

**SOG ADVICE RE: IMPLEMENTATION OF THE STANISLAUS RPA ACTIONS
DURING OCTOBER AND NOVEMBER
10.02.2012**

Background

The fall attraction flow is one component of the daily flow schedule in Appendix 2-E of the NMFS BiOp¹ required per Action III.1.3 of the Reasonable and Prudent Alternative (RPA). As noted in the 2011 RPA Amendments² (p. 50), the fall attraction flow is intended "...to improve in-stream conditions sufficiently to attract CV steelhead to the Stanislaus River." The RPA further notes (p. 50) that "...based upon the advice of SOG and the 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."

Below, SOG advises a modified fall attraction flow schedule that we believe is consistent with the intent of the RPA action.

SOG advice

Flow

For 2012, SOG advises that the fall attraction flow (Below Normal yeartype) be reshaped according to the flow schedule described in Table 1 and Figure 1 of Attachment 1³. This alternate pulse shaping has the same volume (33,073 AF) and peak flow (1,500 cfs) as the Below Normal fall pulse in Appendix 2-E, and the technical team believes it meets the intent of the RPA action, namely, it improves instream conditions and provides an attraction cue. The full list of considerations discussed by SOG at the 9/19/12 meeting or in e-mail discussions is summarized in Table 2 of Attachment 1. Some key features of the advised flow schedule include:

- The *small pulse in early October and post-pulse tail in early November* are, respectively, intended to cool temperatures before starting the pulse to attract fish; and to buffer water temperatures after the main migration pulse has ended in case daytime air temperature is still quite warm.
- The *attraction flow is split into two peaks without steady flows* to discourage spawning during the pulse at flows that won't 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.

¹ Available online at: http://swr.nmfs.noaa.gov/ocap/NMFS_Biological_and_Conference_Opinion_on_the_Long-Term_Operations_of_the_CVP_and_SWP.pdf

² Available online at: http://swr.nmfs.noaa.gov/ocap/040711_OCAP_opinion_2011_amendments.pdf

³ If operational constraints, such as lead time needed to issue a change order; prevent the scheduling of a flow increase on October 4th, SOG advises that the advised schedule be modified by distributing the "missed" flow in 50 cfs increments to the remaining schedule. For example, if the 50 cfs increase advised for 10/4 and 10/5 cannot be implemented, the modified schedule would release an extra 50 cfs (450 cfs) on 10/6 and 10/7. This modified schedule should be initiated as soon as practical given power scheduling.

Temperature

For 2012, SOG advises that the shift in the temperature criterion at Orange Blossom Bridge to 56 degrees Fahrenheit apply as of the initiation of the main attraction pulse within the reshaped fall pulse flow, October 13th. The full rationale for the deferral of the fall temperature criterion, and NMFS' concurrence, is provided in Attachment 2.

ATTACHMENT 1

Stanislaus fall attraction flow schedule advised
by SOG for October-November 2012

Table 1. Stanislaus fall attraction flow schedule advised by SOG for October-November 2012. The pulse volume was calculated against a base flow of 250 cfs (9/20-10/14), 225 cfs (10/15-10/31) or 200 cfs (11/1 onward). The estimated Vernalis flow was calculated as the sum of the estimated flows (with appropriate lag due to travel time to Vernalis) from the San Joaquin River at the confluence with the Merced (3 day lag), Merced River (3 day lag), Tuolumne River (2 day lag), and Stanislaus River (2 day lag).

Date	Estimated Tuolumne (cfs)	Estimated Merced (cfs)	Estimated SJ above Merced confluence (cfs)	Stanislaus (cfs) OCAP 2-E BN	Cumulative Pulse volume (AF)	SOG-advised Stanislaus (cfs)	Cumulative Pulse volume (AF)		with SOG-advised Stanislaus Estimated Vernalis (cfs)
1-Oct-12	150	156	50	250	250	250	0		500
2-Oct-12	150	148	50	250	0	250	0		504
3-Oct-12	150	168	50	250	0	250	0		610
4-Oct-12	150	176	50	250	0	300	99		606
5-Oct-12	150	179	50	250	0	300	198		598
6-Oct-12	150	178	50	250	0	400	496		668
7-Oct-12	150	184	50	250	0	400	793		676
8-Oct-12	150	174	50	250	0	500	1289		779
9-Oct-12	150	181	50	250	0	800	2380	temperature pre-pulse	778
10-Oct-12	150	189	50	250	0	700	3273		884
11-Oct-12	150	183	50	250	0	600	3967		1174
12-Oct-12	150	166	50	250	0	500	4463		1081
13-Oct-12	150	150	50	250	0	1000	5950		989
14-Oct-12	150	152	50	250	0	1500	8429	main migration pulse	883
15-Oct-12	150	154	50	500	545	1500	10958		1366
16-Oct-12	150	172	50	750	1587	1400	13289		1850
17-Oct-12	150	175	50	1000	3124	1300	15421		1852
18-Oct-12	150	1600	50	1250	5157	1200	17355		1754
19-Oct-12	150	1600	50	1500	7686	1100	19090		1672
20-Oct-12	557	1400	50	1500	10215	900	20429		1575
21-Oct-12	557	1000	50	1500	12743	700	21371		2900
22-Oct-12	557	800	50	1500	15272	500	21917		3107
23-Oct-12	557	400	50	1500	17801	1300	24049		2707
24-Oct-12	150	250	50	1500	20330	1200	25983	secondary migration pulse	2107
25-Oct-12	150	250	50	1500	22859	1100	27718		2707
26-Oct-12	150	250	50	1500	25387	900	29057		1800
27-Oct-12	150	250	50	1500	27916	700	29999		1550
28-Oct-12	150	250	50	1250	29949	500	30544	temperature pulse tail	1350
29-Oct-12	150	250	50	1000	31486	300	30693		1150
30-Oct-12	150	250	50	750	32528	300	30842		950
31-Oct-12	150	250	50	500	33073	300	30991		750
1-Nov-12	150	250	50	200	33073	300	31189		750
2-Nov-12	150	250	50	200	33073	300	31387		750
3-Nov-12	150	250	50	200	33073	300	31586		750
4-Nov-12	150	250	50	200	33073	300	31784		750
5-Nov-12	150	250	50	200	33073	300	31982		750
6-Nov-12	150	250	50	200	33073	300	32181		750
7-Nov-12	150	200	50	200	33073	300	32379		750
8-Nov-12	150	200	50	200	33073	250	32478		750
9-Nov-12	150	200	50	200	33073	250	32577		750
10-Nov-12	150	200	50	200	33073	250	32676		650
11-Nov-12	150	200	50	200	33073	250	32776		650
12-Nov-12	150	200	50	200	33073	250	32875		650
13-Nov-12	150	200	50	200	33073	250	32974		650
14-Nov-12	150	200	50	200	33073	250	33073		650
15-Nov-12	150	200	50	200	33073	200	33073	End of pulse volume	650
16-Nov-12	150	200	50	200	33073	200	33073		650
17-Nov-12	150	200	50	200	33073	200	33073		600
18-Nov-12	150	200	50	200	33073	200	33073		600
19-Nov-12	150	200	50	200	33073	200	33073		600
20-Nov-12	150	200	50	200	33073	200	33073		600
21-Nov-12				200	33073	200	33073		600
22-Nov-12				200	33073	200	33073		600
23-Nov-12				200	33073	200	33073		450
24-Nov-12				200	33073	200	33073		200
25-Nov-12				200	33073	200	33073		200
26-Nov-12				200	33073	200	33073		200
27-Nov-12				200	33073	200	33073		200
28-Nov-12				200	33073	200	33073		200
29-Nov-12				200	33073	200	33073		200
30-Nov-12				200	33073	200	33073		200

Figure 1. San Joaquin River tributary releases and resulting Vernalis flow for fall 2012 under SOG-advised flow schedule. The estimated Vernalis flow was calculated as the sum of the estimated flows (with appropriate lag due to travel time to Vernalis) from the San Joaquin River at the confluence with the Merced (3 day lag), Merced River (3 day lag), Tuolumne River (2 day lag), and Stanislaus River (2 day lag).

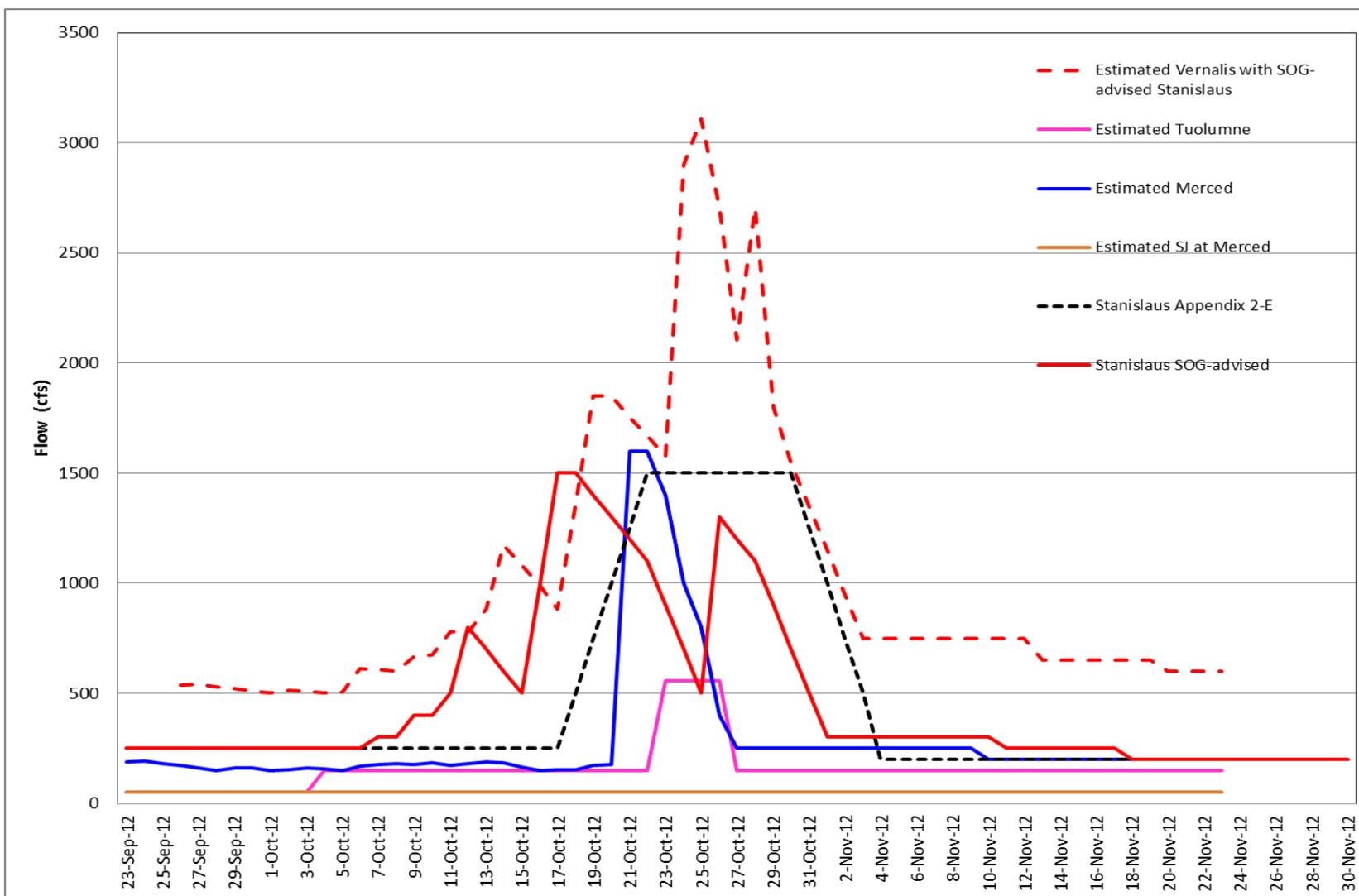


Table 2. Factors considered in the design of the SOG-advised fall attraction pulse.

Driver	Location	Lifestage	Notes
Agriculture	lower trib	N/A	The NMFS Appendix 2-E flow schedule does, in some yeartypes, require flows above 1500 cfs. Because of seepage concerns, NMFS limited the duration of those flows to no more than 10 consecutive days. Since the Below Normal Appendix 2-E flow pulse peaks at 1500 cfs, NMFS doesn't require flows above this level during this yeartype.
D.O.	Vernalis	Adult	The combined pulse should, ideally, provide sufficient flow to achieve a D.O. of at least 7ppm in the deepwater ship channel.
Migration Window	Vernalis	Adult	Provide temperature/D.O. suitable for upmigration for at least several weeks.
Monitoring	Riverbank	N/A	Weir operation is impacted when flows exceed 1500 cfs, or last for more than a few days at 1500 cfs. Ramping down to 500 cfs after peak flows allow the weir to be cleaned.
Redd Scour/Stranding	Trib/spawning area	redd/eggs/fry	The main pulse should occur before a significant number of the season's redds are created. Historically, few redds are built before the 4th week of Oct, though in some years redd activity picks up in mid-October.
Redd Stranding	Trib/spawning area	redd/eggs/fry	The pulse should avoid sustained flows that would encourage redd construction in areas that will be dewatered during post-attraction-pulse flows.
Straying	Vernalis	Adult	Straying may be reduced when San Joaquin flows at Vernalis exceed 4,000 cfs.
Straying	delta	Adult	Straying may be reduced when the ratio of south delta exports to inflow () is no greater than 2:1.
Straying	Vernalis/ I street	Adult	Straying may be reduced when the ratio of Sacramento Inflow (I Street) to SJ Inflow (Vernalis) is no greater than 2:1.
Temperature	Vernalis	Adult	Pulse should be late enough to provide cool enough temperatures for upmigrants through the San Joaquin to avoid egg mortality within migrating adults.
Temperature	Trib/spawning area	Adult	Pulse should be shaped and timed to provide and maintain instream temperatures sufficient to avoid egg mortality for returning adults.

ATTACHMENT 2

NMFS concurrence with SOG advice regarding
initiation date of fall temperature criterion per
RPA Action III.1.2



Barbara Byrne <barbara.byrne@noaa.gov>

Re: SOG advice re: initiation of fall temperature criterion in Action III.1.2

1 message

Garwin Yip <garwin.yip@noaa.gov>

Fri, Sep 28, 2012 at 10:30 PM

To: Tom Morstein-Marx <TMORSTEINMARX@mp.usbr.gov>

Cc: Barbara Byrne <Barbara.Byrne@noaa.gov>, womt@water.ca.gov

Tom--As you know, Action III.1.2 (page 47 of the 2011 RPA Amendments to the NMFS Biological Opinion) provides for the option of initiating the temperature criterion upon the initiation date of the fall pulse flow, rather than October 1. Per the SOG advice below, NMFS agrees that, for 2012, the fall temperature criterion of 56 degrees Fahrenheit at Orange Blossom Bridge may be deferred, with the understanding that (1) the initiation date will not be deferred beyond October 15, and (2) the specific date for initiation of the fall temperature criterion will be included in the SOG advice regarding the reshaping of the fall pulse flow. NMFS determines that the proposed change in initiate date of the fall pulse flow is consistent with the implementation procedures of RPA Action III.1.2.

WOMT--In the interest of following the process provided in NMFS' Opinion section 11.2.1.1, this e-mail is to inform WOMT of NMFS' determination, and to provide WOMT with an opportunity to discuss the proposal. If anyone wants to discuss the SOG advice or NMFS determination, please let Andy Chu know, and he can schedule a WOMT meeting. Thanks.

-Garwin-

Garwin Yip

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NOAA's National Marine Fisheries Service
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----- Forwarded message -----

From: **Barbara Byrne** <barbara.byrne@noaa.gov>

Date: Fri, Sep 28, 2012 at 2:19 PM

Subject: SOG advice re: initiation of fall temperature criterion in Action III.1.2

To: Garwin Yip <Garwin.Yip@noaa.gov>

Garwin,

At its 9/19/2012 meeting, the Stanislaus Operations Group (SOG) discussed both the upcoming fall attraction flow schedule in Appendix 2-E of the NMFS Biological Opinion (BiOp) and the fall temperature criterion at Orange Blossom Bridge. We will shortly be sending advice regarding a reshaped pulse flow that we believe meets the intended objectives of the flow schedule specified in the BiOp per Action III.1.3. In the meantime, SOG submits the following advice regarding the initiation date of the temperature criterion, with the specific date to be included as part of our advice regarding the pulse flow.

SOG ADVICE RE: IMPLEMENTATION OF TEMPERATURE CRITERION IN ACTION III.1.2:

Background

The change in temperature criterion (Action III.1.2) in the fall to 56 degrees Fahrenheit at Orange Blossom Bridge is intended to provide temperatures suitable for the migration and holding of adult Central Valley (CV) Steelhead. The BiOp notes (p. 47 of the 2011 RPA Amendments) that "This criterion shall apply as of October 1 or as of initiation date of fall pulse flow as agreed to by NMFS." SOG expects that few CV steelhead will migrate into the Stanislaus before the fall pulse flow, and have no evidence this year to suggest otherwise. The net upstream cumulative count of fall-run Chinook counted at the Stanislaus Weir as of 9/26/2012 was 116 fish, and no CV steelhead have yet been observed this fall at the weir. These data provide no clear indication of "early migration" of salmonids into the watershed which might require temperature management to begin on October 1.

Daily maximum temperatures measured at Orange Blossom Bridge (http://cdec.water.ca.gov/wquality/OBB_092012.html) have been between 61 and 62 degrees Fahrenheit since 9/18/2012. The 7 day average of the daily maximum temperature (7DADM, the type of temperature criterion applied under Action III.1.2) at Orange Blossom Bridge as of 9/27/2010 was 61.4 degrees Fahrenheit. Because of progressively shorter day length and cooler night temperatures, SOG expects that water temperature will continue to fall.

SOG advice

For 2012, SOG recommends that the shift in the temperature criterion at Orange Blossom Bridge to 56 degrees Fahrenheit apply as of the initiation of the main attraction pulse within the reshaped fall pulse flow, which will be no later than October 15th. Because SOG is still finalizing the reshaped flow schedule, that initiation date is not yet established, but no schedule under consideration initiates the main attraction pulse later than October 15th (the initiation date of the pulse per the Below Normal year schedule in Appendix 2-E of the BiOp).

We request that NMFS concur with this advice. Please send your final decision to Tom Morstein-Marx, Reclamation, with a cc: to me; I'll forward your decision to the Stanislaus Operations Group for their information.

Regards,
Barb (on behalf of SOG)

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Barb Byrne
Fish Biologist

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