Annual Report of Activities

October 1, 2012 to September 30, 2013

Stanislaus Operations Group (SOG)

October 2013

Acronyms and Abbreviations

3DADM	Three-Day-Average Daily Maximum temperature
7DADM	Seven-Day-Average Daily Maximum temperature
BiOp	Biological Opinion
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CDEC	California Data Exchange Center
CDFW	California Department of Fish & Game
CWT	Coded Wire Tag
DWR	California Department of Water Resources
ESA	Endangered Species Act
GDW	Stanislaus River at Goodwin Dam (CDEC gauge)
KF	Knights Ferry
NMFS	National Marine Fisheries Service
OBB	Stanislaus River at Orange Blossom Bridge (CDEC gauge)
OID	Oakdale Irrigation District
Reclamation	U.S. Bureau of Reclamation
RPA	Reasonable and Prudent Alternative
RPN	Stanislaus River at Ripon (CDEC gauge for dissolved oxygen)
SOG	Stanislaus Operations Group
SRMFFN	Stanislaus River Minimum Flows for Fishery Needs
SSJID	South San Joaquin Irrigation District
SWP	State Water Project
SWRCB	State Water Resources Control Board
USFWS	U.S. Fish & Wildlife Service
VAMP	Vernalis Adaptive Management Program
WOMT	Water Operations Management Team

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Chapter 1 – Background

1.1 Background

The Stanislaus River is a significant resource of considerable interest to fishery management agencies, the public, and the Bureau of Reclamation (Reclamation). The U.S. Fish and Wildlife Service (USFWS), NOAA's National Marine Fisheries Service (NMFS), California Department of Fish and Wildlife (CDFW), and State Water Resource Control Board (SWRCB), are agencies with trust responsibilities for fishery and water resources in the Stanislaus River. Reclamation is responsible for operating the East Side Division, which includes New Melones Dam and Powerplant. Tri-Dam Project, a partnership between the Oakdale Irrigation District (OID) and the South San Joaquin Irrigation District (SSJID), owns and operates Donnells and Beardsley Dams and Reservoirs upstream of New Melones Reservoir and Tulloch Dam and Reservoir downstream of New Melones Reservoir. OID and SSJID own Goodwin Dam and Reservoir located downstream of Tulloch Dam. The East Side Division is operated to provide flood control, irrigation, power generation, general recreation, water quality, and fish and wildlife enhancement[1].

On June 4, 2009, NMFS issued its Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project (CVP) and State Water Project (NMFS BiOp)[2]. On April 7, 2011, NMFS issued adjustments[3] to the RPA of the NMFS BiOp (2011 NMFS RPA Adjustments). All references in this document to page numbers refer to the page numbers in the 2011 NMFS RPA adjustments, unless noted otherwise; all references to the NMFS BiOp should be considered to include the 2011 NMFS RPA Adjustments. The NMFS BiOp included the requirement that Reclamation create the Stanislaus Operations Group (SOG). The SOG is a technical team that provides advice to NMFS and to the Water Operations Management Team (WOMT) on issues related to fisheries and water resources on the Stanislaus River, per the decision-making procedures outlined on pages 8-9 of the 2011 NMFS RPA Adjustments. The purpose of the SOG is "to gather and analyze information, and make recommendations, regarding adjustments to water operations within the range of flexibility prescribed in the implementation procedures"[4] for the Stanislaus River and for the operation of the East Side Division as a unit of the overall CVP which is consistent with all relevant laws, regulations, and standards including the NMFS BiOp. Reclamation maintains its authority and responsibility for operations of the East Side Division complex. The SOG has no authority to make operational decisions, but rather provides advice to NMFS and WOMT. NMFS will consider advice from SOG when making a final determination as to whether or not a proposed operational action is consistent with the NMFS BiOp and ESA obligations.

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[1] PL 78–534 and PL 87-874
[2] The NMFS BiOp is available online at: http://swr.nmfs.noaa.gov/ocap.htm
[3] The 2011 NMFS RPA adjustments are available online at: http://swr.nmfs.noaa.gov/ocap/040711_OCAP_opinion_2011_amendments.pdf
[4] 2011 NMFS RPA Adjustments at p. 7.

1.2 Membership

The SOG consists of representatives from Reclamation, USFWS, NMFS, CDFW, DWR, and the SWRCB. Other agencies may be added to the SOG provided existing agencies approve of the change in SOG membership. SOG member agencies and the lead contacts are:

Bureau of Reclamation (Reclamation)
Tom Morstein-Marx - Stanislaus Operator
Patti Clinton – SOG group coordinator

U. S. Fish and Wildlife Service (USFWS)
J.D. Wikert
Julie Zimmerman

National Marine Fisheries Service (NMFS)
Barb Byrne

California Department of Fish and Game (CDFW)
Tim Heyne

California Department of Water Resources (DWR)
Andy Chu
Dan Yamanaka

State Water Resources Control Board (SWRCB)
Chris Carr

Chapter 2 – Summary of Actions and SOG Discussions

The following agenda items were discussed at monthly SOG meetings from October 2012 through September 2013.

2.1 Monthly Discussion Topics

- Fish monitoring
- Restoration
- Water operations and water quality [flows measured at Goodwin Dam, temperatures at Orange Blossom Bridge (OBB) and Knights Ferry (KF), dissolved oxygen at Ripon]
- Stanislaus RPA Actions (2011 NMFS RPA Adjustments at pages 46-55); key actions summarized below:

Temperature management -- RPA Action III.1.2 (2011 NMFS RPA Adjustments at p. 47)
This RPA action calls for Reclamation to manage the cold water supply within New Melones Reservoir and make cold water releases from New Melones Reservoir to provide suitable temperatures for California Central Valley (CV) steelhead (*Oncorhynchus mykiss*) rearing, spawning, egg incubation, smoltification, and adult migration in the Stanislaus River downstream of Goodwin Dam.

The 56°F temperature criterion at OBB in the fall (Action III.1.2) is intended to provide temperatures suitable for the migration and holding of CV steelhead. The NMFS BiOp notes that "This criterion shall apply as of October 1 or as of initiation date of fall pulse flow as agreed to by NMFS." SOG expected that few CV steelhead would migrate into the Stanislaus River before the fall pulse flow. The net upstream cumulative count of fall-run Chinook counted at the Stanislaus Weir as of September 26, 2012, was 116 fish, and no CV steelhead had been observed at the weir at that time. This monitoring data did not suggest any substantial "early migration" of salmonids into the watershed that might require temperature management to begin on October 1.

SOG recommended that the shift in the temperature criterion to 56°F at OBB apply as of the initiation of the main attraction pulse within the reshaped fall pulse flow, which was to be no later than October 15.

Flow management -- RPA Action III.1.3 (2011 NMFS RPA Adjustments at p. 49)
This RPA action calls for Reclamation to operate releases from the East Side Division reservoirs according to the New Melones yeartype specific minimum flow schedules in Appendix 2-E of the NMFS BiOp.

The fall attraction flow is one component of the daily flow schedule in Appendix 2-E of the NMFS BiOp required per Action III.1.3. As noted in the 2011 RPA Adjustments, the fall attraction flow is intended "…to improve in-stream conditions sufficiently to attract CV steelhead to the Stanislaus River." The RPA action further notes that "…based upon the advice of SOG and concurrence by NMFS, the flows may be implemented with minor modifications to the timing, magnitude, and/or duration, as long as NMFS concurs that the rationale for the shift in timing, magnitude, and/or duration is deemed by NMFS to be consistent with the intent of the action."

SOG advised a reshaping of the attraction flow (Table 1) consistent with the intent of the RPA action. Prior to designing the attraction flows, SOG took into consideration seepage concerns, dissolved oxygen, historical migration and spawning periods, monitoring operations, redd scour/stranding, straying, and temperature.

Table 1 SOG Attraction Flow Advice

Date (2012)	Appendix 2-E Below Normal (cfs)	SOG Advised flow (cfs)	Pulse Type
October 1	250	250	
October 2	250	250	
October 3	250	250	
October 4	250	300	
October 5	250	300	
October 6	250	400	
October 7	250	400	
October 8	250	500	
October 9	250	800	
October 10	250	700	Temperature pre-pulse
October 11	250	600	
October 12	250	500	
October 13	250	1000	
October 14	250	1500	
October 15	500	1500	Main migration pulse
October 16	750	1400	
October 17	1000	1300	
October 18	1250	1200	
October 19	1500	1100	
October 20	1500	900	
October 21	1500	700	
October 22	1500	500	
October 23	1500	1300	
October 24	1500	1200	Secondary migration pulse
October 25	1500	1100	
October 26	1500	900	
October 27	1500	700	
October 28	1250	500	Temperature pulse tail
October 29	1000	300	
October 30	750	300	
October 31	500	300	
November 1	200	300	
November 2	200	300	
November 3	200	300	
November 4	200	300	
November 5	200	300	
November 6	200	300	

November 7	200	300	
November 8	200	300	
November 9	200	250	
November 10	200	250	
November 11	200	250	
November 12	200	250	
November 13	200	250	
November 14	200	250	
November 15	200	200	End of pulse volume

The small pulse in early October and post-pulse tail in early November were intended to cool temperatures before starting the pulse to attract fish, and to buffer water temperatures after the main migration pulse ended in case daytime air temperature was still warm.
The attraction flow was split into two peaks without steady flows to discourage spawning during the pulse at flows that would not be sustained through fry emergence.
The pulse was shaped to bring flows below 500 cfs by the end of October by which time spawning has historically begun in order to minimize the number of redds that might be spawned at higher flows in locations that could be dewatered at the sustained 200-300 cfs flows expected through January.

In January 2013, SOG advised that the January winter instability flow (Below Normal yeartype) (a) be reshaped according to the "Alternative A" flow schedule described in the table below, and (b) be shifted in time to coincide with a natural storm event (Table 2).

Table 2 Winter Instability Flow

	Appendix 2-E, Below Normal					Alternative A				
Day	Base flow	Add'l pulse flow	Total flow	Base AF	Pulse AF	Base Flow	Add'l pulse flow	Total flow	Base AF	Pulse AF
1	200	0	200			200	0	200		
2	200	0	200			200	0	200		
3	200	200	400	397	397	200	300	500	397	595
4	200	200	400	397	397	200	250	450	397	496
5	200	200	400	397	397	200	100	300	397	198
6	200	200	400	397	397	200	100	300	397	198
7	200	0	200			200	50	250		99
8	200	0	200			200	0	200		
Cumulative:				1587	1587	Cumulative:			1587	1587

The alternate pulse had the same volume (1,587 AF) and a slightly higher peak flow (500 cfs, rather than 400 cfs) compared to the Below Normal January winter instability pulse in Appendix 2-E. The Appendix 2-E schedule was to provide variability in the winter simulating a small storm pulse. The shape of the "Alternative A" pulse was more typical of the flow pattern associated with storm events; it was concluded that keeping the highest flow below 500 cfs would keep stranding risk for juvenile salmonids low.

According to the Appendix 2-E flow schedule, the January winter instability flow was scheduled to begin on January 3, 2013. Allowing the winter instability flow to be shifted in time to

coincide with a natural storm event should capture the characteristics of a natural hydrograph, as the runoff, turbidity, meteorological conditions, etc. associated with a natural storm event would co-occur with the pulse of regulated flow. SOG recommended that Alternative A pulse start with a storm or no later than January 27. A delay in scheduling the pulse resulted in the overlap of the pulse with water released the last two days of January as part of an early ramp up for meeting the February Vernalis flow target. Goodwin releases for the dual purposes of meeting the January winter instability flow and the Vernalis flow requirement began on January 30 at 90 cfs, followed by a further increase to 1,500 cfs on February 6th.

The delay in implementation of the January pulse, in combination with the nearly 1,500 cfs flows required throughout February to meet the Vernalis flow requirement (a requirement the SWRCB's D-1641, not the NMFS BiOp) resulted in no short-term, storm-like, flow signals on the Stanislaus in the winter of 2013. The specific impact on salmonids caused by releasing a single, longer, winter pulse flow rather than multiple, shorter, winter pulse flows is not known. Both flow patterns may provide benefits, but of different type. For example, the storm-like flows called for in the RPA may provide cues for anadromy, while the month-long flows at nearly 1000 cfs (well above the minimum flow requirement in the RPA) likely inundated restoration areas along the Stanislaus River and provided shallow-water habitat that could provide benefits for rearing salmonids, including *O. mykiss*. While the intent of the winter instability flows is to provide some natural, functional storm flow signatures, the overlap of these flow signals with releases for other regulatory requirements may sometimes result in an alternate flow pattern.

The first day of the Appendix 2-E spring pulse in a Dry yeartype is April 8, 2013 for 350 cfs. The spring outmigration pulse flow is intended to provide "outmigration flow cues to enhance likelihood of anadromy" and "late spring flows for conveyance and maintenance of downstream migratory habitat quality." SOG proposed that the spring outmigration pulse flow (Dry yeartype) be reshaped according to the flows schedule described in Table 3. This alternative pulse shaping had the same volume (60,196 AF) as the spring outmigration pulse in the Dry yeartype schedule in Appendix 2-E; it provides a spring pulse flow that may cue anadromy and improve migratory habitat quality both in the Stanislaus River and in the mainstem San Joaquin River and southern delta; higher flows from the Stanislaus River are expected to convey outmigrating salmonids more rapidly along their migratory pathway, which may improve outmigration success. Coincident with the Appendix 2-E spring pulse releases was release of OID and SSJID water rights water. Estimates of the OID-SSJID water releases are included in the Table 3, since SOG considered the likely contribution of the OID-SSJID releases to instream flow in spring 2012, but SOG had no authority over the OID-SSJID release schedule.

Table 3 Spring Outmigration Pulse Flow

Date (2013)	Elements of reshaped pulse	RPA flows reshaped (cfs)	2-E RPA flows (cfs)	OID-SSJID water (est. cfs)
Apr 1		200	200	0
Apr 2	Pre-pulse	200	200	0
Apr 3	period; steady	200	200	0
Apr 4	conditions for	200	200	0
Apr 5	Chinook	200	200	0

Apr 6	survival study	200	200	0
Apr 7		200	200	0
Apr 8		200	350	0
Apr 9		200	500	0
Apr 10		500	750	0
Apr 11		500	1000	0
Apr 12	Early pulse;	500	1000	0
Apr 13	temperature	500	1000	0
Apr 14	improvement	500	1000	0
Apr 15	and flow	750	1000	0
Apr 16	ramp-up	750	1000	500
Apr 17		750	1000	500
Apr 18		750	1000	500
Apr 19		1200	1000	1800
Apr 20		1200	1000	1800
Apr 21		1200	1000	1800
Apr 22	Peak pulse	1200	1000	1800
Apr 23	flow; to	1200	1000	1800
Apr 24	maintain	1200	1000	1800
Apr 25	inundation of	1200	1000	1800
Apr 26	restoration	1200	1000	1800
Apr 27	areas and	1200	1000	1800
Apr 28	other	1200	1000	1800
Apr 29	shallow-water	1200	1000	1800
Apr 30	habitat for 22	1200	1000	1800
May 1	days	1200	1000	1800
May 2		1200	1000	1800
May 3		1200	1000	1800
May 4		1200	1000	1800
May 5		1200	1000	1800
May 6		1200	1000	1800
May 7		1200	1000	1800
May 8		1200	1000	1800
May 9		1200	1000	1800
May 10		1200	1000	500
May 11		1050	1000	500
May 12	Slow	930	1000	35
May 13	recession	820	1000	0
May 14	from peak	730	1000	0
May 15	flow to	650	1000	0
May 16	increase	580	800	0
May 17	likelihood of	510	600	0
May 18	recruitment	450	450	0
May 19	of riparian	400	200	0
May 20	vegetation	350	200	0
May 21		310	200	0
May 22		270	200	0
May 23		200	200	0
May 24		200	200	0
May 25		200	200	0
May 26		200	200	0
May 27		200	200	0
May 28		200	200	0
May 29		200	200	0
May30		200	200	0
May 31		200	200	0

The pulse initiation date of April 20, 2013, was intended to (a) provide pulse flows during the mid-April to mid-May period during the expected peak outmigration period for salmonids, (b) contribute to improved mainstem San Joaquin River conditions in coordination with spring flows from the Merced and Tuolumne Rivers, and (c) not disrupt the steady "low flow" experimental treatment period for a current study evaluating the survival of juvenile Chinook salmon at different flow conditions. The small increase in flow to 500 cfs in the second week of April was to help to buffer water temperatures and to ramp up to the peak pulse flow. The sustained peak flow of 1,200 cfs was intended to cue outmigration and improve migratory habitat quality downstream. Peak flows were maintained for just over 3 weeks in order to take advantage of the increased flood productivity expected in shallow-water habitat after approximately 2 weeks of inundation. Additionally, the sustained peak flows would provide a "high flow" experimental treatment period for the previously mentioned study evaluating the survival of juvenile Chinook salmon at different flow conditions. The slow recession of the pulse was intended to increase the likelihood of recruitment of riparian vegetation.

Gravel augmentation -- RPA Action III.2.1 (2011 NMFS RPA Adjustments at p. 53)
This RPA action calls for Reclamation to minimize effects of water operations on the Stanislaus River through improving spawning habitat for steelhead trout. On June 30, 2010, Reclamation submitted to NMFS a plan[5] which outlines projects that aim to achieve placement of 50,000 cubic yards of gravel in the Stanislaus River by 2014. This plan includes project descriptions for projects scheduled or likely to occur (*e.g.*, Honolulu Bar, Goodwin Canyon, Lover's Leap) as well as implementation schedules and monitoring efforts to improve spawning habitat. Project descriptions for *potential* projects that may help to meet the gravel augmentation requirements under this action, but are in various stages of development, are also described (*e.g.*, Knights Ferry, Two Mile Bar, Horseshoe Recreation Area, and Valley Oak Restoration Area).

Since the NMFS BiOp was issued in 2009, approximately 8,000 tons (5,333 cubic yards) of gravel has been placed in Goodwin Canyon. No gravel was added in 2013 because Reclamation's funding authority for gravel projects requires a cost share agreement that was not able to be executed for 2013 projects. Draft designs and test pitting have been completed for a spawning and rearing habitat project (side channel, floodplain, gravel) at Two Mile Bar. This project is awaiting a property appraisal. The Honolulu Bar project is complete and staff is still developing an updated schedule for the Lover's Leap project.

During monitoring of RPA-related gravel placements in Goodwin Canyon in November and December of 2012, 285 Chinook salmon redds were mapped in the gravel placement reach. The peak river-wide redd count was 1,023 redds which occurred the week of November 12, 2012. No monitoring of steelhead or trout spawning has occurred in the Stanislaus other than sporadic incidental observations. Gravel movement from the gravel placements in Goodwin Canyon has been monitored through snorkel surveys. The primary source of gravel to the canyon since Goodwin Dam was built has been the recent gravel placements (over the last 15 years or so) so the cumulative movement of this material can be visually monitored with snorkel surveys in the canyon. A 2013 survey showed gravel accumulations creating spawning habitat 0.2 mile downstream of the placement reach (Figures 1 and 2Figure 3). No gravel has reached the

[5] The plan for gravel augmentation is available on the SOG webpage: http://swr.nmfs.noaa.gov/ocap/sog.htm

downstream end of the large pool at the old stream gauge site located 0.5 mile downstream of the gravel placement site and one mile downstream of Goodwin Dam.

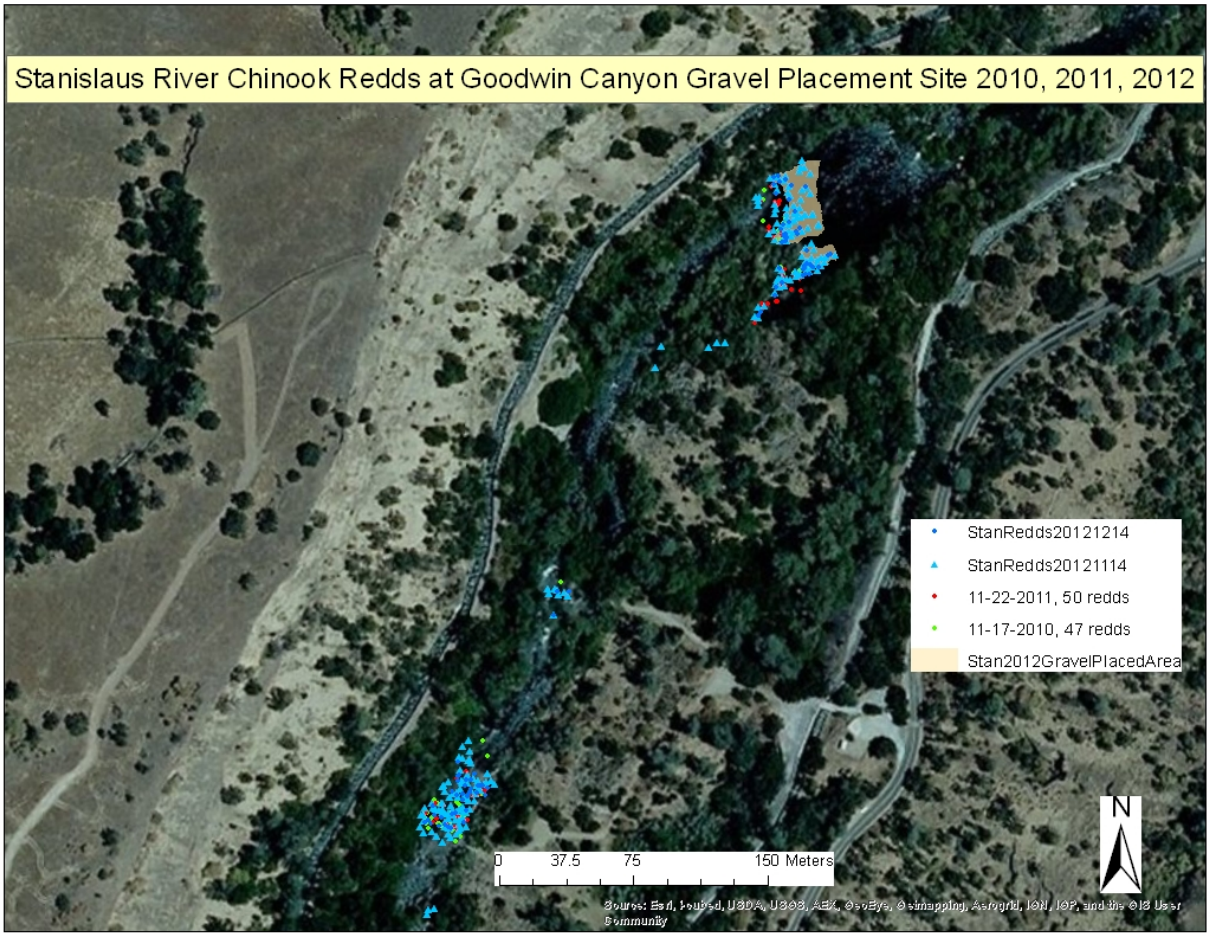

Figure 1 Chinook salmon redds at the Goodwin Canyon gravel placement sites. Redds are plotted with those from 2012 in blue overlaying the 2011 redds in red and 2010 redds in green.

Figure 2 Gravel bar and riffle created 0.2 mile downstream of gravel placement reach.

Conduct Floodplain Restoration and Inundation Flows -- RPA Action III.2.2 (2011 NMFS RPA Adjustments at p. 54)

This RPA action calls for Reclamation to seek advice from SOG to develop an operational strategy to achieve floodplain inundation flows that inundate CV steelhead juvenile rearing habitat on a 1- to 3-year return schedule, and to submit a proposed plan of operations to achieve this flow regime by June 2011. During 2010, SOG discussed several ongoing or proposed floodplain restoration projects (*e.g*. Honolulu Bar, Buttonbush, and Two Mile Bar) which provide several ecological benefits such as: providing refuge from predators, producing additional food resources, improving vegetative contaminant removal, and promoting natural riparian recolonization of woody species which can reduce water temperatures, attenuate flood flows, increase groundwater recharge, and clean instream gravels through deposition of fine sediments on the floodplain. These projects can also provide local gravel for meeting the requirements of Action III.2.1, minimizing the need to import gravel from other watersheds and reducing transportation costs. Projects which restore floodplain and side-channel habitats can increase the acres of seasonally inundated habitats necessary for rearing salmonids without requiring changes to the existing hydrograph. A draft plan was submitted in 2011. Reclamation and NMFS are working on refining the draft plan.

Evaluate Fish Passage at New Melones, Tulloch, and Goodwin Dams -- RPA Action III.2.4 (2011 NMFS RPA Adjustments at p. 55)

SOG expects that Action III.2.4, which calls for an evaluation of fish passage at New Melones, Tulloch, and Goodwin Dams, will be addressed by the Interagency Fish Passage Steering Committee.

2.2 Other Discussion Topics

The following list of SOG discussion topics highlights some additional substantive issues reviewed by SOG over the past year. Minor or logistical discussion items are documented in the notes, but not listed here. Appendix A contains the list of monthly notes.

- Annual Review Report (August and September meetings) – explanation of focus and timing.
- Winter Instability Flows (December and January meetings) – discussed worksheet for the two alternatives and explored different pulse shapes and timing.
- Reshaping spring flows (March and April meetings) – Discussed worksheet for reshaped Appendix 2E pulse.
- OID/SSJID Water Rights Water Flows (March Discussion) – Interest in the timing and duration of the releases and their potential relationship to the spring pulse flow.
- The Stanislaus River Forum was started July 17, 2013 –information that comes from these meetings is available during SOG meetings.

2.3 Summary of RPA III.1.3 Appendix 2E Minimum Flow Discussions

The implementation of the minimum flows in RPA Action III.1.3 was guided by the Appendix 2E flow schedule and hydrologic conditions. In 2013, SOG modified the timing and shape of the winter pulse periods in January and February of 2013. Specific details of flows implemented during water year 2013 are provided above.

Chapter 3 – Water Operations Summary

This chapter briefly describes Stanislaus River operations for water year 2013, pertaining to RPA Actions III.1.2 and III.1.3. These actions are presented in reverse order for clarity.

3.1 Action III.1.3 – Operate the East Side Division Dams to Meet the Minimum Flow, as Measured at Goodwin Dam, as Specified in Appendix 2-E[6]

Figure 3 summarizes New Melones Reservoir operations from October 2012 through early July 2013.

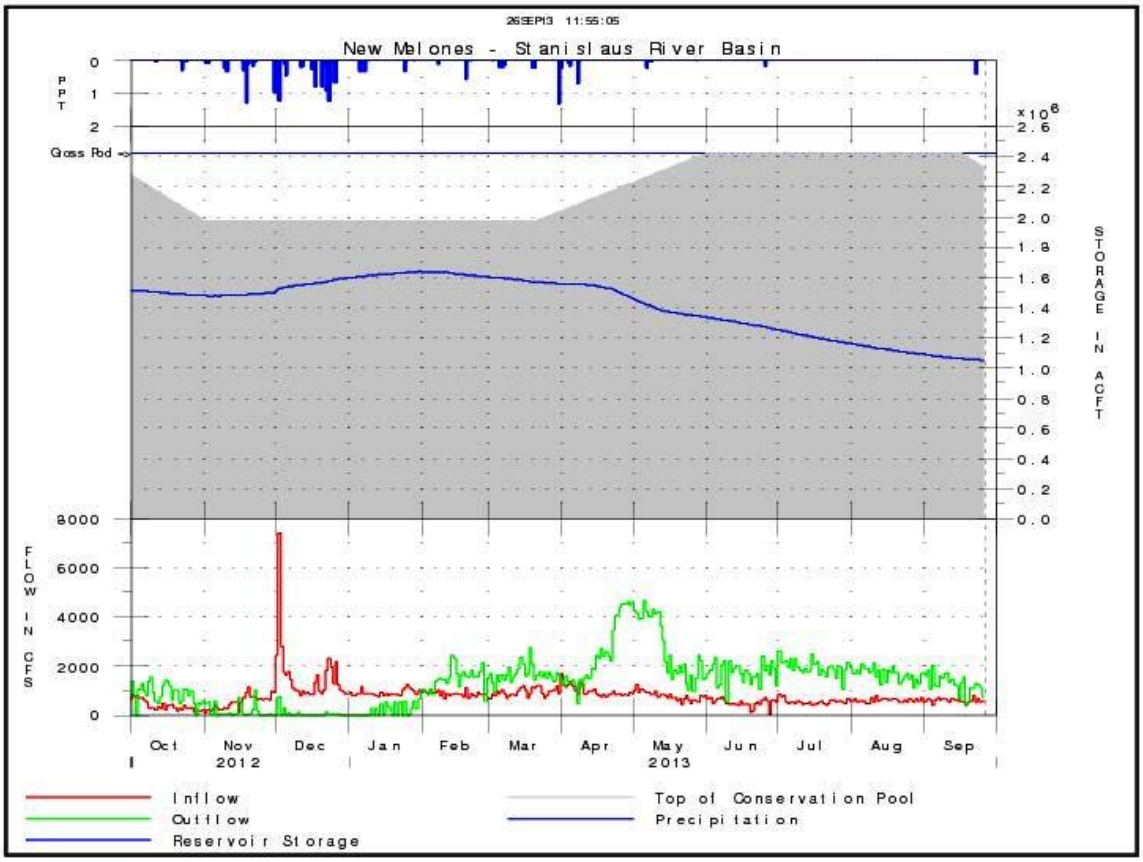

Figure 3 Summary of New Melones Reservoir Operations during the 2013 water year.

[6] Appendix 2-E of the NMFS BiOp is available online (pages 54-59) at: http://swr.nmfs.noaa.gov/ocap/Appendix_2-RPA_supporting_documents_compiled.pdf

The 2013 water year classifications for determining Appendix 2-E minimum flows, based on the New Melones Index, were as follows in Table 4 (the New Melones Index is based on forecasted inflows and storage volume). Per agreement (SOG meeting notes from February 17, 2010), the New Melones Water Supply Parameter was calculated by using the Interim Plan of Operations (IPO) methodology.

Table 4 Water Year Classification by Month

Month	Water Year Classification
October	Below Normal
November	Below Normal
December	Below Normal
January	Below Normal
February	Below Normal
March	Dry
April	Dry
May	Dry
June	Dry
July	Dry
August	Dry
September	Dry

Stanislaus River Operations:

The October pulse was implemented according to the September SOG advice. SOG recommended that the fall attraction flow (below normal yeartype) be reshaped according to the flow schedule described in Chapter 2 and shown in Figure 4, below. During April and May, releases were governed by Appendix 2-E releases and a request from OID to release up to 80,000 acre-feet of water rights water. In July, operations were governed by the Ripon Dissolved Oxygen standard. This continued to be the controlling standard until Aug 3, when Appendix 2-E releases once again became the controlling requirement.

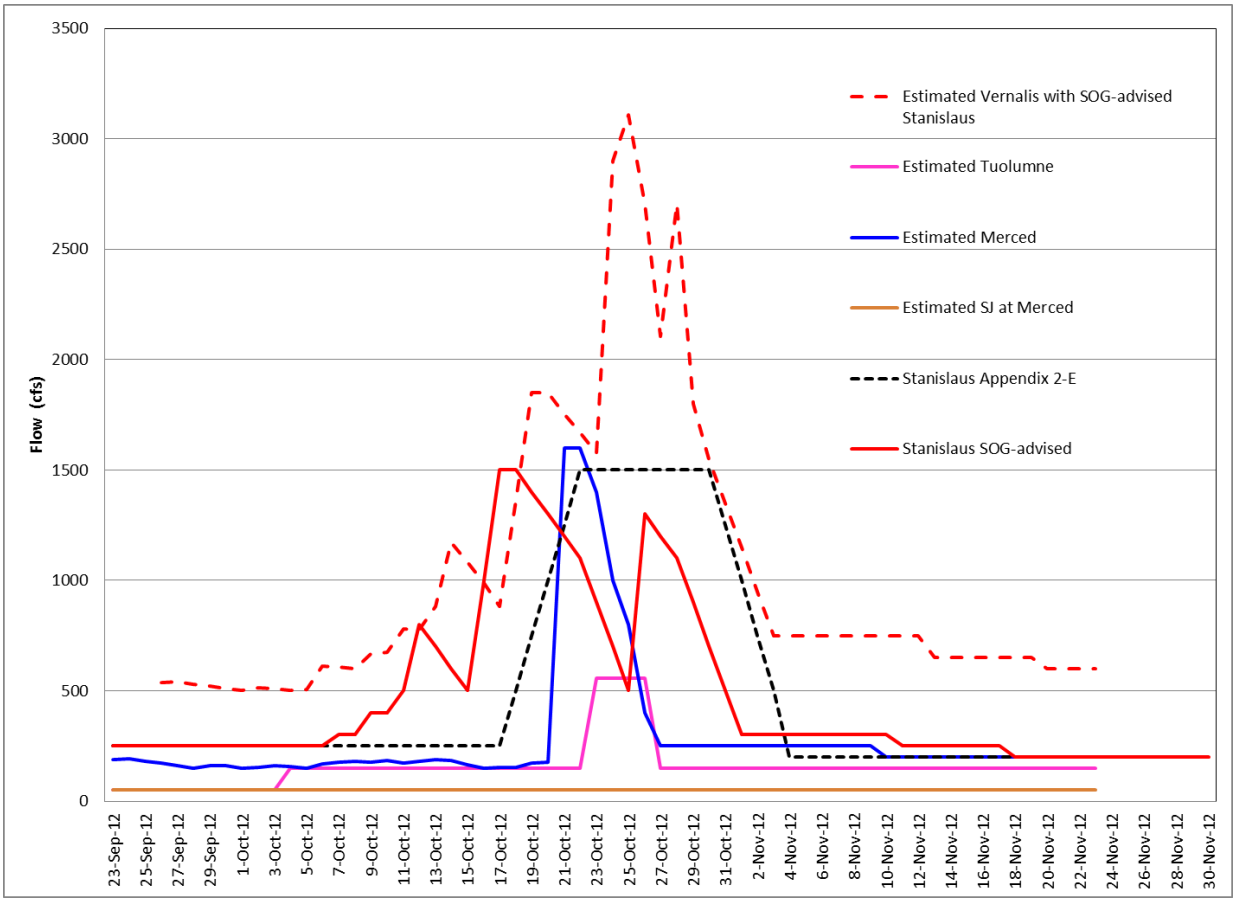

Figure 4 Estimated flows on the San Joaquin during October 2012. The reshaped fall pulse flow on the Stanislaus River, per SOG advice, is shown in the solid red line.

Goodwin Reservoir releases to the Stanislaus River are shown in Figure 5, including the primary reasons for those releases. Table 5 contains a summary of release changes from Goodwin Reservoir indicating the purpose of the operational change. Reclamation has made provisions to notify the public of potential safety or high flow considerations such as recreational precautions, inundation, and seepage as appropriate.

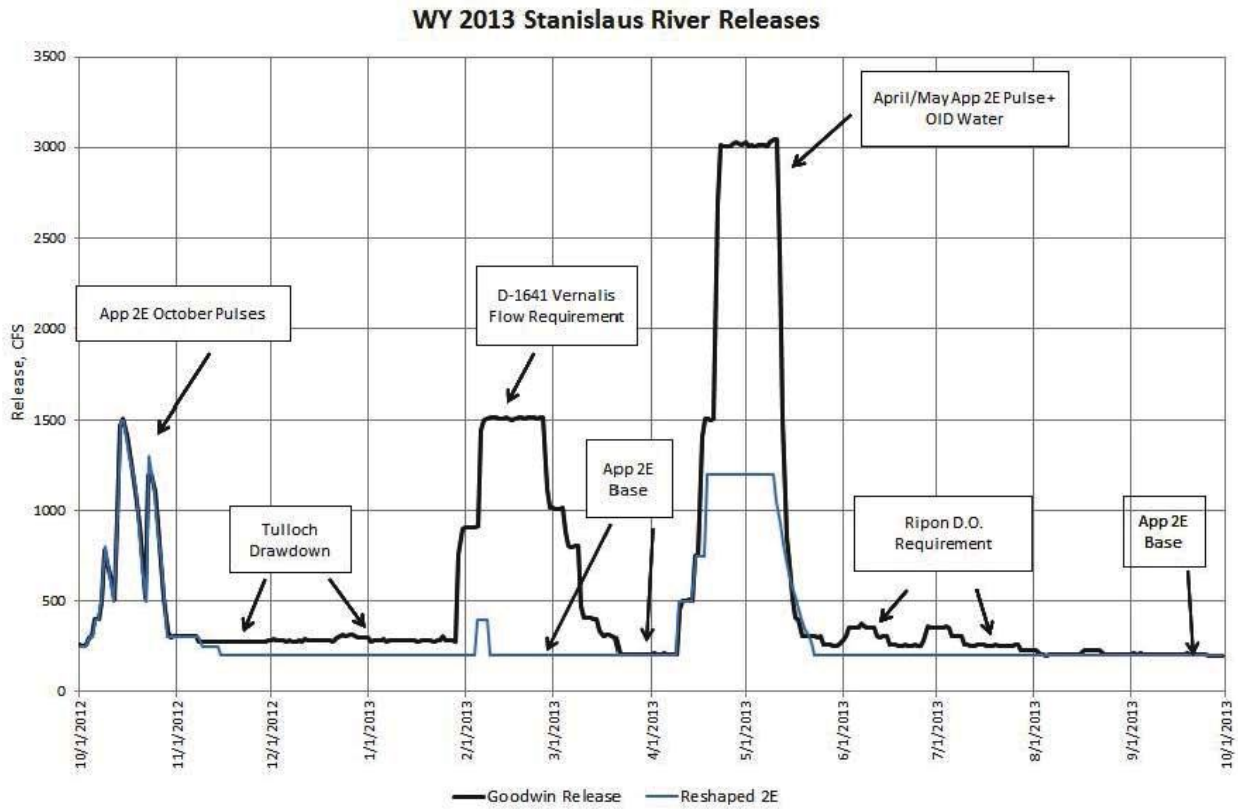

Figure 5 Summary of Stanislaus River Release at Goodwin Dam. Boxes identify the controlling requirements

Table 5 Release Changes at Goodwin Dam

Start Date	End Date	Release	Comment
10/4/12	11/8/2012	Increase	2E Flow fluctuation for fishery purposes.
1/30/13	1/30/13	Increase	D-1641 Vernalis Flow Requirement
2/6/13	2/6/13	Increase	D-1641 Vernalis Flow Requirement
2/27/13	2/27/13	Decrease	Adjustments for March Vernalis Flow Requirement
3/5/13	3/5/13	Decrease	March SWRCB Vernalis Flow Requirement
3/10/13	3/10/13	Decrease	March SWRCB Vernalis Flow Requirement
3/16/13	3/16/13	Decrease	March SWRCB Vernalis Flow Requirement
3/22/13	3/22/13	Decrease	Appendix 2E Minimum
4/10/13	4/15/13	Increase	Ramping up - Appendix 2E release
4/17/13	4/22/13	Increase	Facilitate release of OID/SSJID water rights water and include NMFS BiOp Appendix 2E flows
5/12/13	5/13/13	Decrease	Initial ramp down
5/14/13	5/17/13	Decrease	Ramp down

5/19/13	5/19/13	Decrease	Ramp down
5/26/13	5/26/13	Decrease	Ripon DO Requirement
6/1/13	6/1/13	Increase	Ripon DO Requirement
6/3/13	6/3/13	Increase	Ripon DO Requirement
6/12/13	6/12/13	Decrease	Ripon DO Requirement
6/16/13	6/16/13	Decrease	Ripon DO Requirement
7/6/13	7/6/13	Decrease	Ripon DO Requirement
7/10/13	7/10/13	Decrease	Ripon DO Requirement
7/28/13	7/28/13	Decrease	Ripon DO Requirement
8/3/13	8/3/13	Decrease	Appendix 2E Minimum

3.2 Action III.1.2 Provide Cold Water Releases to Maintain Suitable Steelhead Temperatures

Figure 6 is a summary of temperature operations from October 2012 through August 2013. Temperature exceedances were reported to NMFS and the SOG.

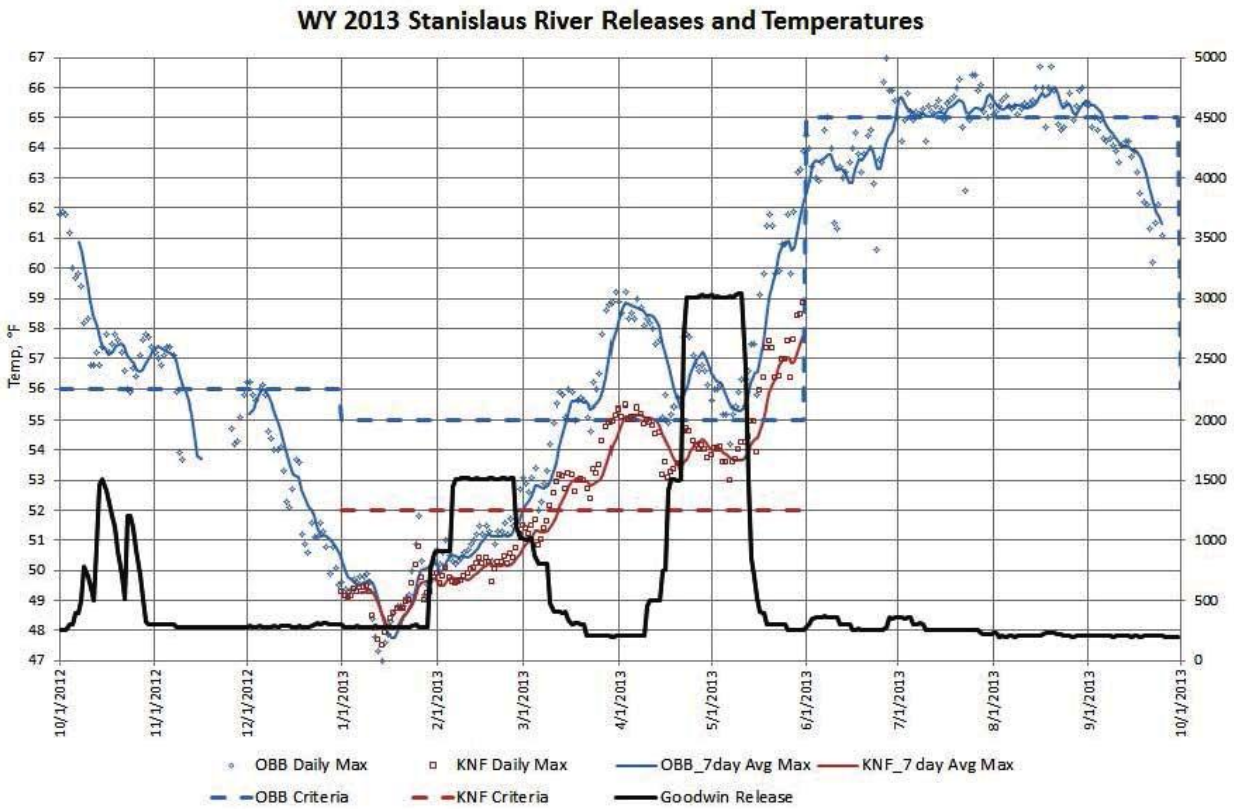

Figure 6 Summary of temperature and flow at Orange Blossom Bridge and Knights Ferry

Summary of Water Year 2013 NMFS BiOp RPA Action III.1.2 Exceptions

RPA Action III.1.2 describes suitable temperatures for CV steelhead life stages on the Stanislaus River. The temperature criteria, measured at both OBB and Knights Ferry are based on a 7-day average daily maximum temperature (7DADM). Stanislaus River temperatures are influenced by the upstream reservoir systems at Goodwin Dam, Tulloch Dam, and New Melones Dam (additional reservoir systems further upstream are assumed to have minimal effect on water temperature due to the large size of New Melones Reservoir). Temperature control devices or other physical structures are not available to manage for temperature blending at these facilities. The outlet controls at both New Melones Dam and Tulloch Dam typically draw the coolest water available in those reservoirs. In the series of reservoirs (New Melones, Tulloch, and Goodwin) downstream temperature can be influenced with increased flows from Goodwin Dam. However, there are operational limitations to utilizing additional water due to conflicts with Reclamation's obligations served by New Melones Reservoir storage and the desire to preserve cold water for fishery purposes later in the year. The NMFS RPA provides a temperature exception procedure which requires Reclamation to notify NMFS if the temperature requirement is expected to be exceeded based on a three-day average daily maximum. Reclamation is also required to provide an evaluation of the conditions and identify conflicts with Reclamation's nondiscretionary requirements.

The temperature exceptions in WY 2013 were noted and discussed within SOG. In the fall, river temperatures exceeded the OBB criterion in October and early November in spite of elevated flows for a fishery pulse. Even with typical weather conditions, and high releases of up to 3,000 cfs, the Knights Ferry temperature criterion was exceeded from mid March through May; the OBB temperature criterion was also exceeded from mid March through May. The Orange Blossom criterion was also exceeded at lower flows from early July through early September (Figure 6).

Chapter 4 – Summary of Selected Stanislaus Fish Monitoring Data

Monitoring data from a counting weir, and rotary screw traps on the Stanislaus River are summarized below for both fall-run Chinook salmon and (when available) *O. mykiss*. The location of monitoring sites is shown in Figure 7.

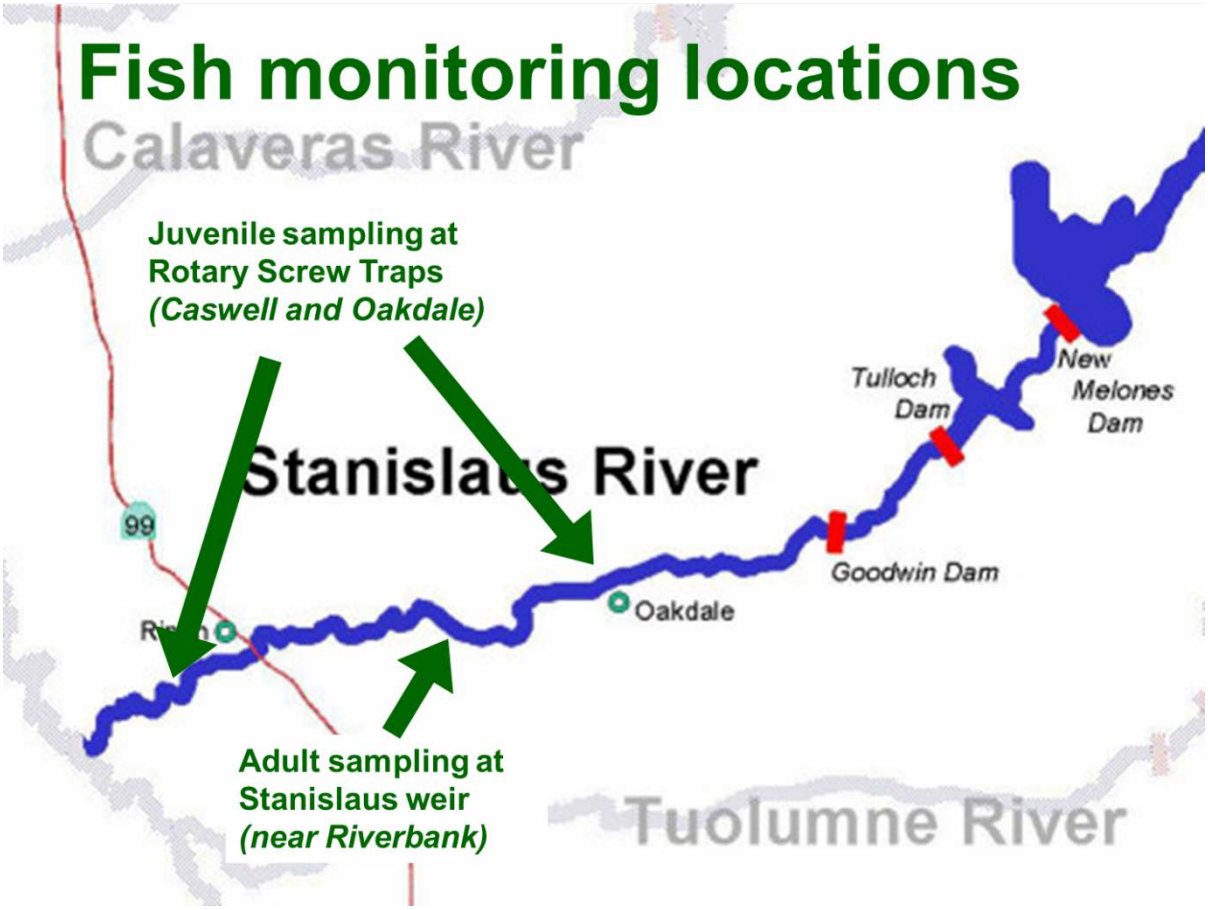

Figure 7 Location of fish monitoring efforts on the Stanislaus River.

Adult Monitoring at the Stanislaus Weir (between Oakdale and Ripon)

From 9/11/2012 through 6/29/13, a net upstream passage of 101 *O. mykiss* was observed; 8 were >16", the size threshold used by CDFW to distinguish steelhead from resident adult rainbow

trout. Looking at data as of April 1, which can be compared across years, this spring the steelhead count was 89, compared to 24 or fewer (including some zeroes) back to 2008.

Table 6 reports the number of adult Chinook salmon that have been observed at the Stanislaus weir from 2003 to 2013. These data, provided by FISHBIO, are available on a weekly basis and help to indicate both the abundance, and relative timing, of migrating Chinook in the Stanislaus basin. Note that, because the start of sampling differs from year to year, net passage through the weir may not represent a full count of returning adults. Net passage is reported as of April 4th to allow a comparison between years not further confounded by differences in the end of sampling; the weir was operated to early April in all years. The Stanislaus weir began operation for the 2013 fall migration season on 9/11/2013.

Table 6. Net upstream passage of Chinook salmon at the Stanislaus Weir. Passage is reported for sampling beginning in the fall of the listed year through April of the following year.

Year	Net Passage by April 4th	Rank by abundance
2012	7159	1
2011	818	9
2010	1382	6
2009	1294	7
2008	923	8
2007	408	10
2006	3056	5
2005	4121	4
2004	4408	3
2003	4848	2

Juvenile Monitoring at the Caswell Rotary Screw Traps

From 12/17/12-6/16/13, Cramer Fish Sciences reported four *O. mykiss* (December 27, 2012; February 13, March 8, and May 16, 2013; and 19,120 juvenile Chinook salmon at the Caswell Rotary Screw Trap monitoring location (Cramer Fish Sciences 2013).

Juvenile Monitoring at Oakdale Rotary Screw Traps in 2012/2013

FISHBIO monitoring at the Oakdale Rotary Screw Traps on the Stanislaus River began on 1/2/13 and ended for the season on 6/28/13. FISHBIO recorded a total of 47 *O. mykiss* and 149,546 juvenile Chinook salmon during the reporting period (December 2012 – June 2013) (FISHBIO 2013b).

References

Bureau of Reclamation. 1982. *Operating Plan for New Melones Reservoir as required by the February 2, 1982 Order of the United States Court of Appeals for the Ninth Circuit.*

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FISHBIO. 2013. FISHBIO Updates. Stanislaus Weir Update, June 19, 2013.

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NMFS. 2009. *Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project. NMFS-Southwest Region. 844 pages plus appendices.*

NMFS. 2011. *Letter transmitting the 2009 Reasonable and Prudent Alternative with 2011 Amendments. April 7.*

Appendix A – SOG Meeting Notes Summary

Meeting Notes and Handouts – SOG Water Year 2012/2013

Date	Meeting Notes and Handout Descriptions	Author
09/19/12	Meeting Notes	SOG
	Agenda	Reclamation
	New Melones Lake Daily Operations, run date: September 18, 2012	Reclamation
	USACE New Melones – Stanislaus River Basin: September 18, 2012	
	Tulloch Reservoir Daily Operations, Run date: September 18, 2012	Reclamation
	Goodwin Reservoir Daily Operations, Run date: September 18, 2012	Reclamation
	Goodwin Dam Discharge, Run date: September 18, 2012	
	New Melones – Stanislaus River Basin, Run date: September 18, 2012	Reclamation
	Stanislaus River at Orange Blossom Bridge – OBB: September 2012	Reclamation
	San Joaquin Precipitation: August 31, 2012	Reclamation
	Stanislaus River Weir	FWS
	Flow, River Discharge for: Mokelumne River at Woodbridge, Delta Cross Channel, BTW Sac R & Snodgrass, North Mokelumne R at W Walnut Grove Rd, and Mokelumne R at San Joaquin River (10/01/2011 through 10/31/2011)	Reclamation
	Current Reservoir Conditions: September 17, 2012	Reclamation
	NMFS' 2012 Draft Release Schedule for Stanislaus, Tuolumne, and Merced (10/1/12 through 11/12/12)	NMFS
	FWS' San Joaquin Tributary Schedules – fall 2012	FWS
10/17/12	Meeting Notes	SOG
	Agenda	Reclamation
	USACE New Melones – Stanislaus River Basin: October 23, 2012	
	New Melones Lake Daily Operations – October 23, 2012	Reclamation
	Tulloch Reservoir Daily Operations – October 23, 2012	Reclamation
	Goodwin Reservoir Daily Operations – October 23, 2012	Reclamation
	Goodwin Dam (GDW) Discharge– October 23, 2012	Reclamation
	Stanislaus R at Orange Blossom Bridge Temperatures– October 2012	Reclamation
	Current Reservoir Conditions – October 22, 2012	Reclamation
11/21/12	Meeting Notes	SOG
	Tulloch Reservoir Daily Operations – November 20, 2012	Reclamation
	Goodwin Reservoir Daily Operations – November 20, 2012	Reclamation
	Goodwin Dam (GDW) Discharge – September 18, 2012	Reclamation
	Stanislaus R at Orange Blossom Bridge Temperatures – September 2012	Reclamation
	Current Reservoir Conditions, November 19, 2012	Reclamation

12/19/12	Meeting Notes	SOG
	Agenda	Reclamation
	USACE New Melones – Stanislaus River Basin: December 18, 2012	
	New Melones Lake Daily Operations – December 18, 2012	Reclamation
	Tulloch Reservoir Daily Operations – December 18, 2012	Reclamation
	Goodwin Reservoir Daily Operations – December 18, 2012	Reclamation
	Stanislaus R at Orange Blossom Bridge Temperatures - December 18, 2012	Reclamation
	San Joaquin Precipitation: 5-Station Index, December 13, 2011	Reclamation
	Current Reservoir Conditions, December 16, 2012	Reclamation
	Water Content (Percent of April 1 Avg)	
	Worksheet with Alternatives for Winter Instability Pulses – December 19, 2012	
1/16/13	Meeting Notes	SOG
	Agenda	Reclamation
	New Melones Lake Daily Operations – January 16, 2013	Reclamation
	Tulloch Reservoir Daily Operations – January 16, 2013	Reclamation
	Goodwin Reservoir Daily Operations – 16, 2013	Reclamation
	New Melones – Stanislaus River Basin Storage USACE - January 16, 2013	Reclamation
	Water Content (Percent of April 1 Avg)	Reclamation
	San Joaquin Precipitation: 5-Station Index, January 14, 2013	Reclamation
	Current Reservoir Conditions, January 15, 2013	Reclamation
	Stanislaus R at Orange Blossom Bridge – OBB: January 13, 2013	Reclamation
2/20/13	Meeting Notes	SOG
	Agenda	Reclamation
	New Melones Lake Daily Operations – February 19, 2013	Reclamation
	Tulloch Reservoir Daily Operations – February 19, 2013	Reclamation
	Goodwin Reservoir Daily Operations – February 19, 2013	Reclamation
	New Melones – Stanislaus River Basin Storage USACE - February 19, 2013	Reclamation
	Goodwin Dam (GDW) Discharge –January 20, 2013 to February 19, 2013	Reclamation
	Stanislaus R at Orange Blossom Bridge Temperatures - February 2013	Reclamation
	San Joaquin Precipitation: 5-Station Index February 1, 2013	Reclamation
	California Snow Water Content – (Percent of April 1 Average)	Reclamation
	Current Reservoir Conditions - February 18, 2013	Reclamation
	Potential Two Mile Bar Designs	Reclamation

4/2/13 (March meeting schedule to April due to scheduling conflicts)	Meeting Notes	SOG
	Agenda	Reclamation
	New Melones Lake Daily Operations – April 1, 2013	Reclamation
	Tulloch Reservoir Daily Operations – April 1, 2013	Reclamation
	Goodwin Reservoir Daily Operations – April 1, 2013	Reclamation
	New Melones – Stanislaus River Basin Storage USACE - April 1, 2013	Reclamation
	Goodwin Dam (GDW) Discharge - April 1, 2013	Reclamation
	2013 Orange Blossom Bridge and Knights Ferry Temps	Reclamation
	San Joaquin Precipitation: 5-Station Index - April 1, 2013	Reclamation
	California Water Content – (Percent of April 1 Average)	Reclamation
	Current Reservoir Conditions - April 1, 2013	Reclamation
4/17/13 (phone conference)	Meeting Notes	SOG
	Agenda	Reclamation
5/15/13	Meeting Notes	SOG
	Agenda	Reclamation
	New Melones Lake Daily Operations – May 13, 2013	Reclamation
	Tulloch Reservoir Daily Operations – May 14, 2013	Reclamation
	Goodwin Reservoir Daily Operations – May 14, 2013	Reclamation
	New Melones – Stanislaus River Basin Storage USACE - May 13, 2013	Reclamation
	Goodwin Dam (GDW) Discharge - May 14, 2013	Reclamation
	2013 Pulse Flows and VNS	
	2013 Orange Blossom Bridge and Knights Ferry Temps	Reclamation
	San Joaquin Precipitation: 5-Station Index - May 13, 2013	Reclamation
	California Water Content (Percent of April 1 Average)	Reclamation
	Current Reservoir Conditions - May 14, 2013	Reclamation
6/19/13	Meeting Notes	SOG
	Agenda	Reclamation
	New Melones Lake Daily Operations – June 14, 2013	Reclamation
	Tulloch Reservoir Daily Operations – June 14, 2013	Reclamation
	Goodwin Reservoir Daily Operations – June 14, 2013	Reclamation
	New Melones – Stanislaus River Basin Storage USACE - June 14, 2013	Reclamation
	Goodwin Dam (GDW) Discharge - June 14, 2013	Reclamation
	2013 Orange Blossom Bridge and Knights Ferry Temps	Reclamation
	San Joaquin Precipitation: 5-Station Index - June 14, 2013	Reclamation
	California Water Content – (Percent of April 1 Avg)	Reclamation
	Current Reservoir Conditions - June 14, 2013	Reclamation

7/17/13	Meeting Notes	SOG
	Agenda	Reclamation
	New Melones Lake Daily Operations – July 16, 2013	Reclamation
	Tulloch Reservoir Daily Operations – July 16, 2013	Reclamation
	Goodwin Reservoir Daily Operations – July 16, 2013	Reclamation
	New Melones – Stanislaus River Basin Storage USACE - July 16, 2013	Reclamation
	Goodwin Dam (GDW) Discharge - July 16, 2013	Reclamation
	2013 Orange Blossom Bridge and Knights Ferry Temps	Reclamation
	San Joaquin Precipitation: 5-Station Index – June 30, 2013	Reclamation
	California Water Content – (Percent of April 1 Avg)	Reclamation
	Current Reservoir Conditions - July 17, 2013	Reclamation