Delta Smelt Working Group Meeting Notes

June 11, 2007

Participating: Gonzalo Castillo (USFWS), Mike Chotkowski (USBR), Kevin Fleming (CDFG), Erin Gleason (CDFG), Lenny Grimaldo (CDWR), Bruce Herbold (USEPA), Tracy Hinojosa (CDWR), Ann Lubas-Williams (USBR), Ryan Olah (USFWS), Ted Sommer (CDWR), Jim White (CDFG) and Victoria Poage (USFWS, convener and scribe)

For Discussion:
1. Assessment of entrainment risk following the current action

Recommendation for WOMT: Results of salvage monitoring, recent surveys, and particle tracking modeling (PTM) completed June 11, 2007 indicate that most juvenile delta smelt are outside the entrainment foot print, should the Projects wish to increase export pumping to 2500 cfs combined. If any delta smelt are taken at the export facilities, Project operations should immediately be modified to achieve a net flow in Old and Middle Rivers as close to zero as possible, and the Working Group should be convened.

Handout: Particle tracking model output

Notes:
At the June 8 meeting, the Delta Smelt Working Group requested that DWR provide additional PTM runs to assess the risk of delta smelt entrainment should the Projects resume, using the same injection points as in the May 22 model runs, using the following hydrology:
   1. current conditions (e.g., with the present action in effect)
   2. expected conditions if Projects increase export rates to their proposed operation (e.g., 2500 cfs combined pumping)
   3. conditions which would apply if the Projects went to maximum operations allowed under the 1995 Water Quality Control Plan
The Working Group decided to use a 30% difference in particle fates as a threshold criterion of significance, as it has in evaluating previous PTM runs. Results are summarized for selected injection points in the table below.

Date	Station	CVP	SWP	Past Chipps	In Delta
16 June	704	0, 0, 0*	0, 0, 0*	9.8, 12.9, 25.4	90.2, 87.1, 74.4
	815	0, 0, 0	0, 0, 0	0, 0, 0	100, 99.9, 99.6
	902	0, 0, 17.9	0, 0, 5.9	0, 0, 0	97.5, 96.9, 67.7
	910	0, 0, 0	0, 0, 0	0, 0, 0	98.8, 98.9, 98.5
20 June	704	0, 0, 0	0, 0, 0	27.6, 30.9, 38.5	72.4, 68.8, 60.9
	815	0, 0, 2.8	0, 0, 0.6	0.1, 0, 0	99.9, 99.8, 95.6
	902	0, 7.4, 28.1	0, 2.2, 18.7	0, 0, 0	89.5, 74.1, 38.3
	910	0, 0, 6.7	0, 0, 2.3	0, 0, 0	97.8, 97.3, 88.2

Date	Station	CVP	SWP	Past Chipps	In Delta
24 June	704	0, 0, 0.1	0, 0, 0	28.9, 33.8, 41.5	71.0, 65.8, 57.9
	815	0, 0.1, 8	0, 0.1, 3.7	0, 0.1, 0	00.5. 99.0, 86.4
	902	2.3, 15.4, 30.2	0, 7.6, 27.0	0, 0, 0	79.1, 57.3, 26.3
	910	0, 1.3, 17.6	0, 0.3, 10.6	0, 0, 0	96.3, 94.7, 67.5
28 June	704	0, 0, 0.2	0, 0.1, 0.1	42.3, 48.6, 53.7	57.4, 50.9, 45.4
	815	0.1, 1.6, 11.5	0, 0.6, 8.2	1.3, 1.6, 1.3	96.8, 94.6, 75.8
	902	10.0, 18.2, 31.1	0.3, 12.6, 31.9	0.6, 0.4, 0.1	65.0. 46.6, 20.0
	910	0.5, 6.7, 22.0	0, 2.1, 19.6	0, 0, 0	95.1, 86.1, 53.0
1 July	704	0, 0, 0.2	0, 0.1, 0.2	65.8, 68.4, 73.6	33.9, 31.0, 25.1
	815	1.2, 2.7, 13.9	0, 1.4, 10.3	6.3, 7.3, 5.7	90.1, 86.2, 66.0
	902	13.2, 19.1, 31.9	0.3, 14.9, 33.1	2.2, 2.6, 1.5	58.7, 39.5, 16.0
	910	2.8, 9.1, 25.8	0.2, 4.3, 25.1	0, 0, 0	91.4, 80.2, 42.0
5 July	704	0.1, 0.2, 0.2	0, 0.2, 0.2	73.2, 75.3, 78.3	26.3, 23.7, 20.4
	815	2.1, 3.8, 16.0	0, 2.5, 13.4	13.3, 12.8, 9.1	81.3, 76.4, 56.4
	902	15.6, 20.4, 32.4	0.8, 18.0, 34.9	6.2, 4.5, 2.1	50.4, 31.3. 12.7
	910	6.5, 12.3, 31.3	0.3, 8.3, 31.8	0.1, 0, 0	84.2, 69.5, 28.0

*Value sets are reported as 1250 cfs, 2500 cfs, 5000 cfs combined pumping

The selected stations exhibited the greatest differences in particle fates among the PTM runs conducted.

DFG biologists are still in the process of sorting net samples from Survey 7 of the 20-mm trawl survey, conducted last week. To date, the survey collected one delta smelt at each of stations 705 (Decker Island), 716 (Cache Slough) and 809 (SJR west of Franks Tract). The CVP has salvaged no delta smelt since May 30; the SWP reported 27 delta smelt salvaged on June 10 (Sunday) and 9 on June 11 (today), but since the radial gates at Clifton Court Forebay were not operated, those delta smelt were already present in the Forebay. The SWP plans to operate the radial gates June 12 and 13; if salvage of delta smelt occurs at either the State or the Federal facility, the Working Group recommends that Project operations immediately be modified to achieve a net flow in Old and Middle Rivers as close to zero as possible, and the Working Group convene.

Next Scheduled Meeting: Monday, June 18 at 3:00 pm via conference call

Attachments:
1. PTM output data tables
2. Addendum, dated 13 June 2007

Submitted,

VLP

Attachment 1.

Scenario C, 2500 cfs Combined Exports, Ag Barriers Gates Tied Open, DXC Open on Weekends, Sac River flow 11400 cfs

12-Jun-07		DIVERSION_AG	DIV_CCC_AT_OLD	DIV_CONTRA_CO	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	0	0	0	0	0	0	0	0	100	0
	sta906	0	0	0	0	0	0	0	0	100	0
	sta815	0	0	0	0	0	0	0	0	100	0
	sta902	0	0	0	0	0	0	0	0	100	0
	sta812	0.1	0	0	0	0	0	0	0	99.9	0
	sta711	0.1	0	0	0	0	0	0	0	99.9	0
	sta704	0	0	0	0	0	0	0	0	100	0
	sta809	0	0	0	0	0	0	0	0	100	0
	sta513	0	0	0	0	0	0	0	4.4	95.6	0
16-Jun-07		DIVERSION_AG	DIV_CCC_AT_OLD	DIV_CONTRA_CO	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	1.2	0	0	0	0	0	0	0	98.8	0
	sta906	0.5	0	0	0	0	0	0	0	99.5	0
	sta815	0.1	0	0	0	0	0	0	0	99.9	0
	sta902	1.7	0.5	0.9	0	0	0	0	0	96.9	1.4
	sta812	0.3	0	0	0	0	0	0	0	99.7	0
	sta711	0.4	0	0	0	0	0	0	0	99.6	0
	sta704	0	0	0	0	0	0	0.3	12.9	87.1	0
	sta809	0.3	0	0	0	0	0	0	0.5	99.2	0
	sta513	0	0	0	0	0	0	5.8	63.8	36.2	0
20-Jun-07		DIVERSION_AG	DIV_CCC_AT_OLD	DIV_CONTRA_CO	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	2.7	0	0	0	0	0	0	0	97.3	0
	sta906	1	0	0	0	0	0	0	0	99	0
	sta815	0.2	0	0	0	0	0	0	0	99.8	0
	sta902	7.2	3.1	6	0	7.4	2.2	0	0	74.1	9.1
	sta812	0.3	0	0	0	0	0	0	0.3	99.4	0
	sta711	0.5	0	0	0	0	0	0	1.2	98.3	0
	sta704	0.3	0	0	0	0	0	1.3	30.9	68.8	0
	sta809	0.4	0	0	0	0	0	0	3.9	95.7	0
	sta513	0.1	0	0	0	0	0	12.1	67.4	32.5	0
24-Jun-07		DIVERSION_AG	DIV_CCC_AT_OLD	DIV_CONTRA_CO	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	3.7	0	0	0	1.3	0.3	0	0	94.7	0
	sta906	1.3	0	0	0	0.6	0.1	0	0	98	0
	sta815	0.7	0	0	0	0.1	0.1	0	0.1	99	0
	sta902	10	3.3	6.4	0	15.4	7.6	0	0	57.3	9.7
	sta812	0.8	0	0	0	0	0	0	0.6	98.6	0
	sta711	0.9	0	0	0	0	0	0.1	4.9	94.2	0
	sta704	0.4	0	0	0	0	0	4.1	33.8	65.8	0
	sta809	0.5	0	0.1	0	0	0	0.4	7.6	91.8	0.1
	sta513	0.2	0	0	0	0	0	18.6	63.7	36.1	0
28-Jun-07		DIVERSION_AG	DIV_CCC_AT_OLD	DIV_CONTRA_CO	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	4.9	0.1	0.1	0	6.7	2.1	0	0	86.1	0.2
	sta906	1.8	0.3	0.4	0	4.3	1.1	0	0.2	91.9	0.7
	sta815	1.1	0.2	0.3	0	1.6	0.6	0.3	1.6	94.6	0.5
	sta902	11.9	3.6	6.7	0	18.2	12.6	0	0.4	46.6	10.3
	sta812	1	0	0	0	0.6	0.1	0.2	3	95.3	0
	sta711	1.1	0	0	0	0.1	0.1	3.2	15.9	82.8	0
	sta704	0.4	0	0	0	0	0.1	16.6	48.6	50.9	0
	sta809	0.6	0	0.2	0	0.1	0.1	3.8	18.1	80.9	0.2
	sta513	0.2	0	0	0	0	0	36.5	74.9	24.9	0
1-Jul-07		DIVERSION_AG	DIV_CCC_AT_OLD	DIV_CONTRA_CO	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	6	0.2	0.2	0	9.1	4.3	0	0	80.2	0.4
	sta906	2.5	0.4	0.6	0	6.4	2.3	0.1	0.8	87	1
	sta815	1.8	0.2	0.4	0	2.7	1.4	0.8	7.3	86.2	0.6
	sta902	13.5	3.7	6.7	0	19.1	14.9	0.4	2.6	39.5	10.4
	sta812	1.5	0	0.2	0	0.9	0.3	0.7	8.6	88.5	0.2
	sta711	1.1	0	0	0	0.1	0.1	7.7	37.2	61.5	0
	sta704	0.5	0	0	0	0	0.1	27.8	68.4	31	0
	sta809	0.9	0	0.3	0	0.2	0.1	9	38	60.5	0.3
	sta513	0.2	0	0	0	0	0	49.1	88.3	11.5	0
5-Jul-07		DIVERSION_AG	DIV_CCC_AT_OLD	DIV_CONTRA_CO	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	8.9	0.5	0.5	0	12.3	8.3	0	0	69.5	1
	sta906	5.1	0.6	1.1	0	8.9	4.9	0.1	2	77.4	1.7
	sta815	3.5	0.3	0.7	0	3.8	2.5	1.4	12.8	76.4	1
	sta902	15	3.9	6.9	0	20.4	18	0.5	4.5	31.3	10.8
	sta812	2	0.2	0.3	0	1.2	0.6	1.5	13.4	82.3	0.5
	sta711	1.2	0	0.1	0	0.6	0.3	12.5	49.4	48.4	0.1
	sta704	0.6	0	0	0	0.2	0.2	35.5	75.3	23.7	0
	sta809	1.1	0.1	0.3	0	0.6	0.4	15.2	51.2	46.3	0.4
	sta513	0.1	0	0	0	0	0	69.1	96.4	3.5	0

Scenario D, 1250 cfs Combined Exports, Ag Barriers Gates Tied Open, DXC Open on Weekends, Sac River flow 11400 cfs

12-Jun-07		DIVERSION_AG	DIV_CCC_AT_OL	DIV_CONTRA_CC	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	0	0	0	0	0	0	0	0	100	0
	sta906	0	0	0	0	0	0	0	0	100	0
	sta815	0	0	0	0	0	0	0	0	100	0
	sta902	0	0	0	0	0	0	0	0	100	0
	sta812	0.1	0	0	0	0	0	0	0	99.9	0
	sta711	0.1	0	0	0	0	0	0	0	99.9	0
	sta704	0	0	0	0	0	0	0	0	100	0
	sta809	0	0	0	0	0	0	0	0	100	0
	sta513	0	0	0	0	0	0	0	4.4	95.6	0
16-Jun-07		DIVERSION_AG	DIV_CCC_AT_OL	DIV_CONTRA_CC	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	1.2	0	0	0	0	0	0	0	98.8	0
	sta906	0.5	0	0	0	0	0	0	0	99.5	0
	sta815	0	0	0	0	0	0	0	0	100	0
	sta902	1.6	0	0.9	0	0	0	0	0	97.5	0.9
	sta812	0.1	0	0	0	0	0	0	0	99.9	0
	sta711	0.4	0	0	0	0	0	0	0	99.6	0
	sta704	0	0	0	0	0	0	0.2	9.8	90.2	0
	sta809	0.3	0	0	0	0	0	0	0.5	99.2	0
	sta513	0	0	0	0	0	0	5.2	63	37	0
20-Jun-07		DIVERSION_AG	DIV_CCC_AT_OL	DIV_CONTRA_CC	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	2.2	0	0	0	0	0	0	0	97.8	0
	sta906	0.9	0	0	0	0	0	0	0	99.1	0
	sta815	0	0	0	0	0	0	0	0.1	99.9	0
	sta902	4.5	0.3	5.7	0	0	0	0	0	89.5	6
	sta812	0.4	0	0	0	0	0	0	0	99.6	0
	sta711	0.6	0	0	0	0	0	0	0.5	98.9	0
	sta704	0	0	0	0	0	0	1.1	27.6	72.4	0
	sta809	0.7	0	0	0	0	0	0	5.9	93.4	0
	sta513	0.1	0	0	0	0	0	12.4	69.1	30.8	0
24-Jun-07		DIVERSION_AG	DIV_CCC_AT_OL	DIV_CONTRA_CC	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	3.7	0	0	0	0	0	0	0	96.3	0
	sta906	1.3	0	0	0	0	0	0	0	98.7	0
	sta815	0.5	0	0	0	0	0	0	0	99.5	0
	sta902	8.7	1.1	8.8	0	2.3	0	0	0	79.1	9.9
	sta812	0.9	0	0.1	0	0	0	0	0.6	98.4	0.1
	sta711	1	0	0	0	0	0	0.2	3.3	95.7	0
	sta704	0.1	0	0	0	0	0	3.2	28.9	71	0
	sta809	0.9	0	0	0	0	0	0.3	8.6	90.5	0
	sta513	0.1	0	0	0	0	0	19.1	67	32.9	0
28-Jun-07		DIVERSION_AG	DIV_CCC_AT_OL	DIV_CONTRA_CC	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	4.4	0	0	0	0.5	0	0	0	95.1	0
	sta906	2	0	0.1	0	0.1	0	0	0.1	97.7	0.1
	sta815	1.2	0	0.6	0	0.1	0	0.1	1.3	96.8	0.6
	sta902	11.8	1.8	10.5	0	10	0.3	0.1	0.6	65	12.3
	sta812	1.3	0	0.1	0	0.1	0	0.2	2.3	96.2	0.1
	sta711	1.3	0	0	0	0	0	1.8	14	84.7	0
	sta704	0.3	0	0	0	0	0	14.7	42.3	57.4	0
	sta809	1	0	0.1	0	0	0	4.8	21.9	77	0.1
	sta513	0.1	0	0	0	0	0	36.2	74.3	25.6	0
1-Jul-07		DIVERSION_AG	DIV_CCC_AT_OL	DIV_CONTRA_CC	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	5.3	0.2	0.1	0	2.8	0.2	0	0	91.4	0.3
	sta906	2.6	0.1	0.2	0	2.3	0	0	0.8	94	0.3
	sta815	1.6	0	0.8	0	1.2	0	0.7	6.3	90.1	0.8
	sta902	12.6	2	11	0	13.2	0.3	0.4	2.2	58.7	13
	sta812	1.8	0	0.1	0	0.2	0	1	8.7	89.2	0.1
	sta711	1.3	0	0	0	0	0	7.5	36	62.7	0
	sta704	0.3	0	0	0	0	0	25.6	65.8	33.9	0
	sta809	1.1	0	0.1	0	0.1	0	11.2	44.6	54.1	0.1
	sta513	0.1	0	0	0	0	0	50	86.8	13.1	0
5-Jul-07		DIVERSION_AG	DIV_CCC_AT_OL	DIV_CONTRA_CC	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	8.2	0.3	0.4	0	6.5	0.3	0	0.1	84.2	0.7
	sta906	4.2	0.4	1	0	4.8	0.2	0.1	2.4	87	1.4
	sta815	2.1	0.1	1.1	0	2.1	0	1.8	13.3	81.3	1.2
	sta902	13.8	2.1	11.1	0	15.6	0.8	0.7	6.2	50.4	13.2
	sta812	2.2	0	0.3	0	0.6	0	3	14.9	82	0.3
	sta711	1.4	0	0	0	0.1	0	12.4	50.7	47.8	0
	sta704	0.4	0	0	0	0.1	0	33.4	73.2	26.3	0
	sta809	1.1	0	0.1	0	0.3	0	17.6	55.1	43.4	0.1
	sta513	0.1	0	0	0	0	0	58.1	90.7	9.2	0

Scenario E, 5000 cfs Combined Exports, Ag Barriers Gates Tidally Operated, DXC Open on Weekends

12-Jun-07		DIVERSION_AG	DIV_CCC_AT_OL	DIV_CONTRA_CO	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	0	0	0	0	0	0	0	0	100	0
	sta906	0	0	0	0	0	0	0	0	100	0
	sta815	0	0	0	0	0	0	0	0	100	0
	sta902	0.1	0	0	0	0	0	0	0	99.9	0
	sta812	0	0	0	0	0	0	0	0	100	0
	sta711	0.1	0	0	0	0	0	0	0	99.9	0
	sta704	0	0	0	0	0	0	0	0	100	0
	sta809	0	0	0	0	0	0	0	0	100	0
	sta513	0	0	0	0	0	0	0	4.7	95.3	0
16-Jun-07		DIVERSION_AG	DIV_CCC_AT_OL	DIV_CONTRA_CO	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	1.5	0	0	0	0	0	0	0	98.5	0
	sta906	0.8	0	0	0	0	0	0	0	99.2	0
	sta815	0.4	0	0	0	0	0	0	0	99.6	0
	sta902	3.3	3	2.2	0	17.9	5.9	0	0	67.7	5.2
	sta812	0.3	0	0	0	0	0	0	0	99.7	0
	sta711	0.4	0	0	0	0	0	0	0.2	99.4	0
	sta704	0.2	0	0	0	0	0	0.2	25.4	74.4	0
	sta809	0.5	0	0	0	0	0	0	0.9	98.6	0
	sta513	0	0	0	0	0	0	6.5	66.5	33.5	0
20-Jun-07		DIVERSION_AG	DIV_CCC_AT_OL	DIV_CONTRA_CO	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	2.5	0.3	0	0	6.7	2.3	0	0	88.2	0.3
	sta906	1.5	0	0.1	0	3.1	0.8	0	0	94.5	0.1
	sta815	0.8	0	0.2	0	2.8	0.6	0	0	95.6	0.2
	sta902	5.9	3.3	5.7	0	28.1	18.7	0	0	38.3	9
	sta812	0.7	0	0	0	0.2	0	0	1.6	97.5	0
	sta711	0.6	0	0	0	0	0	0.1	12.7	86.7	0
	sta704	0.2	0	0.1	0	0	0	1.8	38.8	60.9	0.1
	sta809	0.8	0	0	0	0.1	0.2	0.1	4.7	94.2	0
	sta513	0.1	0	0	0	0	0	14.2	73.1	26.8	0
24-Jun-07		DIVERSION_AG	DIV_CCC_AT_OL	DIV_CONTRA_CO	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	3.9	0.4	0	0	17.6	10.6	0	0	67.5	0.4
	sta906	2.4	0.1	0.4	0	12.5	7	0	0	77.6	0.5
	sta815	1.2	0.1	0.6	0	8	3.7	0	0	86.4	0.7
	sta902	7.5	3.3	5.7	0	30.2	27	0	0	26.3	9
	sta812	1.2	0.1	0	0	2.5	0.6	0.2	1.3	94.3	0.1
	sta711	0.8	0	0	0	0.1	0.2	1.4	17.9	81	0
	sta704	0.4	0	0.1	0	0.1	0	5.7	41.5	57.9	0.1
	sta809	1	0	0.1	0	0.4	0.3	0.1	7.6	90.6	0.1
	sta513	0.2	0	0	0	0	0	21.7	69.5	30.3	0
28-Jun-07		DIVERSION_AG	DIV_CCC_AT_OL	DIV_CONTRA_CO	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	4.9	0.5	0	0	22	19.6	0	0	53	0.5
	sta906	3.4	0.2	0.5	0	22.5	15.2	0	0	58.2	0.7
	sta815	2.1	0.1	1	0	11.5	8.2	0.3	1.3	75.8	1.1
	sta902	7.8	3.4	5.7	0	31.1	31.9	0	0.1	20	9.1
	sta812	2	0.2	0.3	0	4.1	2.1	1.2	3.3	88	0.5
	sta711	0.9	0.1	0	0	0.9	0.3	9.8	29.5	68.3	0.1
	sta704	0.4	0	0.2	0	0.2	0.1	21.3	53.7	45.4	0.2
	sta809	1.3	0	0.1	0	0.6	1.1	4.2	18.6	78.3	0.1
	sta513	0.2	0	0	0	0	0	40	76.8	23	0
1-Jul-07		DIVERSION_AG	DIV_CCC_AT_OL	DIV_CONTRA_CO	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	6.5	0.6	0	0	25.8	25.1	0	0	42	0.6
	sta906	4.4	0.3	0.5	0	26.5	21.2	0	0.3	46.8	0.8
	sta815	2.7	0.2	1.2	0	13.9	10.3	1	5.7	66	1.4
	sta902	8.4	3.4	5.7	0	31.9	33.1	0.1	1.5	16	9.1
	sta812	2.6	0.2	0.4	0	5.6	4	2.3	8.1	79.1	0.6
	sta711	1	0.1	0	0	1	0.6	17.3	51.2	46.1	0.1
	sta704	0.7	0	0.2	0	0.2	0.2	32.8	73.6	25.1	0.2
	sta809	1.3	0	0.1	0	1	1.3	10.1	37.6	58.7	0.1
	sta513	0.2	0	0	0	0	0	52	88.6	11.2	0
5-Jul-07		DIVERSION_AG	DIV_CCC_AT_OL	DIV_CONTRA_CO	DIV_NORTH_BAY	EXPORT_CVP	EXPORT_SWP	PAST_MTZ	PAST_CHIPPS	IN_DELTA	DIV_OTHER
	sta910	8.2	0.6	0.1	0	31.3	31.8	0	0	28	0.7
	sta906	5.5	0.4	0.6	0	32	30	0	0.6	30.9	1
	sta815	3.3	0.3	1.5	0	16	13.4	1.6	9.1	56.4	1.8
	sta902	8.8	3.4	5.7	0	32.4	34.9	0.3	2.1	12.7	9.1
	sta812	3.4	0.3	0.4	0	7.3	6.5	3.4	12.4	69.7	0.7
	sta711	1	0.1	0	0	1.2	0.9	24.8	58.4	38.4	0.1
	sta704	0.7	0	0.2	0	0.2	0.2	39.1	78.3	20.4	0.2
	sta809	1.5	0	0.1	0	1.5	1.8	15.1	47.8	47.3	0.1
	sta513	0.2	0	0	0	0	0	58.7	91.3	8.5	0

Addendum to DSWG Notes from June 11, 2007

Task: On June 12, 2007 the WOMT asked the Delta Smelt Working Group to provide further biological and technical information to support their recommendation that Project operations be modified such that net flows in Old and Middle Rivers are as close to zero (or positive) as possible if delta smelt are salvaged following their proposed increase in operations.

Recent delta smelt salvage at SWP

Date	SWP salvage	Acre Feet	Density
5/24/2007	0	24	0.00
5/25/2007	2	710	0.00
5/26/2007	22	711	0.03
5/27/2007	24	516	0.05
5/28/2007	20	636	0.03
5/29/2007	58	624	0.09
5/30/2007	46	624	0.07
5/31/2007	40	517	0.08
6/10/2007	27	178	0.15
6/11/2007	9	179	0.05
6/12/2007	30*	176	0.17

*15 expanded salvage plus 5 actual count from secondary flush

There has been no salvage of delta smelt at the CVP since May 30.

Considerations for WOMT: With only a few data to consider the Working Group was not able to determine whether the delta smelt salvaged on June 12 had resided in Clifton Court Forebay since May 31 or were drawn into it when the radial gates were opened on June 12. Given this uncertainty, the Working Group currently believes that an entrainment risk still exists under the pumping regime now in place. Following the decision criteria submitted to WOMT on June 11, the Working Group advises that water project operations be modified to maintain non-negative daily net OMR flow.

Sources of Uncertainty:
1. Fish Numbers
Indices of delta smelt abundance generated from survey data have exhibited a sharp decline in recent years. All of the last five Fall Mid-Water Trawl indices have been below the median value and four of the last five Summer Tow-Net indices have been below the median value. The 2007 20-mm Survey, which samples for larval fishes, collected numbers of larval delta smelt which were an order of magnitude below previous survey numbers. While robust population estimates for delta smelt do not exist, the downward trend in these three surveys creates a compelling case that delta smelt numbers are at an all-time and potentially critical low level.

2. Fish Distribution
Delta smelt tend to distribute themselves near or just upstream of the 2 parts per thousand salinity isohaline, referred to as X2 and expressed as kilometers distance from the Golden Gate Bridge. Presently, X2 is at approximately 80 km, just west of Collinsville. Preliminary results from Survey 7 of the 20-mm Survey, conducted during the week of June 4 and presently in the process of sorting samples, indicates that the bulk of larval delta smelt are distributed near or upstream of X2 in the lower Sacramento and San Joaquin River;

however, to date only six larval delta smelt have been collected. With delta smelt at such apparent low numbers, confidence in the ability of the survey to adequately sample for delta smelt is questionable; further, such low numbers severely limit the validity of inferences that may be drawn from the survey data. As an example, surveys have not collected delta smelt at south Delta stations, but larval delta smelt have been salvaged at both the State and Federal facilities, which means that they occur in south Delta channels below levels at which they can be reliably detected by routine survey sampling.

3. Risk of Entrainment

Given the position of X2 and consideration of what is known of their preferred position, it seems unlikely that delta smelt will move further downstream. The results of the particle tracking modeling referred to in the June 11 notes indicates that at the level of Project pumping that was communicated to the Working Group on June 8 (2500 cfs combined), particles injected at stations 704 and 809 exhibited a low risk of entrainment at the export facilities and a very high likelihood of either remaining in the Delta or moving past Chipps Island through the end date of the run on July 5. Stations 704 and 809 approximate the distribution of delta smelt in Survey 7 of the 20-mm survey, indicating a relatively low risk of entrainment under present conditions. However, as hydrologic conditions change, these results will no longer represent the risk of entrainment of juvenile delta smelt near the confluence. Further, uncertainty with regard to distribution increases the risk that the estimated risk of entrainment is understated.

4. Population-Level Effects

As previously stated, robust population estimates for delta smelt do not exist and at present there is no model of the delta smelt life cycle that can adequately assess the effect of entrainment of delta smelt at the export facilities. However, analyses have indicated that the effects of entrainment may at times be significant. As apparent abundance decreases, it becomes more likely that any one mortality event can have a significant impact on the population.