0	0	0	0	1	-19	13	-5	0	-1
2002	0	9	0	0	0	0	0	0	0	-33	28	-5	0	4
2003	0	33	0	0	0	0	0	0	8	-56	24	-25	0	9
2004	0	32	0	0	0	0	0	0	21	-21	0	0	0	32
2005	0	31	0	0	0	0	0	0	0	0	0	0	0	31
2006	0	1	0	0	0	0	0	0	0	0	0	30	30	31
2007	0	-2	0	0	0	0	0	0	0	0	2	2	0	0
2008	0	-1	0	0	0	0	0	0	0	-3	2	-1	0	-2
2009	0	-3	0	0	0	0	0	0	0	-3	5	1	0	-1
2010	0	24	0	0	0	0	0	0	0	-15	-12	-27	0	-3
2011	0	24	0	0	0	0	0	0	0	0	0	24	24	24
2012	0	0	0	0	0	0	0	0	0	0	1	1	0	0
2013	0	-2	0	0	0	0	0	0	0	0	1	1	0	-1

New Melones Project Operation

In general, the actions and circumstances of the Planned bundle develop changes in flow and quality in the San Joaquin River upstream of the Stanislaus River confluence. At times these changes occur when the New Melones Project operation is providing specific releases to comply with the D1641 Vernalis water quality objective. If the change in upstream San Joaquin River flow and quality requires less water from the Stanislaus River to comply with the downstream water quality objective, New Melones would release less water for that purpose. However, such a reduction in release may be countered or limited by a need to release for a flow or quality requirement such as the D1641 Vernalis flow requirement or Stanislaus River instream dissolved oxygen objectives. During periods when Vernalis flow objectives affected the New Melones operation, changes in flow due to Planned bundle actions and circumstances would cause a corresponding change in New Melones releases, again potentially countered or limited by other release requirements.