

From: Milligan, Ronald E <RMilligan@usbr.gov>
Sent: Wednesday, August 22, 2012 3:41 PM
To: Michael Tucker
Subject: FW: CS5 follow-up discussion re:CVP system

Here you go.

From: Milligan, Ronald E
Sent: Wednesday, August 22, 2012 3:19 PM
To: 'Armin.Munevar@CH2M.com'; Barajas, Federico
Cc: Chandra.Chilmakuri@CH2M.com; Paula.Silva@CH2M.com
Subject: RE: CS5 follow-up discussion re:CVP system

Armin,
The flows seem reasonable for this purpose. I wonder about end of September targets. Given how high these are, maybe we should consider looking at the target to end of November relative to the 3.2 maf.
Ron

From: Armin.Munevar@CH2M.com [<mailto:Armin.Munevar@CH2M.com>]
Sent: Monday, August 20, 2012 5:56 PM
To: Barajas, Federico; Milligan, Ronald E
Cc: Chandra.Chilmakuri@CH2M.com; Paula.Silva@CH2M.com
Subject: RE: CS5 follow-up discussion re:CVP system

Hi Ron,

Good talking with you and Frederico today.

The attached table is my estimate of the storage targets and flows based on our discussion. Level 1 and 2 are based on the numbers you provided. I left May at a low level in that I releases are almost always sufficiently cold (as is the weather) to not require specification. Level 3 and 4 are relaxed by 1000 cfs. And Level 5 drops after July to reflect the inadequate coldwater pool.

Please let me know if you'd like to see modification based on discussions with Russ and Randi.

Thanks,
Armin

Shasta EOM Storage (TAF)

	L1	L2	L3	
Oct				
Nov				
Dec				
Jan				
Feb				
Mar				

Apr	4.2	3.8	3.6	3.4	3.0	<< level that is set based on hydrology and antecedent conditions
May						
Jun						
Jul						
Aug						
Sep	3.4	3.4	3.4	3.4	3.0	<< level that if below, only releases for upstream permitted (no delta releases)

Storage level target interpolated between Apr and Sep targets

Keswick Release Target (cfs)

- Oct
- Nov
- Dec
- Jan
- Feb
- March
- April
- May
- Jun
- Jul
- Aug
- Sep

-----Original Appointment-----

From: Barajas, Federico
Sent: Monday, August 20, 2012 11:36 AM
To: Barajas, Federico; Munevar, Armin/SDO; Milligan, Ronald E
Subject: CS5 follow-up discussion re:CVP system
When: Monday, August 20, 2012 3:30 PM-4:30 PM (UTC-08:00) Pacific Time (US & Canada).
Where: Conference Line: (b) (4) Passcode:(b) (4)

Conference Line: (b) (4) Passcode: (b) (4)

From: Barajas, Federico <FBarajas@usbr.gov>
Sent: Tuesday, December 04, 2012 1:09 PM
To: Belin, Letty; Maria Rea - NOAA Federal; Castleberry, Dan
Cc: Connor, Michael L; Glaser, Donald R; Chotkowski, Michael; 'Mike Tucker'; Norris, Jennifer; Fry, Susan M; Knecht, Mary Lee
Subject: FW: Materials for Tomorrow on Modeling
Attachments: Fish Agencies InitOps exercise explanation 061112.docx;
BDCP_FishAg_Scenarios_051712_v3.pptx; NGO Meeting Agenda_6-12-12.docx

Hi Letty, Dan and Maria,

As requested during the weekly call today, here is the CS5 modeling information provided to the NGOs with a copy of the 5/17/12 modeling information and cover memo for the meeting with them on 6/12/12. See email below from Bruce and attached materials.

Thanks, FB

From: Bruce DiGennaro
Sent: Tuesday, June 12, 2012 2:16 AM
To: 'Barry Nelson'; 'Beth Gerbutavicius'; 'bharrell@water.ca.gov'; 'bond13mac@aol.com'; Bruce DiGennaro; 'Carl Wilcox'; 'cbonham@dfg.ca.gov'; 'cgardner@hgcpm.com'; 'cunkel@ducks.org'; 'Cynthia Koehler'; Dan.Castleberry@fws.gov; 'Dick Poole'; Don Glaser; 'Doug Obegi'; Eileen Sobeck; 'Erik.Vink@tpl.org'; 'FBarajas@usbr.gov'; 'Gary Bobker'; 'Greg Thomas'; 'Hal Candee'; 'Hoffman-Floerke, Dale'; 'Jay Ziegler'; jennifer.norris@fws.gov; 'jerry.meral@resources.ca.gov'; 'Jim Metropulos'; 'John Cain'; 'Jon Rosenfield, Ph.D.'; Jonas Minton (jminton@pcl.org); 'Karla Nemeth'; 'Kate Poole'; 'Kathryn Phillips'; 'Kelly Catlett'; 'kerry@alcnet.org'; 'Kim Delfino'; 'King Moon, Laura'; 'Leo Winternitz'; Les Grober; 'maria.rea@noaa.gov'; Maurice Hall; 'mcowin@water.ca.gov'; MEbbin@emslp.com; 'michael_chotkowski@fws.gov'; 'MLConnor@usbr.gov'; 'Nawi, David'; Nick DeCroce; 'Richard Roos-Collins'; 'spreckrosekrans@gmail.com'; 'Steve Rothert'; Sue Fry; 'Susan Tatayon'; 'Will.Stelle@noaa.gov'; 'Zeke Grader'
Subject: Materials for Tomorrow on Modeling

All,

Attached please find a cover document that briefly outlines the agency modeling that was recently conducted, and a PPT that presents some of the output from the exercise.

Maria will walk us through the PPT tomorrow, but we wanted you all to have copies, including those that may be joining by phone.

I've also attached a copy of the agenda for easy reference. For those calling in, the call-in number is listed on the agenda.

Thanks,

Bruce

Bruce DiGennaro

THE **ESSEX**
PARTNERSHIP

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Fish Agency Scenarios for BDCP Initial Operations Development

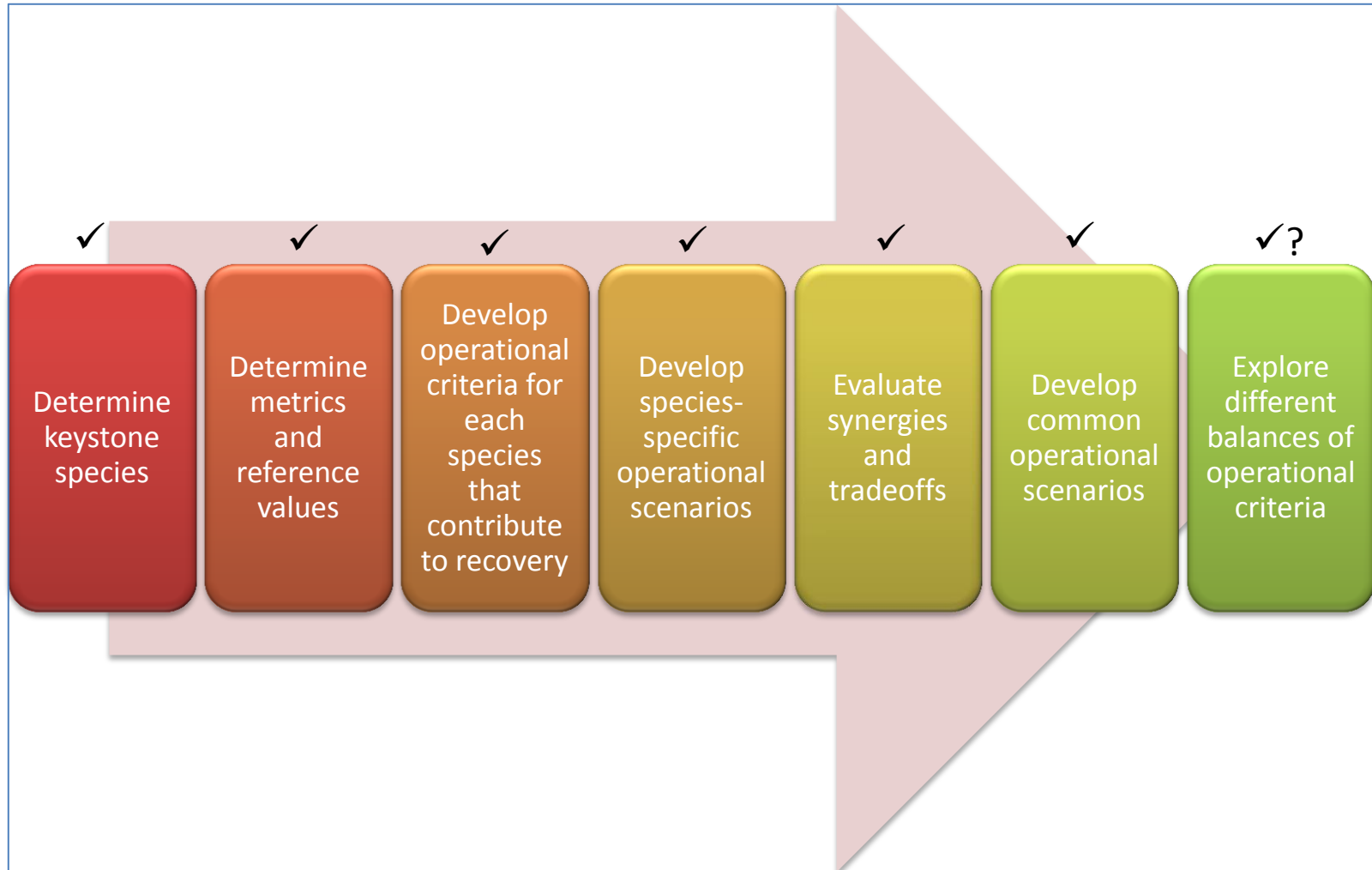
DRAFT

May 17, 2012

Analysis Overview

- Goals of analysis
 - Determine the operational parameters and metrics for the main species that drive operations
 - Identify synergies and tradeoffs amongst species operational targets
 - Develop scenarios that integrate operational targets for all species that contribute to recovery
 - Identify areas of uncertainty and explore the sensitivity of water operations to these parameters
- All analyses performed with Jan 2010 proposed operations for BDCP (dual conveyance)
- All analyses performed with Early Long-Term assumptions (climate and sea level change, demand growth)

Analytical Approach



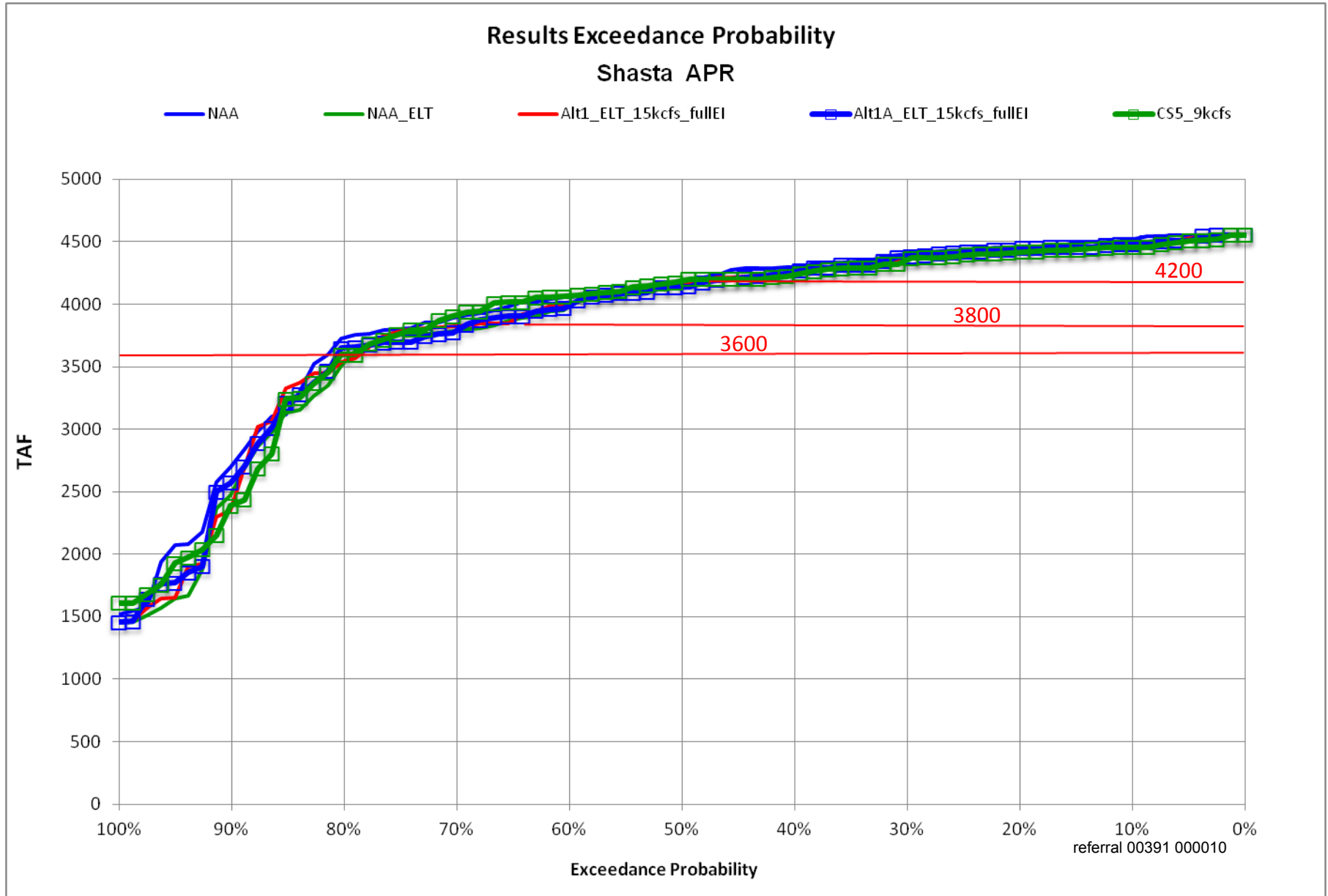
7 Keystone Species Selected for Analysis

- Species for which significant effect on operational parameters may be expected
- 7 keystone species considered in analysis
 - Delta smelt
 - Longfin smelt
 - Winter run chinook
 - Spring run chinook
 - Fall and late-fall run chinook
 - San Joaquin salmonids
 - White and green sturgeon

Key Operational Parameters Considered

- ***Shasta April and September storage*** targets to develop and manage the available cold water pool
- ***Keswick release targets*** to provide flows necessary for temperature control and enhancing ecosystem
- ***Old and Middle River flows*** along with the ***Head of Old River Barrier*** operations to protect against entrainment risk
- ***Delta outflow and X2*** criteria to enhance the suitable habitat availability
- ***North delta diversion bypass flows*** to reduce the risk of increased reverse flows on Sacramento River downstream of Georgiana Slough

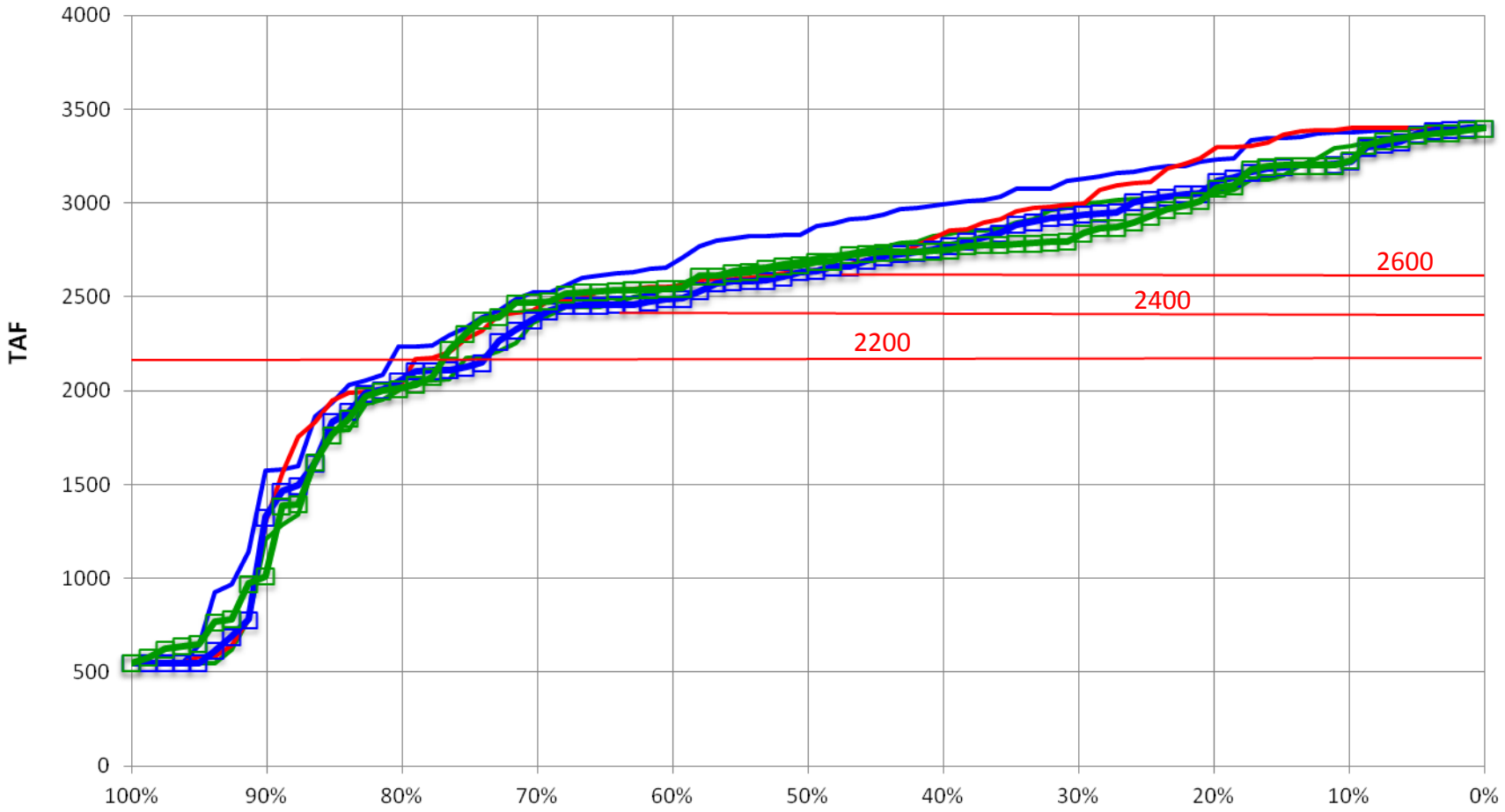
Shasta End of April Storage



Shasta End of September Storage

Results Exceedance Probability
Shasta SEP

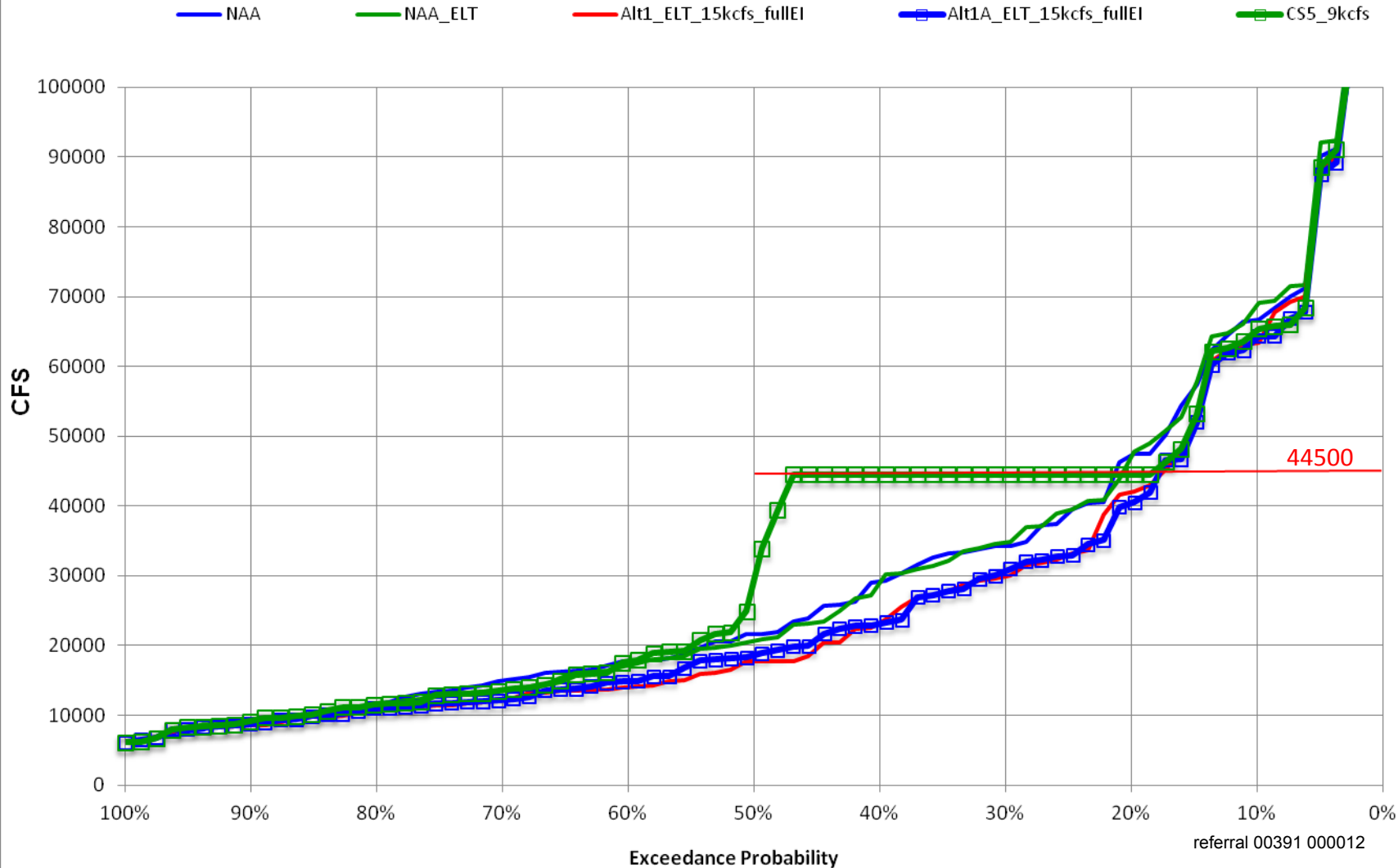
NAA NAA_ELT Alt1_ELT_15kcfs_fullEI Alt1A_ELT_15kcfs_fullEI CS5_9kcfs



Spring Delta Outflow (Mar-May)

Results Exceedance Probability

Delta Outflow MAR-MAY period average



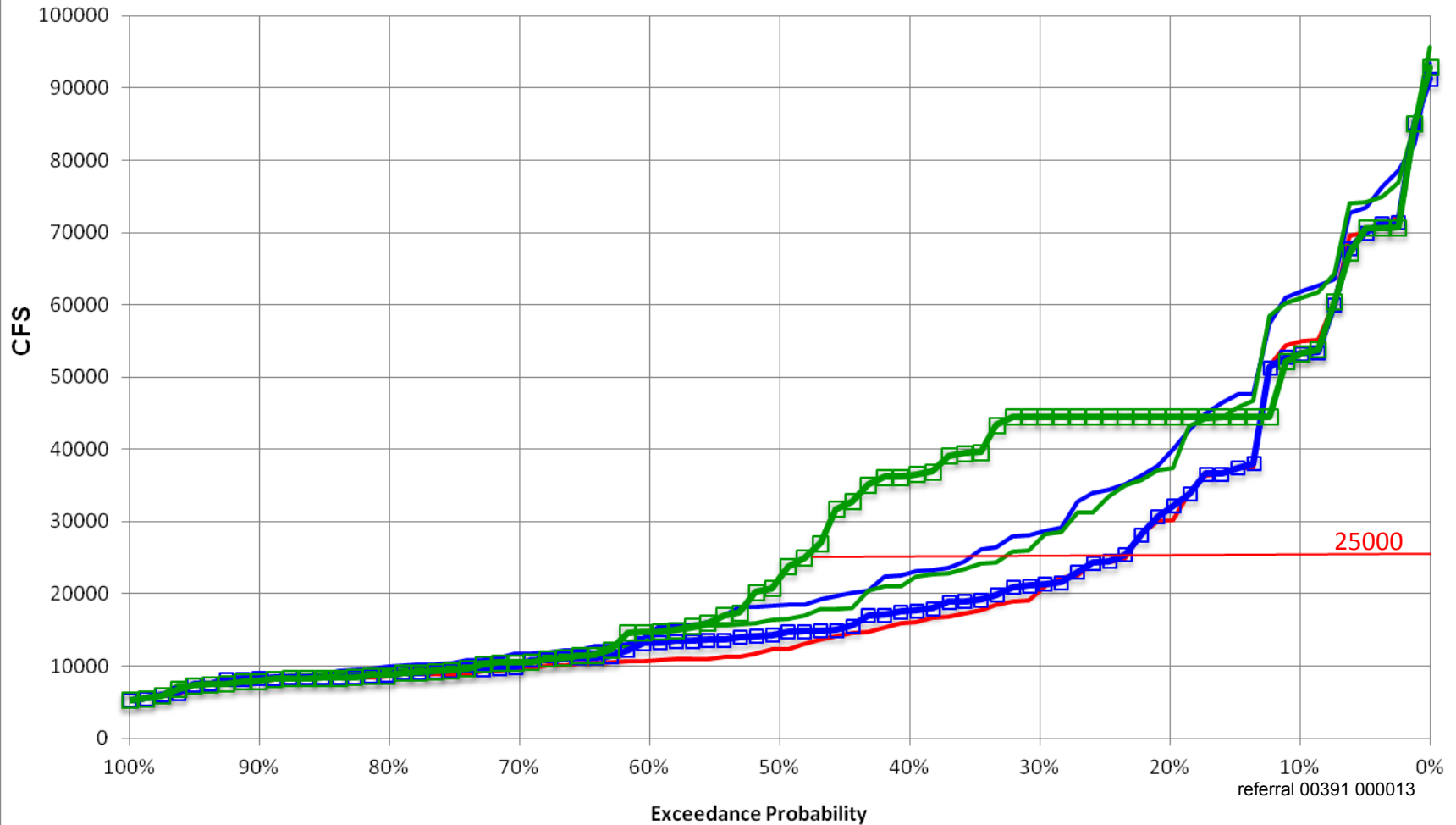
referral 00391 000012

Spring Delta Outflow (Apr-May)

Results Exceedance Probability

Delta Outflow APR-MAY period average

— NAA — NAA_ELT — Alt1_ELT_15kdfs_fulleI — Alt1A_ELT_15kdfs_fulleI — CS5_9kdfs

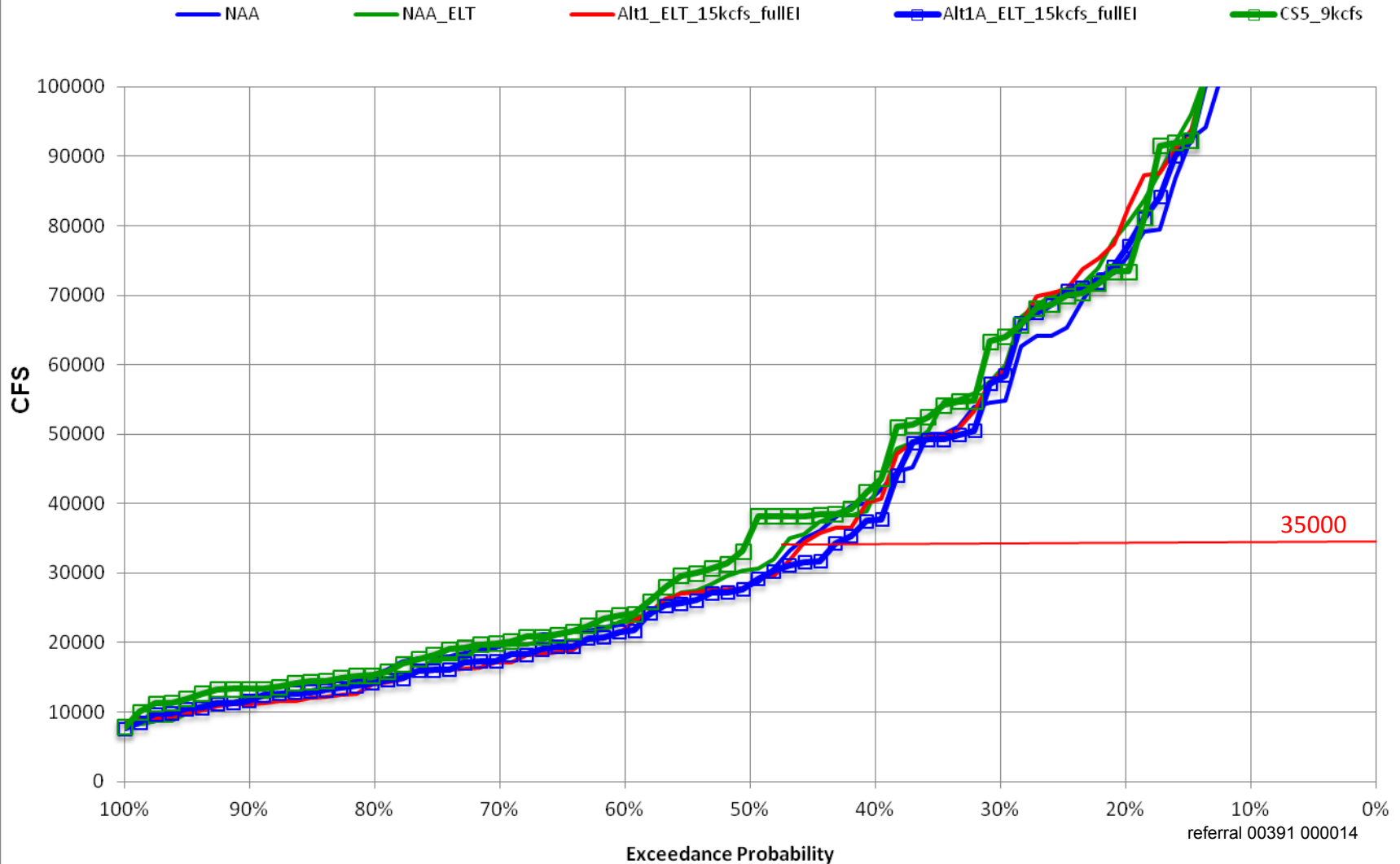


referral 00391 000013

Spring Delta Outflow (Jan-Mar)

Results Exceedance Probability

Delta Outflow JAN-MAR period average



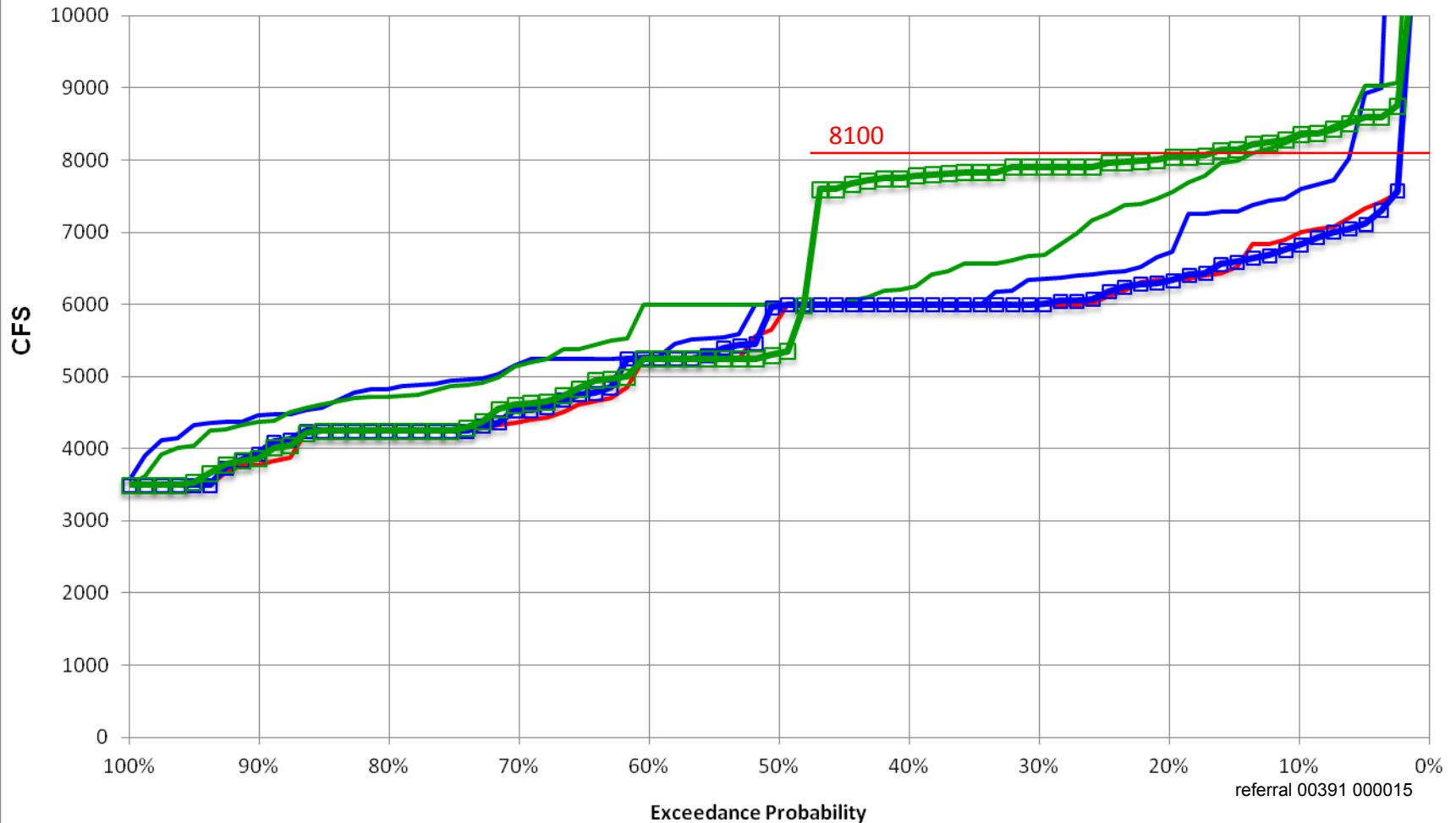
referral 00391 000014

Summer Delta Outflow (Jul-Aug)

Results Exceedance Probability

Delta Outflow JUL-AUG period average

— NAA — NAA_ELT — Alt1_ELT_15kcfs_fulleI — Alt1A_ELT_15kcfs_fulleI — CS5_9kcfs

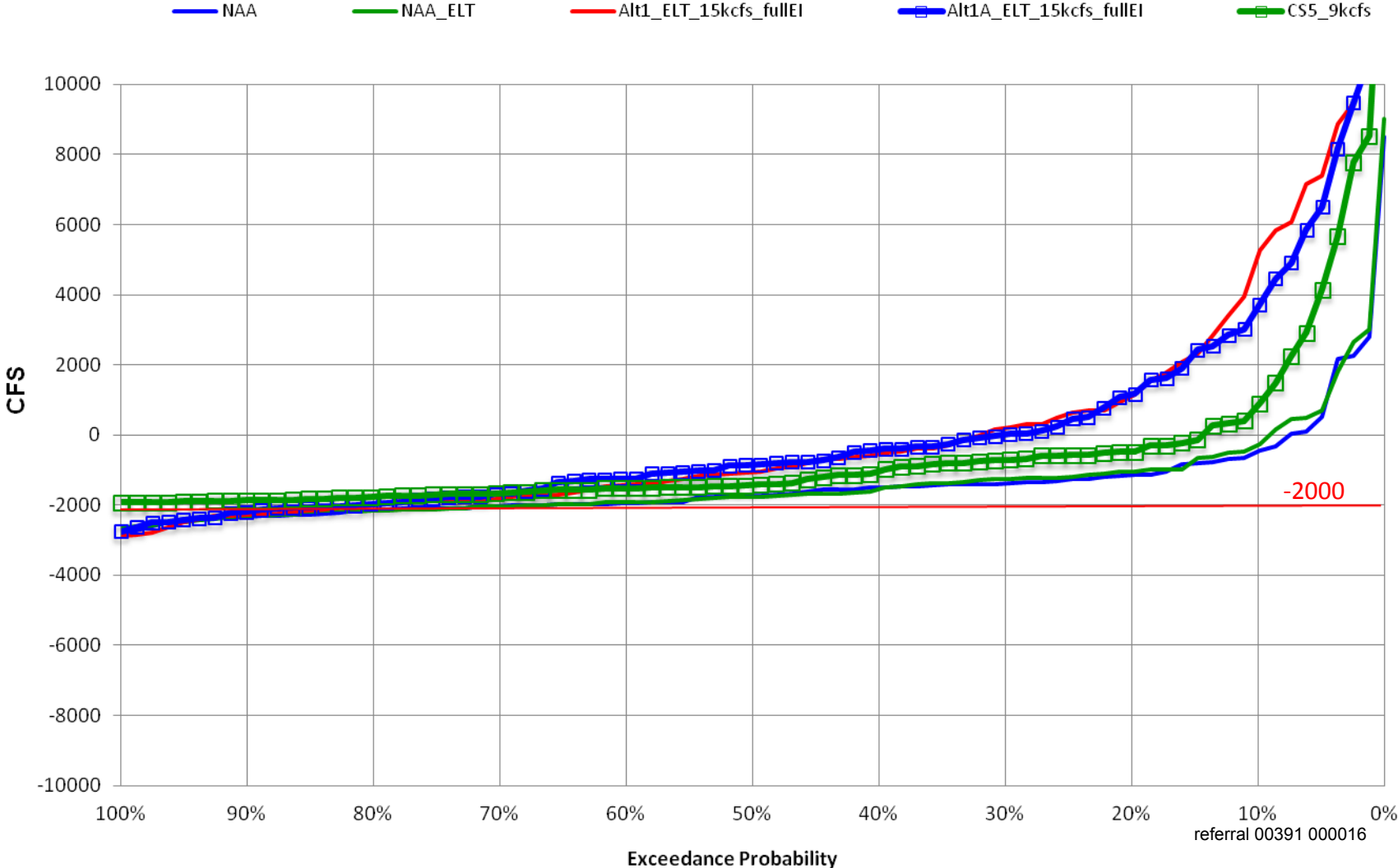


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Spring Old and Middle River Flows

Results Exceedance Probability

Old & Middle River (OMR) Flow MAR-JUN period average

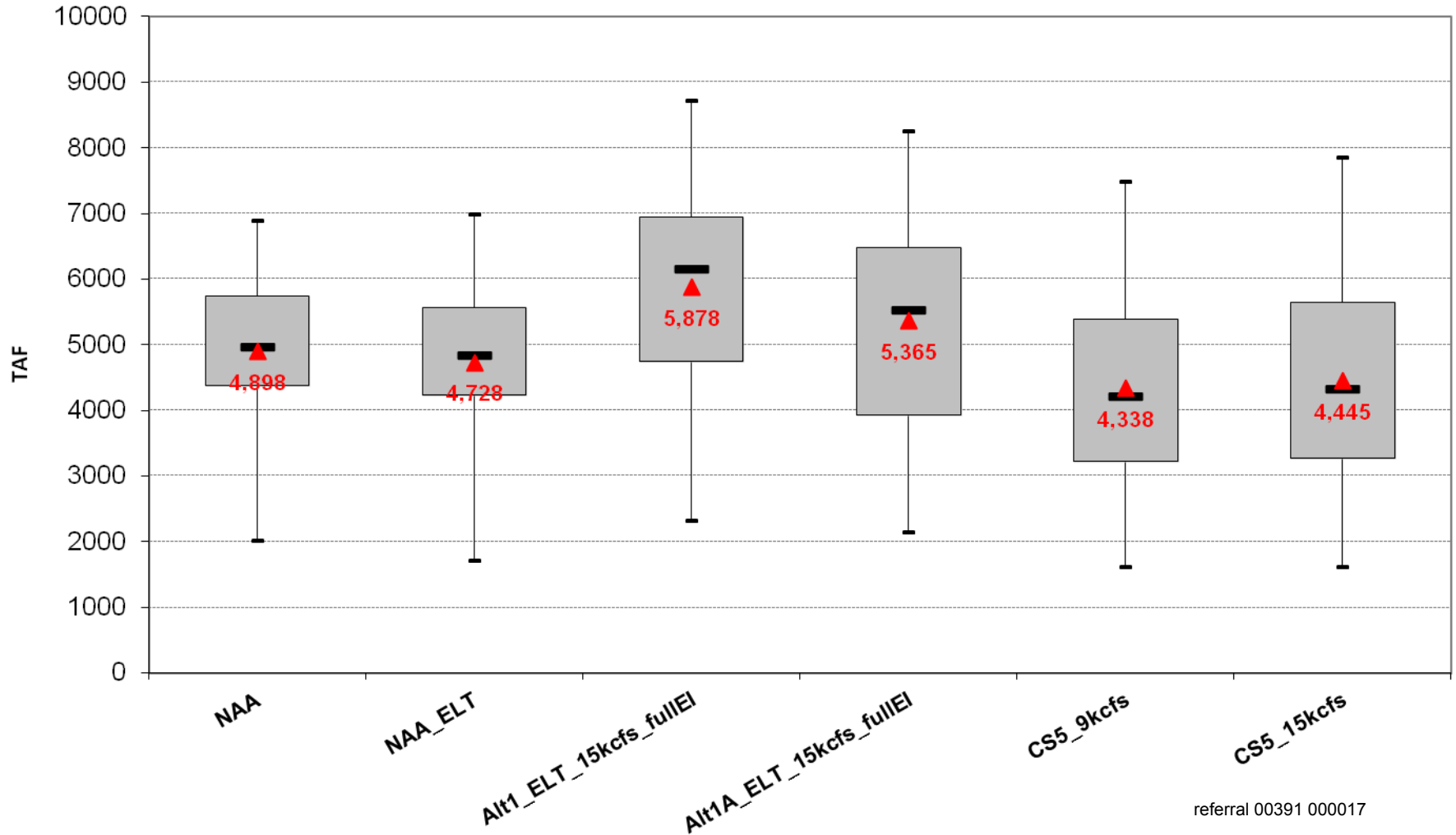


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Annual Delta Exports

Single Month Box Plot Study Comparison
(Box=25th to 75th percentile range, whiskers=min and max, dash=median, triangle=mean)

Delta Exports ANNUAL

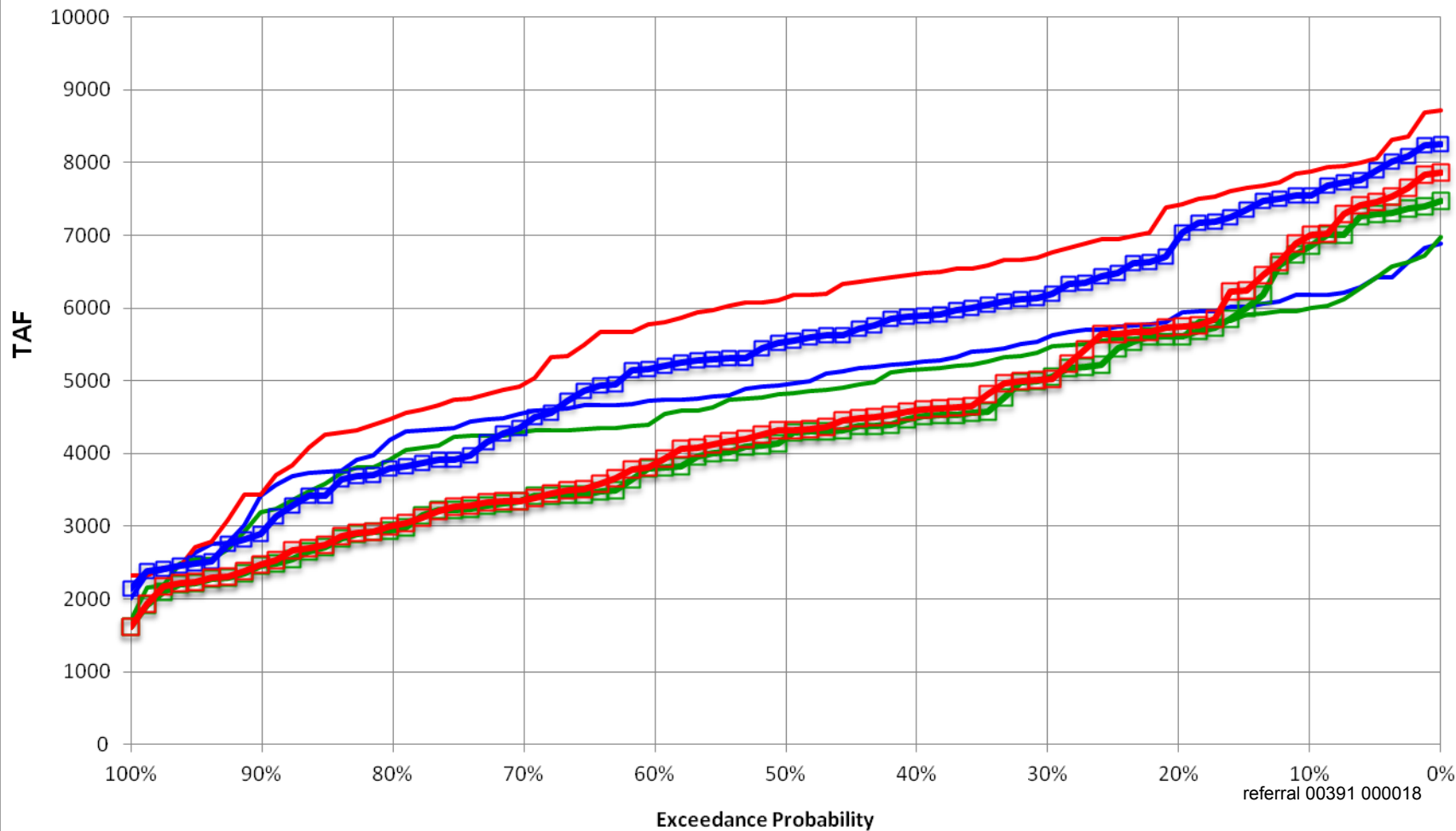


Annual Delta Exports Reliability

Results Exceedance Probability

Delta Exports OCT-SEP period total

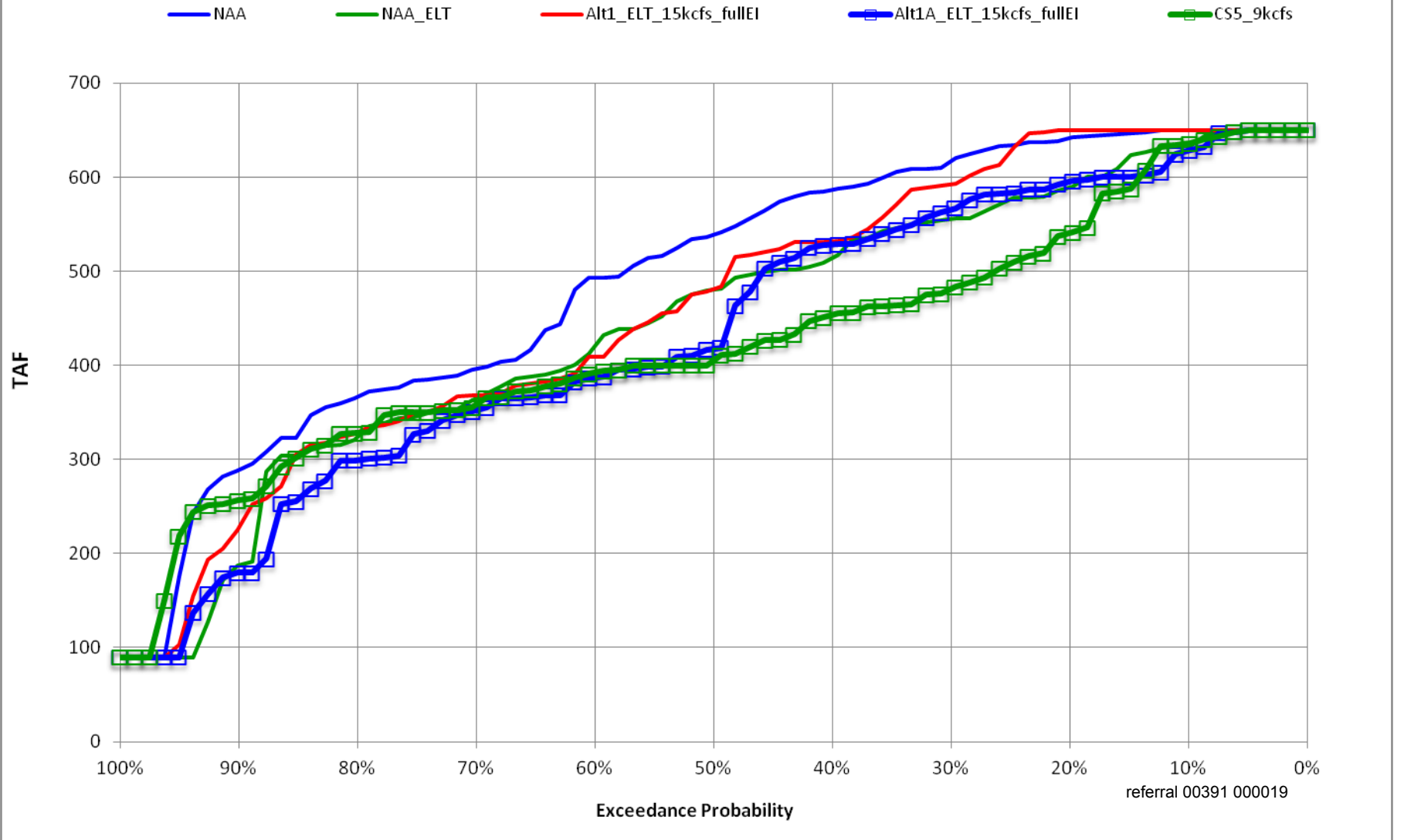
NAA NAA_ELT Alt1_ELT_15kcfs_fullEI Alt1A_ELT_15kcfs_fullEI CS5_9kcfs CS5_15kcfs



referral 00391 000018

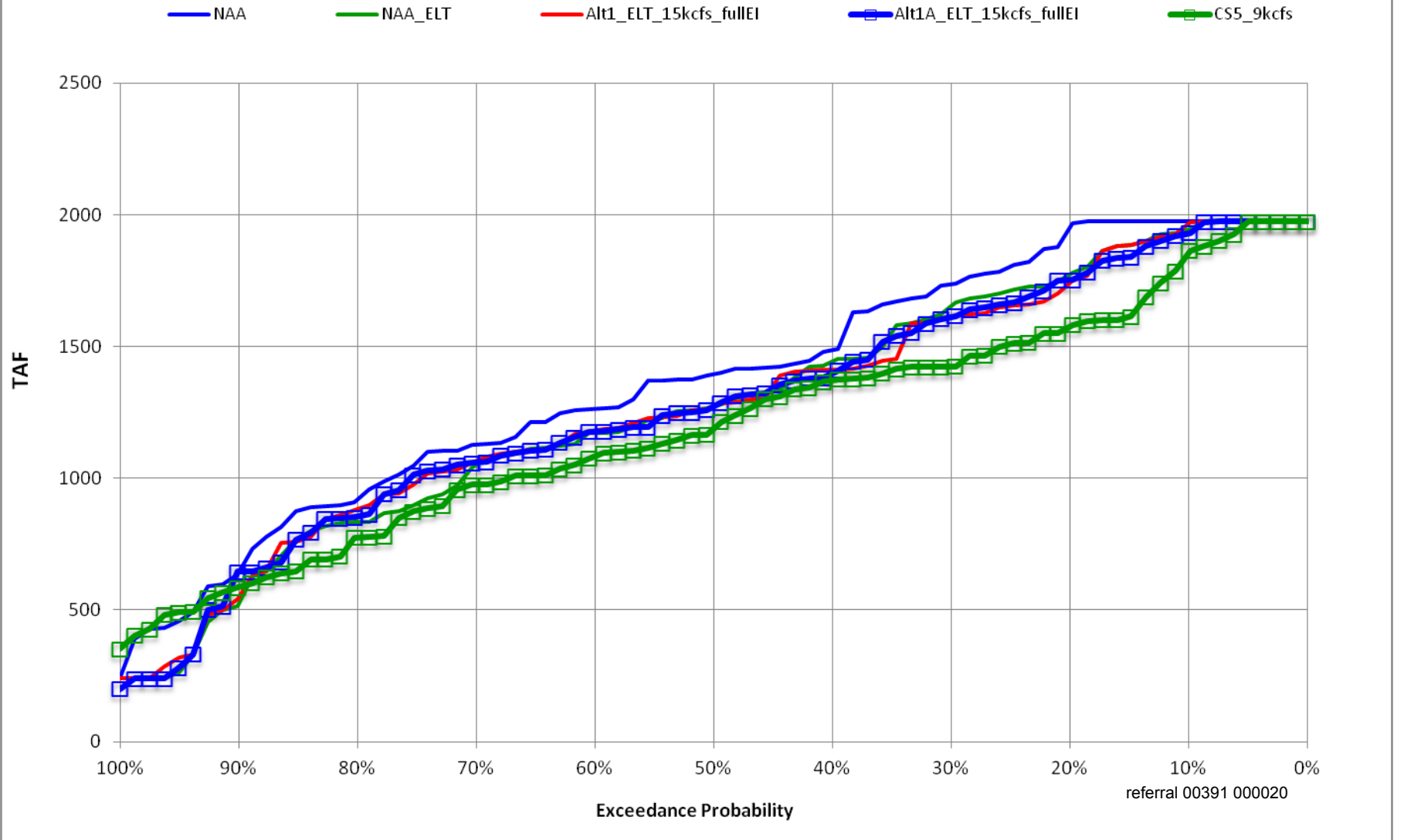
Folsom End of September Storage

Results Exceedance Probability
Folsom SEP

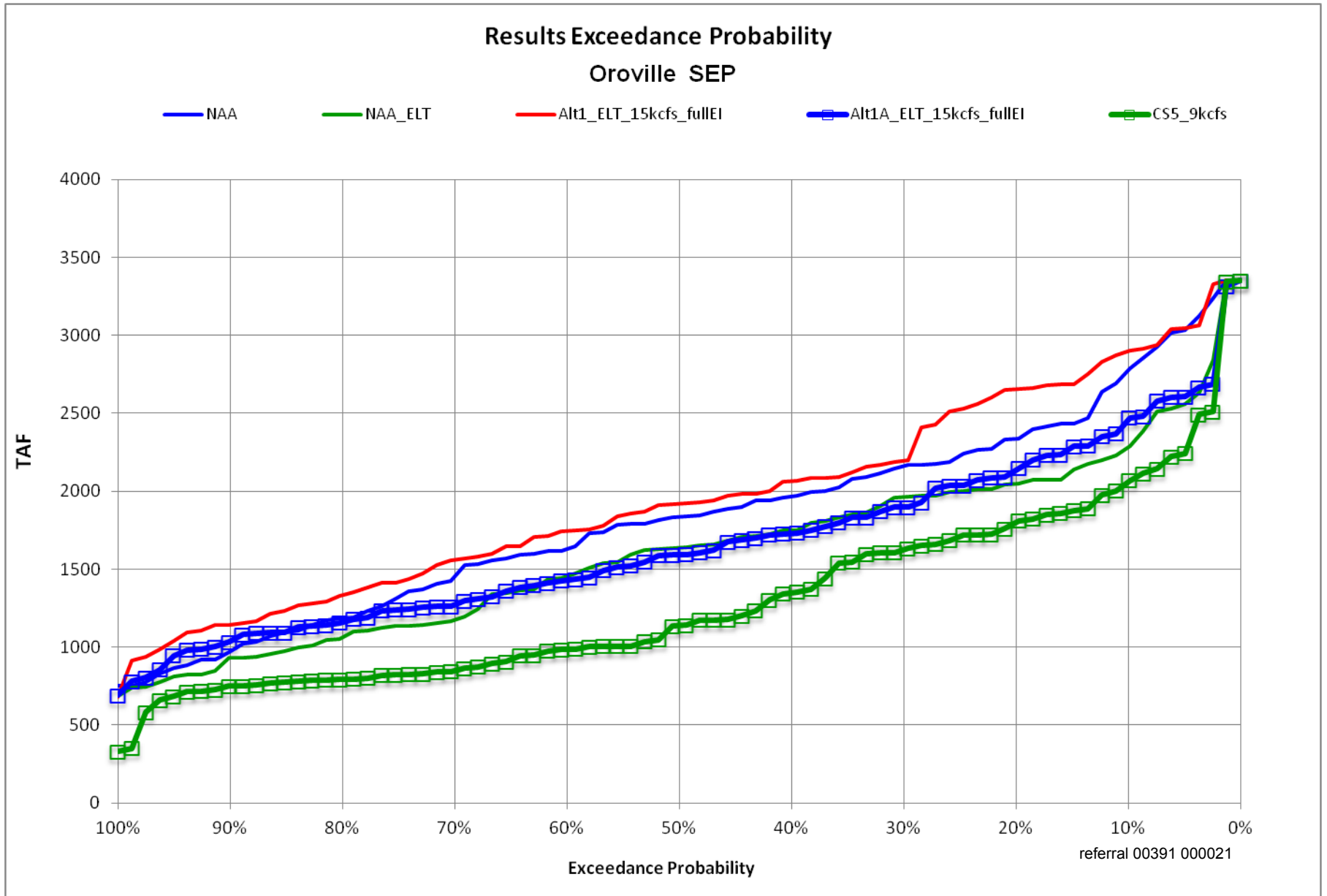


Trinity End of September Storage

Results Exceedance Probability
Trinity SEP



Oroville End of September Storage



Conclusions - Smelts

- Does CS5 scenario meet contribution towards recovery?
 - South Delta entrainment criteria meet
 - Meets seasonal outflow criteria for Delta smelt
 - Meets spring outflow objectives for Longfin smelt
 - CS5 provides for improved outflow without worsening Shasta cold water pool RPA baseline

Conclusions - Salmonids

- Does CS5 scenario meet contribution towards recovery?
 - San Joaquin salmonids criteria met
 - CS5 provides for improved outflow without worsening Shasta cold water pool RPA baseline
 - Uncertainty in summer time Keswick flows for temperature – needs analysis
 - WR criteria not always met – may not be possible within constraints to contribute to recovery
 - Oroville and Trinity results need further review
 - Questions remain re: Fall-run spring flow criteria

Uncertainty in Operations

- Teams prepared assessment of the uncertainty and importance of various operational parameters
- Matrix was prepared to highlight those areas of greater or lesser certainty

Sensitivity of Operations

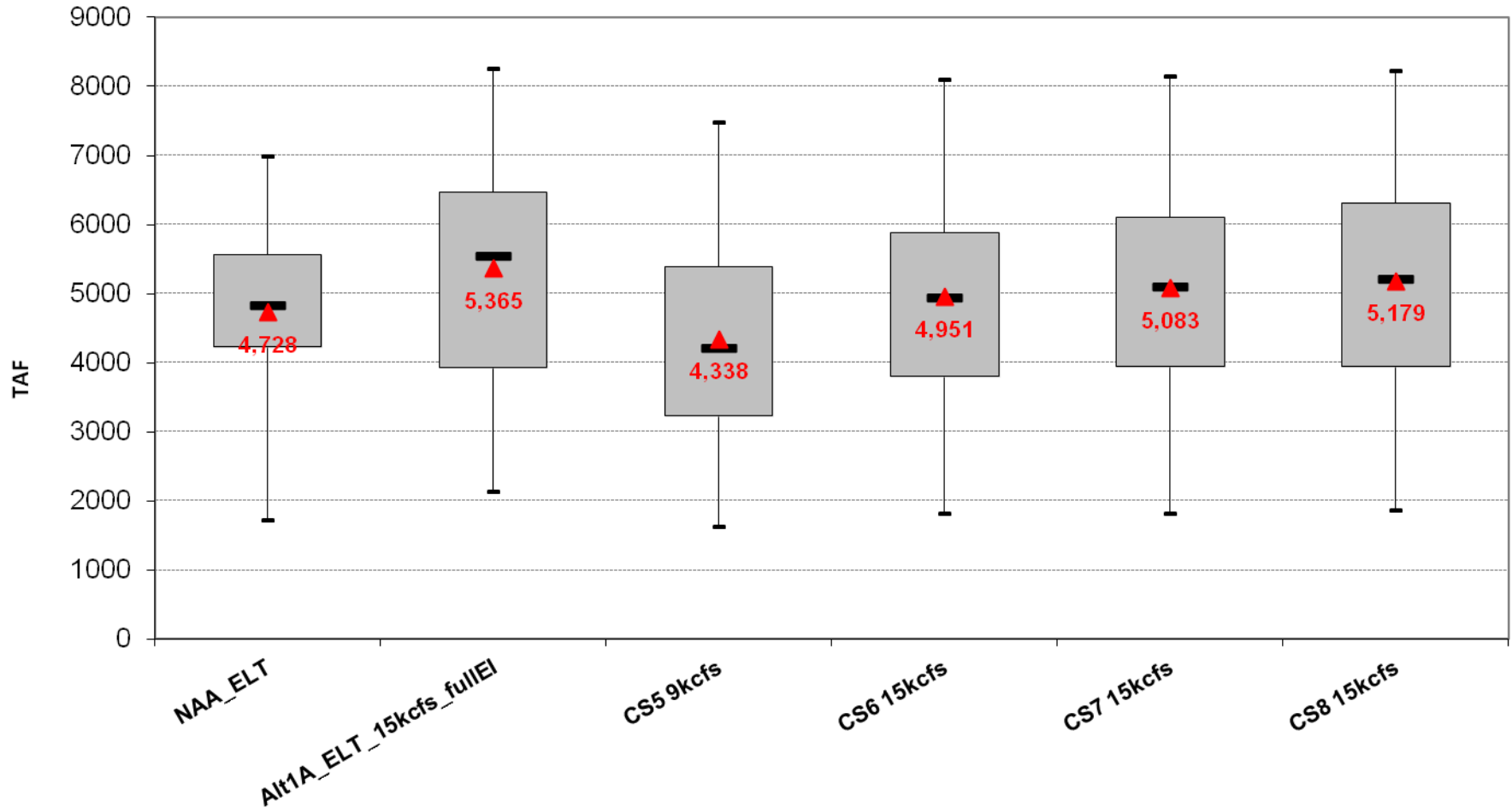
- Combined Species run 5
 - Includes all water operations for all species
- Combined Species run 6
 - No July-August outflow for delta smelt
 - Uses SJR salmonid OMR criteria ($> -2500/-2000$ cfs) for March-May
 - Replaces spring outflow requirements with 25 kcfs during March-May
 - No July-Nov additional north delta bypass flows
- Combined Species run 7
 - January-June OMR per Alternative 1A
 - Spring north delta bypass flows set at 15 kcfs
- Combined Species run 8
 - Spring outflow per Alternative 1A (D1641)
 - North delta diversion bypass flows per Alternative 1A

Delta Exports

Single Month Box Plot Study Comparison

(Box=25th to 75th percentile range, whiskers=min and max, dash=median, triangle=mean)

Delta Exports ANNUAL



Metrics for Smelt

Longfin Smelt

Bio Obj	Variable	Units	Year Type	Condition	Threshold	NAA	NAA_ELT	ALT1_ELT	ALT1A_ELT	CS5	CS6	CS7	CS8
Juvenile Entrainment Projection - Dec	OMR	CFS	0	>=	-5010	13	17	28	39	100	100	100	100
Juvenile Entrainment Projection - Jan1	OMR	CFS	0	>=	-3510	43	41	60	88	100	100	80	80
Juvenile Entrainment Projection - Feb5	OMR	CFS	0	>=	-3510	44	46	80	77	100	100	74	74
Juvenile Entrainment Projection - Mar1	OMR	CFS	0	>=	-5010	100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Apr1	OMR	CFS	0	>=	-5010	100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - May2	OMR	CFS	0	>=	-5010	100	100	100	100	100	100	100	100
Delta Habitat - MarMay1	Delta_Outflow	CFS	0	>=	44400	22	21	18	18	48	18	18	18
Delta Habitat - MarMay1	Delta_Outflow	CFS	0	>=	24990	45	44	39	38	50	50	50	38

Target is 50%

Delta Smelt

Bio Obj	Variable	Units	Year Type	Condition	Threshold	NAA	NAA_ELT	ALT1_ELT	ALT1A_ELT	CS5	CS6	CS7	CS8
Juvenile Entrainment Projection - Dec	OMR	CFS	0	>=	-5010	13	17	28	39	100	100	100	100
Juvenile Entrainment Projection - Jan1	OMR	CFS	0	>=	-3510	43	41	60	88	100	100	80	80
Juvenile Entrainment Projection - Feb5	OMR	CFS	0	>=	-3510	44	46	80	77	100	100	74	74
Juvenile Entrainment Projection - Mar1	OMR	CFS	0	>=	-2010	27	26	73	71	100	66	66	67
Juvenile Entrainment Projection - Apr1	OMR	CFS	0	>=	-2010	100	100	67	100	100	100	100	100
Juvenile Entrainment Projection - May2	OMR	CFS	0	>=	-2010	100	100	72	100	100	100	100	100
Juvenile Entrainment Projection - Jun2	OMR	CFS	0	>=	-2010	10	10	39	38	27	30	30	29
Delta Habitat - JulAug1	X2	KM	1	<=	82	88	100	54	69	100	62	65	62
Delta Habitat - JulAug2	X2	KM	2	<=	82	92	83	25	58	100	75	58	58

Metrics for Winter Run

Bio Obj	Variable	Units	ear	Typ	onditio	Threshold	NAA	NAA_ELT	ALT1_ELT	ALT1A_ELT	ALT1_9kafs	CS5	CS6	CS7	CS8
Shasta Coldwater Pool Setup1	Shasta_Stor	TAF	0	>=		4200	49	45	48	46	48	50	62	62	62
Shasta Coldwater Pool Setup2	Shasta_Stor	TAF	0	>=		3800	76	70	73	71	72	72	78	78	79
Shasta Coldwater Pool Setup3	Shasta_Stor	TAF	0	>=		3600	80	79	79	80	79	78	84	83	83
Shasta Coldwater Pool Setup4	Shasta_Stor	TAF	0	>=		3000	87	85	88	87	88	85	88	88	88
Shasta Coldwater Carryover1	Shasta_Stor	TAF	0	>=		2600	67	59	55	57	57	59	70	66	67
Shasta Coldwater Carryover2	Shasta_Stor	TAF	0	>=		2400	73	70	72	70	72	72	84	83	84
Shasta Coldwater Carryover3	Shasta_Stor	TAF	0	>=		2200	80	73	77	73	78	77	88	87	87
Shasta Coldwater Carryover4	Shasta_Stor	TAF	0	>=		1900	85	83	84	83	85	83	90	89	89
Juvenile Entrainment Projection - Oct	OMR	CFS	0	>=		-5010	24	45	33	100	35	100	100	100	100
Juvenile Entrainment Projection - Nov	OMR	CFS	0	>=		-5010	40	38	39	100	45	100	100	100	100
Juvenile Entrainment Projection - Dec	OMR	CFS	0	>=		-5010	13	17	28	39	28	100	100	100	100
Juvenile Entrainment Projection - Jan1	OMR	CFS	1	>=		-10	8	12	77	69	50	73	69	69	73
Juvenile Entrainment Projection - Jan2	OMR	CFS	2	>=		-3510	58	67	75	100	75	100	100	100	100
Juvenile Entrainment Projection - Jan3	OMR	CFS	3	>=		-5010	100	100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Jan4	OMR	CFS	4	>=		-5010	100	100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Jan5	OMR	CFS	5	>=		-5010	100	100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Feb1	OMR	CFS	1	>=		-10	19	23	100	100	85	81	92	92	100
Juvenile Entrainment Projection - Feb2	OMR	CFS	2	>=		-3510	67	67	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Feb3	OMR	CFS	3	>=		-5010	100	100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Feb4	OMR	CFS	4	>=		-5010	100	100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Feb5	OMR	CFS	5	>=		-5010	100	100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Mar1	OMR	CFS	1	>=		-10	15	19	96	88	92	85	85	85	81
Juvenile Entrainment Projection - Mar2	OMR	CFS	2	>=		-10	8	8	75	83	50	42	58	58	75
Juvenile Entrainment Projection - Mar3	OMR	CFS	3	>=		-3510	43	50	86	100	100	100	100	100	100
Juvenile Entrainment Projection - Mar4	OMR	CFS	4	>=		-3510	78	89	94	100	94	100	100	100	100
Juvenile Entrainment Projection - Mar5	OMR	CFS	5	>=		-3510	75	92	92	100	92	100	100	100	100
Juvenile Entrainment Projection - Apr1	OMR	CFS	0	>=		-2010	100	100	67	100	66	100	100	100	100
Juvenile Entrainment Projection - May1	OMR	CFS	0	>=		-2010	100	100	72	100	74	100	100	100	100

Metrics for Spring Run

Bio Obj	Variable	Units	Year	Typical	Threshold	NAA	NAA_ELT	ALT1_ELT	ALT1A_ELT	CS5	CS6	CS7	CS8
Shasta Coldwater Pool Setup1	Shasta_Stor	TAF	0	>=	4200	49	45	48	46	50	62	62	62
Shasta Coldwater Pool Setup2	Shasta_Stor	TAF	0	>=	4000	65	60	60	60	67	74	74	74
Shasta Coldwater Pool Setup3	Shasta_Stor	TAF	0	>=	3800	76	70	73	71	72	78	78	79
Shasta Coldwater Pool Setup4	Shasta_Stor	TAF	0	>=	3000	87	85	88	87	85	88	88	88
Shasta Coldwater Carryover1	Shasta_Stor	TAF	0	>=	2600	67	59	55	57	59	70	66	67
Shasta Coldwater Carryover2	Shasta_Stor	TAF	0	>=	2500	71	63	66	65	68	78	78	79
Shasta Coldwater Carryover3	Shasta_Stor	TAF	0	>=	2400	73	70	72	70	72	84	83	84
Shasta Coldwater Carryover4	Shasta_Stor	TAF	0	>=	1900	85	83	84	83	83	90	89	89
Juvenile Entrainment Projection - Feb1	OMR	CFS	1	>=	-10	19	23	100	100	81	92	92	100
Juvenile Entrainment Projection - Feb2	OMR	CFS	2	>=	-3510	67	67	100	100	100	100	100	100
Juvenile Entrainment Projection - Feb3	OMR	CFS	3	>=	-5010	100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Feb4	OMR	CFS	4	>=	-5010	100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Feb5	OMR	CFS	5	>=	-5010	100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Mar1	OMR	CFS	1	>=	-10	15	19	96	88	85	85	85	81
Juvenile Entrainment Projection - Mar2	OMR	CFS	2	>=	-10	8	8	75	83	42	58	58	75
Juvenile Entrainment Projection - Mar3	OMR	CFS	3	>=	-3510	43	50	86	100	100	100	100	100
Juvenile Entrainment Projection - Mar4	OMR	CFS	4	>=	-3510	78	89	94	100	100	100	100	100
Juvenile Entrainment Projection - Mar5	OMR	CFS	5	>=	-3510	75	92	92	100	100	100	100	100
Juvenile Entrainment Projection - Apr1	OMR	CFS	0	>=	-2010	100	100	67	100	100	100	100	100
Juvenile Entrainment Projection - May1	OMR	CFS	0	>=	-2010	100	100	72	100	100	100	100	100
Juvenile Entrainment Projection - Jun1	OMR	CFS	0	>=	-3510	54	59	89	100	100	100	100	100

Metrics for Fall and Late Fall Run

Bio Obj	Variable	Units	Year	Type	Condition	Threshold	NAA	NAA_ELT	ALT1_ELT	ALT1A_ELT	CS5	CS6	CS7	CS8
Shasta Coldwater Pool Setup1	Shasta_Stor	TAF	0	>=	4200		49	45	48	46	50	62	62	62
Shasta Coldwater Pool Setup2	Shasta_Stor	TAF	0	>=	3800		76	70	73	71	72	78	78	79
Shasta Coldwater Pool Setup3	Shasta_Stor	TAF	0	>=	3600		80	79	79	80	78	84	83	83
Shasta Coldwater Pool Setup4	Shasta_Stor	TAF	0	>=	3000		87	85	88	87	85	88	88	88
Shasta Coldwater Carryover1	Shasta_Stor	TAF	0	>=	2600		67	59	55	57	59	70	66	67
Shasta Coldwater Carryover2	Shasta_Stor	TAF	0	>=	2400		73	70	72	70	72	84	83	84
Shasta Coldwater Carryover3	Shasta_Stor	TAF	0	>=	2200		80	73	77	73	77	88	87	87
Shasta Coldwater Carryover4	Shasta_Stor	TAF	0	>=	1900		85	83	84	83	83	90	89	89
Juvenile Entrainment Projection - Nov	OMR	CFS	0	>=	-5010		40	38	39	100	100	100	100	100
Juvenile Entrainment Projection - Dec	OMR	CFS	0	>=	-5010		13	17	28	39	100	100	100	100
Juvenile Entrainment Projection - Jan1	OMR	CFS	1	>=	-10		8	12	77	69	73	69	69	73
Juvenile Entrainment Projection - Jan2	OMR	CFS	2	>=	-3510		58	67	75	100	100	100	100	100
Juvenile Entrainment Projection - Jan3	OMR	CFS	3	>=	-5010		100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Jan4	OMR	CFS	4	>=	-5010		100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Jan5	OMR	CFS	5	>=	-5010		100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Feb1	OMR	CFS	1	>=	-10		19	23	100	100	81	92	92	100
Juvenile Entrainment Projection - Feb2	OMR	CFS	2	>=	-3510		67	67	100	100	100	100	100	100
Juvenile Entrainment Projection - Feb3	OMR	CFS	3	>=	-5010		100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Feb4	OMR	CFS	4	>=	-5010		100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Feb5	OMR	CFS	5	>=	-5010		100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Mar1	OMR	CFS	1	>=	-10		15	19	96	88	85	85	85	81
Juvenile Entrainment Projection - Mar2	OMR	CFS	2	>=	-10		8	8	75	83	42	58	58	75
Juvenile Entrainment Projection - Mar3	OMR	CFS	3	>=	-3510		43	50	86	100	100	100	100	100
Juvenile Entrainment Projection - Mar4	OMR	CFS	4	>=	-3510		78	89	94	100	100	100	100	100
Juvenile Entrainment Projection - Mar5	OMR	CFS	5	>=	-3510		75	92	92	100	100	100	100	100
Juvenile Entrainment Projection - Apr1	OMR	CFS	0	>=	-2010		100	100	67	100	100	100	100	100
Juvenile Entrainment Projection - May1	OMR	CFS	0	>=	-2010		100	100	72	100	100	100	100	100
Juvenile Entrainment Projection - Jun1	OMR	CFS	0	>=	-3510		54	59	89	100	100	100	100	100
Delta Habitat - JanMar1	Delta_Outflow	CFS	0	>=	34990		46	48	45	43	50	41	41	43

Target is 47%

Metrics for White & Green Sturgeon

Bio Obj	Variable	Units	Year Type	Condition	Threshold	NAA	NAA_ELT	ALT1_ELT	ALT1A_ELT	CS5	CS6	CS7	CS8
Shasta Coldwater Pool Setup1	Shasta_Stor	TAF	0	>=	4200	49	45	48	46	50	62	62	62
Shasta Coldwater Pool Setup2	Shasta_Stor	TAF	0	>=	3800	76	70	73	71	72	78	78	79
Shasta Coldwater Pool Setup3	Shasta_Stor	TAF	0	>=	3600	80	79	79	80	78	84	83	83
Shasta Coldwater Pool Setup4	Shasta_Stor	TAF	0	>=	3000	87	85	88	87	85	88	88	88
Shasta Coldwater Carryover1	Shasta_Stor	TAF	0	>=	2600	67	59	55	57	59	70	66	67
Shasta Coldwater Carryover2	Shasta_Stor	TAF	0	>=	2400	73	70	72	70	72	84	83	84
Shasta Coldwater Carryover3	Shasta_Stor	TAF	0	>=	2200	80	73	77	73	77	88	87	87
Shasta Coldwater Carryover4	Shasta_Stor	TAF	0	>=	1900	85	83	84	83	83	90	89	89
Juvenile Entrainment Projection - Oct	OMR	CFS	0	>=	-5010	24	45	33	100	100	100	100	100
Juvenile Entrainment Projection - Nov	OMR	CFS	0	>=	-5010	40	38	39	100	100	100	100	100
Juvenile Entrainment Projection - Dec	OMR	CFS	0	>=	-5010	13	17	28	39	100	100	100	100
Juvenile Entrainment Projection - Jan1	OMR	CFS	1	>=	-10	8	12	77	69	73	69	69	73
Juvenile Entrainment Projection - Jan2	OMR	CFS	2	>=	-3510	58	67	75	100	100	100	100	100
Juvenile Entrainment Projection - Jan3	OMR	CFS	3	>=	-5010	100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Jan4	OMR	CFS	4	>=	-5010	100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Jan5	OMR	CFS	5	>=	-5010	100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Feb1	OMR	CFS	1	>=	-10	19	23	100	100	81	92	92	100
Juvenile Entrainment Projection - Feb2	OMR	CFS	2	>=	-3510	67	67	100	100	100	100	100	100
Juvenile Entrainment Projection - Feb3	OMR	CFS	3	>=	-5010	100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Feb4	OMR	CFS	4	>=	-5010	100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Feb5	OMR	CFS	5	>=	-5010	100	100	100	100	100	100	100	100
Juvenile Entrainment Projection - Mar1	OMR	CFS	1	>=	-10	15	19	96	88	85	85	85	81
Juvenile Entrainment Projection - Mar2	OMR	CFS	2	>=	-10	8	8	75	83	42	58	58	75
Juvenile Entrainment Projection - Mar3	OMR	CFS	3	>=	-3510	43	50	86	100	100	100	100	100
Juvenile Entrainment Projection - Mar4	OMR	CFS	4	>=	-3510	78	89	94	100	100	100	100	100
Juvenile Entrainment Projection - Mar5	OMR	CFS	5	>=	-3510	75	92	92	100	100	100	100	100
Juvenile Entrainment Projection - Apr1	OMR	CFS	0	>=	-2010	100	100	67	100	100	100	100	100
Juvenile Entrainment Projection - May1	OMR	CFS	0	>=	-2010	100	100	72	100	100	100	100	100
Juvenile Entrainment Projection - Jun1	OMR	CFS	0	>=	-3510	54	59	89	100	100	100	100	100
Juvenile Entrainment Projection - Jul	OMR	CFS	0	>=	-5010	9	6	56	43	73	33	39	45
Juvenile Entrainment Projection - Aug	OMR	CFS	0	>=	-5010	13	15	78	63	82	56	55	60
Juvenile Entrainment Projection - Sep	OMR	CFS	0	>=	-5010	18	23	76	99	95	99	96	98
Delta Habitat - AprMay1	Delta_Outflow	CFS	0	>=	24990	35	33	24	24	49	29	30	26

Target is 47%

Metrics for San Joaquin Salmonids

Bio Obj	Variable	Units	Year	Condition	Threshold	NAA	NAA_ELT	ALT1_ELT	ALT1A_ELT	CS5	CS6	CS7	CS8
Juvenile Entrainment Projection - Oct1	OMR	CFS	1	>=	-3510	4	0	12	100	100	100	100	100
Juvenile Entrainment Projection - Oct2	OMR	CFS	2	>=	-3510	17	25	8	100	100	100	100	100
Juvenile Entrainment Projection - Oct3	OMR	CFS	3	>=	-5010	7	50	29	100	100	100	100	100
Juvenile Entrainment Projection - Oct4	OMR	CFS	4	>=	-5010	33	50	33	100	100	100	100	100
Juvenile Entrainment Projection - Oct5	OMR	CFS	5	>=	-5010	42	58	58	100	100	100	100	100
Juvenile Entrainment Projection - Nov1	OMR	CFS	1	>=	-3510	8	0	19	58	62	62	62	62
Juvenile Entrainment Projection - Nov2	OMR	CFS	2	>=	-3510	17	8	0	42	58	67	67	67
Juvenile Entrainment Projection - Nov3	OMR	CFS	3	>=	-5010	21	14	36	100	100	100	100	100
Juvenile Entrainment Projection - Nov4	OMR	CFS	4	>=	-5010	50	50	33	100	100	100	100	100
Juvenile Entrainment Projection - Nov5	OMR	CFS	5	>=	-5010	92	83	67	100	100	100	100	100
Juvenile Entrainment Projection - Dec1	OMR	CFS	1	>=	-3510	12	12	46	46	27	77	77	77
Juvenile Entrainment Projection - Dec2	OMR	CFS	2	>=	-3510	0	0	8	8	25	50	50	50
Juvenile Entrainment Projection - Dec3	OMR	CFS	3	>=	-5010	7	14	29	36	100	100	100	100
Juvenile Entrainment Projection - Dec4	OMR	CFS	4	>=	-5010	6	11	11	11	100	100	100	100
Juvenile Entrainment Projection - Dec5	OMR	CFS	5	>=	-5010	42	42	25	42	100	100	100	100
Juvenile Entrainment Projection - Jan1	OMR	CFS	1	>=	-10	8	12	77	69	73	69	69	73
Juvenile Entrainment Projection - Jan2	OMR	CFS	2	>=	-10	0	0	50	33	33	42	42	42
Juvenile Entrainment Projection - Jan3	OMR	CFS	3	>=	-2510	0	0	21	50	100	100	43	43
Juvenile Entrainment Projection - Jan4	OMR	CFS	4	>=	-2510	0	0	6	44	100	100	33	33
Juvenile Entrainment Projection - Jan5	OMR	CFS	5	>=	-2510	25	33	25	50	100	100	33	25
Juvenile Entrainment Projection - Feb1	OMR	CFS	1	>=	-10	19	23	100	100	81	92	92	100
Juvenile Entrainment Projection - Feb2	OMR	CFS	2	>=	-10	8	8	67	67	67	67	67	75
Juvenile Entrainment Projection - Feb3	OMR	CFS	3	>=	-2510	21	21	86	57	100	100	50	57
Juvenile Entrainment Projection - Feb4	OMR	CFS	4	>=	-2510	11	17	22	22	100	100	17	22
Juvenile Entrainment Projection - Feb5	OMR	CFS	5	>=	-2510	33	25	33	17	100	100	25	25
Juvenile Entrainment Projection - Mar1	OMR	CFS	0	>=	-2510	28	29	78	72	100	100	68	68
Juvenile Entrainment Projection - Apr1	OMR	CFS	0	>=	-2510	100	100	85	100	100	100	100	100
Juvenile Entrainment Projection - May2	OMR	CFS	0	>=	-2510	100	100	79	100	100	100	100	100
Juvenile Entrainment Projection - Jun2	OMR	CFS	0	>=	-2510	21	24	60	59	94	94	55	59

Summary of Fish Agencies' Modeling Exercise

May 31, 2012

In late April 2012, the fish agencies (DFG, FWS and NMFS) were asked by the Department of Water Resources to define a set of initial operational criteria that could meet the needs of BDCP covered fish species, based on current science and with the assumption that any benefits of habitat restoration and other conservation measures would not be realized by the time the project was operational. DWR requested that the three fish agencies work with CH2MHill (Armin Munevar) to model those criteria using CalSim. CH2MHill developed a framework for completing this exercise that was reviewed and generally agreed to by the fish agencies. This framework built on discussions that occurred at an April 12, NGO technical meeting.

The team followed the following general process:

- 1) Biologists from DFG, FWS and NMFS identified riverine and estuary flow and storage conditions for a subset of BDCP covered species or species group (winter-run Chinook, spring-run Chinook, fall-run Chinook, San Joaquin salmonids, delta smelt, longfin smelt, green and white sturgeons) that would be sufficiently protective to avoid jeopardy and make a contribution to recovery. The agencies spent time discussing this standard conceptually in order to calibrate across agencies and individual biologists. Initially, each species or species group was treated separately without attempting to balance operations with other species or other beneficial uses.
- 2) Working together across agencies, the biologists used scientific literature, data reports, previous evaluations and their professional judgment to develop criteria that they deemed to be of high to critically high importance to each species or species group. They also ranked the relative uncertainty in the science for each criterion. Uncertainty included scientific uncertainty of the physical or biological mechanism, the specific value selected and the degree to which CalSim was able to accurately predict or capture the mechanism. It was noted that some criteria may not be precisely defined or may be difficult to represent using CalSim.
- 3) The team also developed metrics for some species, which were not criteria that CalSim would operate to, but were outputs from CalSim that would be evaluated and assessed, primary to discern whether there were any unintended consequences of re-operations.
- 4) CH2MHill modeled operational criteria for each of the seven target species and species groups individually. The team then evaluated the outputs of these runs, and refined the criteria in some cases.
- 5) The team then developed several 'combined species runs' considering synergies and trade-offs among species, in an attempt to find one that met all the needs of all the species. Several initial runs highlighted trade-offs between upstream storage and outflow. CH2MHill and the biologists engaged in discussions regarding these CalSim outputs, and used their combined expertise to refine the species criteria in some cases to minimize trade-offs without sacrificing critical protections.

6) This exercise culminated in “combined species run 5” which met outflow criteria without worsening Shasta storage (cold water pool management necessary for Winter-run Chinook) criteria relative to the current RPA baseline. This was achieved by prioritizing export reductions over releases from storage to meet outflow criteria and by protecting storage at Shasta, relative to other upstream reservoirs. The agencies concluded that this was a successful run that should be evaluated further, even though not all the criteria for all the species were attained that would allow for a contribution to recovery due to constraints in the system.

7) The fish agencies prepared a color-coded visual diagram to plot the relative importance and uncertainty of the criteria for each species. This plot assisted the agencies in understanding synergies and tradeoffs relative to importance to each species.

8) CH2MHill prepared additional sensitivity analyses through various combined species runs that explored some of the incremental effects of the criteria and the identified uncertainties. These runs were prepared without input from the fish agencies and were intended to assist the Agency Principals in understanding the sensitivity of outputs relative to adjusted inputs.

Notes:

None of the runs attempted to maintain a particular water supply. None of the operational scenarios were developed in cooperation with the federal or state operating agencies, as typically occurs when developing recommendations for operations under section 7 of the ESA. These operating scenarios should therefore be construed as a rough first pass at the issues, and not a refined product that would necessarily emerge from a section 7 consultation. The individual species runs were initially completed with a 9,000 cfs new North delta diversion capacity. Sensitivity analyses included 15,000 cfs capacity. This exercise was conducted quickly and should be evaluated further. For example, Oroville reoperations should be evaluated for effects on spring-run in the Feather River.

The fish agencies engaged in this exercise at the request of DWR and in an effort to provide technical advice to the applicant on an initial range of operations that could possibly be permissible. What is ultimately deemed to be permissible by any of the regulatory agencies will depend on acceptance of a full application, including an adaptive management plan. The application will be evaluated based on legal requirements, including best available scientific and commercial information at the time of permitting. The agencies will evaluate all conservation measures in the BDCP when it is submitted. This future evaluation will include any anticipated benefit of habitat and other measures proposed as part of BDCP.

Journal 00391 000036

LESSEX

PARTNERSHIP

State/Fed/NGO Work Session #9
Tuesday, June 12th, 2012, 10:30 – 2:30 pm
Natural Resources Defense Council Office
111 Sutter St, 20th Floor
San Francisco, CA
Call-in Number: (916) 651-0948

AGENDA

- | | |
|--|----------------------|
| 1. Welcome and Agenda (<i>DiGennaro/Meral</i>) | 10:30 - 10:35 |
| 2. Revised Project Proposal - Update and Questions (<i>Cowin</i>) | 10:35 - 12:00 |
| a. Facility size | |
| b. Operations and modeling | |
| c. Decision Tree | |
| d. BDCP+ (relates to 4b below) | |
| e. Other | |
| 3. Lunch | 12:00 – 12:30 |
| 4. Workgroup Reports | 12:30 – 1:30 |
| a. Adaptive Management (<i>Rosenfield</i>) | |
| b. BDCP+ (<i>Nelson</i>) | |
| 5. Next Steps (<i>DiGennaro</i>) | 1:30 – 2:30 |
| Adjourn | 2:30 |

From: SUSAN FRY <sfry@usbr.gov>
Sent: Tuesday, November 05, 2013 7:34 AM
To: letty_belin@ios.doi.gov; Eileen Sobeck; Michael Connor; Donald Glaser; Will Stelle
Cc: ryan.wulff@noaa.gov; mknecht@usbr.gov; rmilligan@usbr.gov; skaplan@usbr.gov; kaylee.allen@sol.doi.gov; dmurillo@usbr.gov; joshua_mahan@ios.doi.gov; mmaucieri@usbr.gov; betsy_hildebrandt@fws.gov; fritz.holleman@sol.doi.gov; jrieker@usbr.gov; joan.r.langhans@noaa.gov; ewashburn@usbr.gov; dan_castleberry@fws.gov; ddubray@usbr.gov; temi.josephson@sol.doi.gov; ren_lohoefener@fws.gov; kevin.tanaka@sol.doi.gov; peg.romanik@sol.doi.gov; michael_chotkowski@fws.gov; fmorales@usbr.gov; Inavarro@usbr.gov; pfujitani@usbr.gov; john.bezdek@sol.doi.gov; mkshouse@usgs.gov; shunt@usbr.gov; carter.brown@sol.doi.gov; kfinkler@usbr.gov; hlcase@usgs.gov; parroyave@usbr.gov; dethompson@usbr.gov; deanna.harwood@noaa.gov; Maria Rea

Subject: attorney client and deliberative b5

attorney client and
deliberative b5

[Redacted]

[Redacted]

[Redacted]

Thx. Sue

From: Chrisney, Ann <achrisney@usbr.gov>
Sent: Tuesday, November 05, 2013 4:33 PM
To: Steve.Centerwall@icfi.com; Smith, Adam; Enos, Cassandra
Cc: Patricia Idlof; Mary Lee Knecht; lori_rinek; Theresa Olson; Michael.
Tucker; Ryan Wulff
Subject: USBR Back Check of Chapter 11 BDCP EIR/EIS
Attachments: USBR Ch11 Comment Response Back Check 110513.xlsx

All, here are USBR comments resulting from our back check of Chapter 11. There are 18 blue highlighted rows with our responses in red text. Please let me know if you have any questions.
Thanks, Ann

--

Ann Chrisney

Natural Resource Specialist

Bay-Delta Office

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277	5/15/13	appdx 11C	All		There needs to be a description of Appendix 11C in Chapter 11. How is the mean monthly flow data being used in the fish analysis? How are percent differences between pairs of model scenarios being used in the fish analysis? Discuss why this data important and how it's being used.	USBR	Lead	A description of Appendix 11C will be added to Chapter 11. Could not find where this was added? I assume this is not yet done? The Methods section of the chapter describes the methods used to assess flows and flow-related parameters, and defines differences between pairs of model scenarios. A similar description will be inserted at the beginning of Appendix 11C to provide context for the reader. Could not find where this was added? I assume it is not yet done?	I	D
278	5/15/13	appdx 11C	All		Acronyms (WYT, W, AN, etc.) should be defined in the Acronym list or included at beginning of Appendix 11C.	USBR	Lead	Acronyms will be defined and included at the beginning of Appendix 11C.	E	D
279	5/15/13	appdx 11C	All		What is water year type "All"? It's not an average. Please define.	USBR	Lead	"All" is All Water Year Types Combined. It will be defined with the acronyms at the beginning of Appendix 11C.	I	D
280	5/15/13	appdx 11C	All		Numbers in thousands need commas (some have commas, some don't).	USBR	Lead	Commas will be added to numbers in thousands.	E	D
281	5/15/13	appdx 11C	All		It's difficult to keep track of the primary header (e.g. Alternative 1A) and the secondary header (e.g. Upstream) because there are so many tables. It would be helpful to remove the secondary header and then repeat it in every table heading. Some examples: • Upstream: Sacramento River at Keswick; • Upstream: Sacramento River upstream of Red Bluff; • In Delta: OMR Flow (Old and Middle Rivers)	USBR	Lead	Secondary headers will be removed and repeated in the individual table headings.	E	D
2856	6/14/13	Chapter 11 Fish Summary of Effects	Sum -36	35	Under Alternative 3, over the long term, average annual delta exports are anticipated to increase by 227 TAF relative to existing conditions, and by 900 TAF relative to the No Action Alternative [comment: The exports are anticipated to increase by 930 TAF based on Fig. 5-13.]	USBR	Lead		I	D
2857	6/14/13	Chapter 11 Fish Summary of Effects	Sum -36	39-40	Under Alternative 3, long-term average annual Delta outflow is anticipated to decrease 227 TAF relative to existing conditions and by 438 TAF relative to the NAA [comment: The value of 438 TAF for the decrease in outflow relative to the NAA is not correct. It should be close to the value of the increase in exports (see 930 TAF in the comment above).].	USBR	Lead		I	D
2858	6/14/13	Chapter 11 Fish Summary of Effects	Sum -36	43	It is important to note that some outflow changes under Alternative 3 are greater relative to existing conditions because existing conditions does not includes operations to meet Fall X2, whereas NAA and Alternative 3 do include Fall X2.[comment: This sentence incorrectly states that Alternative 3 includes Fall X2. It should be modified to indicate outflow changes in Alternative 3 decrease relative to the NAA because it does not meet the Fall X2.]	USBR	Lead		I	D

3761	8/2/13	11	SUM 6	10, 28, 42	Line 10 acknowledges adverse impacts of Alt 1A based on changes in hydrology; Entrainment for salmon are recognized as increasing in dry and critical years (potentially when impacts to salmon at the facilities may have a larger demographic impact than in wetter years) line 28. Yet line 42 speculates that these impacts are “more than offset by decreases in entrainment during other periods”. Recommend citing specific analysis that would suggest support for this from a demographic perspective.	USBR	Lead	D	I	
3765	8/2/13	11	SUM 8	13 Table 11-1A-AUM2	More discussion is necessary about the ‘roll up results’ in overall document. The roll-up results in the tables do not capture the impacts identified in the text of the document. For example, it is difficult to reconcile NA/B for entrainment for salmonids when entrainment goes up in dry and critical years (conditions for which if entrainment does have a population-level impact for salmon) entrainment increases could have disproportionate impacts. There is a lack of discussion regarding reduction in flows in the mainstem influencing rearing and outmigrating for salmon, yet table summarizes as NA/LTS. This is not supported. Document cites results from a quantitative OBAN model showing impacts to redd dewatering for winter run and reduced spawning carrying capacity, yet table shows a BENEFITIAL conclusion for WR spawning.	USBR	Lead	This is only the summary section that is meant to provide an overview of results, However, the table was in error and has been corrected, and additional data have been added to the Chapter to support conclusions.	I	
3766	8/2/13	11	SUM 8	13 Table 11-1A-AUM2	Summaries need to maintain the ESA designations for salmonids rather than ‘rolling them up’. It would help show operational benefits/impacts to the South Delta for steelhead and fall-run that are currently not captured by this approach.	USBR	Lead	This is only the summary section that is meant to provide an overview of results, additional details by river and species have been added to Chapter 11 to support these general rollup determinations.	I	
3798	8/2/13	11	Sum -36	35	The exports are anticipated to increase by 930 TAF based on Fig. 5-13.	USBR	Lead		I	D
3799	8/2/13	11	Sum -36	42	The value of 438 TAF for the decrease in outflow relative to the NAA is not correct. It should be close to the value of the increase in exports (see 930 TAF in the comment above).	USBR	Lead		I	D
3800	8/2/13	11	Sum -36	43	This sentence which continues on page Sum-37, incorrectly states that Alternative 3 includes Fall X2. It should be modified to indicate outflow changes in Alternative 3 decrease relative to the NAA because it does not meet the Fall X2.	USBR	Lead		I	D

3863	8/2/13	11 Part 1	11-2	40	It seems like in the list of imp. aquatic habitats on the Yolo bypass, seasonally inundated floodplain should at least be mentioned. On p 11-4/5 the Yolo Bypass is discussed to include Liberty Isl and Cache slough, a tidal area. Perhaps the paragraph on pg 11-2 is premature, since numerous other imp habitats are described in this section but not mentioned in this paragraph that summarizes the description of habitats. Please consider restructuring	USBR	Lead	Changed to an introductory paragraph for both the Yolo and Cache Slough discussions that follow.	I	D
3865	8/2/13	11 Part 1	11-4	15-15	"operational levels of the Sac..." Whose operation? ACOE regarding flood or CVP.SWP regarding exports? It is not about operations as much as elevation levels, please clarify.	USBR	Lead		I	D
3866	8/2/13	11 Part 1	11-4	23-36	Update information	USBR	Lead	Unclear what is being requested. Has been updated. OK.	I	N
3867	8/2/13	11 Part 1	11-4	26-28	Please see DWR-USBR Implementation Plan. This description of the status of the NMFS BiOp Yolo RPAs is insufficient. Please consider requesting agencies to accurately write this section.	USBR	Lead		P	D
3868	8/2/13	11 Part 1	11-4	29	An Implementation Plan for Yolo Bypass Restoration has been submitted to NMFS. It is available at the USBR BDO website.	USBR	Lead		I	D
3869	8/2/13	11 Part 1	11-6	12	"Trinity River is a coldwater fishery" can't be what is meant. The Trinity River is a wild and scenic river containing commercial valuable coldwater fisheries. Please consider revising depending on meaning	USBR	Lead	Deleted coldwater reference	I	D
3870	8/2/13	11 Part 1	11-7	16	There is a NMFS BiOp RPA about HGMPs as the Trinity Hatchery. In the previous section, information about the NMFS BiOp RPAs regarding Yolo were included. Are all RPAs supposed to be described in the EIS/EIR with some level of status information? I'm unclear how the NMFS RPAs are supposed to be described in the document. Please identify standard and maintain throughout sections.	USBR	Lead	No response to comment yet	P	
3871	8/2/13	11 Part 1	11-7	40	What about nonnative fishes. Previous sections included a table (ideal) or narrative (harder to find, but still available) listing nonnative species. What nonnative species live in the upper Sacramento. Is it a refugia from warmwater species from Shasta L due to temperatures. Please add some information about nonnative fishes in upper Sac.	USBR	Lead	Added reference to Table 11-1	I	D
3872	8/2/13	11 Part 1	11-9	15	The American River does not enter the Yolo Bypass via the Fremont Weir. It occasionally may use the Sacramento Weir.	USBR	Lead	No reference to any of these locations on line 15. Referenced text has been removed perhaps from a previous edit. OK.	T	N
3873	8/2/13	11 Part 1	11-13	2	Some of these species are not observed in the American River including green and white sturgeon (see Critical Habitat Listing for green sturgeon) .	USBR	Lead	Deleted river lamprey and green sturgeon, although these fish are listed on the U. of California's California Fish website as occurring in the American River	T	M

3874	8/2/13	11 Part 1	11-13	24	There is a NMFS BiOp RPA about HGMPs as the Nimbus Hatchery. In the previous section, information about the NMFS BiOp RPAs regarding Yolo were included. Are all RPAs supposed to be described in the EIS/EIR with some level of status information? It is unclear how the NMFS RPAs are supposed to be described in the document. Please identify standard and maintain throughout sections.	USBR	Lead	No response to comment yet	P	
3875	8/2/13	11 Part 1	11-13	25-29	There should be a note here that the Nimbus hatchery steelhead brood stock is not Central Valley steelhead and is not covered by the ESA. Also, a significant portion of American R fall run Chinook are released in the American R.	USBR	Lead		I	D
3876	8/2/13	11 Part 1	11-16	27	Water exportation and facilities operations in the Export Service Areas result in both	USBR	Lead		T	D
3877	8/2/13	11 Part 1	11-17	13 + 26	The species list for northern and southern SFB are insufficient. There are many more species observed here than listed.	USBR	Lead		I	D
3878	8/2/13	11 Part 1	11-19	20-36	The discussion of fauna in this section should include nonnative fishes and impacts such as predation, competition, etc. Please consider a couple more sentences in this paragraph. There is already sufficient information about native sp. In this section.	USBR	Lead		T	D
3879	8/2/13	11 Part 1	11-24	26	The section on X2 does not follow in the structure of other sections describing the biological and physical attributes of communities. It starts out that way, but the last section refutes the previous sections. In particular, a nice job is done establishing how conditions around a location fits our expectations for the fish community, but then it is refuted in the last sentence. Please consider revising to be based more on observation and less on argument.	USBR	Lead	Not revised	I	D
3880	8/2/13	11 Part 1	11-31	18	Hanging sentence "See section..."	USBR	Lead		E	D
3881	8/2/13	11 Part 1	11-32	37	And FWS BiOp?: "2009 NMFS BiOp "	USBR	Lead		T	D
3882	8/2/13	11 Part 1	11-33	27	It would be nice in the description of the Tracy Fish Facility to explicitly state where the facility starts. What constitutes prescreen mortality- Old River influenced by the pump, trash boom to trash rack, or just downstream of trash rack. This would help frame a discussion on predation, which is where the discussion starts concerning the CCF and SWP fish collection facility.	USBR	Lead		T	D
3883	8/2/13	11 Part 1	11-33 11-39	36-39	Louvers are not (screens). This is incorrect.	USBR	Lead		T	D
3884	8/2/13	11 Part 1	11-36	36-38	generally were written prior to the BiOps for the continued long-term operation of the CVP and SWP (U.S. Fish and Wildlife Service 2008; National Marine Fisheries Service 2009) and do not reflect the less negative flows in Old and Middle River which intended to reduce the effects of entrainment at the south Delta export facilities.	USBR	Lead		I	D

3885	8/2/13	11 Part 1	11-36	36	What does the DRERIP salmonid and steelhead models say about entrainment and salmonids.	USBR	Lead		I	D
3886	8/2/13	11 Part 1	11-42	13-16	This action is to be implemented between September 1 and November 30 (U.S. Fish and Wildlife Service 2008a). On-going litigation affected X2 implementation in 2011. In 2011, the District Court enjoined Reclamation and DWR from implementing Fall X2 at 74 km but set the action at no more west than 79 km.	USBR	Lead		I	D
3887	8/2/13	11 Part 1	11-43	4-11 12-2	This should be clarified that these citations were analyzing proposed operations in the 2008 BA	USBR	Lead		I	D
3888	8/2/13	11 Part 1	11-43		period, the 2008 USFWS BiOp (U.S. Fish and Wildlife Service 2008a) requires an average daily OMR flow of no more negative than -2,000 cfs for a total duration of	USBR	Lead		E	M
3889	8/2/13	11 Part 1	11-44	24-25	Most recently, OMR flow conditions have been set at -2,500 cfs for April 8–14, 2012 and -3,500 cfs April 15–30, 2012 (National Marine Fisheries Service 2012a).	USBR	Lead		E	N
3891	8/2/13	11 Part 1	11-44	DCC	IT would be nice if this section on DCC was structured to deal with juveniles all at once and adults all at once instead of comingling life stage impacts	USBR	Lead		I	D
3892	8/2/13	11 Part 1	11-45	15-20	This paragraph is about adult fish sandwiched between two sections on juvenile fish. Please restructure to clarify main points.	USBR	Lead		T	D
3893	8/2/13	11 Part 1	11-48	32	This section describes a proposed action on the HORB. This section is supposed to describe the existing condition.	USBR	Lead		I	D
3894	8/2/13	11 Part 1	11-66	34	. Striped bass	USBR	Lead		E	D
3895	8/2/13	11 Part 1	11-67	34	essential for conservation of the species (U.S. Fish and Wildlife Service and National Marine	USBR	Lead		E	D
3896	8/2/13	11 Part 1	11-67	36	Section 7(a)(2) of the ESA requires	USBR	Lead		E	D
3897	8/2/13	11 Part 1	11-68	3-8	If an activity proposed by a federal agency would result in the take of a federally listed species, the consulting agency will issue a Biological Opinion and an Incidental Take Statement. The Incidental Take Statement typically requires various measures to avoid and minimize species take associated with an otherwise lawful action.	USBR	Lead		E	M
3898	8/2/13	11 Part 1	11-68	12-17	This is incorrect. The CVP OCAP, last updated in 2003, describes how the CVP operated from 1998-2003. It does not describe SWP operations. And the systems are not "integrated"- operations are coordinated. Long-Term Operation of CVP and SWP Biological Opinions In 2008 Reclamation prepared a Biological Assessment on the Continued Long-Term Operation of the CVP and SWP. The Biological Assessment described the proposed operation of the CVP and SWP from 2008 to 2025. (U.S. Bureau of Reclamation 2008a).	USBR	Lead		T	M
3899	8/2/13	11 Part 1	11-68	23-24	USFWS developed a Reasonable and Prudent Alternative (RPA),	USBR	Lead		E	M
3900	8/2/13	11 Part 1	11-68	32-34	In March, 2009, SWP and CVP contractors and others filed lawsuits in federal	USBR	Lead		E	D

3901	8/2/13	11 Part 1	11-68	36-37	which found several aspects of the BiOp flawed and directed that they be addressed on remand. An Amended Final Judgement issued May 28, 2011 remanded the BiOp	USBR	Lead		E	D
3902	8/2/13	11 Part 1	11-68 to 69	40-2	The operations of the SWP and CVP are currently subject to the RPA and terms and conditions of this BiOp until a new BiOp is issued.	USBR	Lead		E	D
3903	8/2/13	11 Part 1	11-69	14-18	CVP are currently subject to the RPA and terms and conditions of this BiOp until a new BiOp is issued	USBR	Lead		E	D
3904	8/2/13	11 Part 1	11-69	19	The actions included in the RPA to the proposed action are	USBR	Lead		E	D
3905	8/2/13	11 Part 1	11-69	32	reverse flows and reduce entrainment at the SWP and CVP facilities.	USBR	Lead		E	D
3906	8/2/13	11 Part 1	11-71	9	There should be a section on the green sturgeon recovery plan following the Salmonid recovery plan.	USBR	Lead		I	D
3907	8/2/13	11 Part 1	11-72	36	U.S. Secretary of the Interior the	USBR	Lead		E	
3908	8/2/13	11 Part 1	11-73	20-26	Not clear why need both these discussions: dedication of 800 thousand acre-feet of CVP yield annually to fish, wildlife, and habitat restoration. <u>11.1.1.1 Central Valley Project Improvement Act 3406(b)(2)</u>	USBR	Lead		I	D
3909	8/2/13	11 Part 1	11-73	34-41	The Department of the Interior's May 9, 2003, Decision on Implementation of Section 3406 (b)(2) of the CVPIA explains how 3406 (b)(2) water will be dedicated and managed. Dedication of CVPIA 3406(b)(2) water occurs when Reclamation takes a fish and wildlife habitat restoration action based on recommendations of USFWS (and in consultation with NMFS and DFG), pursuant to Section 3406 (b)(2). .	USBR	Lead		E	M
3910	8/2/13	11 Part 1	11-74	4-9	An important goal identified to meet the fish and wildlife purposes of the CVPIA is to restore natural populations of anadromous fish (e.g., Chinook salmon, steelhead, green sturgeon, white sturgeon, American shad, and striped bass) in Central Valley rivers and streams to double their recent average abundance levels. The CVPIA directs the Secretary of the Interior to develop and implement a program, known as the Anadromous Fish Restoration Program, to ensure the sustainability of anadromous fish in Central Valley rivers and streams.	USBR	Lead		E	D
3911	8/2/13	11 Part 1	11-75	6	"that could result in the incidental take of a wildlife species state-listed as threatened or endangered." Should add here discussion about how SWP currently complies with CESA by implementing BiOps through consistency determinations.	USBR	Lead	Don't see any modified revision?	I	M
3912	8/2/13	11 Part 1	11-77	20	"currently anticipated by July 1, 2012"- so what happened?	USBR	Lead		I	D
3913	8/2/13	11 Part 1	11-78	13	CALFED Program Record of Decision was issued in 2000	USBR	Lead		E	D
3914	8/2/13	11 Part 1	11-78	29	contract water supplies not diverted from the Delta during pumping curtailments (U.S. Bureau of Reclamation 2010). The EWA was implemented until 2007.	USBR	Lead		E	D

3915	8/2/13	11 Part 1	11-79	1-4	Update with more current information: "The End of Stage 1 Evaluation, to be produced by DFG, will qualitatively assess actions that were deemed technically, economically, and politically feasible to implement during Stage 1 of the ERP. This assessment will be used to assist with Stage 2 planning."	USBR	Lead		I	D
3916	8/2/13	11 Part 1	11-80	26-29	Update with more current information: "The DSC is in the process of finalizing and approving the Delta Plan. Five draft plans were developed between January and August 2011. The Fifth Staff Draft Delta Plan, released in August 2011, consists of 12 policies and 61 recommendations, as well as other background information. The Final Draft of the Delta Plan was released on November 30, 2012. "	USBR	Lead		I	D
3917	8/2/13	11 Part 1	11-82	34	regional HCPs and/or NCCPs	USBR	Lead		E	D
3918	8/2/13	11 Part 1	11-83	34	That plan recognizes its relationship to the	USBR	Lead		E	D
3919	8/2/13	11 Part 1	11-84	6-8	This should be updated with information from BiOps- especially NMFS BiOp created several new groups: "Most of the following information regarding real-time decision making and information sharing is taken from Reclamation's 2008 Long-Term CVP/SWP Operation BA (Pages 2-16 through 2-19).	USBR	Lead		I	D
3920	8/2/13	11 Part 1	11-84	26 and 34	I do not believe these groups exist anymore. There is the WOMT, which would seem to be equivalent to the IWOFF. I'm not so sure about the OFF? Verify.	USBR	Lead		I	D
3921	8/2/13	11 Part 1	11-85	34	of Reclamation's 2008 Long-term CVP/SWP Operation BA	USBR	Lead	Get rid of "OCAP" (as per comment) page Set-NAA: 11-95, line 6	E	D
3922	8/2/13	11 Part 1	11-86	7, 16, 20	None of these exist in the current working environment under these titles. There is the DOSS work team which uses the salmon decision process. There are no operations technical teams within the Delta. There are numerous other team outlined in the NMFS BO....	USBR	Lead		I	D
3923	8/2/13	11 Part 1	11-84	11.2.3.16	This section is missing technical teams from the NMFS BiOp.	USBR	Lead		I	D
3924	8/2/13	11 Part 1	11-101	Table 11-9	The periodicity for salmonid ESUs is slightly different between Jun and October than the table regarding the same reach of river on Page 11-217.	USBR	Lead		I	D
3925	8/2/13	11 Part 1	11-104	33	"improving" is subjective. It is inarguable that all of these changes that many of these changes are improvements, but they are cast as impacts "modify" "Construct"	USBR	Lead		I	D
3927	8/2/13	11 Part 1	11-107	29	I believe there is a formatting mistake here.	USBR	Lead		E	D

3928	8/2/13	11 Part 1	11-117	14-37	This discussion is very confusing. It is unclear whether CEQ NEPA regulations were used to help frame significance thresholds for CEQA, or if the document is trying to use an adverse threshold for NEPA analogous to the significance thresholds for CEQA. NEPA analysis is not based on thresholds but rather on absolute effects explained within context so that the reader can make judgments regarding the impact	USBR	Lead		I	D
3929	8/2/13	11 Part 1	11-118	28-29	This isn't consistent with definition of existing condition in Ch 3 which does include most of BiOp operational actions (just not Fall X2): " None of these future actions are included in the assumptions of the CEQA existing conditions. "	USBR	Lead		I	D
3930	8/2/13	11 Part 1	11-120	23-26	Not sure why this needs to be explained when none of the other RPA actions are : This also assumes implementation of the Fall X2 action, which requires water releases in wet and above normal years to meet salinity targets in the western Delta in September and October, plus releases in November to augment Delta outflow.	USBR	Lead		P	D
3931	8/2/13	11 Part 1	11-122	Table 11-12	Update with more current information: Tehama Colusa Canal Authority and U.S. Bureau of Reclamation Red Bluff Diversion Dam Fish Passage Project Expected completion in 2012.	USBR	Lead		I	D
3932	8/2/13	11 Part 1	11-129	26-28	Whatever entrainment is occurring would be reduced by continued efforts to screen these intakes. Further Comment: The NEPA effects section doesn't seem to track discussion directly above at all- nor does it track with the CEQA conclusion. In the NEPA effects at line 18 it says "continued efforts to screen these intakes" unclear which intakes being discussed. Section above indicates unscreened ag diversions in delta not high risk for delta smelt so unclear why continuing efforts to screen would result in not adverse effect .	USBR	Lead		I	D
3933	8/2/13	11 Part 1	11-130	9-10	the court ordered restrictions were in place from late 2007 to Dec 15, 2008. This wouldn't account for salvage changes during the first years of this period:	USBR	Lead		I	D
3934	8/2/13	11 Part 1	11-130	10	Is this meant to be SWG? If so the SWG doesn't take actions it makes recommendations.	USBR	Lead		I	D

3935	8/2/13	11 Part 1	11-130	13	Despite the uncertainty caused by the substantial variation in salvage densities, only relatively small changes in entrainment of adult longfin smelt are expected under NAA, based on the limited potential for a population-level effect of entrainment.	USBR	Lead	Deleted.	I	D
3936	8/2/13	11 Part 1	11-130	18 check globally	Is this meant to be SWG? If so the SWG doesn't take actions it makes recommendations:	USBR	Lead		I	D
3937	8/2/13	11 Part 1	11-132	5-7	reduced reverse OMR flow, and actions taken by the SMG.	USBR	Lead		E	D
3938	8/2/13	11 Part 1	11-133	2-4	the NAA period are not expected to result in an overall increase in per capita entrainment and may be somewhat reduced due to improvements over time associated with the operations of the south Delta export facilities.	USBR	Lead	Edits made based on several similar comments.	E	M
3939	8/2/13	11 Part 1	11-133	19-20	facilities is not expected to substantially change under the NAA.	USBR	Lead		E	D
3940	8/2/13	11 Part 1	11-133	39-40	expected to substantially change under the NAA..	USBR	Lead		E	D
3941	8/2/13	11 Part 1	11-134	11	volumes, associated with meeting the fall X2 action in the USFWS BiOp.	USBR	Lead		E	D
3942	8/2/13	11 Part 1	11-134 156	27 9-10	covered fish species.	USBR	Lead	Not revised	E	D
3943	8/2/13	11 Part 1	11-135	9	SWP/CVP reservoirs in the fall of wet and above normal years to increase Delta outflow,	USBR	Lead		E	D
3944	8/2/13	11 Part 1	11-135	10-11	Explain statement (below). Because it potentially reduces carryover in later years? Because the projects will be shooting for higher storage at the end of august to release for x2? "but would also likely reduce flows (and rearing habitat) at other times of the year"	USBR	Lead		I	D
3945	8/2/13	11 Part 1	11-135	29-30	How do we know at the programmatic level what benefits will be provided by habitat restoration: " benefits provided by the BDCP habitat restoration conservation measures, resulting in less rearing habitat and reduced productivity. "	USBR	Lead	BDCP restoration reference deleted	I	M
3946	8/2/13	11 Part 1	11-135	35-36	This conclusion doesn't seem to follow what is stated above: "However, compared to the overall available habitat in the Plan Area, the loss of this restored habitat is not expected to be adverse for the covered fish species."	USBR	Lead	BDCP restoration reference deleted	I	D
3947	8/2/13	11 Part 1	11-136	8-10	months, flows in Old and Middle River would be more positive towards the Delta due to operations to comply with Fall X2 in wet and above normal years, which can be implemented through reductions in reduces operations of the SWP/CVP south Delta intakes during those months. This Reduced reverse flow conditions are	USBR	Lead	Text edited in combination with other comments	I	M

3948	8/2/13	11 Part 1	11-138	4-7	This conclusion doesn't seem consistent with the previous paragraph: "Although the restoration actions would occur on a smaller scale, and likely more sporadic and inconsistently than implementation under the BDCP, similar types of effects would occur during the restoration and construction phases, as well as similar types of beneficial effects would be provided to covered fish species. Therefore, the effects would not be adverse."	USBR	Lead	Paragraph deleted	I	M
3949	8/2/13	11 Part 1	11-139	9	This conclusion doesn't seem to track either the description or the CEQA conclusion "Therefore, the overall effects would be beneficial."	USBR	Lead		I	D
3950	8/2/13	11 Part 1	11-140	21-22	entrainment and loss over time.	USBR	Lead		E	D
3951	8/2/13	11 Part 1	11-140	33-34	effects on non-covered fish species spawning habitat would be similar.	USBR	Lead	Page Set-NAA: 11-163- We are Ok with the NEPA effect but the sentence above at line 11-13 is wrong. It states "Upstream of the Delta, flows could be affected by changes in water storage volumes, associated with meeting Fall X2 conditions stipulated in the USFWS and NMFS BiOps." The last part of this sentence should be changed to read "associated with meeting Fall X2 targets included in the USFWS BiOp."	E	D
3952	8/2/13	11 Part 1	11-141	7-8	effects on rearing habitat of non-covered fish species would be similar.	USBR	Lead		E	D
3953	8/2/13	11 Part 1	11-141	38-39	Just because the measures are intended to benefit species doesn't mean there won't be impacts. This is very conclusionary. "As the purpose of the restoration measures is intended to benefit aquatic species, the effects would not be adverse."	USBR	Lead		I	D
3954	8/2/13	11 Part 1	11-142	14	benefits.	USBR	Lead		E	N
3955	8/2/13	11 Part 1	11-159	25-26	How can habitat restoration and beneficial operational effects that will occur after construction offset the impact of habitat losses for a one year species?: "Moreover, these habitat losses will be fully offset by habitat restoration and the beneficial operational effects of Alternative 1A on the Delta as a whole."	USBR	Lead		I	D

3956	8/2/13	11 Part 1	11-164	2	The SWG doesn't take actions it makes recommendations: the effects of the Wanger decision on water operations and actions taken by the SWG (U.S. Fish and Wildlife Service 2008).	USBR	Lead		I	D
3957	8/2/13	11 Part 1	11-167	9-11	Implementation of reduced negative OMR flows under the USFWS (2008) BiOp has considerably limited entrainment loss of adult delta smelt (Smelt Working Group 2010; U.S. Fish and Wildlife Service 2011). The reduced negative OMR flows aim	USBR	Lead		E	D
3958	8/2/13	11 Part 1	11-168	6-7	improve the already reduced level of adult delta smelt entrainment since implementation of the BiOp from the south Delta pumping facilities.	USBR	Lead		E	D
3959	8/2/13	11 Part 1	11-170	21-24	entrainment at the Barker Slough Pumping Plant. Therefore, the effect of Alternative 1A is anticipated to reduce entrainment loss for delta smelt. CEQA Conclusion: As described above, implementation of reduced reverse Old and Middle River flows under the USFWS (2008) BiOp has considerably limited entrainment loss of adult delta smelt at the south Delta export pumping facilities.	USBR	Lead	Edits made based on several similar comments.	I	M
3960	8/2/13	11 Part 1	11-171	17-18	based on temperature. There would be little change in suitable	USBR	Lead	Text edited in combination with other comments.	E	M
3961	8/2/13	11 Part 1	11-171	39-40	1A follows Operational Scenario A, which does not include Fall X2 requirements, while the NAA does.	USBR	Lead		I	D
3962	8/2/13	11 Part 1	11-173	31-32	Alternative 1A operations on would likely still result in a loss of suitable delta smelt rearing habitat even with BDCP restoration efforts.	USBR	Lead	text edited.	I	D
3963	8/2/13	11 Part 1	11-174	21-22	affected by changes in turbidity or water temperature conditions due to project operations.	USBR	Lead	Not revised	E	D
3964	8/2/13	11 Part 1	11-191	14,34	The facilities are fairly efficient in salvage, but pre-screen mortality is so high most fish do not make it there.	USBR	Lead	Deleted	I	D
3965	8/2/13	11 Part 1	11-229	21	Inconsistency between summary document and evaluation in Chapter 11. In summary, there was reference to OBAN output suggesting redd dewatering impacts for winter run, yet the section that would provide the most information on this doesn't mention OBAN and suggests that other models found no impacts. This discrepancy needs to be resolved.	USBR	Lead	Additional modeling data added for clarification.	I	D
3966	8/2/13	11 Part 1	11-229	37	Winter run rearing habitat being 'good' under Alt 1A for >26% than NAA needs to be substantiated. What water operation is driving this? Seems like we should be considering doing whatever that is as part of the NAA as present water operations.	USBR	Lead	Additional modeling data added for clarification.	I	D

3967	8/2/13	11 Part 1	11-256	40	<p>The entrainment results for fall-run in dry years indicates @37% increase. Dry years and below normal years indicates increased entrainment of upwards of 60%. Rational for what levels of increases or decreases results in the 'roll up' terminology is warranted. Some biologists would consider this % decrease in entrainment in wetter years to not be the same as the % increase in drier years to be equivalent due to the smaller production numbers typical in the drier water year types. Discussion on subjective 'roll' up needs to be more explicit.</p> <p>Further Comment: I do not think this has been adequately addressed. The results in entrainment for spring and fall-run show increased entrainment in dry years. Fall-run even significantly more (41%). This is not accurately reflected in Table 11-1ASUM2. The data support the same ranking for entrainment for fall as is currently in the table for spring. Recommend adding the same sentence used in the spring run section (Alt 1-C:11-52 line 12) to address the potential increased demographic impacts for fall run.</p>	USBR	Lead	Entire section revised. See text page Alt 1A-C: 11-188, line 35 to page Alt 1A-C: 11-191 line 34.	I	M
3968	8/2/13	11 Part 1	11-257	12	<p>Recommend removing this analysis summary. It is a grossly unsupported assumption to reference an 'average' production number for all years and infer 'population level effects' with this approach. Based on first principles, salmon production from tributaries likely decreases as a function of hydrologic conditions, thus if there is an % increase in number entrained in a dry year it likely has a disproportionate population-level effect. Salmon production numbers varying as a function of hydrologic condition is well supported in other systems and in the scientific literature.</p> <p>Partially resolved; recommend adding same sentence found on Alt 1a-C; 11-152 line 12 to the end of the CEQA summary for fall-run as well</p>	USBR	Lead	Entire section revised. Same pages as comment 3967 above:page Alt 1A-C: 11-188, line 35 to page Alt 1A-C: 11-191 line 34.	I	M
3969	8/2/13	11 Part 1	11-257	9-15	<p>This comment pertains to all the runs of salmon in the document, but the fall-run section was used as illustrative and this needs to be addressed for the other runs as well. The analysis of impacts to juvenile migration and rearing flows in the mainstem Sacramento River is omitted. There are significant flow reductions in the mainstem. The document/analysis dismisses that the flow reductions could convert the above normal years to 'appear' to salmon as a lower flow hydrologic condition. A discussion on impacts to survivorship or reduced channel margin habitat inundation for juvenile rearing is warranted.</p>	USBR	Lead	added to migration impact statements.	I	D
3970	8/2/13	11 Part 1	11-265	35 and 40	<p>There are different conclusions for the same impact. No change in predation and change in predation. Please clarify.</p>	USBR	Lead	One is referring to overall predation, while the other is referring to predator habitat or the number of predators.	I	N

3971	8/2/13	11 Part 1	11-268	4-5	Adaptive management is usually used for experiments or testing. Adaptive management seems to be used here for changing measures. Would these measures be mitigation or conservation measures? Would implementation of these be used to mitigation poor performance or to offer more conservation benefits?	USBR	Lead	The purpose of adaptive management is to verify that the stated objectives of the mitigation or conservation measure are being met. If they are not adjustment would be implemented.		N
3972	8/2/13	11 Part 1	11-269	29-30?	Evidence for the rationale concerning lower steelhead (species is stated, but conclusions should be specific to species) densities in the north delta than south delta is not provided. A summary of indices of steelhead densities in the north and south delta would be necessary to use this rationale.	USBR	Lead	reference to densities deleted. Have not seen revision yet.	I	D
3973	8/2/13	11 Part 1	11-269	34	See 11-268 adaptive management comment (above). It is stated that adaptive management will be used to determine if mitigation is necessary. No rationale for this conclusions concerning water export from SWP.CVP north delta intake facilities.	USBR	Lead	Adaptive management is not intended to determine if mitigation is required. The mitigation determination is based on the expectation that entrainment would be reduced, resulting in a benefit to the species.		N
3974	8/2/13	11 Part 1	11-305	29-37	There seems to be a statement of impact regarding flows, but it is disregarded due to temperature impacts. Should these impacts be analyzed independently. The reduced flows on the Feather seem very significant, and is analysed as such in the conclusion. The conclusion should match the rationale..	USBR	Lead	Text replaced with additional modeling results.	I	D
3975	8/2/13	11 Part 1	11-306	6	Alternative 4 discussion. I believe Alt 1A is being analyzed here.	USBR	Lead		T	D
3976	8/2/13	11 Part 1	11-308/9		GST mitigation is likely to fall onto Sect 7 consultation processes in the future and proposed mitigation actions are likely insufficient to avoid further jeopardy.	USBR	Lead		P	N
3977	8/2/13	11 Part 1	11-317	33	This does not increase their number. It decreases mortality, which maintains the abundance. It does not increase their number. Please further document the rationale if this measure actually impacts productivity. Add sentence to clarify that "based on this, this CM increases the next generation's numbers, not productivity of the current brood stock cohort"	USBR	Lead	The loss of potential adult spawners would impact productivity.	I	N
3978	8/2/13	11 Part 1	11-332	16	Fish passage barriers on the Yolo Bypass certainly impact white sturgeon negatively under the NAA. As proposed, it is likely there is a theoretical rationale for benefits for white sturgeon, but this states there would not be substantial benefits. Please clarify rationale? This section refers to CM2 under Impact AQUA-153 (Effects of Restored Habitat Conditions) proposing,among other things, improved fish passage which is a benefit to white sturgeon. AQUA-153 refers back to AQUA-9 which is also Effects of Restored Habitat Conditions. Are you thinking of AQUA-NAA9 Effects of Construction Facilities on Non-Covered Fish Species???	USBR	Lead	This is the construction impact discussion, not the operational discussion. See text page Alt 1A-C: 11-412, lines 13-20	I	N
3979	8/2/13	11 Part 1	11-335	12-14	A discussion of predation by salmonids on sturgeon in a section on DO seems unsupported. Please clarify conceptual model of interactors physical and biological.	USBR	Lead		I	D

4122	8/2/13	11A	11A-1	6-16	List species in order of how they are organized in the chapter. First species discussed is Delta Smelt. List species in 'intro' list in the same way as document.	USBR	Lead	Item will be updated.	E	D
5077	8/2/13	11 Part 1	11-4	7	This list of stressors is incomplete for describing stressors impacting tidal habitats (see comment 1) in Yolo Bypass. Stressors such as channelization (loss of tidal connectivity), subsidence (loss of elevations), and the influence of the NBWA pumps of hydrodynamics should be discussed. Please consider revising.	USBR	Lead	Additional stressors added as requested. Have not seen revision yet.	I	D

[Redacted]

[Redacted]

**Data Deleted in accordance
with FOIA Exemption (b)(5)
Deliberative Process**

[Redacted]

[Redacted]

**Un-redacted portion
Referred to USBR with
Final Response dated
8/31/2015**

On Wed, Nov 6, 2013 at 10:46 AM, FRY, SUSAN <sfry@usbr.gov> wrote:
Maria and Mike. Please see the email below that has the **attorney client and
deliberative b5** [Redacted] This was
certainly compromise language all the way around the table. Please let me know if you have
concerns with this language so that I can deal with them today. I committed to get a final version
completed by noon tomorrow (Thursday).

attorney client and deliberative b5
[Redacted]

Per David Murillo's email: **attorney client and deliberative b5**
attorney client and deliberative b5
[Redacted]

Thanks, Sue

Sue Fry
Bay-Delta Office
Area Manager
801 I Street
Sacramento, CA 95814

[916-414-2401](tel:916-414-2401) - office
[916-709-0755](tel:916-709-0755) - cell

----- Forwarded message -----

From: "Murillo, David" <dmurillo@usbr.gov>
To: Will Stelle - NOAA Federal <will.stelle@noaa.gov>, Ren Lohofener
<ren_lohofener@fws.gov>, Sue Fry <sfry@mp.usbr.gov>, Maria Rea <Maria.Rea@noaa.gov>,
Dan Castleberry <Dan_Castleberry@fws.gov>, Kaylee Allen <kaylee.allen@sol.doi.gov>
Cc:
Date: Tue, 5 Nov 2013 10:57:15 -0800
Subject: attorney client and deliberative b5
To all, attorney client and deliberative b5

[Redacted]

[Redacted]

[Redacted]

Thanks

*David G. Murillo
Mid Pacific Regional Director*

Office # [916-978-5000](tel:916-978-5000)