From: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
Sent: 3/1/2021 10:05:30 AM
To: Arsenijevic, Jelica [Jelica.Arsenijevic@hdrinc.com]; Alicia Forsythe [aforsythe@sitesproject.org]; Spranza, John [john.spranza@hdrinc.com]; Heydinger, Erin [erin.heydinger@hdrinc.com]
Subject: RE: Sites - Chapter 2 Distribution

Just a reminder that Reclamation has a distribution list for chapters going to federal cooperating agencies. It needs to be updated based on our current schedule but I previously sent it to Ali, John and Erin and have saved Melissa's distribution list here:
https://sitesreservoirproject.sharepoint.com/:x:/r/EnvPlanning/Administrative%20Record/Reclamation%20Cooperating%20Agencies/Sites%20DSEIS-R%20Reviewers.xlsx?d=w6fb1fd589f8c499694d22e2ee6021646&csf=1&web=1&e=o1dLHF

We should probably coordinate with Reclamation before we send chapters of the EIR/EIS to federal agencies.

From: Arsenijevic, Jelica <Jelica.Arsenijevic@hdrinc.com>
Sent: Monday, March 1, 2021 8:50 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>; Laurie Warner Herson <laurie.warner.herson@phenixenv.com>; Spranza, John <John.Spranza@hdrinc.com>; Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Subject: RE: Sites - Chapter 2 Distribution

Do we need to send to EPA?

Jelica Arsenijevic
Environmental Project Manager

Due to COVID-19, I will be working from home. Please contact me via cell # listed below. Be safe out there!

HDR
2379 Gateway Oaks Drive, Suite 200
Sacramento, CA 95833
D 916-679-8854
M 209-329-6897

Jelica.Arsenijevic@hdrinc.com

hdrinc.com/follow-us

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Sunday, February 28, 2021 7:16 PM
To: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>; Spranza, John <John.Spranza@hdrinc.com>; Arsenijevic, Jelica <Jelica.Arsenijevic@hdrinc.com>; Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Subject: Sites - Chapter 2 Distribution

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi all – I was just thinking that we should get Chapter 2 out to some of the folks we have been working with. They aren't going to know that its posted unless they go look and frankly, they aren't going to go look.

Here's the list of folks that I can think of right now. Please add more and let's get the PDF version of the document out so we can start getting input on it.

Fisheries team (CDFW, NMFS, USFWS) – John to Send
Yocha Dehe and Cachile Dehe Tribes – Laurie, can you work with Kevin and Janice?
USACE and State Board 401 contacts – Jelica for USACE; John for 401
State Board Water Rights – Andy to send to Amanda
DWR – Erin to send to team
CDFW and USFWS Terrestrial contacts – John to coordinate with Ellen Berryman and send
NGOs – I will send to the whole group

Who else??

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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Table 17A-1. Power and Pumping Cost Reporting Metrics - Summary
Sites Project Alternatives

				No Action Alternative 011221	Alternative 1A 011221	Alternative 1A 011221 minus No Action Alternative 011221	Alternative 1B 011221	Alternative 1B 011221 minus No Action Alternative 011221	Alternative 2 011221	Alternative 2 011221 minus No Action Alternative 011221	Alternative 3 020121	Alternative 3 020121 minus No Action Alternative 011221
Central Valley Project												
Power Facilities												
Capacity	Total of all Facilities at load center	(MW)	Long Term	1,685	1,686	1	1,688	3	1,686	1	1,692	7
			Dry & Critical	1,589	1,590	2	1,593	4	1,590	2	1,599	10
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	4,694	4,696	2	4,697	3	4,695	2	4,696	2
			Dry & Critical	3,419	3,417	-1	3,422	4	3,418	-1	3,427	8
Pumping Facilities												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	1,337	1,342	5	1,345	8	1,342	5	1,349	12
			Dry & Critical	1,102	1,107	4	1,113	10	1,106	4	1,120	18
Off-peak pumping targets	Percent of time off-peak target not met	(%)	Long Term	0%	0%	0%	0%	0%	0%	0%	0%	0%
			Dry & Critical	1%	0%	-1%	0%	-1%	0%	-1%	0%	-1%
Total CVP Facilities												
Net Generation	Total of all Facilities	(GWh)	Long Term	3,356	3,354	-3	3,352	-5	3,354	-3	3,346	-10
			Dry & Critical	2,316	2,311	-6	2,310	-7	2,311	-5	2,306	-10
State Water Project												
Power Facilities												
Capacity	Total of all Facilities at load center	(MW)	Long Term	982	995	13	994	12	994	12	994	11
			Dry & Critical	631	643	12	646	15	641	10	645	14
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	3,936	4,037	101	4,028	91	4,026	90	4,010	74
			Dry & Critical	2,555	2,739	184	2,738	183	2,736	181	2,714	159
Pumping Facilities												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	6,919	7,254	334	7,224	305	7,217	298	7,167	248
			Dry & Critical	4,901	5,562	661	5,557	657	5,538	637	5,447	547
Off-peak pumping targets	Percent of time off-peak target not met	(%)	Long Term	27%	27%	0%	27%	0%	27%	0%	27%	0%
			Dry & Critical	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total SWP Facilities												
Net Generation	Total of all Facilities	(GWh)	Long Term	-2,983	-3,217	-234	-3,196	-213	-3,191	-208	-3,157	-174
			Dry & Critical	-2,345	-2,823	-477	-2,819	-474	-2,802	-456	-2,733	-388
All Facilities												
Total												
Net Generation	Total of all Facilities	(GWh)	Long Term	373	137	-236	155	-218	162	-211	189	-184
			Dry & Critical	-29	-512	-483	-509	-480	-490	-461	-427	-398

Notes:

1. Results are estimated using LTGEN and SWP_Power utilizing data from the CALSIM II model
2. Long Term is the average quantity for the water years 1922-2003.
3. Dry & Critical is the average quantity for dry and critical years according to the Sacramento River 40-30-30 index
4. Net Generation for all facities is thel sum of Net Generation for CVP and SWP.

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Table 17A-2. Power and Pumping Cost Reporting Metrics - SWP Detail
Sites Project Alternatives

				No Action Alternative 011221	Alternative 1A 011221	Alternative 1A 011221 minus No Action Alternative 011221	Alternative 1B 011221	Alternative 1B 011221 minus No Action Alternative 011221	Alternative 2 011221	Alternative 2 011221 minus No Action Alternative 011221	Alternative 3 020121	Alternative 3 020121 minus No Action Alternative 011221
SWP Facilities												
Oroville Reservoir Power Facility												
Capacity	At load center	(MW)	Long Term	627	627	0	628	0	627	0	628	1
			Dry & Critical	394	387	-7	389	-5	387	-7	395	1
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	1,906	1,904	-2	1,904	-2	1,904	-2	1,906	0
			Dry & Critical	1,099	1,085	-14	1,085	-13	1,086	-12	1,095	-4
Thermalito Power Facility												
Capacity	At load center	(MW)	Long Term	27	27	0	27	0	27	0	27	0
			Dry & Critical	13	13	0	13	0	13	0	13	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	223	224	0	224	0	224	0	223	0
			Dry & Critical	126	124	-2	124	-2	125	-1	126	-1
SWP San Luis Power Facility												
Capacity	At load center	(MW)	Long Term	124	124	0	124	0	124	0	125	1
			Dry & Critical	112	109	-3	110	-2	109	-3	110	-2
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	115	115	0	115	0	115	0	115	1
			Dry & Critical	111	111	0	111	0	111	0	111	0
Alamo Power Facility												
Capacity	At load center	(MW)	Long Term	11	11	1	11	1	11	1	11	0
			Dry & Critical	6	7	1	7	1	7	1	7	1
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	88	92	4	92	4	92	3	91	3
			Dry & Critical	64	73	8	73	9	72	8	71	7
Mojave Power Facility												
Capacity	At load center	(MW)	Long Term	9	10	1	10	1	10	1	10	1
			Dry & Critical	5	6	1	6	1	6	1	6	1
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	66	71	5	71	4	71	4	70	4
			Dry & Critical	47	57	10	57	10	57	10	56	8
Devil's Canyon Power Facility												
Capacity	At load center	(MW)	Long Term	98	105	7	105	7	105	7	104	6
			Dry & Critical	54	67	13	67	14	66	12	63	10
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	797	857	60	851	54	851	54	842	45
			Dry & Critical	569	692	123	692	124	688	119	671	102
Warner Power Facility												
Capacity	At load center	(MW)	Long Term	33	35	2	35	1	35	1	34	1
			Dry & Critical	19	21	2	21	2	21	2	20	2
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	279	292	13	291	12	290	11	287	8
			Dry & Critical	204	226	22	225	21	225	21	221	17
Castaic Power Facility												
Capacity	At load center	(MW)	Long Term	53	55	2	55	2	55	2	54	2
			Dry & Critical	29	33	4	33	4	33	4	32	2
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	462	483	21	482	20	481	19	475	13
			Dry & Critical	335	372	36	370	35	372	36	364	28
SWP Banks Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	753	753	0	753	0	753	0	757	4
			Dry & Critical	461	460	-1	460	0	460	-1	464	3
SWP San Luis Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	158	157	-1	157	0	157	0	158	0
			Dry & Critical	135	135	0	135	0	135	0	135	0

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Table 17A-2. Power and Pumping Cost Reporting Metrics - SWP Detail
Sites Project Alternatives

				No Action Alternative 011221	Alternative 1A 011221	Alternative 1A 011221 minus No Action Alternative 011221	Alternative 1B 011221	Alternative 1B 011221 minus No Action Alternative 011221	Alternative 2 011221	Alternative 2 011221 minus No Action Alternative 011221	Alternative 3 020121	Alternative 3 020121 minus No Action Alternative 011221
SWP Dos Amigos Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	336	349	13	348	12	348	12	347	12
			Dry & Critical	226	252	26	252	26	251	25	249	23
Buena Vista Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	353	376	22	374	20	373	20	369	16
			Dry & Critical	255	301	46	300	45	299	43	292	37
Teerink Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	430	457	27	455	25	454	24	449	20
			Dry & Critical	310	366	56	365	54	363	53	355	45
Chrisman Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	899	949	50	944	46	943	44	935	36
			Dry & Critical	648	745	98	745	97	742	94	728	80
Edmonston Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	3,149	3,324	175	3,309	160	3,304	155	3,274	126
			Dry & Critical	2,269	2,611	343	2,609	341	2,599	331	2,549	280
Pearblossom Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	557	596	39	592	35	592	35	586	29
			Dry & Critical	400	480	80	480	80	478	77	467	66
Oso Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	142	148	6	148	6	148	6	146	4
			Dry & Critical	104	115	11	114	10	115	11	113	9
South Bay Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	113	115	2	115	2	115	2	115	2
			Dry & Critical	74	78	3	77	3	77	3	78	3
Del Valle Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	1	1	0	1	0	1	0	1	0
			Dry & Critical	1	1	0	1	0	1	0	1	0
Las Perillas Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	8	8	0	8	0	8	0	8	0
			Dry & Critical	5	5	0	5	0	5	0	5	0
Badger Hill Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	21	21	0	21	0	21	0	21	0
			Dry & Critical	13	12	0	13	0	13	0	13	0
Total SWP Facilities												
Net Generation	Total of all Facilities	(GWh)	Long Term	-2,983	-3,217	-234	-3,196	-213	-3,191	-208	-3,157	-174
			Dry & Critical	-2,345	-2,823	-477	-2,819	-474	-2,802	-456	-2,733	-388

Notes:

1. Results are estimated using SWP_Power utilizing data from the CALSIM II model
2. Long Term is the average quantity for the water years 1922-2003.
3. Dry & Critical is the average quantity for dry and critical years according to the Sacramento River 40-30-30 index

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Table 17A-3. Power and Pumping Cost Reporting Metrics - CVP Detail
Sites Project Alternatives

				No Action Alternative 011221	Alternative 1A 011221	Alternative 1A 011221 minus No Action Alternative 011221	Alternative 1B 011221	Alternative 1B 011221 minus No Action Alternative 011221	Alternative 2 011221	Alternative 2 011221 minus No Action Alternative 011221	Alternative 3 020121	Alternative 3 020121 minus No Action Alternative 011221
CVP Facilities												
Trinity Reservoir Power Facility												
Capacity	At load center	(MW)	Long Term	116	116	0	116	0	116	0	116	0
			Dry & Critical	106	106	0	106	0	106	0	106	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	404	404	0	404	0	404	0	404	0
			Dry & Critical	297	297	0	297	0	297	0	297	0
Lewiston Power Facility												
Capacity	At load center	(MW)	Long Term	0	0	0	0	0	0	0	0	0
			Dry & Critical	0	0	0	0	0	0	0	0	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	0	0	0	0	0	0	0	0	0
			Dry & Critical	0	0	0	0	0	0	0	0	0
Carr Power Facility												
Capacity	At load center	(MW)	Long Term	145	145	0	145	0	145	0	145	0
			Dry & Critical	145	145	0	145	0	145	0	145	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	269	269	0	269	0	269	0	269	0
			Dry & Critical	243	243	0	243	0	243	0	243	0
Spring Creei Power Facility												
Capacity	At load center	(MW)	Long Term	178	178	0	178	0	178	0	178	0
			Dry & Critical	178	178	0	178	0	178	0	178	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	314	314	0	314	0	314	0	314	0
			Dry & Critical	230	230	0	231	0	230	0	231	1
Shasta Power Facility												
Capacity	At load center	(MW)	Long Term	593	595	1	596	2	594	1	598	5
			Dry & Critical	557	559	2	561	4	559	2	565	8
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	2,071	2,072	1	2,074	2	2,072	1	2,074	2
			Dry & Critical	1,530	1,528	-2	1,531	2	1,528	-2	1,534	4
Keswick Power Facility												
Capacity	At load center	(MW)	Long Term	47	47	0	47	0	47	0	47	0
			Dry & Critical	37	37	0	37	0	37	0	37	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	413	413	0	413	0	413	0	412	-1
			Dry & Critical	330	329	-1	329	-1	329	-1	328	-1
Folsom Power Facility												
Capacity	At load center	(MW)	Long Term	174	174	0	174	0	174	0	175	1
			Dry & Critical	165	165	0	166	1	166	0	167	2
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	561	561	0	561	0	561	0	561	0
			Dry & Critical	289	288	-1	289	0	288	-1	291	2
Nimbus Power Facility												
Capacity	At load center	(MW)	Long Term	7	7	0	7	0	7	0	7	0
			Dry & Critical	4	4	0	4	0	4	0	4	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	63	63	0	63	0	63	0	63	0
			Dry & Critical	37	37	0	37	0	37	0	37	0
New Melones Power Facility												
Capacity	At load center	(MW)	Long Term	313	313	0	313	0	313	0	313	0
			Dry & Critical	295	295	0	295	0	295	0	295	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	468	468	0	468	0	468	0	468	0
			Dry & Critical	348	348	0	348	0	348	0	348	0
CVP San Luis Power Facility												
Capacity	At load center	(MW)	Long Term	111	111	0	111	0	111	0	111	1
			Dry & Critical	99	99	0	99	-1	99	-1	100	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	126	127	1	127	1	127	1	127	1
			Dry & Critical	107	109	2	109	2	109	2	109	2

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Table 17A-3. Power and Pumping Cost Reporting Metrics - CVP Detail
Sites Project Alternatives

				No Action Alternative 011221	Alternative 1A 011221	Alternative 1A 011221 minus No Action Alternative 011221	Alternative 1B 011221	Alternative 1B 011221 minus No Action Alternative 011221	Alternative 2 011221	Alternative 2 011221 minus No Action Alternative 011221	Alternative 3 020121	Alternative 3 020121 minus No Action Alternative 011221
O'Neill Power Facility												
Capacity	At load center	(MW)	Long Term	0	1	0	1	0	1	0	0	0
			Dry & Critical	1	1	0	1	0	1	0	1	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	4	4	0	4	0	4	0	4	0
			Dry & Critical	8	9	0	8	0	9	0	8	0
Jones Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	603	604	1	605	2	604	1	608	5
			Dry & Critical	500	501	1	503	3	501	1	507	8
CVP Banks Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	18	18	0	19	0	18	0	19	0
			Dry & Critical	24	23	-1	24	0	23	-1	24	0
Contra Costa Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	24	24	0	24	0	24	0	24	0
			Dry & Critical	23	23	0	23	0	23	0	23	0
O'Neill Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	73	73	0	73	0	72	0	73	0
			Dry & Critical	59	59	-1	59	0	58	-1	59	0
CVP San Luis Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	227	229	2	229	2	229	2	229	2
			Dry & Critical	195	198	3	198	3	198	2	198	3
San Felipe Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	40	40	0	40	0	40	0	40	0
			Dry & Critical	34	34	0	34	0	34	0	35	1
CVP Dos Amigos Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	133	133	0	134	1	133	0	135	2
			Dry & Critical	87	88	1	89	2	88	1	91	3
Folsom Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	16	16	0	15	0	16	0	15	0
			Dry & Critical	19	19	0	18	0	19	0	18	-1
Corning Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	5	5	0	5	0	5	0	5	0
			Dry & Critical	3	3	0	3	0	3	0	3	0
Red Bluff Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	3	5	2	5	2	5	2	5	2
			Dry & Critical	2	3	1	3	1	3	1	2	1
DMC Intertie Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	2	2	0	2	0	2	0	2	0
			Dry & Critical	1	1	0	1	0	1	0	1	0
San Luis Other Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	95	95	0	95	1	95	0	96	1
			Dry & Critical	58	59	1	60	1	59	1	61	2
DMC Other Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	1	1	0	1	0	1	0	1	0
			Dry & Critical	1	1	0	1	0	1	0	1	0
Tehama Other Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	1	1	0	1	0	1	0	1	0
			Dry & Critical	1	1	0	1	0	1	0	1	0
Misc Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	97	97	0	97	0	97	0	97	0
			Dry & Critical	97	97	0	97	0	97	0	97	0
Total CVP Facilities												
Net Generation	Total of all Facilities	(GWh)	Long Term	3,356	3,354	-3	3,352	-5	3,354	-3	3,346	-10
			Dry & Critical	2,316	2,311	-6	2,310	-7	2,311	-5	2,306	-10

Notes:
1. Results are estimated using LTGEN utilizing data from the CALSIM II model
2. Long Term is the average quantity for the water years 1922-2003.
3. Dry & Critical is the average quantity for dry and critical years according to the Sacramento River 40-30-30 index

Draft_0006783

From: Leaf, Rob/SAC [Rob.Leaf@jacobs.com]
Sent: 3/4/2021 8:18:27 AM
To: Heydinger, Erin [erin.heydinger@hdrinc.com]
CC: steve.micko@jacobs.com; Alicia Forsythe [aforsythe@sitesproject.org]; Thayer, Reed/SAC [Reed.Thayer@jacobs.com]; Whittington, Chad/SAC [Chad.Whittington@jacobs.com]
Subject: RE: Sites - 10 year water revenue analysis
Attachments: Sites Project - Last Ten Years Total Release Extrapolation rev05 draft.pdf

Erin,

See the attached for a draft of the Last Ten Years analysis. First page documents analysis.

Total release includes all participants, PWAs, State and Federal.
Applied it to alt 1B and 3 (the two alternatives with the highest release rates)
Could add 1A and 2 if desired.

Two potential improvements:

- Integrating with the Daily Model for detailed analysis of diversions to fill (based on observed data from 2008-2018; could be extended to 2020)
- Provide a break out of releases by participant type

Rob

From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Thursday, February 25, 2021 4:45 PM
To: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>
Cc: Micko, Steve/SAC <Steve.Micko@jacobs.com>
Subject: [EXTERNAL] FW: Sites - 10 year water revenue analysis

Hi Rob,

See below for some clarifying questions on the 10-year water revenue analysis and answers from JP. Do you think a week is enough time to pull this together? I really don't want this to take more than a couple of hours, please let me know if it becomes more burdensome than that.

Thanks,
Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: JP Robinette <JRobinette@BrwnCald.com>
Sent: Wednesday, February 24, 2021 4:01 PM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>; Brian Grubbs <grubbs@montaguederose.com>
Cc: Cheyanne Harris <CHarris@BrwnCald.com>; Doug Montague <montague@montaguederose.com>; rai@montaguederose.com
Subject: RE: Sites - 10 year water revenue analysis

Hi Erin,

Thanks for following up on this. See my notes below. I would like to hear from Brian as well to confirm my thinking.

Thanks,

JP Robinette, PE*
Brown and Caldwell
JRobinette@brwncald.com
T 916.853.5312 | **C** 801.819.4306
*Professional Registration in Specific States

From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Wednesday, February 24, 2021 1:20 PM
To: Brian Grubbs <grubbs@montaguederose.com>; JP Robinette <JRobinette@BrwnCald.com>
Cc: Cheyanne Harris <CHarris@BrwnCald.com>; Doug Montague <montague@montaguederose.com>; rai@montaguederose.com
Subject: RE: Sites - 10 year water revenue analysis

Hi all,

I wanted to follow up on this. I had a chance to chat with CH and they agreed they haven't done this sort of analysis before. However, Rob Leaf said he would take this on and will do some review of possible timeframes that could be used. He had a few questions:

- When you say "Sites output" what information are you looking for? Reservoir diversions, releases, deliveries? The answer may depend on whether you are including O&M costs. We would like to know the diversions into Sites and the releases from Sites in each of the ten years so we can apply the costs to fill and the revenue from the water from the participant perspective.
- Are you focusing this analysis on our "public water agencies" or non-State/non-Federal? I assume yes. Public water agencies, yes.
- Do you need information by the participant or could something more broad work (e.g. south of Delta, north of Delta, State, Federal)? The model does not code to the level of participant, so that would need to be analyzed by the team separately. Something more broad could work, as long as it corresponds to a type of user, such as NOD agricultural, SOD urban, SOD agricultural or acceptable surrogates. Whatever granularity you have readily available based on that input would be good to understand so we don't make extra work! Curious, do we plan to do individual participant modeling in support of the conversion to storage? If so, when?
- Do you want to assume this is in the "middle" of operations? Meaning the reservoir is likely somewhere between empty and full when the analysis begins. That makes good sense, yes.
- When do you need this? I don't think this will be a huge effort, especially if fairly generally information could work, but it will take them a bit of time due to other efforts that are ongoing. A couple of weeks would be good. We are not in a massive hurry, would one week fit your schedule?

Thank you!
Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: Brian Grubbs <grubbs@montaguederose.com>
Sent: Friday, February 19, 2021 9:09 AM
To: JP Robinette <JRobinette@BrwnCald.com>; Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Cc: Cheyanne Harris <CHarris@brwncald.com>; Doug Montague <montague@montaguederose.com>; rai@montaguederose.com
Subject: RE: Sites - 10 year water revenue analysis

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I don't remember previously matching up prior years with the last 10 for any of MDA's analysis.

From: JP Robinette <JRobinette@BrwnCald.com>
Sent: Friday, February 19, 2021 8:37 AM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Cc: Cheyanne Harris <CHarris@BrwnCald.com>; Doug Montague <montague@montaguederose.com>; Brian Grubbs <grubbs@montaguederose.com>; rai@montaguederose.com
Subject: RE: Sites - 10 year water revenue analysis

Not that I know if. Cheyanne, do you remember anything like this? Brian?

JP Robinette, PE*
Brown and Caldwell
JRobinette@brwncald.com
T 916.853.5312 | **C** 801.819.4306
*Professional Registration in Specific States

From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Friday, February 19, 2021 8:36 AM
To: JP Robinette <JRobinette@BrwnCald.com>
Cc: Cheyanne Harris <CHarris@BrwnCald.com>; Doug Montague <montague@montaguederose.com>; Brian Grubbs <grubbs@montaguederose.com>; rai@montaguederose.com
Subject: RE: Sites - 10 year water revenue analysis

I'm trying to remember – did we do something like this last year? If you already know the years we should use I can get it to you today. If we need to figure out what years to use I will need to check with the CH team.

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: JP Robinette <JRobinette@BrwnCald.com>
Sent: Friday, February 19, 2021 8:34 AM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Cc: Cheyanne Harris <CHarris@BrwnCald.com>; Doug Montague <montague@montaguederose.com>; Brian Grubbs <grubbs@montaguederose.com>; rai@montaguederose.com
Subject: RE: Sites - 10 year water revenue analysis

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I think that would be great. When could we have this?

Thanks,

JP Robinette, PE*
Brown and Caldwell
JRobinette@brwncald.com
T 916.853.5312 | **C** 801.819.4306

*Professional Registration in Specific States

From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Friday, February 19, 2021 8:33 AM
To: JP Robinette <JRobinette@BrwnCald.com>
Cc: Cheyanne Harris <CHarris@BrwnCald.com>; Doug Montague <montague@montaguederose.com>; Brian Grubbs <grubbs@montaguederose.com>; rai@montaguederose.com
Subject: RE: Sites - 10 year water revenue analysis

We have 10 years of data for the CalSim period, but not the past 10 years. Brian's idea is possible - we can take a representative period between 1922 to 2003 if that could work.

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: JP Robinette <JRobinette@BrwnCald.com>
Sent: Friday, February 19, 2021 8:26 AM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Cc: Cheyanne Harris <CHarris@BrwnCald.com>; Doug Montague <montague@montaguederose.com>; Brian Grubbs <grubbs@montaguederose.com>; rai@montaguederose.com
Subject: RE: Sites - 10 year water revenue analysis

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Erin,

Is this readily attainable? Not looking to take up valuable modeling time…

Thanks,

JP Robinette, PE*
Brown and Caldwell
JRobinette@brwncald.com
T 916.853.5312 | **C** 801.819.4306
*Professional Registration in Specific States

From: Brian Grubbs <grubbs@montaguederose.com>
Sent: Friday, February 19, 2021 8:25 AM
To: JP Robinette <JRobinette@BrwnCald.com>
Cc: Cheyanne Harris <CHarris@BrwnCald.com>; Doug Montague <montague@montaguederose.com>; rai@montaguederose.com; Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Subject: Sites - 10 year water revenue analysis

JP,
To do this analysis of estimating the water revenue potential for the last 10 years, we need an estimate of what the Sites output would have been based on the last 10 years actual hydrology. If running this analysis through the NODOS model is problematic, maybe some indication of how the last 10 year were compared to an analyzed historical year in the NODOS model. The NODOS model has estimated Sites output for 1921-2003, so if we could pick 10 distinct years out of that 80 years that resembled the last 10, I think that would work for this level of analysis.

Brian

Brian Grubbs | Managing Director
Montague DeRose and Associates
916-712-1747

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This spreadsheet estimates Sites fills and releases for water years 2004 - 2020 using correlations and annual mass balance calculations.

Estimated annual fills and releases are provided for Alternative 1B and Alternative 3 in the "Summary Tables" tab.
Results from CalSim II model runs for the 1922-2003 period were used as the basis for extrapolating values for 2004-2020.

Sites Fill and Release Functions

The functions described below were established in an attempt to replicate Sites fills and releases simulated by CalSim in WY 1922-2003.
The corresponding logic was extended through WY 2004 - 2020 to determine Sites fills and releases in lieu of CalSim information.
Sites fills are estimated based on full natural flow of the Sacramento River at Bend Bridge. Sites releases are estimated based on the historic Water Year Index.
Figures in the "Alt 1B 011221" tab and "Alt 3 020121" tab compare Sites fills and releases simulated by CalSim and estimated by the functions described below.
Sites fill and release estimates for WY 2004 - 2020 do not include any operational assumptions beyond physcial storage capacity constraints.

Sites Fill Function

Sites fills are a function of full natural flow of the Sacramento River at Bend Bridge (SBB FNF; CDEC) and storage capacity.

Alt 1B and Alt 3 Assumptions:

Sites fills are equal to 9% of the November through March volume of SBB FNF above 1,150 TAF.

When SBB FNF (Nov-Mar) is less than 1,150 TAF for a given year, Sites fills is zero.

Sites fills are also constrained by available storage capacity based on annual mass balance calculations.

Sites Release Function

Sites releases are a function of the historic Sacramento Valley Water Year Index (WSI HIST) and available storage for each year.

Alt 1B Assumptions:

For WSI HIST < 7.25:

Release = 180 TAF per WSI unit below 8.5

For 7.25 < WSI HIST < 9.75:

Release = 60 TAF per WSI unit below 11.0

For WSI HIST > 9.75:

Release = 75 TAF

Release may not exceed storage availability based on annual mass balance calculations
(previous month's storage plus the current month's fill minus dead pool storage)

Alt 3 Assumptions:

For WSI HIST < 7.4:

Release = 180 TAF per WSI unit below 9.0

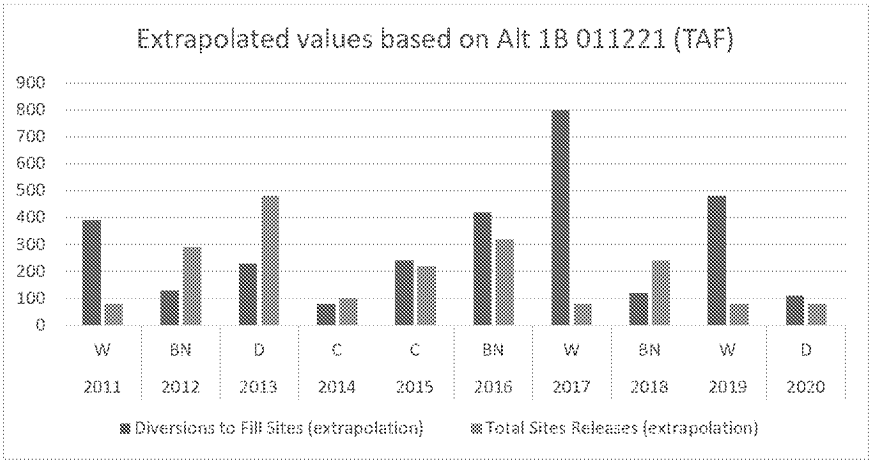
For 7.4 < WSI HIST < 10.063:

Release = 80 TAF per WSI unit below 11.0

For WSI HIST > 10.063:

Release = 75 TAF

Release may not exceed storage availability based on annual mass balance calculations

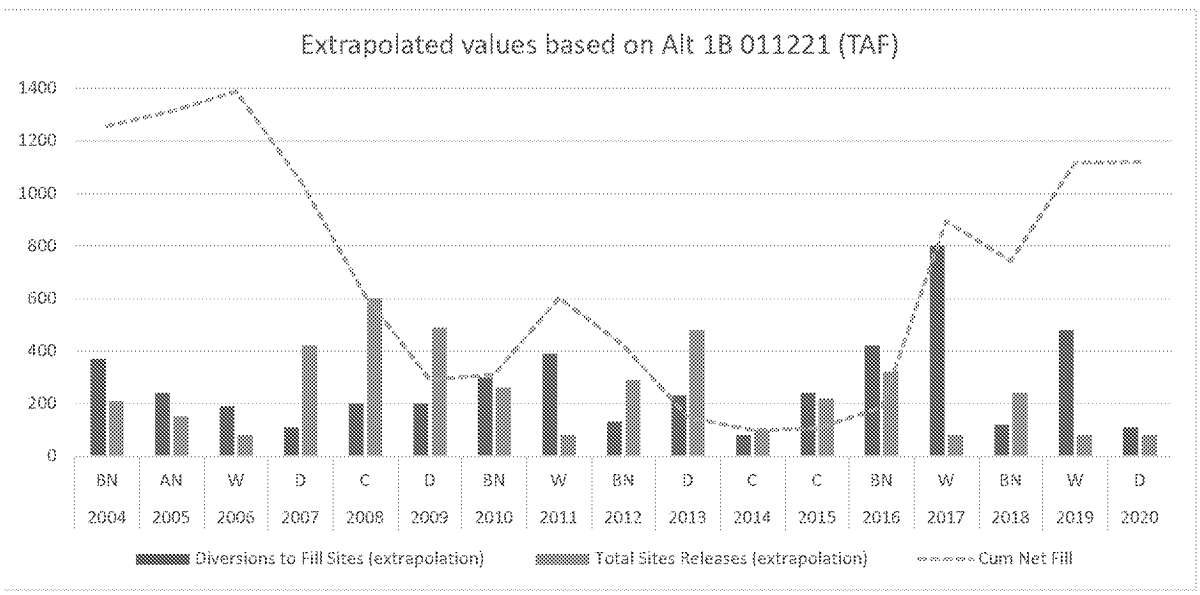


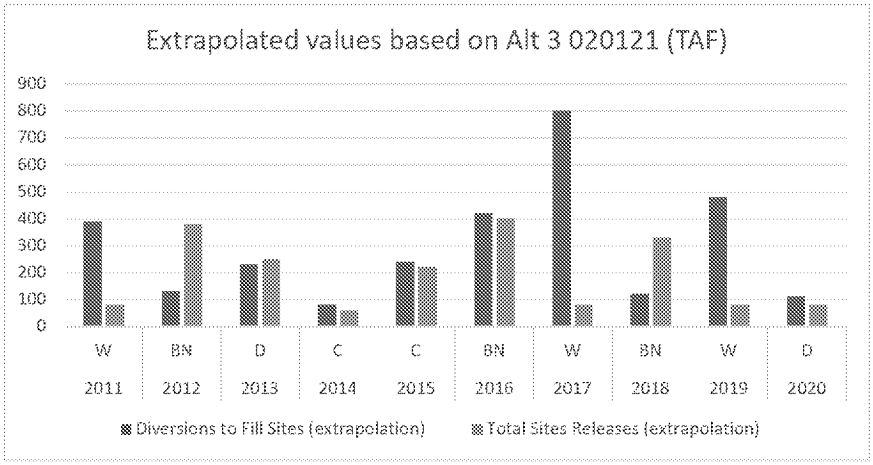
Extrapolated values based on Alt 1B 011221 (TAF)
2004 - 2020

Water Year	Year Type	Diversions to Fill Sites (extrapolation)	Total Sites Releases (extrapolation)
2004	BN	370	210
2005	AN	240	150
2006	W	190	80
2007	D	110	420
2008	C	200	600
2009	D	200	490
2010	BN	300	260
2011	W	390	80
2012	BN	130	290
2013	D	230	480
2014	C	80	100
2015	C	240	220
2016	BN	420	320
2017	W	800	80
2018	BN	120	240
2019	W	480	80
2020	D	110	80
Average		271	246

Extrapolated values based on Alt 1B 011221 (TAF)
Last Ten Years 2011 - 2020

Water Year	Year Type	Diversions to Fill Sites (extrapolation)	Total Sites Releases (extrapolation)
2011	W	390	80
2012	BN	130	290
2013	D	230	480
2014	C	80	100
2015	C	240	220
2016	BN	420	320
2017	W	800	80
2018	BN	120	240
2019	W	480	80
2020	D	110	80
Average		300	197



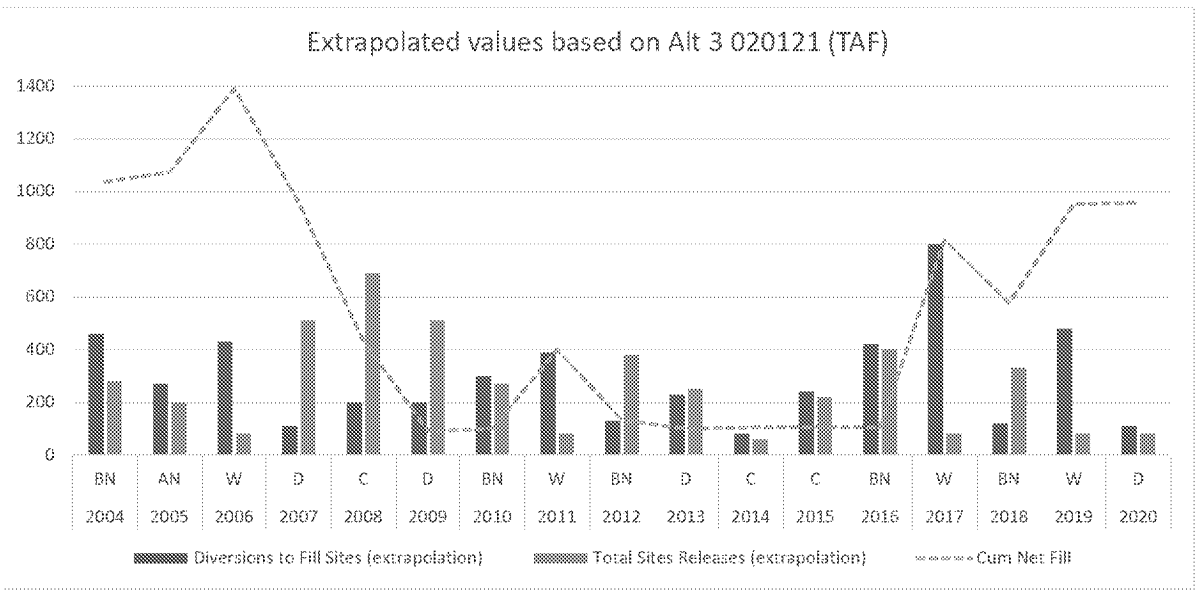


Extrapolated values based on Alt 3 020121 (TAF)
2004 - 2020

Water Year	Year Type	Diversions to Fill Sites (extrapolation)	Total Sites Releases (extrapolation)
2004	BN	460	280
2005	AN	270	200
2006	W	430	80
2007	D	110	510
2008	C	200	690
2009	D	200	510
2010	BN	300	270
2011	W	390	80
2012	BN	130	380
2013	D	230	250
2014	C	80	60
2015	C	240	220
2016	BN	420	400
2017	W	800	80
2018	BN	120	330
2019	W	480	80
2020	D	110	80
Average		292	265

Extrapolated values based on Alt 3 020121 (TAF)
Last Ten Years 2011 - 2020

Water Year	Year Type	Diversions to Fill Sites (extrapolation)	Total Sites Releases (extrapolation)
2011	W	390	80
2012	BN	130	380
2013	D	230	250
2014	C	80	60
2015	C	240	220
2016	BN	420	400
2017	W	800	80
2018	BN	120	330
2019	W	480	80
2020	D	110	80
Average		300	196



From: Jerry Brown [jbrown@sitesproject.org]
Sent: 3/4/2021 8:29:25 AM
To: Alicia Forsythe [aforsythe@sitesproject.org]; Heydinger, Erin [erin.heydinger@hdrinc.com]
CC: Marcia Kivett [MKivett@sitesproject.org]
Subject: Re: RWA Presentation
Attachments: Sites_Overview PPT RWA.pptx

Ali/Erin - Please place the 3 additional slides referenced below in the attached presentation and send back to me today ASAP.

Marcia – please fix the formatting for slides 13-17. When I dragged them over from Erin's ppt in the Feb joint meeting called "confirm operation obj" for some reason they didn't transfer correctly. The format is messed up but the content is correct.

From: Alicia Forsythe <aforsythe@sitesproject.org>
Date: Tuesday, March 2, 2021 at 1:40 PM
To: "Heydinger, Erin" <erin.heydinger@hdrinc.com>, Jerry Brown <jbrown@sitesproject.org>
Subject: RE: RWA Presentation

Jerry – Not sure if you've had a chance to chat with Erin on your one-on-one about the RWA Presentation. We did not use a presentation in our discussion with the technical team. We just talked from the trend report.

We were thinking that the following graphics would be helpful for your presentation. Let us know if you'd like Erin to pull some from the trend report.

Folsom end of month storage – average, January thru December
American River Flow (cfs) at H Street – average, January thru December
Sacramento River Flow (cfs) at Freeport – average, January thru December

I think all of these graphics show virtually no change or little changes to the American River system as a result of Sites. It's also important to note that for this modeling, Reclamation did not want to explore the possibility of maximizing benefits to the American River. So there are no real benefits shown either. We have conveyed to the technical team (1) we leave the opportunity for benefits open in the Project Description of the EIR/EIS; and (2) we have lots of time to look at ways to benefit the American River before we get into operations – essentially, the door is not closed on benefits, but we need to get this thing permitted and into construction before we have time to explore benefits in detail.

Also, we when talked with the American River technical group, they wanted to know what flow standards we used for the American River. The modeling includes the American River Flow Management Standard (FMS), per 2017 Water Forum Agreement. This is the same assumption that was used in the ROC on LTO BiOp modeling.

Let us know what if any graphics you'd like.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Tuesday, March 2, 2021 1:16 PM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Subject: RE: RWA Presentation

Yes, I think you're correct and that we are using the updated standards. I did a little bit of searching and I think the full name is "American River Modified Flow Management Standard." See the attached email thread.

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Tuesday, March 2, 2021 9:39 AM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Subject: RE: RWA Presentation

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Thanks Erin. Now that you say that, I think you're right. We just used the trend report and talked through some of the components.

Jerry has a meeting with the RWA this Thursday that he's getting ready for. I mentioned to him to be ready with a little bit of results to demonstrate that Sites wouldn't impact the American River resources. Here's what I recall discussing with the group that seemed to resonate with them:

Folsom end of month storage
American River at H Street
Sacramento River at Freeport

And I remember a question specifically about whether we used the new flow standards or the old ones. I think we used the new ones – and this was important to the group. Do you know what these are called/the correct title of these flow standards?

Is this your recollection also?

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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Sent: Tuesday, March 2, 2021 9:30 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Subject: RE: RWA Presentation

I don't think we had a slide deck... I think CH just presented a few graphs from the trend reporting spreadsheet on American River and Sacramento River flows. I can pull those graphs if that's what Jerry needs.

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Tuesday, March 2, 2021 9:27 AM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Subject: FW: RWA Presentation

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Do you remember where we put the slide deck from our American River meeting? I looked on SharePoint but didn't see it off hand.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Jerry Brown <jbrown@sitesproject.org>
Sent: Tuesday, March 2, 2021 7:11 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Subject: RWA Presentation

Can you send me the slide deck you used to discuss sites with PCWA/Roseville in the last couple of months?

From: Marcia Kivett [MKivett@sitesproject.org]
Sent: 3/4/2021 8:49:36 AM
To: Jerry Brown [jbrown@sitesproject.org]; Alicia Forsythe [aforsythe@sitesproject.org]; Heydinger, Erin [erin.heydinger@hdrinc.com]
Subject: RE: RWA Presentation
Attachments: Sites_Overview PPT RWA.pptx

I did screen shots of Erin's Feb. presentation. See attached. Ali/Erin, maybe you can work off of this version, if you have not already started.

From: Jerry Brown <jbrown@sitesproject.org>
Sent: Thursday, March 4, 2021 8:29 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>; Heydinger, Erin <erin.heydinger@hdrinc.com>
Cc: Marcia Kivett <MKivett@sitesproject.org>
Subject: Re: RWA Presentation

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To: "Heydinger, Erin" <erin.heydinger@hdrinc.com>, Jerry Brown <jbrown@sitesproject.org>
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Also, we when talked with the American River technical group, they wanted to know what flow standards we used for the American River. The modeling includes the American River Flow Management Standard (FMS),

per 2017 Water Forum Agreement. This is the same assumption that was used in the ROC on LTO BiOp modeling.

Let us know what if any graphics you'd like.

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Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Tuesday, March 2, 2021 9:27 AM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Subject: FW: RWA Presentation

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Do you remember where we put the slide deck from our American River meeting? I looked on SharePoint but didn't see it off hand.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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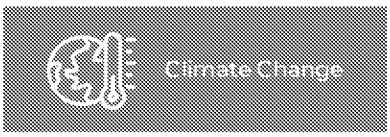
From: Jerry Brown <jbrown@sitesproject.org>
Sent: Tuesday, March 2, 2021 7:11 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Subject: RWA Presentation

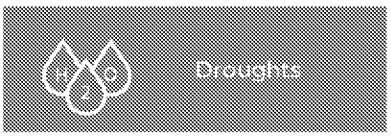
Can you send me the slide deck you used to discuss sites with PCWA/Roseville in the last couple of months?


Sites Reservoir
Sites

Modern Solution to an Mounting Challenges

California's current water system is not designed to meet the challenges we are facing today.

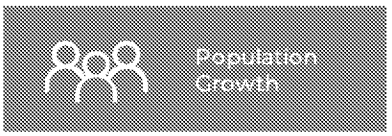








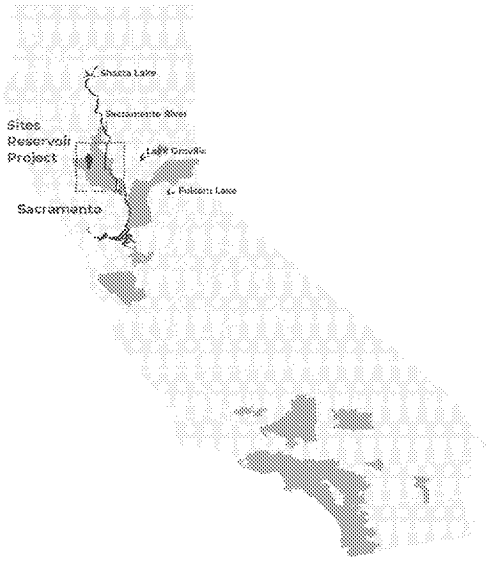




Sites

Our Strength is in Our Broad Statewide Participation

Diverse statewide representation of public agencies advancing Sites Reservoir



Participants include counties, cities, water and irrigation districts

Urban and Rural

Sacramento Valley

San Joaquin Valley

Bay Area

Southern California

Sites

Our Strength is in Our Broad Statewide Participation

Sacramento Valley

Carter Mutual Water Company
City of American Canyon
Colusa County
Colusa County Water Agency
Cortina Water District
Davis Water District
Dunnigan Water District
Glenn County
Glenn-Colusa Irrigation District
LaGrande Water District
Placer County Water Agency
Reclamation District 108
Rosedale-Rio Bravo Water Storage District
City of Roseville
Sacramento County Water Agency
City of Sacramento
Tehama-Colusa Canal Authority
Westside Water District
Western Canal Water District

Bay Area

Santa Clara Valley Water District
Zone 7 Water Agency

San Joaquin Valley

Wheeler Ridge-Maricopa Water Storage District
Rosedale Rio Bravo Water Storage District

Southern California

Antelope Valley - East Kern Water Agency
Coachella Valley Water District
Desert Water Agency
Irvine Ranch Water District
Metropolitan Water District
San Bernardino Valley Municipal Water District
San Gorgonio Pass Water Agency
Santa Clarita Valley Water Agency

Sites

Rightsized to Meet Our Current and Future Water Supply Needs

Sites Reservoir has been designed and optimized to meet our water supply needs for today and in the future

The Sites Project Authority conducted a **rigorous Value Planning effort** to review the project's proposed operations and facilities **to develop a project that is "right sized" for our investors and participants** while still providing water supply reliability and enhancing the environment

Rightsizing the reservoir was **responsive to input** from **state and federal agencies, NGOs, elected officials, landowners and local communities**

The **feedback we received** through a robust outreach effort was **critical** to developing a reservoir that is the **right size for both people and the environment**



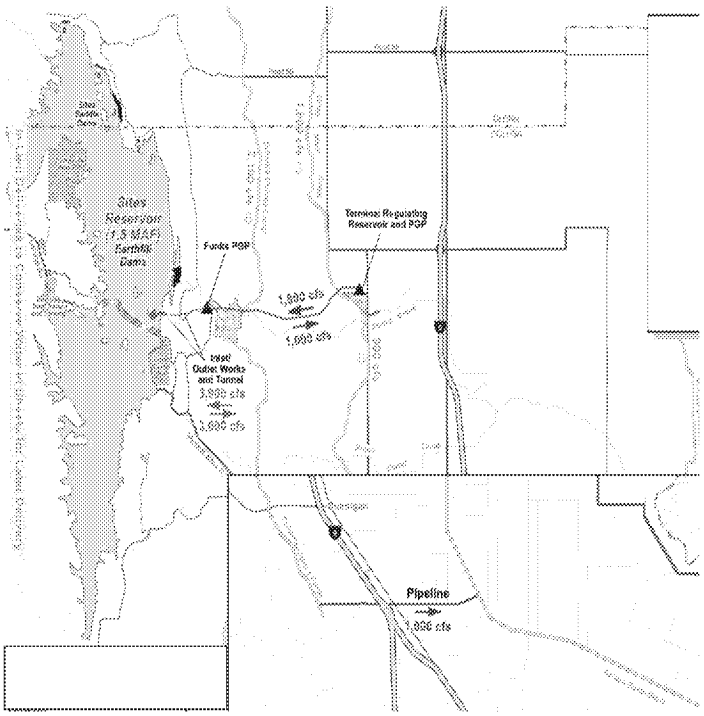
Sites

Rightsized to Meet Our Current and Future Water Supply Needs

1.5 million acre-feet

Utilizes the existing **Glenn-Colusa Irrigation District** and **Tehama-Colusa Canal Authority** canals to convey water to Sites Reservoir from the Sacramento River

Delivers water back to the Sacramento River through the **Tehama-Colusa Canal** and through the **Colusa Basin Drain** for participant deliveries and for the environment



Rightsized to Meet Our Current and Future Water Supply Needs

Member	Reservoir Participation(AFY)
Public Water Agencies	
North of Delta	52,142
South of Delta	140,750
Subtotal Public Water Agencies	192,892
State of CA	~ 40,000
Total Requirement	~230,000

Participant Demand

Participant water subscriptions allocated in the **current participation agreement**

Allocation of State of California water subscription is based on the **Proposition 1 water investment**

- Water for Delta Smelt
- Water for Refuges

Release Capacity from Sites

The "rightsized" project can deliver water to meet the demands of our participants and California's investment of water for the environment

Long term average ~230,000 AFY

Year Type	1,000 cfs Release Capacity (AFY) to the Colusa Basin Drain
Wet	90 - 120
Above Normal	260 - 290
Below Normal	245 - 275
Dry	355 - 385
Critically Dry	210 - 240

Sites

Rightsized to Meet Our Current and Future Water Supply Needs

Reservoir Size (MAF)	1.5
Project Cost (2019$, billions)	$2.4 - $2.7
Contingency Cost (2019$, billions)	$0.6
Total Project Cost (2019$, billions)	$3.0 - $3.3
Annualized AFY release	240,000
Range of Annual Costs During Repayment Without WIFIA Loans (2020$, $/AF)	$650 - $710
Range of Annual Costs During Repayment With WIFIA Loans (2020$, $/AF)	$600 - $660

The rightsized project is **roughly $2 Billion less** then the 2017 preferred alternative

Cost savings primarily from the **removal** of the **Delevan Diversion** facility on the Sacramento River and the **Delevan Pipeline**

Lowered the Annual Cost during repayment ($/AF)

Significant savings to participants with finance through a **WIFIA** government backed loan

Sites

Provides Statewide Benefits for Generations to Come

Sites Reservoir provides regional flood protection benefits

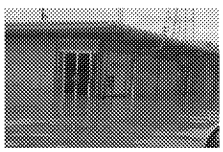
Provides significant **regional flood protection benefits** for the Sacramento Valley

Will capture and store **flood flows** that would normally impact the community of **Maxwell** - protecting homes, business and farms

Will help to **limit "down stream" flooding issues** by capturing storm flows that sometimes overwhelm the regions flood control facilities







Sites

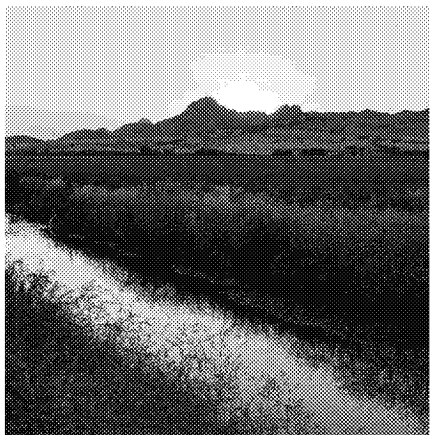
Provides Statewide Benefits for Generations to Come

Sites Reservoir will benefit the local and regional economy

Create hundreds of construction-related jobs during each year of the construction period, and **long-term jobs related to operations**

Creates **new recreation opportunities** in the Sacramento Valley which adds to the **region's economy**

Adding **resiliency** to the water supply will **strengthen the statewide economy** and **business** that rely on a reliable source of water for their operations – particularly agriculture



Sites

We are On-Track to Deliver This Vital Project for the People of California

Key Milestones Through 2021

Meet **eligibility requirements under Prop 1 (WSIP)** in order to access the remainder of the $816 Million in funding

Recirculate Draft EIR for public comment, proactively engage stakeholders, develop responses to comments to support environmental feasibility determination

Complete Feasibility Report

Secure environmental permit certainty and **draft permit applications**

Update and **refine cost estimate** and **affordability analysis**

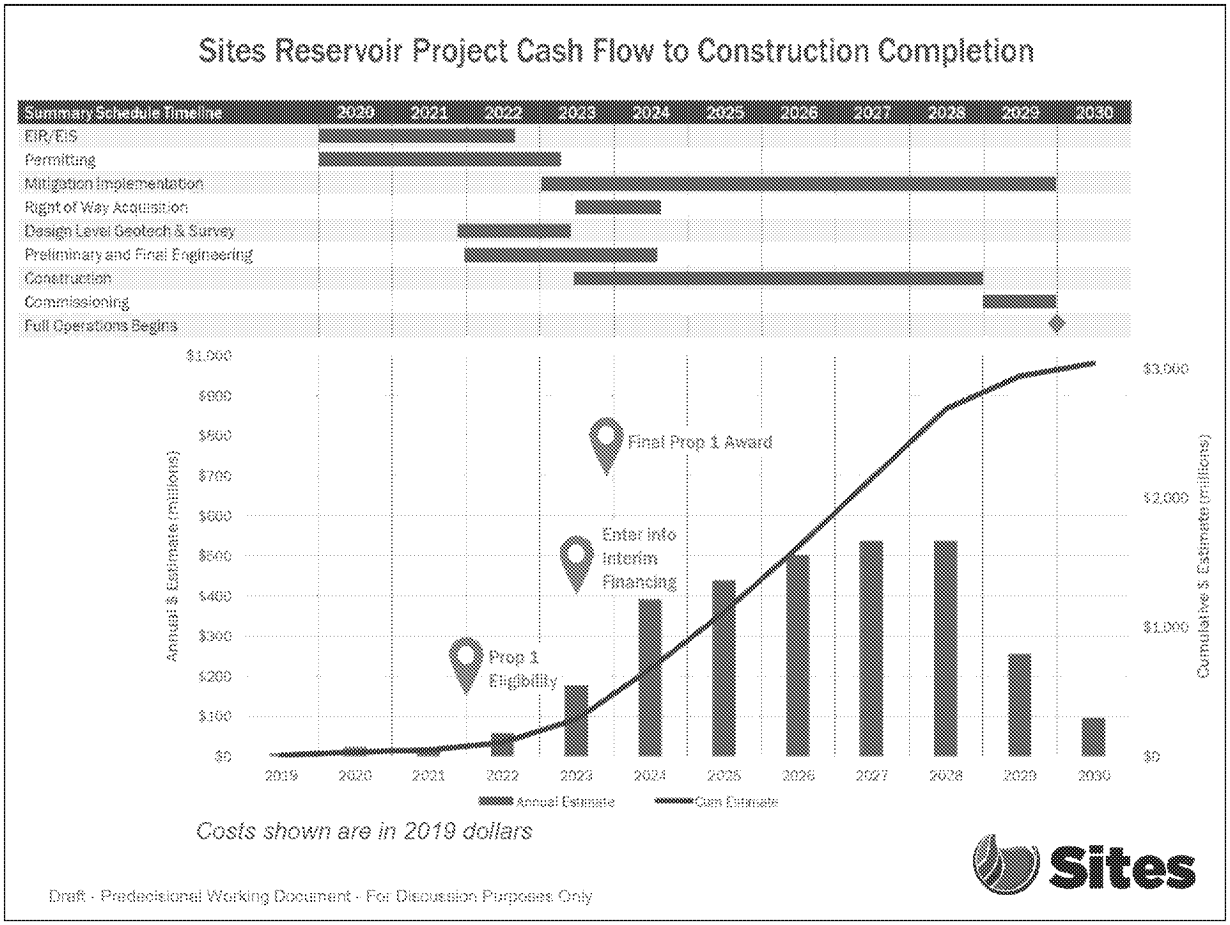
Develop Plan of Finance

Improve definition of **SWP/CVP** exchange, including **Operations Plan**

Enhance landowner, stakeholder & NGO engagement

Develop Operating Agreement Term Sheets with: DWR, USBR, TCCA, GCID, CBD Authority

Sites



Ali to speak to the schedule piece at top. Important to discuss that the graphic is in 2019 dollars.

Significant ramp-up is needed from 2022 to 2024 to complete the project by early 2030 and begin operations. Amendment two, our current work plan, culminates in Prop 1 eligibility milestone. It is assumed that interim finance begins immediately following acquisition of a water right and that the Prop 1 final award lags slightly based on the state's process.

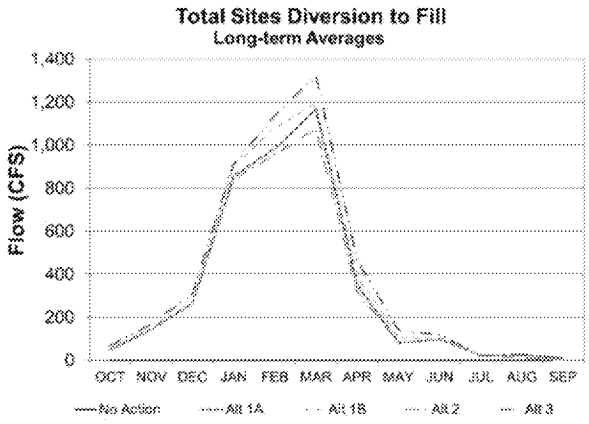
Draft - Predecisional Working Document - For Discussion Purposes Only

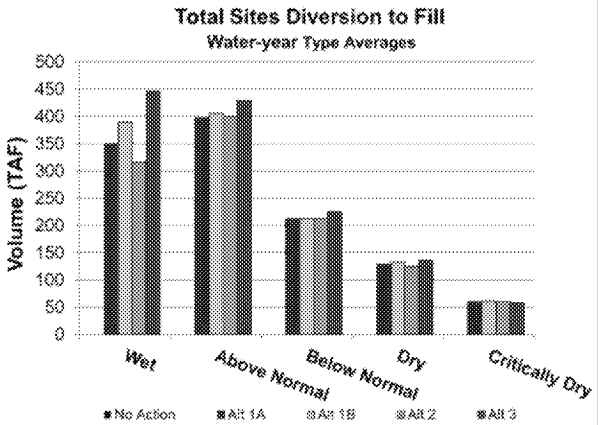
Background: Alternatives

Facilities / Operations	Alternative 1A	Alternative 1B	Alternative 2	Alternative 3
Reservoir Size	1.5 MAF	Same as Alt 1A	1.3 MAF	1.5 MAF
Conveyance Release / Dunnigan Release	1,000 cfs to Colusa Basin Drain	Same as Alt 1A	1,000 cfs to Sacramento River. Partial release to CBD.	Same as Alt 1A
Reclamation Involvement	• Operational exchanges only • No funding	• Funding Partner up to 7% Cost-Share • Also includes operational exchanges	• Operational exchanges only • No funding	Same as Alt 1B, but up to 25% investment
DWR Involvement	Operational Exchanges with Oroville and use of SWP facilities South-of-Delta	Same as Alt 1A	Same as Alt 1A	Same as Alt 1A

erin

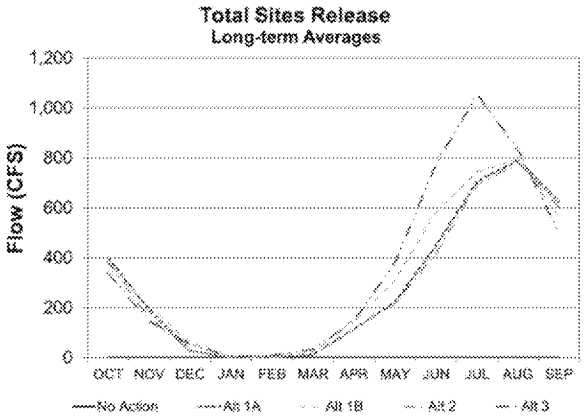
Results: Diversions

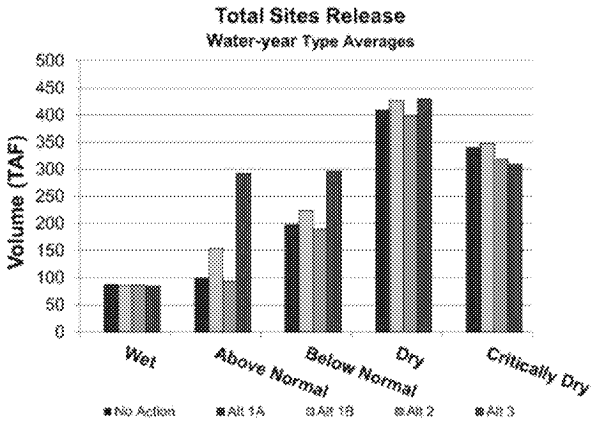




Total Sites Diversion to Fill	Alt 1A	Alt 1B	Alt 2	Alt 3
Long-term Average (TAF)	240	255	229	279
Dry and Critical Average (TAF)	101	104	99	105

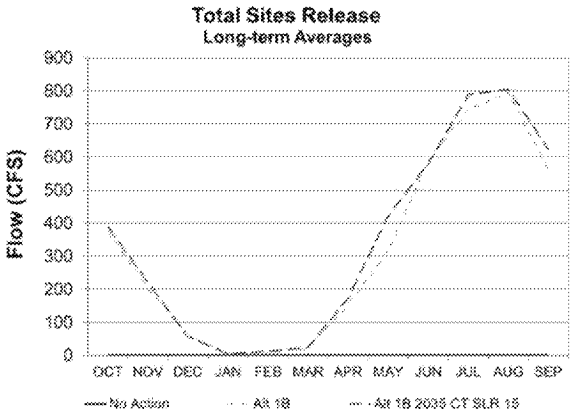
Results: Releases

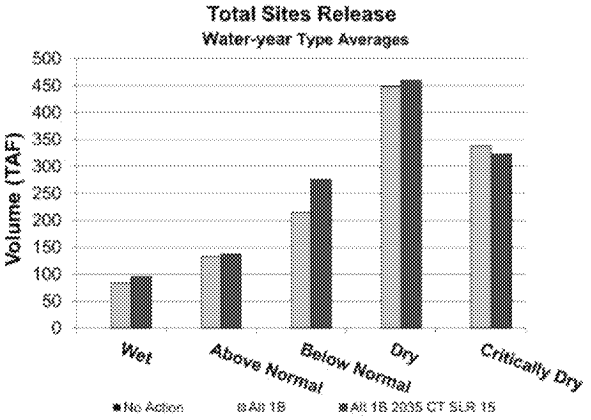




Total Sites Release	Alt 1A	Alt 1B	Alt 2	Alt 3
Long-term Average (TAF)	217	234	209	260
Dry and Critical Average (TAF)	402	404	374	383

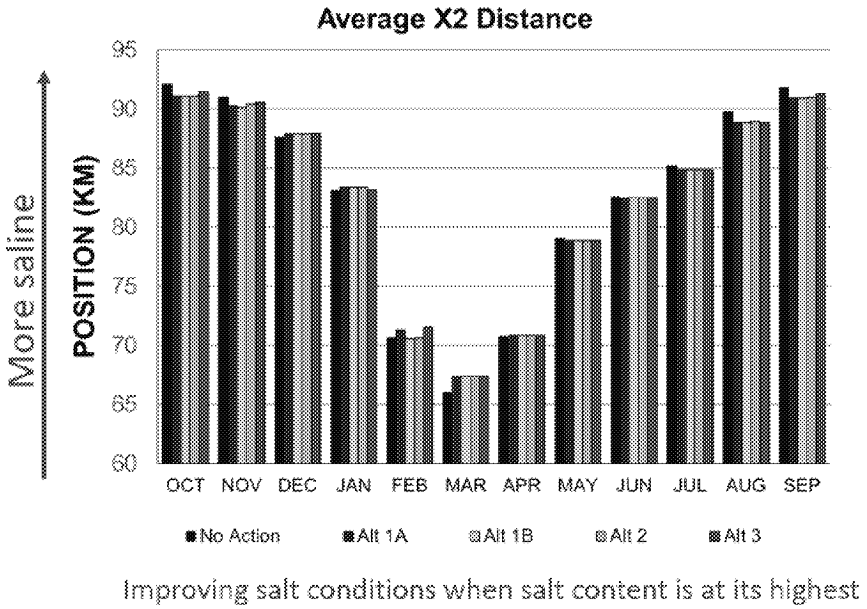
Results: Releases Under Climate Change





Total Sites Release	Alt 1B	Alt 1B 2035CT SLR15
Long-term Average (TAF)	234	250
Dry and Critical Average (TAF)	404	405

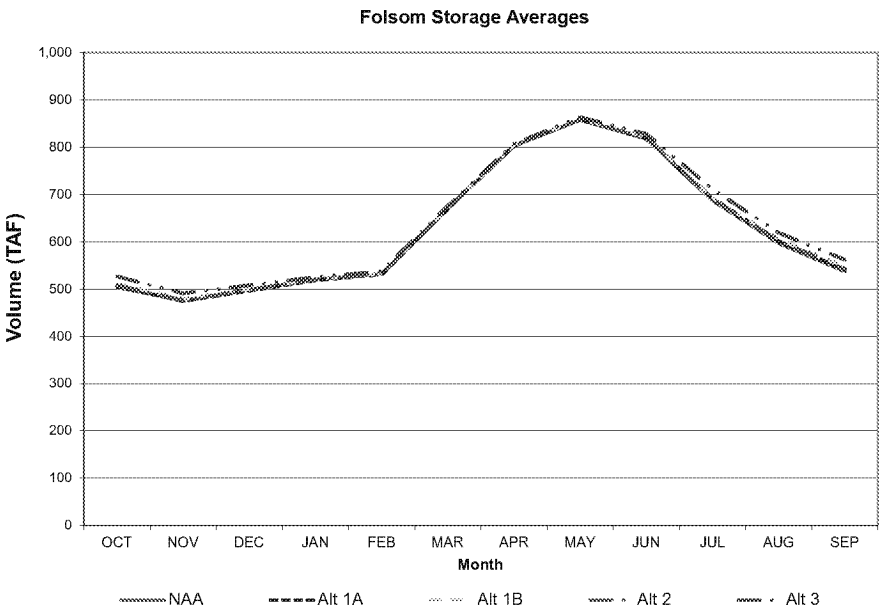
Results - Delta Water Quality X2



Improving salt conditions when salt content is at its highest

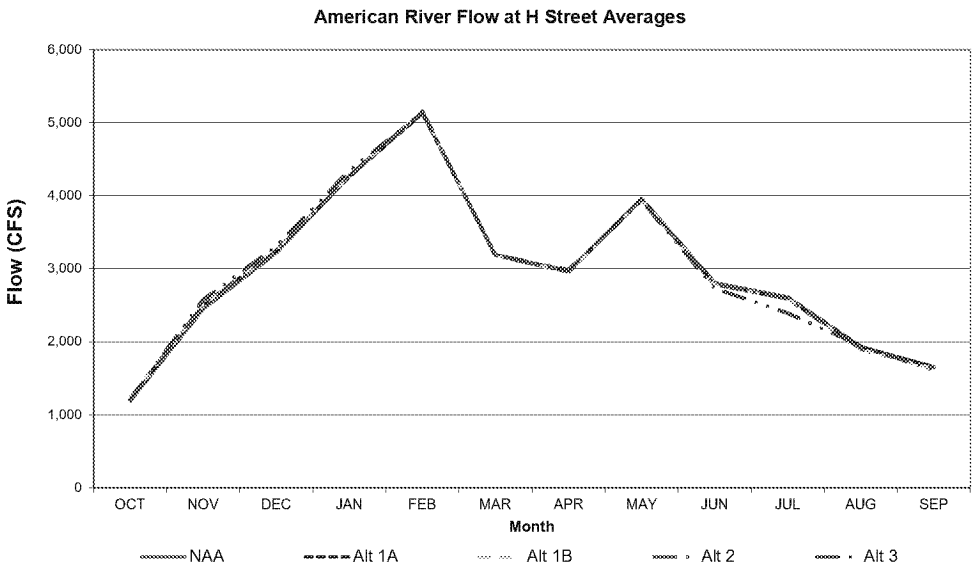
X2 = 2 parts per thousand distance from golden gate bridge
Example: X2 targets for USFWS Delta Smelt BiOp is 74 km or less in the fall following a wet year and 81 km or less following above normal years

Results: Folsom Storage



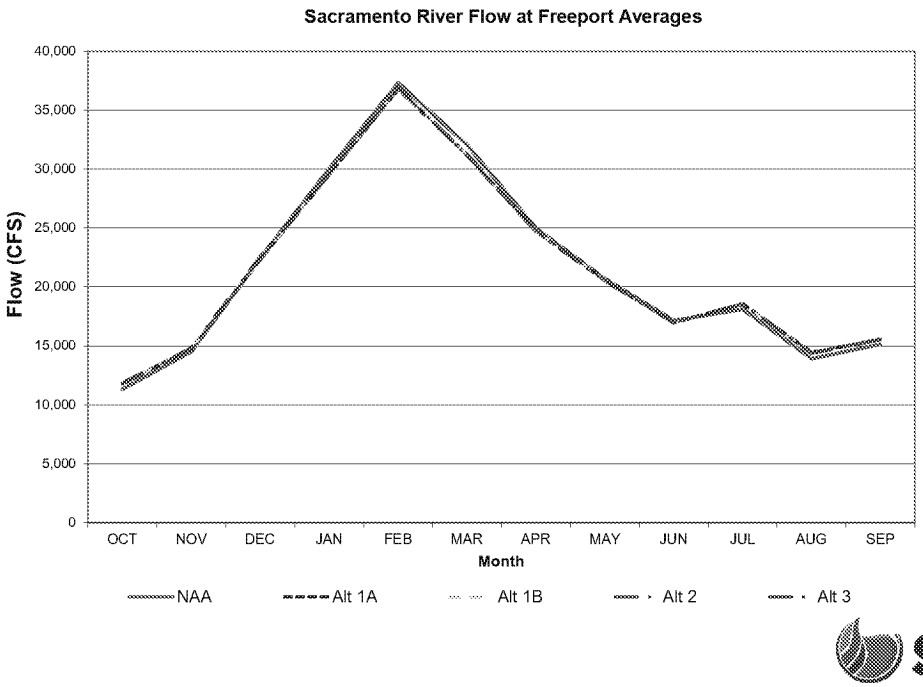
Sites

Results: American River Flow at H Street



Sites

Results: Sacramento River Flow at Freeport



Sites


Questions
Sites

From: Spranza, John [John.Spranza@hdrinc.com]
Sent: 3/4/2021 3:11:18 PM
To: Alicia Forsythe [aforsythe@sitesproject.org]
Subject: FW: Water Quality Comments - Sites Town Hall

Flag: Follow up

Would it be appropriate to have Bruce on the NGO water quality small group discussion?

John Spranza

D 916.679.8858 M 818.640.2487

From: Spranza, John
Sent: Wednesday, February 3, 2021 9:32 AM
To: Spranza, John <John.Spranza@hdrinc.com>
Subject: FW: Water Quality Comments - Sites Town Hall

John Spranza

D 916.679.8858 M 818.640.2487

From: Bruce Houdesheldt <bruceh@norcalwater.org>
Sent: Tuesday, February 2, 2021 4:08 PM
To: Jerry Brown <jbrown@sitesproject.org>
Subject: Water Quality Comments - Sites Town Hall

There has not been a chlorpyrifos exceedance in Walker Creek or Freshwater Creek in over a decade. And that one was related to spray drift. Here is the State Water Resource Control Board's Water Quality Report Cards for Walker Creek Chlorpyrifos and C. dubia toxicity released in October 2018 and Chlorpyrifos and Diazinon within Sacramento River Tributaries (November 2017) that include Butte Slough and the Sacramento Slough (at the bottom of the Colusa Basin Drain).

Bruce Houdesheldt
Director Water Quality
Northern California Water Association
455 Capitol Mall, Suite 703
Sacramento, California 95814
(916) 442-8333 (office)
(916) 952-1287 (mobile)

From: Jerry Brown <jbrown@sitesproject.org>
Sent: Tuesday, February 2, 2021 3:48 PM
To: Bruce Houdesheldt <bruceh@norcalwater.org>
Subject: Re: 10am tomorrow....SGMA Consultant Coordination - Sacramento River Basin

Thanks Bruce. And below is the chat from the town hall that I referenced describing the water quality comments received. Don't hesitate to reach out if you think of anything else.

Jerry

Approximately (with counting the phone numbers as independent individuals)

- 154 attendees in the beginning
- 137 at 11:20
- 19 participants
- 18 Agent/Consultants

from james Brobeck (Aqualliance) to everyone: 10:30 AM

EIR Needs:

- Obtain additional metals data from source waters targeting high flows from which diversions would occur
- Provide information on the water quality impacts from other chemical contaminants that adversely affect water quality in the Sacramento River (including chlorpyrifos, diazinon, chlordane, DDT, mercury, PCBs, and dieldrin) and contaminants in sewer outfalls (such as pharmaceuticals) and other discharges (such as industrial discharges)
- Evaluate the contributions of metals from local tributaries (i.e., Funks Creek and Stone Corral Creek) to the proposed reservoir
- Provide information on the contribution from leaching of metals from the inundation area of the proposed reservoir

EIR needs

- Evaluate effects of metals to beneficial uses within the proposed reservoir
  - o fisheries,
  - o wildlife (including state and federal species listed as threatened or endangered),
  - o recreation

- Evaluate effects of metals to beneficial uses due to releases from the reservoir, agricultural supply water,
  - o effects of metals on crops including incorporation of metals by crops (e.g., arsenic uptake in rice),
  - o effects of metals on plants grown for support of wildlife (such as in wildlife refuges),
  - o drinking water supplies, fisheries, wildlife (including state and federal species listed as threatened or endangered),

- Evaluate combined toxicity of multiple metals
- Evaluate contributions of metals in reservoir releases related to the SWRCB antidegradation policy
- Evaluate impacts from mercury bioaccumulation in aquatic life (especially fish) in the proposed reservoir, and effects to wildlife that feed on fish from the reservoir and recreational opportunities (i.e., sport fishing)
- Evaluate physical conditions expected in the reservoir, including thermal stratification and hypolimnetic anoxia, and effects on reservoir and downstream aquatic resources

Saline water has been observed to seep from underground salt springs in the vicinity of the Salt Lake fault along the slopes above the valley and along the valley floor within the proposed inundation area of Sites Reservoir. The water from the underground springs accumulates along the trough of the valley and forms Salt Lake" (USGS, 1915).

Extremely high concentrations of metals are present in the small streams in the reservoir footprint, which occur due to the nature of the soils in the area of the proposed reservoir. Sites Reservoir would inundate these soils resulting in leaching of metals and further incremental loading of metals to the proposed reservoir. There is no discussion in the EIR about the potential impacts of metals leaching from the soils that would be inundated by the proposed reservoir.

Please do not avoid the questions on salts and heavy metals presented by Jerry Boles and others.

Investers on this webinar need to be made aware of the metal/salt loading in the source water and the inundation footprint soils.

Jerry Boles, retired Chief of the Water Quality and Biology Section of the Northern District of the Department of Water Resources in Red Bluff, submitted comments on the proposed Sites Reservoir Draft Environmental Impact Report.

Boles explains that during his tenure with DWR he collected data that showed elevated levels of aluminum, arsenic, cadmium, iron, chromium, copper, lead, manganese, mercury, nickel, selenium, and zinc in the Sacramento River with the highest levels coming from tributary flows.
from james Brobeck to everyone: 11:16 AM
The poor quality of the source water will certainly be further degraded if the water is impounded in the proposed off-stream reservoir. Boles explains, ""Extremely high concentrations of metals are present in the small streams in the reservoir footprint, which occur due to the nature of the soils in the area of the proposed reservoir. Sites Reservoir would inundate these soils resulting in leaching of metals and further incremental loading of metals to the proposed reservoir."

from Ali Forsythe to everyone: 11:22 AM
Jim Brobeck - Thank you for all this great information. We are working to address all of these considerations, really based off of Jerry Boles' comments on the 2017 EIR/EIS as part of the Revised Draft EIR/Supplemental Draft EIS. I also expect water quality to be a small group topic. Please feel free to contact me at aforsythe@sitesproject.org if you'd like to part of the upcoming water quality small group discussions.
from james Brobeck to everyone: 11:24 AM
The "right size" does not change the metal/salt comments by Boles and others. I would be happy to forward the Boles comments to interested parties including investers. jimb@aqualliance.net

from Dennis and Joe to everyone: 10:51 AM
What is the status of the discussions with the Regulatory Agencies for use of the water allocated for environmental purposes.

Will there be alternatives in the EIS/EIR that reflect a range of diversion criteria/thresholds from the Sacramento River through the two canals? Ron Stork

from debra lucero to everyone: 11:01 AM
Has this project taken into consideratioon Jerry Boles (former DWR employee) comments about high concentrations of metals - both in the river and possibly at the storage site. I sent this question in via email after reading his lengthy comments to the current EIIR.
from debra lucero to everyone: 11:02 AM
Who will oversee the water quality of this project?

from Eric Christen to everyone: 11:49 AM
Thank you for staffs response to my union PLA question. So just to be clear, when you put in your presenations that you have as a goal "divirsity" anbd "inclusion
from Kim Witten to everyone: 11:49 AM
Can you put your email here so I can contact you. Thanks
from Sarah Rossetto to everyone: 11:50 AM
jbrown@sitesproject.org
to Kim Witten (privately): 11:50 AM
jbrown@sitesproject.org or call him at 925-260-7417
from Eric Christen to everyone: 11:50 AM
that you really do not.
from Eric Christen to everyone: 11:50 AM
Non-union workers and apprentices ar enot welcome on your projects.

from Marguerite Patil - CCWD to everyone: 11:59 AM
Thanks Sites Team! Great Town Hall.
from Anjanette Shadley to everyone: 12:00 PM

Very imformative, thank you! Great job! #BuildSites

From: Bruce Houdesheldt <bruceh@norcalwater.org>
Date: Tuesday, February 2, 2021 at 3:35 PM
To: Jerry Brown <jbrown@sitesproject.org>
Subject: FW: 10am tomorrow....SGMA Consultant Coordination - Sacramento River Basin

Bruce Houdesheldt
Director Water Quality
Northern California Water Association
455 Capitol Mall, Suite 703
Sacramento, California 95814
(916) 442-8333 (office)
(916) 952-1287 (mobile)

From: Lisa Porta <lporta@elmontgomery.com>
Sent: Monday, February 1, 2021 4:32 PM
To: David Guy <dguy@norcalwater.org>; Bruce Houdesheldt <bruceh@norcalwater.org>
Subject: RE: 10am tomorrow....SGMA Consultant Coordination - Sacramento River Basin

David, Bruce,

Have you seen this new groundwater quality report from DWR-NRO?

This is not new data; they used data from wells they monitored between 2015 to 2019 and did a bit of an analysis by Subbasin.
Useful information to add to GSPs. I also asked them if they intend to continue monitoring these wells; and they said they are reviewing their monitoring plan.

Talk to you tomorrow.
Lisa

Lisa Porta, P.E.
MONTGOMERY & ASSOCIATES
(916) 701-0398 (mobile)
lporta@elmontgomery.com
www.elmontgomery.com

From: David Guy <dguy@norcalwater.org>
Sent: Monday, February 1, 2021 4:16 PM
To: 'Byron Clark (byron@davidsengineering.com)' <byron@davidsengineering.com>; 'Eddy Teasdale (eteasdale@lsce.com)' <eteasdale@lsce.com>; 'Jim Blanke (jblanke@woodardcurran.com)' <jblanke@woodardcurran.com>; 'Joe Turner (JTurner@geosyntec.com)' <JTurner@geosyntec.com>; 'Lee Bergfeld (bergfeld@mbkengineers.com)' <bergfeld@mbkengineers.com>; Lisa Porta <lporta@elmontgomery.com>; 'Richard Shatz (rshatz@geiconsultants.com)' <rshatz@geiconsultants.com>; 'Satya Gala (sgala@geiconsultants.com)' <sgala@geiconsultants.com>; Bruce Houdesheldt <bruceh@norcalwater.org>; 'peter.lawson@jacobs.com' <peter.lawson@jacobs.com>; 'Christina Buck (CBuck@buttecounty.net)' <CBuck@buttecounty.net>; Leslie Dumas <ldumas@woodardcurran.com>; John a. McHugh <jmchugh@lsce.com>; 'Christina Buck' <buck.christinar@gmail.com>; Rodriguez, Larry <lrodriguez@geiconsultants.com>; Ali Taghavi (ataghavi@woodardcurran.com)

<ataghavi@woodardcurran.com>; 'Kelly Peterson (kpeterson@buttecounty.net)' <kpeterson@buttecounty.net>
Cc: jim@cafwd.org
Subject: 10am tomorrow....SGMA Consultant Coordination - Sacramento River Basin

For the discussion tomorrow at 10:00am, we will discuss:

- **GSP** Development, Coordination

- **GDE's.** As we discussed at the last meeting, TNC is confirmed for our March 2 (10am) meeting. We will discuss how to best structure this discussion to make it productive for you all. Lee has prepared the attached outline to help frame the issues based on our past conversations. Please take a look at this document and we will discuss this in more detail tomorrow.

- **UR 6** – Approach, Monitoring (surface and groundwater)

- **Water Quality Update**

- **Other Issues**

See you tomorrow morning.....



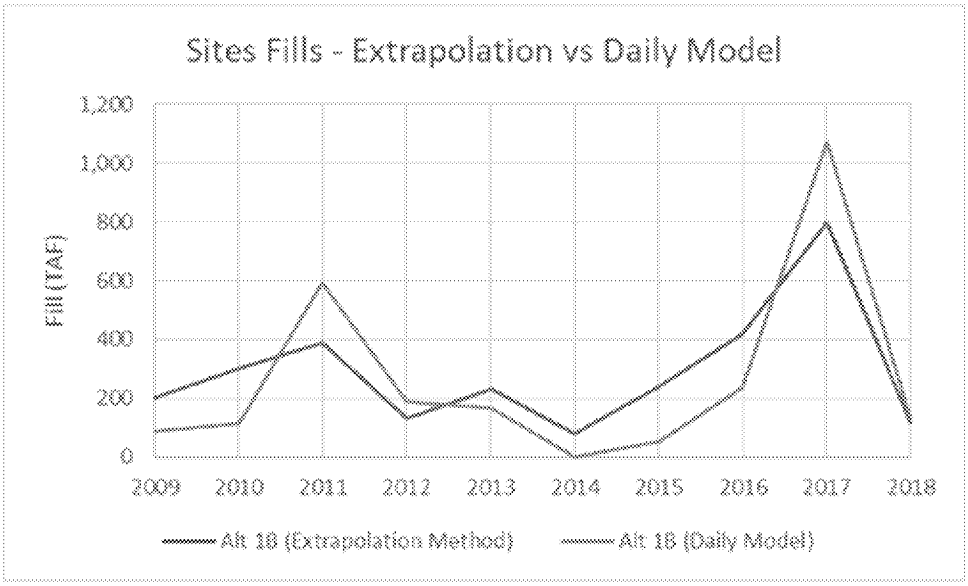
David J. Guy
President
Northern California Water Association
(916) 442-8333

From: Leaf, Rob/SAC [Rob.Leaf@jacobs.com]
Sent: 3/5/2021 9:09:15 AM
To: Heydinger, Erin [erin.heydinger@hdrinc.com]; Alicia Forsythe [aforsythe@sitesproject.org]
CC: steve.micko@jacobs.com; Thayer, Reed/SAC [Reed.Thayer@jacobs.com]; Whittington, Chad/SAC [Chad.Whittington@jacobs.com]
Subject: RE: Sites - 10 year water revenue analysis
Attachments: Sites Project - Last Ten Years Total Release Extrapolation rev05 draft.xlsx; Sites Project - Last Ten Years Total Release Extrapolation rev05 draft.pdf

Yep – see attached

BTW –
Chad put together the following comparison between this extrapolation method and the Daily Model diversion analysis
I have more faith in the Daily Model. 2014 and 2015 are clearly over estimated in the extrapolation method.
My biggest concern here is that the CalSim II "daily" approach (the basis of the extrapolation) is also over estimating in dry and critical conditions.
If we can make room for it in the budget, I highly recommend that we extend the Daily Model to the whole period of record and use it to verify CalSim II results.
You will hear more from me on that as we dig deeper into this area.

Compared to the extrapolation method, it appears that the Daily Model often estimates more fill in wet years and less fill in drier years.
See the figure and table below.



Year	WYT	Alt 1B (Extrapolation Method)	Alt 1B (Daily Model)
2009	D	200	86
2010	BN	300	112
2011	W	390	591
2012	BN	130	187
2013	D	230	167

2014	C	80	0
2015	C	240	52
2016	BN	420	235
2017	W	800	1,072
2018	BN	120	136
Avg.	N/A	291	264

From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Friday, March 5, 2021 8:58 AM
To: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>
Cc: Micko, Steve/SAC <Steve.Micko@jacobs.com>; Alicia Forsythe <aforsythe@sitesproject.org>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>; Whittington, Chad/SAC <Chad.Whittington@jacobs.com>
Subject: [EXTERNAL] RE: Sites - 10 year water revenue analysis

Hi Rob,

We got some very positive feedback on this from Jerry and JP. Can you share the Excel spreadsheet for the revenue analysis?

Thanks!
Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>
Sent: Thursday, March 4, 2021 8:18 AM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Cc: Micko, Steve/SAC <Steve.Micko@jacobs.com>; Alicia Forsythe <aforsythe@sitesproject.org>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>; Whittington, Chad/SAC <Chad.Whittington@jacobs.com>
Subject: RE: Sites - 10 year water revenue analysis

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Erin,

See the attached for a draft of the Last Ten Years analysis. First page documents analysis.

Total release includes all participants, PWAs, State and Federal.
Applied it to alt 1B and 3 (the two alternatives with the highest release rates)
Could add 1A and 2 if desired.

Two potential improvements:

- Integrating with the Daily Model for detailed analysis of diversions to fill (based on observed data from 2008-2018; could be extended to 2020)
- Provide a break out of releases by participant type

Rob

From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Thursday, February 25, 2021 4:45 PM
To: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>
Cc: Micko, Steve/SAC <Steve.Micko@jacobs.com>
Subject: [EXTERNAL] FW: Sites - 10 year water revenue analysis

Hi Rob,

See below for some clarifying questions on the 10-year water revenue analysis and answers from JP. Do you think a week is enough time to pull this together? I really don't want this to take more than a couple of hours, please let me know if it becomes more burdensome than that.

Thanks,
Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: JP Robinette <JRobinette@BrwnCald.com>
Sent: Wednesday, February 24, 2021 4:01 PM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>; Brian Grubbs <grubbs@montaguederose.com>
Cc: Cheyanne Harris <CHarris@BrwnCald.com>; Doug Montague <montague@montaguederose.com>; rai@montaguederose.com
Subject: RE: Sites - 10 year water revenue analysis

Hi Erin,

Thanks for following up on this. See my notes below. I would like to hear from Brian as well to confirm my thinking.

Thanks,

JP Robinette, PE*
Brown and Caldwell
JRobinette@brwncald.com
T 916.853.5312 | **C** 801.819.4306
*Professional Registration in Specific States

From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Wednesday, February 24, 2021 1:20 PM
To: Brian Grubbs <grubbs@montaguederose.com>; JP Robinette <JRobinette@BrwnCald.com>
Cc: Cheyanne Harris <CHarris@BrwnCald.com>; Doug Montague <montague@montaguederose.com>; rai@montaguederose.com
Subject: RE: Sites - 10 year water revenue analysis

Hi all,

I wanted to follow up on this. I had a chance to chat with CH and they agreed they haven't done this sort of analysis before. However, Rob Leaf said he would take this on and will do some review of possible timeframes that could be used. He had a few questions:

- When you say "Sites output" what information are you looking for? Reservoir diversions, releases, deliveries? The answer may depend on whether you are including O&M costs. We would like to know the diversions

into Sites and the releases from Sites in each of the ten years so we can apply the costs to fill and the revenue from the water from the participant perspective.

- Are you focusing this analysis on our "public water agencies" or non-State/non-Federal? I assume yes. Public water agencies, yes.
- Do you need information by the participant or could something more broad work (e.g. south of Delta, north of Delta, State, Federal)? The model does not code to the level of participant, so that would need to be analyzed by the team separately. Something more broad could work, as long as it corresponds to a type of user, such as NOD agricultural, SOD urban, SOD agricultural or acceptable surrogates. Whatever granularity you have readily available based on that input would be good to understand so we don't make extra work! Curious, do we plan to do individual participant modeling in support of the conversion to storage? If so, when?
- Do you want to assume this is in the "middle" of operations? Meaning the reservoir is likely somewhere between empty and full when the analysis begins. That makes good sense, yes.
- When do you need this? I don't think this will be a huge effort, especially if fairly generally information could work, but it will take them a bit of time due to other efforts that are ongoing. A couple of weeks would be good. We are not in a massive hurry, would one week fit your schedule?

Thank you!
Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: Brian Grubbs <grubbs@montaguederose.com>
Sent: Friday, February 19, 2021 9:09 AM
To: JP Robinette <JRobinette@BrwnCald.com>; Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Cc: Cheyanne Harris <CHarris@brwncald.com>; Doug Montague <montague@montaguederose.com>; rai@montaguederose.com
Subject: RE: Sites - 10 year water revenue analysis

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I don't remember previously matching up prior years with the last 10 for any of MDA's analysis.

From: JP Robinette <JRobinette@BrwnCald.com>
Sent: Friday, February 19, 2021 8:37 AM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Cc: Cheyanne Harris <CHarris@BrwnCald.com>; Doug Montague <montague@montaguederose.com>; Brian Grubbs <grubbs@montaguederose.com>; rai@montaguederose.com
Subject: RE: Sites - 10 year water revenue analysis

Not that I know if. Cheyanne, do you remember anything like this? Brian?

JP Robinette, PE*
Brown and Caldwell
JRobinette@brwncald.com
T 916.853.5312 | **C** 801.819.4306
*Professional Registration in Specific States

From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Friday, February 19, 2021 8:36 AM
To: JP Robinette <JRobinette@BrwnCald.com>

Cc: Cheyanne Harris <CHarris@BrwnCald.com>; Doug Montague <montague@montaguederose.com>; Brian Grubbs <grubbs@montaguederose.com>; rai@montaguederose.com
Subject: RE: Sites - 10 year water revenue analysis

I'm trying to remember – did we do something like this last year? If you already know the years we should use I can get it to you today. If we need to figure out what years to use I will need to check with the CH team.

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: JP Robinette <JRobinette@BrwnCald.com>
Sent: Friday, February 19, 2021 8:34 AM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Cc: Cheyanne Harris <CHarris@BrwnCald.com>; Doug Montague <montague@montaguederose.com>; Brian Grubbs <grubbs@montaguederose.com>; rai@montaguederose.com
Subject: RE: Sites - 10 year water revenue analysis

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I think that would be great. When could we have this?

Thanks,

JP Robinette, PE*
Brown and Caldwell
JRobinette@brwncald.com
T 916.853.5312 | **C** 801.819.4306
*Professional Registration in Specific States

From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Friday, February 19, 2021 8:33 AM
To: JP Robinette <JRobinette@BrwnCald.com>
Cc: Cheyanne Harris <CHarris@BrwnCald.com>; Doug Montague <montague@montaguederose.com>; Brian Grubbs <grubbs@montaguederose.com>; rai@montaguederose.com
Subject: RE: Sites - 10 year water revenue analysis

We have 10 years of data for the CalSim period, but not the past 10 years. Brian's idea is possible - we can take a representative period between 1922 to 2003 if that could work.

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: JP Robinette <JRobinette@BrwnCald.com>
Sent: Friday, February 19, 2021 8:26 AM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Cc: Cheyanne Harris <CHarris@BrwnCald.com>; Doug Montague <montague@montaguederose.com>; Brian Grubbs

<grubbs@montaguederose.com>; rai@montaguederose.com
Subject: RE: Sites - 10 year water revenue analysis

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Erin,

Is this readily attainable? Not looking to take up valuable modeling time…

Thanks,

JP Robinette, PE*
Brown and Caldwell
JRobinette@brwncald.com
T 916.853.5312 | **C** 801.819.4306
*Professional Registration in Specific States

From: Brian Grubbs <grubbs@montaguederose.com>
Sent: Friday, February 19, 2021 8:25 AM
To: JP Robinette <JRobinette@BrwnCald.com>
Cc: Cheyanne Harris <CHarris@BrwnCald.com>; Doug Montague <montague@montaguederose.com>; rai@montaguederose.com; Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Subject: Sites - 10 year water revenue analysis

JP,
To do this analysis of estimating the water revenue potential for the last 10 years, we need an estimate of what the Sites output would have been based on the last 10 years actual hydrology. If running this analysis through the NODOS model is problematic, maybe some indication of how the last 10 year were compared to an analyzed historical year in the NODOS model. The NODOS model has estimated Sites output for 1921-2003, so if we could pick 10 distinct years out of that 80 years that resembled the last 10, I think that would work for this level of analysis.

Brian

Brian Grubbs | Managing Director
Montague DeRose and Associates
916-712-1747

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File Provided Natively

From: Luu, Henry [Henry.Luu@hdrinc.com]
Sent: 3/5/2021 4:09:36 PM
To: Jerry Brown [jbrown@sitesproject.org]
Subject: RE: Presentation

Hi Jerry,

The current cost estimate for Dunnigan pipeline Alternative 2 is $261M in 2021 dollars ($253M in 2019 dollars); costs related to Alternative 2 features from the west bank of CBD to the Sacramento River is $152M in 2021 dollars ($147M in 2019 dollars), this includes all markups. A few details to note for cost comparison between Dunnigan Alternative 1 and Alternative 2:

- Current cost estimate for Dunnigan Alternative 1 is $97M in 2021 dollars ($94M in 2019 dollars)
- The cost difference between Alternative 1 (releases into the CBD) and Alternative 2 (partial releases into CBD and Sacramento River) is $164M in 2021 dollars ($159M in 2019 dollars)
- There is a difference in pipe size between Alternative 1 (9-ft ID) and Alternative 2 (10.5-ft ID) to account for the additional length required to gravity flow releases into the Sacramento River.

Hope this helps,

Henry H. Luu, PE
D 916.679.8857 M 916.754.7566

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From: Luu, Henry
Sent: Thursday, March 4, 2021 10:00 AM
To: Jerry Brown <jbrown@sitesproject.org>
Subject: RE: Presentation

I have asked Pete to verify cost for Alt2 Dunnigan from CBD to the River only…more to follow. The team is using Reclamation's Construction Cost Trend as a basis for de-escalation, which is -3% from spring 2021 to summer 2019. This approach is consistent with what is recommended by the CWC.

Henry H. Luu, PE
D 916.679.8857 M 916.754.7566

hdrinc.com/follow-us

From: Jerry Brown <jbrown@sitesproject.org>
Sent: Thursday, March 4, 2021 8:31 AM
To: Luu, Henry <Henry.Luu@hdrinc.com>
Subject: Re: Presentation

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Do you know how much of the Alt 2 cost estimate is the extension of the Dunnigan from the CBD to the Sacto River?

Also, when they changed the "year of the estimate" what factor did they use? CPI? Or ENR CCI?

From: "Luu, Henry" <Henry.Luu@hdrinc.com>
Date: Thursday, March 4, 2021 at 6:50 AM

To: Jerry Brown <jbrown@sitesproject.org>
Subject: RE: Presentation

Jerry, see attached. Also on SharePoint at https://sitesreservoirproject.sharepoint.com/:f:/r/Engineering%26Geotechnical/WSIP%20Feasibility/Coordination/20210303_LMC%20Presentation?csf=1&web=1&e=0iVyb9.

Henry H. Luu, PE
D 916.679.8857 M 916.754.7566

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From: Jerry Brown <jbrown@sitesproject.org>
Sent: Thursday, March 4, 2021 6:46 AM
To: Luu, Henry <Henry.Luu@hdrinc.com>
Subject: Presentation

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Can you send me the slide deck presented yesterday? thanks

Appendix 5B1 – Project Operations (CalSim II)

The following results of the CalSim II model are included for project operations at key project locations for the following alternatives:

- No Action Alternative 011221
- Alternative 1A 011221
- Alternative 1B 011221
- Alternative 2 011221
- Alternative 3 020121

Section	Output Parameters	Table Numbers	Figure Numbers
Project Operations	Red Bluff Diversion - Tehama Colusa Canal	5B1-1-1a to 5B1-1-4c	5B1-1-1 to 5B1-1-18
Project Operations	Hamilton City Diversion - Glenn Colusa Canal	5B1-2-1a to 5B1-2-4c	5B1-2-1 to 5B1-2-18
Project Operations	Total Sites Diversions	5B1-3-1a to 5B1-3-4c	5B1-3-1 to 5B1-3-18
Project Operations	Sites Release to Dunnigan Pipeline	5B1-4-1a to 5B1-4-4c	5B1-4-1 to 5B1-4-18
Project Operations	Sites Release to Yolo Bypass	5B1-5-1a to 5B1-5-4c	5B1-5-1 to 5B1-5-18
Project Operations	Total Sites Release	5B1-6-1a to 5B1-6-4c	5B1-6-1 to 5B1-6-18
Project Operations	Sites Reservoir Storage	5B1-7-1a to 5B1-7-4c	5B1-7-1 to 5B1-7-12
Project Operations	Sites Reservoir Elevation	5B1-8-1a to 5B1-8-4c	5B1-8-1 to 5B1-8-12
Project Operations	Sites Reservoir Surface Area	5B1-9-1a to 5B1-9-4c	5B1-9-1 to 5B1-9-12

Report formats

- Monthly tables comparing an alternative against the No Action alternative (exceedance values, long-term average, and average by water year type)
- Monthly pattern charts (long-term average and average by water year type) including all alternatives
- Monthly exceedance charts (all months) including all alternatives

Table 5B1-1-1a. Red Bluff Diversion - Tehama Colusa Canal, No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	214	20	0	0	0	61	457	867	1,206	1,378	1,095	303
20%	197	17	0	0	0	37	373	782	1,164	1,356	1,080	287
30%	174	17	0	0	0	17	334	740	1,118	1,283	1,024	272
40%	133	17	0	0	0	9	244	674	1,090	1,272	1,000	255
50%	100	13	0	0	0	8	162	559	1,057	1,216	928	226
60%	87	9	0	0	0	8	132	489	989	1,139	863	197
70%	73	8	0	0	0	8	43	399	632	733	579	99
80%	62	8	0	0	0	8	34	253	488	542	433	54
90%	54	8	0	0	0	8	7	62	209	230	183	22
Long Term												
Full Simulation Period[a]	124	14	0	0	2	25	206	532	848	974	769	188
Water Year Types[b,c]												
Wet (32%)	154	15	0	0	0	20	184	668	1,121	1,289	1,020	261
Above Normal (15%)	128	13	0	0	0	17	290	702	1,157	1,314	1,028	249
Below Normal (17%)	126	14	0	0	2	42	278	632	937	1,097	864	177
Dry (22%)	113	12	0	0	5	24	201	414	633	718	570	140
Critical (15%)	69	17	0	0	7	25	96	128	169	195	153	55

Table 5B1-1-1b. Red Bluff Diversion - Tehama Colusa Canal, Alternative 1A 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	209	469	1,115	2,121	2,121	2,121	691	895	1,228	1,336	1,094	301
20%	182	32	0	1,747	2,121	2,121	450	815	1,179	1,282	1,045	280
30%	140	20	0	1,034	1,312	2,121	365	748	1,138	1,249	1,017	265
40%	102	17	0	604	893	1,617	295	695	1,097	1,204	972	232
50%	82	17	0	449	565	115	195	570	1,059	1,168	919	144
60%	66	17	0	121	280	61	141	502	982	1,077	821	90
70%	59	9	0	0	21	29	60	408	633	722	548	50
80%	54	8	0	0	0	11	37	266	488	471	370	28
90%	52	8	0	0	0	8	18	64	207	231	158	15
Long Term												
Full Simulation Period[a]	108	158	232	734	833	963	357	579	893	948	760	160
Water Year Types[b,c]												
Wet (32%)	155	356	37	1,065	1,052	824	566	802	1,166	1,310	1,064	261
Above Normal (15%)	128	223	128	1,251	1,209	1,530	425	692	1,251	1,214	1,021	246
Below Normal (17%)	86	14	344	588	1,026	1,263	349	642	1,021	1,048	804	118
Dry (22%)	76	32	338	324	563	948	193	432	649	682	531	76
Critical (15%)	57	17	465	283	160	367	90	128	162	181	130	30

Table 5B1-1-1c. Red Bluff Diversion - Tehama Colusa Canal, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-4	449	1,115	2,121	2,121	2,061	234	28	22	-41	-1	-2
20%	-15	15	0	1,747	2,121	2,084	77	33	15	-74	-36	-7
30%	-34	3	0	1,034	1,312	2,104	32	7	21	-34	-6	-7
40%	-31	0	0	604	893	1,608	51	21	7	-68	-28	-23
50%	-18	4	0	449	565	107	33	11	2	-49	-10	-82
60%	-20	8	0	121	280	53	9	13	-7	-62	-42	-108
70%	-14	1	0	0	21	21	17	9	1	-11	-31	-50
80%	-8	0	0	0	0	2	3	13	0	-71	-63	-26
90%	-2	0	0	0	0	0	11	2	-3	1	-25	-7
Long Term												
Full Simulation Period[a]	-16	143	232	734	830	938	151	47	45	-26	-9	-28
Water Year Types[b,c]												
Wet (32%)	1	341	37	1,065	1,052	804	382	134	45	21	44	0
Above Normal (15%)	0	210	128	1,251	1,209	1,513	135	-10	95	-100	-7	-4
Below Normal (17%)	-40	0	344	588	1,024	1,220	70	11	84	-49	-59	-59
Dry (22%)	-37	20	338	324	559	924	-7	17	16	-35	-39	-64
Critical (15%)	-12	1	465	283	153	342	-6	0	-7	-13	-23	-25

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-1-2a. Red Bluff Diversion - Tehama Colusa Canal, No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	214	20	0	0	0	61	457	867	1,206	1,378	1,095	303
20%	197	17	0	0	0	37	373	782	1,164	1,356	1,080	287
30%	174	17	0	0	0	17	334	740	1,118	1,283	1,024	272
40%	133	17	0	0	0	9	244	674	1,090	1,272	1,000	255
50%	100	13	0	0	0	8	162	559	1,057	1,216	928	226
60%	87	9	0	0	0	8	132	489	989	1,139	863	197
70%	73	8	0	0	0	8	43	399	632	733	579	99
80%	62	8	0	0	0	8	34	253	488	542	433	54
90%	54	8	0	0	0	8	7	62	209	230	183	22
Long Term												
Full Simulation Period[a]	124	14	0	0	2	25	206	532	848	974	769	188
Water Year Types[b,c]												
Wet (32%)	154	15	0	0	0	20	184	668	1,121	1,289	1,020	261
Above Normal (15%)	128	13	0	0	0	17	290	702	1,157	1,314	1,028	249
Below Normal (17%)	126	14	0	0	2	42	278	632	937	1,097	864	177
Dry (22%)	113	12	0	0	5	24	201	414	633	718	570	140
Critical (15%)	69	17	0	0	7	25	96	128	169	195	153	55

Table 5B1-1-2b. Red Bluff Diversion - Tehama Colusa Canal, Alternative 1B 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	210	407	1,113	2,121	2,121	2,121	908	895	1,220	1,336	1,095	301
20%	186	32	0	1,815	2,121	2,121	450	815	1,153	1,292	1,049	280
30%	140	20	0	1,140	1,682	2,121	365	733	1,092	1,273	1,014	265
40%	100	17	0	752	1,035	1,735	266	621	1,046	1,217	953	240
50%	82	17	0	498	574	219	167	515	901	1,145	916	143
60%	67	15	0	317	293	68	140	418	583	835	816	90
70%	59	9	0	0	24	31	63	330	525	596	556	50
80%	55	8	0	0	0	14	37	179	385	501	372	29
90%	54	8	0	0	0	8	19	66	203	187	161	23
Long Term												
Full Simulation Period[a]	109	153	239	774	904	982	357	545	795	915	759	161
Water Year Types[b,c]												
Wet (32%)	155	340	37	1,188	1,179	850	597	862	1,166	1,310	1,064	261
Above Normal (15%)	124	229	200	1,251	1,346	1,530	425	680	889	1,002	997	250
Below Normal (17%)	89	12	344	589	1,080	1,262	331	505	870	995	810	122
Dry (22%)	86	30	324	329	569	1,001	163	334	563	727	543	77
Critical (15%)	51	18	465	283	160	368	88	91	156	165	127	30

Table 5B1-1-2c. Red Bluff Diversion - Tehama Colusa Canal, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-4	386	1,113	2,121	2,121	2,061	451	28	14	-41	0	-2
20%	-11	15	0	1,815	2,121	2,084	77	33	-11	-64	-31	-7
30%	-34	3	0	1,140	1,682	2,104	32	-7	-25	-9	-10	-7
40%	-34	0	0	752	1,035	1,726	23	-53	-44	-55	-47	-15
50%	-17	4	0	498	574	211	5	-44	-157	-71	-13	-83
60%	-19	6	0	317	293	60	8	-71	-406	-304	-47	-108
70%	-13	1	0	0	24	23	20	-69	-107	-136	-23	-50
80%	-7	0	0	0	0	6	3	-74	-103	-42	-61	-25
90%	0	0	0	0	0	0	12	3	-7	-43	-22	1
Long Term												
Full Simulation Period[a]	-15	139	239	774	901	957	151	13	-54	-59	-9	-27
Water Year Types[b,c]												
Wet (32%)	1	325	37	1,188	1,179	829	414	194	45	21	45	0
Above Normal (15%)	-4	216	200	1,251	1,346	1,513	135	-22	-267	-312	-31	1
Below Normal (17%)	-37	-1	344	589	1,078	1,220	52	-126	-67	-102	-54	-55
Dry (22%)	-27	19	324	329	565	976	-38	-81	-70	9	-27	-63
Critical (15%)	-18	2	465	283	153	343	-7	-37	-13	-30	-26	-25

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-1-3a. Red Bluff Diversion - Tehama Colusa Canal, No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	214	20	0	0	0	61	457	867	1,206	1,378	1,095	303
20%	197	17	0	0	0	37	373	782	1,164	1,356	1,080	287
30%	174	17	0	0	0	17	334	740	1,118	1,283	1,024	272
40%	133	17	0	0	0	9	244	674	1,090	1,272	1,000	255
50%	100	13	0	0	0	8	162	559	1,057	1,216	928	226
60%	87	9	0	0	0	8	132	489	989	1,139	863	197
70%	73	8	0	0	0	8	43	399	632	733	579	99
80%	62	8	0	0	0	8	34	253	488	542	433	54
90%	54	8	0	0	0	8	7	62	209	230	183	22
Long Term												
Full Simulation Period[a]	124	14	0	0	2	25	206	532	848	974	769	188
Water Year Types[b,c]												
Wet (32%)	154	15	0	0	0	20	184	668	1,121	1,289	1,020	261
Above Normal (15%)	128	13	0	0	0	17	290	702	1,157	1,314	1,028	249
Below Normal (17%)	126	14	0	0	2	42	278	632	937	1,097	864	177
Dry (22%)	113	12	0	0	5	24	201	414	633	718	570	140
Critical (15%)	69	17	0	0	7	25	96	128	169	195	153	55

Table 5B1-1-3b. Red Bluff Diversion - Tehama Colusa Canal, Alternative 2 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	209	546	1,115	2,121	2,121	2,121	568	895	1,228	1,336	1,094	301
20%	182	33	0	1,594	2,121	2,121	428	815	1,179	1,278	1,047	280
30%	135	23	0	1,035	1,195	2,109	345	748	1,138	1,246	1,017	269
40%	97	17	0	599	839	1,325	292	695	1,097	1,199	967	232
50%	80	17	0	460	542	105	195	570	1,059	1,153	919	135
60%	66	17	0	86	269	61	141	502	982	1,076	834	88
70%	58	10	0	0	11	29	67	408	624	726	541	48
80%	54	8	0	0	0	11	37	266	488	471	370	28
90%	47	8	0	0	0	8	18	64	208	231	118	15
Long Term												
Full Simulation Period[a]	106	168	232	721	806	910	336	579	893	944	747	159
Water Year Types[b,c]												
Wet (32%)	155	353	37	1,026	971	695	501	802	1,166	1,310	1,028	261
Above Normal (15%)	128	218	129	1,250	1,206	1,530	425	692	1,250	1,204	1,021	248
Below Normal (17%)	84	82	344	588	1,023	1,263	349	643	1,021	1,038	804	116
Dry (22%)	72	32	337	324	563	894	193	432	649	680	530	74
Critical (15%)	53	18	466	283	160	368	90	128	162	180	123	27

Table 5B1-1-3c. Red Bluff Diversion - Tehama Colusa Canal, Alternative 2 011221 minus No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-4	526	1,115	2,121	2,121	2,061	111	28	22	-41	-1	-2
20%	-15	16	0	1,594	2,121	2,084	55	33	15	-78	-34	-7
30%	-40	6	0	1,035	1,195	2,092	12	7	21	-36	-6	-3
40%	-36	0	0	599	839	1,316	48	21	7	-73	-33	-23
50%	-20	4	0	460	542	97	33	11	2	-63	-10	-91
60%	-20	8	0	86	269	53	9	13	-7	-63	-28	-109
70%	-14	2	0	0	11	21	24	9	-8	-7	-38	-52
80%	-8	0	0	0	0	2	3	13	0	-71	-63	-26
90%	-7	0	0	0	0	0	11	2	-2	1	-66	-7
Long Term												
Full Simulation Period[a]	-18	153	232	721	804	885	130	47	45	-30	-22	-29
Water Year Types[b,c]												
Wet (32%)	1	338	37	1,026	971	675	318	134	45	21	9	0
Above Normal (15%)	0	205	129	1,250	1,206	1,513	135	-10	94	-109	-7	-2
Below Normal (17%)	-42	68	344	588	1,021	1,221	70	11	84	-59	-60	-61
Dry (22%)	-41	20	337	324	559	869	-7	18	16	-38	-40	-66
Critical (15%)	-16	2	466	283	153	343	-5	0	-7	-14	-29	-29

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-1-4a. Red Bluff Diversion - Tehama Colusa Canal, No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	214	20	0	0	0	61	457	867	1,206	1,378	1,095	303
20%	197	17	0	0	0	37	373	782	1,164	1,356	1,080	287
30%	174	17	0	0	0	17	334	740	1,118	1,283	1,024	272
40%	133	17	0	0	0	9	244	674	1,090	1,272	1,000	255
50%	100	13	0	0	0	8	162	559	1,057	1,216	928	226
60%	87	9	0	0	0	8	132	489	989	1,139	863	197
70%	73	8	0	0	0	8	43	399	632	733	579	99
80%	62	8	0	0	0	8	34	253	488	542	433	54
90%	54	8	0	0	0	8	7	62	209	230	183	22
Long Term												
Full Simulation Period[a]	124	14	0	0	2	25	206	532	848	974	769	188
Water Year Types[b,c]												
Wet (32%)	154	15	0	0	0	20	184	668	1,121	1,289	1,020	261
Above Normal (15%)	128	13	0	0	0	17	290	702	1,157	1,314	1,028	249
Below Normal (17%)	126	14	0	0	2	42	278	632	937	1,097	864	177
Dry (22%)	113	12	0	0	5	24	201	414	633	718	570	140
Critical (15%)	69	17	0	0	7	25	96	128	169	195	153	55

Table 5B1-1-4b. Red Bluff Diversion - Tehama Colusa Canal, Alternative 3 020121, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	210	553	1,188	2,121	2,121	2,121	1,270	899	1,228	1,336	1,092	301
20%	186	107	345	1,778	2,121	2,121	456	847	1,156	1,278	1,030	280
30%	140	25	0	1,124	2,069	2,121	373	738	1,077	1,209	983	265
40%	113	19	0	744	1,033	2,040	266	621	925	1,039	880	214
50%	87	17	0	535	574	1,321	200	528	556	624	800	140
60%	70	17	0	328	293	94	148	429	517	592	536	93
70%	59	10	0	0	23	43	95	247	478	545	430	71
80%	54	8	0	0	0	15	39	173	283	304	387	46
90%	52	8	0	0	0	8	22	96	215	237	179	25
Long Term												
Full Simulation Period[a]	110	179	263	779	924	1,066	397	557	744	791	698	162
Water Year Types[b,c]												
Wet (32%)	156	340	37	1,205	1,179	1,067	714	912	1,206	1,310	1,064	261
Above Normal (15%)	112	323	305	1,252	1,387	1,652	425	680	887	578	614	200
Below Normal (17%)	87	81	381	589	1,167	1,285	333	508	630	734	764	126
Dry (22%)	89	32	330	330	570	1,002	170	291	431	605	521	89
Critical (15%)	68	18	472	282	159	322	96	124	201	229	179	59

Table 5B1-1-4c. Red Bluff Diversion - Tehama Colusa Canal, Alternative 3 020121 minus No Action Alternative 011221, Monthly Diversion (cfs)

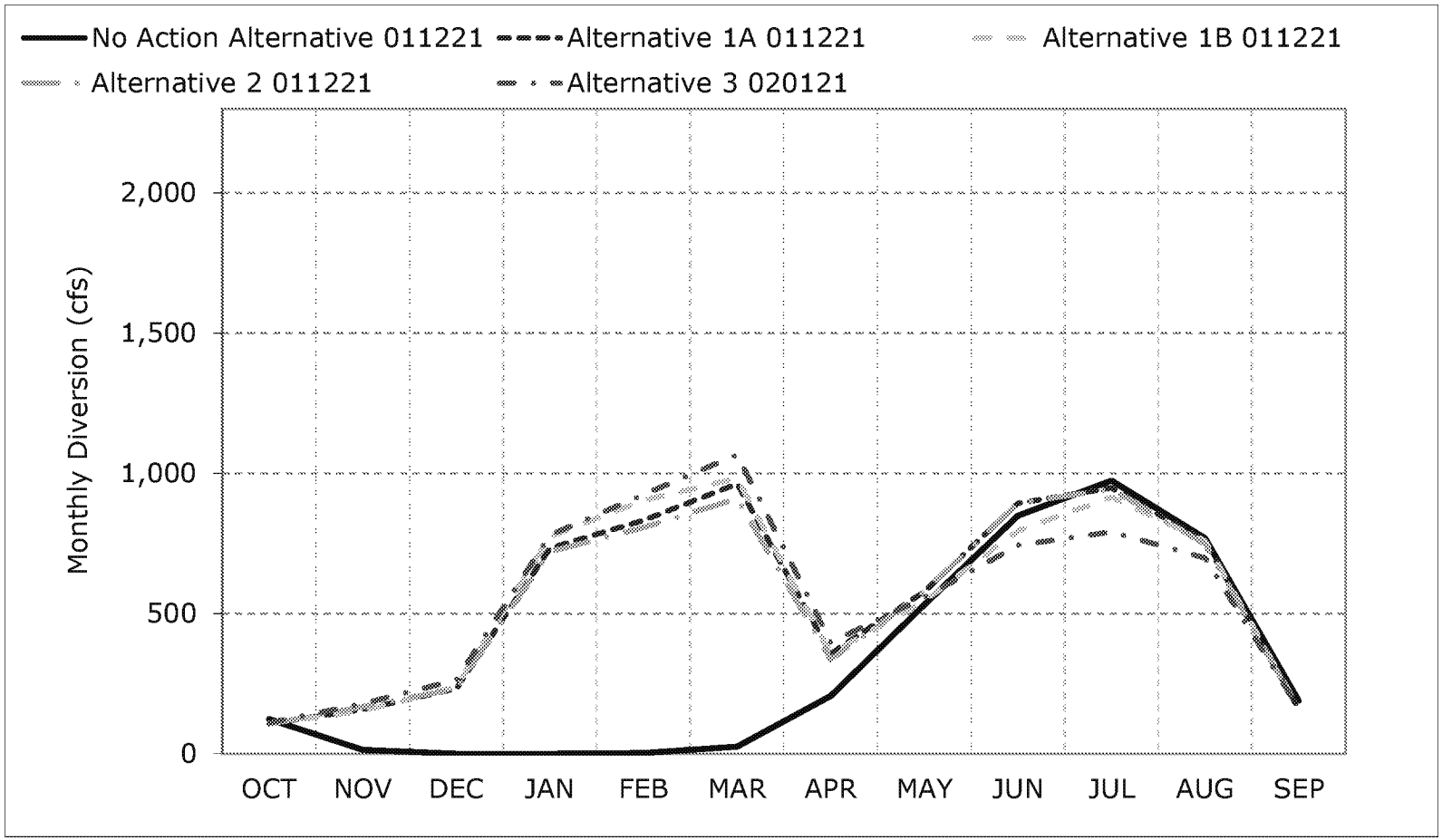
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-4	533	1,188	2,121	2,121	2,061	813	32	22	-41	-3	-2
20%	-11	90	345	1,778	2,121	2,084	83	65	-8	-78	-50	-7
30%	-34	8	0	1,124	2,069	2,104	40	-2	-40	-73	-41	-7
40%	-21	2	0	744	1,033	2,031	23	-53	-164	-233	-120	-41
50%	-13	4	0	535	574	1,313	38	-31	-501	-592	-129	-86
60%	-16	8	0	328	293	86	16	-60	-472	-547	-327	-104
70%	-14	1	0	0	23	35	51	-152	-154	-187	-148	-28
80%	-8	0	0	0	0	7	5	-80	-205	-238	-46	-8
90%	-3	0	0	0	0	0	16	34	6	7	-4	3
Long Term												
Full Simulation Period[a]	-14	164	263	779	922	1,041	191	25	-104	-183	-71	-27
Water Year Types[b,c]												
Wet (32%)	2	325	37	1,205	1,179	1,047	531	244	85	21	44	0
Above Normal (15%)	-16	310	305	1,252	1,387	1,635	135	-22	-270	-736	-414	-49
Below Normal (17%)	-39	67	381	589	1,165	1,242	55	-124	-307	-362	-100	-51
Dry (22%)	-24	20	330	330	565	977	-30	-124	-202	-113	-49	-51
Critical (15%)	-1	2	472	282	152	297	0	-3	32	34	26	4

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

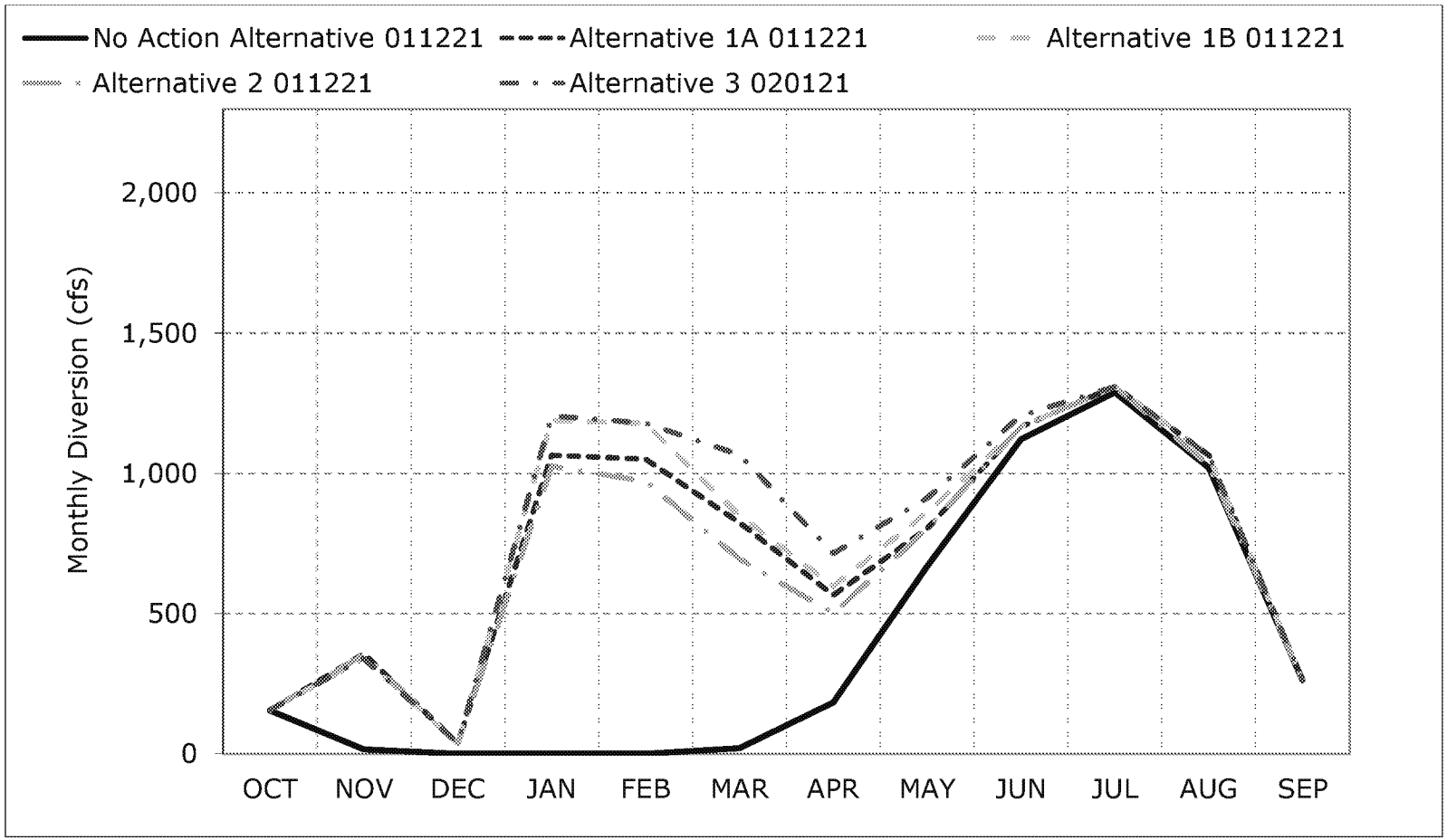
c These results are displayed with calendar year - year type sorting.

Figure 5B1-1-1. Red Bluff Diversion - Tehama Colusa Canal, Long-Term Average Diversion



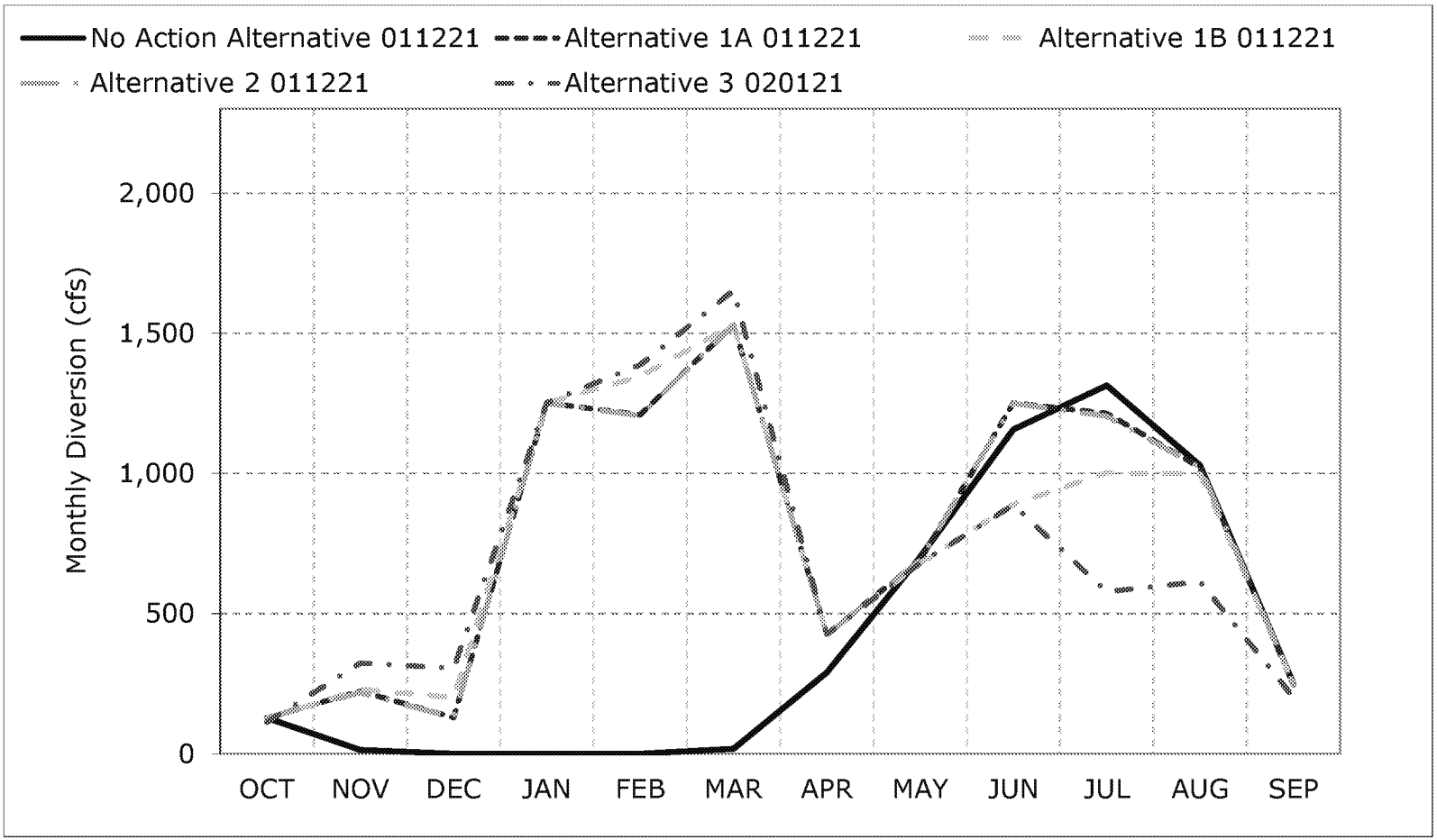
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-1-2. Red Bluff Diversion - Tehama Colusa Canal, Wet Year Average Diversion



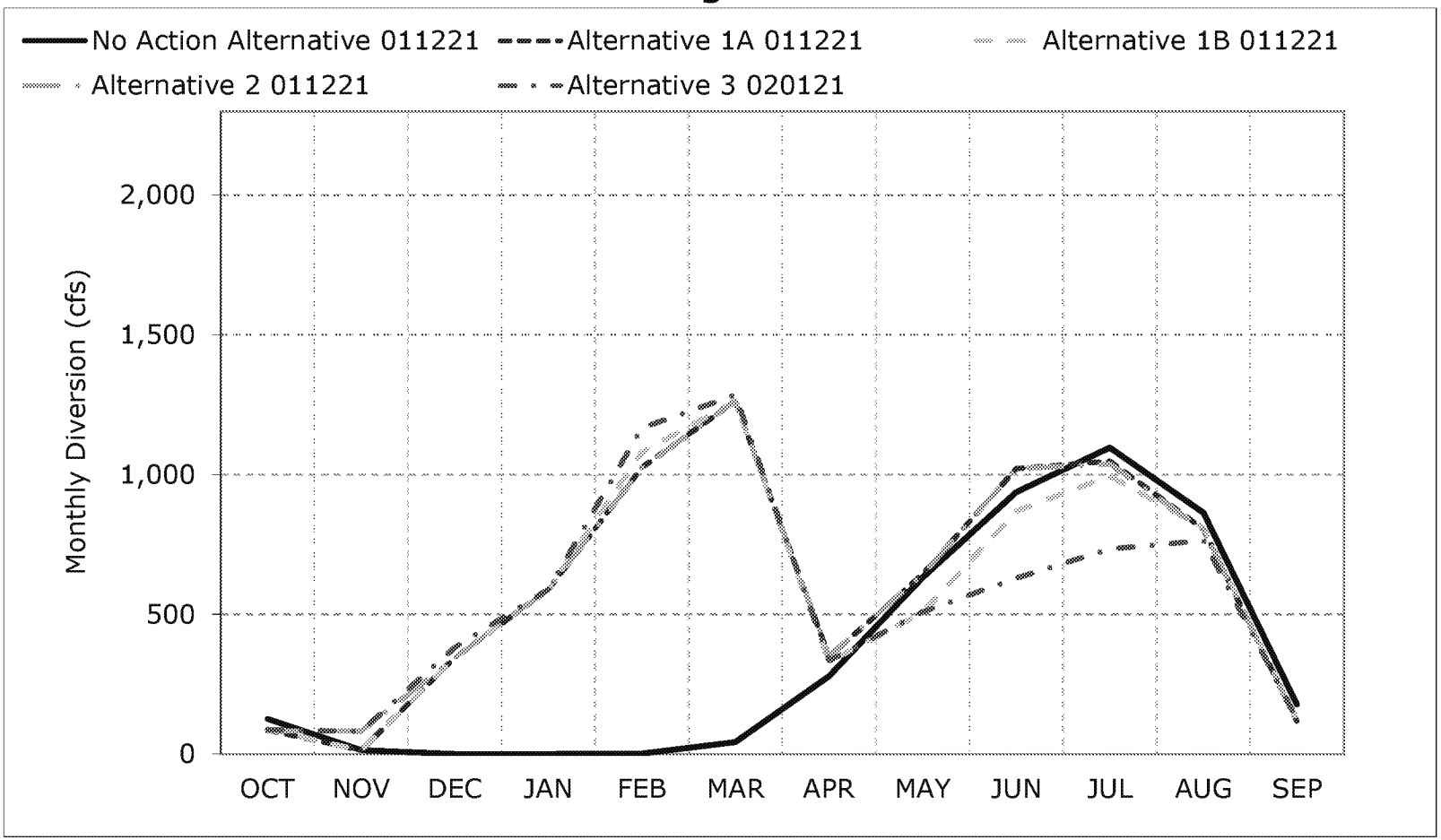
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-1-3. Red Bluff Diversion - Tehama Colusa Canal, Above Normal Year Average Diversion



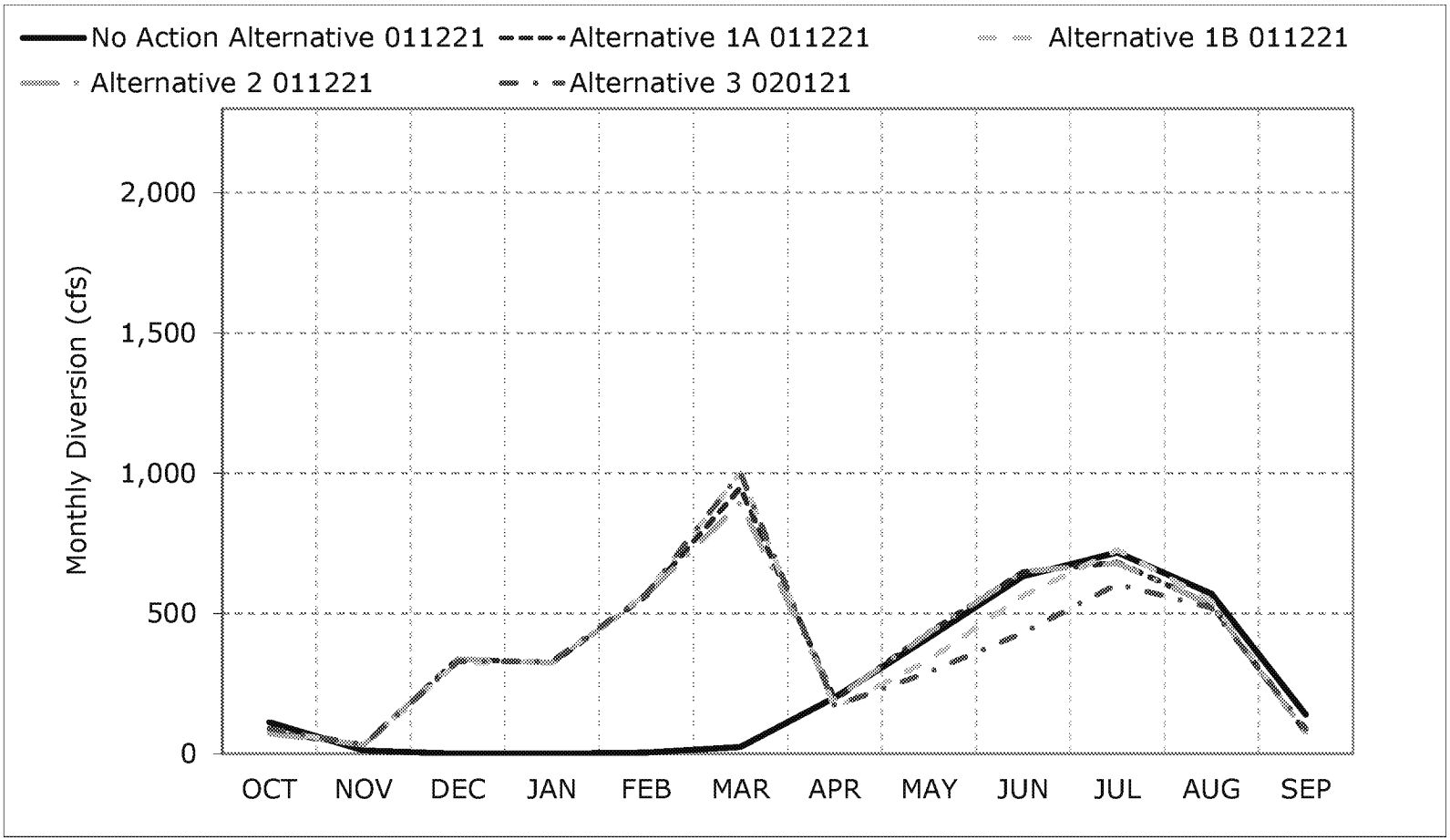
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-1-4. Red Bluff Diversion - Tehama Colusa Canal, Below Normal Year Average Diversion



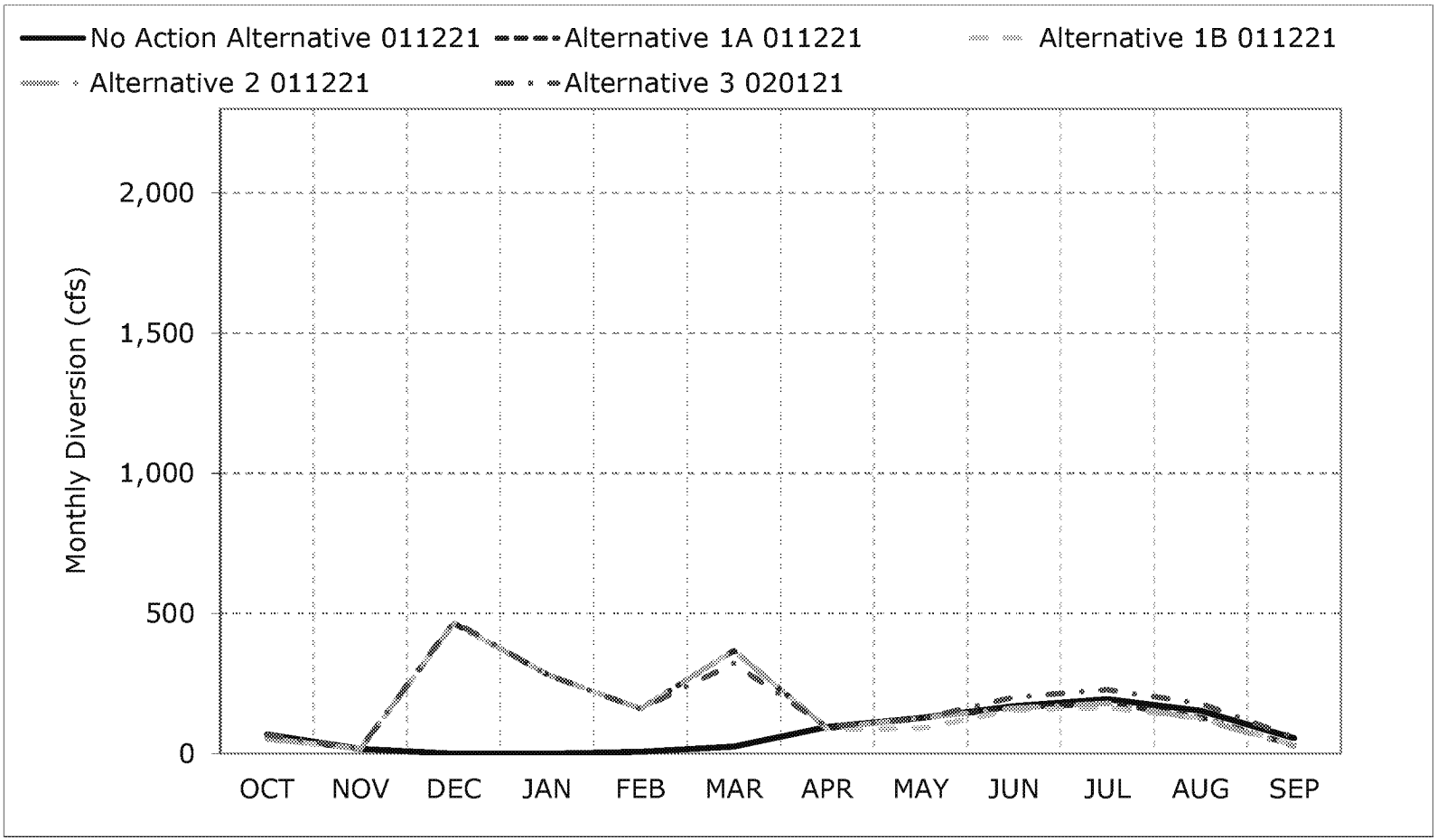
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-1-5. Red Bluff Diversion - Tehama Colusa Canal, Dry Year Average Diversion



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-1-6. Red Bluff Diversion - Tehama Colusa Canal, Critical Year Average Diversion



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-1-7. Red Bluff Diversion - Tehama Colusa Canal, October

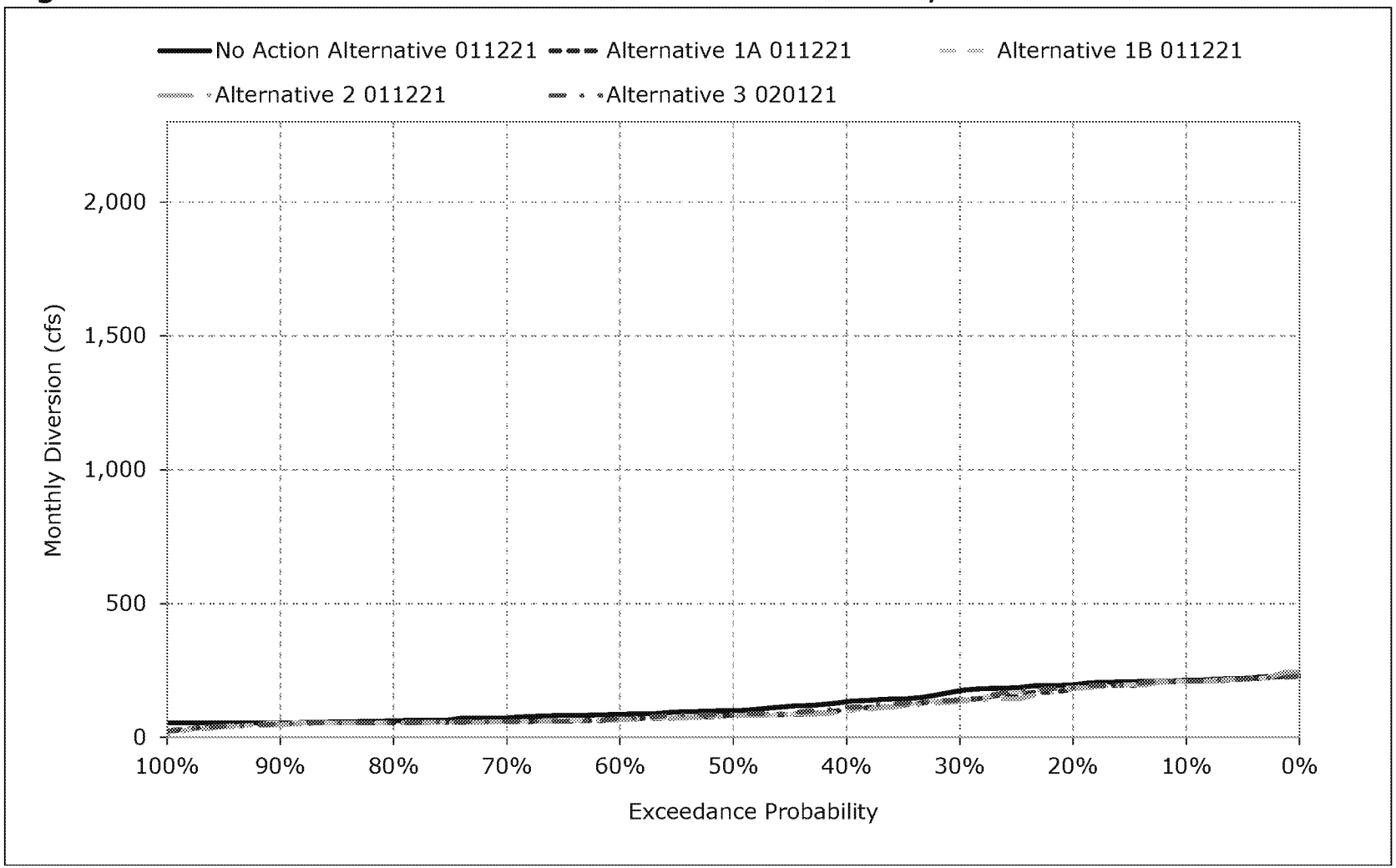


Figure 5B1-1-8. Red Bluff Diversion - Tehama Colusa Canal, November

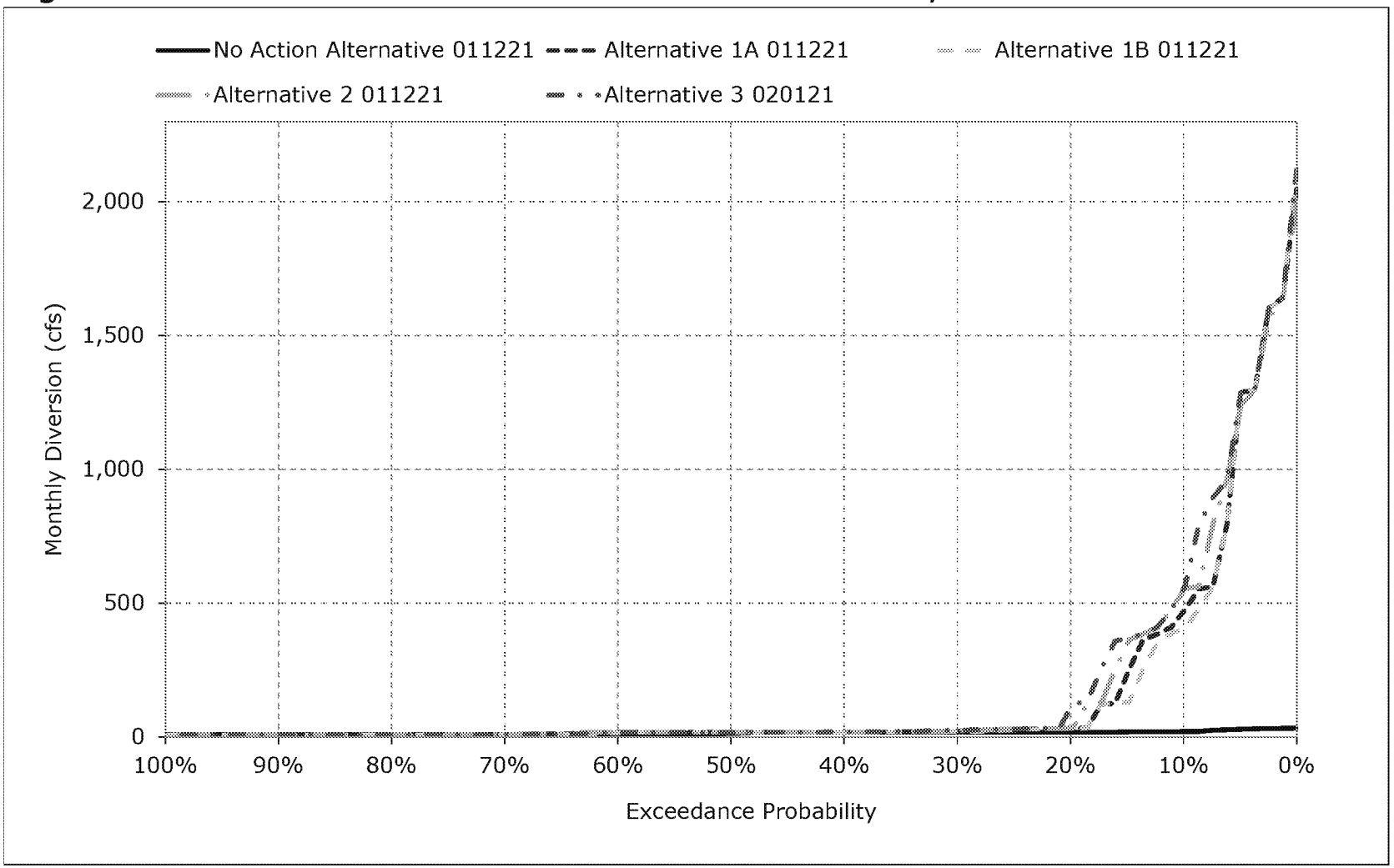


Figure 5B1-1-9. Red Bluff Diversion - Tehama Colusa Canal, December

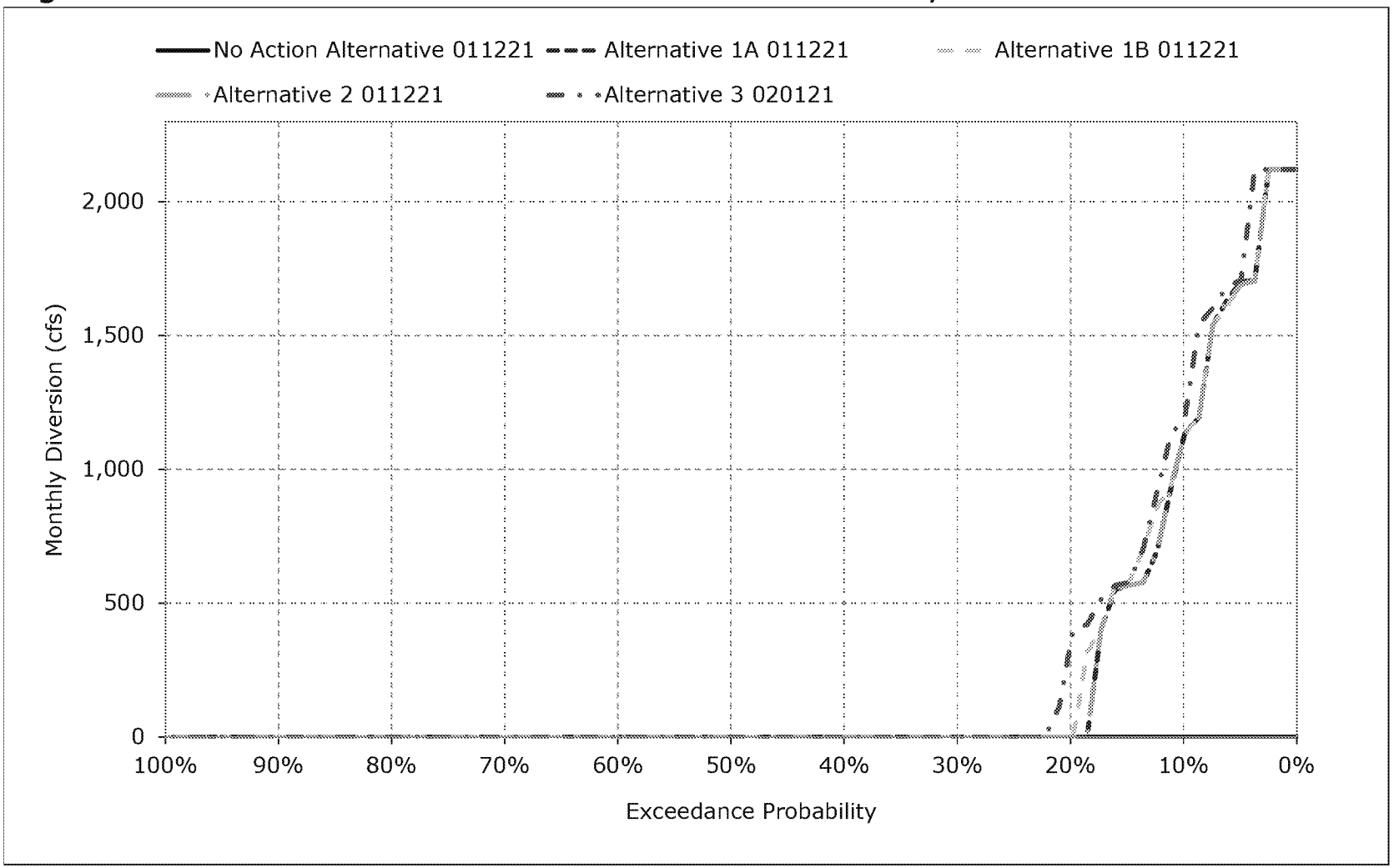


Figure 5B1-1-10. Red Bluff Diversion - Tehama Colusa Canal, January

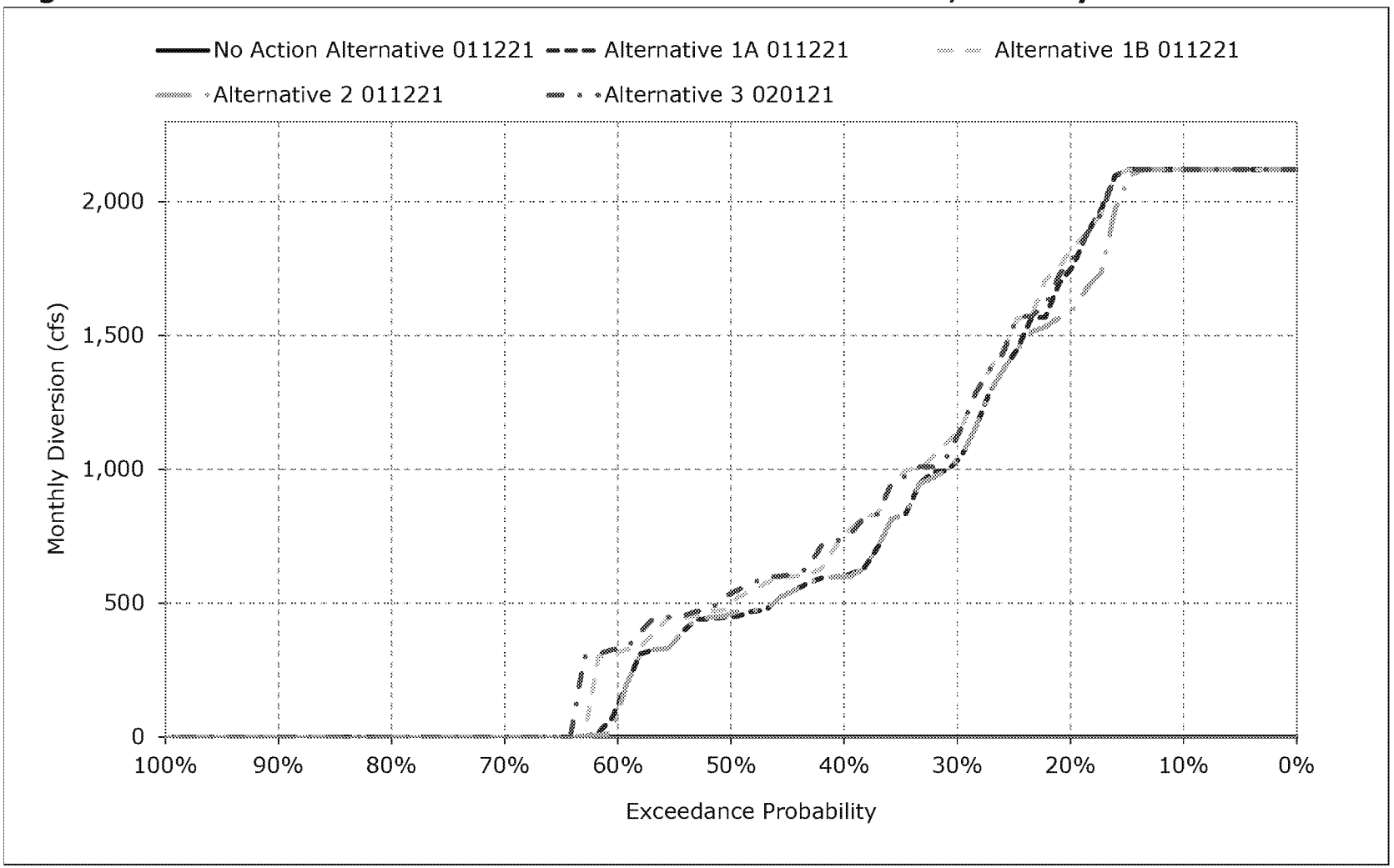


Figure 5B1-1-11. Red Bluff Diversion - Tehama Colusa Canal, February

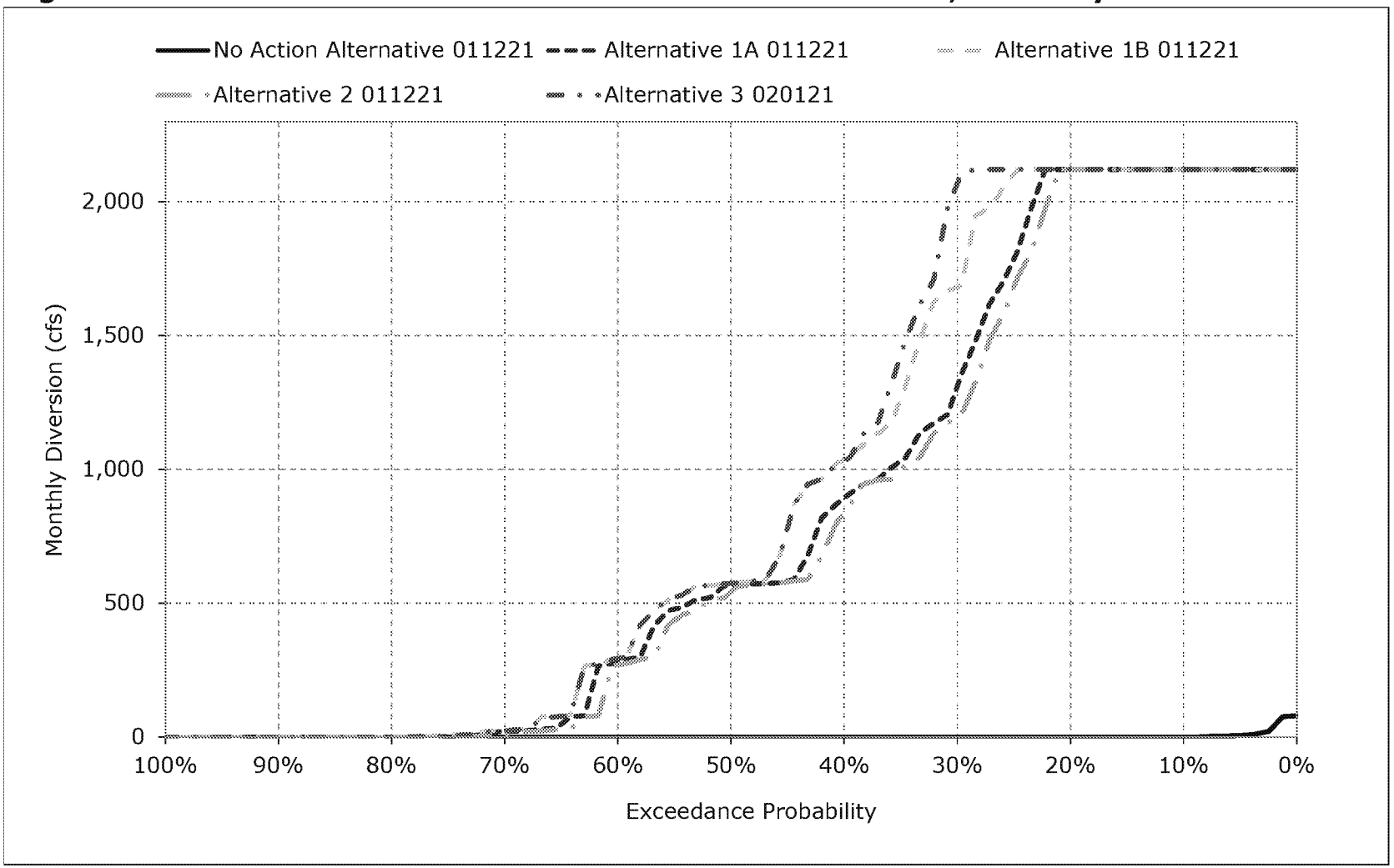


Figure 5B1-1-12. Red Bluff Diversion - Tehama Colusa Canal, March

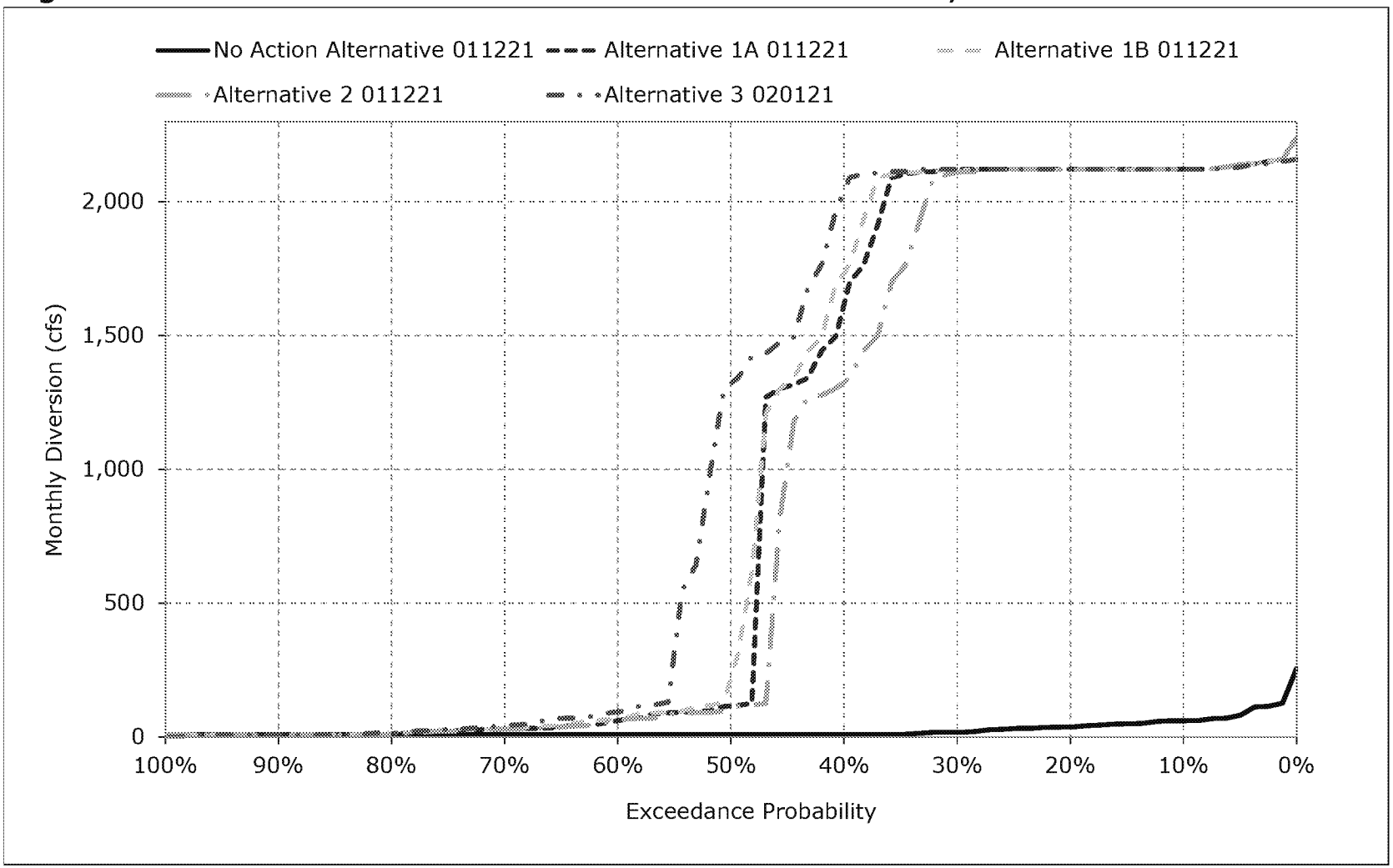


Figure 5B1-1-13. Red Bluff Diversion - Tehama Colusa Canal, April

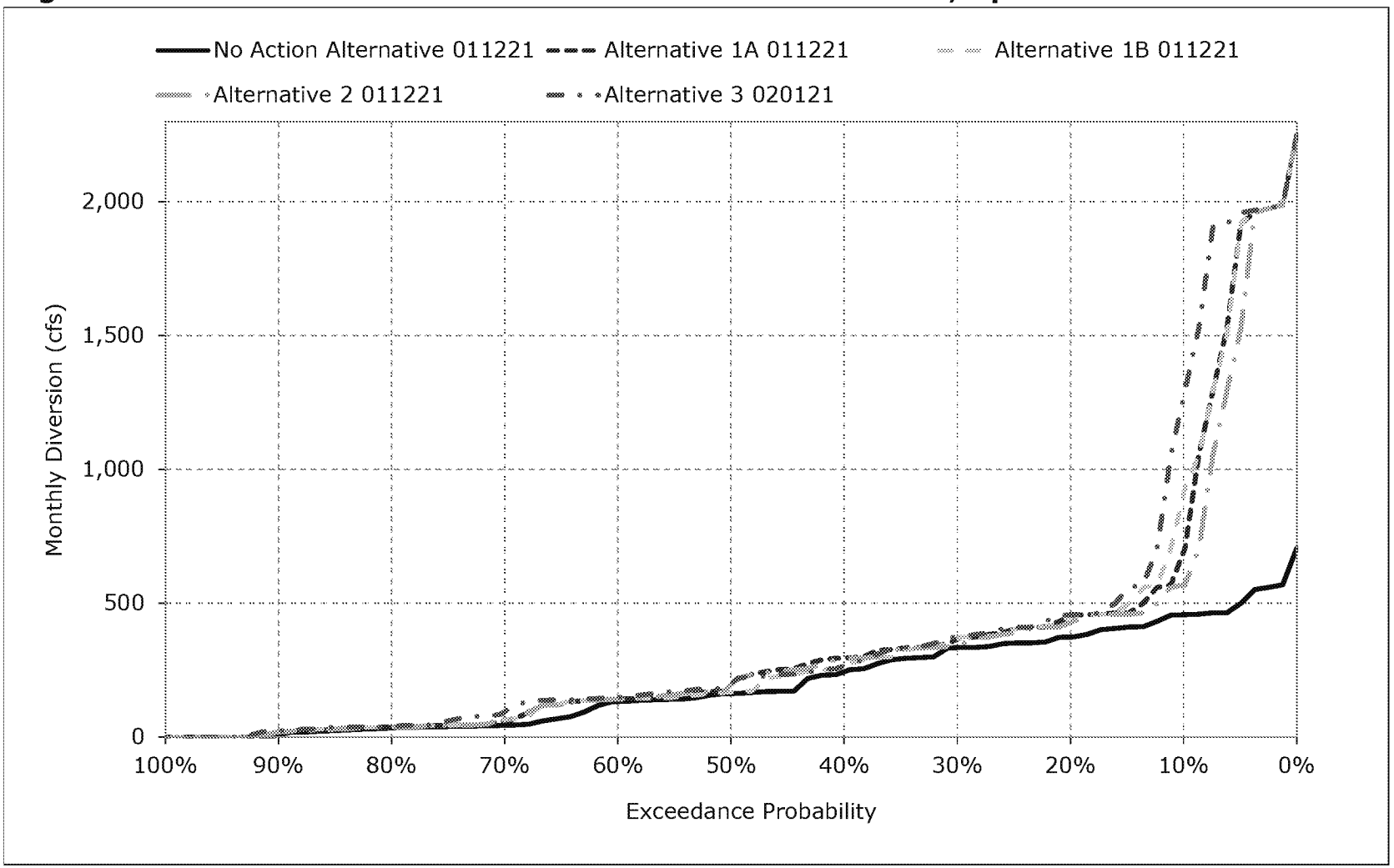


Figure 5B1-1-14. Red Bluff Diversion - Tehama Colusa Canal, May

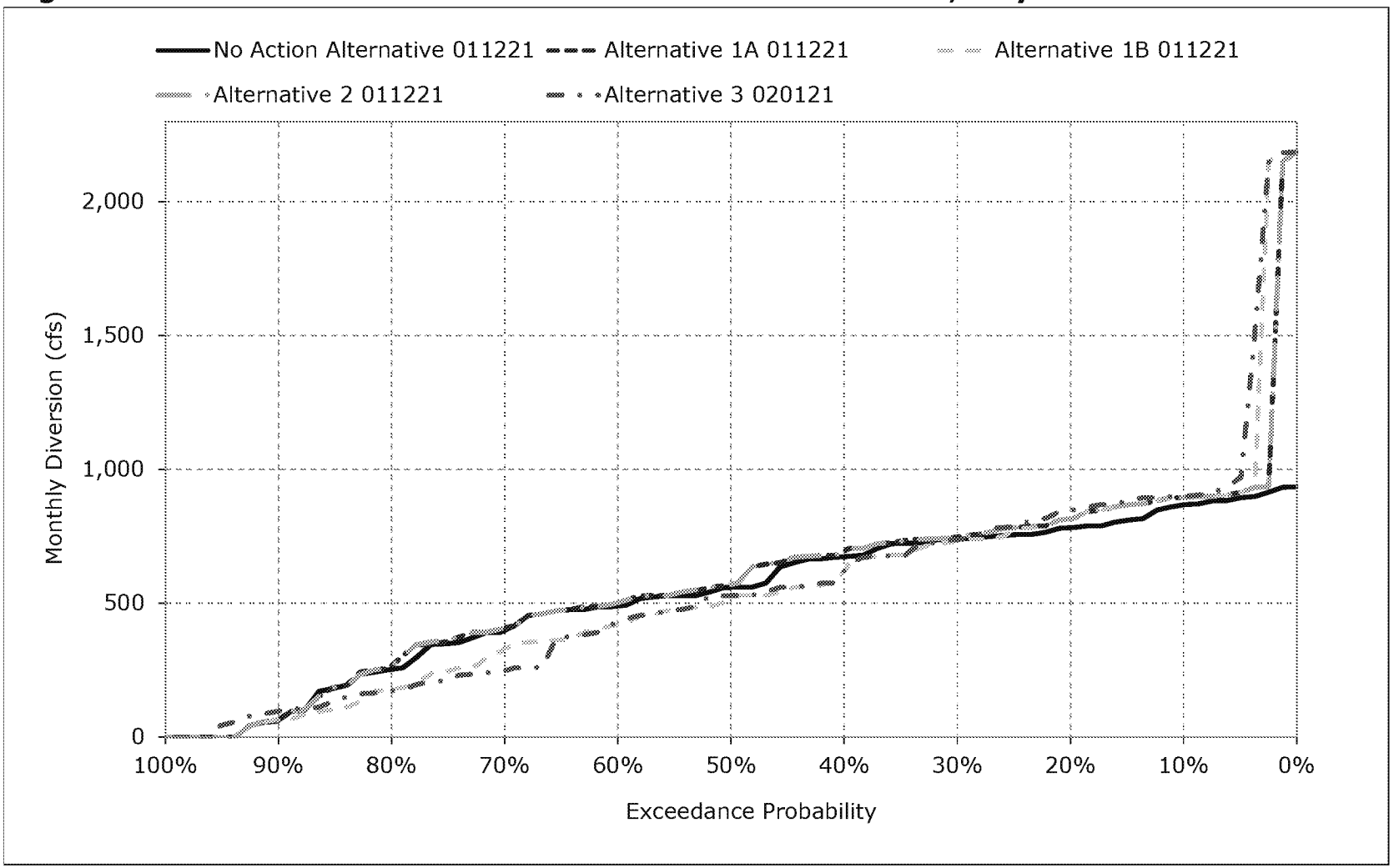


Figure 5B1-1-15. Red Bluff Diversion - Tehama Colusa Canal, June

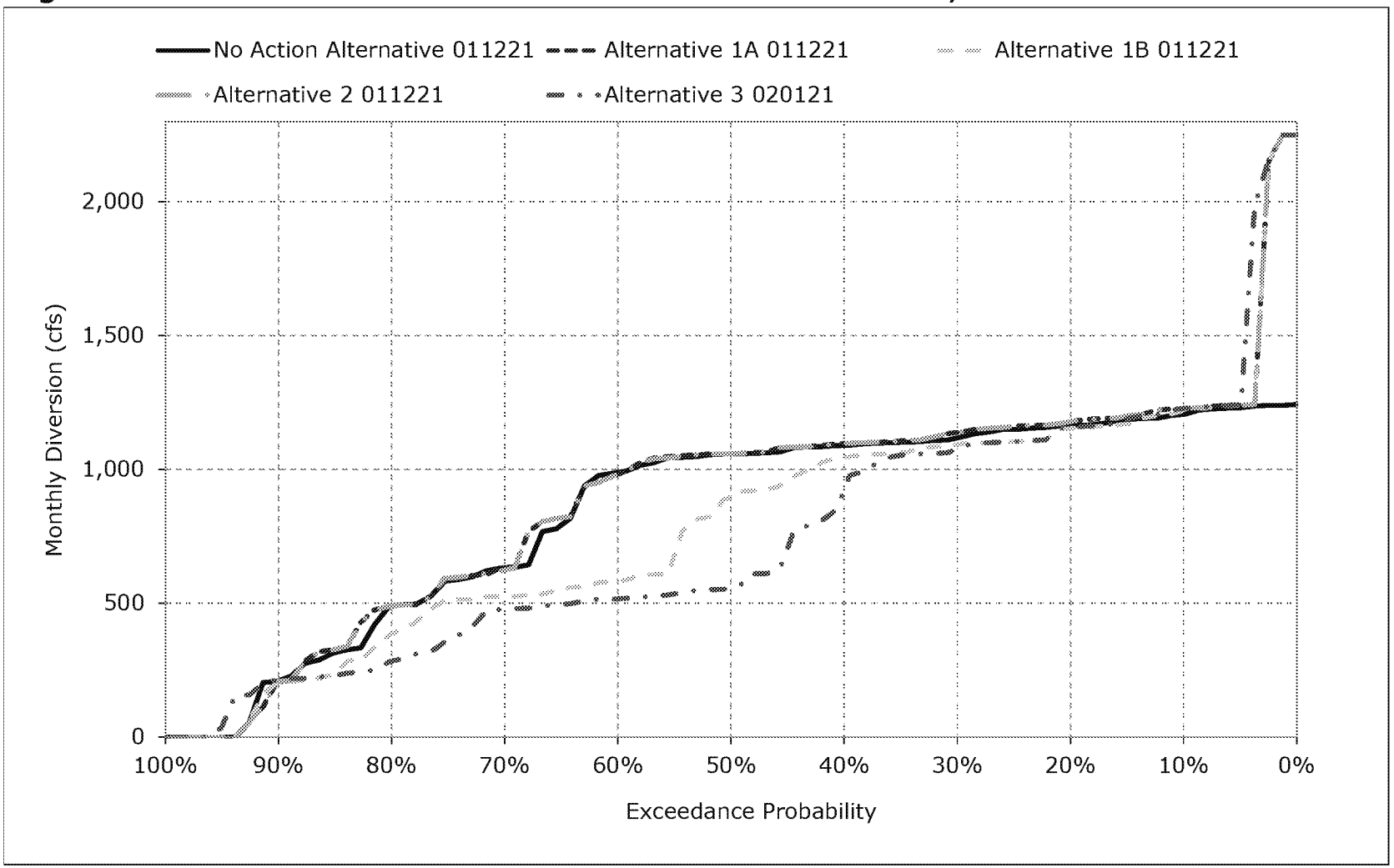


Figure 5B1-1-16. Red Bluff Diversion - Tehama Colusa Canal, July

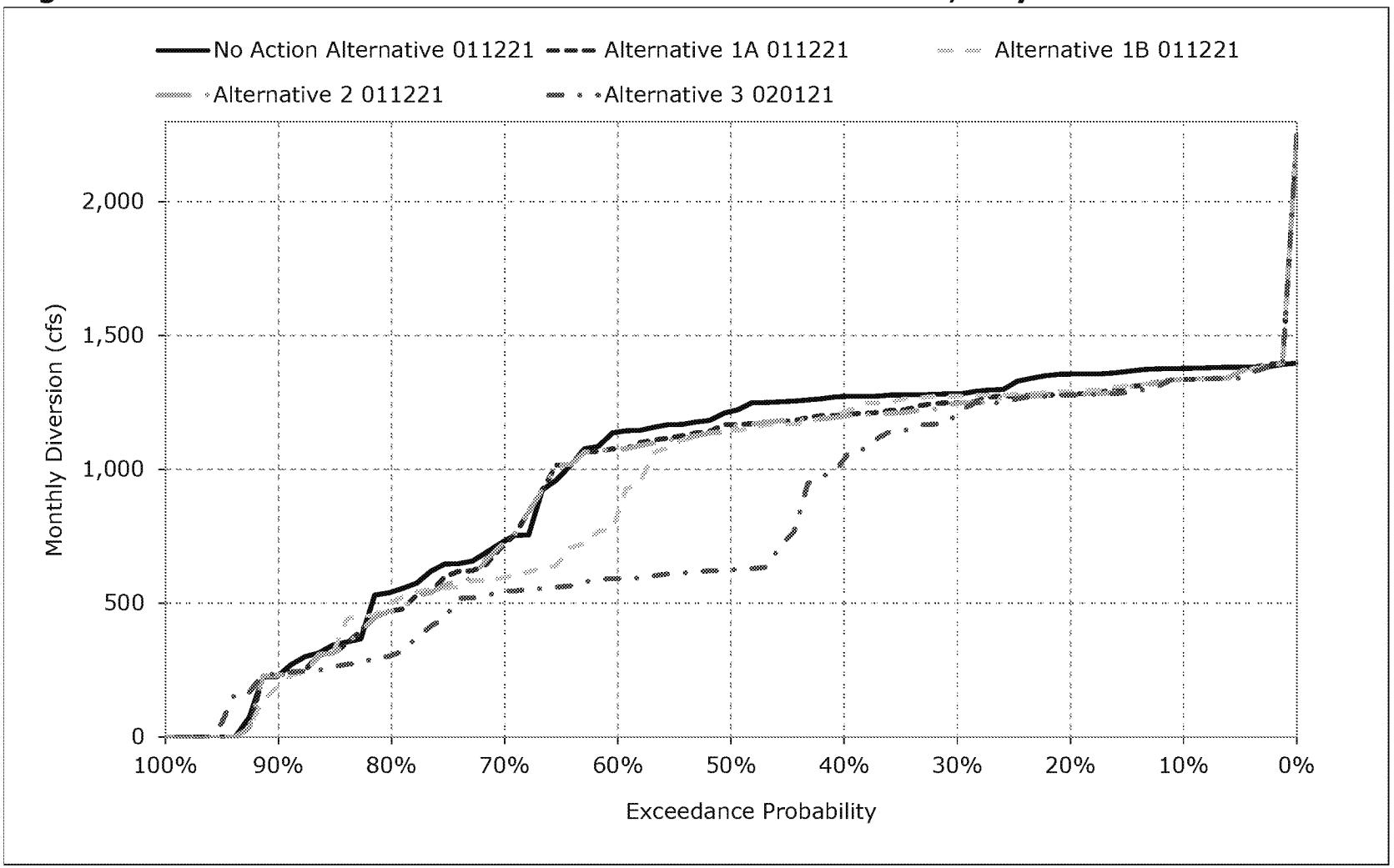


Figure 5B1-1-17. Red Bluff Diversion - Tehama Colusa Canal, August

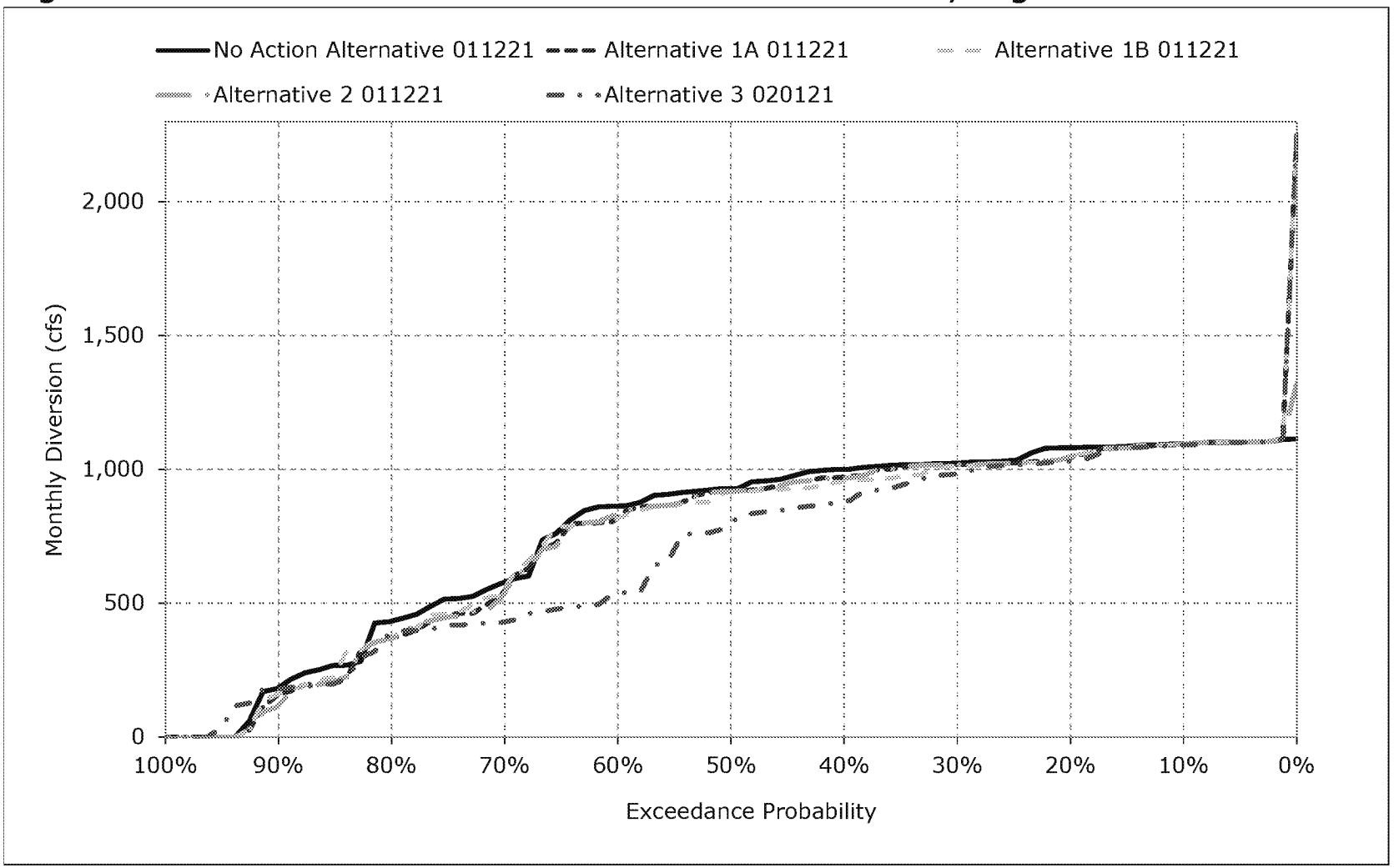


Figure 5B1-1-18. Red Bluff Diversion - Tehama Colusa Canal, September

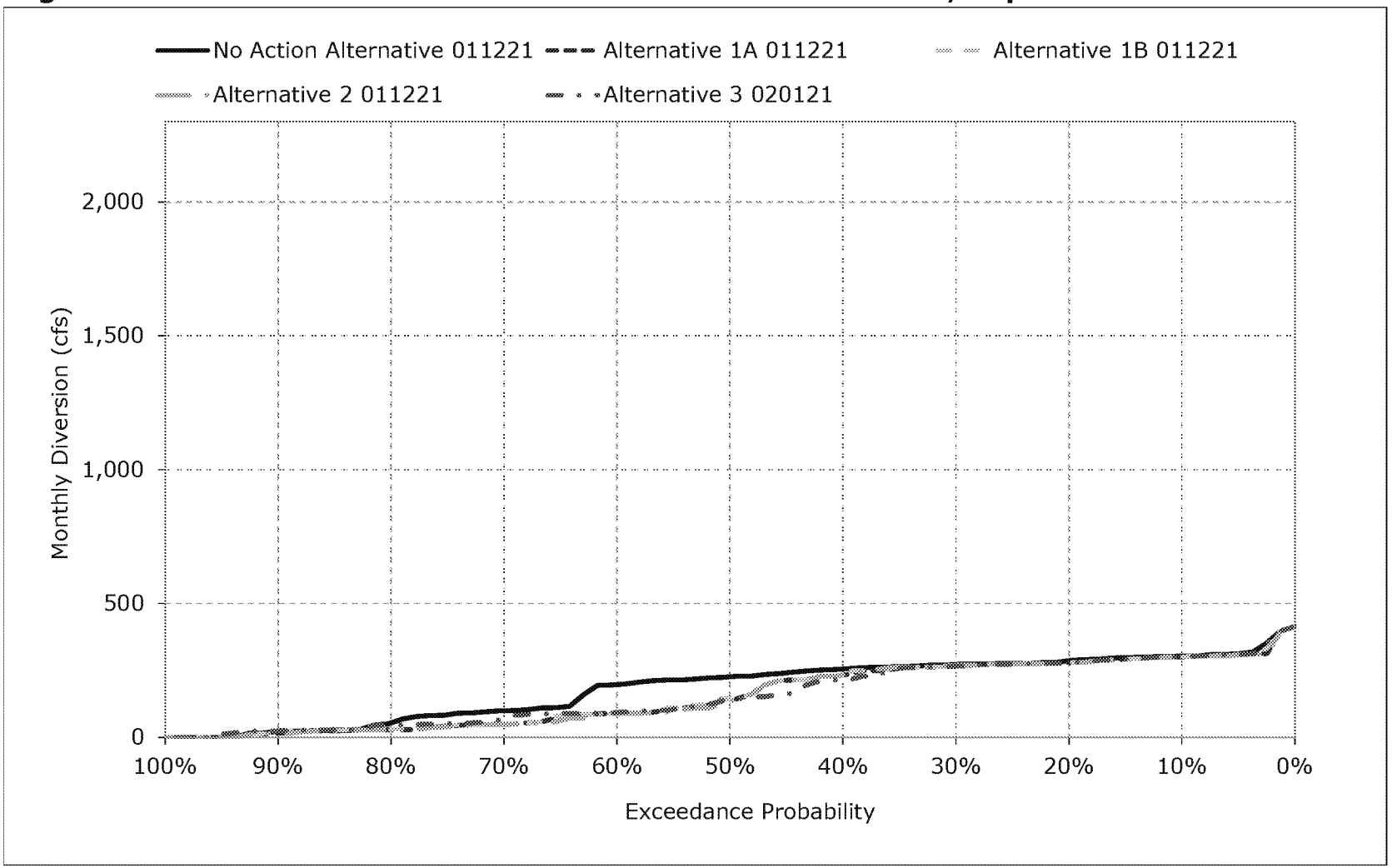


Table 5B1-2-1a. Hamilton City Diversion - Glenn Colusa Canal, No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	610	798	292	126	68	67	551	2,340	2,710	2,633	2,241	633
20%	605	774	270	86	68	50	525	2,296	2,620	2,611	2,219	633
30%	598	750	249	75	68	36	493	2,260	2,543	2,563	2,093	632
40%	586	699	224	75	68	23	466	2,245	2,483	2,527	2,065	629
50%	574	679	199	75	68	12	451	2,212	2,410	2,521	1,999	614
60%	556	649	181	75	68	11	423	2,164	2,347	2,489	1,924	602
70%	541	606	159	75	66	11	410	2,079	2,297	2,443	1,844	593
80%	516	575	158	75	66	11	380	2,025	2,258	2,443	1,812	536
90%	451	546	158	64	52	11	296	1,858	2,223	2,267	1,783	493
Long Term												
Full Simulation Period[a]	556	674	209	82	67	31	435	2,142	2,427	2,490	1,994	591
Water Year Types[b,c]												
Wet (32%)	575	695	229	78	67	22	378	2,117	2,238	2,538	2,190	621
Above Normal (15%)	560	678	207	73	65	17	426	2,085	2,350	2,518	2,009	615
Below Normal (17%)	561	696	201	90	68	34	450	2,188	2,557	2,617	2,026	578
Dry (22%)	571	662	213	85	68	32	460	2,186	2,662	2,467	1,843	589
Critical (15%)	484	616	170	89	64	62	512	2,133	2,412	2,243	1,745	517

Table 5B1-2-1b. Hamilton City Diversion - Glenn Colusa Canal, Alternative 1A 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	612	784	296	673	776	1,098	1,792	2,379	2,701	2,633	2,241	633
20%	601	749	268	140	277	323	550	2,313	2,581	2,614	2,238	633
30%	574	716	237	112	73	221	525	2,281	2,519	2,563	2,093	630
40%	552	671	214	79	68	109	490	2,245	2,469	2,525	2,065	625
50%	528	619	190	75	68	63	456	2,208	2,412	2,521	1,982	595
60%	488	583	173	75	68	45	426	2,132	2,348	2,468	1,924	541
70%	421	554	158	75	68	25	414	2,052	2,310	2,346	1,797	486
80%	386	529	158	75	68	11	392	1,968	2,266	2,200	1,706	440
90%	336	447	146	75	66	11	320	1,797	2,203	1,425	1,026	344
Long Term												
Full Simulation Period[a]	542	623	235	213	234	272	631	2,136	2,409	2,310	1,866	549
Water Year Types[b,c]												
Wet (32%)	740	693	225	318	460	345	880	2,233	2,367	2,579	2,236	655
Above Normal (15%)	560	629	187	447	220	595	583	2,173	2,419	2,512	2,009	614
Below Normal (17%)	418	619	289	90	139	143	583	2,191	2,547	2,608	1,987	529
Dry (22%)	437	560	298	86	103	178	437	2,086	2,366	1,925	1,440	440
Critical (15%)	395	565	150	86	64	83	490	1,898	2,398	1,752	1,419	439

Table 5B1-2-1c. Hamilton City Diversion - Glenn Colusa Canal, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2	-14	4	547	707	1,031	1,240	38	-9	0	0	0
20%	-4	-25	-1	53	208	273	26	17	-40	3	19	0
30%	-24	-34	-11	38	5	185	32	21	-24	0	0	-2
40%	-33	-28	-9	4	0	86	23	0	-14	-2	0	-4
50%	-46	-60	-9	0	0	52	6	-4	2	0	-17	-19
60%	-69	-66	-8	0	0	34	3	-32	2	-22	0	-61
70%	-119	-52	-1	0	2	14	4	-27	14	-97	-47	-107
80%	-130	-46	0	0	2	0	12	-57	8	-243	-105	-96
90%	-115	-99	-12	11	14	0	24	-62	-20	-841	-757	-149
Long Term												
Full Simulation Period[a]	-14	-51	27	130	167	241	196	-6	-18	-180	-128	-42
Water Year Types[b,c]												
Wet (32%)	165	-2	-4	239	392	324	501	117	129	41	46	34
Above Normal (15%)	0	-49	-20	374	155	578	157	88	69	-5	0	-1
Below Normal (17%)	-143	-78	88	0	71	109	133	3	-10	-9	-39	-49
Dry (22%)	-134	-102	85	1	35	146	-23	-100	-296	-542	-403	-149
Critical (15%)	-89	-51	-20	-3	0	21	-22	-235	-14	-492	-326	-78

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-2-2a. Hamilton City Diversion - Glenn Colusa Canal, No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	610	798	292	126	68	67	551	2,340	2,710	2,633	2,241	633
20%	605	774	270	86	68	50	525	2,296	2,620	2,611	2,219	633
30%	598	750	249	75	68	36	493	2,260	2,543	2,563	2,093	632
40%	586	699	224	75	68	23	466	2,245	2,483	2,527	2,065	629
50%	574	679	199	75	68	12	451	2,212	2,410	2,521	1,999	614
60%	556	649	181	75	68	11	423	2,164	2,347	2,489	1,924	602
70%	541	606	159	75	66	11	410	2,079	2,297	2,443	1,844	593
80%	516	575	158	75	66	11	380	2,025	2,258	2,443	1,812	536
90%	451	546	158	64	52	11	296	1,858	2,223	2,267	1,783	493
Long Term												
Full Simulation Period[a]	556	674	209	82	67	31	435	2,142	2,427	2,490	1,994	591
Water Year Types[b,c]												
Wet (32%)	575	695	229	78	67	22	378	2,117	2,238	2,538	2,190	621
Above Normal (15%)	560	678	207	73	65	17	426	2,085	2,350	2,518	2,009	615
Below Normal (17%)	561	696	201	90	68	34	450	2,188	2,557	2,617	2,026	578
Dry (22%)	571	662	213	85	68	32	460	2,186	2,662	2,467	1,843	589
Critical (15%)	484	616	170	89	64	62	512	2,133	2,412	2,243	1,745	517

Table 5B1-2-2b. Hamilton City Diversion - Glenn Colusa Canal, Alternative 1B 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	613	784	296	690	869	1,367	2,174	2,370	2,708	2,633	2,241	633
20%	603	759	268	140	397	319	552	2,301	2,613	2,611	2,238	633
30%	580	716	237	112	80	239	533	2,271	2,542	2,563	2,093	630
40%	554	673	214	77	68	111	499	2,243	2,477	2,521	2,065	627
50%	528	619	190	75	68	66	463	2,197	2,418	2,521	1,982	603
60%	488	587	173	75	68	45	429	2,095	2,360	2,464	1,910	557
70%	425	554	158	75	68	26	415	2,028	2,310	2,336	1,797	494
80%	372	507	158	75	66	11	393	1,892	2,266	2,174	1,490	442
90%	338	452	142	75	66	11	333	1,688	2,204	1,419	1,026	352
Long Term												
Full Simulation Period[a]	553	626	235	226	256	279	660	2,112	2,418	2,297	1,855	543
Water Year Types[b,c]												
Wet (32%)	741	693	225	364	524	362	970	2,255	2,397	2,578	2,236	620
Above Normal (15%)	618	639	187	447	240	596	583	2,172	2,317	2,423	2,009	612
Below Normal (17%)	421	618	289	85	137	133	583	2,039	2,573	2,578	1,950	533
Dry (22%)	437	557	296	86	101	191	440	2,075	2,461	1,948	1,421	452
Critical (15%)	410	584	150	82	64	83	481	1,883	2,317	1,756	1,416	453

Table 5B1-2-2c. Hamilton City Diversion - Glenn Colusa Canal, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2	-15	4	564	801	1,301	1,623	30	-2	0	0	0
20%	-3	-15	-1	54	329	269	27	5	-7	0	19	0
30%	-19	-34	-11	38	11	203	40	11	-1	0	0	-2
40%	-32	-26	-9	2	0	88	33	-2	-7	-6	0	-3
50%	-46	-60	-9	0	0	54	12	-16	7	0	-17	-11
60%	-68	-63	-8	0	0	34	5	-69	14	-25	-14	-46
70%	-116	-52	-1	0	2	14	5	-51	14	-107	-47	-99
80%	-144	-68	0	0	0	0	13	-133	8	-269	-322	-94
90%	-113	-93	-16	11	14	0	37	-170	-18	-848	-757	-141
Long Term												
Full Simulation Period[a]	-3	-47	26	144	190	248	225	-30	-9	-193	-139	-48
Water Year Types[b,c]												
Wet (32%)	166	-2	-4	286	457	340	592	138	160	40	46	-1
Above Normal (15%)	58	-39	-20	375	175	579	157	88	-32	-95	0	-3
Below Normal (17%)	-140	-78	88	-5	69	99	133	-149	16	-39	-77	-45
Dry (22%)	-134	-105	83	1	32	159	-20	-112	-201	-519	-422	-136
Critical (15%)	-74	-32	-20	-7	0	21	-30	-250	-95	-488	-329	-64

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-2-3a. Hamilton City Diversion - Glenn Colusa Canal, No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	610	798	292	126	68	67	551	2,340	2,710	2,633	2,241	633
20%	605	774	270	86	68	50	525	2,296	2,620	2,611	2,219	633
30%	598	750	249	75	68	36	493	2,260	2,543	2,563	2,093	632
40%	586	699	224	75	68	23	466	2,245	2,483	2,527	2,065	629
50%	574	679	199	75	68	12	451	2,212	2,410	2,521	1,999	614
60%	556	649	181	75	68	11	423	2,164	2,347	2,489	1,924	602
70%	541	606	159	75	66	11	410	2,079	2,297	2,443	1,844	593
80%	516	575	158	75	66	11	380	2,025	2,258	2,443	1,812	536
90%	451	546	158	64	52	11	296	1,858	2,223	2,267	1,783	493
Long Term												
Full Simulation Period[a]	556	674	209	82	67	31	435	2,142	2,427	2,490	1,994	591
Water Year Types[b,c]												
Wet (32%)	575	695	229	78	67	22	378	2,117	2,238	2,538	2,190	621
Above Normal (15%)	560	678	207	73	65	17	426	2,085	2,350	2,518	2,009	615
Below Normal (17%)	561	696	201	90	68	34	450	2,188	2,557	2,617	2,026	578
Dry (22%)	571	662	213	85	68	32	460	2,186	2,662	2,467	1,843	589
Critical (15%)	484	616	170	89	64	62	512	2,133	2,412	2,243	1,745	517

Table 5B1-2-3b. Hamilton City Diversion - Glenn Colusa Canal, Alternative 2 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	612	782	296	673	786	808	584	2,373	2,710	2,633	2,241	633
20%	601	749	268	140	224	313	547	2,313	2,597	2,614	2,238	633
30%	574	708	237	112	69	192	523	2,281	2,542	2,563	2,093	630
40%	551	673	214	77	68	84	490	2,245	2,484	2,525	2,065	627
50%	520	637	190	75	68	54	456	2,208	2,418	2,521	1,982	596
60%	477	590	173	75	68	35	426	2,132	2,359	2,468	1,924	541
70%	425	560	158	75	68	15	414	2,049	2,309	2,352	1,824	486
80%	386	543	158	75	67	11	392	1,967	2,266	2,202	1,714	428
90%	336	466	138	75	66	11	321	1,791	2,203	1,427	1,026	347
Long Term												
Full Simulation Period[a]	538	628	235	212	229	237	614	2,136	2,419	2,316	1,887	539
Water Year Types[b,c]												
Wet (32%)	738	693	225	316	445	253	825	2,230	2,363	2,578	2,235	620
Above Normal (15%)	560	624	187	447	222	570	583	2,173	2,419	2,512	2,009	614
Below Normal (17%)	415	610	289	90	139	138	583	2,191	2,547	2,609	1,987	522
Dry (22%)	436	587	296	86	103	171	437	2,086	2,405	1,928	1,487	436
Critical (15%)	381	576	152	86	64	83	490	1,906	2,411	1,791	1,496	459

Table 5B1-2-3c. Hamilton City Diversion - Glenn Colusa Canal, Alternative 2 011221 minus No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2	-16	4	547	717	742	32	32	0	0	0	0
20%	-4	-25	-1	53	156	263	22	17	-23	3	19	0
30%	-24	-42	-11	38	1	156	30	21	-1	0	0	-2
40%	-35	-26	-9	2	0	61	23	0	1	-2	0	-3
50%	-53	-42	-9	0	0	43	6	-4	7	0	-17	-17
60%	-79	-59	-8	0	0	24	3	-32	13	-22	0	-61
70%	-116	-45	-1	0	2	3	4	-30	12	-91	-20	-107
80%	-130	-32	0	0	0	0	12	-57	8	-241	-97	-109
90%	-115	-80	-20	11	14	0	25	-67	-20	-839	-757	-146
Long Term												
Full Simulation Period[a]	-18	-45	26	130	163	206	179	-6	-8	-174	-107	-52
Water Year Types[b,c]												
Wet (32%)	163	-2	-4	238	378	231	446	114	125	40	45	-1
Above Normal (15%)	0	-54	-20	374	157	553	157	88	69	-5	0	-1
Below Normal (17%)	-146	-86	88	0	72	104	133	3	-10	-9	-39	-56
Dry (22%)	-135	-75	83	1	35	139	-23	-100	-257	-538	-355	-152
Critical (15%)	-103	-40	-18	-3	0	21	-22	-227	-1	-453	-249	-58

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-2-4a. Hamilton City Diversion - Glenn Colusa Canal, No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	610	798	292	126	68	67	551	2,340	2,710	2,633	2,241	633
20%	605	774	270	86	68	50	525	2,296	2,620	2,611	2,219	633
30%	598	750	249	75	68	36	493	2,260	2,543	2,563	2,093	632
40%	586	699	224	75	68	23	466	2,245	2,483	2,527	2,065	629
50%	574	679	199	75	68	12	451	2,212	2,410	2,521	1,999	614
60%	556	649	181	75	68	11	423	2,164	2,347	2,489	1,924	602
70%	541	606	159	75	66	11	410	2,079	2,297	2,443	1,844	593
80%	516	575	158	75	66	11	380	2,025	2,258	2,443	1,812	536
90%	451	546	158	64	52	11	296	1,858	2,223	2,267	1,783	493
Long Term												
Full Simulation Period[a]	556	674	209	82	67	31	435	2,142	2,427	2,490	1,994	591
Water Year Types[b,c]												
Wet (32%)	575	695	229	78	67	22	378	2,117	2,238	2,538	2,190	621
Above Normal (15%)	560	678	207	73	65	17	426	2,085	2,350	2,518	2,009	615
Below Normal (17%)	561	696	201	90	68	34	450	2,188	2,557	2,617	2,026	578
Dry (22%)	571	662	213	85	68	32	460	2,186	2,662	2,467	1,843	589
Critical (15%)	484	616	170	89	64	62	512	2,133	2,412	2,243	1,745	517

Table 5B1-2-4b. Hamilton City Diversion - Glenn Colusa Canal, Alternative 3 020121, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	612	787	297	690	911	1,426	2,207	2,395	2,697	2,617	2,241	633
20%	603	753	270	140	550	342	562	2,295	2,577	2,538	2,238	633
30%	590	716	240	118	125	270	539	2,259	2,478	2,521	2,093	630
40%	554	680	221	79	68	148	520	2,222	2,392	2,467	2,065	628
50%	515	637	194	75	68	73	469	2,142	2,304	2,333	1,982	608
60%	484	588	173	75	68	52	442	2,046	2,261	2,189	1,854	573
70%	421	559	158	75	68	32	420	1,944	2,208	1,565	1,779	492
80%	372	533	158	75	67	12	404	1,797	1,931	1,446	1,641	451
90%	337	466	146	75	66	11	354	1,319	1,638	1,400	1,026	351
Long Term												
Full Simulation Period[a]	564	633	250	228	293	326	703	2,063	2,264	2,100	1,849	557
Water Year Types[b,c]												
Wet (32%)	742	693	225	364	561	511	1,101	2,314	2,395	2,577	2,236	656
Above Normal (15%)	623	630	281	449	351	596	583	2,173	2,084	1,547	1,751	610
Below Normal (17%)	423	610	289	90	187	134	583	1,942	2,128	2,260	1,923	542
Dry (22%)	449	597	303	86	103	195	441	1,900	2,248	1,848	1,509	461
Critical (15%)	454	587	146	85	60	76	491	1,795	2,339	1,809	1,530	450

Table 5B1-2-4c. Hamilton City Diversion - Glenn Colusa Canal, Alternative 3 020121 minus No Action Alternative 011221, Monthly Diversion (cfs)

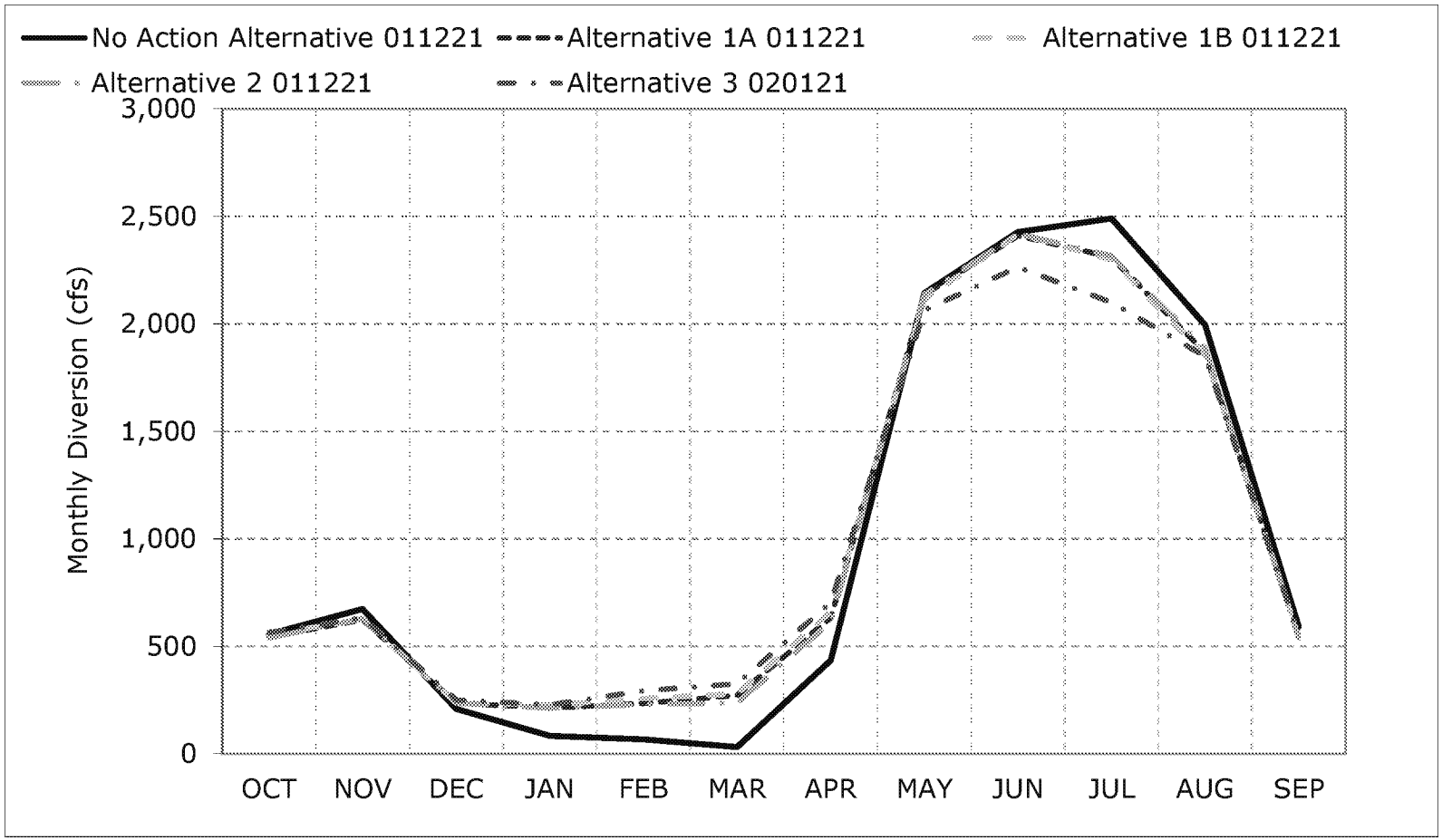
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2	-11	6	564	843	1,360	1,655	55	-13	-16	0	0
20%	-2	-22	0	54	481	293	37	-1	-44	-73	19	0
30%	-8	-34	-8	44	56	234	46	-1	-65	-41	0	-2
40%	-32	-19	-2	4	0	125	53	-23	-91	-60	0	-1
50%	-59	-42	-6	0	0	61	19	-70	-106	-189	-17	-6
60%	-73	-61	-8	0	0	40	18	-118	-86	-300	-70	-29
70%	-120	-47	-1	0	2	21	10	-135	-88	-877	-65	-101
80%	-144	-42	0	0	0	1	24	-228	-328	-997	-171	-85
90%	-114	-80	-12	11	14	0	58	-539	-585	-867	-757	-142
Long Term												
Full Simulation Period[a]	7	-41	41	145	226	295	268	-79	-163	-390	-145	-34
Water Year Types[b,c]												
Wet (32%)	167	-2	-4	286	494	490	723	197	158	39	46	35
Above Normal (15%)	63	-47	74	376	286	579	157	89	-265	-971	-258	-5
Below Normal (17%)	-138	-86	88	0	119	100	133	-246	-429	-357	-103	-36
Dry (22%)	-122	-65	90	1	35	163	-19	-287	-414	-619	-334	-128
Critical (15%)	-30	-29	-24	-4	-4	14	-20	-338	-72	-434	-215	-67

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

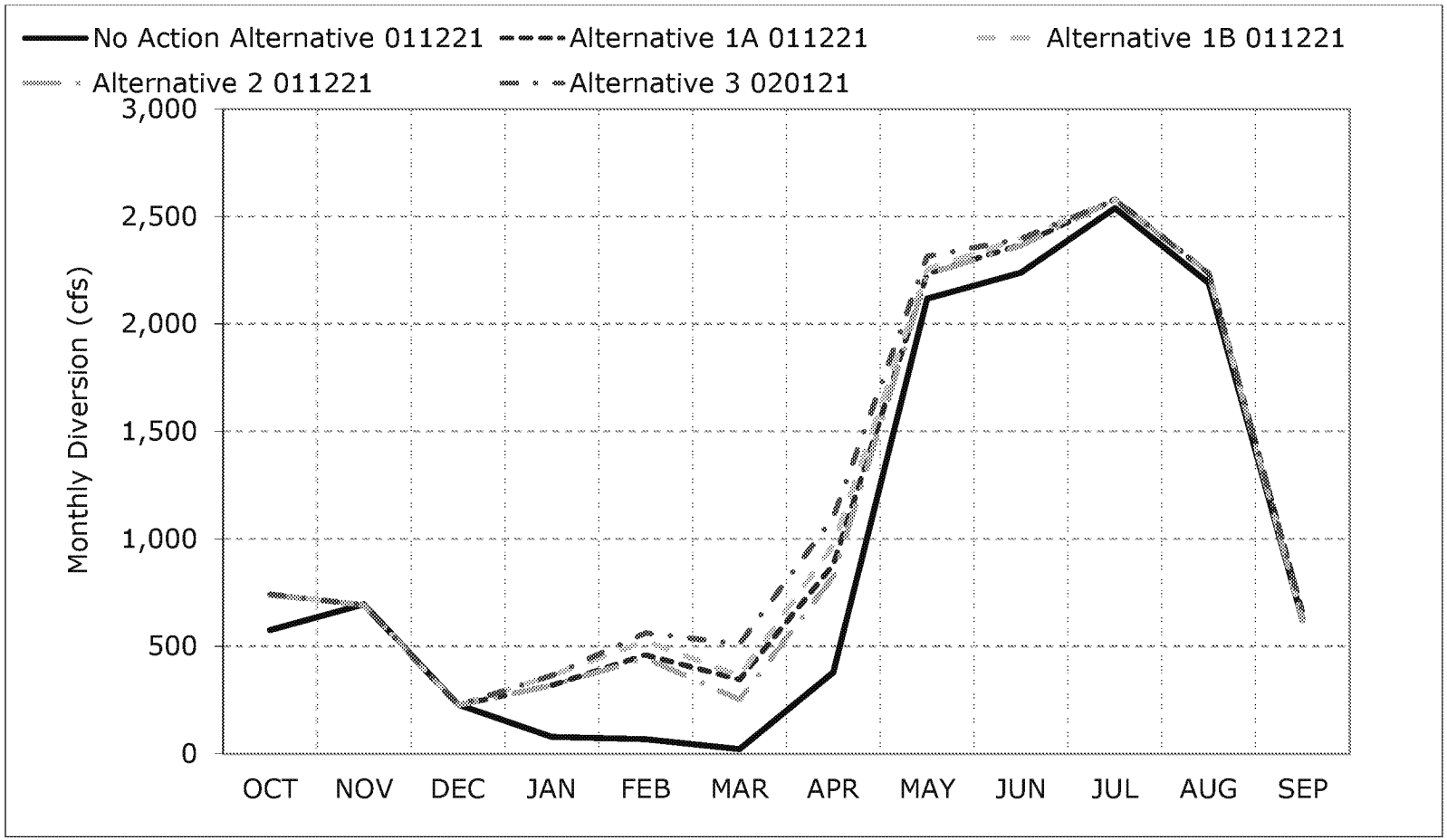
c These results are displayed with calendar year - year type sorting.

Figure 5B1-2-1. Hamilton City Diversion - Glenn Colusa Canal, Long-Term Average Diversion



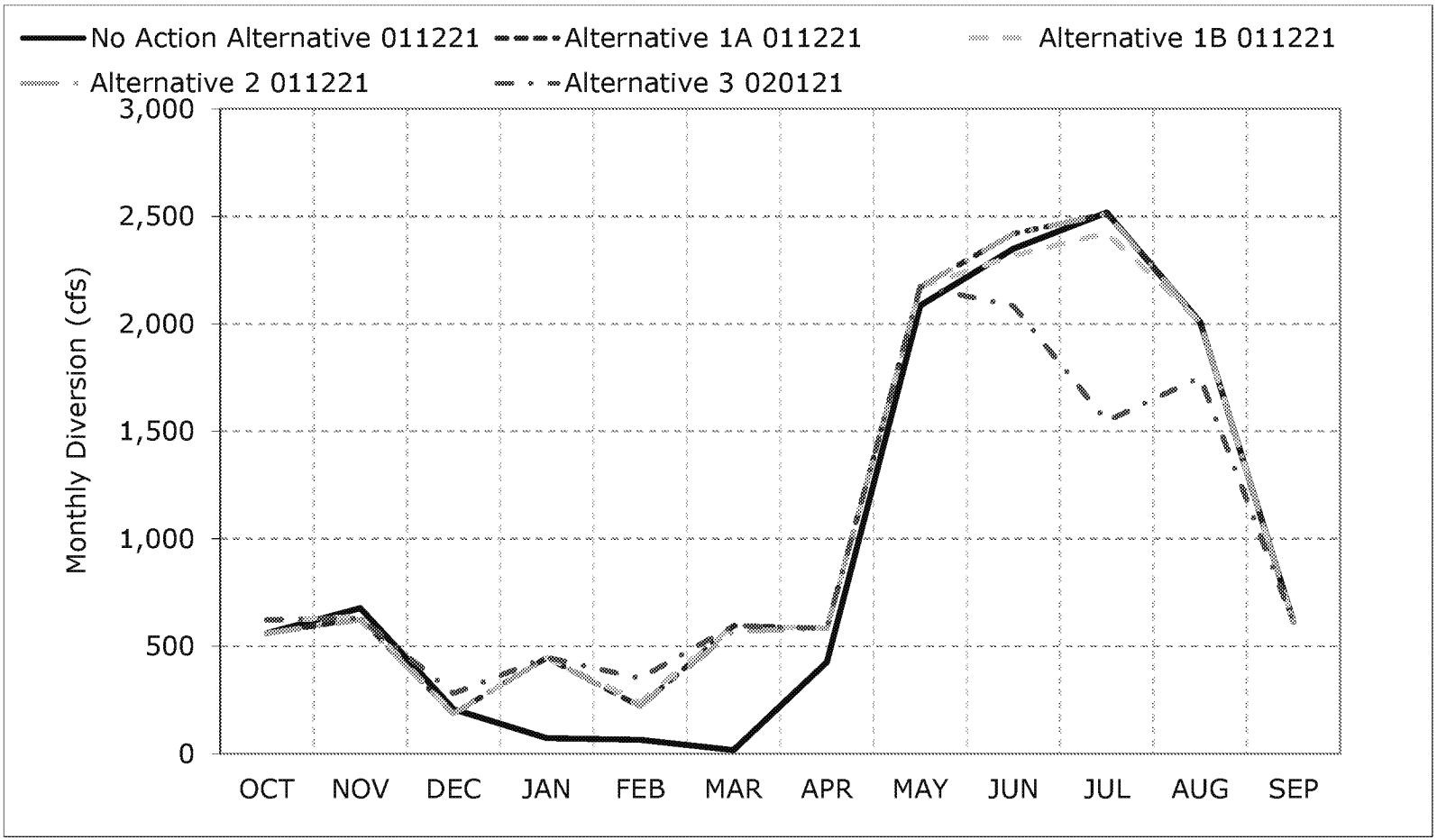
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-2-2. Hamilton City Diversion - Glenn Colusa Canal, Wet Year Average Diversion



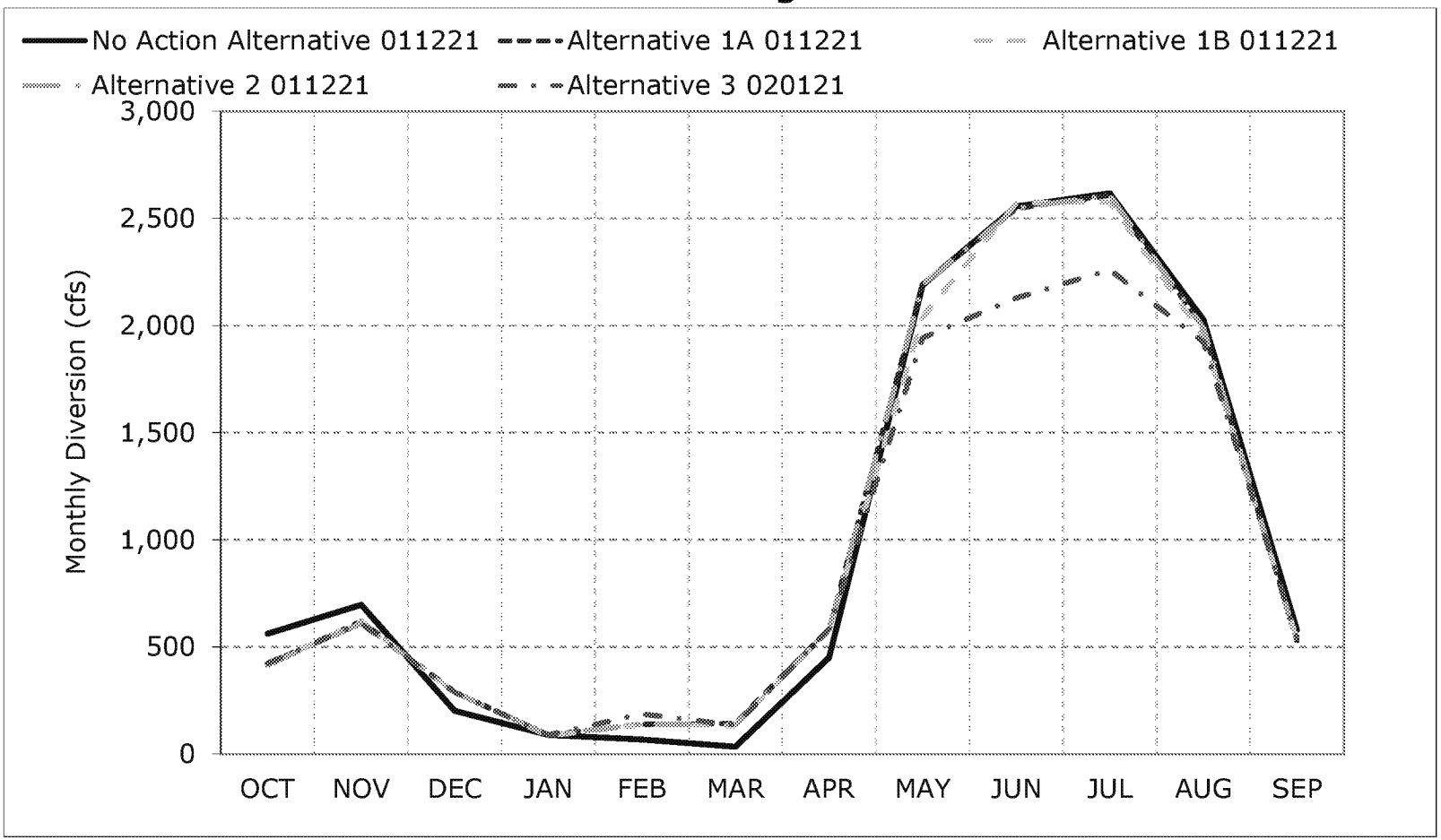
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-2-3. Hamilton City Diversion - Glenn Colusa Canal, Above Normal Year Average Diversion



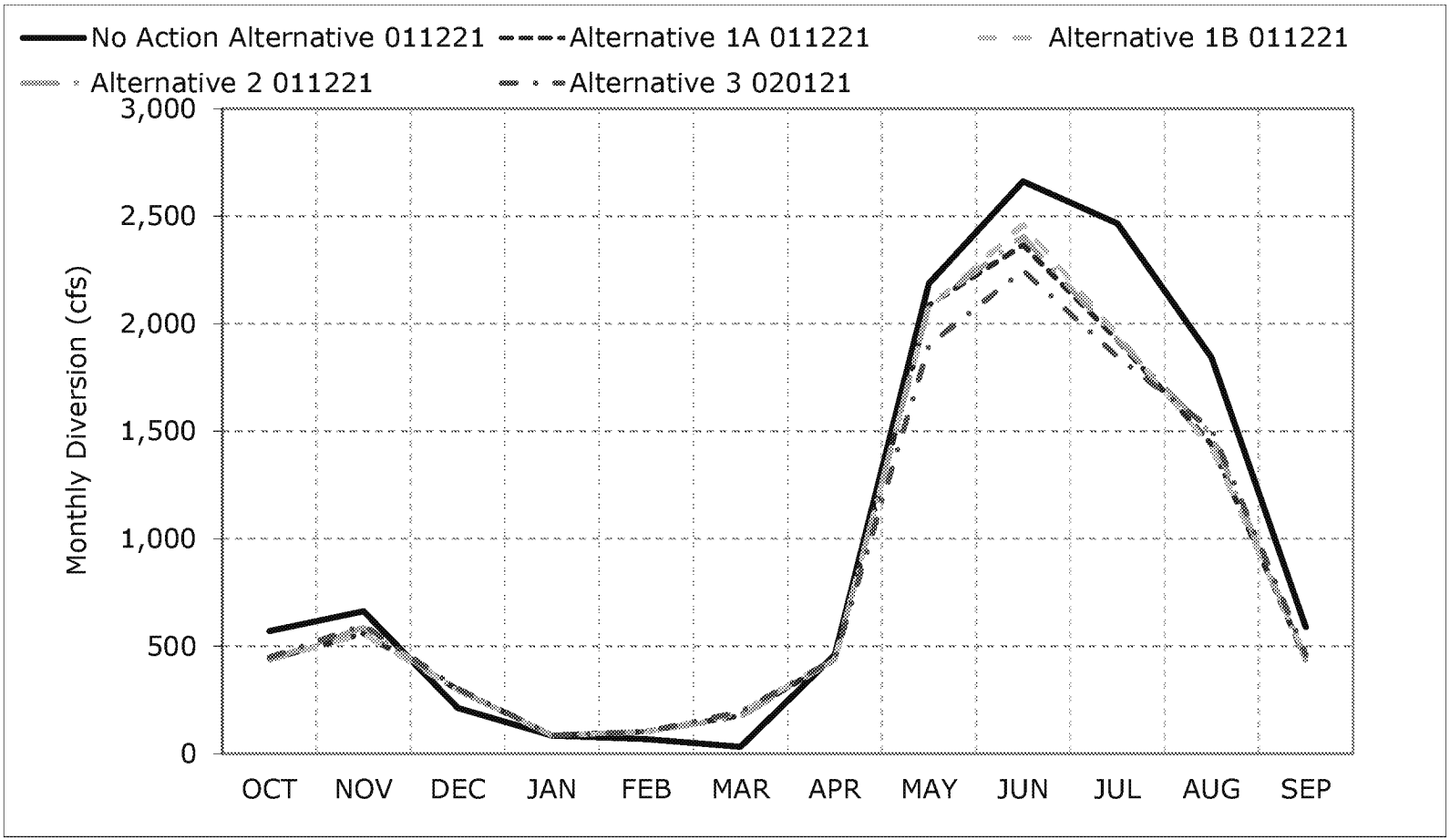
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-2-4. Hamilton City Diversion - Glenn Colusa Canal, Below Normal Year Average Diversion



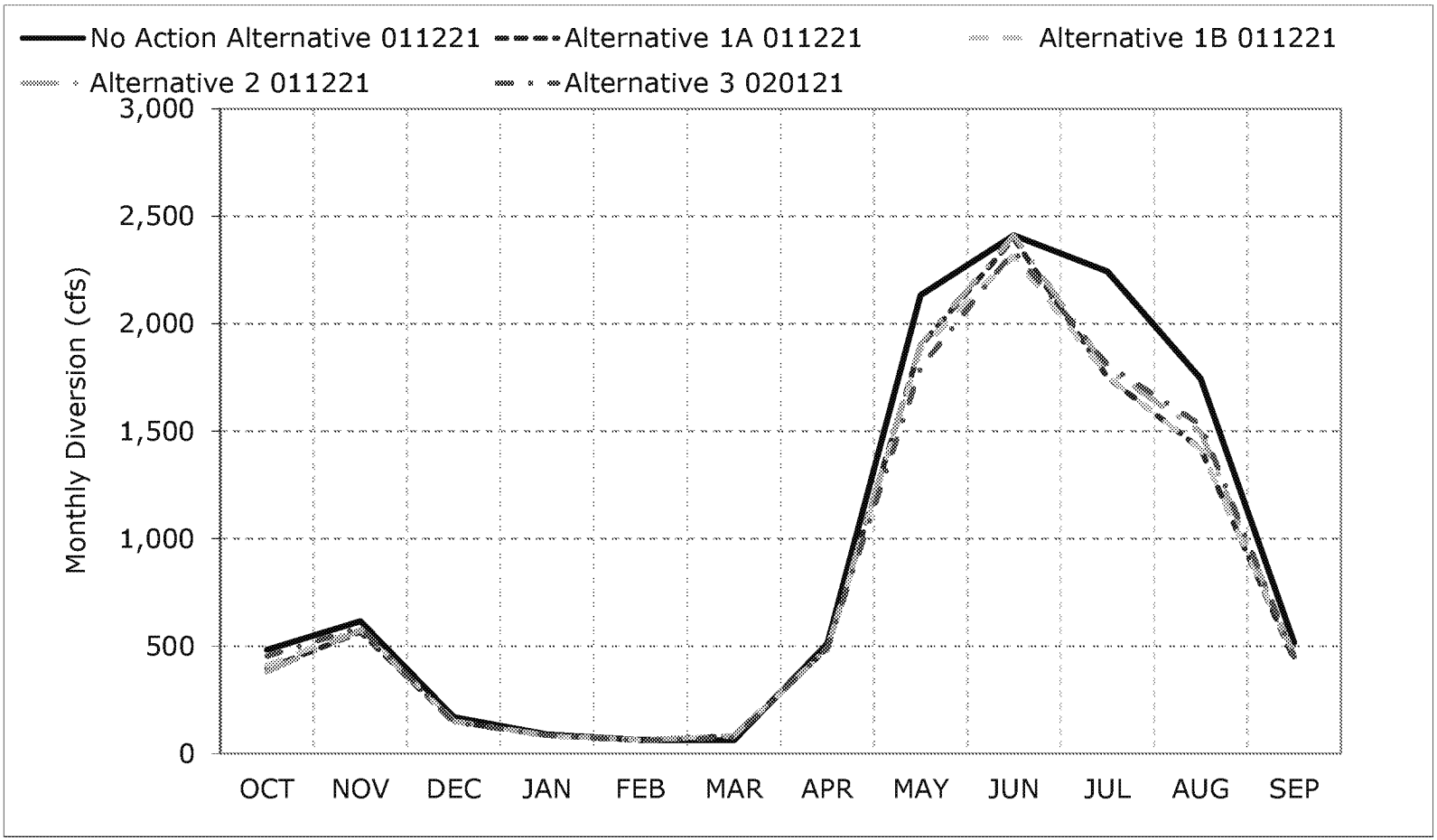
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-2-5. Hamilton City Diversion - Glenn Colusa Canal, Dry Year Average Diversion



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-2-6. Hamilton City Diversion - Glenn Colusa Canal, Critical Year Average Diversion



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-2-7. Hamilton City Diversion - Glenn Colusa Canal, October

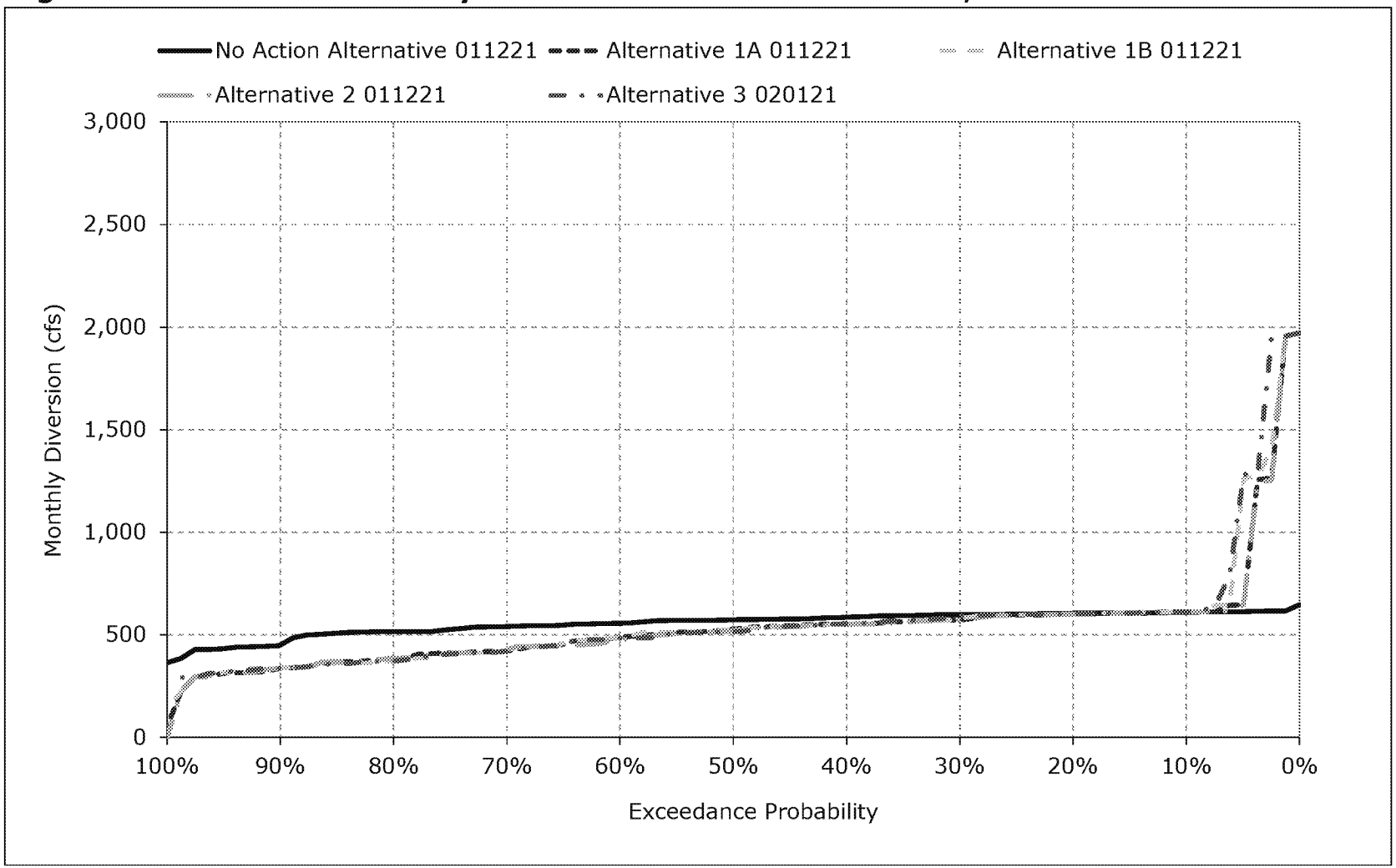


Figure 5B1-2-8. Hamilton City Diversion - Glenn Colusa Canal, November

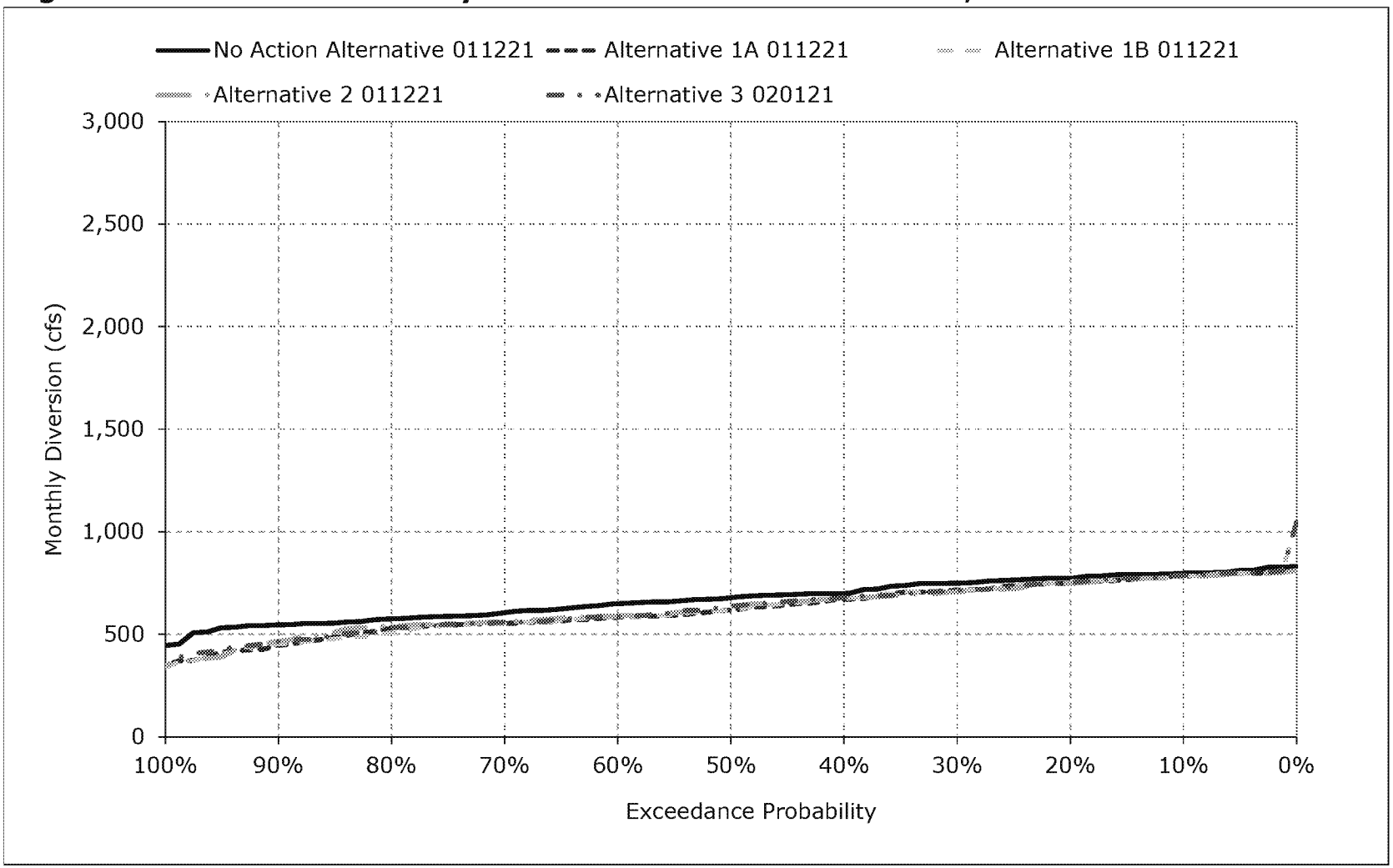


Figure 5B1-2-9. Hamilton City Diversion - Glenn Colusa Canal, December

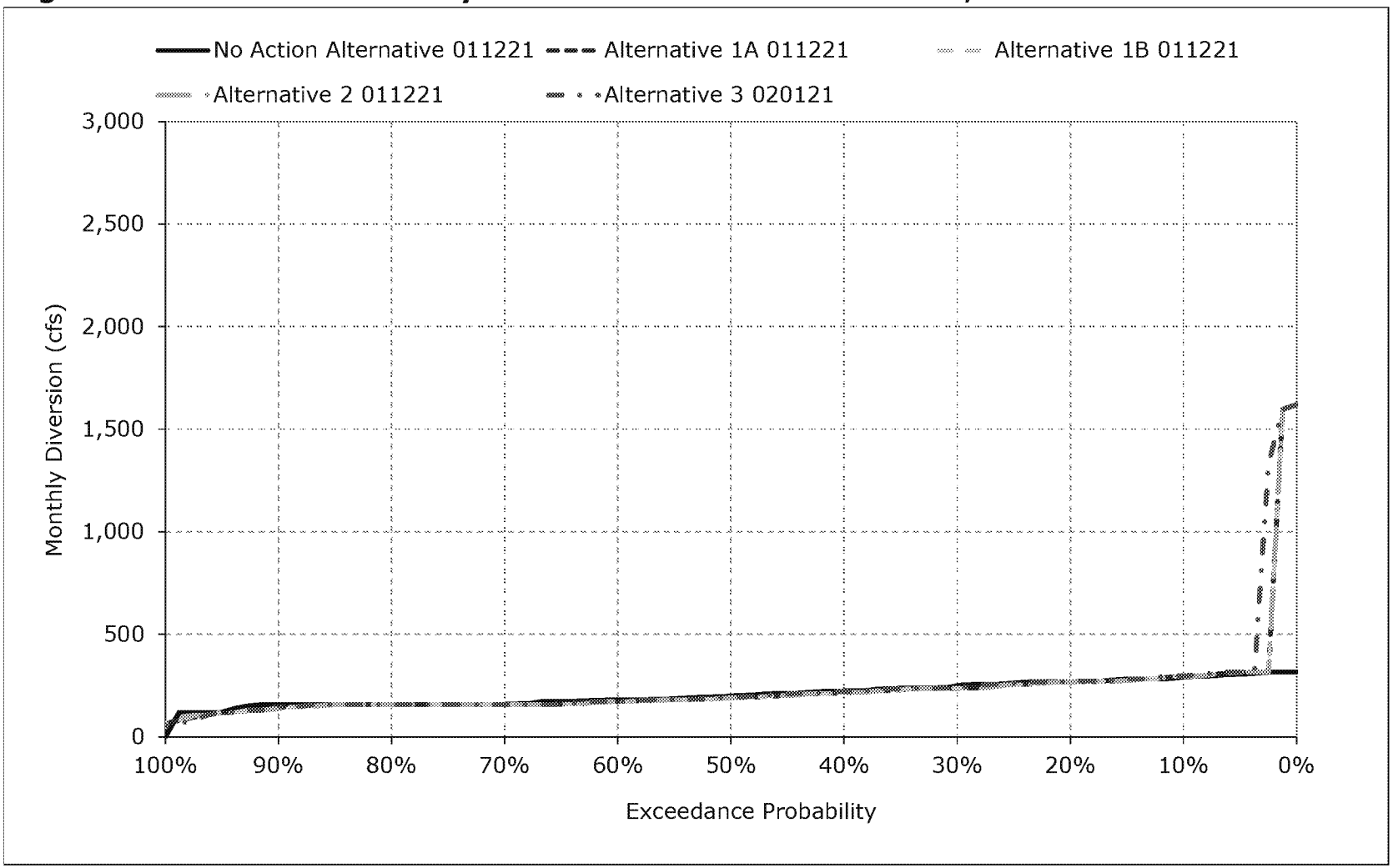


Figure 5B1-2-10. Hamilton City Diversion - Glenn Colusa Canal, January

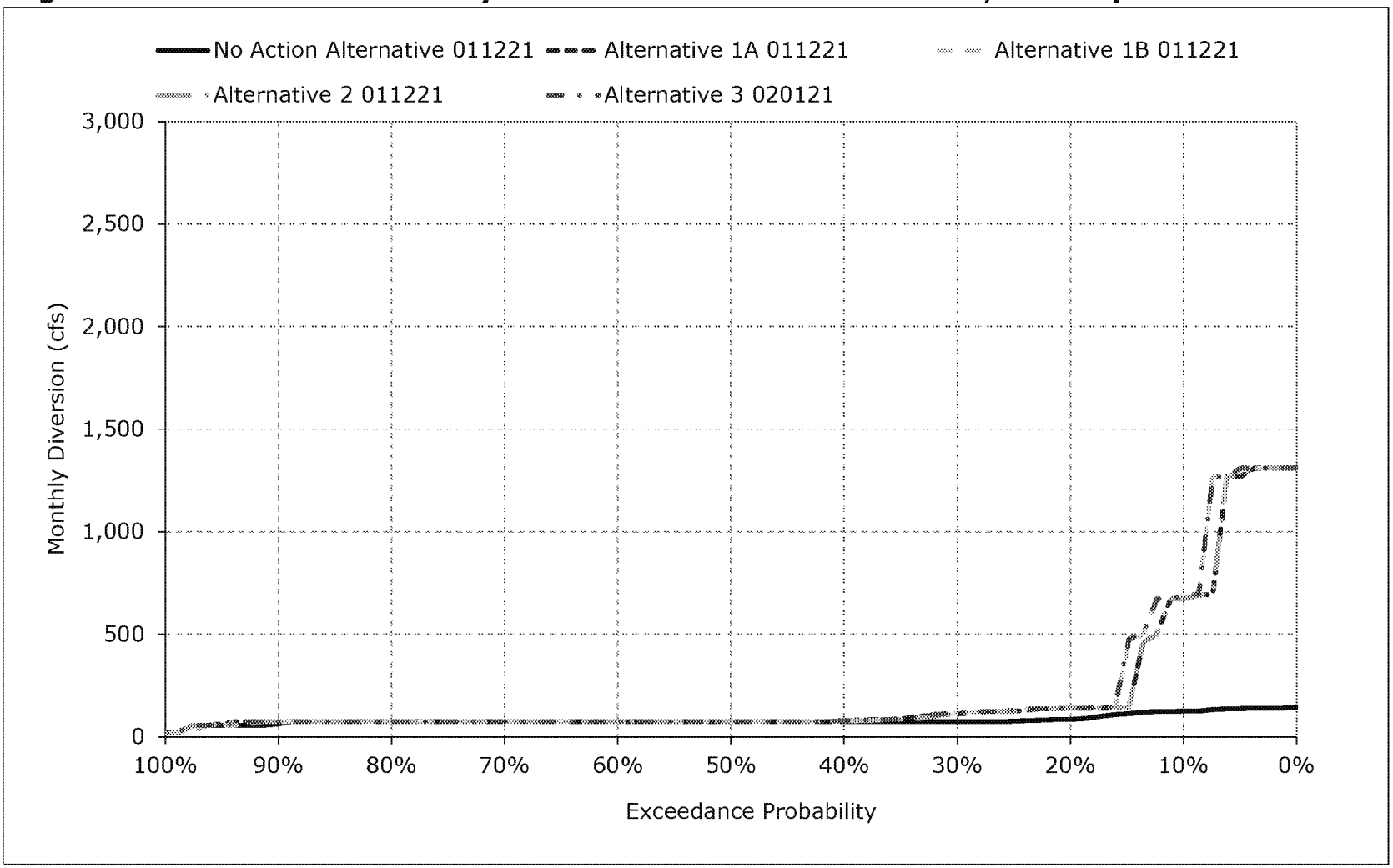


Figure 5B1-2-11. Hamilton City Diversion - Glenn Colusa Canal, February

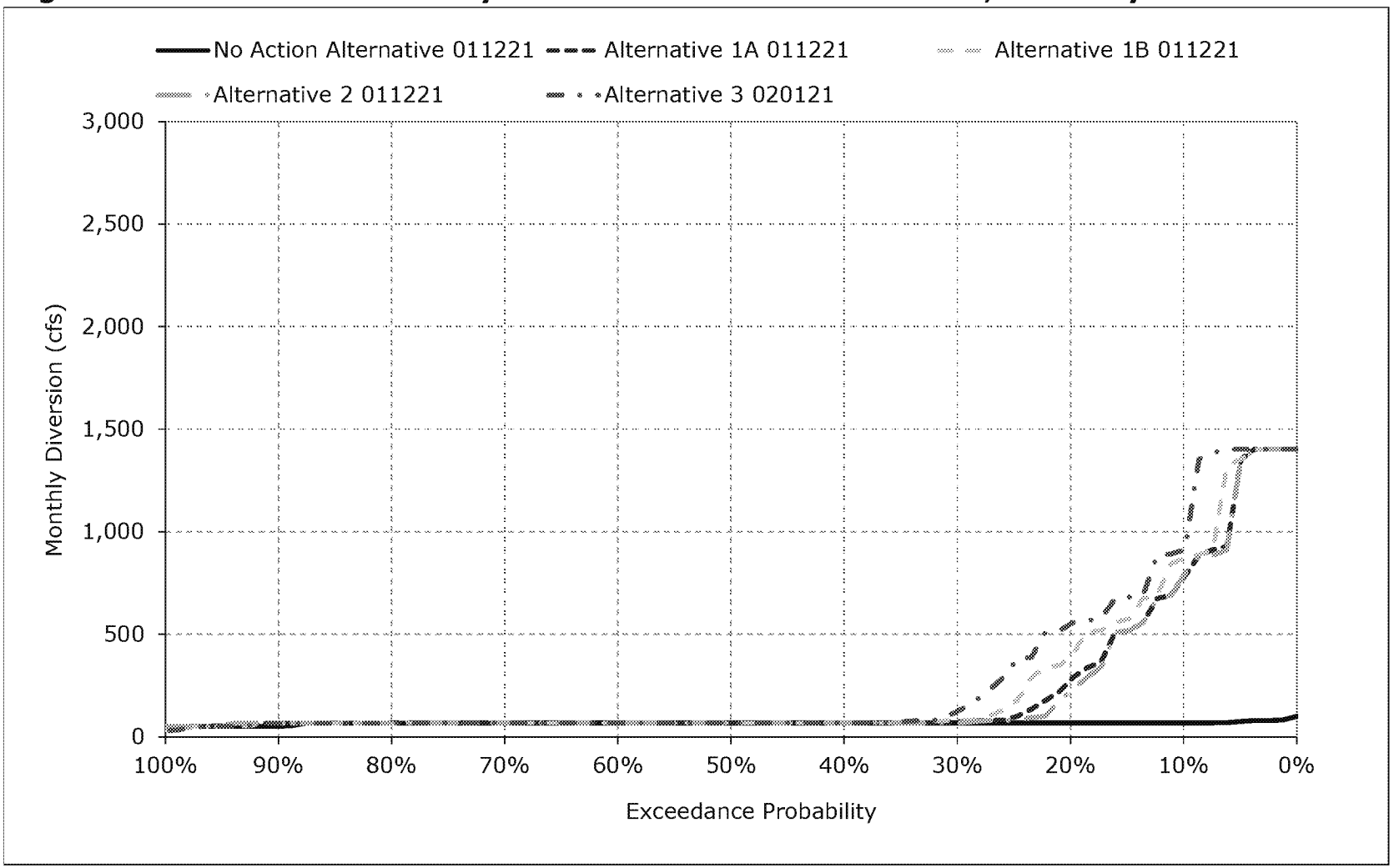


Figure 5B1-2-12. Hamilton City Diversion - Glenn Colusa Canal, March

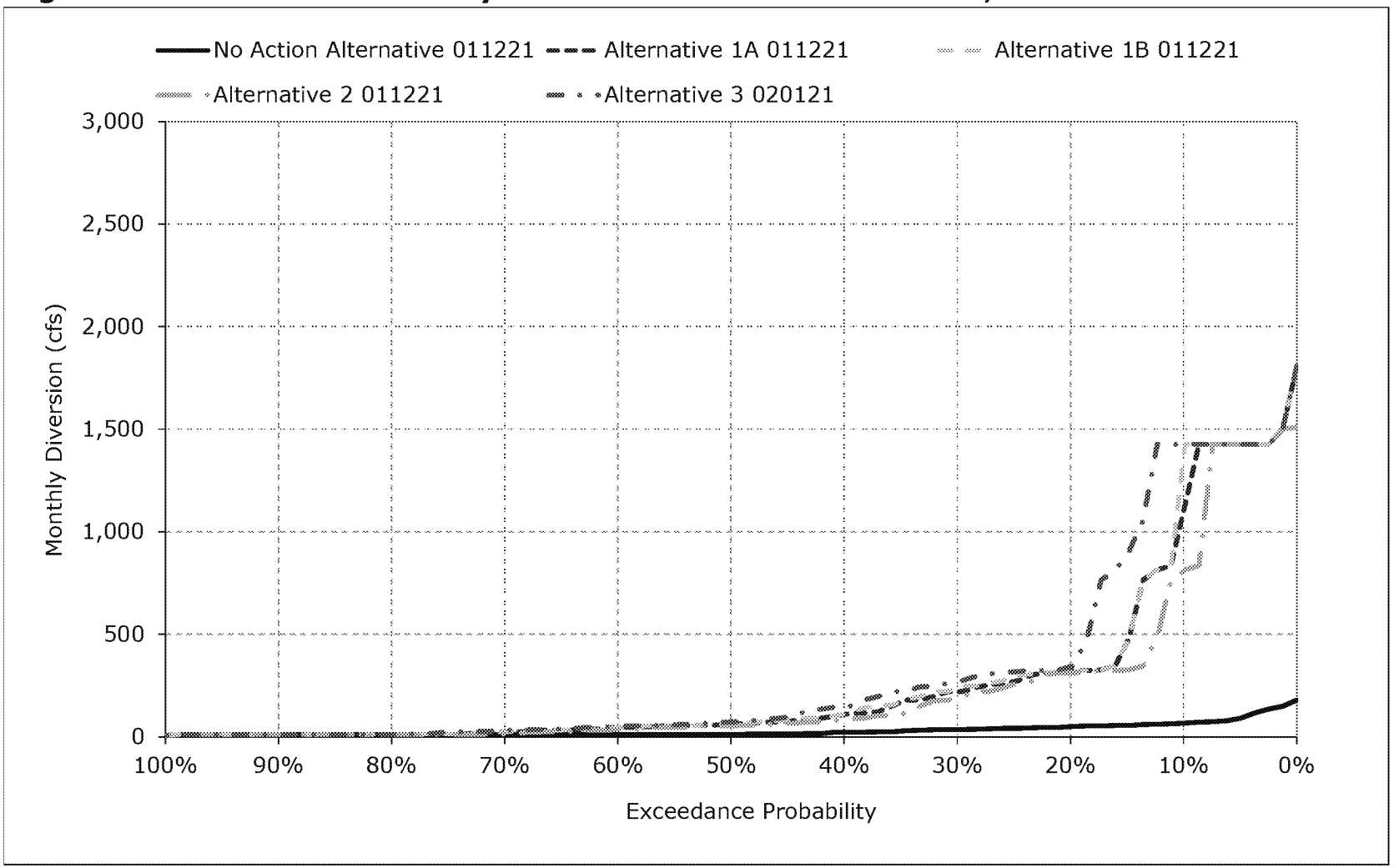


Figure 5B1-2-13. Hamilton City Diversion - Glenn Colusa Canal, April

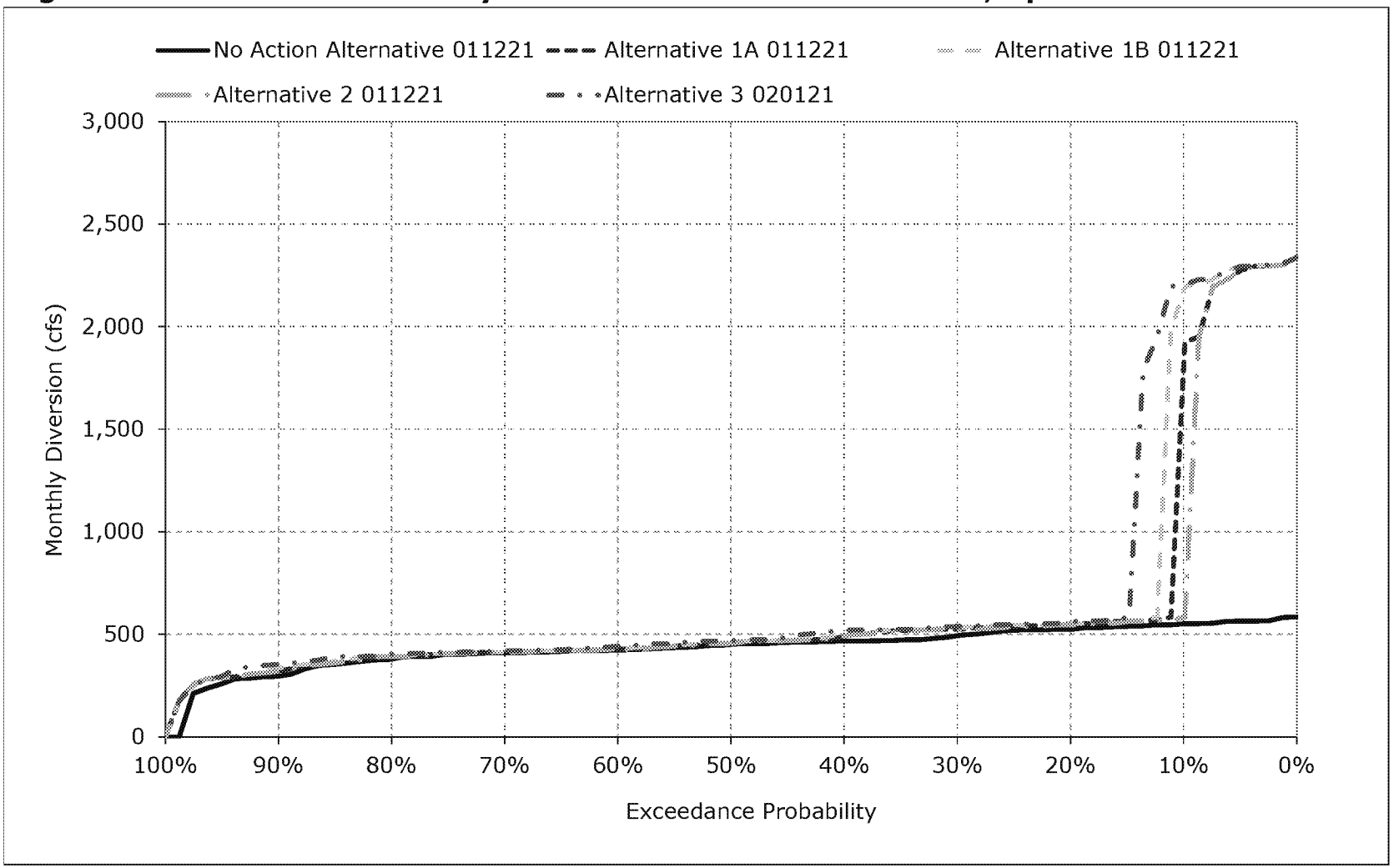


Figure 5B1-2-14. Hamilton City Diversion - Glenn Colusa Canal, May

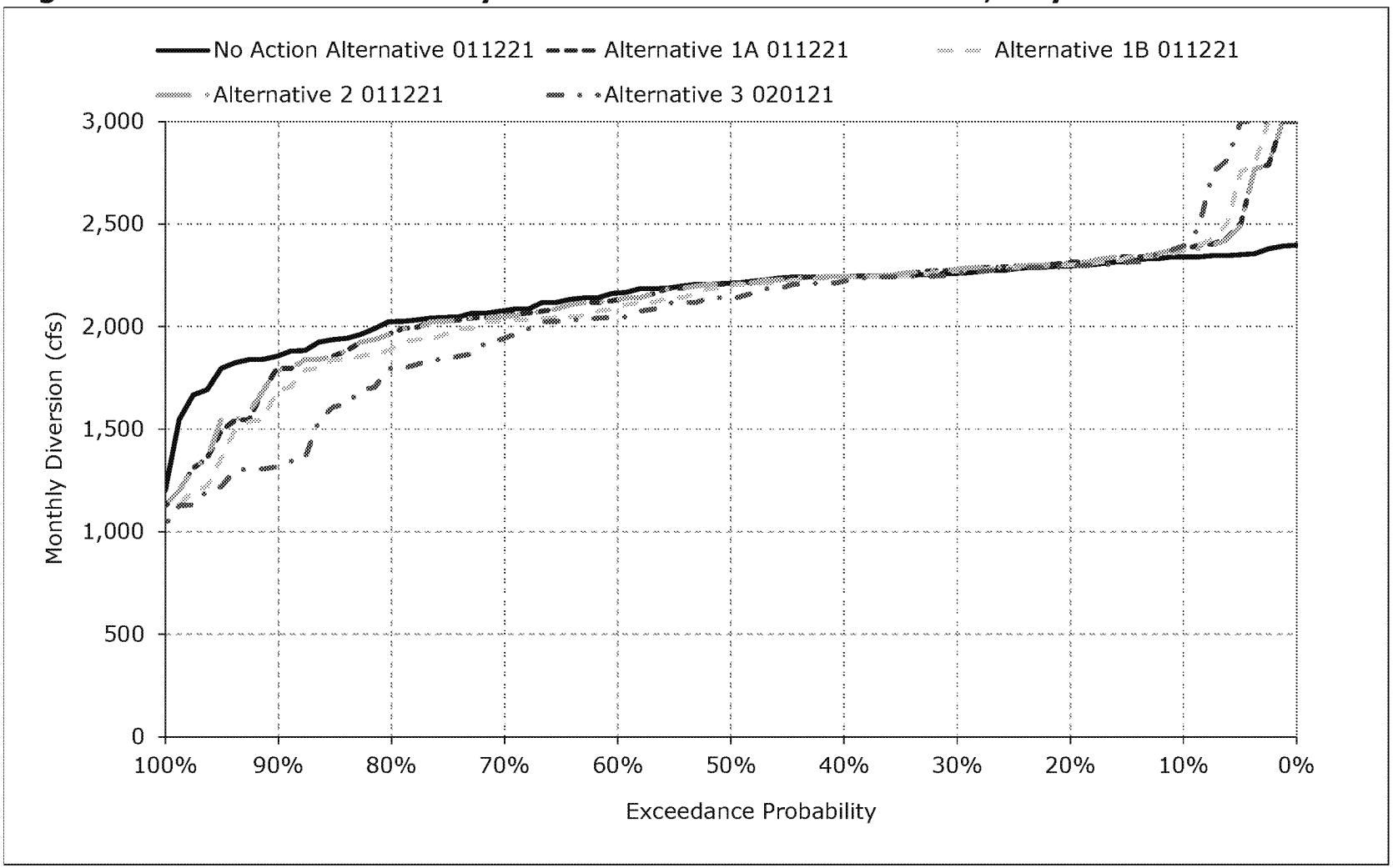


Figure 5B1-2-15. Hamilton City Diversion - Glenn Colusa Canal, June

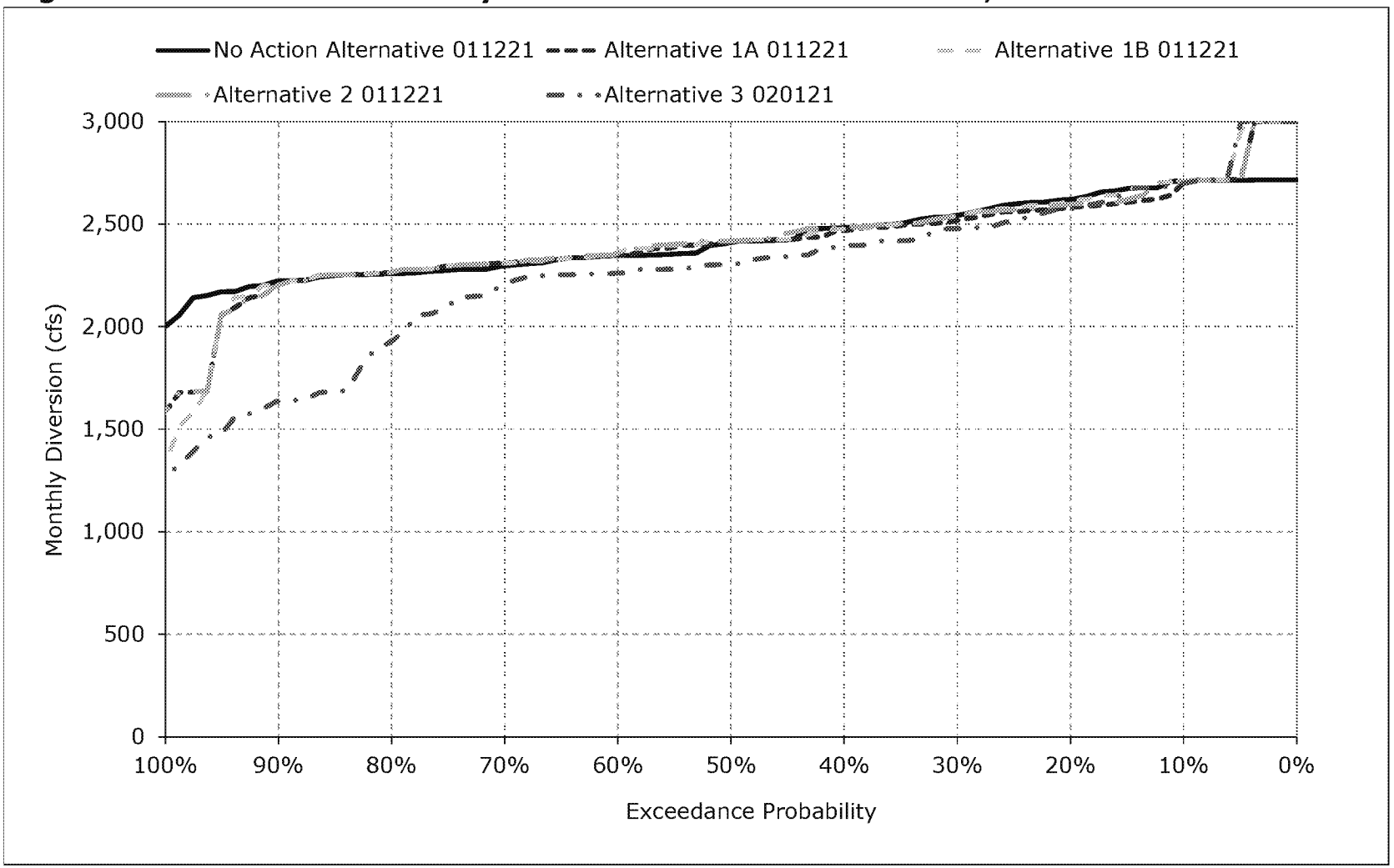


Figure 5B1-2-16. Hamilton City Diversion - Glenn Colusa Canal, July

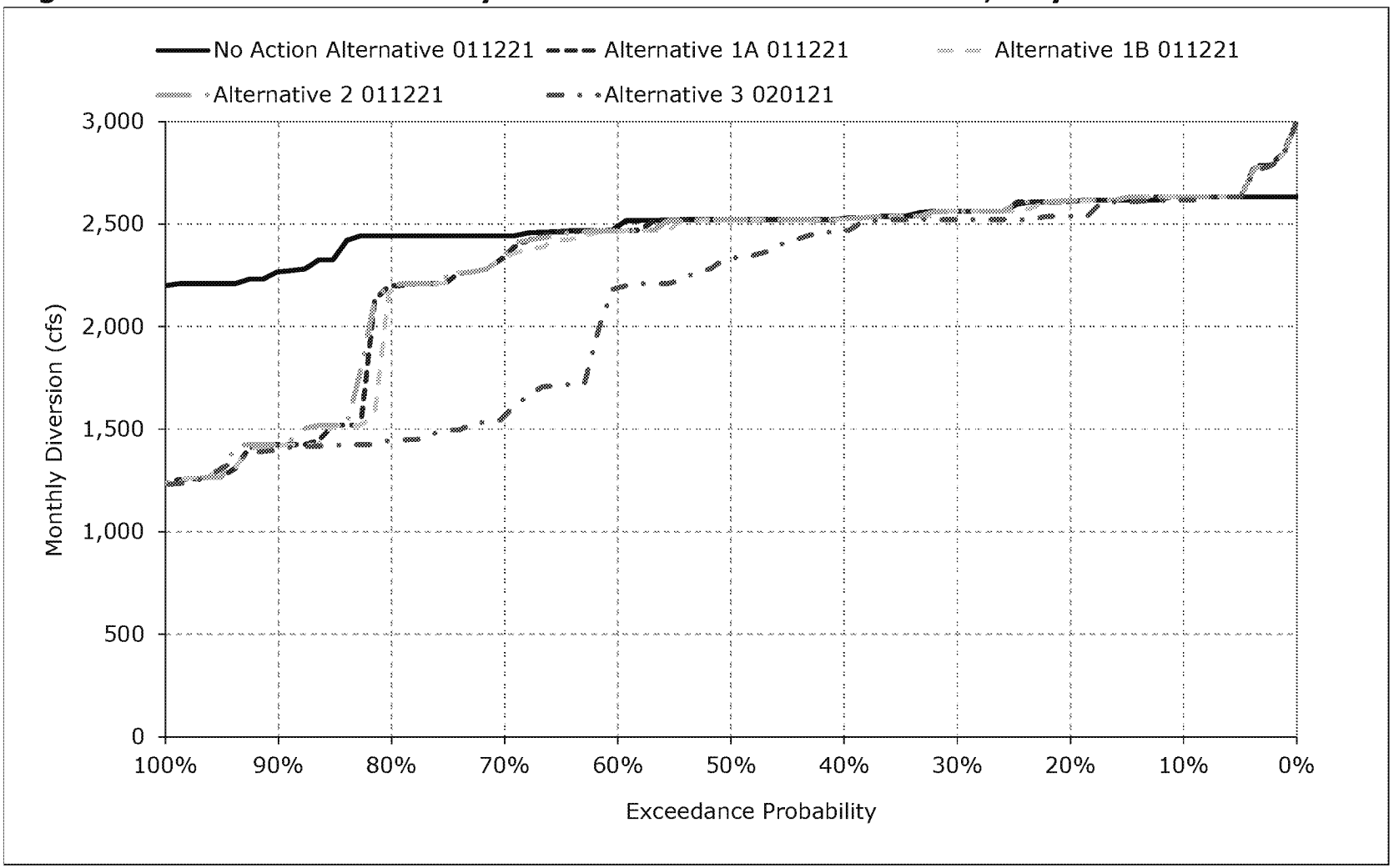


Figure 5B1-2-17. Hamilton City Diversion - Glenn Colusa Canal, August

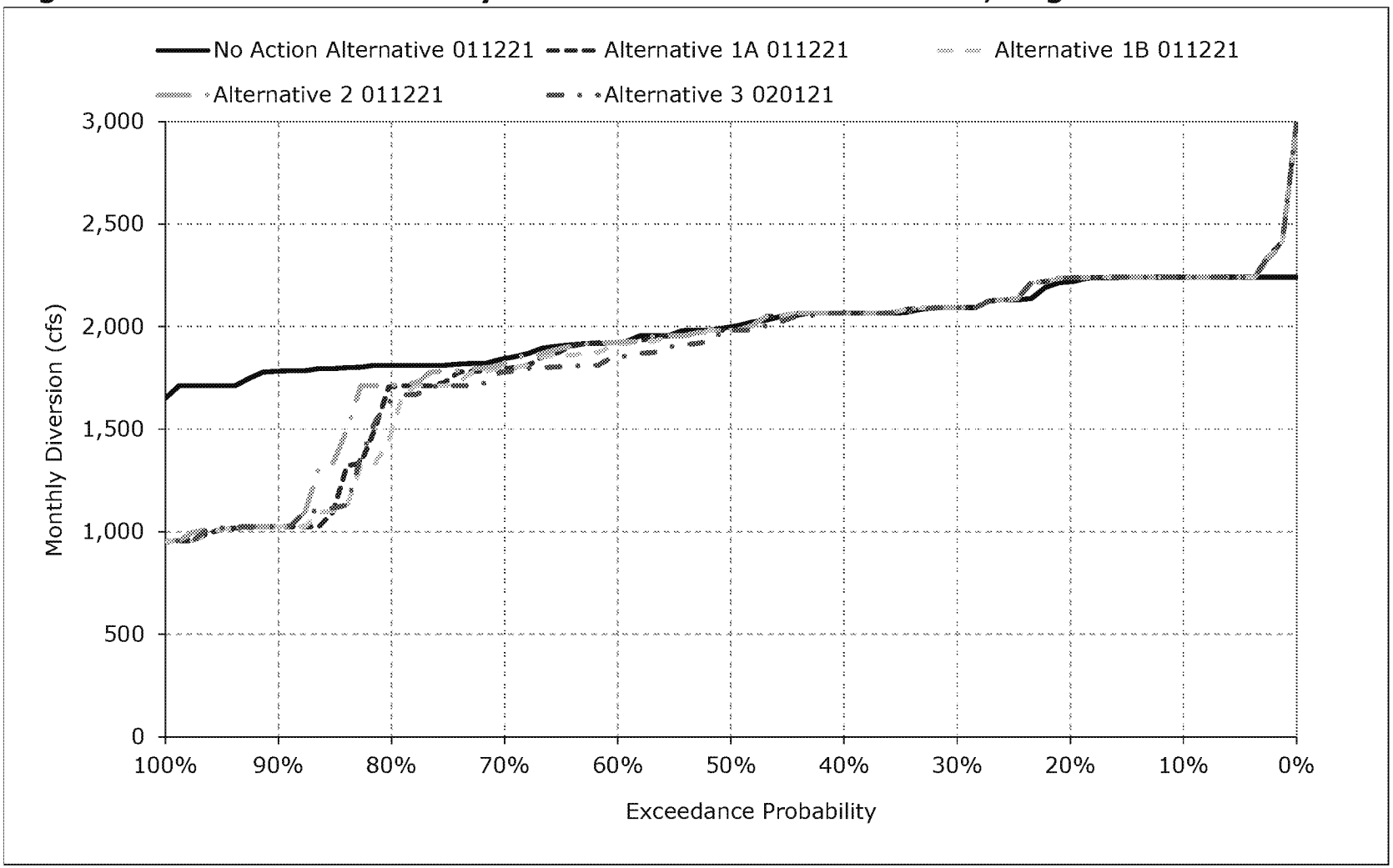


Figure 5B1-2-18. Hamilton City Diversion - Glenn Colusa Canal, September

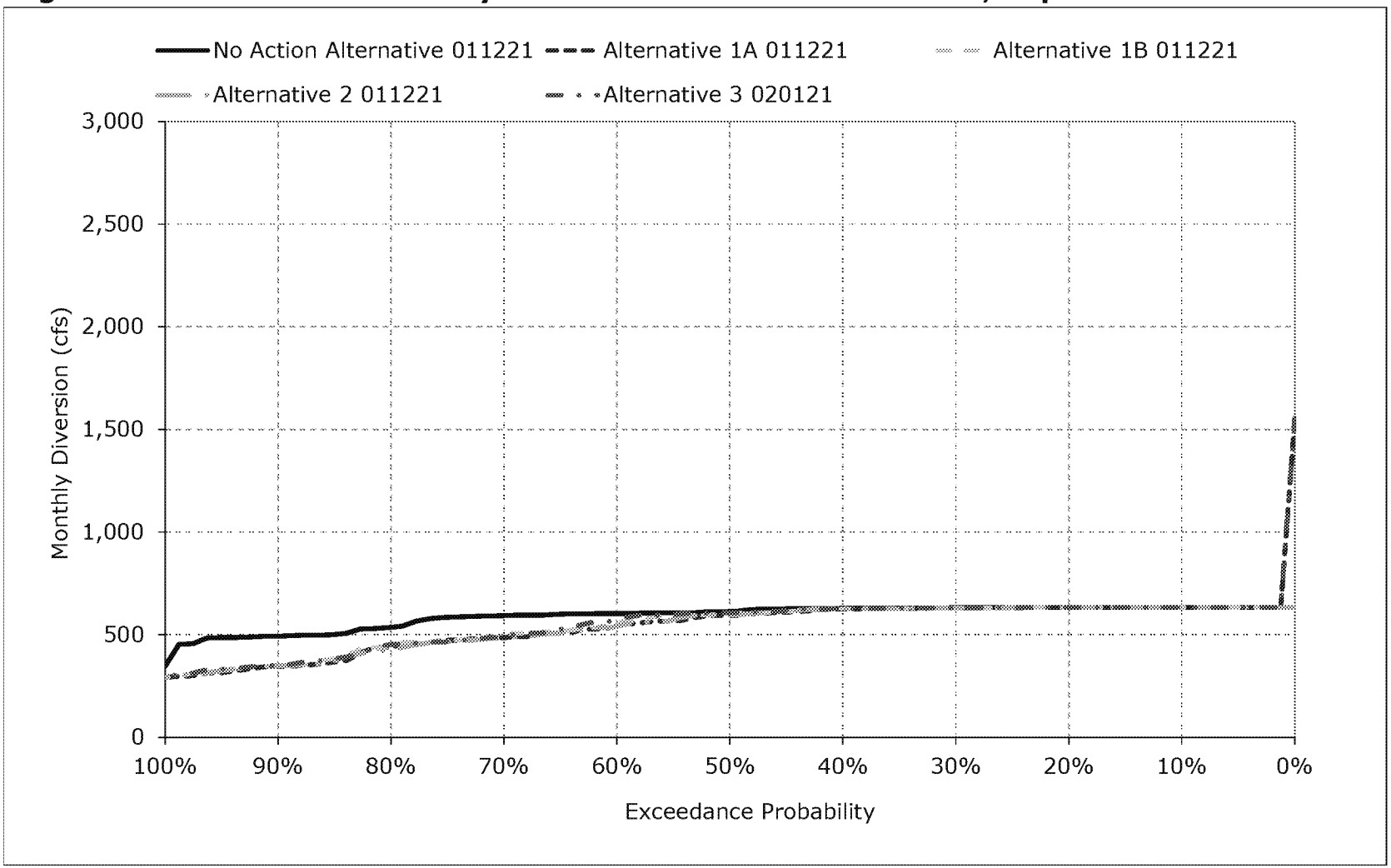


Table 5B1-3-1a. Total Sites Diversions, No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-3-1b. Total Sites Diversions, Alternative 1A 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	456	1,104	2,705	2,795	3,157	1,177	99	139	0	0	0
20%	0	1	0	1,729	2,258	2,362	0	0	0	0	0	0
30%	0	0	0	1,023	1,298	2,195	0	0	0	0	0	0
40%	0	0	0	598	884	1,687	0	0	0	0	0	0
50%	0	0	0	445	560	63	0	0	0	0	0	0
60%	0	0	0	119	277	10	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	47	142	264	854	985	1,165	352	82	98	22	27	10
Water Year Types[b,c]												
Wet (32%)	148	338	37	1,287	1,426	1,114	859	220	162	69	84	30
Above Normal (15%)	0	208	127	1,606	1,349	2,065	297	83	167	0	0	0
Below Normal (17%)	0	0	446	582	1,084	1,317	214	0	128	0	0	0
Dry (22%)	0	20	413	320	587	1,058	0	0	0	0	0	0
Critical (15%)	5	1	461	280	151	359	0	0	0	0	0	0

Table 5B1-3-1c. Total Sites Diversions, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	456	1,104	2,705	2,795	3,157	1,177	99	139	0	0	0
20%	0	1	0	1,729	2,258	2,362	0	0	0	0	0	0
30%	0	0	0	1,023	1,298	2,195	0	0	0	0	0	0
40%	0	0	0	598	884	1,687	0	0	0	0	0	0
50%	0	0	0	445	560	63	0	0	0	0	0	0
60%	0	0	0	119	277	10	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	47	142	264	854	985	1,165	352	82	98	22	27	10
Water Year Types[b,c]												
Wet (32%)	148	338	37	1,287	1,426	1,114	859	220	162	69	84	30
Above Normal (15%)	0	208	127	1,606	1,349	2,065	297	83	167	0	0	0
Below Normal (17%)	0	0	446	582	1,084	1,317	214	0	128	0	0	0
Dry (22%)	0	20	413	320	587	1,058	0	0	0	0	0	0
Critical (15%)	5	1	461	280	151	359	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-3-2a. Total Sites Diversions, No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-3-2b. Total Sites Diversions, Alternative 1B 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	394	1,102	2,705	2,887	3,421	2,406	93	190	0	0	0
20%	0	7	0	1,796	2,435	2,382	0	0	0	0	0	0
30%	0	0	0	1,129	1,665	2,248	0	0	0	0	0	0
40%	0	0	0	744	1,025	1,739	0	0	0	0	0	0
50%	0	0	0	493	568	189	0	0	0	0	0	0
60%	0	0	0	313	290	17	0	0	0	0	0	0
70%	0	0	0	0	3	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	58	144	272	908	1,079	1,191	390	107	106	22	27	0
Water Year Types[b,c]												
Wet (32%)	147	322	37	1,455	1,615	1,155	977	299	188	68	84	0
Above Normal (15%)	67	255	198	1,606	1,504	2,065	297	82	167	0	0	0
Below Normal (17%)	0	0	446	583	1,138	1,307	214	0	128	0	0	0
Dry (22%)	0	19	399	325	593	1,124	0	0	0	0	0	0
Critical (15%)	12	2	461	281	151	361	0	0	0	0	0	0

Table 5B1-3-2c. Total Sites Diversions, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	394	1,102	2,705	2,887	3,421	2,406	93	190	0	0	0
20%	0	7	0	1,796	2,435	2,382	0	0	0	0	0	0
30%	0	0	0	1,129	1,665	2,248	0	0	0	0	0	0
40%	0	0	0	744	1,025	1,739	0	0	0	0	0	0
50%	0	0	0	493	568	189	0	0	0	0	0	0
60%	0	0	0	313	290	17	0	0	0	0	0	0
70%	0	0	0	0	3	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	58	144	272	908	1,079	1,191	390	107	106	22	27	0
Water Year Types[b,c]												
Wet (32%)	147	322	37	1,455	1,615	1,155	977	299	188	68	84	0
Above Normal (15%)	67	255	198	1,606	1,504	2,065	297	82	167	0	0	0
Below Normal (17%)	0	0	446	583	1,138	1,307	214	0	128	0	0	0
Dry (22%)	0	19	399	325	593	1,124	0	0	0	0	0	0
Critical (15%)	12	2	461	281	151	361	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-3-3a. Total Sites Diversions, No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-3-3b. Total Sites Diversions, Alternative 2 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	524	1,104	2,705	2,805	2,868	64	93	130	0	0	0
20%	0	10	0	1,578	2,217	2,338	0	0	0	0	0	0
30%	0	0	0	1,024	1,183	2,144	0	0	0	0	0	0
40%	0	0	0	593	830	1,486	0	0	0	0	0	0
50%	0	0	0	456	537	53	0	0	0	0	0	0
60%	0	0	0	86	266	9	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	47	152	264	841	955	1,078	317	81	96	22	14	0
Water Year Types[b,c]												
Wet (32%)	145	335	37	1,247	1,332	895	746	218	158	68	45	0
Above Normal (15%)	0	204	127	1,605	1,348	2,040	297	83	167	0	0	0
Below Normal (17%)	0	67	446	582	1,081	1,312	214	0	128	0	0	0
Dry (22%)	0	20	412	321	587	998	0	0	0	0	0	0
Critical (15%)	7	2	461	280	151	360	0	0	0	0	0	0

Table 5B1-3-3c. Total Sites Diversions, Alternative 2 011221 minus No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	524	1,104	2,705	2,805	2,868	64	93	130	0	0	0
20%	0	10	0	1,578	2,217	2,338	0	0	0	0	0	0
30%	0	0	0	1,024	1,183	2,144	0	0	0	0	0	0
40%	0	0	0	593	830	1,486	0	0	0	0	0	0
50%	0	0	0	456	537	53	0	0	0	0	0	0
60%	0	0	0	86	266	9	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	47	152	264	841	955	1,078	317	81	96	22	14	0
Water Year Types[b,c]												
Wet (32%)	145	335	37	1,247	1,332	895	746	218	158	68	45	0
Above Normal (15%)	0	204	127	1,605	1,348	2,040	297	83	167	0	0	0
Below Normal (17%)	0	67	446	582	1,081	1,312	214	0	128	0	0	0
Dry (22%)	0	20	412	321	587	998	0	0	0	0	0	0
Critical (15%)	7	2	461	280	151	360	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-3-4a. Total Sites Diversions, No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-3-4b. Total Sites Diversions, Alternative 3 020121, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	52	539	1,179	2,705	2,926	3,479	2,990	90	175	0	0	0
20%	0	92	342	1,760	2,577	2,416	0	0	0	0	0	0
30%	0	0	0	1,113	2,142	2,302	0	0	0	0	0	0
40%	0	0	0	737	1,023	1,971	0	0	0	0	0	0
50%	0	0	0	530	568	1,384	0	0	0	0	0	0
60%	0	0	0	325	290	29	0	0	0	0	0	0
70%	0	0	0	0	4	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	68	169	309	914	1,135	1,322	467	139	119	21	27	10
Water Year Types[b,c]												
Wet (32%)	150	322	37	1,471	1,651	1,517	1,219	401	229	68	84	31
Above Normal (15%)	107	349	394	1,608	1,654	2,186	297	83	167	0	0	0
Below Normal (17%)	0	67	482	583	1,273	1,329	214	0	128	0	0	0
Dry (22%)	9	20	405	327	593	1,129	0	0	0	0	0	0
Critical (15%)	17	2	468	279	151	317	0	0	0	0	0	0

Table 5B1-3-4c. Total Sites Diversions, Alternative 3 020121 minus No Action Alternative 011221, Monthly Diversion (cfs)

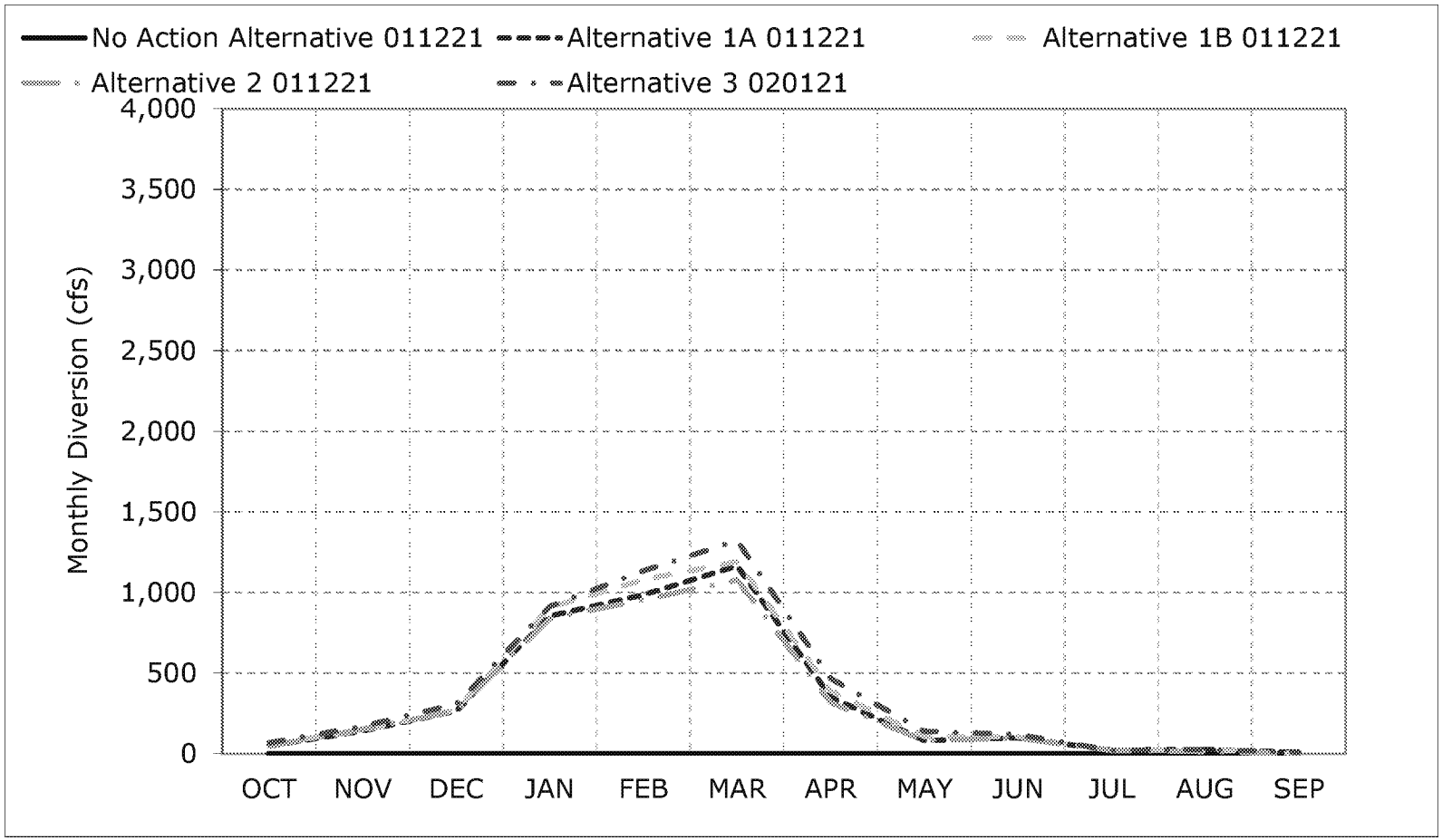
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	52	539	1,179	2,705	2,926	3,479	2,990	90	175	0	0	0
20%	0	92	342	1,760	2,577	2,416	0	0	0	0	0	0
30%	0	0	0	1,113	2,142	2,302	0	0	0	0	0	0
40%	0	0	0	737	1,023	1,971	0	0	0	0	0	0
50%	0	0	0	530	568	1,384	0	0	0	0	0	0
60%	0	0	0	325	290	29	0	0	0	0	0	0
70%	0	0	0	0	4	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	68	169	309	914	1,135	1,322	467	139	119	21	27	10
Water Year Types[b,c]												
Wet (32%)	150	322	37	1,471	1,651	1,517	1,219	401	229	68	84	31
Above Normal (15%)	107	349	394	1,608	1,654	2,186	297	83	167	0	0	0
Below Normal (17%)	0	67	482	583	1,273	1,329	214	0	128	0	0	0
Dry (22%)	9	20	405	327	593	1,129	0	0	0	0	0	0
Critical (15%)	17	2	468	279	151	317	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

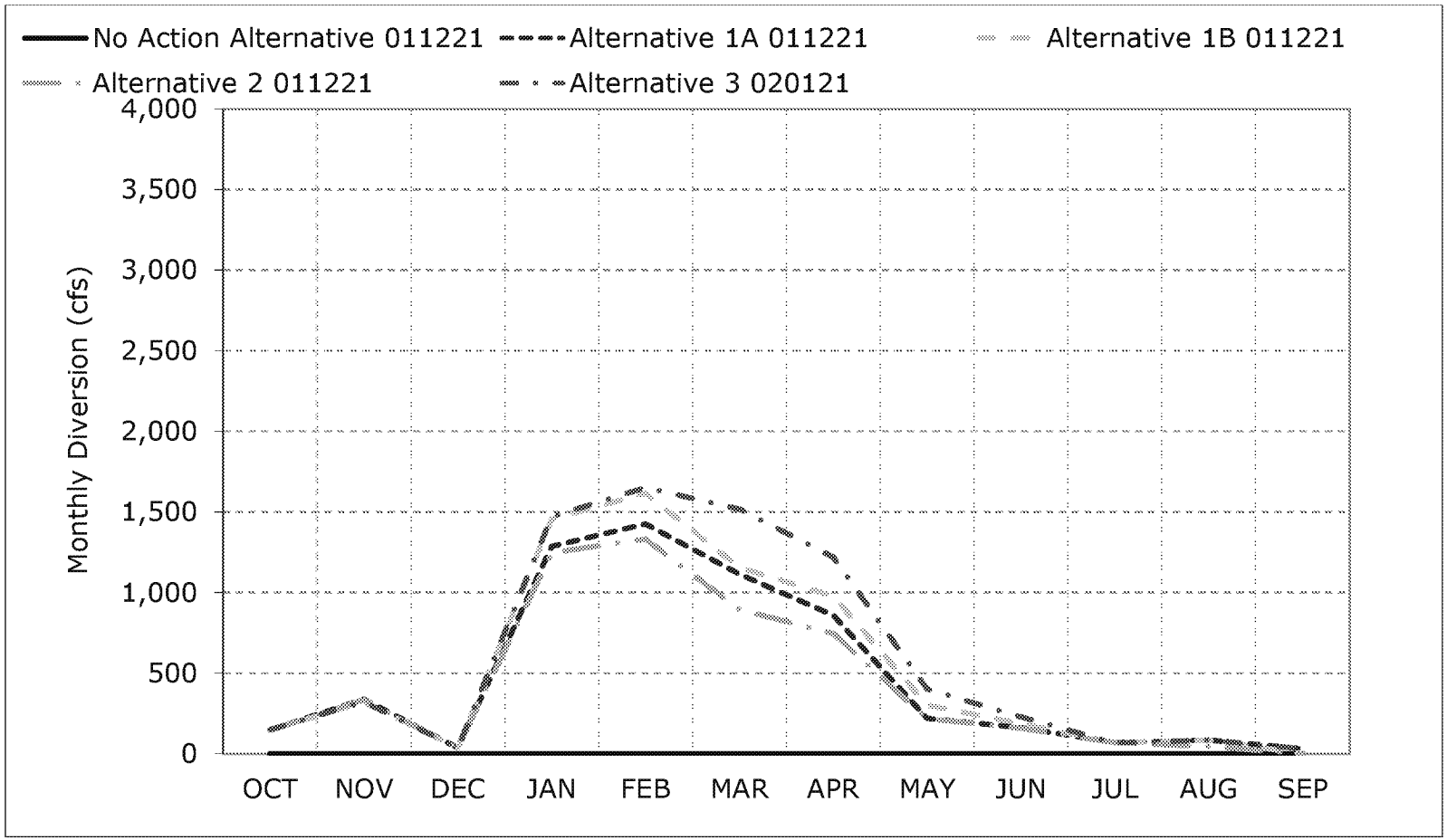
c These results are displayed with calendar year - year type sorting.

Figure 5B1-3-1. Total Sites Diversions, Long-Term Average Diversion



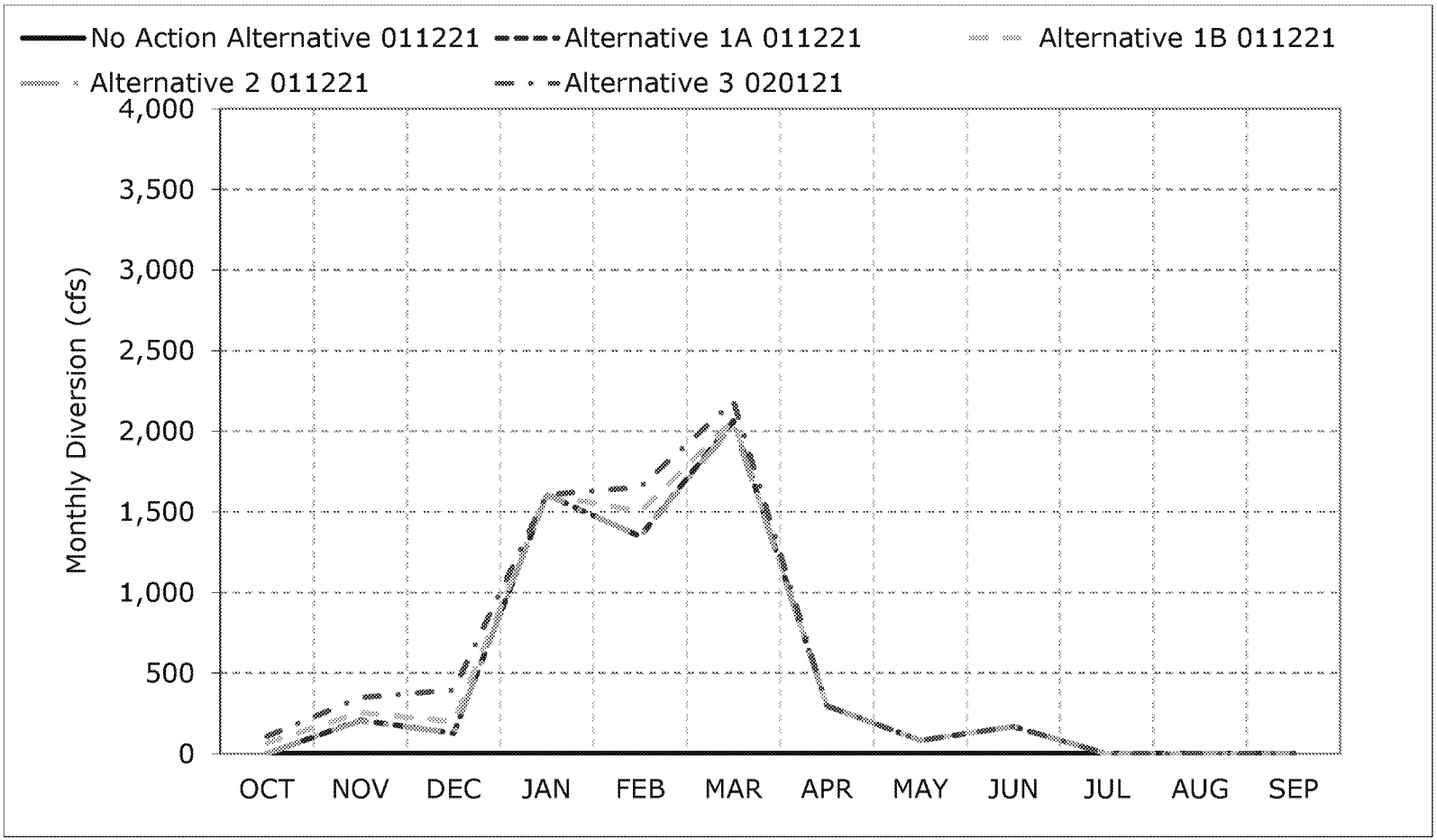
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-3-2. Total Sites Diversions, Wet Year Average Diversion



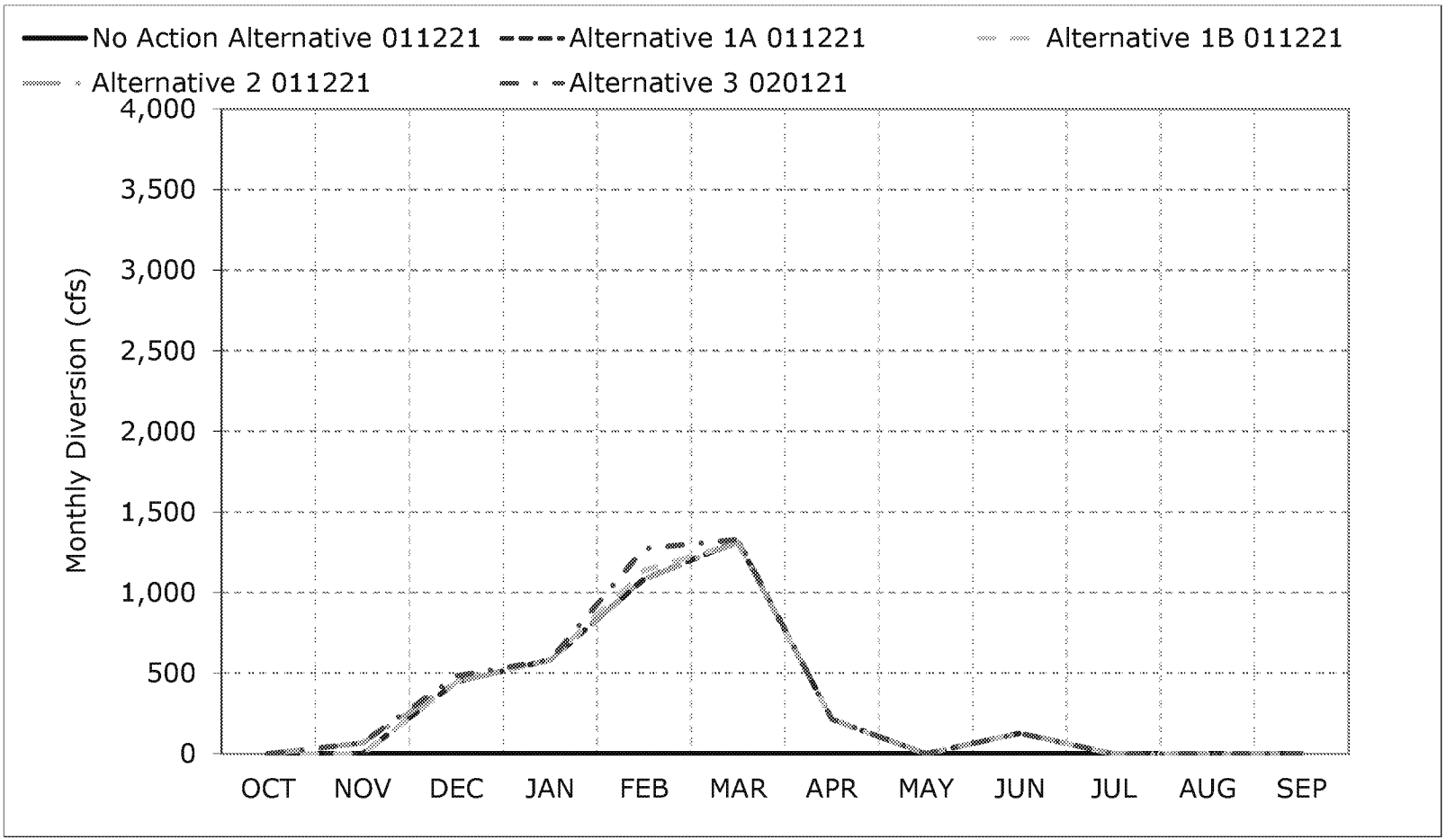
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-3-3. Total Sites Diversions, Above Normal Year Average Diversion



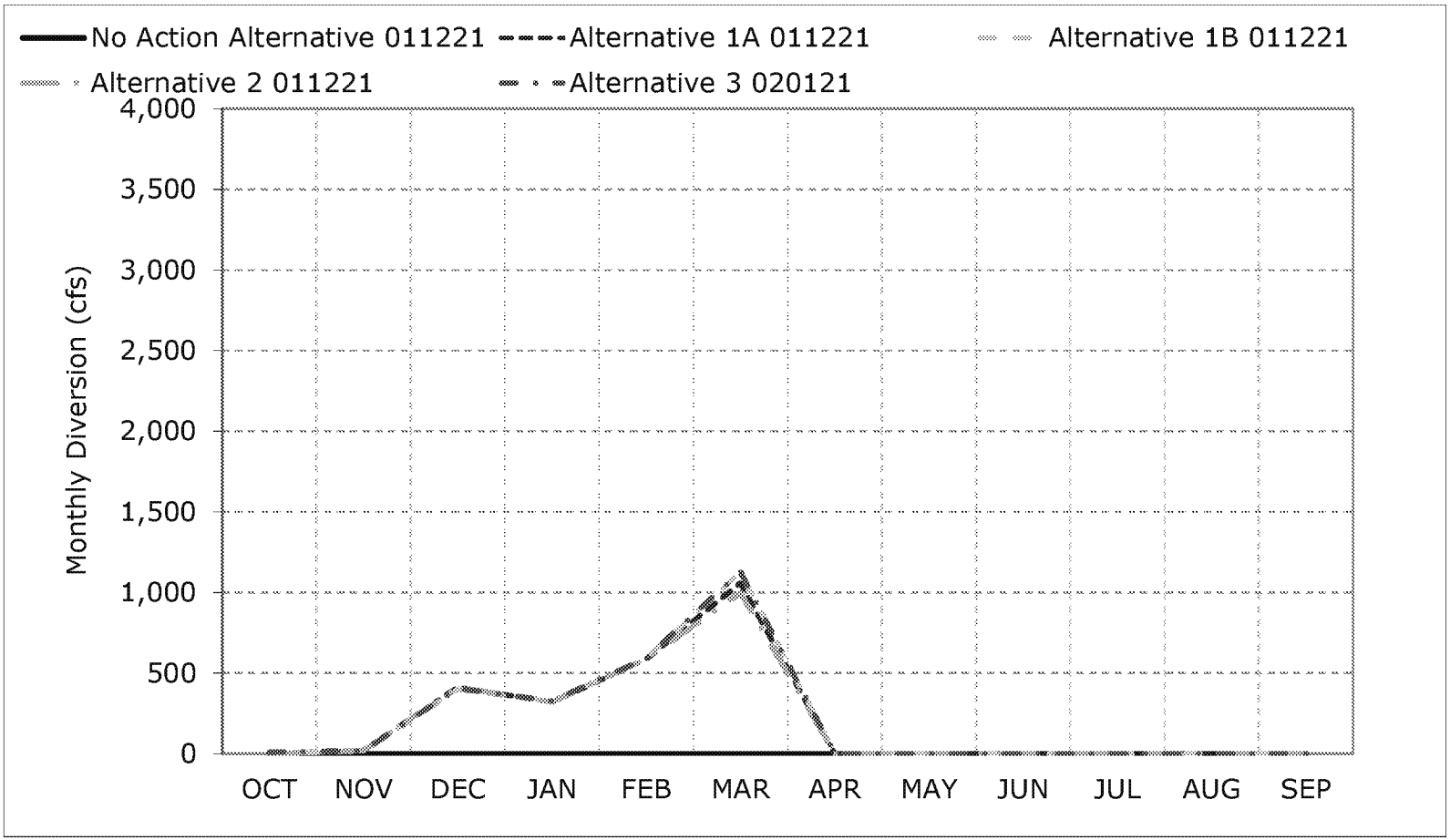
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-3-4. Total Sites Diversions, Below Normal Year Average Diversion



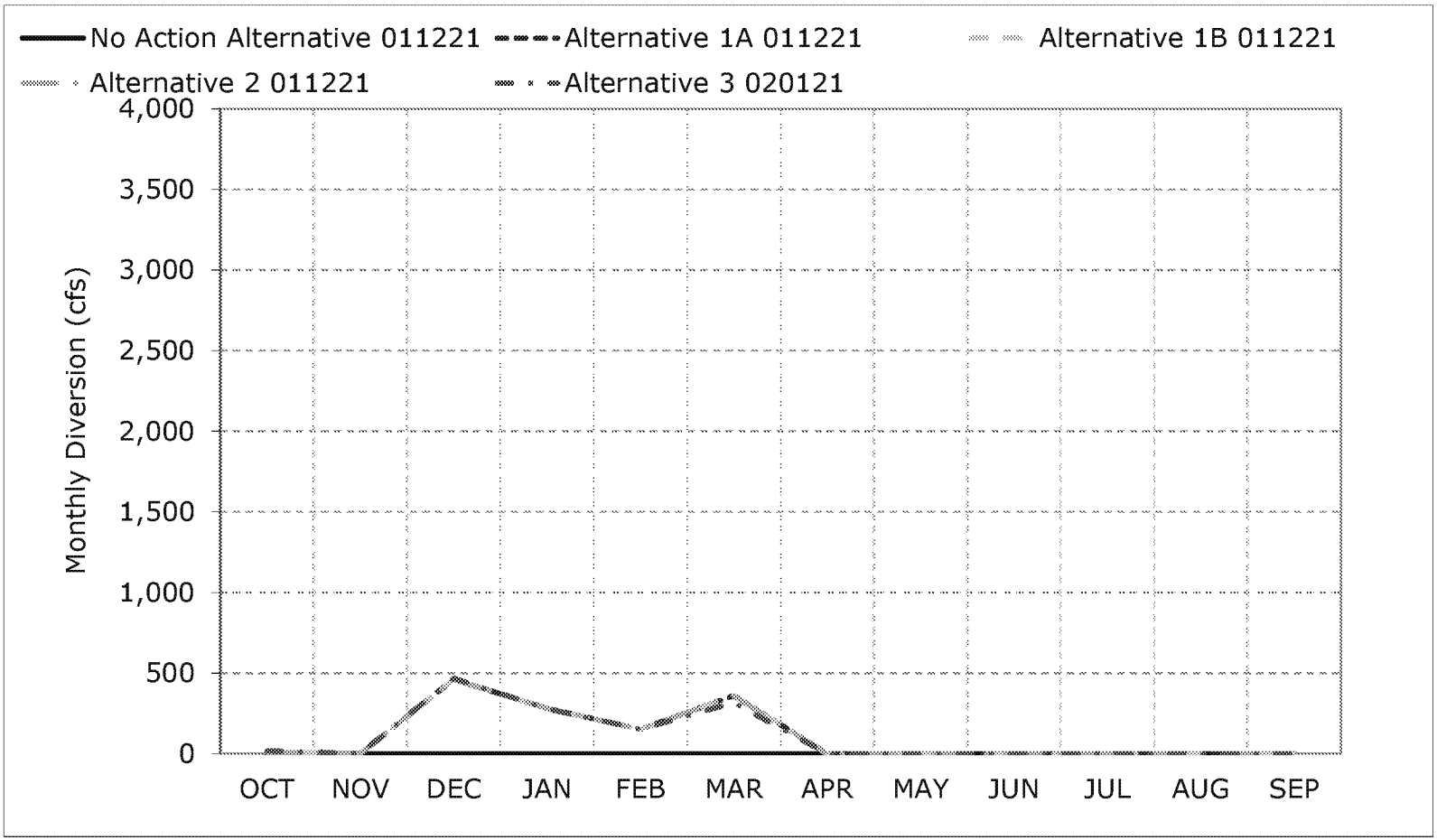
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-3-5. Total Sites Diversions, Dry Year Average Diversion



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-3-6. Total Sites Diversions, Critical Year Average Diversion



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-3-7. Total Sites Diversions, October

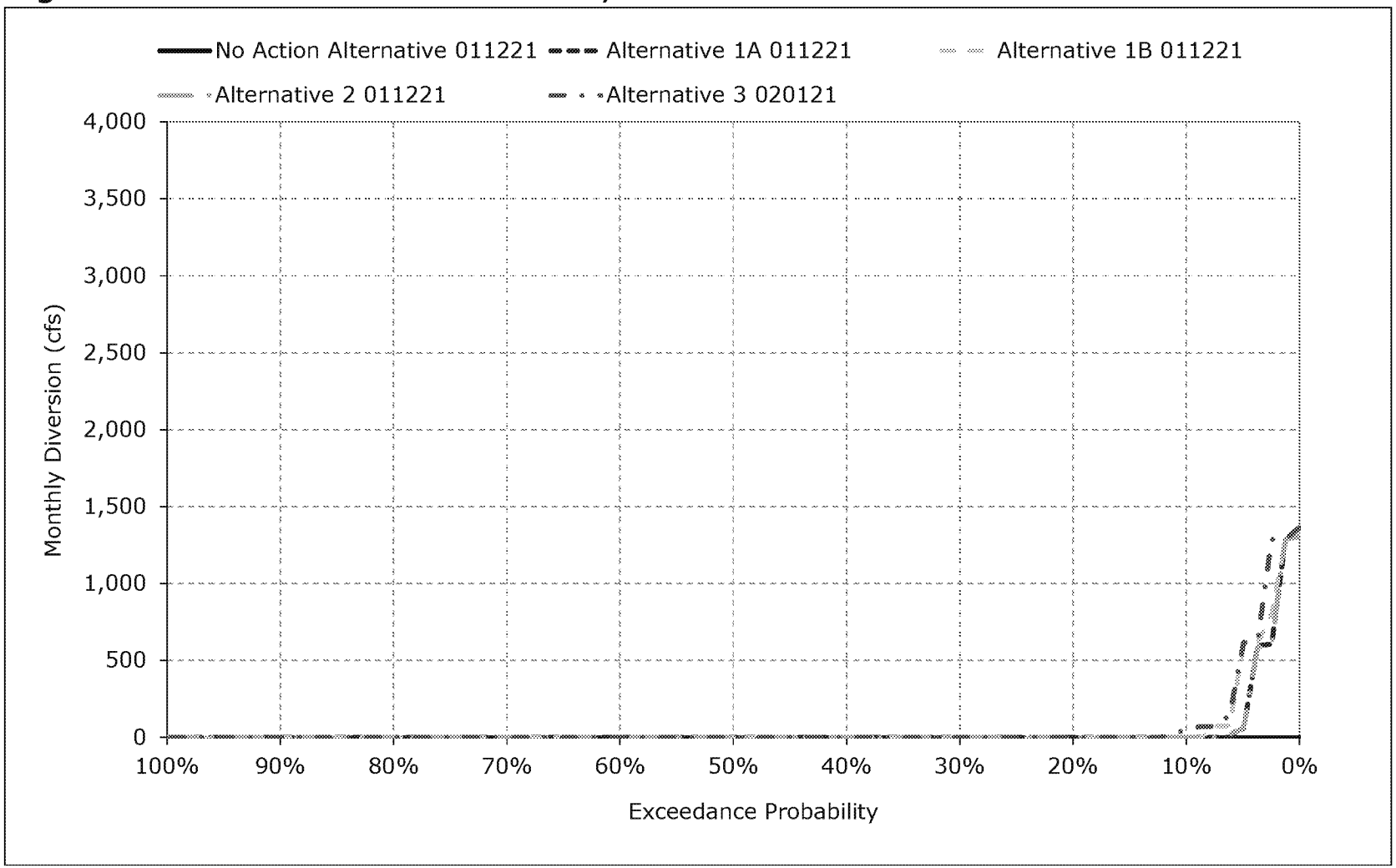


Figure 5B1-3-8. Total Sites Diversions, November

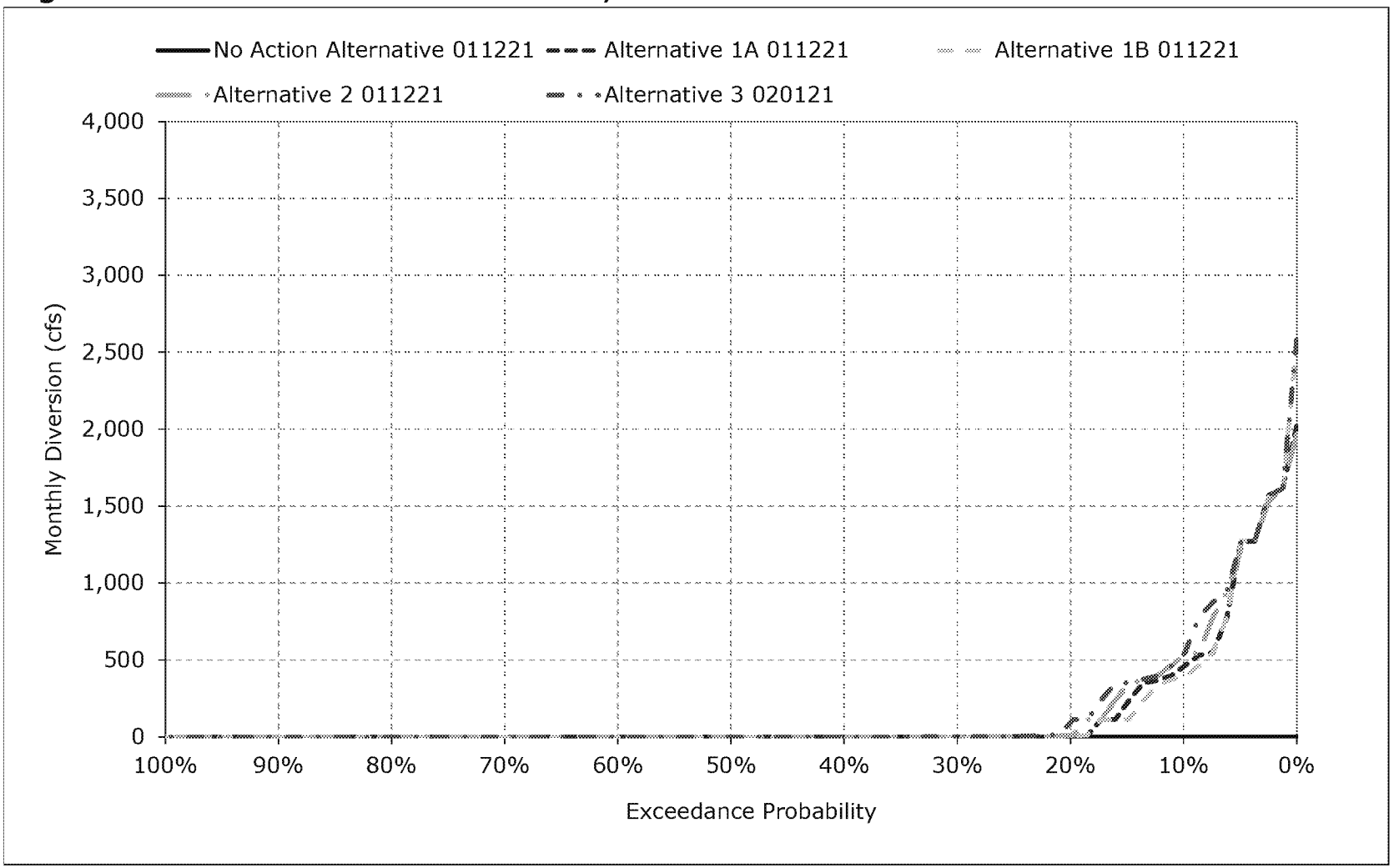


Figure 5B1-3-9. Total Sites Diversions, December

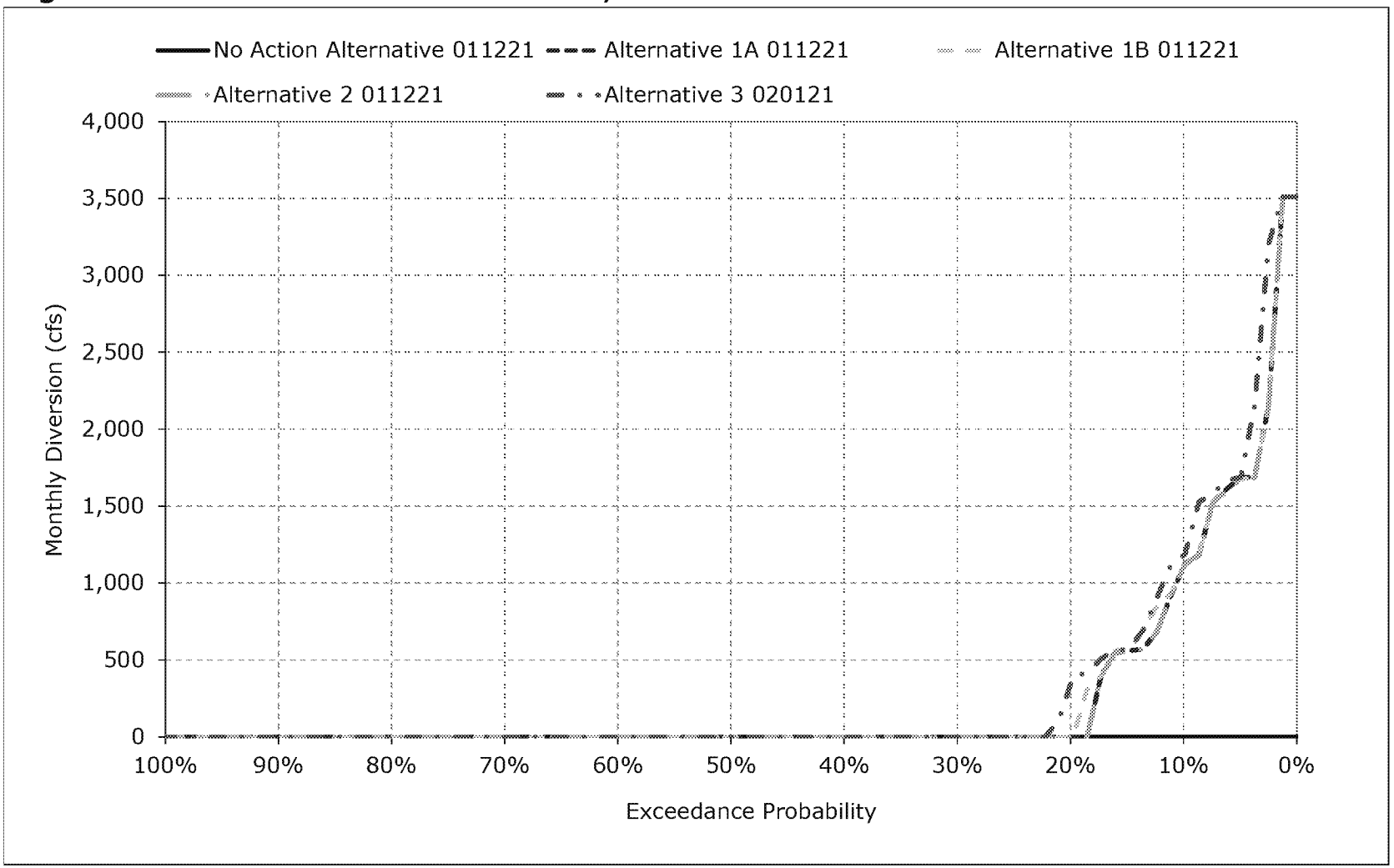


Figure 5B1-3-10. Total Sites Diversions, January

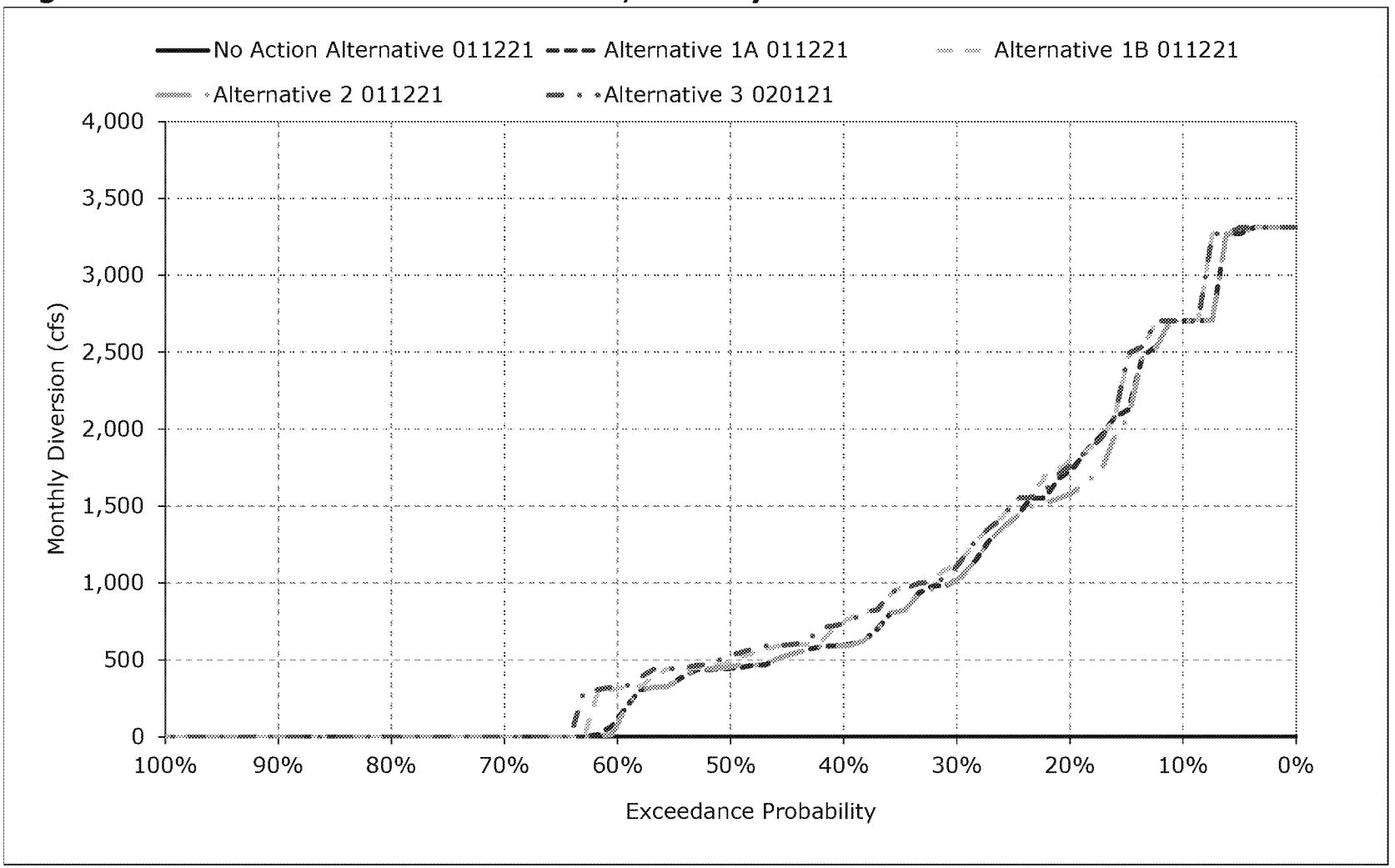


Figure 5B1-3-11. Total Sites Diversions, February

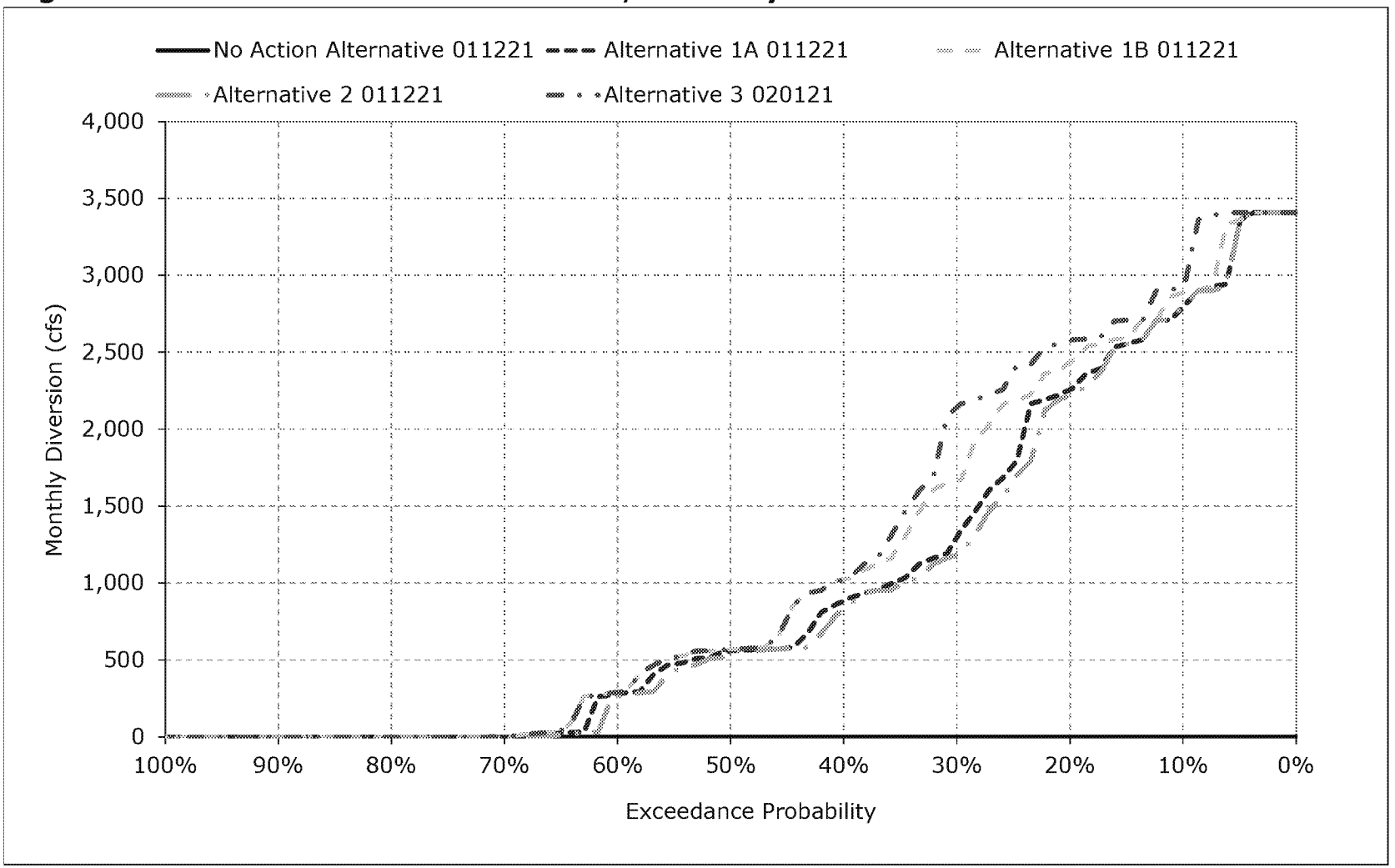


Figure 5B1-3-12. Total Sites Diversions, March

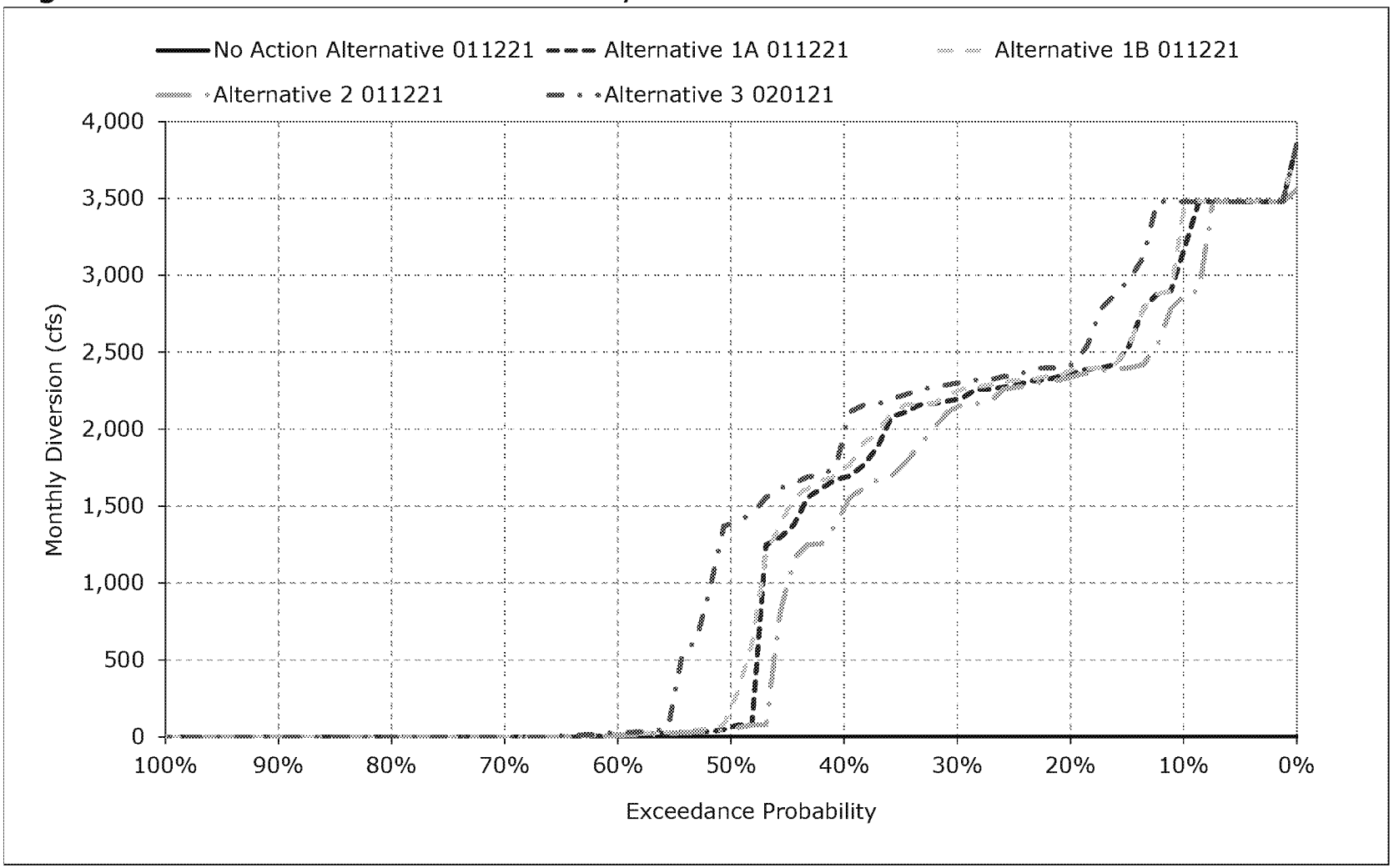


Figure 5B1-3-13. Total Sites Diversions, April

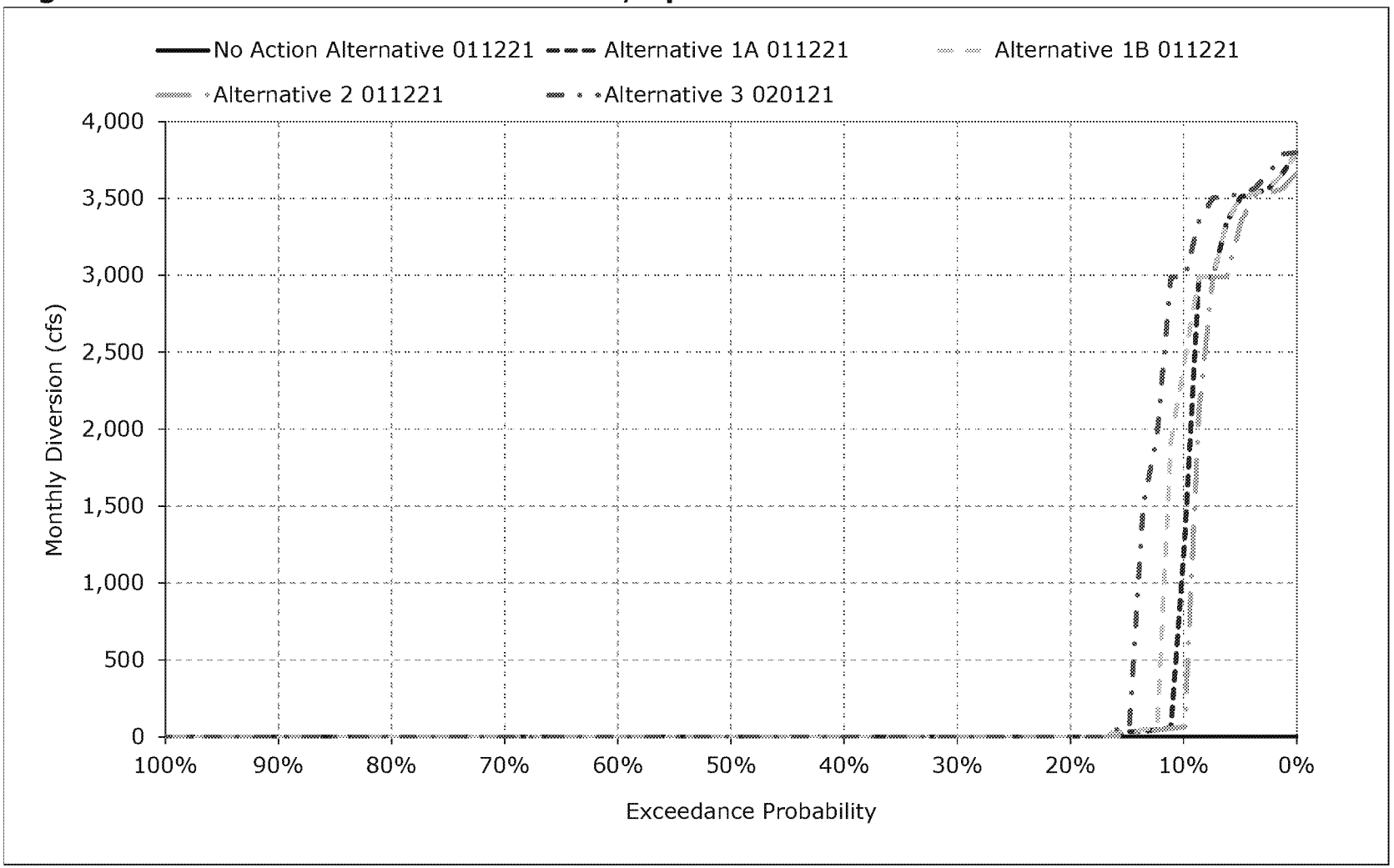


Figure 5B1-3-14. Total Sites Diversions, May

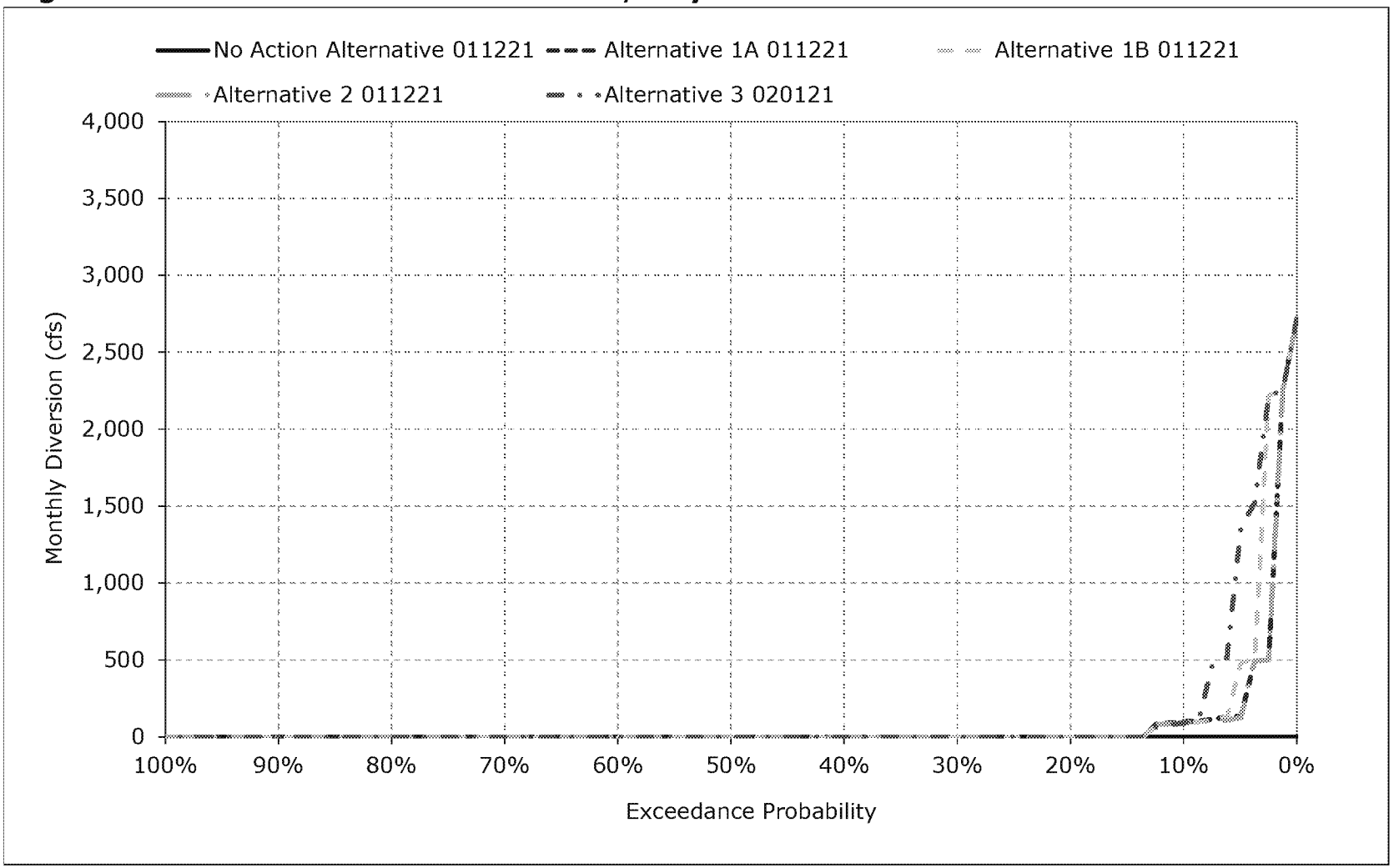


Figure 5B1-3-15. Total Sites Diversions, June

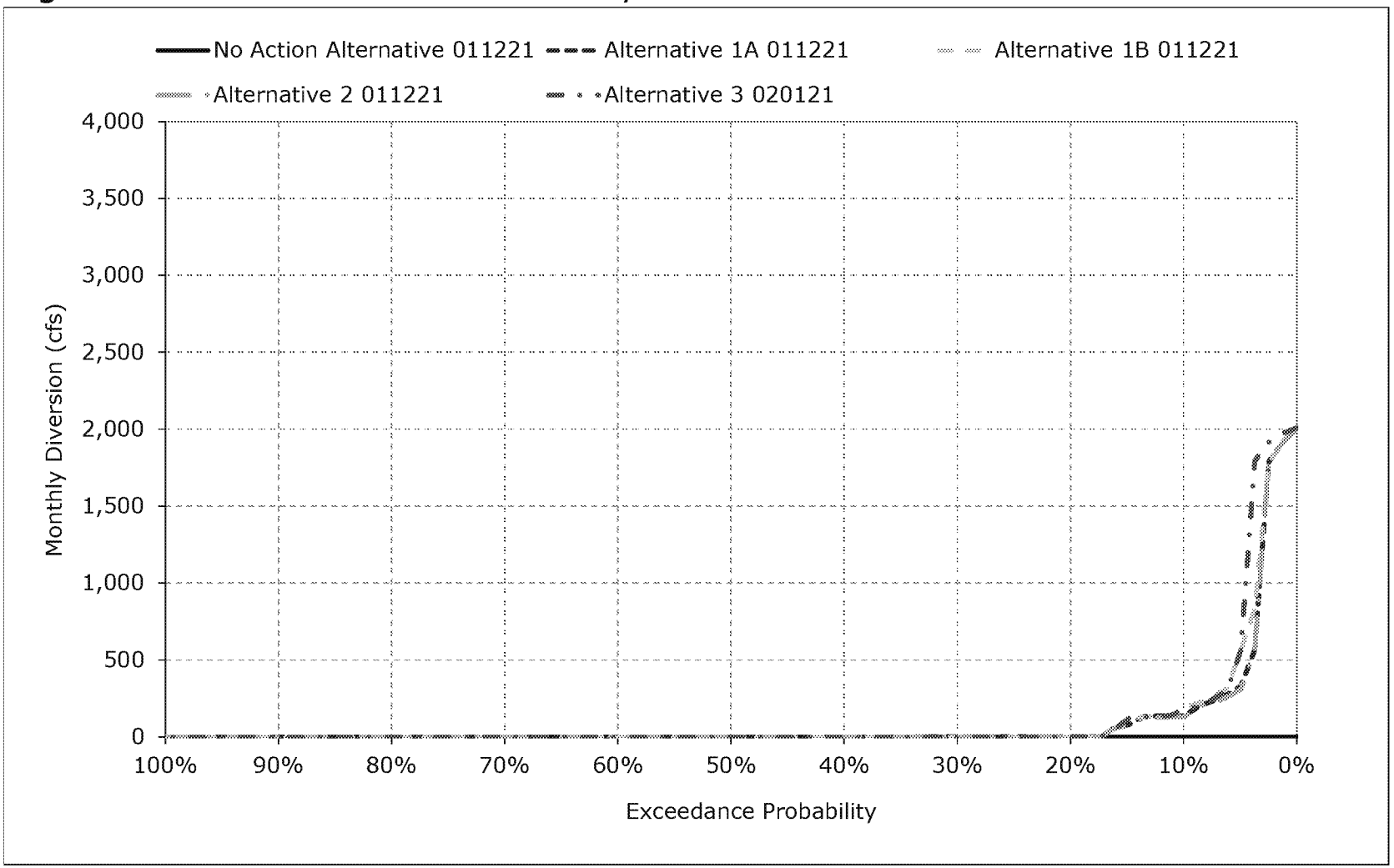


Figure 5B1-3-16. Total Sites Diversions, July

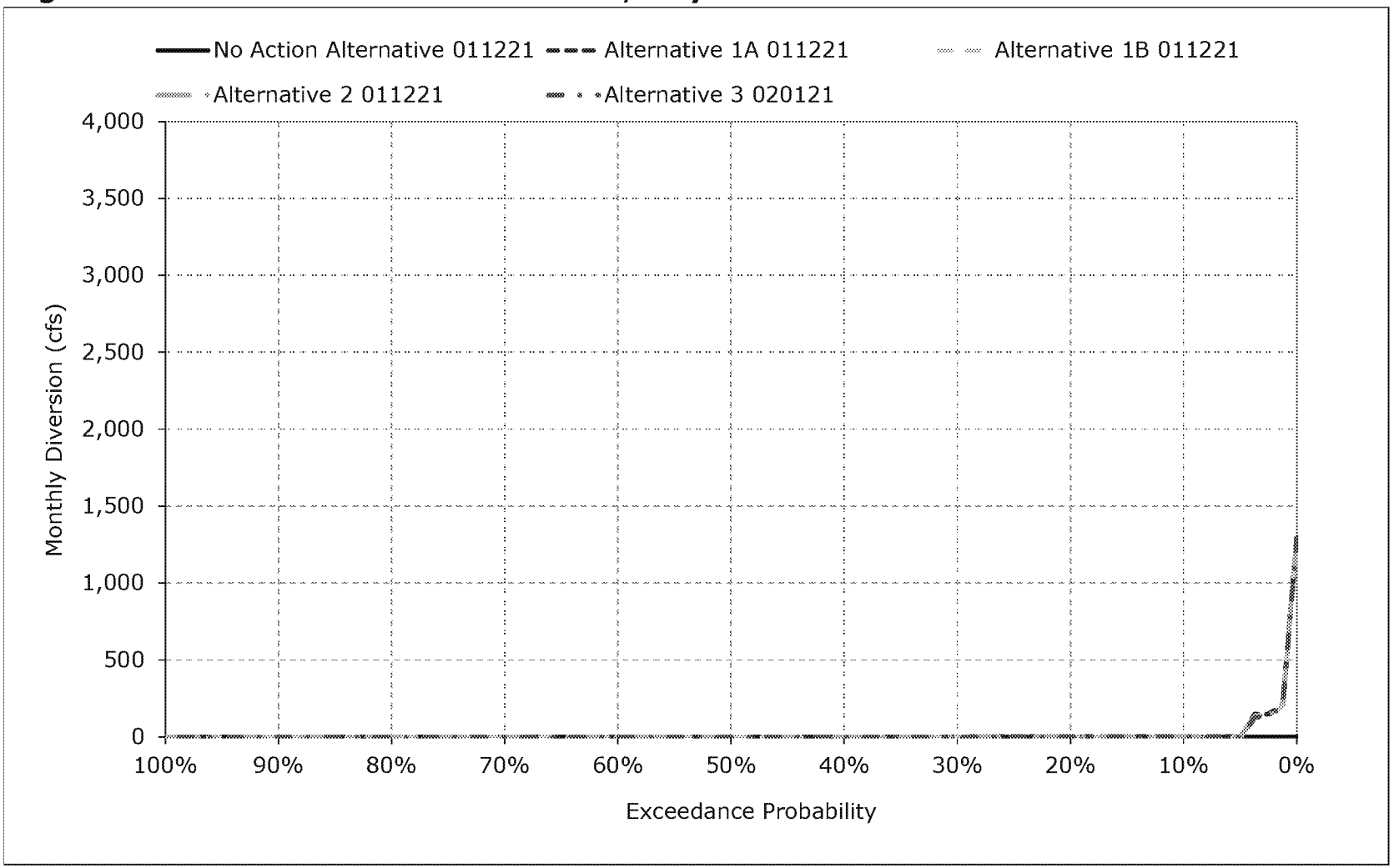


Figure 5B1-3-17. Total Sites Diversions, August

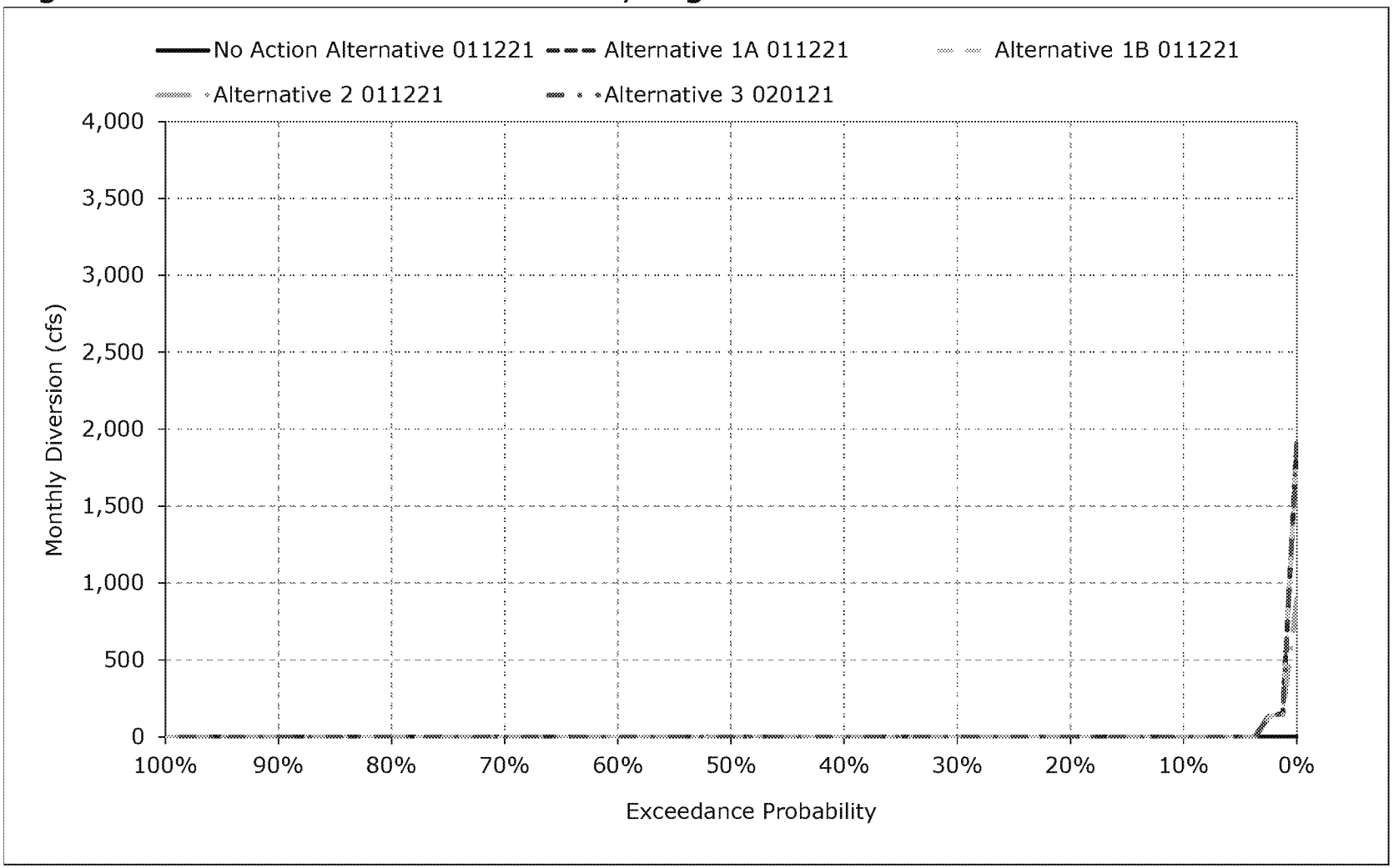


Figure 5B1-3-18. Total Sites Diversions, September

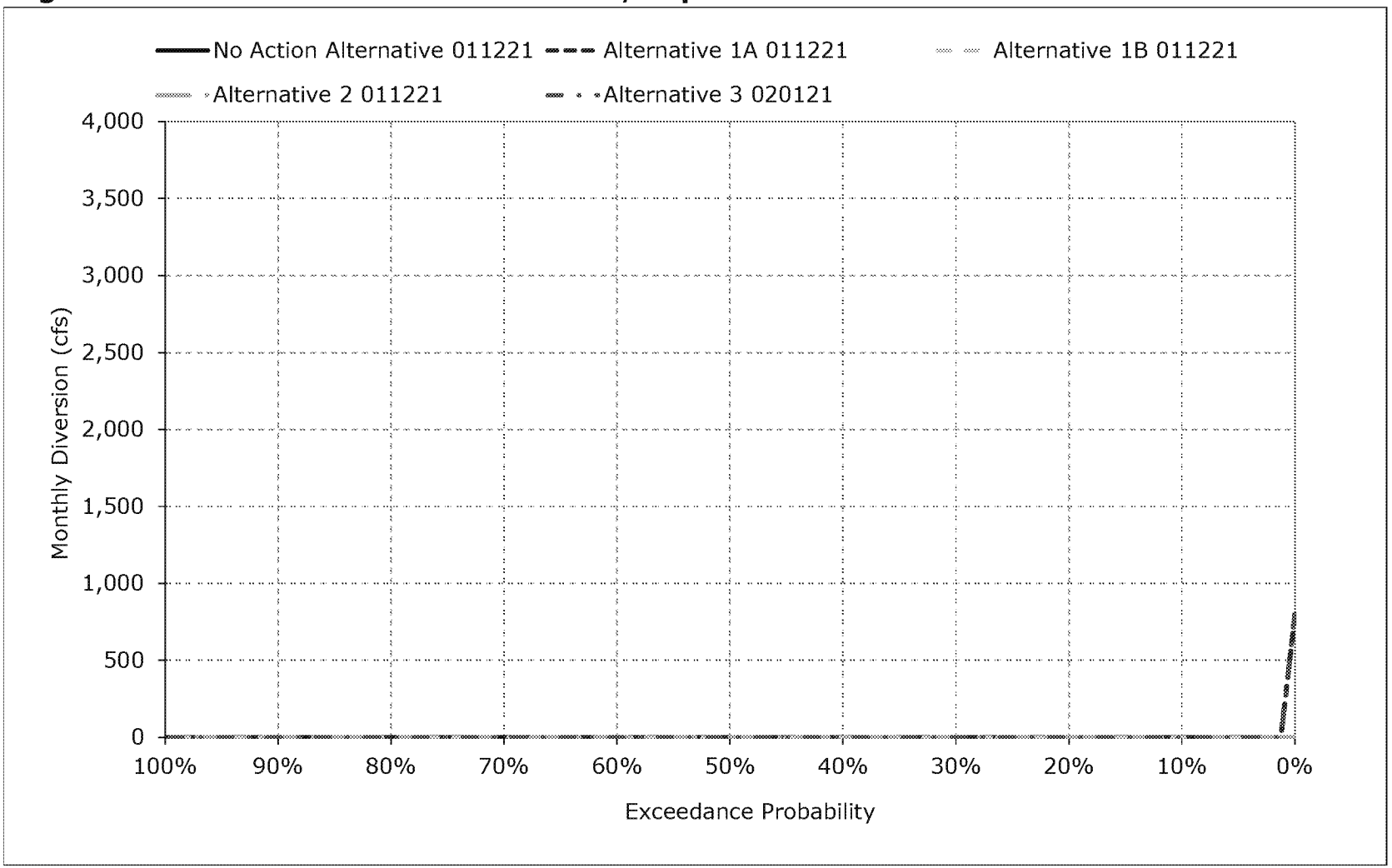


Table 5B1-4-1a. Sites Release to Dunnigan Pipeline, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-4-1b. Sites Release to Dunnigan Pipeline, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	660	804	22	0	0	0	36	187	1,000	1,000	1,000	1,000
20%	449	59	0	0	0	0	0	0	934	1,000	1,000	997
30%	449	0	0	0	0	0	0	0	289	969	1,000	627
40%	449	0	0	0	0	0	0	0	0	414	471	464
50%	273	0	0	0	0	0	0	0	0	0	449	464
60%	45	0	0	0	0	0	0	0	0	0	449	464
70%	0	0	0	0	0	0	0	0	0	0	449	388
80%	0	0	0	0	0	0	0	0	0	0	274	50
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	294	130	11	0	0	0	28	88	271	391	548	495
Water Year Types[b,c]												
Wet (32%)	286	17	14	0	0	1	0	0	0	0	356	404
Above Normal (15%)	272	0	2	0	0	0	0	0	0	4	359	397
Below Normal (17%)	166	180	5	0	0	0	0	0	113	510	703	360
Dry (22%)	455	364	23	0	0	0	58	111	794	970	837	799
Critical (15%)	241	99	3	0	0	0	108	432	529	615	539	489

Table 5B1-4-1c. Sites Release to Dunnigan Pipeline, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	660	804	22	0	0	0	36	187	1,000	1,000	1,000	1,000
20%	449	59	0	0	0	0	0	0	934	1,000	1,000	997
30%	449	0	0	0	0	0	0	0	289	969	1,000	627
40%	449	0	0	0	0	0	0	0	0	414	471	464
50%	273	0	0	0	0	0	0	0	0	0	449	464
60%	45	0	0	0	0	0	0	0	0	0	449	464
70%	0	0	0	0	0	0	0	0	0	0	449	388
80%	0	0	0	0	0	0	0	0	0	0	274	50
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	294	130	11	0	0	0	28	88	271	391	548	495
Water Year Types[b,c]												
Wet (32%)	286	17	14	0	0	1	0	0	0	0	356	404
Above Normal (15%)	272	0	2	0	0	0	0	0	0	4	359	397
Below Normal (17%)	166	180	5	0	0	0	0	0	113	510	703	360
Dry (22%)	455	364	23	0	0	0	58	111	794	970	837	799
Critical (15%)	241	99	3	0	0	0	108	432	529	615	539	489

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-4-2a. Sites Release to Dunnigan Pipeline, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-4-2b. Sites Release to Dunnigan Pipeline, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	672	351	139	0	0	0	36	198	1,000	1,000	1,000	1,000
20%	449	295	0	0	0	0	0	17	933	1,000	1,000	790
30%	449	4	0	0	0	0	0	0	485	912	1,000	489
40%	408	0	0	0	0	0	0	0	194	400	449	464
50%	82	0	0	0	0	0	0	0	0	0	449	464
60%	0	0	0	0	0	0	0	0	0	0	449	464
70%	0	0	0	0	0	0	0	0	0	0	449	243
80%	0	0	0	0	0	0	0	0	0	0	226	22
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	265	139	43	5	5	7	60	100	314	385	547	443
Water Year Types[b,c]												
Wet (32%)	284	93	102	0	3	6	0	0	0	0	356	391
Above Normal (15%)	202	0	2	0	0	0	0	0	241	1	354	322
Below Normal (17%)	141	181	12	15	5	0	8	0	201	494	697	277
Dry (22%)	435	294	31	0	15	15	184	178	765	956	840	725
Critical (15%)	181	96	10	15	0	13	123	417	520	621	537	451

Table 5B1-4-2c. Sites Release to Dunnigan Pipeline, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	672	351	139	0	0	0	36	198	1,000	1,000	1,000	1,000
20%	449	295	0	0	0	0	0	17	933	1,000	1,000	790
30%	449	4	0	0	0	0	0	0	485	912	1,000	489
40%	408	0	0	0	0	0	0	0	194	400	449	464
50%	82	0	0	0	0	0	0	0	0	0	449	464
60%	0	0	0	0	0	0	0	0	0	0	449	464
70%	0	0	0	0	0	0	0	0	0	0	449	243
80%	0	0	0	0	0	0	0	0	0	0	226	22
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	265	139	43	5	5	7	60	100	314	385	547	443
Water Year Types[b,c]												
Wet (32%)	284	93	102	0	3	6	0	0	0	0	356	391
Above Normal (15%)	202	0	2	0	0	0	0	0	241	1	354	322
Below Normal (17%)	141	181	12	15	5	0	8	0	201	494	697	277
Dry (22%)	435	294	31	0	15	15	184	178	765	956	840	725
Critical (15%)	181	96	10	15	0	13	123	417	520	621	537	451

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-4-3a. Sites Release to Dunnigan Pipeline, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-4-3b. Sites Release to Dunnigan Pipeline, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	583	311	32	0	0	0	36	188	1,000	1,000	1,000	1,000
20%	449	17	0	0	0	0	0	0	719	1,000	1,000	793
30%	449	0	0	0	0	0	0	0	281	935	1,000	464
40%	449	0	0	0	0	0	0	0	0	415	457	464
50%	200	0	0	0	0	0	0	0	0	0	449	464
60%	50	0	0	0	0	0	0	0	0	0	449	464
70%	0	0	0	0	0	0	0	0	0	0	449	404
80%	0	0	0	0	0	0	0	0	0	0	302	123
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	270	102	13	0	0	0	29	87	257	388	554	473
Water Year Types[b,c]												
Wet (32%)	272	15	17	0	0	1	0	0	0	0	356	437
Above Normal (15%)	274	2	2	0	0	0	0	0	0	4	381	398
Below Normal (17%)	185	218	5	0	0	0	0	0	113	509	728	425
Dry (22%)	397	206	26	0	0	0	58	111	750	966	858	692
Critical (15%)	169	100	3	0	0	0	109	425	497	605	495	356

Table 5B1-4-3c. Sites Release to Dunnigan Pipeline, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	583	311	32	0	0	0	36	188	1,000	1,000	1,000	1,000
20%	449	17	0	0	0	0	0	0	719	1,000	1,000	793
30%	449	0	0	0	0	0	0	0	281	935	1,000	464
40%	449	0	0	0	0	0	0	0	0	415	457	464
50%	200	0	0	0	0	0	0	0	0	0	449	464
60%	50	0	0	0	0	0	0	0	0	0	449	464
70%	0	0	0	0	0	0	0	0	0	0	449	404
80%	0	0	0	0	0	0	0	0	0	0	302	123
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	270	102	13	0	0	0	29	87	257	388	554	473
Water Year Types[b,c]												
Wet (32%)	272	15	17	0	0	1	0	0	0	0	356	437
Above Normal (15%)	274	2	2	0	0	0	0	0	0	4	381	398
Below Normal (17%)	185	218	5	0	0	0	0	0	113	509	728	425
Dry (22%)	397	206	26	0	0	0	58	111	750	966	858	692
Critical (15%)	169	100	3	0	0	0	109	425	497	605	495	356

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-4-4a. Sites Release to Dunnigan Pipeline, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-4-4b. Sites Release to Dunnigan Pipeline, Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	662	300	70	0	0	0	133	486	1,000	1,000	1,000	1,000
20%	449	59	0	0	0	0	0	1	834	1,000	1,000	634
30%	449	0	0	0	0	0	0	0	480	975	901	464
40%	281	0	0	0	0	0	0	0	214	487	462	464
50%	2	0	0	0	0	0	0	0	38	16	449	459
60%	0	0	0	0	0	0	0	0	0	0	449	321
70%	0	0	0	0	0	0	0	0	0	0	449	127
80%	0	0	0	0	0	0	0	0	0	0	4	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	233	91	39	3	8	21	57	109	307	397	519	385
Water Year Types[b,c]												
Wet (32%)	239	81	102	0	4	5	0	0	0	0	356	382
Above Normal (15%)	272	0	2	0	0	0	0	0	313	8	508	416
Below Normal (17%)	159	102	11	0	19	0	8	0	287	606	642	274
Dry (22%)	333	163	12	0	0	38	156	231	656	936	732	568
Critical (15%)	118	83	10	19	21	78	148	396	464	593	417	218

Table 5B1-4-4c. Sites Release to Dunnigan Pipeline, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

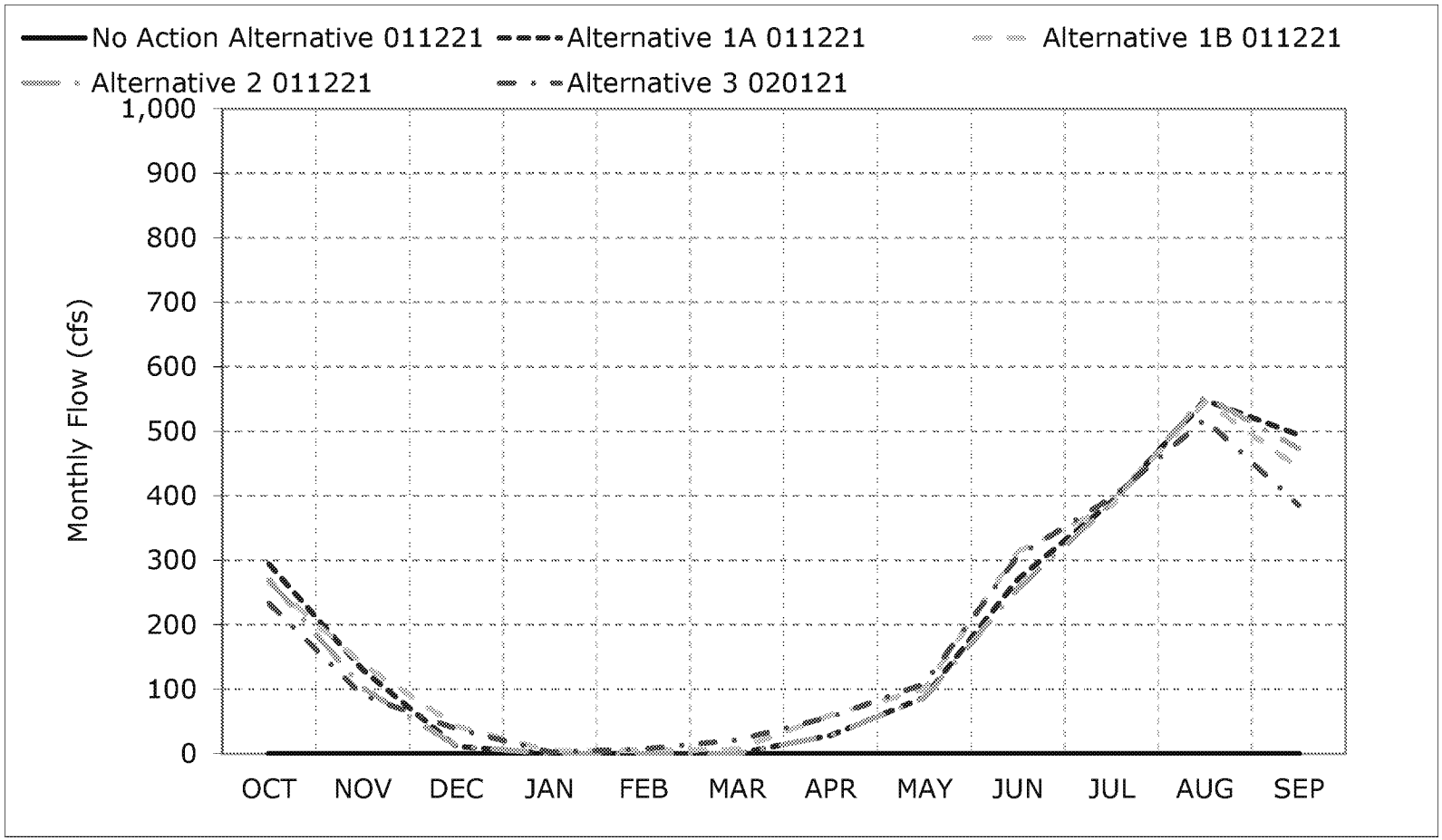
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	662	300	70	0	0	0	133	486	1,000	1,000	1,000	1,000
20%	449	59	0	0	0	0	0	1	834	1,000	1,000	634
30%	449	0	0	0	0	0	0	0	480	975	901	464
40%	281	0	0	0	0	0	0	0	214	487	462	464
50%	2	0	0	0	0	0	0	0	38	16	449	459
60%	0	0	0	0	0	0	0	0	0	0	449	321
70%	0	0	0	0	0	0	0	0	0	0	449	127
80%	0	0	0	0	0	0	0	0	0	0	4	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	233	91	39	3	8	21	57	109	307	397	519	385
Water Year Types[b,c]												
Wet (32%)	239	81	102	0	4	5	0	0	0	0	356	382
Above Normal (15%)	272	0	2	0	0	0	0	0	313	8	508	416
Below Normal (17%)	159	102	11	0	19	0	8	0	287	606	642	274
Dry (22%)	333	163	12	0	0	38	156	231	656	936	732	568
Critical (15%)	118	83	10	19	21	78	148	396	464	593	417	218

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

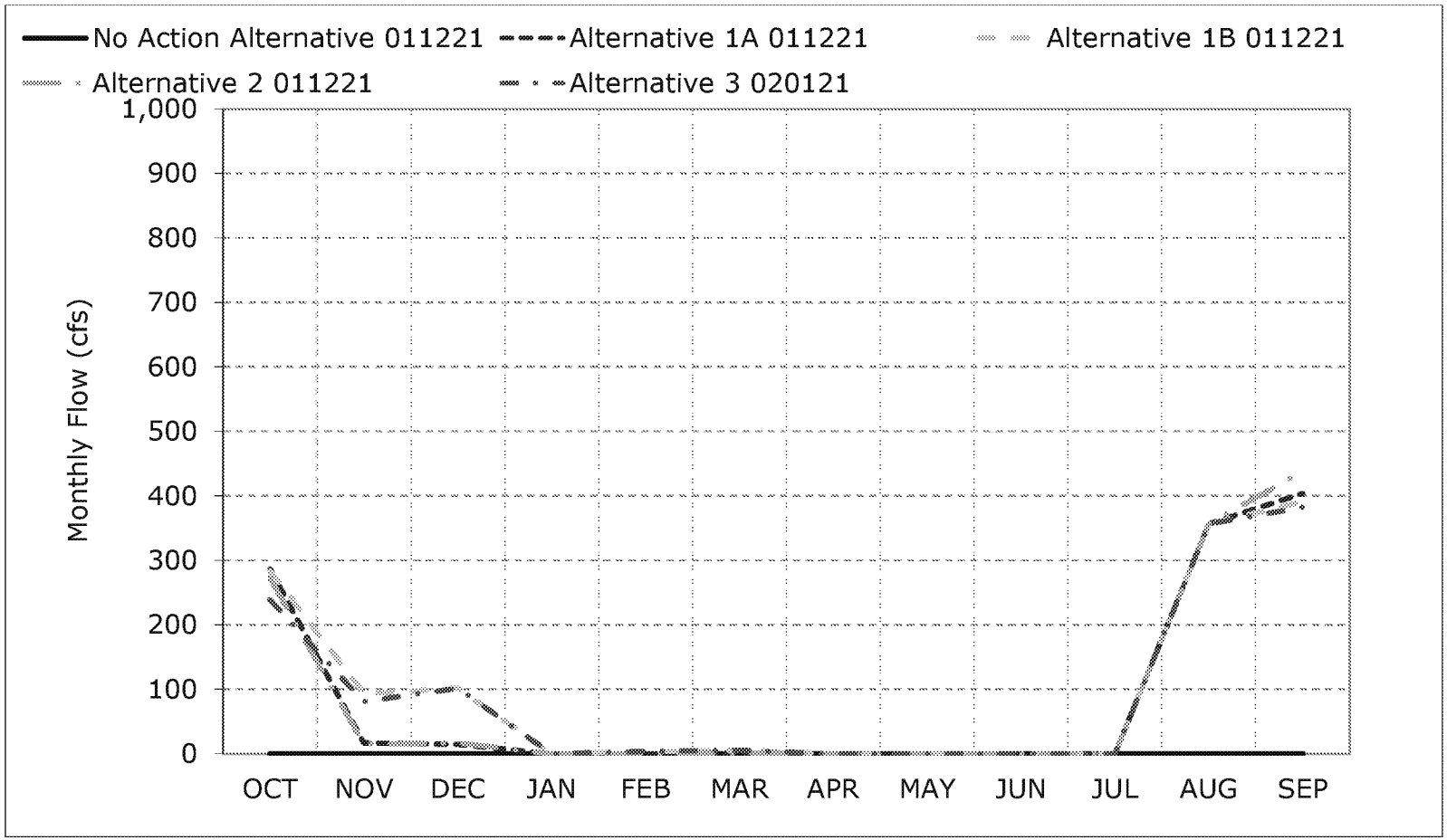
c These results are displayed with calendar year - year type sorting.

Figure 5B1-4-1. Sites Release to Dunnigan Pipeline, Long-Term Average Flow



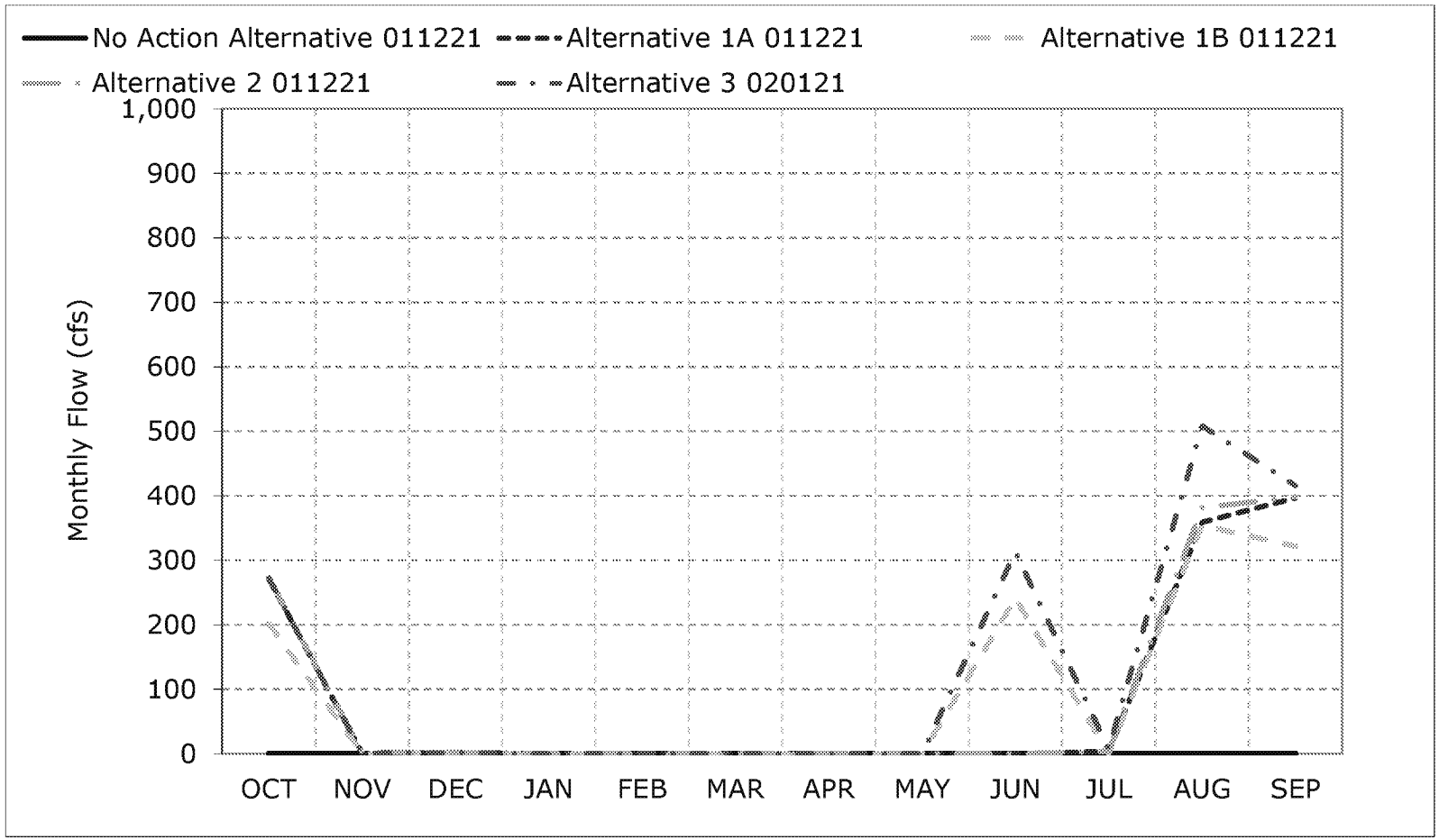
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-4-2. Sites Release to Dunnigan Pipeline, Wet Year Average Flow



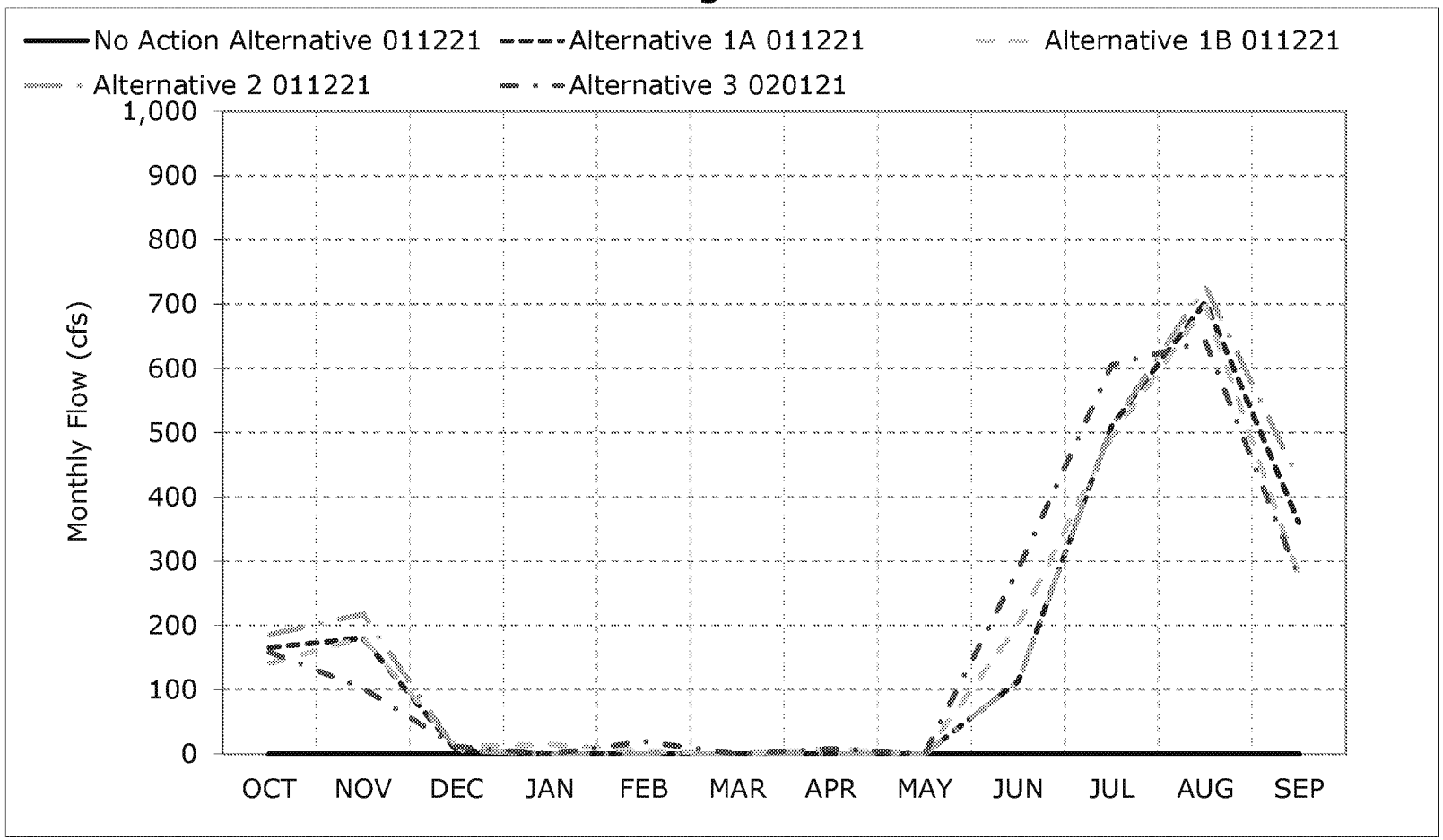
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-4-3. Sites Release to Dunnigan Pipeline, Above Normal Year Average Flow



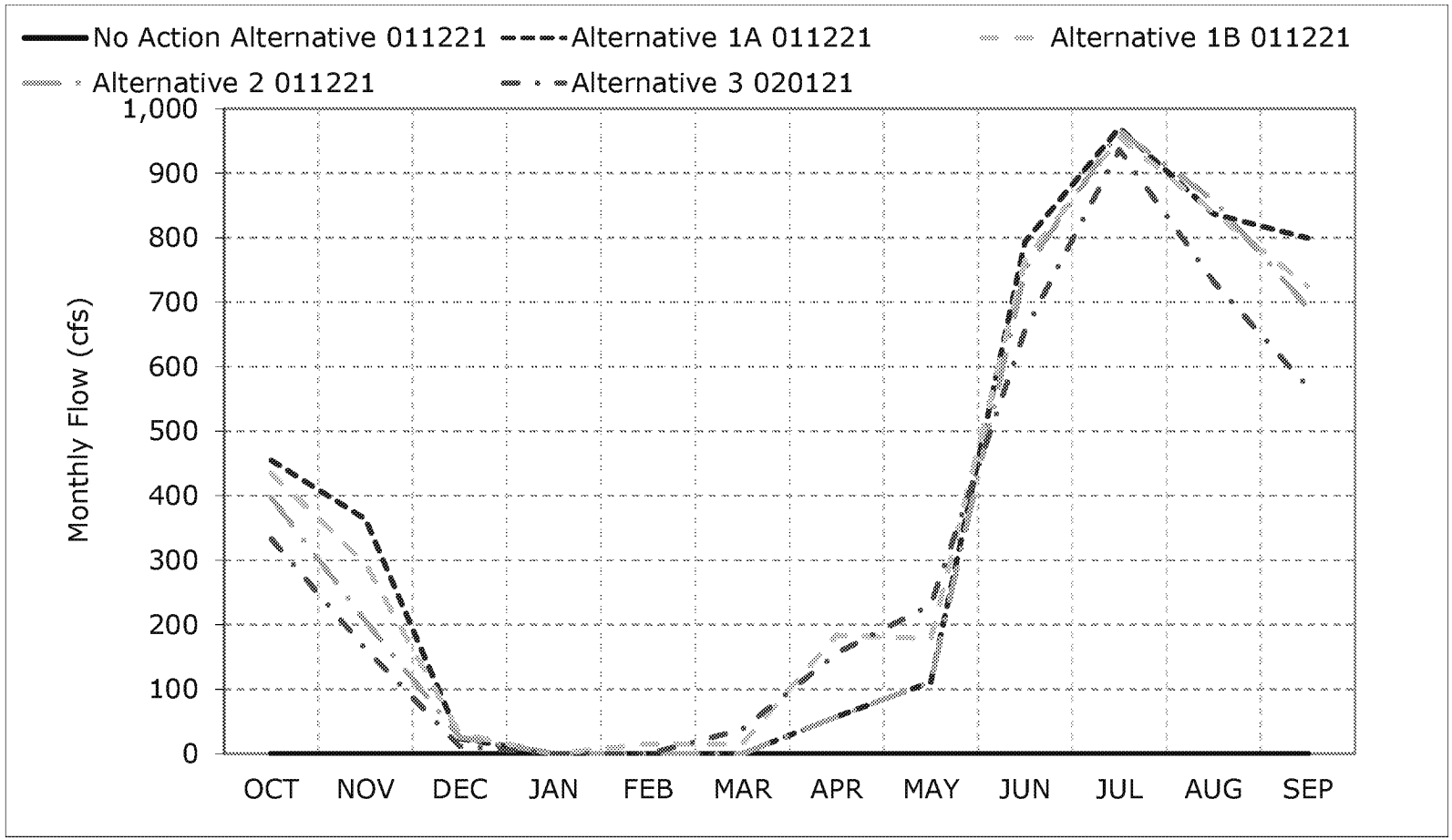
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-4-4. Sites Release to Dunnigan Pipeline, Below Normal Year Average Flow



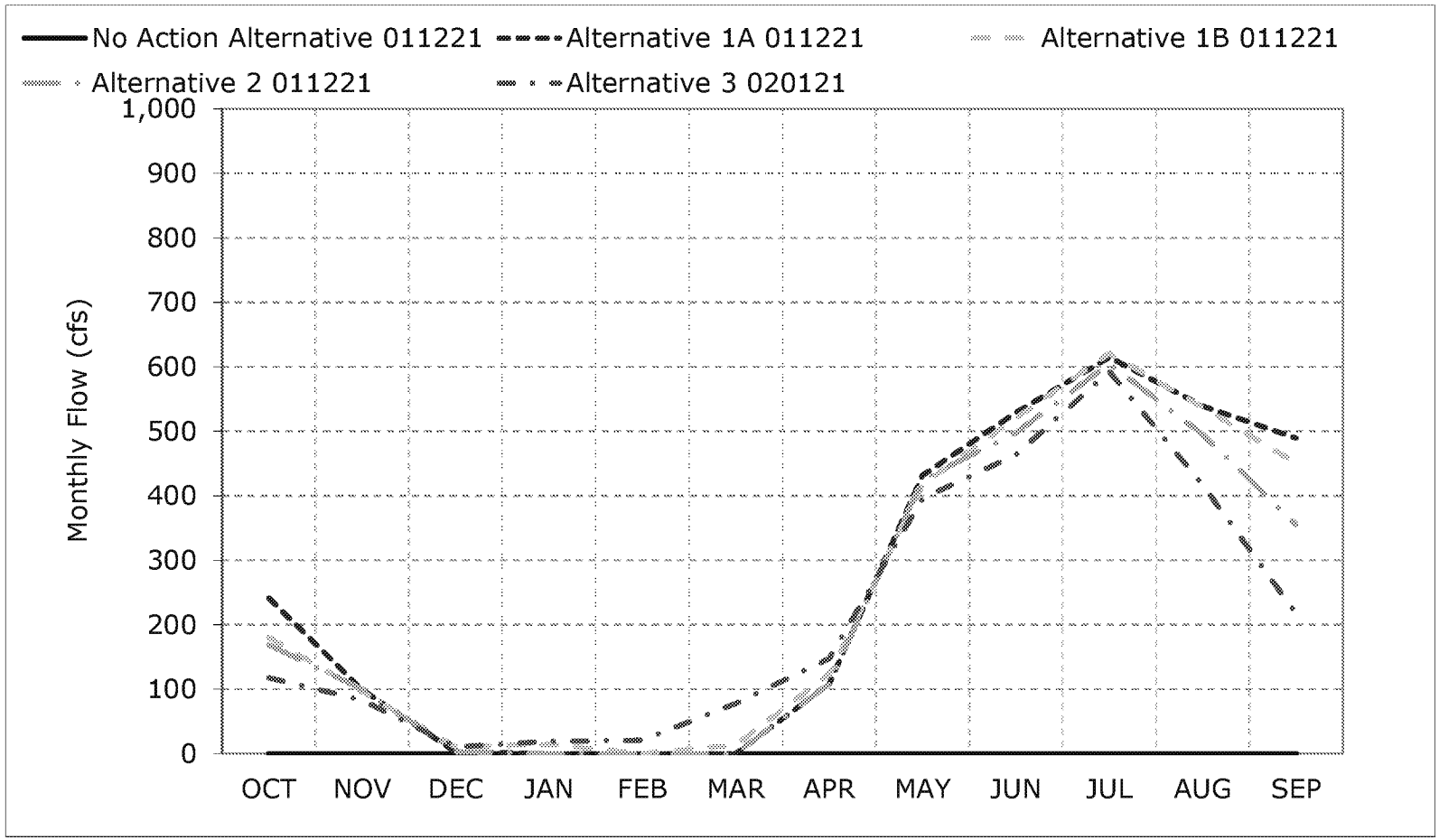
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-4-5. Sites Release to Dunnigan Pipeline, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-4-6. Sites Release to Dunnigan Pipeline, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-4-7. Sites Release to Dunnigan Pipeline, October

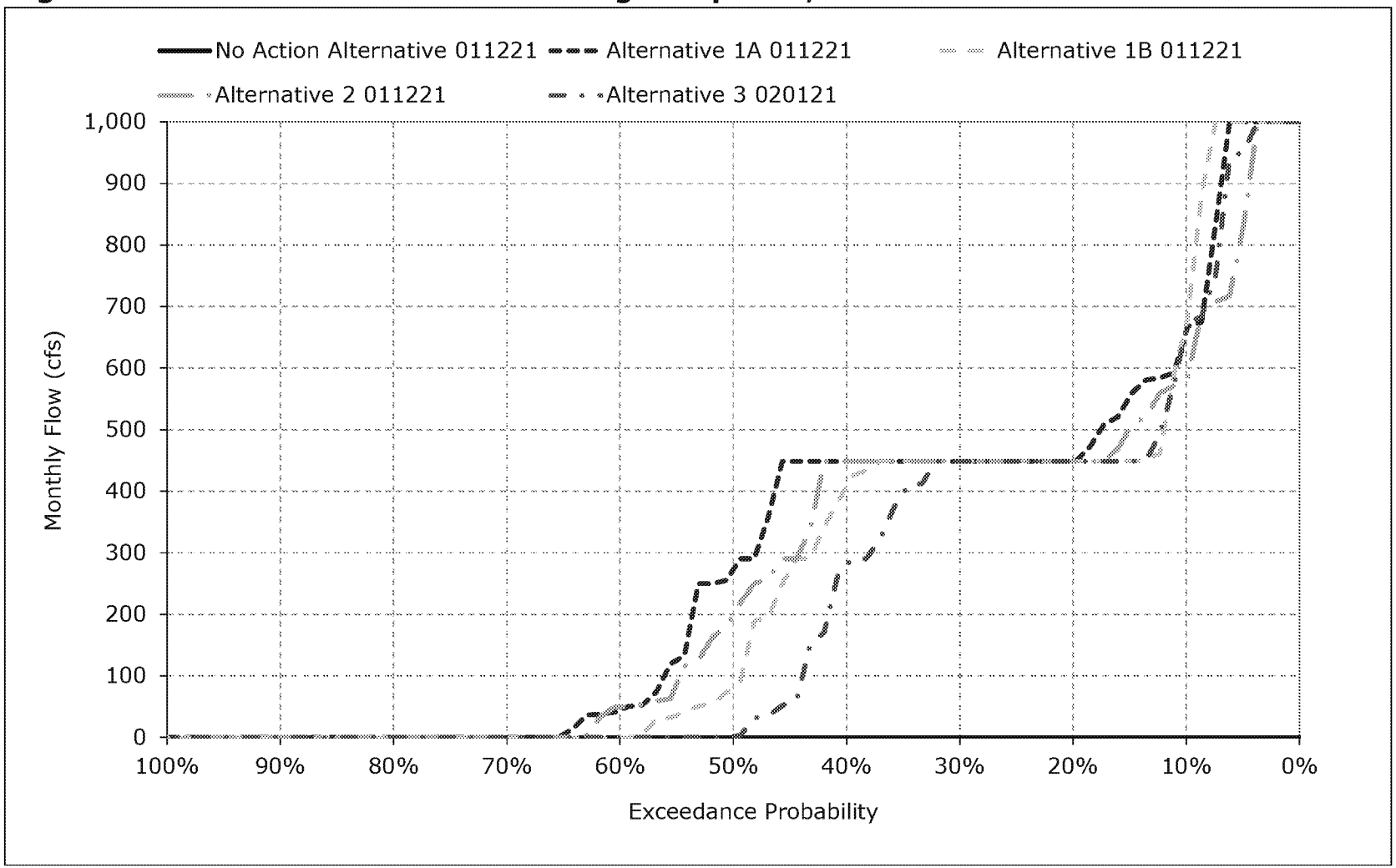


Figure 5B1-4-8. Sites Release to Dunnigan Pipeline, November

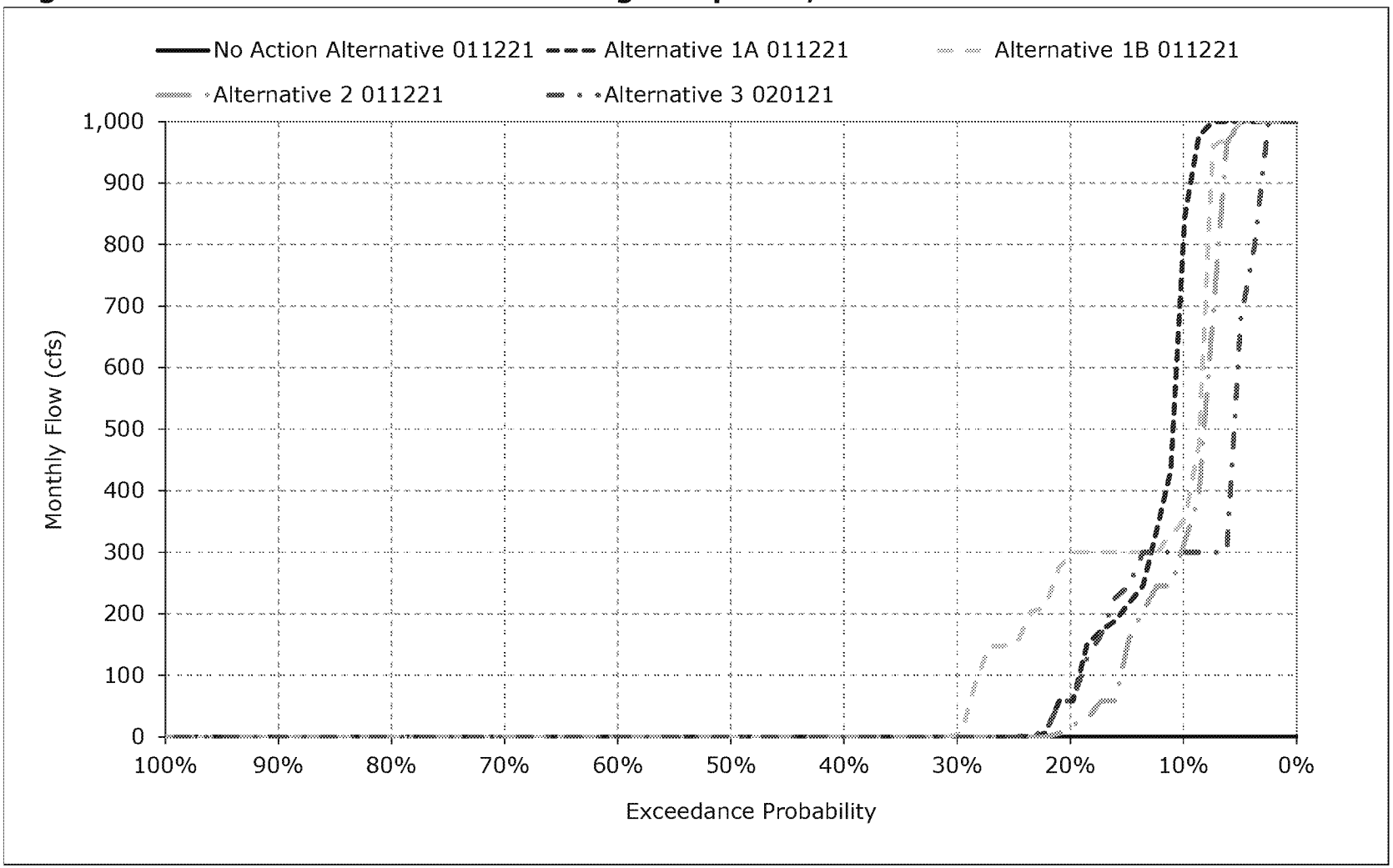


Figure 5B1-4-9. Sites Release to Dunnigan Pipeline, December

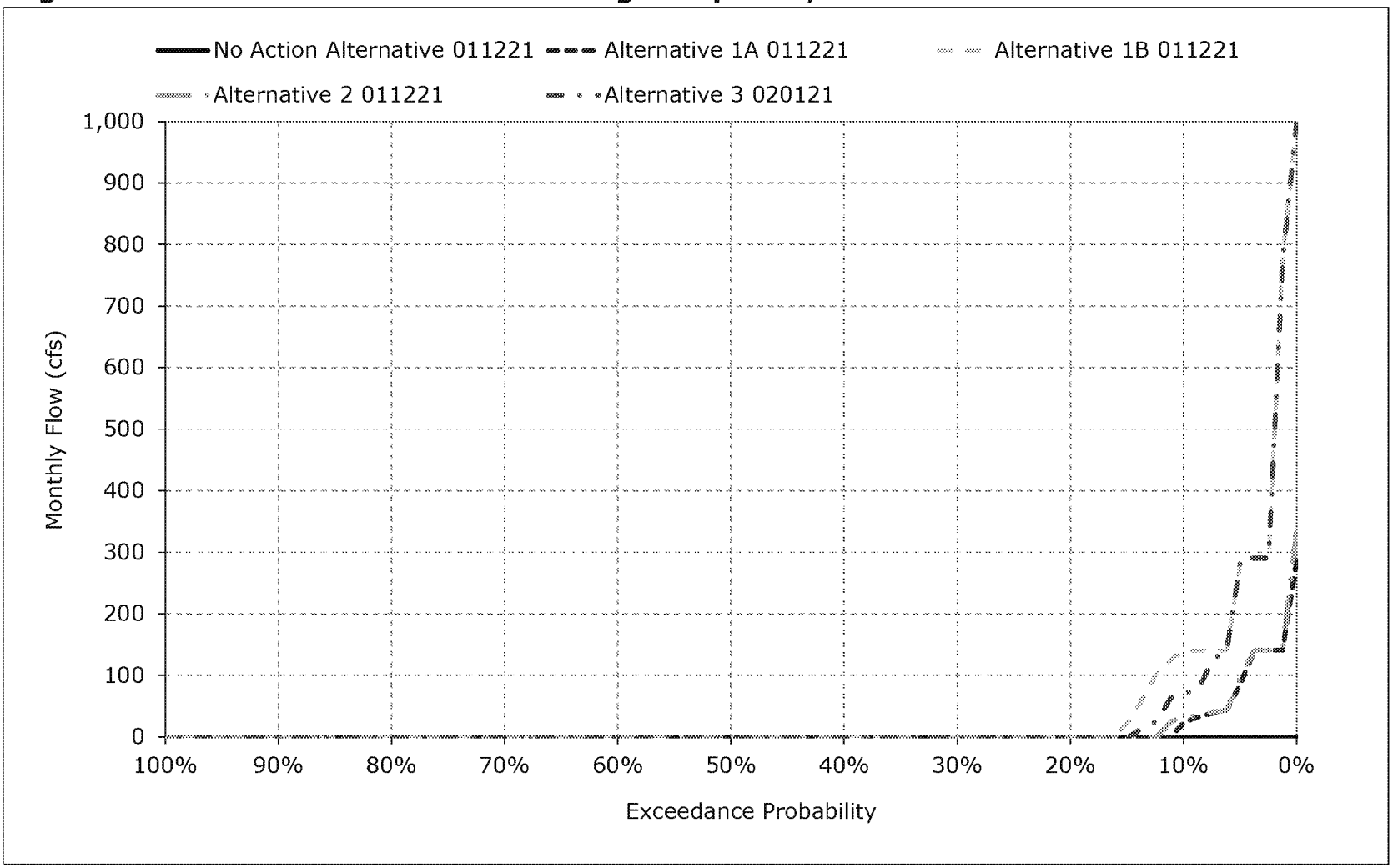


Figure 5B1-4-10. Sites Release to Dunnigan Pipeline, January

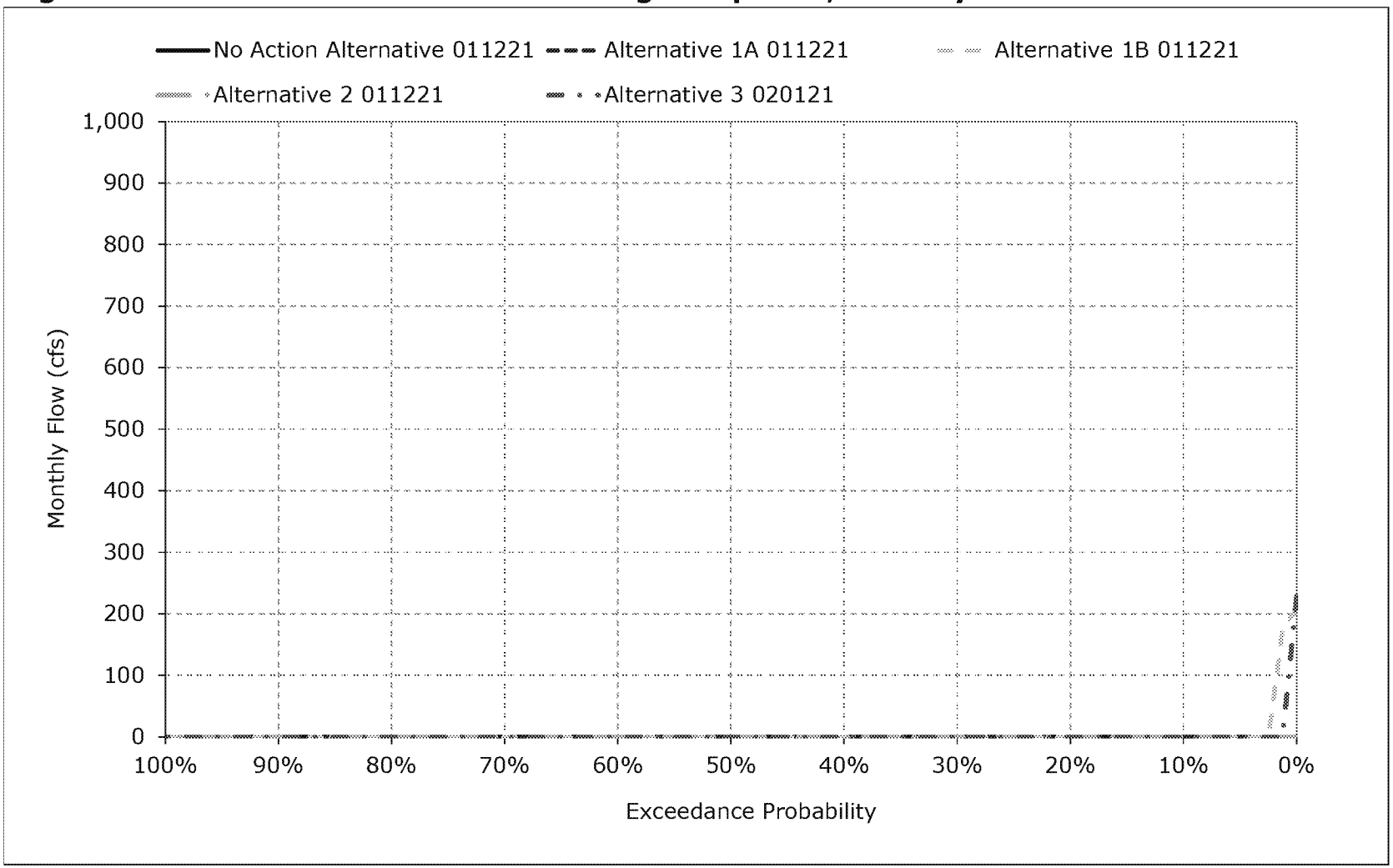


Figure 5B1-4-11. Sites Release to Dunnigan Pipeline, February

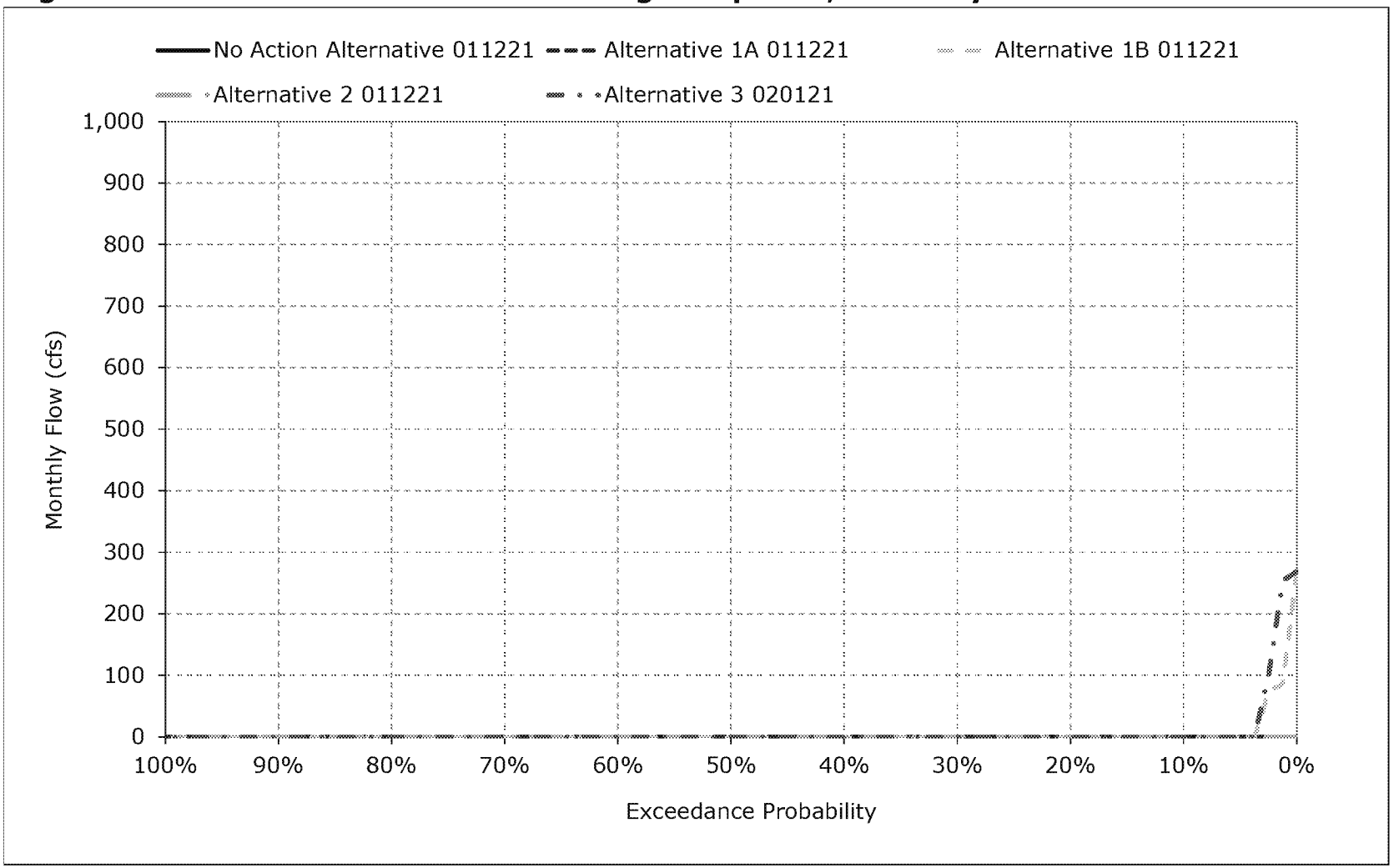


Figure 5B1-4-12. Sites Release to Dunnigan Pipeline, March

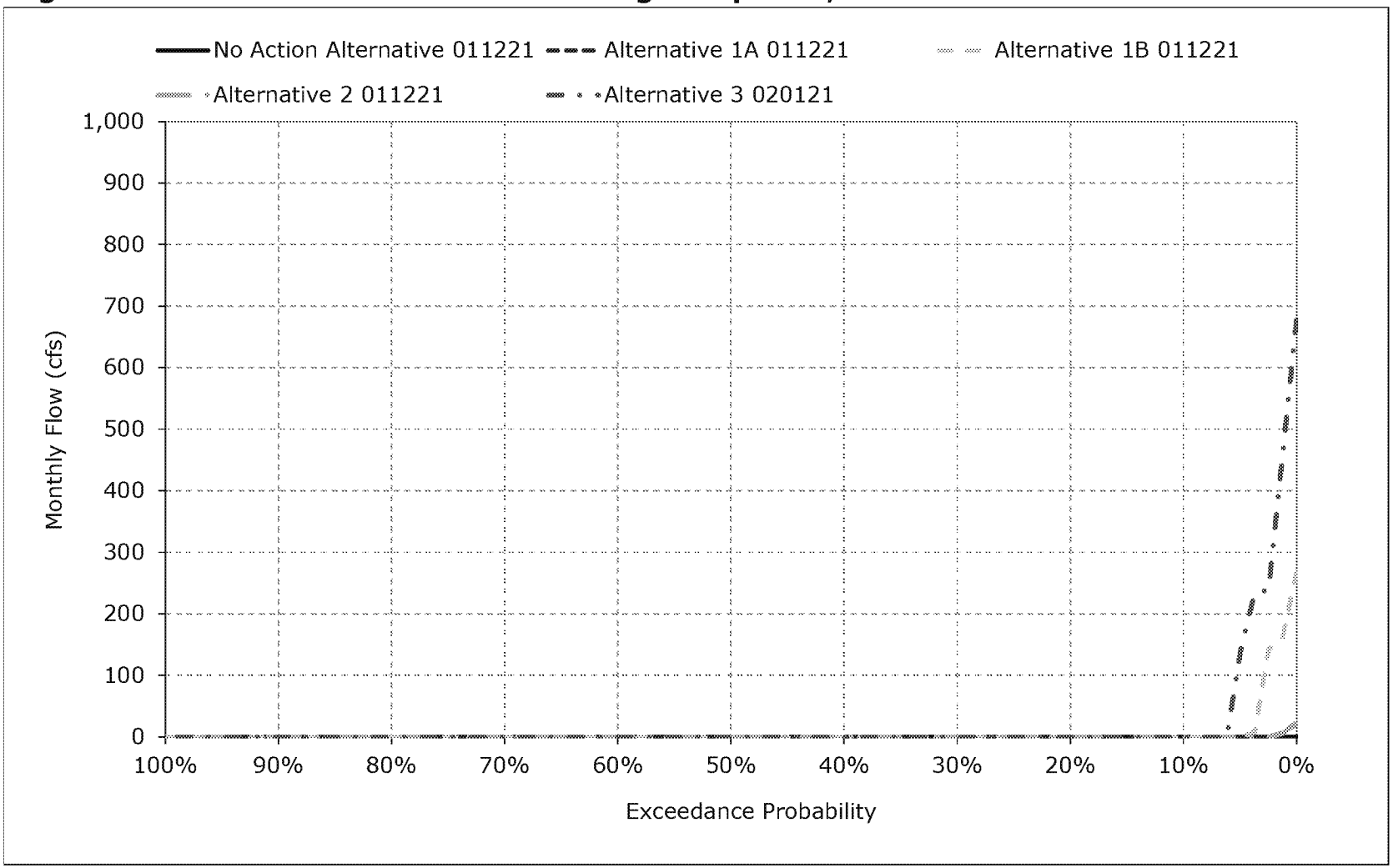


Figure 5B1-4-13. Sites Release to Dunnigan Pipeline, April

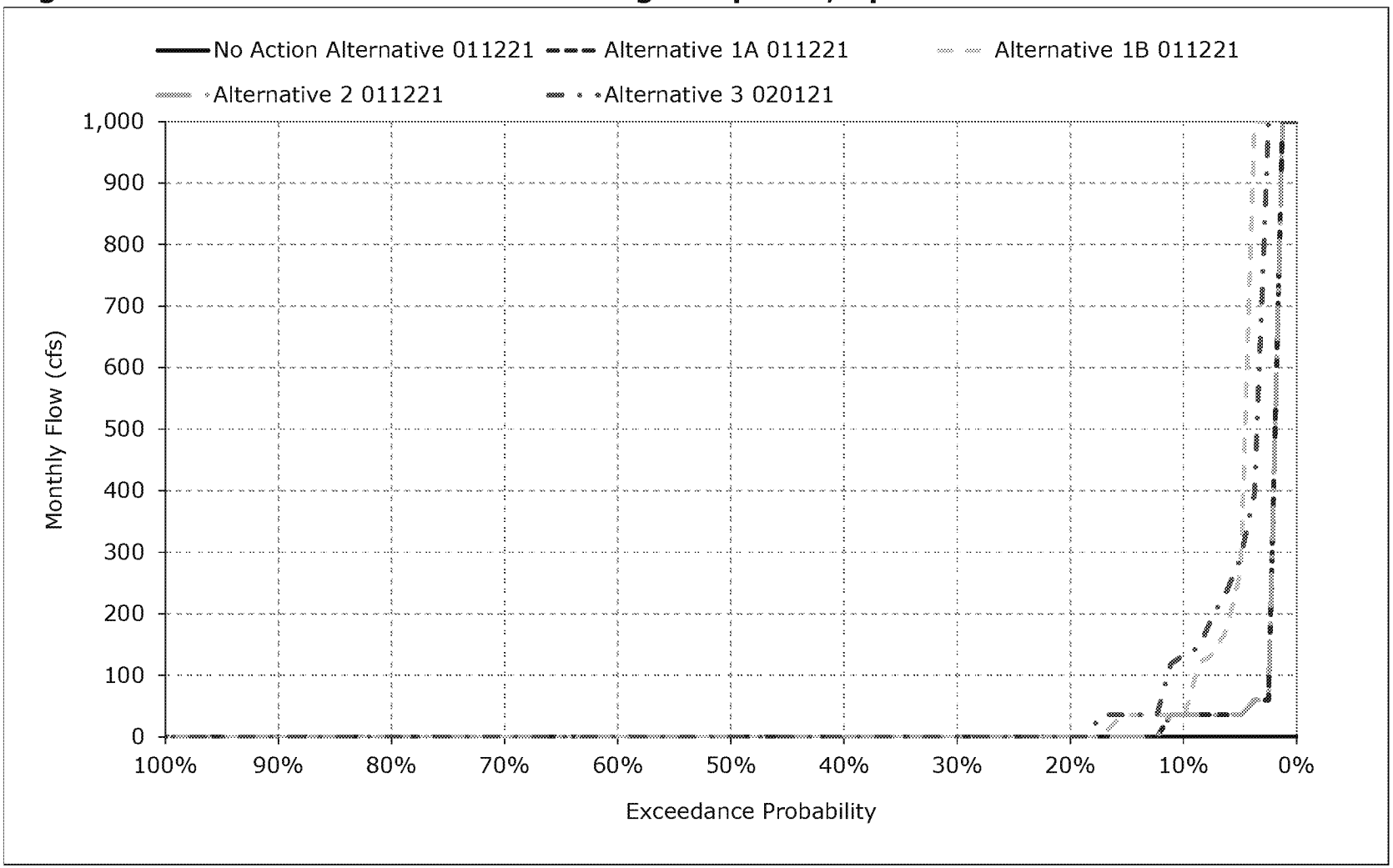


Figure 5B1-4-14. Sites Release to Dunnigan Pipeline, May

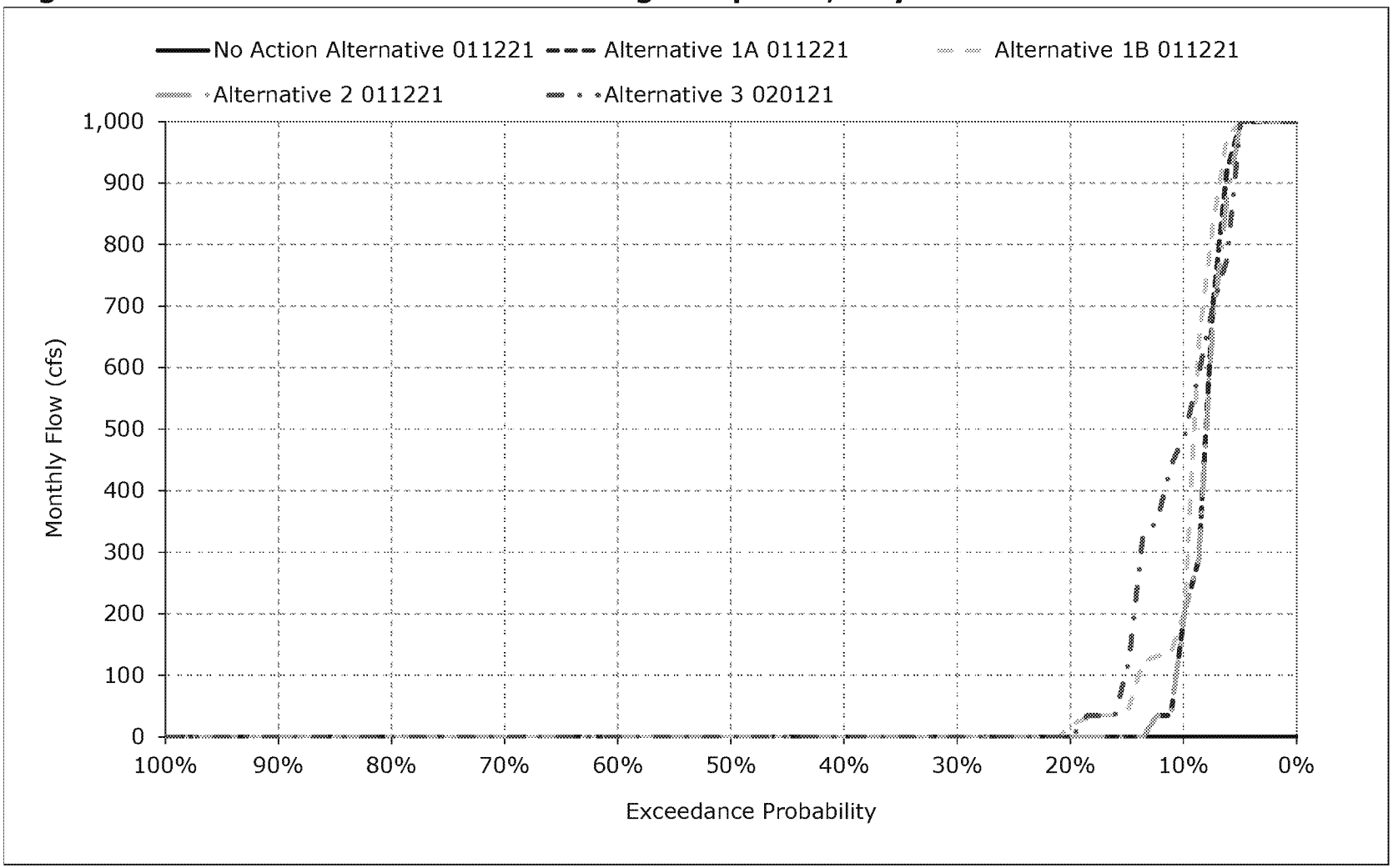


Figure 5B1-4-15. Sites Release to Dunnigan Pipeline, June

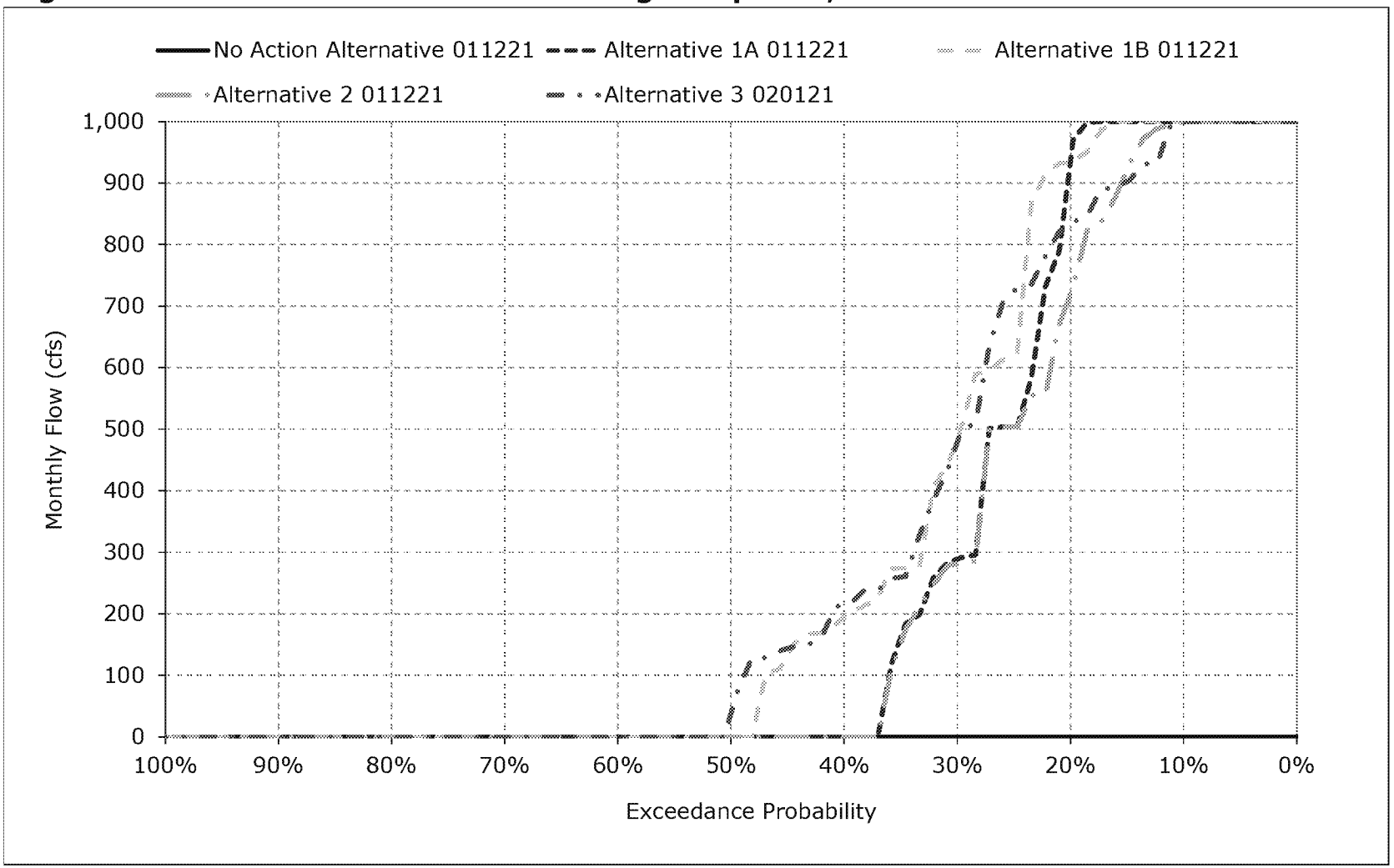


Figure 5B1-4-16. Sites Release to Dunnigan Pipeline, July

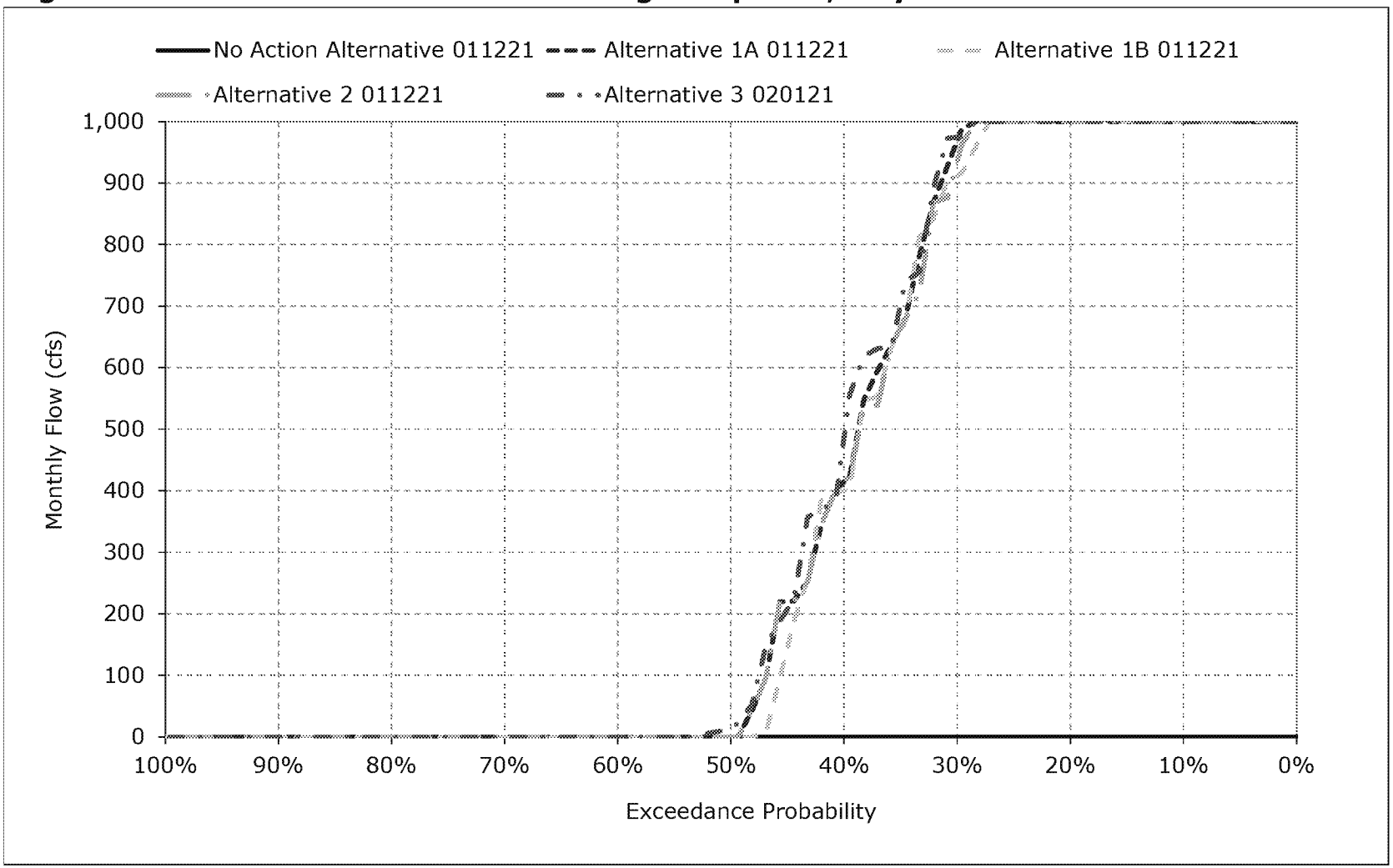


Figure 5B1-4-17. Sites Release to Dunnigan Pipeline, August

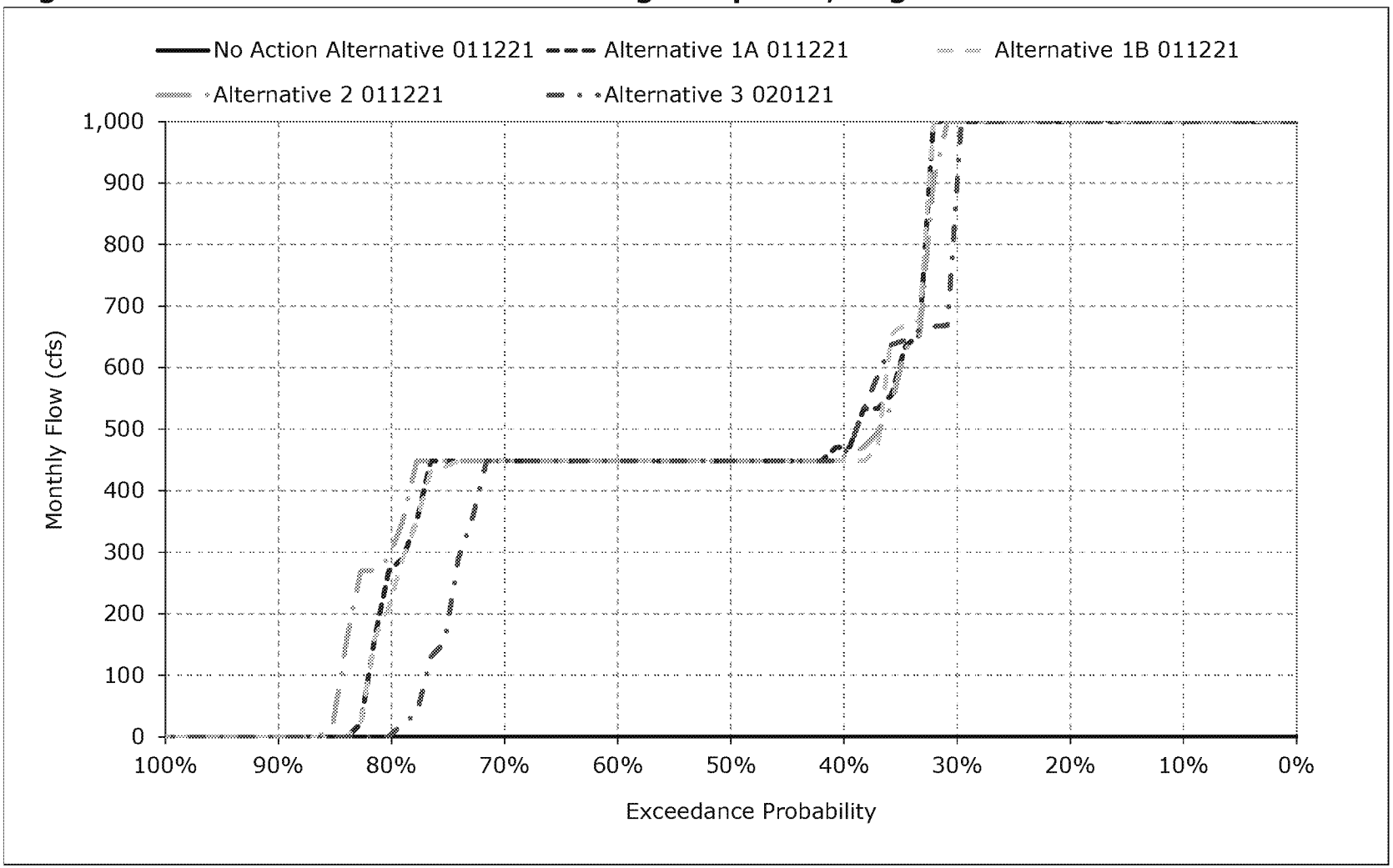


Figure 5B1-4-18. Sites Release to Dunnigan Pipeline, September

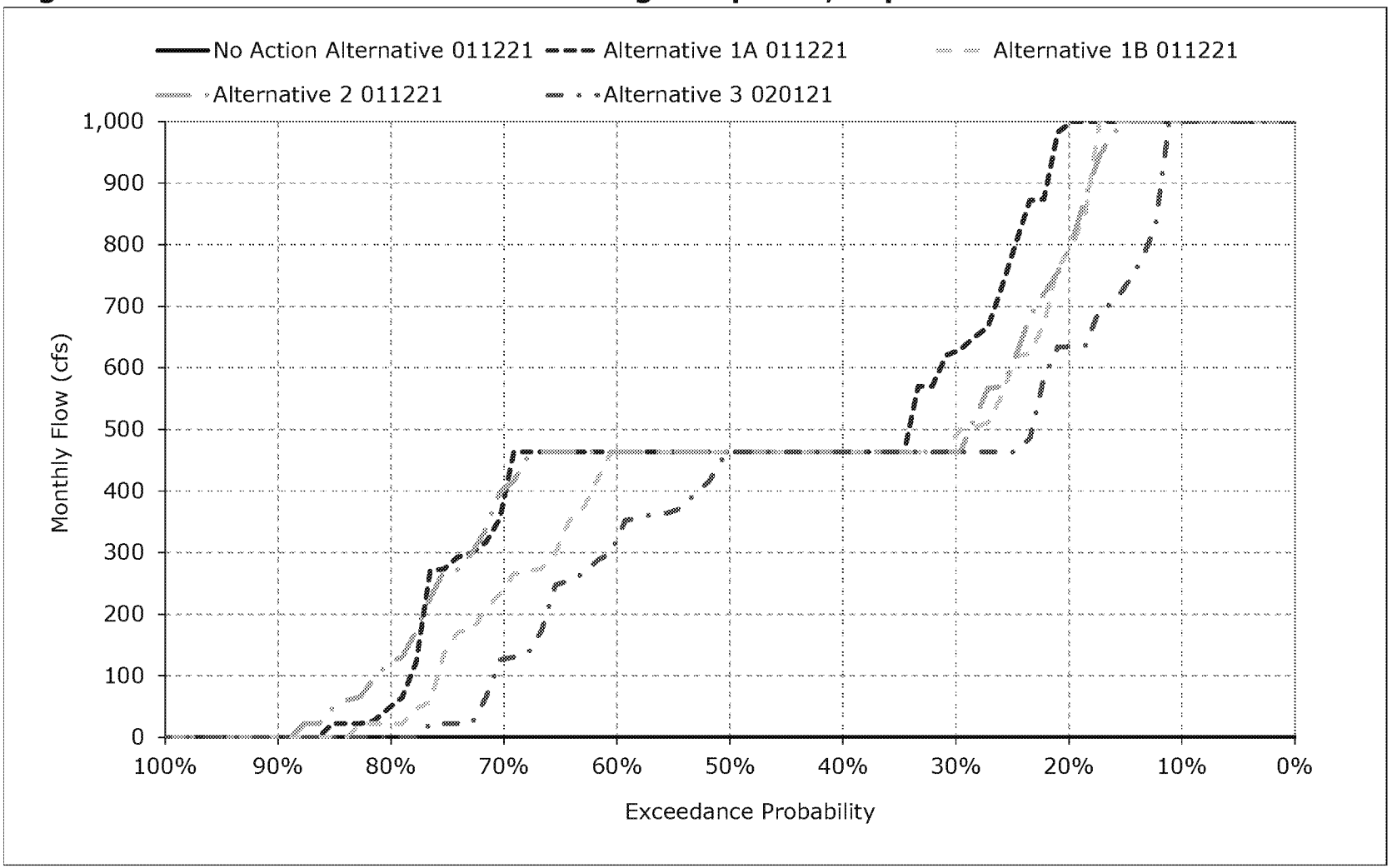


Table 5B1-5-1a. Sites Release to Yolo Bypass, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-5-1b. Sites Release to Yolo Bypass, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	449	0	0	0	0	0	0	0	0	0	449	464
20%	449	0	0	0	0	0	0	0	0	0	449	464
30%	449	0	0	0	0	0	0	0	0	0	449	464
40%	250	0	0	0	0	0	0	0	0	0	449	464
50%	0	0	0	0	0	0	0	0	0	0	449	375
60%	0	0	0	0	0	0	0	0	0	0	278	281
70%	0	0	0	0	0	0	0	0	0	0	0	2
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	181	0	0	0	0	0	0	0	0	0	272	277
Water Year Types[b,c]												
Wet (32%)	286	0	0	0	0	0	0	0	0	0	356	404
Above Normal (15%)	272	0	0	0	0	0	0	0	0	0	359	397
Below Normal (17%)	97	0	0	0	0	0	0	0	0	0	224	187
Dry (22%)	130	0	0	0	0	0	0	0	0	0	228	227
Critical (15%)	37	0	0	0	0	0	0	0	0	0	123	61

Table 5B1-5-1c. Sites Release to Yolo Bypass, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	449	0	0	0	0	0	0	0	0	0	449	464
20%	449	0	0	0	0	0	0	0	0	0	449	464
30%	449	0	0	0	0	0	0	0	0	0	449	464
40%	250	0	0	0	0	0	0	0	0	0	449	464
50%	0	0	0	0	0	0	0	0	0	0	449	375
60%	0	0	0	0	0	0	0	0	0	0	278	281
70%	0	0	0	0	0	0	0	0	0	0	0	2
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	181	0	0	0	0	0	0	0	0	0	272	277
Water Year Types[b,c]												
Wet (32%)	286	0	0	0	0	0	0	0	0	0	356	404
Above Normal (15%)	272	0	0	0	0	0	0	0	0	0	359	397
Below Normal (17%)	97	0	0	0	0	0	0	0	0	0	224	187
Dry (22%)	130	0	0	0	0	0	0	0	0	0	228	227
Critical (15%)	37	0	0	0	0	0	0	0	0	0	123	61

a Based on the 82-year simulation period.
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
c These results are displayed with calendar year - year type sorting.

Table 5B1-5-2a. Sites Release to Yolo Bypass, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-5-2b. Sites Release to Yolo Bypass, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	449	0	0	0	0	0	0	0	0	0	449	464
20%	449	0	0	0	0	0	0	0	0	0	449	464
30%	400	0	0	0	0	0	0	0	0	0	449	464
40%	6	0	0	0	0	0	0	0	0	0	449	426
50%	0	0	0	0	0	0	0	0	0	0	449	287
60%	0	0	0	0	0	0	0	0	0	0	308	150
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	158	0	0	0	0	0	0	0	0	0	272	252
Water Year Types[b,c]												
Wet (32%)	284	0	0	0	0	0	0	0	0	0	356	391
Above Normal (15%)	199	0	0	0	0	0	0	0	0	0	354	322
Below Normal (17%)	96	0	0	0	0	0	0	0	0	0	224	168
Dry (22%)	68	0	0	0	0	0	0	0	0	0	245	187
Critical (15%)	54	0	0	0	0	0	0	0	0	0	103	77

Table 5B1-5-2c. Sites Release to Yolo Bypass, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	449	0	0	0	0	0	0	0	0	0	449	464
20%	449	0	0	0	0	0	0	0	0	0	449	464
30%	400	0	0	0	0	0	0	0	0	0	449	464
40%	6	0	0	0	0	0	0	0	0	0	449	426
50%	0	0	0	0	0	0	0	0	0	0	449	287
60%	0	0	0	0	0	0	0	0	0	0	308	150
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	158	0	0	0	0	0	0	0	0	0	272	252
Water Year Types[b,c]												
Wet (32%)	284	0	0	0	0	0	0	0	0	0	356	391
Above Normal (15%)	199	0	0	0	0	0	0	0	0	0	354	322
Below Normal (17%)	96	0	0	0	0	0	0	0	0	0	224	168
Dry (22%)	68	0	0	0	0	0	0	0	0	0	245	187
Critical (15%)	54	0	0	0	0	0	0	0	0	0	103	77

a Based on the 82-year simulation period.
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
c These results are displayed with calendar year - year type sorting.

Table 5B1-5-3a. Sites Release to Yolo Bypass, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-5-3b. Sites Release to Yolo Bypass, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	449	0	0	0	0	0	0	0	0	0	449	464
20%	449	0	0	0	0	0	0	0	0	0	449	464
30%	449	0	0	0	0	0	0	0	0	0	449	464
40%	274	0	0	0	0	0	0	0	0	0	449	464
50%	0	0	0	0	0	0	0	0	0	0	449	448
60%	0	0	0	0	0	0	0	0	0	0	449	293
70%	0	0	0	0	0	0	0	0	0	0	19	97
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	183	0	0	0	0	0	0	0	0	0	300	290
Water Year Types[b,c]												
Wet (32%)	272	0	0	0	0	0	0	0	0	0	356	437
Above Normal (15%)	274	0	0	0	0	0	0	0	0	0	381	398
Below Normal (17%)	110	0	0	0	0	0	0	0	0	0	288	249
Dry (22%)	146	0	0	0	0	0	0	0	0	0	275	204
Critical (15%)	37	0	0	0	0	0	0	0	0	0	150	37

Table 5B1-5-3c. Sites Release to Yolo Bypass, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	449	0	0	0	0	0	0	0	0	0	449	464
20%	449	0	0	0	0	0	0	0	0	0	449	464
30%	449	0	0	0	0	0	0	0	0	0	449	464
40%	274	0	0	0	0	0	0	0	0	0	449	464
50%	0	0	0	0	0	0	0	0	0	0	449	448
60%	0	0	0	0	0	0	0	0	0	0	449	293
70%	0	0	0	0	0	0	0	0	0	0	19	97
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	183	0	0	0	0	0	0	0	0	0	300	290
Water Year Types[b,c]												
Wet (32%)	272	0	0	0	0	0	0	0	0	0	356	437
Above Normal (15%)	274	0	0	0	0	0	0	0	0	0	381	398
Below Normal (17%)	110	0	0	0	0	0	0	0	0	0	288	249
Dry (22%)	146	0	0	0	0	0	0	0	0	0	275	204
Critical (15%)	37	0	0	0	0	0	0	0	0	0	150	37

a Based on the 82-year simulation period.
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
c These results are displayed with calendar year - year type sorting.

Table 5B1-5-4a. Sites Release to Yolo Bypass, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-5-4b. Sites Release to Yolo Bypass, Alternative 3 020121, Monthly Flow (cfs)

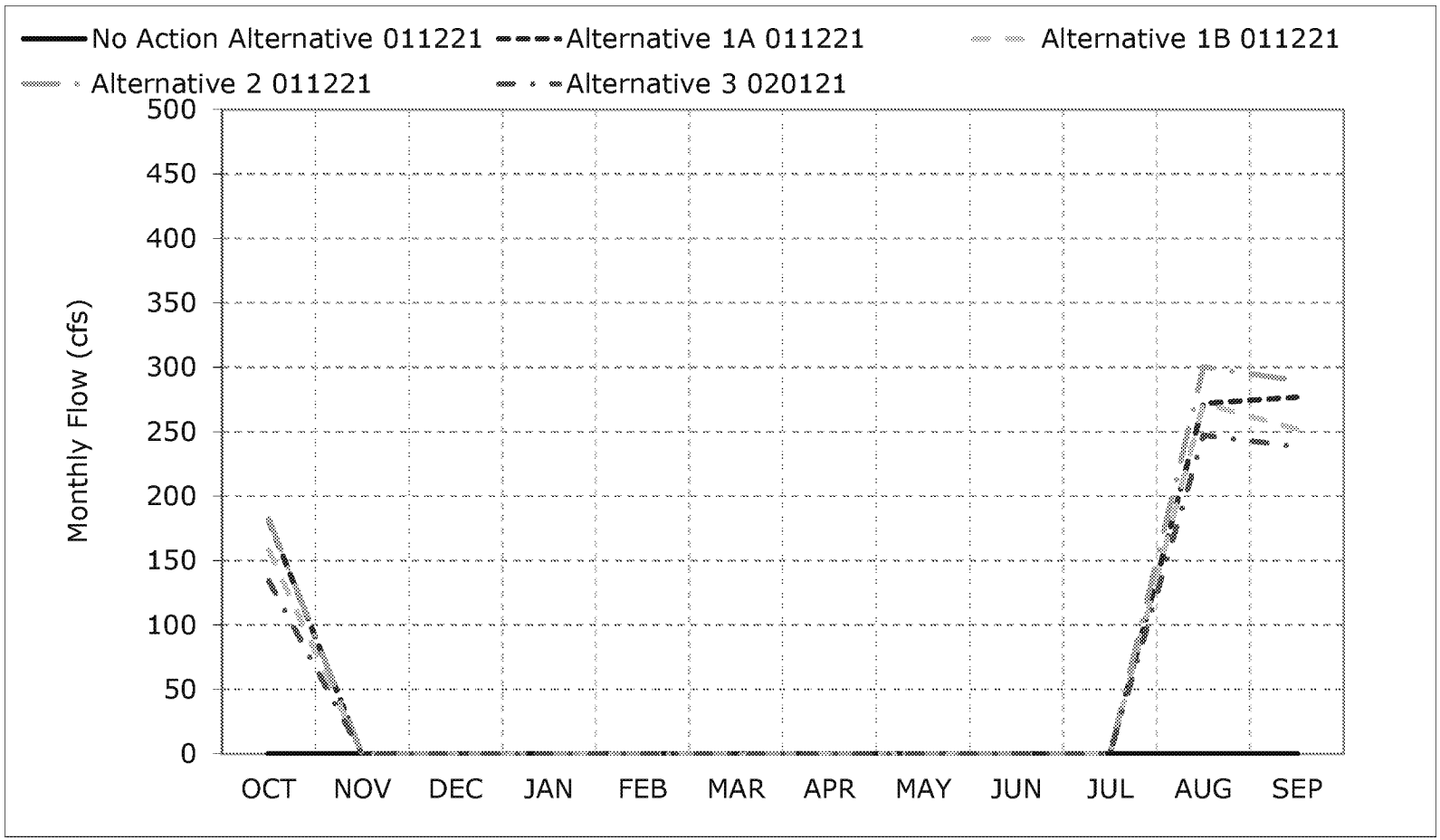
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	449	0	0	0	0	0	0	0	0	0	449	464
20%	449	0	0	0	0	0	0	0	0	0	449	464
30%	283	0	0	0	0	0	0	0	0	0	449	464
40%	0	0	0	0	0	0	0	0	0	0	449	378
50%	0	0	0	0	0	0	0	0	0	0	449	317
60%	0	0	0	0	0	0	0	0	0	0	0	61
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	135	0	0	0	0	0	0	0	0	0	247	239
Water Year Types[b,c]												
Wet (32%)	239	0	0	0	0	0	0	0	0	0	356	382
Above Normal (15%)	177	0	0	0	0	0	0	0	0	0	317	362
Below Normal (17%)	96	0	0	0	0	0	0	0	0	0	224	183
Dry (22%)	50	0	0	0	0	0	0	0	0	0	201	125
Critical (15%)	37	0	0	0	0	0	0	0	0	0	37	39

Table 5B1-5-4c. Sites Release to Yolo Bypass, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	449	0	0	0	0	0	0	0	0	0	449	464
20%	449	0	0	0	0	0	0	0	0	0	449	464
30%	283	0	0	0	0	0	0	0	0	0	449	464
40%	0	0	0	0	0	0	0	0	0	0	449	378
50%	0	0	0	0	0	0	0	0	0	0	449	317
60%	0	0	0	0	0	0	0	0	0	0	0	61
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	135	0	0	0	0	0	0	0	0	0	247	239
Water Year Types[b,c]												
Wet (32%)	239	0	0	0	0	0	0	0	0	0	356	382
Above Normal (15%)	177	0	0	0	0	0	0	0	0	0	317	362
Below Normal (17%)	96	0	0	0	0	0	0	0	0	0	224	183
Dry (22%)	50	0	0	0	0	0	0	0	0	0	201	125
Critical (15%)	37	0	0	0	0	0	0	0	0	0	37	39

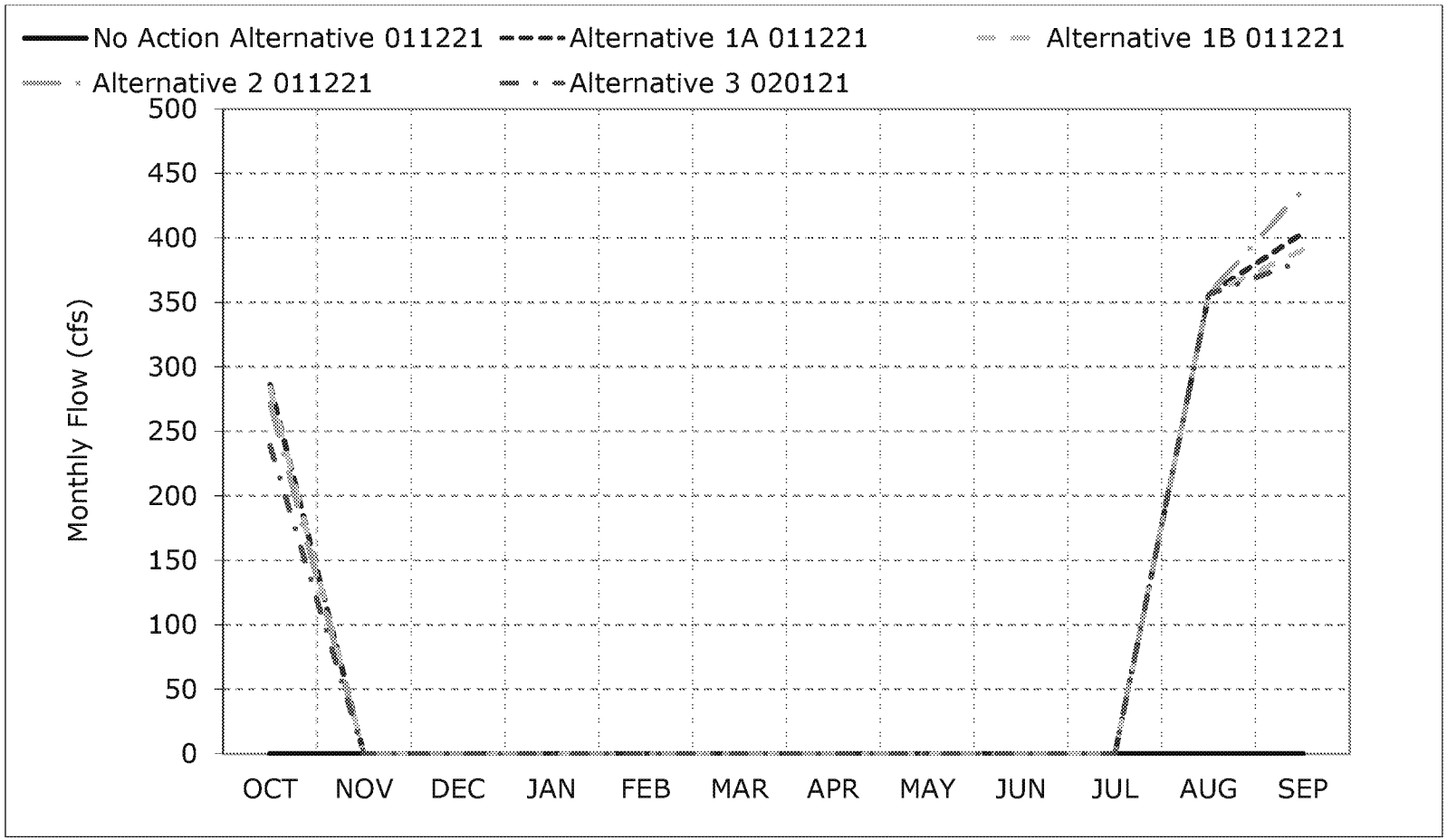
a Based on the 82-year simulation period.
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
c These results are displayed with calendar year - year type sorting.

Figure 5B1-5-1. Sites Release to Yolo Bypass, Long-Term Average Flow



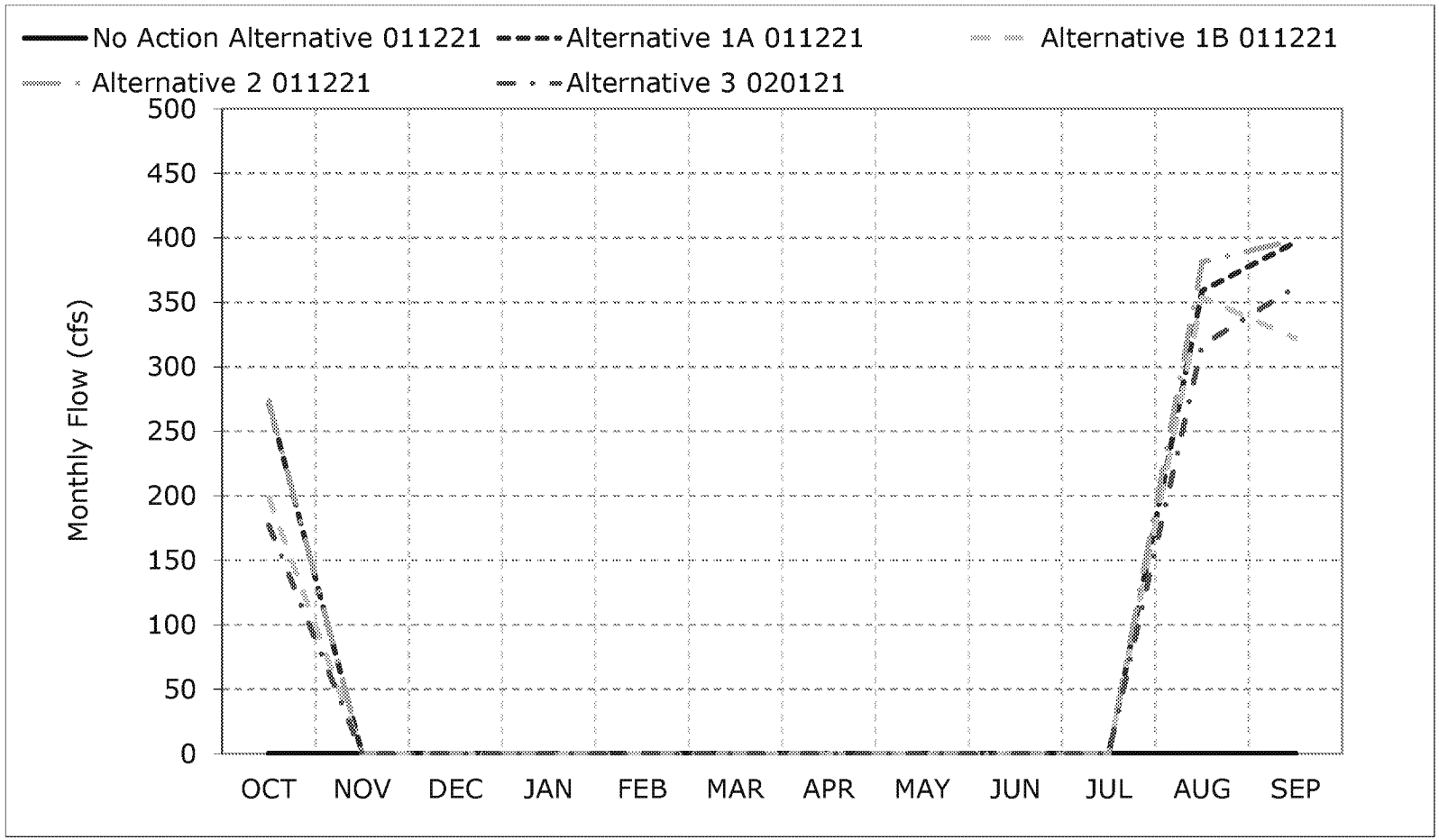
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-5-2. Sites Release to Yolo Bypass, Wet Year Average Flow



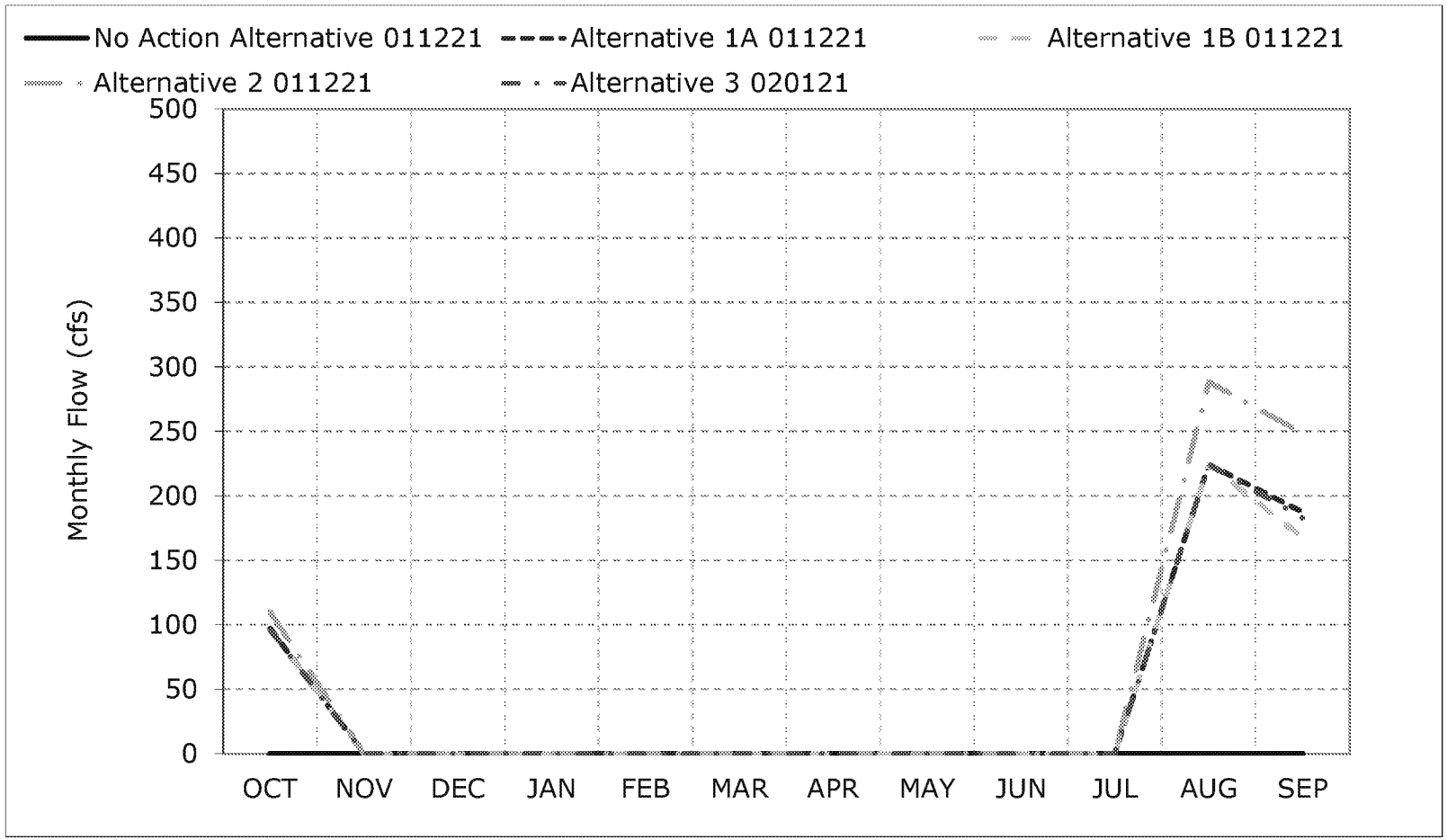
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-5-3. Sites Release to Yolo Bypass, Above Normal Year Average Flow



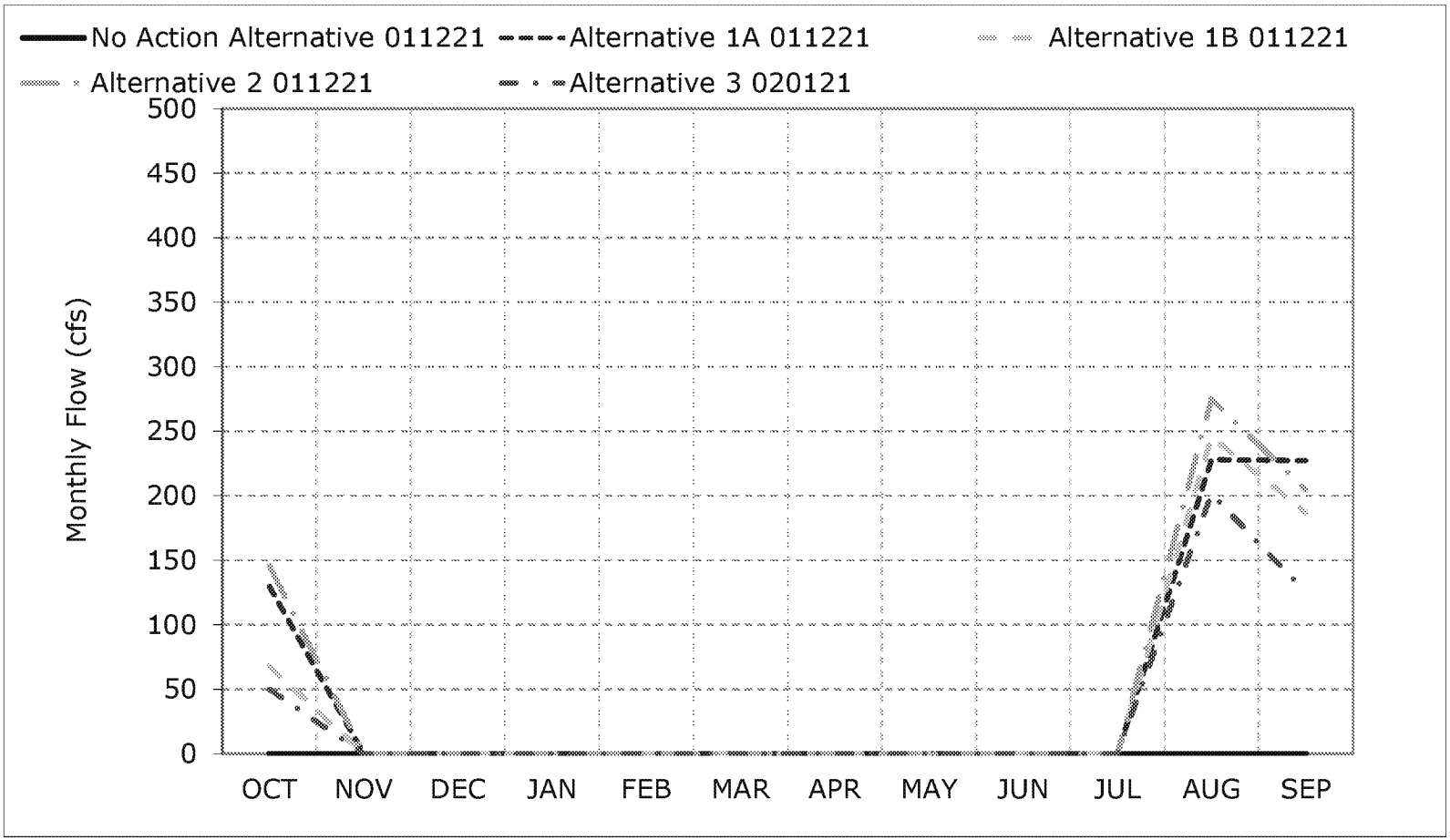
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-5-4. Sites Release to Yolo Bypass, Below Normal Year Average Flow



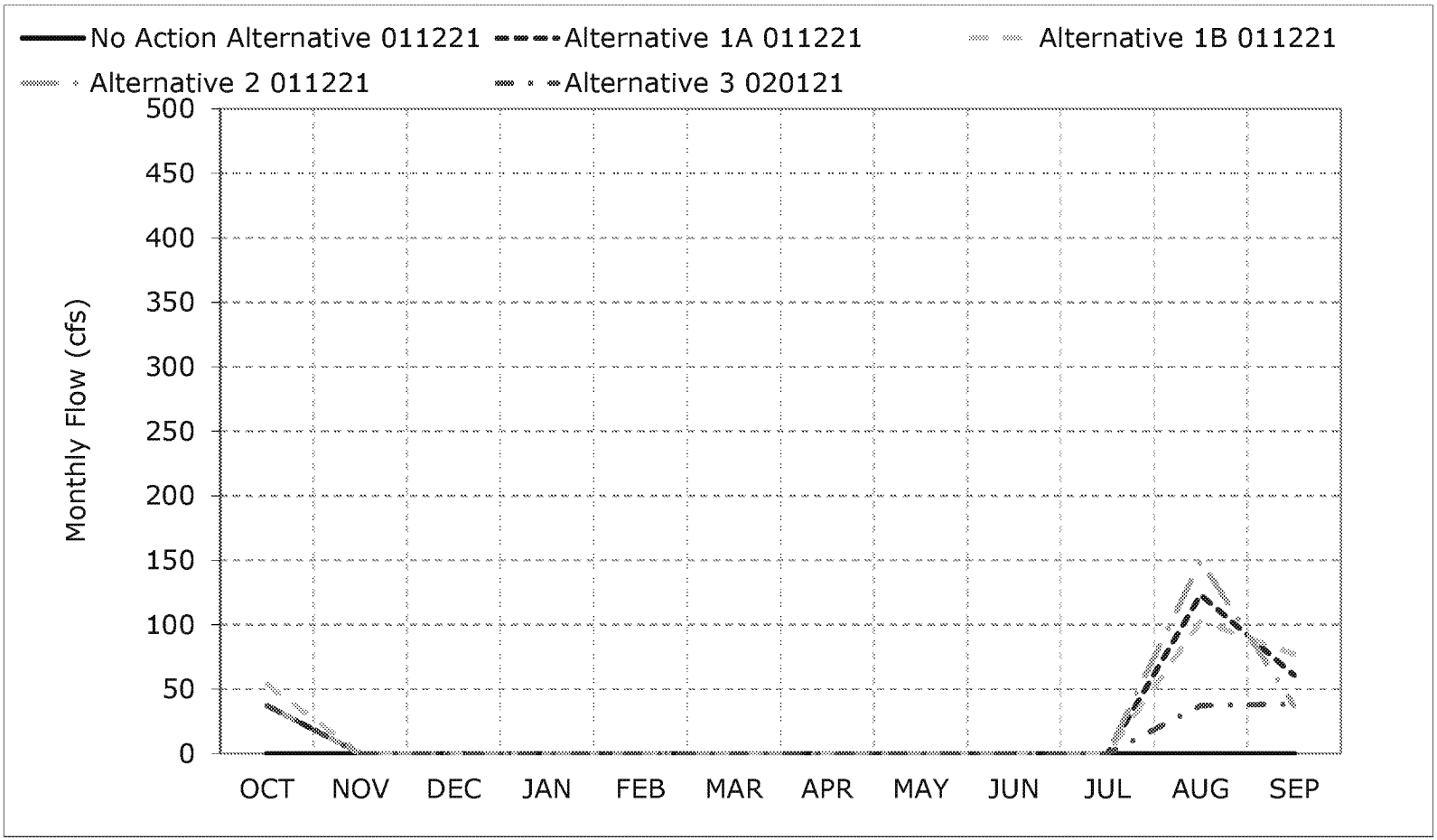
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-5-5. Sites Release to Yolo Bypass, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-5-6. Sites Release to Yolo Bypass, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-5-7. Sites Release to Yolo Bypass, October

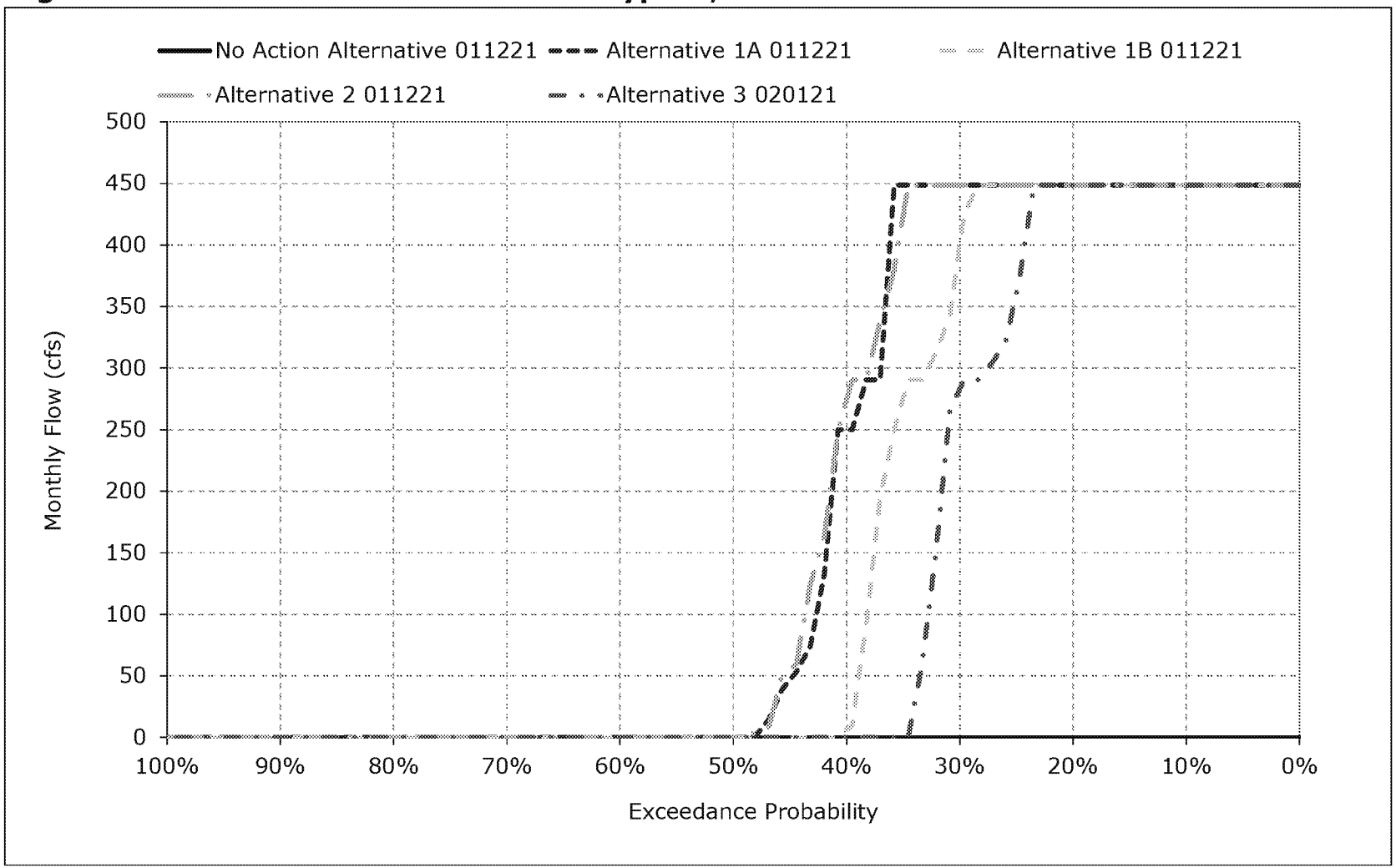


Figure 5B1-5-8. Sites Release to Yolo Bypass, November

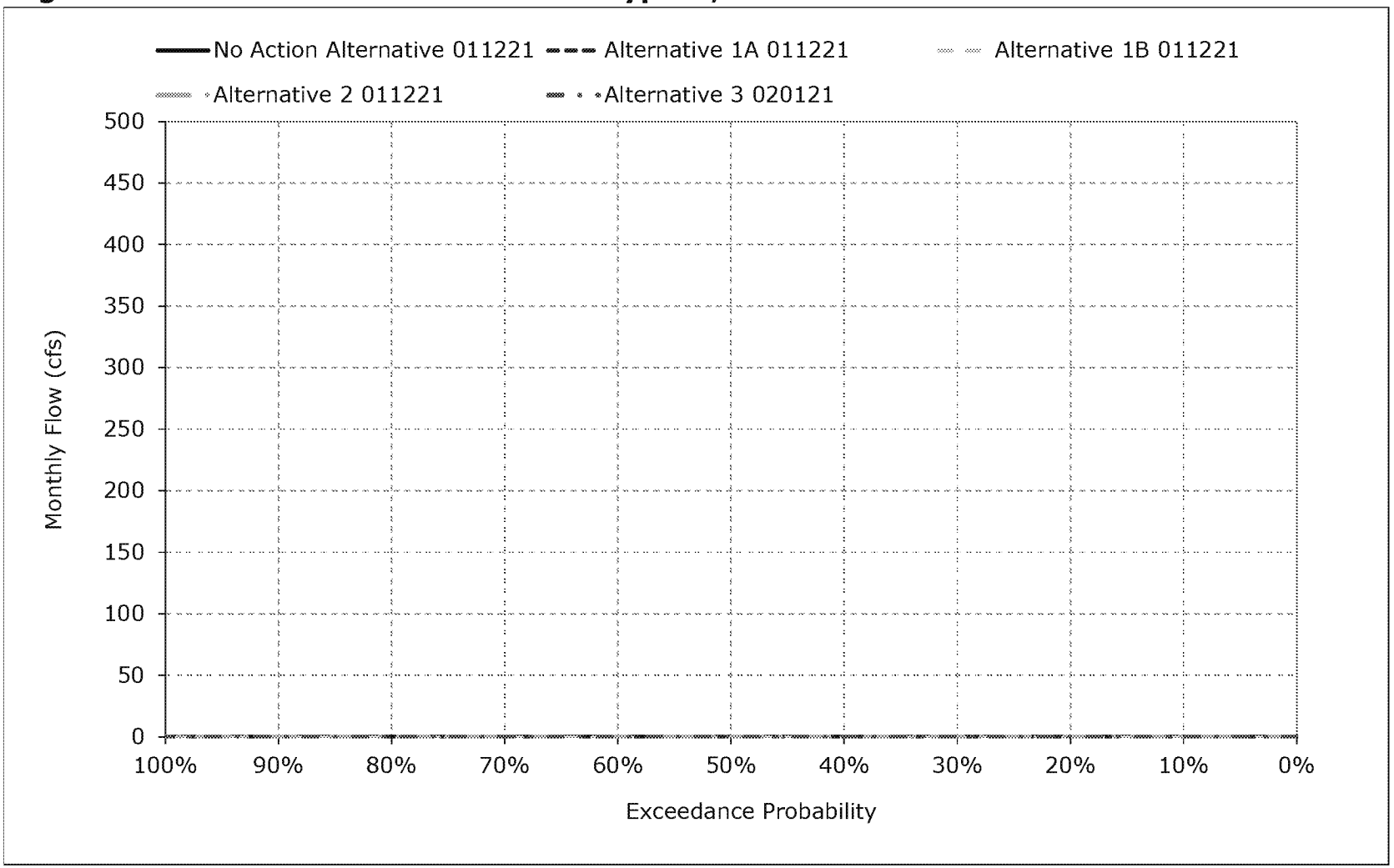


Figure 5B1-5-9. Sites Release to Yolo Bypass, December

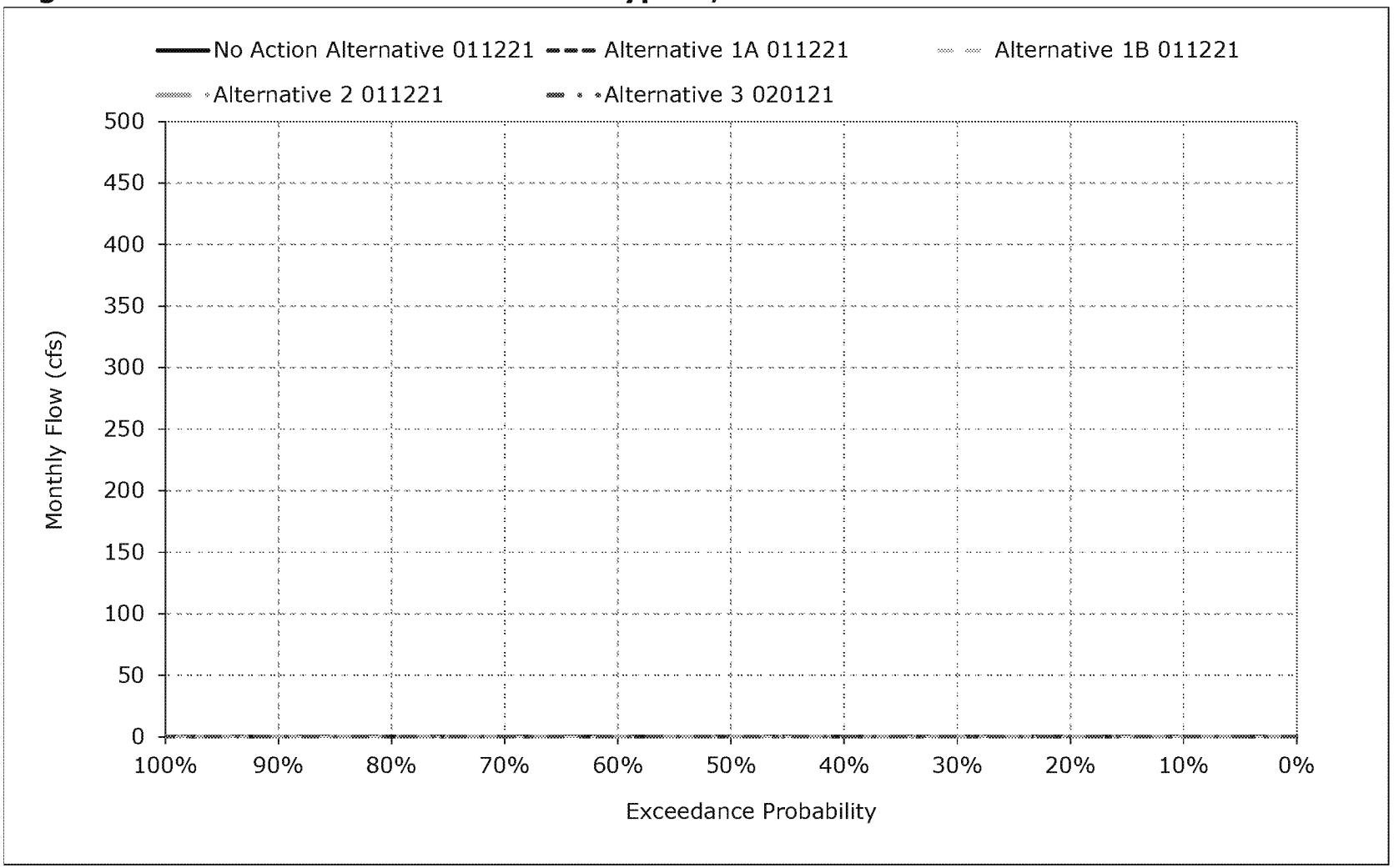


Figure 5B1-5-10. Sites Release to Yolo Bypass, January

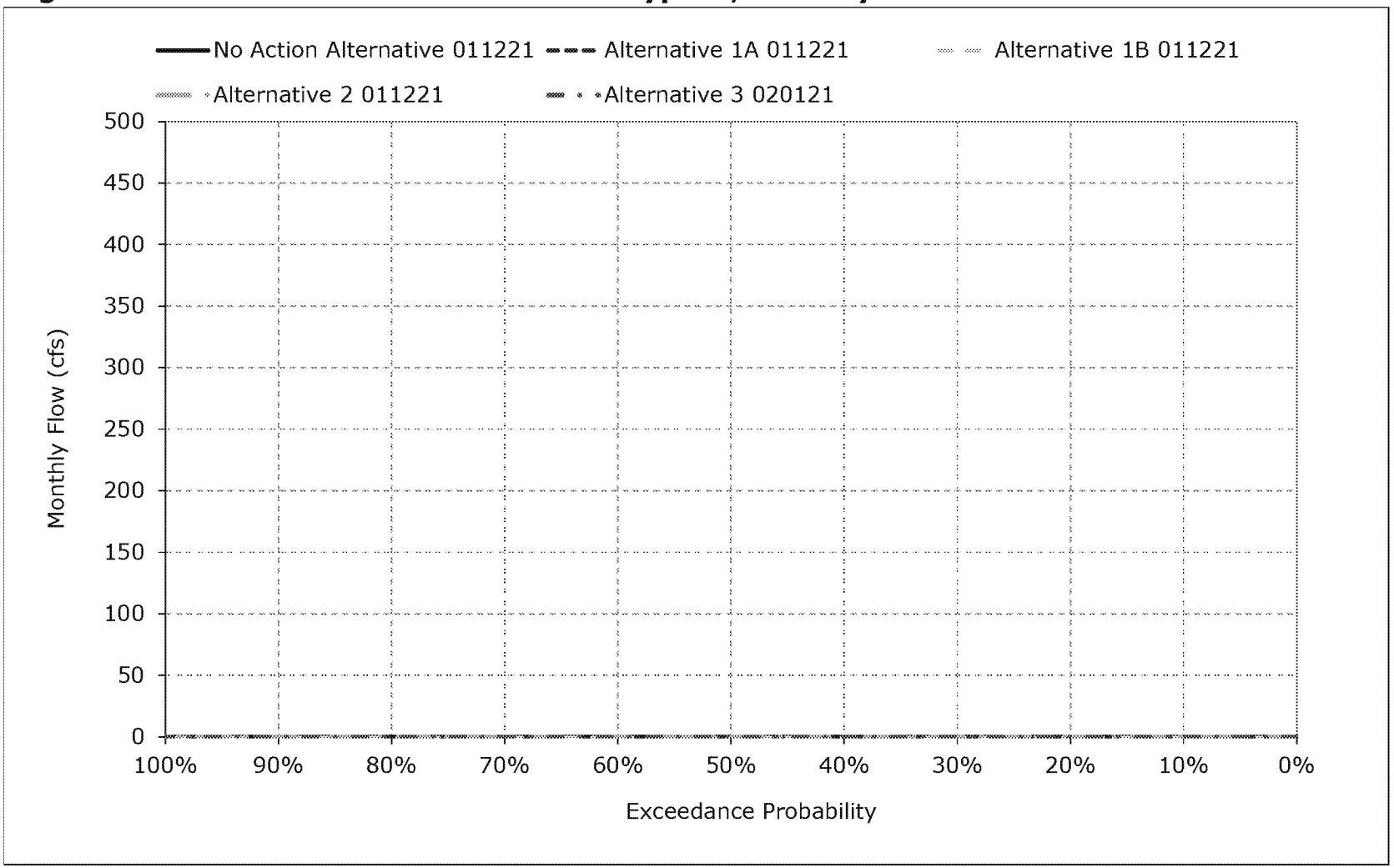


Figure 5B1-5-11. Sites Release to Yolo Bypass, February

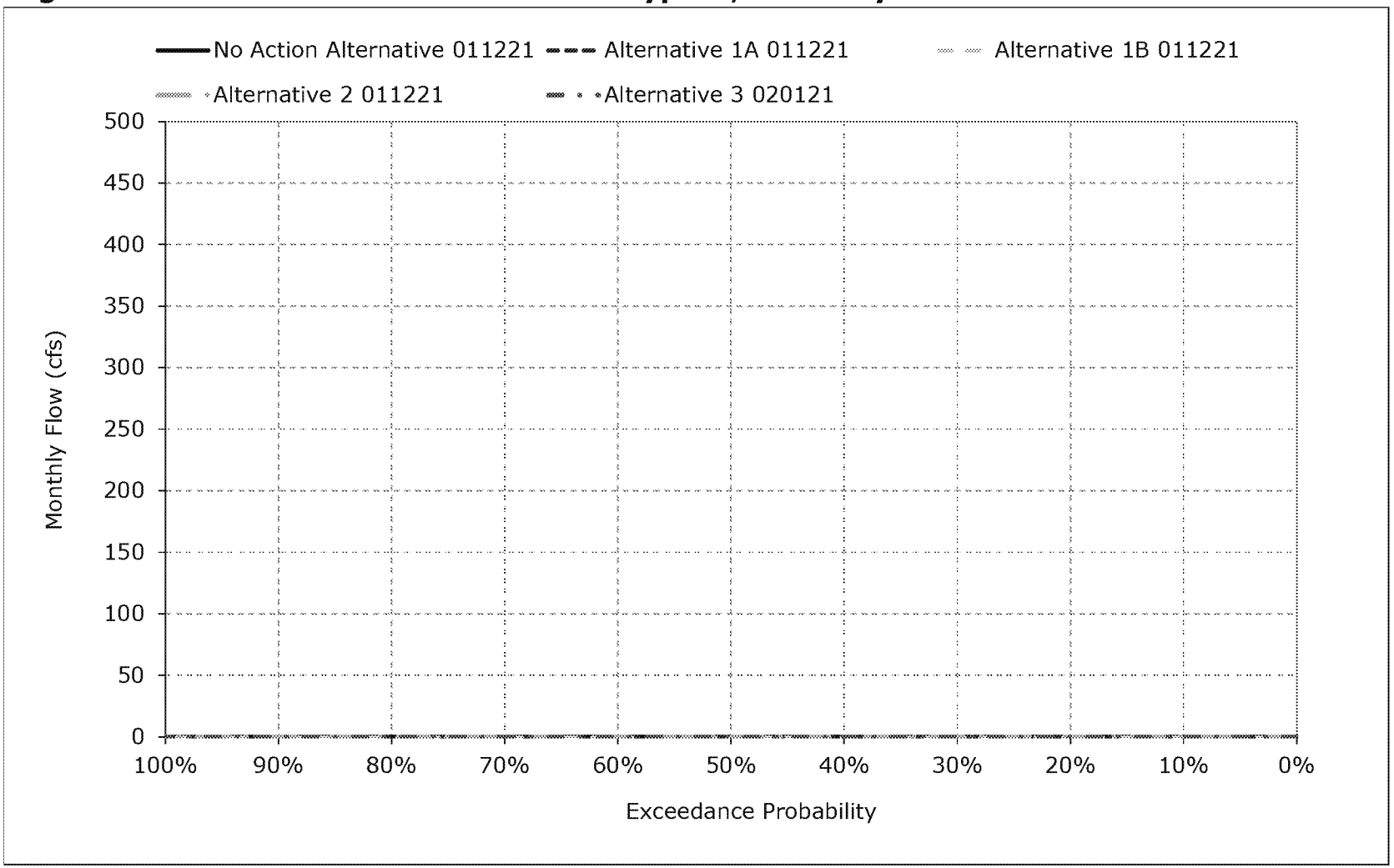


Figure 5B1-5-12. Sites Release to Yolo Bypass, March

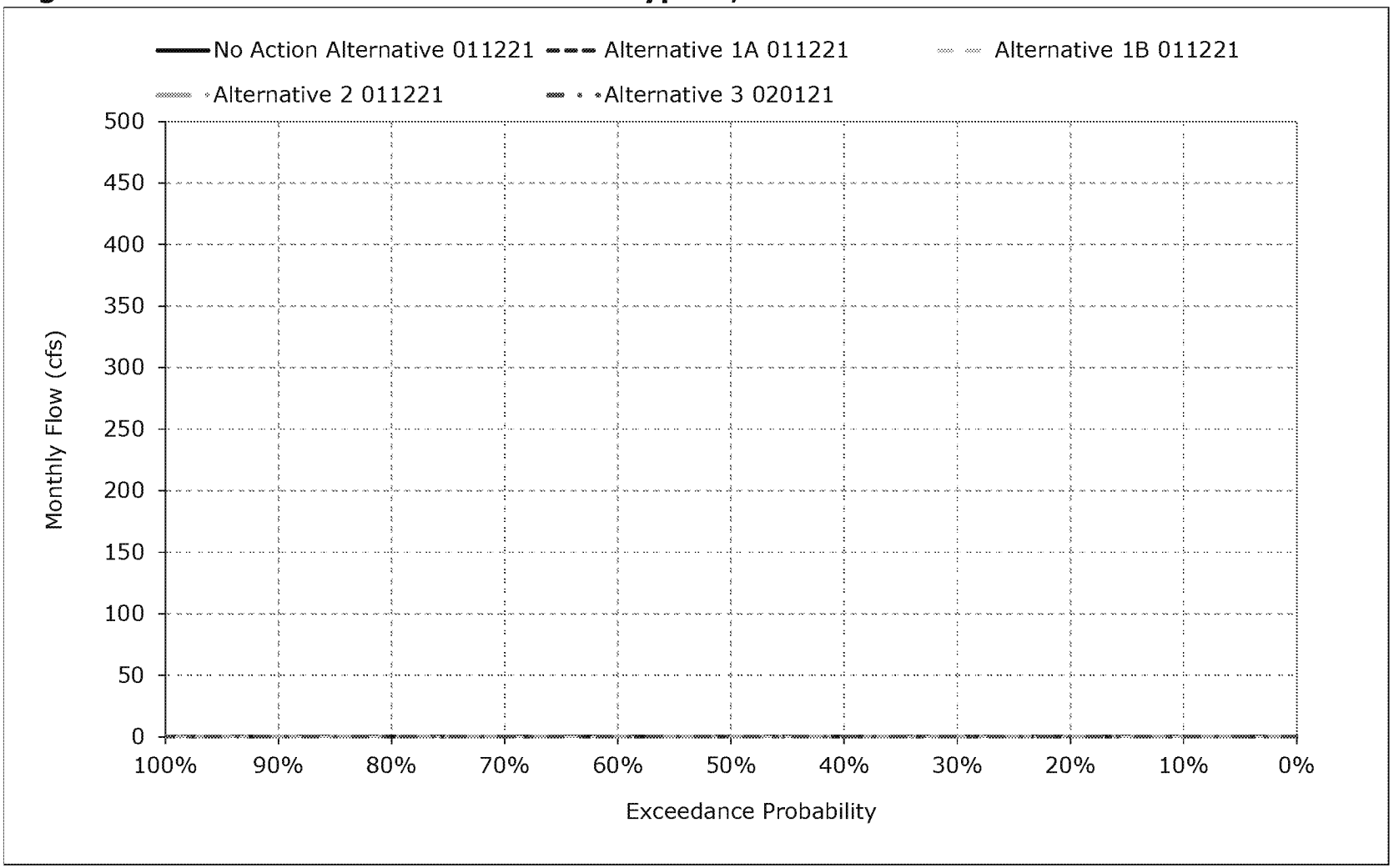


Figure 5B1-5-13. Sites Release to Yolo Bypass, April

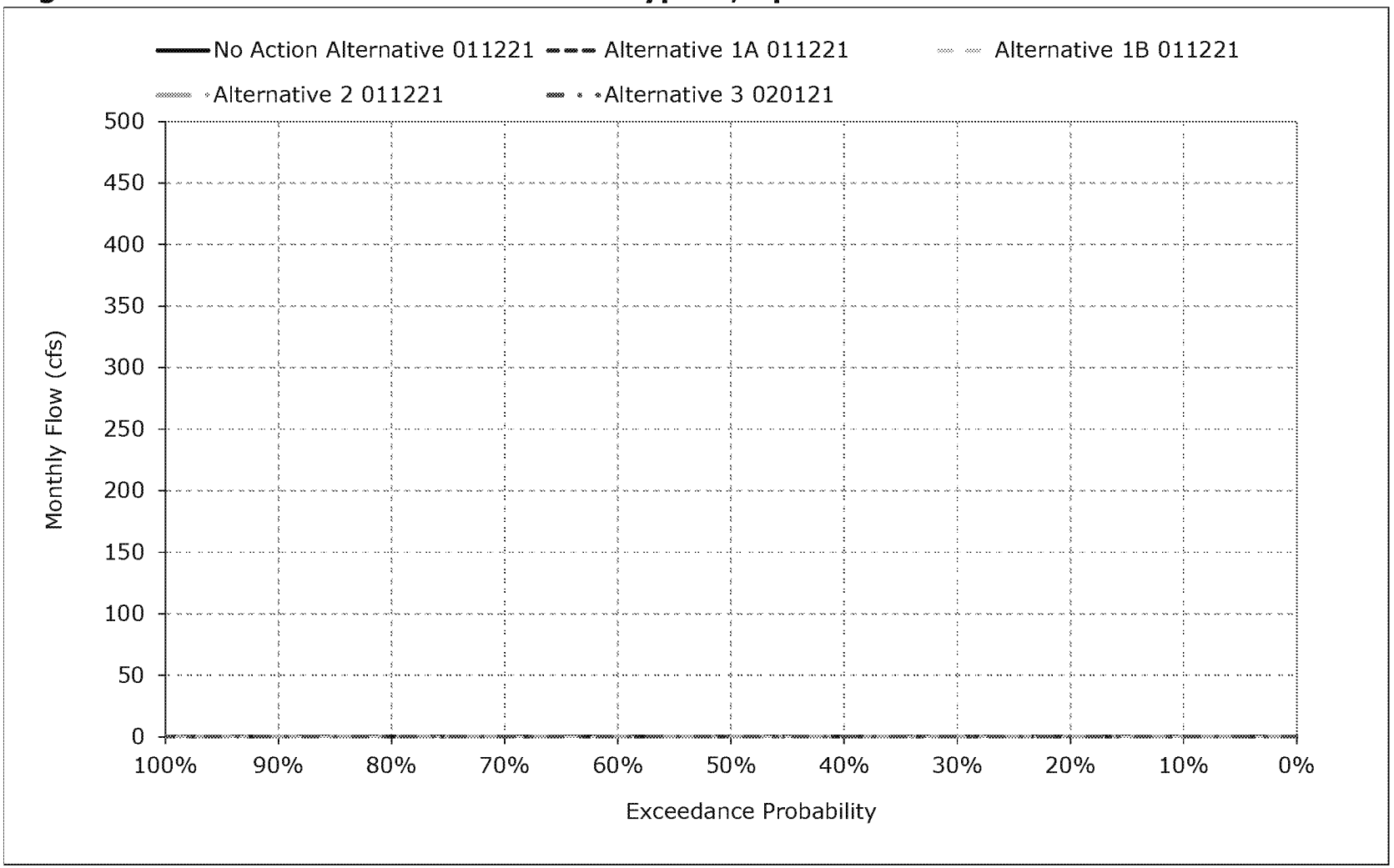


Figure 5B1-5-14. Sites Release to Yolo Bypass, May

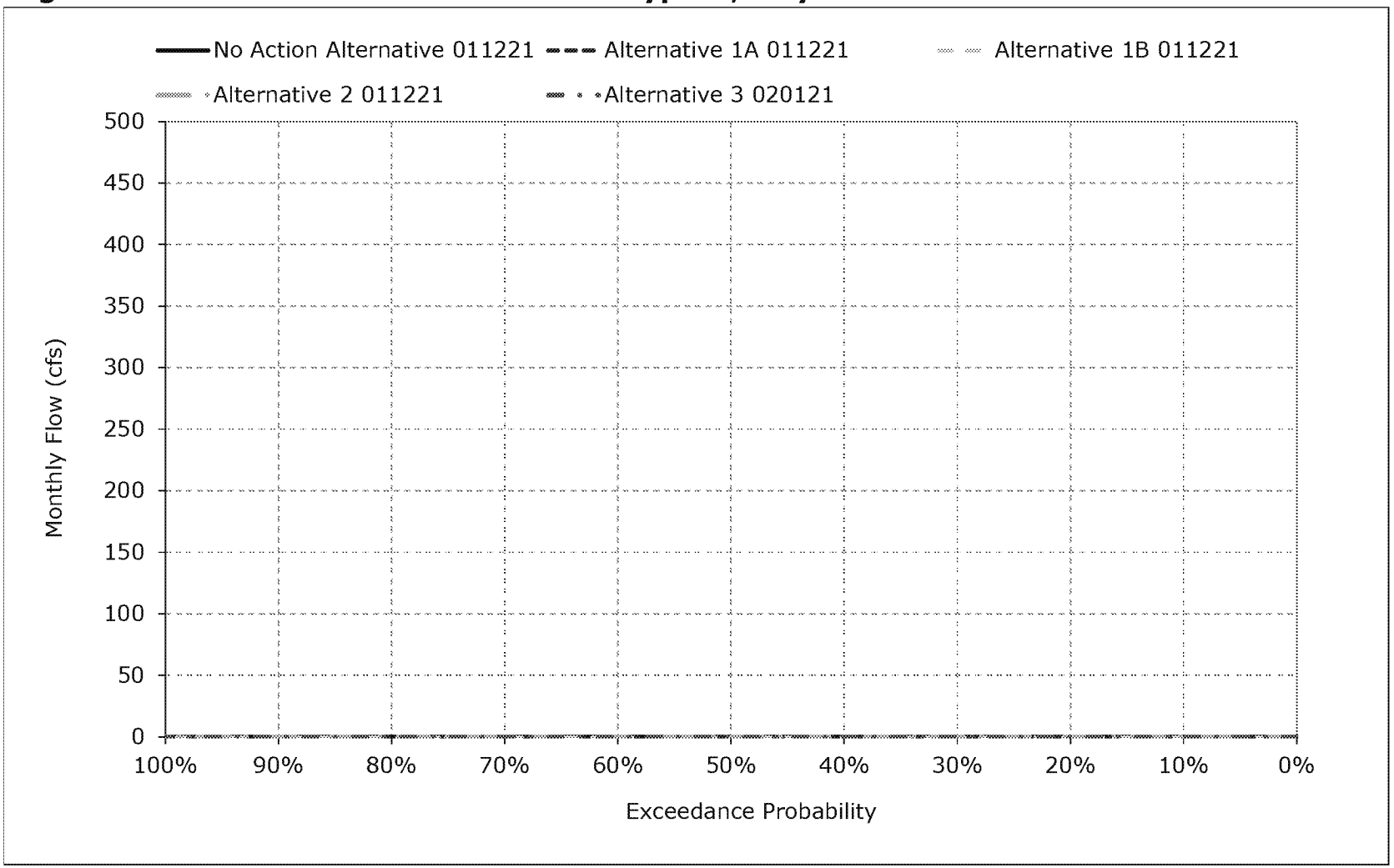


Figure 5B1-5-15. Sites Release to Yolo Bypass, June

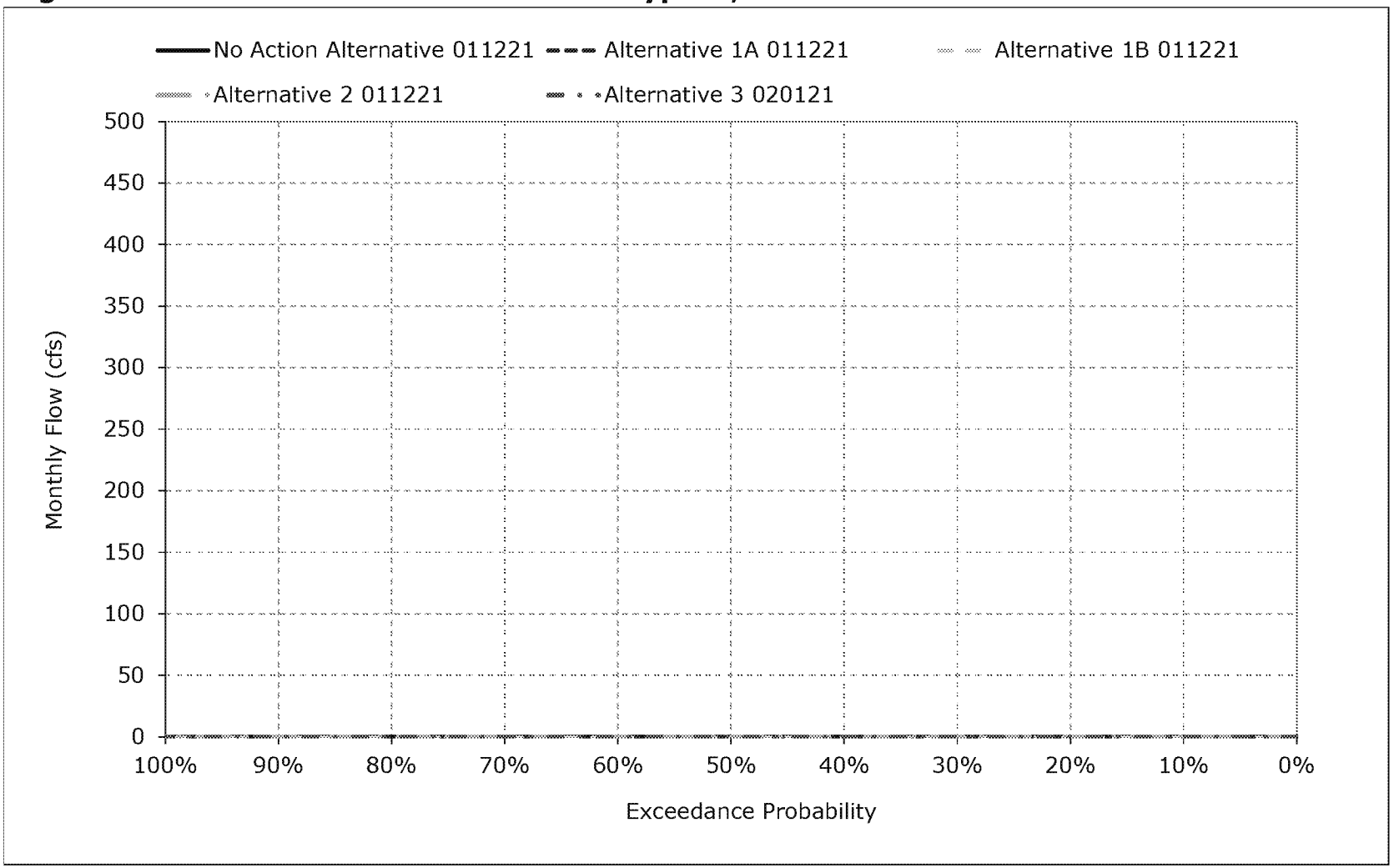


Figure 5B1-5-16. Sites Release to Yolo Bypass, July

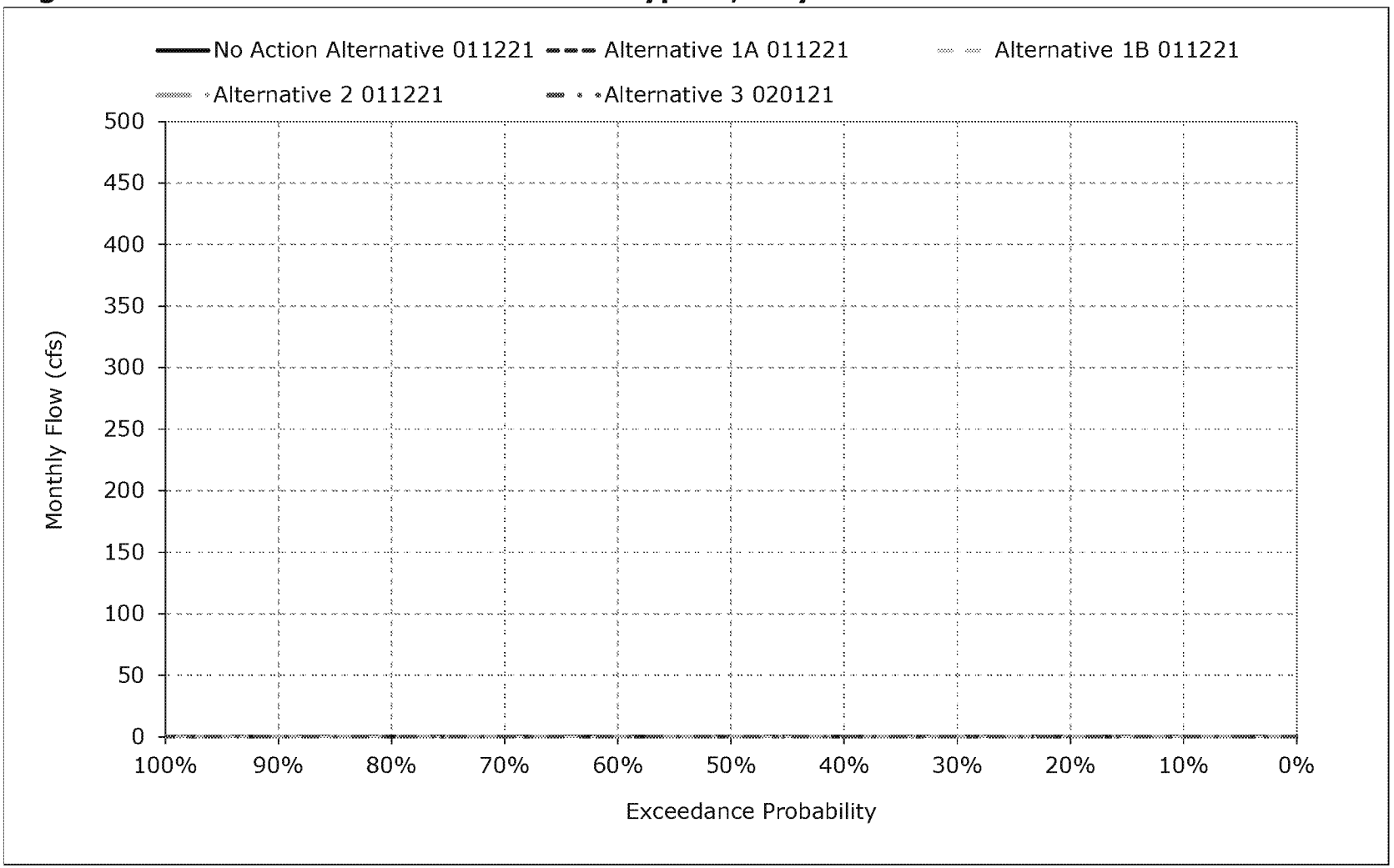


Figure 5B1-5-17. Sites Release to Yolo Bypass, August

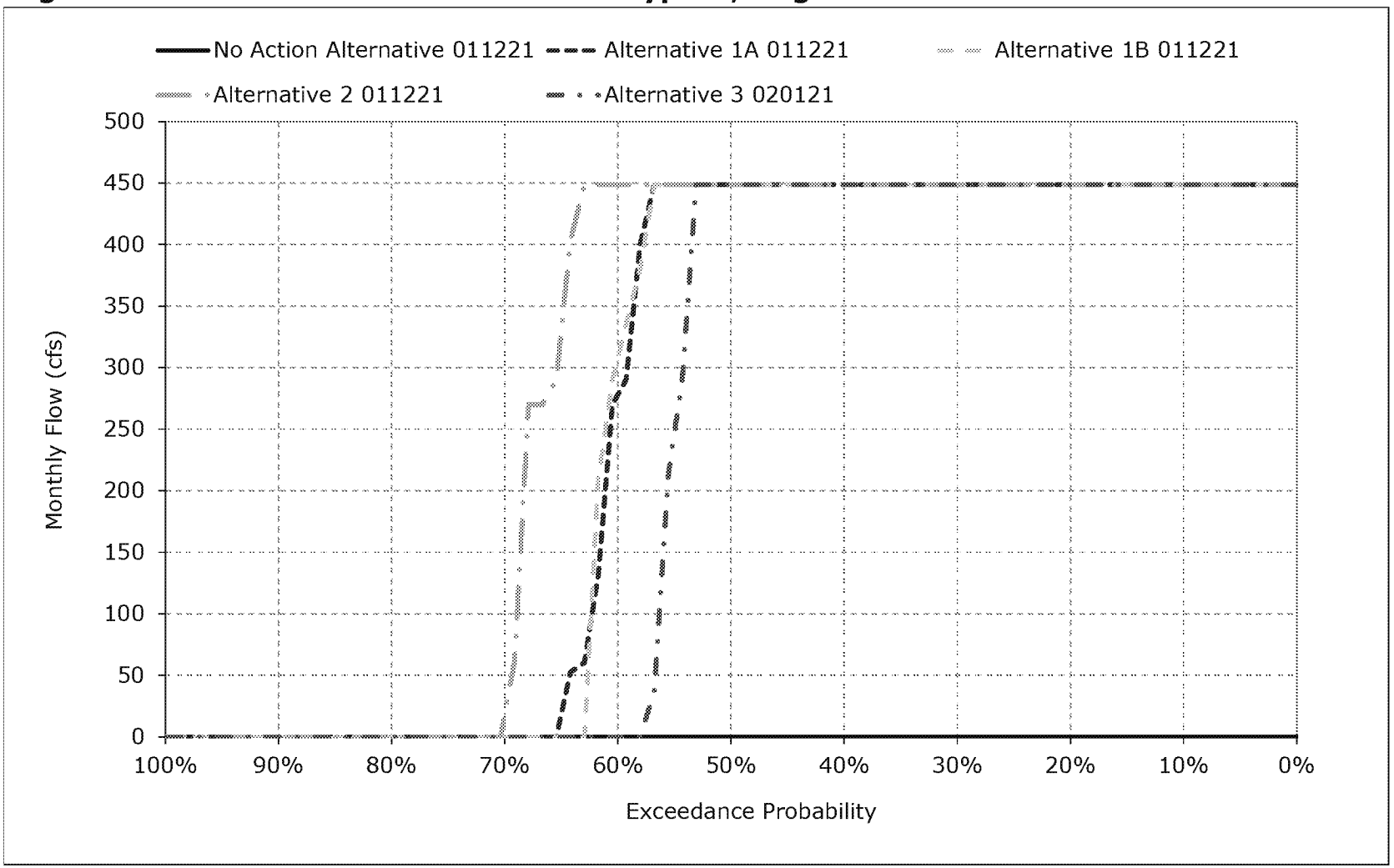


Figure 5B1-5-18. Sites Release to Yolo Bypass, September

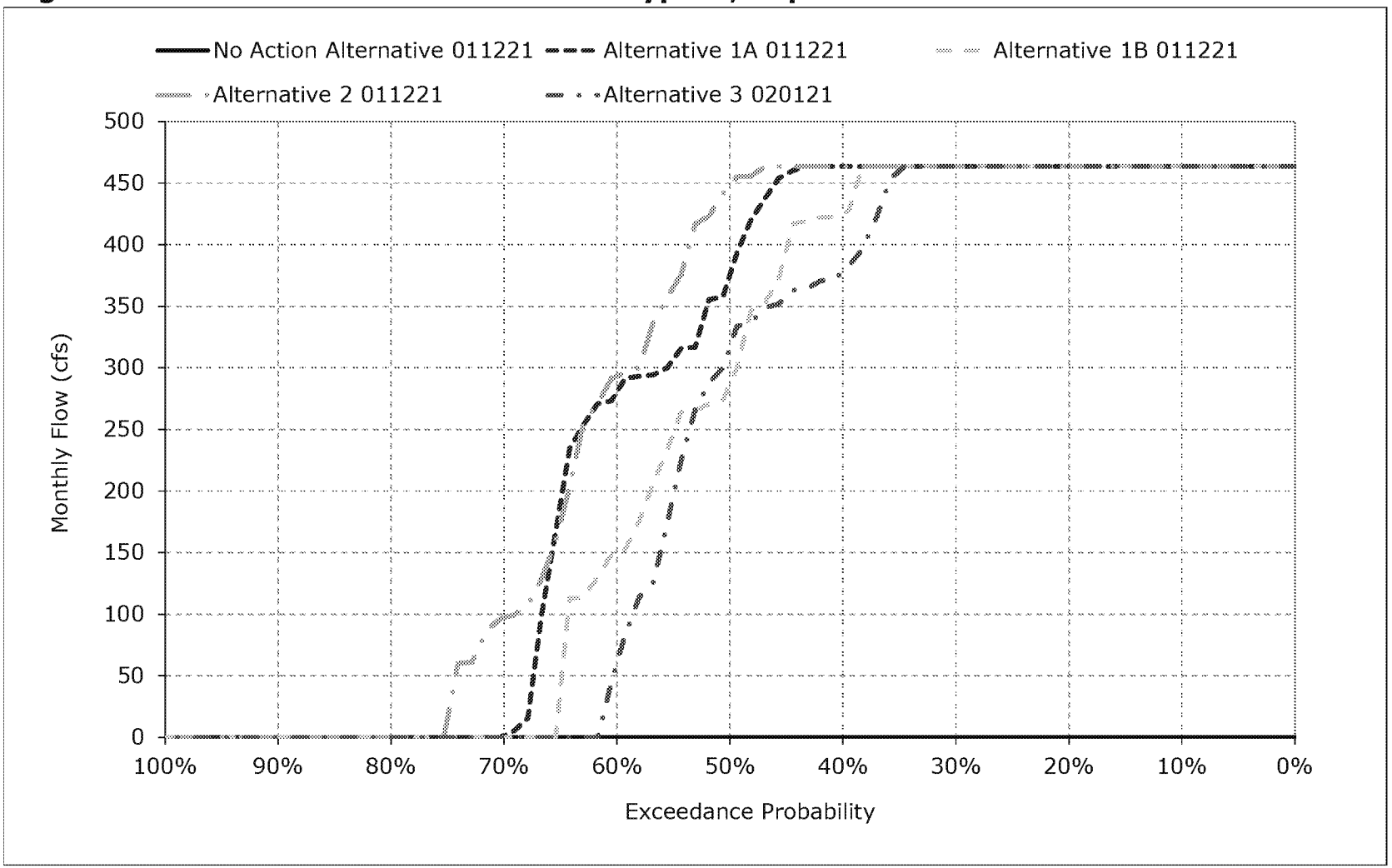


Table 5B1-6-1a. Total Sites Release, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-6-1b. Total Sites Release, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,000	957	114	0	0	30	271	586	1,445	2,213	1,885	1,410
20%	658	320	27	0	0	8	162	241	1,202	1,457	1,456	1,128
30%	481	72	27	0	0	3	79	120	345	1,051	1,117	890
40%	449	29	0	0	0	0	50	0	176	546	559	504
50%	387	0	0	0	0	0	35	0	96	178	493	481
60%	257	0	0	0	0	0	2	0	42	122	481	464
70%	90	0	0	0	0	0	0	0	34	41	449	412
80%	8	0	0	0	0	0	0	0	0	41	347	128
90%	0	0	0	0	0	0	0	0	0	41	41	44
Long Term												
Full Simulation Period[a]	401	191	27	0	0	13	114	224	451	707	791	622
Water Year Types[b,c]												
Wet (32%)	287	17	14	1	0	2	9	3	24	39	380	416
Above Normal (15%)	309	65	39	0	0	2	7	0	29	135	402	438
Below Normal (17%)	386	282	36	0	0	7	51	60	255	650	872	533
Dry (22%)	674	481	39	0	0	13	199	348	1,242	1,731	1,455	1,093
Critical (15%)	350	155	17	0	1	53	397	932	837	1,253	980	649

Table 5B1-6-1c. Total Sites Release, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,000	957	114	0	0	30	271	586	1,445	2,213	1,885	1,410
20%	658	320	27	0	0	8	162	241	1,202	1,457	1,456	1,128
30%	481	72	27	0	0	3	79	120	345	1,051	1,117	890
40%	449	29	0	0	0	0	50	0	176	546	559	504
50%	387	0	0	0	0	0	35	0	96	178	493	481
60%	257	0	0	0	0	0	2	0	42	122	481	464
70%	90	0	0	0	0	0	0	0	34	41	449	412
80%	8	0	0	0	0	0	0	0	0	41	347	128
90%	0	0	0	0	0	0	0	0	0	41	41	44
Long Term												
Full Simulation Period[a]	401	191	27	0	0	13	114	224	451	707	791	622
Water Year Types[b,c]												
Wet (32%)	287	17	14	1	0	2	9	3	24	39	380	416
Above Normal (15%)	309	65	39	0	0	2	7	0	29	135	402	438
Below Normal (17%)	386	282	36	0	0	7	51	60	255	650	872	533
Dry (22%)	674	481	39	0	0	13	199	348	1,242	1,731	1,455	1,093
Critical (15%)	350	155	17	0	1	53	397	932	837	1,253	980	649

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-6-2a. Total Sites Release, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-6-2b. Total Sites Release, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,022	581	195	0	0	62	430	1,090	1,559	2,121	1,837	1,354
20%	489	324	27	0	0	12	174	521	1,347	1,714	1,544	1,028
30%	449	283	27	0	0	3	79	253	976	1,061	1,129	621
40%	439	29	0	0	0	0	47	92	462	736	577	489
50%	293	29	0	0	0	0	35	0	199	435	490	464
60%	182	0	0	0	0	0	2	0	42	41	481	464
70%	90	0	0	0	0	0	0	0	36	41	449	301
80%	8	0	0	0	0	0	0	0	27	41	341	89
90%	0	0	0	0	0	0	0	0	0	41	41	42
Long Term												
Full Simulation Period[a]	373	203	59	7	7	20	154	315	590	744	796	562
Water Year Types[b,c]												
Wet (32%)	284	93	102	1	3	7	9	3	24	39	379	403
Above Normal (15%)	257	91	37	0	0	2	7	24	721	416	423	359
Below Normal (17%)	356	286	43	21	9	7	78	328	471	713	891	444
Dry (22%)	644	420	49	0	18	30	351	533	1,230	1,663	1,461	995
Critical (15%)	297	132	24	20	1	68	407	936	866	1,255	961	597

Table 5B1-6-2c. Total Sites Release, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,022	581	195	0	0	62	430	1,090	1,559	2,121	1,837	1,354
20%	489	324	27	0	0	12	174	521	1,347	1,714	1,544	1,028
30%	449	283	27	0	0	3	79	253	976	1,061	1,129	621
40%	439	29	0	0	0	0	47	92	462	736	577	489
50%	293	29	0	0	0	0	35	0	199	435	490	464
60%	182	0	0	0	0	0	2	0	42	41	481	464
70%	90	0	0	0	0	0	0	0	36	41	449	301
80%	8	0	0	0	0	0	0	0	27	41	341	89
90%	0	0	0	0	0	0	0	0	0	41	41	42
Long Term												
Full Simulation Period[a]	373	203	59	7	7	20	154	315	590	744	796	562
Water Year Types[b,c]												
Wet (32%)	284	93	102	1	3	7	9	3	24	39	379	403
Above Normal (15%)	257	91	37	0	0	2	7	24	721	416	423	359
Below Normal (17%)	356	286	43	21	9	7	78	328	471	713	891	444
Dry (22%)	644	420	49	0	18	30	351	533	1,230	1,663	1,461	995
Critical (15%)	297	132	24	20	1	68	407	936	866	1,255	961	597

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-6-3a. Total Sites Release, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-6-3b. Total Sites Release, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	919	382	161	0	0	23	272	587	1,398	2,078	1,819	1,414
20%	512	267	27	0	0	7	162	238	871	1,477	1,386	1,079
30%	459	42	27	0	0	2	79	120	334	1,044	1,090	527
40%	449	29	0	0	0	0	48	0	169	554	566	495
50%	364	0	0	0	0	0	35	0	100	189	503	478
60%	242	0	0	0	0	0	2	0	42	122	482	464
70%	100	0	0	0	0	0	0	0	34	41	455	447
80%	37	0	0	0	0	0	0	0	0	41	419	257
90%	0	0	0	0	0	0	0	0	0	41	41	65
Long Term												
Full Simulation Period[a]	383	158	29	0	0	11	114	219	418	695	781	603
Water Year Types[b,c]												
Wet (32%)	273	15	17	1	0	2	9	3	24	39	380	450
Above Normal (15%)	311	72	39	0	0	2	7	0	30	145	427	438
Below Normal (17%)	411	330	38	0	0	7	51	59	241	639	898	607
Dry (22%)	621	296	43	0	0	13	199	348	1,164	1,724	1,433	990
Critical (15%)	303	148	17	0	0	38	397	899	750	1,188	889	517

Table 5B1-6-3c. Total Sites Release, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	919	382	161	0	0	23	272	587	1,398	2,078	1,819	1,414
20%	512	267	27	0	0	7	162	238	871	1,477	1,386	1,079
30%	459	42	27	0	0	2	79	120	334	1,044	1,090	527
40%	449	29	0	0	0	0	48	0	169	554	566	495
50%	364	0	0	0	0	0	35	0	100	189	503	478
60%	242	0	0	0	0	0	2	0	42	122	482	464
70%	100	0	0	0	0	0	0	0	34	41	455	447
80%	37	0	0	0	0	0	0	0	0	41	419	257
90%	0	0	0	0	0	0	0	0	0	41	41	65
Long Term												
Full Simulation Period[a]	383	158	29	0	0	11	114	219	418	695	781	603
Water Year Types[b,c]												
Wet (32%)	273	15	17	1	0	2	9	3	24	39	380	450
Above Normal (15%)	311	72	39	0	0	2	7	0	30	145	427	438
Below Normal (17%)	411	330	38	0	0	7	51	59	241	639	898	607
Dry (22%)	621	296	43	0	0	13	199	348	1,164	1,724	1,433	990
Critical (15%)	303	148	17	0	0	38	397	899	750	1,188	889	517

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-6-4a. Total Sites Release, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-6-4b. Total Sites Release, Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	992	326	195	0	0	64	411	1,410	2,166	2,462	1,998	1,293
20%	481	300	27	0	0	7	179	745	1,577	1,941	1,451	881
30%	449	127	27	0	0	1	112	320	1,442	1,679	1,210	496
40%	317	29	0	0	0	0	47	80	933	1,500	782	476
50%	286	0	0	0	0	0	32	0	274	1,017	489	464
60%	100	0	0	0	0	0	2	0	42	507	481	393
70%	40	0	0	0	0	0	0	0	35	41	449	269
80%	0	0	0	0	0	0	0	0	28	41	101	84
90%	0	0	0	0	0	0	0	0	0	38	0	28
Long Term												
Full Simulation Period[a]	339	147	53	4	9	33	146	384	778	1,052	831	498
Water Year Types[b,c]												
Wet (32%)	239	81	102	0	4	6	9	3	24	39	380	395
Above Normal (15%)	379	100	37	0	0	1	7	24	999	1,609	1,188	506
Below Normal (17%)	374	215	42	0	23	5	76	401	1,161	1,357	910	432
Dry (22%)	533	242	22	0	0	52	317	774	1,433	1,829	1,263	803
Critical (15%)	182	116	24	24	27	126	408	962	760	1,171	710	332

Table 5B1-6-4c. Total Sites Release, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

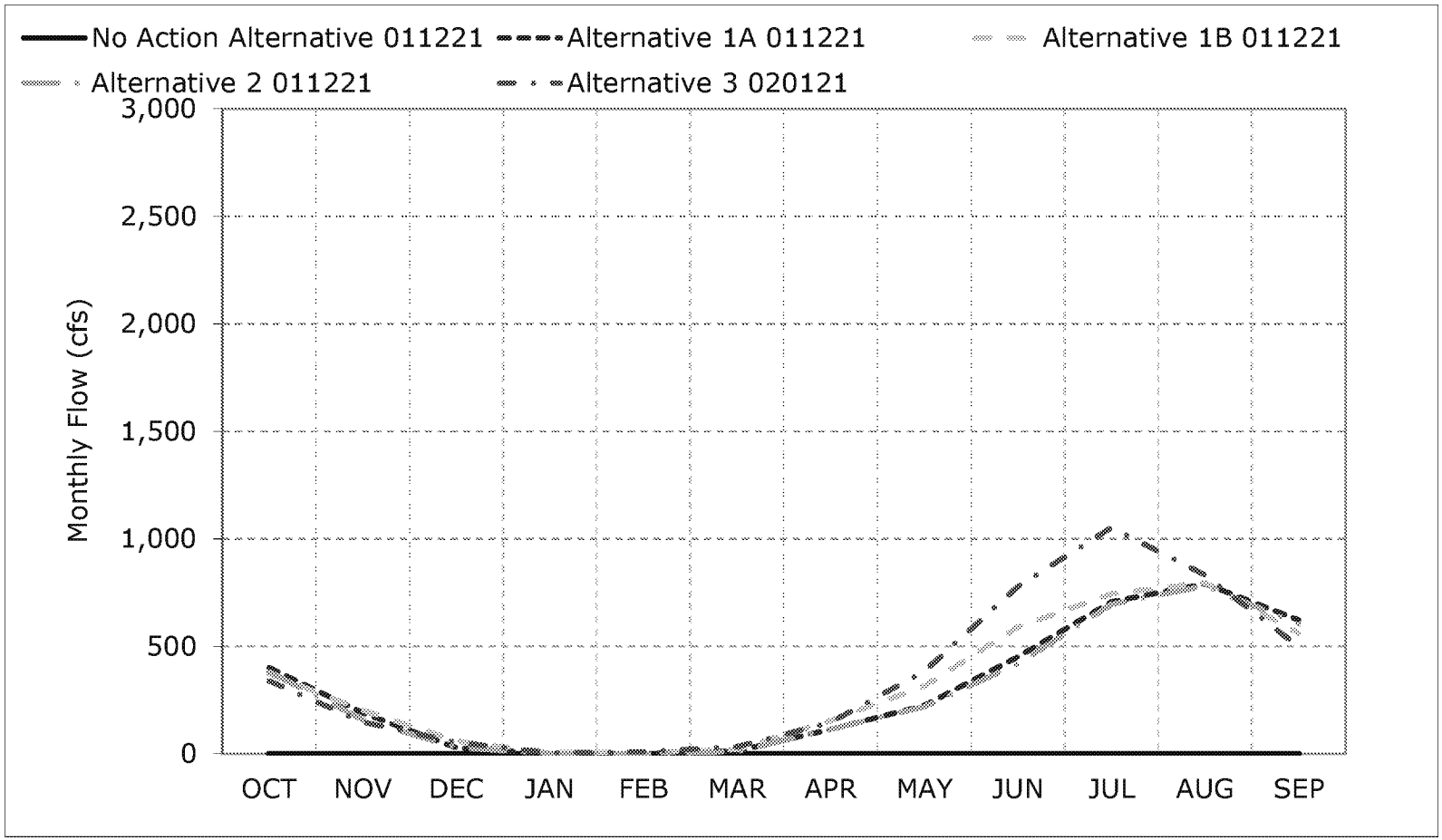
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	992	326	195	0	0	64	411	1,410	2,166	2,462	1,998	1,293
20%	481	300	27	0	0	7	179	745	1,577	1,941	1,451	881
30%	449	127	27	0	0	1	112	320	1,442	1,679	1,210	496
40%	317	29	0	0	0	0	47	80	933	1,500	782	476
50%	286	0	0	0	0	0	32	0	274	1,017	489	464
60%	100	0	0	0	0	0	2	0	42	507	481	393
70%	40	0	0	0	0	0	0	0	35	41	449	269
80%	0	0	0	0	0	0	0	0	28	41	101	84
90%	0	0	0	0	0	0	0	0	0	38	0	28
Long Term												
Full Simulation Period[a]	339	147	53	4	9	33	146	384	778	1,052	831	498
Water Year Types[b,c]												
Wet (32%)	239	81	102	0	4	6	9	3	24	39	380	395
Above Normal (15%)	379	100	37	0	0	1	7	24	999	1,609	1,188	506
Below Normal (17%)	374	215	42	0	23	5	76	401	1,161	1,357	910	432
Dry (22%)	533	242	22	0	0	52	317	774	1,433	1,829	1,263	803
Critical (15%)	182	116	24	24	27	126	408	962	760	1,171	710	332

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

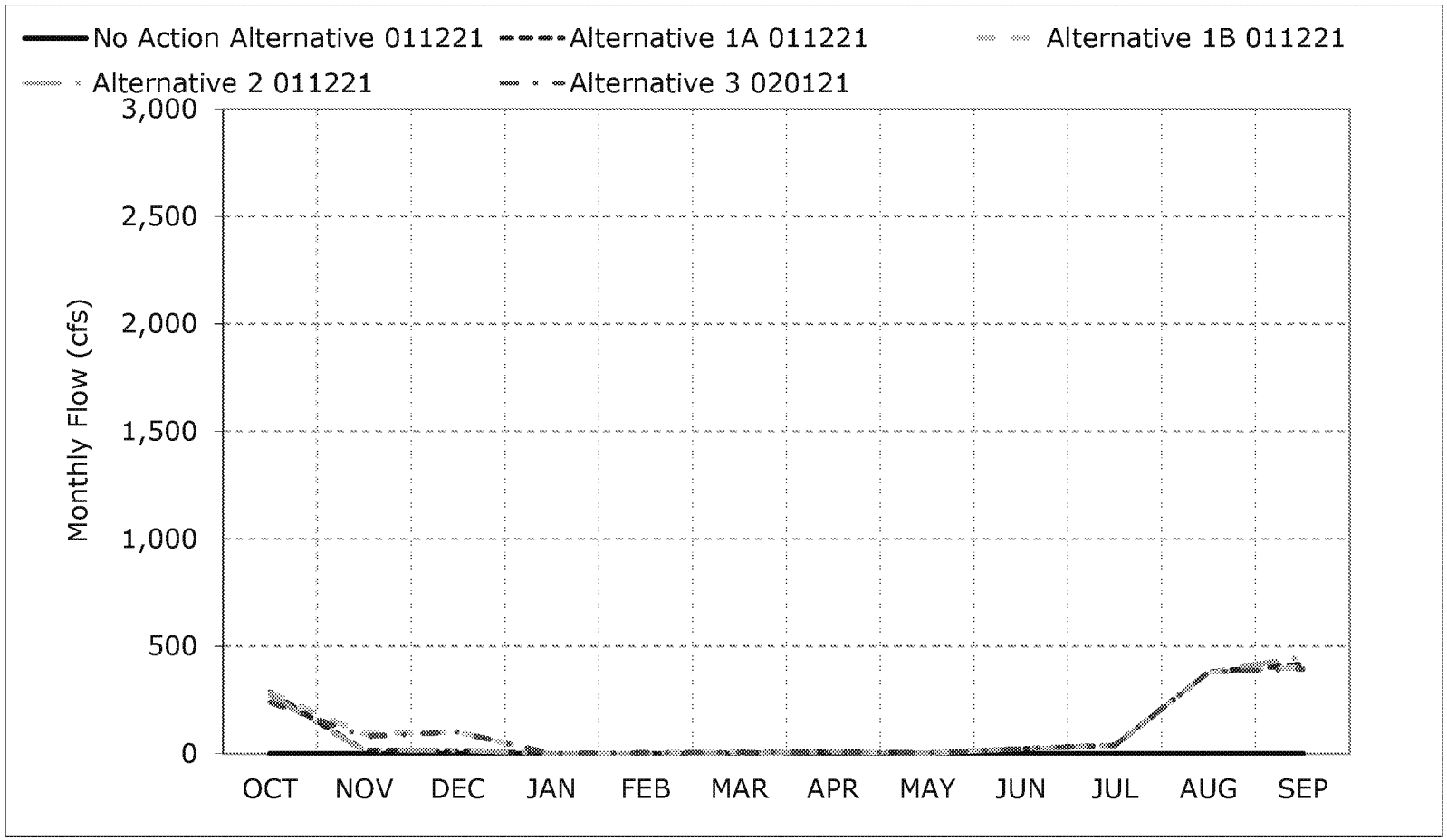
c These results are displayed with calendar year - year type sorting.

Figure 5B1-6-1. Total Sites Release, Long-Term Average Flow



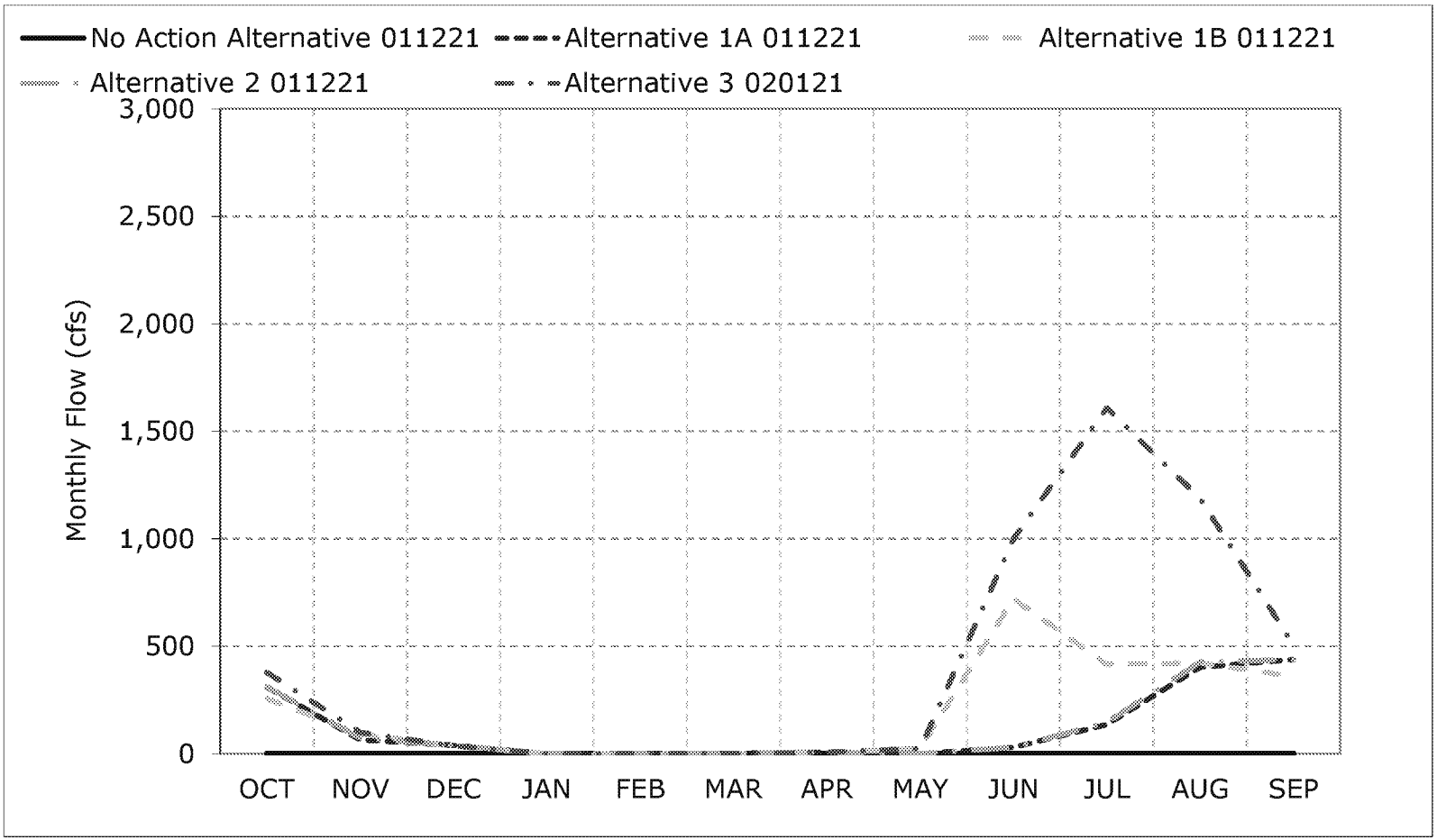
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-6-2. Total Sites Release, Wet Year Average Flow



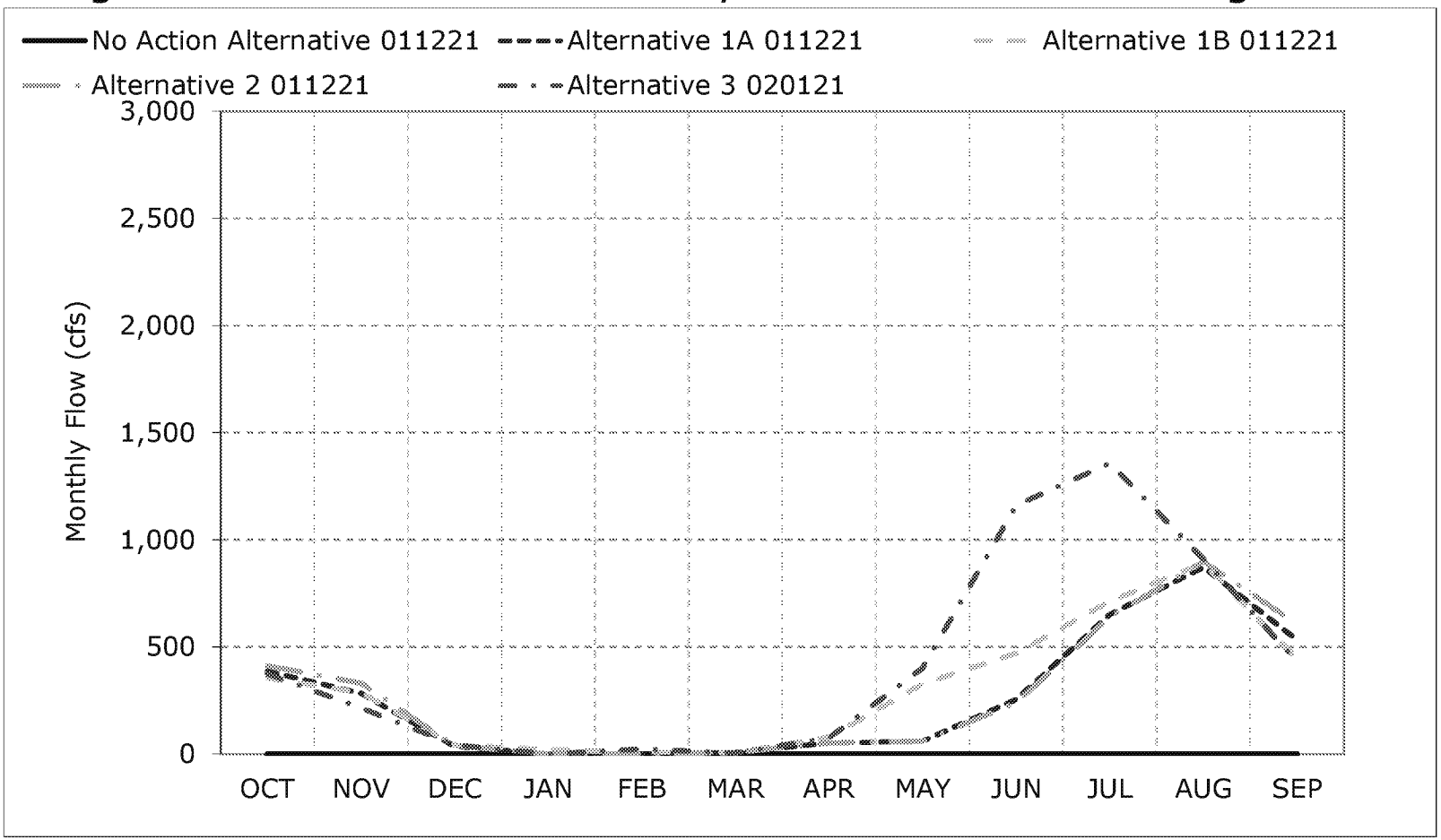
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-6-3. Total Sites Release, Above Normal Year Average Flow



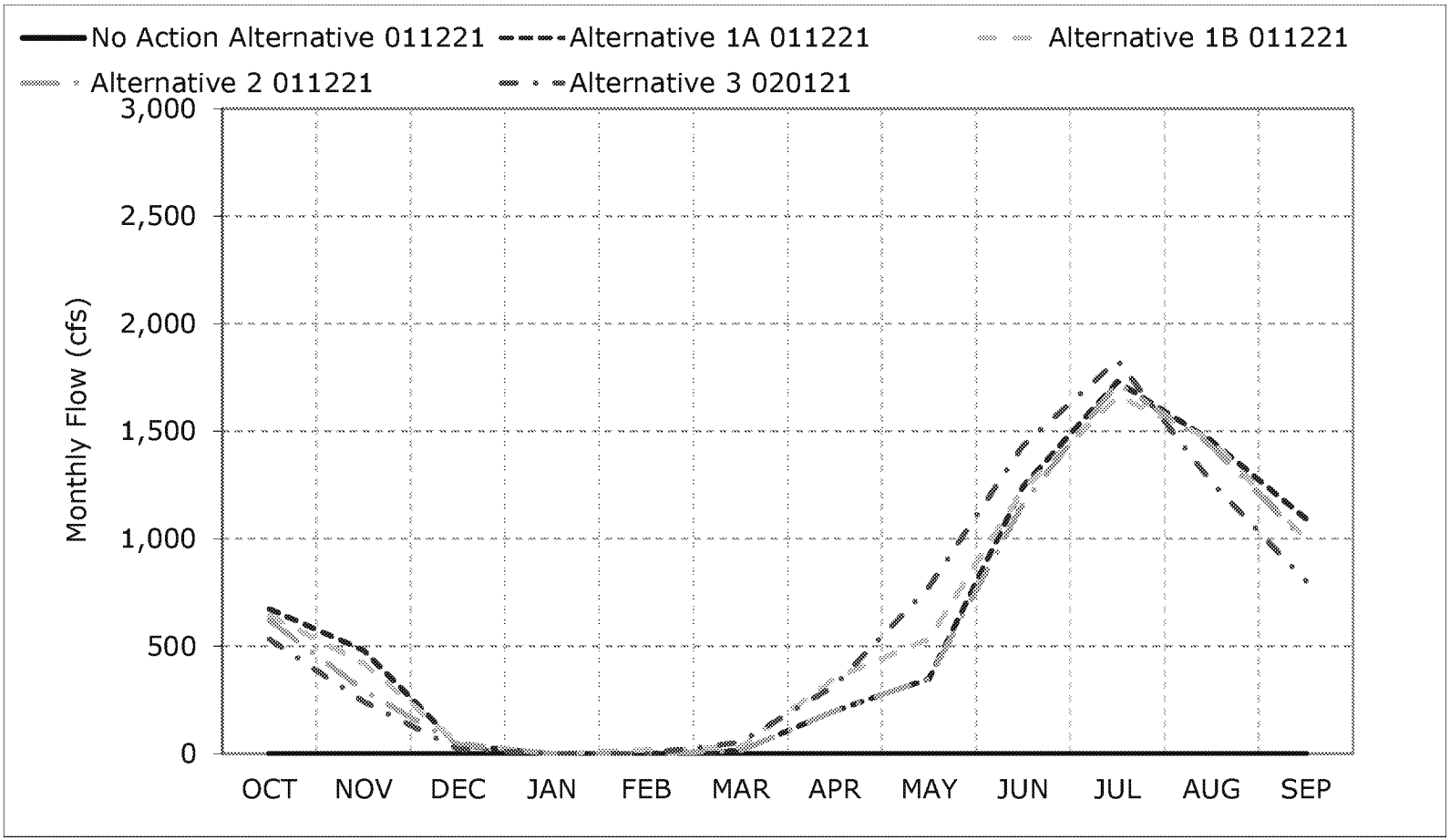
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-6-4. Total Sites Release, Below Normal Year Average Flow



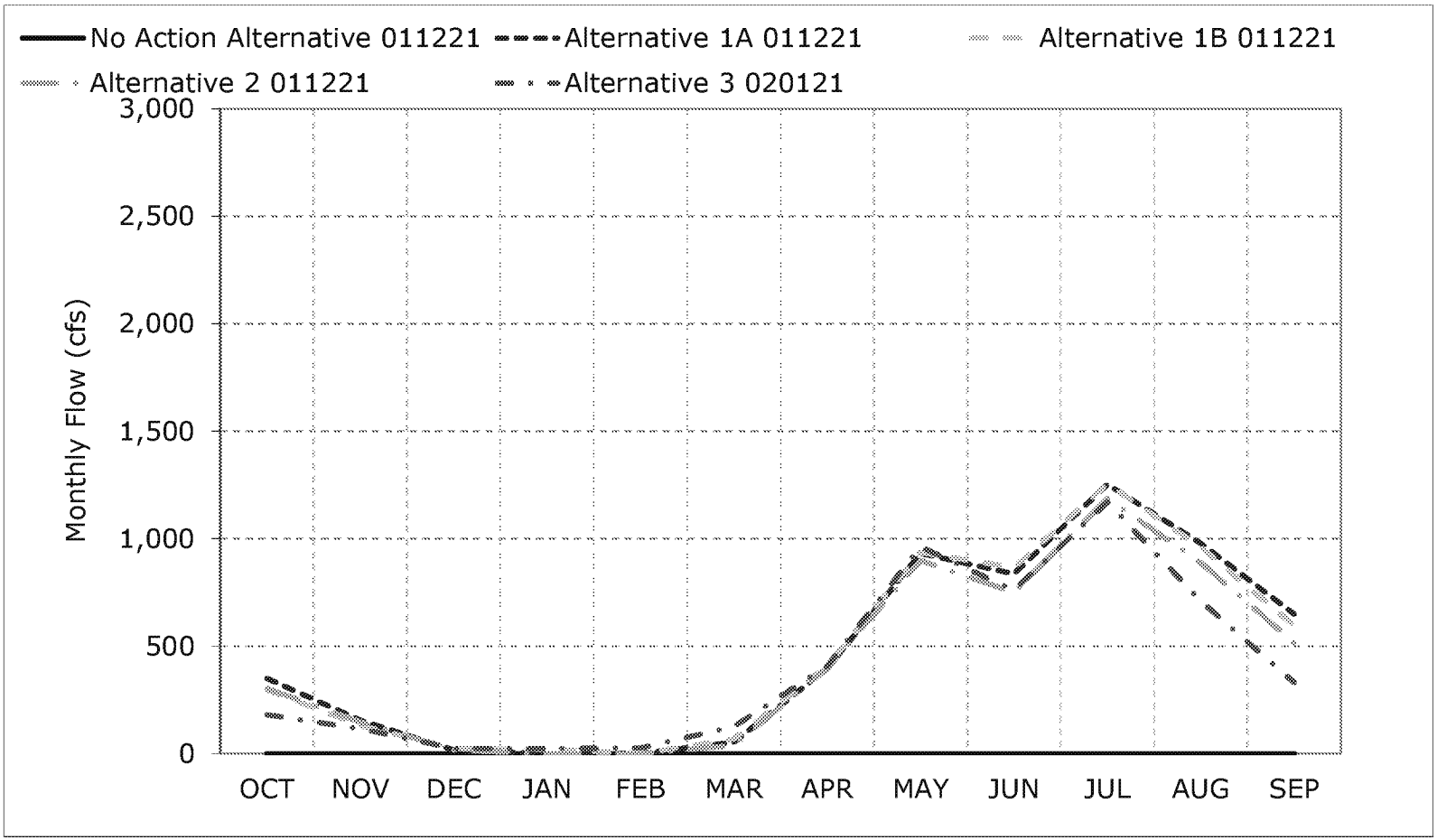
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-6-5. Total Sites Release, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-6-6. Total Sites Release, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B1-6-7. Total Sites Release, October

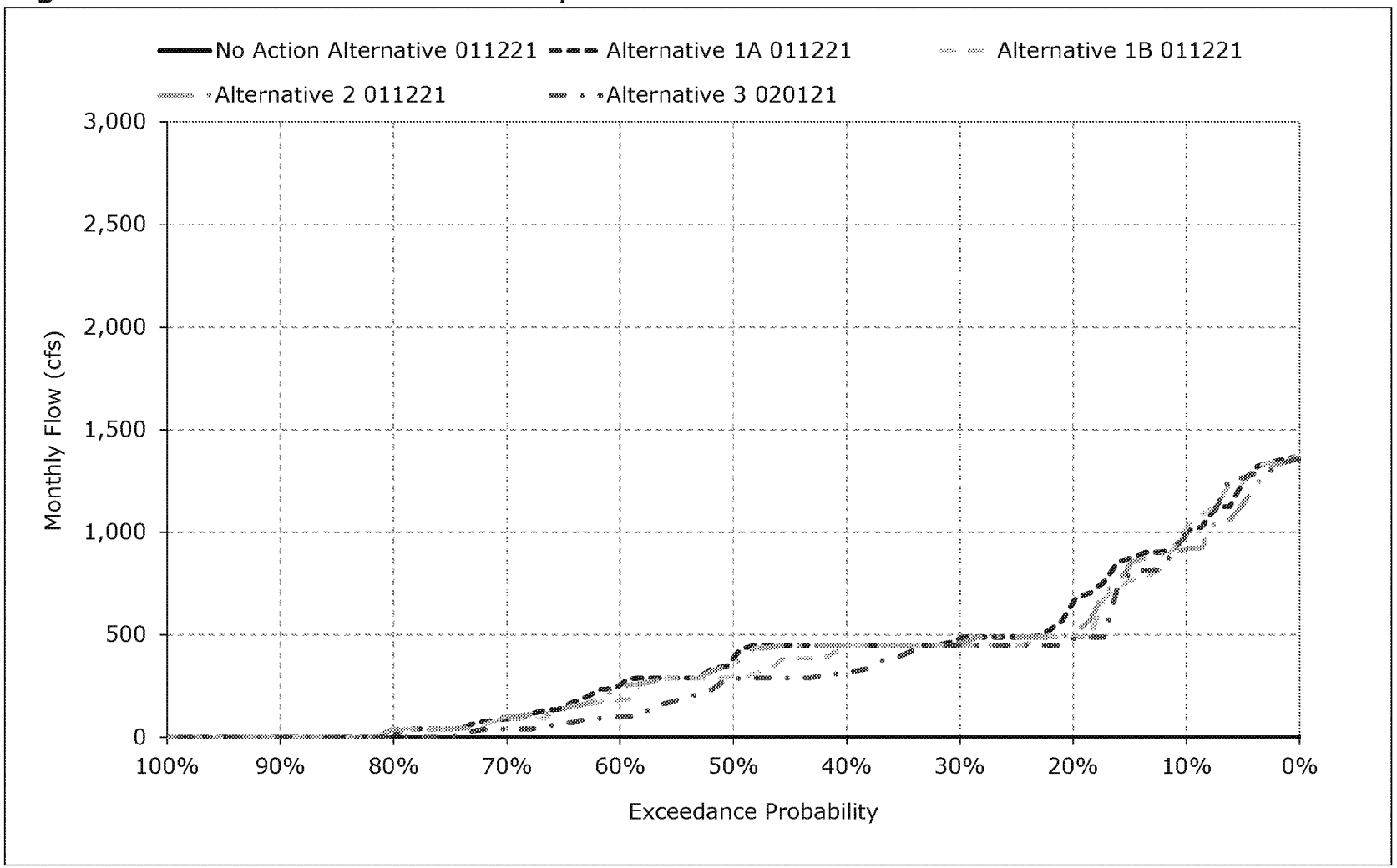


Figure 5B1-6-8. Total Sites Release, November

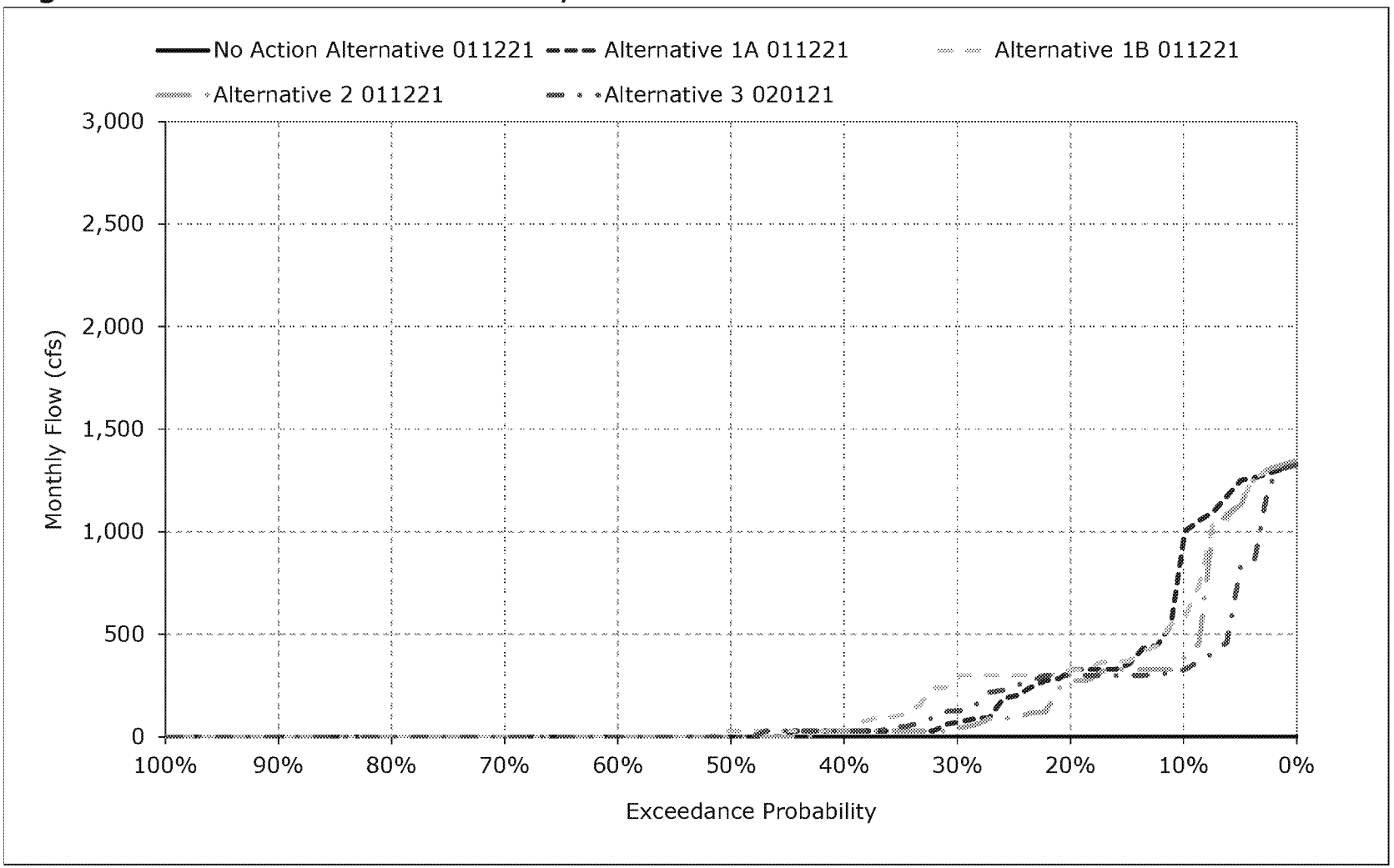


Figure 5B1-6-9. Total Sites Release, December

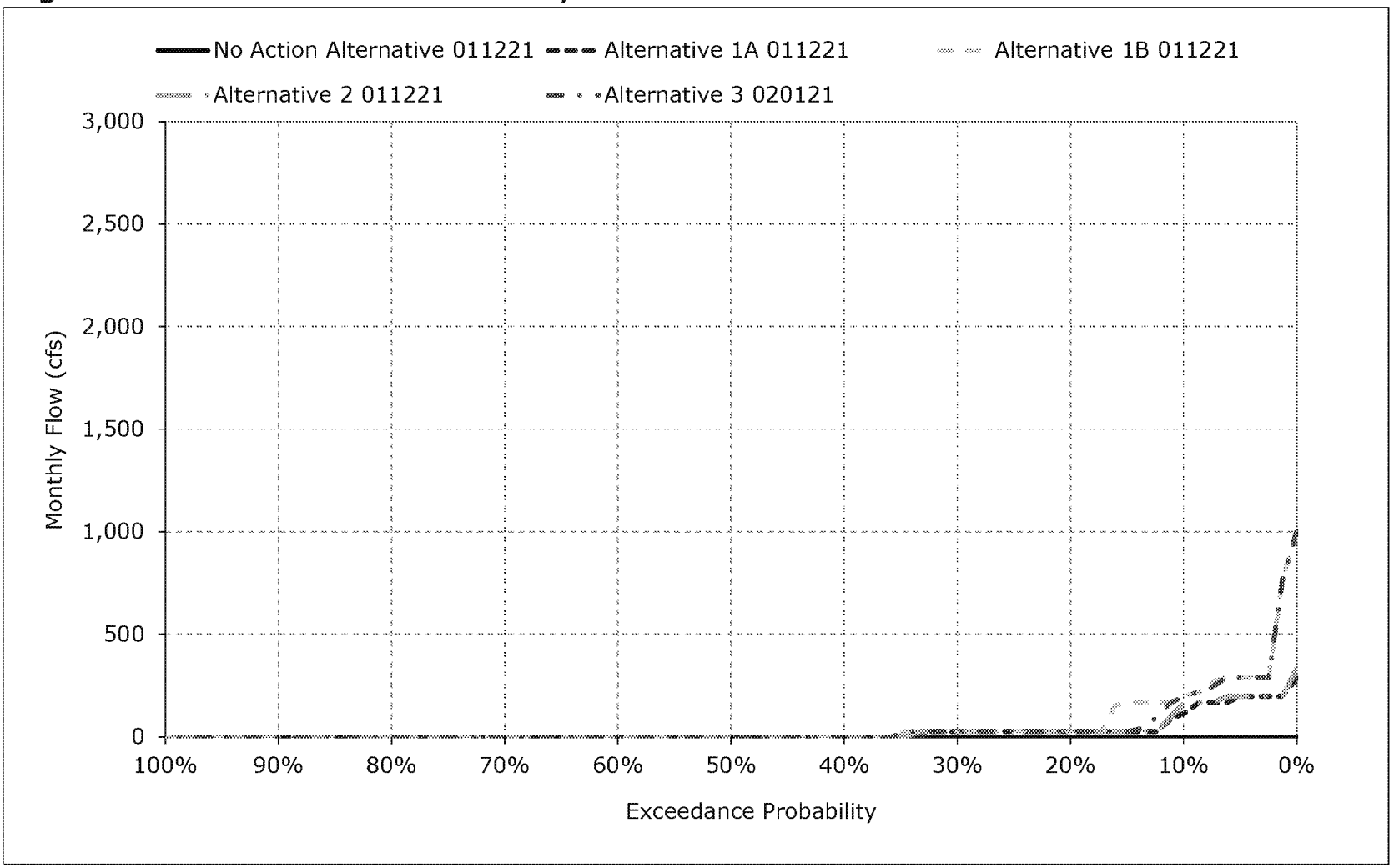


Figure 5B1-6-10. Total Sites Release, January

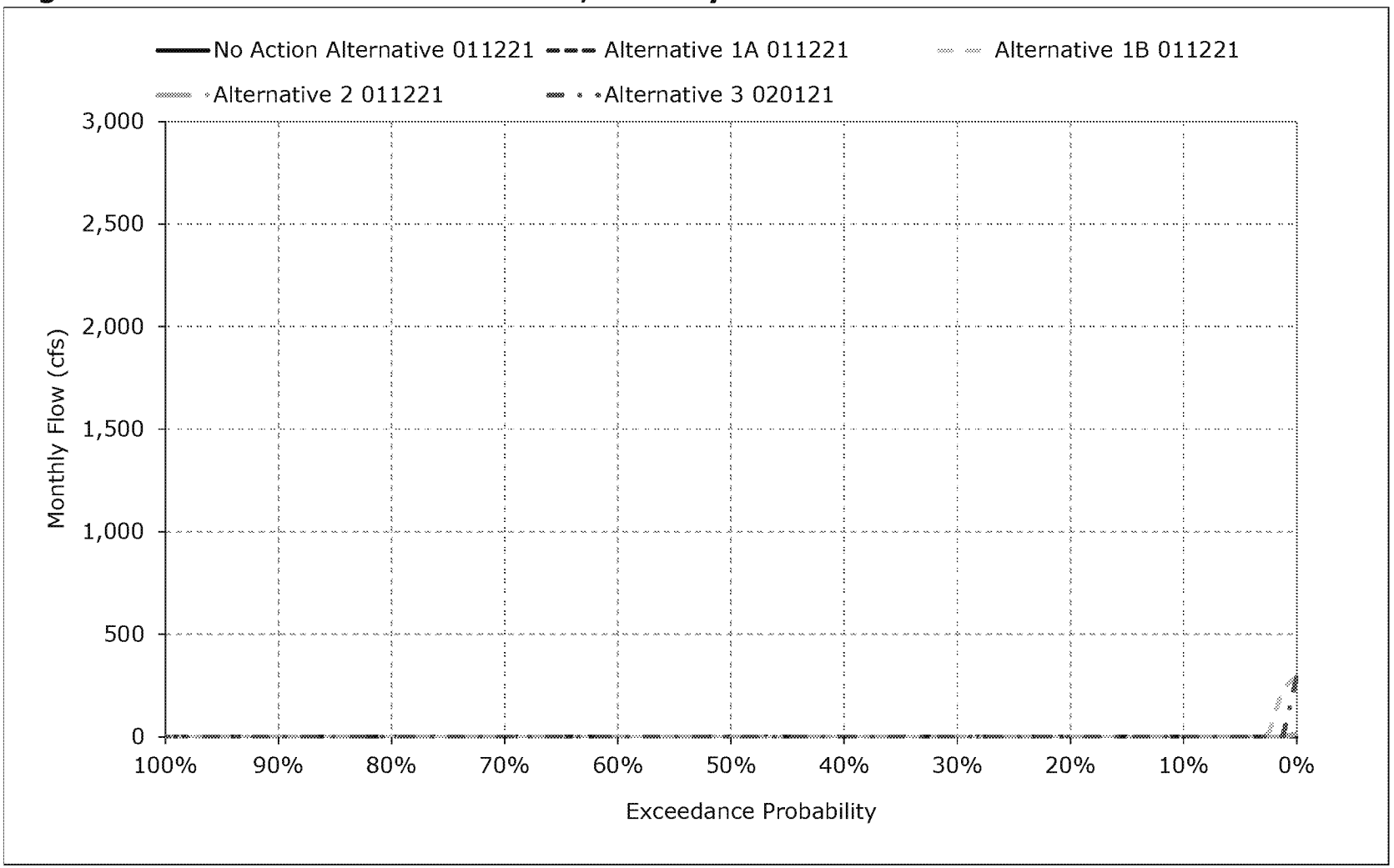


Figure 5B1-6-11. Total Sites Release, February

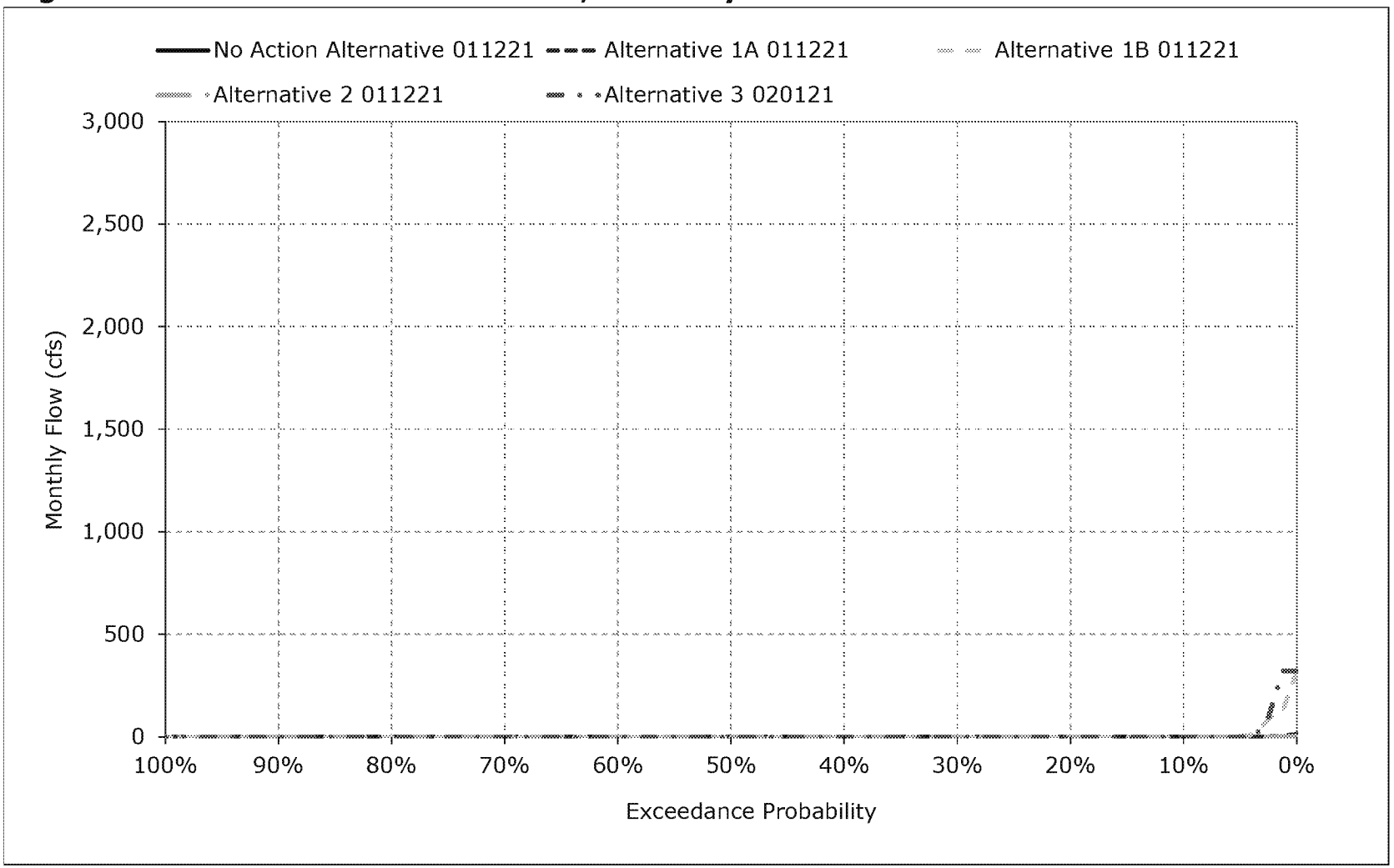


Figure 5B1-6-12. Total Sites Release, March

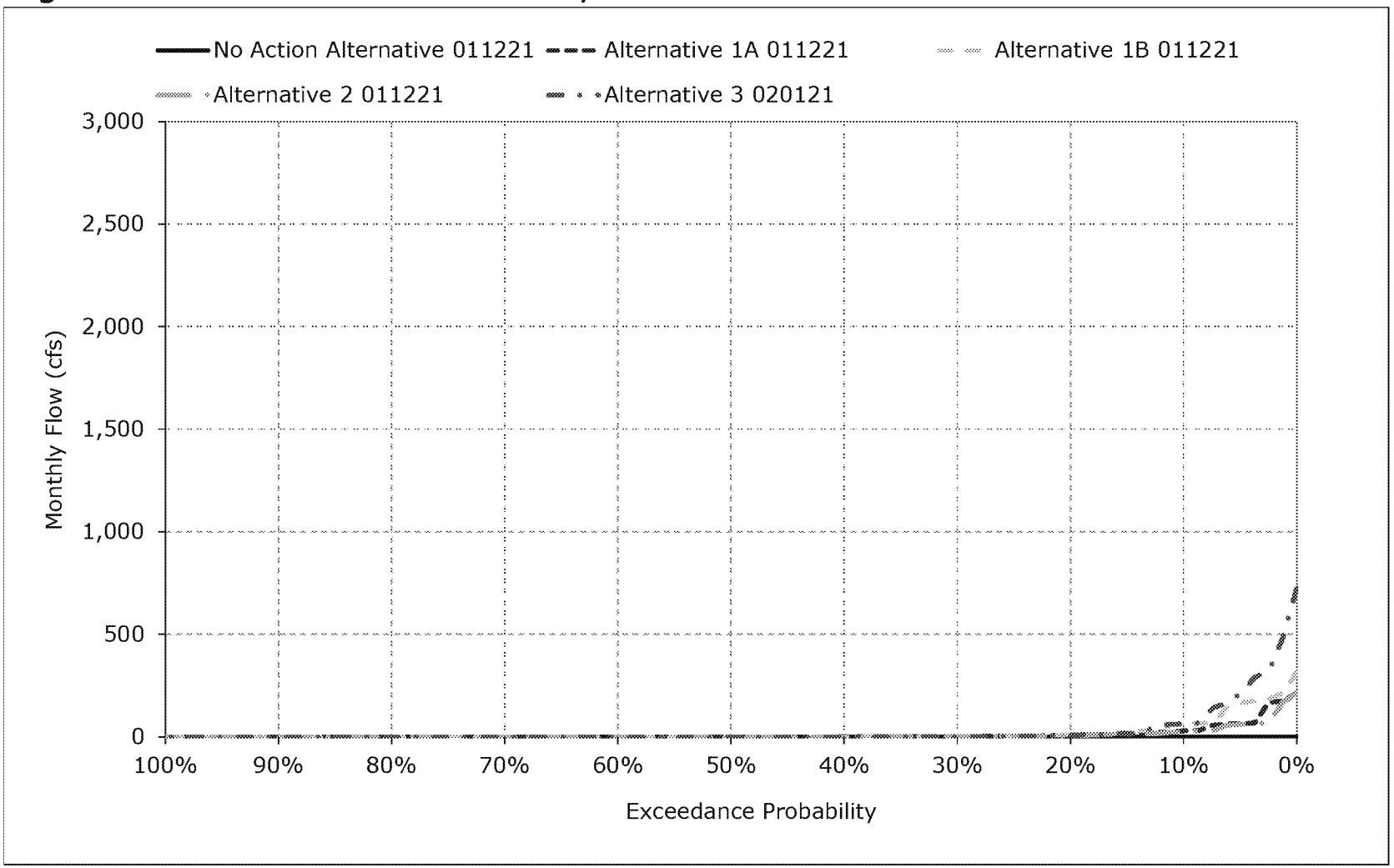


Figure 5B1-6-13. Total Sites Release, April

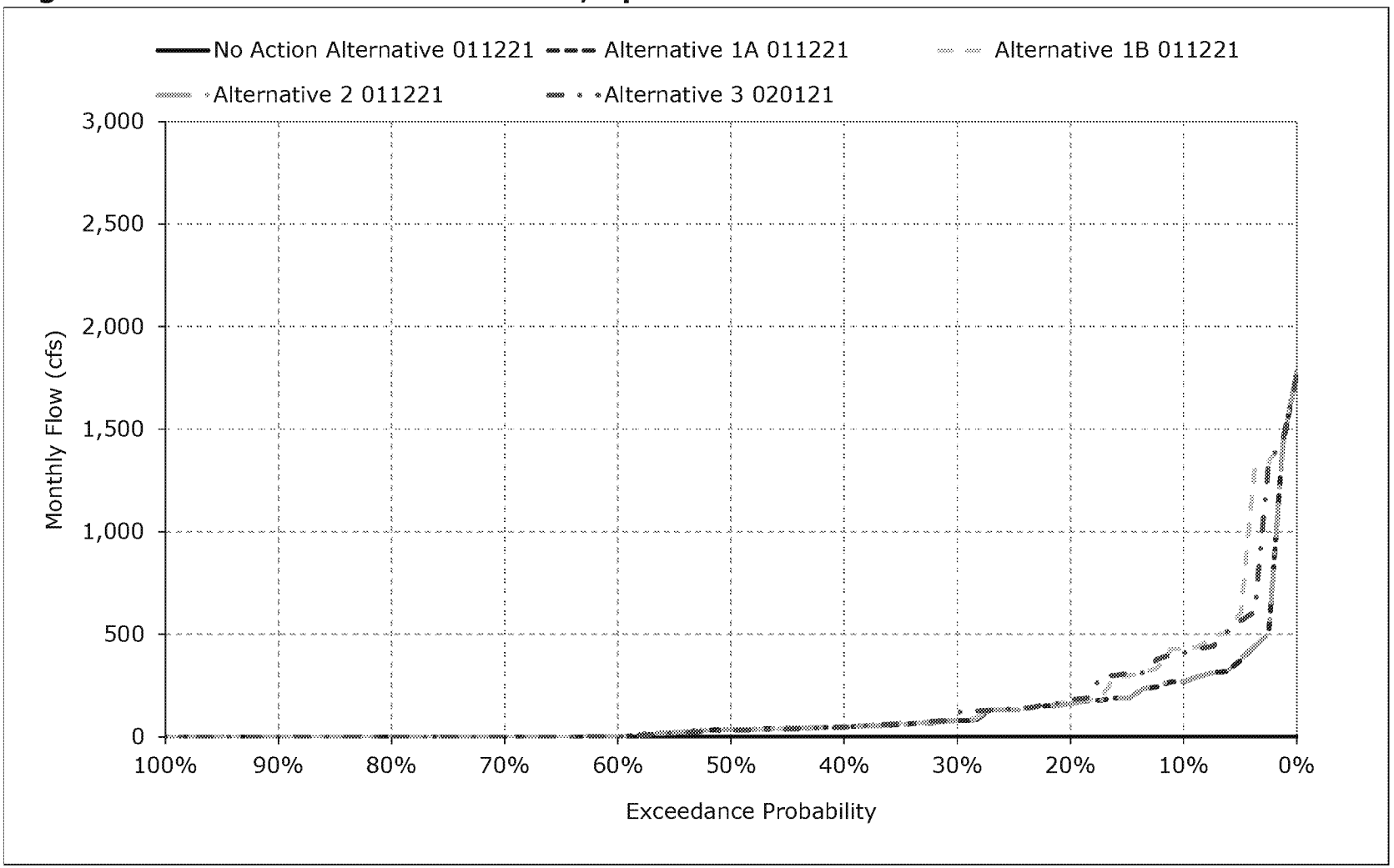


Figure 5B1-6-14. Total Sites Release, May

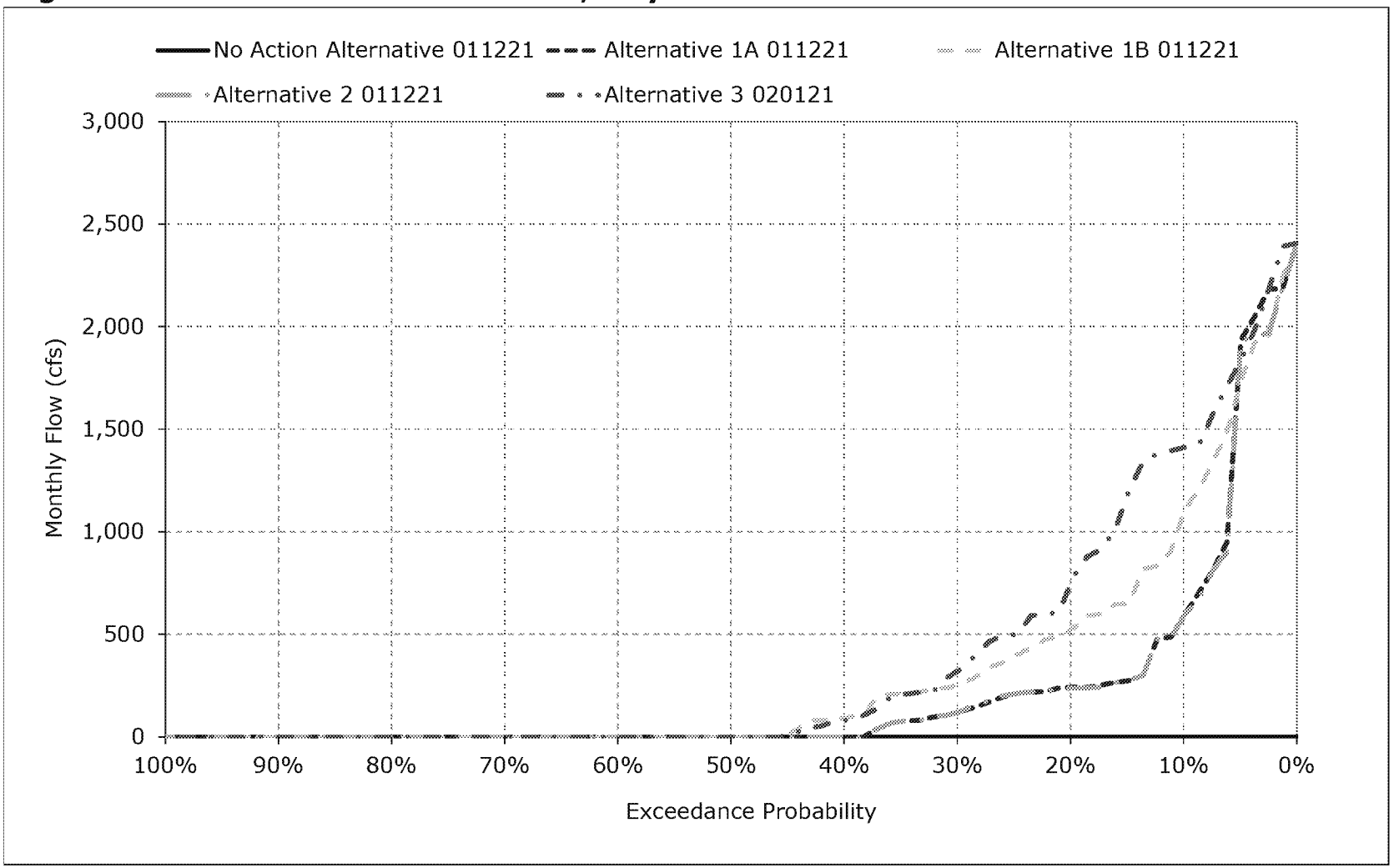


Figure 5B1-6-15. Total Sites Release, June

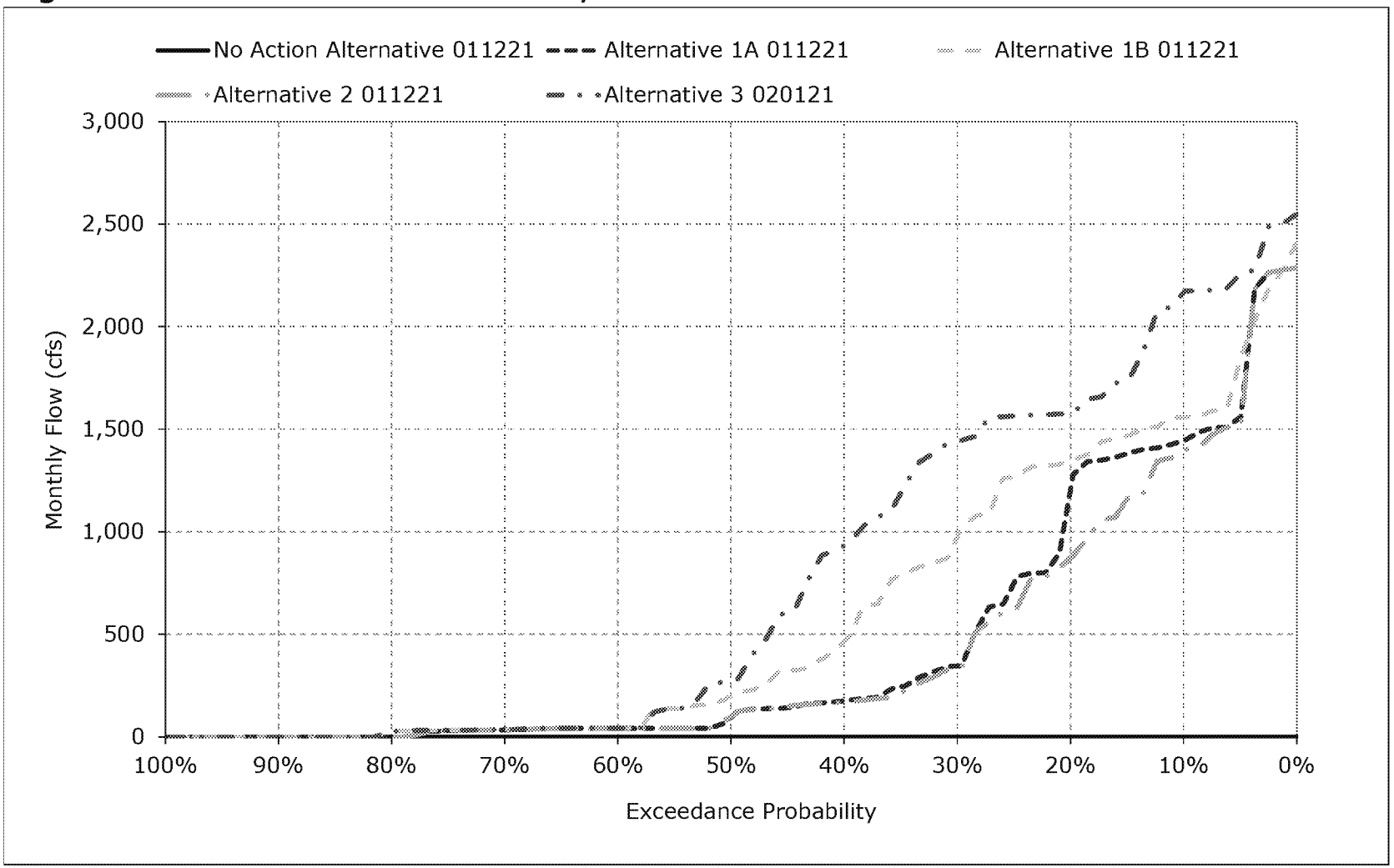


Figure 5B1-6-16. Total Sites Release, July

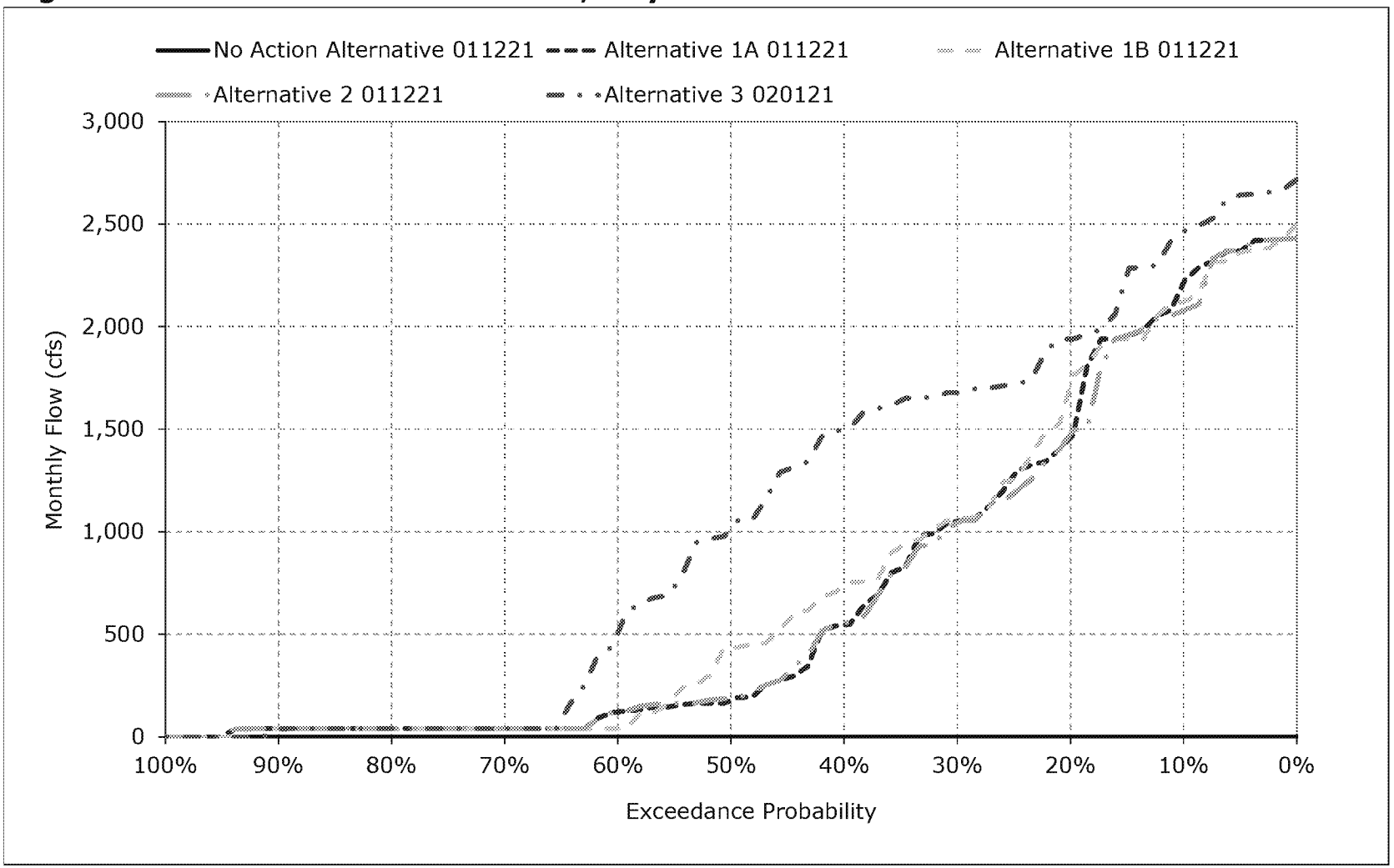


Figure 5B1-6-17. Total Sites Release, August

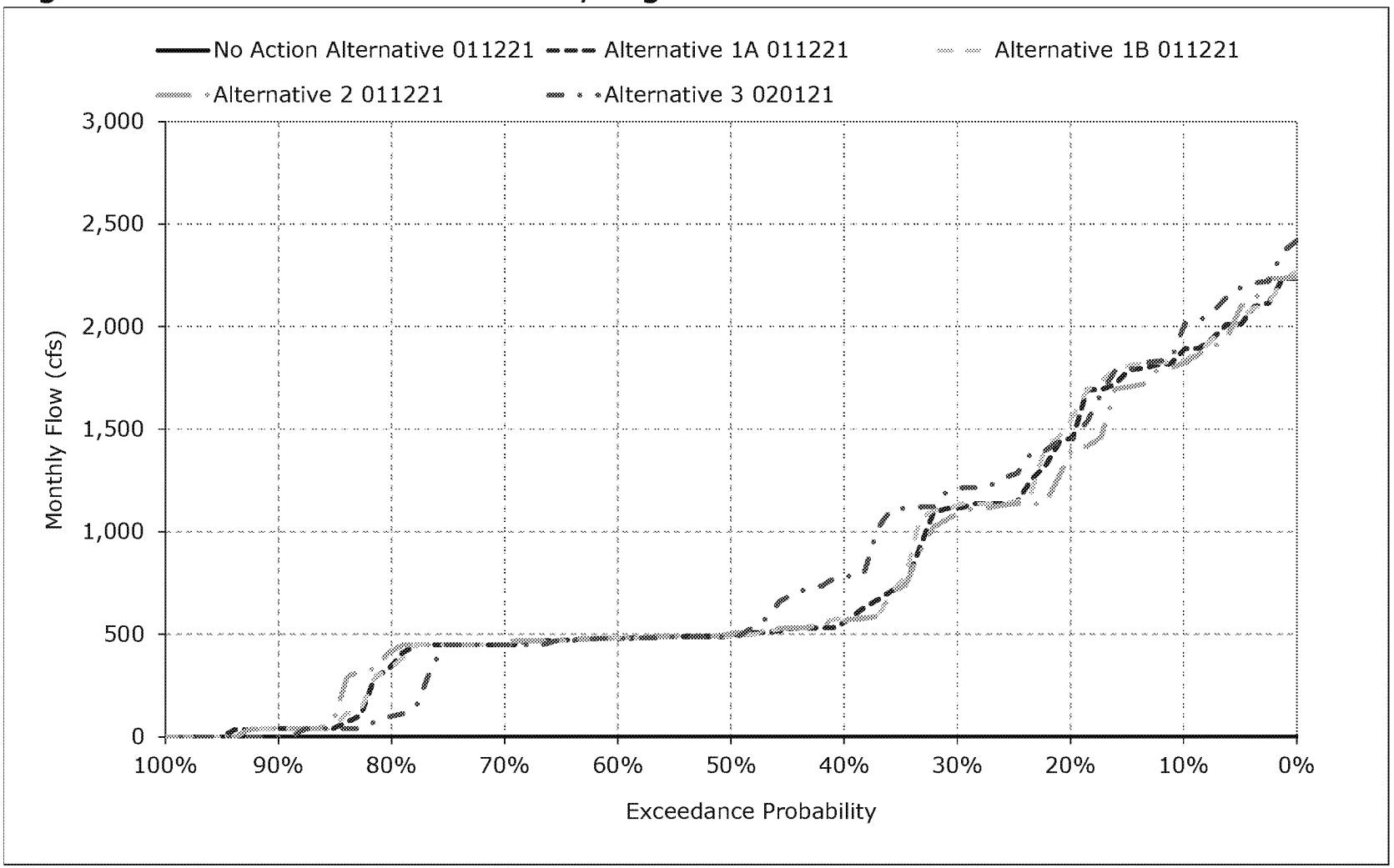


Figure 5B1-6-18. Total Sites Release, September

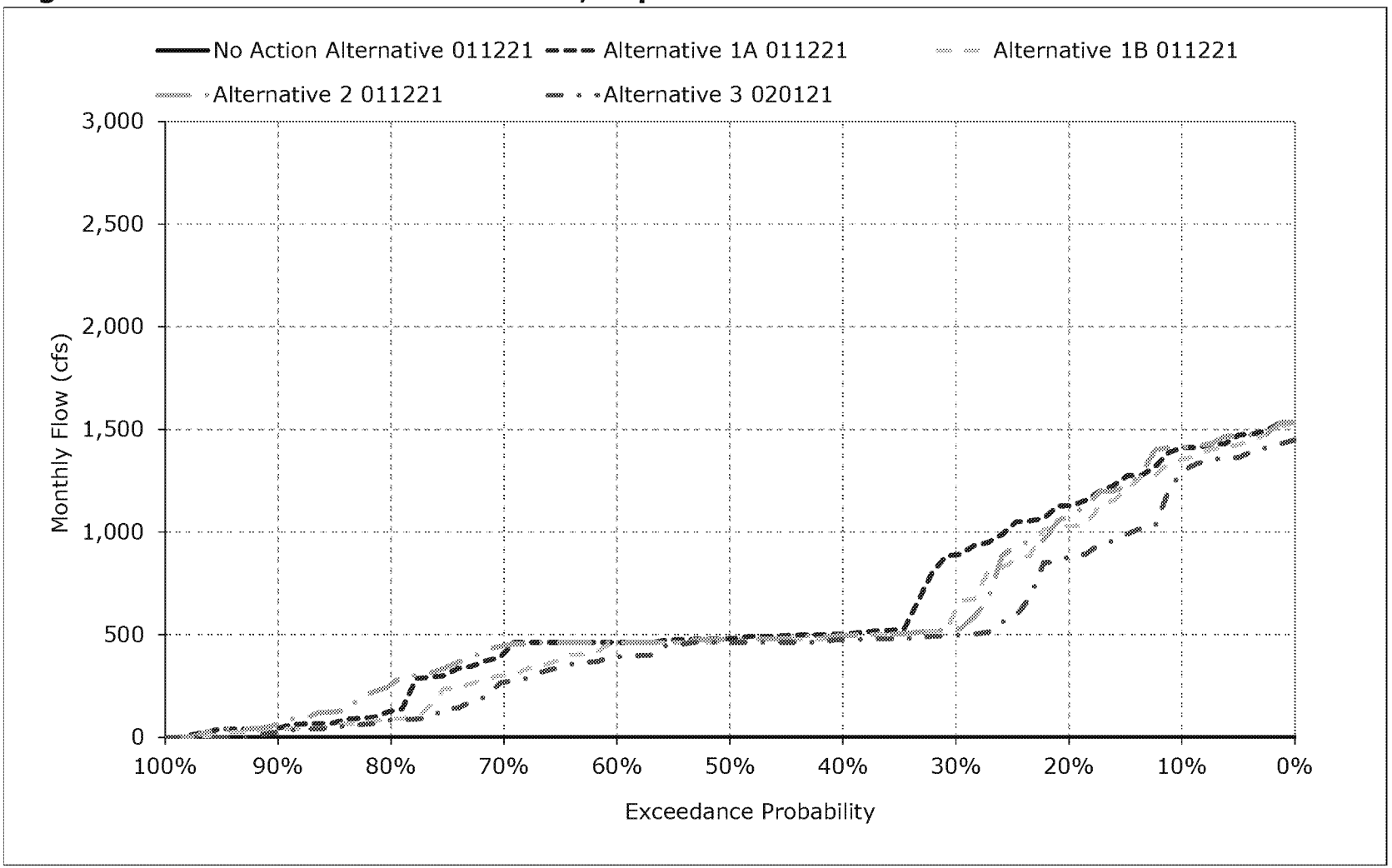


Table 5B1-7-1a. Sites Reservoir Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-7-1b. Sites Reservoir Storage, Alternative 1A 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,386	1,456	1,457	1,500	1,500	1,500	1,500	1,495	1,500	1,487	1,450	1,416
20%	1,371	1,369	1,372	1,447	1,500	1,500	1,496	1,488	1,479	1,465	1,431	1,396
30%	1,286	1,263	1,287	1,357	1,393	1,496	1,487	1,475	1,457	1,427	1,374	1,335
40%	1,069	1,059	1,095	1,113	1,197	1,392	1,420	1,382	1,302	1,200	1,158	1,118
50%	905	894	898	951	1,048	1,062	1,051	1,105	1,130	1,060	966	924
60%	780	806	809	843	886	933	950	967	894	873	836	803
70%	465	440	448	567	616	785	829	803	755	683	594	500
80%	279	224	317	357	481	616	619	614	542	440	356	304
90%	162	172	176	212	263	373	364	349	324	253	210	171
Long Term												
Full Simulation Period[a]	848	846	862	917	974	1,044	1,056	1,042	1,014	964	910	868
Water Year Types[b,c]												
Wet (32%)	1,306	1,326	1,329	1,175	1,257	1,325	1,373	1,381	1,382	1,374	1,347	1,318
Above Normal (15%)	1,063	1,072	1,080	920	999	1,125	1,140	1,139	1,140	1,123	1,090	1,058
Below Normal (17%)	744	728	755	789	851	931	937	929	914	866	806	770
Dry (22%)	540	514	539	888	921	985	970	944	863	749	653	584
Critical (15%)	225	216	244	551	559	577	551	490	436	353	289	248

Table 5B1-7-1c. Sites Reservoir Storage, Alternative 1A 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,386	1,456	1,457	1,500	1,500	1,500	1,500	1,495	1,500	1,487	1,450	1,416
20%	1,371	1,369	1,372	1,447	1,500	1,500	1,496	1,488	1,479	1,465	1,431	1,396
30%	1,286	1,263	1,287	1,357	1,393	1,496	1,487	1,475	1,457	1,427	1,374	1,335
40%	1,069	1,059	1,095	1,113	1,197	1,392	1,420	1,382	1,302	1,200	1,158	1,118
50%	905	894	898	951	1,048	1,062	1,051	1,105	1,130	1,060	966	924
60%	780	806	809	843	886	933	950	967	894	873	836	803
70%	465	440	448	567	616	785	829	803	755	683	594	500
80%	279	224	317	357	481	616	619	614	542	440	356	304
90%	162	172	176	212	263	373	364	349	324	253	210	171
Long Term												
Full Simulation Period[a]	848	846	862	917	974	1,044	1,056	1,042	1,014	964	910	868
Water Year Types[b,c]												
Wet (32%)	1,306	1,326	1,329	1,175	1,257	1,325	1,373	1,381	1,382	1,374	1,347	1,318
Above Normal (15%)	1,063	1,072	1,080	920	999	1,125	1,140	1,139	1,140	1,123	1,090	1,058
Below Normal (17%)	744	728	755	789	851	931	937	929	914	866	806	770
Dry (22%)	540	514	539	888	921	985	970	944	863	749	653	584
Critical (15%)	225	216	244	551	559	577	551	490	436	353	289	248

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-7-2a. Sites Reservoir Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-7-2b. Sites Reservoir Storage, Alternative 1B 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,391	1,442	1,437	1,499	1,500	1,500	1,499	1,493	1,498	1,485	1,449	1,415
20%	1,370	1,366	1,365	1,397	1,499	1,499	1,494	1,487	1,474	1,460	1,426	1,396
30%	1,208	1,205	1,208	1,302	1,367	1,469	1,468	1,399	1,374	1,336	1,289	1,253
40%	999	980	1,035	1,064	1,125	1,272	1,274	1,263	1,215	1,130	1,057	1,000
50%	788	780	783	859	939	963	959	1,036	1,043	991	868	818
60%	706	694	701	748	799	822	856	859	793	766	738	708
70%	354	328	372	437	527	681	755	729	686	553	468	379
80%	213	188	228	305	421	557	566	546	476	365	283	232
90%	144	144	158	194	247	357	346	323	299	231	168	153
Long Term												
Full Simulation Period[a]	792	789	804	861	923	995	1,006	988	953	900	846	808
Water Year Types[b,c]												
Wet (32%)	1,289	1,303	1,301	1,132	1,224	1,295	1,350	1,363	1,365	1,358	1,331	1,300
Above Normal (15%)	977	988	1,000	865	953	1,080	1,094	1,093	1,052	1,018	984	958
Below Normal (17%)	649	633	660	719	784	863	868	843	816	765	704	673
Dry (22%)	459	436	460	811	843	910	887	849	769	659	564	501
Critical (15%)	193	185	213	512	521	538	512	451	395	312	250	212

Table 5B1-7-2c. Sites Reservoir Storage, Alternative 1B 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,391	1,442	1,437	1,499	1,500	1,500	1,499	1,493	1,498	1,485	1,449	1,415
20%	1,370	1,366	1,365	1,397	1,499	1,499	1,494	1,487	1,474	1,460	1,426	1,396
30%	1,208	1,205	1,208	1,302	1,367	1,469	1,468	1,399	1,374	1,336	1,289	1,253
40%	999	980	1,035	1,064	1,125	1,272	1,274	1,263	1,215	1,130	1,057	1,000
50%	788	780	783	859	939	963	959	1,036	1,043	991	868	818
60%	706	694	701	748	799	822	856	859	793	766	738	708
70%	354	328	372	437	527	681	755	729	686	553	468	379
80%	213	188	228	305	421	557	566	546	476	365	283	232
90%	144	144	158	194	247	357	346	323	299	231	168	153
Long Term												
Full Simulation Period[a]	792	789	804	861	923	995	1,006	988	953	900	846	808
Water Year Types[b,c]												
Wet (32%)	1,289	1,303	1,301	1,132	1,224	1,295	1,350	1,363	1,365	1,358	1,331	1,300
Above Normal (15%)	977	988	1,000	865	953	1,080	1,094	1,093	1,052	1,018	984	958
Below Normal (17%)	649	633	660	719	784	863	868	843	816	765	704	673
Dry (22%)	459	436	460	811	843	910	887	849	769	659	564	501
Critical (15%)	193	185	213	512	521	538	512	451	395	312	250	212

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-7-3a. Sites Reservoir Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-7-3b. Sites Reservoir Storage, Alternative 2 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,162	1,227	1,229	1,270	1,270	1,270	1,270	1,265	1,270	1,258	1,221	1,188
20%	1,147	1,148	1,155	1,221	1,270	1,270	1,267	1,261	1,252	1,238	1,208	1,173
30%	1,117	1,108	1,119	1,145	1,213	1,270	1,261	1,256	1,237	1,220	1,186	1,150
40%	939	931	972	1,036	1,111	1,228	1,223	1,190	1,150	1,082	1,004	956
50%	757	777	774	834	859	974	991	990	966	918	846	776
60%	654	623	618	670	714	791	870	825	813	768	706	663
70%	323	309	373	437	543	674	706	692	651	518	403	338
80%	201	201	240	308	436	552	544	524	480	381	268	227
90%	156	163	173	244	267	353	342	329	306	238	176	165
Long Term												
Full Simulation Period[a]	715	715	732	786	841	906	915	902	876	827	774	733
Water Year Types[b,c]												
Wet (32%)	1,110	1,129	1,132	1,008	1,084	1,139	1,180	1,188	1,189	1,182	1,153	1,120
Above Normal (15%)	962	970	978	812	891	1,016	1,031	1,031	1,031	1,014	980	949
Below Normal (17%)	615	600	627	664	726	805	812	804	791	744	682	642
Dry (22%)	410	395	419	743	776	836	822	795	720	607	513	450
Critical (15%)	189	180	209	485	493	512	486	427	378	300	242	209

Table 5B1-7-3c. Sites Reservoir Storage, Alternative 2 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,162	1,227	1,229	1,270	1,270	1,270	1,270	1,265	1,270	1,258	1,221	1,188
20%	1,147	1,148	1,155	1,221	1,270	1,270	1,267	1,261	1,252	1,238	1,208	1,173
30%	1,117	1,108	1,119	1,145	1,213	1,270	1,261	1,256	1,237	1,220	1,186	1,150
40%	939	931	972	1,036	1,111	1,228	1,223	1,190	1,150	1,082	1,004	956
50%	757	777	774	834	859	974	991	990	966	918	846	776
60%	654	623	618	670	714	791	870	825	813	768	706	663
70%	323	309	373	437	543	674	706	692	651	518	403	338
80%	201	201	240	308	436	552	544	524	480	381	268	227
90%	156	163	173	244	267	353	342	329	306	238	176	165
Long Term												
Full Simulation Period[a]	715	715	732	786	841	906	915	902	876	827	774	733
Water Year Types[b,c]												
Wet (32%)	1,110	1,129	1,132	1,008	1,084	1,139	1,180	1,188	1,189	1,182	1,153	1,120
Above Normal (15%)	962	970	978	812	891	1,016	1,031	1,031	1,031	1,014	980	949
Below Normal (17%)	615	600	627	664	726	805	812	804	791	744	682	642
Dry (22%)	410	395	419	743	776	836	822	795	720	607	513	450
Critical (15%)	189	180	209	485	493	512	486	427	378	300	242	209

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-7-4a. Sites Reservoir Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-7-4b. Sites Reservoir Storage, Alternative 3 020121, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,388	1,447	1,439	1,500	1,500	1,500	1,498	1,493	1,496	1,484	1,448	1,413
20%	1,365	1,357	1,365	1,378	1,485	1,500	1,493	1,487	1,473	1,460	1,422	1,391
30%	1,014	1,002	1,026	1,078	1,153	1,344	1,433	1,384	1,264	1,159	1,082	1,042
40%	812	791	800	825	976	1,098	1,107	1,078	1,044	948	861	826
50%	616	622	649	739	796	933	944	955	862	772	653	621
60%	500	496	494	575	600	705	761	771	708	647	605	551
70%	213	223	287	379	486	603	606	552	464	360	271	220
80%	171	170	181	257	368	458	468	454	399	272	190	177
90%	118	117	141	171	213	288	281	278	239	174	144	127
Long Term												
Full Simulation Period[a]	701	703	720	778	843	922	938	918	873	802	746	713
Water Year Types[b,c]												
Wet (32%)	1,267	1,282	1,280	1,057	1,152	1,245	1,315	1,333	1,338	1,330	1,304	1,276
Above Normal (15%)	796	811	836	805	901	1,035	1,050	1,048	991	884	804	769
Below Normal (17%)	503	494	523	648	720	800	806	776	709	618	557	527
Dry (22%)	328	315	340	679	713	779	758	705	614	495	412	361
Critical (15%)	169	162	190	446	453	464	438	375	326	249	202	180

Table 5B1-7-4c. Sites Reservoir Storage, Alternative 3 020121 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,388	1,447	1,439	1,500	1,500	1,500	1,498	1,493	1,496	1,484	1,448	1,413
20%	1,365	1,357	1,365	1,378	1,485	1,500	1,493	1,487	1,473	1,460	1,422	1,391
30%	1,014	1,002	1,026	1,078	1,153	1,344	1,433	1,384	1,264	1,159	1,082	1,042
40%	812	791	800	825	976	1,098	1,107	1,078	1,044	948	861	826
50%	616	622	649	739	796	933	944	955	862	772	653	621
60%	500	496	494	575	600	705	761	771	708	647	605	551
70%	213	223	287	379	486	603	606	552	464	360	271	220
80%	171	170	181	257	368	458	468	454	399	272	190	177
90%	118	117	141	171	213	288	281	278	239	174	144	127
Long Term												
Full Simulation Period[a]	701	703	720	778	843	922	938	918	873	802	746	713
Water Year Types[b,c]												
Wet (32%)	1,267	1,282	1,280	1,057	1,152	1,245	1,315	1,333	1,338	1,330	1,304	1,276
Above Normal (15%)	796	811	836	805	901	1,035	1,050	1,048	991	884	804	769
Below Normal (17%)	503	494	523	648	720	800	806	776	709	618	557	527
Dry (22%)	328	315	340	679	713	779	758	705	614	495	412	361
Critical (15%)	169	162	190	446	453	464	438	375	326	249	202	180

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Figure 5B1-7-1. Sites Reservoir Storage, October

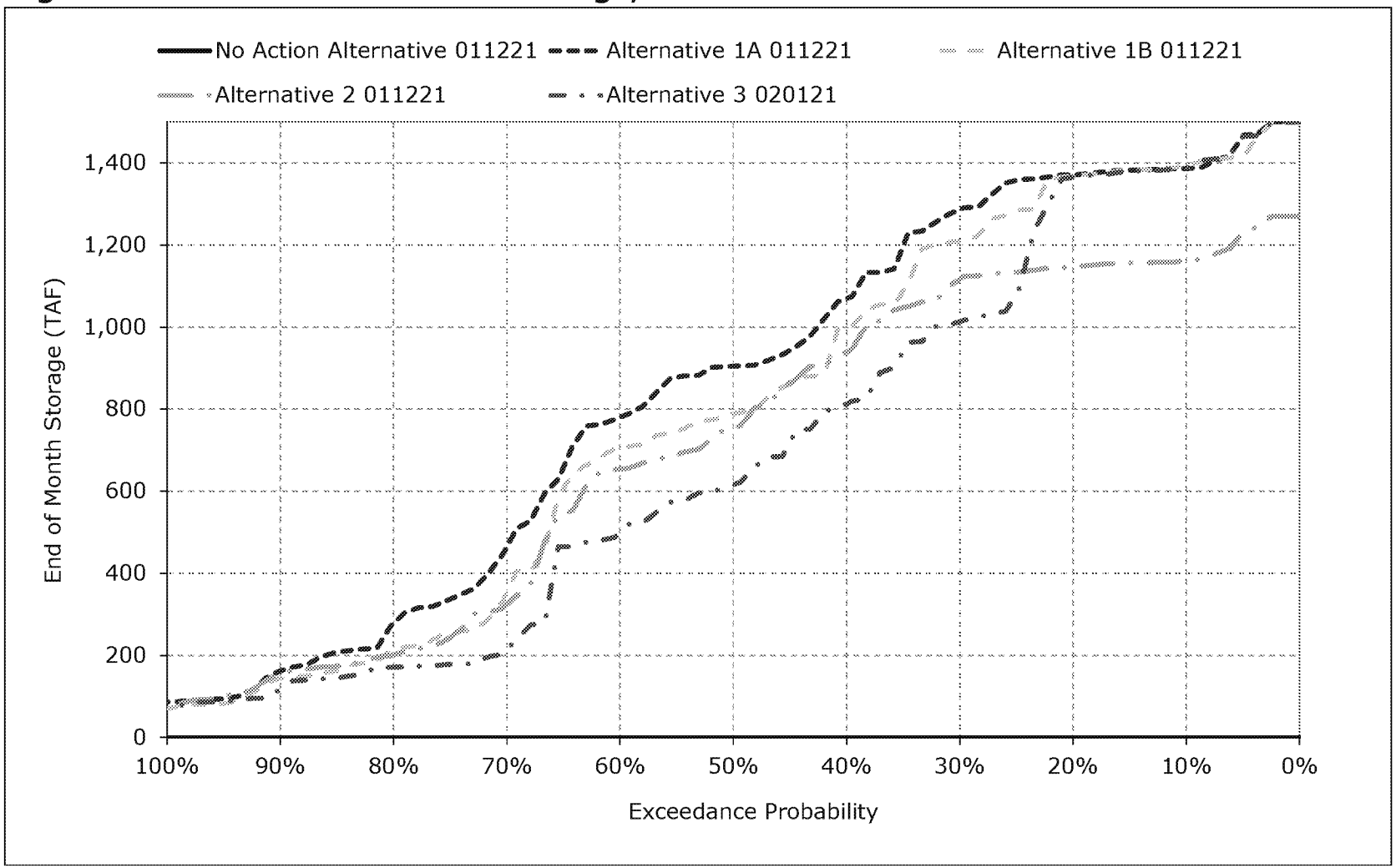


Figure 5B1-7-2. Sites Reservoir Storage, November

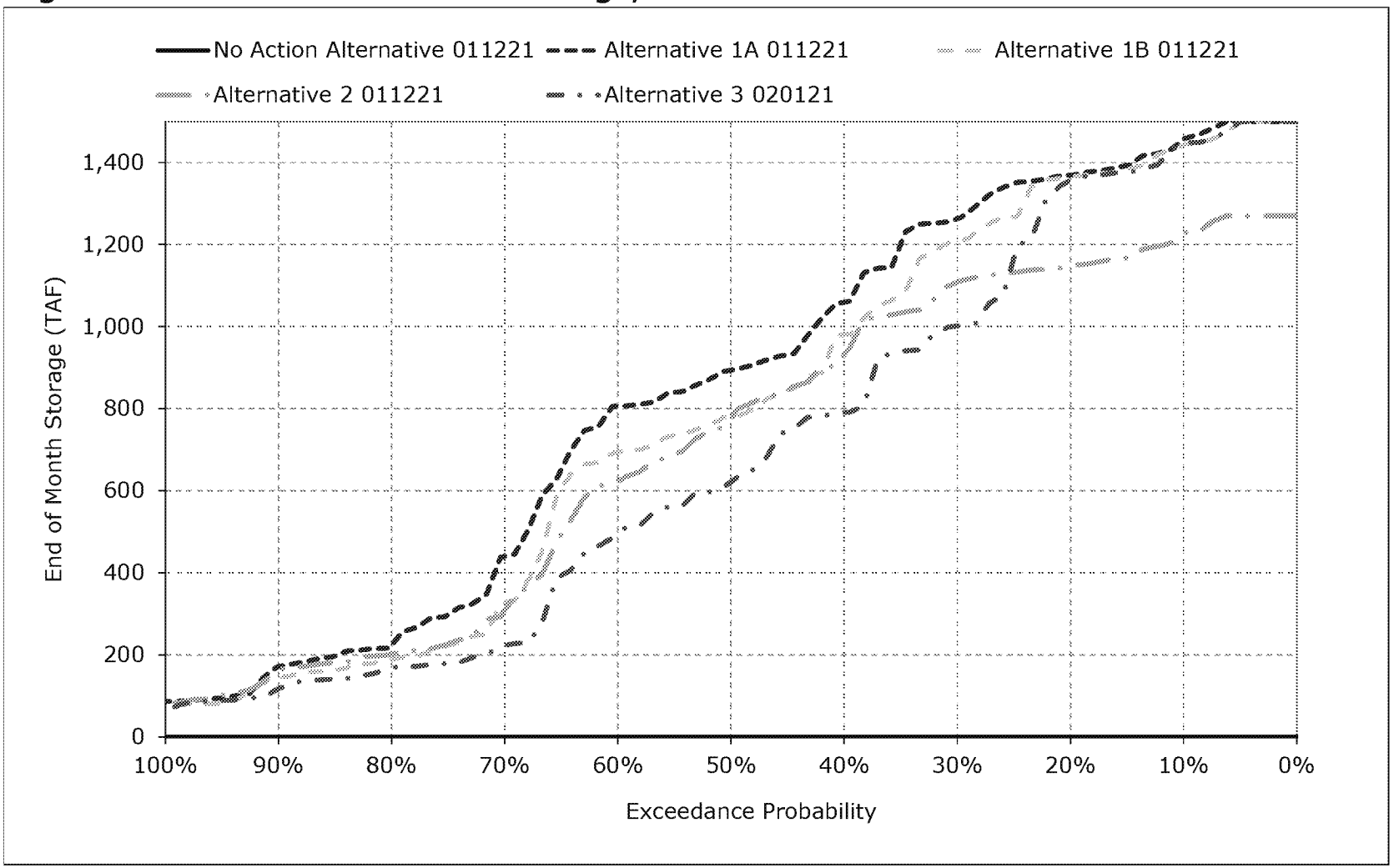


Figure 5B1-7-3. Sites Reservoir Storage, December

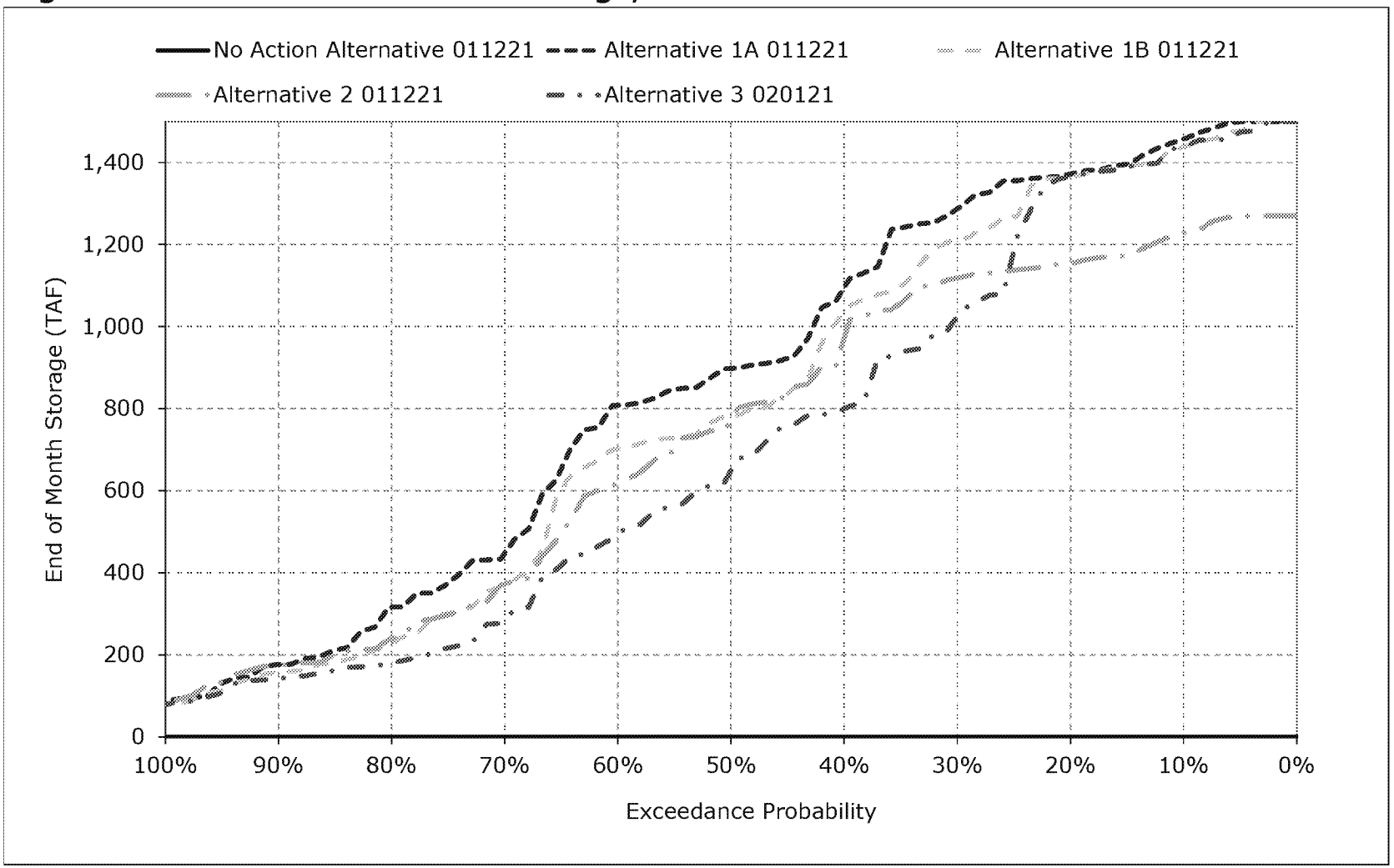


Figure 5B1-7-4. Sites Reservoir Storage, January

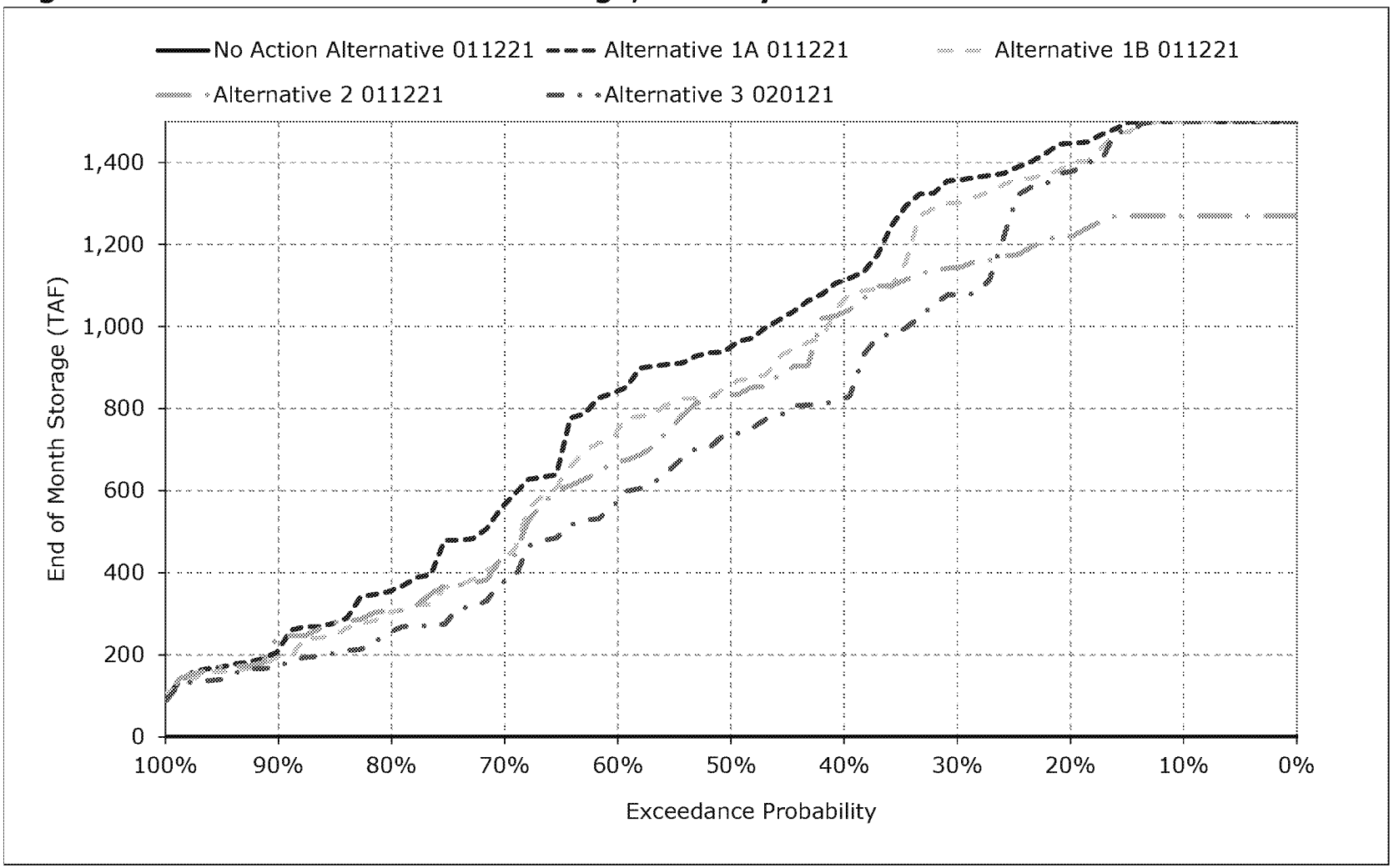


Figure 5B1-7-5. Sites Reservoir Storage, February

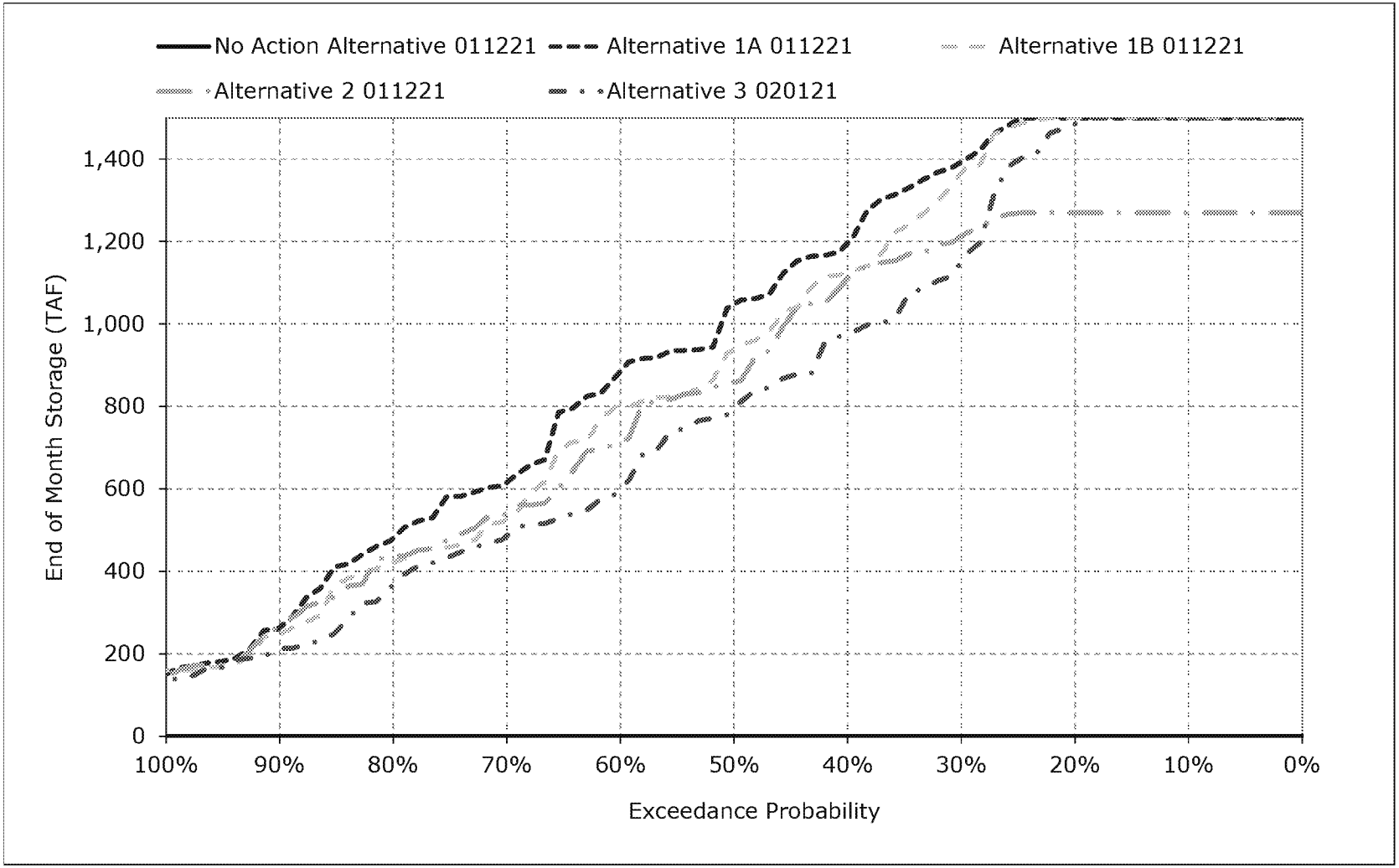


Figure 5B1-7-6. Sites Reservoir Storage, March

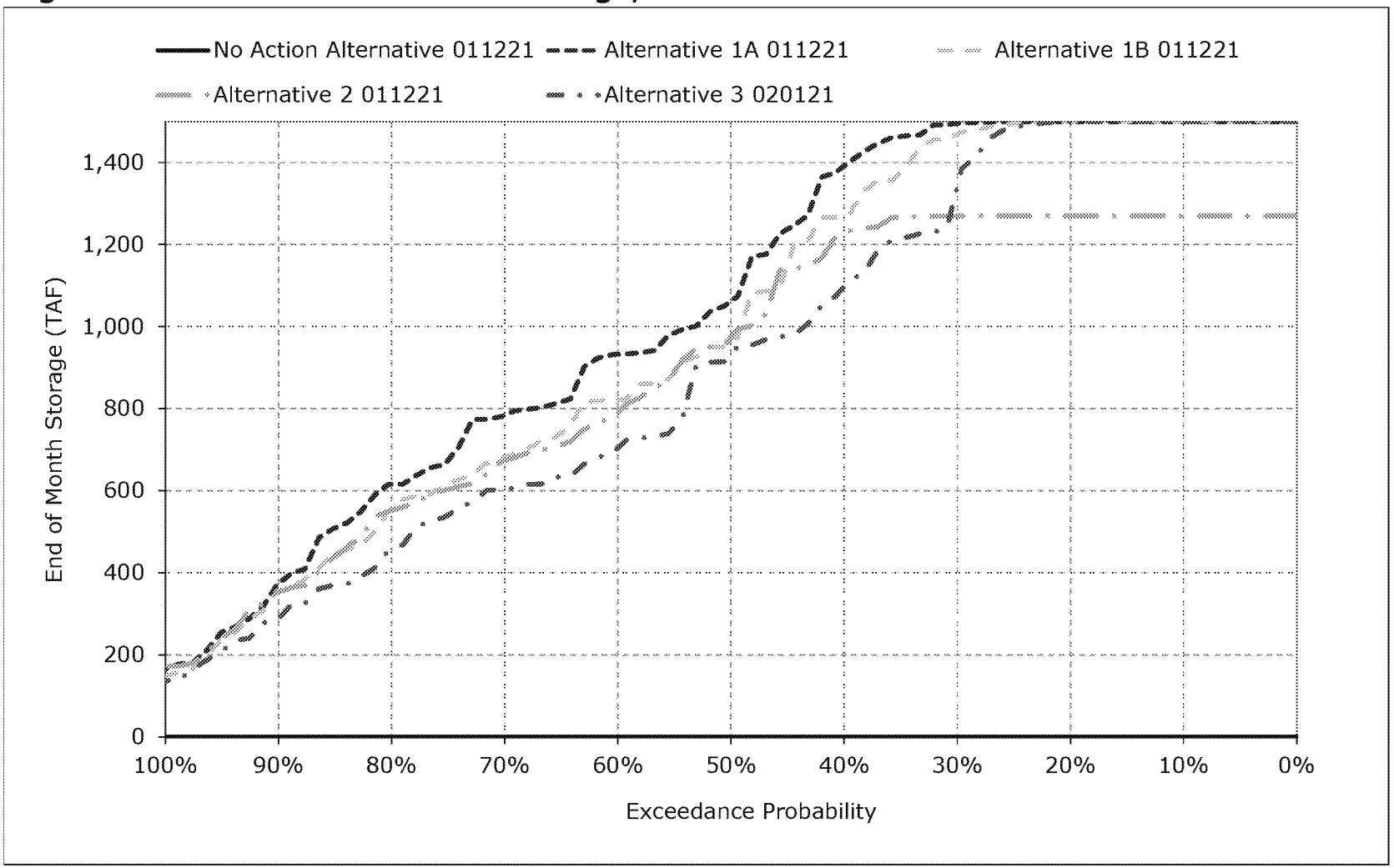


Figure 5B1-7-7. Sites Reservoir Storage, April

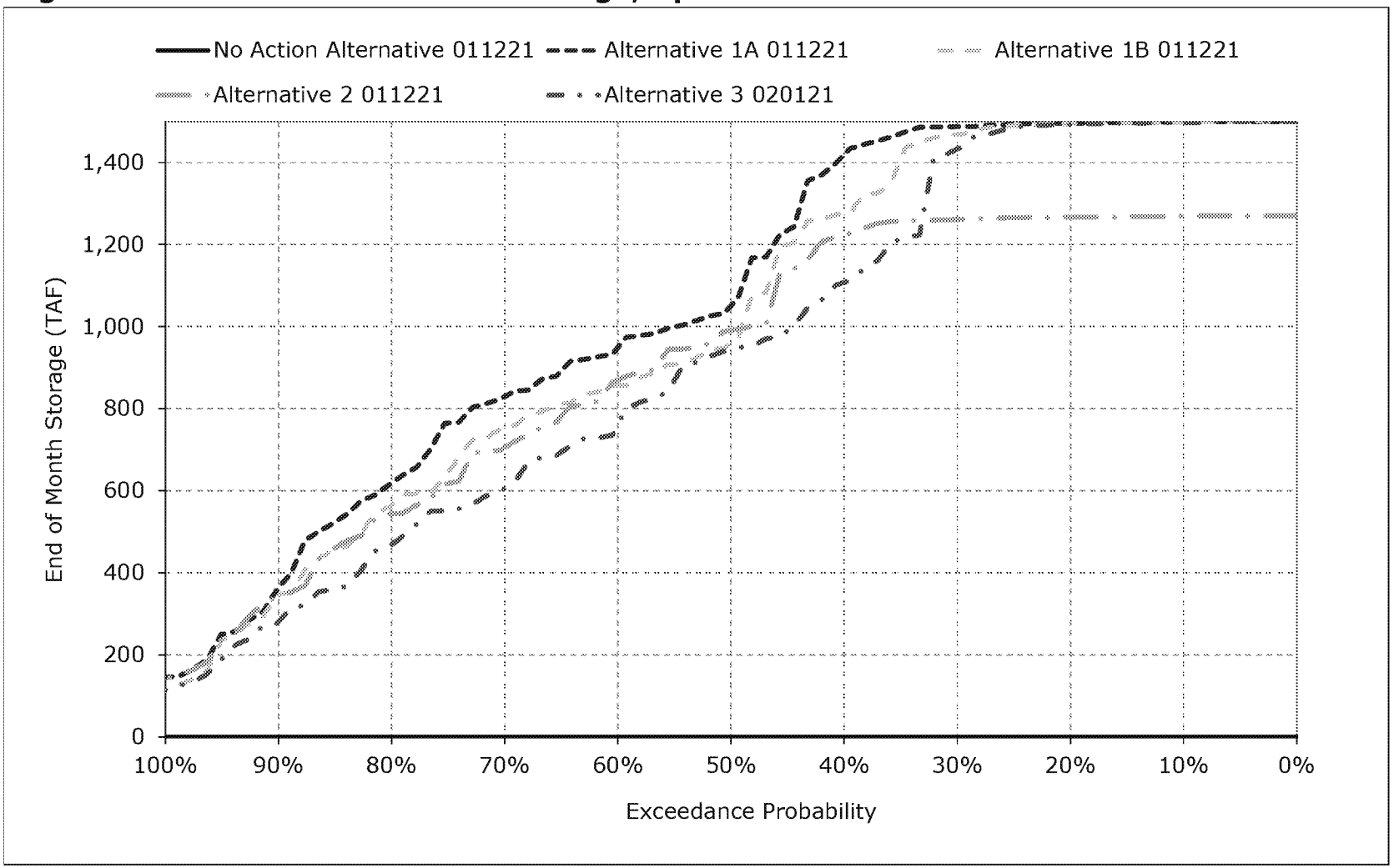


Figure 5B1-7-8. Sites Reservoir Storage, May

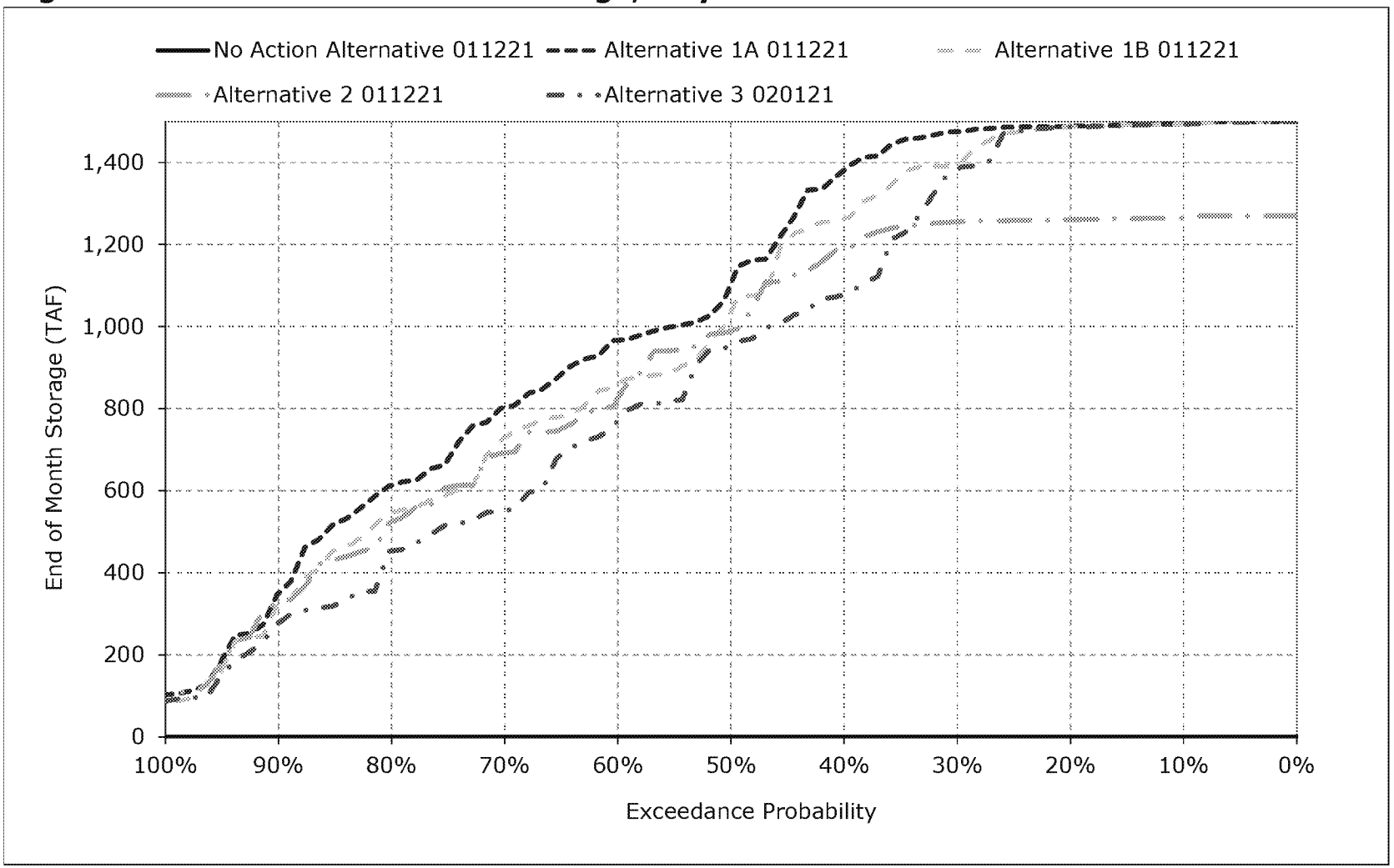


Figure 5B1-7-9. Sites Reservoir Storage, June

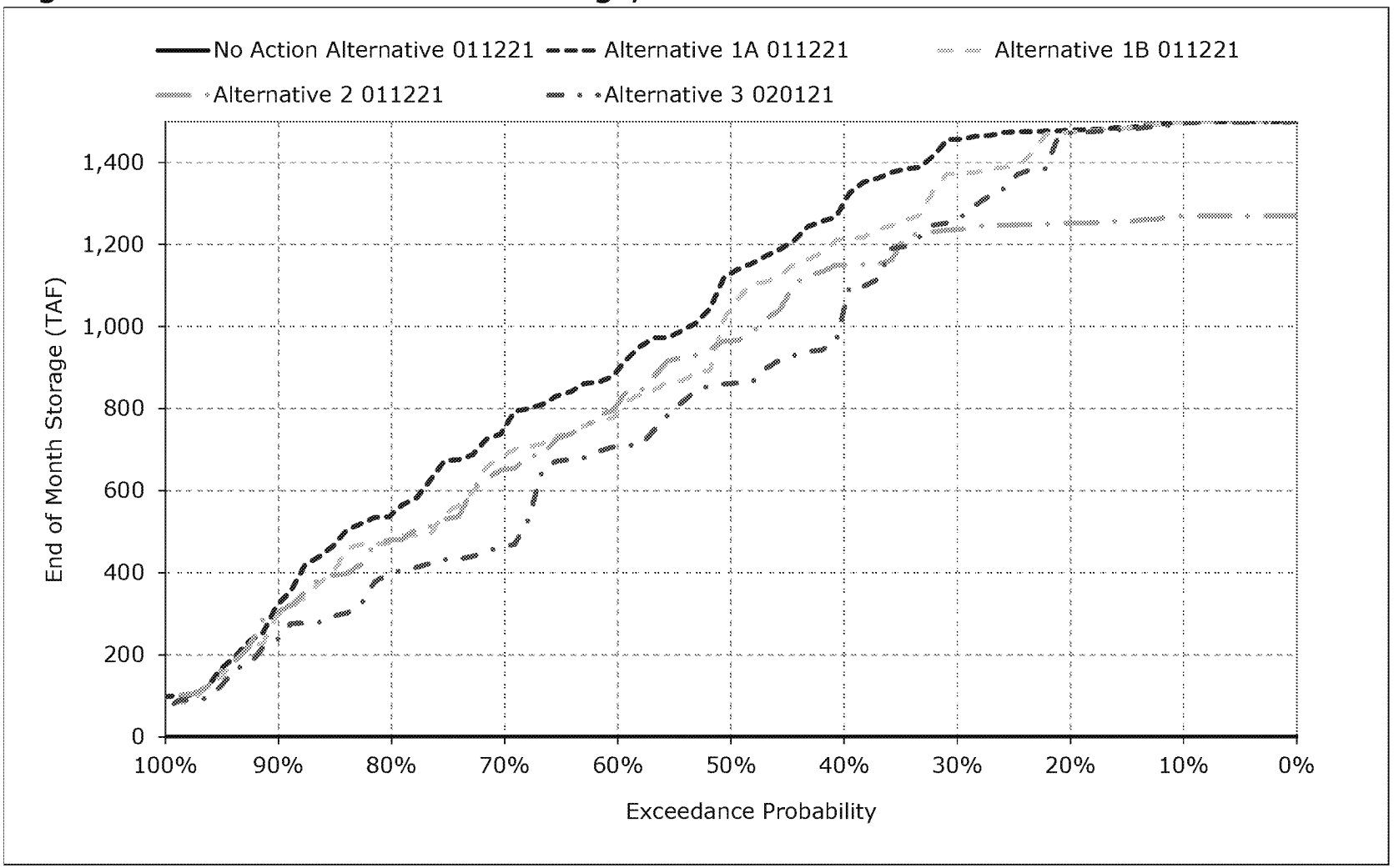


Figure 5B1-7-10. Sites Reservoir Storage, July

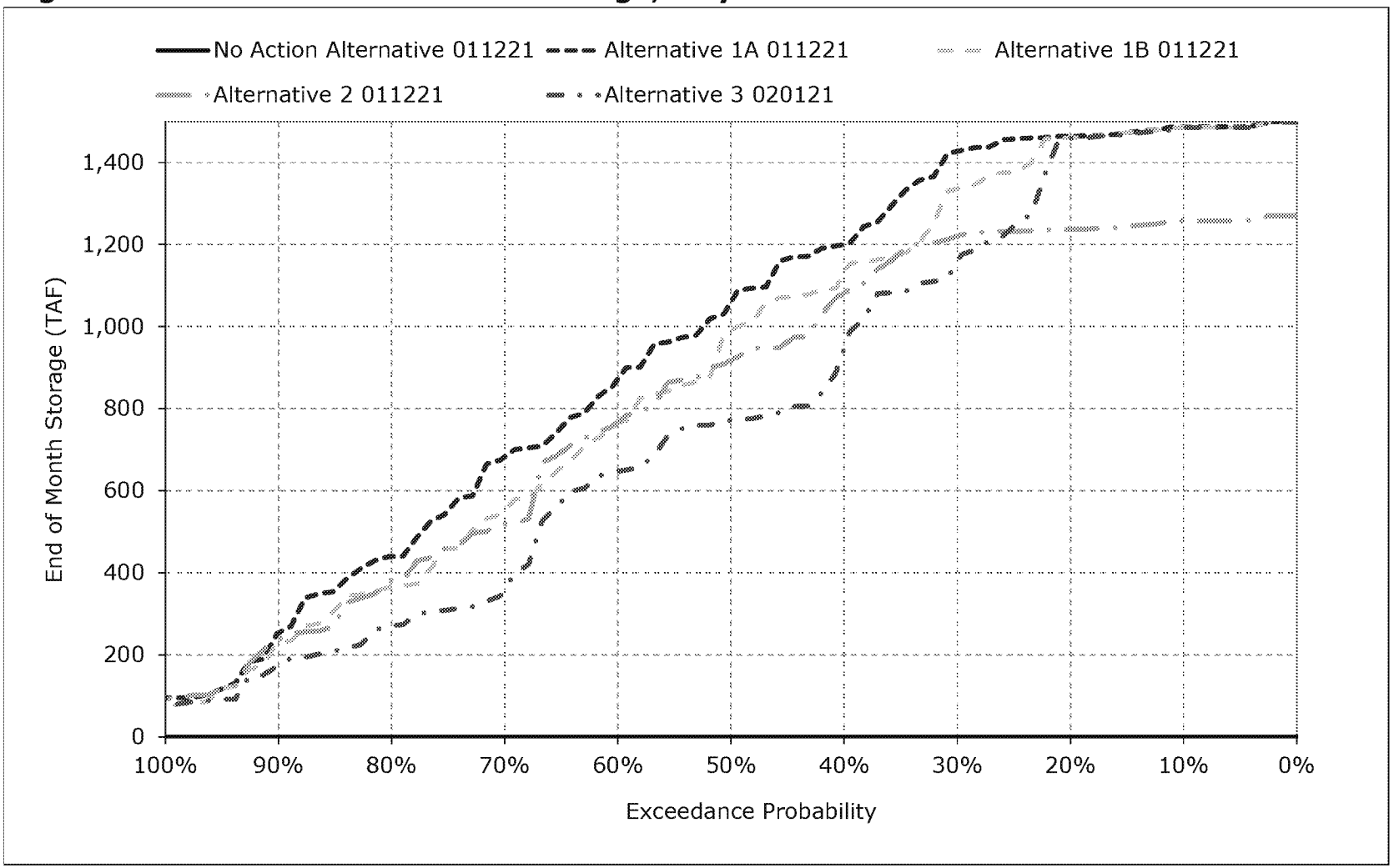


Figure 5B1-7-11. Sites Reservoir Storage, August

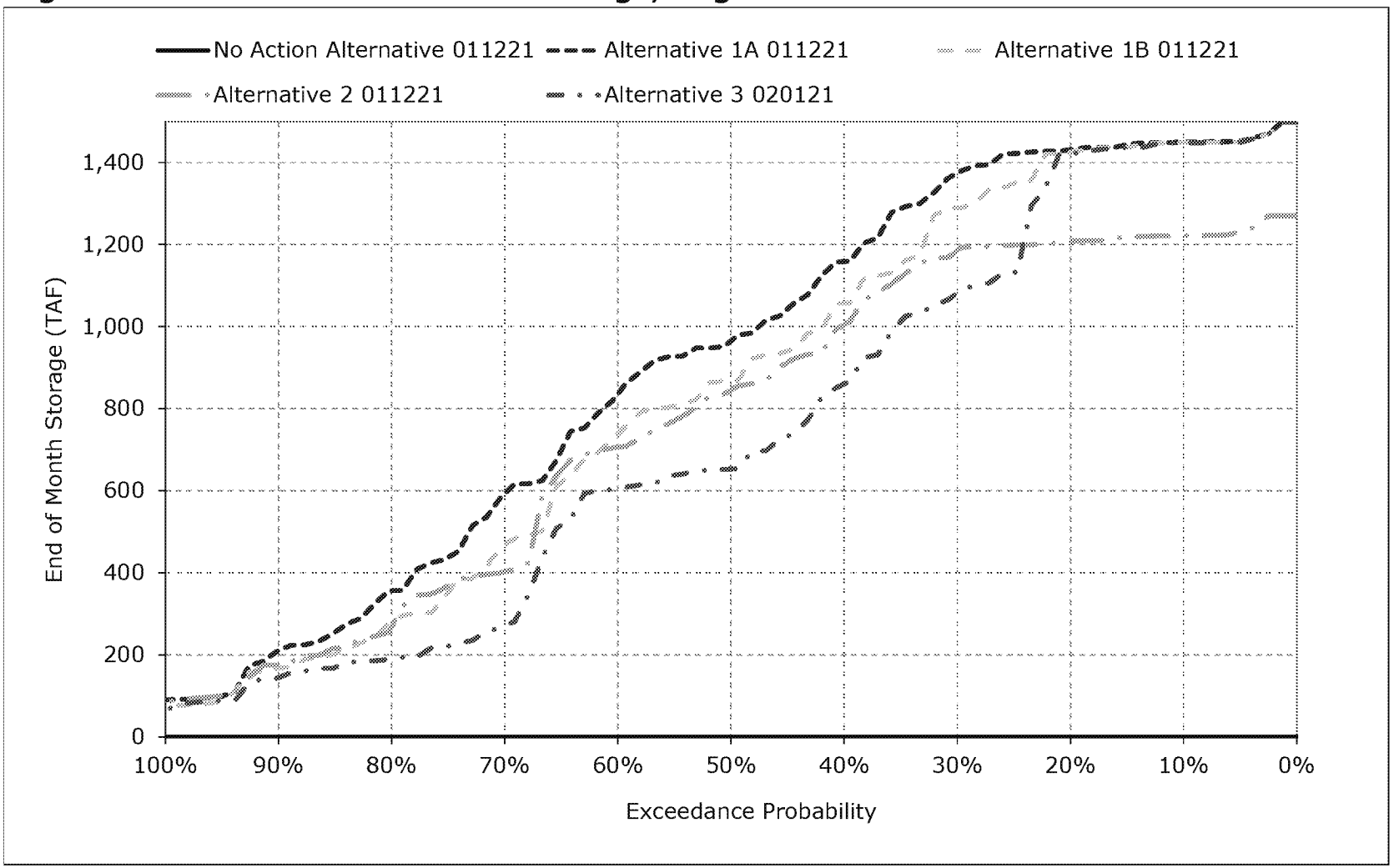


Figure 5B1-7-12. Sites Reservoir Storage, September

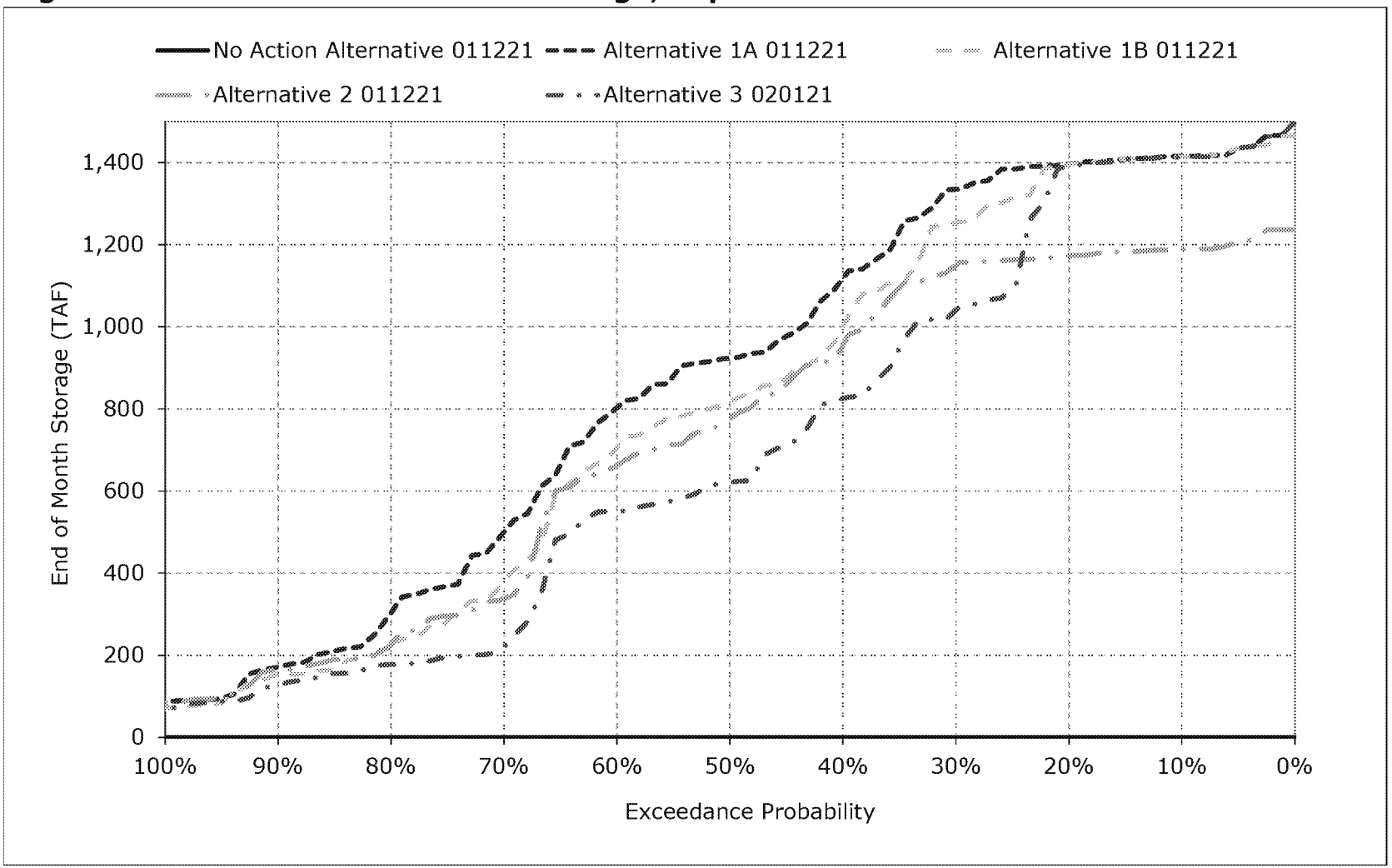


Table 5B1-8-1a. Sites Reservoir Elevation, No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-8-1b. Sites Reservoir Elevation, Alternative 1A 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	489	494	494	497	497	497	497	497	497	496	493	491
20%	487	487	487	493	497	497	497	496	496	495	492	489
30%	481	479	481	486	489	497	496	495	494	492	488	485
40%	462	462	465	466	473	489	491	488	482	474	470	467
50%	447	446	447	452	461	462	461	465	468	462	453	449
60%	435	438	438	442	446	450	452	453	447	444	441	438
70%	400	397	398	412	418	436	440	438	433	425	416	404
80%	373	364	379	385	402	418	419	418	409	397	385	377
90%	351	353	354	362	370	387	386	384	381	369	362	353
Long Term												
Full Simulation Period[a]	434	433	435	442	448	455	456	455	452	446	440	436
Water Year Types[b,c]												
Wet (32%)	482	483	483	467	476	482	487	488	488	487	485	482
Above Normal (15%)	461	461	462	445	453	466	467	467	467	466	463	460
Below Normal (17%)	426	424	428	429	437	446	447	446	445	439	433	429
Dry (22%)	402	399	402	439	443	450	448	446	438	426	415	407
Critical (15%)	357	356	362	401	402	406	403	394	387	377	367	361

Table 5B1-8-1c. Sites Reservoir Elevation, Alternative 1A 011221 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	489	494	494	497	497	497	497	497	497	496	493	491
20%	487	487	487	493	497	497	497	496	496	495	492	489
30%	481	479	481	486	489	497	496	495	494	492	488	485
40%	462	462	465	466	473	489	491	488	482	474	470	467
50%	447	446	447	452	461	462	461	465	468	462	453	449
60%	435	438	438	442	446	450	452	453	447	444	441	438
70%	400	397	398	412	418	436	440	438	433	425	416	404
80%	373	364	379	385	402	418	419	418	409	397	385	377
90%	351	353	354	362	370	387	386	384	381	369	362	353
Long Term												
Full Simulation Period[a]	434	433	435	442	448	455	456	455	452	446	440	436
Water Year Types[b,c]												
Wet (32%)	482	483	483	467	476	482	487	488	488	487	485	482
Above Normal (15%)	461	461	462	445	453	466	467	467	467	466	463	460
Below Normal (17%)	426	424	428	429	437	446	447	446	445	439	433	429
Dry (22%)	402	399	402	439	443	450	448	446	438	426	415	407
Critical (15%)	357	356	362	401	402	406	403	394	387	377	367	361

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-8-2a. Sites Reservoir Elevation, No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-8-2b. Sites Reservoir Elevation, Alternative 1B 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	489	493	492	497	497	497	497	497	497	496	493	491
20%	487	487	487	489	497	497	497	496	495	494	492	489
30%	474	474	474	482	487	495	495	490	488	485	481	478
40%	456	454	459	462	467	480	480	479	475	468	461	456
50%	436	435	436	443	451	453	452	460	460	455	444	439
60%	428	427	427	432	437	440	443	443	437	434	431	428
70%	385	381	387	396	408	425	433	430	426	411	401	388
80%	362	357	364	377	394	411	412	410	402	386	374	365
90%	347	347	350	358	368	385	384	380	376	365	353	349
Long Term												
Full Simulation Period[a]	427	426	429	436	443	450	451	449	446	440	433	429
Water Year Types[b,c]												
Wet (32%)	480	481	481	463	472	479	485	486	486	485	483	481
Above Normal (15%)	453	454	455	439	449	461	463	463	460	456	453	451
Below Normal (17%)	415	413	418	421	430	439	440	438	435	429	421	418
Dry (22%)	392	389	392	431	436	443	440	437	429	416	405	397
Critical (15%)	351	350	357	397	398	402	398	388	382	371	361	355

Table 5B1-8-2c. Sites Reservoir Elevation, Alternative 1B 011221 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	489	493	492	497	497	497	497	497	497	496	493	491
20%	487	487	487	489	497	497	497	496	495	494	492	489
30%	474	474	474	482	487	495	495	490	488	485	481	478
40%	456	454	459	462	467	480	480	479	475	468	461	456
50%	436	435	436	443	451	453	452	460	460	455	444	439
60%	428	427	427	432	437	440	443	443	437	434	431	428
70%	385	381	387	396	408	425	433	430	426	411	401	388
80%	362	357	364	377	394	411	412	410	402	386	374	365
90%	347	347	350	358	368	385	384	380	376	365	353	349
Long Term												
Full Simulation Period[a]	427	426	429	436	443	450	451	449	446	440	433	429
Water Year Types[b,c]												
Wet (32%)	480	481	481	463	472	479	485	486	486	485	483	481
Above Normal (15%)	453	454	455	439	449	461	463	463	460	456	453	451
Below Normal (17%)	415	413	418	421	430	439	440	438	435	429	421	418
Dry (22%)	392	389	392	431	436	443	440	437	429	416	405	397
Critical (15%)	351	350	357	397	398	402	398	388	382	371	361	355

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-8-3a. Sites Reservoir Elevation, No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-8-3b. Sites Reservoir Elevation, Alternative 2 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	470	476	476	479	479	479	479	479	479	478	475	472
20%	469	469	470	475	479	479	479	479	478	477	474	471
30%	466	466	467	469	475	479	479	478	477	475	472	469
40%	451	450	454	460	466	476	475	473	469	464	457	452
50%	433	435	435	441	443	454	455	455	453	449	442	435
60%	422	419	418	424	429	437	444	440	439	434	428	423
70%	380	378	387	396	410	424	428	426	422	407	392	382
80%	360	360	366	378	396	411	410	407	402	389	371	364
90%	350	351	354	367	371	385	383	381	377	366	354	352
Long Term												
Full Simulation Period[a]	421	421	423	430	436	443	444	442	440	434	428	423
Water Year Types[b,c]												
Wet (32%)	465	467	467	454	462	467	472	472	472	472	469	466
Above Normal (15%)	452	453	453	435	444	456	458	458	458	457	453	451
Below Normal (17%)	413	411	415	417	425	434	435	434	433	428	421	416
Dry (22%)	387	385	389	425	430	437	435	433	425	412	400	392
Critical (15%)	352	351	358	394	396	400	396	387	381	370	361	355

Table 5B1-8-3c. Sites Reservoir Elevation, Alternative 2 011221 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	470	476	476	479	479	479	479	479	479	478	475	472
20%	469	469	470	475	479	479	479	479	478	477	474	471
30%	466	466	467	469	475	479	479	478	477	475	472	469
40%	451	450	454	460	466	476	475	473	469	464	457	452
50%	433	435	435	441	443	454	455	455	453	449	442	435
60%	422	419	418	424	429	437	444	440	439	434	428	423
70%	380	378	387	396	410	424	428	426	422	407	392	382
80%	360	360	366	378	396	411	410	407	402	389	371	364
90%	350	351	354	367	371	385	383	381	377	366	354	352
Long Term												
Full Simulation Period[a]	421	421	423	430	436	443	444	442	440	434	428	423
Water Year Types[b,c]												
Wet (32%)	465	467	467	454	462	467	472	472	472	472	469	466
Above Normal (15%)	452	453	453	435	444	456	458	458	458	457	453	451
Below Normal (17%)	413	411	415	417	425	434	435	434	433	428	421	416
Dry (22%)	387	385	389	425	430	437	435	433	425	412	400	392
Critical (15%)	352	351	358	394	396	400	396	387	381	370	361	355

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-8-4a. Sites Reservoir Elevation, No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-8-4b. Sites Reservoir Elevation, Alternative 3 020121, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	489	493	493	497	497	497	497	497	497	496	493	491
20%	487	486	487	488	496	497	497	496	495	494	491	489
30%	458	456	459	463	470	485	492	488	479	470	464	460
40%	439	437	438	440	454	465	466	463	460	451	443	440
50%	418	419	422	431	437	450	451	452	443	435	422	419
60%	405	404	404	413	416	428	433	434	428	422	417	410
70%	362	364	374	388	403	417	417	411	400	386	372	363
80%	353	353	356	369	387	399	401	399	391	372	358	355
90%	341	341	347	353	362	374	373	373	366	354	347	343
Long Term												
Full Simulation Period[a]	417	417	419	427	434	443	445	442	437	429	422	418
Water Year Types[b,c]												
Wet (32%)	478	479	479	456	466	475	482	483	484	483	481	479
Above Normal (15%)	436	437	439	433	444	457	459	459	454	444	436	433
Below Normal (17%)	399	398	402	413	422	432	433	430	424	413	406	402
Dry (22%)	376	374	378	417	422	430	427	422	412	397	387	380
Critical (15%)	346	346	353	388	390	393	389	379	372	360	352	348

Table 5B1-8-4c. Sites Reservoir Elevation, Alternative 3 020121 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	489	493	493	497	497	497	497	497	497	496	493	491
20%	487	486	487	488	496	497	497	496	495	494	491	489
30%	458	456	459	463	470	485	492	488	479	470	464	460
40%	439	437	438	440	454	465	466	463	460	451	443	440
50%	418	419	422	431	437	450	451	452	443	435	422	419
60%	405	404	404	413	416	428	433	434	428	422	417	410
70%	362	364	374	388	403	417	417	411	400	386	372	363
80%	353	353	356	369	387	399	401	399	391	372	358	355
90%	341	341	347	353	362	374	373	373	366	354	347	343
Long Term												
Full Simulation Period[a]	417	417	419	427	434	443	445	442	437	429	422	418
Water Year Types[b,c]												
Wet (32%)	478	479	479	456	466	475	482	483	484	483	481	479
Above Normal (15%)	436	437	439	433	444	457	459	459	454	444	436	433
Below Normal (17%)	399	398	402	413	422	432	433	430	424	413	406	402
Dry (22%)	376	374	378	417	422	430	427	422	412	397	387	380
Critical (15%)	346	346	353	388	390	393	389	379	372	360	352	348

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Figure 5B1-8-1. Sites Reservoir Elevation, October

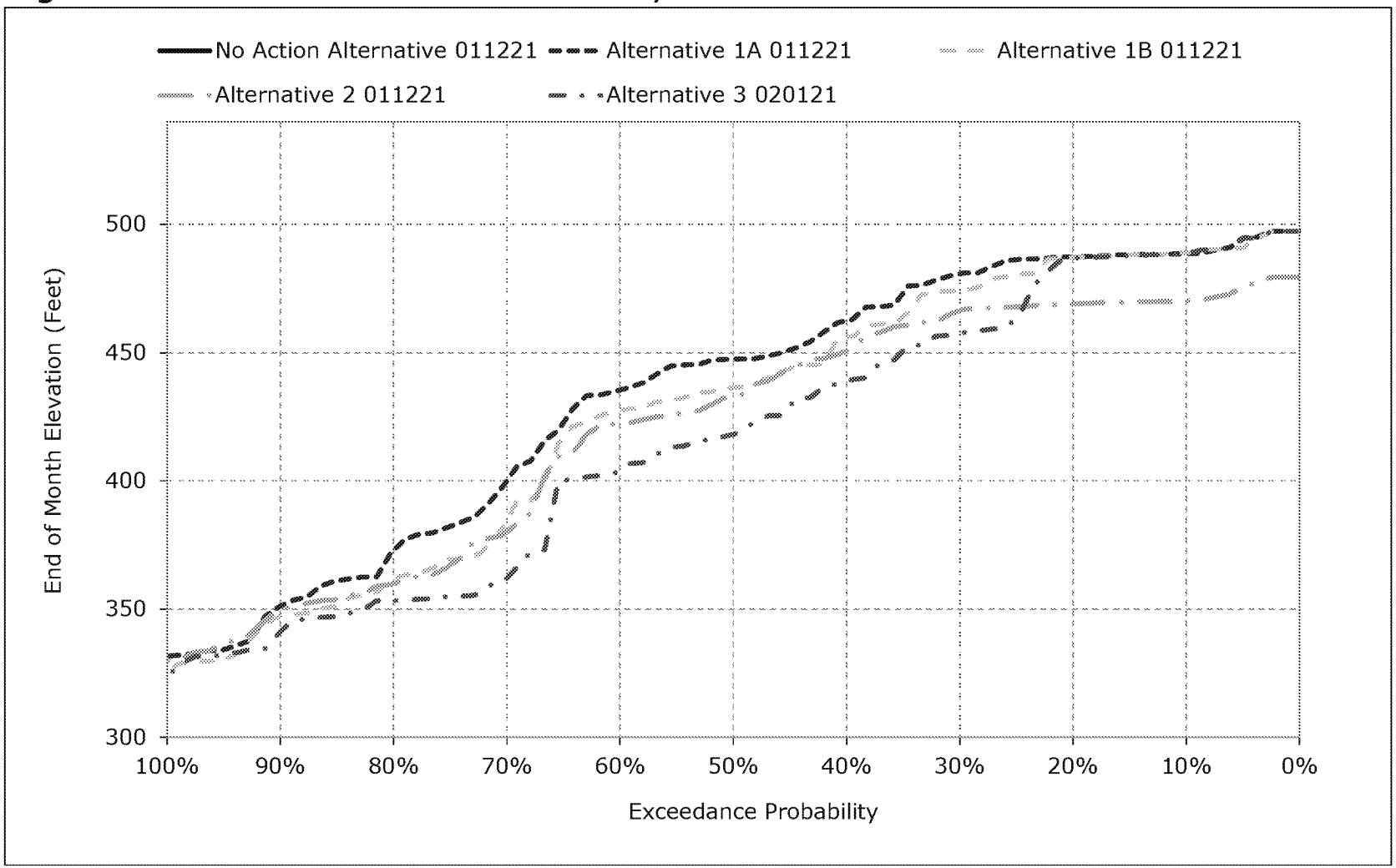


Figure 5B1-8-2. Sites Reservoir Elevation, November

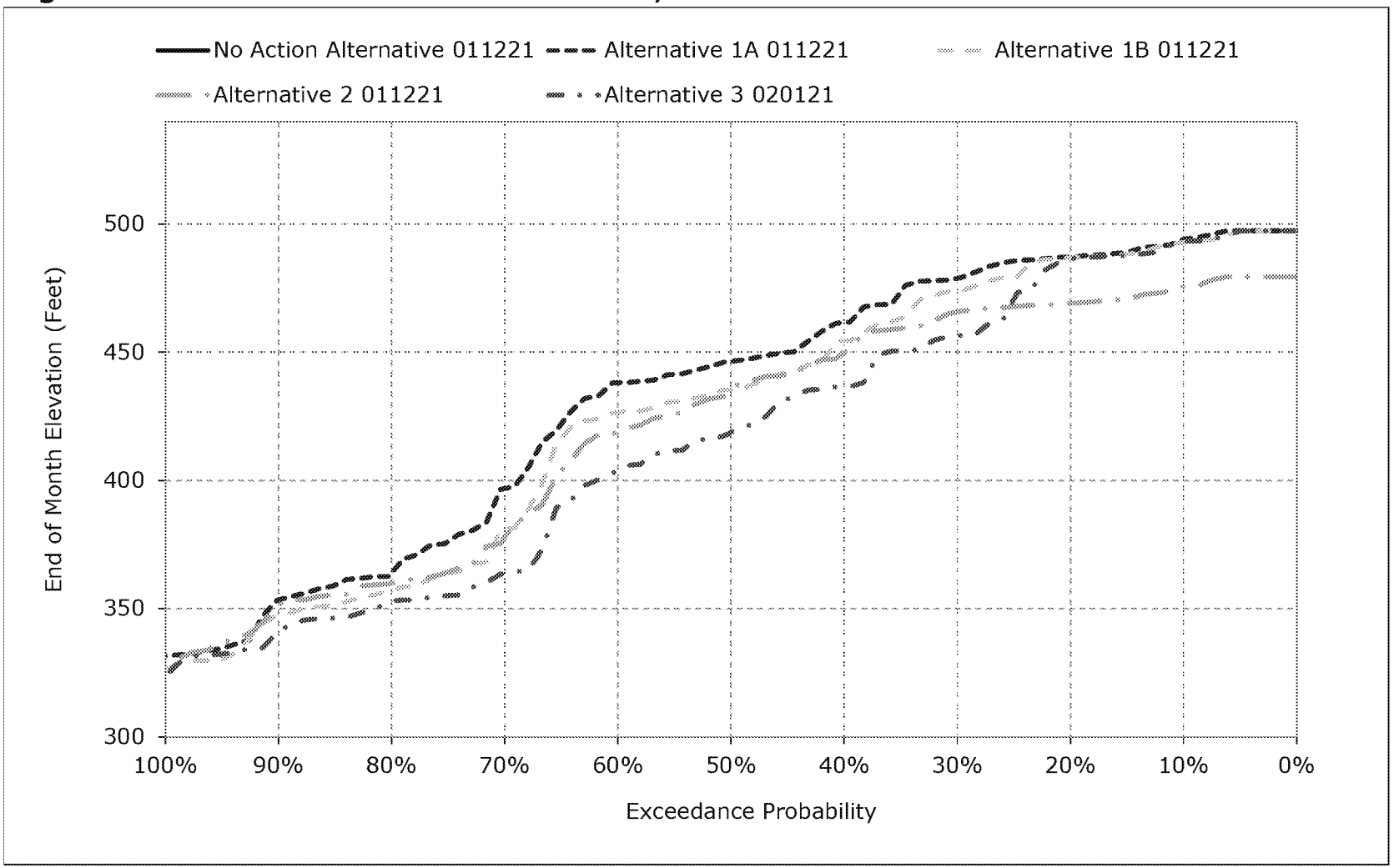


Figure 5B1-8-3. Sites Reservoir Elevation, December

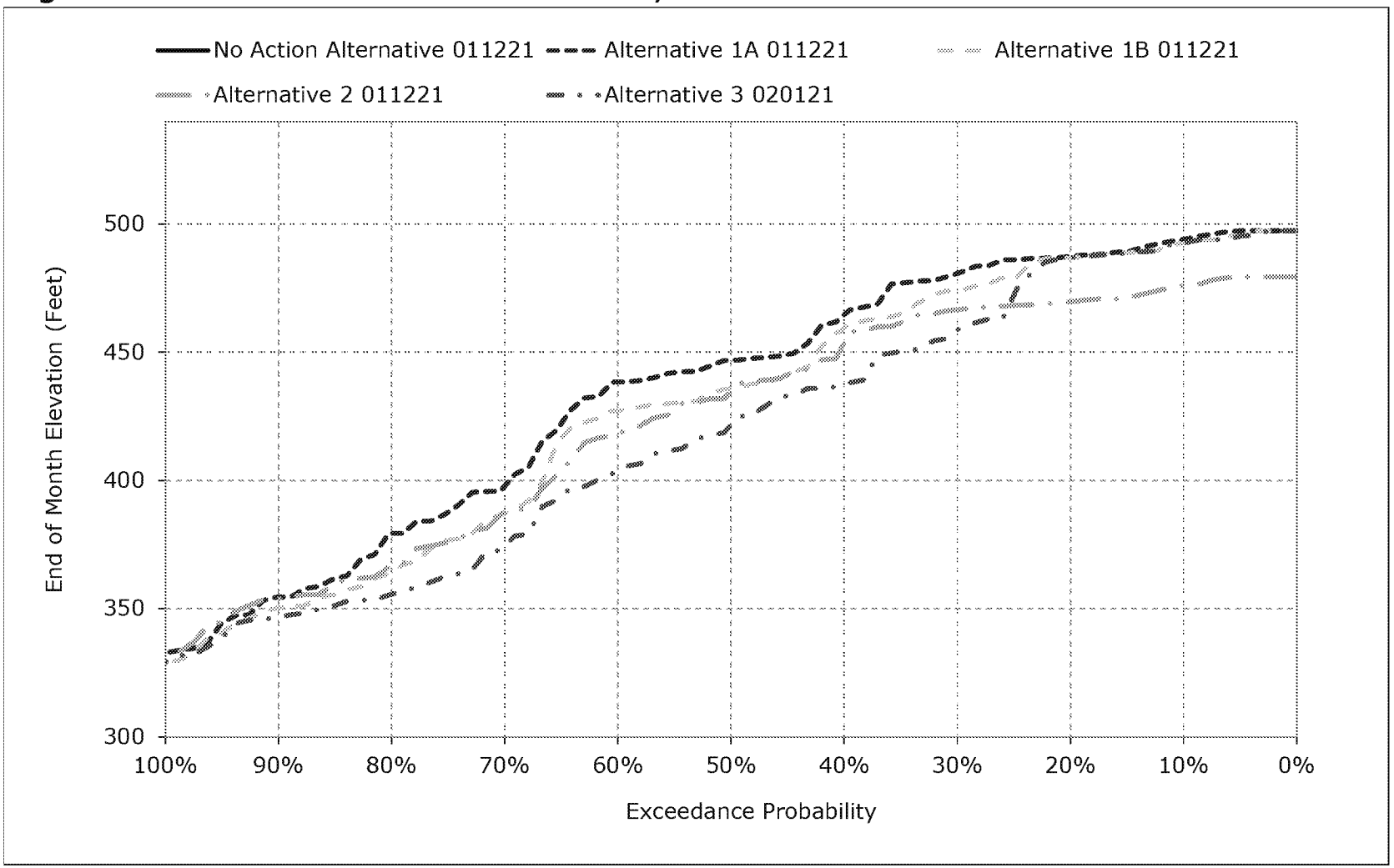


Figure 5B1-8-4. Sites Reservoir Elevation, January

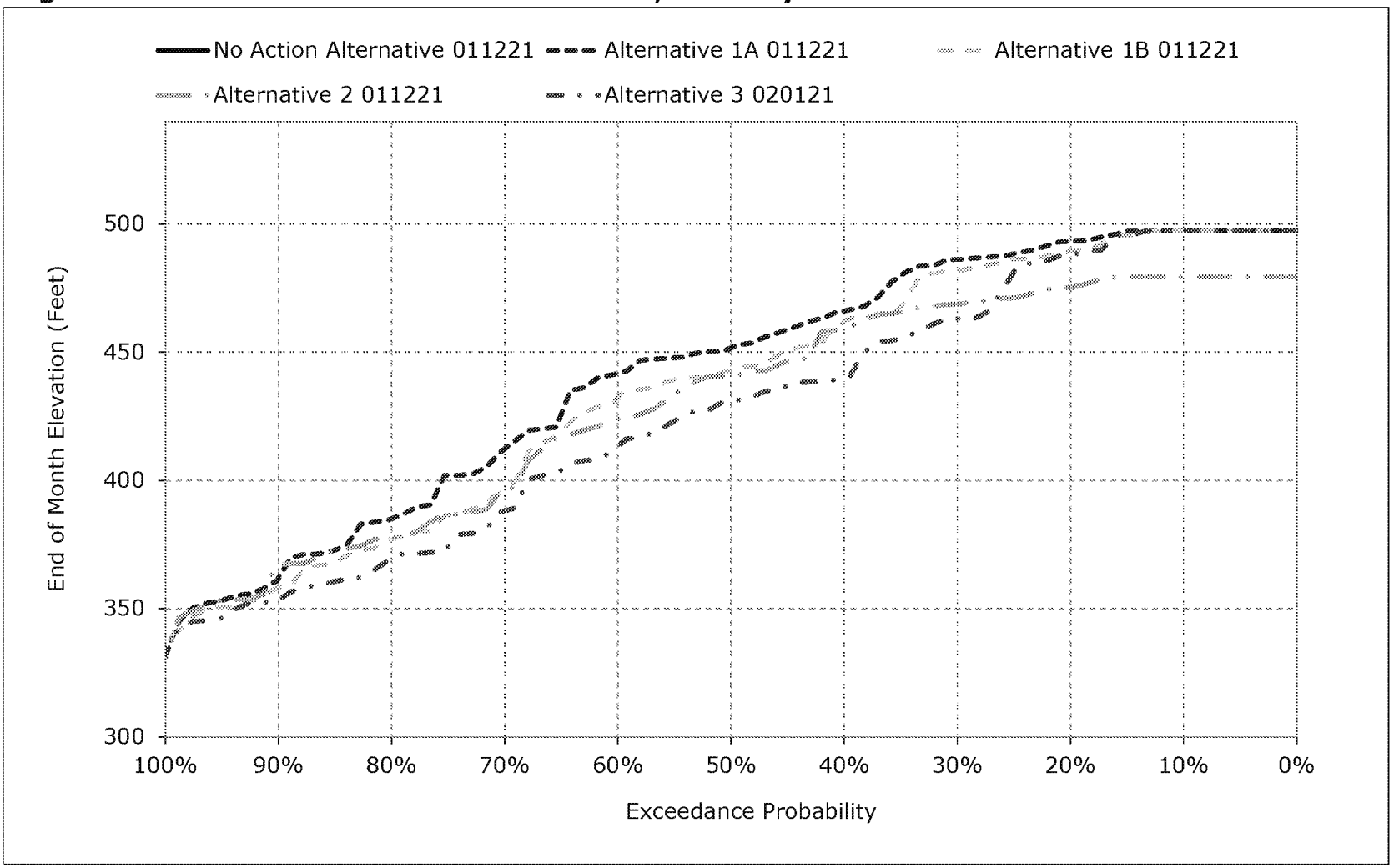


Figure 5B1-8-5. Sites Reservoir Elevation, February

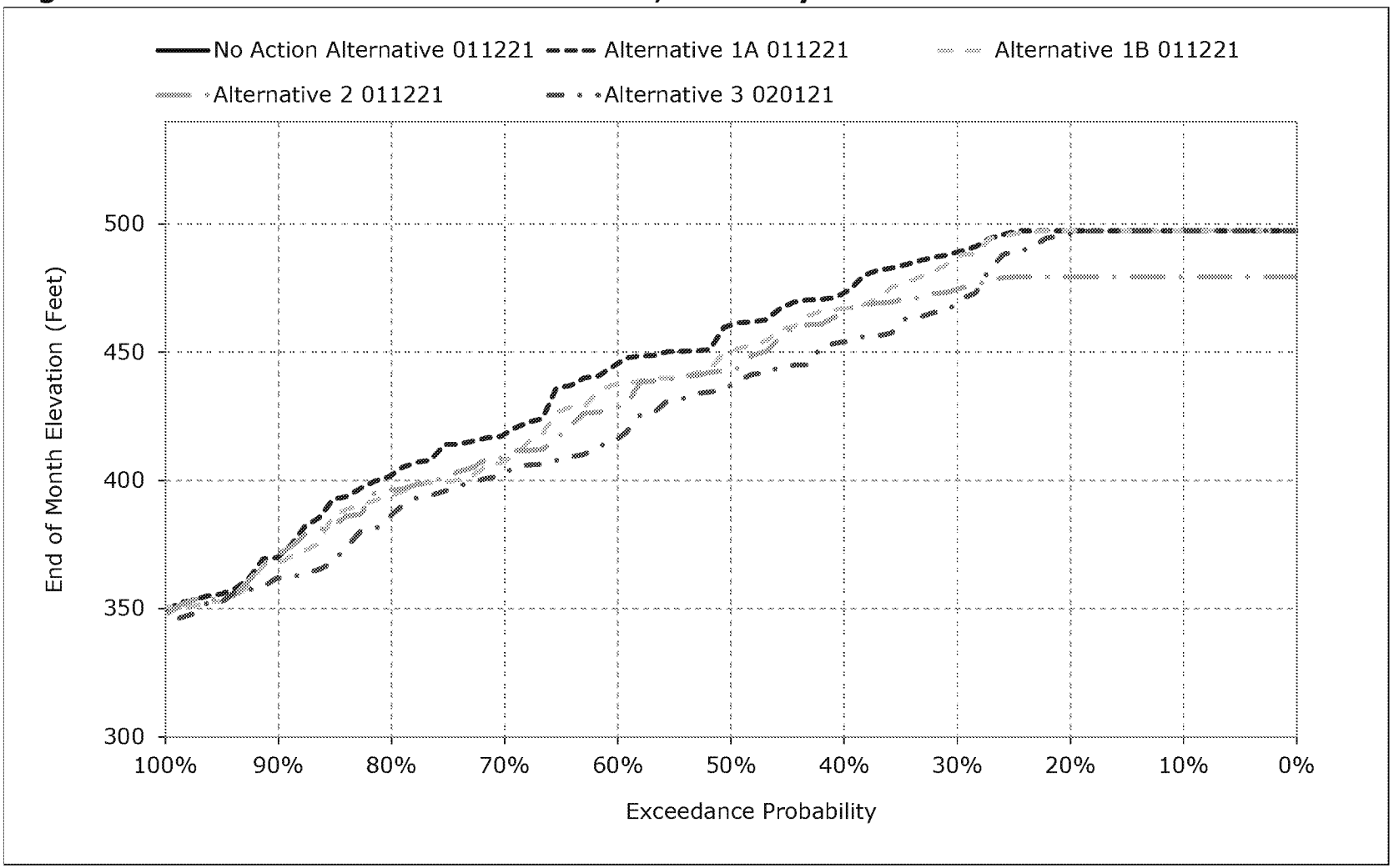


Figure 5B1-8-6. Sites Reservoir Elevation, March

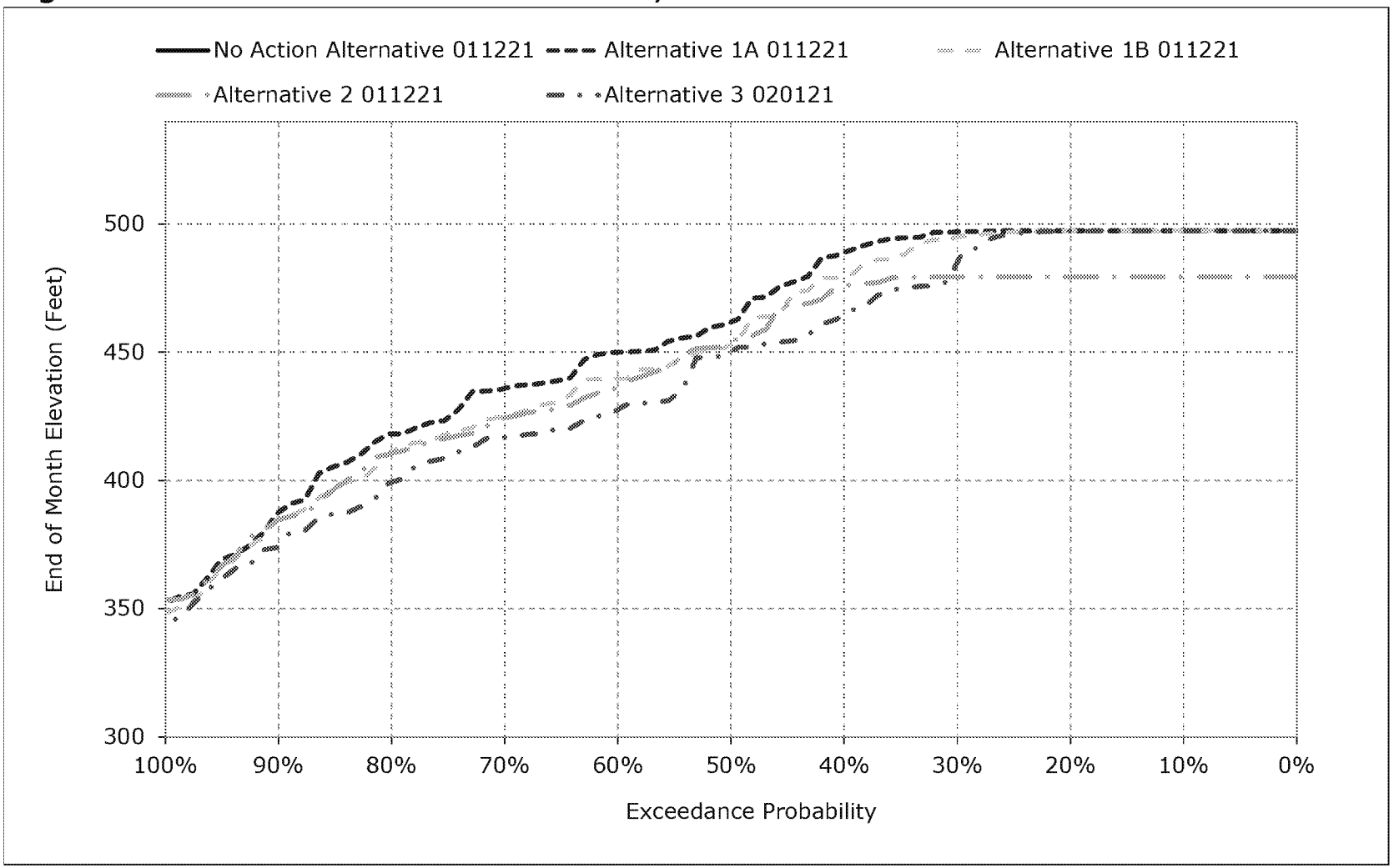


Figure 5B1-8-7. Sites Reservoir Elevation, April

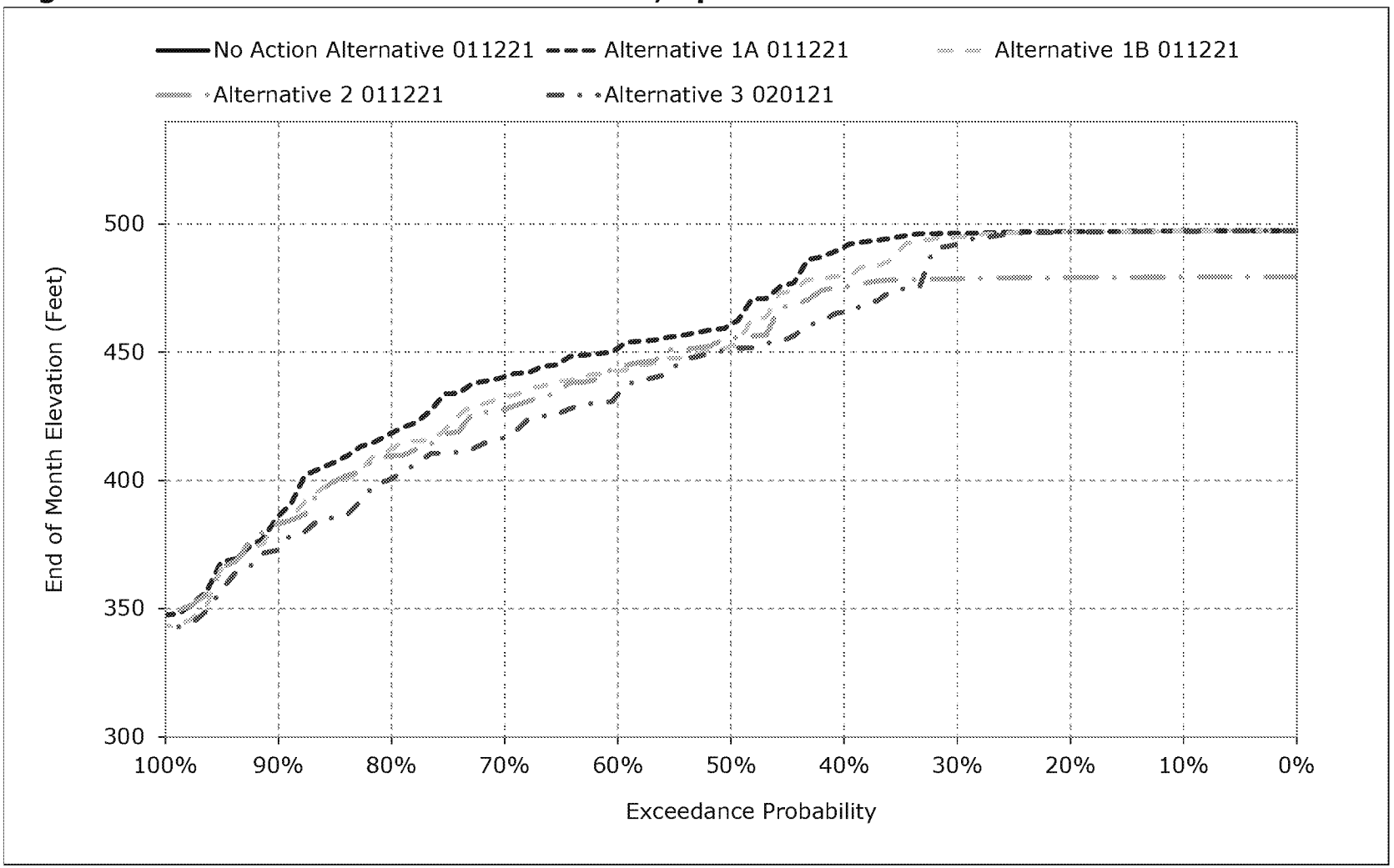


Figure 5B1-8-8. Sites Reservoir Elevation, May

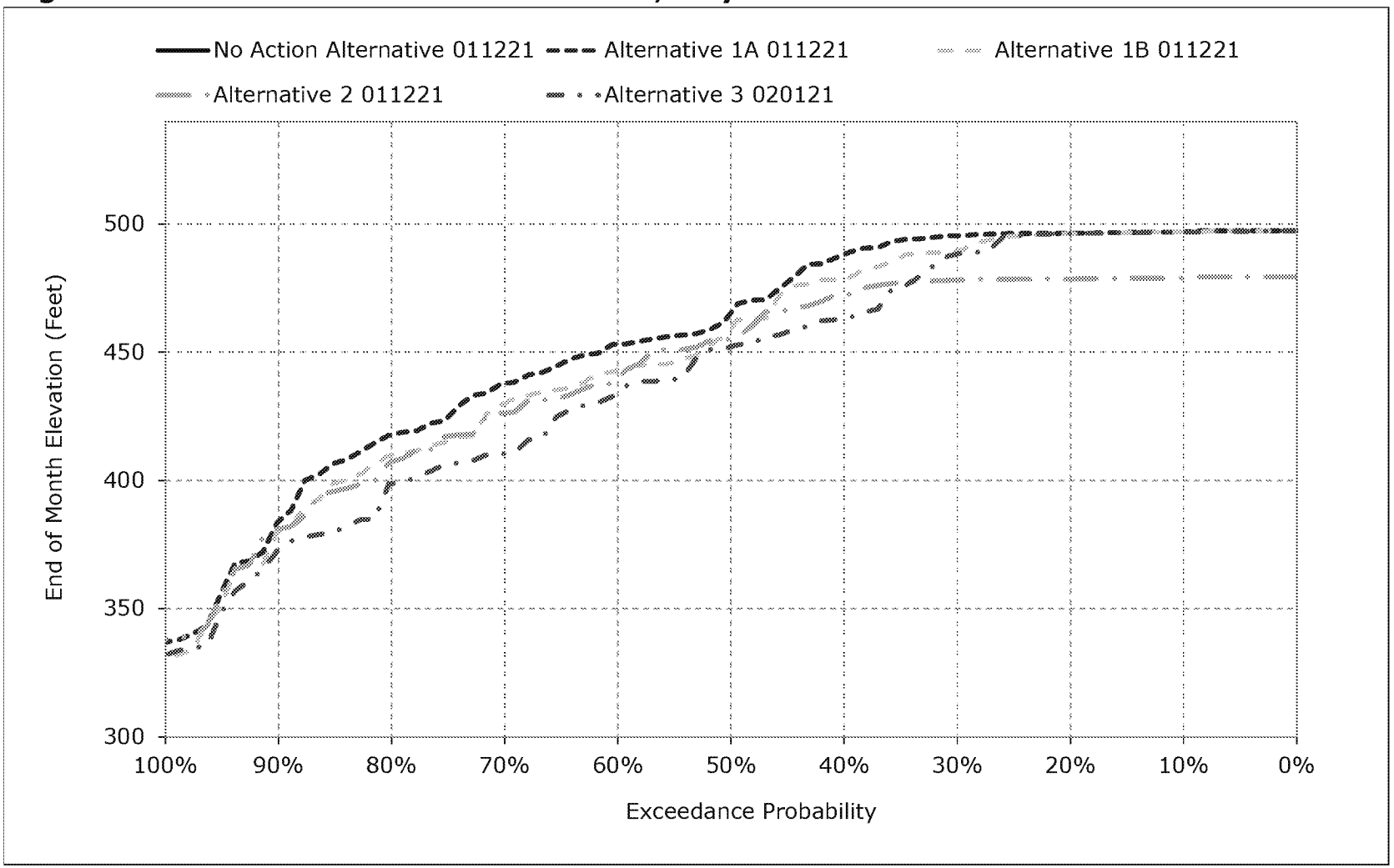


Figure 5B1-8-9. Sites Reservoir Elevation, June

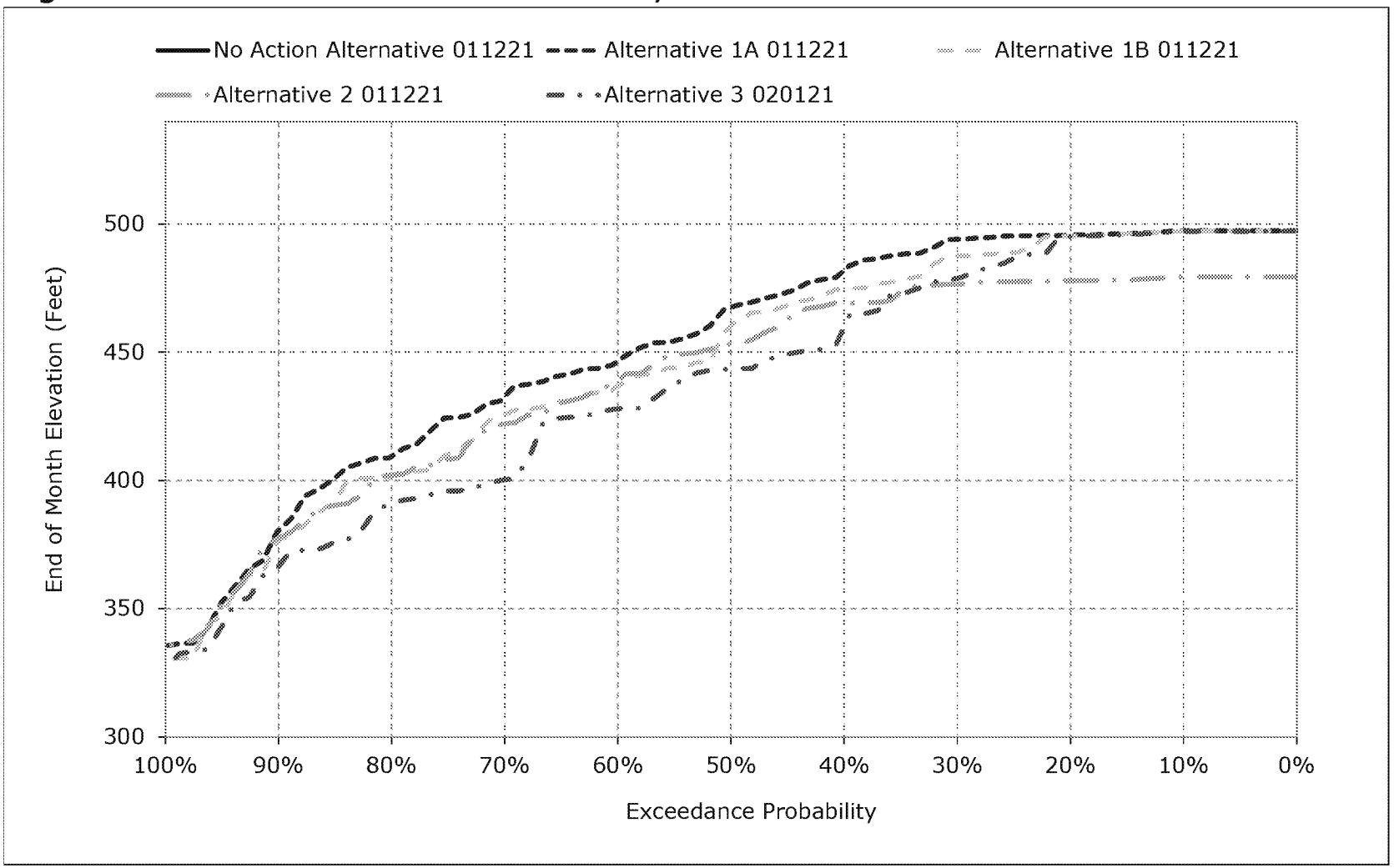


Figure 5B1-8-10. Sites Reservoir Elevation, July

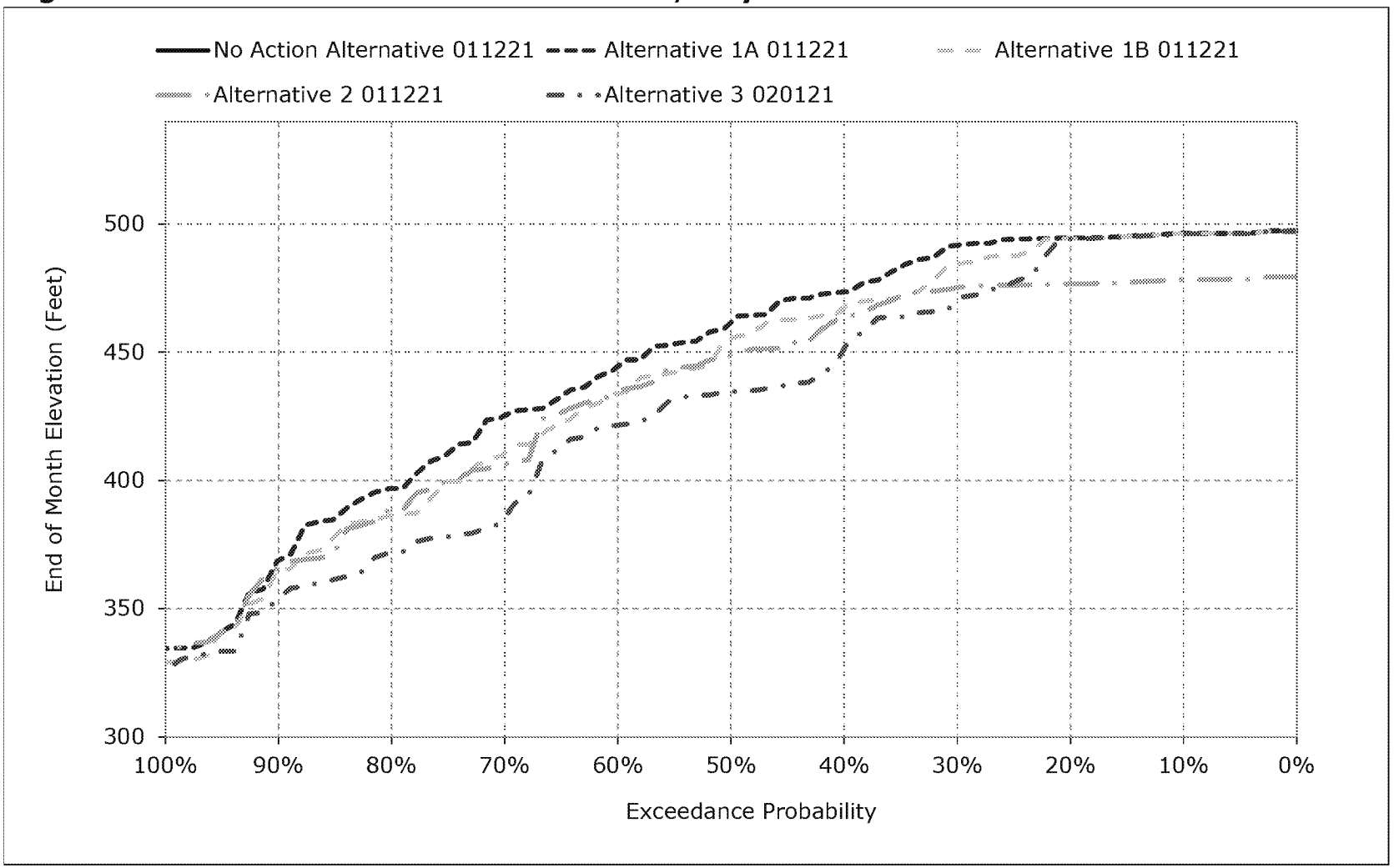


Figure 5B1-8-11. Sites Reservoir Elevation, August

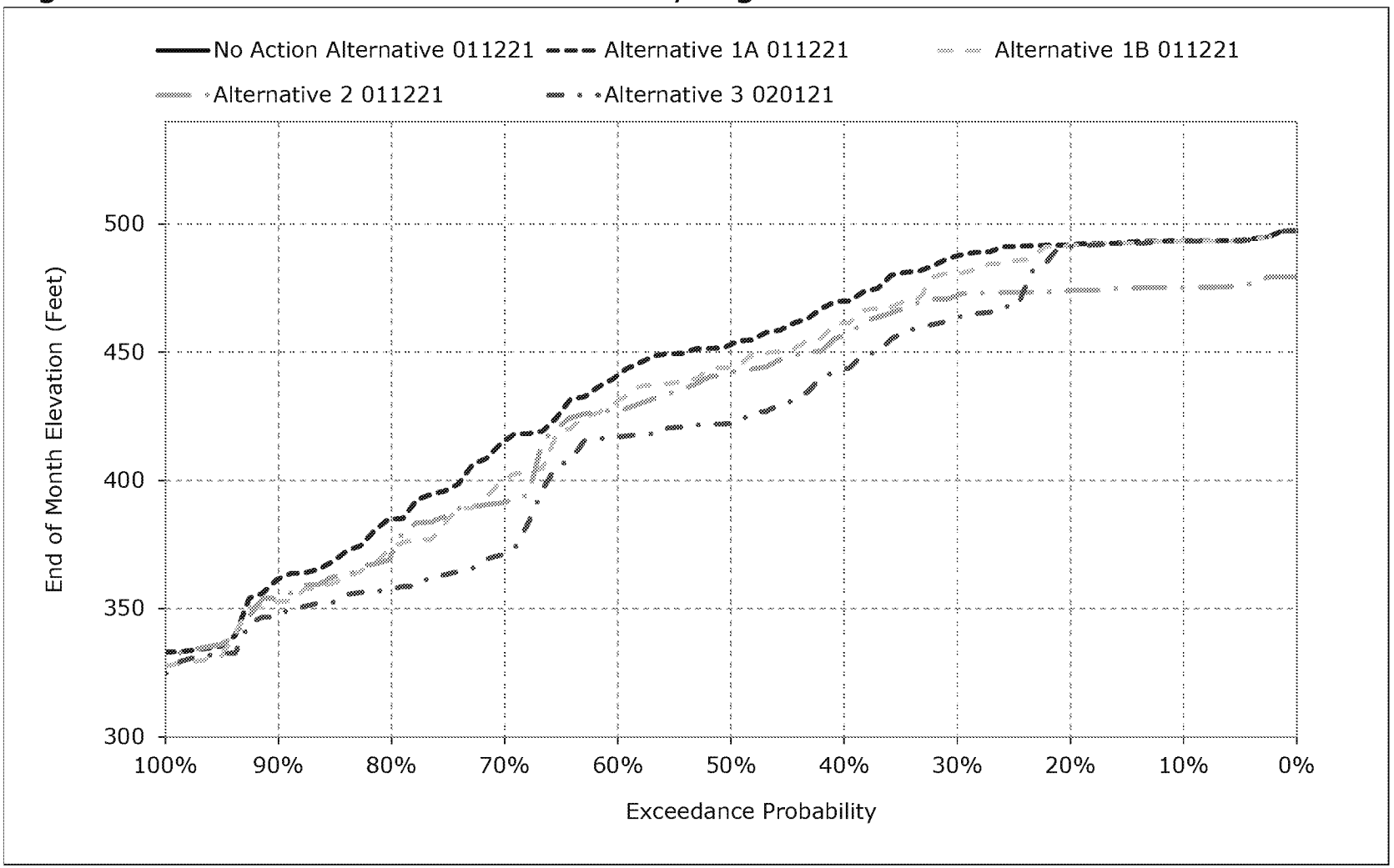


Figure 5B1-8-12. Sites Reservoir Elevation, September

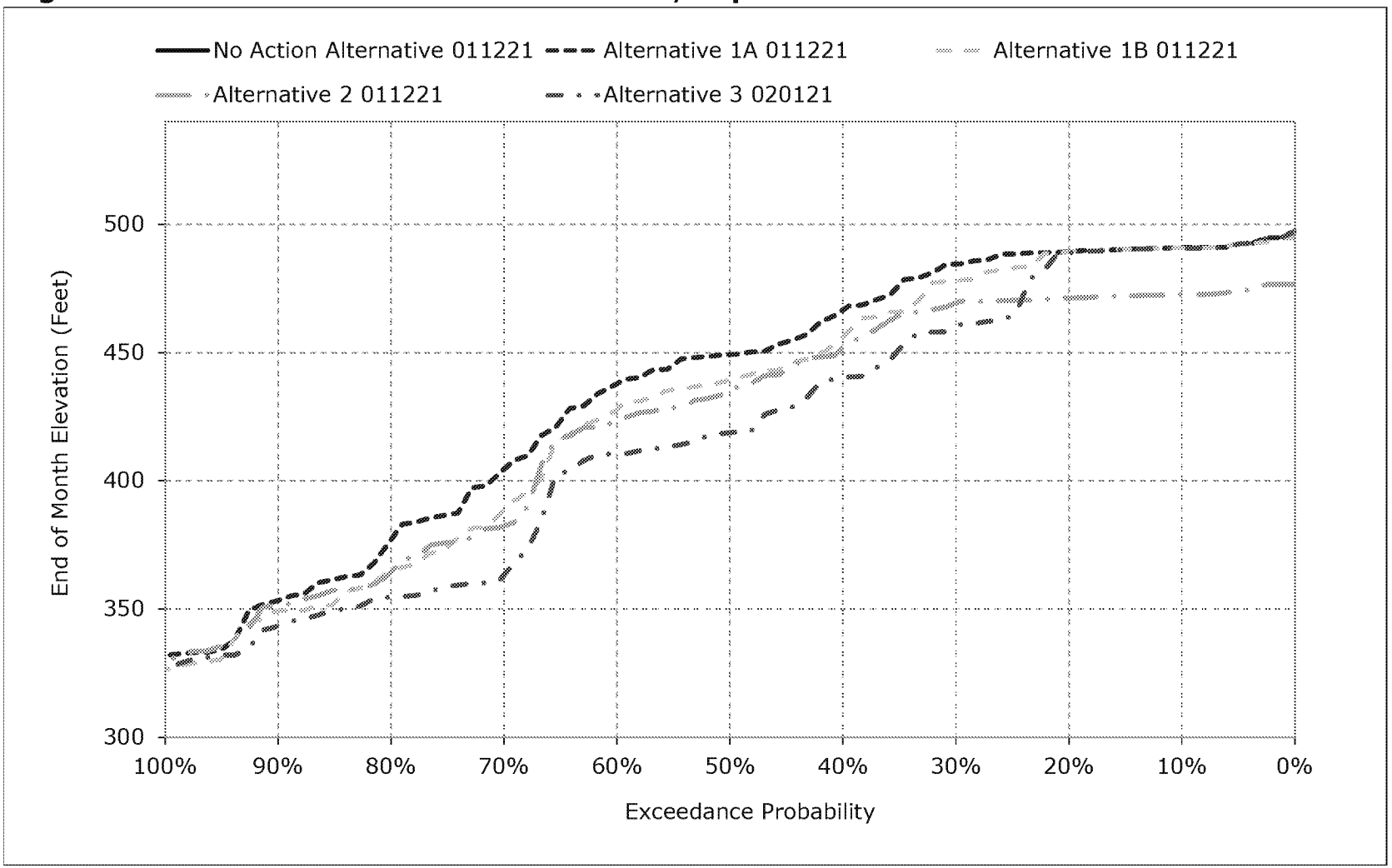


Table 5B1-9-1a. Sites Reservoir Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-9-1b. Sites Reservoir Surface Area, Alternative 1A 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	12,721	12,971	12,975	13,130	13,130	13,130	13,129	13,111	13,129	13,082	12,949	12,827
20%	12,667	12,659	12,669	12,937	13,130	13,130	13,115	13,088	13,053	13,002	12,882	12,756
30%	12,360	12,269	12,362	12,615	12,745	13,114	13,085	13,041	12,975	12,868	12,677	12,535
40%	11,441	11,399	11,552	11,629	11,985	12,739	12,841	12,704	12,415	12,000	11,820	11,650
50%	10,656	10,605	10,625	10,882	11,351	11,411	11,362	11,593	11,698	11,399	10,953	10,748
60%	10,002	10,158	10,171	10,357	10,564	10,792	10,875	10,959	10,606	10,500	10,321	10,140
70%	7,725	7,517	7,583	8,581	8,990	10,031	10,288	10,139	9,853	9,425	8,804	8,021
80%	6,073	5,505	6,470	6,817	7,860	8,992	9,014	8,973	8,375	7,513	6,813	6,328
90%	4,632	4,787	4,864	5,379	5,912	6,956	6,874	6,753	6,544	5,809	5,359	4,780
Long Term												
Full Simulation Period[a]	9,608	9,565	9,718	10,093	10,463	10,888	10,941	10,830	10,668	10,338	9,998	9,735
Water Year Types[b,c]												
Wet (32%)	12,362	12,446	12,458	11,526	11,988	12,361	12,609	12,647	12,652	12,624	12,521	12,407
Above Normal (15%)	11,316	11,347	11,383	10,371	10,855	11,540	11,614	11,614	11,636	11,560	11,412	11,269
Below Normal (17%)	9,284	9,157	9,421	9,400	9,883	10,413	10,486	10,430	10,347	10,029	9,649	9,415
Dry (22%)	7,843	7,651	7,825	9,972	10,211	10,580	10,496	10,364	9,951	9,236	8,617	8,125
Critical (15%)	4,958	4,892	5,305	7,703	7,820	8,065	7,851	7,272	6,854	6,174	5,594	5,197

Table 5B1-9-1c. Sites Reservoir Surface Area, Alternative 1A 011221 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	12,721	12,971	12,975	13,130	13,130	13,130	13,129	13,111	13,129	13,082	12,949	12,827
20%	12,667	12,659	12,669	12,937	13,130	13,130	13,115	13,088	13,053	13,002	12,882	12,756
30%	12,360	12,269	12,362	12,615	12,745	13,114	13,085	13,041	12,975	12,868	12,677	12,535
40%	11,441	11,399	11,552	11,629	11,985	12,739	12,841	12,704	12,415	12,000	11,820	11,650
50%	10,656	10,605	10,625	10,882	11,351	11,411	11,362	11,593	11,698	11,399	10,953	10,748
60%	10,002	10,158	10,171	10,357	10,564	10,792	10,875	10,959	10,606	10,500	10,321	10,140
70%	7,725	7,517	7,583	8,581	8,990	10,031	10,288	10,139	9,853	9,425	8,804	8,021
80%	6,073	5,505	6,470	6,817	7,860	8,992	9,014	8,973	8,375	7,513	6,813	6,328
90%	4,632	4,787	4,864	5,379	5,912	6,956	6,874	6,753	6,544	5,809	5,359	4,780
Long Term												
Full Simulation Period[a]	9,608	9,565	9,718	10,093	10,463	10,888	10,941	10,830	10,668	10,338	9,998	9,735
Water Year Types[b,c]												
Wet (32%)	12,362	12,446	12,458	11,526	11,988	12,361	12,609	12,647	12,652	12,624	12,521	12,407
Above Normal (15%)	11,316	11,347	11,383	10,371	10,855	11,540	11,614	11,614	11,636	11,560	11,412	11,269
Below Normal (17%)	9,284	9,157	9,421	9,400	9,883	10,413	10,486	10,430	10,347	10,029	9,649	9,415
Dry (22%)	7,843	7,651	7,825	9,972	10,211	10,580	10,496	10,364	9,951	9,236	8,617	8,125
Critical (15%)	4,958	4,892	5,305	7,703	7,820	8,065	7,851	7,272	6,854	6,174	5,594	5,197

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-9-2a. Sites Reservoir Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-9-2b. Sites Reservoir Surface Area, Alternative 1B 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	12,739	12,922	12,904	13,127	13,129	13,129	13,125	13,106	13,124	13,077	12,945	12,822
20%	12,661	12,647	12,643	12,760	13,128	13,126	13,110	13,082	13,035	12,986	12,863	12,754
30%	12,033	12,019	12,033	12,418	12,649	13,020	13,015	12,767	12,675	12,538	12,370	12,225
40%	11,114	11,024	11,287	11,419	11,678	12,306	12,315	12,268	12,061	11,700	11,390	11,123
50%	10,052	10,004	10,017	10,433	10,822	10,939	10,919	11,289	11,323	11,077	10,476	10,224
60%	9,562	9,495	9,537	9,811	10,113	10,251	10,419	10,434	10,080	9,916	9,755	9,575
70%	6,790	6,572	6,944	7,492	8,247	9,417	9,852	9,701	9,448	8,467	7,753	7,005
80%	5,392	5,060	5,539	6,345	7,352	8,494	8,573	8,404	7,817	6,889	6,115	5,586
90%	4,338	4,344	4,568	5,148	5,743	6,818	6,727	6,529	6,290	5,571	4,735	4,492
Long Term												
Full Simulation Period[a]	9,216	9,171	9,337	9,751	10,153	10,611	10,664	10,525	10,322	9,956	9,585	9,331
Water Year Types[b,c]												
Wet (32%)	12,276	12,340	12,332	11,283	11,795	12,209	12,505	12,562	12,573	12,544	12,441	12,321
Above Normal (15%)	10,907	10,939	10,993	10,029	10,567	11,308	11,393	11,390	11,250	11,081	10,917	10,783
Below Normal (17%)	8,640	8,490	8,787	8,914	9,435	9,992	10,059	9,931	9,791	9,421	8,990	8,778
Dry (22%)	7,222	7,055	7,242	9,529	9,784	10,193	10,061	9,870	9,412	8,658	7,965	7,512
Critical (15%)	4,557	4,506	4,977	7,460	7,572	7,799	7,556	6,924	6,500	5,791	5,186	4,773

Table 5B1-9-2c. Sites Reservoir Surface Area, Alternative 1B 011221 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	12,739	12,922	12,904	13,127	13,129	13,129	13,125	13,106	13,124	13,077	12,945	12,822
20%	12,661	12,647	12,643	12,760	13,128	13,126	13,110	13,082	13,035	12,986	12,863	12,754
30%	12,033	12,019	12,033	12,418	12,649	13,020	13,015	12,767	12,675	12,538	12,370	12,225
40%	11,114	11,024	11,287	11,419	11,678	12,306	12,315	12,268	12,061	11,700	11,390	11,123
50%	10,052	10,004	10,017	10,433	10,822	10,939	10,919	11,289	11,323	11,077	10,476	10,224
60%	9,562	9,495	9,537	9,811	10,113	10,251	10,419	10,434	10,080	9,916	9,755	9,575
70%	6,790	6,572	6,944	7,492	8,247	9,417	9,852	9,701	9,448	8,467	7,753	7,005
80%	5,392	5,060	5,539	6,345	7,352	8,494	8,573	8,404	7,817	6,889	6,115	5,586
90%	4,338	4,344	4,568	5,148	5,743	6,818	6,727	6,529	6,290	5,571	4,735	4,492
Long Term												
Full Simulation Period[a]	9,216	9,171	9,337	9,751	10,153	10,611	10,664	10,525	10,322	9,956	9,585	9,331
Water Year Types[b,c]												
Wet (32%)	12,276	12,340	12,332	11,283	11,795	12,209	12,505	12,562	12,573	12,544	12,441	12,321
Above Normal (15%)	10,907	10,939	10,993	10,029	10,567	11,308	11,393	11,390	11,250	11,081	10,917	10,783
Below Normal (17%)	8,640	8,490	8,787	8,914	9,435	9,992	10,059	9,931	9,791	9,421	8,990	8,778
Dry (22%)	7,222	7,055	7,242	9,529	9,784	10,193	10,061	9,870	9,412	8,658	7,965	7,512
Critical (15%)	4,557	4,506	4,977	7,460	7,572	7,799	7,556	6,924	6,500	5,791	5,186	4,773

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-9-3a. Sites Reservoir Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-9-3b. Sites Reservoir Surface Area, Alternative 2 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	11,836	12,113	12,122	12,297	12,297	12,297	12,297	12,275	12,296	12,243	12,089	11,947
20%	11,772	11,776	11,805	12,090	12,297	12,297	12,282	12,257	12,220	12,159	12,033	11,885
30%	11,643	11,606	11,651	11,764	12,055	12,296	12,259	12,236	12,155	12,085	11,937	11,784
40%	10,823	10,785	10,983	11,294	11,620	12,118	12,097	11,954	11,785	11,495	11,141	10,905
50%	9,863	9,984	9,967	10,311	10,433	10,994	11,078	11,071	10,954	10,722	10,368	9,979
60%	9,256	9,047	9,007	9,352	9,611	10,069	10,487	10,256	10,193	9,930	9,565	9,312
70%	6,525	6,374	6,951	7,487	8,383	9,373	9,563	9,483	9,240	8,174	7,202	6,656
80%	5,255	5,256	5,666	6,378	7,484	8,456	8,384	8,224	7,851	7,020	5,966	5,531
90%	4,536	4,648	4,807	5,707	5,947	6,784	6,695	6,580	6,356	5,648	4,854	4,678
Long Term												
Full Simulation Period[a]	8,918	8,902	9,067	9,464	9,845	10,287	10,329	10,211	10,048	9,693	9,318	9,047
Water Year Types[b,c]												
Wet (32%)	11,576	11,669	11,683	10,842	11,304	11,654	11,891	11,927	11,930	11,897	11,769	11,622
Above Normal (15%)	10,873	10,908	10,943	9,845	10,350	11,089	11,167	11,169	11,188	11,104	10,941	10,785
Below Normal (17%)	8,519	8,425	8,692	8,714	9,219	9,778	9,849	9,792	9,719	9,395	8,963	8,681
Dry (22%)	6,938	6,822	7,019	9,236	9,492	9,898	9,804	9,658	9,214	8,413	7,726	7,250
Critical (15%)	4,644	4,576	5,033	7,317	7,440	7,696	7,453	6,856	6,465	5,775	5,188	4,848

Table 5B1-9-3c. Sites Reservoir Surface Area, Alternative 2 011221 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	11,836	12,113	12,122	12,297	12,297	12,297	12,297	12,275	12,296	12,243	12,089	11,947
20%	11,772	11,776	11,805	12,090	12,297	12,297	12,282	12,257	12,220	12,159	12,033	11,885
30%	11,643	11,606	11,651	11,764	12,055	12,296	12,259	12,236	12,155	12,085	11,937	11,784
40%	10,823	10,785	10,983	11,294	11,620	12,118	12,097	11,954	11,785	11,495	11,141	10,905
50%	9,863	9,984	9,967	10,311	10,433	10,994	11,078	11,071	10,954	10,722	10,368	9,979
60%	9,256	9,047	9,007	9,352	9,611	10,069	10,487	10,256	10,193	9,930	9,565	9,312
70%	6,525	6,374	6,951	7,487	8,383	9,373	9,563	9,483	9,240	8,174	7,202	6,656
80%	5,255	5,256	5,666	6,378	7,484	8,456	8,384	8,224	7,851	7,020	5,966	5,531
90%	4,536	4,648	4,807	5,707	5,947	6,784	6,695	6,580	6,356	5,648	4,854	4,678
Long Term												
Full Simulation Period[a]	8,918	8,902	9,067	9,464	9,845	10,287	10,329	10,211	10,048	9,693	9,318	9,047
Water Year Types[b,c]												
Wet (32%)	11,576	11,669	11,683	10,842	11,304	11,654	11,891	11,927	11,930	11,897	11,769	11,622
Above Normal (15%)	10,873	10,908	10,943	9,845	10,350	11,089	11,167	11,169	11,188	11,104	10,941	10,785
Below Normal (17%)	8,519	8,425	8,692	8,714	9,219	9,778	9,849	9,792	9,719	9,395	8,963	8,681
Dry (22%)	6,938	6,822	7,019	9,236	9,492	9,898	9,804	9,658	9,214	8,413	7,726	7,250
Critical (15%)	4,644	4,576	5,033	7,317	7,440	7,696	7,453	6,856	6,465	5,775	5,188	4,848

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B1-9-4a. Sites Reservoir Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Table 5B1-9-4b. Sites Reservoir Surface Area, Alternative 3 020121, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	12,728	12,938	12,909	13,130	13,130	13,130	13,121	13,106	13,115	13,073	12,942	12,816
20%	12,643	12,615	12,644	12,690	13,076	13,128	13,106	13,082	13,031	12,986	12,848	12,736
30%	11,187	11,132	11,249	11,478	11,799	12,560	12,888	12,713	12,271	11,825	11,495	11,319
40%	10,194	10,067	10,122	10,265	11,006	11,564	11,604	11,479	11,314	10,866	10,442	10,269
50%	8,994	9,037	9,211	9,758	10,096	10,796	10,850	10,903	10,446	9,955	9,248	9,036
60%	8,022	7,984	7,971	8,649	8,859	9,558	9,890	9,946	9,575	9,213	8,903	8,444
70%	5,388	5,496	6,159	7,002	7,904	8,887	8,905	8,453	7,721	6,847	5,990	5,463
80%	4,782	4,757	4,946	5,850	6,907	7,663	7,753	7,630	7,174	6,000	5,088	4,879
90%	3,914	3,905	4,297	4,778	5,388	6,167	6,099	6,067	5,664	4,828	4,342	4,069
Long Term												
Full Simulation Period[a]	8,598	8,587	8,778	9,237	9,687	10,199	10,270	10,104	9,828	9,333	8,942	8,696
Water Year Types[b,c]												
Wet (32%)	12,174	12,240	12,232	10,905	11,467	11,994	12,356	12,438	12,458	12,428	12,321	12,209
Above Normal (15%)	9,942	10,000	10,101	9,693	10,291	11,102	11,197	11,194	10,964	10,411	9,981	9,775
Below Normal (17%)	7,654	7,581	7,882	8,409	9,000	9,598	9,664	9,510	9,158	8,547	8,081	7,836
Dry (22%)	6,192	6,089	6,320	8,700	9,000	9,447	9,307	9,011	8,442	7,558	6,924	6,481
Critical (15%)	4,219	4,176	4,705	6,941	7,058	7,235	6,973	6,287	5,853	5,133	4,615	4,332

Table 5B1-9-4c. Sites Reservoir Surface Area, Alternative 3 020121 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	12,728	12,938	12,909	13,130	13,130	13,130	13,121	13,106	13,115	13,073	12,942	12,816
20%	12,643	12,615	12,644	12,690	13,076	13,128	13,106	13,082	13,031	12,986	12,848	12,736
30%	11,187	11,132	11,249	11,478	11,799	12,560	12,888	12,713	12,271	11,825	11,495	11,319
40%	10,194	10,067	10,122	10,265	11,006	11,564	11,604	11,479	11,314	10,866	10,442	10,269
50%	8,994	9,037	9,211	9,758	10,096	10,796	10,850	10,903	10,446	9,955	9,248	9,036
60%	8,022	7,984	7,971	8,649	8,859	9,558	9,890	9,946	9,575	9,213	8,903	8,444
70%	5,388	5,496	6,159	7,002	7,904	8,887	8,905	8,453	7,721	6,847	5,990	5,463
80%	4,782	4,757	4,946	5,850	6,907	7,663	7,753	7,630	7,174	6,000	5,088	4,879
90%	3,914	3,905	4,297	4,778	5,388	6,167	6,099	6,067	5,664	4,828	4,342	4,069
Long Term												
Full Simulation Period[a]	8,598	8,587	8,778	9,237	9,687	10,199	10,270	10,104	9,828	9,333	8,942	8,696
Water Year Types[b,c]												
Wet (32%)	12,174	12,240	12,232	10,905	11,467	11,994	12,356	12,438	12,458	12,428	12,321	12,209
Above Normal (15%)	9,942	10,000	10,101	9,693	10,291	11,102	11,197	11,194	10,964	10,411	9,981	9,775
Below Normal (17%)	7,654	7,581	7,882	8,409	9,000	9,598	9,664	9,510	9,158	8,547	8,081	7,836
Dry (22%)	6,192	6,089	6,320	8,700	9,000	9,447	9,307	9,011	8,442	7,558	6,924	6,481
Critical (15%)	4,219	4,176	4,705	6,941	7,058	7,235	6,973	6,287	5,853	5,133	4,615	4,332

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Figure 5B1-9-1. Sites Reservoir Surface Area, October

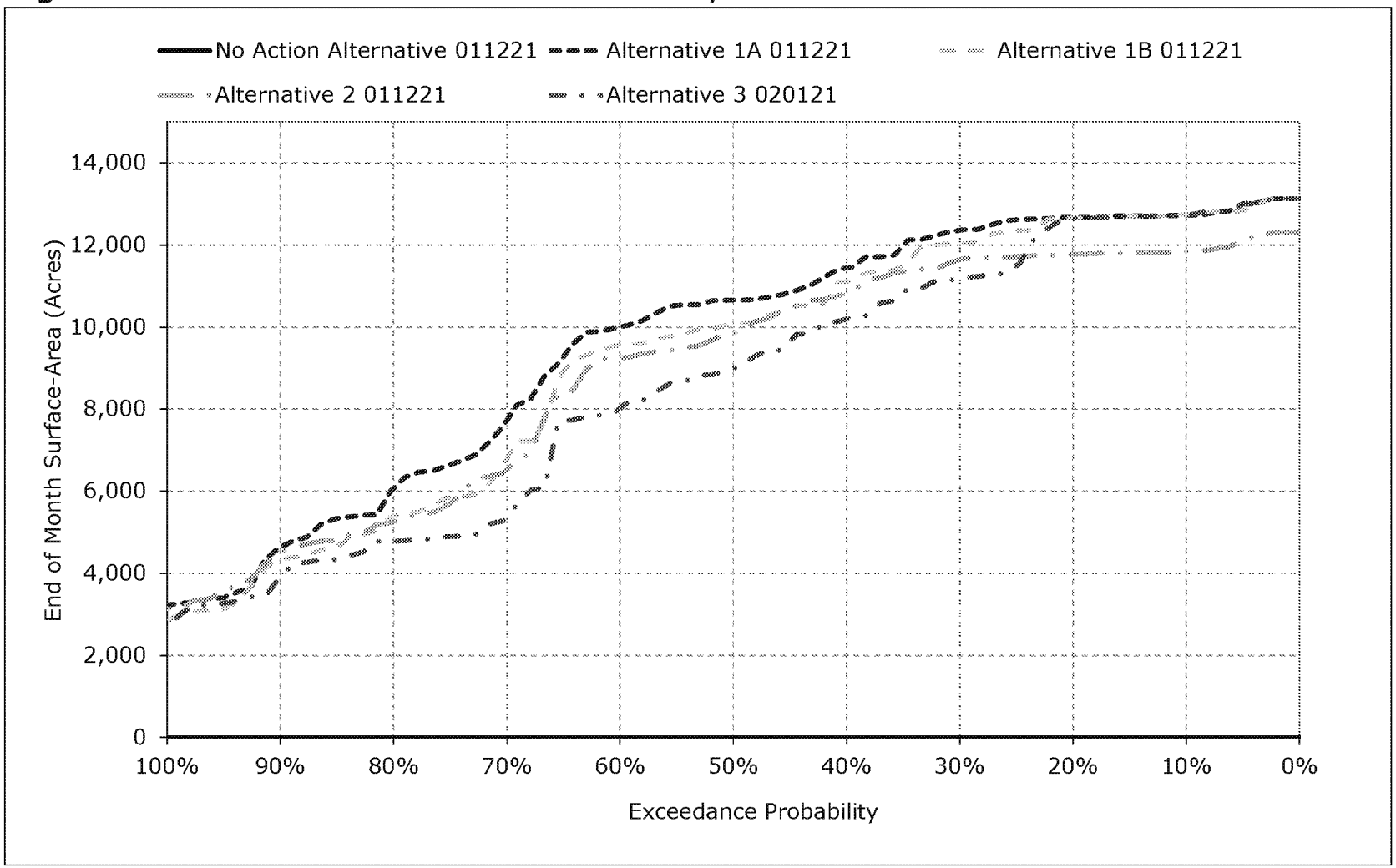


Figure 5B1-9-2. Sites Reservoir Surface Area, November

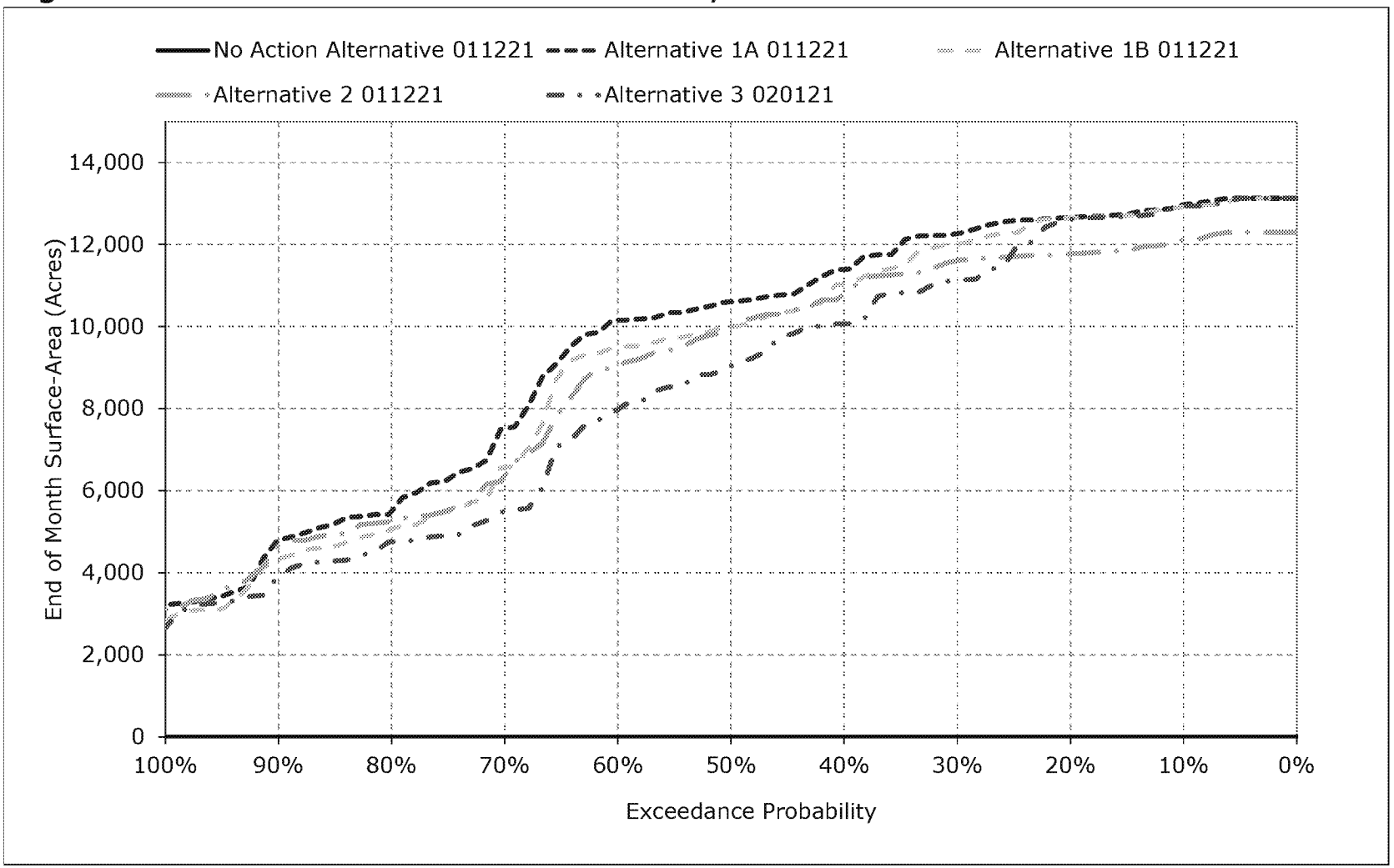


Figure 5B1-9-3. Sites Reservoir Surface Area, December

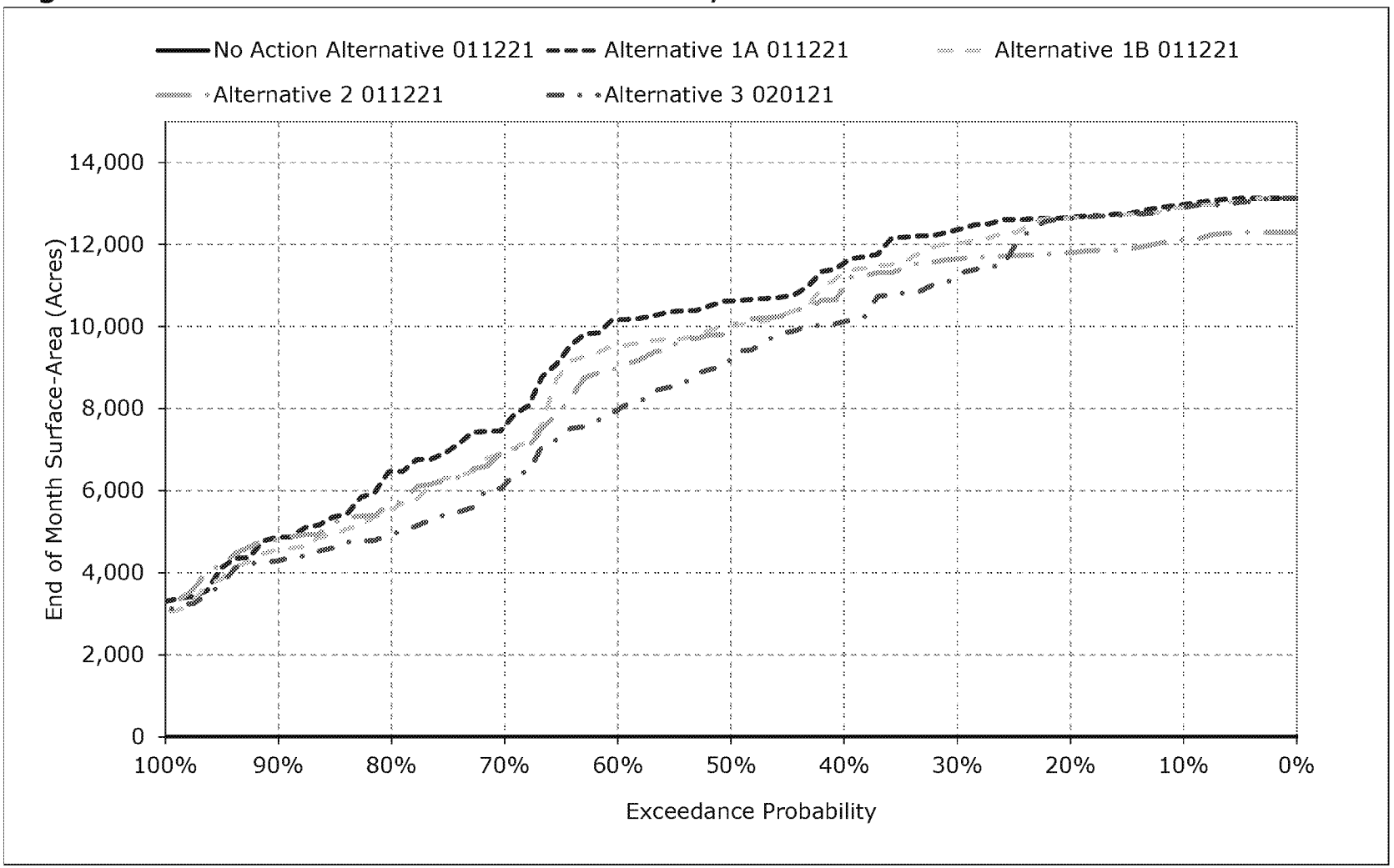


Figure 5B1-9-4. Sites Reservoir Surface Area, January

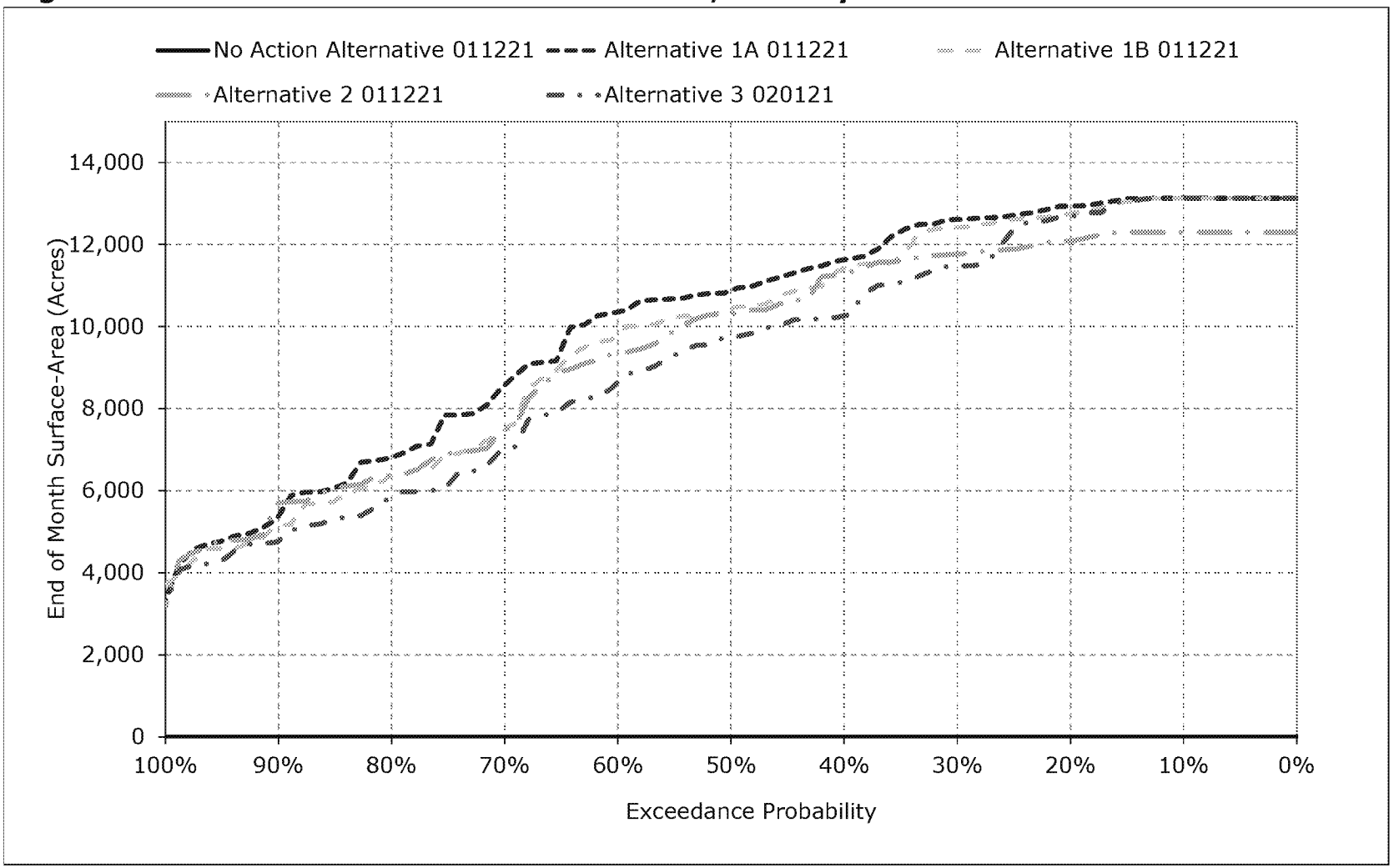


Figure 5B1-9-5. Sites Reservoir Surface Area, February

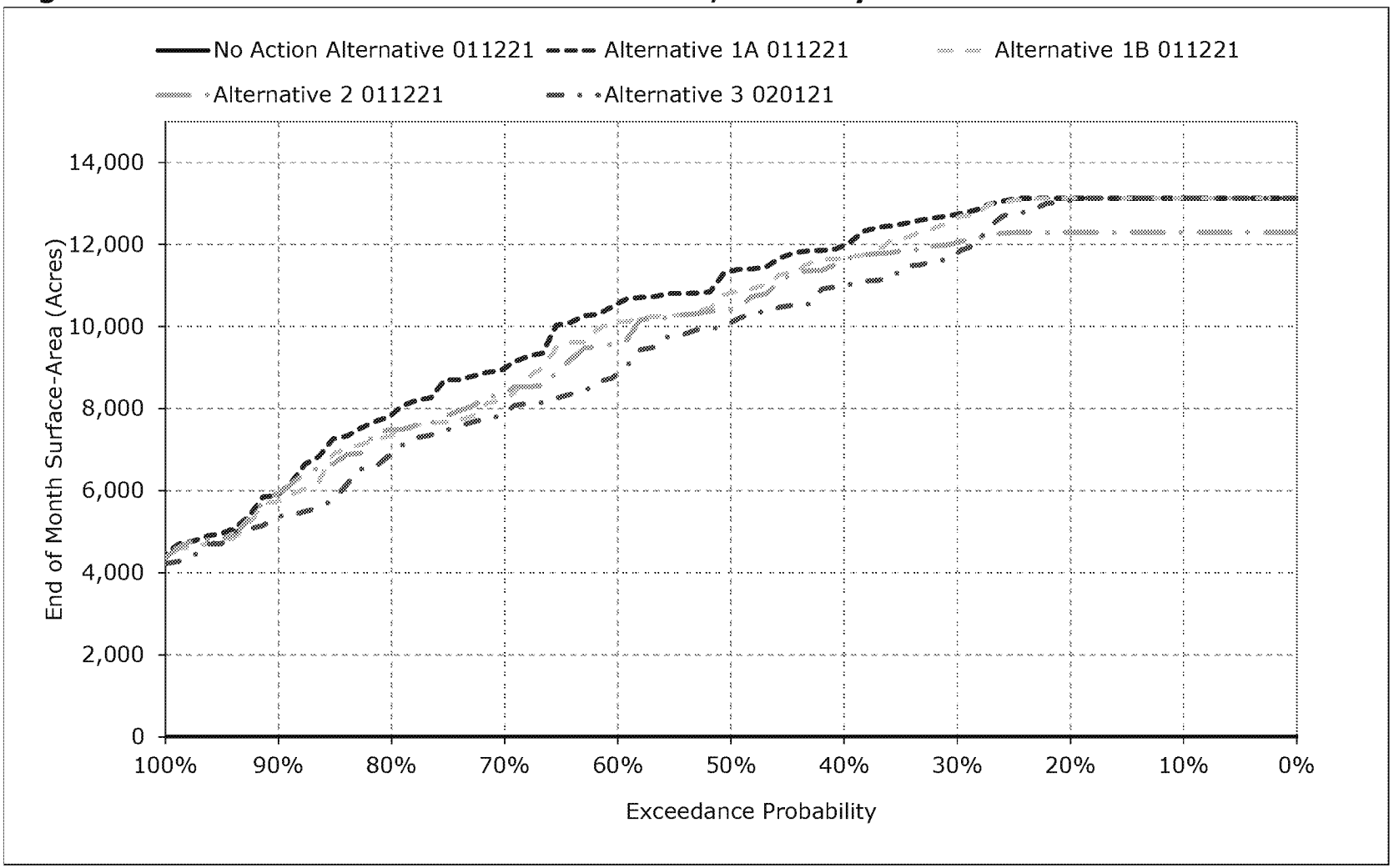


Figure 5B1-9-6. Sites Reservoir Surface Area, March

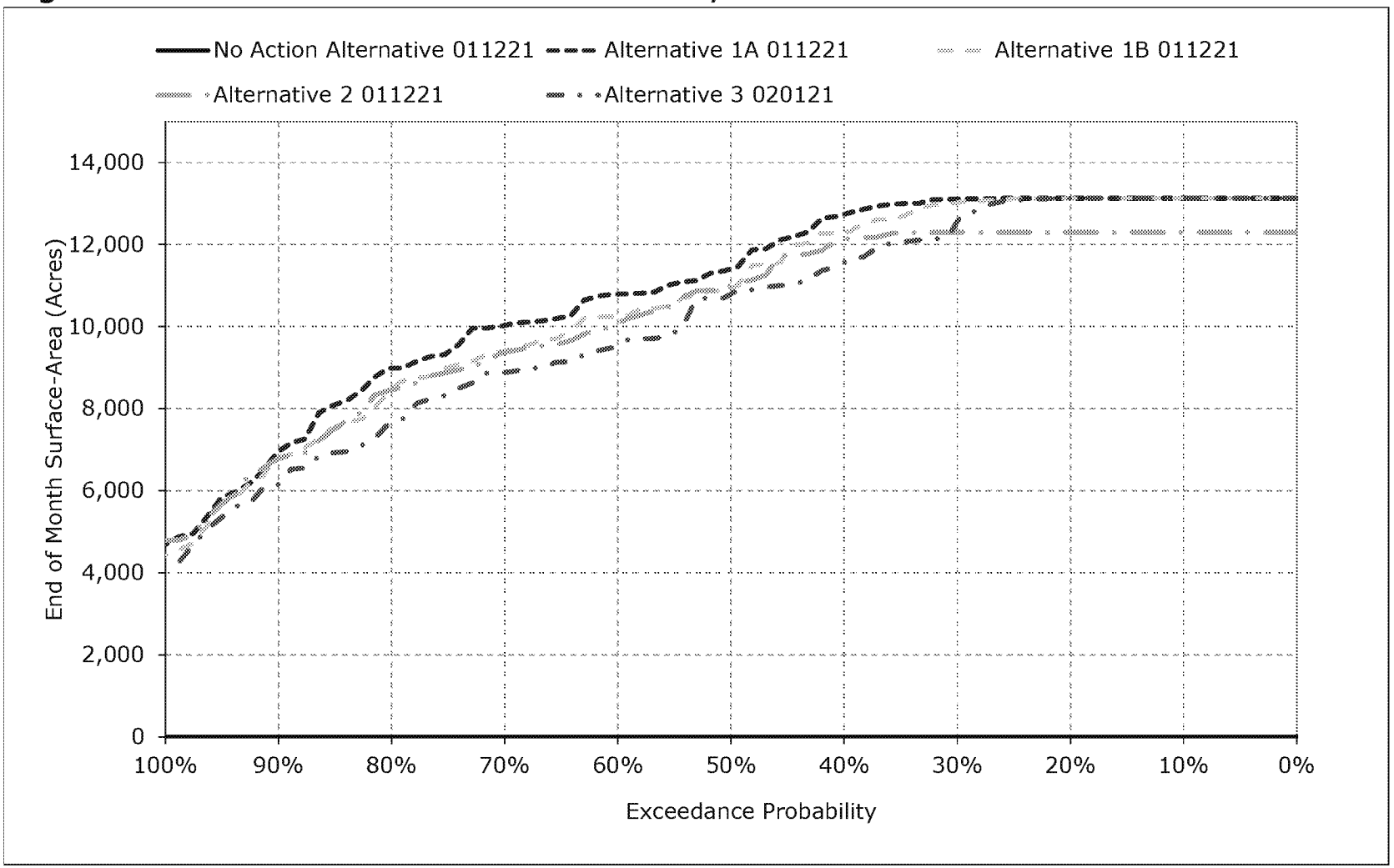


Figure 5B1-9-7. Sites Reservoir Surface Area, April

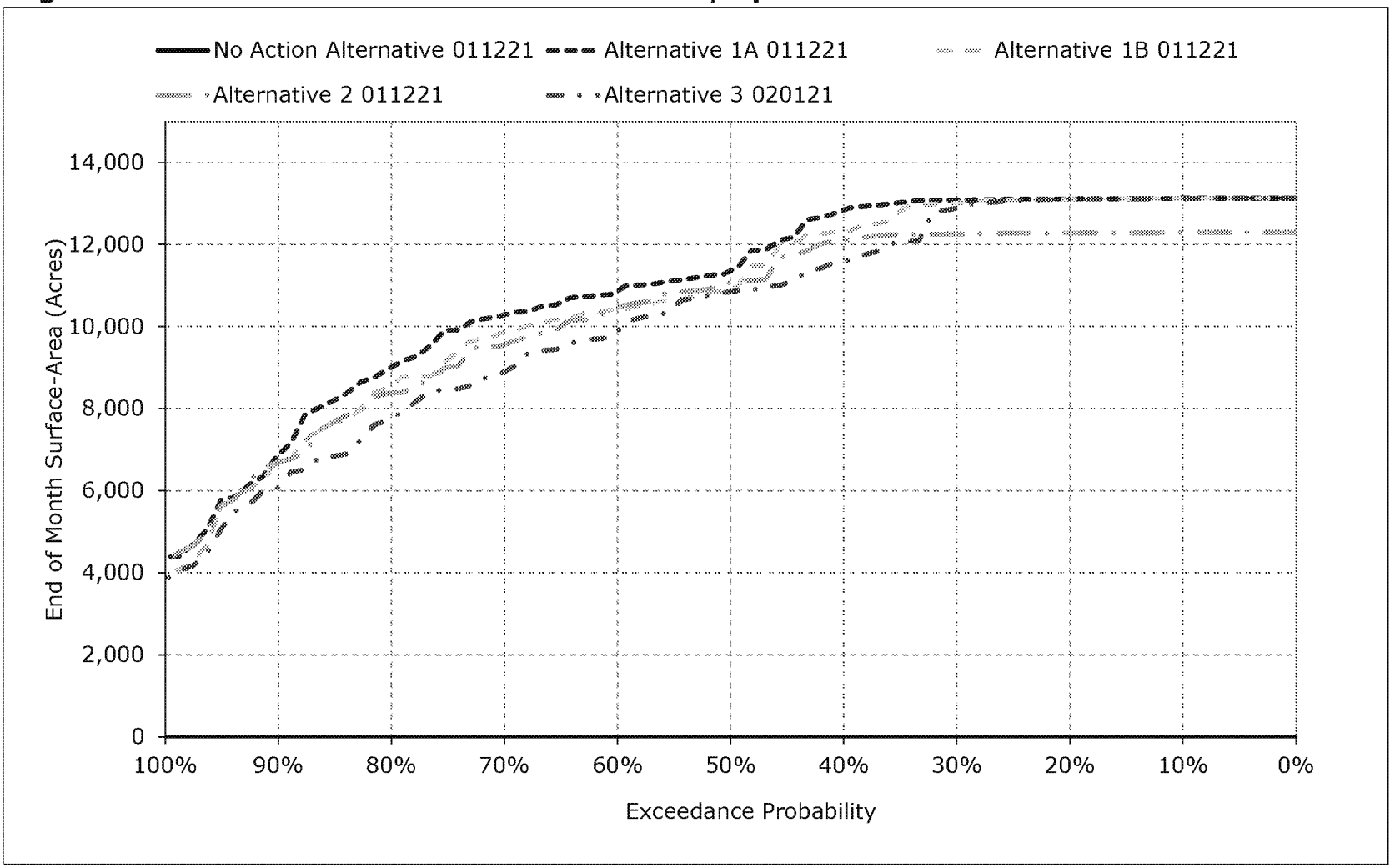


Figure 5B1-9-8. Sites Reservoir Surface Area, May

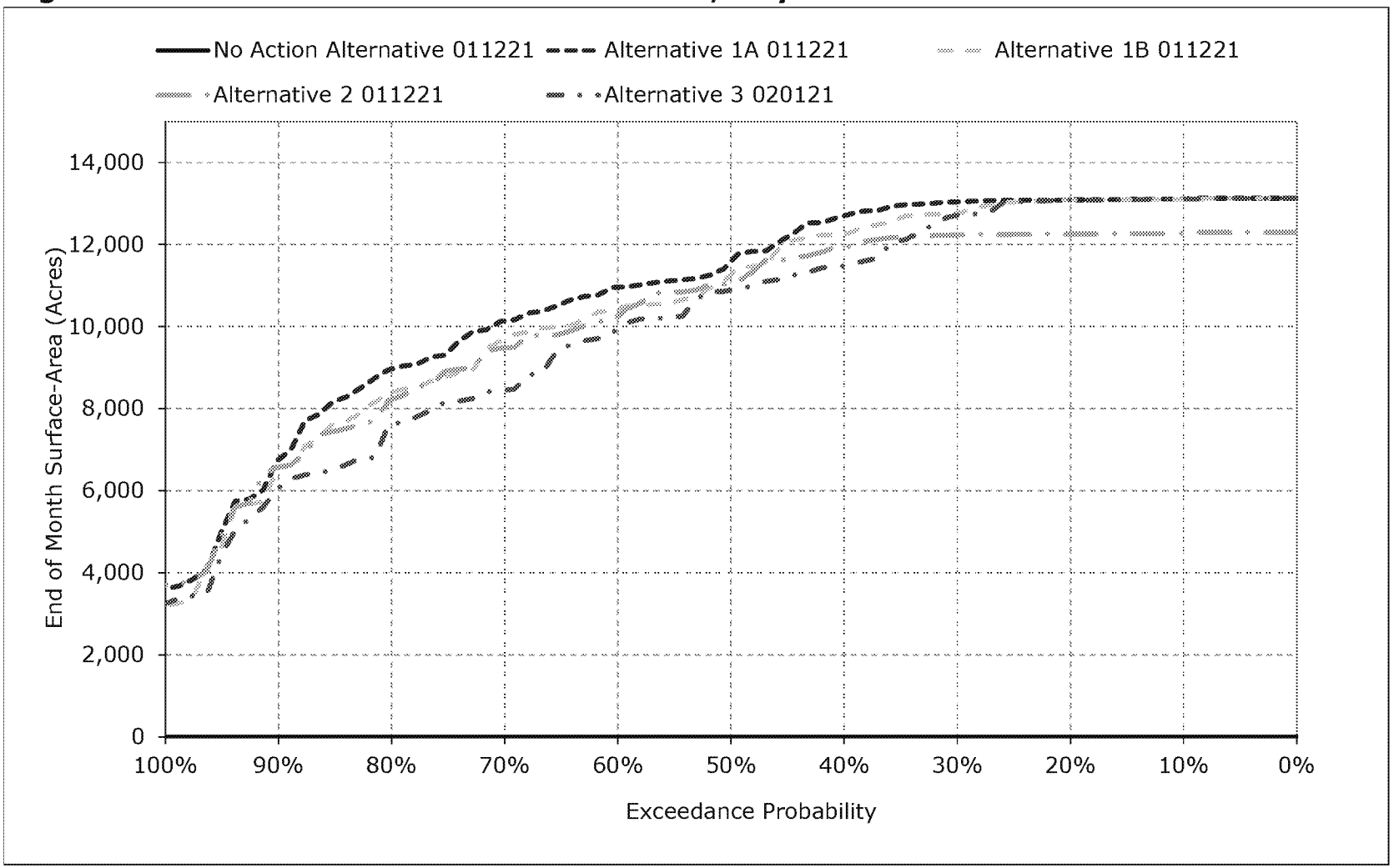


Figure 5B1-9-9. Sites Reservoir Surface Area, June

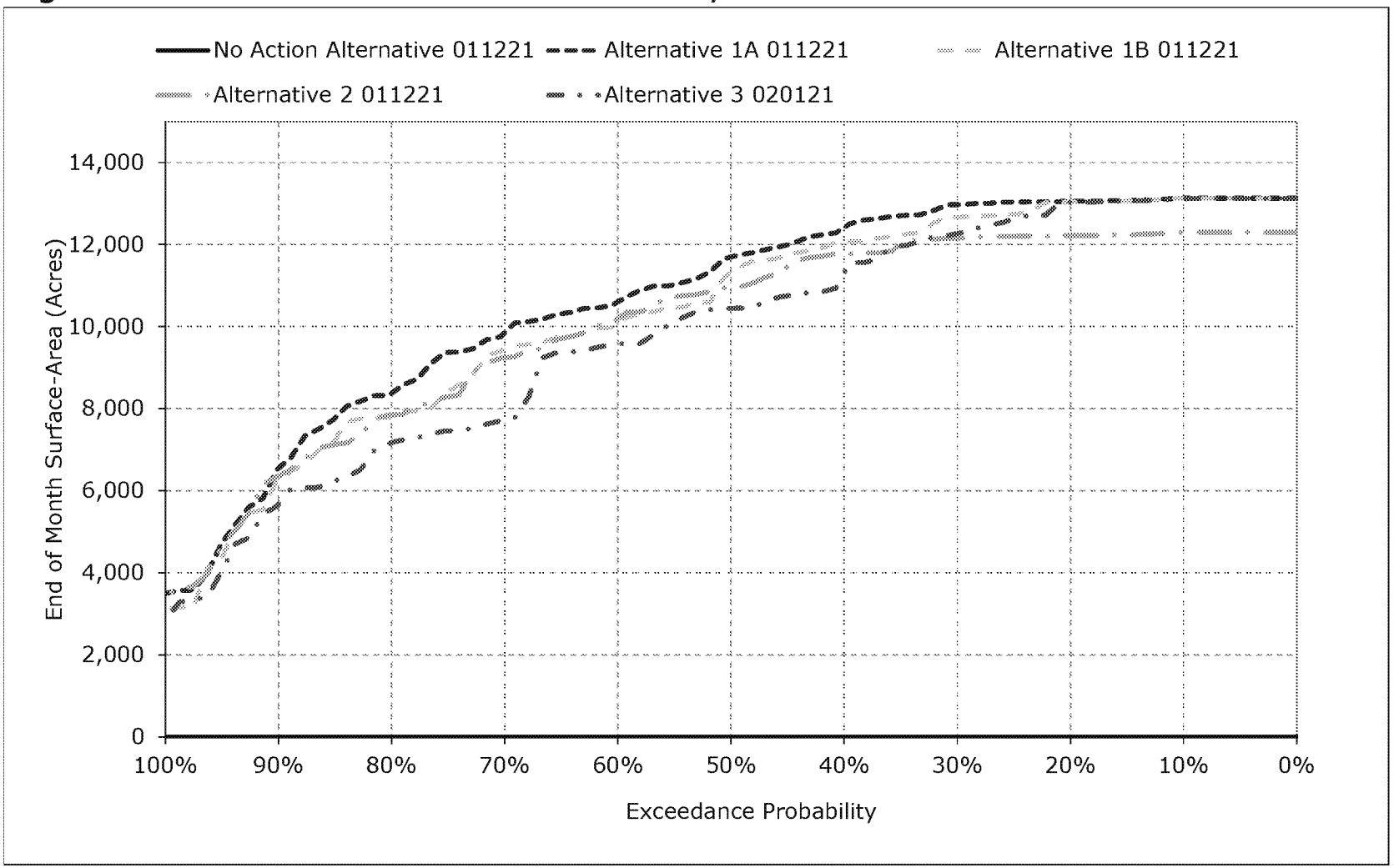


Figure 5B1-9-10. Sites Reservoir Surface Area, July

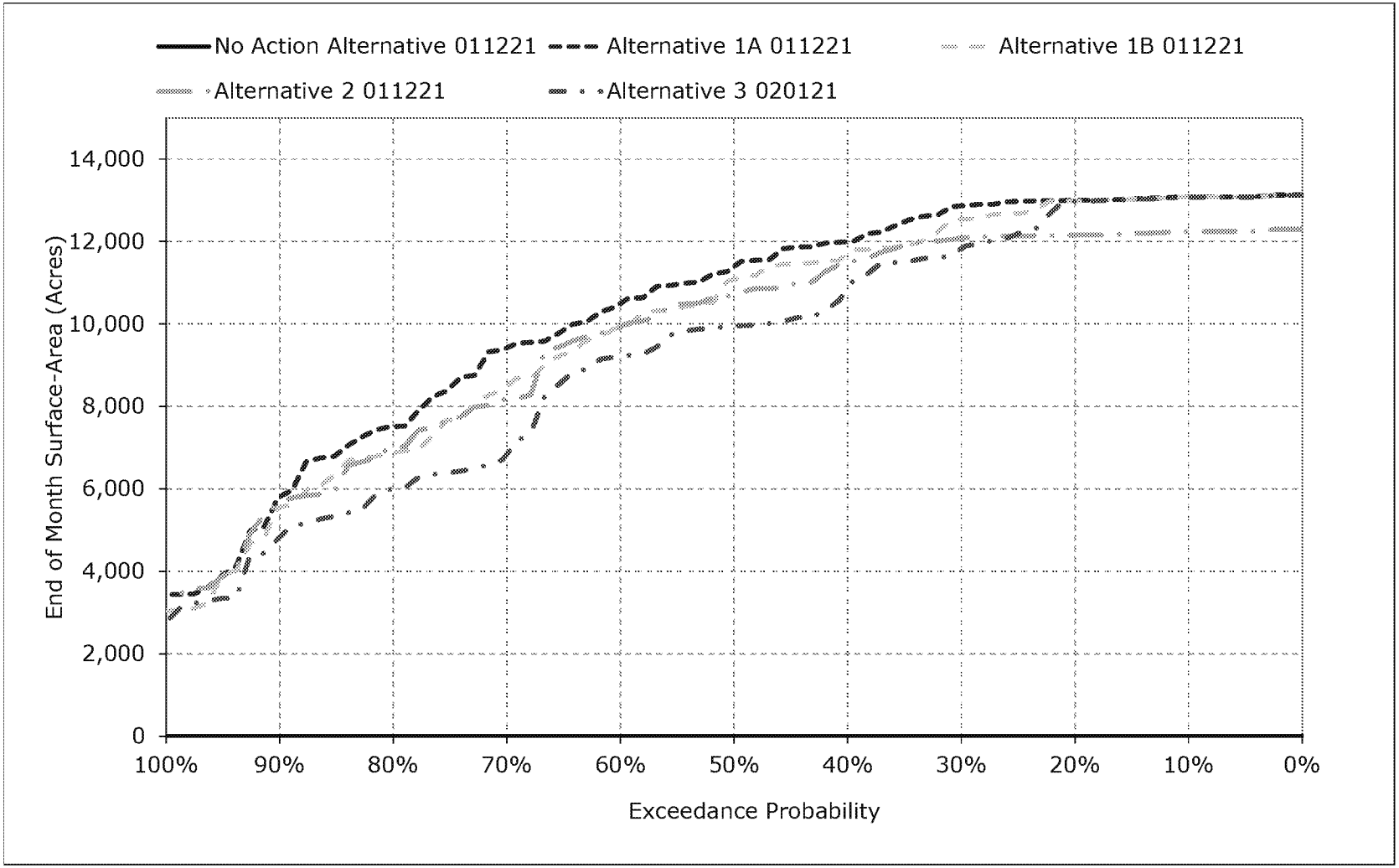


Figure 5B1-9-11. Sites Reservoir Surface Area, August

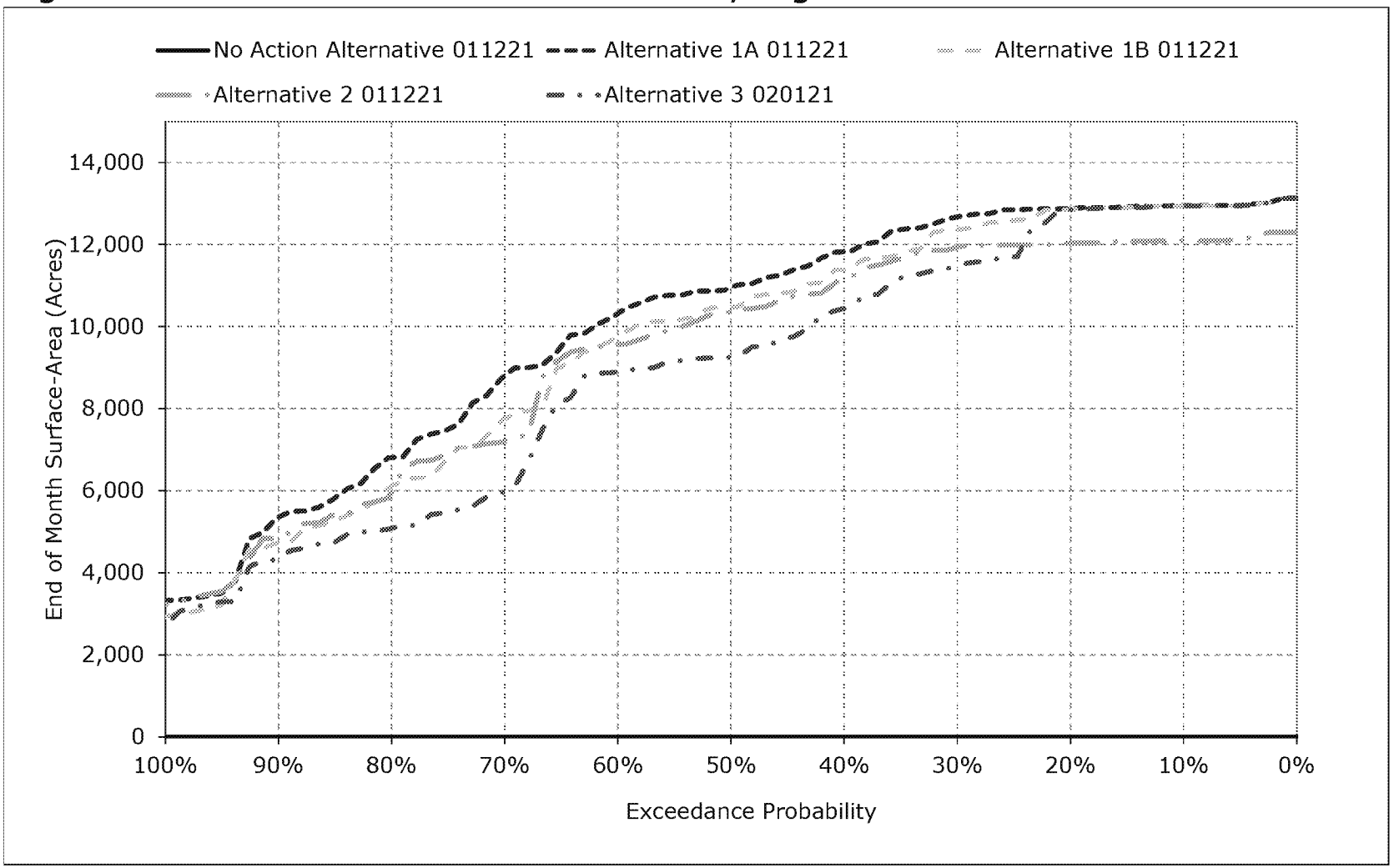
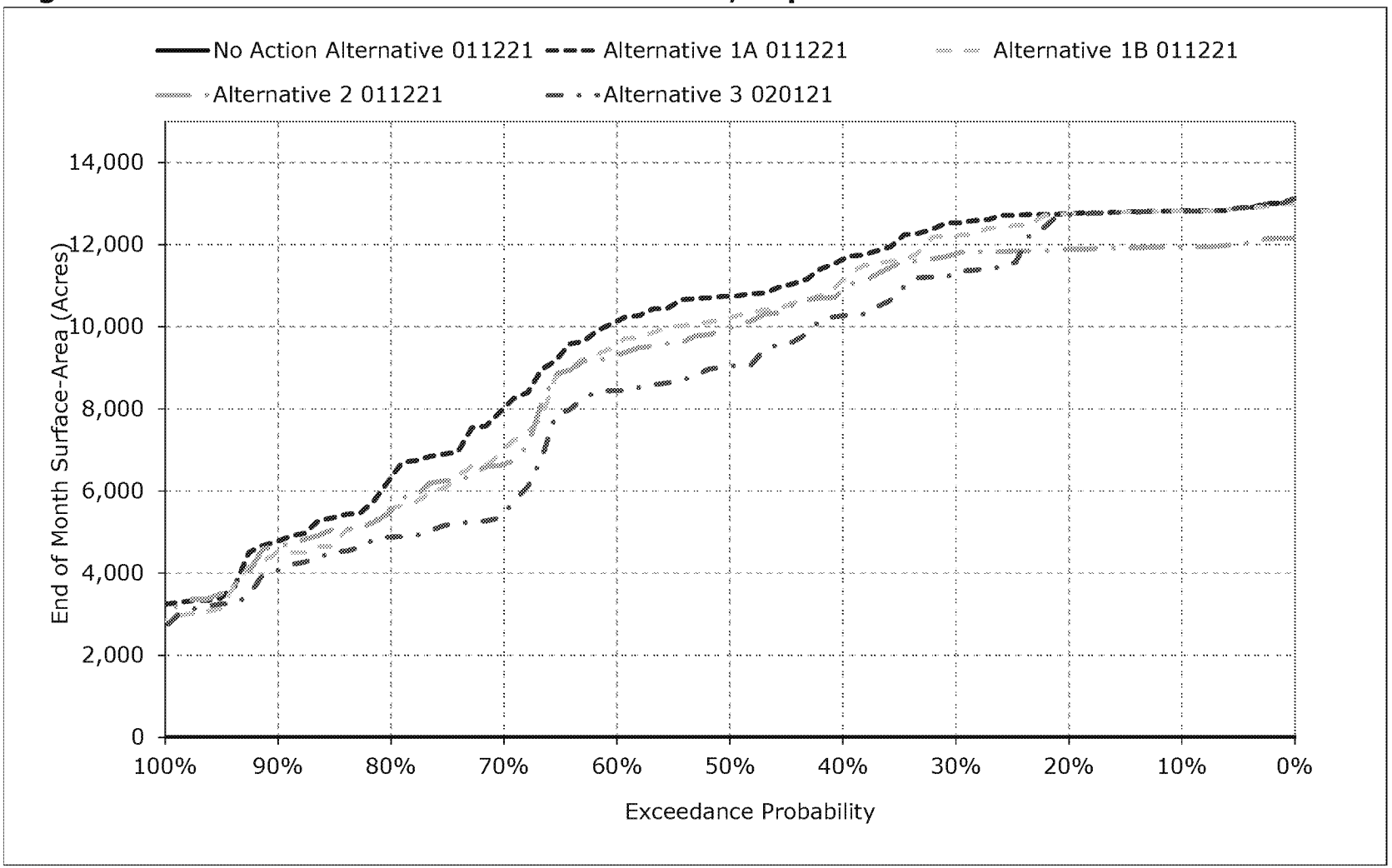


Figure 5B1-9-12. Sites Reservoir Surface Area, September



Appendix 5B2 – River Operations (CalSim II)

The following results of the CalSim II model are included for river operations at key project locations for the following alternatives:

- No Action Alternative 011221
- Alternative 1A 011221
- Alternative 1B 011221
- Alternative 2 011221
- Alternative 3 020121

Section	Output Parameters	Table Numbers	Figure Numbers
Trinity	Trinity Lake Storage	5B2-1-1a to 5B2-1-4c	5B2-1-1 to 5B2-1-12
Trinity	Trinity Lake Elevation	5B2-2-1a to 5B2-2-4c	5B2-2-1 to 5B2-2-12
Trinity	Trinity Lake Surface Area	5B2-3-1a to 5B2-3-4c	5B2-3-1 to 5B2-3-12
Trinity	Trinity River Flow below Lewiston	5B2-4-1a to 5B2-4-4c	5B2-4-1 to 5B2-4-18
Trinity	Trinity Import - Clear Creek Tunnel	5B2-5-1a to 5B2-5-4c	5B2-5-1 to 5B2-5-18
Sacramento	Clear Creek below Whiskeytown Dam Flow	5B2-6-1a to 5B2-6-4c	5B2-6-1 to 5B2-6-18
Sacramento	Shasta Lake Storage	5B2-7-1a to 5B2-7-4c	5B2-7-1 to 5B2-7-12
Sacramento	Shasta Lake Elevation	5B2-8-1a to 5B2-8-4c	5B2-8-1 to 5B2-8-12
Sacramento	Shasta Lake Surface Area	5B2-9-1a to 5B2-9-4c	5B2-9-1 to 5B2-9-12
Sacramento	Sacramento River Flow downstream of Keswick Reservoir	5B2-10-1a to 5B2-10-4c	5B2-10-1 to 5B2-10-18
Sacramento	Sacramento Flow River at Bend Bridge	5B2-11-1a to 5B2-11-4c	5B2-11-1 to 5B2-11-18
Sacramento	Sacramento River below Red Bluff Diversion Dam Flow	5B2-12-1a to 5B2-12-4c	5B2-12-1 to 5B2-12-18
Sacramento	Sacramento River Flow at Hamilton City	5B2-13-1a to 5B2-13-4c	5B2-13-1 to 5B2-13-18
Sacramento	Sacramento River at Wilkins Slough Flow	5B2-14-1a to 5B2-14-4c	5B2-14-1 to 5B2-14-18
Sacramento	Colusa Basin Drain above Dunnigan Pipeline	5B2-15-1a to 5B2-15-4c	5B2-15-1 to 5B2-15-18
Sacramento	Colusa Basin Drain below Dunnigan Pipeline	5B2-16-1a to 5B2-16-4c	5B2-16-1 to 5B2-16-18
Sacramento	Sacramento River below Colusa Basin Drain	5B2-17-1a to 5B2-17-4c	5B2-17-1 to 5B2-17-18
Sacramento	Fremont Weir Spills	5B2-18-1a to 5B2-18-4c	5B2-18-1 to 5B2-18-18
Feather	Lake Oroville Storage	5B2-19-1a to 5B2-19-4c	5B2-19-1 to 5B2-19-12
Feather	Lake Oroville Elevation	5B2-20-1a to 5B2-20-4c	5B2-20-1 to 5B2-20-12
Feather	Lake Oroville Surface Area	5B2-21-1a to 5B2-21-4c	5B2-21-1 to 5B2-21-12
Feather	Feather River Flow downstream of Thermalito	5B2-22-1a to 5B2-22-4c	5B2-22-1 to 5B2-22-18
Feather	Feather River at Sacramento River Confluence Flow	5B2-23-1a to 5B2-23-4c	5B2-23-1 to 5B2-23-18
American	Folsom Lake Storage	5B2-24-1a to 5B2-24-4c	5B2-24-1 to 5B2-24-12
American	Folsom Lake Elevation	5B2-25-1a to 5B2-25-4c	5B2-25-1 to 5B2-25-12
American	Folsom Lake Surface Area	5B2-26-1a to 5B2-26-4c	5B2-26-1 to 5B2-26-12
American	American River below Nimbus Dam Flow	5B2-27-1a to 5B2-27-4c	5B2-27-1 to 5B2-27-18
American	American River at H Street	5B2-28-1a to 5B2-28-4c	5B2-28-1 to 5B2-28-18

Report formats

- Monthly tables comparing an alternative against the No Action alternative (exceedance values, long-term average, and average by water year type)
- Monthly pattern charts (long-term average and average by water year type) including all alternatives
- Monthly exceedance charts (all months) including all alternatives

Table 5B2-1-1a. Trinity Lake Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,300	2,383	2,385	2,270	2,150	1,975
20%	1,850	1,850	1,850	1,900	2,000	2,100	2,285	2,309	2,311	2,251	2,134	1,965
30%	1,668	1,716	1,770	1,848	1,977	2,100	2,256	2,229	2,160	2,023	1,844	1,699
40%	1,514	1,559	1,656	1,761	1,904	2,060	2,192	2,145	2,077	1,946	1,755	1,598
50%	1,389	1,418	1,526	1,625	1,744	1,884	2,047	1,976	1,900	1,744	1,567	1,420
60%	1,328	1,313	1,407	1,459	1,632	1,754	1,882	1,837	1,814	1,649	1,476	1,361
70%	1,223	1,213	1,274	1,341	1,456	1,594	1,682	1,731	1,665	1,548	1,405	1,276
80%	1,034	1,071	1,062	1,124	1,212	1,405	1,585	1,497	1,429	1,314	1,168	1,065
90%	830	821	853	872	1,000	1,004	1,200	1,195	1,168	1,073	951	856
Long Term												
Full Simulation Period[a]	1,385	1,398	1,446	1,513	1,621	1,742	1,894	1,890	1,856	1,727	1,576	1,438
Water Year Types[b,c]												
Wet (32%)	1,756	1,768	1,779	1,781	1,935	2,067	2,252	2,287	2,264	2,147	2,018	1,856
Above Normal (15%)	1,609	1,608	1,639	1,648	1,799	1,957	2,134	2,139	2,107	1,985	1,811	1,650
Below Normal (17%)	1,298	1,330	1,414	1,440	1,515	1,608	1,779	1,765	1,729	1,601	1,443	1,315
Dry (22%)	1,160	1,176	1,278	1,400	1,481	1,613	1,750	1,702	1,648	1,489	1,320	1,200
Critical (15%)	795	798	821	1,054	1,096	1,170	1,230	1,209	1,182	1,063	919	823

Table 5B2-1-1b. Trinity Lake Storage, Alternative 1A 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,300	2,383	2,385	2,270	2,150	1,975
20%	1,850	1,850	1,850	1,900	2,000	2,100	2,285	2,309	2,311	2,251	2,134	1,965
30%	1,668	1,716	1,770	1,848	1,977	2,100	2,256	2,229	2,160	2,023	1,844	1,699
40%	1,514	1,559	1,656	1,761	1,904	2,060	2,192	2,145	2,077	1,946	1,755	1,598
50%	1,389	1,418	1,526	1,625	1,744	1,884	2,047	1,976	1,900	1,744	1,567	1,420
60%	1,328	1,313	1,407	1,459	1,632	1,754	1,882	1,837	1,814	1,649	1,476	1,361
70%	1,223	1,213	1,274	1,341	1,456	1,594	1,682	1,731	1,665	1,548	1,405	1,276
80%	1,034	1,071	1,062	1,124	1,212	1,405	1,585	1,497	1,429	1,314	1,168	1,065
90%	830	821	853	872	1,000	1,004	1,200	1,195	1,168	1,073	951	856
Long Term												
Full Simulation Period[a]	1,385	1,398	1,446	1,513	1,621	1,742	1,894	1,890	1,856	1,727	1,576	1,438
Water Year Types[b,c]												
Wet (32%)	1,756	1,768	1,779	1,781	1,935	2,067	2,252	2,287	2,264	2,147	2,018	1,856
Above Normal (15%)	1,609	1,608	1,639	1,648	1,799	1,957	2,134	2,139	2,107	1,985	1,811	1,650
Below Normal (17%)	1,298	1,330	1,414	1,440	1,515	1,608	1,779	1,765	1,729	1,601	1,443	1,315
Dry (22%)	1,160	1,176	1,278	1,400	1,481	1,613	1,750	1,702	1,648	1,489	1,320	1,200
Critical (15%)	795	798	821	1,054	1,096	1,170	1,230	1,209	1,182	1,063	919	823

Table 5B2-1-1c. Trinity Lake Storage, Alternative 1A 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
c These results are displayed with calendar year - year type sorting.

Table 5B2-1-2a. Trinity Lake Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,300	2,383	2,385	2,270	2,150	1,975
20%	1,850	1,850	1,850	1,900	2,000	2,100	2,285	2,309	2,311	2,251	2,134	1,965
30%	1,668	1,716	1,770	1,848	1,977	2,100	2,256	2,229	2,160	2,023	1,844	1,699
40%	1,514	1,559	1,656	1,761	1,904	2,060	2,192	2,145	2,077	1,946	1,755	1,598
50%	1,389	1,418	1,526	1,625	1,744	1,884	2,047	1,976	1,900	1,744	1,567	1,420
60%	1,328	1,313	1,407	1,459	1,632	1,754	1,882	1,837	1,814	1,649	1,476	1,361
70%	1,223	1,213	1,274	1,341	1,456	1,594	1,682	1,731	1,665	1,548	1,405	1,276
80%	1,034	1,071	1,062	1,124	1,212	1,405	1,585	1,497	1,429	1,314	1,168	1,065
90%	830	821	853	872	1,000	1,004	1,200	1,195	1,168	1,073	951	856
Long Term												
Full Simulation Period[a]	1,385	1,398	1,446	1,513	1,621	1,742	1,894	1,890	1,856	1,727	1,576	1,438
Water Year Types[b,c]												
Wet (32%)	1,756	1,768	1,779	1,781	1,935	2,067	2,252	2,287	2,264	2,147	2,018	1,856
Above Normal (15%)	1,609	1,608	1,639	1,648	1,799	1,957	2,134	2,139	2,107	1,985	1,811	1,650
Below Normal (17%)	1,298	1,330	1,414	1,440	1,515	1,608	1,779	1,765	1,729	1,601	1,443	1,315
Dry (22%)	1,160	1,176	1,278	1,400	1,481	1,613	1,750	1,702	1,648	1,489	1,320	1,200
Critical (15%)	795	798	821	1,054	1,096	1,170	1,230	1,209	1,182	1,063	919	823

Table 5B2-1-2b. Trinity Lake Storage, Alternative 1B 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,300	2,383	2,385	2,270	2,150	1,975
20%	1,850	1,850	1,850	1,900	2,000	2,100	2,285	2,309	2,311	2,251	2,134	1,965
30%	1,668	1,716	1,770	1,848	1,977	2,100	2,256	2,229	2,160	2,023	1,844	1,699
40%	1,514	1,559	1,656	1,761	1,904	2,060	2,192	2,145	2,077	1,946	1,755	1,598
50%	1,389	1,418	1,526	1,625	1,744	1,884	2,047	1,976	1,900	1,744	1,567	1,420
60%	1,328	1,313	1,407	1,459	1,632	1,754	1,882	1,837	1,814	1,649	1,476	1,361
70%	1,223	1,213	1,274	1,341	1,456	1,594	1,682	1,731	1,665	1,548	1,405	1,276
80%	1,034	1,071	1,062	1,124	1,212	1,405	1,585	1,497	1,429	1,314	1,168	1,065
90%	830	821	853	872	1,000	1,004	1,200	1,195	1,168	1,073	951	856
Long Term												
Full Simulation Period[a]	1,385	1,398	1,446	1,513	1,621	1,742	1,894	1,890	1,856	1,727	1,576	1,438
Water Year Types[b,c]												
Wet (32%)	1,756	1,768	1,779	1,781	1,935	2,067	2,252	2,287	2,264	2,147	2,018	1,856
Above Normal (15%)	1,609	1,608	1,639	1,648	1,799	1,957	2,134	2,139	2,107	1,985	1,811	1,650
Below Normal (17%)	1,298	1,330	1,414	1,440	1,515	1,608	1,779	1,765	1,729	1,601	1,443	1,315
Dry (22%)	1,160	1,176	1,278	1,400	1,481	1,613	1,750	1,702	1,648	1,489	1,320	1,200
Critical (15%)	795	798	821	1,054	1,096	1,170	1,230	1,209	1,182	1,063	919	823

Table 5B2-1-2c. Trinity Lake Storage, Alternative 1B 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-1-3a. Trinity Lake Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,300	2,383	2,385	2,270	2,150	1,975
20%	1,850	1,850	1,850	1,900	2,000	2,100	2,285	2,309	2,311	2,251	2,134	1,965
30%	1,668	1,716	1,770	1,848	1,977	2,100	2,256	2,229	2,160	2,023	1,844	1,699
40%	1,514	1,559	1,656	1,761	1,904	2,060	2,192	2,145	2,077	1,946	1,755	1,598
50%	1,389	1,418	1,526	1,625	1,744	1,884	2,047	1,976	1,900	1,744	1,567	1,420
60%	1,328	1,313	1,407	1,459	1,632	1,754	1,882	1,837	1,814	1,649	1,476	1,361
70%	1,223	1,213	1,274	1,341	1,456	1,594	1,682	1,731	1,665	1,548	1,405	1,276
80%	1,034	1,071	1,062	1,124	1,212	1,405	1,585	1,497	1,429	1,314	1,168	1,065
90%	830	821	853	872	1,000	1,004	1,200	1,195	1,168	1,073	951	856
Long Term												
Full Simulation Period[a]	1,385	1,398	1,446	1,513	1,621	1,742	1,894	1,890	1,856	1,727	1,576	1,438
Water Year Types[b,c]												
Wet (32%)	1,756	1,768	1,779	1,781	1,935	2,067	2,252	2,287	2,264	2,147	2,018	1,856
Above Normal (15%)	1,609	1,608	1,639	1,648	1,799	1,957	2,134	2,139	2,107	1,985	1,811	1,650
Below Normal (17%)	1,298	1,330	1,414	1,440	1,515	1,608	1,779	1,765	1,729	1,601	1,443	1,315
Dry (22%)	1,160	1,176	1,278	1,400	1,481	1,613	1,750	1,702	1,648	1,489	1,320	1,200
Critical (15%)	795	798	821	1,054	1,096	1,170	1,230	1,209	1,182	1,063	919	823

Table 5B2-1-3b. Trinity Lake Storage, Alternative 2 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,300	2,383	2,385	2,270	2,150	1,975
20%	1,850	1,850	1,850	1,900	2,000	2,100	2,285	2,309	2,311	2,251	2,134	1,965
30%	1,668	1,716	1,770	1,848	1,977	2,100	2,256	2,229	2,160	2,023	1,844	1,699
40%	1,514	1,559	1,656	1,761	1,904	2,060	2,192	2,145	2,077	1,946	1,755	1,598
50%	1,389	1,418	1,526	1,625	1,744	1,884	2,047	1,976	1,900	1,744	1,567	1,420
60%	1,328	1,313	1,407	1,459	1,632	1,754	1,882	1,837	1,814	1,649	1,476	1,361
70%	1,223	1,213	1,274	1,341	1,456	1,594	1,682	1,731	1,665	1,548	1,405	1,276
80%	1,034	1,071	1,062	1,124	1,212	1,405	1,585	1,497	1,429	1,314	1,168	1,065
90%	830	821	853	872	1,000	1,004	1,200	1,195	1,168	1,073	951	856
Long Term												
Full Simulation Period[a]	1,385	1,398	1,446	1,513	1,621	1,742	1,894	1,890	1,856	1,727	1,576	1,438
Water Year Types[b,c]												
Wet (32%)	1,756	1,768	1,779	1,781	1,935	2,067	2,252	2,287	2,264	2,147	2,018	1,856
Above Normal (15%)	1,609	1,608	1,639	1,648	1,799	1,957	2,134	2,139	2,107	1,985	1,811	1,650
Below Normal (17%)	1,298	1,330	1,414	1,440	1,515	1,608	1,779	1,765	1,729	1,601	1,443	1,315
Dry (22%)	1,160	1,176	1,278	1,400	1,481	1,613	1,750	1,702	1,648	1,489	1,320	1,200
Critical (15%)	795	798	821	1,054	1,096	1,170	1,230	1,209	1,182	1,063	919	823

Table 5B2-1-3c. Trinity Lake Storage, Alternative 2 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-1-4a. Trinity Lake Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,300	2,383	2,385	2,270	2,150	1,975
20%	1,850	1,850	1,850	1,900	2,000	2,100	2,285	2,309	2,311	2,251	2,134	1,965
30%	1,668	1,716	1,770	1,848	1,977	2,100	2,256	2,229	2,160	2,023	1,844	1,699
40%	1,514	1,559	1,656	1,761	1,904	2,060	2,192	2,145	2,077	1,946	1,755	1,598
50%	1,389	1,418	1,526	1,625	1,744	1,884	2,047	1,976	1,900	1,744	1,567	1,420
60%	1,328	1,313	1,407	1,459	1,632	1,754	1,882	1,837	1,814	1,649	1,476	1,361
70%	1,223	1,213	1,274	1,341	1,456	1,594	1,682	1,731	1,665	1,548	1,405	1,276
80%	1,034	1,071	1,062	1,124	1,212	1,405	1,585	1,497	1,429	1,314	1,168	1,065
90%	830	821	853	872	1,000	1,004	1,200	1,195	1,168	1,073	951	856
Long Term												
Full Simulation Period[a]	1,385	1,398	1,446	1,513	1,621	1,742	1,894	1,890	1,856	1,727	1,576	1,438
Water Year Types[b,c]												
Wet (32%)	1,756	1,768	1,779	1,781	1,935	2,067	2,252	2,287	2,264	2,147	2,018	1,856
Above Normal (15%)	1,609	1,608	1,639	1,648	1,799	1,957	2,134	2,139	2,107	1,985	1,811	1,650
Below Normal (17%)	1,298	1,330	1,414	1,440	1,515	1,608	1,779	1,765	1,729	1,601	1,443	1,315
Dry (22%)	1,160	1,176	1,278	1,400	1,481	1,613	1,750	1,702	1,648	1,489	1,320	1,200
Critical (15%)	795	798	821	1,054	1,096	1,170	1,230	1,209	1,182	1,063	919	823

Table 5B2-1-4b. Trinity Lake Storage, Alternative 3 020121, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,300	2,383	2,385	2,270	2,150	1,975
20%	1,850	1,850	1,850	1,900	2,000	2,100	2,285	2,309	2,311	2,251	2,134	1,965
30%	1,668	1,716	1,770	1,848	1,977	2,100	2,256	2,229	2,160	2,023	1,844	1,699
40%	1,514	1,559	1,656	1,761	1,904	2,060	2,192	2,145	2,077	1,946	1,755	1,598
50%	1,389	1,418	1,526	1,625	1,744	1,884	2,047	1,976	1,900	1,744	1,567	1,420
60%	1,328	1,313	1,407	1,459	1,632	1,754	1,882	1,837	1,814	1,649	1,476	1,361
70%	1,223	1,213	1,274	1,341	1,456	1,594	1,682	1,731	1,665	1,548	1,405	1,276
80%	1,034	1,071	1,062	1,124	1,212	1,405	1,585	1,497	1,429	1,314	1,168	1,065
90%	830	821	853	872	1,000	1,004	1,200	1,195	1,168	1,073	951	856
Long Term												
Full Simulation Period[a]	1,385	1,398	1,446	1,513	1,621	1,742	1,894	1,890	1,856	1,727	1,576	1,438
Water Year Types[b,c]												
Wet (32%)	1,756	1,768	1,779	1,781	1,935	2,067	2,252	2,287	2,264	2,147	2,018	1,856
Above Normal (15%)	1,609	1,608	1,639	1,648	1,799	1,957	2,134	2,139	2,107	1,985	1,811	1,650
Below Normal (17%)	1,298	1,330	1,414	1,440	1,515	1,608	1,779	1,765	1,729	1,601	1,443	1,315
Dry (22%)	1,160	1,176	1,278	1,400	1,481	1,613	1,750	1,702	1,648	1,489	1,320	1,200
Critical (15%)	795	798	821	1,054	1,096	1,170	1,230	1,209	1,182	1,063	919	823

Table 5B2-1-4c. Trinity Lake Storage, Alternative 3 020121 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
c These results are displayed with calendar year - year type sorting.

Figure 5B2-1-1. Trinity Lake Storage, October

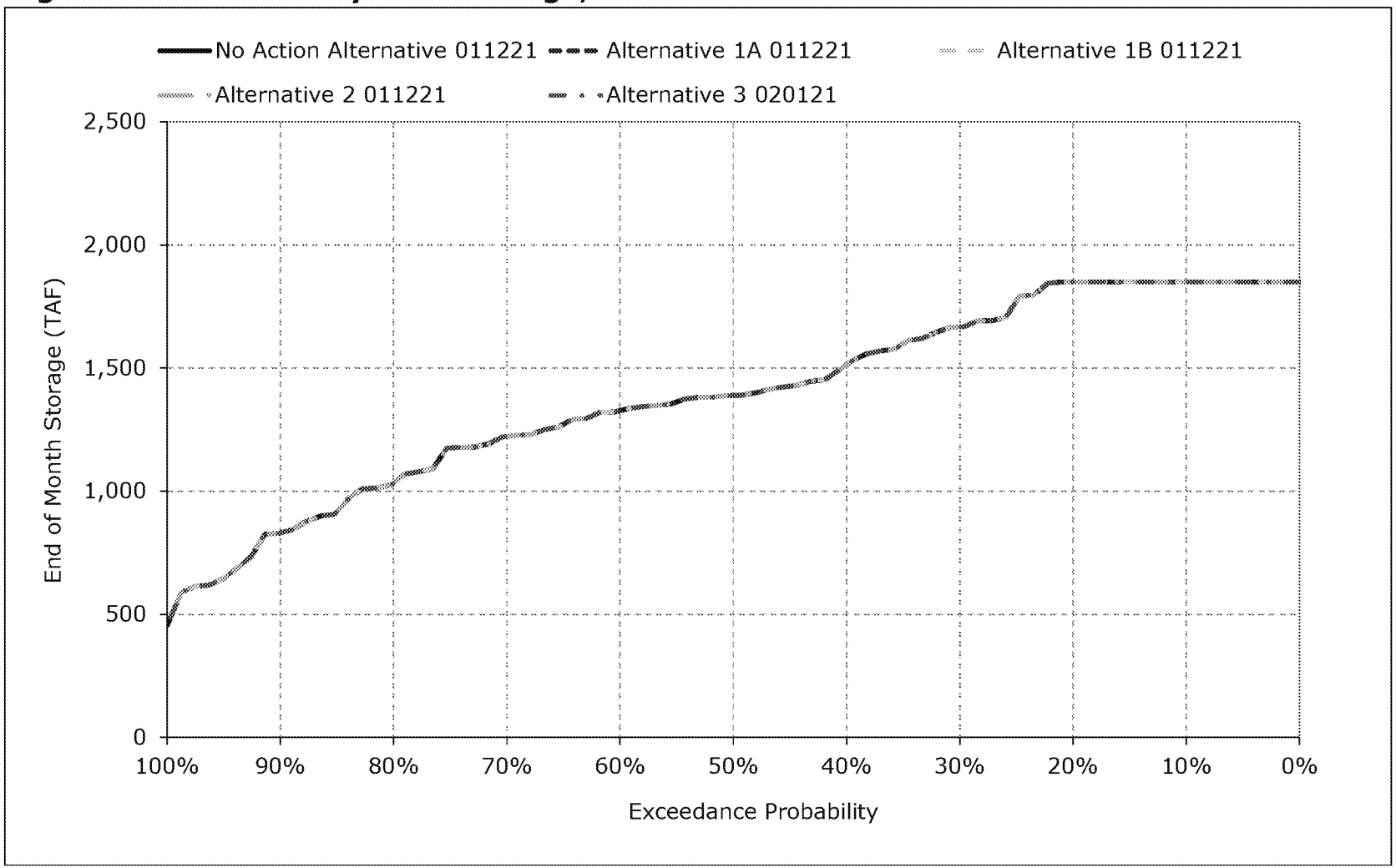


Figure 5B2-1-2. Trinity Lake Storage, November

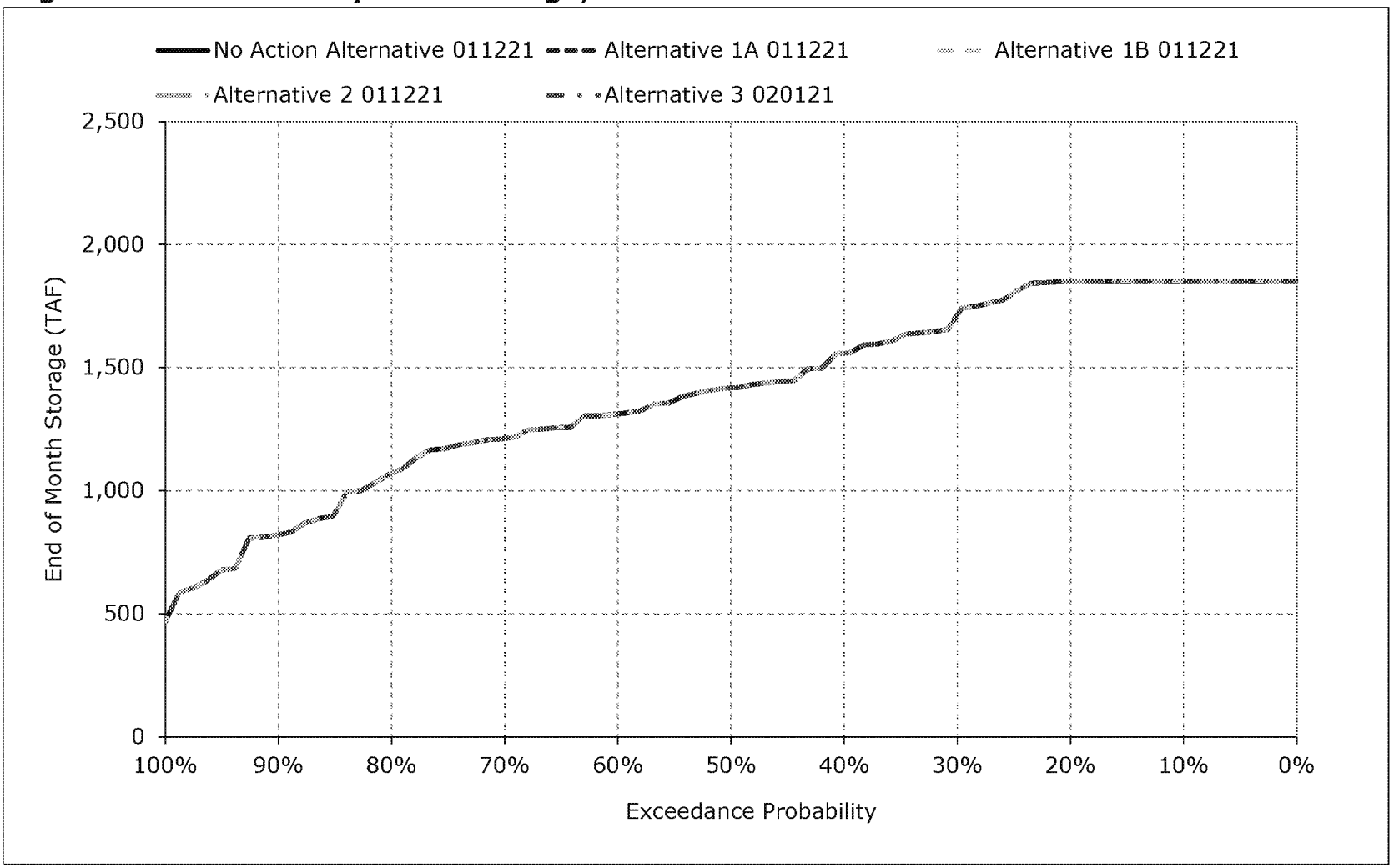


Figure 5B2-1-3. Trinity Lake Storage, December

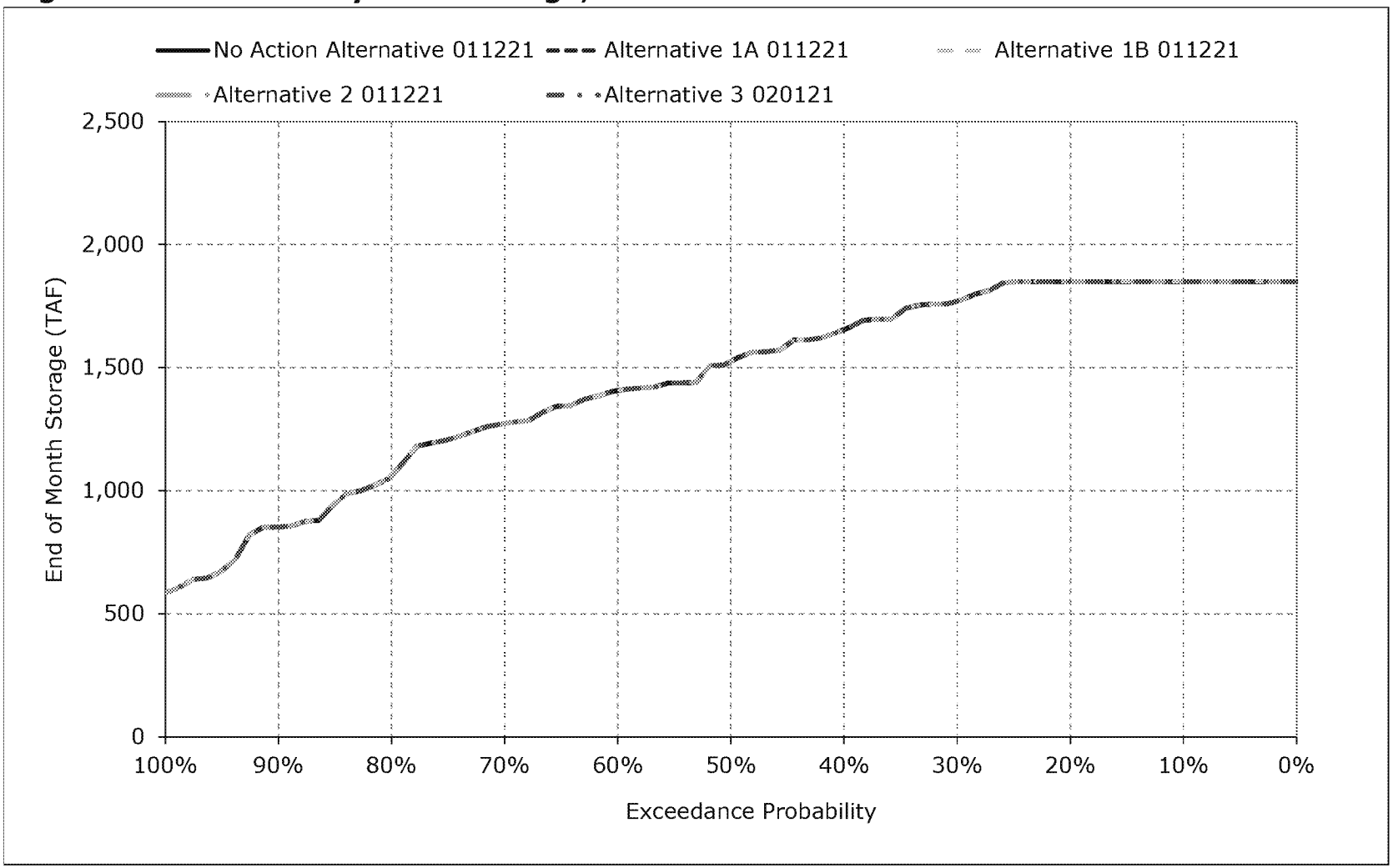


Figure 5B2-1-4. Trinity Lake Storage, January

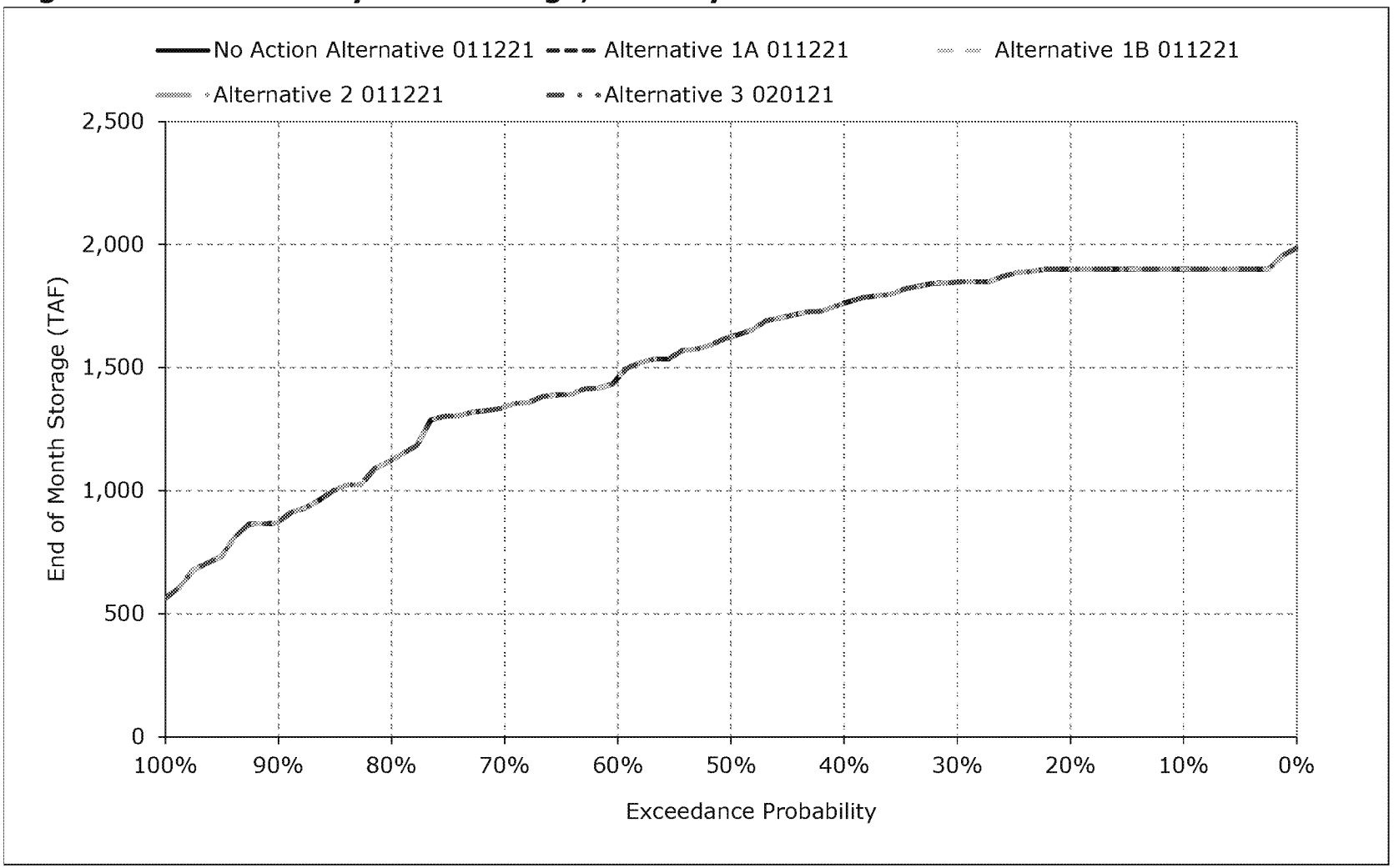


Figure 5B2-1-5. Trinity Lake Storage, February

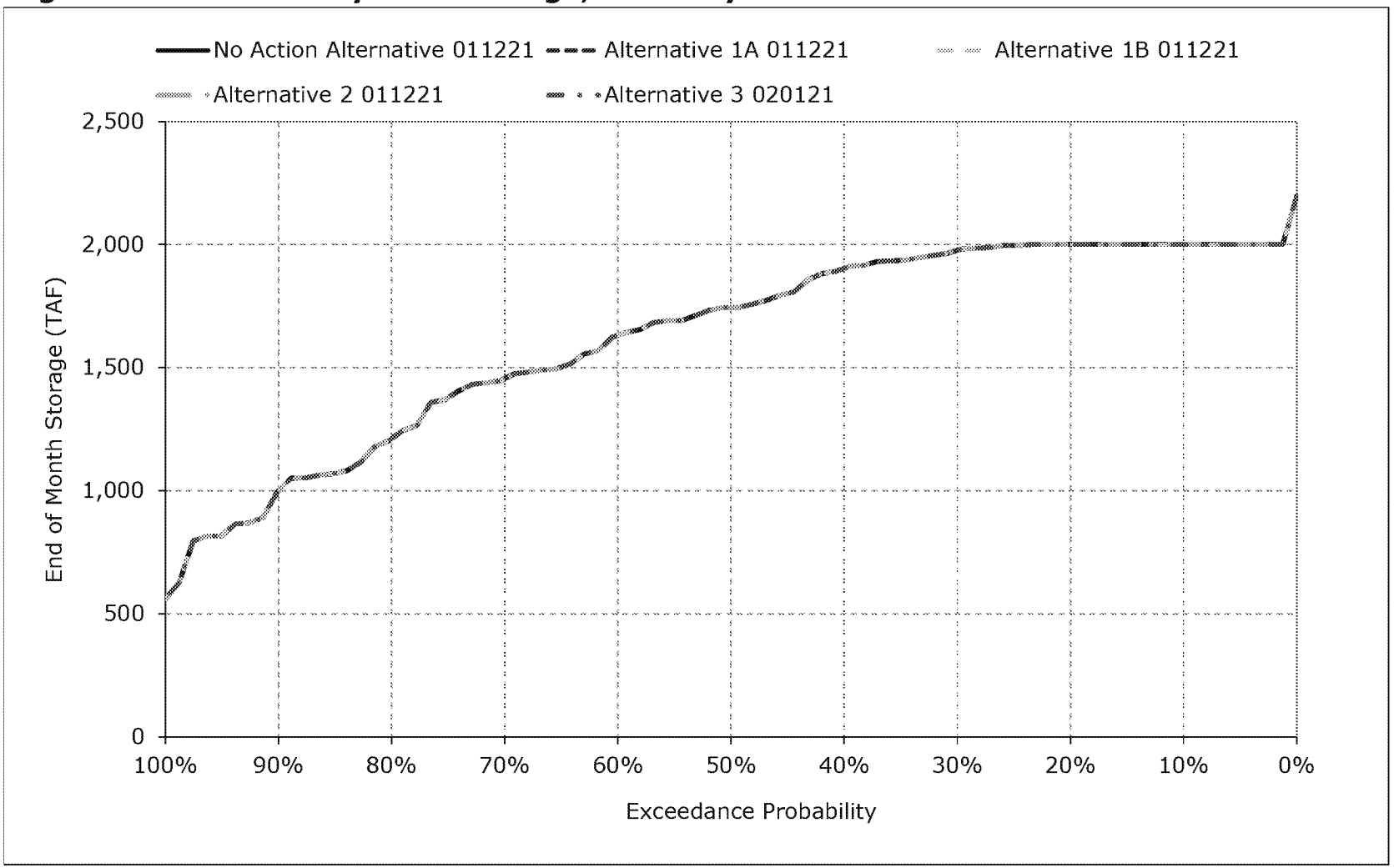


Figure 5B2-1-6. Trinity Lake Storage, March

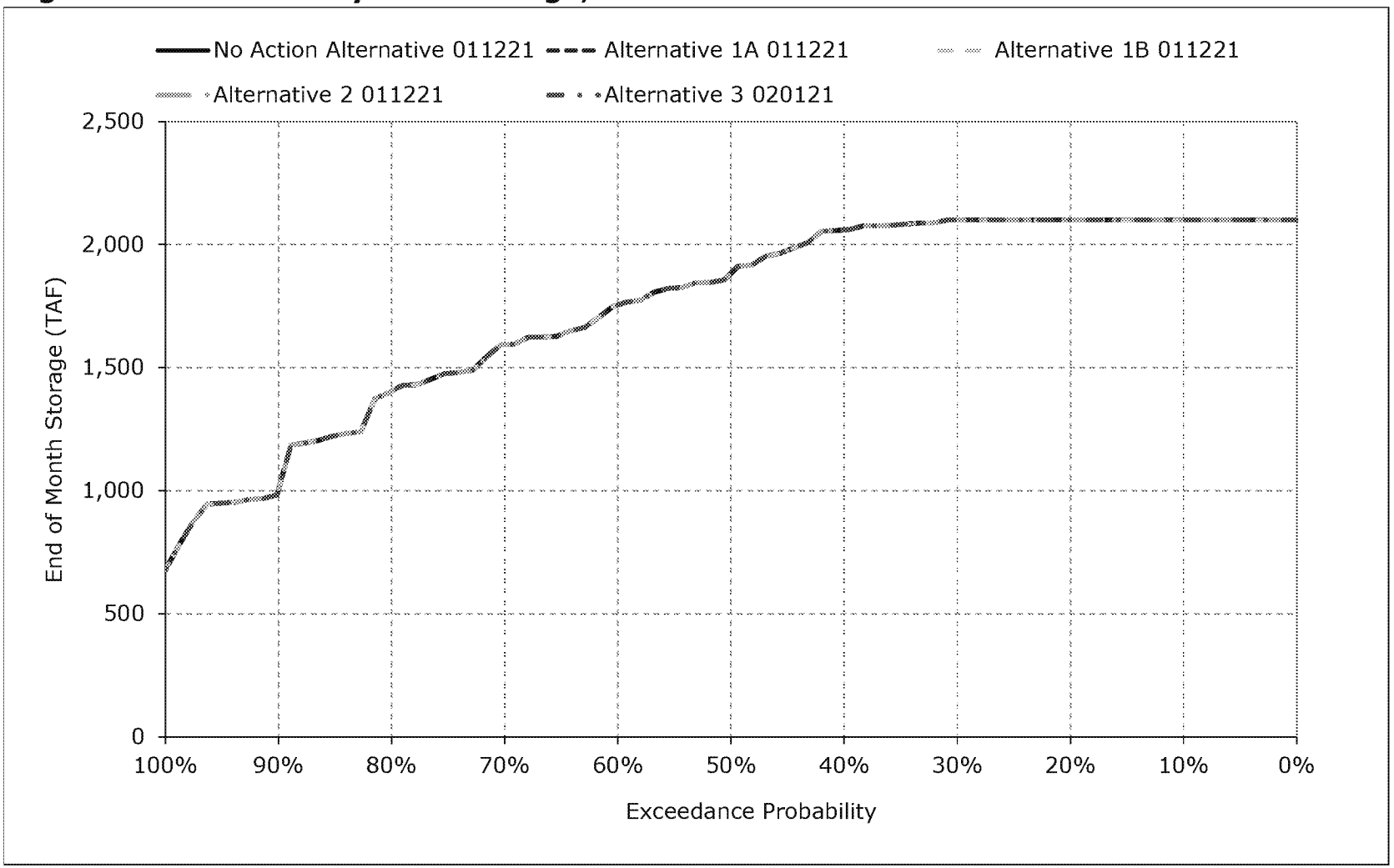


Figure 5B2-1-7. Trinity Lake Storage, April

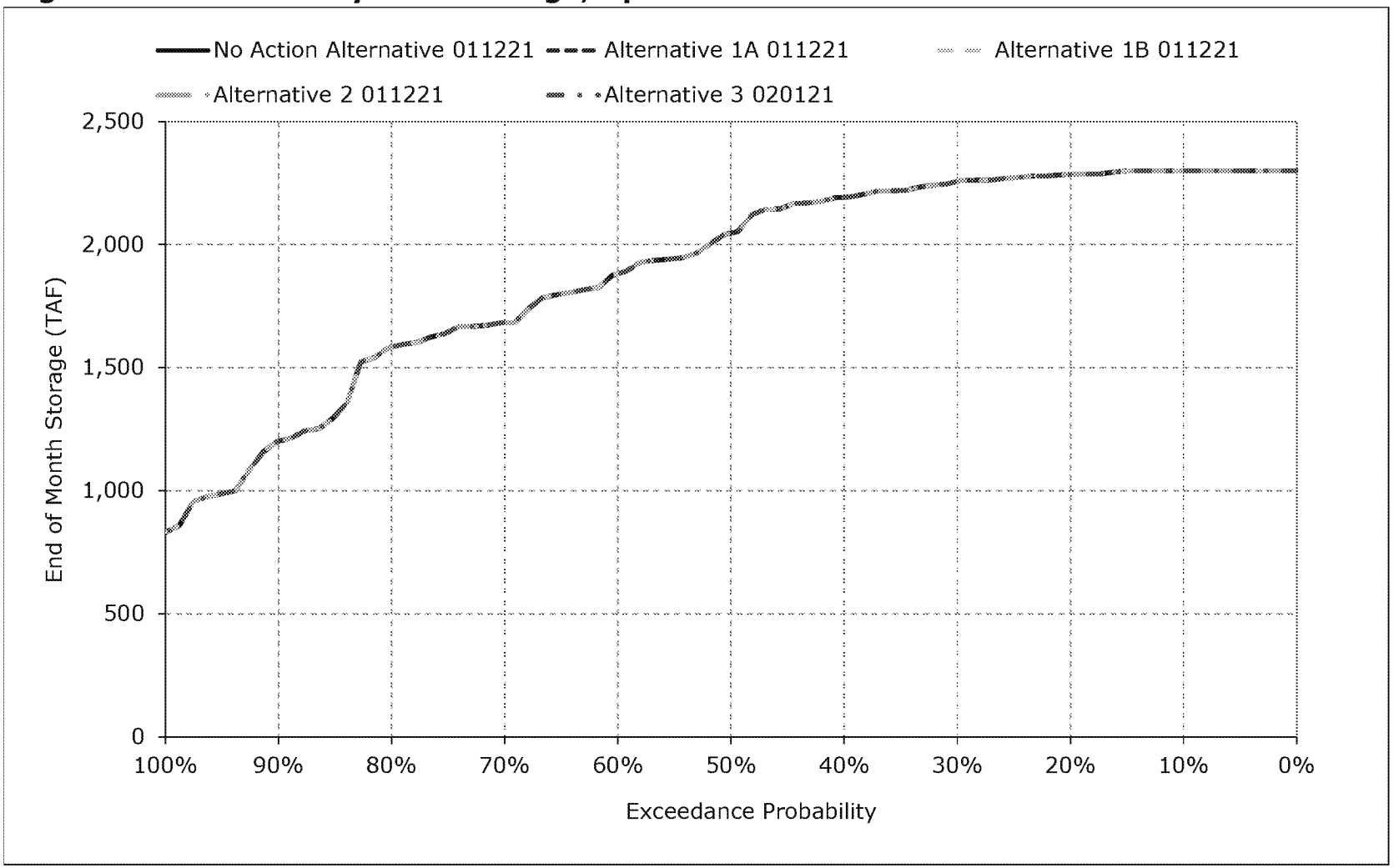


Figure 5B2-1-8. Trinity Lake Storage, May

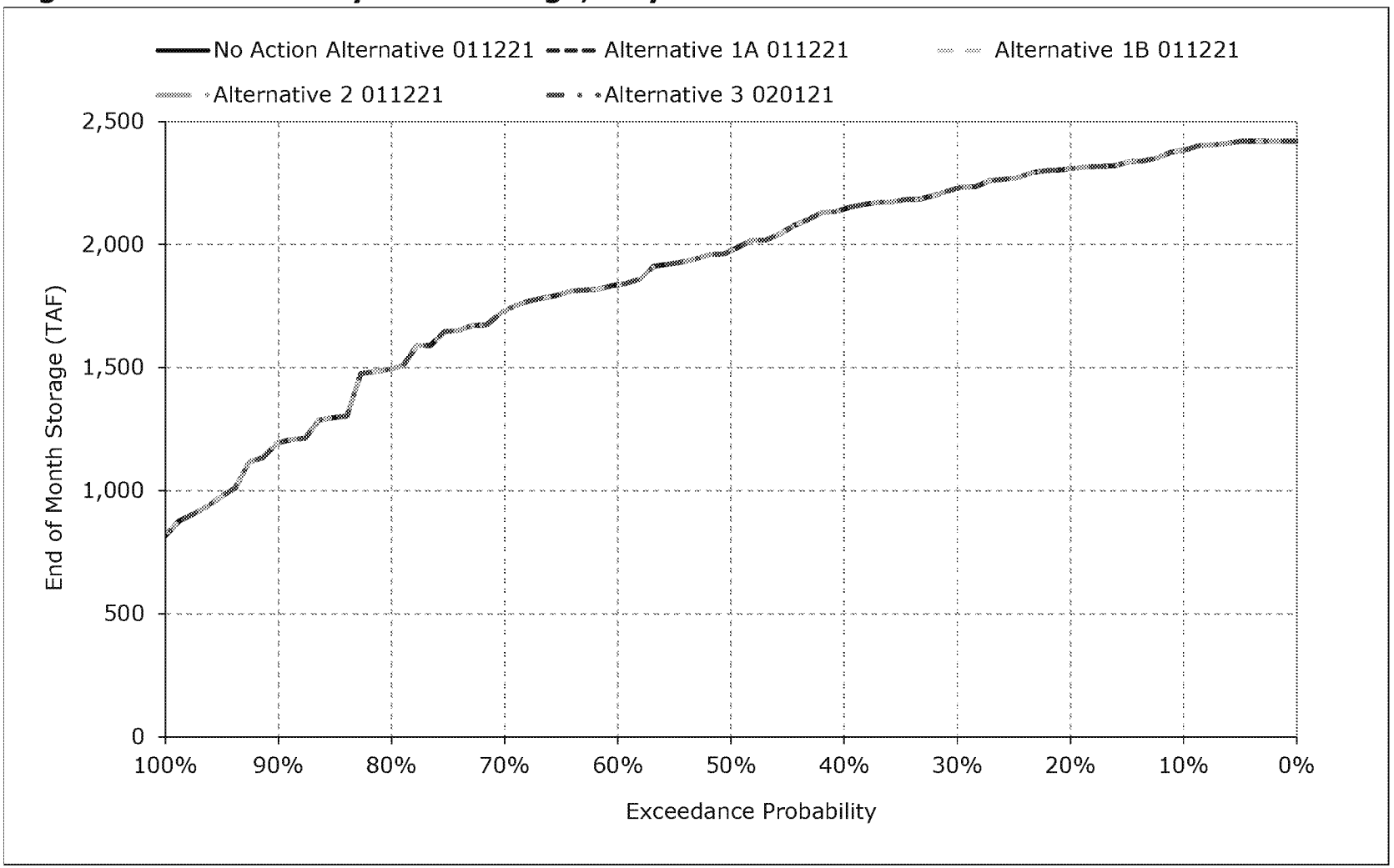


Figure 5B2-1-9. Trinity Lake Storage, June

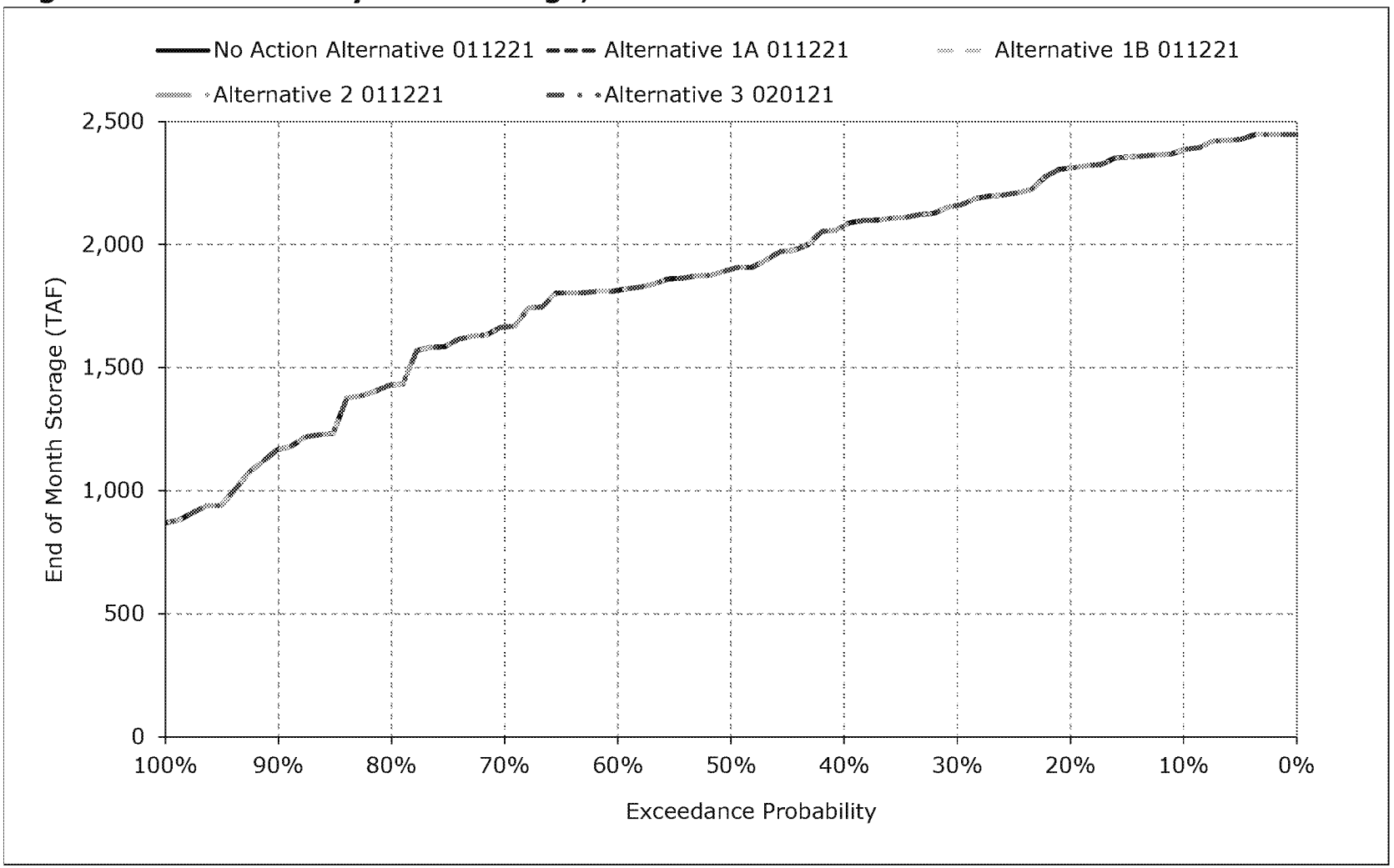


Figure 5B2-1-10. Trinity Lake Storage, July

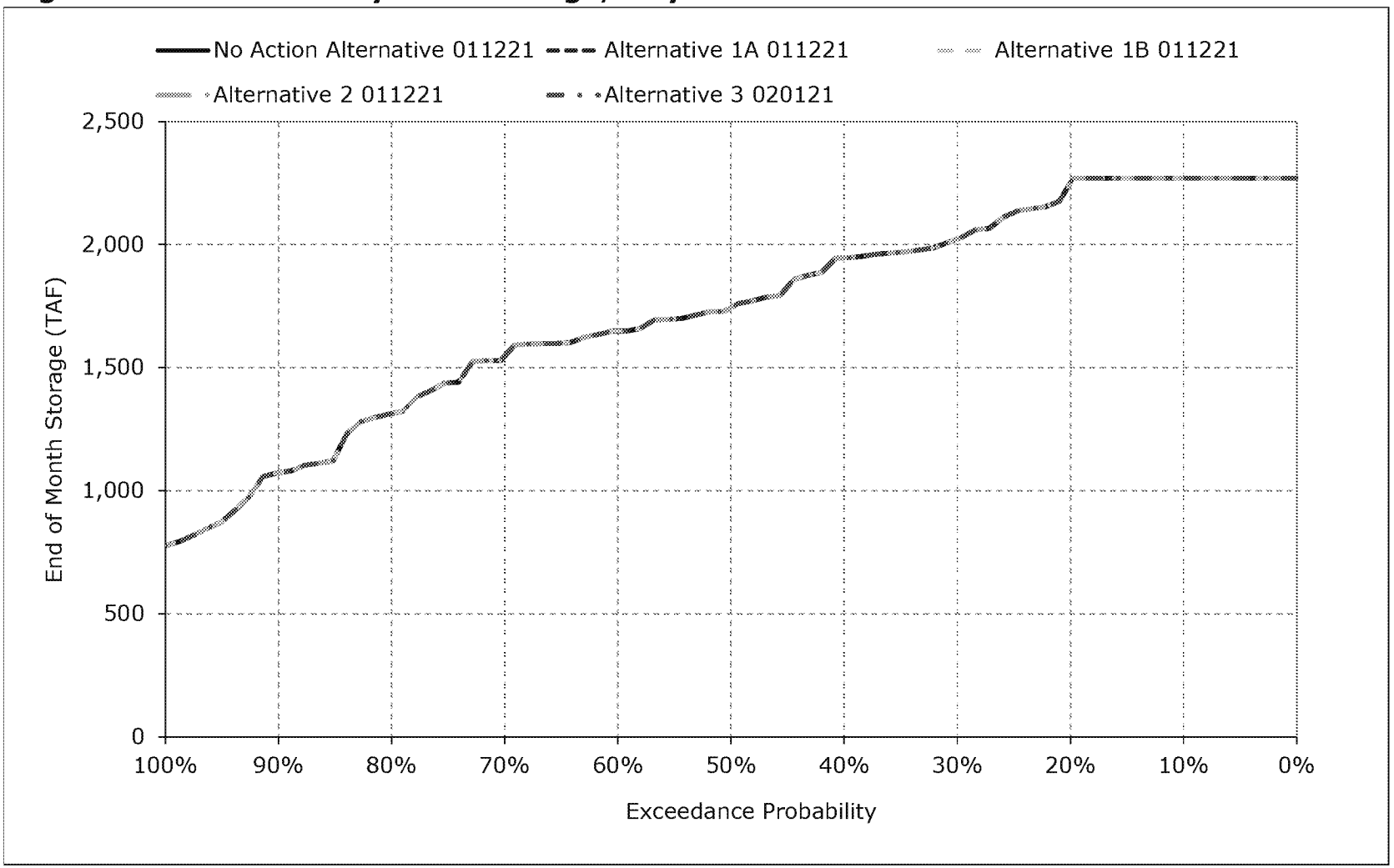


Figure 5B2-1-11. Trinity Lake Storage, August

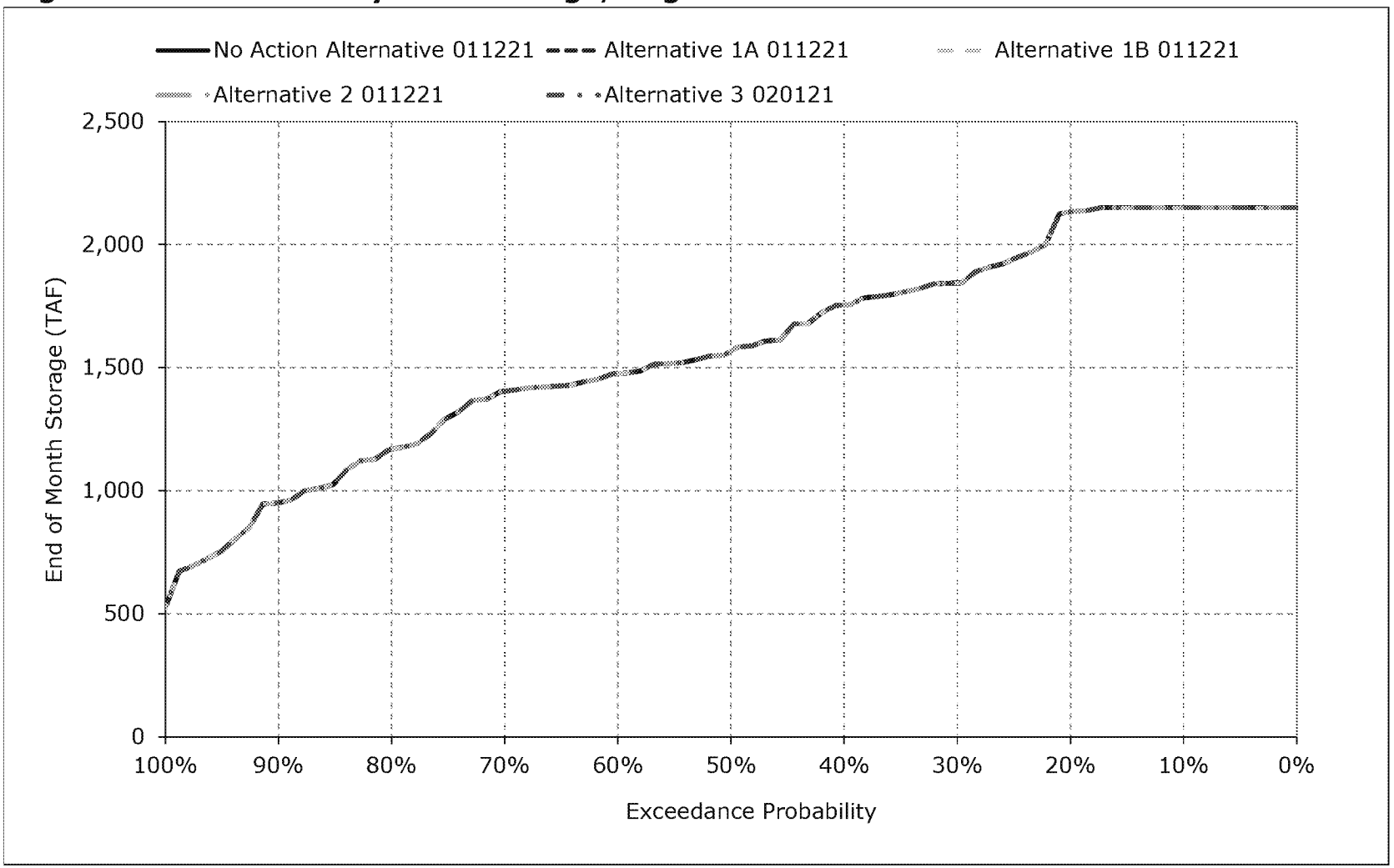


Figure 5B2-1-12. Trinity Lake Storage, September

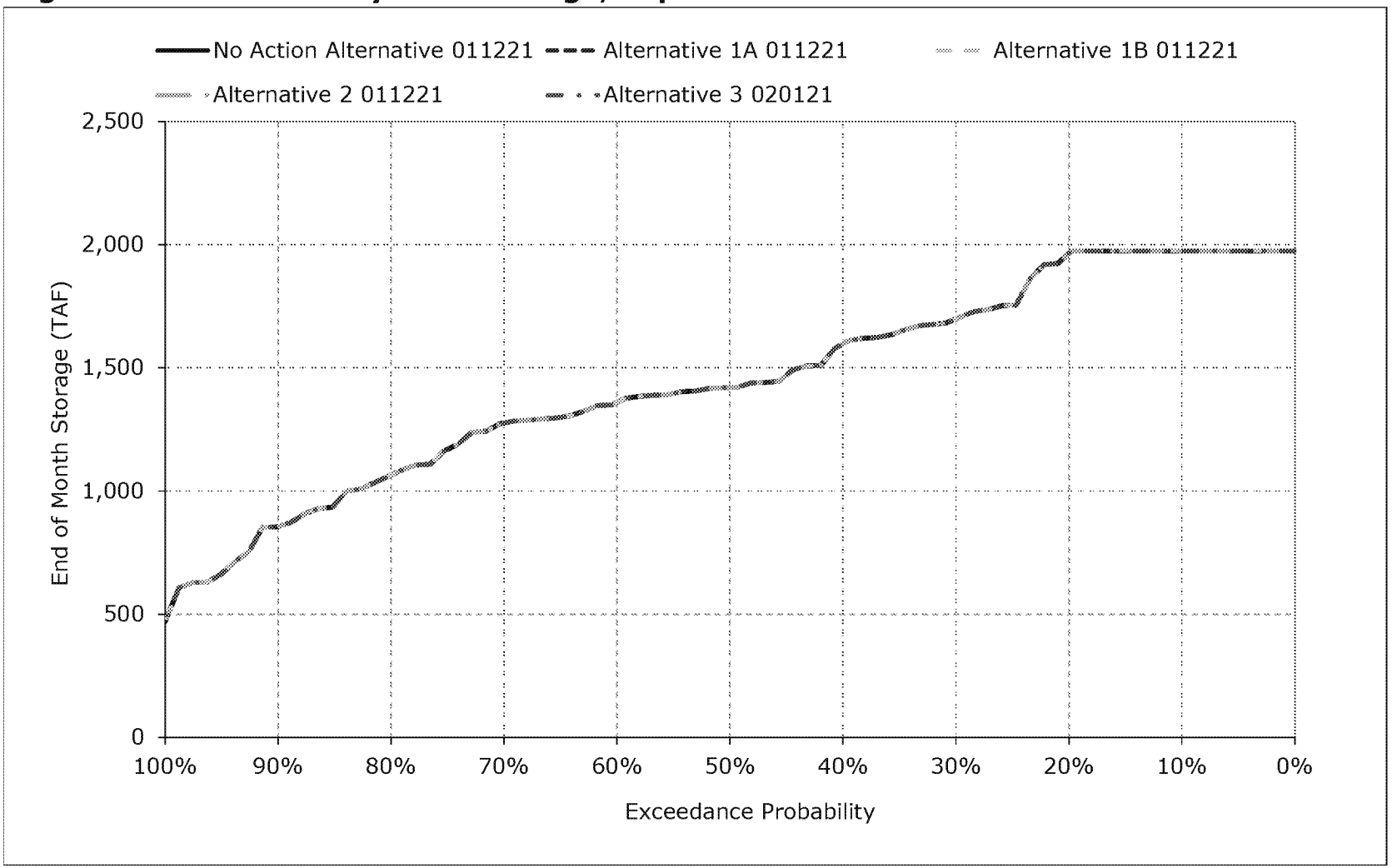


Table 5B2-2-1a. Trinity Lake Elevation, No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,332	2,332	2,332	2,337	2,345	2,350	2,361	2,366	2,366	2,359	2,353	2,343
20%	2,332	2,332	2,332	2,337	2,345	2,350	2,360	2,362	2,362	2,358	2,352	2,342
30%	2,317	2,321	2,325	2,332	2,343	2,350	2,359	2,357	2,354	2,346	2,332	2,319
40%	2,304	2,308	2,316	2,325	2,337	2,348	2,355	2,353	2,349	2,340	2,324	2,311
50%	2,293	2,296	2,305	2,313	2,323	2,335	2,347	2,343	2,336	2,323	2,308	2,296
60%	2,288	2,287	2,295	2,299	2,314	2,324	2,335	2,331	2,329	2,315	2,301	2,291
70%	2,278	2,277	2,283	2,289	2,299	2,310	2,318	2,322	2,317	2,307	2,295	2,284
80%	2,259	2,263	2,262	2,268	2,277	2,295	2,310	2,302	2,297	2,287	2,273	2,262
90%	2,235	2,233	2,238	2,240	2,255	2,255	2,276	2,275	2,273	2,263	2,249	2,238
Long Term												
Full Simulation Period[a]	2,290	2,291	2,295	2,301	2,311	2,321	2,331	2,331	2,329	2,319	2,306	2,294
Water Year Types[b,c]												
Wet (32%)	2,324	2,325	2,326	2,326	2,339	2,348	2,358	2,361	2,359	2,352	2,344	2,333
Above Normal (15%)	2,312	2,312	2,314	2,314	2,328	2,339	2,350	2,351	2,349	2,342	2,329	2,315
Below Normal (17%)	2,284	2,287	2,294	2,295	2,302	2,310	2,324	2,323	2,321	2,311	2,297	2,285
Dry (22%)	2,271	2,272	2,281	2,291	2,299	2,311	2,323	2,319	2,315	2,301	2,286	2,274
Critical (15%)	2,227	2,228	2,232	2,257	2,262	2,270	2,277	2,274	2,272	2,260	2,243	2,231

Table 5B2-2-1b. Trinity Lake Elevation, Alternative 1A 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,332	2,332	2,332	2,337	2,345	2,350	2,361	2,366	2,366	2,359	2,353	2,343
20%	2,332	2,332	2,332	2,337	2,345	2,350	2,360	2,362	2,362	2,358	2,352	2,342
30%	2,317	2,321	2,325	2,332	2,343	2,350	2,359	2,357	2,354	2,346	2,332	2,319
40%	2,304	2,308	2,316	2,325	2,337	2,348	2,355	2,353	2,349	2,340	2,324	2,311
50%	2,293	2,296	2,305	2,313	2,323	2,335	2,347	2,343	2,336	2,323	2,308	2,296
60%	2,288	2,287	2,295	2,299	2,314	2,324	2,335	2,331	2,329	2,315	2,301	2,291
70%	2,278	2,277	2,283	2,289	2,299	2,310	2,318	2,322	2,317	2,307	2,295	2,284
80%	2,259	2,263	2,262	2,268	2,277	2,295	2,310	2,302	2,297	2,287	2,273	2,262
90%	2,235	2,233	2,238	2,240	2,255	2,255	2,276	2,275	2,273	2,263	2,249	2,238
Long Term												
Full Simulation Period[a]	2,290	2,291	2,295	2,301	2,311	2,321	2,331	2,331	2,329	2,319	2,306	2,294
Water Year Types[b,c]												
Wet (32%)	2,324	2,325	2,326	2,326	2,339	2,348	2,358	2,361	2,359	2,352	2,344	2,333
Above Normal (15%)	2,312	2,312	2,314	2,314	2,328	2,339	2,350	2,351	2,349	2,342	2,329	2,315
Below Normal (17%)	2,284	2,287	2,294	2,295	2,302	2,310	2,324	2,323	2,321	2,311	2,297	2,285
Dry (22%)	2,271	2,272	2,281	2,291	2,299	2,311	2,323	2,319	2,315	2,301	2,286	2,274
Critical (15%)	2,227	2,228	2,232	2,257	2,262	2,270	2,277	2,274	2,272	2,260	2,243	2,231

Table 5B2-2-1c. Trinity Lake Elevation, Alternative 1A 011221 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-2-2a. Trinity Lake Elevation, No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,332	2,332	2,332	2,337	2,345	2,350	2,361	2,366	2,366	2,359	2,353	2,343
20%	2,332	2,332	2,332	2,337	2,345	2,350	2,360	2,362	2,362	2,358	2,352	2,342
30%	2,317	2,321	2,325	2,332	2,343	2,350	2,359	2,357	2,354	2,346	2,332	2,319
40%	2,304	2,308	2,316	2,325	2,337	2,348	2,355	2,353	2,349	2,340	2,324	2,311
50%	2,293	2,296	2,305	2,313	2,323	2,335	2,347	2,343	2,336	2,323	2,308	2,296
60%	2,288	2,287	2,295	2,299	2,314	2,324	2,335	2,331	2,329	2,315	2,301	2,291
70%	2,278	2,277	2,283	2,289	2,299	2,310	2,318	2,322	2,317	2,307	2,295	2,284
80%	2,259	2,263	2,262	2,268	2,277	2,295	2,310	2,302	2,297	2,287	2,273	2,262
90%	2,235	2,233	2,238	2,240	2,255	2,255	2,276	2,275	2,273	2,263	2,249	2,238
Long Term												
Full Simulation Period[a]	2,290	2,291	2,295	2,301	2,311	2,321	2,331	2,331	2,329	2,319	2,306	2,294
Water Year Types[b,c]												
Wet (32%)	2,324	2,325	2,326	2,326	2,339	2,348	2,358	2,361	2,359	2,352	2,344	2,333
Above Normal (15%)	2,312	2,312	2,314	2,314	2,328	2,339	2,350	2,351	2,349	2,342	2,329	2,315
Below Normal (17%)	2,284	2,287	2,294	2,295	2,302	2,310	2,324	2,323	2,321	2,311	2,297	2,285
Dry (22%)	2,271	2,272	2,281	2,291	2,299	2,311	2,323	2,319	2,315	2,301	2,286	2,274
Critical (15%)	2,227	2,228	2,232	2,257	2,262	2,270	2,277	2,274	2,272	2,260	2,243	2,231

Table 5B2-2-2b. Trinity Lake Elevation, Alternative 1B 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,332	2,332	2,332	2,337	2,345	2,350	2,361	2,366	2,366	2,359	2,353	2,343
20%	2,332	2,332	2,332	2,337	2,345	2,350	2,360	2,362	2,362	2,358	2,352	2,342
30%	2,317	2,321	2,325	2,332	2,343	2,350	2,359	2,357	2,354	2,346	2,332	2,319
40%	2,304	2,308	2,316	2,325	2,337	2,348	2,355	2,353	2,349	2,340	2,324	2,311
50%	2,293	2,296	2,305	2,313	2,323	2,335	2,347	2,343	2,336	2,323	2,308	2,296
60%	2,288	2,287	2,295	2,299	2,314	2,324	2,335	2,331	2,329	2,315	2,301	2,291
70%	2,278	2,277	2,283	2,289	2,299	2,310	2,318	2,322	2,317	2,307	2,295	2,284
80%	2,259	2,263	2,262	2,268	2,277	2,295	2,310	2,302	2,297	2,287	2,273	2,262
90%	2,235	2,233	2,238	2,240	2,255	2,255	2,276	2,275	2,273	2,263	2,249	2,238
Long Term												
Full Simulation Period[a]	2,290	2,291	2,295	2,301	2,311	2,321	2,331	2,331	2,329	2,319	2,306	2,294
Water Year Types[b,c]												
Wet (32%)	2,324	2,325	2,326	2,326	2,339	2,348	2,358	2,361	2,359	2,352	2,344	2,333
Above Normal (15%)	2,312	2,312	2,314	2,314	2,328	2,339	2,350	2,351	2,349	2,342	2,329	2,315
Below Normal (17%)	2,284	2,287	2,294	2,295	2,302	2,310	2,324	2,323	2,321	2,311	2,297	2,285
Dry (22%)	2,271	2,272	2,281	2,291	2,299	2,311	2,323	2,319	2,315	2,301	2,286	2,274
Critical (15%)	2,227	2,228	2,232	2,257	2,262	2,270	2,277	2,274	2,272	2,260	2,243	2,231

Table 5B2-2-2c. Trinity Lake Elevation, Alternative 1B 011221 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-2-3a. Trinity Lake Elevation, No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,332	2,332	2,332	2,337	2,345	2,350	2,361	2,366	2,366	2,359	2,353	2,343
20%	2,332	2,332	2,332	2,337	2,345	2,350	2,360	2,362	2,362	2,358	2,352	2,342
30%	2,317	2,321	2,325	2,332	2,343	2,350	2,359	2,357	2,354	2,346	2,332	2,319
40%	2,304	2,308	2,316	2,325	2,337	2,348	2,355	2,353	2,349	2,340	2,324	2,311
50%	2,293	2,296	2,305	2,313	2,323	2,335	2,347	2,343	2,336	2,323	2,308	2,296
60%	2,288	2,287	2,295	2,299	2,314	2,324	2,335	2,331	2,329	2,315	2,301	2,291
70%	2,278	2,277	2,283	2,289	2,299	2,310	2,318	2,322	2,317	2,307	2,295	2,284
80%	2,259	2,263	2,262	2,268	2,277	2,295	2,310	2,302	2,297	2,287	2,273	2,262
90%	2,235	2,233	2,238	2,240	2,255	2,255	2,276	2,275	2,273	2,263	2,249	2,238
Long Term												
Full Simulation Period[a]	2,290	2,291	2,295	2,301	2,311	2,321	2,331	2,331	2,329	2,319	2,306	2,294
Water Year Types[b,c]												
Wet (32%)	2,324	2,325	2,326	2,326	2,339	2,348	2,358	2,361	2,359	2,352	2,344	2,333
Above Normal (15%)	2,312	2,312	2,314	2,314	2,328	2,339	2,350	2,351	2,349	2,342	2,329	2,315
Below Normal (17%)	2,284	2,287	2,294	2,295	2,302	2,310	2,324	2,323	2,321	2,311	2,297	2,285
Dry (22%)	2,271	2,272	2,281	2,291	2,299	2,311	2,323	2,319	2,315	2,301	2,286	2,274
Critical (15%)	2,227	2,228	2,232	2,257	2,262	2,270	2,277	2,274	2,272	2,260	2,243	2,231

Table 5B2-2-3b. Trinity Lake Elevation, Alternative 2 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,332	2,332	2,332	2,337	2,345	2,350	2,361	2,366	2,366	2,359	2,353	2,343
20%	2,332	2,332	2,332	2,337	2,345	2,350	2,360	2,362	2,362	2,358	2,352	2,342
30%	2,317	2,321	2,325	2,332	2,343	2,350	2,359	2,357	2,354	2,346	2,332	2,319
40%	2,304	2,308	2,316	2,325	2,337	2,348	2,355	2,353	2,349	2,340	2,324	2,311
50%	2,293	2,296	2,305	2,313	2,323	2,335	2,347	2,343	2,336	2,323	2,308	2,296
60%	2,288	2,287	2,295	2,299	2,314	2,324	2,335	2,331	2,329	2,315	2,301	2,291
70%	2,278	2,277	2,283	2,289	2,299	2,310	2,318	2,322	2,317	2,307	2,295	2,284
80%	2,259	2,263	2,262	2,268	2,277	2,295	2,310	2,302	2,297	2,287	2,273	2,262
90%	2,235	2,233	2,238	2,240	2,255	2,255	2,276	2,275	2,273	2,263	2,249	2,238
Long Term												
Full Simulation Period[a]	2,290	2,291	2,295	2,301	2,311	2,321	2,331	2,331	2,329	2,319	2,306	2,294
Water Year Types[b,c]												
Wet (32%)	2,324	2,325	2,326	2,326	2,339	2,348	2,358	2,361	2,359	2,352	2,344	2,333
Above Normal (15%)	2,312	2,312	2,314	2,314	2,328	2,339	2,350	2,351	2,349	2,342	2,329	2,315
Below Normal (17%)	2,284	2,287	2,294	2,295	2,302	2,310	2,324	2,323	2,321	2,311	2,297	2,285
Dry (22%)	2,271	2,272	2,281	2,291	2,299	2,311	2,323	2,319	2,315	2,301	2,286	2,274
Critical (15%)	2,227	2,228	2,232	2,257	2,262	2,270	2,277	2,274	2,272	2,260	2,243	2,231

Table 5B2-2-3c. Trinity Lake Elevation, Alternative 2 011221 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-2-4a. Trinity Lake Elevation, No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,332	2,332	2,332	2,337	2,345	2,350	2,361	2,366	2,366	2,359	2,353	2,343
20%	2,332	2,332	2,332	2,337	2,345	2,350	2,360	2,362	2,362	2,358	2,352	2,342
30%	2,317	2,321	2,325	2,332	2,343	2,350	2,359	2,357	2,354	2,346	2,332	2,319
40%	2,304	2,308	2,316	2,325	2,337	2,348	2,355	2,353	2,349	2,340	2,324	2,311
50%	2,293	2,296	2,305	2,313	2,323	2,335	2,347	2,343	2,336	2,323	2,308	2,296
60%	2,288	2,287	2,295	2,299	2,314	2,324	2,335	2,331	2,329	2,315	2,301	2,291
70%	2,278	2,277	2,283	2,289	2,299	2,310	2,318	2,322	2,317	2,307	2,295	2,284
80%	2,259	2,263	2,262	2,268	2,277	2,295	2,310	2,302	2,297	2,287	2,273	2,262
90%	2,235	2,233	2,238	2,240	2,255	2,255	2,276	2,275	2,273	2,263	2,249	2,238
Long Term												
Full Simulation Period[a]	2,290	2,291	2,295	2,301	2,311	2,321	2,331	2,331	2,329	2,319	2,306	2,294
Water Year Types[b,c]												
Wet (32%)	2,324	2,325	2,326	2,326	2,339	2,348	2,358	2,361	2,359	2,352	2,344	2,333
Above Normal (15%)	2,312	2,312	2,314	2,314	2,328	2,339	2,350	2,351	2,349	2,342	2,329	2,315
Below Normal (17%)	2,284	2,287	2,294	2,295	2,302	2,310	2,324	2,323	2,321	2,311	2,297	2,285
Dry (22%)	2,271	2,272	2,281	2,291	2,299	2,311	2,323	2,319	2,315	2,301	2,286	2,274
Critical (15%)	2,227	2,228	2,232	2,257	2,262	2,270	2,277	2,274	2,272	2,260	2,243	2,231

Table 5B2-2-4b. Trinity Lake Elevation, Alternative 3 020121, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,332	2,332	2,332	2,337	2,345	2,350	2,361	2,366	2,366	2,359	2,353	2,343
20%	2,332	2,332	2,332	2,337	2,345	2,350	2,360	2,362	2,362	2,358	2,352	2,342
30%	2,317	2,321	2,325	2,332	2,343	2,350	2,359	2,357	2,354	2,346	2,332	2,319
40%	2,304	2,308	2,316	2,325	2,337	2,348	2,355	2,353	2,349	2,340	2,324	2,311
50%	2,293	2,296	2,305	2,313	2,323	2,335	2,347	2,343	2,336	2,323	2,308	2,296
60%	2,288	2,287	2,295	2,299	2,314	2,324	2,335	2,331	2,329	2,315	2,301	2,291
70%	2,278	2,277	2,283	2,289	2,299	2,310	2,318	2,322	2,317	2,307	2,295	2,284
80%	2,259	2,263	2,262	2,268	2,277	2,295	2,310	2,302	2,297	2,287	2,273	2,262
90%	2,235	2,233	2,238	2,240	2,255	2,255	2,276	2,275	2,273	2,263	2,249	2,238
Long Term												
Full Simulation Period[a]	2,290	2,291	2,295	2,301	2,311	2,321	2,331	2,331	2,329	2,319	2,306	2,294
Water Year Types[b,c]												
Wet (32%)	2,324	2,325	2,326	2,326	2,339	2,348	2,358	2,361	2,359	2,352	2,344	2,333
Above Normal (15%)	2,312	2,312	2,314	2,314	2,328	2,339	2,350	2,351	2,349	2,342	2,329	2,315
Below Normal (17%)	2,284	2,287	2,294	2,295	2,302	2,310	2,324	2,323	2,321	2,311	2,297	2,285
Dry (22%)	2,271	2,272	2,281	2,291	2,299	2,311	2,323	2,319	2,315	2,301	2,286	2,274
Critical (15%)	2,227	2,228	2,232	2,257	2,262	2,270	2,277	2,274	2,272	2,260	2,243	2,231

Table 5B2-2-4c. Trinity Lake Elevation, Alternative 3 020121 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Figure 5B2-2-1. Trinity Lake Elevation, October

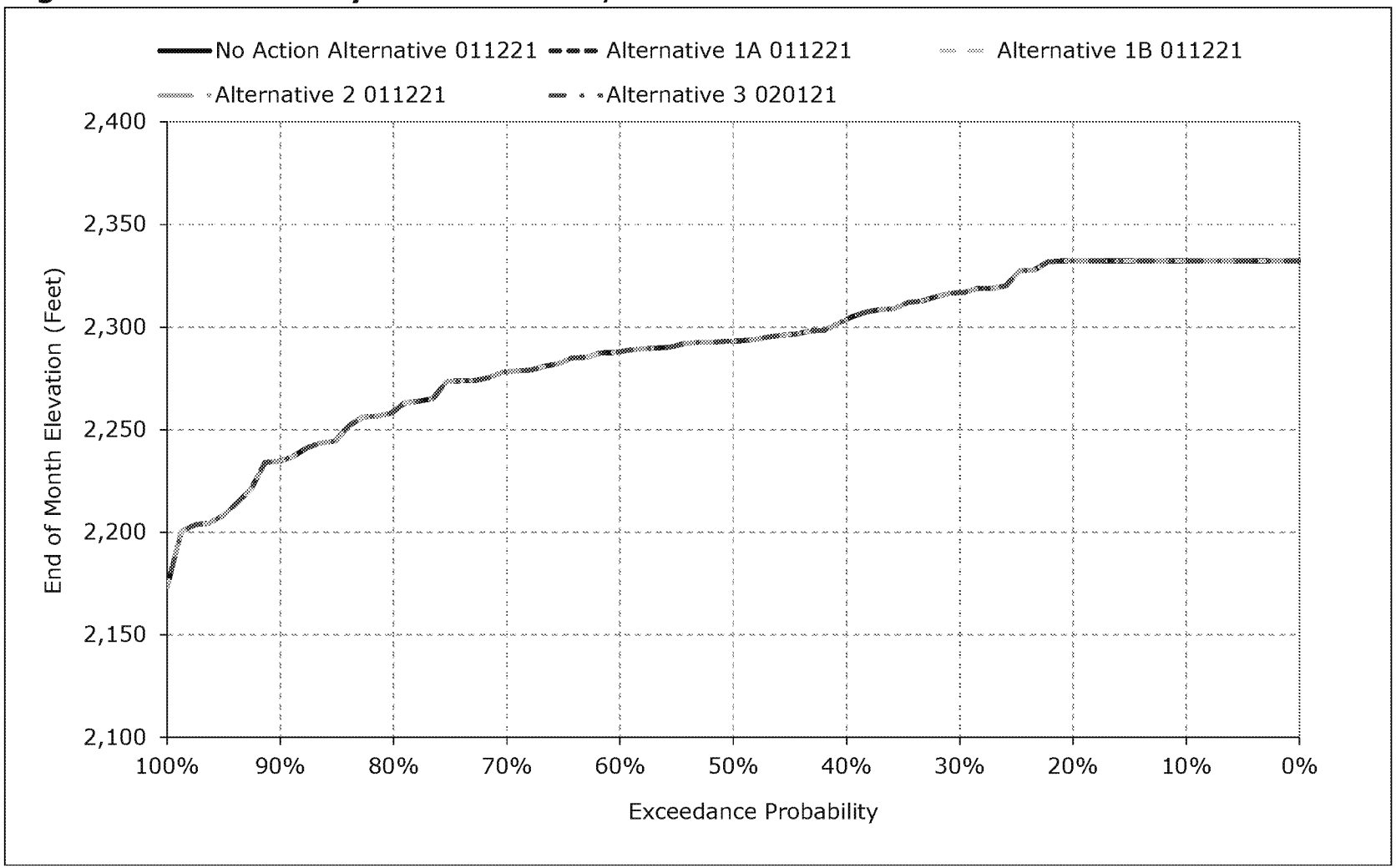


Figure 5B2-2-2. Trinity Lake Elevation, November

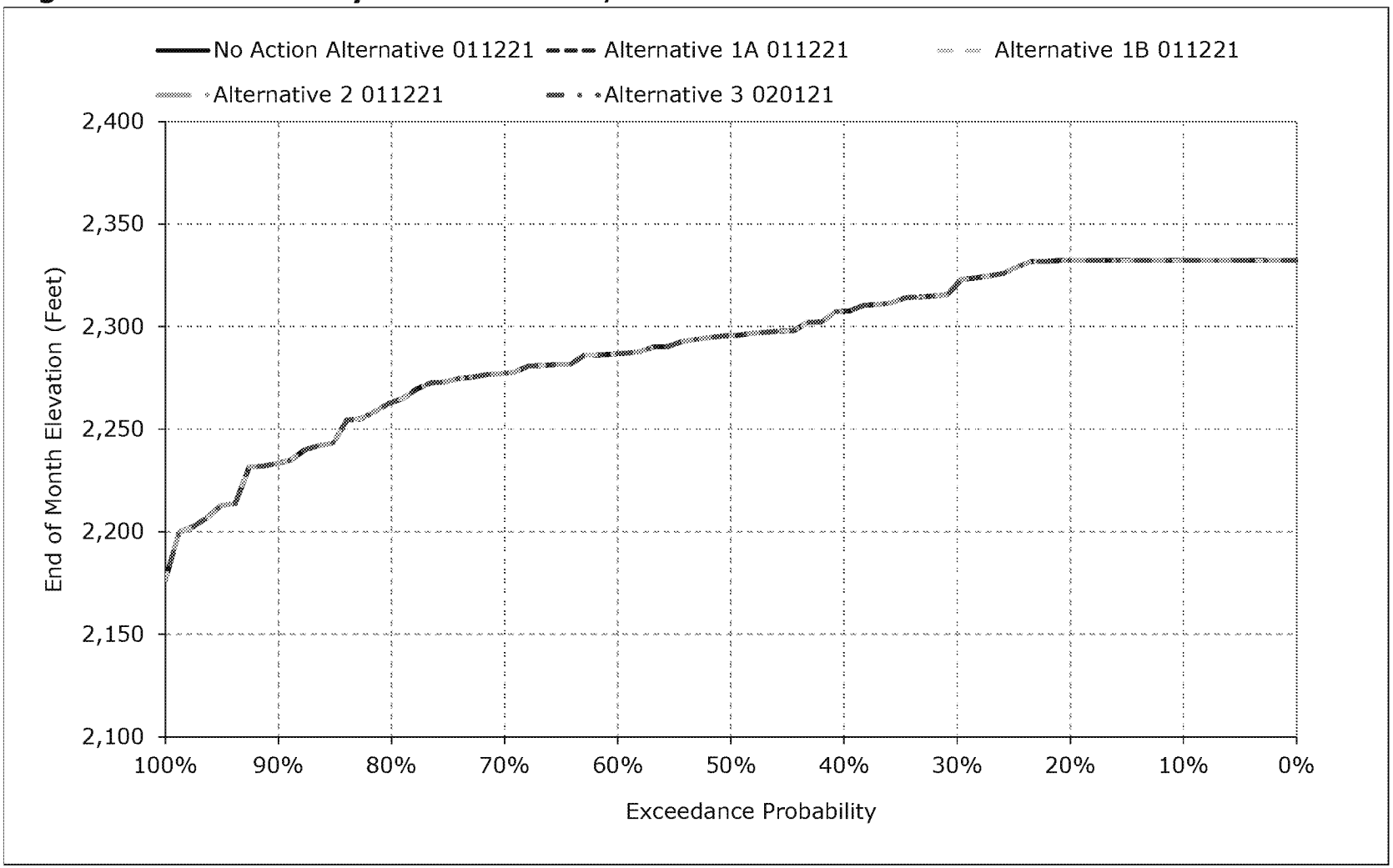


Figure 5B2-2-3. Trinity Lake Elevation, December

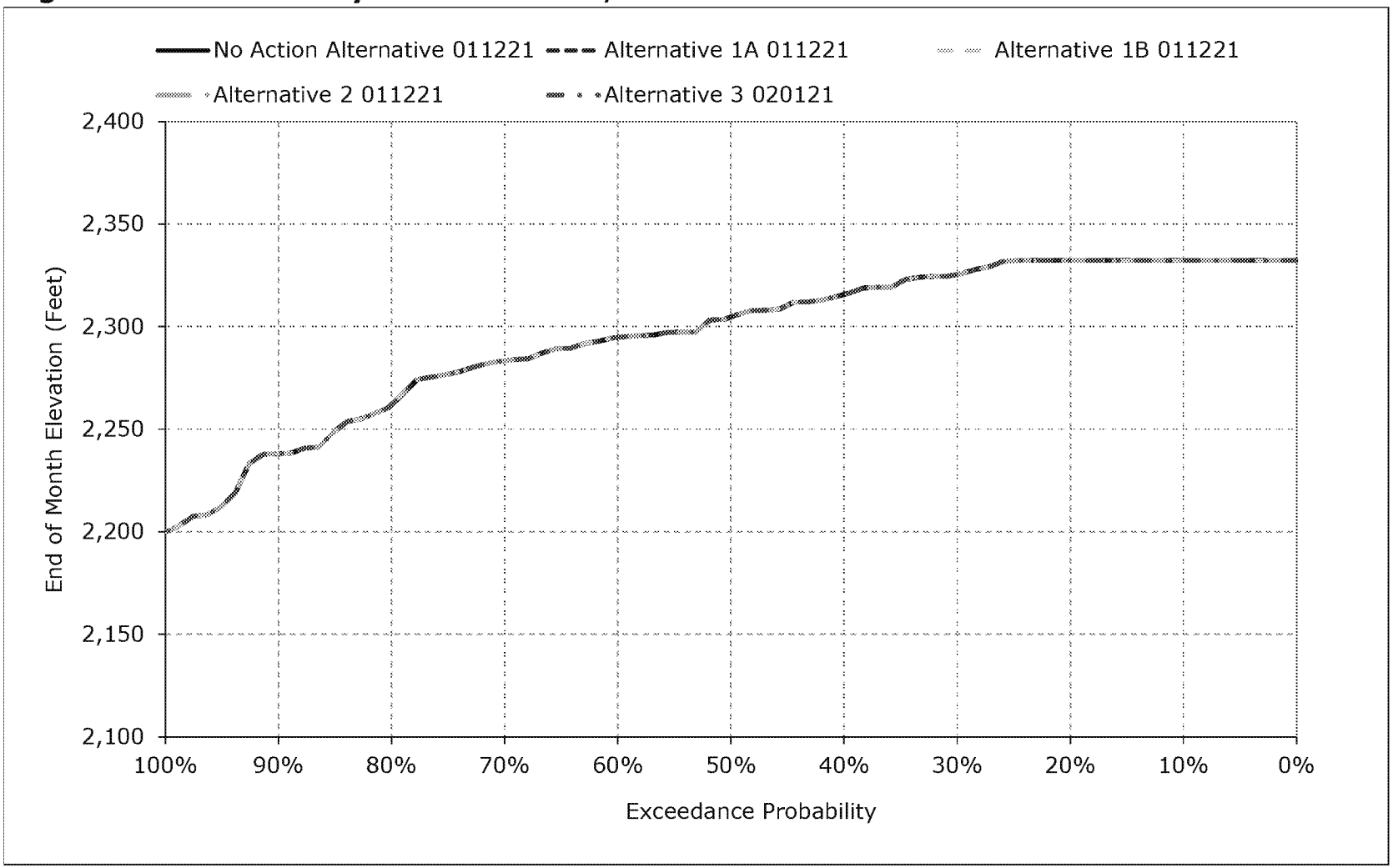


Figure 5B2-2-4. Trinity Lake Elevation, January

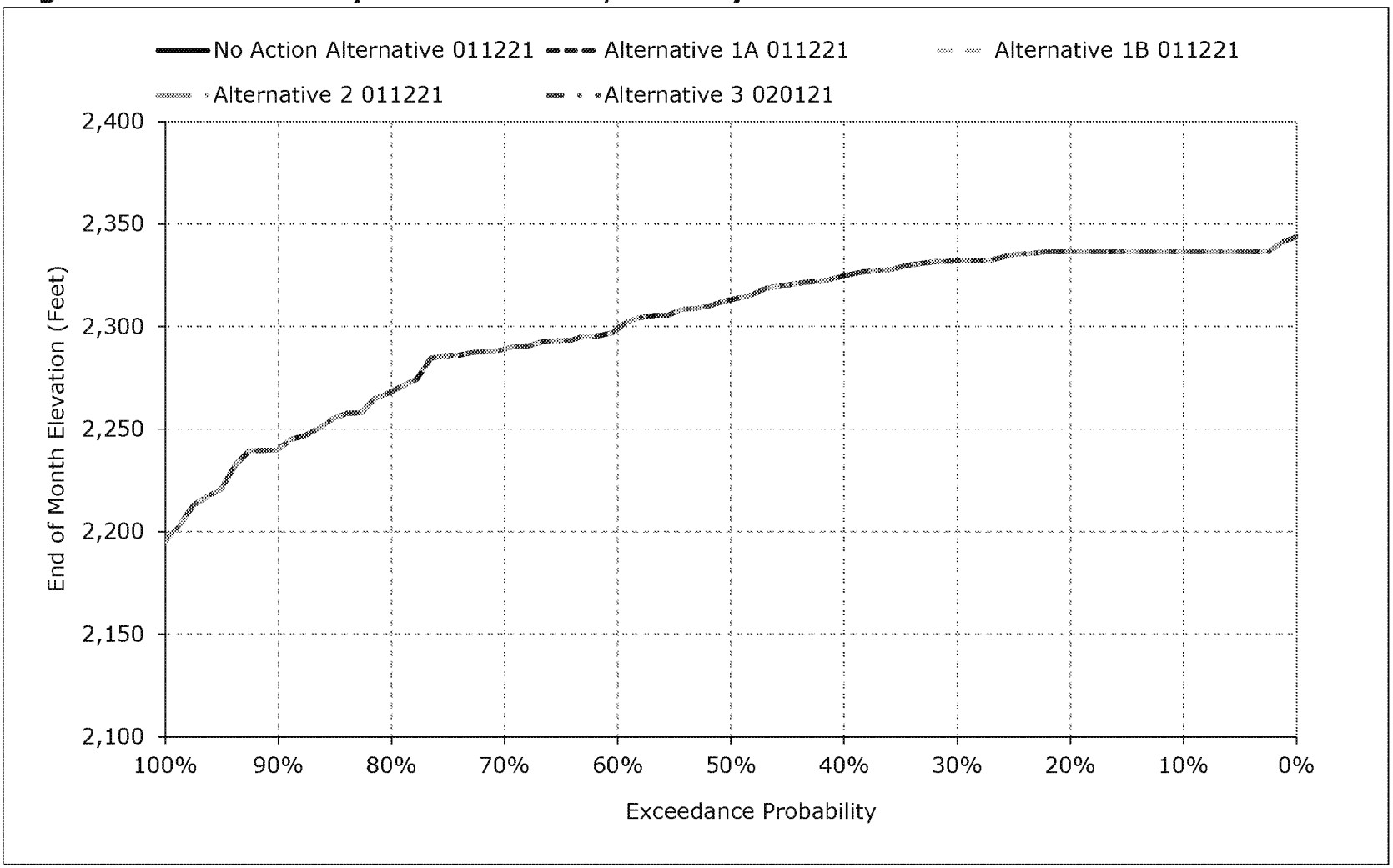


Figure 5B2-2-5. Trinity Lake Elevation, February

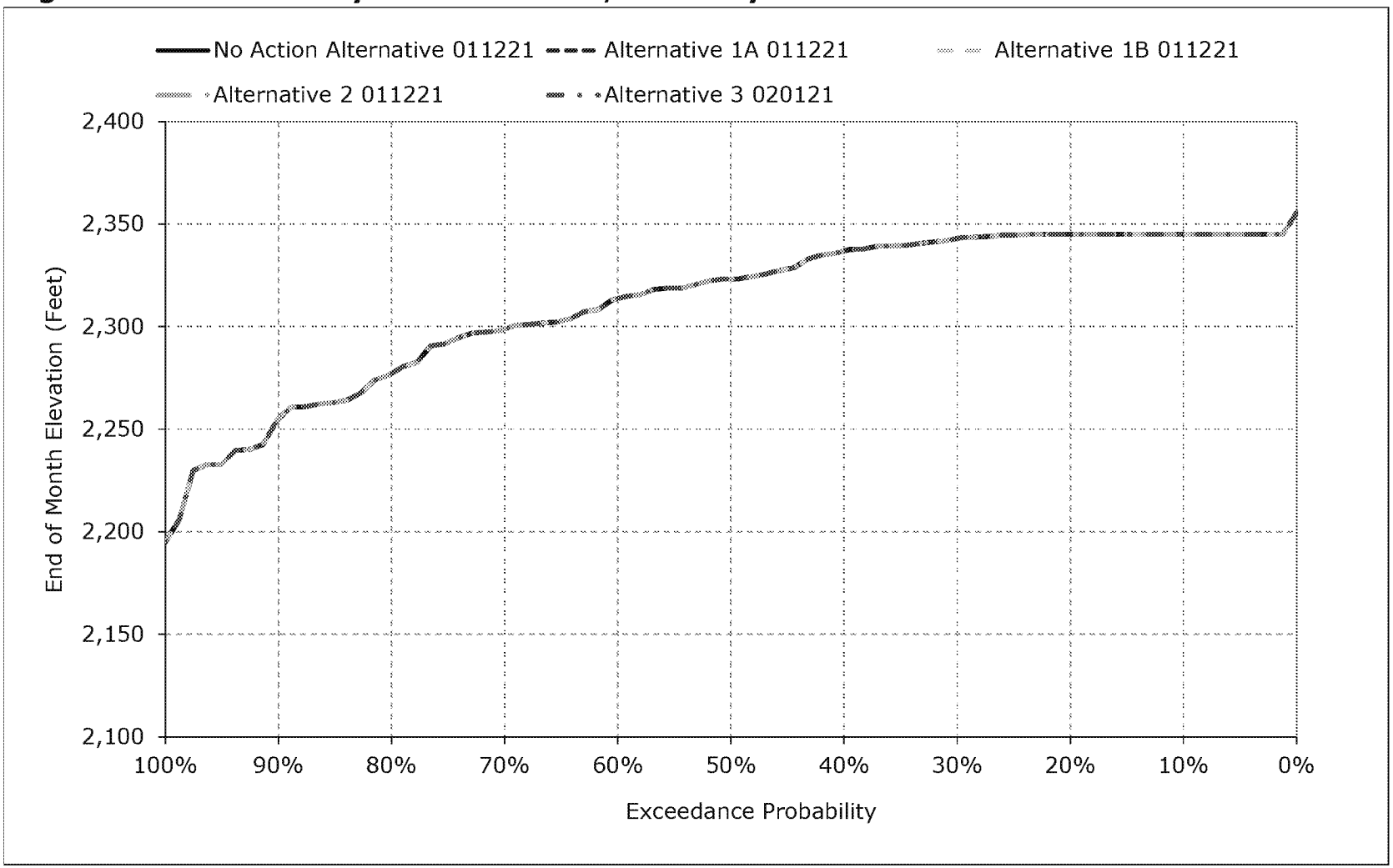


Figure 5B2-2-6. Trinity Lake Elevation, March

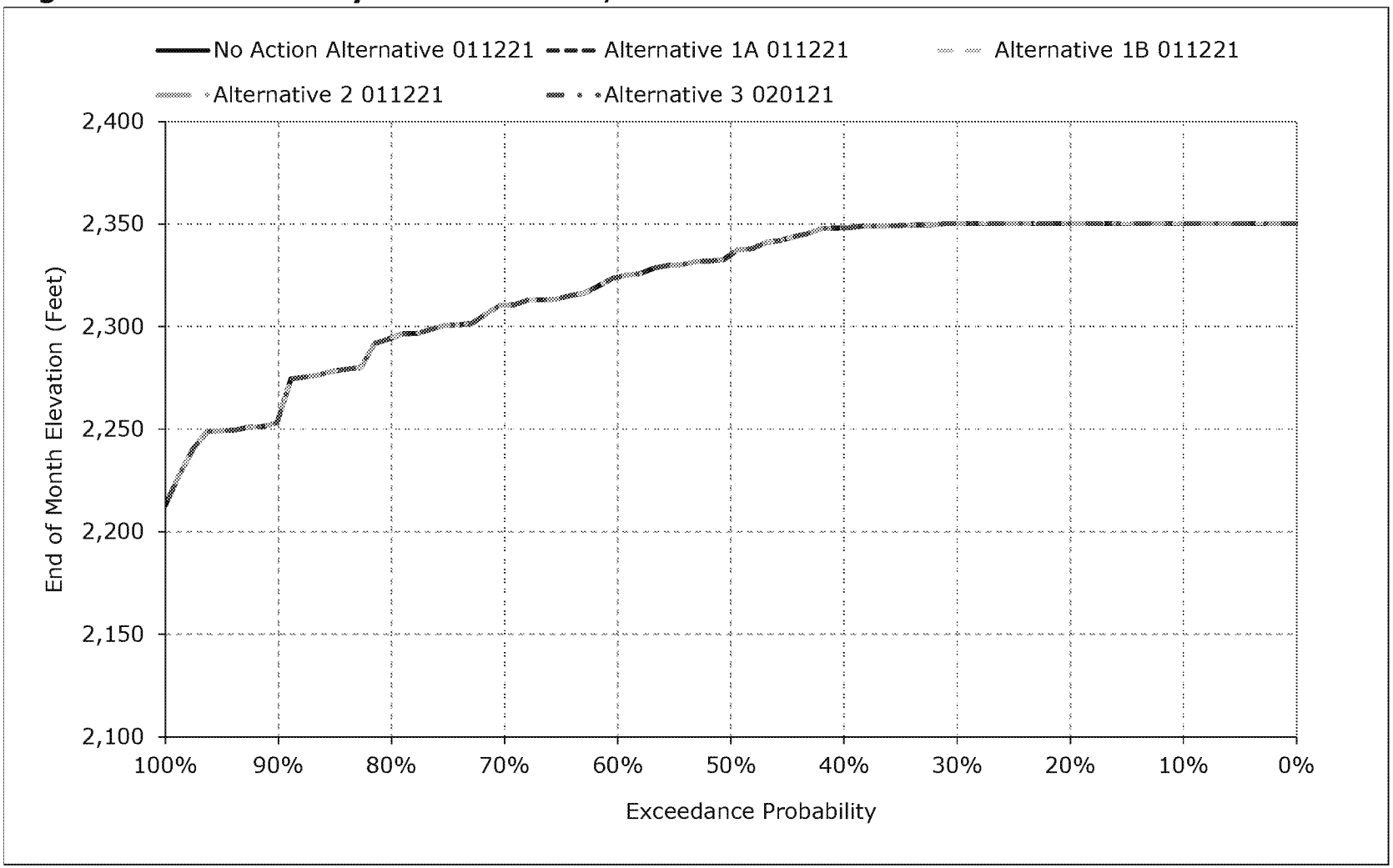


Figure 5B2-2-7. Trinity Lake Elevation, April

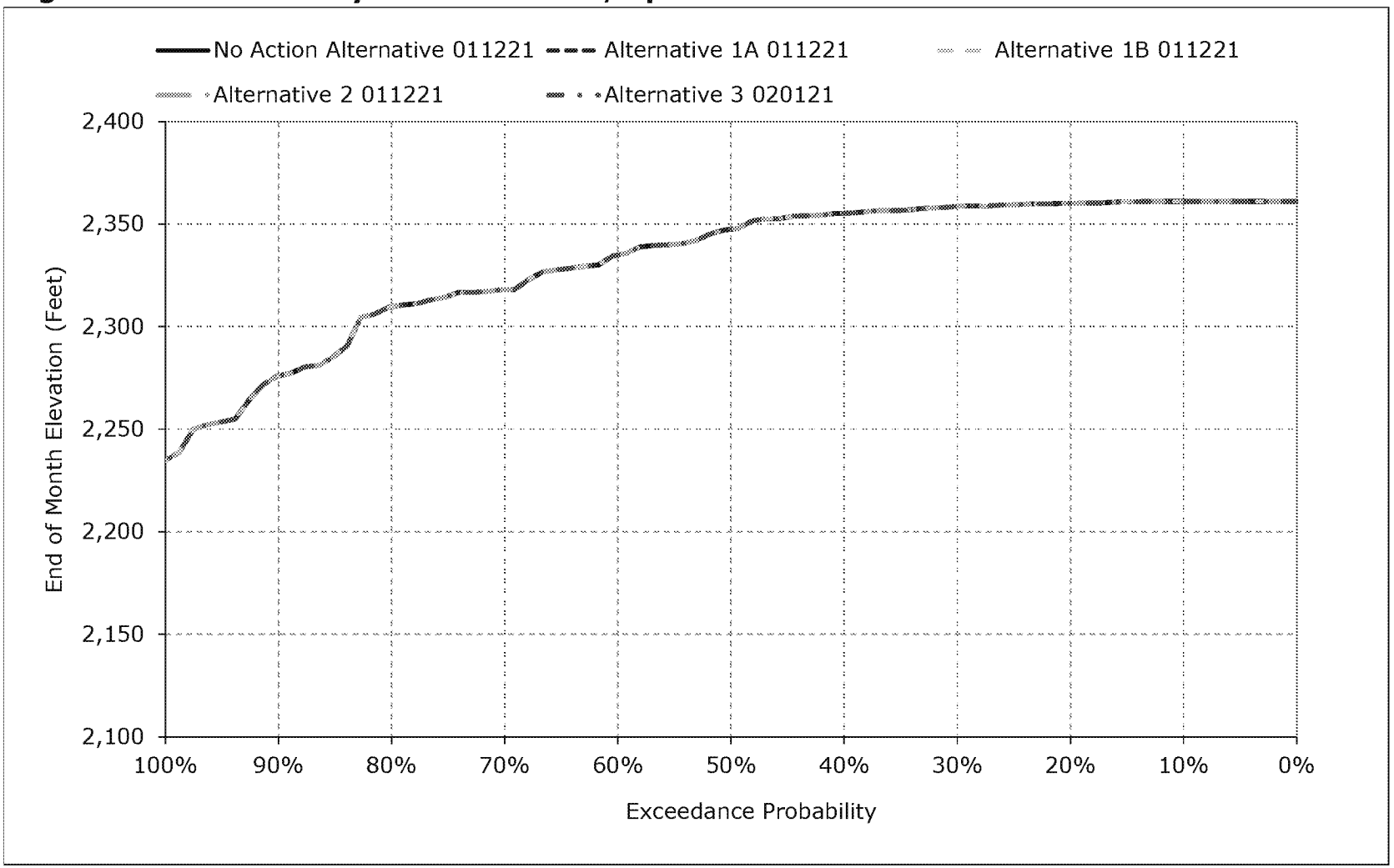


Figure 5B2-2-8. Trinity Lake Elevation, May

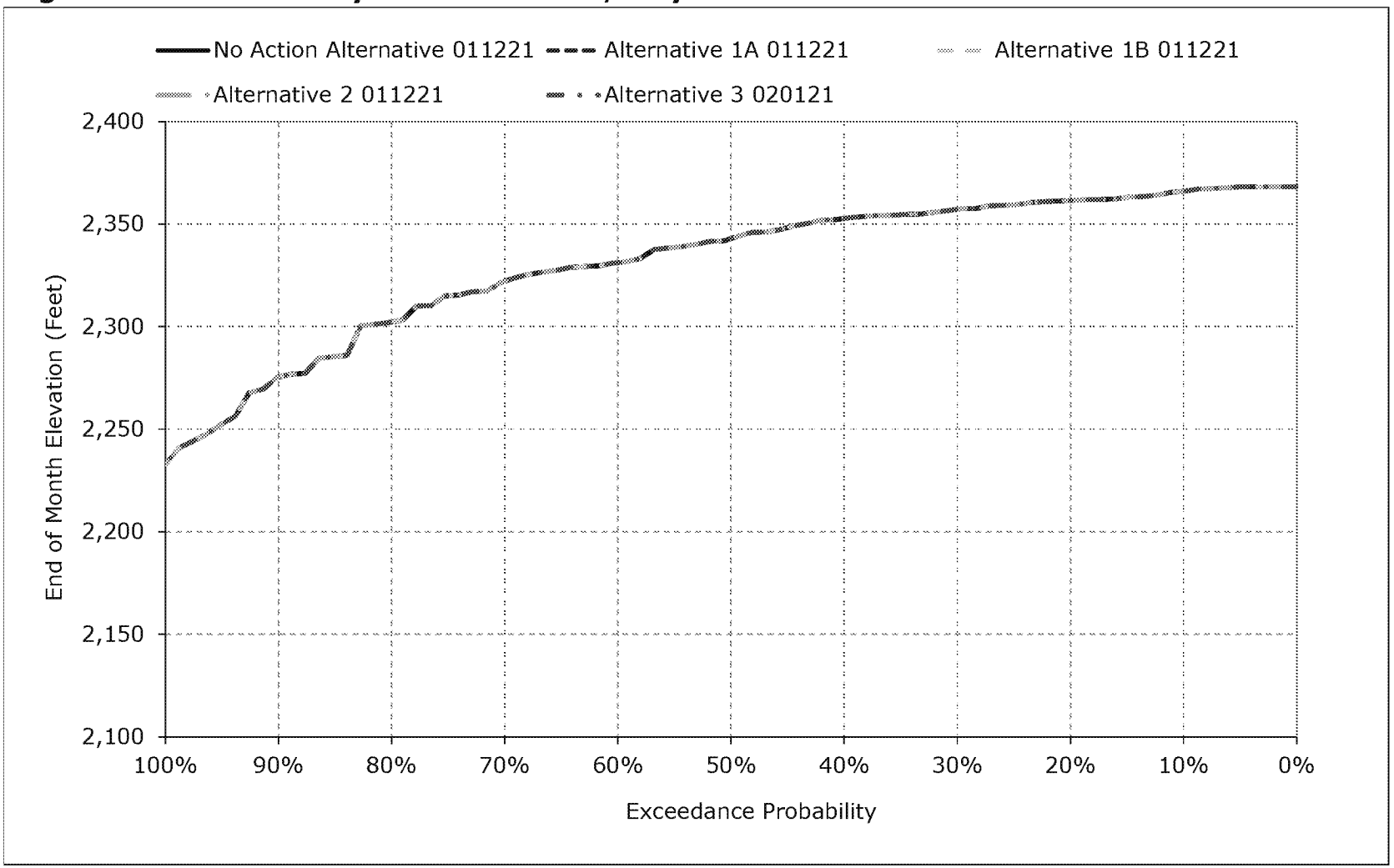


Figure 5B2-2-9. Trinity Lake Elevation, June

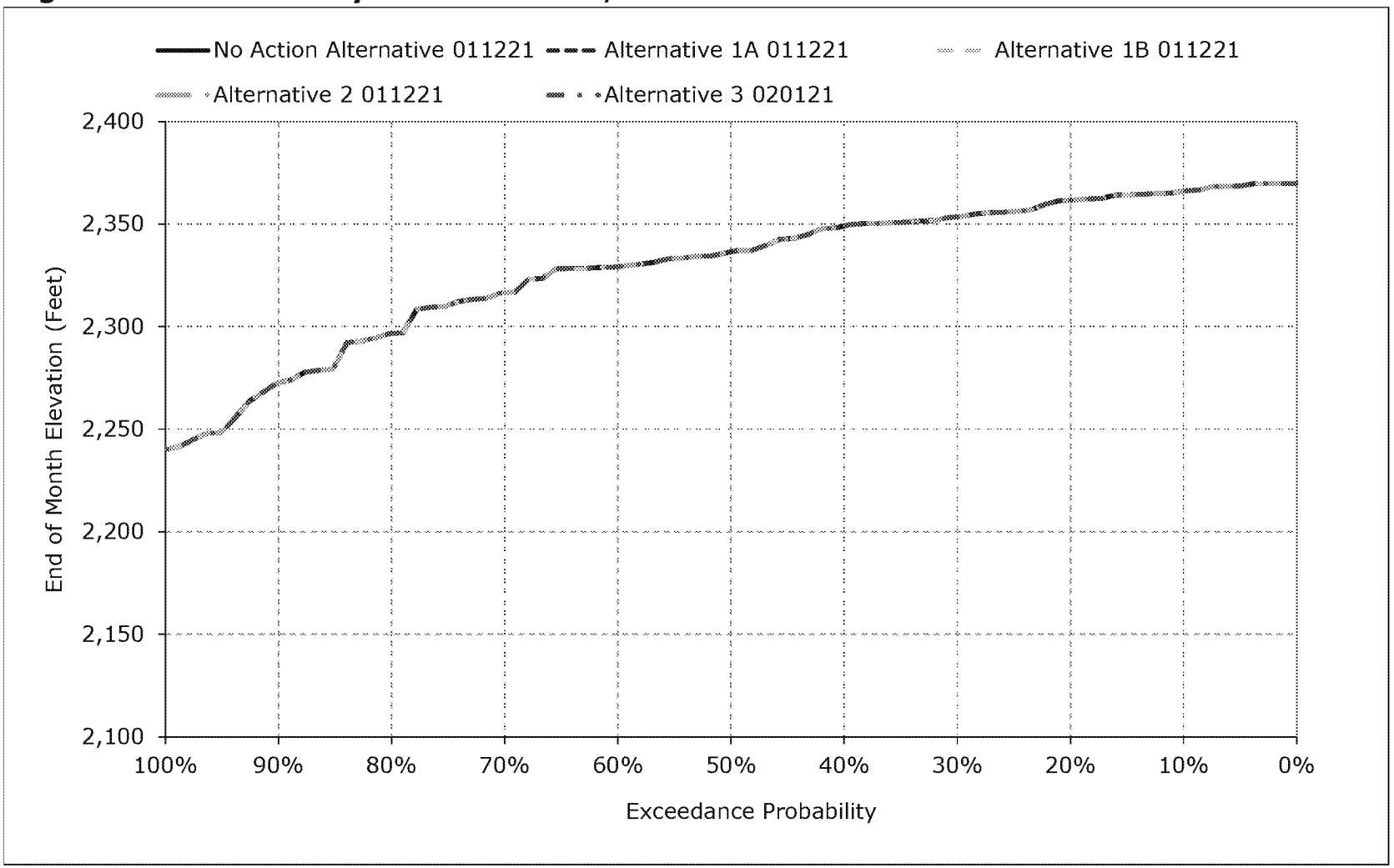


Figure 5B2-2-10. Trinity Lake Elevation, July

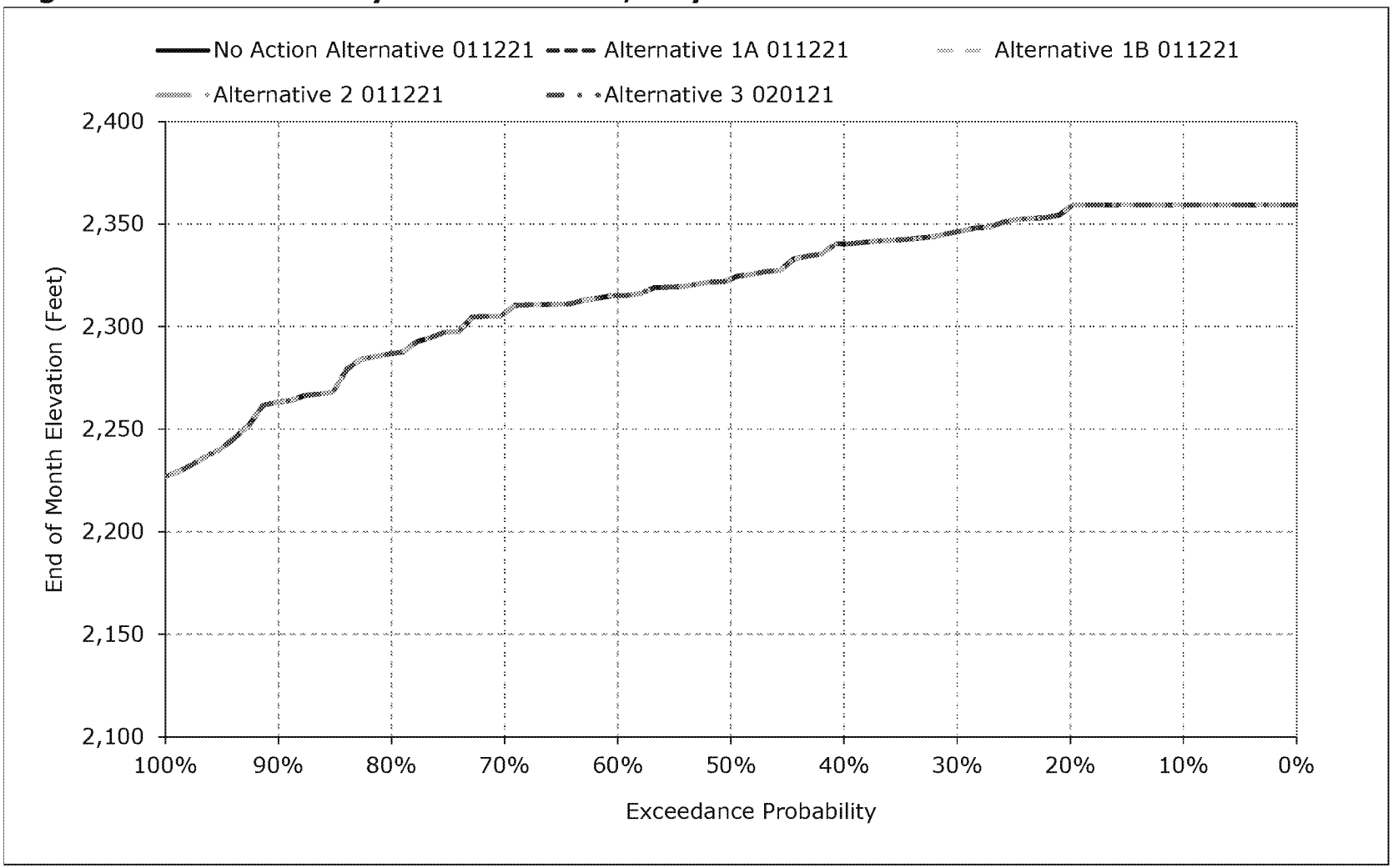


Figure 5B2-2-11. Trinity Lake Elevation, August

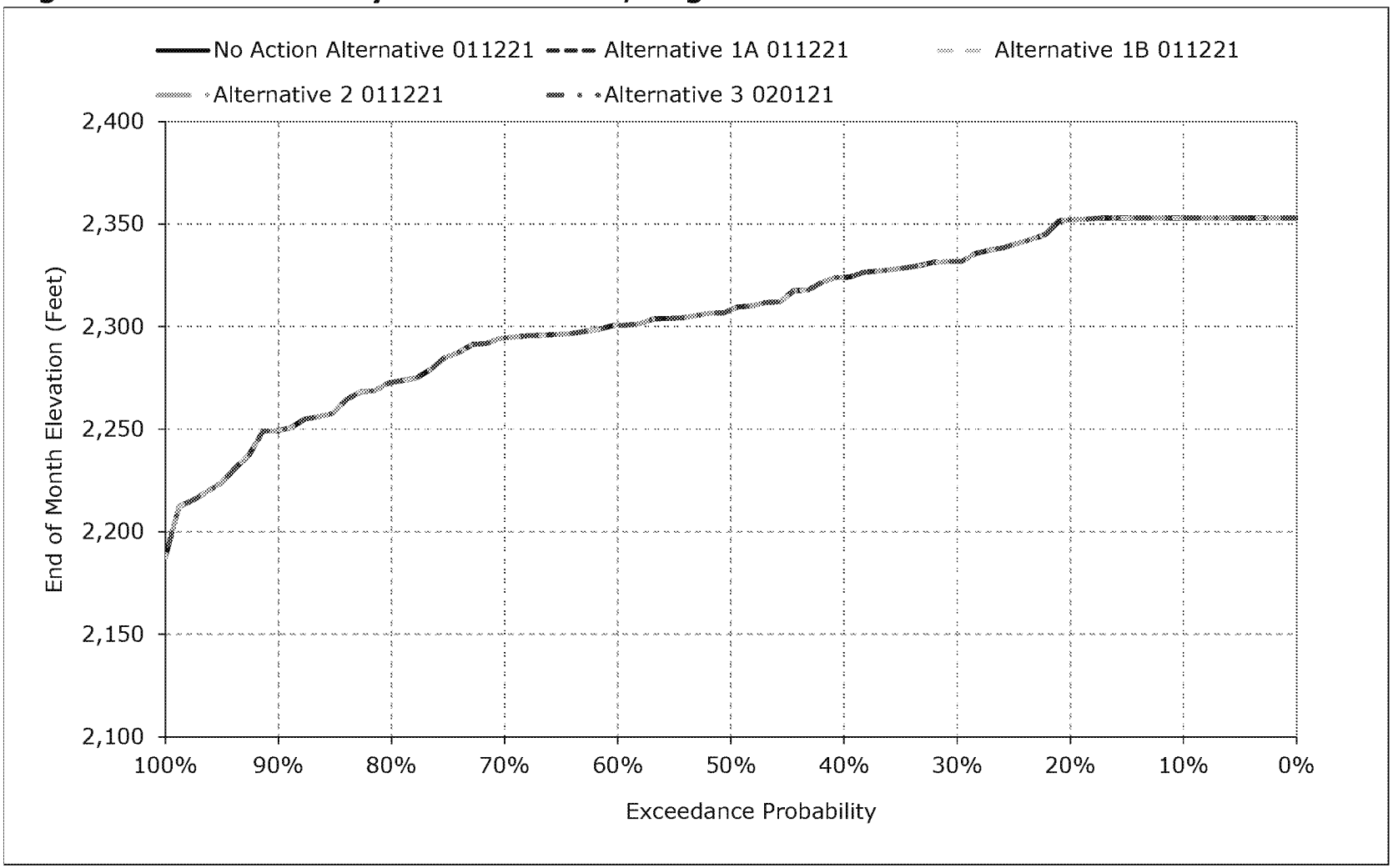


Figure 5B2-2-12. Trinity Lake Elevation, September

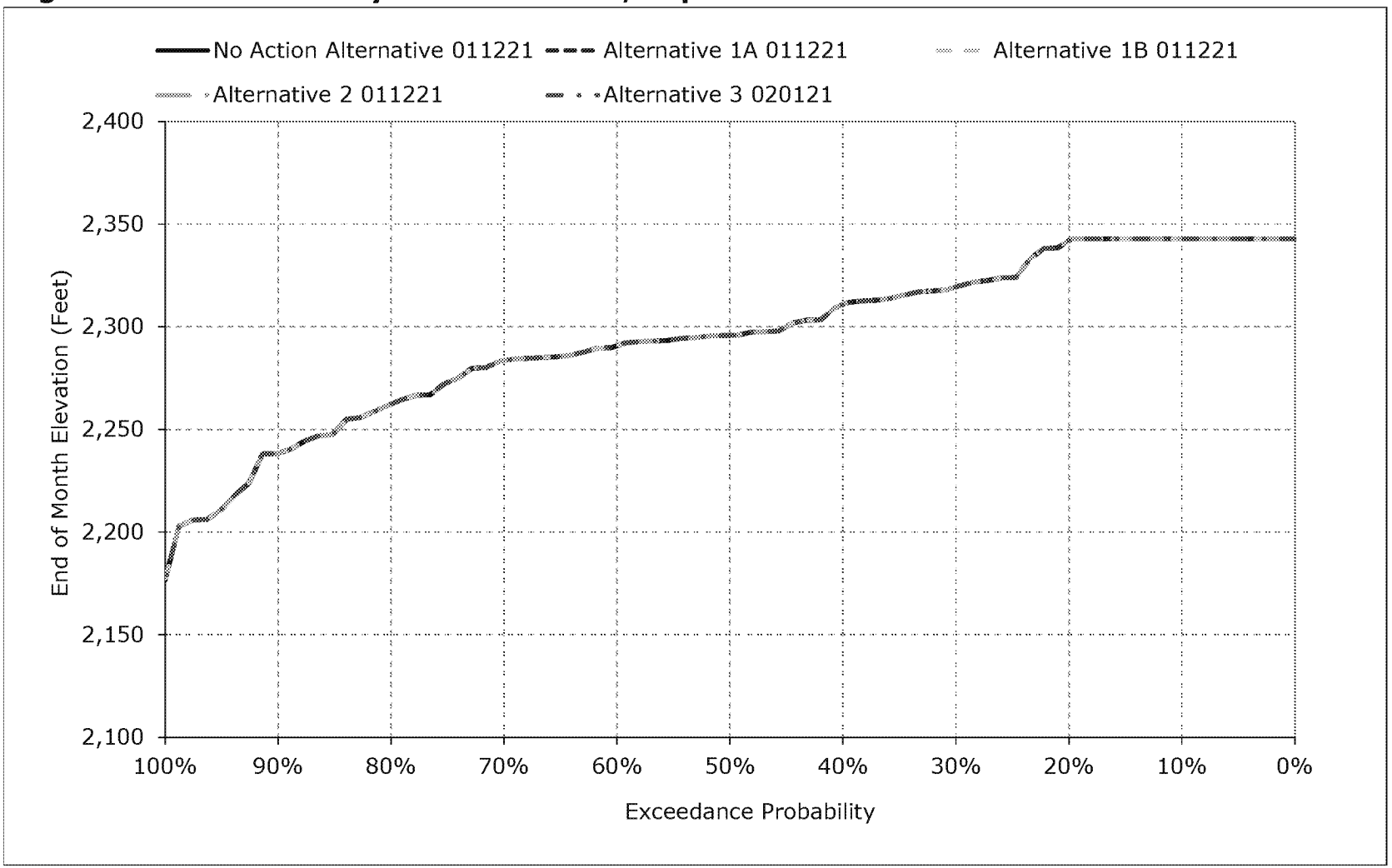


Table 5B2-3-1a. Trinity Lake Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	13,625	13,625	13,625	13,850	14,300	14,700	15,500	15,832	15,841	15,380	14,900	14,188
20%	13,625	13,625	13,625	13,850	14,300	14,700	15,441	15,535	15,542	15,305	14,835	14,141
30%	12,804	13,021	13,265	13,615	14,195	14,700	15,326	15,215	14,938	14,393	13,597	12,947
40%	12,015	12,268	12,750	13,227	13,870	14,538	15,070	14,878	14,607	14,057	13,195	12,481
50%	11,312	11,476	12,081	12,614	13,148	13,777	14,487	14,191	13,849	13,150	12,314	11,488
60%	10,968	10,883	11,416	11,704	12,644	13,195	13,767	13,568	13,465	12,719	11,803	11,153
70%	10,345	10,283	10,661	11,040	11,688	12,465	12,871	13,087	12,794	12,208	11,403	10,677
80%	9,161	9,404	9,341	9,735	10,276	11,401	12,414	11,918	11,540	10,890	10,010	9,364
90%	7,798	7,736	7,953	8,082	8,932	8,951	10,208	10,172	10,005	9,419	8,606	7,973
Long Term												
Full Simulation Period[a]	11,116	11,188	11,453	11,803	12,352	12,946	13,642	13,613	13,460	12,854	12,086	11,389
Water Year Types[b,c]												
Wet (32%)	13,164	13,221	13,277	13,284	14,006	14,564	15,310	15,449	15,351	14,871	14,326	13,626
Above Normal (15%)	12,481	12,467	12,627	12,536	13,291	14,048	14,805	14,834	14,707	14,197	13,429	12,690
Below Normal (17%)	10,740	10,928	11,367	11,422	11,828	12,300	13,160	13,121	12,970	12,363	11,544	10,838
Dry (22%)	9,926	10,018	10,584	11,222	11,687	12,403	13,076	12,844	12,585	11,804	10,869	10,166
Critical (15%)	7,538	7,562	7,729	9,176	9,442	9,908	10,275	10,142	9,998	9,287	8,350	7,718

Table 5B2-3-1b. Trinity Lake Surface Area, Alternative 1A 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	13,625	13,625	13,625	13,850	14,300	14,700	15,500	15,832	15,841	15,380	14,900	14,188
20%	13,625	13,625	13,625	13,850	14,300	14,700	15,441	15,535	15,542	15,305	14,835	14,141
30%	12,804	13,021	13,265	13,615	14,195	14,700	15,326	15,215	14,938	14,393	13,597	12,947
40%	12,015	12,268	12,750	13,227	13,870	14,538	15,070	14,878	14,607	14,057	13,195	12,481
50%	11,312	11,476	12,081	12,614	13,148	13,777	14,487	14,191	13,849	13,150	12,314	11,488
60%	10,968	10,883	11,416	11,704	12,644	13,195	13,767	13,568	13,465	12,719	11,803	11,153
70%	10,345	10,283	10,661	11,040	11,688	12,465	12,871	13,087	12,794	12,208	11,403	10,677
80%	9,161	9,404	9,341	9,735	10,276	11,401	12,414	11,918	11,540	10,890	10,010	9,364
90%	7,798	7,736	7,953	8,082	8,932	8,951	10,208	10,172	10,005	9,419	8,606	7,973
Long Term												
Full Simulation Period[a]	11,116	11,188	11,453	11,803	12,352	12,946	13,642	13,613	13,460	12,854	12,086	11,389
Water Year Types[b,c]												
Wet (32%)	13,164	13,221	13,277	13,284	14,006	14,564	15,310	15,449	15,351	14,871	14,326	13,626
Above Normal (15%)	12,481	12,467	12,627	12,536	13,291	14,048	14,805	14,834	14,707	14,197	13,429	12,690
Below Normal (17%)	10,740	10,928	11,367	11,422	11,828	12,300	13,160	13,121	12,970	12,363	11,544	10,838
Dry (22%)	9,926	10,018	10,584	11,222	11,687	12,403	13,076	12,844	12,585	11,804	10,869	10,166
Critical (15%)	7,538	7,562	7,729	9,176	9,442	9,908	10,275	10,142	9,998	9,287	8,350	7,718

Table 5B2-3-1c. Trinity Lake Surface Area, Alternative 1A 011221 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-3-2a. Trinity Lake Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	13,625	13,625	13,625	13,850	14,300	14,700	15,500	15,832	15,841	15,380	14,900	14,188
20%	13,625	13,625	13,625	13,850	14,300	14,700	15,441	15,535	15,542	15,305	14,835	14,141
30%	12,804	13,021	13,265	13,615	14,195	14,700	15,326	15,215	14,938	14,393	13,597	12,947
40%	12,015	12,268	12,750	13,227	13,870	14,538	15,070	14,878	14,607	14,057	13,195	12,481
50%	11,312	11,476	12,081	12,614	13,148	13,777	14,487	14,191	13,849	13,150	12,314	11,488
60%	10,968	10,883	11,416	11,704	12,644	13,195	13,767	13,568	13,465	12,719	11,803	11,153
70%	10,345	10,283	10,661	11,040	11,688	12,465	12,871	13,087	12,794	12,208	11,403	10,677
80%	9,161	9,404	9,341	9,735	10,276	11,401	12,414	11,918	11,540	10,890	10,010	9,364
90%	7,798	7,736	7,953	8,082	8,932	8,951	10,208	10,172	10,005	9,419	8,606	7,973
Long Term												
Full Simulation Period[a]	11,116	11,188	11,453	11,803	12,352	12,946	13,642	13,613	13,460	12,854	12,086	11,389
Water Year Types[b,c]												
Wet (32%)	13,164	13,221	13,277	13,284	14,006	14,564	15,310	15,449	15,351	14,871	14,326	13,626
Above Normal (15%)	12,481	12,467	12,627	12,536	13,291	14,048	14,805	14,834	14,707	14,197	13,429	12,690
Below Normal (17%)	10,740	10,928	11,367	11,422	11,828	12,300	13,160	13,121	12,970	12,363	11,544	10,838
Dry (22%)	9,926	10,018	10,584	11,222	11,687	12,403	13,076	12,844	12,585	11,804	10,869	10,166
Critical (15%)	7,538	7,562	7,729	9,176	9,442	9,908	10,275	10,142	9,998	9,287	8,350	7,718

Table 5B2-3-2b. Trinity Lake Surface Area, Alternative 1B 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	13,625	13,625	13,625	13,850	14,300	14,700	15,500	15,832	15,841	15,380	14,900	14,188
20%	13,625	13,625	13,625	13,850	14,300	14,700	15,441	15,535	15,542	15,305	14,835	14,141
30%	12,804	13,021	13,265	13,615	14,195	14,700	15,326	15,215	14,938	14,393	13,597	12,947
40%	12,015	12,268	12,750	13,227	13,870	14,538	15,070	14,878	14,607	14,057	13,195	12,481
50%	11,312	11,476	12,081	12,614	13,148	13,777	14,487	14,191	13,849	13,150	12,314	11,488
60%	10,968	10,883	11,416	11,704	12,644	13,195	13,767	13,568	13,465	12,719	11,803	11,153
70%	10,345	10,283	10,661	11,040	11,688	12,465	12,871	13,087	12,794	12,208	11,403	10,677
80%	9,161	9,404	9,341	9,735	10,276	11,401	12,414	11,918	11,540	10,890	10,010	9,364
90%	7,798	7,736	7,953	8,082	8,932	8,951	10,208	10,172	10,005	9,419	8,606	7,973
Long Term												
Full Simulation Period[a]	11,116	11,188	11,453	11,803	12,352	12,946	13,642	13,613	13,460	12,854	12,086	11,389
Water Year Types[b,c]												
Wet (32%)	13,164	13,221	13,277	13,284	14,006	14,564	15,310	15,449	15,351	14,871	14,326	13,626
Above Normal (15%)	12,481	12,467	12,627	12,536	13,291	14,048	14,805	14,834	14,707	14,197	13,429	12,690
Below Normal (17%)	10,740	10,928	11,367	11,422	11,828	12,300	13,160	13,121	12,970	12,363	11,544	10,838
Dry (22%)	9,926	10,018	10,584	11,222	11,687	12,403	13,076	12,844	12,585	11,804	10,869	10,166
Critical (15%)	7,538	7,562	7,729	9,176	9,442	9,908	10,275	10,142	9,998	9,287	8,350	7,718

Table 5B2-3-2c. Trinity Lake Surface Area, Alternative 1B 011221 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-3-3a. Trinity Lake Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	13,625	13,625	13,625	13,850	14,300	14,700	15,500	15,832	15,841	15,380	14,900	14,188
20%	13,625	13,625	13,625	13,850	14,300	14,700	15,441	15,535	15,542	15,305	14,835	14,141
30%	12,804	13,021	13,265	13,615	14,195	14,700	15,326	15,215	14,938	14,393	13,597	12,947
40%	12,015	12,268	12,750	13,227	13,870	14,538	15,070	14,878	14,607	14,057	13,195	12,481
50%	11,312	11,476	12,081	12,614	13,148	13,777	14,487	14,191	13,849	13,150	12,314	11,488
60%	10,968	10,883	11,416	11,704	12,644	13,195	13,767	13,568	13,465	12,719	11,803	11,153
70%	10,345	10,283	10,661	11,040	11,688	12,465	12,871	13,087	12,794	12,208	11,403	10,677
80%	9,161	9,404	9,341	9,735	10,276	11,401	12,414	11,918	11,540	10,890	10,010	9,364
90%	7,798	7,736	7,953	8,082	8,932	8,951	10,208	10,172	10,005	9,419	8,606	7,973
Long Term												
Full Simulation Period[a]	11,116	11,188	11,453	11,803	12,352	12,946	13,642	13,613	13,460	12,854	12,086	11,389
Water Year Types[b,c]												
Wet (32%)	13,164	13,221	13,277	13,284	14,006	14,564	15,310	15,449	15,351	14,871	14,326	13,626
Above Normal (15%)	12,481	12,467	12,627	12,536	13,291	14,048	14,805	14,834	14,707	14,197	13,429	12,690
Below Normal (17%)	10,740	10,928	11,367	11,422	11,828	12,300	13,160	13,121	12,970	12,363	11,544	10,838
Dry (22%)	9,926	10,018	10,584	11,222	11,687	12,403	13,076	12,844	12,585	11,804	10,869	10,166
Critical (15%)	7,538	7,562	7,729	9,176	9,442	9,908	10,275	10,142	9,998	9,287	8,350	7,718

Table 5B2-3-3b. Trinity Lake Surface Area, Alternative 2 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	13,625	13,625	13,625	13,850	14,300	14,700	15,500	15,832	15,841	15,380	14,900	14,188
20%	13,625	13,625	13,625	13,850	14,300	14,700	15,441	15,535	15,542	15,305	14,835	14,141
30%	12,804	13,021	13,265	13,615	14,195	14,700	15,326	15,215	14,938	14,393	13,597	12,947
40%	12,015	12,268	12,750	13,227	13,870	14,538	15,070	14,878	14,607	14,057	13,195	12,481
50%	11,312	11,476	12,081	12,614	13,148	13,777	14,487	14,191	13,849	13,150	12,314	11,488
60%	10,968	10,883	11,416	11,704	12,644	13,195	13,767	13,568	13,465	12,719	11,803	11,153
70%	10,345	10,283	10,661	11,040	11,688	12,465	12,871	13,087	12,794	12,208	11,403	10,677
80%	9,161	9,404	9,341	9,735	10,276	11,401	12,414	11,918	11,540	10,890	10,010	9,364
90%	7,798	7,736	7,953	8,082	8,932	8,951	10,208	10,172	10,005	9,419	8,606	7,973
Long Term												
Full Simulation Period[a]	11,116	11,188	11,453	11,803	12,352	12,946	13,642	13,613	13,460	12,854	12,086	11,389
Water Year Types[b,c]												
Wet (32%)	13,164	13,221	13,277	13,284	14,006	14,564	15,310	15,449	15,351	14,871	14,326	13,626
Above Normal (15%)	12,481	12,467	12,627	12,536	13,291	14,048	14,805	14,834	14,707	14,197	13,429	12,690
Below Normal (17%)	10,740	10,928	11,367	11,422	11,828	12,300	13,160	13,121	12,970	12,363	11,544	10,838
Dry (22%)	9,926	10,018	10,584	11,222	11,687	12,403	13,076	12,844	12,585	11,804	10,869	10,166
Critical (15%)	7,538	7,562	7,729	9,176	9,442	9,908	10,275	10,142	9,998	9,287	8,350	7,718

Table 5B2-3-3c. Trinity Lake Surface Area, Alternative 2 011221 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-3-4a. Trinity Lake Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	13,625	13,625	13,625	13,850	14,300	14,700	15,500	15,832	15,841	15,380	14,900	14,188
20%	13,625	13,625	13,625	13,850	14,300	14,700	15,441	15,535	15,542	15,305	14,835	14,141
30%	12,804	13,021	13,265	13,615	14,195	14,700	15,326	15,215	14,938	14,393	13,597	12,947
40%	12,015	12,268	12,750	13,227	13,870	14,538	15,070	14,878	14,607	14,057	13,195	12,481
50%	11,312	11,476	12,081	12,614	13,148	13,777	14,487	14,191	13,849	13,150	12,314	11,488
60%	10,968	10,883	11,416	11,704	12,644	13,195	13,767	13,568	13,465	12,719	11,803	11,153
70%	10,345	10,283	10,661	11,040	11,688	12,465	12,871	13,087	12,794	12,208	11,403	10,677
80%	9,161	9,404	9,341	9,735	10,276	11,401	12,414	11,918	11,540	10,890	10,010	9,364
90%	7,798	7,736	7,953	8,082	8,932	8,951	10,208	10,172	10,005	9,419	8,606	7,973
Long Term												
Full Simulation Period[a]	11,116	11,188	11,453	11,803	12,352	12,946	13,642	13,613	13,460	12,854	12,086	11,389
Water Year Types[b,c]												
Wet (32%)	13,164	13,221	13,277	13,284	14,006	14,564	15,310	15,449	15,351	14,871	14,326	13,626
Above Normal (15%)	12,481	12,467	12,627	12,536	13,291	14,048	14,805	14,834	14,707	14,197	13,429	12,690
Below Normal (17%)	10,740	10,928	11,367	11,422	11,828	12,300	13,160	13,121	12,970	12,363	11,544	10,838
Dry (22%)	9,926	10,018	10,584	11,222	11,687	12,403	13,076	12,844	12,585	11,804	10,869	10,166
Critical (15%)	7,538	7,562	7,729	9,176	9,442	9,908	10,275	10,142	9,998	9,287	8,350	7,718

Table 5B2-3-4b. Trinity Lake Surface Area, Alternative 3 020121, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	13,625	13,625	13,625	13,850	14,300	14,700	15,500	15,832	15,841	15,380	14,900	14,188
20%	13,625	13,625	13,625	13,850	14,300	14,700	15,441	15,535	15,542	15,305	14,835	14,141
30%	12,804	13,021	13,265	13,615	14,195	14,700	15,326	15,215	14,938	14,393	13,597	12,947
40%	12,015	12,268	12,750	13,227	13,870	14,538	15,070	14,878	14,607	14,057	13,195	12,481
50%	11,312	11,476	12,081	12,614	13,148	13,777	14,487	14,191	13,849	13,150	12,314	11,488
60%	10,968	10,883	11,416	11,704	12,644	13,195	13,767	13,568	13,465	12,719	11,803	11,153
70%	10,345	10,283	10,661	11,040	11,688	12,465	12,871	13,087	12,794	12,208	11,403	10,677
80%	9,161	9,404	9,341	9,735	10,276	11,401	12,414	11,918	11,540	10,890	10,010	9,364
90%	7,798	7,736	7,953	8,082	8,932	8,951	10,208	10,172	10,005	9,419	8,606	7,973
Long Term												
Full Simulation Period[a]	11,116	11,188	11,453	11,803	12,352	12,946	13,642	13,613	13,460	12,854	12,086	11,389
Water Year Types[b,c]												
Wet (32%)	13,164	13,221	13,277	13,284	14,006	14,564	15,310	15,449	15,351	14,871	14,326	13,626
Above Normal (15%)	12,481	12,467	12,627	12,536	13,291	14,048	14,805	14,834	14,707	14,197	13,429	12,690
Below Normal (17%)	10,740	10,928	11,367	11,422	11,828	12,300	13,160	13,121	12,970	12,363	11,544	10,838
Dry (22%)	9,926	10,018	10,584	11,222	11,687	12,403	13,076	12,844	12,585	11,804	10,869	10,166
Critical (15%)	7,538	7,562	7,729	9,176	9,442	9,908	10,275	10,142	9,998	9,287	8,350	7,718

Table 5B2-3-4c. Trinity Lake Surface Area, Alternative 3 020121 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Figure 5B2-3-1. Trinity Lake Surface Area, October

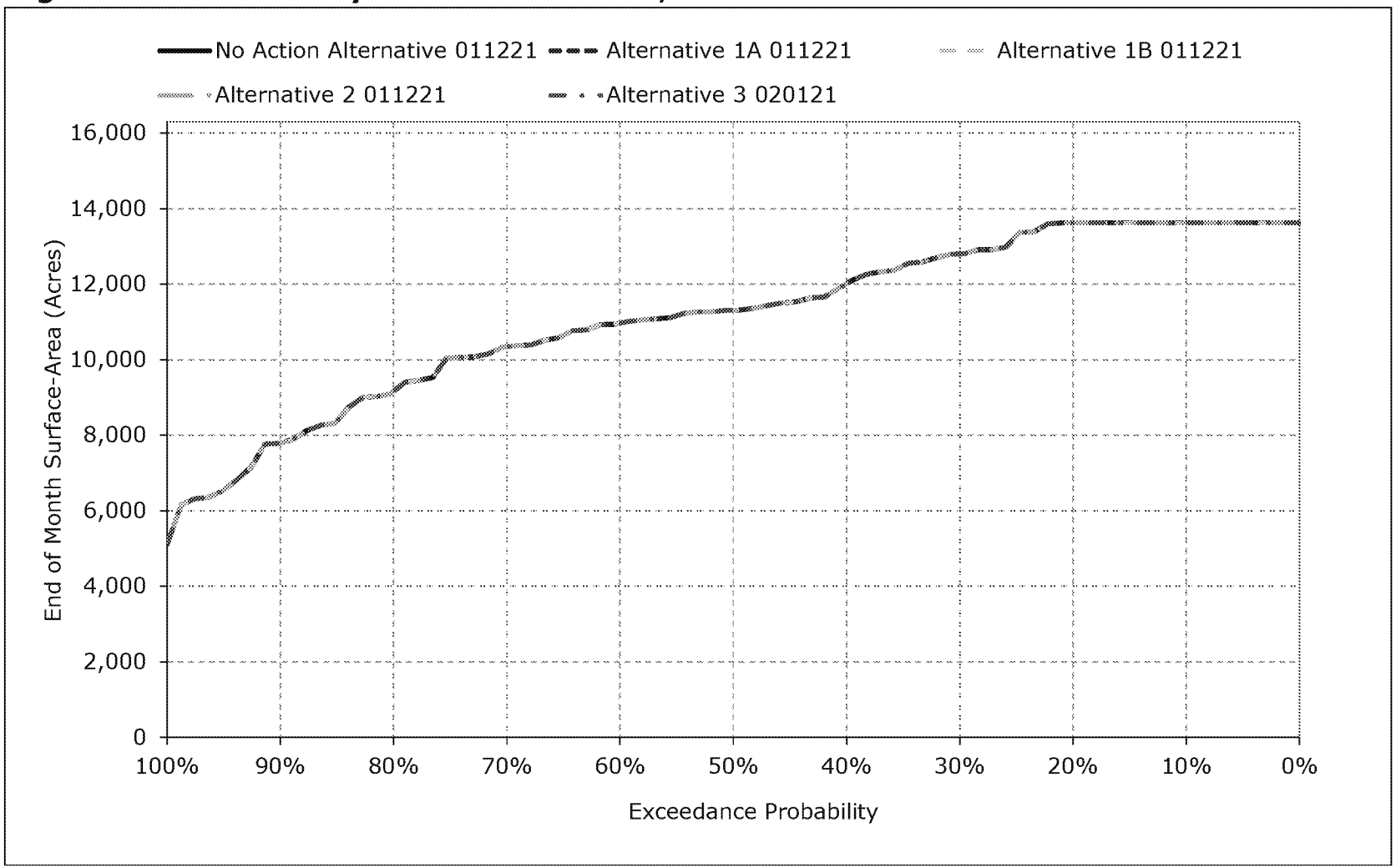


Figure 5B2-3-2. Trinity Lake Surface Area, November

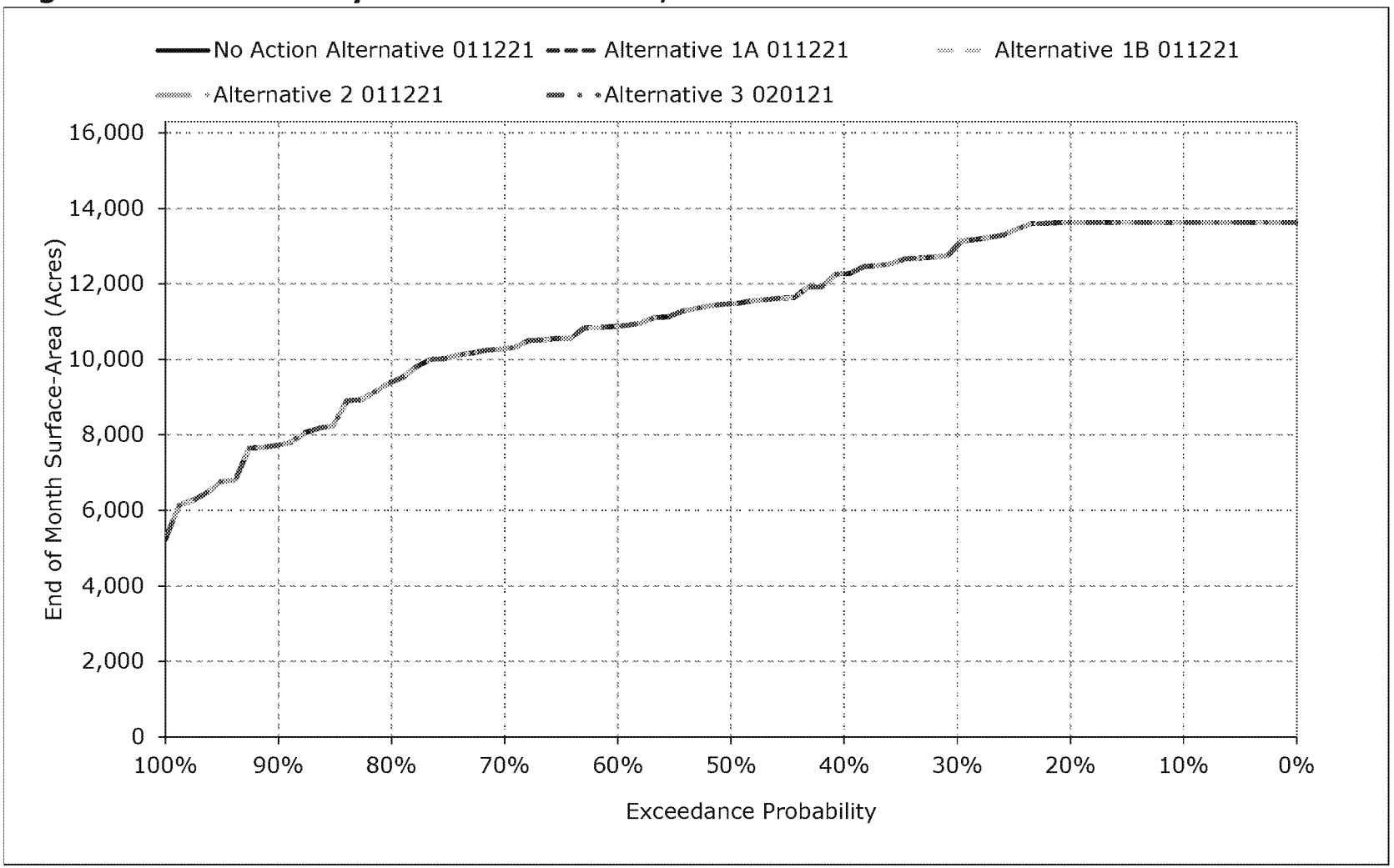


Figure 5B2-3-3. Trinity Lake Surface Area, December

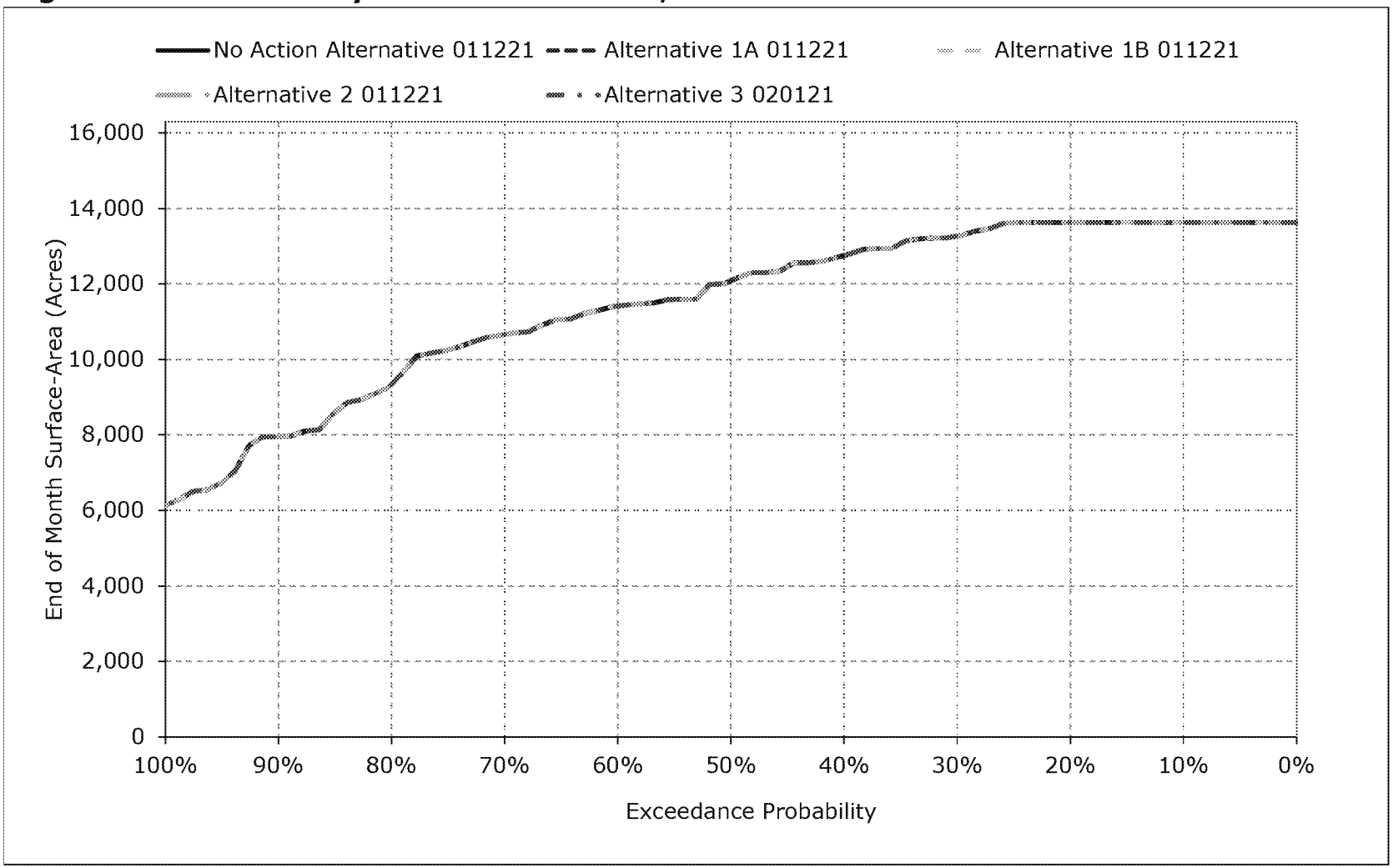


Figure 5B2-3-4. Trinity Lake Surface Area, January

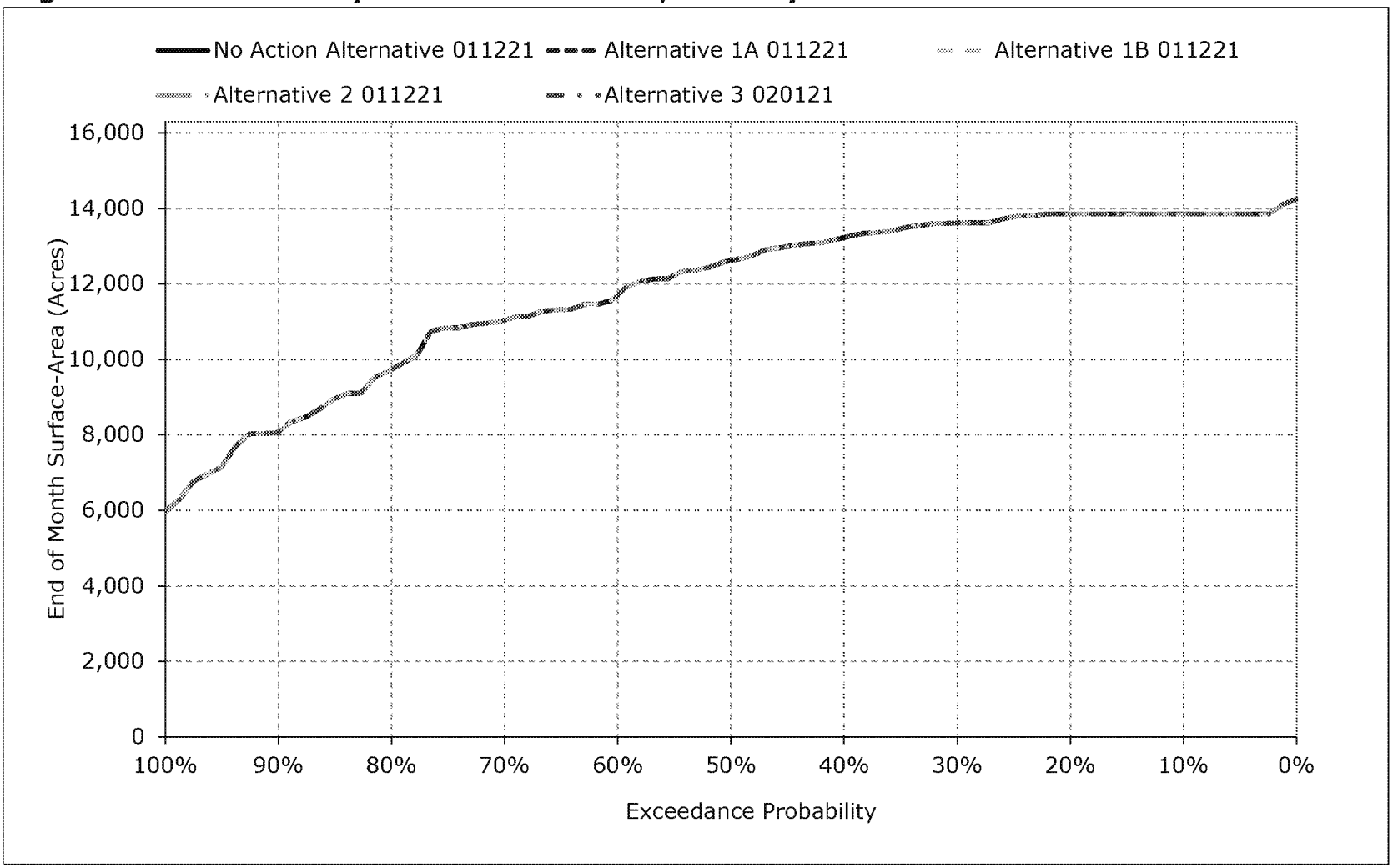


Figure 5B2-3-5. Trinity Lake Surface Area, February

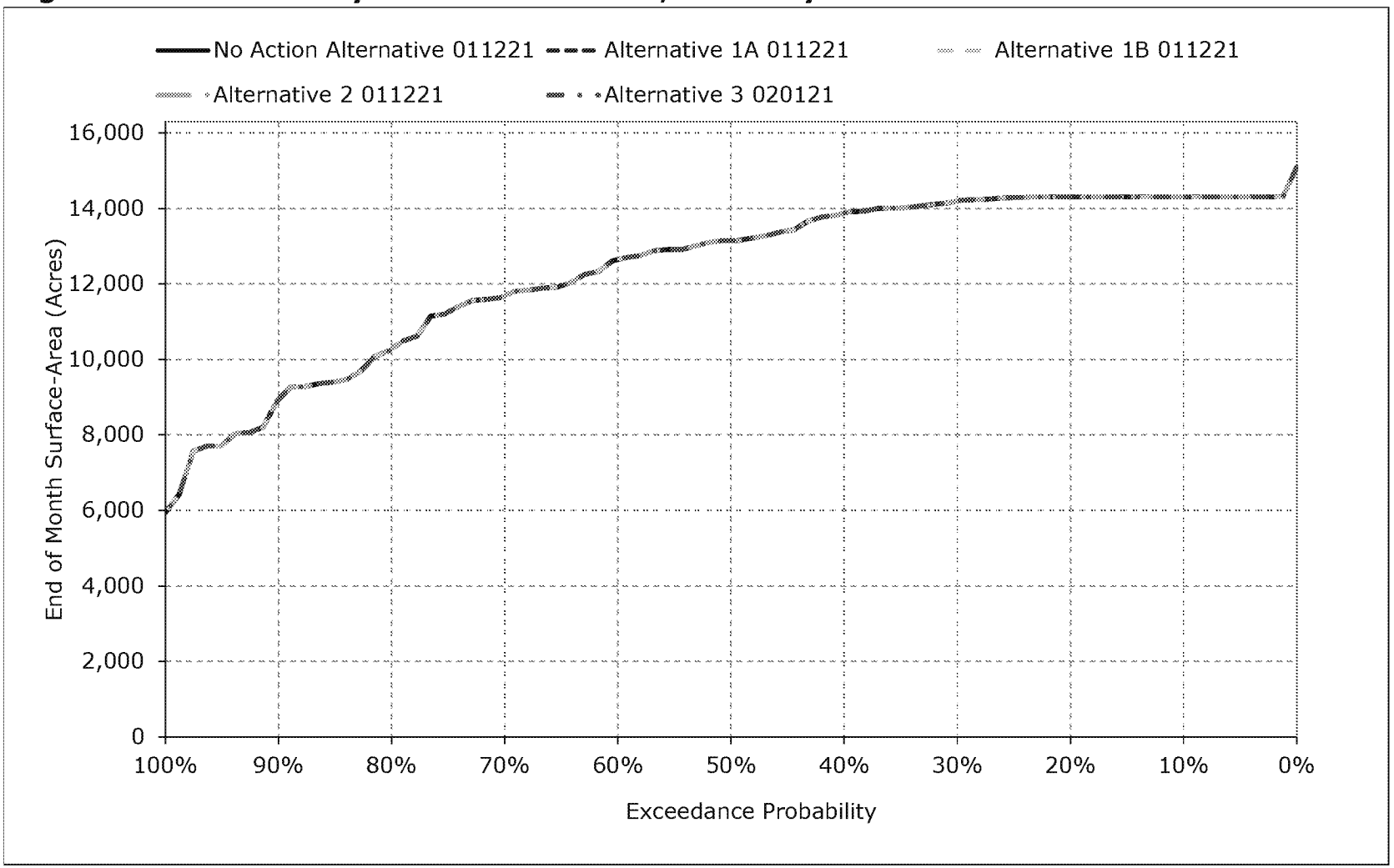


Figure 5B2-3-6. Trinity Lake Surface Area, March

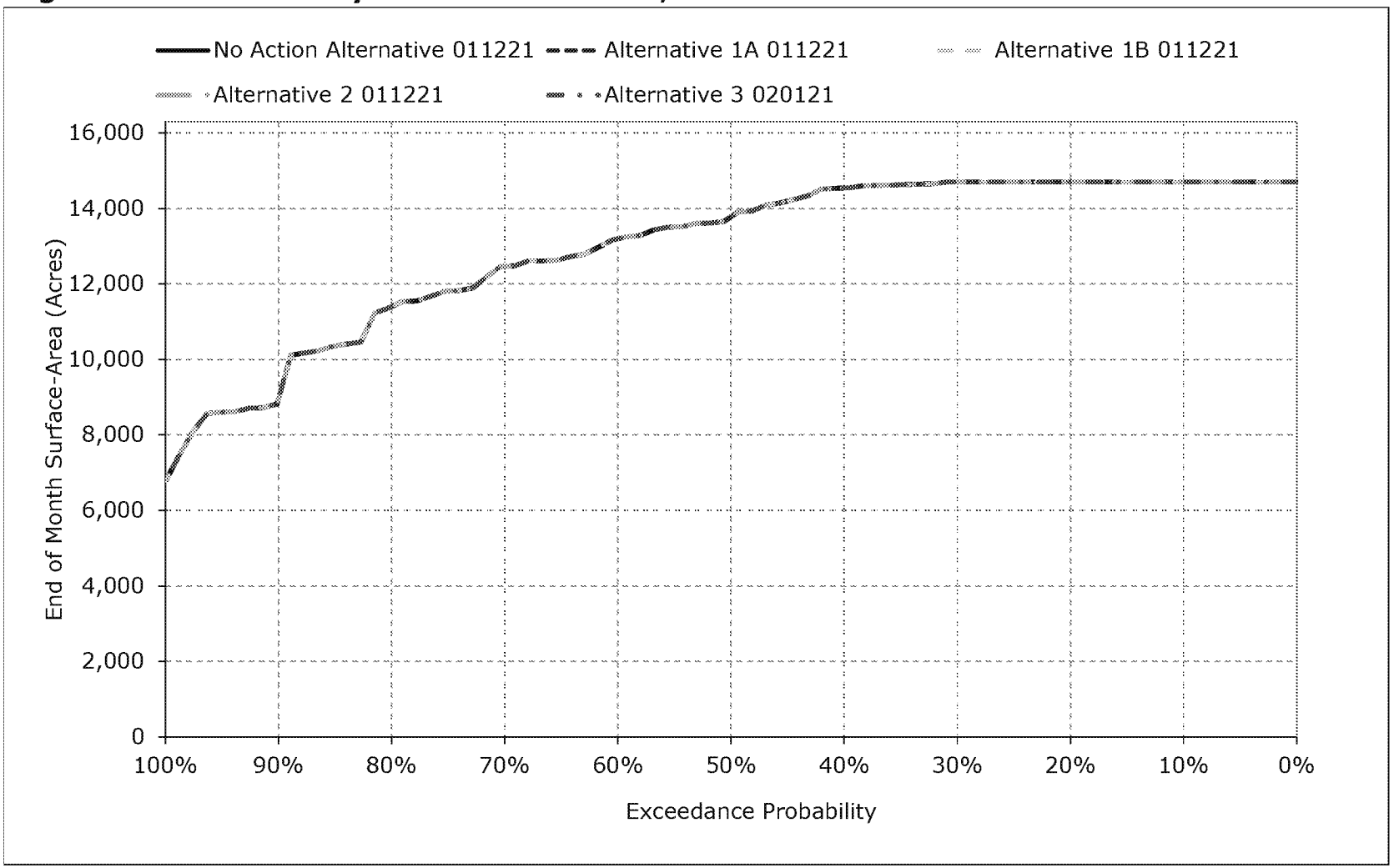


Figure 5B2-3-7. Trinity Lake Surface Area, April

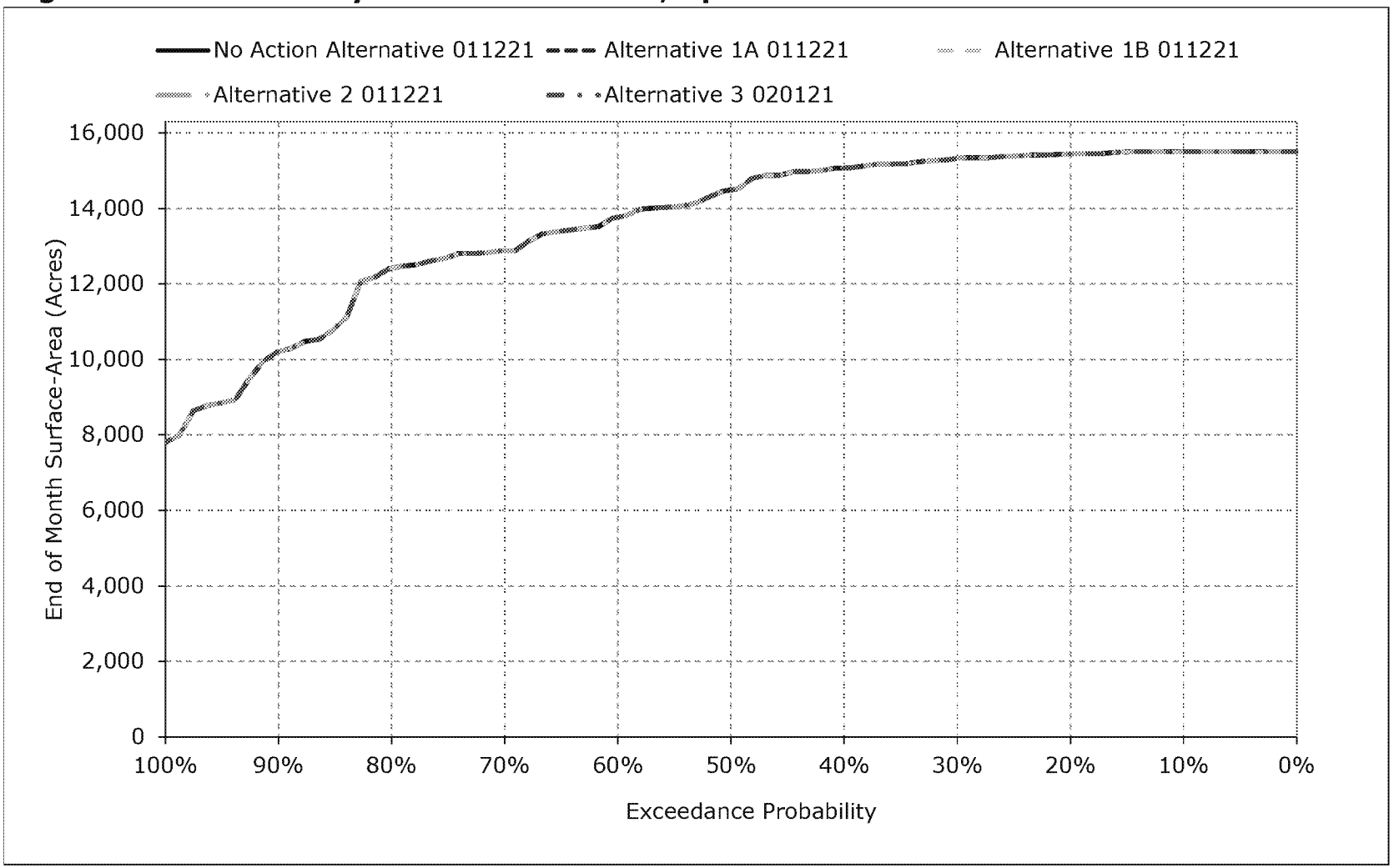


Figure 5B2-3-8. Trinity Lake Surface Area, May

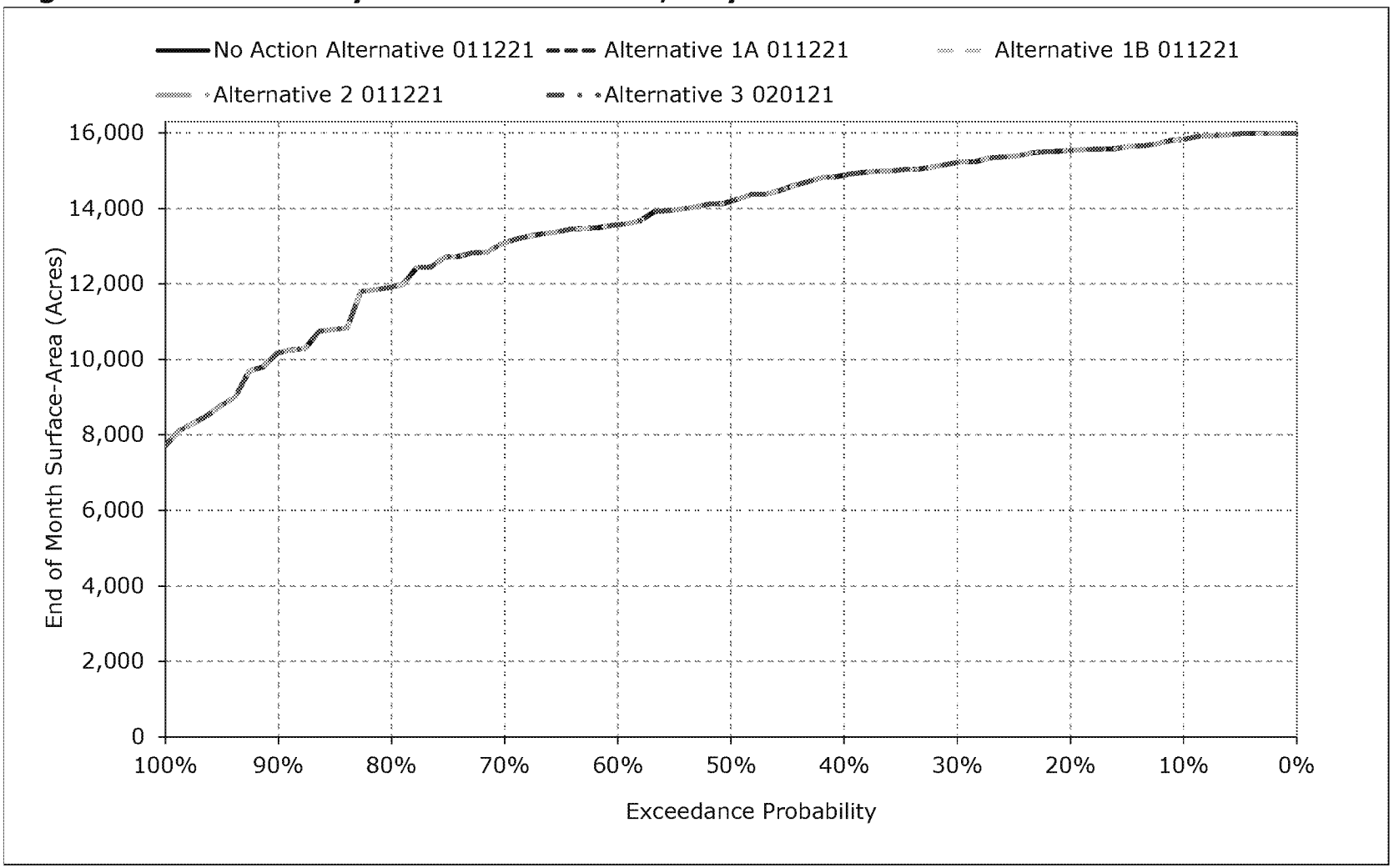


Figure 5B2-3-9. Trinity Lake Surface Area, June

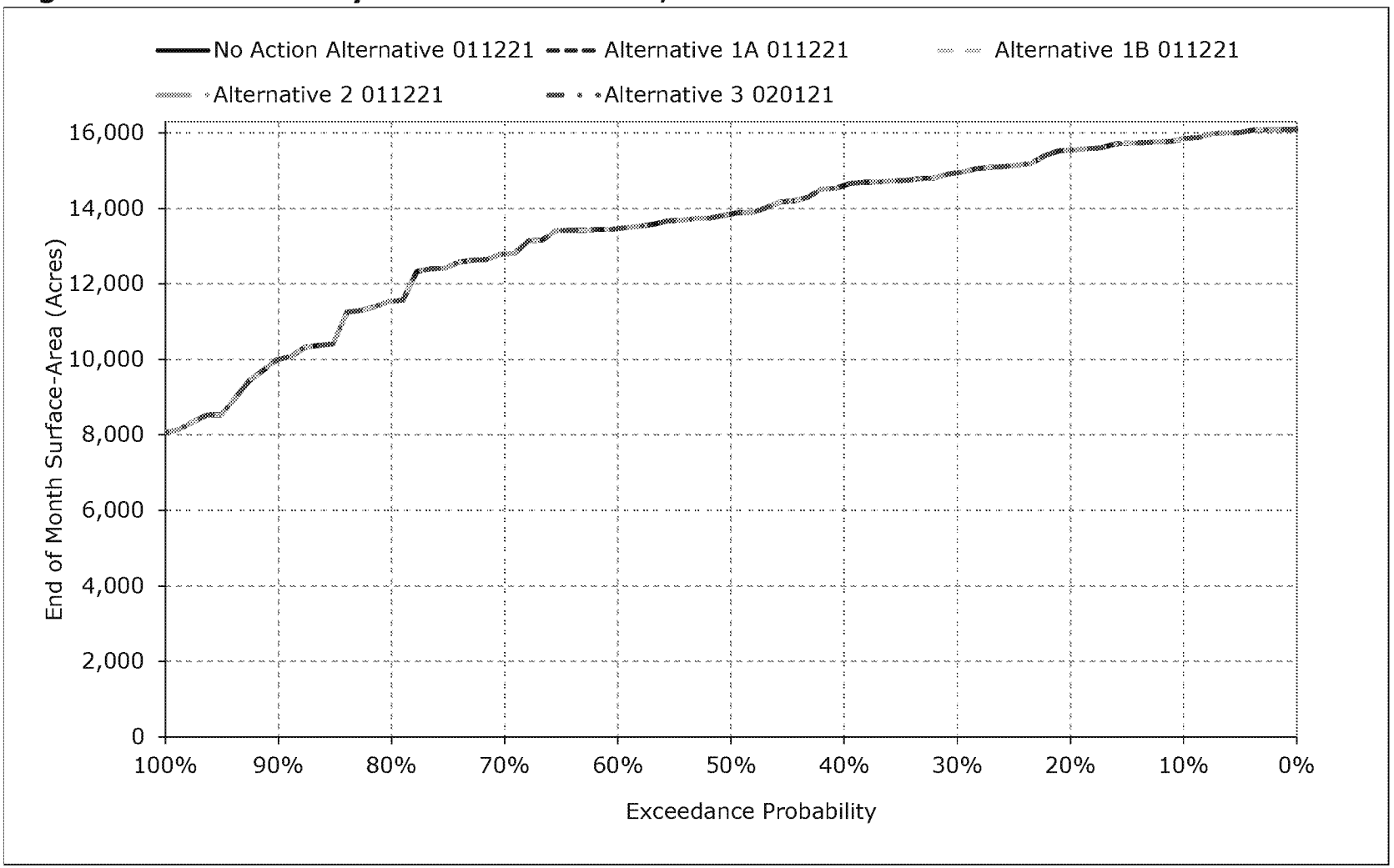


Figure 5B2-3-10. Trinity Lake Surface Area, July

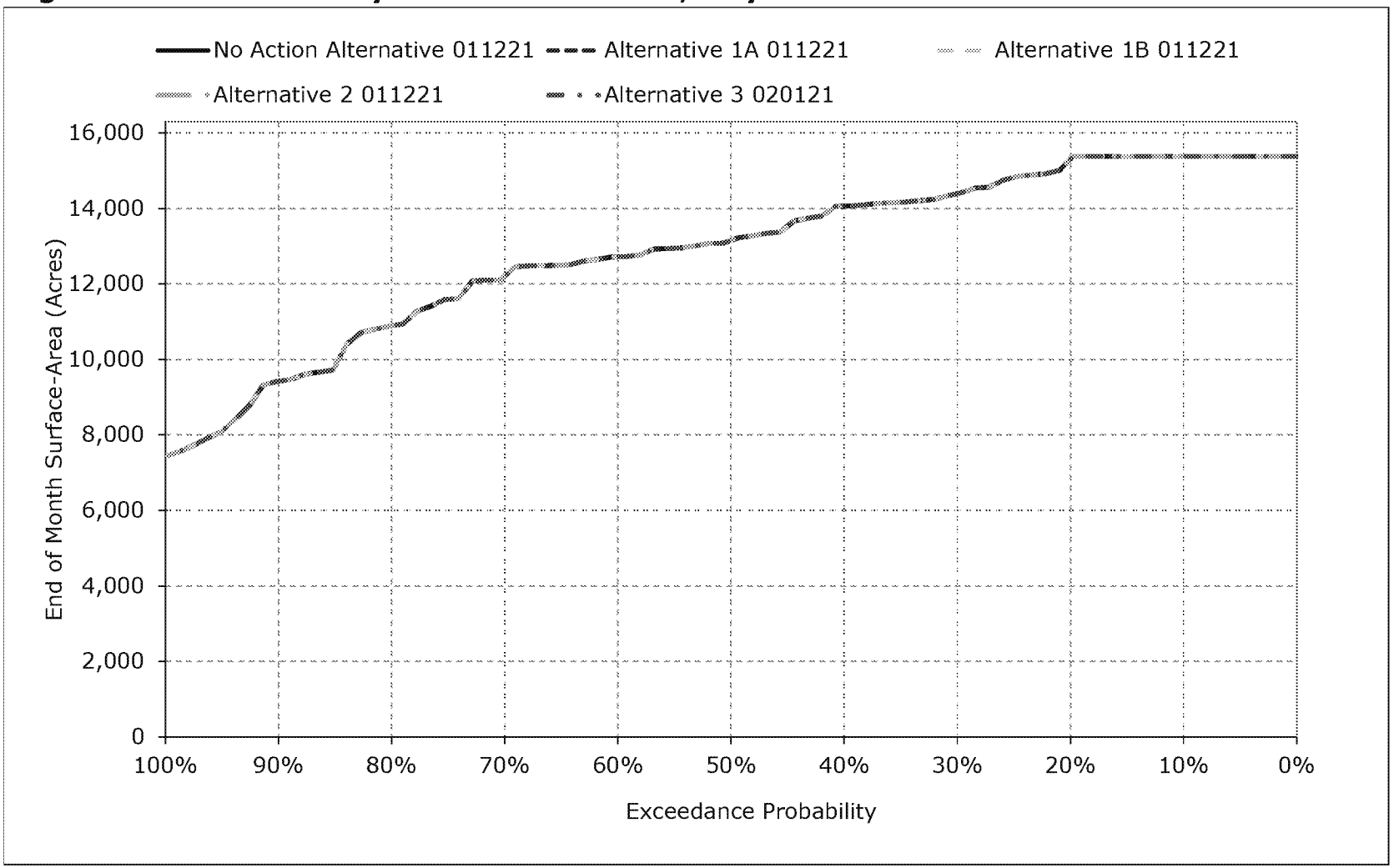


Figure 5B2-3-11. Trinity Lake Surface Area, August

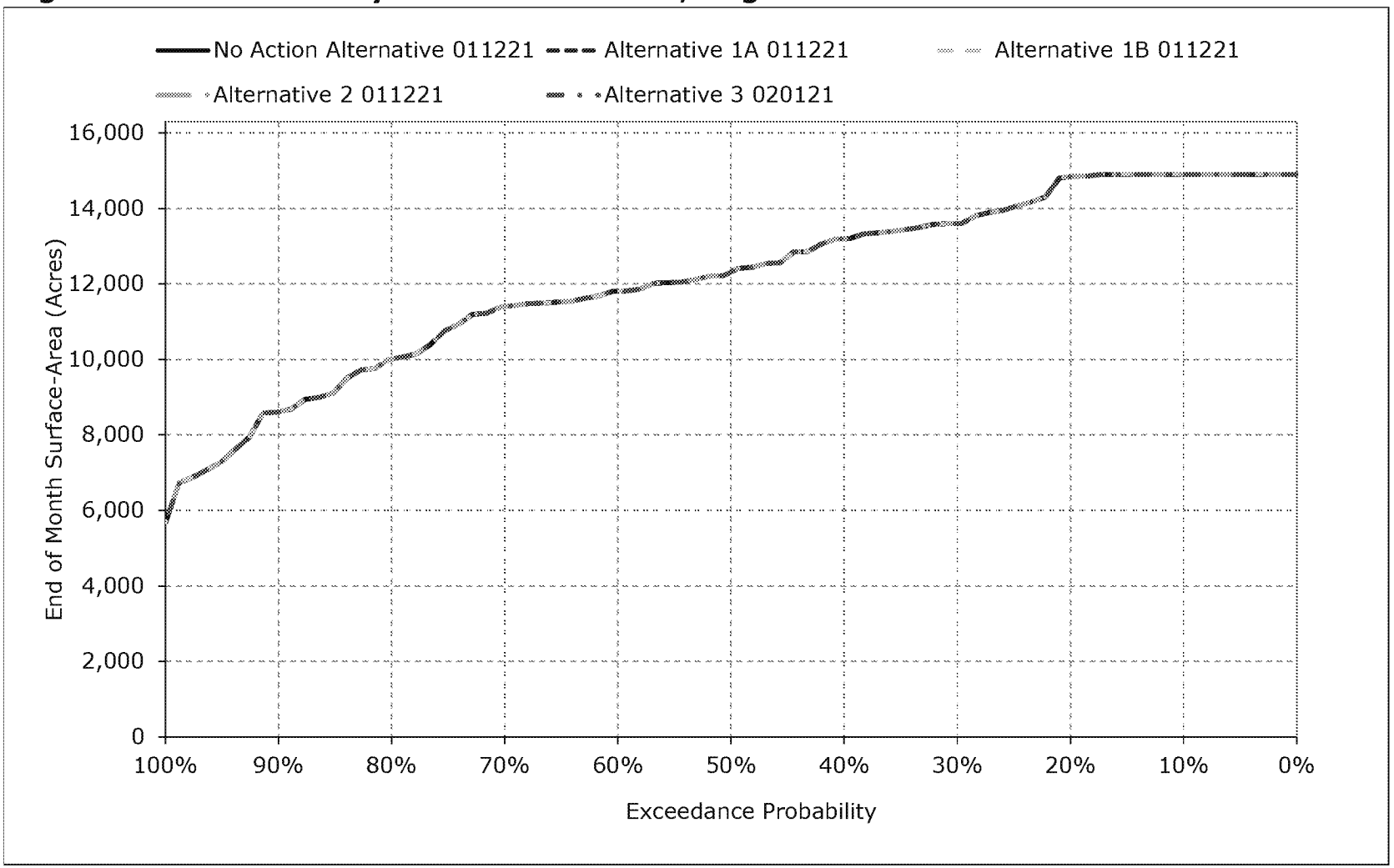


Figure 5B2-3-12. Trinity Lake Surface Area, September

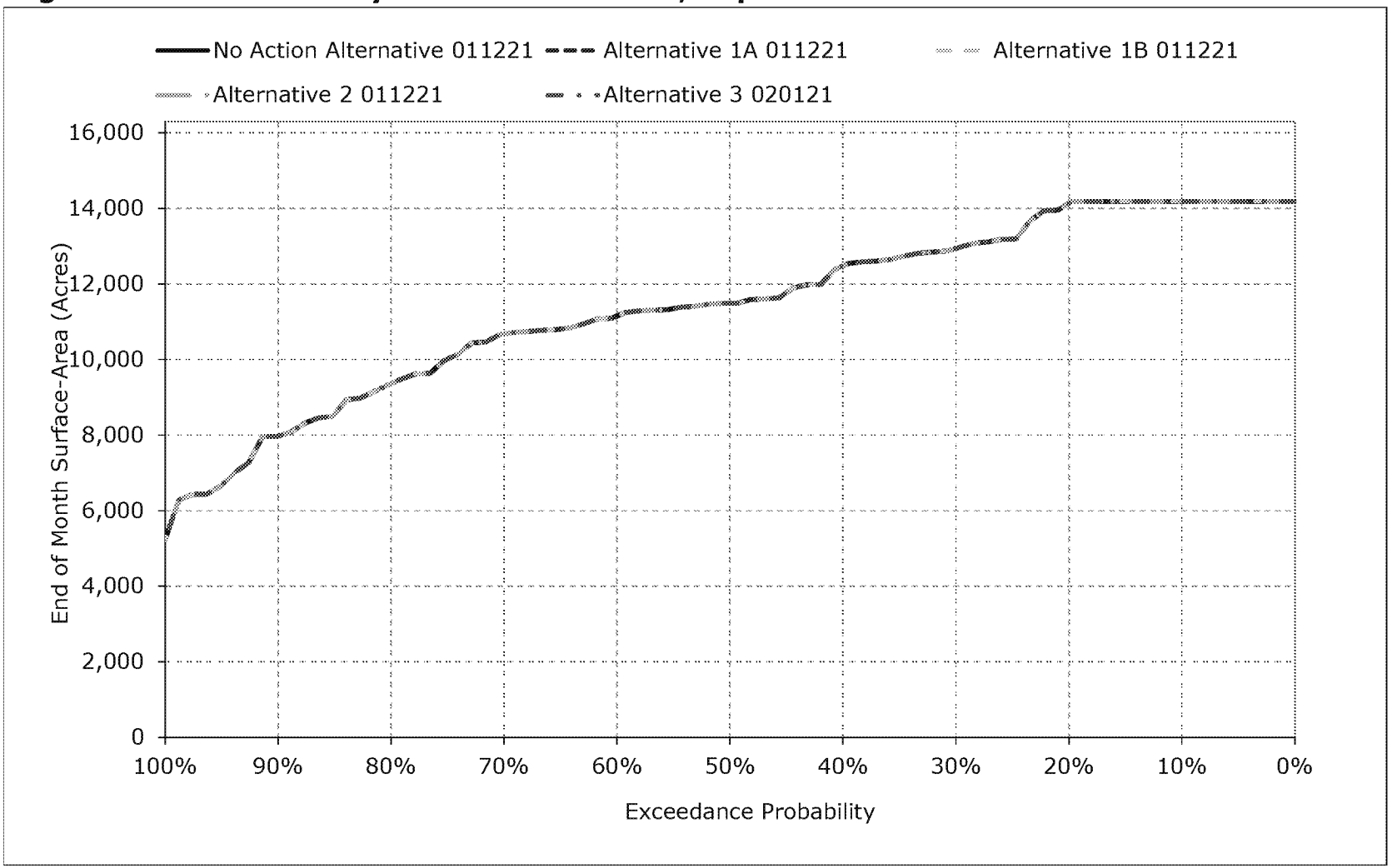


Table 5B2-4-1a. Trinity River Flow below Lewiston, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	373	300	300	309	1,051	300	600	4,709	4,626	1,102	870	870
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
30%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	870	870
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	870	870
60%	373	300	300	300	300	300	473	4,189	2,120	1,102	870	870
70%	373	300	300	300	300	300	460	2,924	783	450	870	870
80%	373	300	300	300	300	300	460	2,924	783	450	870	870
90%	373	300	300	300	300	300	430	1,641	783	450	450	450
Long Term												
Full Simulation Period[a]	373	342	519	575	555	526	529	3,784	2,108	923	814	814
Water Year Types[b,c]												
Wet (32%)	373	323	848	1,168	938	974	544	4,649	3,371	1,289	709	709
Above Normal (15%)	373	538	596	300	559	302	478	4,462	2,488	1,048	835	835
Below Normal (17%)	373	300	300	300	385	367	507	3,774	1,672	869	870	870
Dry (22%)	373	300	309	300	300	300	529	3,216	1,251	667	870	870
Critical (15%)	373	300	300	300	300	300	575	2,092	783	450	870	870

Table 5B2-4-1b. Trinity River Flow below Lewiston, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	373	300	300	309	1,051	300	600	4,709	4,626	1,102	870	870
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
30%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	870	870
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	870	870
60%	373	300	300	300	300	300	473	4,189	2,120	1,102	870	870
70%	373	300	300	300	300	300	460	2,924	783	450	870	870
80%	373	300	300	300	300	300	460	2,924	783	450	870	870
90%	373	300	300	300	300	300	430	1,641	783	450	450	450
Long Term												
Full Simulation Period[a]	373	342	519	575	555	526	529	3,784	2,108	923	814	814
Water Year Types[b,c]												
Wet (32%)	373	323	848	1,168	938	974	544	4,649	3,371	1,289	709	709
Above Normal (15%)	373	538	596	300	559	302	478	4,462	2,488	1,048	835	835
Below Normal (17%)	373	300	300	300	385	367	507	3,774	1,672	869	870	870
Dry (22%)	373	300	309	300	300	300	529	3,216	1,251	667	870	870
Critical (15%)	373	300	300	300	300	300	575	2,092	783	450	870	870

Table 5B2-4-1c. Trinity River Flow below Lewiston, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
c These results are displayed with calendar year - year type sorting.

Table 5B2-4-2a. Trinity River Flow below Lewiston, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	373	300	300	309	1,051	300	600	4,709	4,626	1,102	870	870
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
30%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	870	870
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	870	870
60%	373	300	300	300	300	300	473	4,189	2,120	1,102	870	870
70%	373	300	300	300	300	300	460	2,924	783	450	870	870
80%	373	300	300	300	300	300	460	2,924	783	450	870	870
90%	373	300	300	300	300	300	430	1,641	783	450	450	450
Long Term												
Full Simulation Period[a]	373	342	519	575	555	526	529	3,784	2,108	923	814	814
Water Year Types[b,c]												
Wet (32%)	373	323	848	1,168	938	974	544	4,649	3,371	1,289	709	709
Above Normal (15%)	373	538	596	300	559	302	478	4,462	2,488	1,048	835	835
Below Normal (17%)	373	300	300	300	385	367	507	3,774	1,672	869	870	870
Dry (22%)	373	300	309	300	300	300	529	3,216	1,251	667	870	870
Critical (15%)	373	300	300	300	300	300	575	2,092	783	450	870	870

Table 5B2-4-2b. Trinity River Flow below Lewiston, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	373	300	300	309	1,051	300	600	4,709	4,626	1,102	870	870
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
30%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	870	870
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	870	870
60%	373	300	300	300	300	300	473	4,189	2,120	1,102	870	870
70%	373	300	300	300	300	300	460	2,924	783	450	870	870
80%	373	300	300	300	300	300	460	2,924	783	450	870	870
90%	373	300	300	300	300	300	430	1,641	783	450	450	450
Long Term												
Full Simulation Period[a]	373	342	519	575	555	526	529	3,784	2,108	923	814	814
Water Year Types[b,c]												
Wet (32%)	373	323	848	1,168	938	974	544	4,649	3,371	1,289	709	709
Above Normal (15%)	373	538	596	300	559	302	478	4,462	2,488	1,048	835	835
Below Normal (17%)	373	300	300	300	385	367	507	3,774	1,672	869	870	870
Dry (22%)	373	300	309	300	300	300	529	3,216	1,251	667	870	870
Critical (15%)	373	300	300	300	300	300	575	2,092	783	450	870	870

Table 5B2-4-2c. Trinity River Flow below Lewiston, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
c These results are displayed with calendar year - year type sorting.

Table 5B2-4-3a. Trinity River Flow below Lewiston, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	373	300	300	309	1,051	300	600	4,709	4,626	1,102	870	870
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
30%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	870	870
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	870	870
60%	373	300	300	300	300	300	473	4,189	2,120	1,102	870	870
70%	373	300	300	300	300	300	460	2,924	783	450	870	870
80%	373	300	300	300	300	300	460	2,924	783	450	870	870
90%	373	300	300	300	300	300	430	1,641	783	450	450	450
Long Term												
Full Simulation Period[a]	373	342	519	575	555	526	529	3,784	2,108	923	814	814
Water Year Types[b,c]												
Wet (32%)	373	323	848	1,168	938	974	544	4,649	3,371	1,289	709	709
Above Normal (15%)	373	538	596	300	559	302	478	4,462	2,488	1,048	835	835
Below Normal (17%)	373	300	300	300	385	367	507	3,774	1,672	869	870	870
Dry (22%)	373	300	309	300	300	300	529	3,216	1,251	667	870	870
Critical (15%)	373	300	300	300	300	300	575	2,092	783	450	870	870

Table 5B2-4-3b. Trinity River Flow below Lewiston, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	373	300	300	309	1,051	300	600	4,709	4,626	1,102	870	870
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
30%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	870	870
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	870	870
60%	373	300	300	300	300	300	473	4,189	2,120	1,102	870	870
70%	373	300	300	300	300	300	460	2,924	783	450	870	870
80%	373	300	300	300	300	300	460	2,924	783	450	870	870
90%	373	300	300	300	300	300	430	1,641	783	450	450	450
Long Term												
Full Simulation Period[a]	373	342	519	575	555	526	529	3,784	2,108	923	814	814
Water Year Types[b,c]												
Wet (32%)	373	323	848	1,168	938	974	544	4,649	3,371	1,289	709	709
Above Normal (15%)	373	538	596	300	559	302	478	4,462	2,488	1,048	835	835
Below Normal (17%)	373	300	300	300	385	367	507	3,774	1,672	869	870	870
Dry (22%)	373	300	309	300	300	300	529	3,216	1,251	667	870	870
Critical (15%)	373	300	300	300	300	300	575	2,092	783	450	870	870

Table 5B2-4-3c. Trinity River Flow below Lewiston, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-4-4a. Trinity River Flow below Lewiston, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	373	300	300	309	1,051	300	600	4,709	4,626	1,102	870	870
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
30%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	870	870
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	870	870
60%	373	300	300	300	300	300	473	4,189	2,120	1,102	870	870
70%	373	300	300	300	300	300	460	2,924	783	450	870	870
80%	373	300	300	300	300	300	460	2,924	783	450	870	870
90%	373	300	300	300	300	300	430	1,641	783	450	450	450
Long Term												
Full Simulation Period[a]	373	342	519	575	555	526	529	3,784	2,108	923	814	814
Water Year Types[b,c]												
Wet (32%)	373	323	848	1,168	938	974	544	4,649	3,371	1,289	709	709
Above Normal (15%)	373	538	596	300	559	302	478	4,462	2,488	1,048	835	835
Below Normal (17%)	373	300	300	300	385	367	507	3,774	1,672	869	870	870
Dry (22%)	373	300	309	300	300	300	529	3,216	1,251	667	870	870
Critical (15%)	373	300	300	300	300	300	575	2,092	783	450	870	870

Table 5B2-4-4b. Trinity River Flow below Lewiston, Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	373	300	300	309	1,051	300	600	4,709	4,626	1,102	870	870
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
30%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	870	870
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	870	870
60%	373	300	300	300	300	300	473	4,189	2,120	1,102	870	870
70%	373	300	300	300	300	300	460	2,924	783	450	870	870
80%	373	300	300	300	300	300	460	2,924	783	450	870	870
90%	373	300	300	300	300	300	430	1,641	783	450	450	450
Long Term												
Full Simulation Period[a]	373	342	519	575	555	526	529	3,784	2,108	923	814	814
Water Year Types[b,c]												
Wet (32%)	373	323	848	1,168	938	974	544	4,649	3,371	1,289	709	709
Above Normal (15%)	373	538	596	300	559	302	478	4,462	2,488	1,048	835	835
Below Normal (17%)	373	300	300	300	385	367	507	3,774	1,672	869	870	870
Dry (22%)	373	300	309	300	300	300	529	3,216	1,251	667	870	870
Critical (15%)	373	300	300	300	300	300	575	2,092	783	450	870	870

Table 5B2-4-4c. Trinity River Flow below Lewiston, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

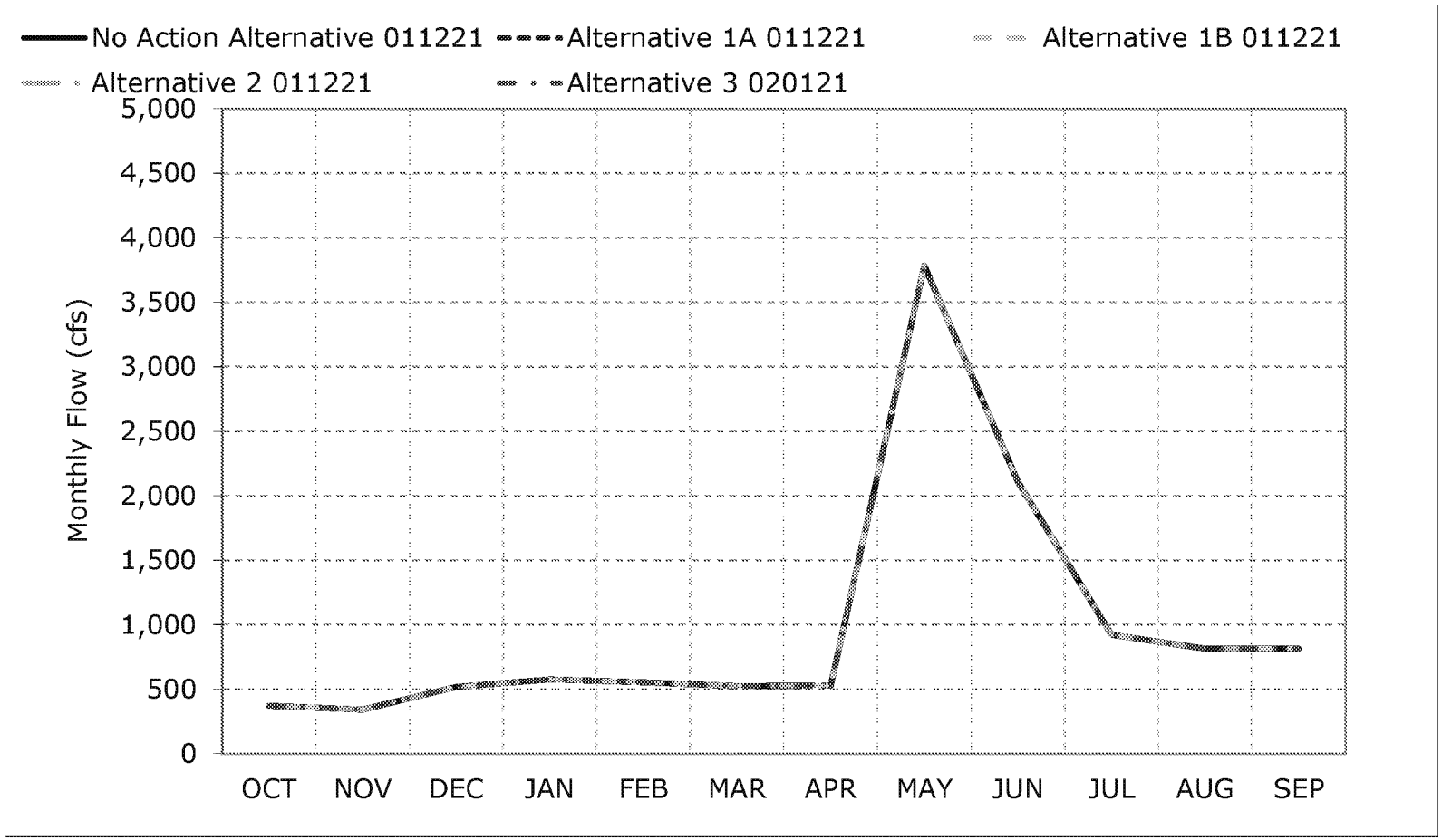
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

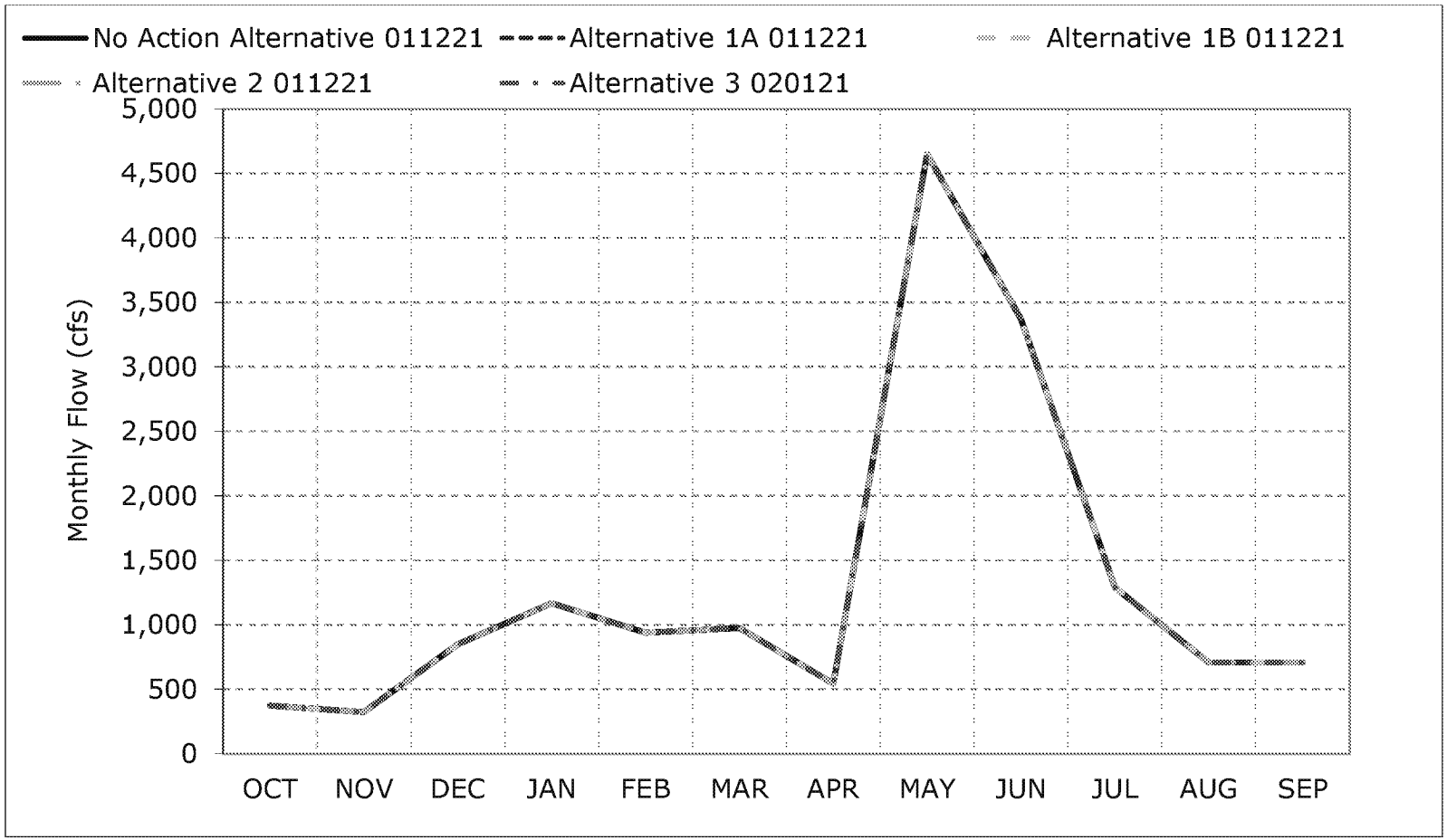
c These results are displayed with calendar year - year type sorting.

Figure 5B2-4-1. Trinity River Flow below Lewiston, Long-Term Average Flow



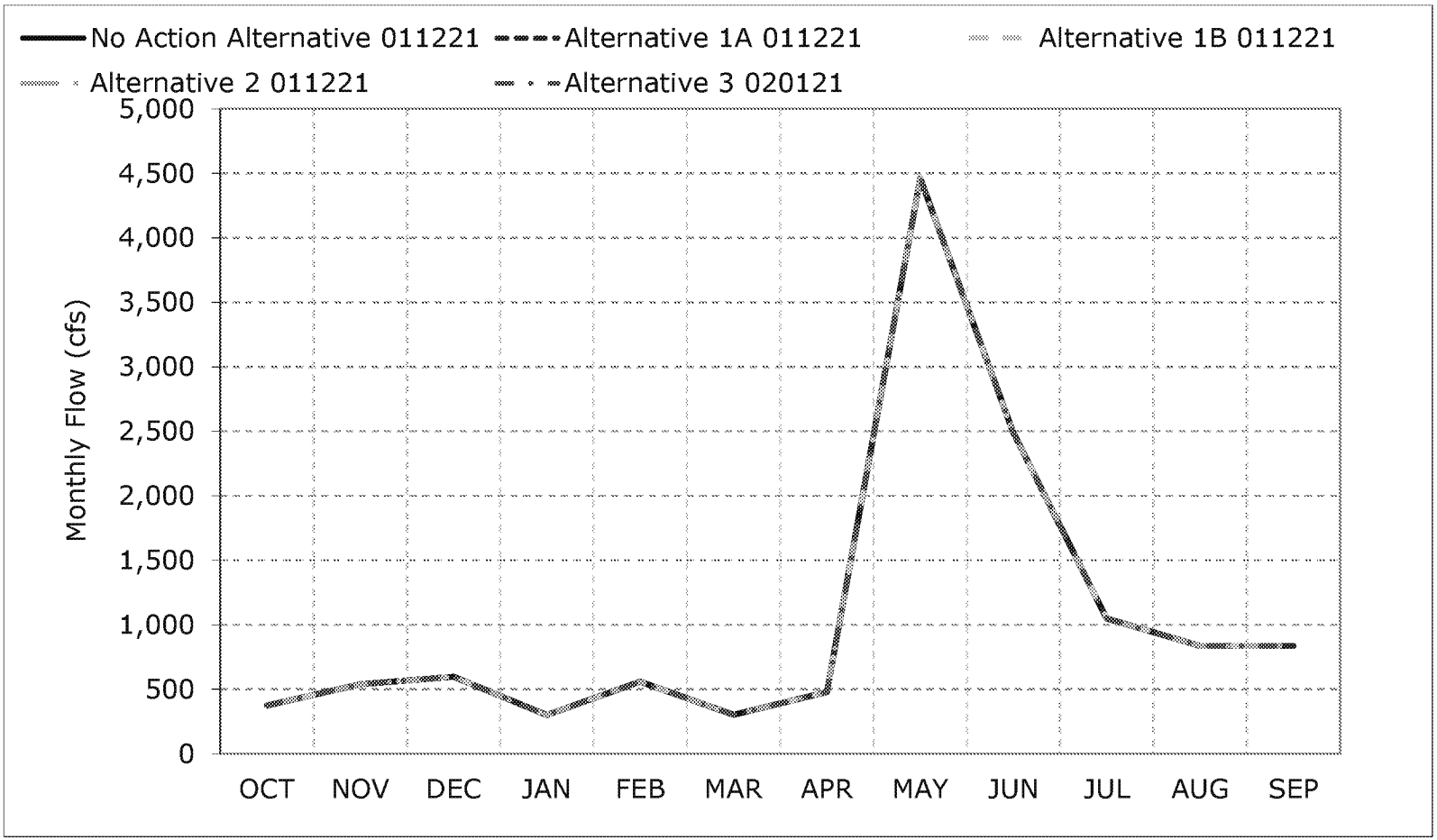
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-4-2. Trinity River Flow below Lewiston, Wet Year Average Flow



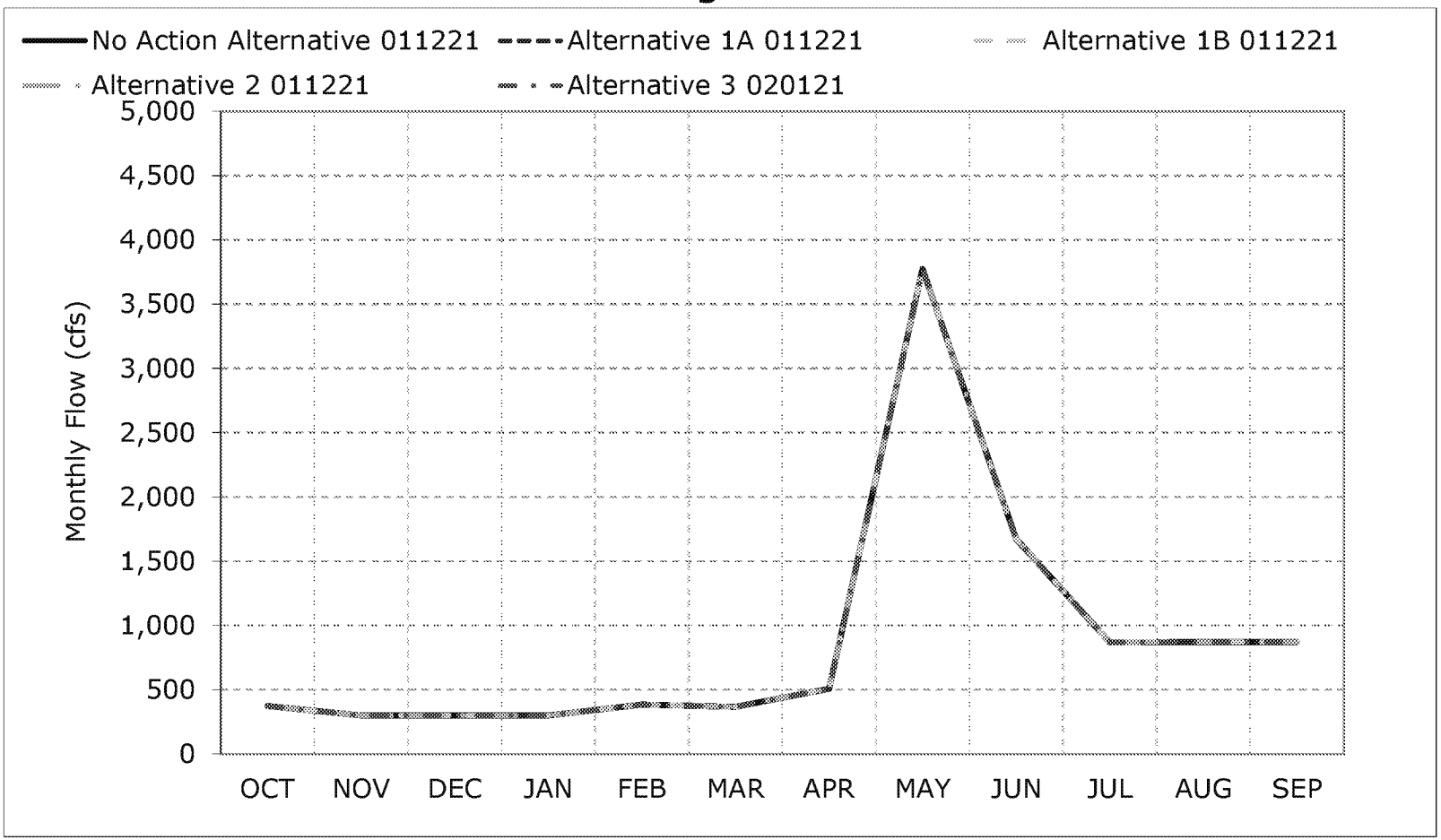
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-4-3. Trinity River Flow below Lewiston, Above Normal Year Average Flow



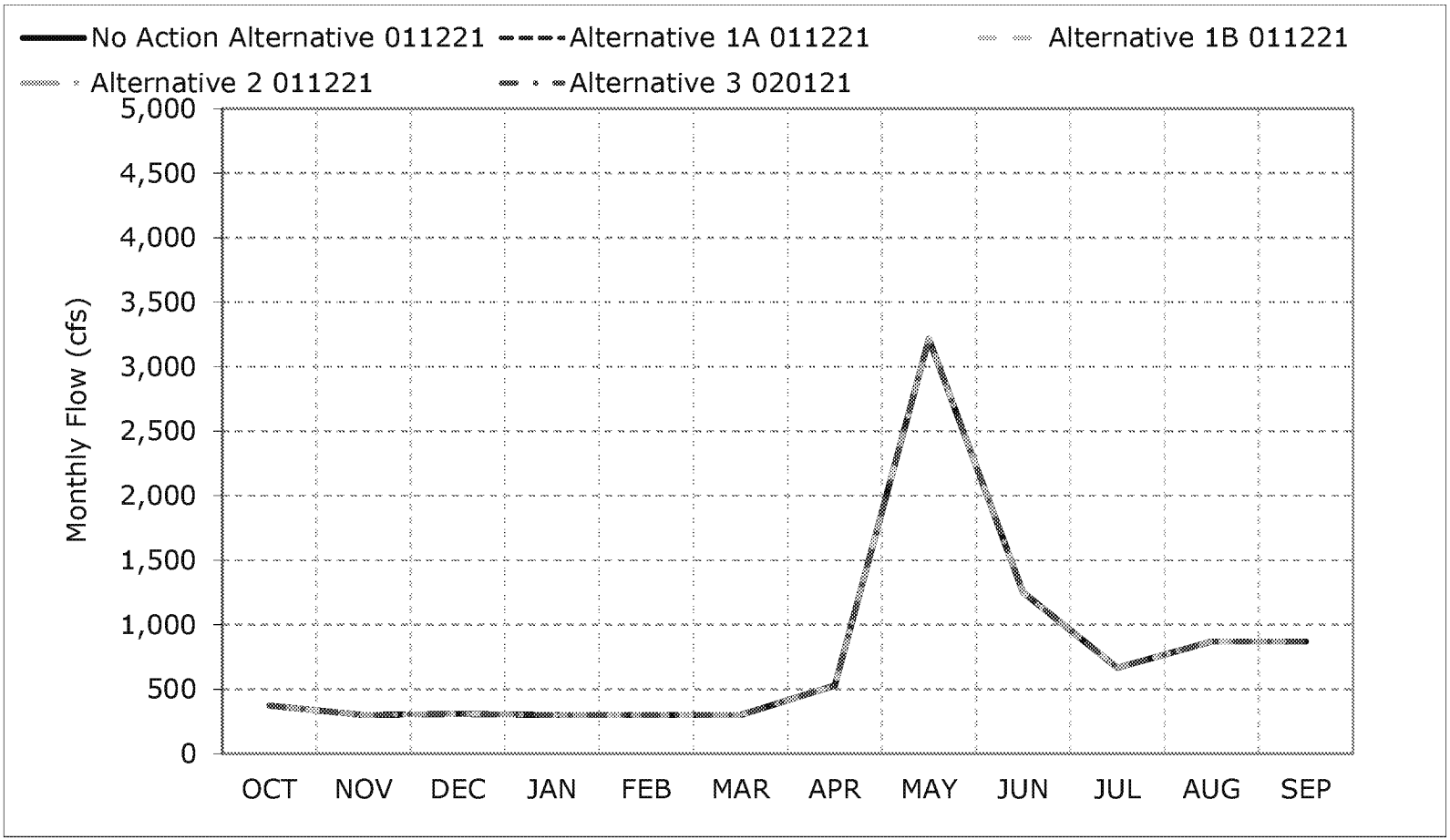
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-4-4. Trinity River Flow below Lewiston, Below Normal Year Average Flow



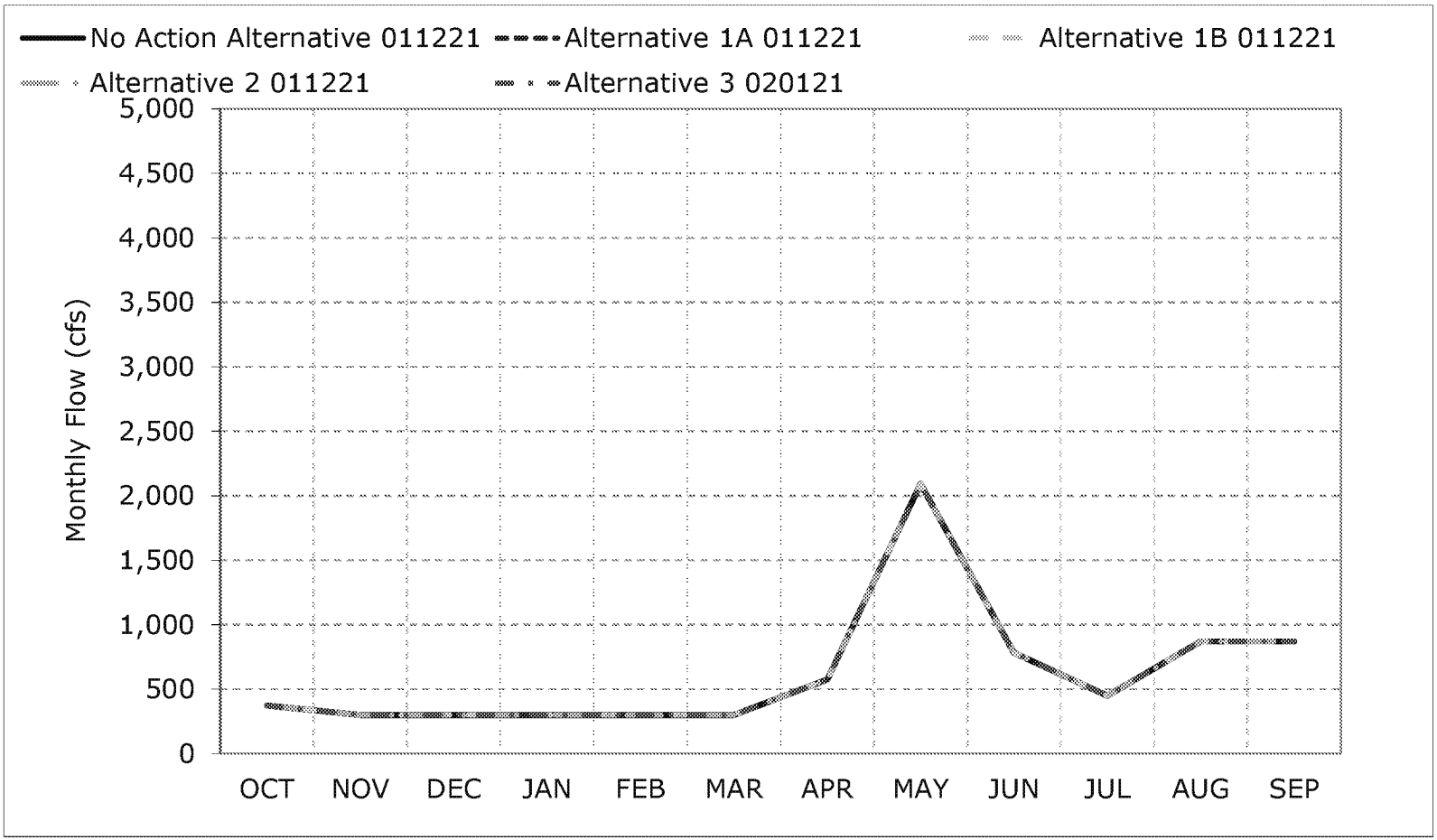
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-4-5. Trinity River Flow below Lewiston, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-4-6. Trinity River Flow below Lewiston, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-4-7. Trinity River Flow below Lewiston, October

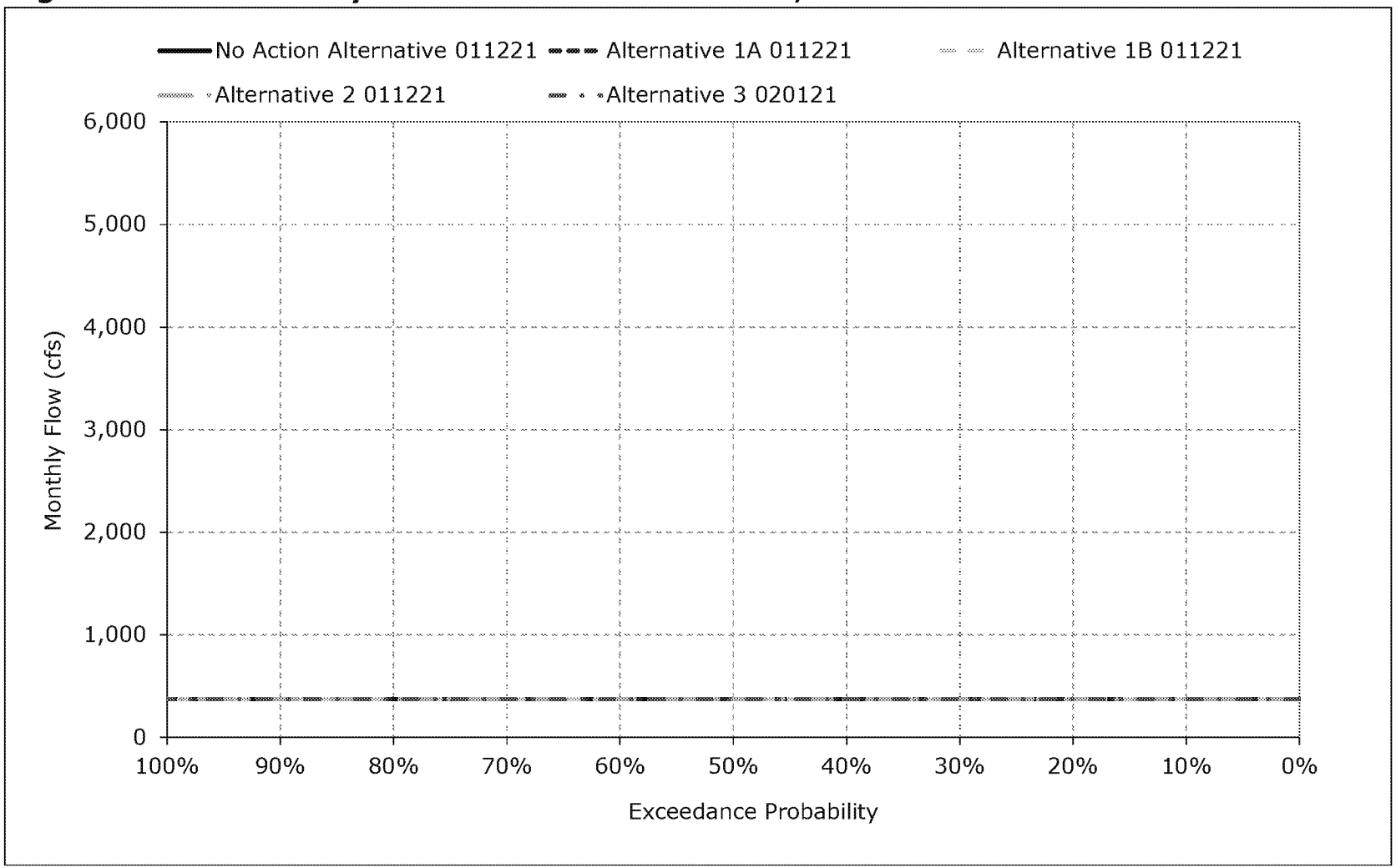


Figure 5B2-4-8. Trinity River Flow below Lewiston, November

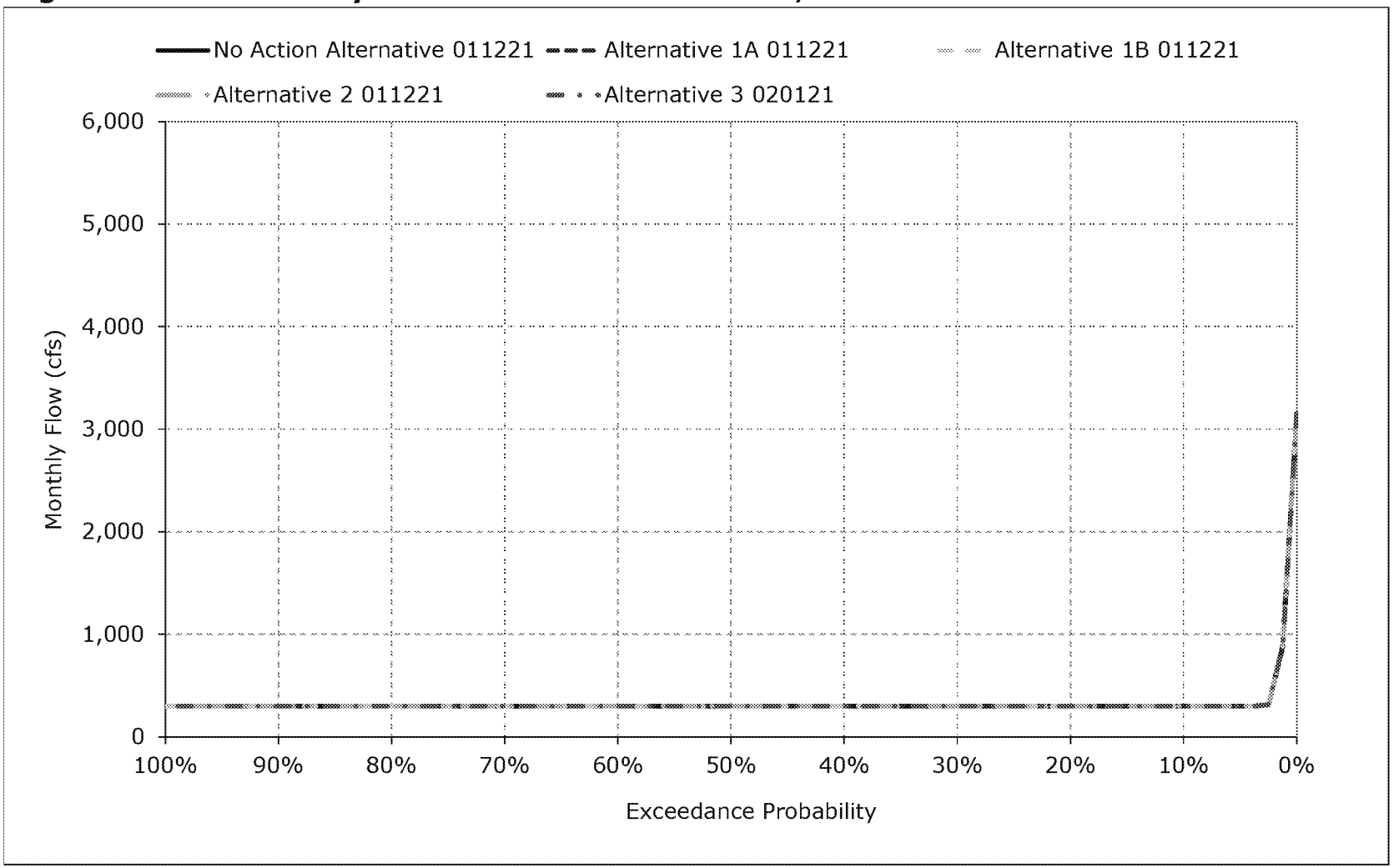


Figure 5B2-4-9. Trinity River Flow below Lewiston, December

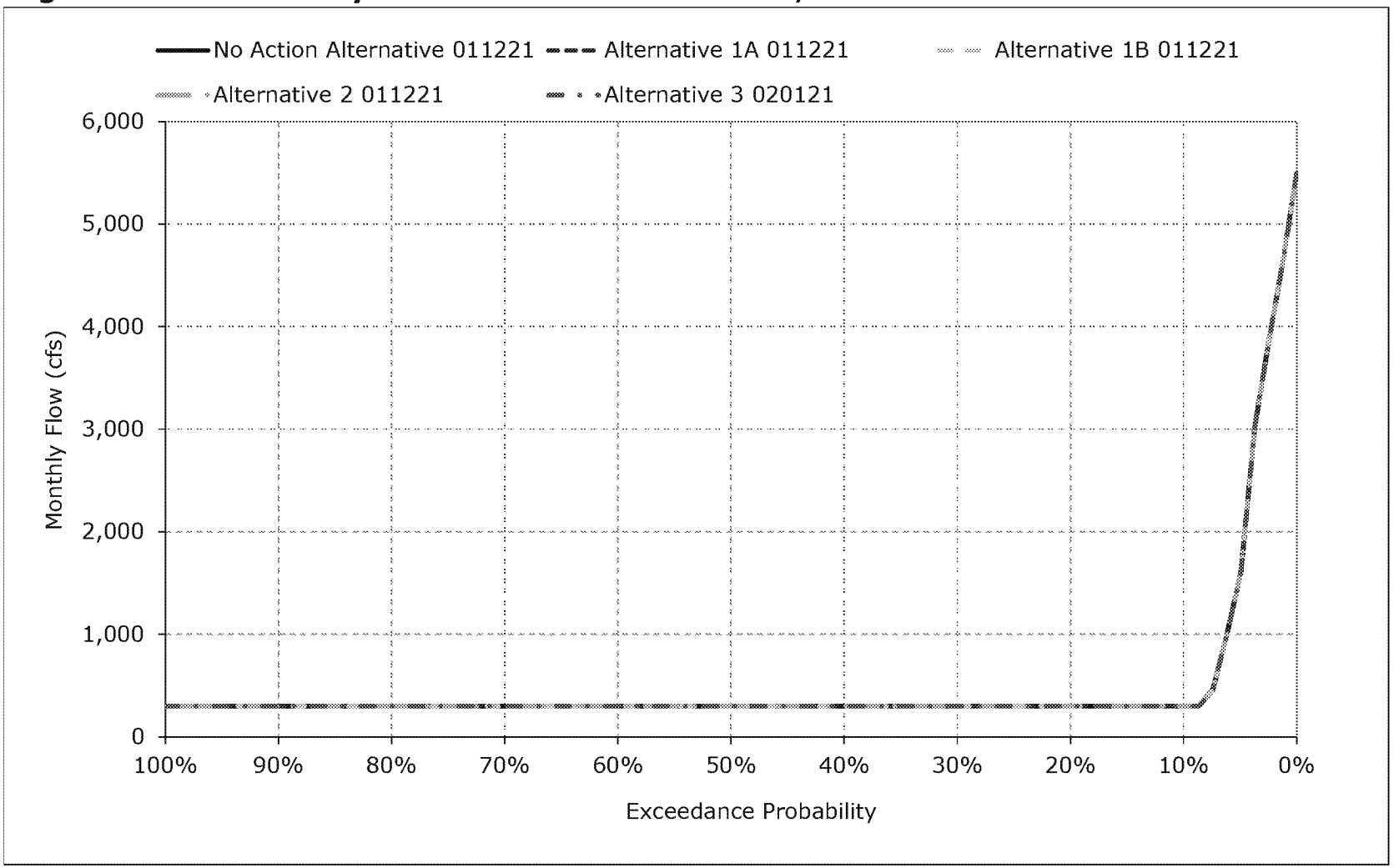


Figure 5B2-4-10. Trinity River Flow below Lewiston, January

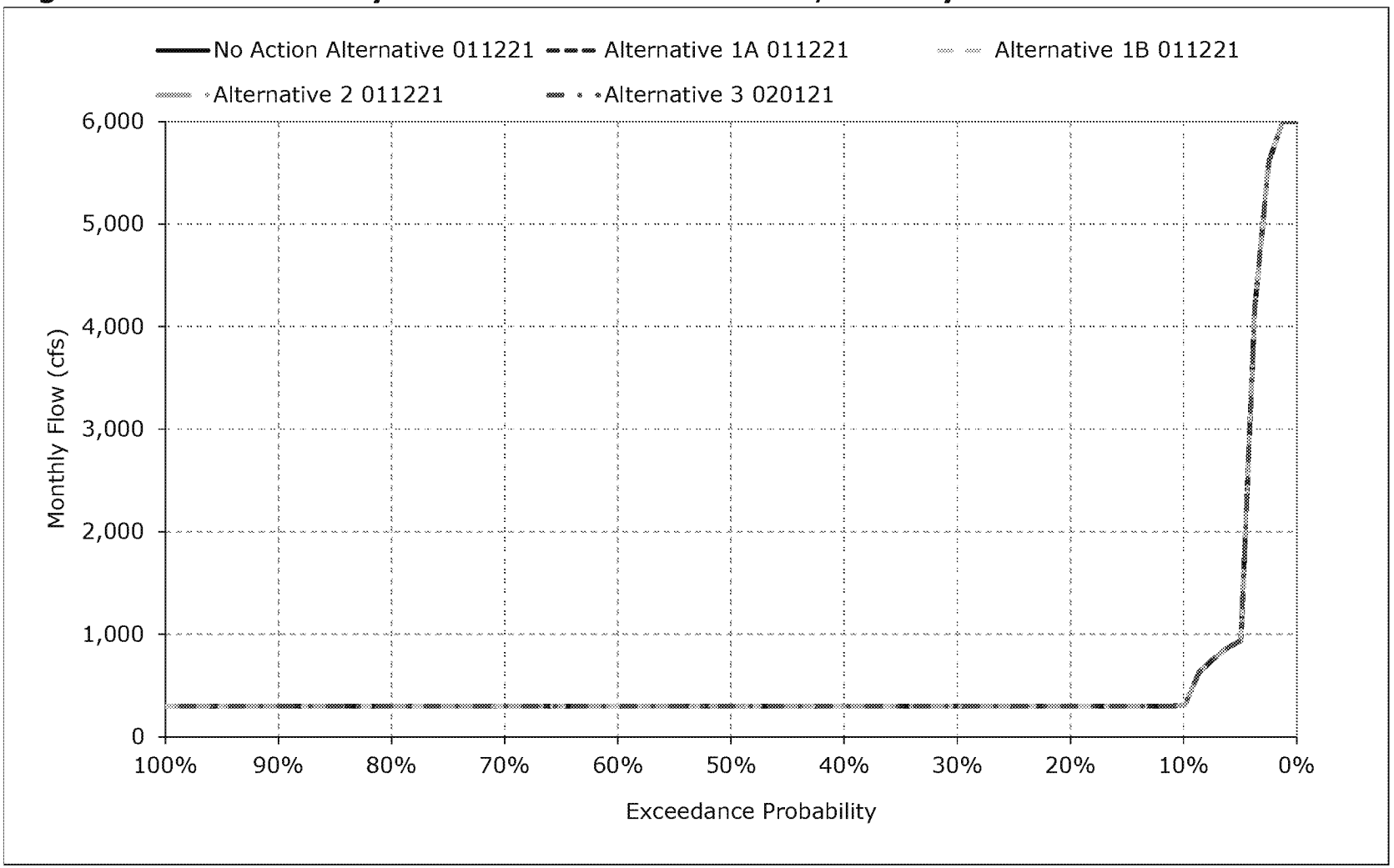


Figure 5B2-4-11. Trinity River Flow below Lewiston, February

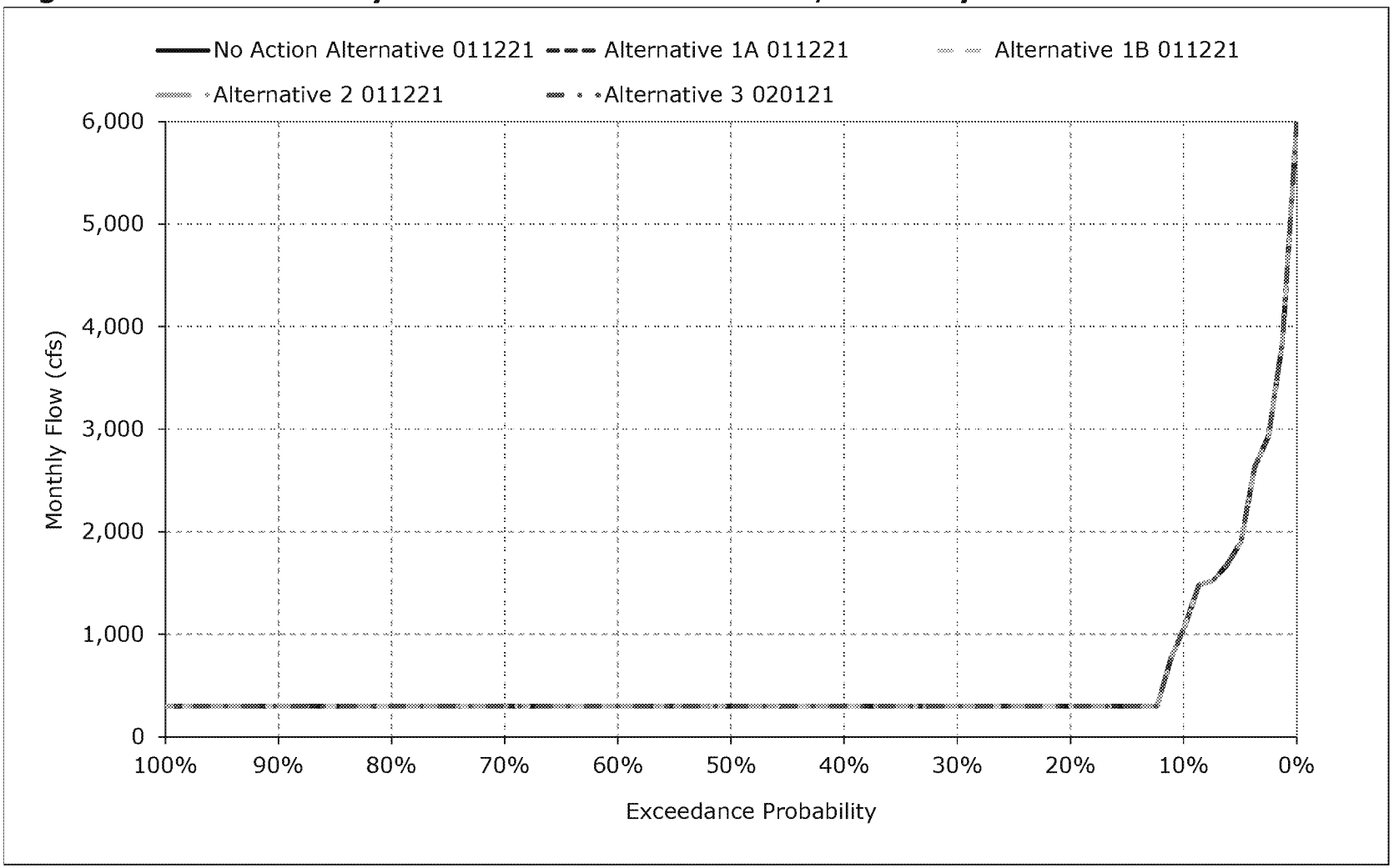


Figure 5B2-4-12. Trinity River Flow below Lewiston, March

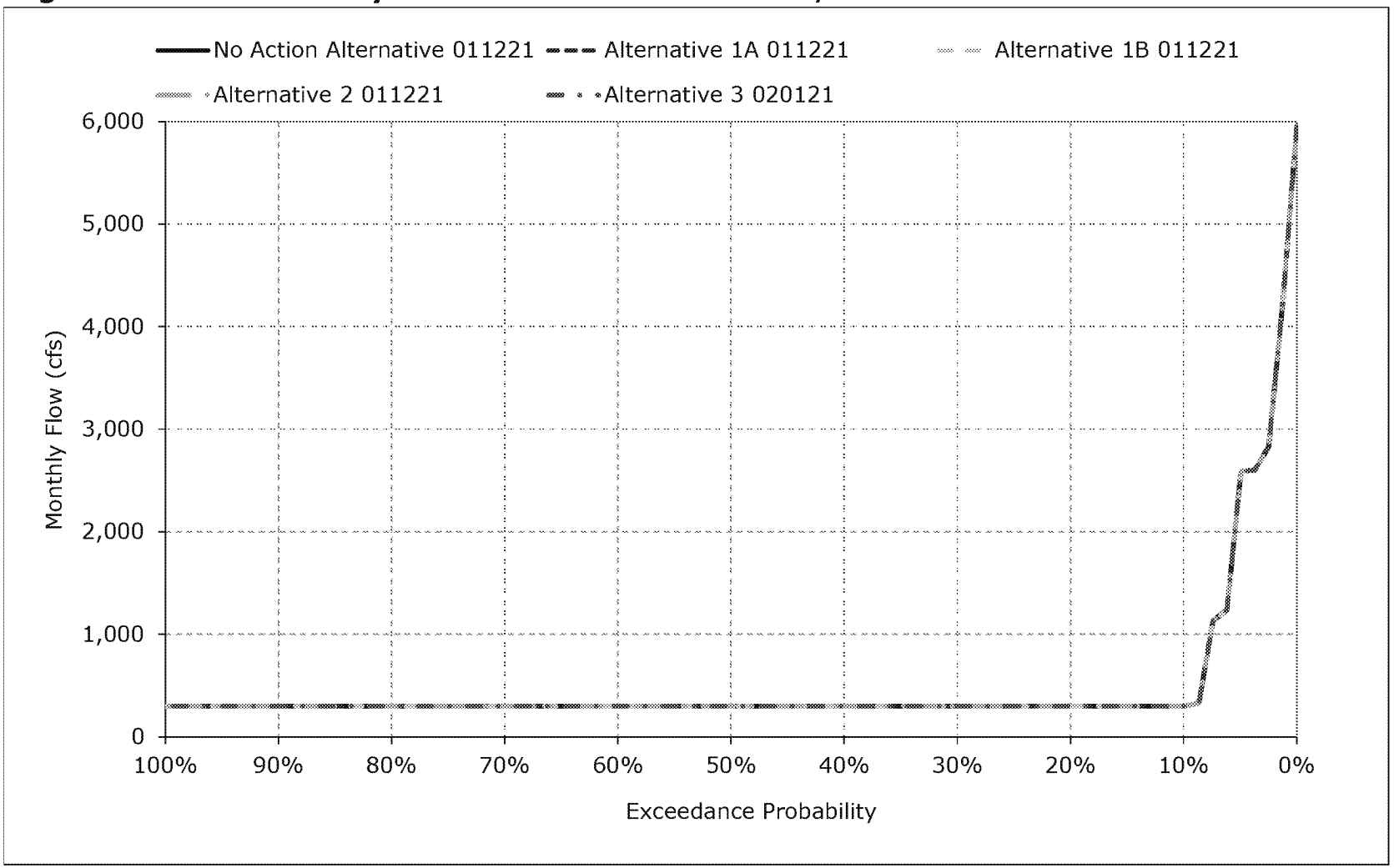


Figure 5B2-4-13. Trinity River Flow below Lewiston, April

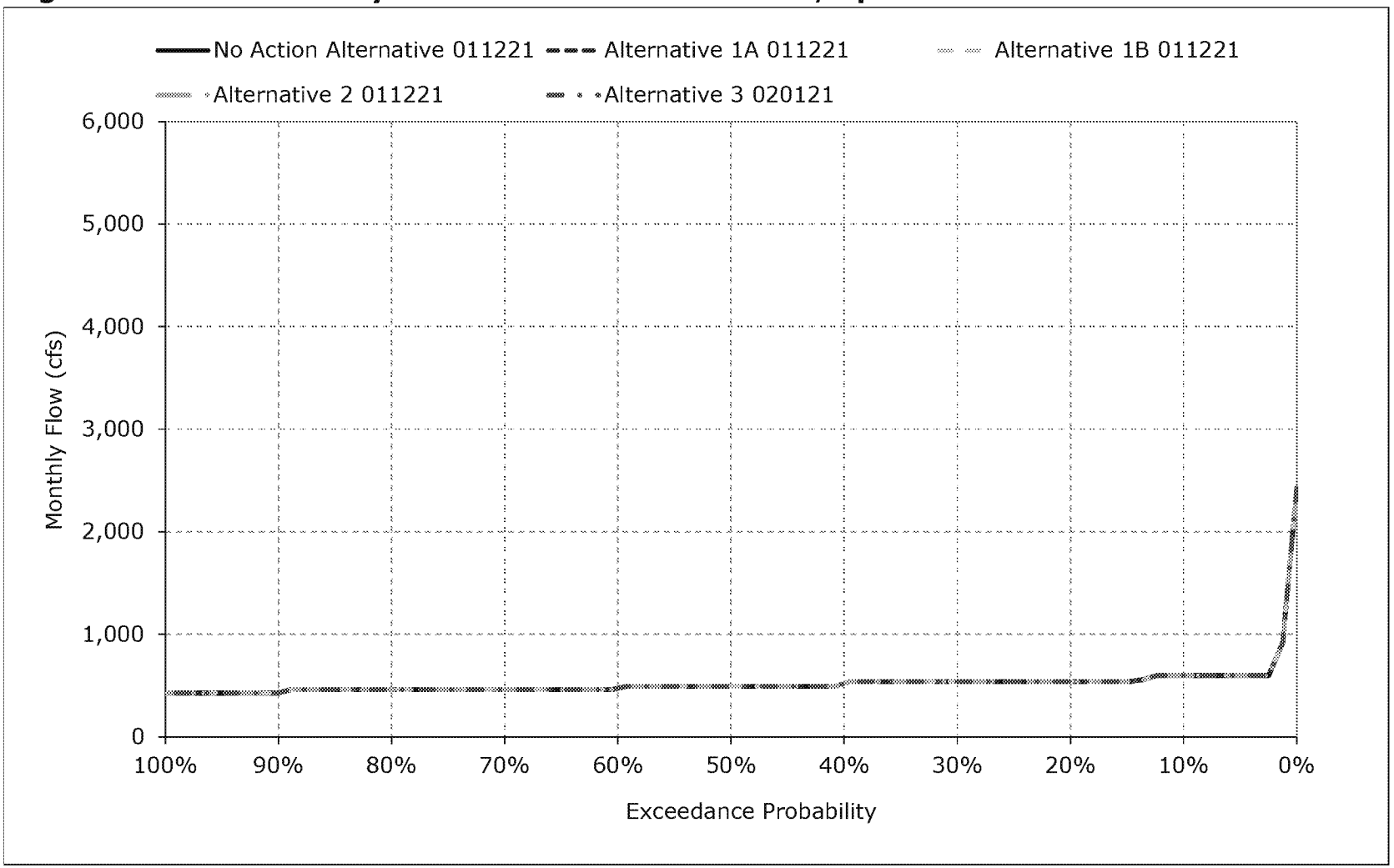


Figure 5B2-4-14. Trinity River Flow below Lewiston, May

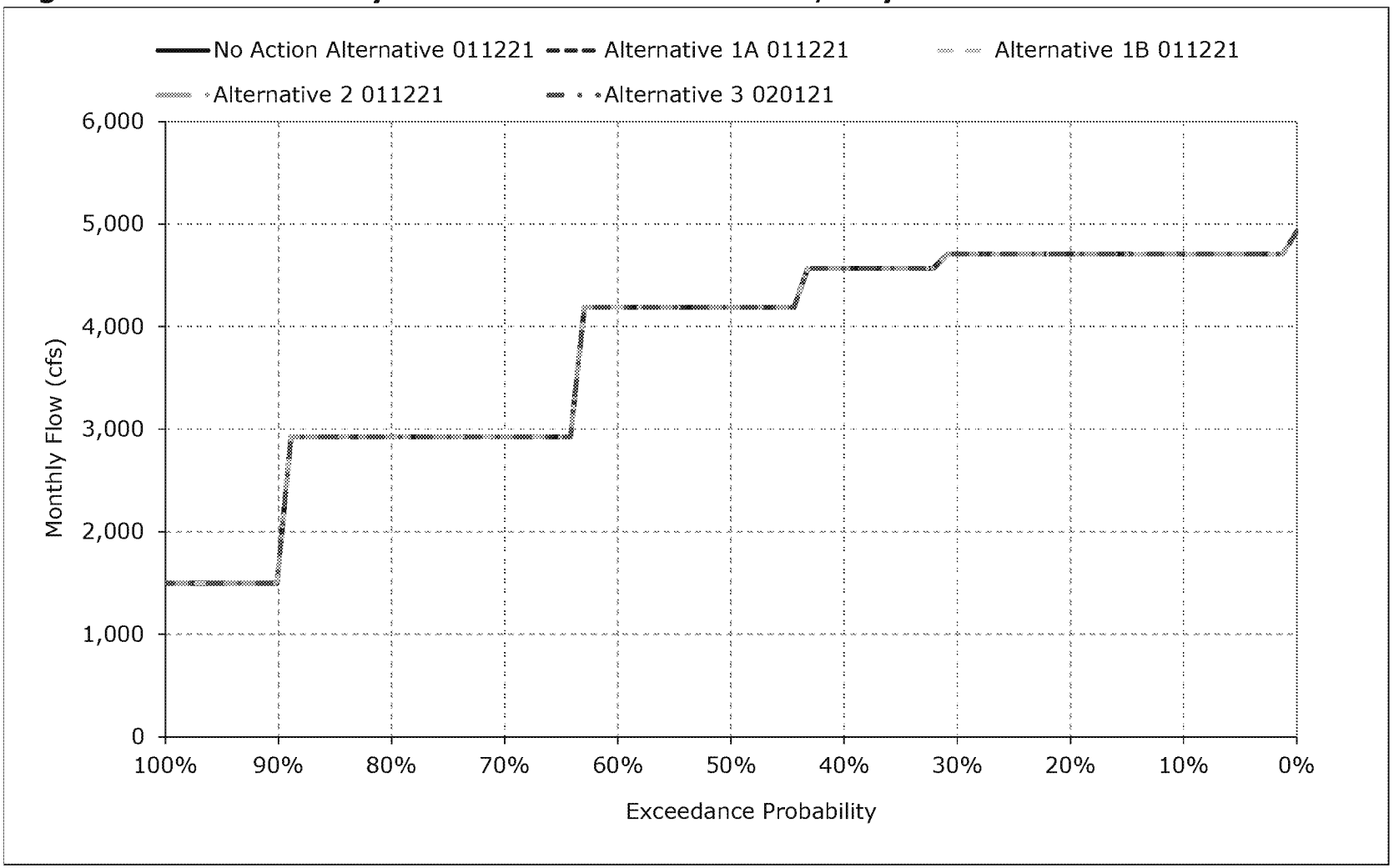


Figure 5B2-4-15. Trinity River Flow below Lewiston, June

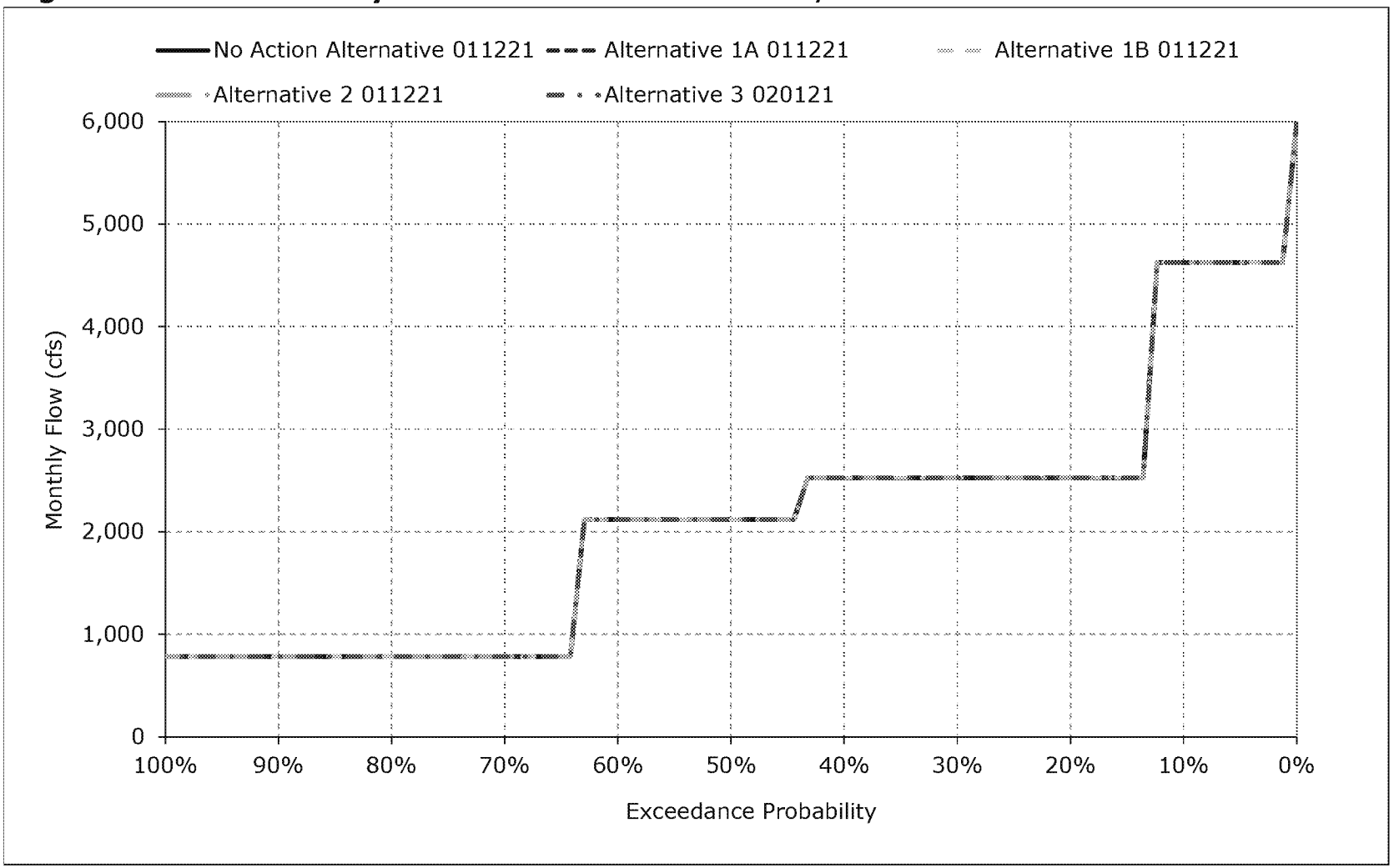


Figure 5B2-4-16. Trinity River Flow below Lewiston, July

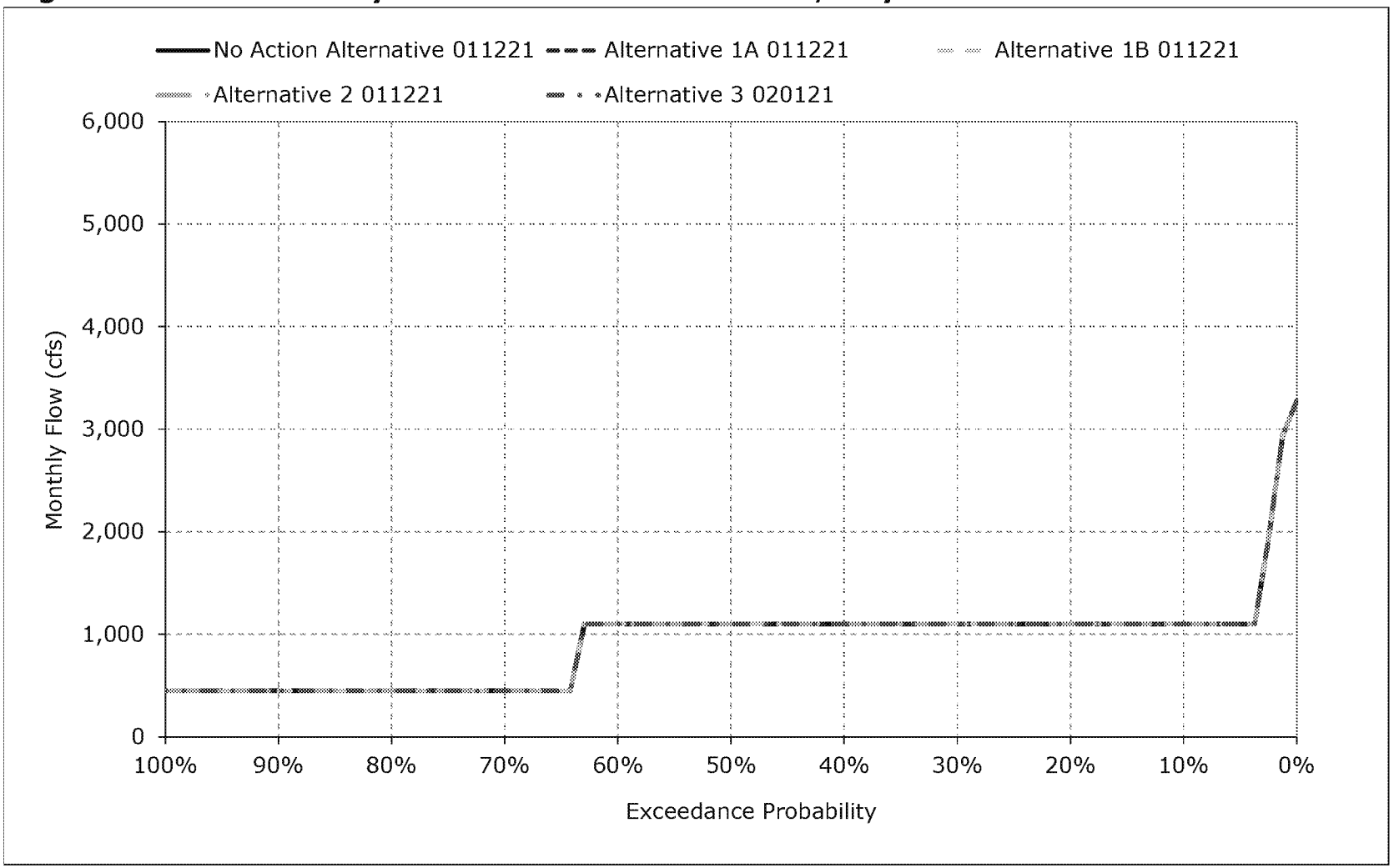


Figure 5B2-4-17. Trinity River Flow below Lewiston, August

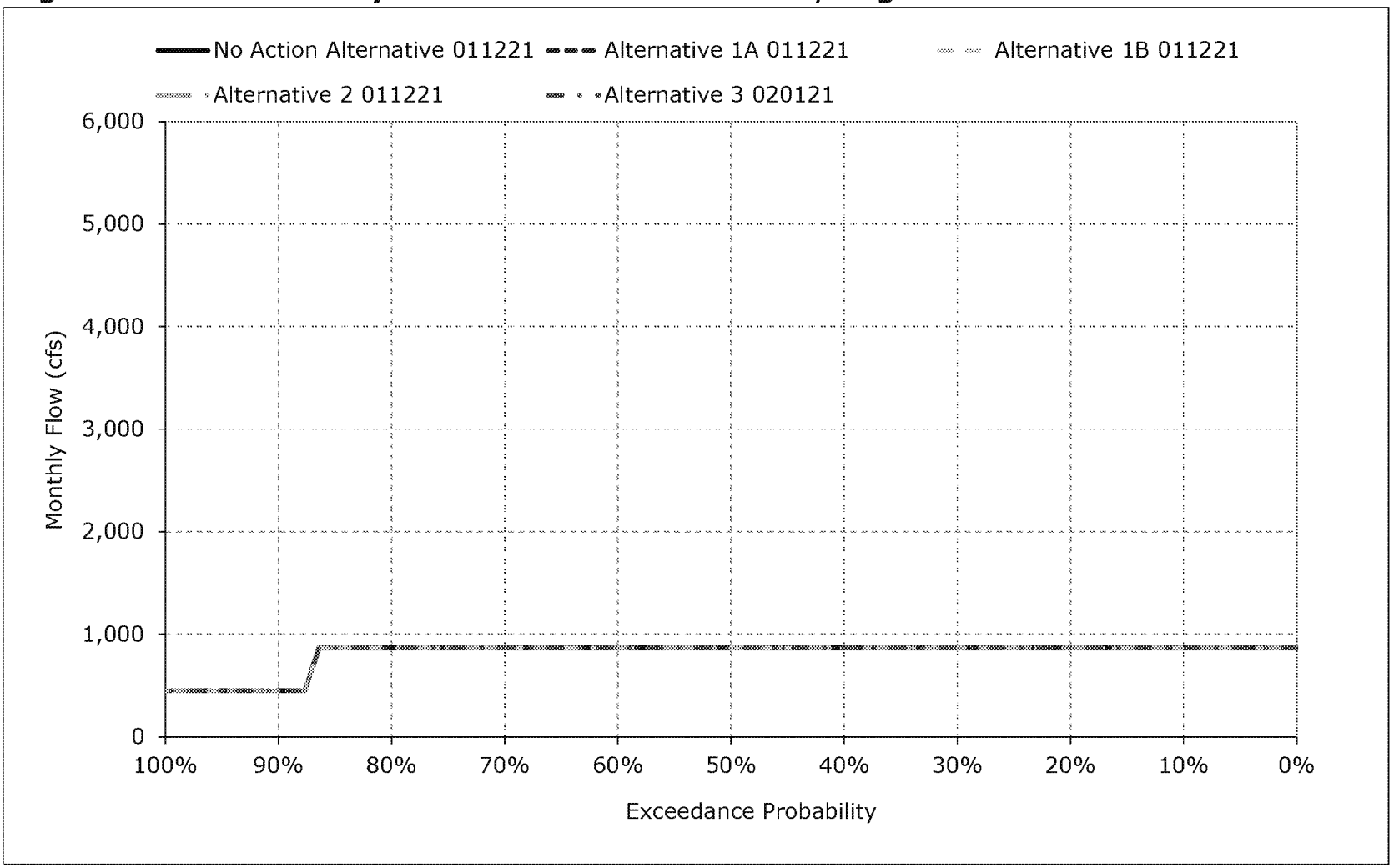


Figure 5B2-4-18. Trinity River Flow below Lewiston, September

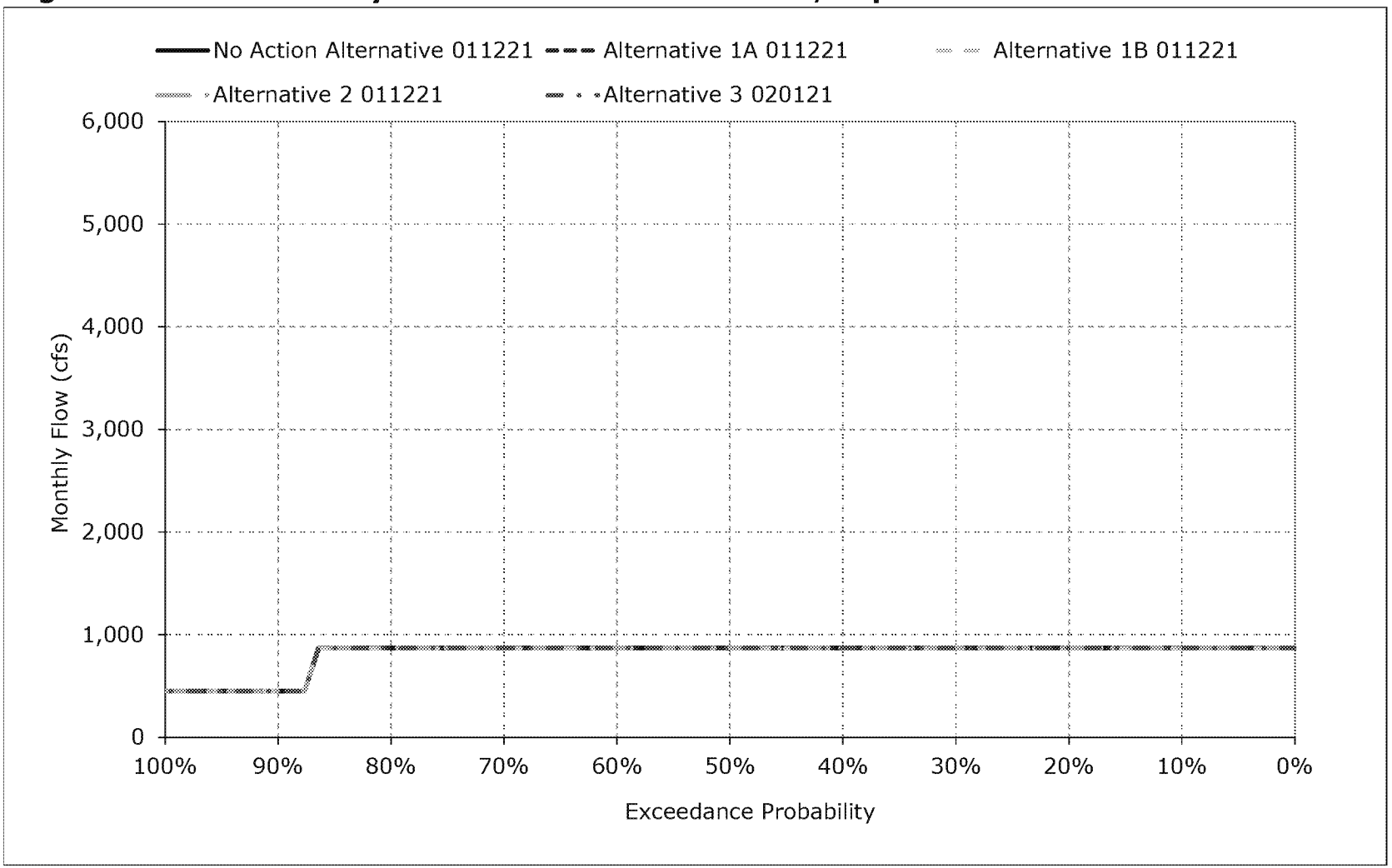


Table 5B2-5-1a. Trinity Import - Clear Creek Tunnel, No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,864	605	1,051	1,456	593	1,144	639	278	1,296	3,220	2,670	2,550
20%	1,746	505	383	698	297	807	448	128	750	2,075	2,075	2,142
30%	755	505	301	397	104	269	400	66	625	1,895	2,075	2,075
40%	755	357	255	270	100	166	342	0	326	1,533	2,005	2,006
50%	750	138	140	113	100	100	268	0	255	1,500	1,559	1,450
60%	625	55	73	100	62	100	202	0	210	1,500	1,500	1,355
70%	180	16	30	55	28	57	123	0	168	1,487	1,500	1,305
80%	180	0	0	0	0	0	65	0	109	1,105	1,161	730
90%	0	0	0	0	0	0	0	0	0	718	1,105	530
Long Term												
Full Simulation Period[a]	776	306	322	451	212	383	376	147	478	1,651	1,735	1,562
Water Year Types[b,c]												
Wet (32%)	1,452	405	617	543	307	594	447	259	348	1,580	1,560	2,093
Above Normal (15%)	742	541	275	251	287	624	458	0	225	1,383	2,057	1,970
Below Normal (17%)	401	168	75	339	198	411	342	28	454	1,497	1,755	1,344
Dry (22%)	496	237	177	312	138	78	249	192	801	2,076	1,910	1,199
Critical (15%)	203	120	233	791	57	112	370	125	559	1,618	1,508	801

Table 5B2-5-1b. Trinity Import - Clear Creek Tunnel, Alternative 1A 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,864	605	1,051	1,456	593	1,144	639	278	1,296	3,220	2,670	2,550
20%	1,746	505	383	698	297	807	448	128	750	2,075	2,075	2,142
30%	755	505	301	397	104	269	400	66	625	1,895	2,075	2,075
40%	755	357	255	270	100	166	342	0	326	1,533	2,005	2,006
50%	750	138	140	113	100	100	268	0	255	1,500	1,559	1,450
60%	625	55	73	100	62	100	202	0	210	1,500	1,500	1,355
70%	180	16	30	55	28	57	123	0	168	1,487	1,500	1,305
80%	180	0	0	0	0	0	65	0	109	1,105	1,161	730
90%	0	0	0	0	0	0	0	0	0	718	1,105	530
Long Term												
Full Simulation Period[a]	776	306	322	451	212	383	376	147	478	1,651	1,735	1,562
Water Year Types[b,c]												
Wet (32%)	1,452	405	617	543	307	594	447	259	348	1,580	1,560	2,093
Above Normal (15%)	742	541	275	251	287	624	458	0	225	1,383	2,057	1,970
Below Normal (17%)	401	168	75	339	198	411	342	28	454	1,497	1,755	1,344
Dry (22%)	496	237	177	312	138	78	249	192	801	2,076	1,910	1,199
Critical (15%)	203	120	233	791	57	112	370	125	559	1,618	1,508	801

Table 5B2-5-1c. Trinity Import - Clear Creek Tunnel, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-5-2a. Trinity Import - Clear Creek Tunnel, No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,864	605	1,051	1,456	593	1,144	639	278	1,296	3,220	2,670	2,550
20%	1,746	505	383	698	297	807	448	128	750	2,075	2,075	2,142
30%	755	505	301	397	104	269	400	66	625	1,895	2,075	2,075
40%	755	357	255	270	100	166	342	0	326	1,533	2,005	2,006
50%	750	138	140	113	100	100	268	0	255	1,500	1,559	1,450
60%	625	55	73	100	62	100	202	0	210	1,500	1,500	1,355
70%	180	16	30	55	28	57	123	0	168	1,487	1,500	1,305
80%	180	0	0	0	0	0	65	0	109	1,105	1,161	730
90%	0	0	0	0	0	0	0	0	0	718	1,105	530
Long Term												
Full Simulation Period[a]	776	306	322	451	212	383	376	147	478	1,651	1,735	1,562
Water Year Types[b,c]												
Wet (32%)	1,452	405	617	543	307	594	447	259	348	1,580	1,560	2,093
Above Normal (15%)	742	541	275	251	287	624	458	0	225	1,383	2,057	1,970
Below Normal (17%)	401	168	75	339	198	411	342	28	454	1,497	1,755	1,344
Dry (22%)	496	237	177	312	138	78	249	192	801	2,076	1,910	1,199
Critical (15%)	203	120	233	791	57	112	370	125	559	1,618	1,508	801

Table 5B2-5-2b. Trinity Import - Clear Creek Tunnel, Alternative 1B 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,864	605	1,051	1,456	593	1,144	639	278	1,296	3,220	2,670	2,550
20%	1,746	505	383	698	297	807	448	128	750	2,075	2,075	2,142
30%	755	505	301	397	104	269	400	66	625	1,895	2,075	2,075
40%	755	357	255	270	100	166	342	0	326	1,533	2,005	2,006
50%	750	138	140	113	100	100	268	0	255	1,500	1,559	1,450
60%	625	55	73	100	62	100	202	0	210	1,500	1,500	1,355
70%	180	16	30	55	28	57	123	0	168	1,487	1,500	1,305
80%	180	0	0	0	0	0	65	0	109	1,105	1,161	730
90%	0	0	0	0	0	0	0	0	0	718	1,105	530
Long Term												
Full Simulation Period[a]	776	306	322	451	212	383	376	147	478	1,651	1,735	1,562
Water Year Types[b,c]												
Wet (32%)	1,452	405	617	543	307	594	447	259	348	1,580	1,560	2,093
Above Normal (15%)	742	541	275	251	287	624	458	0	225	1,383	2,057	1,970
Below Normal (17%)	401	168	75	339	198	411	342	28	454	1,497	1,755	1,344
Dry (22%)	496	237	177	312	138	78	249	192	801	2,076	1,910	1,199
Critical (15%)	203	120	233	791	57	112	370	125	559	1,618	1,508	801

Table 5B2-5-2c. Trinity Import - Clear Creek Tunnel, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-5-3a. Trinity Import - Clear Creek Tunnel, No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,864	605	1,051	1,456	593	1,144	639	278	1,296	3,220	2,670	2,550
20%	1,746	505	383	698	297	807	448	128	750	2,075	2,075	2,142
30%	755	505	301	397	104	269	400	66	625	1,895	2,075	2,075
40%	755	357	255	270	100	166	342	0	326	1,533	2,005	2,006
50%	750	138	140	113	100	100	268	0	255	1,500	1,559	1,450
60%	625	55	73	100	62	100	202	0	210	1,500	1,500	1,355
70%	180	16	30	55	28	57	123	0	168	1,487	1,500	1,305
80%	180	0	0	0	0	0	65	0	109	1,105	1,161	730
90%	0	0	0	0	0	0	0	0	0	718	1,105	530
Long Term												
Full Simulation Period[a]	776	306	322	451	212	383	376	147	478	1,651	1,735	1,562
Water Year Types[b,c]												
Wet (32%)	1,452	405	617	543	307	594	447	259	348	1,580	1,560	2,093
Above Normal (15%)	742	541	275	251	287	624	458	0	225	1,383	2,057	1,970
Below Normal (17%)	401	168	75	339	198	411	342	28	454	1,497	1,755	1,344
Dry (22%)	496	237	177	312	138	78	249	192	801	2,076	1,910	1,199
Critical (15%)	203	120	233	791	57	112	370	125	559	1,618	1,508	801

Table 5B2-5-3b. Trinity Import - Clear Creek Tunnel, Alternative 2 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,864	605	1,051	1,456	593	1,144	639	278	1,296	3,220	2,670	2,550
20%	1,746	505	383	698	297	807	448	128	750	2,075	2,075	2,142
30%	755	505	301	397	104	269	400	66	625	1,895	2,075	2,075
40%	755	357	255	270	100	166	342	0	326	1,533	2,005	2,006
50%	750	138	140	113	100	100	268	0	255	1,500	1,559	1,450
60%	625	55	73	100	62	100	202	0	210	1,500	1,500	1,355
70%	180	16	30	55	28	57	123	0	168	1,487	1,500	1,305
80%	180	0	0	0	0	0	65	0	109	1,105	1,161	730
90%	0	0	0	0	0	0	0	0	0	718	1,105	530
Long Term												
Full Simulation Period[a]	776	306	322	451	212	383	376	147	478	1,651	1,735	1,562
Water Year Types[b,c]												
Wet (32%)	1,452	405	617	543	307	594	447	259	348	1,580	1,560	2,093
Above Normal (15%)	742	541	275	251	287	624	458	0	225	1,383	2,057	1,970
Below Normal (17%)	401	168	75	339	198	411	342	28	454	1,497	1,755	1,344
Dry (22%)	496	237	177	312	138	78	249	192	801	2,076	1,910	1,199
Critical (15%)	203	120	233	791	57	112	370	125	559	1,618	1,508	801

Table 5B2-5-3c. Trinity Import - Clear Creek Tunnel, Alternative 2 011221 minus No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-5-4a. Trinity Import - Clear Creek Tunnel, No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,864	605	1,051	1,456	593	1,144	639	278	1,296	3,220	2,670	2,550
20%	1,746	505	383	698	297	807	448	128	750	2,075	2,075	2,142
30%	755	505	301	397	104	269	400	66	625	1,895	2,075	2,075
40%	755	357	255	270	100	166	342	0	326	1,533	2,005	2,006
50%	750	138	140	113	100	100	268	0	255	1,500	1,559	1,450
60%	625	55	73	100	62	100	202	0	210	1,500	1,500	1,355
70%	180	16	30	55	28	57	123	0	168	1,487	1,500	1,305
80%	180	0	0	0	0	0	65	0	109	1,105	1,161	730
90%	0	0	0	0	0	0	0	0	0	718	1,105	530
Long Term												
Full Simulation Period[a]	776	306	322	451	212	383	376	147	478	1,651	1,735	1,562
Water Year Types[b,c]												
Wet (32%)	1,452	405	617	543	307	594	447	259	348	1,580	1,560	2,093
Above Normal (15%)	742	541	275	251	287	624	458	0	225	1,383	2,057	1,970
Below Normal (17%)	401	168	75	339	198	411	342	28	454	1,497	1,755	1,344
Dry (22%)	496	237	177	312	138	78	249	192	801	2,076	1,910	1,199
Critical (15%)	203	120	233	791	57	112	370	125	559	1,618	1,508	801

Table 5B2-5-4b. Trinity Import - Clear Creek Tunnel, Alternative 3 020121, Monthly Diversion (cfs)

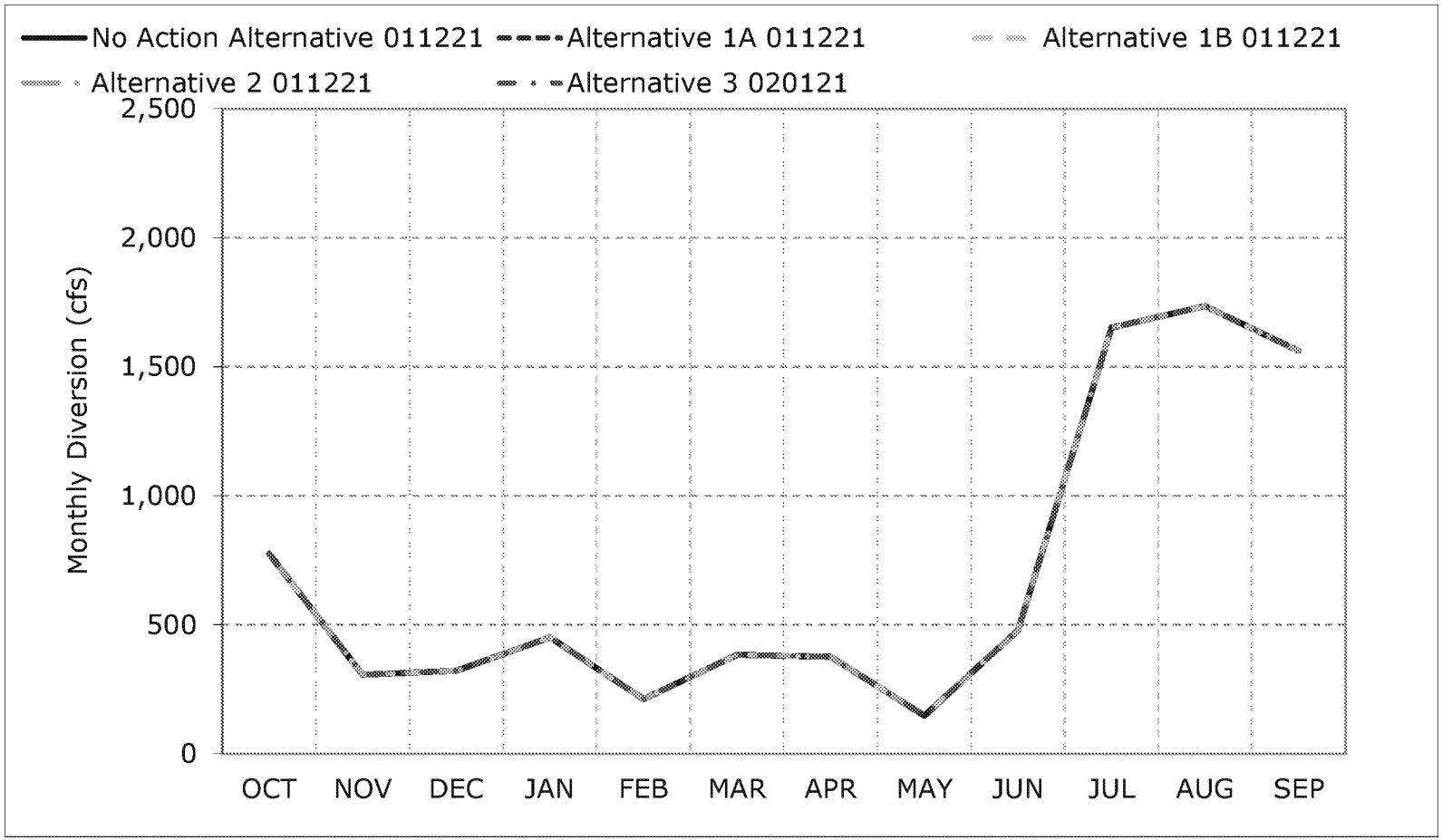
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,864	605	1,051	1,456	593	1,144	639	278	1,296	3,220	2,670	2,550
20%	1,746	505	383	698	297	807	448	128	750	2,075	2,075	2,142
30%	755	505	301	397	104	269	400	66	625	1,895	2,075	2,075
40%	755	357	255	270	100	166	342	0	326	1,533	2,005	2,006
50%	750	138	140	113	100	100	268	0	255	1,500	1,559	1,450
60%	625	55	73	100	62	100	202	0	210	1,500	1,500	1,355
70%	180	16	30	55	28	57	123	0	168	1,487	1,500	1,305
80%	180	0	0	0	0	0	65	0	109	1,105	1,161	730
90%	0	0	0	0	0	0	0	0	0	718	1,105	530
Long Term												
Full Simulation Period[a]	776	306	322	451	212	383	376	147	478	1,651	1,735	1,562
Water Year Types[b,c]												
Wet (32%)	1,452	405	617	543	307	594	447	259	348	1,580	1,560	2,093
Above Normal (15%)	742	541	275	251	287	624	458	0	225	1,383	2,057	1,970
Below Normal (17%)	401	168	75	339	198	411	342	28	454	1,497	1,755	1,344
Dry (22%)	496	237	177	312	138	78	249	192	801	2,076	1,910	1,199
Critical (15%)	203	120	233	791	57	112	370	125	559	1,618	1,508	801

Table 5B2-5-4c. Trinity Import - Clear Creek Tunnel, Alternative 3 020121 minus No Action Alternative 011221, Monthly Diversion (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

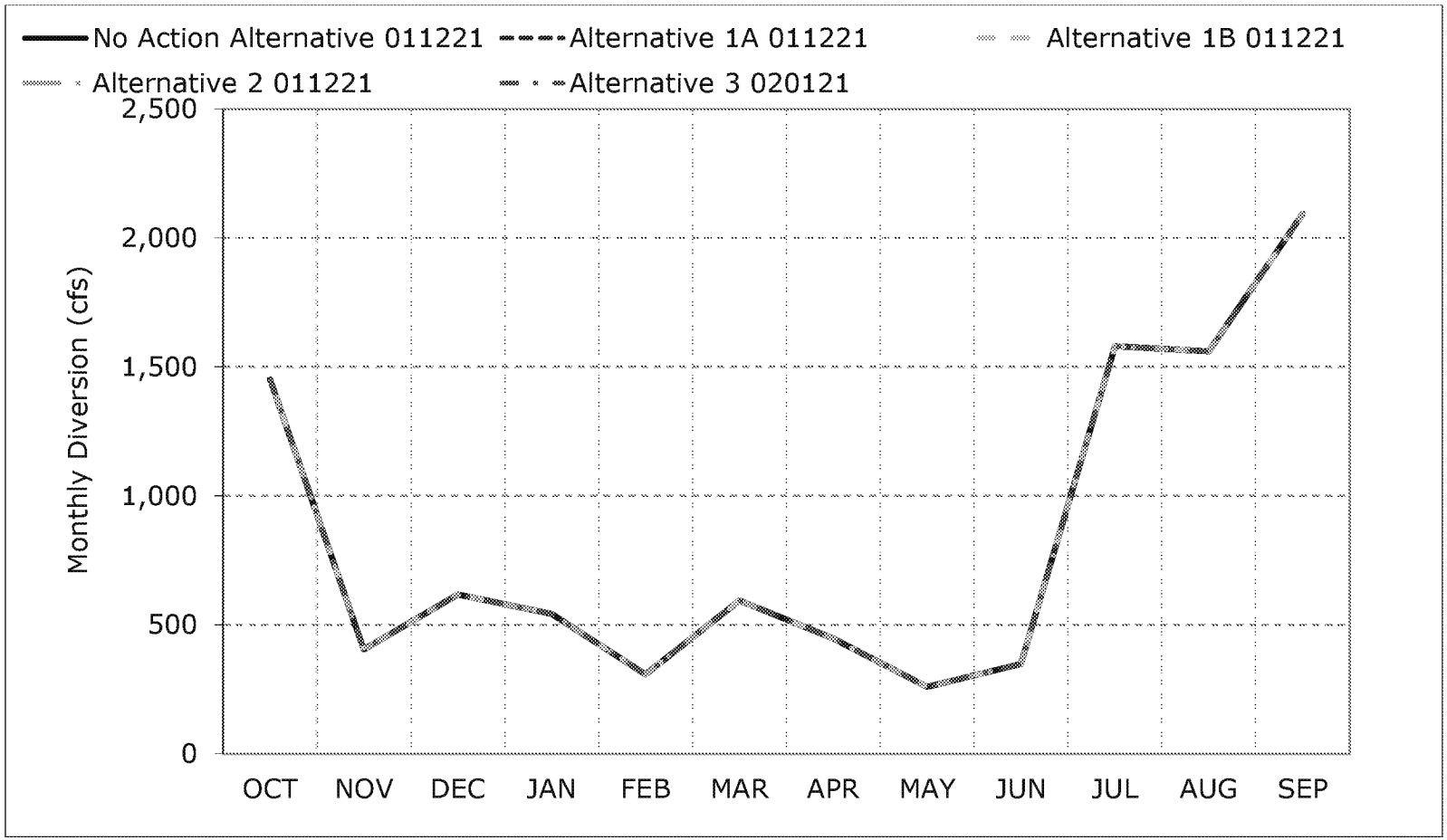
a Based on the 82-year simulation period.
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
c These results are displayed with calendar year - year type sorting.

Figure 5B2-5-1. Trinity Import - Clear Creek Tunnel, Long-Term Average Diversion



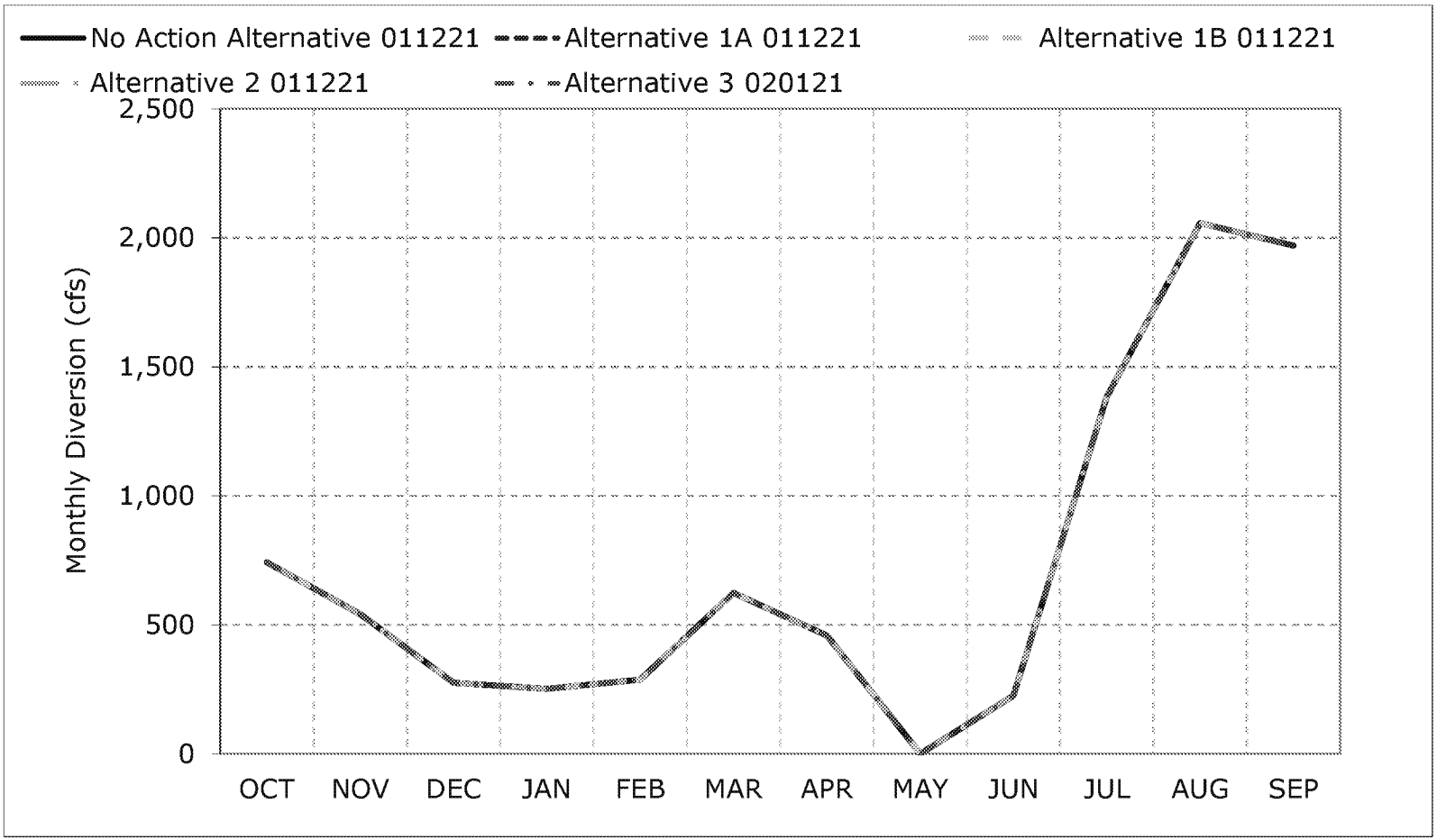
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-5-2. Trinity Import - Clear Creek Tunnel, Wet Year Average Diversion



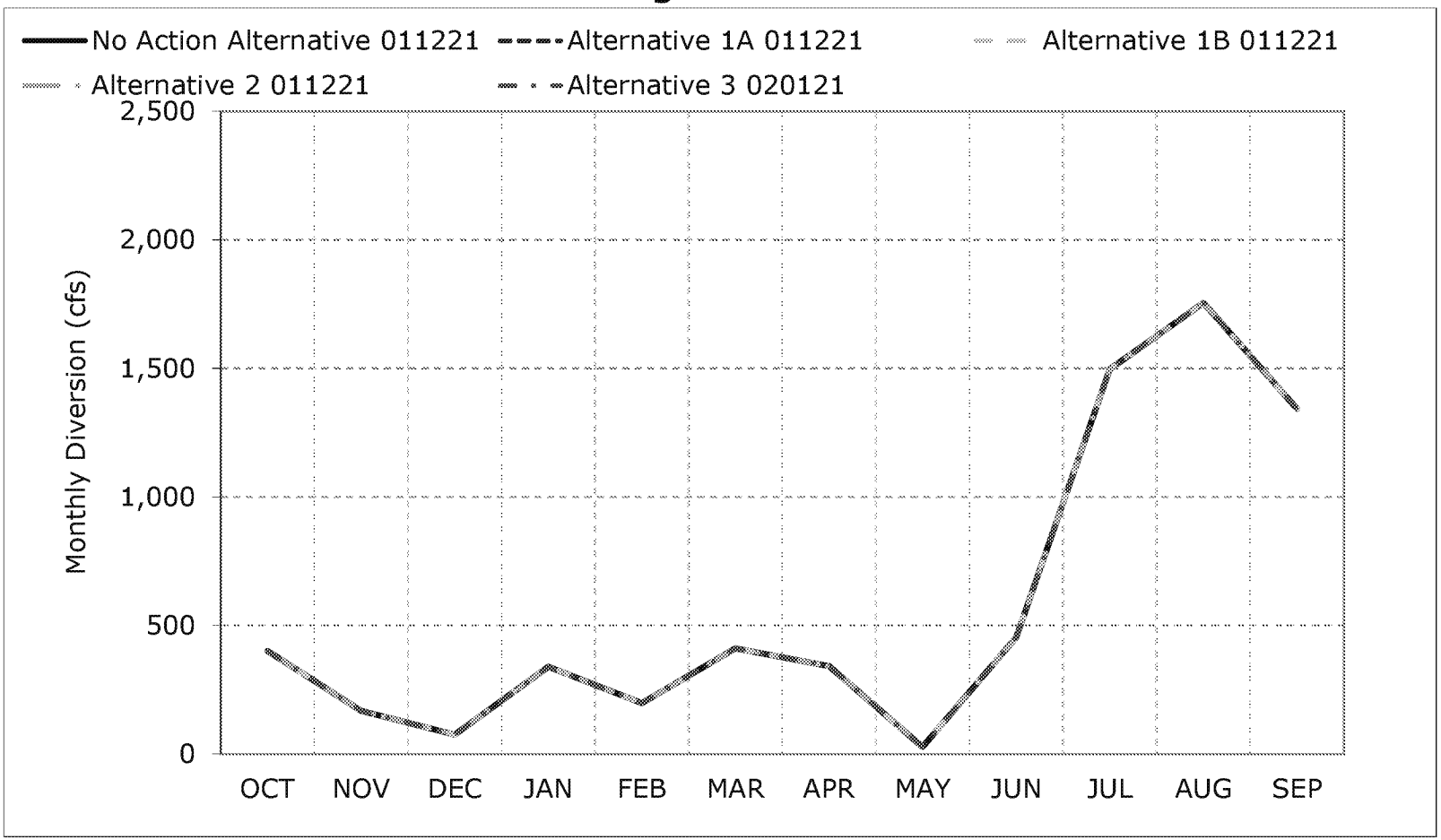
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-5-3. Trinity Import - Clear Creek Tunnel, Above Normal Year Average Diversion



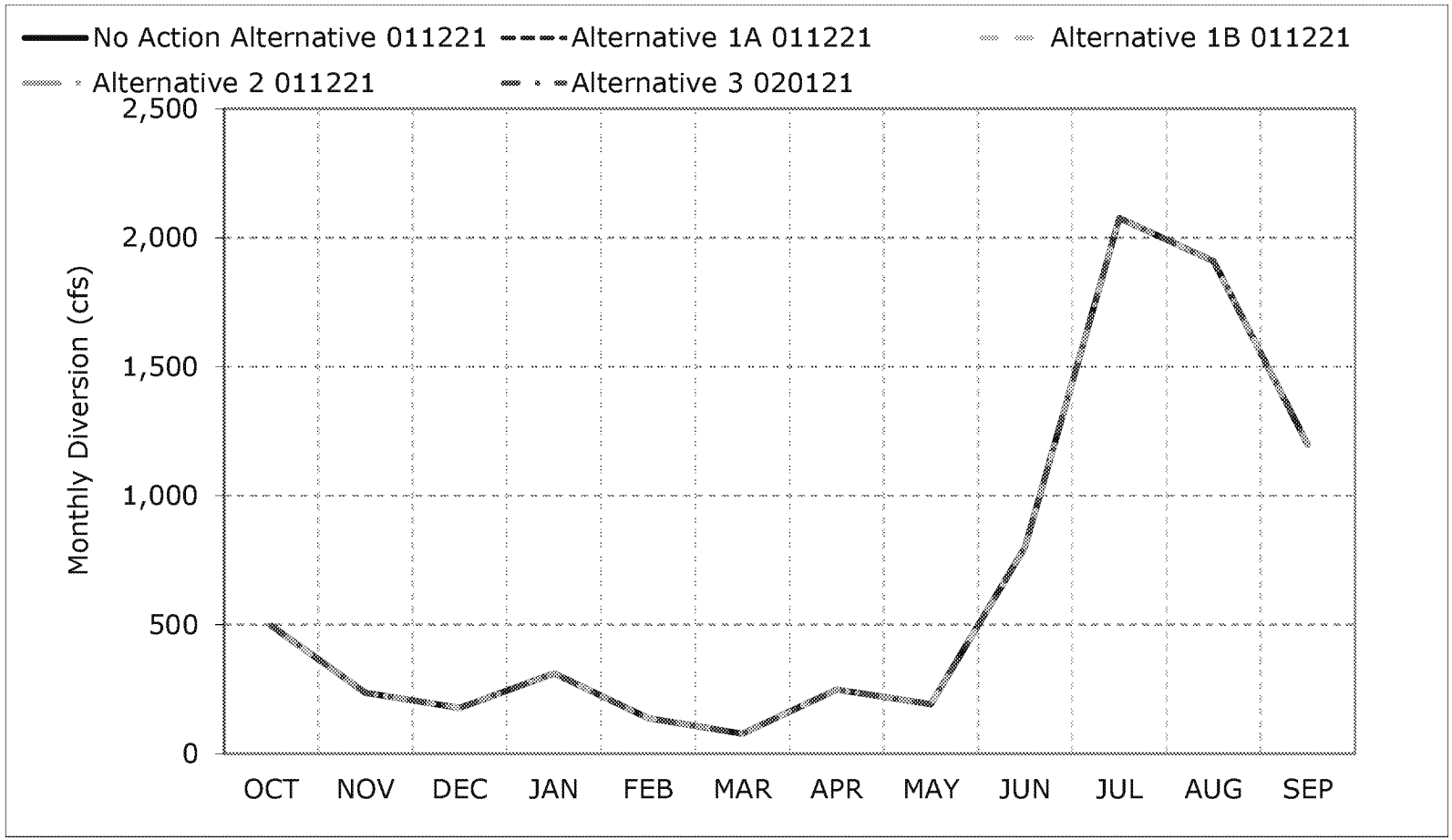
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-5-4. Trinity Import - Clear Creek Tunnel, Below Normal Year Average Diversion



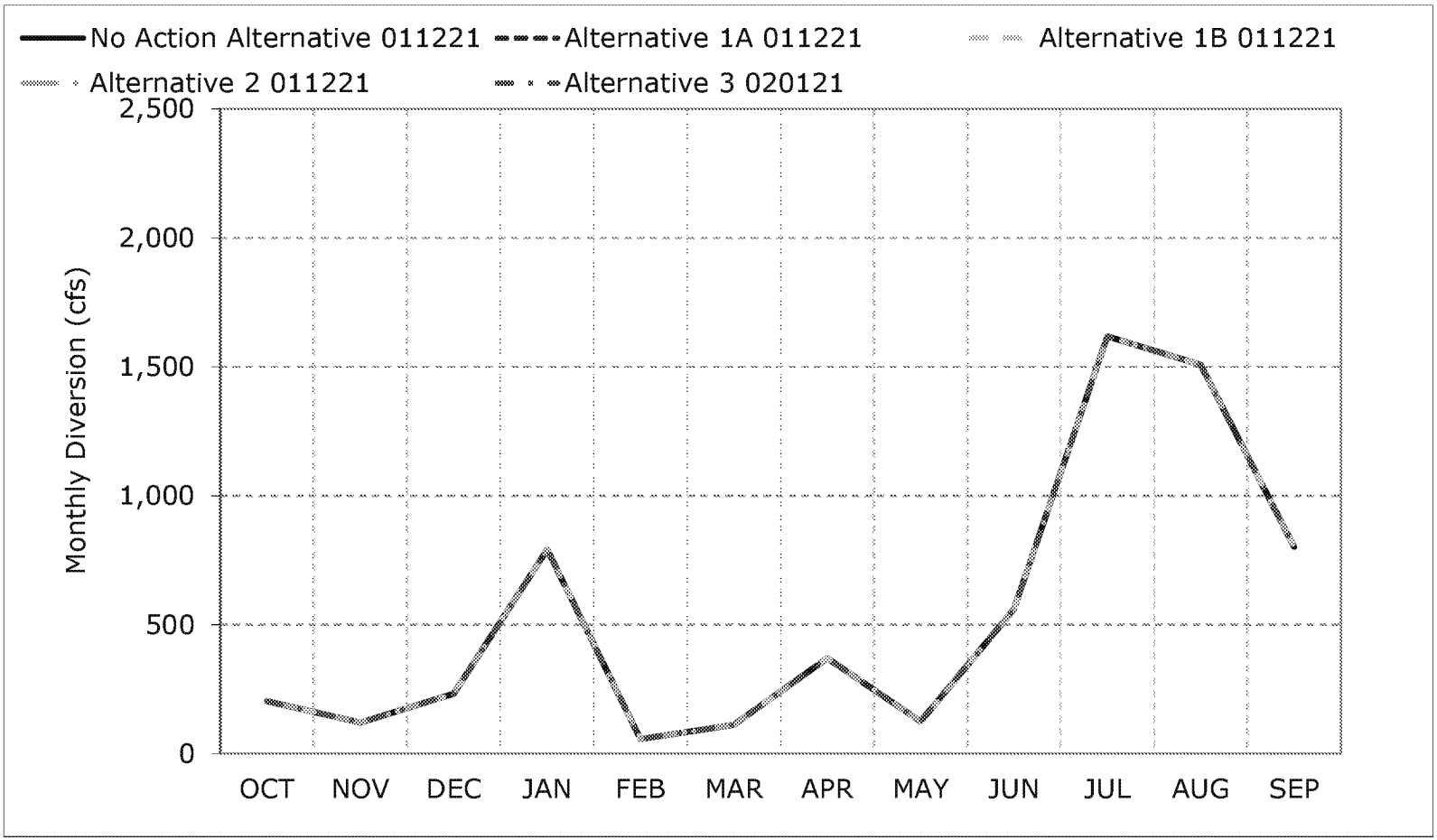
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-5-5. Trinity Import - Clear Creek Tunnel, Dry Year Average Diversion



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-5-6. Trinity Import - Clear Creek Tunnel, Critical Year Average Diversion



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-5-7. Trinity Import - Clear Creek Tunnel, October

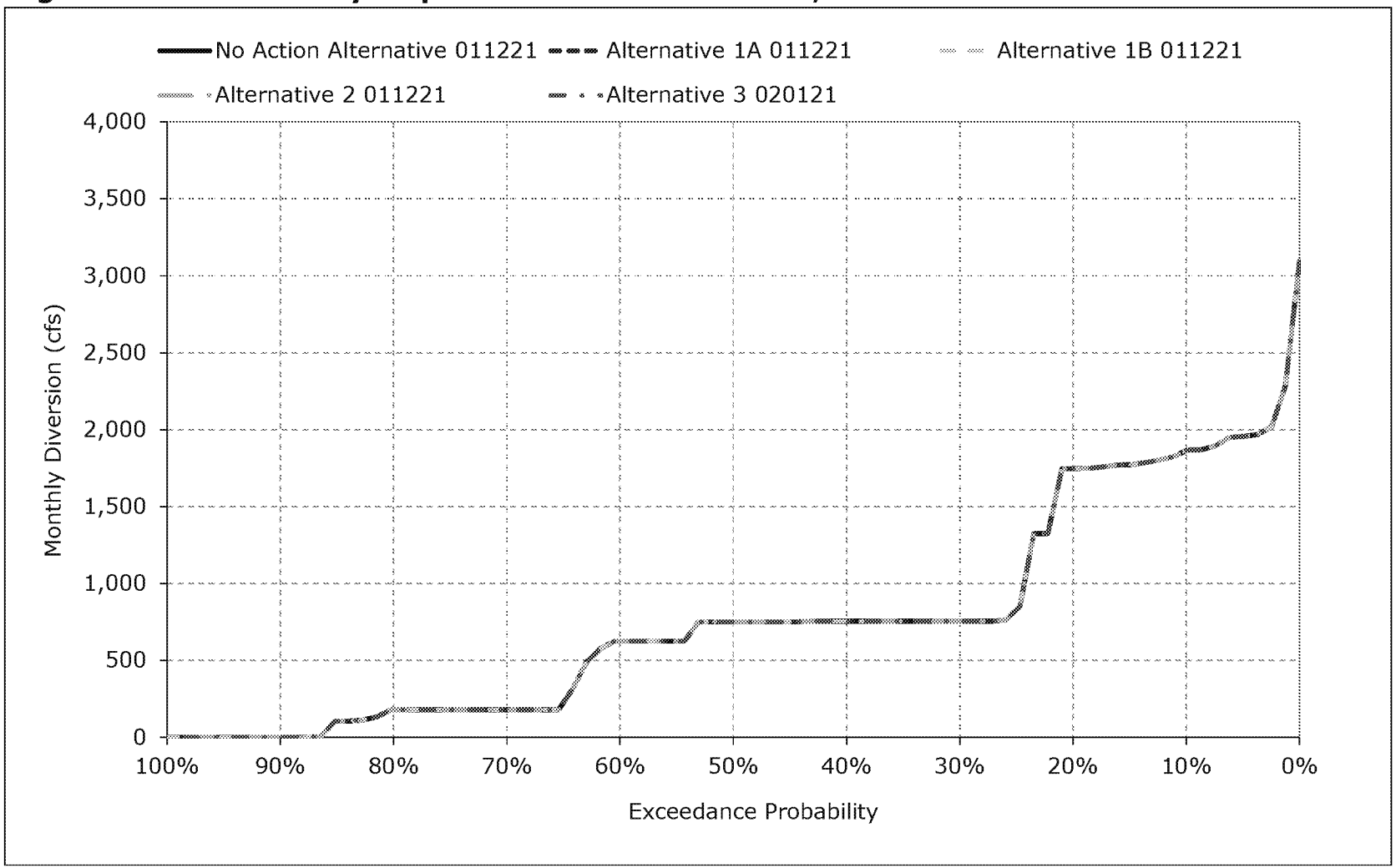


Figure 5B2-5-8. Trinity Import - Clear Creek Tunnel, November

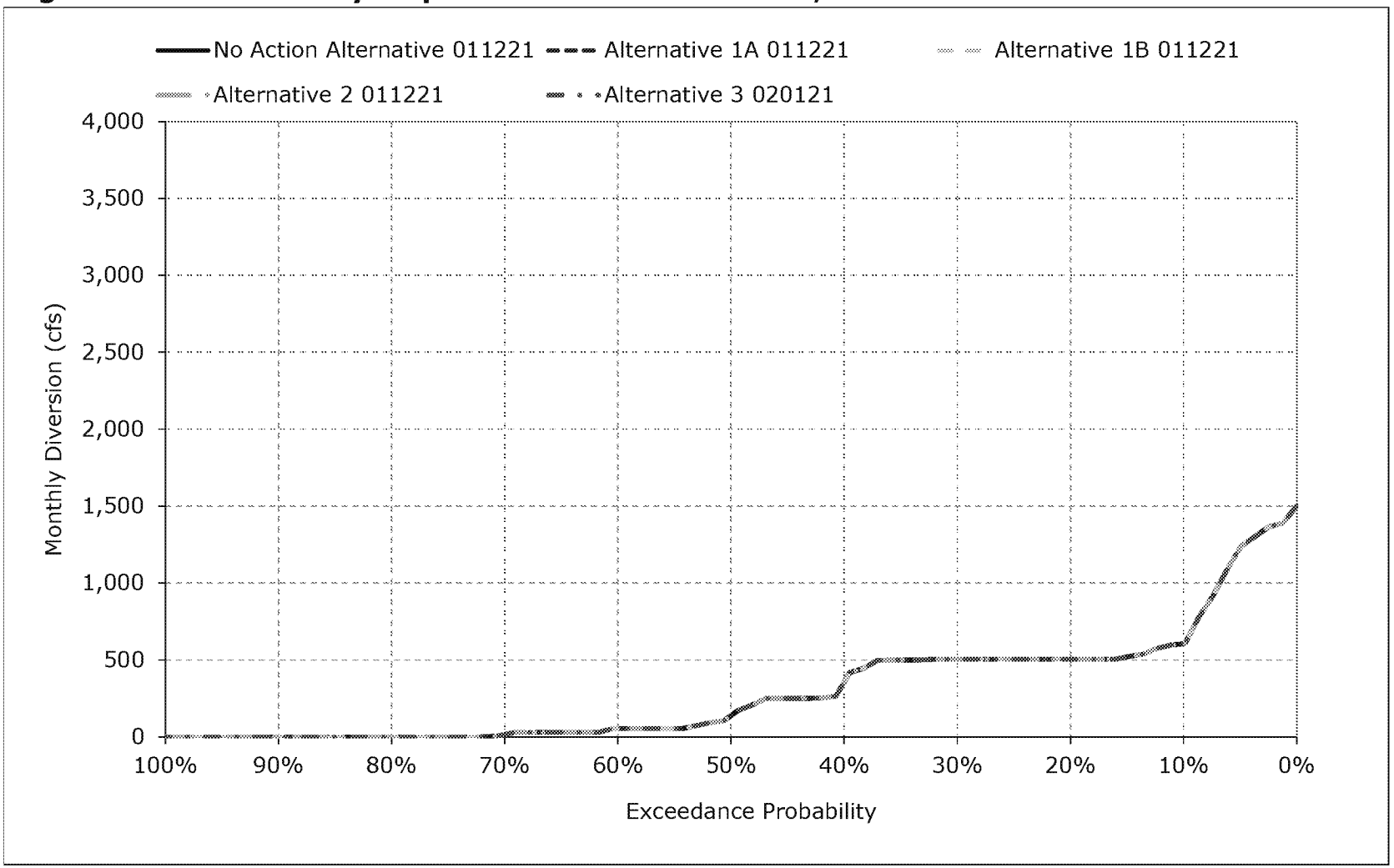


Figure 5B2-5-9. Trinity Import - Clear Creek Tunnel, December

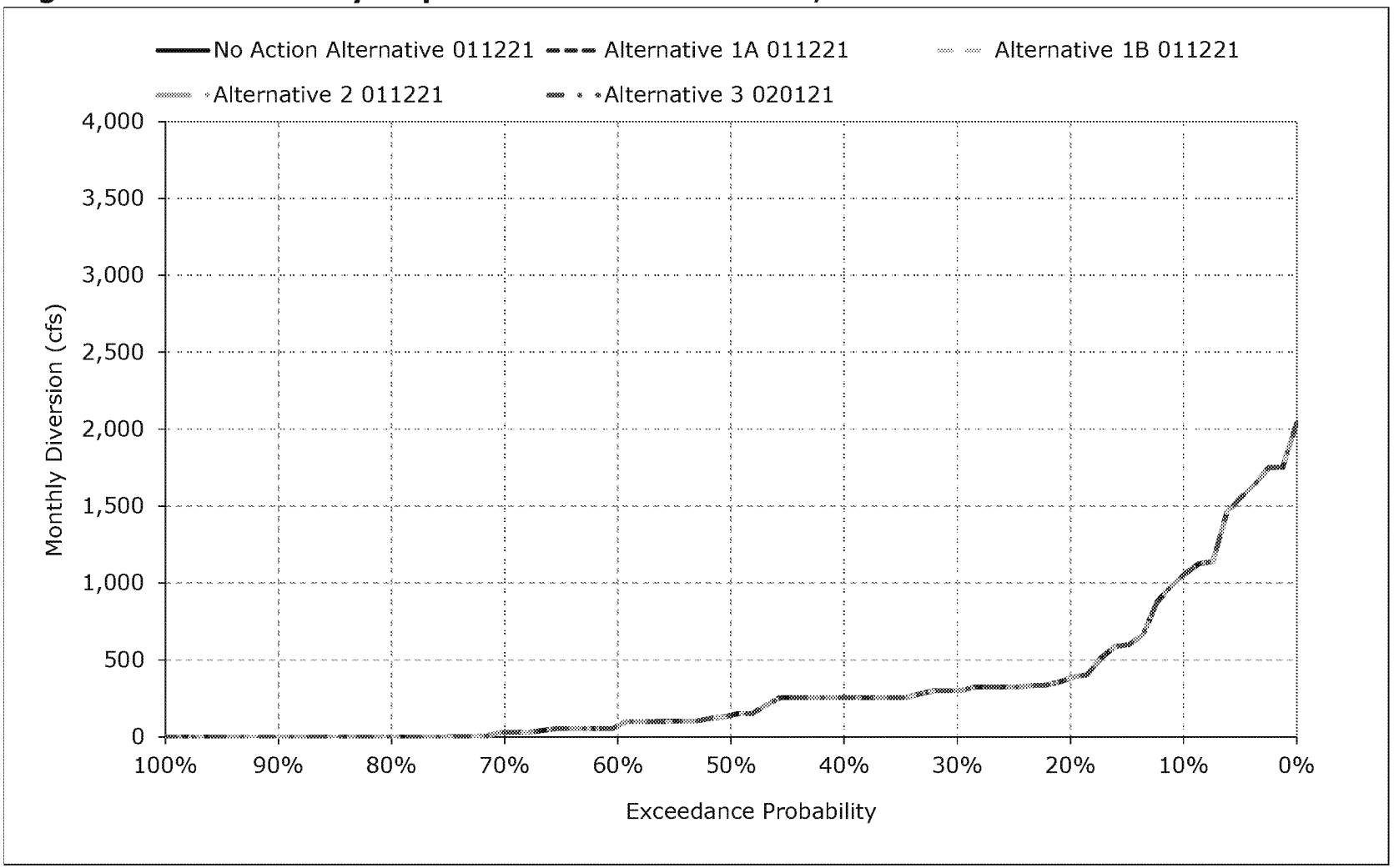


Figure 5B2-5-10. Trinity Import - Clear Creek Tunnel, January

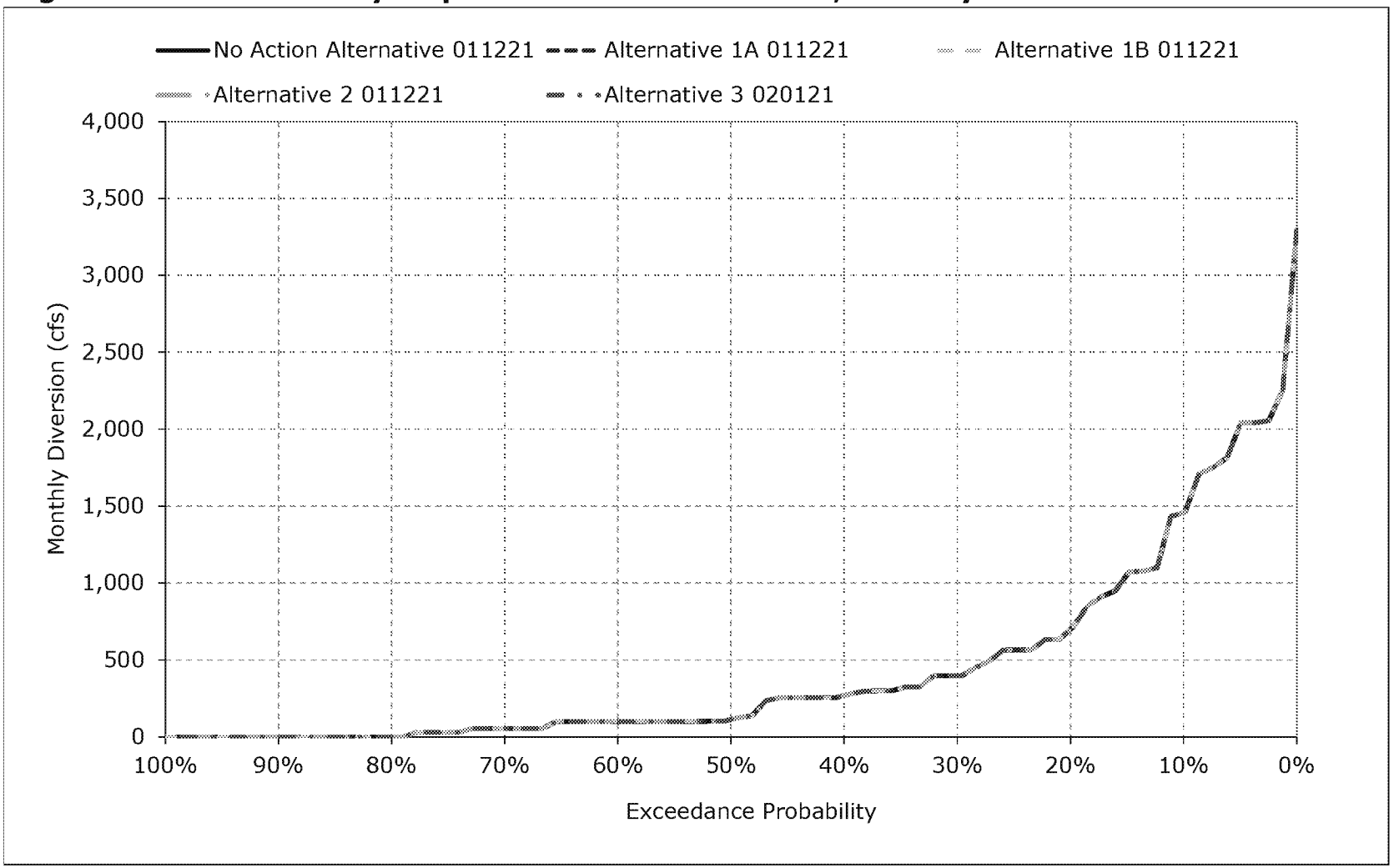


Figure 5B2-5-11. Trinity Import - Clear Creek Tunnel, February

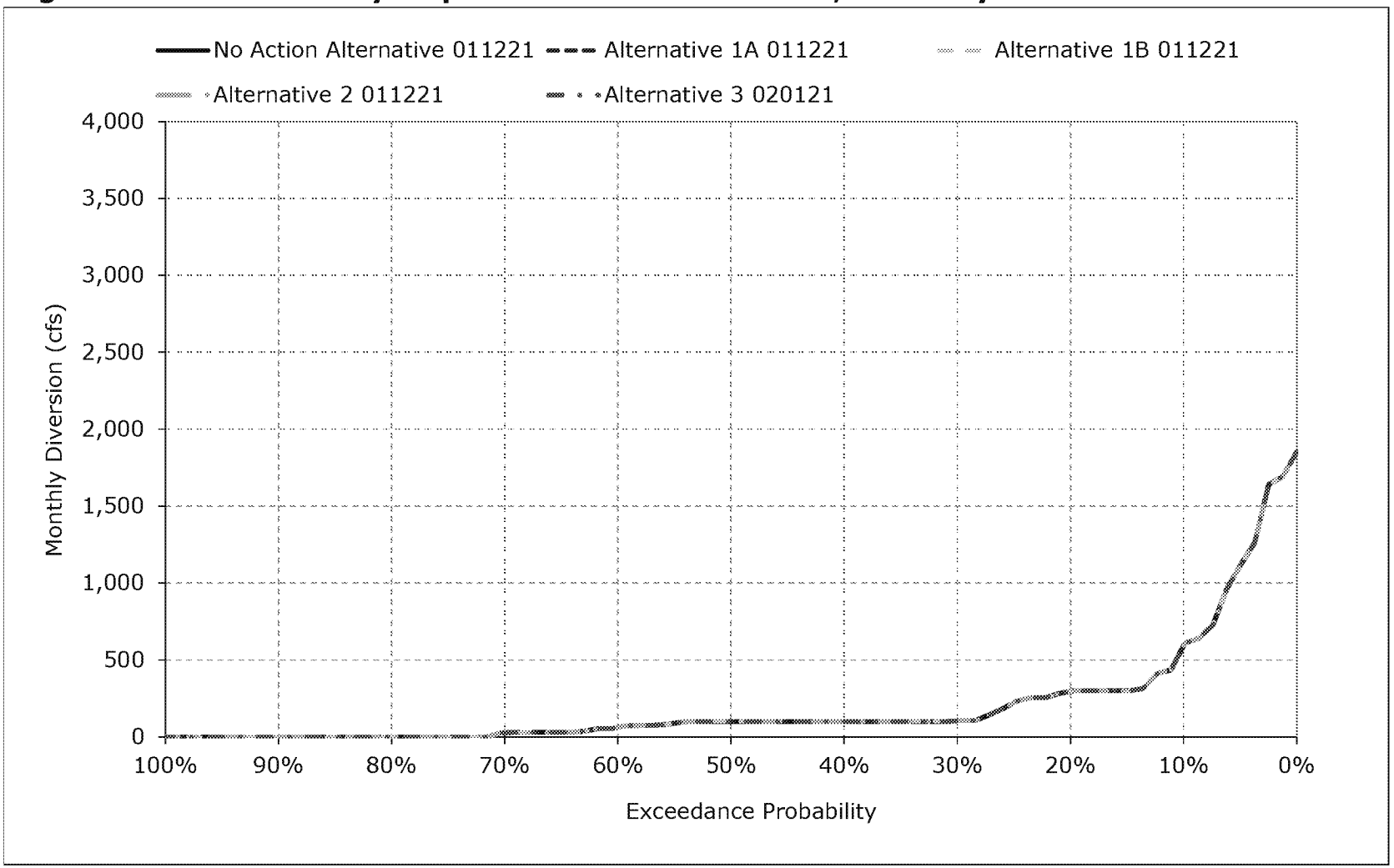


Figure 5B2-5-12. Trinity Import - Clear Creek Tunnel, March

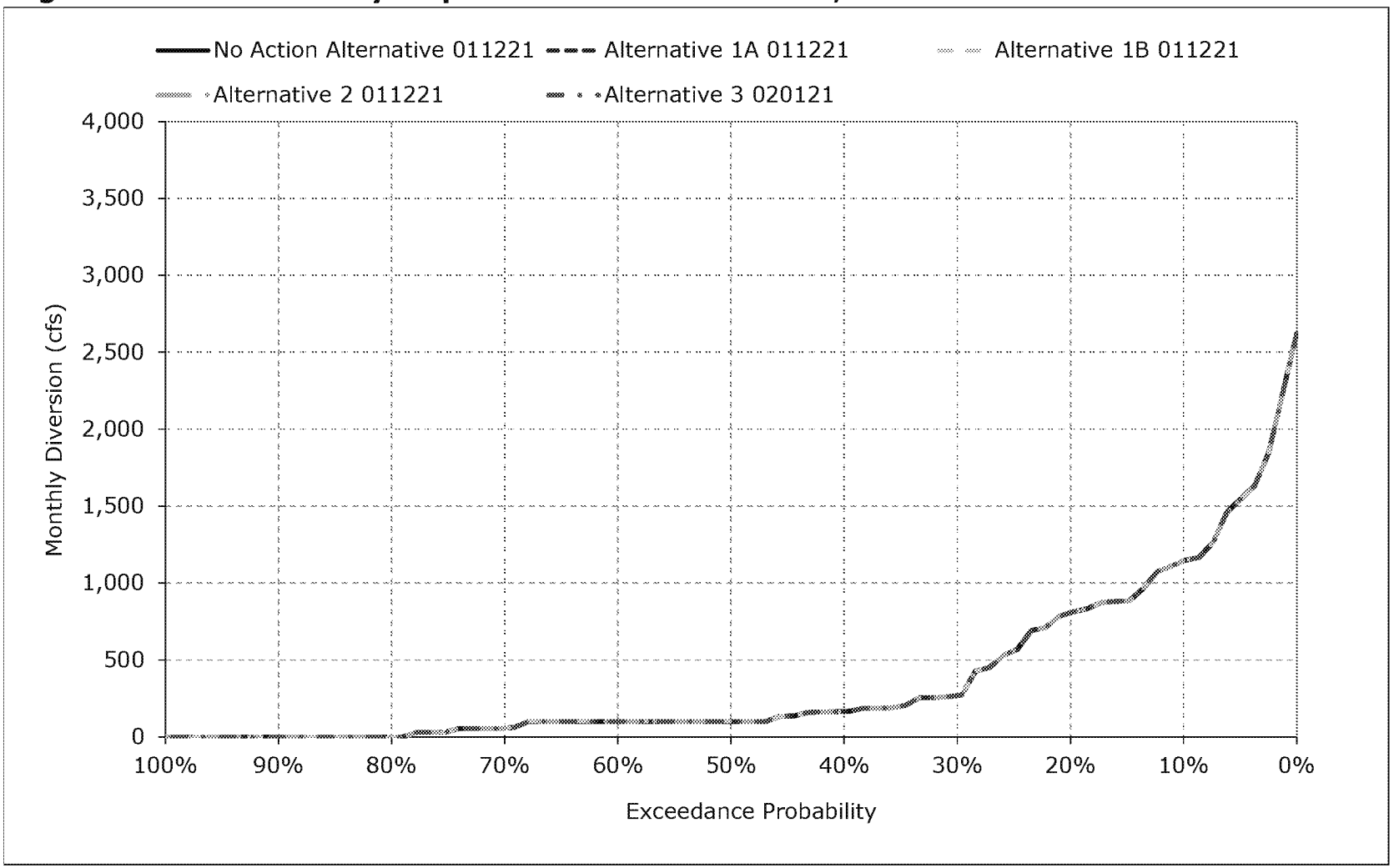


Figure 5B2-5-13. Trinity Import - Clear Creek Tunnel, April

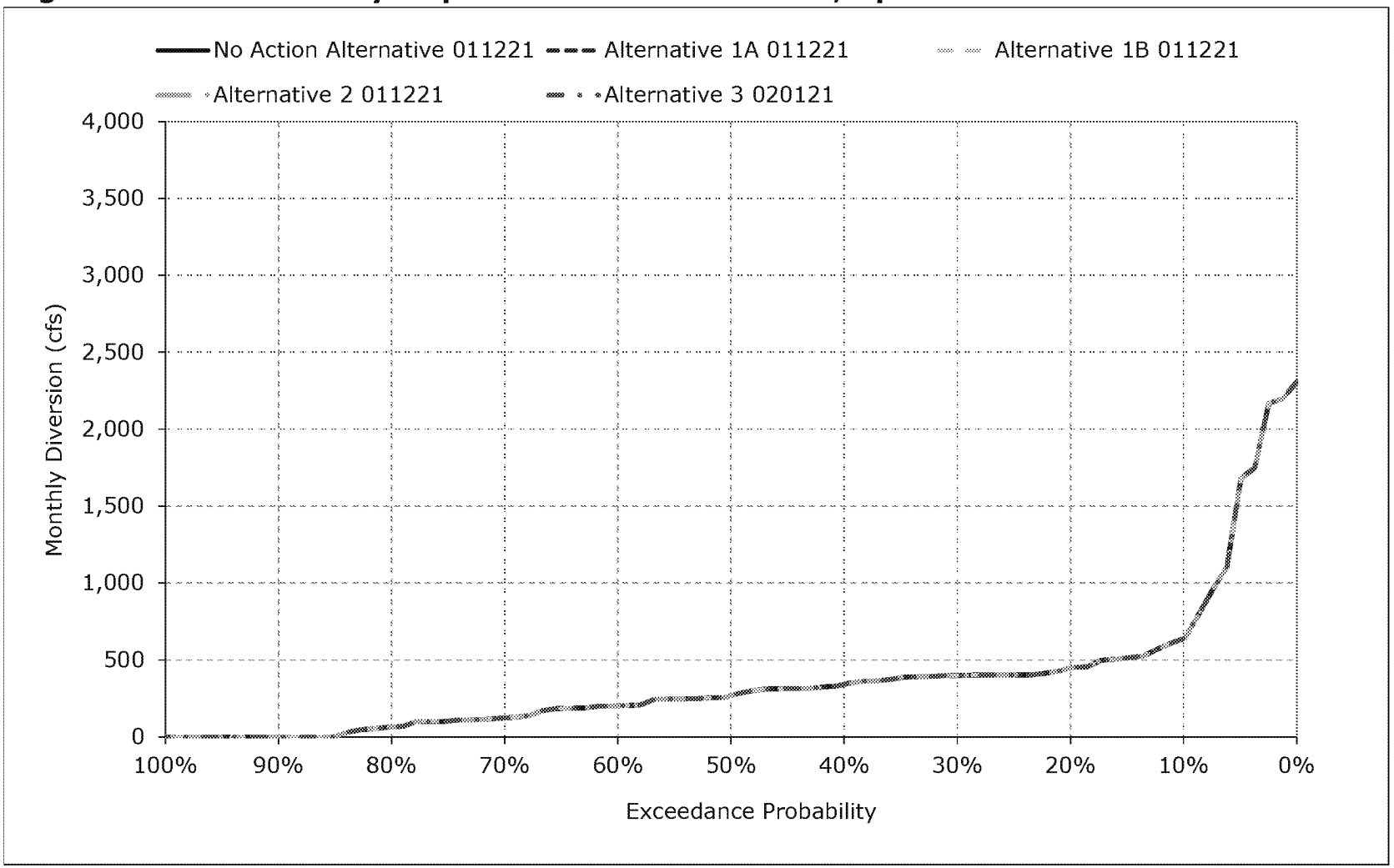


Figure 5B2-5-14. Trinity Import - Clear Creek Tunnel, May

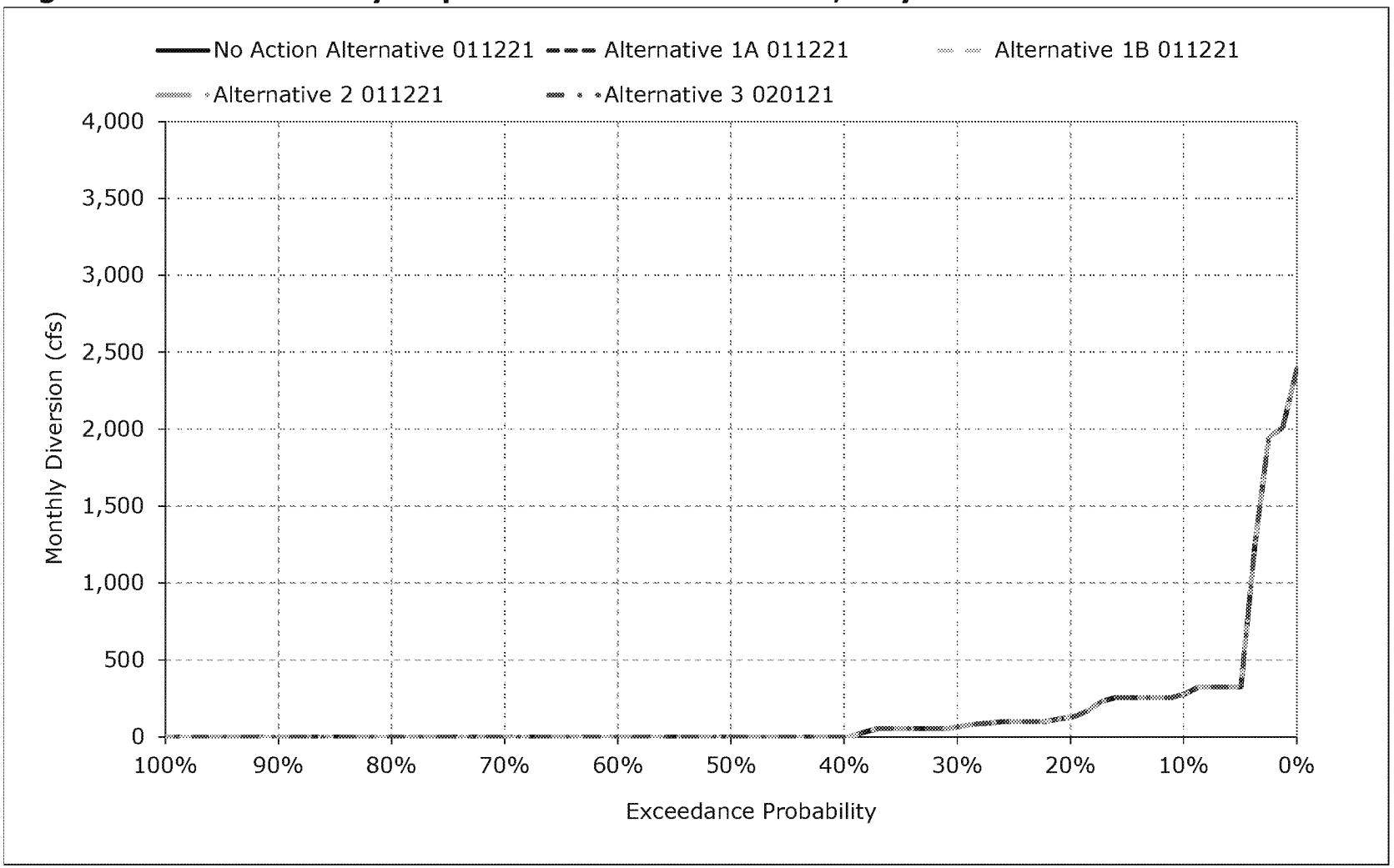


Figure 5B2-5-15. Trinity Import - Clear Creek Tunnel, June

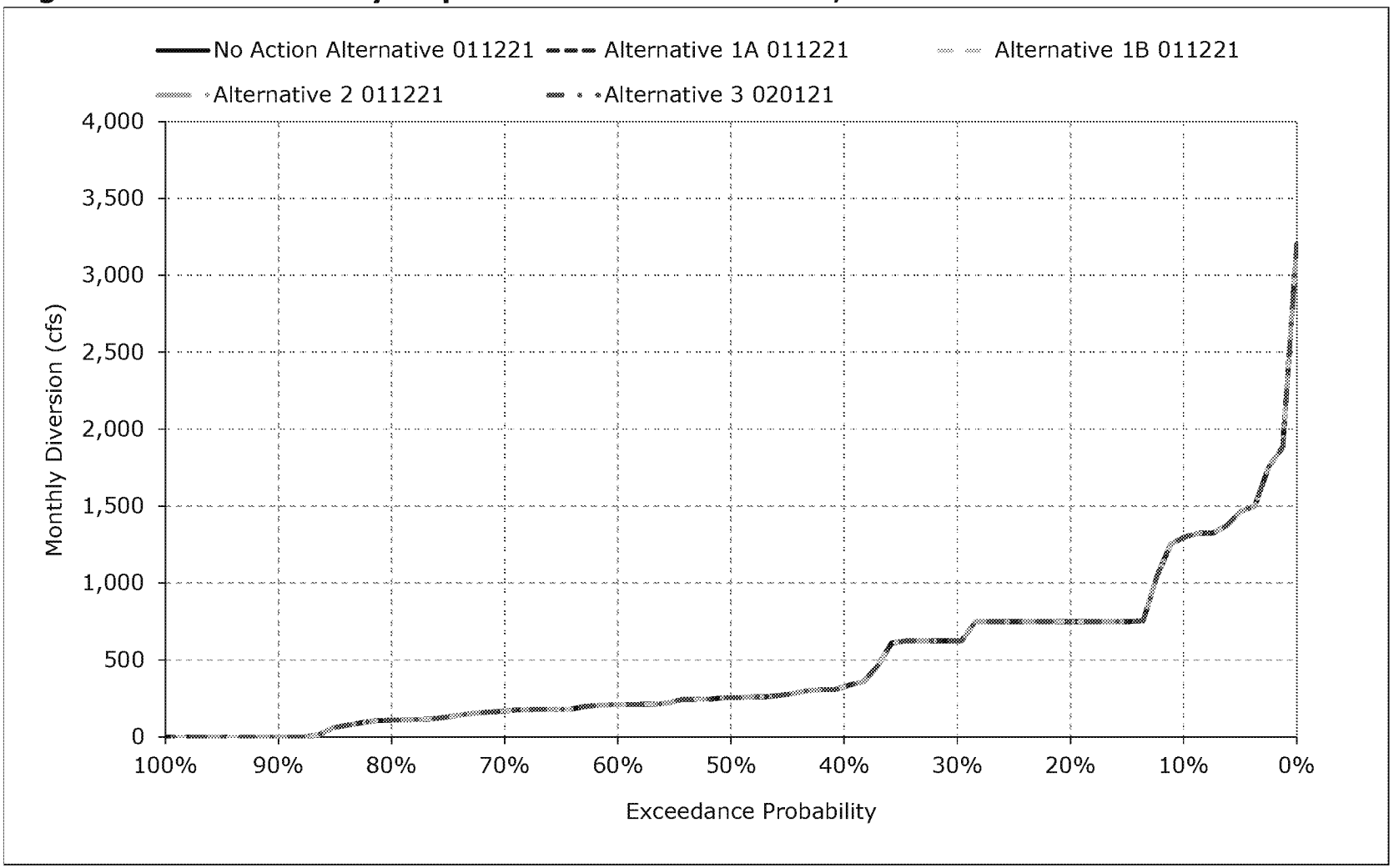


Figure 5B2-5-16. Trinity Import - Clear Creek Tunnel, July

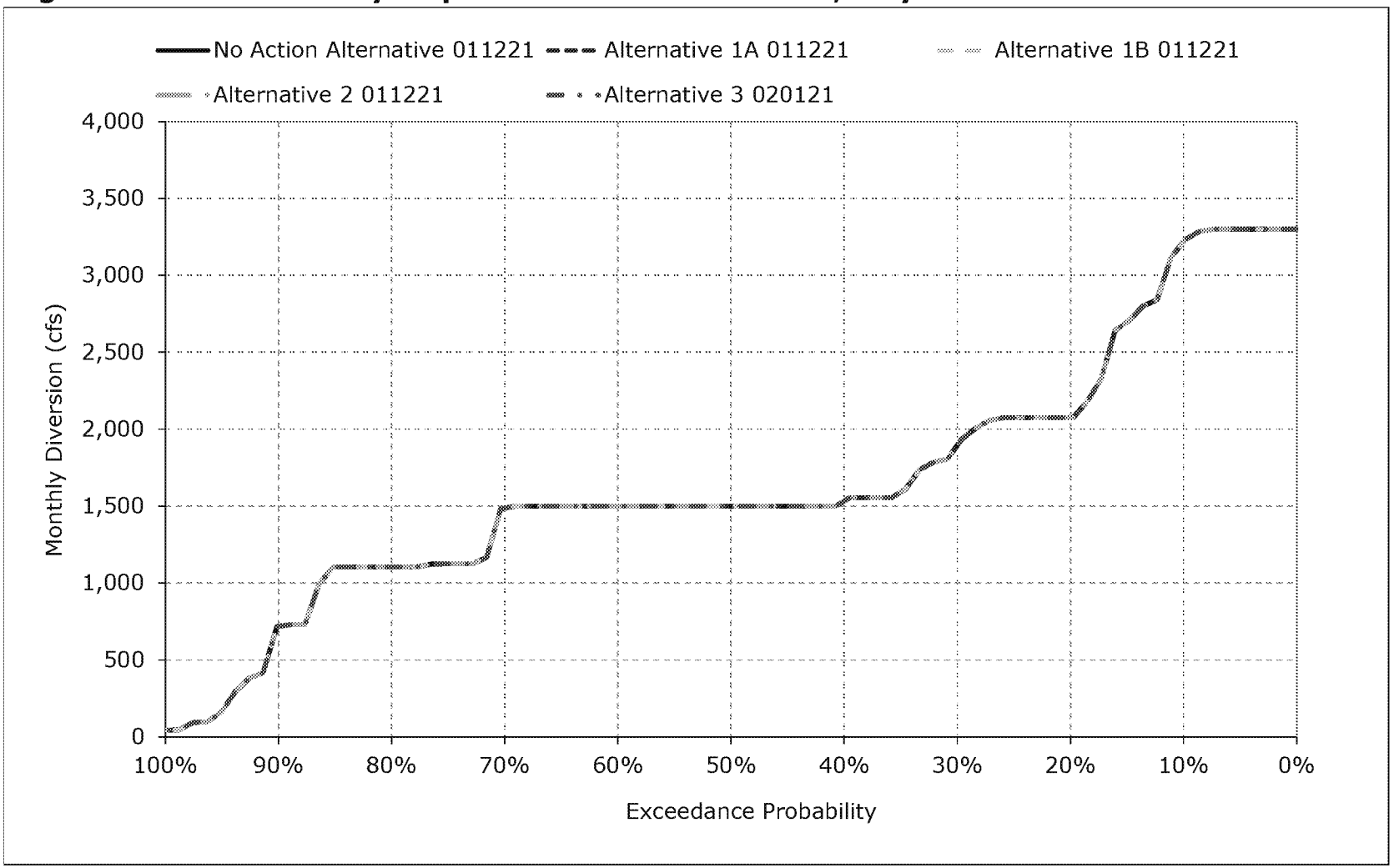


Figure 5B2-5-17. Trinity Import - Clear Creek Tunnel, August

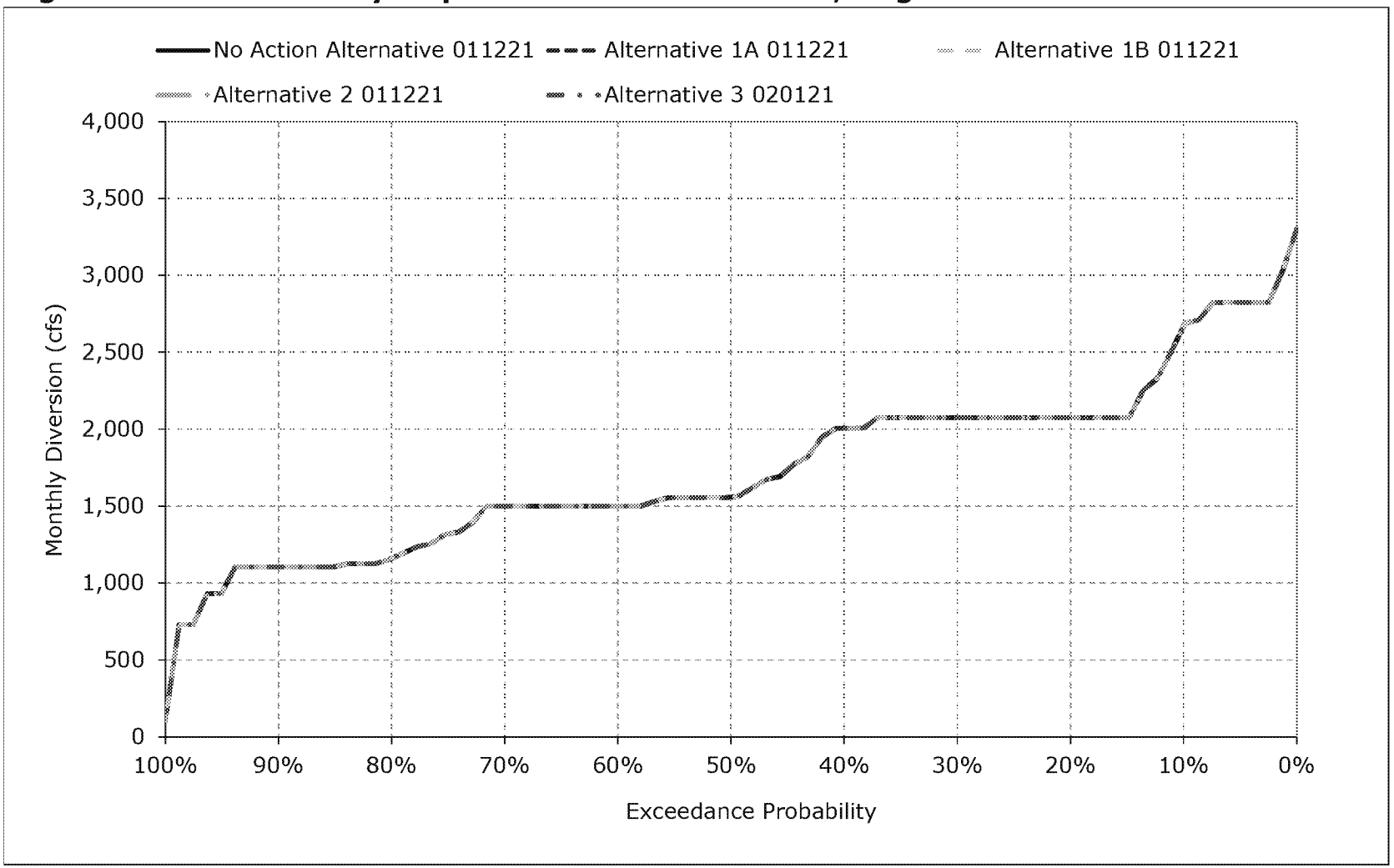


Figure 5B2-5-18. Trinity Import - Clear Creek Tunnel, September

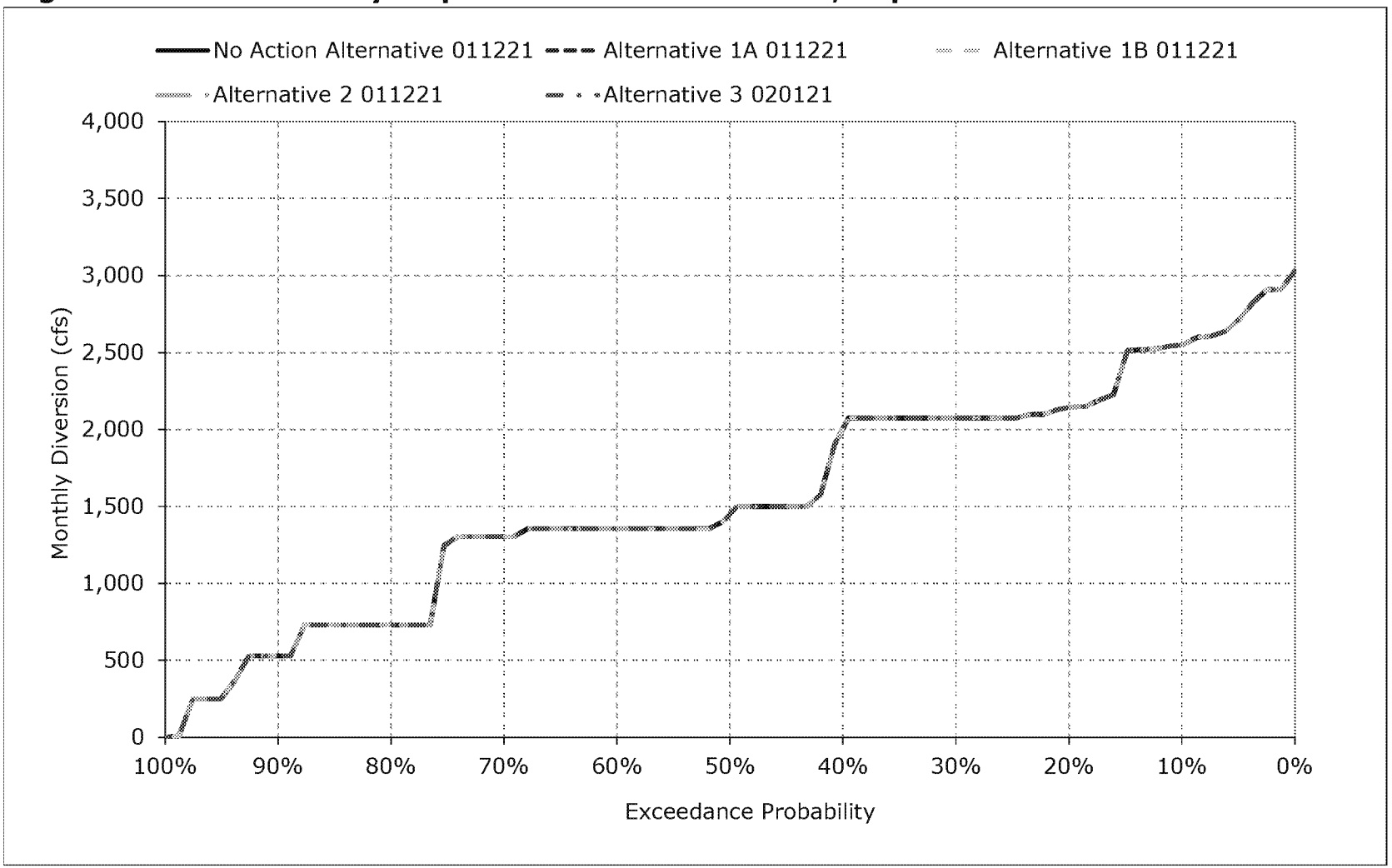


Table 5B2-6-1a. Clear Creek below Whiskeytown Dam Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	200	200	200	200	380	200	200	200	318	150	150	150
20%	200	200	200	200	380	200	200	200	318	150	150	150
30%	200	200	200	200	380	200	200	200	318	150	150	150
40%	200	200	200	200	380	200	200	200	318	150	150	150
50%	200	200	200	200	374	200	200	200	318	150	150	150
60%	200	200	200	200	374	200	200	200	318	150	150	150
70%	200	200	200	200	200	200	200	200	318	150	150	150
80%	200	200	200	200	200	200	200	200	318	150	150	150
90%	150	150	150	150	150	150	150	150	225	150	150	150
Long Term												
Full Simulation Period[a]	193	193	193	193	317	195	193	193	304	150	150	150
Water Year Types[b,c]												
Wet (32%)	200	200	200	198	414	207	200	200	318	150	150	150
Above Normal (15%)	200	200	200	192	378	200	200	200	318	150	150	150
Below Normal (17%)	200	200	200	196	378	200	200	200	318	150	150	150
Dry (22%)	200	200	200	189	200	200	200	200	318	150	150	150
Critical (15%)	150	150	150	183	150	150	150	150	225	150	150	150

Table 5B2-6-1b. Clear Creek below Whiskeytown Dam Flow, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	200	200	200	200	380	200	200	200	318	150	150	150
20%	200	200	200	200	380	200	200	200	318	150	150	150
30%	200	200	200	200	380	200	200	200	318	150	150	150
40%	200	200	200	200	380	200	200	200	318	150	150	150
50%	200	200	200	200	374	200	200	200	318	150	150	150
60%	200	200	200	200	374	200	200	200	318	150	150	150
70%	200	200	200	200	200	200	200	200	318	150	150	150
80%	200	200	200	200	200	200	200	200	318	150	150	150
90%	150	150	150	150	150	150	150	150	225	150	150	150
Long Term												
Full Simulation Period[a]	193	193	193	193	317	195	193	193	304	150	150	150
Water Year Types[b,c]												
Wet (32%)	200	200	200	198	414	207	200	200	318	150	150	150
Above Normal (15%)	200	200	200	192	378	200	200	200	318	150	150	150
Below Normal (17%)	200	200	200	196	378	200	200	200	318	150	150	150
Dry (22%)	200	200	200	189	200	200	200	200	318	150	150	150
Critical (15%)	150	150	150	183	150	150	150	150	225	150	150	150

Table 5B2-6-1c. Clear Creek below Whiskeytown Dam Flow, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
c These results are displayed with calendar year - year type sorting.

Table 5B2-6-2a. Clear Creek below Whiskeytown Dam Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	200	200	200	200	380	200	200	200	318	150	150	150
20%	200	200	200	200	380	200	200	200	318	150	150	150
30%	200	200	200	200	380	200	200	200	318	150	150	150
40%	200	200	200	200	380	200	200	200	318	150	150	150
50%	200	200	200	200	374	200	200	200	318	150	150	150
60%	200	200	200	200	374	200	200	200	318	150	150	150
70%	200	200	200	200	200	200	200	200	318	150	150	150
80%	200	200	200	200	200	200	200	200	318	150	150	150
90%	150	150	150	150	150	150	150	150	225	150	150	150
Long Term												
Full Simulation Period[a]	193	193	193	193	317	195	193	193	304	150	150	150
Water Year Types[b,c]												
Wet (32%)	200	200	200	198	414	207	200	200	318	150	150	150
Above Normal (15%)	200	200	200	192	378	200	200	200	318	150	150	150
Below Normal (17%)	200	200	200	196	378	200	200	200	318	150	150	150
Dry (22%)	200	200	200	189	200	200	200	200	318	150	150	150
Critical (15%)	150	150	150	183	150	150	150	150	225	150	150	150

Table 5B2-6-2b. Clear Creek below Whiskeytown Dam Flow, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	200	200	200	200	380	200	200	200	318	150	150	150
20%	200	200	200	200	380	200	200	200	318	150	150	150
30%	200	200	200	200	380	200	200	200	318	150	150	150
40%	200	200	200	200	380	200	200	200	318	150	150	150
50%	200	200	200	200	374	200	200	200	318	150	150	150
60%	200	200	200	200	374	200	200	200	318	150	150	150
70%	200	200	200	200	200	200	200	200	318	150	150	150
80%	200	200	200	200	200	200	200	200	318	150	150	150
90%	150	150	150	150	150	150	150	150	225	150	150	150
Long Term												
Full Simulation Period[a]	193	193	193	193	317	195	193	193	304	150	150	150
Water Year Types[b,c]												
Wet (32%)	200	200	200	198	414	207	200	200	318	150	150	150
Above Normal (15%)	200	200	200	192	378	200	200	200	318	150	150	150
Below Normal (17%)	200	200	200	196	378	200	200	200	318	150	150	150
Dry (22%)	200	200	200	189	200	200	200	200	318	150	150	150
Critical (15%)	150	150	150	183	150	150	150	150	225	150	150	150

Table 5B2-6-2c. Clear Creek below Whiskeytown Dam Flow, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
c These results are displayed with calendar year - year type sorting.

Table 5B2-6-3a. Clear Creek below Whiskeytown Dam Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	200	200	200	200	380	200	200	200	318	150	150	150
20%	200	200	200	200	380	200	200	200	318	150	150	150
30%	200	200	200	200	380	200	200	200	318	150	150	150
40%	200	200	200	200	380	200	200	200	318	150	150	150
50%	200	200	200	200	374	200	200	200	318	150	150	150
60%	200	200	200	200	374	200	200	200	318	150	150	150
70%	200	200	200	200	200	200	200	200	318	150	150	150
80%	200	200	200	200	200	200	200	200	318	150	150	150
90%	150	150	150	150	150	150	150	150	225	150	150	150
Long Term												
Full Simulation Period[a]	193	193	193	193	317	195	193	193	304	150	150	150
Water Year Types[b,c]												
Wet (32%)	200	200	200	198	414	207	200	200	318	150	150	150
Above Normal (15%)	200	200	200	192	378	200	200	200	318	150	150	150
Below Normal (17%)	200	200	200	196	378	200	200	200	318	150	150	150
Dry (22%)	200	200	200	189	200	200	200	200	318	150	150	150
Critical (15%)	150	150	150	183	150	150	150	150	225	150	150	150

Table 5B2-6-3b. Clear Creek below Whiskeytown Dam Flow, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	200	200	200	200	380	200	200	200	318	150	150	150
20%	200	200	200	200	380	200	200	200	318	150	150	150
30%	200	200	200	200	380	200	200	200	318	150	150	150
40%	200	200	200	200	380	200	200	200	318	150	150	150
50%	200	200	200	200	374	200	200	200	318	150	150	150
60%	200	200	200	200	374	200	200	200	318	150	150	150
70%	200	200	200	200	200	200	200	200	318	150	150	150
80%	200	200	200	200	200	200	200	200	318	150	150	150
90%	150	150	150	150	150	150	150	150	225	150	150	150
Long Term												
Full Simulation Period[a]	193	193	193	193	317	195	193	193	304	150	150	150
Water Year Types[b,c]												
Wet (32%)	200	200	200	198	414	207	200	200	318	150	150	150
Above Normal (15%)	200	200	200	192	378	200	200	200	318	150	150	150
Below Normal (17%)	200	200	200	196	378	200	200	200	318	150	150	150
Dry (22%)	200	200	200	189	200	200	200	200	318	150	150	150
Critical (15%)	150	150	150	183	150	150	150	150	225	150	150	150

Table 5B2-6-3c. Clear Creek below Whiskeytown Dam Flow, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
c These results are displayed with calendar year - year type sorting.

Table 5B2-6-4a. Clear Creek below Whiskeytown Dam Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	200	200	200	200	380	200	200	200	318	150	150	150
20%	200	200	200	200	380	200	200	200	318	150	150	150
30%	200	200	200	200	380	200	200	200	318	150	150	150
40%	200	200	200	200	380	200	200	200	318	150	150	150
50%	200	200	200	200	374	200	200	200	318	150	150	150
60%	200	200	200	200	374	200	200	200	318	150	150	150
70%	200	200	200	200	200	200	200	200	318	150	150	150
80%	200	200	200	200	200	200	200	200	318	150	150	150
90%	150	150	150	150	150	150	150	150	225	150	150	150
Long Term												
Full Simulation Period[a]	193	193	193	193	317	195	193	193	304	150	150	150
Water Year Types[b,c]												
Wet (32%)	200	200	200	198	414	207	200	200	318	150	150	150
Above Normal (15%)	200	200	200	192	378	200	200	200	318	150	150	150
Below Normal (17%)	200	200	200	196	378	200	200	200	318	150	150	150
Dry (22%)	200	200	200	189	200	200	200	200	318	150	150	150
Critical (15%)	150	150	150	183	150	150	150	150	225	150	150	150

Table 5B2-6-4b. Clear Creek below Whiskeytown Dam Flow, Alternative 3 020121, Monthly Flow (cfs)

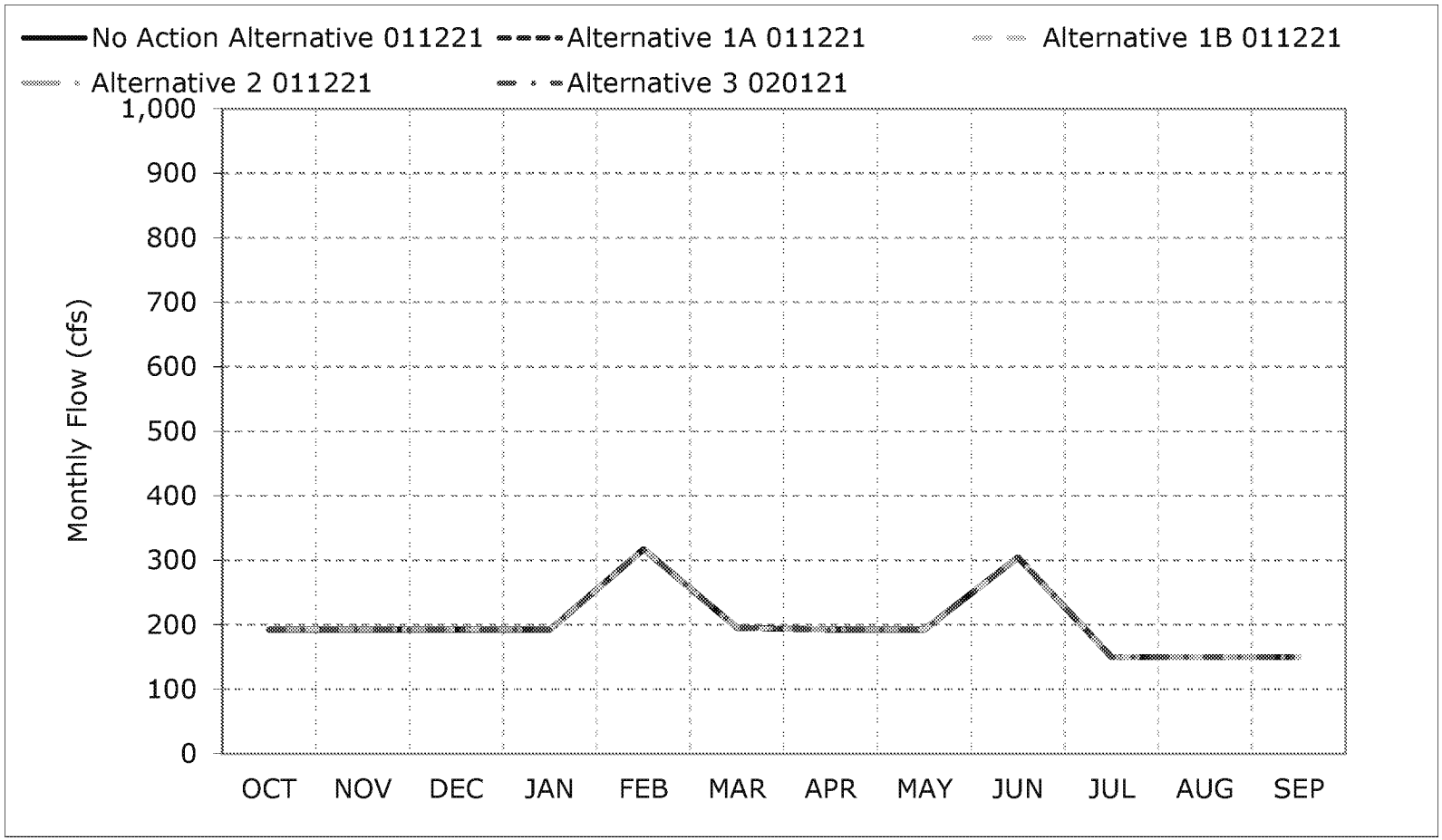
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	200	200	200	200	380	200	200	200	318	150	150	150
20%	200	200	200	200	380	200	200	200	318	150	150	150
30%	200	200	200	200	380	200	200	200	318	150	150	150
40%	200	200	200	200	380	200	200	200	318	150	150	150
50%	200	200	200	200	374	200	200	200	318	150	150	150
60%	200	200	200	200	374	200	200	200	318	150	150	150
70%	200	200	200	200	200	200	200	200	318	150	150	150
80%	200	200	200	200	200	200	200	200	318	150	150	150
90%	150	150	150	150	150	150	150	150	225	150	150	150
Long Term												
Full Simulation Period[a]	193	193	193	193	317	195	193	193	304	150	150	150
Water Year Types[b,c]												
Wet (32%)	200	200	200	198	414	207	200	200	318	150	150	150
Above Normal (15%)	200	200	200	192	378	200	200	200	318	150	150	150
Below Normal (17%)	200	200	200	196	378	200	200	200	318	150	150	150
Dry (22%)	200	200	200	189	200	200	200	200	318	150	150	150
Critical (15%)	150	150	150	183	150	150	150	150	225	150	150	150

Table 5B2-6-4c. Clear Creek below Whiskeytown Dam Flow, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

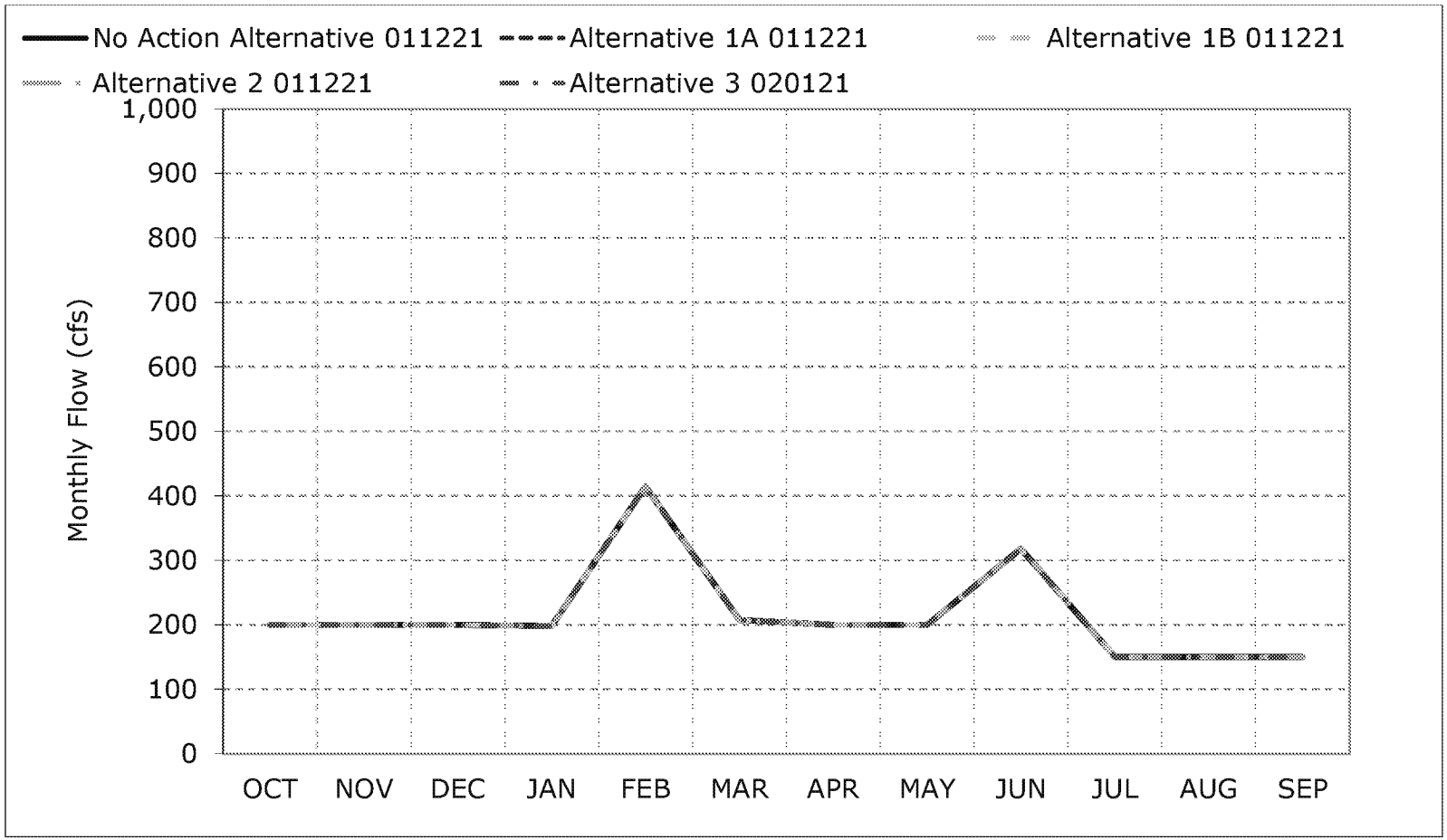
a Based on the 82-year simulation period.
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
c These results are displayed with calendar year - year type sorting.

Figure 5B2-6-1. Clear Creek below Whiskeytown Dam Flow, Long-Term Average Flow



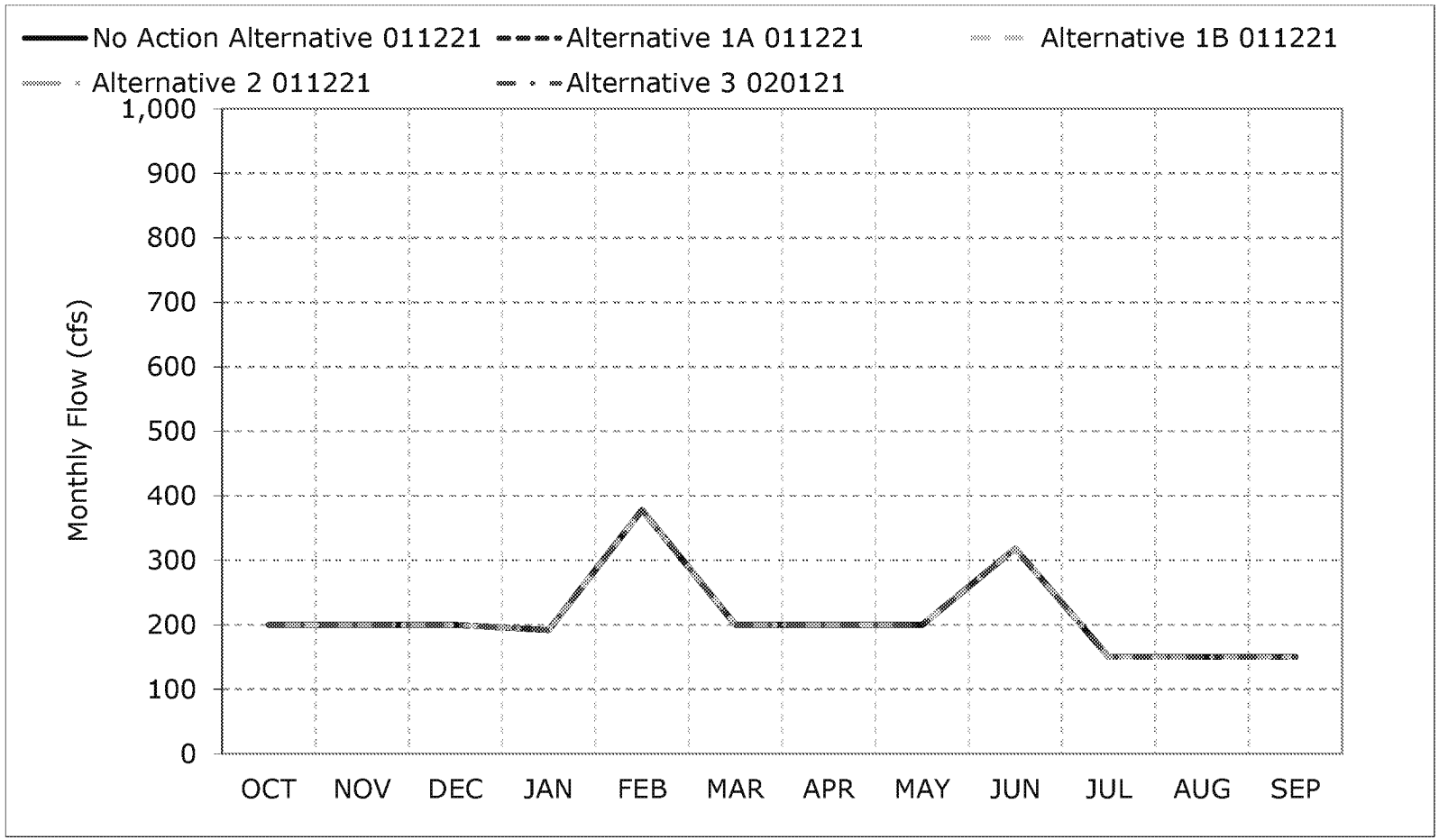
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-6-2. Clear Creek below Whiskeytown Dam Flow, Wet Year Average Flow



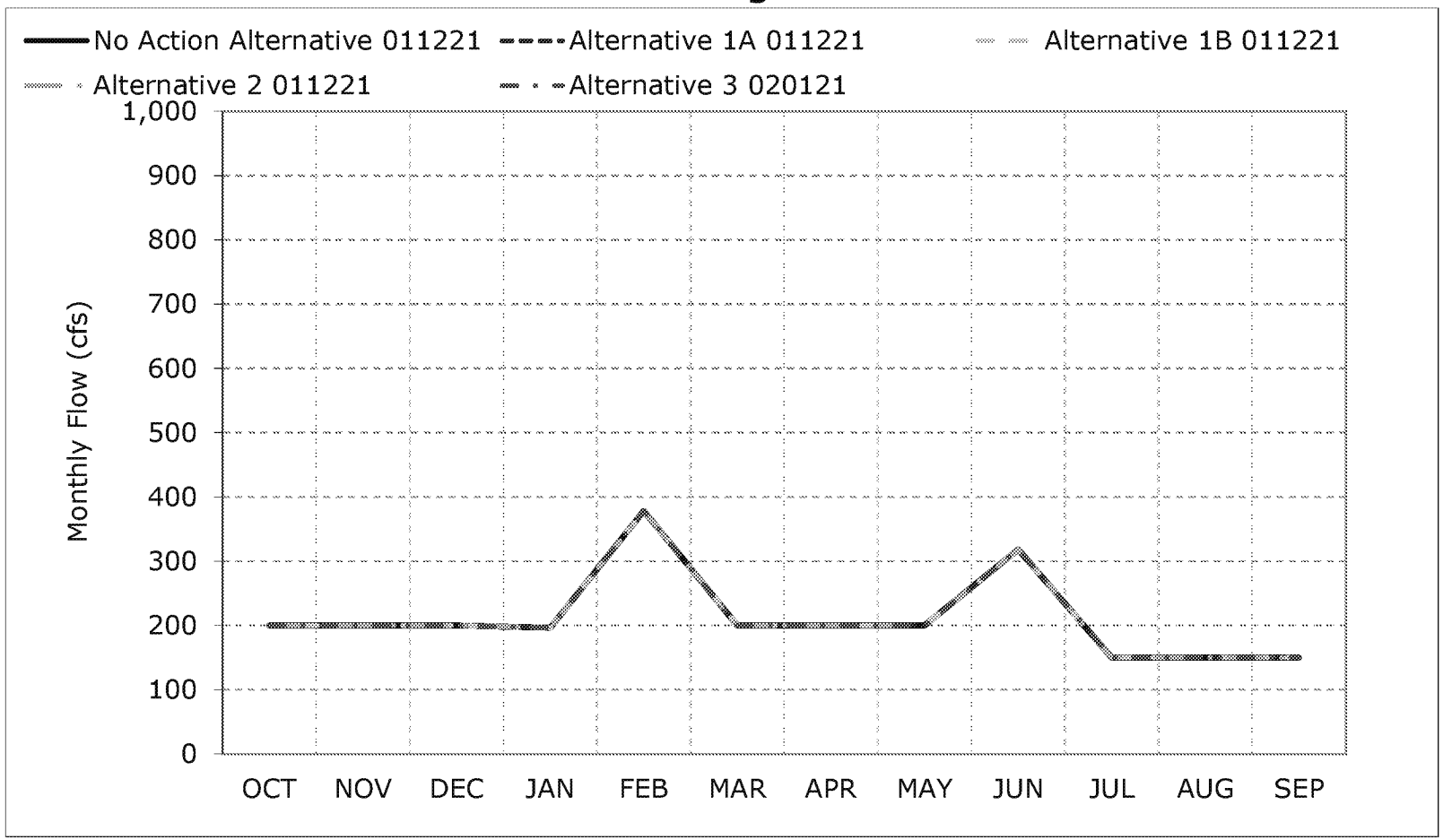
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-6-3. Clear Creek below Whiskeytown Dam Flow, Above Normal Year Average Flow



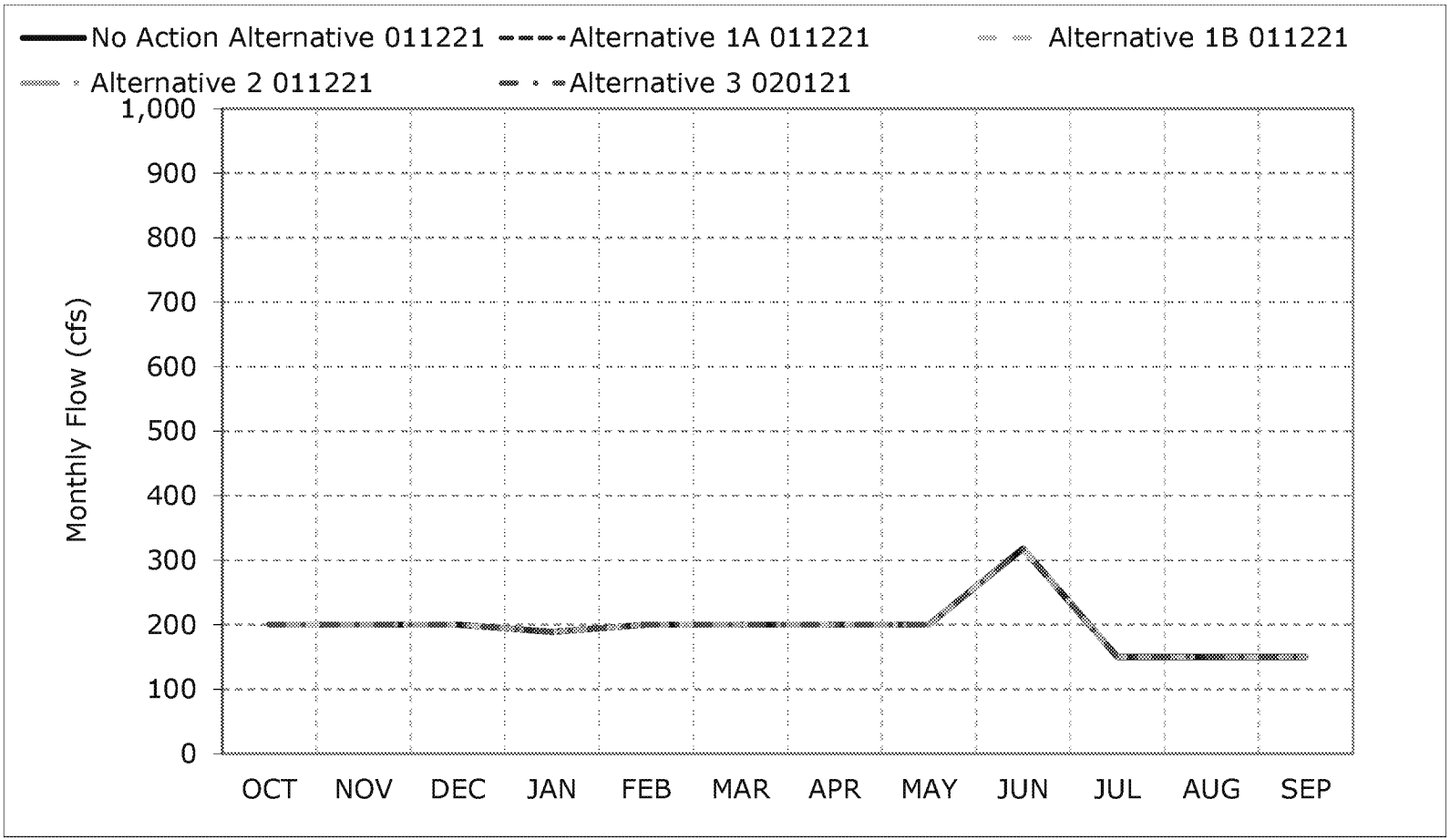
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-6-4. Clear Creek below Whiskeytown Dam Flow, Below Normal Year Average Flow



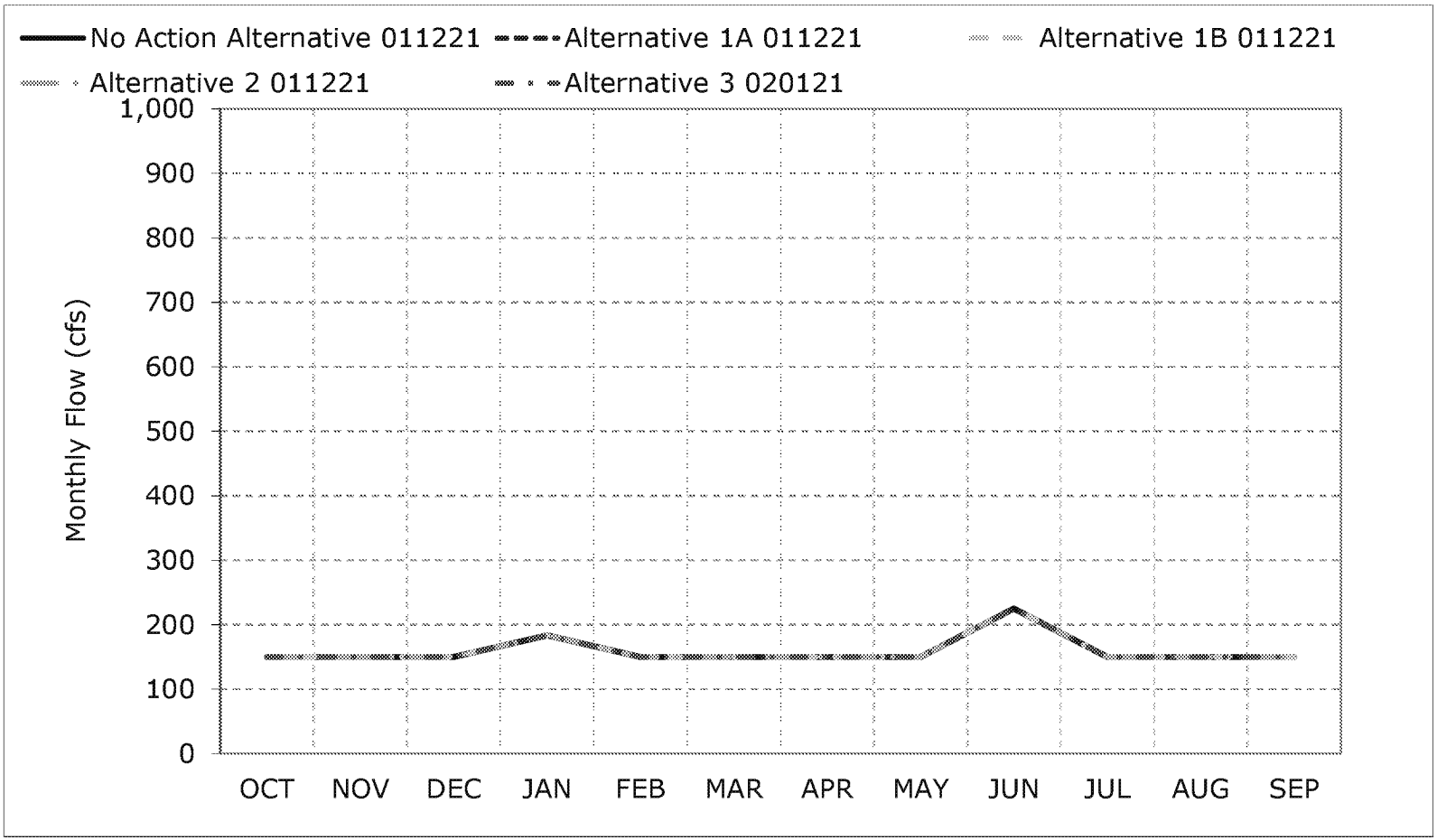
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-6-5. Clear Creek below Whiskeytown Dam Flow, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-6-6. Clear Creek below Whiskeytown Dam Flow, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-6-7. Clear Creek below Whiskeytown Dam Flow, October

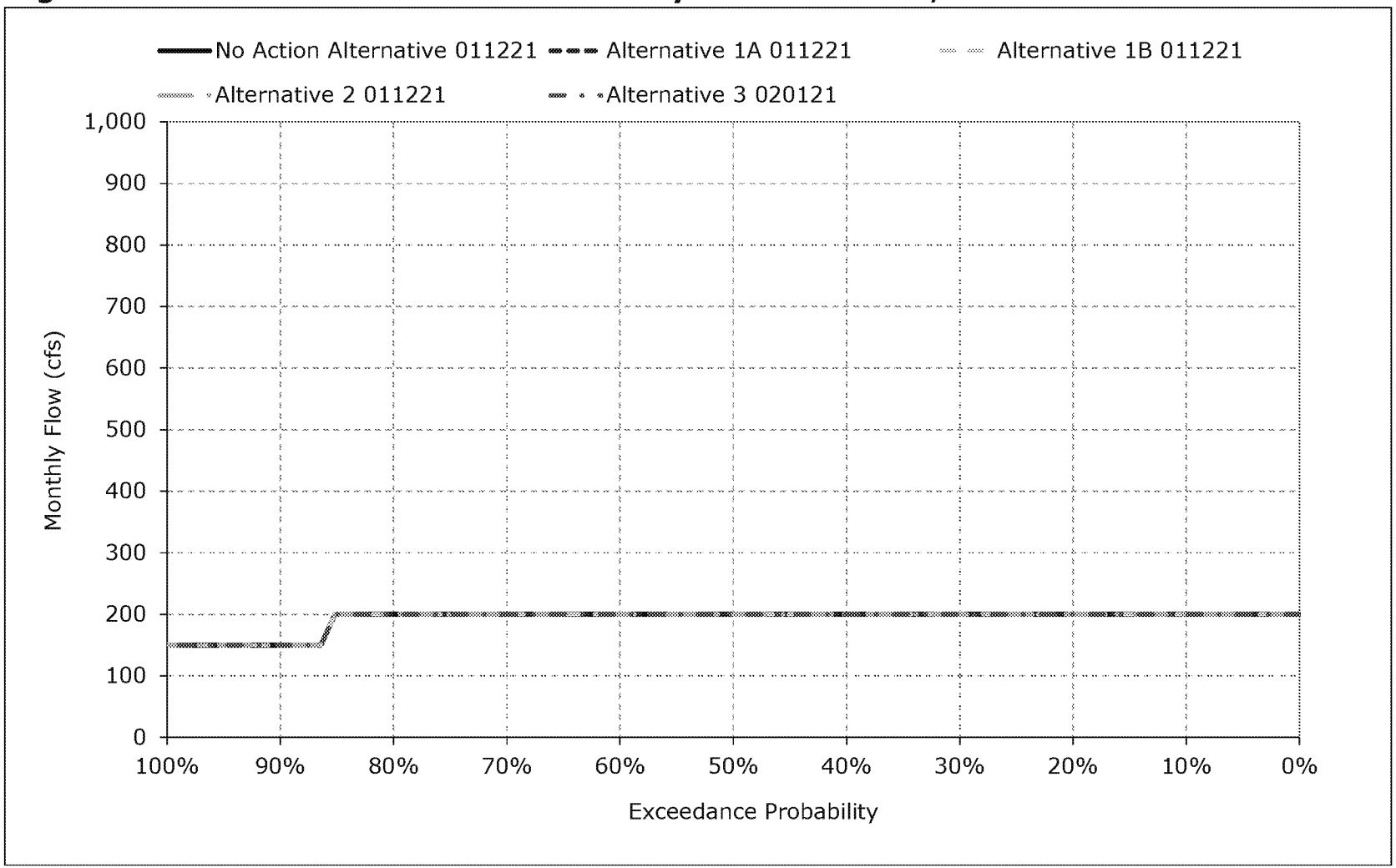


Figure 5B2-6-8. Clear Creek below Whiskeytown Dam Flow, November

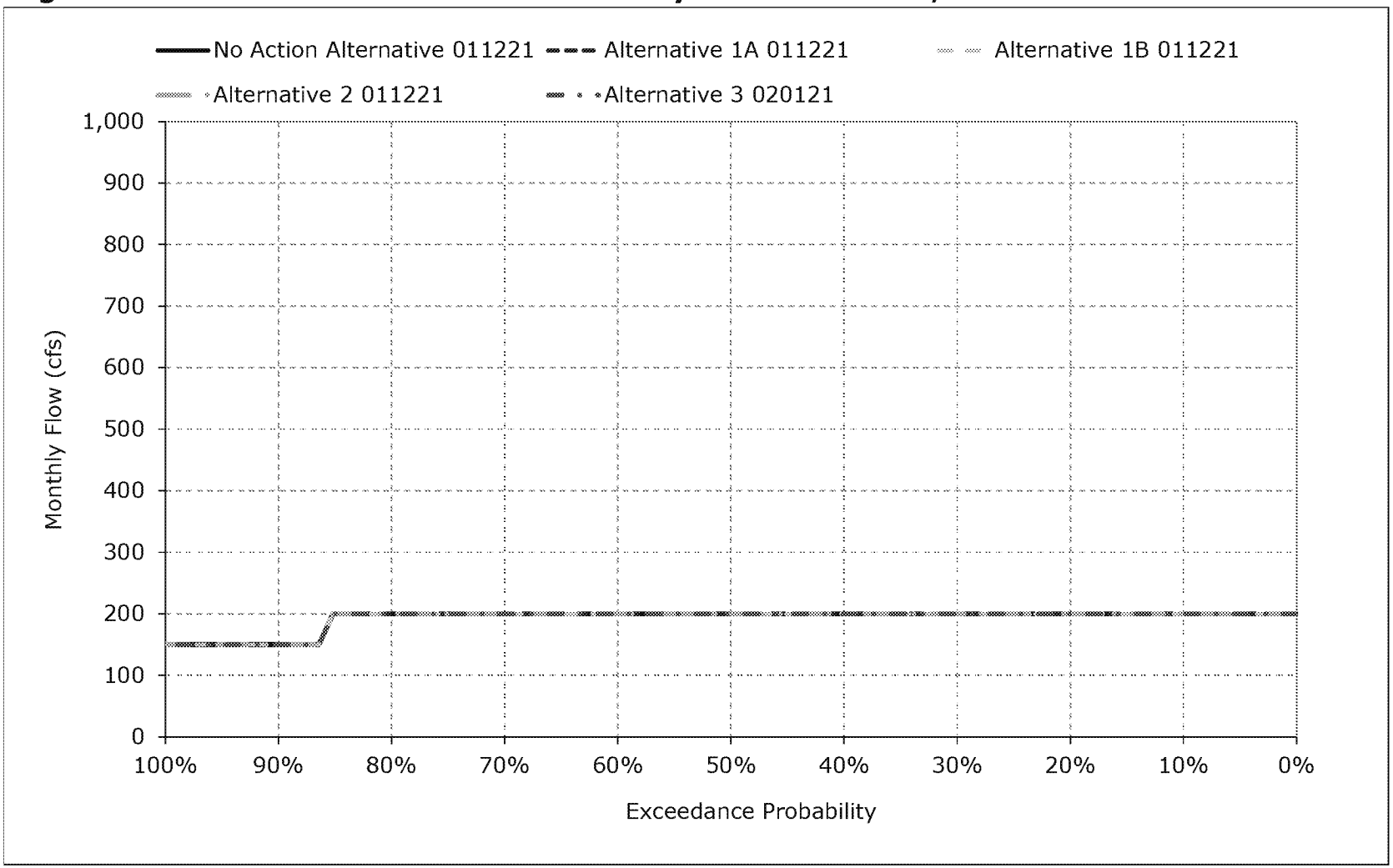


Figure 5B2-6-9. Clear Creek below Whiskeytown Dam Flow, December

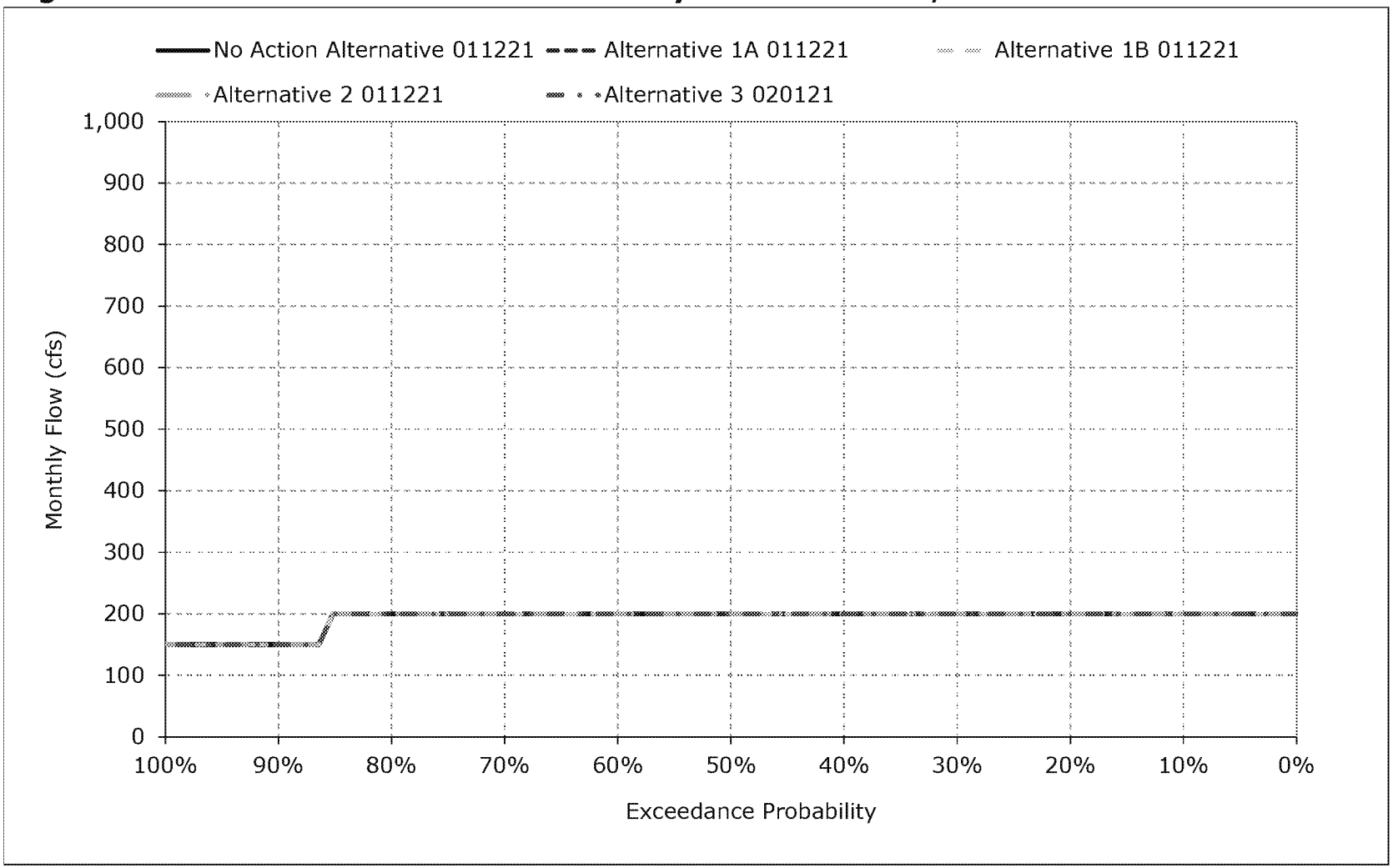


Figure 5B2-6-10. Clear Creek below Whiskeytown Dam Flow, January

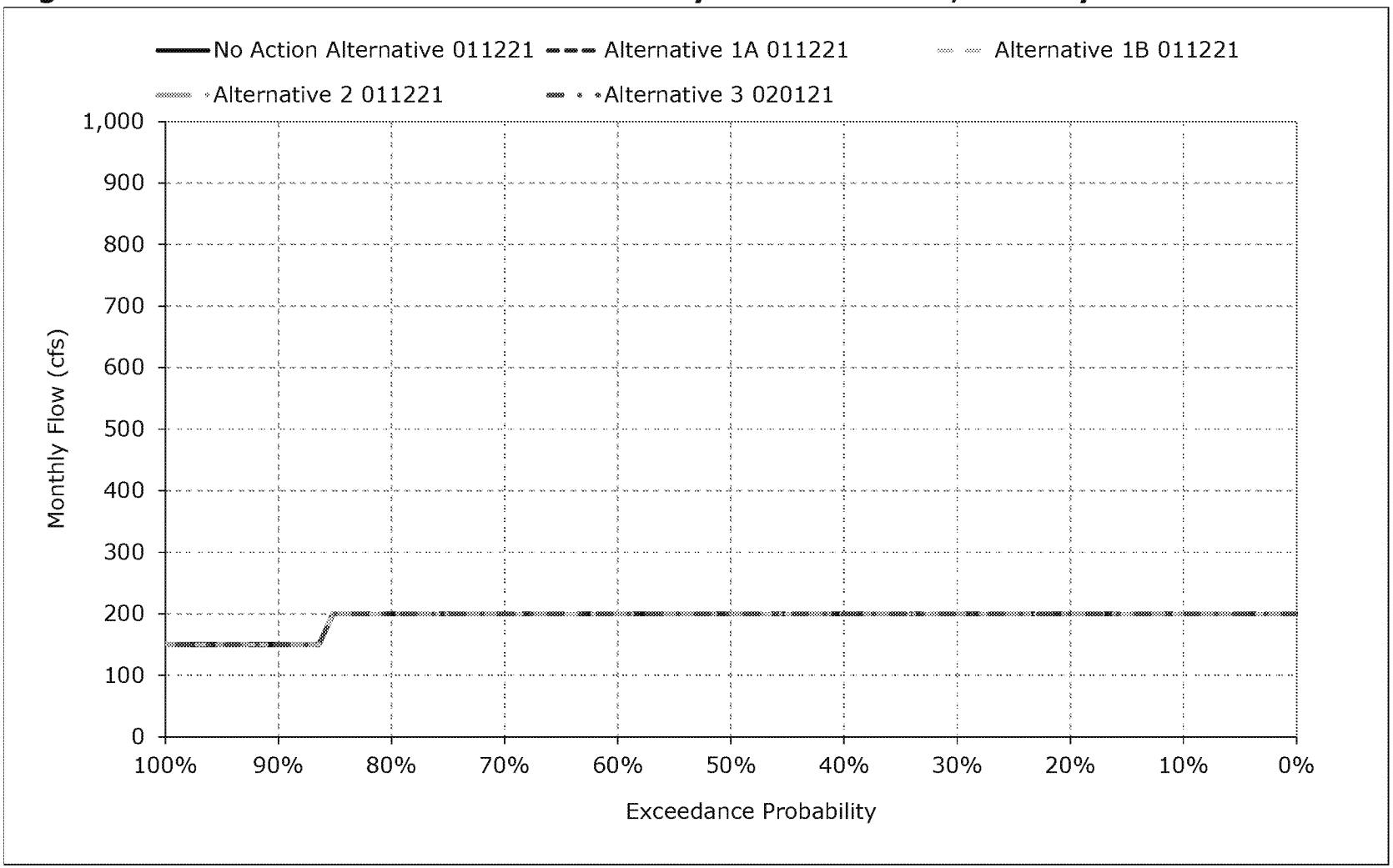


Figure 5B2-6-11. Clear Creek below Whiskeytown Dam Flow, February

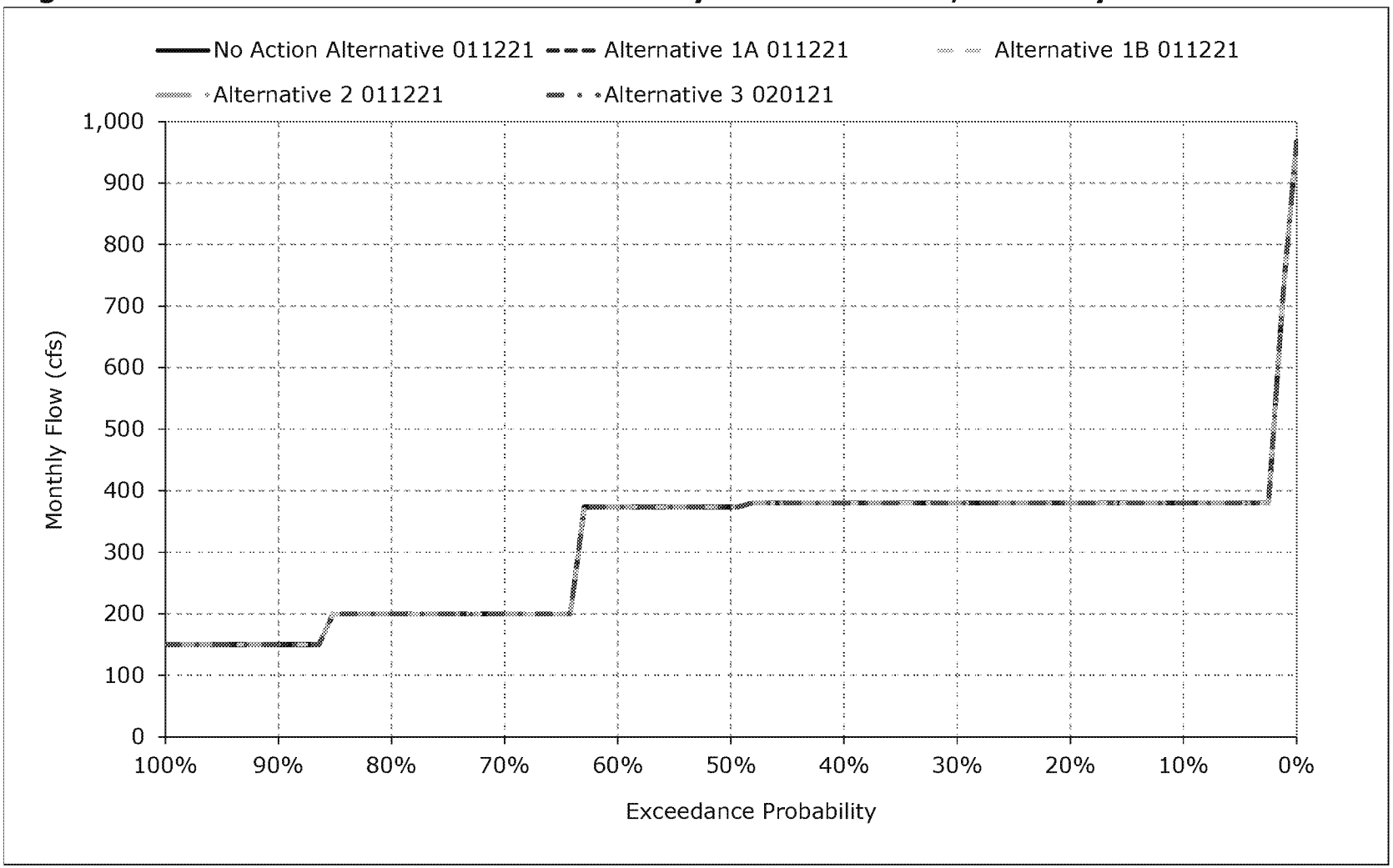


Figure 5B2-6-12. Clear Creek below Whiskeytown Dam Flow, March

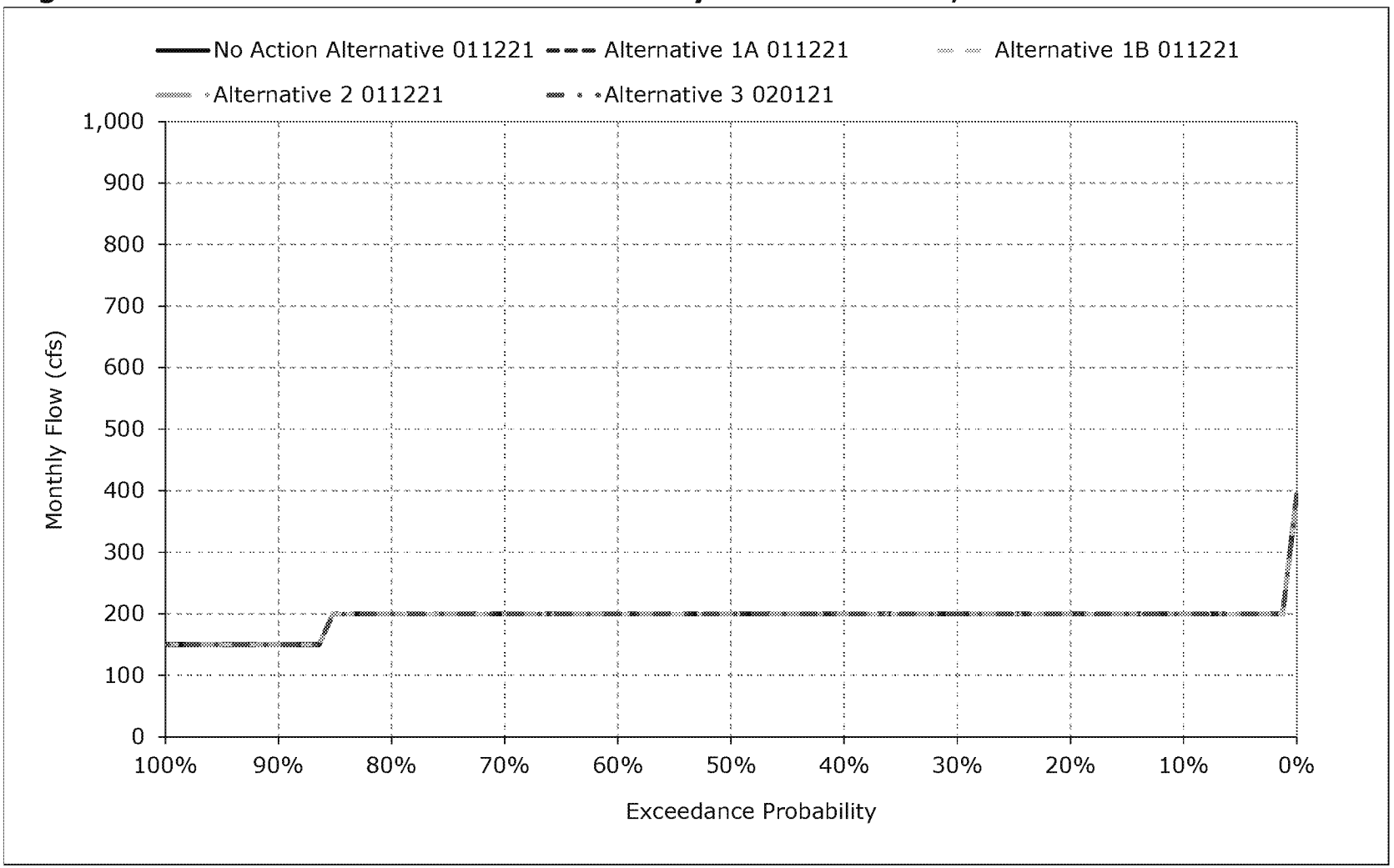


Figure 5B2-6-13. Clear Creek below Whiskeytown Dam Flow, April

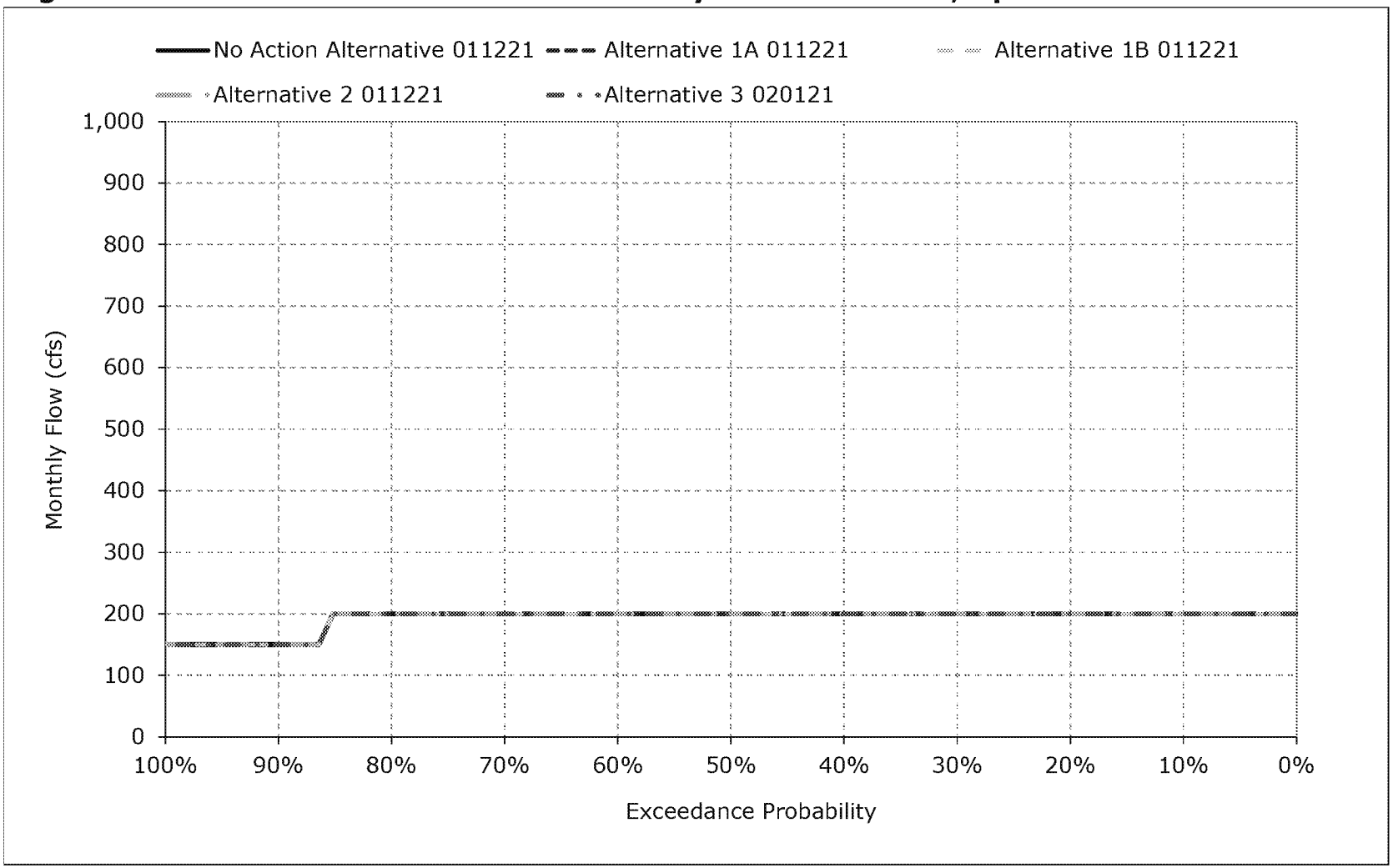


Figure 5B2-6-14. Clear Creek below Whiskeytown Dam Flow, May

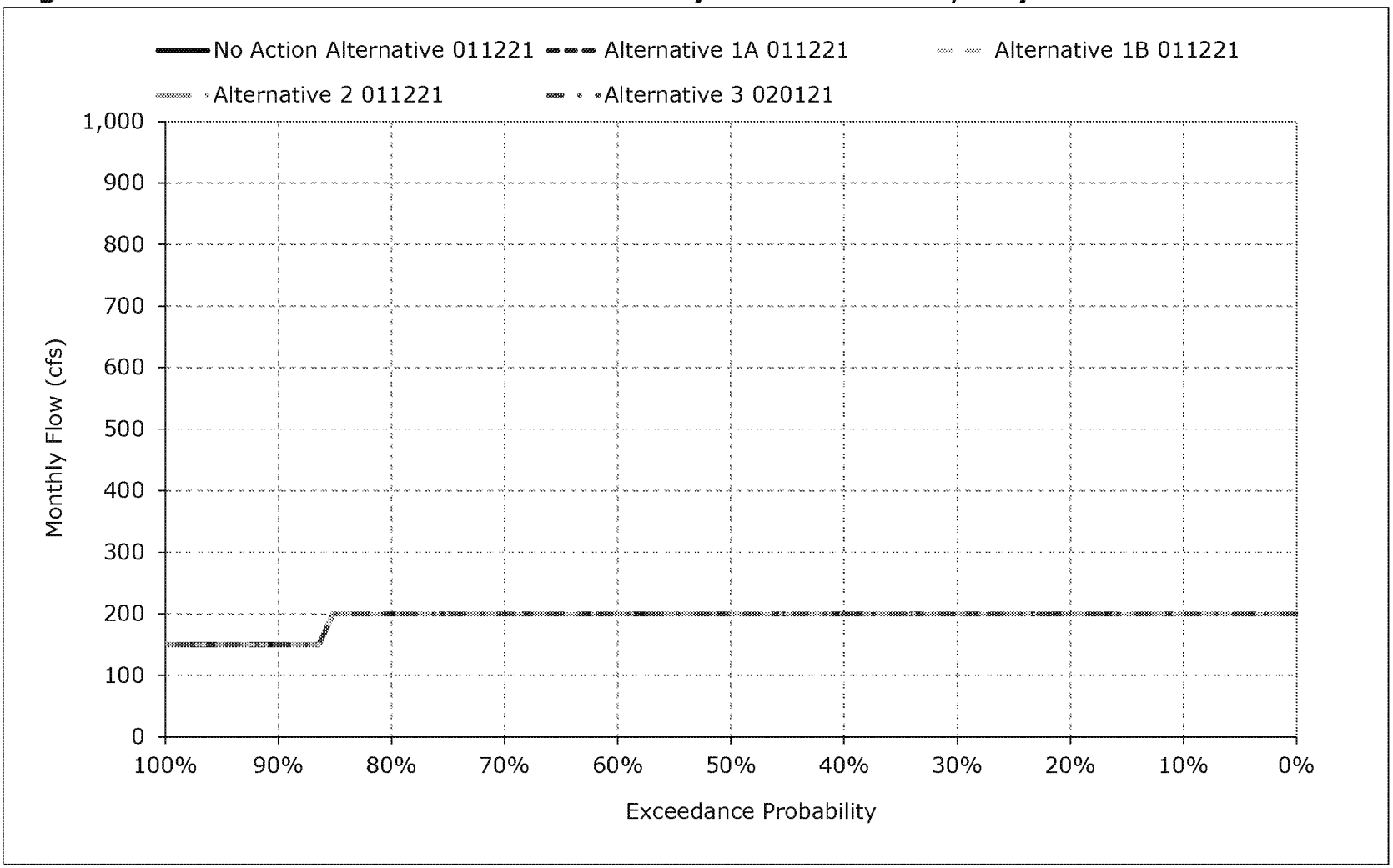


Figure 5B2-6-15. Clear Creek below Whiskeytown Dam Flow, June

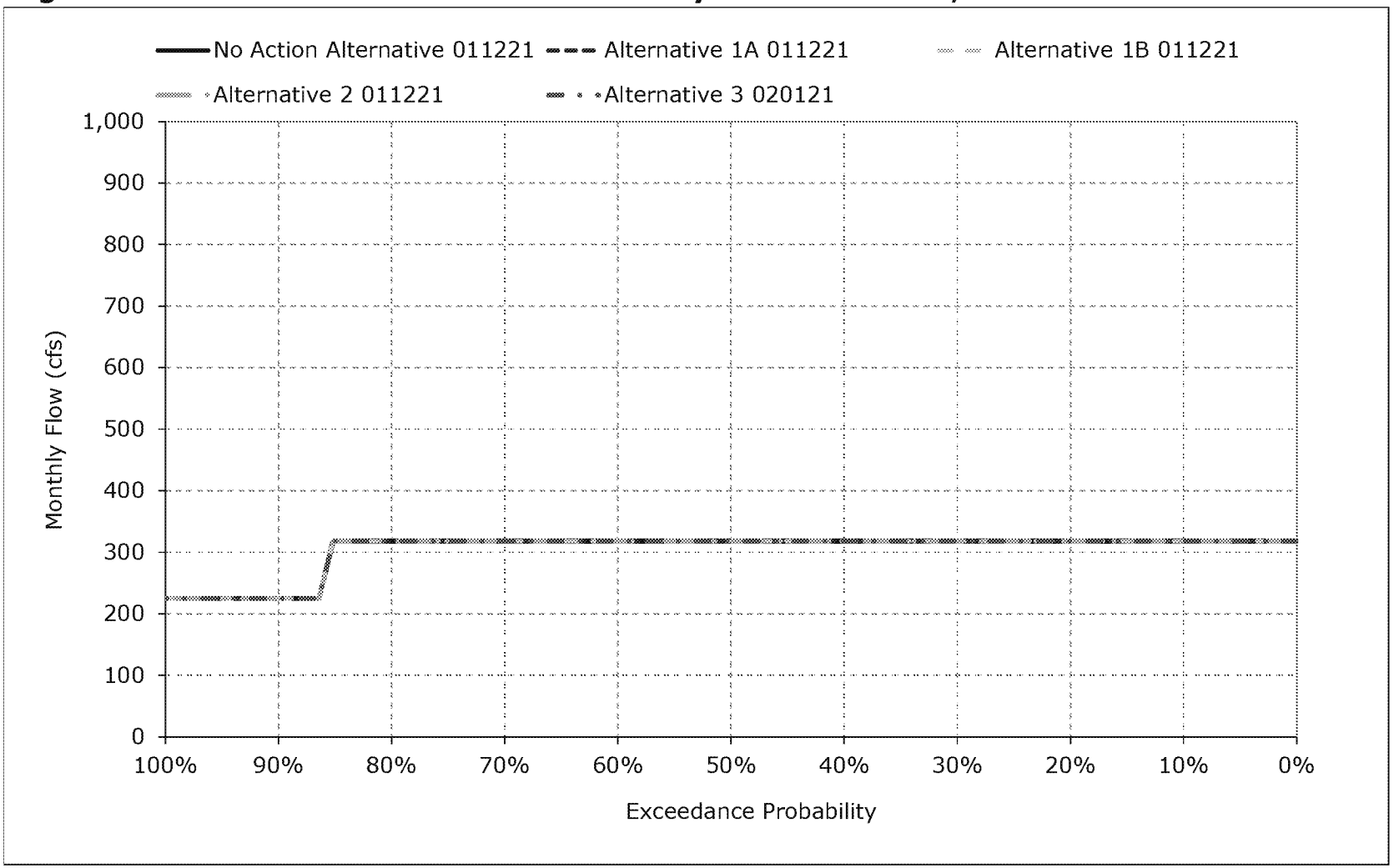


Figure 5B2-6-16. Clear Creek below Whiskeytown Dam Flow, July

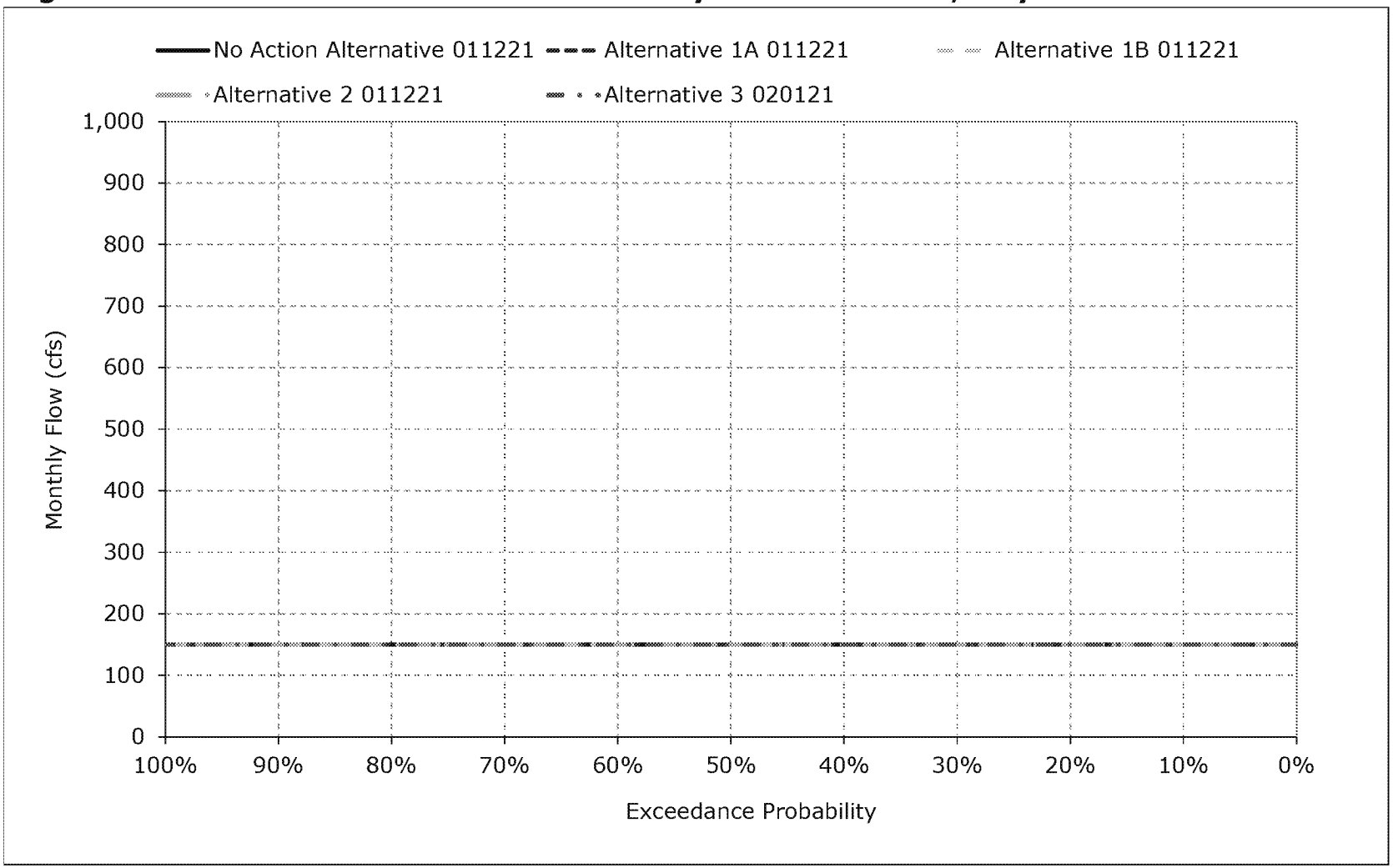


Figure 5B2-6-17. Clear Creek below Whiskeytown Dam Flow, August

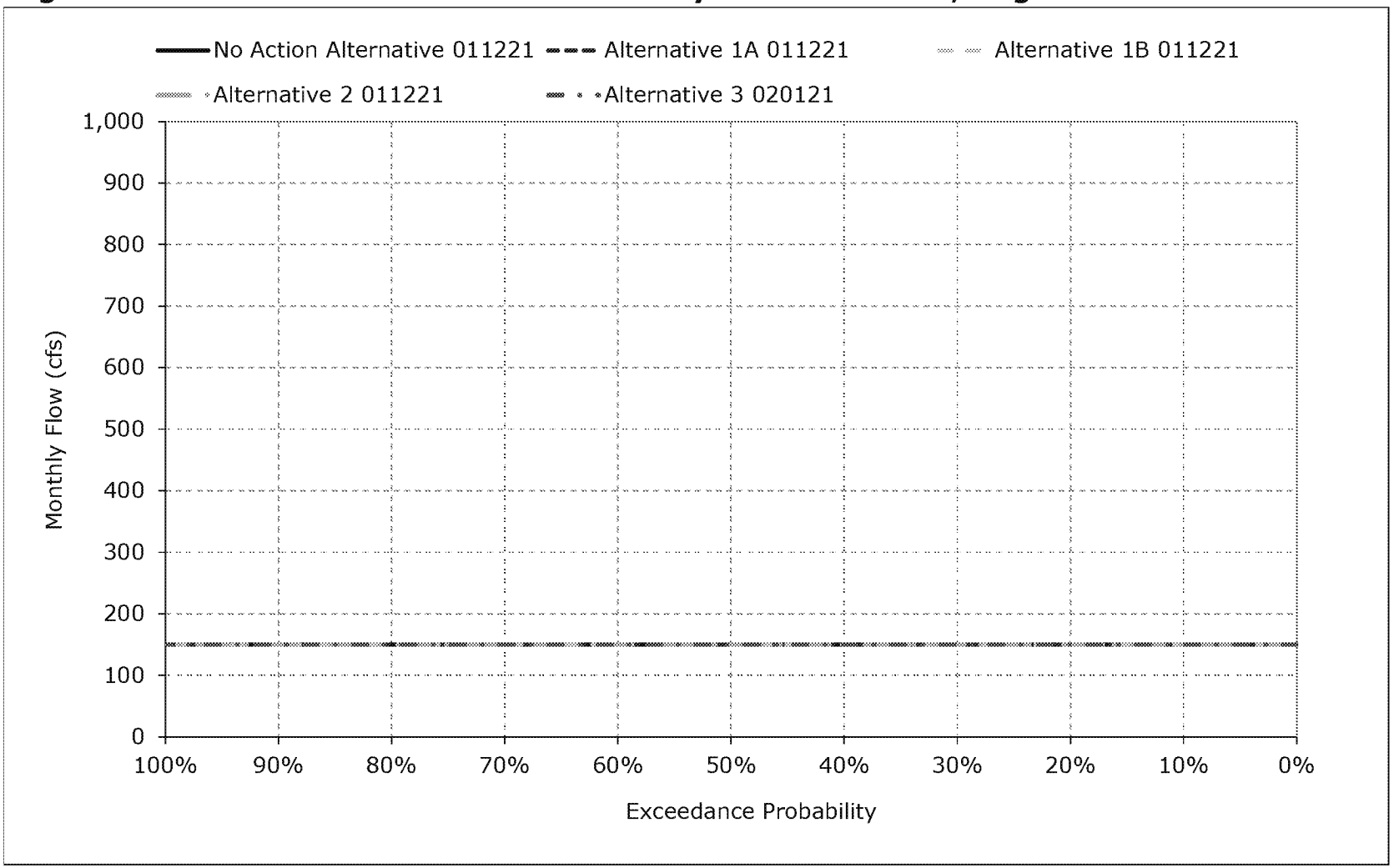


Figure 5B2-6-18. Clear Creek below Whiskeytown Dam Flow, September

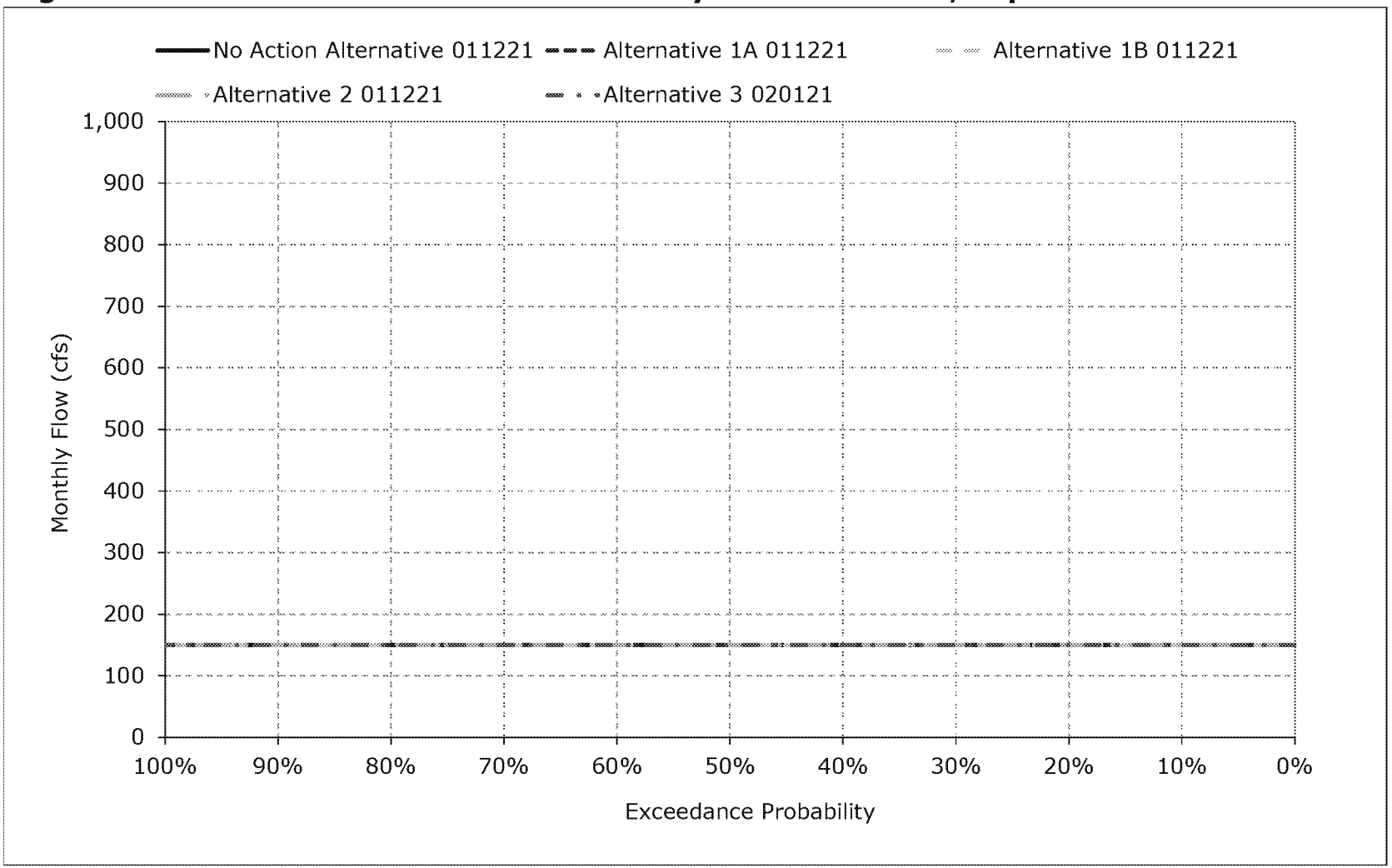


Table 5B2-7-1a. Shasta Lake Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,250	3,252	3,357	3,650	3,919	4,241	4,552	4,552	4,500	4,150	3,700	3,400
20%	3,250	3,252	3,337	3,588	3,791	4,144	4,545	4,552	4,467	3,974	3,692	3,400
30%	3,245	3,187	3,314	3,527	3,700	4,052	4,491	4,552	4,320	3,790	3,446	3,258
40%	3,119	3,136	3,268	3,409	3,642	4,000	4,431	4,541	4,178	3,567	3,257	3,164
50%	3,025	2,991	3,225	3,317	3,523	3,955	4,292	4,439	4,059	3,477	3,177	3,072
60%	2,865	2,925	3,110	3,252	3,442	3,893	4,193	4,287	3,848	3,306	2,978	2,936
70%	2,699	2,743	2,856	3,149	3,289	3,577	4,100	3,974	3,674	3,140	2,845	2,797
80%	2,517	2,450	2,531	2,886	3,201	3,417	3,957	3,693	3,359	3,002	2,683	2,614
90%	1,948	1,784	2,259	2,448	2,558	2,860	3,100	2,816	2,598	2,333	2,107	2,046
Long Term												
Full Simulation Period[a]	2,793	2,788	2,914	3,157	3,393	3,738	4,099	4,091	3,823	3,354	3,029	2,890
Water Year Types[b,c]												
Wet (32%)	3,183	3,168	3,256	3,451	3,604	3,855	4,349	4,490	4,376	3,942	3,568	3,304
Above Normal (15%)	2,998	2,938	3,115	3,314	3,544	4,021	4,499	4,510	4,220	3,616	3,268	3,101
Below Normal (17%)	2,960	2,988	3,058	3,203	3,488	3,886	4,323	4,311	3,974	3,428	3,105	3,024
Dry (22%)	2,682	2,730	2,914	2,996	3,363	3,814	4,039	3,918	3,533	3,077	2,796	2,754
Critical (15%)	1,714	1,667	1,806	2,548	2,718	2,914	2,987	2,813	2,486	2,143	1,882	1,831

Table 5B2-7-1b. Shasta Lake Storage, Alternative 1A 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,250	3,252	3,359	3,650	3,919	4,241	4,552	4,552	4,500	4,150	3,700	3,400
20%	3,250	3,252	3,337	3,588	3,791	4,144	4,545	4,552	4,485	3,979	3,693	3,400
30%	3,244	3,186	3,314	3,530	3,714	4,055	4,498	4,552	4,334	3,776	3,452	3,256
40%	3,123	3,139	3,266	3,416	3,637	3,996	4,431	4,552	4,185	3,588	3,261	3,181
50%	3,027	3,006	3,226	3,322	3,524	3,961	4,290	4,447	4,069	3,482	3,197	3,088
60%	2,847	2,935	3,118	3,252	3,445	3,893	4,197	4,309	3,860	3,304	2,991	2,959
70%	2,681	2,756	2,852	3,137	3,289	3,582	4,100	3,981	3,695	3,164	2,875	2,796
80%	2,556	2,454	2,539	2,907	3,214	3,417	3,970	3,783	3,367	3,006	2,712	2,634
90%	1,955	1,841	2,255	2,365	2,561	2,922	3,122	2,968	2,708	2,443	2,177	2,086
Long Term												
Full Simulation Period[a]	2,799	2,794	2,920	3,161	3,398	3,742	4,105	4,108	3,846	3,372	3,045	2,902
Water Year Types[b,c]												
Wet (32%)	3,185	3,170	3,261	3,453	3,604	3,855	4,350	4,492	4,381	3,945	3,570	3,305
Above Normal (15%)	3,002	2,942	3,120	3,324	3,546	4,021	4,499	4,514	4,227	3,626	3,279	3,111
Below Normal (17%)	2,970	2,994	3,062	3,197	3,486	3,885	4,324	4,319	3,988	3,436	3,114	3,032
Dry (22%)	2,685	2,736	2,907	2,996	3,368	3,822	4,050	3,943	3,573	3,106	2,810	2,758
Critical (15%)	1,733	1,688	1,836	2,569	2,742	2,934	3,007	2,875	2,546	2,200	1,945	1,882

Table 5B2-7-1c. Shasta Lake Storage, Alternative 1A 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	2	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	1	0	0	18	5	1	0
30%	-2	-1	0	3	14	3	7	0	13	-14	6	-2
40%	4	3	-2	7	-5	-4	1	11	7	20	4	17
50%	2	15	2	5	1	6	-2	8	11	6	21	17
60%	-18	11	9	0	3	0	3	22	13	-2	13	23
70%	-18	13	-3	-13	0	5	0	6	22	24	30	-2
80%	39	4	8	21	13	0	13	91	8	5	29	20
90%	7	57	-4	-83	4	62	22	152	110	110	70	40
Long Term												
Full Simulation Period[a]	6	7	6	4	5	5	6	17	23	18	16	12
Water Year Types[b,c]												
Wet (32%)	1	3	4	1	0	0	1	2	5	2	2	2
Above Normal (15%)	4	4	5	10	2	1	0	4	7	9	11	10
Below Normal (17%)	10	6	4	-6	-1	-1	0	9	14	8	10	8
Dry (22%)	3	6	-7	1	4	8	12	24	40	29	15	4
Critical (15%)	19	21	30	21	24	20	20	62	60	57	64	51

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-7-2a. Shasta Lake Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,250	3,252	3,357	3,650	3,919	4,241	4,552	4,552	4,500	4,150	3,700	3,400
20%	3,250	3,252	3,337	3,588	3,791	4,144	4,545	4,552	4,467	3,974	3,692	3,400
30%	3,245	3,187	3,314	3,527	3,700	4,052	4,491	4,552	4,320	3,790	3,446	3,258
40%	3,119	3,136	3,268	3,409	3,642	4,000	4,431	4,541	4,178	3,567	3,257	3,164
50%	3,025	2,991	3,225	3,317	3,523	3,955	4,292	4,439	4,059	3,477	3,177	3,072
60%	2,865	2,925	3,110	3,252	3,442	3,893	4,193	4,287	3,848	3,306	2,978	2,936
70%	2,699	2,743	2,856	3,149	3,289	3,577	4,100	3,974	3,674	3,140	2,845	2,797
80%	2,517	2,450	2,531	2,886	3,201	3,417	3,957	3,693	3,359	3,002	2,683	2,614
90%	1,948	1,784	2,259	2,448	2,558	2,860	3,100	2,816	2,598	2,333	2,107	2,046
Long Term												
Full Simulation Period[a]	2,793	2,788	2,914	3,157	3,393	3,738	4,099	4,091	3,823	3,354	3,029	2,890
Water Year Types[b,c]												
Wet (32%)	3,183	3,168	3,256	3,451	3,604	3,855	4,349	4,490	4,376	3,942	3,568	3,304
Above Normal (15%)	2,998	2,938	3,115	3,314	3,544	4,021	4,499	4,510	4,220	3,616	3,268	3,101
Below Normal (17%)	2,960	2,988	3,058	3,203	3,488	3,886	4,323	4,311	3,974	3,428	3,105	3,024
Dry (22%)	2,682	2,730	2,914	2,996	3,363	3,814	4,039	3,918	3,533	3,077	2,796	2,754
Critical (15%)	1,714	1,667	1,806	2,548	2,718	2,914	2,987	2,813	2,486	2,143	1,882	1,831

Table 5B2-7-2b. Shasta Lake Storage, Alternative 1B 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,250	3,252	3,358	3,650	3,934	4,241	4,552	4,552	4,500	4,150	3,700	3,400
20%	3,250	3,252	3,346	3,588	3,791	4,147	4,545	4,552	4,485	3,990	3,694	3,400
30%	3,242	3,199	3,317	3,536	3,714	4,061	4,498	4,552	4,359	3,815	3,465	3,289
40%	3,178	3,147	3,266	3,426	3,645	4,006	4,431	4,552	4,222	3,620	3,309	3,191
50%	3,044	3,012	3,233	3,335	3,549	3,961	4,290	4,473	4,109	3,521	3,235	3,120
60%	2,883	2,956	3,127	3,252	3,448	3,894	4,203	4,318	3,896	3,349	3,044	2,965
70%	2,725	2,780	2,872	3,149	3,283	3,604	4,128	4,005	3,704	3,221	2,934	2,858
80%	2,581	2,509	2,569	2,922	3,227	3,419	3,995	3,778	3,442	2,985	2,726	2,657
90%	1,956	1,853	2,255	2,368	2,586	2,943	3,110	2,992	2,733	2,469	2,203	2,112
Long Term												
Full Simulation Period[a]	2,816	2,806	2,930	3,171	3,404	3,748	4,111	4,120	3,865	3,394	3,065	2,919
Water Year Types[b,c]												
Wet (32%)	3,185	3,175	3,266	3,455	3,604	3,855	4,350	4,492	4,381	3,945	3,570	3,305
Above Normal (15%)	3,033	2,974	3,139	3,335	3,552	4,024	4,499	4,514	4,267	3,685	3,336	3,147
Below Normal (17%)	2,998	3,010	3,074	3,208	3,488	3,887	4,326	4,339	4,020	3,473	3,151	3,065
Dry (22%)	2,712	2,738	2,920	3,019	3,387	3,838	4,073	3,972	3,596	3,123	2,830	2,779
Critical (15%)	1,746	1,698	1,842	2,575	2,748	2,943	3,015	2,888	2,566	2,220	1,955	1,891

Table 5B2-7-2c. Shasta Lake Storage, Alternative 1B 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	1	0	15	0	0	0	0	0	0	0
20%	0	0	8	0	0	3	0	0	18	16	2	0
30%	-3	11	2	9	14	9	7	0	38	25	19	32
40%	59	11	-2	17	3	6	1	11	44	53	52	27
50%	19	21	8	18	26	6	-2	33	50	45	58	48
60%	18	31	17	0	6	1	10	31	48	43	65	28
70%	26	37	16	0	-6	27	28	31	30	81	89	60
80%	64	59	38	36	26	2	38	86	83	-17	43	42
90%	8	69	-4	-80	28	83	10	176	135	137	96	66
Long Term												
Full Simulation Period[a]	23	18	16	14	11	10	13	29	42	40	37	28
Water Year Types[b,c]												
Wet (32%)	1	7	9	4	0	0	1	2	5	2	2	1
Above Normal (15%)	35	36	24	21	8	3	0	4	47	69	69	46
Below Normal (17%)	38	22	16	5	1	1	3	29	46	45	47	41
Dry (22%)	30	8	5	23	23	25	35	54	63	46	34	26
Critical (15%)	32	32	36	27	30	29	29	75	80	77	74	60

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-7-3a. Shasta Lake Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,250	3,252	3,357	3,650	3,919	4,241	4,552	4,552	4,500	4,150	3,700	3,400
20%	3,250	3,252	3,337	3,588	3,791	4,144	4,545	4,552	4,467	3,974	3,692	3,400
30%	3,245	3,187	3,314	3,527	3,700	4,052	4,491	4,552	4,320	3,790	3,446	3,258
40%	3,119	3,136	3,268	3,409	3,642	4,000	4,431	4,541	4,178	3,567	3,257	3,164
50%	3,025	2,991	3,225	3,317	3,523	3,955	4,292	4,439	4,059	3,477	3,177	3,072
60%	2,865	2,925	3,110	3,252	3,442	3,893	4,193	4,287	3,848	3,306	2,978	2,936
70%	2,699	2,743	2,856	3,149	3,289	3,577	4,100	3,974	3,674	3,140	2,845	2,797
80%	2,517	2,450	2,531	2,886	3,201	3,417	3,957	3,693	3,359	3,002	2,683	2,614
90%	1,948	1,784	2,259	2,448	2,558	2,860	3,100	2,816	2,598	2,333	2,107	2,046
Long Term												
Full Simulation Period[a]	2,793	2,788	2,914	3,157	3,393	3,738	4,099	4,091	3,823	3,354	3,029	2,890
Water Year Types[b,c]												
Wet (32%)	3,183	3,168	3,256	3,451	3,604	3,855	4,349	4,490	4,376	3,942	3,568	3,304
Above Normal (15%)	2,998	2,938	3,115	3,314	3,544	4,021	4,499	4,510	4,220	3,616	3,268	3,101
Below Normal (17%)	2,960	2,988	3,058	3,203	3,488	3,886	4,323	4,311	3,974	3,428	3,105	3,024
Dry (22%)	2,682	2,730	2,914	2,996	3,363	3,814	4,039	3,918	3,533	3,077	2,796	2,754
Critical (15%)	1,714	1,667	1,806	2,548	2,718	2,914	2,987	2,813	2,486	2,143	1,882	1,831

Table 5B2-7-3b. Shasta Lake Storage, Alternative 2 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,250	3,252	3,359	3,650	3,919	4,241	4,552	4,552	4,500	4,150	3,700	3,400
20%	3,250	3,252	3,337	3,588	3,791	4,144	4,545	4,552	4,485	3,979	3,693	3,400
30%	3,243	3,186	3,314	3,530	3,714	4,055	4,498	4,552	4,334	3,775	3,452	3,258
40%	3,123	3,139	3,266	3,416	3,637	4,000	4,439	4,552	4,185	3,592	3,261	3,181
50%	3,027	3,009	3,226	3,322	3,525	3,961	4,290	4,447	4,077	3,482	3,196	3,089
60%	2,851	2,937	3,118	3,252	3,445	3,893	4,197	4,310	3,861	3,305	2,990	2,959
70%	2,681	2,756	2,882	3,151	3,289	3,582	4,100	3,985	3,703	3,166	2,878	2,796
80%	2,560	2,455	2,537	2,890	3,215	3,417	3,969	3,789	3,368	3,006	2,712	2,636
90%	1,967	1,845	2,235	2,376	2,564	2,924	3,079	2,966	2,707	2,442	2,177	2,086
Long Term												
Full Simulation Period[a]	2,797	2,793	2,918	3,159	3,396	3,741	4,104	4,107	3,845	3,371	3,043	2,900
Water Year Types[b,c]												
Wet (32%)	3,185	3,170	3,261	3,453	3,604	3,855	4,350	4,492	4,381	3,945	3,570	3,305
Above Normal (15%)	3,002	2,942	3,120	3,325	3,546	4,021	4,499	4,514	4,227	3,626	3,279	3,111
Below Normal (17%)	2,965	2,989	3,057	3,191	3,485	3,883	4,322	4,317	3,986	3,434	3,112	3,030
Dry (22%)	2,687	2,741	2,912	2,998	3,370	3,824	4,052	3,944	3,575	3,108	2,812	2,760
Critical (15%)	1,722	1,676	1,819	2,561	2,734	2,925	2,998	2,867	2,540	2,195	1,930	1,868

Table 5B2-7-3c. Shasta Lake Storage, Alternative 2 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	2	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	1	0	0	18	5	1	0
30%	-2	-1	0	3	14	3	7	0	13	-14	6	0
40%	4	3	-2	7	-5	0	9	11	7	24	4	17
50%	2	18	1	5	2	6	-1	8	18	5	19	17
60%	-14	13	9	0	3	0	3	23	13	-1	11	22
70%	-18	14	26	1	0	5	0	11	29	26	34	-2
80%	43	4	6	4	14	0	11	96	8	5	29	22
90%	19	61	-24	-72	6	64	-21	150	109	110	70	40
Long Term												
Full Simulation Period[a]	4	5	3	3	4	4	5	16	22	17	14	10
Water Year Types[b,c]												
Wet (32%)	1	3	4	1	0	0	1	2	5	2	2	1
Above Normal (15%)	5	4	5	11	2	1	0	4	7	10	12	10
Below Normal (17%)	5	1	-1	-11	-3	-3	-2	6	12	6	7	6
Dry (22%)	5	11	-2	3	6	10	13	26	42	30	16	6
Critical (15%)	9	9	13	13	16	12	12	54	54	52	49	37

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-7-4a. Shasta Lake Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,250	3,252	3,357	3,650	3,919	4,241	4,552	4,552	4,500	4,150	3,700	3,400
20%	3,250	3,252	3,337	3,588	3,791	4,144	4,545	4,552	4,467	3,974	3,692	3,400
30%	3,245	3,187	3,314	3,527	3,700	4,052	4,491	4,552	4,320	3,790	3,446	3,258
40%	3,119	3,136	3,268	3,409	3,642	4,000	4,431	4,541	4,178	3,567	3,257	3,164
50%	3,025	2,991	3,225	3,317	3,523	3,955	4,292	4,439	4,059	3,477	3,177	3,072
60%	2,865	2,925	3,110	3,252	3,442	3,893	4,193	4,287	3,848	3,306	2,978	2,936
70%	2,699	2,743	2,856	3,149	3,289	3,577	4,100	3,974	3,674	3,140	2,845	2,797
80%	2,517	2,450	2,531	2,886	3,201	3,417	3,957	3,693	3,359	3,002	2,683	2,614
90%	1,948	1,784	2,259	2,448	2,558	2,860	3,100	2,816	2,598	2,333	2,107	2,046
Long Term												
Full Simulation Period[a]	2,793	2,788	2,914	3,157	3,393	3,738	4,099	4,091	3,823	3,354	3,029	2,890
Water Year Types[b,c]												
Wet (32%)	3,183	3,168	3,256	3,451	3,604	3,855	4,349	4,490	4,376	3,942	3,568	3,304
Above Normal (15%)	2,998	2,938	3,115	3,314	3,544	4,021	4,499	4,510	4,220	3,616	3,268	3,101
Below Normal (17%)	2,960	2,988	3,058	3,203	3,488	3,886	4,323	4,311	3,974	3,428	3,105	3,024
Dry (22%)	2,682	2,730	2,914	2,996	3,363	3,814	4,039	3,918	3,533	3,077	2,796	2,754
Critical (15%)	1,714	1,667	1,806	2,548	2,718	2,914	2,987	2,813	2,486	2,143	1,882	1,831

Table 5B2-7-4b. Shasta Lake Storage, Alternative 3 020121, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,250	3,252	3,356	3,650	3,934	4,241	4,552	4,552	4,500	4,150	3,700	3,400
20%	3,250	3,252	3,345	3,601	3,802	4,159	4,545	4,552	4,485	4,033	3,700	3,400
30%	3,250	3,203	3,317	3,542	3,714	4,069	4,498	4,552	4,379	3,843	3,495	3,374
40%	3,220	3,156	3,266	3,479	3,657	4,009	4,453	4,552	4,263	3,656	3,377	3,229
50%	3,070	3,070	3,239	3,362	3,564	3,968	4,324	4,480	4,143	3,567	3,260	3,187
60%	2,966	3,008	3,160	3,252	3,469	3,894	4,224	4,364	4,007	3,386	3,091	3,033
70%	2,795	2,850	2,923	3,211	3,289	3,616	4,141	4,040	3,755	3,285	2,994	2,951
80%	2,621	2,564	2,604	2,931	3,232	3,421	4,029	3,829	3,505	3,083	2,805	2,699
90%	2,006	1,883	2,350	2,512	2,658	2,963	3,176	3,046	2,830	2,554	2,286	2,195
Long Term												
Full Simulation Period[a]	2,852	2,839	2,953	3,194	3,417	3,760	4,124	4,135	3,893	3,430	3,114	2,963
Water Year Types[b,c]												
Wet (32%)	3,185	3,175	3,265	3,465	3,604	3,855	4,350	4,492	4,381	3,945	3,570	3,305
Above Normal (15%)	3,076	3,009	3,162	3,373	3,552	4,024	4,499	4,514	4,284	3,724	3,431	3,215
Below Normal (17%)	3,039	3,045	3,093	3,225	3,501	3,899	4,335	4,349	4,072	3,532	3,216	3,123
Dry (22%)	2,786	2,815	2,966	3,049	3,416	3,862	4,098	4,007	3,648	3,193	2,914	2,866
Critical (15%)	1,786	1,741	1,883	2,607	2,780	2,974	3,055	2,927	2,602	2,258	1,994	1,932

Table 5B2-7-4c. Shasta Lake Storage, Alternative 3 020121 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	-1	0	15	0	0	0	0	0	0	0
20%	0	0	7	14	11	15	0	0	18	59	8	0
30%	5	16	2	15	14	17	7	0	59	54	49	116
40%	101	20	-2	70	15	9	23	11	85	89	120	65
50%	45	80	14	45	41	13	32	41	84	90	83	116
60%	101	84	50	0	27	1	30	77	159	80	113	97
70%	96	107	68	62	0	39	41	65	81	145	150	154
80%	104	114	73	45	32	4	71	137	146	81	122	85
90%	58	98	91	65	101	103	76	230	232	221	179	150
Long Term												
Full Simulation Period[a]	59	52	38	37	24	22	25	44	70	76	86	73
Water Year Types[b,c]												
Wet (32%)	1	7	8	13	0	0	1	2	5	2	2	2
Above Normal (15%)	78	70	47	58	8	3	0	4	63	107	164	114
Below Normal (17%)	79	57	35	22	13	13	12	39	98	104	111	99
Dry (22%)	104	84	51	54	52	48	59	89	115	115	118	112
Critical (15%)	72	75	77	58	62	61	69	114	116	114	113	100

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Figure 5B2-7-1. Shasta Lake Storage, October

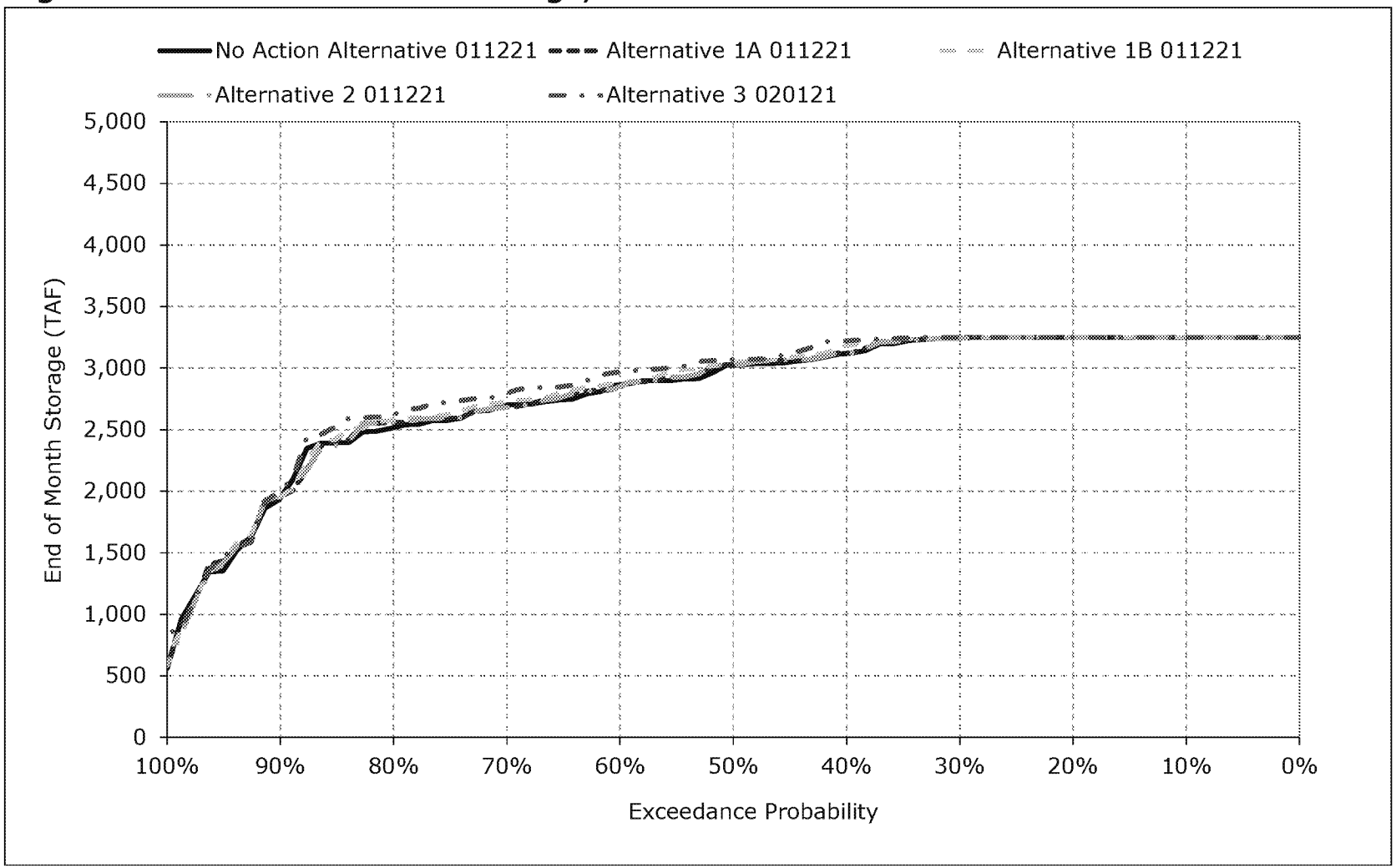


Figure 5B2-7-2. Shasta Lake Storage, November

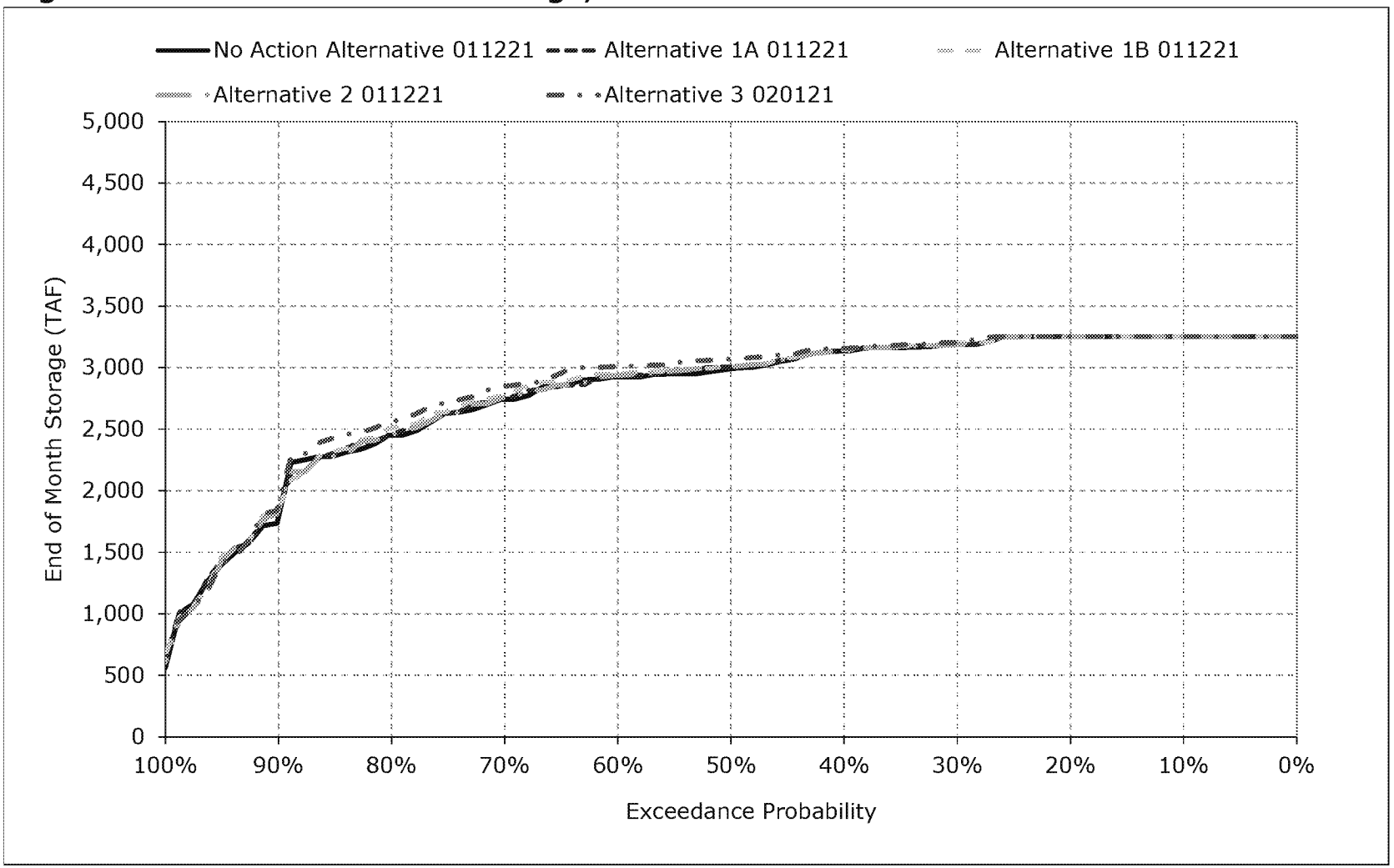


Figure 5B2-7-3. Shasta Lake Storage, December

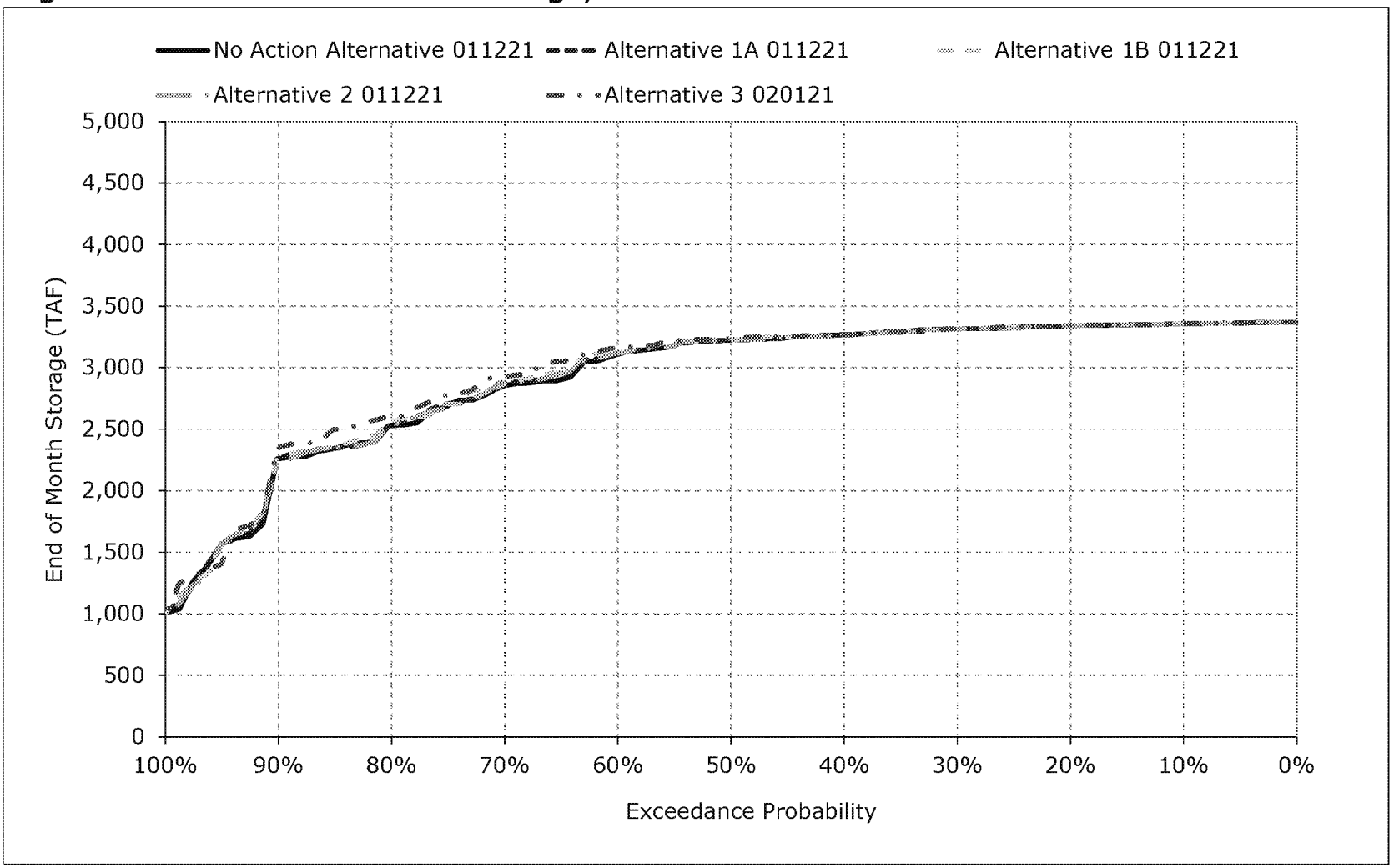


Figure 5B2-7-4. Shasta Lake Storage, January

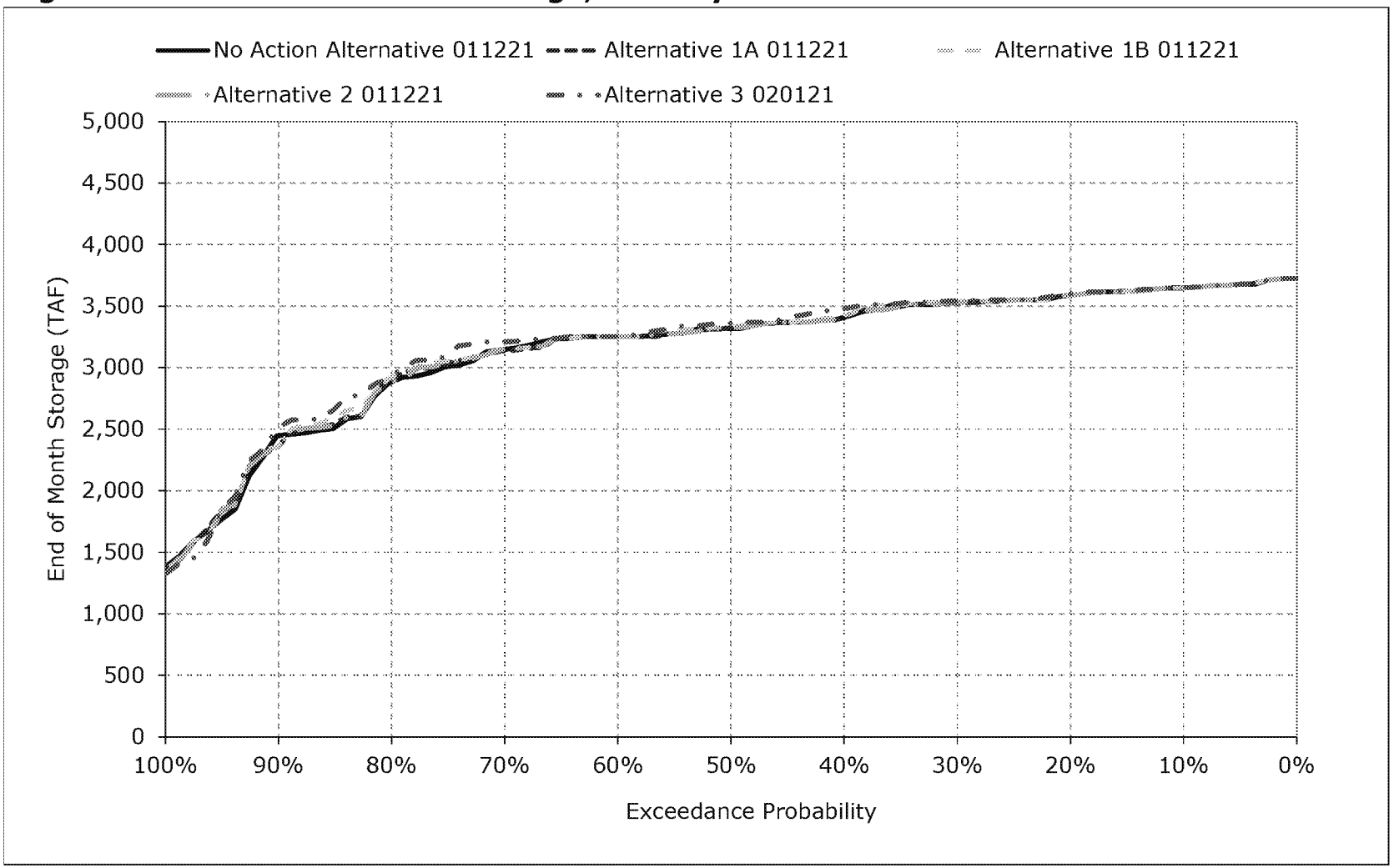


Figure 5B2-7-5. Shasta Lake Storage, February

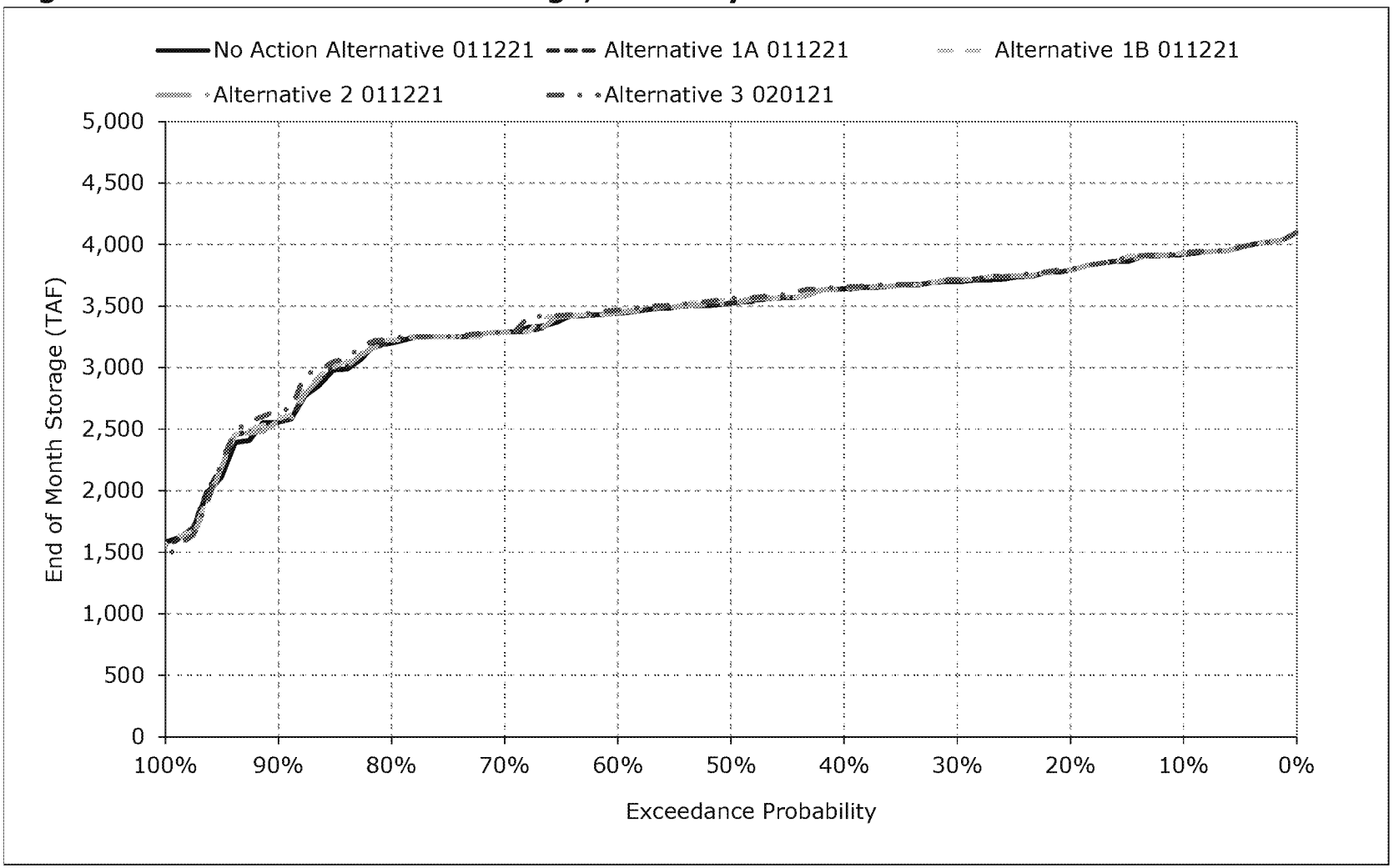


Figure 5B2-7-6. Shasta Lake Storage, March

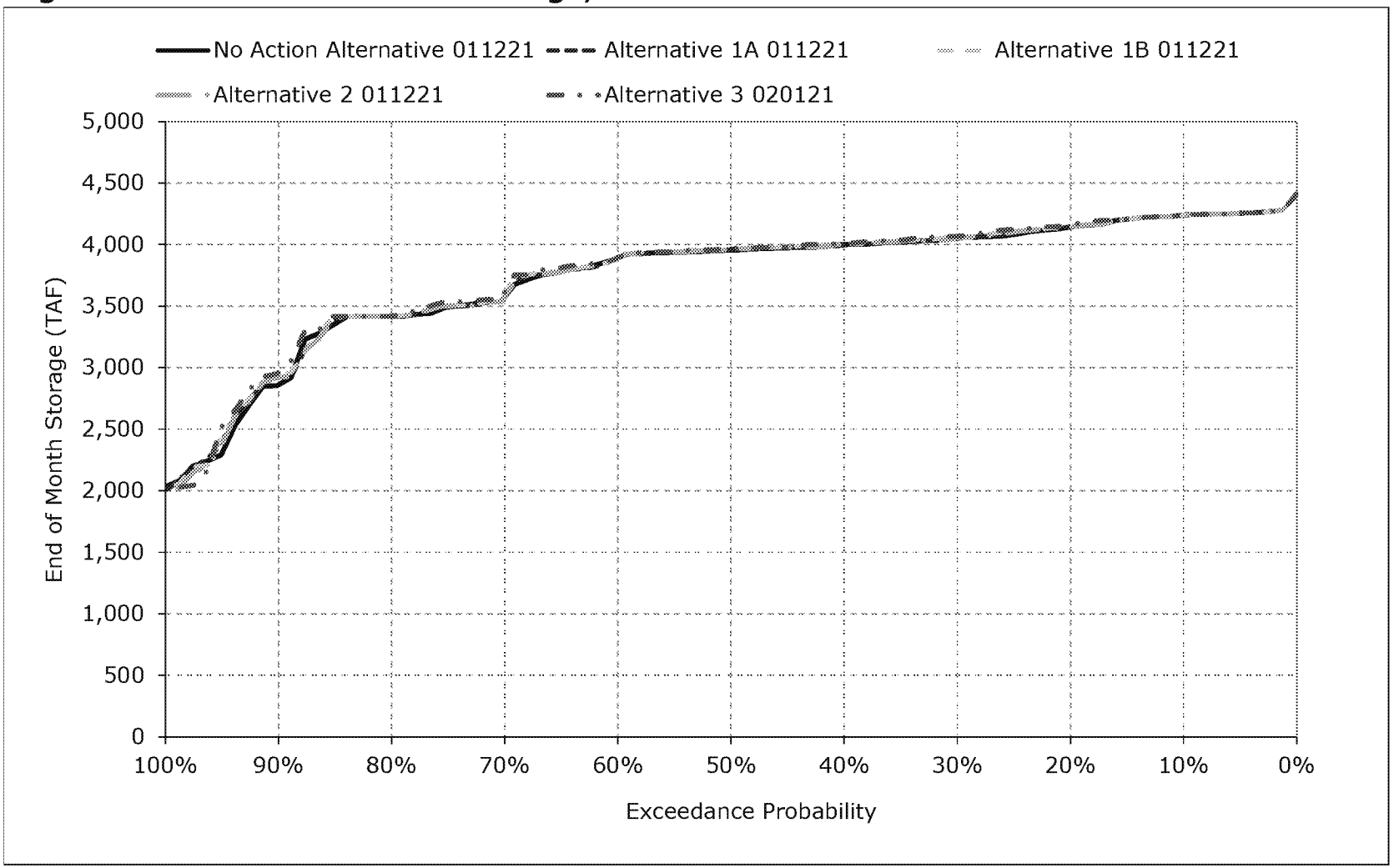


Figure 5B2-7-7. Shasta Lake Storage, April

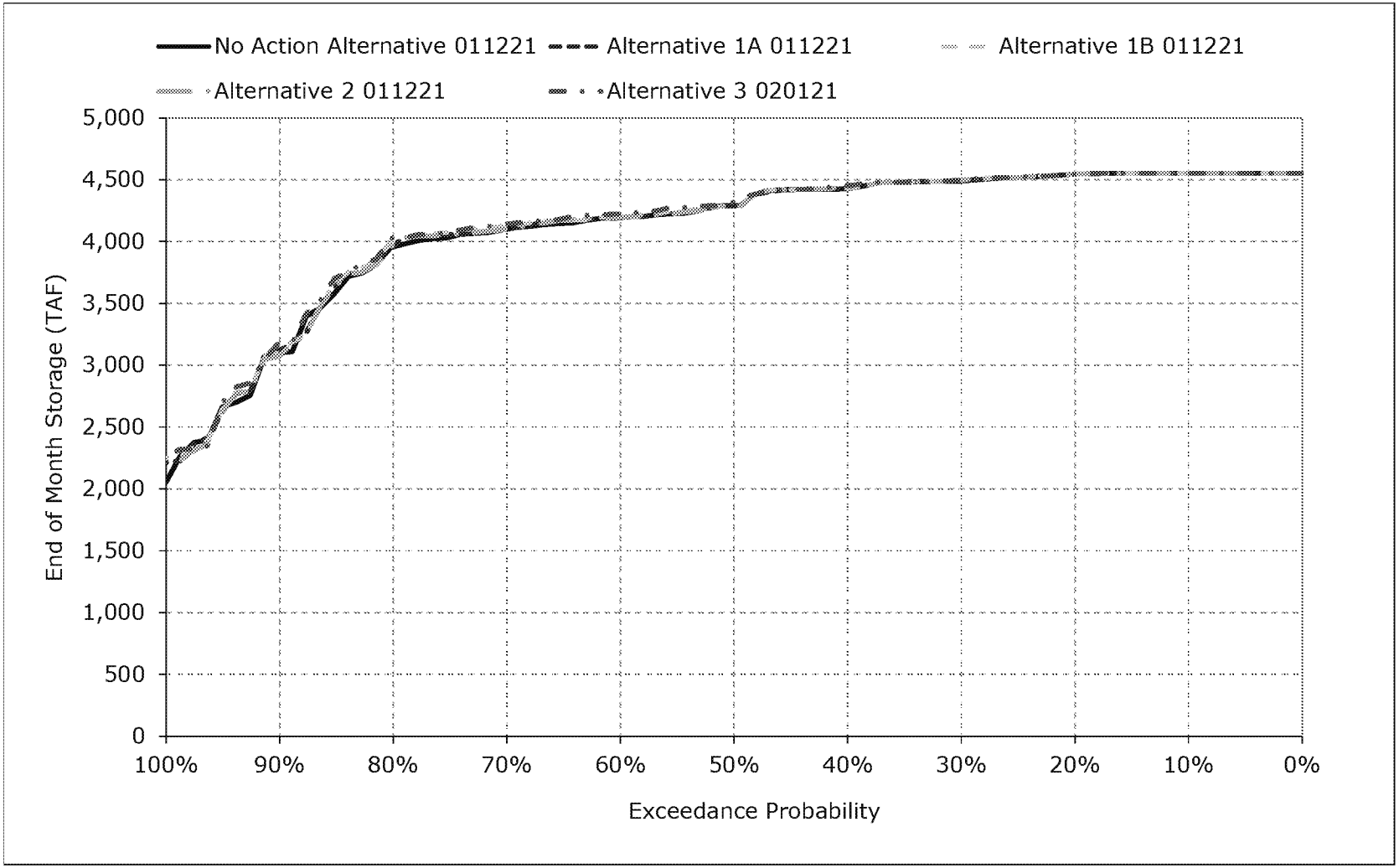


Figure 5B2-7-8. Shasta Lake Storage, May

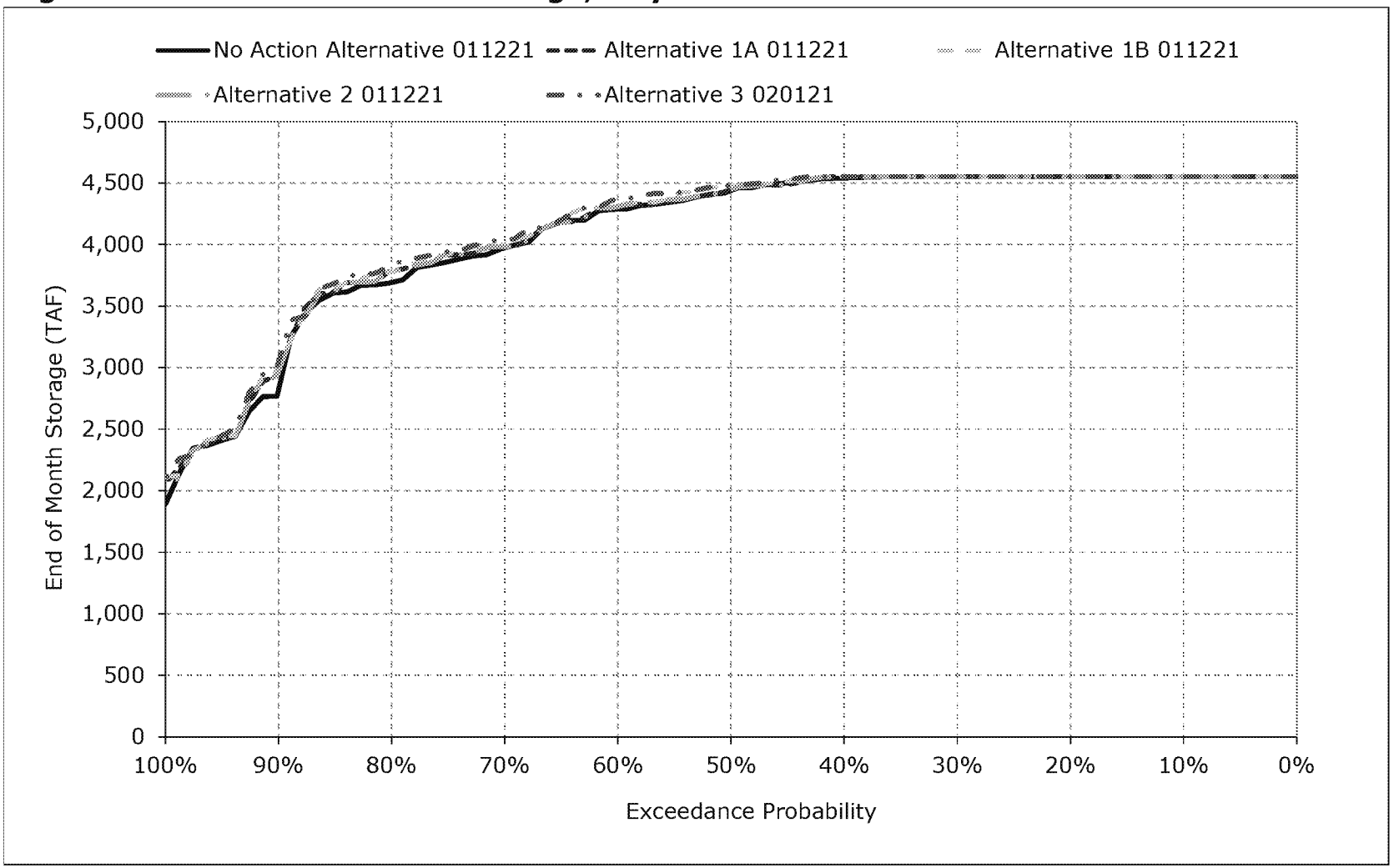


Figure 5B2-7-9. Shasta Lake Storage, June

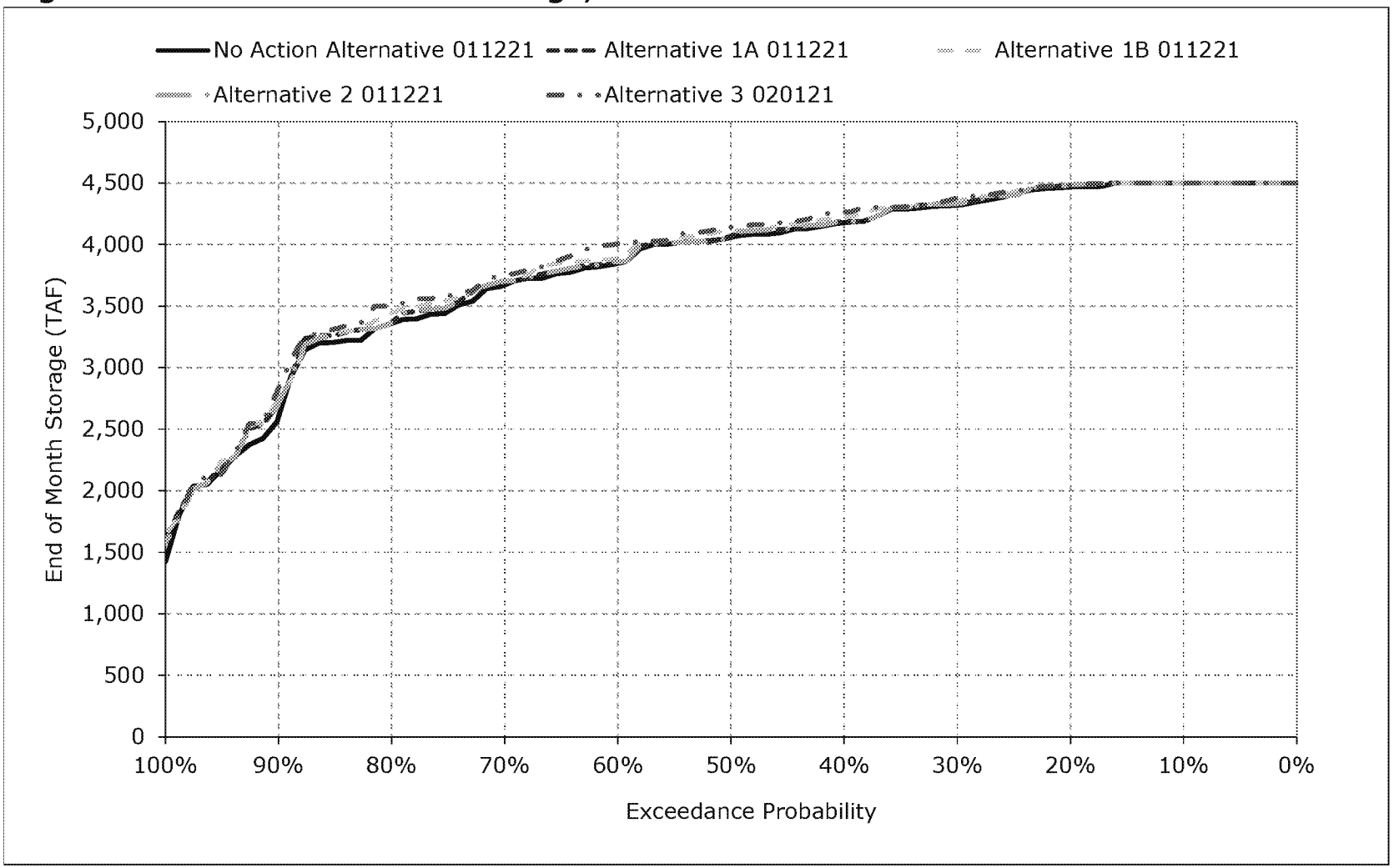


Figure 5B2-7-10. Shasta Lake Storage, July

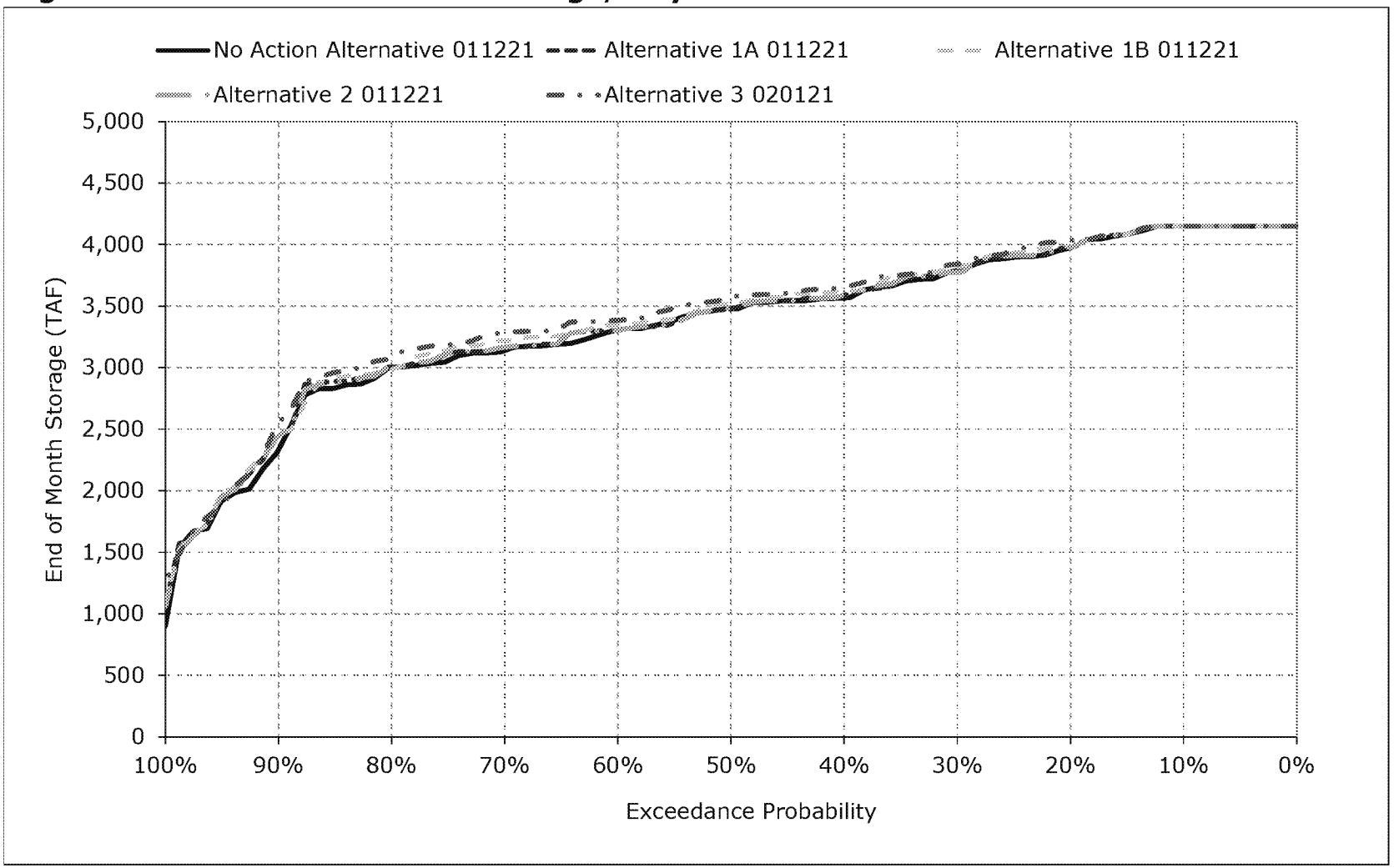


Figure 5B2-7-11. Shasta Lake Storage, August

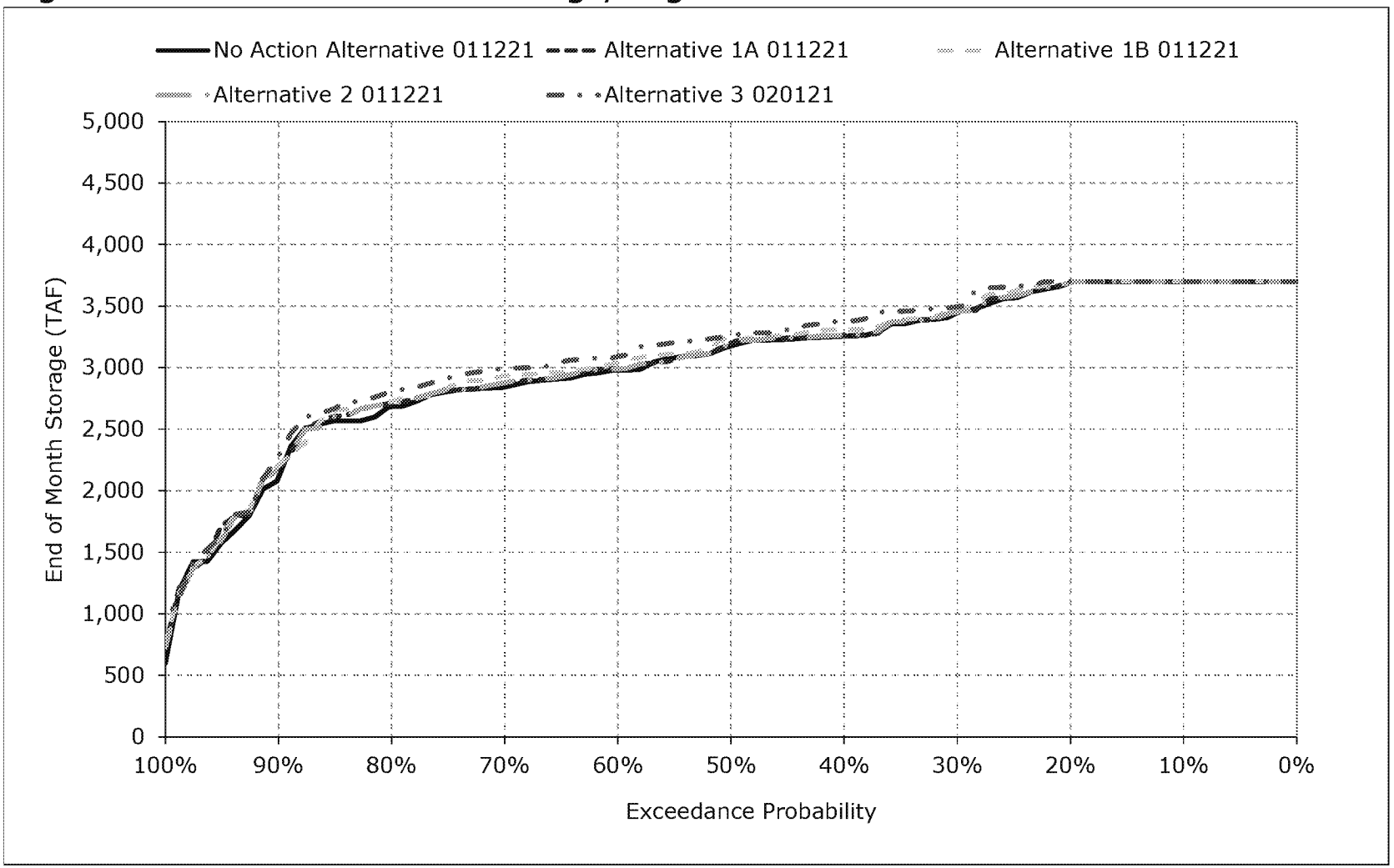


Figure 5B2-7-12. Shasta Lake Storage, September

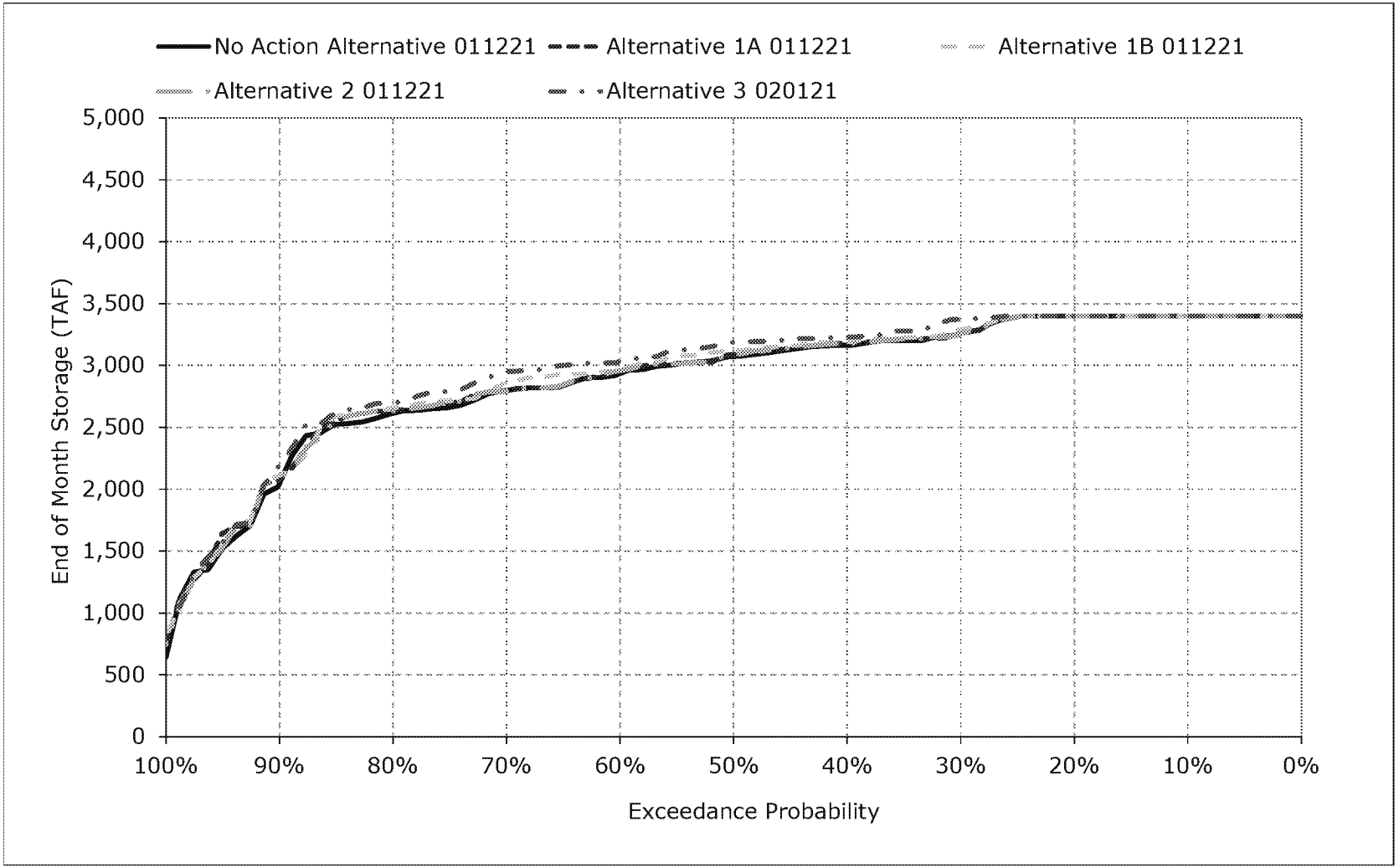


Table 5B2-8-1a. Shasta Lake Elevation, No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,017	1,017	1,022	1,034	1,044	1,056	1,067	1,067	1,065	1,053	1,036	1,023
20%	1,017	1,017	1,021	1,032	1,040	1,052	1,067	1,067	1,064	1,046	1,036	1,023
30%	1,017	1,014	1,020	1,029	1,036	1,049	1,065	1,067	1,059	1,040	1,025	1,017
40%	1,011	1,012	1,018	1,024	1,034	1,047	1,063	1,067	1,054	1,031	1,017	1,013
50%	1,007	1,006	1,016	1,020	1,029	1,046	1,058	1,063	1,049	1,027	1,014	1,009
60%	1,000	1,003	1,011	1,017	1,025	1,043	1,054	1,058	1,042	1,019	1,005	1,003
70%	993	995	1,000	1,013	1,019	1,031	1,051	1,046	1,035	1,012	999	997
80%	985	981	986	1,001	1,015	1,024	1,046	1,036	1,022	1,006	992	989
90%	953	944	970	981	987	1,000	1,010	998	989	975	962	958
Long Term												
Full Simulation Period[a]	994	994	1,000	1,012	1,022	1,036	1,050	1,049	1,038	1,019	1,005	999
Water Year Types[b,c]												
Wet (32%)	1,014	1,013	1,017	1,026	1,032	1,042	1,060	1,065	1,061	1,045	1,031	1,019
Above Normal (15%)	1,006	1,003	1,011	1,019	1,029	1,048	1,065	1,065	1,055	1,032	1,018	1,010
Below Normal (17%)	1,004	1,005	1,008	1,013	1,026	1,042	1,058	1,058	1,046	1,024	1,011	1,007
Dry (22%)	991	993	1,001	1,004	1,021	1,039	1,048	1,044	1,028	1,009	997	995
Critical (15%)	933	930	941	983	991	1,001	1,004	996	980	960	944	941

Table 5B2-8-1b. Shasta Lake Elevation, Alternative 1A 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,017	1,017	1,022	1,034	1,044	1,056	1,067	1,067	1,065	1,053	1,036	1,023
20%	1,017	1,017	1,021	1,032	1,040	1,052	1,067	1,067	1,065	1,046	1,036	1,023
30%	1,017	1,014	1,020	1,029	1,037	1,049	1,065	1,067	1,059	1,039	1,026	1,017
40%	1,011	1,012	1,018	1,024	1,034	1,047	1,063	1,067	1,054	1,032	1,017	1,014
50%	1,007	1,006	1,016	1,020	1,029	1,046	1,058	1,063	1,050	1,027	1,015	1,010
60%	999	1,003	1,011	1,017	1,025	1,043	1,054	1,058	1,042	1,019	1,006	1,004
70%	992	995	1,000	1,012	1,019	1,031	1,051	1,047	1,036	1,013	1,001	997
80%	987	982	986	1,002	1,015	1,024	1,046	1,040	1,022	1,006	994	990
90%	953	947	970	976	987	1,003	1,011	1,005	993	981	966	961
Long Term												
Full Simulation Period[a]	994	994	1,000	1,012	1,022	1,036	1,050	1,050	1,039	1,020	1,006	1,000
Water Year Types[b,c]												
Wet (32%)	1,014	1,013	1,017	1,026	1,032	1,042	1,060	1,065	1,061	1,045	1,031	1,019
Above Normal (15%)	1,006	1,003	1,011	1,020	1,029	1,048	1,065	1,066	1,055	1,033	1,018	1,011
Below Normal (17%)	1,005	1,006	1,008	1,013	1,026	1,041	1,059	1,059	1,047	1,025	1,011	1,007
Dry (22%)	991	993	1,001	1,004	1,021	1,039	1,048	1,044	1,030	1,010	997	995
Critical (15%)	934	931	943	984	993	1,002	1,005	999	983	964	948	944

Table 5B2-8-1c. Shasta Lake Elevation, Alternative 1A 011221 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	1	0	0	0
30%	0	0	0	0	1	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	1	0	1
50%	0	1	0	0	0	0	0	0	0	0	1	1
60%	-1	0	0	0	0	0	0	1	0	0	1	1
70%	-1	1	0	-1	0	0	0	0	1	1	1	0
80%	2	0	0	1	1	0	0	3	0	0	1	1
90%	0	3	0	-5	0	3	1	7	5	6	4	2
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	1	1	1	1	1
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	1	0	0	0
Dry (22%)	0	0	0	0	0	0	0	1	2	1	1	0
Critical (15%)	1	1	2	1	1	1	1	3	3	4	4	3

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-8-2a. Shasta Lake Elevation, No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,017	1,017	1,022	1,034	1,044	1,056	1,067	1,067	1,065	1,053	1,036	1,023
20%	1,017	1,017	1,021	1,032	1,040	1,052	1,067	1,067	1,064	1,046	1,036	1,023
30%	1,017	1,014	1,020	1,029	1,036	1,049	1,065	1,067	1,059	1,040	1,025	1,017
40%	1,011	1,012	1,018	1,024	1,034	1,047	1,063	1,067	1,054	1,031	1,017	1,013
50%	1,007	1,006	1,016	1,020	1,029	1,046	1,058	1,063	1,049	1,027	1,014	1,009
60%	1,000	1,003	1,011	1,017	1,025	1,043	1,054	1,058	1,042	1,019	1,005	1,003
70%	993	995	1,000	1,013	1,019	1,031	1,051	1,046	1,035	1,012	999	997
80%	985	981	986	1,001	1,015	1,024	1,046	1,036	1,022	1,006	992	989
90%	953	944	970	981	987	1,000	1,010	998	989	975	962	958
Long Term												
Full Simulation Period[a]	994	994	1,000	1,012	1,022	1,036	1,050	1,049	1,038	1,019	1,005	999
Water Year Types[b,c]												
Wet (32%)	1,014	1,013	1,017	1,026	1,032	1,042	1,060	1,065	1,061	1,045	1,031	1,019
Above Normal (15%)	1,006	1,003	1,011	1,019	1,029	1,048	1,065	1,065	1,055	1,032	1,018	1,010
Below Normal (17%)	1,004	1,005	1,008	1,013	1,026	1,042	1,058	1,058	1,046	1,024	1,011	1,007
Dry (22%)	991	993	1,001	1,004	1,021	1,039	1,048	1,044	1,028	1,009	997	995
Critical (15%)	933	930	941	983	991	1,001	1,004	996	980	960	944	941

Table 5B2-8-2b. Shasta Lake Elevation, Alternative 1B 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,017	1,017	1,022	1,034	1,045	1,056	1,067	1,067	1,065	1,053	1,036	1,023
20%	1,017	1,017	1,021	1,032	1,040	1,052	1,067	1,067	1,065	1,047	1,036	1,023
30%	1,017	1,015	1,020	1,029	1,037	1,049	1,065	1,067	1,060	1,041	1,026	1,019
40%	1,014	1,012	1,018	1,025	1,034	1,047	1,063	1,067	1,055	1,033	1,019	1,014
50%	1,008	1,007	1,016	1,021	1,030	1,046	1,058	1,064	1,051	1,029	1,016	1,011
60%	1,001	1,004	1,012	1,017	1,026	1,043	1,055	1,059	1,044	1,021	1,008	1,005
70%	994	996	1,000	1,013	1,018	1,032	1,052	1,047	1,037	1,016	1,003	1,000
80%	988	985	987	1,003	1,016	1,024	1,047	1,039	1,025	1,005	994	991
90%	953	947	970	977	988	1,004	1,011	1,006	994	982	967	962
Long Term												
Full Simulation Period[a]	995	995	1,001	1,012	1,023	1,036	1,050	1,050	1,040	1,021	1,007	1,000
Water Year Types[b,c]												
Wet (32%)	1,014	1,014	1,018	1,026	1,032	1,042	1,060	1,065	1,061	1,045	1,031	1,019
Above Normal (15%)	1,007	1,005	1,012	1,020	1,030	1,048	1,065	1,066	1,057	1,035	1,021	1,012
Below Normal (17%)	1,006	1,006	1,009	1,014	1,026	1,042	1,059	1,059	1,048	1,026	1,013	1,009
Dry (22%)	993	993	1,002	1,005	1,022	1,040	1,049	1,046	1,031	1,011	998	996
Critical (15%)	934	932	943	984	993	1,003	1,006	1,000	984	965	948	944

Table 5B2-8-2c. Shasta Lake Elevation, Alternative 1B 011221 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	1	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	1	1	0	0
30%	0	0	0	0	1	0	0	0	1	1	1	1
40%	3	0	0	1	0	0	0	0	2	2	2	1
50%	1	1	0	1	1	0	0	1	2	2	3	2
60%	1	1	1	0	0	0	0	1	2	2	3	1
70%	1	2	1	0	0	1	1	1	1	4	4	3
80%	3	3	2	2	1	0	1	3	4	-1	2	2
90%	0	4	0	-5	1	4	0	8	6	8	5	4
Long Term												
Full Simulation Period[a]	1	1	1	1	0	0	1	1	2	2	2	1
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	2	2	1	1	0	0	0	0	2	3	3	2
Below Normal (17%)	2	1	1	0	0	0	0	1	2	2	2	2
Dry (22%)	1	0	0	1	1	1	1	2	3	2	1	1
Critical (15%)	2	2	2	1	2	1	1	4	4	5	4	4

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-8-3a. Shasta Lake Elevation, No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,017	1,017	1,022	1,034	1,044	1,056	1,067	1,067	1,065	1,053	1,036	1,023
20%	1,017	1,017	1,021	1,032	1,040	1,052	1,067	1,067	1,064	1,046	1,036	1,023
30%	1,017	1,014	1,020	1,029	1,036	1,049	1,065	1,067	1,059	1,040	1,025	1,017
40%	1,011	1,012	1,018	1,024	1,034	1,047	1,063	1,067	1,054	1,031	1,017	1,013
50%	1,007	1,006	1,016	1,020	1,029	1,046	1,058	1,063	1,049	1,027	1,014	1,009
60%	1,000	1,003	1,011	1,017	1,025	1,043	1,054	1,058	1,042	1,019	1,005	1,003
70%	993	995	1,000	1,013	1,019	1,031	1,051	1,046	1,035	1,012	999	997
80%	985	981	986	1,001	1,015	1,024	1,046	1,036	1,022	1,006	992	989
90%	953	944	970	981	987	1,000	1,010	998	989	975	962	958
Long Term												
Full Simulation Period[a]	994	994	1,000	1,012	1,022	1,036	1,050	1,049	1,038	1,019	1,005	999
Water Year Types[b,c]												
Wet (32%)	1,014	1,013	1,017	1,026	1,032	1,042	1,060	1,065	1,061	1,045	1,031	1,019
Above Normal (15%)	1,006	1,003	1,011	1,019	1,029	1,048	1,065	1,065	1,055	1,032	1,018	1,010
Below Normal (17%)	1,004	1,005	1,008	1,013	1,026	1,042	1,058	1,058	1,046	1,024	1,011	1,007
Dry (22%)	991	993	1,001	1,004	1,021	1,039	1,048	1,044	1,028	1,009	997	995
Critical (15%)	933	930	941	983	991	1,001	1,004	996	980	960	944	941

Table 5B2-8-3b. Shasta Lake Elevation, Alternative 2 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,017	1,017	1,022	1,034	1,044	1,056	1,067	1,067	1,065	1,053	1,036	1,023
20%	1,017	1,017	1,021	1,032	1,040	1,052	1,067	1,067	1,065	1,046	1,036	1,023
30%	1,017	1,014	1,020	1,029	1,037	1,049	1,065	1,067	1,059	1,039	1,026	1,017
40%	1,011	1,012	1,018	1,024	1,034	1,047	1,063	1,067	1,054	1,032	1,017	1,014
50%	1,007	1,006	1,016	1,020	1,029	1,046	1,058	1,063	1,050	1,027	1,015	1,010
60%	1,000	1,003	1,011	1,017	1,025	1,043	1,054	1,058	1,042	1,019	1,006	1,004
70%	992	995	1,001	1,013	1,019	1,031	1,051	1,047	1,037	1,013	1,001	997
80%	987	982	986	1,001	1,015	1,024	1,046	1,040	1,022	1,006	994	990
90%	954	947	969	977	987	1,003	1,009	1,005	993	981	966	961
Long Term												
Full Simulation Period[a]	994	994	1,000	1,012	1,022	1,036	1,050	1,050	1,039	1,020	1,006	999
Water Year Types[b,c]												
Wet (32%)	1,014	1,013	1,017	1,026	1,032	1,042	1,060	1,065	1,061	1,045	1,031	1,019
Above Normal (15%)	1,006	1,003	1,011	1,020	1,029	1,048	1,065	1,066	1,055	1,033	1,018	1,011
Below Normal (17%)	1,004	1,005	1,008	1,013	1,026	1,041	1,058	1,058	1,046	1,025	1,011	1,007
Dry (22%)	991	994	1,001	1,004	1,021	1,040	1,048	1,045	1,030	1,010	997	995
Critical (15%)	933	930	942	984	992	1,002	1,005	999	983	964	947	943

Table 5B2-8-3c. Shasta Lake Elevation, Alternative 2 011221 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	1	0	0	0
30%	0	0	0	0	1	0	0	0	0	-1	0	0
40%	0	0	0	0	0	0	0	0	0	1	0	1
50%	0	1	0	0	0	0	0	0	1	0	1	1
60%	-1	1	0	0	0	0	0	1	0	0	0	1
70%	-1	1	1	0	0	0	0	0	1	1	1	0
80%	2	0	0	0	1	0	0	4	0	0	1	1
90%	1	3	-1	-4	0	3	-1	7	5	6	4	2
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	1	1	1	1	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	1	0	0	0	0	0	0	1	0
Below Normal (17%)	0	0	0	-1	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	1	2	1	1	0
Critical (15%)	0	0	1	1	1	0	1	2	3	3	3	2

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-8-4a. Shasta Lake Elevation, No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,017	1,017	1,022	1,034	1,044	1,056	1,067	1,067	1,065	1,053	1,036	1,023
20%	1,017	1,017	1,021	1,032	1,040	1,052	1,067	1,067	1,064	1,046	1,036	1,023
30%	1,017	1,014	1,020	1,029	1,036	1,049	1,065	1,067	1,059	1,040	1,025	1,017
40%	1,011	1,012	1,018	1,024	1,034	1,047	1,063	1,067	1,054	1,031	1,017	1,013
50%	1,007	1,006	1,016	1,020	1,029	1,046	1,058	1,063	1,049	1,027	1,014	1,009
60%	1,000	1,003	1,011	1,017	1,025	1,043	1,054	1,058	1,042	1,019	1,005	1,003
70%	993	995	1,000	1,013	1,019	1,031	1,051	1,046	1,035	1,012	999	997
80%	985	981	986	1,001	1,015	1,024	1,046	1,036	1,022	1,006	992	989
90%	953	944	970	981	987	1,000	1,010	998	989	975	962	958
Long Term												
Full Simulation Period[a]	994	994	1,000	1,012	1,022	1,036	1,050	1,049	1,038	1,019	1,005	999
Water Year Types[b,c]												
Wet (32%)	1,014	1,013	1,017	1,026	1,032	1,042	1,060	1,065	1,061	1,045	1,031	1,019
Above Normal (15%)	1,006	1,003	1,011	1,019	1,029	1,048	1,065	1,065	1,055	1,032	1,018	1,010
Below Normal (17%)	1,004	1,005	1,008	1,013	1,026	1,042	1,058	1,058	1,046	1,024	1,011	1,007
Dry (22%)	991	993	1,001	1,004	1,021	1,039	1,048	1,044	1,028	1,009	997	995
Critical (15%)	933	930	941	983	991	1,001	1,004	996	980	960	944	941

Table 5B2-8-4b. Shasta Lake Elevation, Alternative 3 020121, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,017	1,017	1,021	1,034	1,045	1,056	1,067	1,067	1,065	1,053	1,036	1,023
20%	1,017	1,017	1,021	1,032	1,040	1,053	1,067	1,067	1,065	1,048	1,036	1,023
30%	1,017	1,015	1,020	1,030	1,037	1,050	1,065	1,067	1,061	1,042	1,028	1,022
40%	1,016	1,013	1,018	1,027	1,035	1,048	1,063	1,067	1,057	1,035	1,022	1,016
50%	1,009	1,009	1,016	1,022	1,031	1,046	1,059	1,064	1,052	1,031	1,017	1,014
60%	1,005	1,006	1,013	1,017	1,026	1,043	1,055	1,060	1,048	1,023	1,010	1,007
70%	997	1,000	1,003	1,015	1,019	1,033	1,052	1,049	1,038	1,018	1,006	1,004
80%	990	987	989	1,003	1,016	1,024	1,048	1,041	1,028	1,010	998	993
90%	956	949	976	985	991	1,004	1,014	1,008	999	987	972	967
Long Term												
Full Simulation Period[a]	997	996	1,002	1,013	1,023	1,037	1,051	1,051	1,041	1,023	1,009	1,003
Water Year Types[b,c]												
Wet (32%)	1,014	1,014	1,018	1,026	1,032	1,042	1,060	1,065	1,061	1,045	1,031	1,019
Above Normal (15%)	1,009	1,006	1,013	1,022	1,030	1,048	1,065	1,066	1,057	1,037	1,025	1,015
Below Normal (17%)	1,008	1,008	1,010	1,014	1,026	1,042	1,059	1,060	1,050	1,029	1,015	1,011
Dry (22%)	996	997	1,003	1,007	1,023	1,041	1,050	1,047	1,033	1,014	1,002	1,000
Critical (15%)	937	935	946	985	994	1,004	1,007	1,002	986	967	951	947

Table 5B2-8-4c. Shasta Lake Elevation, Alternative 3 020121 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	1	0	0	0	0	0	0	0
20%	0	0	0	1	0	1	0	0	1	2	0	0
30%	0	1	0	1	1	1	0	0	2	2	2	5
40%	4	1	0	3	1	0	1	0	3	4	5	3
50%	2	3	1	2	2	0	1	1	3	4	4	5
60%	4	4	2	0	1	0	1	3	6	3	5	4
70%	4	5	3	3	0	2	1	2	3	6	6	7
80%	5	6	3	2	1	0	3	5	6	4	5	4
90%	3	6	5	4	4	4	3	10	10	12	10	8
Long Term												
Full Simulation Period[a]	3	3	2	2	1	1	1	2	3	4	4	4
Water Year Types[b,c]												
Wet (32%)	0	0	0	1	0	0	0	0	0	0	0	0
Above Normal (15%)	4	3	2	3	0	0	0	0	2	4	7	5
Below Normal (17%)	3	3	2	1	0	0	0	1	4	4	5	4
Dry (22%)	5	4	2	2	2	2	2	3	5	5	5	5
Critical (15%)	5	5	5	2	3	3	3	5	6	7	7	7

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Figure 5B2-8-1. Shasta Lake Elevation, October

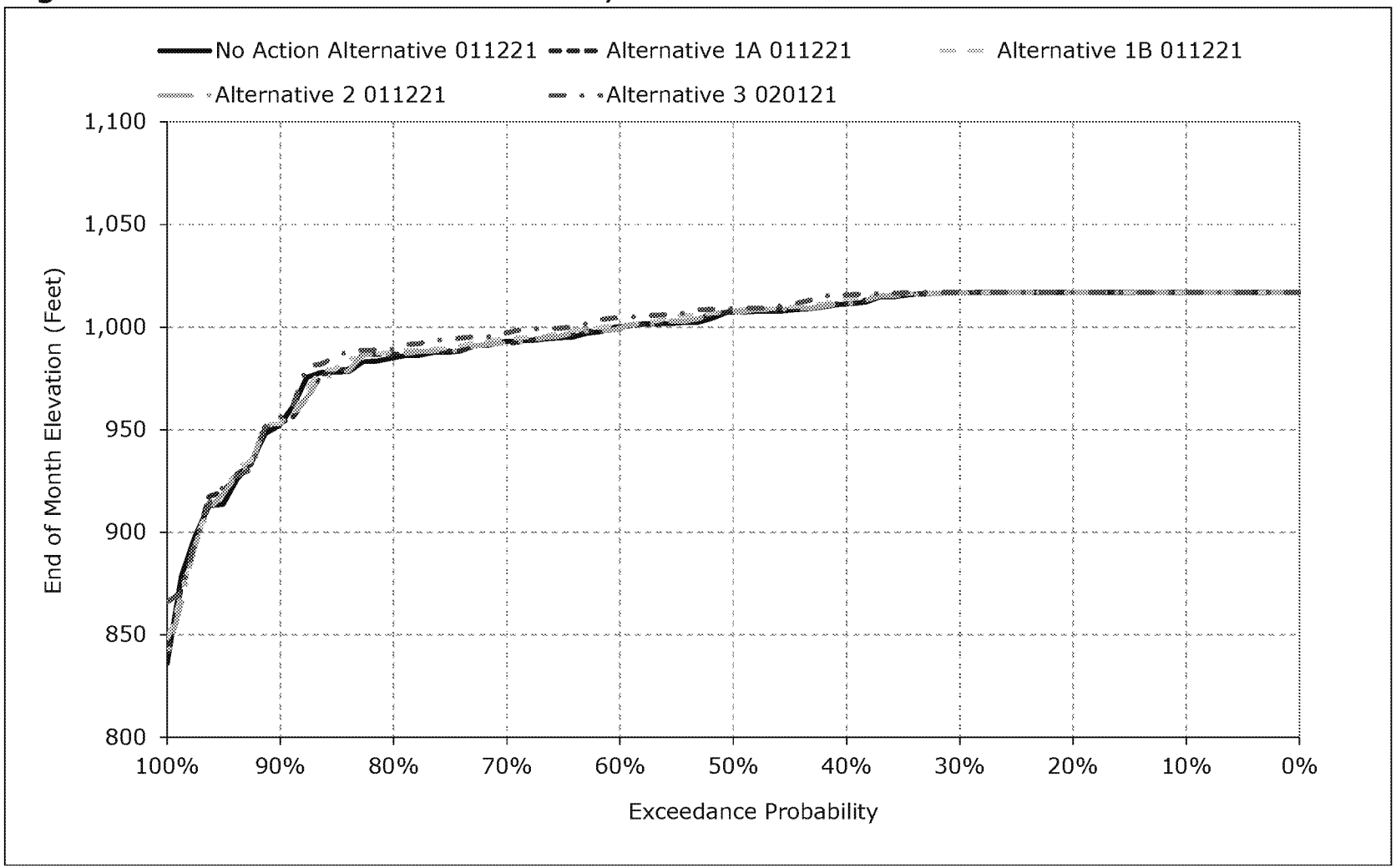


Figure 5B2-8-2. Shasta Lake Elevation, November

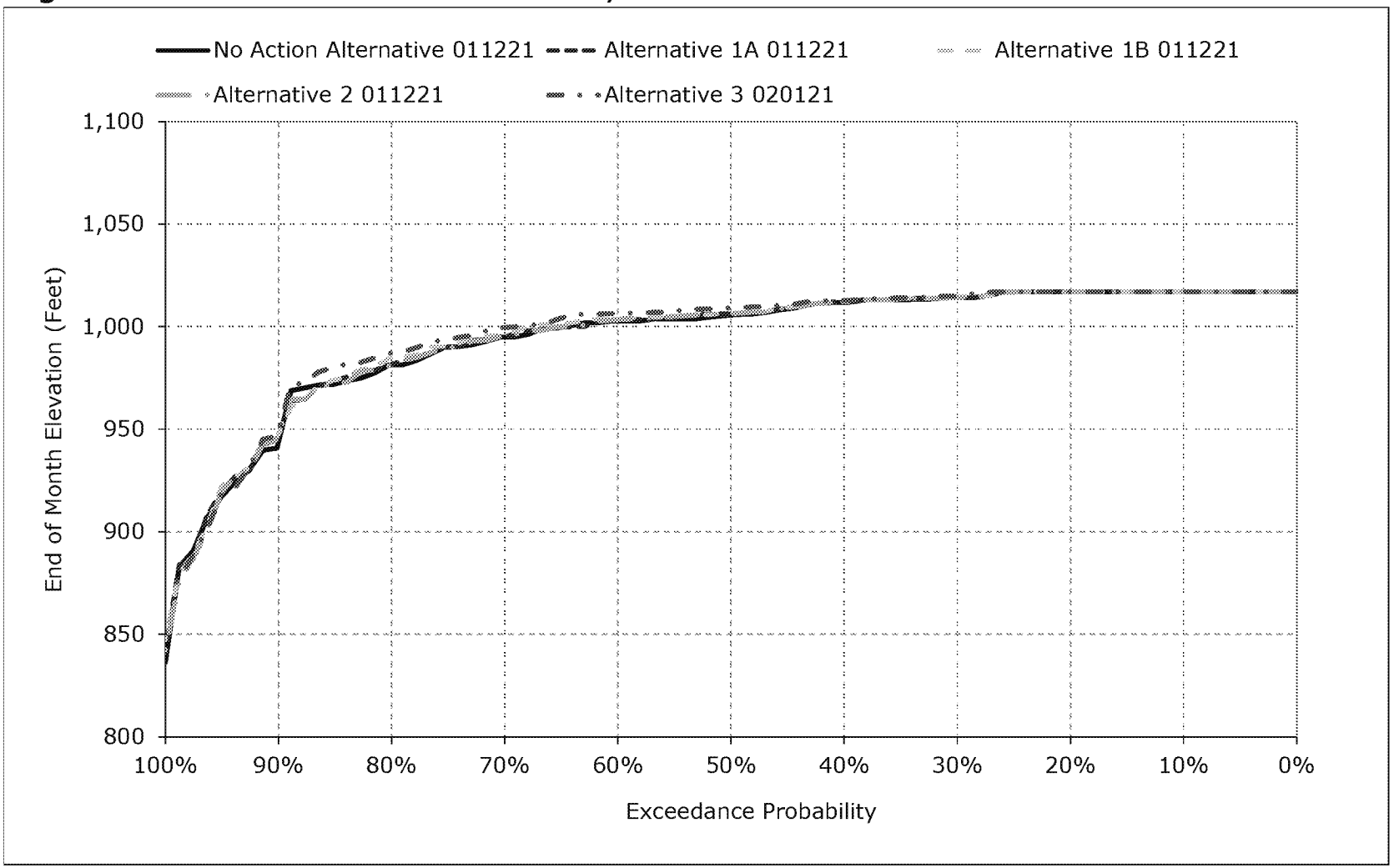


Figure 5B2-8-3. Shasta Lake Elevation, December

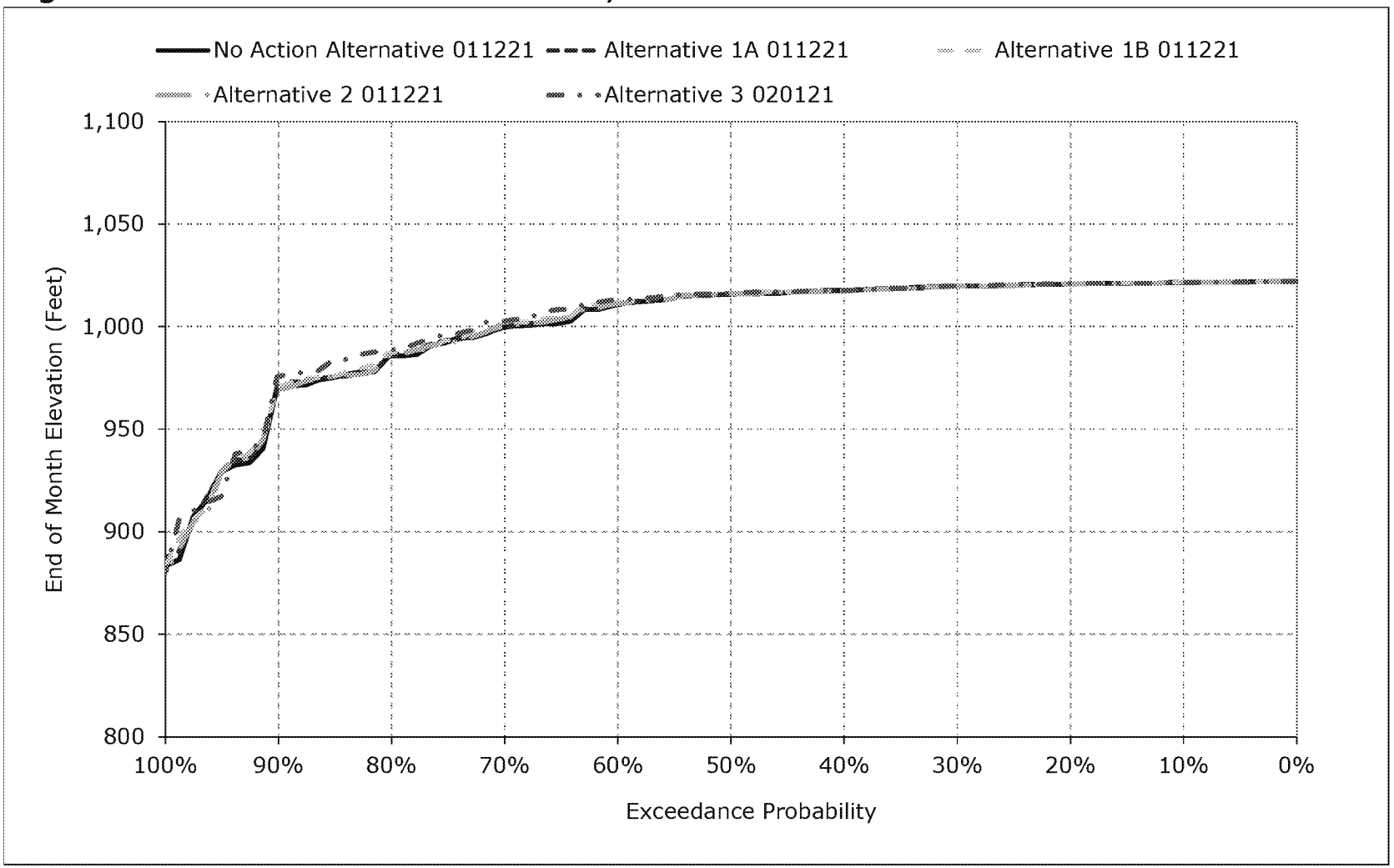


Figure 5B2-8-4. Shasta Lake Elevation, January

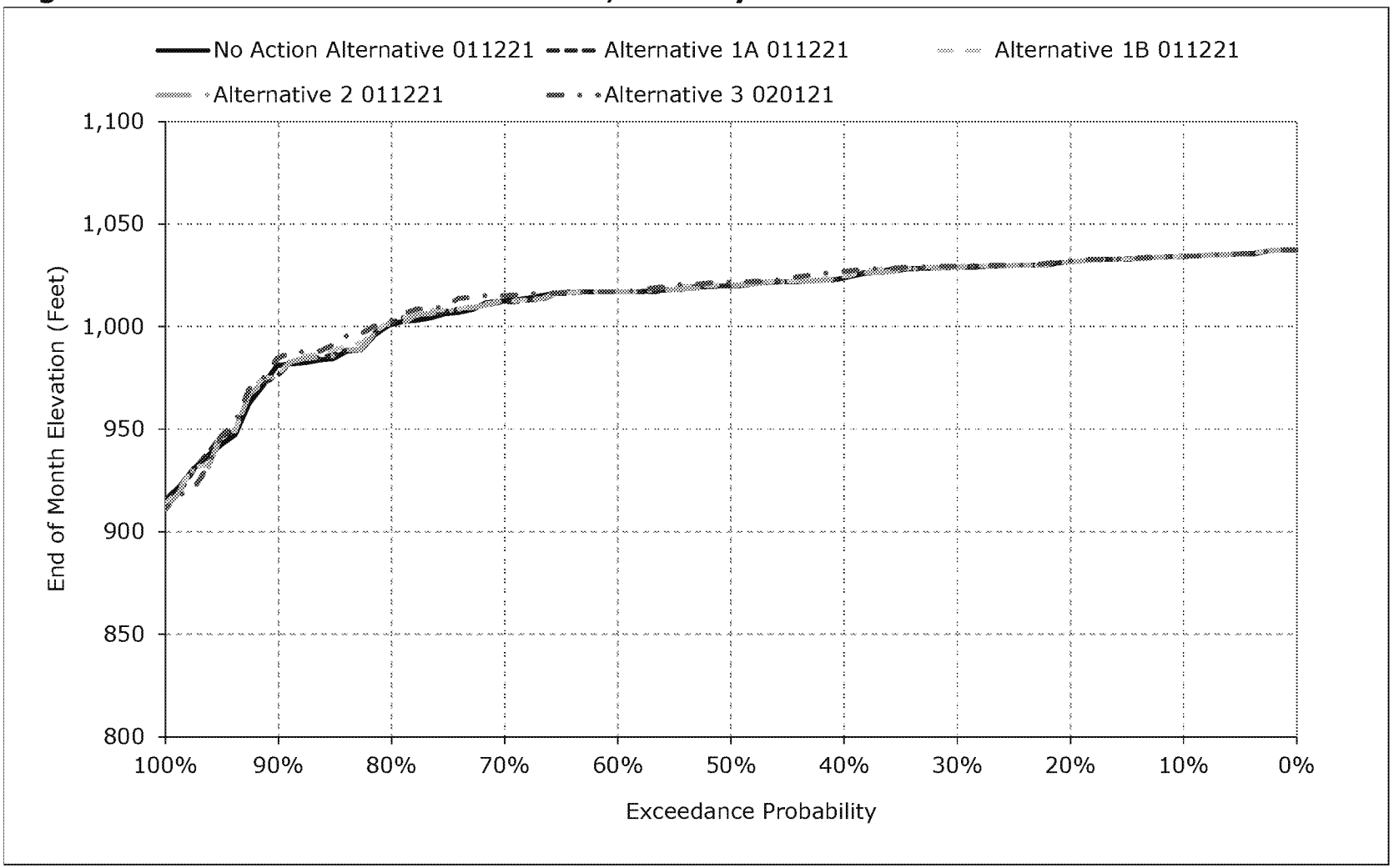


Figure 5B2-8-5. Shasta Lake Elevation, February

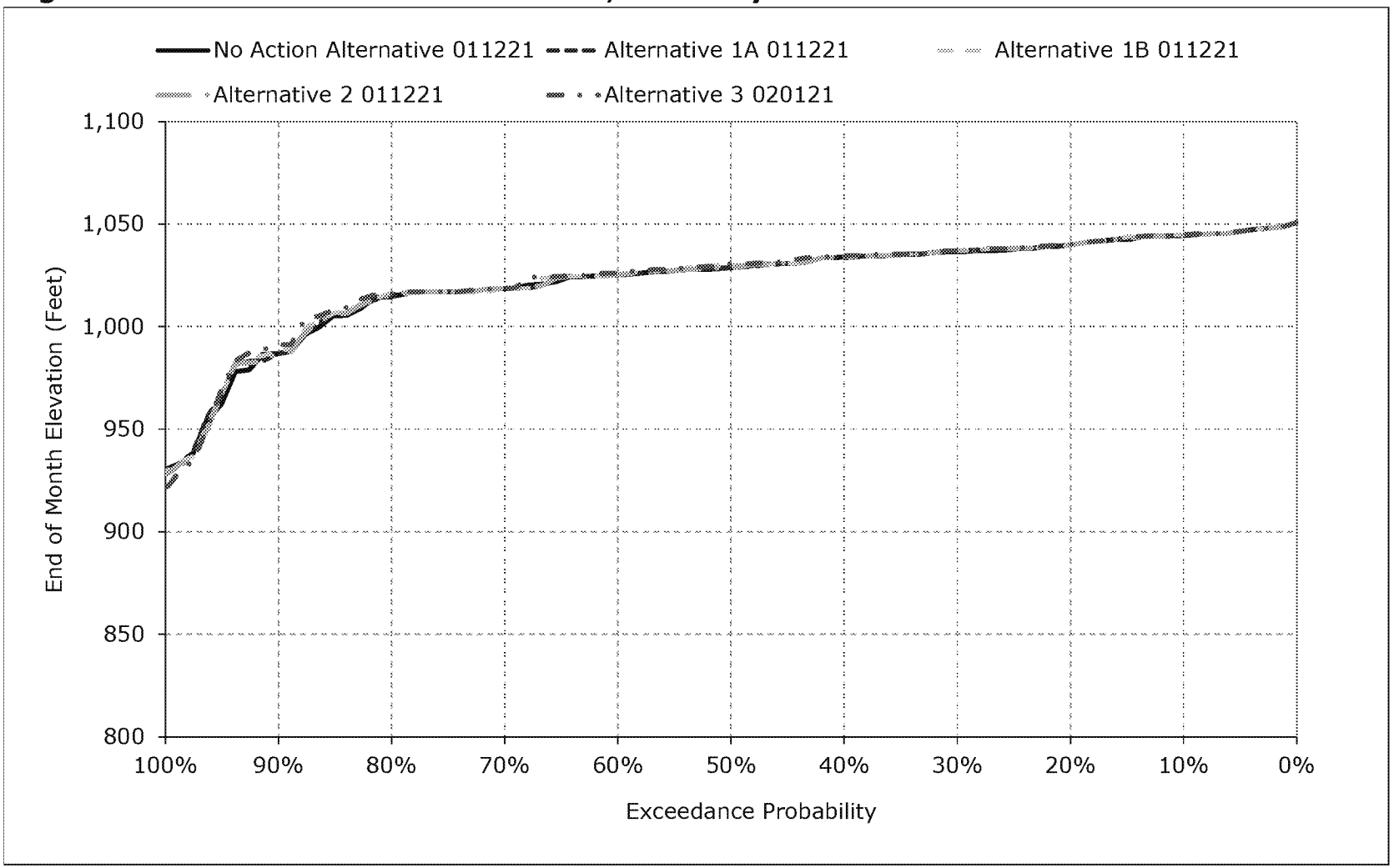


Figure 5B2-8-6. Shasta Lake Elevation, March

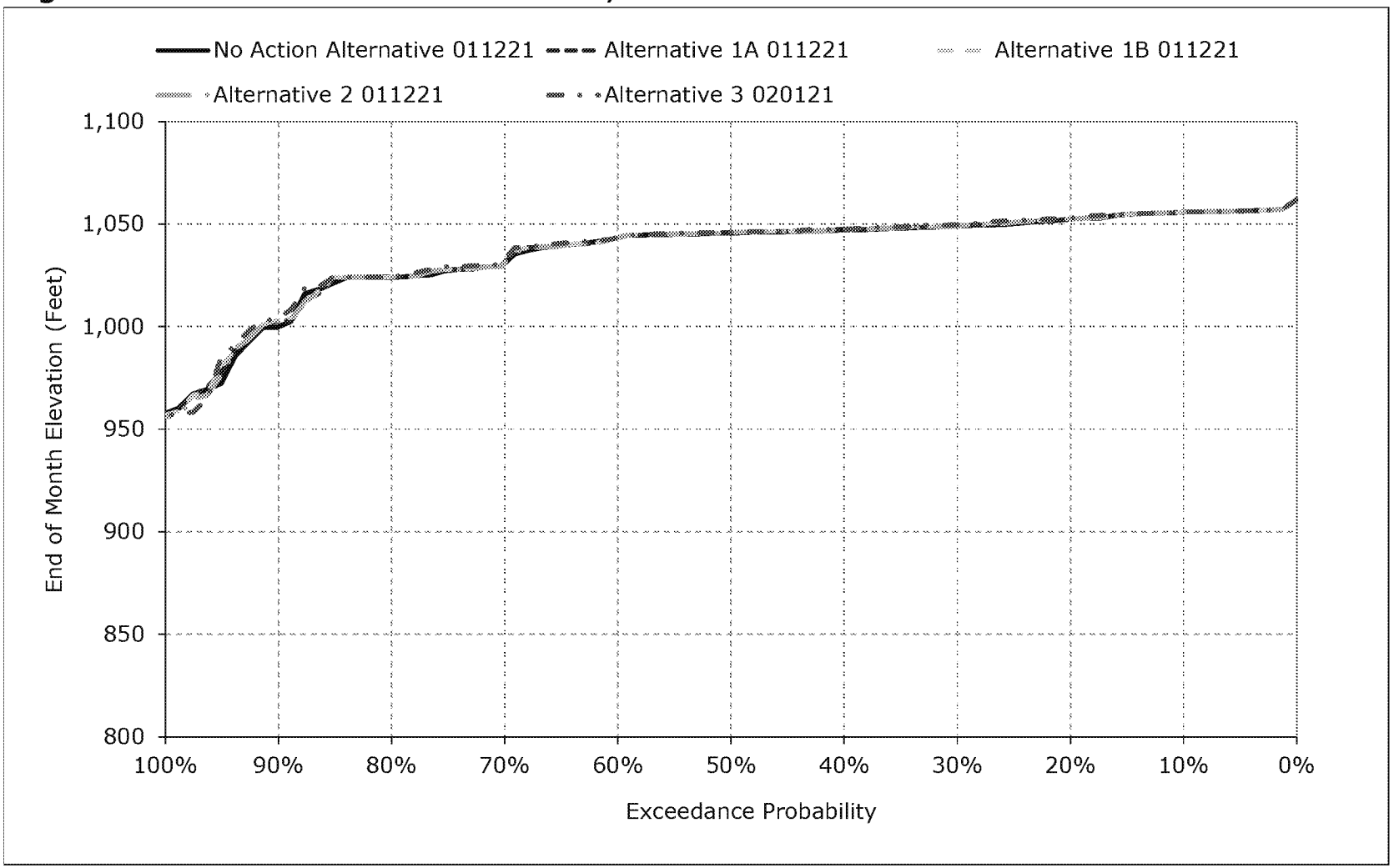


Figure 5B2-8-7. Shasta Lake Elevation, April

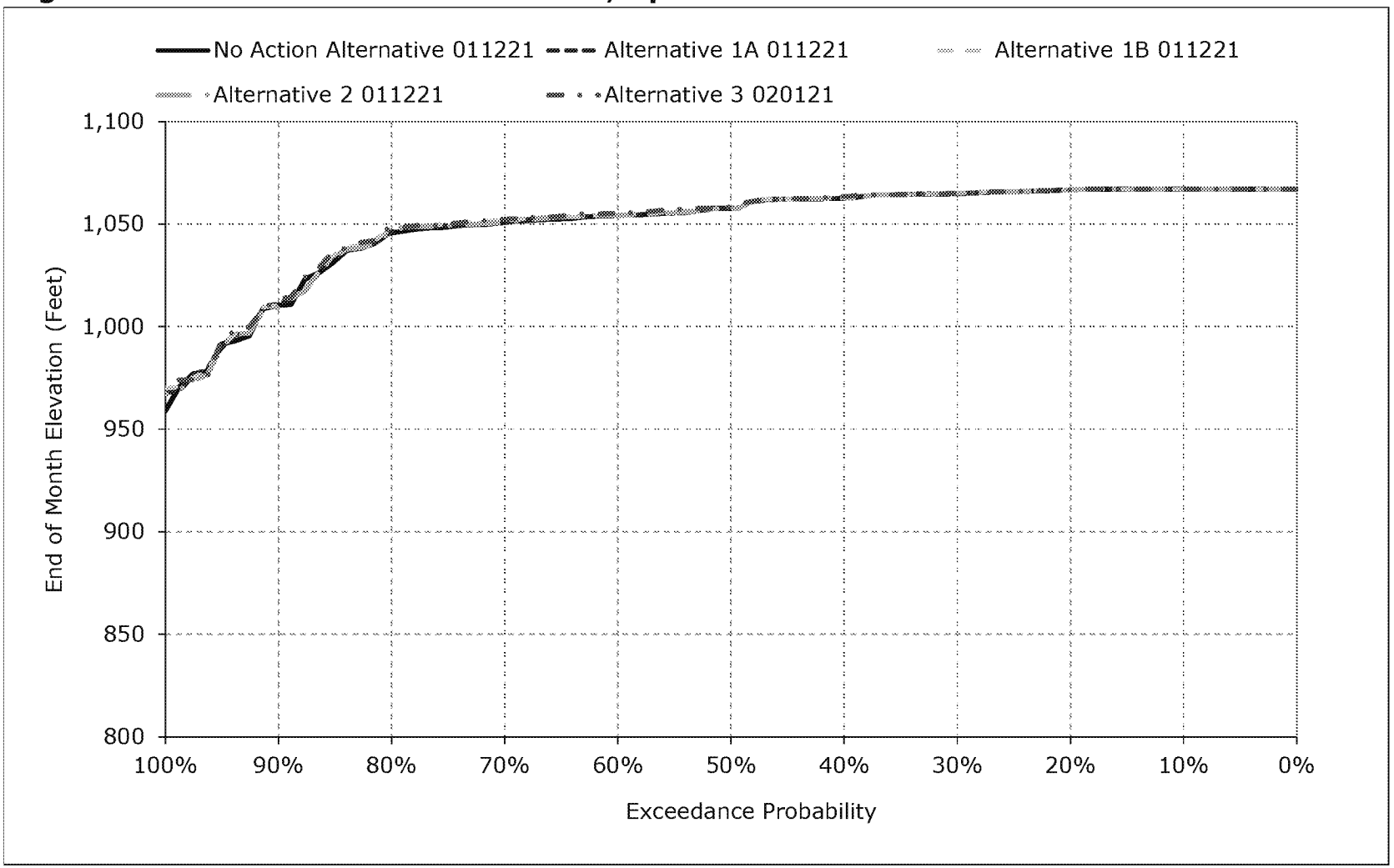


Figure 5B2-8-8. Shasta Lake Elevation, May

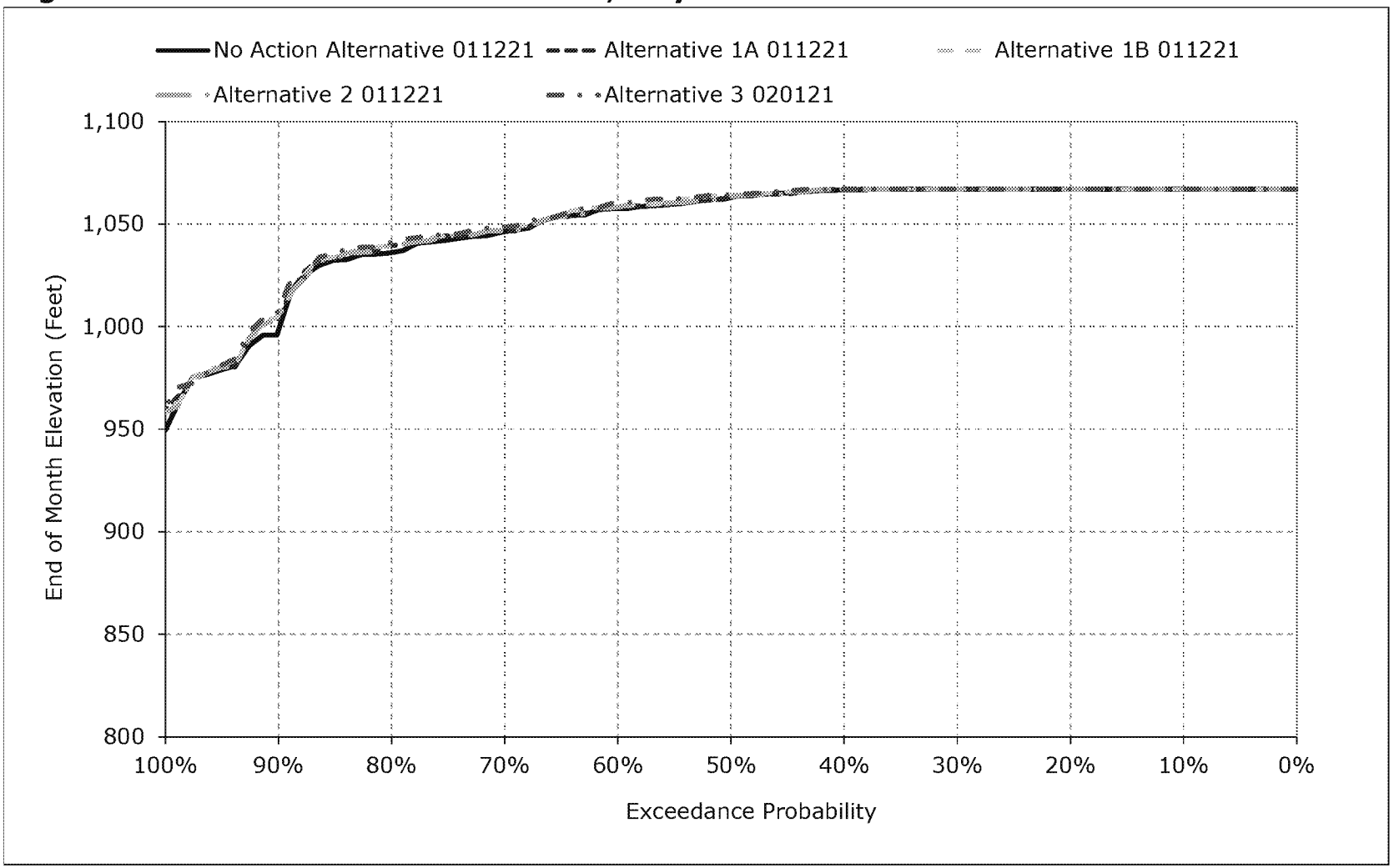


Figure 5B2-8-9. Shasta Lake Elevation, June

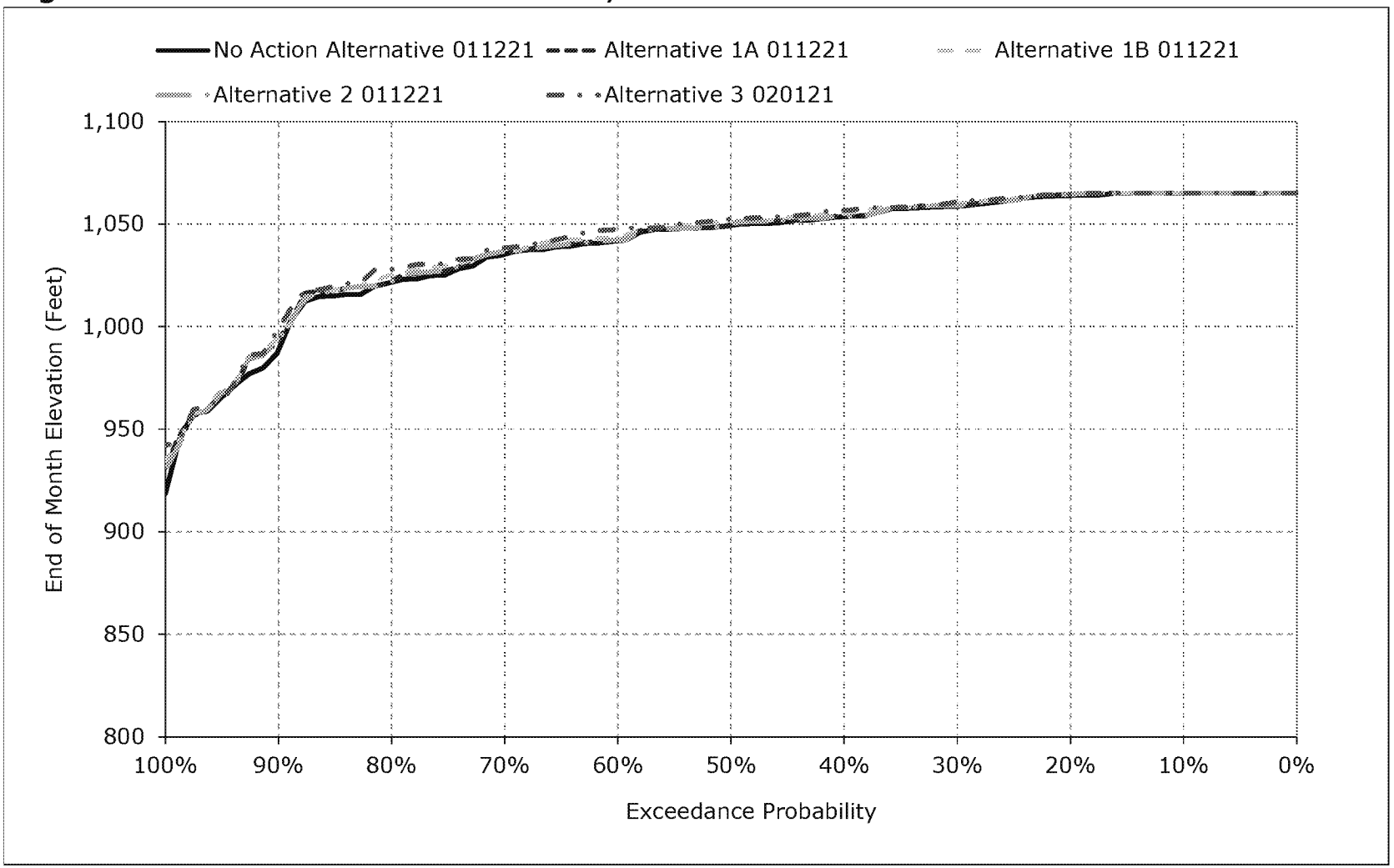


Figure 5B2-8-10. Shasta Lake Elevation, July

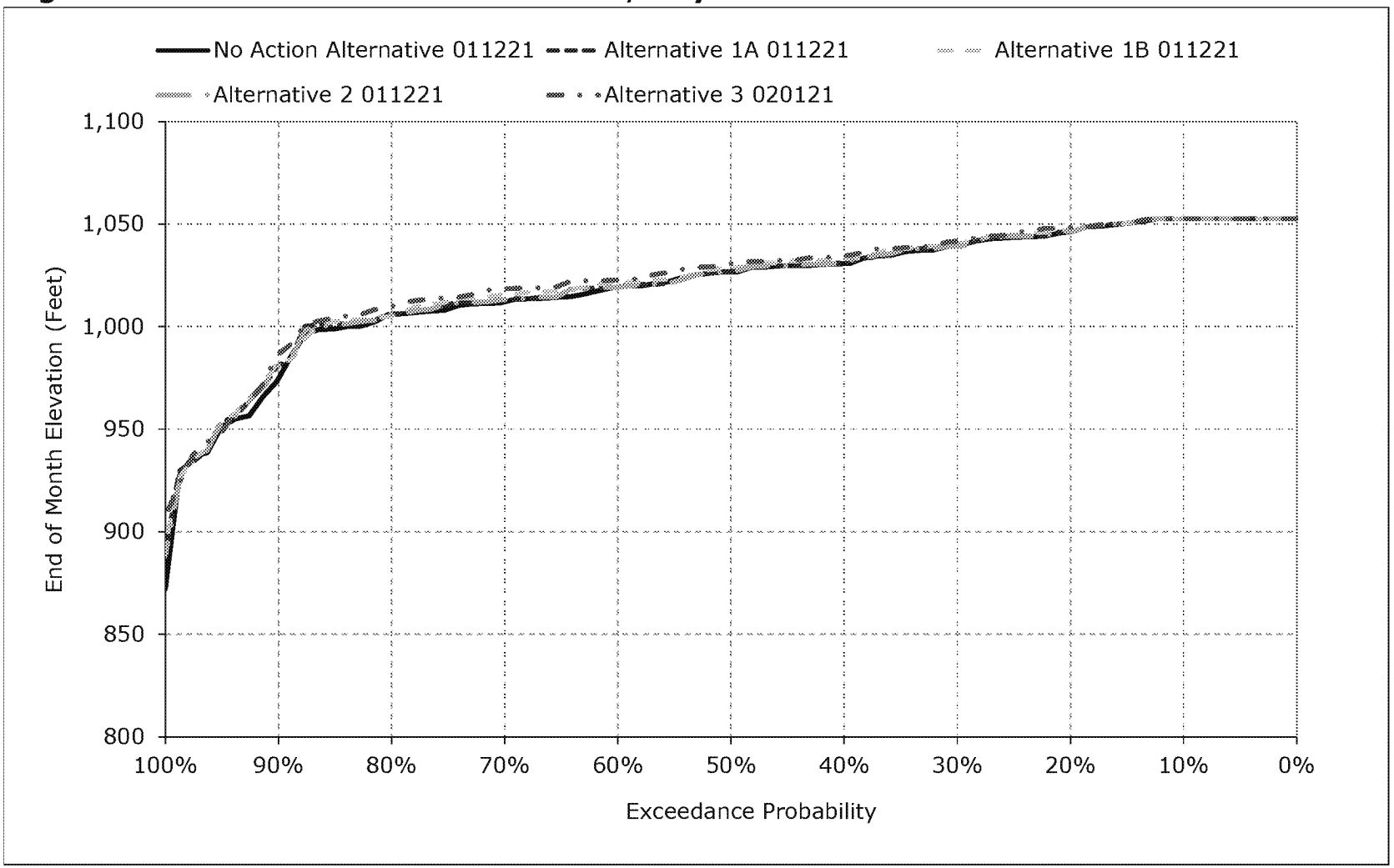


Figure 5B2-8-11. Shasta Lake Elevation, August

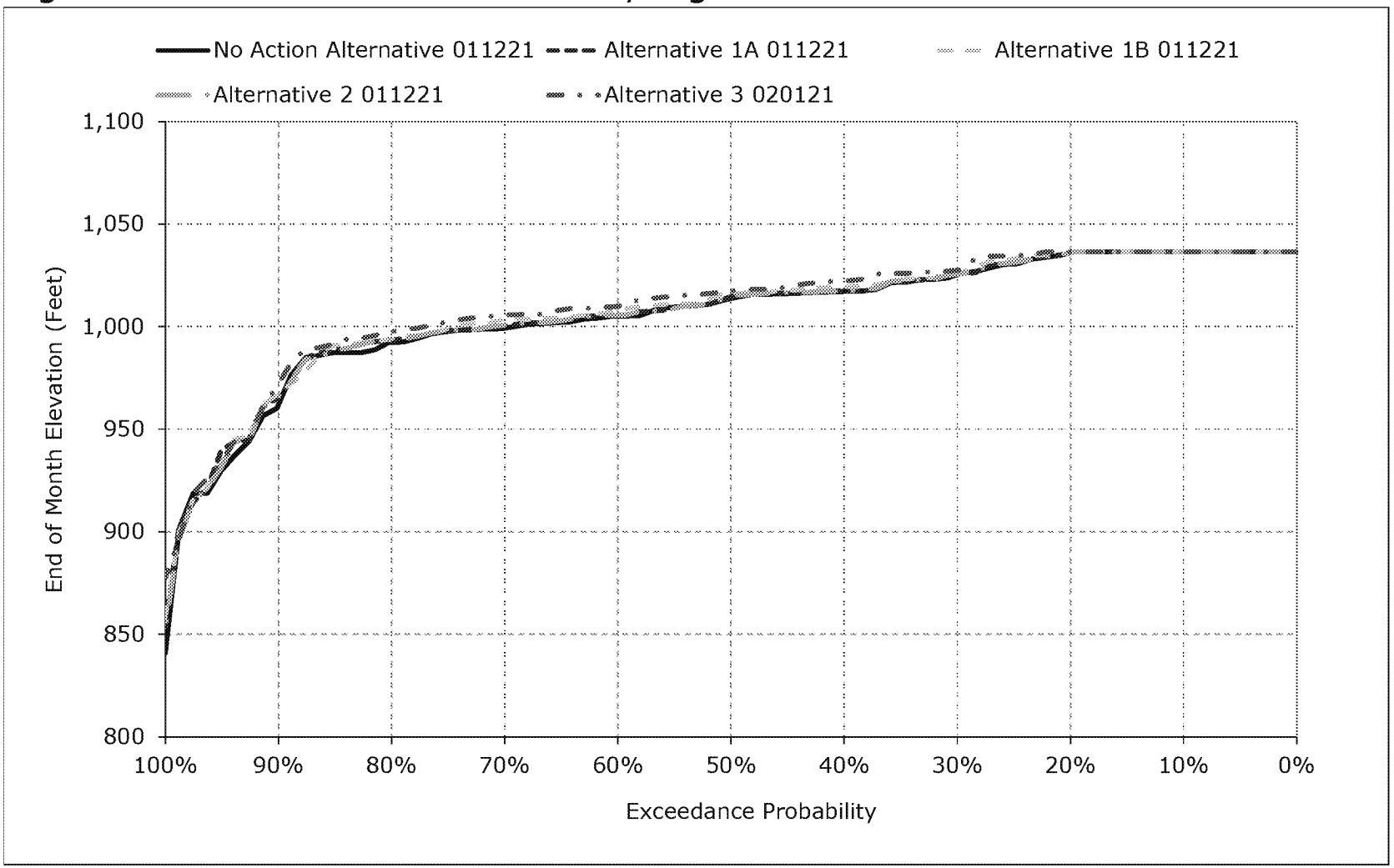


Figure 5B2-8-12. Shasta Lake Elevation, September

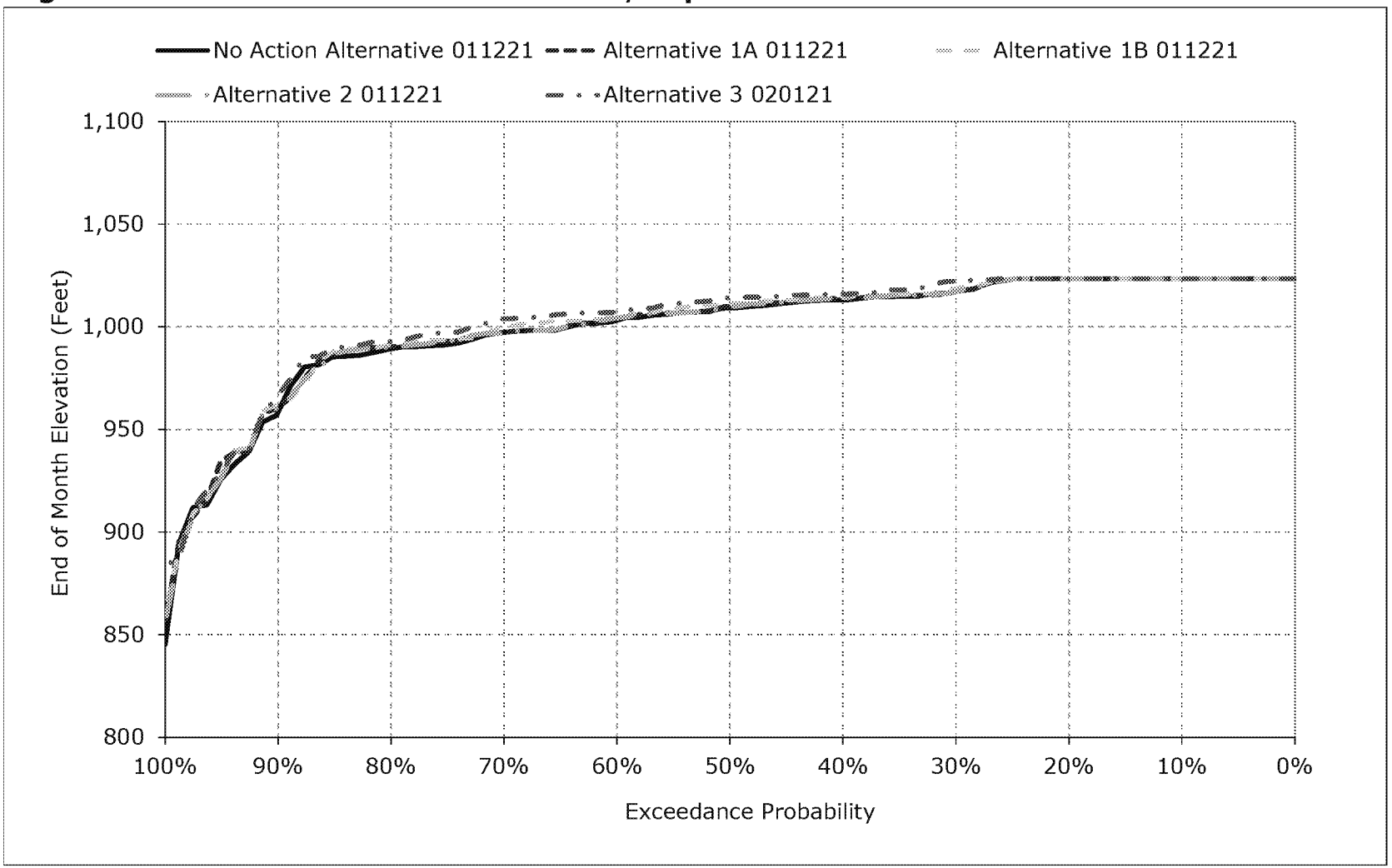


Table 5B2-9-1a. Shasta Lake Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	23,927	23,937	24,498	26,062	27,286	28,666	30,000	30,000	29,776	28,275	26,331	24,728
20%	23,927	23,937	24,394	25,730	26,733	28,248	29,968	30,000	29,636	27,519	26,287	24,728
30%	23,901	23,591	24,270	25,406	26,331	27,855	29,737	30,000	29,006	26,729	24,974	23,968
40%	23,227	23,316	24,024	24,776	26,022	27,631	29,478	29,953	28,395	25,622	23,963	23,466
50%	22,723	22,541	23,792	24,284	25,385	27,438	28,883	29,516	27,883	25,138	23,535	22,973
60%	21,869	22,189	23,176	23,937	24,951	27,172	28,460	28,862	26,978	24,225	22,476	22,252
70%	20,984	21,218	21,820	23,389	24,136	25,672	28,061	27,521	26,190	23,338	21,761	21,509
80%	20,008	19,626	20,086	21,983	23,663	24,817	27,449	26,291	24,510	22,599	20,897	20,531
90%	16,717	15,769	18,517	19,610	20,228	21,843	23,126	21,609	20,442	18,943	17,636	17,282
Long Term												
Full Simulation Period[a]	21,388	21,353	22,060	23,391	24,619	26,281	27,905	27,850	26,593	24,328	22,671	21,925
Water Year Types[b,c]												
Wet (32%)	23,571	23,486	23,961	25,002	25,763	26,932	29,127	29,732	29,243	27,324	25,625	24,213
Above Normal (15%)	22,573	22,247	23,197	24,261	25,445	27,695	29,770	29,818	28,576	25,838	24,020	23,130
Below Normal (17%)	22,373	22,518	22,888	23,629	25,092	26,956	28,974	28,944	27,475	24,852	23,150	22,718
Dry (22%)	20,862	21,110	22,101	22,518	24,456	26,674	27,698	27,185	25,345	22,992	21,481	21,254
Critical (15%)	15,115	14,841	15,777	20,061	21,006	22,079	22,454	21,523	19,713	17,721	16,147	15,846

Table 5B2-9-1b. Shasta Lake Surface Area, Alternative 1A 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	23,927	23,937	24,507	26,062	27,286	28,666	30,000	30,000	29,776	28,275	26,331	24,728
20%	23,927	23,937	24,394	25,730	26,733	28,251	29,968	30,000	29,713	27,540	26,295	24,728
30%	23,893	23,585	24,270	25,423	26,403	27,865	29,767	30,000	29,063	26,670	25,003	23,957
40%	23,249	23,331	24,013	24,811	25,996	27,612	29,482	30,000	28,426	25,731	23,984	23,559
50%	22,737	22,622	23,800	24,313	25,392	27,464	28,873	29,549	27,928	25,167	23,645	23,064
60%	21,772	22,245	23,222	23,937	24,968	27,172	28,474	28,959	27,033	24,212	22,543	22,372
70%	20,886	21,290	21,801	23,322	24,136	25,701	28,061	27,549	26,306	23,466	21,923	21,500
80%	20,219	19,647	20,130	22,097	23,734	24,817	27,503	26,702	24,554	22,625	21,050	20,636
90%	16,756	16,099	18,495	19,132	20,248	22,175	23,242	22,421	21,029	19,582	18,041	17,515
Long Term												
Full Simulation Period[a]	21,420	21,391	22,093	23,413	24,643	26,304	27,933	27,935	26,711	24,430	22,765	21,993
Water Year Types[b,c]												
Wet (32%)	23,578	23,500	23,984	25,009	25,762	26,932	29,132	29,740	29,264	27,333	25,634	24,222
Above Normal (15%)	22,598	22,269	23,223	24,315	25,458	27,698	29,770	29,835	28,604	25,880	24,081	23,182
Below Normal (17%)	22,426	22,550	22,911	23,596	25,084	26,949	28,976	28,984	27,543	24,894	23,202	22,762
Dry (22%)	20,873	21,140	22,062	22,519	24,473	26,712	27,747	27,294	25,548	23,145	21,560	21,273
Critical (15%)	15,211	14,966	15,959	20,180	21,142	22,186	22,562	21,859	20,058	18,075	16,533	16,157

Table 5B2-9-1c. Shasta Lake Surface Area, Alternative 1A 011221 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	9	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	3	0	0	77	21	7	0
30%	-9	-7	-1	17	72	11	30	0	58	-59	30	-11
40%	22	15	-10	35	-25	-19	4	47	31	109	21	93
50%	13	82	8	29	7	26	-9	33	45	29	110	91
60%	-97	57	46	0	16	1	14	97	54	-13	67	121
70%	-98	72	-18	-67	0	29	0	28	116	129	163	-9
80%	211	21	44	114	70	0	55	411	44	26	153	105
90%	39	330	-22	-478	20	332	116	811	587	639	405	234
Long Term												
Full Simulation Period[a]	31	38	34	22	24	23	29	85	117	102	94	68
Water Year Types[b,c]												
Wet (32%)	7	14	24	8	0	0	5	9	21	9	9	8
Above Normal (15%)	24	21	26	53	13	3	0	17	28	42	61	52
Below Normal (17%)	53	32	23	-32	-7	-7	2	40	68	41	51	45
Dry (22%)	11	30	-38	1	18	38	49	109	203	153	79	19
Critical (15%)	96	125	182	119	136	107	108	336	345	354	386	311

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-9-2a. Shasta Lake Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	23,927	23,937	24,498	26,062	27,286	28,666	30,000	30,000	29,776	28,275	26,331	24,728
20%	23,927	23,937	24,394	25,730	26,733	28,248	29,968	30,000	29,636	27,519	26,287	24,728
30%	23,901	23,591	24,270	25,406	26,331	27,855	29,737	30,000	29,006	26,729	24,974	23,968
40%	23,227	23,316	24,024	24,776	26,022	27,631	29,478	29,953	28,395	25,622	23,963	23,466
50%	22,723	22,541	23,792	24,284	25,385	27,438	28,883	29,516	27,883	25,138	23,535	22,973
60%	21,869	22,189	23,176	23,937	24,951	27,172	28,460	28,862	26,978	24,225	22,476	22,252
70%	20,984	21,218	21,820	23,389	24,136	25,672	28,061	27,521	26,190	23,338	21,761	21,509
80%	20,008	19,626	20,086	21,983	23,663	24,817	27,449	26,291	24,510	22,599	20,897	20,531
90%	16,717	15,769	18,517	19,610	20,228	21,843	23,126	21,609	20,442	18,943	17,636	17,282
Long Term												
Full Simulation Period[a]	21,388	21,353	22,060	23,391	24,619	26,281	27,905	27,850	26,593	24,328	22,671	21,925
Water Year Types[b,c]												
Wet (32%)	23,571	23,486	23,961	25,002	25,763	26,932	29,127	29,732	29,243	27,324	25,625	24,213
Above Normal (15%)	22,573	22,247	23,197	24,261	25,445	27,695	29,770	29,818	28,576	25,838	24,020	23,130
Below Normal (17%)	22,373	22,518	22,888	23,629	25,092	26,956	28,974	28,944	27,475	24,852	23,150	22,718
Dry (22%)	20,862	21,110	22,101	22,518	24,456	26,674	27,698	27,185	25,345	22,992	21,481	21,254
Critical (15%)	15,115	14,841	15,777	20,061	21,006	22,079	22,454	21,523	19,713	17,721	16,147	15,846

Table 5B2-9-2b. Shasta Lake Surface Area, Alternative 1B 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	23,927	23,937	24,504	26,062	27,350	28,666	30,000	30,000	29,776	28,275	26,331	24,728
20%	23,927	23,937	24,438	25,730	26,733	28,260	29,968	30,000	29,713	27,590	26,300	24,728
30%	23,883	23,652	24,283	25,455	26,403	27,895	29,767	30,000	29,171	26,836	25,073	24,137
40%	23,540	23,377	24,013	24,866	26,038	27,656	29,481	30,000	28,584	25,904	24,242	23,609
50%	22,824	22,656	23,834	24,382	25,523	27,464	28,873	29,660	28,098	25,376	23,844	23,231
60%	21,966	22,354	23,269	23,937	24,985	27,176	28,502	28,994	27,186	24,455	22,824	22,401
70%	21,124	21,414	21,905	23,387	24,105	25,815	28,180	27,653	26,352	23,769	22,238	21,831
80%	20,350	19,966	20,291	22,177	23,802	24,828	27,612	26,680	24,954	22,511	21,127	20,758
90%	16,763	16,169	18,497	19,147	20,378	22,286	23,178	22,547	21,164	19,735	18,194	17,666
Long Term												
Full Simulation Period[a]	21,514	21,452	22,148	23,467	24,676	26,331	27,963	27,988	26,799	24,544	22,875	22,082
Water Year Types[b,c]												
Wet (32%)	23,578	23,526	24,011	25,024	25,762	26,932	29,132	29,740	29,264	27,333	25,634	24,219
Above Normal (15%)	22,763	22,442	23,330	24,374	25,490	27,709	29,770	29,837	28,779	26,172	24,388	23,375
Below Normal (17%)	22,576	22,641	22,975	23,652	25,095	26,958	28,984	29,067	27,679	25,089	23,400	22,938
Dry (22%)	21,020	21,152	22,130	22,641	24,573	26,787	27,850	27,427	25,658	23,238	21,662	21,387
Critical (15%)	15,295	15,030	15,995	20,211	21,172	22,233	22,605	21,927	20,166	18,195	16,592	16,206

Table 5B2-9-2c. Shasta Lake Surface Area, Alternative 1B 011221 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	6	0	64	0	0	0	0	0	0	0
20%	0	0	45	0	0	12	0	0	77	71	12	0
30%	-18	60	13	49	72	40	30	0	165	107	100	168
40%	313	61	-10	90	16	25	3	47	189	282	279	143
50%	101	115	42	98	138	26	-9	144	215	239	309	258
60%	97	165	93	0	34	5	42	132	208	230	348	150
70%	140	196	85	-2	-31	143	119	132	162	432	477	322
80%	342	340	205	194	139	11	163	389	444	-89	230	227
90%	46	400	-21	-463	150	442	52	938	722	792	557	385
Long Term												
Full Simulation Period[a]	126	99	89	76	57	50	59	139	206	216	204	157
Water Year Types[b,c]												
Wet (32%)	7	39	50	22	0	0	5	9	21	9	9	5
Above Normal (15%)	189	194	133	113	45	14	0	19	202	334	368	246
Below Normal (17%)	203	123	87	24	3	2	10	123	204	237	249	221
Dry (22%)	158	42	29	122	117	113	152	242	313	246	181	133
Critical (15%)	180	190	218	150	166	153	152	404	452	474	445	360

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-9-3a. Shasta Lake Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	23,927	23,937	24,498	26,062	27,286	28,666	30,000	30,000	29,776	28,275	26,331	24,728
20%	23,927	23,937	24,394	25,730	26,733	28,248	29,968	30,000	29,636	27,519	26,287	24,728
30%	23,901	23,591	24,270	25,406	26,331	27,855	29,737	30,000	29,006	26,729	24,974	23,968
40%	23,227	23,316	24,024	24,776	26,022	27,631	29,478	29,953	28,395	25,622	23,963	23,466
50%	22,723	22,541	23,792	24,284	25,385	27,438	28,883	29,516	27,883	25,138	23,535	22,973
60%	21,869	22,189	23,176	23,937	24,951	27,172	28,460	28,862	26,978	24,225	22,476	22,252
70%	20,984	21,218	21,820	23,389	24,136	25,672	28,061	27,521	26,190	23,338	21,761	21,509
80%	20,008	19,626	20,086	21,983	23,663	24,817	27,449	26,291	24,510	22,599	20,897	20,531
90%	16,717	15,769	18,517	19,610	20,228	21,843	23,126	21,609	20,442	18,943	17,636	17,282
Long Term												
Full Simulation Period[a]	21,388	21,353	22,060	23,391	24,619	26,281	27,905	27,850	26,593	24,328	22,671	21,925
Water Year Types[b,c]												
Wet (32%)	23,571	23,486	23,961	25,002	25,763	26,932	29,127	29,732	29,243	27,324	25,625	24,213
Above Normal (15%)	22,573	22,247	23,197	24,261	25,445	27,695	29,770	29,818	28,576	25,838	24,020	23,130
Below Normal (17%)	22,373	22,518	22,888	23,629	25,092	26,956	28,974	28,944	27,475	24,852	23,150	22,718
Dry (22%)	20,862	21,110	22,101	22,518	24,456	26,674	27,698	27,185	25,345	22,992	21,481	21,254
Critical (15%)	15,115	14,841	15,777	20,061	21,006	22,079	22,454	21,523	19,713	17,721	16,147	15,846

Table 5B2-9-3b. Shasta Lake Surface Area, Alternative 2 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	23,927	23,937	24,507	26,062	27,286	28,666	30,000	30,000	29,776	28,275	26,331	24,728
20%	23,927	23,937	24,394	25,730	26,733	28,251	29,968	30,000	29,714	27,539	26,295	24,728
30%	23,889	23,585	24,270	25,423	26,403	27,865	29,767	30,000	29,063	26,668	25,006	23,968
40%	23,249	23,331	24,013	24,811	25,996	27,631	29,516	30,000	28,426	25,752	23,985	23,559
50%	22,736	22,637	23,799	24,313	25,393	27,464	28,877	29,550	27,962	25,167	23,638	23,064
60%	21,797	22,256	23,222	23,938	24,966	27,172	28,475	28,962	27,033	24,220	22,536	22,370
70%	20,886	21,290	21,959	23,397	24,136	25,701	28,061	27,568	26,344	23,477	21,942	21,500
80%	20,238	19,651	20,118	22,005	23,739	24,817	27,498	26,725	24,554	22,625	21,050	20,646
90%	16,829	16,122	18,378	19,193	20,263	22,187	23,015	22,410	21,026	19,580	18,041	17,516
Long Term												
Full Simulation Period[a]	21,406	21,380	22,078	23,404	24,636	26,297	27,925	27,928	26,705	24,426	22,751	21,978
Water Year Types[b,c]												
Wet (32%)	23,578	23,500	23,984	25,009	25,762	26,932	29,132	29,740	29,264	27,333	25,634	24,221
Above Normal (15%)	22,598	22,269	23,224	24,321	25,457	27,698	29,770	29,835	28,605	25,882	24,084	23,182
Below Normal (17%)	22,396	22,522	22,881	23,564	25,072	26,935	28,961	28,969	27,528	24,884	23,188	22,749
Dry (22%)	20,882	21,168	22,088	22,531	24,484	26,721	27,756	27,303	25,558	23,154	21,568	21,282
Critical (15%)	15,138	14,883	15,848	20,132	21,093	22,138	22,513	21,815	20,020	18,043	16,437	16,061

Table 5B2-9-3c. Shasta Lake Surface Area, Alternative 2 011221 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	9	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	3	0	0	78	20	7	0
30%	-12	-7	-1	17	72	11	30	0	58	-61	32	0
40%	22	15	-10	35	-25	0	38	47	31	130	22	93
50%	13	96	7	29	8	26	-6	34	79	29	104	91
60%	-72	68	46	0	15	1	14	99	55	-5	60	119
70%	-98	72	139	8	0	29	0	47	155	139	181	-9
80%	230	26	32	22	76	0	49	434	44	26	153	115
90%	112	353	-139	-417	34	344	-111	801	584	637	404	234
Long Term												
Full Simulation Period[a]	18	27	18	13	18	16	21	78	111	97	80	53
Water Year Types[b,c]												
Wet (32%)	7	14	23	8	0	0	5	9	21	9	9	8
Above Normal (15%)	25	22	27	59	13	3	0	17	28	44	63	52
Below Normal (17%)	23	5	-7	-64	-20	-21	-13	26	53	31	38	31
Dry (22%)	20	57	-13	13	29	47	58	118	213	162	87	28
Critical (15%)	23	42	71	71	87	58	59	292	307	322	290	214

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-9-4a. Shasta Lake Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	23,927	23,937	24,498	26,062	27,286	28,666	30,000	30,000	29,776	28,275	26,331	24,728
20%	23,927	23,937	24,394	25,730	26,733	28,248	29,968	30,000	29,636	27,519	26,287	24,728
30%	23,901	23,591	24,270	25,406	26,331	27,855	29,737	30,000	29,006	26,729	24,974	23,968
40%	23,227	23,316	24,024	24,776	26,022	27,631	29,478	29,953	28,395	25,622	23,963	23,466
50%	22,723	22,541	23,792	24,284	25,385	27,438	28,883	29,516	27,883	25,138	23,535	22,973
60%	21,869	22,189	23,176	23,937	24,951	27,172	28,460	28,862	26,978	24,225	22,476	22,252
70%	20,984	21,218	21,820	23,389	24,136	25,672	28,061	27,521	26,190	23,338	21,761	21,509
80%	20,008	19,626	20,086	21,983	23,663	24,817	27,449	26,291	24,510	22,599	20,897	20,531
90%	16,717	15,769	18,517	19,610	20,228	21,843	23,126	21,609	20,442	18,943	17,636	17,282
Long Term												
Full Simulation Period[a]	21,388	21,353	22,060	23,391	24,619	26,281	27,905	27,850	26,593	24,328	22,671	21,925
Water Year Types[b,c]												
Wet (32%)	23,571	23,486	23,961	25,002	25,763	26,932	29,127	29,732	29,243	27,324	25,625	24,213
Above Normal (15%)	22,573	22,247	23,197	24,261	25,445	27,695	29,770	29,818	28,576	25,838	24,020	23,130
Below Normal (17%)	22,373	22,518	22,888	23,629	25,092	26,956	28,974	28,944	27,475	24,852	23,150	22,718
Dry (22%)	20,862	21,110	22,101	22,518	24,456	26,674	27,698	27,185	25,345	22,992	21,481	21,254
Critical (15%)	15,115	14,841	15,777	20,061	21,006	22,079	22,454	21,523	19,713	17,721	16,147	15,846

Table 5B2-9-4b. Shasta Lake Surface Area, Alternative 3 020121, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	23,927	23,937	24,492	26,062	27,350	28,666	30,000	30,000	29,776	28,275	26,331	24,728
20%	23,927	23,937	24,431	25,803	26,782	28,314	29,968	30,000	29,713	27,773	26,331	24,728
30%	23,927	23,675	24,283	25,484	26,403	27,928	29,767	30,000	29,259	26,958	25,233	24,587
40%	23,768	23,424	24,013	25,150	26,101	27,668	29,575	30,000	28,762	26,096	24,604	23,815
50%	22,964	22,967	23,867	24,525	25,601	27,495	29,021	29,691	28,244	25,619	23,981	23,590
60%	22,411	22,636	23,446	23,938	25,098	27,176	28,590	29,194	27,660	24,654	23,077	22,767
70%	21,498	21,789	22,180	23,720	24,136	25,869	28,238	27,802	26,579	24,112	22,560	22,329
80%	20,564	20,264	20,473	22,225	23,832	24,838	27,754	26,899	25,291	23,033	21,547	20,983
90%	17,054	16,339	19,044	19,981	20,766	22,391	23,530	22,839	21,684	20,207	18,673	18,148
Long Term												
Full Simulation Period[a]	21,714	21,643	22,274	23,588	24,743	26,388	28,024	28,059	26,934	24,737	23,145	22,332
Water Year Types[b,c]												
Wet (32%)	23,578	23,523	24,006	25,073	25,762	26,932	29,132	29,740	29,264	27,334	25,634	24,222
Above Normal (15%)	22,999	22,635	23,454	24,576	25,487	27,709	29,770	29,837	28,848	26,358	24,895	23,738
Below Normal (17%)	22,797	22,829	23,084	23,745	25,158	27,014	29,020	29,108	27,908	25,394	23,743	23,249
Dry (22%)	21,421	21,560	22,374	22,810	24,724	26,895	27,957	27,580	25,916	23,608	22,114	21,855
Critical (15%)	15,565	15,318	16,242	20,367	21,333	22,398	22,817	22,135	20,365	18,414	16,849	16,475

Table 5B2-9-4c. Shasta Lake Surface Area, Alternative 3 020121 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	-6	0	64	0	0	0	0	0	0	0
20%	0	0	38	73	49	66	0	0	77	254	43	0
30%	25	84	13	78	72	74	30	0	253	230	259	619
40%	541	108	-10	374	80	37	97	47	367	474	640	349
50%	241	427	75	241	216	57	138	175	361	481	446	617
60%	542	447	269	0	146	5	130	332	682	429	601	516
70%	514	572	361	331	0	197	177	281	389	774	799	820
80%	556	638	387	242	168	21	305	608	781	433	651	452
90%	337	569	527	371	537	548	404	1,230	1,242	1,264	1,036	867
Long Term												
Full Simulation Period[a]	325	290	214	197	124	107	120	210	341	408	474	406
Water Year Types[b,c]												
Wet (32%)	8	37	45	72	0	0	5	9	21	10	9	8
Above Normal (15%)	425	387	258	314	43	14	0	19	271	521	874	608
Below Normal (17%)	424	311	196	116	66	58	46	165	433	542	593	532
Dry (22%)	559	450	274	291	268	221	259	395	571	616	633	601
Critical (15%)	449	477	465	305	327	318	364	612	652	693	702	629

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Figure 5B2-9-1. Shasta Lake Surface Area, October

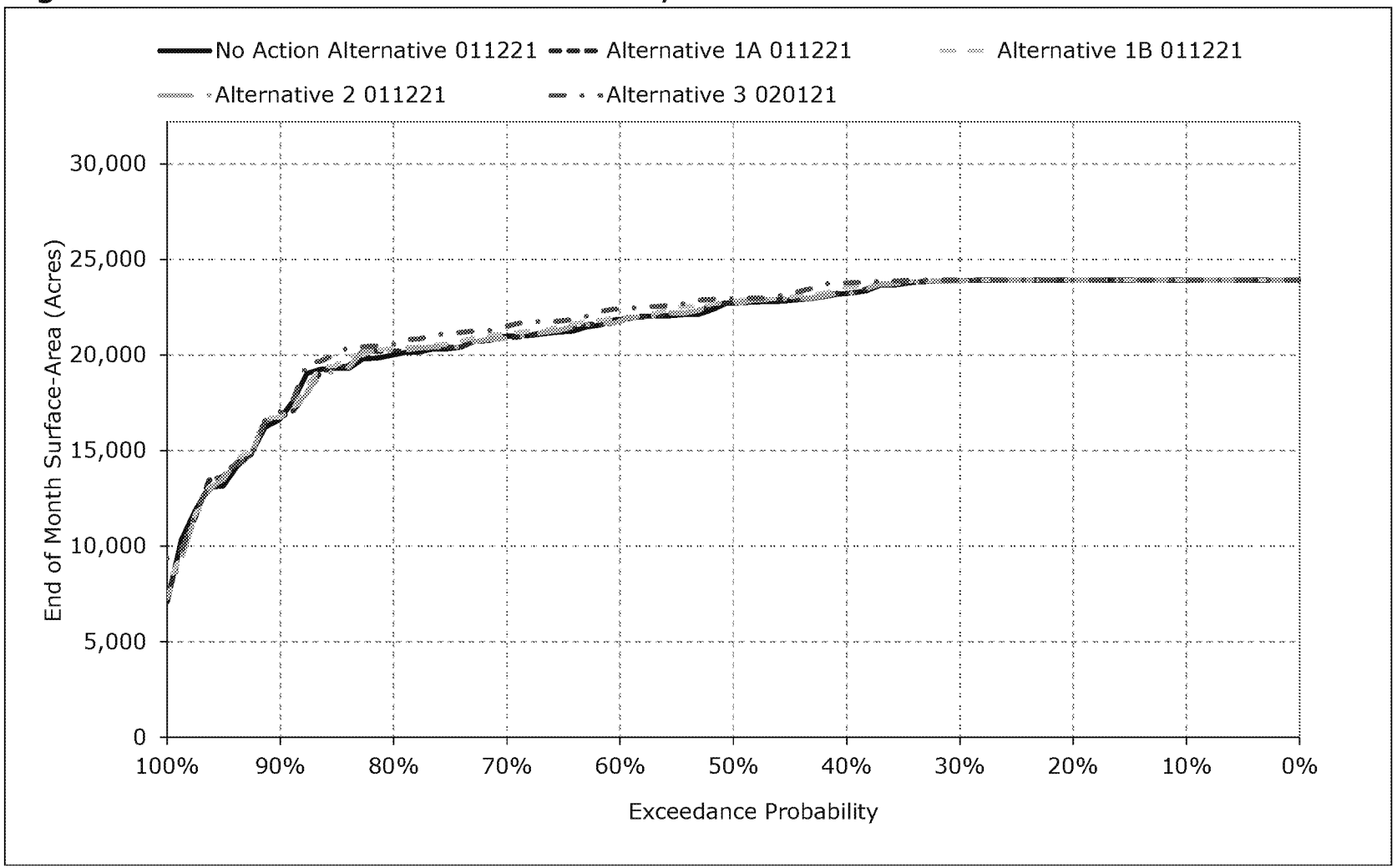


Figure 5B2-9-2. Shasta Lake Surface Area, November

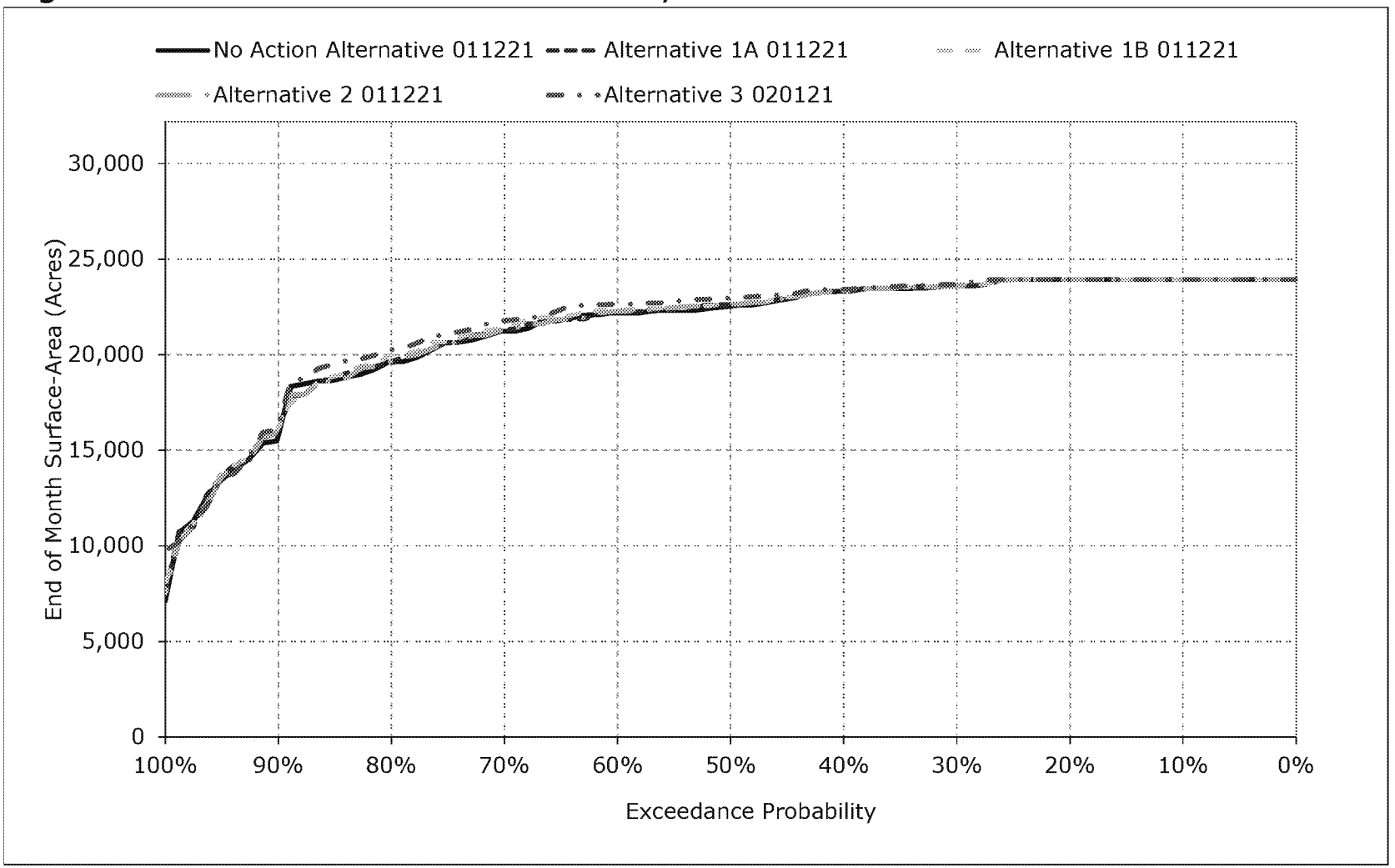


Figure 5B2-9-3. Shasta Lake Surface Area, December

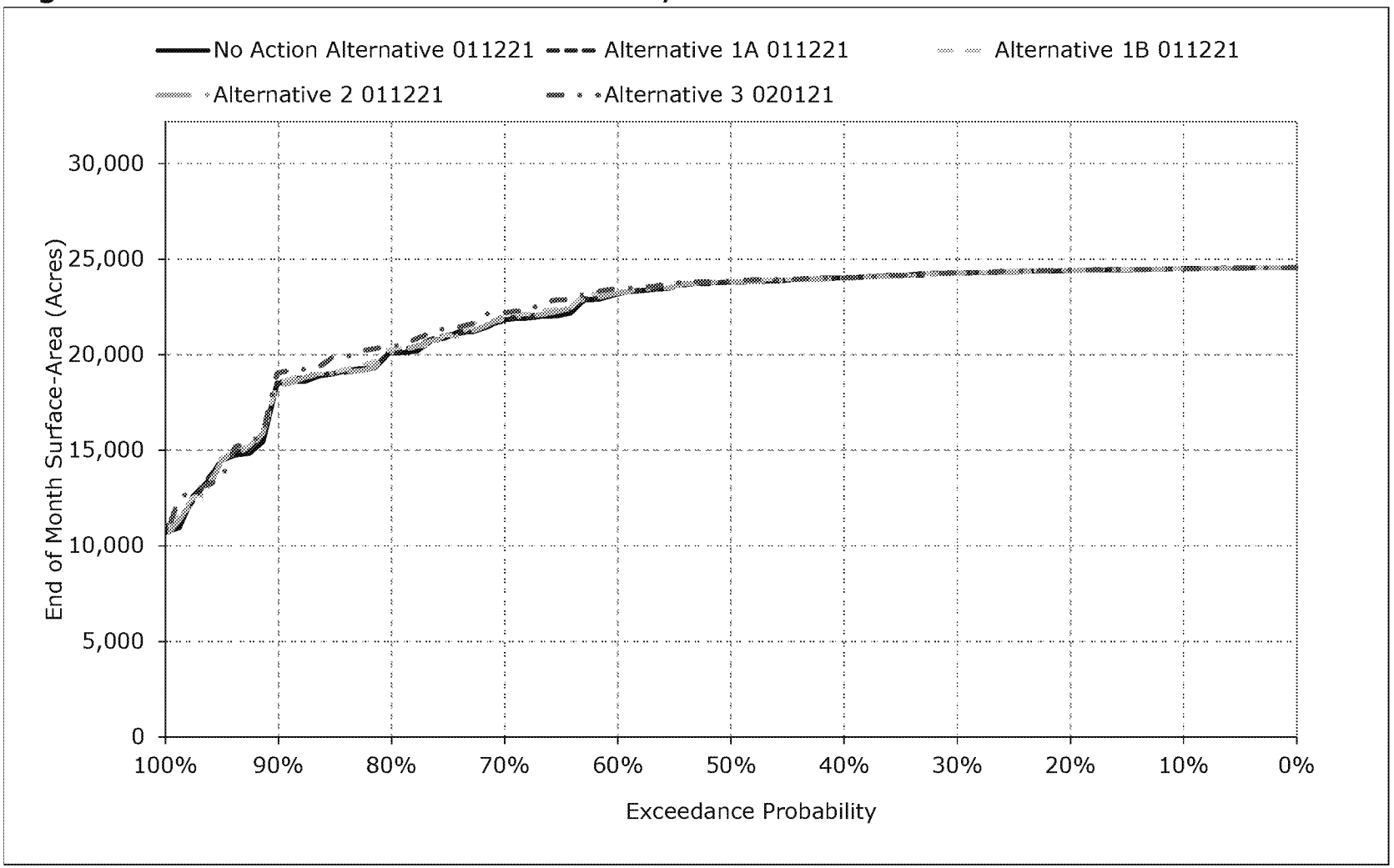


Figure 5B2-9-4. Shasta Lake Surface Area, January

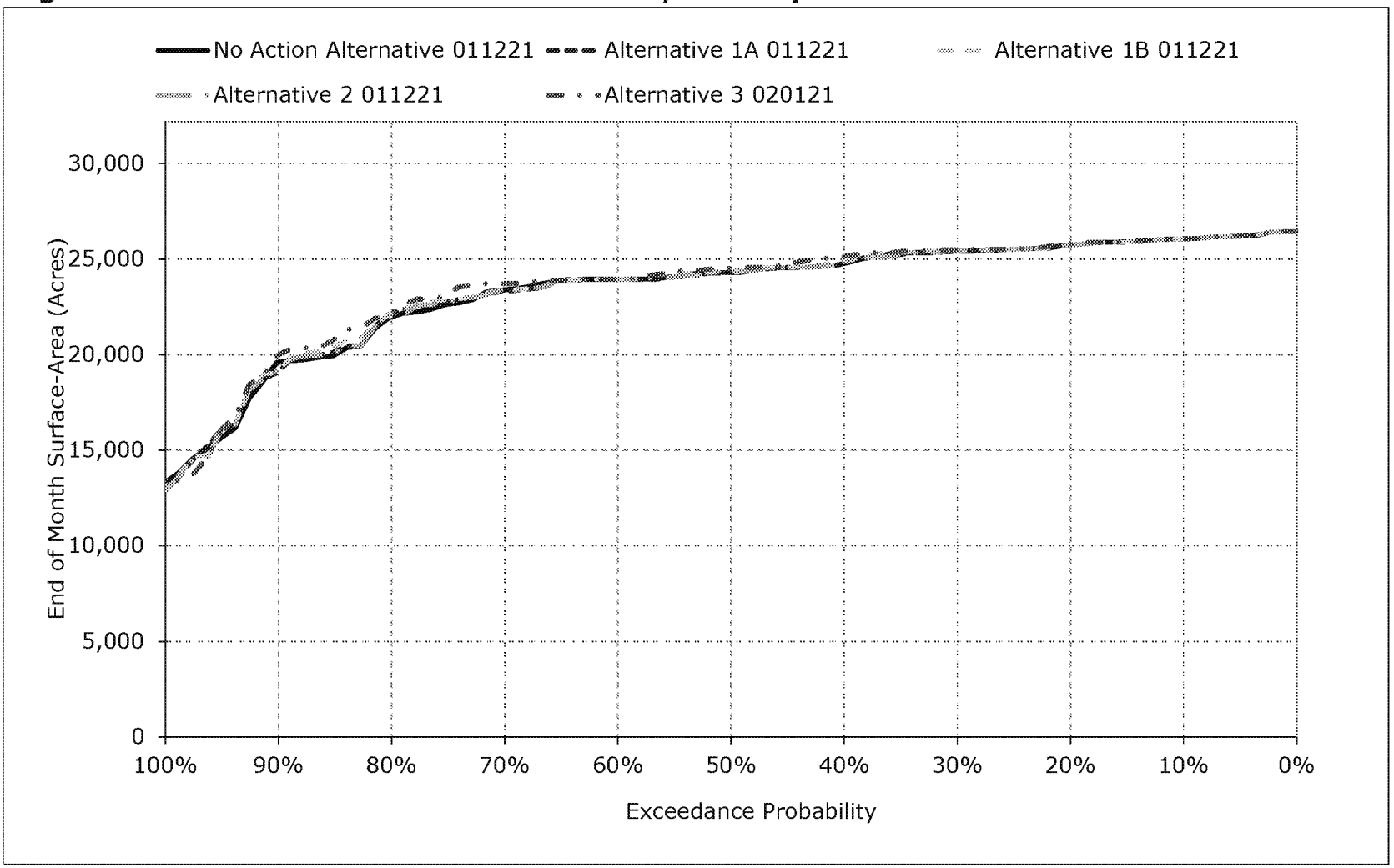


Figure 5B2-9-5. Shasta Lake Surface Area, February

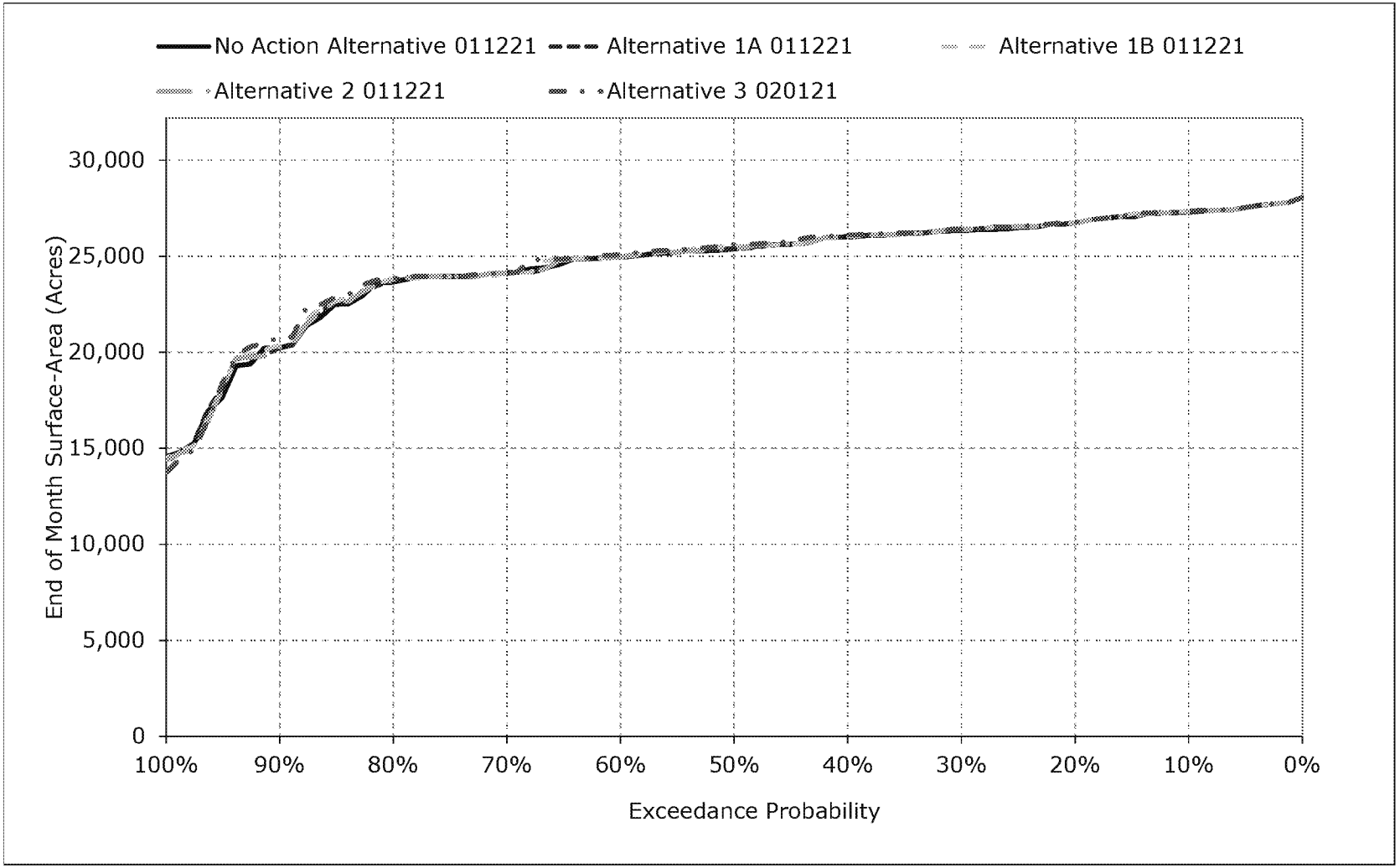


Figure 5B2-9-6. Shasta Lake Surface Area, March

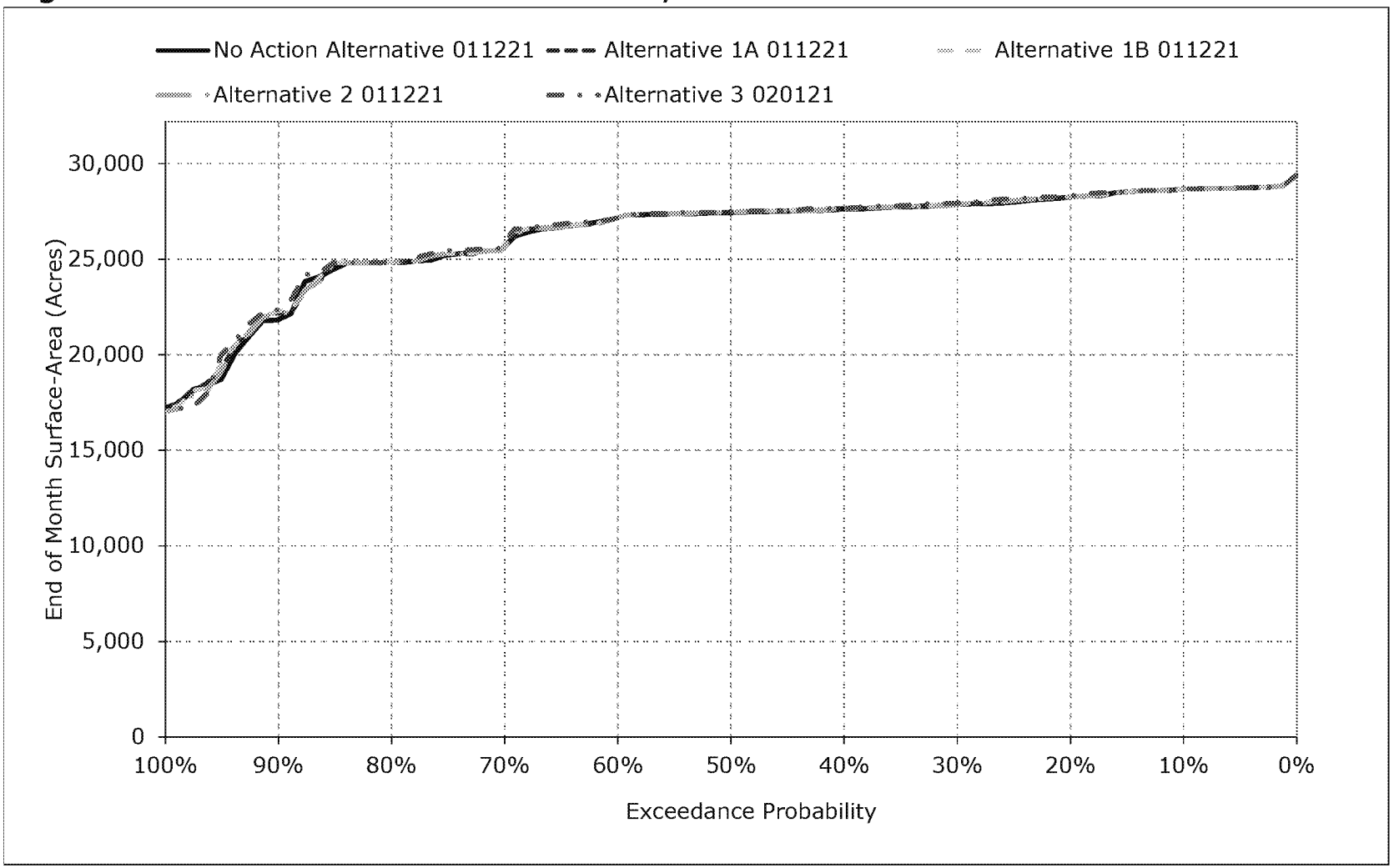


Figure 5B2-9-7. Shasta Lake Surface Area, April

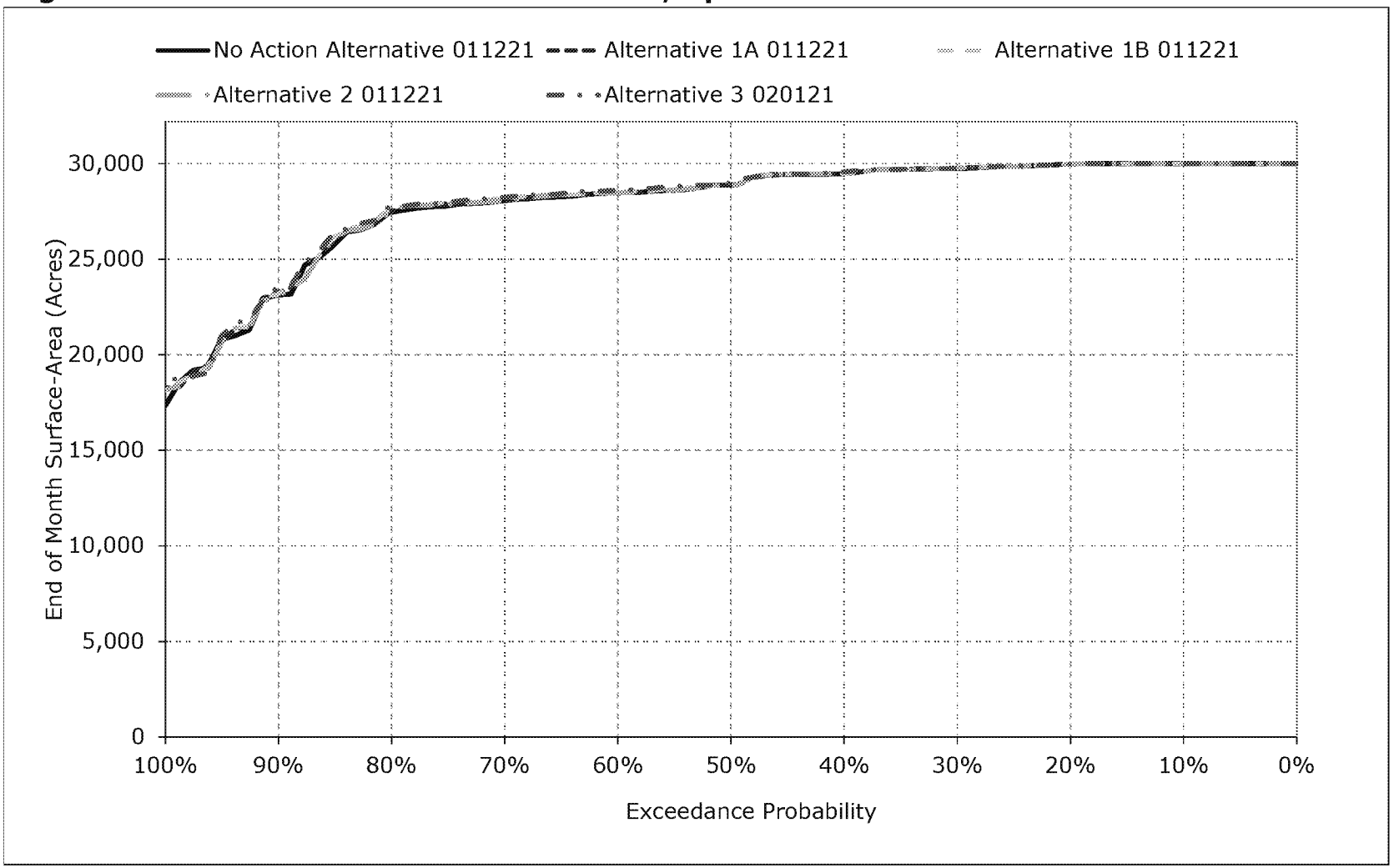


Figure 5B2-9-8. Shasta Lake Surface Area, May

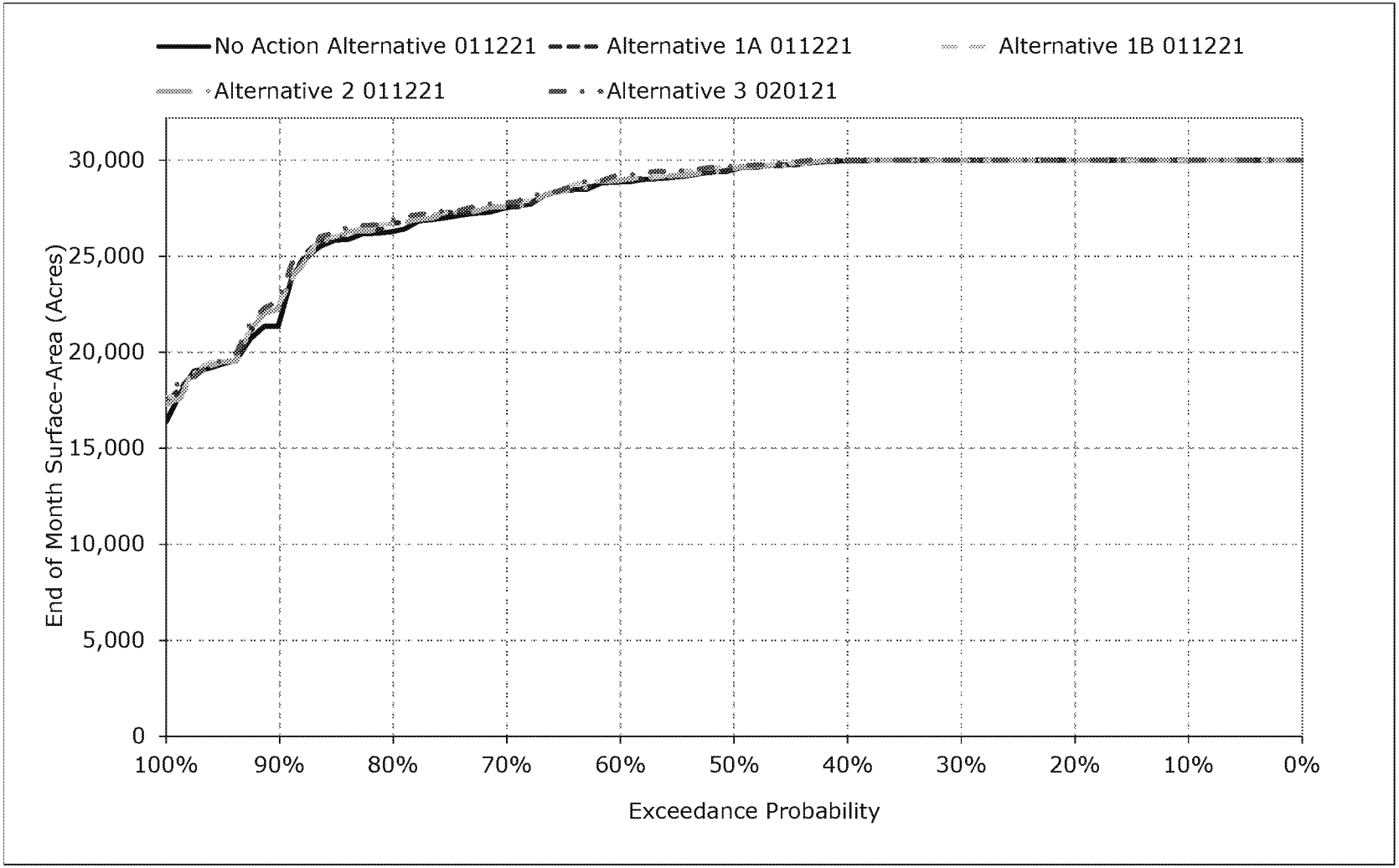


Figure 5B2-9-9. Shasta Lake Surface Area, June

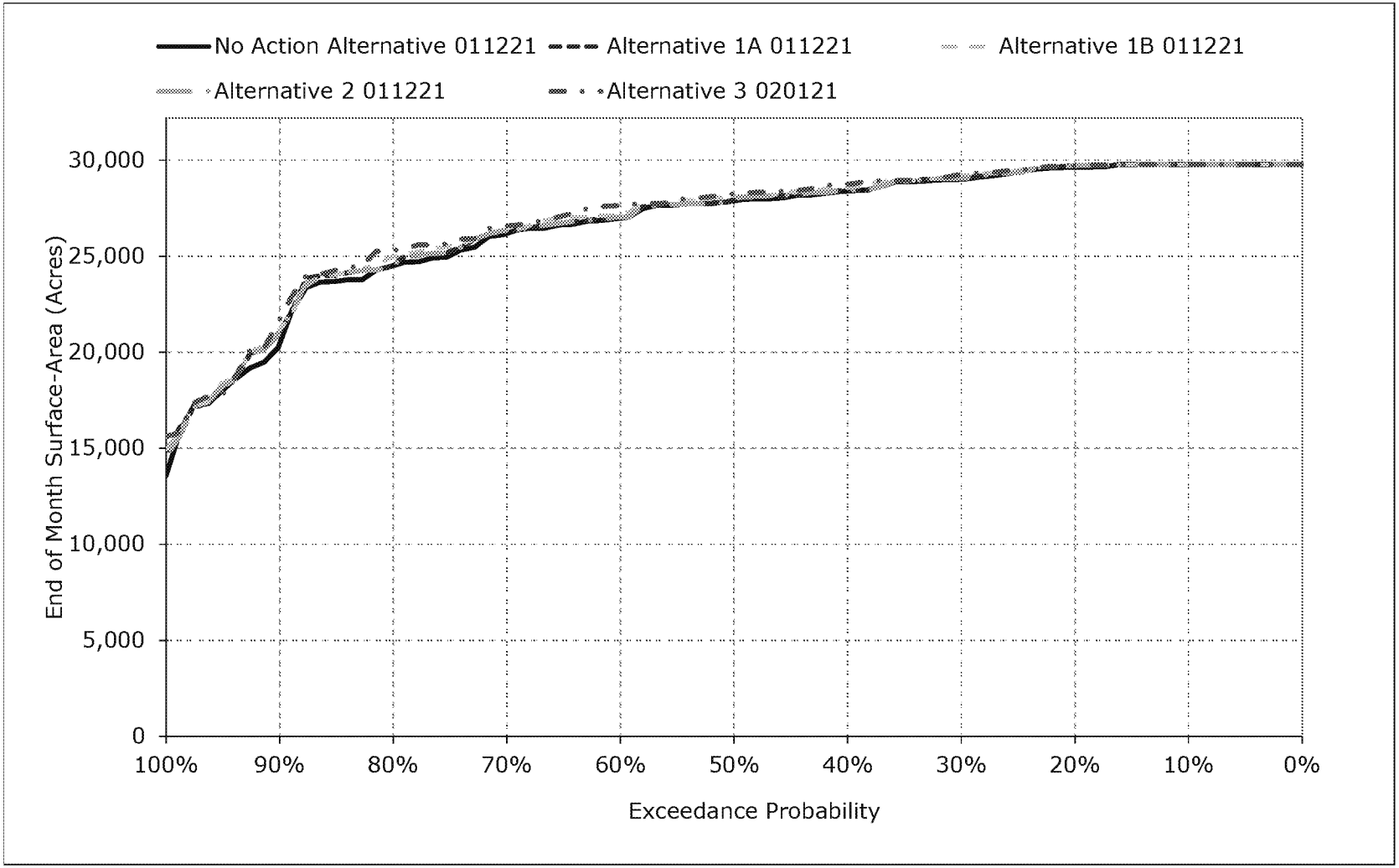


Figure 5B2-9-10. Shasta Lake Surface Area, July

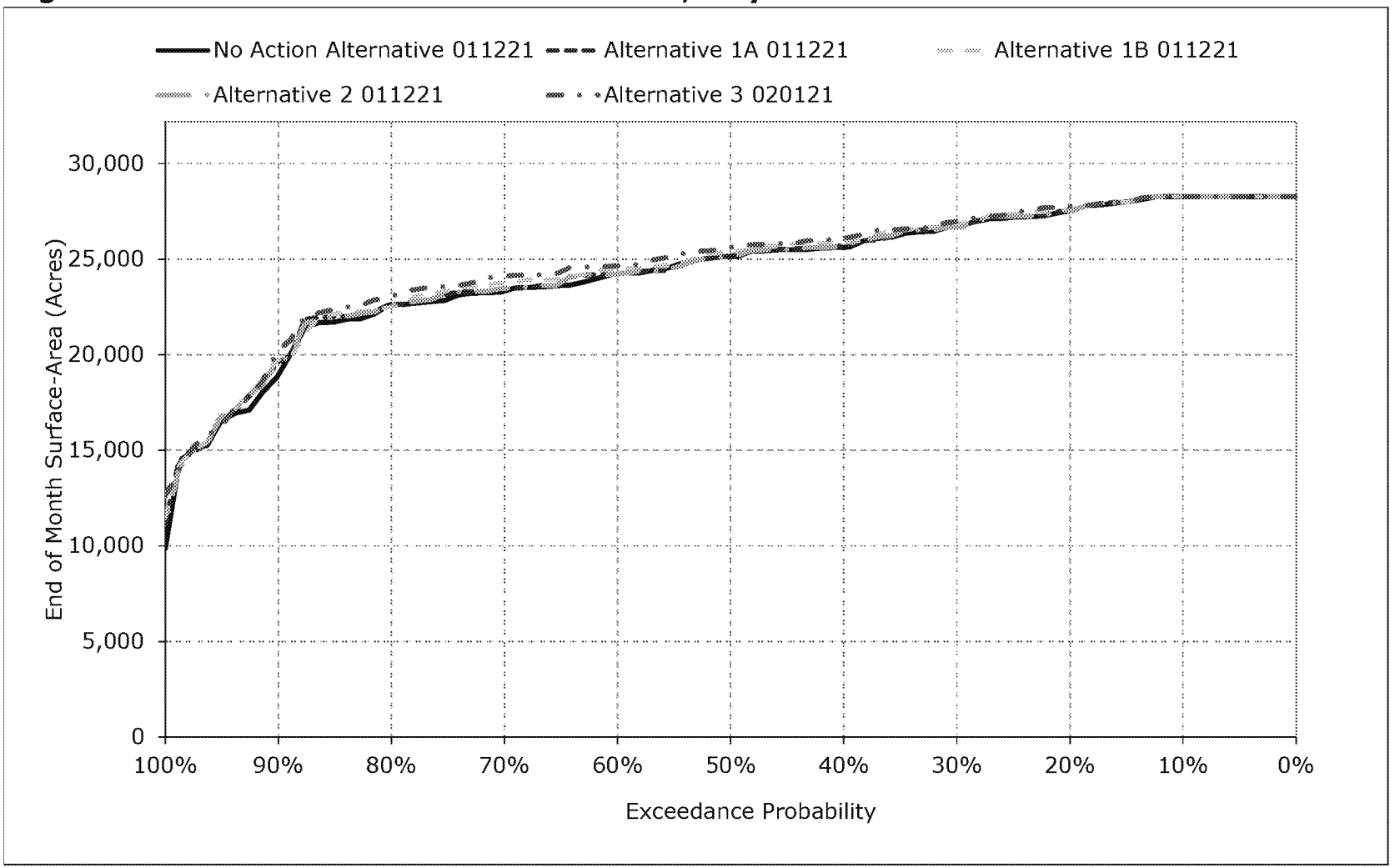


Figure 5B2-9-11. Shasta Lake Surface Area, August

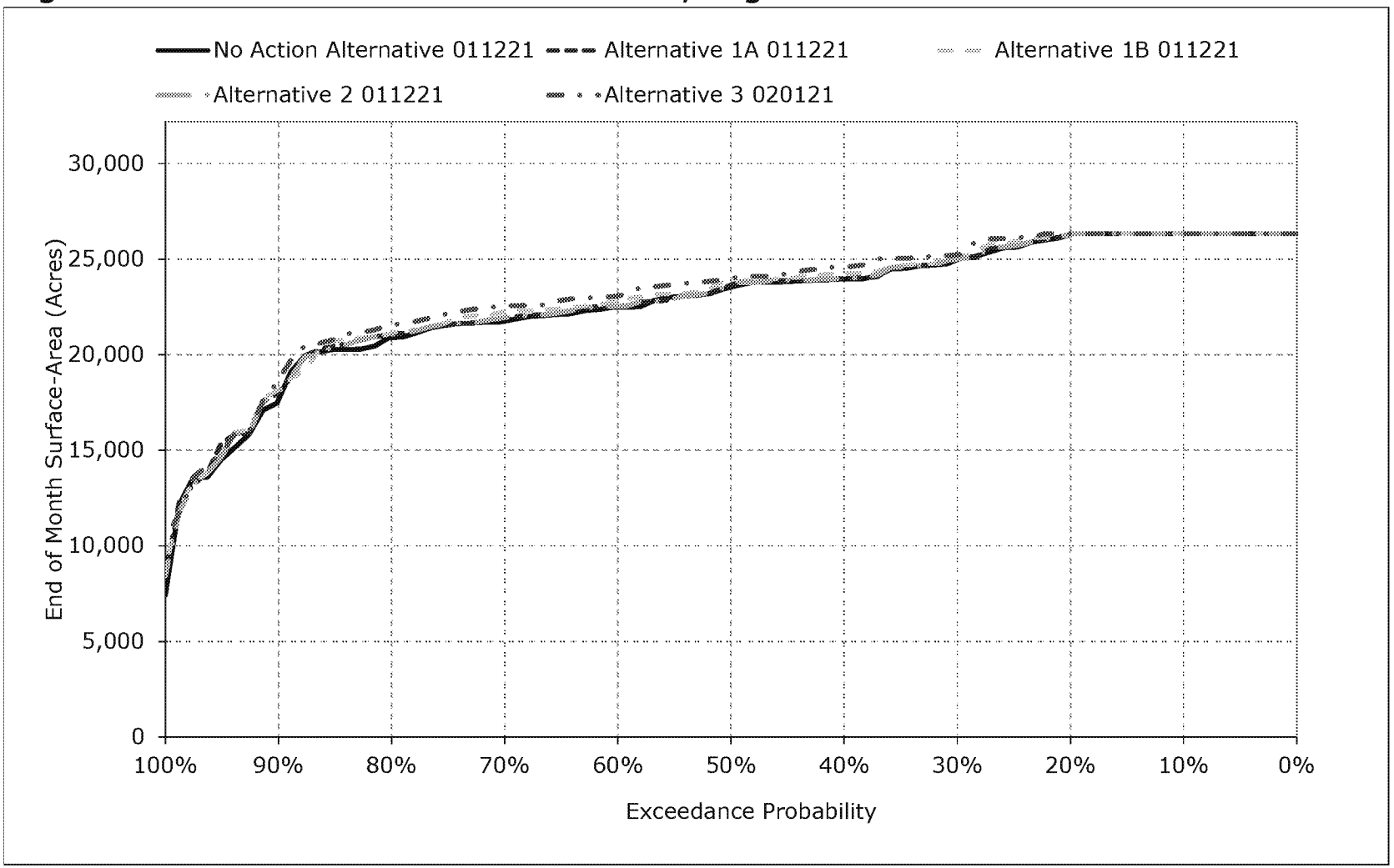


Figure 5B2-9-12. Shasta Lake Surface Area, September

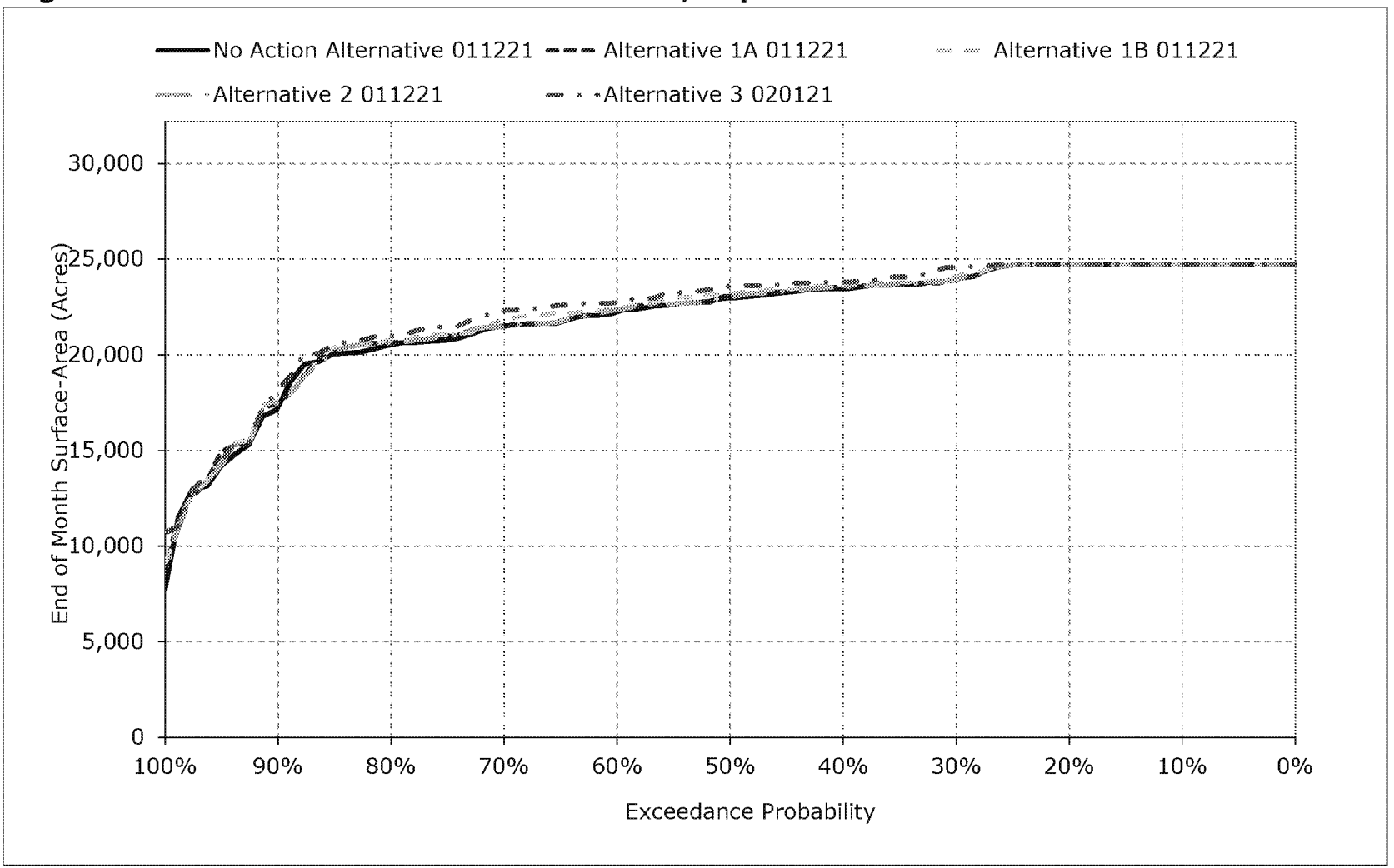


Table 5B2-10-1a. Sacramento River Flow downstream of Keswick Reservoir, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,755	8,329	17,857	23,049	30,057	20,016	9,963	11,548	13,053	16,000	12,308	11,274
20%	8,233	7,434	10,897	13,794	19,248	12,798	7,229	10,543	11,600	15,610	11,593	10,623
30%	7,103	6,718	5,839	7,666	9,348	10,048	5,566	9,615	10,643	13,689	10,732	8,919
40%	6,293	5,991	5,108	5,331	6,817	6,005	4,611	8,813	9,900	13,009	10,308	7,979
50%	5,939	5,551	4,482	3,250	4,422	4,470	4,155	8,310	9,427	12,526	10,003	6,051
60%	5,596	5,310	3,980	3,250	3,250	3,382	3,356	7,678	9,060	12,045	9,668	5,504
70%	5,373	4,853	3,333	3,250	3,250	3,250	3,250	7,340	8,743	11,644	9,232	5,023
80%	5,123	4,447	3,250	3,250	3,250	3,250	3,250	6,382	8,317	10,927	8,852	4,472
90%	4,044	3,817	3,250	3,250	3,250	3,250	3,250	5,697	7,697	9,651	8,051	4,237
Long Term												
Full Simulation Period[a]	6,306	6,256	7,393	8,792	10,963	8,827	5,835	8,525	9,957	12,687	10,084	7,196
Water Year Types[b,c]												
Wet (32%)	7,749	7,005	8,520	17,347	19,700	15,956	8,792	9,759	9,153	12,912	11,271	10,326
Above Normal (15%)	5,978	8,261	6,743	8,135	15,132	9,910	5,408	8,825	10,111	14,669	10,894	8,325
Below Normal (17%)	6,037	5,882	8,172	4,476	6,931	4,680	4,105	7,595	10,463	13,476	9,864	5,765
Dry (22%)	5,230	5,037	8,114	3,625	3,648	4,195	4,302	7,805	11,008	12,371	9,181	4,854
Critical (15%)	5,438	4,892	3,609	3,697	3,543	4,081	4,177	7,718	9,380	9,767	8,315	4,469

Table 5B2-10-1b. Sacramento River Flow downstream of Keswick Reservoir, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,755	8,362	17,857	23,325	30,057	20,016	9,963	11,616	12,912	16,000	12,308	11,234
20%	8,234	7,360	10,929	13,792	19,248	12,798	7,420	10,456	11,506	15,665	11,644	10,646
30%	7,158	6,562	5,768	7,666	9,599	10,050	5,602	9,206	10,273	13,832	10,897	8,978
40%	6,396	5,917	5,067	5,289	6,896	5,990	4,543	8,598	9,977	13,320	10,366	8,066
50%	6,157	5,557	4,525	3,250	4,340	4,470	4,095	8,036	9,467	12,749	10,042	6,493
60%	5,721	5,350	3,920	3,250	3,250	3,250	3,250	7,550	9,068	12,126	9,768	5,570
70%	5,427	4,882	3,313	3,250	3,250	3,250	3,250	6,951	8,592	11,762	9,301	5,112
80%	5,078	4,331	3,281	3,250	3,250	3,250	3,250	6,292	8,110	11,036	8,758	4,804
90%	4,268	3,774	3,250	3,250	3,250	3,250	3,250	5,517	7,576	9,641	7,805	4,236
Long Term												
Full Simulation Period[a]	6,385	6,248	7,417	8,816	10,955	8,827	5,813	8,342	9,862	12,761	10,110	7,275
Water Year Types[b,c]												
Wet (32%)	7,751	6,984	8,491	17,387	19,725	15,956	8,772	9,745	9,099	12,959	11,282	10,328
Above Normal (15%)	6,051	8,272	6,725	8,142	15,263	9,940	5,418	8,761	10,066	14,622	10,861	8,352
Below Normal (17%)	6,009	5,949	8,198	4,479	6,861	4,680	4,072	7,458	10,367	13,582	9,834	5,790
Dry (22%)	5,249	4,990	8,324	3,605	3,583	4,131	4,246	7,598	10,740	12,554	9,404	5,033
Critical (15%)	5,901	4,864	3,511	3,796	3,477	4,150	4,180	7,033	9,404	9,822	8,197	4,678

Table 5B2-10-1c. Sacramento River Flow downstream of Keswick Reservoir, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	33	0	276	0	0	0	68	-141	0	0	-41
20%	1	-74	32	-2	0	0	192	-87	-95	55	52	23
30%	55	-156	-70	0	251	1	36	-409	-369	143	165	59
40%	103	-74	-41	-41	78	-16	-68	-214	78	311	58	87
50%	219	6	43	0	-82	0	-60	-274	40	223	39	443
60%	125	40	-60	0	0	-132	-106	-129	8	81	100	66
70%	54	30	-19	0	0	0	0	-389	-151	117	69	90
80%	-45	-116	31	0	0	0	0	-90	-208	109	-94	332
90%	225	-43	0	0	0	0	0	-180	-120	-11	-246	-1
Long Term												
Full Simulation Period[a]	79	-8	24	25	-8	0	-22	-183	-96	74	25	79
Water Year Types[b,c]												
Wet (32%)	2	-21	-29	40	26	0	-19	-14	-54	47	11	2
Above Normal (15%)	73	12	-18	7	131	30	10	-63	-45	-48	-33	27
Below Normal (17%)	-28	66	27	3	-70	0	-33	-137	-96	106	-29	24
Dry (22%)	19	-47	210	-19	-64	-64	-56	-207	-268	183	223	179
Critical (15%)	463	-27	-99	99	-66	69	2	-686	24	54	-118	209

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-10-2a. Sacramento River Flow downstream of Keswick Reservoir, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,755	8,329	17,857	23,049	30,057	20,016	9,963	11,548	13,053	16,000	12,308	11,274
20%	8,233	7,434	10,897	13,794	19,248	12,798	7,229	10,543	11,600	15,610	11,593	10,623
30%	7,103	6,718	5,839	7,666	9,348	10,048	5,566	9,615	10,643	13,689	10,732	8,919
40%	6,293	5,991	5,108	5,331	6,817	6,005	4,611	8,813	9,900	13,009	10,308	7,979
50%	5,939	5,551	4,482	3,250	4,422	4,470	4,155	8,310	9,427	12,526	10,003	6,051
60%	5,596	5,310	3,980	3,250	3,250	3,382	3,356	7,678	9,060	12,045	9,668	5,504
70%	5,373	4,853	3,333	3,250	3,250	3,250	3,250	7,340	8,743	11,644	9,232	5,023
80%	5,123	4,447	3,250	3,250	3,250	3,250	3,250	6,382	8,317	10,927	8,852	4,472
90%	4,044	3,817	3,250	3,250	3,250	3,250	3,250	5,697	7,697	9,651	8,051	4,237
Long Term												
Full Simulation Period[a]	6,306	6,256	7,393	8,792	10,963	8,827	5,835	8,525	9,957	12,687	10,084	7,196
Water Year Types[b,c]												
Wet (32%)	7,749	7,005	8,520	17,347	19,700	15,956	8,792	9,759	9,153	12,912	11,271	10,326
Above Normal (15%)	5,978	8,261	6,743	8,135	15,132	9,910	5,408	8,825	10,111	14,669	10,894	8,325
Below Normal (17%)	6,037	5,882	8,172	4,476	6,931	4,680	4,105	7,595	10,463	13,476	9,864	5,765
Dry (22%)	5,230	5,037	8,114	3,625	3,648	4,195	4,302	7,805	11,008	12,371	9,181	4,854
Critical (15%)	5,438	4,892	3,609	3,697	3,543	4,081	4,177	7,718	9,380	9,767	8,315	4,469

Table 5B2-10-2b. Sacramento River Flow downstream of Keswick Reservoir, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,755	8,456	17,841	23,325	30,057	20,016	9,963	11,616	12,809	16,000	12,308	11,233
20%	8,340	7,557	11,240	13,792	19,248	12,798	6,685	10,376	10,970	15,658	11,754	10,675
30%	7,055	6,718	5,812	7,666	10,386	10,054	5,659	9,206	10,103	13,809	10,897	9,017
40%	6,422	6,071	5,224	5,281	6,898	5,989	4,545	8,529	9,761	13,139	10,313	8,226
50%	6,092	5,629	4,567	3,250	4,346	4,470	4,170	7,731	9,402	12,773	10,030	6,362
60%	5,742	5,336	3,940	3,250	3,250	3,250	3,250	7,419	9,013	12,079	9,780	5,576
70%	5,434	5,012	3,459	3,250	3,250	3,250	3,250	6,820	8,440	11,763	9,297	5,187
80%	5,054	4,798	3,287	3,250	3,250	3,250	3,250	6,107	8,062	10,777	8,773	4,877
90%	4,312	3,723	3,250	3,250	3,250	3,250	3,250	5,520	7,506	9,532	7,974	4,310
Long Term												
Full Simulation Period[a]	6,379	6,348	7,435	8,815	11,024	8,838	5,791	8,259	9,738	12,716	10,129	7,333
Water Year Types[b,c]												
Wet (32%)	7,743	6,904	8,486	17,441	19,773	15,956	8,772	9,745	9,099	12,959	11,282	10,337
Above Normal (15%)	6,129	8,250	6,924	8,142	15,351	9,995	5,461	8,754	9,390	14,309	10,892	8,685
Below Normal (17%)	6,089	6,139	8,283	4,465	7,014	4,680	4,058	7,173	10,170	13,493	9,831	5,856
Dry (22%)	5,164	5,396	8,162	3,605	3,643	4,176	4,133	7,489	10,857	12,638	9,366	5,002
Critical (15%)	5,838	4,913	3,587	3,691	3,492	4,104	4,172	6,964	9,292	9,807	8,360	4,691

Table 5B2-10-2c. Sacramento River Flow downstream of Keswick Reservoir, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	127	-15	277	0	0	0	68	-244	0	0	-42
20%	107	123	343	-2	0	0	-543	-167	-630	48	161	51
30%	-48	1	-27	0	1,038	6	93	-409	-540	119	165	98
40%	130	80	116	-50	81	-16	-67	-283	-139	130	6	248
50%	153	78	85	0	-75	0	15	-580	-25	247	27	312
60%	146	26	-40	0	0	-132	-106	-259	-47	34	111	72
70%	61	159	127	0	0	0	0	-521	-303	118	65	165
80%	-70	351	37	0	0	0	0	-276	-256	-150	-79	404
90%	268	-94	0	0	0	0	0	-177	-191	-120	-76	74
Long Term												
Full Simulation Period[a]	73	92	42	24	61	12	-44	-266	-219	29	45	137
Water Year Types[b,c]												
Wet (32%)	-6	-101	-34	94	73	0	-19	-14	-54	47	11	11
Above Normal (15%)	151	-10	180	7	219	86	53	-70	-721	-361	-1	360
Below Normal (17%)	52	256	112	-11	83	0	-47	-421	-294	17	-33	91
Dry (22%)	-66	359	48	-19	-5	-19	-168	-315	-151	267	185	148
Critical (15%)	399	21	-23	-6	-50	23	-6	-754	-89	40	45	222

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-10-3a. Sacramento River Flow downstream of Keswick Reservoir, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,755	8,329	17,857	23,049	30,057	20,016	9,963	11,548	13,053	16,000	12,308	11,274
20%	8,233	7,434	10,897	13,794	19,248	12,798	7,229	10,543	11,600	15,610	11,593	10,623
30%	7,103	6,718	5,839	7,666	9,348	10,048	5,566	9,615	10,643	13,689	10,732	8,919
40%	6,293	5,991	5,108	5,331	6,817	6,005	4,611	8,813	9,900	13,009	10,308	7,979
50%	5,939	5,551	4,482	3,250	4,422	4,470	4,155	8,310	9,427	12,526	10,003	6,051
60%	5,596	5,310	3,980	3,250	3,250	3,382	3,356	7,678	9,060	12,045	9,668	5,504
70%	5,373	4,853	3,333	3,250	3,250	3,250	3,250	7,340	8,743	11,644	9,232	5,023
80%	5,123	4,447	3,250	3,250	3,250	3,250	3,250	6,382	8,317	10,927	8,852	4,472
90%	4,044	3,817	3,250	3,250	3,250	3,250	3,250	5,697	7,697	9,651	8,051	4,237
Long Term												
Full Simulation Period[a]	6,306	6,256	7,393	8,792	10,963	8,827	5,835	8,525	9,957	12,687	10,084	7,196
Water Year Types[b,c]												
Wet (32%)	7,749	7,005	8,520	17,347	19,700	15,956	8,792	9,759	9,153	12,912	11,271	10,326
Above Normal (15%)	5,978	8,261	6,743	8,135	15,132	9,910	5,408	8,825	10,111	14,669	10,894	8,325
Below Normal (17%)	6,037	5,882	8,172	4,476	6,931	4,680	4,105	7,595	10,463	13,476	9,864	5,765
Dry (22%)	5,230	5,037	8,114	3,625	3,648	4,195	4,302	7,805	11,008	12,371	9,181	4,854
Critical (15%)	5,438	4,892	3,609	3,697	3,543	4,081	4,177	7,718	9,380	9,767	8,315	4,469

Table 5B2-10-3b. Sacramento River Flow downstream of Keswick Reservoir, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,755	8,362	17,857	23,326	30,057	20,016	9,963	11,616	12,912	16,000	12,308	11,252
20%	8,340	7,368	10,944	13,792	19,248	12,798	7,420	10,456	11,498	15,663	11,644	10,646
30%	7,161	6,693	5,847	7,666	9,672	10,048	5,604	9,206	10,273	13,833	10,897	8,985
40%	6,393	5,876	5,035	5,280	6,896	5,990	4,544	8,598	9,973	13,312	10,365	8,062
50%	6,106	5,503	4,527	3,250	4,340	4,470	4,098	8,030	9,466	12,749	10,068	6,491
60%	5,694	5,332	3,920	3,250	3,250	3,250	3,250	7,525	9,068	12,127	9,811	5,589
70%	5,448	4,899	3,323	3,250	3,250	3,250	3,250	6,951	8,545	11,762	9,298	5,123
80%	5,080	4,331	3,288	3,250	3,250	3,250	3,250	6,292	8,097	11,002	8,821	4,803
90%	4,314	3,801	3,250	3,250	3,250	3,250	3,250	5,517	7,576	9,586	7,886	4,235
Long Term												
Full Simulation Period[a]	6,385	6,238	7,433	8,802	10,949	8,827	5,813	8,341	9,859	12,756	10,135	7,272
Water Year Types[b,c]												
Wet (32%)	7,751	6,984	8,493	17,383	19,725	15,956	8,772	9,745	9,099	12,960	11,282	10,328
Above Normal (15%)	6,051	8,271	6,726	8,142	15,286	9,939	5,418	8,761	10,065	14,615	10,861	8,359
Below Normal (17%)	6,058	5,940	8,207	4,477	6,798	4,680	4,073	7,459	10,368	13,577	9,844	5,786
Dry (22%)	5,250	4,932	8,330	3,605	3,584	4,134	4,246	7,597	10,741	12,557	9,406	5,030
Critical (15%)	5,843	4,898	3,595	3,710	3,488	4,147	4,180	7,023	9,385	9,798	8,358	4,660

Table 5B2-10-3c. Sacramento River Flow downstream of Keswick Reservoir, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	32	0	277	0	0	0	68	-141	0	0	-22
20%	107	-66	47	-2	0	0	192	-87	-102	53	51	23
30%	57	-25	8	0	324	-1	38	-409	-369	143	165	66
40%	101	-115	-74	-51	79	-16	-67	-215	73	302	57	84
50%	167	-48	45	0	-82	0	-57	-280	39	223	64	440
60%	98	22	-60	0	0	-132	-106	-153	8	82	142	85
70%	75	46	-9	0	0	0	0	-389	-198	117	66	100
80%	-44	-117	38	0	0	0	0	-90	-221	75	-32	330
90%	271	-16	0	0	0	0	0	-180	-120	-66	-165	-1
Long Term												
Full Simulation Period[a]	79	-18	40	10	-14	1	-22	-184	-98	70	51	76
Water Year Types[b,c]												
Wet (32%)	2	-21	-28	36	26	0	-19	-14	-54	48	11	2
Above Normal (15%)	73	10	-18	7	153	29	10	-63	-46	-54	-32	34
Below Normal (17%)	21	57	35	2	-133	0	-32	-136	-96	101	-20	20
Dry (22%)	20	-105	217	-19	-64	-61	-56	-208	-267	186	225	176
Critical (15%)	405	6	-14	13	-55	67	3	-695	4	31	43	191

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-10-4a. Sacramento River Flow downstream of Keswick Reservoir, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,755	8,329	17,857	23,049	30,057	20,016	9,963	11,548	13,053	16,000	12,308	11,274
20%	8,233	7,434	10,897	13,794	19,248	12,798	7,229	10,543	11,600	15,610	11,593	10,623
30%	7,103	6,718	5,839	7,666	9,348	10,048	5,566	9,615	10,643	13,689	10,732	8,919
40%	6,293	5,991	5,108	5,331	6,817	6,005	4,611	8,813	9,900	13,009	10,308	7,979
50%	5,939	5,551	4,482	3,250	4,422	4,470	4,155	8,310	9,427	12,526	10,003	6,051
60%	5,596	5,310	3,980	3,250	3,250	3,382	3,356	7,678	9,060	12,045	9,668	5,504
70%	5,373	4,853	3,333	3,250	3,250	3,250	3,250	7,340	8,743	11,644	9,232	5,023
80%	5,123	4,447	3,250	3,250	3,250	3,250	3,250	6,382	8,317	10,927	8,852	4,472
90%	4,044	3,817	3,250	3,250	3,250	3,250	3,250	5,697	7,697	9,651	8,051	4,237
Long Term												
Full Simulation Period[a]	6,306	6,256	7,393	8,792	10,963	8,827	5,835	8,525	9,957	12,687	10,084	7,196
Water Year Types[b,c]												
Wet (32%)	7,749	7,005	8,520	17,347	19,700	15,956	8,792	9,759	9,153	12,912	11,271	10,326
Above Normal (15%)	5,978	8,261	6,743	8,135	15,132	9,910	5,408	8,825	10,111	14,669	10,894	8,325
Below Normal (17%)	6,037	5,882	8,172	4,476	6,931	4,680	4,105	7,595	10,463	13,476	9,864	5,765
Dry (22%)	5,230	5,037	8,114	3,625	3,648	4,195	4,302	7,805	11,008	12,371	9,181	4,854
Critical (15%)	5,438	4,892	3,609	3,697	3,543	4,081	4,177	7,718	9,380	9,767	8,315	4,469

Table 5B2-10-4b. Sacramento River Flow downstream of Keswick Reservoir, Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,791	8,410	17,841	23,329	30,057	20,016	9,963	11,616	12,311	16,000	12,297	11,199
20%	8,340	7,637	11,240	13,792	19,248	12,798	6,641	10,363	10,878	15,366	11,343	10,647
30%	7,287	6,752	6,649	7,666	12,318	10,033	5,696	9,251	9,974	13,585	10,551	9,171
40%	6,714	5,983	5,256	5,199	7,056	5,809	4,543	8,526	9,549	12,960	10,036	8,446
50%	6,157	5,627	4,691	3,250	4,109	4,470	3,920	7,692	9,231	12,484	9,845	6,498
60%	5,963	5,409	4,025	3,250	3,250	3,250	3,250	7,459	8,865	12,161	9,483	5,560
70%	5,633	5,025	3,469	3,250	3,250	3,250	3,250	6,711	8,389	11,507	9,063	5,172
80%	5,212	4,646	3,282	3,250	3,250	3,250	3,250	5,995	7,948	10,452	8,617	4,776
90%	4,435	3,710	3,250	3,250	3,250	3,250	3,250	5,530	7,339	9,308	7,809	4,395
Long Term												
Full Simulation Period[a]	6,526	6,382	7,619	8,811	11,196	8,854	5,777	8,218	9,521	12,579	9,920	7,391
Water Year Types[b,c]												
Wet (32%)	7,751	6,913	8,495	17,451	19,941	15,956	8,772	9,745	9,099	12,959	11,281	10,329
Above Normal (15%)	6,518	8,394	7,123	8,143	16,027	9,989	5,461	8,754	9,119	13,950	9,965	9,077
Below Normal (17%)	6,362	6,242	8,528	4,465	7,109	4,680	4,112	7,154	9,459	13,379	9,742	5,959
Dry (22%)	5,351	5,395	8,650	3,605	3,674	4,258	4,121	7,316	10,570	12,353	9,122	4,951
Critical (15%)	5,831	4,864	3,611	3,635	3,474	4,094	4,033	6,972	9,334	9,791	8,329	4,669

Table 5B2-10-4c. Sacramento River Flow downstream of Keswick Reservoir, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

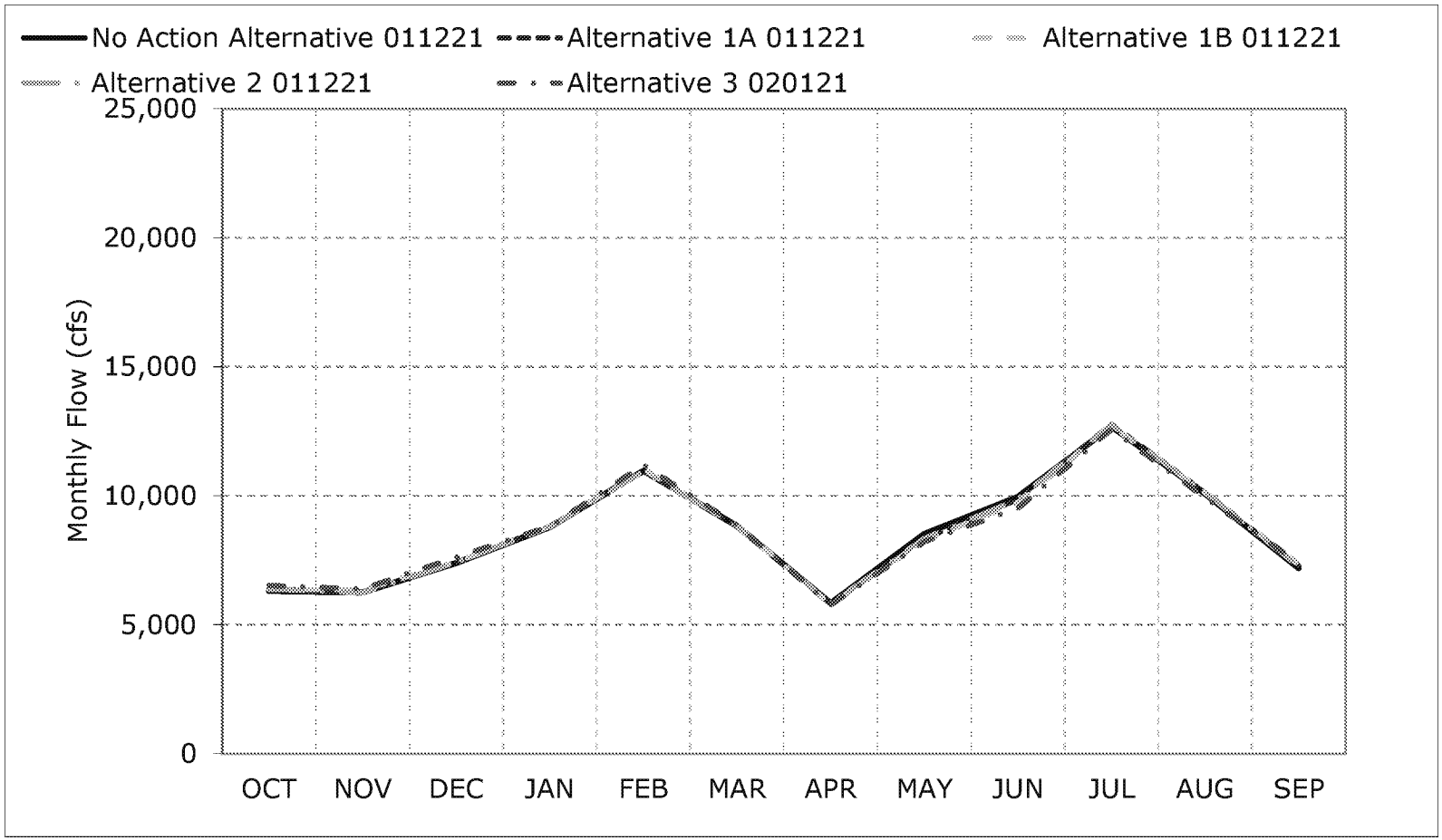
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	36	80	-15	281	0	0	0	68	-741	0	-11	-76
20%	107	204	343	-2	0	0	-587	-179	-723	-244	-250	23
30%	183	34	810	0	2,970	-15	130	-364	-668	-105	-181	252
40%	421	-8	148	-132	239	-197	-68	-287	-351	-50	-272	467
50%	218	75	208	0	-313	0	-235	-618	-196	-41	-158	448
60%	367	99	45	0	0	-132	-106	-219	-194	116	-185	56
70%	260	173	136	0	0	0	0	-629	-354	-138	-169	149
80%	88	199	32	0	0	0	0	-387	-369	-474	-236	304
90%	391	-107	0	0	0	0	0	-167	-358	-343	-241	158
Long Term												
Full Simulation Period[a]	220	126	226	19	233	27	-58	-307	-437	-108	-164	195
Water Year Types[b,c]												
Wet (32%)	2	-92	-26	104	241	0	-19	-15	-54	47	10	3
Above Normal (15%)	540	134	380	7	894	79	53	-71	-991	-719	-928	752
Below Normal (17%)	325	360	356	-11	178	0	7	-441	-1,004	-97	-122	194
Dry (22%)	122	357	536	-19	26	63	-181	-488	-438	-19	-59	97
Critical (15%)	393	-28	2	-62	-69	14	-144	-746	-46	24	14	200

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

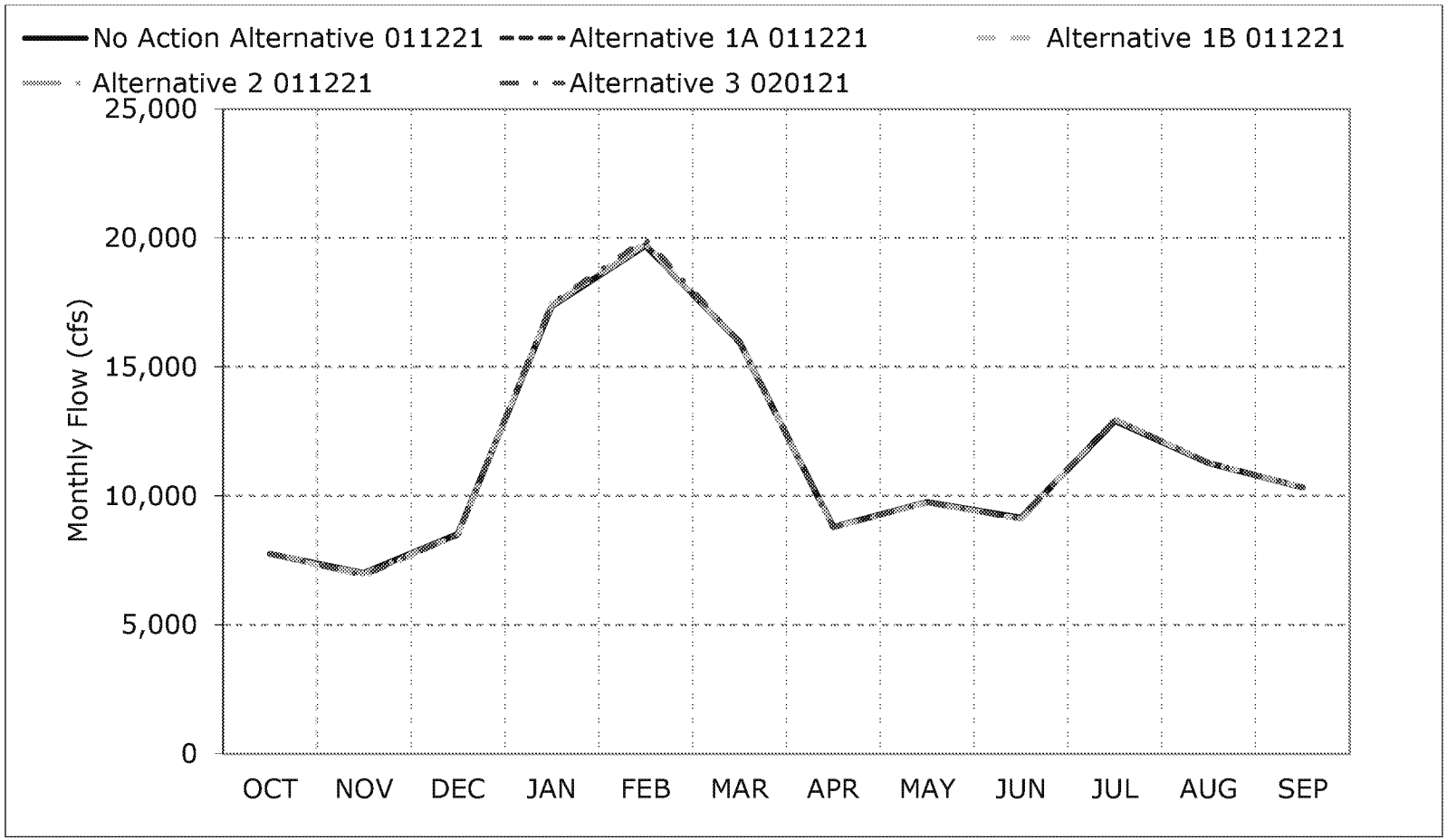
c These results are displayed with calendar year - year type sorting.

Figure 5B2-10-1. Sacramento River Flow downstream of Keswick Reservoir, Long-Term Average Flow



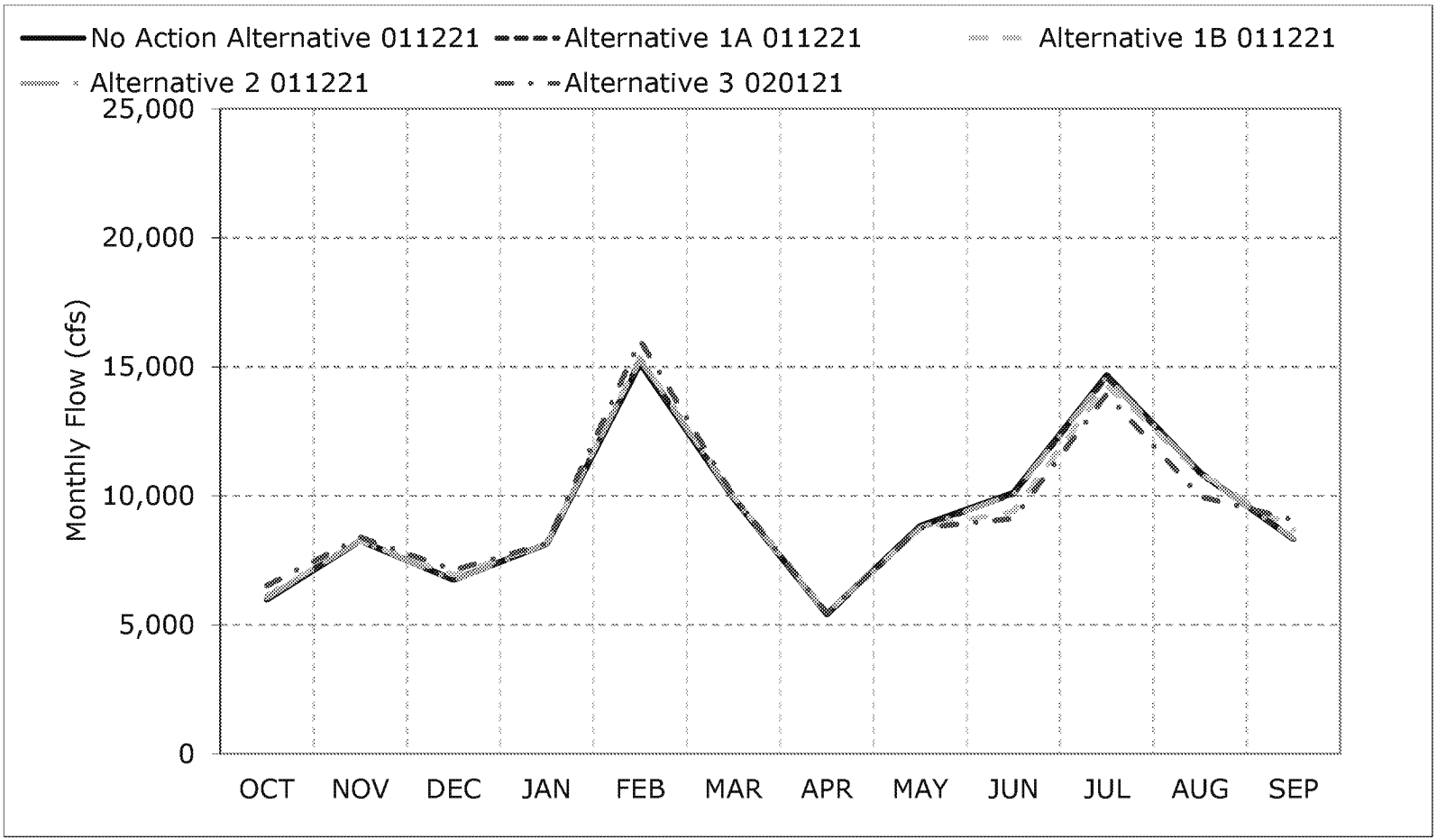
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-10-2. Sacramento River Flow downstream of Keswick Reservoir, Wet Year Average Flow



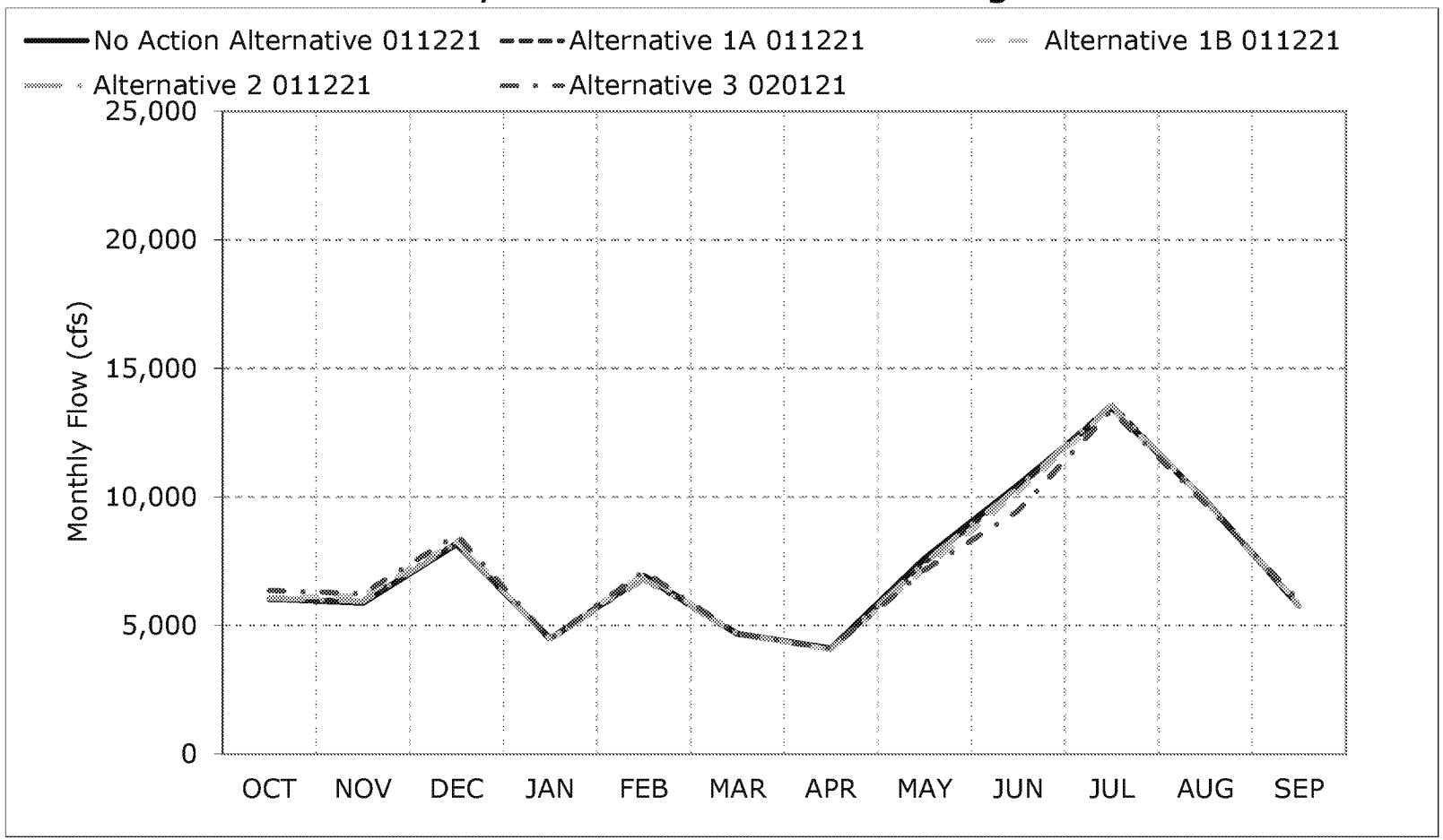
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-10-3. Sacramento River Flow downstream of Keswick Reservoir, Above Normal Year Average Flow



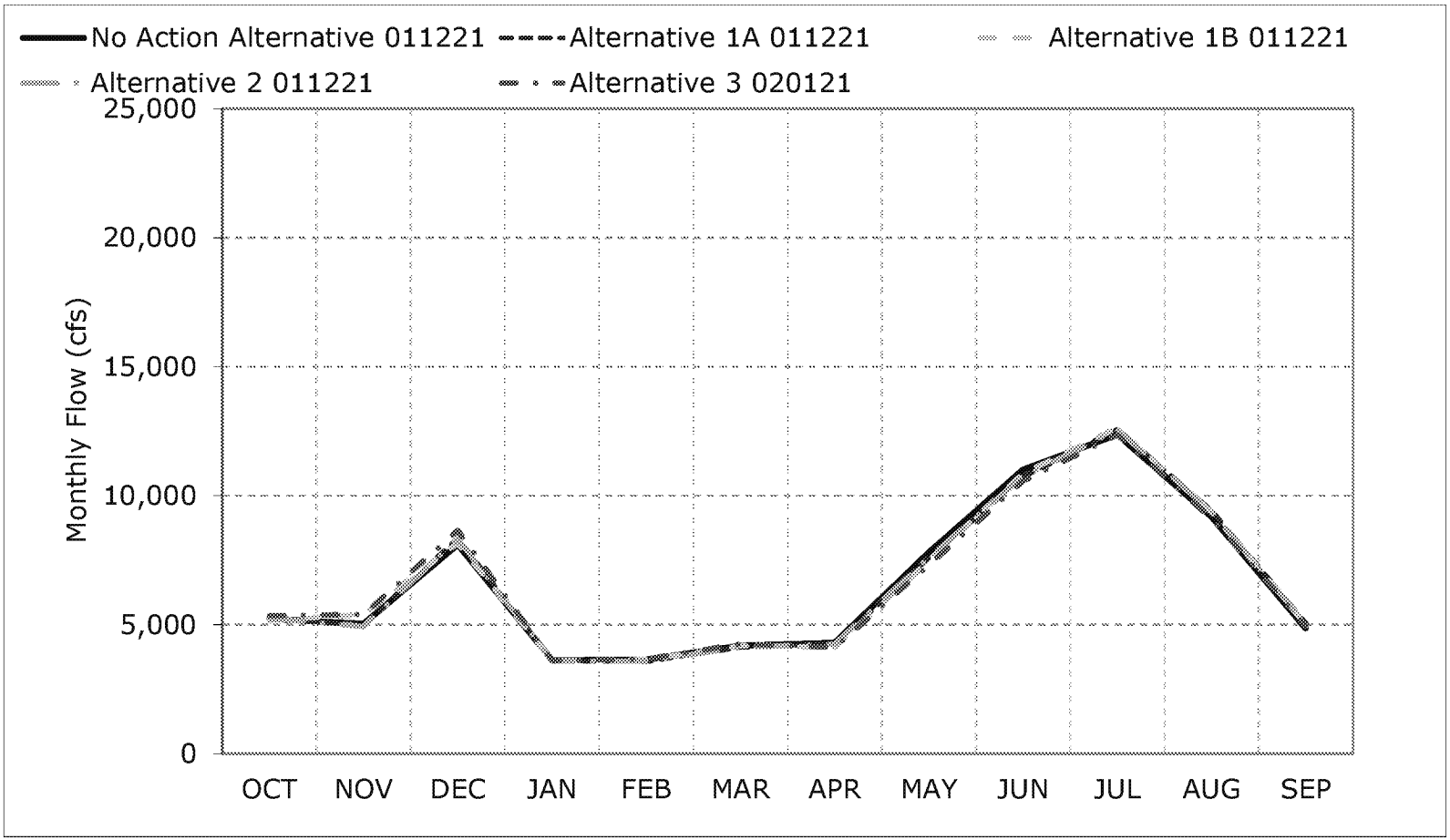
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-10-4. Sacramento River Flow downstream of Keswick Reservoir, Below Normal Year Average Flow



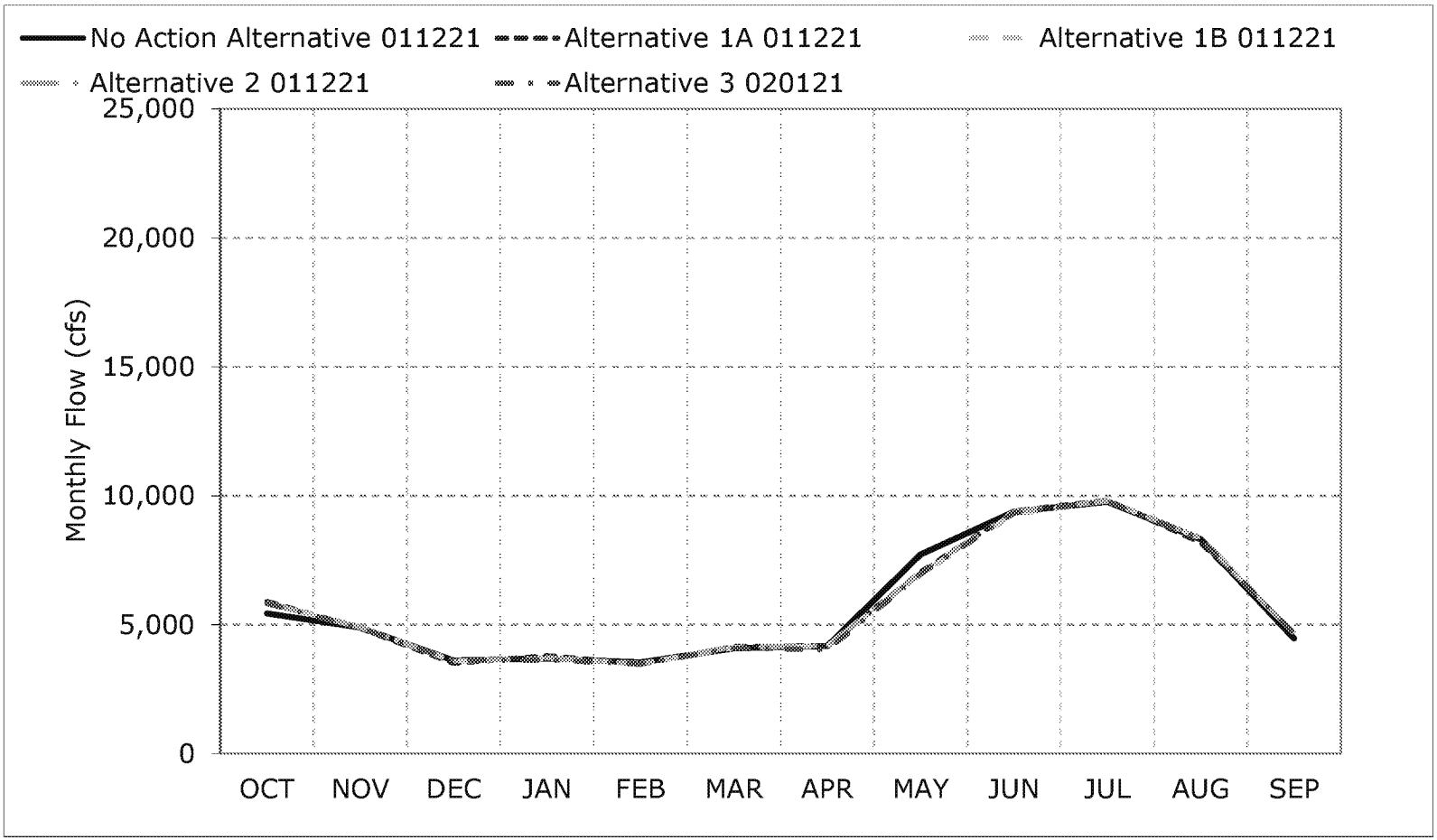
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-10-5. Sacramento River Flow downstream of Keswick Reservoir, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-10-6. Sacramento River Flow downstream of Keswick Reservoir, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-10-7. Sacramento River Flow downstream of Keswick Reservoir, October

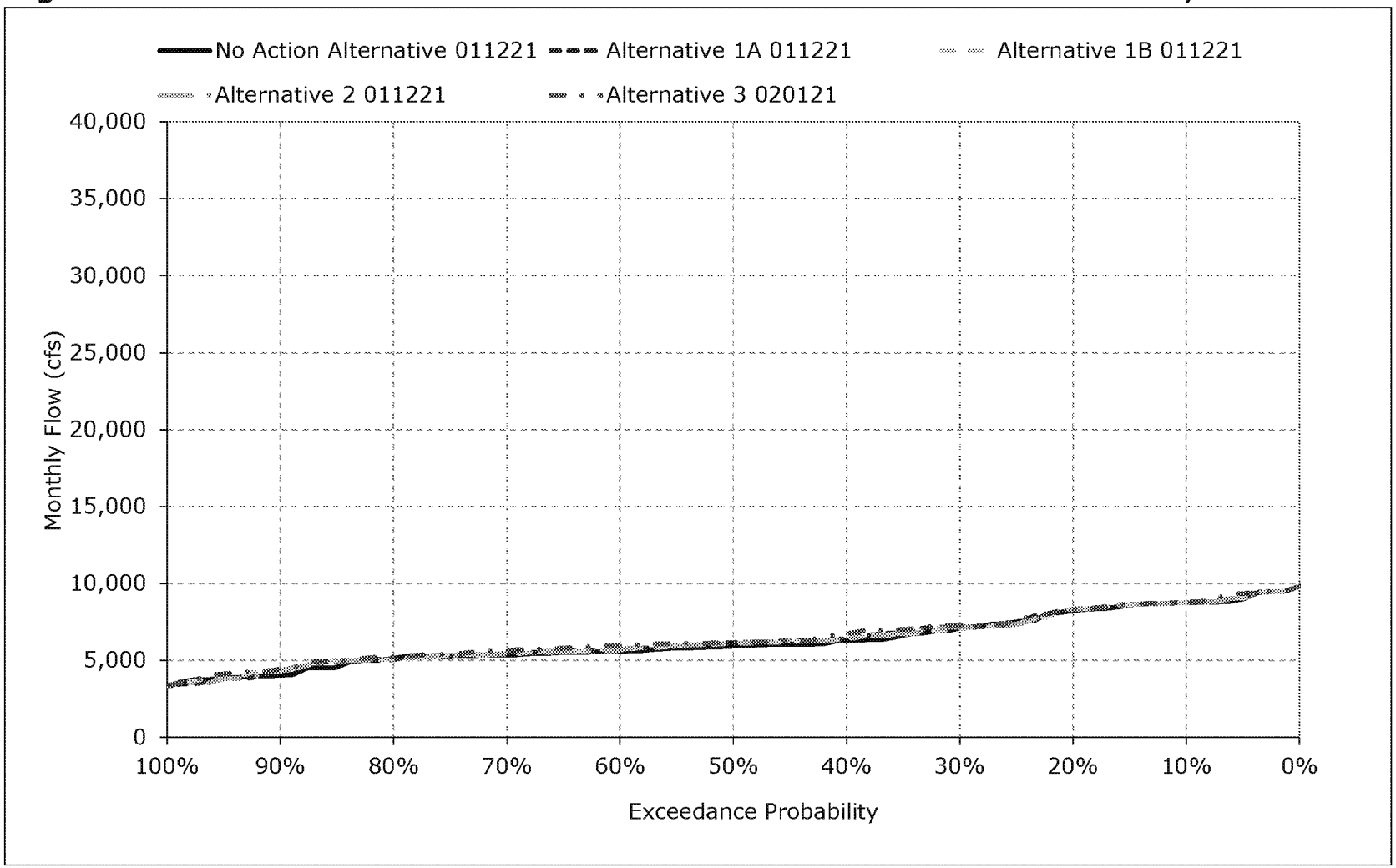


Figure 5B2-10-8. Sacramento River Flow downstream of Keswick Reservoir, November

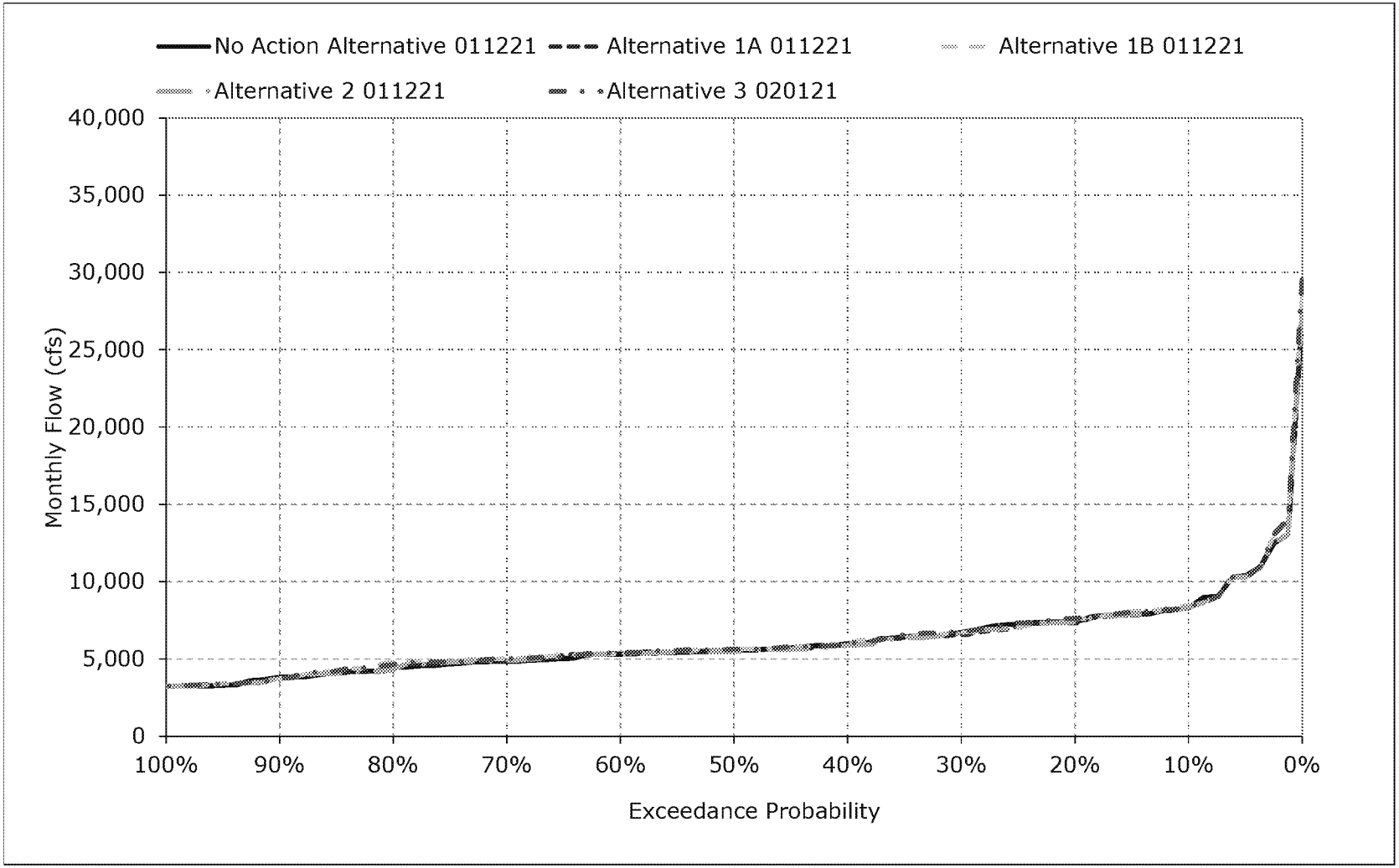


Figure 5B2-10-9. Sacramento River Flow downstream of Keswick Reservoir, December

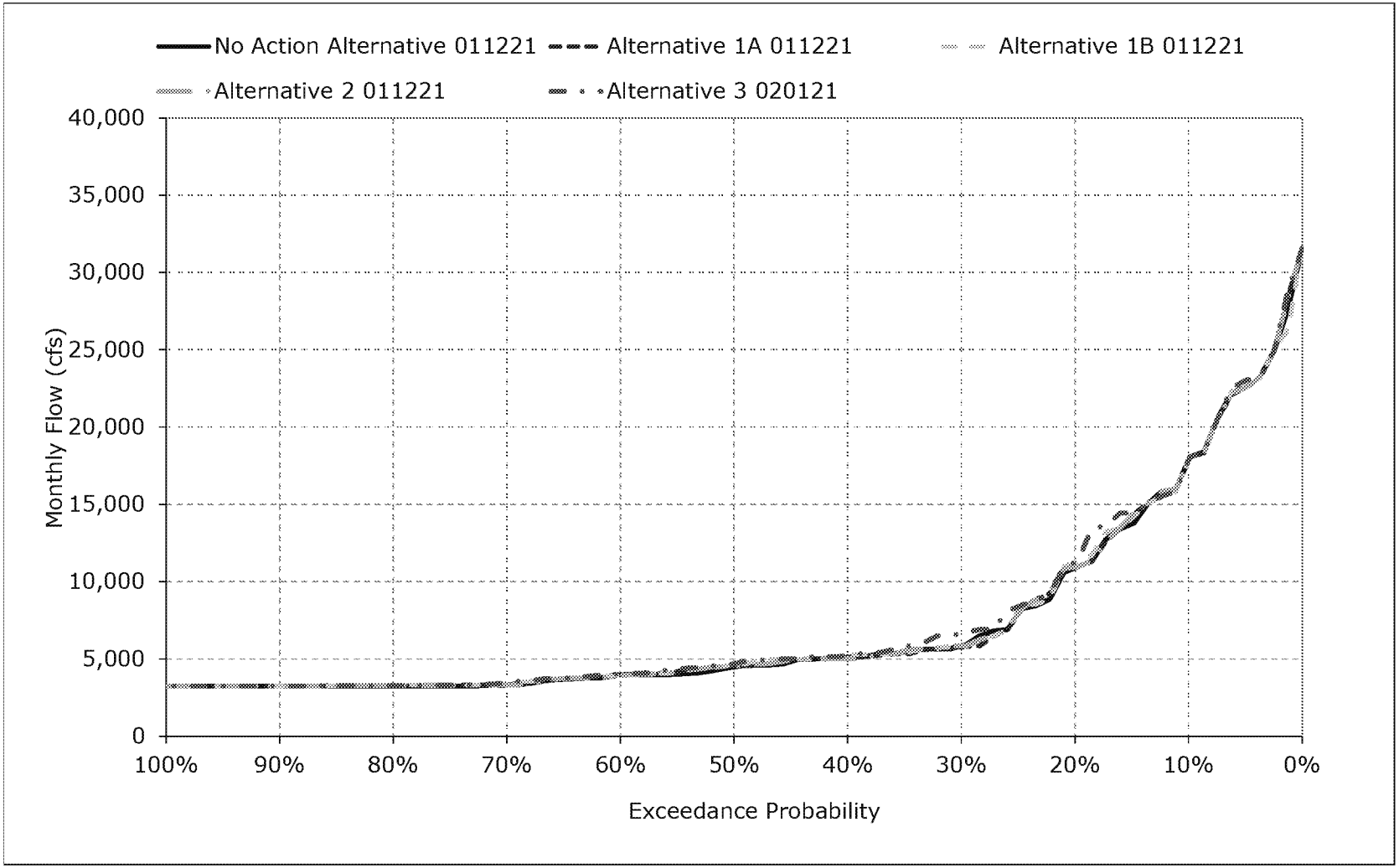


Figure 5B2-10-10. Sacramento River Flow downstream of Keswick Reservoir, January

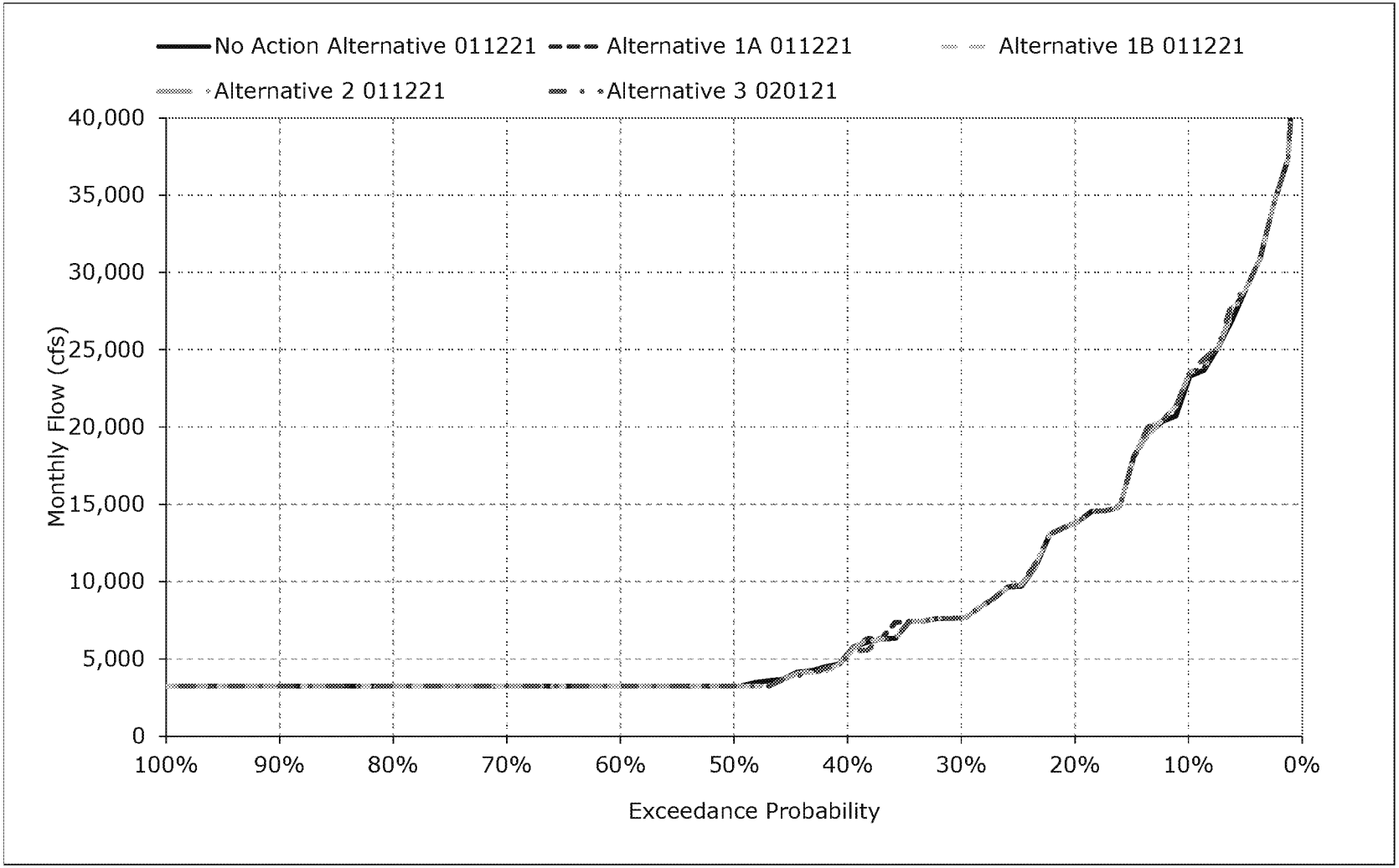


Figure 5B2-10-11. Sacramento River Flow downstream of Keswick Reservoir, February

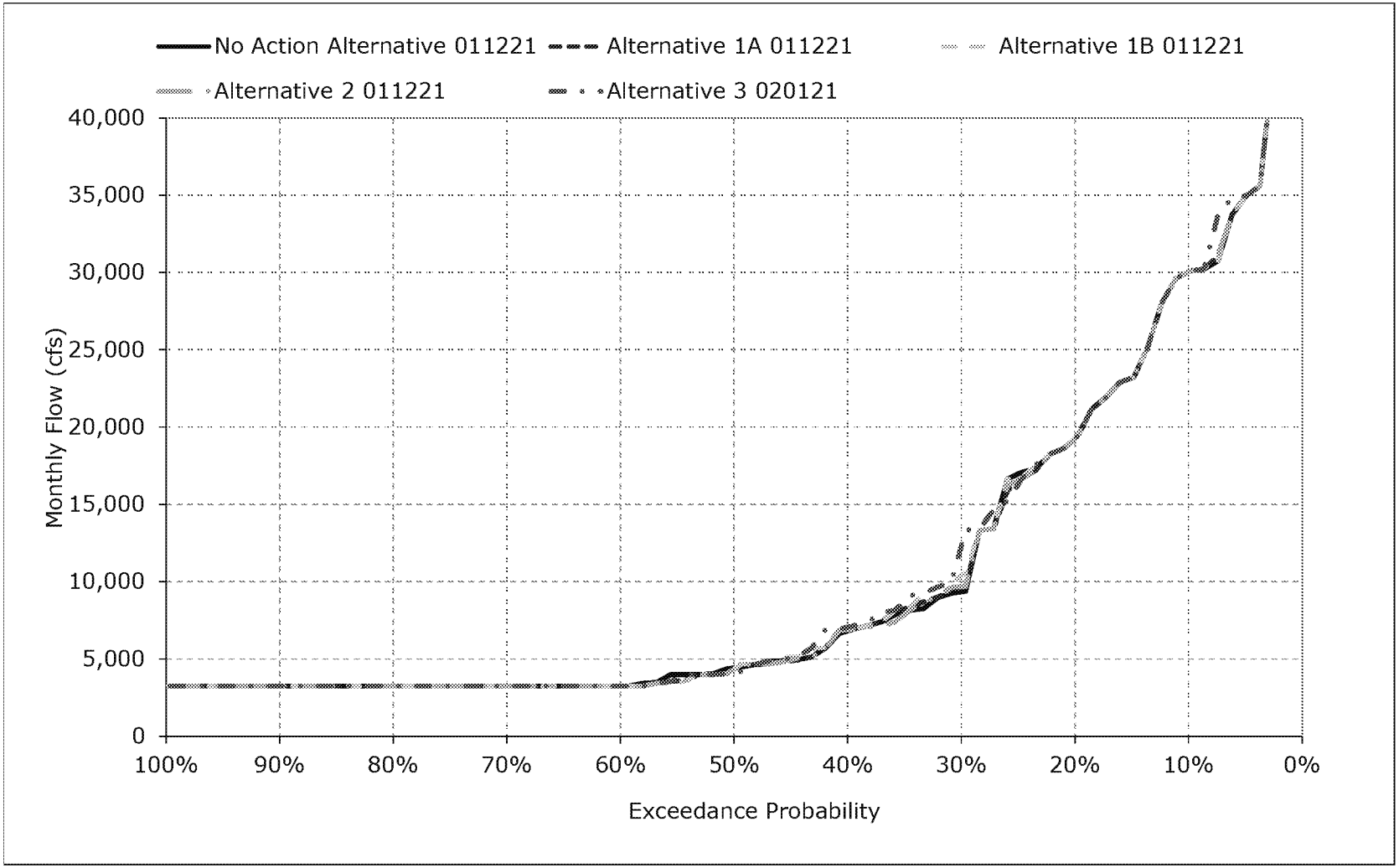


Figure 5B2-10-12. Sacramento River Flow downstream of Keswick Reservoir, March

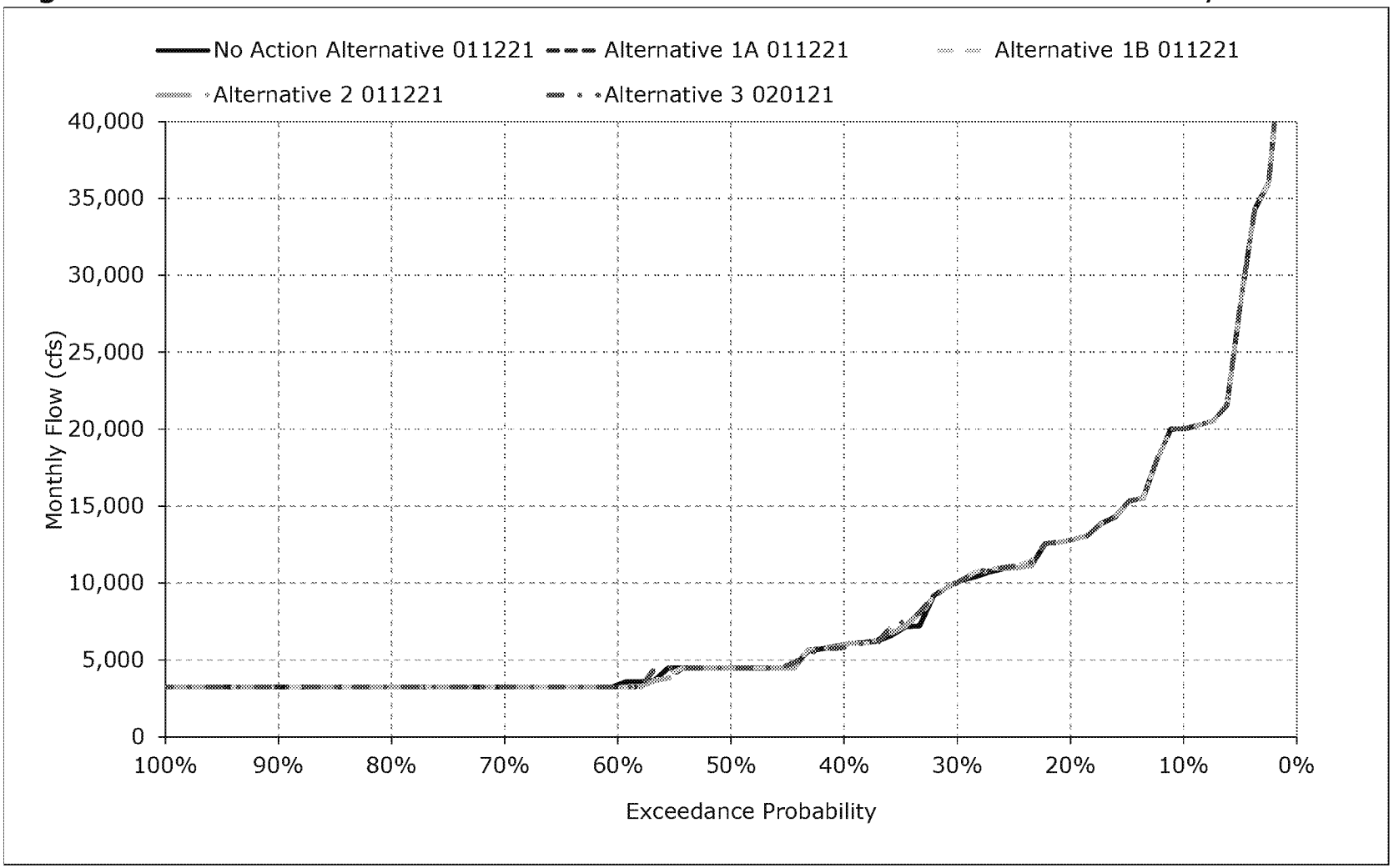


Figure 5B2-10-13. Sacramento River Flow downstream of Keswick Reservoir, April

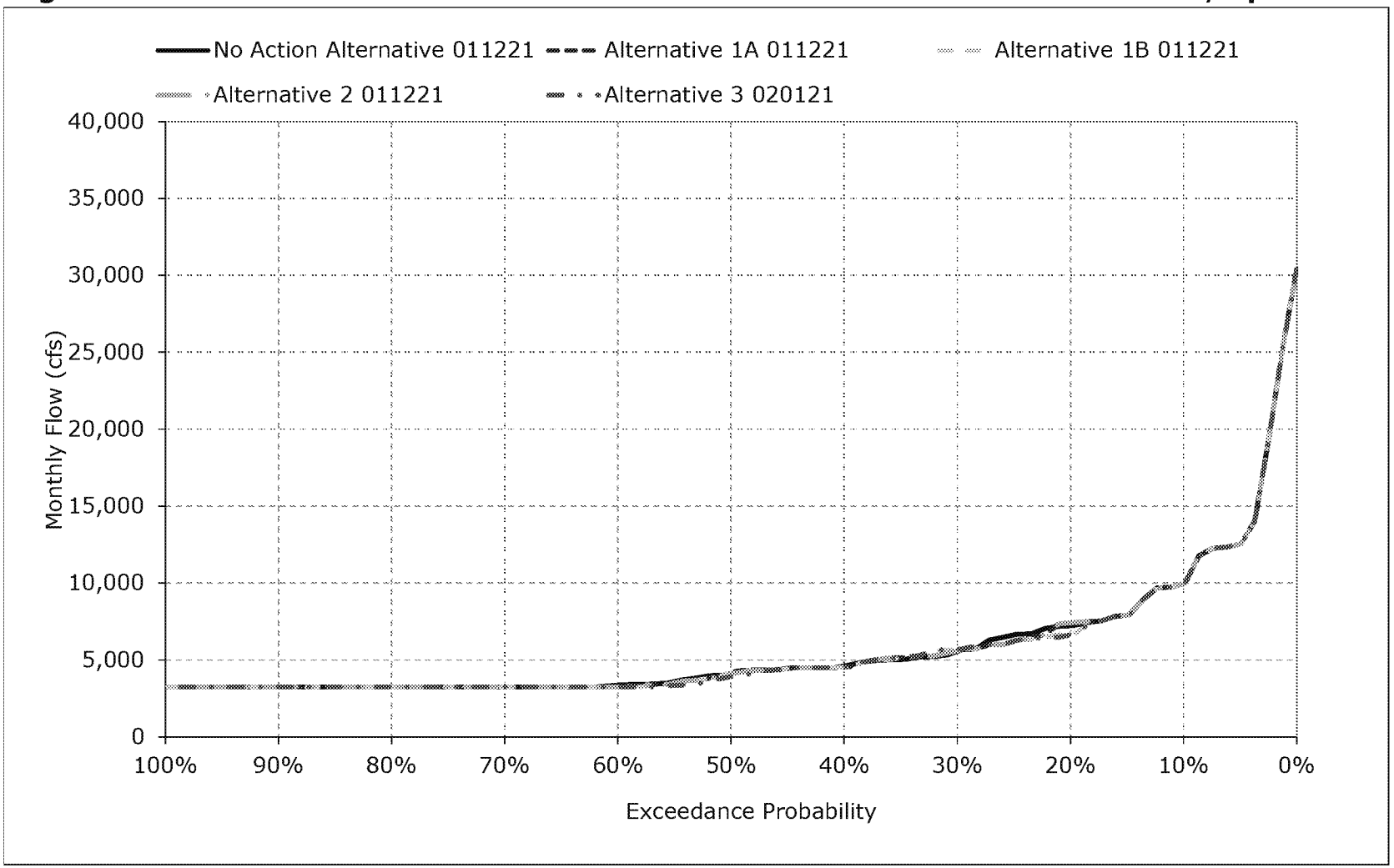


Figure 5B2-10-14. Sacramento River Flow downstream of Keswick Reservoir, May

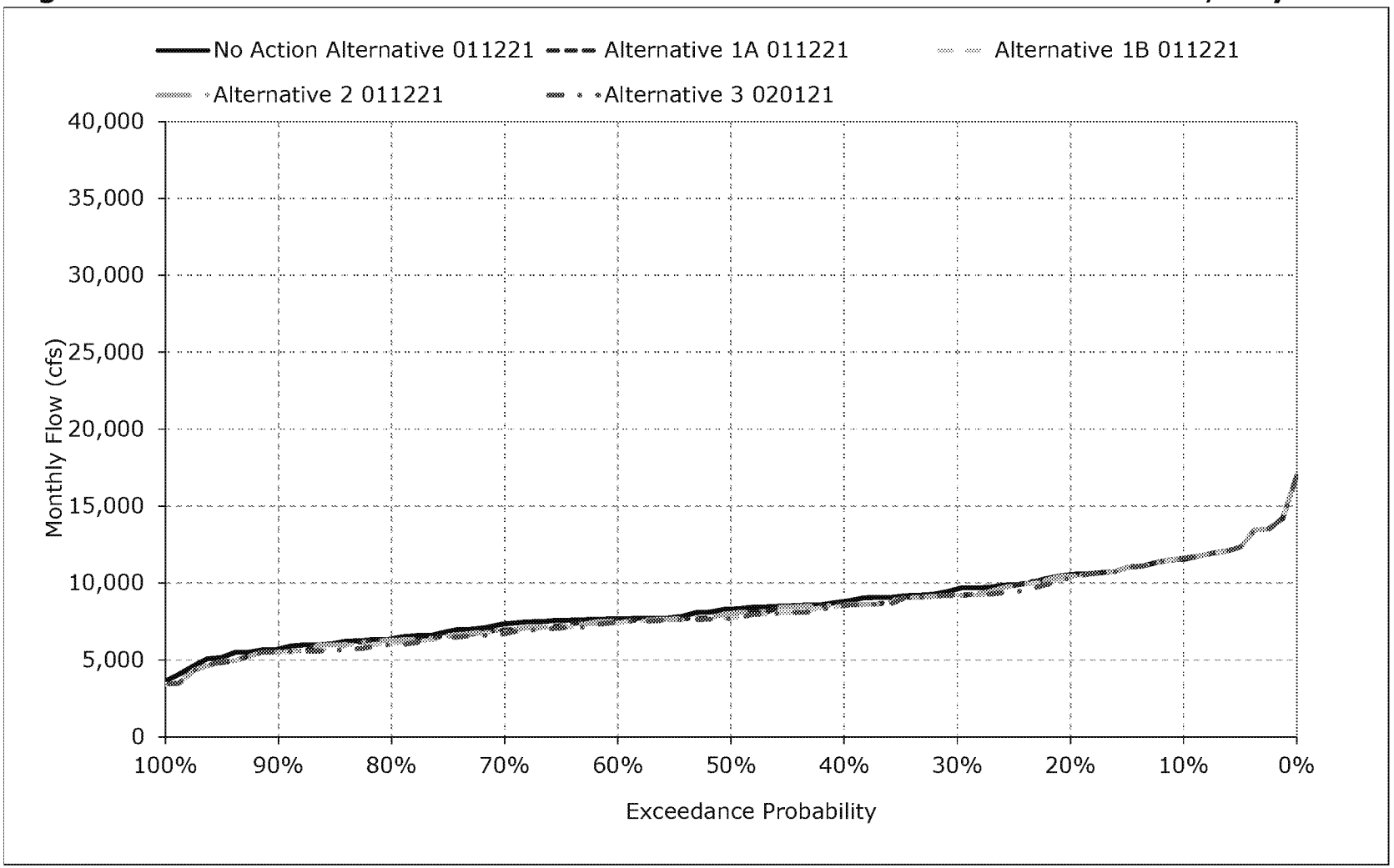


Figure 5B2-10-15. Sacramento River Flow downstream of Keswick Reservoir, June

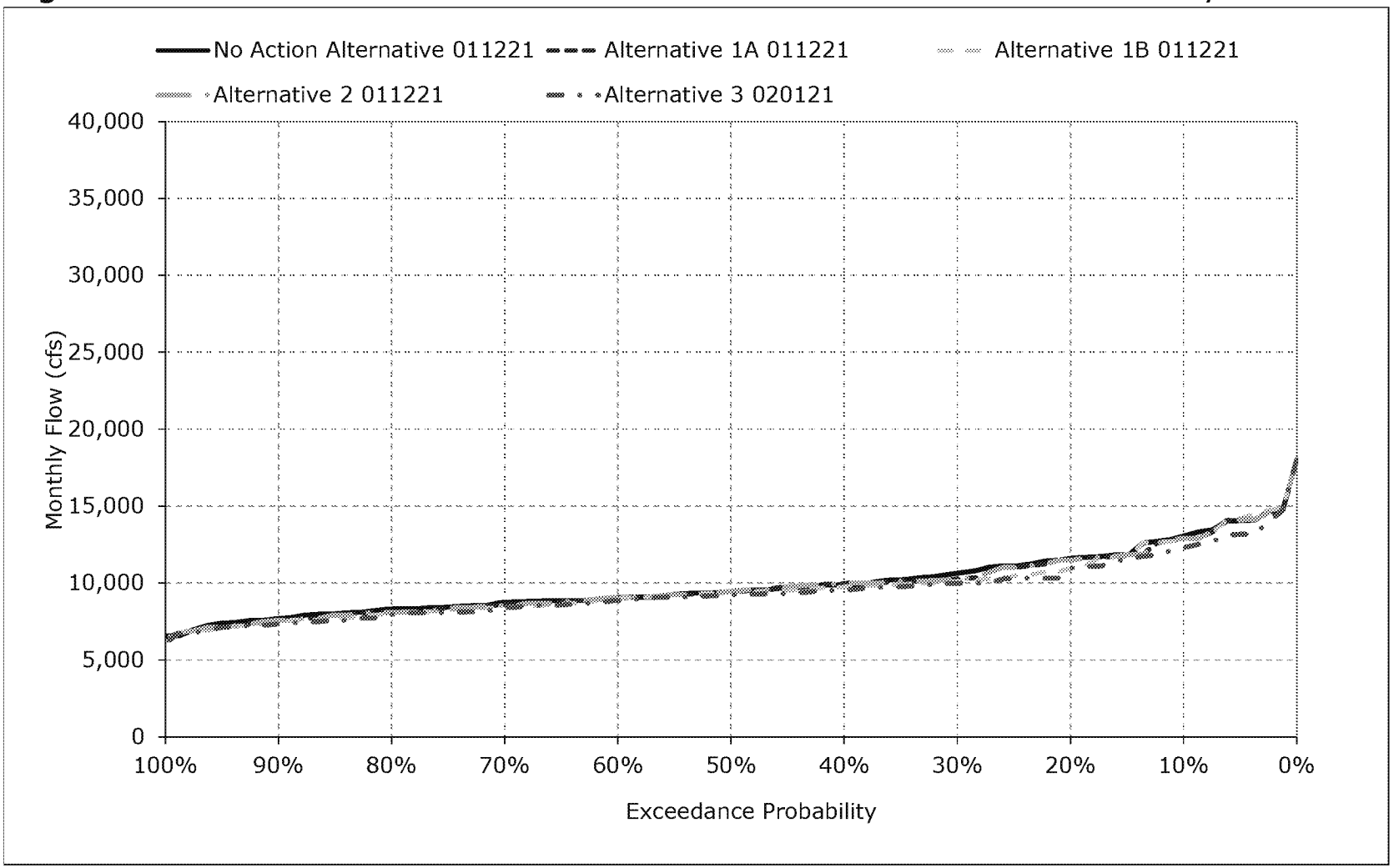


Figure 5B2-10-16. Sacramento River Flow downstream of Keswick Reservoir, July

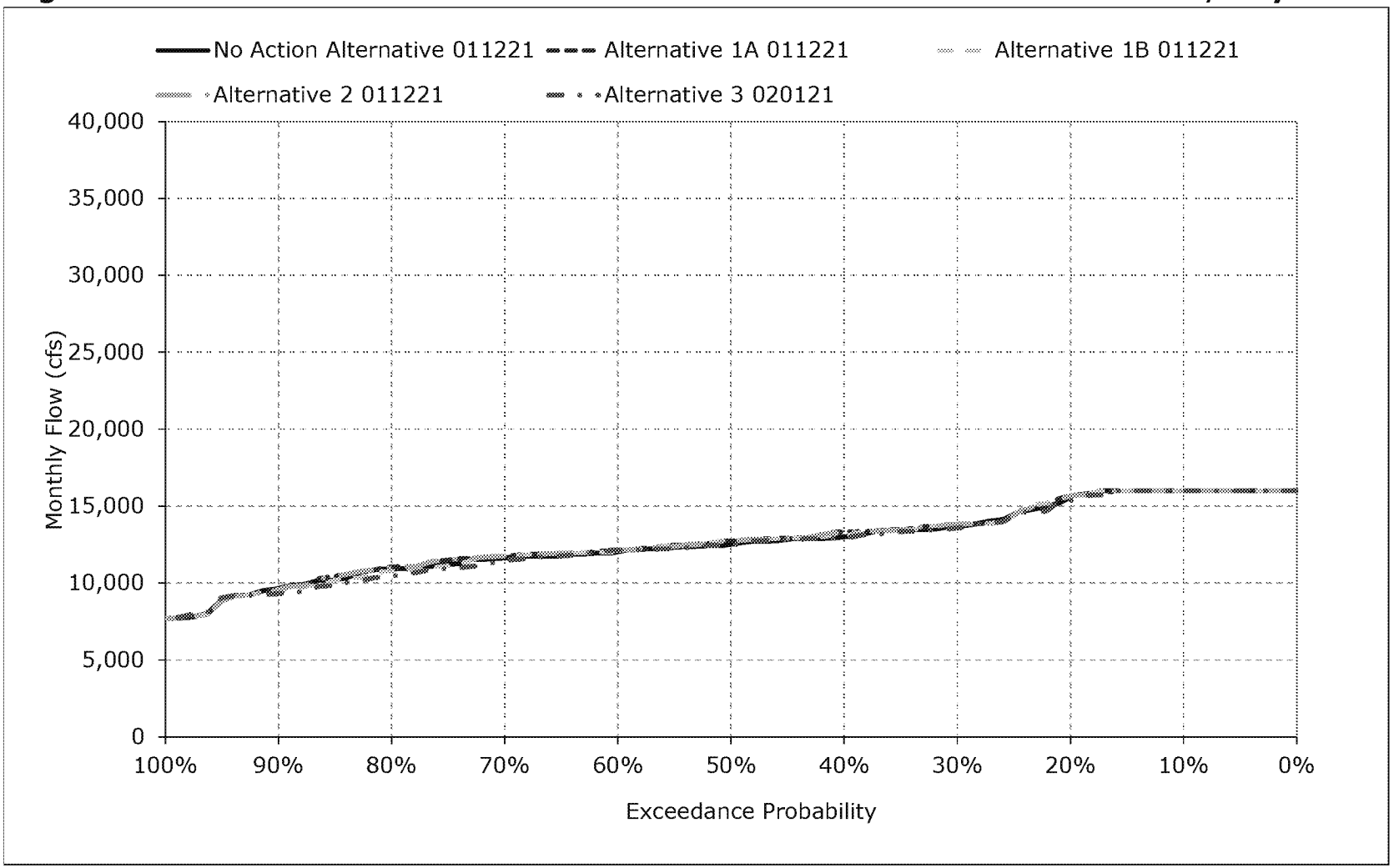


Figure 5B2-10-17. Sacramento River Flow downstream of Keswick Reservoir, August

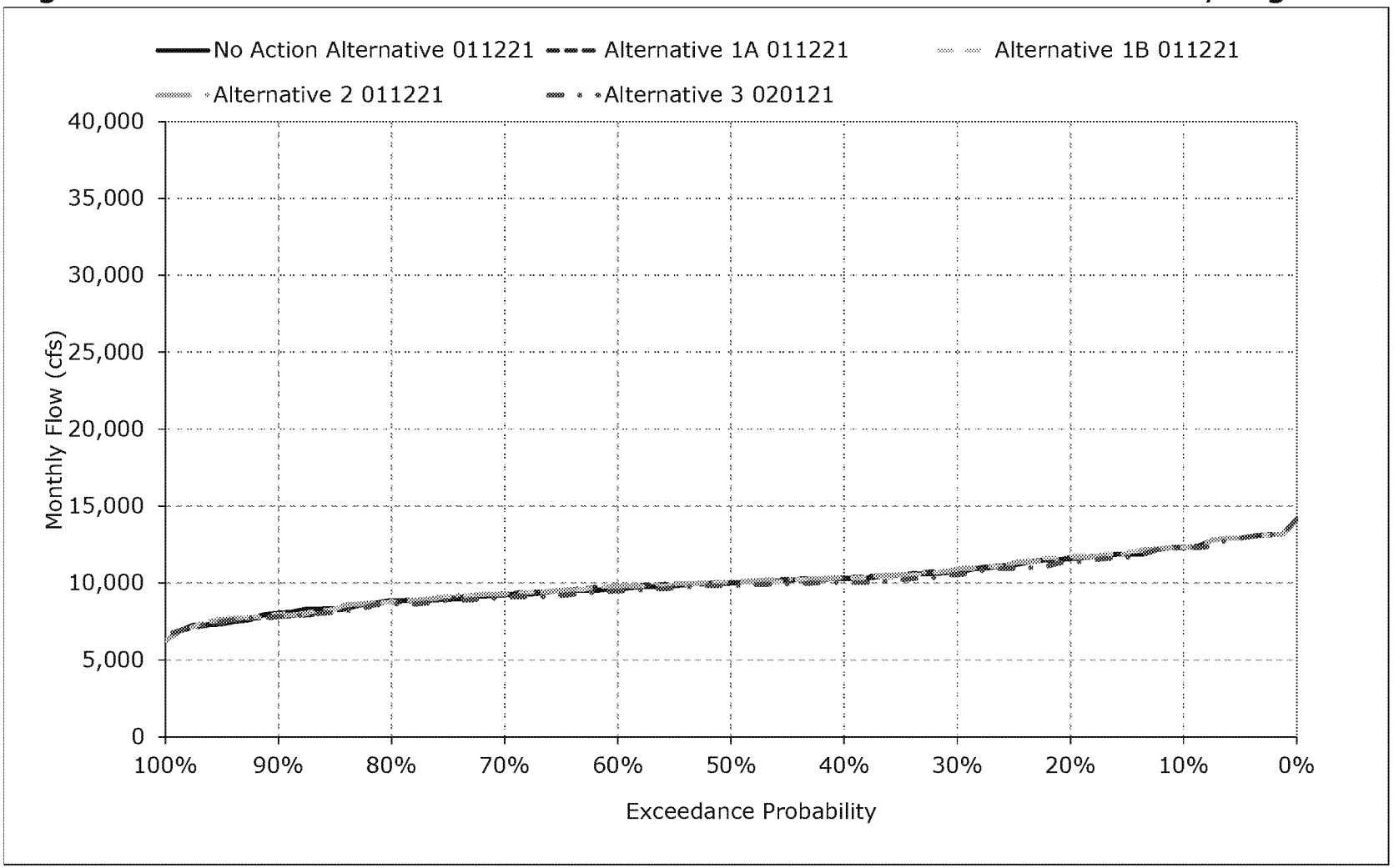


Figure 5B2-10-18. Sacramento River Flow downstream of Keswick Reservoir, September

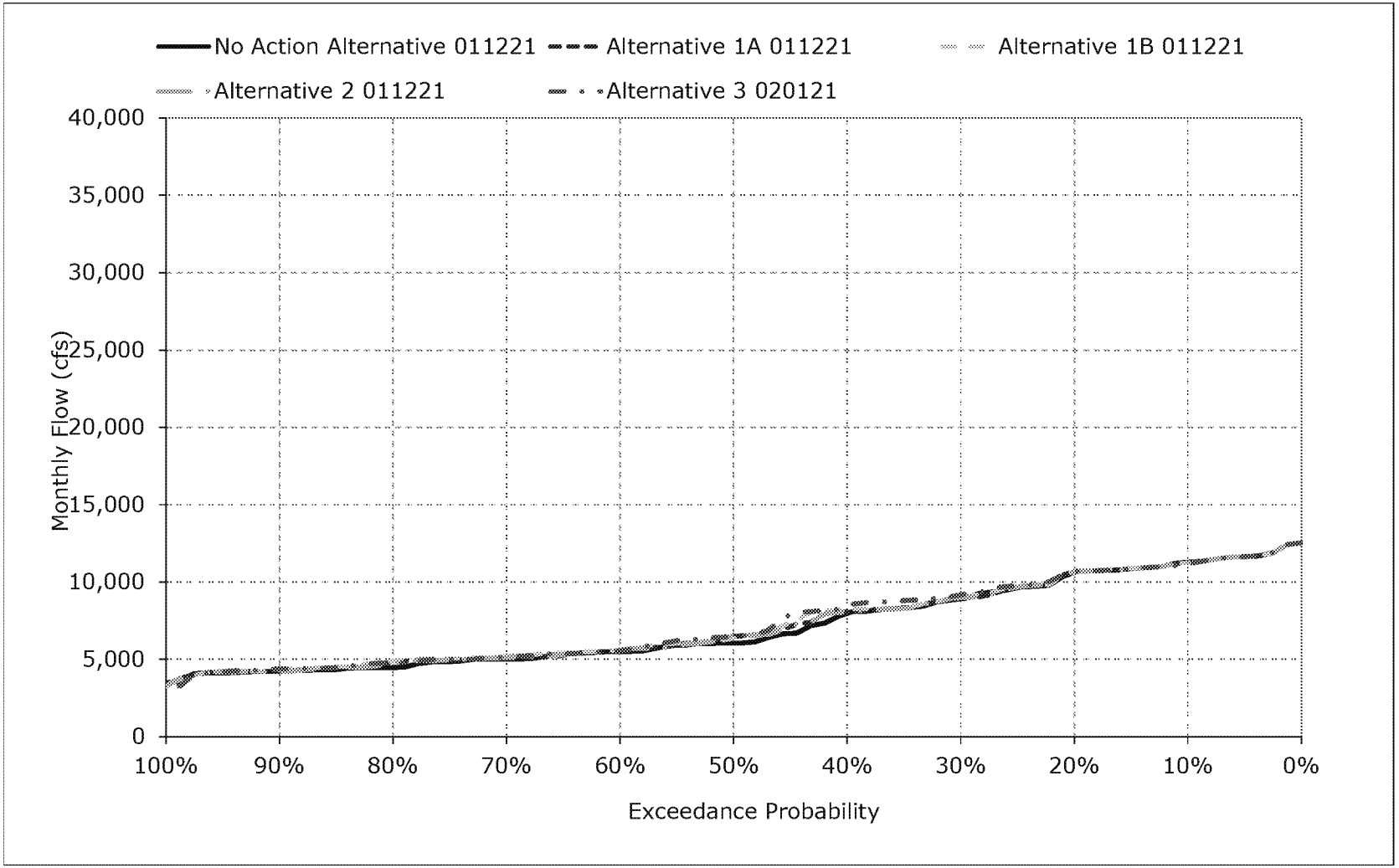


Table 5B2-11-1a. Sacramento Flow River at Bend Bridge, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,860	12,656	27,264	38,135	43,710	30,494	17,407	14,566	13,732	16,168	12,530	11,728
20%	8,915	9,281	16,162	23,108	29,235	19,684	13,523	12,724	12,231	15,521	11,650	10,934
30%	7,708	8,418	10,663	15,382	19,550	16,979	8,842	11,203	11,608	14,102	10,831	9,366
40%	7,214	7,999	8,717	12,278	13,528	10,824	7,973	10,016	10,962	13,350	10,545	8,228
50%	6,657	7,159	7,387	8,795	10,841	9,180	6,876	9,389	10,590	13,026	10,181	6,475
60%	6,481	6,829	6,660	7,177	8,700	7,990	6,103	9,026	10,165	12,343	9,856	5,880
70%	6,206	6,529	6,025	6,653	7,458	7,409	5,730	8,696	9,775	11,716	9,423	5,495
80%	6,039	6,173	5,623	5,914	6,260	6,118	5,300	8,044	9,261	11,239	9,042	4,987
90%	5,104	5,850	5,081	4,957	5,328	5,512	4,975	7,454	8,954	9,820	8,355	4,655
Long Term												
Full Simulation Period[a]	7,242	8,459	12,043	15,428	18,565	14,719	9,488	10,495	11,025	12,980	10,323	7,628
Water Year Types[b,c]												
Wet (32%)	8,722	9,466	13,051	28,508	31,283	24,660	14,483	12,724	10,822	13,475	11,605	10,811
Above Normal (15%)	7,023	10,518	11,516	16,345	24,171	17,301	9,681	11,074	11,093	14,827	11,106	8,763
Below Normal (17%)	7,199	8,157	13,104	9,304	12,964	8,785	7,386	9,138	11,318	13,594	9,999	6,115
Dry (22%)	6,073	7,256	13,766	6,713	8,846	8,666	6,462	9,106	11,720	12,521	9,388	5,304
Critical (15%)	6,058	6,376	6,565	6,390	6,515	6,599	5,463	8,754	10,013	10,030	8,545	4,844

Table 5B2-11-1b. Sacramento Flow River at Bend Bridge, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,860	12,475	27,266	38,411	43,928	30,495	17,407	14,566	13,661	16,168	12,552	11,724
20%	8,915	9,287	16,692	23,108	29,235	19,704	13,121	12,973	12,180	15,667	11,863	10,934
30%	7,767	8,416	10,662	15,391	19,927	16,979	8,976	11,064	11,525	14,156	11,120	9,313
40%	7,345	7,691	8,737	12,279	13,536	10,826	7,716	9,710	10,824	13,541	10,599	8,430
50%	6,789	7,142	7,270	8,797	10,841	9,272	6,785	9,125	10,574	13,025	10,204	6,760
60%	6,563	6,795	6,436	7,179	8,700	8,056	6,136	8,829	10,126	12,530	9,912	5,895
70%	6,401	6,449	6,012	6,637	7,444	7,410	5,763	8,391	9,465	11,924	9,555	5,536
80%	6,078	6,180	5,564	5,838	6,108	6,124	5,368	7,886	9,258	11,301	9,018	5,118
90%	5,581	5,861	5,241	4,957	5,294	5,513	4,975	7,186	8,852	9,802	8,013	4,685
Long Term												
Full Simulation Period[a]	7,320	8,451	12,068	15,453	18,557	14,719	9,466	10,312	10,931	13,053	10,347	7,706
Water Year Types[b,c]												
Wet (32%)	8,725	9,445	13,022	28,548	31,309	24,660	14,464	12,711	10,768	13,522	11,615	10,813
Above Normal (15%)	7,096	10,530	11,498	16,353	24,302	17,331	9,691	11,011	11,049	14,780	11,073	8,790
Below Normal (17%)	7,171	8,224	13,130	9,307	12,894	8,785	7,354	9,002	11,223	13,700	9,969	6,139
Dry (22%)	6,091	7,210	13,978	6,693	8,782	8,603	6,405	8,898	11,451	12,701	9,607	5,479
Critical (15%)	6,519	6,345	6,468	6,490	6,448	6,669	5,465	8,069	10,043	10,083	8,426	5,054

Table 5B2-11-1c. Sacramento Flow River at Bend Bridge, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	-180	1	276	218	0	0	0	-71	0	22	-4
20%	0	7	529	0	0	20	-402	249	-51	146	214	0
30%	59	-2	0	9	378	0	133	-139	-83	54	290	-53
40%	131	-308	19	1	8	2	-256	-306	-137	191	54	202
50%	132	-17	-117	2	0	92	-91	-264	-15	-1	22	285
60%	82	-34	-224	1	-1	66	33	-197	-40	187	56	15
70%	194	-79	-13	-17	-14	0	33	-305	-310	207	131	41
80%	39	7	-59	-77	-152	6	68	-157	-3	62	-24	131
90%	477	10	160	0	-34	1	0	-269	-102	-18	-342	30
Long Term												
Full Simulation Period[a]	78	-8	25	25	-8	1	-22	-183	-94	74	24	78
Water Year Types[b,c]												
Wet (32%)	2	-21	-29	40	26	0	-19	-14	-54	47	10	2
Above Normal (15%)	73	11	-18	7	132	30	11	-63	-44	-47	-33	27
Below Normal (17%)	-28	67	26	3	-69	1	-33	-137	-95	106	-30	24
Dry (22%)	17	-46	211	-19	-64	-64	-56	-209	-269	181	219	175
Critical (15%)	461	-31	-97	100	-67	70	2	-685	30	53	-119	209

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-11-2a. Sacramento Flow River at Bend Bridge, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,860	12,656	27,264	38,135	43,710	30,494	17,407	14,566	13,732	16,168	12,530	11,728
20%	8,915	9,281	16,162	23,108	29,235	19,684	13,523	12,724	12,231	15,521	11,650	10,934
30%	7,708	8,418	10,663	15,382	19,550	16,979	8,842	11,203	11,608	14,102	10,831	9,366
40%	7,214	7,999	8,717	12,278	13,528	10,824	7,973	10,016	10,962	13,350	10,545	8,228
50%	6,657	7,159	7,387	8,795	10,841	9,180	6,876	9,389	10,590	13,026	10,181	6,475
60%	6,481	6,829	6,660	7,177	8,700	7,990	6,103	9,026	10,165	12,343	9,856	5,880
70%	6,206	6,529	6,025	6,653	7,458	7,409	5,730	8,696	9,775	11,716	9,423	5,495
80%	6,039	6,173	5,623	5,914	6,260	6,118	5,300	8,044	9,261	11,239	9,042	4,987
90%	5,104	5,850	5,081	4,957	5,328	5,512	4,975	7,454	8,954	9,820	8,355	4,655
Long Term												
Full Simulation Period[a]	7,242	8,459	12,043	15,428	18,565	14,719	9,488	10,495	11,025	12,980	10,323	7,628
Water Year Types[b,c]												
Wet (32%)	8,722	9,466	13,051	28,508	31,283	24,660	14,483	12,724	10,822	13,475	11,605	10,811
Above Normal (15%)	7,023	10,518	11,516	16,345	24,171	17,301	9,681	11,074	11,093	14,827	11,106	8,763
Below Normal (17%)	7,199	8,157	13,104	9,304	12,964	8,785	7,386	9,138	11,318	13,594	9,999	6,115
Dry (22%)	6,073	7,256	13,766	6,713	8,846	8,666	6,462	9,106	11,720	12,521	9,388	5,304
Critical (15%)	6,058	6,376	6,565	6,390	6,515	6,599	5,463	8,754	10,013	10,030	8,545	4,844

Table 5B2-11-2b. Sacramento Flow River at Bend Bridge, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,860	12,492	27,250	38,412	43,713	30,495	17,408	14,566	13,598	16,174	12,552	11,724
20%	8,959	9,385	18,324	23,108	29,236	19,837	13,258	12,970	12,031	15,655	11,944	10,934
30%	7,757	8,412	10,900	15,393	20,246	16,978	8,842	10,995	11,219	14,156	11,078	9,425
40%	7,280	7,857	8,795	12,277	13,908	10,823	7,601	9,703	10,710	13,441	10,498	8,639
50%	6,781	7,339	7,295	8,796	10,842	9,181	6,785	9,046	10,455	13,060	10,174	6,683
60%	6,562	6,810	6,527	7,180	8,700	7,982	6,185	8,713	10,011	12,464	9,914	5,940
70%	6,354	6,504	6,025	6,616	7,444	7,410	5,764	8,204	9,346	11,843	9,572	5,629
80%	6,018	6,228	5,539	5,838	6,211	6,124	5,367	7,865	9,133	10,969	9,007	5,237
90%	5,576	5,940	5,245	4,959	5,288	5,527	4,977	6,893	8,674	9,736	8,345	4,712
Long Term												
Full Simulation Period[a]	7,314	8,551	12,085	15,452	18,626	14,730	9,444	10,229	10,807	13,009	10,366	7,763
Water Year Types[b,c]												
Wet (32%)	8,716	9,365	13,018	28,603	31,356	24,660	14,464	12,711	10,768	13,522	11,616	10,822
Above Normal (15%)	7,171	10,507	11,697	16,353	24,391	17,386	9,734	11,004	10,373	14,471	11,105	9,121
Below Normal (17%)	7,249	8,413	13,214	9,293	13,047	8,785	7,339	8,717	11,028	13,612	9,965	6,205
Dry (22%)	6,005	7,616	13,812	6,692	8,841	8,647	6,293	8,790	11,567	12,783	9,567	5,447
Critical (15%)	6,455	6,393	6,544	6,384	6,465	6,623	5,458	8,000	9,930	10,068	8,588	5,065

Table 5B2-11-2c. Sacramento Flow River at Bend Bridge, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	-163	-14	277	2	0	1	0	-134	6	22	-4
20%	44	105	2,162	0	2	153	-265	245	-201	135	294	0
30%	49	-7	238	11	697	-1	0	-208	-389	54	247	60
40%	67	-142	78	0	381	-2	-372	-313	-251	90	-47	411
50%	124	181	-92	1	0	0	-91	-343	-135	34	-7	208
60%	81	-19	-133	3	0	-8	82	-312	-154	121	58	60
70%	148	-25	0	-37	-14	0	33	-492	-428	127	149	134
80%	-21	55	-84	-76	-50	6	67	-178	-127	-271	-35	250
90%	472	90	163	2	-39	15	2	-561	-280	-84	-11	57
Long Term												
Full Simulation Period[a]	72	92	42	24	61	12	-44	-266	-217	29	43	135
Water Year Types[b,c]												
Wet (32%)	-6	-101	-33	95	73	0	-19	-14	-54	47	11	11
Above Normal (15%)	148	-11	182	8	220	85	53	-70	-720	-356	-1	358
Below Normal (17%)	51	256	110	-11	84	0	-47	-421	-290	18	-34	90
Dry (22%)	-68	360	45	-21	-4	-19	-169	-317	-153	262	178	143
Critical (15%)	397	17	-22	-6	-50	24	-6	-754	-82	38	44	221

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-11-3a. Sacramento Flow River at Bend Bridge, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,860	12,656	27,264	38,135	43,710	30,494	17,407	14,566	13,732	16,168	12,530	11,728
20%	8,915	9,281	16,162	23,108	29,235	19,684	13,523	12,724	12,231	15,521	11,650	10,934
30%	7,708	8,418	10,663	15,382	19,550	16,979	8,842	11,203	11,608	14,102	10,831	9,366
40%	7,214	7,999	8,717	12,278	13,528	10,824	7,973	10,016	10,962	13,350	10,545	8,228
50%	6,657	7,159	7,387	8,795	10,841	9,180	6,876	9,389	10,590	13,026	10,181	6,475
60%	6,481	6,829	6,660	7,177	8,700	7,990	6,103	9,026	10,165	12,343	9,856	5,880
70%	6,206	6,529	6,025	6,653	7,458	7,409	5,730	8,696	9,775	11,716	9,423	5,495
80%	6,039	6,173	5,623	5,914	6,260	6,118	5,300	8,044	9,261	11,239	9,042	4,987
90%	5,104	5,850	5,081	4,957	5,328	5,512	4,975	7,454	8,954	9,820	8,355	4,655
Long Term												
Full Simulation Period[a]	7,242	8,459	12,043	15,428	18,565	14,719	9,488	10,495	11,025	12,980	10,323	7,628
Water Year Types[b,c]												
Wet (32%)	8,722	9,466	13,051	28,508	31,283	24,660	14,483	12,724	10,822	13,475	11,605	10,811
Above Normal (15%)	7,023	10,518	11,516	16,345	24,171	17,301	9,681	11,074	11,093	14,827	11,106	8,763
Below Normal (17%)	7,199	8,157	13,104	9,304	12,964	8,785	7,386	9,138	11,318	13,594	9,999	6,115
Dry (22%)	6,073	7,256	13,766	6,713	8,846	8,666	6,462	9,106	11,720	12,521	9,388	5,304
Critical (15%)	6,058	6,376	6,565	6,390	6,515	6,599	5,463	8,754	10,013	10,030	8,545	4,844

Table 5B2-11-3b. Sacramento Flow River at Bend Bridge, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,860	12,464	27,271	38,412	43,928	30,495	17,407	14,566	13,671	16,168	12,552	11,726
20%	8,915	9,287	16,756	23,108	29,235	19,701	13,126	12,973	12,181	15,658	11,849	10,934
30%	7,772	8,410	10,662	15,392	19,981	16,979	8,976	11,064	11,525	14,156	11,121	9,316
40%	7,218	7,725	8,737	12,279	13,536	10,826	7,716	9,703	10,824	13,534	10,622	8,430
50%	6,789	7,023	7,274	8,797	10,841	9,272	6,785	9,125	10,574	13,025	10,211	6,760
60%	6,566	6,734	6,517	7,179	8,700	8,068	6,138	8,829	10,126	12,515	9,926	5,896
70%	6,373	6,446	6,025	6,636	7,444	7,410	5,763	8,373	9,465	11,926	9,556	5,536
80%	6,077	6,111	5,554	5,837	6,168	6,124	5,368	7,909	9,244	11,293	9,061	5,117
90%	5,503	5,907	5,250	4,957	5,294	5,514	4,975	7,186	8,852	9,749	8,149	4,718
Long Term												
Full Simulation Period[a]	7,320	8,441	12,084	15,438	18,551	14,720	9,466	10,311	10,928	13,049	10,373	7,702
Water Year Types[b,c]												
Wet (32%)	8,725	9,445	13,023	28,543	31,309	24,660	14,464	12,711	10,768	13,523	11,615	10,813
Above Normal (15%)	7,096	10,528	11,498	16,353	24,325	17,330	9,691	11,011	11,048	14,773	11,073	8,797
Below Normal (17%)	7,220	8,215	13,139	9,305	12,831	8,786	7,354	9,002	11,223	13,695	9,978	6,135
Dry (22%)	6,091	7,152	13,984	6,693	8,782	8,606	6,405	8,897	11,452	12,704	9,609	5,476
Critical (15%)	6,461	6,378	6,552	6,403	6,460	6,666	5,465	8,059	10,023	10,060	8,587	5,035

Table 5B2-11-3c. Sacramento Flow River at Bend Bridge, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	-192	7	277	218	0	0	0	-60	0	22	-2
20%	0	7	594	0	0	17	-398	249	-51	138	199	0
30%	63	-8	0	9	432	0	134	-139	-83	54	291	-50
40%	5	-274	19	1	8	2	-256	-313	-137	184	77	202
50%	132	-136	-112	2	0	91	-91	-264	-15	-2	29	285
60%	85	-95	-143	1	0	79	35	-197	-40	173	70	15
70%	167	-83	1	-17	-14	0	33	-322	-309	209	132	41
80%	39	-62	-70	-77	-93	6	68	-135	-17	53	18	130
90%	399	57	169	0	-34	2	0	-268	-102	-71	-207	62
Long Term												
Full Simulation Period[a]	78	-18	40	10	-14	1	-22	-184	-97	69	50	75
Water Year Types[b,c]												
Wet (32%)	2	-21	-28	36	26	0	-19	-14	-54	48	10	2
Above Normal (15%)	73	10	-18	7	154	28	11	-63	-45	-54	-32	34
Below Normal (17%)	21	57	35	2	-132	1	-33	-136	-95	101	-21	20
Dry (22%)	18	-105	218	-20	-64	-61	-56	-209	-268	184	221	172
Critical (15%)	403	2	-13	13	-54	68	2	-695	11	30	42	190

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-11-4a. Sacramento Flow River at Bend Bridge, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,860	12,656	27,264	38,135	43,710	30,494	17,407	14,566	13,732	16,168	12,530	11,728
20%	8,915	9,281	16,162	23,108	29,235	19,684	13,523	12,724	12,231	15,521	11,650	10,934
30%	7,708	8,418	10,663	15,382	19,550	16,979	8,842	11,203	11,608	14,102	10,831	9,366
40%	7,214	7,999	8,717	12,278	13,528	10,824	7,973	10,016	10,962	13,350	10,545	8,228
50%	6,657	7,159	7,387	8,795	10,841	9,180	6,876	9,389	10,590	13,026	10,181	6,475
60%	6,481	6,829	6,660	7,177	8,700	7,990	6,103	9,026	10,165	12,343	9,856	5,880
70%	6,206	6,529	6,025	6,653	7,458	7,409	5,730	8,696	9,775	11,716	9,423	5,495
80%	6,039	6,173	5,623	5,914	6,260	6,118	5,300	8,044	9,261	11,239	9,042	4,987
90%	5,104	5,850	5,081	4,957	5,328	5,512	4,975	7,454	8,954	9,820	8,355	4,655
Long Term												
Full Simulation Period[a]	7,242	8,459	12,043	15,428	18,565	14,719	9,488	10,495	11,025	12,980	10,323	7,628
Water Year Types[b,c]												
Wet (32%)	8,722	9,466	13,051	28,508	31,283	24,660	14,483	12,724	10,822	13,475	11,605	10,811
Above Normal (15%)	7,023	10,518	11,516	16,345	24,171	17,301	9,681	11,074	11,093	14,827	11,106	8,763
Below Normal (17%)	7,199	8,157	13,104	9,304	12,964	8,785	7,386	9,138	11,318	13,594	9,999	6,115
Dry (22%)	6,073	7,256	13,766	6,713	8,846	8,666	6,462	9,106	11,720	12,521	9,388	5,304
Critical (15%)	6,058	6,376	6,565	6,390	6,515	6,599	5,463	8,754	10,013	10,030	8,545	4,844

Table 5B2-11-4b. Sacramento Flow River at Bend Bridge, Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,889	12,557	27,275	38,416	43,929	30,495	17,409	14,567	13,060	16,164	12,488	11,716
20%	8,959	9,379	18,967	23,109	29,238	19,820	13,866	12,970	11,872	15,503	11,496	10,935
30%	8,203	8,616	12,248	15,394	20,724	16,978	8,842	10,539	10,878	14,051	10,739	9,559
40%	7,403	7,929	8,793	12,278	14,598	10,825	7,600	9,701	10,634	13,320	10,181	8,897
50%	6,845	7,177	7,121	8,795	10,841	9,180	6,785	8,972	10,190	12,939	10,000	6,788
60%	6,625	6,725	6,495	7,034	8,702	7,855	6,104	8,662	9,837	12,435	9,652	6,051
70%	6,463	6,462	5,984	6,622	7,445	7,409	5,727	8,387	9,270	11,696	9,248	5,642
80%	6,094	6,171	5,627	5,837	6,247	6,124	5,305	7,542	9,055	10,632	8,856	5,107
90%	5,724	5,940	5,159	4,959	5,294	5,527	4,937	6,871	8,439	9,644	8,199	4,683
Long Term												
Full Simulation Period[a]	7,459	8,584	12,269	15,447	18,799	14,746	9,430	10,188	10,589	12,872	10,156	7,821
Water Year Types[b,c]												
Wet (32%)	8,725	9,374	13,026	28,611	31,525	24,660	14,465	12,711	10,768	13,523	11,615	10,815
Above Normal (15%)	7,554	10,648	11,896	16,354	25,066	17,376	9,735	11,004	10,103	14,115	10,180	9,519
Below Normal (17%)	7,521	8,514	13,458	9,294	13,142	8,784	7,394	8,696	10,316	13,500	9,873	6,307
Dry (22%)	6,192	7,613	14,300	6,691	8,873	8,730	6,279	8,617	11,281	12,498	9,323	5,397
Critical (15%)	6,447	6,345	6,569	6,329	6,447	6,613	5,317	8,005	9,966	10,044	8,550	5,038

Table 5B2-11-4c. Sacramento Flow River at Bend Bridge, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

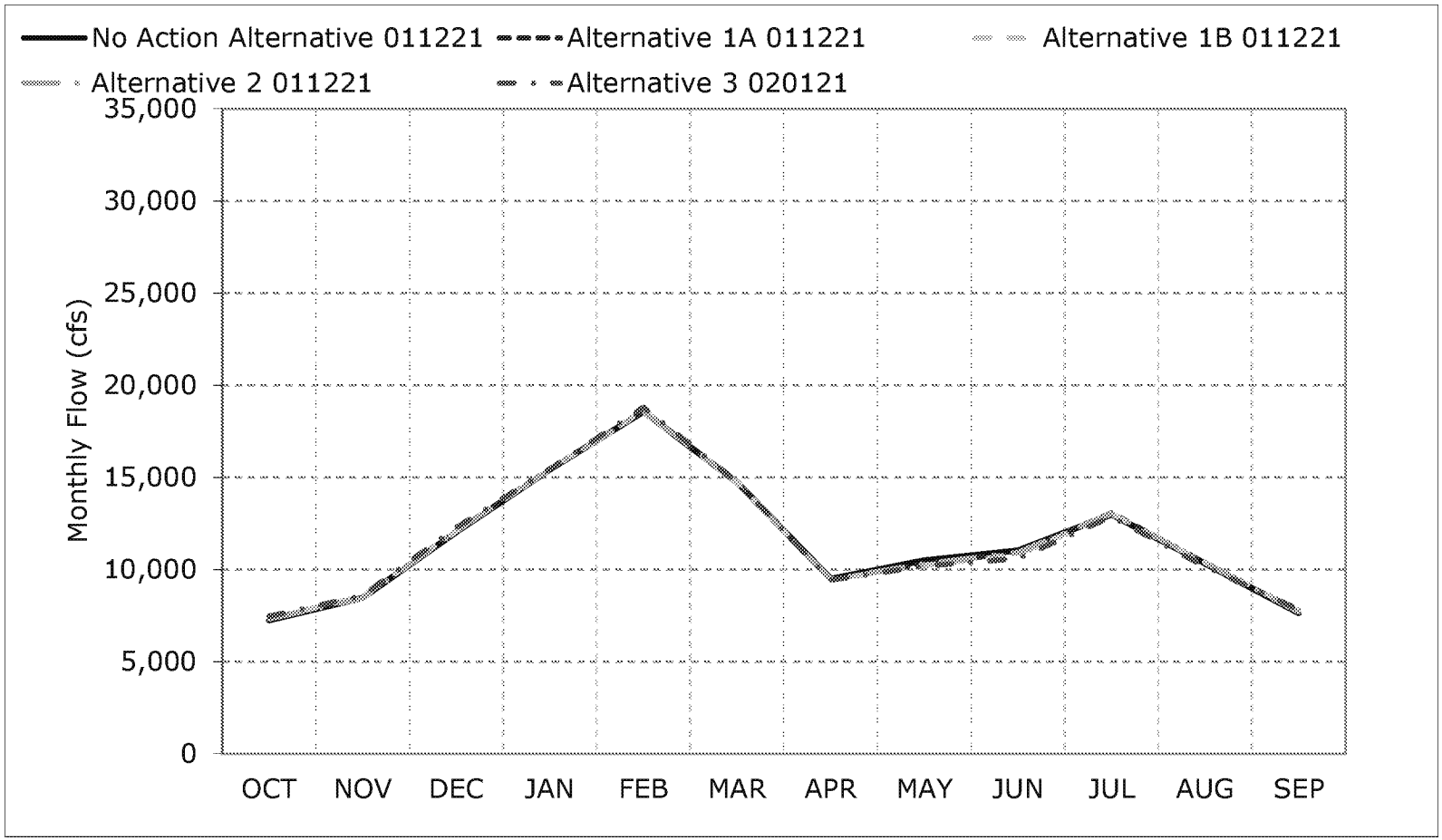
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	29	-99	11	281	218	1	2	1	-672	-4	-42	-13
20%	45	99	2,805	1	4	136	343	245	-359	-18	-153	0
30%	495	198	1,585	11	1,174	-1	0	-664	-730	-51	-91	194
40%	189	-70	76	0	1,070	0	-372	-315	-328	-30	-364	669
50%	188	19	-266	0	0	0	-91	-417	-400	-88	-182	313
60%	144	-104	-164	-144	2	-135	1	-364	-329	93	-204	171
70%	257	-67	-41	-31	-13	0	-3	-309	-505	-20	-175	147
80%	55	-2	3	-77	-13	6	4	-502	-206	-607	-186	120
90%	620	89	78	2	-34	15	-38	-584	-515	-176	-156	28
Long Term												
Full Simulation Period[a]	217	124	226	19	234	27	-58	-307	-436	-108	-167	193
Water Year Types[b,c]												
Wet (32%)	3	-92	-25	103	242	0	-18	-14	-53	48	10	3
Above Normal (15%)	531	129	381	9	895	75	55	-70	-990	-712	-926	756
Below Normal (17%)	322	357	355	-10	178	0	7	-442	-1,001	-94	-126	191
Dry (22%)	119	356	534	-22	27	64	-182	-490	-439	-23	-65	93
Critical (15%)	389	-31	3	-61	-67	15	-147	-750	-46	14	5	194

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

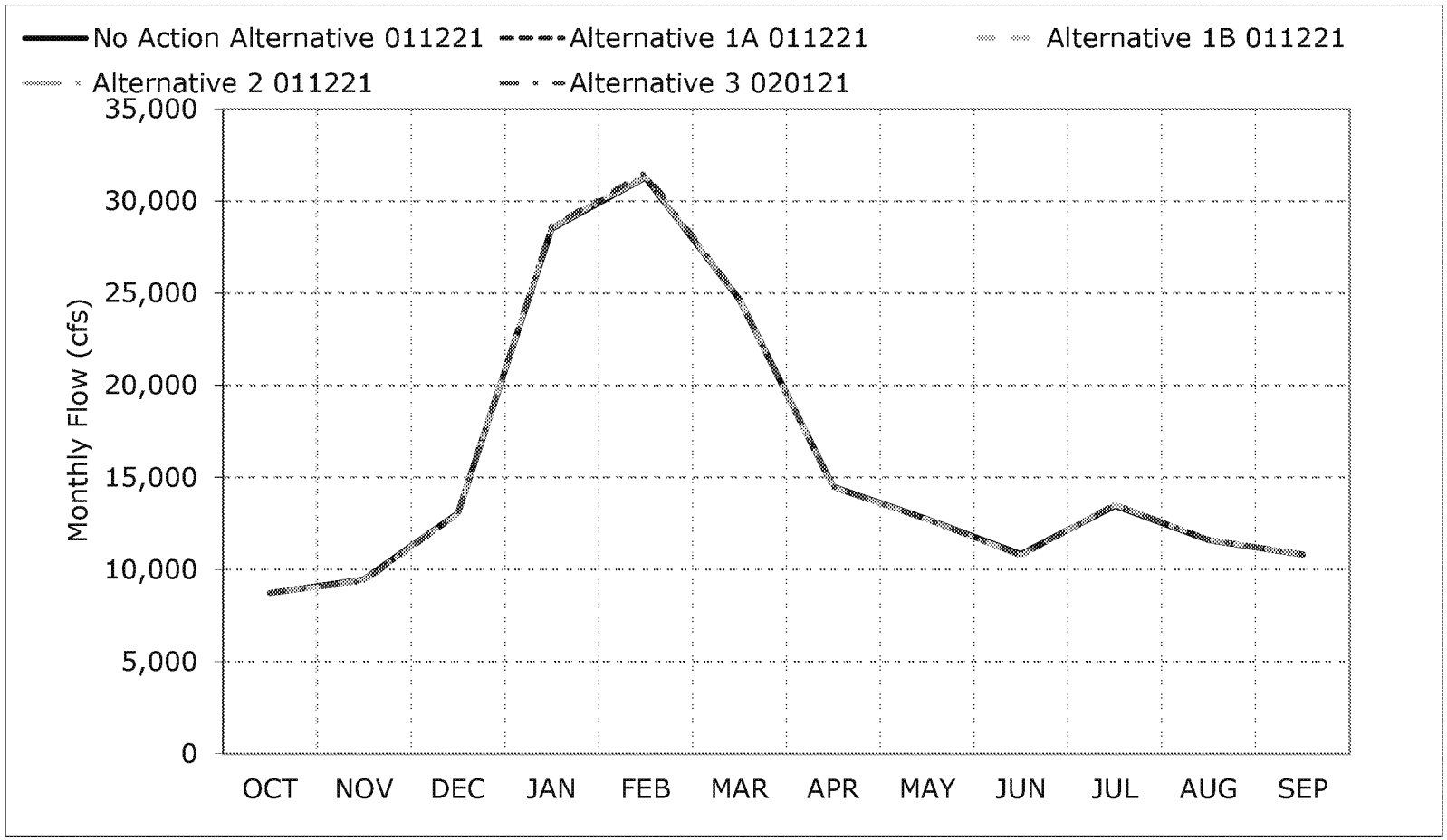
c These results are displayed with calendar year - year type sorting.

Figure 5B2-11-1. Sacramento Flow River at Bend Bridge, Long-Term Average Flow



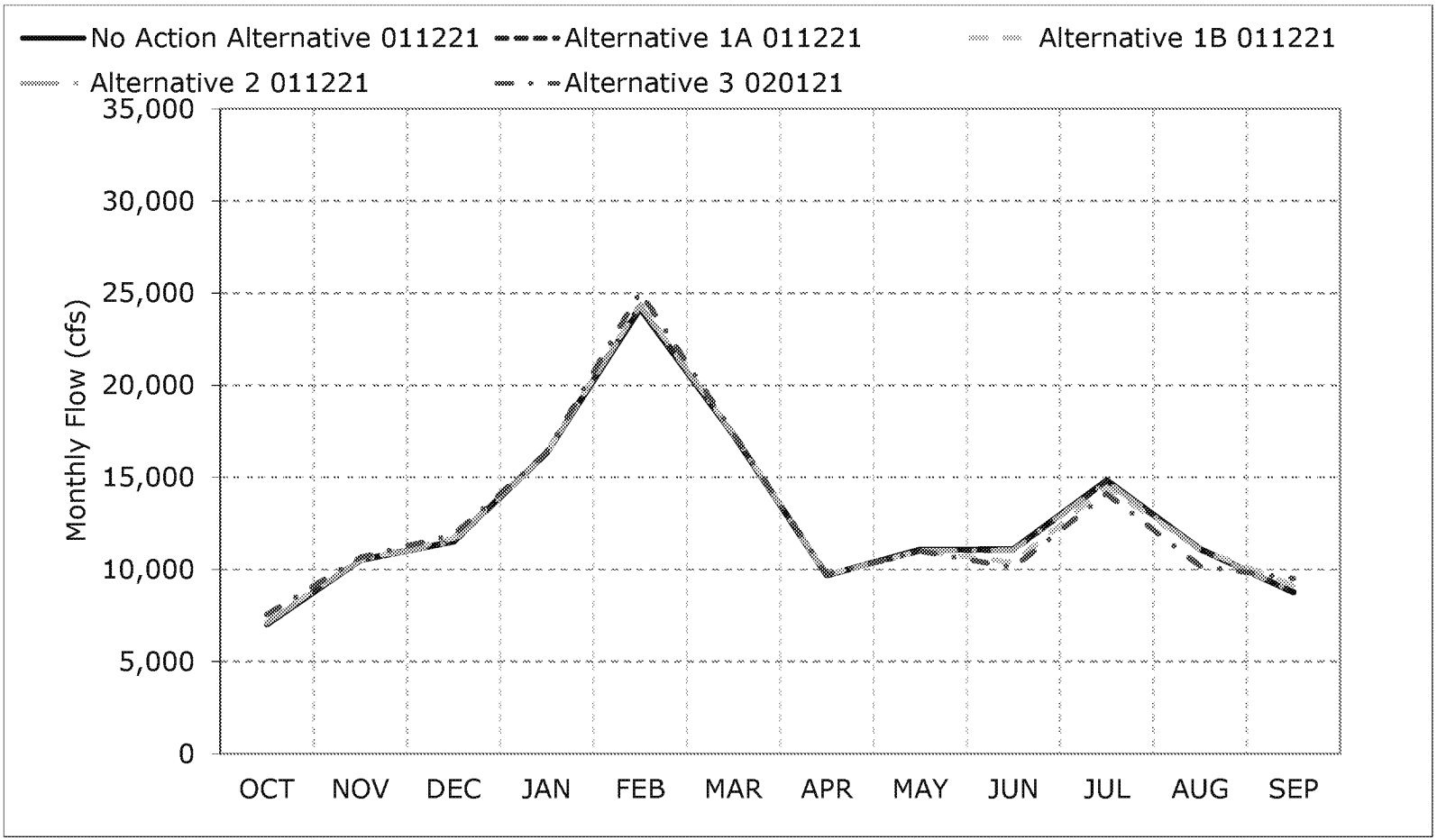
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-11-2. Sacramento Flow River at Bend Bridge, Wet Year Average Flow



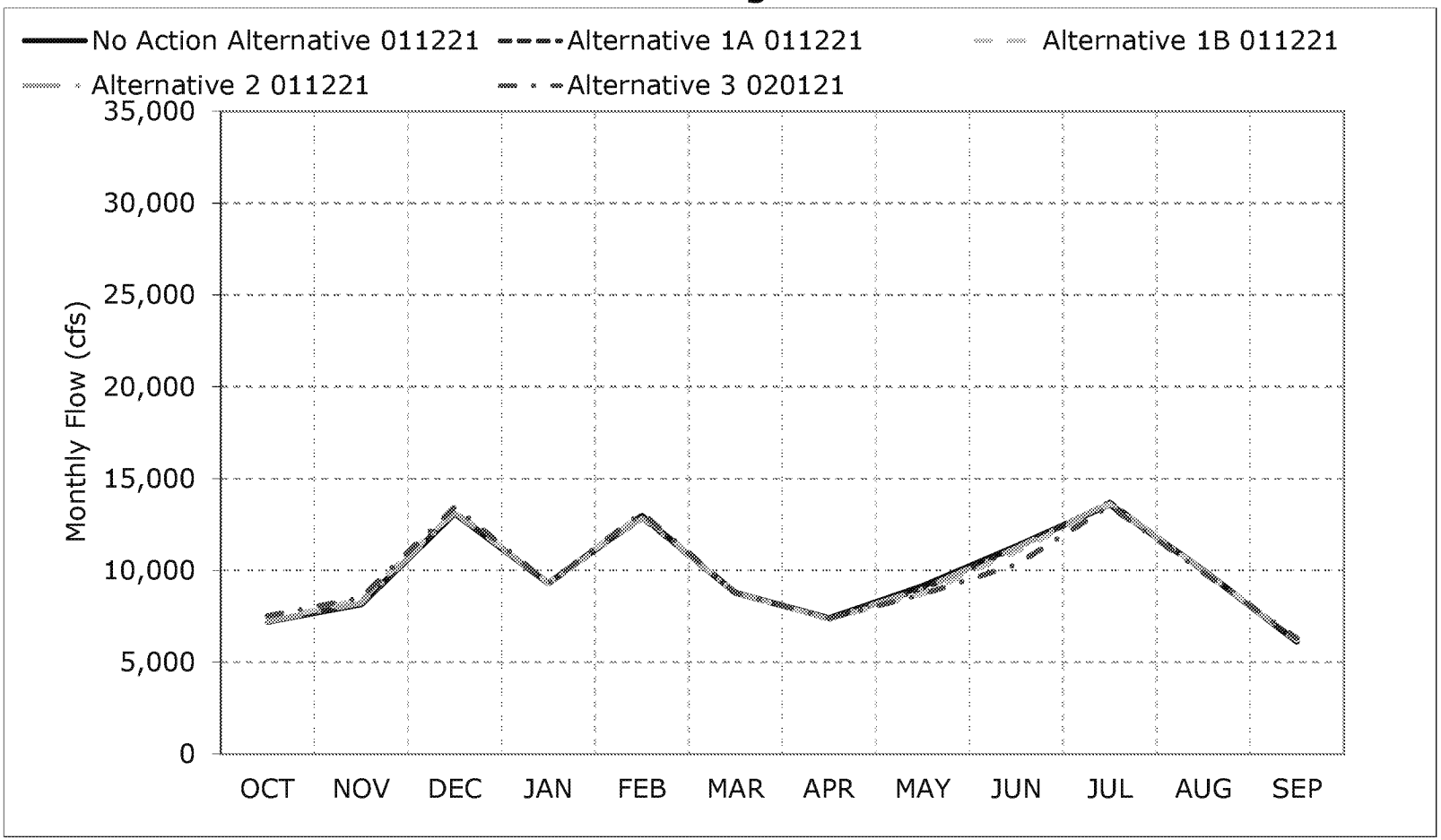
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-11-3. Sacramento Flow River at Bend Bridge, Above Normal Year Average Flow



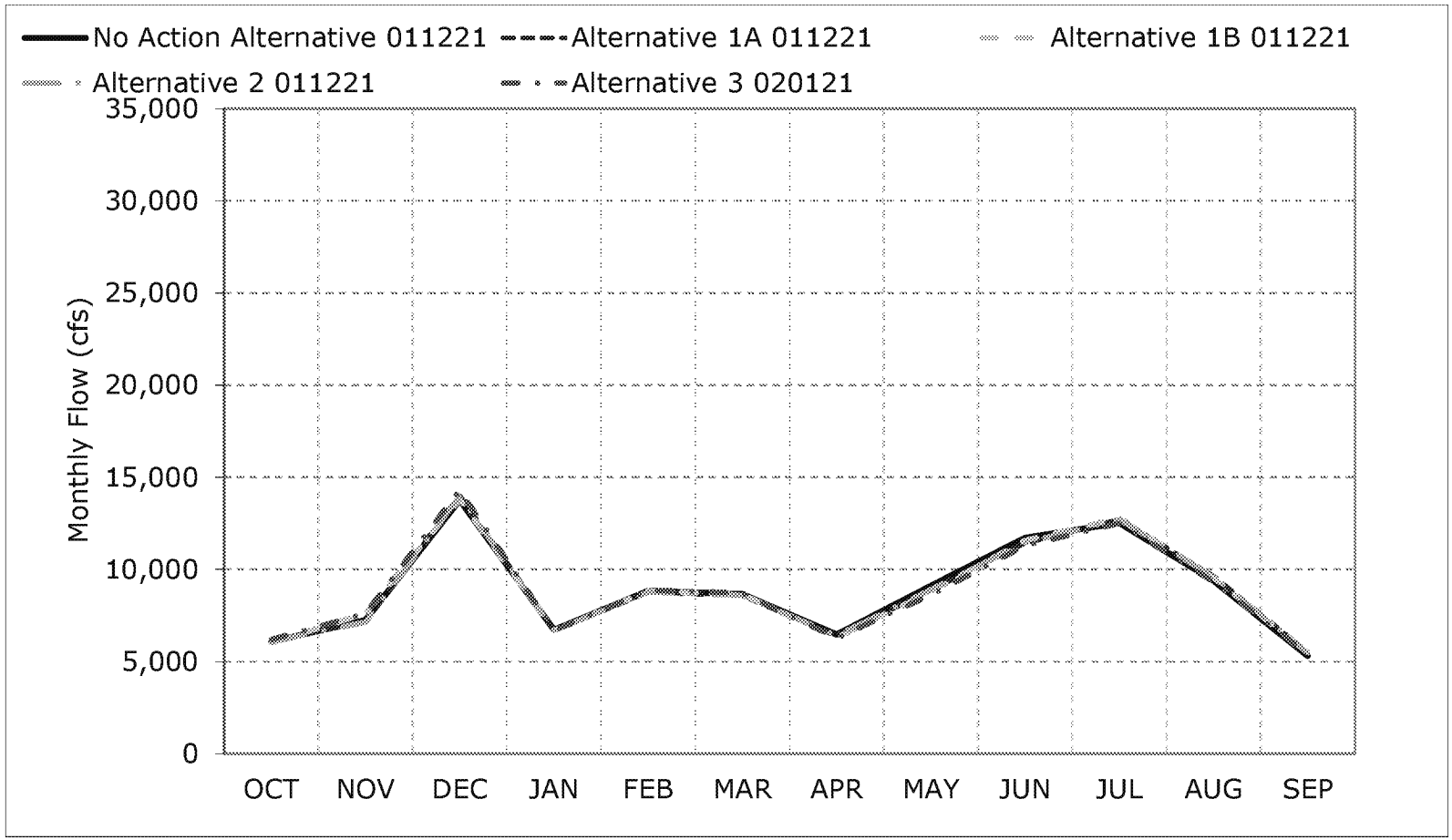
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-11-4. Sacramento Flow River at Bend Bridge, Below Normal Year Average Flow



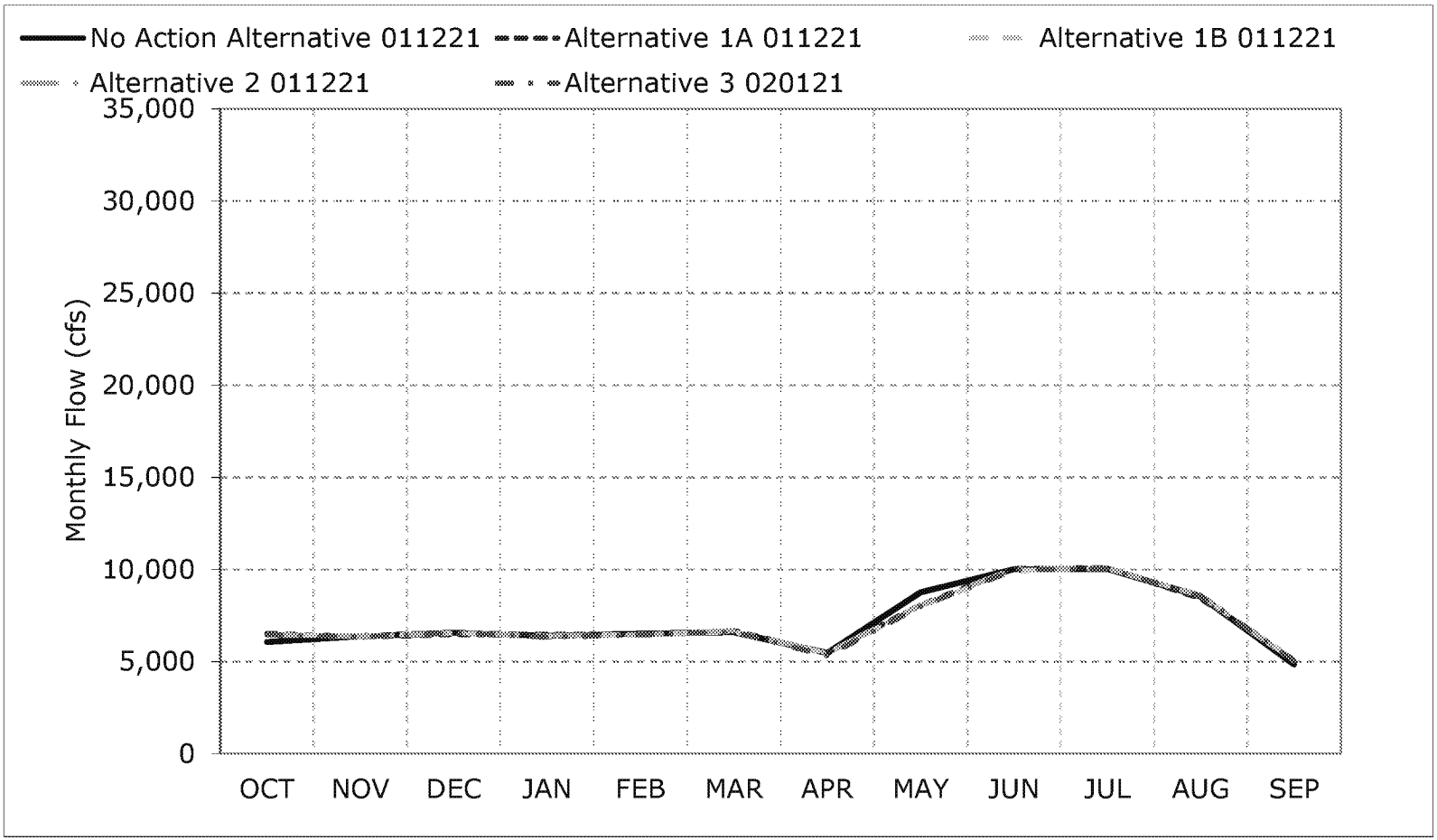
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-11-5. Sacramento Flow River at Bend Bridge, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-11-6. Sacramento Flow River at Bend Bridge, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-11-7. Sacramento Flow River at Bend Bridge, October

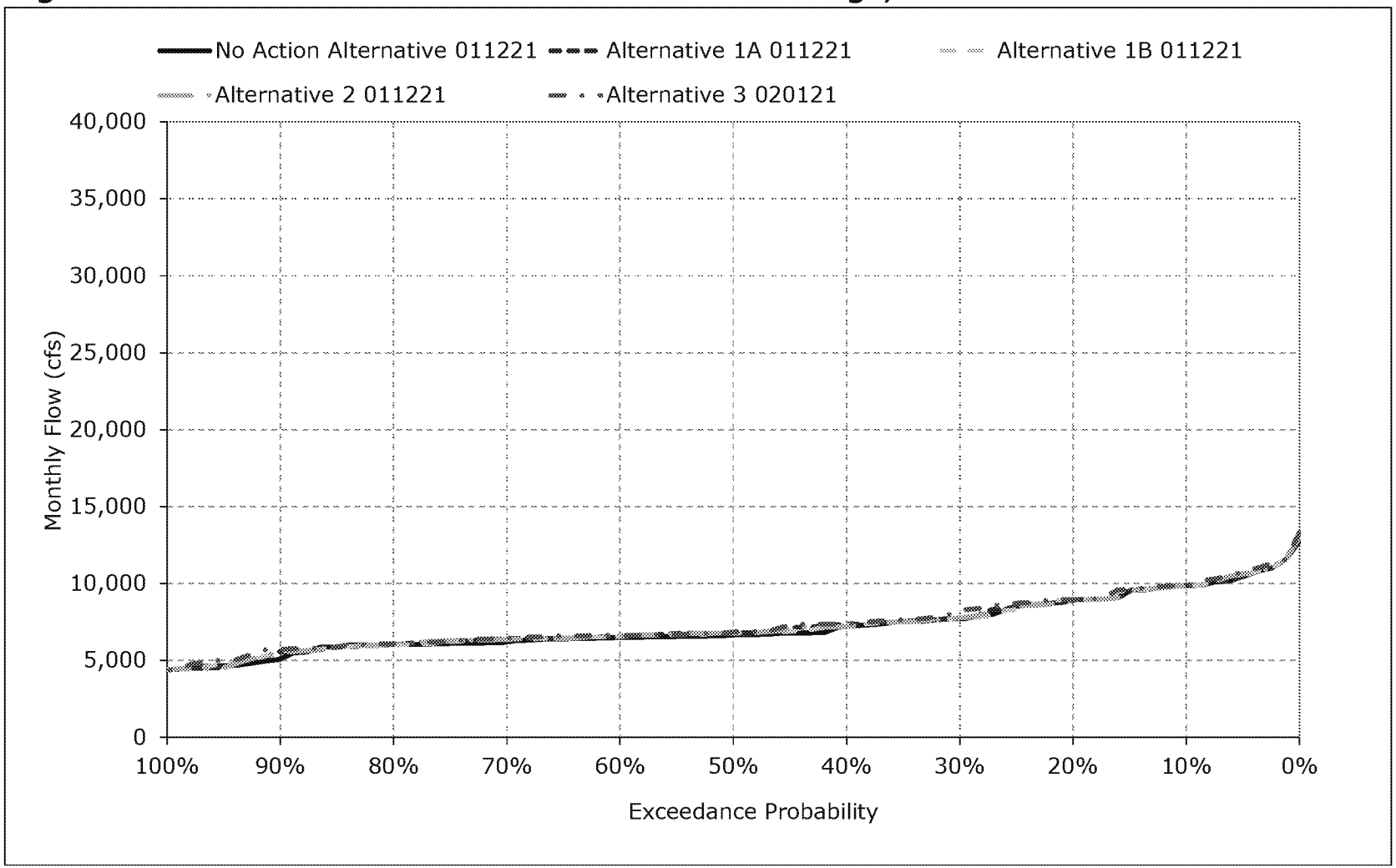


Figure 5B2-11-8. Sacramento Flow River at Bend Bridge, November

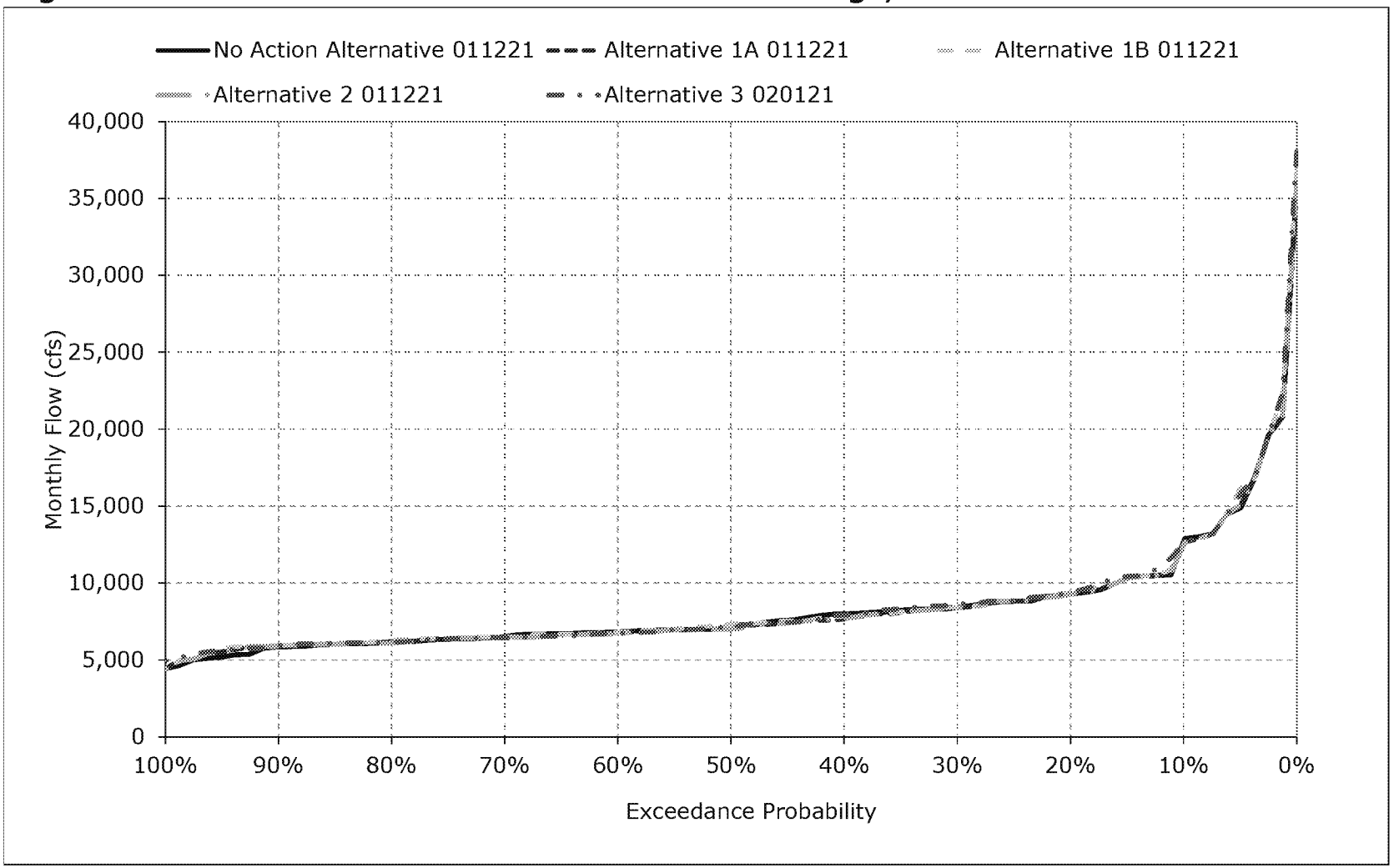


Figure 5B2-11-9. Sacramento Flow River at Bend Bridge, December

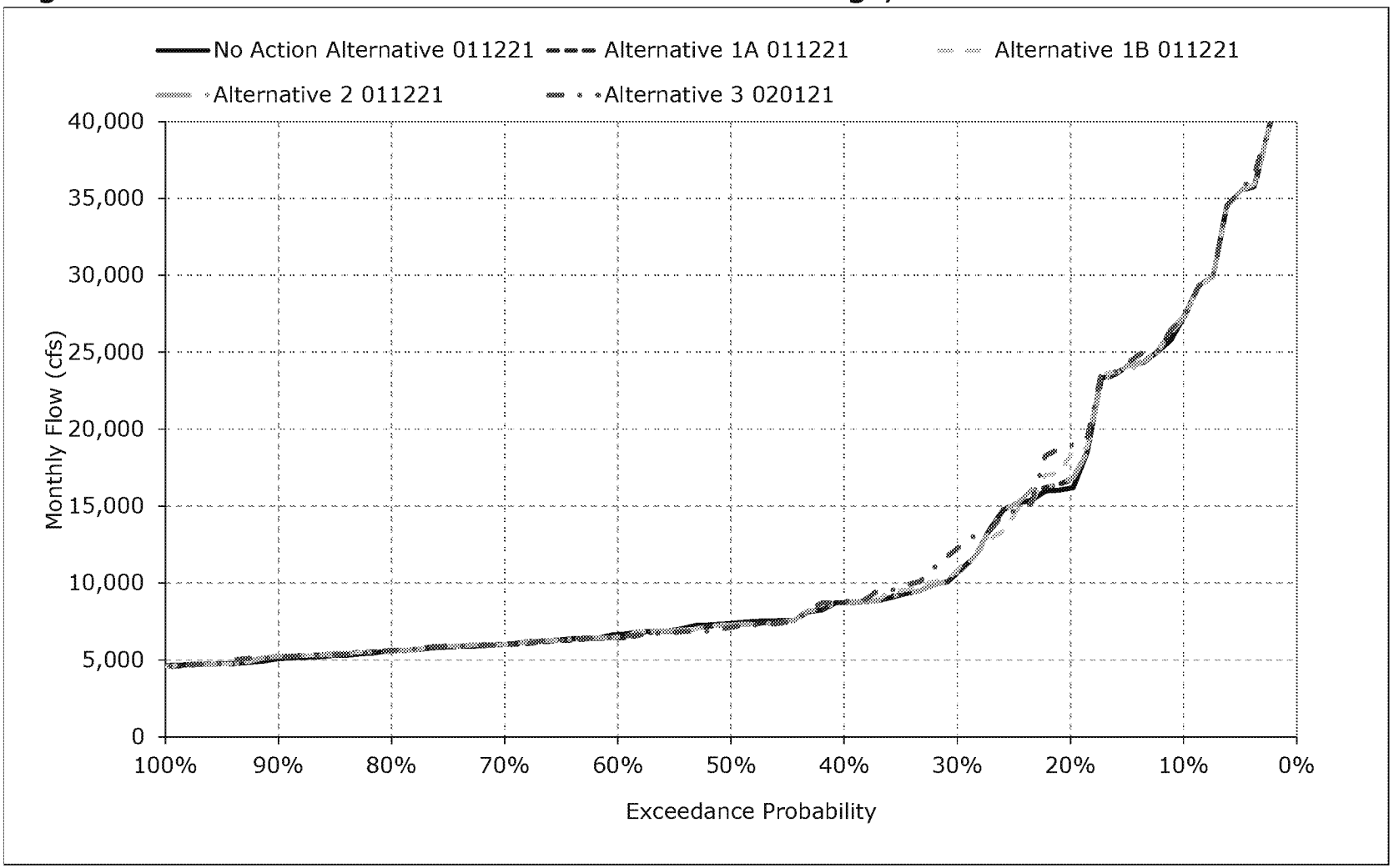


Figure 5B2-11-10. Sacramento Flow River at Bend Bridge, January

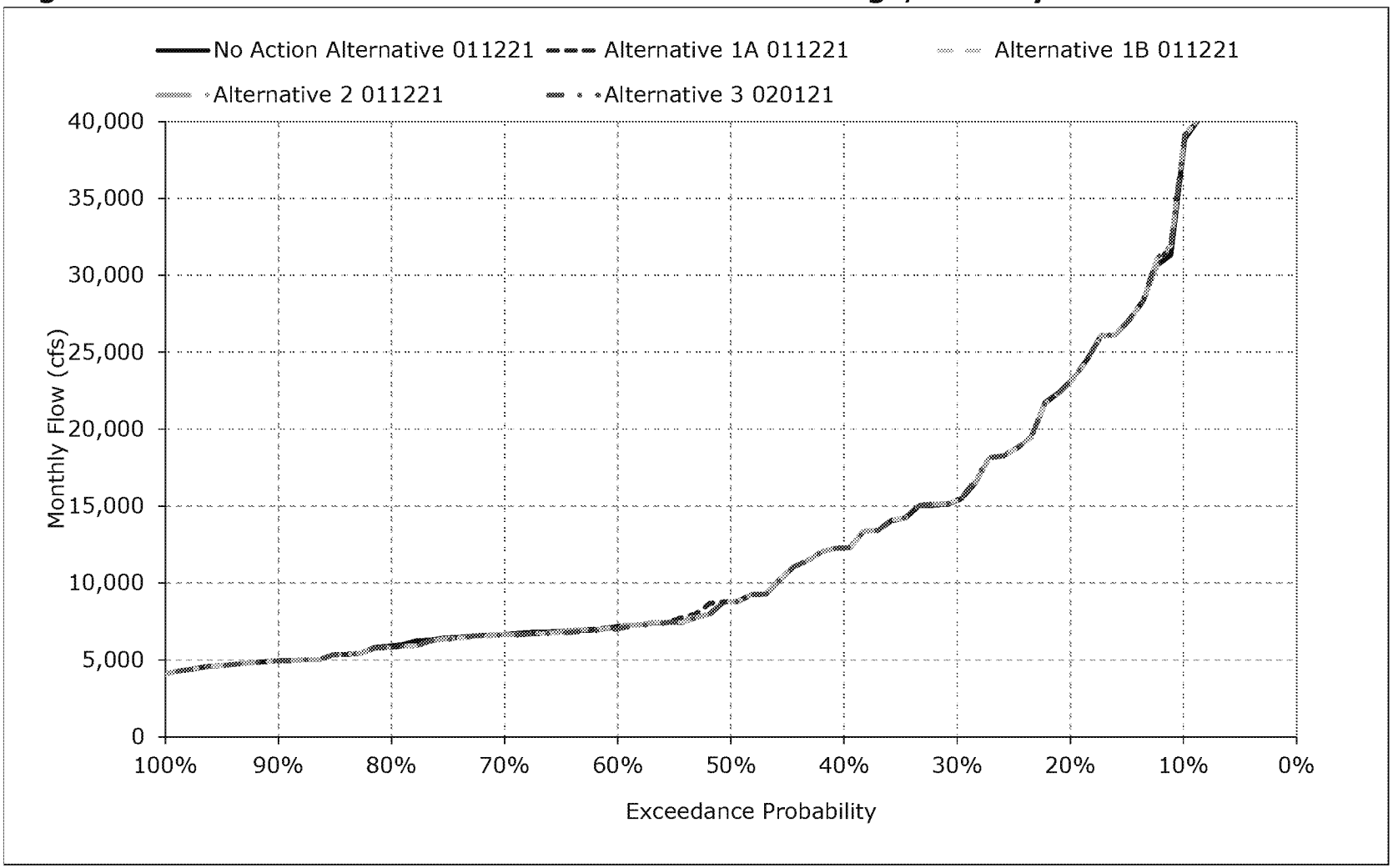


Figure 5B2-11-11. Sacramento Flow River at Bend Bridge, February

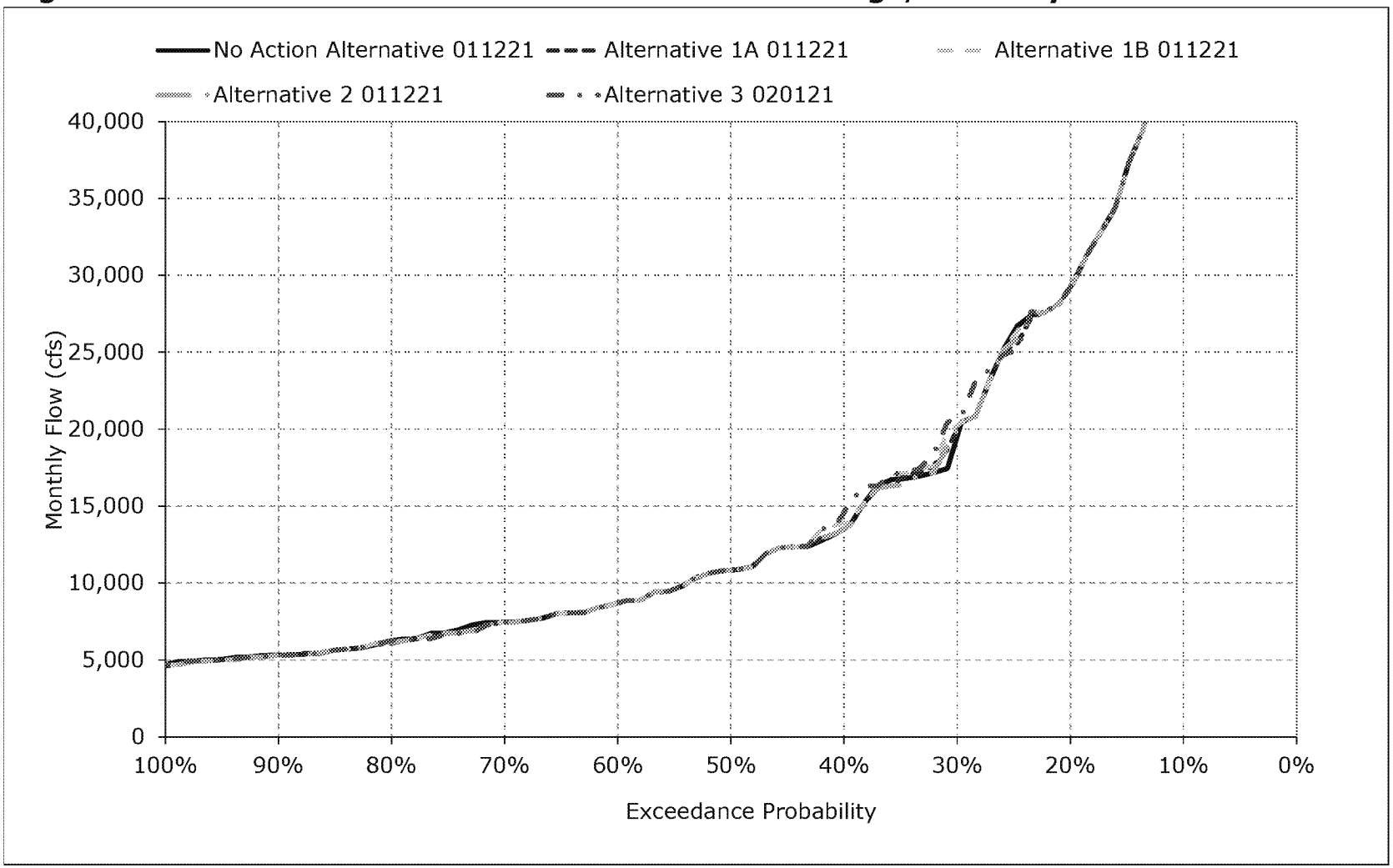


Figure 5B2-11-12. Sacramento Flow River at Bend Bridge, March

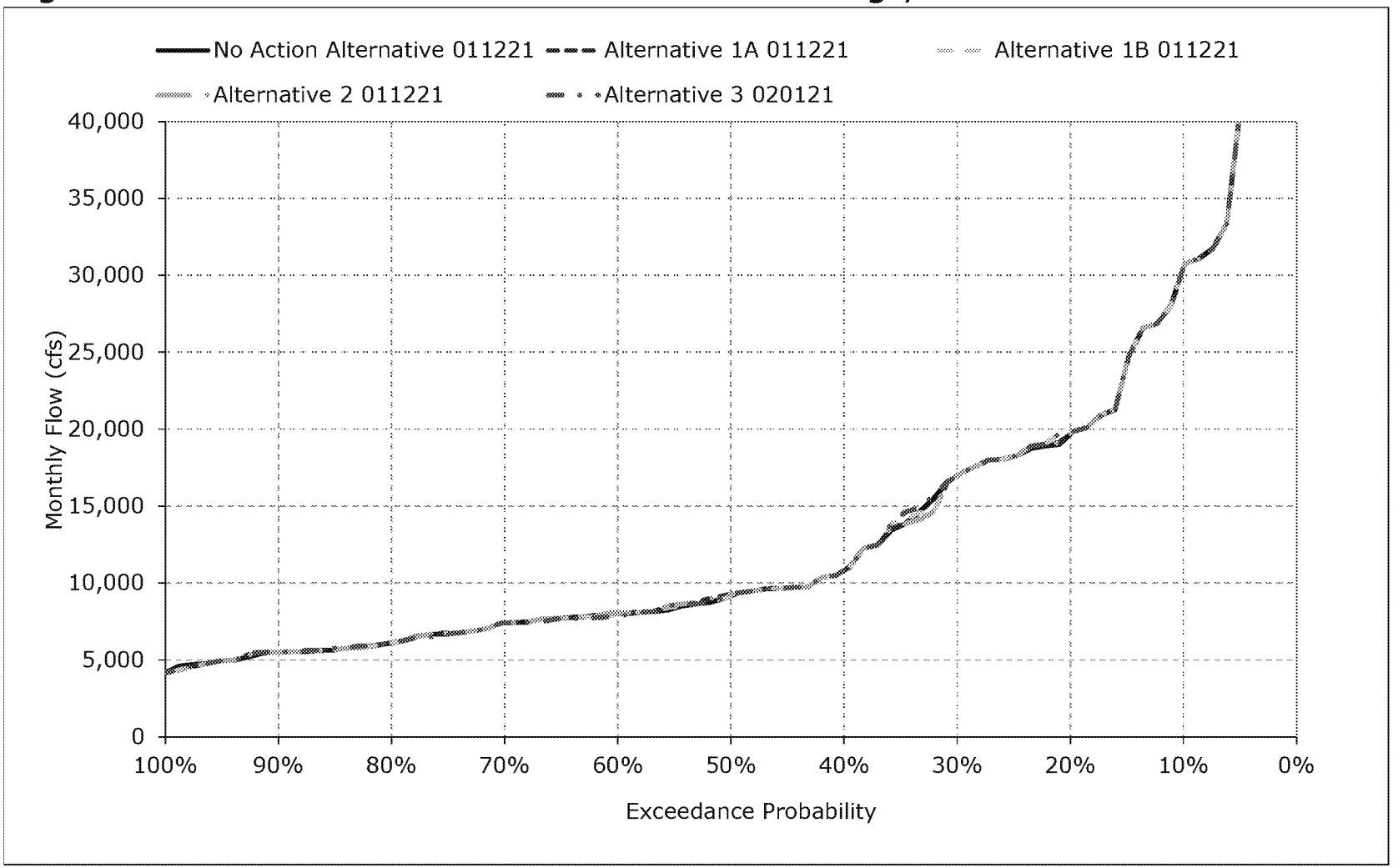


Figure 5B2-11-13. Sacramento Flow River at Bend Bridge, April

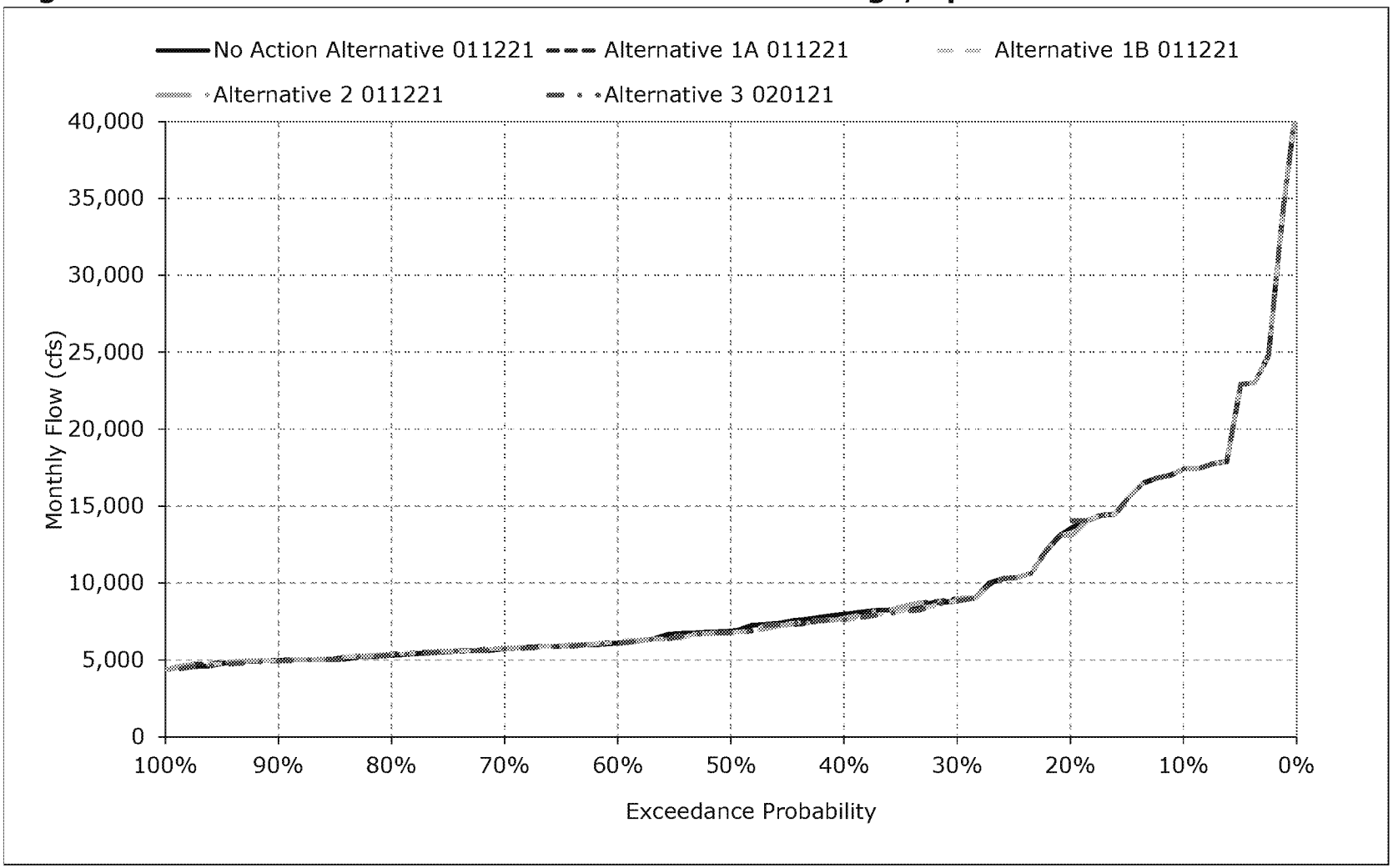


Figure 5B2-11-14. Sacramento Flow River at Bend Bridge, May

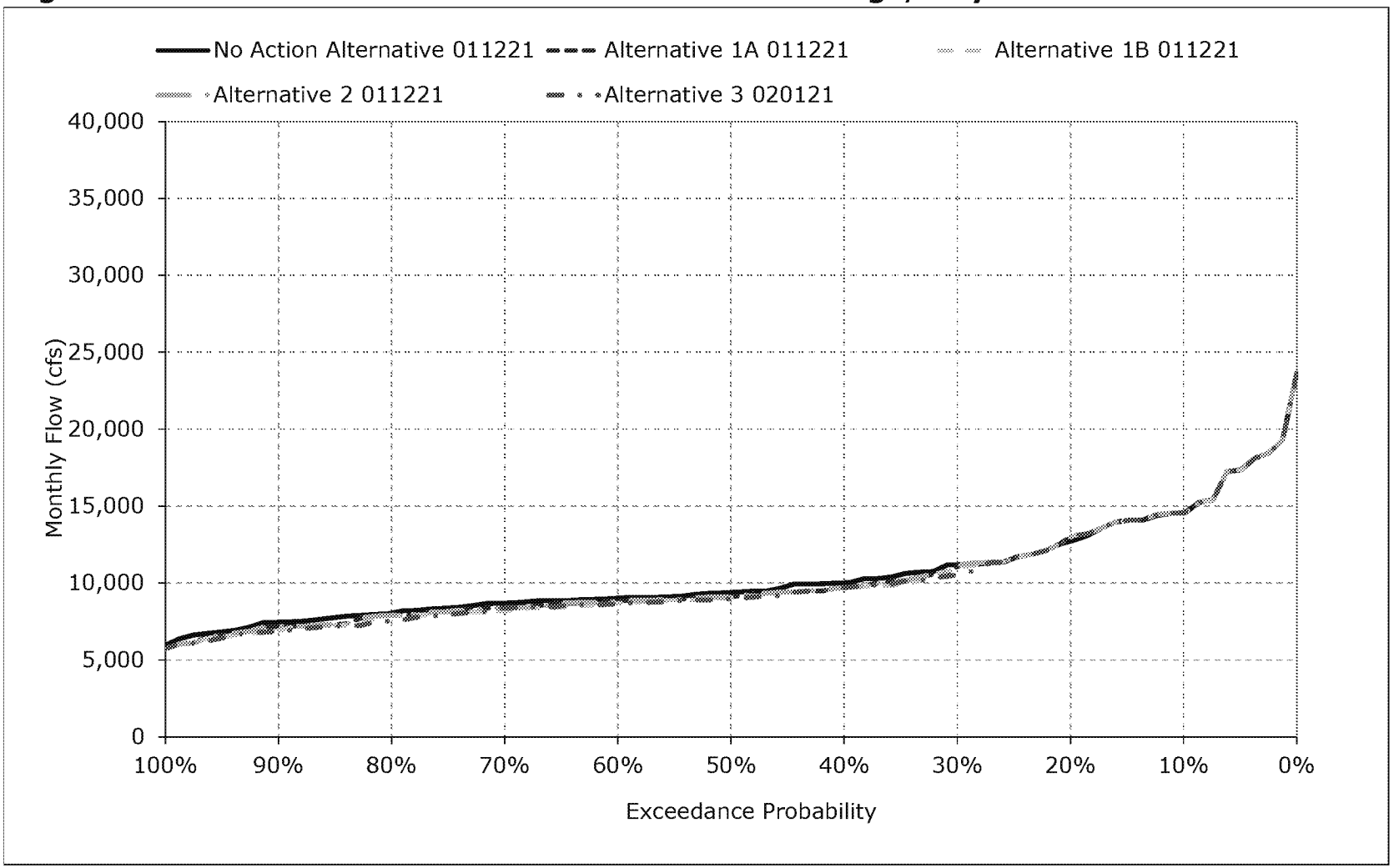


Figure 5B2-11-15. Sacramento Flow River at Bend Bridge, June

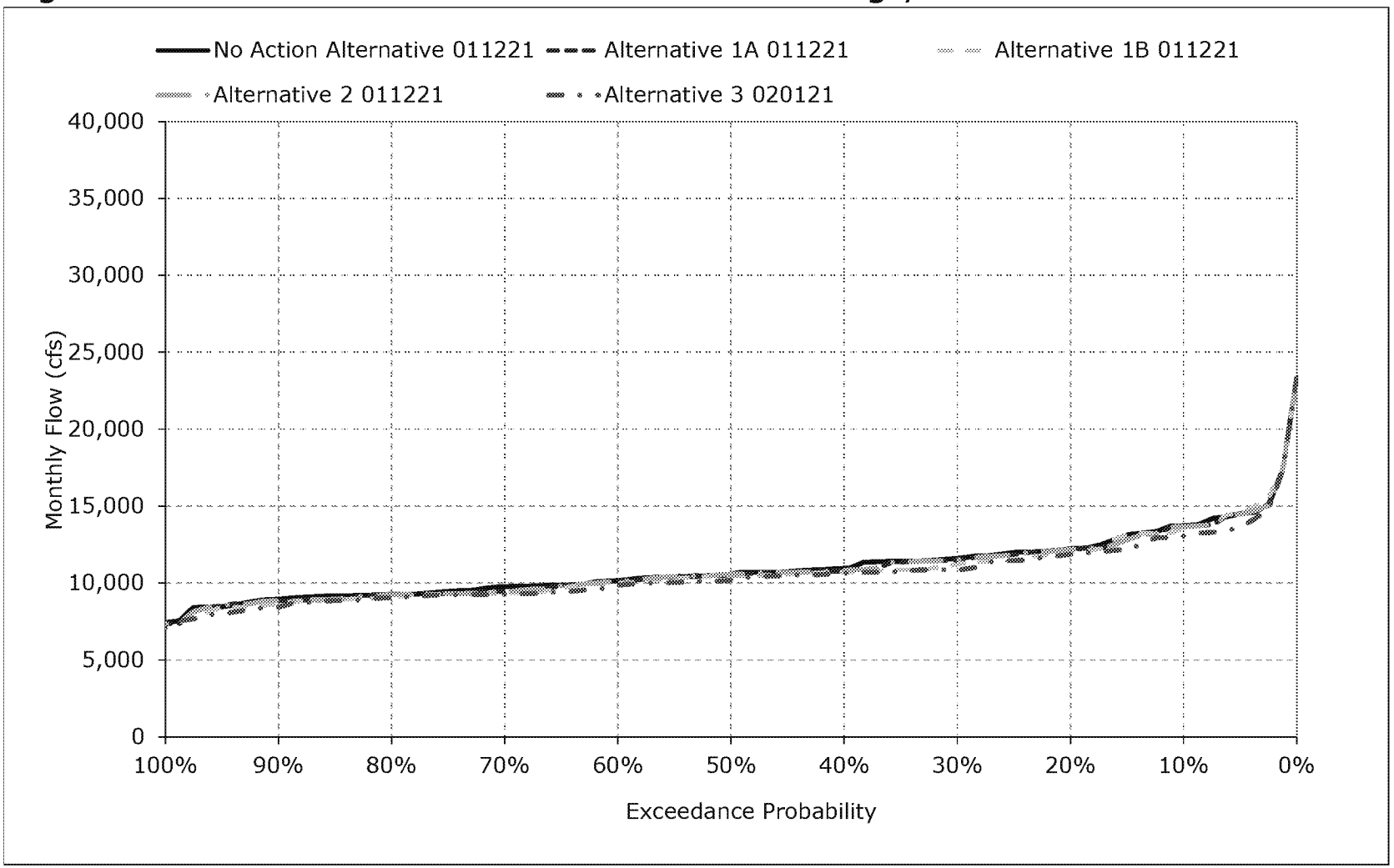


Figure 5B2-11-16. Sacramento Flow River at Bend Bridge, July

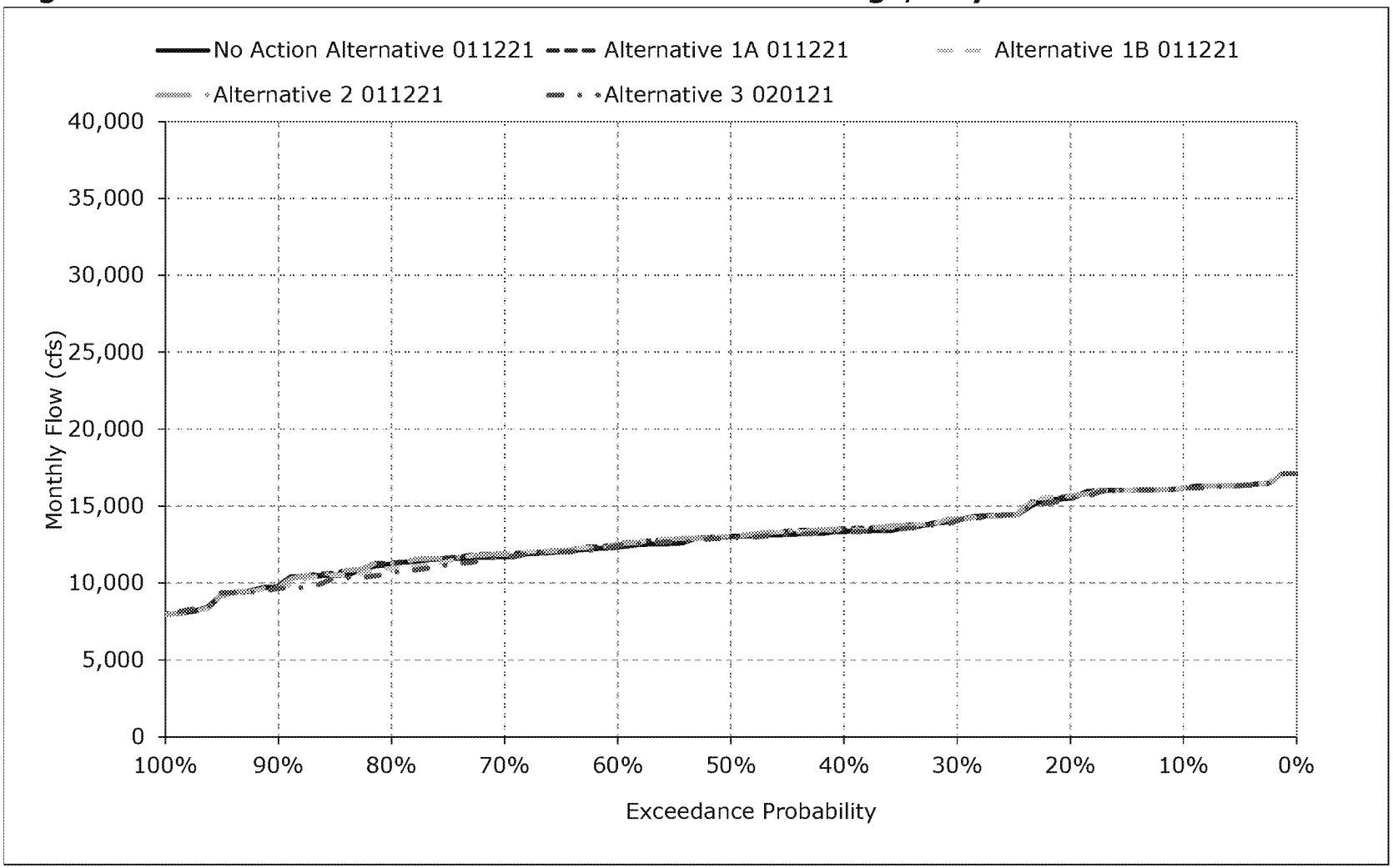


Figure 5B2-11-17. Sacramento Flow River at Bend Bridge, August

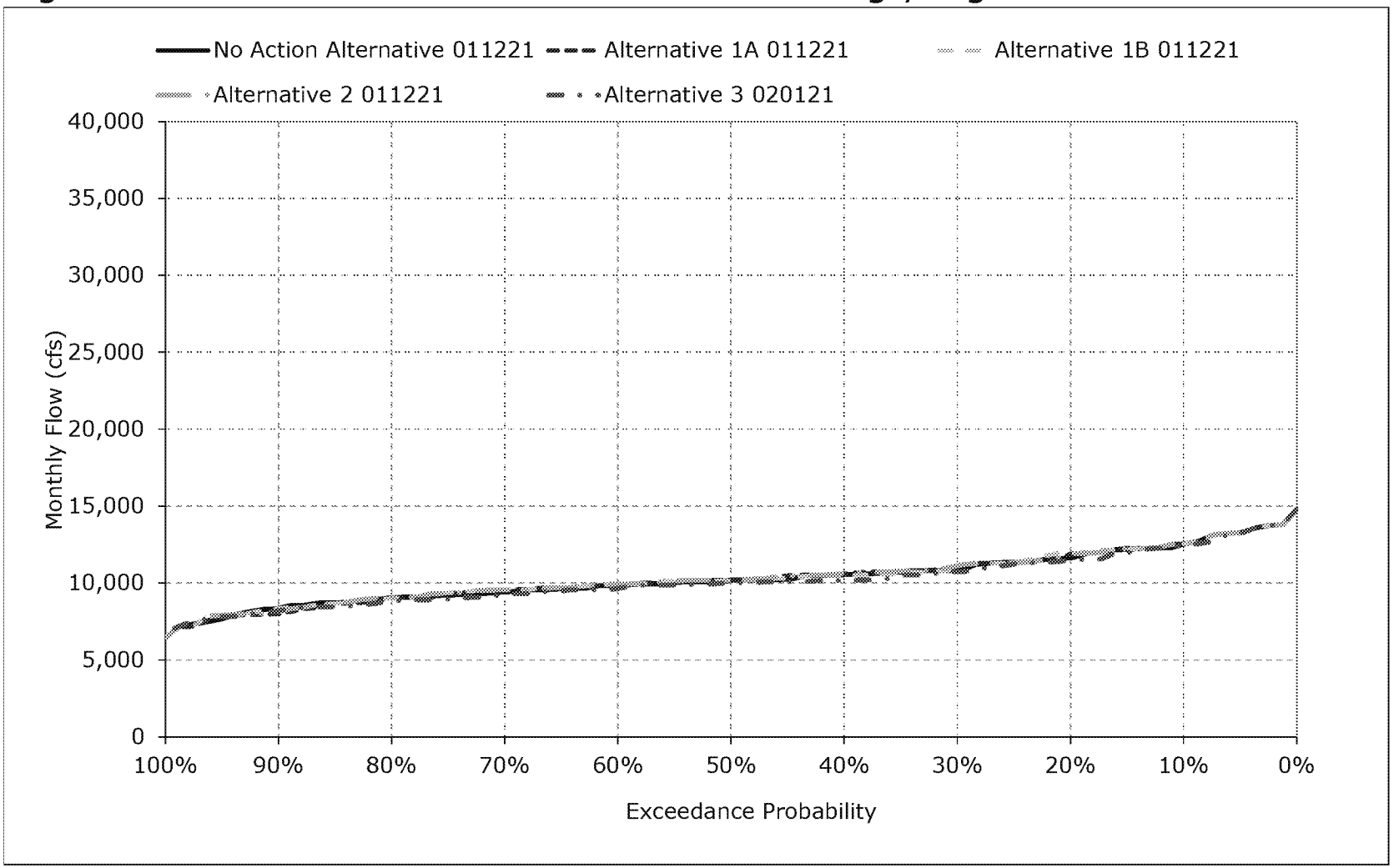


Figure 5B2-11-18. Sacramento Flow River at Bend Bridge, September

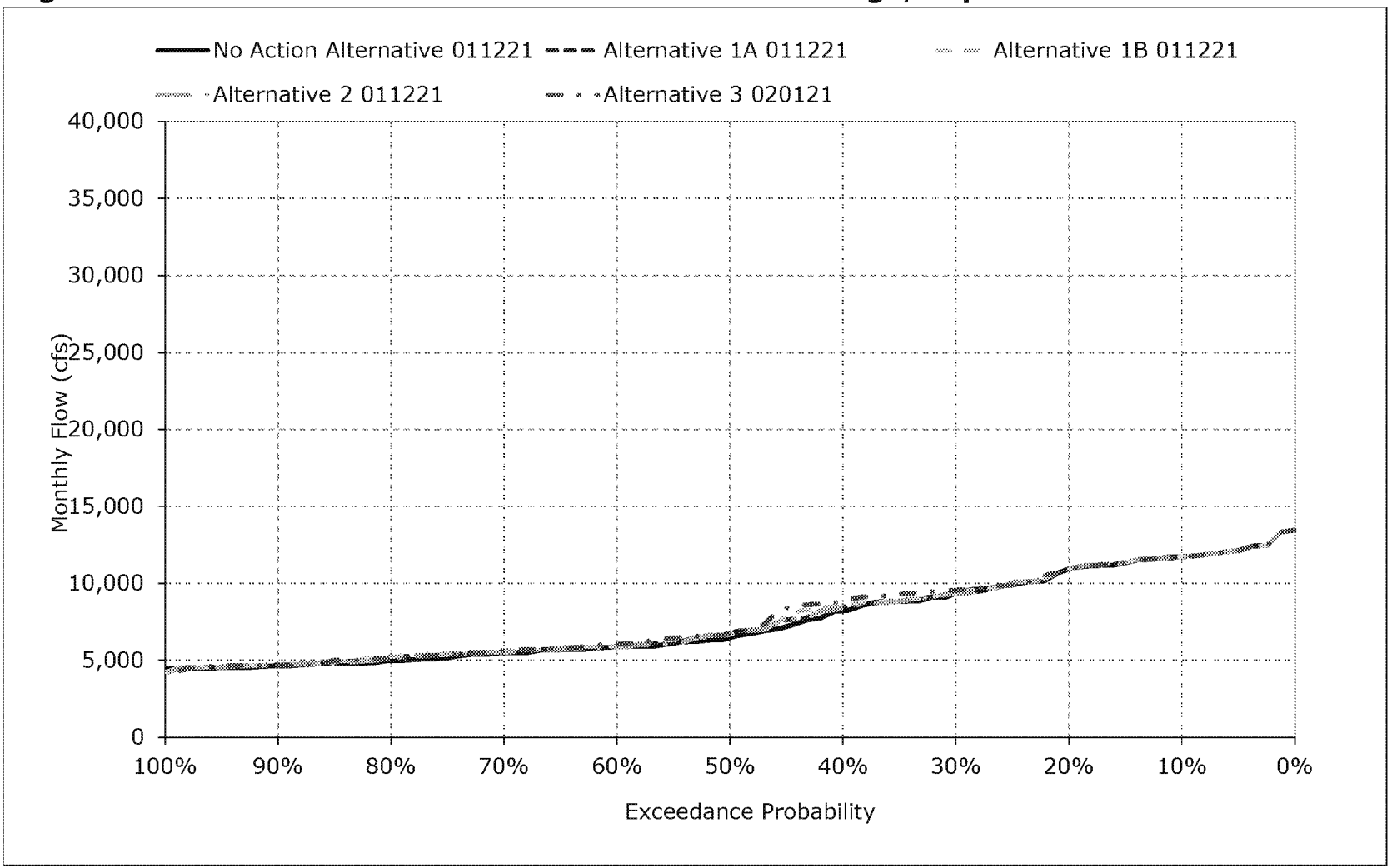


Table 5B2-12-1a. Sacramento River below Red Bluff Diversion Dam Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,687	12,797	27,766	38,806	44,493	30,815	17,630	13,937	13,072	15,027	11,470	11,495
20%	8,705	9,290	16,631	23,458	29,903	19,888	13,695	11,946	11,475	14,566	10,903	10,639
30%	7,499	8,446	10,968	15,774	20,017	17,079	8,737	10,638	10,861	12,856	10,049	9,072
40%	7,085	8,000	8,935	12,583	13,763	11,011	7,769	9,510	10,220	12,402	9,605	8,079
50%	6,534	7,180	7,425	9,029	11,073	9,368	6,867	8,928	9,669	11,966	9,350	6,415
60%	6,399	6,878	6,759	7,301	8,830	8,071	5,942	8,364	9,183	11,383	9,116	5,697
70%	6,097	6,534	6,086	6,800	7,603	7,520	5,465	8,048	8,721	10,671	8,841	5,333
80%	5,939	6,206	5,673	6,011	6,329	6,097	5,116	7,557	8,467	10,220	8,216	4,834
90%	5,034	5,891	5,137	5,021	5,407	5,574	4,842	7,151	8,243	9,163	7,861	4,553
Long Term												
Full Simulation Period[a]	7,128	8,503	12,232	15,778	18,902	14,890	9,400	9,990	10,184	12,007	9,555	7,441
Water Year Types[b,c]												
Wet (32%)	8,577	9,514	13,245	29,134	31,811	24,953	14,501	12,102	9,714	12,188	10,586	10,552
Above Normal (15%)	6,908	10,569	11,720	16,816	24,627	17,530	9,517	10,400	9,943	13,514	10,078	8,516
Below Normal (17%)	7,088	8,209	13,308	9,531	13,259	8,863	7,201	8,526	10,386	12,498	9,136	5,940
Dry (22%)	5,968	7,306	13,980	6,853	9,027	8,777	6,326	8,707	11,091	11,804	8,818	5,165
Critical (15%)	5,996	6,386	6,676	6,476	6,605	6,646	5,407	8,637	9,847	9,836	8,392	4,790

Table 5B2-12-1b. Sacramento River below Red Bluff Diversion Dam Flow, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,687	12,154	27,477	37,542	43,014	29,609	16,144	14,005	12,974	15,038	11,483	11,495
20%	8,711	9,080	16,849	23,227	29,497	19,144	12,401	12,175	11,303	14,545	10,831	10,639
30%	7,647	8,336	10,868	14,486	18,808	15,128	8,710	10,216	10,610	13,016	10,268	9,037
40%	7,247	7,583	8,534	12,046	13,563	10,155	7,653	9,144	9,916	12,506	9,683	8,177
50%	6,741	7,071	7,196	8,658	10,059	7,834	6,675	8,582	9,550	12,055	9,382	6,735
60%	6,445	6,723	6,362	6,903	8,347	6,994	5,945	8,266	9,229	11,553	9,217	5,814
70%	6,317	6,443	5,989	6,453	7,097	6,388	5,503	7,889	8,752	10,967	8,848	5,510
80%	5,912	6,147	5,564	5,731	5,990	5,726	5,203	7,367	8,301	10,314	8,246	4,990
90%	5,517	5,882	5,187	5,021	5,408	5,002	4,842	6,776	8,035	9,151	7,772	4,635
Long Term												
Full Simulation Period[a]	7,222	8,351	12,025	15,069	18,064	13,953	9,227	9,761	10,045	12,106	9,588	7,547
Water Year Types[b,c]												
Wet (32%)	8,579	9,152	13,178	28,109	30,785	24,149	14,100	11,955	9,615	12,214	10,552	10,554
Above Normal (15%)	6,981	10,371	11,574	15,573	23,549	16,047	9,392	10,347	9,804	13,566	10,052	8,547
Below Normal (17%)	7,100	8,276	12,989	8,946	12,166	7,643	7,098	8,379	10,207	12,653	9,165	6,023
Dry (22%)	6,022	7,239	13,853	6,509	8,405	7,790	6,277	8,481	10,807	12,020	9,077	5,404
Critical (15%)	6,469	6,353	6,113	6,293	6,385	6,375	5,414	7,952	9,884	9,902	8,296	5,025

Table 5B2-12-1c. Sacramento River below Red Bluff Diversion Dam Flow, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-1	-643	-289	-1,265	-1,479	-1,206	-1,486	68	-98	11	13	0
20%	7	-209	218	-231	-406	-744	-1,293	229	-171	-21	-72	0
30%	148	-110	-100	-1,288	-1,209	-1,951	-27	-422	-251	160	219	-35
40%	162	-417	-401	-536	-200	-856	-116	-366	-304	104	78	99
50%	207	-109	-230	-370	-1,014	-1,534	-192	-346	-120	90	32	320
60%	46	-155	-397	-398	-483	-1,078	4	-99	45	170	101	117
70%	220	-91	-97	-348	-506	-1,132	38	-159	30	296	7	176
80%	-27	-59	-109	-280	-340	-371	88	-190	-166	93	30	155
90%	483	-9	50	0	1	-573	0	-375	-208	-12	-90	82
Long Term												
Full Simulation Period[a]	94	-152	-207	-709	-838	-937	-173	-230	-139	100	33	106
Water Year Types[b,c]												
Wet (32%)	1	-362	-66	-1,025	-1,026	-804	-401	-148	-99	26	-34	2
Above Normal (15%)	73	-199	-146	-1,244	-1,078	-1,483	-125	-53	-139	52	-25	31
Below Normal (17%)	12	67	-318	-585	-1,093	-1,220	-103	-147	-179	155	29	83
Dry (22%)	54	-67	-126	-343	-623	-988	-49	-226	-285	216	258	239
Critical (15%)	473	-32	-562	-183	-219	-272	7	-685	37	66	-96	234

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-12-2a. Sacramento River below Red Bluff Diversion Dam Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,687	12,797	27,766	38,806	44,493	30,815	17,630	13,937	13,072	15,027	11,470	11,495
20%	8,705	9,290	16,631	23,458	29,903	19,888	13,695	11,946	11,475	14,566	10,903	10,639
30%	7,499	8,446	10,968	15,774	20,017	17,079	8,737	10,638	10,861	12,856	10,049	9,072
40%	7,085	8,000	8,935	12,583	13,763	11,011	7,769	9,510	10,220	12,402	9,605	8,079
50%	6,534	7,180	7,425	9,029	11,073	9,368	6,867	8,928	9,669	11,966	9,350	6,415
60%	6,399	6,878	6,759	7,301	8,830	8,071	5,942	8,364	9,183	11,383	9,116	5,697
70%	6,097	6,534	6,086	6,800	7,603	7,520	5,465	8,048	8,721	10,671	8,841	5,333
80%	5,939	6,206	5,673	6,011	6,329	6,097	5,116	7,557	8,467	10,220	8,216	4,834
90%	5,034	5,891	5,137	5,021	5,407	5,574	4,842	7,151	8,243	9,163	7,861	4,553
Long Term												
Full Simulation Period[a]	7,128	8,503	12,232	15,778	18,902	14,890	9,400	9,990	10,184	12,007	9,555	7,441
Water Year Types[b,c]												
Wet (32%)	8,577	9,514	13,245	29,134	31,811	24,953	14,501	12,102	9,714	12,188	10,586	10,552
Above Normal (15%)	6,908	10,569	11,720	16,816	24,627	17,530	9,517	10,400	9,943	13,514	10,078	8,516
Below Normal (17%)	7,088	8,209	13,308	9,531	13,259	8,863	7,201	8,526	10,386	12,498	9,136	5,940
Dry (22%)	5,968	7,306	13,980	6,853	9,027	8,777	6,326	8,707	11,091	11,804	8,818	5,165
Critical (15%)	5,996	6,386	6,676	6,476	6,605	6,646	5,407	8,637	9,847	9,836	8,392	4,790

Table 5B2-12-2b. Sacramento River below Red Bluff Diversion Dam Flow, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,687	12,171	27,471	37,497	42,795	29,612	16,144	14,005	12,965	15,028	11,486	11,496
20%	8,753	9,237	18,632	23,227	28,437	19,157	12,402	12,171	11,131	14,631	10,950	10,640
30%	7,644	8,311	11,194	14,487	18,896	15,127	8,657	10,250	10,399	12,882	10,206	9,132
40%	7,192	7,700	8,765	11,637	13,667	10,156	7,493	9,070	9,936	12,504	9,623	8,418
50%	6,691	7,252	7,197	8,571	10,059	7,769	6,648	8,581	9,550	12,071	9,376	6,657
60%	6,439	6,737	6,398	6,904	8,346	6,991	5,950	8,198	9,182	11,554	9,254	5,895
70%	6,271	6,513	5,988	6,433	7,075	6,392	5,503	7,871	8,636	11,072	8,888	5,547
80%	5,886	6,275	5,565	5,730	6,006	5,709	5,198	7,275	8,231	10,284	8,326	5,091
90%	5,530	5,942	5,176	5,023	5,365	5,002	4,841	6,606	7,964	9,151	7,886	4,655
Long Term												
Full Simulation Period[a]	7,215	8,456	12,035	15,028	18,062	13,945	9,205	9,710	10,020	12,094	9,607	7,603
Water Year Types[b,c]												
Wet (32%)	8,571	9,088	13,174	28,041	30,704	24,124	14,069	11,895	9,615	12,214	10,552	10,563
Above Normal (15%)	7,059	10,342	11,701	15,573	23,501	16,102	9,435	10,352	9,491	13,470	10,108	8,873
Below Normal (17%)	7,176	8,467	13,073	8,931	12,265	7,643	7,101	8,232	10,163	12,618	9,156	6,085
Dry (22%)	5,927	7,647	13,701	6,503	8,458	7,782	6,196	8,471	11,008	12,056	9,024	5,371
Critical (15%)	6,411	6,401	6,189	6,187	6,402	6,327	5,408	7,920	9,778	9,904	8,462	5,036

Table 5B2-12-2c. Sacramento River below Red Bluff Diversion Dam Flow, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	-626	-295	-1,309	-1,698	-1,203	-1,485	68	-106	1	16	0
20%	48	-53	2,001	-231	-1,466	-731	-1,293	225	-344	65	47	0
30%	144	-135	226	-1,287	-1,121	-1,951	-80	-388	-462	26	157	60
40%	107	-300	-169	-946	-96	-855	-276	-440	-284	102	18	339
50%	157	72	-228	-457	-1,014	-1,599	-219	-347	-120	106	25	242
60%	40	-141	-361	-397	-483	-1,080	8	-166	-2	171	139	198
70%	174	-21	-98	-367	-528	-1,128	38	-178	-86	402	47	214
80%	-53	69	-108	-281	-324	-387	82	-282	-236	64	109	257
90%	496	51	39	2	-42	-573	0	-545	-279	-12	24	102
Long Term												
Full Simulation Period[a]	87	-47	-197	-750	-840	-945	-195	-280	-164	88	52	162
Water Year Types[b,c]												
Wet (32%)	-7	-426	-70	-1,093	-1,106	-829	-433	-207	-99	26	-34	11
Above Normal (15%)	151	-227	-19	-1,243	-1,126	-1,428	-82	-48	-452	-44	30	358
Below Normal (17%)	88	257	-235	-600	-994	-1,220	-99	-295	-223	119	20	145
Dry (22%)	-41	342	-279	-350	-569	-995	-131	-236	-83	253	205	206
Critical (15%)	415	16	-486	-289	-202	-319	1	-717	-69	68	70	245

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-12-3a. Sacramento River below Red Bluff Diversion Dam Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,687	12,797	27,766	38,806	44,493	30,815	17,630	13,937	13,072	15,027	11,470	11,495
20%	8,705	9,290	16,631	23,458	29,903	19,888	13,695	11,946	11,475	14,566	10,903	10,639
30%	7,499	8,446	10,968	15,774	20,017	17,079	8,737	10,638	10,861	12,856	10,049	9,072
40%	7,085	8,000	8,935	12,583	13,763	11,011	7,769	9,510	10,220	12,402	9,605	8,079
50%	6,534	7,180	7,425	9,029	11,073	9,368	6,867	8,928	9,669	11,966	9,350	6,415
60%	6,399	6,878	6,759	7,301	8,830	8,071	5,942	8,364	9,183	11,383	9,116	5,697
70%	6,097	6,534	6,086	6,800	7,603	7,520	5,465	8,048	8,721	10,671	8,841	5,333
80%	5,939	6,206	5,673	6,011	6,329	6,097	5,116	7,557	8,467	10,220	8,216	4,834
90%	5,034	5,891	5,137	5,021	5,407	5,574	4,842	7,151	8,243	9,163	7,861	4,553
Long Term												
Full Simulation Period[a]	7,128	8,503	12,232	15,778	18,902	14,890	9,400	9,990	10,184	12,007	9,555	7,441
Water Year Types[b,c]												
Wet (32%)	8,577	9,514	13,245	29,134	31,811	24,953	14,501	12,102	9,714	12,188	10,586	10,552
Above Normal (15%)	6,908	10,569	11,720	16,816	24,627	17,530	9,517	10,400	9,943	13,514	10,078	8,516
Below Normal (17%)	7,088	8,209	13,308	9,531	13,259	8,863	7,201	8,526	10,386	12,498	9,136	5,940
Dry (22%)	5,968	7,306	13,980	6,853	9,027	8,777	6,326	8,707	11,091	11,804	8,818	5,165
Critical (15%)	5,996	6,386	6,676	6,476	6,605	6,646	5,407	8,637	9,847	9,836	8,392	4,790

Table 5B2-12-3b. Sacramento River below Red Bluff Diversion Dam Flow, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,687	12,143	27,477	37,578	44,134	29,704	16,736	14,005	12,974	15,052	11,674	11,495
20%	8,702	9,080	16,864	23,227	29,497	19,138	12,402	12,175	11,303	14,545	10,901	10,639
30%	7,649	8,323	10,868	14,642	18,883	15,128	8,710	10,216	10,610	13,024	10,269	9,040
40%	7,165	7,605	8,534	12,204	13,563	10,156	7,653	9,139	9,916	12,506	9,683	8,177
50%	6,738	7,004	7,196	8,575	10,059	7,835	6,673	8,581	9,549	12,071	9,407	6,735
60%	6,445	6,695	6,401	6,903	8,347	6,993	5,945	8,266	9,179	11,524	9,264	5,815
70%	6,305	6,437	6,005	6,441	7,097	6,388	5,503	7,891	8,752	10,971	8,885	5,510
80%	5,912	6,121	5,560	5,730	6,006	5,715	5,203	7,367	8,301	10,323	8,324	4,990
90%	5,455	5,926	5,194	5,021	5,408	5,002	4,842	6,776	8,035	9,153	7,836	4,642
Long Term												
Full Simulation Period[a]	7,224	8,332	12,041	15,067	18,084	14,006	9,248	9,759	10,042	12,106	9,626	7,545
Water Year Types[b,c]												
Wet (32%)	8,579	9,155	13,180	28,144	30,865	24,279	14,165	11,954	9,615	12,215	10,588	10,554
Above Normal (15%)	6,981	10,374	11,574	15,573	23,575	16,045	9,392	10,347	9,805	13,569	10,053	8,552
Below Normal (17%)	7,152	8,199	12,998	8,945	12,105	7,644	7,098	8,380	10,207	12,658	9,175	6,021
Dry (22%)	6,027	7,181	13,860	6,509	8,405	7,847	6,277	8,480	10,807	12,025	9,079	5,403
Critical (15%)	6,415	6,386	6,197	6,206	6,398	6,371	5,414	7,942	9,864	9,880	8,464	5,009

Table 5B2-12-3c. Sacramento River below Red Bluff Diversion Dam Flow, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	-654	-289	-1,228	-358	-1,111	-894	68	-98	24	204	0
20%	-3	-209	234	-231	-406	-750	-1,293	229	-171	-21	-2	0
30%	149	-123	-100	-1,132	-1,134	-1,951	-27	-422	-251	168	219	-32
40%	80	-395	-401	-378	-200	-856	-116	-371	-304	105	78	99
50%	204	-177	-230	-453	-1,014	-1,533	-194	-347	-120	105	57	320
60%	46	-183	-357	-398	-483	-1,079	4	-98	-5	141	148	118
70%	209	-97	-81	-359	-506	-1,132	38	-157	30	301	44	176
80%	-27	-85	-113	-281	-324	-382	87	-190	-166	103	108	155
90%	421	35	57	0	1	-573	0	-375	-208	-9	-26	89
Long Term												
Full Simulation Period[a]	96	-171	-191	-711	-818	-884	-152	-231	-142	99	71	104
Water Year Types[b,c]												
Wet (32%)	2	-359	-65	-990	-945	-674	-337	-148	-99	27	2	2
Above Normal (15%)	73	-195	-146	-1,243	-1,052	-1,484	-125	-53	-139	56	-25	36
Below Normal (17%)	63	-11	-310	-586	-1,154	-1,220	-103	-147	-179	160	39	81
Dry (22%)	59	-125	-119	-343	-623	-930	-49	-227	-284	222	261	238
Critical (15%)	419	1	-479	-270	-207	-275	7	-695	18	44	71	219

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-12-4a. Sacramento River below Red Bluff Diversion Dam Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,687	12,797	27,766	38,806	44,493	30,815	17,630	13,937	13,072	15,027	11,470	11,495
20%	8,705	9,290	16,631	23,458	29,903	19,888	13,695	11,946	11,475	14,566	10,903	10,639
30%	7,499	8,446	10,968	15,774	20,017	17,079	8,737	10,638	10,861	12,856	10,049	9,072
40%	7,085	8,000	8,935	12,583	13,763	11,011	7,769	9,510	10,220	12,402	9,605	8,079
50%	6,534	7,180	7,425	9,029	11,073	9,368	6,867	8,928	9,669	11,966	9,350	6,415
60%	6,399	6,878	6,759	7,301	8,830	8,071	5,942	8,364	9,183	11,383	9,116	5,697
70%	6,097	6,534	6,086	6,800	7,603	7,520	5,465	8,048	8,721	10,671	8,841	5,333
80%	5,939	6,206	5,673	6,011	6,329	6,097	5,116	7,557	8,467	10,220	8,216	4,834
90%	5,034	5,891	5,137	5,021	5,407	5,574	4,842	7,151	8,243	9,163	7,861	4,553
Long Term												
Full Simulation Period[a]	7,128	8,503	12,232	15,778	18,902	14,890	9,400	9,990	10,184	12,007	9,555	7,441
Water Year Types[b,c]												
Wet (32%)	8,577	9,514	13,245	29,134	31,811	24,953	14,501	12,102	9,714	12,188	10,586	10,552
Above Normal (15%)	6,908	10,569	11,720	16,816	24,627	17,530	9,517	10,400	9,943	13,514	10,078	8,516
Below Normal (17%)	7,088	8,209	13,308	9,531	13,259	8,863	7,201	8,526	10,386	12,498	9,136	5,940
Dry (22%)	5,968	7,306	13,980	6,853	9,027	8,777	6,326	8,707	11,091	11,804	8,818	5,165
Critical (15%)	5,996	6,386	6,676	6,476	6,605	6,646	5,407	8,637	9,847	9,836	8,392	4,790

Table 5B2-12-4b. Sacramento River below Red Bluff Diversion Dam Flow, Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,749	12,246	27,481	37,496	44,062	29,220	16,144	14,005	12,475	15,444	11,486	11,496
20%	8,801	9,078	19,353	23,227	28,432	19,101	12,402	12,145	10,999	14,751	10,621	10,640
30%	8,178	8,525	12,373	14,488	20,554	14,999	8,657	10,154	10,317	12,835	9,855	9,310
40%	7,297	7,630	8,764	11,647	14,018	10,037	7,491	9,066	9,690	12,407	9,450	8,740
50%	6,795	7,157	7,007	8,572	10,059	7,685	6,636	8,599	9,412	12,008	9,245	6,750
60%	6,509	6,681	6,401	6,834	8,347	6,996	5,936	8,180	9,078	11,331	9,050	6,005
70%	6,348	6,454	5,978	6,366	7,076	6,477	5,458	7,756	8,561	10,835	8,742	5,539
80%	5,986	6,153	5,495	5,732	5,990	5,805	5,139	7,283	8,182	10,190	8,199	5,021
90%	5,665	5,819	5,172	5,023	5,408	5,001	4,822	6,602	7,771	9,153	7,728	4,645
Long Term												
Full Simulation Period[a]	7,359	8,463	12,195	15,017	18,214	13,876	9,151	9,658	9,852	12,081	9,458	7,660
Water Year Types[b,c]												
Wet (32%)	8,578	9,097	13,183	28,033	30,873	23,906	13,952	11,845	9,575	12,215	10,551	10,556
Above Normal (15%)	7,455	10,389	11,795	15,574	24,135	15,970	9,436	10,352	9,224	13,537	9,566	9,321
Below Normal (17%)	7,449	8,499	13,281	8,932	12,272	7,621	7,153	8,208	9,692	12,767	9,110	6,182
Dry (22%)	6,111	7,642	14,184	6,501	8,489	7,864	6,175	8,341	10,854	11,894	8,803	5,309
Critical (15%)	6,387	6,353	6,207	6,133	6,385	6,364	5,260	7,891	9,768	9,816	8,371	4,980

Table 5B2-12-4c. Sacramento River below Red Bluff Diversion Dam Flow, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

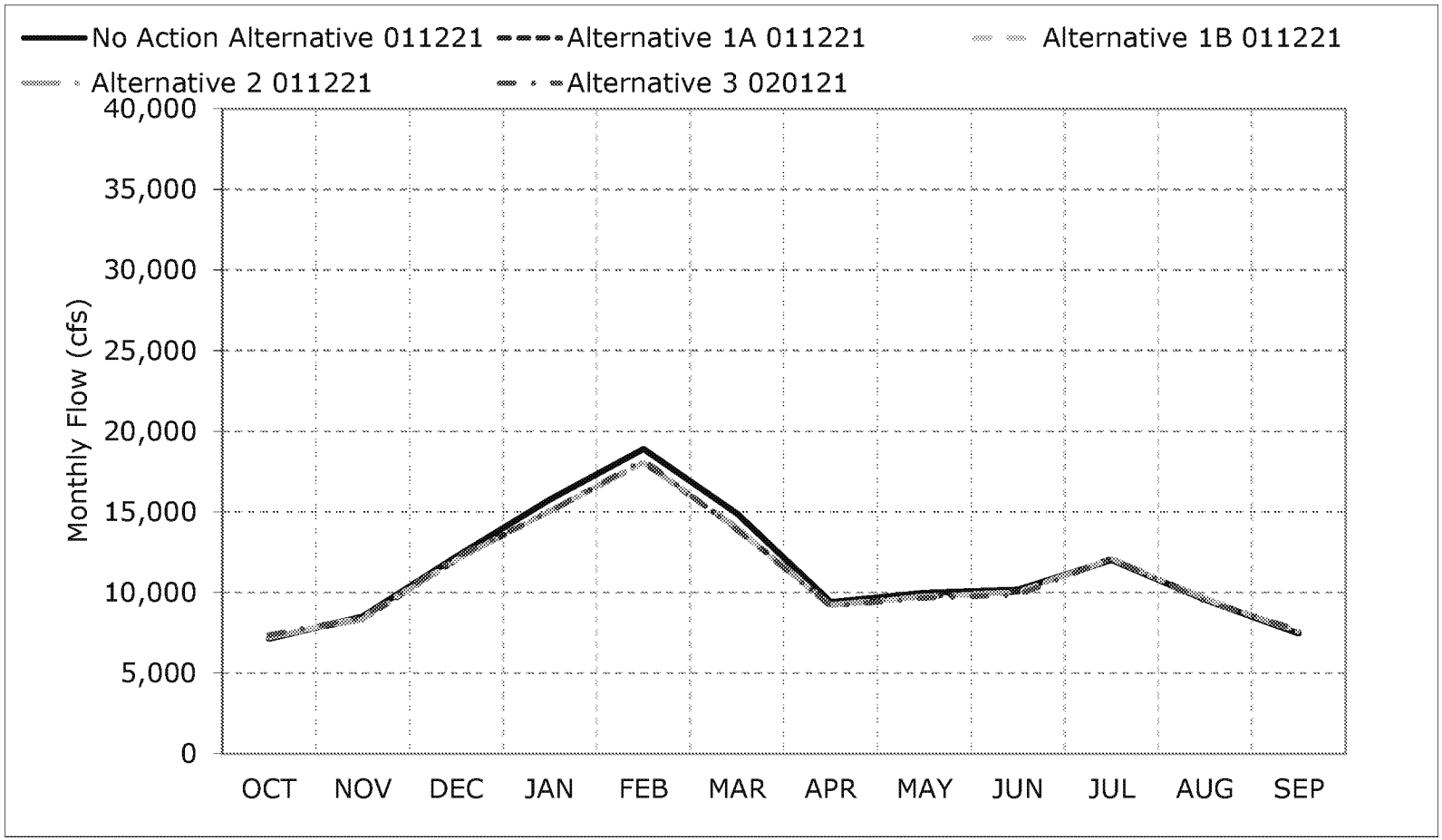
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	61	-552	-285	-1,310	-431	-1,595	-1,486	69	-597	417	17	1
20%	96	-212	2,723	-231	-1,471	-787	-1,292	199	-475	185	-281	0
30%	679	79	1,405	-1,286	537	-2,080	-80	-483	-544	-21	-194	238
40%	211	-370	-171	-936	255	-974	-278	-444	-530	5	-155	662
50%	261	-23	-418	-457	-1,014	-1,683	-230	-330	-257	42	-106	335
60%	110	-197	-357	-467	-483	-1,075	-5	-184	-105	-53	-66	308
70%	251	-79	-108	-435	-528	-1,044	-7	-293	-160	164	-99	206
80%	47	-53	-178	-279	-339	-292	23	-274	-285	-30	-17	186
90%	631	-72	35	2	1	-574	-19	-549	-471	-10	-133	92
Long Term												
Full Simulation Period[a]	230	-40	-37	-761	-688	-1,014	-249	-333	-331	75	-97	220
Water Year Types[b,c]												
Wet (32%)	1	-417	-62	-1,101	-937	-1,047	-549	-258	-139	27	-34	4
Above Normal (15%)	547	-181	76	-1,243	-492	-1,560	-81	-47	-720	24	-512	805
Below Normal (17%)	361	290	-27	-599	-987	-1,243	-48	-319	-694	269	-26	242
Dry (22%)	143	336	204	-352	-538	-913	-152	-366	-238	90	-16	144
Critical (15%)	391	-33	-468	-343	-219	-282	-147	-746	-78	-20	-21	190

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

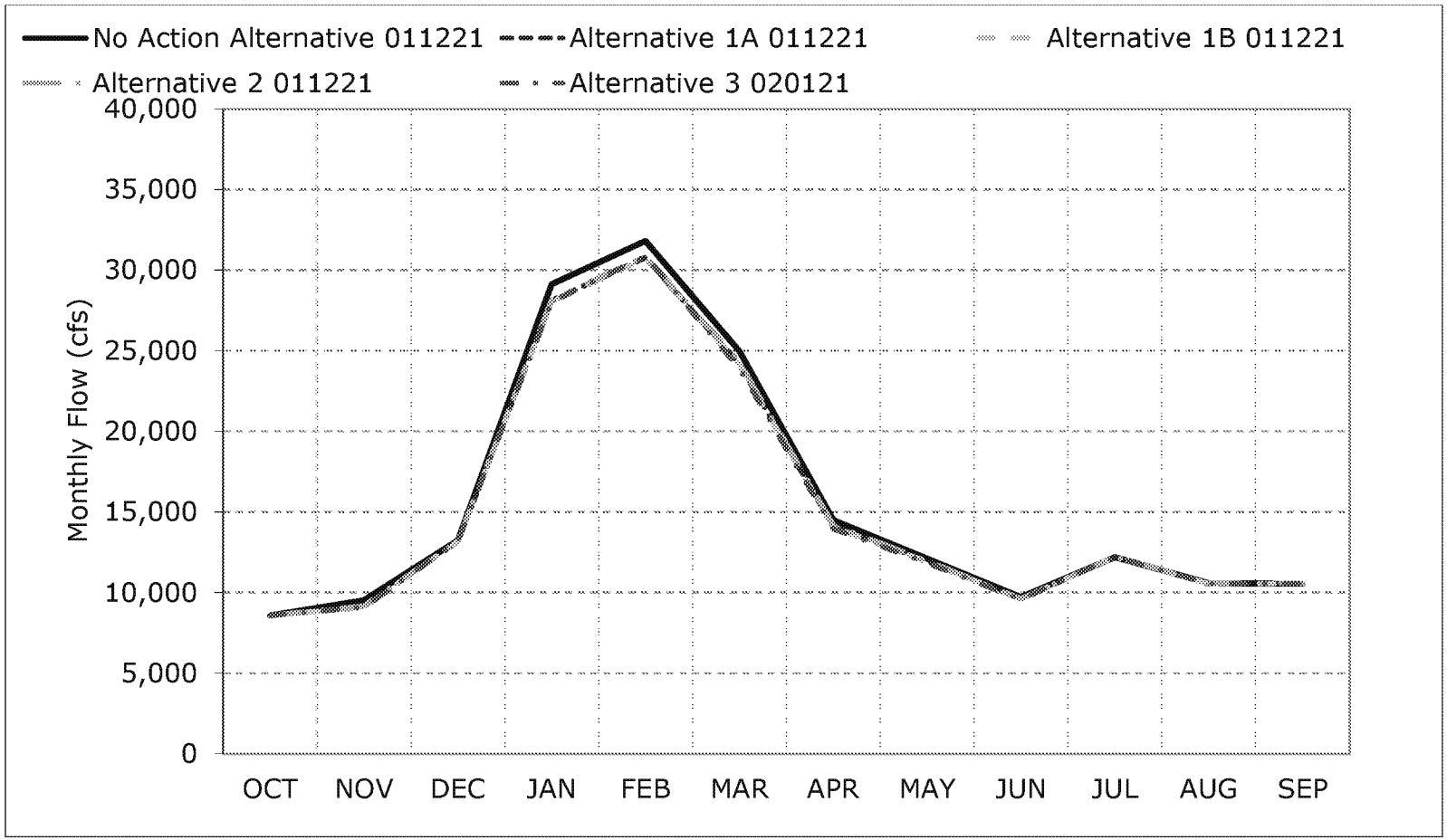
c These results are displayed with calendar year - year type sorting.

Figure 5B2-12-1. Sacramento River below Red Bluff Diversion Dam Flow, Long-Term Average Flow



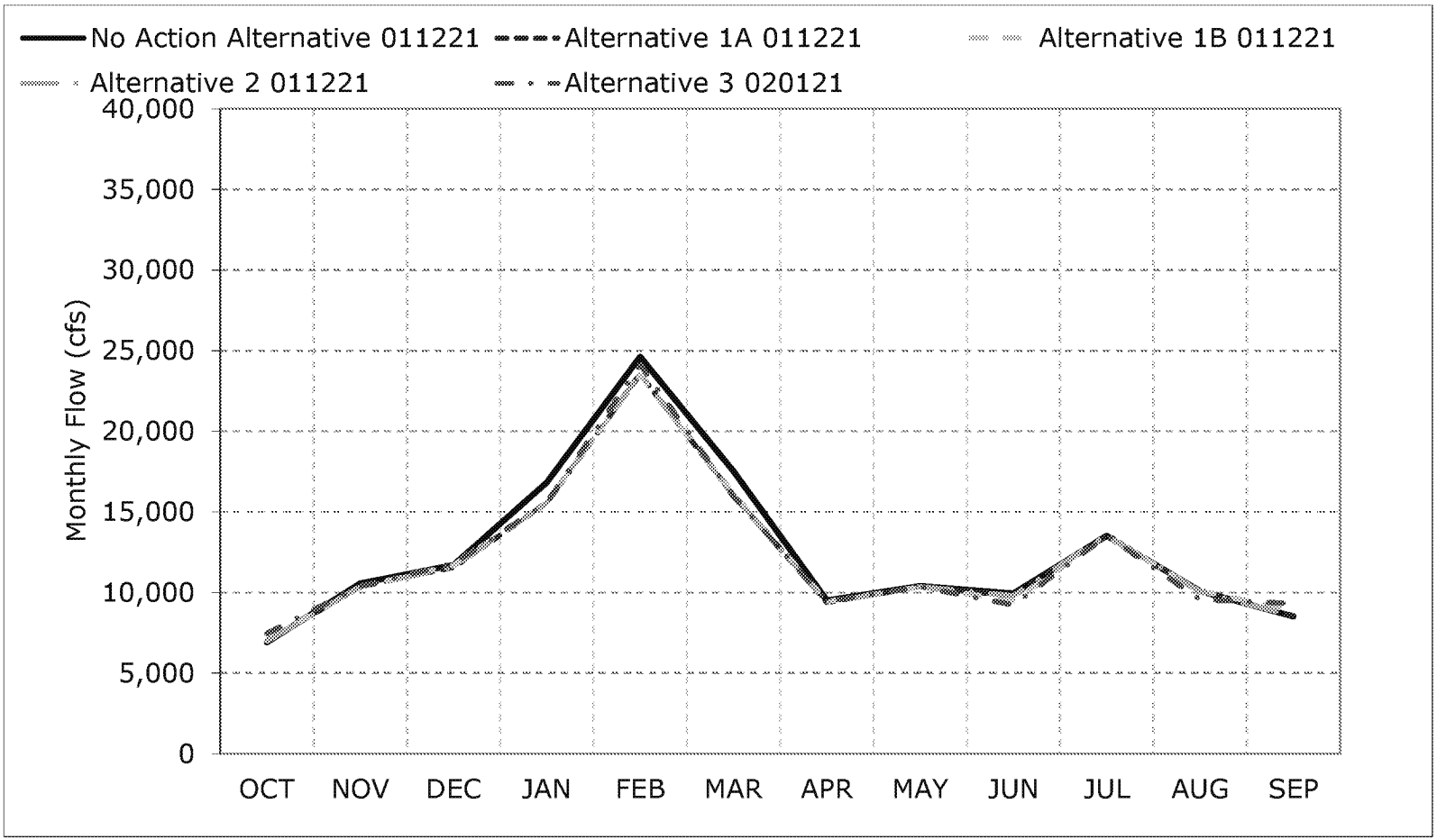
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-12-2. Sacramento River below Red Bluff Diversion Dam Flow, Wet Year Average Flow



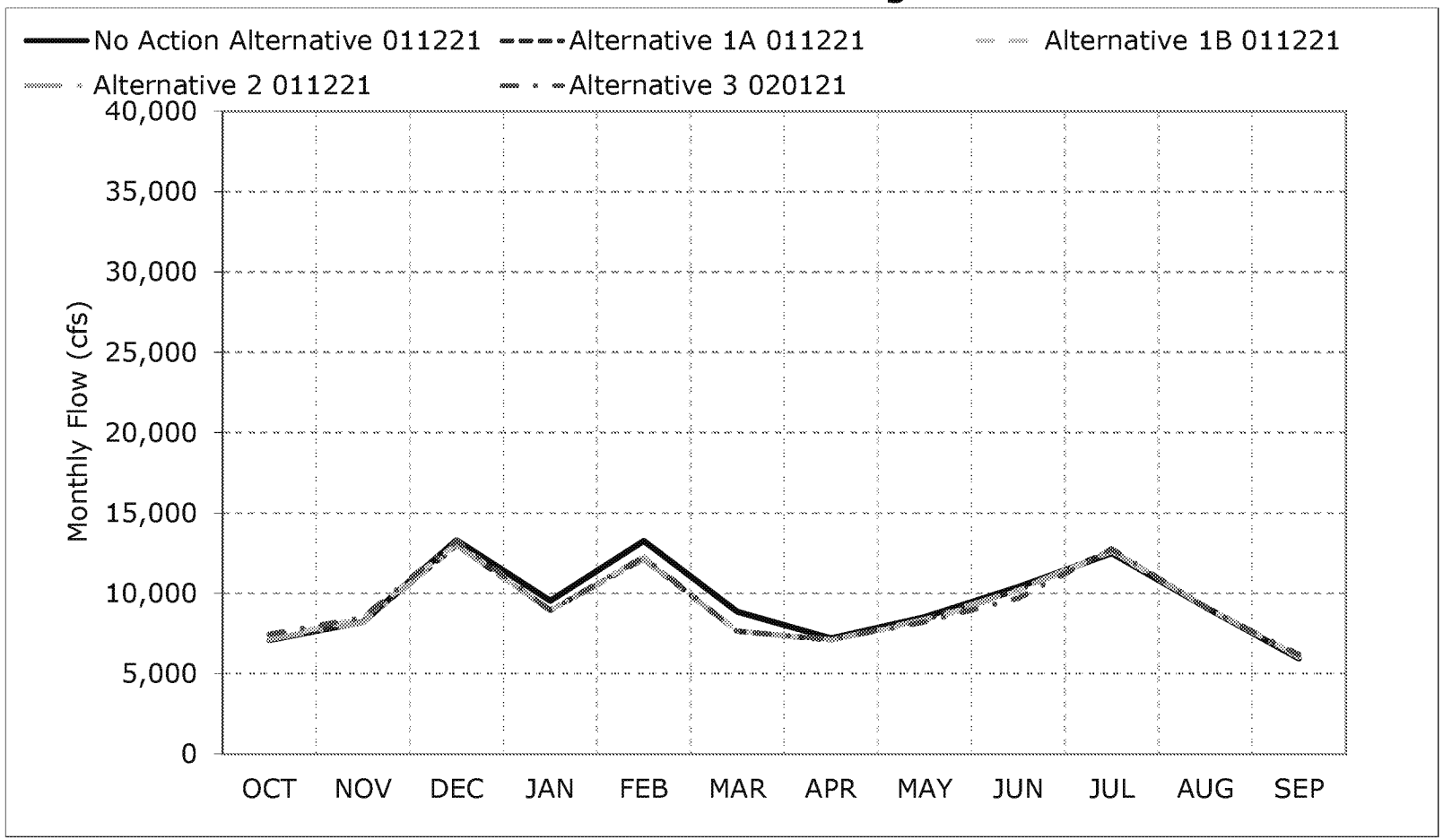
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-12-3. Sacramento River below Red Bluff Diversion Dam Flow, Above Normal Year Average Flow



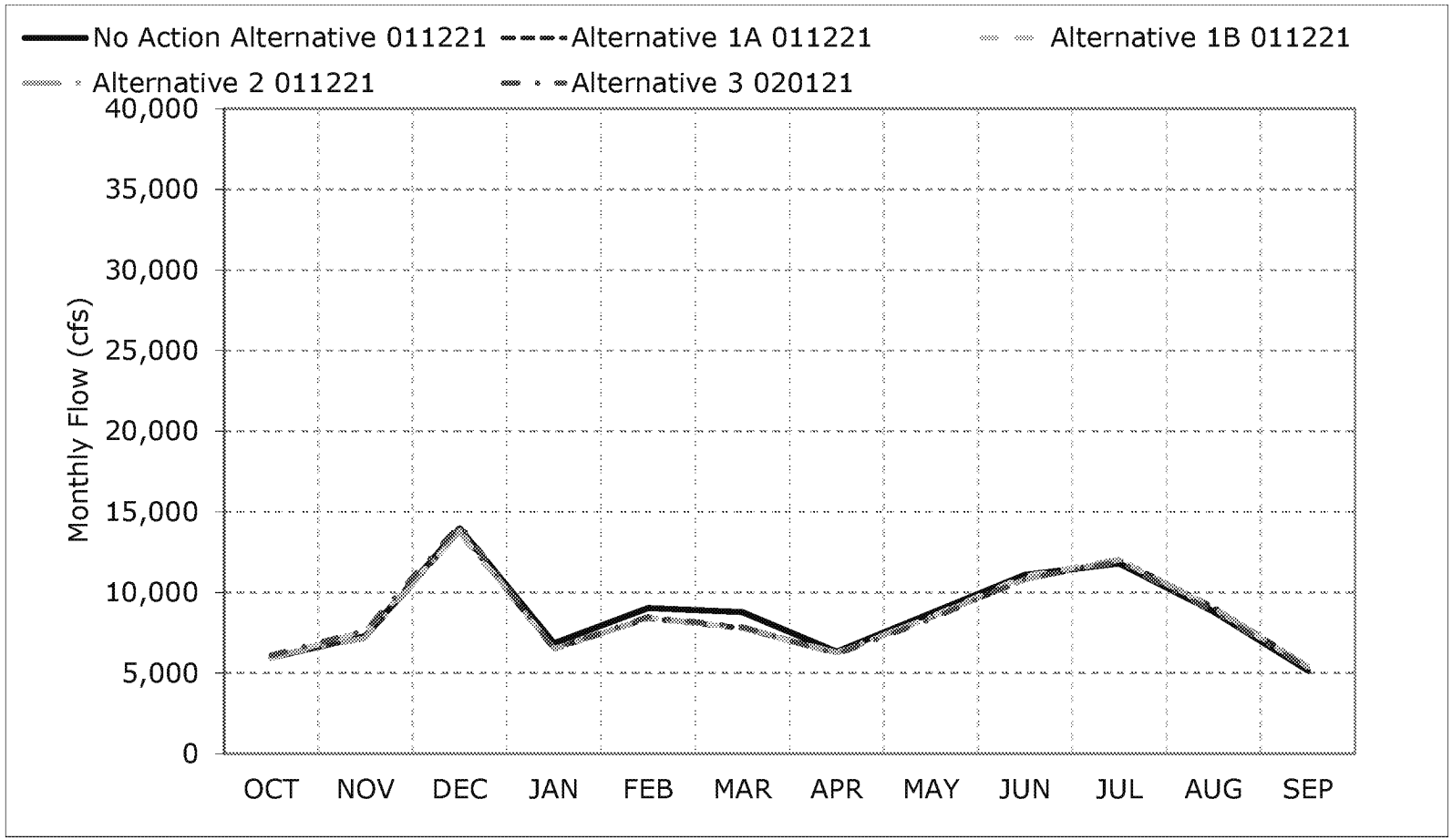
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-12-4. Sacramento River below Red Bluff Diversion Dam Flow, Below Normal Year Average Flow



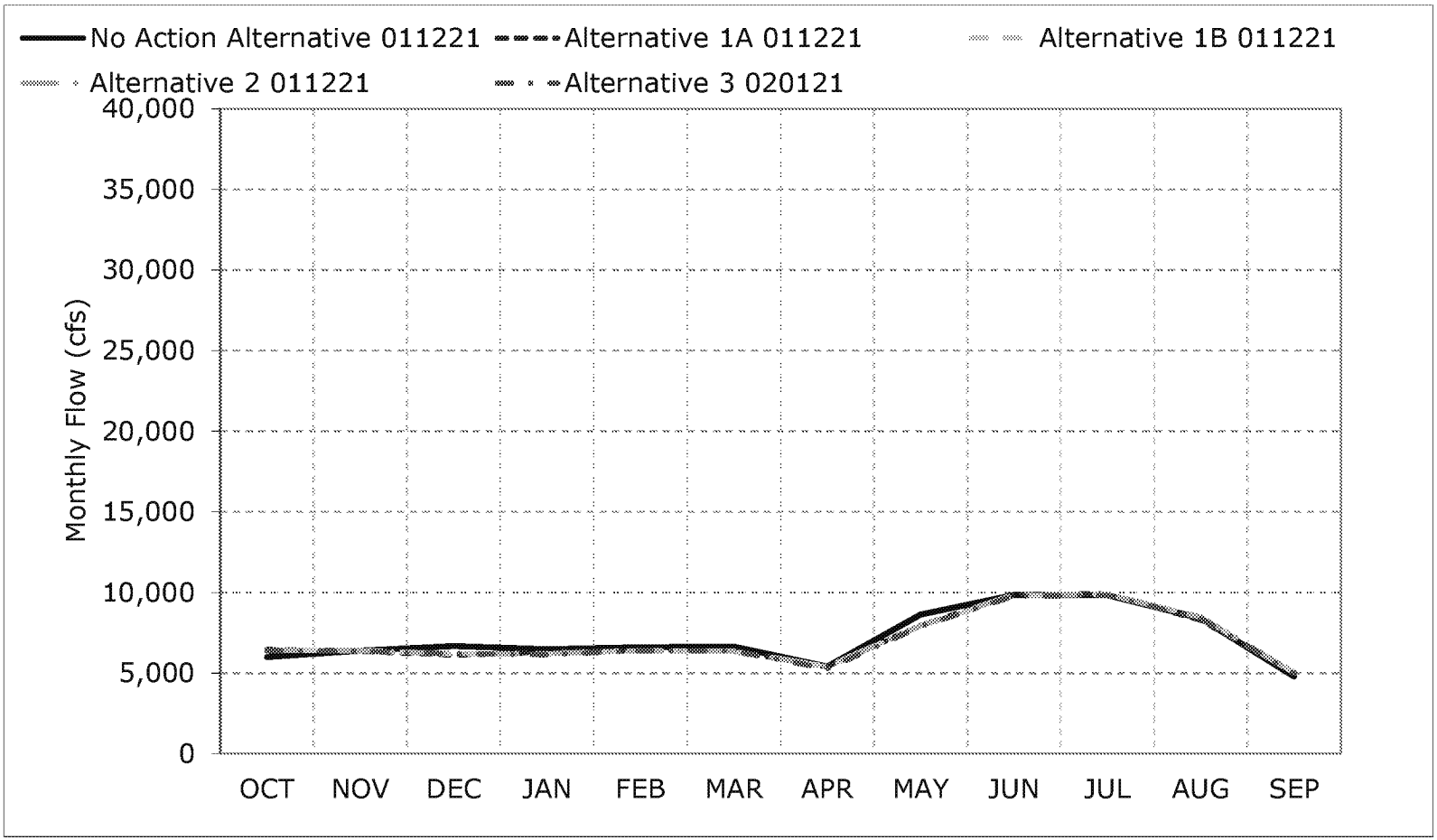
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-12-5. Sacramento River below Red Bluff Diversion Dam Flow, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-12-6. Sacramento River below Red Bluff Diversion Dam Flow, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-12-7. Sacramento River below Red Bluff Diversion Dam Flow, October

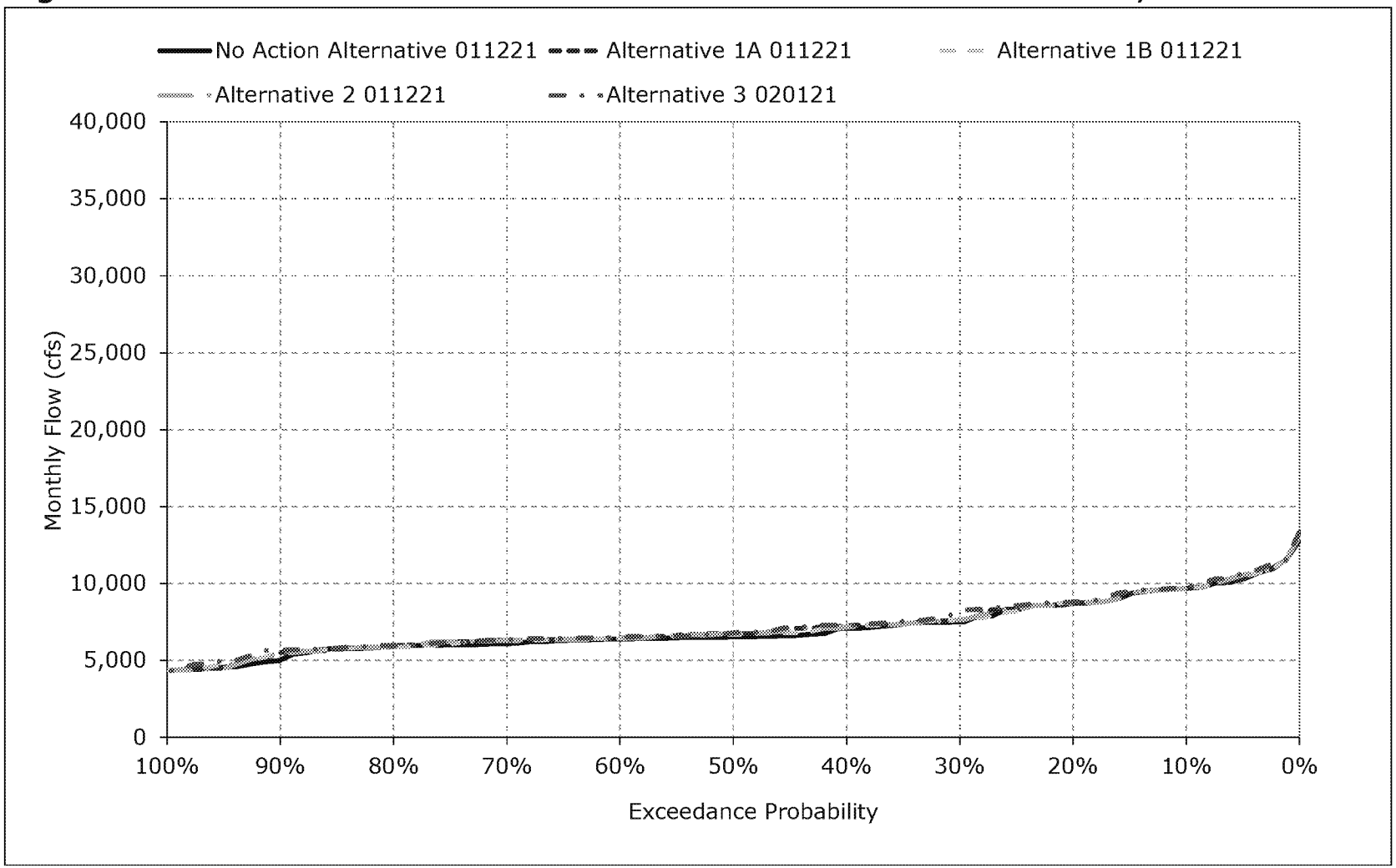


Figure 5B2-12-8. Sacramento River below Red Bluff Diversion Dam Flow, November

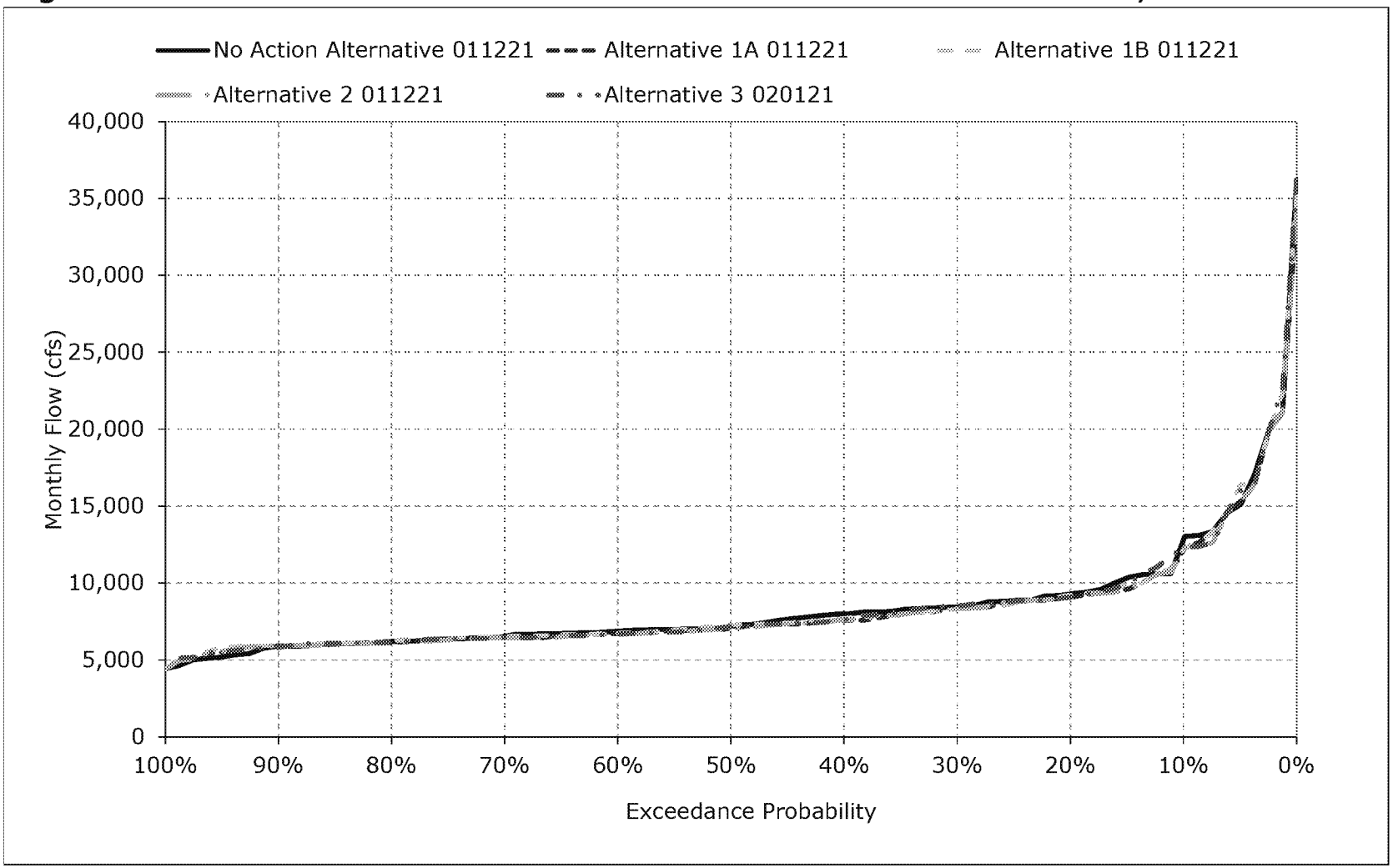


Figure 5B2-12-9. Sacramento River below Red Bluff Diversion Dam Flow, December

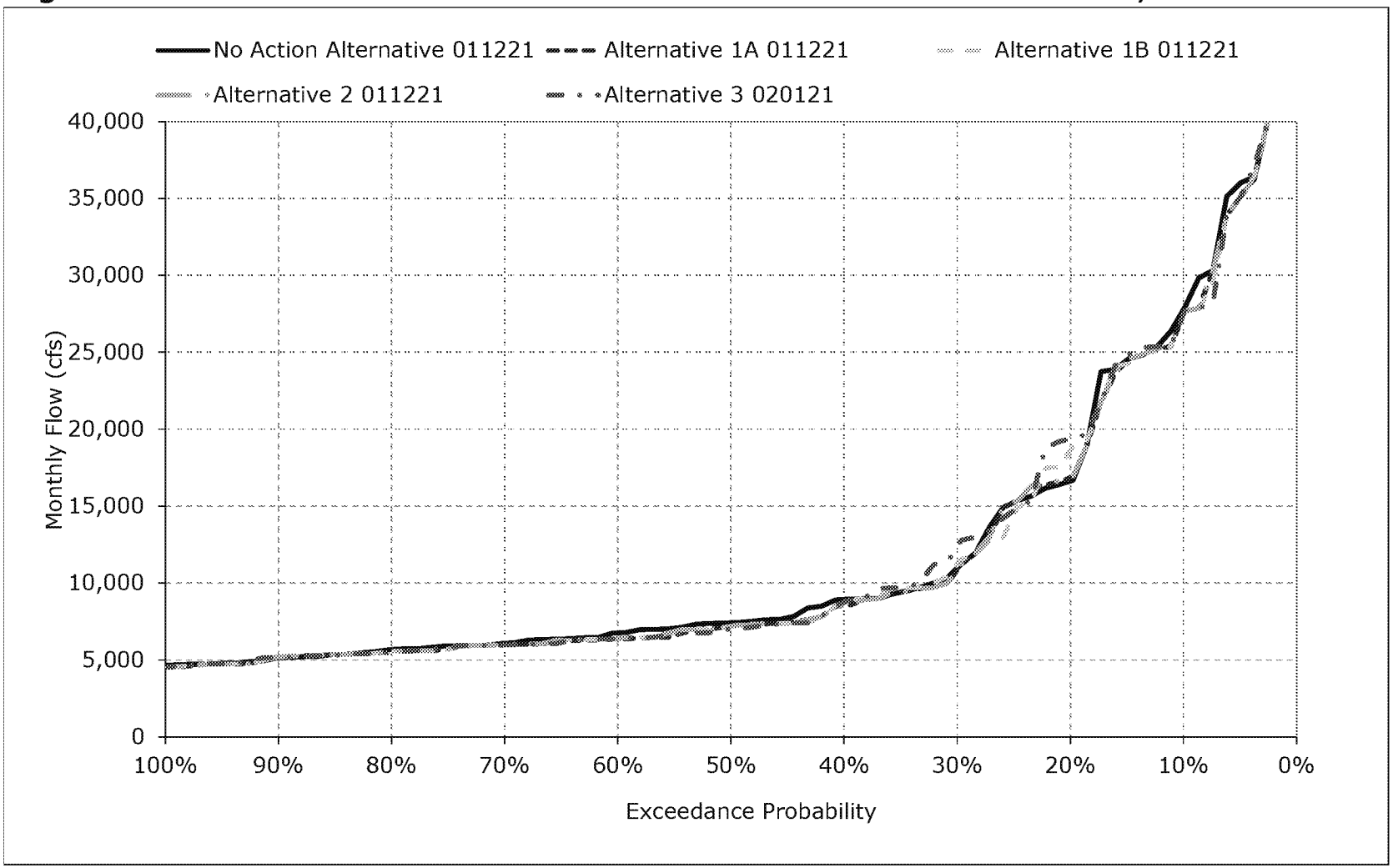


Figure 5B2-12-10. Sacramento River below Red Bluff Diversion Dam Flow, January

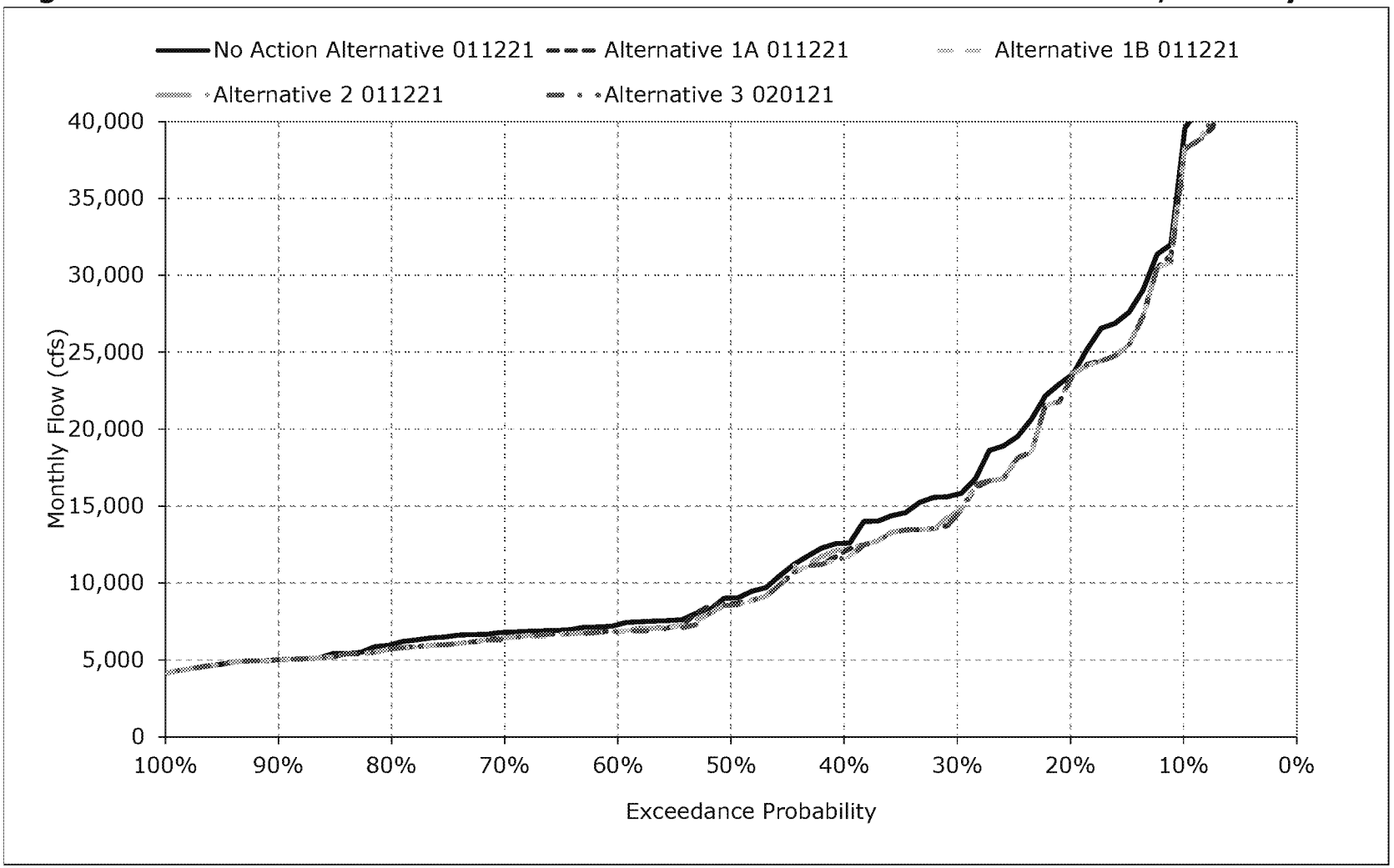


Figure 5B2-12-11. Sacramento River below Red Bluff Diversion Dam Flow, February

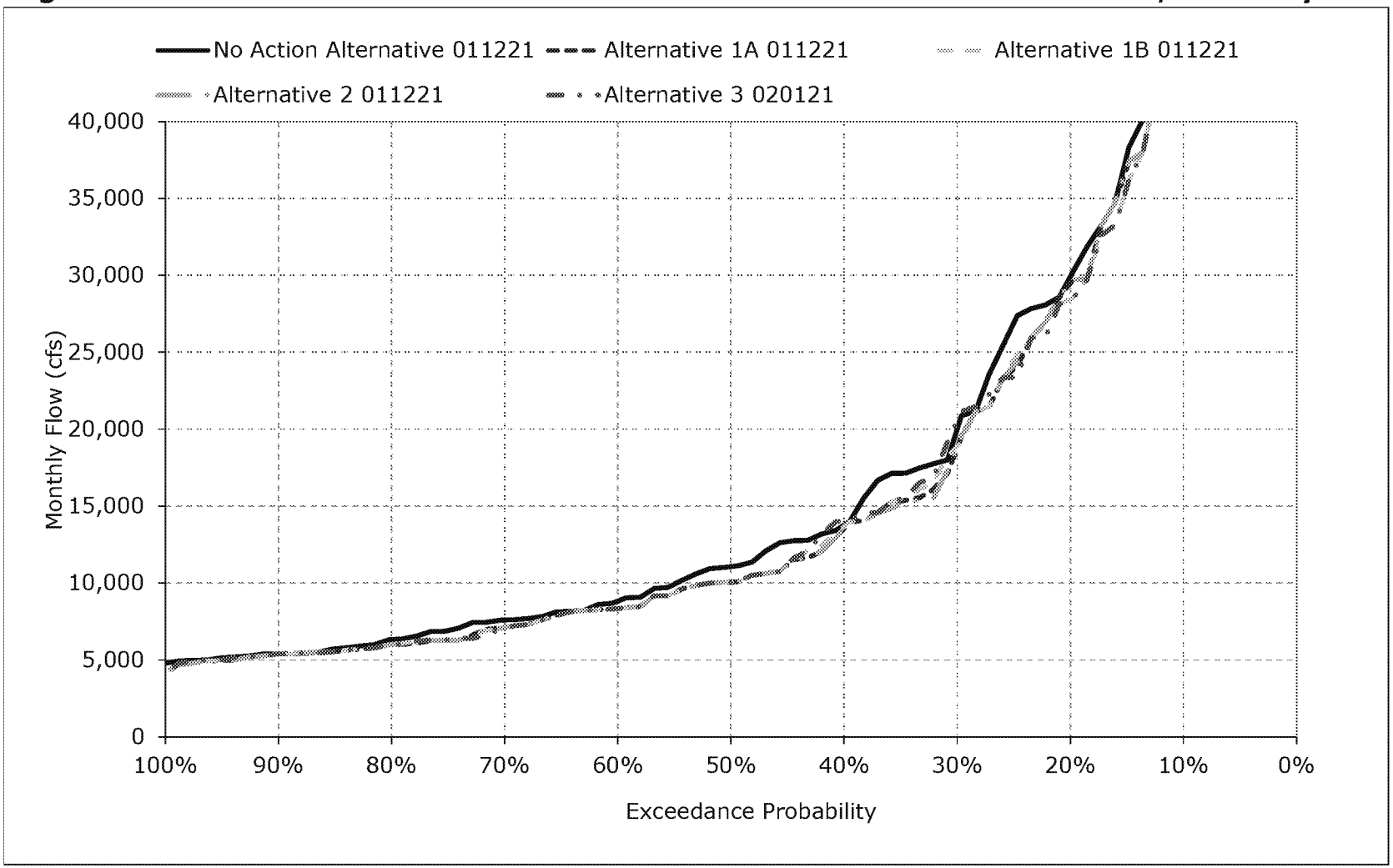


Figure 5B2-12-12. Sacramento River below Red Bluff Diversion Dam Flow, March

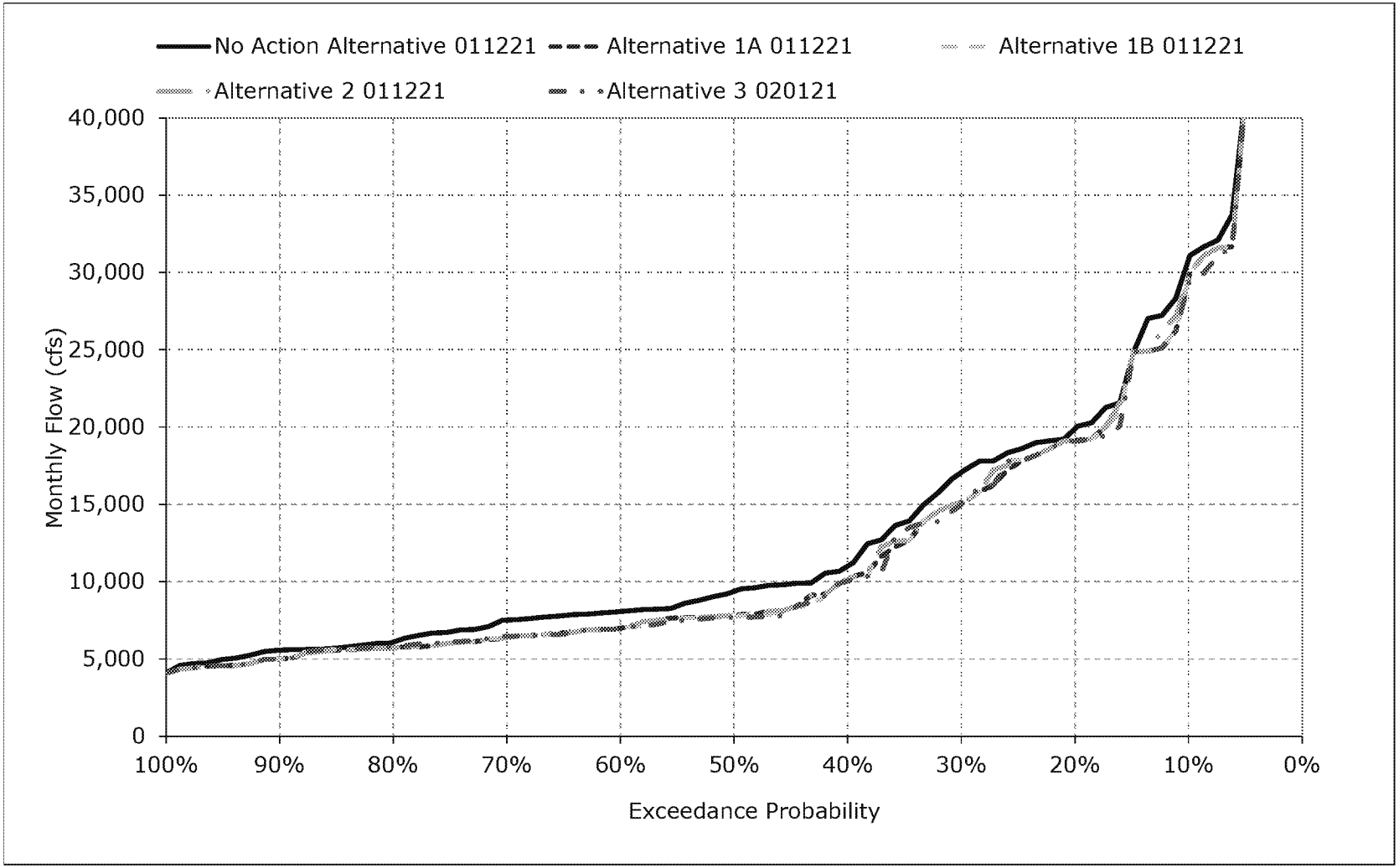


Figure 5B2-12-13. Sacramento River below Red Bluff Diversion Dam Flow, April

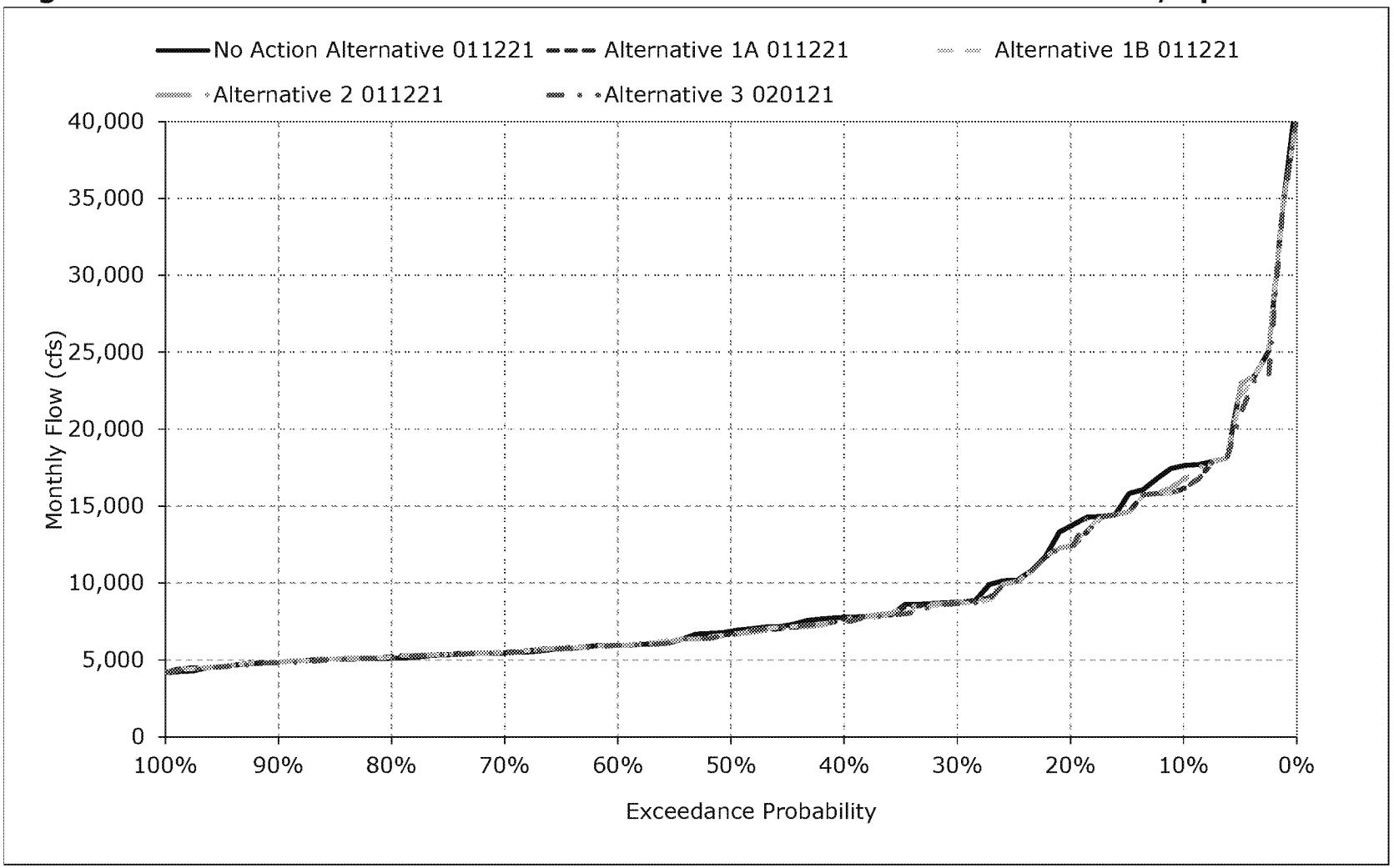


Figure 5B2-12-14. Sacramento River below Red Bluff Diversion Dam Flow, May

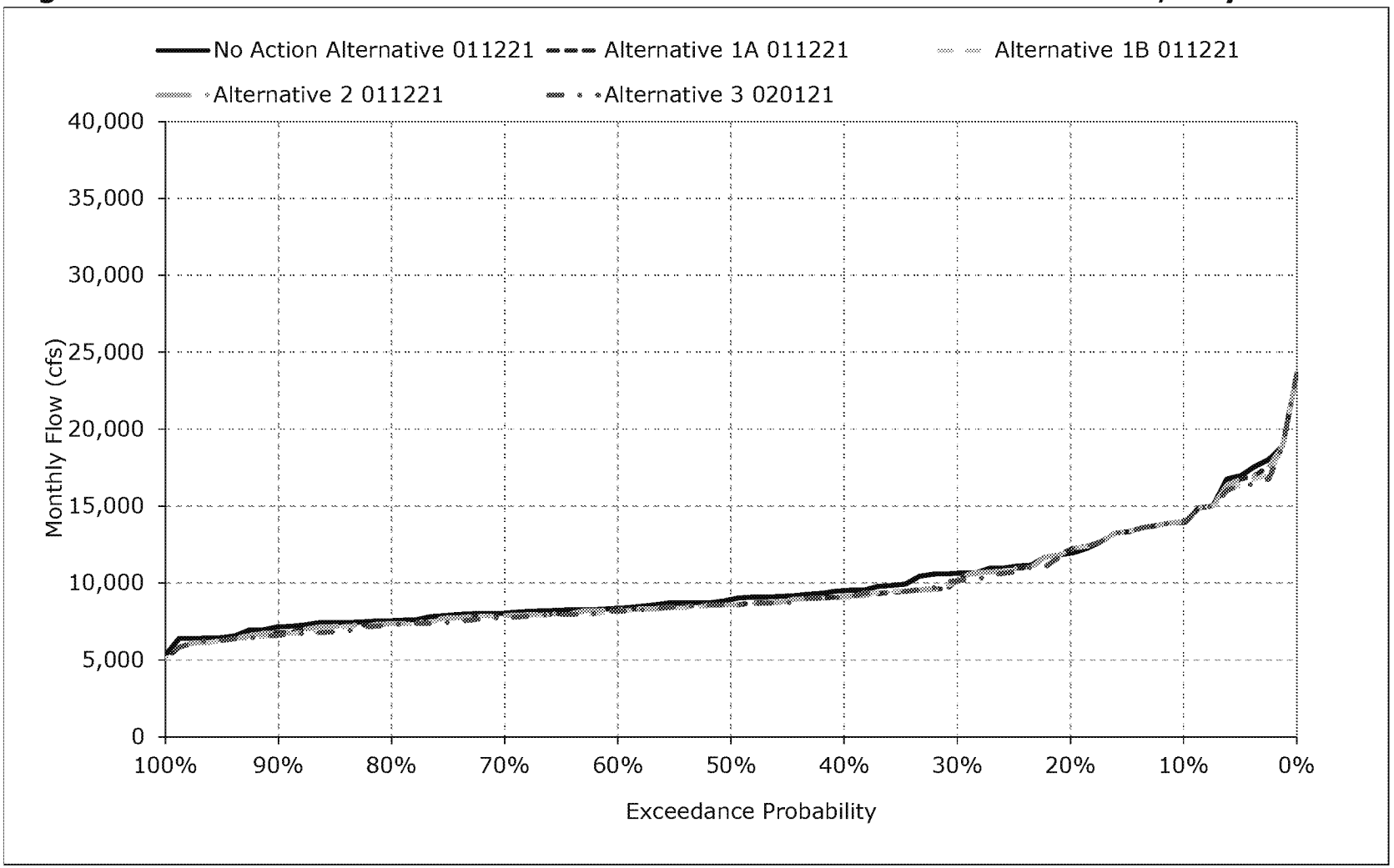


Figure 5B2-12-15. Sacramento River below Red Bluff Diversion Dam Flow, June

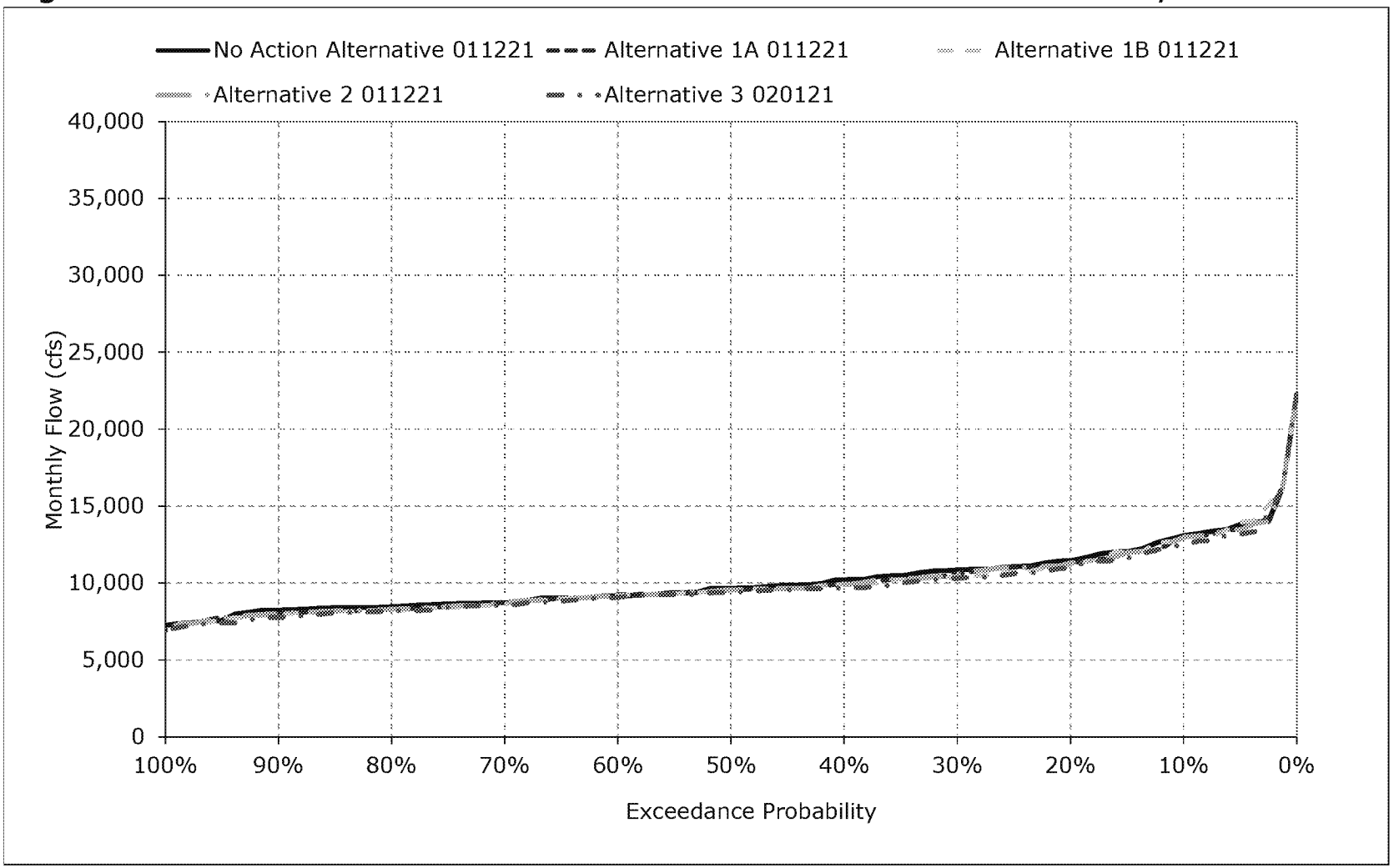


Figure 5B2-12-16. Sacramento River below Red Bluff Diversion Dam Flow, July

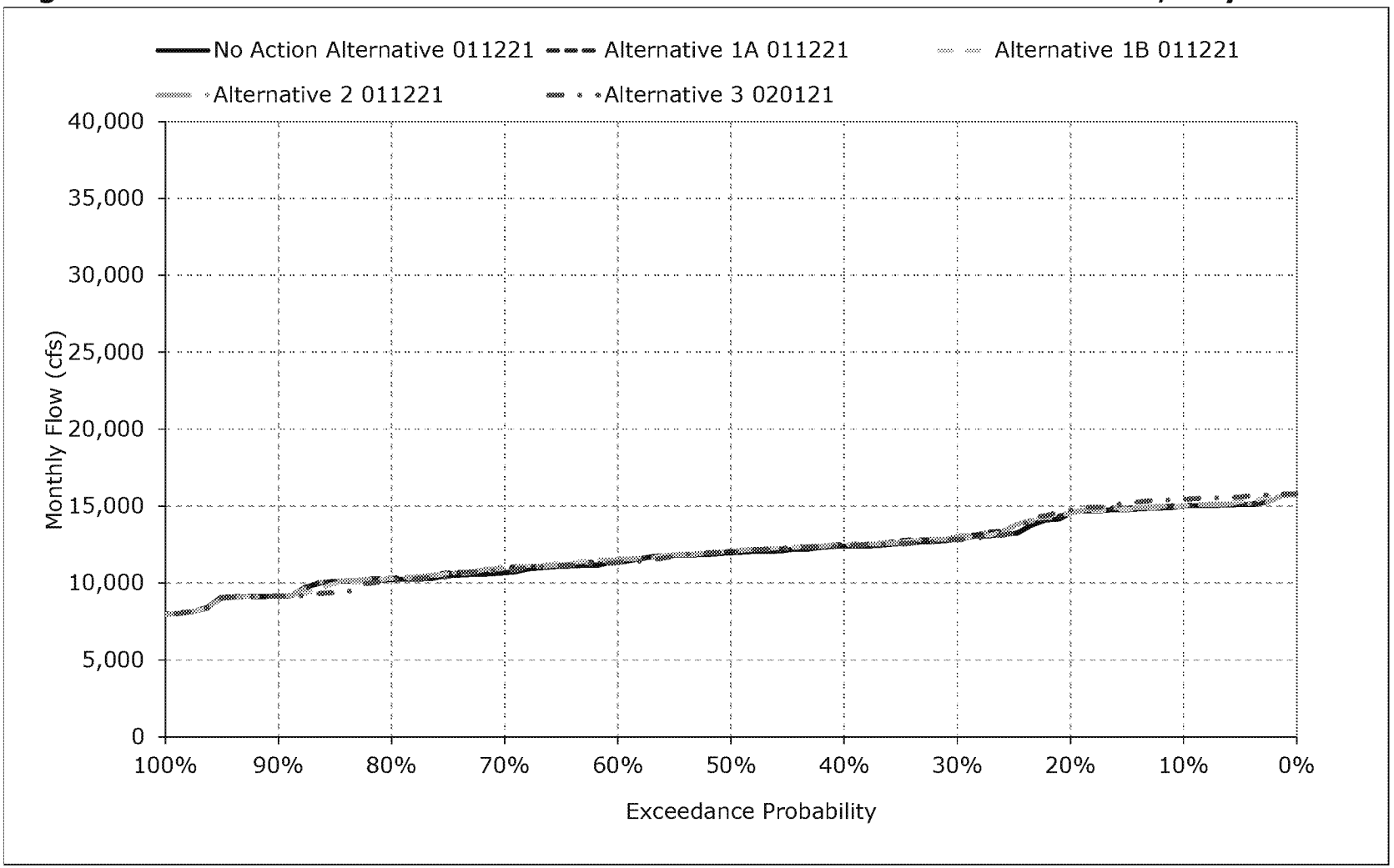


Figure 5B2-12-17. Sacramento River below Red Bluff Diversion Dam Flow, August

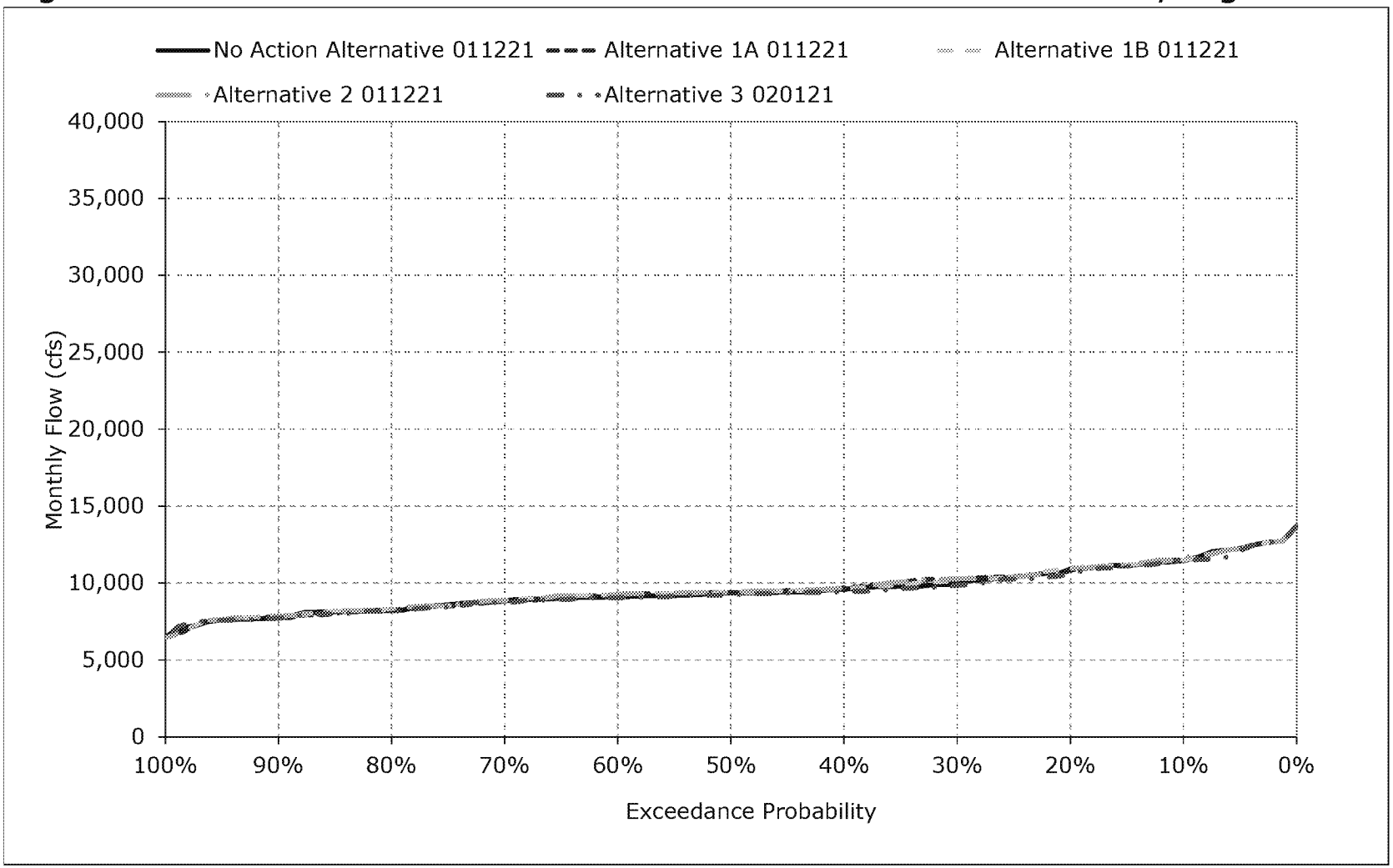


Figure 5B2-12-18. Sacramento River below Red Bluff Diversion Dam Flow, September

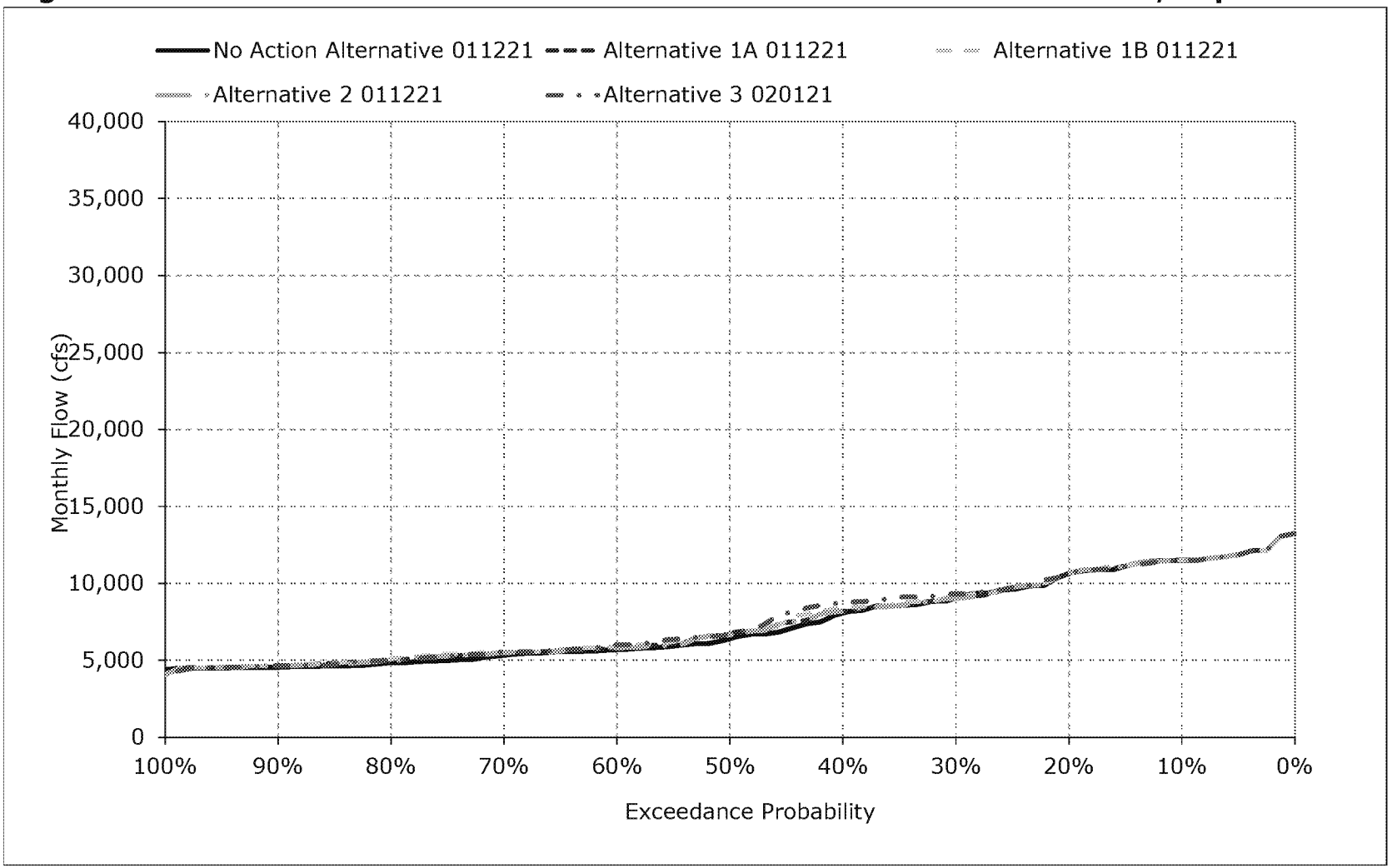


Table 5B2-13-1a. Sacramento River Flow at Hamilton City, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,362	13,269	31,161	42,851	49,409	34,404	20,461	14,341	10,783	12,442	9,605	11,001
20%	8,374	9,132	19,234	26,396	33,068	22,537	16,406	12,469	9,691	12,051	8,724	10,154
30%	7,103	8,475	12,483	18,353	22,473	19,676	10,394	9,007	8,945	10,533	8,107	8,534
40%	6,709	7,621	10,087	14,564	15,912	13,218	8,766	8,019	8,144	9,995	7,529	7,556
50%	6,219	6,999	7,936	10,760	12,611	11,419	7,795	7,490	7,789	9,677	7,388	5,953
60%	6,037	6,649	7,150	8,301	10,398	9,374	7,034	7,179	7,253	9,103	7,218	5,138
70%	5,802	6,261	6,515	7,483	8,767	8,707	6,284	6,629	6,962	8,440	6,970	4,889
80%	5,534	5,874	5,843	6,587	7,184	7,097	5,771	6,341	6,607	7,895	6,425	4,388
90%	4,856	5,458	5,210	5,438	5,977	6,538	5,219	5,896	6,322	6,929	6,090	4,040
Long Term												
Full Simulation Period[a]	6,849	8,506	13,501	17,808	21,248	16,978	10,752	9,085	8,282	9,644	7,616	6,942
Water Year Types[b,c]												
Wet (32%)	8,297	9,582	14,455	32,780	35,503	28,021	16,778	12,053	8,440	9,928	8,511	10,077
Above Normal (15%)	6,657	10,622	13,021	19,441	27,752	20,211	11,140	9,742	8,190	11,107	8,113	8,012
Below Normal (17%)	6,930	8,266	14,669	10,879	14,992	10,294	8,469	7,330	8,216	9,933	7,138	5,433
Dry (22%)	5,613	7,317	15,624	7,652	10,418	10,365	7,057	7,176	8,636	9,375	6,996	4,642
Critical (15%)	5,662	6,125	7,368	7,052	7,401	7,535	5,511	6,907	7,577	7,630	6,668	4,292

Table 5B2-13-1b. Sacramento River Flow at Hamilton City, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,361	12,637	30,992	40,205	48,442	32,492	18,560	14,332	10,682	12,541	9,501	11,002
20%	8,374	9,082	19,452	25,723	32,617	21,483	13,571	12,202	9,381	12,245	8,935	9,791
30%	7,384	8,273	12,371	16,318	21,213	16,765	10,283	8,964	8,896	11,027	8,302	8,505
40%	6,876	7,517	9,740	13,762	15,662	11,941	8,766	7,722	7,993	10,370	7,916	7,803
50%	6,546	6,994	7,665	10,227	11,818	9,228	7,469	7,409	7,727	9,919	7,554	6,468
60%	6,251	6,642	6,799	7,857	9,947	8,393	6,724	6,834	7,265	9,644	7,345	5,466
70%	6,030	6,253	6,264	7,208	8,256	7,647	6,218	6,516	6,820	8,661	7,145	4,973
80%	5,649	5,861	5,884	6,325	6,626	6,717	5,893	6,101	6,479	8,079	6,774	4,666
90%	5,304	5,570	5,395	5,439	5,984	6,012	5,284	5,682	6,163	7,489	6,118	4,286
Long Term												
Full Simulation Period[a]	6,957	8,406	13,268	16,968	20,243	15,800	10,383	8,861	8,160	9,923	7,777	7,090
Water Year Types[b,c]												
Wet (32%)	8,133	9,222	14,392	31,516	34,085	26,893	15,876	11,789	8,212	9,914	8,430	10,045
Above Normal (15%)	6,730	10,472	12,895	17,823	26,520	18,149	10,858	9,601	7,982	11,165	8,087	8,044
Below Normal (17%)	7,085	8,411	14,263	10,294	13,827	8,965	8,233	7,180	8,047	10,097	7,206	5,565
Dry (22%)	5,801	7,353	15,413	7,308	9,761	9,232	7,031	7,049	8,647	10,133	7,657	5,030
Critical (15%)	6,223	6,143	6,826	6,872	7,182	7,242	5,541	6,456	7,628	8,187	6,898	4,605

Table 5B2-13-1c. Sacramento River Flow at Hamilton City, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-1	-632	-169	-2,646	-966	-1,912	-1,901	-10	-100	99	-105	0
20%	0	-50	218	-673	-451	-1,054	-2,835	-267	-311	194	211	-363
30%	281	-201	-112	-2,035	-1,260	-2,911	-111	-43	-49	494	195	-29
40%	167	-103	-346	-802	-251	-1,278	0	-297	-151	375	387	246
50%	326	-6	-271	-534	-793	-2,191	-326	-81	-61	242	166	516
60%	213	-7	-351	-444	-452	-980	-311	-345	12	541	127	329
70%	229	-9	-251	-275	-511	-1,060	-67	-113	-142	222	175	84
80%	114	-13	41	-262	-557	-380	122	-239	-128	184	349	278
90%	448	112	185	0	7	-527	65	-214	-159	560	27	245
Long Term												
Full Simulation Period[a]	108	-101	-234	-839	-1,005	-1,178	-369	-224	-122	280	161	148
Water Year Types[b,c]												
Wet (32%)	-164	-360	-63	-1,264	-1,418	-1,128	-903	-264	-228	-15	-80	-32
Above Normal (15%)	73	-150	-126	-1,618	-1,233	-2,061	-282	-141	-208	58	-25	32
Below Normal (17%)	155	144	-406	-585	-1,165	-1,329	-236	-150	-169	164	68	132
Dry (22%)	188	36	-212	-344	-657	-1,133	-26	-126	11	758	661	388
Critical (15%)	561	18	-542	-180	-219	-293	29	-451	52	557	230	313

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-13-2a. Sacramento River Flow at Hamilton City, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,362	13,269	31,161	42,851	49,409	34,404	20,461	14,341	10,783	12,442	9,605	11,001
20%	8,374	9,132	19,234	26,396	33,068	22,537	16,406	12,469	9,691	12,051	8,724	10,154
30%	7,103	8,475	12,483	18,353	22,473	19,676	10,394	9,007	8,945	10,533	8,107	8,534
40%	6,709	7,621	10,087	14,564	15,912	13,218	8,766	8,019	8,144	9,995	7,529	7,556
50%	6,219	6,999	7,936	10,760	12,611	11,419	7,795	7,490	7,789	9,677	7,388	5,953
60%	6,037	6,649	7,150	8,301	10,398	9,374	7,034	7,179	7,253	9,103	7,218	5,138
70%	5,802	6,261	6,515	7,483	8,767	8,707	6,284	6,629	6,962	8,440	6,970	4,889
80%	5,534	5,874	5,843	6,587	7,184	7,097	5,771	6,341	6,607	7,895	6,425	4,388
90%	4,856	5,458	5,210	5,438	5,977	6,538	5,219	5,896	6,322	6,929	6,090	4,040
Long Term												
Full Simulation Period[a]	6,849	8,506	13,501	17,808	21,248	16,978	10,752	9,085	8,282	9,644	7,616	6,942
Water Year Types[b,c]												
Wet (32%)	8,297	9,582	14,455	32,780	35,503	28,021	16,778	12,053	8,440	9,928	8,511	10,077
Above Normal (15%)	6,657	10,622	13,021	19,441	27,752	20,211	11,140	9,742	8,190	11,107	8,113	8,012
Below Normal (17%)	6,930	8,266	14,669	10,879	14,992	10,294	8,469	7,330	8,216	9,933	7,138	5,433
Dry (22%)	5,613	7,317	15,624	7,652	10,418	10,365	7,057	7,176	8,636	9,375	6,996	4,642
Critical (15%)	5,662	6,125	7,368	7,052	7,401	7,535	5,511	6,907	7,577	7,630	6,668	4,292

Table 5B2-13-2b. Sacramento River Flow at Hamilton City, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,362	12,631	30,978	40,156	48,419	32,495	18,560	14,332	10,587	12,563	9,487	11,002
20%	8,374	9,081	20,649	25,725	31,445	21,539	13,568	12,207	9,154	12,186	8,940	10,154
30%	7,457	8,227	12,636	16,318	21,245	16,766	10,284	8,937	8,632	11,022	8,289	8,592
40%	6,838	7,569	10,043	13,336	15,765	11,805	8,766	7,723	7,993	10,390	7,897	7,971
50%	6,505	7,057	7,653	10,226	11,819	9,088	7,467	7,403	7,693	9,911	7,584	6,368
60%	6,249	6,727	6,887	7,776	9,946	8,394	6,721	6,833	7,169	9,656	7,398	5,533
70%	5,985	6,365	6,471	7,088	8,254	7,647	6,216	6,523	6,780	8,700	7,197	5,025
80%	5,613	5,917	5,884	6,325	6,627	6,719	5,893	6,107	6,479	8,010	6,754	4,731
90%	5,325	5,686	5,345	5,440	5,953	6,118	5,284	5,683	6,163	7,432	6,164	4,279
Long Term												
Full Simulation Period[a]	6,939	8,507	13,278	16,914	20,219	15,785	10,332	8,835	8,127	9,925	7,807	7,152
Water Year Types[b,c]												
Wet (32%)	8,124	9,158	14,389	31,401	33,940	26,851	15,753	11,708	8,181	9,915	8,431	10,089
Above Normal (15%)	6,751	10,434	13,023	17,823	26,451	18,204	10,901	9,607	7,770	11,158	8,143	8,373
Below Normal (17%)	7,158	8,602	14,346	10,284	13,928	8,975	8,237	7,184	7,977	10,091	7,235	5,623
Dry (22%)	5,707	7,764	15,262	7,301	9,817	9,211	6,946	7,051	8,754	10,146	7,623	4,984
Critical (15%)	6,151	6,173	6,902	6,770	7,199	7,196	5,543	6,440	7,603	8,185	7,066	4,602

Table 5B2-13-2c. Sacramento River Flow at Hamilton City, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	-638	-183	-2,695	-989	-1,910	-1,901	-9	-196	121	-119	0
20%	0	-51	1,414	-672	-1,623	-998	-2,838	-262	-538	135	217	0
30%	354	-248	153	-2,035	-1,228	-2,910	-110	-71	-313	489	182	57
40%	129	-52	-44	-1,228	-147	-1,414	0	-296	-151	395	368	414
50%	285	57	-283	-534	-792	-2,331	-329	-87	-95	235	196	415
60%	211	79	-263	-525	-452	-980	-314	-346	-84	553	179	395
70%	184	104	-44	-396	-513	-1,060	-68	-106	-182	260	227	137
80%	79	43	41	-262	-557	-378	122	-234	-128	116	329	343
90%	469	228	135	2	-24	-420	65	-213	-159	503	74	239
Long Term												
Full Simulation Period[a]	90	1	-224	-894	-1,029	-1,193	-419	-250	-154	281	192	210
Water Year Types[b,c]												
Wet (32%)	-172	-424	-67	-1,379	-1,563	-1,170	-1,025	-345	-258	-14	-80	12
Above Normal (15%)	94	-188	1	-1,618	-1,301	-2,007	-239	-135	-420	51	30	361
Below Normal (17%)	228	336	-322	-595	-1,064	-1,319	-232	-146	-239	159	97	190
Dry (22%)	94	447	-362	-351	-601	-1,154	-111	-125	118	772	627	342
Critical (15%)	489	48	-466	-282	-202	-339	31	-467	26	555	398	310

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-13-3a. Sacramento River Flow at Hamilton City, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,362	13,269	31,161	42,851	49,409	34,404	20,461	14,341	10,783	12,442	9,605	11,001
20%	8,374	9,132	19,234	26,396	33,068	22,537	16,406	12,469	9,691	12,051	8,724	10,154
30%	7,103	8,475	12,483	18,353	22,473	19,676	10,394	9,007	8,945	10,533	8,107	8,534
40%	6,709	7,621	10,087	14,564	15,912	13,218	8,766	8,019	8,144	9,995	7,529	7,556
50%	6,219	6,999	7,936	10,760	12,611	11,419	7,795	7,490	7,789	9,677	7,388	5,953
60%	6,037	6,649	7,150	8,301	10,398	9,374	7,034	7,179	7,253	9,103	7,218	5,138
70%	5,802	6,261	6,515	7,483	8,767	8,707	6,284	6,629	6,962	8,440	6,970	4,889
80%	5,534	5,874	5,843	6,587	7,184	7,097	5,771	6,341	6,607	7,895	6,425	4,388
90%	4,856	5,458	5,210	5,438	5,977	6,538	5,219	5,896	6,322	6,929	6,090	4,040
Long Term												
Full Simulation Period[a]	6,849	8,506	13,501	17,808	21,248	16,978	10,752	9,085	8,282	9,644	7,616	6,942
Water Year Types[b,c]												
Wet (32%)	8,297	9,582	14,455	32,780	35,503	28,021	16,778	12,053	8,440	9,928	8,511	10,077
Above Normal (15%)	6,657	10,622	13,021	19,441	27,752	20,211	11,140	9,742	8,190	11,107	8,113	8,012
Below Normal (17%)	6,930	8,266	14,669	10,879	14,992	10,294	8,469	7,330	8,216	9,933	7,138	5,433
Dry (22%)	5,613	7,317	15,624	7,652	10,418	10,365	7,057	7,176	8,636	9,375	6,996	4,642
Critical (15%)	5,662	6,125	7,368	7,052	7,401	7,535	5,511	6,907	7,577	7,630	6,668	4,292

Table 5B2-13-3b. Sacramento River Flow at Hamilton City, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,361	12,625	30,997	40,212	48,972	32,593	18,582	14,332	10,693	12,545	9,500	11,002
20%	8,374	9,082	19,468	25,723	32,617	21,484	13,571	12,209	9,381	12,277	8,944	10,154
30%	7,387	8,273	12,372	16,328	21,283	16,765	10,283	8,964	8,897	11,027	8,338	8,508
40%	6,876	7,529	9,740	14,143	15,662	11,941	8,766	7,722	7,951	10,346	7,878	7,799
50%	6,547	6,992	7,665	10,227	11,818	9,228	7,467	7,403	7,732	9,876	7,554	6,469
60%	6,253	6,579	6,891	7,843	9,947	8,393	6,727	6,834	7,214	9,644	7,370	5,448
70%	6,012	6,188	6,487	7,208	8,254	7,647	6,217	6,516	6,787	8,661	7,203	4,973
80%	5,649	5,892	5,850	6,325	6,627	6,717	5,893	6,103	6,479	8,091	6,791	4,665
90%	5,330	5,552	5,399	5,439	5,984	6,011	5,284	5,682	6,163	7,486	6,122	4,276
Long Term												
Full Simulation Period[a]	6,963	8,380	13,284	16,967	20,268	15,888	10,420	8,859	8,148	9,917	7,794	7,098
Water Year Types[b,c]												
Wet (32%)	8,135	9,226	14,394	31,552	34,180	27,115	15,995	11,792	8,215	9,916	8,467	10,080
Above Normal (15%)	6,730	10,480	12,895	17,824	26,543	18,173	10,858	9,601	7,982	11,168	8,088	8,049
Below Normal (17%)	7,139	8,342	14,271	10,293	13,766	8,971	8,233	7,180	8,047	10,101	7,216	5,570
Dry (22%)	5,807	7,267	15,422	7,308	9,761	9,295	7,031	7,049	8,608	10,135	7,612	5,033
Critical (15%)	6,184	6,165	6,908	6,785	7,194	7,239	5,541	6,439	7,595	8,126	6,988	4,569

Table 5B2-13-3c. Sacramento River Flow at Hamilton City, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-1	-644	-164	-2,639	-437	-1,811	-1,879	-10	-90	103	-105	0
20%	0	-50	234	-674	-451	-1,053	-2,835	-260	-311	226	221	0
30%	284	-202	-112	-2,025	-1,190	-2,911	-111	-44	-48	494	231	-26
40%	167	-92	-347	-421	-250	-1,278	0	-297	-194	350	349	243
50%	328	-7	-271	-534	-793	-2,191	-328	-87	-57	199	166	516
60%	216	-70	-259	-458	-452	-980	-307	-345	-39	541	151	310
70%	211	-73	-28	-275	-514	-1,060	-67	-113	-175	221	234	84
80%	115	18	7	-262	-557	-380	122	-238	-128	196	366	276
90%	475	95	189	0	7	-528	65	-214	-159	557	31	235
Long Term												
Full Simulation Period[a]	114	-126	-218	-841	-980	-1,089	-331	-225	-134	273	178	156
Water Year Types[b,c]												
Wet (32%)	-162	-357	-61	-1,228	-1,323	-906	-783	-261	-224	-13	-44	3
Above Normal (15%)	73	-142	-126	-1,617	-1,209	-2,038	-282	-141	-208	61	-25	36
Below Normal (17%)	209	75	-398	-586	-1,225	-1,324	-236	-150	-169	168	78	137
Dry (22%)	193	-50	-202	-344	-657	-1,070	-26	-127	-28	760	616	391
Critical (15%)	522	40	-461	-267	-207	-296	29	-468	19	496	320	277

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-13-4a. Sacramento River Flow at Hamilton City, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,362	13,269	31,161	42,851	49,409	34,404	20,461	14,341	10,783	12,442	9,605	11,001
20%	8,374	9,132	19,234	26,396	33,068	22,537	16,406	12,469	9,691	12,051	8,724	10,154
30%	7,103	8,475	12,483	18,353	22,473	19,676	10,394	9,007	8,945	10,533	8,107	8,534
40%	6,709	7,621	10,087	14,564	15,912	13,218	8,766	8,019	8,144	9,995	7,529	7,556
50%	6,219	6,999	7,936	10,760	12,611	11,419	7,795	7,490	7,789	9,677	7,388	5,953
60%	6,037	6,649	7,150	8,301	10,398	9,374	7,034	7,179	7,253	9,103	7,218	5,138
70%	5,802	6,261	6,515	7,483	8,767	8,707	6,284	6,629	6,962	8,440	6,970	4,889
80%	5,534	5,874	5,843	6,587	7,184	7,097	5,771	6,341	6,607	7,895	6,425	4,388
90%	4,856	5,458	5,210	5,438	5,977	6,538	5,219	5,896	6,322	6,929	6,090	4,040
Long Term												
Full Simulation Period[a]	6,849	8,506	13,501	17,808	21,248	16,978	10,752	9,085	8,282	9,644	7,616	6,942
Water Year Types[b,c]												
Wet (32%)	8,297	9,582	14,455	32,780	35,503	28,021	16,778	12,053	8,440	9,928	8,511	10,077
Above Normal (15%)	6,657	10,622	13,021	19,441	27,752	20,211	11,140	9,742	8,190	11,107	8,113	8,012
Below Normal (17%)	6,930	8,266	14,669	10,879	14,992	10,294	8,469	7,330	8,216	9,933	7,138	5,433
Dry (22%)	5,613	7,317	15,624	7,652	10,418	10,365	7,057	7,176	8,636	9,375	6,996	4,642
Critical (15%)	5,662	6,125	7,368	7,052	7,401	7,535	5,511	6,907	7,577	7,630	6,668	4,292

Table 5B2-13-4b. Sacramento River Flow at Hamilton City, Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,362	12,724	30,060	40,155	48,415	31,548	18,562	14,332	10,735	13,689	9,344	11,002
20%	8,496	9,103	21,504	25,724	31,177	21,378	13,569	12,021	9,107	12,522	8,729	9,827
30%	7,903	8,353	13,838	16,320	22,697	16,728	10,277	8,753	8,493	11,017	8,092	8,750
40%	7,035	7,575	10,297	13,346	16,422	11,696	8,766	7,794	7,917	10,376	7,733	8,309
50%	6,538	7,030	7,587	10,226	11,819	9,039	7,451	7,400	7,654	9,824	7,464	6,367
60%	6,251	6,573	6,785	7,658	9,946	8,393	6,701	6,942	7,183	9,447	7,298	5,535
70%	6,021	6,185	6,490	7,156	8,254	7,727	6,173	6,563	6,820	8,713	7,045	4,968
80%	5,767	5,804	5,930	6,325	6,850	6,676	5,770	6,136	6,548	8,146	6,638	4,719
90%	5,397	5,651	5,266	5,440	5,979	6,140	5,284	5,698	6,251	7,267	6,089	4,207
Long Term												
Full Simulation Period[a]	7,072	8,507	13,424	16,902	20,334	15,669	10,235	8,831	8,114	10,108	7,665	7,196
Water Year Types[b,c]												
Wet (32%)	8,130	9,167	14,397	31,393	34,072	26,484	15,507	11,598	8,143	9,916	8,430	10,046
Above Normal (15%)	7,141	10,489	13,023	17,822	26,974	18,072	10,902	9,606	7,736	12,101	7,859	8,822
Below Normal (17%)	7,429	8,643	14,554	10,280	13,886	8,951	8,288	7,257	7,950	10,558	7,215	5,711
Dry (22%)	5,878	7,717	15,739	7,300	9,846	9,289	6,925	7,096	8,812	10,084	7,314	4,914
Critical (15%)	6,083	6,121	6,924	6,712	7,186	7,239	5,384	6,498	7,571	8,044	6,862	4,549

Table 5B2-13-4c. Sacramento River Flow at Hamilton City, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

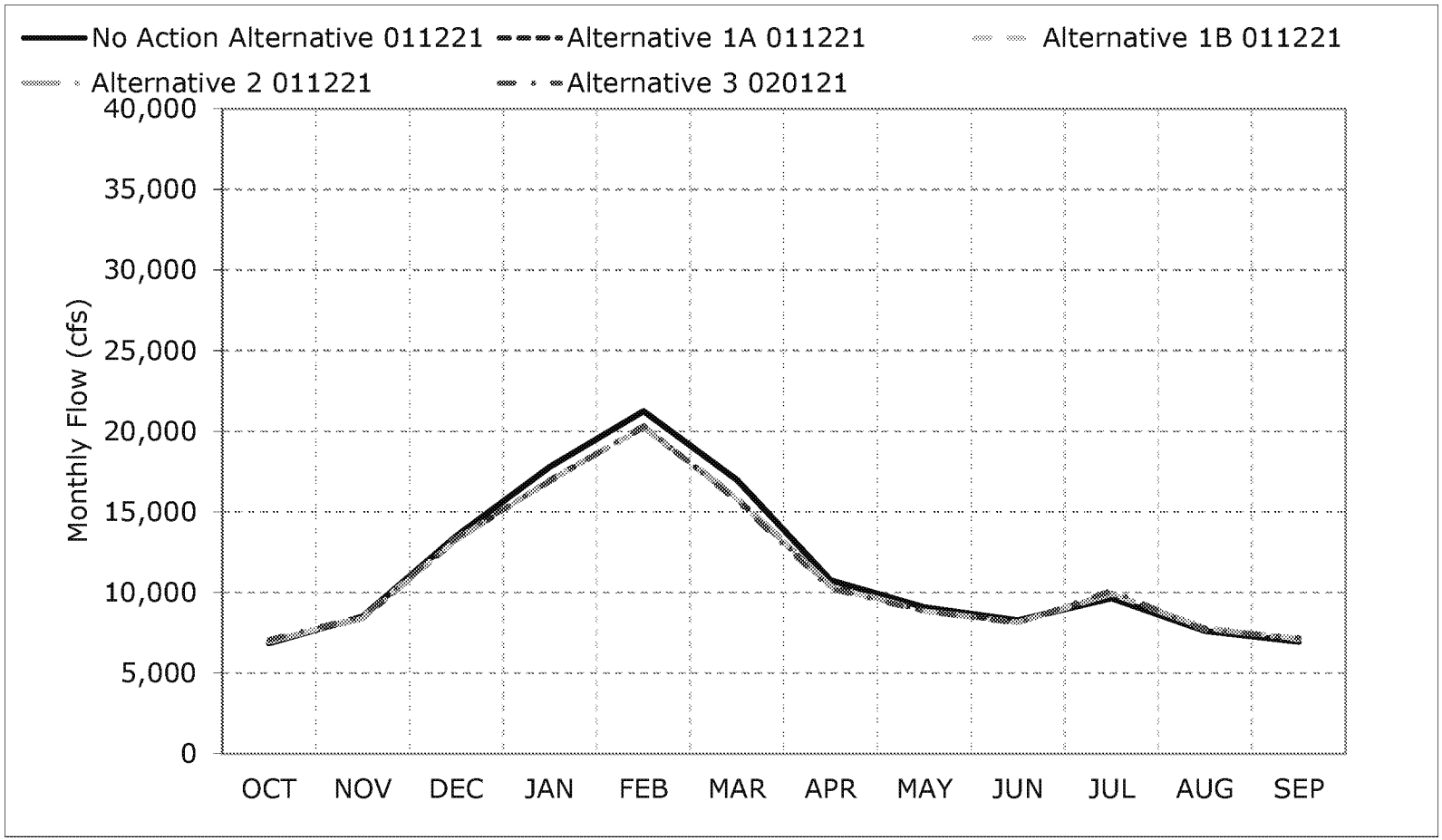
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	-545	-1,101	-2,696	-994	-2,856	-1,900	-9	-48	1,246	-262	1
20%	122	-29	2,269	-673	-1,891	-1,159	-2,837	-448	-584	471	5	-327
30%	801	-122	1,355	-2,033	224	-2,947	-117	-255	-452	484	-15	215
40%	326	-45	210	-1,218	510	-1,522	0	-226	-228	380	204	753
50%	319	31	-349	-535	-792	-2,380	-344	-90	-135	148	76	415
60%	214	-76	-365	-643	-452	-980	-334	-237	-70	344	80	398
70%	219	-77	-25	-327	-513	-980	-111	-67	-142	273	76	79
80%	233	-70	87	-262	-334	-422	0	-205	-60	251	213	331
90%	541	193	56	2	2	-398	65	-199	-71	338	-2	167
Long Term												
Full Simulation Period[a]	223	1	-78	-906	-914	-1,309	-516	-254	-168	465	49	254
Water Year Types[b,c]												
Wet (32%)	-166	-415	-58	-1,387	-1,431	-1,537	-1,272	-455	-296	-12	-81	-31
Above Normal (15%)	484	-133	1	-1,619	-778	-2,139	-238	-136	-454	994	-254	810
Below Normal (17%)	499	376	-114	-599	-1,106	-1,343	-181	-73	-266	625	77	278
Dry (22%)	265	401	114	-353	-572	-1,076	-132	-79	176	710	318	272
Critical (15%)	421	-4	-444	-339	-215	-296	-127	-409	-6	415	194	257

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

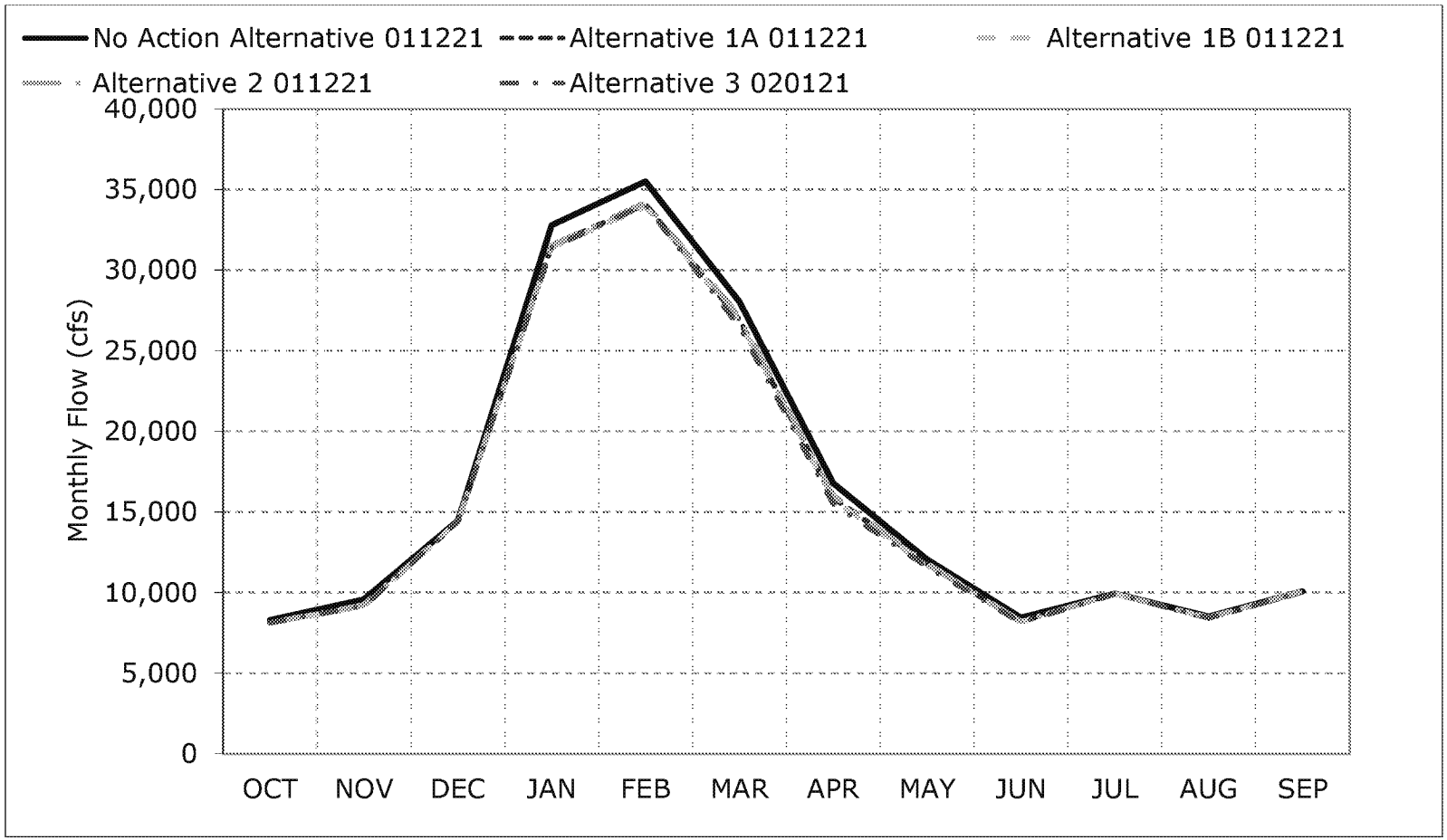
c These results are displayed with calendar year - year type sorting.

Figure 5B2-13-1. Sacramento River Flow at Hamilton City, Long-Term Average Flow



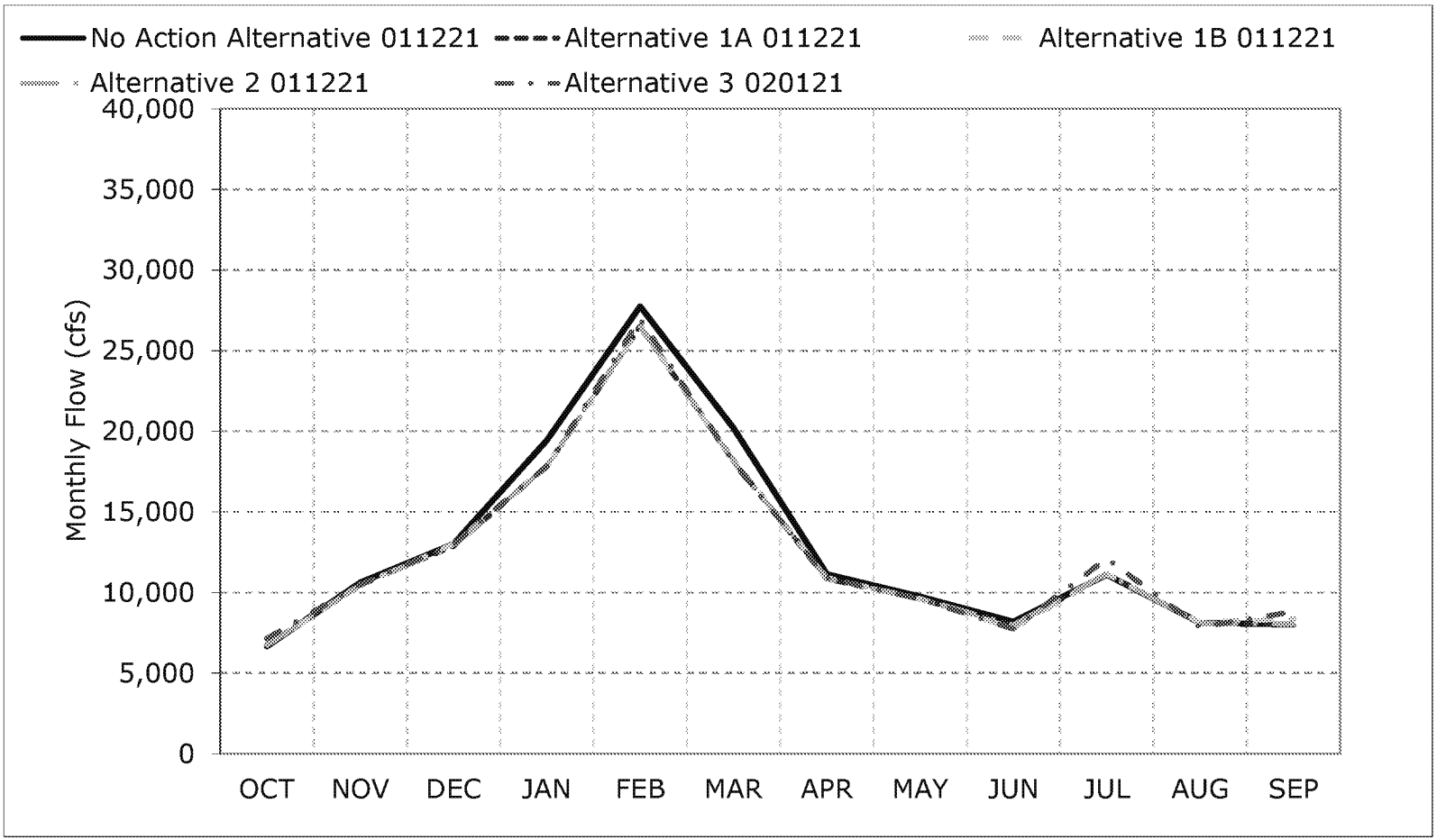
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-13-2. Sacramento River Flow at Hamilton City, Wet Year Average Flow



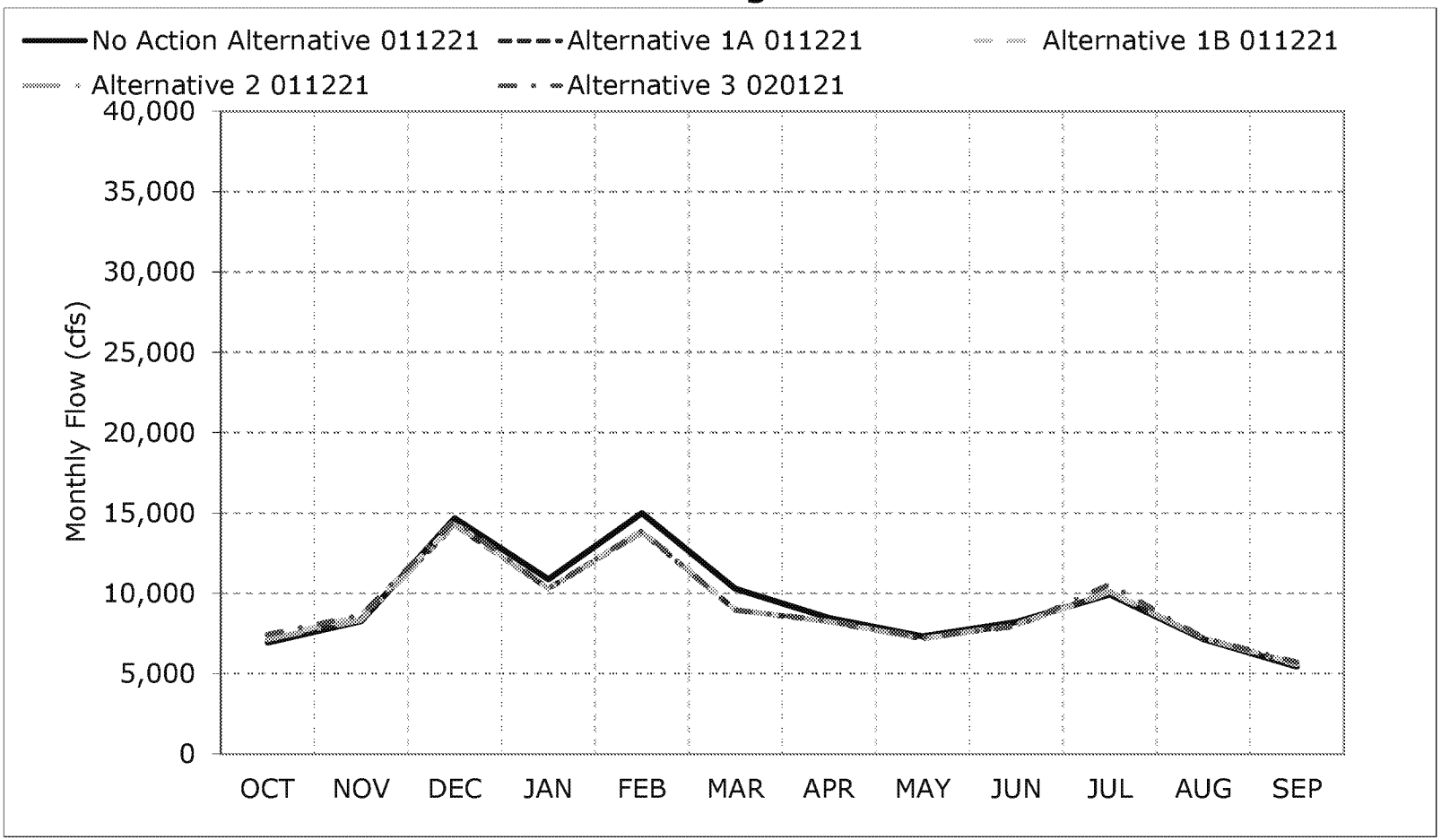
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-13-3. Sacramento River Flow at Hamilton City, Above Normal Year Average Flow



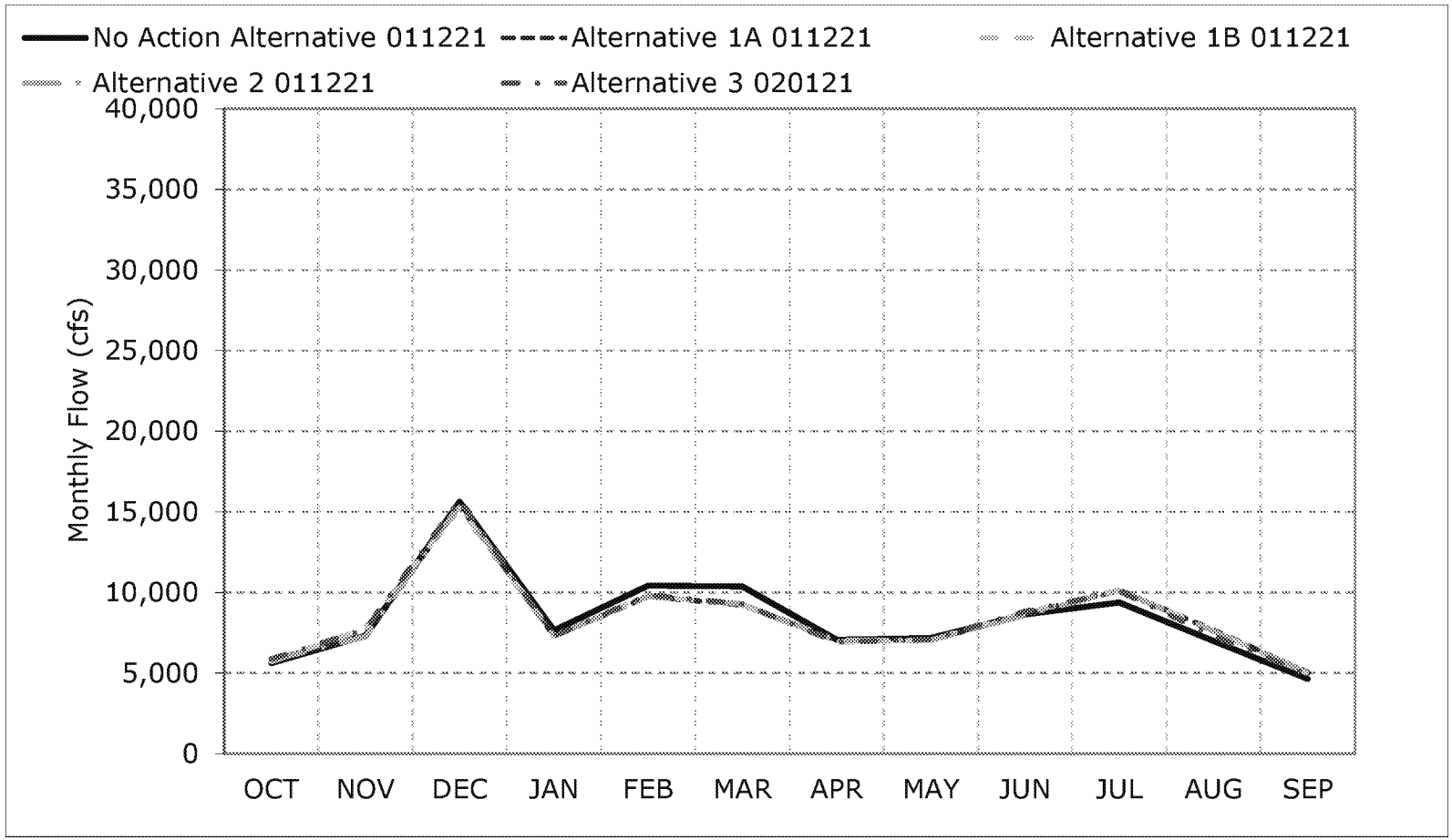
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-13-4. Sacramento River Flow at Hamilton City, Below Normal Year Average Flow



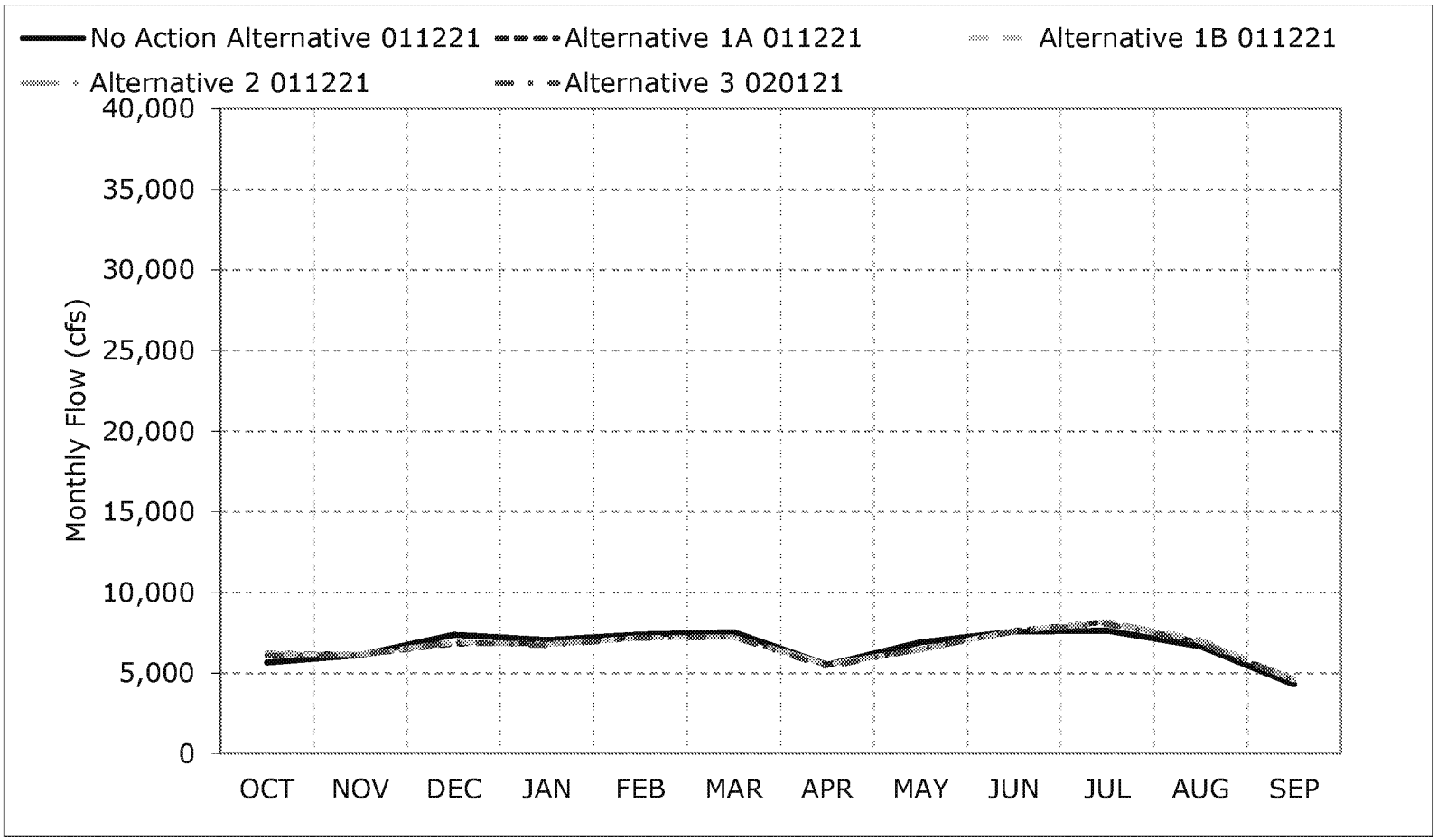
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-13-5. Sacramento River Flow at Hamilton City, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-13-6. Sacramento River Flow at Hamilton City, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-13-7. Sacramento River Flow at Hamilton City, October

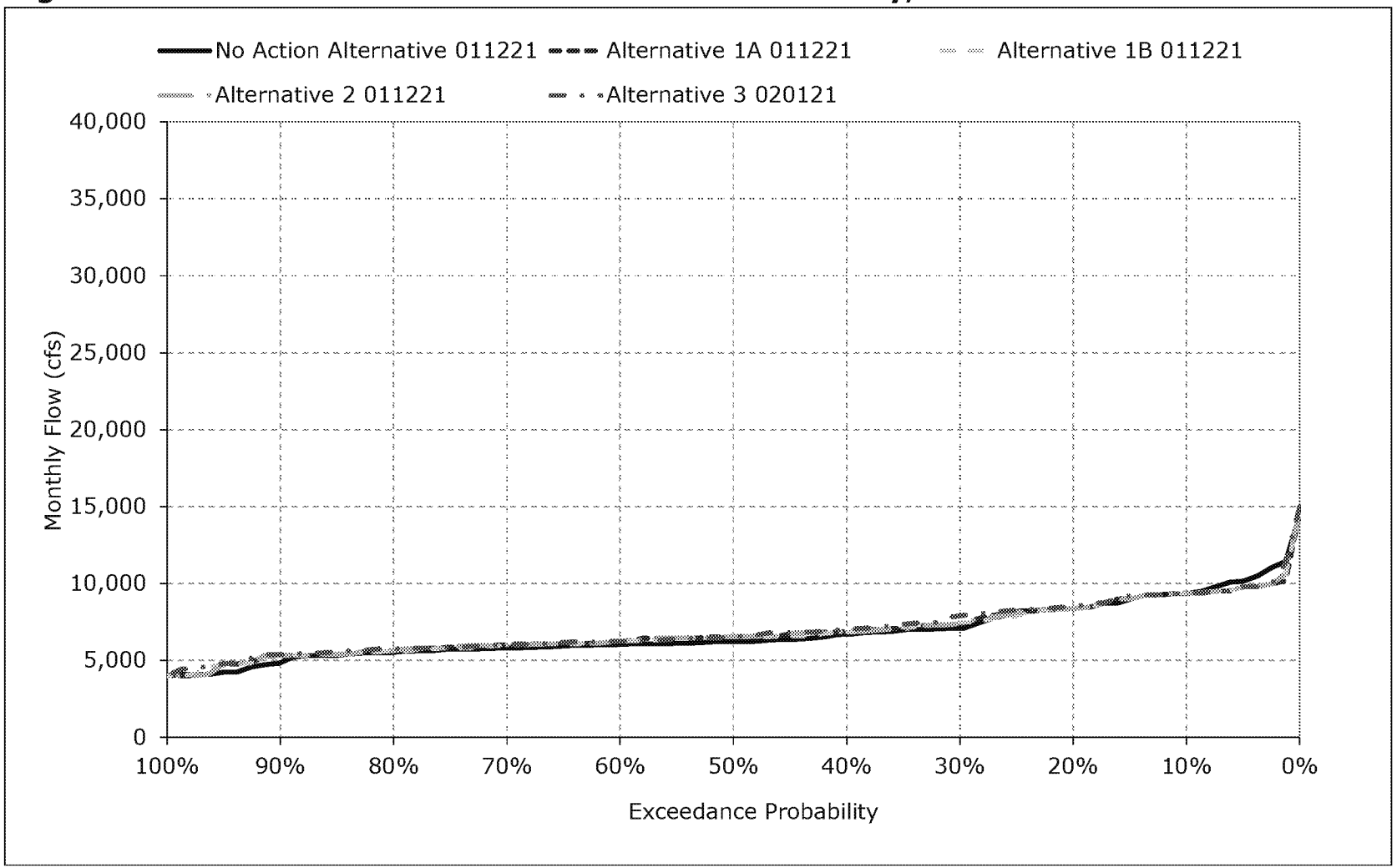


Figure 5B2-13-8. Sacramento River Flow at Hamilton City, November

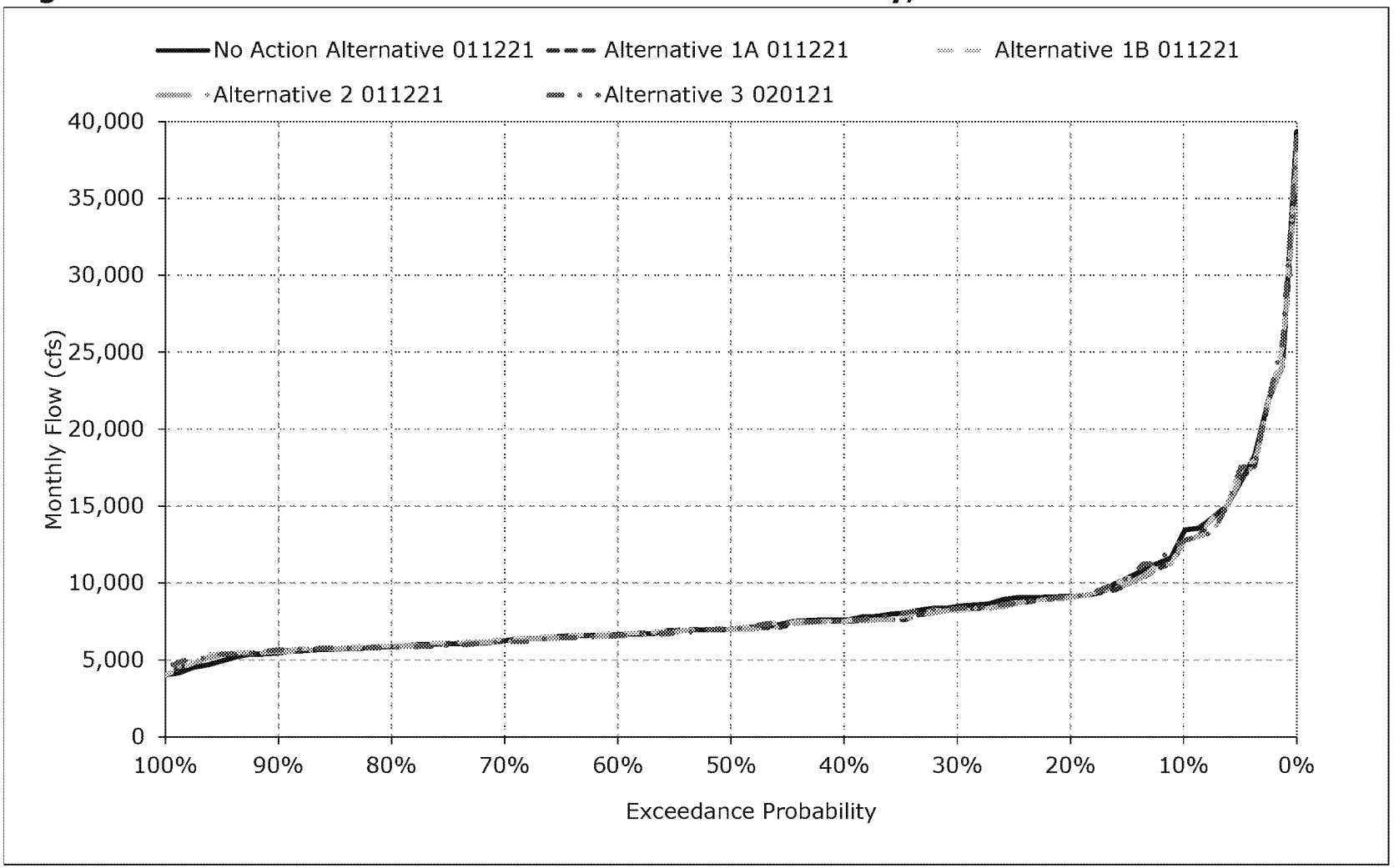


Figure 5B2-13-9. Sacramento River Flow at Hamilton City, December

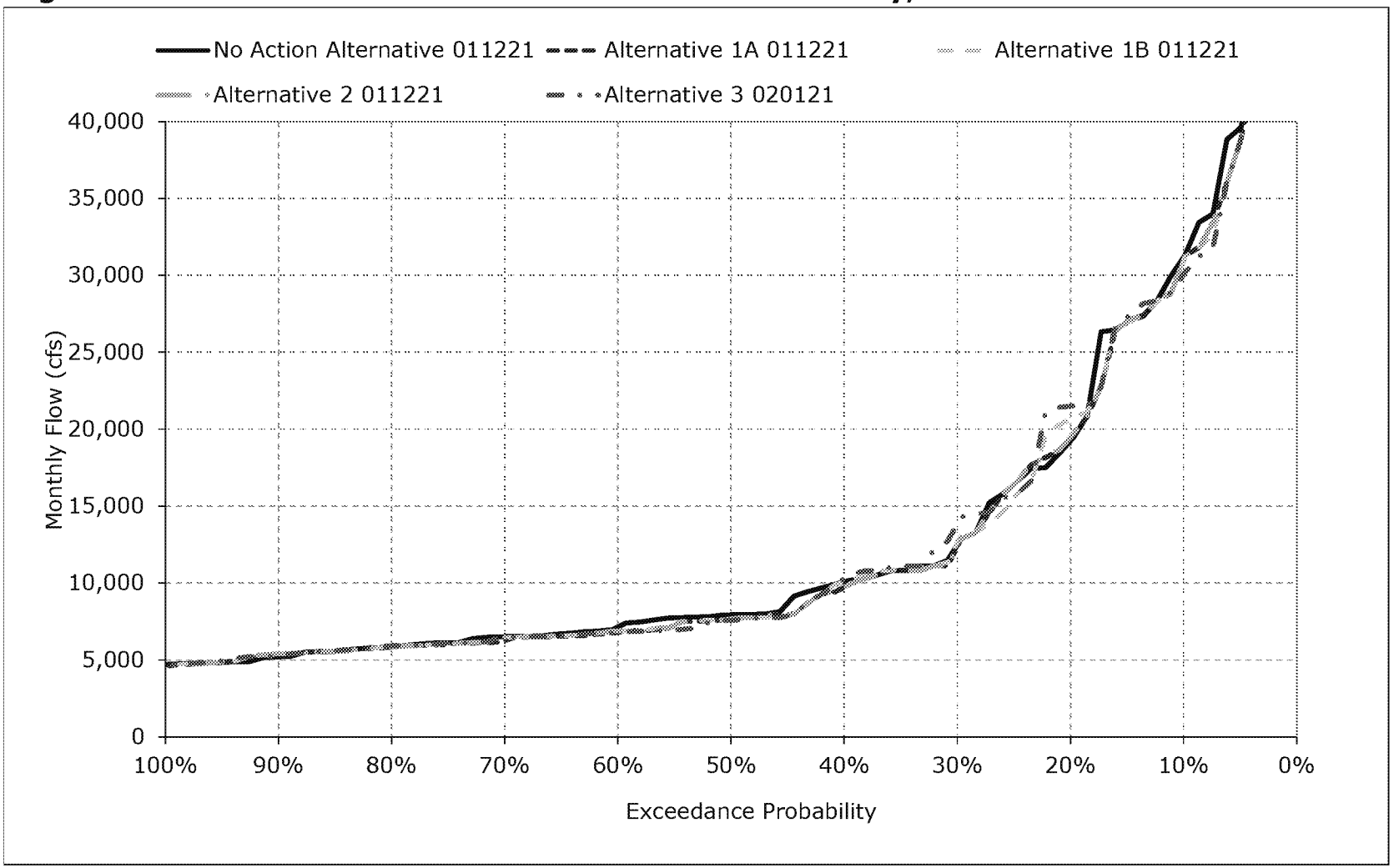


Figure 5B2-13-10. Sacramento River Flow at Hamilton City, January

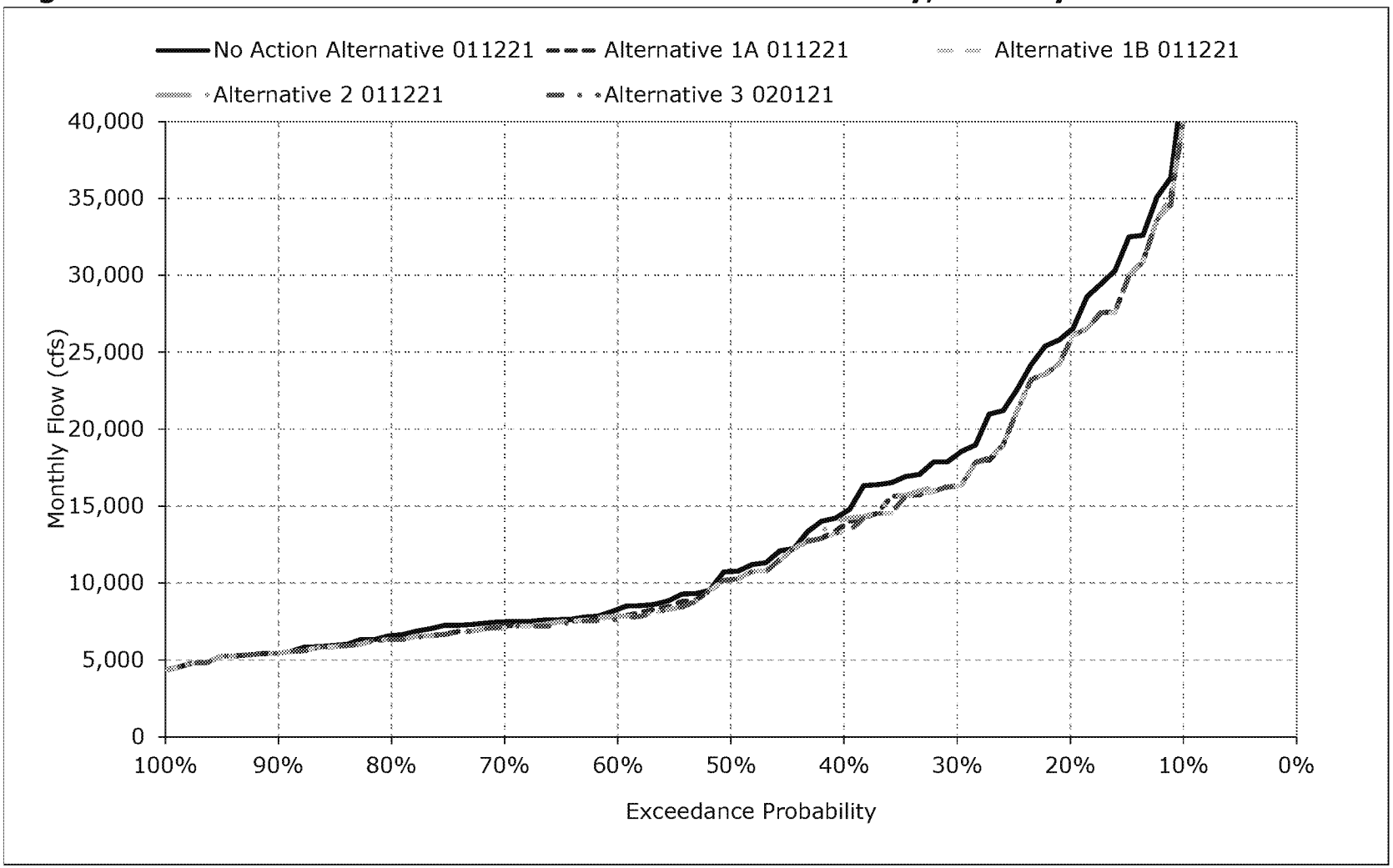


Figure 5B2-13-11. Sacramento River Flow at Hamilton City, February

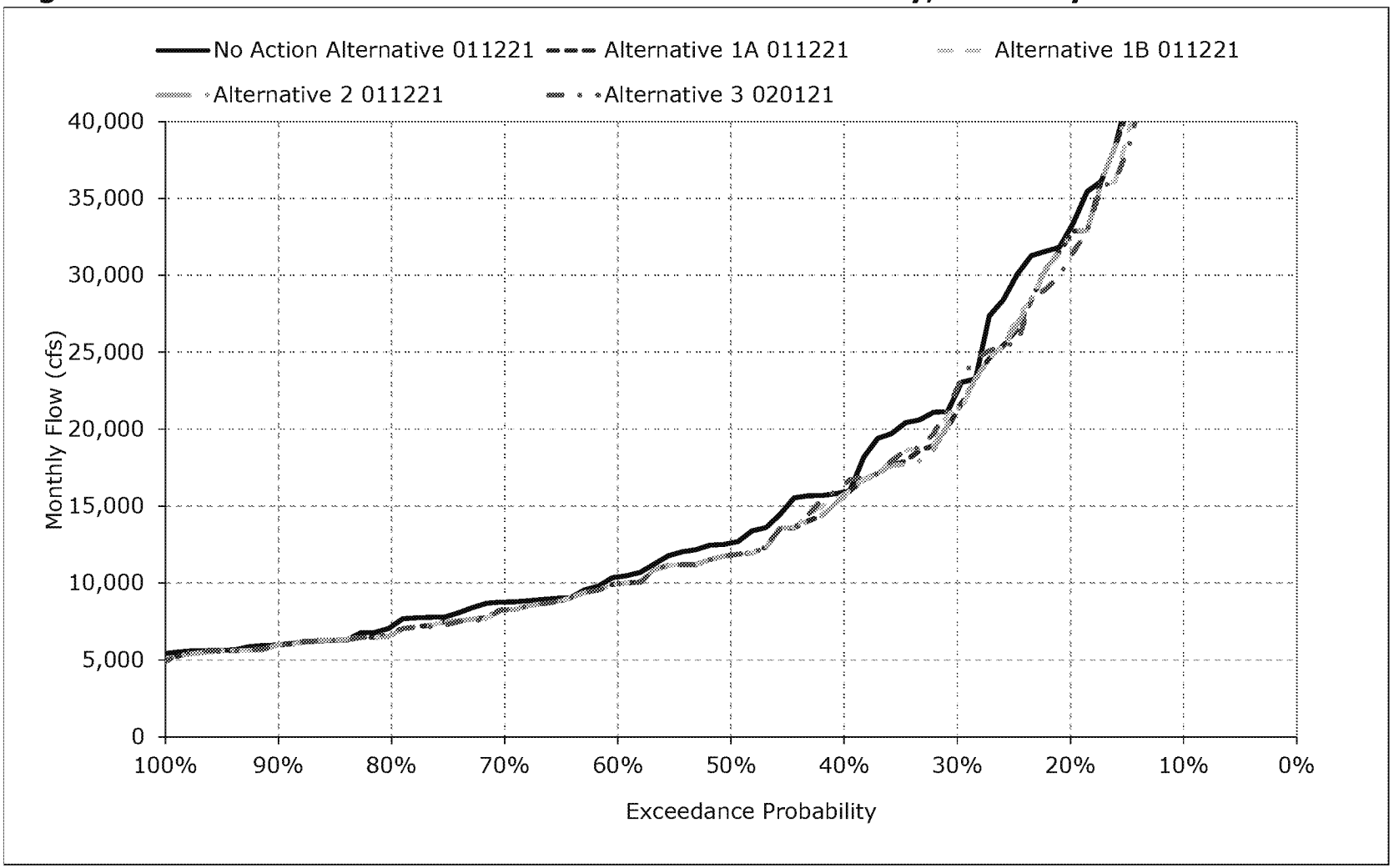


Figure 5B2-13-12. Sacramento River Flow at Hamilton City, March

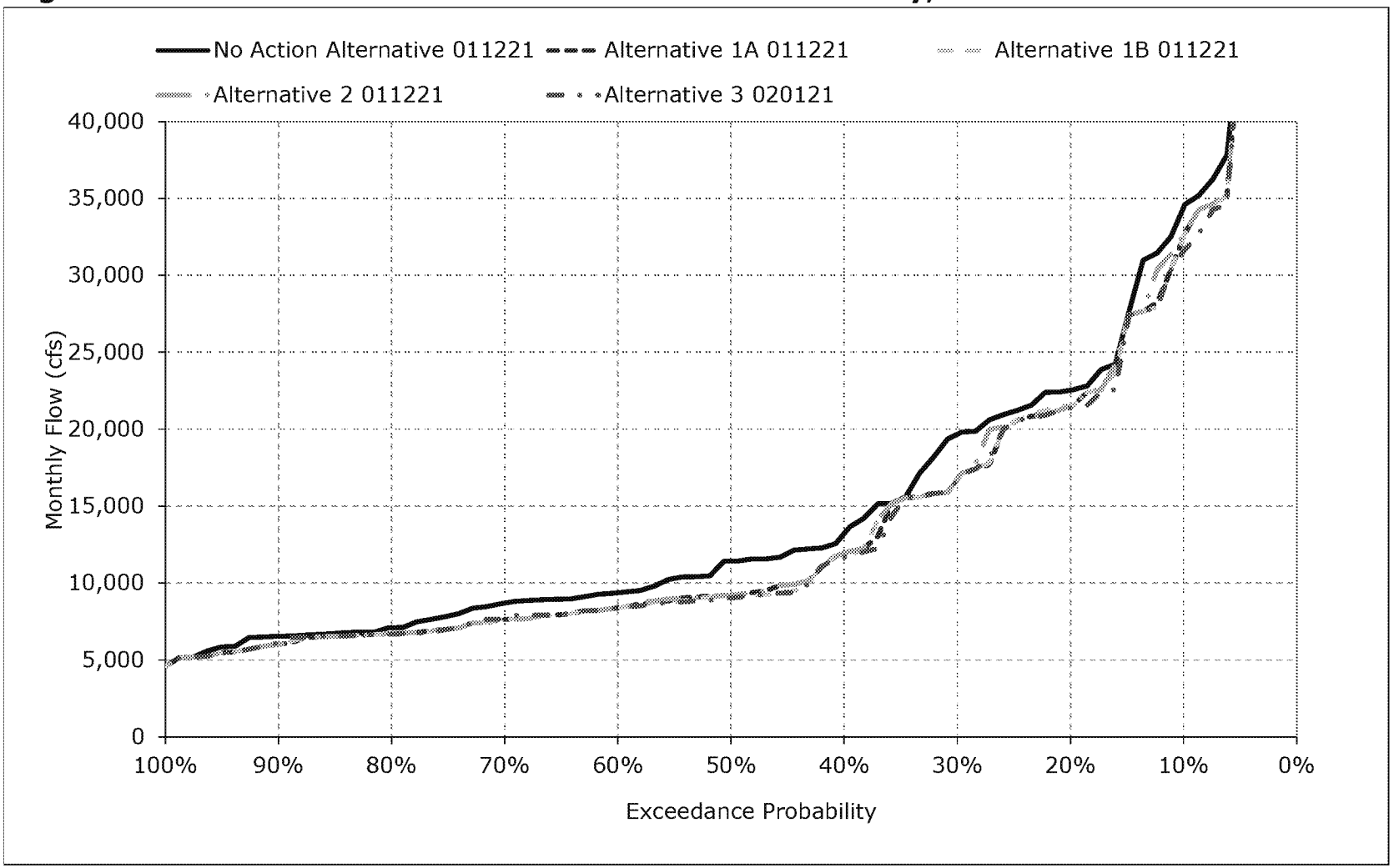


Figure 5B2-13-13. Sacramento River Flow at Hamilton City, April

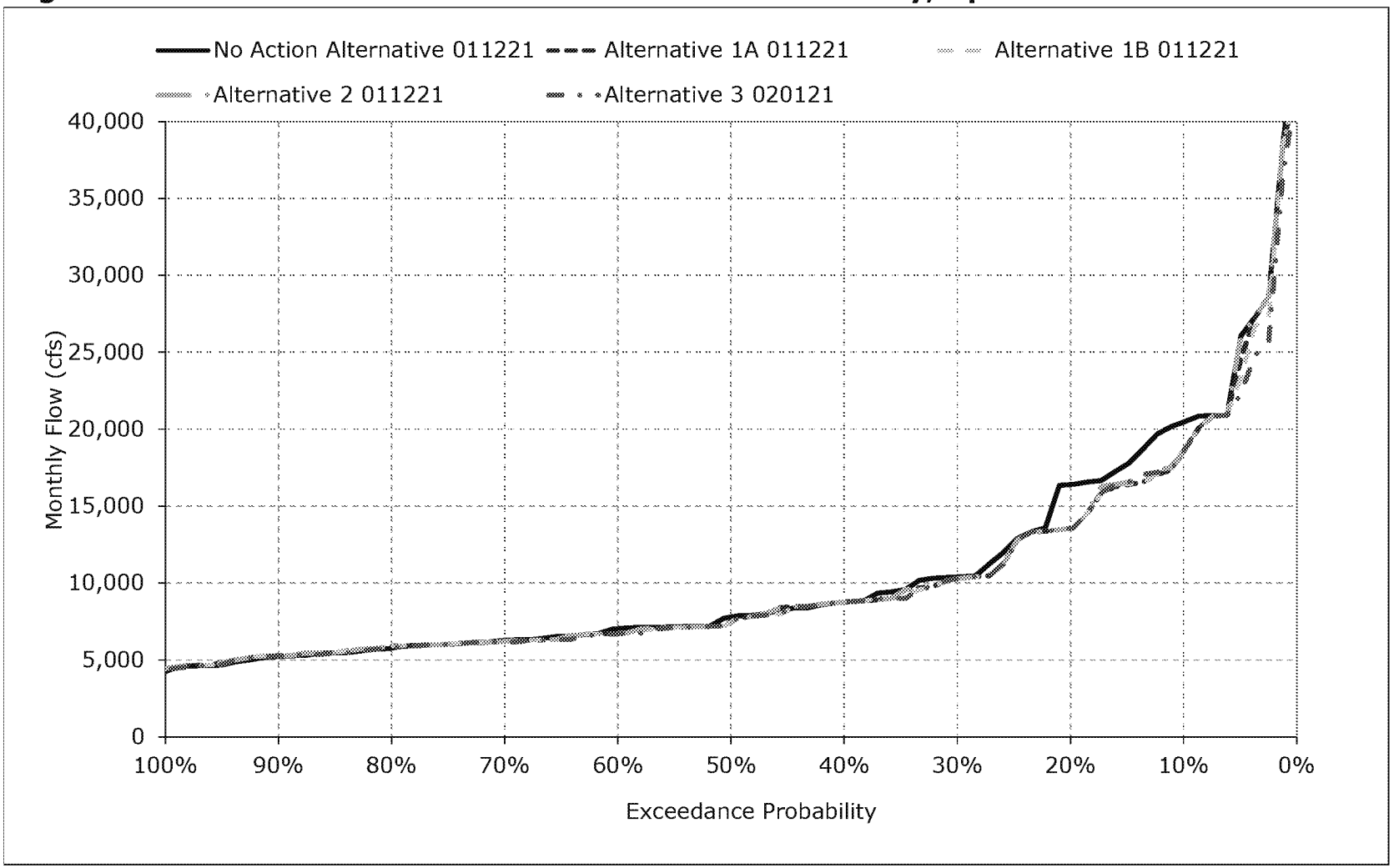


Figure 5B2-13-14. Sacramento River Flow at Hamilton City, May

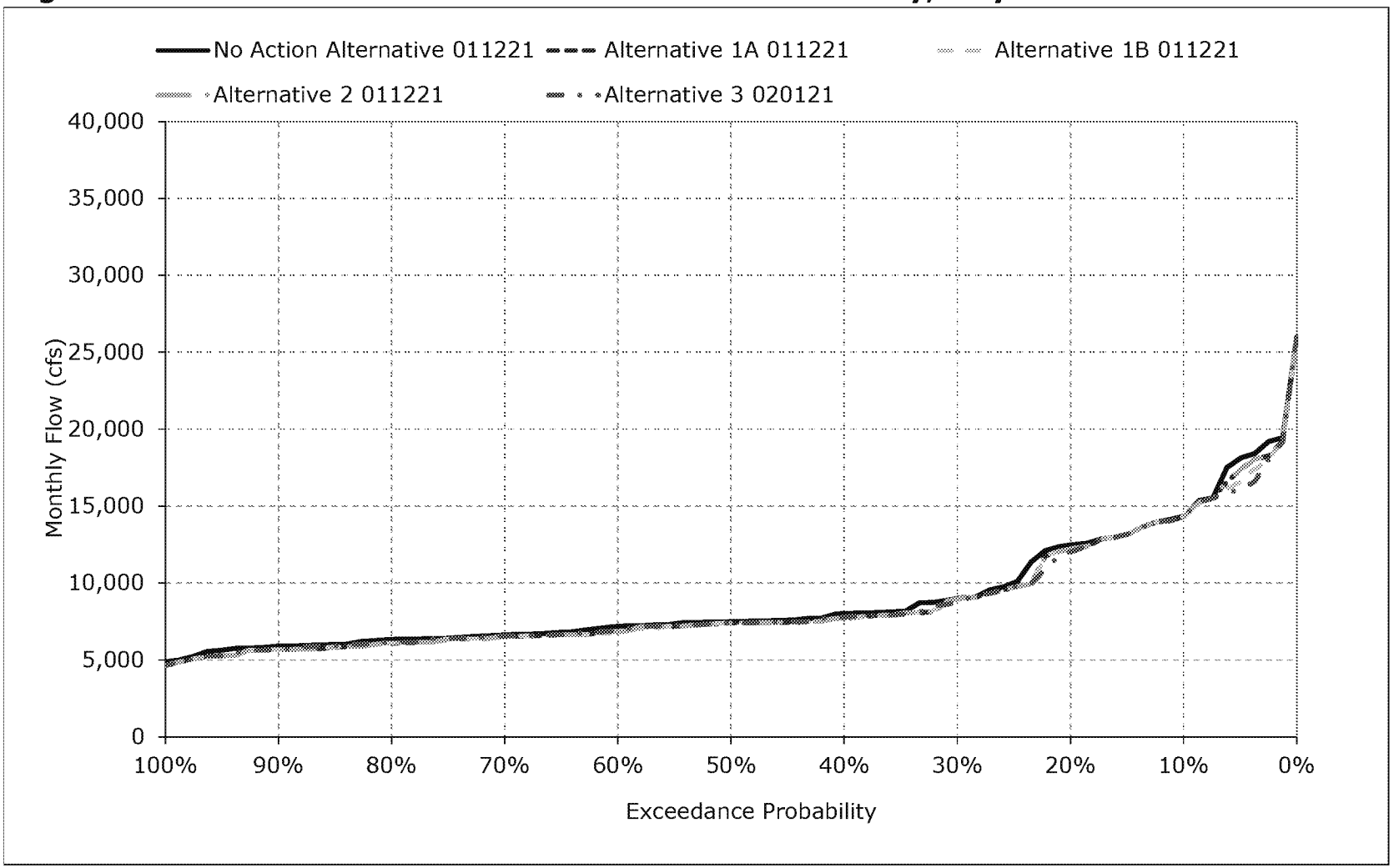


Figure 5B2-13-15. Sacramento River Flow at Hamilton City, June

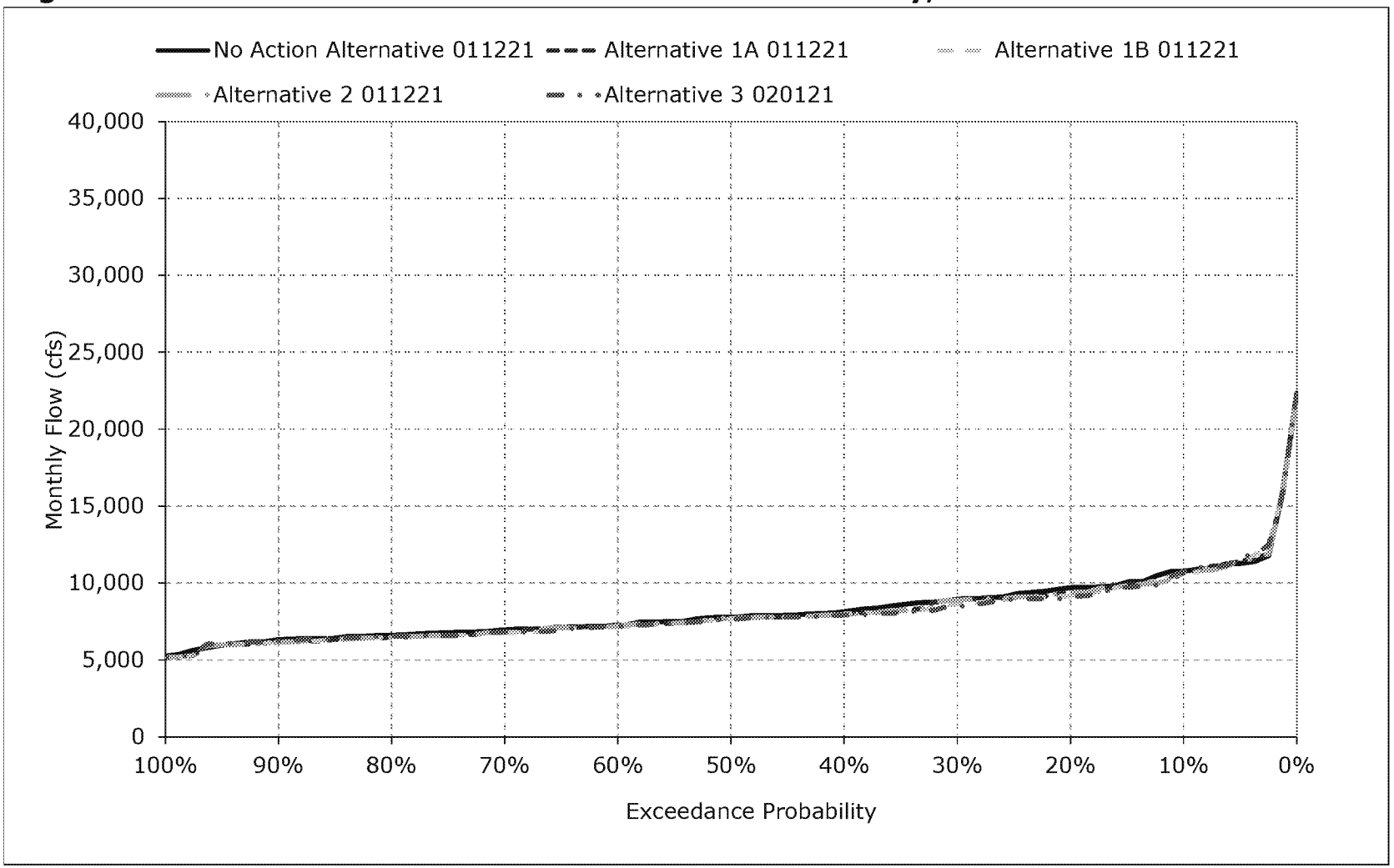


Figure 5B2-13-16. Sacramento River Flow at Hamilton City, July

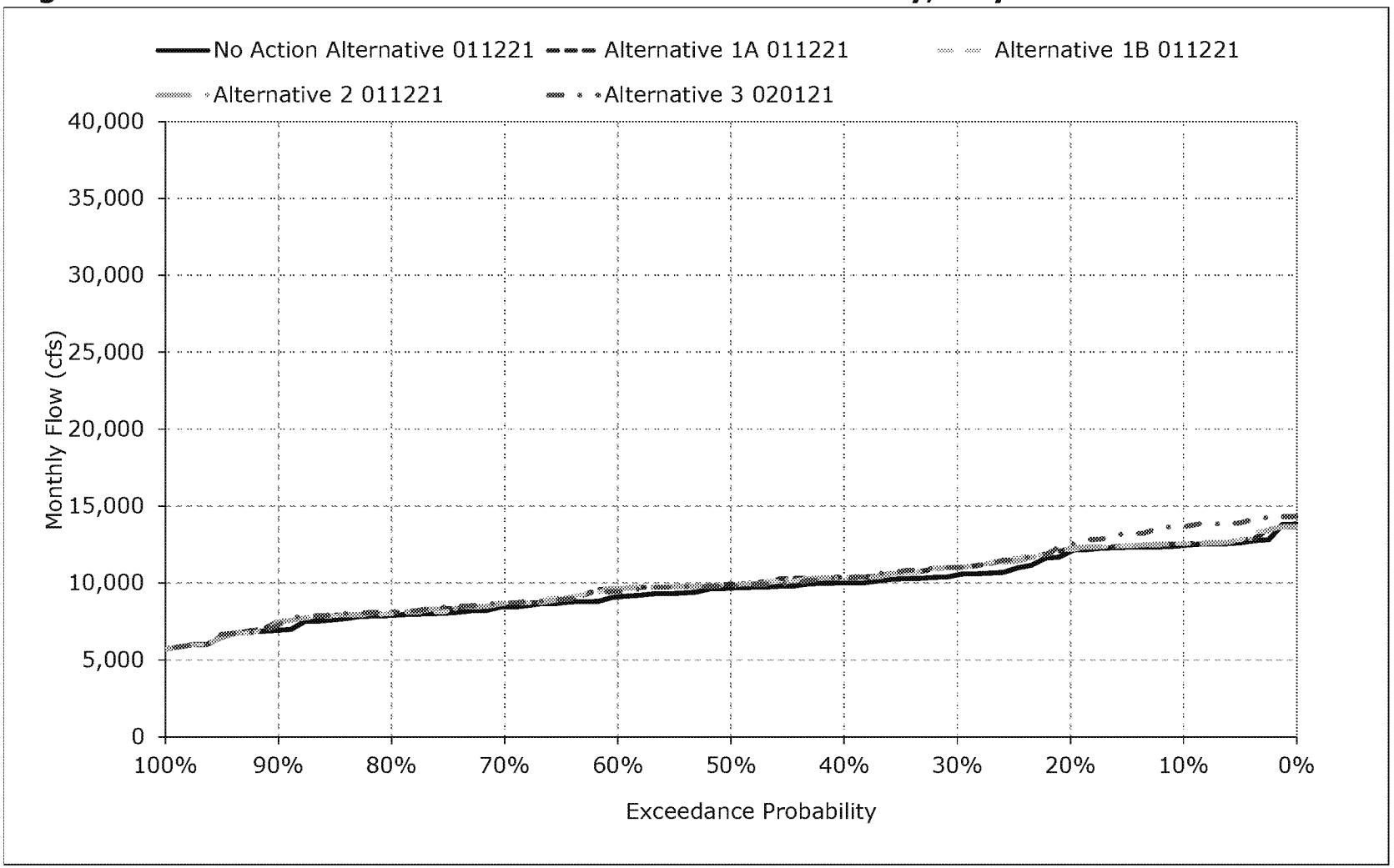


Figure 5B2-13-17. Sacramento River Flow at Hamilton City, August

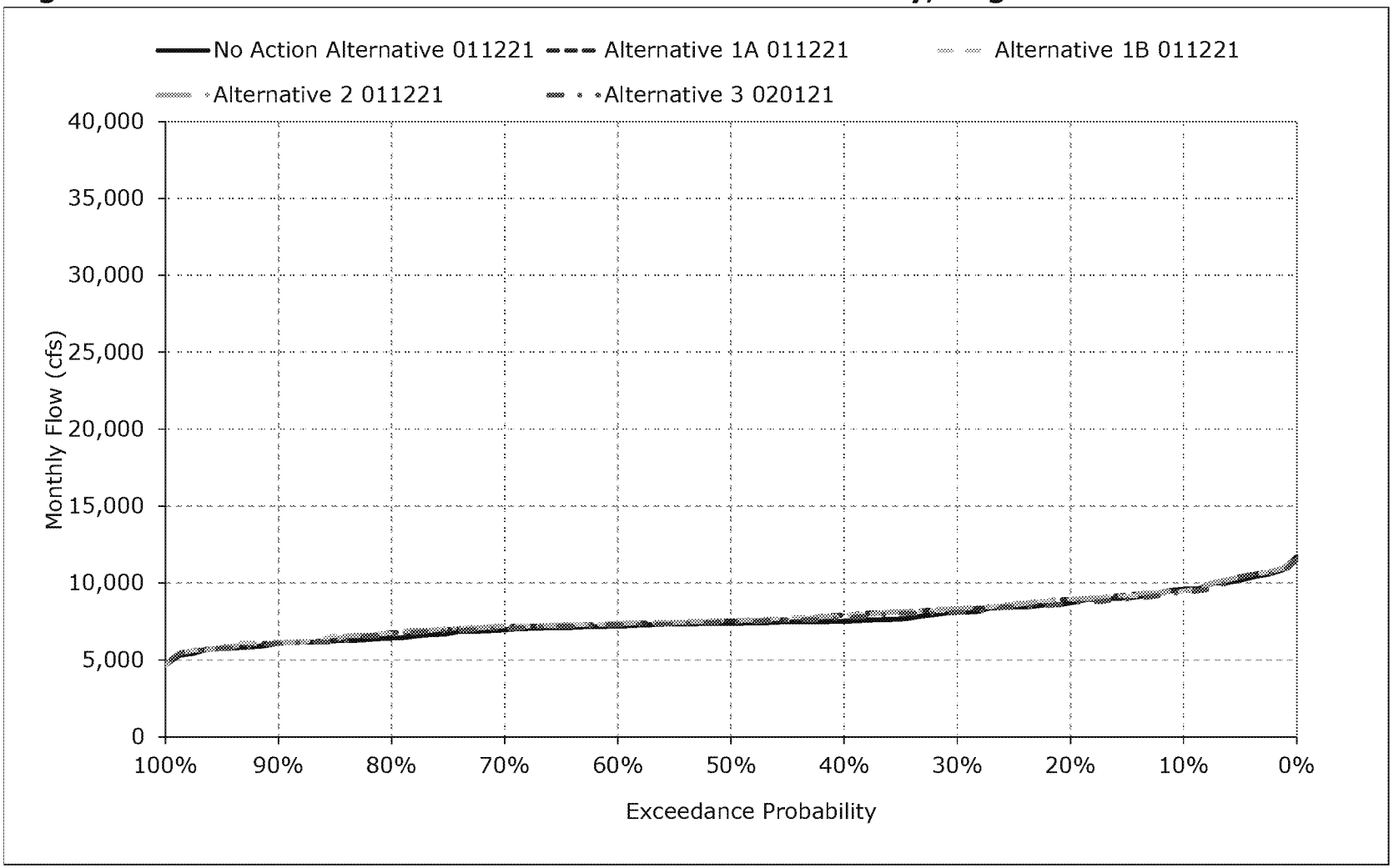


Figure 5B2-13-18. Sacramento River Flow at Hamilton City, September

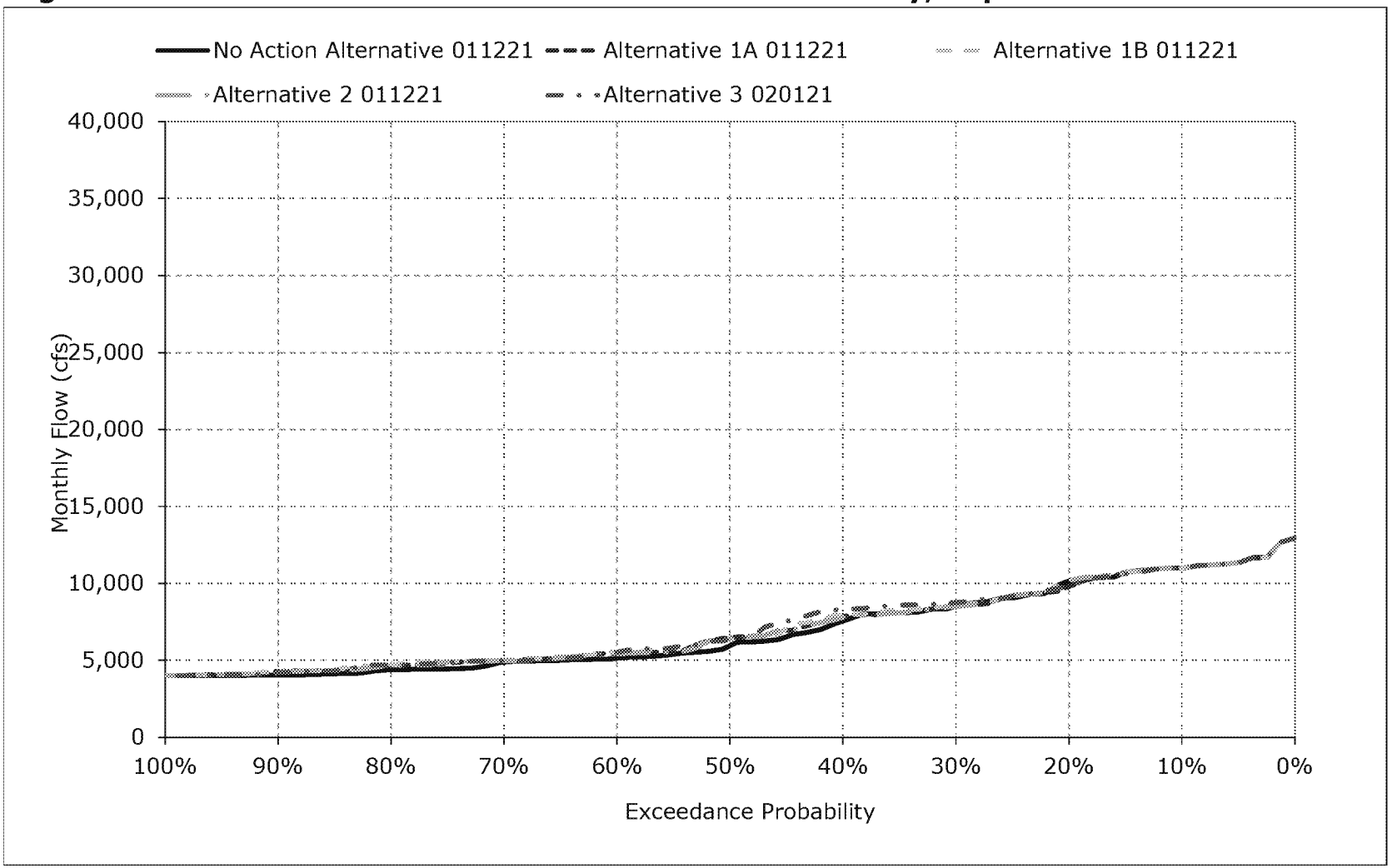


Table 5B2-14-1a. Sacramento River at Wilkins Slough Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,173	12,396	22,490	25,424	26,402	23,969	21,188	13,706	8,415	9,265	7,181	10,842
20%	7,890	9,540	18,819	23,330	24,108	22,457	17,656	10,667	7,085	8,244	6,548	9,795
30%	6,773	7,803	15,097	20,437	22,614	19,363	11,545	6,549	6,167	7,722	5,916	8,449
40%	6,185	6,993	11,713	17,106	20,791	16,026	9,694	5,467	5,683	7,333	5,358	7,732
50%	5,779	6,325	8,784	11,616	16,001	13,875	8,389	4,883	5,024	6,731	4,784	5,948
60%	5,578	6,145	7,609	9,531	13,166	11,675	7,546	4,690	4,812	5,972	4,609	5,000
70%	5,405	5,741	6,825	8,111	10,531	9,387	6,792	4,548	4,707	5,179	4,540	4,582
80%	5,023	5,000	5,785	7,080	7,912	8,225	6,421	4,299	4,278	4,619	4,511	4,151
90%	4,513	4,597	5,323	6,350	6,429	7,299	5,318	3,781	3,639	4,174	4,039	3,654
Long Term												
Full Simulation Period[a]	6,452	7,763	11,812	14,482	16,404	14,855	11,068	7,151	5,887	6,626	5,334	6,823
Water Year Types[b,c]												
Wet (32%)	7,961	9,018	12,477	20,933	21,863	19,607	16,301	10,572	6,786	7,085	6,077	10,096
Above Normal (15%)	6,351	8,768	12,576	18,310	20,692	18,867	12,447	8,265	5,884	7,918	5,841	7,906
Below Normal (17%)	6,644	8,090	13,002	12,261	15,211	11,773	9,510	5,473	5,540	6,685	4,703	5,294
Dry (22%)	5,092	6,567	11,959	8,576	11,930	11,798	7,476	4,619	5,618	6,299	4,736	4,445
Critical (15%)	5,102	5,450	8,000	8,126	8,394	8,727	5,560	4,378	4,755	4,761	4,847	4,000

Table 5B2-14-1b. Sacramento River at Wilkins Slough Flow, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,111	12,435	22,354	24,992	26,281	23,968	20,574	13,142	7,789	9,274	7,265	10,827
20%	7,904	8,902	18,825	23,003	23,626	21,969	17,472	10,790	6,821	8,657	6,610	9,899
30%	6,827	7,506	15,104	19,155	21,992	18,471	11,546	6,580	6,167	8,047	6,117	8,536
40%	6,557	6,849	11,854	16,608	19,976	14,754	9,647	5,281	5,681	7,589	5,526	7,728
50%	6,078	6,346	8,230	11,113	15,498	12,064	8,511	4,712	5,105	7,005	5,200	6,383
60%	5,798	6,099	7,605	9,097	12,616	10,138	7,519	4,500	4,535	6,550	4,799	5,376
70%	5,576	5,555	6,495	7,913	10,371	8,756	6,936	4,244	4,500	5,217	4,629	4,762
80%	5,207	5,196	5,747	6,977	7,669	7,735	6,234	4,000	4,440	4,905	4,500	4,500
90%	4,706	4,780	5,464	6,352	6,354	6,757	5,259	3,400	3,421	4,500	4,066	3,779
Long Term												
Full Simulation Period[a]	6,560	7,690	11,688	14,164	16,053	14,098	10,876	6,935	5,767	6,904	5,476	6,969
Water Year Types[b,c]												
Wet (32%)	7,797	8,684	12,421	20,623	21,609	19,124	15,790	10,373	6,555	7,074	5,988	10,066
Above Normal (15%)	6,420	8,749	12,442	17,795	20,325	17,759	12,357	8,105	5,671	7,975	5,807	7,938
Below Normal (17%)	6,793	8,232	12,916	11,863	14,593	10,562	9,406	5,303	5,366	6,849	4,755	5,423
Dry (22%)	5,284	6,620	11,966	8,338	11,543	10,914	7,470	4,478	5,629	7,052	5,360	4,821
Critical (15%)	5,659	5,453	7,495	7,963	8,213	8,448	5,570	3,906	4,830	5,306	5,049	4,314

Table 5B2-14-1c. Sacramento River at Wilkins Slough Flow, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-62	39	-137	-432	-121	-1	-614	-564	-626	10	84	-15
20%	14	-638	6	-326	-482	-489	-185	123	-264	413	62	104
30%	54	-298	7	-1,282	-622	-892	1	32	0	326	201	87
40%	372	-144	141	-497	-815	-1,271	-48	-186	-2	256	168	-5
50%	300	21	-554	-503	-502	-1,812	122	-171	81	274	416	435
60%	221	-46	-4	-434	-551	-1,537	-27	-190	-277	578	190	376
70%	171	-187	-330	-198	-161	-631	143	-304	-207	37	90	180
80%	184	196	-37	-103	-243	-491	-187	-299	162	286	-11	349
90%	193	184	141	2	-75	-542	-59	-381	-217	326	28	125
Long Term												
Full Simulation Period[a]	108	-72	-124	-318	-351	-757	-193	-216	-121	278	142	146
Water Year Types[b,c]												
Wet (32%)	-164	-334	-56	-310	-254	-483	-511	-200	-231	-11	-88	-30
Above Normal (15%)	69	-18	-134	-515	-367	-1,108	-90	-160	-213	57	-34	32
Below Normal (17%)	149	142	-86	-398	-618	-1,212	-105	-171	-173	163	52	129
Dry (22%)	193	53	7	-239	-387	-885	-5	-141	10	753	623	376
Critical (15%)	558	3	-505	-163	-182	-279	10	-472	75	545	201	315

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-14-2a. Sacramento River at Wilkins Slough Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,173	12,396	22,490	25,424	26,402	23,969	21,188	13,706	8,415	9,265	7,181	10,842
20%	7,890	9,540	18,819	23,330	24,108	22,457	17,656	10,667	7,085	8,244	6,548	9,795
30%	6,773	7,803	15,097	20,437	22,614	19,363	11,545	6,549	6,167	7,722	5,916	8,449
40%	6,185	6,993	11,713	17,106	20,791	16,026	9,694	5,467	5,683	7,333	5,358	7,732
50%	5,779	6,325	8,784	11,616	16,001	13,875	8,389	4,883	5,024	6,731	4,784	5,948
60%	5,578	6,145	7,609	9,531	13,166	11,675	7,546	4,690	4,812	5,972	4,609	5,000
70%	5,405	5,741	6,825	8,111	10,531	9,387	6,792	4,548	4,707	5,179	4,540	4,582
80%	5,023	5,000	5,785	7,080	7,912	8,225	6,421	4,299	4,278	4,619	4,511	4,151
90%	4,513	4,597	5,323	6,350	6,429	7,299	5,318	3,781	3,639	4,174	4,039	3,654
Long Term												
Full Simulation Period[a]	6,452	7,763	11,812	14,482	16,404	14,855	11,068	7,151	5,887	6,626	5,334	6,823
Water Year Types[b,c]												
Wet (32%)	7,961	9,018	12,477	20,933	21,863	19,607	16,301	10,572	6,786	7,085	6,077	10,096
Above Normal (15%)	6,351	8,768	12,576	18,310	20,692	18,867	12,447	8,265	5,884	7,918	5,841	7,906
Below Normal (17%)	6,644	8,090	13,002	12,261	15,211	11,773	9,510	5,473	5,540	6,685	4,703	5,294
Dry (22%)	5,092	6,567	11,959	8,576	11,930	11,798	7,476	4,619	5,618	6,299	4,736	4,445
Critical (15%)	5,102	5,450	8,000	8,126	8,394	8,727	5,560	4,378	4,755	4,761	4,847	4,000

Table 5B2-14-2b. Sacramento River at Wilkins Slough Flow, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,187	12,432	22,677	24,984	26,242	23,955	20,573	13,143	7,809	9,354	7,235	11,031
20%	7,934	8,987	18,821	22,979	23,683	21,974	17,506	10,792	6,861	8,706	6,610	9,879
30%	6,852	7,695	14,831	19,152	22,135	18,495	11,546	6,559	5,932	8,100	6,051	8,595
40%	6,369	6,906	11,780	16,622	20,193	15,005	9,647	5,316	5,611	7,591	5,585	7,778
50%	5,952	6,339	8,233	11,117	15,584	12,067	8,416	4,603	5,085	6,978	5,285	6,415
60%	5,748	6,078	7,610	9,078	12,614	10,137	7,481	4,500	4,500	6,531	4,936	5,423
70%	5,504	5,561	6,509	7,707	10,381	8,678	6,936	4,291	4,500	5,488	4,678	4,840
80%	5,189	5,267	5,845	6,967	7,668	7,735	6,234	4,000	4,213	4,820	4,502	4,500
90%	4,822	4,854	5,398	6,359	6,356	6,721	5,259	3,400	3,622	4,500	4,082	3,776
Long Term												
Full Simulation Period[a]	6,540	7,780	11,714	14,128	16,072	14,090	10,858	6,910	5,734	6,906	5,505	7,029
Water Year Types[b,c]												
Wet (32%)	7,787	8,621	12,428	20,571	21,590	19,108	15,768	10,293	6,526	7,075	5,987	10,110
Above Normal (15%)	6,434	8,679	12,610	17,800	20,363	17,795	12,399	8,110	5,460	7,979	5,859	8,263
Below Normal (17%)	6,863	8,400	12,972	11,853	14,642	10,570	9,409	5,308	5,296	6,847	4,784	5,480
Dry (22%)	5,192	7,010	11,870	8,322	11,575	10,905	7,387	4,484	5,733	7,060	5,326	4,778
Critical (15%)	5,591	5,488	7,569	7,862	8,238	8,398	5,575	3,890	4,805	5,305	5,216	4,302

Table 5B2-14-2c. Sacramento River at Wilkins Slough Flow, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	13	36	187	-440	-160	-14	-615	-562	-605	89	54	189
20%	44	-553	2	-351	-424	-483	-151	125	-225	462	62	84
30%	79	-109	-267	-1,285	-479	-868	1	11	-236	379	135	146
40%	184	-87	66	-484	-598	-1,020	-48	-150	-72	258	227	46
50%	174	14	-551	-499	-416	-1,809	27	-280	61	247	501	467
60%	170	-67	1	-453	-552	-1,538	-64	-190	-312	559	327	423
70%	100	-180	-316	-403	-150	-709	144	-257	-207	309	138	259
80%	166	267	60	-113	-244	-491	-188	-299	-65	201	-9	349
90%	309	257	75	10	-73	-578	-59	-381	-17	326	44	123
Long Term												
Full Simulation Period[a]	88	17	-98	-354	-332	-765	-211	-241	-153	280	172	205
Water Year Types[b,c]												
Wet (32%)	-174	-397	-49	-362	-273	-499	-533	-280	-260	-10	-89	13
Above Normal (15%)	84	-89	34	-511	-329	-1,072	-48	-155	-424	61	18	357
Below Normal (17%)	219	311	-29	-409	-568	-1,203	-101	-166	-243	162	81	185
Dry (22%)	101	443	-89	-254	-355	-894	-89	-135	115	761	590	333
Critical (15%)	489	38	-432	-264	-156	-329	15	-488	50	544	369	302

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-14-3a. Sacramento River at Wilkins Slough Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,173	12,396	22,490	25,424	26,402	23,969	21,188	13,706	8,415	9,265	7,181	10,842
20%	7,890	9,540	18,819	23,330	24,108	22,457	17,656	10,667	7,085	8,244	6,548	9,795
30%	6,773	7,803	15,097	20,437	22,614	19,363	11,545	6,549	6,167	7,722	5,916	8,449
40%	6,185	6,993	11,713	17,106	20,791	16,026	9,694	5,467	5,683	7,333	5,358	7,732
50%	5,779	6,325	8,784	11,616	16,001	13,875	8,389	4,883	5,024	6,731	4,784	5,948
60%	5,578	6,145	7,609	9,531	13,166	11,675	7,546	4,690	4,812	5,972	4,609	5,000
70%	5,405	5,741	6,825	8,111	10,531	9,387	6,792	4,548	4,707	5,179	4,540	4,582
80%	5,023	5,000	5,785	7,080	7,912	8,225	6,421	4,299	4,278	4,619	4,511	4,151
90%	4,513	4,597	5,323	6,350	6,429	7,299	5,318	3,781	3,639	4,174	4,039	3,654
Long Term												
Full Simulation Period[a]	6,452	7,763	11,812	14,482	16,404	14,855	11,068	7,151	5,887	6,626	5,334	6,823
Water Year Types[b,c]												
Wet (32%)	7,961	9,018	12,477	20,933	21,863	19,607	16,301	10,572	6,786	7,085	6,077	10,096
Above Normal (15%)	6,351	8,768	12,576	18,310	20,692	18,867	12,447	8,265	5,884	7,918	5,841	7,906
Below Normal (17%)	6,644	8,090	13,002	12,261	15,211	11,773	9,510	5,473	5,540	6,685	4,703	5,294
Dry (22%)	5,092	6,567	11,959	8,576	11,930	11,798	7,476	4,619	5,618	6,299	4,736	4,445
Critical (15%)	5,102	5,450	8,000	8,126	8,394	8,727	5,560	4,378	4,755	4,761	4,847	4,000

Table 5B2-14-3b. Sacramento River at Wilkins Slough Flow, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,188	12,434	22,354	24,992	26,383	23,969	20,577	13,142	7,789	9,275	7,376	10,836
20%	7,878	8,867	18,826	23,008	23,628	22,063	17,543	10,791	6,821	8,657	6,619	9,909
30%	6,825	7,504	15,104	19,154	21,886	18,494	11,546	6,581	6,172	8,044	6,119	8,536
40%	6,566	6,847	11,854	16,608	19,977	15,152	9,647	5,281	5,682	7,585	5,543	7,726
50%	6,080	6,353	8,238	11,113	15,498	12,064	8,511	4,712	5,105	7,001	5,207	6,383
60%	5,798	6,082	7,610	9,078	12,616	10,137	7,516	4,500	4,535	6,550	4,775	5,388
70%	5,573	5,472	6,495	7,780	10,381	8,761	6,937	4,236	4,500	5,216	4,625	4,762
80%	5,209	5,123	5,846	6,964	7,669	7,735	6,234	4,000	4,270	4,905	4,500	4,500
90%	4,723	4,630	5,465	6,352	6,354	6,715	5,259	3,400	3,416	4,500	4,106	3,784
Long Term												
Full Simulation Period[a]	6,566	7,665	11,703	14,167	16,052	14,141	10,901	6,933	5,755	6,898	5,493	6,976
Water Year Types[b,c]												
Wet (32%)	7,799	8,688	12,423	20,675	21,616	19,209	15,872	10,375	6,560	7,077	6,025	10,100
Above Normal (15%)	6,420	8,754	12,442	17,795	20,334	17,777	12,356	8,105	5,671	7,978	5,807	7,944
Below Normal (17%)	6,846	8,161	12,925	11,860	14,546	10,568	9,405	5,303	5,366	6,853	4,765	5,428
Dry (22%)	5,287	6,533	11,974	8,337	11,544	10,977	7,468	4,478	5,591	7,055	5,315	4,826
Critical (15%)	5,629	5,476	7,574	7,873	8,232	8,442	5,570	3,888	4,798	5,247	5,141	4,272

Table 5B2-14-3c. Sacramento River at Wilkins Slough Flow, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	15	38	-137	-432	-19	0	-611	-564	-626	10	195	-6
20%	-11	-673	6	-322	-480	-394	-113	124	-264	413	71	115
30%	52	-300	7	-1,283	-728	-869	1	32	5	322	203	87
40%	381	-145	141	-497	-814	-874	-48	-186	-1	252	185	-6
50%	301	28	-546	-503	-502	-1,812	122	-171	81	270	422	435
60%	221	-63	1	-453	-550	-1,538	-30	-190	-277	578	165	388
70%	168	-269	-330	-330	-151	-626	145	-312	-207	37	85	180
80%	186	123	62	-116	-243	-490	-187	-299	-9	286	-11	349
90%	210	34	141	2	-75	-585	-59	-381	-222	326	68	130
Long Term												
Full Simulation Period[a]	113	-98	-109	-315	-353	-714	-167	-218	-132	272	159	153
Water Year Types[b,c]												
Wet (32%)	-162	-330	-54	-258	-247	-398	-429	-198	-226	-8	-51	3
Above Normal (15%)	69	-13	-134	-515	-358	-1,090	-91	-160	-213	60	-34	38
Below Normal (17%)	202	71	-76	-401	-665	-1,205	-106	-171	-174	167	62	134
Dry (22%)	196	-34	14	-239	-386	-822	-7	-141	-27	756	578	381
Critical (15%)	527	26	-426	-254	-162	-285	10	-490	43	485	293	272

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-14-4a. Sacramento River at Wilkins Slough Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,173	12,396	22,490	25,424	26,402	23,969	21,188	13,706	8,415	9,265	7,181	10,842
20%	7,890	9,540	18,819	23,330	24,108	22,457	17,656	10,667	7,085	8,244	6,548	9,795
30%	6,773	7,803	15,097	20,437	22,614	19,363	11,545	6,549	6,167	7,722	5,916	8,449
40%	6,185	6,993	11,713	17,106	20,791	16,026	9,694	5,467	5,683	7,333	5,358	7,732
50%	5,779	6,325	8,784	11,616	16,001	13,875	8,389	4,883	5,024	6,731	4,784	5,948
60%	5,578	6,145	7,609	9,531	13,166	11,675	7,546	4,690	4,812	5,972	4,609	5,000
70%	5,405	5,741	6,825	8,111	10,531	9,387	6,792	4,548	4,707	5,179	4,540	4,582
80%	5,023	5,000	5,785	7,080	7,912	8,225	6,421	4,299	4,278	4,619	4,511	4,151
90%	4,513	4,597	5,323	6,350	6,429	7,299	5,318	3,781	3,639	4,174	4,039	3,654
Long Term												
Full Simulation Period[a]	6,452	7,763	11,812	14,482	16,404	14,855	11,068	7,151	5,887	6,626	5,334	6,823
Water Year Types[b,c]												
Wet (32%)	7,961	9,018	12,477	20,933	21,863	19,607	16,301	10,572	6,786	7,085	6,077	10,096
Above Normal (15%)	6,351	8,768	12,576	18,310	20,692	18,867	12,447	8,265	5,884	7,918	5,841	7,906
Below Normal (17%)	6,644	8,090	13,002	12,261	15,211	11,773	9,510	5,473	5,540	6,685	4,703	5,294
Dry (22%)	5,092	6,567	11,959	8,576	11,930	11,798	7,476	4,619	5,618	6,299	4,736	4,445
Critical (15%)	5,102	5,450	8,000	8,126	8,394	8,727	5,560	4,378	4,755	4,761	4,847	4,000

Table 5B2-14-4b. Sacramento River at Wilkins Slough Flow, Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,185	12,903	23,119	24,972	26,247	23,808	20,610	13,143	7,831	10,427	7,103	10,828
20%	8,204	8,955	18,900	23,000	23,979	21,951	17,649	10,373	6,593	9,197	6,523	9,833
30%	7,387	7,645	15,633	19,151	22,509	17,989	11,546	6,570	6,030	8,103	5,915	8,841
40%	6,443	6,914	11,786	16,624	19,994	14,871	9,647	5,274	5,556	7,538	5,540	8,119
50%	5,937	6,368	8,223	11,103	15,585	12,067	8,426	4,847	5,054	7,027	5,032	6,545
60%	5,780	6,018	7,578	9,081	12,610	10,140	7,485	4,500	4,500	6,494	4,661	5,399
70%	5,585	5,485	6,282	7,760	10,375	8,676	6,804	4,496	4,500	5,336	4,533	4,730
80%	5,310	5,135	5,844	6,896	7,672	7,736	6,076	4,000	4,285	4,943	4,500	4,500
90%	4,916	4,815	5,475	6,360	6,359	6,772	5,255	3,400	3,834	4,500	4,006	3,774
Long Term												
Full Simulation Period[a]	6,669	7,762	11,821	14,118	16,112	14,049	10,828	6,908	5,719	7,091	5,356	7,082
Water Year Types[b,c]												
Wet (32%)	7,795	8,629	12,437	20,566	21,594	18,953	15,734	10,184	6,488	7,076	5,985	10,066
Above Normal (15%)	6,803	8,651	12,726	17,804	20,532	17,724	12,404	8,109	5,426	8,925	5,543	8,741
Below Normal (17%)	7,131	8,440	13,117	11,851	14,685	10,552	9,456	5,379	5,267	7,317	4,746	5,578
Dry (22%)	5,359	6,942	12,142	8,318	11,608	10,971	7,366	4,532	5,791	6,996	5,024	4,719
Critical (15%)	5,519	5,436	7,590	7,805	8,233	8,444	5,418	3,959	4,767	5,167	5,019	4,256

Table 5B2-14-4c. Sacramento River at Wilkins Slough Flow, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

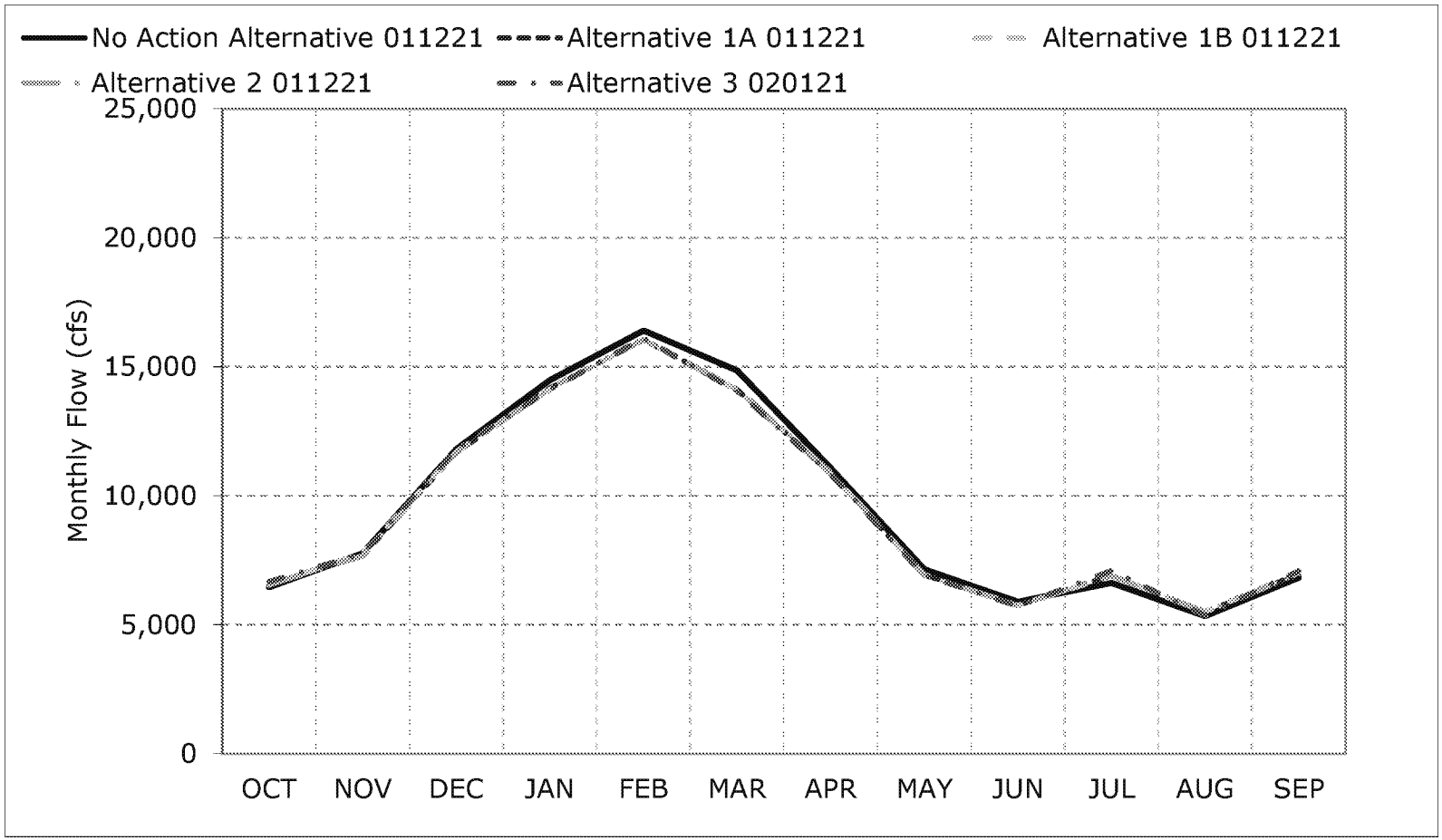
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	12	507	628	-451	-155	-161	-578	-562	-584	1,162	-78	-14
20%	314	-585	81	-330	-129	-507	-8	-294	-492	953	-25	39
30%	614	-158	536	-1,286	-105	-1,374	2	21	-137	382	-2	392
40%	257	-79	73	-482	-797	-1,155	-47	-193	-127	205	181	387
50%	159	43	-561	-513	-416	-1,809	38	-36	30	296	247	596
60%	202	-127	-31	-451	-556	-1,535	-61	-190	-312	523	52	399
70%	180	-256	-543	-351	-157	-711	12	-52	-207	157	-6	148
80%	287	135	60	-185	-240	-490	-345	-299	7	324	-11	349
90%	403	218	152	11	-70	-527	-63	-381	195	326	-32	120
Long Term												
Full Simulation Period[a]	216	0	9	-364	-292	-806	-240	-243	-168	465	23	259
Water Year Types[b,c]												
Wet (32%)	-166	-389	-40	-367	-269	-654	-567	-389	-297	-8	-92	-30
Above Normal (15%)	452	-117	150	-506	-160	-1,143	-42	-156	-458	1,007	-298	835
Below Normal (17%)	487	350	115	-410	-525	-1,221	-55	-94	-273	631	43	284
Dry (22%)	267	375	182	-258	-322	-827	-110	-87	172	697	288	274
Critical (15%)	417	-14	-411	-321	-161	-283	-142	-419	12	405	172	257

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

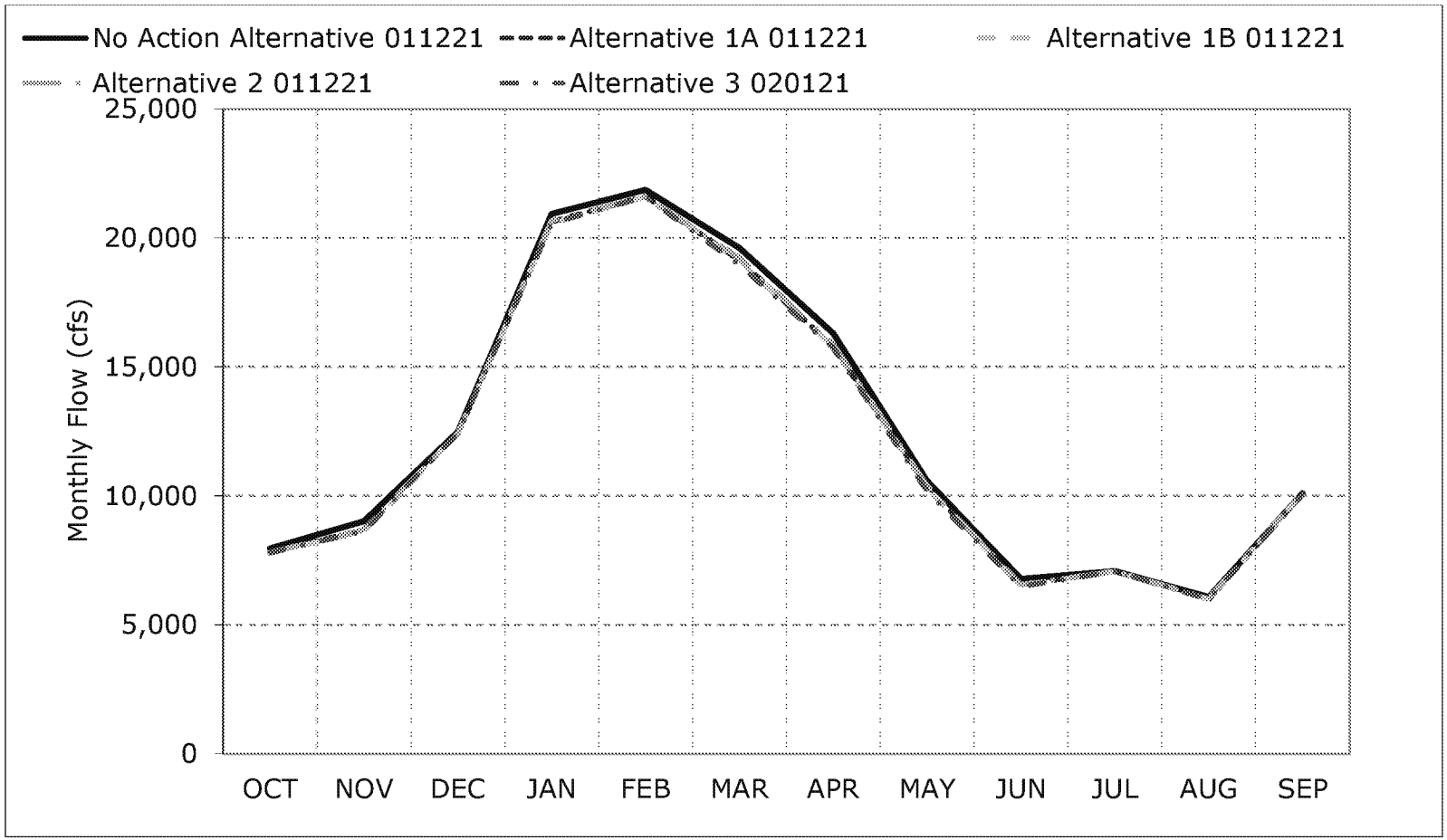
c These results are displayed with calendar year - year type sorting.

Figure 5B2-14-1. Sacramento River at Wilkins Slough Flow, Long-Term Average Flow



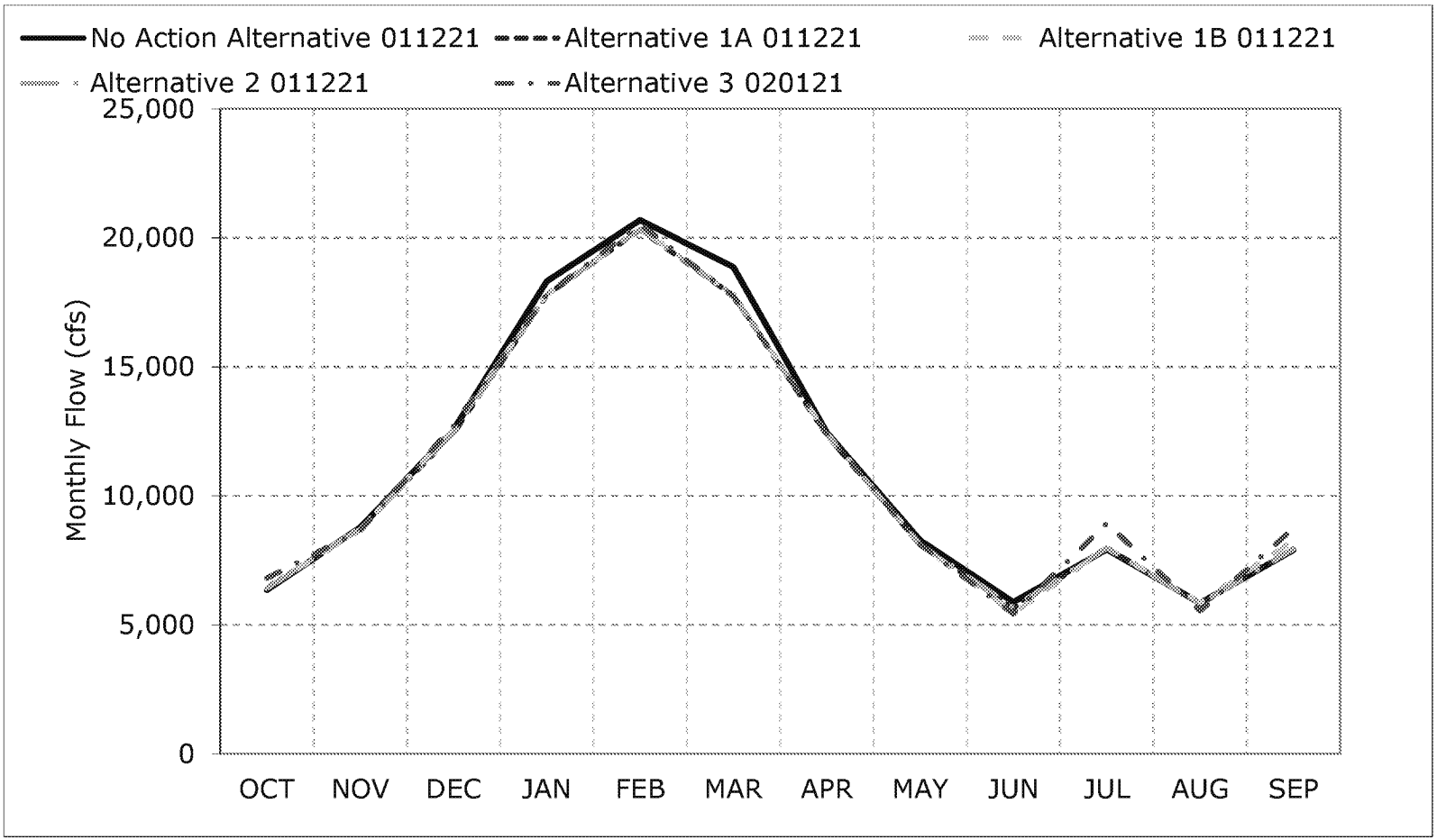
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-14-2. Sacramento River at Wilkins Slough Flow, Wet Year Average Flow



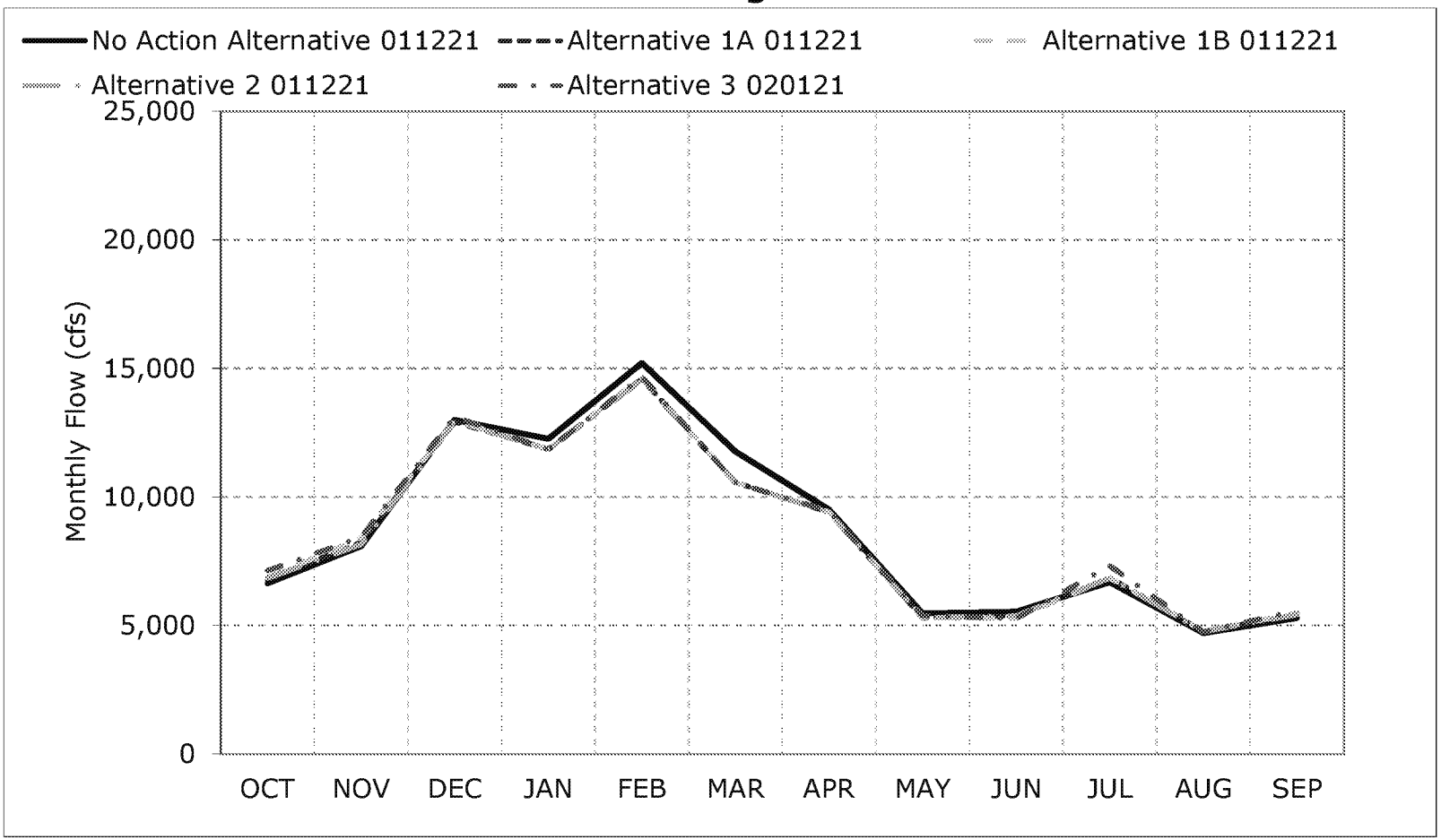
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-14-3. Sacramento River at Wilkins Slough Flow, Above Normal Year Average Flow



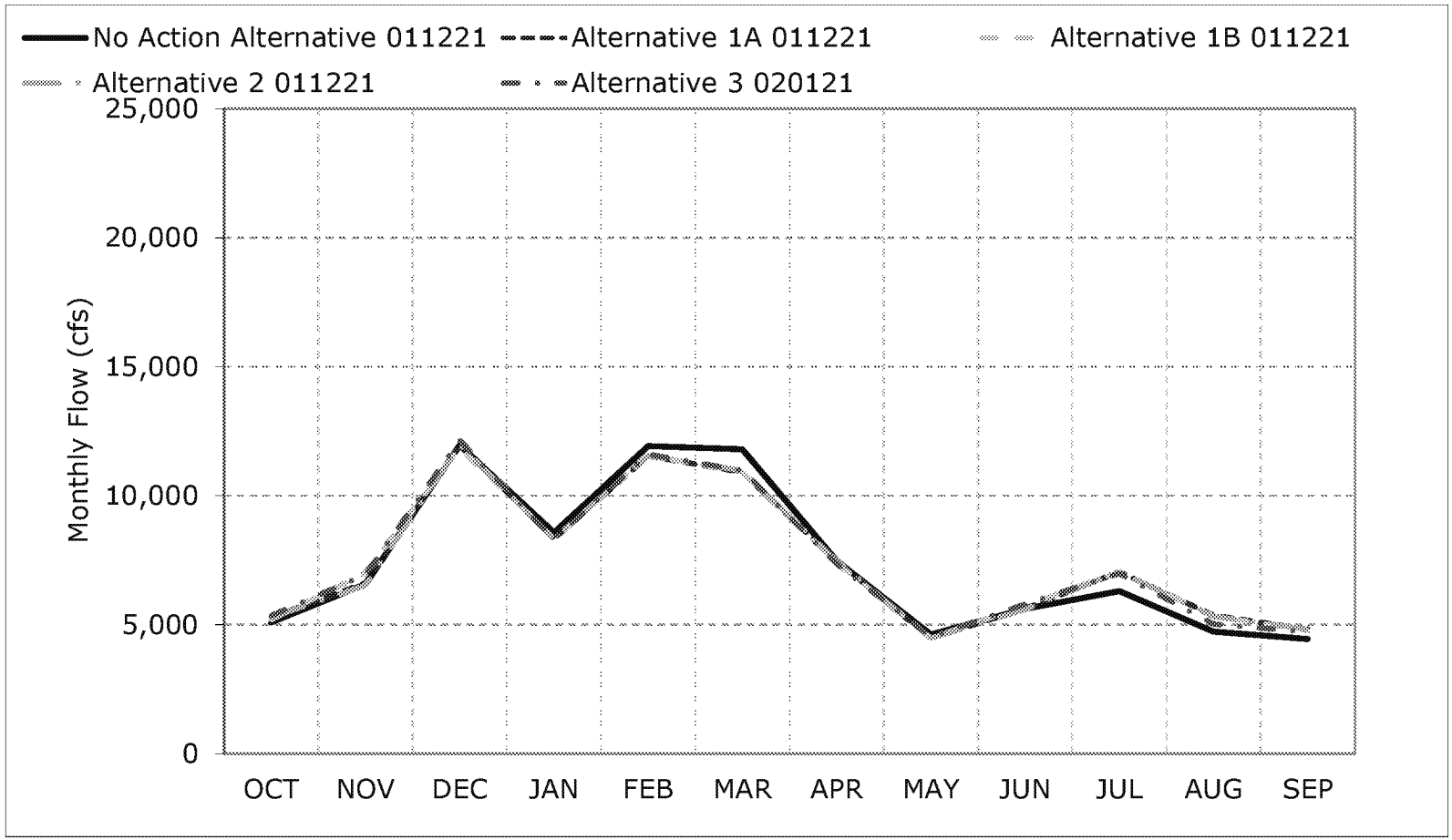
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-14-4. Sacramento River at Wilkins Slough Flow, Below Normal Year Average Flow



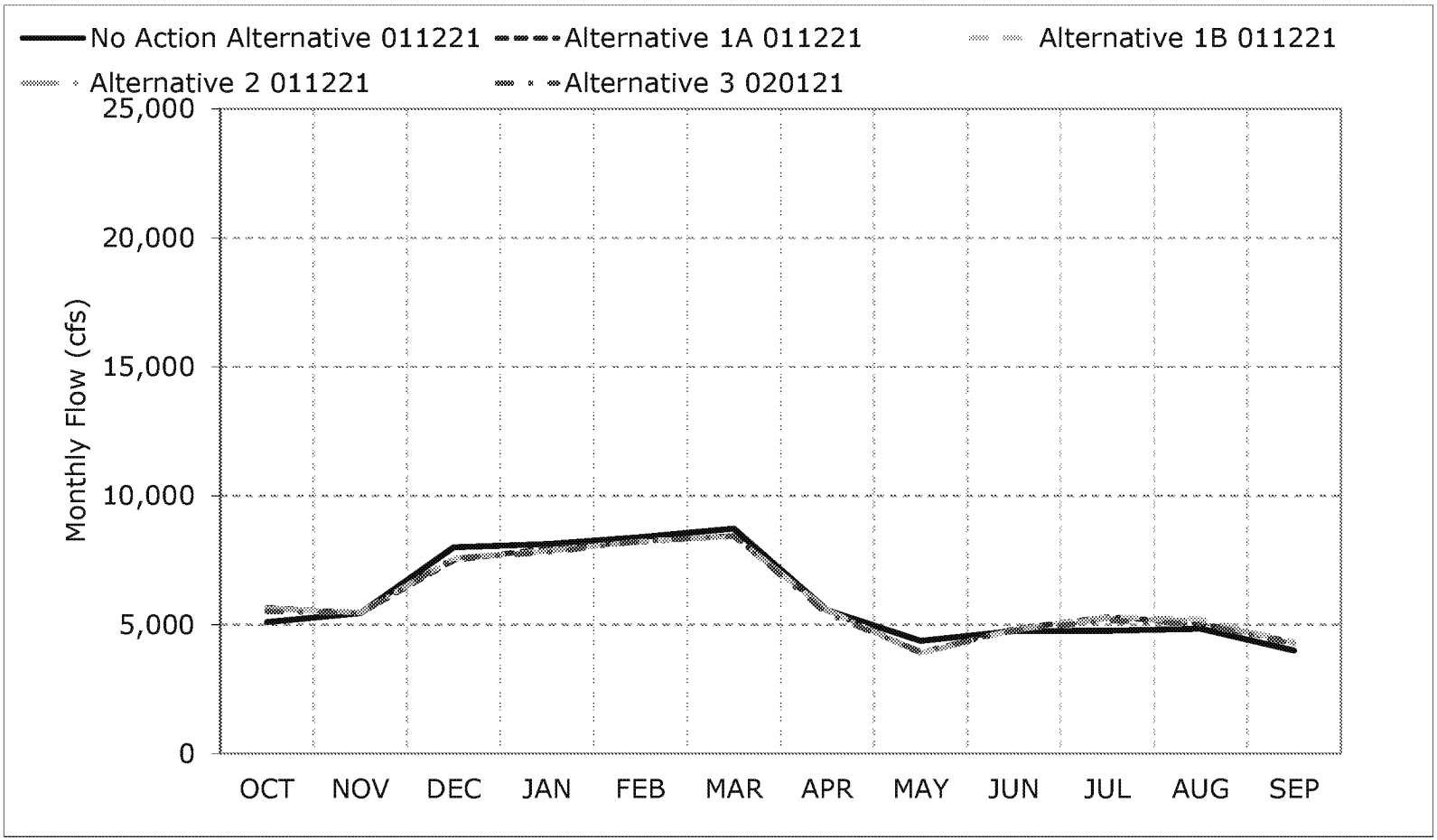
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-14-5. Sacramento River at Wilkins Slough Flow, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-14-6. Sacramento River at Wilkins Slough Flow, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-14-7. Sacramento River at Wilkins Slough Flow, October

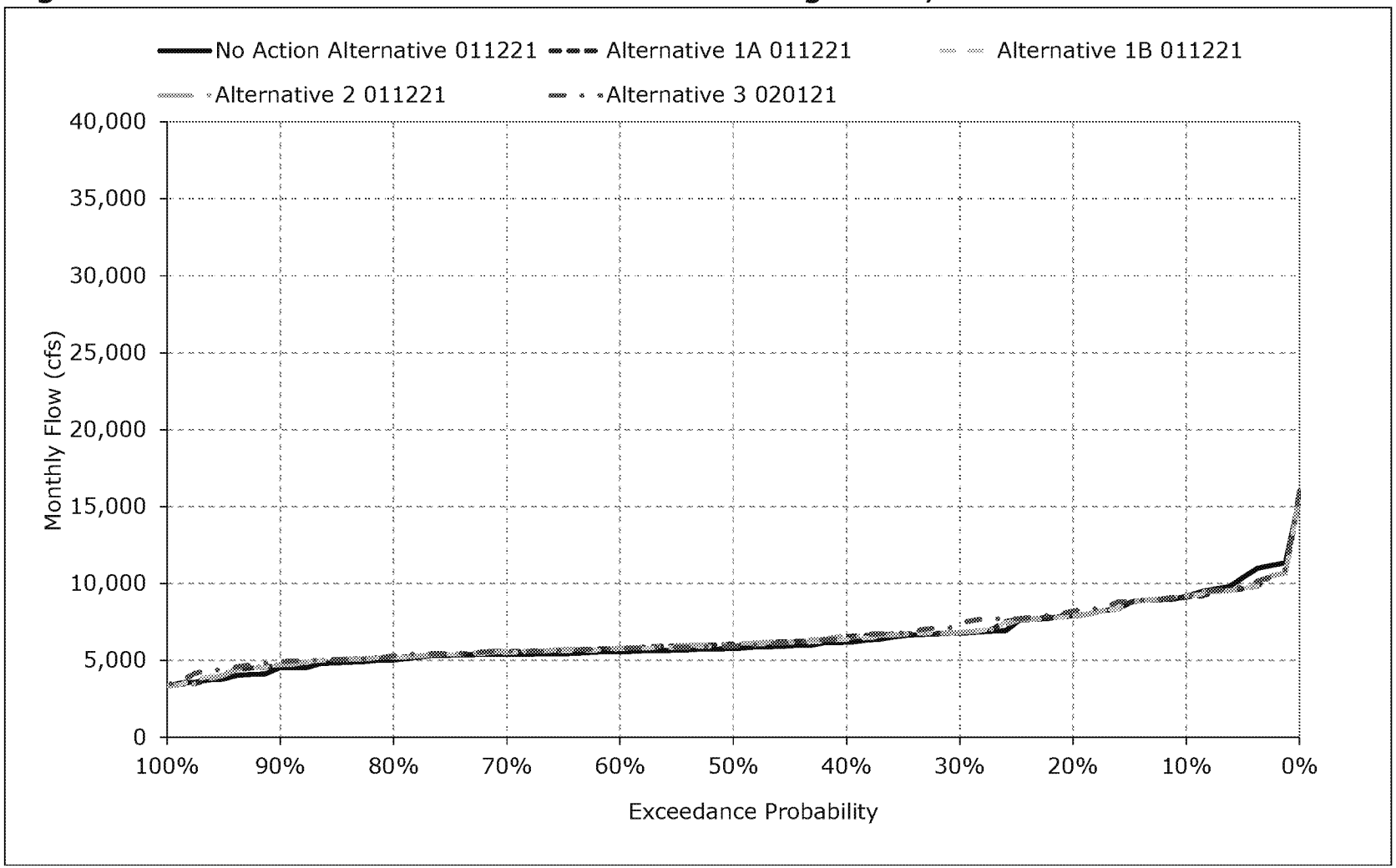


Figure 5B2-14-8. Sacramento River at Wilkins Slough Flow, November

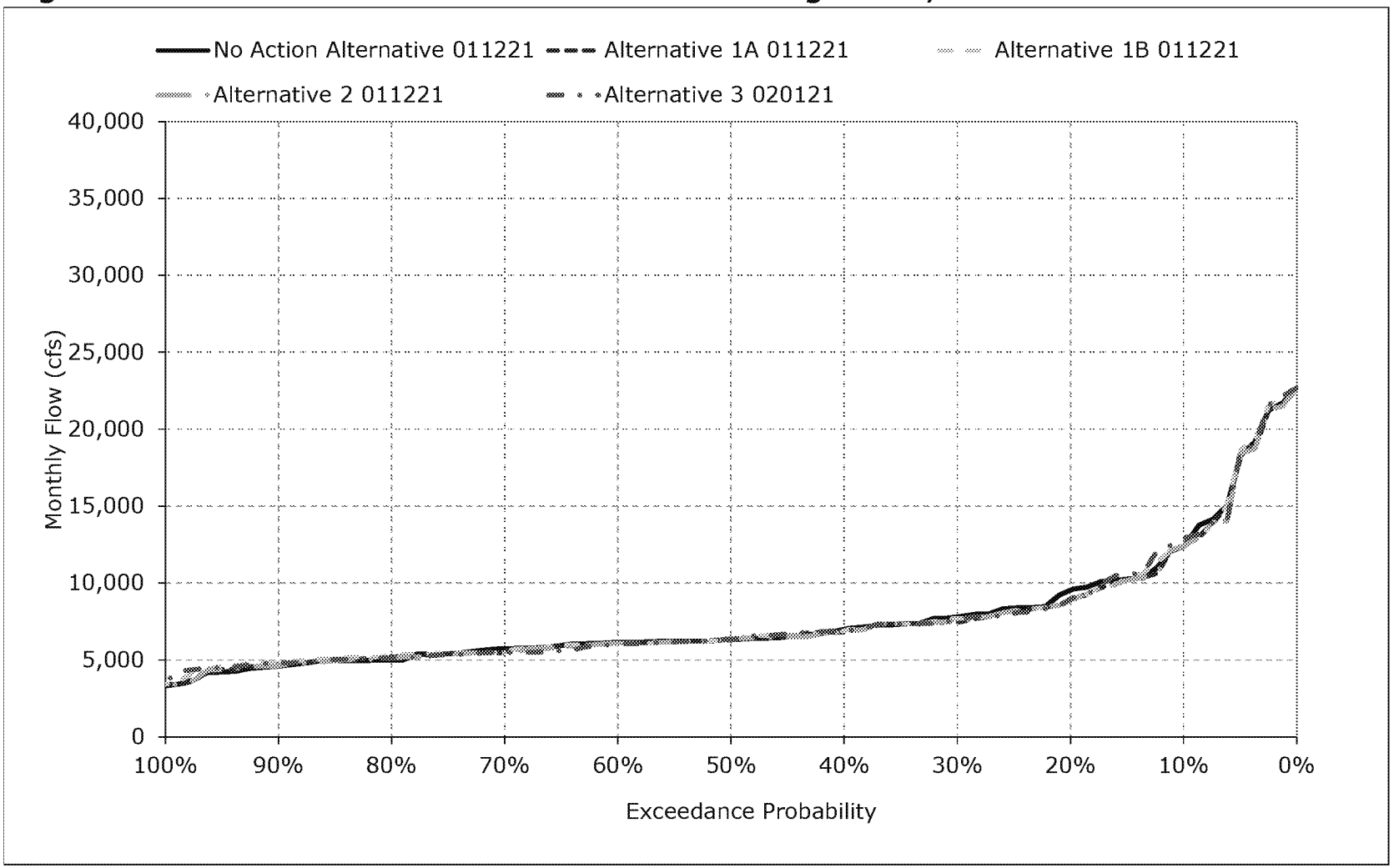


Figure 5B2-14-9. Sacramento River at Wilkins Slough Flow, December

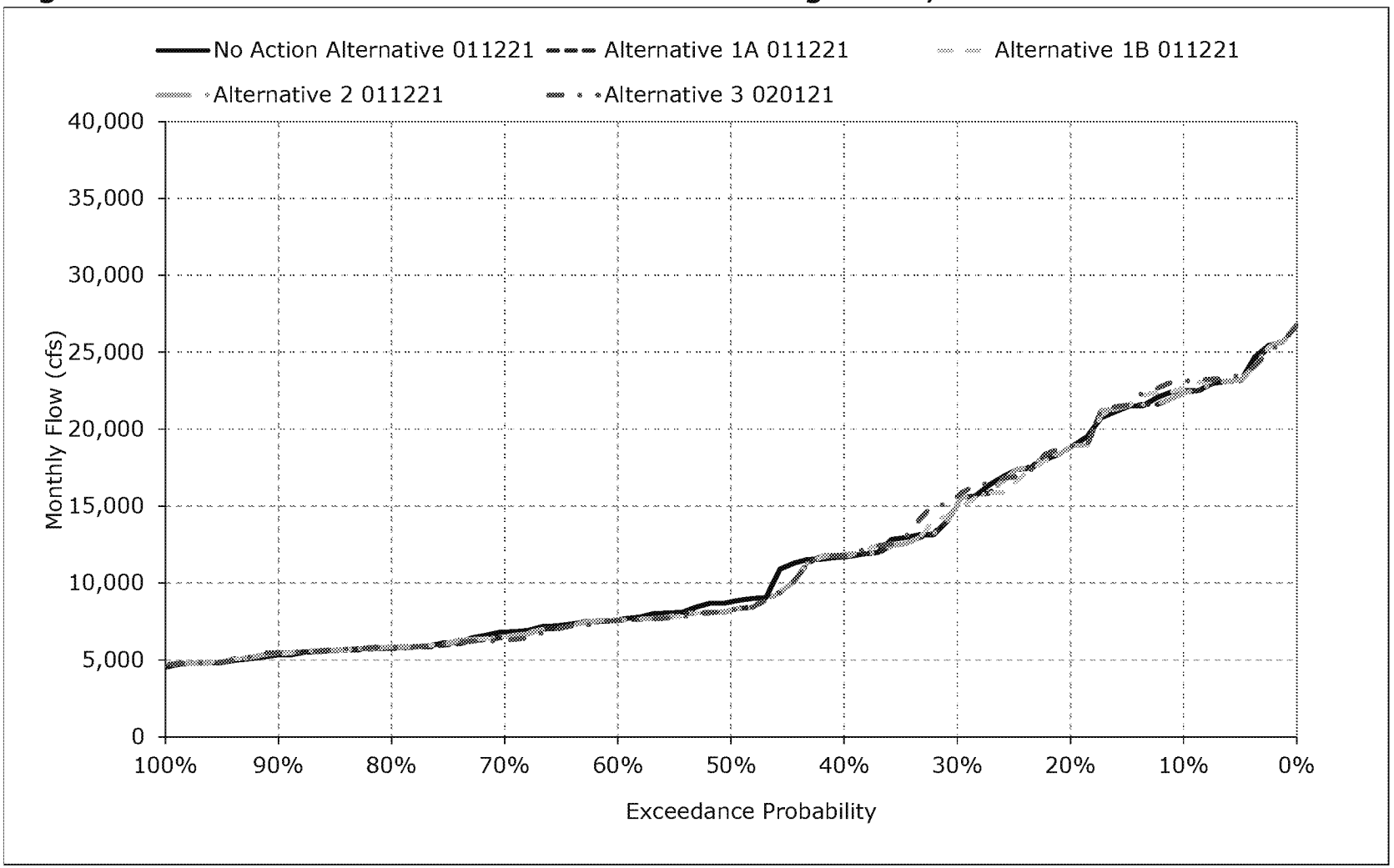


Figure 5B2-14-10. Sacramento River at Wilkins Slough Flow, January

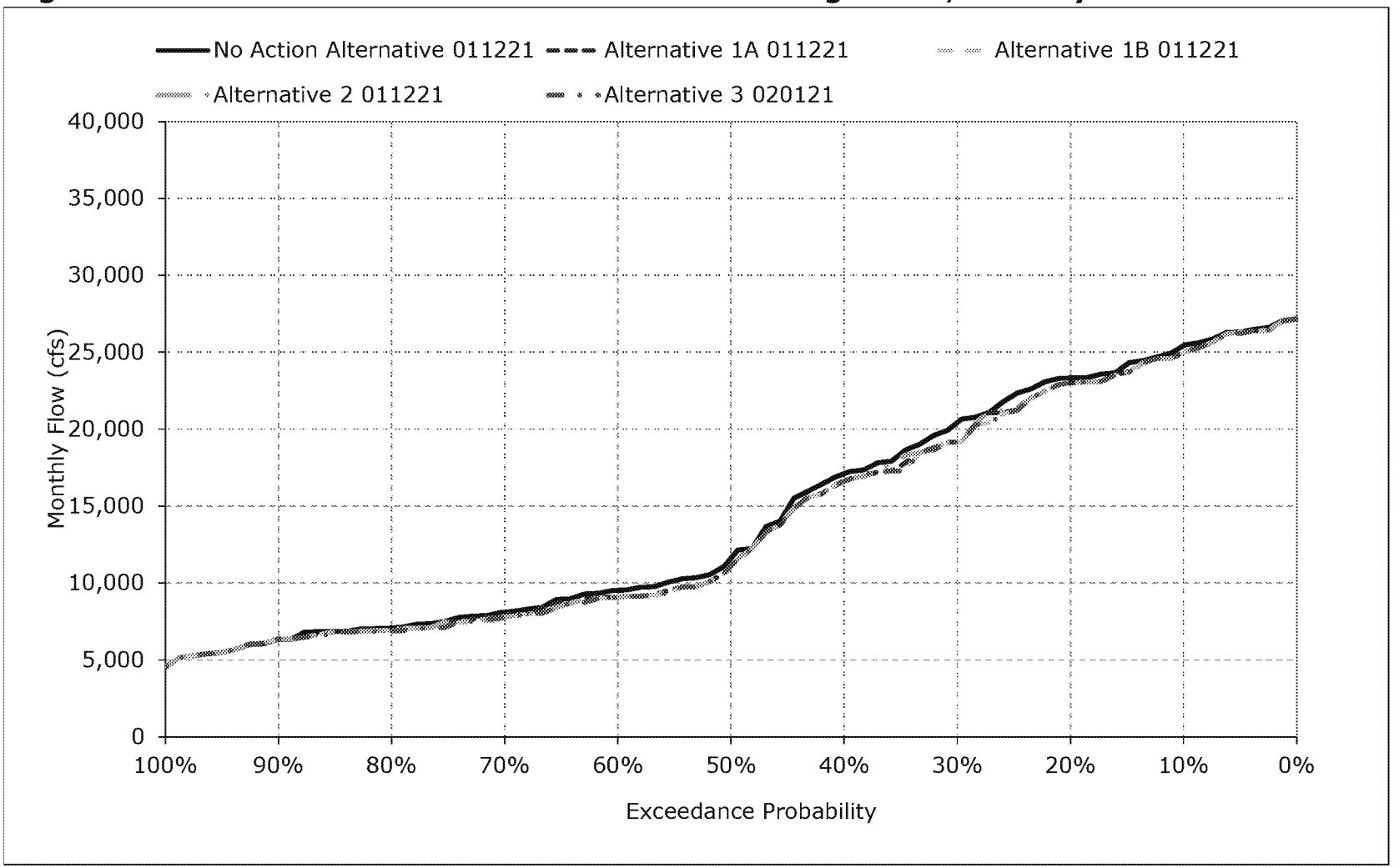


Figure 5B2-14-11. Sacramento River at Wilkins Slough Flow, February

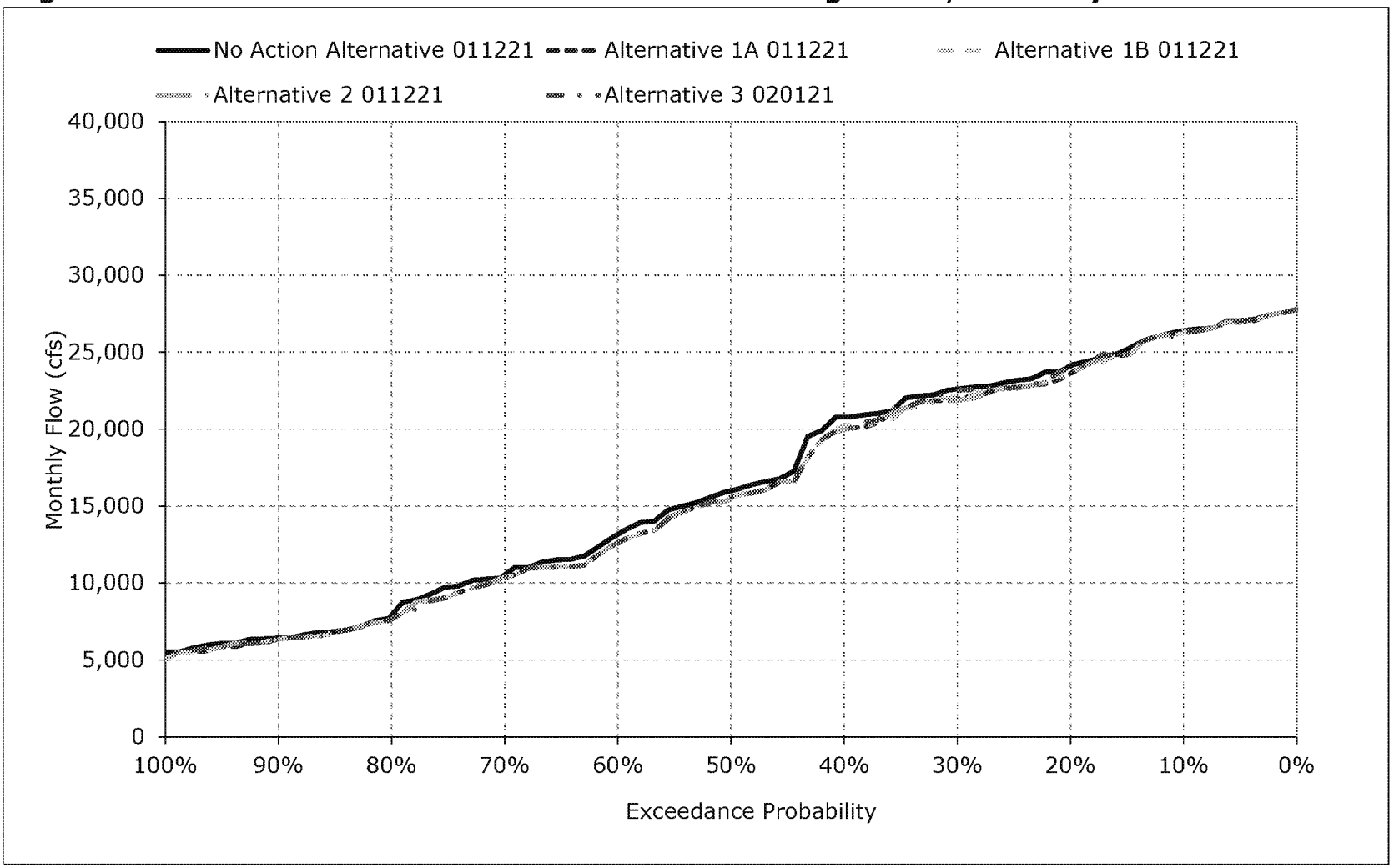


Figure 5B2-14-12. Sacramento River at Wilkins Slough Flow, March

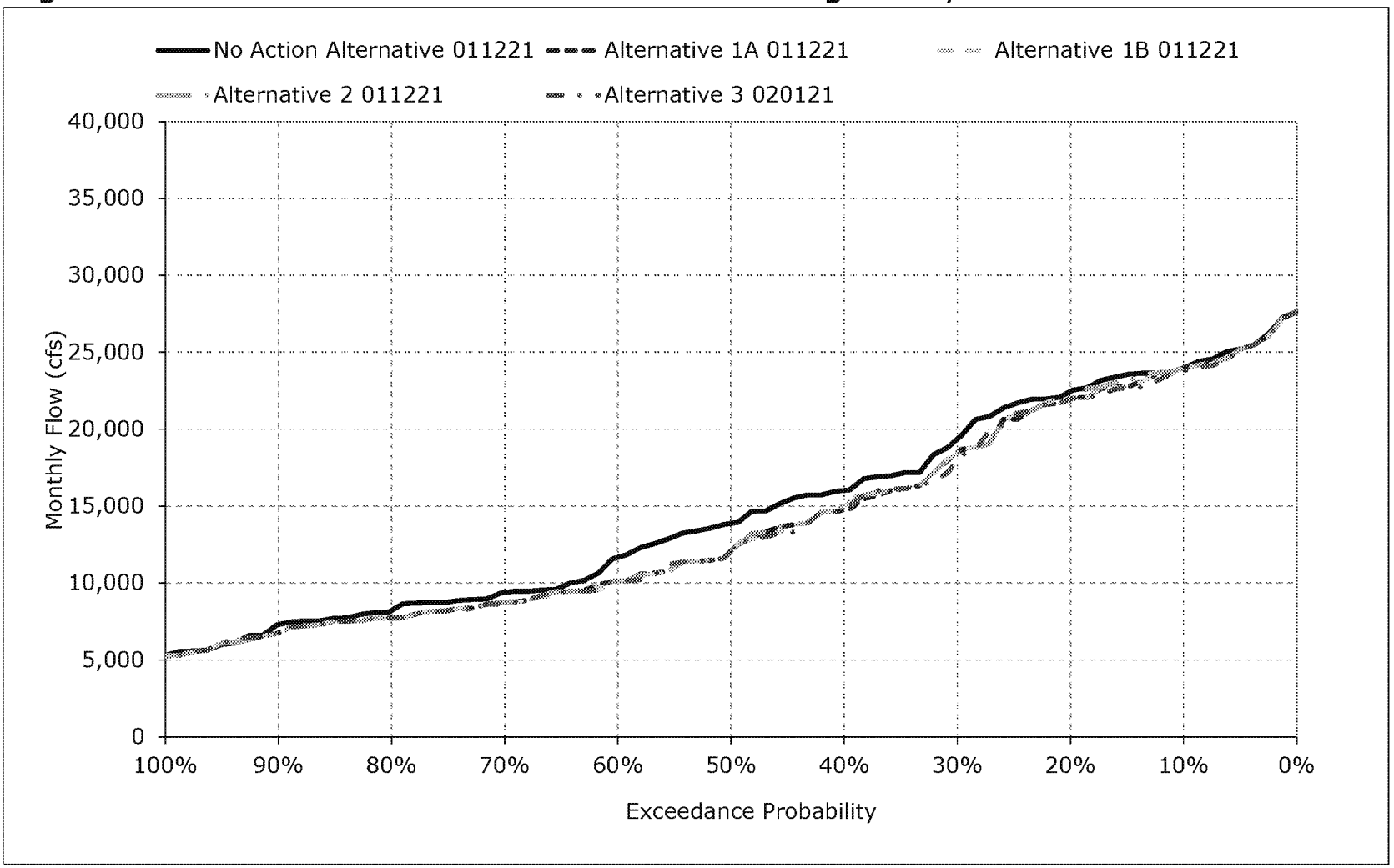


Figure 5B2-14-13. Sacramento River at Wilkins Slough Flow, April

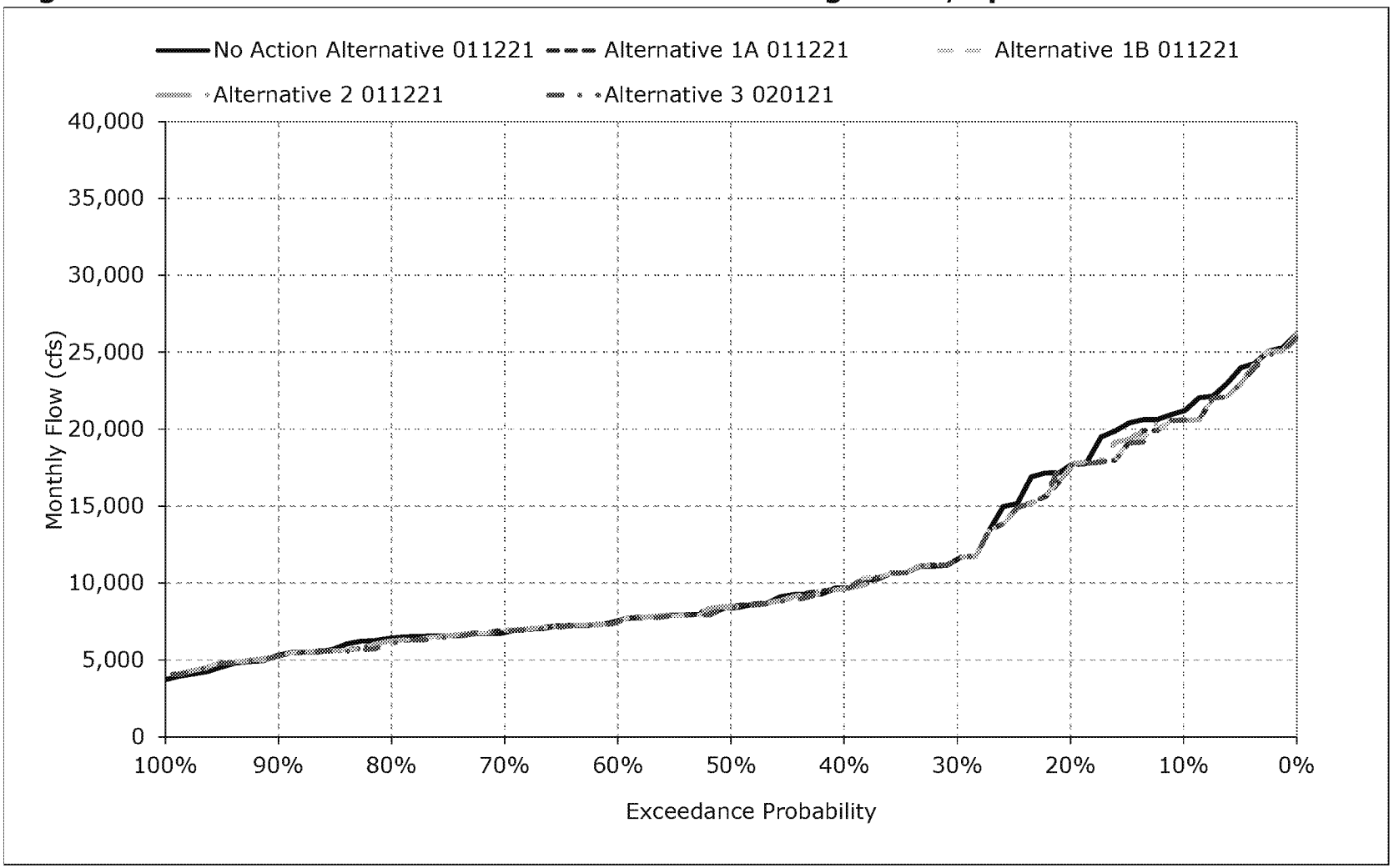


Figure 5B2-14-14. Sacramento River at Wilkins Slough Flow, May

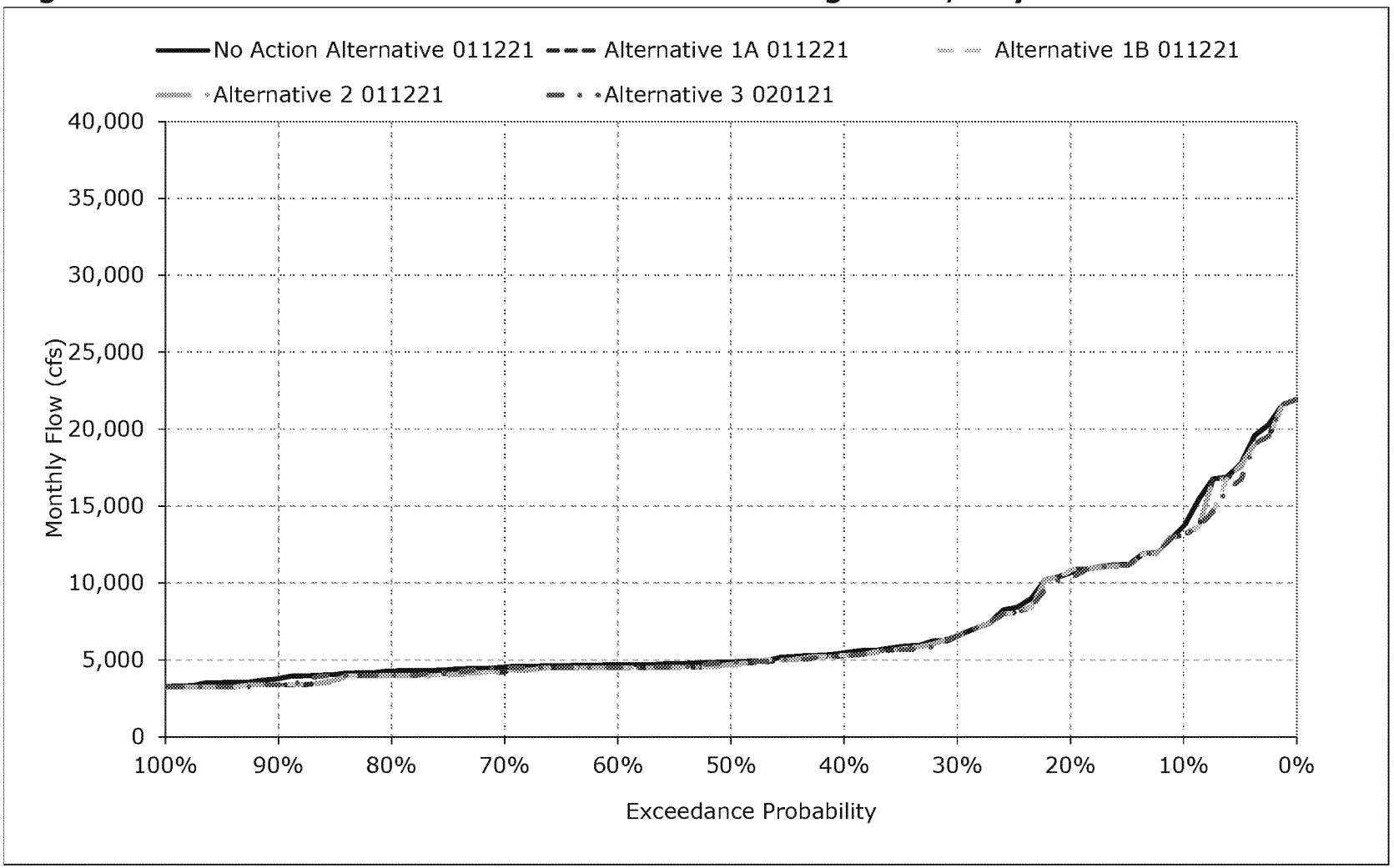


Figure 5B2-14-15. Sacramento River at Wilkins Slough Flow, June

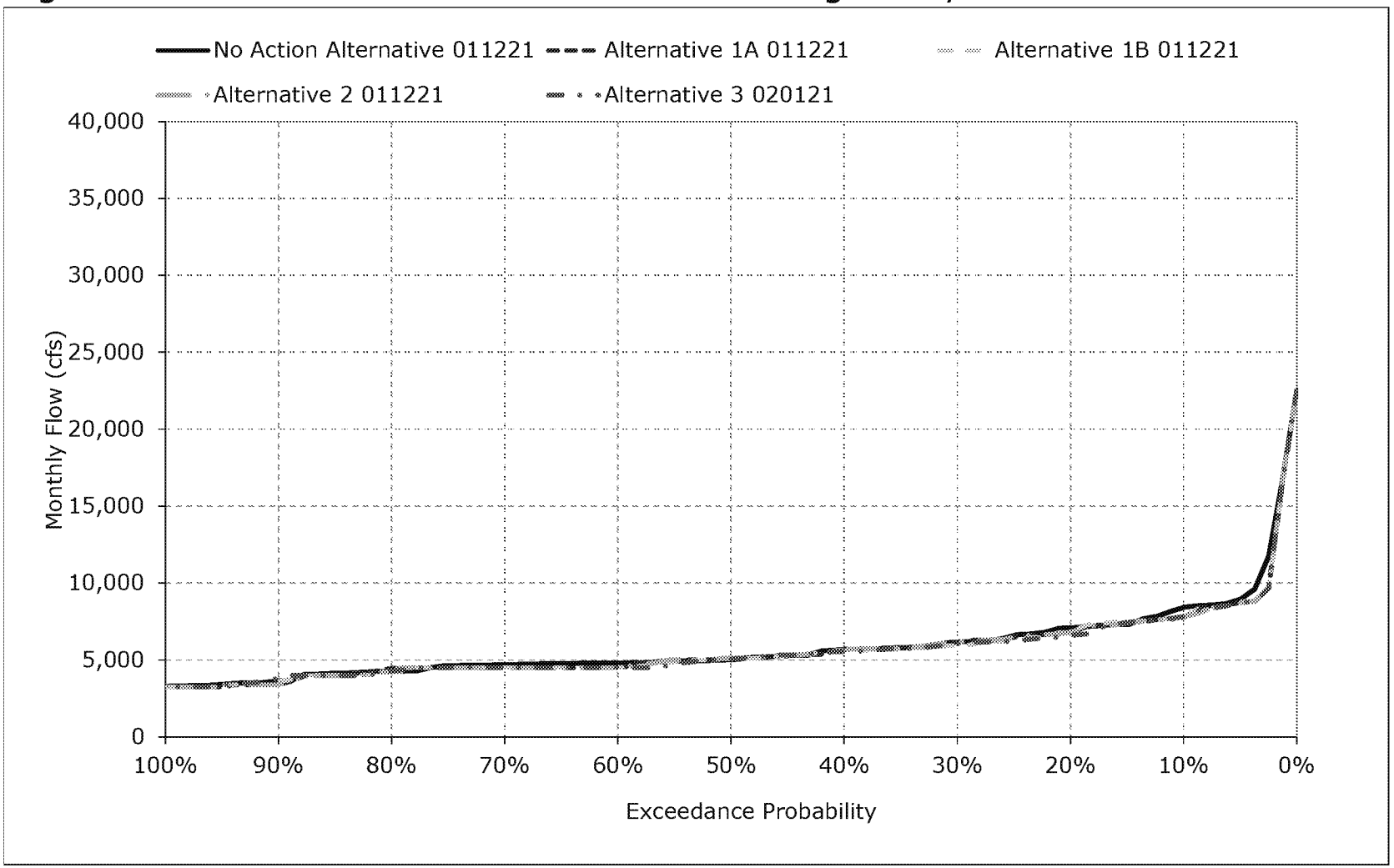


Figure 5B2-14-16. Sacramento River at Wilkins Slough Flow, July

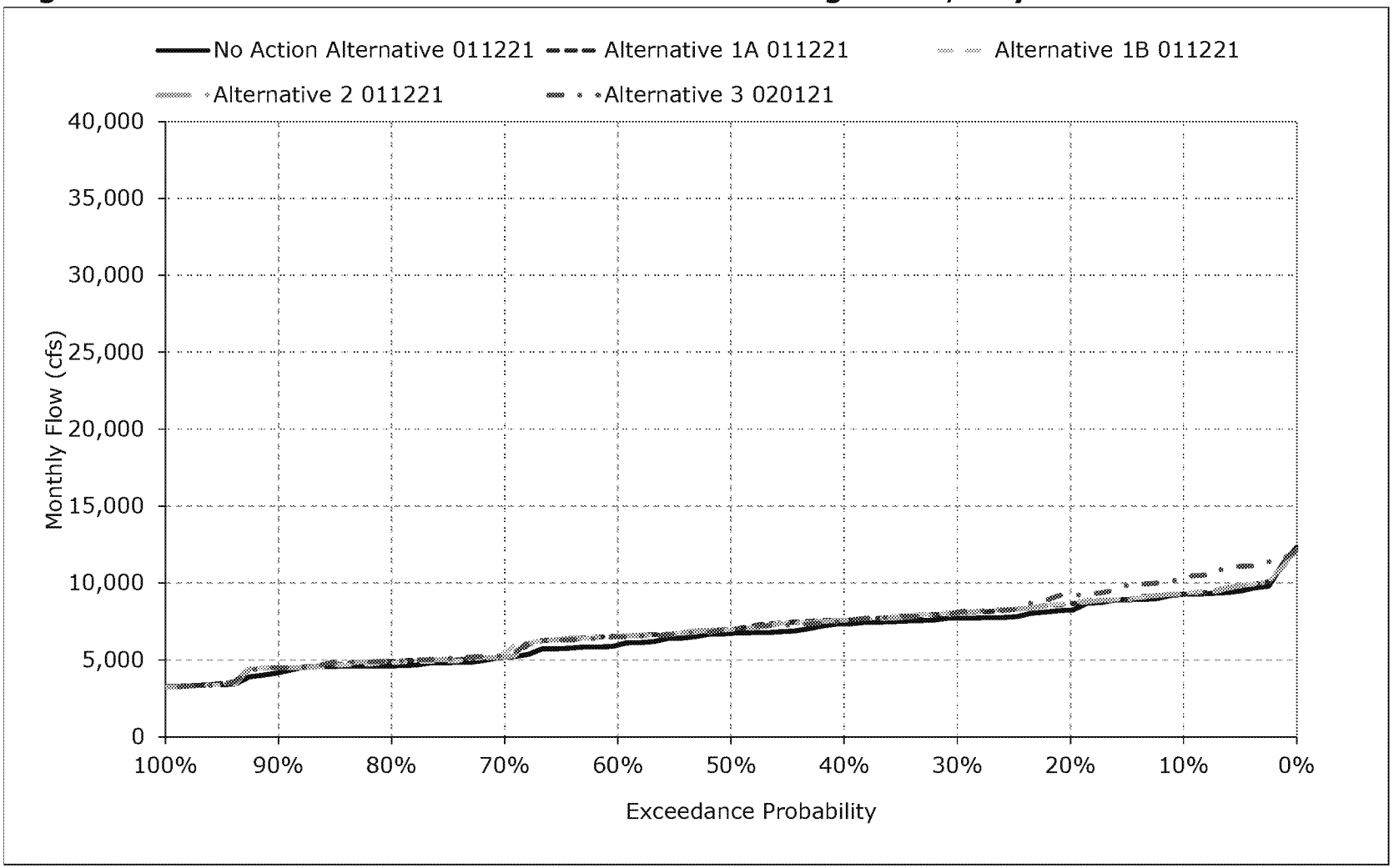


Figure 5B2-14-17. Sacramento River at Wilkins Slough Flow, August

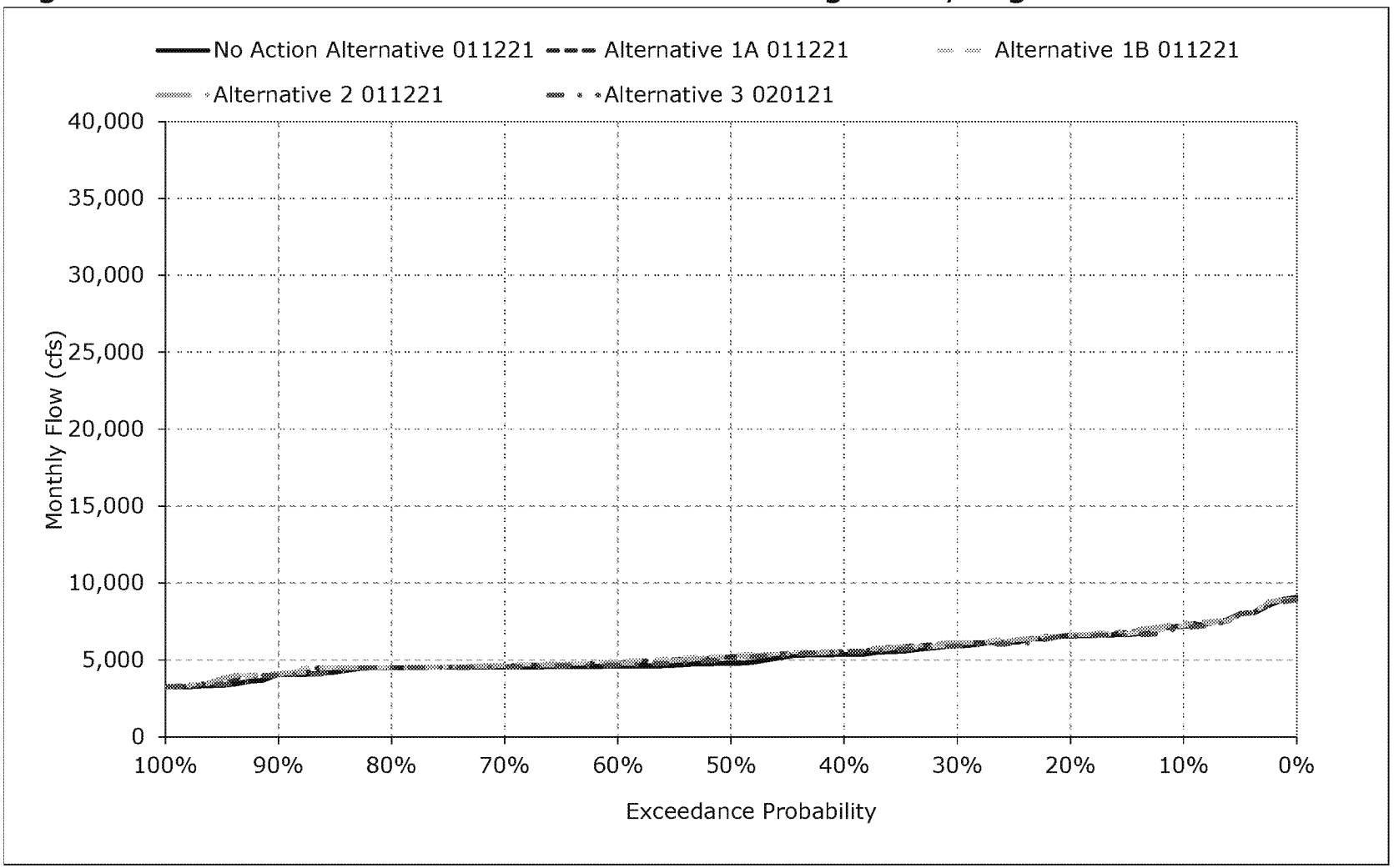


Figure 5B2-14-18. Sacramento River at Wilkins Slough Flow, September

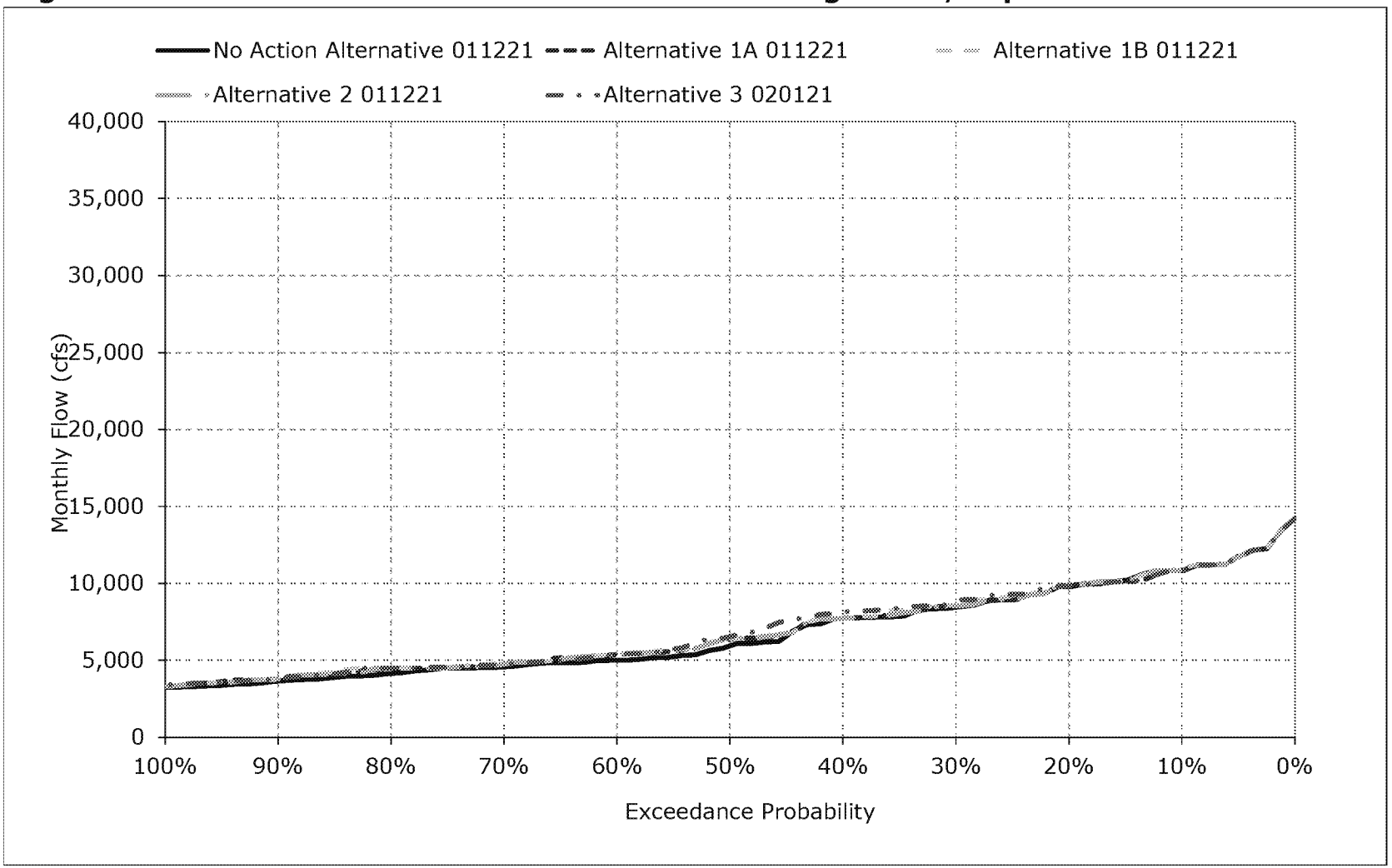


Table 5B2-15-1a. Colusa Basin Drain above Dunnigan Pipeline, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	72	793	1,146	904	918	868	1,724	1,393	1,393	1,529	1,542	909
20%	10	457	832	630	763	520	1,385	1,179	1,245	1,247	1,273	825
30%	0	307	640	465	645	323	1,096	952	1,170	1,119	1,193	680
40%	0	234	478	347	491	216	842	771	1,087	983	1,127	603
50%	0	191	373	217	0	75	633	674	1,021	929	948	537
60%	0	107	268	0	0	0	331	607	949	857	835	437
70%	0	20	43	0	0	0	211	577	871	775	664	361
80%	0	18	0	0	0	0	0	520	725	728	587	271
90%	0	14	0	0	0	0	0	433	653	670	487	115
Long Term												
Full Simulation Period[a]	23	271	457	350	384	289	737	777	1,028	1,013	1,010	550
Water Year Types[b,c]												
Wet (32%)	3	297	434	258	128	112	582	644	1,058	1,157	1,186	520
Above Normal (15%)	88	272	508	189	101	155	700	827	1,086	960	1,124	671
Below Normal (17%)	19	317	269	317	432	478	598	889	1,048	968	884	463
Dry (22%)	12	326	401	581	718	308	848	912	1,127	1,071	982	653
Critical (15%)	25	79	760	403	662	557	1,104	684	730	716	702	441

Table 5B2-15-1b. Colusa Basin Drain above Dunnigan Pipeline, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	46	793	1,096	914	918	870	1,743	1,397	1,395	1,499	1,537	923
20%	8	457	845	629	765	521	1,388	1,183	1,235	1,225	1,273	819
30%	0	298	663	474	645	325	1,101	953	1,155	1,103	1,202	680
40%	0	242	489	364	492	217	849	778	1,088	983	1,127	609
50%	0	206	385	222	0	77	635	676	1,022	929	948	547
60%	0	110	288	0	0	0	333	617	949	857	835	446
70%	0	23	45	0	0	0	212	579	872	775	664	370
80%	0	21	0	0	0	0	0	526	727	728	587	278
90%	0	15	0	0	0	0	0	434	642	670	487	115
Long Term												
Full Simulation Period[a]	23	273	462	354	384	289	739	781	1,026	1,010	1,011	553
Water Year Types[b,c]												
Wet (32%)	3	296	442	261	128	112	583	651	1,055	1,153	1,186	519
Above Normal (15%)	88	274	509	189	101	156	701	823	1,082	960	1,124	672
Below Normal (17%)	20	320	279	323	433	477	600	894	1,045	958	890	494
Dry (22%)	8	329	409	587	719	308	851	916	1,129	1,071	981	638
Critical (15%)	25	82	753	407	664	559	1,107	688	733	716	702	448

Table 5B2-15-1c. Colusa Basin Drain above Dunnigan Pipeline, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-26	0	-49	10	0	2	19	4	2	-30	-5	13
20%	-2	0	13	-2	2	1	3	3	-10	-22	0	-6
30%	0	-9	23	9	0	1	4	1	-15	-15	9	0
40%	0	8	11	17	1	1	6	7	1	0	0	6
50%	0	15	12	5	0	2	2	2	1	0	0	10
60%	0	3	20	0	0	0	1	10	0	0	0	9
70%	0	3	2	0	0	0	1	2	1	0	0	9
80%	0	3	0	0	0	0	0	6	2	0	0	7
90%	0	1	0	0	0	0	0	0	-10	0	0	0
Long Term												
Full Simulation Period[a]	-1	2	5	4	1	0	2	4	-2	-3	1	3
Water Year Types[b,c]												
Wet (32%)	0	0	9	3	0	0	1	7	-4	-4	0	-1
Above Normal (15%)	0	1	1	0	0	0	1	-4	-4	0	0	0
Below Normal (17%)	1	3	9	7	1	-1	2	5	-3	-10	7	31
Dry (22%)	-4	4	8	6	1	0	4	5	1	0	-1	-15
Critical (15%)	0	3	-6	4	2	1	3	4	3	0	0	7

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-15-2a. Colusa Basin Drain above Dunnigan Pipeline, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	72	793	1,146	904	918	868	1,724	1,393	1,393	1,529	1,542	909
20%	10	457	832	630	763	520	1,385	1,179	1,245	1,247	1,273	825
30%	0	307	640	465	645	323	1,096	952	1,170	1,119	1,193	680
40%	0	234	478	347	491	216	842	771	1,087	983	1,127	603
50%	0	191	373	217	0	75	633	674	1,021	929	948	537
60%	0	107	268	0	0	0	331	607	949	857	835	437
70%	0	20	43	0	0	0	211	577	871	775	664	361
80%	0	18	0	0	0	0	0	520	725	728	587	271
90%	0	14	0	0	0	0	0	433	653	670	487	115
Long Term												
Full Simulation Period[a]	23	271	457	350	384	289	737	777	1,028	1,013	1,010	550
Water Year Types[b,c]												
Wet (32%)	3	297	434	258	128	112	582	644	1,058	1,157	1,186	520
Above Normal (15%)	88	272	508	189	101	155	700	827	1,086	960	1,124	671
Below Normal (17%)	19	317	269	317	432	478	598	889	1,048	968	884	463
Dry (22%)	12	326	401	581	718	308	848	912	1,127	1,071	982	653
Critical (15%)	25	79	760	403	662	557	1,104	684	730	716	702	441

Table 5B2-15-2b. Colusa Basin Drain above Dunnigan Pipeline, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	46	793	1,096	914	918	870	1,743	1,397	1,395	1,499	1,537	923
20%	5	457	845	629	765	521	1,388	1,183	1,235	1,225	1,273	819
30%	0	298	663	475	645	325	1,101	953	1,155	1,103	1,202	678
40%	0	239	489	364	492	217	849	778	1,088	983	1,127	609
50%	0	199	385	222	0	77	635	676	1,022	929	948	547
60%	0	110	288	0	0	0	333	617	949	857	835	441
70%	0	23	45	0	0	0	212	579	872	775	664	370
80%	0	21	0	0	0	0	0	526	727	728	587	278
90%	0	15	0	0	0	0	0	434	642	670	469	115
Long Term												
Full Simulation Period[a]	23	272	464	354	384	289	739	781	1,026	1,010	1,011	552
Water Year Types[b,c]												
Wet (32%)	3	296	442	261	128	112	583	651	1,054	1,153	1,187	519
Above Normal (15%)	88	266	509	189	101	156	701	823	1,082	960	1,124	672
Below Normal (17%)	20	320	279	324	433	477	600	894	1,045	958	886	494
Dry (22%)	7	330	409	587	719	308	851	916	1,129	1,071	986	634
Critical (15%)	25	82	764	407	664	559	1,107	688	733	716	702	447

Table 5B2-15-2c. Colusa Basin Drain above Dunnigan Pipeline, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-26	0	-49	10	0	2	19	4	2	-30	-5	13
20%	-5	0	13	-2	2	1	3	3	-10	-22	0	-6
30%	0	-9	23	9	0	1	4	1	-15	-15	9	-2
40%	0	5	11	17	1	1	6	7	1	0	0	6
50%	0	8	13	5	0	2	2	2	1	0	0	10
60%	0	3	20	0	0	0	1	10	0	0	0	4
70%	0	3	2	0	0	0	1	2	1	0	0	9
80%	0	3	0	0	0	0	0	6	2	0	0	7
90%	0	1	0	0	0	0	0	0	-10	0	-18	0
Long Term												
Full Simulation Period[a]	-1	1	7	4	1	0	2	4	-2	-3	2	2
Water Year Types[b,c]												
Wet (32%)	0	0	8	3	0	0	1	7	-4	-5	1	-1
Above Normal (15%)	0	-6	1	0	0	0	1	-4	-4	0	0	0
Below Normal (17%)	1	3	9	7	1	-1	2	5	-3	-9	2	31
Dry (22%)	-5	4	8	6	1	0	3	5	1	0	4	-19
Critical (15%)	0	3	4	4	2	1	3	4	3	0	0	6

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-15-3a. Colusa Basin Drain above Dunnigan Pipeline, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	72	793	1,146	904	918	868	1,724	1,393	1,393	1,529	1,542	909
20%	10	457	832	630	763	520	1,385	1,179	1,245	1,247	1,273	825
30%	0	307	640	465	645	323	1,096	952	1,170	1,119	1,193	680
40%	0	234	478	347	491	216	842	771	1,087	983	1,127	603
50%	0	191	373	217	0	75	633	674	1,021	929	948	537
60%	0	107	268	0	0	0	331	607	949	857	835	437
70%	0	20	43	0	0	0	211	577	871	775	664	361
80%	0	18	0	0	0	0	0	520	725	728	587	271
90%	0	14	0	0	0	0	0	433	653	670	487	115
Long Term												
Full Simulation Period[a]	23	271	457	350	384	289	737	777	1,028	1,013	1,010	550
Water Year Types[b,c]												
Wet (32%)	3	297	434	258	128	112	582	644	1,058	1,157	1,186	520
Above Normal (15%)	88	272	508	189	101	155	700	827	1,086	960	1,124	671
Below Normal (17%)	19	317	269	317	432	478	598	889	1,048	968	884	463
Dry (22%)	12	326	401	581	718	308	848	912	1,127	1,071	982	653
Critical (15%)	25	79	760	403	662	557	1,104	684	730	716	702	441

Table 5B2-15-3b. Colusa Basin Drain above Dunnigan Pipeline, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	46	793	1,099	914	918	870	1,743	1,397	1,395	1,499	1,542	923
20%	8	458	845	629	765	521	1,388	1,183	1,235	1,225	1,273	819
30%	0	308	663	474	645	325	1,101	953	1,155	1,103	1,202	680
40%	0	244	489	352	492	217	849	778	1,088	983	1,127	609
50%	0	211	385	222	0	77	635	676	1,022	929	948	547
60%	0	116	289	0	0	0	333	617	949	857	835	446
70%	0	23	45	0	0	0	212	579	872	775	664	370
80%	0	21	0	0	0	0	0	526	727	728	587	278
90%	0	16	0	0	0	0	0	434	642	670	487	115
Long Term												
Full Simulation Period[a]	23	278	463	354	384	289	739	781	1,026	1,009	1,012	553
Water Year Types[b,c]												
Wet (32%)	3	296	442	261	128	112	583	651	1,055	1,153	1,190	519
Above Normal (15%)	88	274	509	189	101	156	701	823	1,082	960	1,124	672
Below Normal (17%)	20	348	279	322	433	477	600	894	1,045	957	890	494
Dry (22%)	8	329	409	587	719	308	852	916	1,129	1,071	981	638
Critical (15%)	25	83	754	407	664	559	1,107	688	733	716	702	450

Table 5B2-15-3c. Colusa Basin Drain above Dunnigan Pipeline, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-26	0	-47	10	0	2	19	4	2	-30	0	13
20%	-2	1	13	-2	2	1	3	3	-10	-22	0	-6
30%	0	1	23	9	0	1	4	1	-15	-15	9	0
40%	0	10	11	5	1	1	6	7	1	0	0	6
50%	0	20	13	5	0	2	2	2	1	0	0	10
60%	0	8	21	0	0	0	1	10	0	0	0	9
70%	0	3	2	0	0	0	1	2	1	0	0	9
80%	0	3	0	0	0	0	0	6	2	0	0	7
90%	0	2	0	0	0	0	0	0	-10	0	0	0
Long Term												
Full Simulation Period[a]	-1	7	6	4	1	0	2	4	-2	-3	2	3
Water Year Types[b,c]												
Wet (32%)	0	0	9	3	0	0	1	7	-4	-4	4	-1
Above Normal (15%)	0	1	1	0	0	0	1	-4	-4	0	0	0
Below Normal (17%)	1	31	10	5	1	-1	2	5	-3	-11	7	31
Dry (22%)	-4	4	9	6	1	0	4	5	1	0	-1	-15
Critical (15%)	0	3	-6	4	2	1	3	4	3	0	0	9

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-15-4a. Colusa Basin Drain above Dunnigan Pipeline, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	72	793	1,146	904	918	868	1,724	1,393	1,393	1,529	1,542	909
20%	10	457	832	630	763	520	1,385	1,179	1,245	1,247	1,273	825
30%	0	307	640	465	645	323	1,096	952	1,170	1,119	1,193	680
40%	0	234	478	347	491	216	842	771	1,087	983	1,127	603
50%	0	191	373	217	0	75	633	674	1,021	929	948	537
60%	0	107	268	0	0	0	331	607	949	857	835	437
70%	0	20	43	0	0	0	211	577	871	775	664	361
80%	0	18	0	0	0	0	0	520	725	728	587	271
90%	0	14	0	0	0	0	0	433	653	670	487	115
Long Term												
Full Simulation Period[a]	23	271	457	350	384	289	737	777	1,028	1,013	1,010	550
Water Year Types[b,c]												
Wet (32%)	3	297	434	258	128	112	582	644	1,058	1,157	1,186	520
Above Normal (15%)	88	272	508	189	101	155	700	827	1,086	960	1,124	671
Below Normal (17%)	19	317	269	317	432	478	598	889	1,048	968	884	463
Dry (22%)	12	326	401	581	718	308	848	912	1,127	1,071	982	653
Critical (15%)	25	79	760	403	662	557	1,104	684	730	716	702	441

Table 5B2-15-4b. Colusa Basin Drain above Dunnigan Pipeline, Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	46	793	1,098	914	918	870	1,743	1,397	1,384	1,499	1,458	910
20%	5	457	820	629	765	521	1,388	1,183	1,235	1,225	1,285	819
30%	0	307	608	472	645	325	1,101	953	1,155	1,103	1,202	678
40%	0	239	455	352	492	217	849	778	1,088	983	1,127	603
50%	0	197	365	222	0	77	635	676	1,022	929	948	547
60%	0	115	250	0	0	0	333	617	941	857	835	441
70%	0	23	0	0	0	0	212	579	872	775	664	370
80%	0	21	0	0	0	0	0	526	727	728	587	278
90%	0	16	0	0	0	0	0	434	642	670	492	115
Long Term												
Full Simulation Period[a]	23	276	444	354	384	289	739	781	1,025	1,010	1,011	553
Water Year Types[b,c]												
Wet (32%)	3	296	442	261	128	112	583	651	1,052	1,156	1,186	519
Above Normal (15%)	88	266	432	189	101	156	701	823	1,082	960	1,121	668
Below Normal (17%)	20	348	279	321	433	477	600	894	1,040	957	890	491
Dry (22%)	7	329	370	586	719	307	851	916	1,129	1,071	987	644
Critical (15%)	25	82	764	410	664	559	1,107	688	733	716	702	447

Table 5B2-15-4c. Colusa Basin Drain above Dunnigan Pipeline, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

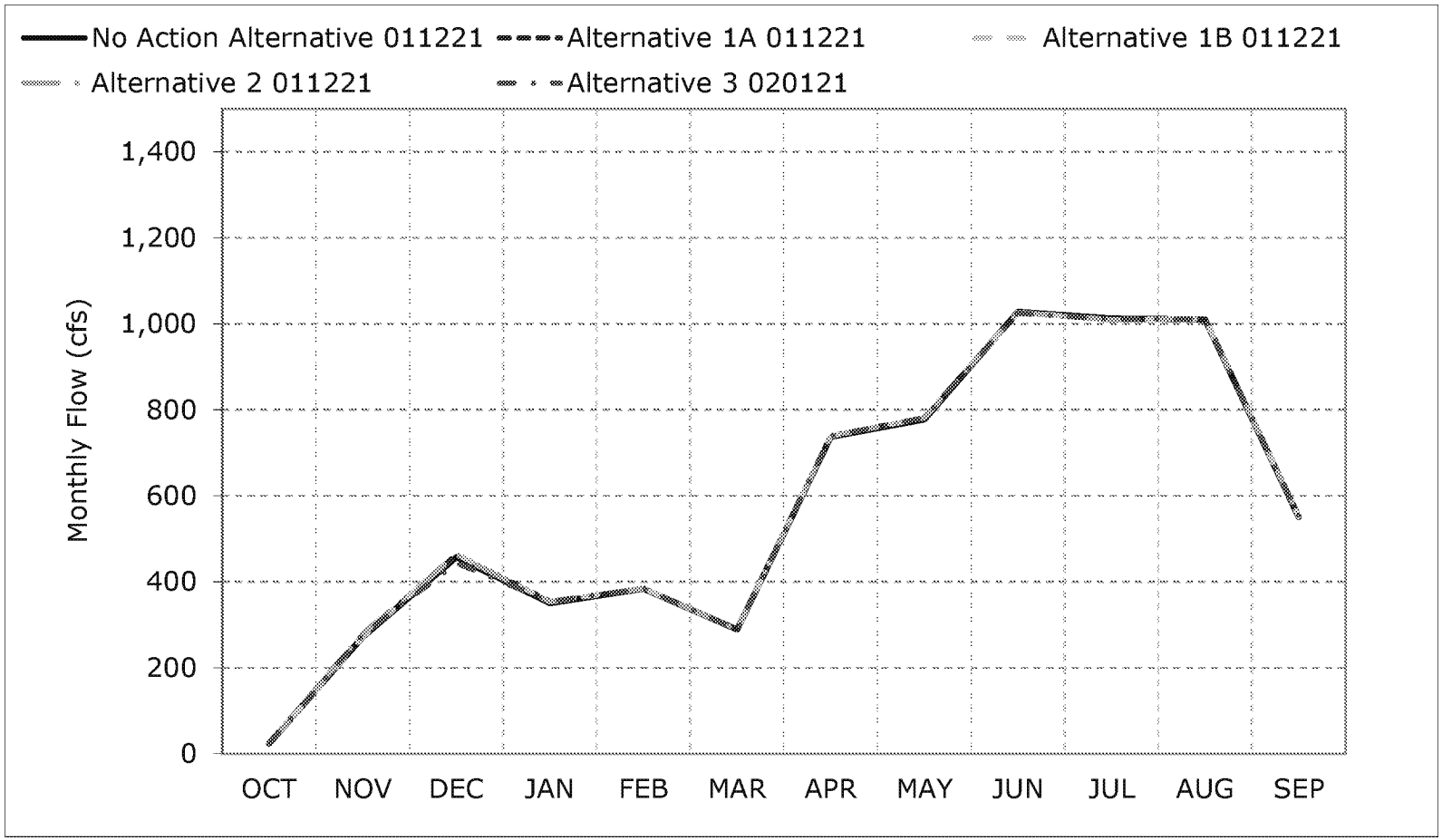
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-26	0	-48	10	0	2	19	4	-9	-30	-84	1
20%	-5	0	-11	-2	2	1	3	3	-10	-22	12	-6
30%	0	0	-31	7	0	1	4	1	-15	-15	9	-2
40%	0	5	-23	5	1	1	6	7	1	0	0	0
50%	0	6	-7	5	0	2	2	2	1	0	0	10
60%	0	8	-18	0	0	0	1	10	-8	0	0	4
70%	0	3	-43	0	0	0	1	2	1	0	0	9
80%	0	3	0	0	0	0	0	6	2	0	0	7
90%	0	2	0	0	0	0	0	0	-10	0	5	0
Long Term												
Full Simulation Period[a]	-1	5	-13	4	1	0	2	4	-3	-2	2	3
Water Year Types[b,c]												
Wet (32%)	0	0	8	3	0	0	1	7	-6	-1	0	-1
Above Normal (15%)	0	-6	-76	0	0	0	1	-4	-4	0	-4	-3
Below Normal (17%)	1	31	9	5	1	-1	2	5	-8	-11	7	28
Dry (22%)	-5	3	-31	5	1	0	3	4	1	0	5	-9
Critical (15%)	0	3	4	7	2	1	3	5	3	0	0	5

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

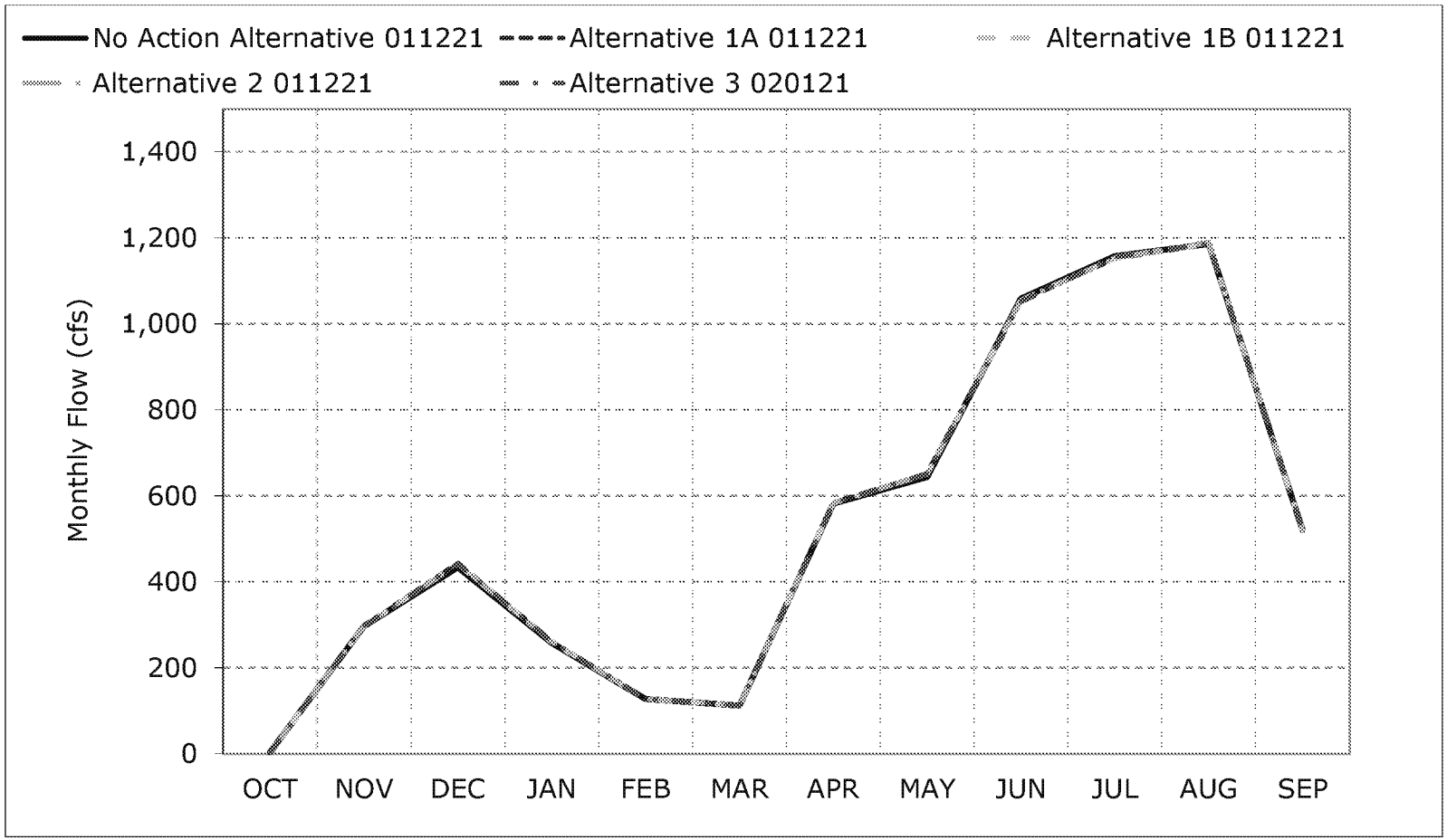
c These results are displayed with calendar year - year type sorting.

Figure 5B2-15-1. Colusa Basin Drain above Dunnigan Pipeline, Long-Term Average Flow



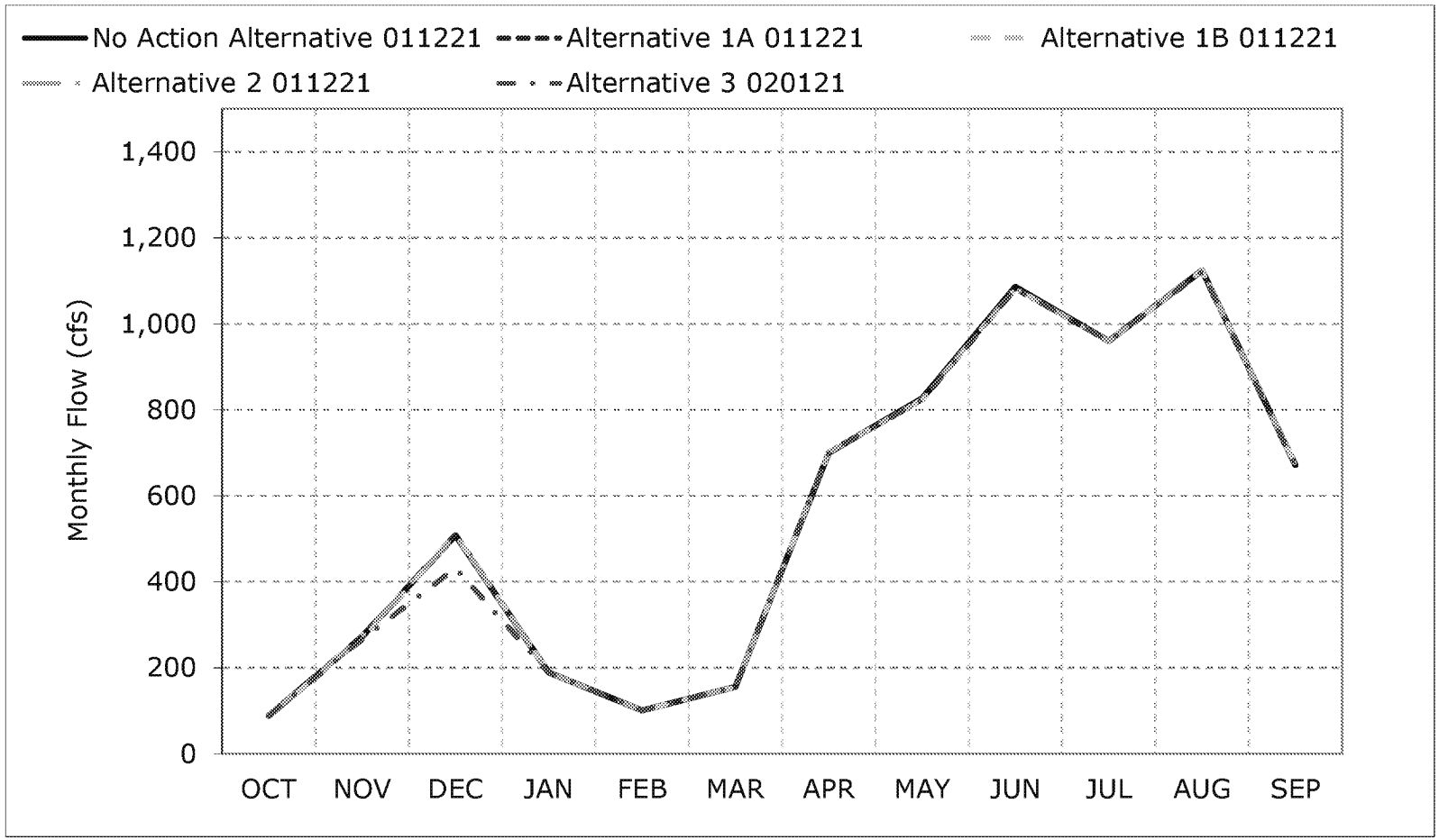
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-15-2. Colusa Basin Drain above Dunnigan Pipeline, Wet Year Average Flow



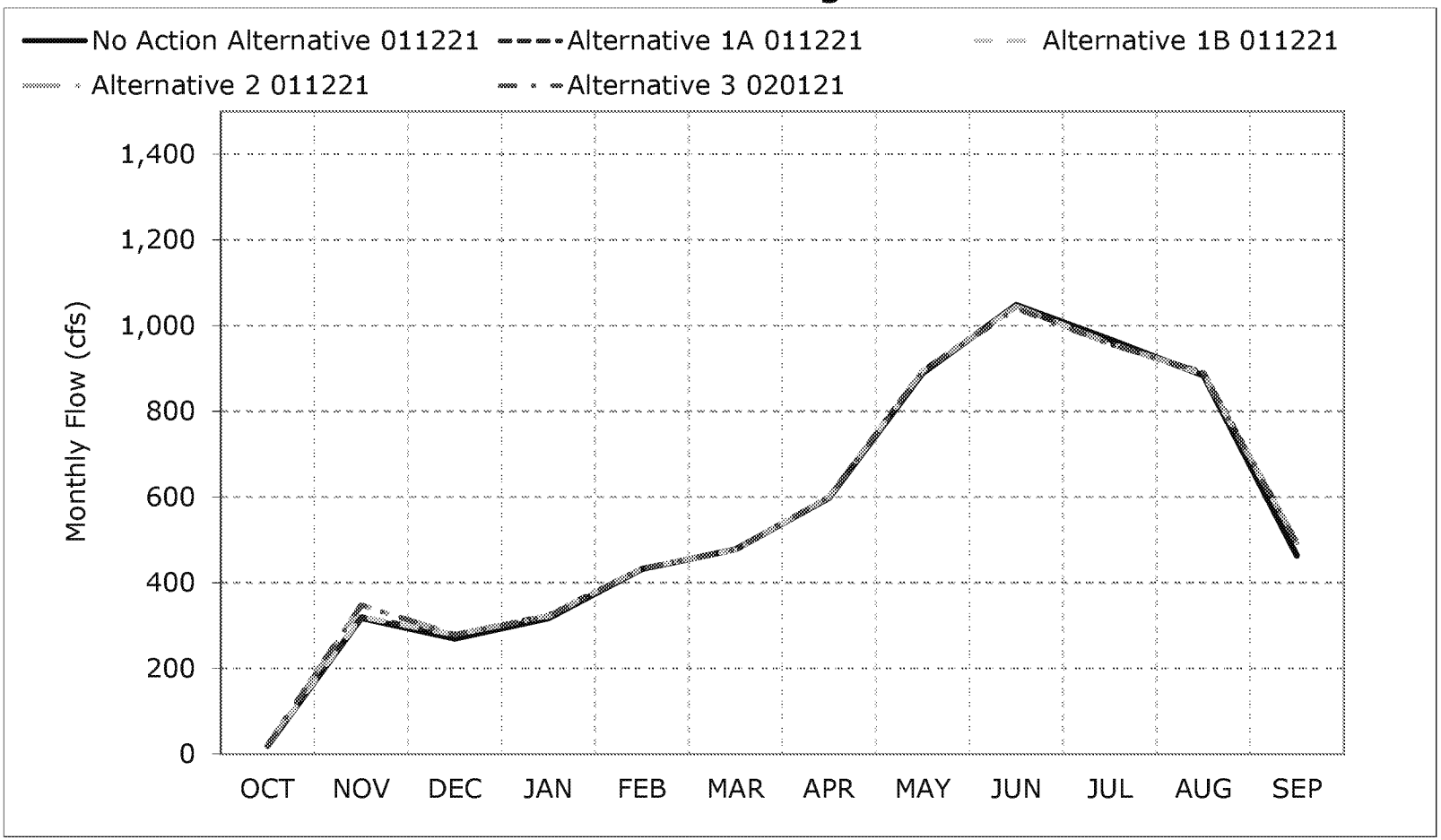
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-15-3. Colusa Basin Drain above Dunnigan Pipeline, Above Normal Year Average Flow



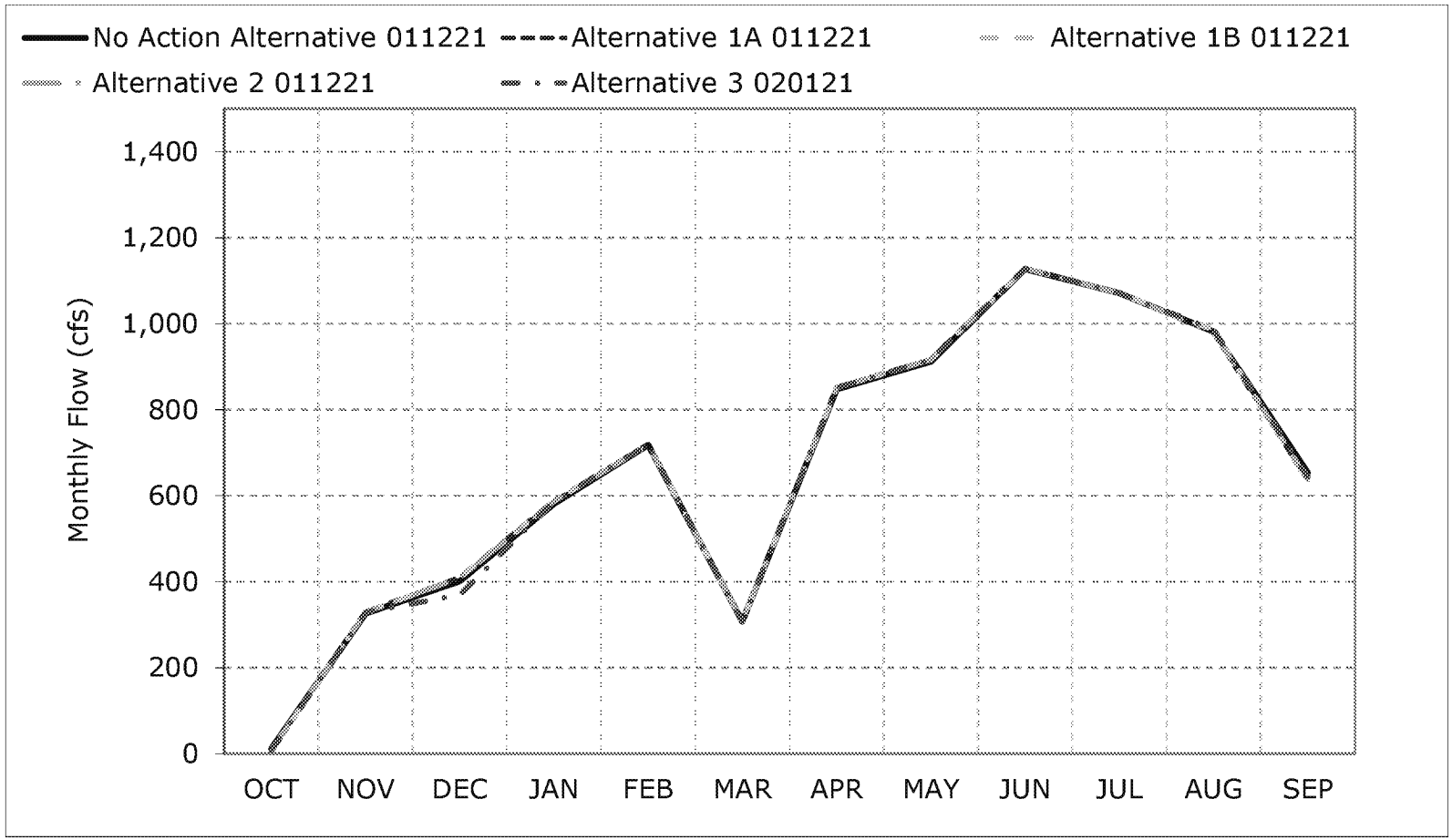
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-15-4. Colusa Basin Drain above Dunnigan Pipeline, Below Normal Year Average Flow



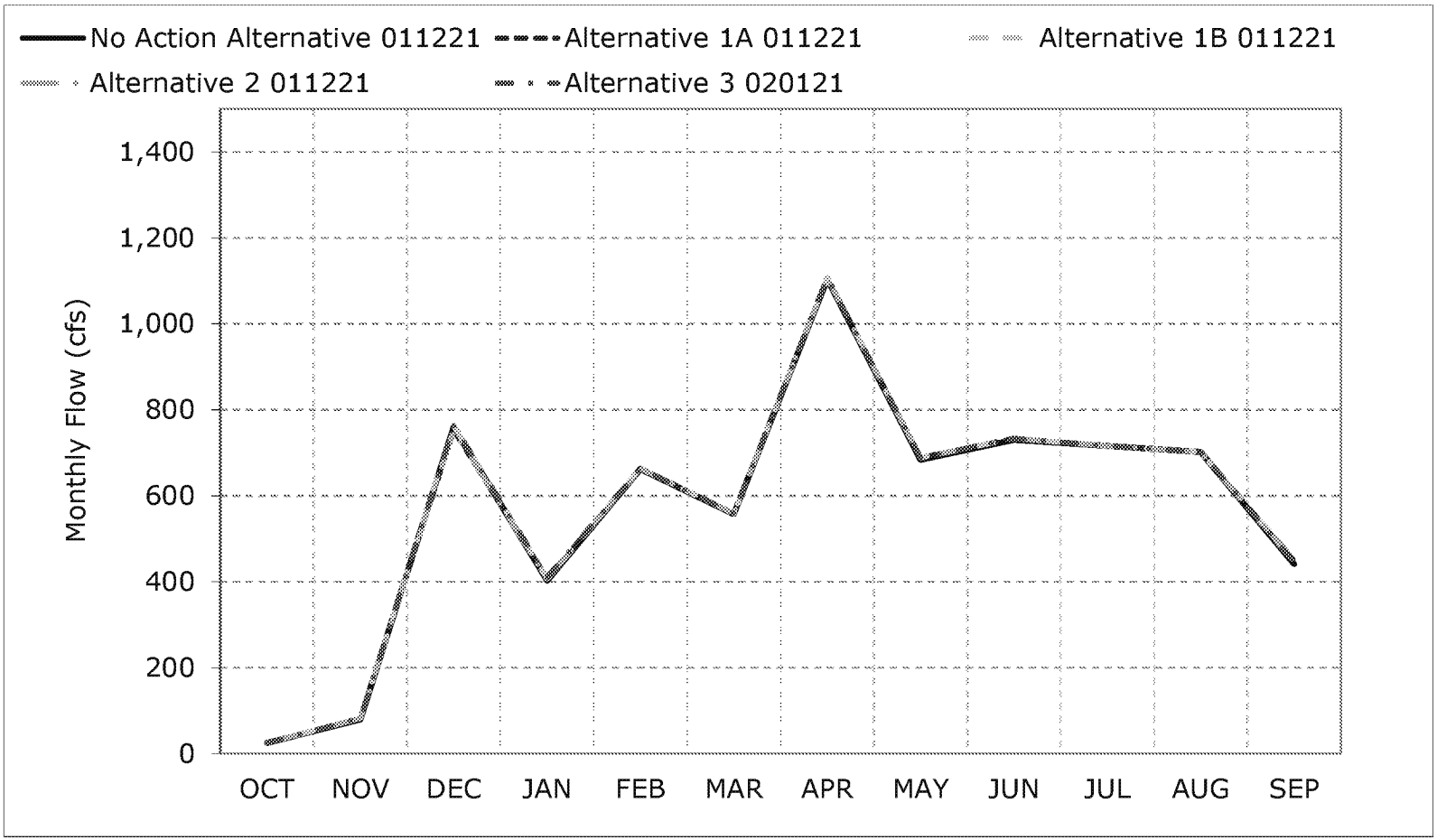
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-15-5. Colusa Basin Drain above Dunnigan Pipeline, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-15-6. Colusa Basin Drain above Dunnigan Pipeline, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-15-7. Colusa Basin Drain above Dunnigan Pipeline, October

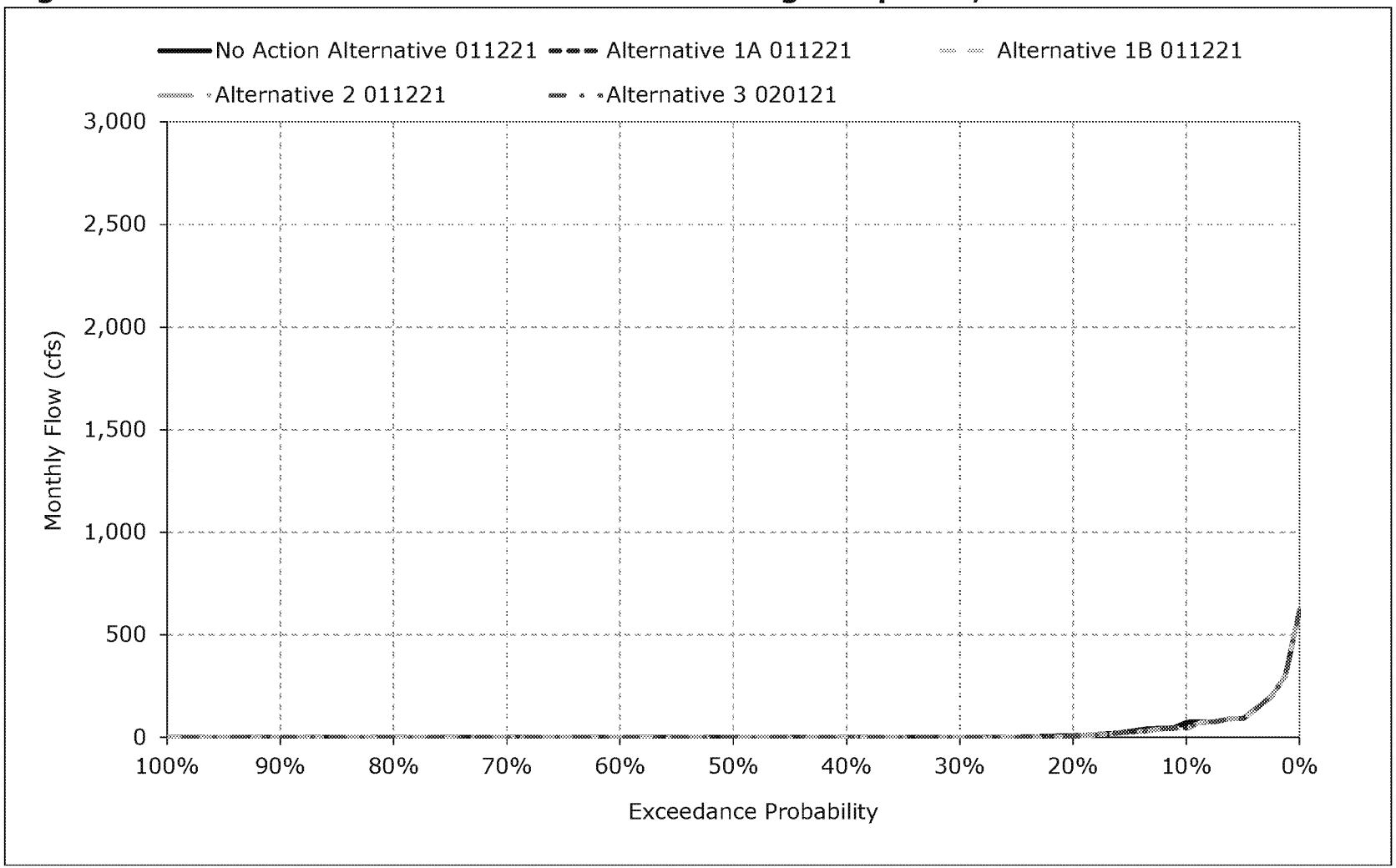


Figure 5B2-15-8. Colusa Basin Drain above Dunnigan Pipeline, November

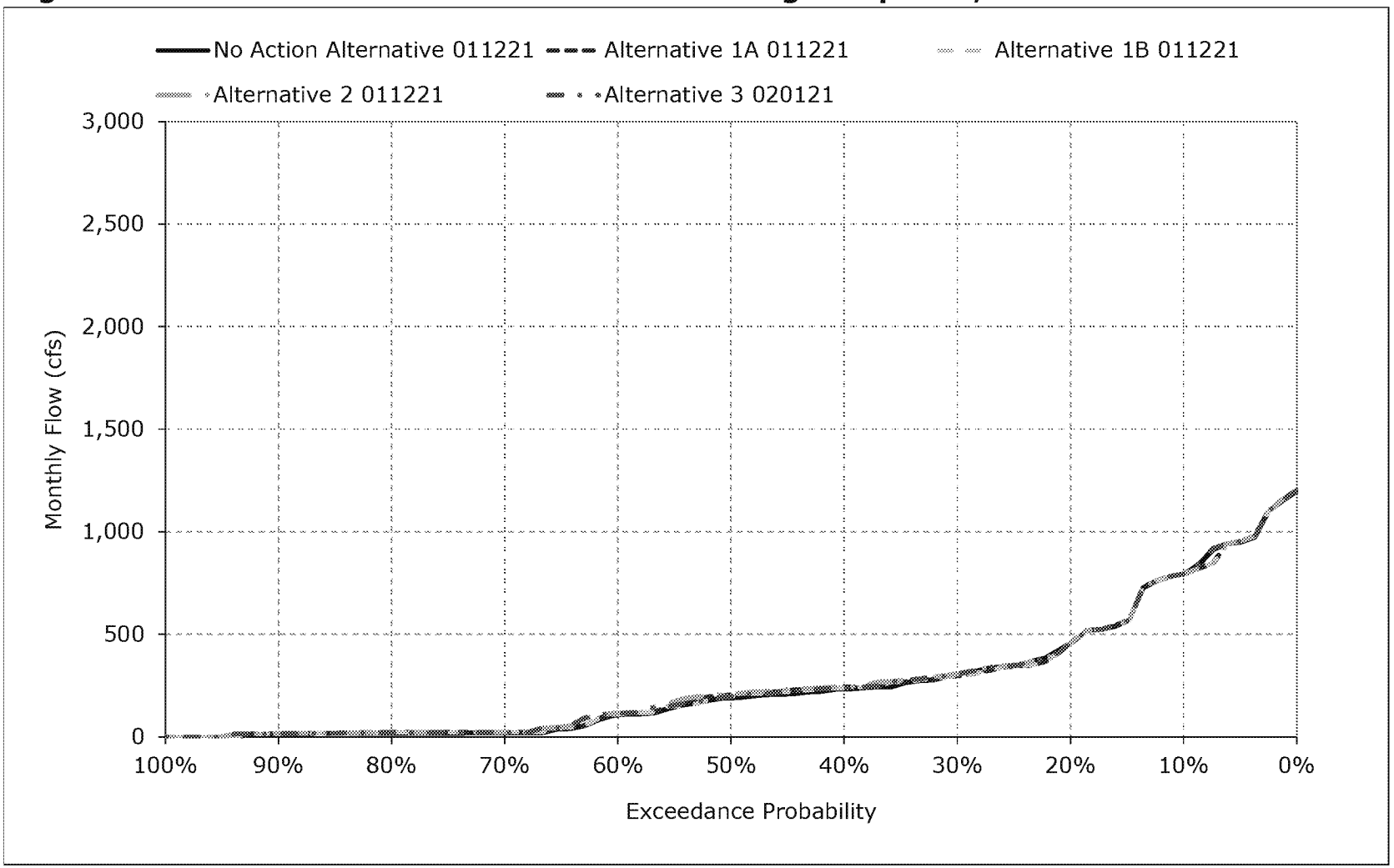


Figure 5B2-15-9. Colusa Basin Drain above Dunnigan Pipeline, December

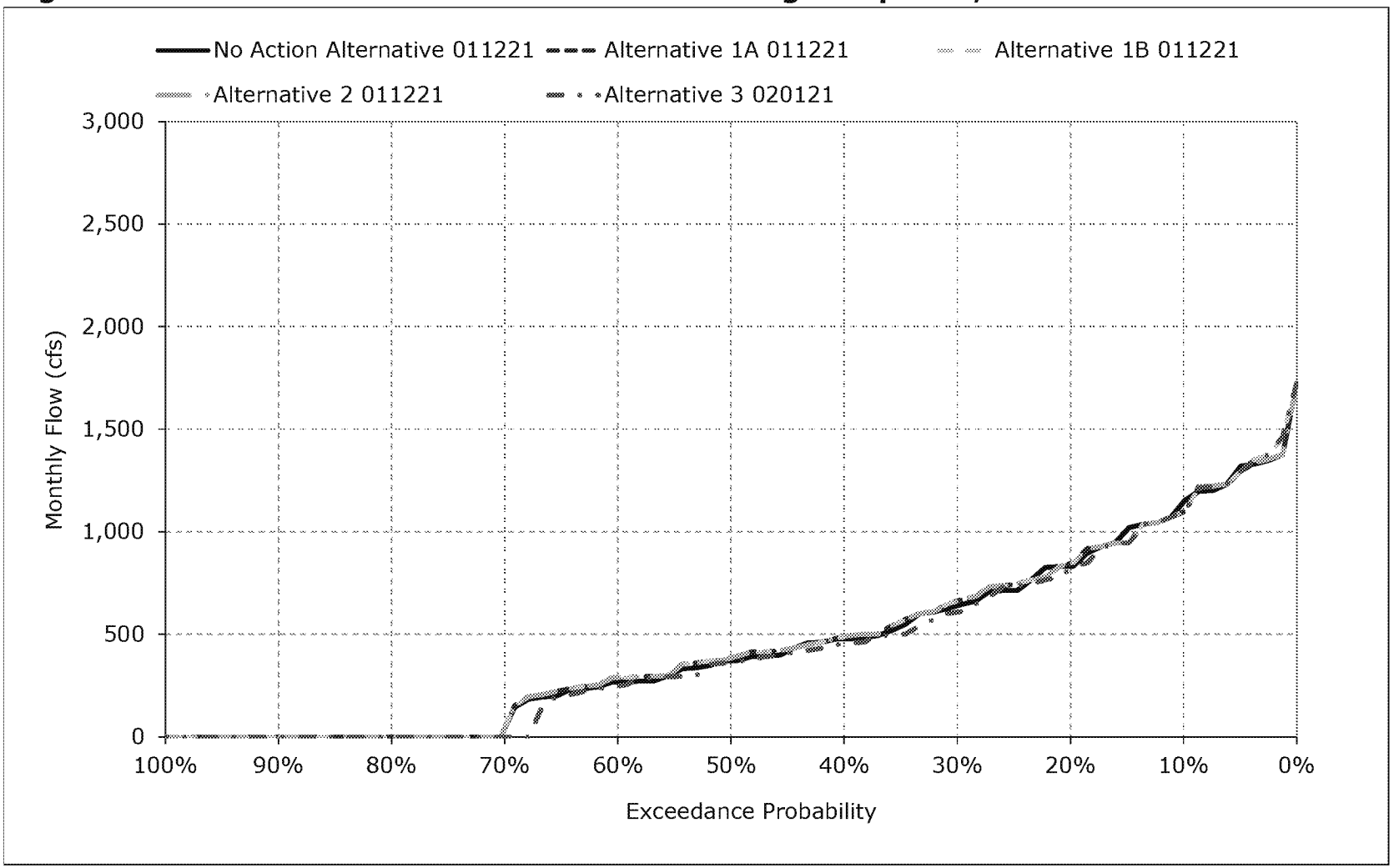


Figure 5B2-15-10. Colusa Basin Drain above Dunnigan Pipeline, January

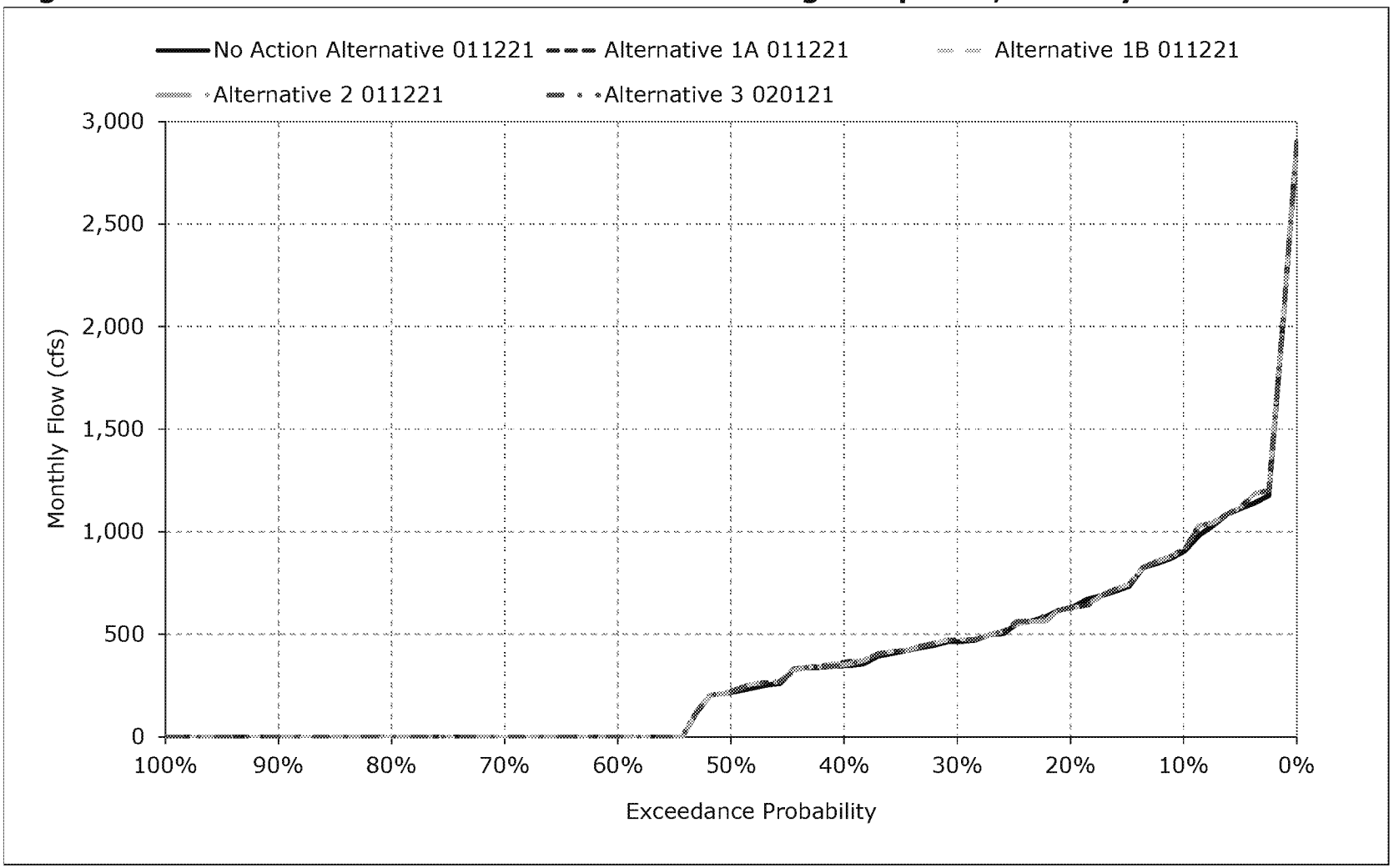


Figure 5B2-15-11. Colusa Basin Drain above Dunnigan Pipeline, February

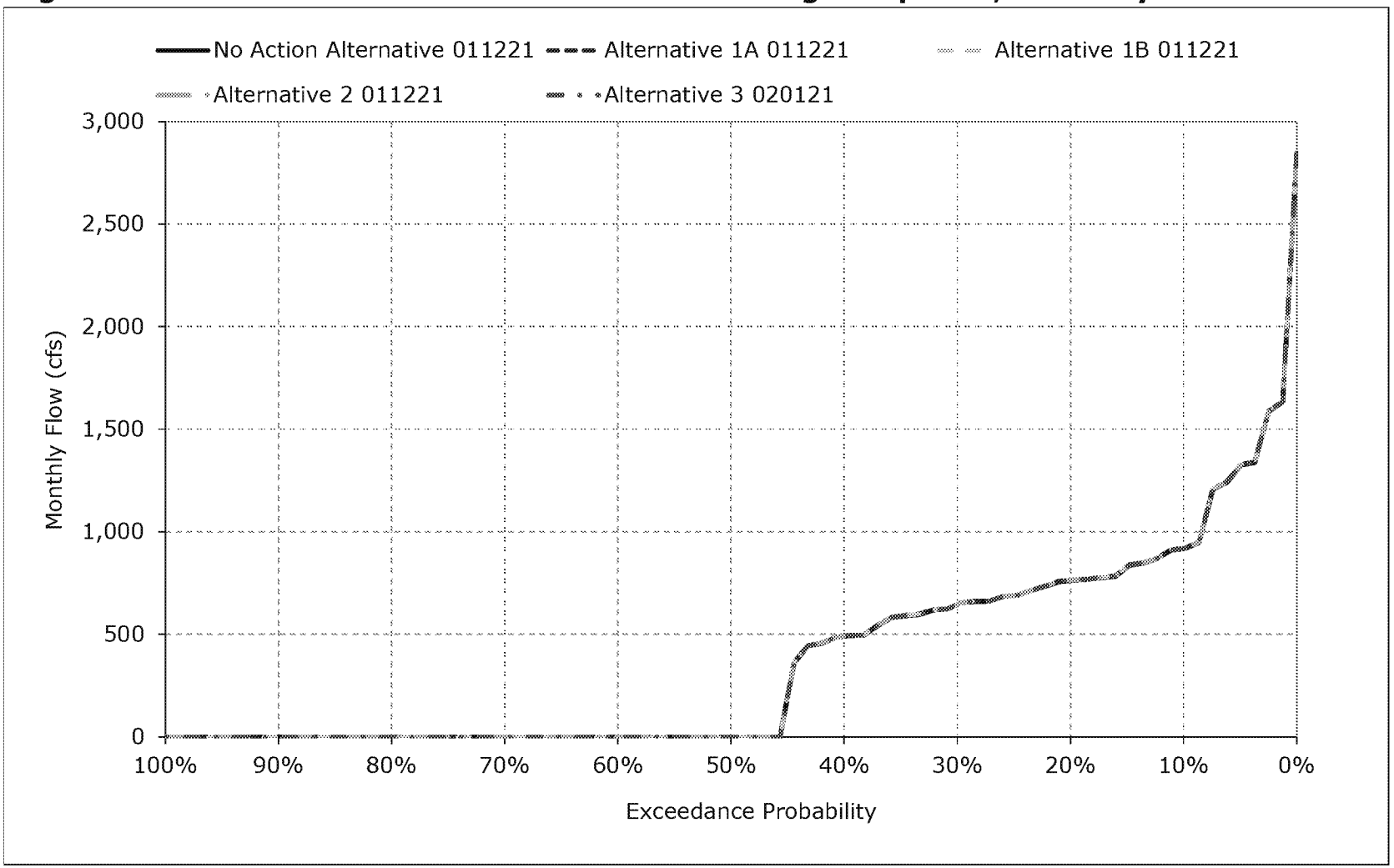


Figure 5B2-15-12. Colusa Basin Drain above Dunnigan Pipeline, March

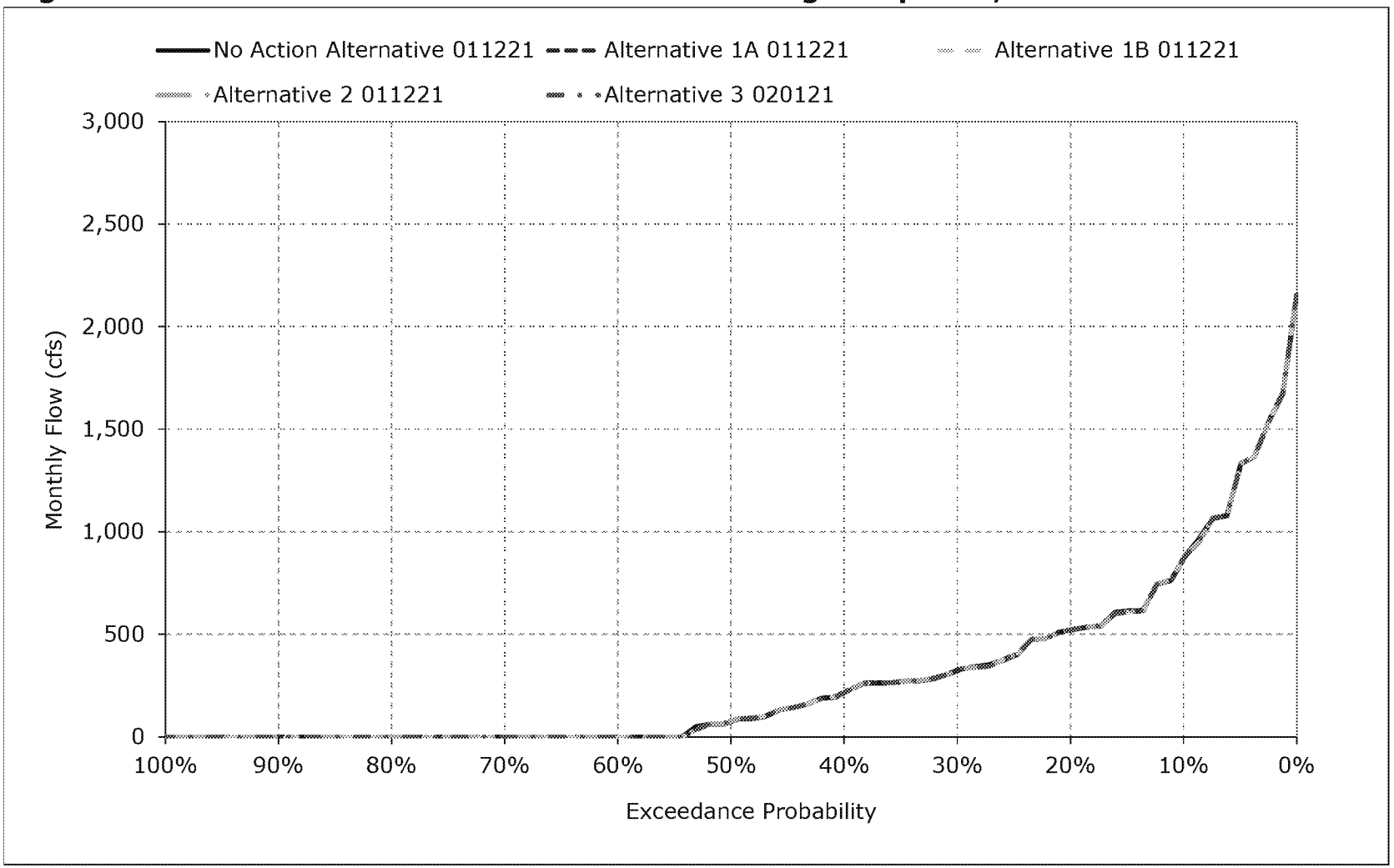


Figure 5B2-15-13. Colusa Basin Drain above Dunnigan Pipeline, April

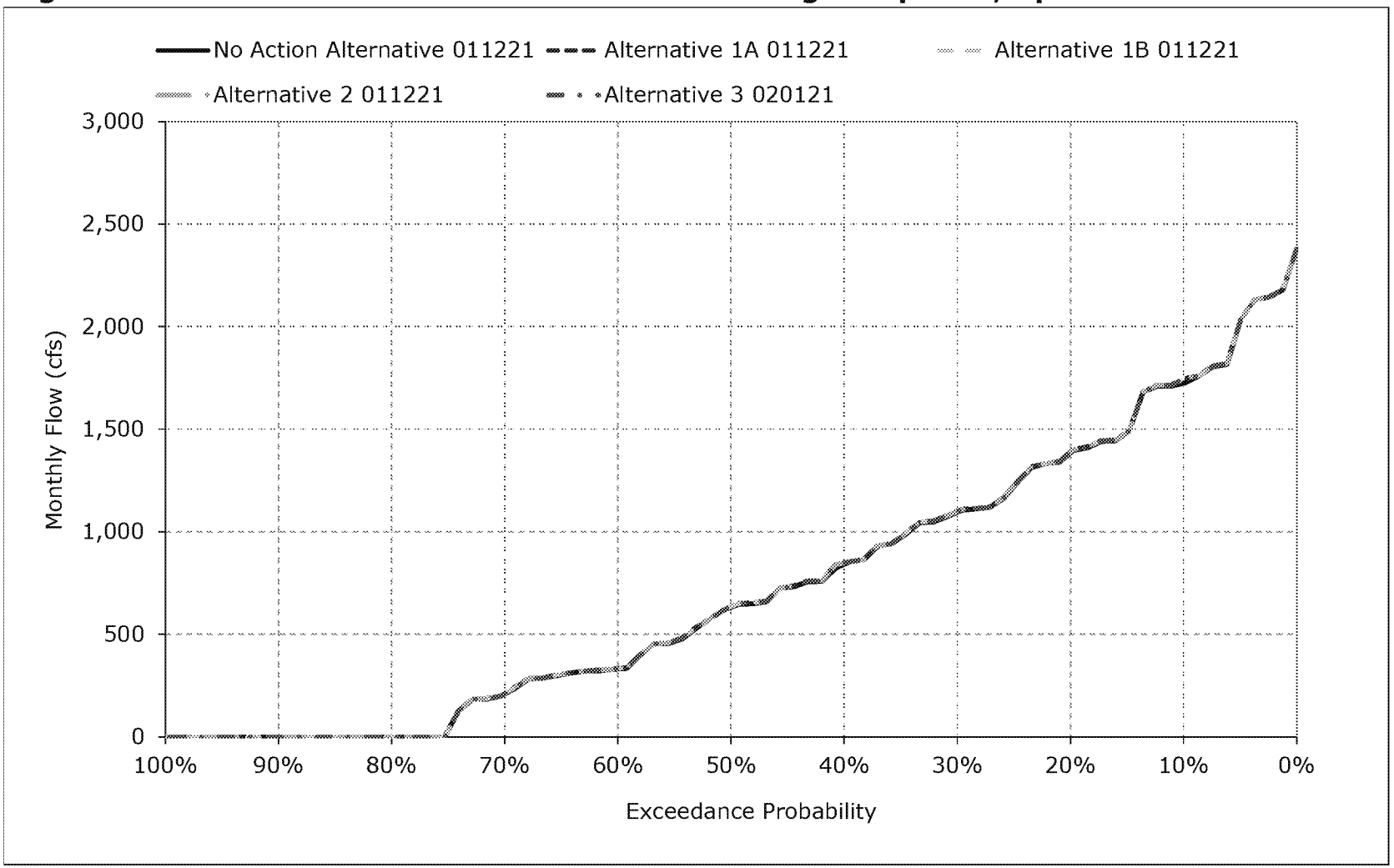


Figure 5B2-15-14. Colusa Basin Drain above Dunnigan Pipeline, May

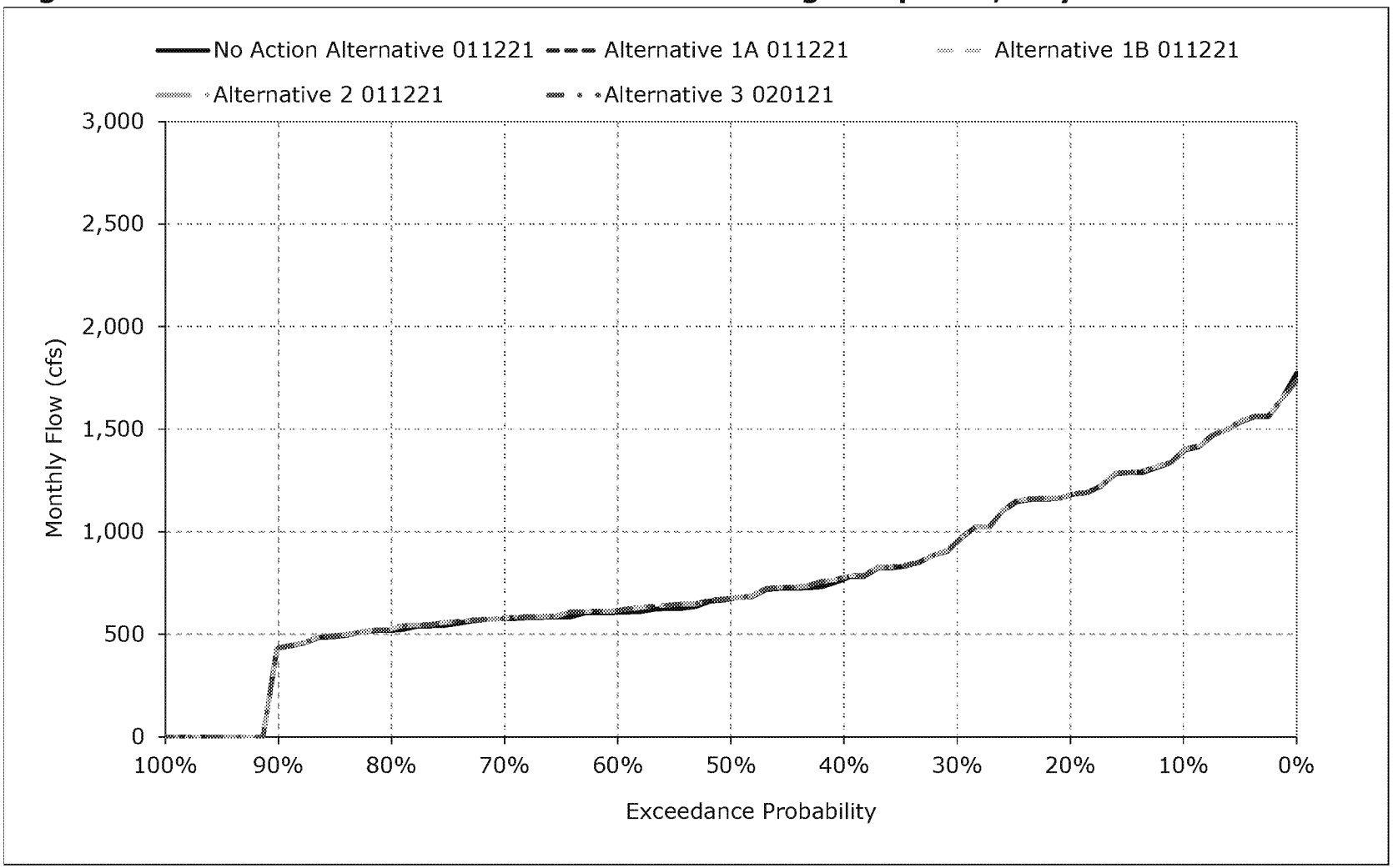


Figure 5B2-15-15. Colusa Basin Drain above Dunnigan Pipeline, June

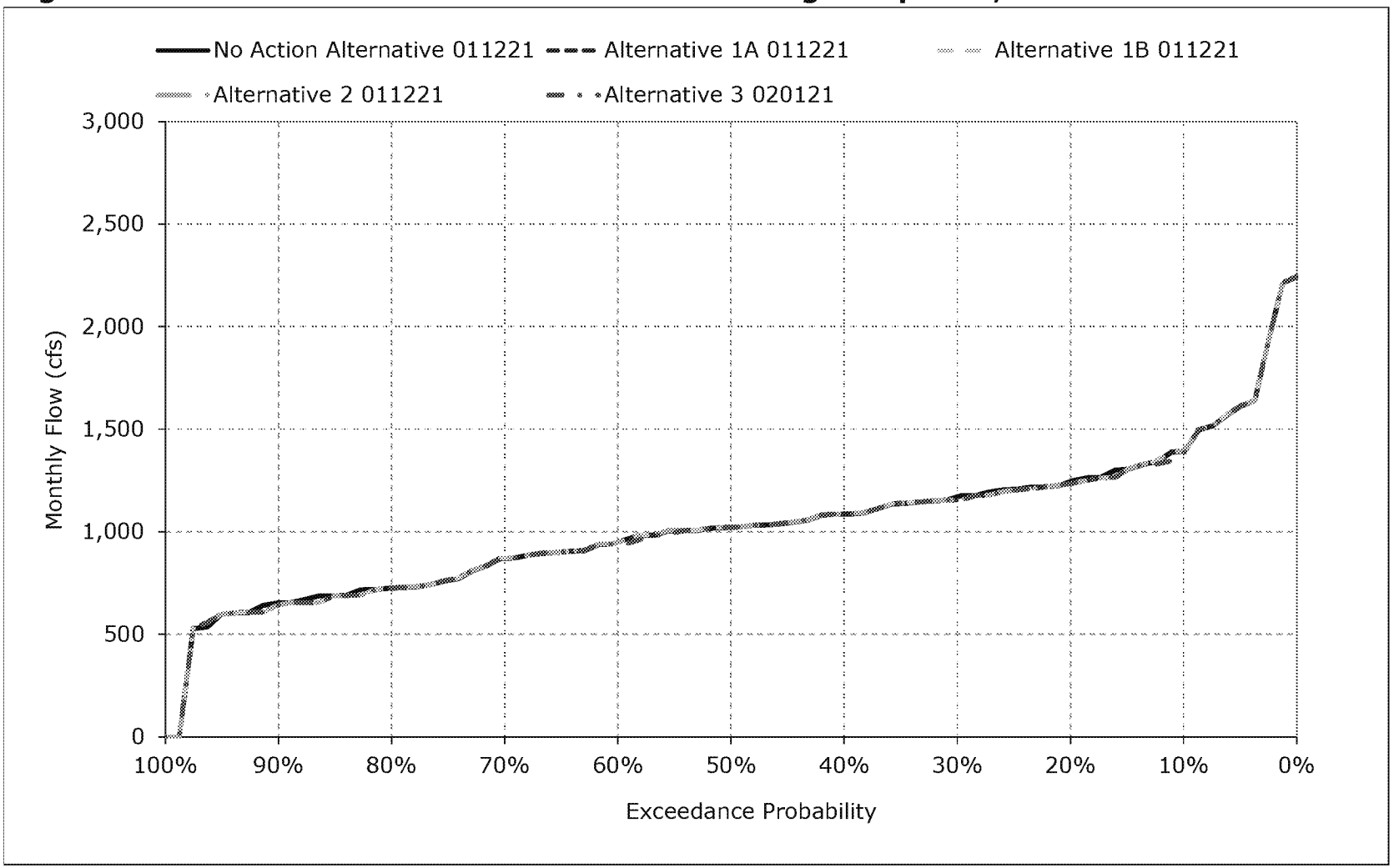


Figure 5B2-15-16. Colusa Basin Drain above Dunnigan Pipeline, July

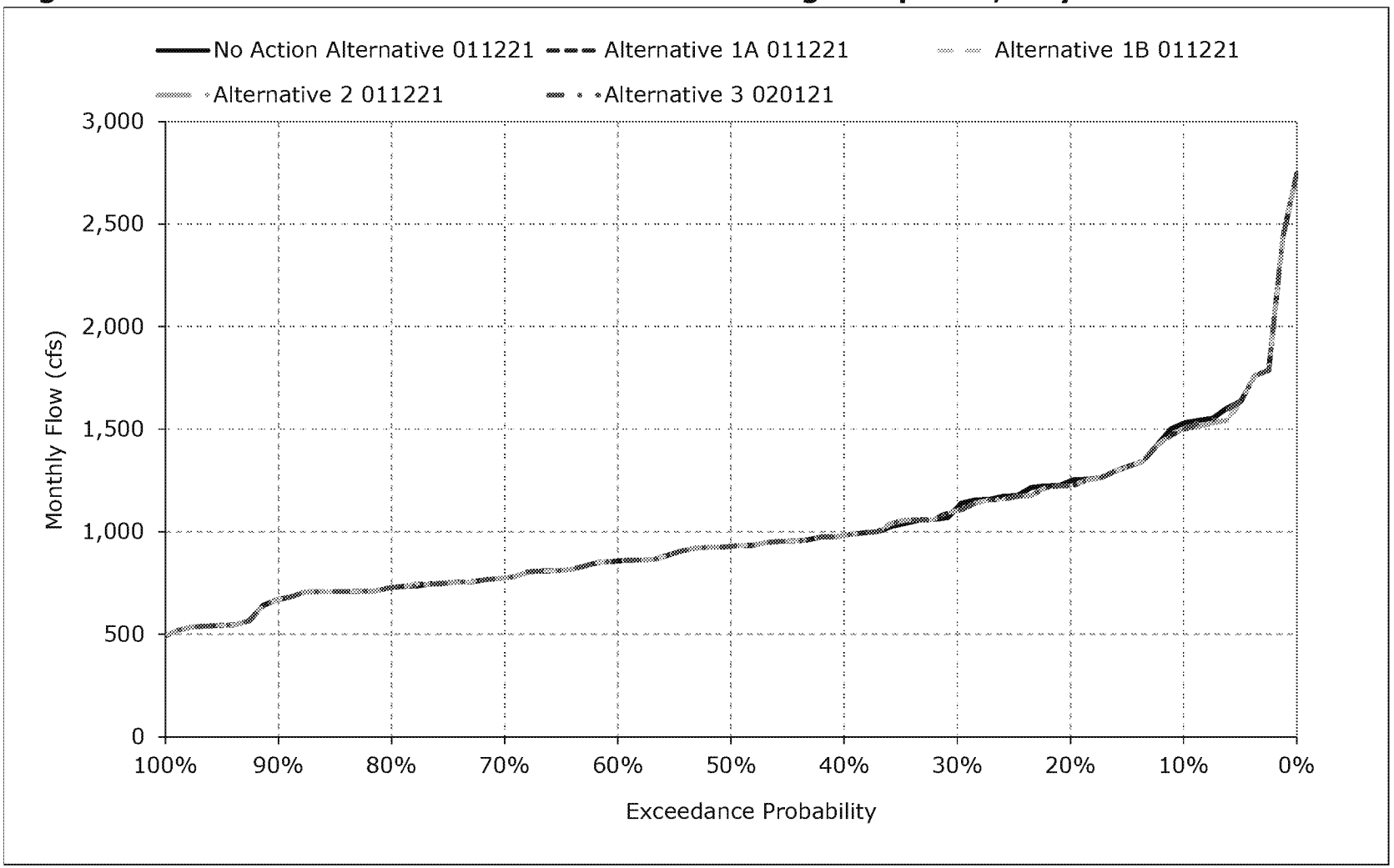


Figure 5B2-15-17. Colusa Basin Drain above Dunnigan Pipeline, August

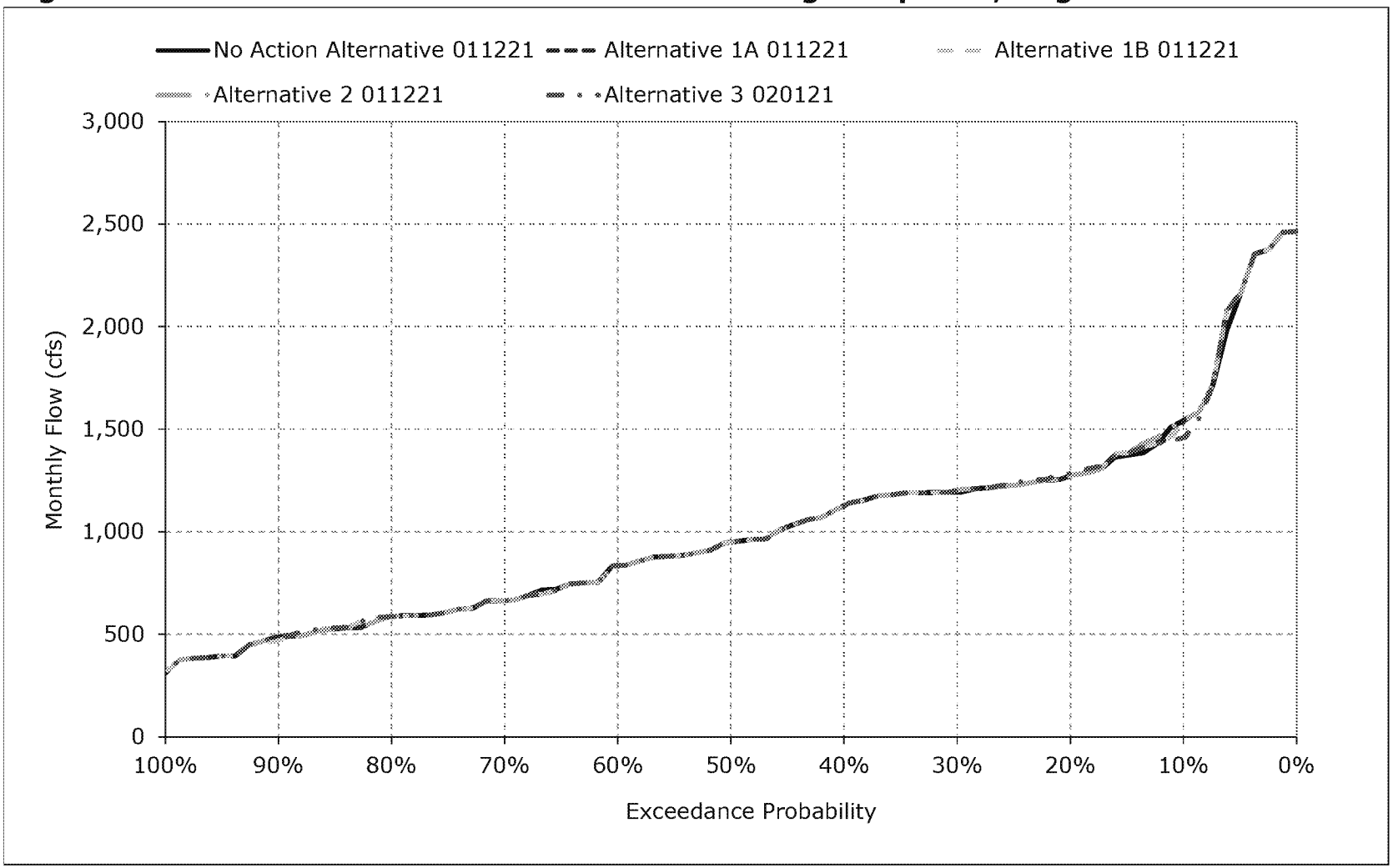


Figure 5B2-15-18. Colusa Basin Drain above Dunnigan Pipeline, September

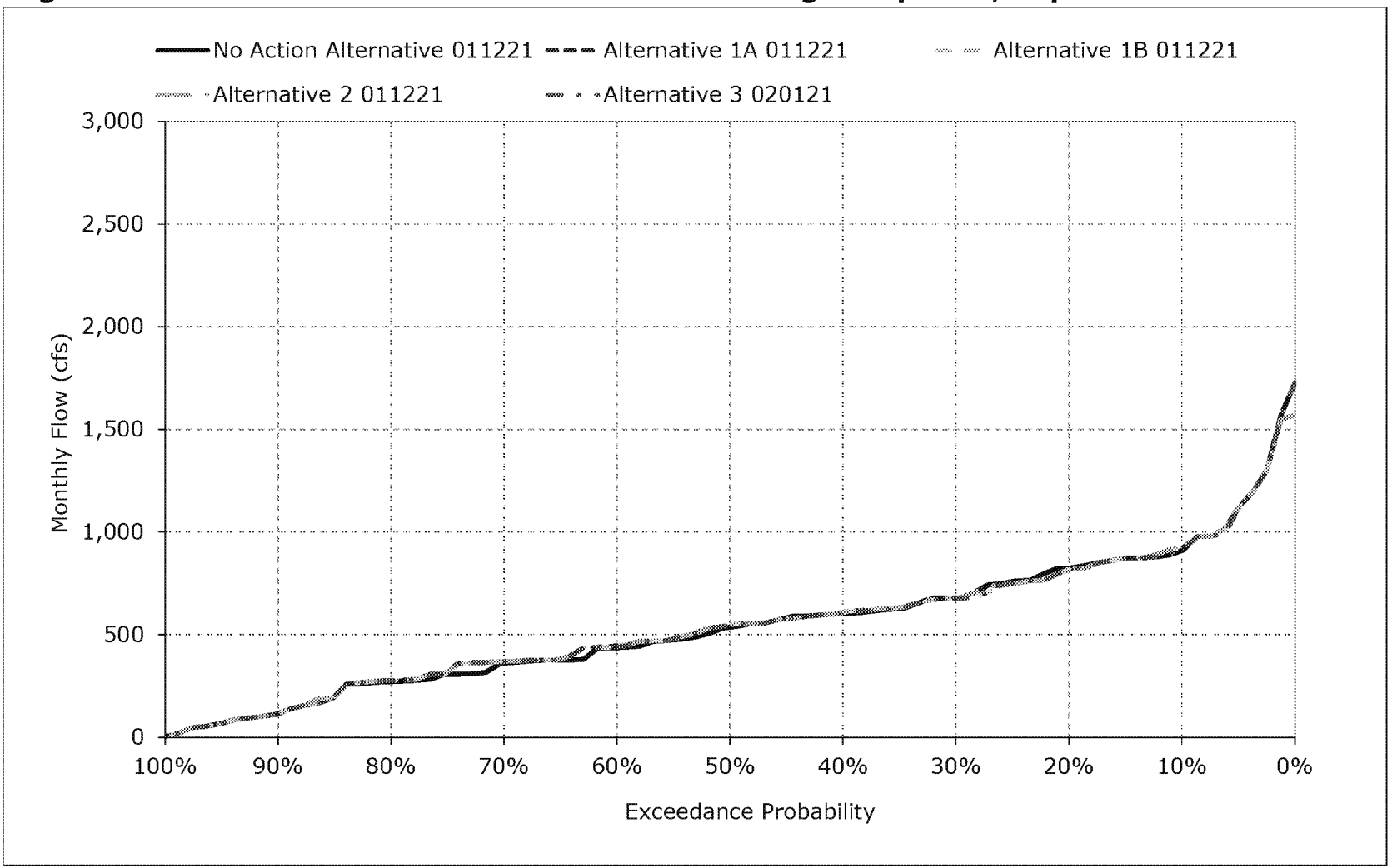


Table 5B2-16-1a. Colusa Basin Drain below Dunnigan Pipeline, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	72	793	1,146	904	918	868	1,724	1,393	1,393	1,529	1,542	909
20%	10	457	832	630	763	520	1,385	1,179	1,245	1,247	1,273	825
30%	0	307	640	465	645	323	1,096	952	1,170	1,119	1,193	680
40%	0	234	478	347	491	216	842	771	1,087	983	1,127	603
50%	0	191	373	217	0	75	633	674	1,021	929	948	537
60%	0	107	268	0	0	0	331	607	949	857	835	437
70%	0	20	43	0	0	0	211	577	871	775	664	361
80%	0	18	0	0	0	0	0	520	725	728	587	271
90%	0	14	0	0	0	0	0	433	653	670	487	115
Long Term												
Full Simulation Period[a]	23	271	457	350	384	289	737	777	1,028	1,013	1,010	550
Water Year Types[b,c]												
Wet (32%)	3	297	434	258	128	112	582	644	1,058	1,157	1,186	520
Above Normal (15%)	88	272	508	189	101	155	700	827	1,086	960	1,124	671
Below Normal (17%)	19	317	269	317	432	478	598	889	1,048	968	884	463
Dry (22%)	12	326	401	581	718	308	848	912	1,127	1,071	982	653
Critical (15%)	25	79	760	403	662	557	1,104	684	730	716	702	441

Table 5B2-16-1b. Colusa Basin Drain below Dunnigan Pipeline, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	591	1,065	1,098	914	918	870	1,759	1,519	2,088	2,108	2,074	1,380
20%	135	934	845	629	765	521	1,431	1,314	1,713	1,850	1,724	1,159
30%	61	537	718	474	645	325	1,116	1,164	1,515	1,710	1,509	979
40%	17	343	489	364	492	217	861	834	1,293	1,547	1,381	858
50%	0	273	385	222	0	77	652	729	1,167	1,359	1,234	643
60%	0	205	290	0	0	0	384	644	1,048	1,117	1,161	586
70%	0	24	106	0	0	0	212	596	990	991	964	493
80%	0	21	0	0	0	0	0	559	876	894	818	362
90%	0	15	0	0	0	0	0	437	662	756	592	140
Long Term												
Full Simulation Period[a]	136	403	474	354	384	289	767	869	1,297	1,400	1,287	771
Water Year Types[b,c]												
Wet (32%)	3	313	457	261	128	113	583	651	1,055	1,153	1,186	519
Above Normal (15%)	88	274	511	189	101	156	701	823	1,082	964	1,124	672
Below Normal (17%)	89	500	284	323	433	477	600	894	1,158	1,468	1,370	666
Dry (22%)	333	693	433	587	719	308	909	1,028	1,922	2,042	1,590	1,210
Critical (15%)	229	181	756	407	664	559	1,215	1,120	1,262	1,331	1,118	877

Table 5B2-16-1c. Colusa Basin Drain below Dunnigan Pipeline, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	519	272	-48	10	0	2	35	126	695	579	532	470
20%	125	477	13	-2	2	1	46	134	468	603	451	334
30%	61	231	78	9	0	1	19	212	345	592	316	299
40%	17	110	11	17	1	1	18	63	206	565	254	255
50%	0	83	12	5	0	2	19	55	146	430	285	107
60%	0	97	22	0	0	0	52	37	99	260	326	149
70%	0	4	63	0	0	0	1	19	120	216	299	132
80%	0	3	0	0	0	0	0	39	150	166	231	91
90%	0	1	0	0	0	0	0	4	10	85	105	24
Long Term												
Full Simulation Period[a]	112	132	17	4	1	0	31	92	269	388	277	220
Water Year Types[b,c]												
Wet (32%)	0	17	23	3	0	1	1	7	-4	-4	0	-1
Above Normal (15%)	0	2	3	0	0	0	1	-4	-4	3	0	0
Below Normal (17%)	70	183	15	7	1	-1	2	5	110	501	486	204
Dry (22%)	321	367	32	6	1	0	61	116	795	970	608	557
Critical (15%)	204	102	-3	4	2	1	111	436	532	615	416	435

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-16-2a. Colusa Basin Drain below Dunnigan Pipeline, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	72	793	1,146	904	918	868	1,724	1,393	1,393	1,529	1,542	909
20%	10	457	832	630	763	520	1,385	1,179	1,245	1,247	1,273	825
30%	0	307	640	465	645	323	1,096	952	1,170	1,119	1,193	680
40%	0	234	478	347	491	216	842	771	1,087	983	1,127	603
50%	0	191	373	217	0	75	633	674	1,021	929	948	537
60%	0	107	268	0	0	0	331	607	949	857	835	437
70%	0	20	43	0	0	0	211	577	871	775	664	361
80%	0	18	0	0	0	0	0	520	725	728	587	271
90%	0	14	0	0	0	0	0	433	653	670	487	115
Long Term												
Full Simulation Period[a]	23	271	457	350	384	289	737	777	1,028	1,013	1,010	550
Water Year Types[b,c]												
Wet (32%)	3	297	434	258	128	112	582	644	1,058	1,157	1,186	520
Above Normal (15%)	88	272	508	189	101	155	700	827	1,086	960	1,124	671
Below Normal (17%)	19	317	269	317	432	478	598	889	1,048	968	884	463
Dry (22%)	12	326	401	581	718	308	848	912	1,127	1,071	982	653
Critical (15%)	25	79	760	403	662	557	1,104	684	730	716	702	441

Table 5B2-16-2b. Colusa Basin Drain below Dunnigan Pipeline, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	547	1,042	1,098	914	918	870	1,815	1,539	2,109	2,059	2,033	1,407
20%	118	755	904	641	766	542	1,443	1,331	1,808	1,850	1,724	1,113
30%	43	537	743	492	662	325	1,180	1,164	1,617	1,708	1,542	913
40%	3	418	590	364	492	217	958	846	1,376	1,530	1,370	835
50%	0	317	424	222	0	90	670	729	1,224	1,360	1,215	626
60%	0	236	316	0	0	0	453	644	1,143	1,135	1,154	562
70%	0	65	211	0	0	0	255	593	1,026	988	964	451
80%	0	21	0	0	0	0	0	559	912	857	835	335
90%	0	15	0	0	0	0	0	437	663	756	592	140
Long Term												
Full Simulation Period[a]	130	411	507	359	389	296	799	882	1,340	1,395	1,286	743
Water Year Types[b,c]												
Wet (32%)	3	390	544	261	131	117	583	651	1,054	1,153	1,187	519
Above Normal (15%)	91	267	511	189	101	156	701	823	1,323	961	1,124	672
Below Normal (17%)	65	501	291	338	438	477	608	894	1,246	1,452	1,359	603
Dry (22%)	374	624	440	587	734	323	1,035	1,095	1,893	2,027	1,580	1,172
Critical (15%)	152	179	774	421	664	572	1,230	1,105	1,254	1,337	1,136	821

Table 5B2-16-2c. Colusa Basin Drain below Dunnigan Pipeline, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	475	249	-48	10	0	2	91	146	716	530	491	498
20%	108	298	73	11	4	22	58	151	563	603	451	288
30%	43	231	103	27	17	1	84	212	447	590	348	233
40%	3	184	112	17	1	1	115	76	289	547	243	232
50%	0	126	51	5	0	15	38	55	203	430	267	90
60%	0	129	48	0	0	0	121	37	194	277	319	126
70%	0	45	168	0	0	0	44	16	155	213	299	90
80%	0	3	0	0	0	0	0	39	187	130	248	65
90%	0	1	0	0	0	0	0	4	10	85	105	24
Long Term												
Full Simulation Period[a]	106	140	50	9	6	7	62	104	312	382	276	193
Water Year Types[b,c]												
Wet (32%)	0	93	110	3	3	5	1	7	-4	-5	1	-1
Above Normal (15%)	3	-6	3	0	0	0	1	-4	237	1	0	0
Below Normal (17%)	46	184	21	22	6	-1	11	5	198	485	475	141
Dry (22%)	362	298	40	6	16	15	187	183	766	956	598	519
Critical (15%)	127	99	15	19	2	15	126	421	523	621	435	379

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-16-3a. Colusa Basin Drain below Dunnigan Pipeline, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	72	793	1,146	904	918	868	1,724	1,393	1,393	1,529	1,542	909
20%	10	457	832	630	763	520	1,385	1,179	1,245	1,247	1,273	825
30%	0	307	640	465	645	323	1,096	952	1,170	1,119	1,193	680
40%	0	234	478	347	491	216	842	771	1,087	983	1,127	603
50%	0	191	373	217	0	75	633	674	1,021	929	948	537
60%	0	107	268	0	0	0	331	607	949	857	835	437
70%	0	20	43	0	0	0	211	577	871	775	664	361
80%	0	18	0	0	0	0	0	520	725	728	587	271
90%	0	14	0	0	0	0	0	433	653	670	487	115
Long Term												
Full Simulation Period[a]	23	271	457	350	384	289	737	777	1,028	1,013	1,010	550
Water Year Types[b,c]												
Wet (32%)	3	297	434	258	128	112	582	644	1,058	1,157	1,186	520
Above Normal (15%)	88	272	508	189	101	155	700	827	1,086	960	1,124	671
Below Normal (17%)	19	317	269	317	432	478	598	889	1,048	968	884	463
Dry (22%)	12	326	401	581	718	308	848	912	1,127	1,071	982	653
Critical (15%)	25	79	760	403	662	557	1,104	684	730	716	702	441

Table 5B2-16-3b. Colusa Basin Drain below Dunnigan Pipeline, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	46	793	1,099	914	918	870	1,743	1,397	1,395	1,499	1,542	923
20%	8	458	845	629	765	521	1,388	1,183	1,235	1,225	1,273	819
30%	0	308	663	474	645	325	1,101	953	1,155	1,103	1,202	680
40%	0	244	489	352	492	217	849	778	1,088	983	1,127	609
50%	0	211	385	222	0	77	635	676	1,022	929	948	547
60%	0	116	289	0	0	0	333	617	949	857	835	446
70%	0	23	45	0	0	0	212	579	872	775	664	370
80%	0	21	0	0	0	0	0	526	727	728	587	278
90%	0	16	0	0	0	0	0	434	642	670	487	115
Long Term												
Full Simulation Period[a]	23	278	463	354	384	289	739	781	1,026	1,009	1,012	553
Water Year Types[b,c]												
Wet (32%)	3	296	442	261	128	112	583	651	1,055	1,153	1,190	519
Above Normal (15%)	88	274	509	189	101	156	701	823	1,082	960	1,124	672
Below Normal (17%)	20	348	279	322	433	477	600	894	1,045	957	890	494
Dry (22%)	8	329	409	587	719	308	852	916	1,129	1,071	981	638
Critical (15%)	25	83	754	407	664	559	1,107	688	733	716	702	450

Table 5B2-16-3c. Colusa Basin Drain below Dunnigan Pipeline, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-26	0	-47	10	0	2	19	4	2	-30	0	13
20%	-2	1	13	-2	2	1	3	3	-10	-22	0	-6
30%	0	1	23	9	0	1	4	1	-15	-15	9	0
40%	0	10	11	5	1	1	6	7	1	0	0	6
50%	0	20	13	5	0	2	2	2	1	0	0	10
60%	0	8	21	0	0	0	1	10	0	0	0	9
70%	0	3	2	0	0	0	1	2	1	0	0	9
80%	0	3	0	0	0	0	0	6	2	0	0	7
90%	0	2	0	0	0	0	0	0	-10	0	0	0
Long Term												
Full Simulation Period[a]	-1	7	6	4	1	0	2	4	-2	-3	2	3
Water Year Types[b,c]												
Wet (32%)	0	0	9	3	0	0	1	7	-4	-4	4	-1
Above Normal (15%)	0	1	1	0	0	0	1	-4	-4	0	0	0
Below Normal (17%)	1	31	10	5	1	-1	2	5	-3	-11	7	31
Dry (22%)	-4	4	9	6	1	0	4	5	1	0	-1	-15
Critical (15%)	0	3	-6	4	2	1	3	4	3	0	0	9

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-16-4a. Colusa Basin Drain below Dunnigan Pipeline, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	72	793	1,146	904	918	868	1,724	1,393	1,393	1,529	1,542	909
20%	10	457	832	630	763	520	1,385	1,179	1,245	1,247	1,273	825
30%	0	307	640	465	645	323	1,096	952	1,170	1,119	1,193	680
40%	0	234	478	347	491	216	842	771	1,087	983	1,127	603
50%	0	191	373	217	0	75	633	674	1,021	929	948	537
60%	0	107	268	0	0	0	331	607	949	857	835	437
70%	0	20	43	0	0	0	211	577	871	775	664	361
80%	0	18	0	0	0	0	0	520	725	728	587	271
90%	0	14	0	0	0	0	0	433	653	670	487	115
Long Term												
Full Simulation Period[a]	23	271	457	350	384	289	737	777	1,028	1,013	1,010	550
Water Year Types[b,c]												
Wet (32%)	3	297	434	258	128	112	582	644	1,058	1,157	1,186	520
Above Normal (15%)	88	272	508	189	101	155	700	827	1,086	960	1,124	671
Below Normal (17%)	19	317	269	317	432	478	598	889	1,048	968	884	463
Dry (22%)	12	326	401	581	718	308	848	912	1,127	1,071	982	653
Critical (15%)	25	79	760	403	662	557	1,104	684	730	716	702	441

Table 5B2-16-4b. Colusa Basin Drain below Dunnigan Pipeline, Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	612	953	1,098	914	919	949	1,836	1,566	2,122	2,134	2,138	1,255
20%	87	713	845	633	776	541	1,443	1,334	1,789	1,862	1,743	1,033
30%	20	484	726	475	660	325	1,163	1,164	1,580	1,731	1,513	874
40%	0	343	498	352	492	250	911	983	1,341	1,583	1,315	812
50%	0	275	384	222	0	97	658	751	1,215	1,308	1,207	621
60%	0	210	297	0	0	0	453	649	1,149	1,135	1,088	546
70%	0	61	45	0	0	0	291	596	1,042	994	883	436
80%	0	21	0	0	0	0	0	557	940	879	719	335
90%	0	16	0	0	0	0	0	437	660	756	592	140
Long Term												
Full Simulation Period[a]	121	368	482	357	392	310	796	890	1,331	1,407	1,283	700
Water Year Types[b,c]												
Wet (32%)	3	377	544	261	132	117	583	651	1,052	1,156	1,186	519
Above Normal (15%)	183	267	434	189	101	156	701	823	1,395	968	1,312	722
Below Normal (17%)	83	450	290	321	452	477	608	894	1,327	1,563	1,308	582
Dry (22%)	291	491	381	586	719	345	1,007	1,147	1,785	2,008	1,517	1,087
Critical (15%)	105	166	774	429	685	636	1,255	1,084	1,197	1,309	1,081	626

Table 5B2-16-4c. Colusa Basin Drain below Dunnigan Pipeline, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

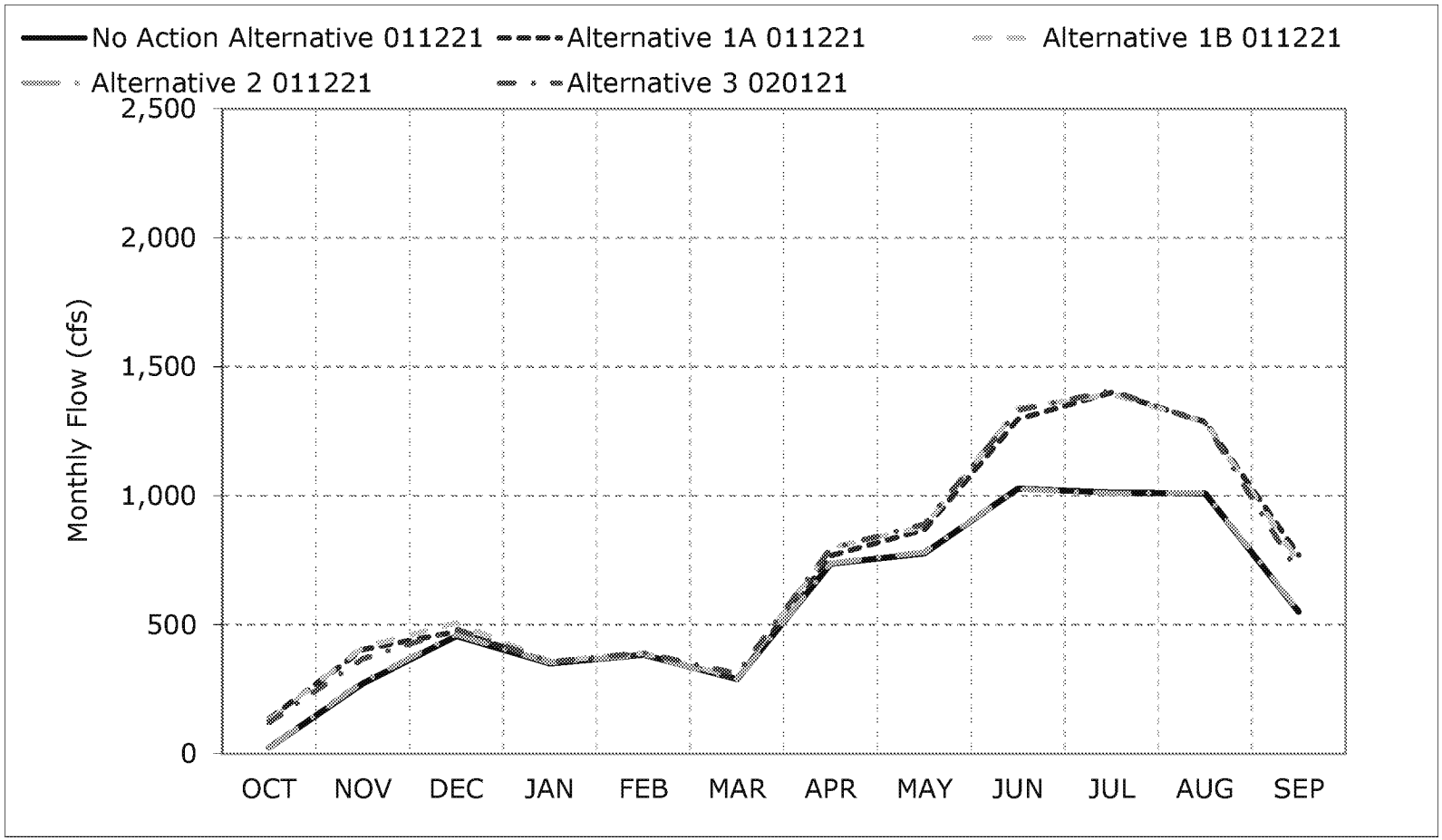
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	540	160	-48	10	1	82	112	173	729	606	596	345
20%	77	256	14	3	13	21	58	154	544	614	470	208
30%	20	177	86	9	14	1	66	212	410	613	319	194
40%	0	109	21	5	1	34	69	213	255	600	187	209
50%	0	84	12	5	0	22	25	77	194	378	259	84
60%	0	103	29	0	0	0	121	42	200	278	253	109
70%	0	41	2	0	0	0	80	19	171	218	218	75
80%	0	3	0	0	0	0	0	37	214	151	132	65
90%	0	2	0	0	0	0	0	4	8	85	104	24
Long Term												
Full Simulation Period[a]	98	96	25	7	8	21	59	113	303	395	273	150
Water Year Types[b,c]												
Wet (32%)	0	81	110	3	4	5	1	7	-6	-1	0	-1
Above Normal (15%)	95	-6	-74	0	0	0	1	-4	309	8	188	50
Below Normal (17%)	64	133	21	5	20	-1	11	5	279	595	424	119
Dry (22%)	279	166	-19	5	1	38	159	235	657	936	535	434
Critical (15%)	80	86	15	26	23	79	151	400	467	593	379	184

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

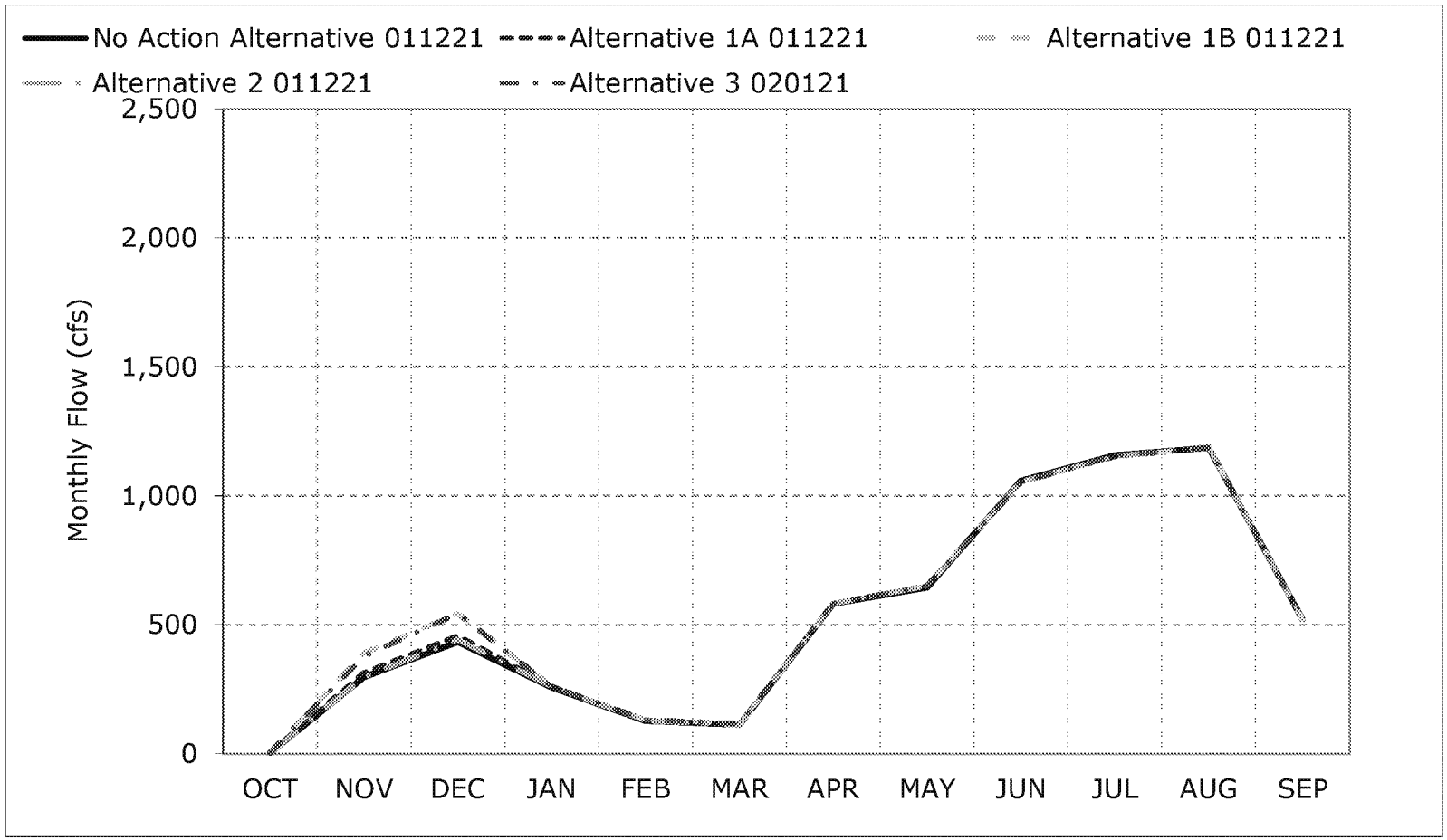
c These results are displayed with calendar year - year type sorting.

Figure 5B2-16-1. Colusa Basin Drain below Dunnigan Pipeline, Long-Term Average Flow



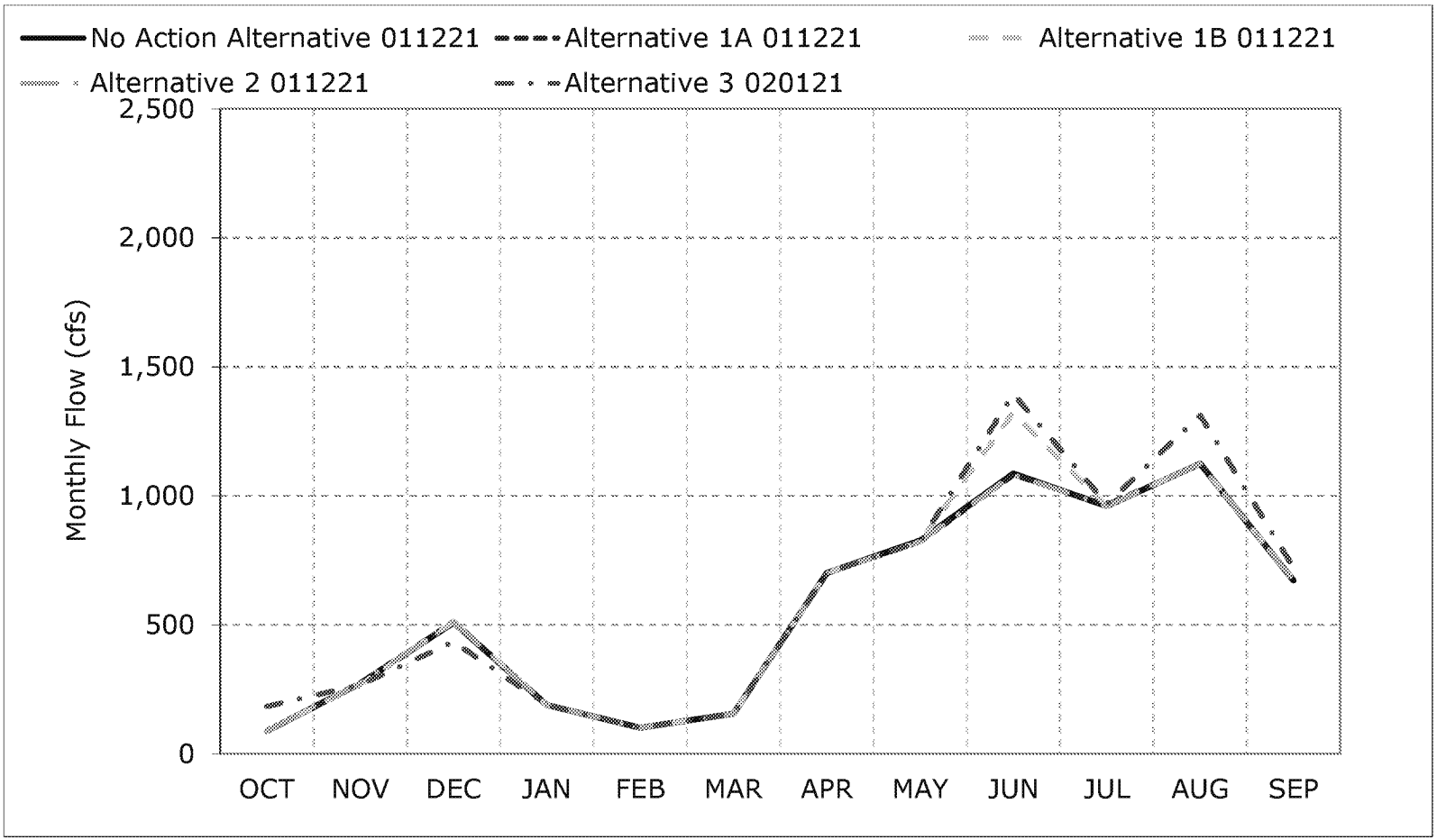
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-16-2. Colusa Basin Drain below Dunnigan Pipeline, Wet Year Average Flow



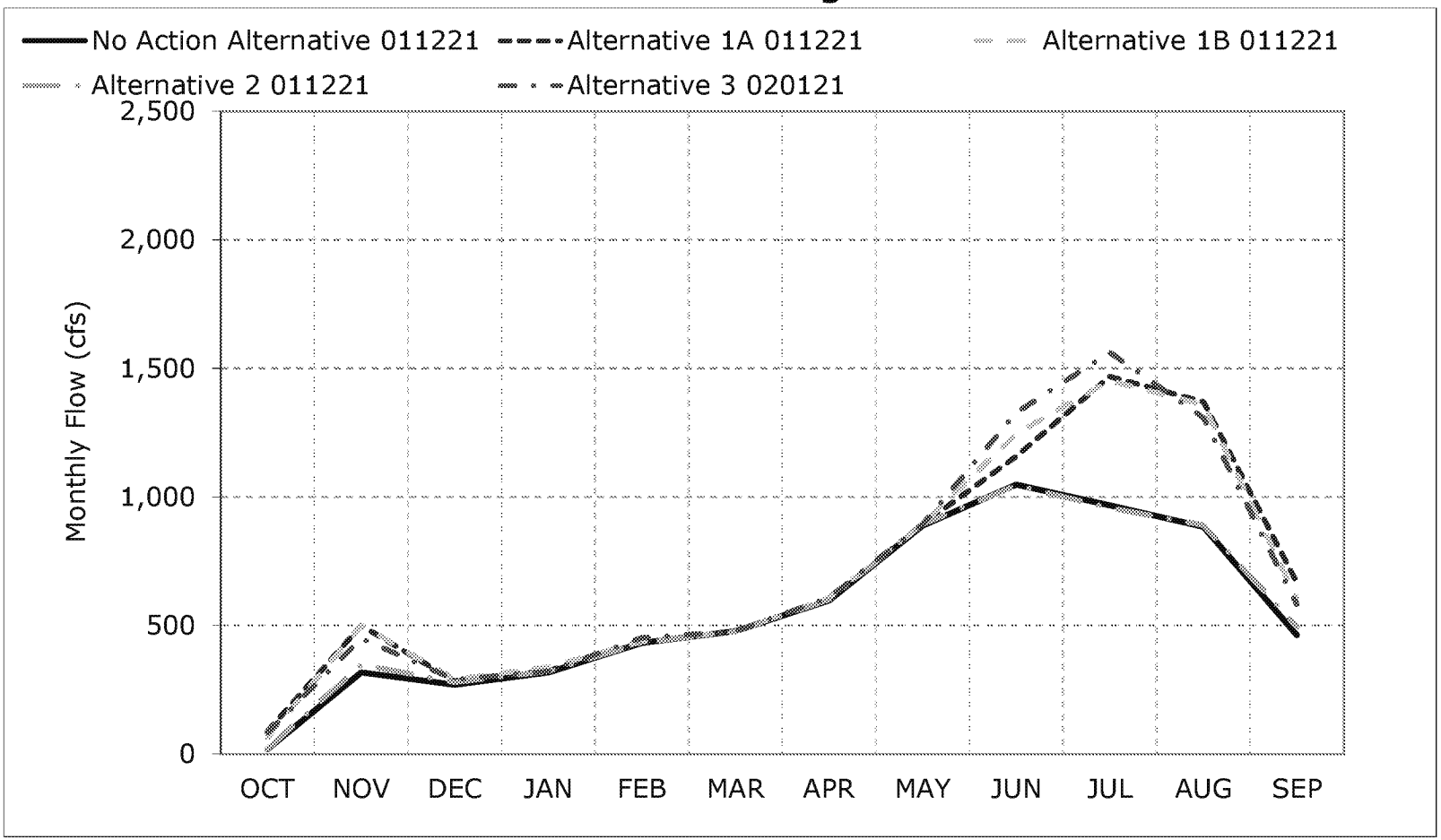
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-16-3. Colusa Basin Drain below Dunnigan Pipeline, Above Normal Year Average Flow



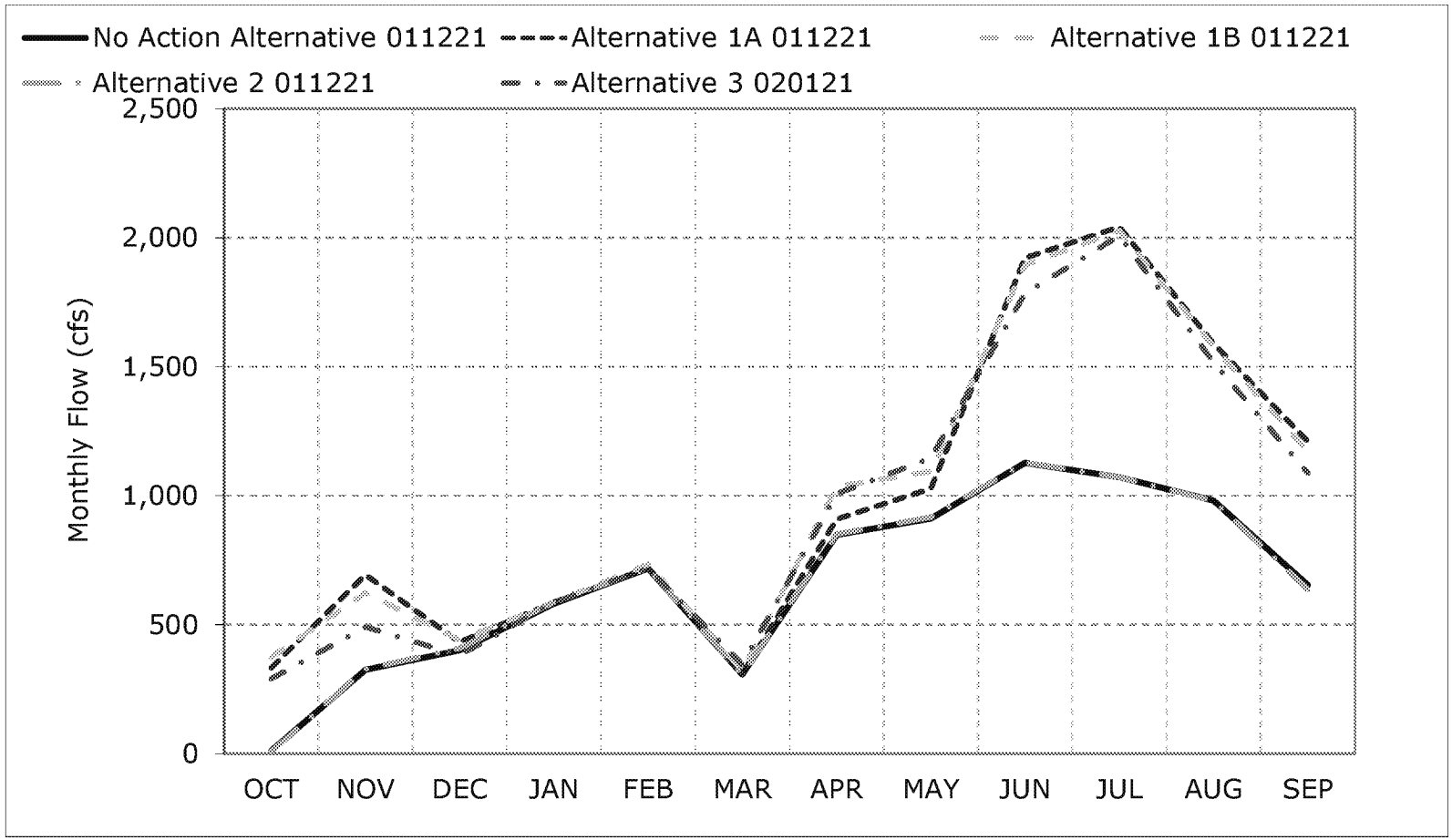
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-16-4. Colusa Basin Drain below Dunnigan Pipeline, Below Normal Year Average Flow



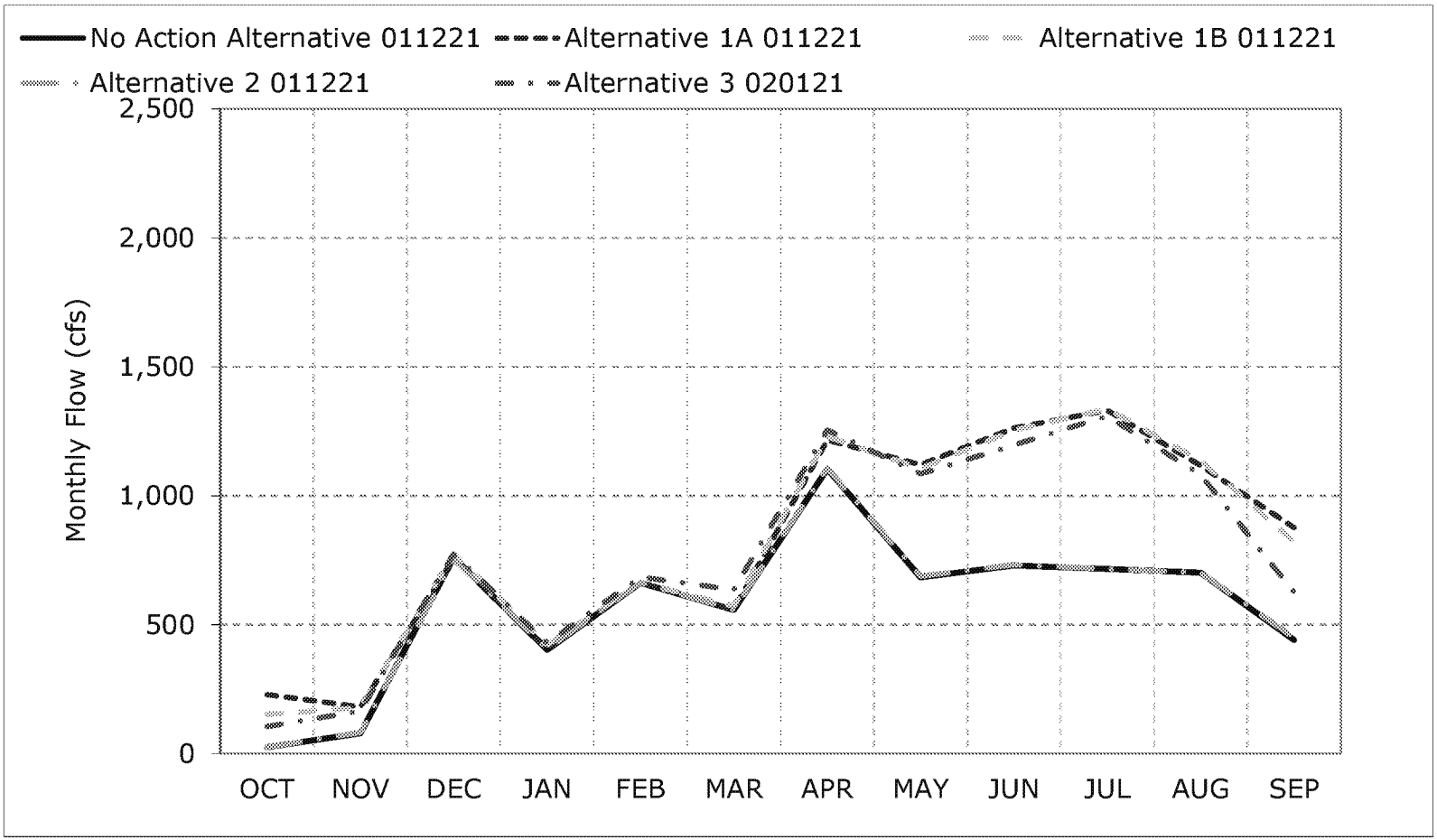
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-16-5. Colusa Basin Drain below Dunnigan Pipeline, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-16-6. Colusa Basin Drain below Dunnigan Pipeline, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-16-7. Colusa Basin Drain below Dunnigan Pipeline, October

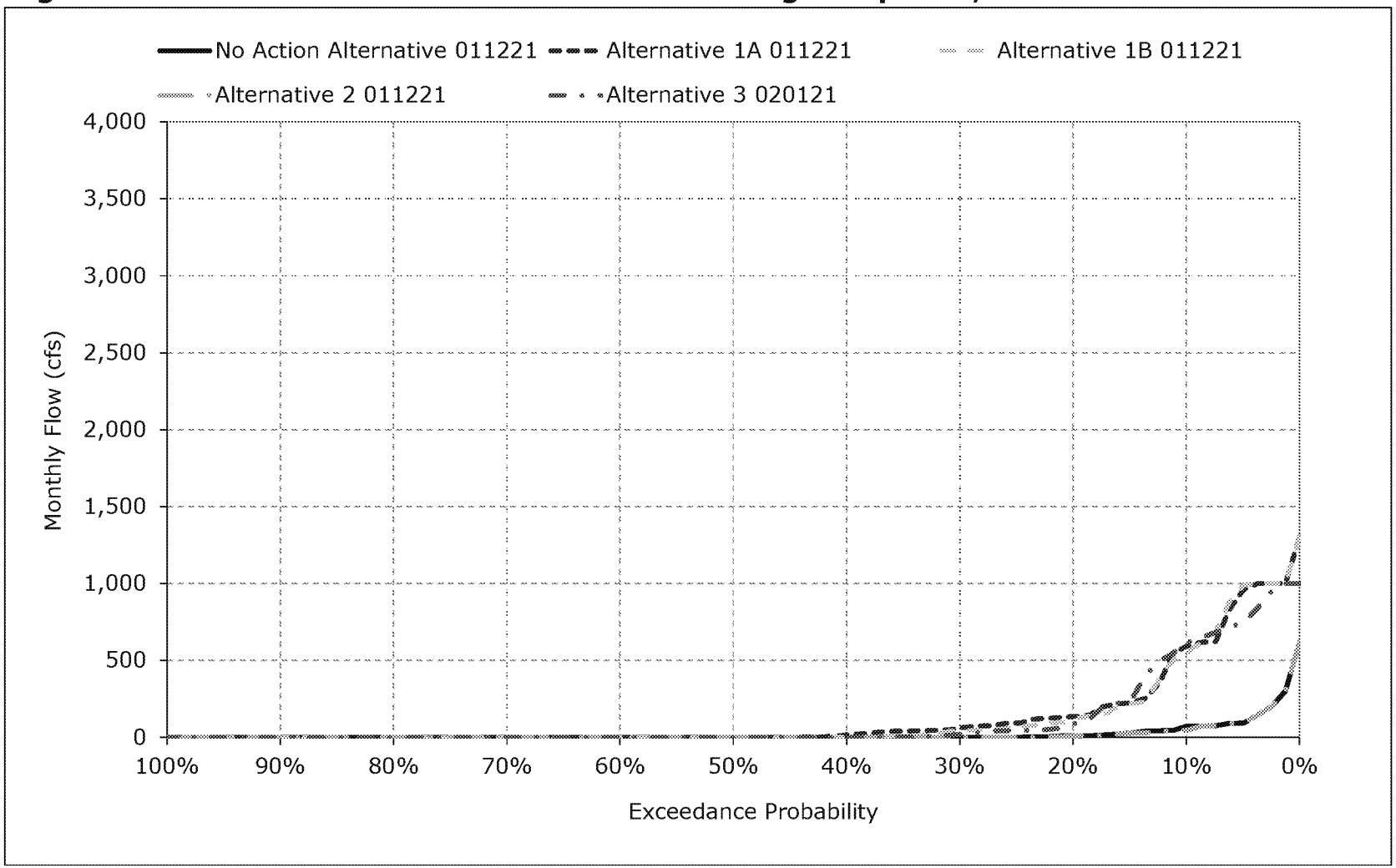


Figure 5B2-16-8. Colusa Basin Drain below Dunnigan Pipeline, November

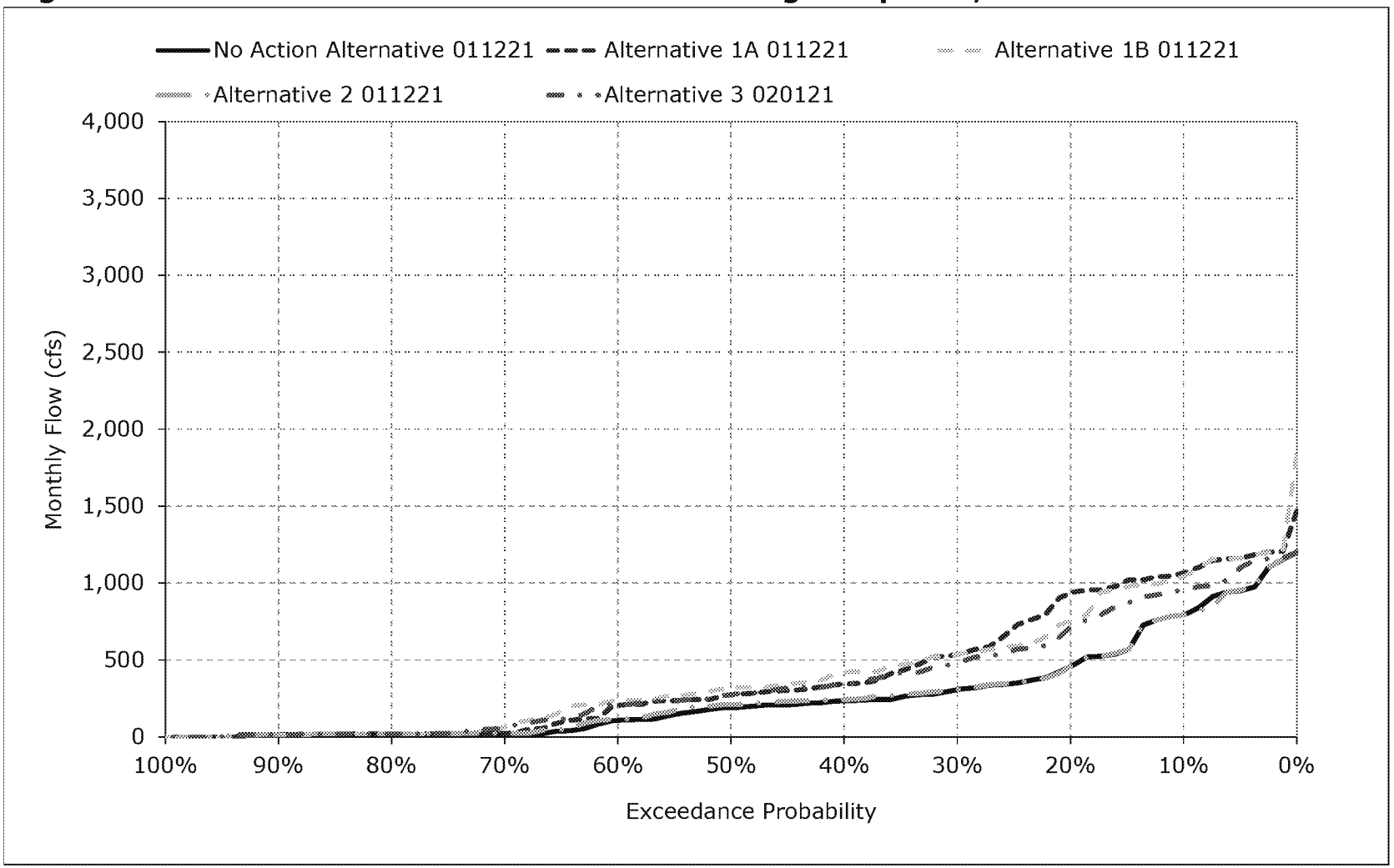


Figure 5B2-16-9. Colusa Basin Drain below Dunnigan Pipeline, December

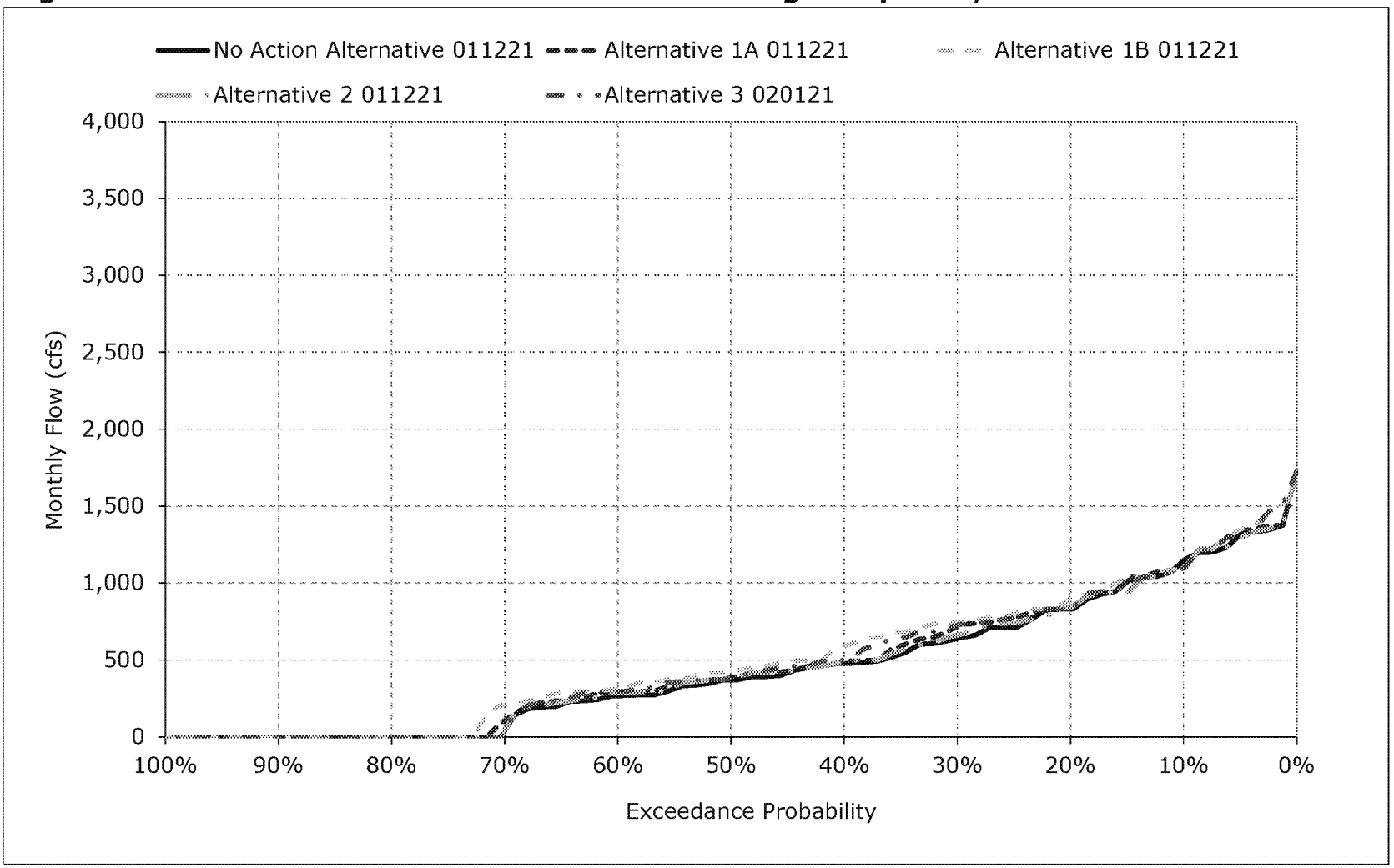


Figure 5B2-16-10. Colusa Basin Drain below Dunnigan Pipeline, January

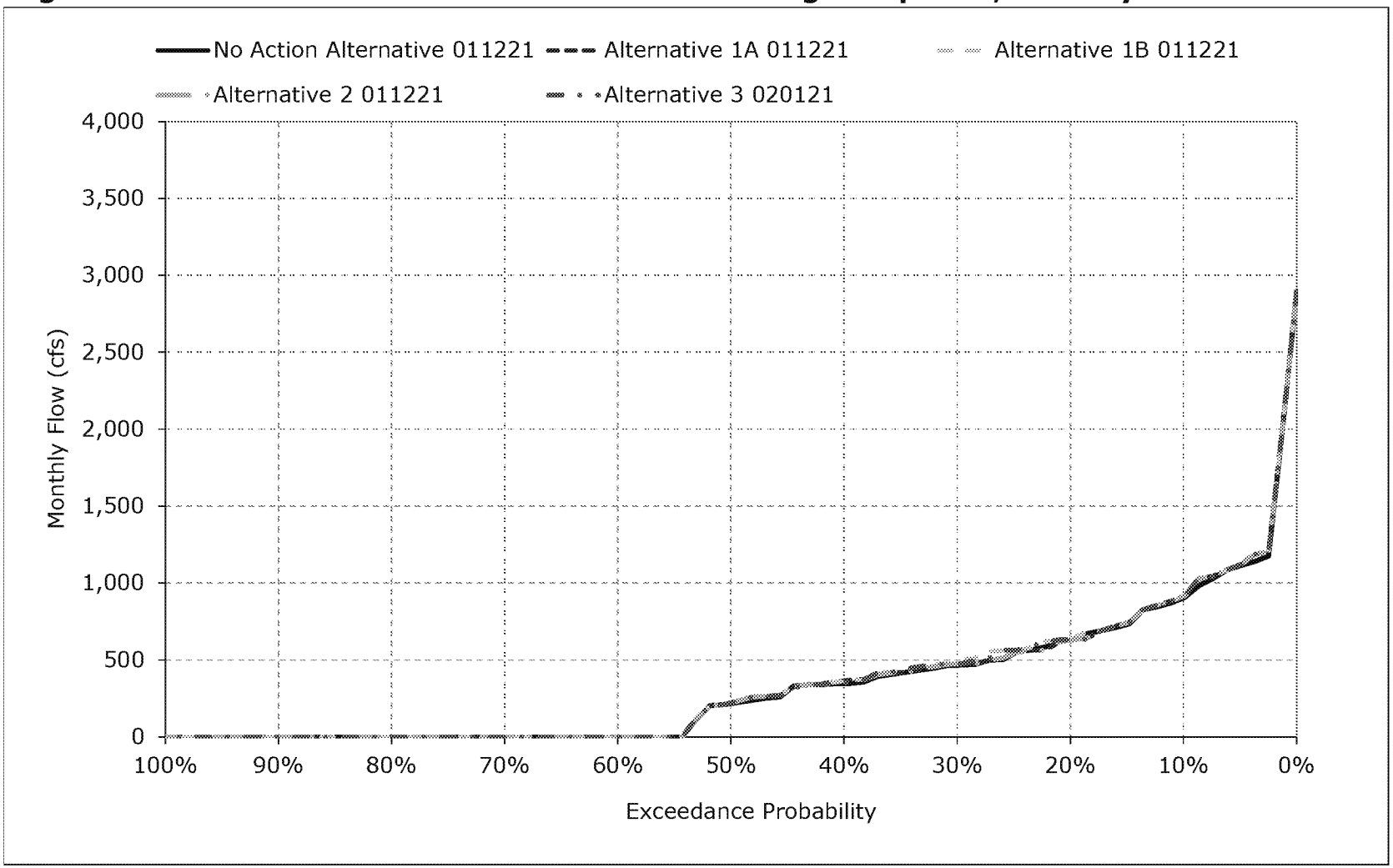


Figure 5B2-16-11. Colusa Basin Drain below Dunnigan Pipeline, February

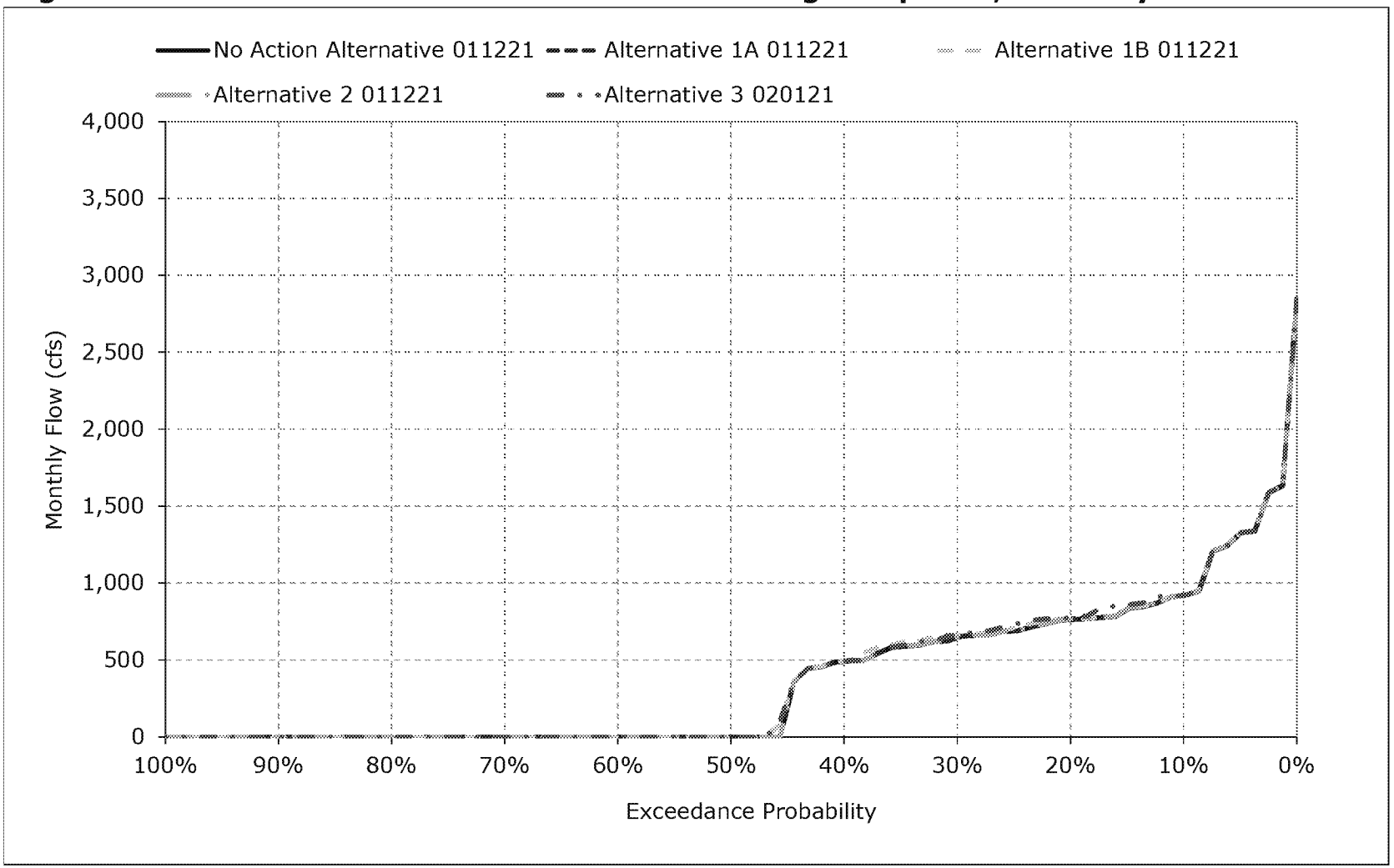


Figure 5B2-16-12. Colusa Basin Drain below Dunnigan Pipeline, March

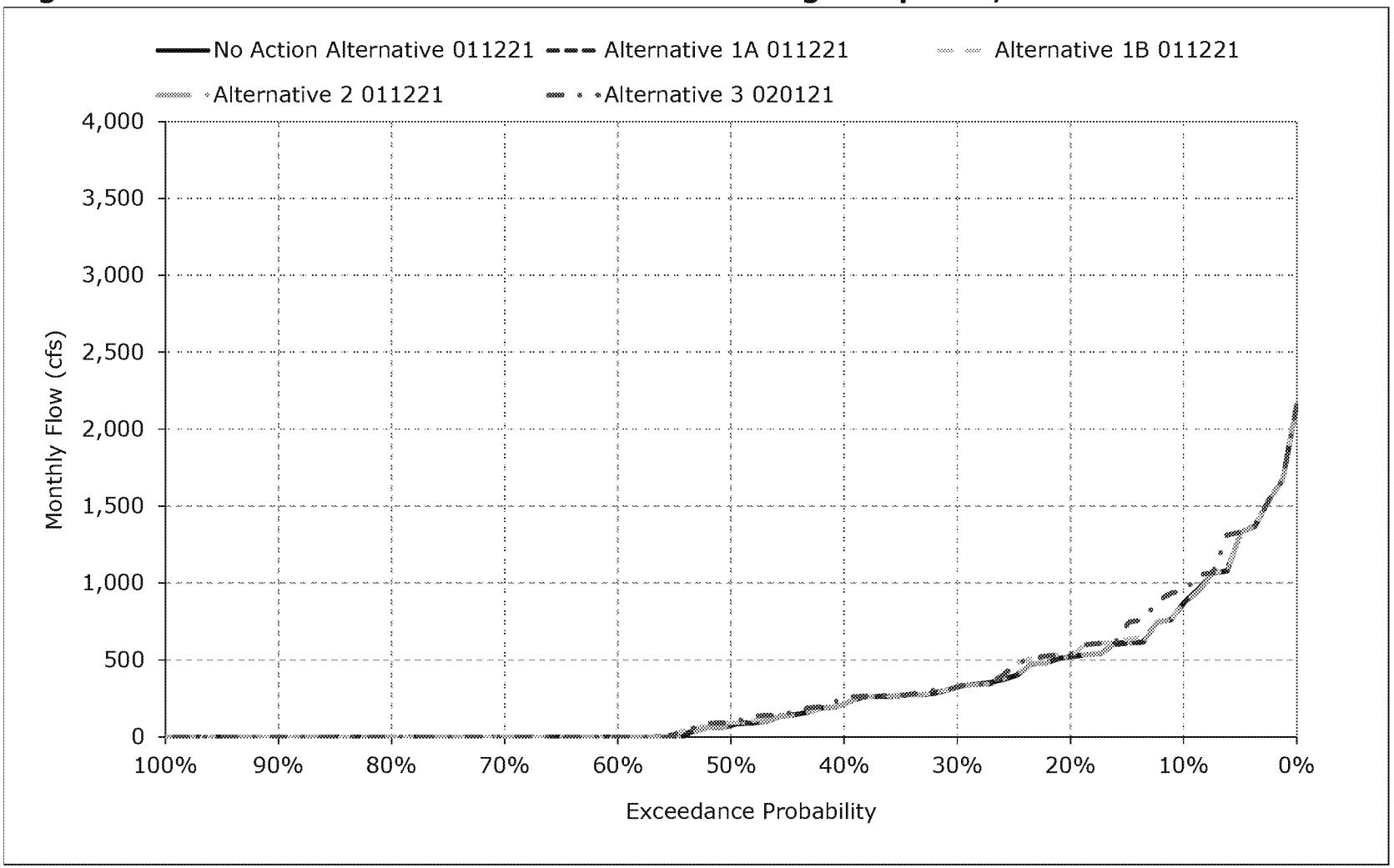


Figure 5B2-16-13. Colusa Basin Drain below Dunnigan Pipeline, April

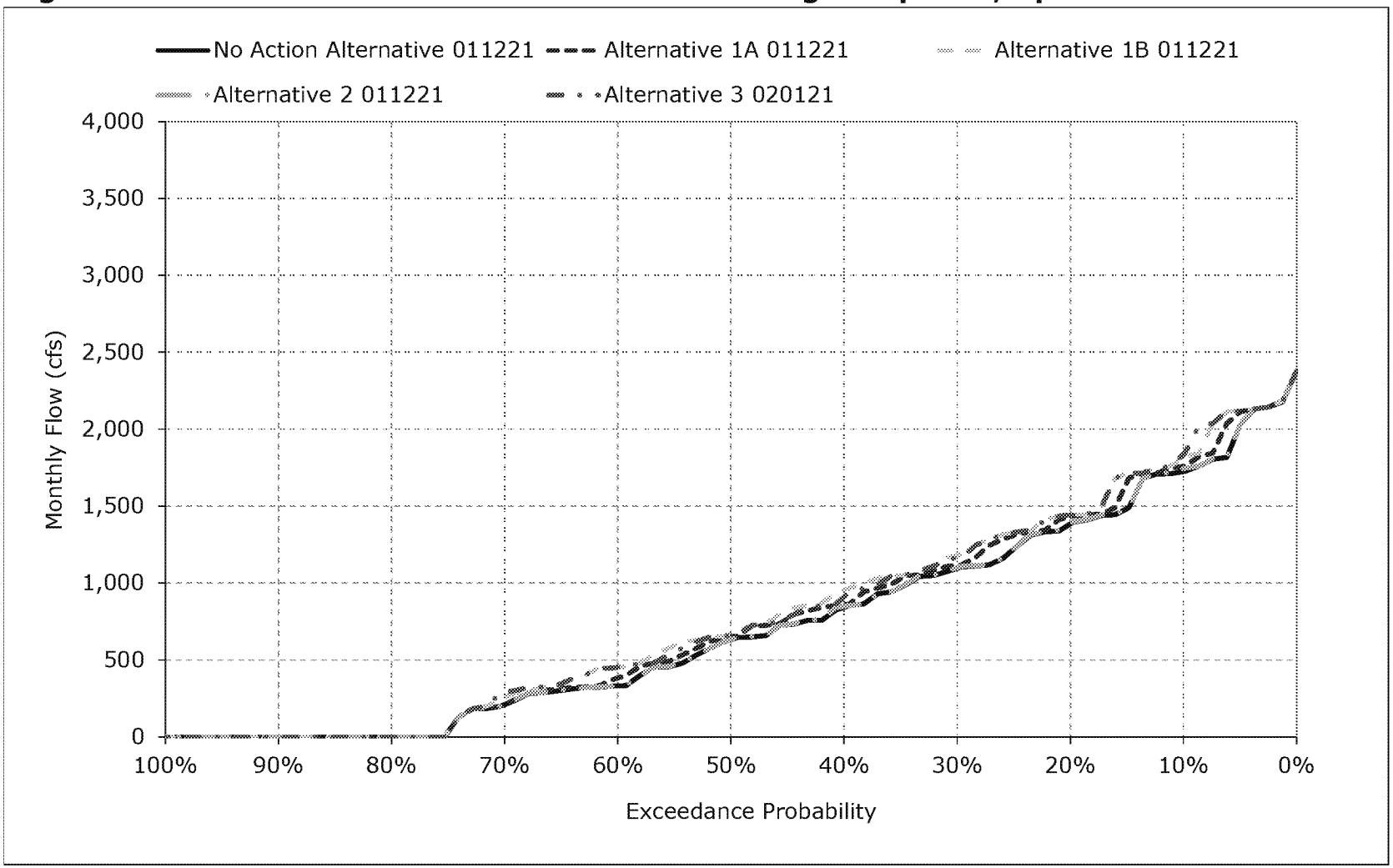


Figure 5B2-16-14. Colusa Basin Drain below Dunnigan Pipeline, May

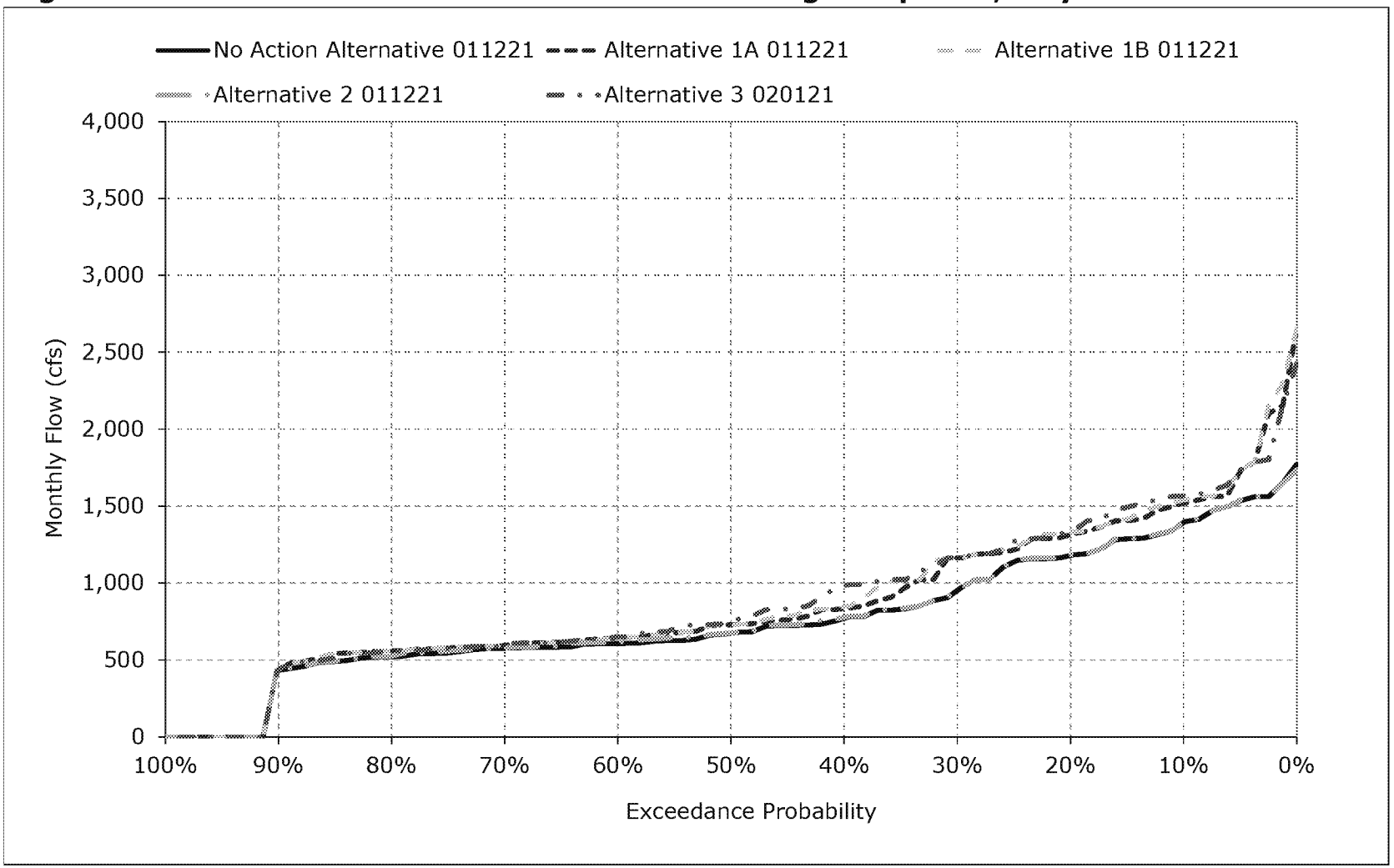


Figure 5B2-16-15. Colusa Basin Drain below Dunnigan Pipeline, June

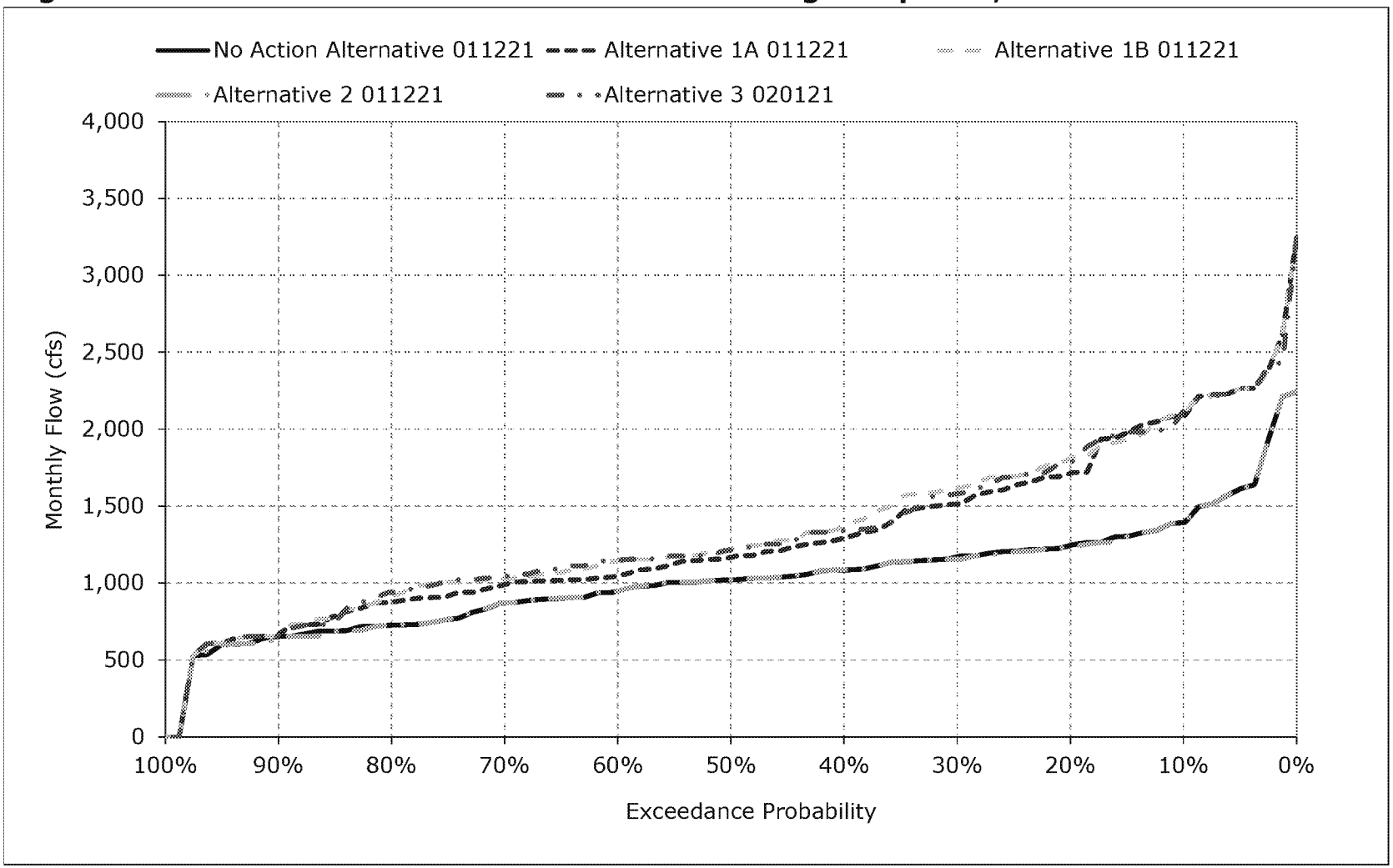


Figure 5B2-16-16. Colusa Basin Drain below Dunnigan Pipeline, July

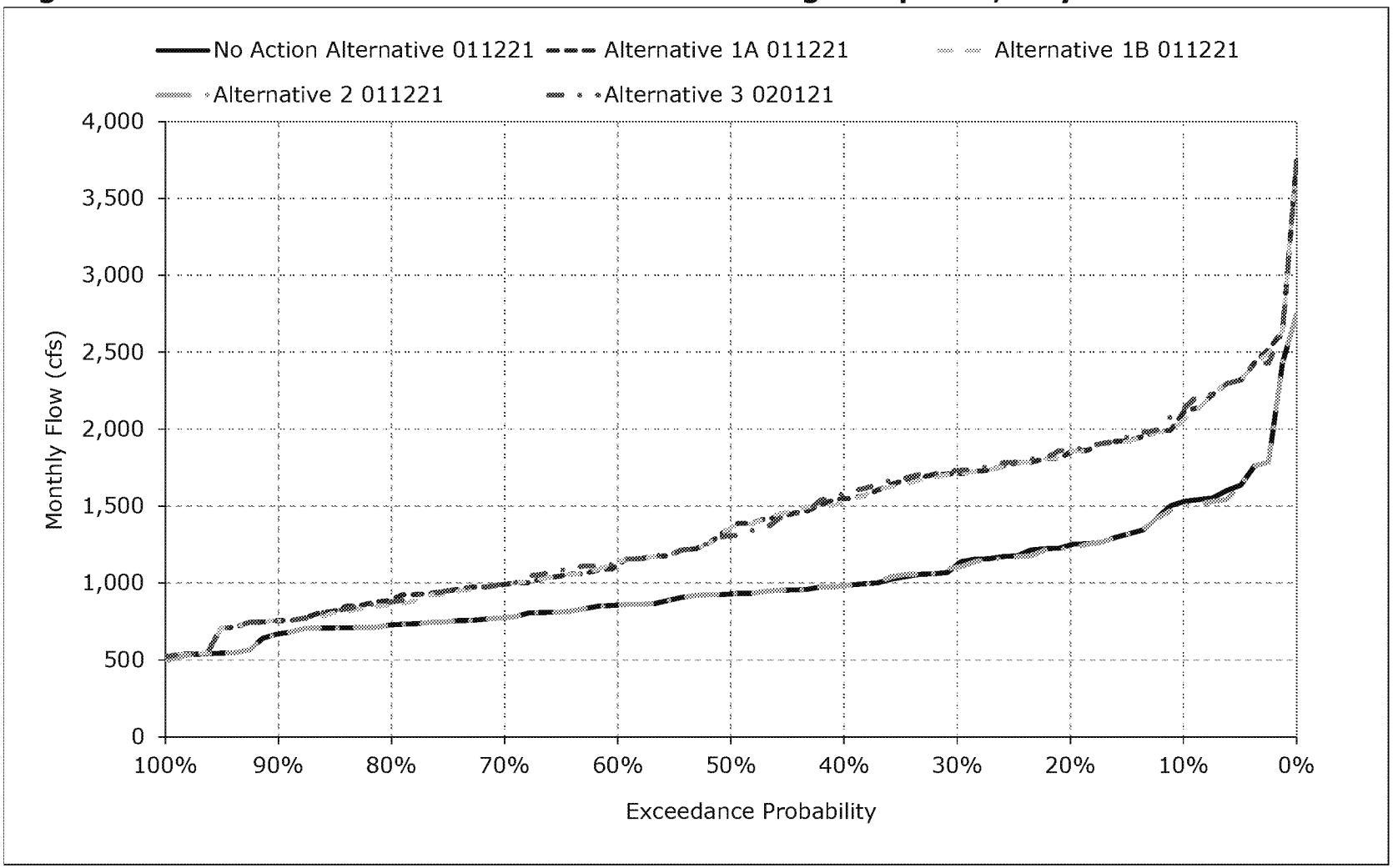


Figure 5B2-16-17. Colusa Basin Drain below Dunnigan Pipeline, August

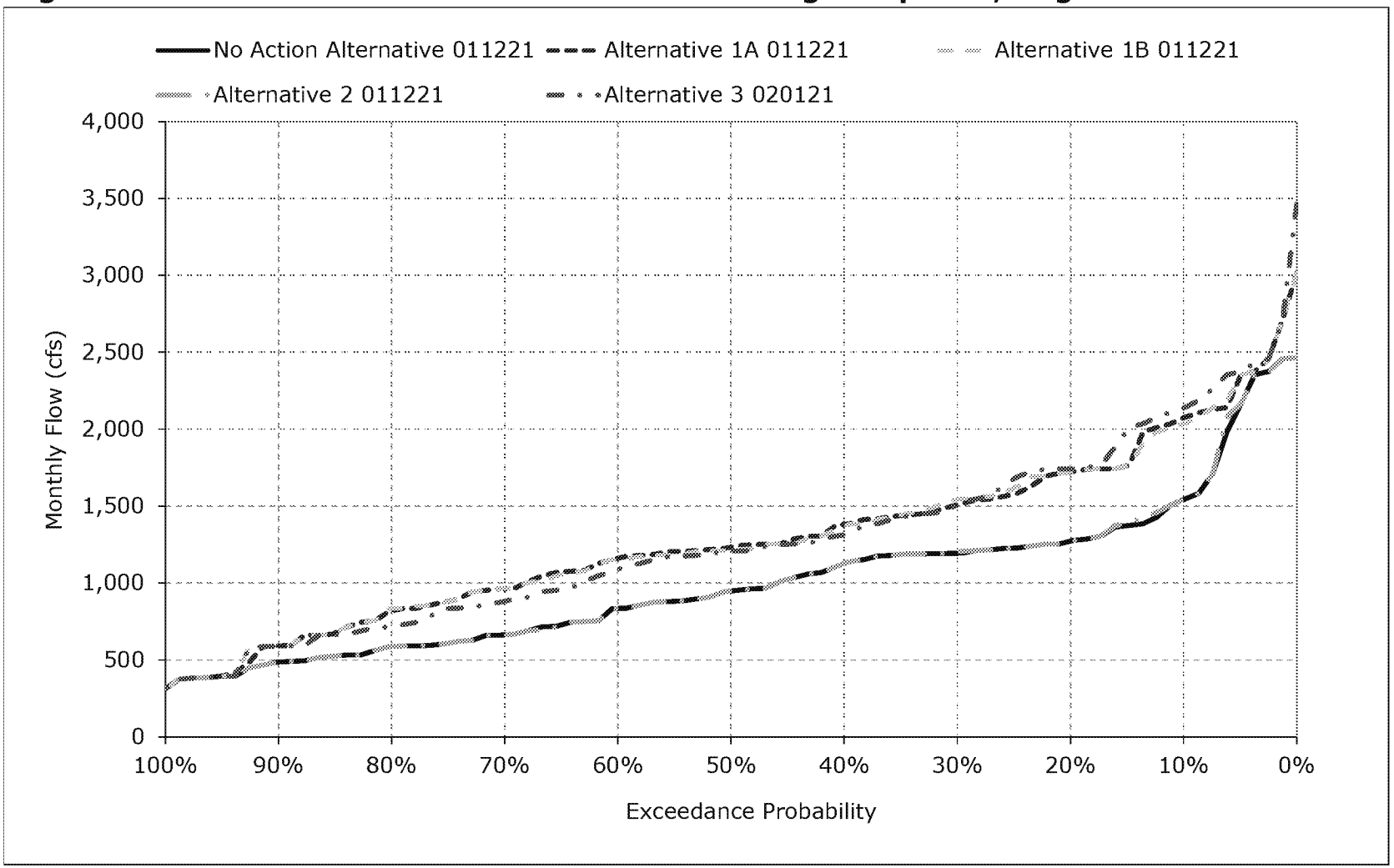


Figure 5B2-16-18. Colusa Basin Drain below Dunnigan Pipeline, September

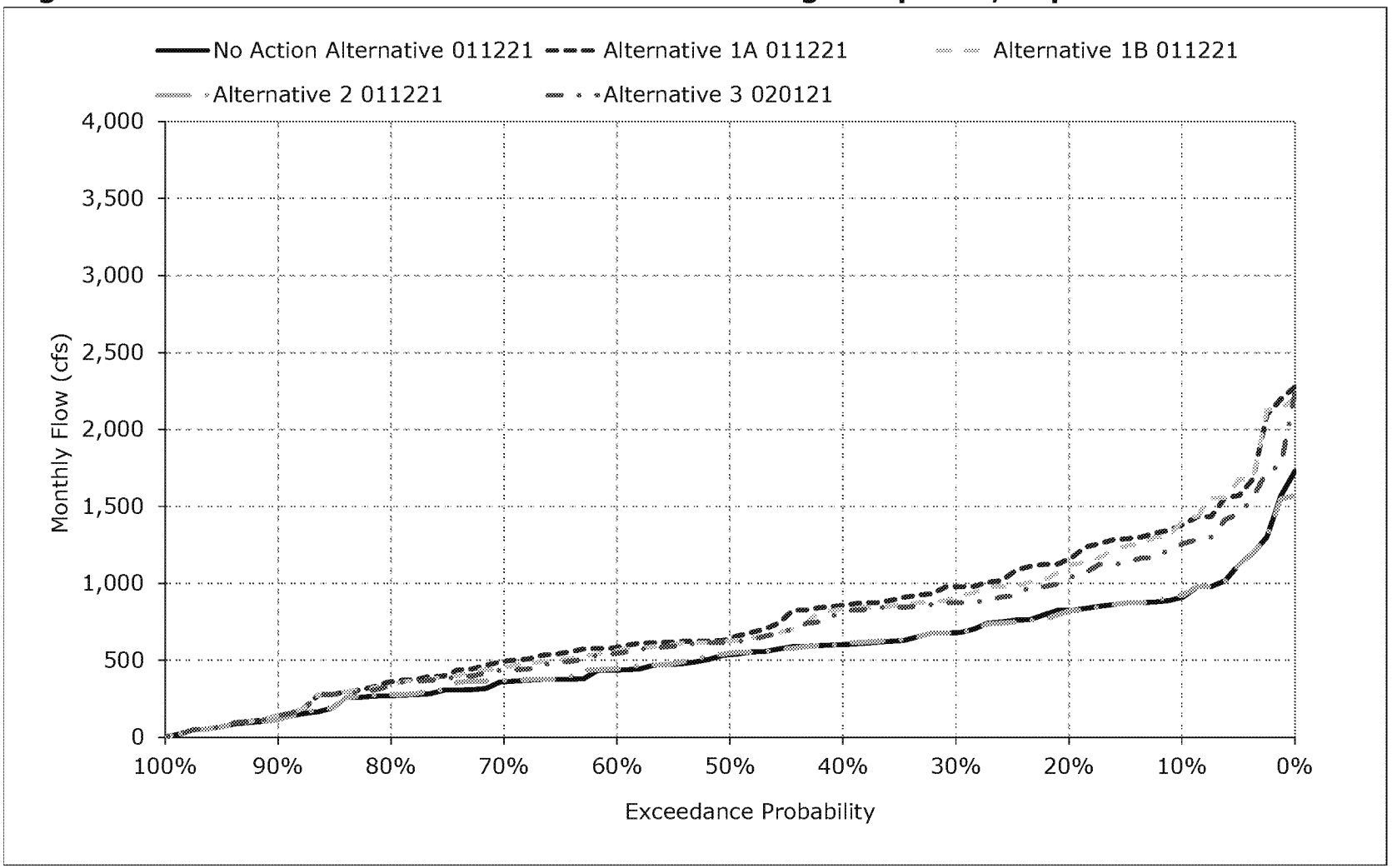


Table 5B2-17-1a. Sacramento River below Colusa Basin Drain, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,998	12,968	22,490	25,424	26,436	23,969	21,195	13,947	9,648	10,259	8,355	11,530
20%	7,705	9,936	18,819	23,330	24,143	22,457	17,668	11,851	8,365	9,725	7,542	10,185
30%	6,555	8,012	15,633	20,437	22,649	19,379	13,219	7,470	7,177	8,981	7,037	8,928
40%	5,897	7,096	12,774	17,106	20,826	16,176	11,212	6,374	6,692	8,488	6,634	8,368
50%	5,674	6,701	9,735	12,891	16,290	14,654	9,275	6,096	6,254	7,658	6,173	6,445
60%	5,505	6,237	8,469	10,481	14,311	12,071	8,335	5,711	5,943	7,074	5,868	5,783
70%	5,339	5,880	7,223	8,658	11,270	9,619	7,615	5,238	5,776	6,296	5,565	5,153
80%	5,000	5,327	6,299	7,733	8,794	8,896	6,986	4,886	5,535	5,735	5,242	4,645
90%	4,361	4,719	5,615	7,049	7,099	7,732	6,219	4,499	4,705	4,931	4,557	4,092
Long Term												
Full Simulation Period[a]	6,306	8,003	12,269	14,832	16,823	15,143	11,815	7,911	6,981	7,697	6,388	7,377
Water Year Types[b,c]												
Wet (32%)	7,750	9,284	12,911	21,191	22,026	19,720	16,883	11,172	7,896	8,333	7,341	10,613
Above Normal (15%)	6,288	9,012	13,084	18,499	20,828	19,023	13,162	9,137	7,062	8,877	6,982	8,569
Below Normal (17%)	6,618	8,388	13,271	12,578	15,678	12,246	10,125	6,393	6,684	7,755	5,638	5,767
Dry (22%)	4,907	6,877	12,360	9,157	12,684	12,109	8,333	5,491	6,791	7,429	5,759	5,108
Critical (15%)	4,930	5,460	8,760	8,529	9,093	9,281	6,685	5,019	5,552	5,469	5,549	4,452

Table 5B2-17-1b. Sacramento River below Colusa Basin Drain, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,941	13,017	22,354	24,992	26,315	23,968	20,590	13,565	9,856	10,682	8,801	11,420
20%	7,815	9,916	18,825	23,003	23,660	21,969	17,566	11,735	8,548	10,181	8,065	10,179
30%	6,830	8,028	15,625	19,155	22,027	18,481	13,225	7,502	7,471	9,597	7,416	9,050
40%	6,306	7,356	12,817	16,608	20,011	14,754	11,173	6,349	6,981	9,231	7,129	8,488
50%	5,935	6,882	9,146	12,677	15,760	13,156	9,578	6,054	6,478	8,778	6,706	7,192
60%	5,823	6,278	8,458	9,901	13,900	10,468	8,393	5,607	6,155	8,215	6,256	6,603
70%	5,591	5,885	7,164	8,566	11,029	9,184	7,679	5,078	5,738	6,899	5,992	5,780
80%	5,265	5,407	6,293	7,670	8,464	8,163	6,946	4,880	5,458	6,361	5,807	5,455
90%	4,912	5,055	5,795	7,024	6,850	7,557	6,272	4,167	5,031	5,493	5,421	4,581
Long Term												
Full Simulation Period[a]	6,526	8,063	12,162	14,518	16,473	14,387	11,653	7,787	7,130	8,362	6,808	7,743
Water Year Types[b,c]												
Wet (32%)	7,587	8,966	12,878	20,884	21,772	19,238	16,373	10,980	7,661	8,318	7,253	10,582
Above Normal (15%)	6,357	8,996	12,954	17,984	20,461	17,915	13,073	8,973	6,844	8,937	6,948	8,602
Below Normal (17%)	6,836	8,713	13,200	12,187	15,061	11,033	10,023	6,227	6,621	8,420	6,176	6,099
Dry (22%)	5,421	7,297	12,399	8,925	12,298	11,224	8,389	5,466	7,596	9,152	6,990	6,041
Critical (15%)	5,691	5,565	8,252	8,370	8,913	9,002	6,806	4,983	6,159	6,629	6,166	5,202

Table 5B2-17-1c. Sacramento River below Colusa Basin Drain, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-58	49	-137	-432	-121	-1	-605	-382	208	423	445	-110
20%	110	-20	6	-326	-483	-489	-102	-116	183	457	523	-6
30%	275	15	-8	-1,282	-623	-898	6	32	294	617	379	122
40%	410	259	43	-497	-815	-1,422	-40	-24	289	743	495	120
50%	262	181	-589	-213	-530	-1,498	302	-42	224	1,120	533	747
60%	318	41	-11	-580	-411	-1,603	58	-105	211	1,142	388	820
70%	253	5	-60	-92	-242	-434	64	-160	-38	603	427	627
80%	266	81	-6	-63	-331	-733	-40	-6	-76	627	566	810
90%	551	336	180	-25	-249	-175	53	-332	326	562	864	489
Long Term												
Full Simulation Period[a]	220	60	-108	-314	-351	-757	-162	-124	148	665	420	366
Water Year Types[b,c]												
Wet (32%)	-164	-317	-33	-307	-254	-482	-510	-193	-235	-15	-88	-31
Above Normal (15%)	69	-16	-131	-515	-367	-1,108	-89	-164	-217	60	-34	33
Below Normal (17%)	218	325	-71	-391	-617	-1,212	-102	-165	-64	664	538	333
Dry (22%)	514	420	38	-232	-386	-885	56	-25	805	1,723	1,231	933
Critical (15%)	761	105	-508	-159	-180	-278	121	-36	607	1,160	617	750

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-17-2a. Sacramento River below Colusa Basin Drain, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,998	12,968	22,490	25,424	26,436	23,969	21,195	13,947	9,648	10,259	8,355	11,530
20%	7,705	9,936	18,819	23,330	24,143	22,457	17,668	11,851	8,365	9,725	7,542	10,185
30%	6,555	8,012	15,633	20,437	22,649	19,379	13,219	7,470	7,177	8,981	7,037	8,928
40%	5,897	7,096	12,774	17,106	20,826	16,176	11,212	6,374	6,692	8,488	6,634	8,368
50%	5,674	6,701	9,735	12,891	16,290	14,654	9,275	6,096	6,254	7,658	6,173	6,445
60%	5,505	6,237	8,469	10,481	14,311	12,071	8,335	5,711	5,943	7,074	5,868	5,783
70%	5,339	5,880	7,223	8,658	11,270	9,619	7,615	5,238	5,776	6,296	5,565	5,153
80%	5,000	5,327	6,299	7,733	8,794	8,896	6,986	4,886	5,535	5,735	5,242	4,645
90%	4,361	4,719	5,615	7,049	7,099	7,732	6,219	4,499	4,705	4,931	4,557	4,092
Long Term												
Full Simulation Period[a]	6,306	8,003	12,269	14,832	16,823	15,143	11,815	7,911	6,981	7,697	6,388	7,377
Water Year Types[b,c]												
Wet (32%)	7,750	9,284	12,911	21,191	22,026	19,720	16,883	11,172	7,896	8,333	7,341	10,613
Above Normal (15%)	6,288	9,012	13,084	18,499	20,828	19,023	13,162	9,137	7,062	8,877	6,982	8,569
Below Normal (17%)	6,618	8,388	13,271	12,578	15,678	12,246	10,125	6,393	6,684	7,755	5,638	5,767
Dry (22%)	4,907	6,877	12,360	9,157	12,684	12,109	8,333	5,491	6,791	7,429	5,759	5,108
Critical (15%)	4,930	5,460	8,760	8,529	9,093	9,281	6,685	5,019	5,552	5,469	5,549	4,452

Table 5B2-17-2b. Sacramento River below Colusa Basin Drain, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,998	13,028	22,682	24,984	26,276	23,955	20,589	13,570	9,807	10,682	8,419	11,509
20%	7,704	9,951	18,821	22,979	23,718	21,974	17,568	11,752	8,620	10,213	8,069	10,252
30%	6,953	8,131	15,455	19,152	22,169	18,505	13,225	7,502	7,551	9,615	7,467	9,181
40%	6,285	7,669	13,028	16,622	20,228	15,005	11,270	6,398	6,882	9,243	6,962	8,524
50%	5,872	7,022	9,147	12,676	15,762	12,934	9,576	6,086	6,478	8,759	6,699	7,170
60%	5,782	6,307	8,464	9,901	13,897	10,411	8,391	5,607	6,124	8,193	6,332	6,734
70%	5,508	5,993	7,182	8,410	11,040	9,158	7,687	5,153	5,695	6,833	6,074	5,849
80%	5,187	5,410	6,342	7,671	8,462	8,214	6,946	4,937	5,407	6,361	5,841	5,359
90%	4,903	5,086	5,826	7,025	6,890	7,557	6,271	4,167	4,914	5,399	5,422	4,591
Long Term												
Full Simulation Period[a]	6,501	8,160	12,221	14,487	16,497	14,386	11,667	7,774	7,140	8,359	6,836	7,775
Water Year Types[b,c]												
Wet (32%)	7,577	8,980	12,971	20,832	21,756	19,227	16,351	10,899	7,632	8,319	7,253	10,626
Above Normal (15%)	6,374	8,918	13,122	17,989	20,499	17,952	13,115	8,978	6,874	8,939	7,000	8,926
Below Normal (17%)	6,883	8,882	13,263	12,191	15,116	11,042	10,034	6,232	6,639	8,402	6,193	6,093
Dry (22%)	5,370	7,618	12,311	8,910	12,345	11,230	8,431	5,539	7,671	9,146	6,947	5,960
Critical (15%)	5,546	5,597	8,343	8,283	8,939	8,967	6,826	4,953	6,126	6,634	6,352	5,133

Table 5B2-17-2c. Sacramento River below Colusa Basin Drain, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-1	60	192	-440	-160	-14	-606	-377	159	424	64	-21
20%	0	15	2	-351	-425	-483	-100	-98	255	488	527	67
30%	399	118	-178	-1,285	-480	-874	6	32	374	635	430	254
40%	389	572	254	-484	-598	-1,171	57	24	190	754	329	156
50%	198	321	-588	-215	-528	-1,720	301	-10	224	1,102	526	725
60%	276	70	-5	-580	-414	-1,661	56	-104	181	1,120	463	951
70%	170	112	-41	-248	-231	-460	72	-85	-81	537	509	696
80%	188	83	43	-62	-332	-682	-40	51	-128	627	600	715
90%	542	367	211	-25	-209	-175	53	-332	209	468	865	500
Long Term												
Full Simulation Period[a]	195	157	-49	-345	-326	-758	-149	-136	158	662	448	399
Water Year Types[b,c]												
Wet (32%)	-174	-303	60	-359	-269	-493	-532	-273	-264	-14	-88	12
Above Normal (15%)	86	-95	38	-511	-329	-1,071	-47	-159	-187	62	18	357
Below Normal (17%)	265	495	-8	-387	-562	-1,204	-91	-160	-45	647	556	326
Dry (22%)	463	741	-50	-248	-339	-879	98	48	881	1,716	1,188	852
Critical (15%)	616	137	-417	-246	-154	-314	141	-67	574	1,165	804	682

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-17-3a. Sacramento River below Colusa Basin Drain, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,998	12,968	22,490	25,424	26,436	23,969	21,195	13,947	9,648	10,259	8,355	11,530
20%	7,705	9,936	18,819	23,330	24,143	22,457	17,668	11,851	8,365	9,725	7,542	10,185
30%	6,555	8,012	15,633	20,437	22,649	19,379	13,219	7,470	7,177	8,981	7,037	8,928
40%	5,897	7,096	12,774	17,106	20,826	16,176	11,212	6,374	6,692	8,488	6,634	8,368
50%	5,674	6,701	9,735	12,891	16,290	14,654	9,275	6,096	6,254	7,658	6,173	6,445
60%	5,505	6,237	8,469	10,481	14,311	12,071	8,335	5,711	5,943	7,074	5,868	5,783
70%	5,339	5,880	7,223	8,658	11,270	9,619	7,615	5,238	5,776	6,296	5,565	5,153
80%	5,000	5,327	6,299	7,733	8,794	8,896	6,986	4,886	5,535	5,735	5,242	4,645
90%	4,361	4,719	5,615	7,049	7,099	7,732	6,219	4,499	4,705	4,931	4,557	4,092
Long Term												
Full Simulation Period[a]	6,306	8,003	12,269	14,832	16,823	15,143	11,815	7,911	6,981	7,697	6,388	7,377
Water Year Types[b,c]												
Wet (32%)	7,750	9,284	12,911	21,191	22,026	19,720	16,883	11,172	7,896	8,333	7,341	10,613
Above Normal (15%)	6,288	9,012	13,084	18,499	20,828	19,023	13,162	9,137	7,062	8,877	6,982	8,569
Below Normal (17%)	6,618	8,388	13,271	12,578	15,678	12,246	10,125	6,393	6,684	7,755	5,638	5,767
Dry (22%)	4,907	6,877	12,360	9,157	12,684	12,109	8,333	5,491	6,791	7,429	5,759	5,108
Critical (15%)	4,930	5,460	8,760	8,529	9,093	9,281	6,685	5,019	5,552	5,469	5,549	4,452

Table 5B2-17-3b. Sacramento River below Colusa Basin Drain, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,997	13,015	22,354	24,992	26,418	23,969	20,593	13,578	9,878	10,682	8,869	11,508
20%	7,789	9,891	18,826	23,008	23,662	22,063	17,640	11,742	8,524	10,181	8,065	10,181
30%	6,830	8,048	15,625	19,154	21,920	18,505	13,225	7,502	7,400	9,571	7,440	9,050
40%	6,272	7,294	12,822	16,608	20,012	15,152	11,171	6,349	6,902	9,223	6,999	8,489
50%	5,939	6,704	9,156	12,677	15,761	13,272	9,578	6,054	6,431	8,785	6,570	7,237
60%	5,821	6,218	8,458	9,901	13,899	10,417	8,387	5,607	6,155	8,215	6,180	6,504
70%	5,591	5,814	7,164	8,412	11,039	9,198	7,680	5,078	5,738	6,935	5,905	5,722
80%	5,267	5,408	6,358	7,670	8,464	8,163	6,946	4,880	5,458	6,361	5,714	5,364
90%	4,748	4,928	5,836	7,026	6,850	7,557	6,272	4,167	5,011	5,458	5,437	4,587
Long Term												
Full Simulation Period[a]	6,506	8,014	12,178	14,521	16,471	14,430	11,679	7,784	7,104	8,353	6,803	7,716
Water Year Types[b,c]												
Wet (32%)	7,589	8,968	12,881	20,936	21,778	19,322	16,455	10,982	7,667	8,321	7,294	10,616
Above Normal (15%)	6,357	9,002	12,954	17,984	20,470	17,933	13,072	8,973	6,844	8,940	6,948	8,607
Below Normal (17%)	6,897	8,708	13,210	12,182	15,014	11,040	10,021	6,227	6,620	8,422	6,146	6,108
Dry (22%)	5,350	7,053	12,409	8,925	12,298	11,287	8,387	5,466	7,514	9,151	6,919	5,961
Critical (15%)	5,588	5,590	8,331	8,280	8,932	8,997	6,807	4,960	6,096	6,559	6,188	5,051

Table 5B2-17-3c. Sacramento River below Colusa Basin Drain, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-1	47	-137	-432	-18	0	-603	-369	230	424	514	-21
20%	84	-46	6	-322	-481	-394	-28	-108	160	456	523	-3
30%	275	35	-8	-1,283	-729	-875	6	32	223	591	403	123
40%	376	198	48	-497	-814	-1,024	-41	-24	210	734	365	122
50%	266	3	-579	-213	-530	-1,382	302	-42	177	1,127	396	792
60%	315	-19	-11	-580	-411	-1,654	52	-105	211	1,142	312	721
70%	253	-67	-59	-247	-232	-421	64	-160	-38	639	340	569
80%	267	81	59	-63	-331	-732	-40	-6	-76	626	472	720
90%	387	209	221	-24	-248	-175	53	-332	306	527	880	495
Long Term												
Full Simulation Period[a]	200	11	-91	-311	-352	-713	-137	-127	123	657	415	339
Water Year Types[b,c]												
Wet (32%)	-162	-315	-29	-255	-247	-398	-428	-190	-229	-12	-47	2
Above Normal (15%)	69	-10	-131	-515	-358	-1,090	-90	-164	-217	63	-34	38
Below Normal (17%)	279	320	-61	-396	-664	-1,206	-103	-165	-64	666	508	342
Dry (22%)	443	176	48	-233	-386	-822	54	-25	724	1,722	1,160	853
Critical (15%)	658	129	-429	-249	-161	-283	122	-60	544	1,090	639	599

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-17-4a. Sacramento River below Colusa Basin Drain, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,998	12,968	22,490	25,424	26,436	23,969	21,195	13,947	9,648	10,259	8,355	11,530
20%	7,705	9,936	18,819	23,330	24,143	22,457	17,668	11,851	8,365	9,725	7,542	10,185
30%	6,555	8,012	15,633	20,437	22,649	19,379	13,219	7,470	7,177	8,981	7,037	8,928
40%	5,897	7,096	12,774	17,106	20,826	16,176	11,212	6,374	6,692	8,488	6,634	8,368
50%	5,674	6,701	9,735	12,891	16,290	14,654	9,275	6,096	6,254	7,658	6,173	6,445
60%	5,505	6,237	8,469	10,481	14,311	12,071	8,335	5,711	5,943	7,074	5,868	5,783
70%	5,339	5,880	7,223	8,658	11,270	9,619	7,615	5,238	5,776	6,296	5,565	5,153
80%	5,000	5,327	6,299	7,733	8,794	8,896	6,986	4,886	5,535	5,735	5,242	4,645
90%	4,361	4,719	5,615	7,049	7,099	7,732	6,219	4,499	4,705	4,931	4,557	4,092
Long Term												
Full Simulation Period[a]	6,306	8,003	12,269	14,832	16,823	15,143	11,815	7,911	6,981	7,697	6,388	7,377
Water Year Types[b,c]												
Wet (32%)	7,750	9,284	12,911	21,191	22,026	19,720	16,883	11,172	7,896	8,333	7,341	10,613
Above Normal (15%)	6,288	9,012	13,084	18,499	20,828	19,023	13,162	9,137	7,062	8,877	6,982	8,569
Below Normal (17%)	6,618	8,388	13,271	12,578	15,678	12,246	10,125	6,393	6,684	7,755	5,638	5,767
Dry (22%)	4,907	6,877	12,360	9,157	12,684	12,109	8,333	5,491	6,791	7,429	5,759	5,108
Critical (15%)	4,930	5,460	8,760	8,529	9,093	9,281	6,685	5,019	5,552	5,469	5,549	4,452

Table 5B2-17-4b. Sacramento River below Colusa Basin Drain, Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,998	13,825	23,119	24,972	26,281	23,808	20,621	13,565	9,863	11,632	8,488	11,422
20%	8,116	9,942	18,900	23,000	24,014	21,951	17,655	11,554	8,410	10,701	7,847	10,299
30%	7,254	8,058	15,859	19,151	22,544	18,007	13,225	7,501	7,694	9,885	7,342	9,550
40%	6,330	7,561	13,035	16,624	20,029	14,871	11,258	6,416	6,889	9,222	6,934	8,745
50%	5,926	6,746	9,123	12,664	15,763	12,948	9,406	6,110	6,423	8,681	6,555	7,409
60%	5,782	6,213	8,463	9,906	13,894	10,412	8,388	5,730	6,116	8,251	6,151	6,408
70%	5,604	5,760	6,878	8,388	11,033	9,232	7,594	5,267	5,738	7,103	5,894	5,724
80%	5,408	5,373	6,370	7,550	8,466	8,335	6,853	4,993	5,331	6,295	5,552	5,184
90%	4,919	5,032	5,911	6,938	7,014	7,559	6,271	4,427	4,936	5,522	5,110	4,397
Long Term												
Full Simulation Period[a]	6,620	8,099	12,303	14,474	16,539	14,359	11,634	7,781	7,117	8,556	6,684	7,785
Water Year Types[b,c]												
Wet (32%)	7,584	8,975	12,980	20,827	21,761	19,071	16,316	10,790	7,592	8,324	7,250	10,582
Above Normal (15%)	6,834	8,890	13,160	17,993	20,668	17,881	13,120	8,977	6,913	9,891	6,872	9,454
Below Normal (17%)	7,168	8,870	13,407	12,172	15,173	11,024	10,081	6,304	6,691	8,982	6,104	6,169
Dry (22%)	5,453	7,418	12,523	8,904	12,363	11,319	8,382	5,639	7,620	9,062	6,581	5,816
Critical (15%)	5,428	5,532	8,364	8,234	8,954	9,076	6,693	5,001	6,031	6,467	6,100	4,893

Table 5B2-17-4c. Sacramento River below Colusa Basin Drain, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

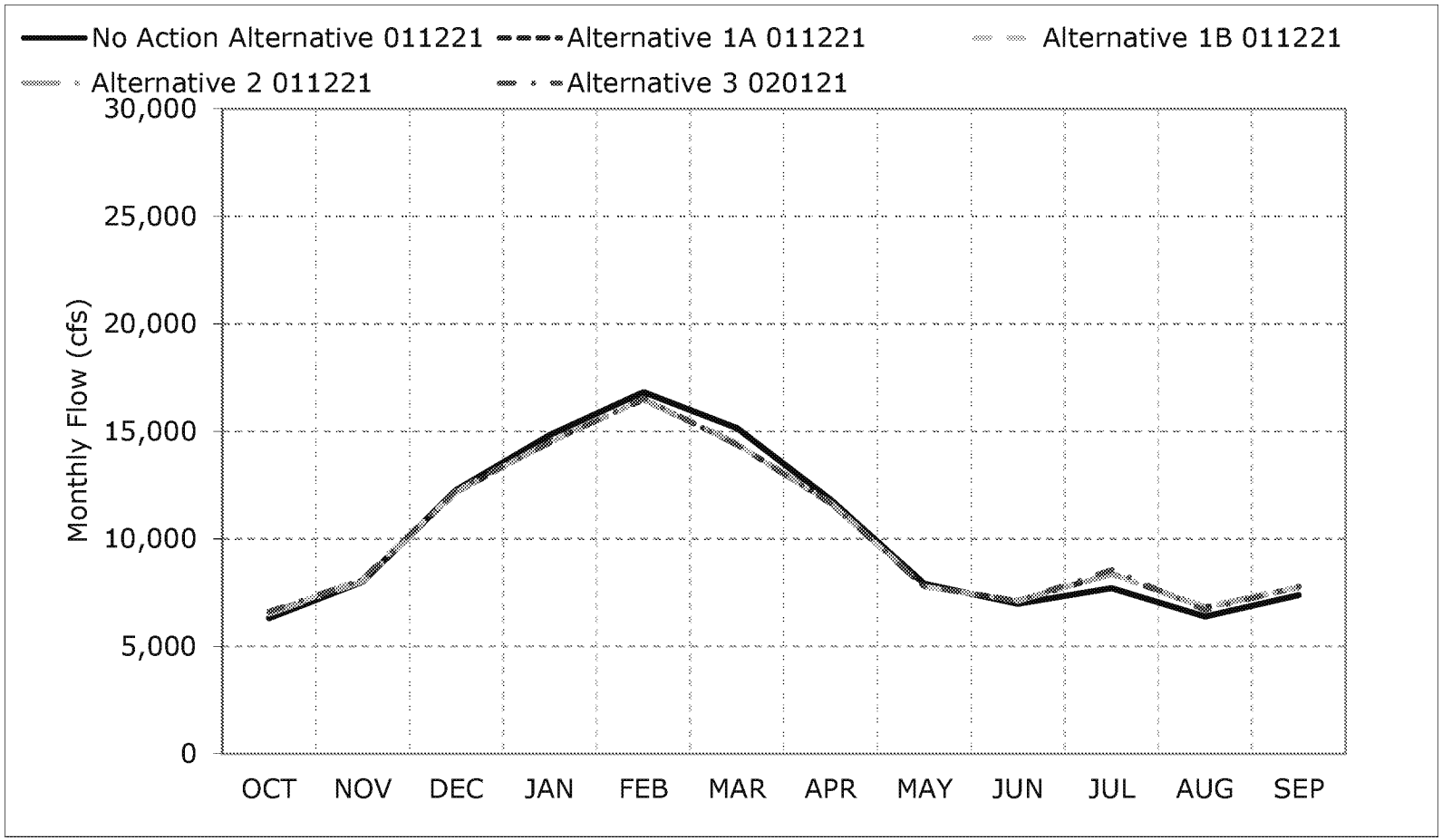
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	857	628	-451	-155	-161	-574	-382	216	1,373	133	-107
20%	411	6	81	-330	-129	-507	-13	-297	45	976	305	114
30%	699	46	226	-1,286	-105	-1,372	6	31	517	904	305	622
40%	434	465	261	-482	-797	-1,305	46	42	197	733	300	377
50%	252	45	-612	-226	-527	-1,706	131	14	169	1,023	382	964
60%	277	-24	-6	-575	-417	-1,660	53	19	172	1,178	282	625
70%	266	-120	-346	-271	-237	-387	-21	28	-38	807	329	571
80%	409	46	70	-182	-328	-561	-132	107	-203	561	310	539
90%	558	313	296	-111	-85	-173	52	-71	231	591	553	306
Long Term												
Full Simulation Period[a]	314	96	34	-358	-284	-785	-181	-130	135	859	296	408
Water Year Types[b,c]												
Wet (32%)	-166	-308	70	-364	-265	-649	-566	-382	-304	-10	-91	-31
Above Normal (15%)	547	-123	75	-506	-160	-1,143	-41	-160	-149	1,014	-110	885
Below Normal (17%)	550	483	136	-406	-505	-1,222	-44	-89	7	1,226	467	403
Dry (22%)	546	541	163	-253	-321	-790	49	148	830	1,633	823	708
Critical (15%)	498	72	-396	-295	-139	-204	8	-19	479	998	551	441

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

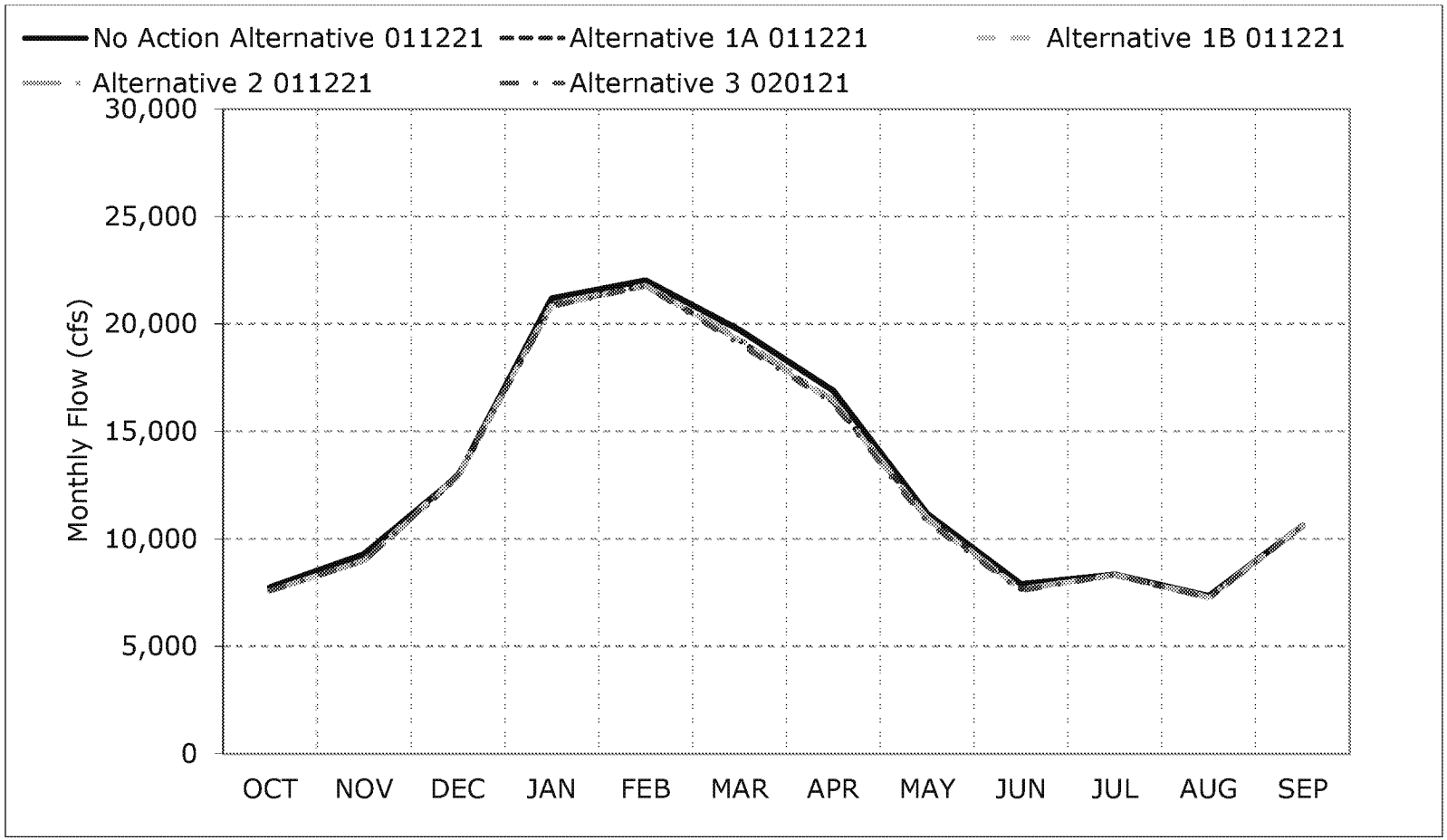
c These results are displayed with calendar year - year type sorting.

Figure 5B2-17-1. Sacramento River below Colusa Basin Drain, Long-Term Average Flow



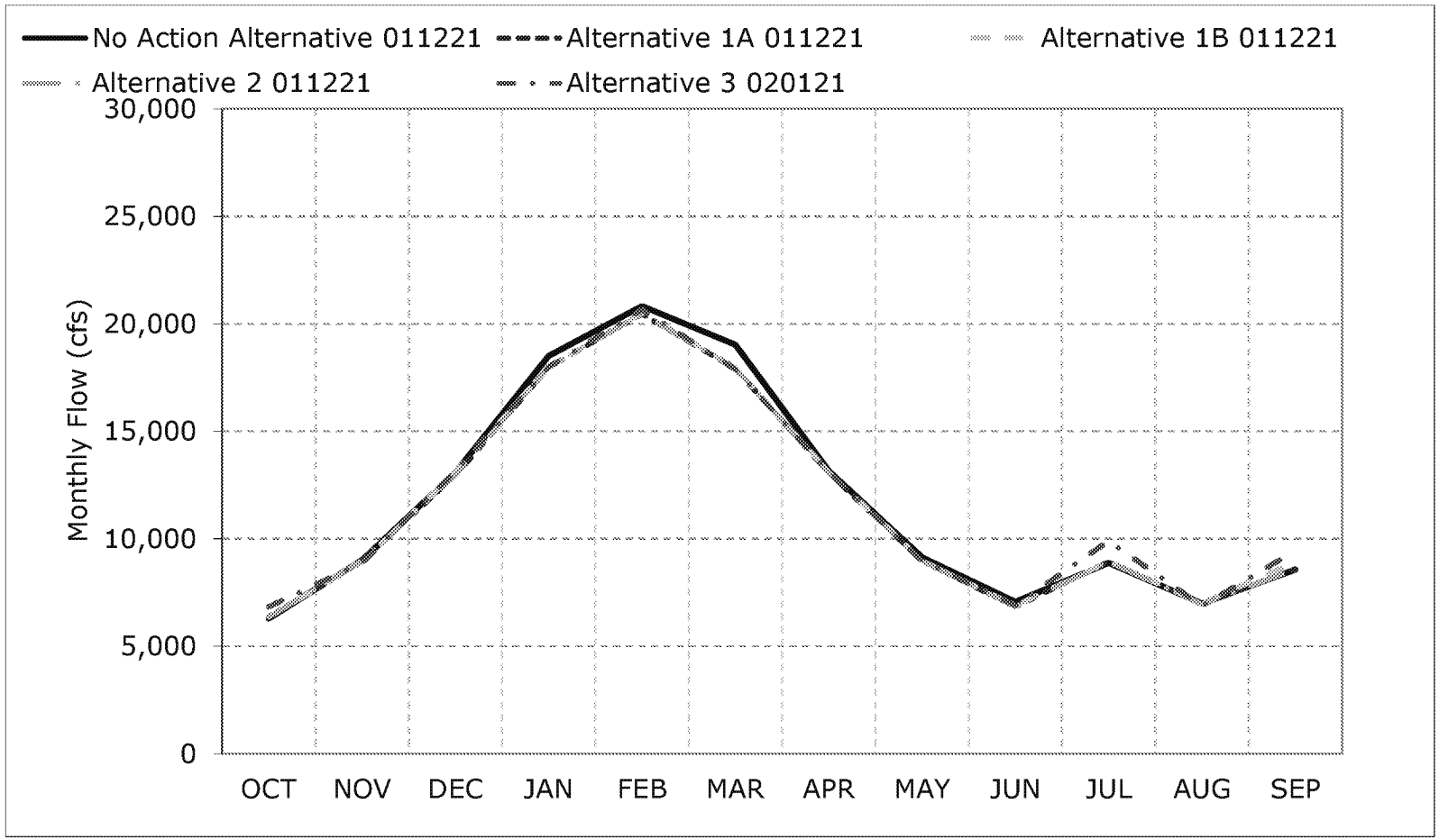
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-17-2. Sacramento River below Colusa Basin Drain, Wet Year Average Flow



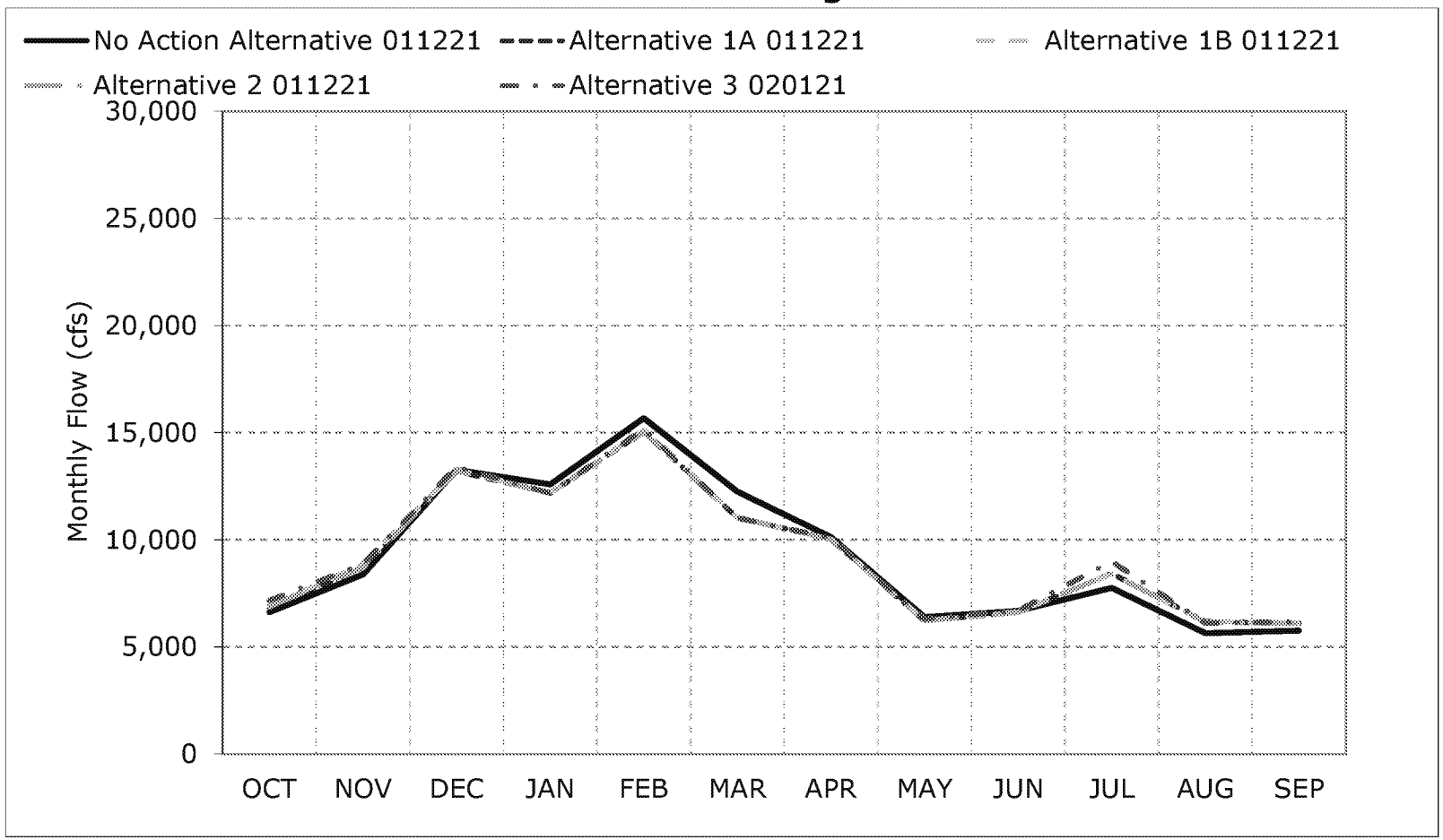
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-17-3. Sacramento River below Colusa Basin Drain, Above Normal Year Average Flow



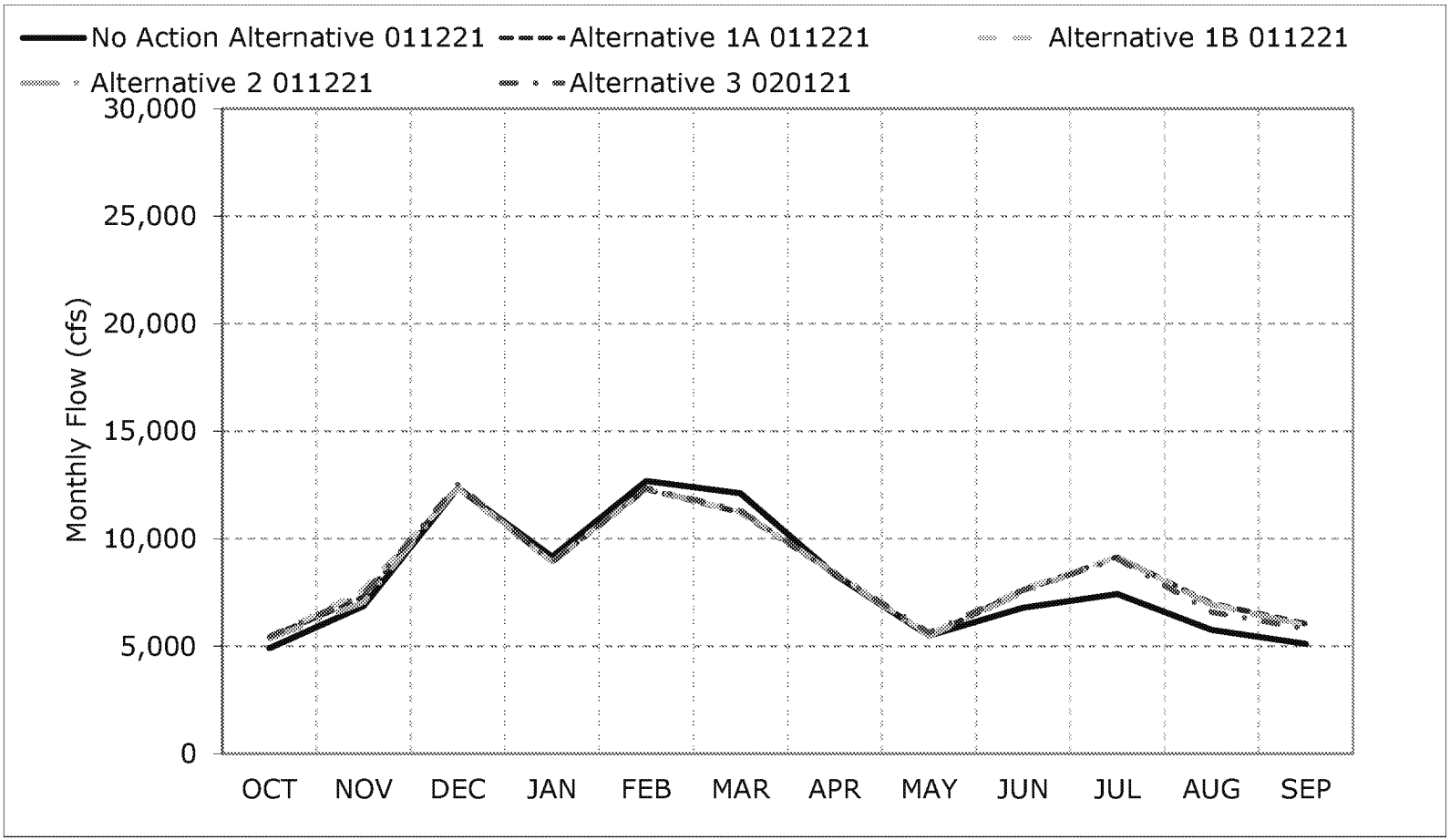
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-17-4. Sacramento River below Colusa Basin Drain, Below Normal Year Average Flow



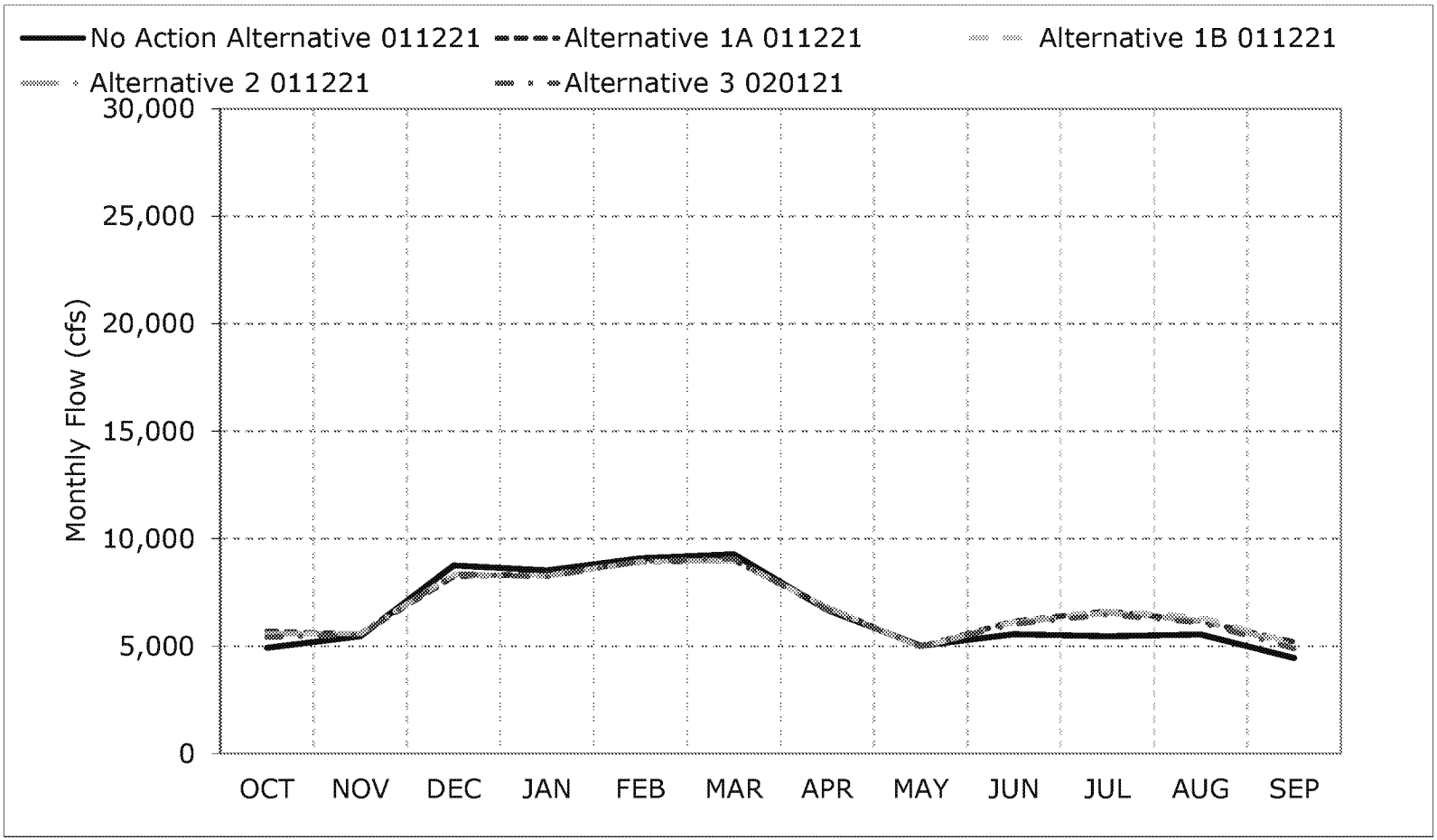
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-17-5. Sacramento River below Colusa Basin Drain, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-17-6. Sacramento River below Colusa Basin Drain, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-17-7. Sacramento River below Colusa Basin Drain, October

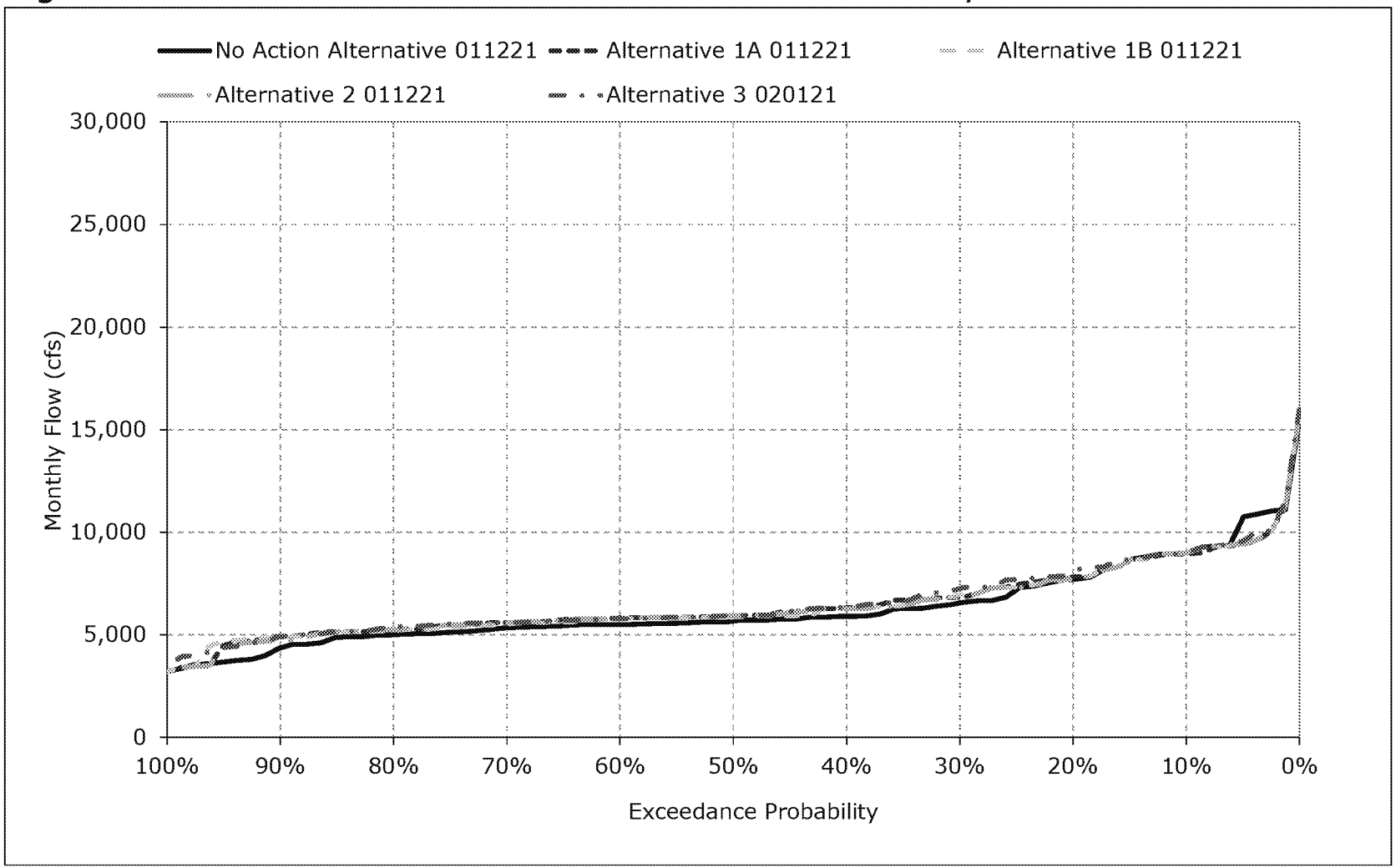


Figure 5B2-17-8. Sacramento River below Colusa Basin Drain, November

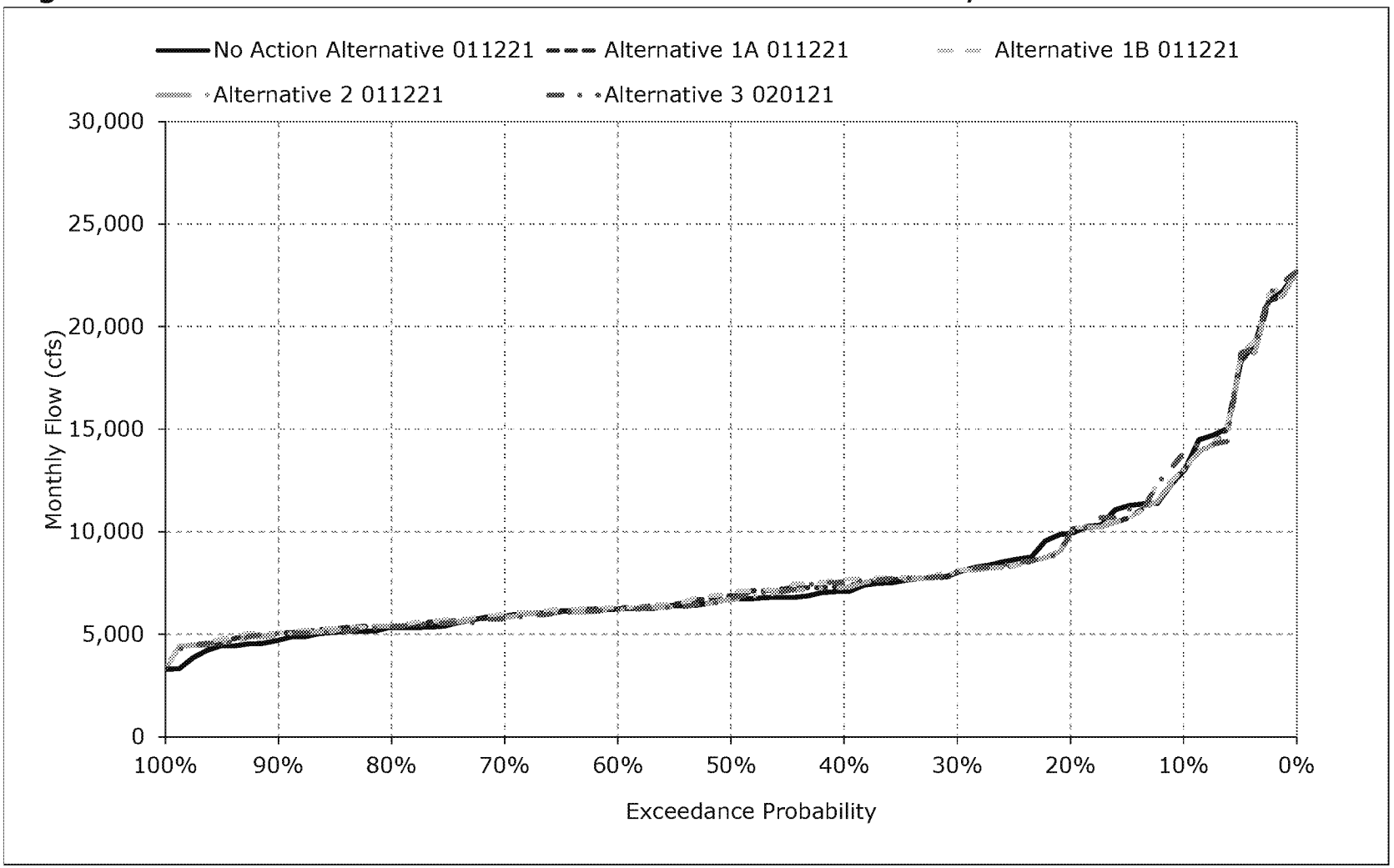


Figure 5B2-17-9. Sacramento River below Colusa Basin Drain, December

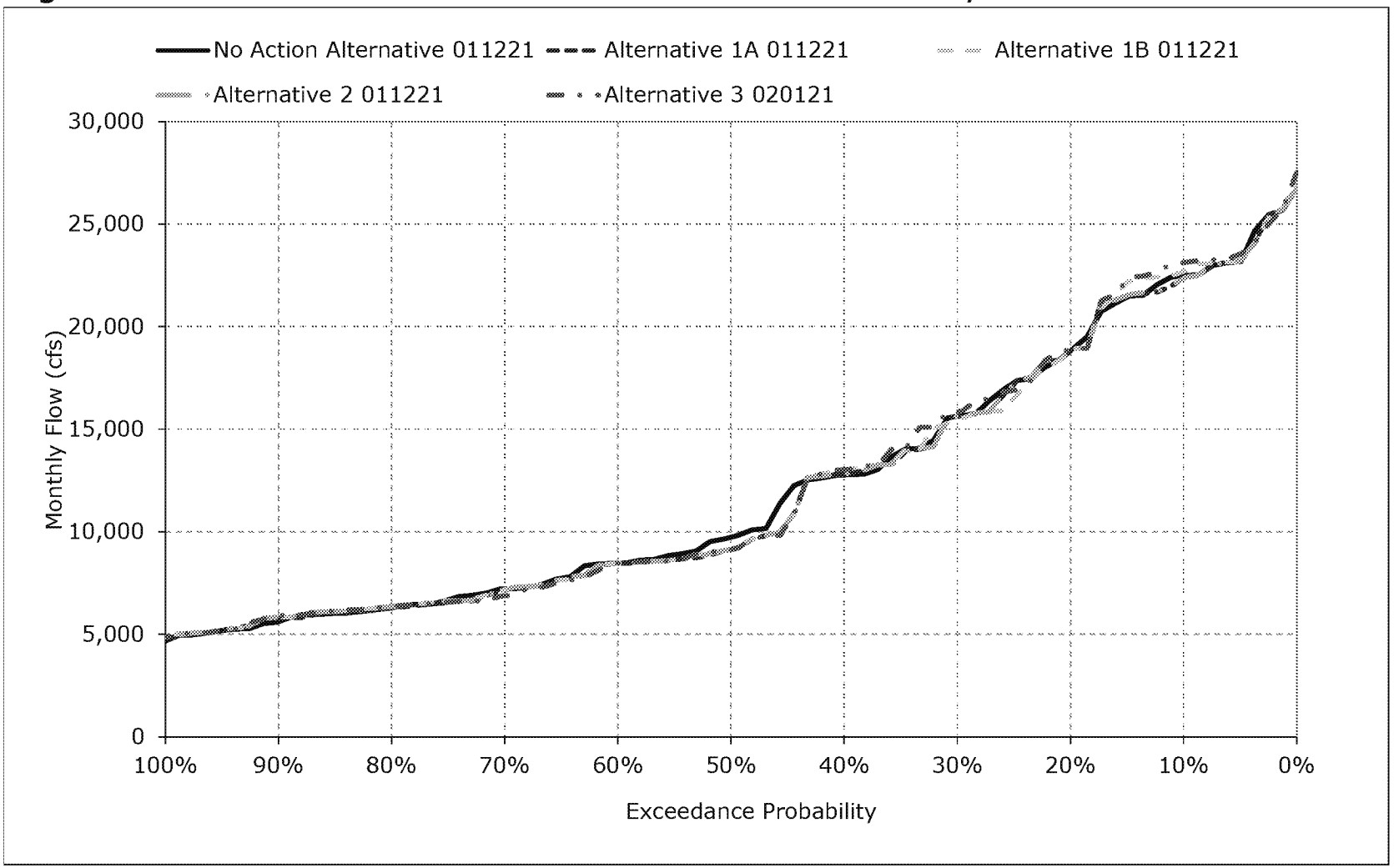


Figure 5B2-17-10. Sacramento River below Colusa Basin Drain, January

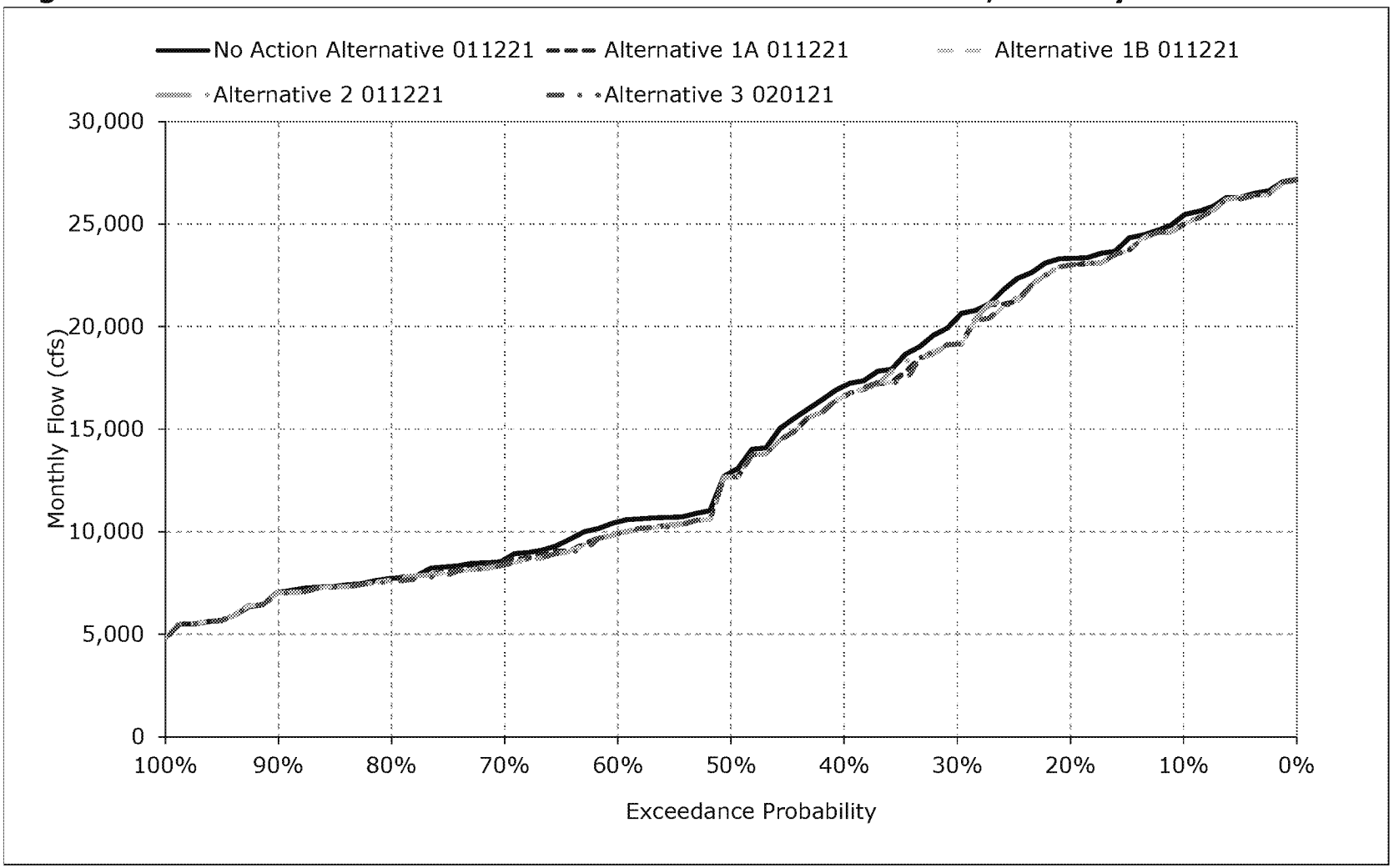


Figure 5B2-17-11. Sacramento River below Colusa Basin Drain, February

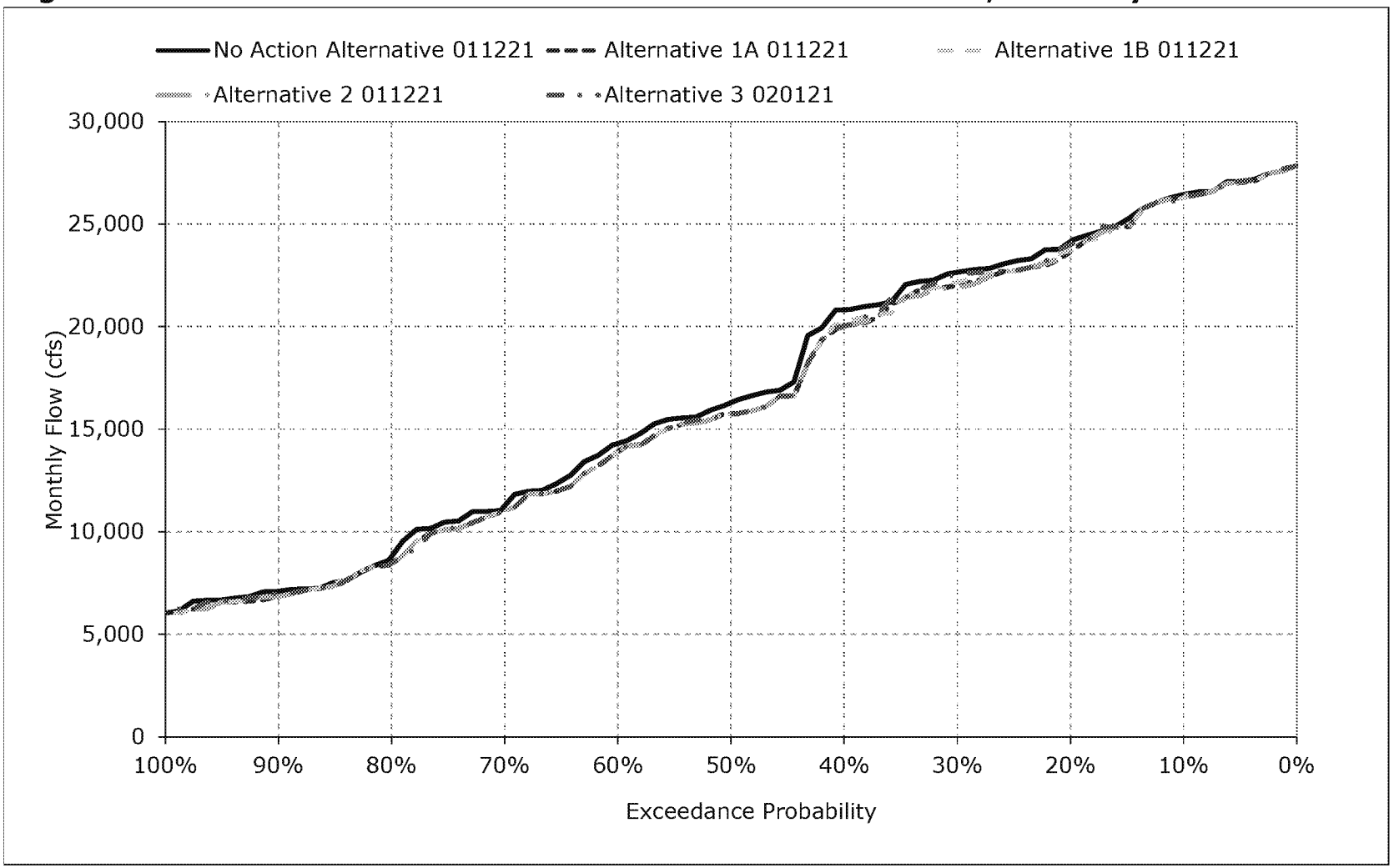


Figure 5B2-17-12. Sacramento River below Colusa Basin Drain, March

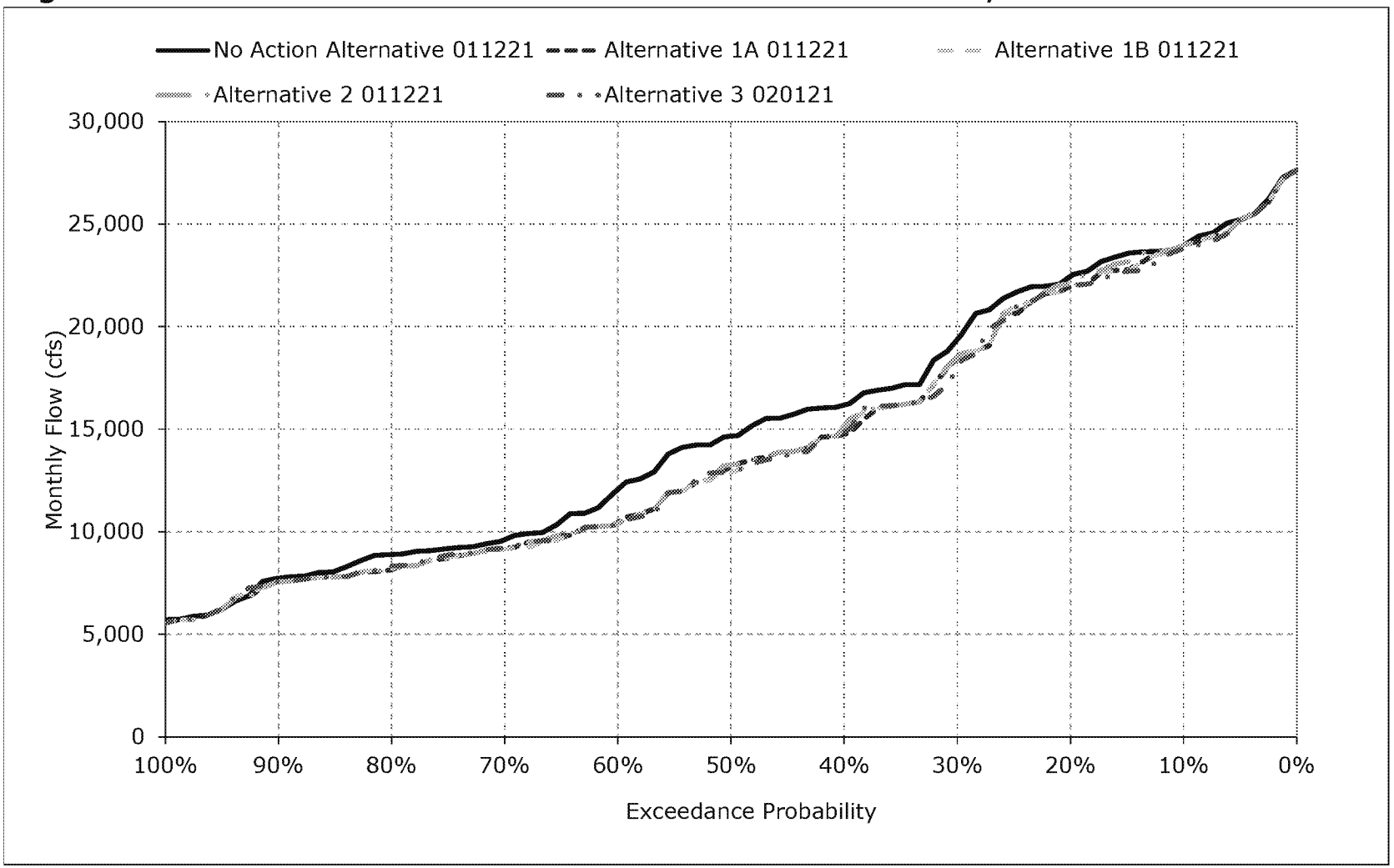


Figure 5B2-17-13. Sacramento River below Colusa Basin Drain, April

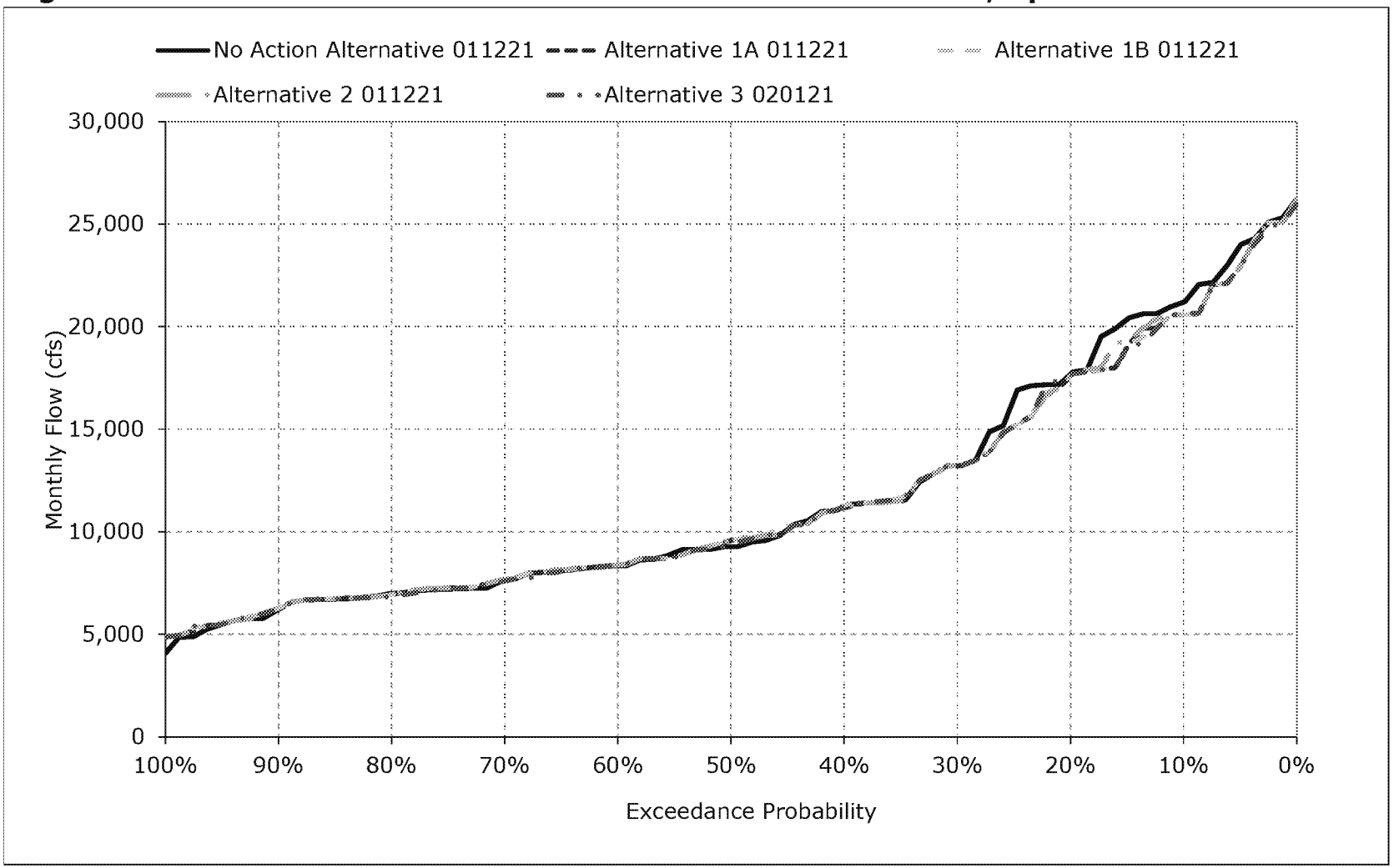


Figure 5B2-17-14. Sacramento River below Colusa Basin Drain, May

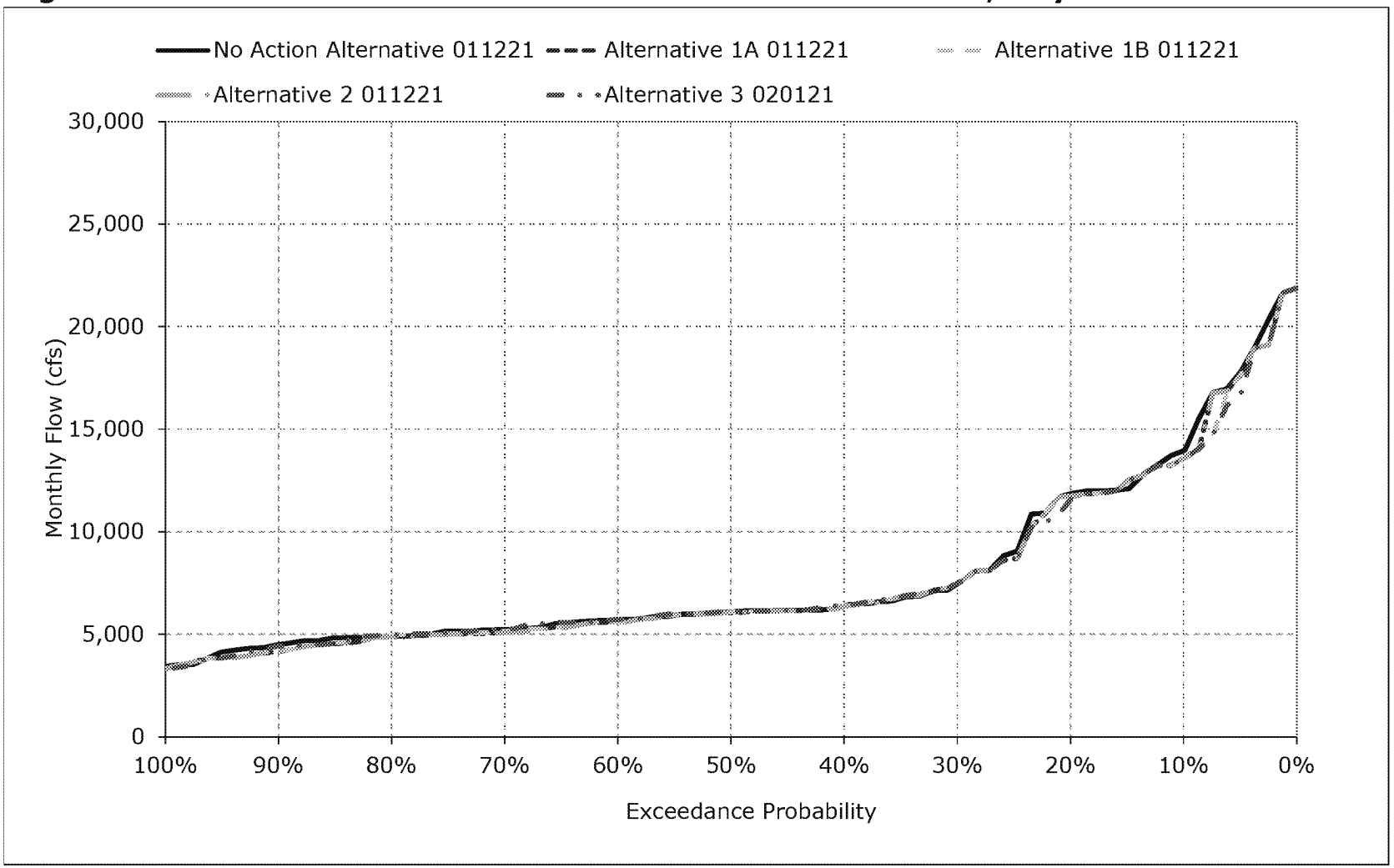


Figure 5B2-17-15. Sacramento River below Colusa Basin Drain, June

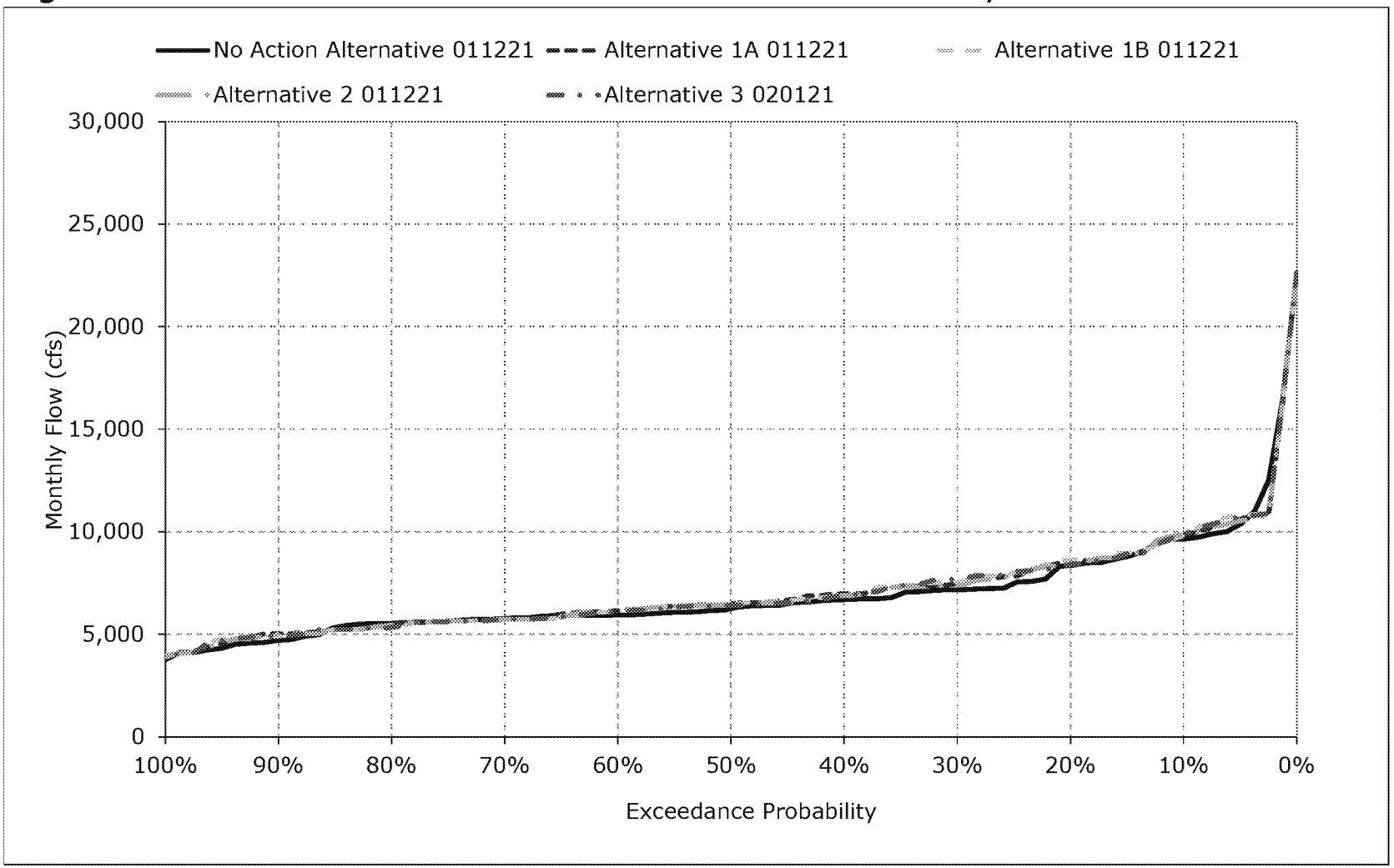


Figure 5B2-17-16. Sacramento River below Colusa Basin Drain, July

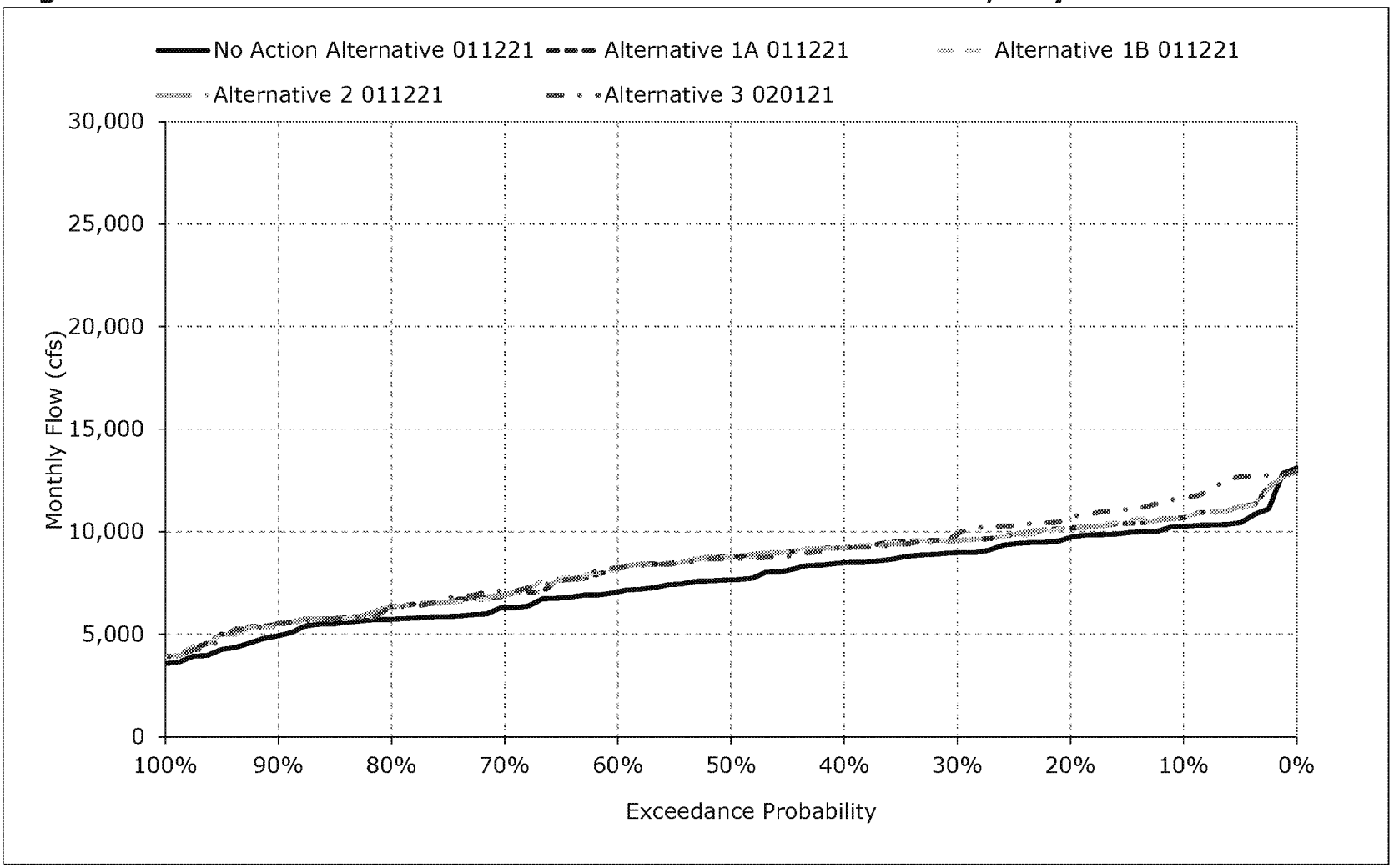


Figure 5B2-17-17. Sacramento River below Colusa Basin Drain, August

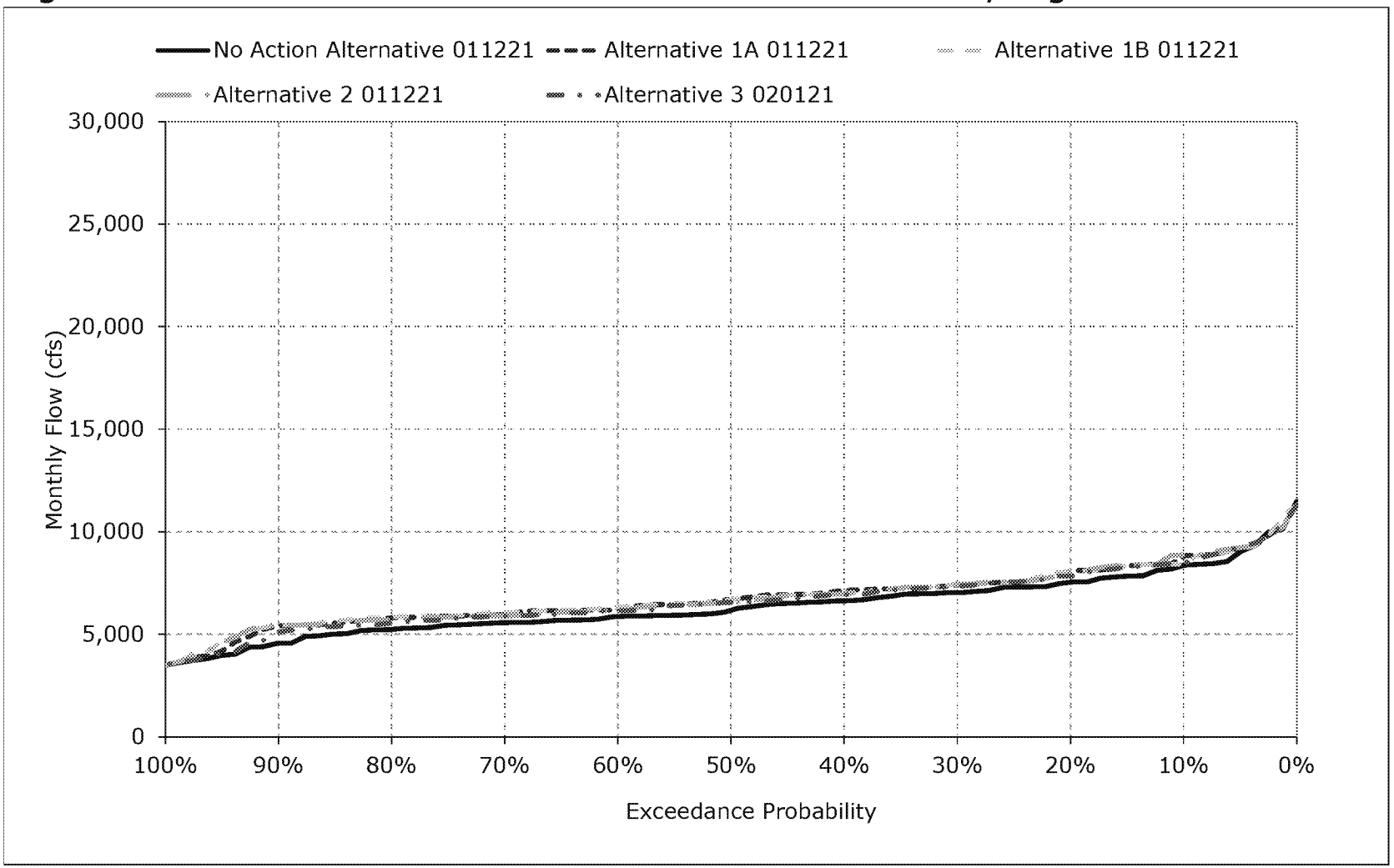


Figure 5B2-17-18. Sacramento River below Colusa Basin Drain, September

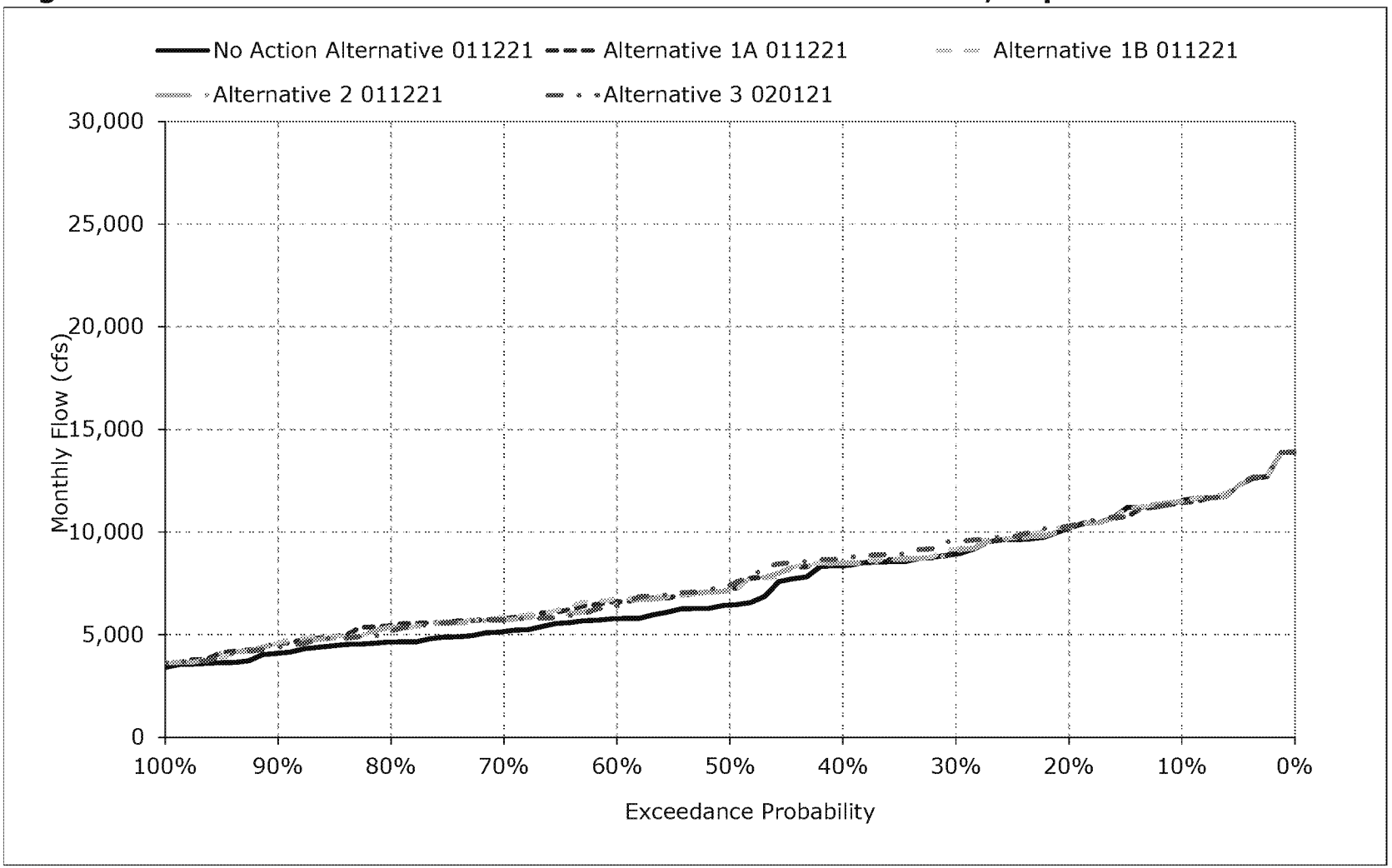


Table 5B2-18-1a. Fremont Weir Spills, No Action Alternative 011221, Monthly Spills (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	313	9,867	24,573	36,744	19,102	2,014	0	0	0	0	0
20%	0	19	1,862	8,468	15,364	4,967	25	0	0	0	0	0
30%	0	1	418	3,280	7,222	1,881	0	0	0	0	0	0
40%	0	0	181	998	3,864	815	0	0	0	0	0	0
50%	0	0	55	413	1,729	515	0	0	0	0	0	0
60%	0	0	22	178	627	167	0	0	0	0	0	0
70%	0	0	6	30	269	85	0	0	0	0	0	0
80%	0	0	0	4	72	6	0	0	0	0	0	0
90%	0	0	0	0	6	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	295	2,927	8,268	11,514	6,382	1,319	143	10	0	0	4
Water Year Types[b,c]												
Wet (32%)	0	335	4,206	22,758	28,262	16,659	3,896	399	30	0	0	7
Above Normal (15%)	0	823	1,167	5,855	12,143	6,585	506	114	0	0	0	0
Below Normal (17%)	0	179	2,766	683	3,109	350	59	0	0	0	0	11
Dry (22%)	0	170	4,277	302	960	309	0	0	0	0	0	0
Critical (15%)	0	0	76	85	236	59	0	0	0	0	0	0

Table 5B2-18-1b. Fremont Weir Spills, Alternative 1A 011221, Monthly Spills (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	311	8,998	23,445	34,187	17,967	1,143	0	0	0	0	0
20%	0	17	1,876	7,761	14,897	4,850	18	0	0	0	0	0
30%	0	1	424	2,969	6,722	1,876	0	0	0	0	0	0
40%	0	0	165	900	3,458	603	0	0	0	0	0	0
50%	0	0	52	374	1,651	370	0	0	0	0	0	0
60%	0	0	18	142	556	137	0	0	0	0	0	0
70%	0	0	4	25	240	48	0	0	0	0	0	0
80%	0	0	0	3	72	6	0	0	0	0	0	0
90%	0	0	0	0	3	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	279	2,871	7,903	11,052	6,079	1,219	119	9	0	0	4
Water Year Types[b,c]												
Wet (32%)	0	327	4,226	21,988	27,399	16,125	3,661	324	30	0	0	7
Above Normal (15%)	0	731	1,165	5,208	11,478	5,918	370	109	0	0	0	0
Below Normal (17%)	0	182	2,573	593	2,744	259	24	0	0	0	0	11
Dry (22%)	0	168	4,156	257	843	224	0	0	0	0	0	0
Critical (15%)	0	0	59	76	213	44	0	0	0	0	0	0

Table 5B2-18-1c. Fremont Weir Spills, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Spills (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	-2	-869	-1,129	-2,557	-1,135	-871	0	0	0	0	0
20%	0	-2	13	-707	-467	-118	-6	0	0	0	0	0
30%	0	0	5	-311	-499	-5	0	0	0	0	0	0
40%	0	0	-16	-98	-406	-211	0	0	0	0	0	0
50%	0	0	-3	-39	-78	-145	0	0	0	0	0	0
60%	0	0	-4	-36	-71	-30	0	0	0	0	0	0
70%	0	0	-2	-5	-29	-37	0	0	0	0	0	0
80%	0	0	0	-1	0	0	0	0	0	0	0	0
90%	0	0	0	0	-3	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	-16	-56	-365	-463	-303	-100	-24	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	-8	20	-770	-864	-535	-235	-75	-1	0	0	0
Above Normal (15%)	0	-92	-2	-647	-665	-667	-135	-5	0	0	0	0
Below Normal (17%)	0	3	-193	-90	-365	-90	-35	0	0	0	0	0
Dry (22%)	0	-2	-121	-45	-117	-85	0	0	0	0	0	0
Critical (15%)	0	0	-17	-9	-23	-15	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-18-2a. Fremont Weir Spills, No Action Alternative 011221, Monthly Spills (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	313	9,867	24,573	36,744	19,102	2,014	0	0	0	0	0
20%	0	19	1,862	8,468	15,364	4,967	25	0	0	0	0	0
30%	0	1	418	3,280	7,222	1,881	0	0	0	0	0	0
40%	0	0	181	998	3,864	815	0	0	0	0	0	0
50%	0	0	55	413	1,729	515	0	0	0	0	0	0
60%	0	0	22	178	627	167	0	0	0	0	0	0
70%	0	0	6	30	269	85	0	0	0	0	0	0
80%	0	0	0	4	72	6	0	0	0	0	0	0
90%	0	0	0	0	6	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	295	2,927	8,268	11,514	6,382	1,319	143	10	0	0	4
Water Year Types[b,c]												
Wet (32%)	0	335	4,206	22,758	28,262	16,659	3,896	399	30	0	0	7
Above Normal (15%)	0	823	1,167	5,855	12,143	6,585	506	114	0	0	0	0
Below Normal (17%)	0	179	2,766	683	3,109	350	59	0	0	0	0	11
Dry (22%)	0	170	4,277	302	960	309	0	0	0	0	0	0
Critical (15%)	0	0	76	85	236	59	0	0	0	0	0	0

Table 5B2-18-2b. Fremont Weir Spills, Alternative 1B 011221, Monthly Spills (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	308	8,773	23,417	33,964	17,968	1,143	0	0	0	0	0
20%	0	19	1,954	7,708	14,625	4,856	18	0	0	0	0	0
30%	0	1	404	2,969	6,724	1,877	0	0	0	0	0	0
40%	0	0	170	900	3,484	603	0	0	0	0	0	0
50%	0	0	52	377	1,653	353	0	0	0	0	0	0
60%	0	0	18	142	561	137	0	0	0	0	0	0
70%	0	0	4	25	240	48	0	0	0	0	0	0
80%	0	0	0	3	72	6	0	0	0	0	0	0
90%	0	0	0	0	4	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	286	2,866	7,885	10,997	6,074	1,197	119	9	0	0	4
Water Year Types[b,c]												
Wet (32%)	0	327	4,256	21,931	27,222	16,111	3,593	325	30	0	0	7
Above Normal (15%)	0	756	1,154	5,210	11,421	5,922	370	109	0	0	0	0
Below Normal (17%)	0	194	2,585	595	2,785	260	24	0	0	0	0	13
Dry (22%)	0	176	4,088	255	856	220	0	0	0	0	0	0
Critical (15%)	0	0	60	76	213	44	0	0	0	0	0	0

Table 5B2-18-2c. Fremont Weir Spills, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Spills (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	-5	-1,095	-1,156	-2,780	-1,134	-871	0	0	0	0	0
20%	0	0	92	-760	-739	-111	-6	0	0	0	0	0
30%	0	0	-15	-311	-498	-4	0	0	0	0	0	0
40%	0	0	-11	-98	-379	-212	0	0	0	0	0	0
50%	0	0	-3	-36	-76	-162	0	0	0	0	0	0
60%	0	0	-4	-35	-66	-30	0	0	0	0	0	0
70%	0	0	-2	-5	-29	-37	0	0	0	0	0	0
80%	0	0	0	-1	0	0	0	0	0	0	0	0
90%	0	0	0	0	-3	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	-9	-61	-383	-517	-308	-122	-24	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	-8	50	-827	-1,041	-548	-304	-75	-1	0	0	0
Above Normal (15%)	0	-68	-13	-645	-721	-663	-135	-5	0	0	0	0
Below Normal (17%)	0	15	-181	-88	-324	-89	-35	0	0	0	0	2
Dry (22%)	0	6	-189	-46	-105	-89	0	0	0	0	0	0
Critical (15%)	0	0	-16	-9	-23	-15	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-18-3a. Fremont Weir Spills, No Action Alternative 011221, Monthly Spills (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	313	9,867	24,573	36,744	19,102	2,014	0	0	0	0	0
20%	0	19	1,862	8,468	15,364	4,967	25	0	0	0	0	0
30%	0	1	418	3,280	7,222	1,881	0	0	0	0	0	0
40%	0	0	181	998	3,864	815	0	0	0	0	0	0
50%	0	0	55	413	1,729	515	0	0	0	0	0	0
60%	0	0	22	178	627	167	0	0	0	0	0	0
70%	0	0	6	30	269	85	0	0	0	0	0	0
80%	0	0	0	4	72	6	0	0	0	0	0	0
90%	0	0	0	0	6	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	295	2,927	8,268	11,514	6,382	1,319	143	10	0	0	4
Water Year Types[b,c]												
Wet (32%)	0	335	4,206	22,758	28,262	16,659	3,896	399	30	0	0	7
Above Normal (15%)	0	823	1,167	5,855	12,143	6,585	506	114	0	0	0	0
Below Normal (17%)	0	179	2,766	683	3,109	350	59	0	0	0	0	11
Dry (22%)	0	170	4,277	302	960	309	0	0	0	0	0	0
Critical (15%)	0	0	76	85	236	59	0	0	0	0	0	0

Table 5B2-18-3b. Fremont Weir Spills, Alternative 2 011221, Monthly Spills (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	311	9,005	23,473	34,187	18,867	1,143	0	0	0	0	0
20%	0	17	1,904	7,771	14,921	4,849	18	0	0	0	0	0
30%	0	1	424	3,051	6,724	1,877	0	0	0	0	0	0
40%	0	0	165	900	3,459	603	0	0	0	0	0	0
50%	0	0	52	374	1,651	370	0	0	0	0	0	0
60%	0	0	18	142	561	137	0	0	0	0	0	0
70%	0	0	4	25	240	48	0	0	0	0	0	0
80%	0	0	0	3	72	6	0	0	0	0	0	0
90%	0	0	0	0	3	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	278	2,875	7,899	11,078	6,105	1,229	119	9	0	0	4
Water Year Types[b,c]												
Wet (32%)	0	327	4,229	21,975	27,478	16,205	3,692	325	30	0	0	7
Above Normal (15%)	0	733	1,164	5,208	11,495	5,924	370	109	0	0	0	0
Below Normal (17%)	0	173	2,589	593	2,737	260	24	0	0	0	0	11
Dry (22%)	0	168	4,159	257	843	225	0	0	0	0	0	0
Critical (15%)	0	0	59	76	213	44	0	0	0	0	0	0

Table 5B2-18-3c. Fremont Weir Spills, Alternative 2 011221 minus No Action Alternative 011221, Monthly Spills (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	-2	-863	-1,101	-2,557	-235	-871	0	0	0	0	0
20%	0	-2	41	-697	-443	-118	-6	0	0	0	0	0
30%	0	0	6	-229	-498	-5	0	0	0	0	0	0
40%	0	0	-16	-98	-405	-211	0	0	0	0	0	0
50%	0	0	-3	-39	-78	-146	0	0	0	0	0	0
60%	0	0	-4	-36	-66	-30	0	0	0	0	0	0
70%	0	0	-2	-5	-29	-37	0	0	0	0	0	0
80%	0	0	0	-1	0	0	0	0	0	0	0	0
90%	0	0	0	0	-3	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	-17	-52	-369	-436	-277	-91	-24	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	-8	22	-783	-784	-454	-204	-75	-1	0	0	0
Above Normal (15%)	0	-90	-2	-647	-648	-661	-135	-5	0	0	0	0
Below Normal (17%)	0	-6	-177	-90	-372	-89	-35	0	0	0	0	0
Dry (22%)	0	-1	-118	-45	-117	-84	0	0	0	0	0	0
Critical (15%)	0	0	-17	-9	-23	-15	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-18-4a. Fremont Weir Spills, No Action Alternative 011221, Monthly Spills (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	313	9,867	24,573	36,744	19,102	2,014	0	0	0	0	0
20%	0	19	1,862	8,468	15,364	4,967	25	0	0	0	0	0
30%	0	1	418	3,280	7,222	1,881	0	0	0	0	0	0
40%	0	0	181	998	3,864	815	0	0	0	0	0	0
50%	0	0	55	413	1,729	515	0	0	0	0	0	0
60%	0	0	22	178	627	167	0	0	0	0	0	0
70%	0	0	6	30	269	85	0	0	0	0	0	0
80%	0	0	0	4	72	6	0	0	0	0	0	0
90%	0	0	0	0	6	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	295	2,927	8,268	11,514	6,382	1,319	143	10	0	0	4
Water Year Types[b,c]												
Wet (32%)	0	335	4,206	22,758	28,262	16,659	3,896	399	30	0	0	7
Above Normal (15%)	0	823	1,167	5,855	12,143	6,585	506	114	0	0	0	0
Below Normal (17%)	0	179	2,766	683	3,109	350	59	0	0	0	0	11
Dry (22%)	0	170	4,277	302	960	309	0	0	0	0	0	0
Critical (15%)	0	0	76	85	236	59	0	0	0	0	0	0

Table 5B2-18-4b. Fremont Weir Spills, Alternative 3 020121, Monthly Spills (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	315	8,755	23,456	33,890	17,380	1,143	0	0	0	0	0
20%	0	18	2,007	8,004	14,034	4,370	18	0	0	0	0	0
30%	0	0	416	2,971	6,620	1,877	0	0	0	0	0	0
40%	0	0	170	900	3,962	603	0	0	0	0	0	0
50%	0	0	51	376	1,653	353	0	0	0	0	0	0
60%	0	0	18	142	560	137	0	0	0	0	0	0
70%	0	0	5	25	241	49	0	0	0	0	0	0
80%	0	0	0	3	70	7	0	0	0	0	0	0
90%	0	0	0	0	4	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	292	2,897	7,891	11,048	6,016	1,145	116	9	0	0	4
Water Year Types[b,c]												
Wet (32%)	0	327	4,253	21,933	27,341	15,951	3,428	316	30	0	0	7
Above Normal (15%)	0	802	1,098	5,250	11,606	5,861	371	109	0	0	0	0
Below Normal (17%)	0	189	2,623	594	2,705	259	24	0	0	0	0	12
Dry (22%)	0	178	4,244	256	856	227	0	0	0	0	0	0
Critical (15%)	0	0	60	77	213	45	0	0	0	0	0	0

Table 5B2-18-4c. Fremont Weir Spills, Alternative 3 020121 minus No Action Alternative 011221, Monthly Spills (cfs)

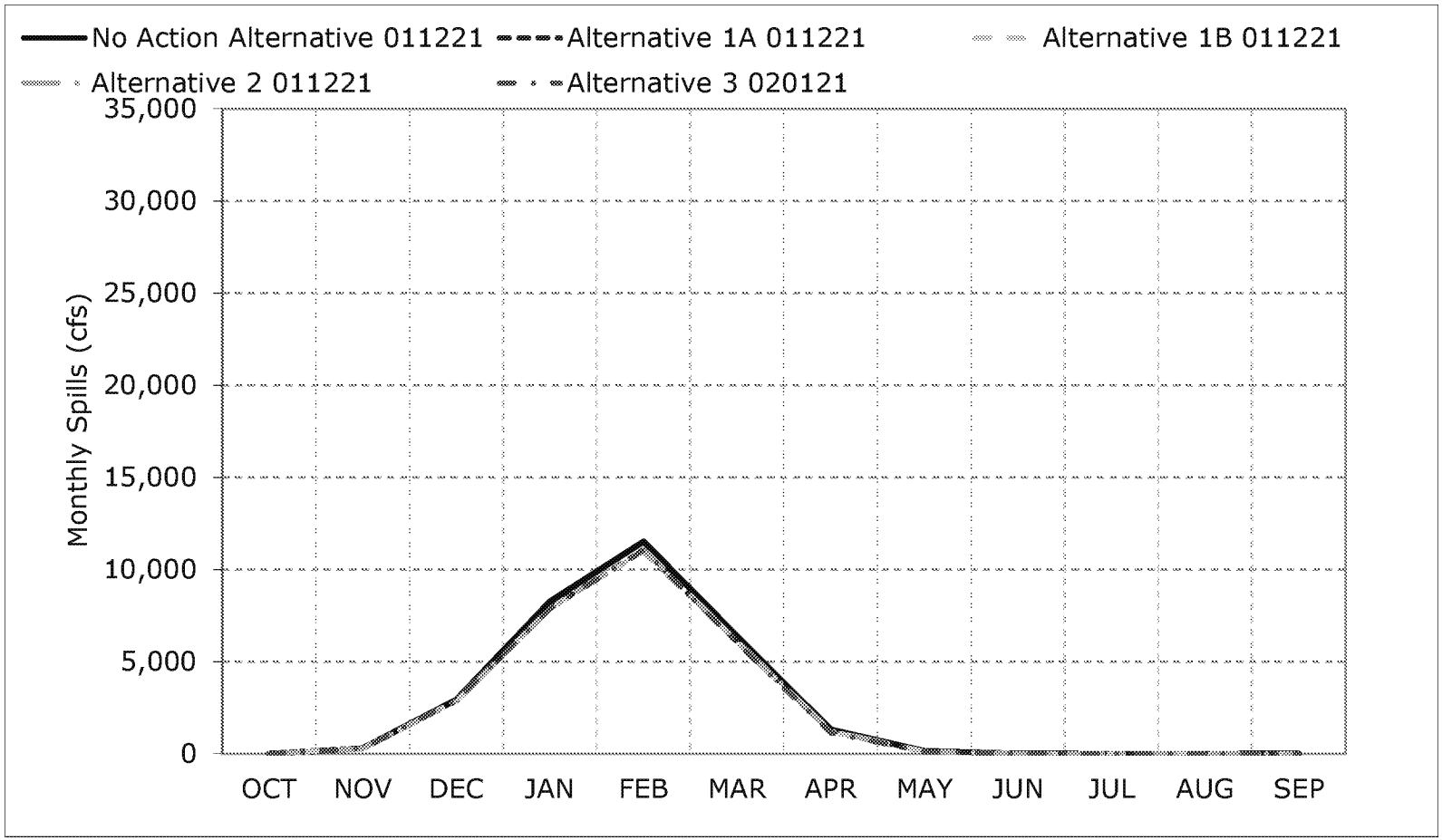
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	2	-1,112	-1,118	-2,854	-1,721	-871	0	0	0	0	0
20%	0	-1	145	-464	-1,330	-597	-6	0	0	0	0	0
30%	0	-1	-3	-309	-602	-5	0	0	0	0	0	0
40%	0	0	-11	-98	98	-211	0	0	0	0	0	0
50%	0	0	-3	-37	-76	-162	0	0	0	0	0	0
60%	0	0	-4	-35	-67	-30	0	0	0	0	0	0
70%	0	0	-1	-4	-28	-36	0	0	0	0	0	0
80%	0	0	0	-1	-2	1	0	0	0	0	0	0
90%	0	0	0	0	-3	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	0	-2	-29	-377	-466	-366	-174	-27	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	-8	47	-825	-922	-709	-469	-83	-1	0	0	0
Above Normal (15%)	0	-21	-69	-605	-537	-724	-135	-5	0	0	0	0
Below Normal (17%)	0	10	-143	-88	-404	-90	-35	0	0	0	0	1
Dry (22%)	0	8	-33	-46	-105	-82	0	0	0	0	0	0
Critical (15%)	0	0	-16	-9	-23	-14	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

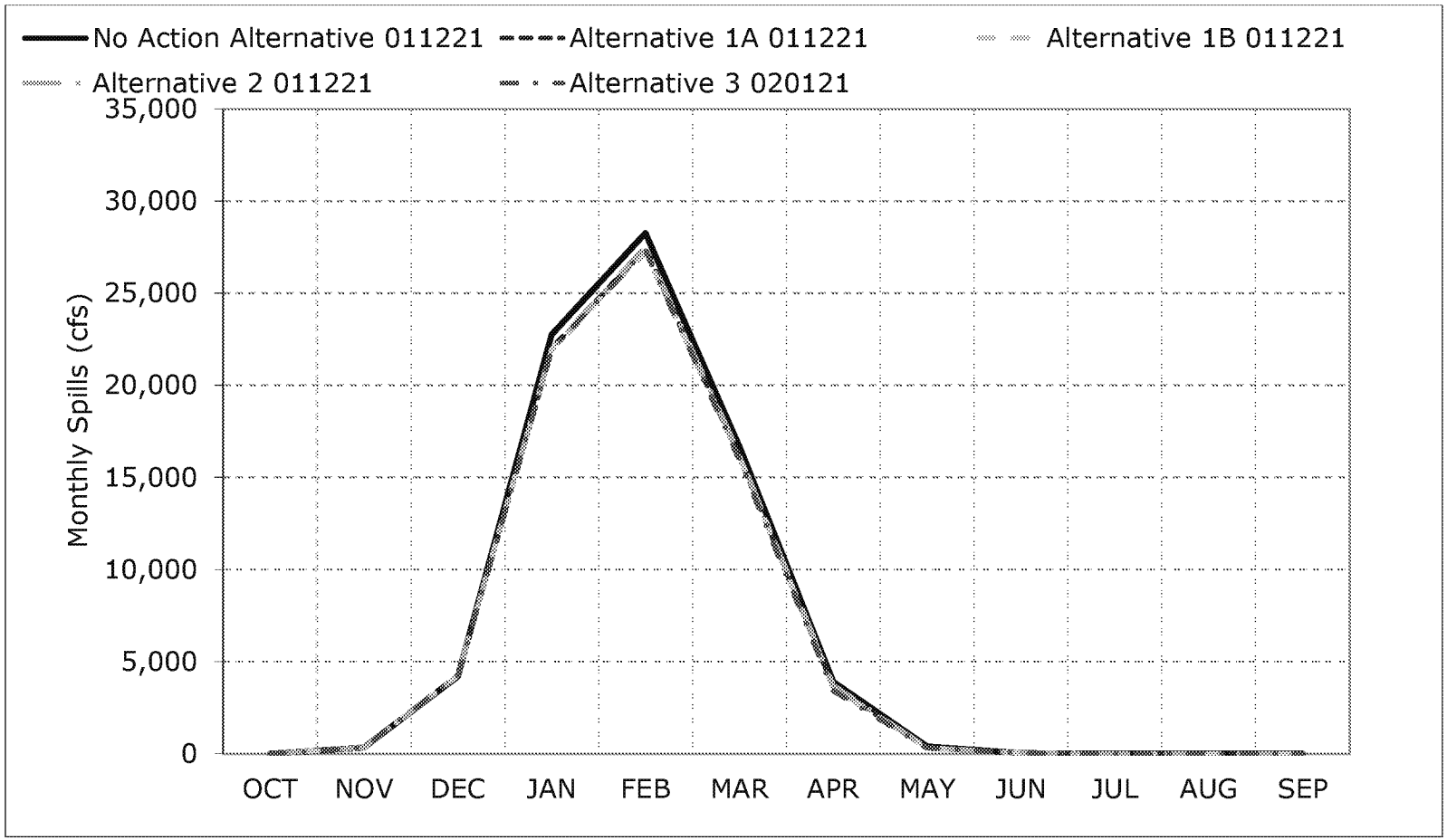
c These results are displayed with calendar year - year type sorting.

Figure 5B2-18-1. Fremont Weir Spills, Long-Term Average Spills



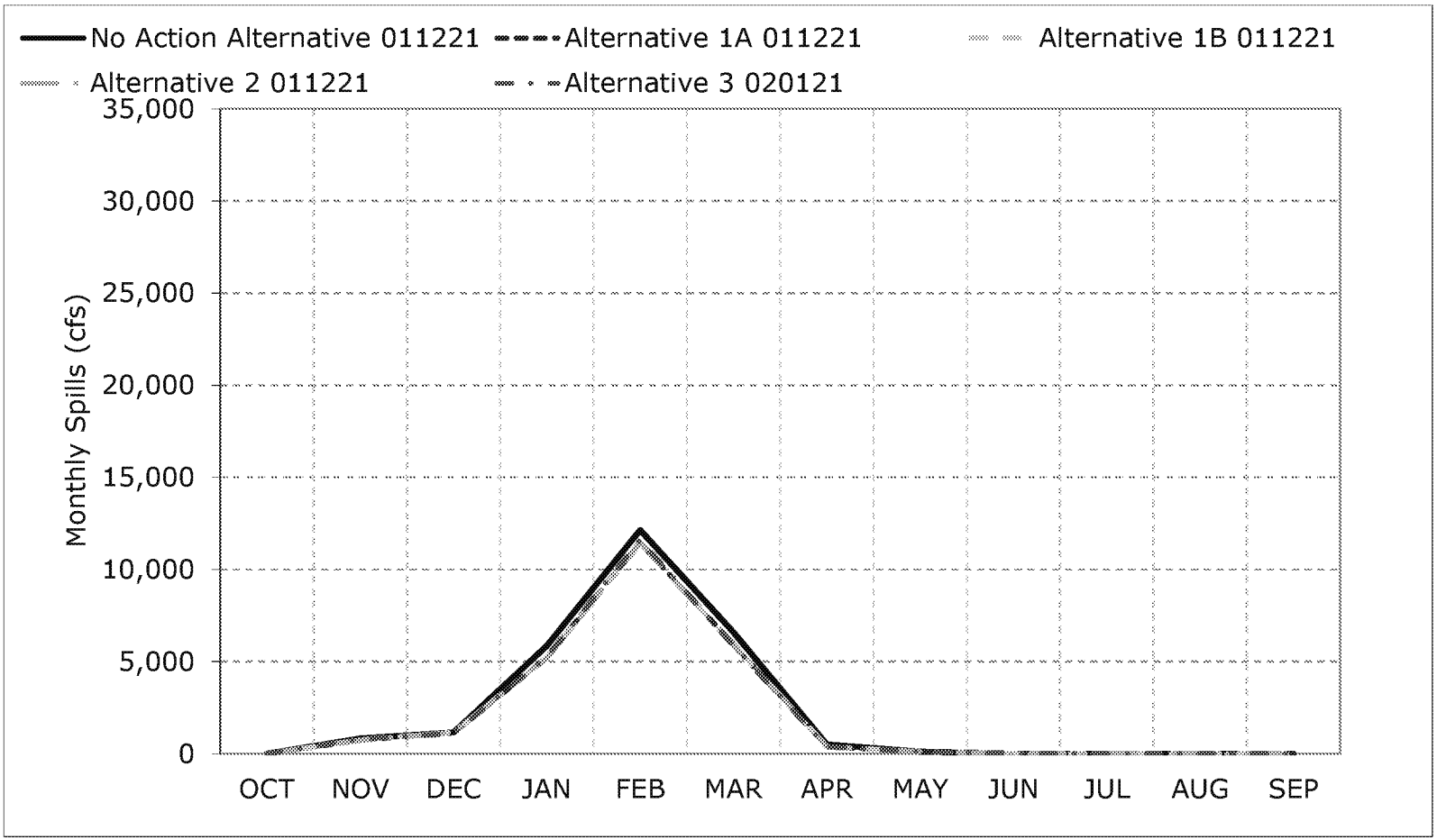
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-18-2. Fremont Weir Spills, Wet Year Average Spills



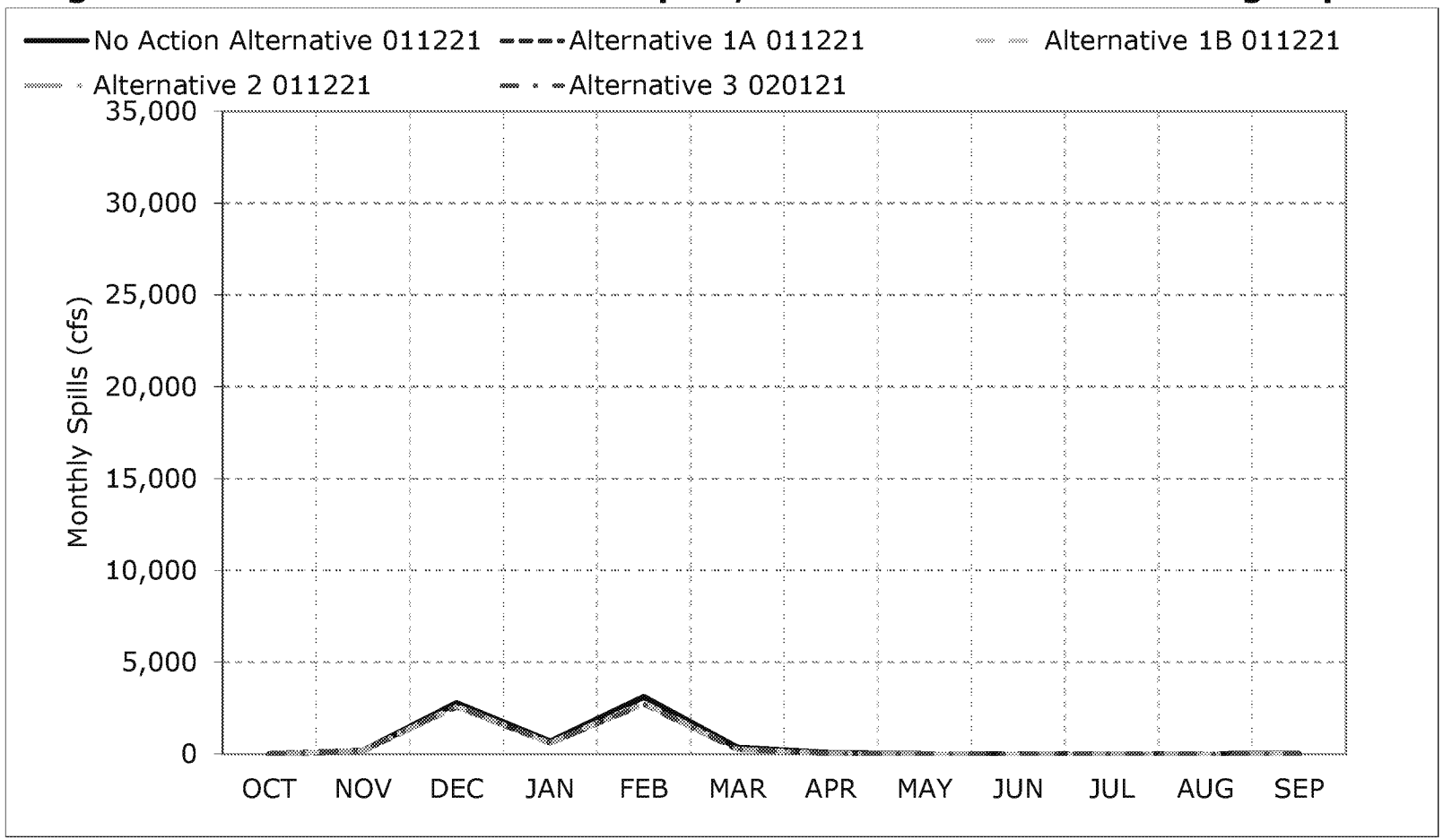
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-18-3. Fremont Weir Spills, Above Normal Year Average Spills



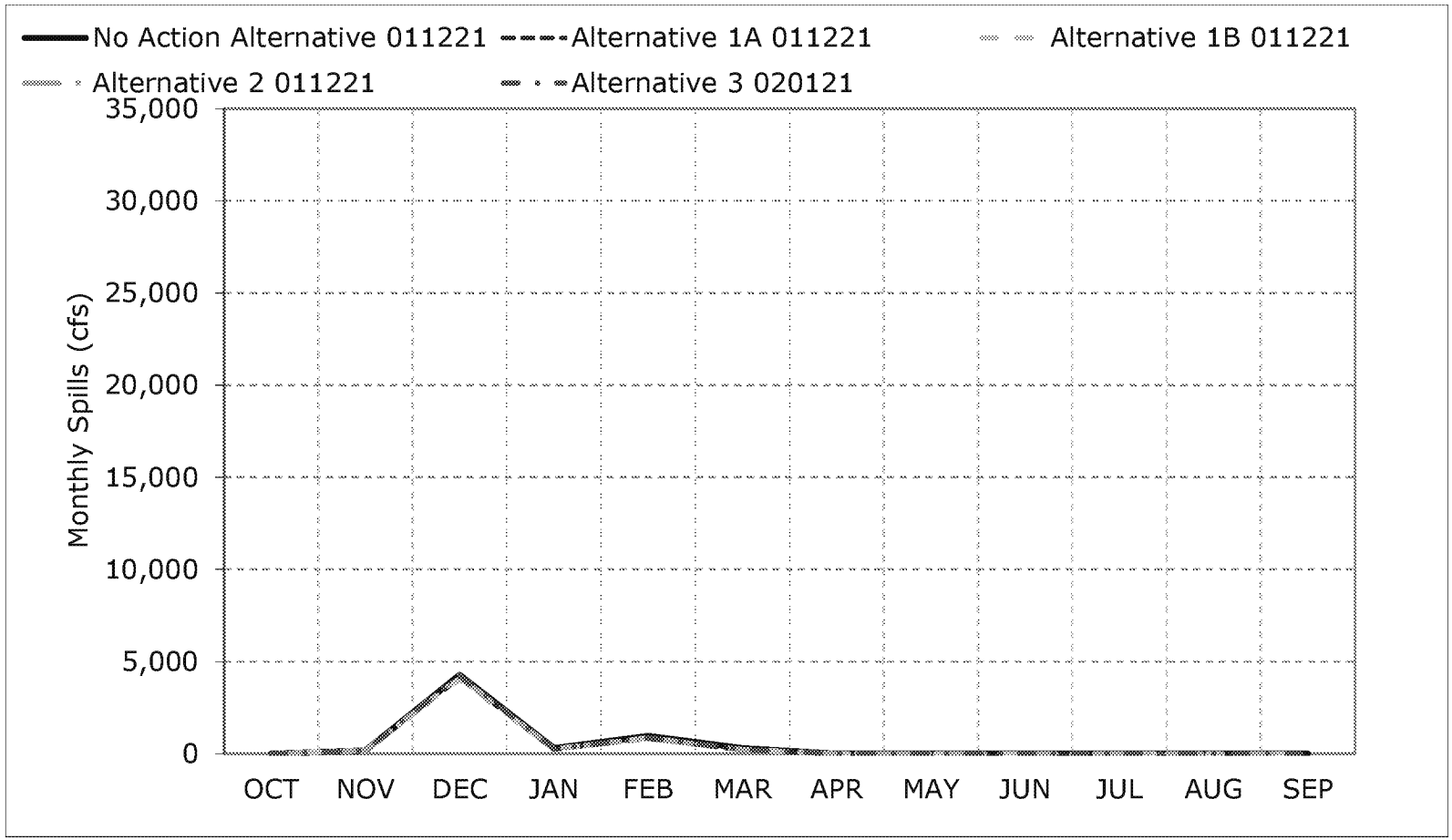
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-18-4. Fremont Weir Spills, Below Normal Year Average Spills



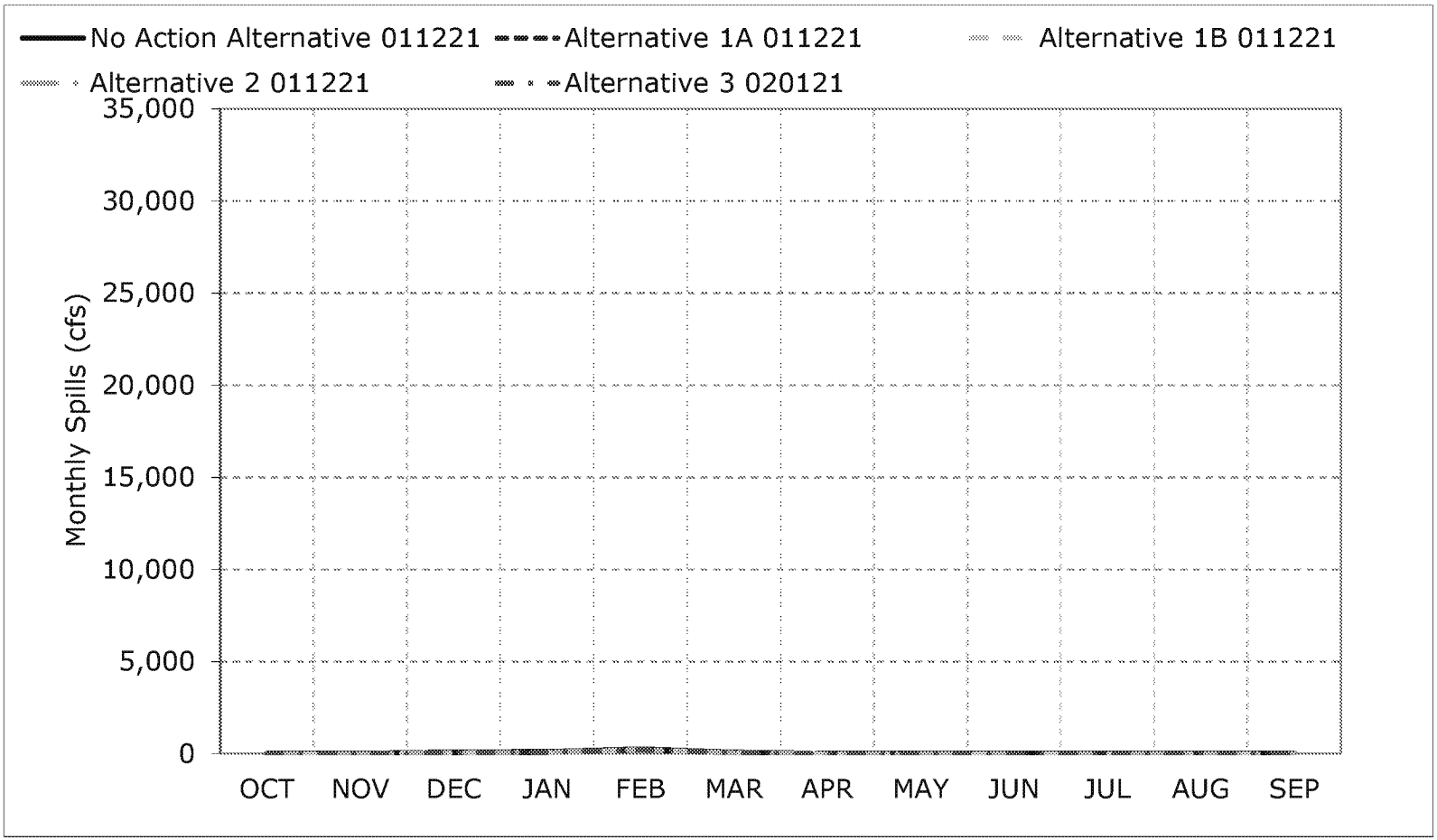
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-18-5. Fremont Weir Spills, Dry Year Average Spills



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-18-6. Fremont Weir Spills, Critical Year Average Spills



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-18-7. Fremont Weir Spills, October

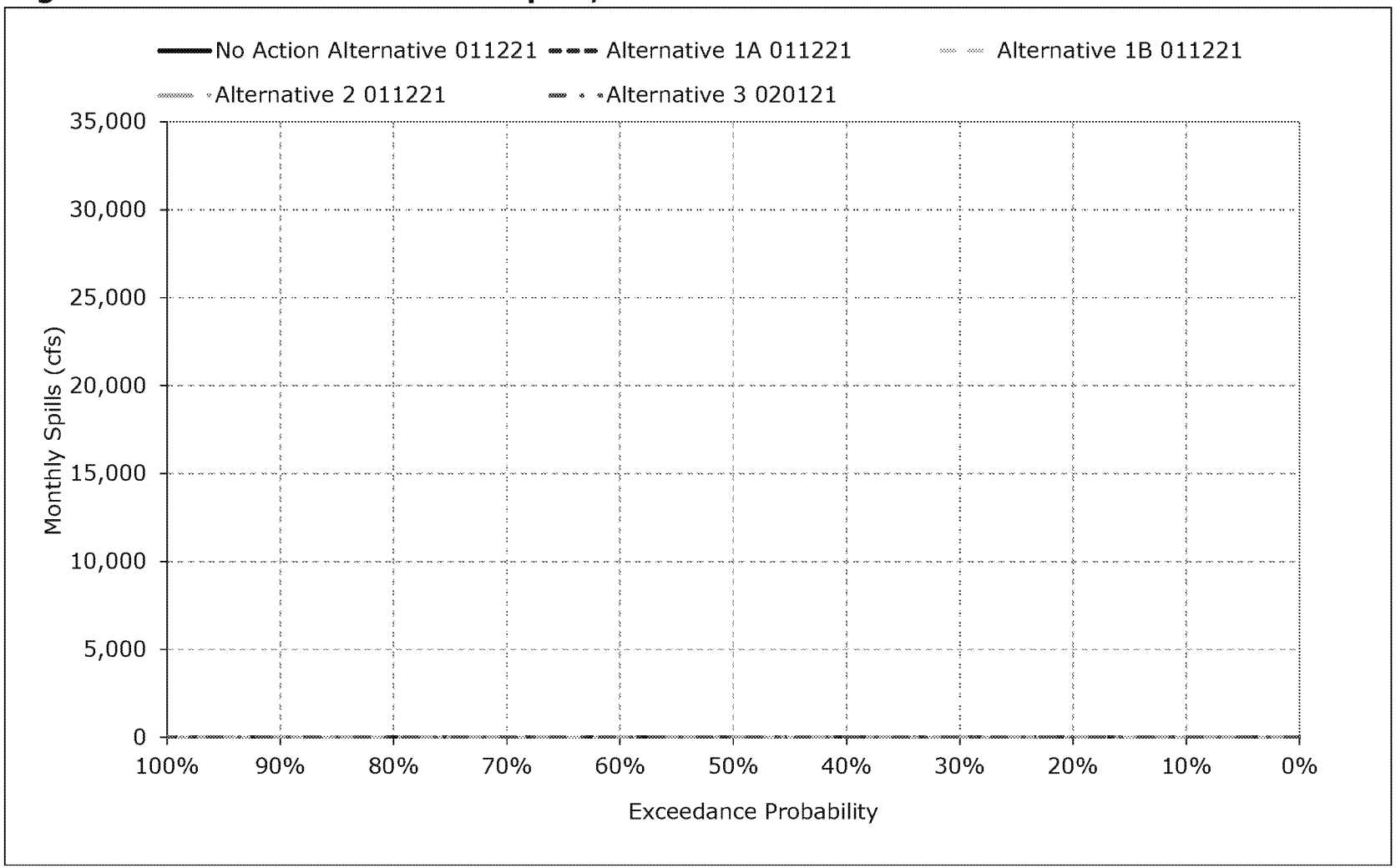


Figure 5B2-18-8. Fremont Weir Spills, November

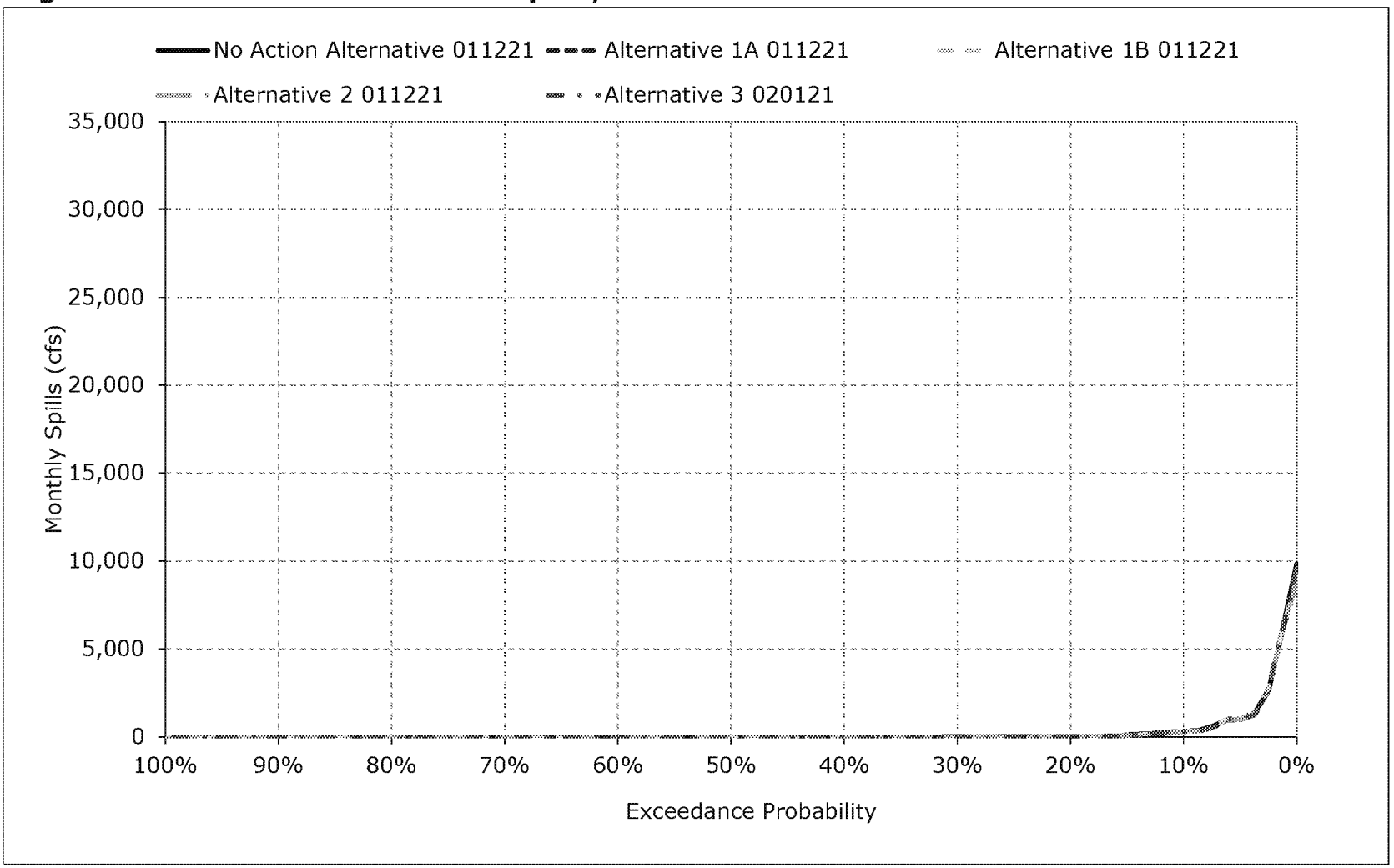


Figure 5B2-18-9. Fremont Weir Spills, December

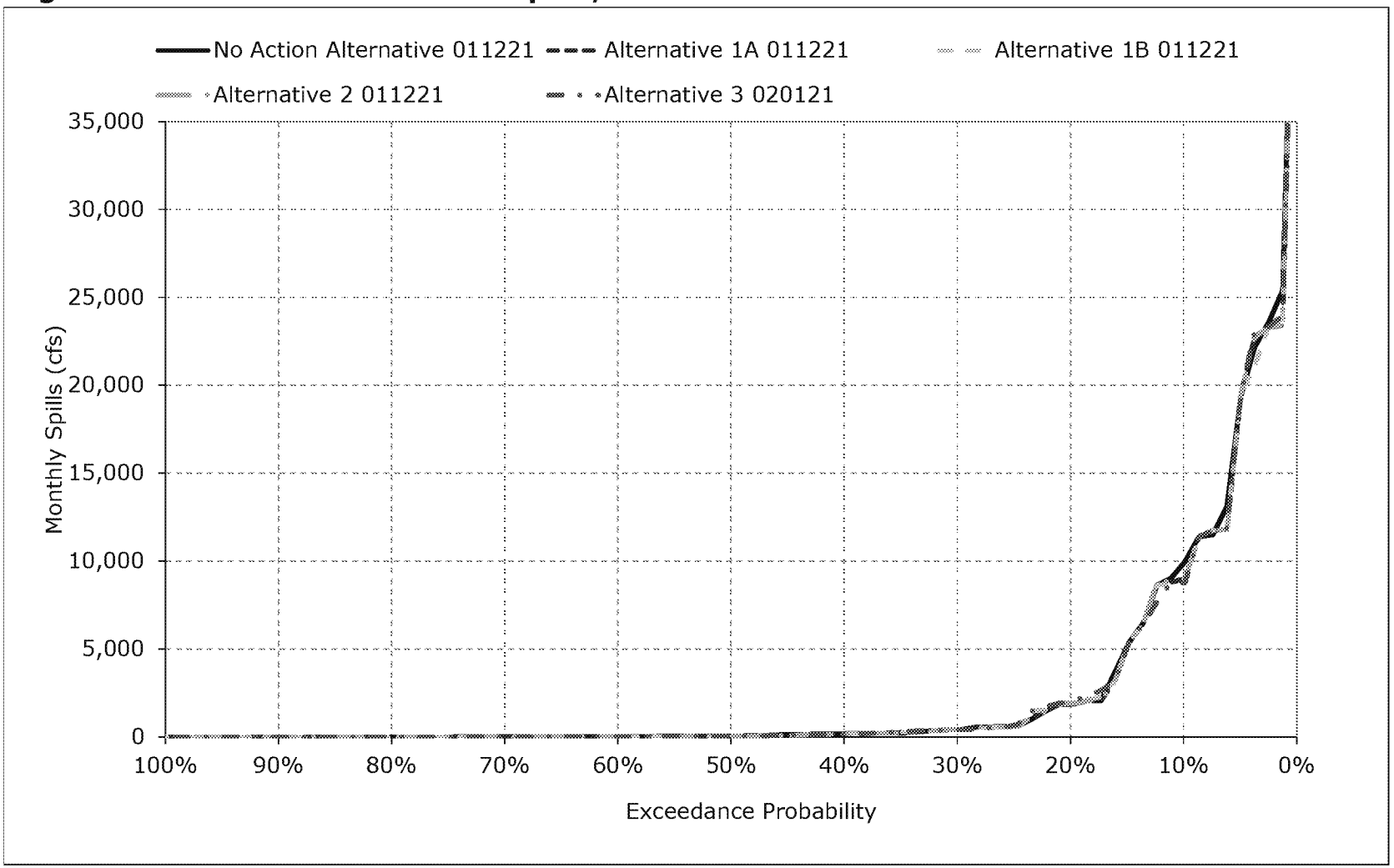


Figure 5B2-18-10. Fremont Weir Spills, January

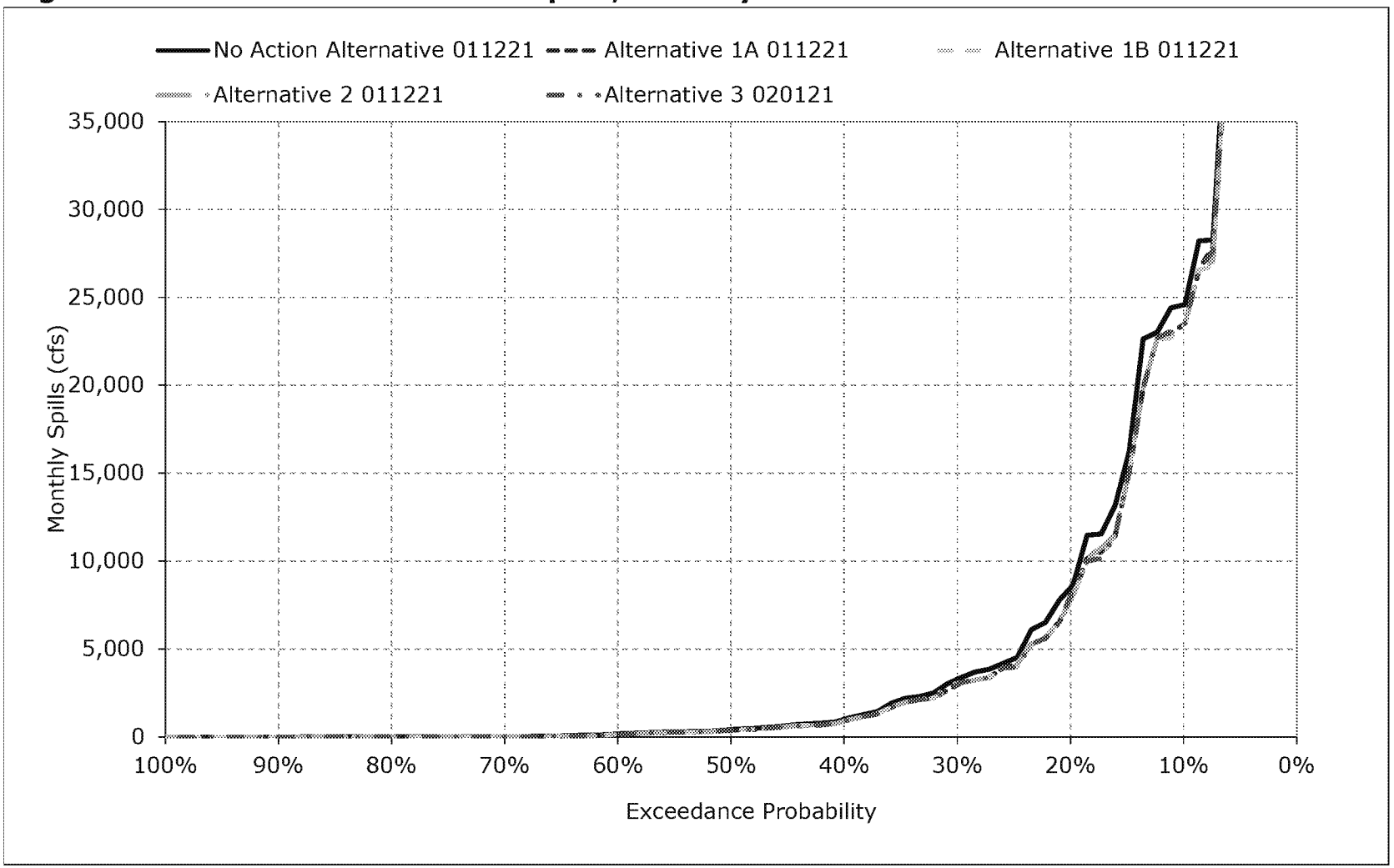


Figure 5B2-18-11. Fremont Weir Spills, February

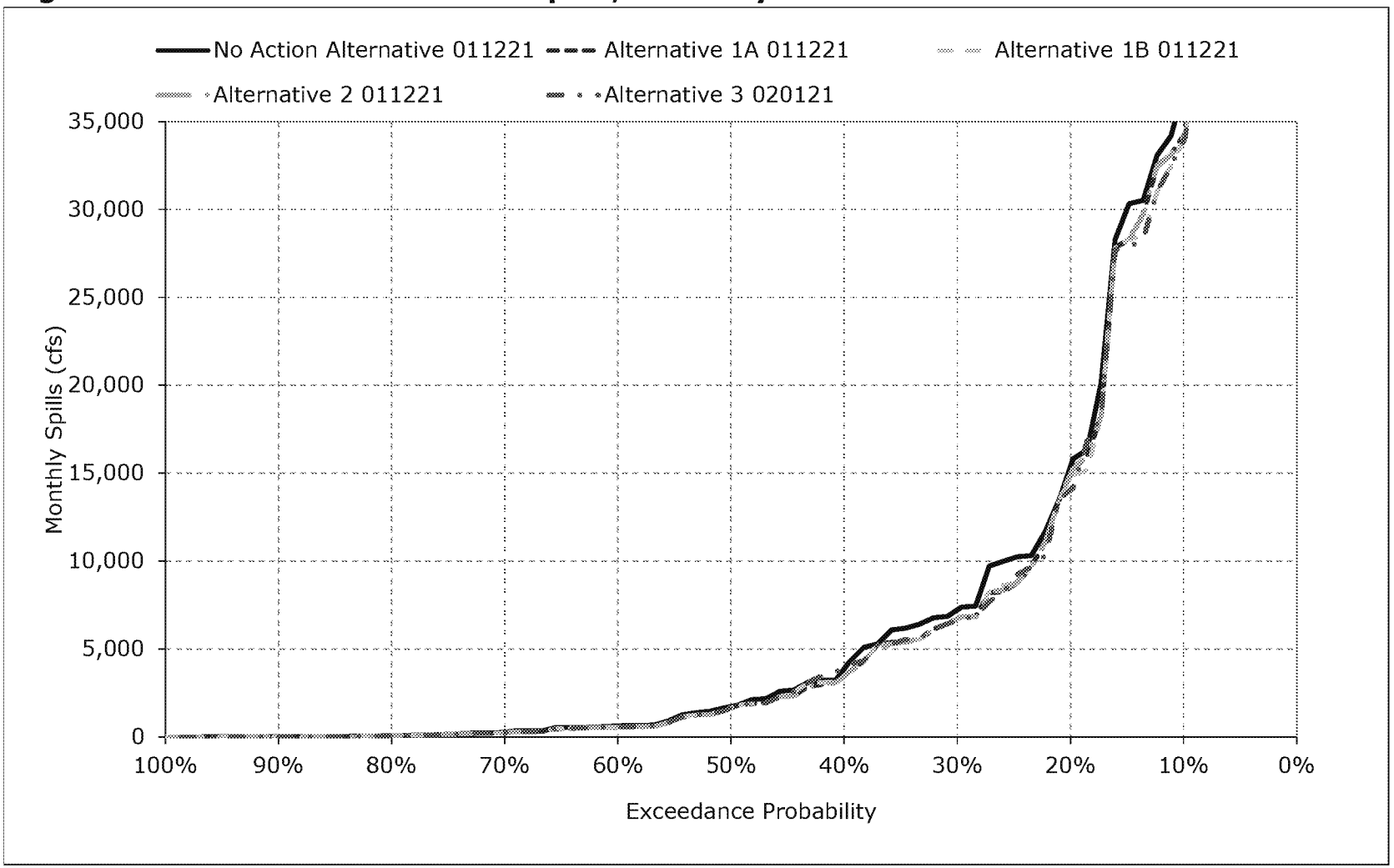


Figure 5B2-18-12. Fremont Weir Spills, March

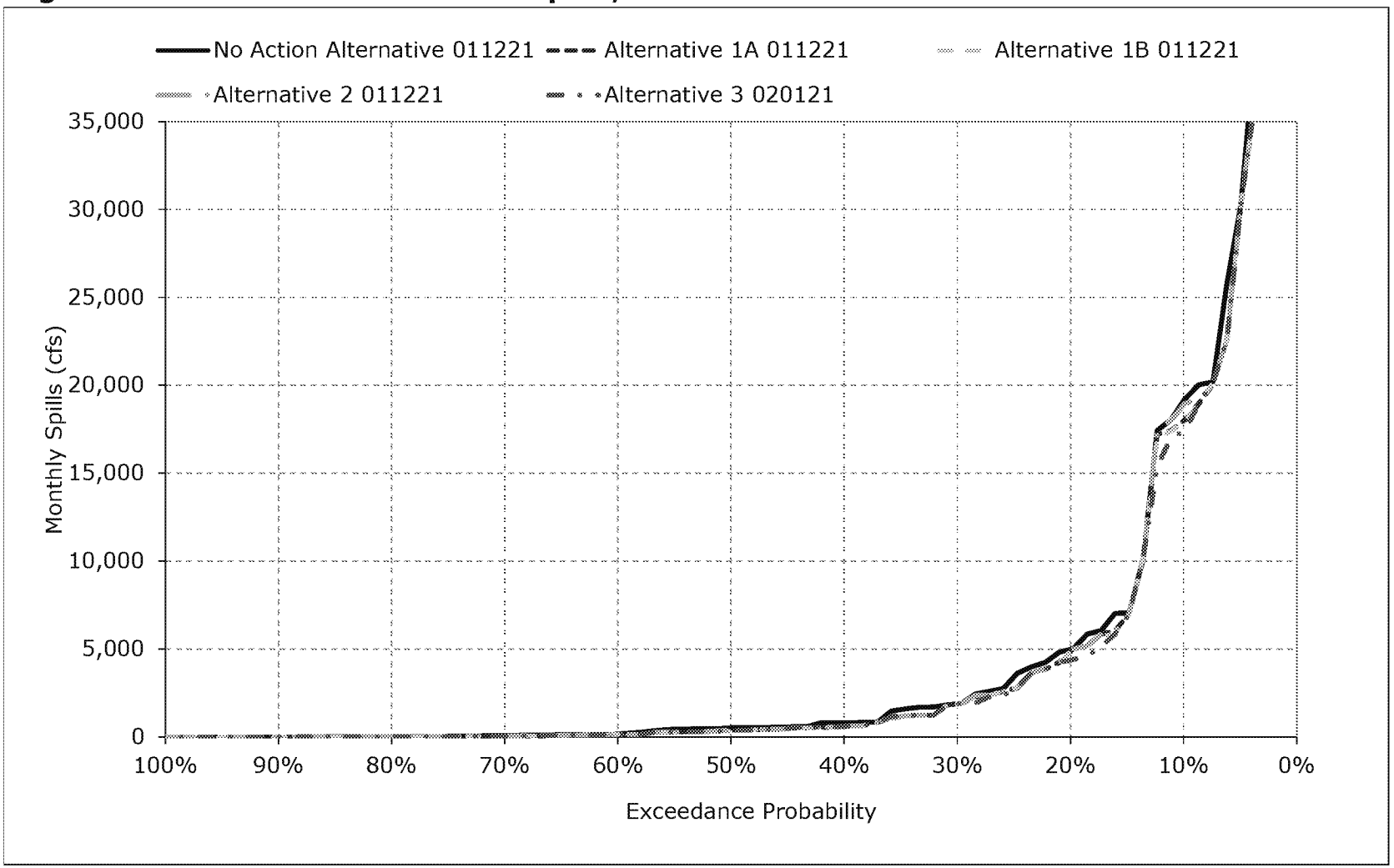


Figure 5B2-18-13. Fremont Weir Spills, April

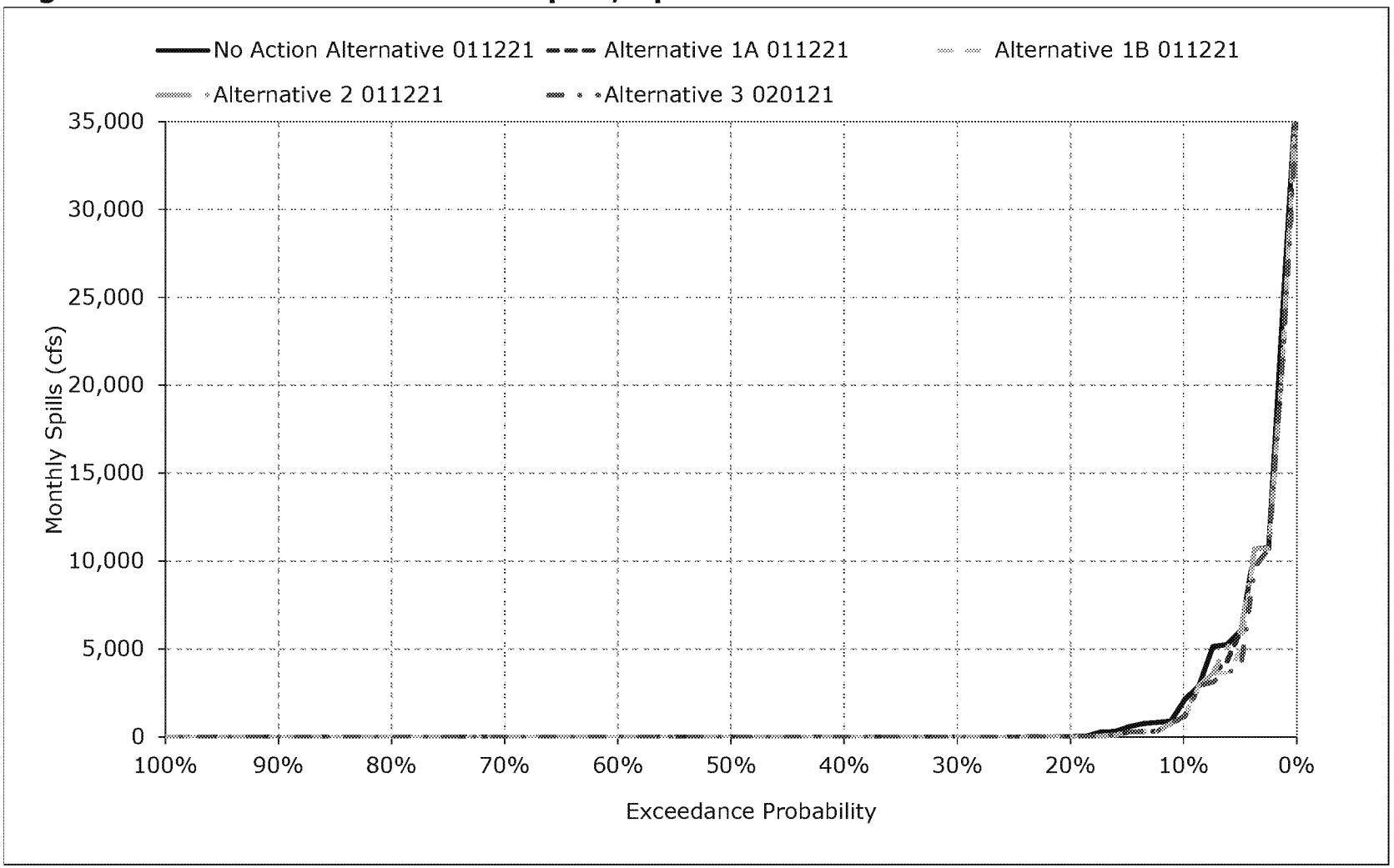


Figure 5B2-18-14. Fremont Weir Spills, May

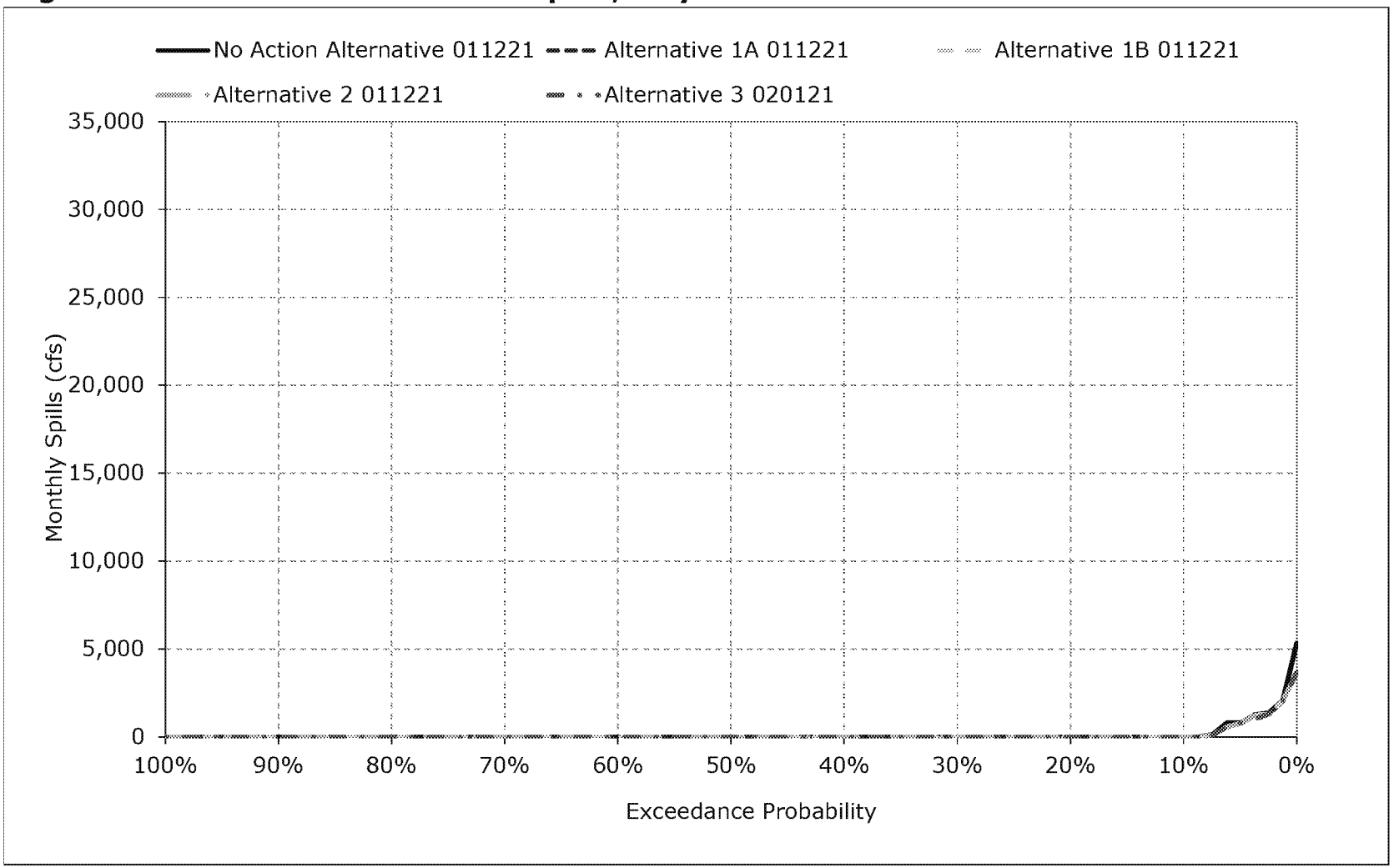


Figure 5B2-18-15. Fremont Weir Spills, June

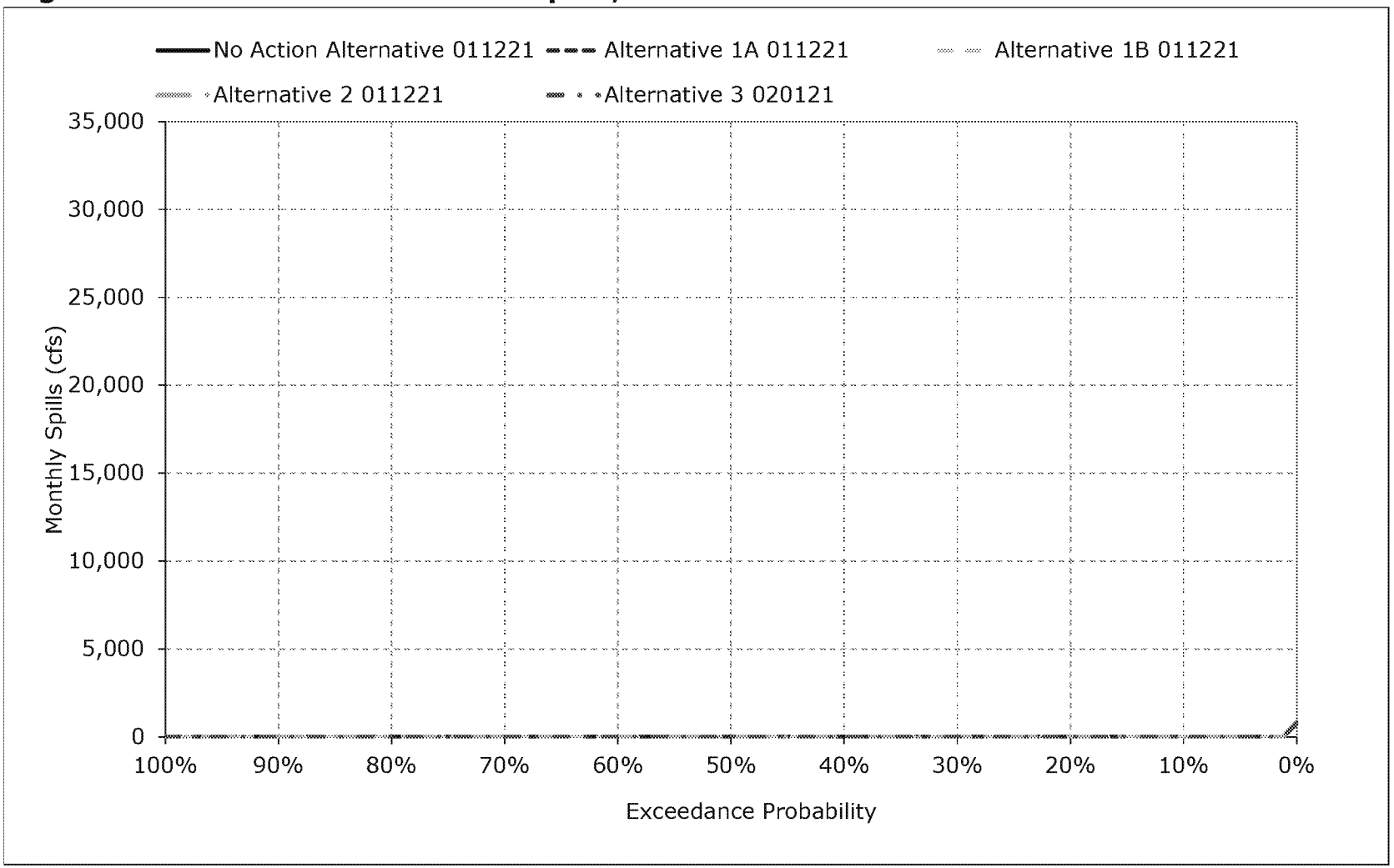


Figure 5B2-18-16. Fremont Weir Spills, July

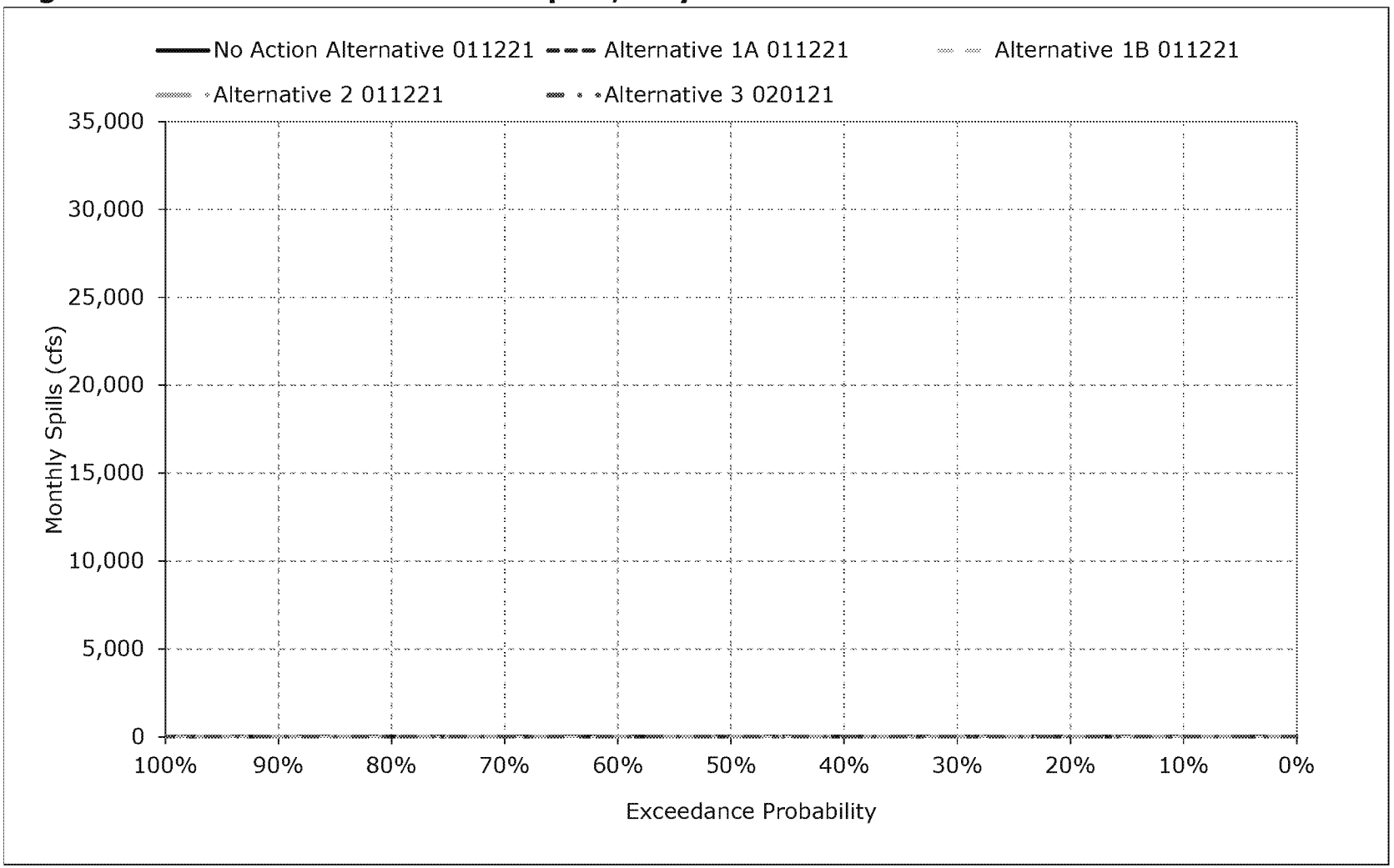


Figure 5B2-18-17. Fremont Weir Spills, August

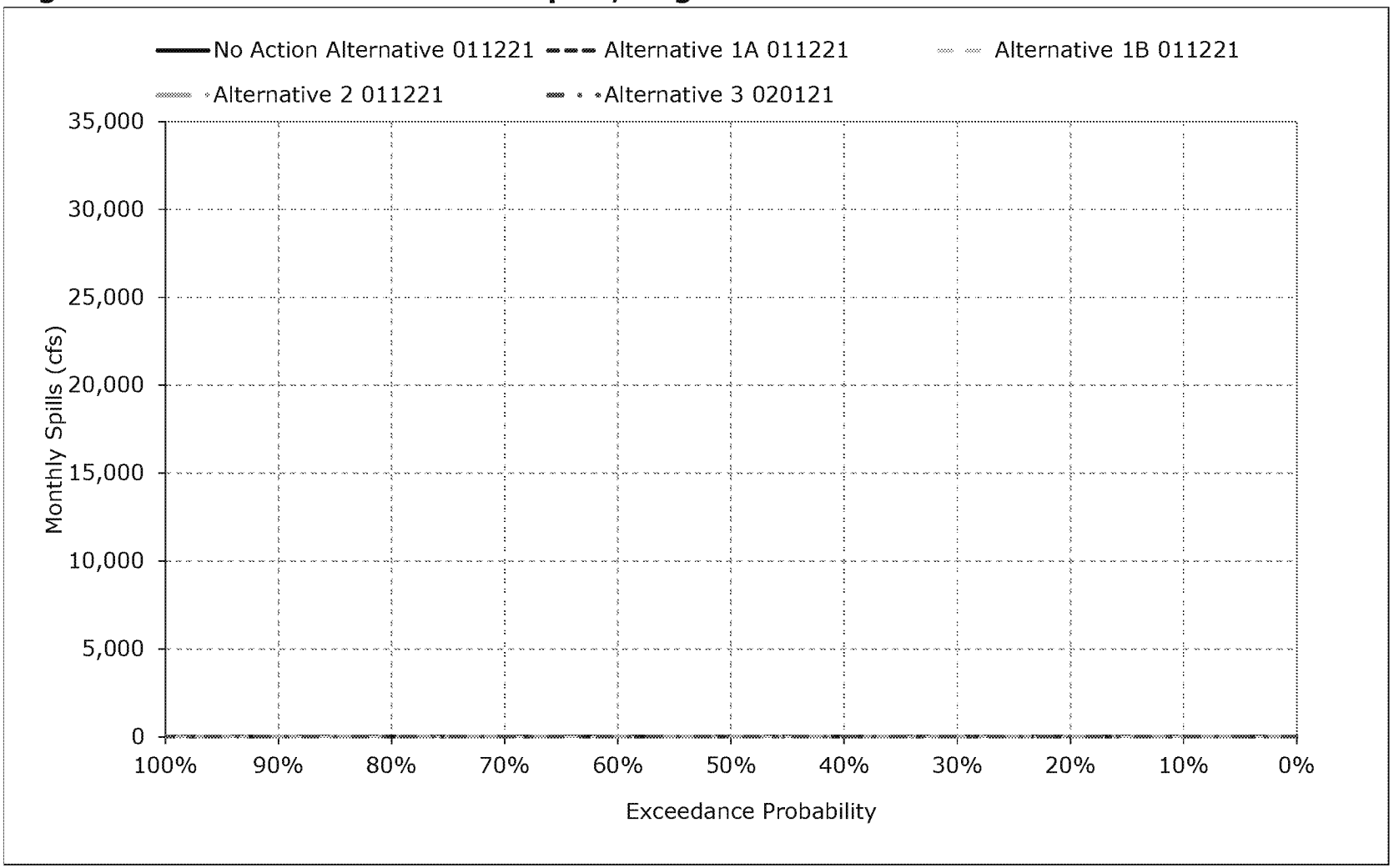


Figure 5B2-18-18. Fremont Weir Spills, September

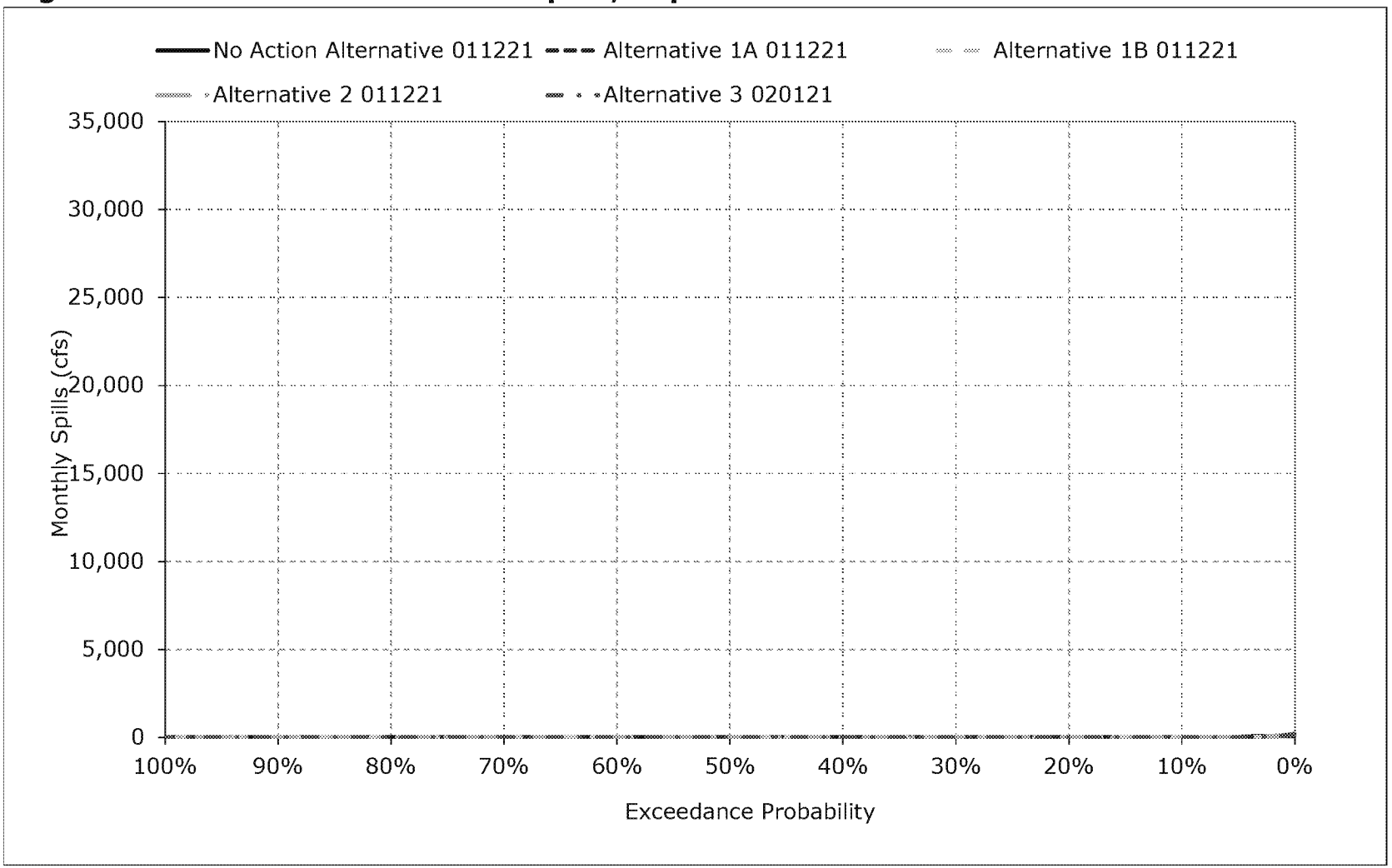


Table 5B2-19-1a. Lake Oroville Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,757	2,763	2,788	2,807	2,922	3,058	3,361	3,538	3,538	3,382	3,151	2,796
20%	2,229	2,325	2,562	2,788	2,802	2,990	3,297	3,538	3,538	3,089	2,789	2,408
30%	2,028	2,086	2,204	2,572	2,788	2,933	3,270	3,538	3,532	3,012	2,597	2,134
40%	1,764	1,867	1,979	2,371	2,702	2,841	3,221	3,438	3,314	2,790	2,364	1,937
50%	1,604	1,602	1,731	2,117	2,474	2,788	3,154	3,238	3,056	2,458	1,996	1,737
60%	1,503	1,488	1,597	1,688	2,003	2,485	2,758	2,808	2,710	2,183	1,699	1,594
70%	1,390	1,303	1,259	1,492	1,783	2,134	2,464	2,584	2,307	1,684	1,590	1,501
80%	1,279	1,165	1,201	1,363	1,679	1,924	2,120	2,132	1,958	1,565	1,435	1,363
90%	986	1,007	1,049	1,237	1,424	1,623	1,766	1,786	1,590	1,329	1,183	1,059
Long Term												
Full Simulation Period[a]	1,747	1,722	1,822	2,026	2,264	2,495	2,776	2,900	2,766	2,355	2,088	1,867
Water Year Types[b,c]												
Wet (32%)	2,448	2,413	2,430	2,617	2,855	2,945	3,304	3,508	3,488	3,191	2,964	2,624
Above Normal (15%)	1,897	1,860	1,924	2,116	2,480	2,913	3,295	3,493	3,402	2,899	2,483	2,047
Below Normal (17%)	1,633	1,615	1,785	1,889	2,152	2,438	2,815	3,013	2,907	2,338	1,866	1,711
Dry (22%)	1,307	1,293	1,513	1,610	1,831	2,152	2,354	2,375	2,094	1,619	1,482	1,409
Critical (15%)	867	855	910	1,440	1,546	1,686	1,702	1,649	1,410	1,124	965	914

Table 5B2-19-1b. Lake Oroville Storage, Alternative 1A 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,694	2,728	2,788	2,807	2,922	3,058	3,361	3,538	3,538	3,400	3,144	2,817
20%	2,229	2,319	2,522	2,788	2,796	2,990	3,297	3,538	3,538	3,089	2,785	2,412
30%	2,027	2,115	2,202	2,570	2,788	2,933	3,272	3,538	3,533	3,028	2,600	2,147
40%	1,768	1,856	1,976	2,371	2,697	2,827	3,219	3,445	3,317	2,790	2,363	1,939
50%	1,614	1,602	1,747	2,119	2,473	2,788	3,154	3,237	3,059	2,477	2,015	1,765
60%	1,541	1,485	1,597	1,679	2,041	2,485	2,745	2,796	2,717	2,191	1,717	1,634
70%	1,387	1,285	1,271	1,481	1,767	2,120	2,463	2,579	2,304	1,719	1,599	1,509
80%	1,284	1,189	1,182	1,343	1,645	1,898	2,069	2,120	2,004	1,663	1,506	1,416
90%	969	1,005	1,033	1,230	1,391	1,587	1,765	1,773	1,651	1,406	1,210	1,085
Long Term												
Full Simulation Period[a]	1,744	1,715	1,815	2,019	2,256	2,489	2,770	2,893	2,776	2,377	2,104	1,880
Water Year Types[b,c]												
Wet (32%)	2,446	2,411	2,426	2,619	2,854	2,945	3,304	3,508	3,488	3,194	2,966	2,626
Above Normal (15%)	1,895	1,857	1,925	2,109	2,474	2,908	3,291	3,489	3,400	2,896	2,480	2,044
Below Normal (17%)	1,638	1,611	1,780	1,889	2,153	2,438	2,815	3,012	2,916	2,366	1,891	1,736
Dry (22%)	1,311	1,287	1,504	1,591	1,812	2,134	2,337	2,357	2,124	1,682	1,529	1,450
Critical (15%)	845	831	886	1,424	1,530	1,673	1,687	1,633	1,424	1,148	974	911

Table 5B2-19-1c. Lake Oroville Storage, Alternative 1A 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-63	-34	0	0	0	0	0	0	0	18	-7	22
20%	0	-6	-40	0	-6	0	0	0	0	0	-4	4
30%	-2	29	-2	-2	0	-1	2	0	1	16	3	12
40%	4	-11	-3	0	-4	-15	-2	7	3	0	-1	2
50%	10	0	15	2	-1	0	0	-1	2	18	18	28
60%	38	-3	0	-9	38	0	-13	-11	8	8	18	40
70%	-3	-17	12	-10	-16	-14	-1	-5	-2	35	9	9
80%	6	24	-19	-20	-35	-26	-51	-12	46	98	72	53
90%	-17	-2	-16	-7	-33	-36	-1	-13	61	77	27	27
Long Term												
Full Simulation Period[a]	-3	-7	-7	-7	-7	-7	-7	-7	10	22	16	13
Water Year Types[b,c]												
Wet (32%)	-2	-2	-4	3	-1	0	0	0	1	2	2	2
Above Normal (15%)	-2	-2	1	-7	-6	-5	-4	-4	-2	-3	-3	-3
Below Normal (17%)	4	-4	-5	0	0	0	0	-1	9	27	25	24
Dry (22%)	4	-6	-8	-18	-18	-18	-17	-18	30	62	48	41
Critical (15%)	-23	-24	-24	-16	-16	-13	-15	-16	14	25	9	-2

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-19-2a. Lake Oroville Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,757	2,763	2,788	2,807	2,922	3,058	3,361	3,538	3,538	3,382	3,151	2,796
20%	2,229	2,325	2,562	2,788	2,802	2,990	3,297	3,538	3,538	3,089	2,789	2,408
30%	2,028	2,086	2,204	2,572	2,788	2,933	3,270	3,538	3,532	3,012	2,597	2,134
40%	1,764	1,867	1,979	2,371	2,702	2,841	3,221	3,438	3,314	2,790	2,364	1,937
50%	1,604	1,602	1,731	2,117	2,474	2,788	3,154	3,238	3,056	2,458	1,996	1,737
60%	1,503	1,488	1,597	1,688	2,003	2,485	2,758	2,808	2,710	2,183	1,699	1,594
70%	1,390	1,303	1,259	1,492	1,783	2,134	2,464	2,584	2,307	1,684	1,590	1,501
80%	1,279	1,165	1,201	1,363	1,679	1,924	2,120	2,132	1,958	1,565	1,435	1,363
90%	986	1,007	1,049	1,237	1,424	1,623	1,766	1,786	1,590	1,329	1,183	1,059
Long Term												
Full Simulation Period[a]	1,747	1,722	1,822	2,026	2,264	2,495	2,776	2,900	2,766	2,355	2,088	1,867
Water Year Types[b,c]												
Wet (32%)	2,448	2,413	2,430	2,617	2,855	2,945	3,304	3,508	3,488	3,191	2,964	2,624
Above Normal (15%)	1,897	1,860	1,924	2,116	2,480	2,913	3,295	3,493	3,402	2,899	2,483	2,047
Below Normal (17%)	1,633	1,615	1,785	1,889	2,152	2,438	2,815	3,013	2,907	2,338	1,866	1,711
Dry (22%)	1,307	1,293	1,513	1,610	1,831	2,152	2,354	2,375	2,094	1,619	1,482	1,409
Critical (15%)	867	855	910	1,440	1,546	1,686	1,702	1,649	1,410	1,124	965	914

Table 5B2-19-2b. Lake Oroville Storage, Alternative 1B 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,697	2,731	2,789	2,807	2,922	3,058	3,361	3,538	3,538	3,400	3,143	2,818
20%	2,229	2,319	2,522	2,788	2,799	2,990	3,297	3,538	3,538	3,089	2,785	2,412
30%	2,027	2,113	2,203	2,572	2,788	2,933	3,272	3,538	3,538	3,028	2,600	2,147
40%	1,770	1,840	1,979	2,372	2,697	2,827	3,219	3,446	3,317	2,790	2,363	1,938
50%	1,614	1,603	1,748	2,119	2,473	2,788	3,154	3,237	3,060	2,476	2,014	1,735
60%	1,531	1,487	1,599	1,680	2,040	2,487	2,754	2,796	2,728	2,209	1,719	1,632
70%	1,366	1,285	1,271	1,475	1,773	2,120	2,465	2,579	2,307	1,723	1,598	1,508
80%	1,284	1,183	1,170	1,343	1,647	1,897	2,069	2,131	1,976	1,655	1,492	1,418
90%	987	1,007	1,044	1,219	1,371	1,584	1,766	1,782	1,647	1,401	1,207	1,081
Long Term												
Full Simulation Period[a]	1,743	1,715	1,815	2,019	2,257	2,490	2,771	2,895	2,778	2,378	2,104	1,879
Water Year Types[b,c]												
Wet (32%)	2,447	2,411	2,427	2,615	2,854	2,945	3,304	3,508	3,489	3,194	2,966	2,627
Above Normal (15%)	1,894	1,859	1,926	2,113	2,475	2,910	3,293	3,490	3,402	2,898	2,479	2,047
Below Normal (17%)	1,637	1,608	1,779	1,893	2,157	2,442	2,819	3,015	2,919	2,368	1,894	1,731
Dry (22%)	1,307	1,286	1,502	1,592	1,813	2,134	2,337	2,359	2,130	1,683	1,527	1,447
Critical (15%)	845	832	886	1,423	1,529	1,672	1,687	1,632	1,423	1,146	974	909

Table 5B2-19-2c. Lake Oroville Storage, Alternative 1B 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-60	-32	1	0	0	0	0	0	0	18	-8	22
20%	0	-6	-40	0	-4	0	0	0	0	0	-4	4
30%	-1	27	-1	0	0	0	2	0	6	16	3	12
40%	6	-27	0	1	-5	-15	-2	7	3	1	-1	1
50%	10	2	17	2	-1	0	0	-1	3	17	18	-2
60%	28	-2	2	-8	37	2	-4	-12	18	26	20	38
70%	-23	-17	11	-17	-11	-13	1	-5	1	39	8	7
80%	5	18	-31	-20	-33	-27	-50	-1	18	90	57	55
90%	0	-1	-5	-18	-53	-39	0	-4	57	72	24	23
Long Term												
Full Simulation Period[a]	-3	-7	-7	-7	-7	-6	-6	-6	12	23	16	12
Water Year Types[b,c]												
Wet (32%)	-2	-2	-3	-1	-1	0	0	0	1	2	2	2
Above Normal (15%)	-3	-1	2	-3	-5	-3	-2	-2	-1	-1	-3	0
Below Normal (17%)	3	-7	-5	4	4	4	4	3	12	30	27	20
Dry (22%)	0	-7	-10	-18	-18	-18	-17	-15	36	63	45	37
Critical (15%)	-22	-24	-24	-17	-17	-13	-15	-17	13	22	9	-4

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-19-3a. Lake Oroville Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,757	2,763	2,788	2,807	2,922	3,058	3,361	3,538	3,538	3,382	3,151	2,796
20%	2,229	2,325	2,562	2,788	2,802	2,990	3,297	3,538	3,538	3,089	2,789	2,408
30%	2,028	2,086	2,204	2,572	2,788	2,933	3,270	3,538	3,532	3,012	2,597	2,134
40%	1,764	1,867	1,979	2,371	2,702	2,841	3,221	3,438	3,314	2,790	2,364	1,937
50%	1,604	1,602	1,731	2,117	2,474	2,788	3,154	3,238	3,056	2,458	1,996	1,737
60%	1,503	1,488	1,597	1,688	2,003	2,485	2,758	2,808	2,710	2,183	1,699	1,594
70%	1,390	1,303	1,259	1,492	1,783	2,134	2,464	2,584	2,307	1,684	1,590	1,501
80%	1,279	1,165	1,201	1,363	1,679	1,924	2,120	2,132	1,958	1,565	1,435	1,363
90%	986	1,007	1,049	1,237	1,424	1,623	1,766	1,786	1,590	1,329	1,183	1,059
Long Term												
Full Simulation Period[a]	1,747	1,722	1,822	2,026	2,264	2,495	2,776	2,900	2,766	2,355	2,088	1,867
Water Year Types[b,c]												
Wet (32%)	2,448	2,413	2,430	2,617	2,855	2,945	3,304	3,508	3,488	3,191	2,964	2,624
Above Normal (15%)	1,897	1,860	1,924	2,116	2,480	2,913	3,295	3,493	3,402	2,899	2,483	2,047
Below Normal (17%)	1,633	1,615	1,785	1,889	2,152	2,438	2,815	3,013	2,907	2,338	1,866	1,711
Dry (22%)	1,307	1,293	1,513	1,610	1,831	2,152	2,354	2,375	2,094	1,619	1,482	1,409
Critical (15%)	867	855	910	1,440	1,546	1,686	1,702	1,649	1,410	1,124	965	914

Table 5B2-19-3b. Lake Oroville Storage, Alternative 2 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,692	2,727	2,788	2,807	2,922	3,058	3,361	3,538	3,538	3,400	3,144	2,817
20%	2,229	2,330	2,522	2,788	2,795	2,990	3,297	3,538	3,538	3,089	2,785	2,412
30%	2,027	2,114	2,203	2,572	2,788	2,933	3,272	3,538	3,535	3,028	2,600	2,146
40%	1,770	1,856	1,976	2,371	2,697	2,827	3,219	3,445	3,317	2,790	2,363	1,948
50%	1,614	1,602	1,747	2,119	2,473	2,788	3,154	3,237	3,059	2,475	2,024	1,765
60%	1,541	1,485	1,597	1,679	2,041	2,485	2,747	2,797	2,720	2,195	1,717	1,633
70%	1,387	1,285	1,271	1,481	1,769	2,119	2,462	2,578	2,317	1,720	1,599	1,509
80%	1,284	1,189	1,182	1,343	1,645	1,898	2,069	2,120	1,993	1,660	1,495	1,415
90%	977	1,006	1,040	1,229	1,390	1,587	1,765	1,773	1,642	1,397	1,202	1,077
Long Term												
Full Simulation Period[a]	1,744	1,716	1,815	2,020	2,257	2,489	2,770	2,893	2,775	2,376	2,104	1,879
Water Year Types[b,c]												
Wet (32%)	2,447	2,411	2,426	2,619	2,854	2,945	3,304	3,508	3,489	3,194	2,966	2,627
Above Normal (15%)	1,895	1,858	1,925	2,110	2,474	2,909	3,292	3,489	3,401	2,896	2,480	2,045
Below Normal (17%)	1,640	1,612	1,781	1,889	2,153	2,438	2,815	3,012	2,916	2,365	1,893	1,737
Dry (22%)	1,311	1,288	1,505	1,592	1,813	2,135	2,338	2,358	2,121	1,678	1,525	1,445
Critical (15%)	845	832	886	1,424	1,530	1,673	1,687	1,632	1,422	1,145	972	907

Table 5B2-19-3c. Lake Oroville Storage, Alternative 2 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-65	-36	0	0	0	0	0	0	0	18	-8	22
20%	0	5	-40	0	-8	0	0	0	0	0	-4	4
30%	-2	28	-1	1	0	-1	2	0	3	16	3	12
40%	6	-11	-3	0	-4	-15	-2	7	3	0	-1	11
50%	10	0	16	2	-1	0	0	-1	2	17	28	28
60%	38	-3	0	-9	38	0	-11	-11	10	11	18	39
70%	-3	-17	12	-11	-15	-15	-1	-5	10	36	9	8
80%	6	24	-19	-20	-35	-26	-51	-12	35	95	61	52
90%	-10	-1	-9	-8	-33	-36	-1	-13	52	68	19	19
Long Term												
Full Simulation Period[a]	-2	-6	-7	-6	-7	-6	-6	-7	9	21	15	12
Water Year Types[b,c]												
Wet (32%)	-2	-2	-4	3	-1	0	0	0	1	2	2	2
Above Normal (15%)	-2	-2	1	-6	-6	-4	-3	-3	-2	-3	-2	-2
Below Normal (17%)	6	-3	-4	0	1	0	0	-1	9	27	26	26
Dry (22%)	4	-5	-7	-17	-17	-17	-16	-17	27	59	44	35
Critical (15%)	-23	-24	-24	-16	-16	-13	-15	-17	11	21	7	-6

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-19-4a. Lake Oroville Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,757	2,763	2,788	2,807	2,922	3,058	3,361	3,538	3,538	3,382	3,151	2,796
20%	2,229	2,325	2,562	2,788	2,802	2,990	3,297	3,538	3,538	3,089	2,789	2,408
30%	2,028	2,086	2,204	2,572	2,788	2,933	3,270	3,538	3,532	3,012	2,597	2,134
40%	1,764	1,867	1,979	2,371	2,702	2,841	3,221	3,438	3,314	2,790	2,364	1,937
50%	1,604	1,602	1,731	2,117	2,474	2,788	3,154	3,238	3,056	2,458	1,996	1,737
60%	1,503	1,488	1,597	1,688	2,003	2,485	2,758	2,808	2,710	2,183	1,699	1,594
70%	1,390	1,303	1,259	1,492	1,783	2,134	2,464	2,584	2,307	1,684	1,590	1,501
80%	1,279	1,165	1,201	1,363	1,679	1,924	2,120	2,132	1,958	1,565	1,435	1,363
90%	986	1,007	1,049	1,237	1,424	1,623	1,766	1,786	1,590	1,329	1,183	1,059
Long Term												
Full Simulation Period[a]	1,747	1,722	1,822	2,026	2,264	2,495	2,776	2,900	2,766	2,355	2,088	1,867
Water Year Types[b,c]												
Wet (32%)	2,448	2,413	2,430	2,617	2,855	2,945	3,304	3,508	3,488	3,191	2,964	2,624
Above Normal (15%)	1,897	1,860	1,924	2,116	2,480	2,913	3,295	3,493	3,402	2,899	2,483	2,047
Below Normal (17%)	1,633	1,615	1,785	1,889	2,152	2,438	2,815	3,013	2,907	2,338	1,866	1,711
Dry (22%)	1,307	1,293	1,513	1,610	1,831	2,152	2,354	2,375	2,094	1,619	1,482	1,409
Critical (15%)	867	855	910	1,440	1,546	1,686	1,702	1,649	1,410	1,124	965	914

Table 5B2-19-4b. Lake Oroville Storage, Alternative 3 020121, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,686	2,719	2,788	2,813	2,922	3,058	3,361	3,538	3,538	3,401	3,141	2,810
20%	2,270	2,333	2,563	2,788	2,795	2,990	3,297	3,538	3,538	3,089	2,785	2,426
30%	2,027	2,112	2,230	2,574	2,788	2,924	3,268	3,538	3,538	3,028	2,601	2,147
40%	1,803	1,846	1,991	2,373	2,698	2,827	3,219	3,436	3,316	2,810	2,375	1,956
50%	1,615	1,617	1,759	2,119	2,473	2,788	3,154	3,237	3,060	2,473	2,015	1,762
60%	1,526	1,488	1,600	1,684	2,015	2,493	2,767	2,794	2,738	2,215	1,720	1,620
70%	1,376	1,285	1,274	1,492	1,771	2,156	2,488	2,598	2,317	1,715	1,599	1,512
80%	1,278	1,183	1,189	1,352	1,694	1,896	2,073	2,146	1,970	1,630	1,498	1,386
90%	1,014	1,008	1,048	1,228	1,395	1,600	1,743	1,811	1,635	1,391	1,212	1,069
Long Term												
Full Simulation Period[a]	1,749	1,722	1,820	2,024	2,260	2,493	2,774	2,899	2,779	2,378	2,104	1,880
Water Year Types[b,c]												
Wet (32%)	2,447	2,412	2,428	2,619	2,855	2,945	3,304	3,508	3,489	3,194	2,966	2,629
Above Normal (15%)	1,914	1,880	1,939	2,115	2,475	2,911	3,294	3,492	3,402	2,913	2,496	2,065
Below Normal (17%)	1,641	1,613	1,783	1,893	2,157	2,442	2,819	3,016	2,919	2,366	1,890	1,733
Dry (22%)	1,308	1,290	1,507	1,602	1,823	2,145	2,346	2,375	2,133	1,674	1,520	1,438
Critical (15%)	857	843	898	1,428	1,534	1,676	1,692	1,639	1,426	1,146	972	907

Table 5B2-19-4c. Lake Oroville Storage, Alternative 3 020121 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-72	-43	0	6	0	0	0	0	0	18	-10	14
20%	41	8	1	0	-8	0	0	0	0	0	-4	17
30%	-1	26	25	2	0	-9	-2	0	6	16	5	13
40%	39	-21	11	2	-4	-15	-2	-3	2	20	11	19
50%	11	15	28	3	-1	0	0	-1	4	14	18	25
60%	23	0	3	-5	13	8	9	-14	28	31	21	26
70%	-14	-18	15	1	-12	22	25	14	10	30	9	11
80%	-1	18	-12	-11	15	-28	-47	14	12	64	63	23
90%	28	1	-1	-9	-29	-23	-23	25	44	63	28	10
Long Term												
Full Simulation Period[a]	2	0	-2	-2	-3	-3	-3	-1	13	23	16	13
Water Year Types[b,c]												
Wet (32%)	-1	-1	-2	2	0	0	0	0	1	2	2	4
Above Normal (15%)	17	20	15	-1	-5	-2	-1	-1	0	14	13	18
Below Normal (17%)	8	-2	-1	4	4	4	4	3	12	28	23	22
Dry (22%)	1	-2	-6	-8	-8	-8	-8	0	39	55	38	29
Critical (15%)	-11	-12	-12	-11	-11	-10	-10	-10	16	22	7	-7

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Figure 5B2-19-1. Lake Oroville Storage, October

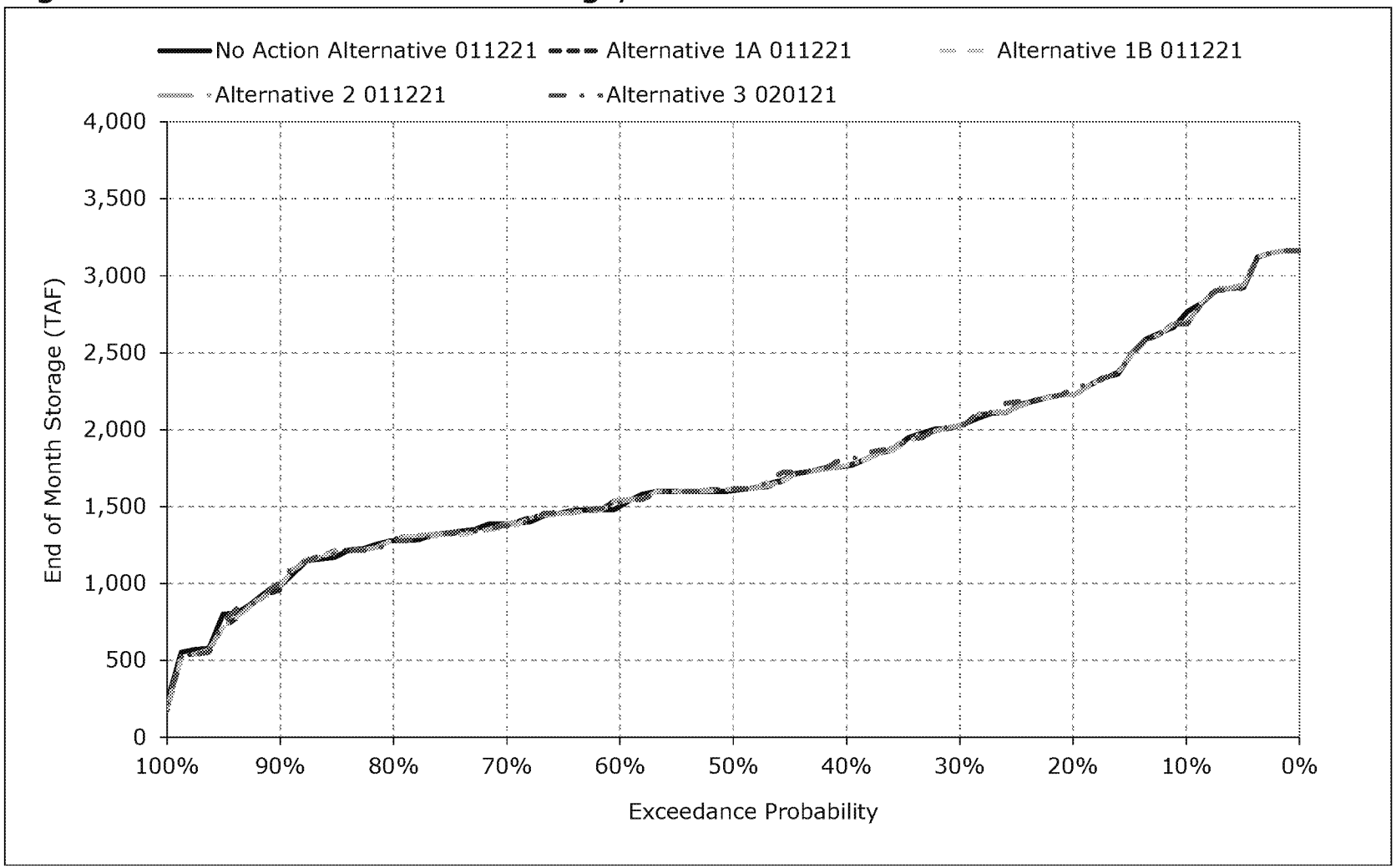


Figure 5B2-19-2. Lake Oroville Storage, November

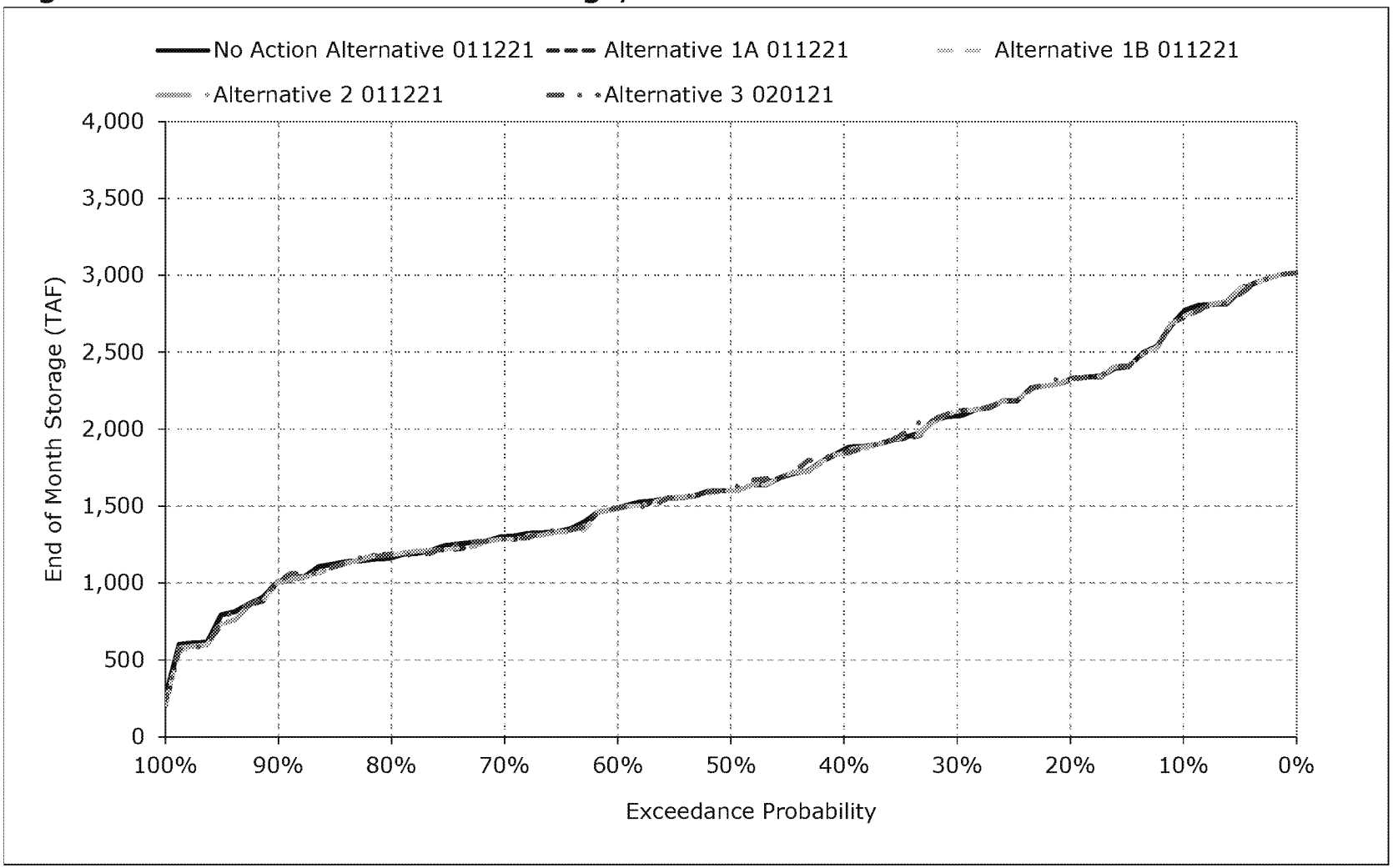


Figure 5B2-19-3. Lake Oroville Storage, December

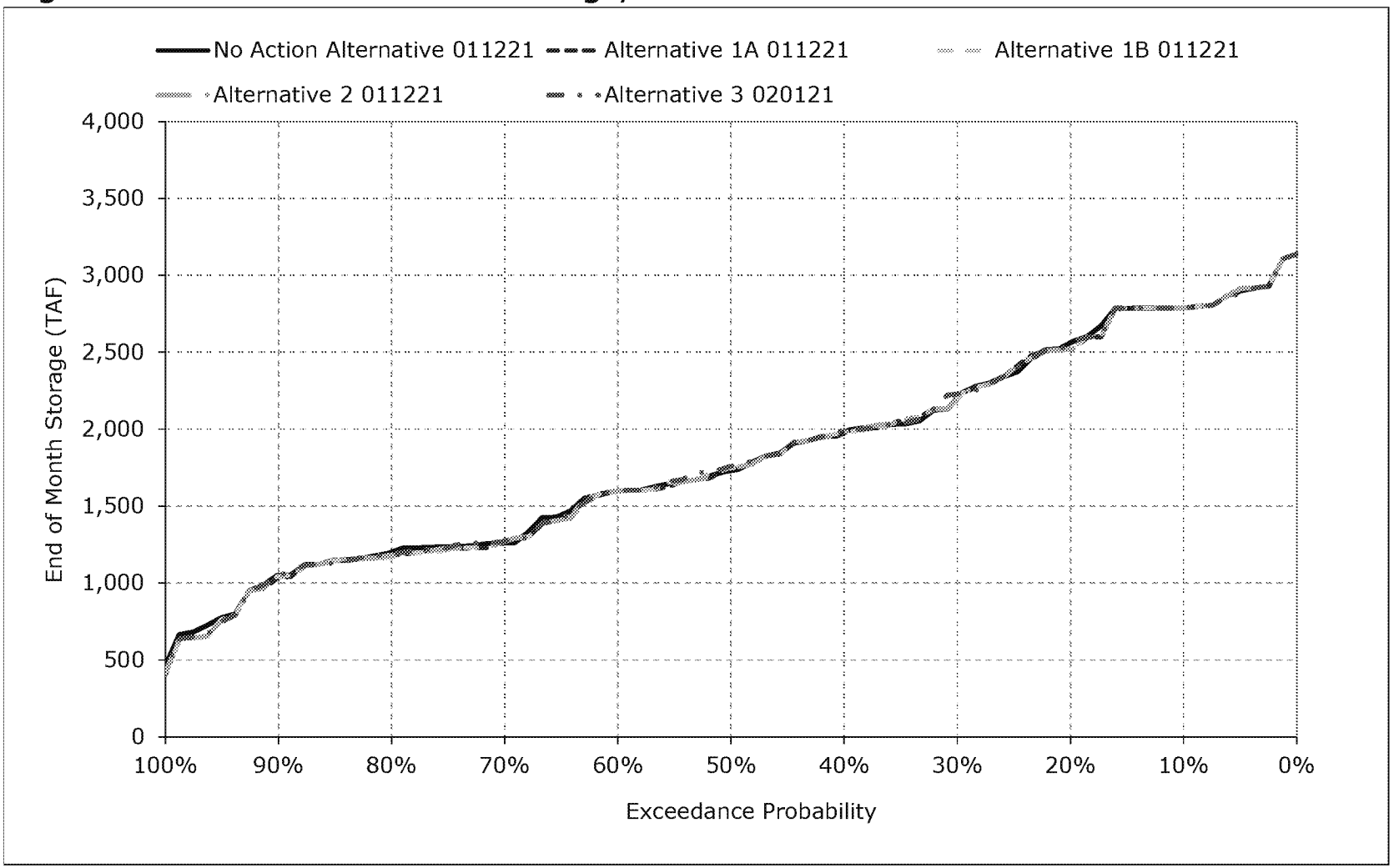


Figure 5B2-19-4. Lake Oroville Storage, January

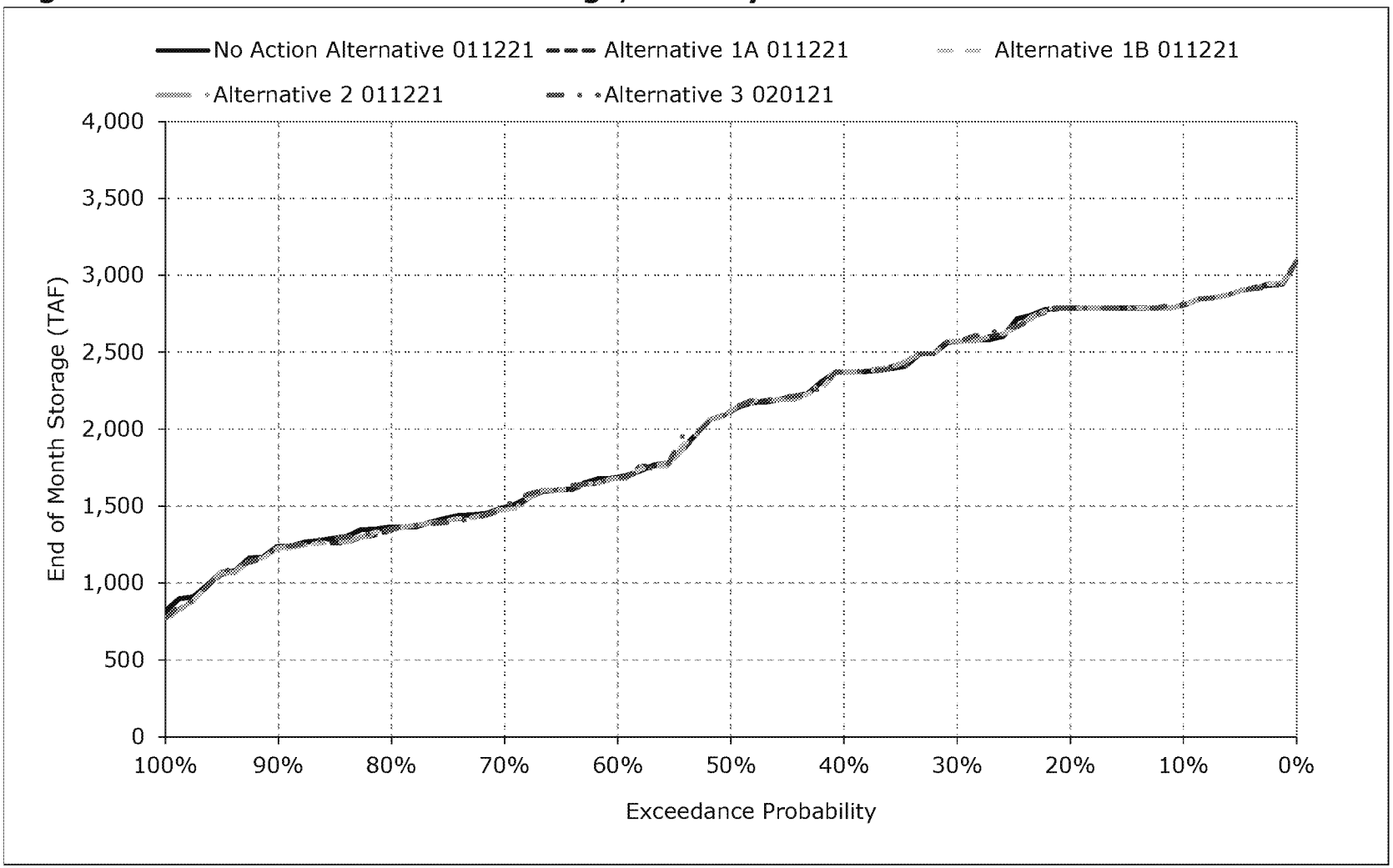


Figure 5B2-19-5. Lake Oroville Storage, February

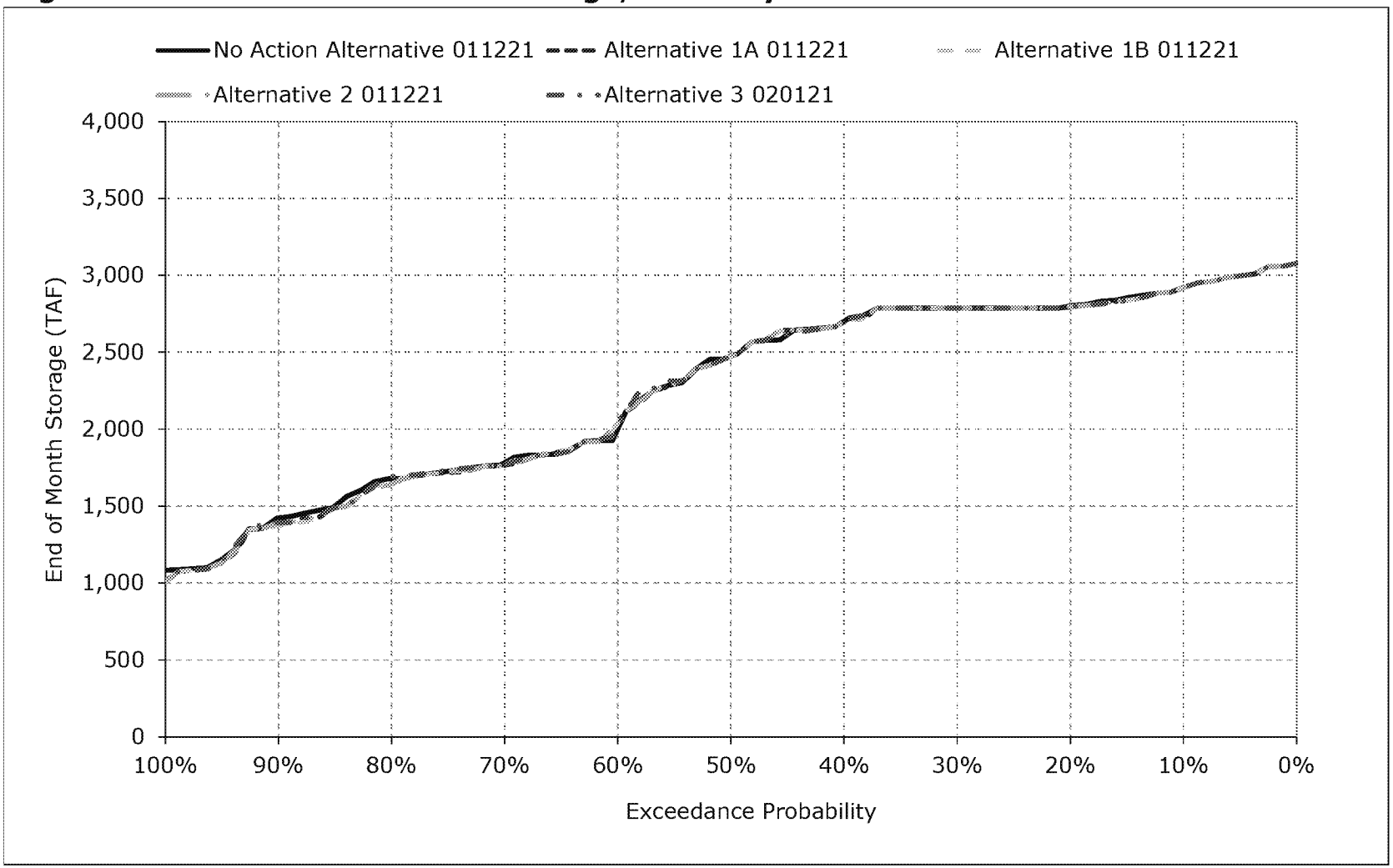


Figure 5B2-19-6. Lake Oroville Storage, March

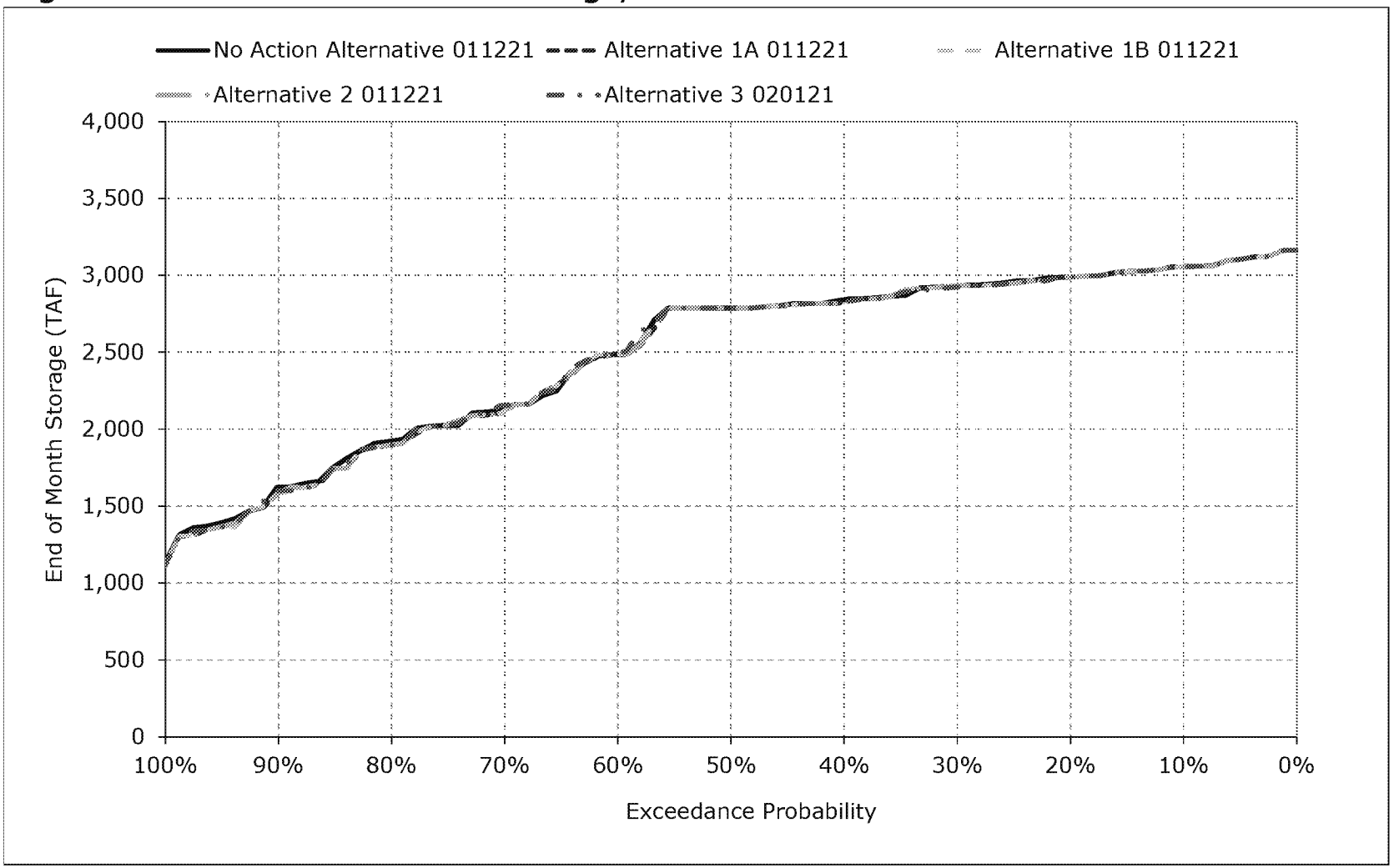


Figure 5B2-19-7. Lake Oroville Storage, April

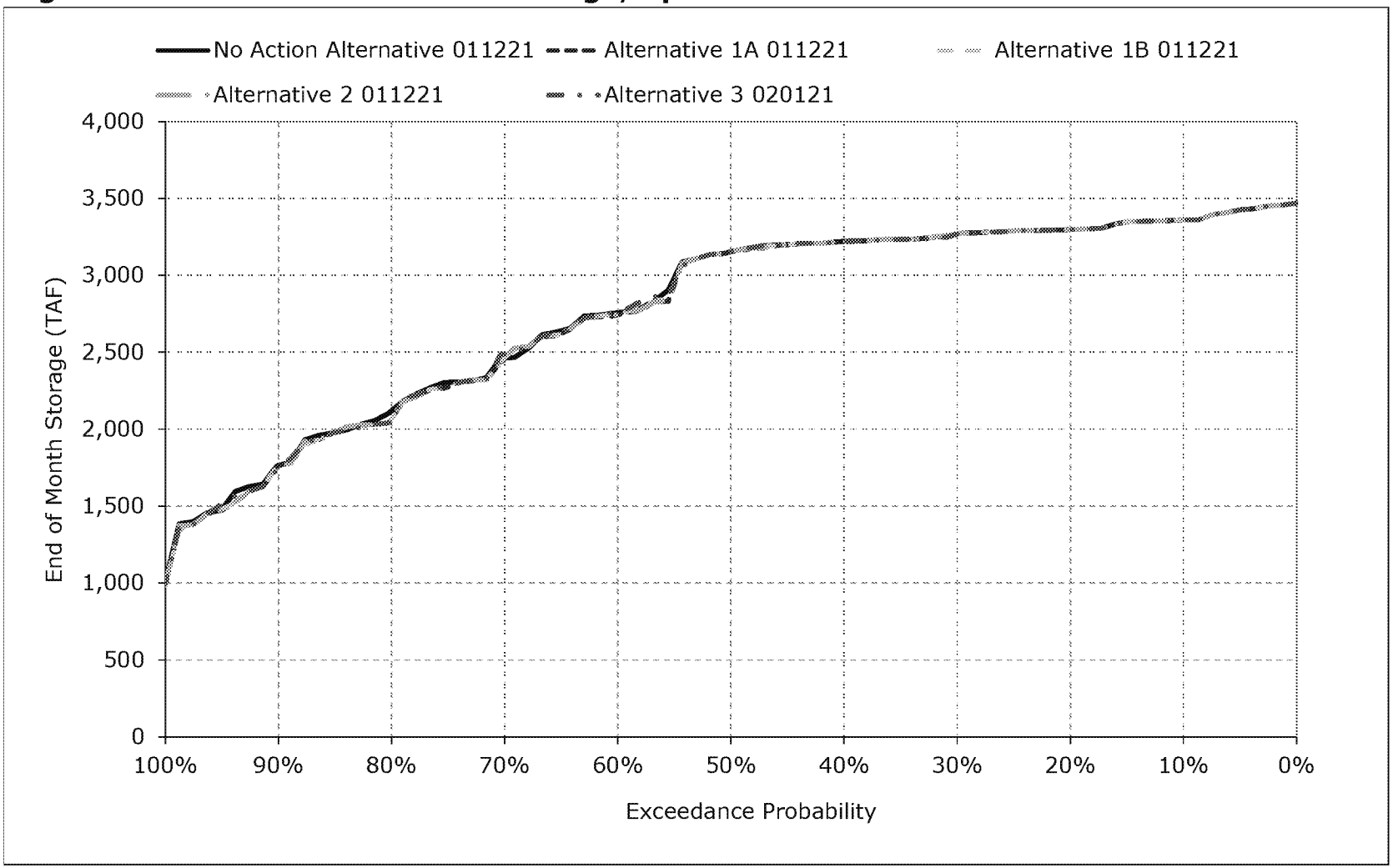


Figure 5B2-19-8. Lake Oroville Storage, May

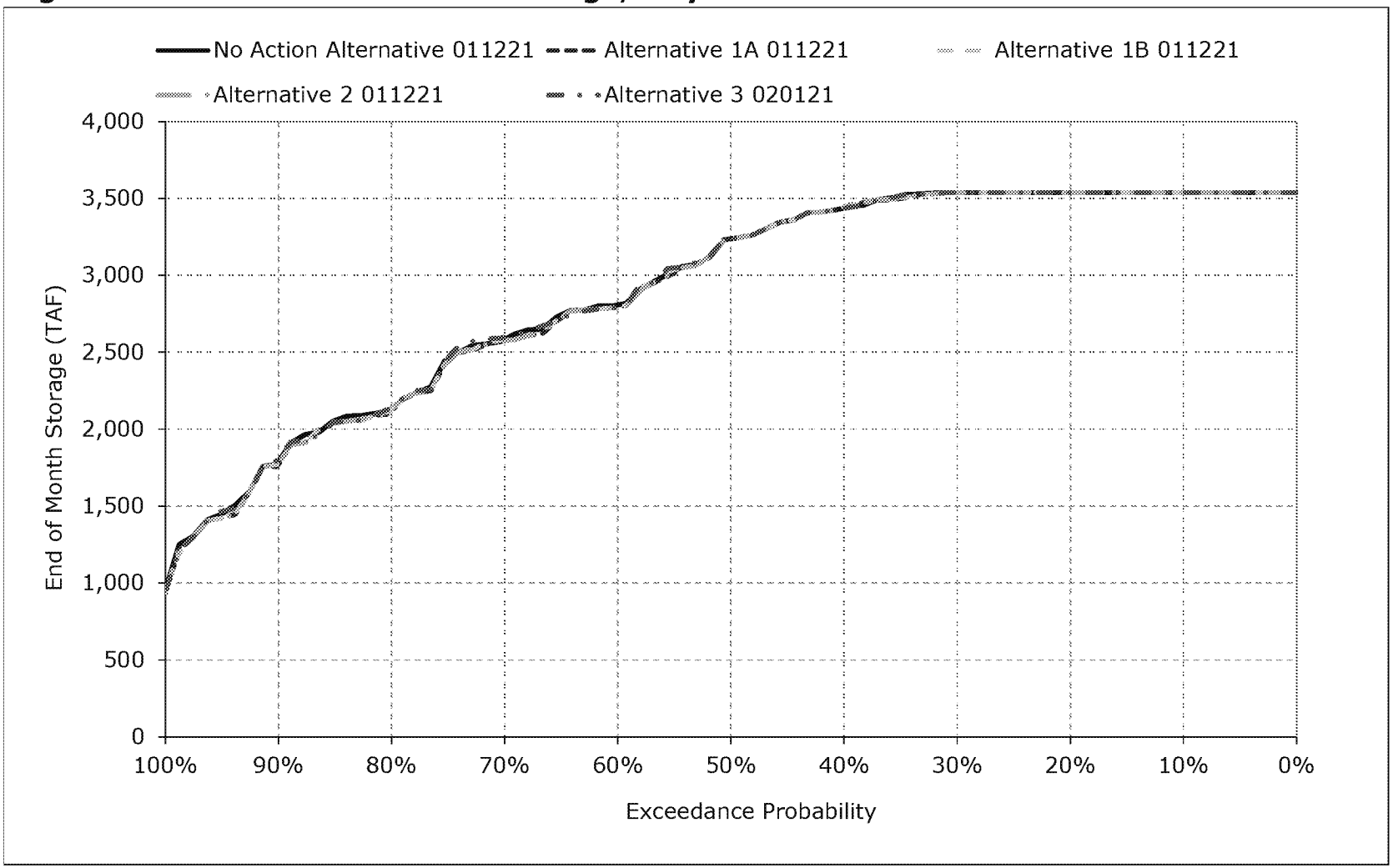


Figure 5B2-19-9. Lake Oroville Storage, June

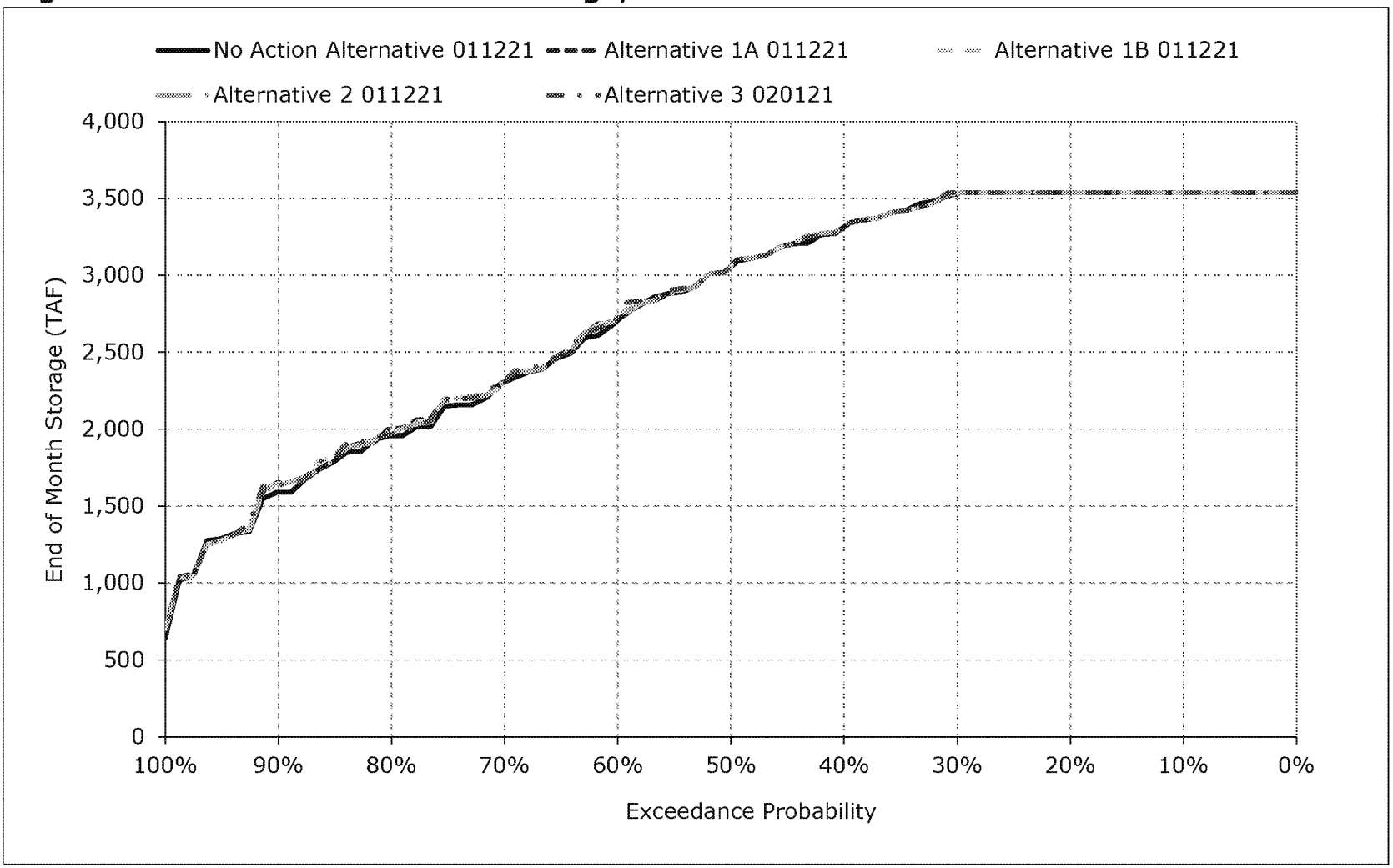


Figure 5B2-19-10. Lake Oroville Storage, July

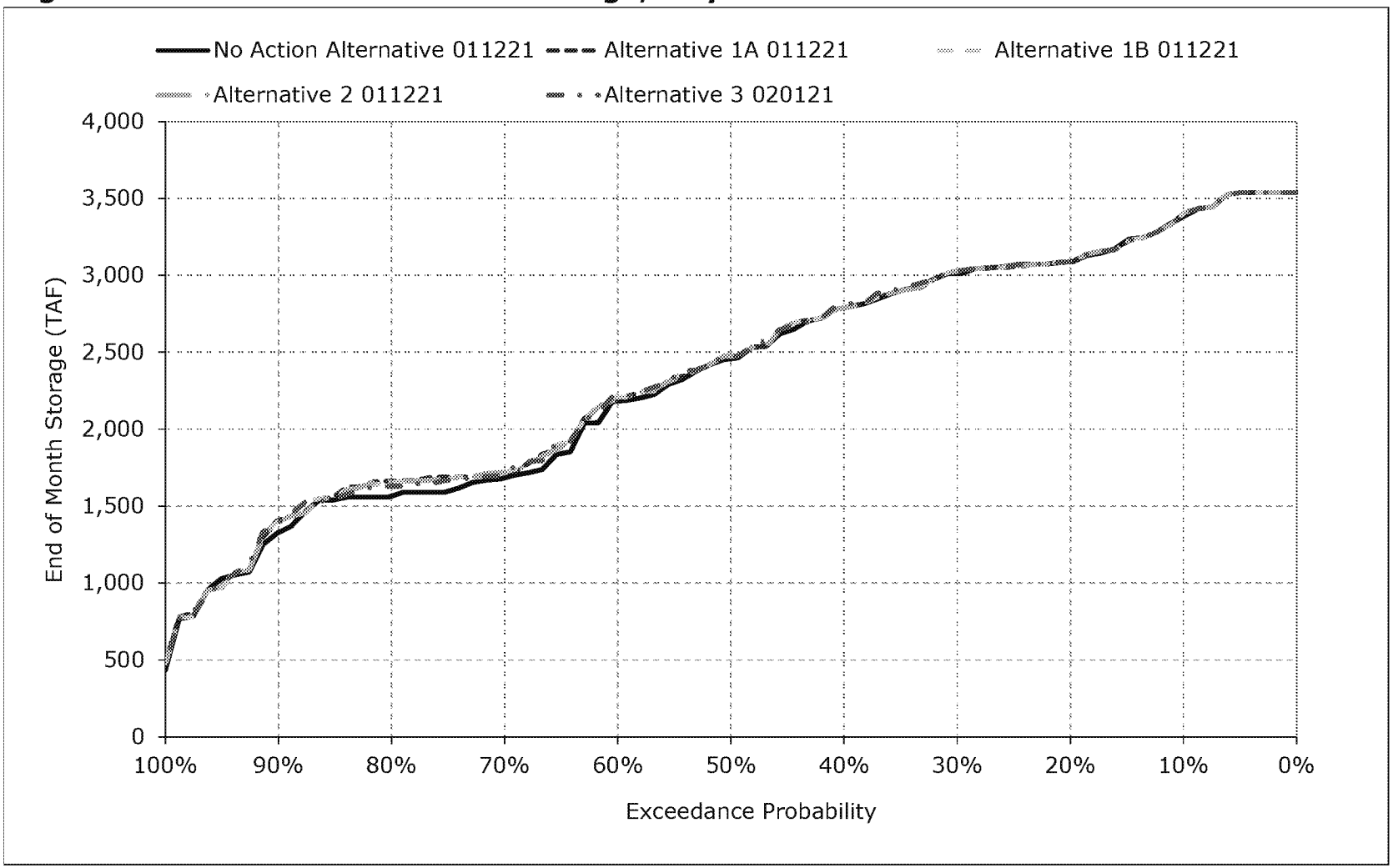


Figure 5B2-19-11. Lake Oroville Storage, August

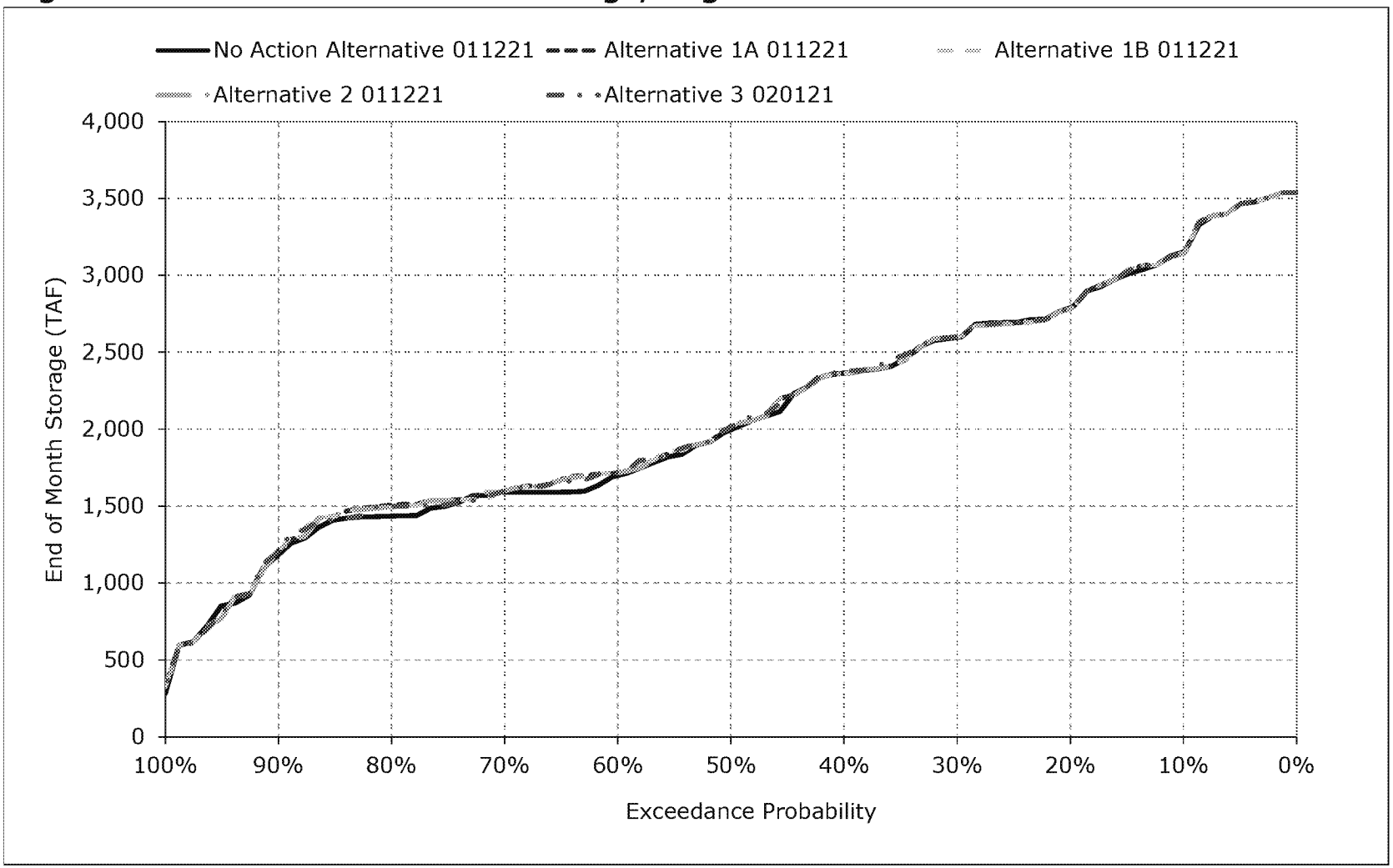


Figure 5B2-19-12. Lake Oroville Storage, September

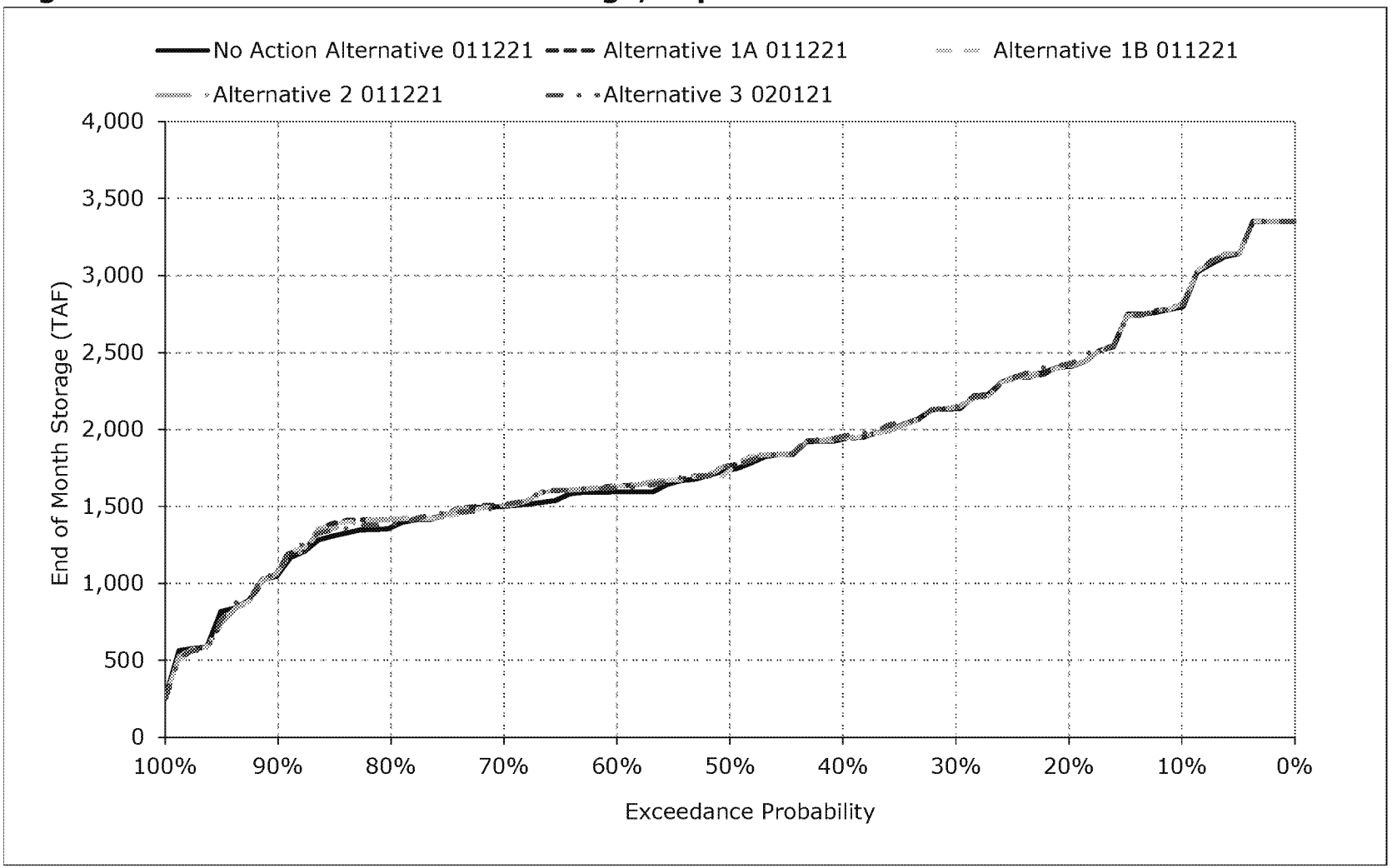


Table 5B2-20-1a. Lake Oroville Elevation, No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	847	847	849	850	858	867	888	900	900	889	874	849
20%	806	816	833	849	850	863	884	900	900	869	849	823
30%	786	792	804	834	849	859	882	900	900	864	836	797
40%	759	769	781	820	843	852	878	893	885	849	820	776
50%	741	740	755	795	827	849	874	879	867	826	782	756
60%	728	727	740	751	783	828	847	850	843	802	752	740
70%	715	704	699	727	761	797	827	835	814	750	739	728
80%	701	687	692	711	750	775	795	796	778	736	720	711
90%	664	668	673	696	719	743	759	761	739	707	689	674
Long Term												
Full Simulation Period[a]	747	745	755	778	801	821	843	851	839	804	779	759
Water Year Types[b,c]												
Wet (32%)	820	818	819	835	853	859	884	898	897	876	860	835
Above Normal (15%)	771	767	773	790	824	857	883	897	891	856	826	786
Below Normal (17%)	743	740	757	764	793	818	850	864	857	815	769	752
Dry (22%)	704	702	724	737	763	795	814	816	792	742	726	717
Critical (15%)	633	633	646	718	730	746	748	742	714	676	649	640

Table 5B2-20-1b. Lake Oroville Elevation, Alternative 1A 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	842	845	849	850	858	867	888	900	900	891	873	851
20%	806	816	831	849	849	863	884	900	900	869	849	823
30%	786	795	804	834	849	859	882	900	900	865	836	798
40%	759	768	780	820	843	851	878	894	885	849	820	777
50%	742	740	757	795	827	849	874	879	867	828	784	759
60%	733	726	740	750	787	828	846	849	844	803	754	744
70%	714	702	700	726	759	795	827	834	814	754	740	729
80%	702	690	689	709	746	772	790	795	783	748	729	718
90%	661	668	671	695	715	739	759	760	747	717	693	677
Long Term												
Full Simulation Period[a]	746	744	754	777	800	821	842	851	840	807	781	761
Water Year Types[b,c]												
Wet (32%)	820	818	818	835	853	859	884	898	897	876	861	835
Above Normal (15%)	771	767	773	789	823	857	883	897	891	856	826	786
Below Normal (17%)	744	740	756	764	792	818	850	864	857	817	772	755
Dry (22%)	705	701	723	735	761	794	812	815	795	749	732	722
Critical (15%)	628	628	641	716	728	744	746	740	716	679	650	639

Table 5B2-20-1c. Lake Oroville Elevation, Alternative 1A 011221 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-4	-2	0	0	0	0	0	0	0	1	0	1
20%	0	-1	-3	0	0	0	0	0	0	0	0	0
30%	0	3	0	0	0	0	0	0	0	1	0	1
40%	0	-1	0	0	0	-1	0	0	0	0	0	0
50%	1	0	2	0	0	0	0	0	0	1	2	3
60%	5	0	0	-1	4	0	-1	-1	1	1	2	5
70%	0	-2	1	-1	-2	-1	0	0	0	4	1	1
80%	1	3	-2	-2	-4	-3	-5	-1	5	12	9	6
90%	-3	0	-2	-1	-4	-4	0	-1	7	9	3	3
Long Term												
Full Simulation Period[a]	-1	-1	-1	-1	-1	-1	-1	-1	1	3	2	1
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	-1	-1	0	0	0	0	0	0	0
Below Normal (17%)	0	-1	-1	0	0	0	0	0	1	2	3	3
Dry (22%)	0	-1	-1	-3	-2	-2	-2	-2	3	7	6	5
Critical (15%)	-5	-5	-5	-2	-2	-1	-2	-2	2	4	2	-1

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-20-2a. Lake Oroville Elevation, No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	847	847	849	850	858	867	888	900	900	889	874	849
20%	806	816	833	849	850	863	884	900	900	869	849	823
30%	786	792	804	834	849	859	882	900	900	864	836	797
40%	759	769	781	820	843	852	878	893	885	849	820	776
50%	741	740	755	795	827	849	874	879	867	826	782	756
60%	728	727	740	751	783	828	847	850	843	802	752	740
70%	715	704	699	727	761	797	827	835	814	750	739	728
80%	701	687	692	711	750	775	795	796	778	736	720	711
90%	664	668	673	696	719	743	759	761	739	707	689	674
Long Term												
Full Simulation Period[a]	747	745	755	778	801	821	843	851	839	804	779	759
Water Year Types[b,c]												
Wet (32%)	820	818	819	835	853	859	884	898	897	876	860	835
Above Normal (15%)	771	767	773	790	824	857	883	897	891	856	826	786
Below Normal (17%)	743	740	757	764	793	818	850	864	857	815	769	752
Dry (22%)	704	702	724	737	763	795	814	816	792	742	726	717
Critical (15%)	633	633	646	718	730	746	748	742	714	676	649	640

Table 5B2-20-2b. Lake Oroville Elevation, Alternative 1B 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	843	845	849	850	858	867	888	900	900	891	873	851
20%	806	816	831	849	849	863	884	900	900	869	849	823
30%	786	795	804	834	849	859	882	900	900	865	836	798
40%	759	766	781	820	843	851	878	894	885	849	820	776
50%	742	741	757	795	827	849	874	879	867	827	784	756
60%	732	726	740	750	787	828	846	849	845	804	754	744
70%	712	702	700	725	760	795	827	834	814	754	740	729
80%	702	689	688	709	746	772	790	796	780	747	727	718
90%	664	668	672	694	712	738	759	760	746	716	692	677
Long Term												
Full Simulation Period[a]	746	744	754	777	800	821	842	851	840	807	781	761
Water Year Types[b,c]												
Wet (32%)	820	818	818	835	853	859	884	898	897	876	861	835
Above Normal (15%)	771	767	773	789	824	857	883	897	891	856	826	786
Below Normal (17%)	744	740	756	765	793	818	850	864	858	818	772	755
Dry (22%)	705	701	723	734	761	794	812	815	795	750	731	722
Critical (15%)	628	628	641	716	728	744	746	740	716	679	650	639

Table 5B2-20-2c. Lake Oroville Elevation, Alternative 1B 011221 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-4	-2	0	0	0	0	0	0	0	1	-1	1
20%	0	-1	-3	0	0	0	0	0	0	0	0	0
30%	0	3	0	0	0	0	0	0	0	1	0	1
40%	1	-3	0	0	0	-1	0	1	0	0	0	0
50%	1	0	2	0	0	0	0	0	0	1	2	0
60%	3	0	0	-1	4	0	0	-1	1	3	2	5
70%	-3	-2	1	-2	-1	-1	0	0	0	4	1	1
80%	1	2	-4	-2	-4	-3	-5	0	2	11	7	7
90%	0	0	-1	-2	-6	-5	0	0	7	9	3	3
Long Term												
Full Simulation Period[a]	-1	-1	-1	-1	-1	-1	-1	-1	1	3	2	1
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	-1	-1	0	0	0	0	0	1	3	3	2
Dry (22%)	0	-1	-1	-3	-2	-2	-2	-1	4	7	5	5
Critical (15%)	-5	-5	-5	-2	-2	-1	-2	-2	2	3	2	-1

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-20-3a. Lake Oroville Elevation, No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	847	847	849	850	858	867	888	900	900	889	874	849
20%	806	816	833	849	850	863	884	900	900	869	849	823
30%	786	792	804	834	849	859	882	900	900	864	836	797
40%	759	769	781	820	843	852	878	893	885	849	820	776
50%	741	740	755	795	827	849	874	879	867	826	782	756
60%	728	727	740	751	783	828	847	850	843	802	752	740
70%	715	704	699	727	761	797	827	835	814	750	739	728
80%	701	687	692	711	750	775	795	796	778	736	720	711
90%	664	668	673	696	719	743	759	761	739	707	689	674
Long Term												
Full Simulation Period[a]	747	745	755	778	801	821	843	851	839	804	779	759
Water Year Types[b,c]												
Wet (32%)	820	818	819	835	853	859	884	898	897	876	860	835
Above Normal (15%)	771	767	773	790	824	857	883	897	891	856	826	786
Below Normal (17%)	743	740	757	764	793	818	850	864	857	815	769	752
Dry (22%)	704	702	724	737	763	795	814	816	792	742	726	717
Critical (15%)	633	633	646	718	730	746	748	742	714	676	649	640

Table 5B2-20-3b. Lake Oroville Elevation, Alternative 2 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	842	845	849	850	858	867	888	900	900	891	873	851
20%	806	817	831	849	849	863	884	900	900	869	849	823
30%	786	795	804	834	849	859	882	900	900	865	836	798
40%	759	768	780	820	843	851	878	894	885	849	820	778
50%	742	740	757	795	827	849	874	879	867	827	785	759
60%	733	726	740	750	787	828	846	849	844	803	754	744
70%	714	702	700	726	759	795	827	834	815	754	740	729
80%	702	690	689	709	746	772	790	795	782	748	727	718
90%	662	668	672	695	715	739	759	760	745	715	692	676
Long Term												
Full Simulation Period[a]	747	744	754	777	800	821	842	851	840	806	781	760
Water Year Types[b,c]												
Wet (32%)	820	818	818	835	853	859	884	898	897	876	861	835
Above Normal (15%)	771	767	773	789	823	857	883	897	891	856	826	786
Below Normal (17%)	744	740	756	764	793	818	850	864	857	817	772	755
Dry (22%)	705	701	723	735	761	794	812	815	794	749	731	721
Critical (15%)	628	628	641	716	728	744	746	740	715	679	650	638

Table 5B2-20-3c. Lake Oroville Elevation, Alternative 2 011221 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-4	-2	0	0	0	0	0	0	0	1	-1	1
20%	0	1	-3	0	-1	0	0	0	0	0	0	0
30%	0	3	0	0	0	0	0	0	0	1	0	1
40%	1	-1	0	0	0	-1	0	0	0	0	0	1
50%	1	0	2	0	0	0	0	0	0	1	3	3
60%	5	0	0	-1	4	0	-1	-1	1	1	2	5
70%	0	-2	1	-1	-1	-2	0	0	1	4	1	1
80%	1	3	-2	-2	-4	-3	-5	-1	4	12	7	6
90%	-2	0	-1	-1	-4	-4	0	-1	6	8	2	2
Long Term												
Full Simulation Period[a]	-1	-1	-1	-1	-1	-1	-1	-1	1	2	2	1
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	-1	-1	0	0	0	0	0	0	0
Below Normal (17%)	1	0	-1	0	0	0	0	0	1	2	3	3
Dry (22%)	0	-1	-1	-2	-2	-2	-2	-2	3	7	5	4
Critical (15%)	-5	-5	-5	-2	-2	-1	-2	-2	2	3	1	-2

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-20-4a. Lake Oroville Elevation, No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	847	847	849	850	858	867	888	900	900	889	874	849
20%	806	816	833	849	850	863	884	900	900	869	849	823
30%	786	792	804	834	849	859	882	900	900	864	836	797
40%	759	769	781	820	843	852	878	893	885	849	820	776
50%	741	740	755	795	827	849	874	879	867	826	782	756
60%	728	727	740	751	783	828	847	850	843	802	752	740
70%	715	704	699	727	761	797	827	835	814	750	739	728
80%	701	687	692	711	750	775	795	796	778	736	720	711
90%	664	668	673	696	719	743	759	761	739	707	689	674
Long Term												
Full Simulation Period[a]	747	745	755	778	801	821	843	851	839	804	779	759
Water Year Types[b,c]												
Wet (32%)	820	818	819	835	853	859	884	898	897	876	860	835
Above Normal (15%)	771	767	773	790	824	857	883	897	891	856	826	786
Below Normal (17%)	743	740	757	764	793	818	850	864	857	815	769	752
Dry (22%)	704	702	724	737	763	795	814	816	792	742	726	717
Critical (15%)	633	633	646	718	730	746	748	742	714	676	649	640

Table 5B2-20-4b. Lake Oroville Elevation, Alternative 3 020121, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	842	844	849	850	858	867	888	900	900	891	873	850
20%	811	817	833	849	849	863	884	900	900	869	849	824
30%	786	794	806	834	849	858	882	900	900	865	836	798
40%	763	767	782	820	843	851	878	893	885	850	821	778
50%	742	742	758	795	827	849	874	879	867	827	784	758
60%	731	727	740	750	784	829	847	849	845	805	754	743
70%	713	702	701	727	759	799	828	836	815	754	740	729
80%	701	689	690	710	751	772	790	798	780	744	728	714
90%	668	668	673	695	715	740	757	763	744	715	693	675
Long Term												
Full Simulation Period[a]	747	745	755	777	800	821	842	851	840	807	781	761
Water Year Types[b,c]												
Wet (32%)	820	818	818	835	853	859	884	898	897	876	861	835
Above Normal (15%)	773	769	774	790	824	857	883	897	891	857	828	788
Below Normal (17%)	744	740	756	765	793	818	850	864	858	817	771	755
Dry (22%)	705	702	723	736	762	795	813	816	795	749	730	721
Critical (15%)	631	630	643	717	729	745	747	741	716	679	650	638

Table 5B2-20-4c. Lake Oroville Elevation, Alternative 3 020121 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-5	-3	0	0	0	0	0	0	0	1	-1	1
20%	4	1	0	0	-1	0	0	0	0	0	0	1
30%	0	3	3	0	0	-1	0	0	0	1	0	1
40%	4	-2	1	0	0	-1	0	0	0	1	1	2
50%	1	2	3	0	0	0	0	0	0	1	2	3
60%	3	0	0	0	1	1	1	-1	2	3	2	3
70%	-2	-2	2	0	-1	2	2	1	1	3	1	1
80%	0	2	-1	-1	2	-3	-5	1	1	8	8	3
90%	5	0	0	-1	-4	-3	-2	3	5	8	3	1
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	1	2	2	1
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	2	2	2	0	0	0	0	0	0	1	1	2
Below Normal (17%)	1	0	0	0	0	0	0	0	1	3	3	3
Dry (22%)	0	0	-1	-1	-1	-1	-1	0	4	6	5	4
Critical (15%)	-2	-2	-3	-1	-1	-1	-1	-1	2	3	1	-2

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Figure 5B2-20-1. Lake Oroville Elevation, October

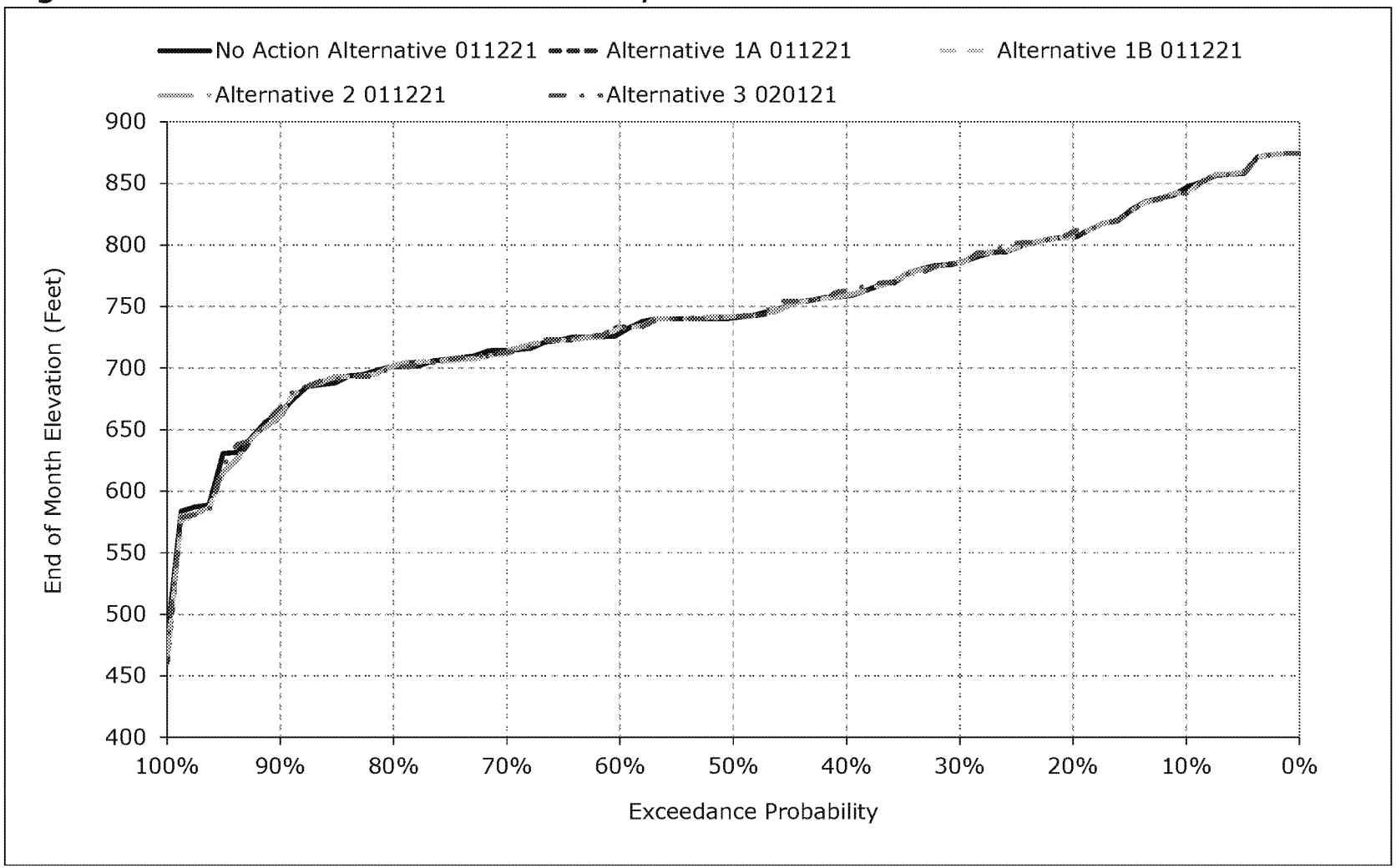


Figure 5B2-20-2. Lake Oroville Elevation, November

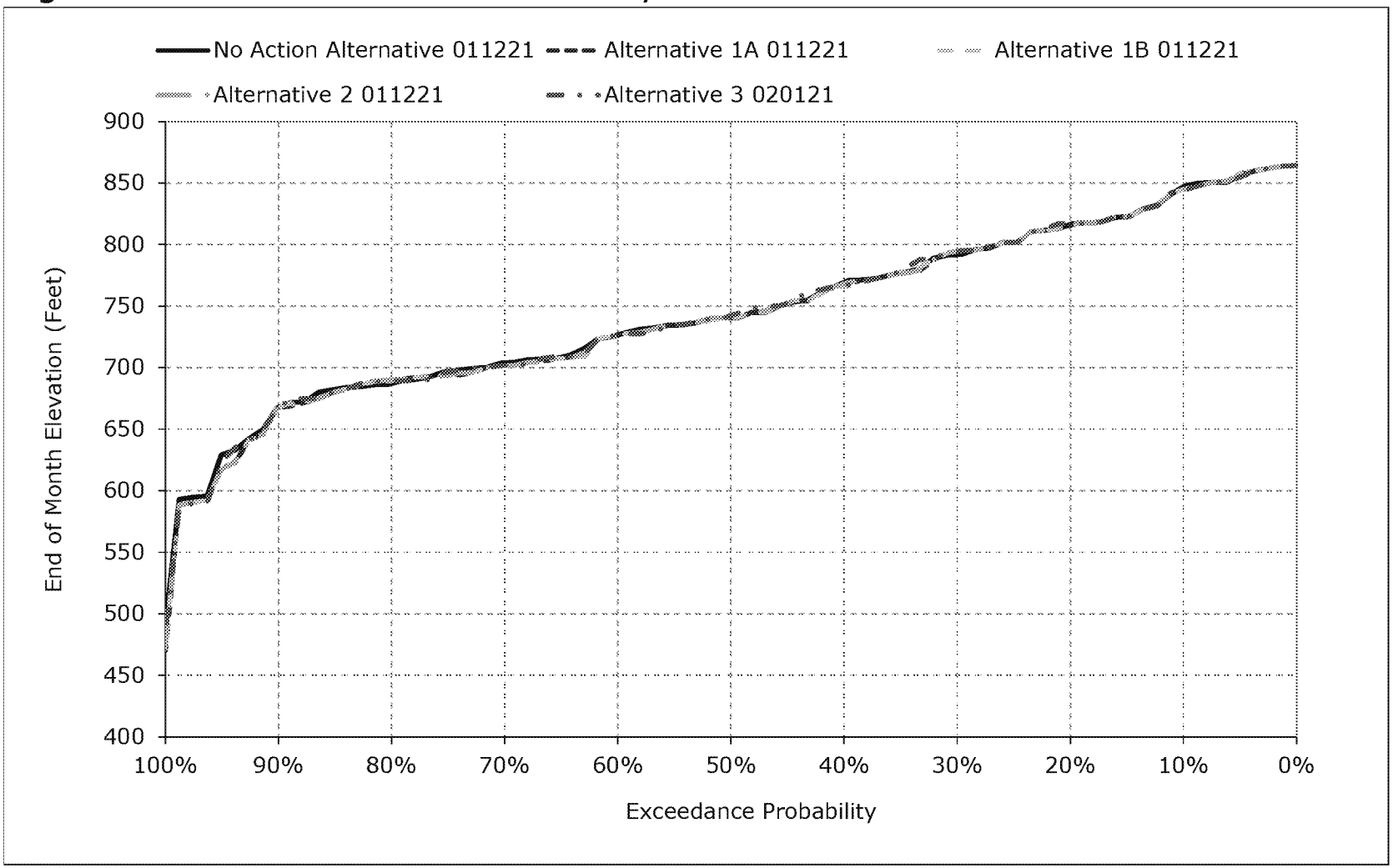


Figure 5B2-20-3. Lake Oroville Elevation, December

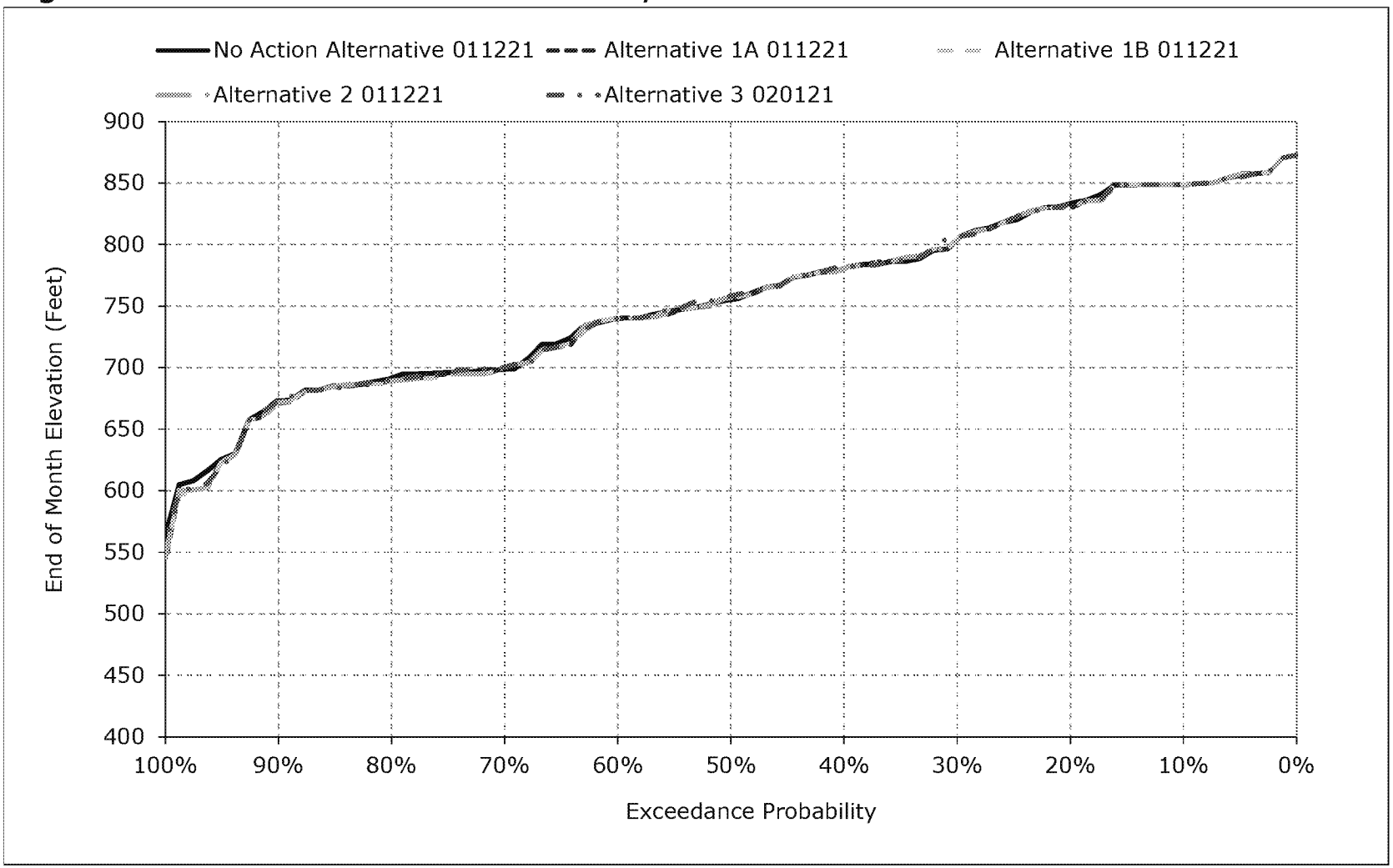


Figure 5B2-20-4. Lake Oroville Elevation, January

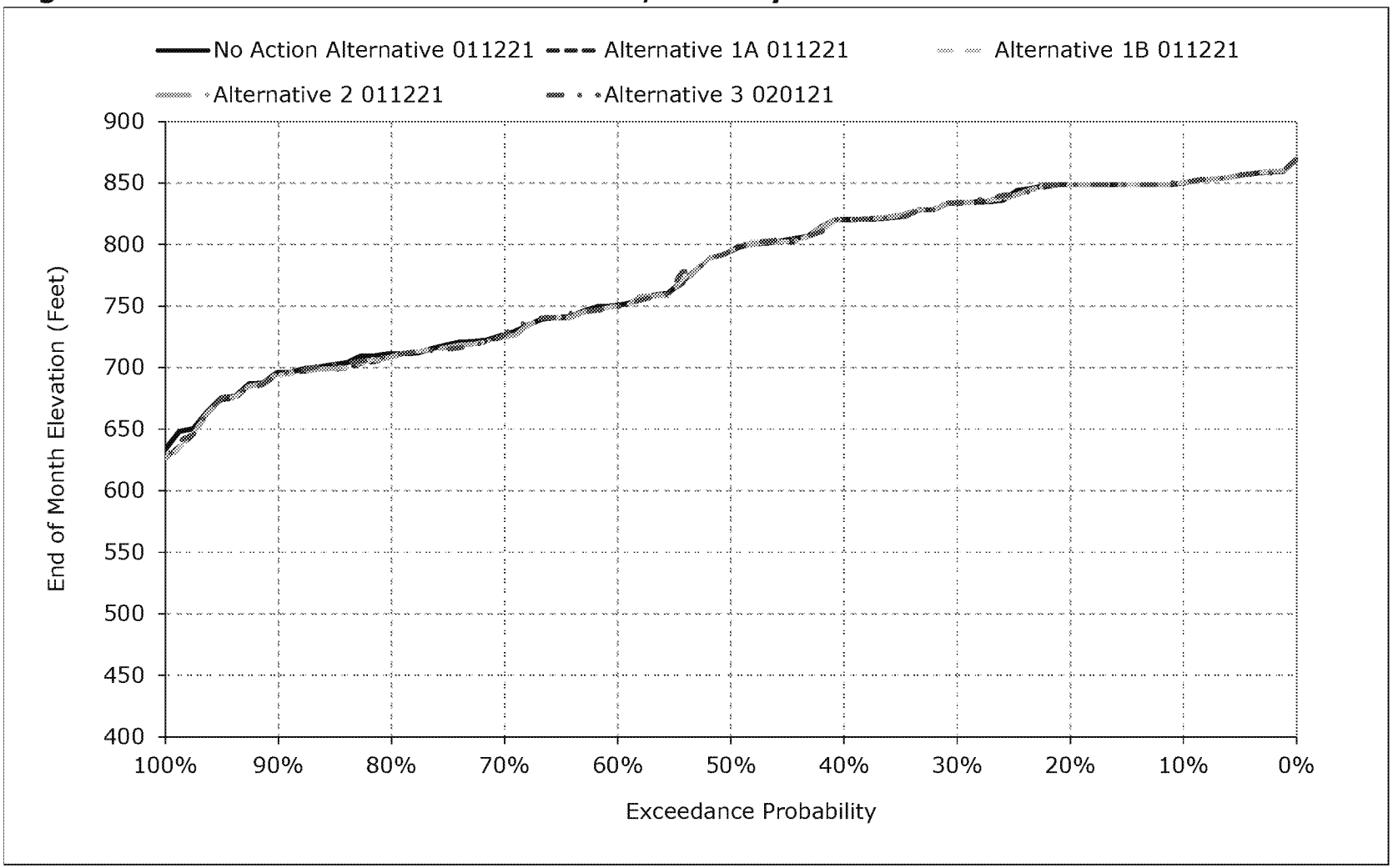


Figure 5B2-20-5. Lake Oroville Elevation, February

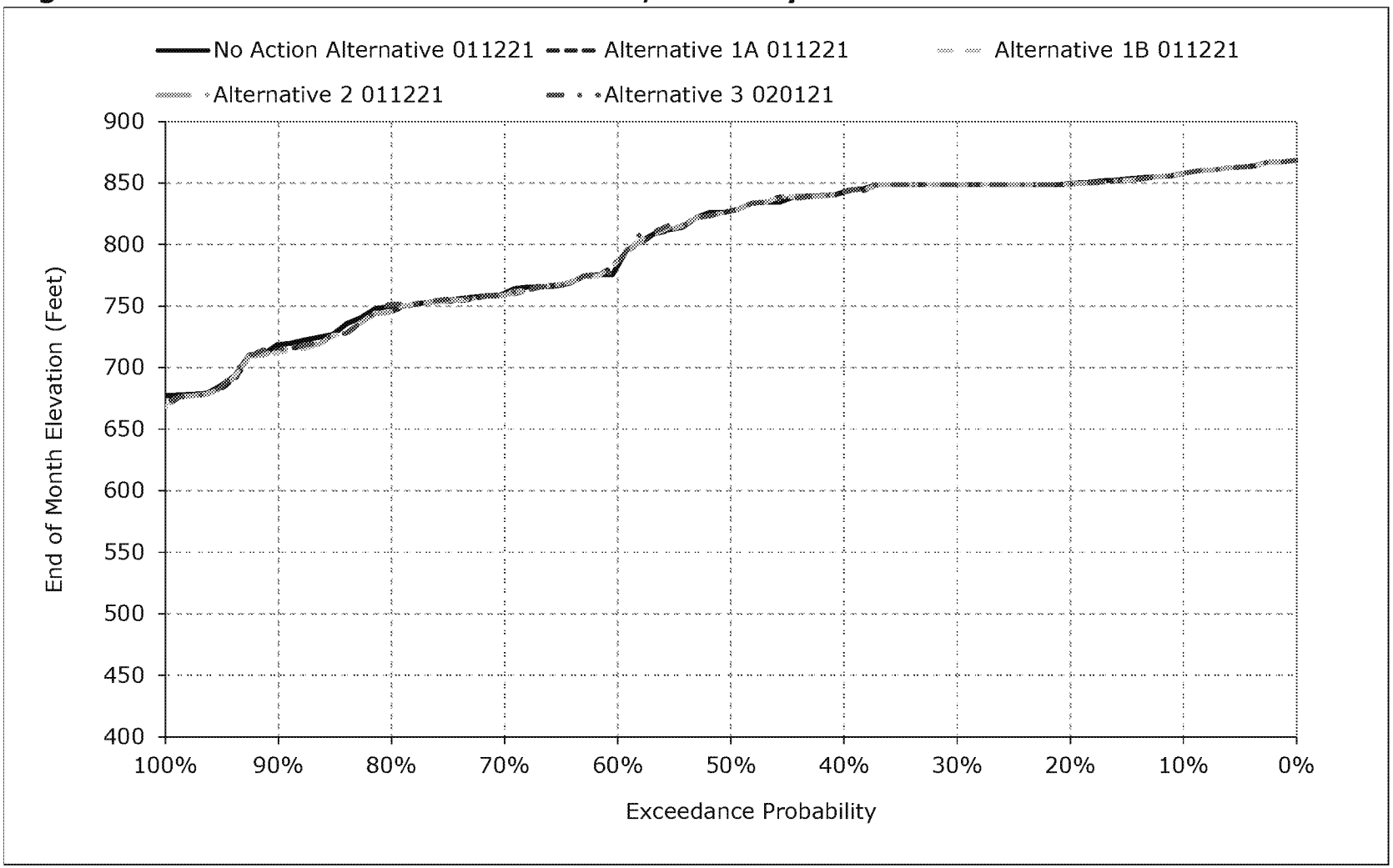


Figure 5B2-20-6. Lake Oroville Elevation, March

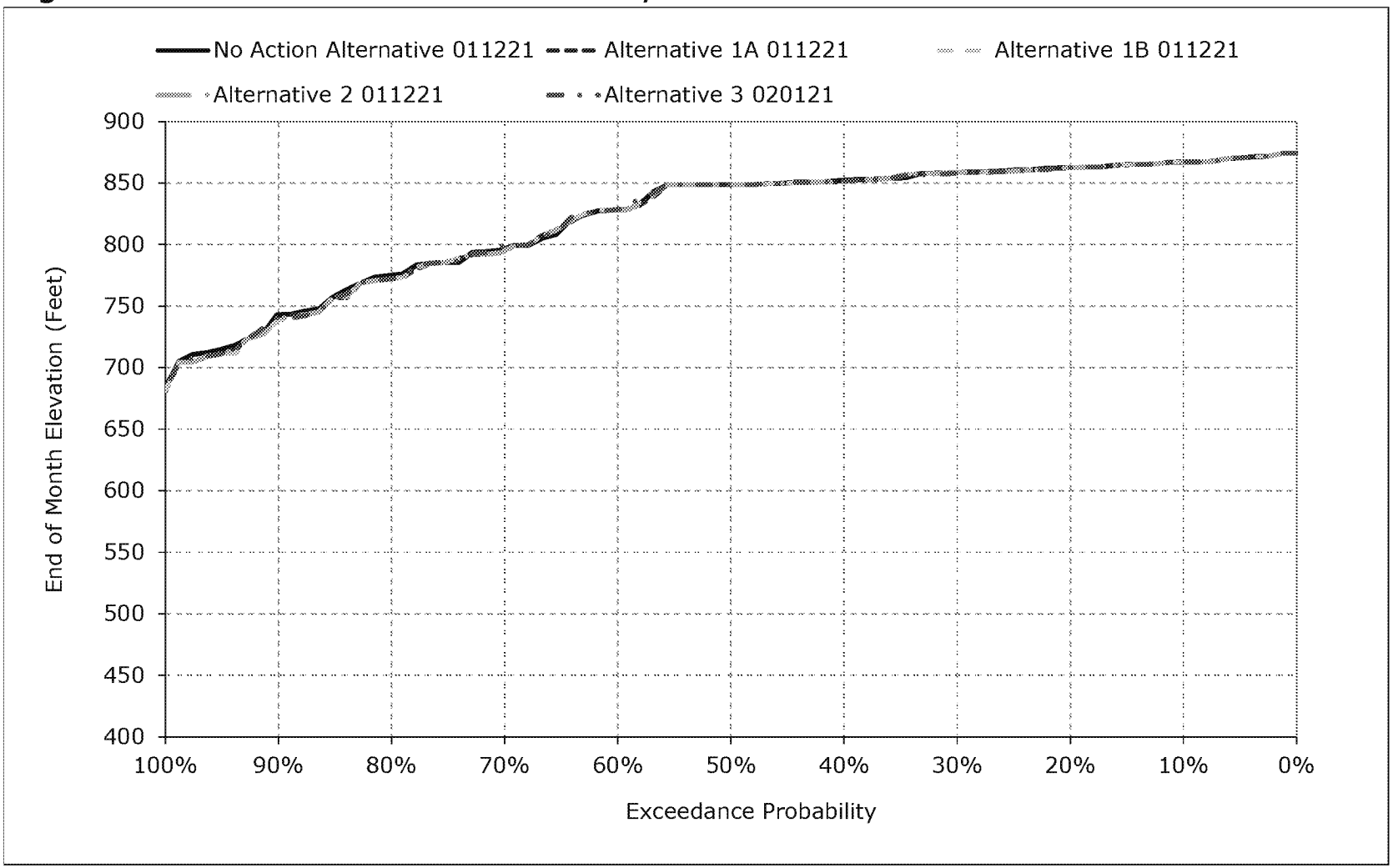


Figure 5B2-20-7. Lake Oroville Elevation, April

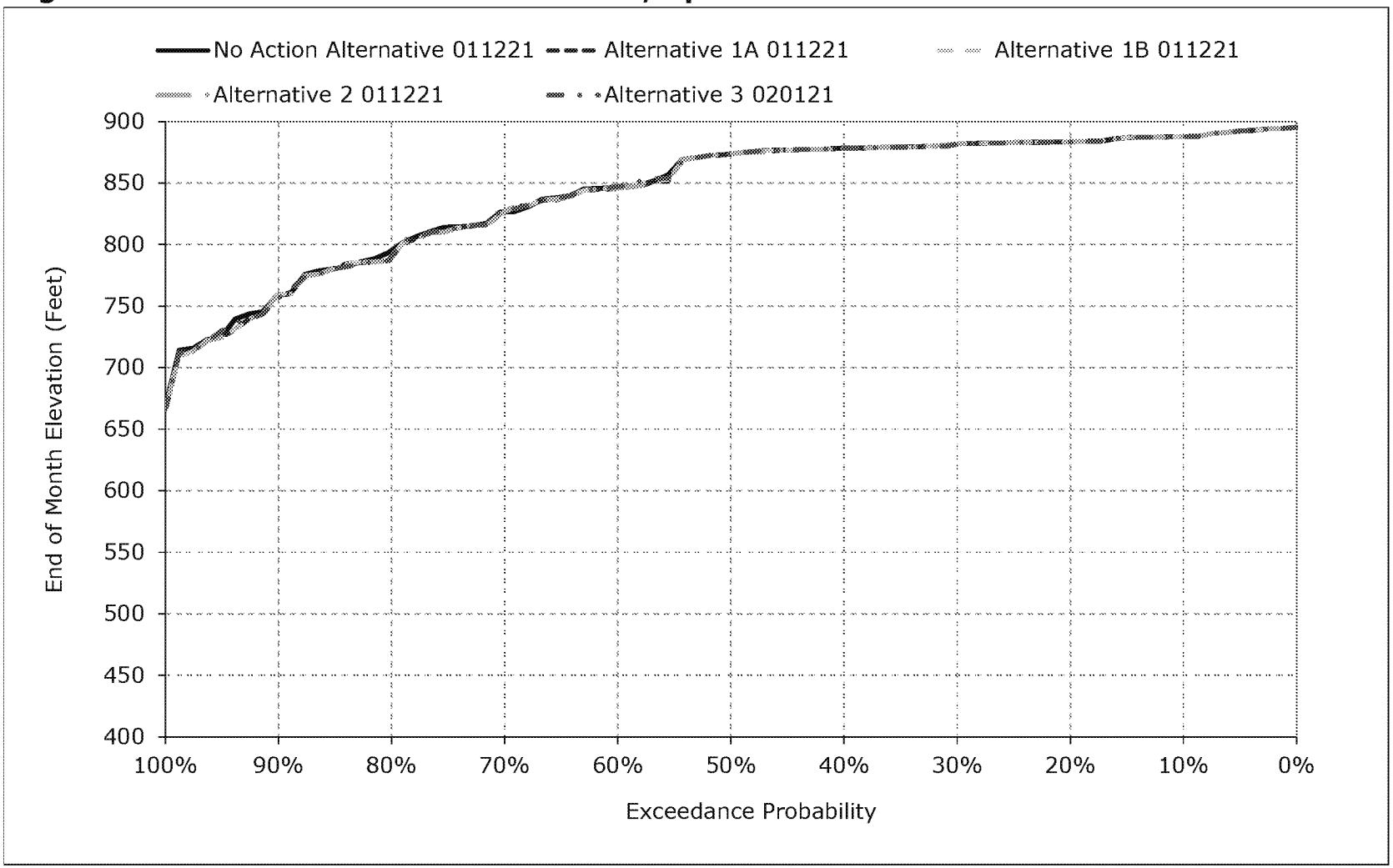


Figure 5B2-20-8. Lake Oroville Elevation, May

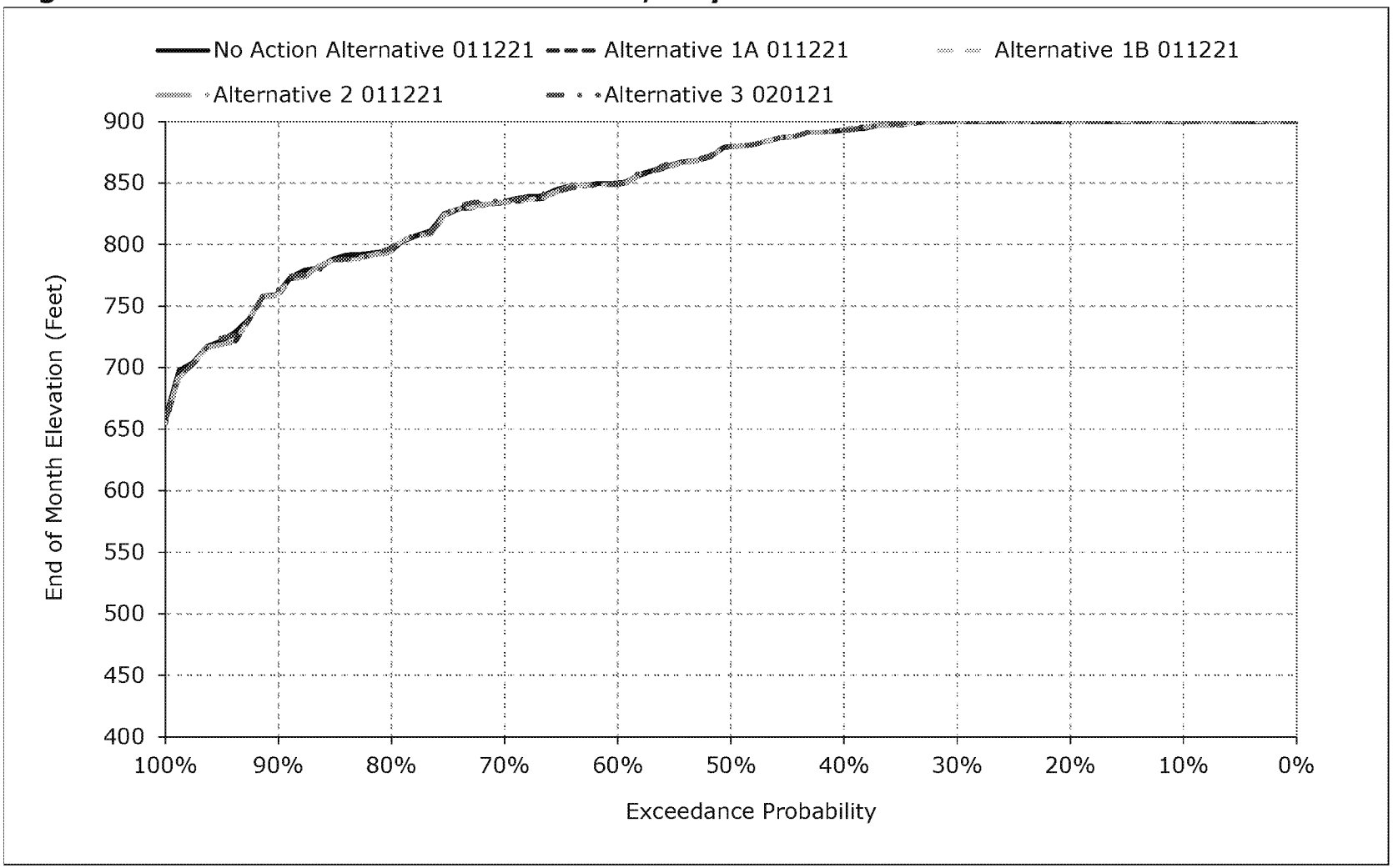


Figure 5B2-20-9. Lake Oroville Elevation, June

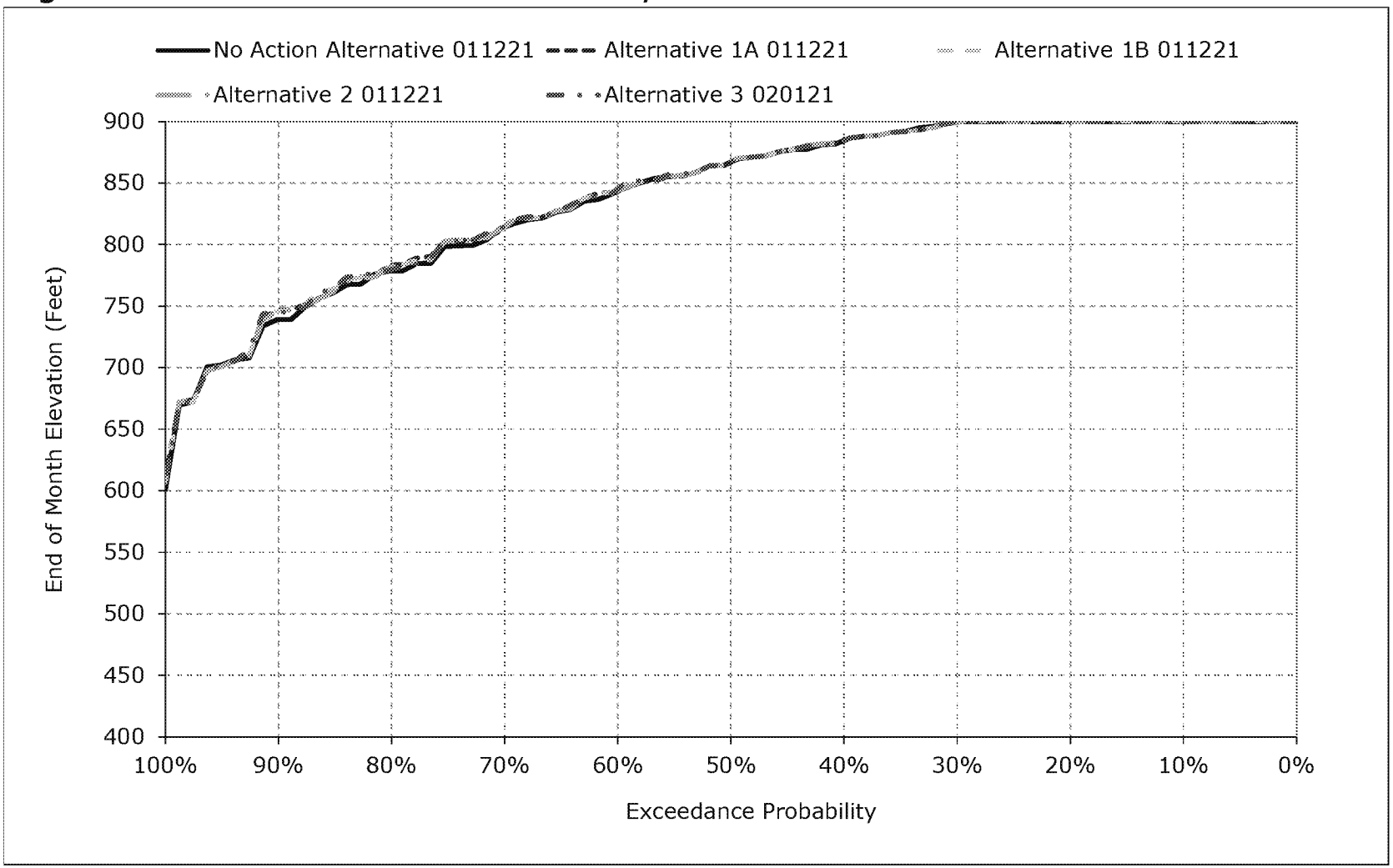


Figure 5B2-20-10. Lake Oroville Elevation, July

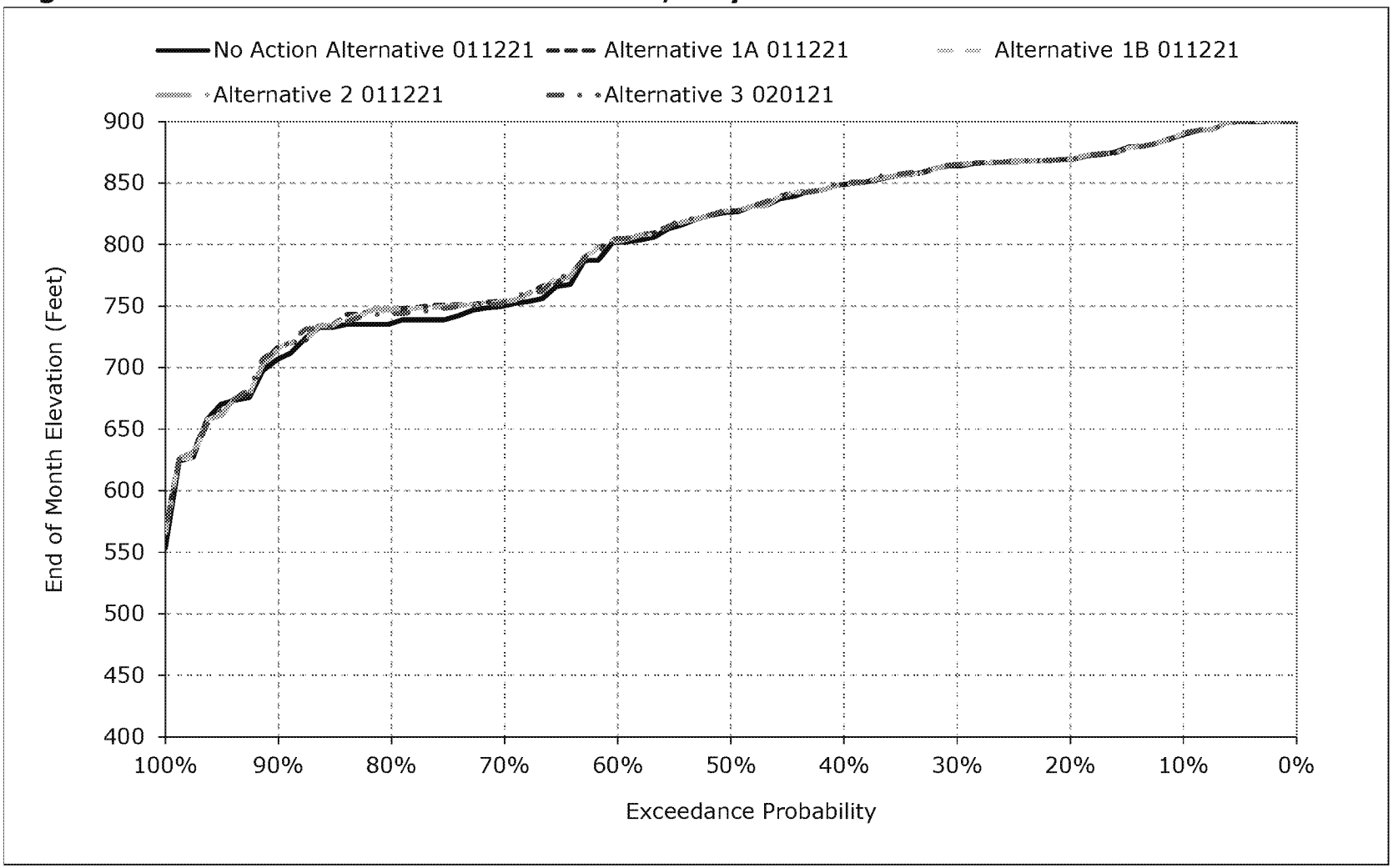


Figure 5B2-20-11. Lake Oroville Elevation, August

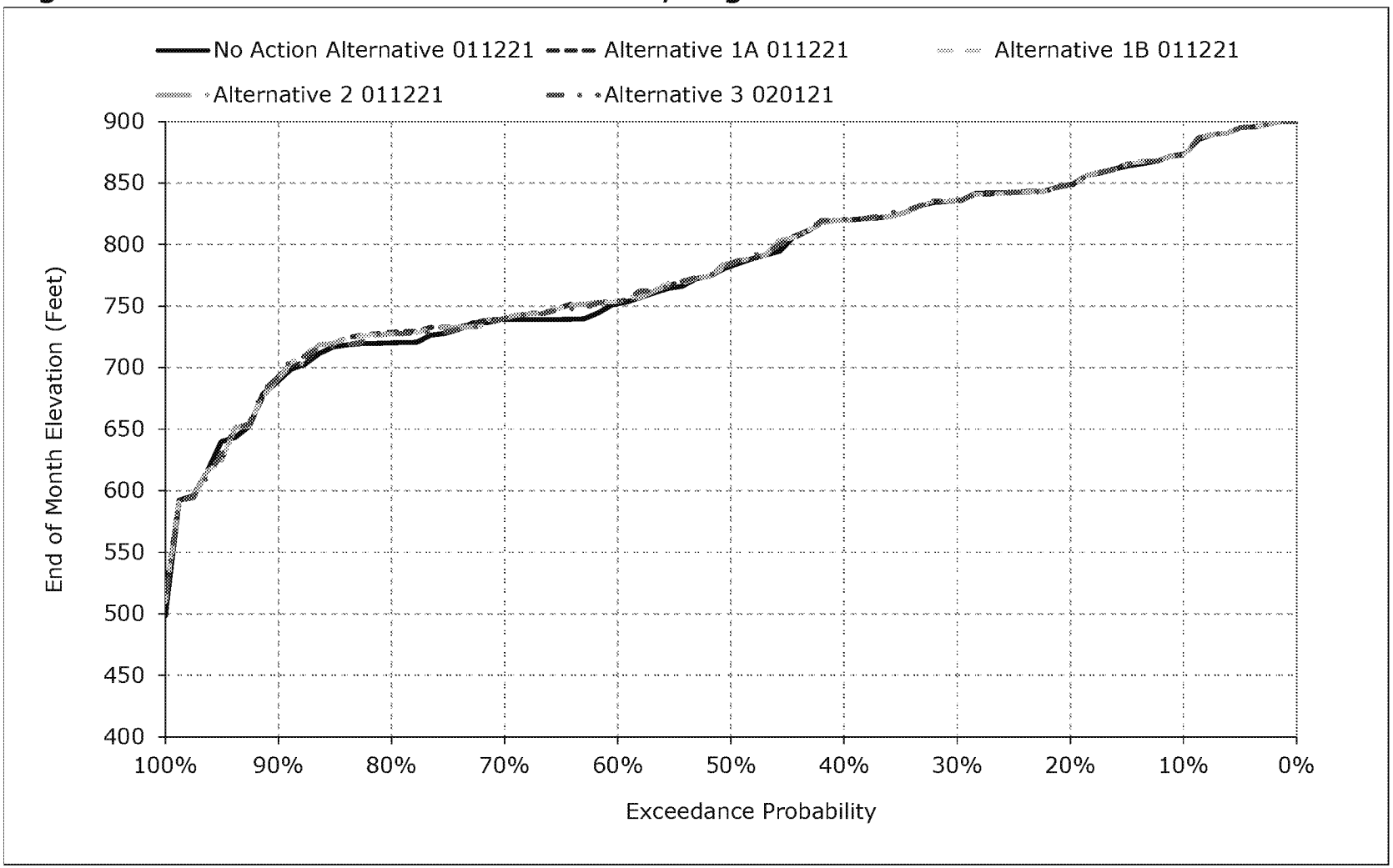


Figure 5B2-20-12. Lake Oroville Elevation, September

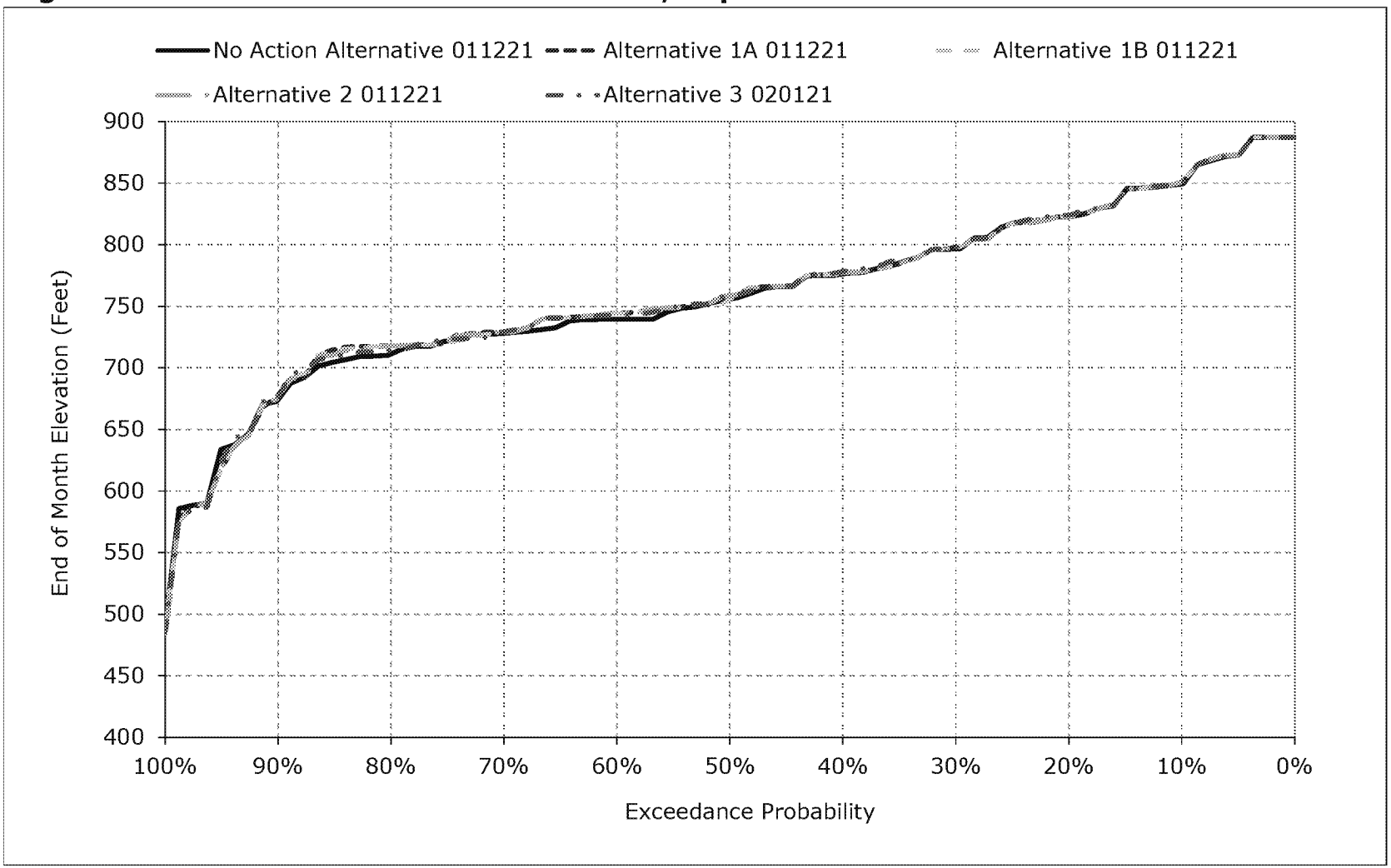


Table 5B2-21-1a. Lake Oroville Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	13,202	13,220	13,304	13,367	13,749	14,203	15,213	15,804	15,804	15,284	14,514	13,330
20%	11,392	11,751	12,551	13,303	13,352	13,976	15,002	15,804	15,804	14,307	13,306	12,039
30%	10,641	10,859	11,299	12,583	13,304	13,788	14,910	15,804	15,782	14,051	12,667	11,038
40%	9,654	10,038	10,458	11,913	13,016	13,482	14,748	15,471	15,058	13,310	11,890	10,301
50%	9,024	9,015	9,531	10,971	12,259	13,304	14,523	14,804	14,199	12,206	10,523	9,554
60%	8,604	8,543	8,995	9,371	10,546	12,295	13,204	13,371	13,043	11,221	9,411	8,983
70%	8,134	7,773	7,594	8,558	9,727	11,036	12,223	12,623	11,682	9,355	8,968	8,595
80%	7,673	7,201	7,351	8,025	9,337	10,251	10,983	11,030	10,377	8,864	8,322	8,024
90%	6,449	6,545	6,722	7,502	8,277	9,104	9,661	9,736	8,967	7,881	7,278	6,760
Long Term												
Full Simulation Period[a]	9,435	9,340	9,721	10,514	11,400	12,235	13,200	13,612	13,126	11,666	10,691	9,890
Water Year Types[b,c]												
Wet (32%)	12,107	11,993	12,043	12,704	13,527	13,827	15,023	15,702	15,636	14,648	13,886	12,725
Above Normal (15%)	10,132	9,985	10,216	10,899	12,234	13,720	14,995	15,652	15,352	13,674	12,270	10,696
Below Normal (17%)	9,128	9,035	9,656	10,008	11,024	12,050	13,391	14,053	13,700	11,768	10,032	9,441
Dry (22%)	7,791	7,717	8,548	8,973	9,857	11,066	11,794	11,878	10,875	9,079	8,516	8,216
Critical (15%)	5,773	5,737	6,029	8,290	8,715	9,271	9,341	9,128	8,169	6,960	6,220	5,979

Table 5B2-21-1b. Lake Oroville Surface Area, Alternative 1A 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	12,991	13,106	13,304	13,367	13,749	14,203	15,213	15,804	15,804	15,345	14,491	13,402
20%	11,393	11,728	12,417	13,303	13,331	13,976	15,002	15,804	15,804	14,308	13,293	12,051
30%	10,636	10,966	11,292	12,578	13,304	13,787	14,916	15,804	15,787	14,104	12,678	11,083
40%	9,668	9,999	10,448	11,913	13,001	13,433	14,740	15,493	15,067	13,310	11,886	10,307
50%	9,065	9,015	9,589	10,980	12,255	13,304	14,523	14,800	14,207	12,266	10,591	9,658
60%	8,763	8,531	8,997	9,337	10,688	12,293	13,160	13,332	13,069	11,251	9,479	9,147
70%	8,122	7,700	7,642	8,515	9,665	10,983	12,220	12,606	11,671	9,486	9,005	8,632
80%	7,697	7,302	7,272	7,940	9,193	10,154	10,792	10,984	10,550	9,270	8,619	8,243
90%	6,370	6,538	6,654	7,472	8,140	8,956	9,658	9,687	9,221	8,201	7,389	6,871
Long Term												
Full Simulation Period[a]	9,420	9,309	9,688	10,486	11,371	12,210	13,175	13,586	13,165	11,755	10,757	9,942
Water Year Types[b,c]												
Wet (32%)	12,099	11,984	12,031	12,713	13,524	13,827	15,023	15,702	15,639	14,656	13,892	12,731
Above Normal (15%)	10,123	9,976	10,218	10,869	12,211	13,705	14,982	15,640	15,345	13,663	12,259	10,685
Below Normal (17%)	9,145	9,018	9,632	10,004	11,023	12,049	13,390	14,050	13,729	11,865	10,127	9,538
Dry (22%)	7,807	7,693	8,516	8,893	9,782	10,995	11,730	11,813	10,988	9,332	8,714	8,387
Critical (15%)	5,653	5,611	5,905	8,228	8,654	9,224	9,284	9,064	8,232	7,070	6,262	5,962

Table 5B2-21-1c. Lake Oroville Surface Area, Alternative 1A 011221 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-211	-114	0	0	0	0	0	0	0	61	-23	72
20%	1	-22	-134	0	-21	0	0	0	0	1	-13	12
30%	-6	107	-6	-5	0	-2	5	0	5	53	11	45
40%	15	-39	-11	0	-15	-49	-8	22	9	0	-4	6
50%	41	0	58	9	-4	0	0	-4	8	61	68	104
60%	159	-12	2	-33	141	-2	-44	-38	26	30	67	164
70%	-12	-72	48	-43	-61	-53	-3	-17	-11	131	36	37
80%	24	100	-79	-85	-143	-97	-191	-46	173	407	297	219
90%	-80	-7	-68	-31	-136	-148	-3	-48	254	320	111	111
Long Term												
Full Simulation Period[a]	-15	-30	-33	-28	-30	-25	-25	-26	39	89	66	52
Water Year Types[b,c]												
Wet (32%)	-8	-9	-13	10	-3	0	0	0	2	8	6	6
Above Normal (15%)	-8	-9	2	-29	-23	-15	-13	-13	-7	-11	-11	-11
Below Normal (17%)	17	-17	-24	-4	0	-1	-2	-3	29	98	95	97
Dry (22%)	16	-23	-31	-80	-75	-71	-64	-65	113	253	198	171
Critical (15%)	-120	-126	-124	-62	-62	-48	-58	-64	63	110	41	-17

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-21-2a. Lake Oroville Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	13,202	13,220	13,304	13,367	13,749	14,203	15,213	15,804	15,804	15,284	14,514	13,330
20%	11,392	11,751	12,551	13,303	13,352	13,976	15,002	15,804	15,804	14,307	13,306	12,039
30%	10,641	10,859	11,299	12,583	13,304	13,788	14,910	15,804	15,782	14,051	12,667	11,038
40%	9,654	10,038	10,458	11,913	13,016	13,482	14,748	15,471	15,058	13,310	11,890	10,301
50%	9,024	9,015	9,531	10,971	12,259	13,304	14,523	14,804	14,199	12,206	10,523	9,554
60%	8,604	8,543	8,995	9,371	10,546	12,295	13,204	13,371	13,043	11,221	9,411	8,983
70%	8,134	7,773	7,594	8,558	9,727	11,036	12,223	12,623	11,682	9,355	8,968	8,595
80%	7,673	7,201	7,351	8,025	9,337	10,251	10,983	11,030	10,377	8,864	8,322	8,024
90%	6,449	6,545	6,722	7,502	8,277	9,104	9,661	9,736	8,967	7,881	7,278	6,760
Long Term												
Full Simulation Period[a]	9,435	9,340	9,721	10,514	11,400	12,235	13,200	13,612	13,126	11,666	10,691	9,890
Water Year Types[b,c]												
Wet (32%)	12,107	11,993	12,043	12,704	13,527	13,827	15,023	15,702	15,636	14,648	13,886	12,725
Above Normal (15%)	10,132	9,985	10,216	10,899	12,234	13,720	14,995	15,652	15,352	13,674	12,270	10,696
Below Normal (17%)	9,128	9,035	9,656	10,008	11,024	12,050	13,391	14,053	13,700	11,768	10,032	9,441
Dry (22%)	7,791	7,717	8,548	8,973	9,857	11,066	11,794	11,878	10,875	9,079	8,516	8,216
Critical (15%)	5,773	5,737	6,029	8,290	8,715	9,271	9,341	9,128	8,169	6,960	6,220	5,979

Table 5B2-21-2b. Lake Oroville Surface Area, Alternative 1B 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	13,000	13,115	13,308	13,368	13,749	14,203	15,213	15,804	15,804	15,345	14,488	13,403
20%	11,393	11,727	12,417	13,304	13,339	13,976	15,002	15,804	15,804	14,308	13,293	12,051
30%	10,636	10,960	11,294	12,585	13,304	13,787	14,916	15,804	15,803	14,104	12,678	11,083
40%	9,675	9,938	10,459	11,916	13,000	13,433	14,740	15,496	15,067	13,312	11,887	10,304
50%	9,068	9,021	9,593	10,981	12,255	13,304	14,523	14,800	14,210	12,264	10,588	9,547
60%	8,721	8,537	9,002	9,338	10,685	12,301	13,192	13,330	13,104	11,318	9,487	9,141
70%	8,038	7,700	7,641	8,487	9,686	10,986	12,228	12,607	11,680	9,503	9,000	8,624
80%	7,696	7,278	7,223	7,940	9,201	10,149	10,795	11,025	10,445	9,237	8,558	8,252
90%	6,450	6,543	6,701	7,427	8,056	8,940	9,662	9,722	9,205	8,182	7,377	6,855
Long Term												
Full Simulation Period[a]	9,418	9,309	9,688	10,485	11,373	12,213	13,178	13,590	13,171	11,757	10,756	9,937
Water Year Types[b,c]												
Wet (32%)	12,101	11,986	12,033	12,698	13,524	13,827	15,023	15,702	15,639	14,656	13,893	12,733
Above Normal (15%)	10,122	9,982	10,224	10,884	12,217	13,710	14,987	15,645	15,349	13,671	12,258	10,696
Below Normal (17%)	9,141	9,007	9,630	10,019	11,037	12,061	13,402	14,062	13,740	11,875	10,137	9,522
Dry (22%)	7,793	7,689	8,506	8,894	9,783	10,996	11,731	11,823	11,008	9,335	8,702	8,371
Critical (15%)	5,658	5,616	5,910	8,223	8,649	9,220	9,280	9,061	8,226	7,057	6,263	5,951

Table 5B2-21-2c. Lake Oroville Surface Area, Alternative 1B 011221 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-202	-105	4	1	0	0	0	0	0	61	-27	73
20%	1	-24	-133	1	-13	0	0	0	0	1	-13	12
30%	-5	101	-5	1	0	-2	5	0	20	53	11	46
40%	22	-100	0	3	-16	-49	-8	25	10	2	-3	3
50%	43	7	62	9	-3	0	0	-4	12	58	66	-7
60%	117	-7	7	-32	139	6	-13	-40	62	97	75	158
70%	-96	-73	48	-71	-40	-50	5	-17	-2	147	32	30
80%	23	77	-128	-84	-136	-101	-188	-5	68	373	236	228
90%	1	-3	-21	-75	-220	-164	0	-14	237	301	99	95
Long Term												
Full Simulation Period[a]	-17	-31	-33	-29	-27	-22	-22	-22	45	91	65	46
Water Year Types[b,c]												
Wet (32%)	-6	-6	-10	-6	-3	0	0	0	2	8	6	8
Above Normal (15%)	-9	-3	8	-15	-17	-10	-8	-7	-2	-3	-12	-1
Below Normal (17%)	13	-28	-26	11	13	11	10	9	40	107	105	81
Dry (22%)	2	-27	-41	-80	-74	-70	-63	-55	133	256	186	155
Critical (15%)	-115	-121	-120	-66	-66	-52	-61	-68	57	97	42	-28

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-21-3a. Lake Oroville Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	13,202	13,220	13,304	13,367	13,749	14,203	15,213	15,804	15,804	15,284	14,514	13,330
20%	11,392	11,751	12,551	13,303	13,352	13,976	15,002	15,804	15,804	14,307	13,306	12,039
30%	10,641	10,859	11,299	12,583	13,304	13,788	14,910	15,804	15,782	14,051	12,667	11,038
40%	9,654	10,038	10,458	11,913	13,016	13,482	14,748	15,471	15,058	13,310	11,890	10,301
50%	9,024	9,015	9,531	10,971	12,259	13,304	14,523	14,804	14,199	12,206	10,523	9,554
60%	8,604	8,543	8,995	9,371	10,546	12,295	13,204	13,371	13,043	11,221	9,411	8,983
70%	8,134	7,773	7,594	8,558	9,727	11,036	12,223	12,623	11,682	9,355	8,968	8,595
80%	7,673	7,201	7,351	8,025	9,337	10,251	10,983	11,030	10,377	8,864	8,322	8,024
90%	6,449	6,545	6,722	7,502	8,277	9,104	9,661	9,736	8,967	7,881	7,278	6,760
Long Term												
Full Simulation Period[a]	9,435	9,340	9,721	10,514	11,400	12,235	13,200	13,612	13,126	11,666	10,691	9,890
Water Year Types[b,c]												
Wet (32%)	12,107	11,993	12,043	12,704	13,527	13,827	15,023	15,702	15,636	14,648	13,886	12,725
Above Normal (15%)	10,132	9,985	10,216	10,899	12,234	13,720	14,995	15,652	15,352	13,674	12,270	10,696
Below Normal (17%)	9,128	9,035	9,656	10,008	11,024	12,050	13,391	14,053	13,700	11,768	10,032	9,441
Dry (22%)	7,791	7,717	8,548	8,973	9,857	11,066	11,794	11,878	10,875	9,079	8,516	8,216
Critical (15%)	5,773	5,737	6,029	8,290	8,715	9,271	9,341	9,128	8,169	6,960	6,220	5,979

Table 5B2-21-3b. Lake Oroville Surface Area, Alternative 2 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	12,986	13,101	13,304	13,367	13,749	14,203	15,213	15,804	15,804	15,345	14,489	13,402
20%	11,393	11,769	12,417	13,303	13,327	13,976	15,002	15,804	15,804	14,308	13,293	12,051
30%	10,636	10,963	11,294	12,585	13,304	13,786	14,916	15,804	15,793	14,104	12,678	11,083
40%	9,676	9,999	10,448	11,913	13,001	13,433	14,740	15,493	15,067	13,310	11,886	10,341
50%	9,066	9,015	9,589	10,980	12,254	13,304	14,523	14,800	14,207	12,263	10,626	9,658
60%	8,763	8,531	8,997	9,337	10,688	12,293	13,169	13,333	13,076	11,263	9,479	9,143
70%	8,123	7,700	7,642	8,514	9,672	10,981	12,219	12,605	11,718	9,491	9,005	8,629
80%	7,697	7,302	7,272	7,941	9,193	10,154	10,792	10,985	10,508	9,258	8,573	8,241
90%	6,403	6,542	6,684	7,468	8,138	8,953	9,658	9,687	9,183	8,165	7,355	6,838
Long Term												
Full Simulation Period[a]	9,423	9,312	9,690	10,488	11,372	12,212	13,177	13,587	13,160	11,750	10,753	9,936
Water Year Types[b,c]												
Wet (32%)	12,101	11,986	12,031	12,714	13,524	13,827	15,023	15,702	15,639	14,656	13,893	12,733
Above Normal (15%)	10,126	9,979	10,221	10,873	12,213	13,706	14,983	15,641	15,346	13,665	12,262	10,688
Below Normal (17%)	9,153	9,023	9,634	10,005	11,025	12,050	13,391	14,050	13,729	11,865	10,133	9,544
Dry (22%)	7,808	7,696	8,520	8,898	9,786	10,999	11,734	11,817	10,975	9,317	8,697	8,363
Critical (15%)	5,654	5,614	5,908	8,227	8,653	9,223	9,283	9,063	8,219	7,053	6,250	5,938

Table 5B2-21-3c. Lake Oroville Surface Area, Alternative 2 011221 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-216	-119	0	0	0	0	0	0	0	61	-25	72
20%	1	18	-134	0	-25	0	0	0	0	1	-13	12
30%	-6	105	-5	2	0	-2	5	0	11	53	11	45
40%	22	-39	-10	0	-15	-49	-8	22	9	0	-4	40
50%	41	0	59	9	-5	0	0	-4	8	57	104	104
60%	159	-12	2	-33	141	-2	-35	-38	33	42	67	160
70%	-11	-72	48	-44	-54	-55	-4	-18	36	136	36	34
80%	23	100	-79	-83	-143	-97	-191	-46	131	395	251	217
90%	-47	-4	-38	-34	-139	-151	-3	-49	216	284	77	78
Long Term												
Full Simulation Period[a]	-12	-28	-31	-27	-28	-24	-24	-25	34	83	62	45
Water Year Types[b,c]												
Wet (32%)	-6	-7	-13	10	-3	0	0	0	2	8	6	8
Above Normal (15%)	-6	-6	5	-26	-21	-14	-12	-11	-5	-8	-8	-9
Below Normal (17%)	24	-12	-22	-3	1	0	-1	-3	29	97	101	103
Dry (22%)	16	-20	-28	-75	-70	-67	-60	-61	100	237	181	147
Critical (15%)	-119	-123	-121	-63	-63	-49	-59	-65	50	93	30	-41

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-21-4a. Lake Oroville Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	13,202	13,220	13,304	13,367	13,749	14,203	15,213	15,804	15,804	15,284	14,514	13,330
20%	11,392	11,751	12,551	13,303	13,352	13,976	15,002	15,804	15,804	14,307	13,306	12,039
30%	10,641	10,859	11,299	12,583	13,304	13,788	14,910	15,804	15,782	14,051	12,667	11,038
40%	9,654	10,038	10,458	11,913	13,016	13,482	14,748	15,471	15,058	13,310	11,890	10,301
50%	9,024	9,015	9,531	10,971	12,259	13,304	14,523	14,804	14,199	12,206	10,523	9,554
60%	8,604	8,543	8,995	9,371	10,546	12,295	13,204	13,371	13,043	11,221	9,411	8,983
70%	8,134	7,773	7,594	8,558	9,727	11,036	12,223	12,623	11,682	9,355	8,968	8,595
80%	7,673	7,201	7,351	8,025	9,337	10,251	10,983	11,030	10,377	8,864	8,322	8,024
90%	6,449	6,545	6,722	7,502	8,277	9,104	9,661	9,736	8,967	7,881	7,278	6,760
Long Term												
Full Simulation Period[a]	9,435	9,340	9,721	10,514	11,400	12,235	13,200	13,612	13,126	11,666	10,691	9,890
Water Year Types[b,c]												
Wet (32%)	12,107	11,993	12,043	12,704	13,527	13,827	15,023	15,702	15,636	14,648	13,886	12,725
Above Normal (15%)	10,132	9,985	10,216	10,899	12,234	13,720	14,995	15,652	15,352	13,674	12,270	10,696
Below Normal (17%)	9,128	9,035	9,656	10,008	11,024	12,050	13,391	14,053	13,700	11,768	10,032	9,441
Dry (22%)	7,791	7,717	8,548	8,973	9,857	11,066	11,794	11,878	10,875	9,079	8,516	8,216
Critical (15%)	5,773	5,737	6,029	8,290	8,715	9,271	9,341	9,128	8,169	6,960	6,220	5,979

Table 5B2-21-4b. Lake Oroville Surface Area, Alternative 3 020121, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	12,963	13,076	13,304	13,386	13,749	14,203	15,213	15,804	15,804	15,346	14,480	13,377
20%	11,546	11,780	12,553	13,304	13,327	13,976	15,002	15,804	15,804	14,308	13,293	12,096
30%	10,637	10,955	11,394	12,591	13,304	13,758	14,904	15,804	15,803	14,104	12,682	11,085
40%	9,801	9,959	10,501	11,921	13,003	13,433	14,741	15,462	15,063	13,377	11,928	10,372
50%	9,072	9,078	9,635	10,981	12,254	13,304	14,523	14,800	14,212	12,253	10,591	9,648
60%	8,701	8,543	9,009	9,353	10,593	12,322	13,234	13,322	13,136	11,338	9,490	9,092
70%	8,078	7,700	7,656	8,560	9,681	11,120	12,305	12,671	11,718	9,469	9,004	8,642
80%	7,671	7,276	7,303	7,977	9,392	10,147	10,807	11,082	10,422	9,131	8,585	8,119
90%	6,573	6,547	6,717	7,464	8,156	9,009	9,577	9,828	9,152	8,141	7,395	6,803
Long Term												
Full Simulation Period[a]	9,442	9,337	9,712	10,504	11,388	12,224	13,189	13,608	13,176	11,755	10,755	9,941
Water Year Types[b,c]												
Wet (32%)	12,104	11,989	12,038	12,710	13,527	13,827	15,023	15,702	15,639	14,656	13,894	12,740
Above Normal (15%)	10,199	10,064	10,274	10,893	12,218	13,715	14,992	15,651	15,351	13,720	12,316	10,762
Below Normal (17%)	9,158	9,025	9,646	10,018	11,038	12,060	13,402	14,064	13,741	11,868	10,121	9,529
Dry (22%)	7,797	7,706	8,526	8,939	9,825	11,035	11,762	11,877	11,018	9,299	8,674	8,337
Critical (15%)	5,717	5,675	5,964	8,248	8,673	9,234	9,303	9,091	8,239	7,057	6,251	5,939

Table 5B2-21-4c. Lake Oroville Surface Area, Alternative 3 020121 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-238	-144	0	19	0	0	0	0	0	62	-34	47
20%	154	29	3	1	-25	0	0	0	0	1	-13	57
30%	-5	96	95	8	0	-30	-7	0	20	53	15	48
40%	147	-79	42	8	-13	-49	-7	-9	5	66	38	71
50%	48	63	104	10	-4	0	0	-4	13	48	69	94
60%	97	-1	14	-17	47	27	30	-48	93	117	78	109
70%	-57	-73	62	2	-46	84	82	47	35	114	36	47
80%	-2	74	-48	-47	55	-104	-176	52	45	267	263	94
90%	123	1	-5	-38	-121	-95	-84	93	184	260	117	43
Long Term												
Full Simulation Period[a]	7	-3	-9	-10	-13	-11	-11	-4	49	88	64	50
Water Year Types[b,c]												
Wet (32%)	-3	-4	-5	7	1	0	0	0	2	7	8	15
Above Normal (15%)	67	79	58	-5	-17	-5	-3	-2	0	46	46	66
Below Normal (17%)	29	-9	-10	11	15	10	10	11	41	100	90	87
Dry (22%)	6	-10	-21	-34	-32	-31	-32	-1	143	220	158	121
Critical (15%)	-55	-62	-65	-42	-42	-37	-38	-37	71	97	30	-39

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Figure 5B2-21-1. Lake Oroville Surface Area, October

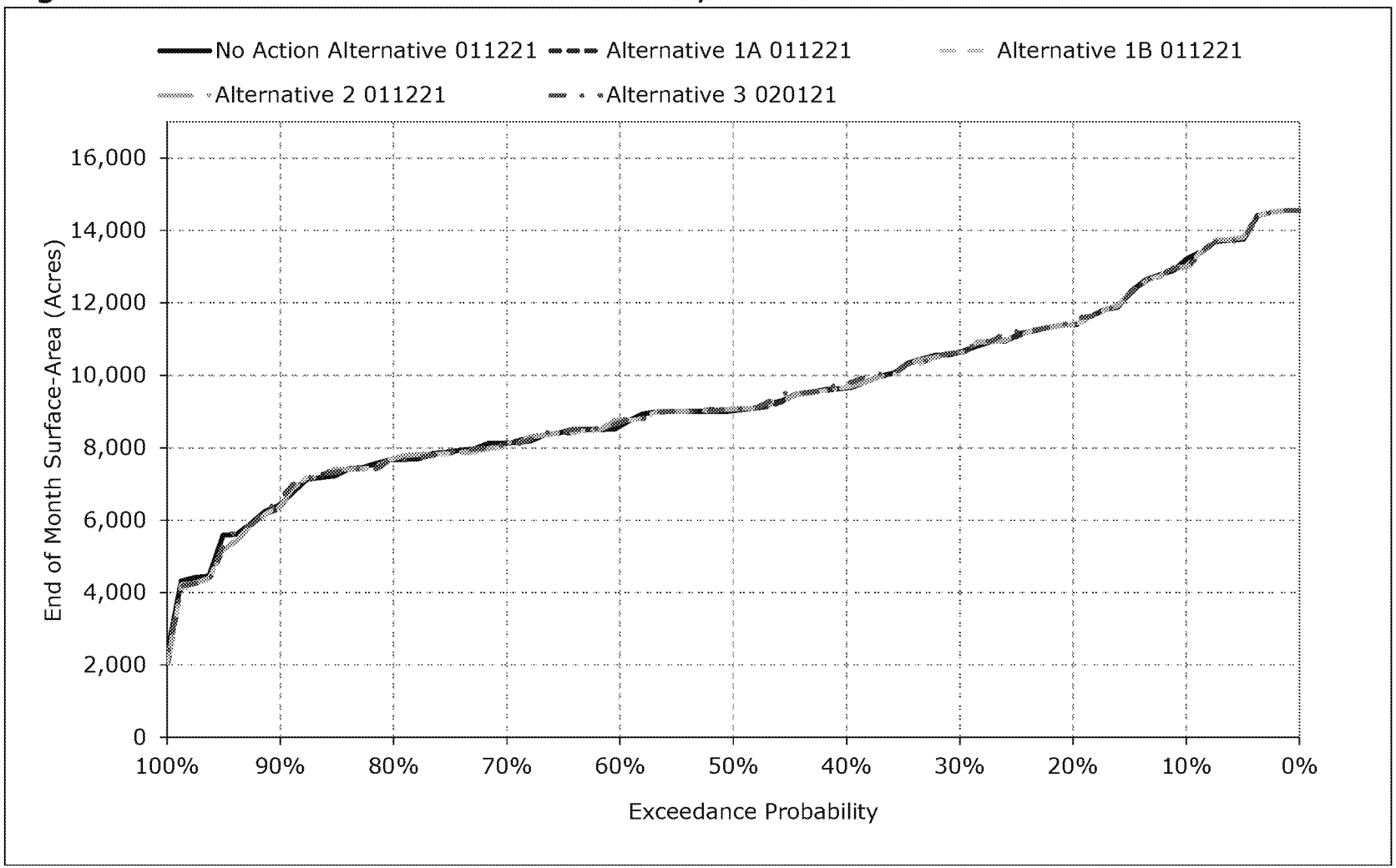


Figure 5B2-21-2. Lake Oroville Surface Area, November

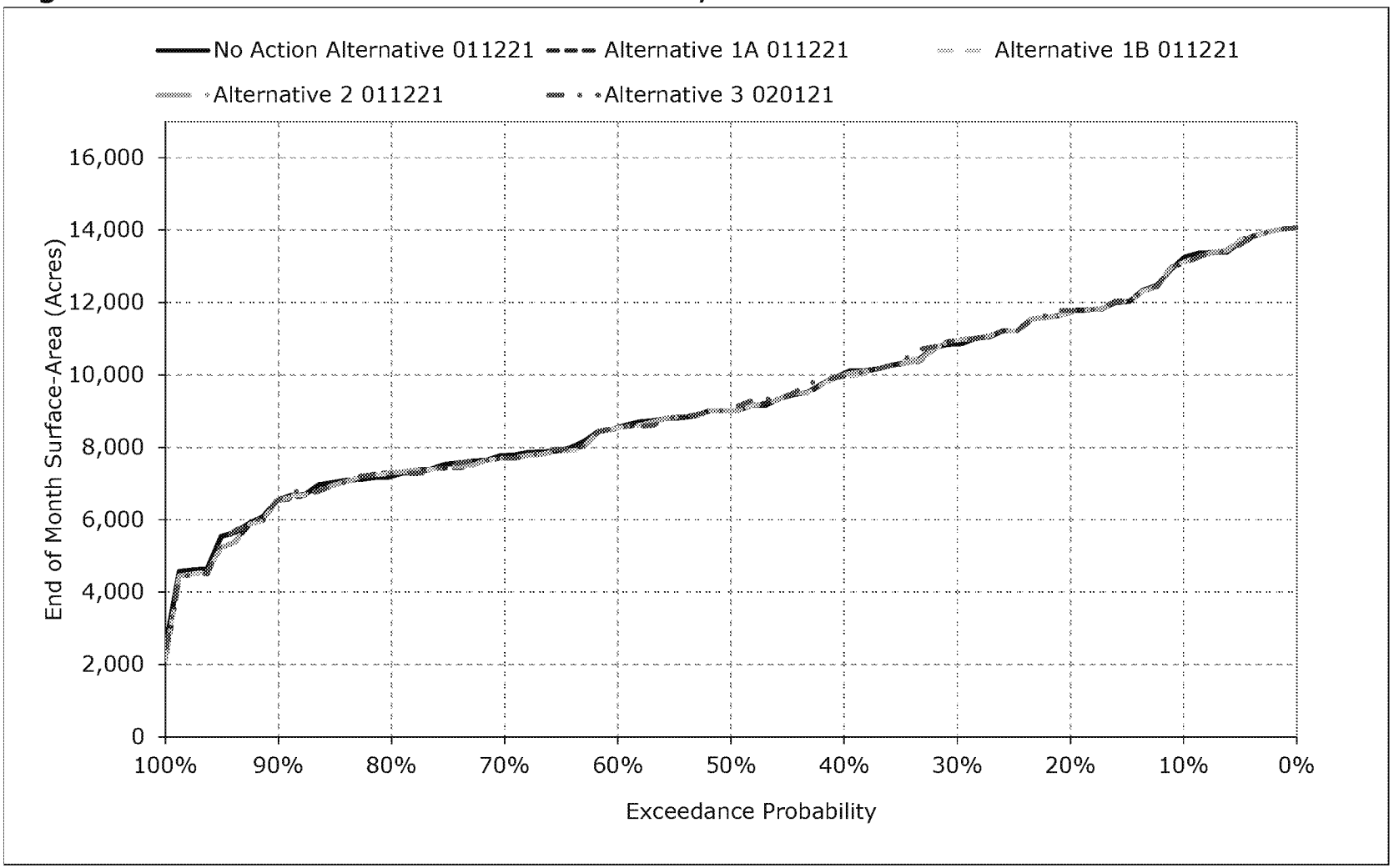


Figure 5B2-21-3. Lake Oroville Surface Area, December

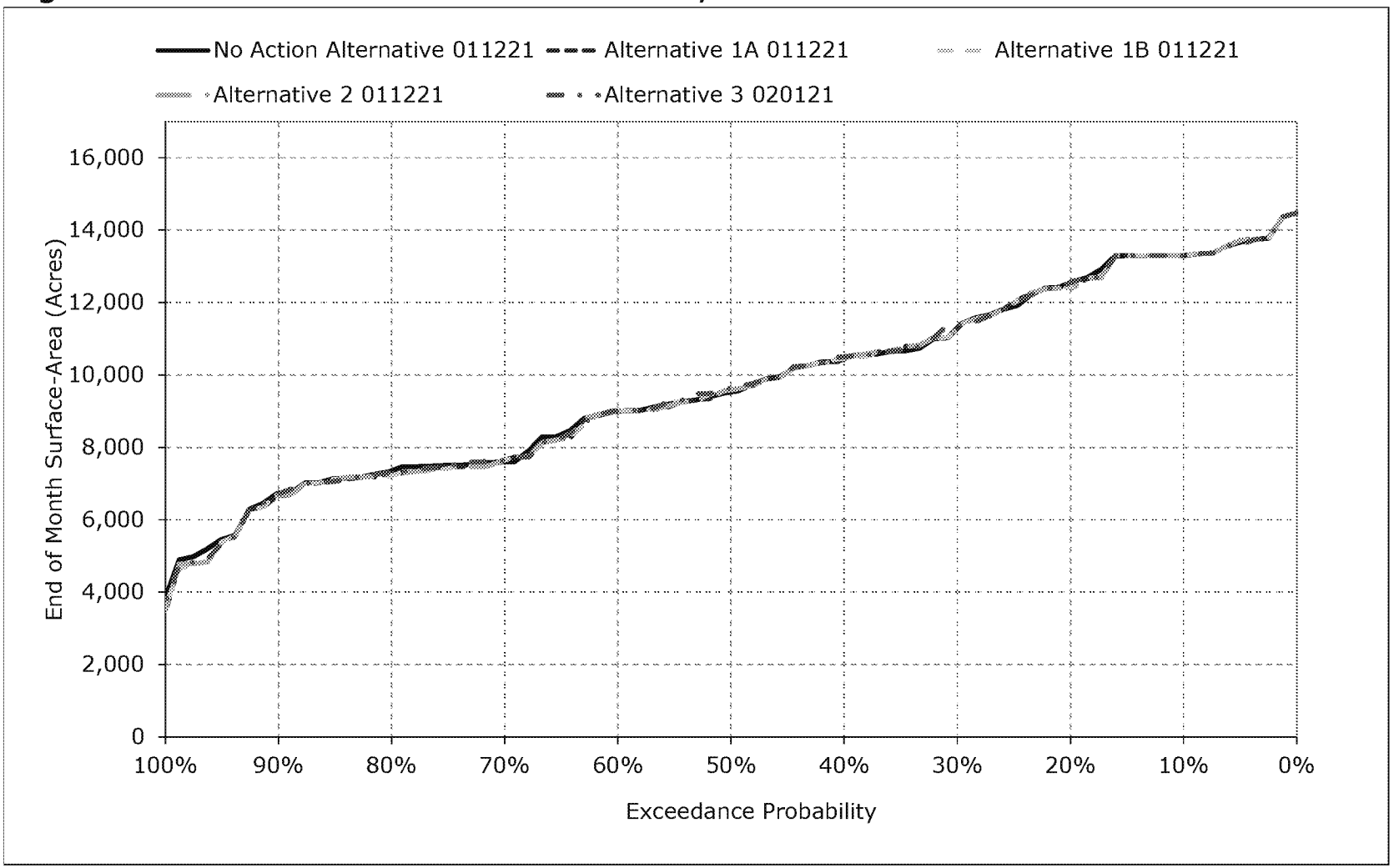


Figure 5B2-21-4. Lake Oroville Surface Area, January

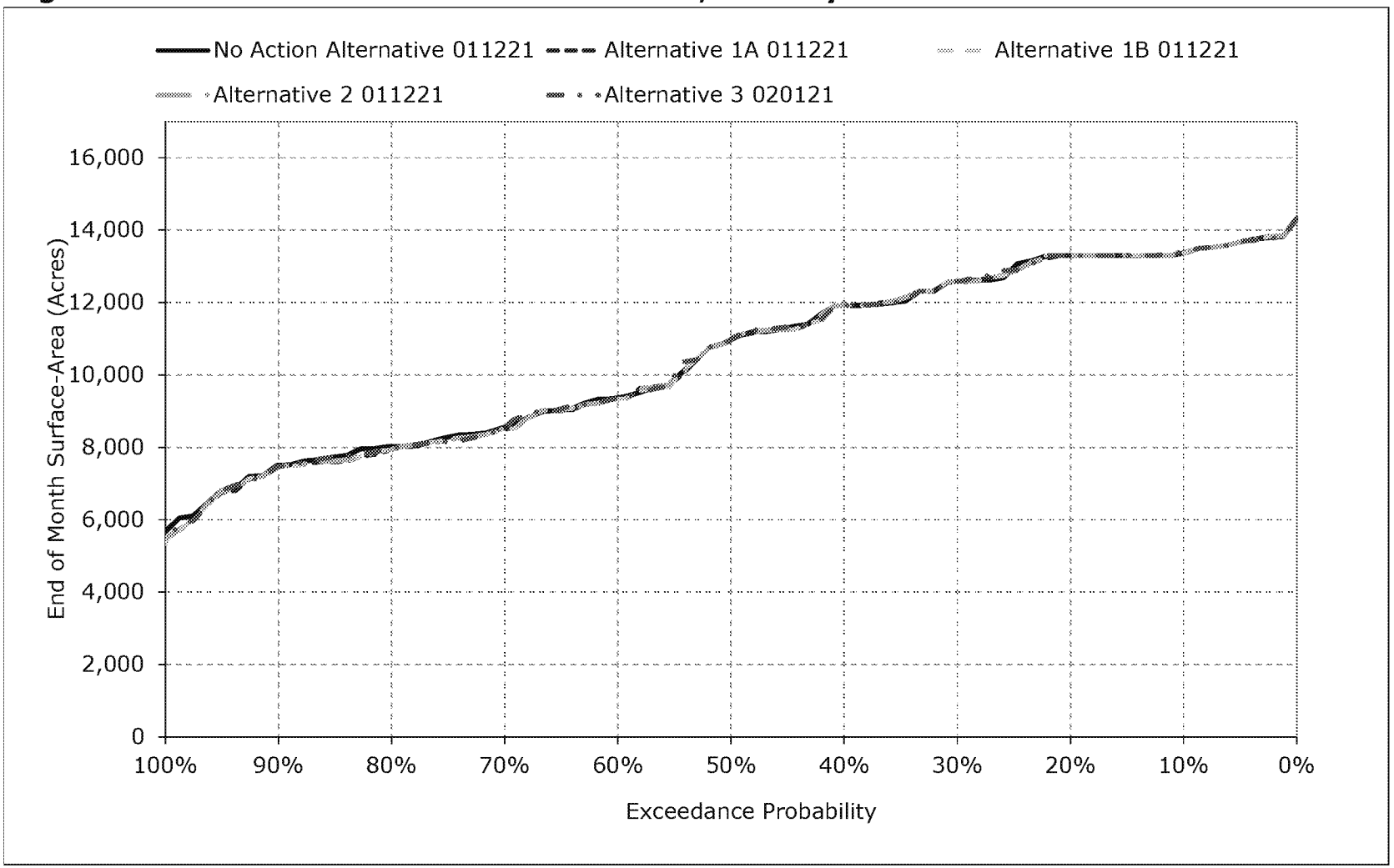


Figure 5B2-21-5. Lake Oroville Surface Area, February

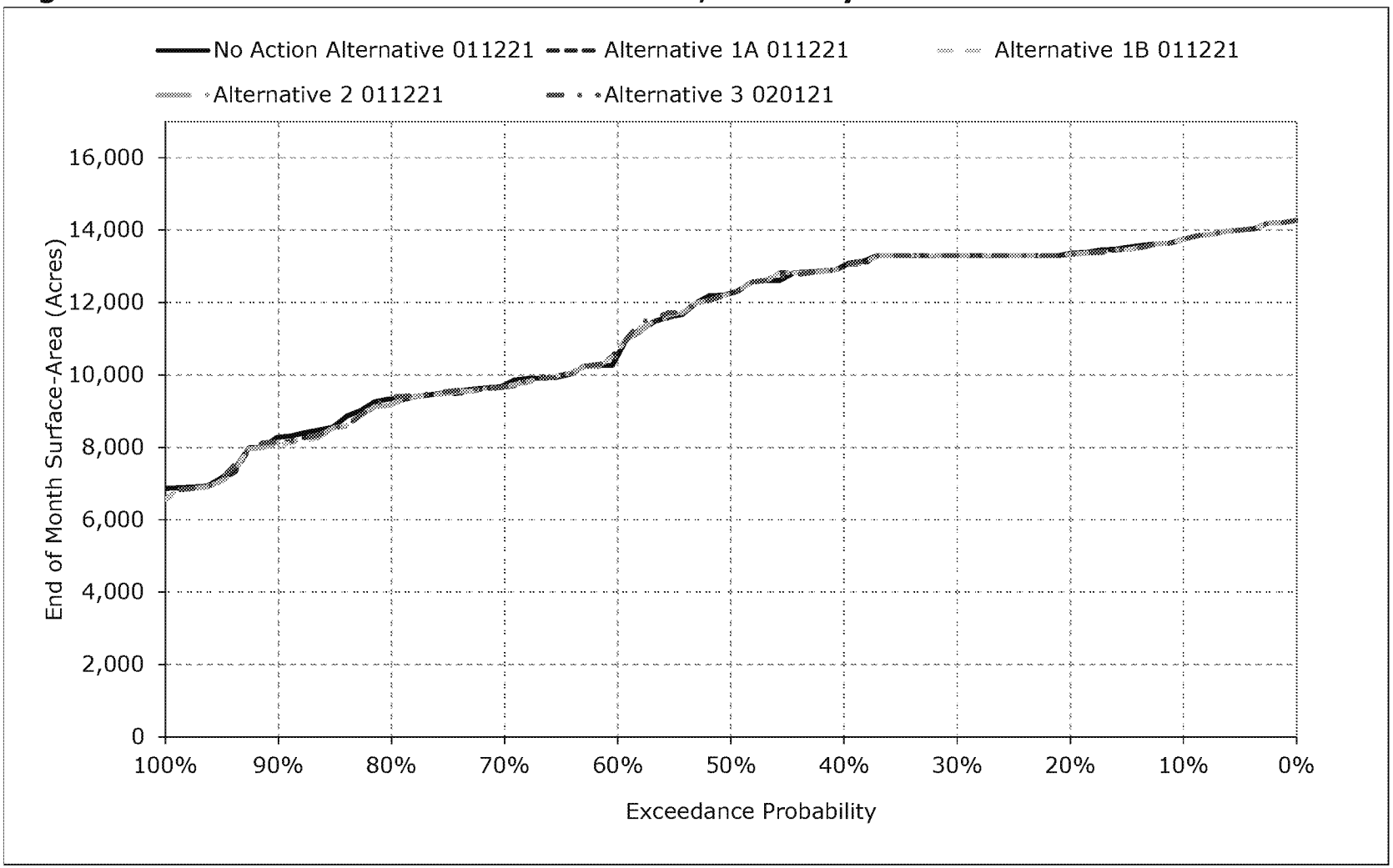


Figure 5B2-21-6. Lake Oroville Surface Area, March

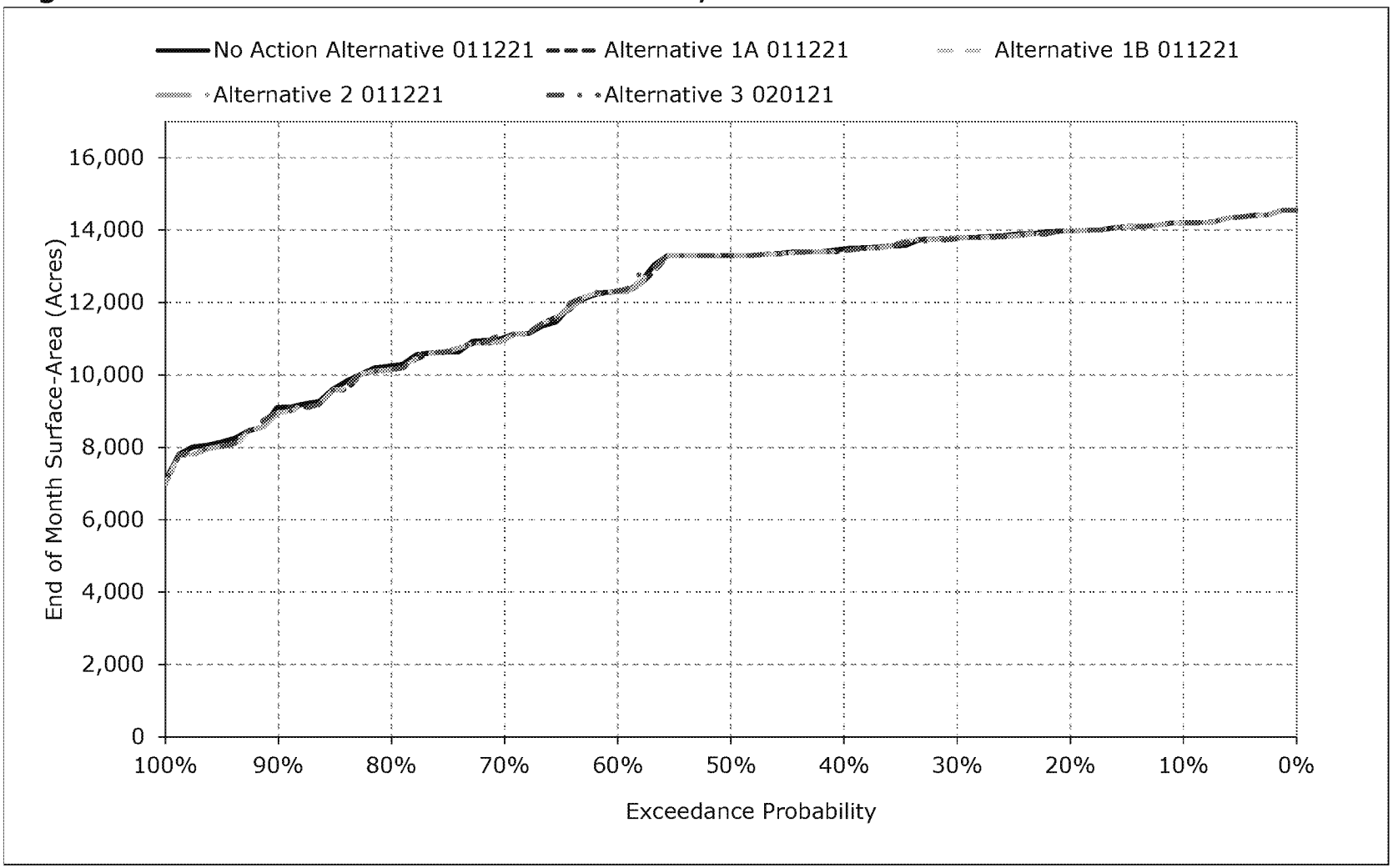


Figure 5B2-21-7. Lake Oroville Surface Area, April

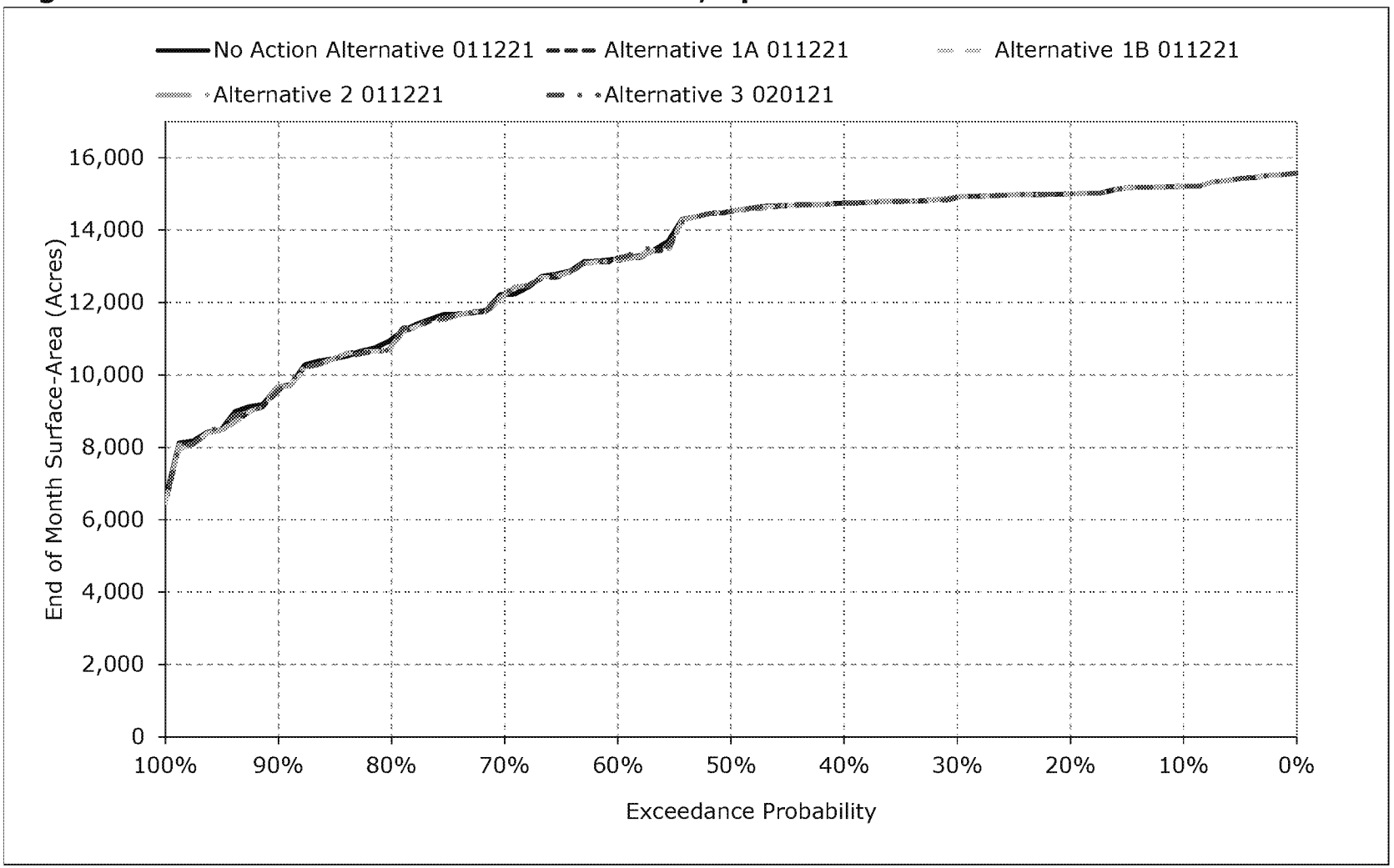


Figure 5B2-21-8. Lake Oroville Surface Area, May

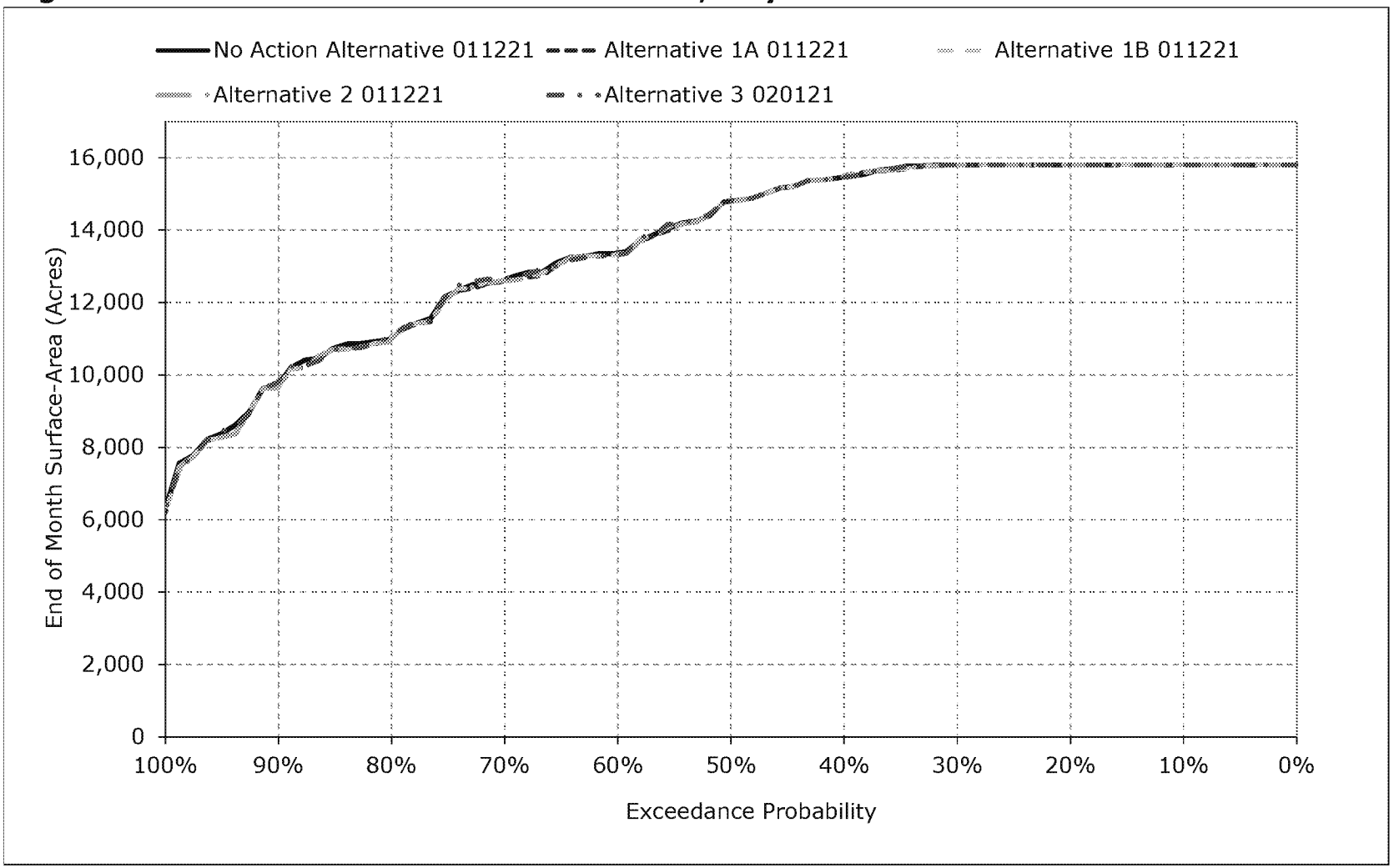


Figure 5B2-21-9. Lake Oroville Surface Area, June

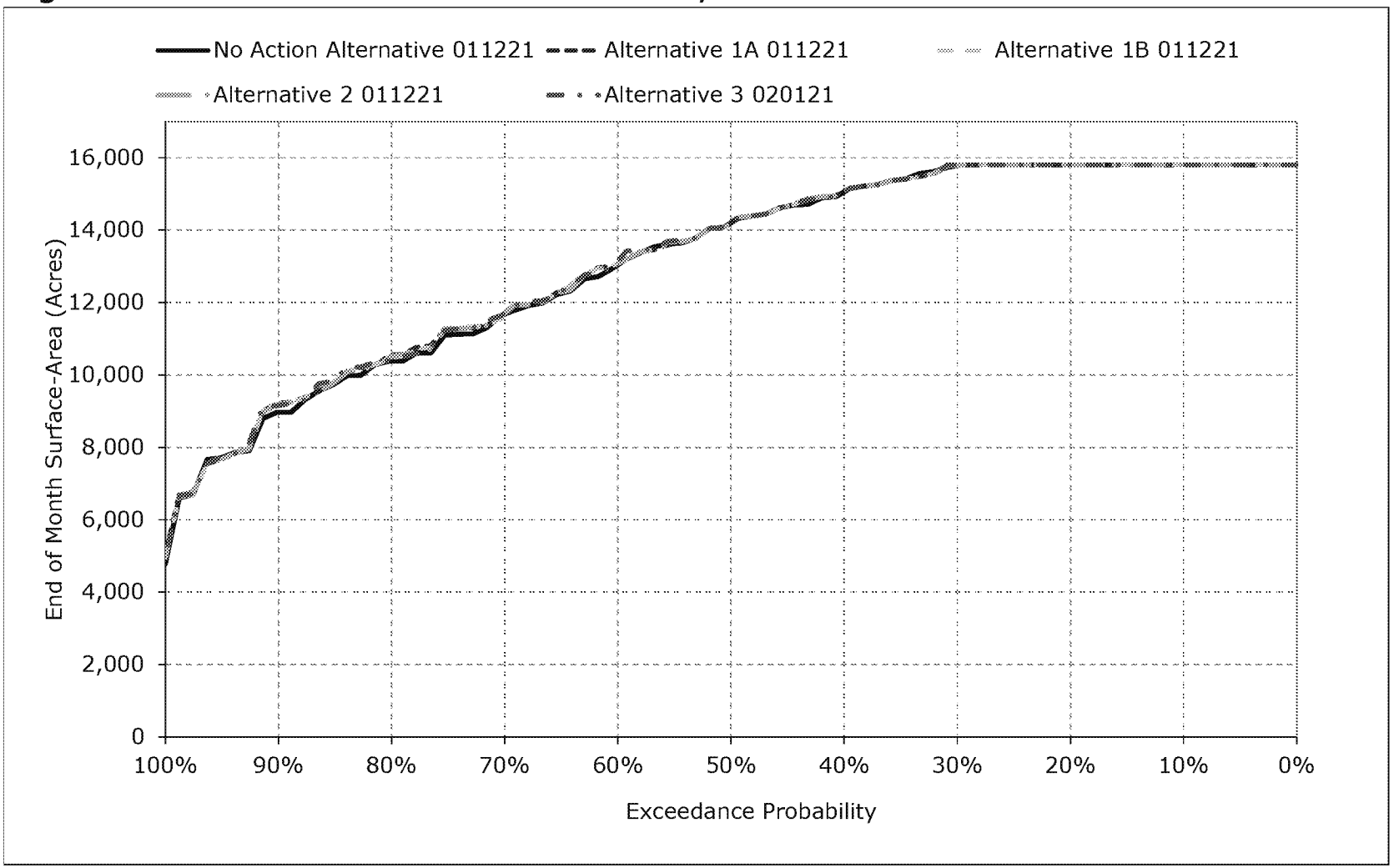


Figure 5B2-21-10. Lake Oroville Surface Area, July

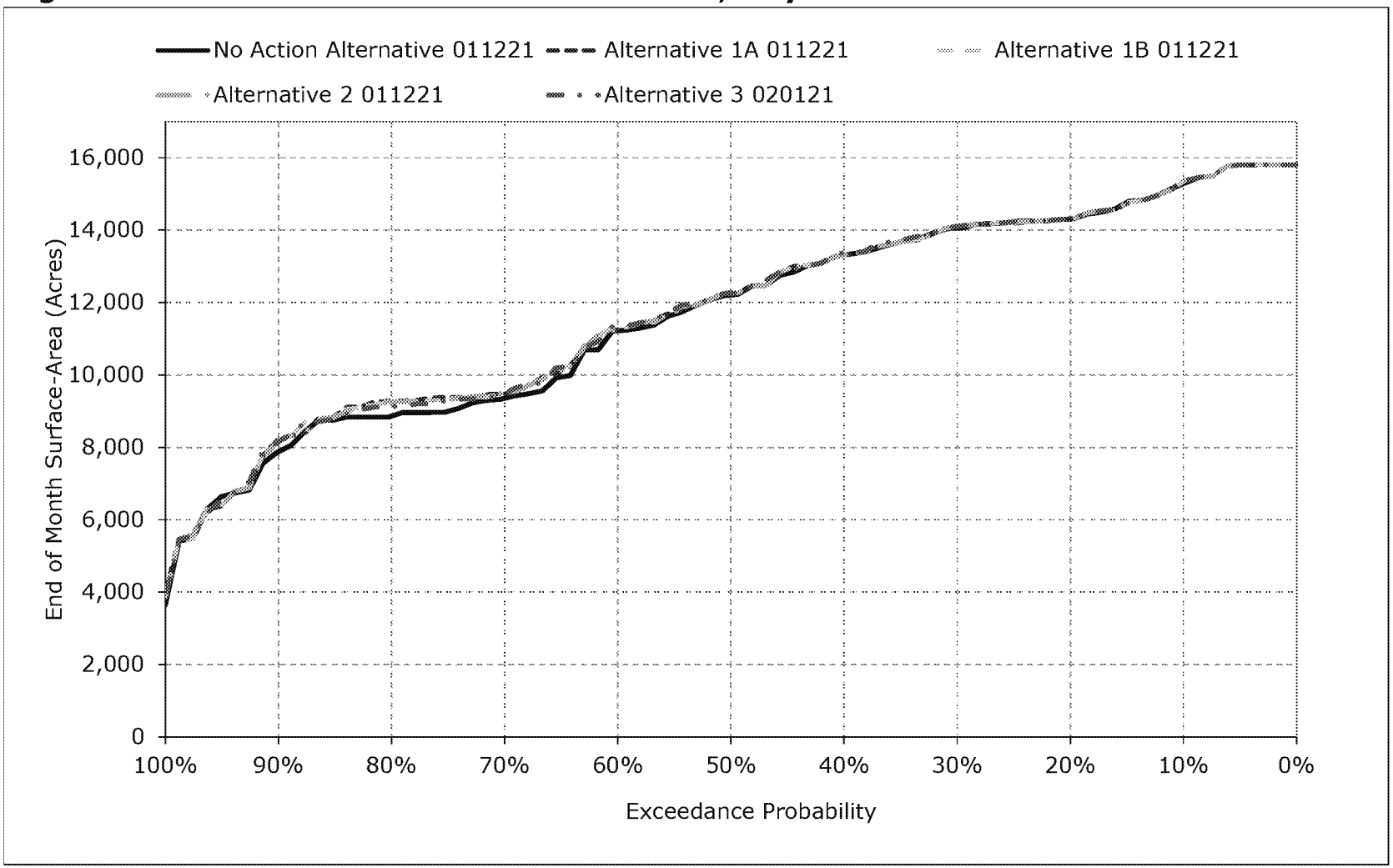


Figure 5B2-21-11. Lake Oroville Surface Area, August

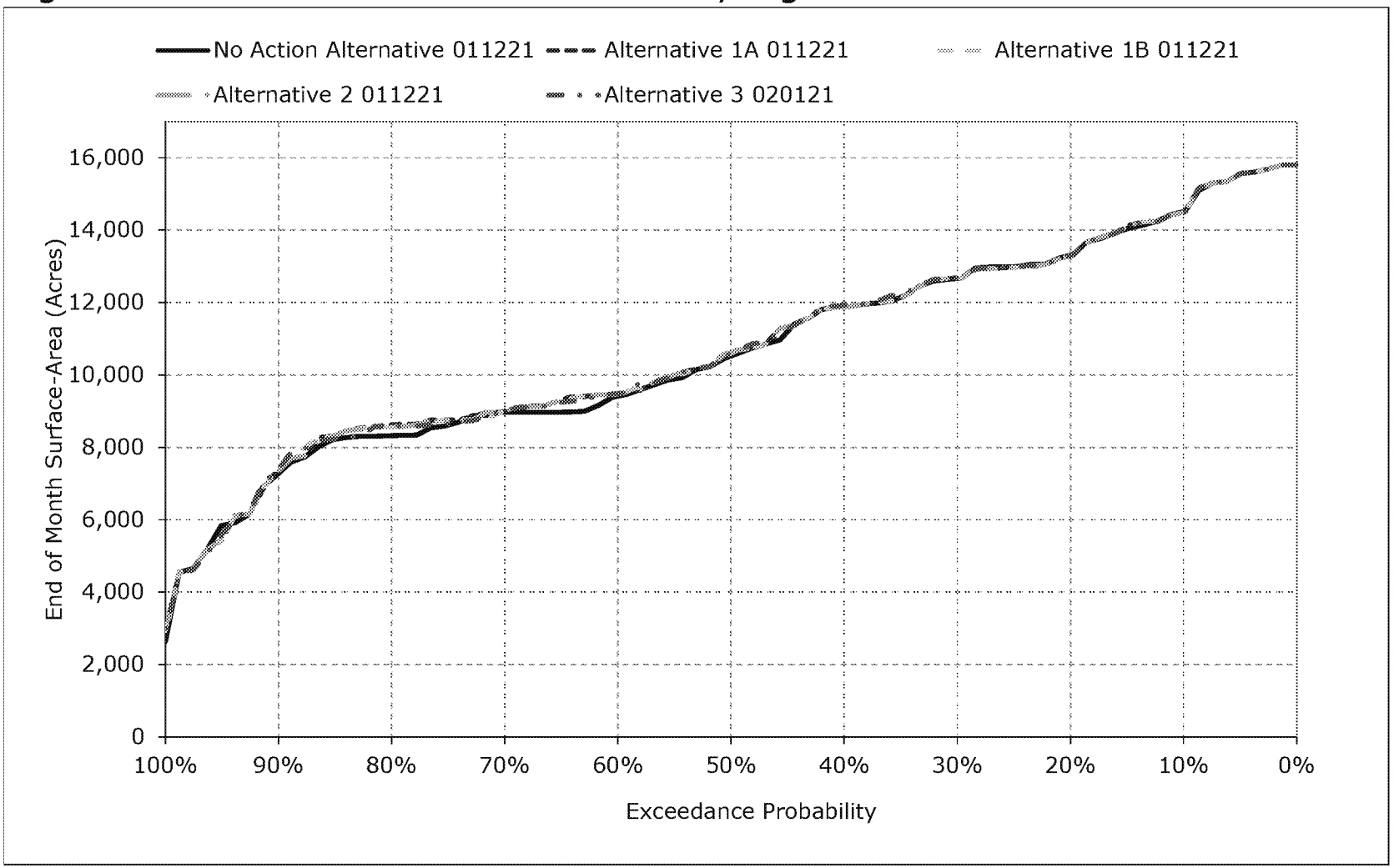


Figure 5B2-21-12. Lake Oroville Surface Area, September

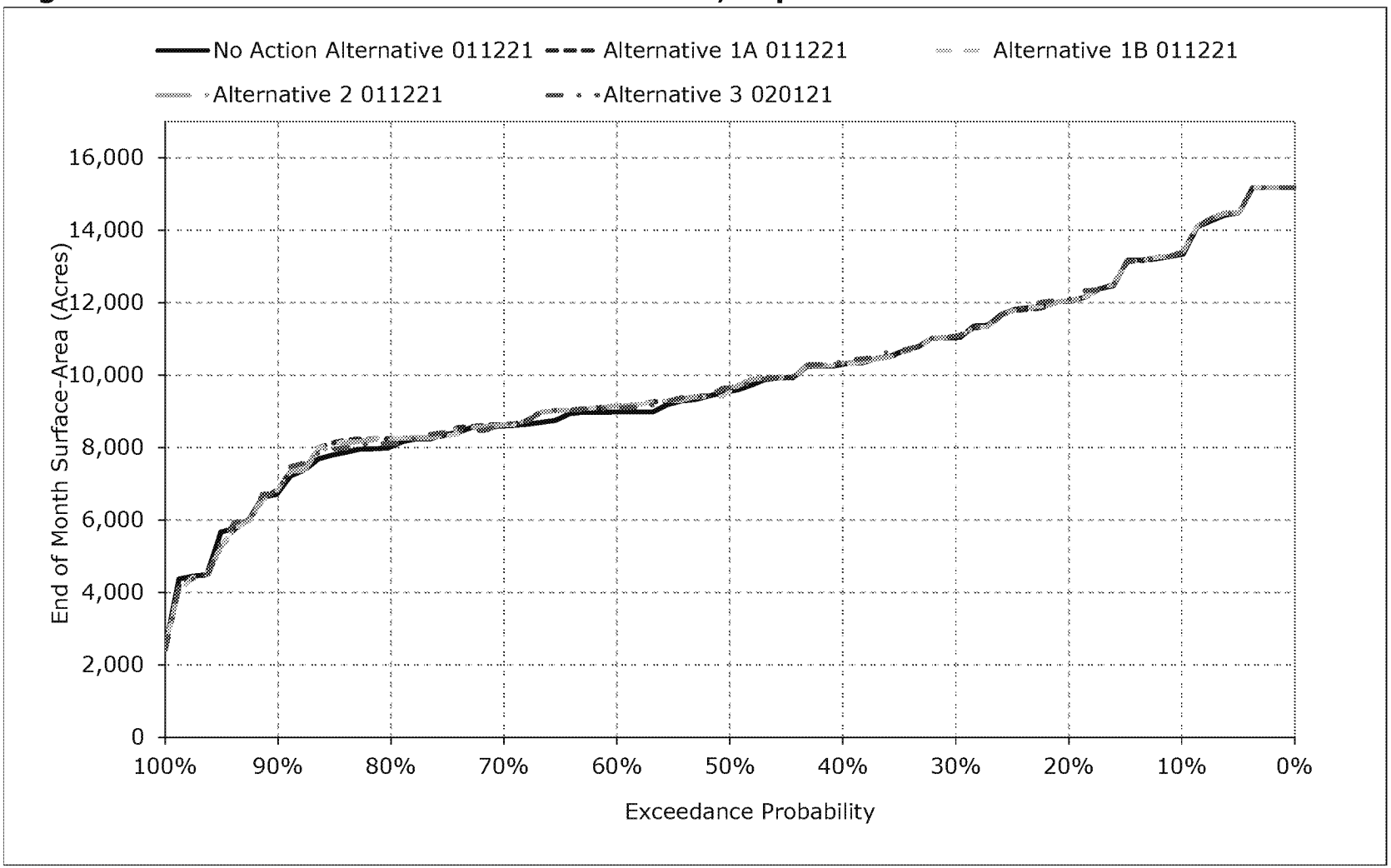


Table 5B2-22-1a. Feather River Flow downstream of Thermalito, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,000	2,500	5,229	12,439	13,637	13,345	7,796	10,305	6,714	9,597	7,783	7,879
20%	4,000	2,500	4,196	2,713	10,238	8,993	3,841	5,816	5,235	9,086	7,564	7,451
30%	4,000	1,705	2,736	1,700	5,525	6,135	2,091	3,240	4,451	8,722	6,962	6,842
40%	3,307	1,700	1,711	1,700	1,700	4,364	1,334	2,486	4,194	8,149	5,932	5,935
50%	1,968	1,700	1,700	1,700	1,700	1,700	1,000	1,976	3,787	7,724	3,379	2,519
60%	1,700	1,700	1,700	1,700	1,700	1,700	1,000	1,500	3,458	5,506	2,647	1,309
70%	1,700	1,217	1,700	1,200	1,700	1,700	1,000	1,000	2,944	4,139	2,078	1,101
80%	1,200	1,200	1,200	960	1,200	1,000	1,000	1,000	2,231	3,338	1,703	1,000
90%	900	900	901	900	900	800	750	1,000	1,675	2,868	1,414	993
Long Term												
Full Simulation Period[a]	2,506	1,922	2,962	4,213	4,973	5,512	2,979	3,866	4,073	6,546	4,409	3,993
Water Year Types[b,c]												
Wet (32%)	3,753	2,898	4,827	9,851	10,480	12,293	6,570	7,547	5,068	5,735	4,385	6,466
Above Normal (15%)	3,613	2,113	2,867	2,444	4,517	5,180	1,897	3,358	3,104	7,984	6,821	7,654
Below Normal (17%)	1,991	1,629	1,966	1,475	2,647	1,797	1,147	1,536	2,759	8,670	7,478	2,389
Dry (22%)	1,287	1,260	1,981	1,397	1,534	1,458	1,153	1,969	4,510	6,927	1,912	1,009
Critical (15%)	1,126	954	1,654	1,185	1,371	1,567	1,155	1,966	3,765	3,818	2,217	1,321

Table 5B2-22-1b. Feather River Flow downstream of Thermalito, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,000	2,500	5,211	12,439	13,557	13,345	7,796	10,305	6,479	9,366	7,773	7,909
20%	4,000	2,500	3,964	2,709	10,585	8,992	3,841	5,816	4,741	8,797	7,540	7,450
30%	4,000	2,103	2,736	1,700	5,525	6,134	2,091	3,273	4,004	8,476	7,012	6,796
40%	3,397	1,856	1,732	1,700	1,700	4,359	1,354	2,449	3,721	8,001	5,913	5,909
50%	2,500	1,700	1,700	1,700	1,700	1,700	1,000	1,976	3,292	7,554	3,813	2,480
60%	2,500	1,700	1,700	1,700	1,700	1,700	1,000	1,567	3,071	5,625	2,712	1,628
70%	2,018	1,700	1,700	1,200	1,700	1,700	1,000	1,000	2,735	4,046	2,283	1,200
80%	1,662	1,200	1,200	960	1,200	1,000	1,000	1,000	2,070	3,111	1,765	1,018
90%	1,018	900	901	900	900	800	750	1,000	1,417	2,562	1,474	1,000
Long Term												
Full Simulation Period[a]	2,767	2,009	2,973	4,205	4,991	5,503	2,981	3,866	3,778	6,353	4,512	4,040
Water Year Types[b,c]												
Wet (32%)	3,820	2,902	4,859	9,818	10,545	12,279	6,570	7,548	5,048	5,711	4,395	6,469
Above Normal (15%)	3,598	2,113	2,821	2,444	4,496	5,152	1,885	3,357	3,074	8,002	6,819	7,656
Below Normal (17%)	2,348	1,756	1,958	1,474	2,646	1,797	1,150	1,551	2,594	8,357	7,528	2,405
Dry (22%)	1,891	1,501	2,020	1,401	1,534	1,456	1,171	1,947	3,692	6,427	2,161	1,076
Critical (15%)	1,460	1,024	1,653	1,195	1,371	1,568	1,153	1,976	3,242	3,648	2,470	1,516

Table 5B2-22-1c. Feather River Flow downstream of Thermalito, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	-18	0	-80	0	1	0	-235	-230	-11	30
20%	0	0	-232	-4	347	-1	0	0	-494	-289	-24	-2
30%	0	398	0	0	0	-1	0	34	-447	-245	50	-46
40%	90	156	21	0	0	-5	20	-38	-473	-148	-19	-26
50%	532	0	0	0	0	0	0	0	-495	-169	434	-39
60%	800	0	0	0	0	0	0	67	-386	118	65	319
70%	318	483	0	0	0	0	0	0	-209	-93	205	99
80%	462	0	0	0	0	0	0	0	-161	-227	62	18
90%	118	0	0	0	0	0	0	0	-258	-305	60	7
Long Term												
Full Simulation Period[a]	262	86	11	-8	17	-9	2	-1	-295	-193	103	47
Water Year Types[b,c]												
Wet (32%)	67	4	32	-33	65	-14	0	1	-20	-24	10	3
Above Normal (15%)	-15	-1	-46	0	-21	-28	-11	-1	-30	18	-2	2
Below Normal (17%)	357	127	-8	-2	-1	1	3	15	-166	-314	50	16
Dry (22%)	604	241	40	4	0	-2	18	-22	-818	-500	249	68
Critical (15%)	334	70	0	10	0	0	-2	10	-523	-170	252	195

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-22-2a. Feather River Flow downstream of Thermalito, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,000	2,500	5,229	12,439	13,637	13,345	7,796	10,305	6,714	9,597	7,783	7,879
20%	4,000	2,500	4,196	2,713	10,238	8,993	3,841	5,816	5,235	9,086	7,564	7,451
30%	4,000	1,705	2,736	1,700	5,525	6,135	2,091	3,240	4,451	8,722	6,962	6,842
40%	3,307	1,700	1,711	1,700	1,700	4,364	1,334	2,486	4,194	8,149	5,932	5,935
50%	1,968	1,700	1,700	1,700	1,700	1,700	1,000	1,976	3,787	7,724	3,379	2,519
60%	1,700	1,700	1,700	1,700	1,700	1,700	1,000	1,500	3,458	5,506	2,647	1,309
70%	1,700	1,217	1,700	1,200	1,700	1,700	1,000	1,000	2,944	4,139	2,078	1,101
80%	1,200	1,200	1,200	960	1,200	1,000	1,000	1,000	2,231	3,338	1,703	1,000
90%	900	900	901	900	900	800	750	1,000	1,675	2,868	1,414	993
Long Term												
Full Simulation Period[a]	2,506	1,922	2,962	4,213	4,973	5,512	2,979	3,866	4,073	6,546	4,409	3,993
Water Year Types[b,c]												
Wet (32%)	3,753	2,898	4,827	9,851	10,480	12,293	6,570	7,547	5,068	5,735	4,385	6,466
Above Normal (15%)	3,613	2,113	2,867	2,444	4,517	5,180	1,897	3,358	3,104	7,984	6,821	7,654
Below Normal (17%)	1,991	1,629	1,966	1,475	2,647	1,797	1,147	1,536	2,759	8,670	7,478	2,389
Dry (22%)	1,287	1,260	1,981	1,397	1,534	1,458	1,153	1,969	4,510	6,927	1,912	1,009
Critical (15%)	1,126	954	1,654	1,185	1,371	1,567	1,155	1,966	3,765	3,818	2,217	1,321

Table 5B2-22-2b. Feather River Flow downstream of Thermalito, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,000	2,500	5,211	12,439	12,888	13,345	7,796	10,305	6,466	9,364	7,778	7,909
20%	4,000	2,500	3,962	2,732	10,560	8,993	3,841	5,816	4,688	8,904	7,541	7,433
30%	4,000	1,972	2,756	1,700	5,525	6,134	2,091	3,264	4,081	8,560	7,012	6,752
40%	3,396	1,784	1,732	1,700	1,700	4,359	1,350	2,443	3,674	8,035	5,911	5,908
50%	2,500	1,700	1,700	1,700	1,700	1,700	1,000	1,976	3,310	7,549	3,694	2,877
60%	2,417	1,700	1,700	1,700	1,700	1,700	1,000	1,540	3,045	5,649	2,718	1,896
70%	2,009	1,700	1,700	1,200	1,700	1,700	1,000	1,000	2,716	3,973	2,326	1,211
80%	1,647	1,200	1,200	960	1,200	1,000	1,000	1,000	2,071	3,114	1,805	1,007
90%	904	900	901	900	900	800	750	1,000	1,499	2,617	1,479	1,000
Long Term												
Full Simulation Period[a]	2,760	1,987	2,973	4,205	4,974	5,503	2,979	3,857	3,771	6,376	4,527	4,059
Water Year Types[b,c]												
Wet (32%)	3,817	2,902	4,858	9,818	10,470	12,279	6,568	7,548	5,048	5,713	4,401	6,463
Above Normal (15%)	3,660	2,084	2,819	2,444	4,538	5,152	1,885	3,355	3,081	7,989	6,861	7,595
Below Normal (17%)	2,290	1,756	1,957	1,482	2,652	1,797	1,145	1,550	2,601	8,380	7,523	2,524
Dry (22%)	1,886	1,423	2,025	1,401	1,534	1,457	1,170	1,907	3,645	6,503	2,226	1,090
Critical (15%)	1,427	1,022	1,654	1,186	1,371	1,564	1,152	1,977	3,250	3,672	2,425	1,557

Table 5B2-22-2c. Feather River Flow downstream of Thermalito, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	-19	0	-749	0	1	0	-248	-233	-5	30
20%	0	0	-234	19	322	0	0	0	-547	-182	-23	-18
30%	0	267	20	0	0	-1	0	24	-371	-161	50	-91
40%	88	84	21	0	0	-5	15	-43	-520	-114	-20	-27
50%	532	0	0	0	0	0	0	0	-477	-175	315	358
60%	717	0	0	0	0	0	0	40	-413	143	71	587
70%	309	483	0	0	0	0	0	0	-228	-166	248	110
80%	447	0	0	0	0	0	0	0	-160	-224	101	7
90%	4	0	0	0	0	0	0	0	-176	-251	65	7
Long Term												
Full Simulation Period[a]	254	65	11	-8	1	-9	1	-10	-302	-170	118	66
Water Year Types[b,c]												
Wet (32%)	65	4	31	-33	-10	-13	-2	1	-20	-22	16	-3
Above Normal (15%)	46	-30	-48	0	21	-28	-11	-3	-23	5	40	-59
Below Normal (17%)	300	127	-9	7	6	1	-1	15	-159	-291	45	135
Dry (22%)	599	164	44	4	0	-1	17	-62	-866	-423	314	81
Critical (15%)	301	68	0	1	0	-3	-3	11	-514	-147	207	235

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-22-3a. Feather River Flow downstream of Thermalito, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,000	2,500	5,229	12,439	13,637	13,345	7,796	10,305	6,714	9,597	7,783	7,879
20%	4,000	2,500	4,196	2,713	10,238	8,993	3,841	5,816	5,235	9,086	7,564	7,451
30%	4,000	1,705	2,736	1,700	5,525	6,135	2,091	3,240	4,451	8,722	6,962	6,842
40%	3,307	1,700	1,711	1,700	1,700	4,364	1,334	2,486	4,194	8,149	5,932	5,935
50%	1,968	1,700	1,700	1,700	1,700	1,700	1,000	1,976	3,787	7,724	3,379	2,519
60%	1,700	1,700	1,700	1,700	1,700	1,700	1,000	1,500	3,458	5,506	2,647	1,309
70%	1,700	1,217	1,700	1,200	1,700	1,700	1,000	1,000	2,944	4,139	2,078	1,101
80%	1,200	1,200	1,200	960	1,200	1,000	1,000	1,000	2,231	3,338	1,703	1,000
90%	900	900	901	900	900	800	750	1,000	1,675	2,868	1,414	993
Long Term												
Full Simulation Period[a]	2,506	1,922	2,962	4,213	4,973	5,512	2,979	3,866	4,073	6,546	4,409	3,993
Water Year Types[b,c]												
Wet (32%)	3,753	2,898	4,827	9,851	10,480	12,293	6,570	7,547	5,068	5,735	4,385	6,466
Above Normal (15%)	3,613	2,113	2,867	2,444	4,517	5,180	1,897	3,358	3,104	7,984	6,821	7,654
Below Normal (17%)	1,991	1,629	1,966	1,475	2,647	1,797	1,147	1,536	2,759	8,670	7,478	2,389
Dry (22%)	1,287	1,260	1,981	1,397	1,534	1,458	1,153	1,969	4,510	6,927	1,912	1,009
Critical (15%)	1,126	954	1,654	1,185	1,371	1,567	1,155	1,966	3,765	3,818	2,217	1,321

Table 5B2-22-3b. Feather River Flow downstream of Thermalito, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,000	2,500	5,211	12,439	13,557	13,345	7,796	10,305	6,479	9,365	7,769	7,909
20%	4,000	2,500	3,964	2,711	10,581	8,993	3,841	5,816	4,741	8,812	7,541	7,450
30%	4,000	2,083	2,763	1,700	5,525	6,134	2,091	3,273	4,004	8,476	7,012	6,797
40%	3,401	1,801	1,732	1,700	1,700	4,359	1,354	2,449	3,735	8,020	5,913	5,909
50%	2,500	1,700	1,700	1,700	1,700	1,700	1,000	1,976	3,313	7,552	3,790	2,606
60%	2,369	1,700	1,700	1,700	1,700	1,700	1,000	1,598	3,119	5,622	2,712	1,650
70%	1,981	1,700	1,700	1,200	1,700	1,700	1,000	1,000	2,755	4,041	2,280	1,229
80%	1,549	1,200	1,200	960	1,200	1,000	1,000	1,000	2,068	3,103	1,765	1,055
90%	911	900	901	900	900	800	750	1,000	1,559	2,587	1,485	1,000
Long Term												
Full Simulation Period[a]	2,736	1,994	2,979	4,203	4,993	5,503	2,981	3,867	3,802	6,357	4,505	4,047
Water Year Types[b,c]												
Wet (32%)	3,821	2,902	4,867	9,818	10,548	12,279	6,570	7,548	5,048	5,713	4,394	6,456
Above Normal (15%)	3,600	2,113	2,821	2,444	4,504	5,153	1,885	3,356	3,074	7,998	6,819	7,656
Below Normal (17%)	2,344	1,758	1,980	1,474	2,646	1,797	1,150	1,556	2,595	8,366	7,487	2,406
Dry (22%)	1,797	1,440	2,020	1,401	1,534	1,456	1,171	1,947	3,771	6,429	2,172	1,104
Critical (15%)	1,388	1,016	1,654	1,186	1,371	1,568	1,152	1,976	3,286	3,662	2,452	1,551

Table 5B2-22-3c. Feather River Flow downstream of Thermalito, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	-18	0	-80	0	1	0	-235	-232	-14	30
20%	0	0	-232	-3	343	0	0	0	-494	-274	-23	-2
30%	0	378	27	0	0	-1	0	34	-447	-246	50	-46
40%	94	101	21	0	0	-5	20	-38	-458	-129	-18	-26
50%	532	0	0	0	0	0	0	0	-474	-172	411	87
60%	669	0	0	0	0	0	0	98	-339	116	65	342
70%	281	483	0	0	0	0	0	0	-189	-97	202	128
80%	349	0	0	0	0	0	0	0	-162	-235	61	55
90%	11	0	0	0	0	0	0	0	-117	-280	71	7
Long Term												
Full Simulation Period[a]	231	72	17	-10	19	-9	2	0	-271	-189	96	54
Water Year Types[b,c]												
Wet (32%)	69	4	40	-33	67	-14	0	1	-20	-23	9	-10
Above Normal (15%)	-13	-1	-46	0	-12	-28	-11	-2	-30	14	-2	2
Below Normal (17%)	354	129	14	-1	-1	1	3	20	-165	-304	10	16
Dry (22%)	510	180	39	4	0	-2	18	-22	-739	-498	260	95
Critical (15%)	262	62	0	0	0	1	-3	10	-479	-157	235	230

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-22-4a. Feather River Flow downstream of Thermalito, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,000	2,500	5,229	12,439	13,637	13,345	7,796	10,305	6,714	9,597	7,783	7,879
20%	4,000	2,500	4,196	2,713	10,238	8,993	3,841	5,816	5,235	9,086	7,564	7,451
30%	4,000	1,705	2,736	1,700	5,525	6,135	2,091	3,240	4,451	8,722	6,962	6,842
40%	3,307	1,700	1,711	1,700	1,700	4,364	1,334	2,486	4,194	8,149	5,932	5,935
50%	1,968	1,700	1,700	1,700	1,700	1,700	1,000	1,976	3,787	7,724	3,379	2,519
60%	1,700	1,700	1,700	1,700	1,700	1,700	1,000	1,500	3,458	5,506	2,647	1,309
70%	1,700	1,217	1,700	1,200	1,700	1,700	1,000	1,000	2,944	4,139	2,078	1,101
80%	1,200	1,200	1,200	960	1,200	1,000	1,000	1,000	2,231	3,338	1,703	1,000
90%	900	900	901	900	900	800	750	1,000	1,675	2,868	1,414	993
Long Term												
Full Simulation Period[a]	2,506	1,922	2,962	4,213	4,973	5,512	2,979	3,866	4,073	6,546	4,409	3,993
Water Year Types[b,c]												
Wet (32%)	3,753	2,898	4,827	9,851	10,480	12,293	6,570	7,547	5,068	5,735	4,385	6,466
Above Normal (15%)	3,613	2,113	2,867	2,444	4,517	5,180	1,897	3,358	3,104	7,984	6,821	7,654
Below Normal (17%)	1,991	1,629	1,966	1,475	2,647	1,797	1,147	1,536	2,759	8,670	7,478	2,389
Dry (22%)	1,287	1,260	1,981	1,397	1,534	1,458	1,153	1,969	4,510	6,927	1,912	1,009
Critical (15%)	1,126	954	1,654	1,185	1,371	1,567	1,155	1,966	3,765	3,818	2,217	1,321

Table 5B2-22-4b. Feather River Flow downstream of Thermalito, Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,000	2,500	5,210	12,461	13,022	13,345	7,796	10,305	6,490	9,216	7,784	7,876
20%	4,000	2,500	4,196	2,795	10,534	8,994	3,841	5,816	4,854	8,849	7,561	7,372
30%	4,000	1,988	2,989	1,700	5,525	6,136	2,091	3,254	4,064	8,567	7,011	6,740
40%	3,500	1,751	1,744	1,700	1,700	4,359	1,331	2,435	3,694	8,035	5,970	5,907
50%	2,500	1,700	1,700	1,700	1,700	1,700	1,000	1,955	3,391	7,557	3,696	2,830
60%	2,085	1,700	1,700	1,700	1,700	1,700	1,000	1,500	3,096	5,820	2,667	1,537
70%	1,834	1,430	1,700	1,200	1,700	1,700	1,000	1,000	2,718	4,065	2,282	1,228
80%	1,384	1,200	1,200	960	1,200	1,000	1,000	1,000	2,162	3,165	1,918	1,051
90%	910	900	901	900	900	800	750	1,000	1,708	2,861	1,486	1,000
Long Term												
Full Simulation Period[a]	2,690	1,969	2,988	4,223	4,994	5,505	2,981	3,834	3,830	6,399	4,523	4,031
Water Year Types[b,c]												
Wet (32%)	3,844	2,902	4,844	9,849	10,513	12,296	6,570	7,548	5,048	5,713	4,385	6,427
Above Normal (15%)	3,643	2,062	2,953	2,500	4,585	5,130	1,885	3,354	3,097	7,758	6,831	7,552
Below Normal (17%)	2,226	1,751	1,967	1,480	2,651	1,797	1,146	1,541	2,606	8,418	7,557	2,451
Dry (22%)	1,737	1,359	2,013	1,401	1,534	1,457	1,166	1,824	3,862	6,693	2,199	1,110
Critical (15%)	1,204	1,021	1,654	1,186	1,371	1,563	1,161	1,960	3,302	3,727	2,464	1,542

Table 5B2-22-4c. Feather River Flow downstream of Thermalito, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

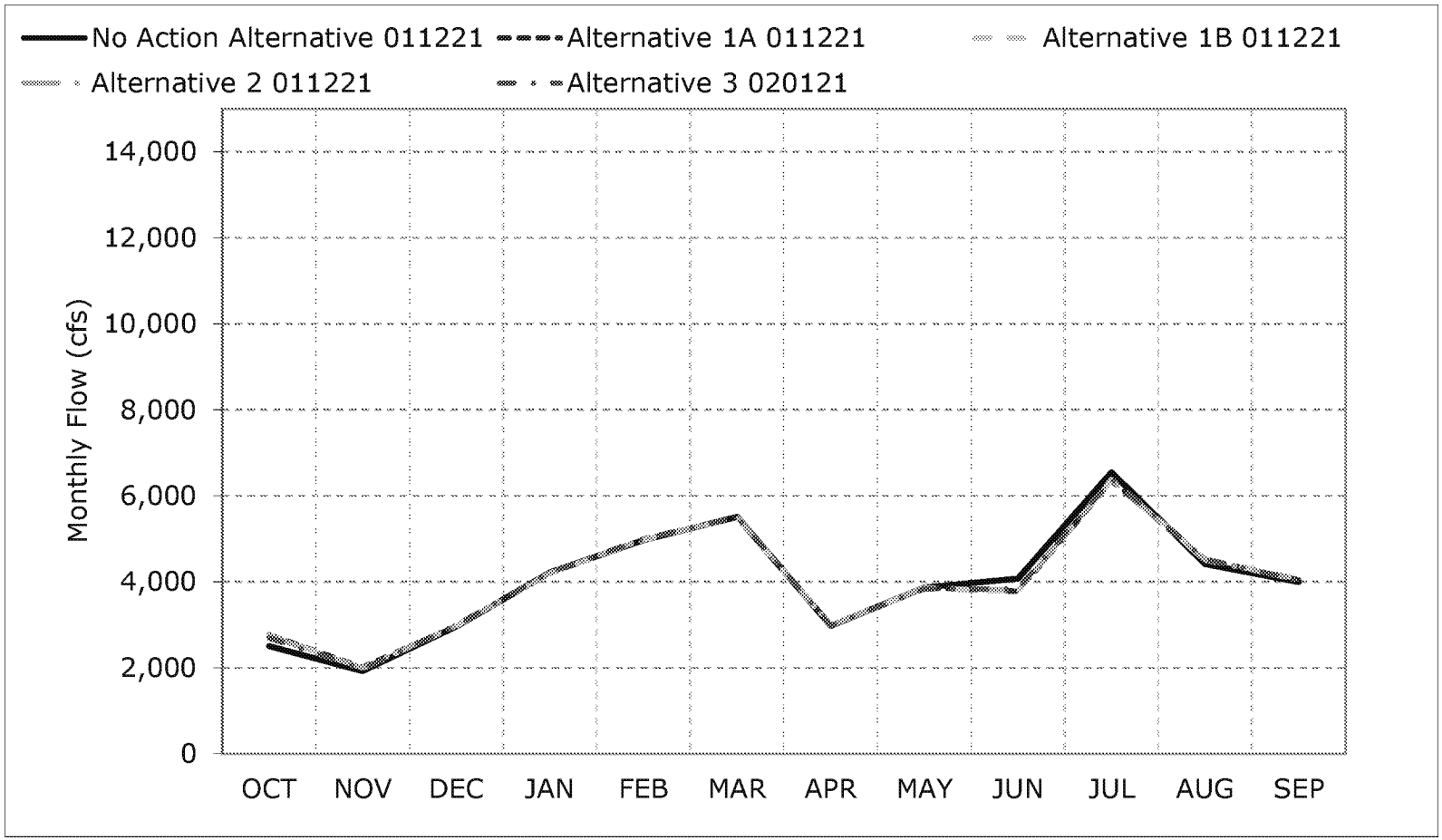
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	-19	22	-615	0	1	0	-224	-381	0	-3
20%	0	0	-1	81	296	1	0	0	-380	-237	-3	-79
30%	0	283	253	0	0	1	0	14	-387	-155	49	-102
40%	193	51	33	0	0	-5	-3	-51	-500	-114	39	-28
50%	532	0	0	0	0	0	0	-21	-397	-167	317	311
60%	385	0	0	0	0	0	0	0	-362	313	19	229
70%	134	214	0	0	0	0	0	0	-226	-74	204	127
80%	184	0	0	0	0	0	0	0	-69	-173	215	51
90%	10	0	0	0	0	0	0	0	33	-6	72	7
Long Term												
Full Simulation Period[a]	184	46	25	9	21	-7	2	-32	-244	-148	114	38
Water Year Types[b,c]												
Wet (32%)	92	5	17	-2	32	3	0	1	-20	-22	0	-38
Above Normal (15%)	30	-52	86	55	68	-50	-11	-4	-7	-226	10	-102
Below Normal (17%)	236	122	1	4	5	0	0	5	-153	-252	79	62
Dry (22%)	449	99	32	4	0	-1	13	-144	-648	-233	287	101
Critical (15%)	78	67	1	1	0	-4	6	-6	-463	-91	247	221

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

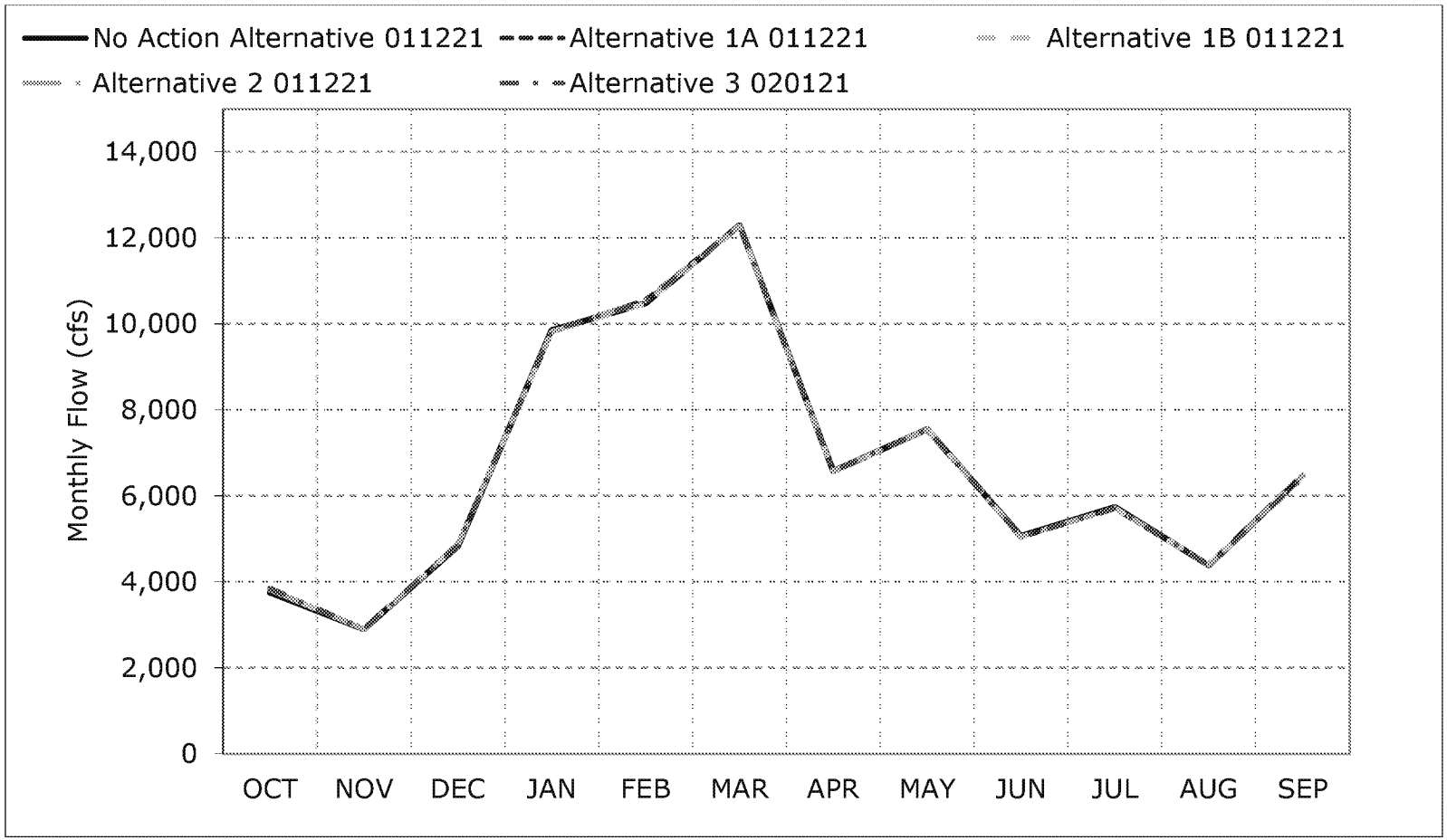
c These results are displayed with calendar year - year type sorting.

Figure 5B2-22-1. Feather River Flow downstream of Thermalito, Long-Term Average Flow



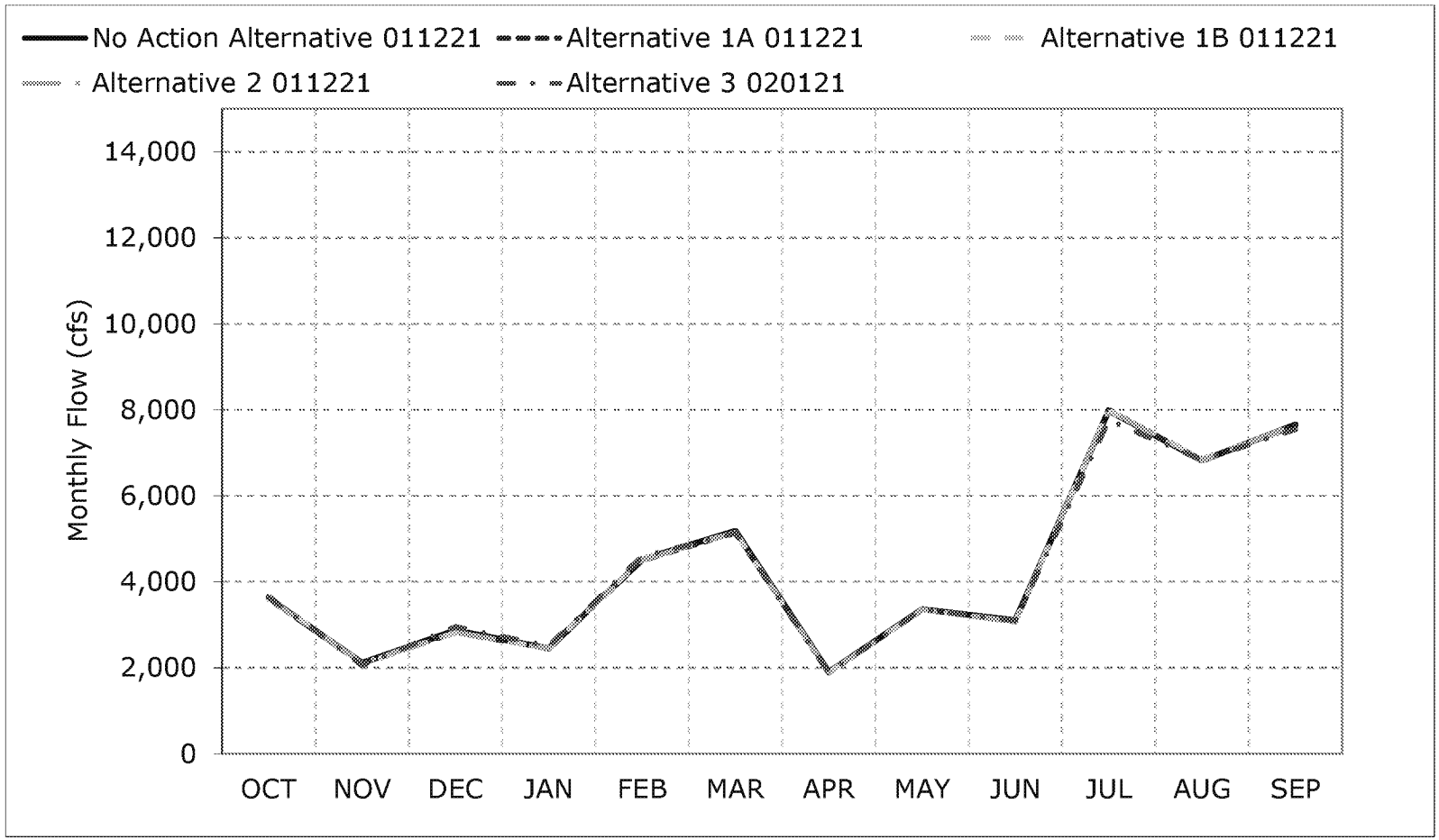
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-22-2. Feather River Flow downstream of Thermalito, Wet Year Average Flow



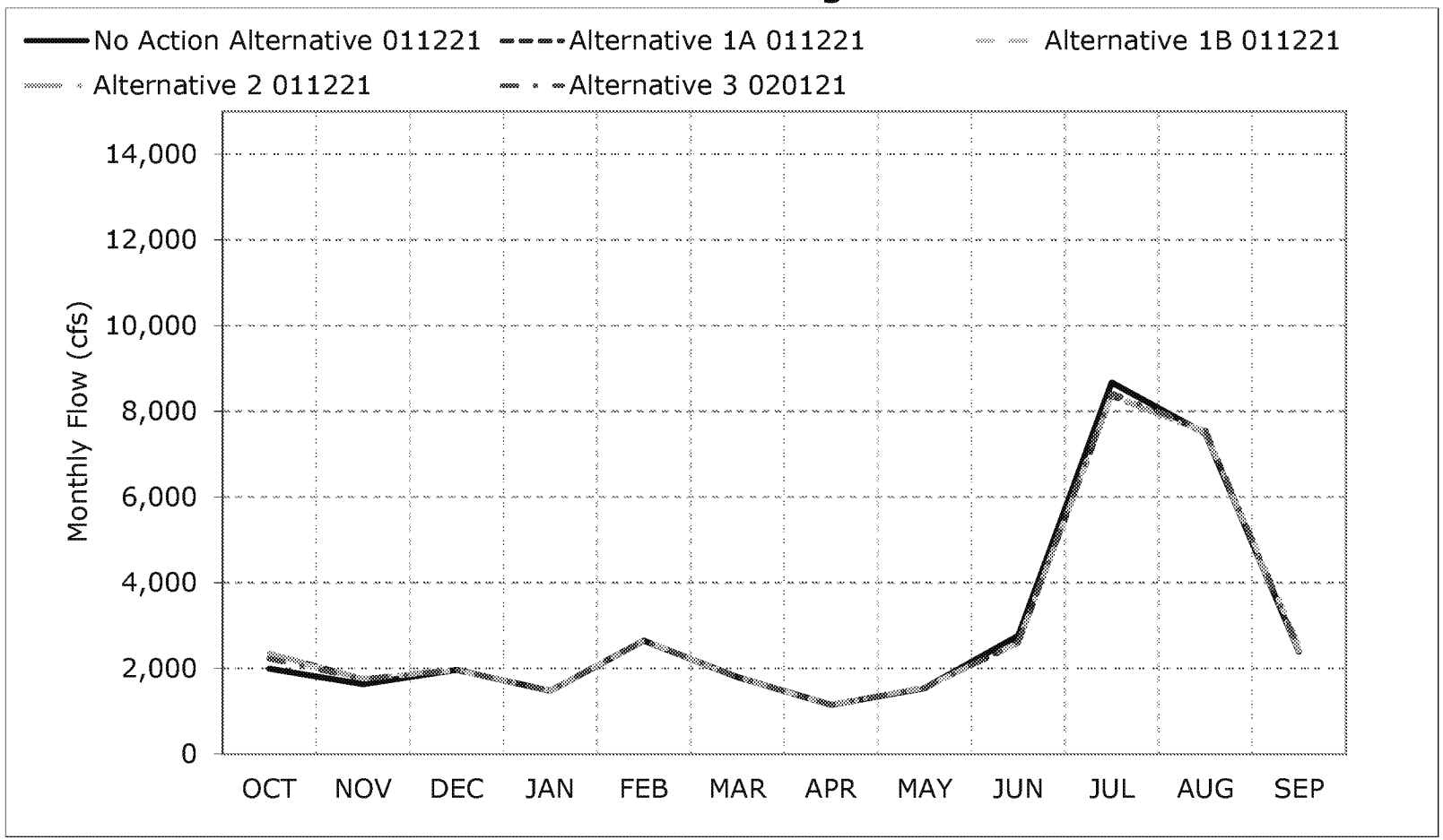
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-22-3. Feather River Flow downstream of Thermalito, Above Normal Year Average Flow



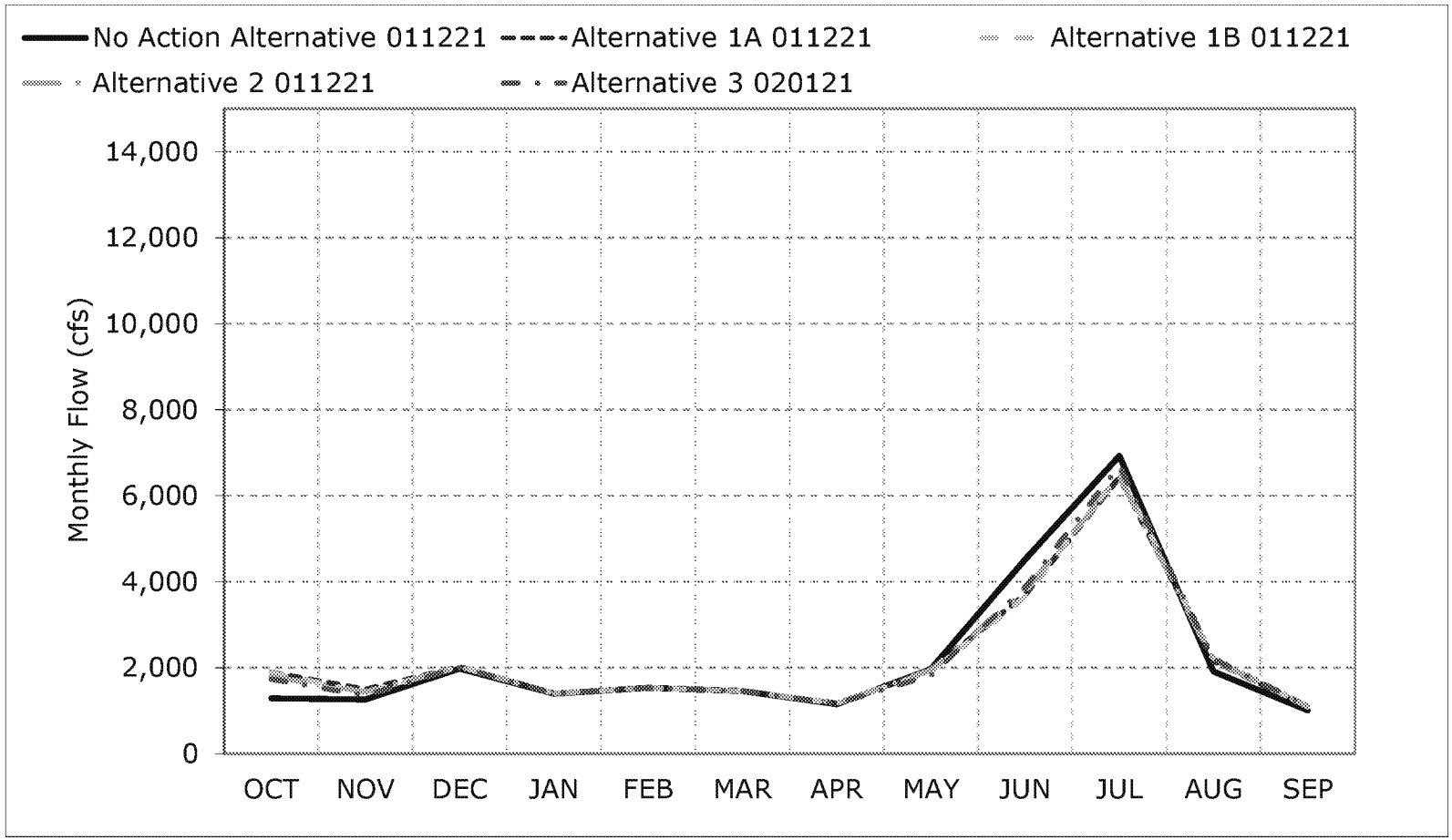
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-22-4. Feather River Flow downstream of Thermalito, Below Normal Year Average Flow



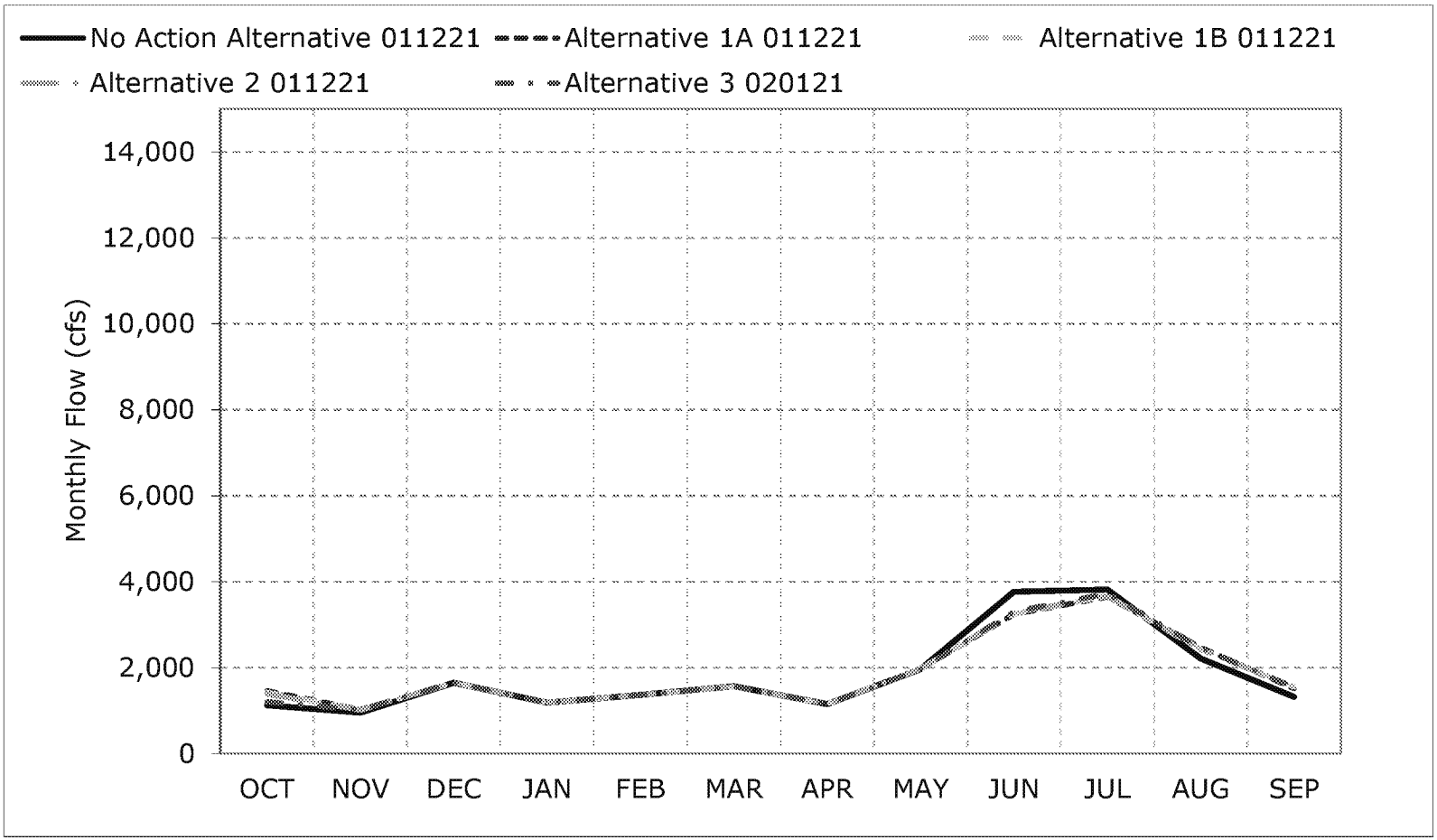
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-22-5. Feather River Flow downstream of Thermalito, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-22-6. Feather River Flow downstream of Thermalito, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-22-7. Feather River Flow downstream of Thermalito, October

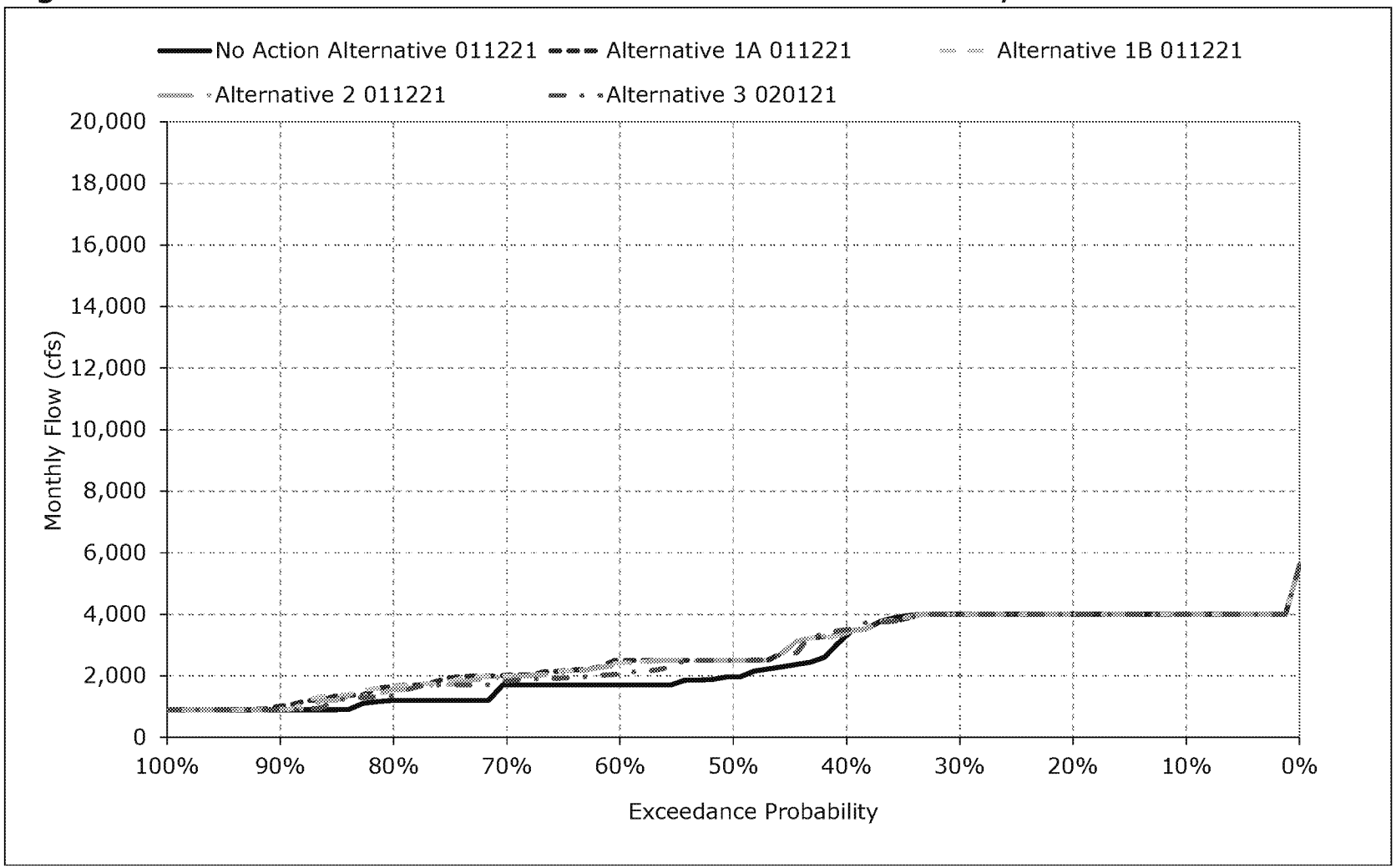


Figure 5B2-22-8. Feather River Flow downstream of Thermalito, November

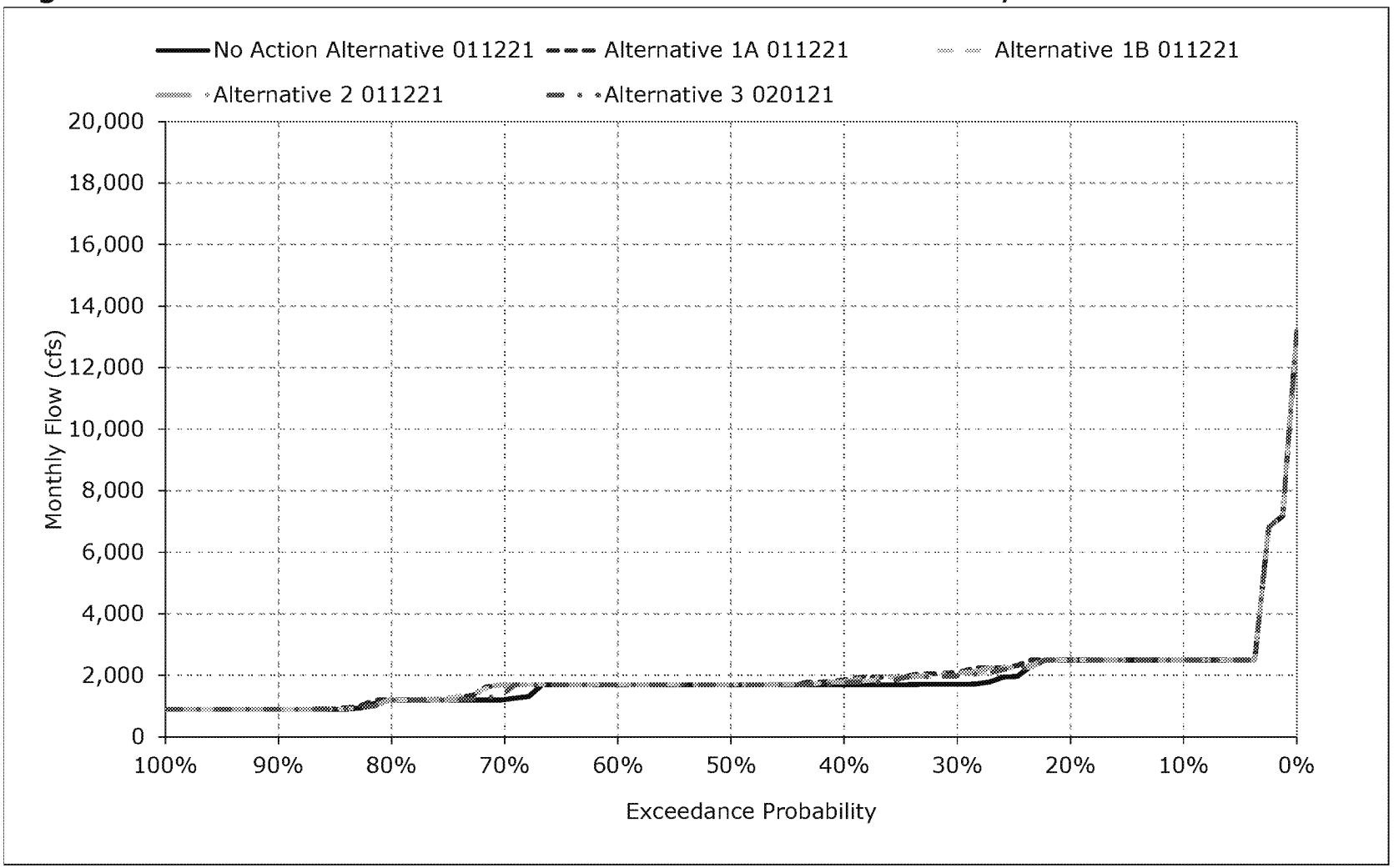


Figure 5B2-22-9. Feather River Flow downstream of Thermalito, December

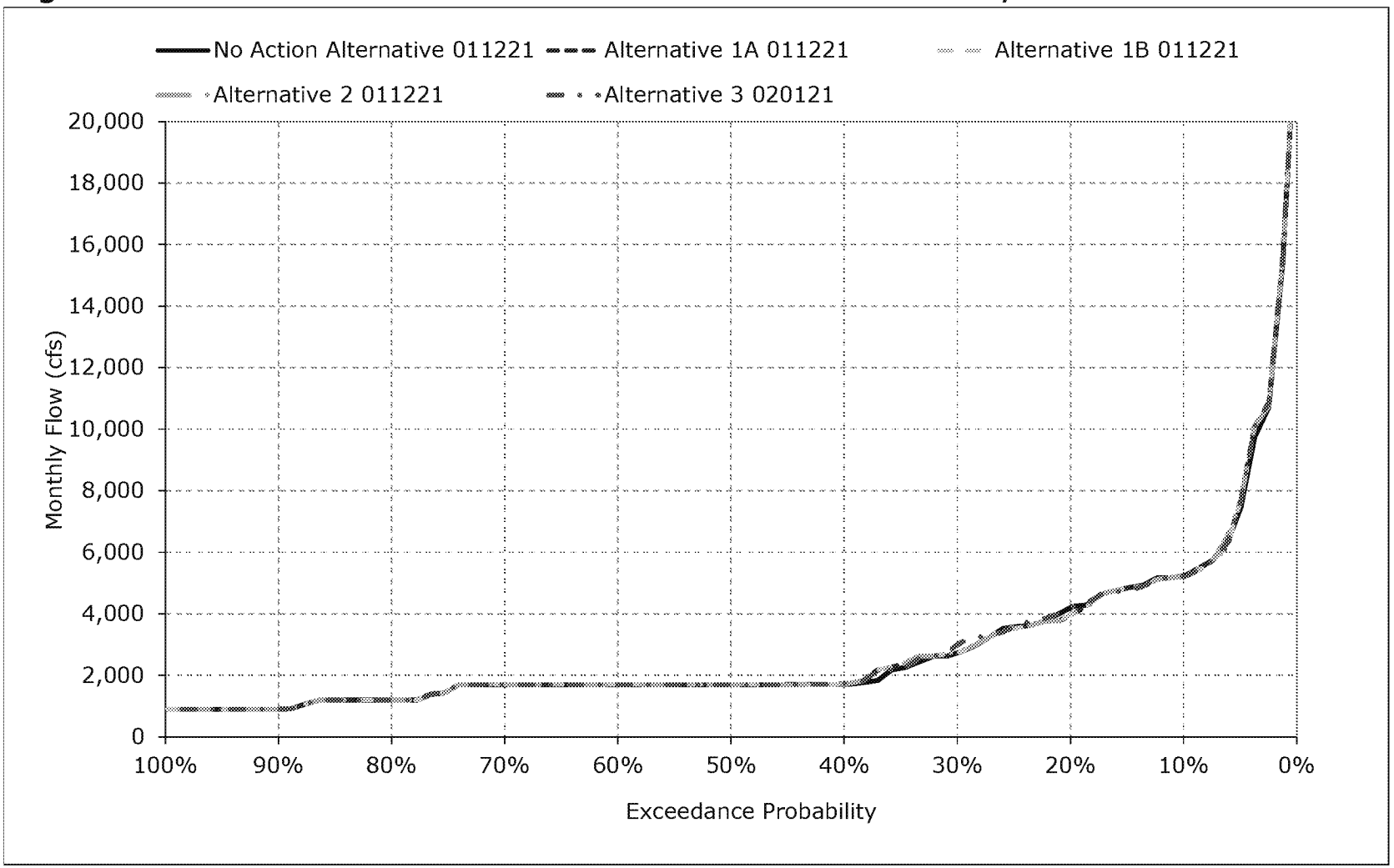


Figure 5B2-22-10. Feather River Flow downstream of Thermalito, January

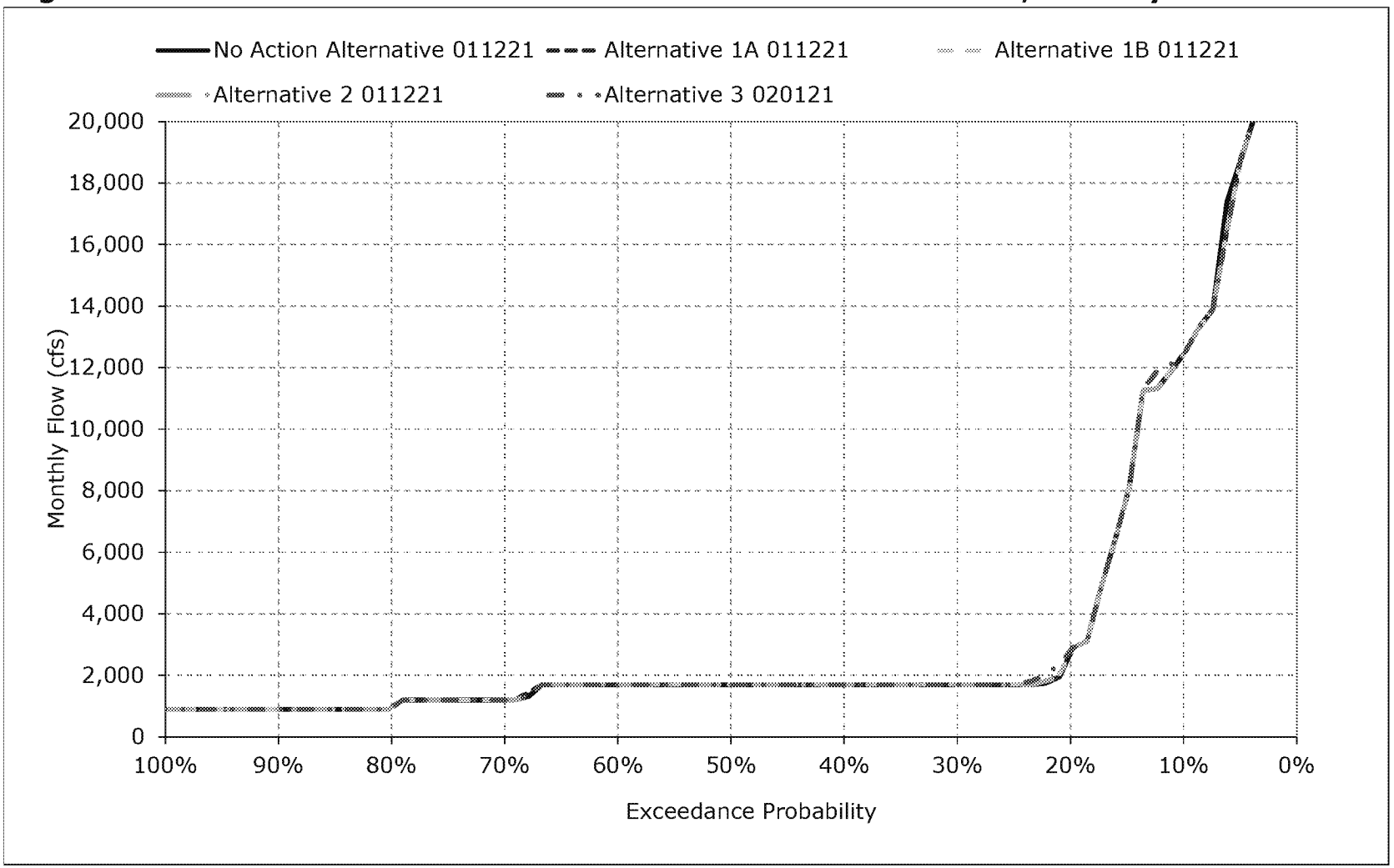


Figure 5B2-22-11. Feather River Flow downstream of Thermalito, February

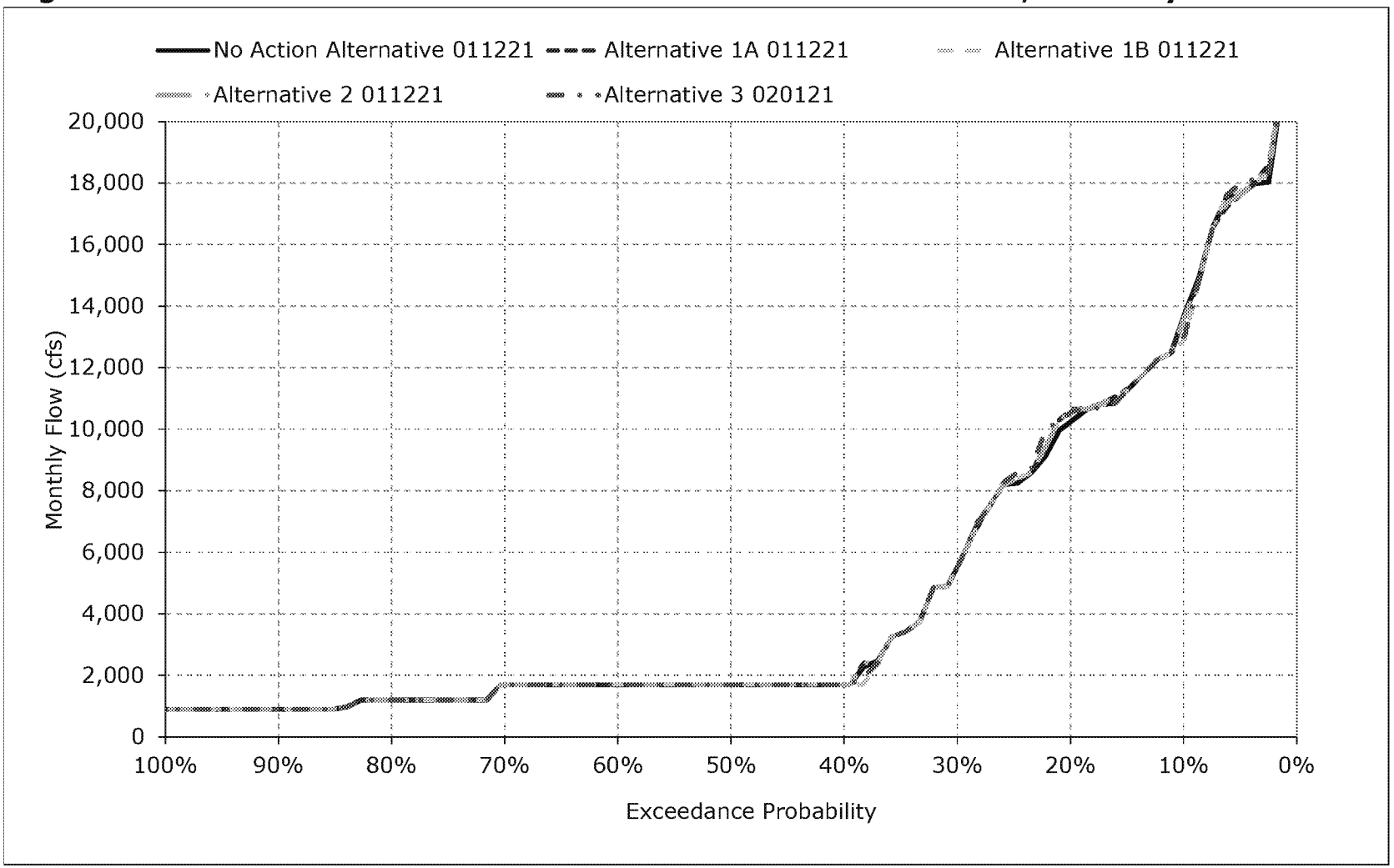


Figure 5B2-22-12. Feather River Flow downstream of Thermalito, March

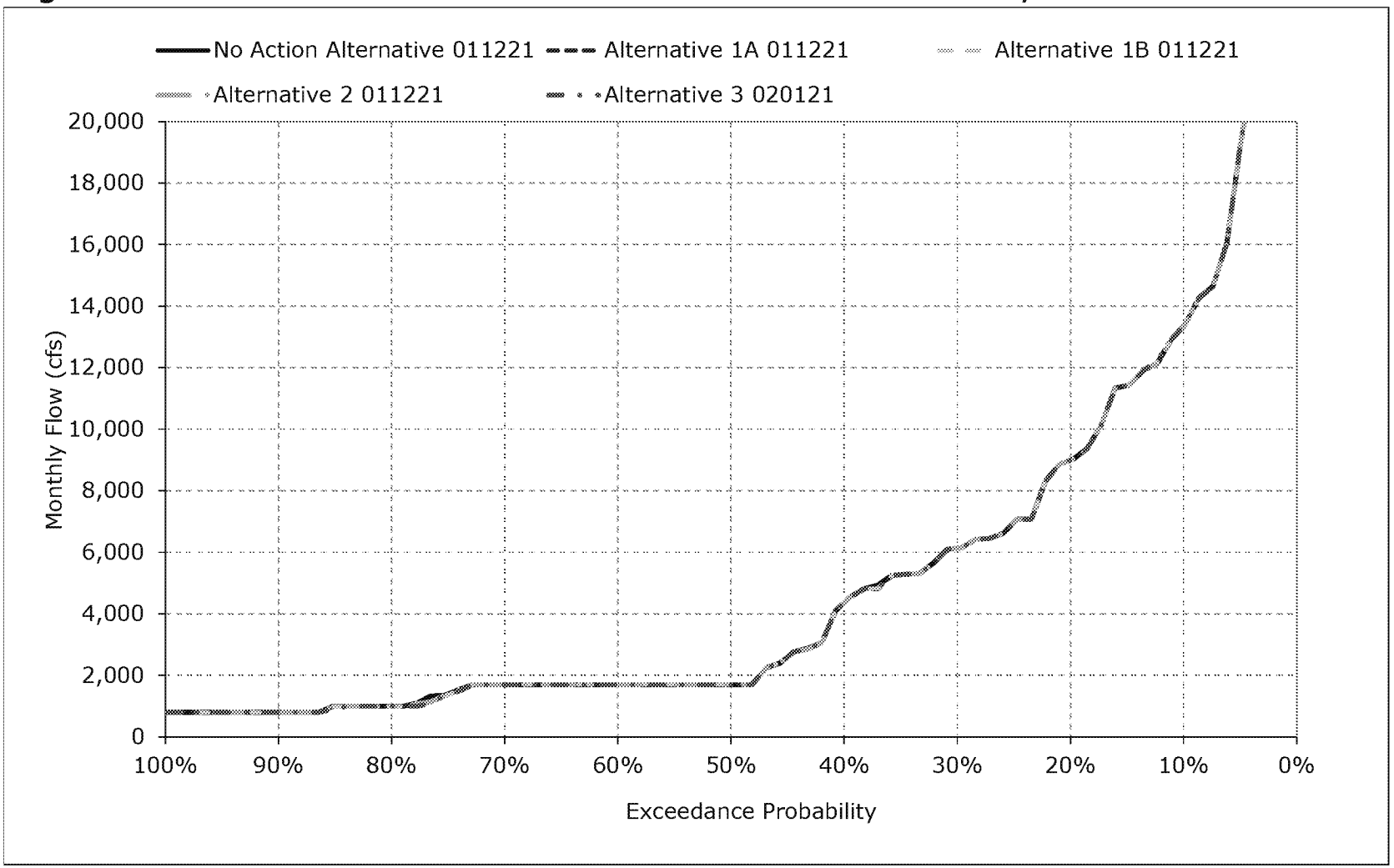


Figure 5B2-22-13. Feather River Flow downstream of Thermalito, April

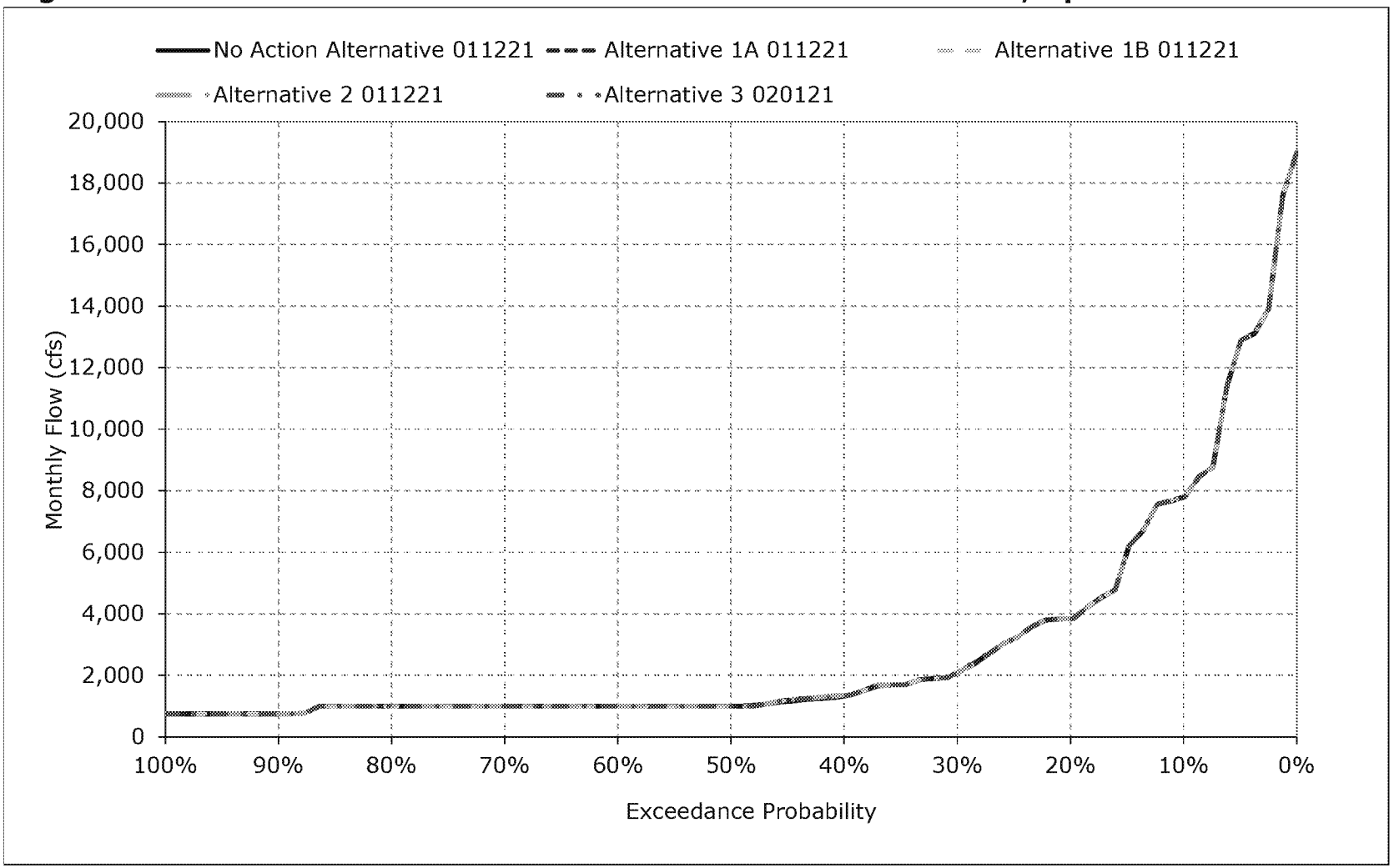


Figure 5B2-22-14. Feather River Flow downstream of Thermalito, May

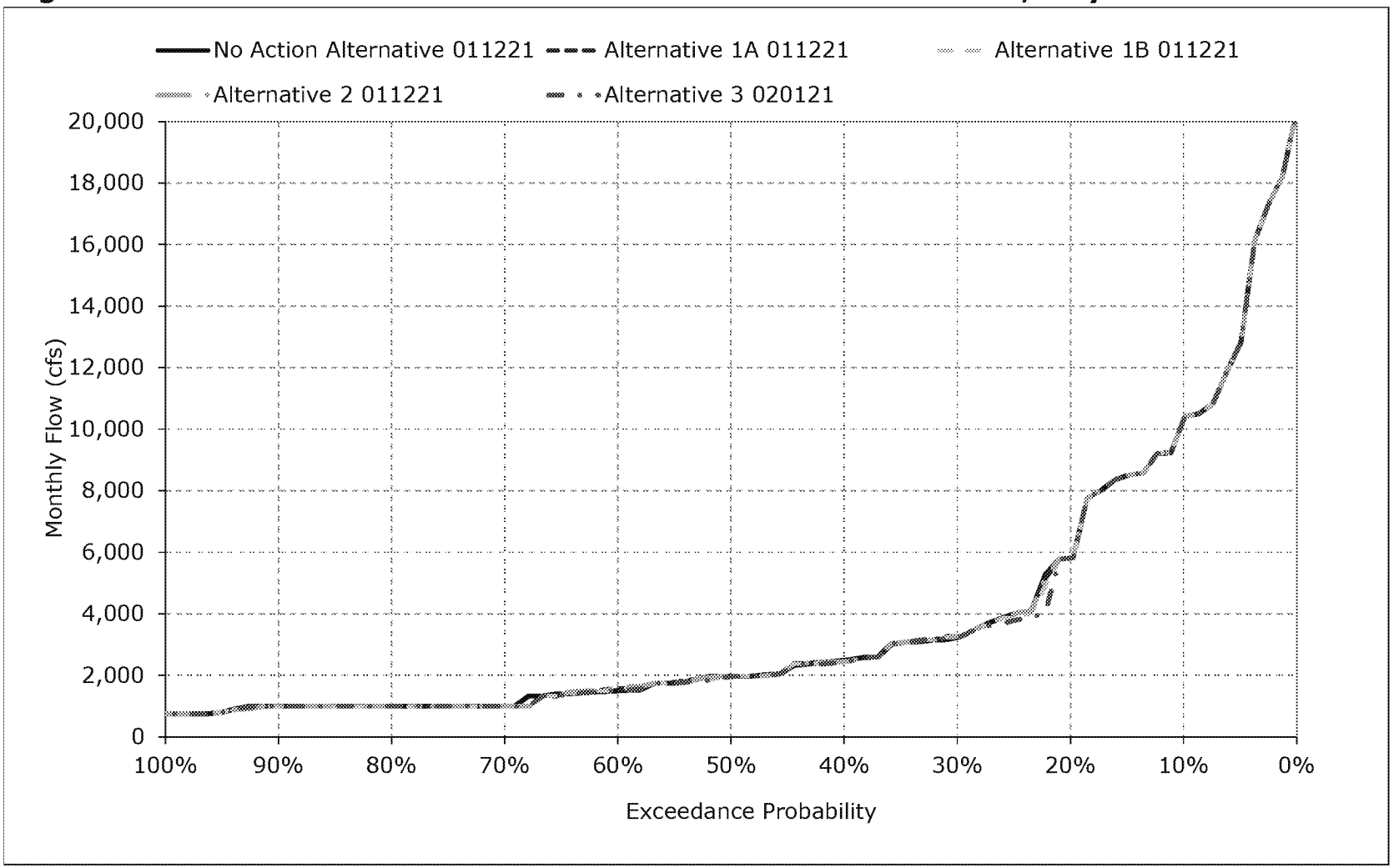


Figure 5B2-22-15. Feather River Flow downstream of Thermalito, June

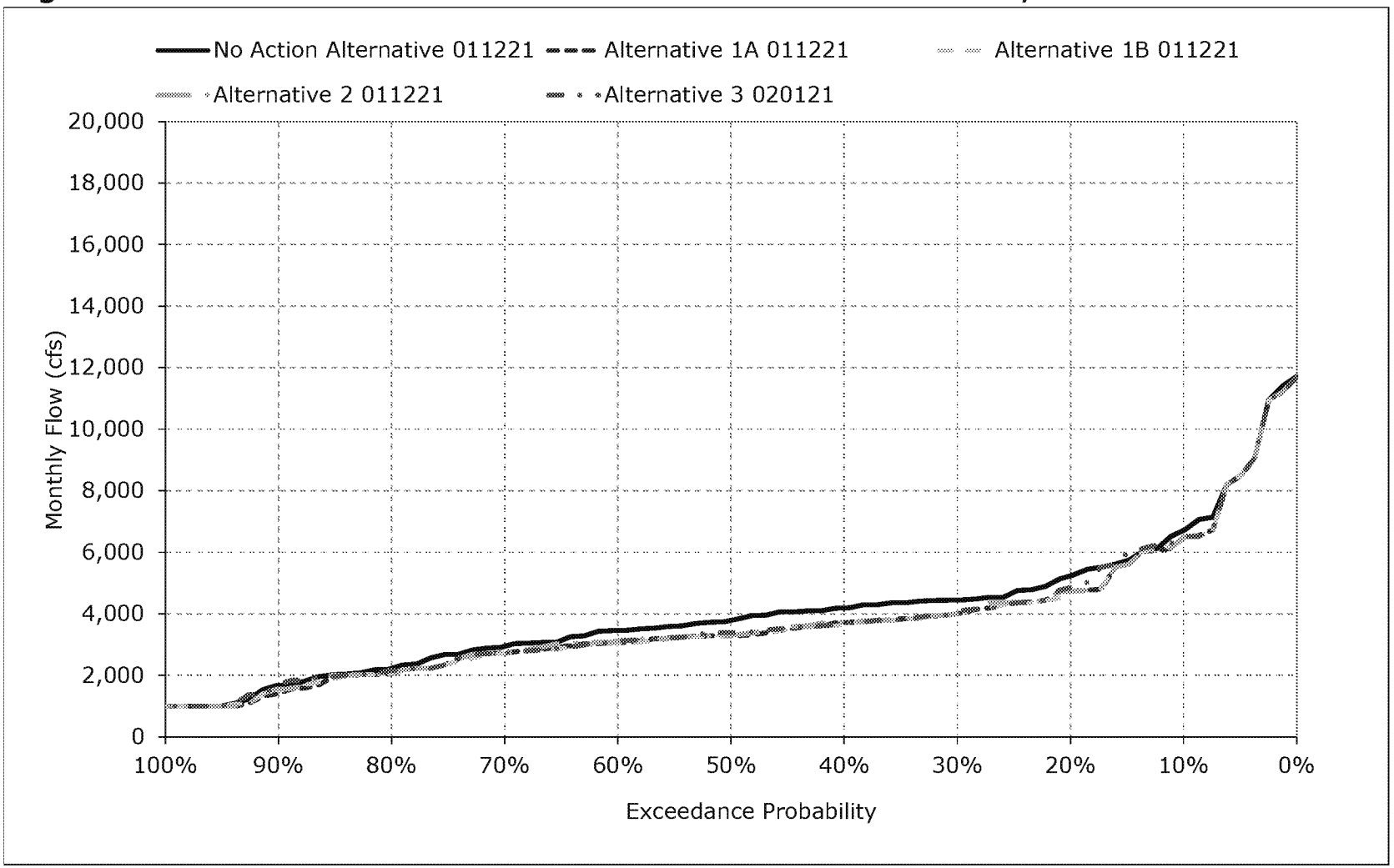


Figure 5B2-22-16. Feather River Flow downstream of Thermalito, July

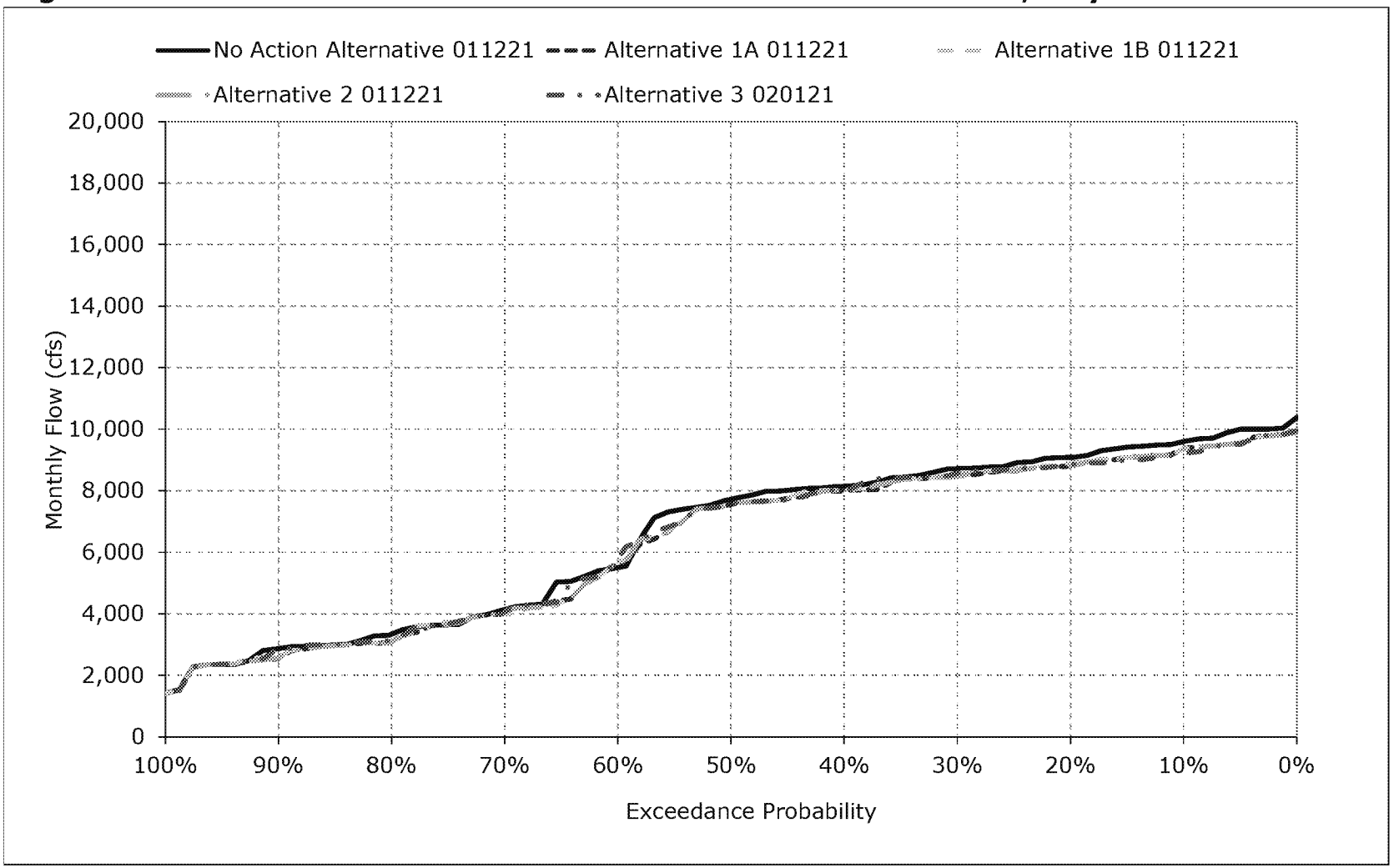


Figure 5B2-22-17. Feather River Flow downstream of Thermalito, August

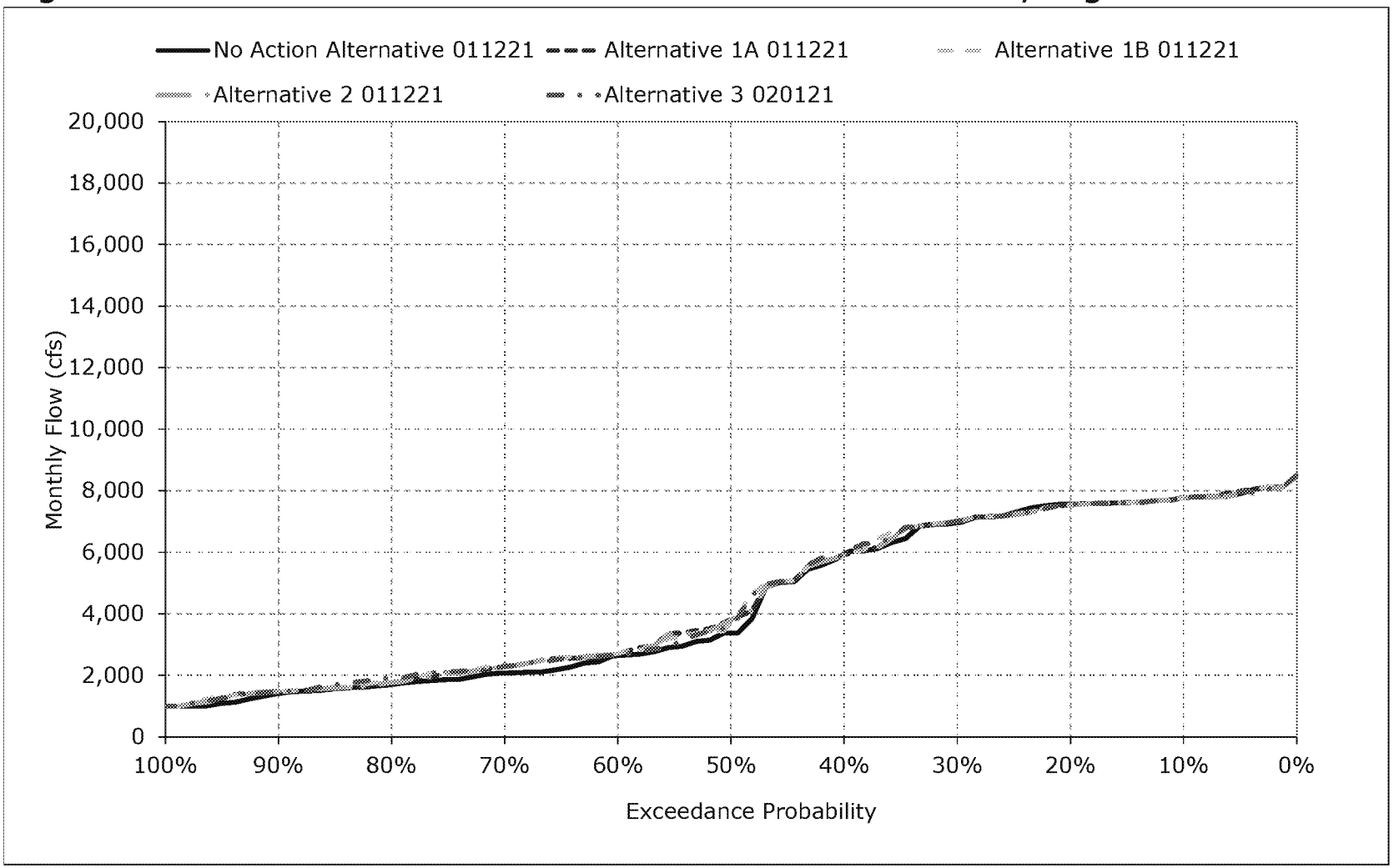


Figure 5B2-22-18. Feather River Flow downstream of Thermalito, September

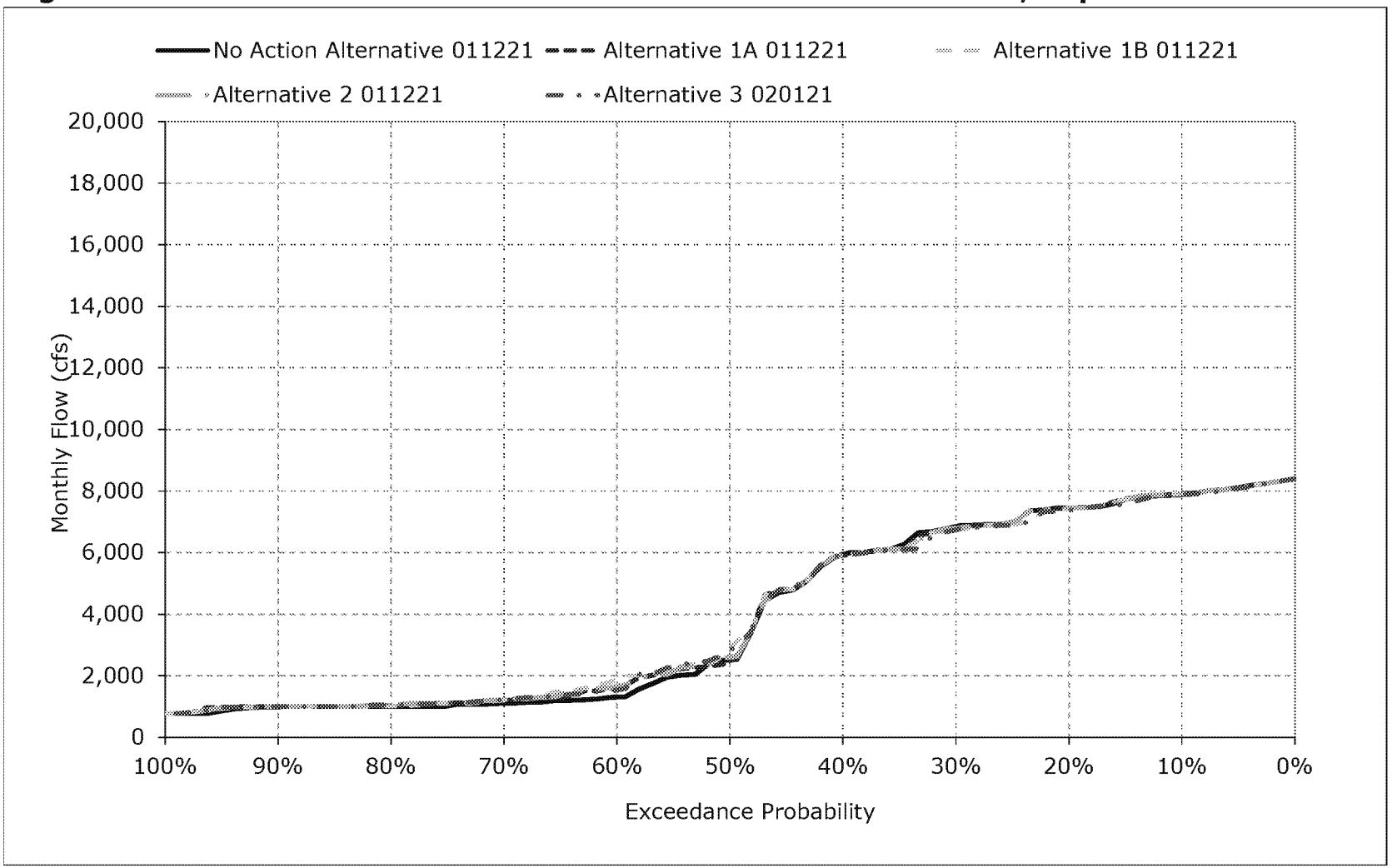


Table 5B2-23-1a. Feather River at Sacramento River Confluence Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,949	3,915	11,782	22,062	31,282	30,121	22,310	17,800	12,676	9,903	8,353	9,645
20%	4,612	2,930	5,770	16,176	20,876	20,164	13,253	11,014	8,517	9,419	7,978	9,316
30%	4,053	2,786	4,728	10,163	15,992	15,559	8,733	7,785	6,313	9,107	7,515	8,742
40%	3,319	2,371	4,017	7,355	12,187	10,513	7,030	5,935	5,540	8,658	6,739	7,605
50%	2,654	2,172	3,127	4,981	7,176	8,356	5,838	5,415	5,172	8,257	4,984	4,561
60%	2,252	1,936	2,415	4,060	5,036	6,030	4,827	4,308	4,686	7,191	3,020	2,992
70%	1,774	1,806	1,805	3,407	4,038	4,330	3,768	3,649	4,315	5,259	2,576	2,721
80%	1,660	1,509	1,661	2,734	2,581	3,138	3,167	3,173	3,923	4,005	2,099	2,581
90%	1,318	1,267	1,030	2,026	1,700	2,294	2,800	2,800	3,551	3,201	1,657	2,461
Long Term												
Full Simulation Period[a]	3,054	2,776	5,275	10,796	12,773	12,924	8,975	7,996	6,818	7,086	5,017	5,655
Water Year Types[b,c]												
Wet (32%)	4,220	3,653	7,992	22,107	25,897	24,147	16,441	14,487	10,477	7,380	5,680	8,460
Above Normal (15%)	4,135	3,003	4,006	10,450	12,184	17,918	9,717	8,313	6,503	8,531	7,483	9,513
Below Normal (17%)	3,151	3,024	5,871	5,312	8,197	6,993	5,479	5,411	4,952	8,965	7,801	4,143
Dry (22%)	1,726	2,155	4,061	4,012	4,315	4,735	4,314	4,058	5,217	6,704	2,162	2,761
Critical (15%)	1,327	1,290	1,785	3,212	2,954	2,814	3,129	2,534	3,780	3,388	2,148	1,826

Table 5B2-23-1b. Feather River at Sacramento River Confluence Flow, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,950	3,918	11,782	22,063	31,270	30,121	22,310	17,800	12,675	9,616	8,363	9,646
20%	4,612	2,940	5,757	16,177	20,865	20,164	13,253	11,014	8,290	9,257	7,974	9,314
30%	4,053	2,851	4,727	10,163	15,980	15,475	8,733	7,779	6,110	8,906	7,487	8,698
40%	3,716	2,664	3,924	7,345	12,188	10,513	7,030	5,905	5,442	8,444	6,845	7,598
50%	3,037	2,320	3,133	4,981	7,178	8,356	5,838	5,416	4,746	7,688	5,021	4,555
60%	2,714	2,081	2,415	4,060	5,035	6,028	4,827	4,348	4,367	6,927	3,556	3,089
70%	2,522	1,892	1,801	3,407	4,038	4,330	3,769	3,623	3,864	5,265	2,704	2,777
80%	1,907	1,569	1,661	2,776	2,581	3,138	3,167	3,154	3,584	3,818	2,305	2,593
90%	1,562	1,266	1,031	2,025	1,705	2,294	2,800	2,800	2,968	3,064	1,806	2,483
Long Term												
Full Simulation Period[a]	3,315	2,860	5,284	10,790	12,791	12,916	8,977	7,993	6,524	6,894	5,120	5,699
Water Year Types[b,c]												
Wet (32%)	4,286	3,657	8,024	22,073	25,961	24,131	16,438	14,488	10,466	7,356	5,691	8,456
Above Normal (15%)	4,120	3,002	3,960	10,450	12,163	17,891	9,706	8,313	6,473	8,548	7,481	9,515
Below Normal (17%)	3,509	3,148	5,862	5,310	8,195	6,992	5,481	5,425	4,786	8,662	7,845	4,158
Dry (22%)	2,330	2,393	4,091	4,021	4,317	4,736	4,332	4,029	4,394	6,201	2,413	2,821
Critical (15%)	1,661	1,357	1,784	3,230	2,960	2,820	3,127	2,544	3,258	3,217	2,403	2,021

Table 5B2-23-1c. Feather River at Sacramento River Confluence Flow, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	3	0	0	-12	0	0	0	0	-287	10	1
20%	0	10	-13	0	-11	0	0	0	-228	-162	-4	-2
30%	0	65	-1	0	-12	-83	0	-7	-203	-201	-29	-44
40%	396	293	-93	-10	0	0	0	-30	-99	-215	105	-7
50%	383	147	6	0	1	0	0	1	-426	-569	37	-7
60%	462	145	0	0	0	-2	0	40	-319	-264	536	97
70%	748	86	-4	0	0	0	1	-26	-451	7	128	56
80%	247	60	0	41	0	0	0	-19	-338	-187	206	12
90%	244	-1	0	0	5	0	0	0	-583	-137	148	21
Long Term												
Full Simulation Period[a]	261	85	8	-6	18	-8	2	-2	-293	-192	103	43
Water Year Types[b,c]												
Wet (32%)	66	4	32	-34	64	-16	-2	1	-11	-24	11	-3
Above Normal (15%)	-16	0	-46	0	-21	-28	-11	-1	-30	17	-2	2
Below Normal (17%)	357	124	-9	-2	-1	0	3	14	-166	-303	44	15
Dry (22%)	604	238	30	9	2	1	18	-30	-823	-502	251	61
Critical (15%)	334	68	-1	18	5	6	-2	10	-523	-171	255	194

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-23-2a. Feather River at Sacramento River Confluence Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,949	3,915	11,782	22,062	31,282	30,121	22,310	17,800	12,676	9,903	8,353	9,645
20%	4,612	2,930	5,770	16,176	20,876	20,164	13,253	11,014	8,517	9,419	7,978	9,316
30%	4,053	2,786	4,728	10,163	15,992	15,559	8,733	7,785	6,313	9,107	7,515	8,742
40%	3,319	2,371	4,017	7,355	12,187	10,513	7,030	5,935	5,540	8,658	6,739	7,605
50%	2,654	2,172	3,127	4,981	7,176	8,356	5,838	5,415	5,172	8,257	4,984	4,561
60%	2,252	1,936	2,415	4,060	5,036	6,030	4,827	4,308	4,686	7,191	3,020	2,992
70%	1,774	1,806	1,805	3,407	4,038	4,330	3,768	3,649	4,315	5,259	2,576	2,721
80%	1,660	1,509	1,661	2,734	2,581	3,138	3,167	3,173	3,923	4,005	2,099	2,581
90%	1,318	1,267	1,030	2,026	1,700	2,294	2,800	2,800	3,551	3,201	1,657	2,461
Long Term												
Full Simulation Period[a]	3,054	2,776	5,275	10,796	12,773	12,924	8,975	7,996	6,818	7,086	5,017	5,655
Water Year Types[b,c]												
Wet (32%)	4,220	3,653	7,992	22,107	25,897	24,147	16,441	14,487	10,477	7,380	5,680	8,460
Above Normal (15%)	4,135	3,003	4,006	10,450	12,184	17,918	9,717	8,313	6,503	8,531	7,483	9,513
Below Normal (17%)	3,151	3,024	5,871	5,312	8,197	6,993	5,479	5,411	4,952	8,965	7,801	4,143
Dry (22%)	1,726	2,155	4,061	4,012	4,315	4,735	4,314	4,058	5,217	6,704	2,162	2,761
Critical (15%)	1,327	1,290	1,785	3,212	2,954	2,814	3,129	2,534	3,780	3,388	2,148	1,826

Table 5B2-23-2b. Feather River at Sacramento River Confluence Flow, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,950	3,919	11,782	22,063	31,270	30,121	22,310	17,800	12,676	9,714	8,363	9,646
20%	4,612	2,940	5,741	16,177	20,867	20,164	13,254	11,014	8,314	9,257	7,974	9,232
30%	4,053	2,834	4,727	10,163	16,043	15,482	8,733	7,782	6,110	8,893	7,542	8,696
40%	3,716	2,494	3,921	7,345	12,188	10,513	7,030	5,864	5,506	8,434	6,845	7,597
50%	3,024	2,292	3,137	4,981	7,196	8,356	5,838	5,414	4,706	7,855	4,994	4,549
60%	2,713	2,038	2,413	4,060	5,036	6,028	4,827	4,348	4,367	6,928	3,466	3,213
70%	2,472	1,892	1,804	3,407	4,038	4,330	3,769	3,602	3,908	5,267	2,682	2,764
80%	1,915	1,543	1,661	2,738	2,581	3,138	3,165	3,154	3,457	3,766	2,341	2,583
90%	1,556	1,266	1,031	2,025	1,705	2,294	2,800	2,800	2,905	3,181	1,925	2,473
Long Term												
Full Simulation Period[a]	3,308	2,839	5,284	10,791	12,778	12,917	8,976	7,984	6,517	6,915	5,131	5,715
Water Year Types[b,c]												
Wet (32%)	4,284	3,657	8,023	22,074	25,893	24,137	16,438	14,488	10,466	7,355	5,689	8,450
Above Normal (15%)	4,181	2,972	3,958	10,450	12,206	17,890	9,706	8,310	6,480	8,536	7,523	9,454
Below Normal (17%)	3,451	3,149	5,862	5,320	8,204	6,994	5,477	5,425	4,794	8,675	7,838	4,278
Dry (22%)	2,325	2,316	4,096	4,021	4,316	4,735	4,331	3,989	4,346	6,278	2,472	2,824
Critical (15%)	1,626	1,356	1,784	3,221	2,960	2,816	3,126	2,545	3,266	3,241	2,358	2,060

Table 5B2-23-2c. Feather River at Sacramento River Confluence Flow, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	4	0	0	-12	0	0	0	0	-189	10	1
20%	0	10	-29	0	-9	0	0	0	-204	-162	-4	-84
30%	0	48	-1	0	51	-77	0	-4	-203	-213	27	-46
40%	396	123	-96	-10	0	0	0	-70	-34	-224	105	-8
50%	369	120	10	0	19	0	0	-1	-466	-401	10	-12
60%	461	102	-2	0	0	-2	0	40	-319	-263	446	221
70%	698	87	-1	0	0	0	1	-47	-407	9	106	43
80%	256	34	0	4	0	0	-1	-19	-465	-240	242	2
90%	238	0	1	0	5	0	0	0	-645	-20	267	12
Long Term												
Full Simulation Period[a]	254	63	9	-6	4	-7	1	-11	-300	-171	114	60
Water Year Types[b,c]												
Wet (32%)	65	4	31	-33	-3	-10	-2	1	-11	-25	9	-9
Above Normal (15%)	46	-30	-48	0	22	-28	-11	-3	-23	5	40	-59
Below Normal (17%)	299	125	-10	8	8	1	-1	15	-159	-290	37	135
Dry (22%)	599	161	35	9	0	0	17	-70	-871	-425	310	63
Critical (15%)	299	66	0	9	6	3	-3	11	-514	-147	210	234

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-23-3a. Feather River at Sacramento River Confluence Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,949	3,915	11,782	22,062	31,282	30,121	22,310	17,800	12,676	9,903	8,353	9,645
20%	4,612	2,930	5,770	16,176	20,876	20,164	13,253	11,014	8,517	9,419	7,978	9,316
30%	4,053	2,786	4,728	10,163	15,992	15,559	8,733	7,785	6,313	9,107	7,515	8,742
40%	3,319	2,371	4,017	7,355	12,187	10,513	7,030	5,935	5,540	8,658	6,739	7,605
50%	2,654	2,172	3,127	4,981	7,176	8,356	5,838	5,415	5,172	8,257	4,984	4,561
60%	2,252	1,936	2,415	4,060	5,036	6,030	4,827	4,308	4,686	7,191	3,020	2,992
70%	1,774	1,806	1,805	3,407	4,038	4,330	3,768	3,649	4,315	5,259	2,576	2,721
80%	1,660	1,509	1,661	2,734	2,581	3,138	3,167	3,173	3,923	4,005	2,099	2,581
90%	1,318	1,267	1,030	2,026	1,700	2,294	2,800	2,800	3,551	3,201	1,657	2,461
Long Term												
Full Simulation Period[a]	3,054	2,776	5,275	10,796	12,773	12,924	8,975	7,996	6,818	7,086	5,017	5,655
Water Year Types[b,c]												
Wet (32%)	4,220	3,653	7,992	22,107	25,897	24,147	16,441	14,487	10,477	7,380	5,680	8,460
Above Normal (15%)	4,135	3,003	4,006	10,450	12,184	17,918	9,717	8,313	6,503	8,531	7,483	9,513
Below Normal (17%)	3,151	3,024	5,871	5,312	8,197	6,993	5,479	5,411	4,952	8,965	7,801	4,143
Dry (22%)	1,726	2,155	4,061	4,012	4,315	4,735	4,314	4,058	5,217	6,704	2,162	2,761
Critical (15%)	1,327	1,290	1,785	3,212	2,954	2,814	3,129	2,534	3,780	3,388	2,148	1,826

Table 5B2-23-3b. Feather River at Sacramento River Confluence Flow, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,950	3,918	11,782	22,063	31,270	30,122	22,310	17,800	12,675	9,615	8,296	9,646
20%	4,612	2,940	5,757	16,177	20,865	20,164	13,254	11,014	8,295	9,260	7,974	9,313
30%	4,053	2,838	4,727	10,163	15,981	15,476	8,733	7,770	6,110	8,890	7,486	8,698
40%	3,716	2,576	3,921	7,345	12,188	10,513	7,030	5,904	5,442	8,442	6,845	7,598
50%	3,018	2,307	3,133	4,981	7,201	8,356	5,838	5,416	4,747	7,785	5,019	4,555
60%	2,685	2,075	2,414	4,060	5,035	6,028	4,827	4,348	4,367	6,926	3,469	3,191
70%	2,399	1,892	1,803	3,407	4,038	4,330	3,769	3,623	3,927	5,265	2,694	2,779
80%	1,839	1,546	1,661	2,735	2,581	3,138	3,166	3,154	3,585	3,799	2,323	2,583
90%	1,558	1,267	1,031	2,025	1,705	2,294	2,800	2,800	3,119	3,063	1,806	2,475
Long Term												
Full Simulation Period[a]	3,284	2,846	5,290	10,789	12,794	12,916	8,977	7,994	6,548	6,896	5,114	5,706
Water Year Types[b,c]												
Wet (32%)	4,287	3,657	8,032	22,073	25,963	24,131	16,438	14,488	10,466	7,356	5,689	8,450
Above Normal (15%)	4,122	3,002	3,960	10,450	12,172	17,891	9,706	8,312	6,473	8,544	7,481	9,515
Below Normal (17%)	3,504	3,151	5,884	5,313	8,199	6,995	5,481	5,431	4,787	8,664	7,813	4,159
Dry (22%)	2,236	2,333	4,091	4,021	4,317	4,737	4,332	4,029	4,473	6,203	2,424	2,842
Critical (15%)	1,588	1,350	1,784	3,221	2,960	2,820	3,126	2,544	3,302	3,230	2,386	2,053

Table 5B2-23-3c. Feather River at Sacramento River Confluence Flow, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	3	0	0	-12	0	0	0	0	-288	-57	1
20%	0	10	-13	0	-11	0	0	0	-223	-159	-3	-3
30%	0	52	-1	0	-11	-83	0	-15	-203	-217	-29	-44
40%	396	205	-96	-10	0	0	0	-30	-98	-216	105	-7
50%	364	134	6	0	25	0	0	1	-426	-472	35	-6
60%	433	140	-1	0	0	-2	0	40	-319	-265	448	200
70%	624	87	-2	0	0	0	1	-26	-388	7	118	57
80%	180	36	0	0	0	0	0	-19	-338	-206	224	2
90%	240	0	1	0	5	0	0	0	-432	-138	148	14
Long Term												
Full Simulation Period[a]	230	71	15	-7	21	-7	2	-2	-270	-190	97	51
Water Year Types[b,c]												
Wet (32%)	67	4	40	-34	67	-16	-2	1	-11	-24	9	-10
Above Normal (15%)	-13	0	-46	0	-12	-27	-11	-2	-30	13	-2	2
Below Normal (17%)	353	127	13	1	2	2	3	20	-165	-301	12	16
Dry (22%)	510	178	29	10	2	1	18	-30	-745	-501	262	81
Critical (15%)	261	60	-1	9	6	6	-3	10	-478	-157	237	226

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-23-4a. Feather River at Sacramento River Confluence Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,949	3,915	11,782	22,062	31,282	30,121	22,310	17,800	12,676	9,903	8,353	9,645
20%	4,612	2,930	5,770	16,176	20,876	20,164	13,253	11,014	8,517	9,419	7,978	9,316
30%	4,053	2,786	4,728	10,163	15,992	15,559	8,733	7,785	6,313	9,107	7,515	8,742
40%	3,319	2,371	4,017	7,355	12,187	10,513	7,030	5,935	5,540	8,658	6,739	7,605
50%	2,654	2,172	3,127	4,981	7,176	8,356	5,838	5,415	5,172	8,257	4,984	4,561
60%	2,252	1,936	2,415	4,060	5,036	6,030	4,827	4,308	4,686	7,191	3,020	2,992
70%	1,774	1,806	1,805	3,407	4,038	4,330	3,768	3,649	4,315	5,259	2,576	2,721
80%	1,660	1,509	1,661	2,734	2,581	3,138	3,167	3,173	3,923	4,005	2,099	2,581
90%	1,318	1,267	1,030	2,026	1,700	2,294	2,800	2,800	3,551	3,201	1,657	2,461
Long Term												
Full Simulation Period[a]	3,054	2,776	5,275	10,796	12,773	12,924	8,975	7,996	6,818	7,086	5,017	5,655
Water Year Types[b,c]												
Wet (32%)	4,220	3,653	7,992	22,107	25,897	24,147	16,441	14,487	10,477	7,380	5,680	8,460
Above Normal (15%)	4,135	3,003	4,006	10,450	12,184	17,918	9,717	8,313	6,503	8,531	7,483	9,513
Below Normal (17%)	3,151	3,024	5,871	5,312	8,197	6,993	5,479	5,411	4,952	8,965	7,801	4,143
Dry (22%)	1,726	2,155	4,061	4,012	4,315	4,735	4,314	4,058	5,217	6,704	2,162	2,761
Critical (15%)	1,327	1,290	1,785	3,212	2,954	2,814	3,129	2,534	3,780	3,388	2,148	1,826

Table 5B2-23-4b. Feather River at Sacramento River Confluence Flow, Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,950	3,919	11,782	22,063	31,271	30,124	22,310	17,801	12,676	9,749	8,363	9,608
20%	4,616	2,935	5,744	16,177	20,897	20,165	13,254	11,014	8,379	9,229	7,986	9,201
30%	4,053	2,833	4,728	10,163	16,033	15,483	8,733	7,774	6,288	8,787	7,539	8,473
40%	3,716	2,494	4,017	7,347	12,188	10,513	7,030	5,834	5,566	8,417	6,845	7,606
50%	2,917	2,278	3,290	4,981	7,200	8,357	5,838	5,402	4,896	8,194	5,000	4,474
60%	2,655	2,038	2,414	4,058	5,037	6,029	4,827	4,259	4,422	6,950	3,581	3,093
70%	2,353	1,855	1,804	3,407	4,039	4,330	3,769	3,577	3,919	5,274	2,707	2,819
80%	1,700	1,510	1,661	2,737	2,581	3,138	3,167	3,129	3,468	4,028	2,282	2,647
90%	1,381	1,266	1,032	2,026	1,705	2,294	2,800	2,800	3,065	3,206	1,883	2,473
Long Term												
Full Simulation Period[a]	3,238	2,821	5,299	10,809	12,799	12,920	8,977	7,962	6,576	6,938	5,130	5,688
Water Year Types[b,c]												
Wet (32%)	4,311	3,657	8,010	22,107	25,939	24,156	16,439	14,489	10,466	7,358	5,680	8,423
Above Normal (15%)	4,166	2,951	4,092	10,505	12,252	17,869	9,707	8,310	6,496	8,305	7,494	9,411
Below Normal (17%)	3,386	3,145	5,872	5,318	8,204	6,995	5,478	5,416	4,799	8,714	7,877	4,205
Dry (22%)	2,175	2,253	4,084	4,020	4,315	4,734	4,327	3,906	4,565	6,467	2,444	2,837
Critical (15%)	1,405	1,356	1,784	3,221	2,960	2,816	3,135	2,528	3,318	3,296	2,396	2,046

Table 5B2-23-4c. Feather River at Sacramento River Confluence Flow, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

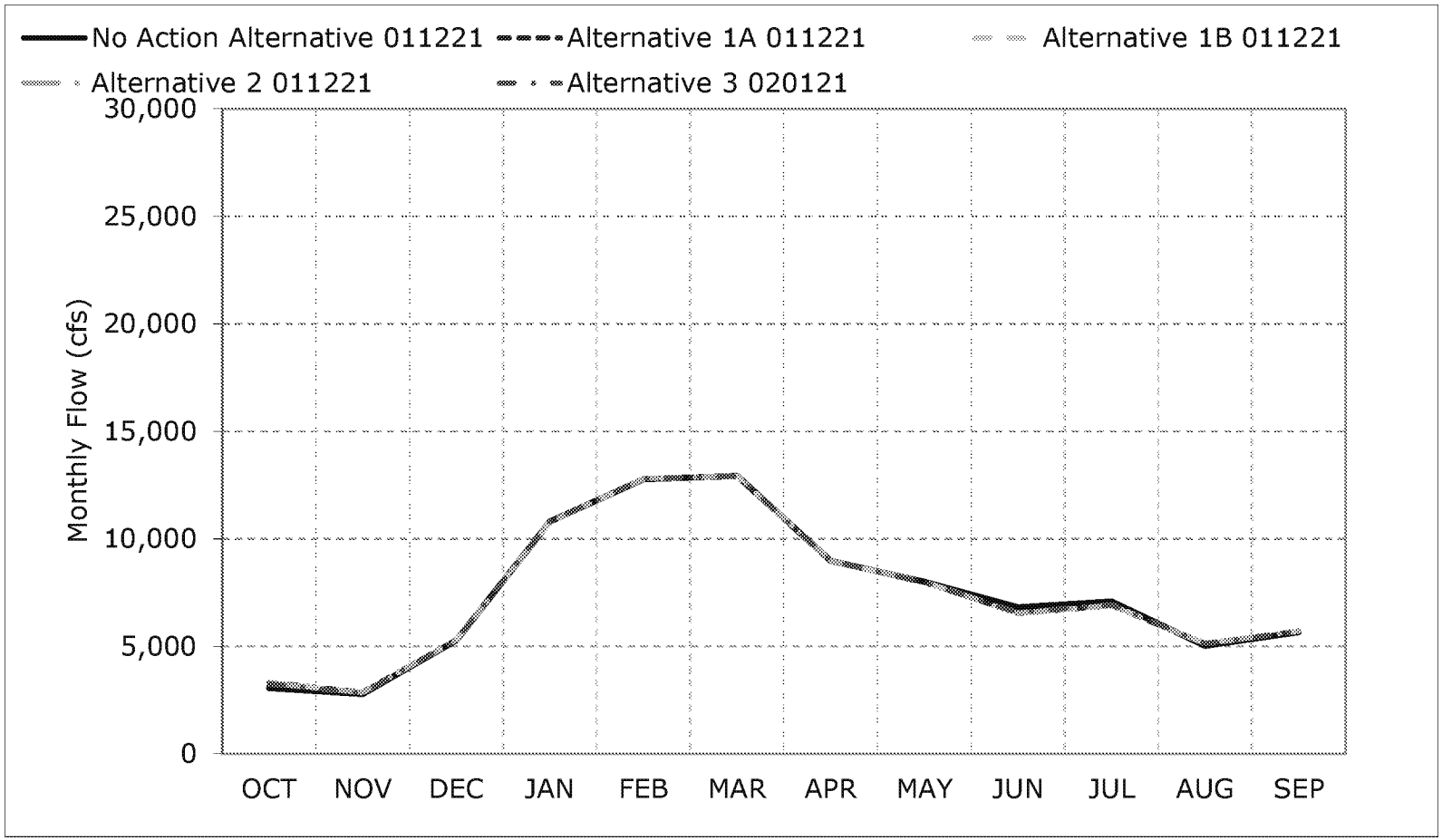
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1	4	0	1	-11	3	0	0	0	-154	10	-37
20%	4	5	-27	1	22	0	1	0	-138	-190	8	-115
30%	0	47	0	0	41	-76	0	-11	-25	-320	23	-269
40%	397	123	0	-8	1	0	0	-100	25	-242	106	1
50%	262	106	163	0	24	1	0	-13	-276	-63	16	-87
60%	403	102	-1	-1	1	-1	0	-49	-265	-241	561	101
70%	578	49	-1	0	1	0	1	-72	-396	15	131	98
80%	41	1	0	3	0	0	0	-43	-454	23	183	66
90%	63	-1	1	0	5	0	0	0	-486	5	225	12
Long Term												
Full Simulation Period[a]	184	46	23	12	25	-4	2	-34	-242	-148	113	33
Water Year Types[b,c]												
Wet (32%)	92	4	18	0	42	9	-2	1	-11	-22	0	-37
Above Normal (15%)	30	-52	86	55	68	-49	-11	-4	-6	-225	12	-102
Below Normal (17%)	235	121	0	6	8	2	-1	5	-154	-251	76	61
Dry (22%)	450	98	23	8	-1	-1	13	-152	-653	-237	282	76
Critical (15%)	77	66	-1	9	6	2	6	-6	-462	-92	248	220

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

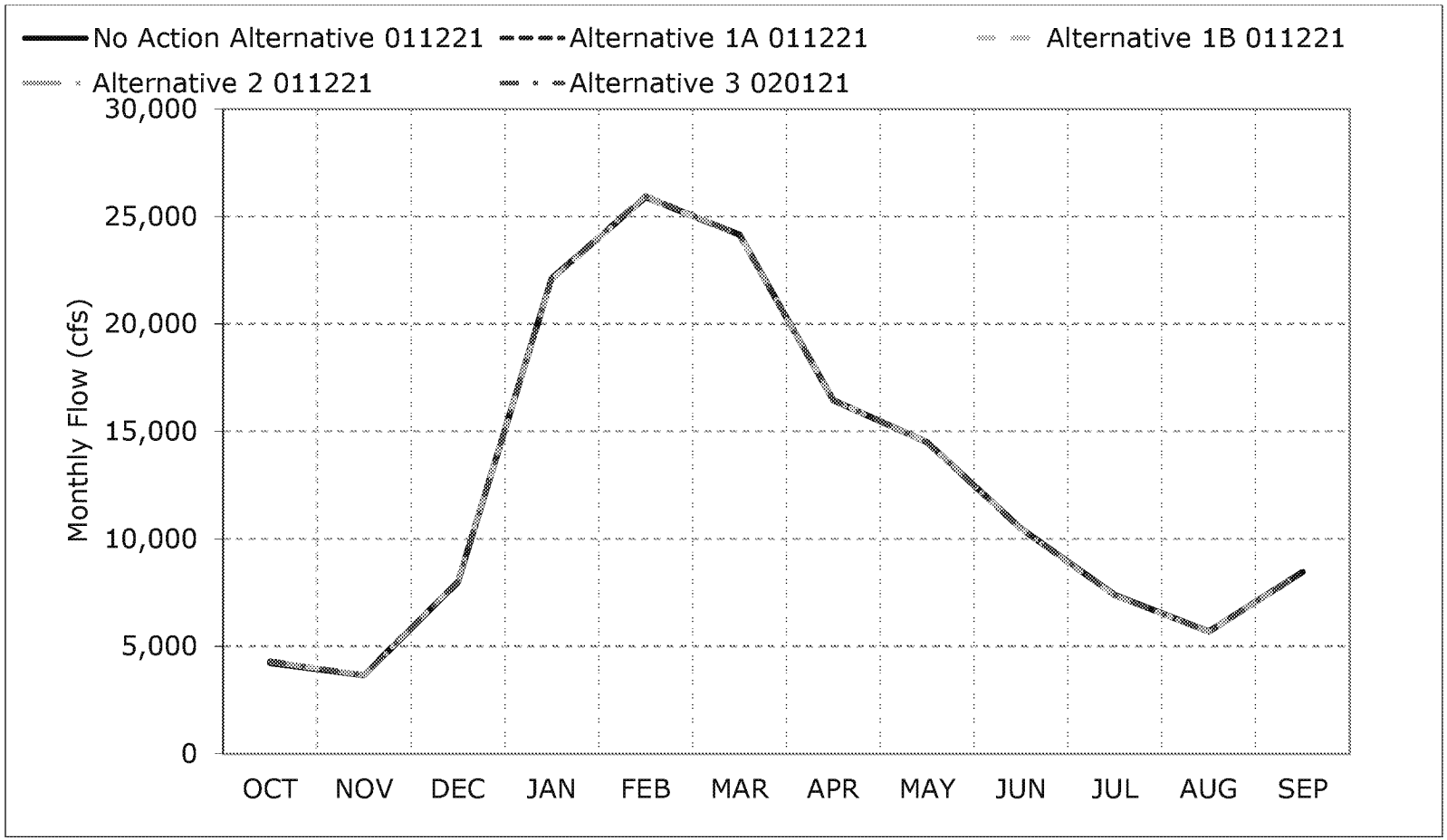
c These results are displayed with calendar year - year type sorting.

Figure 5B2-23-1. Feather River at Sacramento River Confluence Flow, Long-Term Average Flow



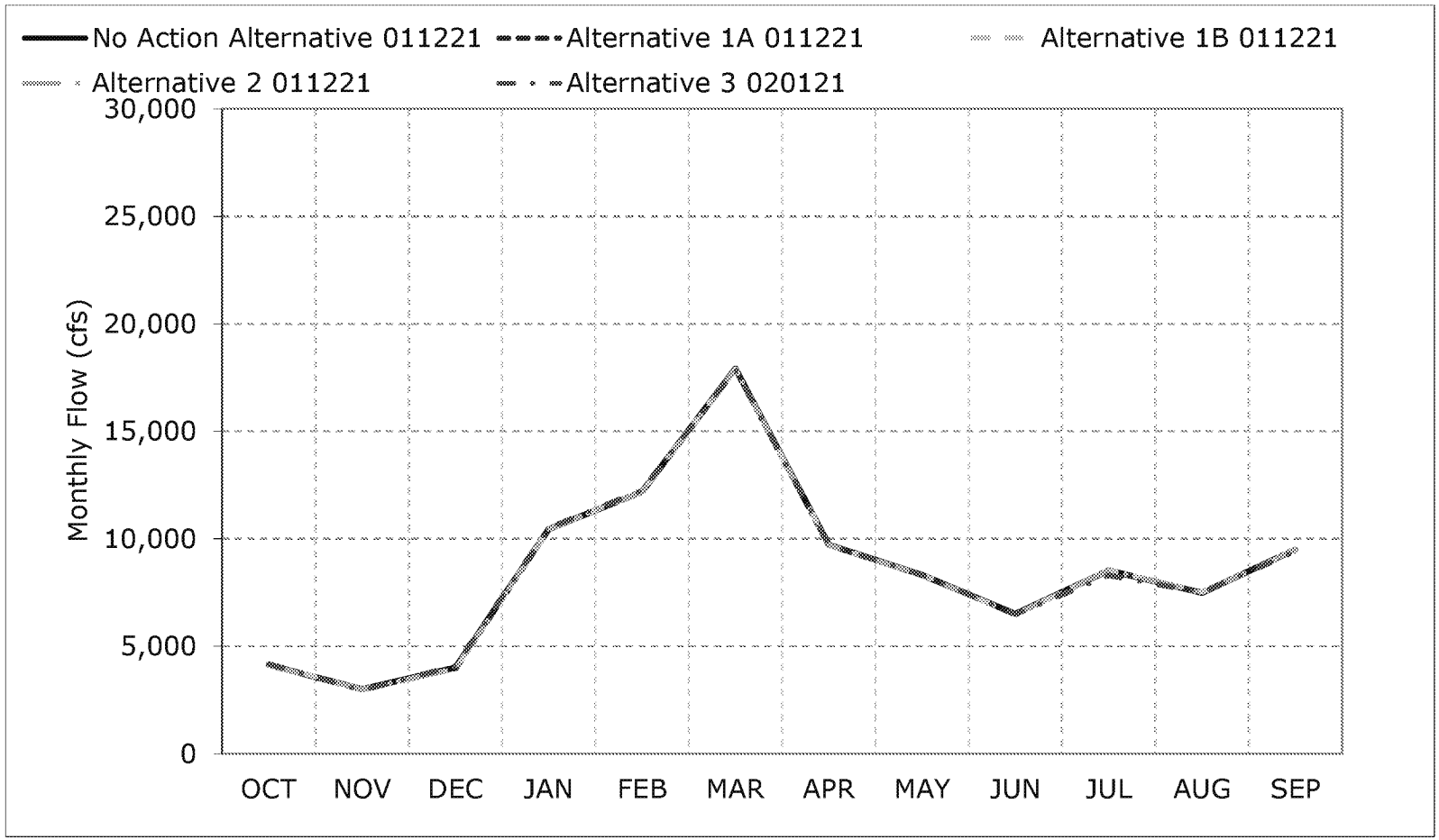
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-23-2. Feather River at Sacramento River Confluence Flow, Wet Year Average Flow



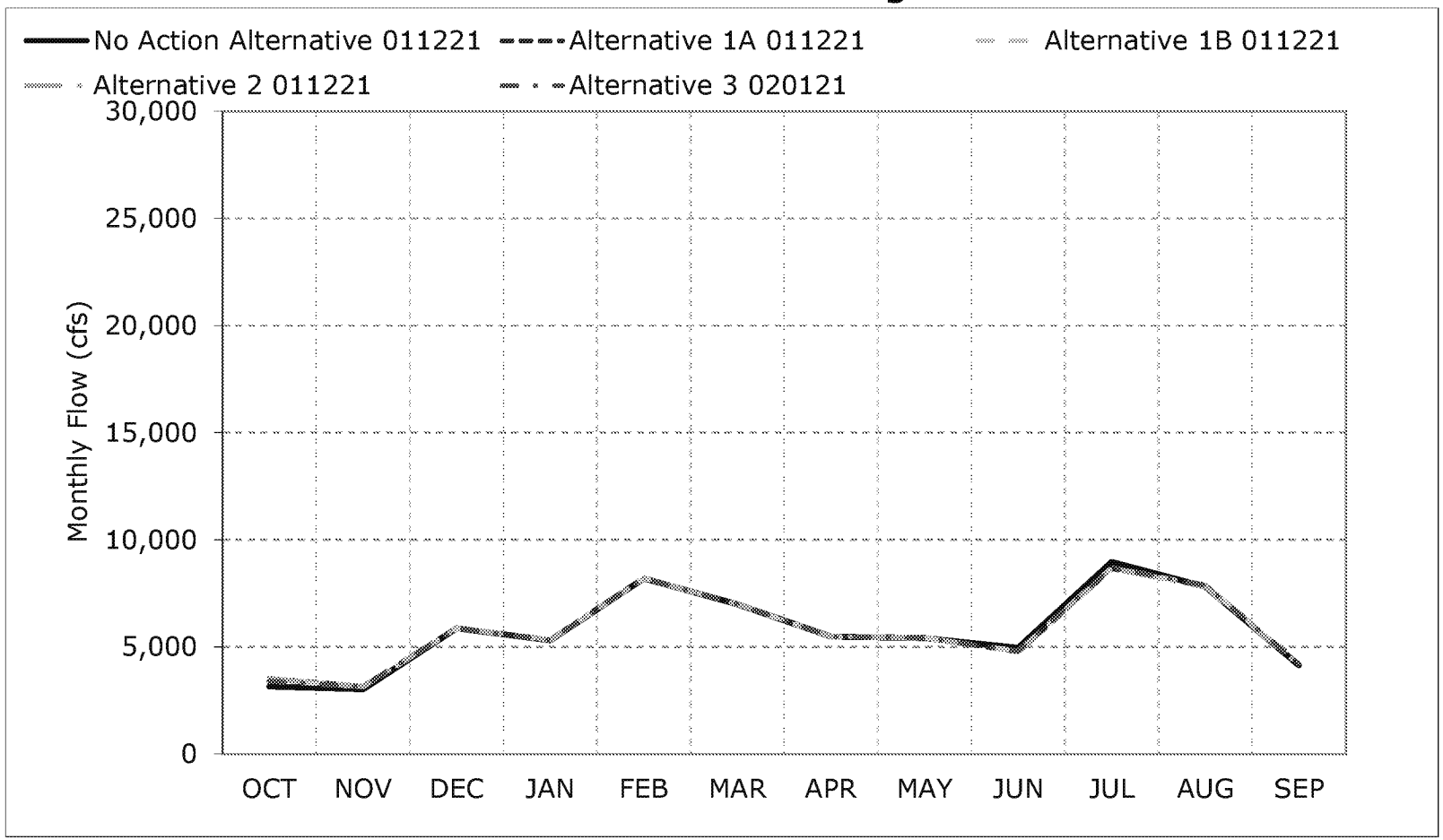
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-23-3. Feather River at Sacramento River Confluence Flow, Above Normal Year Average Flow



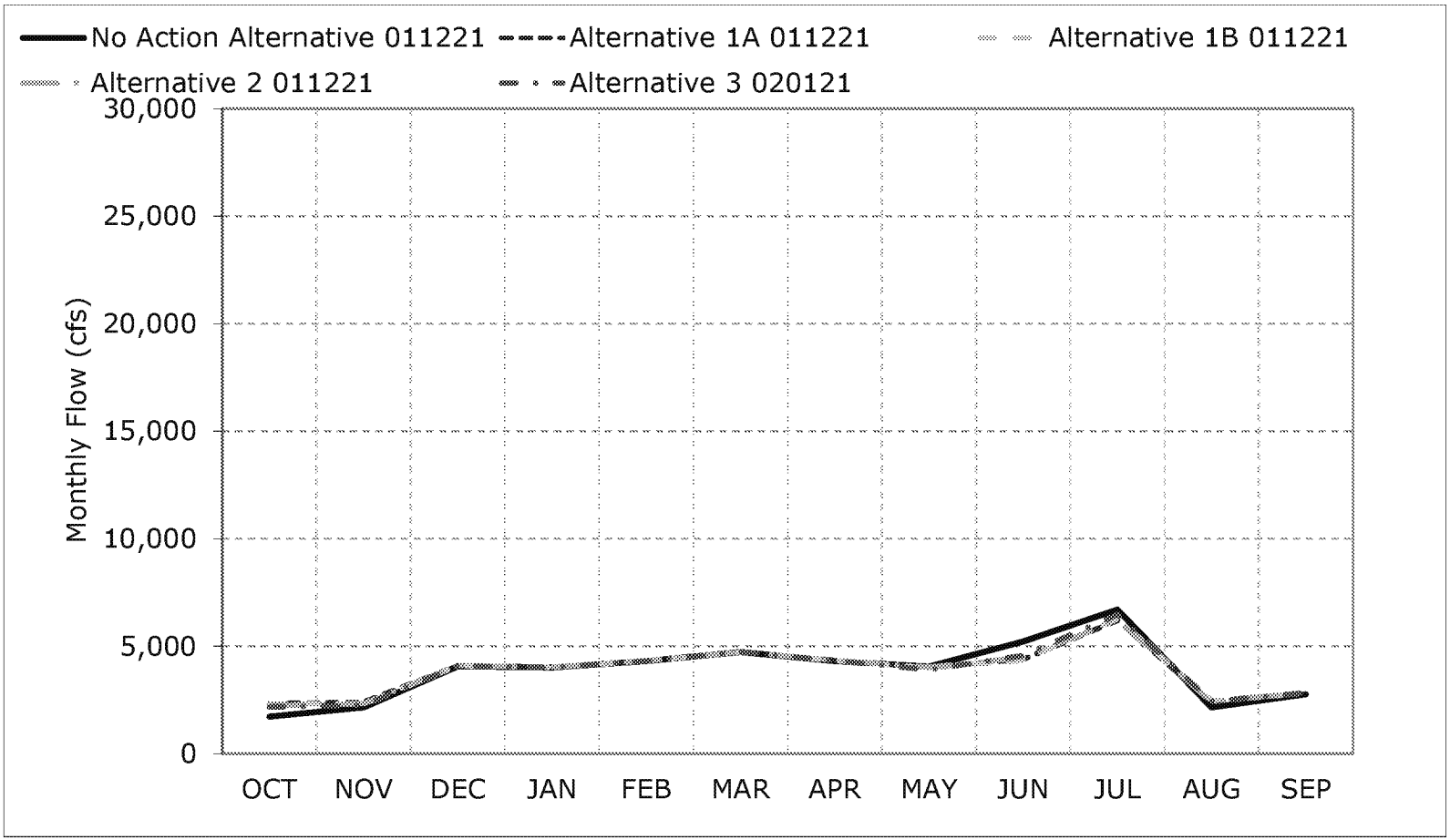
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-23-4. Feather River at Sacramento River Confluence Flow, Below Normal Year Average Flow



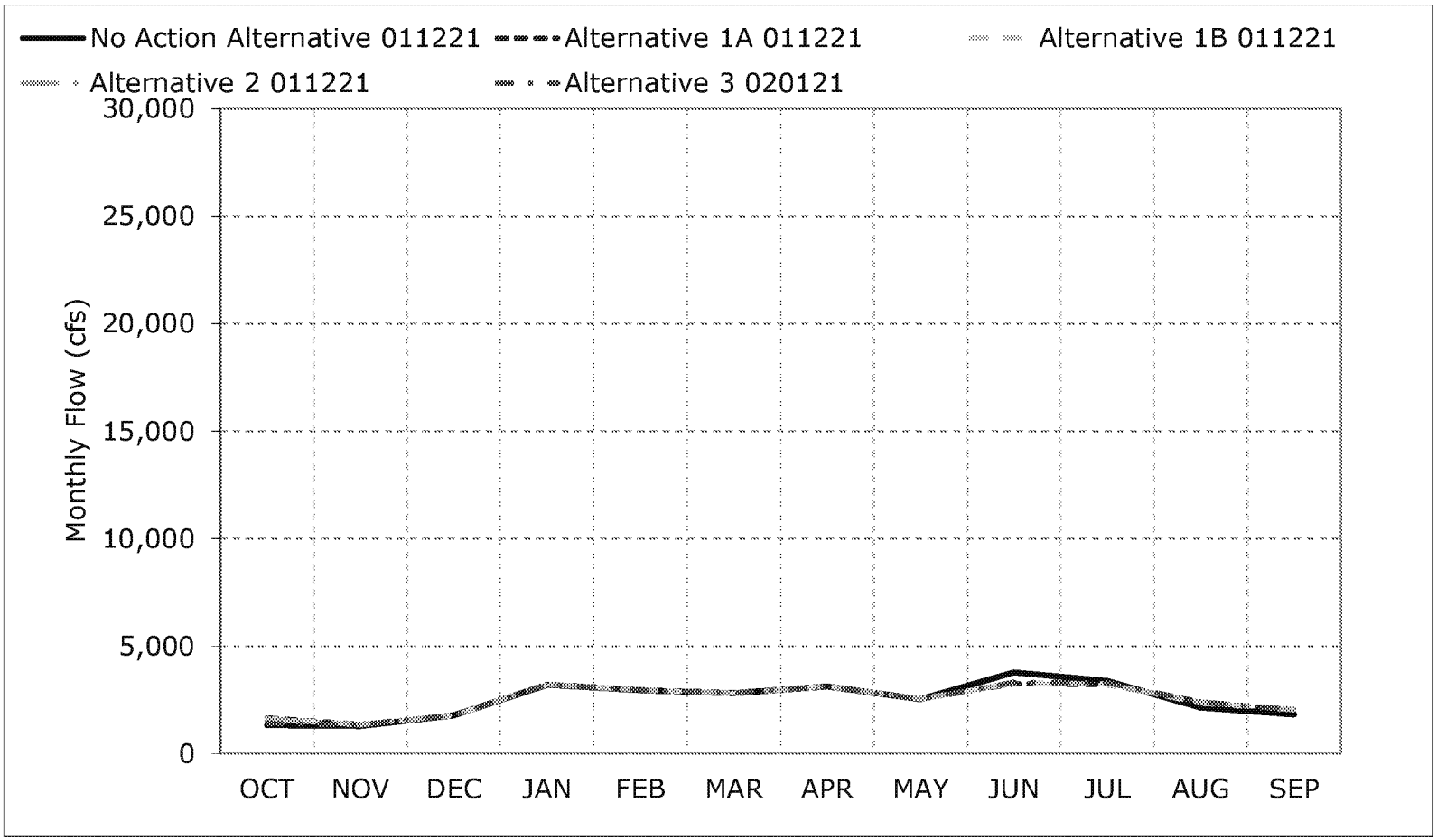
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-23-5. Feather River at Sacramento River Confluence Flow, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-23-6. Feather River at Sacramento River Confluence Flow, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-23-7. Feather River at Sacramento River Confluence Flow, October

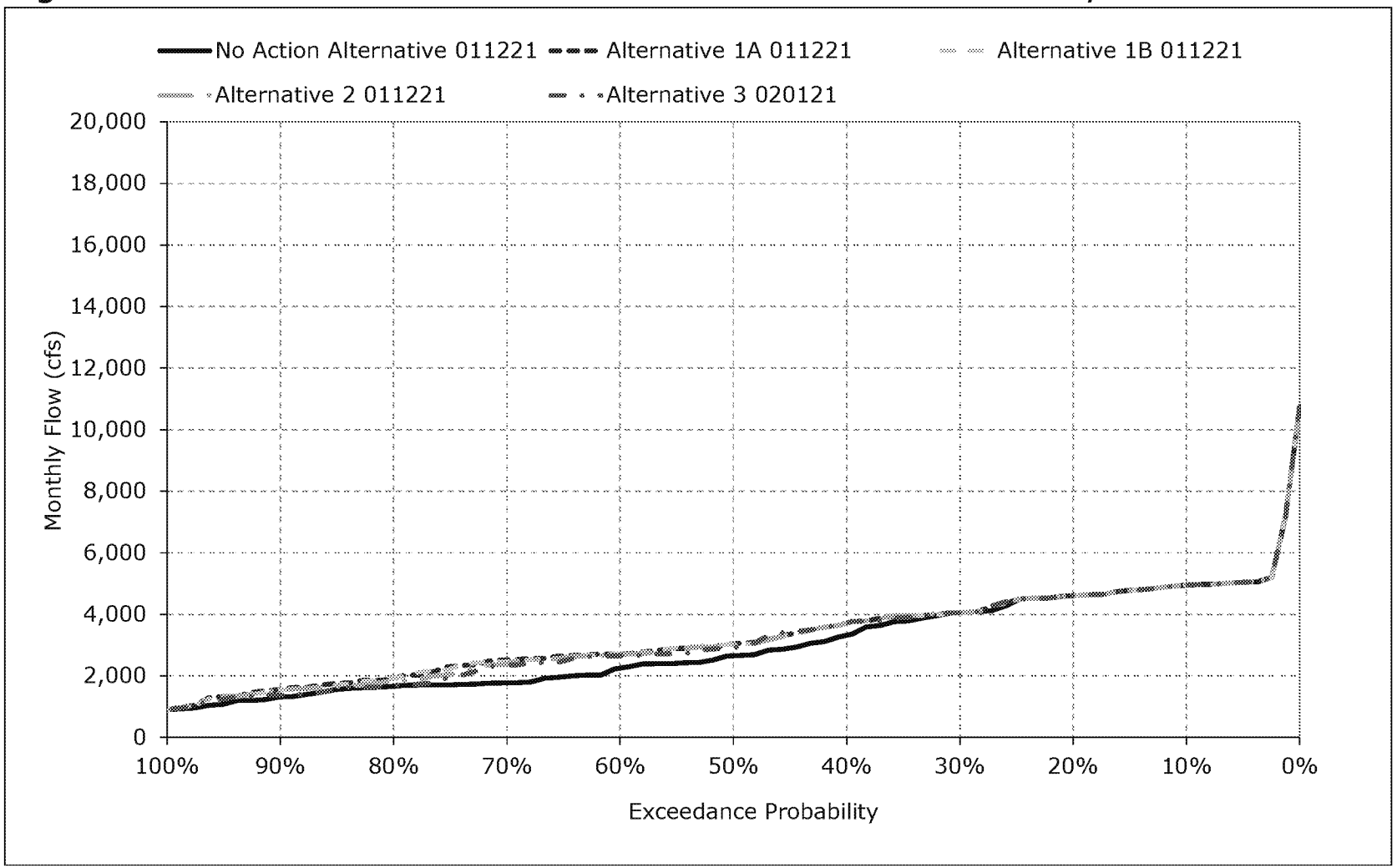


Figure 5B2-23-8. Feather River at Sacramento River Confluence Flow, November

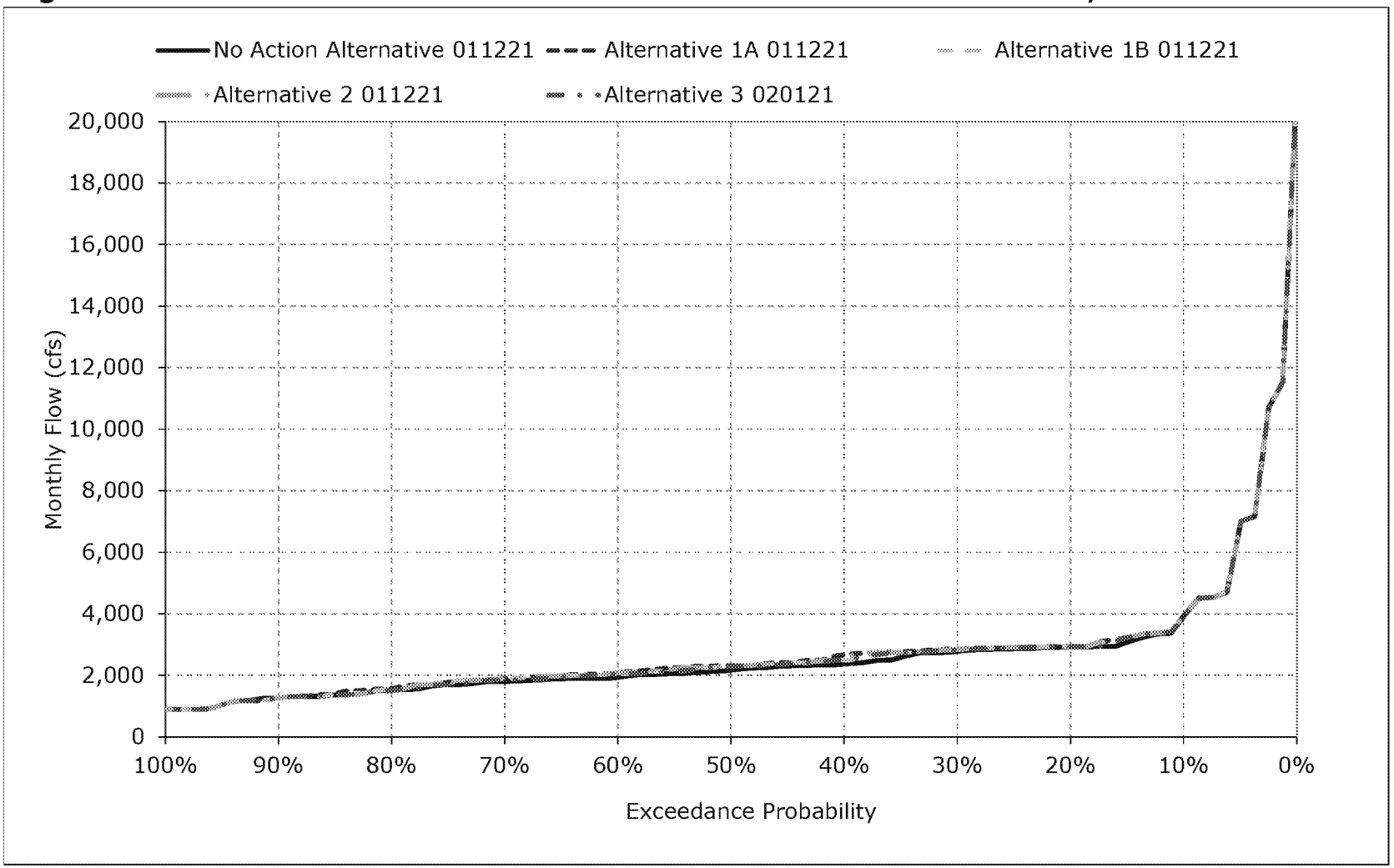


Figure 5B2-23-9. Feather River at Sacramento River Confluence Flow, December

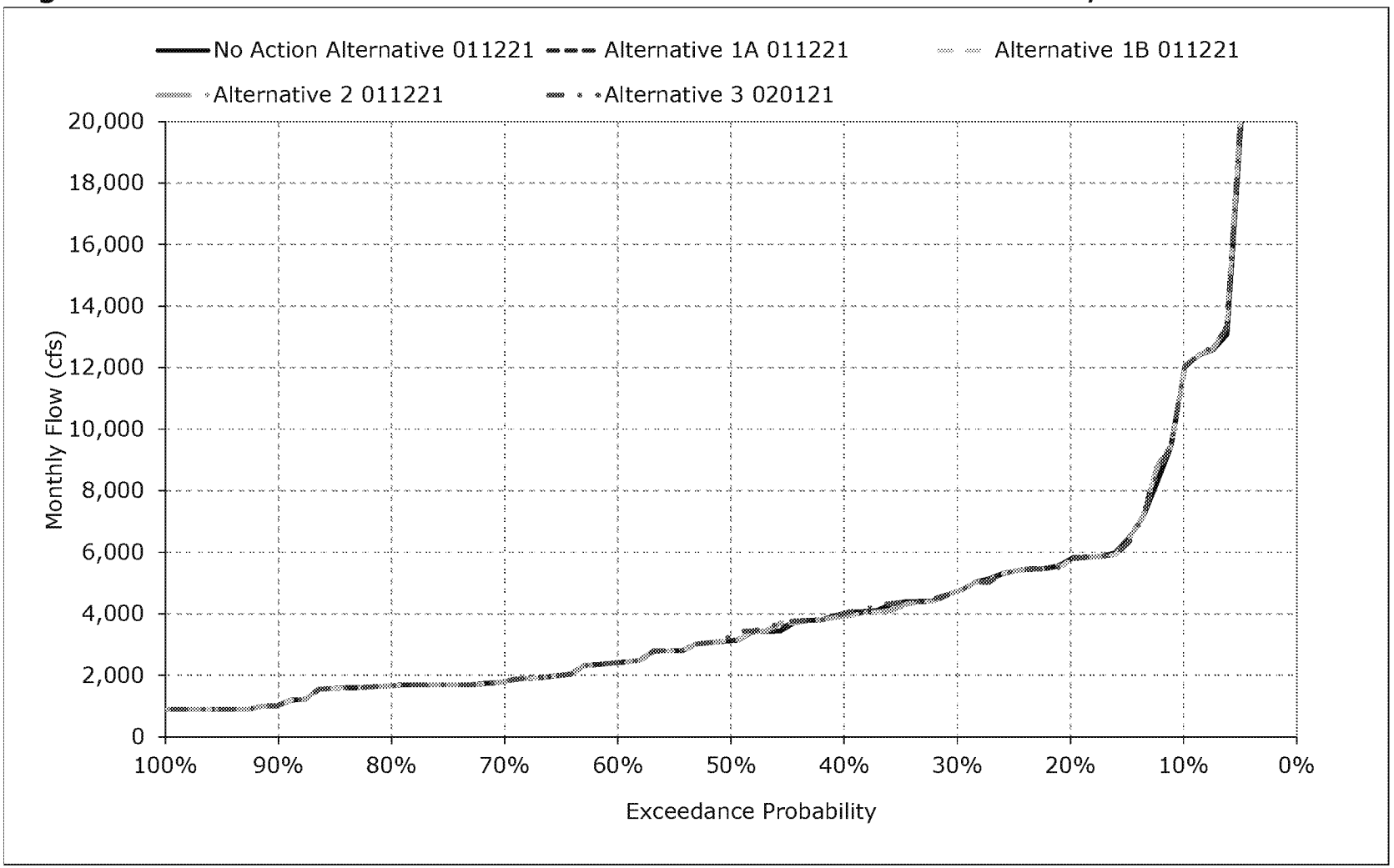


Figure 5B2-23-10. Feather River at Sacramento River Confluence Flow, January

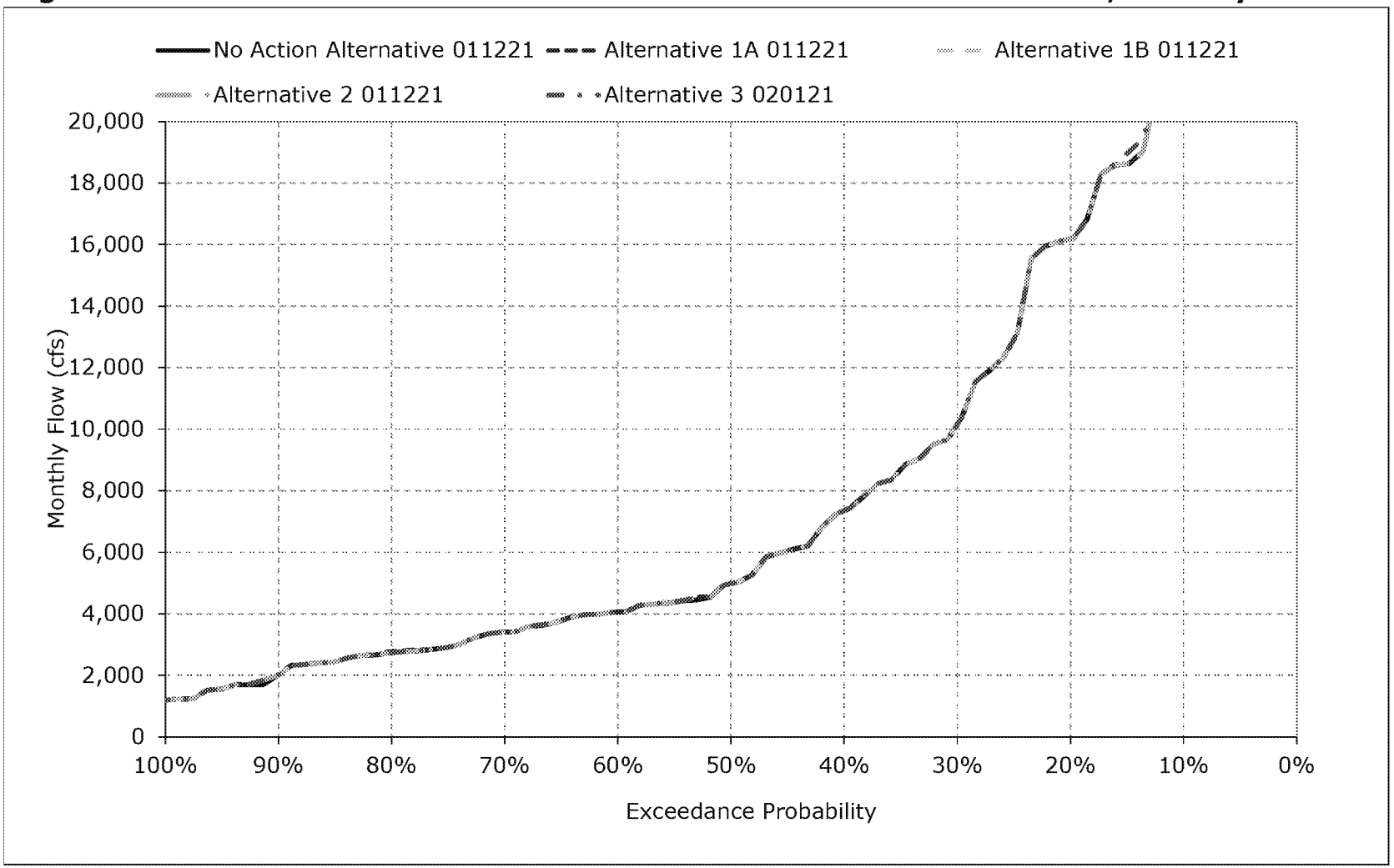


Figure 5B2-23-11. Feather River at Sacramento River Confluence Flow, February

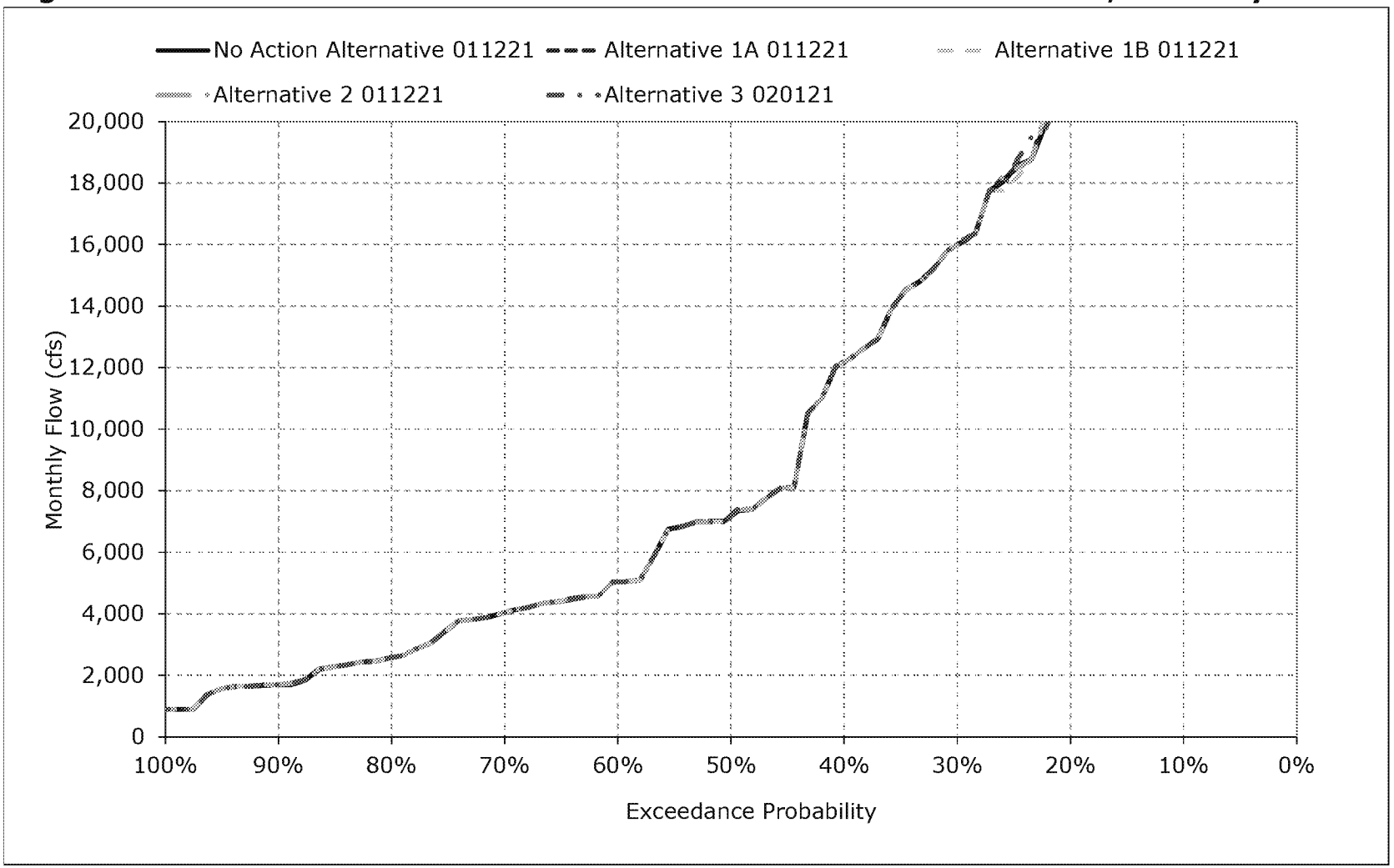


Figure 5B2-23-12. Feather River at Sacramento River Confluence Flow, March

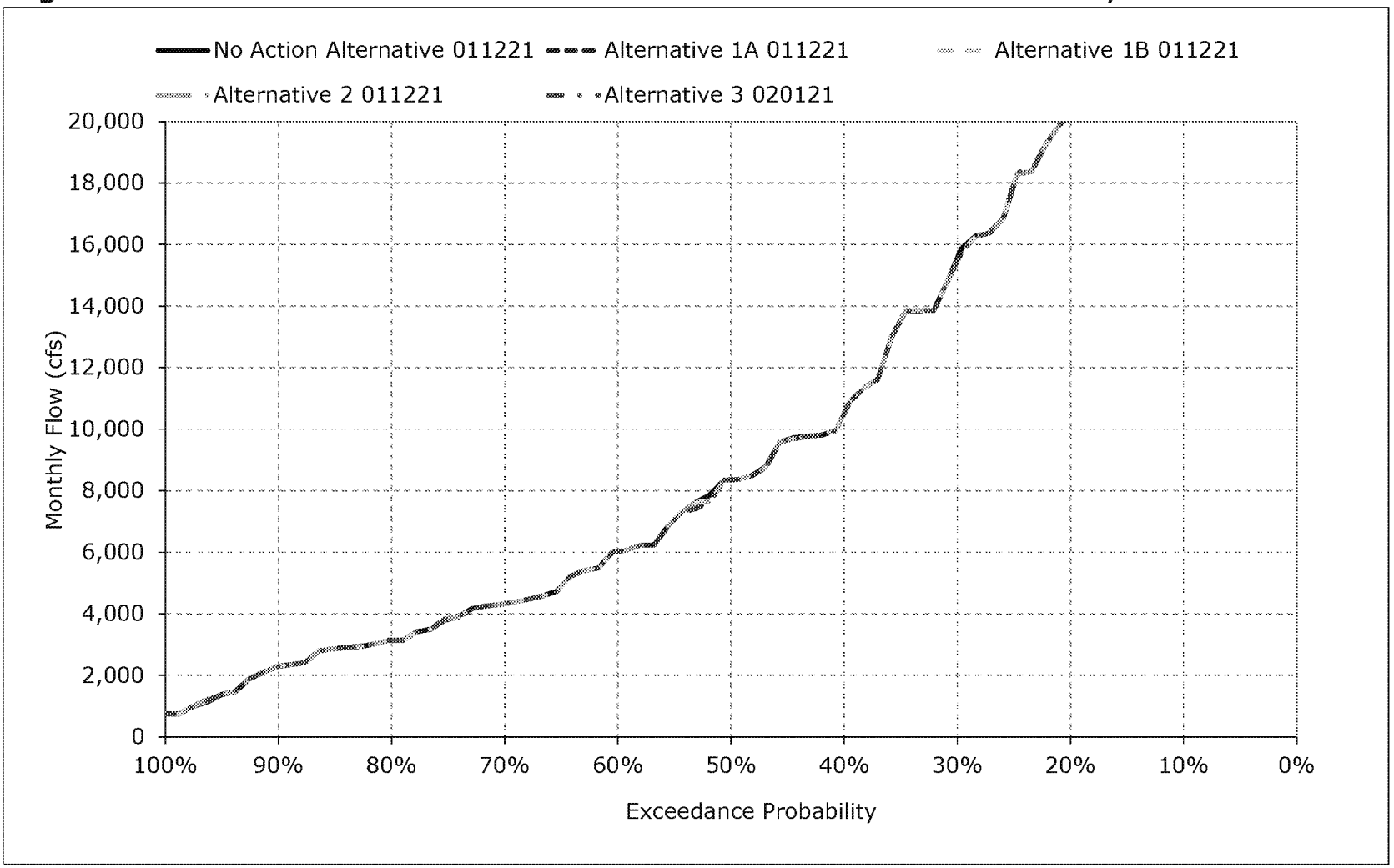


Figure 5B2-23-13. Feather River at Sacramento River Confluence Flow, April

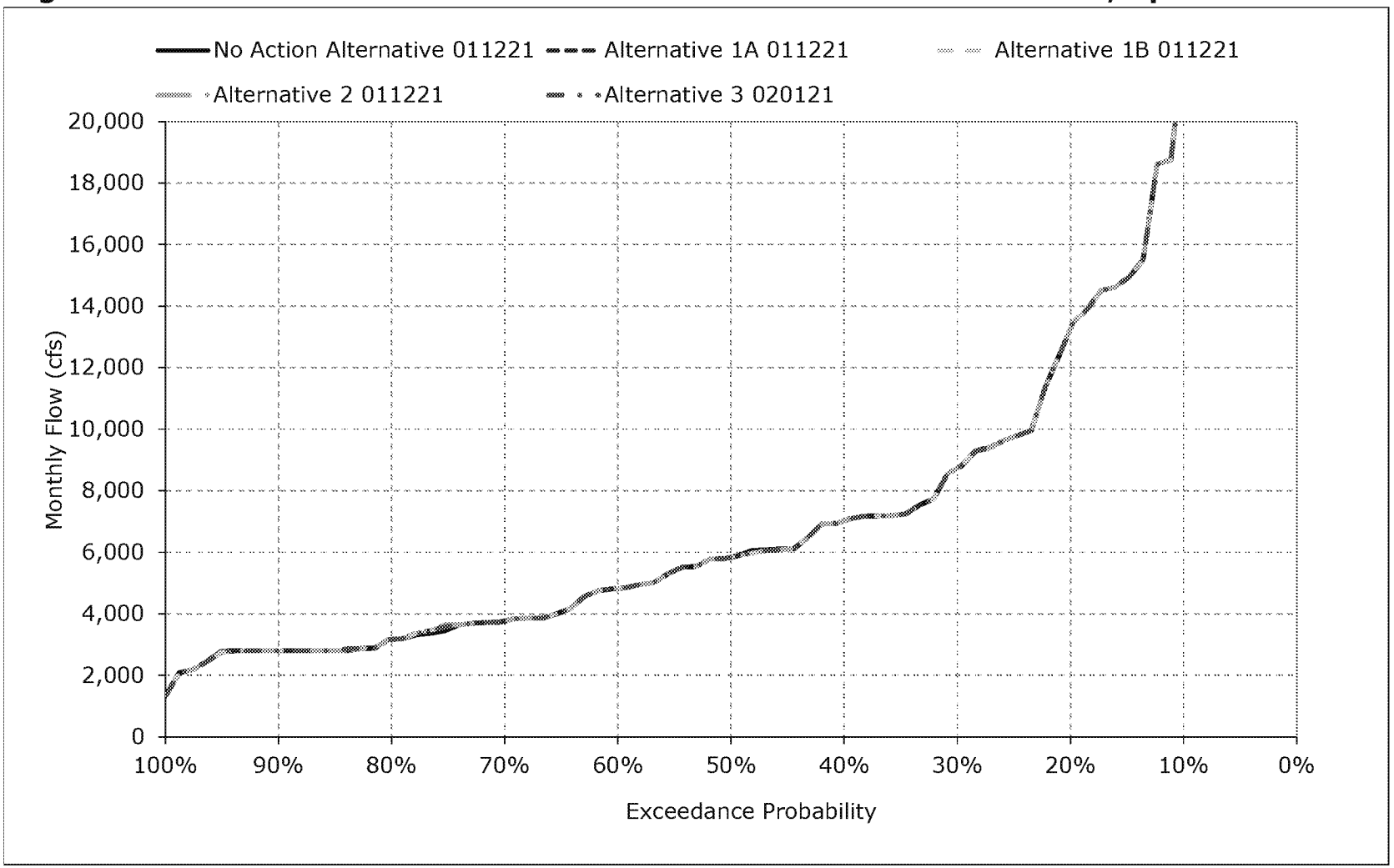


Figure 5B2-23-14. Feather River at Sacramento River Confluence Flow, May

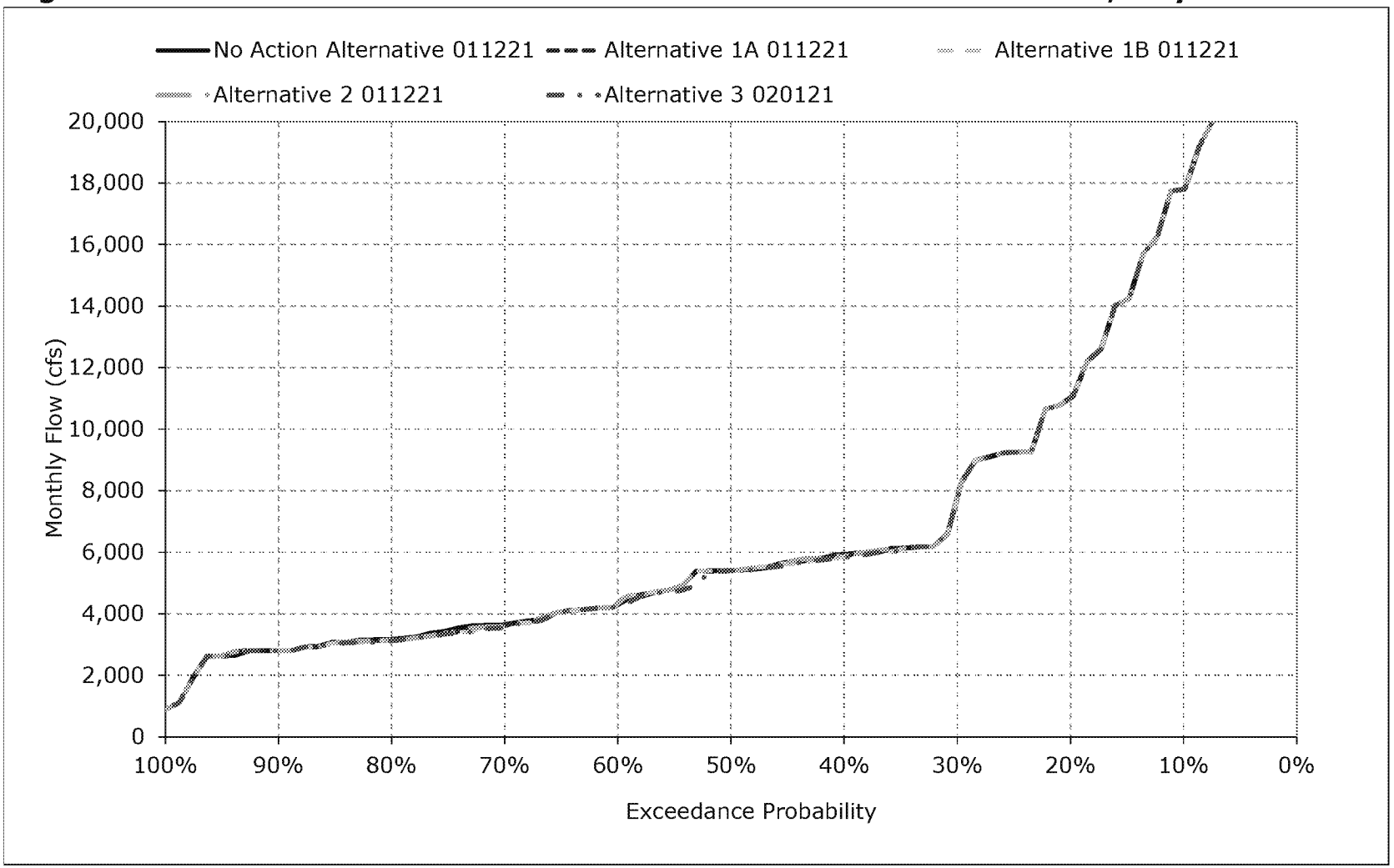


Figure 5B2-23-15. Feather River at Sacramento River Confluence Flow, June

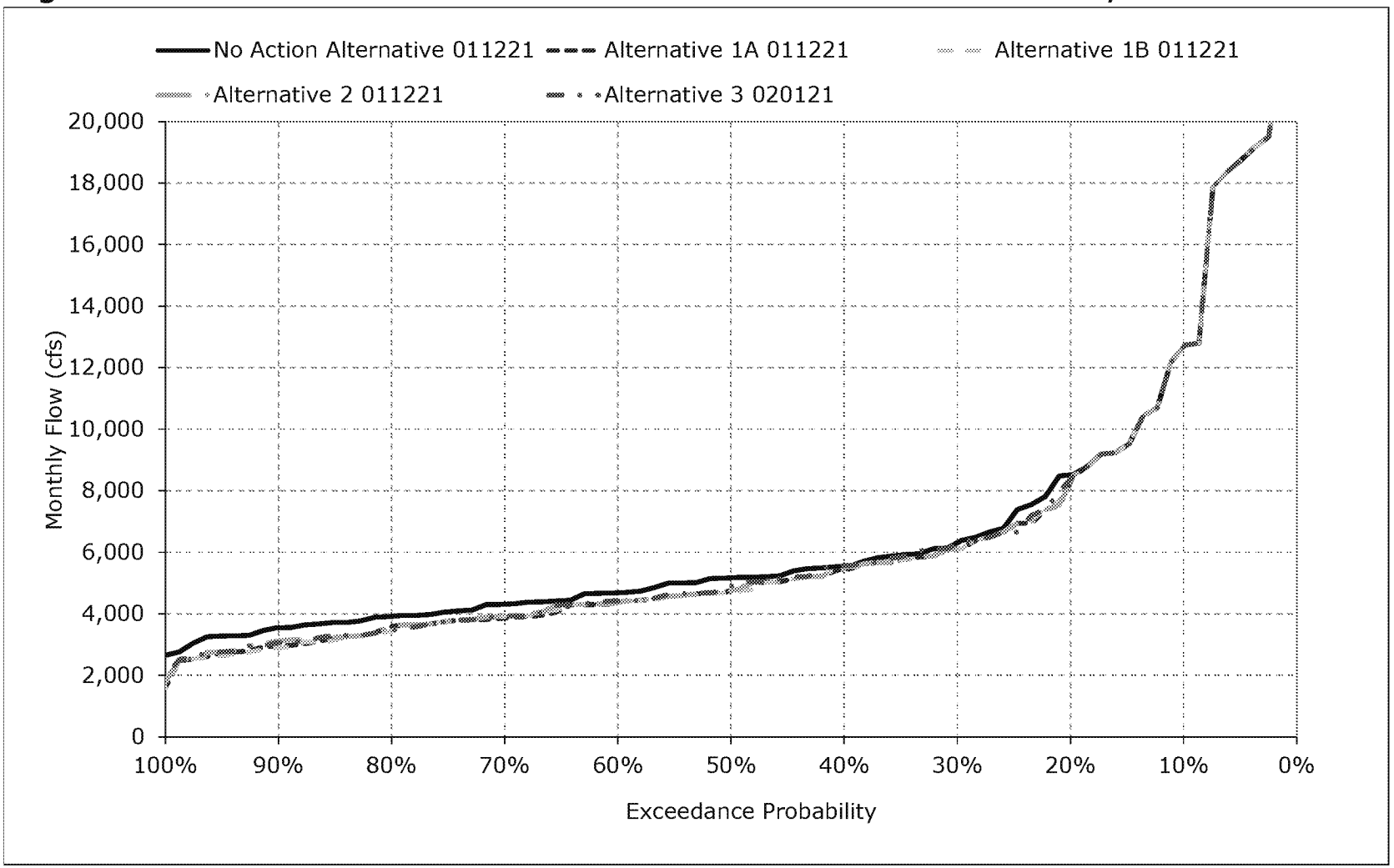


Figure 5B2-23-16. Feather River at Sacramento River Confluence Flow, July

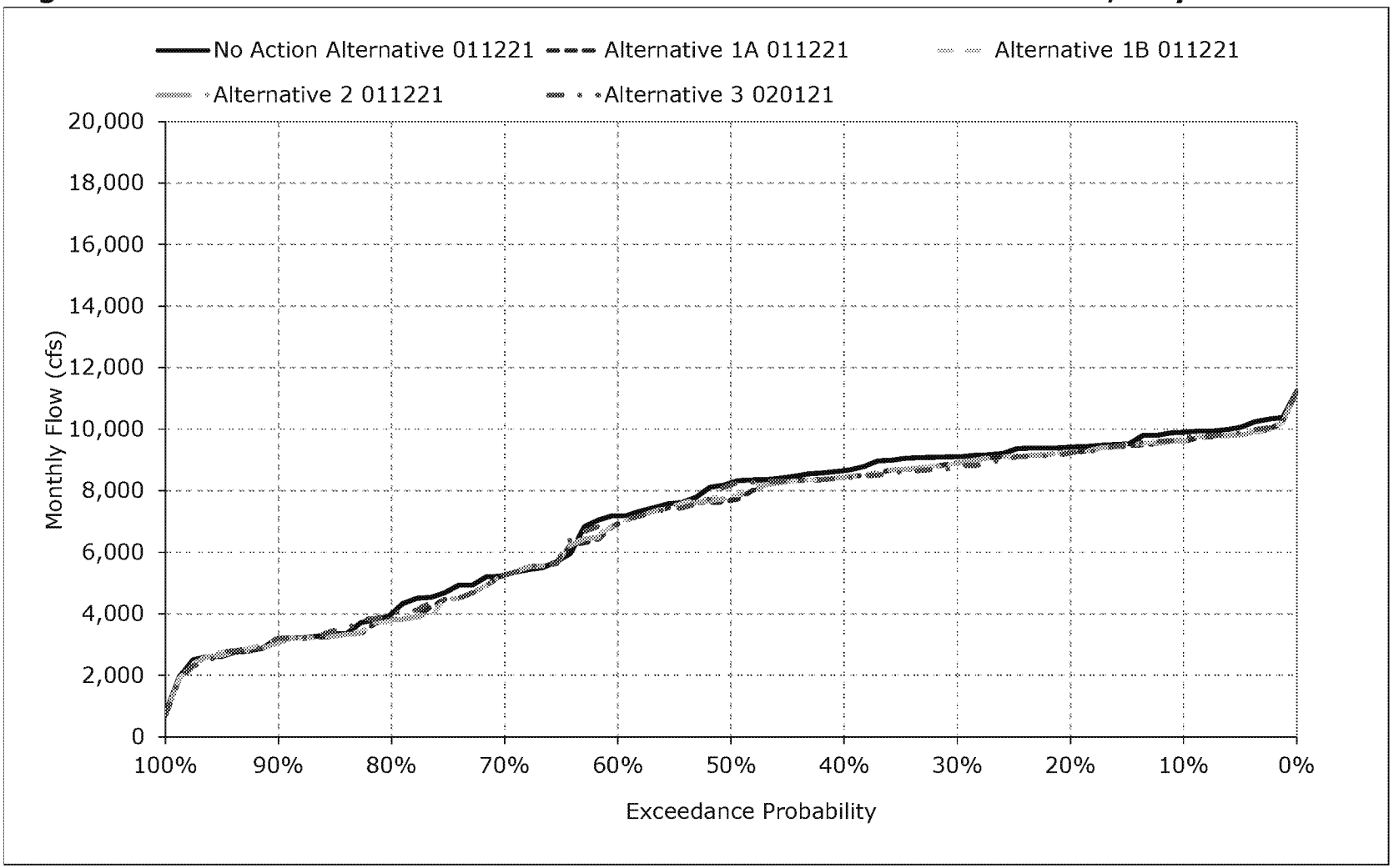


Figure 5B2-23-17. Feather River at Sacramento River Confluence Flow, August

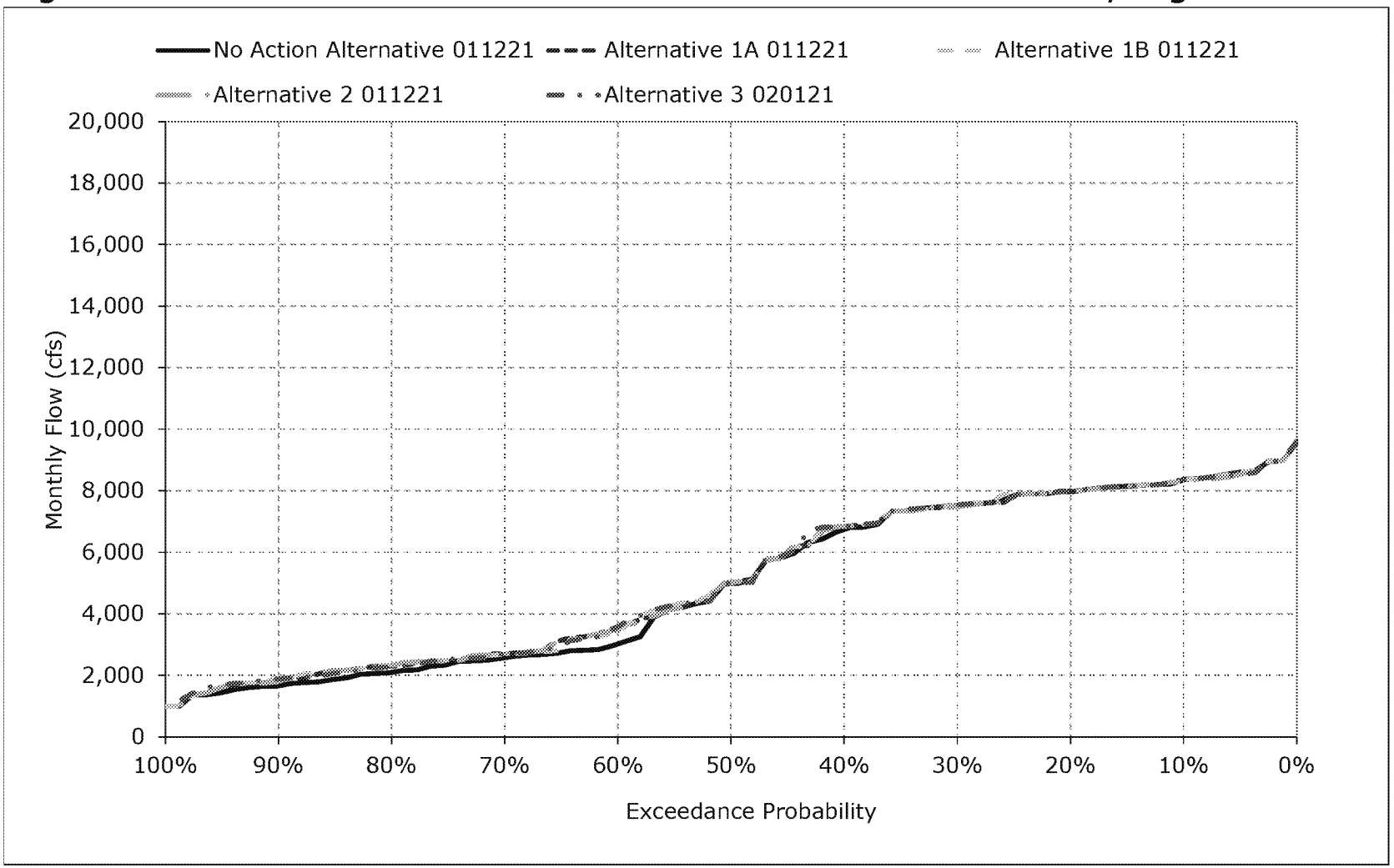


Figure 5B2-23-18. Feather River at Sacramento River Confluence Flow, September

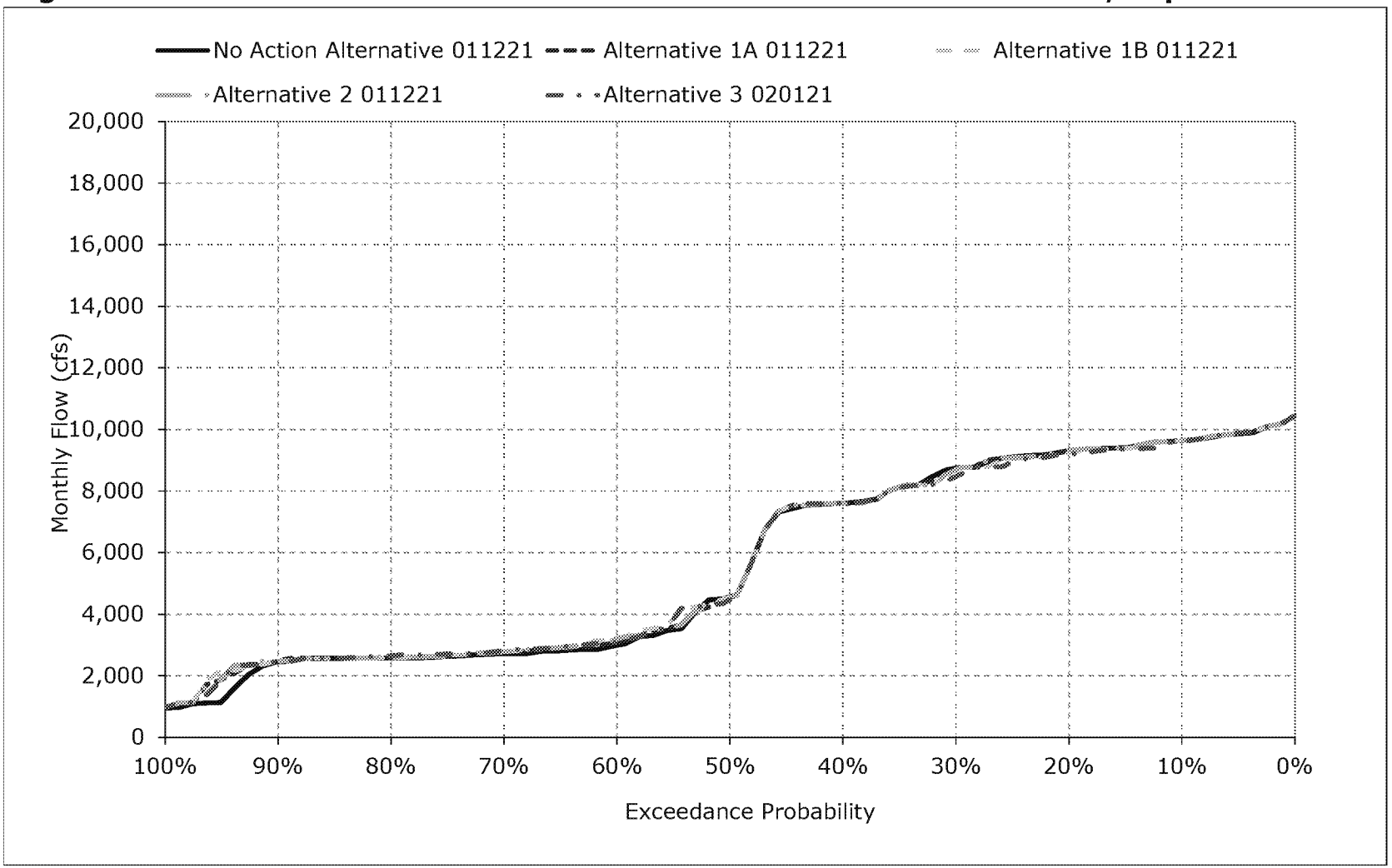


Table 5B2-24-1a. Folsom Lake Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	712	567	567	567	567	756	900	967	967	942	792	752
20%	696	567	567	567	567	756	900	967	967	940	792	744
30%	583	559	567	567	567	756	900	967	967	844	748	630
40%	546	543	564	567	567	756	900	967	967	732	663	585
50%	480	503	540	567	567	746	900	967	895	703	620	530
60%	443	464	516	567	567	697	887	967	841	627	539	477
70%	404	434	473	524	567	639	801	826	759	554	491	432
80%	386	407	425	467	493	585	662	703	642	510	441	407
90%	338	334	356	374	453	496	588	581	522	436	380	341
Long Term												
Full Simulation Period[a]	504	475	499	520	532	671	803	858	818	687	597	538
Water Year Types[b,c]												
Wet (32%)	648	544	541	567	567	751	897	966	951	864	746	691
Above Normal (15%)	482	455	483	555	567	748	896	967	919	725	632	532
Below Normal (17%)	491	485	494	542	553	677	857	925	884	672	602	520
Dry (22%)	447	475	509	476	514	627	759	800	721	593	509	468
Critical (15%)	314	338	415	427	426	482	509	524	496	426	362	334

Table 5B2-24-1b. Folsom Lake Storage, Alternative 1A 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	712	567	567	567	567	756	900	967	967	942	792	752
20%	698	567	567	567	567	756	900	967	967	940	792	745
30%	589	564	567	567	567	756	900	967	967	846	753	642
40%	549	543	564	567	567	756	900	967	967	749	673	588
50%	490	511	540	567	567	746	900	967	900	708	623	533
60%	462	468	512	566	567	687	890	967	834	627	550	493
70%	412	432	479	520	567	639	801	823	755	561	504	433
80%	384	397	408	475	492	594	662	703	654	513	451	413
90%	326	333	364	375	434	483	571	565	529	441	388	349
Long Term												
Full Simulation Period[a]	506	475	496	519	531	670	803	858	819	691	601	541
Water Year Types[b,c]												
Wet (32%)	651	544	542	567	567	751	897	966	953	867	749	694
Above Normal (15%)	484	456	484	555	567	748	896	967	923	729	636	534
Below Normal (17%)	493	485	495	540	552	676	857	925	882	676	606	523
Dry (22%)	458	476	505	477	513	629	762	801	722	599	522	481
Critical (15%)	302	328	399	415	420	472	503	520	495	425	356	327

Table 5B2-24-1c. Folsom Lake Storage, Alternative 1A 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	2	0	0	0	0	0	0	0	0	0	0	1
30%	6	5	0	0	0	0	0	0	0	3	5	11
40%	3	0	0	0	0	0	0	0	0	17	10	4
50%	9	8	-1	0	0	0	0	0	4	5	3	3
60%	19	4	-4	-1	0	-10	3	0	-7	0	11	16
70%	8	-2	5	-4	0	0	0	-3	-4	7	13	2
80%	-2	-9	-16	8	-1	9	0	0	12	3	9	6
90%	-12	-1	8	1	-19	-14	-17	-16	7	5	8	8
Long Term												
Full Simulation Period[a]	2	-1	-3	-2	-1	-1	0	0	1	3	4	3
Water Year Types[b,c]												
Wet (32%)	2	1	1	0	0	0	0	0	2	3	3	3
Above Normal (15%)	2	1	1	0	0	0	0	0	5	5	4	2
Below Normal (17%)	2	1	1	-2	-1	-1	0	0	-1	4	3	3
Dry (22%)	12	1	-4	1	-2	2	3	1	2	6	13	13
Critical (15%)	-12	-9	-16	-12	-6	-10	-5	-3	-1	0	-7	-7

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-24-2a. Folsom Lake Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	712	567	567	567	567	756	900	967	967	942	792	752
20%	696	567	567	567	567	756	900	967	967	940	792	744
30%	583	559	567	567	567	756	900	967	967	844	748	630
40%	546	543	564	567	567	756	900	967	967	732	663	585
50%	480	503	540	567	567	746	900	967	895	703	620	530
60%	443	464	516	567	567	697	887	967	841	627	539	477
70%	404	434	473	524	567	639	801	826	759	554	491	432
80%	386	407	425	467	493	585	662	703	642	510	441	407
90%	338	334	356	374	453	496	588	581	522	436	380	341
Long Term												
Full Simulation Period[a]	504	475	499	520	532	671	803	858	818	687	597	538
Water Year Types[b,c]												
Wet (32%)	648	544	541	567	567	751	897	966	951	864	746	691
Above Normal (15%)	482	455	483	555	567	748	896	967	919	725	632	532
Below Normal (17%)	491	485	494	542	553	677	857	925	884	672	602	520
Dry (22%)	447	475	509	476	514	627	759	800	721	593	509	468
Critical (15%)	314	338	415	427	426	482	509	524	496	426	362	334

Table 5B2-24-2b. Folsom Lake Storage, Alternative 1B 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	712	567	567	567	567	756	900	967	967	942	792	752
20%	698	567	567	567	567	756	900	967	967	933	792	747
30%	595	564	567	567	567	756	900	967	967	847	758	642
40%	550	547	565	567	567	756	900	967	967	742	676	589
50%	501	511	541	567	567	746	900	967	902	716	637	545
60%	469	472	515	566	567	697	891	967	844	632	555	495
70%	418	434	486	527	567	639	806	829	772	575	512	443
80%	380	400	422	482	492	596	665	706	654	516	453	421
90%	330	349	375	377	441	484	568	569	539	436	377	350
Long Term												
Full Simulation Period[a]	511	479	500	521	532	671	805	860	821	692	605	547
Water Year Types[b,c]												
Wet (32%)	651	545	542	567	567	751	897	966	953	867	749	694
Above Normal (15%)	502	464	491	556	567	748	896	967	925	730	642	553
Below Normal (17%)	499	488	496	542	553	677	857	925	885	678	609	527
Dry (22%)	455	479	508	481	515	632	767	808	728	602	525	483
Critical (15%)	316	339	411	424	423	476	509	525	498	429	369	340

Table 5B2-24-2c. Folsom Lake Storage, Alternative 1B 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	2	0	0	0	0	0	0	0	0	-6	0	3
30%	12	5	0	0	0	0	0	0	0	3	10	12
40%	4	4	1	0	0	0	0	0	0	10	13	5
50%	21	8	1	0	0	0	0	0	6	13	17	15
60%	26	8	-2	-1	0	0	4	0	3	4	16	18
70%	14	0	13	3	0	0	4	3	13	21	21	12
80%	-6	-7	-3	15	-1	11	3	3	12	6	12	14
90%	-8	15	19	3	-12	-12	-20	-13	17	1	-3	9
Long Term												
Full Simulation Period[a]	7	4	1	1	0	0	2	2	4	5	8	9
Water Year Types[b,c]												
Wet (32%)	2	2	1	0	0	0	0	0	2	3	3	3
Above Normal (15%)	20	9	8	1	0	0	0	0	6	5	10	21
Below Normal (17%)	8	4	2	0	0	0	0	0	1	6	6	7
Dry (22%)	8	4	-1	5	1	6	8	9	8	9	15	15
Critical (15%)	1	2	-4	-3	-3	-5	0	1	2	4	7	7

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-24-3a. Folsom Lake Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	712	567	567	567	567	756	900	967	967	942	792	752
20%	696	567	567	567	567	756	900	967	967	940	792	744
30%	583	559	567	567	567	756	900	967	967	844	748	630
40%	546	543	564	567	567	756	900	967	967	732	663	585
50%	480	503	540	567	567	746	900	967	895	703	620	530
60%	443	464	516	567	567	697	887	967	841	627	539	477
70%	404	434	473	524	567	639	801	826	759	554	491	432
80%	386	407	425	467	493	585	662	703	642	510	441	407
90%	338	334	356	374	453	496	588	581	522	436	380	341
Long Term												
Full Simulation Period[a]	504	475	499	520	532	671	803	858	818	687	597	538
Water Year Types[b,c]												
Wet (32%)	648	544	541	567	567	751	897	966	951	864	746	691
Above Normal (15%)	482	455	483	555	567	748	896	967	919	725	632	532
Below Normal (17%)	491	485	494	542	553	677	857	925	884	672	602	520
Dry (22%)	447	475	509	476	514	627	759	800	721	593	509	468
Critical (15%)	314	338	415	427	426	482	509	524	496	426	362	334

Table 5B2-24-3b. Folsom Lake Storage, Alternative 2 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	712	567	567	567	567	756	900	967	967	942	792	752
20%	698	567	567	567	567	756	900	967	967	940	792	745
30%	590	563	567	567	567	756	900	967	967	846	750	642
40%	549	543	564	567	567	756	900	967	967	750	675	588
50%	489	511	540	567	567	746	900	967	900	708	623	533
60%	462	469	514	566	567	697	890	967	834	627	550	493
70%	412	432	482	524	567	639	801	823	755	561	504	433
80%	385	401	420	482	493	595	662	703	654	513	451	413
90%	330	342	372	375	434	483	571	565	529	440	388	349
Long Term												
Full Simulation Period[a]	508	476	498	520	531	670	803	858	819	691	602	543
Water Year Types[b,c]												
Wet (32%)	651	544	542	567	567	751	897	966	953	867	749	694
Above Normal (15%)	484	456	484	555	567	748	896	967	923	729	636	535
Below Normal (17%)	494	487	496	541	552	676	857	925	882	676	605	524
Dry (22%)	458	477	506	478	513	629	762	801	722	599	523	481
Critical (15%)	313	337	409	423	421	475	507	522	496	426	366	337

Table 5B2-24-3c. Folsom Lake Storage, Alternative 2 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	2	0	0	0	0	0	0	0	0	0	0	1
30%	7	4	0	0	0	0	0	0	0	3	2	11
40%	3	0	0	0	0	0	0	0	0	18	11	4
50%	9	8	-1	0	0	0	0	0	4	5	3	3
60%	19	5	-3	-1	0	0	4	0	-7	-1	11	16
70%	8	-2	9	0	0	0	0	-3	-4	7	13	2
80%	-1	-6	-5	14	-1	10	0	0	12	3	9	6
90%	-9	9	17	1	-19	-14	-17	-16	7	5	7	8
Long Term												
Full Simulation Period[a]	4	1	-1	0	-1	-1	0	0	1	4	5	5
Water Year Types[b,c]												
Wet (32%)	2	1	1	0	0	0	0	0	2	3	3	3
Above Normal (15%)	2	1	1	0	0	0	0	0	5	4	3	3
Below Normal (17%)	3	2	3	-1	0	0	0	0	-1	4	3	4
Dry (22%)	12	1	-3	3	-1	2	3	2	2	6	13	13
Critical (15%)	-2	-1	-5	-4	-5	-7	-2	-1	0	0	4	4

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-24-4a. Folsom Lake Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	712	567	567	567	567	756	900	967	967	942	792	752
20%	696	567	567	567	567	756	900	967	967	940	792	744
30%	583	559	567	567	567	756	900	967	967	844	748	630
40%	546	543	564	567	567	756	900	967	967	732	663	585
50%	480	503	540	567	567	746	900	967	895	703	620	530
60%	443	464	516	567	567	697	887	967	841	627	539	477
70%	404	434	473	524	567	639	801	826	759	554	491	432
80%	386	407	425	467	493	585	662	703	642	510	441	407
90%	338	334	356	374	453	496	588	581	522	436	380	341
Long Term												
Full Simulation Period[a]	504	475	499	520	532	671	803	858	818	687	597	538
Water Year Types[b,c]												
Wet (32%)	648	544	541	567	567	751	897	966	951	864	746	691
Above Normal (15%)	482	455	483	555	567	748	896	967	919	725	632	532
Below Normal (17%)	491	485	494	542	553	677	857	925	884	672	602	520
Dry (22%)	447	475	509	476	514	627	759	800	721	593	509	468
Critical (15%)	314	338	415	427	426	482	509	524	496	426	362	334

Table 5B2-24-4b. Folsom Lake Storage, Alternative 3 020121, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	712	567	567	567	567	756	900	967	967	942	792	752
20%	699	567	567	567	567	756	900	967	967	933	792	747
30%	611	566	567	567	567	756	900	967	967	851	776	651
40%	557	552	567	567	567	756	900	967	967	771	694	599
50%	521	534	553	567	567	751	900	967	910	735	653	579
60%	481	509	533	567	567	697	891	967	853	682	583	518
70%	444	449	502	528	567	639	810	831	773	602	524	467
80%	400	420	424	477	525	607	685	729	678	537	475	436
90%	349	346	382	404	450	507	598	590	553	462	404	390
Long Term												
Full Simulation Period[a]	527	491	508	525	538	676	807	864	828	711	619	562
Water Year Types[b,c]												
Wet (32%)	651	545	542	567	567	751	897	966	953	867	749	694
Above Normal (15%)	540	488	511	556	567	748	896	967	928	771	674	595
Below Normal (17%)	529	514	513	541	552	676	857	925	889	716	645	559
Dry (22%)	477	502	521	500	534	647	777	822	751	630	549	507
Critical (15%)	315	332	408	423	432	486	511	530	502	430	357	328

Table 5B2-24-4c. Folsom Lake Storage, Alternative 3 020121 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	3	0	0	0	0	0	0	0	0	-6	0	3
30%	29	7	0	0	0	0	0	0	0	8	28	21
40%	11	9	3	0	0	0	0	0	0	39	31	15
50%	41	31	13	0	0	5	0	0	15	31	33	49
60%	38	45	16	0	0	0	4	0	12	55	44	41
70%	40	15	28	4	0	0	8	6	14	48	33	36
80%	14	14	-1	9	31	22	23	26	37	27	34	29
90%	11	12	26	30	-3	10	10	8	30	26	24	48
Long Term												
Full Simulation Period[a]	23	15	9	5	5	5	4	6	10	24	22	24
Water Year Types[b,c]												
Wet (32%)	3	1	1	0	0	0	0	0	2	3	3	3
Above Normal (15%)	58	33	28	1	0	0	0	0	9	46	41	63
Below Normal (17%)	39	30	19	0	-1	-1	0	0	5	44	42	39
Dry (22%)	30	27	12	25	20	20	18	23	30	37	39	39
Critical (15%)	1	-6	-6	-4	6	4	2	6	5	4	-5	-6

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Figure 5B2-24-1. Folsom Lake Storage, October

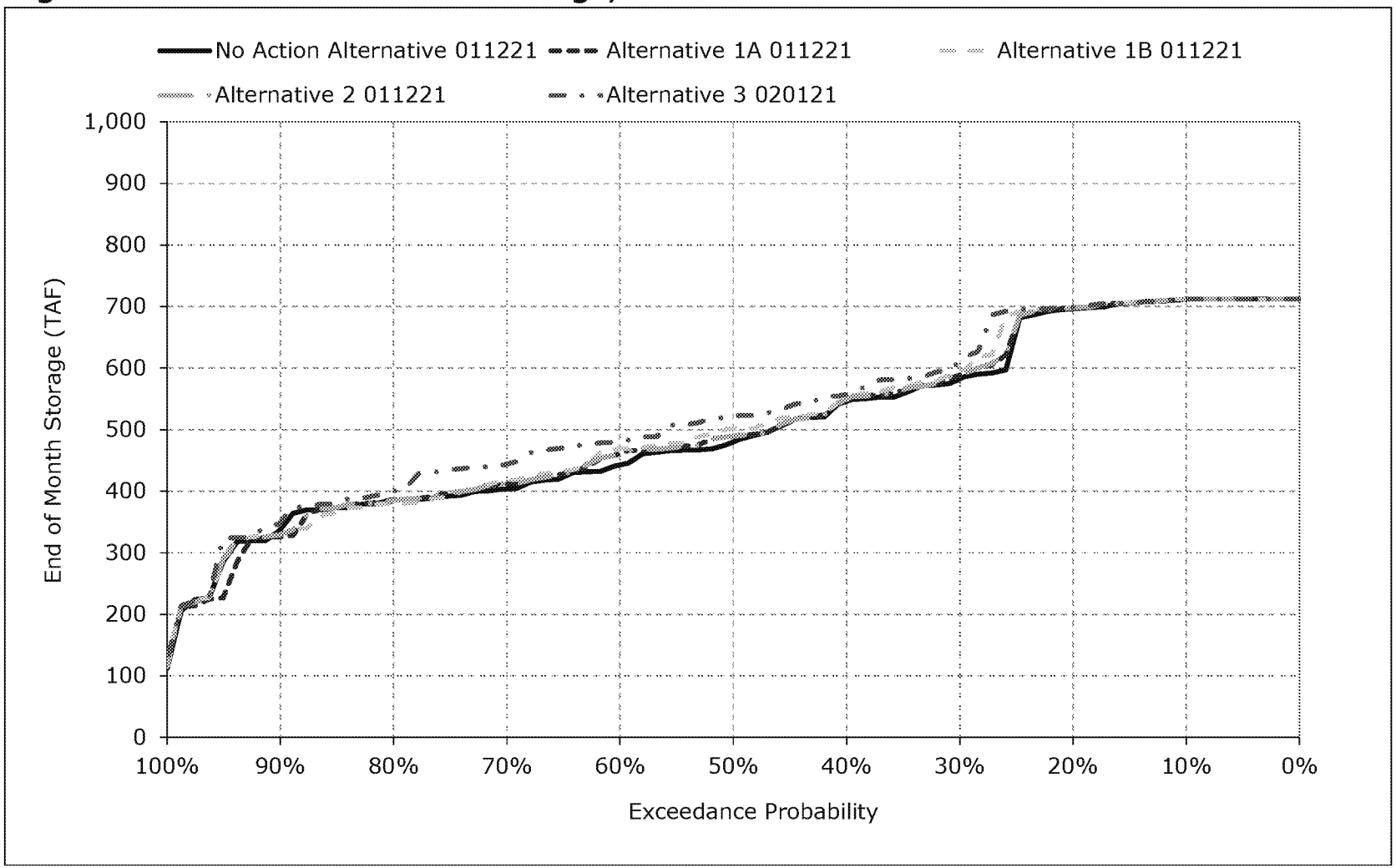


Figure 5B2-24-2. Folsom Lake Storage, November

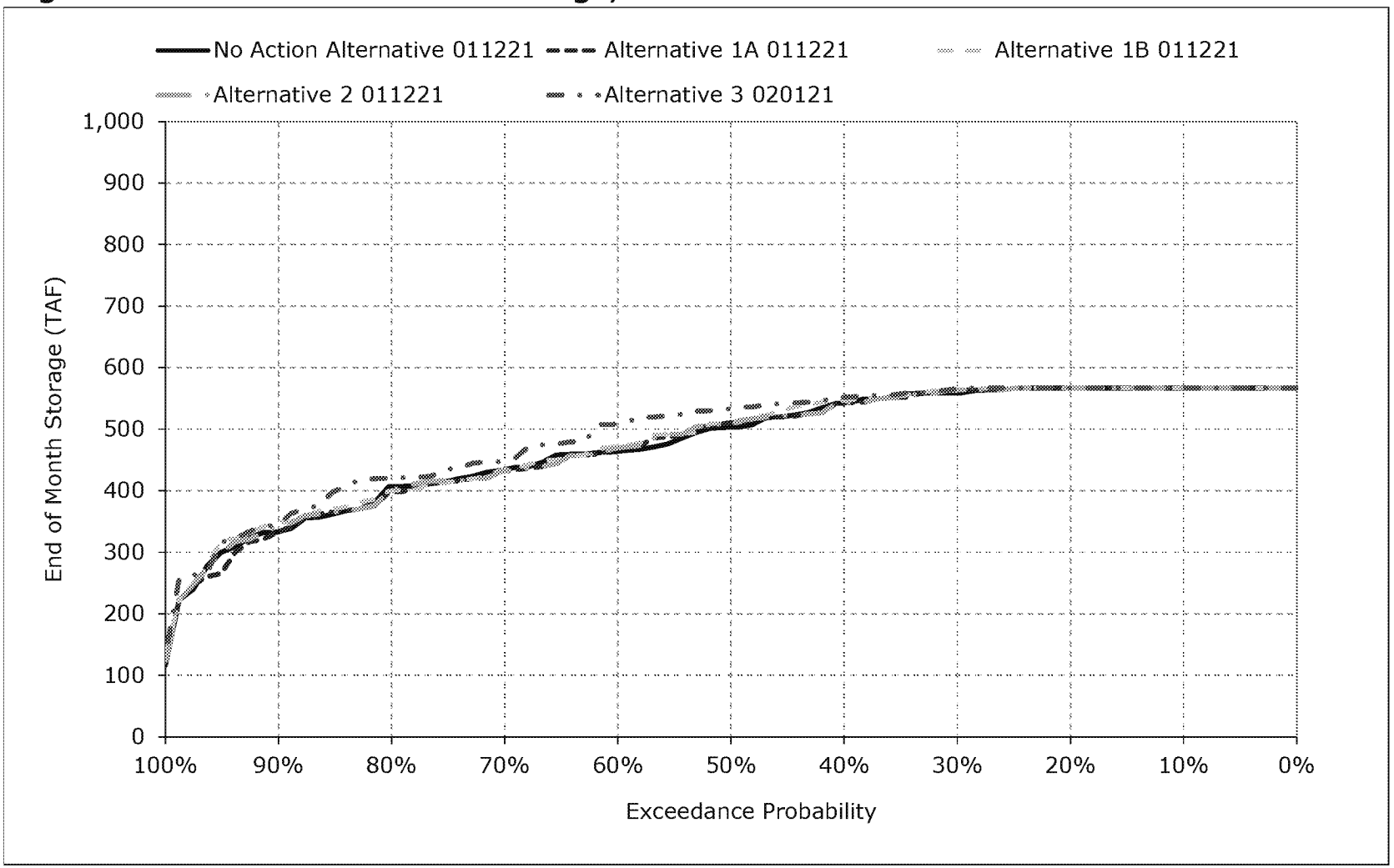


Figure 5B2-24-3. Folsom Lake Storage, December

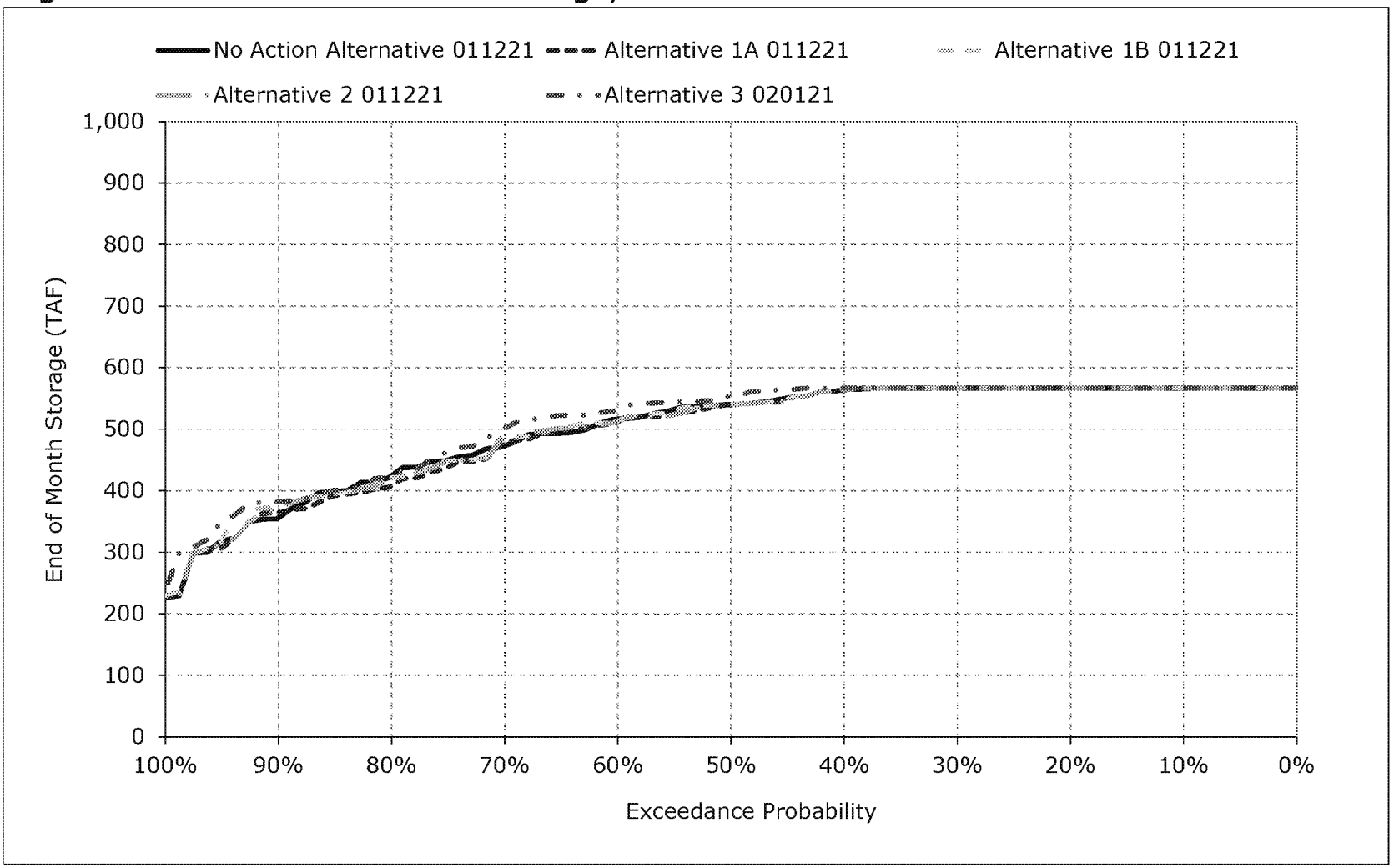


Figure 5B2-24-4. Folsom Lake Storage, January

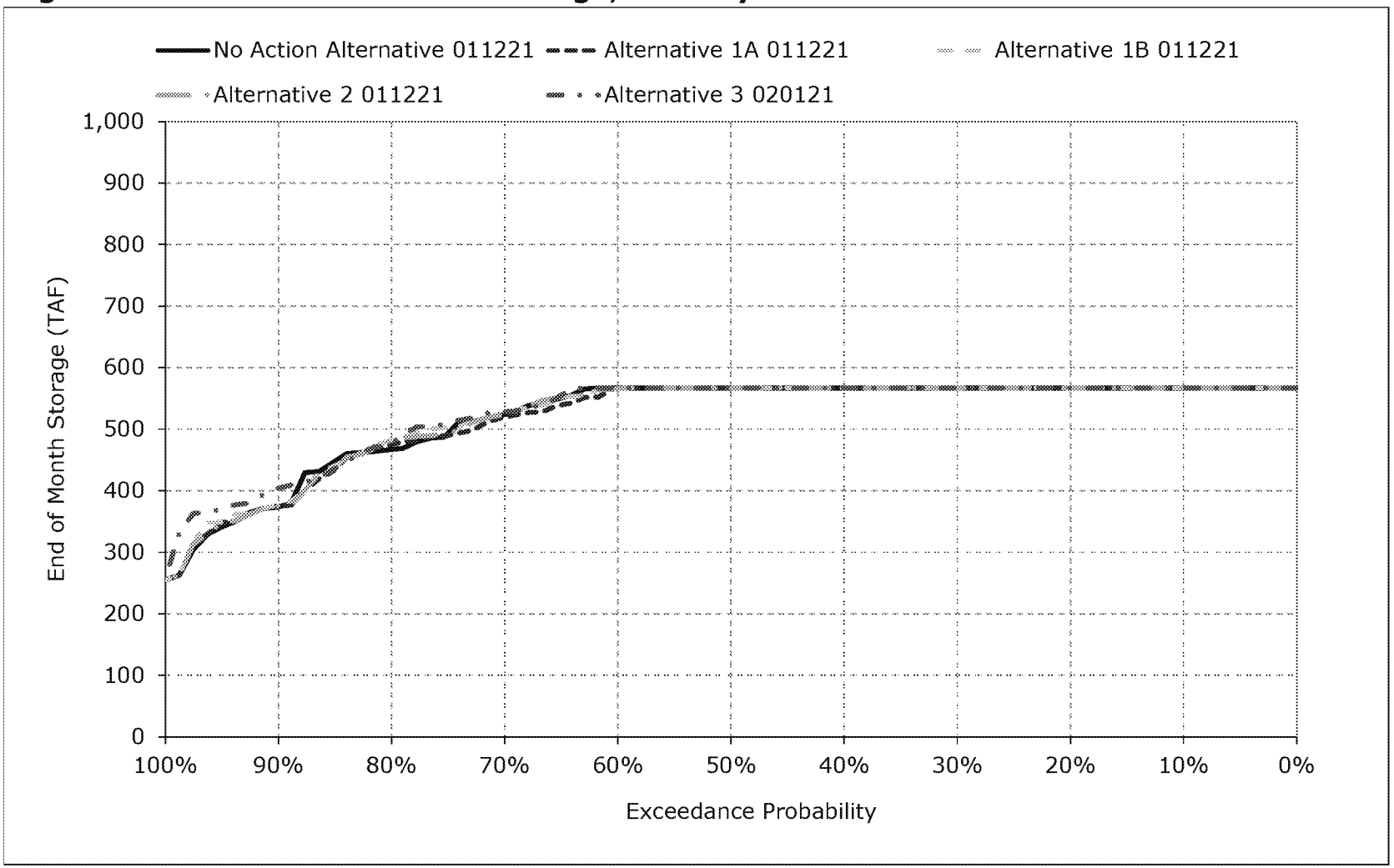


Figure 5B2-24-5. Folsom Lake Storage, February

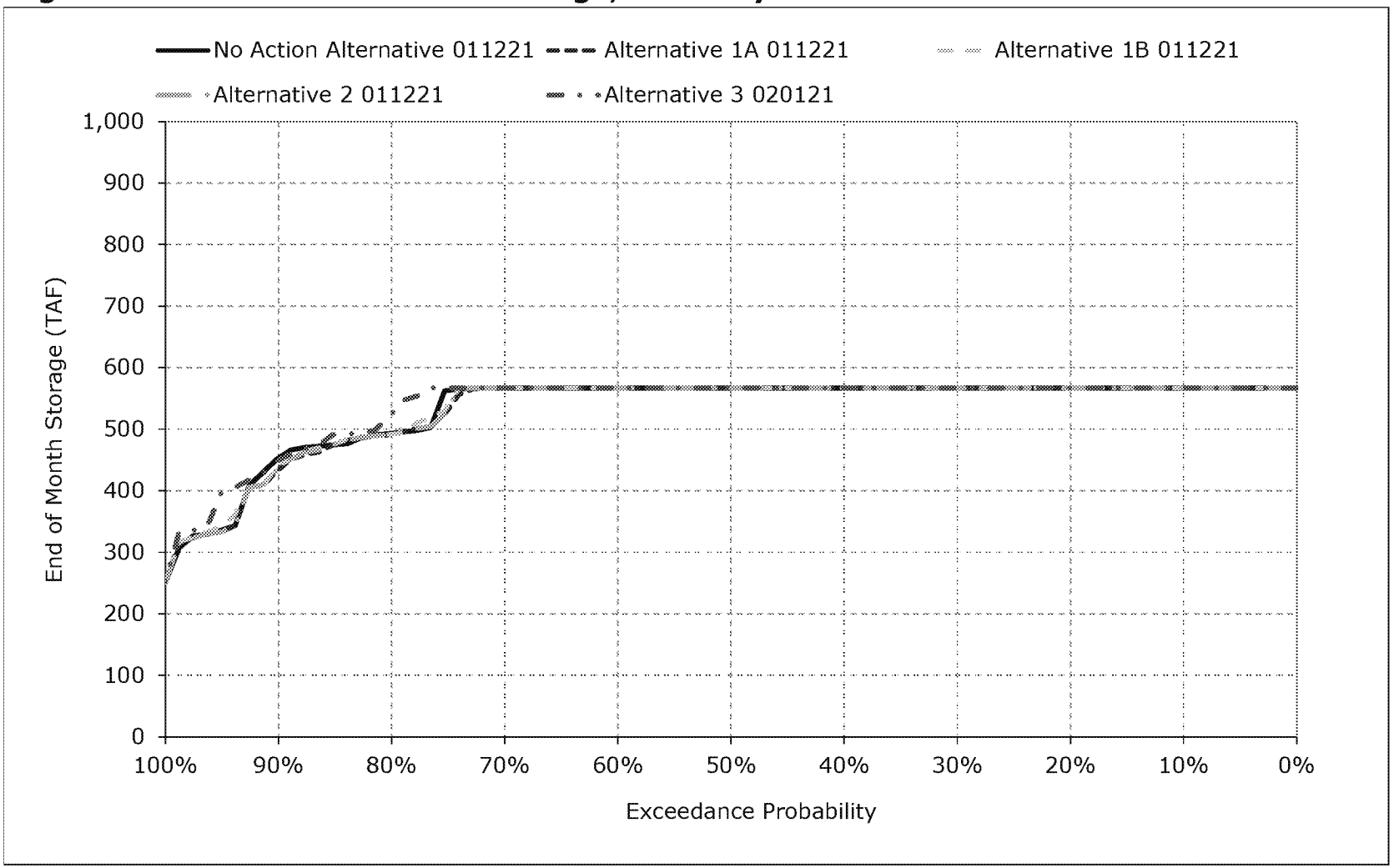


Figure 5B2-24-6. Folsom Lake Storage, March

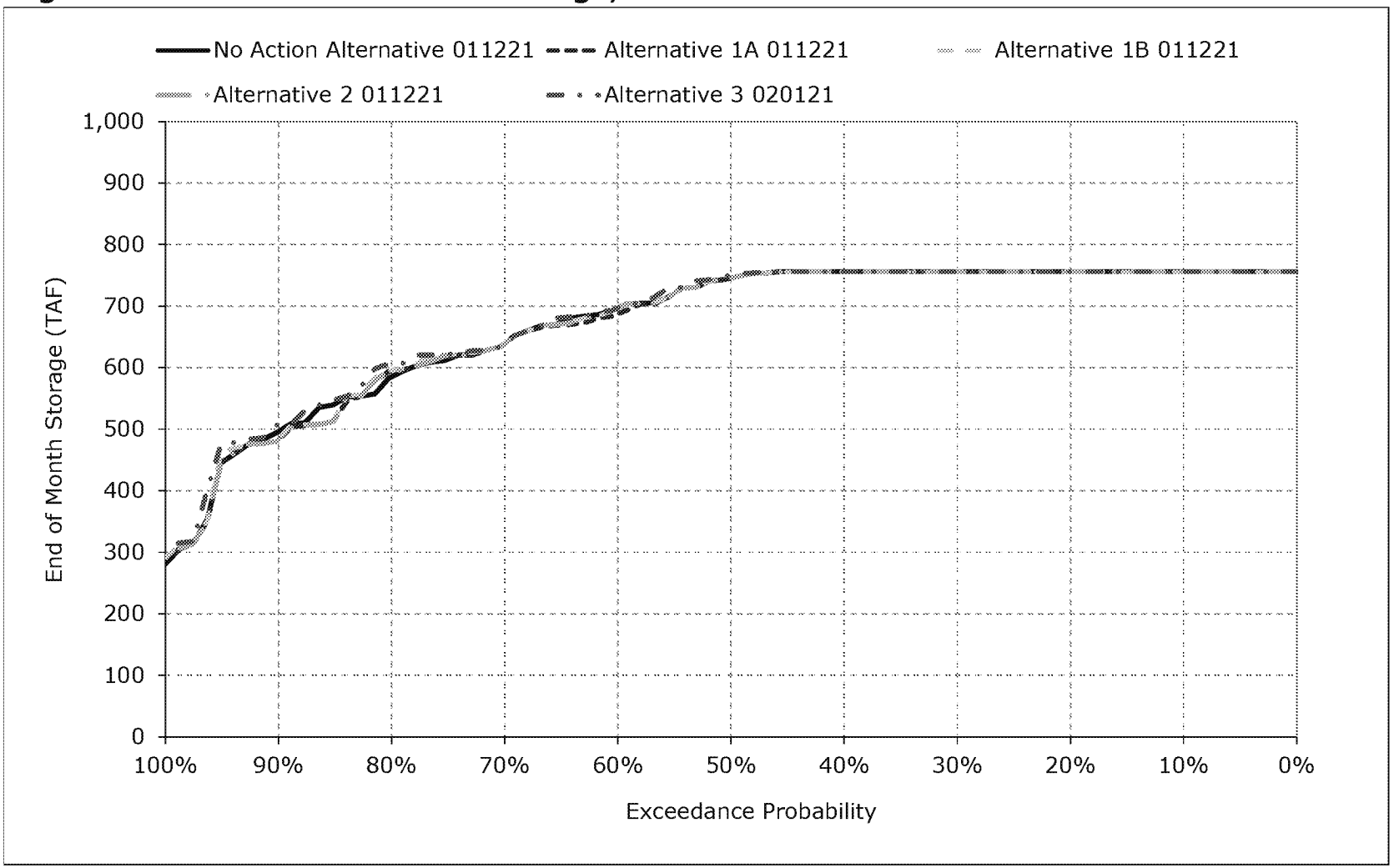


Figure 5B2-24-7. Folsom Lake Storage, April

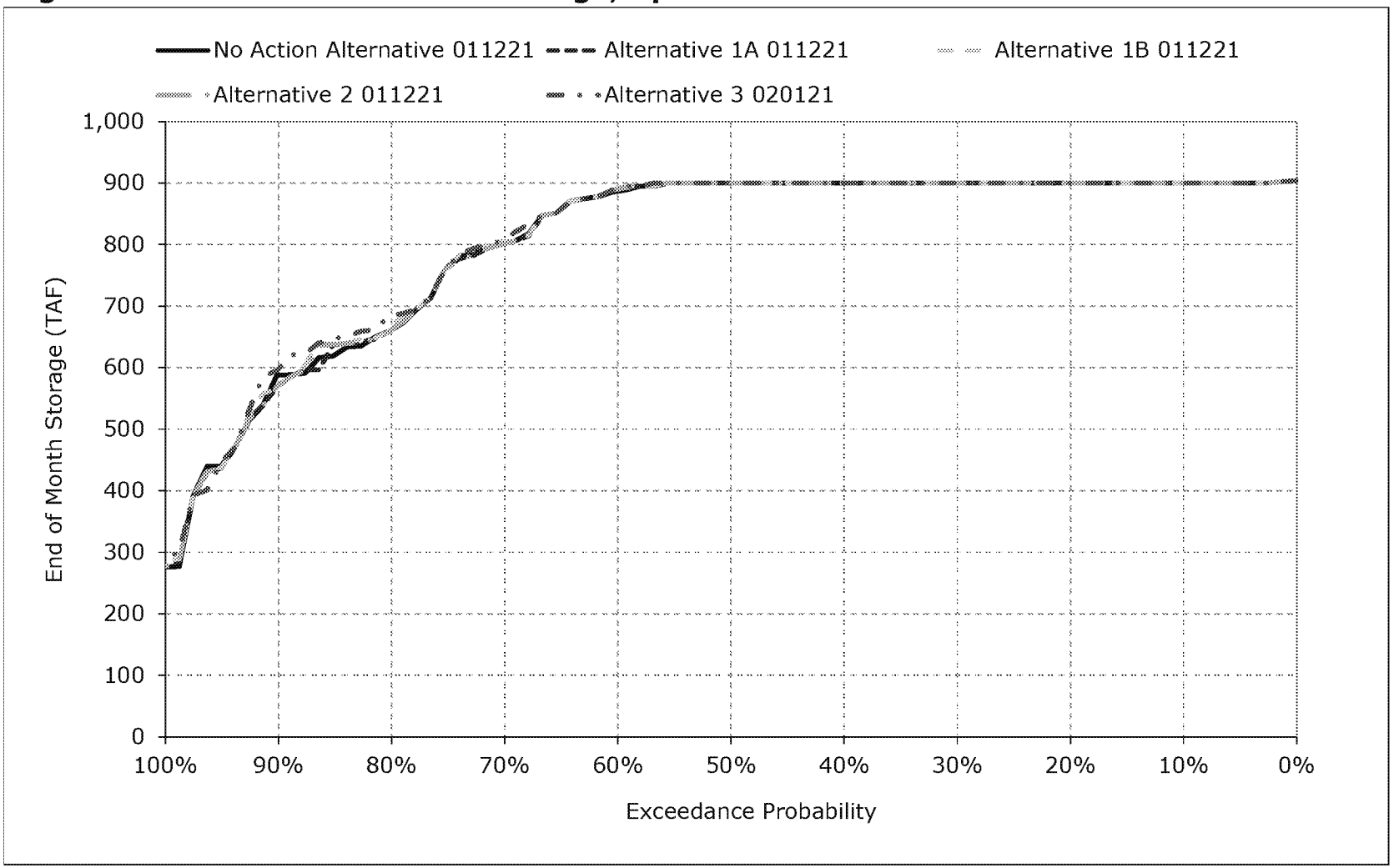


Figure 5B2-24-8. Folsom Lake Storage, May

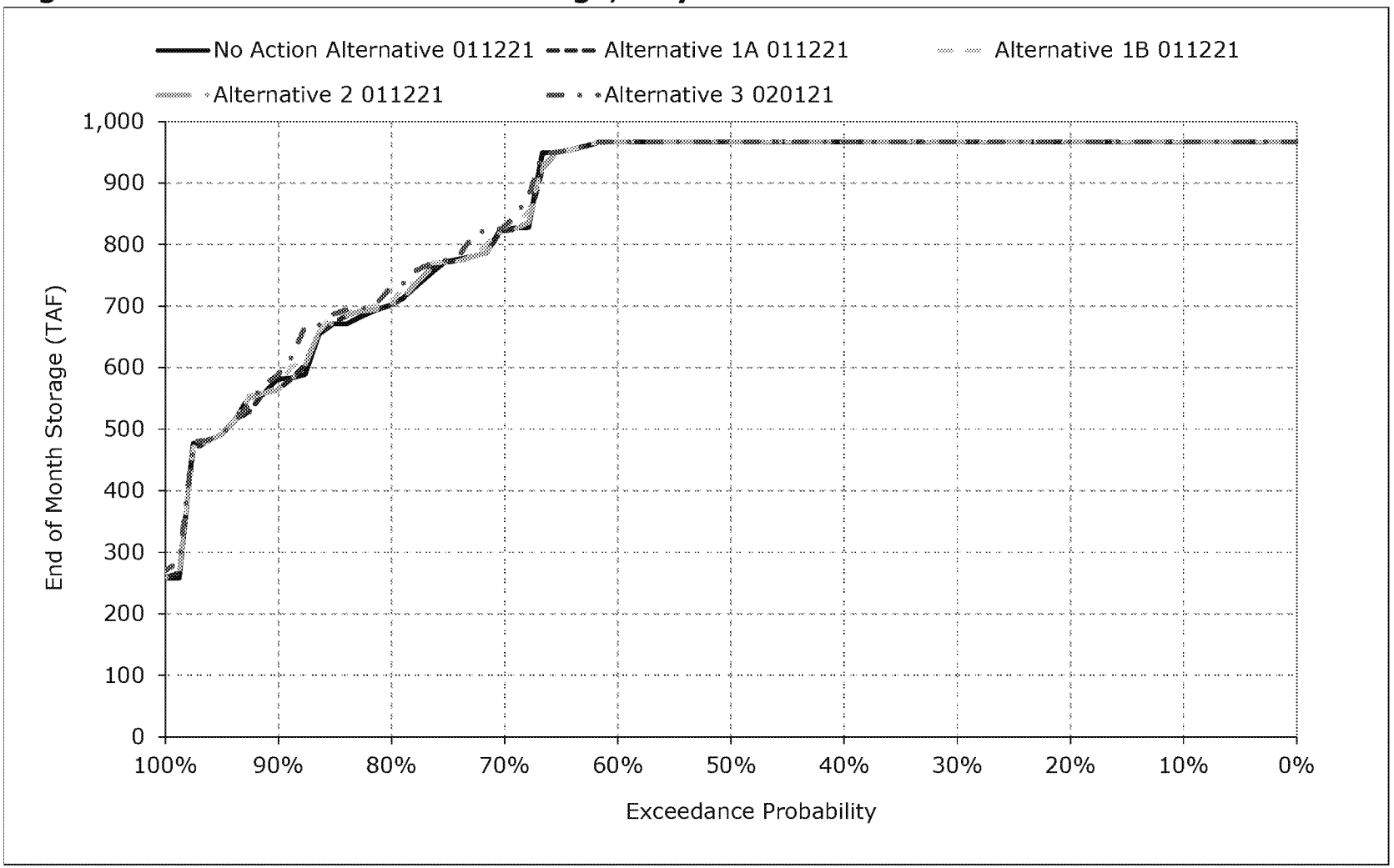


Figure 5B2-24-9. Folsom Lake Storage, June

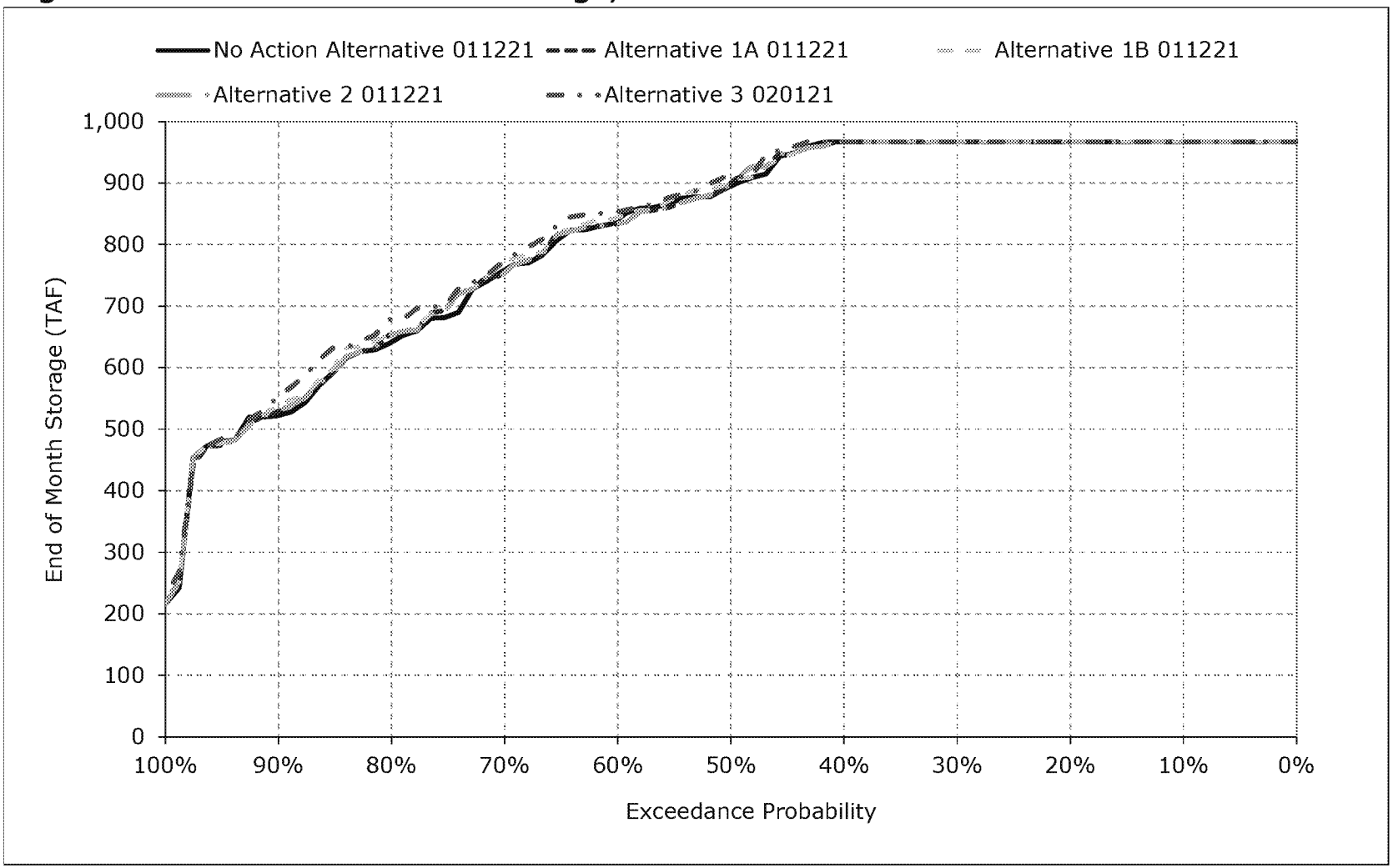


Figure 5B2-24-10. Folsom Lake Storage, July

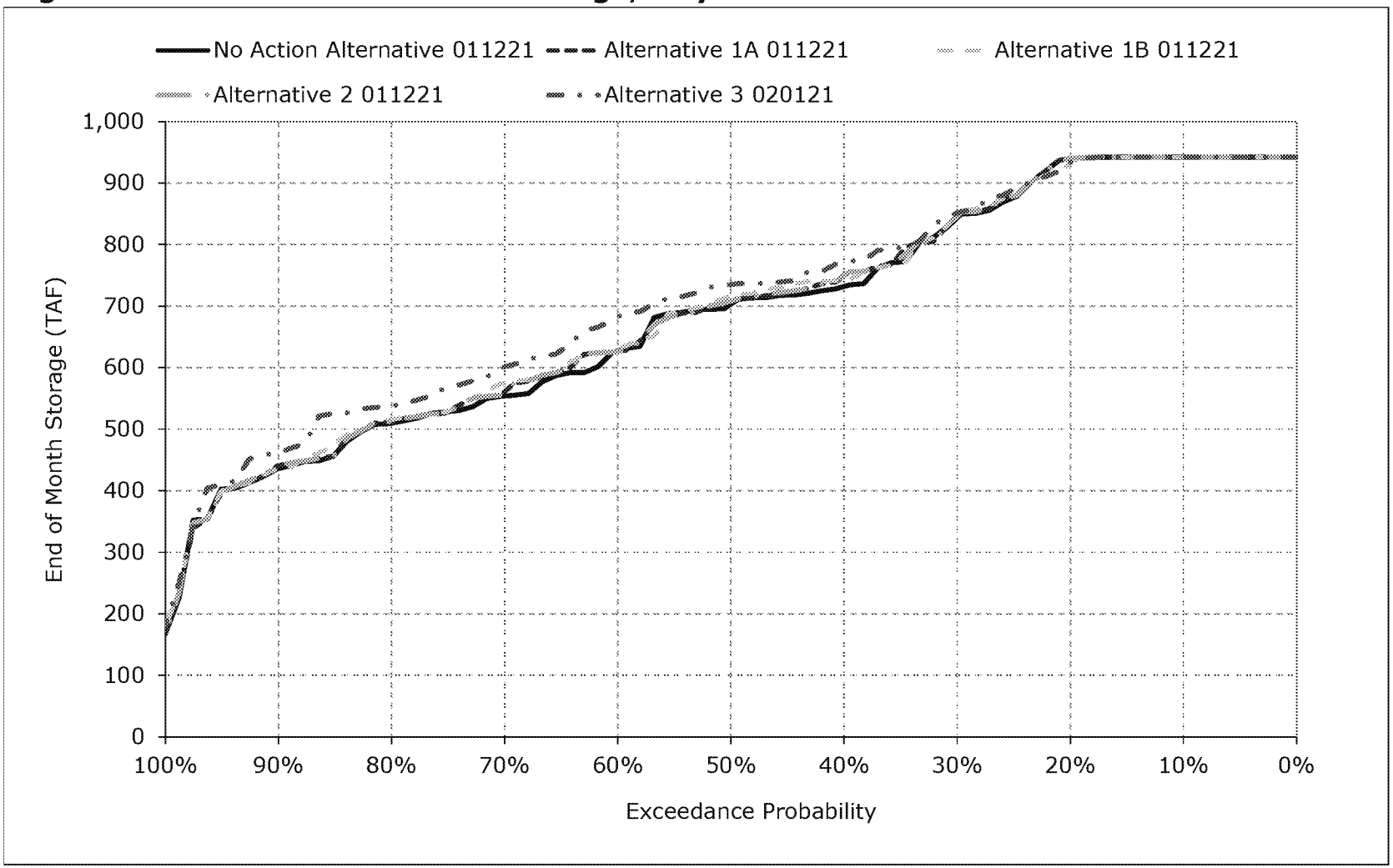


Figure 5B2-24-11. Folsom Lake Storage, August

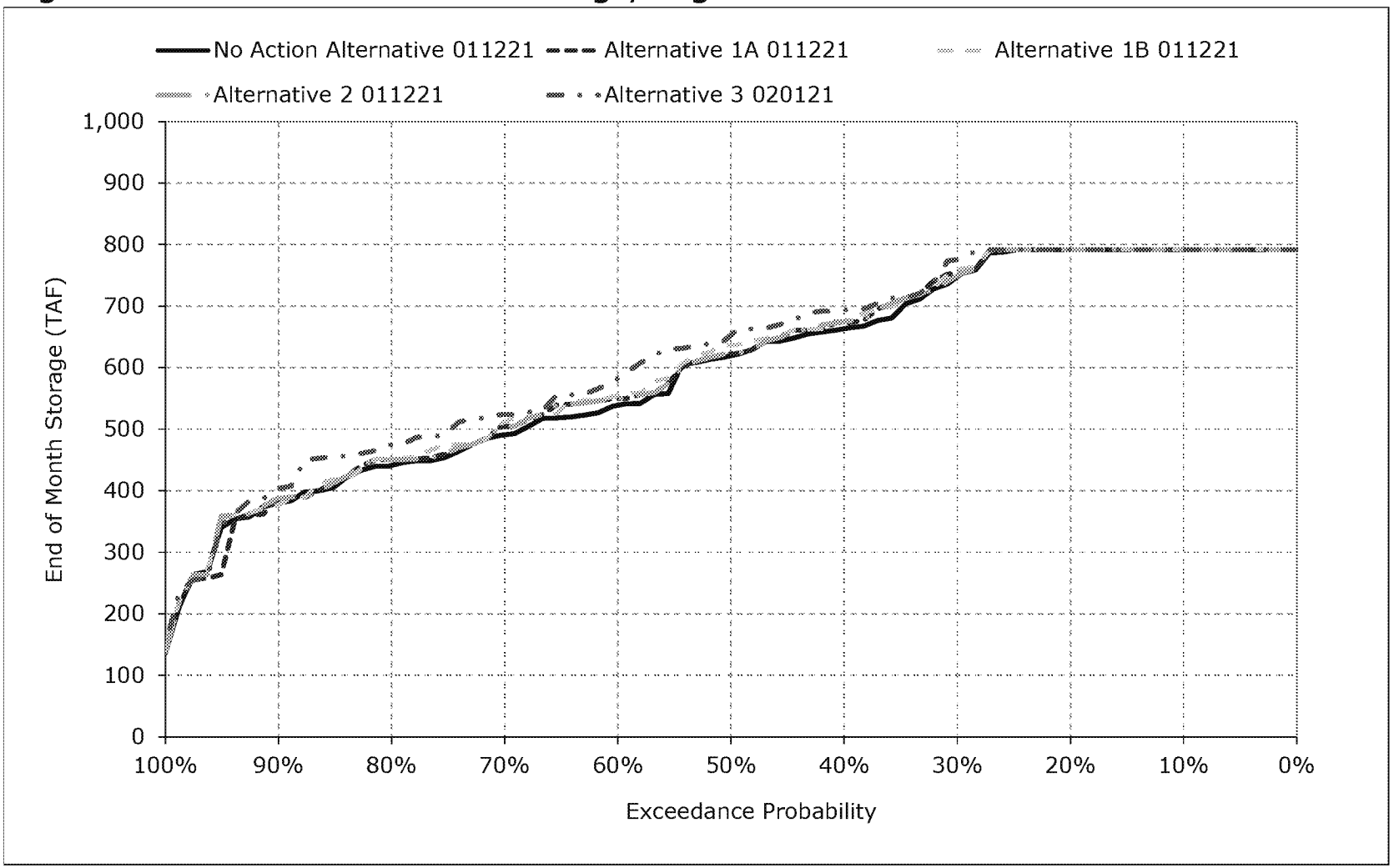


Figure 5B2-24-12. Folsom Lake Storage, September

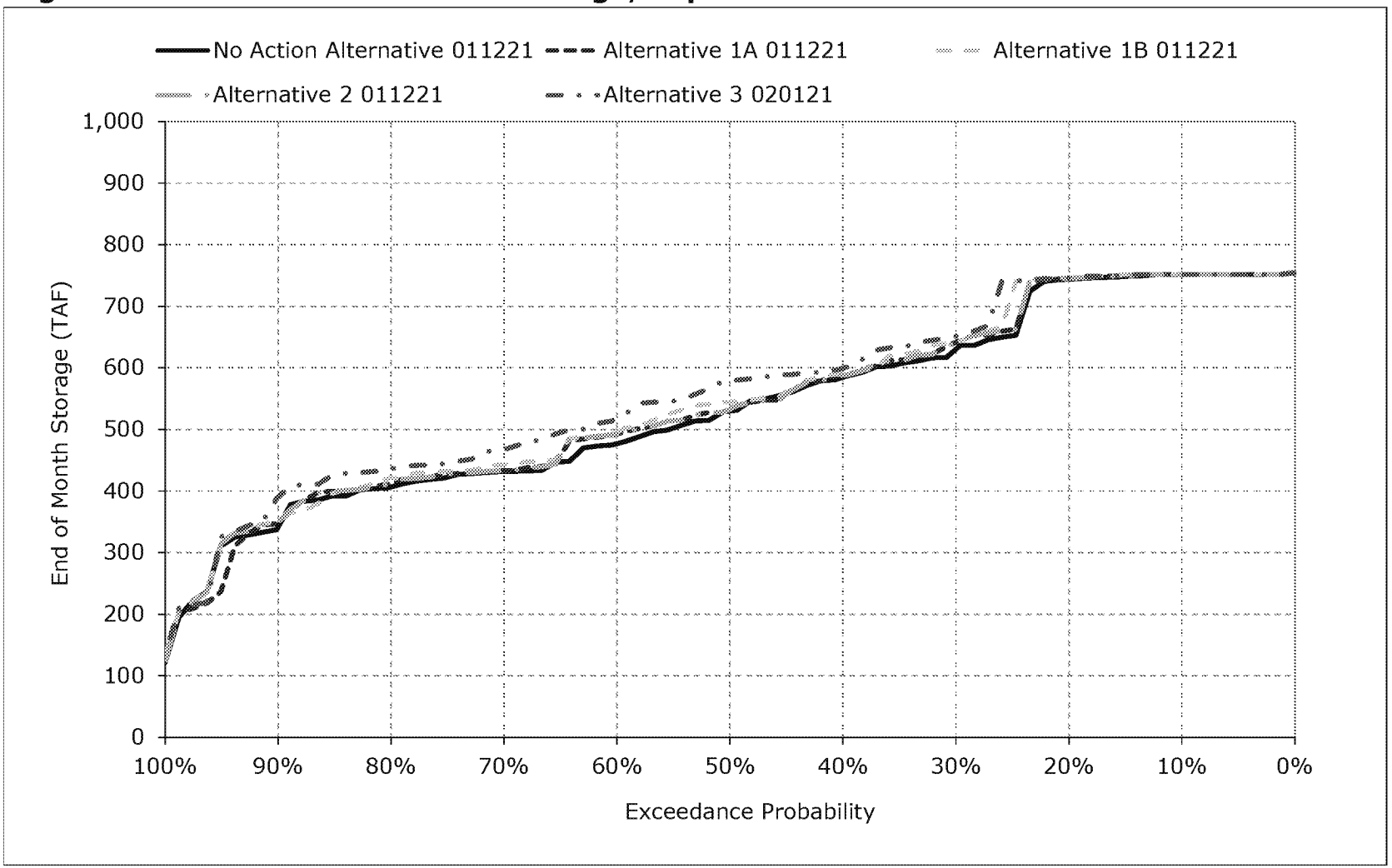


Table 5B2-25-1a. Folsom Lake Elevation, No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	441	424	424	424	424	446	460	466	466	464	449	445
20%	440	424	424	424	424	446	460	466	466	463	449	444
30%	426	423	424	424	424	446	460	466	466	454	445	432
40%	422	421	424	424	424	446	460	466	466	443	436	427
50%	414	416	421	424	424	444	460	466	459	440	431	420
60%	409	412	418	424	424	440	458	466	454	432	421	413
70%	404	408	413	419	424	433	450	452	446	423	415	407
80%	402	404	407	412	415	427	436	440	434	417	409	404
90%	394	393	397	400	410	416	427	426	419	408	401	395
Long Term												
Full Simulation Period[a]	415	412	415	418	420	436	449	455	450	436	426	419
Water Year Types[b,c]												
Wet (32%)	434	421	421	424	424	445	459	466	465	456	444	438
Above Normal (15%)	414	410	413	423	424	445	459	466	461	441	432	420
Below Normal (17%)	414	413	414	421	423	437	455	462	458	436	428	418
Dry (22%)	409	413	417	412	418	431	445	449	441	427	417	412
Critical (15%)	388	392	404	406	406	413	416	418	414	404	396	391

Table 5B2-25-1b. Folsom Lake Elevation, Alternative 1A 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	441	424	424	424	424	446	460	466	466	464	449	445
20%	440	424	424	424	424	446	460	466	466	463	449	444
30%	427	424	424	424	424	446	460	466	466	454	445	434
40%	422	421	424	424	424	446	460	466	466	445	437	427
50%	415	417	421	424	424	444	460	466	459	441	431	420
60%	411	412	418	424	424	439	459	466	453	432	422	415
70%	405	408	413	418	424	433	450	452	445	424	417	408
80%	402	403	405	413	415	428	436	440	435	418	410	405
90%	392	393	398	400	408	414	425	424	420	409	402	396
Long Term												
Full Simulation Period[a]	416	412	415	418	420	436	449	455	451	437	427	420
Water Year Types[b,c]												
Wet (32%)	434	422	421	424	424	445	459	466	465	456	444	439
Above Normal (15%)	414	410	414	423	424	445	459	466	462	442	432	420
Below Normal (17%)	414	413	415	421	422	437	455	462	458	436	428	418
Dry (22%)	411	413	417	413	417	432	446	450	442	428	419	414
Critical (15%)	386	390	402	405	405	412	415	417	414	404	394	389

Table 5B2-25-1c. Folsom Lake Elevation, Alternative 1A 011221 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	1	1	0	0	0	0	0	0	0	0	1	1
40%	0	0	0	0	0	0	0	0	0	2	1	0
50%	1	1	0	0	0	0	0	0	0	0	0	0
60%	2	1	-1	0	0	-1	0	0	-1	0	1	2
70%	1	0	1	-1	0	0	0	0	0	1	2	0
80%	0	-1	-2	1	0	1	0	0	1	0	1	1
90%	-2	0	1	0	-2	-2	-2	-2	1	1	1	1
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	1	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	1	0	0	0	0	0	0	0	0	1	2	2
Critical (15%)	-2	-1	-2	-1	-1	-1	-1	0	0	0	-1	-1

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-25-2a. Folsom Lake Elevation, No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	441	424	424	424	424	446	460	466	466	464	449	445
20%	440	424	424	424	424	446	460	466	466	463	449	444
30%	426	423	424	424	424	446	460	466	466	454	445	432
40%	422	421	424	424	424	446	460	466	466	443	436	427
50%	414	416	421	424	424	444	460	466	459	440	431	420
60%	409	412	418	424	424	440	458	466	454	432	421	413
70%	404	408	413	419	424	433	450	452	446	423	415	407
80%	402	404	407	412	415	427	436	440	434	417	409	404
90%	394	393	397	400	410	416	427	426	419	408	401	395
Long Term												
Full Simulation Period[a]	415	412	415	418	420	436	449	455	450	436	426	419
Water Year Types[b,c]												
Wet (32%)	434	421	421	424	424	445	459	466	465	456	444	438
Above Normal (15%)	414	410	413	423	424	445	459	466	461	441	432	420
Below Normal (17%)	414	413	414	421	423	437	455	462	458	436	428	418
Dry (22%)	409	413	417	412	418	431	445	449	441	427	417	412
Critical (15%)	388	392	404	406	406	413	416	418	414	404	396	391

Table 5B2-25-2b. Folsom Lake Elevation, Alternative 1B 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	441	424	424	424	424	446	460	466	466	464	449	445
20%	440	424	424	424	424	446	460	466	466	463	449	445
30%	428	424	424	424	424	446	460	466	466	454	446	434
40%	422	422	424	424	424	446	460	466	466	444	438	427
50%	416	417	421	424	424	444	460	466	460	442	433	422
60%	412	413	418	424	424	440	459	466	454	432	423	415
70%	406	408	414	419	424	433	450	453	447	425	418	409
80%	401	404	406	414	415	428	436	441	435	418	410	406
90%	393	396	400	401	409	414	424	425	421	408	401	396
Long Term												
Full Simulation Period[a]	416	413	416	418	420	436	449	455	451	437	427	421
Water Year Types[b,c]												
Wet (32%)	434	422	421	424	424	445	459	466	465	456	444	439
Above Normal (15%)	416	411	415	423	424	445	459	466	462	442	433	422
Below Normal (17%)	415	414	415	421	423	437	455	462	458	436	428	419
Dry (22%)	410	413	417	413	418	432	446	450	442	428	419	414
Critical (15%)	389	393	404	406	405	412	416	418	414	405	397	392

Table 5B2-25-2c. Folsom Lake Elevation, Alternative 1B 011221 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	-1	0	0
30%	2	1	0	0	0	0	0	0	0	0	1	1
40%	1	1	0	0	0	0	0	0	0	1	1	1
50%	3	1	0	0	0	0	0	0	1	1	2	2
60%	3	1	0	0	0	0	0	0	0	1	2	2
70%	2	0	2	0	0	0	0	0	1	3	3	1
80%	-1	-1	0	2	0	1	0	0	1	1	1	2
90%	-1	3	3	1	-2	-2	-3	-2	2	0	0	1
Long Term												
Full Simulation Period[a]	1	1	0	0	0	0	0	0	0	1	1	1
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	2	1	1	0	0	0	0	0	1	1	1	2
Below Normal (17%)	1	0	0	0	0	0	0	0	0	1	1	1
Dry (22%)	1	1	0	1	0	1	1	1	1	1	2	2
Critical (15%)	1	1	0	0	0	-1	0	0	0	1	1	1

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-25-3a. Folsom Lake Elevation, No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	441	424	424	424	424	446	460	466	466	464	449	445
20%	440	424	424	424	424	446	460	466	466	463	449	444
30%	426	423	424	424	424	446	460	466	466	454	445	432
40%	422	421	424	424	424	446	460	466	466	443	436	427
50%	414	416	421	424	424	444	460	466	459	440	431	420
60%	409	412	418	424	424	440	458	466	454	432	421	413
70%	404	408	413	419	424	433	450	452	446	423	415	407
80%	402	404	407	412	415	427	436	440	434	417	409	404
90%	394	393	397	400	410	416	427	426	419	408	401	395
Long Term												
Full Simulation Period[a]	415	412	415	418	420	436	449	455	450	436	426	419
Water Year Types[b,c]												
Wet (32%)	434	421	421	424	424	445	459	466	465	456	444	438
Above Normal (15%)	414	410	413	423	424	445	459	466	461	441	432	420
Below Normal (17%)	414	413	414	421	423	437	455	462	458	436	428	418
Dry (22%)	409	413	417	412	418	431	445	449	441	427	417	412
Critical (15%)	388	392	404	406	406	413	416	418	414	404	396	391

Table 5B2-25-3b. Folsom Lake Elevation, Alternative 2 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	441	424	424	424	424	446	460	466	466	464	449	445
20%	440	424	424	424	424	446	460	466	466	463	449	444
30%	427	424	424	424	424	446	460	466	466	454	445	434
40%	422	421	424	424	424	446	460	466	466	445	438	427
50%	415	417	421	424	424	444	460	466	459	441	431	420
60%	411	412	418	424	424	440	459	466	453	432	422	415
70%	405	408	414	419	424	433	450	452	445	424	417	408
80%	402	404	406	414	415	428	436	440	435	418	410	405
90%	393	395	400	400	408	414	425	424	420	409	402	396
Long Term												
Full Simulation Period[a]	416	412	415	418	420	436	449	455	451	437	427	420
Water Year Types[b,c]												
Wet (32%)	434	422	421	424	424	445	459	466	465	456	444	439
Above Normal (15%)	414	410	414	423	424	445	459	466	462	442	432	420
Below Normal (17%)	414	414	415	421	423	437	455	462	458	436	428	418
Dry (22%)	411	413	417	413	418	432	446	450	442	428	419	414
Critical (15%)	388	392	404	406	405	412	416	418	414	405	396	391

Table 5B2-25-3c. Folsom Lake Elevation, Alternative 2 011221 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	1	1	0	0	0	0	0	0	0	0	0	1
40%	0	0	0	0	0	0	0	0	0	2	1	0
50%	1	1	0	0	0	0	0	0	0	0	0	0
60%	2	1	0	0	0	0	0	0	-1	0	1	2
70%	1	0	1	0	0	0	0	0	0	1	2	0
80%	0	-1	-1	2	0	1	0	0	1	0	1	1
90%	-1	1	3	0	-2	-2	-2	-2	1	1	1	1
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	1	1
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	1	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	1	0	0	0	0	0	0	0	0	1	2	2
Critical (15%)	0	0	-1	0	-1	-1	0	0	0	0	1	1

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-25-4a. Folsom Lake Elevation, No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	441	424	424	424	424	446	460	466	466	464	449	445
20%	440	424	424	424	424	446	460	466	466	463	449	444
30%	426	423	424	424	424	446	460	466	466	454	445	432
40%	422	421	424	424	424	446	460	466	466	443	436	427
50%	414	416	421	424	424	444	460	466	459	440	431	420
60%	409	412	418	424	424	440	458	466	454	432	421	413
70%	404	408	413	419	424	433	450	452	446	423	415	407
80%	402	404	407	412	415	427	436	440	434	417	409	404
90%	394	393	397	400	410	416	427	426	419	408	401	395
Long Term												
Full Simulation Period[a]	415	412	415	418	420	436	449	455	450	436	426	419
Water Year Types[b,c]												
Wet (32%)	434	421	421	424	424	445	459	466	465	456	444	438
Above Normal (15%)	414	410	413	423	424	445	459	466	461	441	432	420
Below Normal (17%)	414	413	414	421	423	437	455	462	458	436	428	418
Dry (22%)	409	413	417	412	418	431	445	449	441	427	417	412
Critical (15%)	388	392	404	406	406	413	416	418	414	404	396	391

Table 5B2-25-4b. Folsom Lake Elevation, Alternative 3 020121, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	441	424	424	424	424	446	460	466	466	464	449	445
20%	440	424	424	424	424	446	460	466	466	463	449	445
30%	430	424	424	424	424	446	460	466	466	455	447	435
40%	423	422	424	424	424	446	460	466	466	447	439	428
50%	419	420	423	424	424	445	460	466	460	443	435	426
60%	414	417	420	424	424	440	459	466	455	438	426	418
70%	409	410	416	420	424	433	451	453	447	429	419	412
80%	404	406	407	413	419	429	439	443	438	421	413	408
90%	396	395	401	404	410	417	428	427	423	411	404	402
Long Term												
Full Simulation Period[a]	418	414	417	419	421	436	450	455	452	439	429	422
Water Year Types[b,c]												
Wet (32%)	434	422	421	424	424	445	459	466	465	456	444	439
Above Normal (15%)	421	414	417	423	424	445	459	466	462	447	436	427
Below Normal (17%)	419	418	417	421	423	437	455	462	458	441	433	423
Dry (22%)	413	416	419	416	420	434	447	452	445	431	422	417
Critical (15%)	388	391	403	406	407	413	417	419	415	405	395	390

Table 5B2-25-4c. Folsom Lake Elevation, Alternative 3 020121 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	-1	0	0
30%	4	1	0	0	0	0	0	0	0	1	3	3
40%	1	1	0	0	0	0	0	0	0	4	3	2
50%	5	4	2	0	0	1	0	0	1	3	4	6
60%	5	6	2	0	0	0	0	0	1	6	6	5
70%	5	2	4	1	0	0	1	1	1	6	4	4
80%	2	2	0	1	4	3	2	3	4	3	4	4
90%	2	2	4	4	0	1	1	1	4	3	3	8
Long Term												
Full Simulation Period[a]	3	2	1	1	1	1	1	1	1	3	3	3
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	7	4	4	0	0	0	0	0	1	5	5	7
Below Normal (17%)	6	4	3	0	0	0	0	0	0	5	5	6
Dry (22%)	4	4	2	4	3	2	2	2	3	5	5	5
Critical (15%)	0	-1	-1	0	1	1	0	1	1	1	-1	-1

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Figure 5B2-25-1. Folsom Lake Elevation, October

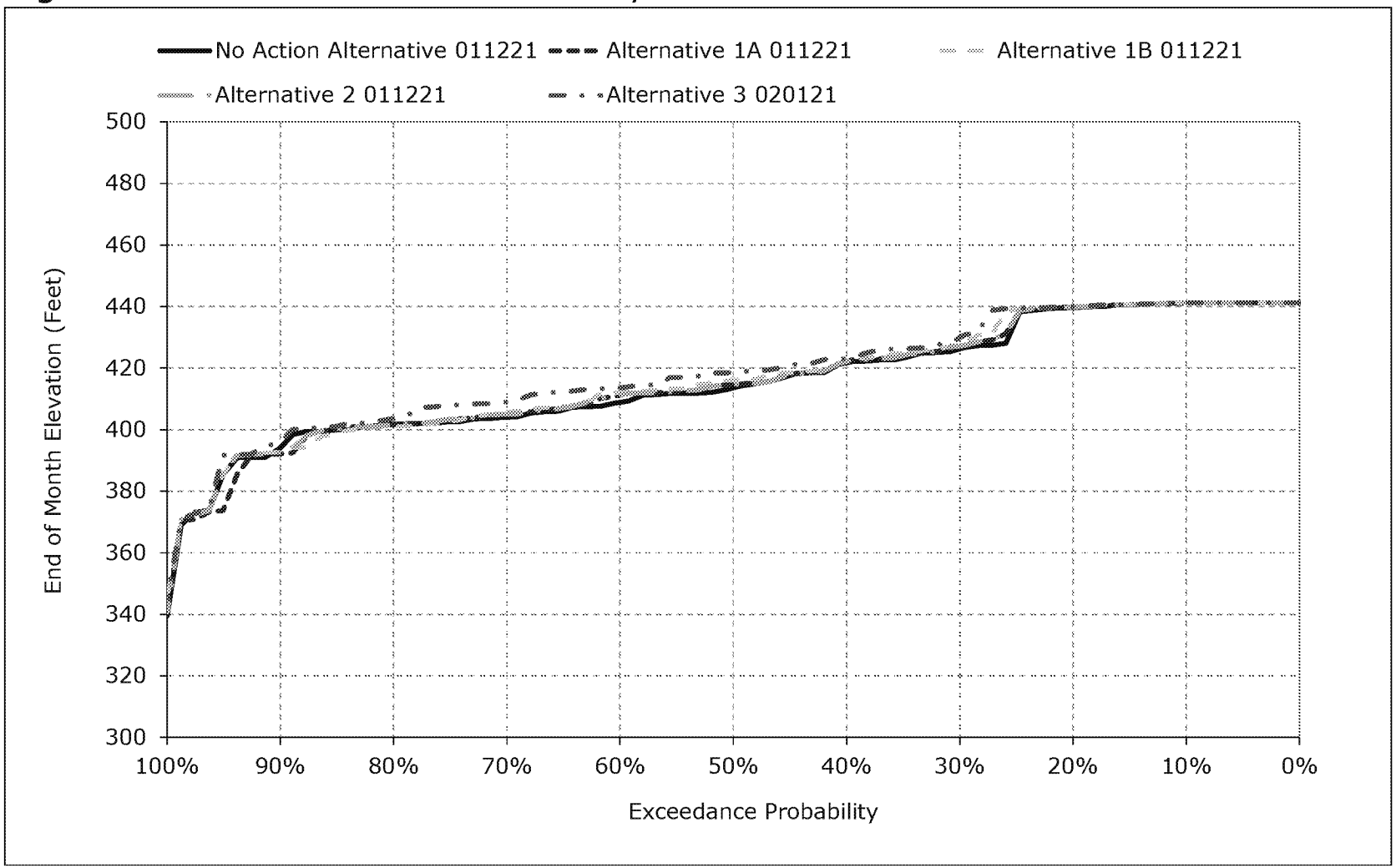


Figure 5B2-25-2. Folsom Lake Elevation, November

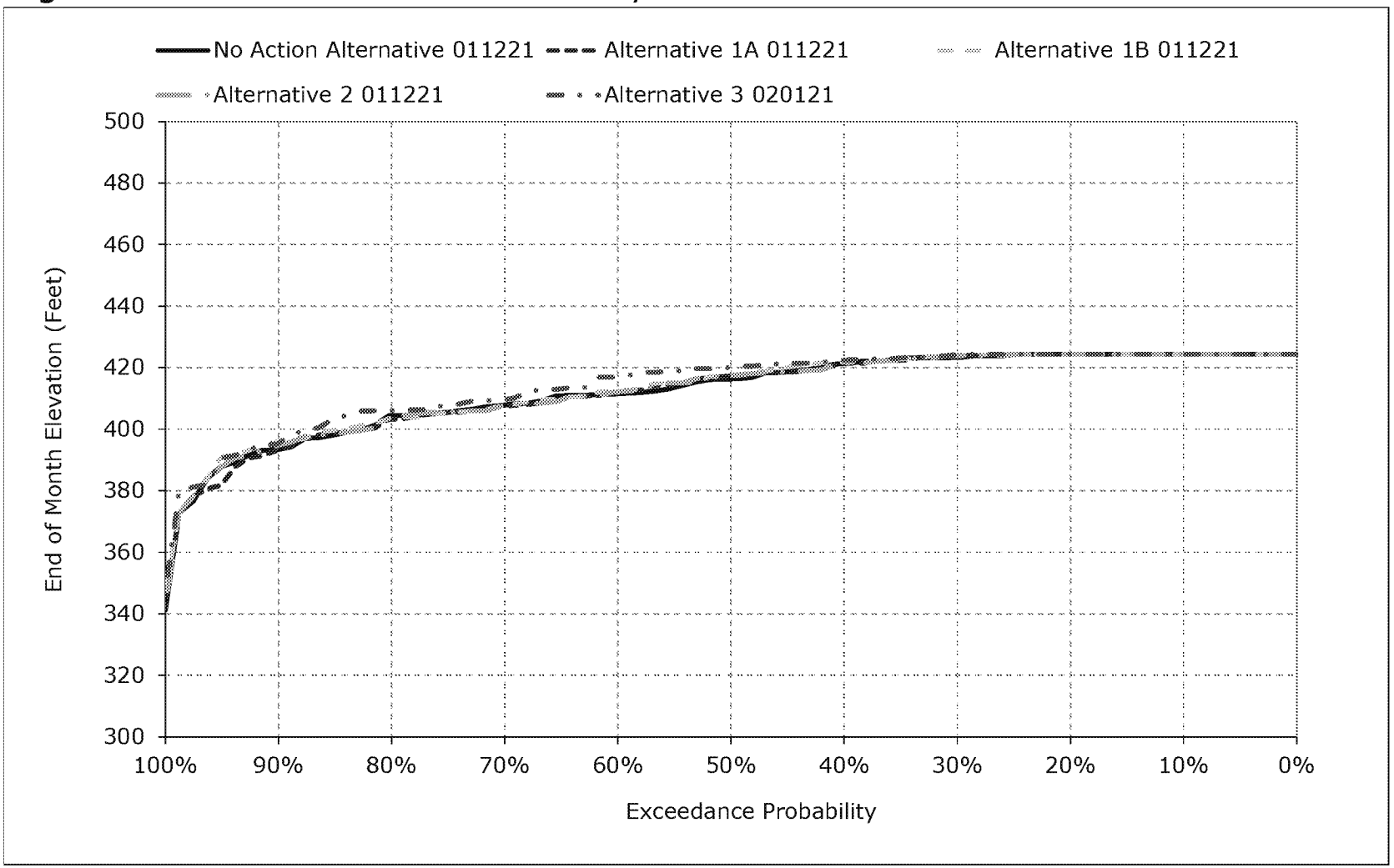


Figure 5B2-25-3. Folsom Lake Elevation, December

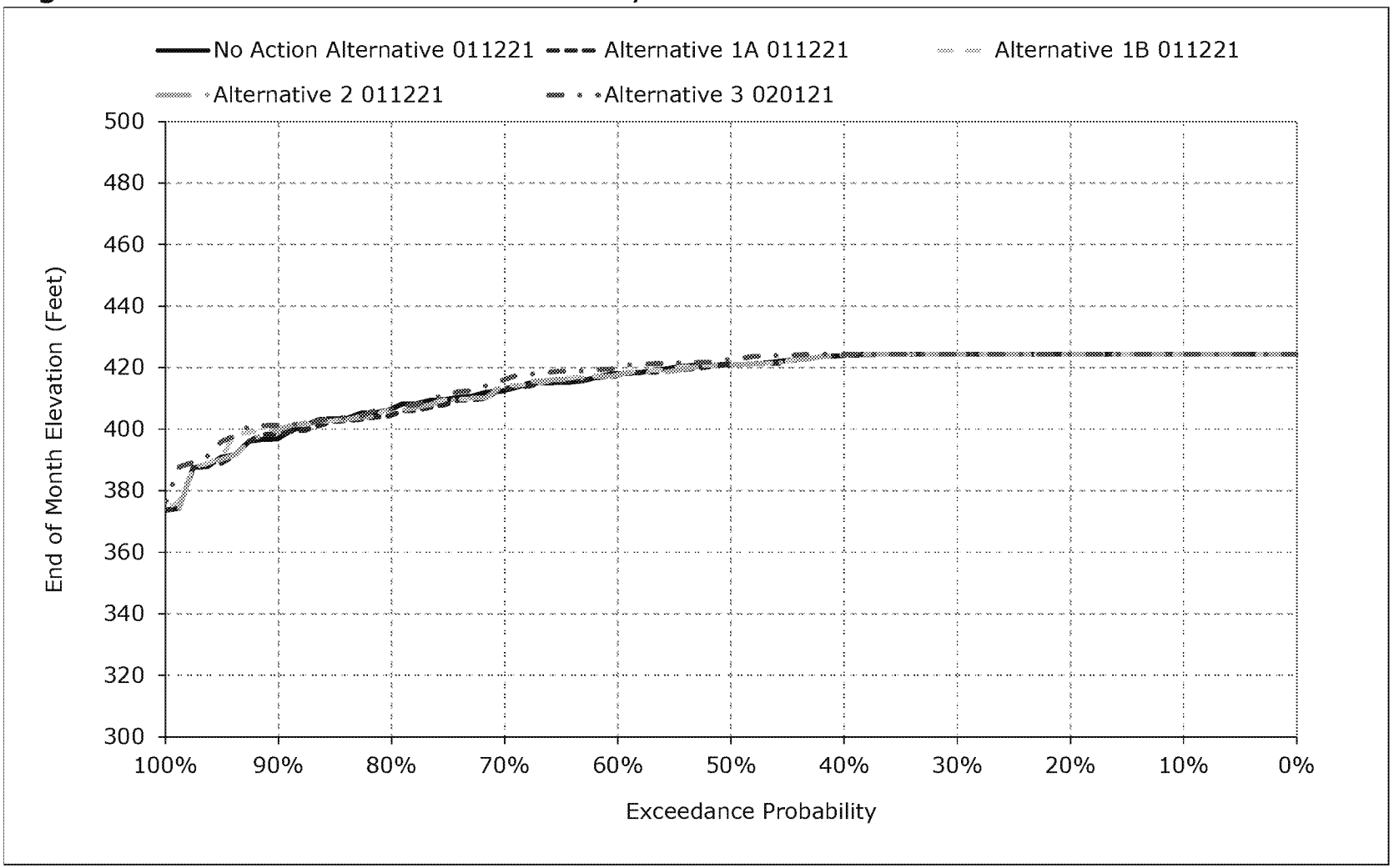


Figure 5B2-25-4. Folsom Lake Elevation, January

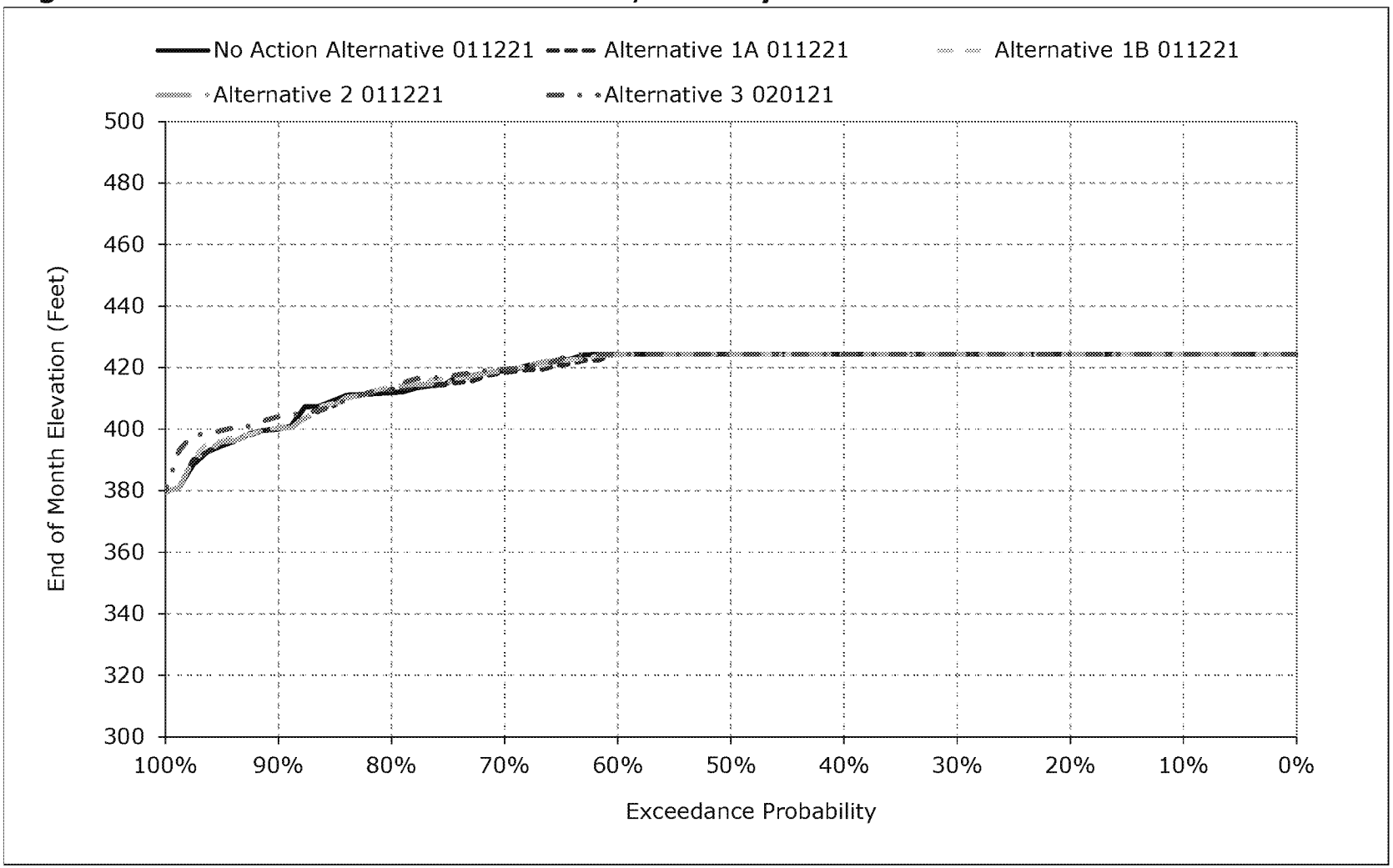


Figure 5B2-25-5. Folsom Lake Elevation, February

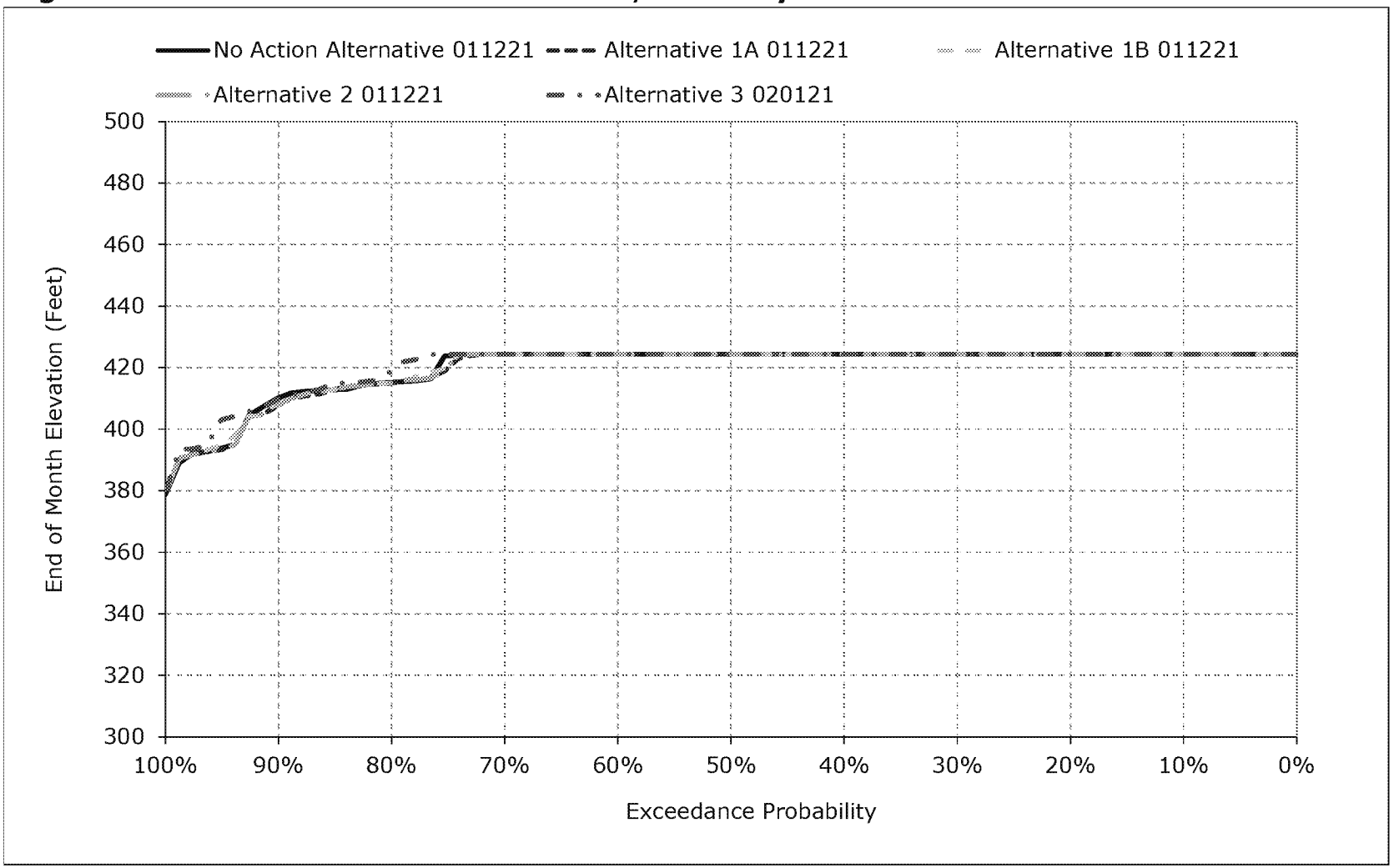


Figure 5B2-25-6. Folsom Lake Elevation, March

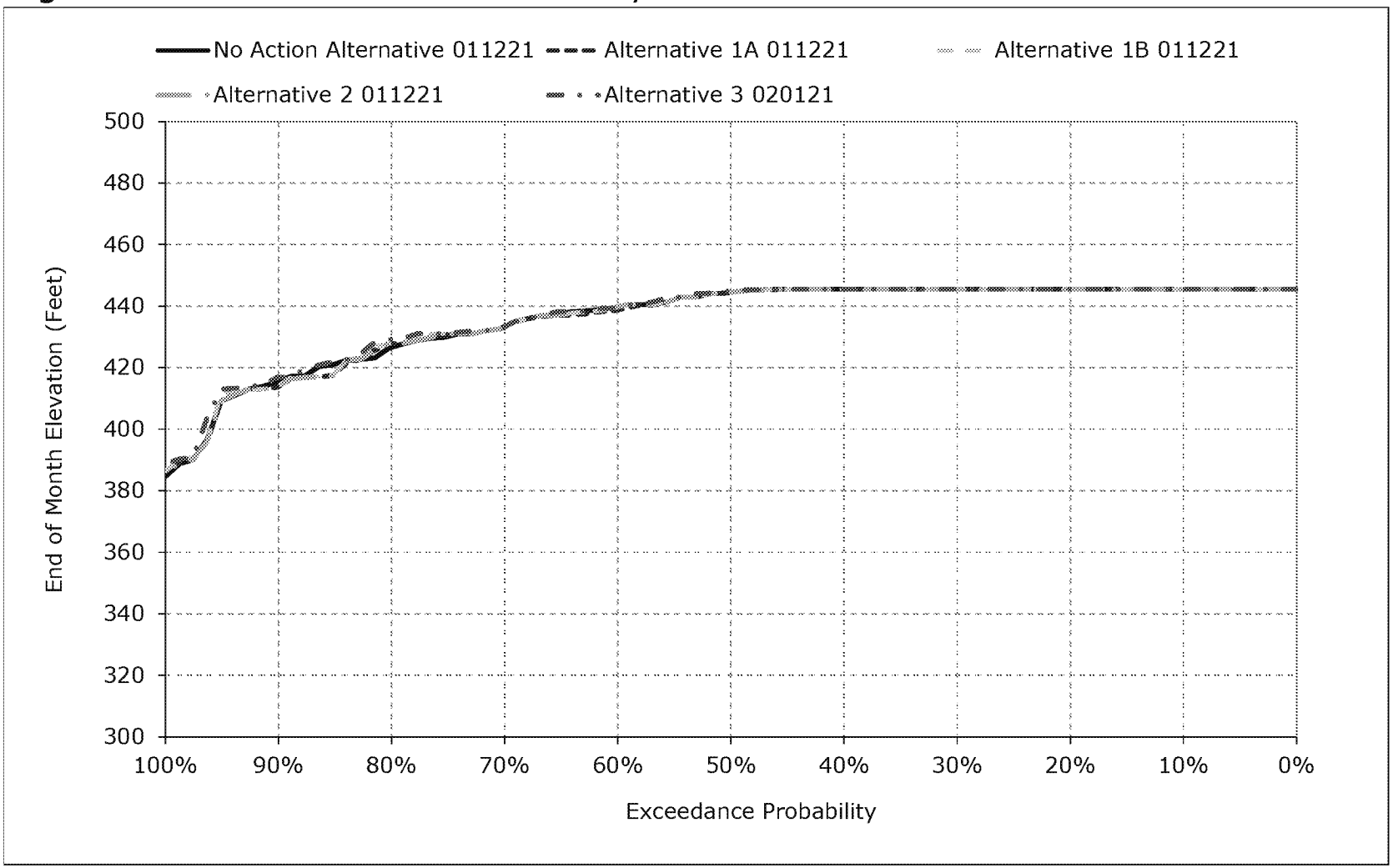


Figure 5B2-25-7. Folsom Lake Elevation, April

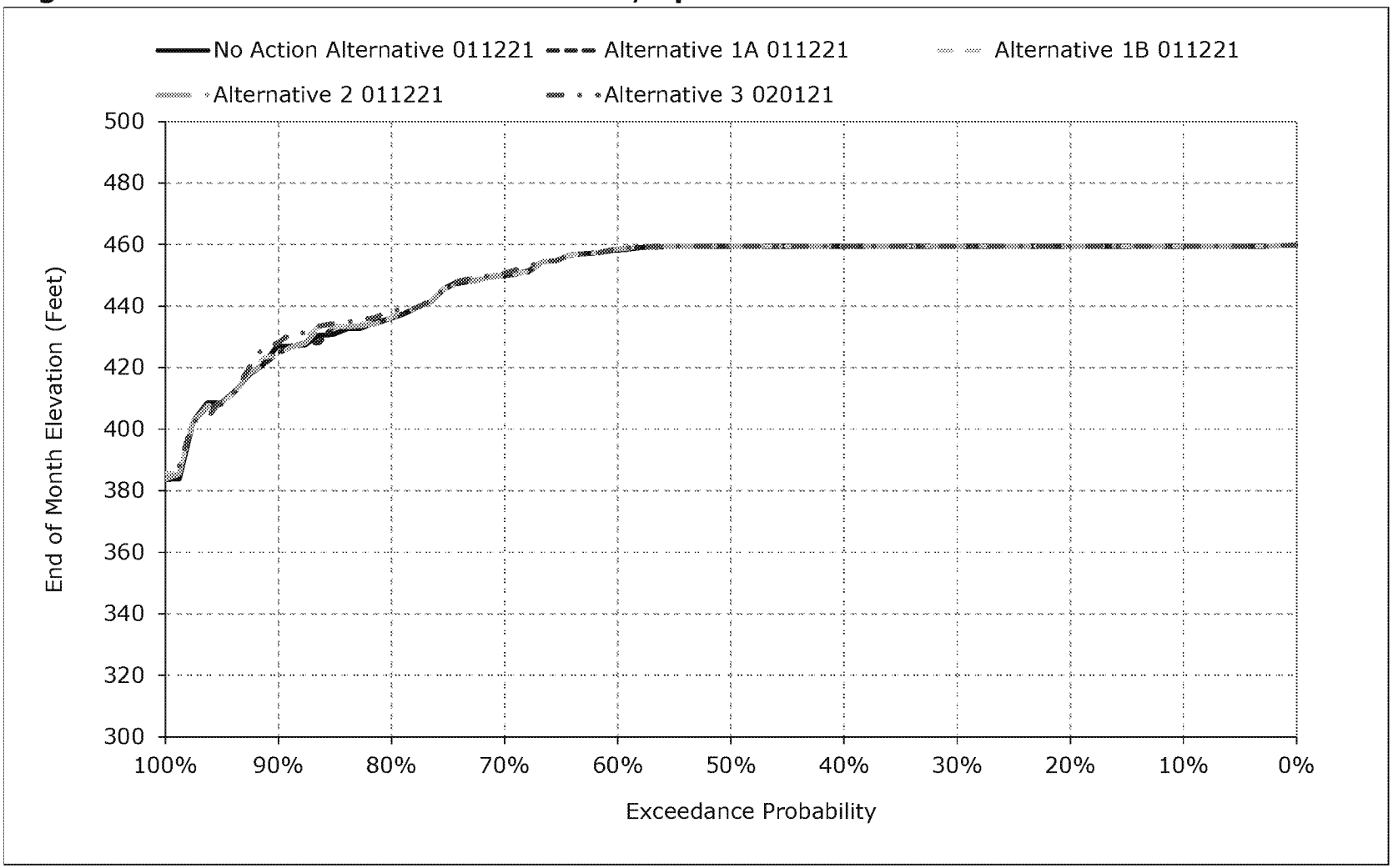


Figure 5B2-25-8. Folsom Lake Elevation, May

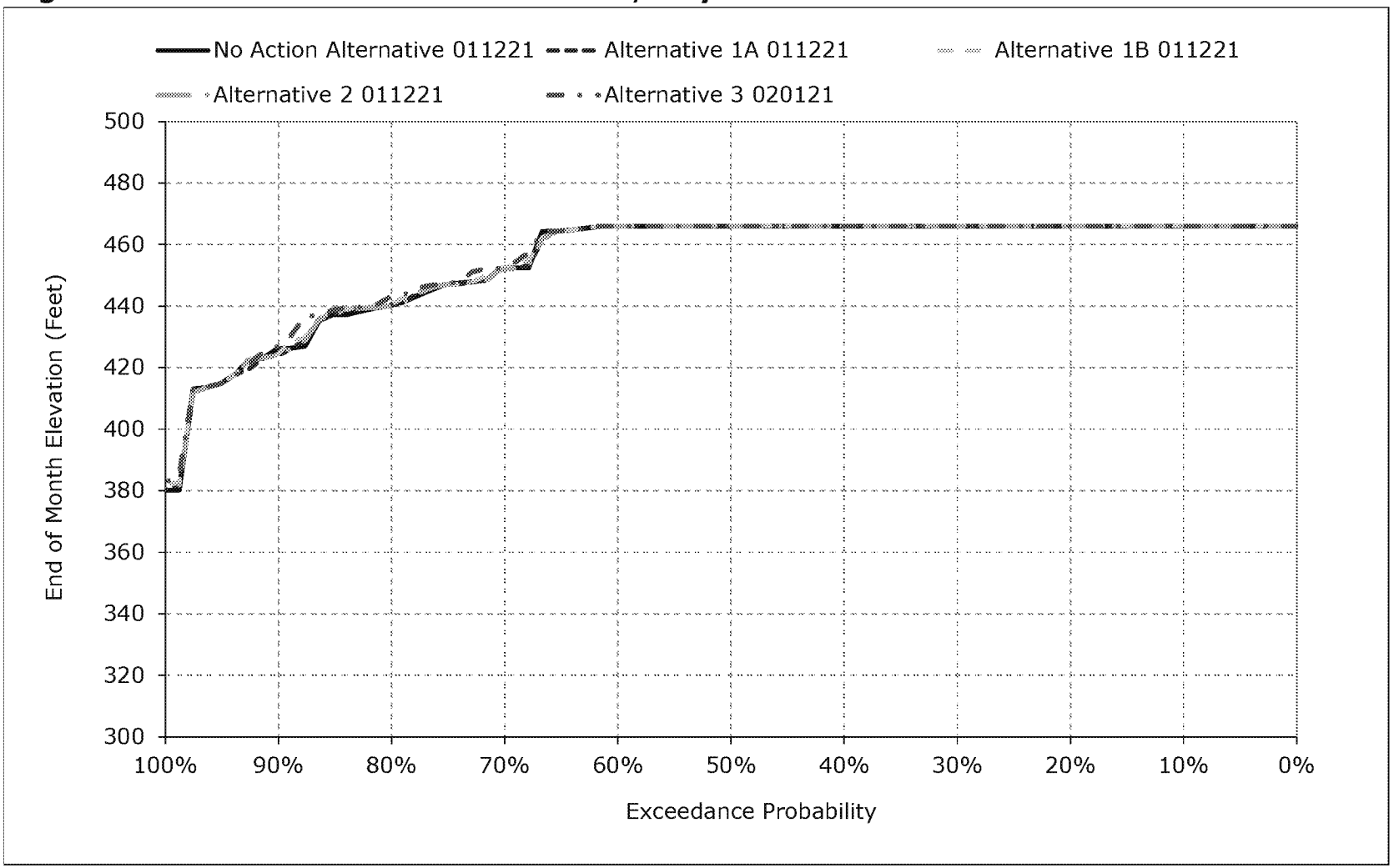


Figure 5B2-25-9. Folsom Lake Elevation, June

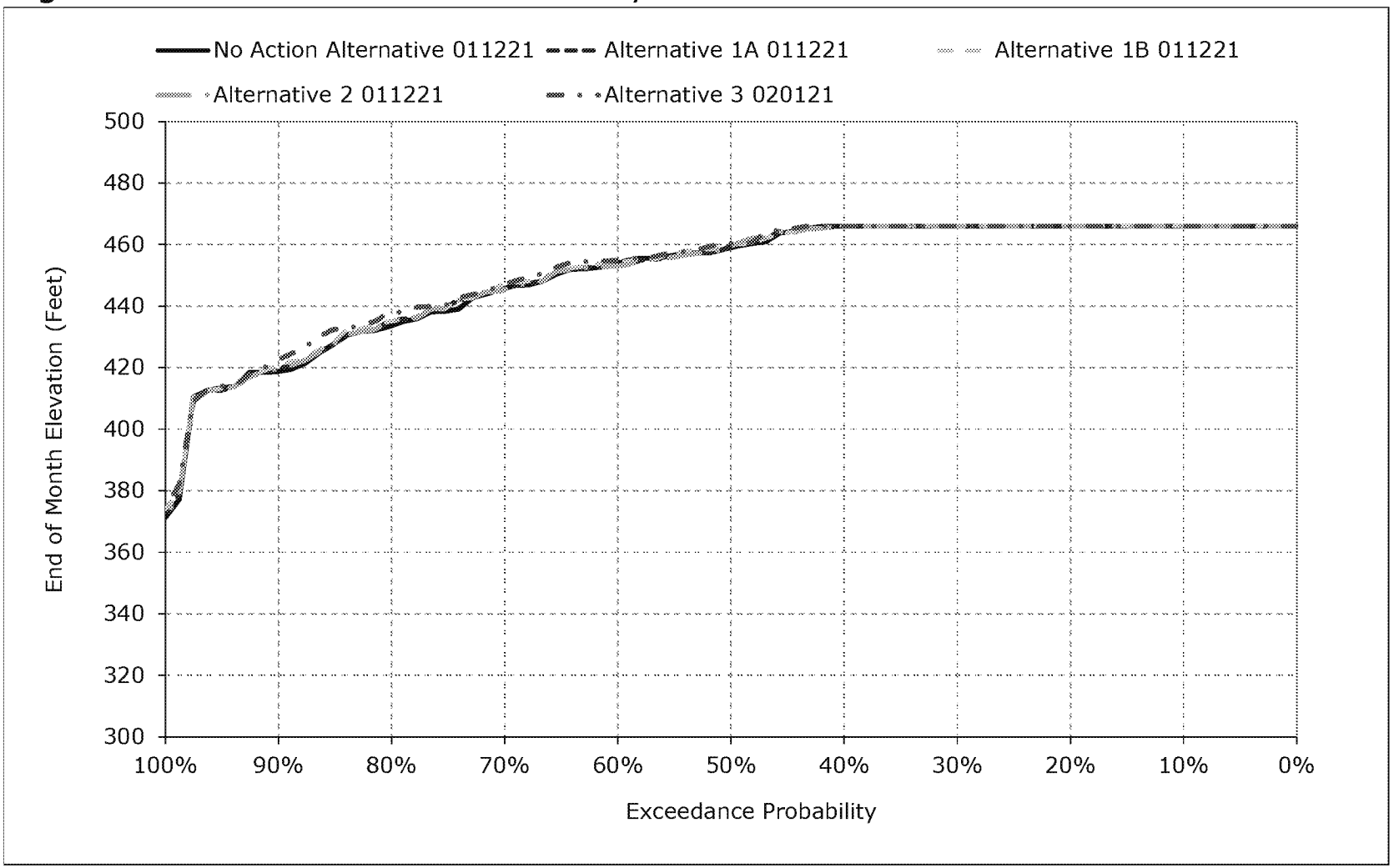


Figure 5B2-25-10. Folsom Lake Elevation, July

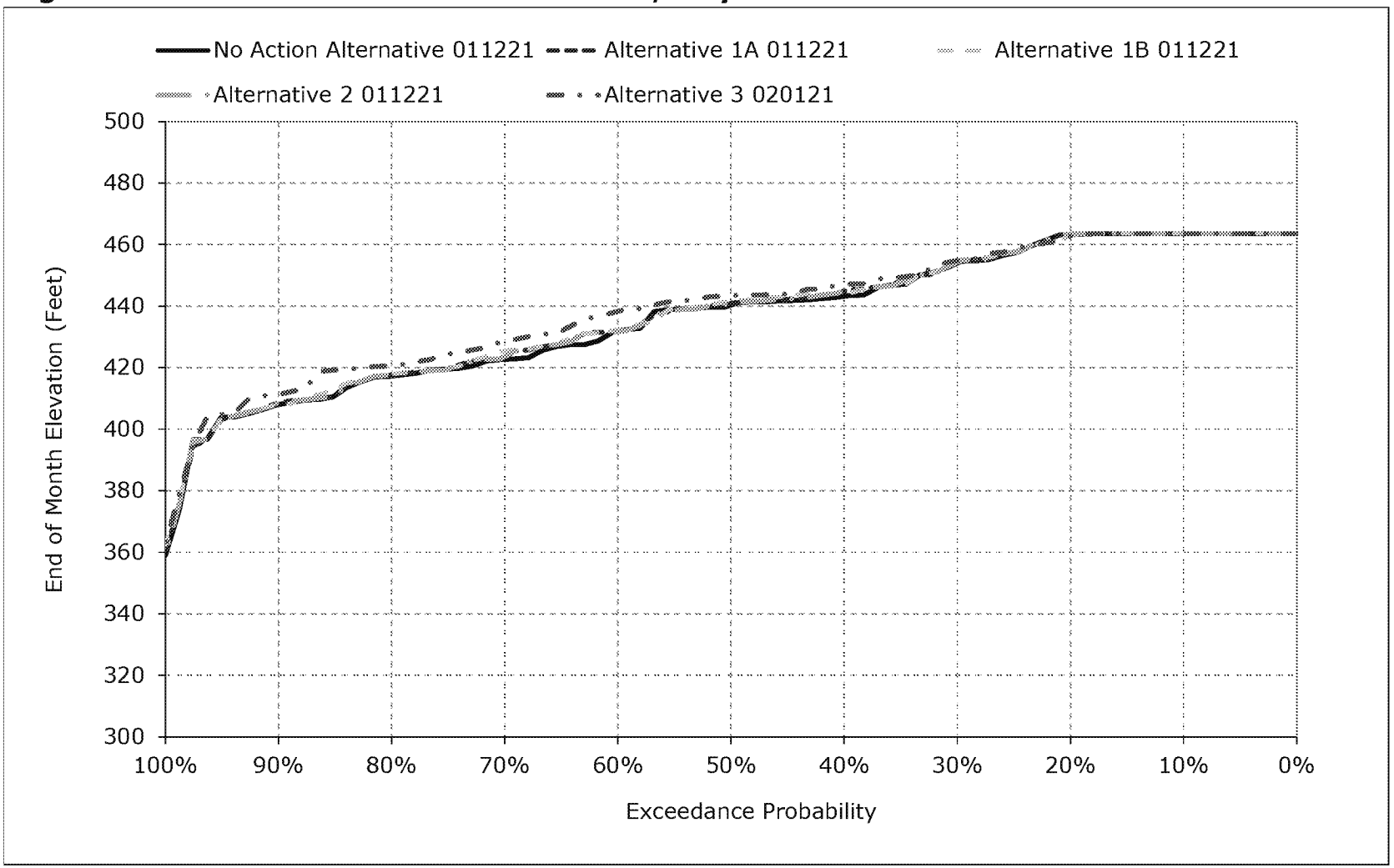


Figure 5B2-25-11. Folsom Lake Elevation, August

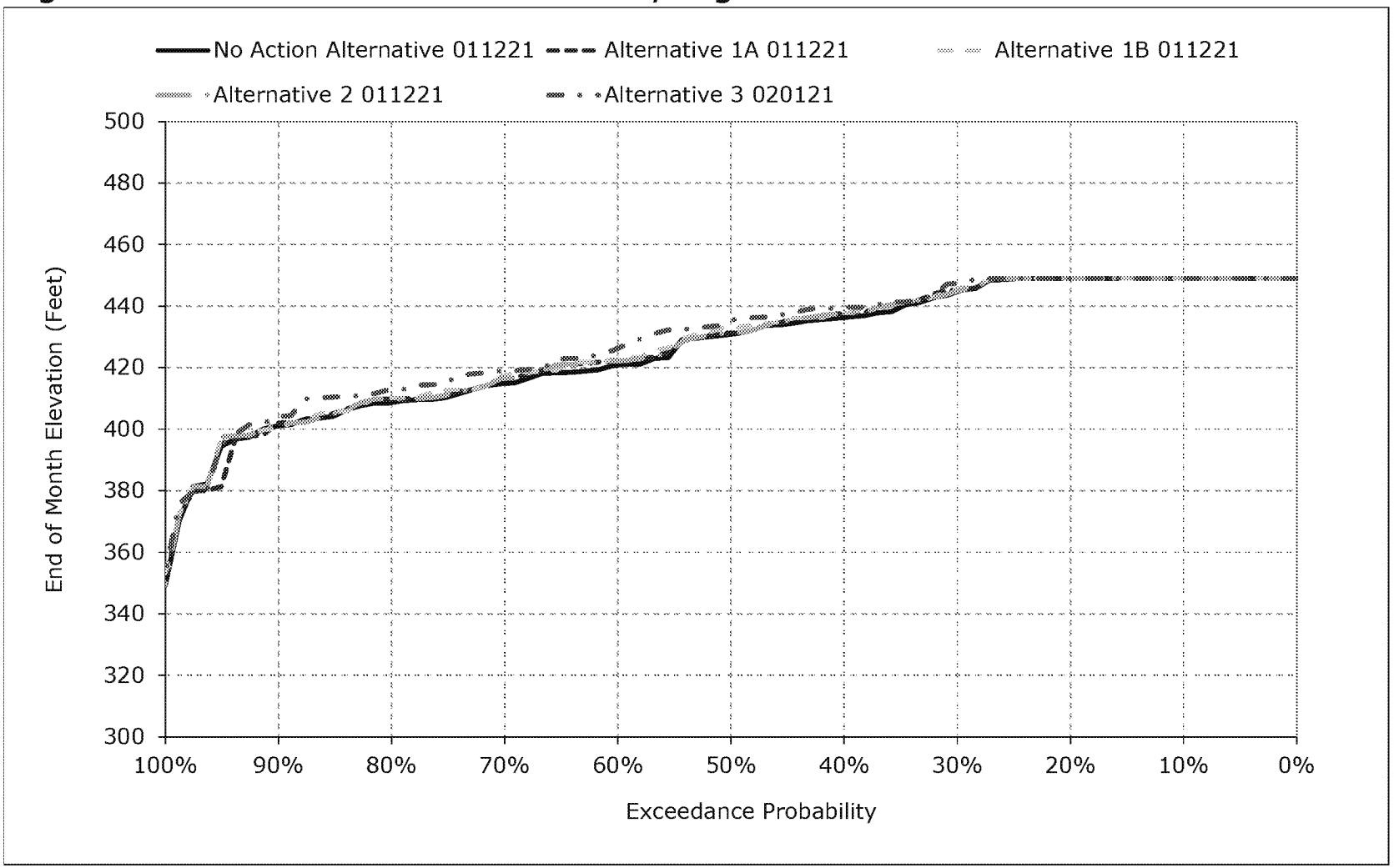


Figure 5B2-25-12. Folsom Lake Elevation, September

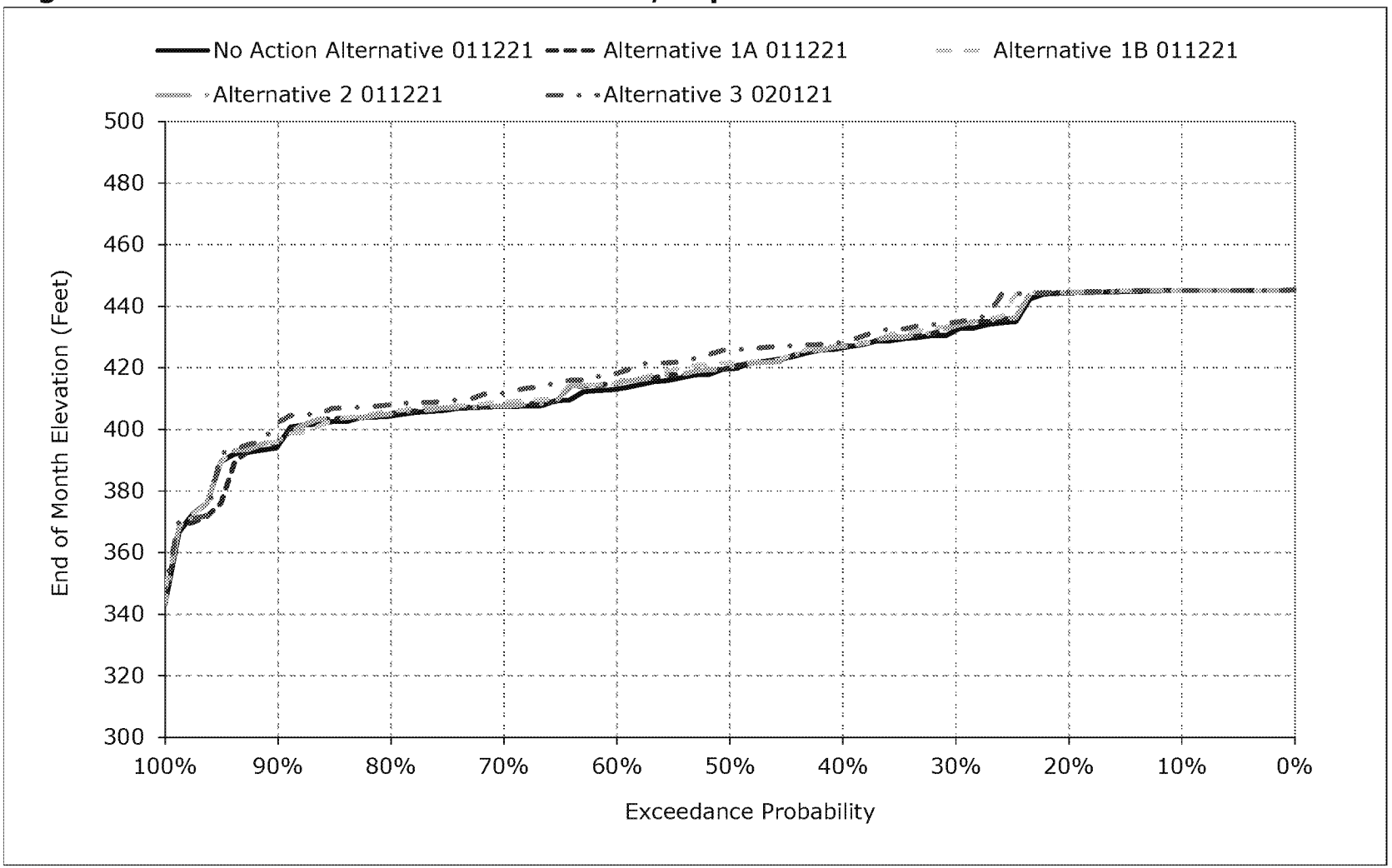


Table 5B2-26-1a. Folsom Lake Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,631	8,418	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,993	10,106	9,869
20%	9,539	8,418	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,980	10,106	9,822
30%	8,565	8,342	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,411	9,845	9,016
40%	8,222	8,190	8,389	8,418	8,418	9,893	10,745	11,141	11,141	9,751	9,326	8,585
50%	7,601	7,815	8,165	8,418	8,418	9,831	10,745	11,141	10,716	9,581	8,914	8,068
60%	7,247	7,449	7,942	8,418	8,418	9,546	10,667	11,141	10,396	8,986	8,153	7,570
70%	6,880	7,169	7,534	8,015	8,418	9,100	10,162	10,304	9,909	8,295	7,702	7,143
80%	6,711	6,906	7,076	7,477	7,725	8,590	9,308	9,579	9,122	7,881	7,231	6,908
90%	6,147	6,089	6,362	6,584	7,345	7,753	8,617	8,553	7,998	7,183	6,660	6,186
Long Term												
Full Simulation Period[a]	7,734	7,504	7,749	7,962	8,078	9,216	10,059	10,398	10,127	9,197	8,523	8,019
Water Year Types[b,c]												
Wet (32%)	9,090	8,198	8,175	8,418	8,418	9,855	10,727	11,134	11,049	10,502	9,784	9,387
Above Normal (15%)	7,612	7,344	7,598	8,306	8,418	9,842	10,720	11,140	10,854	9,583	8,907	8,064
Below Normal (17%)	7,626	7,592	7,675	8,177	8,285	9,325	10,492	10,890	10,643	9,202	8,656	7,927
Dry (22%)	7,283	7,539	7,861	7,523	7,916	8,914	9,833	10,118	9,586	8,579	7,852	7,488
Critical (15%)	5,719	6,003	6,897	7,035	7,004	7,530	7,784	7,909	7,611	6,904	6,261	5,911

Table 5B2-26-1b. Folsom Lake Surface Area, Alternative 1A 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,631	8,418	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,993	10,106	9,869
20%	9,549	8,418	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,980	10,106	9,829
30%	8,622	8,386	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,427	9,877	9,123
40%	8,252	8,188	8,389	8,418	8,418	9,893	10,745	11,141	11,141	9,853	9,403	8,618
50%	7,688	7,891	8,160	8,418	8,418	9,831	10,745	11,141	10,742	9,611	8,943	8,100
60%	7,425	7,489	7,902	8,409	8,418	9,487	10,685	11,141	10,356	8,982	8,256	7,719
70%	6,956	7,145	7,585	7,973	8,418	9,100	10,162	10,287	9,885	8,363	7,827	7,157
80%	6,695	6,821	6,924	7,553	7,712	8,674	9,310	9,577	9,234	7,906	7,320	6,965
90%	5,995	6,081	6,462	6,597	7,169	7,625	8,454	8,403	8,061	7,226	6,731	6,280
Long Term												
Full Simulation Period[a]	7,746	7,494	7,726	7,945	8,065	9,207	10,058	10,397	10,136	9,225	8,551	8,044
Water Year Types[b,c]												
Wet (32%)	9,109	8,204	8,183	8,418	8,418	9,855	10,727	11,134	11,061	10,519	9,803	9,407
Above Normal (15%)	7,630	7,353	7,607	8,307	8,418	9,842	10,720	11,140	10,881	9,624	8,939	8,087
Below Normal (17%)	7,647	7,599	7,690	8,161	8,275	9,315	10,490	10,890	10,635	9,222	8,675	7,953
Dry (22%)	7,392	7,545	7,827	7,532	7,899	8,937	9,860	10,130	9,603	8,638	7,972	7,610
Critical (15%)	5,558	5,895	6,743	6,927	6,950	7,448	7,739	7,881	7,605	6,906	6,173	5,806

Table 5B2-26-1c. Folsom Lake Surface Area, Alternative 1A 011221 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	11	0	0	0	0	0	0	0	0	0	0	8
30%	57	43	0	0	0	0	0	0	0	16	32	107
40%	31	-2	0	0	0	0	0	0	0	102	77	33
50%	87	76	-5	0	0	0	0	0	26	30	28	32
60%	178	40	-39	-9	0	-58	18	0	-40	-4	103	149
70%	76	-24	51	-42	0	0	0	-17	-24	68	125	15
80%	-16	-85	-152	76	-13	85	2	-2	112	25	89	57
90%	-151	-8	100	12	-176	-128	-163	-150	63	43	71	94
Long Term												
Full Simulation Period[a]	13	-10	-23	-17	-13	-9	-1	-2	9	28	27	26
Water Year Types[b,c]												
Wet (32%)	19	6	8	0	0	0	0	0	12	17	19	20
Above Normal (15%)	18	9	9	0	0	0	0	0	27	40	32	22
Below Normal (17%)	21	7	15	-15	-10	-10	-1	0	-8	20	18	26
Dry (22%)	109	6	-34	8	-16	23	27	12	18	59	121	122
Critical (15%)	-161	-108	-154	-108	-54	-82	-45	-28	-7	2	-88	-105

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-26-2a. Folsom Lake Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,631	8,418	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,993	10,106	9,869
20%	9,539	8,418	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,980	10,106	9,822
30%	8,565	8,342	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,411	9,845	9,016
40%	8,222	8,190	8,389	8,418	8,418	9,893	10,745	11,141	11,141	9,751	9,326	8,585
50%	7,601	7,815	8,165	8,418	8,418	9,831	10,745	11,141	10,716	9,581	8,914	8,068
60%	7,247	7,449	7,942	8,418	8,418	9,546	10,667	11,141	10,396	8,986	8,153	7,570
70%	6,880	7,169	7,534	8,015	8,418	9,100	10,162	10,304	9,909	8,295	7,702	7,143
80%	6,711	6,906	7,076	7,477	7,725	8,590	9,308	9,579	9,122	7,881	7,231	6,908
90%	6,147	6,089	6,362	6,584	7,345	7,753	8,617	8,553	7,998	7,183	6,660	6,186
Long Term												
Full Simulation Period[a]	7,734	7,504	7,749	7,962	8,078	9,216	10,059	10,398	10,127	9,197	8,523	8,019
Water Year Types[b,c]												
Wet (32%)	9,090	8,198	8,175	8,418	8,418	9,855	10,727	11,134	11,049	10,502	9,784	9,387
Above Normal (15%)	7,612	7,344	7,598	8,306	8,418	9,842	10,720	11,140	10,854	9,583	8,907	8,064
Below Normal (17%)	7,626	7,592	7,675	8,177	8,285	9,325	10,492	10,890	10,643	9,202	8,656	7,927
Dry (22%)	7,283	7,539	7,861	7,523	7,916	8,914	9,833	10,118	9,586	8,579	7,852	7,488
Critical (15%)	5,719	6,003	6,897	7,035	7,004	7,530	7,784	7,909	7,611	6,904	6,261	5,911

Table 5B2-26-2b. Folsom Lake Surface Area, Alternative 1B 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,632	8,418	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,993	10,106	9,869
20%	9,549	8,418	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,943	10,106	9,838
30%	8,679	8,386	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,431	9,903	9,127
40%	8,260	8,228	8,399	8,418	8,418	9,893	10,745	11,141	11,141	9,811	9,420	8,629
50%	7,796	7,887	8,175	8,418	8,418	9,831	10,745	11,141	10,754	9,656	9,075	8,208
60%	7,491	7,523	7,925	8,409	8,418	9,546	10,693	11,141	10,416	9,026	8,306	7,740
70%	7,012	7,168	7,654	8,046	8,418	9,100	10,186	10,324	9,984	8,498	7,900	7,251
80%	6,656	6,844	7,049	7,617	7,712	8,692	9,327	9,596	9,235	7,934	7,340	7,038
90%	6,050	6,275	6,595	6,623	7,230	7,636	8,424	8,434	8,155	7,188	6,623	6,292
Long Term												
Full Simulation Period[a]	7,797	7,543	7,766	7,971	8,077	9,221	10,074	10,414	10,156	9,241	8,594	8,105
Water Year Types[b,c]												
Wet (32%)	9,108	8,212	8,186	8,418	8,418	9,855	10,727	11,134	11,061	10,518	9,802	9,409
Above Normal (15%)	7,790	7,432	7,678	8,312	8,418	9,842	10,720	11,141	10,891	9,622	8,997	8,237
Below Normal (17%)	7,701	7,628	7,702	8,181	8,283	9,324	10,491	10,890	10,652	9,244	8,702	7,992
Dry (22%)	7,352	7,587	7,864	7,573	7,929	8,968	9,895	10,177	9,650	8,664	7,992	7,629
Critical (15%)	5,745	6,039	6,874	7,015	6,979	7,484	7,794	7,926	7,643	6,958	6,348	5,995

Table 5B2-26-2c. Folsom Lake Surface Area, Alternative 1B 011221 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1	0	0	0	0	0	0	0	0	0	0	0
20%	11	0	0	0	0	0	0	0	0	-37	0	16
30%	114	44	0	0	0	0	0	0	0	20	58	112
40%	38	38	10	0	0	0	0	0	0	60	94	44
50%	195	72	10	0	0	1	0	0	38	74	161	140
60%	243	74	-17	-9	0	0	27	0	20	40	153	170
70%	132	-1	120	31	0	0	25	20	75	202	199	109
80%	-55	-62	-27	140	-13	103	19	17	113	53	109	131
90%	-97	186	233	39	-115	-117	-193	-120	157	5	-37	106
Long Term												
Full Simulation Period[a]	64	39	17	9	-1	5	15	15	29	44	70	87
Water Year Types[b,c]												
Wet (32%)	19	14	11	0	0	0	0	0	12	17	18	22
Above Normal (15%)	178	88	80	6	0	0	0	0	37	39	90	172
Below Normal (17%)	75	36	27	4	-2	-2	-1	0	8	41	46	65
Dry (22%)	69	47	3	50	13	54	63	59	65	85	141	141
Critical (15%)	26	36	-24	-20	-25	-46	10	17	32	54	87	85

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-26-3a. Folsom Lake Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,631	8,418	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,993	10,106	9,869
20%	9,539	8,418	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,980	10,106	9,822
30%	8,565	8,342	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,411	9,845	9,016
40%	8,222	8,190	8,389	8,418	8,418	9,893	10,745	11,141	11,141	9,751	9,326	8,585
50%	7,601	7,815	8,165	8,418	8,418	9,831	10,745	11,141	10,716	9,581	8,914	8,068
60%	7,247	7,449	7,942	8,418	8,418	9,546	10,667	11,141	10,396	8,986	8,153	7,570
70%	6,880	7,169	7,534	8,015	8,418	9,100	10,162	10,304	9,909	8,295	7,702	7,143
80%	6,711	6,906	7,076	7,477	7,725	8,590	9,308	9,579	9,122	7,881	7,231	6,908
90%	6,147	6,089	6,362	6,584	7,345	7,753	8,617	8,553	7,998	7,183	6,660	6,186
Long Term												
Full Simulation Period[a]	7,734	7,504	7,749	7,962	8,078	9,216	10,059	10,398	10,127	9,197	8,523	8,019
Water Year Types[b,c]												
Wet (32%)	9,090	8,198	8,175	8,418	8,418	9,855	10,727	11,134	11,049	10,502	9,784	9,387
Above Normal (15%)	7,612	7,344	7,598	8,306	8,418	9,842	10,720	11,140	10,854	9,583	8,907	8,064
Below Normal (17%)	7,626	7,592	7,675	8,177	8,285	9,325	10,492	10,890	10,643	9,202	8,656	7,927
Dry (22%)	7,283	7,539	7,861	7,523	7,916	8,914	9,833	10,118	9,586	8,579	7,852	7,488
Critical (15%)	5,719	6,003	6,897	7,035	7,004	7,530	7,784	7,909	7,611	6,904	6,261	5,911

Table 5B2-26-3b. Folsom Lake Surface Area, Alternative 2 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,631	8,418	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,993	10,106	9,869
20%	9,549	8,418	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,980	10,106	9,829
30%	8,635	8,385	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,428	9,857	9,123
40%	8,252	8,189	8,390	8,418	8,418	9,893	10,745	11,141	11,141	9,859	9,411	8,619
50%	7,686	7,893	8,160	8,418	8,418	9,831	10,745	11,141	10,742	9,611	8,943	8,098
60%	7,425	7,497	7,917	8,409	8,418	9,546	10,688	11,141	10,356	8,980	8,255	7,724
70%	6,956	7,147	7,621	8,016	8,418	9,100	10,162	10,287	9,885	8,364	7,827	7,157
80%	6,702	6,852	7,031	7,614	7,720	8,684	9,311	9,577	9,235	7,911	7,321	6,966
90%	6,042	6,195	6,564	6,597	7,169	7,624	8,454	8,403	8,061	7,226	6,730	6,283
Long Term												
Full Simulation Period[a]	7,770	7,514	7,745	7,961	8,068	9,211	10,063	10,400	10,137	9,227	8,571	8,069
Water Year Types[b,c]												
Wet (32%)	9,109	8,203	8,183	8,418	8,418	9,855	10,727	11,134	11,061	10,519	9,803	9,407
Above Normal (15%)	7,631	7,353	7,607	8,307	8,418	9,842	10,720	11,140	10,881	9,623	8,938	8,088
Below Normal (17%)	7,656	7,616	7,707	8,170	8,281	9,321	10,490	10,890	10,635	9,224	8,673	7,963
Dry (22%)	7,394	7,553	7,833	7,549	7,902	8,937	9,860	10,130	9,604	8,640	7,975	7,612
Critical (15%)	5,703	6,000	6,850	6,999	6,960	7,469	7,771	7,900	7,613	6,916	6,309	5,957

Table 5B2-26-3c. Folsom Lake Surface Area, Alternative 2 011221 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	11	0	0	0	0	0	0	0	0	0	0	8
30%	69	42	0	0	0	0	0	0	0	17	12	107
40%	31	-1	1	0	0	0	0	0	0	108	85	33
50%	85	78	-5	0	0	0	0	0	26	29	29	29
60%	178	48	-25	-9	0	0	21	0	-40	-6	102	155
70%	76	-22	87	1	0	0	0	-17	-24	69	125	15
80%	-9	-54	-45	136	-5	94	2	-2	112	31	89	58
90%	-105	107	202	13	-176	-129	-163	-151	63	43	71	97
Long Term												
Full Simulation Period[a]	36	10	-4	-1	-10	-4	4	1	10	30	48	50
Water Year Types[b,c]												
Wet (32%)	19	6	8	0	0	0	0	0	12	17	19	20
Above Normal (15%)	19	9	9	0	0	0	0	0	27	40	31	24
Below Normal (17%)	30	23	32	-7	-5	-5	-1	0	-8	22	17	36
Dry (22%)	111	14	-28	25	-14	24	28	12	18	61	123	124
Critical (15%)	-17	-3	-48	-35	-44	-61	-13	-9	2	12	48	47

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-26-4a. Folsom Lake Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,631	8,418	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,993	10,106	9,869
20%	9,539	8,418	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,980	10,106	9,822
30%	8,565	8,342	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,411	9,845	9,016
40%	8,222	8,190	8,389	8,418	8,418	9,893	10,745	11,141	11,141	9,751	9,326	8,585
50%	7,601	7,815	8,165	8,418	8,418	9,831	10,745	11,141	10,716	9,581	8,914	8,068
60%	7,247	7,449	7,942	8,418	8,418	9,546	10,667	11,141	10,396	8,986	8,153	7,570
70%	6,880	7,169	7,534	8,015	8,418	9,100	10,162	10,304	9,909	8,295	7,702	7,143
80%	6,711	6,906	7,076	7,477	7,725	8,590	9,308	9,579	9,122	7,881	7,231	6,908
90%	6,147	6,089	6,362	6,584	7,345	7,753	8,617	8,553	7,998	7,183	6,660	6,186
Long Term												
Full Simulation Period[a]	7,734	7,504	7,749	7,962	8,078	9,216	10,059	10,398	10,127	9,197	8,523	8,019
Water Year Types[b,c]												
Wet (32%)	9,090	8,198	8,175	8,418	8,418	9,855	10,727	11,134	11,049	10,502	9,784	9,387
Above Normal (15%)	7,612	7,344	7,598	8,306	8,418	9,842	10,720	11,140	10,854	9,583	8,907	8,064
Below Normal (17%)	7,626	7,592	7,675	8,177	8,285	9,325	10,492	10,890	10,643	9,202	8,656	7,927
Dry (22%)	7,283	7,539	7,861	7,523	7,916	8,914	9,833	10,118	9,586	8,579	7,852	7,488
Critical (15%)	5,719	6,003	6,897	7,035	7,004	7,530	7,784	7,909	7,611	6,904	6,261	5,911

Table 5B2-26-4b. Folsom Lake Surface Area, Alternative 3 020121, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,631	8,418	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,993	10,106	9,869
20%	9,555	8,418	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,943	10,106	9,838
30%	8,837	8,409	8,418	8,418	8,418	9,893	10,745	11,141	11,141	10,458	10,009	9,213
40%	8,325	8,278	8,418	8,418	8,418	9,893	10,745	11,141	11,141	9,983	9,525	8,723
50%	7,988	8,104	8,287	8,418	8,418	9,861	10,745	11,141	10,802	9,768	9,229	8,534
60%	7,606	7,872	8,097	8,418	8,418	9,545	10,693	11,141	10,469	9,457	8,569	7,956
70%	7,260	7,307	7,802	8,055	8,418	9,100	10,211	10,338	9,993	8,743	8,010	7,479
80%	6,847	7,037	7,068	7,566	8,018	8,792	9,470	9,733	9,434	8,140	7,550	7,184
90%	6,281	6,236	6,675	6,882	7,313	7,850	8,709	8,631	8,284	7,427	6,884	6,746
Long Term												
Full Simulation Period[a]	7,950	7,658	7,850	8,017	8,131	9,261	10,097	10,442	10,205	9,399	8,721	8,245
Water Year Types[b,c]												
Wet (32%)	9,111	8,211	8,186	8,418	8,418	9,855	10,727	11,134	11,061	10,519	9,803	9,409
Above Normal (15%)	8,142	7,662	7,869	8,312	8,418	9,842	10,720	11,141	10,908	9,935	9,270	8,612
Below Normal (17%)	8,045	7,915	7,900	8,177	8,280	9,320	10,493	10,890	10,673	9,553	9,047	8,341
Dry (22%)	7,563	7,804	7,985	7,788	8,109	9,084	9,985	10,273	9,816	8,916	8,216	7,854
Critical (15%)	5,713	5,937	6,845	7,010	7,083	7,589	7,817	7,978	7,686	6,978	6,205	5,830

Table 5B2-26-4c. Folsom Lake Surface Area, Alternative 3 020121 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	17	0	0	0	0	0	0	0	0	-37	0	16
30%	271	67	0	0	0	0	0	0	0	46	164	198
40%	104	87	29	0	0	0	0	0	0	232	199	137
50%	387	290	122	0	0	31	0	0	86	186	315	465
60%	359	423	155	0	0	0	26	0	73	471	416	386
70%	380	138	268	40	0	0	49	34	84	448	308	336
80%	136	131	-8	89	294	203	162	154	311	259	319	277
90%	134	147	312	297	-32	98	92	78	286	244	224	560
Long Term												
Full Simulation Period[a]	217	154	101	55	53	45	38	44	78	202	198	226
Water Year Types[b,c]												
Wet (32%)	21	13	11	0	0	0	0	0	12	17	19	22
Above Normal (15%)	530	318	271	6	0	0	0	0	54	352	364	547
Below Normal (17%)	419	323	225	0	-5	-5	1	0	30	351	391	414
Dry (22%)	280	264	124	264	193	171	152	155	230	337	365	366
Critical (15%)	-6	-66	-52	-25	79	59	33	69	75	74	-56	-81

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Figure 5B2-26-1. Folsom Lake Surface Area, October

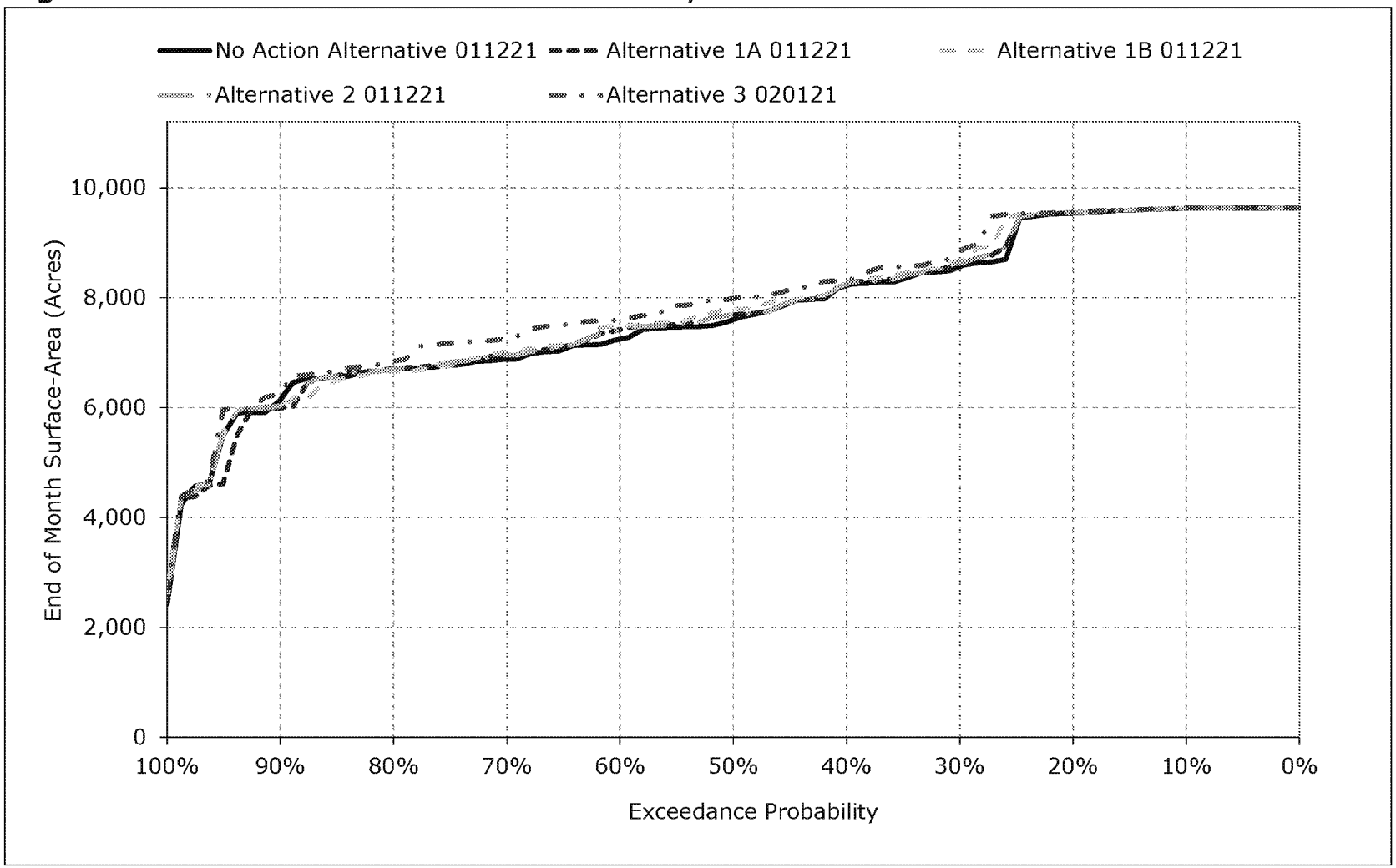


Figure 5B2-26-2. Folsom Lake Surface Area, November

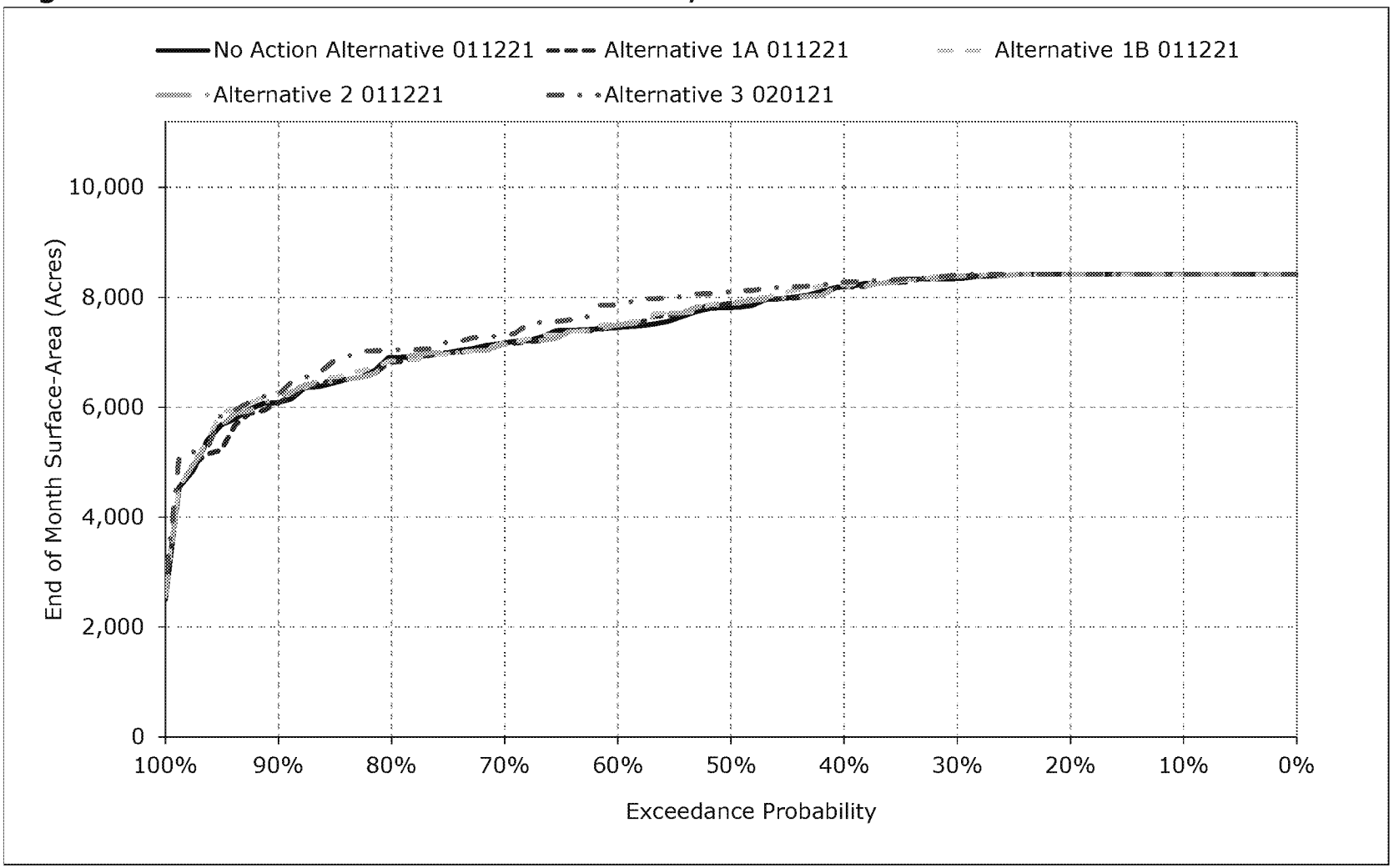


Figure 5B2-26-3. Folsom Lake Surface Area, December

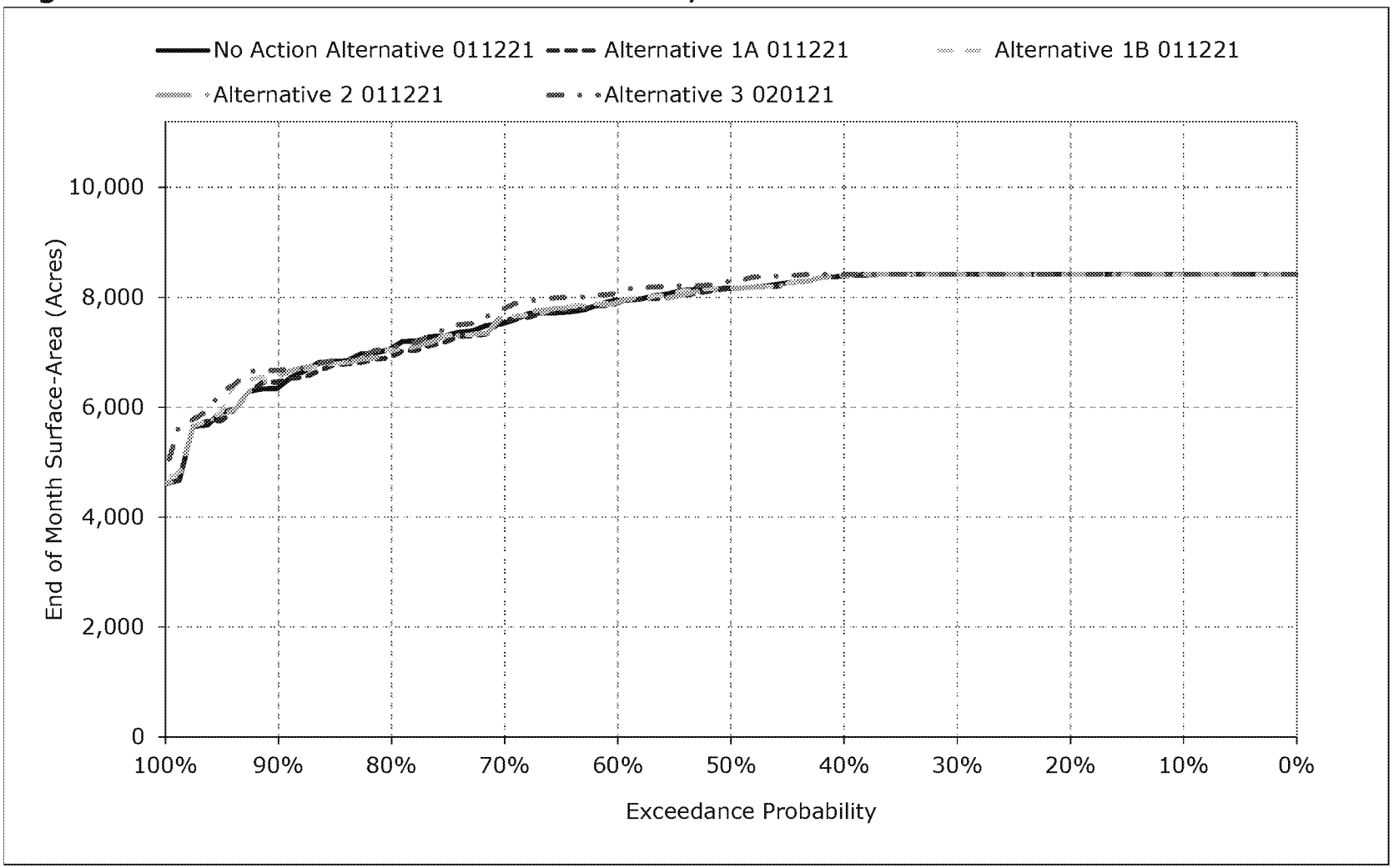


Figure 5B2-26-4. Folsom Lake Surface Area, January

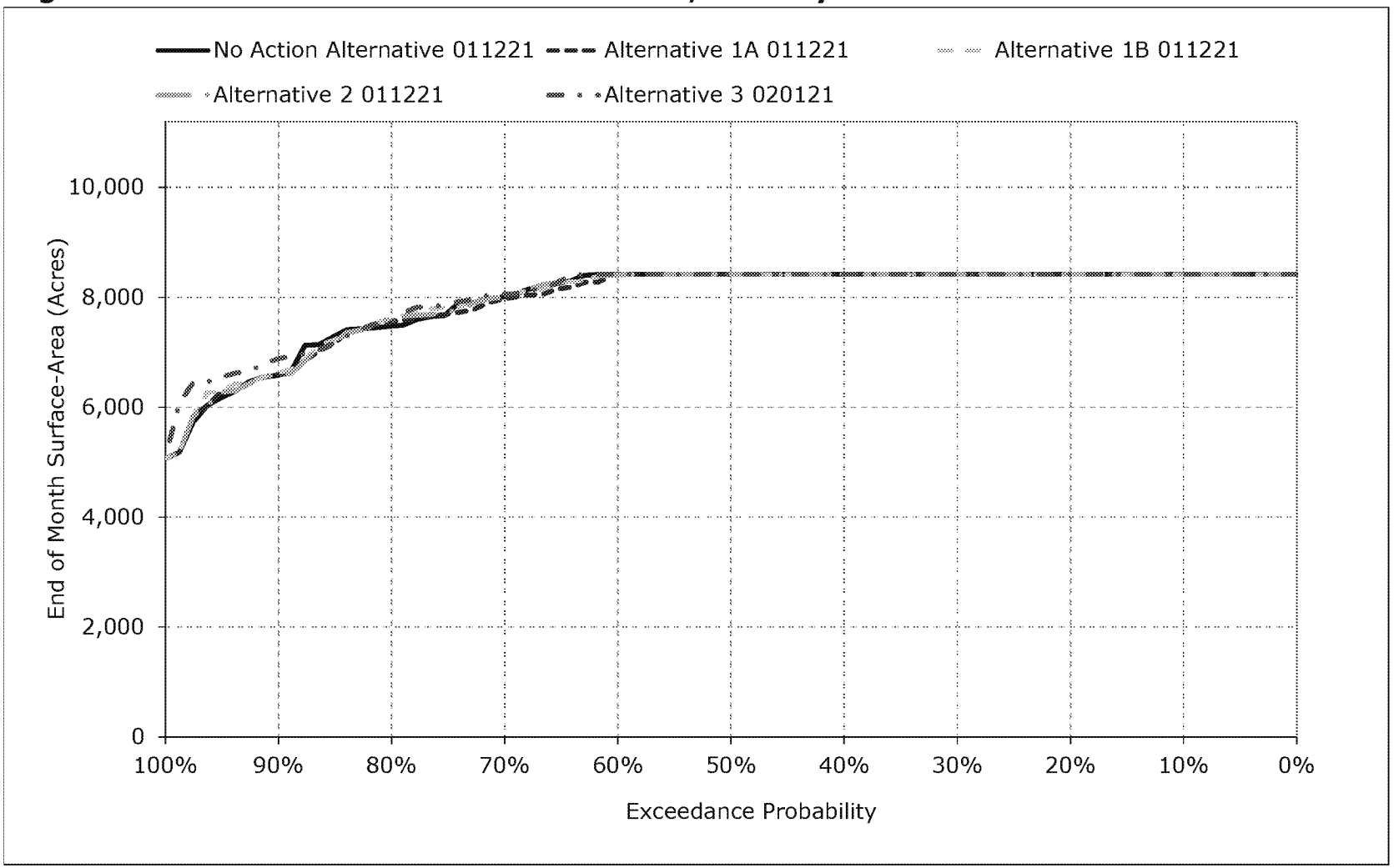


Figure 5B2-26-5. Folsom Lake Surface Area, February

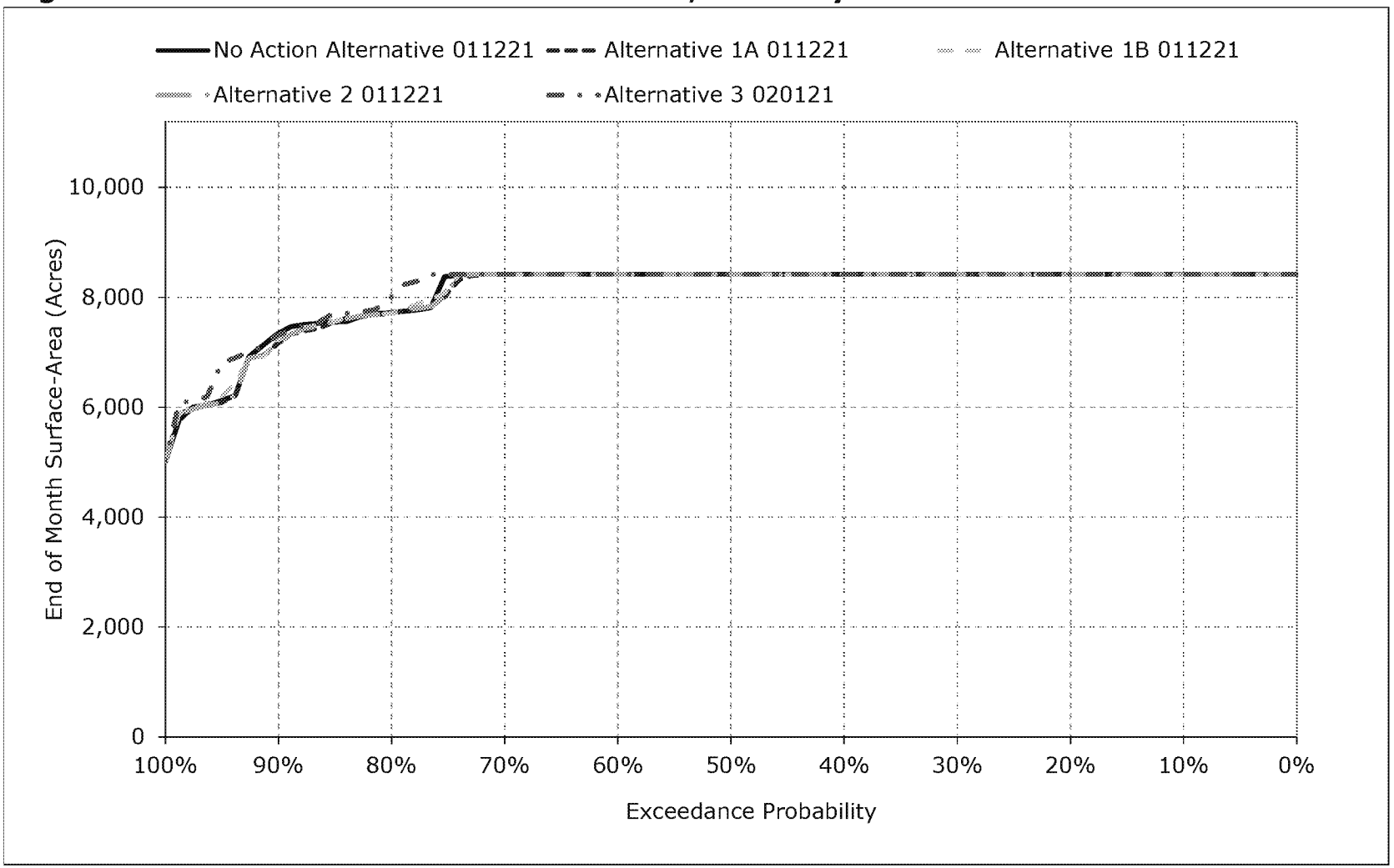


Figure 5B2-26-6. Folsom Lake Surface Area, March

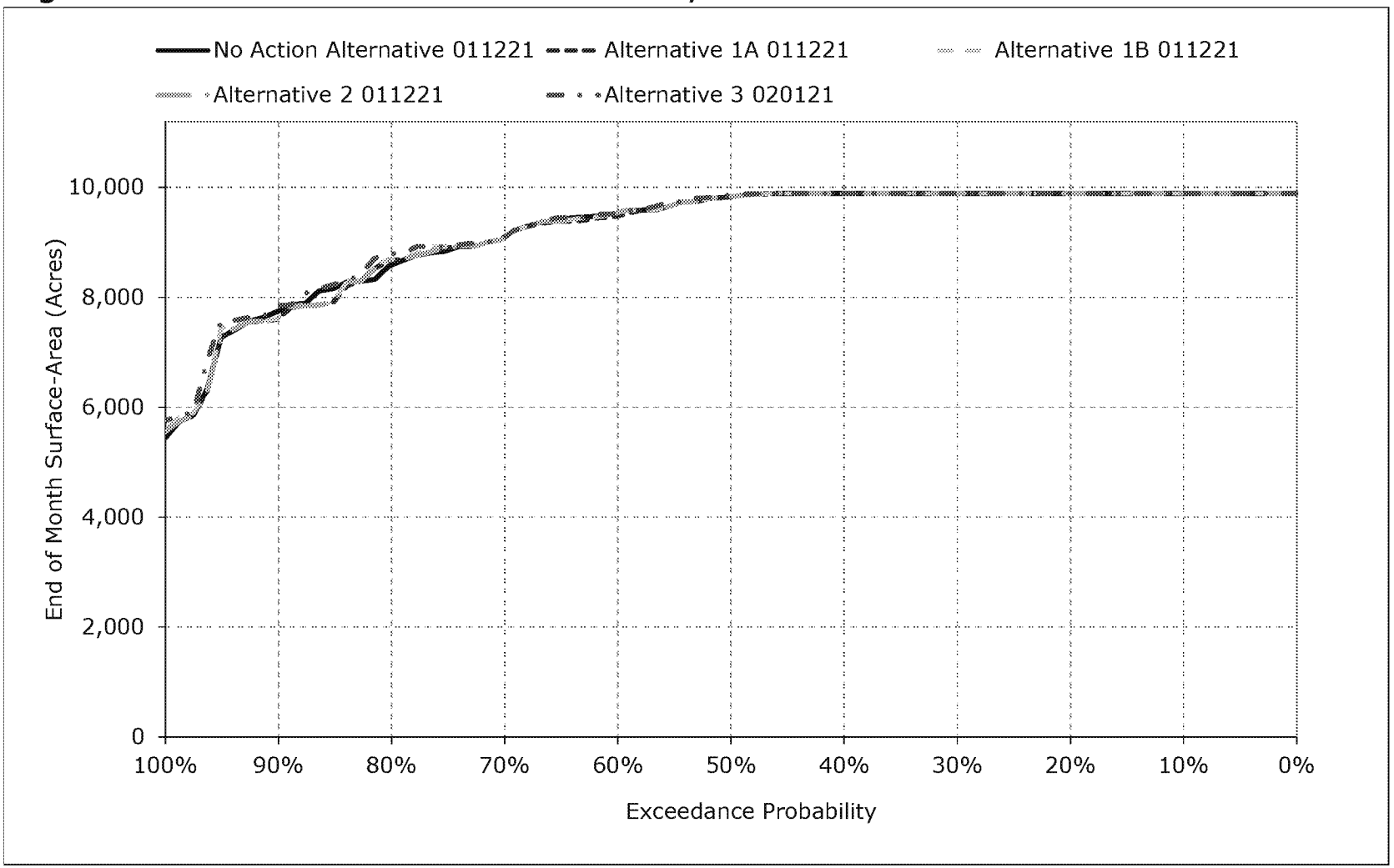


Figure 5B2-26-7. Folsom Lake Surface Area, April

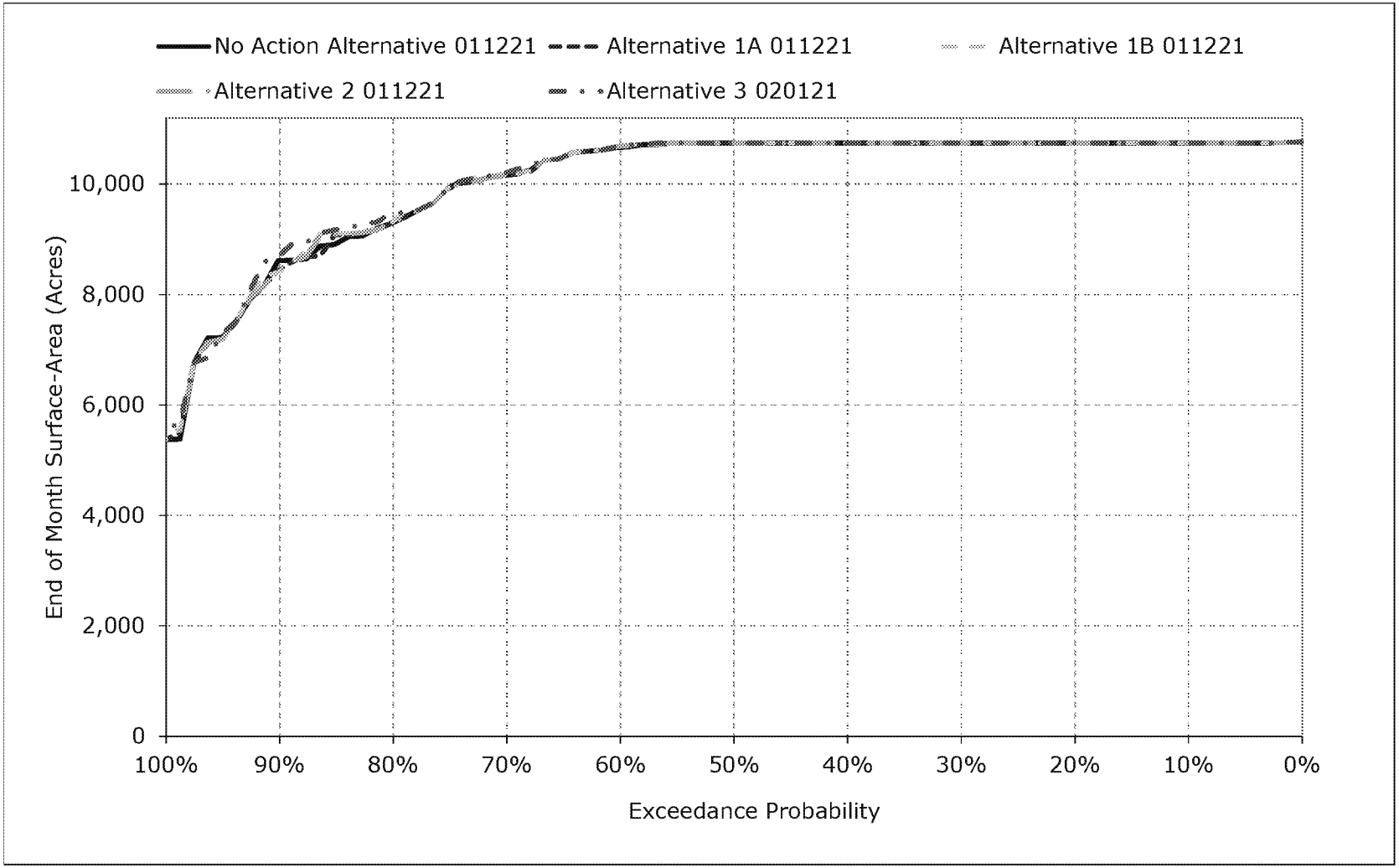


Figure 5B2-26-8. Folsom Lake Surface Area, May

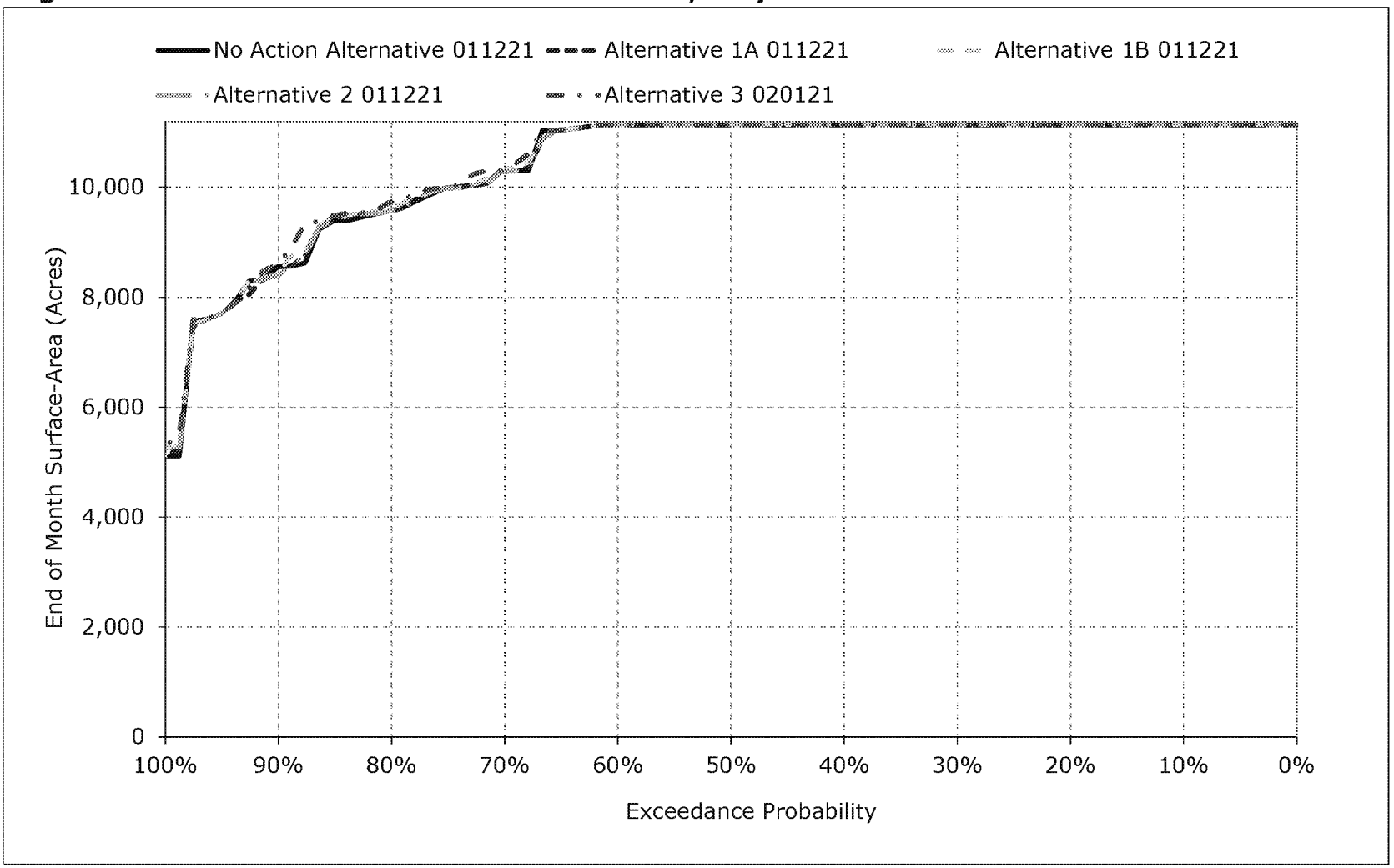


Figure 5B2-26-9. Folsom Lake Surface Area, June

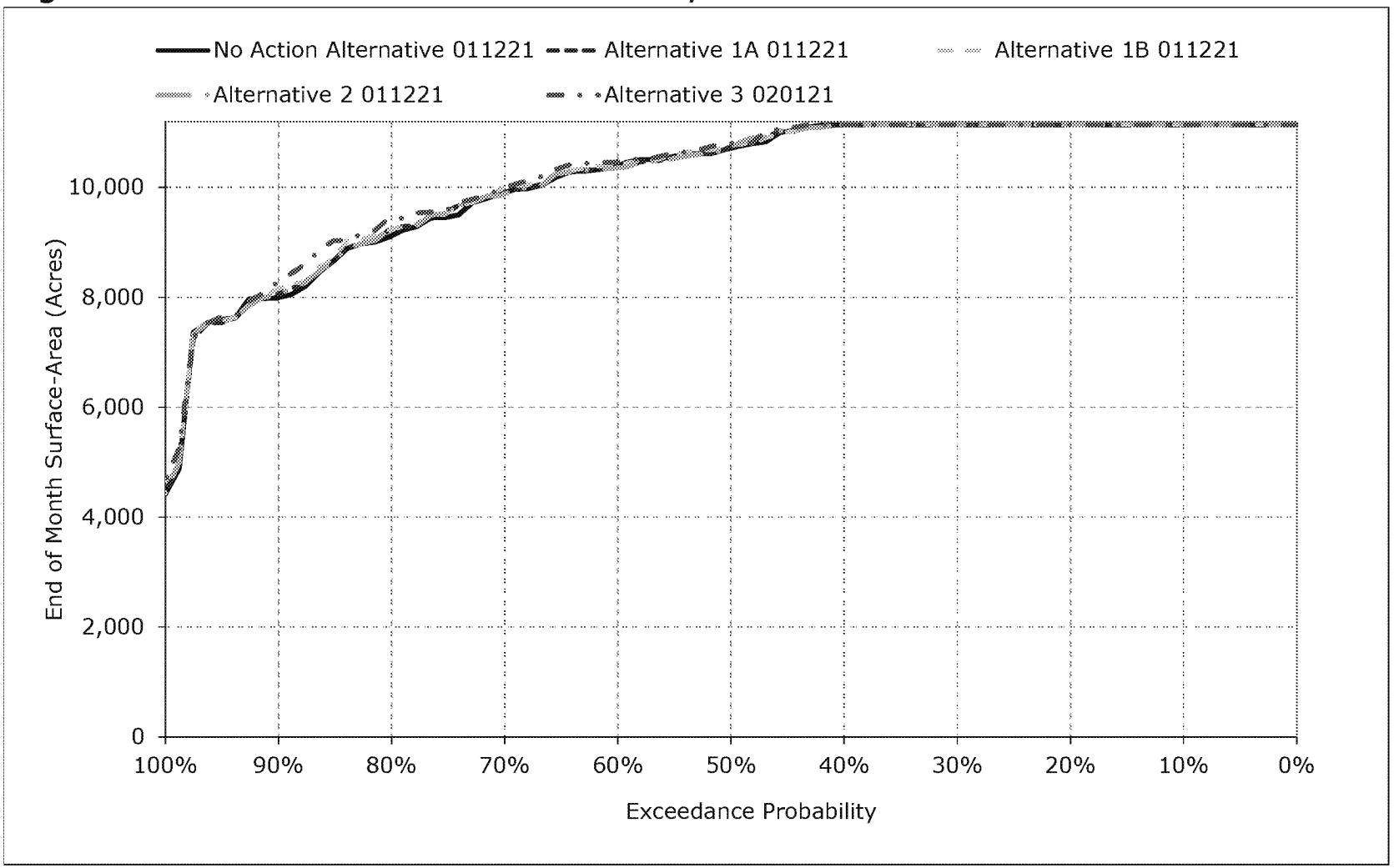


Figure 5B2-26-10. Folsom Lake Surface Area, July

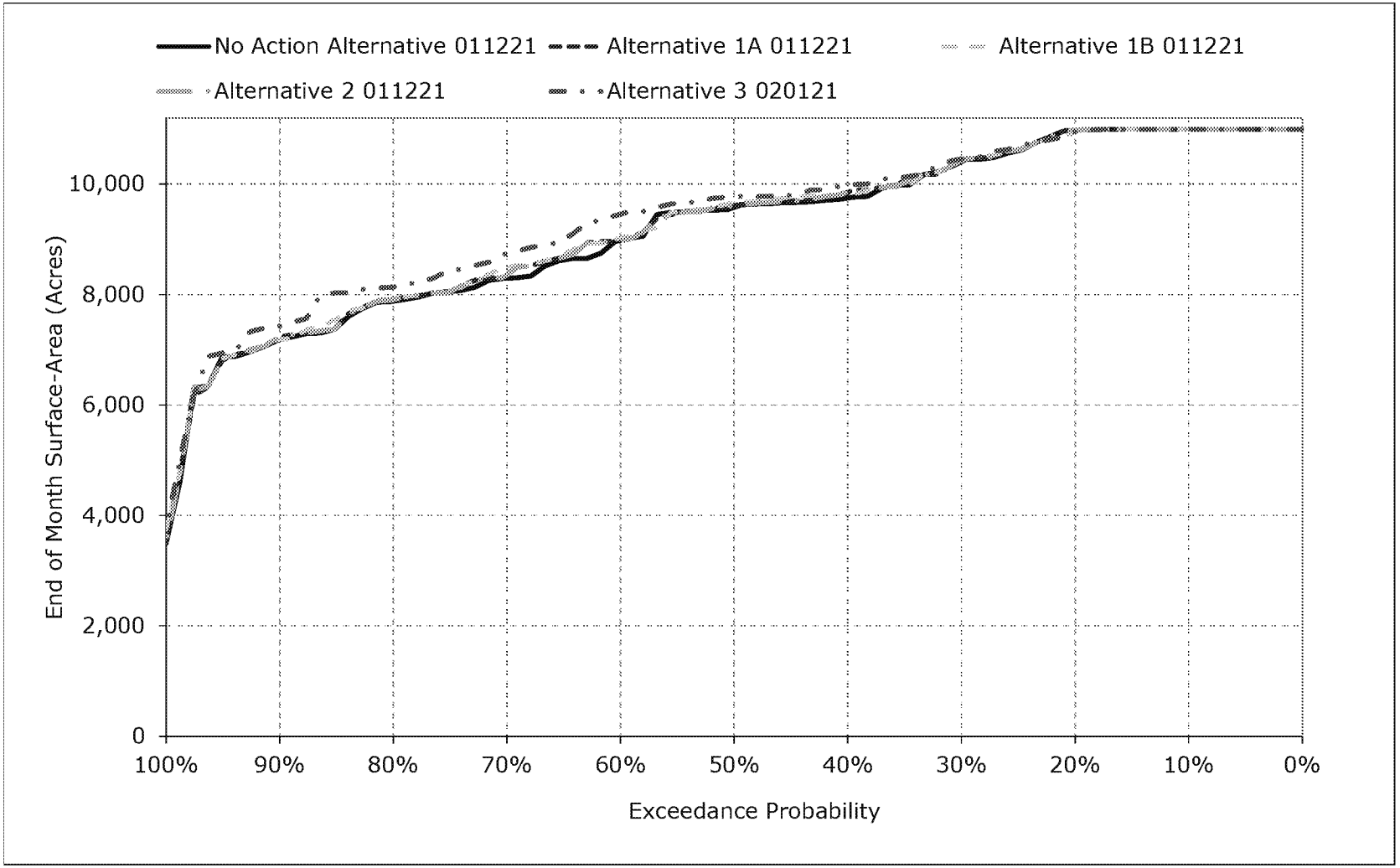


Figure 5B2-26-11. Folsom Lake Surface Area, August

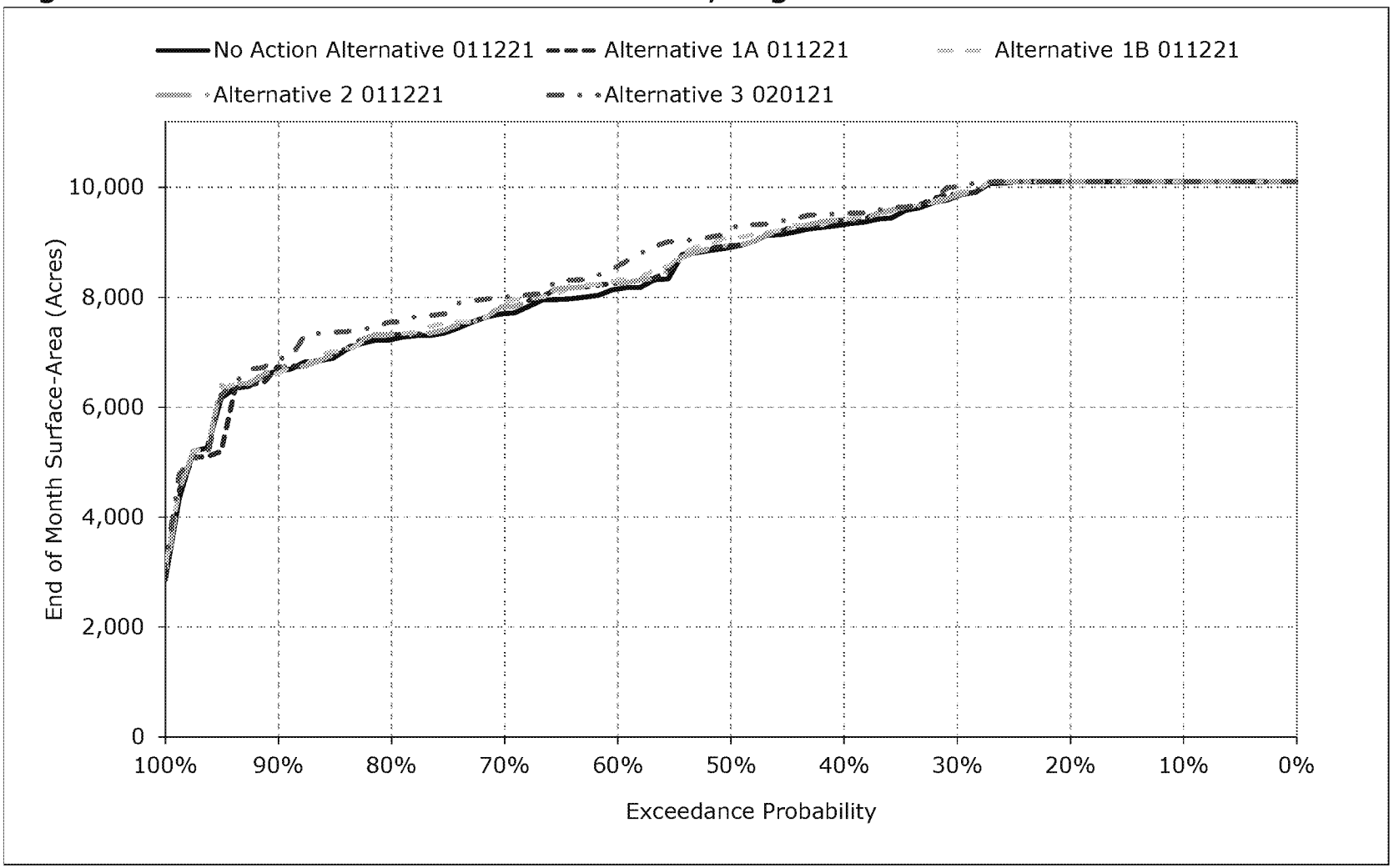


Figure 5B2-26-12. Folsom Lake Surface Area, September

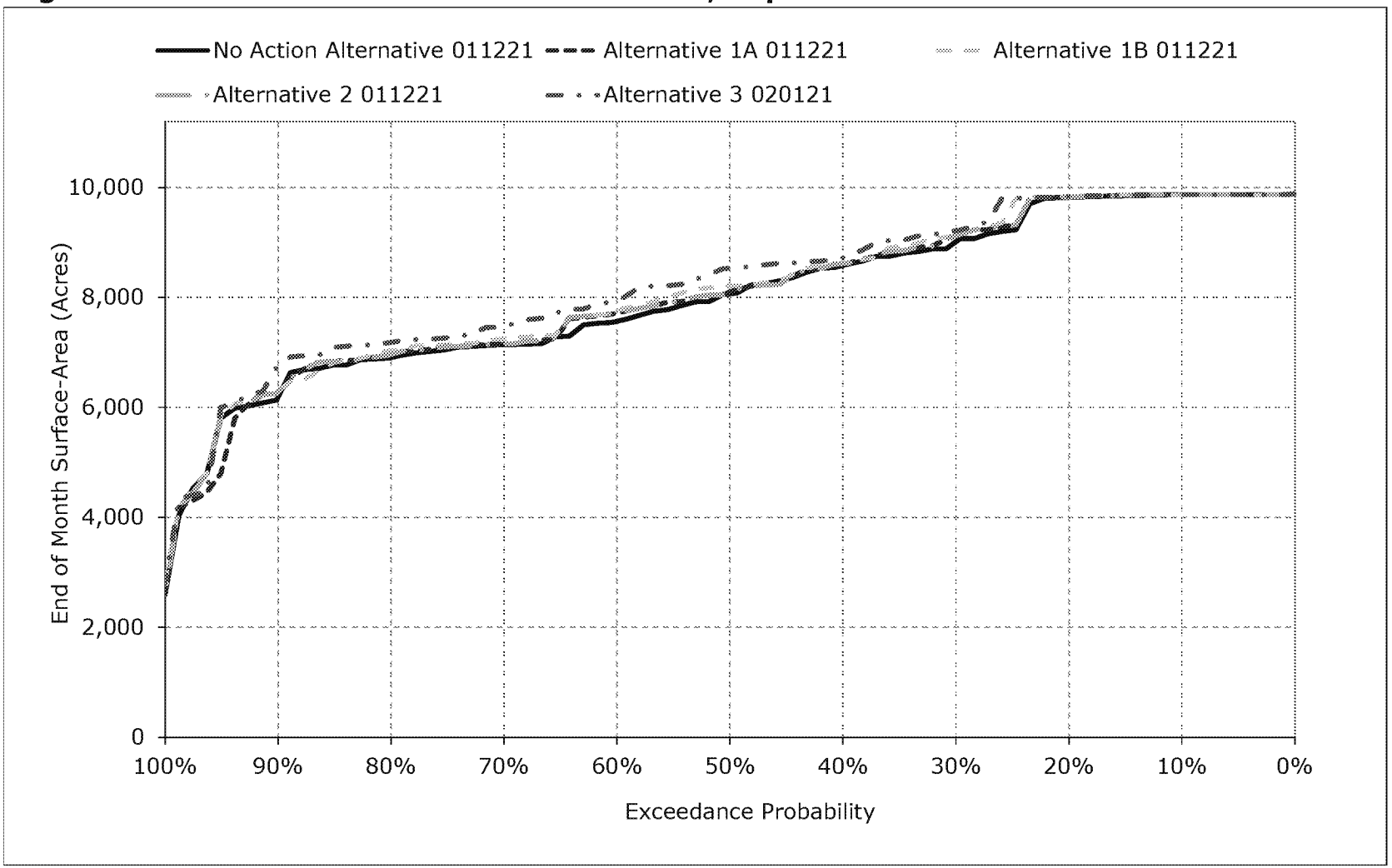


Table 5B2-27-1a. American River below Nimbus Dam Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,876	4,794	7,259	10,824	11,622	8,543	6,686	9,393	5,936	5,095	3,808	3,054
20%	1,500	4,129	4,004	7,049	9,495	4,637	5,184	6,613	4,580	4,742	3,551	2,611
30%	1,500	3,459	2,890	4,957	6,745	3,389	3,923	5,665	3,699	3,897	2,815	2,329
40%	1,500	2,339	2,146	3,501	5,108	2,477	3,207	4,922	3,076	3,589	2,487	1,830
50%	1,500	2,000	2,000	1,872	3,501	1,798	2,395	4,019	2,704	2,926	2,009	1,750
60%	1,500	2,000	2,000	1,571	2,470	1,750	1,586	2,584	2,286	2,619	1,820	1,750
70%	1,199	1,291	1,914	1,400	1,847	1,750	1,351	1,844	2,002	2,399	1,750	1,644
80%	754	785	887	1,400	1,415	1,475	1,014	1,110	1,380	1,864	1,576	1,511
90%	625	619	640	739	1,400	953	953	953	852	1,316	1,080	885
Long Term												
Full Simulation Period[a]	1,366	2,618	3,371	4,436	5,336	3,381	3,237	4,343	3,198	3,150	2,329	1,939
Water Year Types[b,c]												
Wet (32%)	1,669	4,274	4,061	8,903	9,406	5,774	5,565	7,300	5,253	3,586	3,205	2,147
Above Normal (15%)	1,532	2,427	2,988	5,089	6,380	4,613	3,448	5,019	3,162	4,137	2,482	2,671
Below Normal (17%)	1,541	2,816	4,039	2,270	4,562	1,932	2,702	3,935	2,587	4,312	2,004	2,332
Dry (22%)	1,045	1,515	3,947	1,438	2,029	1,846	1,488	2,119	2,161	2,250	1,925	1,554
Critical (15%)	823	646	619	1,127	1,336	960	1,228	1,071	1,050	1,212	1,265	876

Table 5B2-27-1b. American River below Nimbus Dam Flow, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,886	4,795	7,259	10,824	11,622	8,474	6,691	9,393	5,936	5,129	3,795	3,059
20%	1,559	4,118	3,971	7,049	9,495	4,637	5,087	6,613	4,534	4,665	3,551	2,703
30%	1,500	3,399	2,876	4,957	6,744	3,389	3,924	5,665	3,687	3,844	2,841	2,227
40%	1,500	2,473	2,151	3,513	5,108	2,477	3,207	4,922	3,072	3,589	2,540	1,842
50%	1,500	2,002	2,000	1,896	3,502	1,798	2,352	4,019	2,628	2,913	2,009	1,750
60%	1,500	2,000	2,000	1,618	2,492	1,750	1,586	2,584	2,319	2,598	1,819	1,750
70%	1,216	1,408	1,914	1,400	1,868	1,750	1,351	1,776	1,901	2,373	1,750	1,644
80%	756	790	1,111	1,400	1,400	1,475	966	1,191	1,292	1,840	1,575	1,511
90%	637	637	649	672	1,400	953	953	953	852	1,276	885	885
Long Term												
Full Simulation Period[a]	1,387	2,668	3,398	4,425	5,329	3,378	3,221	4,343	3,174	3,114	2,322	1,944
Water Year Types[b,c]												
Wet (32%)	1,672	4,303	4,057	8,880	9,406	5,774	5,569	7,300	5,220	3,572	3,206	2,150
Above Normal (15%)	1,533	2,443	2,985	5,102	6,380	4,613	3,448	5,019	3,085	4,136	2,498	2,690
Below Normal (17%)	1,549	2,840	4,034	2,262	4,549	1,932	2,688	3,931	2,611	4,227	2,011	2,343
Dry (22%)	1,065	1,698	4,015	1,419	2,074	1,783	1,475	2,141	2,155	2,182	1,804	1,551
Critical (15%)	919	603	714	1,126	1,234	1,030	1,146	1,044	1,015	1,199	1,370	876

Table 5B2-27-1c. American River below Nimbus Dam Flow, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9	0	0	0	0	-69	5	0	0	35	-14	4
20%	59	-11	-33	0	0	0	-97	0	-45	-77	0	91
30%	0	-60	-15	0	0	0	1	0	-12	-53	25	-101
40%	0	134	5	13	0	0	0	0	-4	1	53	11
50%	0	2	0	25	1	0	-43	0	-75	-13	0	0
60%	0	0	0	47	23	0	0	0	33	-21	-1	0
70%	18	117	0	0	21	0	0	-68	-101	-26	0	0
80%	1	5	224	0	-15	0	-48	81	-88	-24	-2	0
90%	11	17	9	-67	0	0	0	0	0	-40	-195	0
Long Term												
Full Simulation Period[a]	21	50	26	-11	-7	-4	-16	0	-24	-36	-7	5
Water Year Types[b,c]												
Wet (32%)	3	30	-3	-23	0	0	4	0	-33	-15	1	3
Above Normal (15%)	1	16	-3	13	1	0	0	0	-77	0	17	19
Below Normal (17%)	8	24	-5	-9	-13	0	-14	-3	23	-85	7	11
Dry (22%)	20	183	68	-19	46	-63	-13	22	-6	-69	-121	-3
Critical (15%)	96	-43	95	-1	-102	70	-82	-28	-35	-14	105	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-27-2a. American River below Nimbus Dam Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,876	4,794	7,259	10,824	11,622	8,543	6,686	9,393	5,936	5,095	3,808	3,054
20%	1,500	4,129	4,004	7,049	9,495	4,637	5,184	6,613	4,580	4,742	3,551	2,611
30%	1,500	3,459	2,890	4,957	6,745	3,389	3,923	5,665	3,699	3,897	2,815	2,329
40%	1,500	2,339	2,146	3,501	5,108	2,477	3,207	4,922	3,076	3,589	2,487	1,830
50%	1,500	2,000	2,000	1,872	3,501	1,798	2,395	4,019	2,704	2,926	2,009	1,750
60%	1,500	2,000	2,000	1,571	2,470	1,750	1,586	2,584	2,286	2,619	1,820	1,750
70%	1,199	1,291	1,914	1,400	1,847	1,750	1,351	1,844	2,002	2,399	1,750	1,644
80%	754	785	887	1,400	1,415	1,475	1,014	1,110	1,380	1,864	1,576	1,511
90%	625	619	640	739	1,400	953	953	953	852	1,316	1,080	885
Long Term												
Full Simulation Period[a]	1,366	2,618	3,371	4,436	5,336	3,381	3,237	4,343	3,198	3,150	2,329	1,939
Water Year Types[b,c]												
Wet (32%)	1,669	4,274	4,061	8,903	9,406	5,774	5,565	7,300	5,253	3,586	3,205	2,147
Above Normal (15%)	1,532	2,427	2,988	5,089	6,380	4,613	3,448	5,019	3,162	4,137	2,482	2,671
Below Normal (17%)	1,541	2,816	4,039	2,270	4,562	1,932	2,702	3,935	2,587	4,312	2,004	2,332
Dry (22%)	1,045	1,515	3,947	1,438	2,029	1,846	1,488	2,119	2,161	2,250	1,925	1,554
Critical (15%)	823	646	619	1,127	1,336	960	1,228	1,071	1,050	1,212	1,265	876

Table 5B2-27-2b. American River below Nimbus Dam Flow, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,976	4,792	7,259	10,824	11,622	8,474	6,694	9,393	5,936	5,256	3,795	3,018
20%	1,619	4,107	4,091	7,049	9,495	4,637	5,179	6,613	4,535	4,626	3,531	2,615
30%	1,500	3,585	2,800	4,957	6,744	3,389	3,924	5,665	3,687	3,845	2,704	2,211
40%	1,500	2,397	2,188	3,695	5,108	2,466	3,207	4,922	2,975	3,469	2,335	1,841
50%	1,500	2,000	2,000	2,005	3,533	1,798	2,353	4,019	2,760	2,891	2,003	1,750
60%	1,500	2,000	2,000	1,593	2,565	1,750	1,556	2,584	2,260	2,614	1,753	1,750
70%	1,412	1,349	1,951	1,400	2,052	1,750	1,243	1,826	1,950	2,401	1,750	1,644
80%	768	760	1,132	1,400	1,415	1,475	966	1,179	1,279	1,873	1,576	1,511
90%	639	609	645	672	1,400	953	953	953	852	1,262	953	885
Long Term												
Full Simulation Period[a]	1,404	2,676	3,407	4,444	5,355	3,371	3,216	4,337	3,169	3,126	2,286	1,908
Water Year Types[b,c]												
Wet (32%)	1,678	4,288	4,066	8,908	9,406	5,774	5,570	7,300	5,220	3,573	3,206	2,142
Above Normal (15%)	1,531	2,613	2,993	5,189	6,391	4,613	3,448	5,017	3,057	4,154	2,403	2,490
Below Normal (17%)	1,523	2,885	4,063	2,269	4,570	1,930	2,701	3,932	2,563	4,233	2,003	2,320
Dry (22%)	1,154	1,583	4,024	1,419	2,097	1,774	1,449	2,104	2,174	2,228	1,815	1,551
Critical (15%)	918	639	702	1,102	1,346	997	1,133	1,060	1,035	1,184	1,210	876

Table 5B2-27-2c. American River below Nimbus Dam Flow, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	100	-3	0	0	0	-69	8	0	0	161	-14	-36
20%	119	-22	87	0	0	0	-5	0	-45	-117	-20	4
30%	0	126	-90	0	-1	0	1	0	-12	-52	-112	-118
40%	0	59	42	195	0	-10	0	0	-102	-120	-152	11
50%	0	0	0	133	32	0	-42	0	56	-35	-6	0
60%	0	0	0	22	95	0	-30	0	-26	-5	-67	0
70%	213	58	38	0	205	0	-108	-18	-52	1	0	0
80%	14	-25	245	0	0	0	-48	69	-101	9	-1	0
90%	14	-11	5	-67	0	0	0	0	0	-54	-126	0
Long Term												
Full Simulation Period[a]	37	58	36	8	19	-11	-21	-6	-29	-24	-43	-31
Water Year Types[b,c]												
Wet (32%)	9	15	5	4	0	0	5	0	-33	-13	1	-5
Above Normal (15%)	-1	185	5	100	11	0	0	-1	-105	18	-79	-181
Below Normal (17%)	-18	69	25	-1	8	-2	-1	-3	-24	-79	-1	-12
Dry (22%)	109	68	77	-20	69	-73	-39	-16	13	-22	-109	-3
Critical (15%)	95	-7	83	-25	10	37	-95	-11	-15	-29	-54	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-27-3a. American River below Nimbus Dam Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,876	4,794	7,259	10,824	11,622	8,543	6,686	9,393	5,936	5,095	3,808	3,054
20%	1,500	4,129	4,004	7,049	9,495	4,637	5,184	6,613	4,580	4,742	3,551	2,611
30%	1,500	3,459	2,890	4,957	6,745	3,389	3,923	5,665	3,699	3,897	2,815	2,329
40%	1,500	2,339	2,146	3,501	5,108	2,477	3,207	4,922	3,076	3,589	2,487	1,830
50%	1,500	2,000	2,000	1,872	3,501	1,798	2,395	4,019	2,704	2,926	2,009	1,750
60%	1,500	2,000	2,000	1,571	2,470	1,750	1,586	2,584	2,286	2,619	1,820	1,750
70%	1,199	1,291	1,914	1,400	1,847	1,750	1,351	1,844	2,002	2,399	1,750	1,644
80%	754	785	887	1,400	1,415	1,475	1,014	1,110	1,380	1,864	1,576	1,511
90%	625	619	640	739	1,400	953	953	953	852	1,316	1,080	885
Long Term												
Full Simulation Period[a]	1,366	2,618	3,371	4,436	5,336	3,381	3,237	4,343	3,198	3,150	2,329	1,939
Water Year Types[b,c]												
Wet (32%)	1,669	4,274	4,061	8,903	9,406	5,774	5,565	7,300	5,253	3,586	3,205	2,147
Above Normal (15%)	1,532	2,427	2,988	5,089	6,380	4,613	3,448	5,019	3,162	4,137	2,482	2,671
Below Normal (17%)	1,541	2,816	4,039	2,270	4,562	1,932	2,702	3,935	2,587	4,312	2,004	2,332
Dry (22%)	1,045	1,515	3,947	1,438	2,029	1,846	1,488	2,119	2,161	2,250	1,925	1,554
Critical (15%)	823	646	619	1,127	1,336	960	1,228	1,071	1,050	1,212	1,265	876

Table 5B2-27-3b. American River below Nimbus Dam Flow, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,886	4,795	7,259	10,824	11,622	8,474	6,694	9,393	5,936	5,123	3,795	3,039
20%	1,558	4,115	3,971	7,049	9,495	4,637	5,131	6,613	4,532	4,678	3,531	2,703
30%	1,500	3,397	2,874	4,957	6,744	3,389	3,924	5,665	3,687	3,844	2,751	2,227
40%	1,500	2,495	2,151	3,602	5,108	2,477	3,207	4,922	3,072	3,589	2,461	1,842
50%	1,500	2,000	2,000	1,896	3,502	1,798	2,352	4,019	2,627	2,911	2,004	1,750
60%	1,500	2,000	2,000	1,618	2,656	1,750	1,586	2,584	2,320	2,598	1,818	1,750
70%	1,216	1,405	1,914	1,400	2,002	1,750	1,351	1,855	1,904	2,373	1,750	1,644
80%	756	834	1,106	1,400	1,415	1,475	966	1,191	1,331	1,840	1,575	1,511
90%	637	637	649	672	1,400	953	953	953	852	1,276	885	885
Long Term												
Full Simulation Period[a]	1,388	2,669	3,393	4,430	5,353	3,373	3,222	4,346	3,177	3,113	2,301	1,938
Water Year Types[b,c]												
Wet (32%)	1,672	4,303	4,057	8,884	9,406	5,774	5,570	7,300	5,220	3,572	3,207	2,150
Above Normal (15%)	1,533	2,446	2,985	5,102	6,380	4,613	3,448	5,019	3,084	4,138	2,498	2,686
Below Normal (17%)	1,550	2,828	4,034	2,284	4,556	1,932	2,697	3,931	2,610	4,225	2,026	2,312
Dry (22%)	1,065	1,687	4,019	1,419	2,102	1,786	1,475	2,141	2,155	2,177	1,804	1,552
Critical (15%)	923	638	677	1,126	1,352	992	1,146	1,066	1,035	1,199	1,205	876

Table 5B2-27-3c. American River below Nimbus Dam Flow, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	10	0	0	0	0	-69	8	0	0	28	-14	-15
20%	58	-14	-34	0	0	0	-53	0	-47	-64	-20	92
30%	0	-62	-16	0	0	0	1	0	-12	-53	-65	-102
40%	0	157	5	102	0	0	0	0	-4	0	-26	11
50%	0	0	0	25	1	0	-43	0	-77	-15	-6	0
60%	0	0	0	48	186	0	0	0	33	-21	-2	0
70%	18	114	0	0	155	0	0	11	-97	-26	0	0
80%	1	49	219	0	0	0	-48	81	-49	-24	-1	0
90%	11	17	9	-67	0	0	0	0	0	-40	-195	0
Long Term												
Full Simulation Period[a]	22	51	22	-6	18	-9	-14	3	-21	-37	-29	-1
Water Year Types[b,c]												
Wet (32%)	3	29	-4	-20	0	0	5	0	-33	-15	1	3
Above Normal (15%)	1	19	-4	13	0	0	0	0	-77	1	16	15
Below Normal (17%)	9	12	-5	13	-7	0	-5	-4	23	-87	22	-20
Dry (22%)	20	172	72	-19	74	-60	-13	22	-5	-73	-121	-2
Critical (15%)	100	-8	58	-1	17	32	-82	-5	-16	-13	-59	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-27-4a. American River below Nimbus Dam Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,876	4,794	7,259	10,824	11,622	8,543	6,686	9,393	5,936	5,095	3,808	3,054
20%	1,500	4,129	4,004	7,049	9,495	4,637	5,184	6,613	4,580	4,742	3,551	2,611
30%	1,500	3,459	2,890	4,957	6,745	3,389	3,923	5,665	3,699	3,897	2,815	2,329
40%	1,500	2,339	2,146	3,501	5,108	2,477	3,207	4,922	3,076	3,589	2,487	1,830
50%	1,500	2,000	2,000	1,872	3,501	1,798	2,395	4,019	2,704	2,926	2,009	1,750
60%	1,500	2,000	2,000	1,571	2,470	1,750	1,586	2,584	2,286	2,619	1,820	1,750
70%	1,199	1,291	1,914	1,400	1,847	1,750	1,351	1,844	2,002	2,399	1,750	1,644
80%	754	785	887	1,400	1,415	1,475	1,014	1,110	1,380	1,864	1,576	1,511
90%	625	619	640	739	1,400	953	953	953	852	1,316	1,080	885
Long Term												
Full Simulation Period[a]	1,366	2,618	3,371	4,436	5,336	3,381	3,237	4,343	3,198	3,150	2,329	1,939
Water Year Types[b,c]												
Wet (32%)	1,669	4,274	4,061	8,903	9,406	5,774	5,565	7,300	5,253	3,586	3,205	2,147
Above Normal (15%)	1,532	2,427	2,988	5,089	6,380	4,613	3,448	5,019	3,162	4,137	2,482	2,671
Below Normal (17%)	1,541	2,816	4,039	2,270	4,562	1,932	2,702	3,935	2,587	4,312	2,004	2,332
Dry (22%)	1,045	1,515	3,947	1,438	2,029	1,846	1,488	2,119	2,161	2,250	1,925	1,554
Critical (15%)	823	646	619	1,127	1,336	960	1,228	1,071	1,050	1,212	1,265	876

Table 5B2-27-4b. American River below Nimbus Dam Flow, Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,825	4,792	7,259	10,824	11,622	8,518	6,694	9,393	5,936	4,892	3,795	3,042
20%	1,500	4,186	4,474	7,049	9,495	4,637	5,093	6,613	4,488	4,192	3,551	2,440
30%	1,500	3,778	2,910	4,957	6,742	3,389	3,924	5,665	3,687	3,642	2,863	2,161
40%	1,500	2,338	2,284	3,701	5,108	2,477	3,207	4,922	2,925	3,077	2,562	1,826
50%	1,500	2,000	2,000	2,163	3,533	1,799	2,395	4,019	2,570	2,753	2,162	1,750
60%	1,500	2,000	2,000	1,666	2,704	1,750	1,715	2,584	2,142	2,520	1,851	1,750
70%	1,379	1,474	2,000	1,400	1,813	1,750	1,470	1,660	1,779	2,365	1,750	1,644
80%	794	918	1,273	1,400	1,400	1,481	1,014	1,082	1,220	1,776	1,583	1,511
90%	645	609	640	705	1,400	953	953	953	828	1,290	1,111	885
Long Term												
Full Simulation Period[a]	1,382	2,742	3,462	4,510	5,330	3,385	3,245	4,317	3,120	2,920	2,356	1,891
Water Year Types[b,c]												
Wet (32%)	1,672	4,294	4,064	8,997	9,405	5,774	5,570	7,300	5,220	3,571	3,206	2,147
Above Normal (15%)	1,527	2,854	3,059	5,201	6,390	4,613	3,448	5,017	3,008	3,530	2,558	2,305
Below Normal (17%)	1,546	2,973	4,210	2,336	4,568	1,932	2,689	3,934	2,498	3,678	2,014	2,368
Dry (22%)	1,183	1,570	4,181	1,511	2,115	1,846	1,512	2,045	2,029	2,124	1,888	1,553
Critical (15%)	714	758	609	1,128	1,154	985	1,251	1,006	1,041	1,210	1,412	876

Table 5B2-27-4c. American River below Nimbus Dam Flow, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

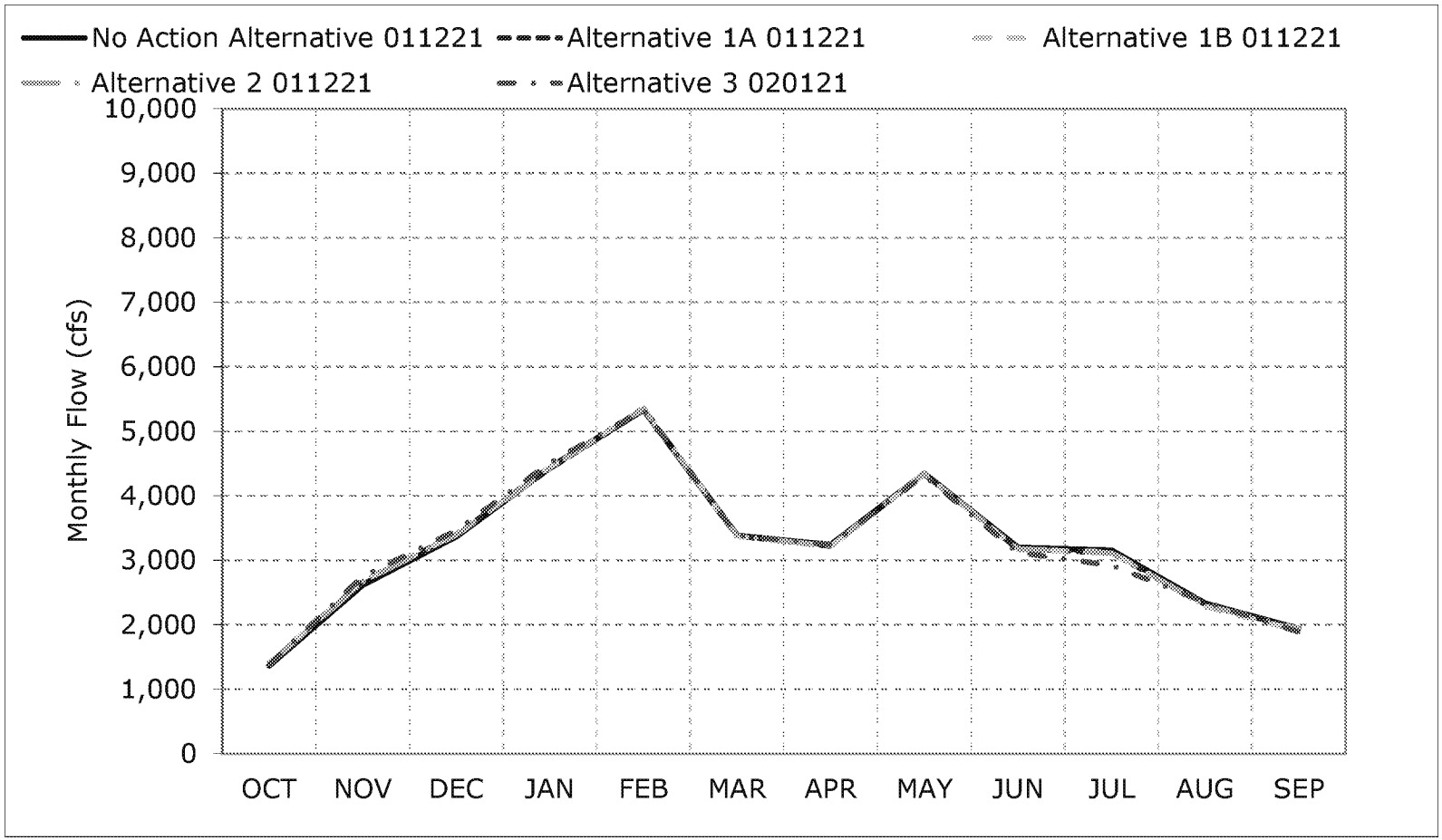
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-51	-3	0	0	0	-25	8	0	0	-203	-14	-13
20%	0	57	470	0	0	0	-91	0	-92	-550	0	-172
30%	0	319	20	0	-3	0	1	0	-12	-255	48	-168
40%	0	0	138	201	0	0	0	0	-152	-512	74	-5
50%	0	0	0	291	32	1	0	0	-134	-174	153	0
60%	0	0	0	95	234	0	129	0	-144	-99	31	0
70%	180	183	86	0	-34	0	119	-184	-223	-34	0	0
80%	40	133	386	0	-15	6	0	-28	-160	-88	7	0
90%	19	-11	0	-34	0	0	0	0	-24	-26	31	0
Long Term												
Full Simulation Period[a]	15	124	91	74	-5	3	8	-26	-78	-230	27	-48
Water Year Types[b,c]												
Wet (32%)	3	20	4	94	-1	0	5	0	-33	-15	1	0
Above Normal (15%)	-5	427	71	112	11	0	0	-1	-154	-606	76	-366
Below Normal (17%)	5	158	172	66	6	0	-13	-1	-89	-634	10	36
Dry (22%)	138	55	234	73	86	-1	24	-74	-132	-126	-37	-1
Critical (15%)	-109	112	-10	1	-182	25	23	-66	-9	-2	147	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

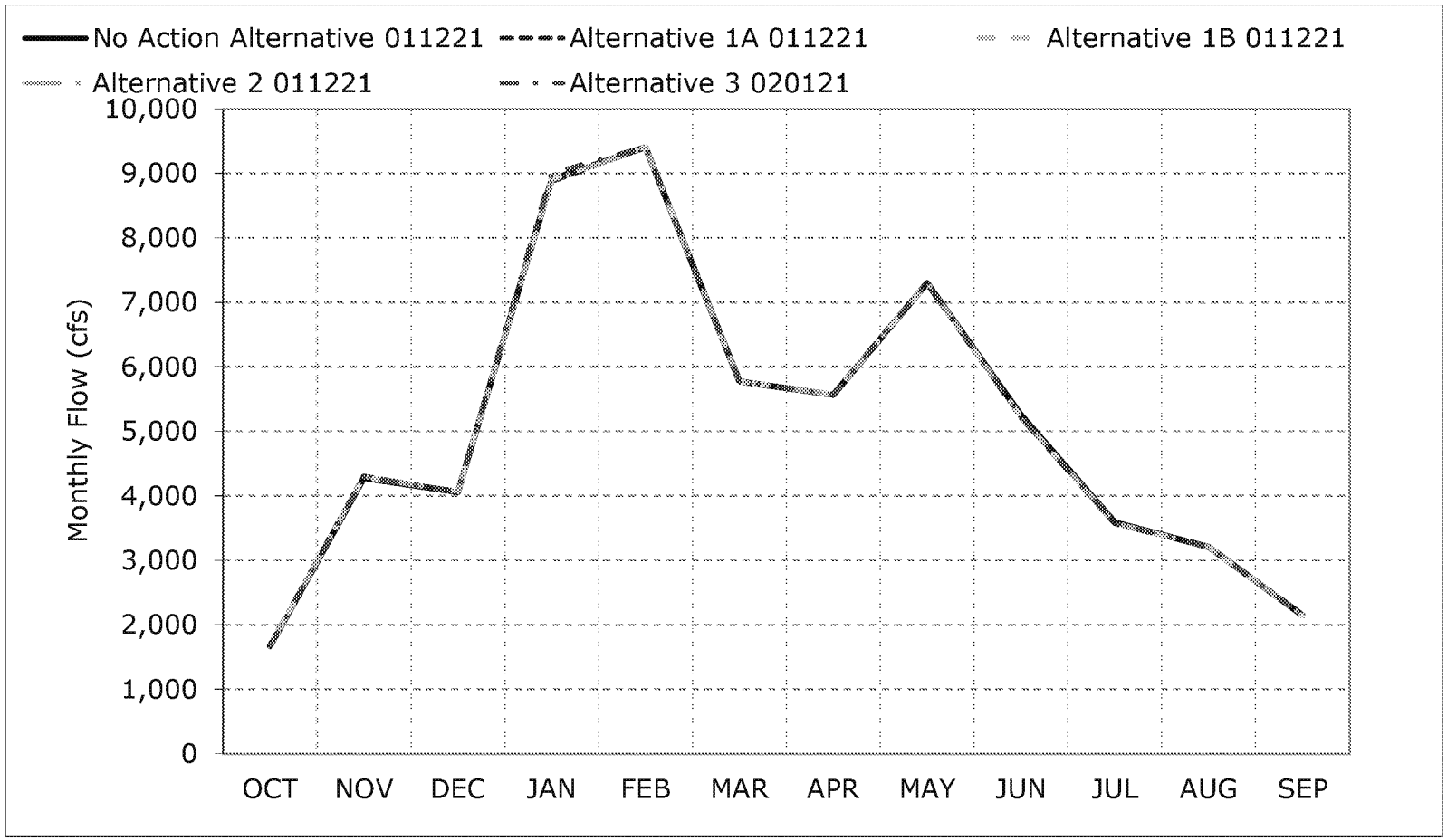
c These results are displayed with calendar year - year type sorting.

Figure 5B2-27-1. American River below Nimbus Dam Flow, Long-Term Average Flow



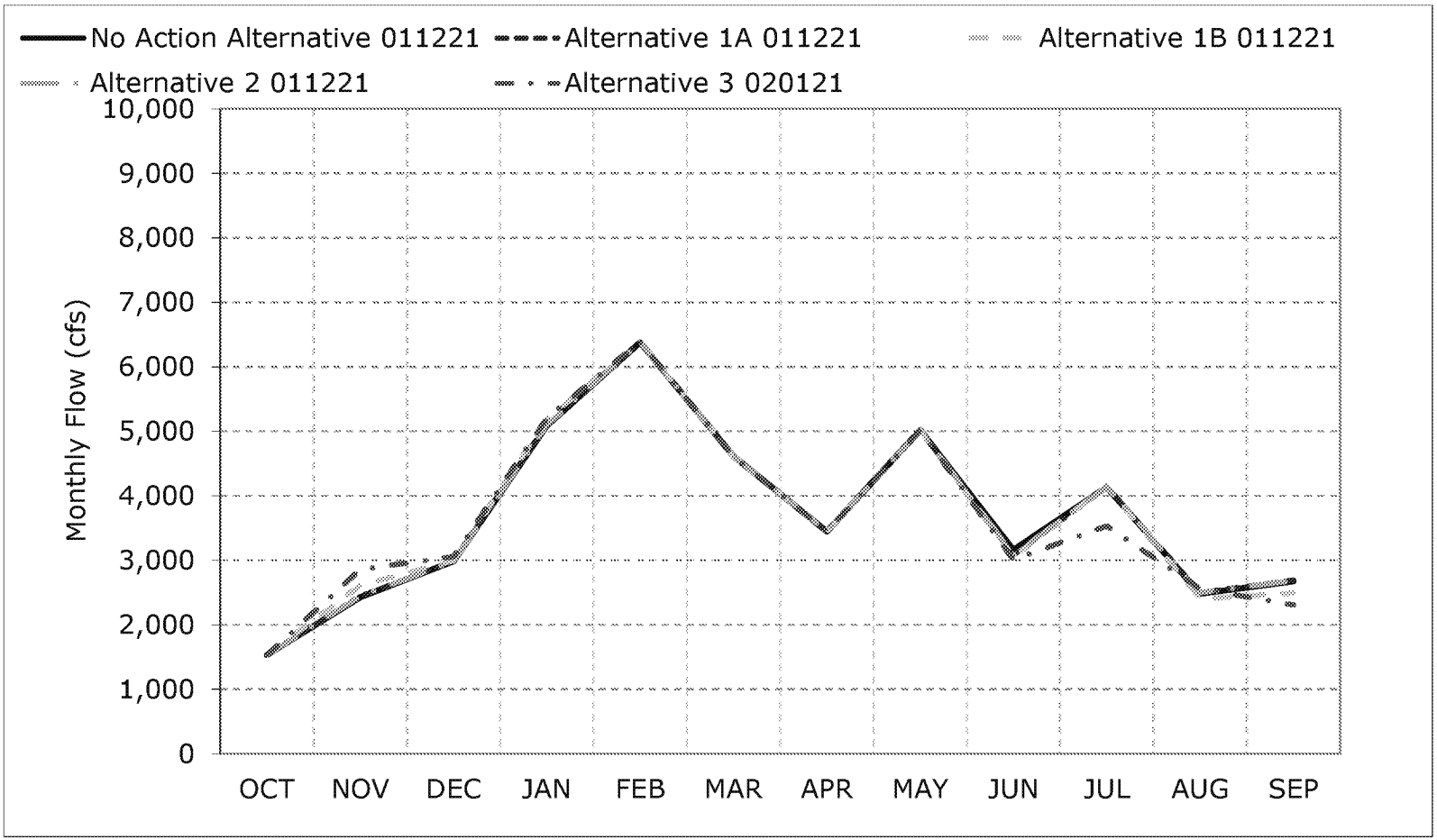
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-27-2. American River below Nimbus Dam Flow, Wet Year Average Flow



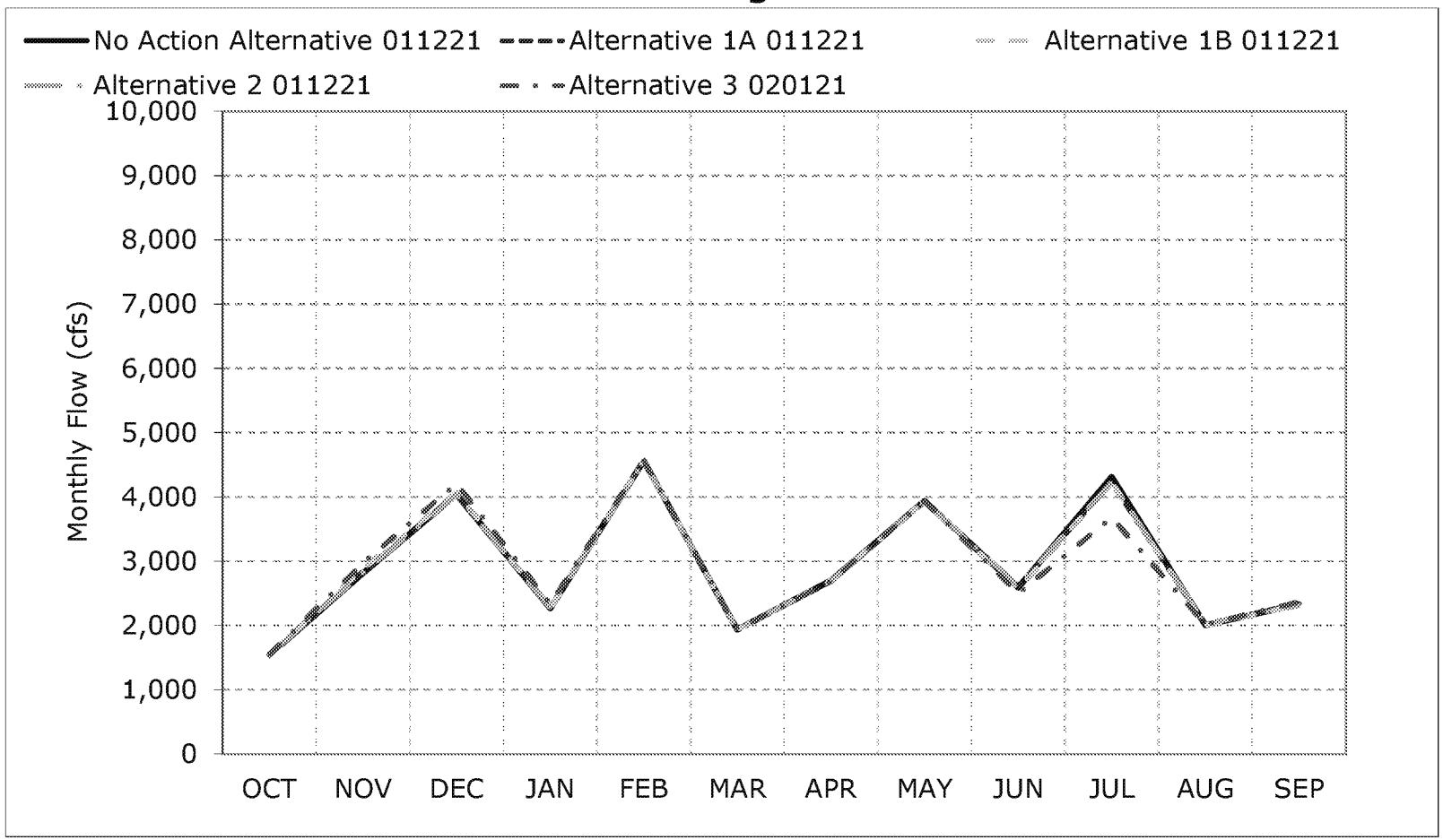
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-27-3. American River below Nimbus Dam Flow, Above Normal Year Average Flow



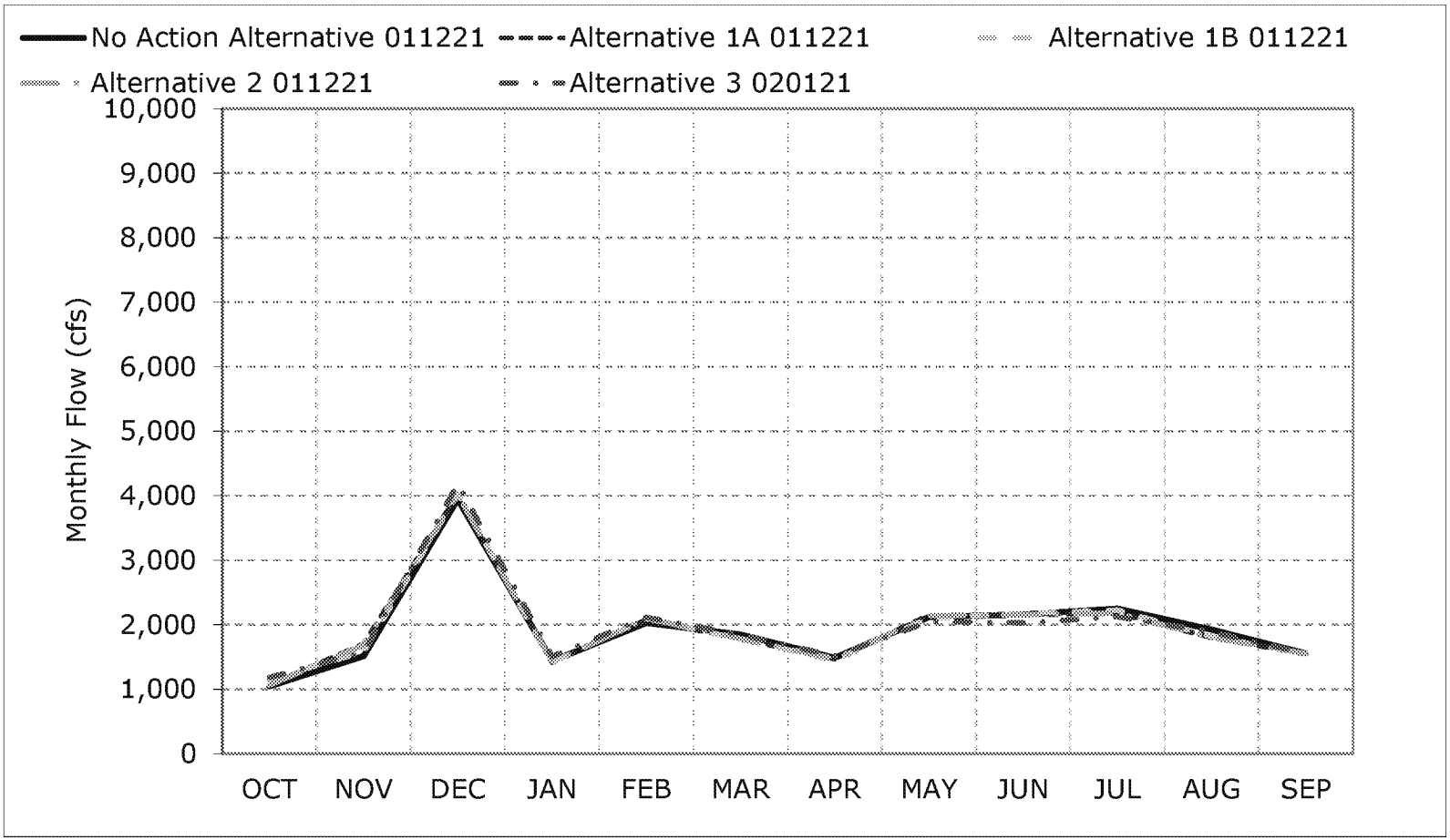
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-27-4. American River below Nimbus Dam Flow, Below Normal Year Average Flow



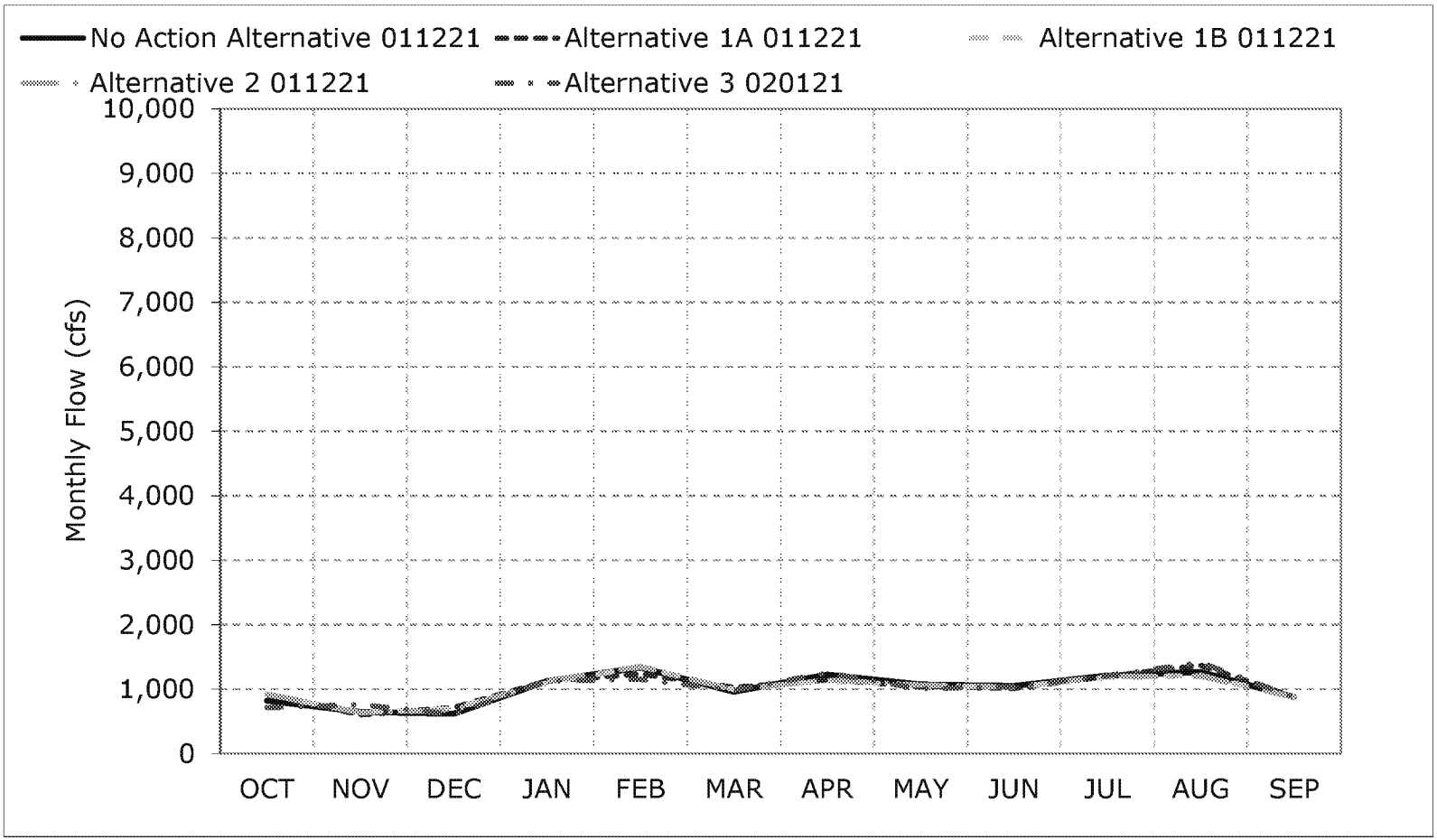
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-27-5. American River below Nimbus Dam Flow, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-27-6. American River below Nimbus Dam Flow, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-27-7. American River below Nimbus Dam Flow, October

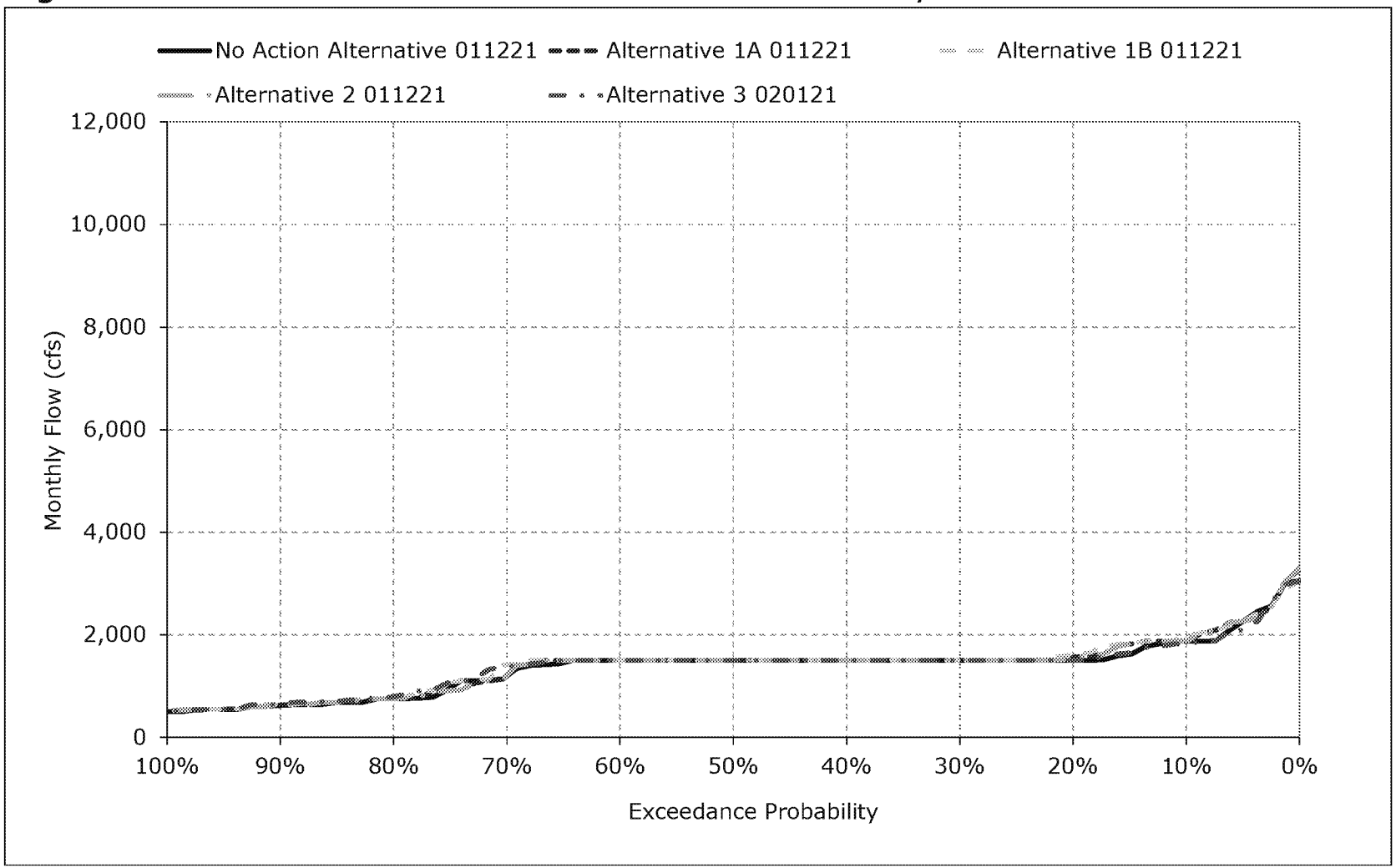


Figure 5B2-27-8. American River below Nimbus Dam Flow, November

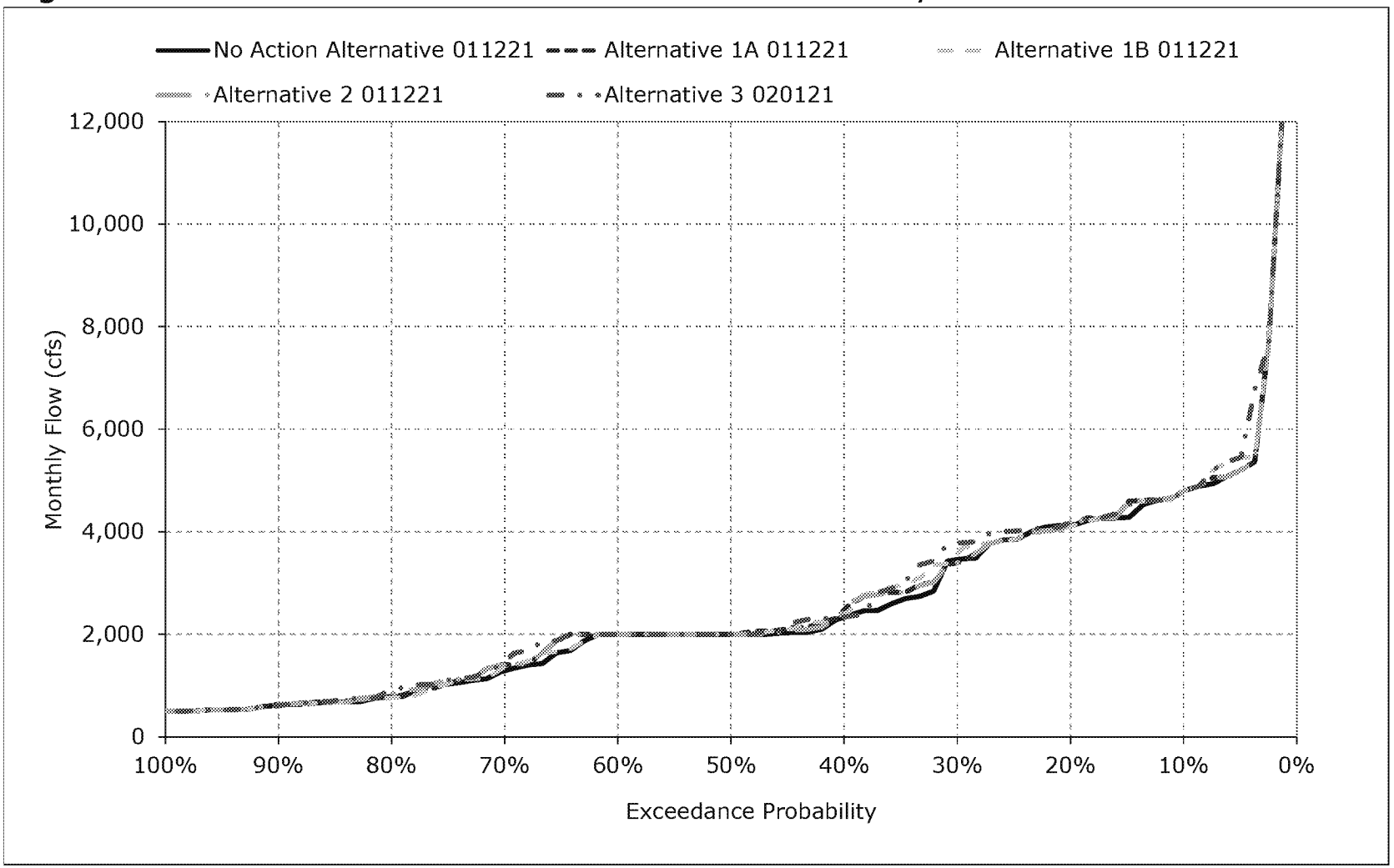


Figure 5B2-27-9. American River below Nimbus Dam Flow, December

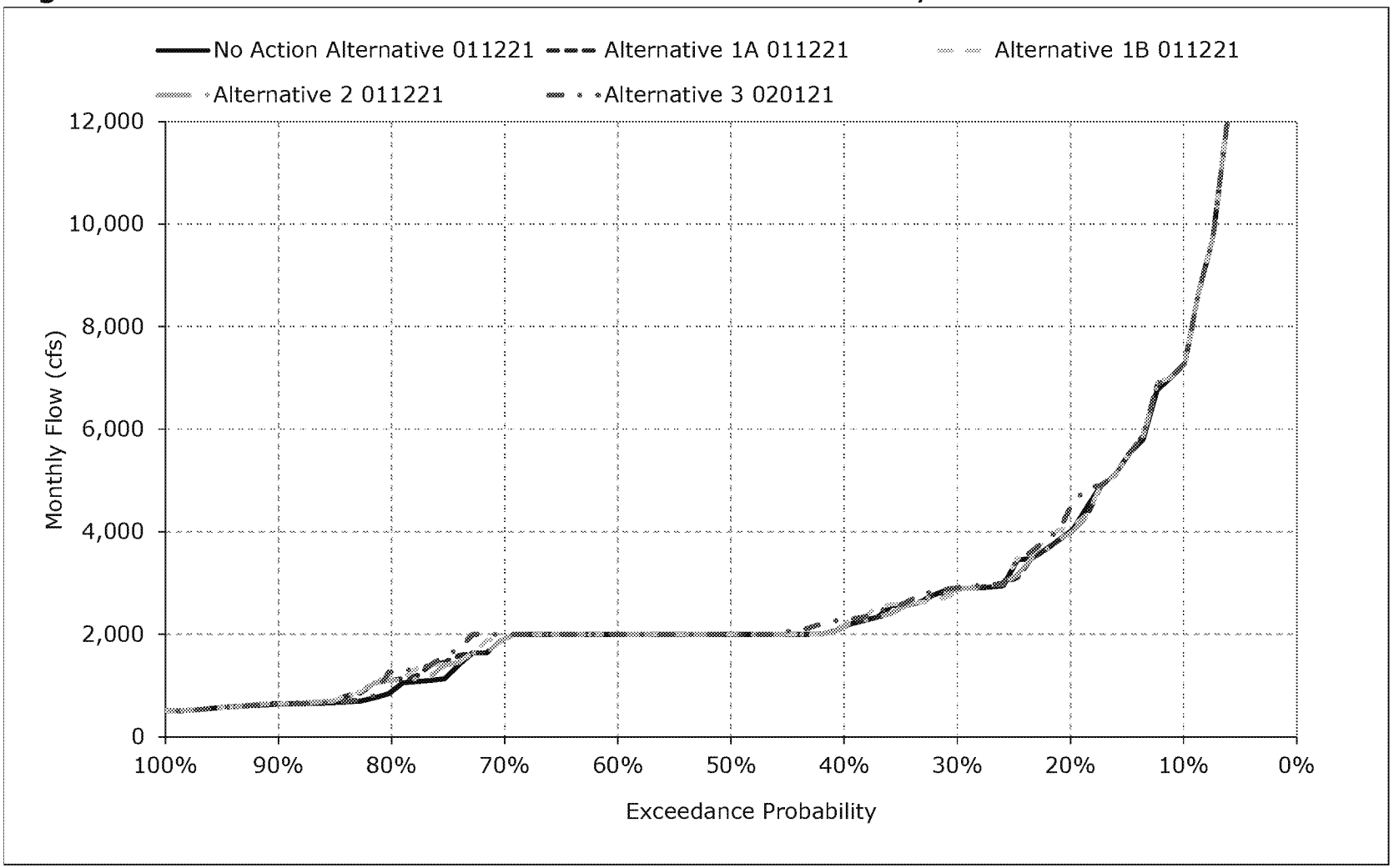


Figure 5B2-27-10. American River below Nimbus Dam Flow, January

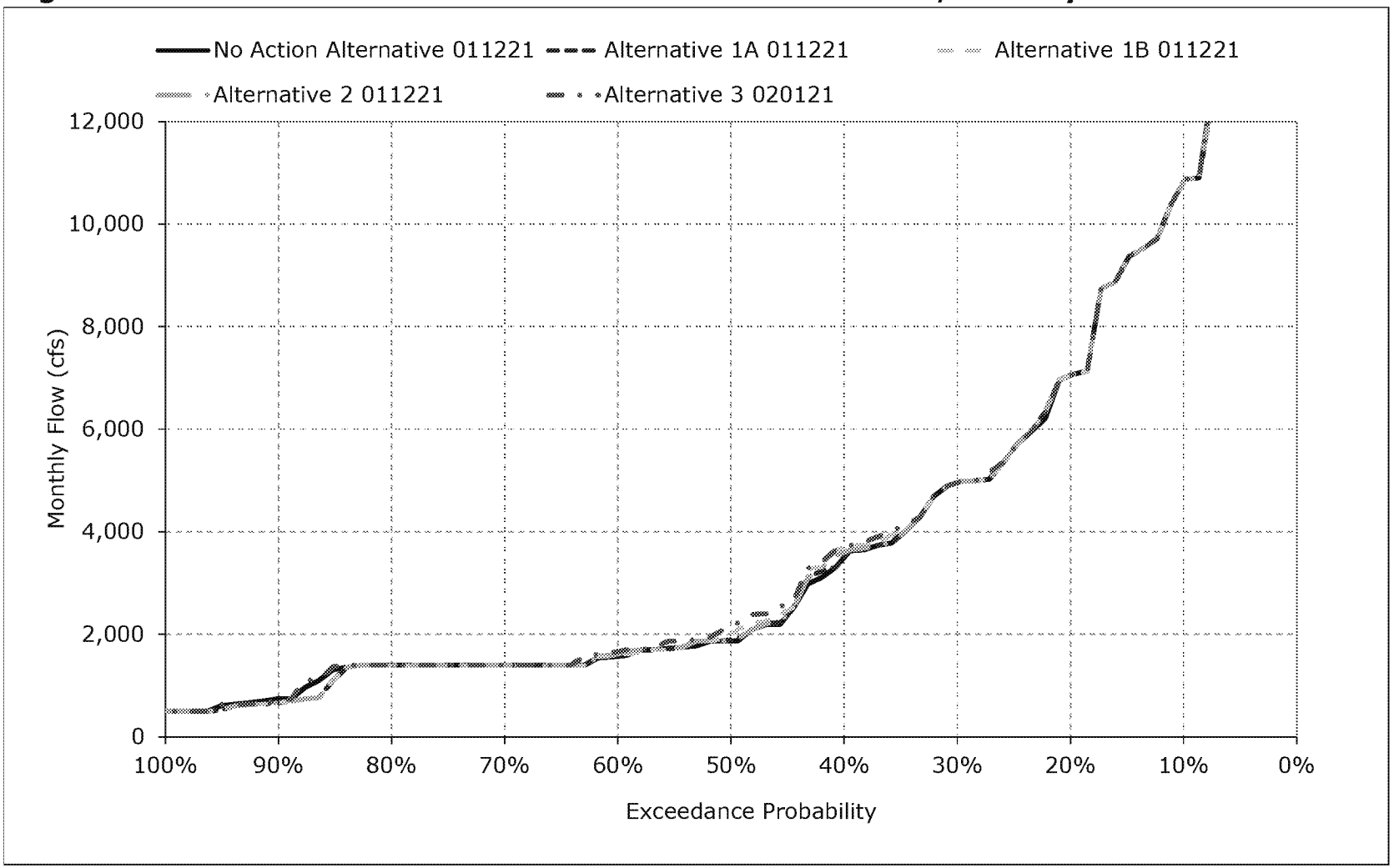


Figure 5B2-27-11. American River below Nimbus Dam Flow, February

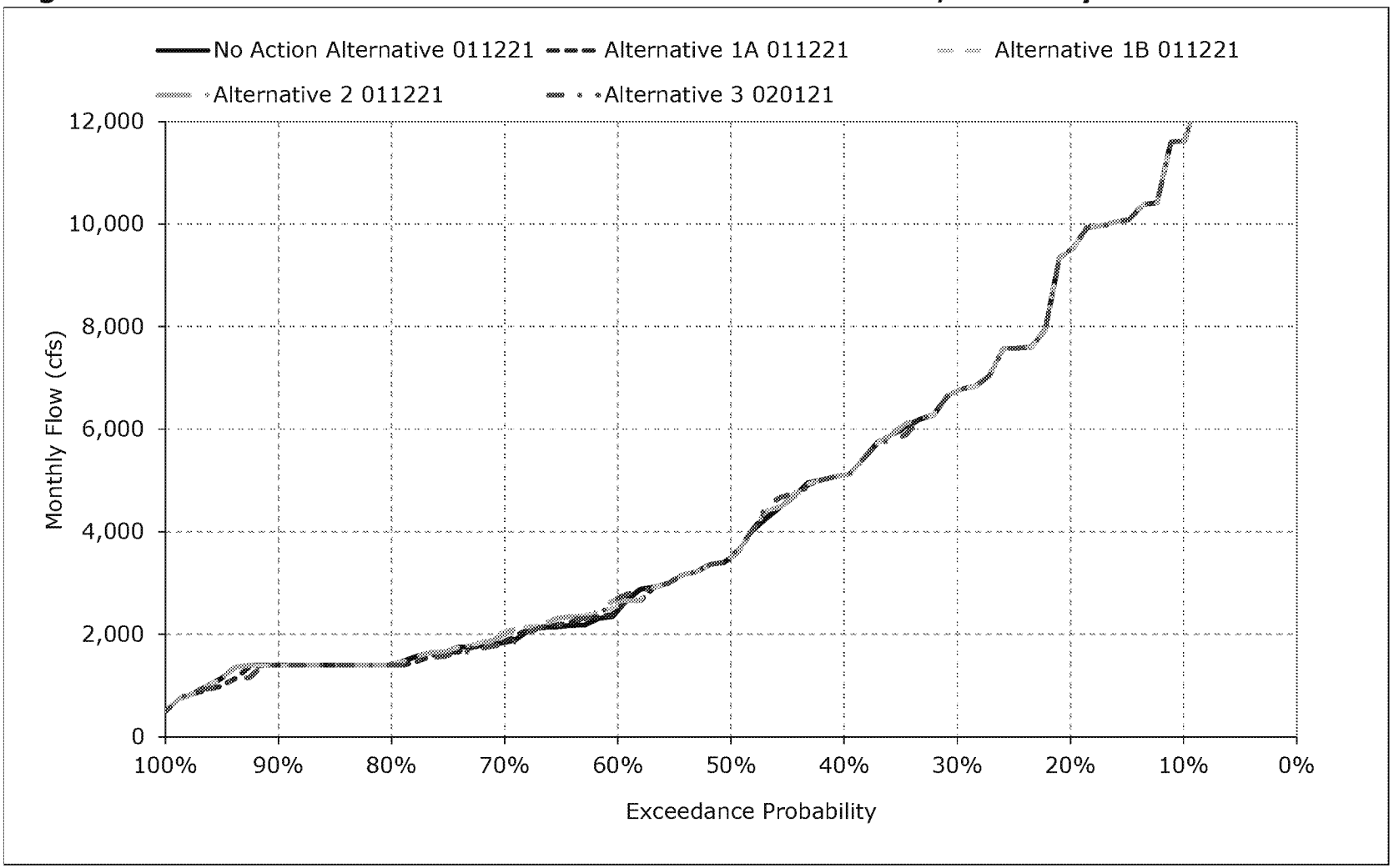


Figure 5B2-27-12. American River below Nimbus Dam Flow, March

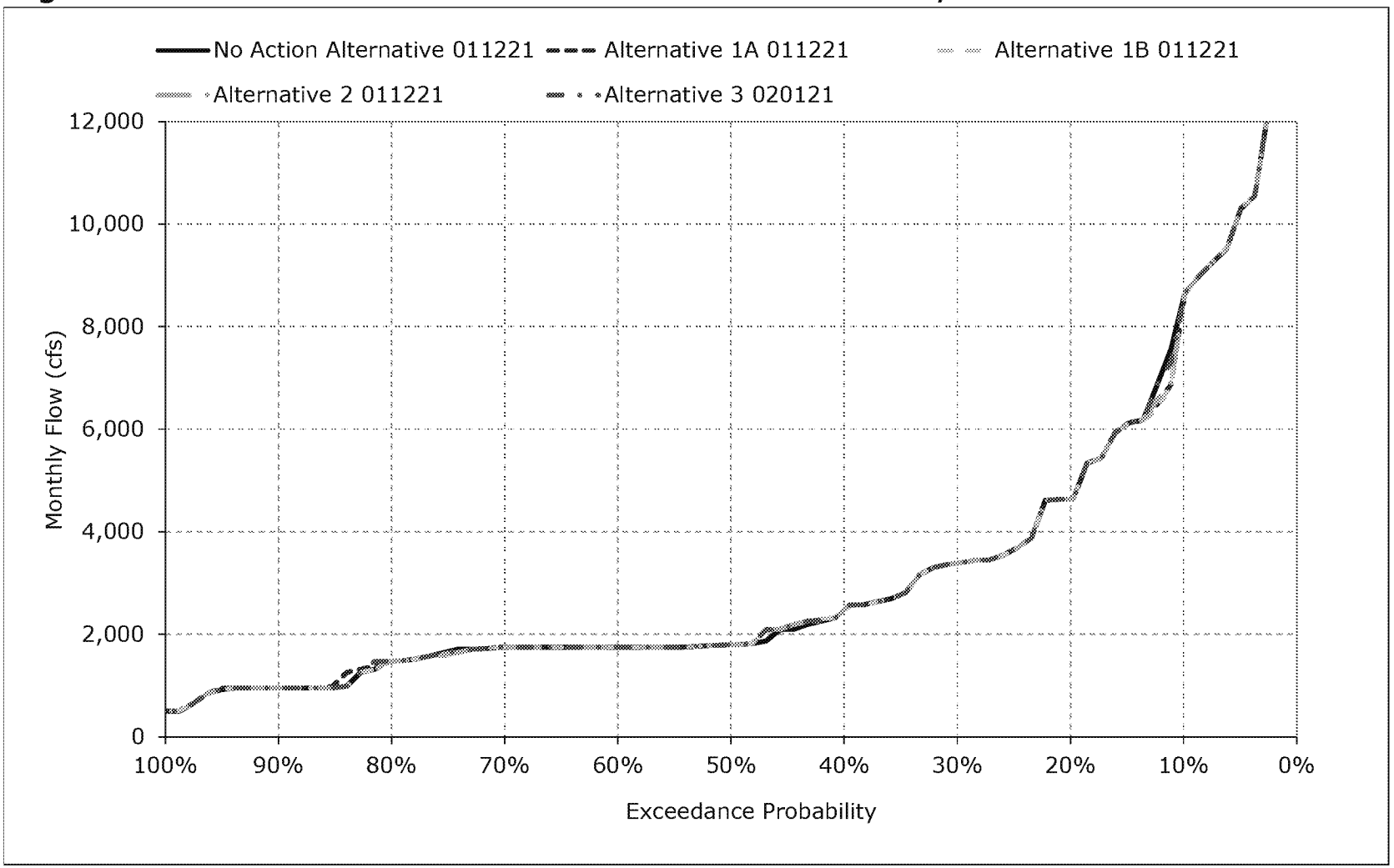


Figure 5B2-27-13. American River below Nimbus Dam Flow, April

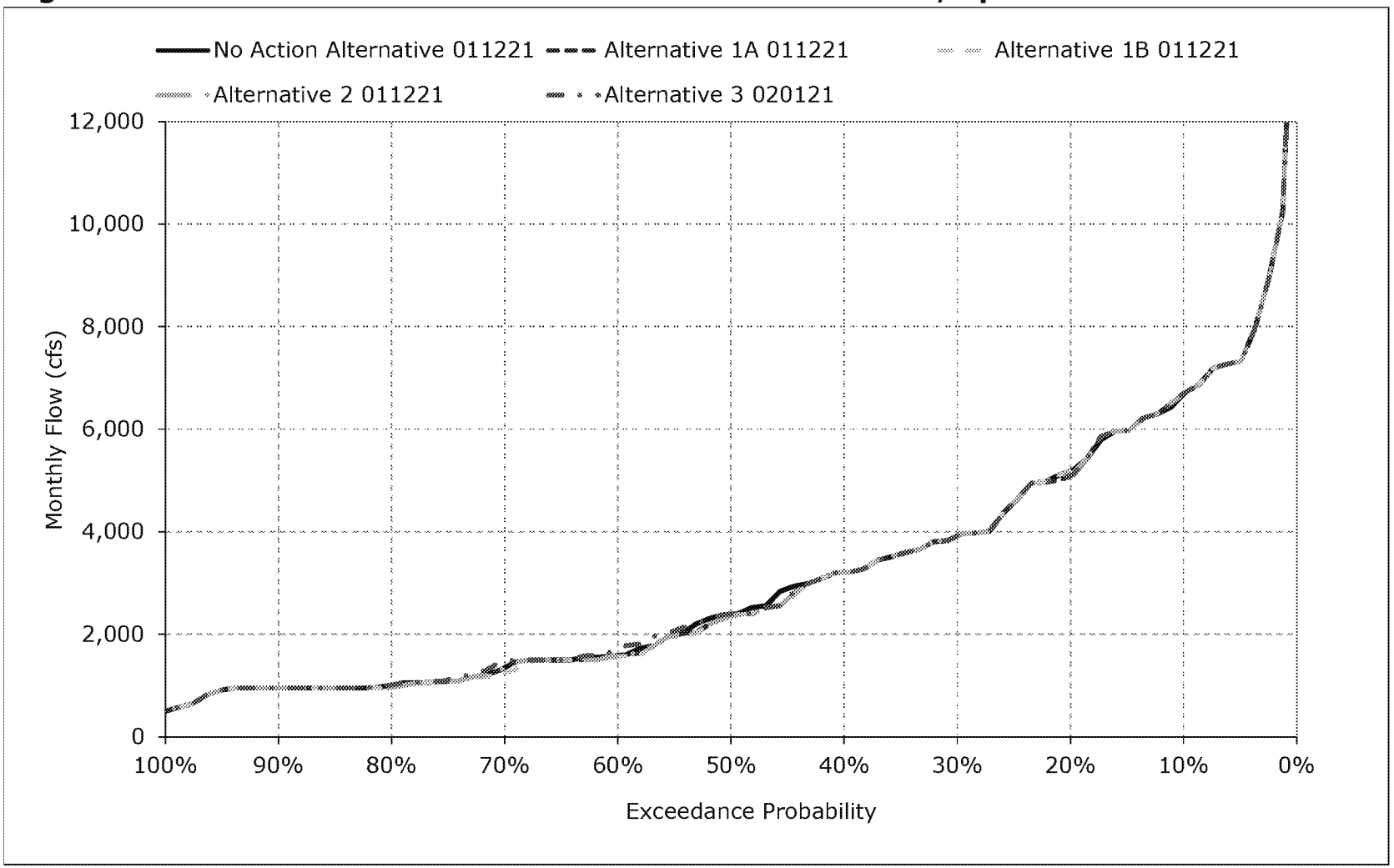


Figure 5B2-27-14. American River below Nimbus Dam Flow, May

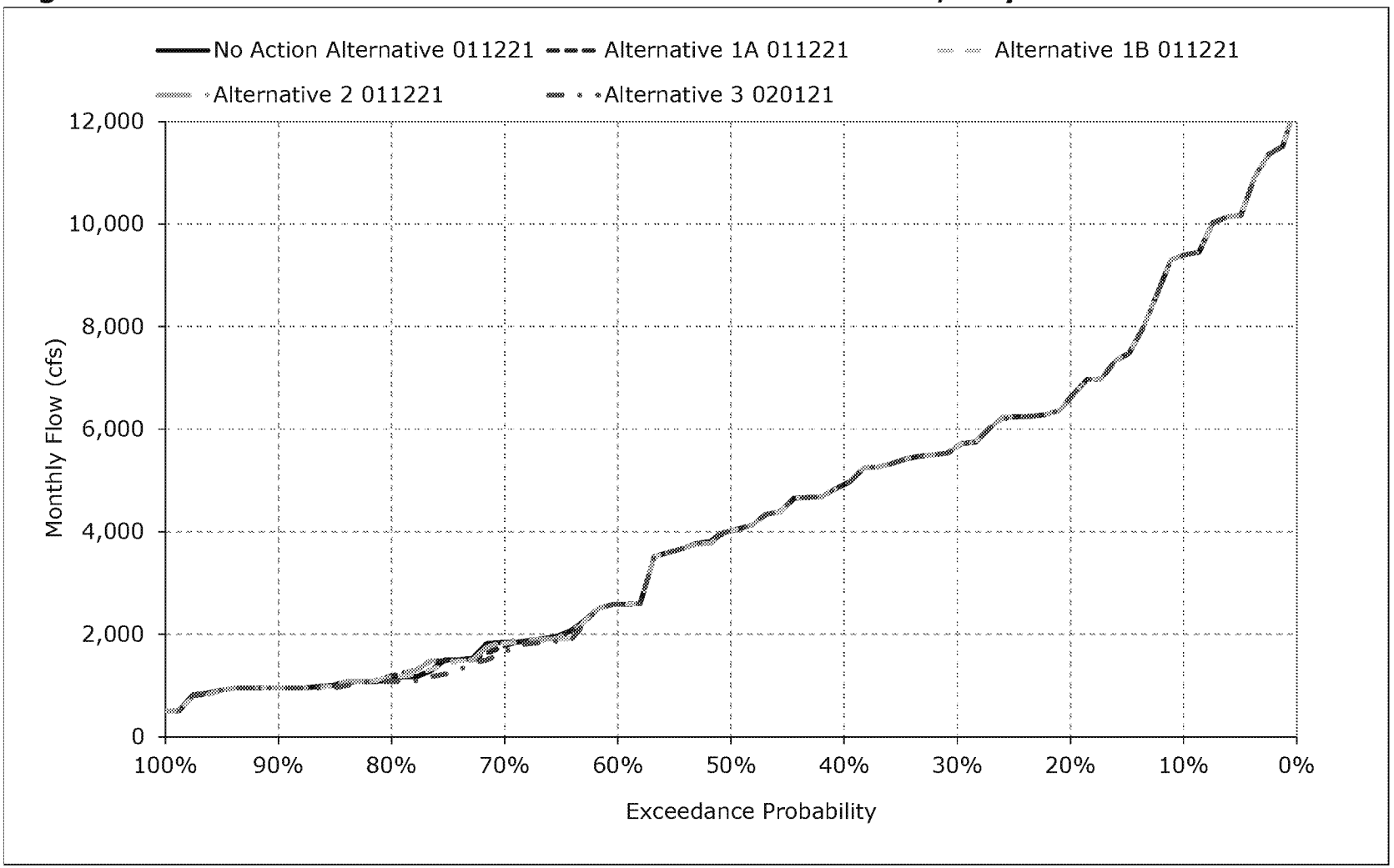


Figure 5B2-27-15. American River below Nimbus Dam Flow, June

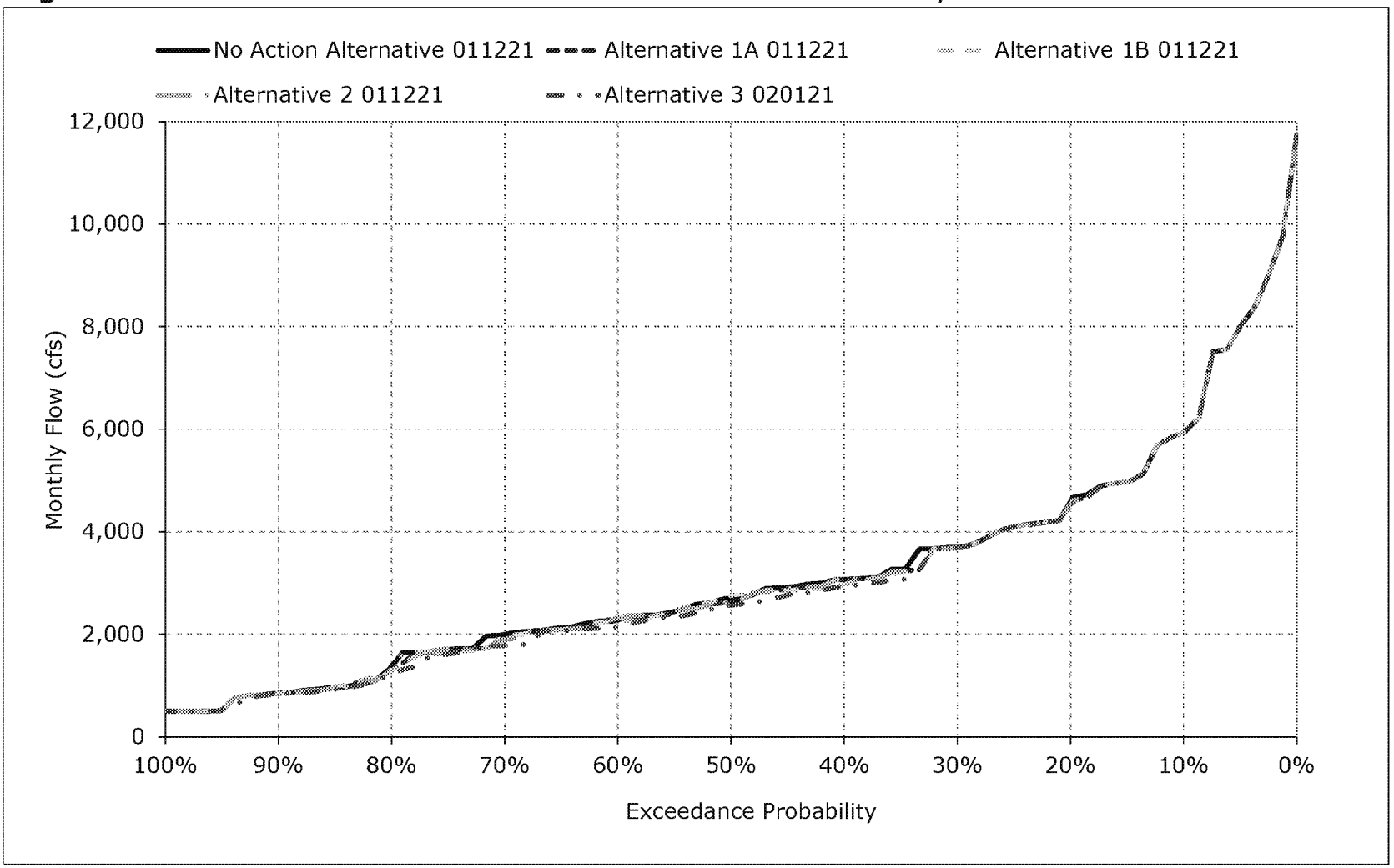


Figure 5B2-27-16. American River below Nimbus Dam Flow, July

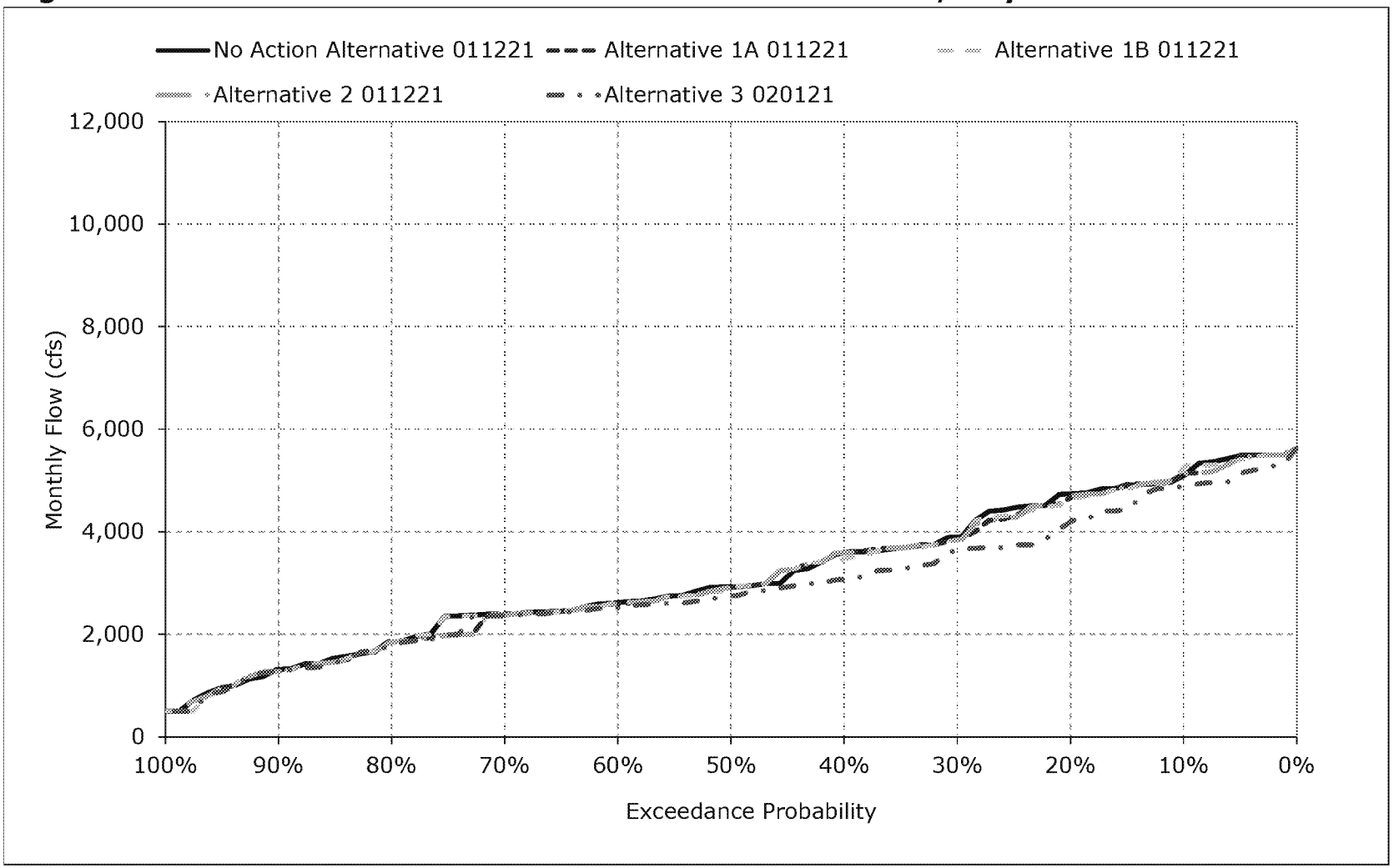


Figure 5B2-27-17. American River below Nimbus Dam Flow, August

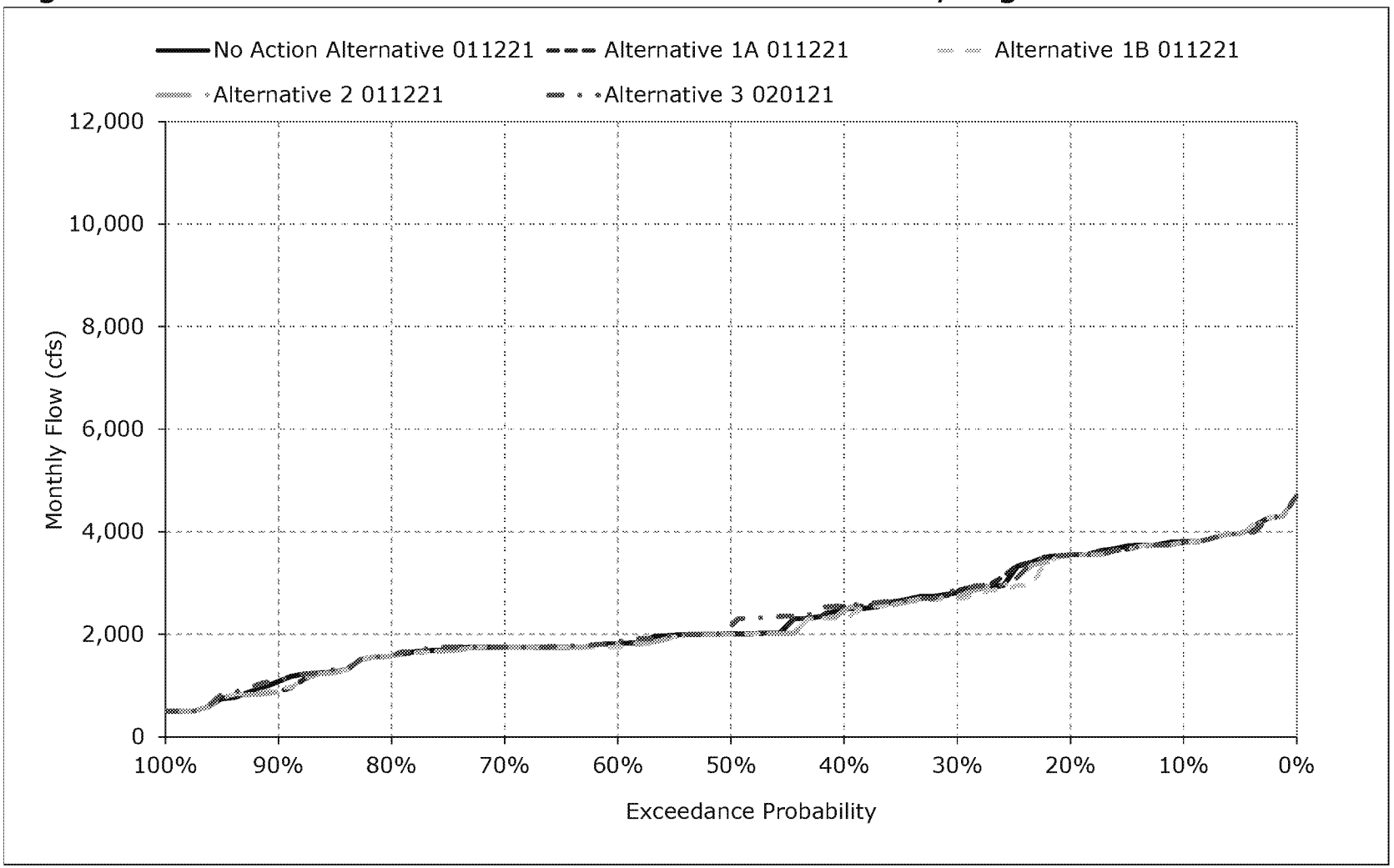


Figure 5B2-27-18. American River below Nimbus Dam Flow, September

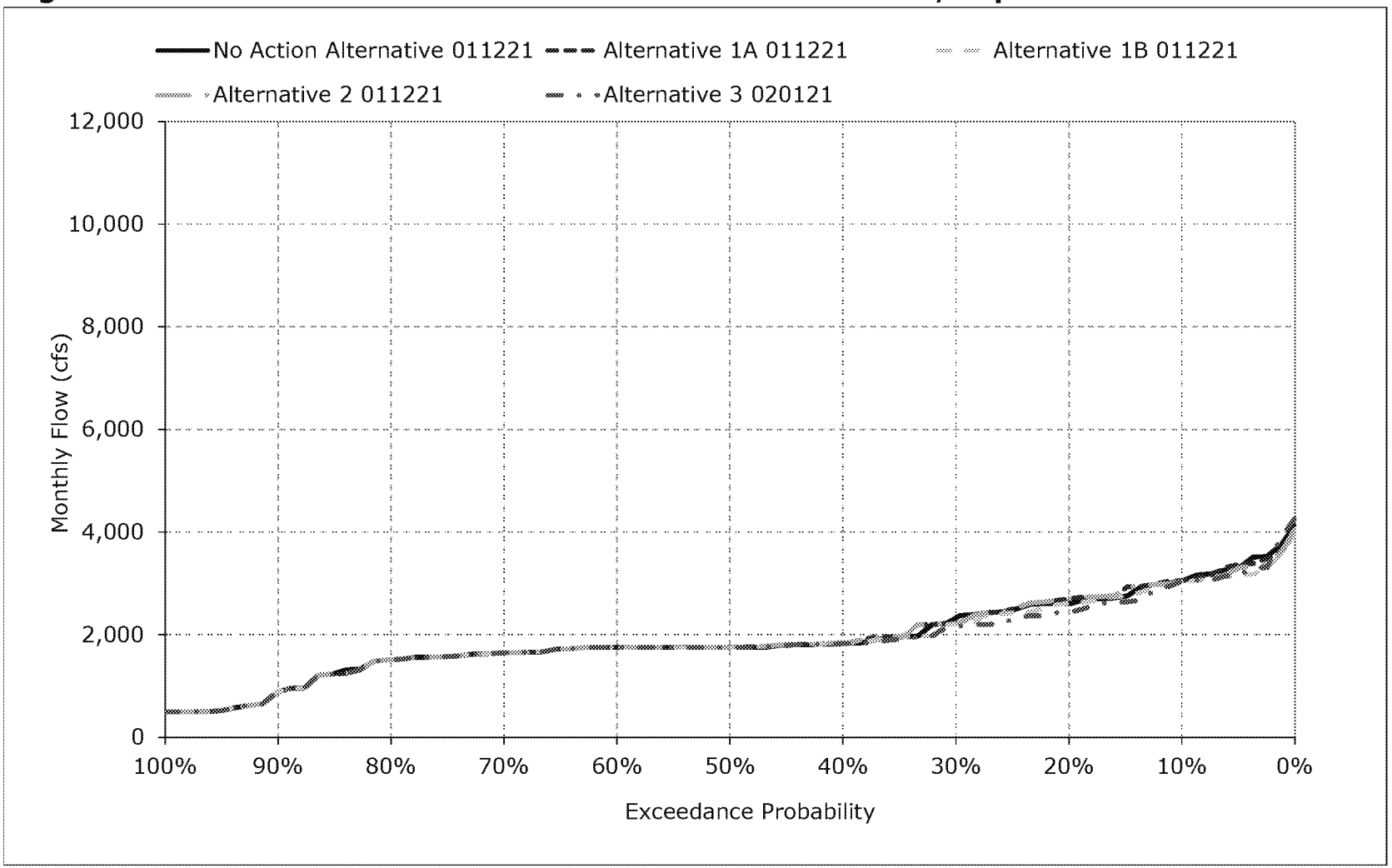


Table 5B2-28-1a. American River at H Street, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,688	4,539	7,071	10,611	11,384	8,356	6,229	8,801	5,257	4,478	3,237	2,598
20%	1,349	3,909	3,835	6,807	9,222	4,537	4,935	6,090	3,973	4,122	2,972	2,203
30%	1,333	3,262	2,661	4,749	6,379	3,090	3,448	5,127	3,096	3,255	2,236	1,885
40%	1,321	2,114	1,990	3,295	4,951	2,298	3,000	4,419	2,793	2,946	1,910	1,615
50%	1,315	1,873	1,863	1,750	3,253	1,636	2,199	3,529	2,442	2,265	1,750	1,540
60%	1,307	1,831	1,830	1,450	2,210	1,584	1,435	2,360	2,046	1,959	1,552	1,527
70%	1,029	1,143	1,766	1,246	1,717	1,536	1,176	1,648	1,761	1,754	1,484	1,426
80%	597	712	755	1,223	1,344	1,306	848	913	1,155	1,616	1,328	1,319
90%	461	489	500	570	1,222	782	777	774	616	1,076	841	691
Long Term												
Full Simulation Period[a]	1,190	2,453	3,220	4,272	5,138	3,188	2,973	3,957	2,806	2,611	1,933	1,655
Water Year Types[b,c]												
Wet (32%)	1,483	4,066	3,870	8,715	9,145	5,534	5,252	6,774	4,688	2,946	2,673	1,832
Above Normal (15%)	1,356	2,267	2,861	4,954	6,196	4,411	3,113	4,557	2,797	3,537	2,060	2,268
Below Normal (17%)	1,361	2,661	3,873	2,102	4,374	1,746	2,446	3,521	2,214	3,687	1,671	2,042
Dry (22%)	876	1,378	3,802	1,287	1,872	1,695	1,276	1,875	1,874	1,758	1,595	1,336
Critical (15%)	662	517	538	974	1,187	803	1,054	888	827	986	1,014	682

Table 5B2-28-1b. American River at H Street, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,709	4,548	7,071	10,611	11,384	8,276	6,397	8,801	5,257	4,500	3,186	2,602
20%	1,382	3,898	3,802	6,809	9,222	4,537	4,794	6,090	3,907	4,044	2,972	2,270
30%	1,336	3,217	2,648	4,749	6,378	3,090	3,449	5,127	3,028	3,233	2,285	1,819
40%	1,325	2,223	1,999	3,294	4,951	2,298	3,000	4,419	2,791	2,954	1,959	1,619
50%	1,317	1,891	1,863	1,784	3,254	1,636	2,155	3,529	2,357	2,238	1,750	1,544
60%	1,310	1,843	1,830	1,500	2,313	1,584	1,435	2,360	2,068	1,939	1,554	1,527
70%	1,038	1,283	1,766	1,246	1,738	1,536	1,176	1,581	1,640	1,750	1,485	1,434
80%	606	691	965	1,223	1,303	1,306	846	993	1,071	1,596	1,329	1,305
90%	468	489	502	547	1,219	795	764	774	616	1,042	649	691
Long Term												
Full Simulation Period[a]	1,209	2,502	3,246	4,261	5,130	3,184	2,960	3,957	2,786	2,589	1,926	1,657
Water Year Types[b,c]												
Wet (32%)	1,486	4,095	3,867	8,692	9,145	5,534	5,267	6,773	4,667	2,932	2,675	1,828
Above Normal (15%)	1,357	2,282	2,858	4,967	6,196	4,411	3,113	4,557	2,720	3,537	2,077	2,287
Below Normal (17%)	1,370	2,685	3,868	2,093	4,361	1,747	2,432	3,518	2,237	3,602	1,678	2,053
Dry (22%)	896	1,557	3,868	1,267	1,914	1,631	1,264	1,897	1,868	1,750	1,492	1,334
Critical (15%)	747	472	633	973	1,085	874	971	861	792	973	1,094	682

Table 5B2-28-1c. American River at H Street, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	21	9	0	0	0	-81	168	0	0	22	-51	5
20%	33	-11	-33	1	0	0	-140	0	-66	-78	0	67
30%	2	-45	-13	0	0	0	0	0	-68	-23	49	-67
40%	4	109	8	0	0	0	0	0	-2	8	49	4
50%	1	17	0	35	1	0	-44	0	-85	-27	0	4
60%	4	12	0	51	103	0	0	0	22	-20	2	0
70%	9	140	0	0	21	0	0	-67	-121	-4	0	8
80%	8	-21	210	0	-41	0	-2	80	-84	-19	1	-14
90%	8	0	2	-22	-4	13	-12	0	0	-35	-192	0
Long Term												
Full Simulation Period[a]	19	49	26	-12	-8	-4	-13	0	-20	-23	-7	3
Water Year Types[b,c]												
Wet (32%)	3	30	-4	-23	0	0	15	0	-20	-14	1	-4
Above Normal (15%)	1	16	-4	13	0	0	0	0	-77	0	17	19
Below Normal (17%)	8	24	-5	-9	-13	0	-14	-3	23	-85	7	11
Dry (22%)	20	179	66	-20	42	-64	-12	22	-6	-7	-103	-2
Critical (15%)	85	-44	96	-1	-102	71	-83	-27	-35	-13	81	-1

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-28-2a. American River at H Street, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,688	4,539	7,071	10,611	11,384	8,356	6,229	8,801	5,257	4,478	3,237	2,598
20%	1,349	3,909	3,835	6,807	9,222	4,537	4,935	6,090	3,973	4,122	2,972	2,203
30%	1,333	3,262	2,661	4,749	6,379	3,090	3,448	5,127	3,096	3,255	2,236	1,885
40%	1,321	2,114	1,990	3,295	4,951	2,298	3,000	4,419	2,793	2,946	1,910	1,615
50%	1,315	1,873	1,863	1,750	3,253	1,636	2,199	3,529	2,442	2,265	1,750	1,540
60%	1,307	1,831	1,830	1,450	2,210	1,584	1,435	2,360	2,046	1,959	1,552	1,527
70%	1,029	1,143	1,766	1,246	1,717	1,536	1,176	1,648	1,761	1,754	1,484	1,426
80%	597	712	755	1,223	1,344	1,306	848	913	1,155	1,616	1,328	1,319
90%	461	489	500	570	1,222	782	777	774	616	1,076	841	691
Long Term												
Full Simulation Period[a]	1,190	2,453	3,220	4,272	5,138	3,188	2,973	3,957	2,806	2,611	1,933	1,655
Water Year Types[b,c]												
Wet (32%)	1,483	4,066	3,870	8,715	9,145	5,534	5,252	6,774	4,688	2,946	2,673	1,832
Above Normal (15%)	1,356	2,267	2,861	4,954	6,196	4,411	3,113	4,557	2,797	3,537	2,060	2,268
Below Normal (17%)	1,361	2,661	3,873	2,102	4,374	1,746	2,446	3,521	2,214	3,687	1,671	2,042
Dry (22%)	876	1,378	3,802	1,287	1,872	1,695	1,276	1,875	1,874	1,758	1,595	1,336
Critical (15%)	662	517	538	974	1,187	803	1,054	888	827	986	1,014	682

Table 5B2-28-2b. American River at H Street, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,817	4,547	7,068	10,611	11,384	8,276	6,397	8,801	5,257	4,613	3,186	2,545
20%	1,455	3,886	3,929	6,808	9,222	4,537	4,935	6,090	3,907	4,020	2,948	2,199
30%	1,339	3,381	2,567	4,749	6,378	3,090	3,449	5,127	3,028	3,234	2,138	1,750
40%	1,329	2,199	2,019	3,497	4,950	2,298	3,000	4,419	2,716	2,846	1,750	1,615
50%	1,317	1,882	1,864	1,873	3,285	1,636	2,156	3,529	2,494	2,235	1,750	1,544
60%	1,312	1,834	1,830	1,473	2,351	1,584	1,394	2,360	1,981	1,935	1,504	1,527
70%	1,235	1,205	1,804	1,246	1,939	1,536	1,053	1,623	1,715	1,754	1,482	1,434
80%	620	690	965	1,223	1,344	1,306	846	981	1,056	1,624	1,327	1,319
90%	498	485	502	548	1,222	782	764	755	616	1,023	714	691
Long Term												
Full Simulation Period[a]	1,226	2,509	3,256	4,279	5,155	3,177	2,956	3,952	2,781	2,587	1,894	1,628
Water Year Types[b,c]												
Wet (32%)	1,492	4,081	3,875	8,718	9,145	5,534	5,268	6,773	4,667	2,933	2,675	1,829
Above Normal (15%)	1,356	2,452	2,865	5,054	6,205	4,411	3,113	4,555	2,693	3,523	1,984	2,107
Below Normal (17%)	1,343	2,719	3,897	2,100	4,377	1,745	2,446	3,518	2,190	3,608	1,671	2,030
Dry (22%)	985	1,446	3,879	1,267	1,937	1,622	1,238	1,859	1,888	1,754	1,502	1,334
Critical (15%)	745	509	621	949	1,196	840	959	877	812	958	960	683

Table 5B2-28-2c. American River at H Street, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	129	8	-3	0	0	-81	168	0	0	135	-51	-52
20%	106	-23	94	1	0	0	0	0	-66	-102	-24	-4
30%	6	119	-94	0	-1	0	0	0	-68	-21	-98	-135
40%	8	85	28	203	-1	0	0	0	-77	-100	-160	0
50%	2	9	1	123	32	0	-43	0	51	-30	0	4
60%	5	3	0	23	141	0	-41	0	-64	-24	-48	0
70%	206	61	38	0	222	0	-123	-25	-46	0	-2	8
80%	22	-22	210	0	0	0	-2	67	-99	8	-1	0
90%	37	-4	2	-22	0	0	-12	-19	0	-53	-127	0
Long Term												
Full Simulation Period[a]	36	56	35	7	18	-11	-17	-6	-25	-25	-39	-27
Water Year Types[b,c]												
Wet (32%)	9	15	5	2	0	0	16	0	-21	-13	1	-3
Above Normal (15%)	0	185	4	100	10	0	0	-1	-105	-14	-76	-161
Below Normal (17%)	-18	58	24	-2	3	-2	-1	-3	-24	-79	0	-12
Dry (22%)	109	68	77	-20	65	-73	-38	-16	13	-3	-92	-2
Critical (15%)	84	-8	83	-25	10	37	-95	-11	-15	-28	-54	1

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-28-3a. American River at H Street, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,688	4,539	7,071	10,611	11,384	8,356	6,229	8,801	5,257	4,478	3,237	2,598
20%	1,349	3,909	3,835	6,807	9,222	4,537	4,935	6,090	3,973	4,122	2,972	2,203
30%	1,333	3,262	2,661	4,749	6,379	3,090	3,448	5,127	3,096	3,255	2,236	1,885
40%	1,321	2,114	1,990	3,295	4,951	2,298	3,000	4,419	2,793	2,946	1,910	1,615
50%	1,315	1,873	1,863	1,750	3,253	1,636	2,199	3,529	2,442	2,265	1,750	1,540
60%	1,307	1,831	1,830	1,450	2,210	1,584	1,435	2,360	2,046	1,959	1,552	1,527
70%	1,029	1,143	1,766	1,246	1,717	1,536	1,176	1,648	1,761	1,754	1,484	1,426
80%	597	712	755	1,223	1,344	1,306	848	913	1,155	1,616	1,328	1,319
90%	461	489	500	570	1,222	782	777	774	616	1,076	841	691
Long Term												
Full Simulation Period[a]	1,190	2,453	3,220	4,272	5,138	3,188	2,973	3,957	2,806	2,611	1,933	1,655
Water Year Types[b,c]												
Wet (32%)	1,483	4,066	3,870	8,715	9,145	5,534	5,252	6,774	4,688	2,946	2,673	1,832
Above Normal (15%)	1,356	2,267	2,861	4,954	6,196	4,411	3,113	4,557	2,797	3,537	2,060	2,268
Below Normal (17%)	1,361	2,661	3,873	2,102	4,374	1,746	2,446	3,521	2,214	3,687	1,671	2,042
Dry (22%)	876	1,378	3,802	1,287	1,872	1,695	1,276	1,875	1,874	1,758	1,595	1,336
Critical (15%)	662	517	538	974	1,187	803	1,054	888	827	986	1,014	682

Table 5B2-28-3b. American River at H Street, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,709	4,548	7,071	10,611	11,384	8,276	6,397	8,801	5,257	4,499	3,186	2,586
20%	1,381	3,895	3,801	6,809	9,222	4,537	4,900	6,090	3,905	4,057	2,948	2,273
30%	1,336	3,215	2,648	4,749	6,378	3,090	3,449	5,127	3,028	3,233	2,181	1,819
40%	1,325	2,245	1,999	3,404	4,951	2,298	3,000	4,419	2,791	2,954	1,853	1,623
50%	1,317	1,872	1,863	1,784	3,254	1,636	2,155	3,529	2,356	2,238	1,750	1,545
60%	1,310	1,842	1,830	1,500	2,418	1,584	1,435	2,360	2,068	1,937	1,554	1,527
70%	1,038	1,277	1,766	1,246	1,900	1,536	1,176	1,650	1,643	1,750	1,483	1,434
80%	606	718	961	1,223	1,344	1,306	846	993	1,108	1,596	1,329	1,319
90%	468	489	502	548	1,222	782	764	774	616	1,042	649	691
Long Term												
Full Simulation Period[a]	1,210	2,504	3,242	4,266	5,154	3,179	2,962	3,961	2,789	2,588	1,908	1,652
Water Year Types[b,c]												
Wet (32%)	1,486	4,095	3,866	8,695	9,145	5,534	5,268	6,773	4,667	2,932	2,675	1,828
Above Normal (15%)	1,357	2,285	2,857	4,967	6,196	4,411	3,113	4,557	2,720	3,539	2,077	2,283
Below Normal (17%)	1,371	2,678	3,868	2,115	4,367	1,746	2,441	3,517	2,237	3,600	1,694	2,022
Dry (22%)	896	1,546	3,872	1,268	1,942	1,634	1,264	1,897	1,869	1,746	1,491	1,335
Critical (15%)	750	508	596	973	1,197	835	971	883	812	973	954	683

Table 5B2-28-3c. American River at H Street, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	21	9	0	0	0	-81	168	0	0	21	-51	-12
20%	31	-14	-34	1	0	0	-35	0	-68	-65	-24	70
30%	2	-48	-13	0	0	0	0	0	-68	-23	-55	-67
40%	4	131	9	109	0	0	0	0	-2	8	-56	8
50%	1	-1	0	35	1	0	-44	0	-86	-27	0	5
60%	4	11	0	51	208	0	0	0	22	-21	2	0
70%	9	134	0	0	183	0	0	3	-118	-4	-1	8
80%	8	6	206	0	0	0	-2	80	-47	-20	2	0
90%	8	0	2	-22	0	0	-12	0	0	-35	-192	0
Long Term												
Full Simulation Period[a]	20	50	21	-7	16	-9	-11	4	-17	-24	-25	-3
Water Year Types[b,c]												
Wet (32%)	3	29	-4	-20	0	0	16	0	-21	-14	2	-4
Above Normal (15%)	1	19	-4	13	0	0	0	0	-77	2	16	15
Below Normal (17%)	10	17	-5	13	-7	0	-5	-4	23	-87	23	-20
Dry (22%)	20	167	70	-19	70	-61	-13	22	-6	-12	-103	-1
Critical (15%)	88	-9	58	-1	11	32	-83	-4	-15	-13	-59	1

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B2-28-4a. American River at H Street, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,688	4,539	7,071	10,611	11,384	8,356	6,229	8,801	5,257	4,478	3,237	2,598
20%	1,349	3,909	3,835	6,807	9,222	4,537	4,935	6,090	3,973	4,122	2,972	2,203
30%	1,333	3,262	2,661	4,749	6,379	3,090	3,448	5,127	3,096	3,255	2,236	1,885
40%	1,321	2,114	1,990	3,295	4,951	2,298	3,000	4,419	2,793	2,946	1,910	1,615
50%	1,315	1,873	1,863	1,750	3,253	1,636	2,199	3,529	2,442	2,265	1,750	1,540
60%	1,307	1,831	1,830	1,450	2,210	1,584	1,435	2,360	2,046	1,959	1,552	1,527
70%	1,029	1,143	1,766	1,246	1,717	1,536	1,176	1,648	1,761	1,754	1,484	1,426
80%	597	712	755	1,223	1,344	1,306	848	913	1,155	1,616	1,328	1,319
90%	461	489	500	570	1,222	782	777	774	616	1,076	841	691
Long Term												
Full Simulation Period[a]	1,190	2,453	3,220	4,272	5,138	3,188	2,973	3,957	2,806	2,611	1,933	1,655
Water Year Types[b,c]												
Wet (32%)	1,483	4,066	3,870	8,715	9,145	5,534	5,252	6,774	4,688	2,946	2,673	1,832
Above Normal (15%)	1,356	2,267	2,861	4,954	6,196	4,411	3,113	4,557	2,797	3,537	2,060	2,268
Below Normal (17%)	1,361	2,661	3,873	2,102	4,374	1,746	2,446	3,521	2,214	3,687	1,671	2,042
Dry (22%)	876	1,378	3,802	1,287	1,872	1,695	1,276	1,875	1,874	1,758	1,595	1,336
Critical (15%)	662	517	538	974	1,187	803	1,054	888	827	986	1,014	682

Table 5B2-28-4b. American River at H Street, Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,652	4,546	7,056	10,611	11,384	8,331	6,397	8,801	5,257	4,252	3,186	2,570
20%	1,350	3,908	4,311	6,805	9,222	4,537	4,819	6,090	3,860	3,470	2,972	2,050
30%	1,335	3,524	2,704	4,749	6,376	3,090	3,449	5,127	3,028	2,972	2,309	1,750
40%	1,320	2,150	2,066	3,495	4,950	2,298	3,000	4,419	2,653	2,456	2,005	1,613
50%	1,316	1,873	1,873	1,986	3,285	1,630	2,199	3,529	2,298	2,108	1,750	1,540
60%	1,309	1,839	1,849	1,531	2,485	1,583	1,524	2,360	1,891	1,922	1,592	1,525
70%	1,209	1,328	1,811	1,249	1,648	1,537	1,283	1,459	1,532	1,750	1,496	1,431
80%	631	775	1,096	1,223	1,298	1,306	858	883	998	1,538	1,337	1,306
90%	500	487	500	557	1,219	782	777	753	594	1,044	872	691
Long Term												
Full Simulation Period[a]	1,207	2,575	3,308	4,344	5,131	3,191	2,984	3,931	2,732	2,391	1,947	1,610
Water Year Types[b,c]												
Wet (32%)	1,486	4,086	3,874	8,806	9,143	5,534	5,268	6,773	4,667	2,931	2,675	1,825
Above Normal (15%)	1,354	2,687	2,928	5,065	6,205	4,411	3,113	4,555	2,643	2,899	2,091	1,940
Below Normal (17%)	1,366	2,807	4,033	2,168	4,374	1,746	2,433	3,520	2,125	3,054	1,686	2,078
Dry (22%)	1,013	1,439	4,036	1,356	1,957	1,694	1,300	1,801	1,743	1,694	1,543	1,335
Critical (15%)	563	622	526	976	1,010	829	1,077	822	819	984	1,136	681

Table 5B2-28-4c. American River at H Street, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

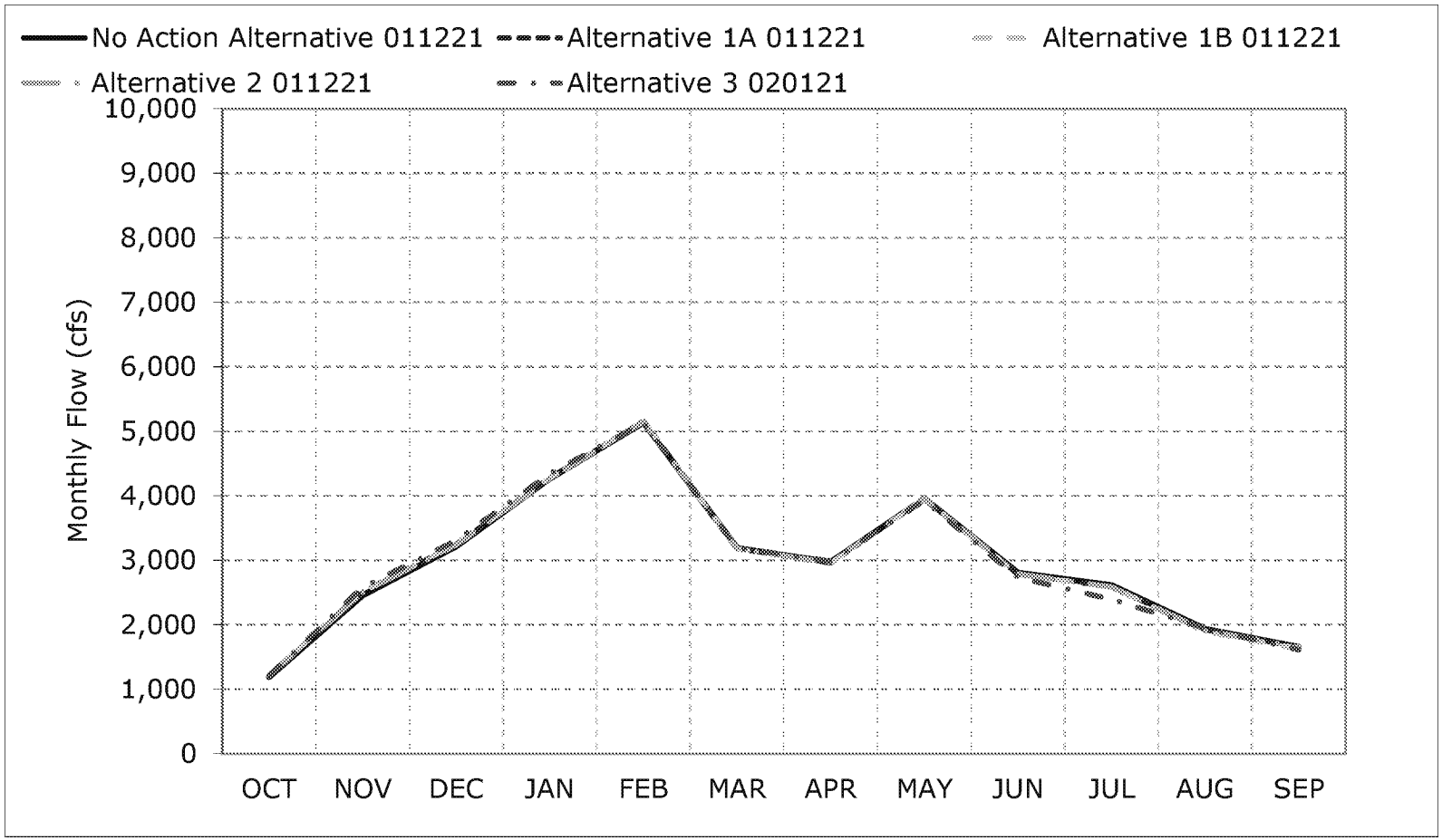
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-36	6	-15	0	0	-25	168	0	0	-226	-51	-28
20%	1	-1	476	-3	0	0	-116	0	-113	-651	0	-153
30%	1	261	44	0	-3	0	0	0	-68	-284	73	-135
40%	-1	35	76	200	-1	0	0	0	-141	-490	96	-2
50%	0	0	9	237	32	-6	0	0	-144	-157	0	0
60%	2	8	19	81	275	0	89	0	-155	-37	40	-2
70%	180	185	45	3	-69	1	108	-188	-228	-4	12	5
80%	33	63	341	0	-46	0	10	-30	-157	-78	9	-14
90%	39	-2	0	-13	-4	0	0	-21	-22	-32	31	0
Long Term												
Full Simulation Period[a]	17	121	88	72	-6	3	11	-26	-74	-220	14	-45
Water Year Types[b,c]												
Wet (32%)	3	20	4	90	-2	0	16	0	-21	-15	2	-8
Above Normal (15%)	-2	421	67	111	9	0	0	-1	-154	-637	31	-328
Below Normal (17%)	4	146	160	66	0	0	-13	-1	-89	-633	16	36
Dry (22%)	138	60	234	69	85	-1	24	-74	-131	-63	-52	-1
Critical (15%)	-99	105	-12	2	-176	26	23	-66	-8	-2	122	-1

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

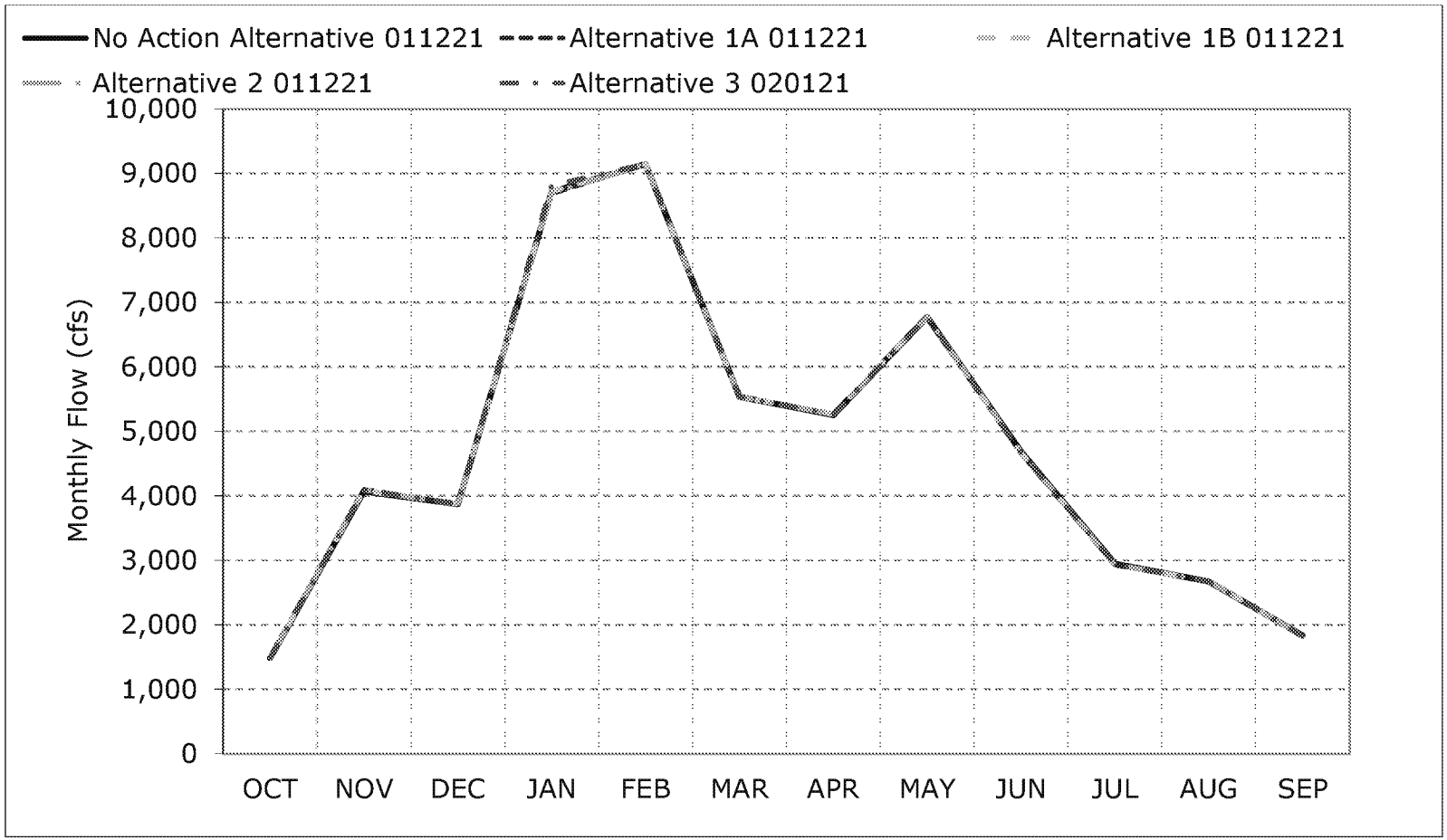
c These results are displayed with calendar year - year type sorting.

Figure 5B2-28-1. American River at H Street, Long-Term Average Flow



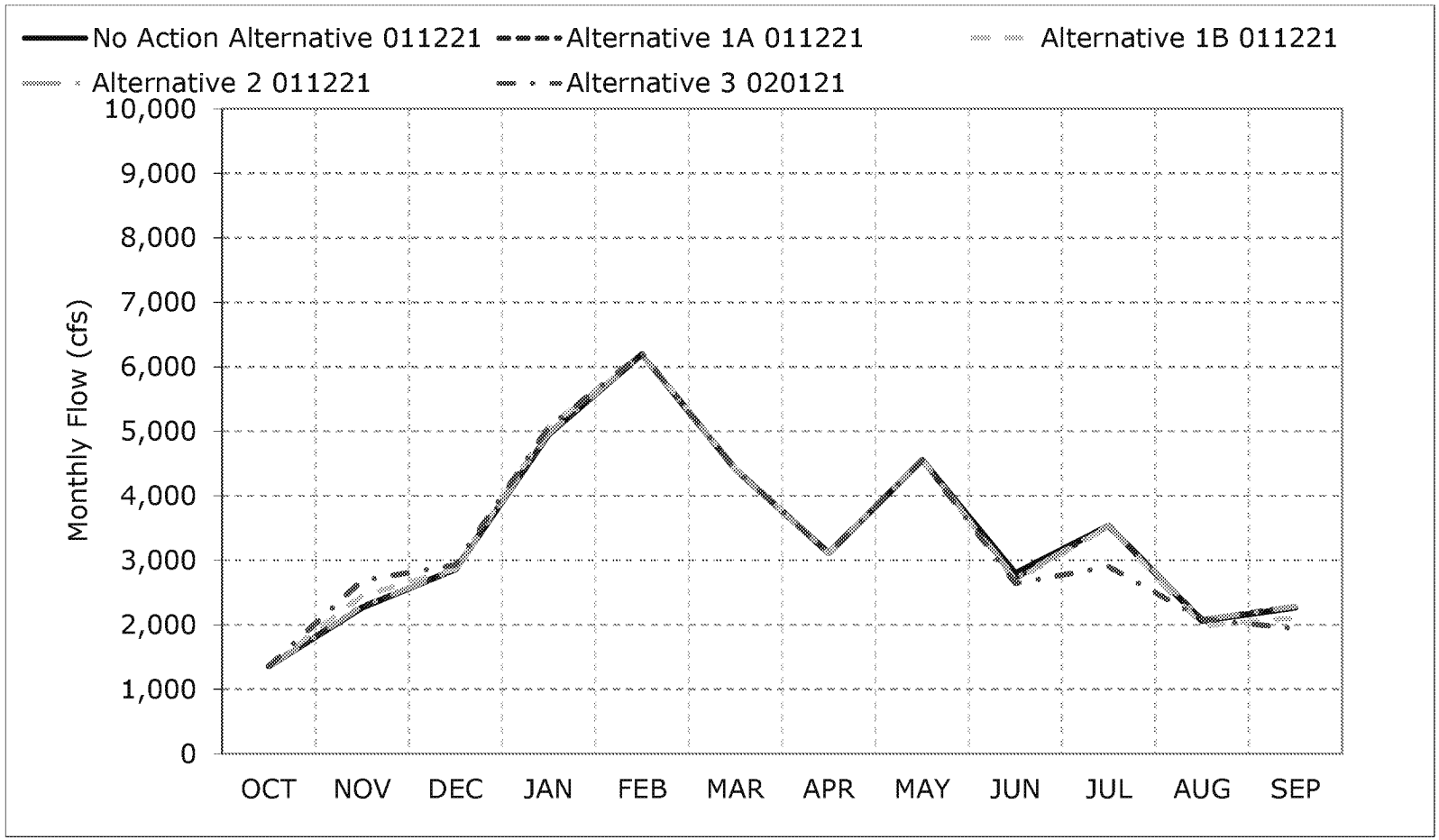
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-28-2. American River at H Street, Wet Year Average Flow



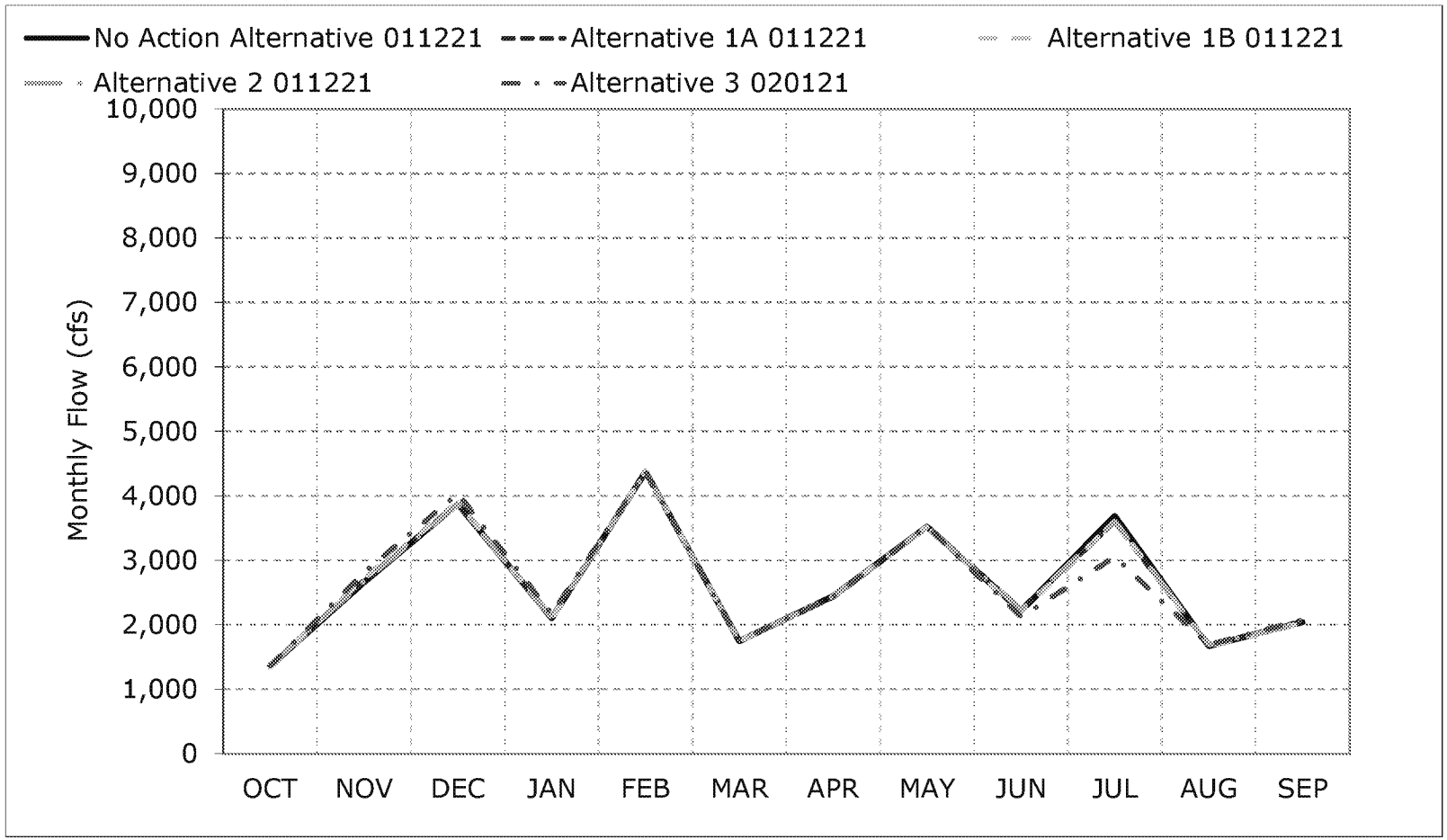
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-28-3. American River at H Street, Above Normal Year Average Flow



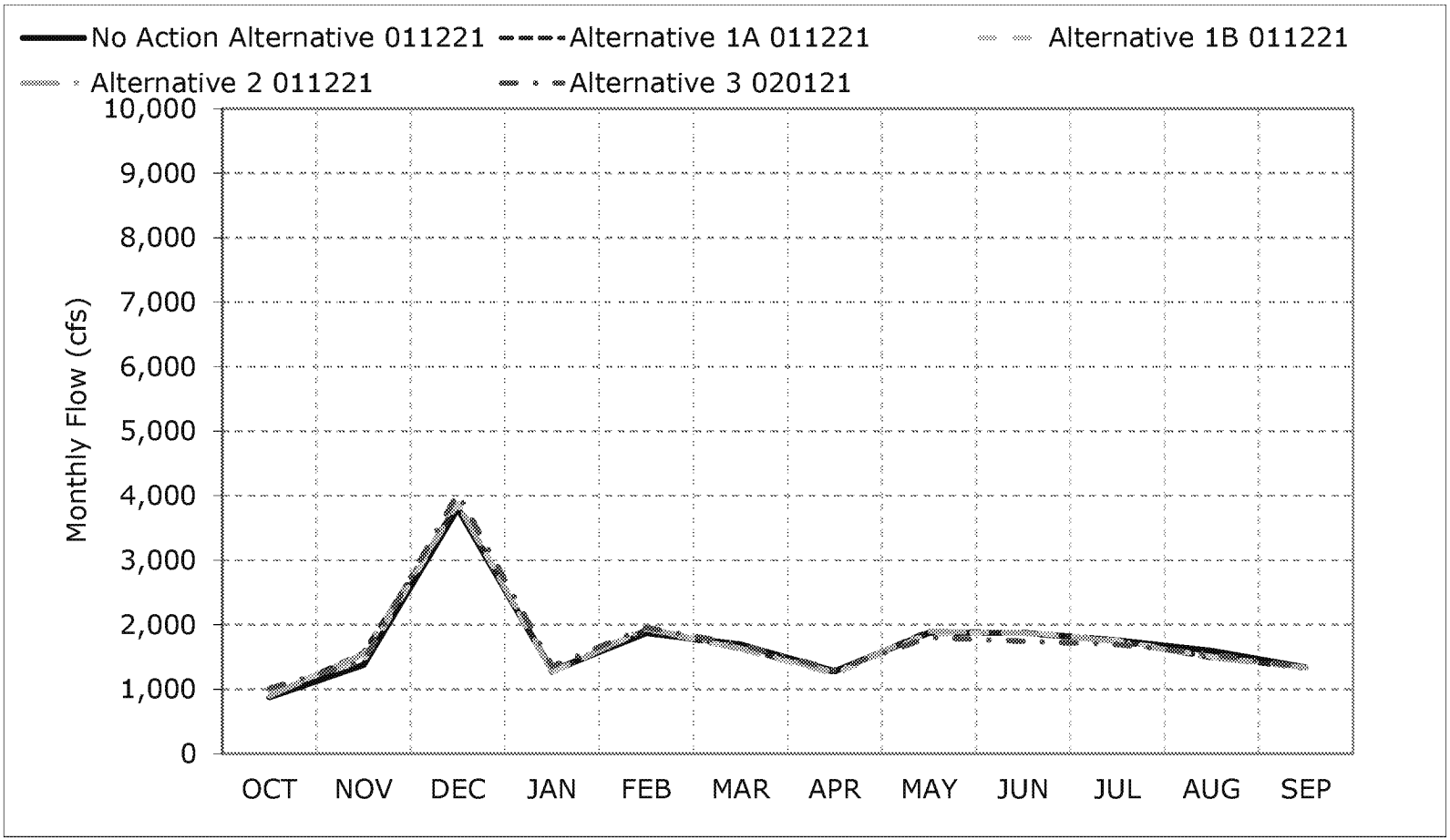
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-28-4. American River at H Street, Below Normal Year Average Flow



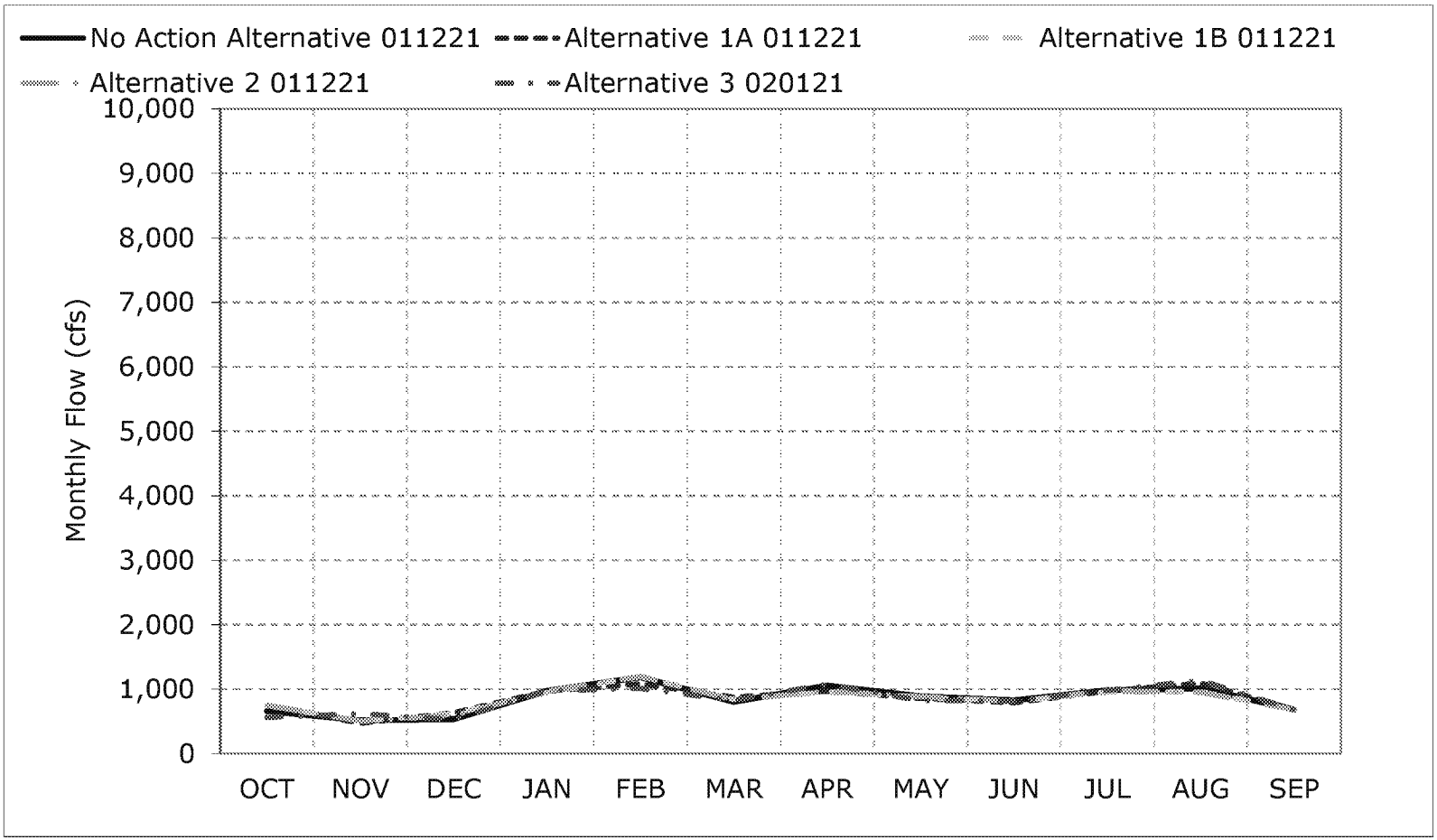
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-28-5. American River at H Street, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-28-6. American River at H Street, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B2-28-7. American River at H Street, October

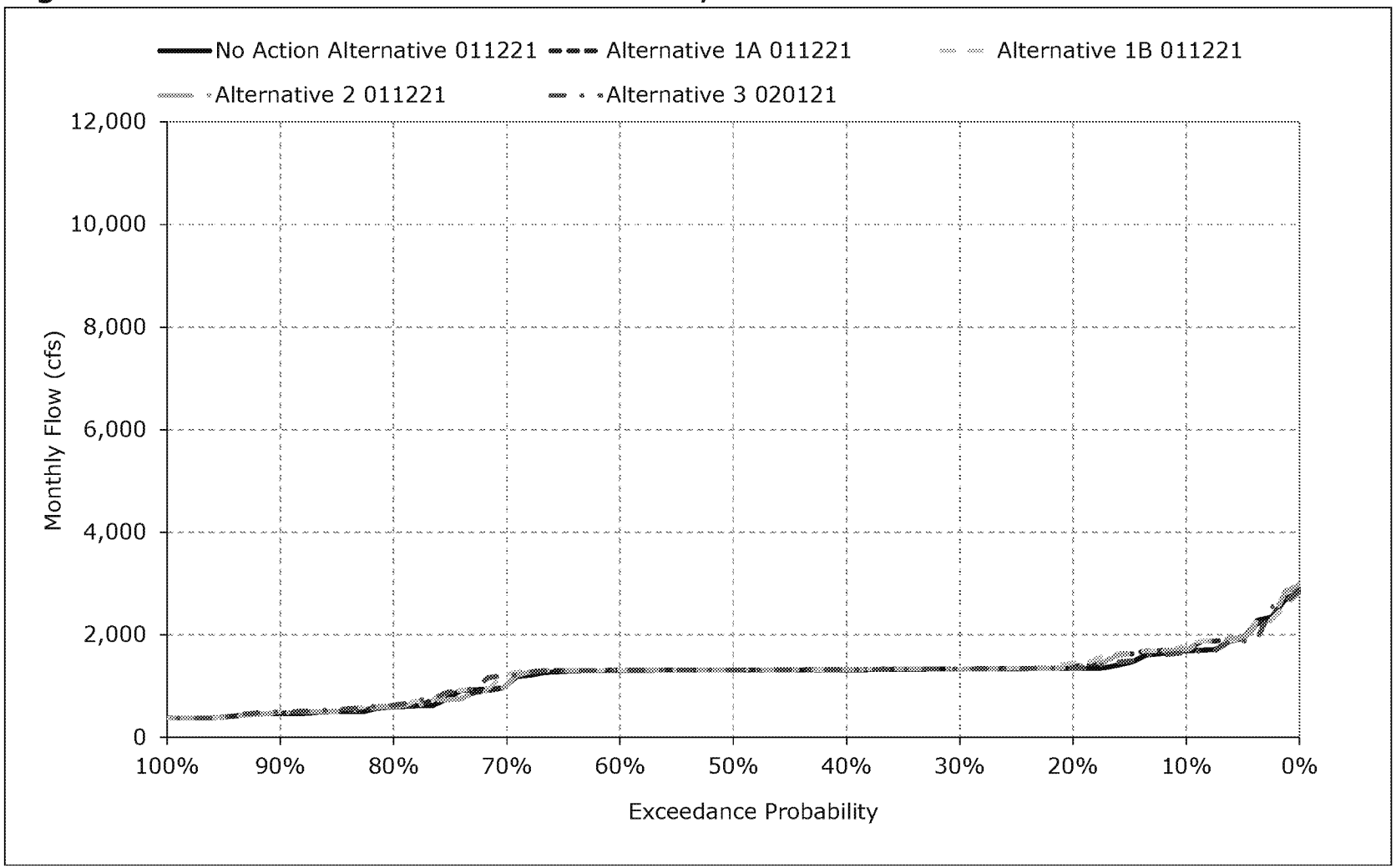


Figure 5B2-28-8. American River at H Street, November

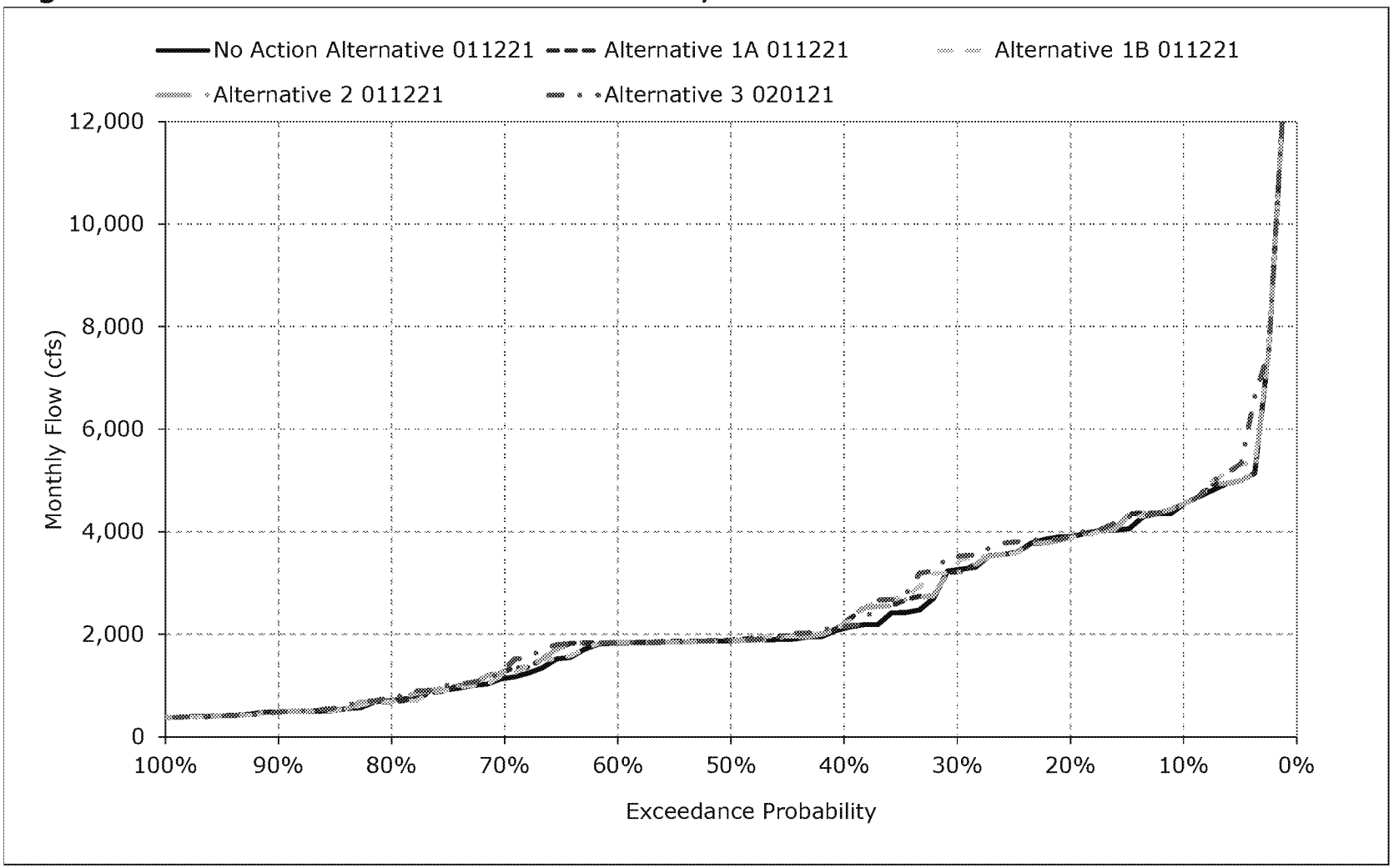


Figure 5B2-28-9. American River at H Street, December

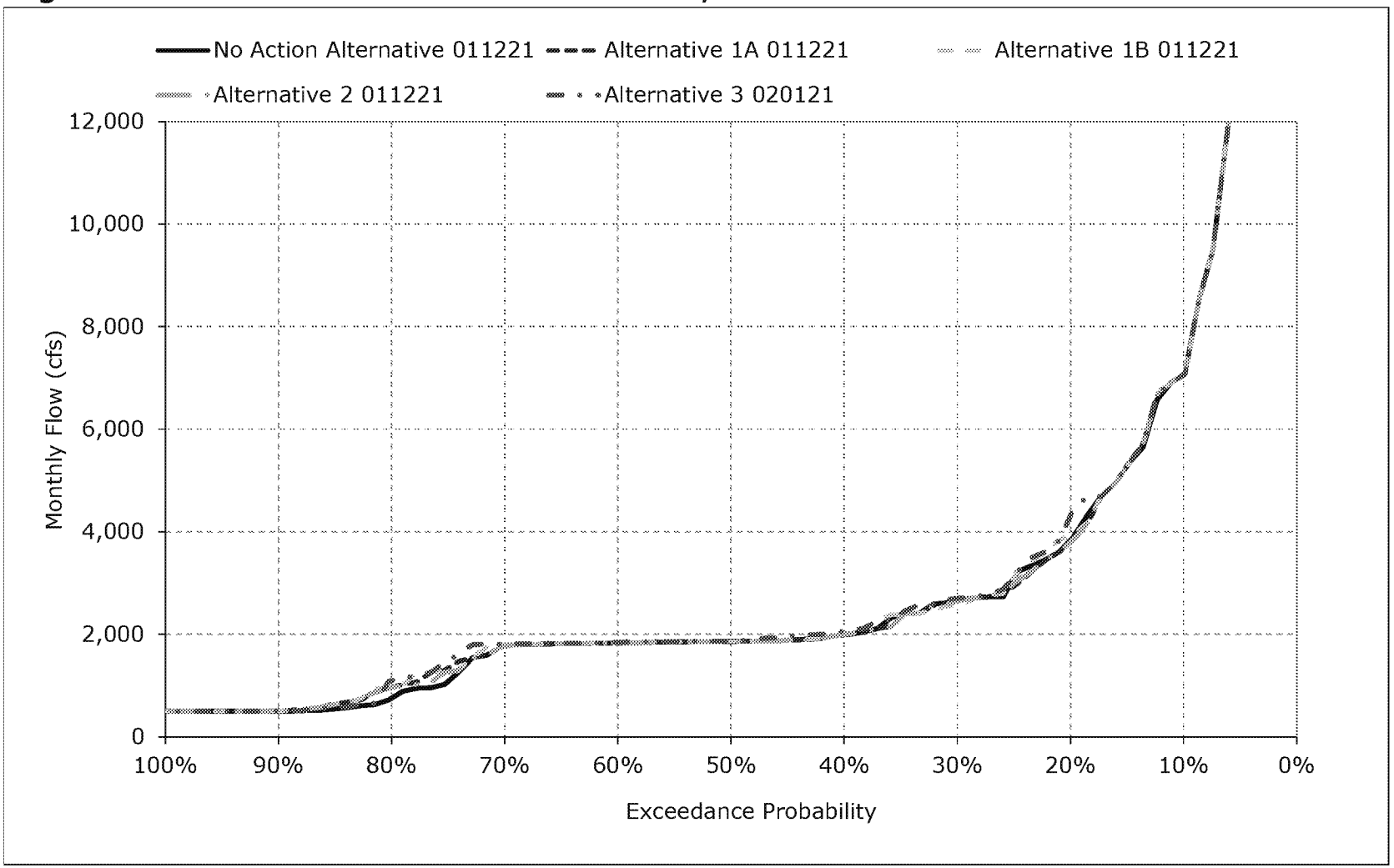


Figure 5B2-28-10. American River at H Street, January

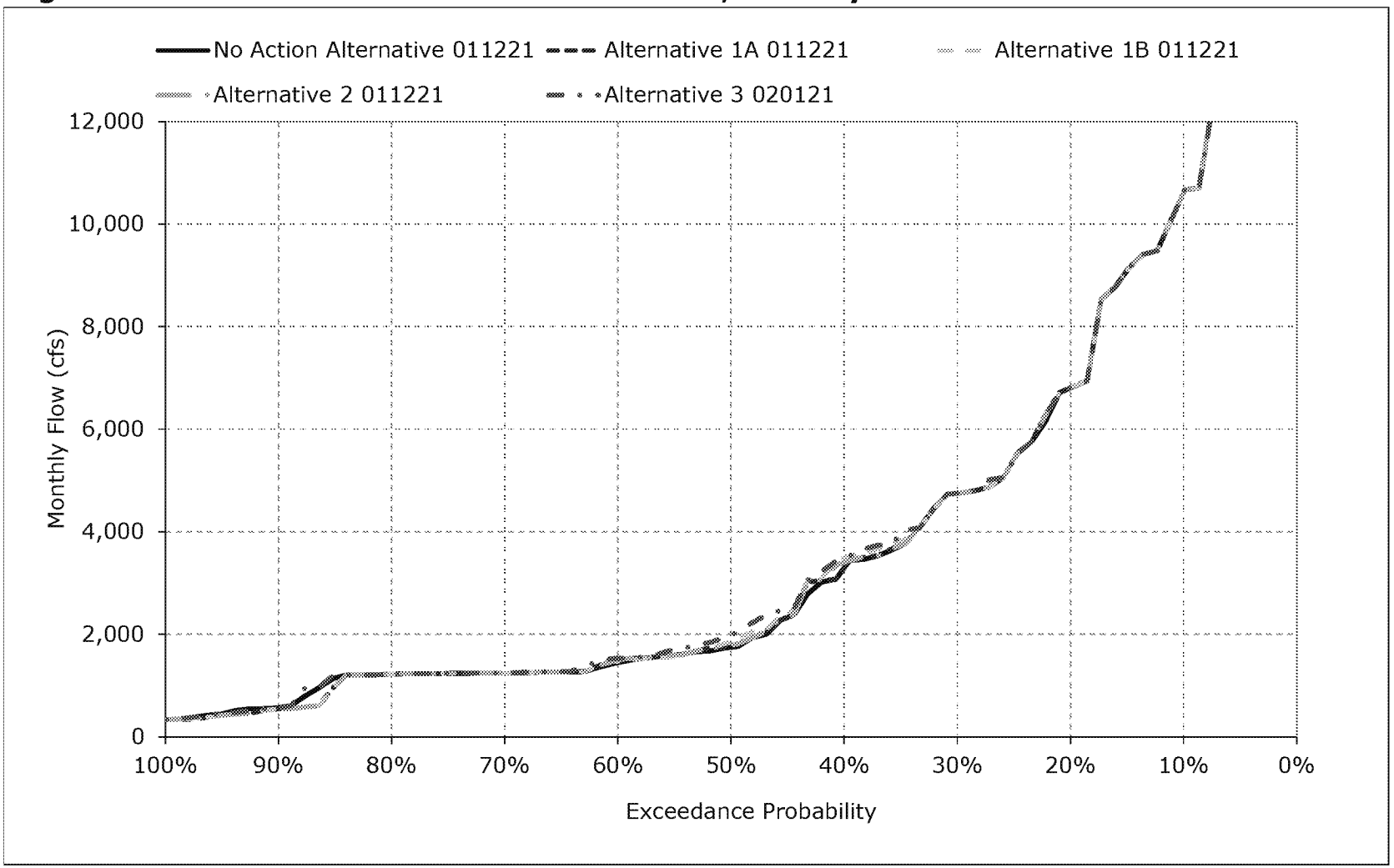


Figure 5B2-28-11. American River at H Street, February

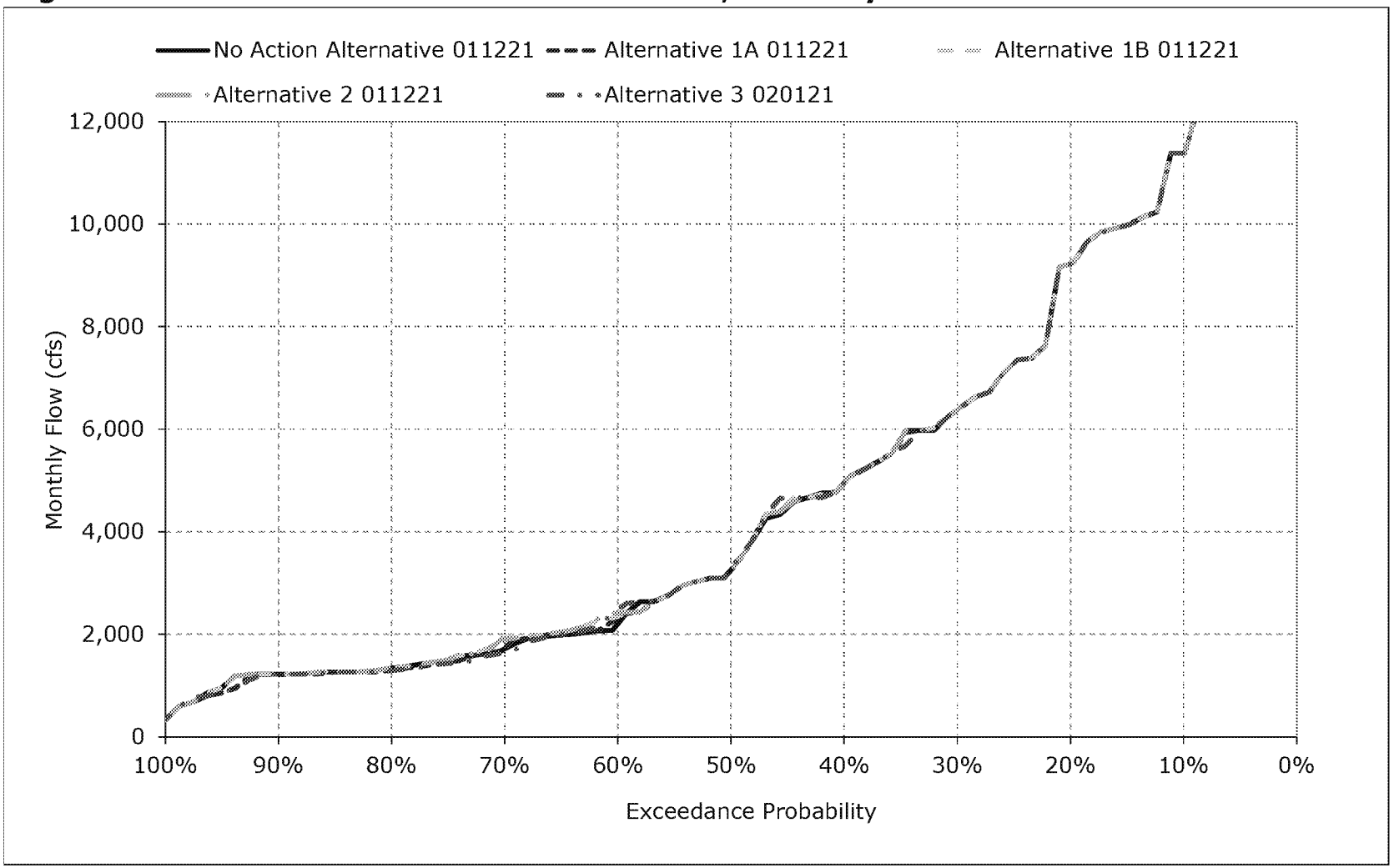


Figure 5B2-28-12. American River at H Street, March

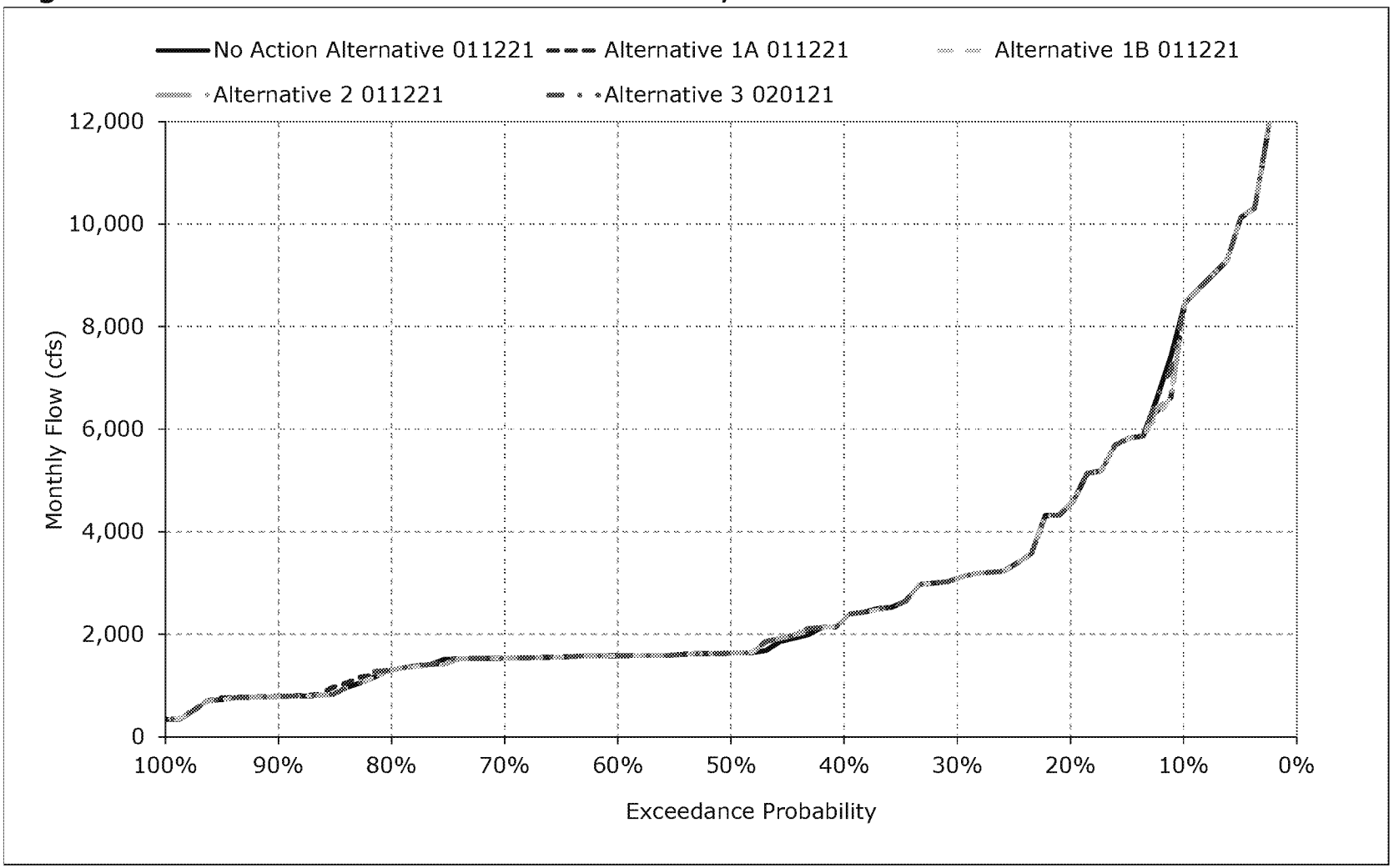


Figure 5B2-28-13. American River at H Street, April

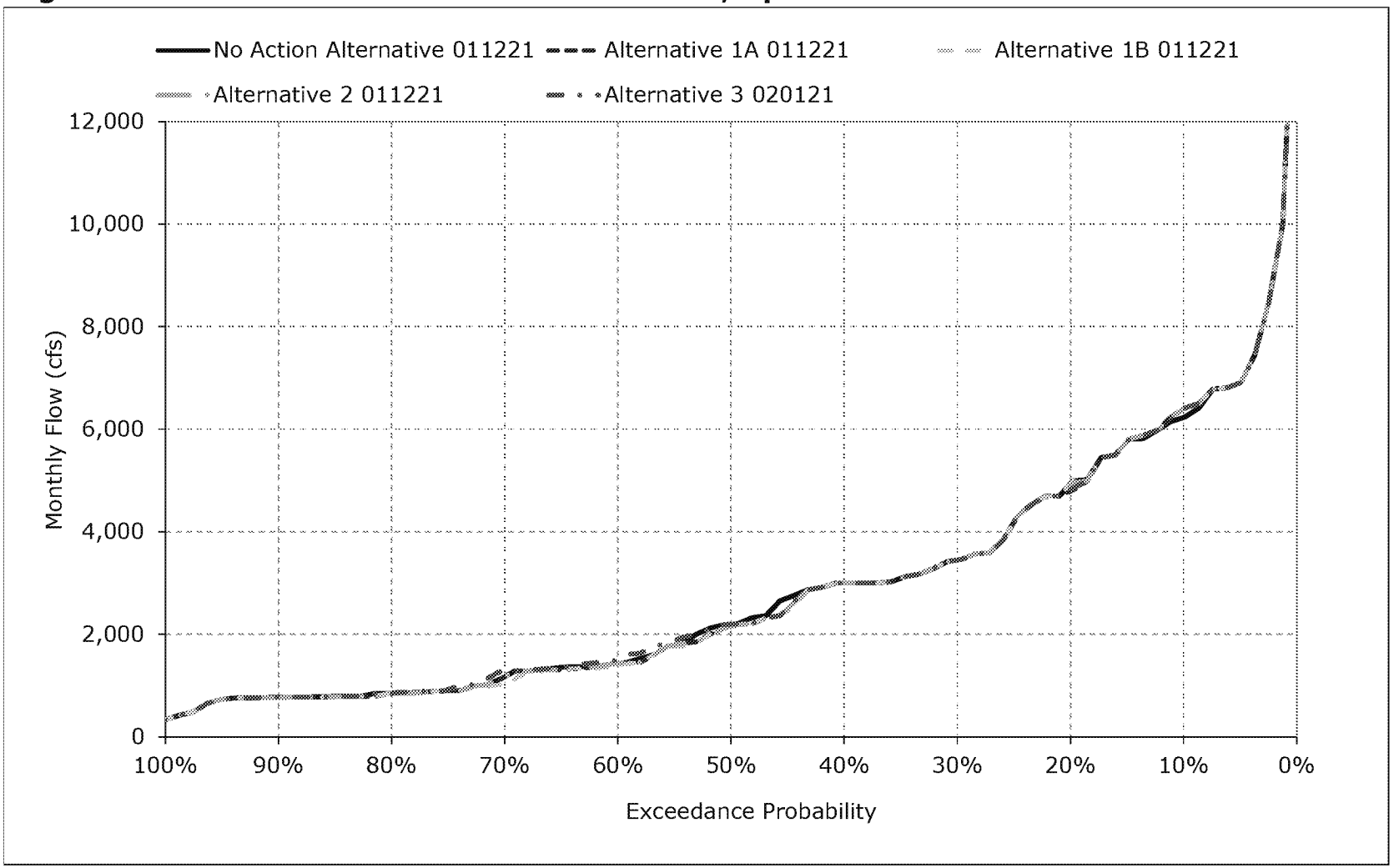


Figure 5B2-28-14. American River at H Street, May

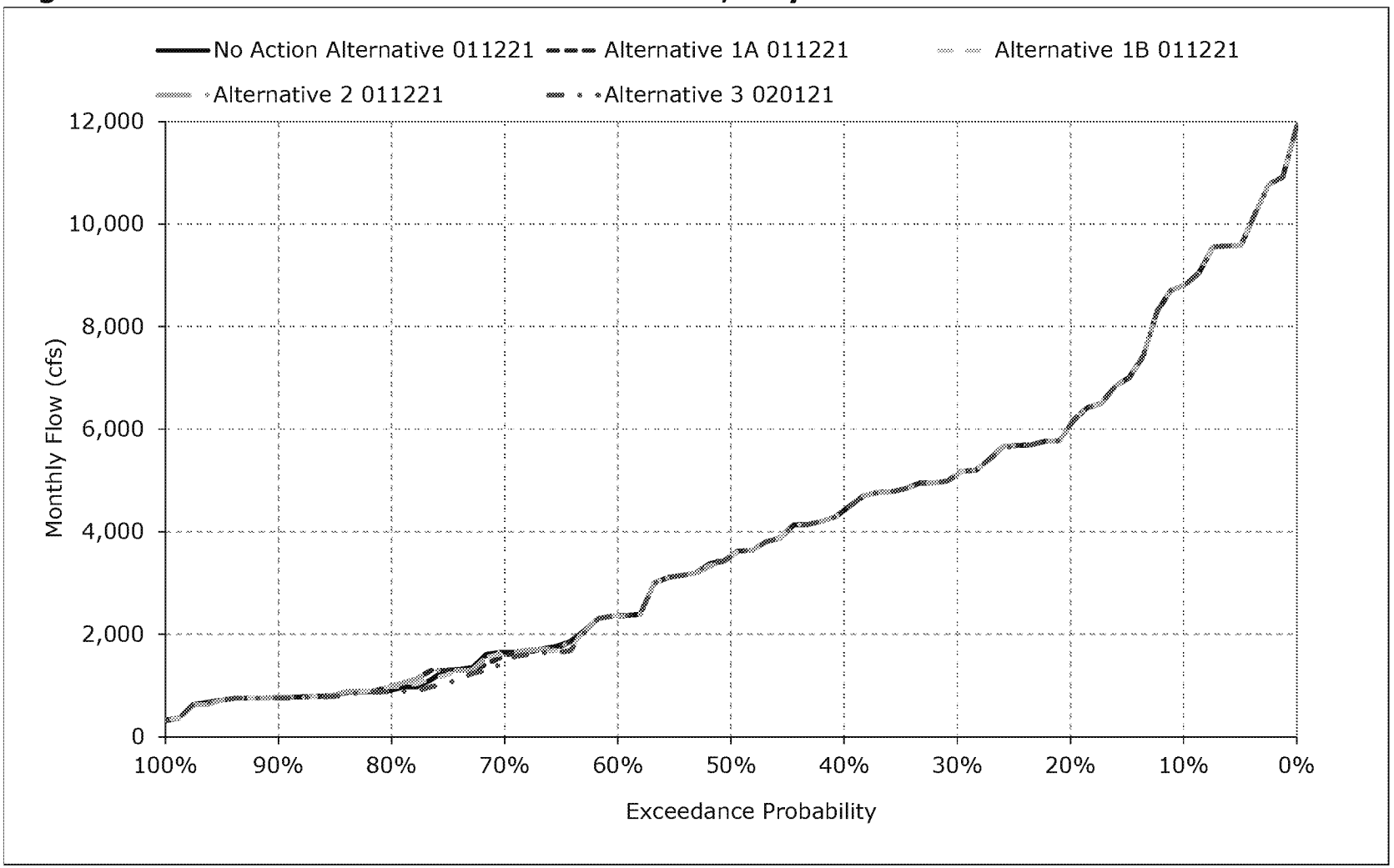


Figure 5B2-28-15. American River at H Street, June

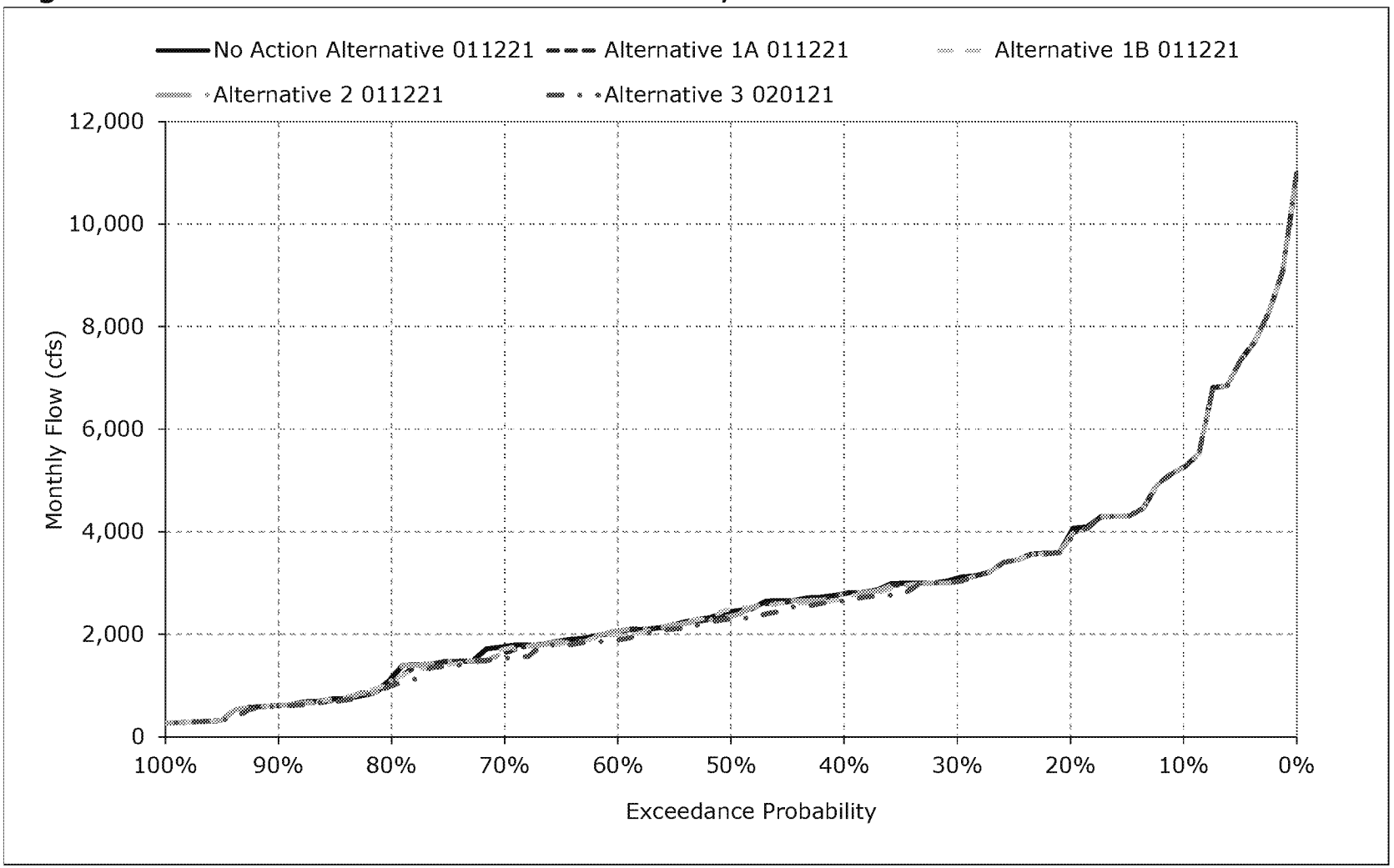


Figure 5B2-28-16. American River at H Street, July

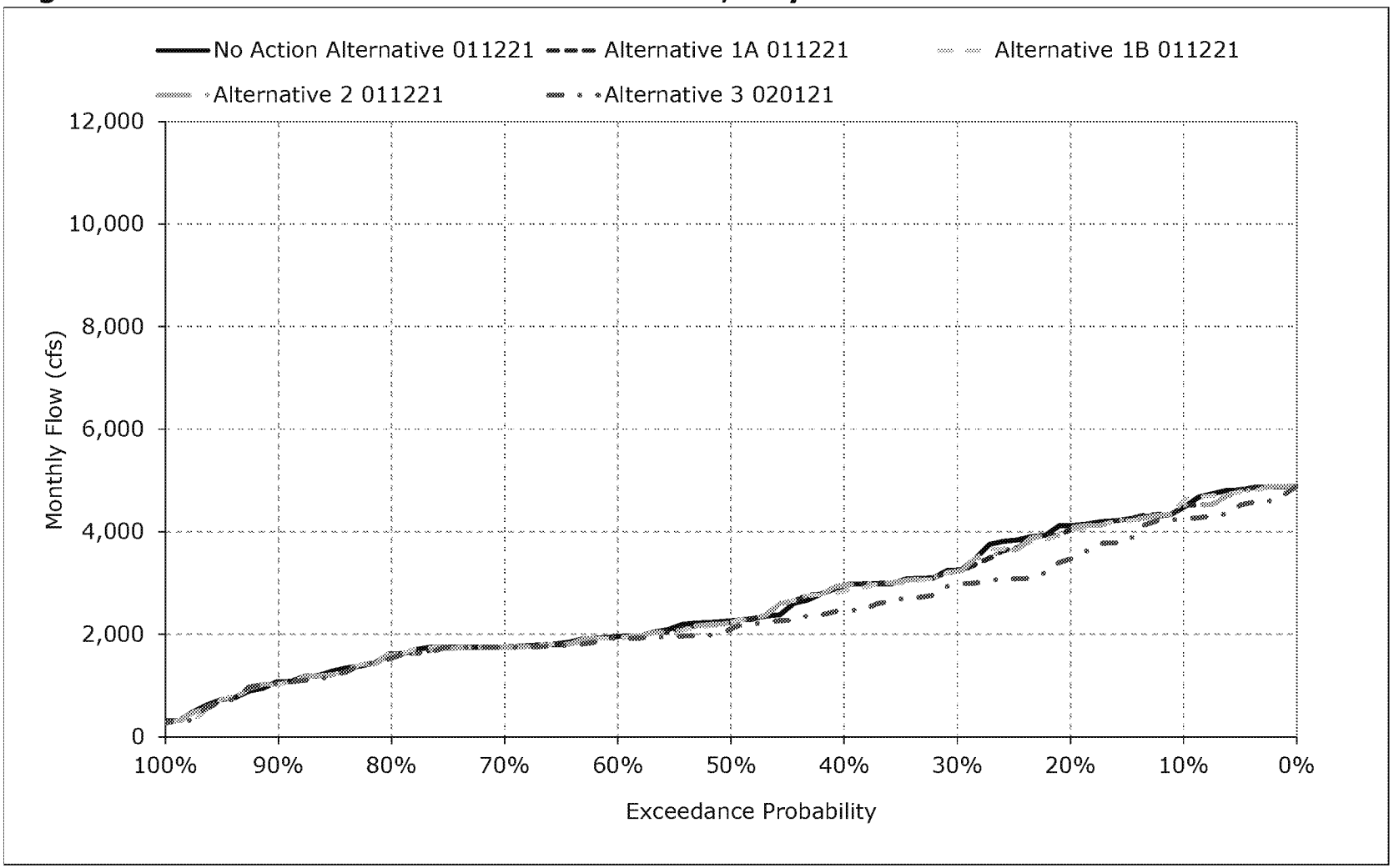


Figure 5B2-28-17. American River at H Street, August

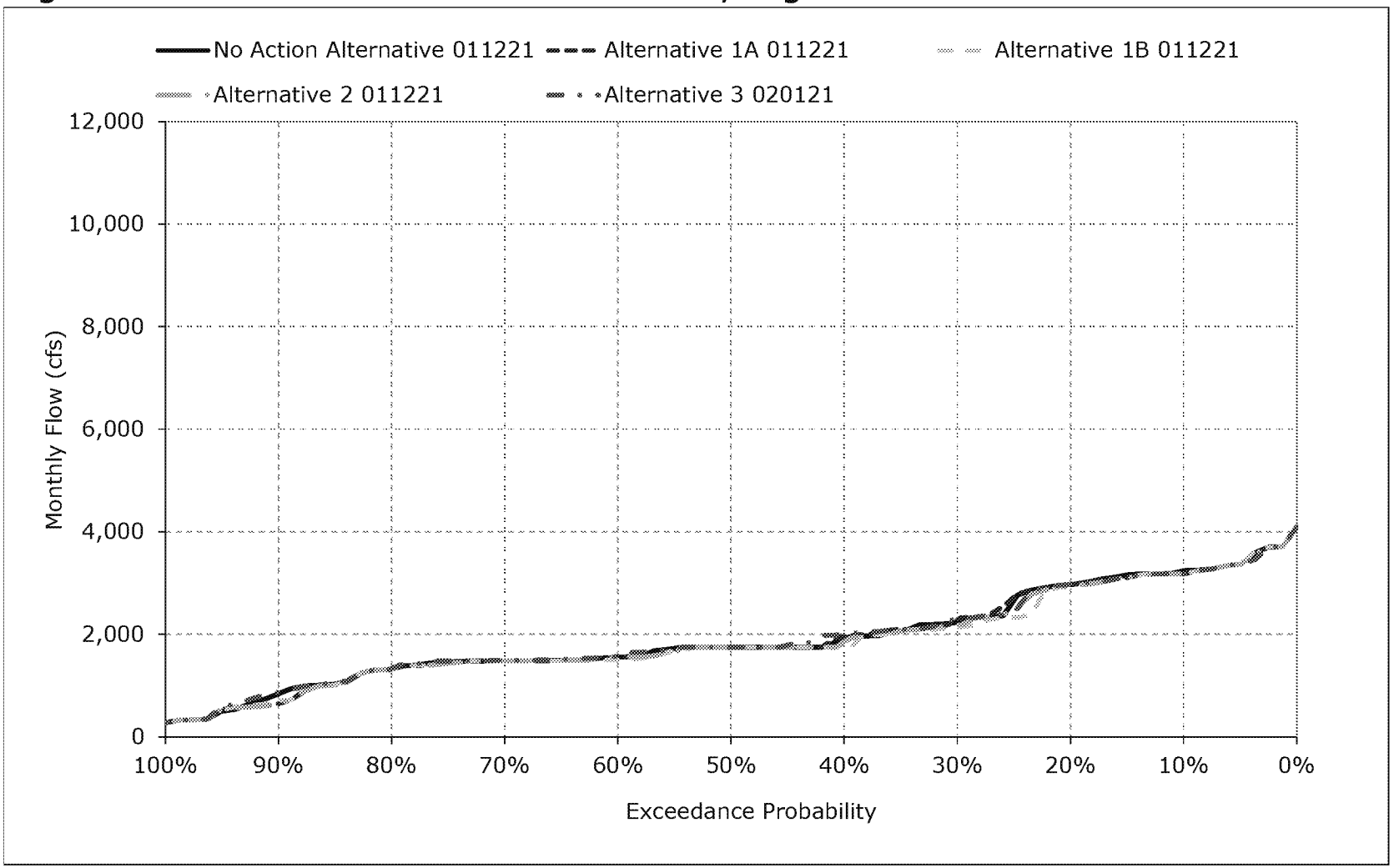
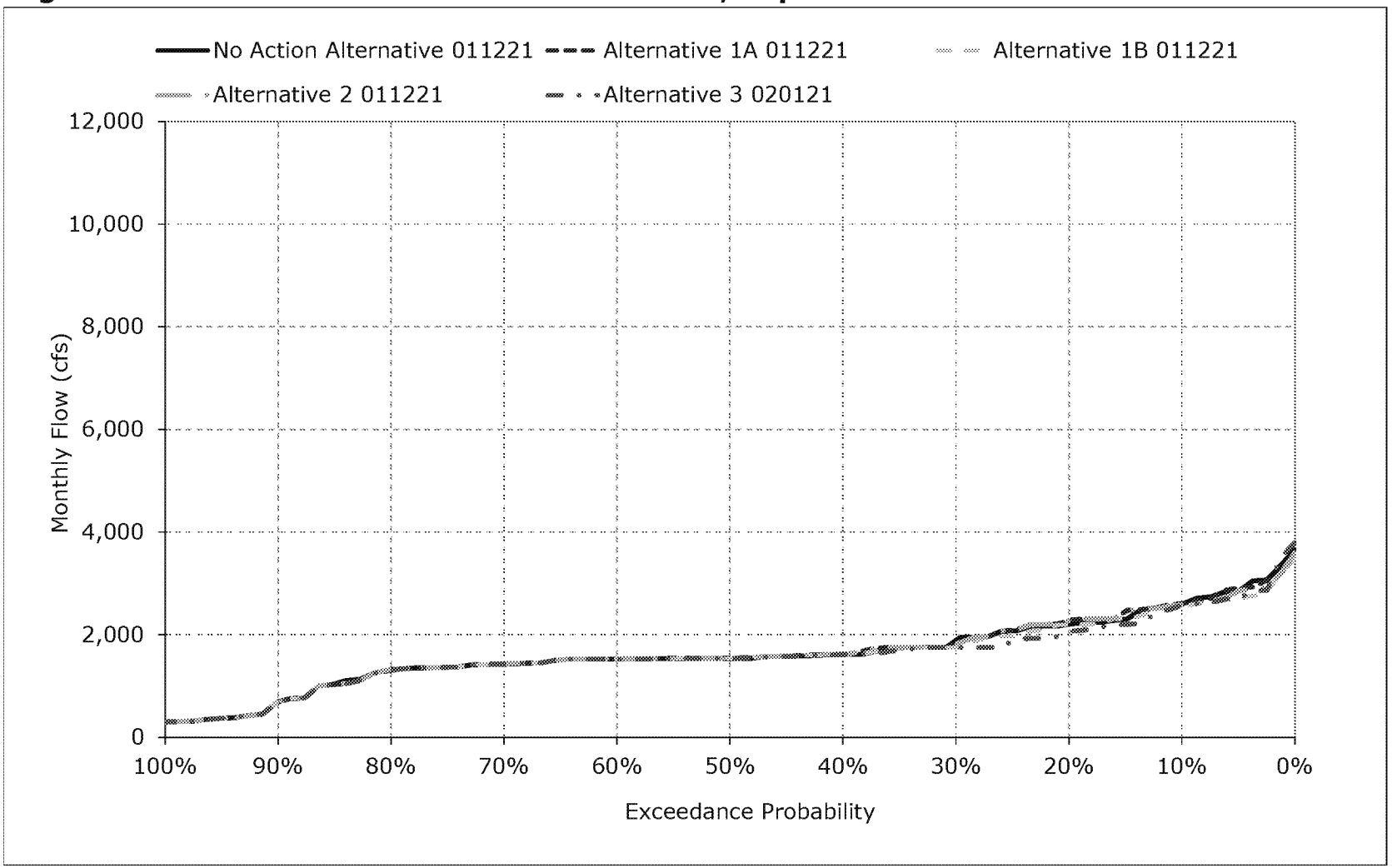


Figure 5B2-28-18. American River at H Street, September



Appendix 5B3 – Delta Operations (CalSim II)

The following results of the CalSim II model are included for delta operations at key project locations for the following alternatives:

- No Action Alternative 011221
- Alternative 1A 011221
- Alternative 1B 011221
- Alternative 2 011221
- Alternative 3 020121

Section	Output Parameters	Table Numbers	Figure Numbers
Delta	Sacramento River Flow at Freeport	5B3-1-1a to 5B3-1-4c	5B3-1-1 to 5B3-1-18
Delta	DCC Flow	5B3-2-1a to 5B3-2-4c	5B3-2-1 to 5B3-2-18
Delta	Yolo Bypass Flow	5B3-3-1a to 5B3-3-4c	5B3-3-1 to 5B3-3-18
Delta	Sacramento River Flow at Rio Vista	5B3-4-1a to 5B3-4-4c	5B3-4-1 to 5B3-4-18
Delta	Delta Outflow	5B3-5-1a to 5B3-5-4c	5B3-5-1 to 5B3-5-18
Delta	Old and Middle River Flow	5B3-6-1a to 5B3-6-4c	5B3-6-1 to 5B3-6-18
Delta	San Joaquin River at Vernalis	5B3-7-1a to 5B3-7-4c	5B3-7-1 to 5B3-7-18
Delta	San Joaquin River at Vernalis (60-20-20)	5B3-8-1a to 5B3-8-4c	5B3-8-1 to 5B3-8-6

Report formats

- Monthly tables comparing an alternative against the No Action alternative (exceedance values, long-term average, and average by water year type)
- Monthly pattern charts (long-term average and average by water year type) including all alternatives
- Monthly exceedance charts (all months) including all alternatives

Table 5B3-1-1a. Sacramento River Flow at Freeport, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	15,399	24,146	48,741	58,415	65,818	61,761	52,870	43,518	26,635	24,173	17,772	22,063
20%	14,226	15,568	32,821	51,261	57,186	50,168	40,756	31,756	20,094	23,306	17,184	21,446
30%	12,620	14,399	22,929	38,967	49,951	39,506	25,336	20,921	15,578	21,438	16,687	21,146
40%	12,112	13,614	18,360	26,312	43,564	32,875	22,859	17,208	15,153	20,198	16,454	20,135
50%	10,919	13,259	15,637	22,920	32,788	25,343	18,551	15,183	14,631	19,209	15,330	14,285
60%	9,661	11,929	15,245	18,947	25,695	21,710	15,239	13,573	14,126	17,191	13,428	11,275
70%	8,806	9,878	13,960	14,650	21,401	18,301	12,638	11,966	13,279	15,711	11,147	10,114
80%	7,835	9,138	12,159	12,794	17,750	14,906	11,958	10,551	12,233	13,960	9,780	9,218
90%	7,054	7,287	9,801	11,765	14,560	12,042	10,926	9,823	10,851	10,426	8,964	7,604
Long Term												
Full Simulation Period[a]	11,321	14,535	22,458	30,034	37,320	32,057	24,973	20,710	17,158	18,113	13,921	15,135
Water Year Types[b,c]												
Wet (32%)	14,276	18,111	25,645	48,304	56,161	48,925	40,279	33,406	24,000	19,624	16,478	21,465
Above Normal (15%)	12,444	16,320	22,905	36,313	43,185	42,470	27,398	23,370	16,743	21,725	17,016	20,960
Below Normal (17%)	12,311	15,483	25,759	22,142	32,912	22,289	19,420	16,193	14,491	21,189	15,633	12,623
Dry (22%)	8,173	11,869	21,558	16,291	23,237	20,402	14,659	12,093	14,146	16,533	10,090	9,497
Critical (15%)	7,362	7,896	12,607	13,993	16,897	13,976	11,337	8,738	10,378	10,010	9,036	6,986

Table 5B3-1-1b. Sacramento River Flow at Freeport, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	15,404	23,397	48,114	56,120	65,734	61,751	51,592	43,414	24,679	24,293	17,704	22,007
20%	14,293	14,966	32,827	49,629	56,202	48,178	40,754	31,728	19,031	23,329	17,239	21,512
30%	12,885	14,399	22,944	37,903	49,280	37,187	25,392	20,547	15,572	21,448	16,853	21,209
40%	12,201	13,612	18,100	25,886	42,800	31,335	22,903	17,075	15,165	20,380	16,450	20,146
50%	11,396	13,350	15,452	22,574	31,786	23,757	18,589	14,922	14,557	19,413	15,626	14,491
60%	10,515	12,602	14,980	18,467	25,187	20,553	15,523	13,551	14,124	17,571	14,199	11,793
70%	10,213	11,034	13,762	14,532	20,992	17,825	13,065	11,968	13,276	16,506	11,797	10,928
80%	9,353	10,302	11,822	12,740	17,501	14,613	11,982	10,637	12,191	14,385	11,216	10,310
90%	8,026	7,597	9,994	11,961	14,342	12,116	11,090	9,867	10,851	10,872	9,647	8,731
Long Term												
Full Simulation Period[a]	11,843	14,724	22,345	29,569	36,799	31,188	24,738	20,589	16,988	18,551	14,445	15,568
Water Year Types[b,c]												
Wet (32%)	14,198	17,819	25,625	47,812	55,706	48,342	39,627	33,226	23,719	19,556	16,402	21,461
Above Normal (15%)	12,512	16,271	22,725	35,378	42,587	41,065	27,273	23,210	16,419	21,792	16,996	21,031
Below Normal (17%)	12,899	15,960	25,578	21,644	32,104	21,069	19,235	16,039	14,285	21,468	16,242	12,998
Dry (22%)	9,342	12,716	21,595	15,987	22,752	19,299	14,731	12,060	14,121	17,694	11,513	10,503
Critical (15%)	8,592	8,038	12,213	13,855	16,594	13,784	11,373	8,685	10,429	11,016	9,952	7,932

Table 5B3-1-1c. Sacramento River Flow at Freeport, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	5	-748	-628	-2,295	-84	-10	-1,278	-103	-1,956	120	-68	-55
20%	67	-602	6	-1,632	-985	-1,990	-2	-28	-1,062	24	54	66
30%	265	0	14	-1,064	-671	-2,319	57	-373	-6	10	166	64
40%	89	-2	-260	-426	-764	-1,540	44	-133	11	182	-4	11
50%	477	90	-185	-346	-1,002	-1,586	38	-261	-74	204	296	206
60%	854	673	-265	-481	-507	-1,157	284	-22	-3	380	771	518
70%	1,407	1,157	-198	-118	-409	-476	427	2	-3	795	650	814
80%	1,518	1,164	-337	-54	-249	-293	24	86	-42	425	1,436	1,092
90%	971	310	193	196	-219	74	164	44	0	446	682	1,128
Long Term												
Full Simulation Period[a]	522	189	-113	-465	-521	-869	-235	-122	-169	438	524	432
Water Year Types[b,c]												
Wet (32%)	-79	-292	-20	-492	-454	-582	-651	-180	-280	-68	-76	-5
Above Normal (15%)	69	-49	-180	-935	-598	-1,405	-124	-160	-324	67	-19	71
Below Normal (17%)	589	477	-181	-498	-808	-1,220	-185	-154	-206	279	610	375
Dry (22%)	1,168	848	37	-305	-485	-1,103	72	-32	-25	1,161	1,424	1,007
Critical (15%)	1,231	142	-394	-138	-304	-192	36	-53	51	1,006	916	946

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-1-2a. Sacramento River Flow at Freeport, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	15,399	24,146	48,741	58,415	65,818	61,761	52,870	43,518	26,635	24,173	17,772	22,063
20%	14,226	15,568	32,821	51,261	57,186	50,168	40,756	31,756	20,094	23,306	17,184	21,446
30%	12,620	14,399	22,929	38,967	49,951	39,506	25,336	20,921	15,578	21,438	16,687	21,146
40%	12,112	13,614	18,360	26,312	43,564	32,875	22,859	17,208	15,153	20,198	16,454	20,135
50%	10,919	13,259	15,637	22,920	32,788	25,343	18,551	15,183	14,631	19,209	15,330	14,285
60%	9,661	11,929	15,245	18,947	25,695	21,710	15,239	13,573	14,126	17,191	13,428	11,275
70%	8,806	9,878	13,960	14,650	21,401	18,301	12,638	11,966	13,279	15,711	11,147	10,114
80%	7,835	9,138	12,159	12,794	17,750	14,906	11,958	10,551	12,233	13,960	9,780	9,218
90%	7,054	7,287	9,801	11,765	14,560	12,042	10,926	9,823	10,851	10,426	8,964	7,604
Long Term												
Full Simulation Period[a]	11,321	14,535	22,458	30,034	37,320	32,057	24,973	20,710	17,158	18,113	13,921	15,135
Water Year Types[b,c]												
Wet (32%)	14,276	18,111	25,645	48,304	56,161	48,925	40,279	33,406	24,000	19,624	16,478	21,465
Above Normal (15%)	12,444	16,320	22,905	36,313	43,185	42,470	27,398	23,370	16,743	21,725	17,016	20,960
Below Normal (17%)	12,311	15,483	25,759	22,142	32,912	22,289	19,420	16,193	14,491	21,189	15,633	12,623
Dry (22%)	8,173	11,869	21,558	16,291	23,237	20,402	14,659	12,093	14,146	16,533	10,090	9,497
Critical (15%)	7,362	7,896	12,607	13,993	16,897	13,976	11,337	8,738	10,378	10,010	9,036	6,986

Table 5B3-1-2b. Sacramento River Flow at Freeport, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	15,405	23,391	48,084	56,042	65,774	61,489	50,671	41,932	24,684	24,344	17,704	22,063
20%	14,311	14,966	33,003	49,615	55,898	48,167	40,751	31,736	19,032	23,337	17,221	21,511
30%	12,847	14,395	23,026	37,896	49,430	37,273	25,615	20,546	15,515	21,471	16,827	21,275
40%	12,177	13,643	18,209	26,215	42,998	31,324	22,903	17,075	15,159	20,467	16,450	20,130
50%	11,327	13,352	15,453	22,610	32,232	23,758	18,589	14,922	14,572	19,402	15,655	14,514
60%	10,430	12,825	14,970	18,498	25,186	20,510	15,523	13,550	14,067	17,705	14,202	11,804
70%	10,199	10,993	13,752	14,532	20,996	17,662	13,065	11,985	13,277	16,611	11,756	11,033
80%	9,030	10,155	11,923	12,740	17,517	14,613	12,076	10,637	12,191	14,501	11,260	10,203
90%	7,897	7,753	9,984	11,801	14,482	12,119	11,089	9,867	10,851	10,935	9,618	8,498
Long Term												
Full Simulation Period[a]	11,823	14,815	22,407	29,557	36,855	31,177	24,733	20,561	16,986	18,576	14,448	15,580
Water Year Types[b,c]												
Wet (32%)	14,192	17,818	25,689	47,787	55,675	48,325	39,568	33,146	23,690	19,558	16,399	21,489
Above Normal (15%)	12,584	16,346	22,882	35,468	42,649	41,116	27,316	23,210	16,428	21,798	16,995	21,092
Below Normal (17%)	12,852	16,186	25,683	21,665	32,208	21,076	19,257	16,045	14,263	21,471	16,245	13,093
Dry (22%)	9,363	12,864	21,551	15,970	22,843	19,286	14,746	12,056	14,169	17,789	11,530	10,425
Critical (15%)	8,421	8,104	12,287	13,735	16,723	13,707	11,380	8,672	10,424	11,027	9,955	7,903

Table 5B3-1-2c. Sacramento River Flow at Freeport, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	6	-755	-657	-2,373	-44	-272	-2,199	-1,585	-1,951	172	-68	0
20%	85	-602	181	-1,646	-1,288	-2,002	-6	-21	-1,061	32	37	65
30%	228	-4	97	-1,072	-521	-2,232	280	-374	-63	33	140	129
40%	65	29	-152	-97	-566	-1,551	44	-134	6	269	-4	-5
50%	408	92	-184	-310	-556	-1,585	38	-261	-59	193	326	229
60%	769	895	-275	-449	-508	-1,200	284	-22	-59	514	774	528
70%	1,393	1,115	-208	-118	-405	-639	428	18	-1	900	609	919
80%	1,194	1,016	-236	-54	-233	-293	118	86	-42	541	1,480	985
90%	843	466	183	36	-79	77	164	44	0	509	653	895
Long Term												
Full Simulation Period[a]	502	280	-51	-477	-465	-880	-240	-149	-171	463	527	445
Water Year Types[b,c]												
Wet (32%)	-84	-293	44	-517	-485	-600	-711	-260	-309	-66	-78	23
Above Normal (15%)	141	26	-24	-845	-537	-1,354	-82	-160	-315	74	-21	132
Below Normal (17%)	541	703	-76	-477	-704	-1,213	-163	-149	-228	281	613	470
Dry (22%)	1,190	995	-7	-321	-394	-1,116	88	-37	23	1,256	1,440	928
Critical (15%)	1,060	209	-320	-258	-174	-269	43	-66	46	1,017	919	917

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-1-3a. Sacramento River Flow at Freeport, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	15,399	24,146	48,741	58,415	65,818	61,761	52,870	43,518	26,635	24,173	17,772	22,063
20%	14,226	15,568	32,821	51,261	57,186	50,168	40,756	31,756	20,094	23,306	17,184	21,446
30%	12,620	14,399	22,929	38,967	49,951	39,506	25,336	20,921	15,578	21,438	16,687	21,146
40%	12,112	13,614	18,360	26,312	43,564	32,875	22,859	17,208	15,153	20,198	16,454	20,135
50%	10,919	13,259	15,637	22,920	32,788	25,343	18,551	15,183	14,631	19,209	15,330	14,285
60%	9,661	11,929	15,245	18,947	25,695	21,710	15,239	13,573	14,126	17,191	13,428	11,275
70%	8,806	9,878	13,960	14,650	21,401	18,301	12,638	11,966	13,279	15,711	11,147	10,114
80%	7,835	9,138	12,159	12,794	17,750	14,906	11,958	10,551	12,233	13,960	9,780	9,218
90%	7,054	7,287	9,801	11,765	14,560	12,042	10,926	9,823	10,851	10,426	8,964	7,604
Long Term												
Full Simulation Period[a]	11,321	14,535	22,458	30,034	37,320	32,057	24,973	20,710	17,158	18,113	13,921	15,135
Water Year Types[b,c]												
Wet (32%)	14,276	18,111	25,645	48,304	56,161	48,925	40,279	33,406	24,000	19,624	16,478	21,465
Above Normal (15%)	12,444	16,320	22,905	36,313	43,185	42,470	27,398	23,370	16,743	21,725	17,016	20,960
Below Normal (17%)	12,311	15,483	25,759	22,142	32,912	22,289	19,420	16,193	14,491	21,189	15,633	12,623
Dry (22%)	8,173	11,869	21,558	16,291	23,237	20,402	14,659	12,093	14,146	16,533	10,090	9,497
Critical (15%)	7,362	7,896	12,607	13,993	16,897	13,976	11,337	8,738	10,378	10,010	9,036	6,986

Table 5B3-1-3b. Sacramento River Flow at Freeport, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	15,404	23,380	48,114	56,152	65,734	61,754	51,571	43,403	24,681	24,295	17,704	22,063
20%	14,344	14,966	32,861	49,627	56,189	49,093	40,754	31,728	19,032	23,338	17,225	21,512
30%	12,871	14,399	22,944	38,700	49,355	37,184	25,392	20,547	15,572	21,500	16,853	21,195
40%	12,203	13,612	18,100	25,889	42,877	31,335	22,896	17,073	15,165	20,380	16,450	20,146
50%	11,133	13,350	15,452	22,578	31,786	23,758	18,586	14,922	14,558	19,415	15,661	14,491
60%	10,504	12,592	14,973	18,471	25,187	20,568	15,523	13,551	14,124	17,487	14,198	11,746
70%	10,214	10,927	13,764	14,532	20,994	17,828	13,065	11,968	13,276	16,569	11,797	10,924
80%	8,598	9,564	11,830	12,741	17,503	14,613	11,982	10,637	12,191	14,386	10,996	10,221
90%	7,958	7,620	10,025	11,801	14,342	12,091	11,090	9,866	10,851	10,870	9,568	8,541
Long Term												
Full Simulation Period[a]	11,791	14,664	22,359	29,574	36,830	31,245	24,767	20,590	16,990	18,541	14,412	15,545
Water Year Types[b,c]												
Wet (32%)	14,201	17,821	25,634	47,863	55,722	48,483	39,715	33,229	23,725	19,559	16,441	21,489
Above Normal (15%)	12,513	16,282	22,724	35,378	42,624	41,083	27,273	23,209	16,419	21,793	16,996	21,033
Below Normal (17%)	12,957	15,954	25,595	21,664	32,068	21,077	19,243	16,044	14,284	21,470	16,197	12,984
Dry (22%)	9,175	12,406	21,609	15,987	22,780	19,364	14,729	12,060	14,119	17,675	11,453	10,449
Critical (15%)	8,414	8,090	12,250	13,756	16,732	13,739	11,373	8,684	10,428	10,963	9,792	7,813

Table 5B3-1-3c. Sacramento River Flow at Freeport, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	5	-766	-627	-2,263	-84	-7	-1,299	-115	-1,954	122	-69	0
20%	119	-602	39	-1,634	-997	-1,075	-2	-28	-1,062	32	41	66
30%	251	0	15	-267	-596	-2,321	56	-374	-6	63	166	49
40%	91	-2	-260	-424	-687	-1,540	37	-135	11	182	-4	11
50%	215	90	-185	-342	-1,001	-1,585	34	-261	-73	206	332	206
60%	843	663	-272	-476	-508	-1,142	284	-22	-3	296	770	471
70%	1,408	1,050	-196	-117	-407	-473	428	2	-3	858	650	811
80%	763	425	-329	-53	-246	-293	25	86	-42	425	1,216	1,003
90%	903	333	224	36	-219	49	164	43	0	443	604	938
Long Term												
Full Simulation Period[a]	470	129	-99	-460	-490	-812	-206	-120	-168	428	492	410
Water Year Types[b,c]												
Wet (32%)	-76	-290	-10	-441	-438	-441	-564	-178	-275	-65	-37	24
Above Normal (15%)	69	-39	-181	-936	-562	-1,387	-125	-161	-324	68	-19	73
Below Normal (17%)	647	471	-164	-478	-844	-1,212	-176	-149	-206	281	564	362
Dry (22%)	1,002	537	51	-305	-457	-1,038	70	-32	-27	1,143	1,363	952
Critical (15%)	1,053	195	-357	-238	-165	-237	36	-54	51	953	756	827

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-1-4a. Sacramento River Flow at Freeport, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	15,399	24,146	48,741	58,415	65,818	61,761	52,870	43,518	26,635	24,173	17,772	22,063
20%	14,226	15,568	32,821	51,261	57,186	50,168	40,756	31,756	20,094	23,306	17,184	21,446
30%	12,620	14,399	22,929	38,967	49,951	39,506	25,336	20,921	15,578	21,438	16,687	21,146
40%	12,112	13,614	18,360	26,312	43,564	32,875	22,859	17,208	15,153	20,198	16,454	20,135
50%	10,919	13,259	15,637	22,920	32,788	25,343	18,551	15,183	14,631	19,209	15,330	14,285
60%	9,661	11,929	15,245	18,947	25,695	21,710	15,239	13,573	14,126	17,191	13,428	11,275
70%	8,806	9,878	13,960	14,650	21,401	18,301	12,638	11,966	13,279	15,711	11,147	10,114
80%	7,835	9,138	12,159	12,794	17,750	14,906	11,958	10,551	12,233	13,960	9,780	9,218
90%	7,054	7,287	9,801	11,765	14,560	12,042	10,926	9,823	10,851	10,426	8,964	7,604
Long Term												
Full Simulation Period[a]	11,321	14,535	22,458	30,034	37,320	32,057	24,973	20,710	17,158	18,113	13,921	15,135
Water Year Types[b,c]												
Wet (32%)	14,276	18,111	25,645	48,304	56,161	48,925	40,279	33,406	24,000	19,624	16,478	21,465
Above Normal (15%)	12,444	16,320	22,905	36,313	43,185	42,470	27,398	23,370	16,743	21,725	17,016	20,960
Below Normal (17%)	12,311	15,483	25,759	22,142	32,912	22,289	19,420	16,193	14,491	21,189	15,633	12,623
Dry (22%)	8,173	11,869	21,558	16,291	23,237	20,402	14,659	12,093	14,146	16,533	10,090	9,497
Critical (15%)	7,362	7,896	12,607	13,993	16,897	13,976	11,337	8,738	10,378	10,010	9,036	6,986

Table 5B3-1-4b. Sacramento River Flow at Freeport, Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	15,460	23,379	48,219	56,055	65,776	59,937	50,099	41,951	24,687	24,444	17,704	22,064
20%	14,645	15,014	33,806	49,597	56,356	48,134	40,752	31,746	19,037	23,352	17,274	21,515
30%	13,096	14,407	23,405	37,896	48,703	37,277	25,616	20,548	15,421	21,611	16,772	21,228
40%	12,198	13,646	19,109	26,280	44,302	31,336	22,908	17,196	15,098	20,514	16,461	20,368
50%	11,217	13,295	15,589	22,588	32,300	23,758	18,591	14,872	14,578	19,425	15,579	14,549
60%	10,551	12,229	15,159	18,563	25,180	20,511	15,436	13,551	14,128	17,626	14,228	12,080
70%	10,212	10,921	13,753	14,590	21,010	17,977	13,066	11,951	13,371	16,744	11,789	10,688
80%	8,509	9,814	11,921	12,759	17,451	14,594	12,099	10,636	12,253	14,181	10,636	10,099
90%	7,754	8,062	9,884	11,802	14,161	12,121	11,187	9,788	10,851	11,002	9,322	8,407
Long Term												
Full Simulation Period[a]	11,848	14,804	22,550	29,609	36,913	31,150	24,715	20,527	16,972	18,584	14,383	15,546
Water Year Types[b,c]												
Wet (32%)	14,216	17,819	25,684	47,860	55,714	48,138	39,483	33,047	23,651	19,564	16,387	21,423
Above Normal (15%)	13,031	16,561	23,072	35,499	43,025	41,017	27,322	23,209	16,433	21,892	16,998	21,393
Below Normal (17%)	13,097	16,254	26,015	21,713	32,265	21,056	19,297	16,108	14,253	21,531	16,212	13,144
Dry (22%)	9,328	12,586	21,873	16,057	22,867	19,447	14,755	12,015	14,191	17,763	11,239	10,296
Critical (15%)	7,861	8,152	12,209	13,713	16,557	13,808	11,374	8,644	10,384	10,947	10,008	7,645

Table 5B3-1-4c. Sacramento River Flow at Freeport, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

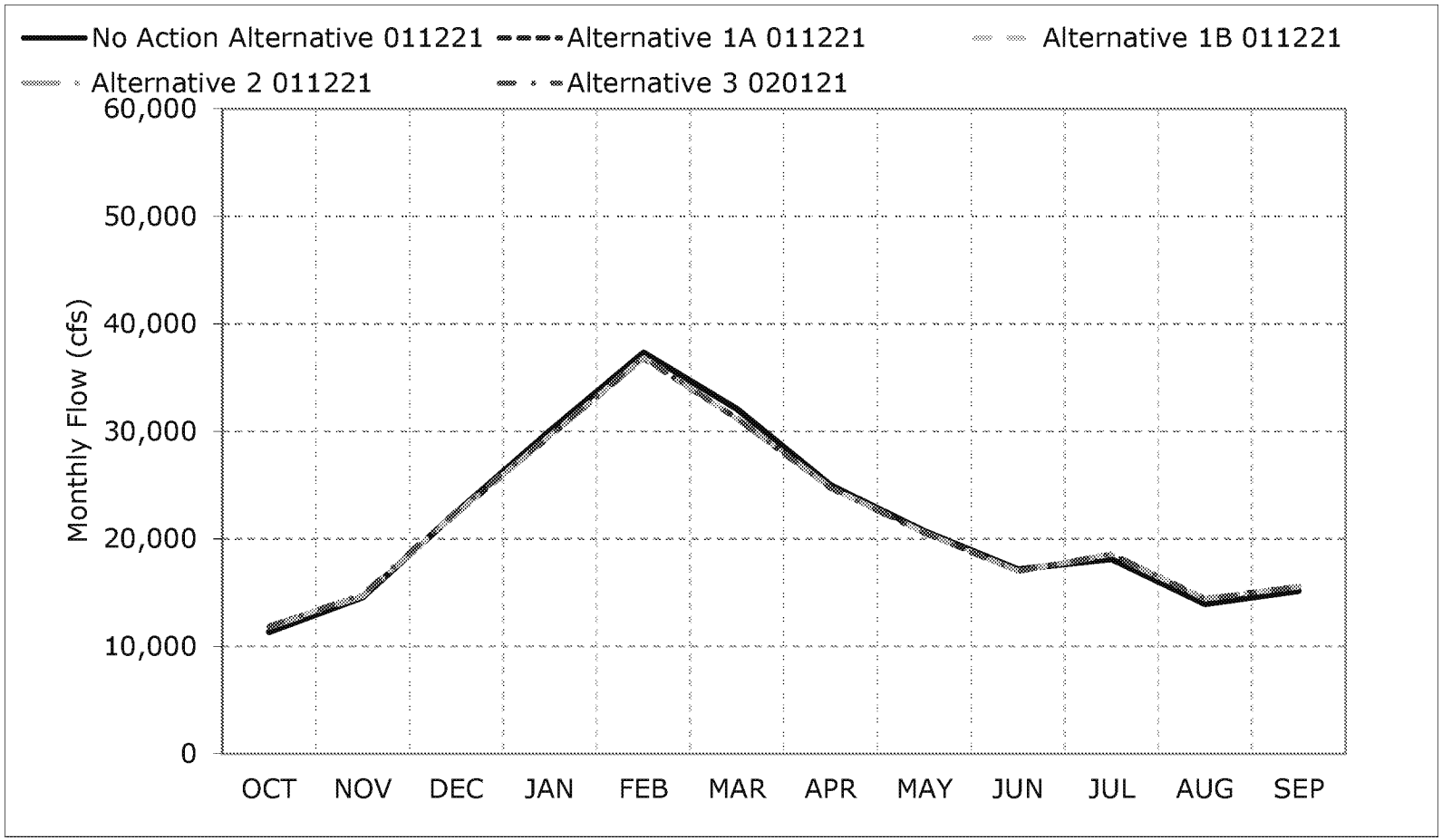
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	61	-766	-523	-2,359	-42	-1,824	-2,771	-1,567	-1,948	272	-68	2
20%	419	-554	985	-1,663	-830	-2,035	-4	-11	-1,057	46	89	69
30%	477	8	475	-1,071	-1,248	-2,229	280	-373	-157	174	85	82
40%	86	32	748	-32	738	-1,539	49	-12	-55	315	6	232
50%	298	36	-47	-332	-487	-1,585	40	-311	-52	216	249	264
60%	889	300	-86	-384	-515	-1,199	197	-22	2	435	799	805
70%	1,405	1,044	-207	-60	-391	-324	428	-15	92	1,033	642	575
80%	673	676	-238	-34	-299	-312	141	85	20	221	856	881
90%	699	775	83	36	-400	79	262	-36	0	575	357	804
Long Term												
Full Simulation Period[a]	527	269	92	-426	-407	-907	-258	-183	-185	471	462	411
Water Year Types[b,c]												
Wet (32%)	-61	-292	40	-444	-447	-786	-796	-360	-349	-60	-90	-42
Above Normal (15%)	587	241	167	-814	-160	-1,452	-76	-162	-310	167	-18	433
Below Normal (17%)	786	772	256	-429	-647	-1,233	-123	-85	-237	342	580	521
Dry (22%)	1,154	717	316	-235	-370	-955	96	-78	46	1,230	1,149	800
Critical (15%)	499	256	-398	-280	-340	-168	37	-94	7	937	972	659

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

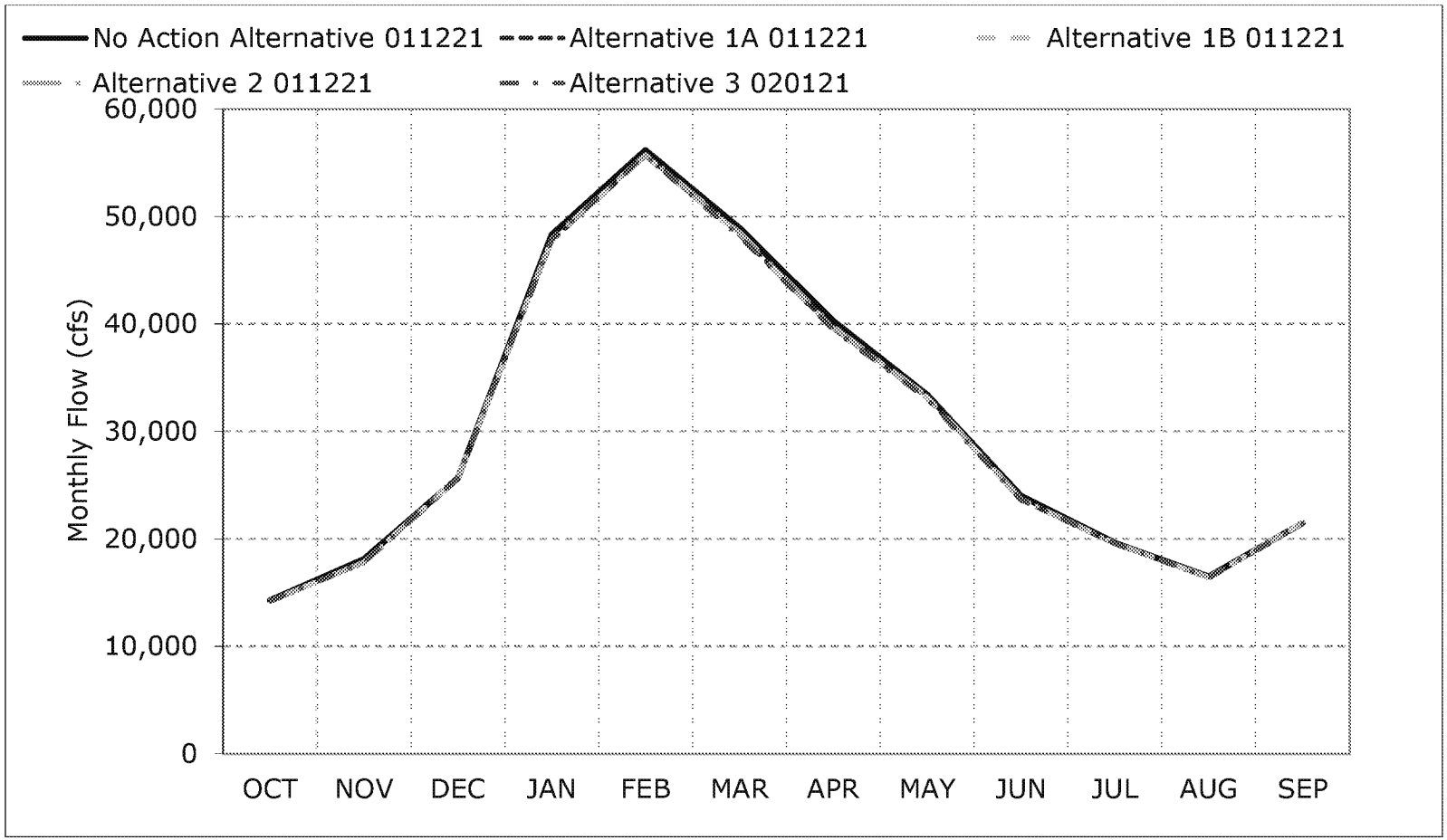
c These results are displayed with calendar year - year type sorting.

Figure 5B3-1-1. Sacramento River Flow at Freeport, Long-Term Average Flow



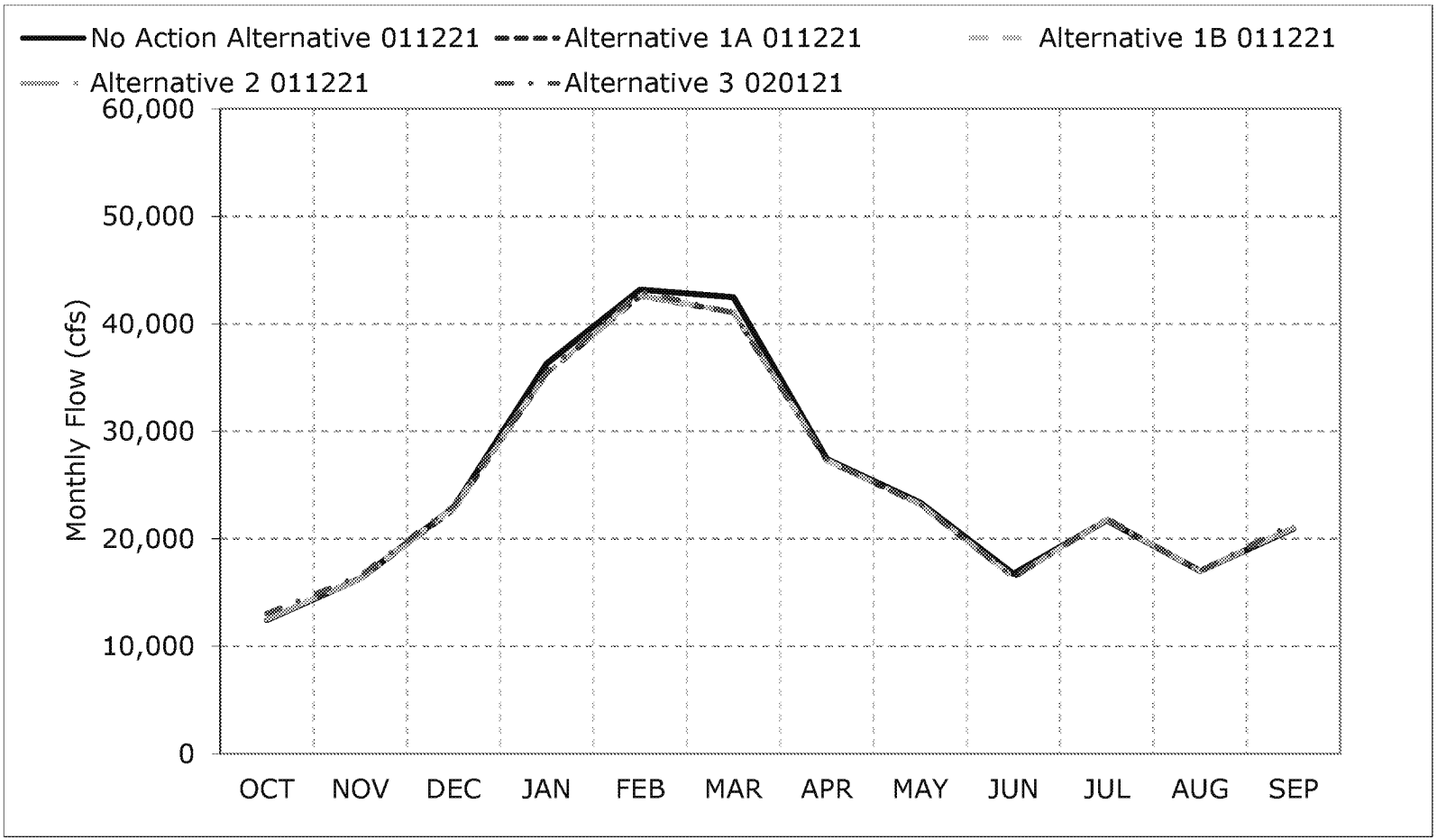
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-1-2. Sacramento River Flow at Freeport, Wet Year Average Flow



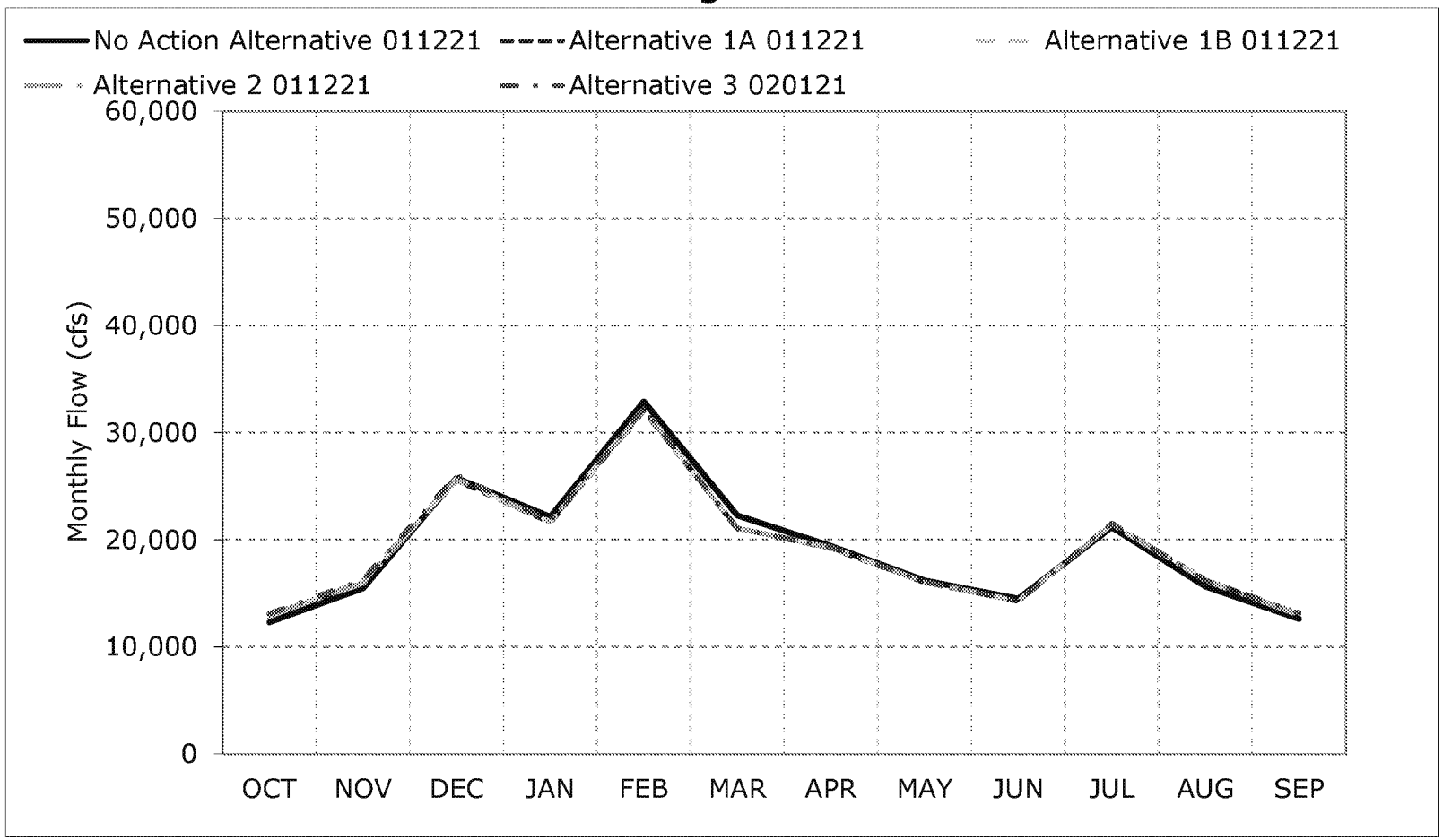
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-1-3. Sacramento River Flow at Freeport, Above Normal Year Average Flow



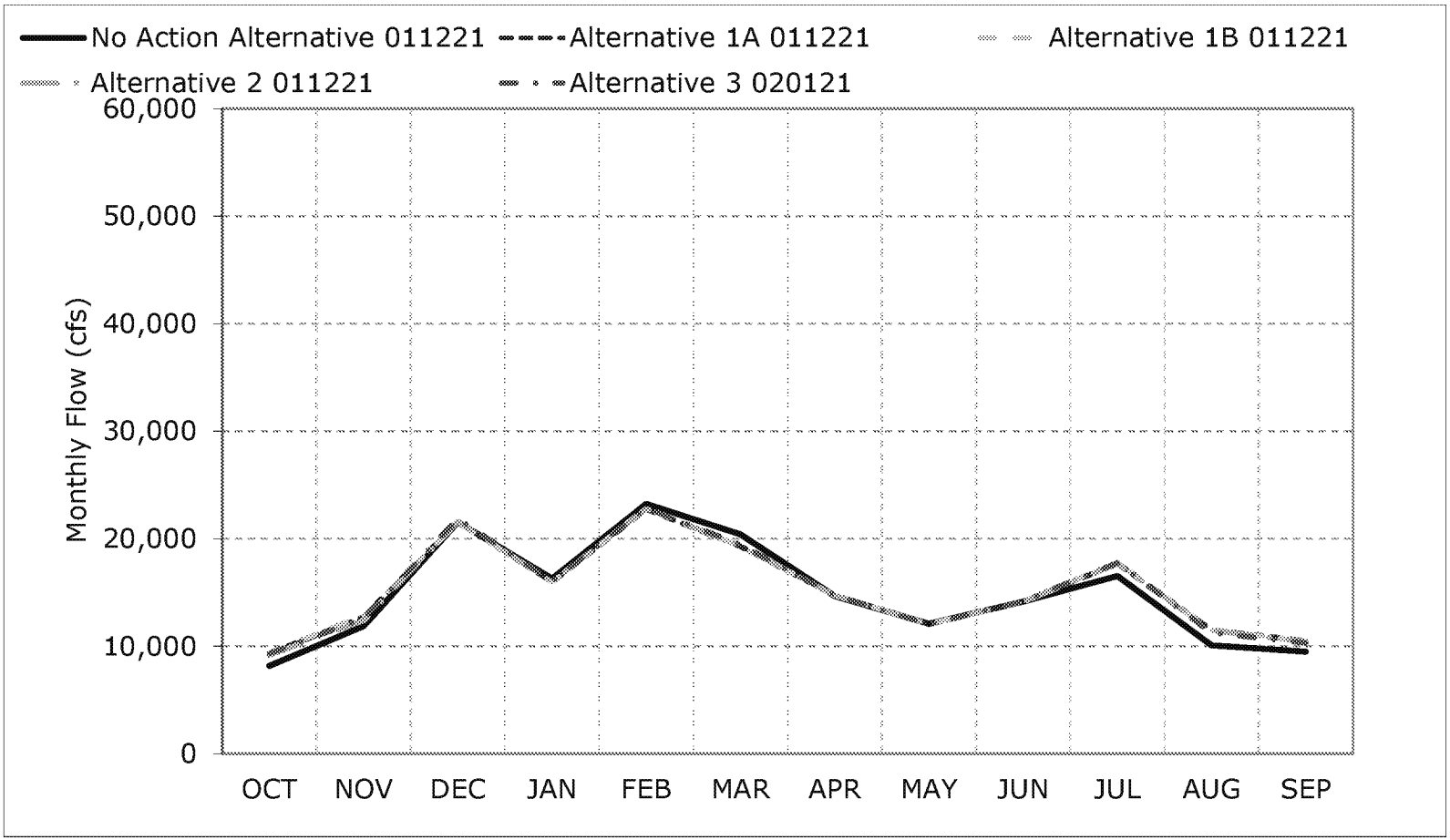
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-1-4. Sacramento River Flow at Freeport, Below Normal Year Average Flow



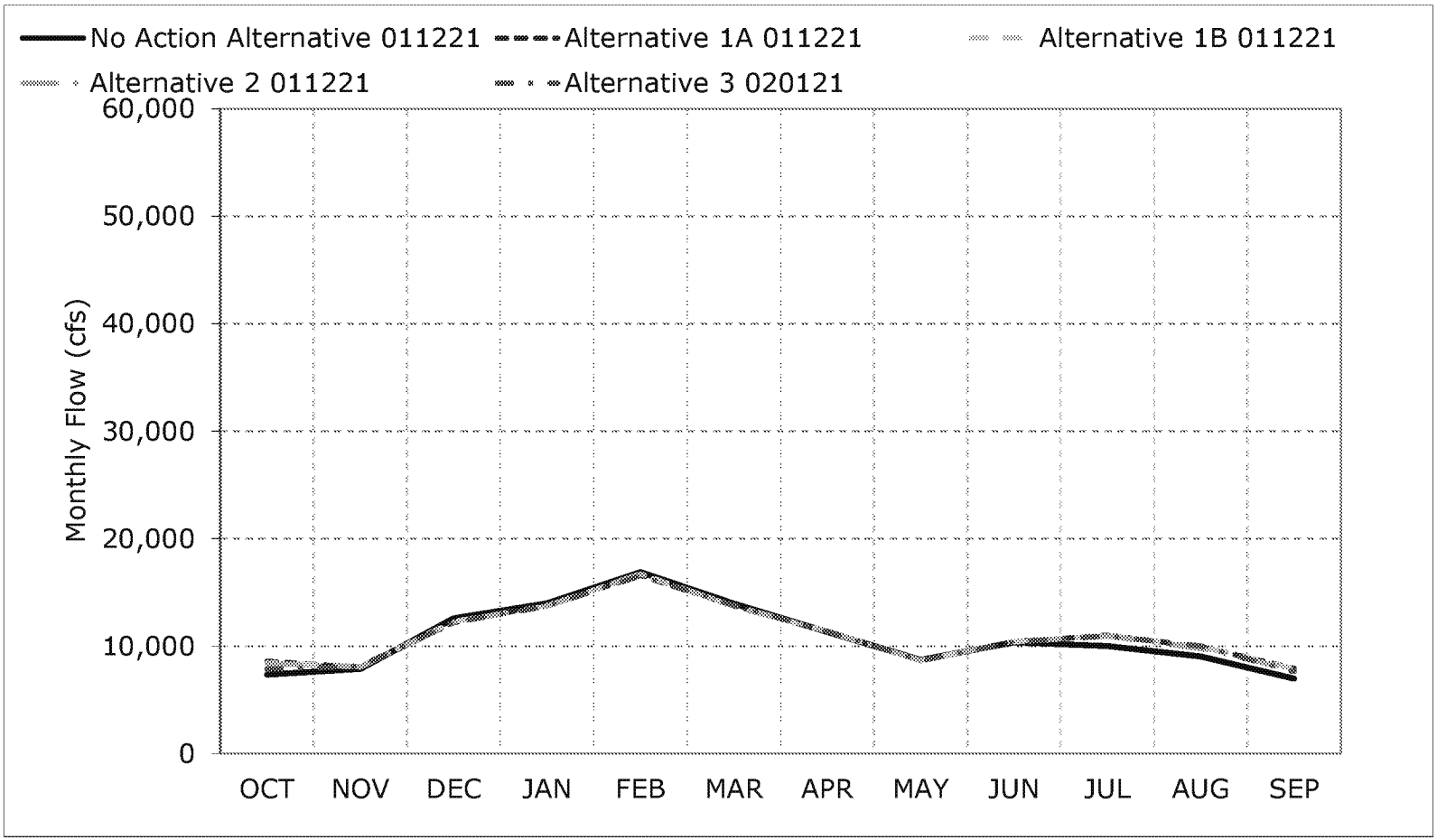
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-1-5. Sacramento River Flow at Freeport, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-1-6. Sacramento River Flow at Freeport, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-1-7. Sacramento River Flow at Freeport, October

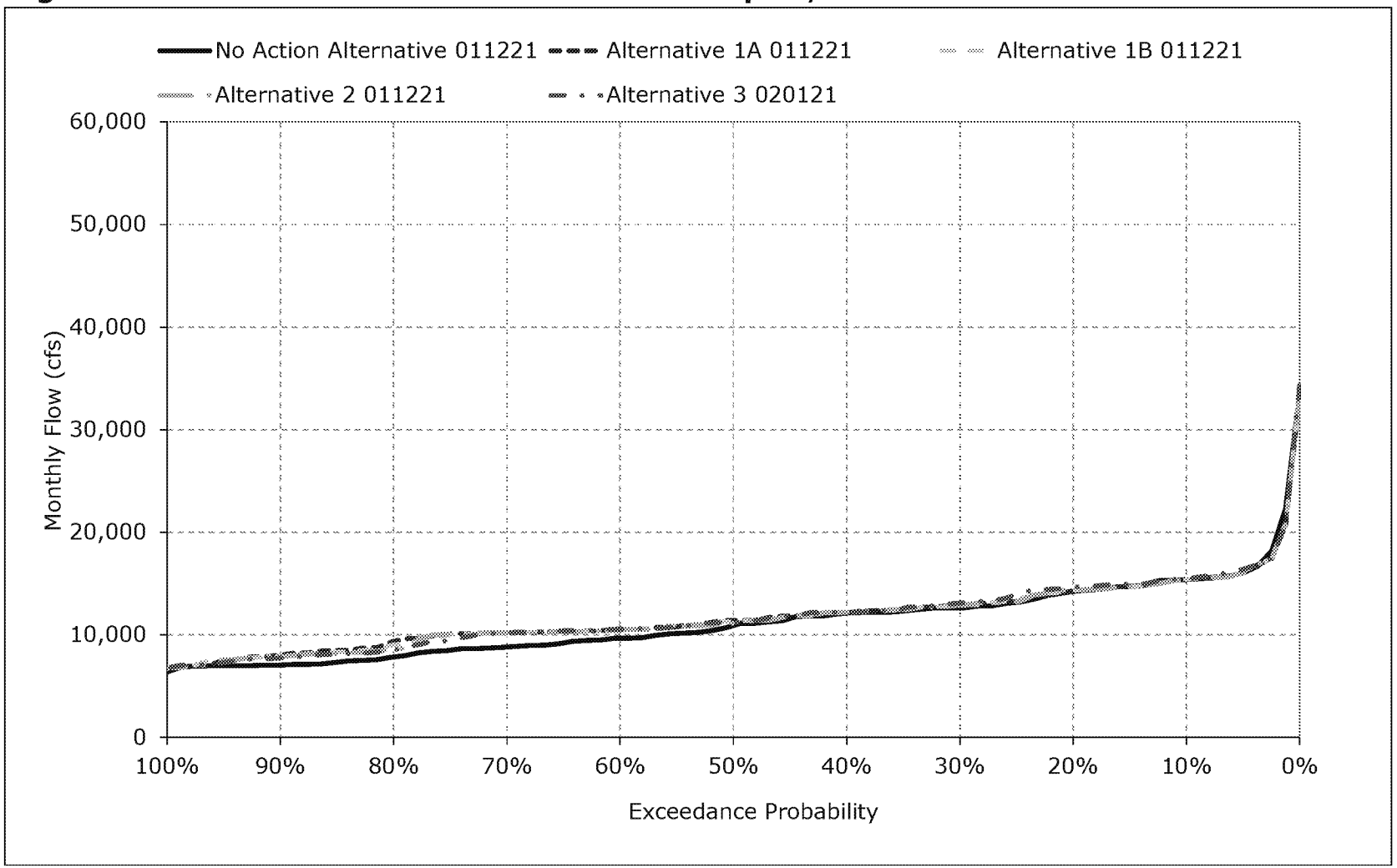


Figure 5B3-1-8. Sacramento River Flow at Freeport, November

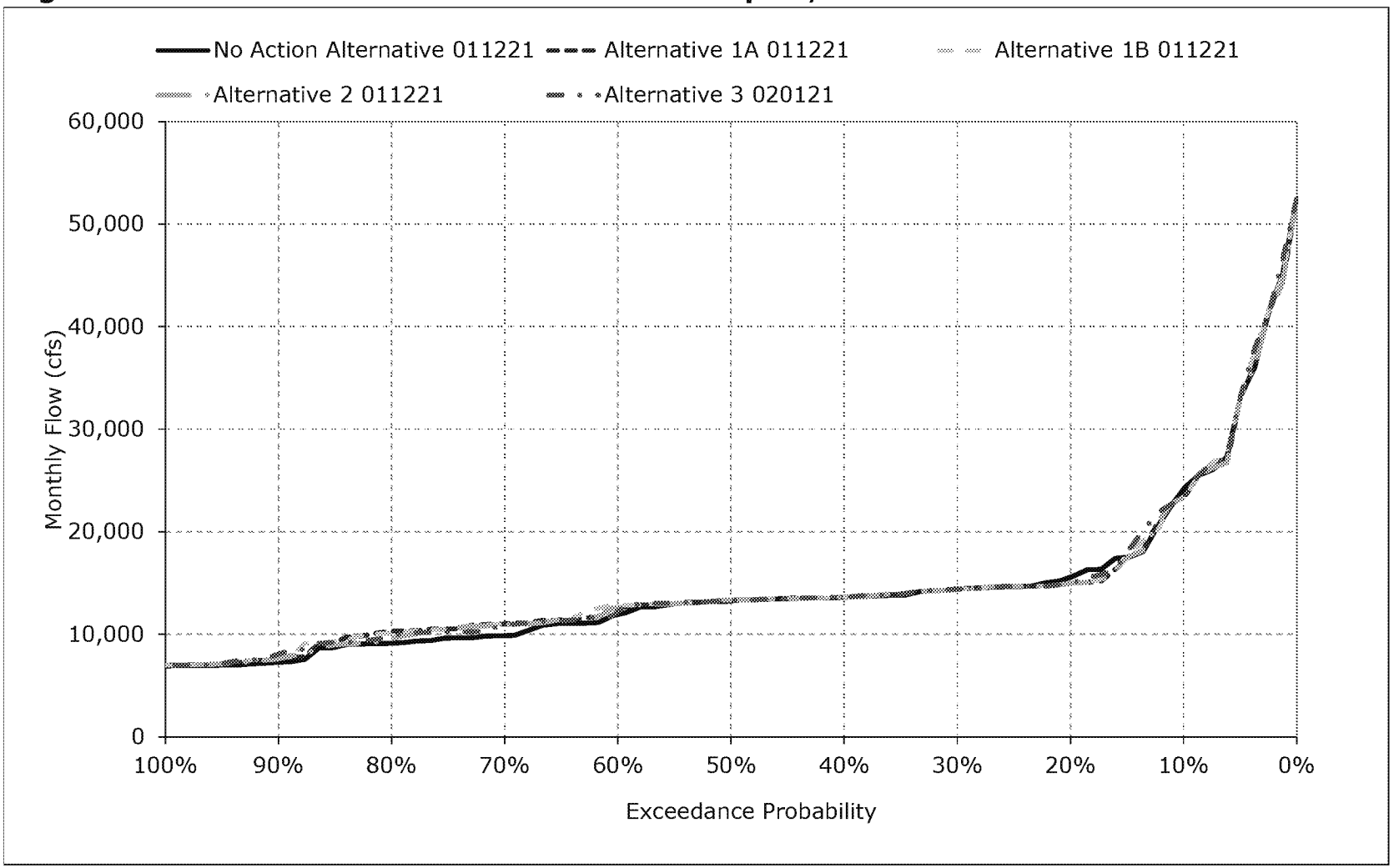


Figure 5B3-1-9. Sacramento River Flow at Freeport, December

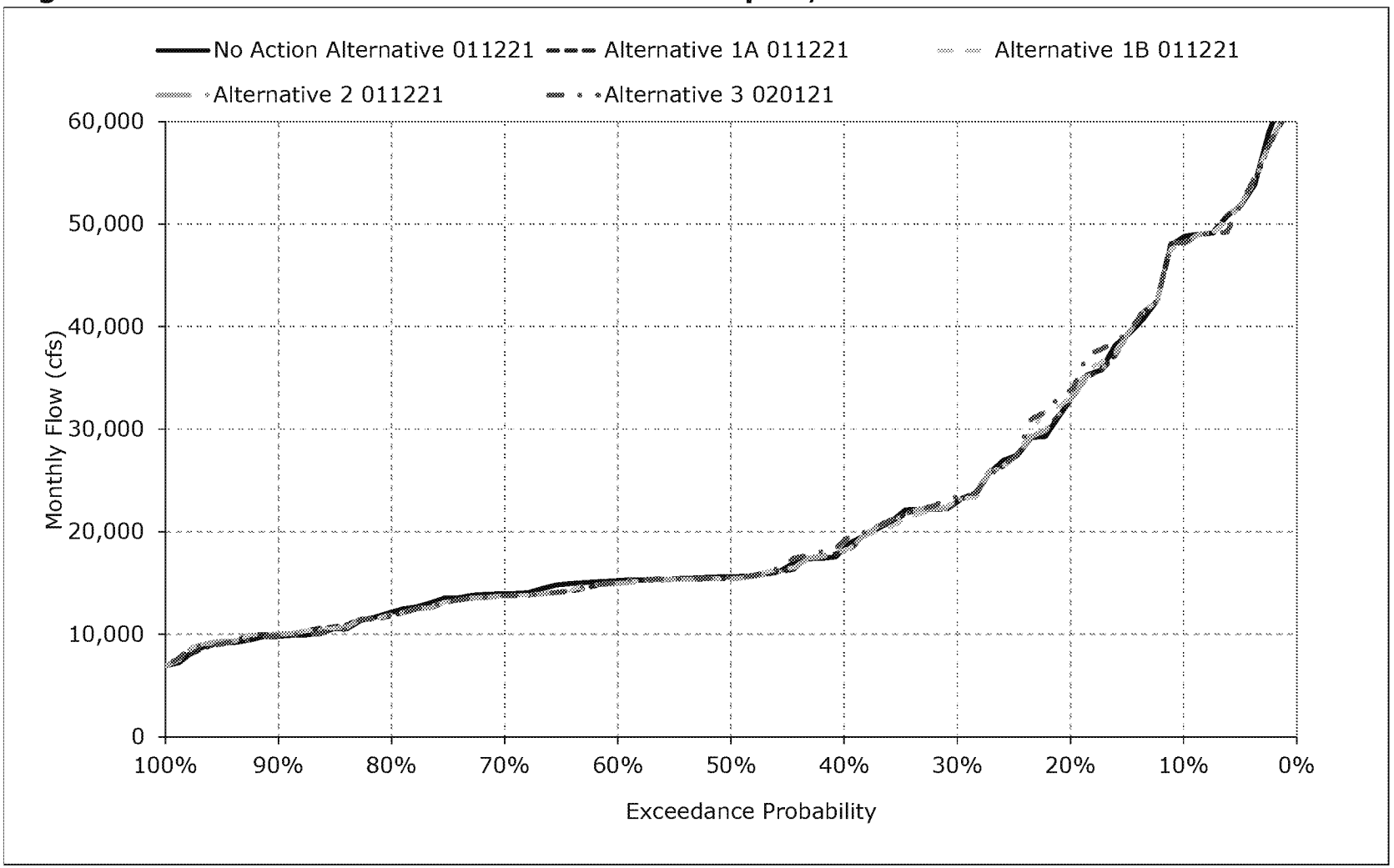


Figure 5B3-1-10. Sacramento River Flow at Freeport, January

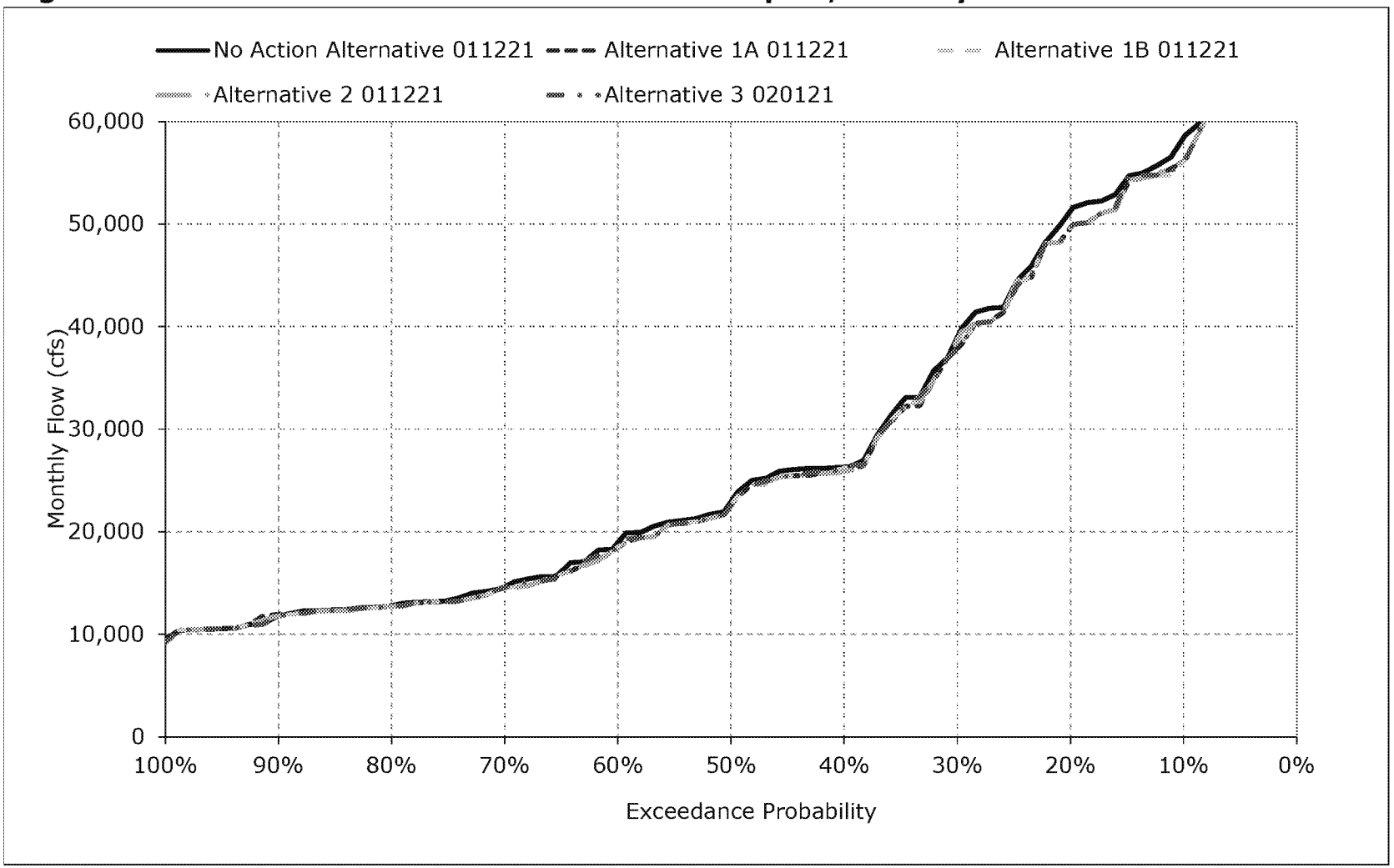


Figure 5B3-1-11. Sacramento River Flow at Freeport, February

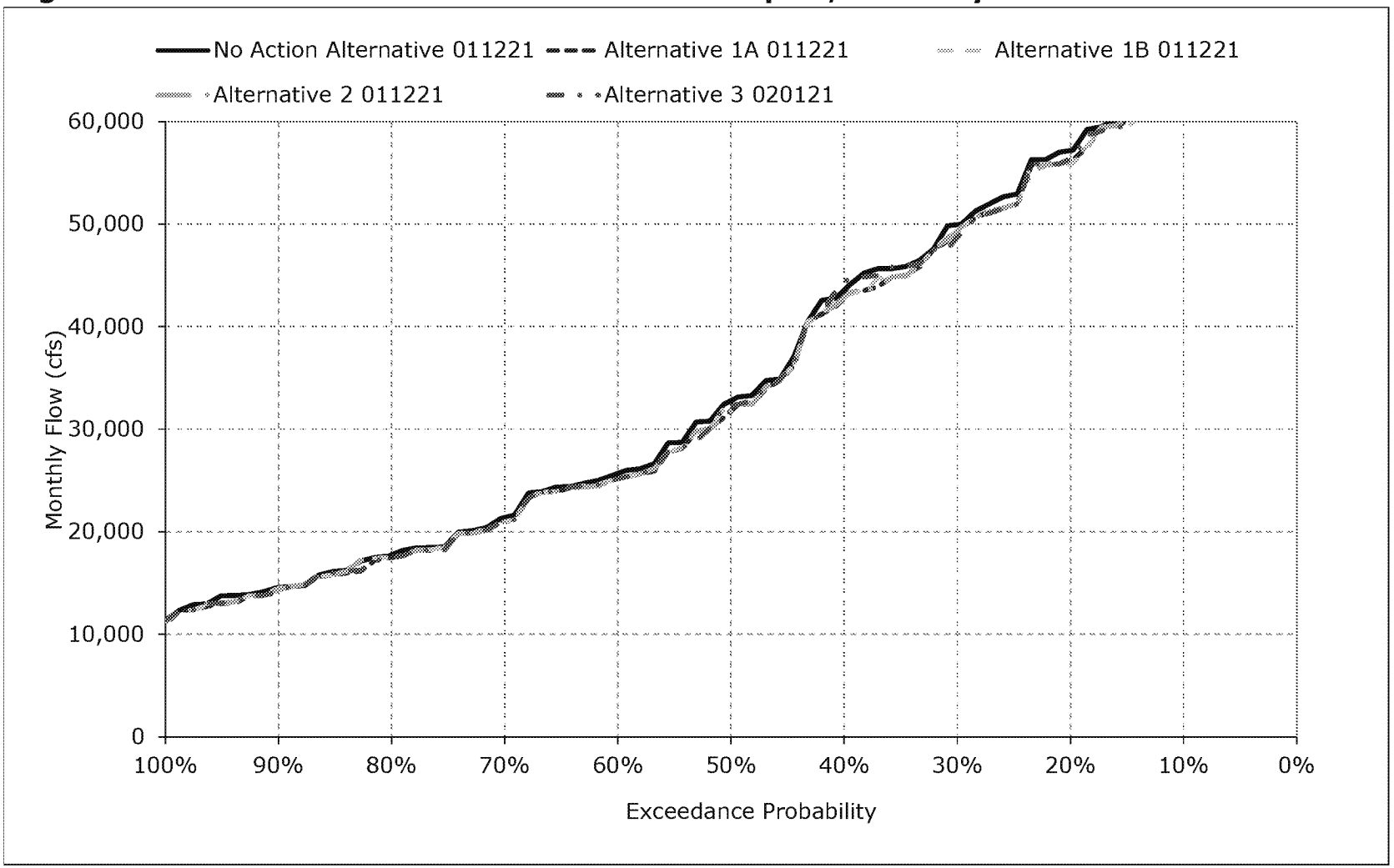


Figure 5B3-1-12. Sacramento River Flow at Freeport, March

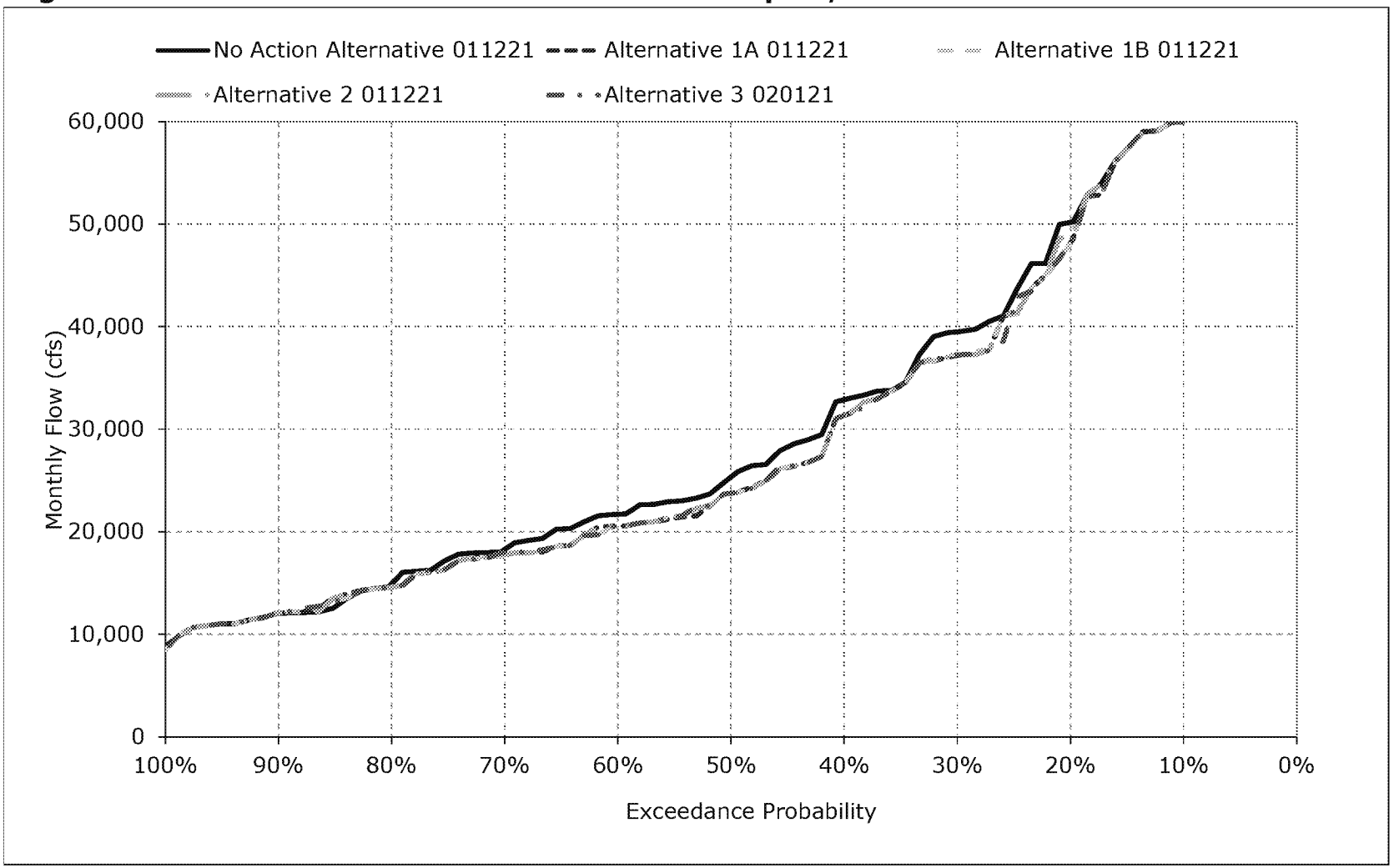


Figure 5B3-1-13. Sacramento River Flow at Freeport, April

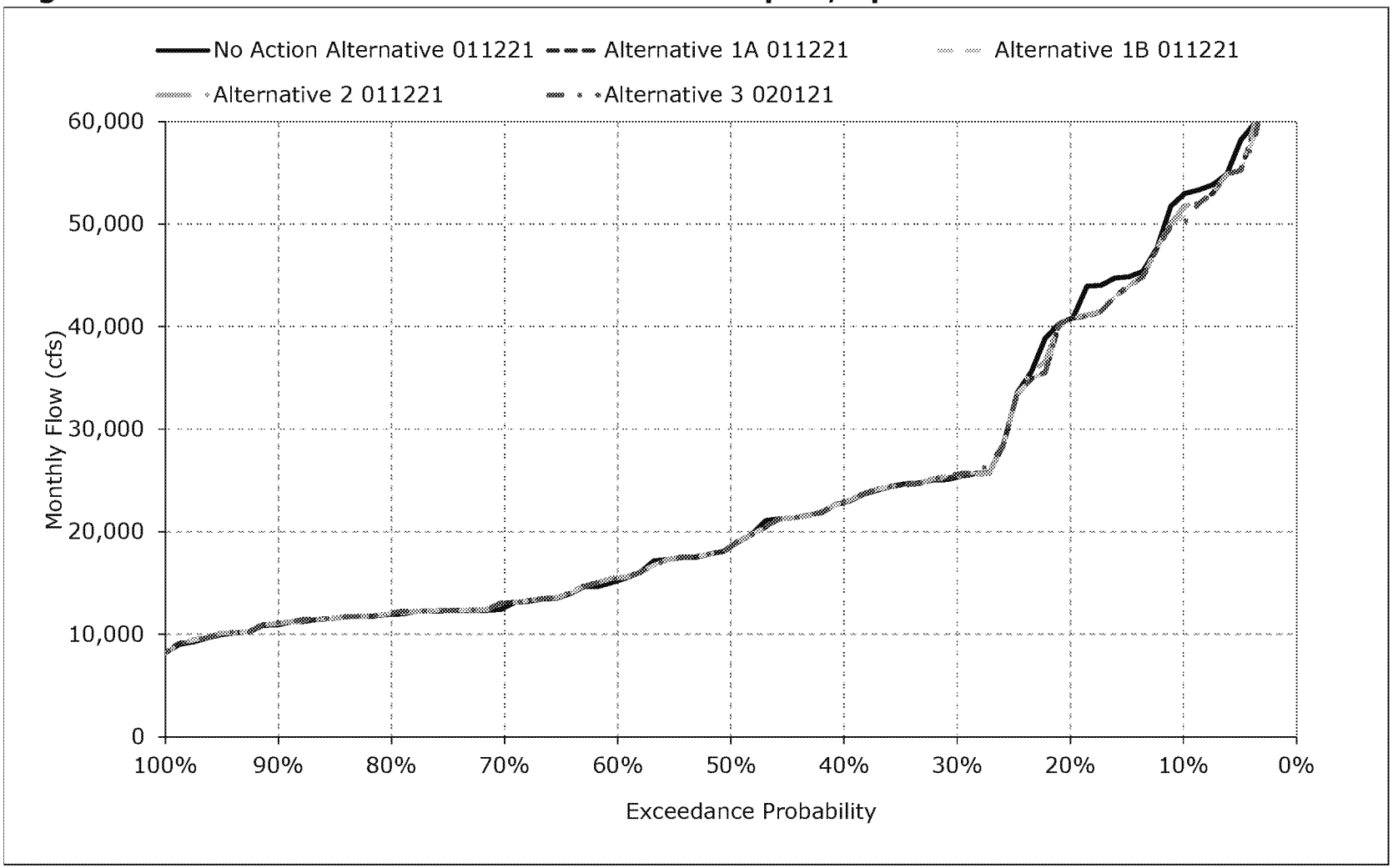


Figure 5B3-1-14. Sacramento River Flow at Freeport, May

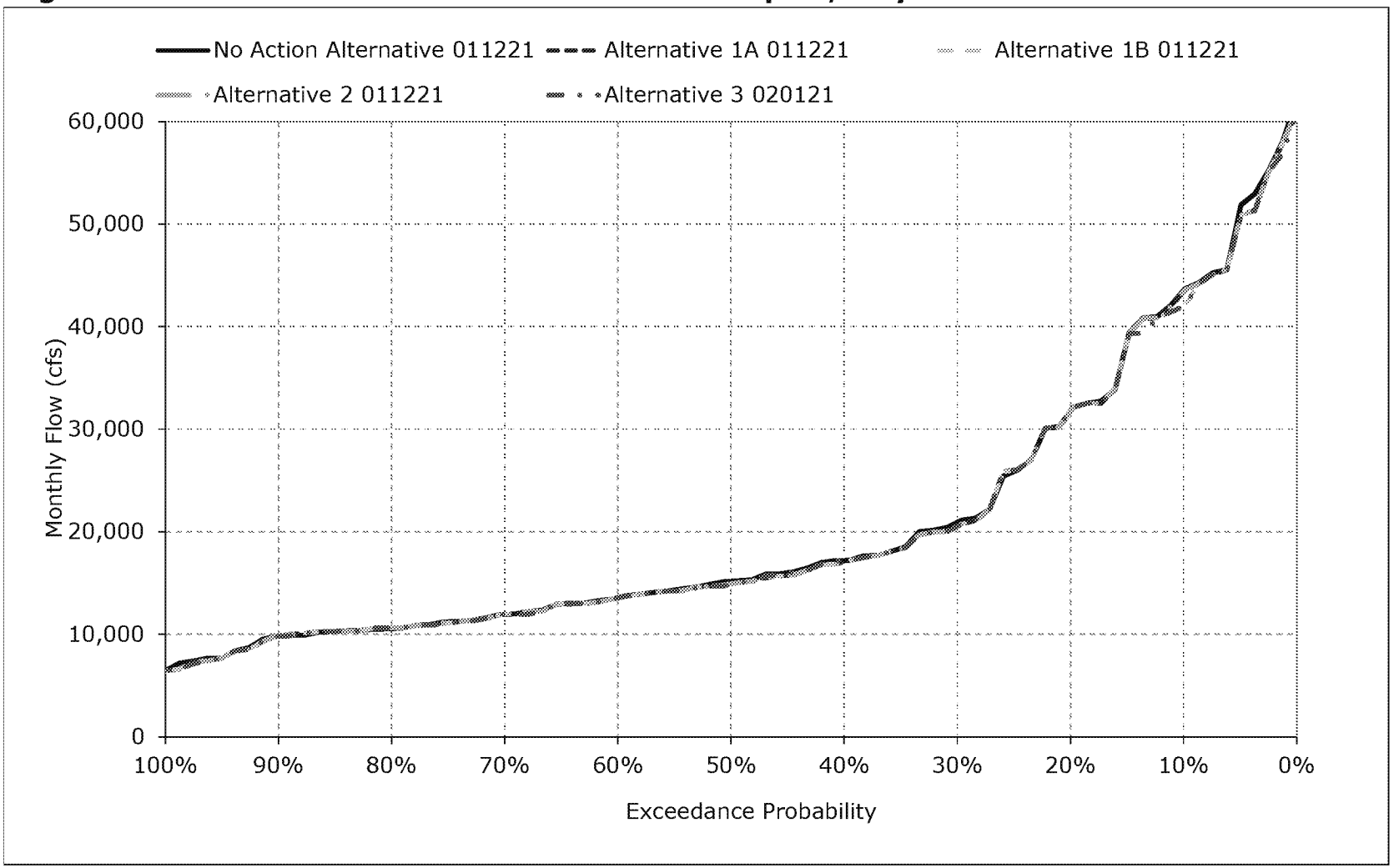


Figure 5B3-1-15. Sacramento River Flow at Freeport, June

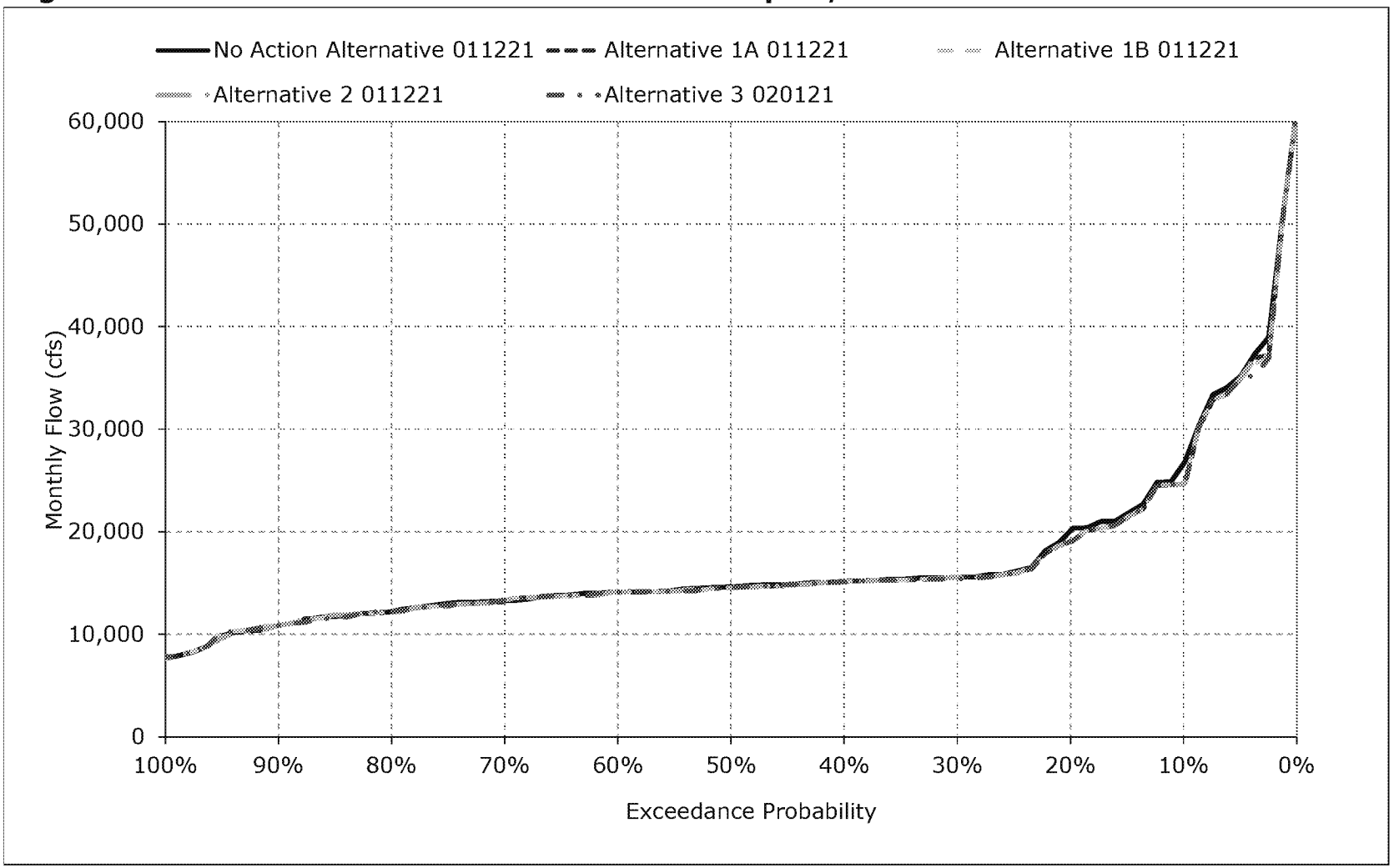


Figure 5B3-1-16. Sacramento River Flow at Freeport, July

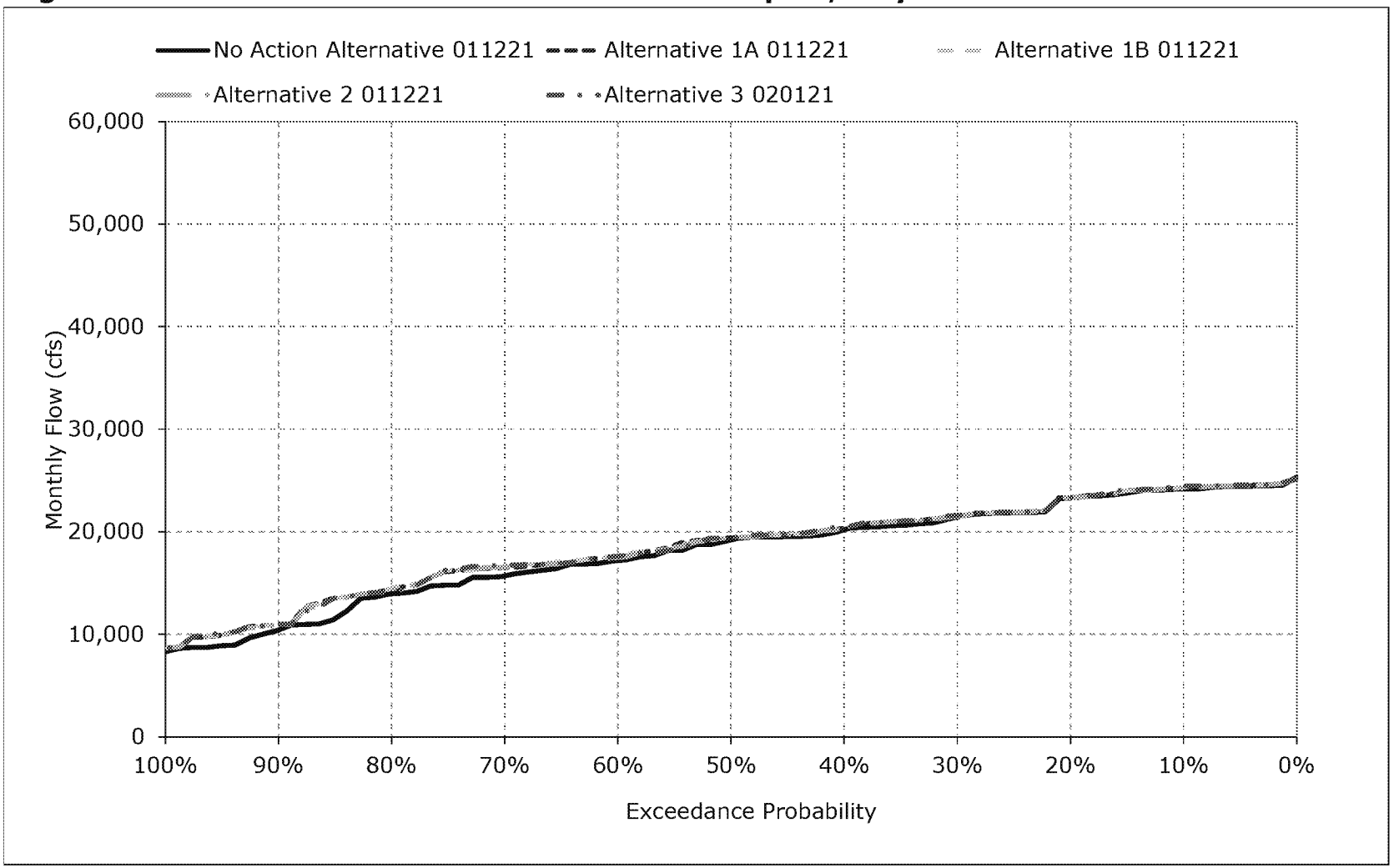


Figure 5B3-1-17. Sacramento River Flow at Freeport, August

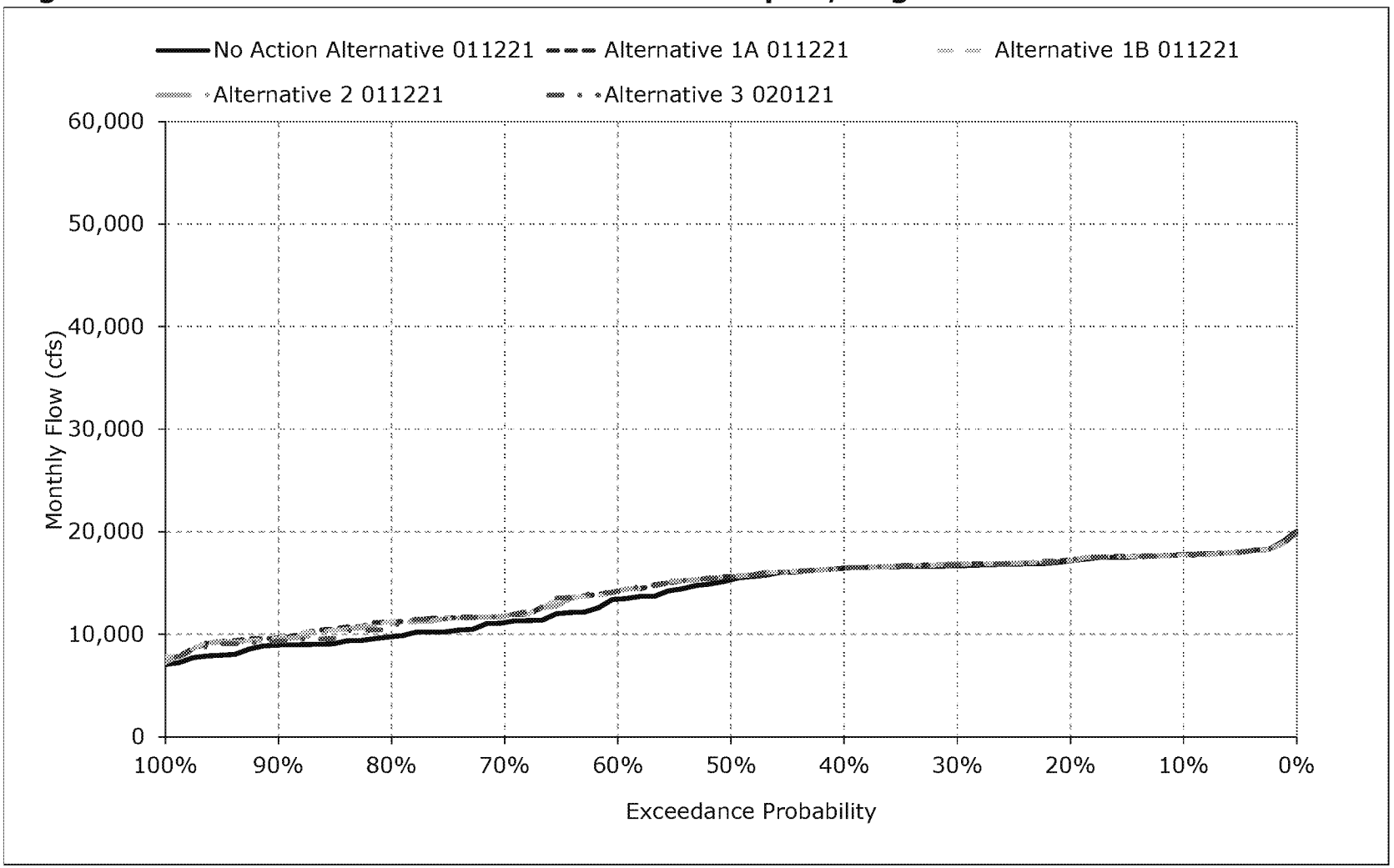


Figure 5B3-1-18. Sacramento River Flow at Freeport, September

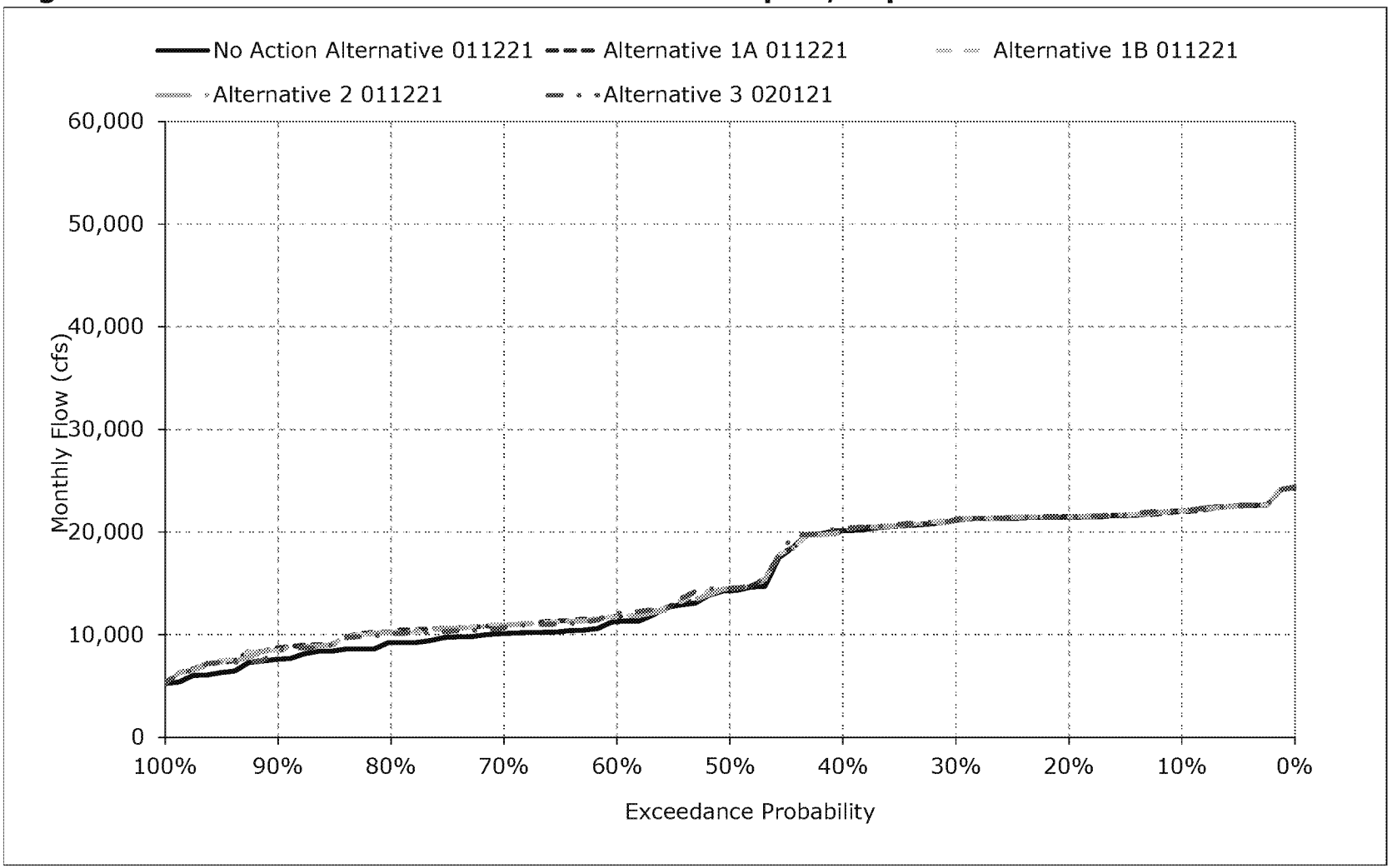


Table 5B3-2-1a. DCC Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,153	1,656	1,006	0	0	0	0	0	3,038	4,496	3,310	4,128
20%	1,954	1,595	879	0	0	0	0	0	2,487	4,281	3,194	4,012
30%	1,739	1,397	768	0	0	0	0	0	2,414	3,925	3,100	3,956
40%	1,601	1,162	634	0	0	0	0	0	2,328	3,685	3,054	3,763
50%	1,456	1,041	416	0	0	0	0	0	2,244	3,506	2,843	2,659
60%	1,354	857	0	0	0	0	0	0	2,104	3,147	2,480	2,084
70%	1,273	734	0	0	0	0	0	0	1,919	2,878	2,050	1,862
80%	749	195	0	0	0	0	0	0	1,684	2,521	1,789	1,692
90%	442	0	0	0	0	0	0	0	119	1,819	1,636	1,387
Long Term												
Full Simulation Period[a]	1,383	949	431	0	0	0	0	0	2,062	3,298	2,575	2,738
Water Year Types[b,c]												
Wet (32%)	1,243	1,076	517	0	0	0	0	0	2,078	3,461	3,060	4,016
Above Normal (15%)	1,873	1,146	418	0	0	0	0	0	1,871	4,042	3,163	3,920
Below Normal (17%)	1,594	802	370	0	0	0	0	0	2,315	3,939	2,900	2,340
Dry (22%)	1,148	817	357	0	0	0	0	0	2,256	3,056	1,849	1,747
Critical (15%)	1,306	849	443	0	0	0	0	0	1,634	1,813	1,649	737

Table 5B3-2-1b. DCC Flow, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,186	1,667	1,016	0	0	0	0	0	3,073	4,529	3,297	4,118
20%	1,977	1,596	875	0	0	0	0	0	2,492	4,345	3,204	4,023
30%	1,900	1,442	803	0	0	0	0	0	2,426	3,987	3,132	3,968
40%	1,816	1,320	727	0	0	0	0	0	2,324	3,786	3,055	3,765
50%	1,584	1,133	485	0	0	0	0	0	2,254	3,604	2,899	2,697
60%	1,467	897	0	0	0	0	0	0	2,121	3,254	2,628	2,181
70%	1,310	757	0	0	0	0	0	0	1,930	3,054	2,173	2,017
80%	839	422	0	0	0	0	0	0	1,715	2,653	2,063	1,901
90%	508	0	0	0	0	0	0	0	1,193	1,978	1,765	1,601
Long Term												
Full Simulation Period[a]	1,471	1,000	446	0	0	0	0	0	2,095	3,438	2,675	2,823
Water Year Types[b,c]												
Wet (32%)	1,282	1,158	531	0	0	0	0	0	2,053	3,630	3,046	4,015
Above Normal (15%)	1,862	1,151	443	0	0	0	0	0	2,187	4,054	3,159	3,933
Below Normal (17%)	1,707	809	374	0	0	0	0	0	2,281	3,992	3,015	2,411
Dry (22%)	1,285	881	367	0	0	0	0	0	2,252	3,276	2,119	1,938
Critical (15%)	1,491	911	464	0	0	0	0	0	1,642	2,004	1,823	940

Table 5B3-2-1c. DCC Flow, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	34	12	10	0	0	0	0	0	35	33	-13	-11
20%	23	1	-4	0	0	0	0	0	5	64	10	11
30%	161	45	36	0	0	0	0	0	11	62	31	12
40%	215	158	93	0	0	0	0	0	-5	101	0	1
50%	129	92	69	0	0	0	0	0	10	98	56	38
60%	113	40	0	0	0	0	0	0	17	108	147	97
70%	37	23	0	0	0	0	0	0	11	176	123	155
80%	90	226	0	0	0	0	0	0	31	132	274	209
90%	66	0	0	0	0	0	0	0	1,074	158	129	215
Long Term												
Full Simulation Period[a]	87	51	14	0	0	0	0	0	33	141	99	85
Water Year Types[b,c]												
Wet (32%)	39	81	14	0	0	0	0	0	-25	169	-14	-1
Above Normal (15%)	-11	6	24	0	0	0	0	0	316	13	-4	14
Below Normal (17%)	113	7	4	0	0	0	0	0	-34	53	116	71
Dry (22%)	137	64	10	0	0	0	0	0	-4	220	270	191
Critical (15%)	186	62	21	0	0	0	0	0	8	191	174	203

a Based on the 82-year simulation period.
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
c These results are displayed with calendar year - year type sorting.

Table 5B3-2-2a. DCC Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,153	1,656	1,006	0	0	0	0	0	3,038	4,496	3,310	4,128
20%	1,954	1,595	879	0	0	0	0	0	2,487	4,281	3,194	4,012
30%	1,739	1,397	768	0	0	0	0	0	2,414	3,925	3,100	3,956
40%	1,601	1,162	634	0	0	0	0	0	2,328	3,685	3,054	3,763
50%	1,456	1,041	416	0	0	0	0	0	2,244	3,506	2,843	2,659
60%	1,354	857	0	0	0	0	0	0	2,104	3,147	2,480	2,084
70%	1,273	734	0	0	0	0	0	0	1,919	2,878	2,050	1,862
80%	749	195	0	0	0	0	0	0	1,684	2,521	1,789	1,692
90%	442	0	0	0	0	0	0	0	119	1,819	1,636	1,387
Long Term												
Full Simulation Period[a]	1,383	949	431	0	0	0	0	0	2,062	3,298	2,575	2,738
Water Year Types[b,c]												
Wet (32%)	1,243	1,076	517	0	0	0	0	0	2,078	3,461	3,060	4,016
Above Normal (15%)	1,873	1,146	418	0	0	0	0	0	1,871	4,042	3,163	3,920
Below Normal (17%)	1,594	802	370	0	0	0	0	0	2,315	3,939	2,900	2,340
Dry (22%)	1,148	817	357	0	0	0	0	0	2,256	3,056	1,849	1,747
Critical (15%)	1,306	849	443	0	0	0	0	0	1,634	1,813	1,649	737

Table 5B3-2-2b. DCC Flow, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,189	1,678	1,016	0	0	0	0	0	3,073	4,536	3,297	4,128
20%	1,970	1,596	883	0	0	0	0	0	2,483	4,347	3,201	4,023
30%	1,887	1,443	805	0	0	0	0	0	2,425	3,991	3,128	3,978
40%	1,782	1,291	726	0	0	0	0	0	2,327	3,802	3,055	3,762
50%	1,566	1,121	489	0	0	0	0	0	2,246	3,602	2,905	2,701
60%	1,498	926	0	0	0	0	0	0	2,121	3,278	2,628	2,183
70%	1,368	794	0	0	0	0	0	0	1,930	3,072	2,165	2,036
80%	853	469	0	0	0	0	0	0	1,715	2,675	2,071	1,881
90%	438	0	0	0	0	0	0	0	1,193	1,990	1,759	1,556
Long Term												
Full Simulation Period[a]	1,464	1,010	445	0	0	0	0	0	2,096	3,443	2,675	2,806
Water Year Types[b,c]												
Wet (32%)	1,288	1,158	529	0	0	0	0	0	2,053	3,631	3,045	4,020
Above Normal (15%)	1,863	1,154	443	0	0	0	0	0	2,188	4,056	3,159	3,945
Below Normal (17%)	1,666	795	375	0	0	0	0	0	2,277	3,993	3,016	2,429
Dry (22%)	1,288	928	367	0	0	0	0	0	2,260	3,294	2,122	1,923
Critical (15%)	1,475	918	461	0	0	0	0	0	1,641	2,006	1,824	802

Table 5B3-2-2c. DCC Flow, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	36	22	10	0	0	0	0	0	35	40	-13	0
20%	16	1	3	0	0	0	0	0	-4	66	7	10
30%	147	46	38	0	0	0	0	0	11	66	28	22
40%	182	128	92	0	0	0	0	0	-1	117	0	-2
50%	110	80	73	0	0	0	0	0	2	96	61	43
60%	144	68	0	0	0	0	0	0	17	132	148	99
70%	95	60	0	0	0	0	0	0	11	194	115	174
80%	105	273	0	0	0	0	0	0	31	155	283	190
90%	-4	0	0	0	0	0	0	0	1,074	170	123	170
Long Term												
Full Simulation Period[a]	81	60	13	0	0	0	0	0	34	145	100	68
Water Year Types[b,c]												
Wet (32%)	46	82	12	0	0	0	0	0	-25	169	-15	4
Above Normal (15%)	-10	9	25	0	0	0	0	0	318	14	-4	25
Below Normal (17%)	72	-7	5	0	0	0	0	0	-37	53	116	89
Dry (22%)	139	111	10	0	0	0	0	0	4	238	273	176
Critical (15%)	169	69	18	0	0	0	0	0	8	193	174	65

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-2-3a. DCC Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,153	1,656	1,006	0	0	0	0	0	3,038	4,496	3,310	4,128
20%	1,954	1,595	879	0	0	0	0	0	2,487	4,281	3,194	4,012
30%	1,739	1,397	768	0	0	0	0	0	2,414	3,925	3,100	3,956
40%	1,601	1,162	634	0	0	0	0	0	2,328	3,685	3,054	3,763
50%	1,456	1,041	416	0	0	0	0	0	2,244	3,506	2,843	2,659
60%	1,354	857	0	0	0	0	0	0	2,104	3,147	2,480	2,084
70%	1,273	734	0	0	0	0	0	0	1,919	2,878	2,050	1,862
80%	749	195	0	0	0	0	0	0	1,684	2,521	1,789	1,692
90%	442	0	0	0	0	0	0	0	119	1,819	1,636	1,387
Long Term												
Full Simulation Period[a]	1,383	949	431	0	0	0	0	0	2,062	3,298	2,575	2,738
Water Year Types[b,c]												
Wet (32%)	1,243	1,076	517	0	0	0	0	0	2,078	3,461	3,060	4,016
Above Normal (15%)	1,873	1,146	418	0	0	0	0	0	1,871	4,042	3,163	3,920
Below Normal (17%)	1,594	802	370	0	0	0	0	0	2,315	3,939	2,900	2,340
Dry (22%)	1,148	817	357	0	0	0	0	0	2,256	3,056	1,849	1,747
Critical (15%)	1,306	849	443	0	0	0	0	0	1,634	1,813	1,649	737

Table 5B3-2-3b. DCC Flow, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,186	1,667	1,016	0	0	0	0	0	3,073	4,529	3,297	4,128
20%	1,977	1,596	875	0	0	0	0	0	2,492	4,347	3,201	4,023
30%	1,895	1,442	803	0	0	0	0	0	2,426	3,997	3,132	3,965
40%	1,816	1,310	727	0	0	0	0	0	2,324	3,786	3,055	3,765
50%	1,575	1,118	485	0	0	0	0	0	2,254	3,605	2,903	2,697
60%	1,461	899	0	0	0	0	0	0	2,121	3,239	2,627	2,172
70%	1,379	776	0	0	0	0	0	0	1,930	3,063	2,173	2,016
80%	853	423	0	0	0	0	0	0	1,715	2,653	2,024	1,889
90%	439	0	0	0	0	0	0	0	1,193	1,978	1,750	1,564
Long Term												
Full Simulation Period[a]	1,470	1,001	445	0	0	0	0	0	2,095	3,437	2,669	2,819
Water Year Types[b,c]												
Wet (32%)	1,277	1,158	531	0	0	0	0	0	2,054	3,631	3,053	4,020
Above Normal (15%)	1,862	1,153	443	0	0	0	0	0	2,187	4,055	3,159	3,934
Below Normal (17%)	1,694	812	375	0	0	0	0	0	2,281	3,993	3,007	2,408
Dry (22%)	1,310	875	367	0	0	0	0	0	2,252	3,273	2,108	1,927
Critical (15%)	1,475	922	458	0	0	0	0	0	1,642	1,994	1,793	921

Table 5B3-2-3c. DCC Flow, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	34	12	10	0	0	0	0	0	35	33	-13	0
20%	23	1	-4	0	0	0	0	0	5	66	8	11
30%	155	45	35	0	0	0	0	0	11	72	31	9
40%	216	148	93	0	0	0	0	0	-5	101	0	2
50%	120	77	69	0	0	0	0	0	10	98	60	38
60%	107	42	0	0	0	0	0	0	17	92	147	89
70%	106	42	0	0	0	0	0	0	11	185	123	154
80%	105	227	0	0	0	0	0	0	31	132	236	197
90%	-3	0	0	0	0	0	0	0	1,074	159	115	178
Long Term												
Full Simulation Period[a]	87	52	13	0	0	0	0	0	33	139	93	82
Water Year Types[b,c]												
Wet (32%)	35	82	14	0	0	0	0	0	-25	170	-7	4
Above Normal (15%)	-11	7	24	0	0	0	0	0	316	13	-4	14
Below Normal (17%)	100	10	4	0	0	0	0	0	-34	53	107	69
Dry (22%)	162	57	10	0	0	0	0	0	-4	217	258	180
Critical (15%)	170	73	16	0	0	0	0	0	8	181	143	184

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-2-4a. DCC Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,153	1,656	1,006	0	0	0	0	0	3,038	4,496	3,310	4,128
20%	1,954	1,595	879	0	0	0	0	0	2,487	4,281	3,194	4,012
30%	1,739	1,397	768	0	0	0	0	0	2,414	3,925	3,100	3,956
40%	1,601	1,162	634	0	0	0	0	0	2,328	3,685	3,054	3,763
50%	1,456	1,041	416	0	0	0	0	0	2,244	3,506	2,843	2,659
60%	1,354	857	0	0	0	0	0	0	2,104	3,147	2,480	2,084
70%	1,273	734	0	0	0	0	0	0	1,919	2,878	2,050	1,862
80%	749	195	0	0	0	0	0	0	1,684	2,521	1,789	1,692
90%	442	0	0	0	0	0	0	0	119	1,819	1,636	1,387
Long Term												
Full Simulation Period[a]	1,383	949	431	0	0	0	0	0	2,062	3,298	2,575	2,738
Water Year Types[b,c]												
Wet (32%)	1,243	1,076	517	0	0	0	0	0	2,078	3,461	3,060	4,016
Above Normal (15%)	1,873	1,146	418	0	0	0	0	0	1,871	4,042	3,163	3,920
Below Normal (17%)	1,594	802	370	0	0	0	0	0	2,315	3,939	2,900	2,340
Dry (22%)	1,148	817	357	0	0	0	0	0	2,256	3,056	1,849	1,747
Critical (15%)	1,306	849	443	0	0	0	0	0	1,634	1,813	1,649	737

Table 5B3-2-4b. DCC Flow, Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,247	1,681	1,015	0	0	0	0	0	3,074	4,557	3,297	4,129
20%	1,970	1,608	873	0	0	0	0	0	2,467	4,350	3,211	4,024
30%	1,912	1,444	752	0	0	0	0	0	2,417	4,018	3,116	3,970
40%	1,702	1,249	714	0	0	0	0	0	2,326	3,812	3,057	3,807
50%	1,502	1,048	490	0	0	0	0	0	2,255	3,607	2,893	2,708
60%	1,410	918	0	0	0	0	0	0	2,127	3,264	2,633	2,236
70%	1,312	851	0	0	0	0	0	0	1,946	3,096	2,172	1,973
80%	956	425	0	0	0	0	0	0	1,715	2,614	1,951	1,860
90%	571	0	0	0	0	0	0	0	1,213	2,005	1,703	1,539
Long Term												
Full Simulation Period[a]	1,468	1,000	440	0	0	0	0	0	2,096	3,445	2,663	2,805
Water Year Types[b,c]												
Wet (32%)	1,282	1,158	525	0	0	0	0	0	2,054	3,632	3,043	4,008
Above Normal (15%)	1,742	1,139	447	0	0	0	0	0	2,189	4,073	3,159	4,002
Below Normal (17%)	1,611	778	372	0	0	0	0	0	2,276	4,004	3,009	2,438
Dry (22%)	1,495	913	361	0	0	0	0	0	2,264	3,289	2,067	1,899
Critical (15%)	1,387	907	445	0	0	0	0	0	1,635	1,991	1,834	791

Table 5B3-2-4c. DCC Flow, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

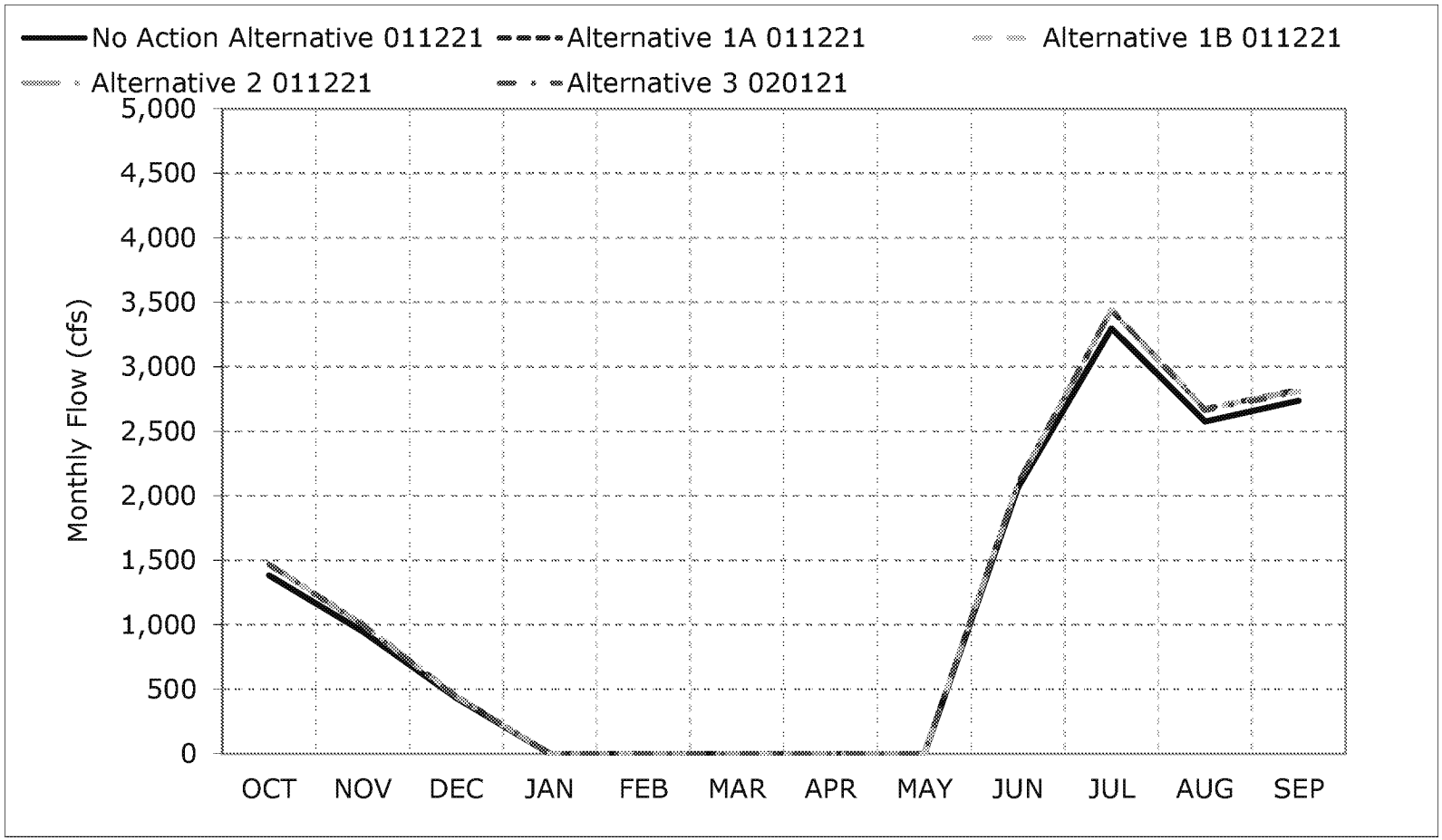
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	94	25	9	0	0	0	0	0	36	60	-13	0
20%	16	13	-6	0	0	0	0	0	-20	69	17	11
30%	172	47	-15	0	0	0	0	0	2	93	16	14
40%	101	87	80	0	0	0	0	0	-3	126	2	44
50%	46	6	75	0	0	0	0	0	11	101	50	49
60%	55	60	0	0	0	0	0	0	24	118	153	152
70%	39	116	0	0	0	0	0	0	28	218	122	111
80%	207	229	0	0	0	0	0	0	31	94	162	169
90%	129	0	0	0	0	0	0	0	1,094	186	67	152
Long Term												
Full Simulation Period[a]	84	50	8	0	0	0	0	0	34	147	88	68
Water Year Types[b,c]												
Wet (32%)	40	82	9	0	0	0	0	0	-24	170	-17	-8
Above Normal (15%)	-131	-7	29	0	0	0	0	0	318	32	-3	82
Below Normal (17%)	17	-24	1	0	0	0	0	0	-39	65	110	99
Dry (22%)	346	96	4	0	0	0	0	0	7	233	218	152
Critical (15%)	81	58	2	0	0	0	0	0	1	178	184	55

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

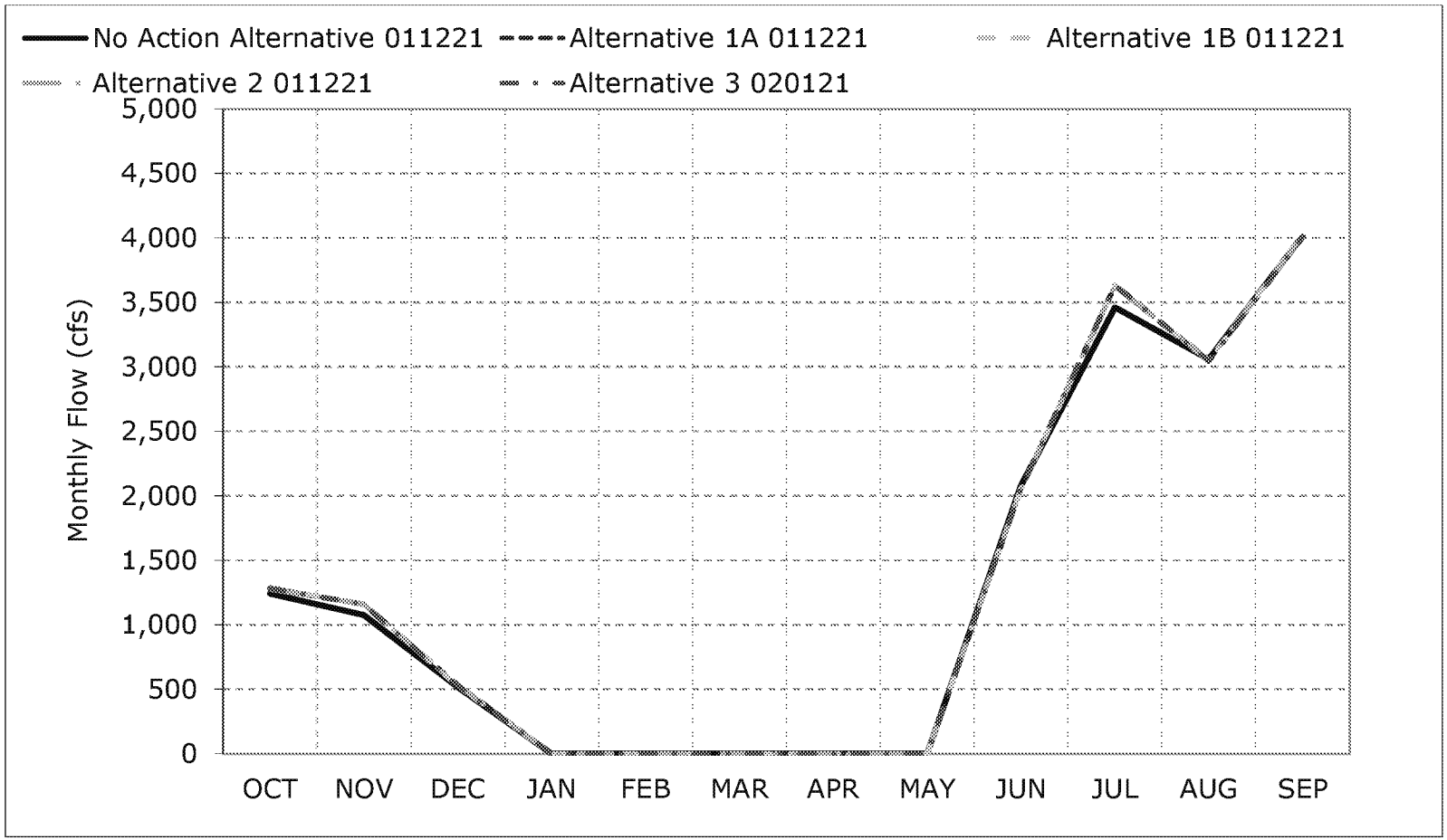
c These results are displayed with calendar year - year type sorting.

Figure 5B3-2-1. DCC Flow, Long-Term Average Flow



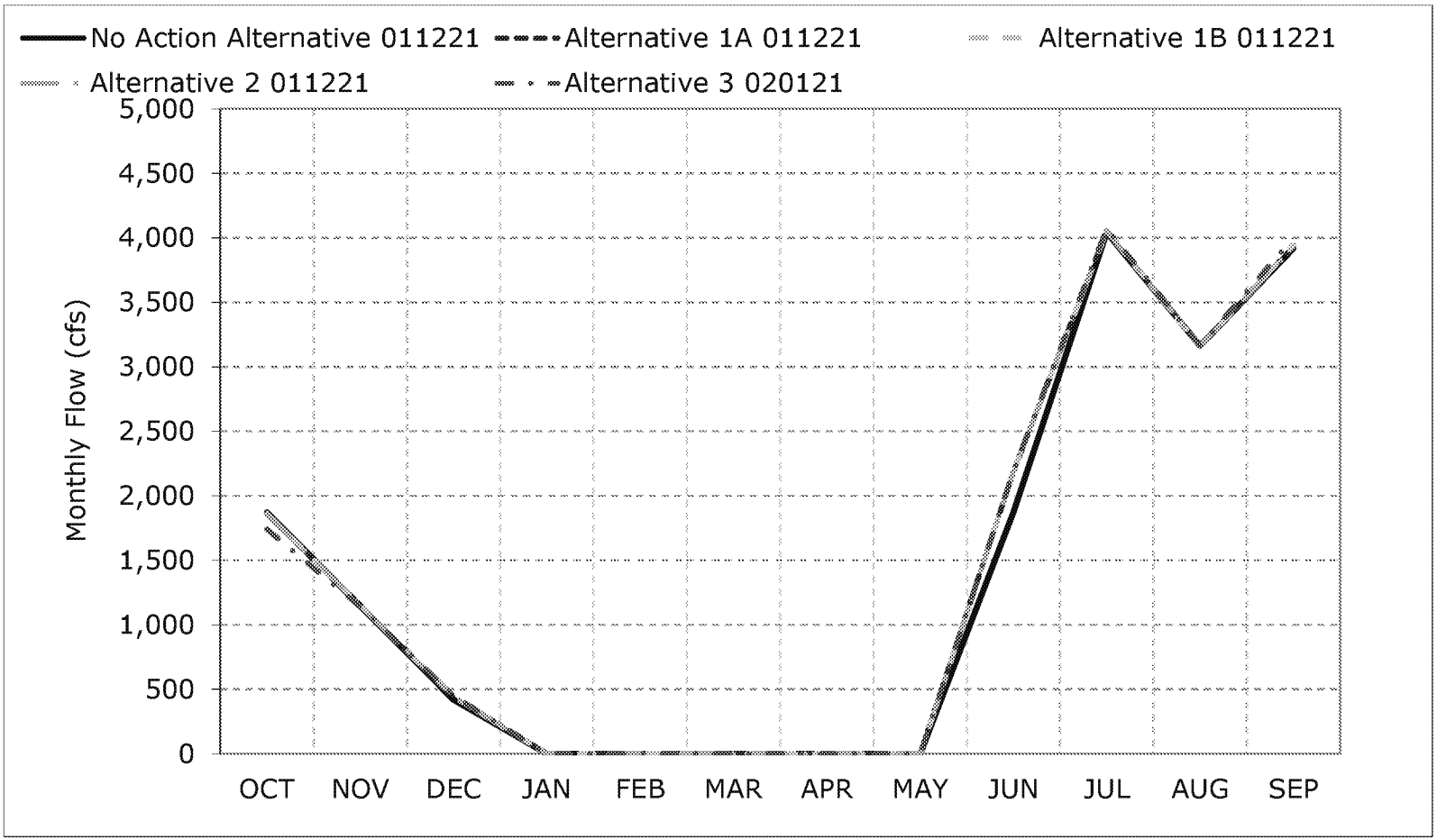
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-2-2. DCC Flow, Wet Year Average Flow



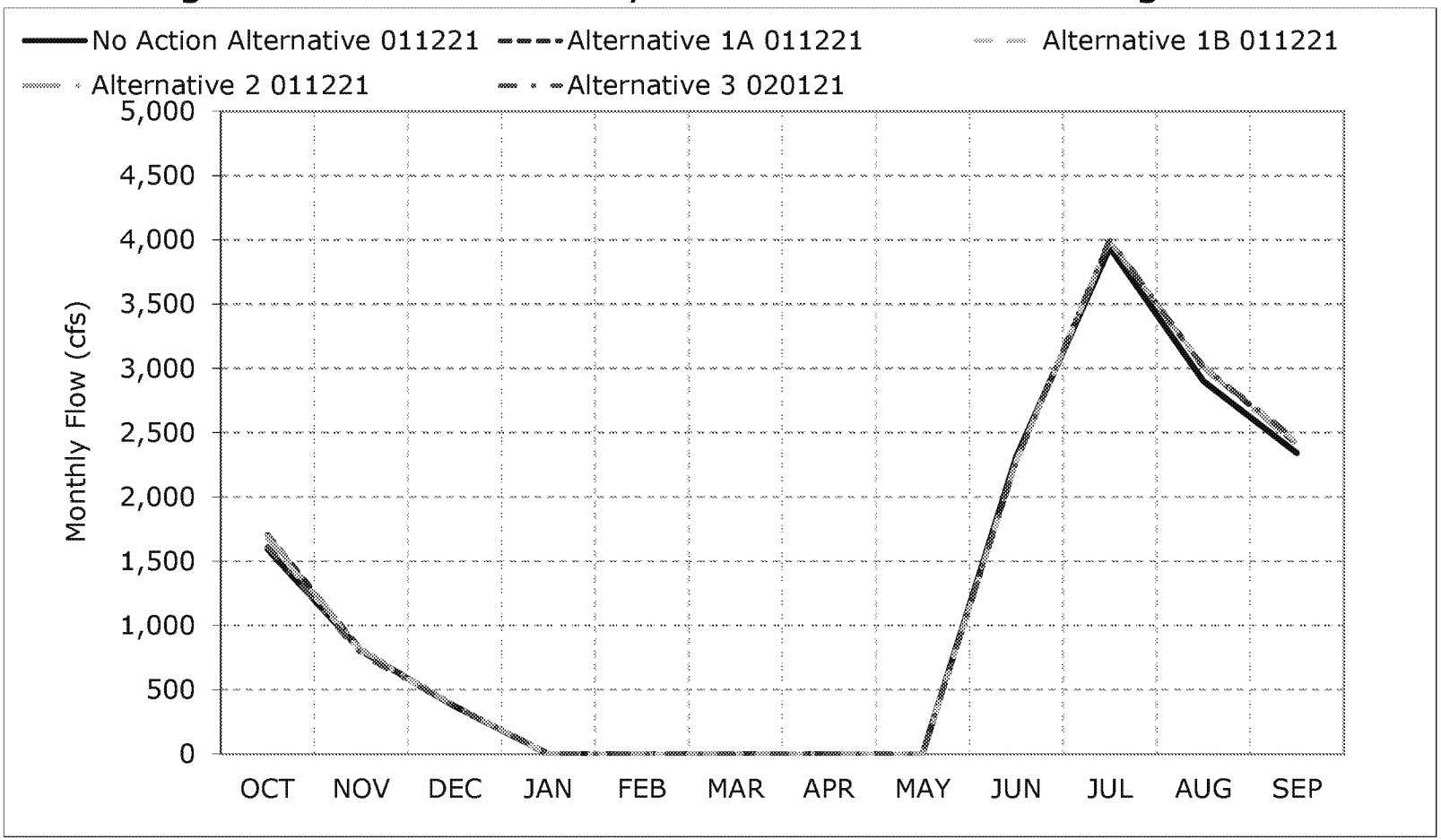
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-2-3. DCC Flow, Above Normal Year Average Flow



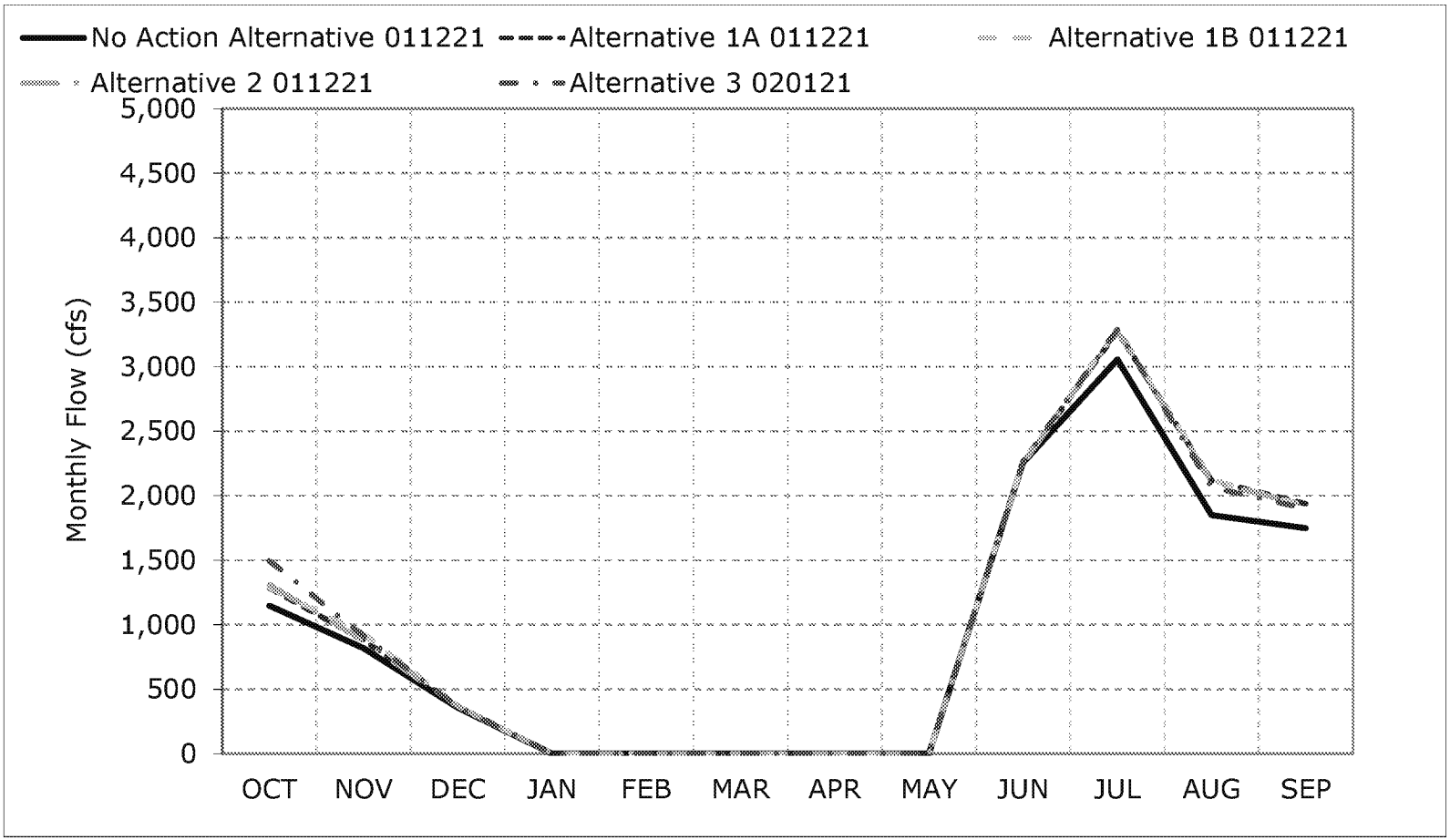
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-2-4. DCC Flow, Below Normal Year Average Flow



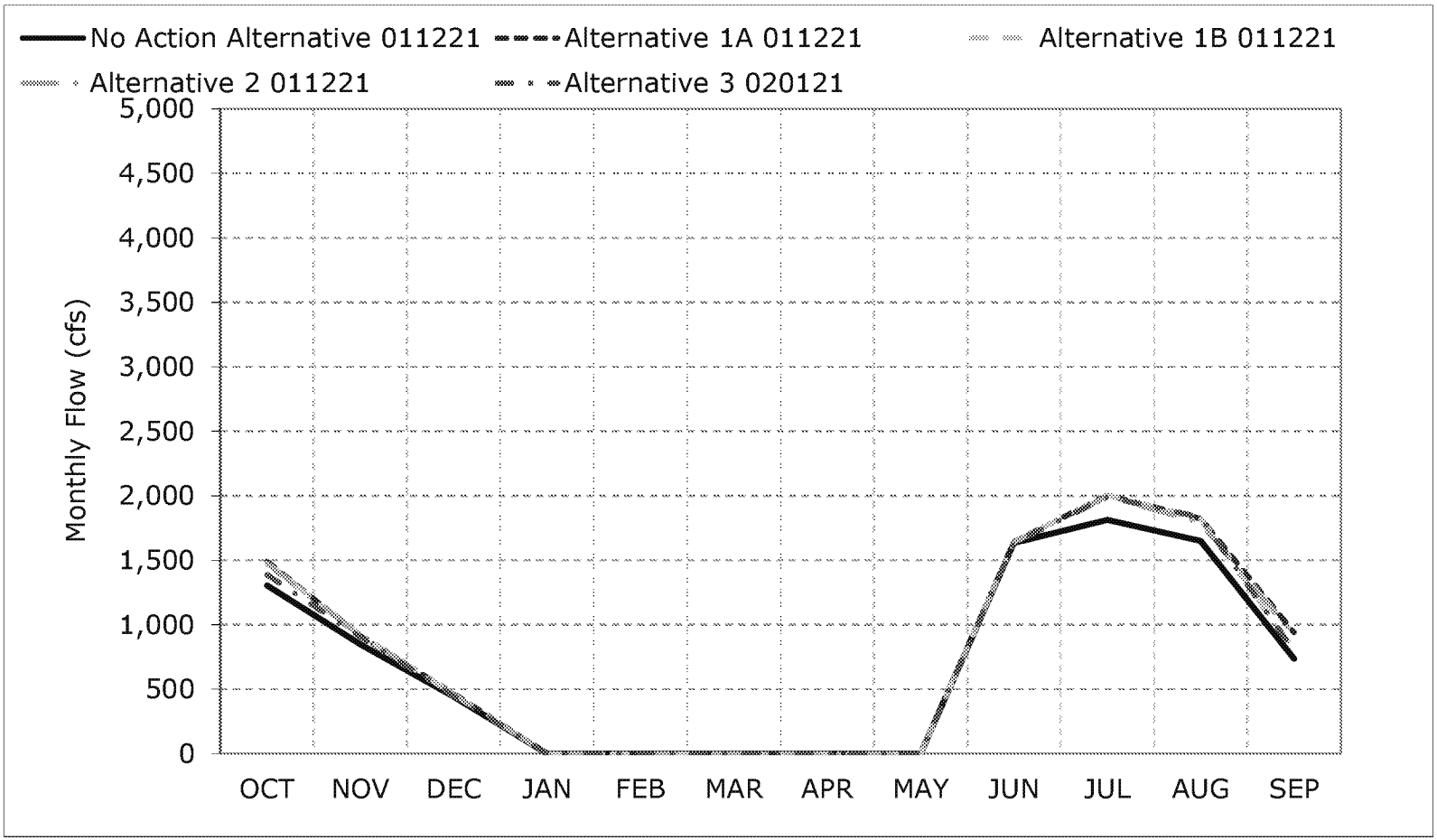
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-2-5. DCC Flow, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-2-6. DCC Flow, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-2-7. DCC Flow, October

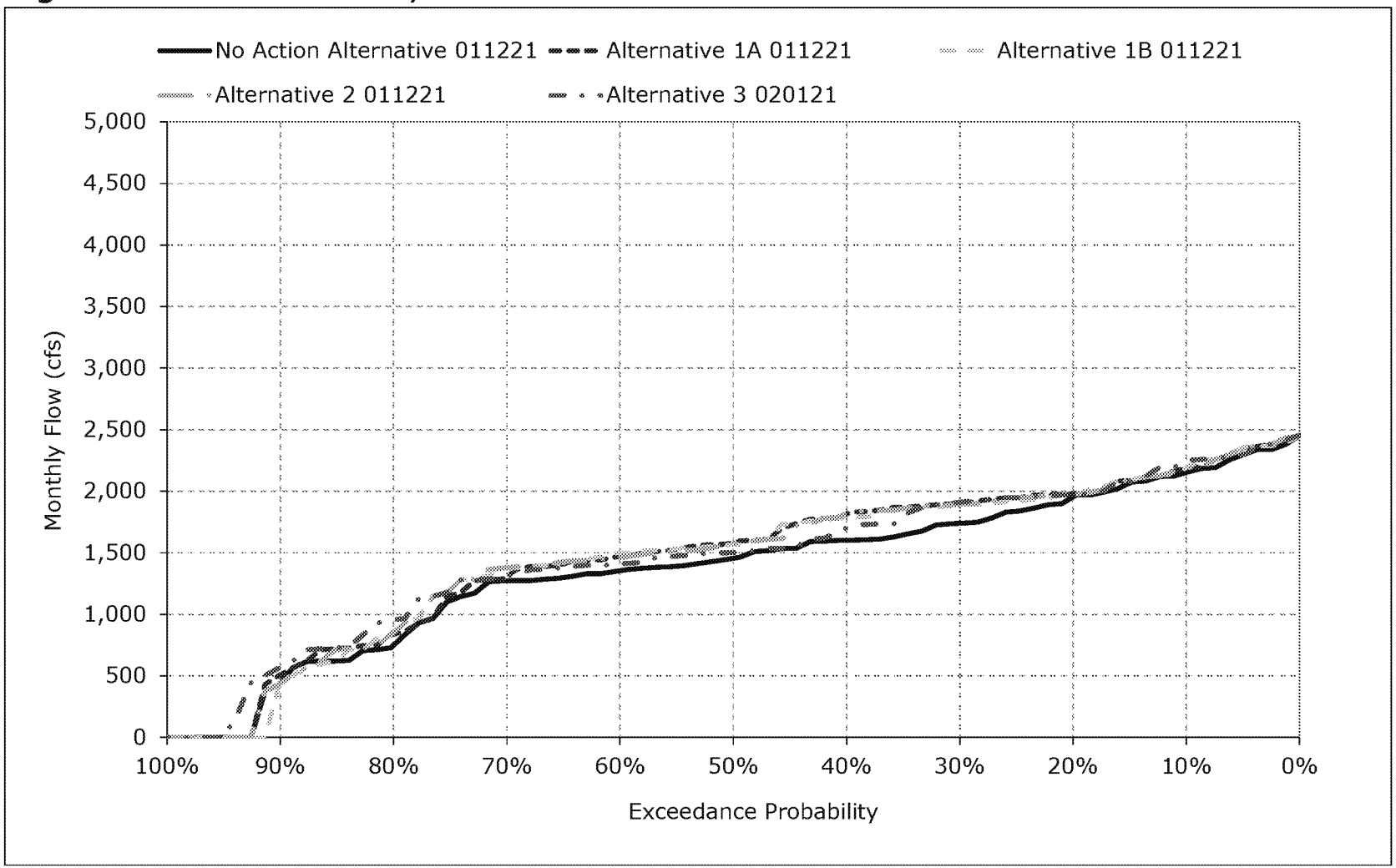


Figure 5B3-2-8. DCC Flow, November

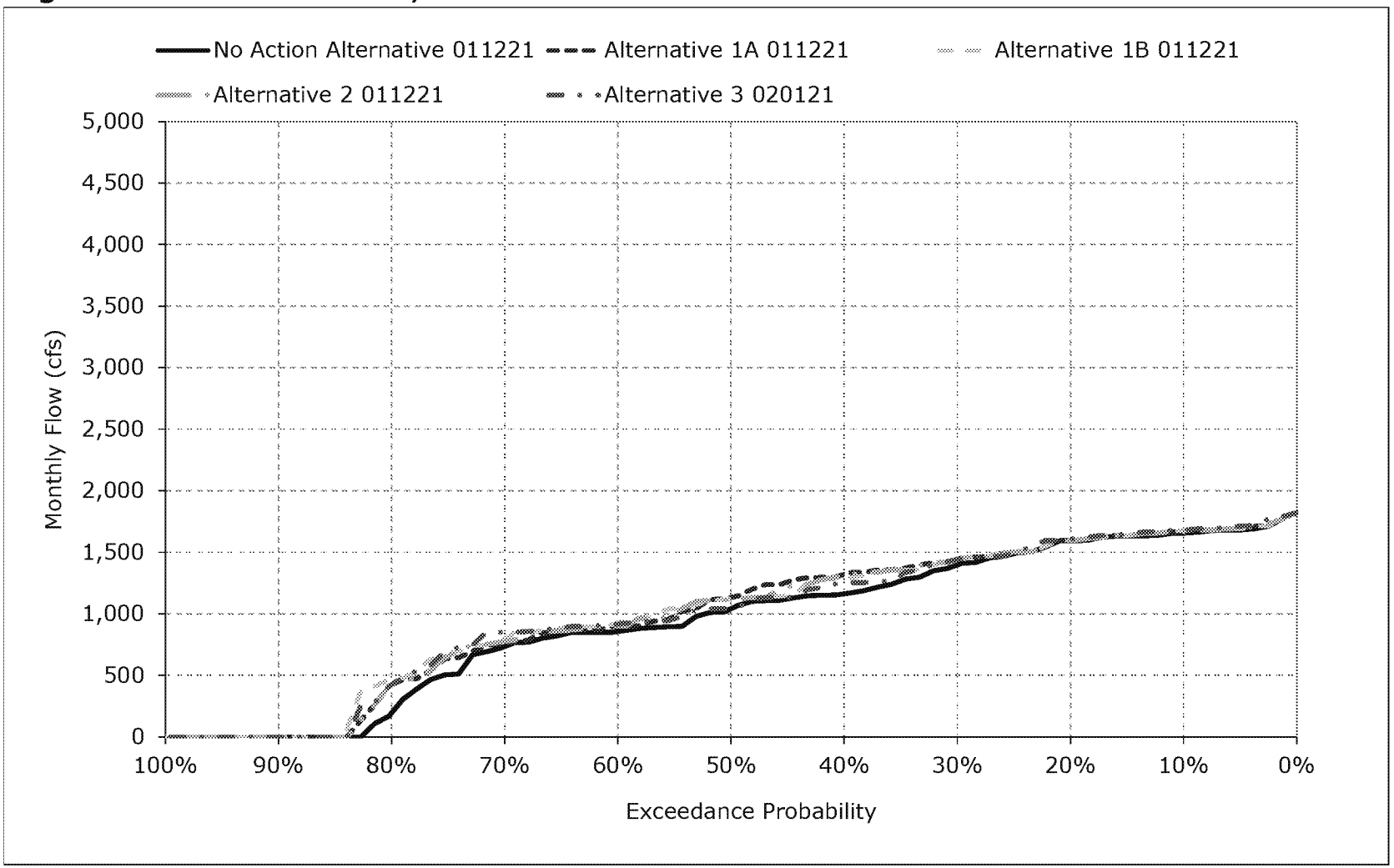


Figure 5B3-2-9. DCC Flow, December

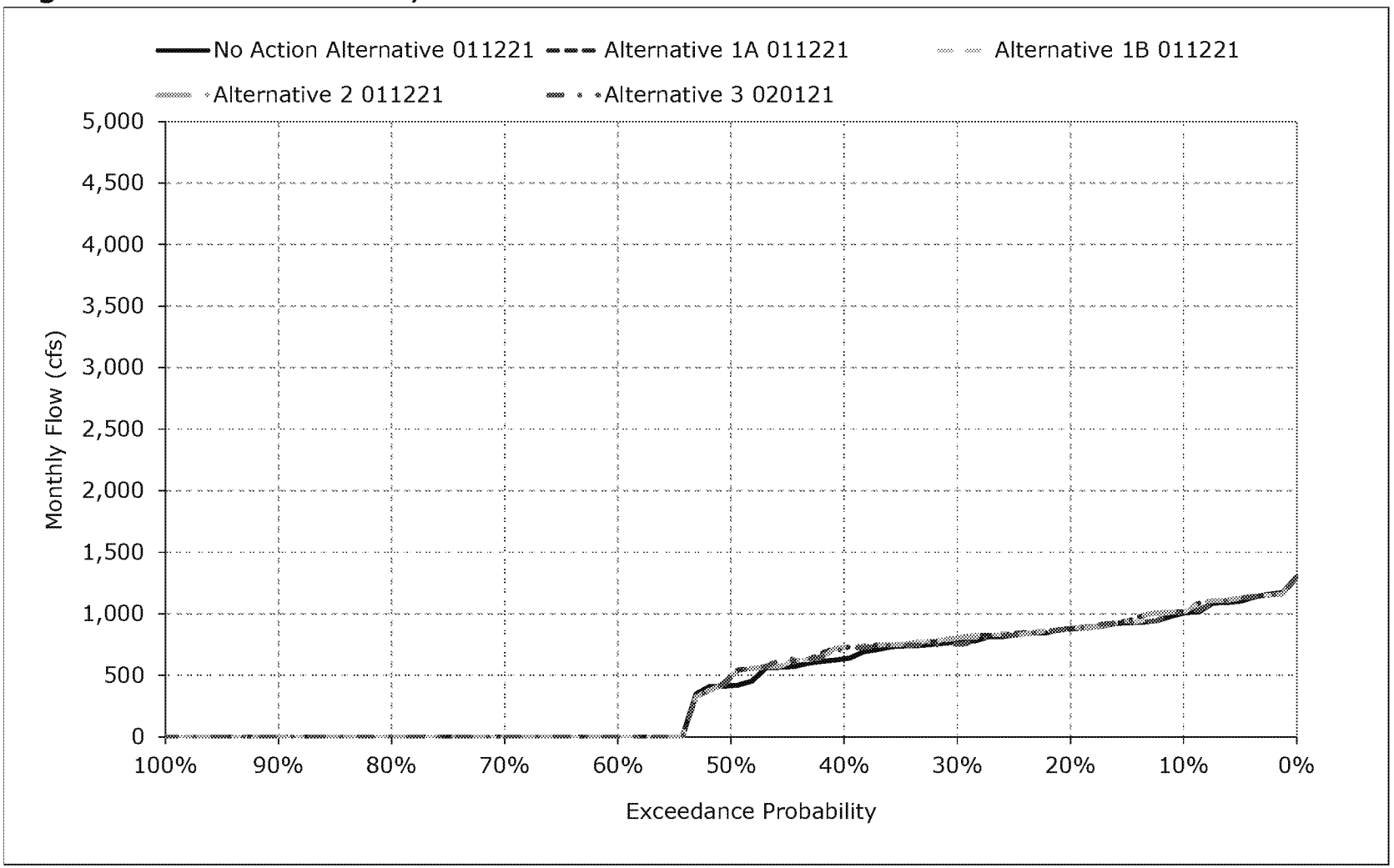


Figure 5B3-2-10. DCC Flow, January

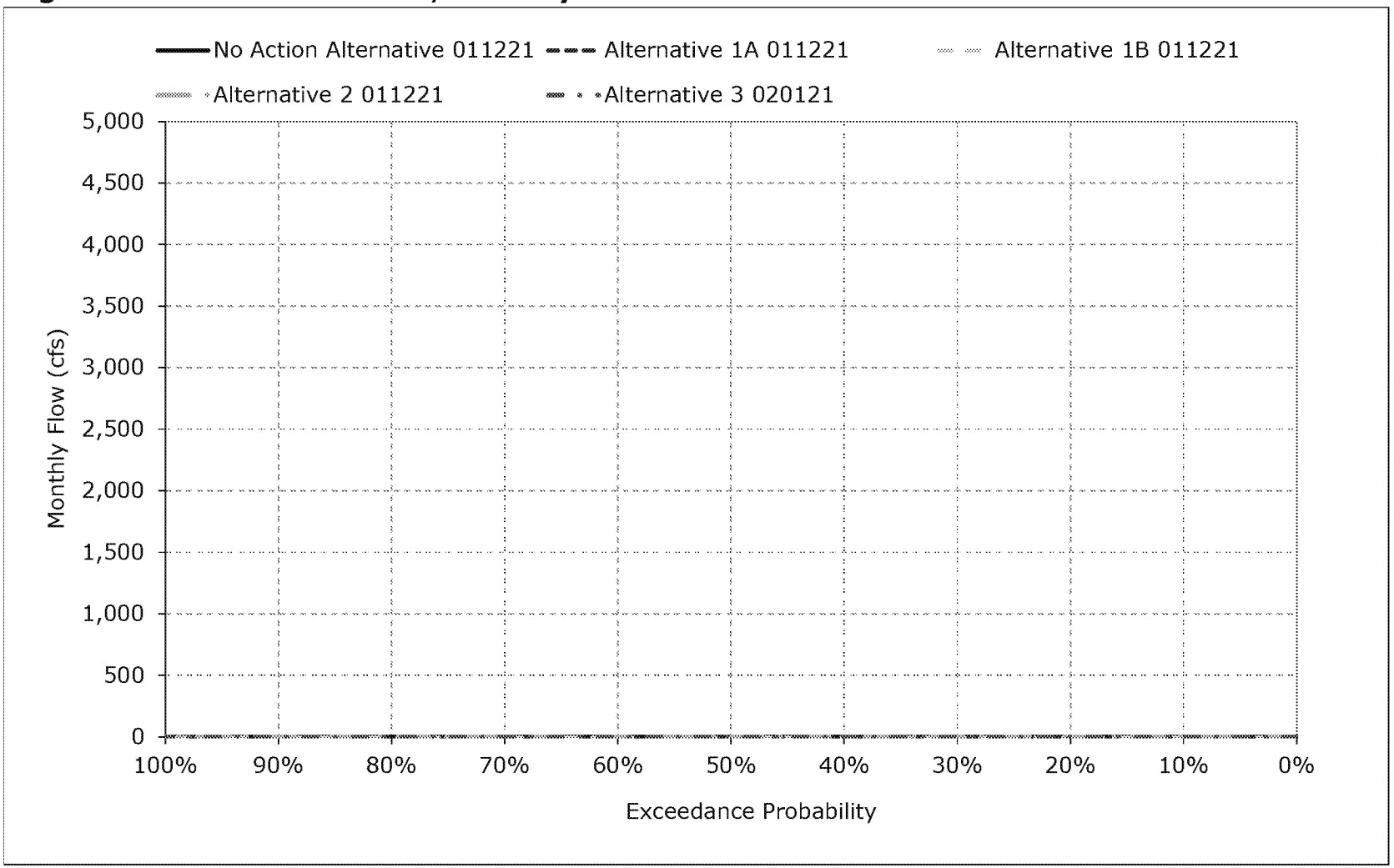


Figure 5B3-2-11. DCC Flow, February

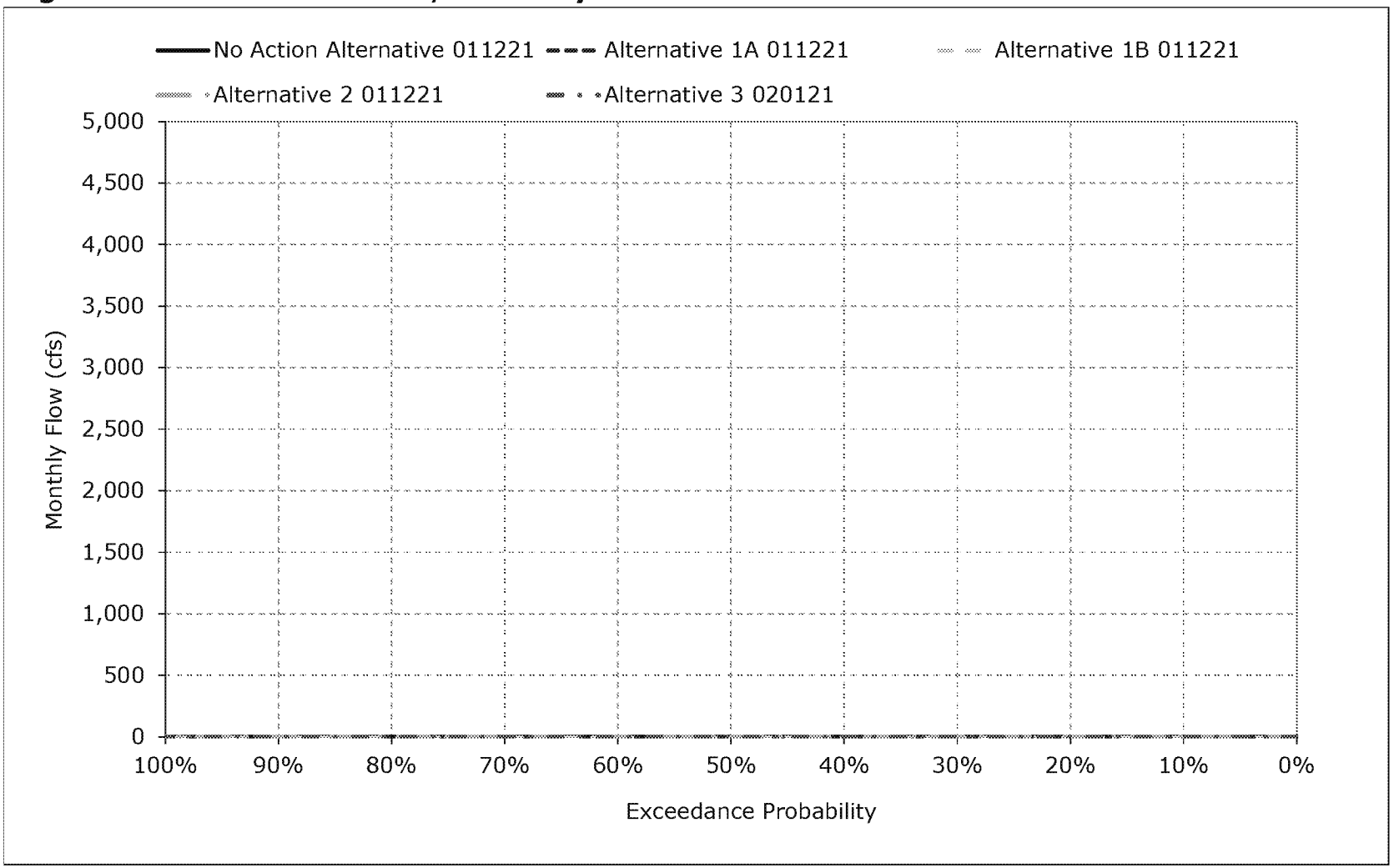


Figure 5B3-2-12. DCC Flow, March

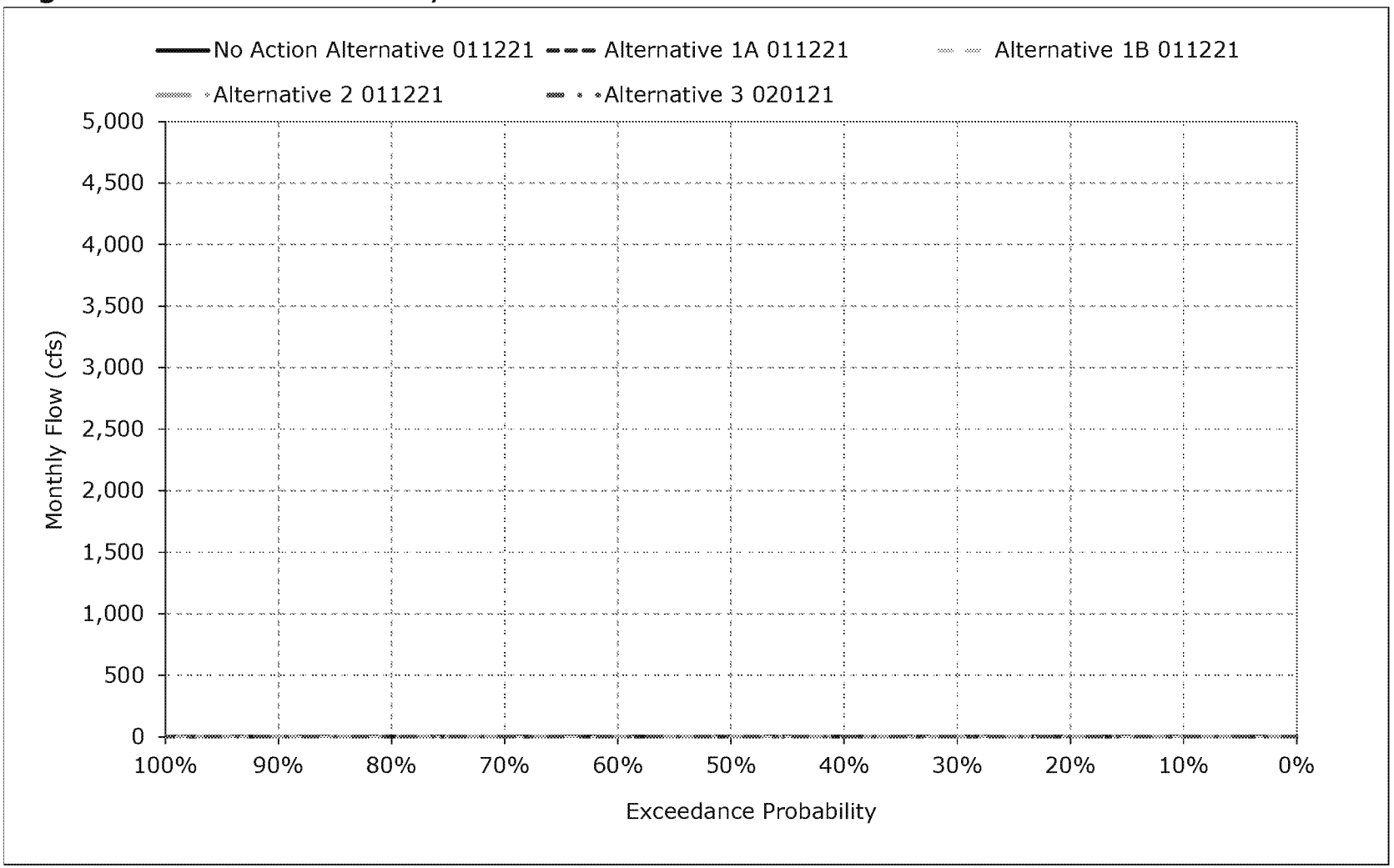


Figure 5B3-2-13. DCC Flow, April

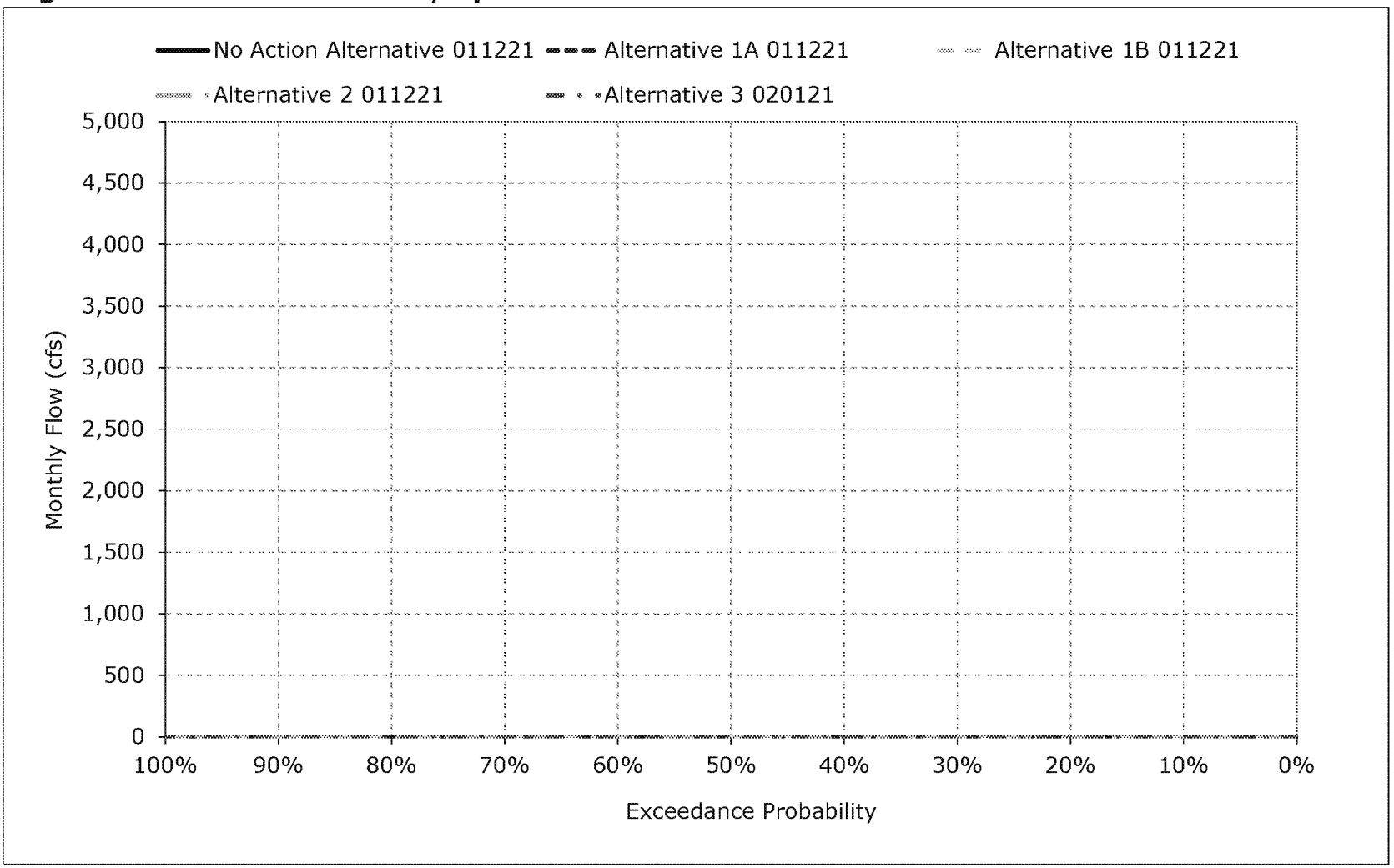


Figure 5B3-2-14. DCC Flow, May

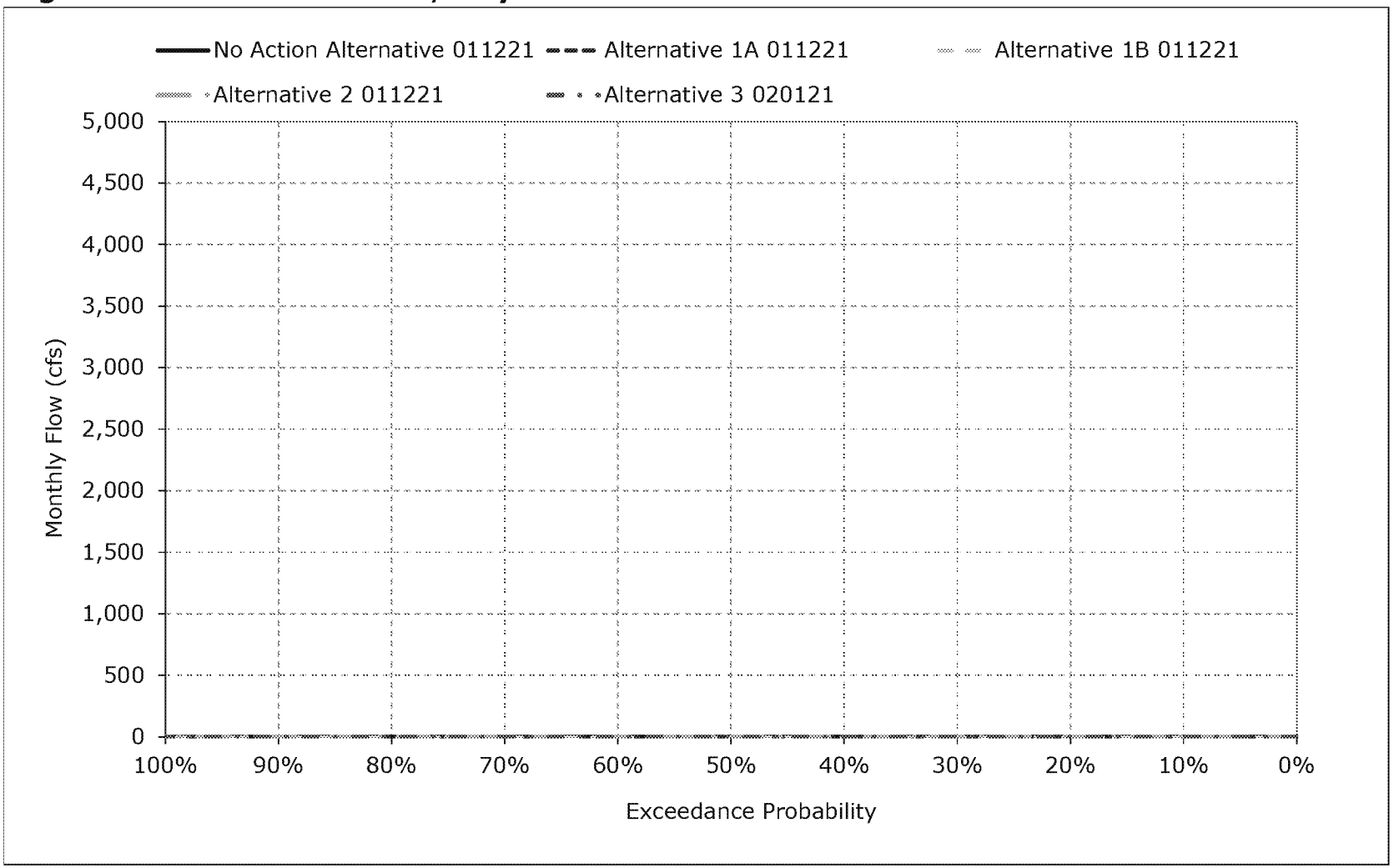


Figure 5B3-2-15. DCC Flow, June

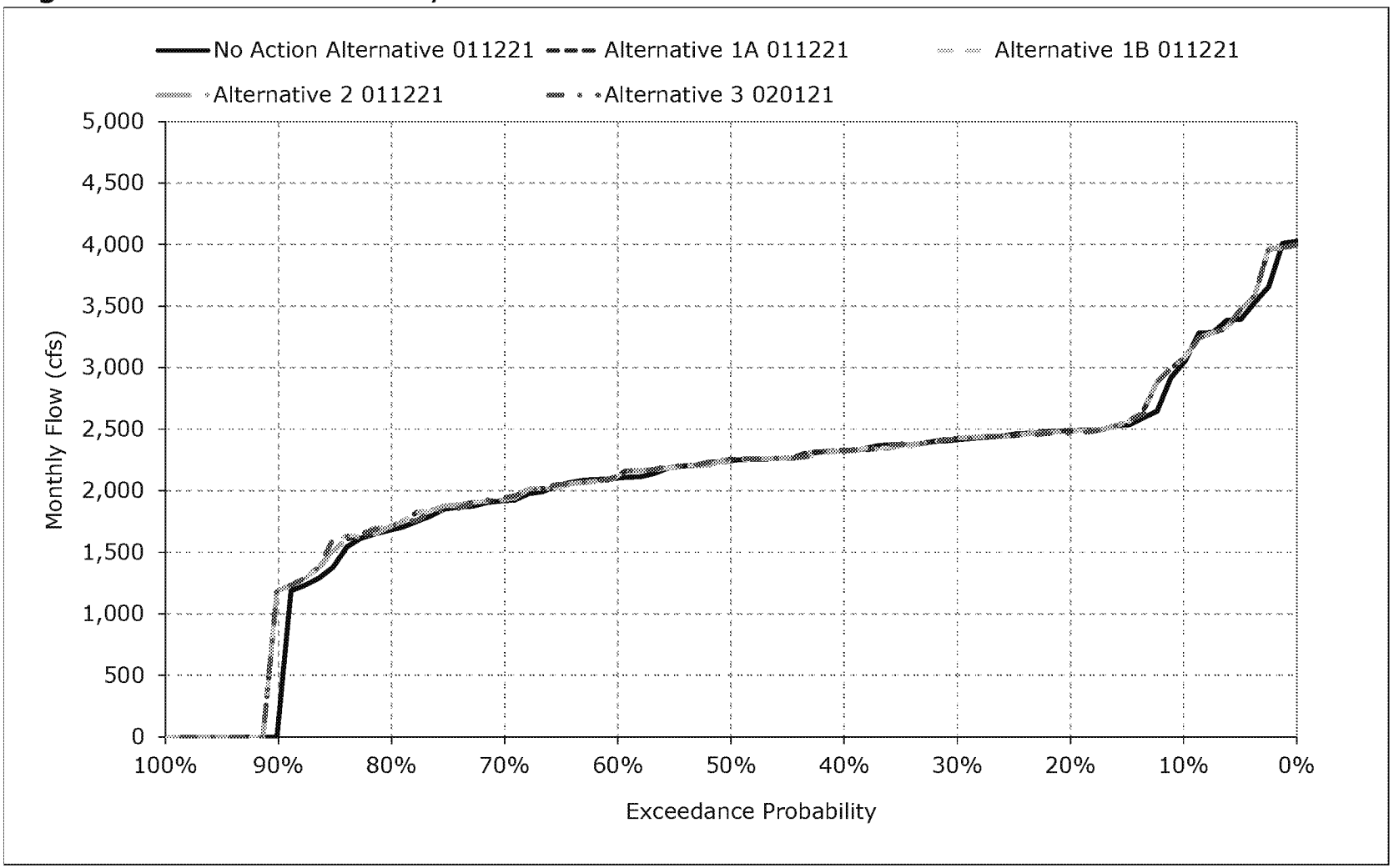


Figure 5B3-2-16. DCC Flow, July

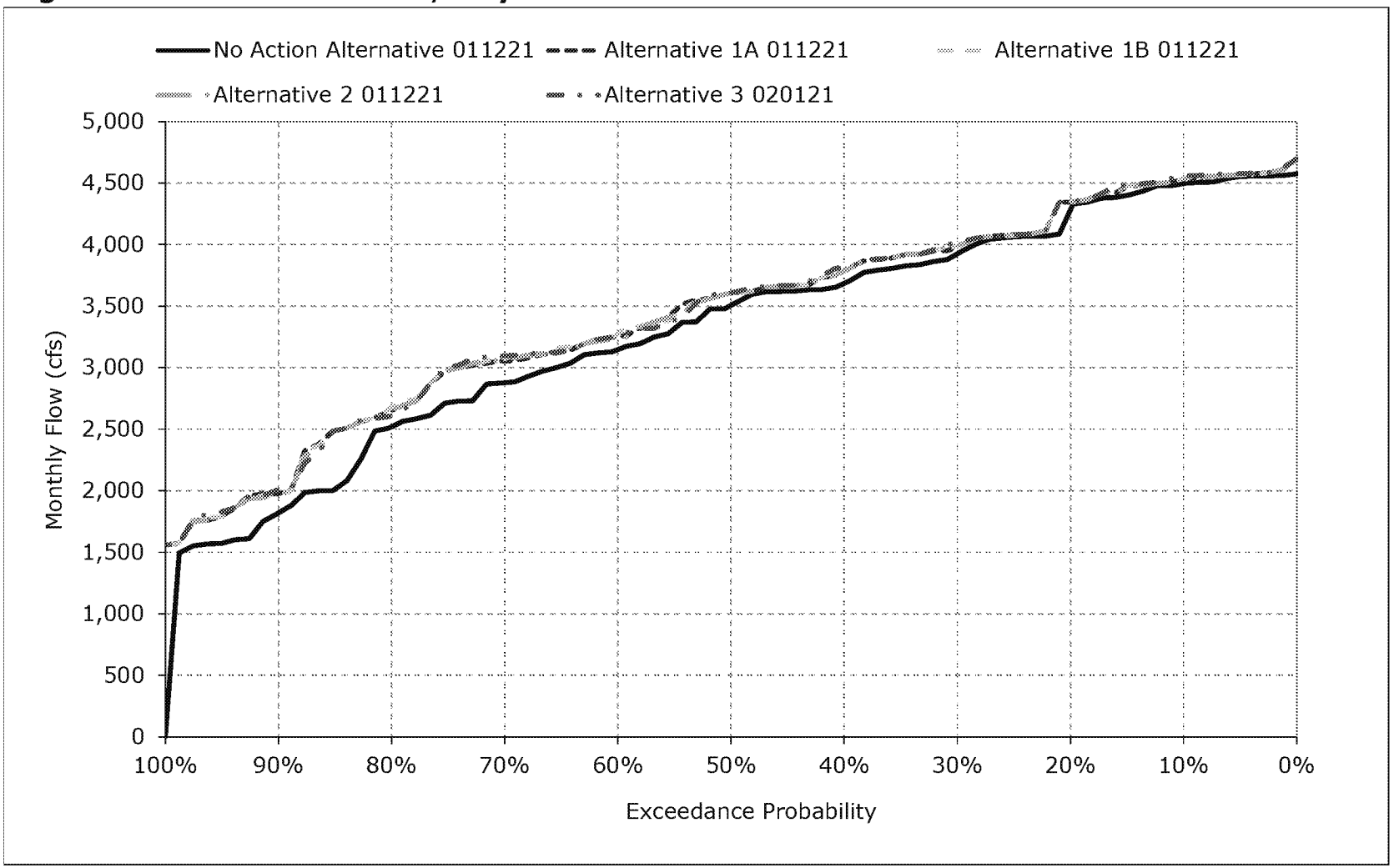


Figure 5B3-2-17. DCC Flow, August

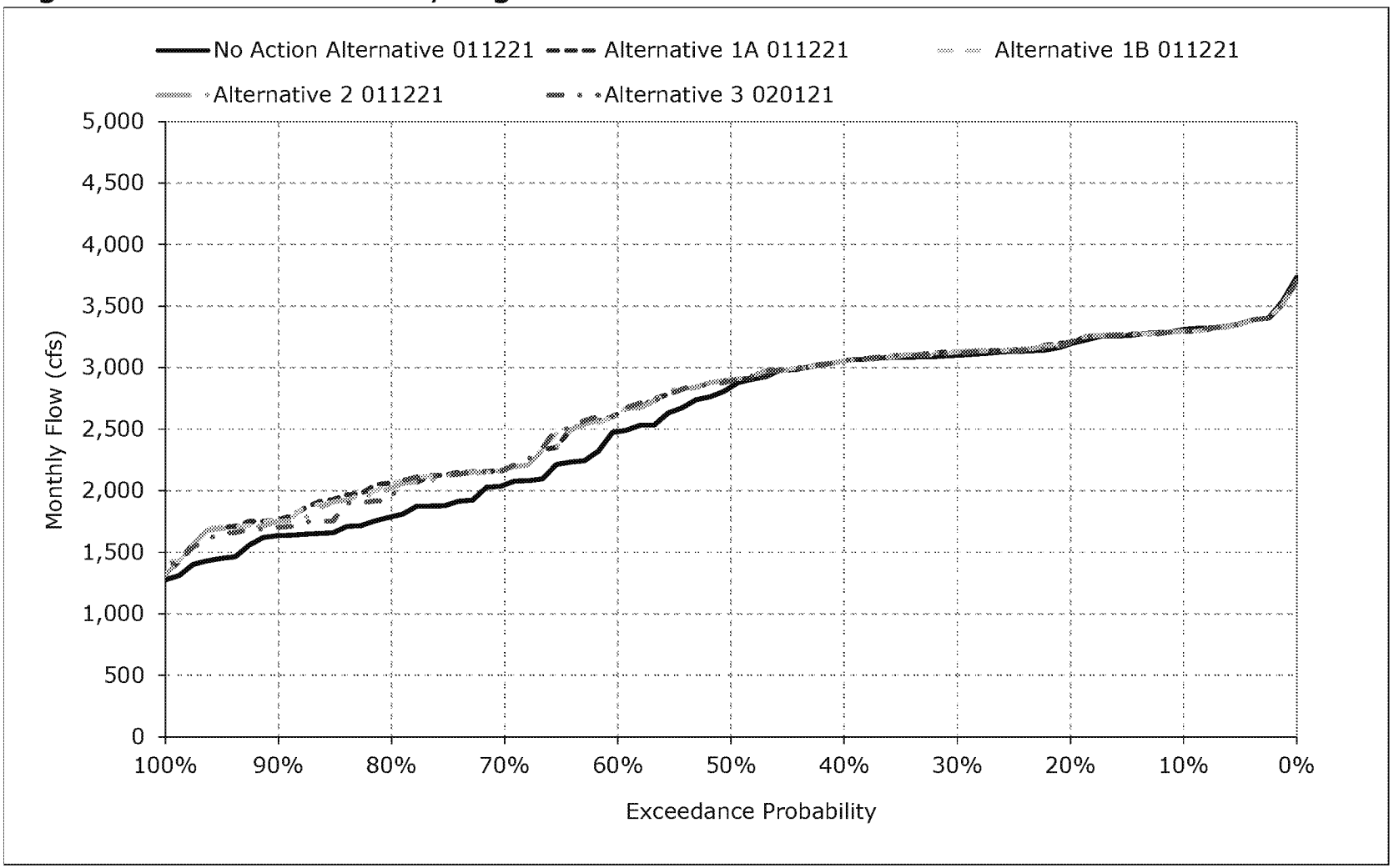


Figure 5B3-2-18. DCC Flow, September

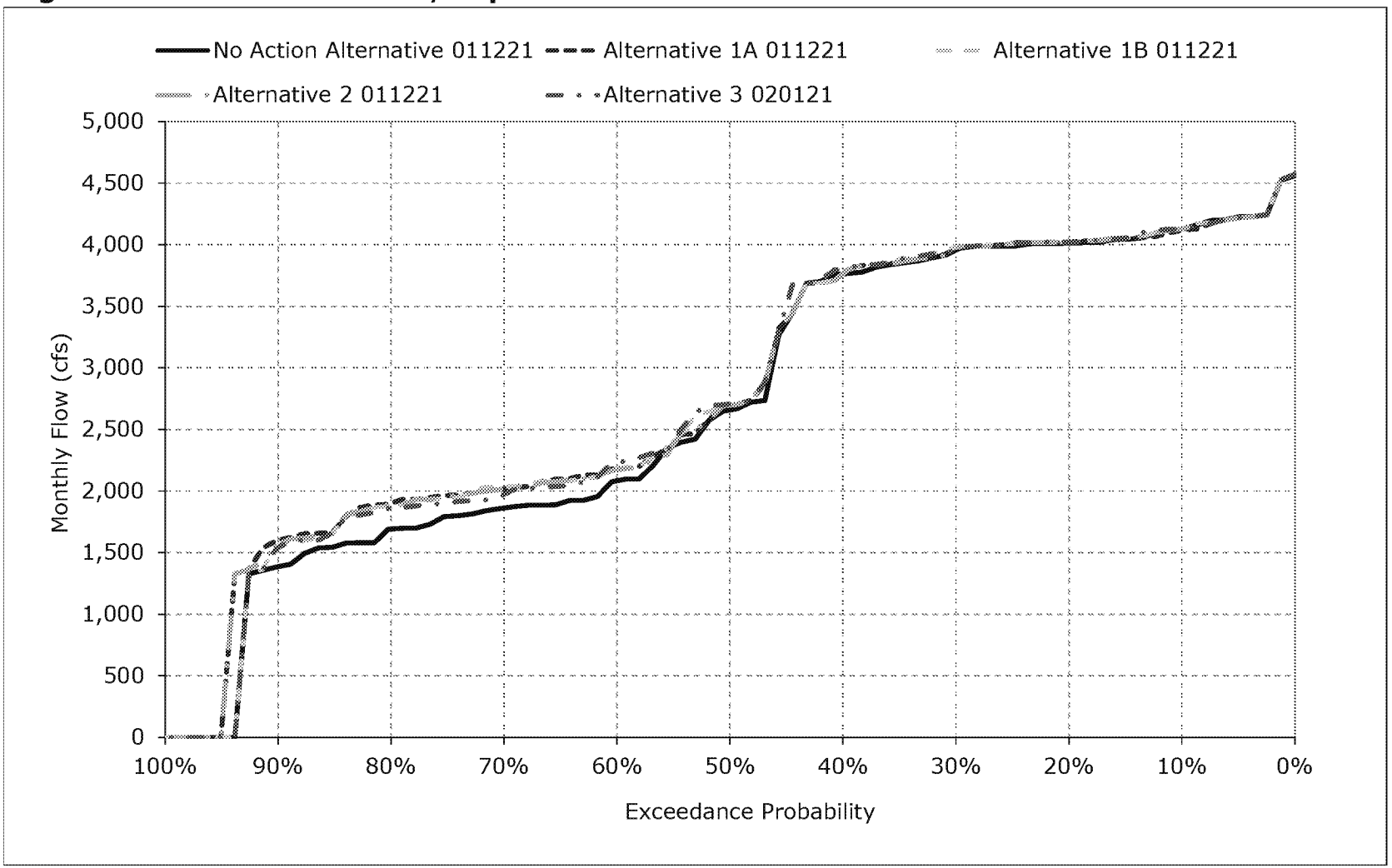


Table 5B3-3-1a. Yolo Bypass Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	63	712	15,514	34,446	48,177	24,268	6,840	784	68	48	183	140
20%	61	158	4,823	15,924	20,367	9,332	3,162	78	68	48	55	60
30%	58	60	1,604	6,573	12,261	4,573	1,070	74	68	48	55	59
40%	53	27	550	3,070	8,634	2,772	331	71	68	48	55	59
50%	45	11	220	854	3,577	1,481	139	68	67	48	55	59
60%	40	8	128	487	1,380	592	113	65	67	48	55	59
70%	29	5	55	209	502	201	92	63	66	48	55	58
80%	15	1	22	69	160	78	80	59	64	48	55	55
90%	4	0	0	23	44	37	58	53	62	48	54	52
Long Term												
Full Simulation Period[a]	104	467	4,363	11,141	15,097	8,739	2,735	302	100	48	98	80
Water Year Types[b,c]												
Wet (32%)	86	596	5,365	29,169	35,753	21,857	7,148	688	172	48	139	79
Above Normal (15%)	37	956	2,211	9,403	16,160	9,300	1,999	308	66	48	87	65
Below Normal (17%)	327	422	4,697	1,701	4,934	1,040	541	67	66	48	114	113
Dry (22%)	42	287	6,742	757	2,122	996	308	77	67	48	62	65
Critical (15%)	41	22	385	406	599	351	107	68	64	48	54	78

Table 5B3-3-1b. Yolo Bypass Flow, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	442	715	15,595	32,704	46,176	24,143	6,540	773	68	48	449	463
20%	402	157	4,848	15,073	19,873	9,331	3,163	78	68	48	445	416
30%	390	55	1,584	6,393	11,369	4,296	1,074	74	68	48	445	403
40%	257	29	543	3,001	8,337	2,504	331	71	68	48	445	403
50%	64	13	214	830	3,422	1,349	139	68	67	48	437	381
60%	61	9	134	469	1,298	528	113	65	67	48	390	291
70%	53	6	58	204	497	202	92	63	66	48	152	141
80%	40	1	20	68	156	63	80	59	64	48	55	59
90%	16	0	3	24	43	37	58	53	62	48	55	59
Long Term												
Full Simulation Period[a]	252	452	4,317	10,764	14,624	8,429	2,633	276	99	48	325	297
Water Year Types[b,c]												
Wet (32%)	316	587	5,385	28,362	34,865	21,307	6,910	611	171	48	443	395
Above Normal (15%)	259	865	2,212	8,753	15,476	8,629	1,863	304	66	48	368	374
Below Normal (17%)	412	428	4,497	1,611	4,567	950	507	67	66	48	309	250
Dry (22%)	152	286	6,660	713	2,005	906	308	77	67	48	251	252
Critical (15%)	72	22	383	398	577	336	107	68	64	48	157	132

Table 5B3-3-1c. Yolo Bypass Flow, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	379	3	82	-1,742	-2,001	-125	-300	-11	0	0	266	323
20%	340	-1	25	-851	-494	-1	1	0	0	0	390	356
30%	333	-5	-20	-180	-891	-277	4	0	0	0	390	344
40%	204	2	-7	-70	-296	-268	0	0	0	0	390	344
50%	19	2	-7	-24	-155	-132	0	0	0	0	382	321
60%	21	0	6	-19	-82	-63	0	0	0	0	335	232
70%	23	1	3	-5	-5	0	0	0	0	0	97	83
80%	26	0	-1	-1	-5	-16	0	0	0	0	0	4
90%	11	0	3	2	-1	0	0	0	0	0	1	7
Long Term												
Full Simulation Period[a]	149	-16	-46	-377	-473	-310	-101	-25	0	0	227	218
Water Year Types[b,c]												
Wet (32%)	230	-9	20	-807	-888	-550	-238	-77	-1	0	304	316
Above Normal (15%)	222	-91	1	-650	-683	-671	-135	-5	0	0	281	309
Below Normal (17%)	85	5	-200	-90	-367	-90	-34	0	0	0	195	137
Dry (22%)	110	-2	-82	-44	-117	-90	0	0	0	0	189	187
Critical (15%)	31	0	-2	-8	-22	-15	0	0	0	0	103	54

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-3-2a. Yolo Bypass Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	63	712	15,514	34,446	48,177	24,268	6,840	784	68	48	183	140
20%	61	158	4,823	15,924	20,367	9,332	3,162	78	68	48	55	60
30%	58	60	1,604	6,573	12,261	4,573	1,070	74	68	48	55	59
40%	53	27	550	3,070	8,634	2,772	331	71	68	48	55	59
50%	45	11	220	854	3,577	1,481	139	68	67	48	55	59
60%	40	8	128	487	1,380	592	113	65	67	48	55	59
70%	29	5	55	209	502	201	92	63	66	48	55	58
80%	15	1	22	69	160	78	80	59	64	48	55	55
90%	4	0	0	23	44	37	58	53	62	48	54	52
Long Term												
Full Simulation Period[a]	104	467	4,363	11,141	15,097	8,739	2,735	302	100	48	98	80
Water Year Types[b,c]												
Wet (32%)	86	596	5,365	29,169	35,753	21,857	7,148	688	172	48	139	79
Above Normal (15%)	37	956	2,211	9,403	16,160	9,300	1,999	308	66	48	87	65
Below Normal (17%)	327	422	4,697	1,701	4,934	1,040	541	67	66	48	114	113
Dry (22%)	42	287	6,742	757	2,122	996	308	77	67	48	62	65
Critical (15%)	41	22	385	406	599	351	107	68	64	48	54	78

Table 5B3-3-2b. Yolo Bypass Flow, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	430	748	15,581	32,702	45,697	24,147	6,540	770	68	48	449	463
20%	390	157	5,008	14,858	19,791	9,272	3,163	78	68	48	445	428
30%	390	64	1,581	6,394	11,355	4,296	1,074	74	68	48	445	403
40%	152	33	543	3,003	8,314	2,455	331	71	68	48	445	403
50%	63	16	213	830	3,423	1,344	139	68	67	48	424	325
60%	54	9	133	469	1,322	527	113	65	67	48	390	189
70%	45	6	58	200	497	202	92	63	66	48	216	81
80%	36	1	21	68	163	63	80	59	64	48	55	59
90%	11	0	3	24	43	37	58	53	62	48	55	58
Long Term												
Full Simulation Period[a]	234	460	4,301	10,746	14,571	8,424	2,612	276	99	48	324	276
Water Year Types[b,c]												
Wet (32%)	314	587	5,416	28,307	34,691	21,293	6,841	610	171	48	442	387
Above Normal (15%)	202	890	2,201	8,755	15,423	8,632	1,864	304	66	48	364	311
Below Normal (17%)	411	440	4,509	1,613	4,609	951	507	67	66	48	309	231
Dry (22%)	104	299	6,547	711	2,018	902	308	77	67	48	267	216
Critical (15%)	83	22	373	398	577	336	107	68	64	48	135	145

Table 5B3-3-2c. Yolo Bypass Flow, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	367	36	67	-1,744	-2,481	-120	-300	-14	0	0	266	323
20%	329	-1	186	-1,066	-576	-60	1	0	0	0	390	368
30%	333	4	-23	-180	-906	-278	4	0	0	0	390	344
40%	99	6	-7	-68	-320	-317	0	0	0	0	390	344
50%	18	5	-7	-23	-154	-138	0	0	0	0	369	266
60%	13	0	5	-19	-58	-65	0	0	0	0	335	130
70%	15	1	3	-9	-5	0	0	0	0	0	161	23
80%	21	1	-1	-1	2	-16	0	0	0	0	0	4
90%	7	0	3	2	-1	0	0	0	0	0	1	6
Long Term												
Full Simulation Period[a]	130	-7	-62	-394	-526	-314	-123	-26	0	0	227	197
Water Year Types[b,c]												
Wet (32%)	228	-9	51	-863	-1,063	-564	-307	-78	-1	0	303	308
Above Normal (15%)	165	-66	-10	-648	-737	-668	-135	-5	0	0	277	246
Below Normal (17%)	84	17	-188	-88	-325	-89	-34	0	0	0	195	118
Dry (22%)	62	12	-195	-45	-104	-94	0	0	0	0	205	152
Critical (15%)	42	0	-12	-8	-22	-15	0	0	0	0	80	67

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-3-3a. Yolo Bypass Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	63	712	15,514	34,446	48,177	24,268	6,840	784	68	48	183	140
20%	61	158	4,823	15,924	20,367	9,332	3,162	78	68	48	55	60
30%	58	60	1,604	6,573	12,261	4,573	1,070	74	68	48	55	59
40%	53	27	550	3,070	8,634	2,772	331	71	68	48	55	59
50%	45	11	220	854	3,577	1,481	139	68	67	48	55	59
60%	40	8	128	487	1,380	592	113	65	67	48	55	59
70%	29	5	55	209	502	201	92	63	66	48	55	58
80%	15	1	22	69	160	78	80	59	64	48	55	55
90%	4	0	0	23	44	37	58	53	62	48	54	52
Long Term												
Full Simulation Period[a]	104	467	4,363	11,141	15,097	8,739	2,735	302	100	48	98	80
Water Year Types[b,c]												
Wet (32%)	86	596	5,365	29,169	35,753	21,857	7,148	688	172	48	139	79
Above Normal (15%)	37	956	2,211	9,403	16,160	9,300	1,999	308	66	48	87	65
Below Normal (17%)	327	422	4,697	1,701	4,934	1,040	541	67	66	48	114	113
Dry (22%)	42	287	6,742	757	2,122	996	308	77	67	48	62	65
Critical (15%)	41	22	385	406	599	351	107	68	64	48	54	78

Table 5B3-3-3b. Yolo Bypass Flow, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	442	715	15,596	32,703	47,164	24,143	6,556	775	68	48	449	474
20%	400	157	4,859	15,075	19,899	9,329	3,163	78	68	48	445	434
30%	390	55	1,584	6,393	11,370	4,296	1,074	74	68	48	445	403
40%	281	29	543	3,001	8,363	2,506	331	71	68	48	445	403
50%	69	13	214	830	3,422	1,344	139	68	67	48	444	400
60%	61	9	134	469	1,309	529	113	65	67	48	390	312
70%	53	6	58	204	497	202	92	63	66	48	390	157
80%	42	0	20	68	156	63	80	59	64	48	55	59
90%	17	0	3	24	43	37	58	53	62	48	55	59
Long Term												
Full Simulation Period[a]	254	446	4,322	10,760	14,651	8,456	2,643	276	99	48	349	306
Water Year Types[b,c]												
Wet (32%)	304	587	5,387	28,351	34,946	21,388	6,941	611	171	48	443	423
Above Normal (15%)	263	868	2,212	8,753	15,494	8,634	1,863	304	66	48	383	375
Below Normal (17%)	422	392	4,514	1,613	4,560	951	507	67	66	48	365	296
Dry (22%)	167	286	6,664	713	2,005	907	308	77	67	48	292	228
Critical (15%)	72	22	386	398	577	336	107	68	64	48	180	111

Table 5B3-3-3c. Yolo Bypass Flow, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	379	4	82	-1,743	-1,013	-125	-284	-9	0	0	266	334
20%	338	-1	37	-848	-468	-3	1	0	0	0	390	374
30%	333	-5	-20	-180	-891	-277	4	0	0	0	390	344
40%	228	2	-7	-70	-271	-266	0	0	0	0	390	344
50%	24	2	-6	-24	-155	-137	0	0	0	0	389	340
60%	21	0	6	-19	-71	-63	0	0	0	0	335	253
70%	23	1	3	-5	-5	0	0	0	0	0	335	98
80%	28	0	-1	-1	-5	-16	0	0	0	0	0	4
90%	13	0	3	2	-1	0	0	0	0	0	1	7
Long Term												
Full Simulation Period[a]	151	-21	-41	-380	-446	-283	-91	-25	0	0	251	227
Water Year Types[b,c]												
Wet (32%)	219	-9	23	-818	-808	-469	-207	-77	-1	0	304	344
Above Normal (15%)	226	-88	1	-650	-665	-666	-135	-5	0	0	296	310
Below Normal (17%)	95	-31	-183	-88	-374	-89	-34	0	0	0	251	183
Dry (22%)	125	-1	-78	-44	-117	-89	0	0	0	0	230	164
Critical (15%)	31	0	0	-8	-22	-15	0	0	0	0	126	33

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-3-4a. Yolo Bypass Flow, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	63	712	15,514	34,446	48,177	24,268	6,840	784	68	48	183	140
20%	61	158	4,823	15,924	20,367	9,332	3,162	78	68	48	55	60
30%	58	60	1,604	6,573	12,261	4,573	1,070	74	68	48	55	59
40%	53	27	550	3,070	8,634	2,772	331	71	68	48	55	59
50%	45	11	220	854	3,577	1,481	139	68	67	48	55	59
60%	40	8	128	487	1,380	592	113	65	67	48	55	59
70%	29	5	55	209	502	201	92	63	66	48	55	58
80%	15	1	22	69	160	78	80	59	64	48	55	55
90%	4	0	0	23	44	37	58	53	62	48	54	52
Long Term												
Full Simulation Period[a]	104	467	4,363	11,141	15,097	8,739	2,735	302	100	48	98	80
Water Year Types[b,c]												
Wet (32%)	86	596	5,365	29,169	35,753	21,857	7,148	688	172	48	139	79
Above Normal (15%)	37	956	2,211	9,403	16,160	9,300	1,999	308	66	48	87	65
Below Normal (17%)	327	422	4,697	1,701	4,934	1,040	541	67	66	48	114	113
Dry (22%)	42	287	6,742	757	2,122	996	308	77	67	48	62	65
Critical (15%)	41	22	385	406	599	351	107	68	64	48	54	78

Table 5B3-3-4b. Yolo Bypass Flow, Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	430	830	15,584	32,747	45,847	22,551	6,540	770	68	48	450	463
20%	390	157	5,348	14,943	21,190	9,216	3,163	78	68	48	445	410
30%	273	56	1,610	6,394	11,098	4,296	1,074	74	68	48	445	403
40%	64	29	672	3,003	8,308	2,511	331	71	68	48	445	374
50%	61	13	213	830	3,423	1,344	139	68	67	48	426	298
60%	53	9	133	469	1,322	526	113	65	67	48	390	125
70%	44	6	53	200	497	202	92	63	66	48	55	59
80%	36	1	22	68	156	65	80	59	64	48	55	59
90%	11	0	3	24	43	37	58	53	62	48	55	57
Long Term												
Full Simulation Period[a]	215	461	4,370	10,763	14,629	8,366	2,558	273	99	48	308	265
Water Year Types[b,c]												
Wet (32%)	280	587	5,413	28,340	34,830	21,132	6,673	601	171	48	443	379
Above Normal (15%)	179	936	2,222	8,796	15,615	8,571	1,864	304	66	48	344	348
Below Normal (17%)	411	407	4,547	1,615	4,526	950	507	67	66	48	309	243
Dry (22%)	89	296	6,827	712	2,018	912	308	77	67	48	236	163
Critical (15%)	72	22	370	398	577	337	107	68	64	48	87	111

Table 5B3-3-4c. Yolo Bypass Flow, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

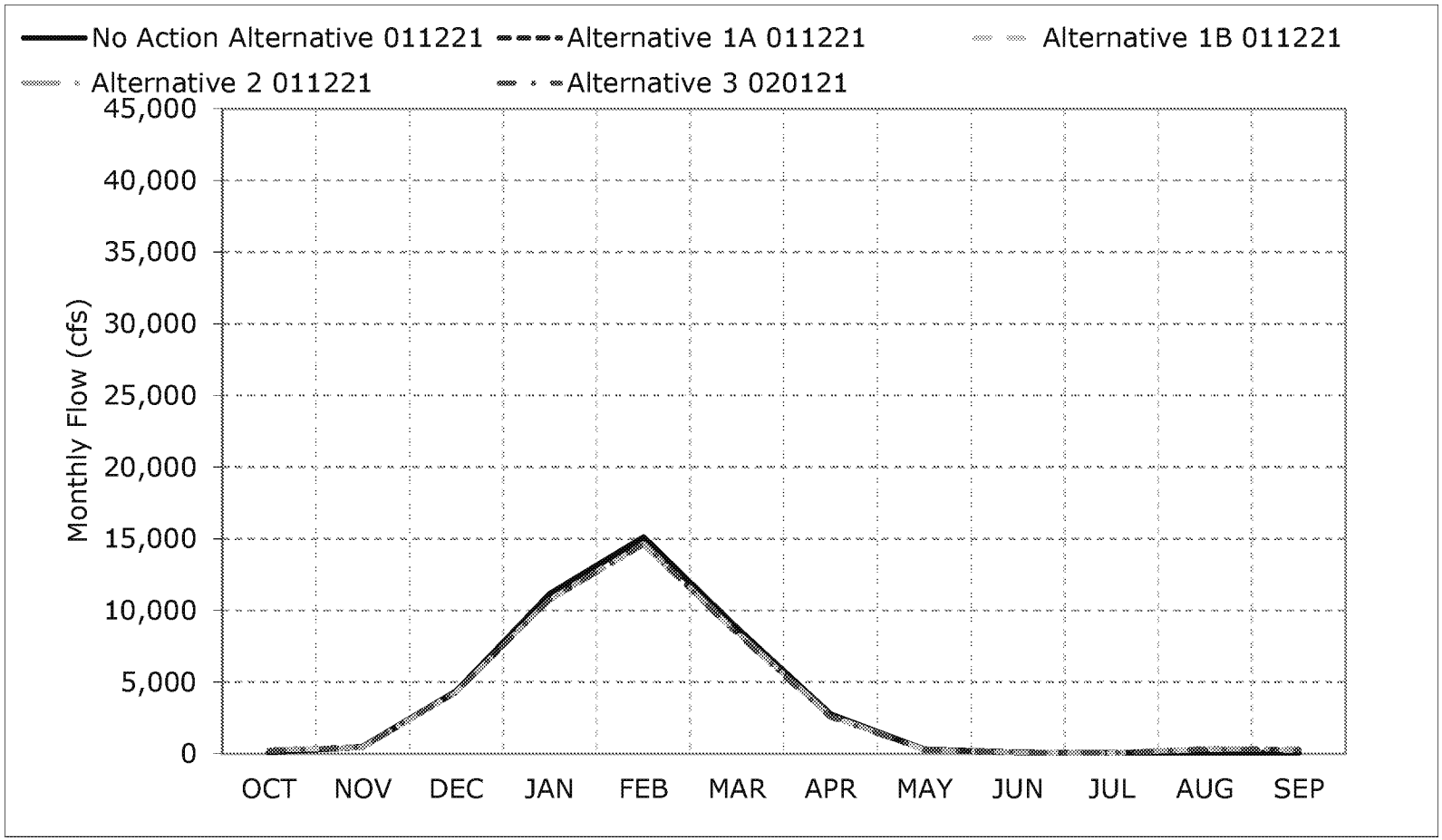
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	367	119	70	-1,699	-2,330	-1,717	-300	-14	0	0	266	323
20%	329	-1	525	-981	823	-116	1	0	0	0	390	350
30%	216	-5	6	-179	-1,163	-278	4	0	0	0	390	344
40%	11	2	122	-67	-326	-261	0	0	0	0	390	314
50%	16	2	-7	-23	-154	-138	0	0	0	0	371	239
60%	13	0	5	-19	-58	-66	0	0	0	0	335	66
70%	15	1	-1	-9	-5	0	0	0	0	0	0	1
80%	21	1	0	-1	-5	-14	0	0	0	0	0	4
90%	7	0	3	2	-1	0	0	0	0	0	1	5
Long Term												
Full Simulation Period[a]	111	-7	8	-378	-468	-372	-176	-28	0	0	210	185
Water Year Types[b,c]												
Wet (32%)	194	-9	48	-829	-923	-725	-475	-87	-1	0	304	299
Above Normal (15%)	142	-20	11	-608	-545	-729	-135	-5	0	0	258	283
Below Normal (17%)	84	-15	-150	-86	-408	-90	-34	0	0	0	195	130
Dry (22%)	47	8	85	-45	-105	-84	0	0	0	0	174	98
Critical (15%)	31	0	-15	-8	-22	-14	0	0	0	0	33	34

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

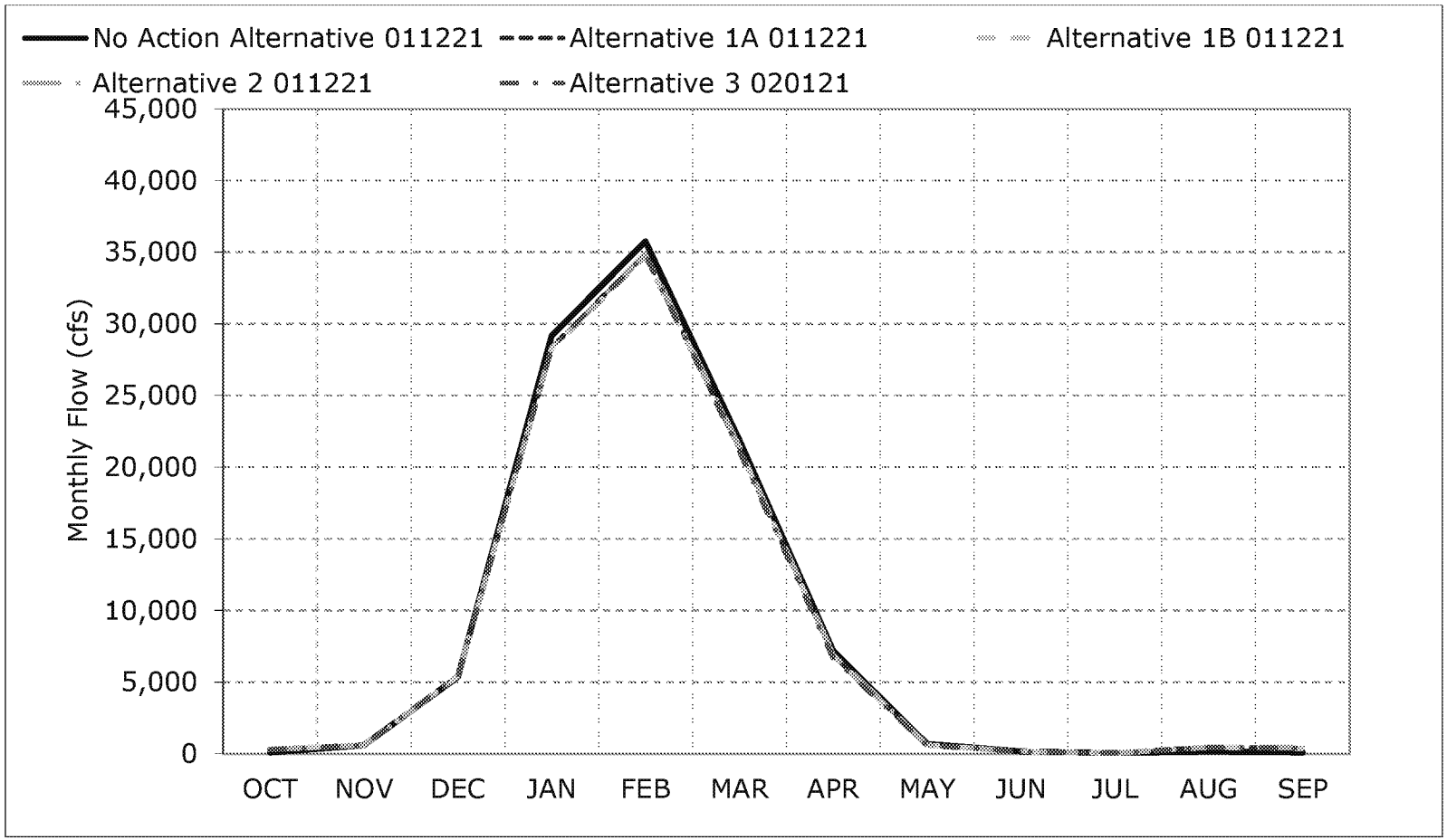
c These results are displayed with calendar year - year type sorting.

Figure 5B3-3-1. Yolo Bypass Flow, Long-Term Average Flow



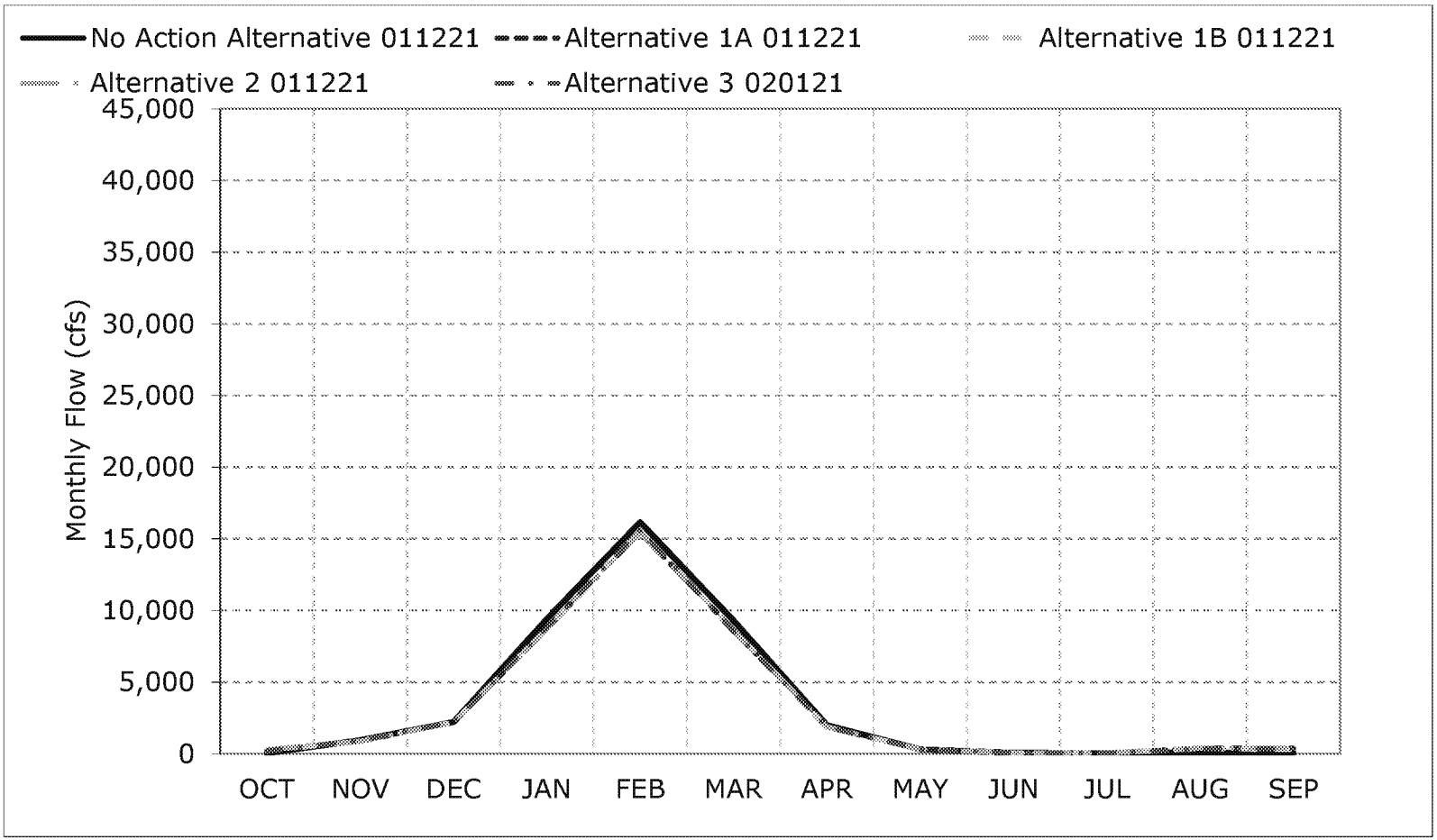
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-3-2. Yolo Bypass Flow, Wet Year Average Flow



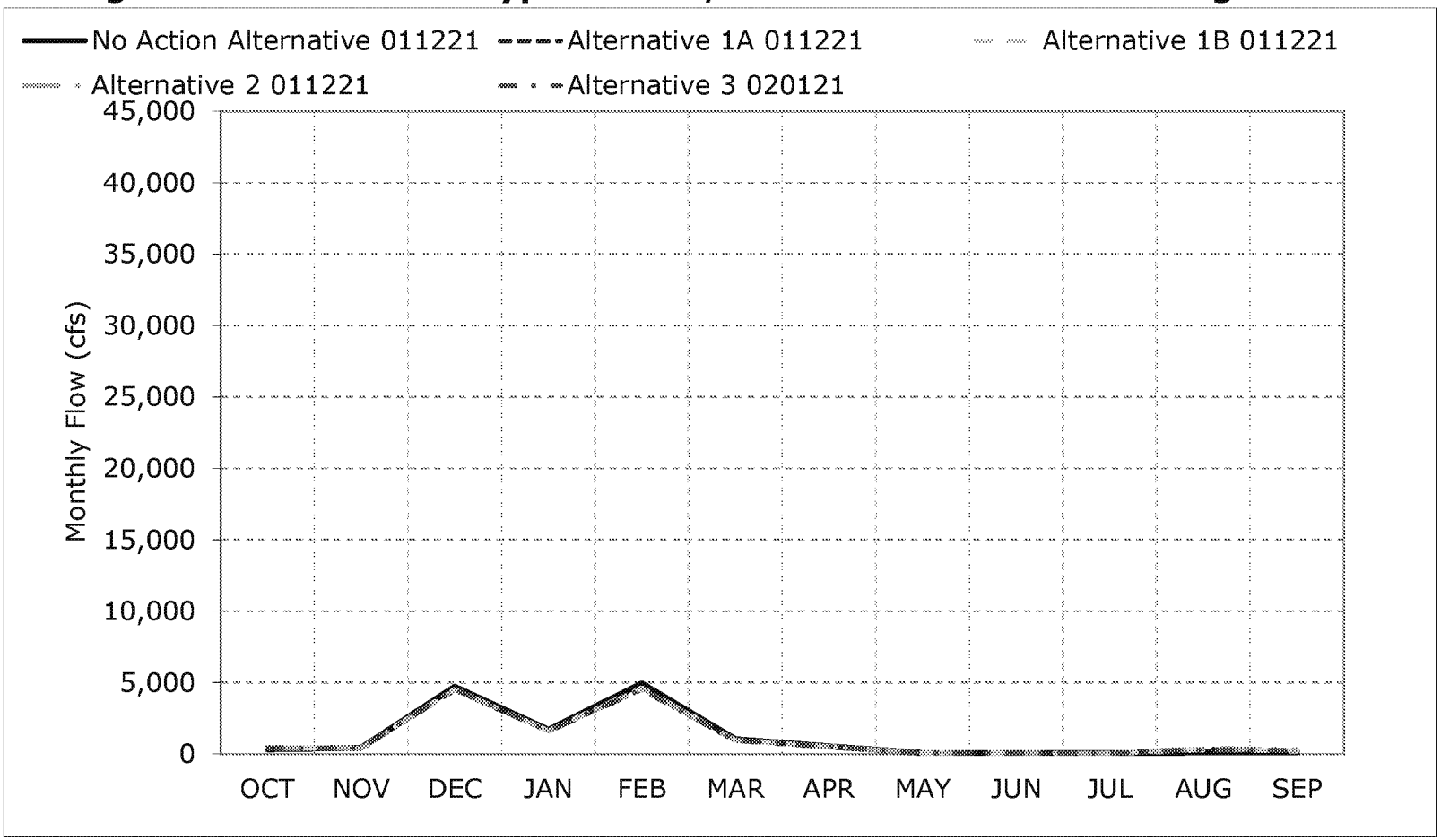
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-3-3. Yolo Bypass Flow, Above Normal Year Average Flow



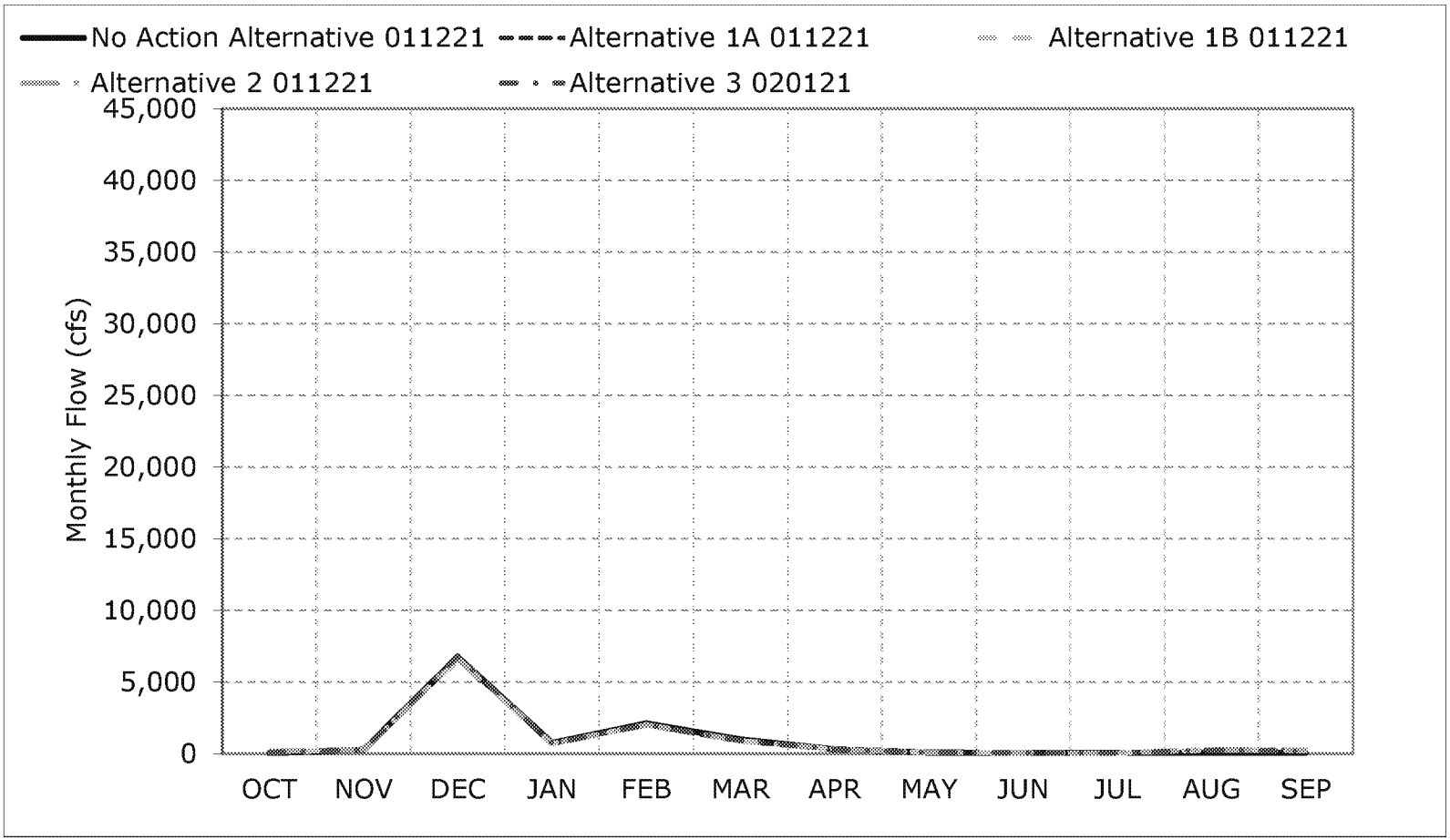
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-3-4. Yolo Bypass Flow, Below Normal Year Average Flow



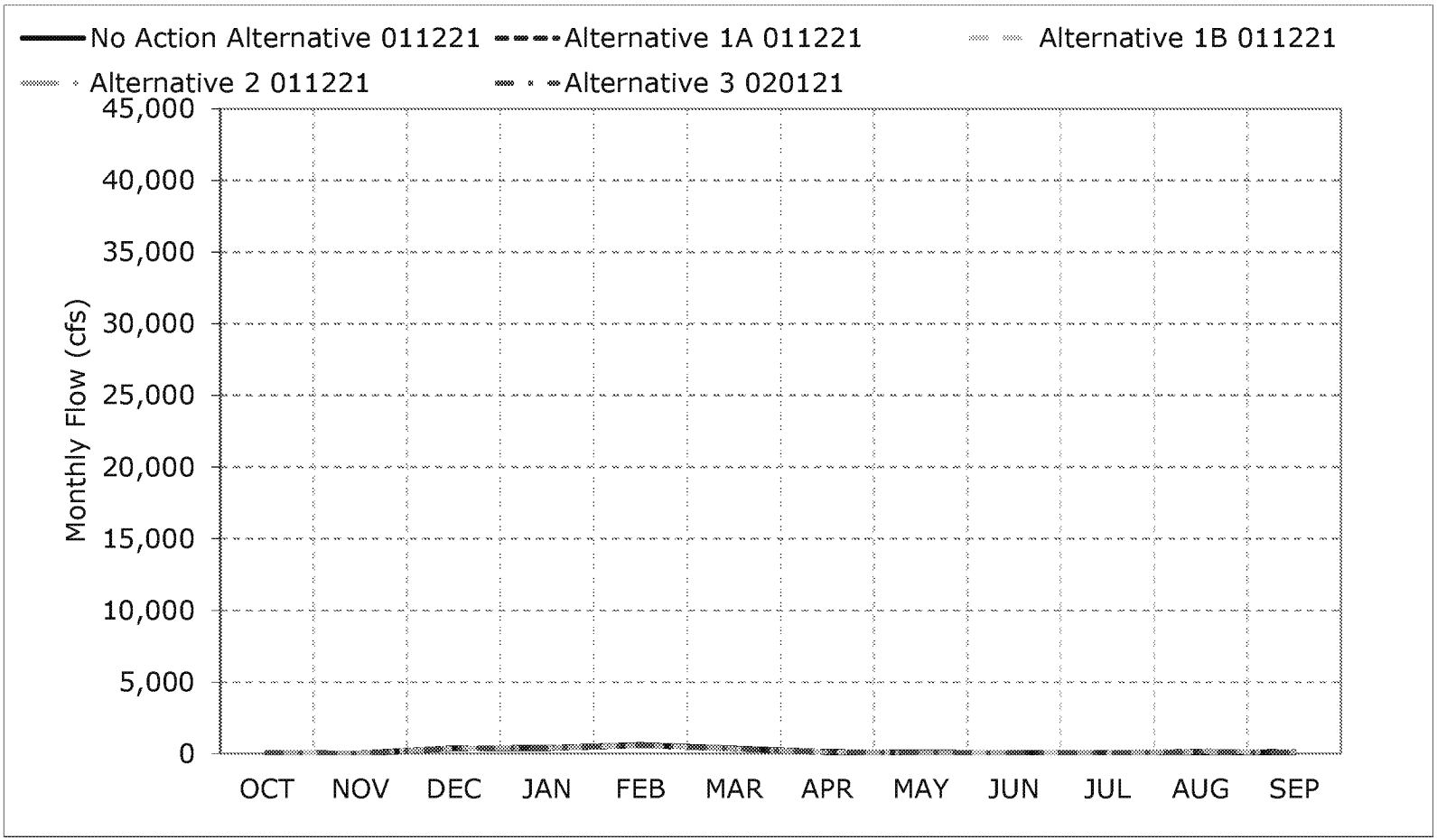
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-3-5. Yolo Bypass Flow, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-3-6. Yolo Bypass Flow, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-3-7. Yolo Bypass Flow, October

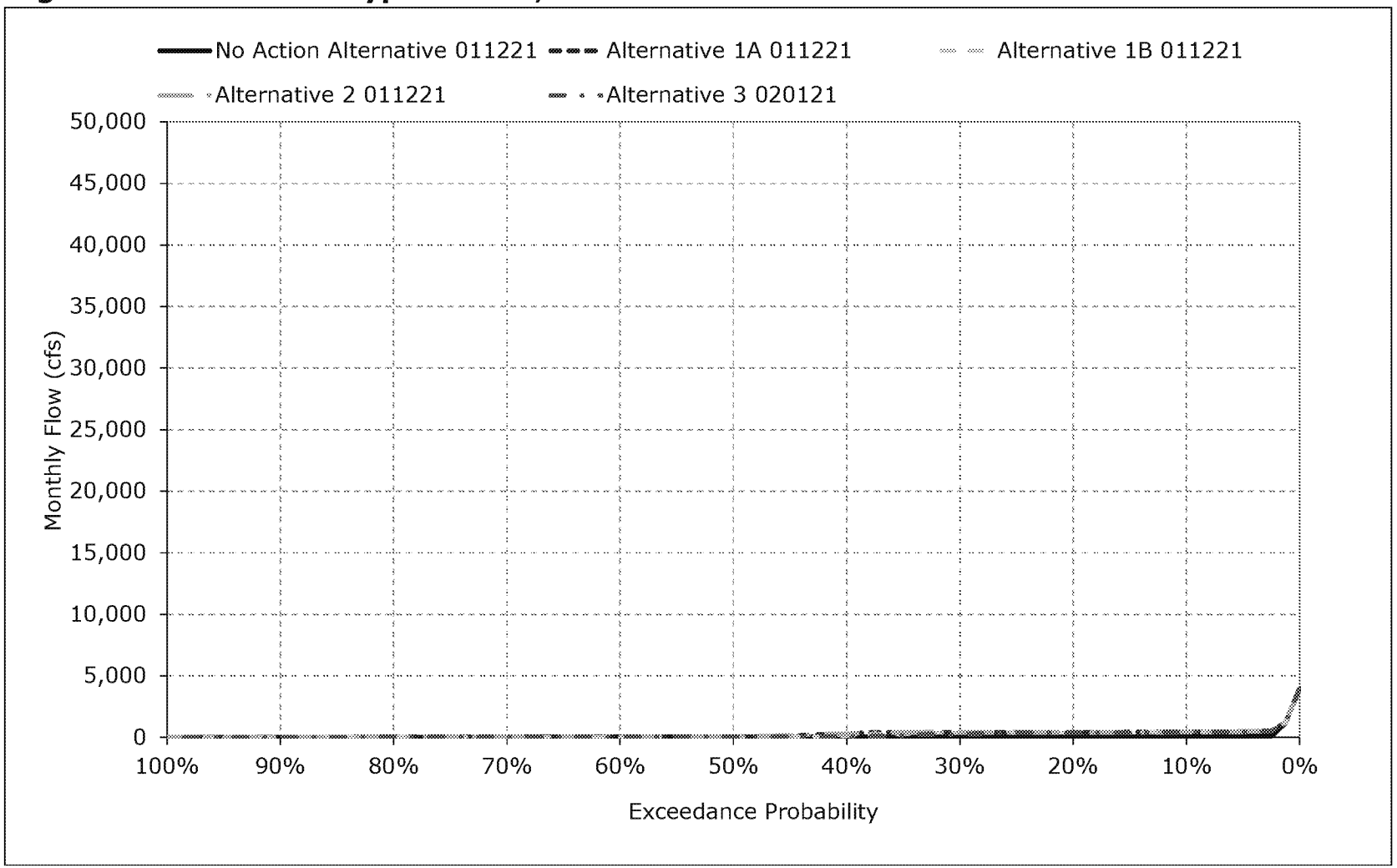


Figure 5B3-3-8. Yolo Bypass Flow, November

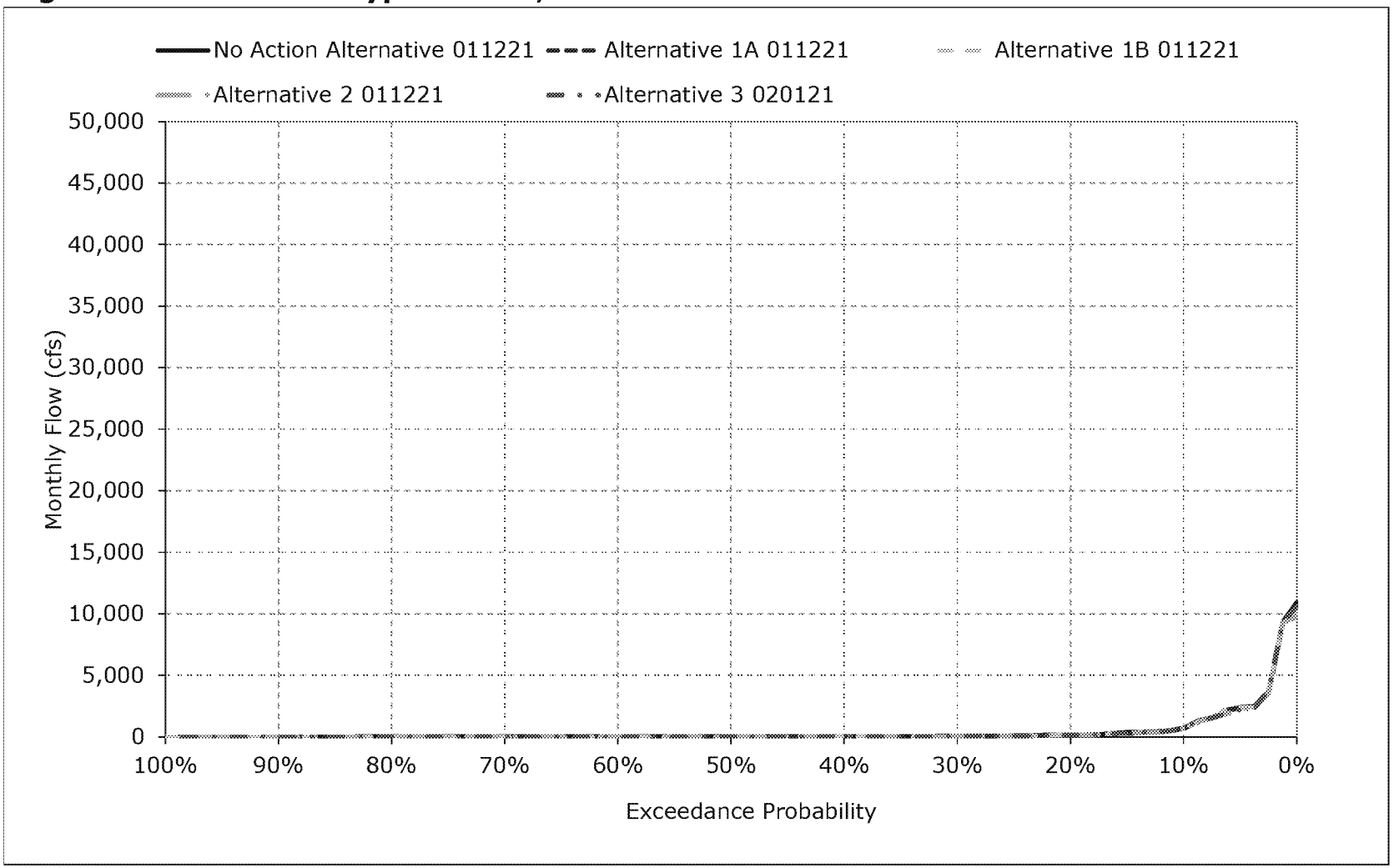


Figure 5B3-3-9. Yolo Bypass Flow, December

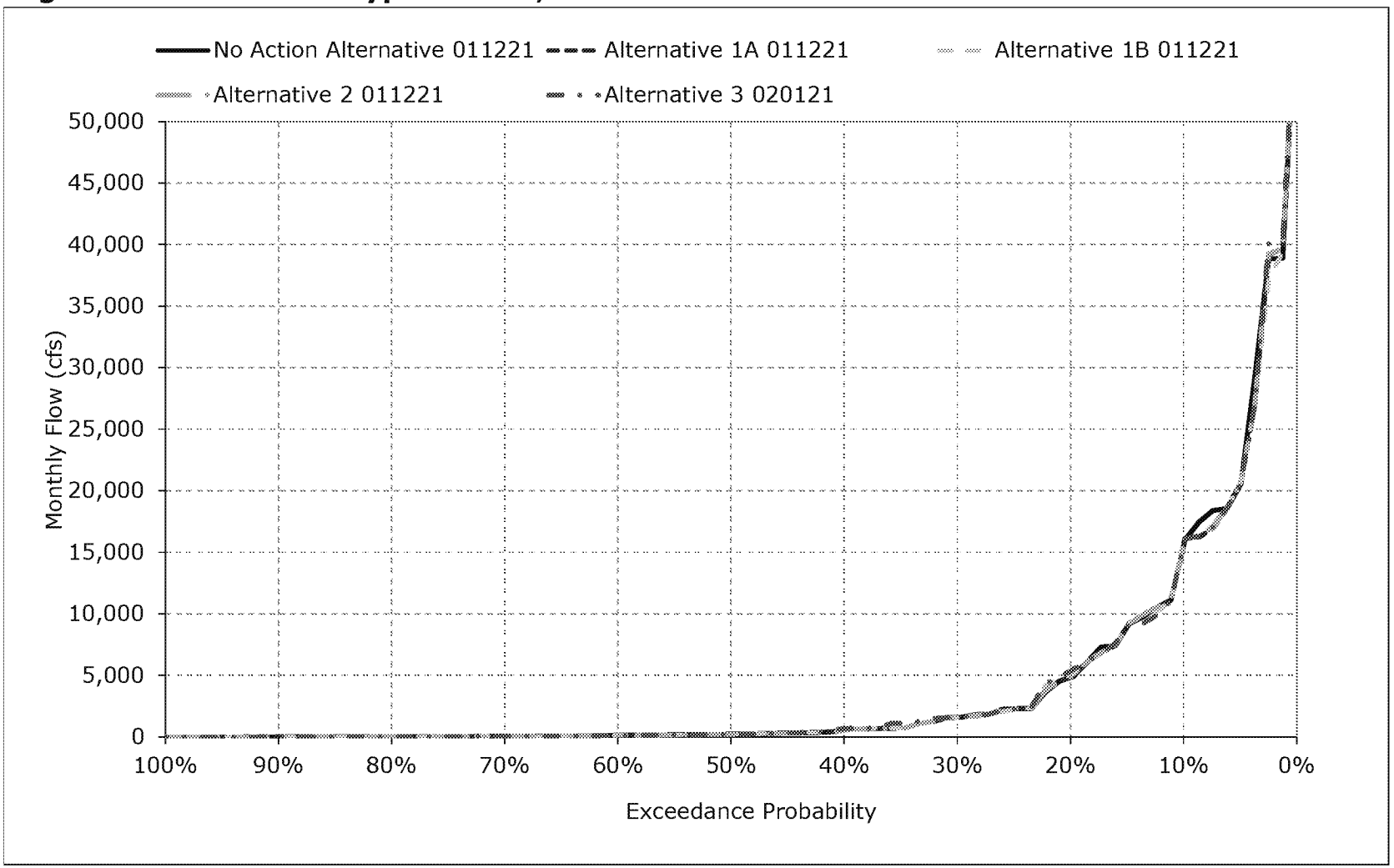


Figure 5B3-3-10. Yolo Bypass Flow, January

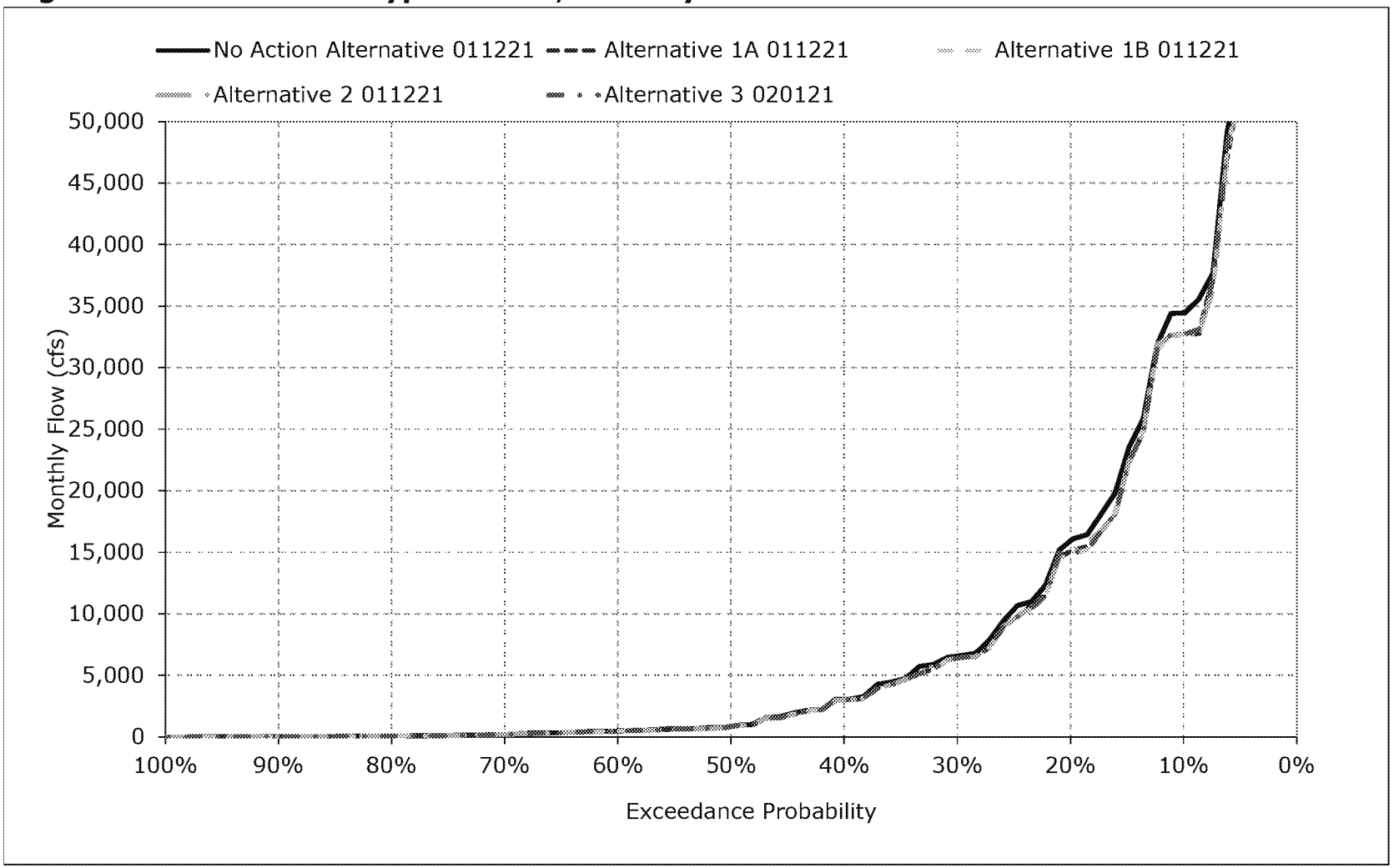


Figure 5B3-3-11. Yolo Bypass Flow, February

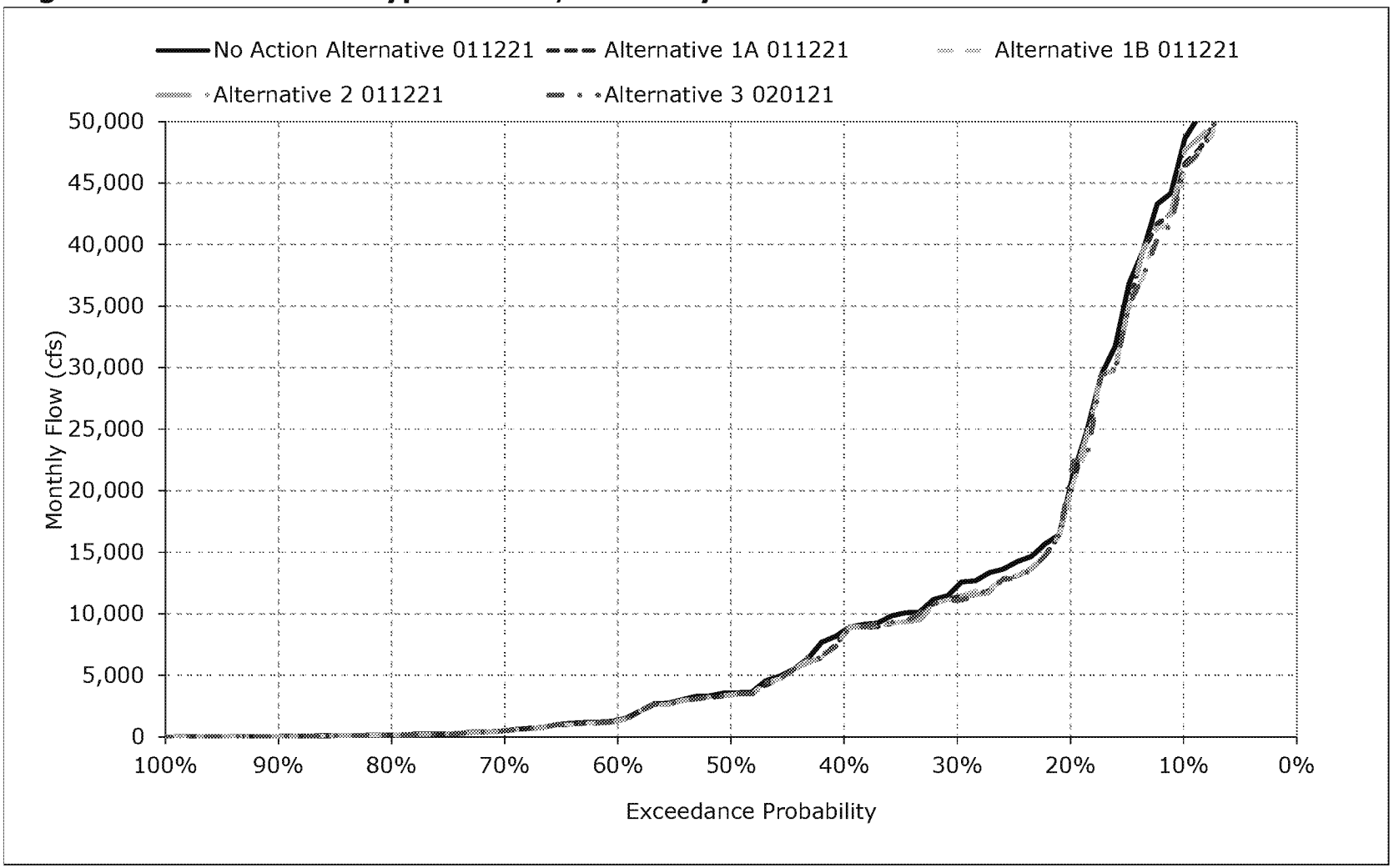


Figure 5B3-3-12. Yolo Bypass Flow, March

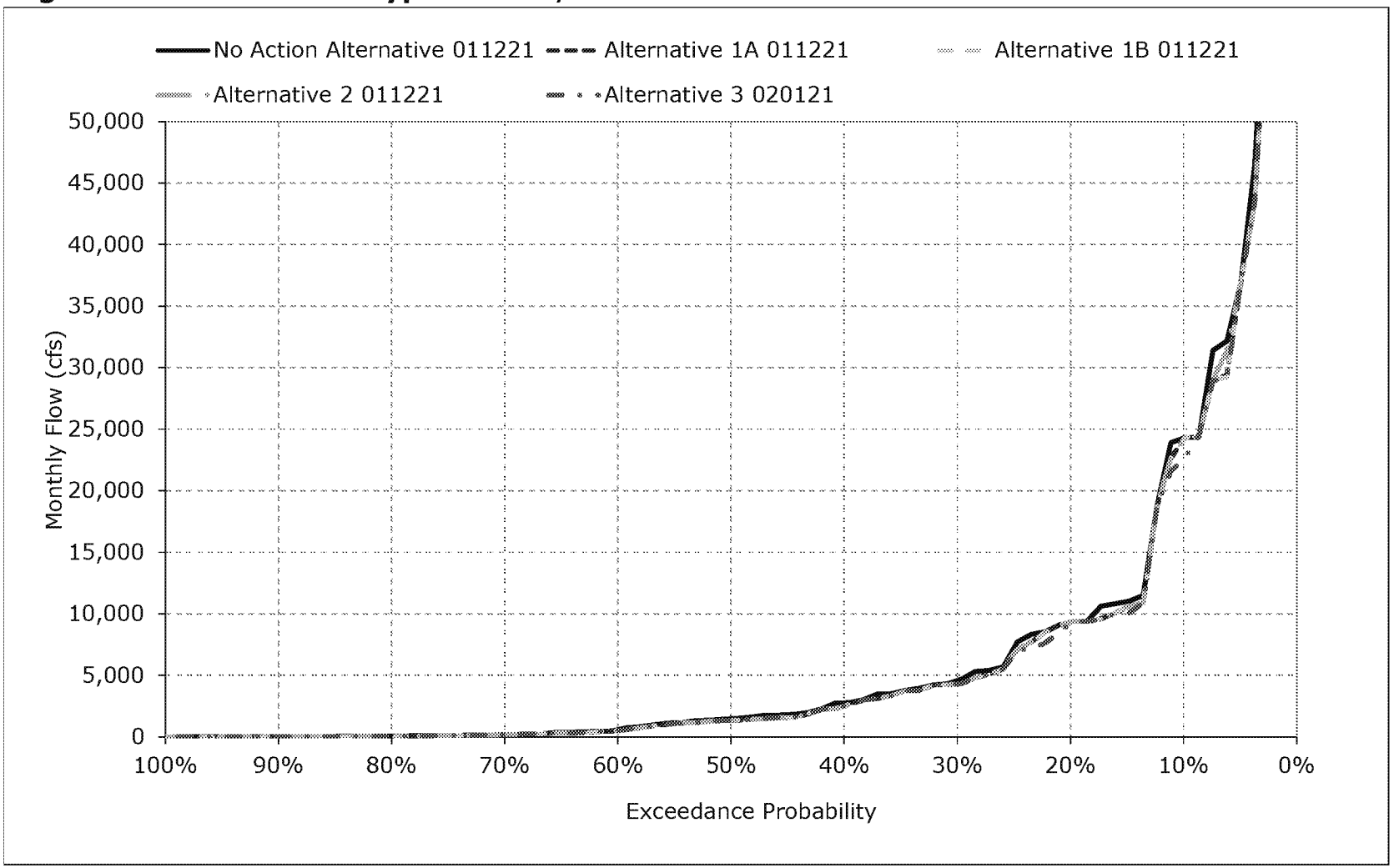


Figure 5B3-3-13. Yolo Bypass Flow, April

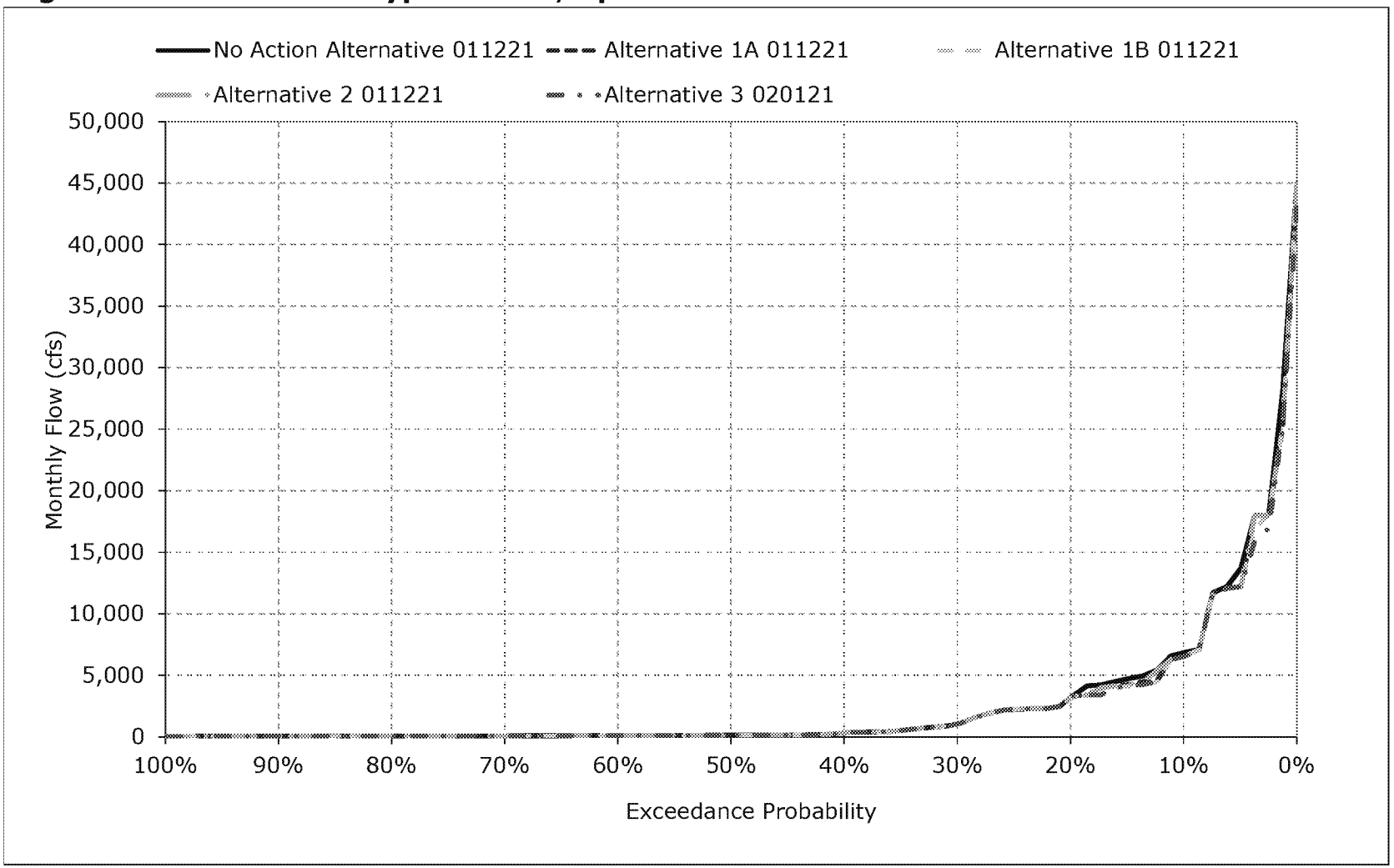


Figure 5B3-3-14. Yolo Bypass Flow, May

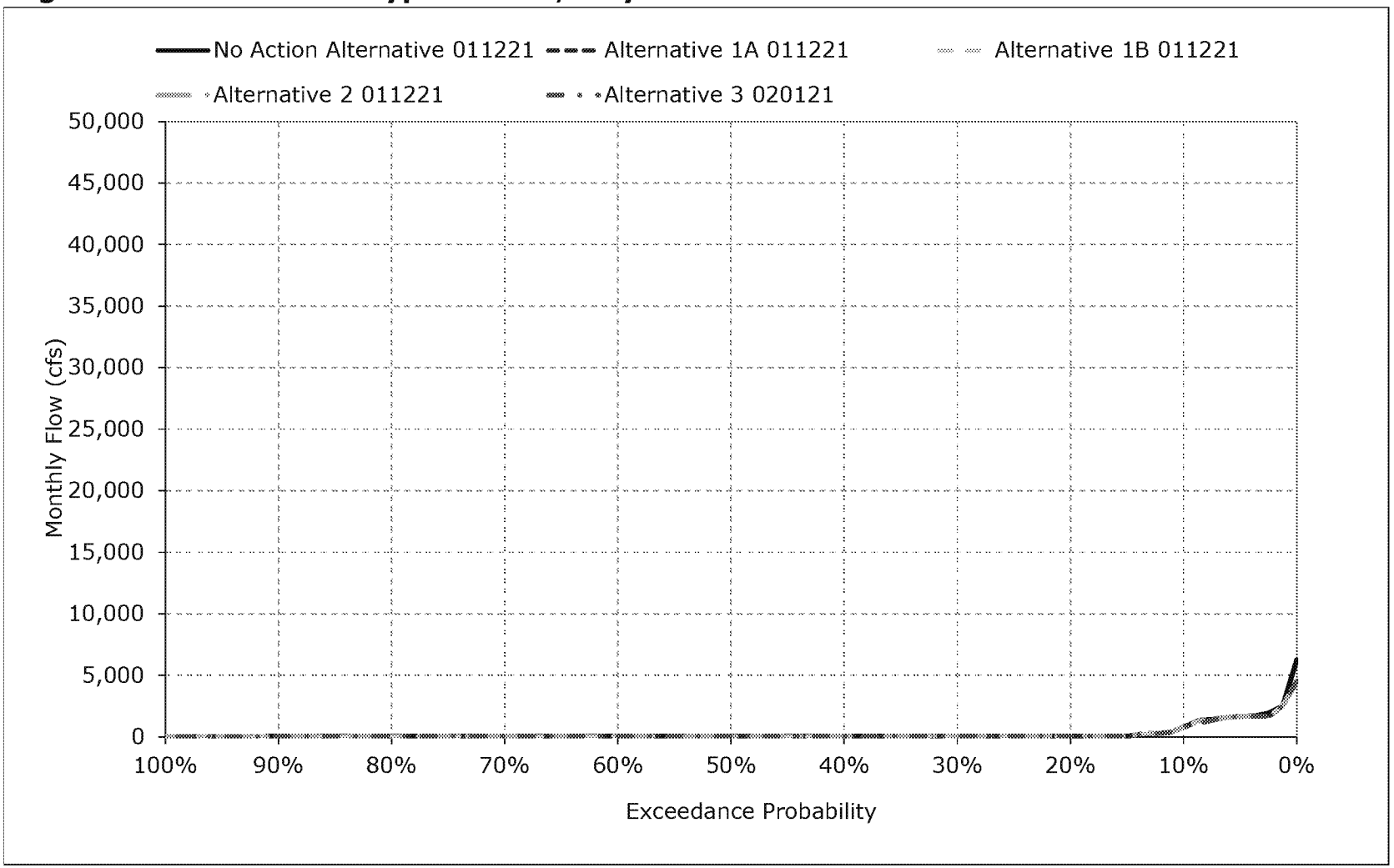


Figure 5B3-3-15. Yolo Bypass Flow, June

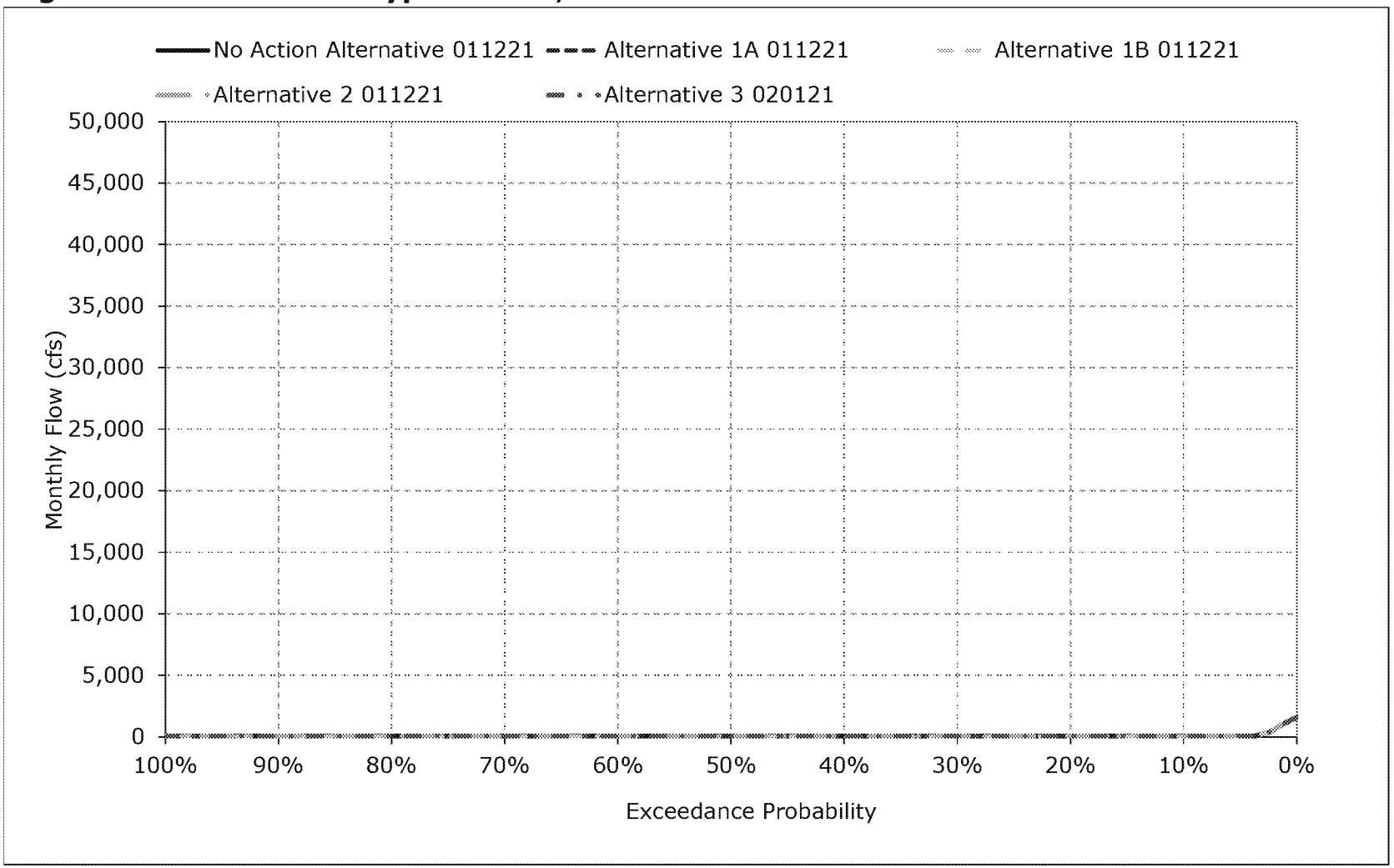


Figure 5B3-3-16. Yolo Bypass Flow, July

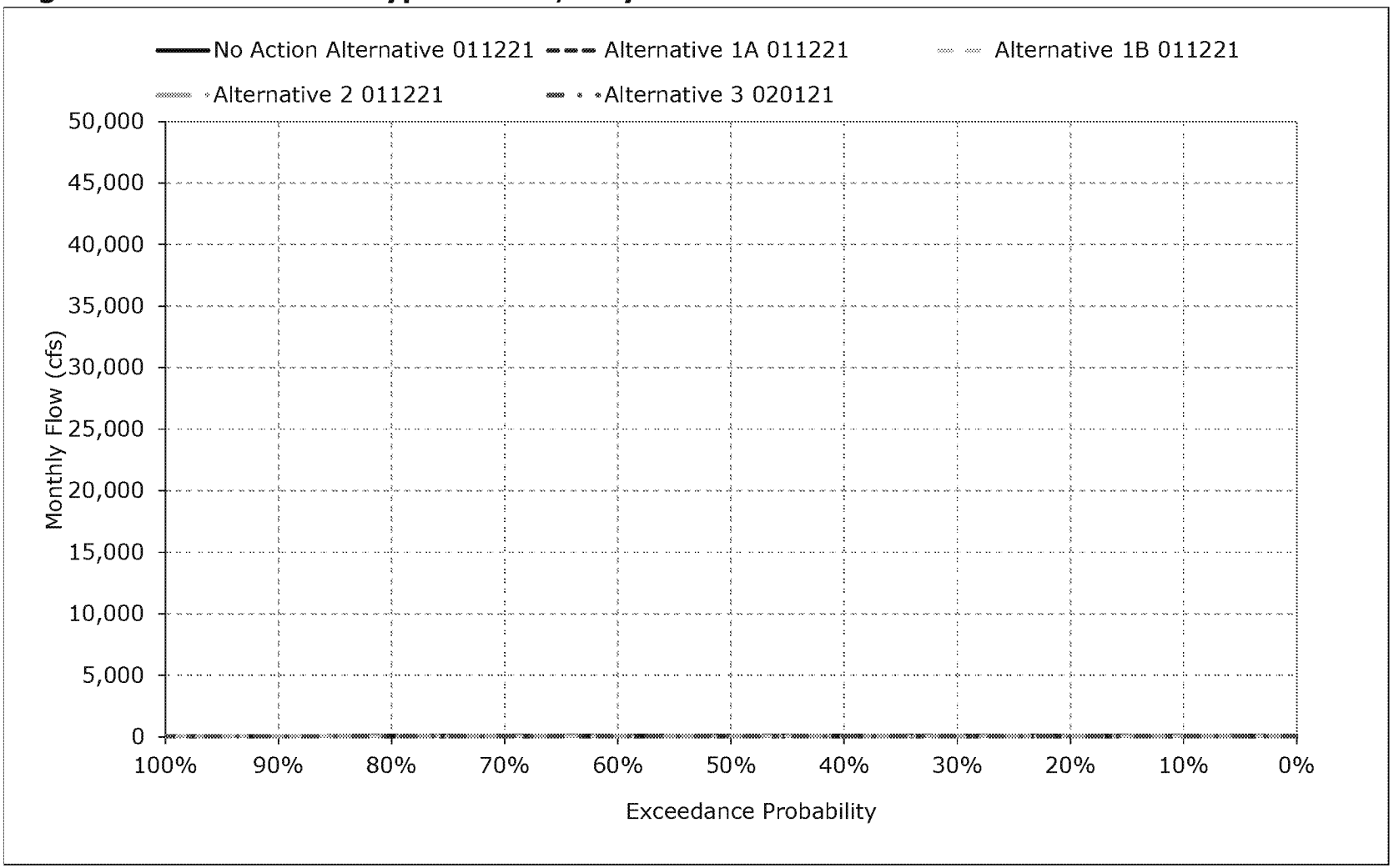


Figure 5B3-3-17. Yolo Bypass Flow, August

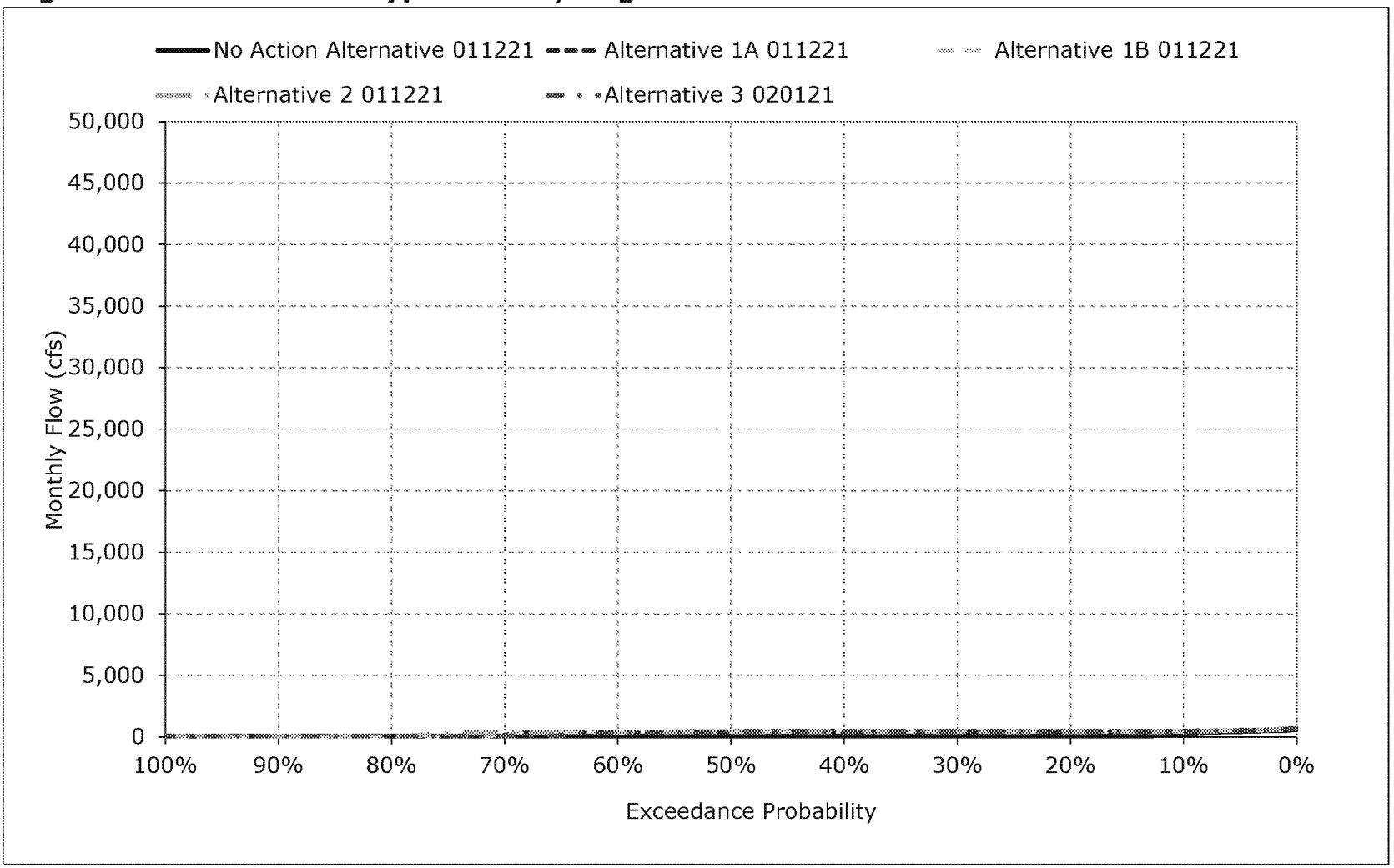


Figure 5B3-3-18. Yolo Bypass Flow, September

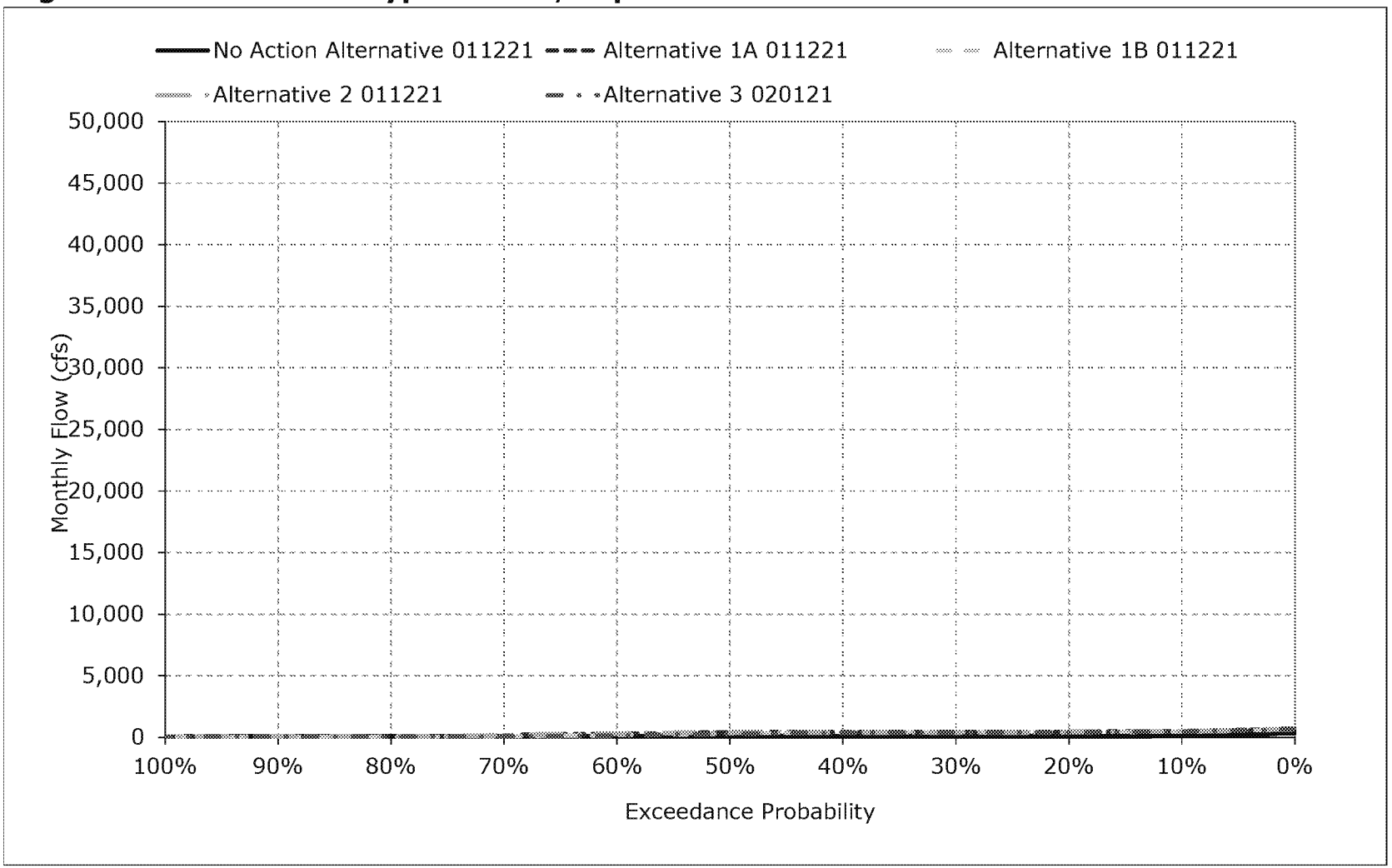


Table 5B3-4-1a. Sacramento River Flow at Rio Vista, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	11,079	19,997	58,275	86,943	107,488	77,055	53,732	36,423	20,683	14,132	10,315	13,485
20%	9,494	11,733	32,478	58,610	67,939	51,031	37,503	25,881	11,923	13,600	9,929	13,013
30%	7,487	9,721	19,457	41,043	56,217	37,225	21,624	16,340	8,741	12,240	9,571	12,805
40%	6,816	8,799	15,418	26,232	45,365	29,656	19,570	13,145	8,506	11,358	9,304	12,107
50%	6,181	8,476	11,939	20,149	31,081	21,568	14,497	11,463	8,071	10,755	8,586	8,192
60%	5,336	7,921	11,019	15,921	23,266	19,223	11,702	9,901	7,696	9,396	7,319	6,098
70%	4,695	6,328	10,006	12,152	17,598	14,883	9,473	8,482	7,085	8,390	5,726	5,237
80%	4,198	5,558	8,478	10,211	14,582	11,654	8,746	7,372	6,370	7,187	4,745	4,598
90%	3,722	4,108	6,375	9,155	11,471	9,087	8,035	6,763	5,454	4,751	4,212	3,849
Long Term												
Full Simulation Period[a]	7,025	10,743	22,231	36,592	46,729	35,367	22,883	16,450	10,621	10,074	7,645	8,801
Water Year Types[b,c]												
Wet (32%)	9,696	13,851	25,847	70,937	83,943	63,299	40,717	27,888	16,646	11,232	9,409	13,023
Above Normal (15%)	7,445	12,570	20,562	40,616	53,162	44,974	24,237	18,800	10,416	12,493	9,762	12,683
Below Normal (17%)	7,930	11,683	25,527	20,045	32,749	19,114	15,826	12,259	8,018	12,113	8,835	7,060
Dry (22%)	4,465	8,389	23,939	13,903	21,286	17,409	11,445	8,735	7,733	8,930	4,994	4,862
Critical (15%)	3,606	4,615	9,659	11,489	14,141	11,142	8,280	5,783	5,142	4,485	4,291	3,710

Table 5B3-4-1b. Sacramento River Flow at Rio Vista, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	11,081	19,305	56,502	83,503	104,639	74,843	50,241	36,340	15,392	14,204	10,521	13,857
20%	9,864	11,067	32,579	56,279	67,625	50,418	36,342	25,857	11,309	13,540	10,240	13,366
30%	7,616	9,783	19,453	39,612	54,783	36,028	21,637	16,090	8,702	12,240	9,872	13,041
40%	7,095	8,775	15,431	25,608	44,225	29,625	19,596	13,031	8,495	11,494	9,727	12,436
50%	6,722	8,585	11,591	19,802	30,037	20,385	14,530	11,321	8,043	10,927	8,974	8,300
60%	6,077	8,059	10,804	15,457	22,695	17,444	11,977	9,853	7,714	9,667	8,202	6,675
70%	5,780	6,993	9,571	11,612	17,213	14,382	9,709	8,504	7,101	8,976	6,544	6,050
80%	5,356	6,332	8,553	10,078	14,352	11,416	8,767	7,420	6,356	7,603	5,760	5,624
90%	4,372	4,455	6,495	9,223	11,327	9,105	8,065	6,826	5,459	5,117	4,794	4,577
Long Term												
Full Simulation Period[a]	7,538	10,840	22,076	35,811	45,805	34,305	22,578	16,320	10,441	10,303	8,217	9,306
Water Year Types[b,c]												
Wet (32%)	9,817	13,508	25,838	69,703	82,661	62,244	39,914	27,654	16,427	11,004	9,663	13,338
Above Normal (15%)	7,734	12,431	20,384	39,154	51,959	43,084	23,994	18,656	9,820	12,538	10,030	13,040
Below Normal (17%)	8,418	12,095	25,165	19,523	31,681	17,965	15,632	12,126	7,872	12,280	9,421	7,441
Dry (22%)	5,442	9,053	23,889	13,595	20,748	16,366	11,509	8,708	7,716	9,700	6,131	5,725
Critical (15%)	4,520	4,683	9,298	11,360	13,859	10,961	8,310	5,738	5,178	5,149	4,996	4,386

Table 5B3-4-1c. Sacramento River Flow at Rio Vista, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2	-692	-1,773	-3,440	-2,850	-2,212	-3,491	-82	-5,291	73	205	372
20%	370	-666	101	-2,331	-314	-613	-1,161	-25	-614	-59	311	352
30%	129	62	-3	-1,431	-1,434	-1,197	13	-250	-39	0	300	235
40%	280	-24	13	-624	-1,140	-31	26	-114	-11	136	423	329
50%	541	109	-348	-347	-1,044	-1,183	33	-143	-28	173	388	108
60%	741	138	-215	-464	-571	-1,779	275	-49	18	271	883	577
70%	1,086	665	-435	-540	-385	-501	236	22	16	587	817	813
80%	1,158	774	75	-133	-230	-238	21	48	-14	416	1,015	1,027
90%	650	347	120	68	-144	18	30	63	5	366	582	727
Long Term												
Full Simulation Period[a]	513	97	-155	-781	-925	-1,063	-305	-130	-180	229	573	505
Water Year Types[b,c]												
Wet (32%)	122	-342	-9	-1,234	-1,283	-1,055	-803	-233	-219	-228	253	315
Above Normal (15%)	289	-139	-179	-1,462	-1,203	-1,891	-243	-144	-596	46	268	357
Below Normal (17%)	489	412	-362	-522	-1,068	-1,149	-195	-134	-145	167	587	381
Dry (22%)	978	664	-51	-308	-538	-1,043	63	-27	-17	770	1,138	863
Critical (15%)	914	69	-361	-128	-283	-181	30	-45	36	664	705	676

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-4-2a. Sacramento River Flow at Rio Vista, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	11,079	19,997	58,275	86,943	107,488	77,055	53,732	36,423	20,683	14,132	10,315	13,485
20%	9,494	11,733	32,478	58,610	67,939	51,031	37,503	25,881	11,923	13,600	9,929	13,013
30%	7,487	9,721	19,457	41,043	56,217	37,225	21,624	16,340	8,741	12,240	9,571	12,805
40%	6,816	8,799	15,418	26,232	45,365	29,656	19,570	13,145	8,506	11,358	9,304	12,107
50%	6,181	8,476	11,939	20,149	31,081	21,568	14,497	11,463	8,071	10,755	8,586	8,192
60%	5,336	7,921	11,019	15,921	23,266	19,223	11,702	9,901	7,696	9,396	7,319	6,098
70%	4,695	6,328	10,006	12,152	17,598	14,883	9,473	8,482	7,085	8,390	5,726	5,237
80%	4,198	5,558	8,478	10,211	14,582	11,654	8,746	7,372	6,370	7,187	4,745	4,598
90%	3,722	4,108	6,375	9,155	11,471	9,087	8,035	6,763	5,454	4,751	4,212	3,849
Long Term												
Full Simulation Period[a]	7,025	10,743	22,231	36,592	46,729	35,367	22,883	16,450	10,621	10,074	7,645	8,801
Water Year Types[b,c]												
Wet (32%)	9,696	13,851	25,847	70,937	83,943	63,299	40,717	27,888	16,646	11,232	9,409	13,023
Above Normal (15%)	7,445	12,570	20,562	40,616	53,162	44,974	24,237	18,800	10,416	12,493	9,762	12,683
Below Normal (17%)	7,930	11,683	25,527	20,045	32,749	19,114	15,826	12,259	8,018	12,113	8,835	7,060
Dry (22%)	4,465	8,389	23,939	13,903	21,286	17,409	11,445	8,735	7,733	8,930	4,994	4,862
Critical (15%)	3,606	4,615	9,659	11,489	14,141	11,142	8,280	5,783	5,142	4,485	4,291	3,710

Table 5B3-4-2b. Sacramento River Flow at Rio Vista, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	11,082	19,299	56,431	83,494	104,885	74,918	50,243	35,429	15,394	14,204	10,521	13,874
20%	9,868	11,067	33,083	56,414	67,619	50,403	36,341	25,863	11,310	13,542	10,240	13,355
30%	7,637	9,780	19,639	39,600	55,025	36,026	21,660	16,089	8,697	12,249	9,852	13,028
40%	7,074	8,804	15,431	25,608	45,036	29,622	19,596	13,031	8,491	11,553	9,707	12,283
50%	6,614	8,635	11,587	19,838	30,496	20,385	14,530	11,323	8,015	10,920	8,981	8,348
60%	6,004	8,205	10,792	15,485	22,751	17,443	11,977	9,852	7,696	9,699	8,204	6,630
70%	5,725	6,993	9,574	11,611	17,217	14,364	9,709	8,538	7,102	9,038	6,467	6,050
80%	5,085	6,293	8,569	10,076	14,447	11,416	8,848	7,420	6,356	7,672	5,753	5,580
90%	4,204	4,507	6,503	9,184	11,449	9,102	8,063	6,826	5,459	5,097	4,695	4,560
Long Term												
Full Simulation Period[a]	7,510	10,919	22,116	35,784	45,799	34,290	22,552	16,296	10,438	10,320	8,219	9,312
Water Year Types[b,c]												
Wet (32%)	9,804	13,508	25,926	69,626	82,460	62,215	39,793	27,583	16,402	11,006	9,661	13,347
Above Normal (15%)	7,738	12,518	20,508	39,234	51,960	43,132	24,030	18,656	9,826	12,543	10,025	13,015
Below Normal (17%)	8,417	12,317	25,267	19,543	31,813	17,973	15,651	12,130	7,857	12,282	9,424	7,486
Dry (22%)	5,412	9,149	23,739	13,579	20,840	16,351	11,521	8,704	7,749	9,764	6,158	5,638
Critical (15%)	4,398	4,738	9,359	11,260	13,962	10,892	8,316	5,726	5,174	5,156	4,976	4,507

Table 5B3-4-2c. Sacramento River Flow at Rio Vista, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3	-698	-1,845	-3,449	-2,603	-2,138	-3,489	-994	-5,288	73	205	389
20%	373	-666	606	-2,196	-320	-628	-1,162	-18	-613	-58	311	341
30%	149	59	182	-1,443	-1,192	-1,199	36	-251	-44	9	281	223
40%	258	4	13	-624	-329	-33	25	-114	-15	195	403	175
50%	433	159	-352	-311	-585	-1,182	33	-140	-56	166	395	156
60%	668	284	-227	-436	-514	-1,780	275	-49	0	303	885	533
70%	1,030	666	-432	-541	-381	-519	236	56	17	649	741	813
80%	888	735	90	-134	-136	-238	102	48	-14	485	1,008	982
90%	481	399	128	29	-22	15	28	63	5	346	483	711
Long Term												
Full Simulation Period[a]	485	177	-115	-808	-930	-1,077	-331	-155	-183	245	575	511
Water Year Types[b,c]												
Wet (32%)	108	-343	79	-1,311	-1,484	-1,084	-924	-304	-244	-226	251	324
Above Normal (15%)	293	-52	-54	-1,382	-1,202	-1,843	-207	-144	-590	50	263	332
Below Normal (17%)	487	634	-260	-502	-936	-1,142	-176	-129	-160	169	589	426
Dry (22%)	948	760	-200	-324	-446	-1,058	76	-31	16	833	1,164	776
Critical (15%)	793	123	-300	-228	-179	-250	36	-56	32	671	685	797

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-4-3a. Sacramento River Flow at Rio Vista, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	11,079	19,997	58,275	86,943	107,488	77,055	53,732	36,423	20,683	14,132	10,315	13,485
20%	9,494	11,733	32,478	58,610	67,939	51,031	37,503	25,881	11,923	13,600	9,929	13,013
30%	7,487	9,721	19,457	41,043	56,217	37,225	21,624	16,340	8,741	12,240	9,571	12,805
40%	6,816	8,799	15,418	26,232	45,365	29,656	19,570	13,145	8,506	11,358	9,304	12,107
50%	6,181	8,476	11,939	20,149	31,081	21,568	14,497	11,463	8,071	10,755	8,586	8,192
60%	5,336	7,921	11,019	15,921	23,266	19,223	11,702	9,901	7,696	9,396	7,319	6,098
70%	4,695	6,328	10,006	12,152	17,598	14,883	9,473	8,482	7,085	8,390	5,726	5,237
80%	4,198	5,558	8,478	10,211	14,582	11,654	8,746	7,372	6,370	7,187	4,745	4,598
90%	3,722	4,108	6,375	9,155	11,471	9,087	8,035	6,763	5,454	4,751	4,212	3,849
Long Term												
Full Simulation Period[a]	7,025	10,743	22,231	36,592	46,729	35,367	22,883	16,450	10,621	10,074	7,645	8,801
Water Year Types[b,c]												
Wet (32%)	9,696	13,851	25,847	70,937	83,943	63,299	40,717	27,888	16,646	11,232	9,409	13,023
Above Normal (15%)	7,445	12,570	20,562	40,616	53,162	44,974	24,237	18,800	10,416	12,493	9,762	12,683
Below Normal (17%)	7,930	11,683	25,527	20,045	32,749	19,114	15,826	12,259	8,018	12,113	8,835	7,060
Dry (22%)	4,465	8,389	23,939	13,903	21,286	17,409	11,445	8,735	7,733	8,930	4,994	4,862
Critical (15%)	3,606	4,615	9,659	11,489	14,141	11,142	8,280	5,783	5,142	4,485	4,291	3,710

Table 5B3-4-3b. Sacramento River Flow at Rio Vista, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	11,081	19,289	56,503	83,505	104,712	76,224	50,241	36,328	15,393	14,204	10,521	13,888
20%	9,851	11,067	32,722	56,280	67,623	50,425	36,788	25,857	11,309	13,542	10,240	13,378
30%	7,742	9,779	19,459	39,731	54,893	36,029	21,641	16,089	8,702	12,261	9,903	13,031
40%	7,111	8,778	15,429	25,607	44,313	29,627	19,597	13,030	8,495	11,494	9,727	12,464
50%	6,587	8,585	11,589	19,805	30,038	20,392	14,527	11,321	8,042	10,929	9,087	8,332
60%	6,023	8,059	10,827	15,472	22,752	17,444	11,977	9,853	7,711	9,601	8,202	6,706
70%	5,707	6,791	9,581	11,613	17,215	14,373	9,709	8,504	7,101	8,986	6,544	5,986
80%	5,185	5,833	8,554	10,078	14,434	11,416	8,767	7,420	6,356	7,603	5,745	5,604
90%	4,136	4,517	6,539	9,185	11,327	9,093	8,065	6,817	5,459	5,093	4,737	4,396
Long Term												
Full Simulation Period[a]	7,496	10,782	22,095	35,812	45,857	34,380	22,613	16,321	10,442	10,296	8,219	9,299
Water Year Types[b,c]												
Wet (32%)	9,813	13,510	25,847	69,736	82,755	62,447	40,022	27,656	16,431	11,006	9,688	13,383
Above Normal (15%)	7,738	12,441	20,383	39,153	52,009	43,105	23,993	18,655	9,820	12,539	10,045	13,042
Below Normal (17%)	8,493	12,050	25,198	19,543	31,643	17,973	15,639	12,130	7,872	12,282	9,447	7,477
Dry (22%)	5,291	8,787	23,905	13,595	20,772	16,424	11,507	8,708	7,714	9,687	6,131	5,665
Critical (15%)	4,381	4,722	9,341	11,277	13,970	10,922	8,310	5,737	5,178	5,112	4,910	4,284

Table 5B3-4-3c. Sacramento River Flow at Rio Vista, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2	-708	-1,773	-3,438	-2,777	-832	-3,491	-94	-5,290	73	206	403
20%	356	-666	245	-2,330	-317	-606	-715	-25	-613	-58	311	365
30%	255	58	2	-1,312	-1,324	-1,196	17	-251	-39	21	332	225
40%	296	-21	11	-625	-1,052	-29	26	-115	-11	136	423	356
50%	406	109	-350	-344	-1,043	-1,176	30	-143	-28	174	501	140
60%	687	138	-192	-449	-514	-1,779	275	-48	15	205	882	608
70%	1,012	463	-425	-539	-383	-510	236	22	16	596	817	750
80%	987	275	75	-133	-148	-238	21	48	-14	416	999	1,006
90%	414	409	164	30	-144	6	30	54	5	341	525	547
Long Term												
Full Simulation Period[a]	471	39	-137	-779	-872	-987	-270	-129	-179	222	575	498
Water Year Types[b,c]												
Wet (32%)	117	-340	0	-1,201	-1,188	-852	-696	-231	-214	-226	279	360
Above Normal (15%)	293	-129	-180	-1,462	-1,153	-1,870	-244	-145	-596	46	283	360
Below Normal (17%)	563	368	-330	-503	-1,106	-1,141	-187	-129	-145	169	612	417
Dry (22%)	827	398	-35	-308	-514	-985	61	-27	-19	757	1,137	803
Critical (15%)	776	107	-317	-211	-171	-220	30	-45	36	627	619	574

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-4-4a. Sacramento River Flow at Rio Vista, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	11,079	19,997	58,275	86,943	107,488	77,055	53,732	36,423	20,683	14,132	10,315	13,485
20%	9,494	11,733	32,478	58,610	67,939	51,031	37,503	25,881	11,923	13,600	9,929	13,013
30%	7,487	9,721	19,457	41,043	56,217	37,225	21,624	16,340	8,741	12,240	9,571	12,805
40%	6,816	8,799	15,418	26,232	45,365	29,656	19,570	13,145	8,506	11,358	9,304	12,107
50%	6,181	8,476	11,939	20,149	31,081	21,568	14,497	11,463	8,071	10,755	8,586	8,192
60%	5,336	7,921	11,019	15,921	23,266	19,223	11,702	9,901	7,696	9,396	7,319	6,098
70%	4,695	6,328	10,006	12,152	17,598	14,883	9,473	8,482	7,085	8,390	5,726	5,237
80%	4,198	5,558	8,478	10,211	14,582	11,654	8,746	7,372	6,370	7,187	4,745	4,598
90%	3,722	4,108	6,375	9,155	11,471	9,087	8,035	6,763	5,454	4,751	4,212	3,849
Long Term												
Full Simulation Period[a]	7,025	10,743	22,231	36,592	46,729	35,367	22,883	16,450	10,621	10,074	7,645	8,801
Water Year Types[b,c]												
Wet (32%)	9,696	13,851	25,847	70,937	83,943	63,299	40,717	27,888	16,646	11,232	9,409	13,023
Above Normal (15%)	7,445	12,570	20,562	40,616	53,162	44,974	24,237	18,800	10,416	12,493	9,762	12,683
Below Normal (17%)	7,930	11,683	25,527	20,045	32,749	19,114	15,826	12,259	8,018	12,113	8,835	7,060
Dry (22%)	4,465	8,389	23,939	13,903	21,286	17,409	11,445	8,735	7,733	8,930	4,994	4,862
Critical (15%)	3,606	4,615	9,659	11,489	14,141	11,142	8,280	5,783	5,142	4,485	4,291	3,710

Table 5B3-4-4b. Sacramento River Flow at Rio Vista, Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	11,381	19,326	56,253	83,643	105,102	74,921	50,242	35,360	15,397	14,314	10,490	13,864
20%	10,041	11,304	33,886	56,400	67,614	50,082	36,343	25,872	11,313	13,544	10,209	13,383
30%	8,139	9,782	20,279	39,575	54,126	36,024	21,660	16,090	8,634	12,337	9,922	13,007
40%	7,185	8,804	16,480	25,608	45,734	29,418	19,594	13,134	8,491	11,593	9,686	12,540
50%	6,670	8,595	11,570	19,816	30,278	20,381	14,532	11,326	8,053	10,994	8,932	8,339
60%	5,925	8,104	10,892	15,551	22,752	17,444	11,902	9,853	7,690	9,670	8,144	6,674
70%	5,710	6,883	9,556	11,872	17,229	14,326	9,709	8,463	7,064	9,041	6,561	5,740
80%	4,719	5,956	8,558	10,068	14,335	11,398	8,870	7,420	6,438	7,479	5,633	5,258
90%	3,942	4,582	6,455	9,213	11,169	9,114	8,136	6,662	5,438	5,186	4,597	4,524
Long Term												
Full Simulation Period[a]	7,509	10,922	22,311	35,845	45,909	34,209	22,483	16,263	10,426	10,325	8,159	9,271
Water Year Types[b,c]												
Wet (32%)	9,797	13,508	25,922	69,723	82,633	61,892	39,551	27,488	16,367	11,009	9,654	13,295
Above Normal (15%)	8,228	12,770	20,697	39,301	52,478	42,985	24,037	18,655	9,828	12,606	10,008	13,256
Below Normal (17%)	8,682	12,361	25,597	19,587	31,780	17,954	15,685	12,185	7,851	12,323	9,401	7,532
Dry (22%)	5,161	8,925	24,292	13,654	20,861	16,501	11,527	8,668	7,765	9,746	5,930	5,497
Critical (15%)	3,989	4,787	9,299	11,237	13,824	10,981	8,311	5,703	5,147	5,102	4,963	4,255

Table 5B3-4-4c. Sacramento River Flow at Rio Vista, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

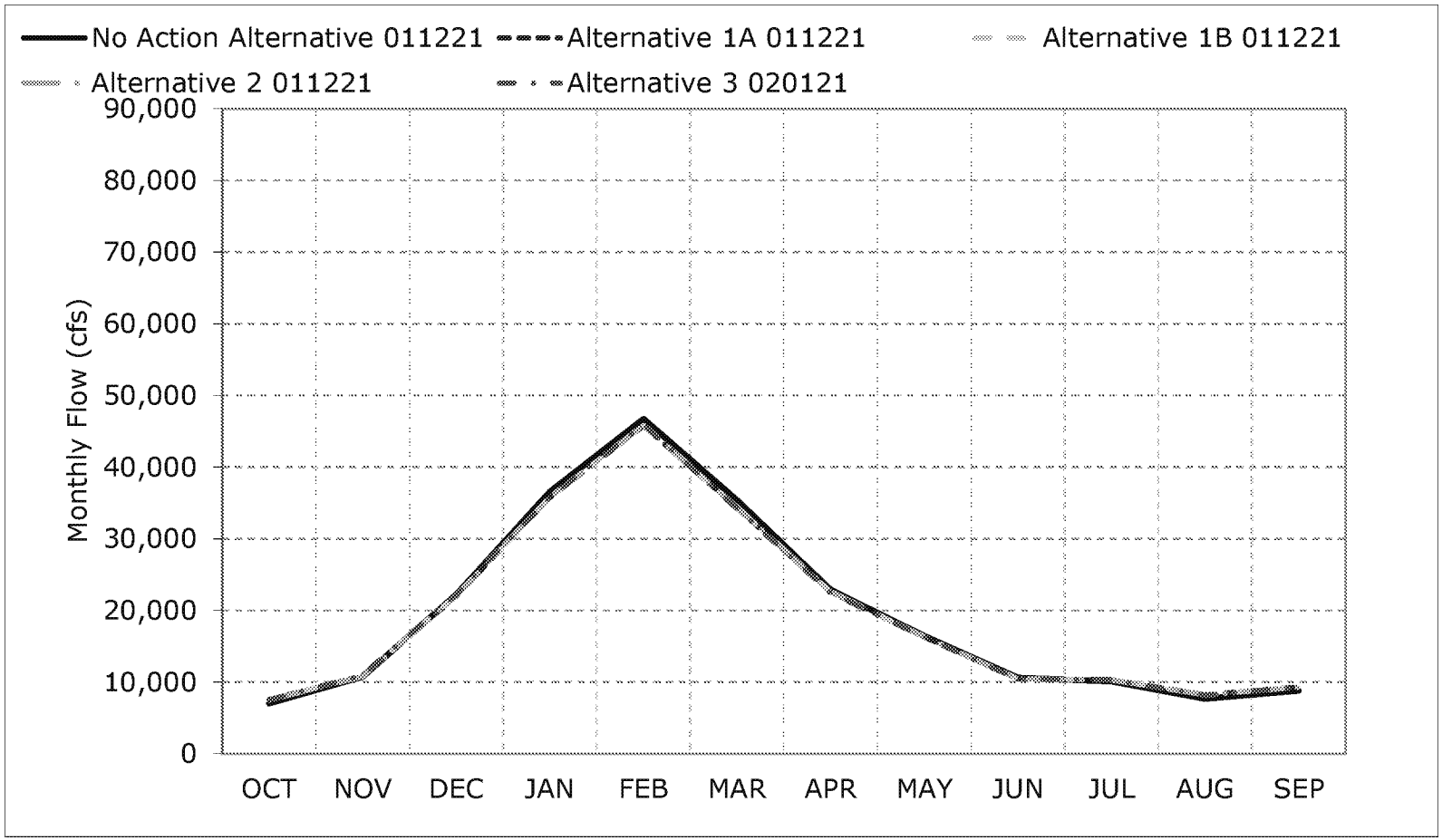
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	302	-672	-2,023	-3,300	-2,386	-2,134	-3,490	-1,062	-5,286	183	174	379
20%	547	-429	1,408	-2,210	-325	-949	-1,159	-9	-610	-55	280	370
30%	652	61	822	-1,468	-2,091	-1,201	36	-250	-107	97	350	201
40%	369	5	1,063	-624	369	-237	24	-11	-15	235	382	433
50%	489	118	-369	-333	-802	-1,187	35	-137	-17	239	346	147
60%	589	183	-127	-369	-514	-1,779	200	-49	-6	274	824	576
70%	1,015	555	-450	-280	-368	-557	236	-19	-22	651	835	503
80%	521	398	79	-143	-247	-256	125	48	68	292	888	661
90%	220	474	80	58	-302	27	101	-101	-16	435	385	675
Long Term												
Full Simulation Period[a]	484	179	80	-747	-821	-1,158	-401	-187	-195	251	514	470
Water Year Types[b,c]												
Wet (32%)	101	-342	75	-1,214	-1,311	-1,407	-1,166	-400	-279	-223	244	272
Above Normal (15%)	783	200	134	-1,315	-684	-1,989	-200	-145	-587	113	246	573
Below Normal (17%)	752	679	69	-459	-969	-1,160	-141	-74	-167	210	567	472
Dry (22%)	696	536	352	-249	-425	-908	82	-67	32	815	937	635
Critical (15%)	383	172	-360	-251	-317	-160	30	-80	5	617	672	545

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

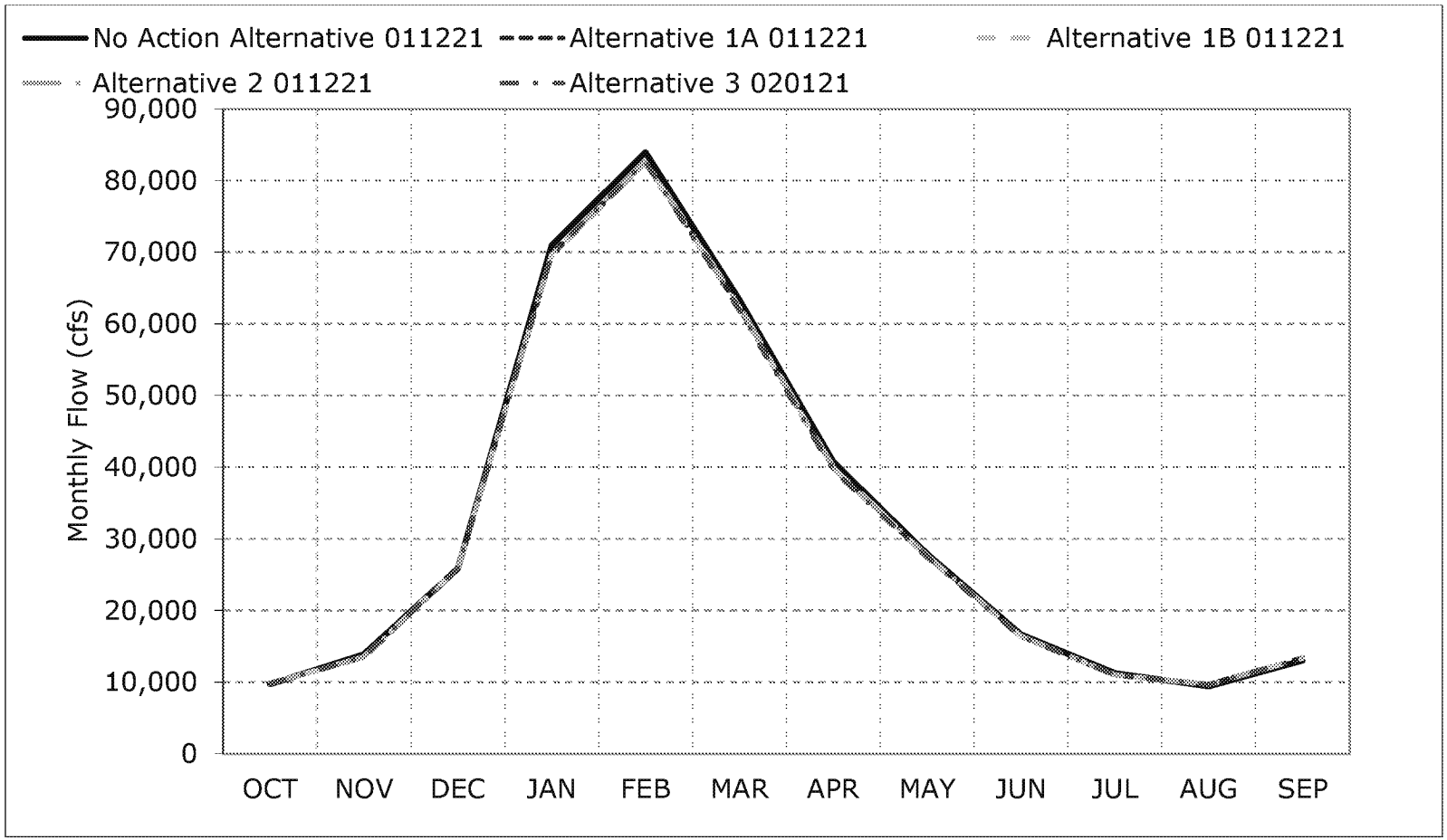
c These results are displayed with calendar year - year type sorting.

Figure 5B3-4-1. Sacramento River Flow at Rio Vista, Long-Term Average Flow



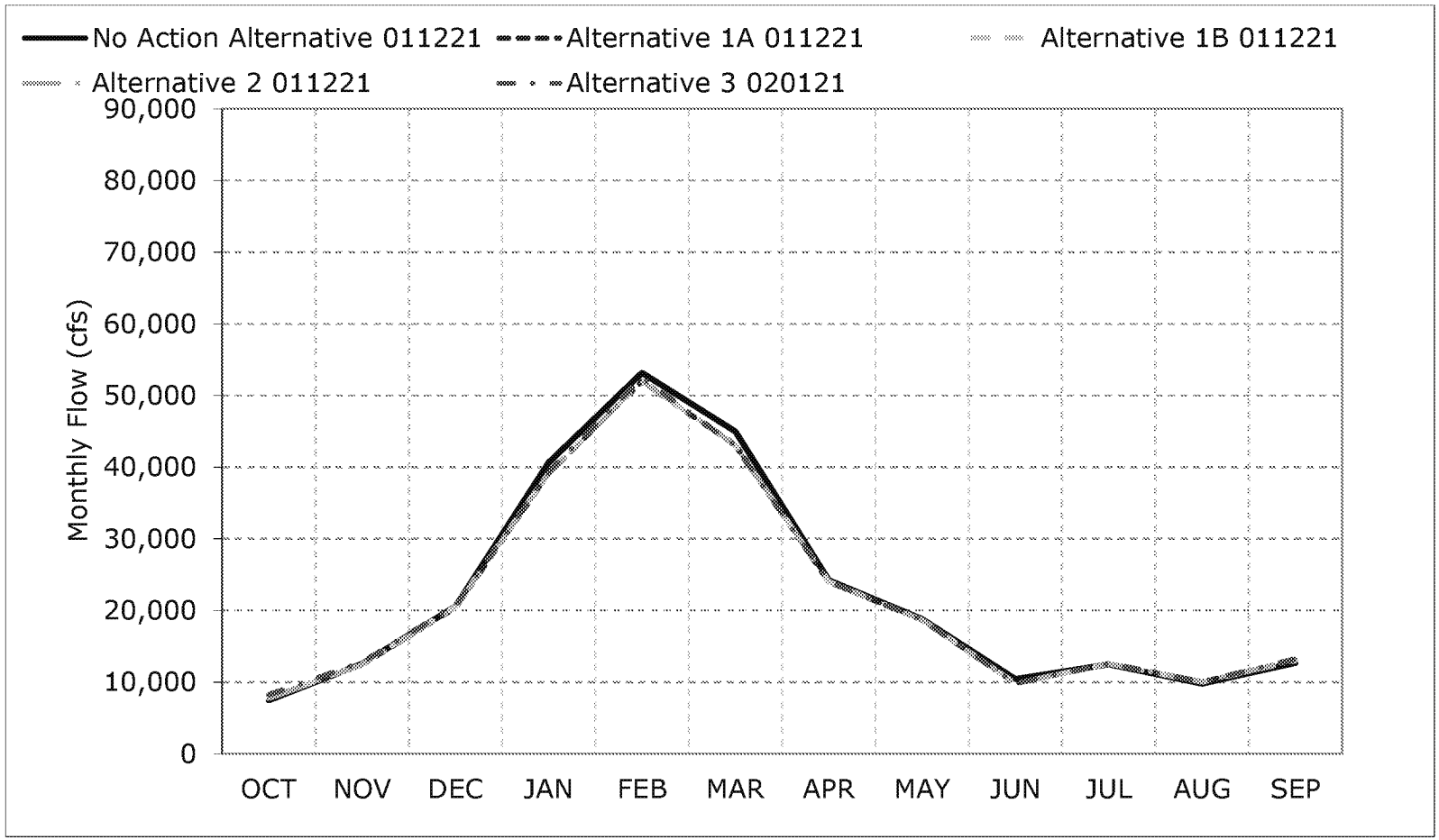
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-4-2. Sacramento River Flow at Rio Vista, Wet Year Average Flow



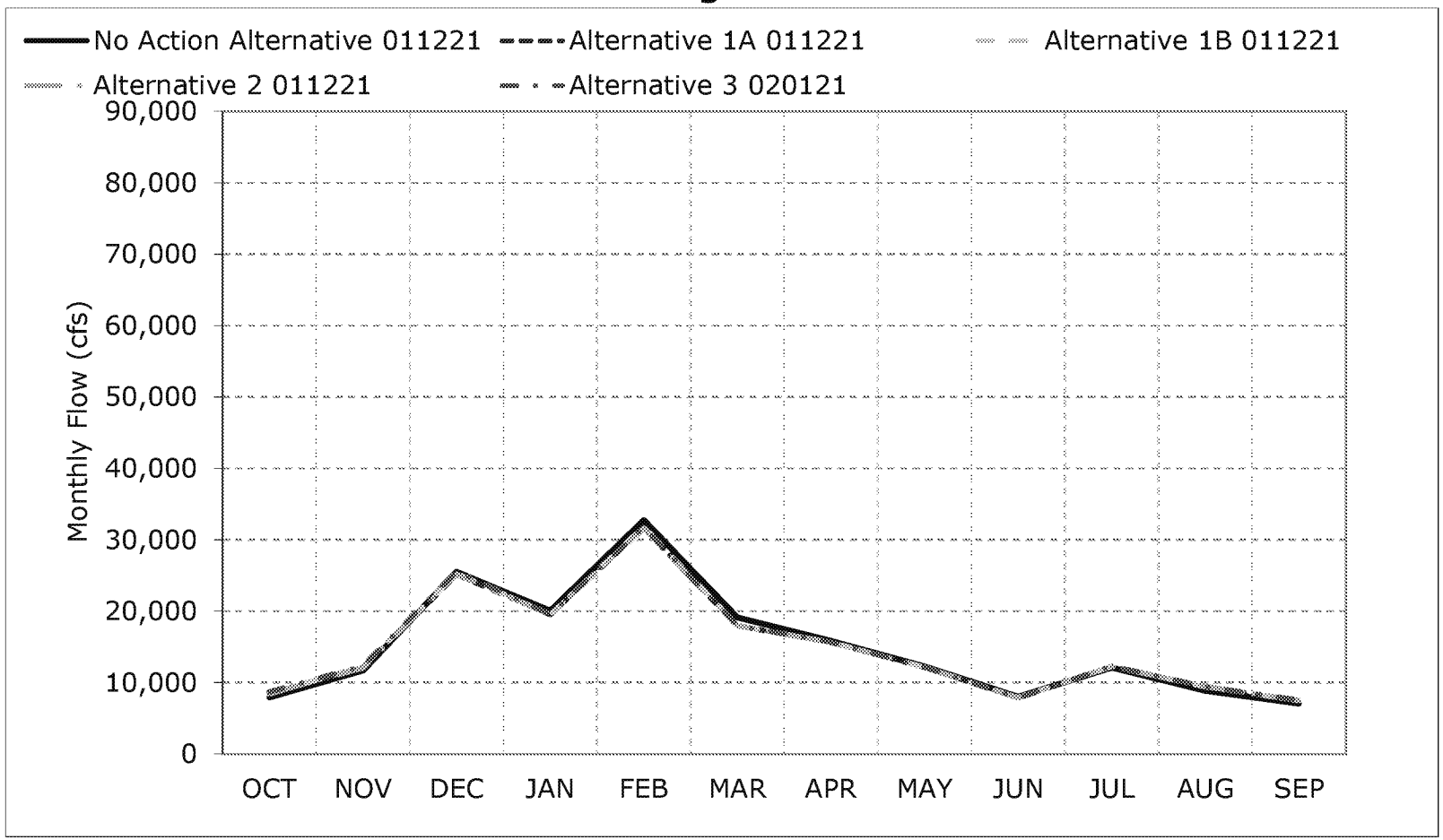
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-4-3. Sacramento River Flow at Rio Vista, Above Normal Year Average Flow



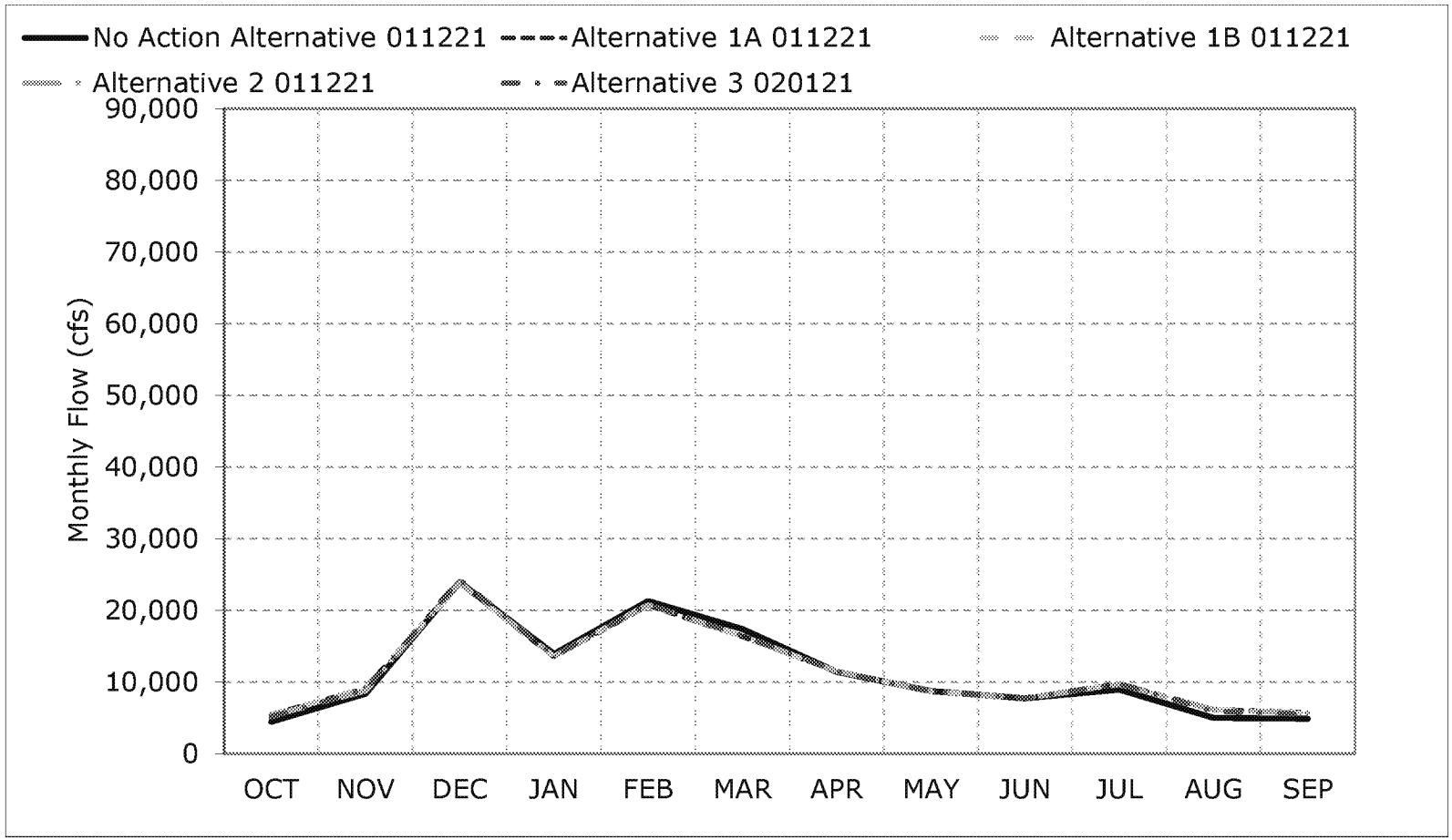
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-4-4. Sacramento River Flow at Rio Vista, Below Normal Year Average Flow



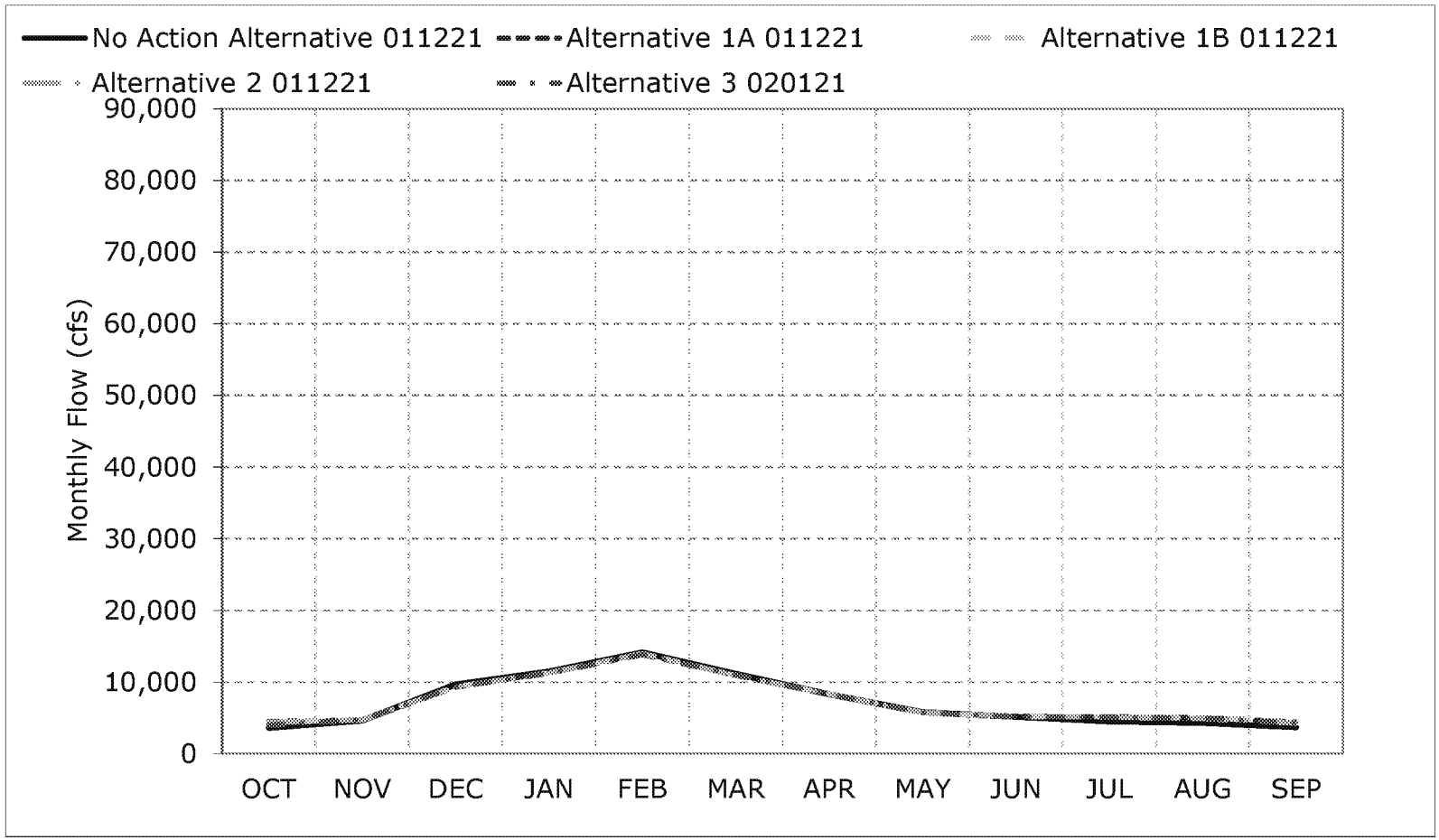
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-4-5. Sacramento River Flow at Rio Vista, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-4-6. Sacramento River Flow at Rio Vista, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-4-7. Sacramento River Flow at Rio Vista, October

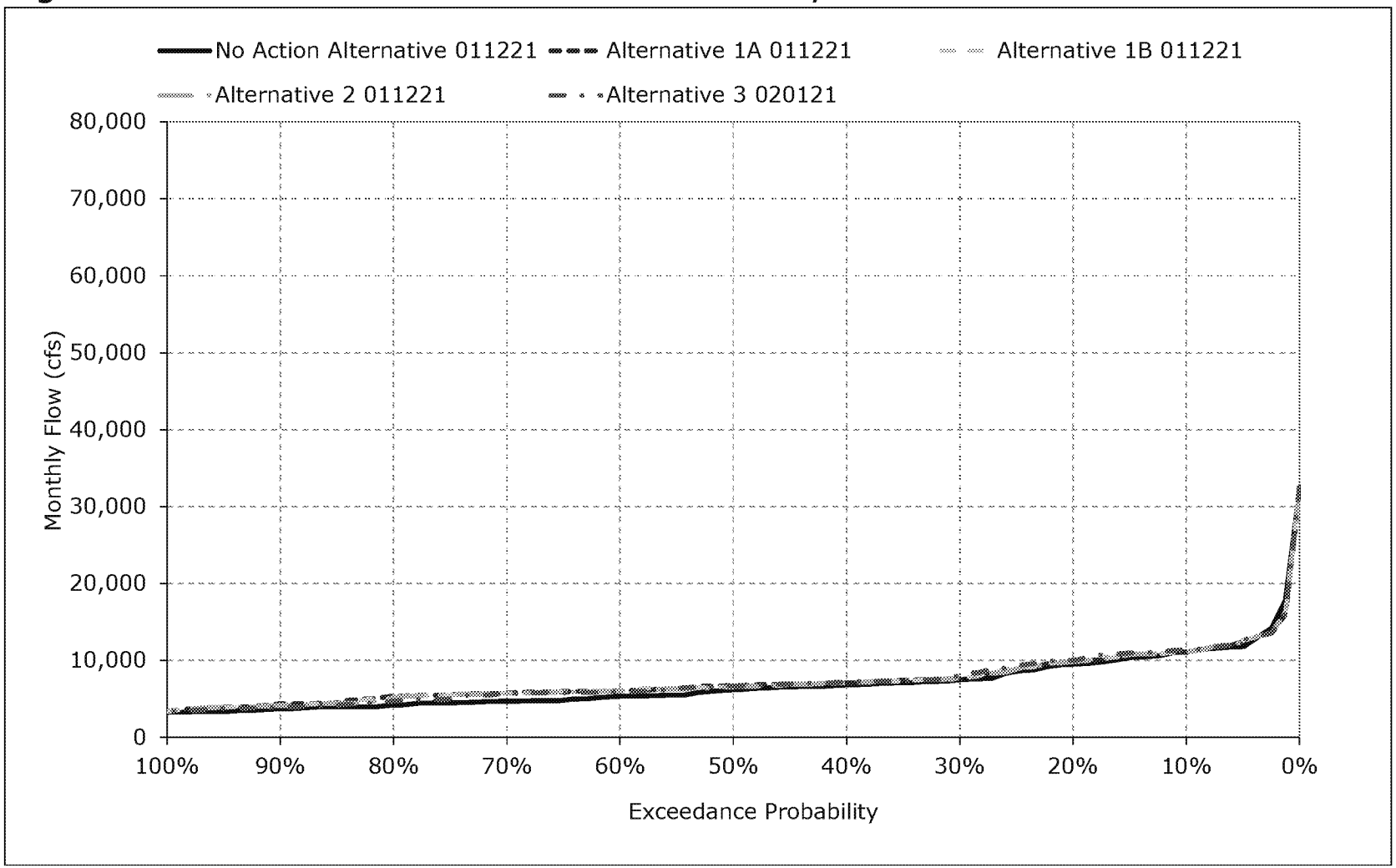


Figure 5B3-4-8. Sacramento River Flow at Rio Vista, November

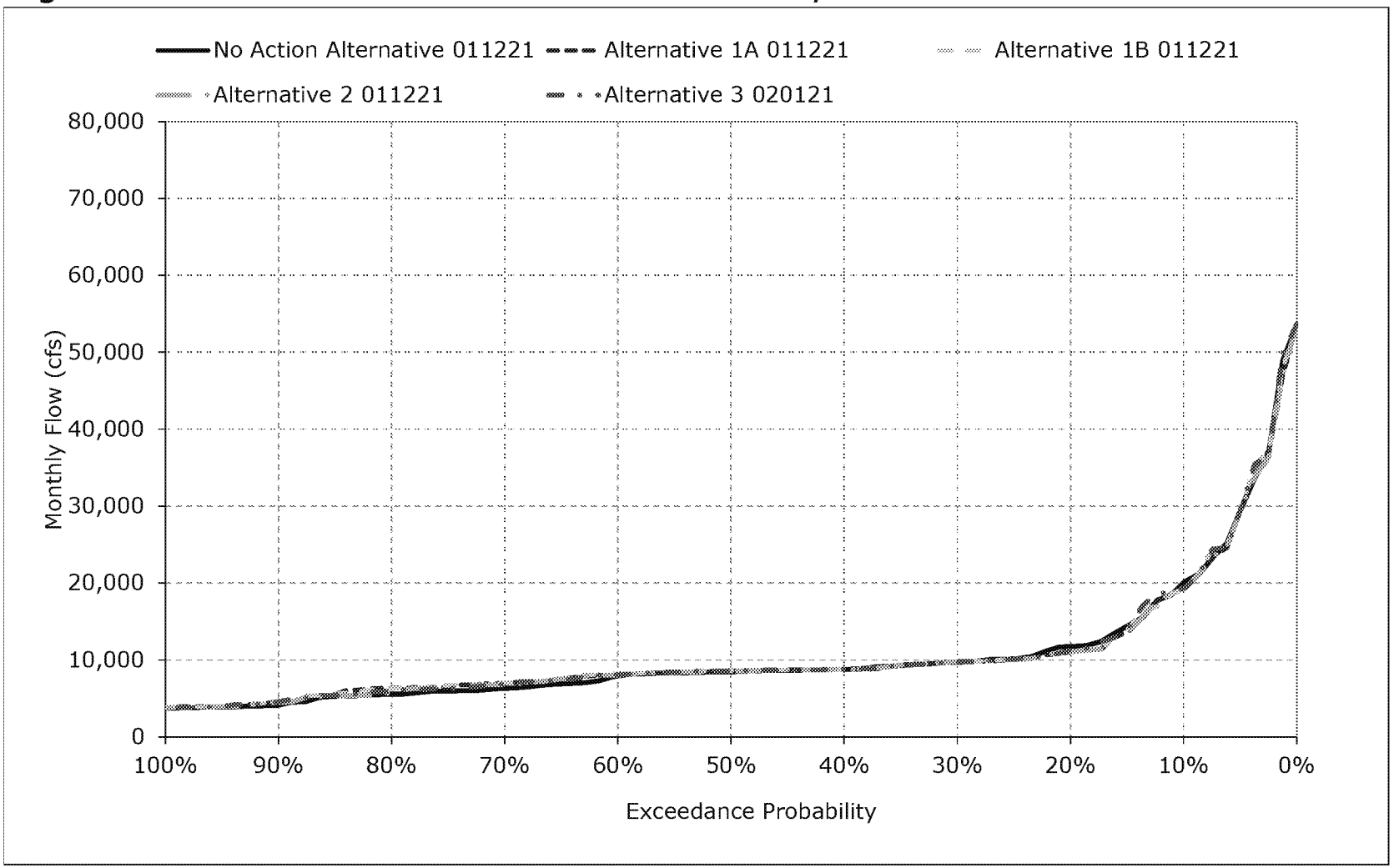


Figure 5B3-4-9. Sacramento River Flow at Rio Vista, December

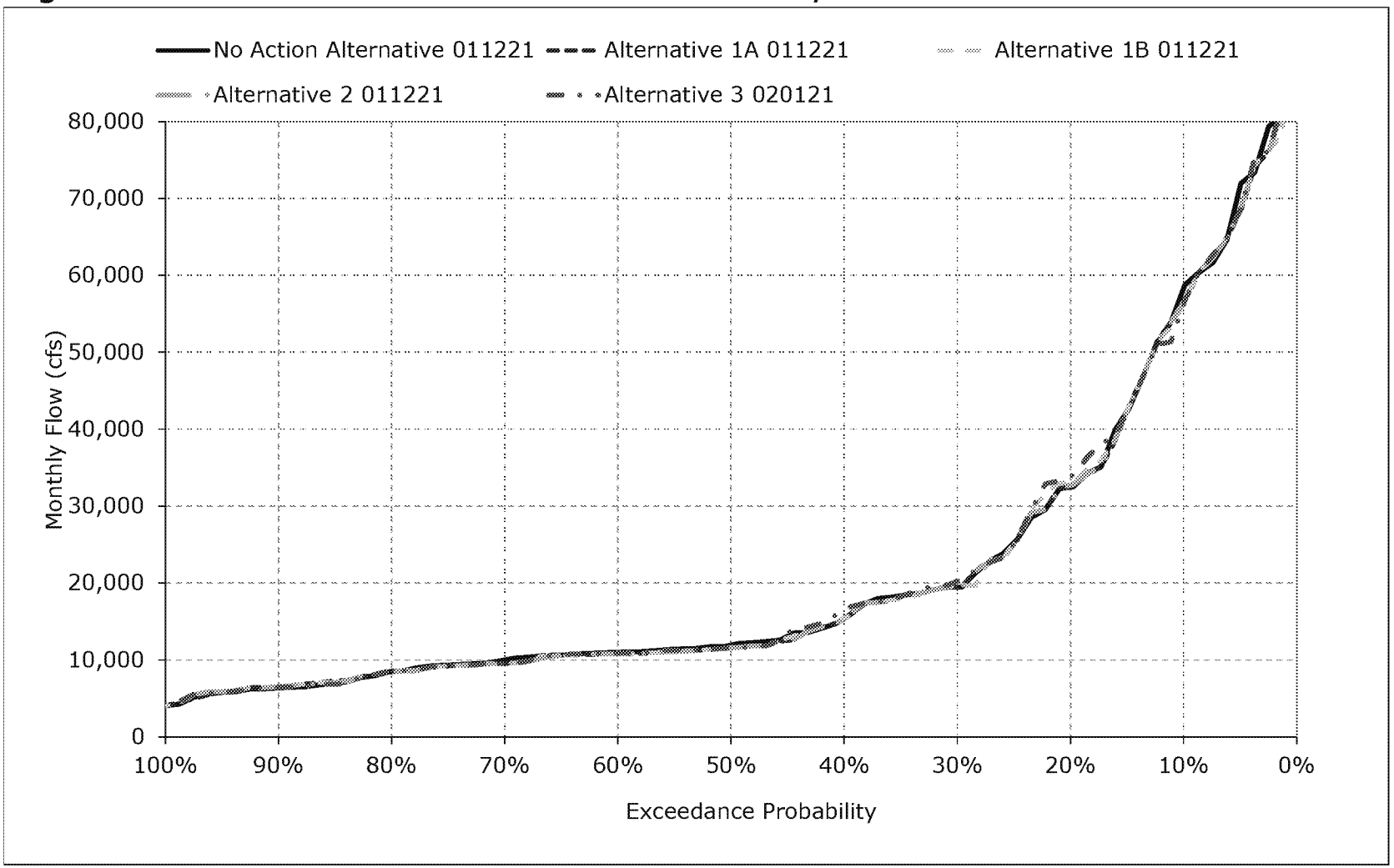


Figure 5B3-4-10. Sacramento River Flow at Rio Vista, January

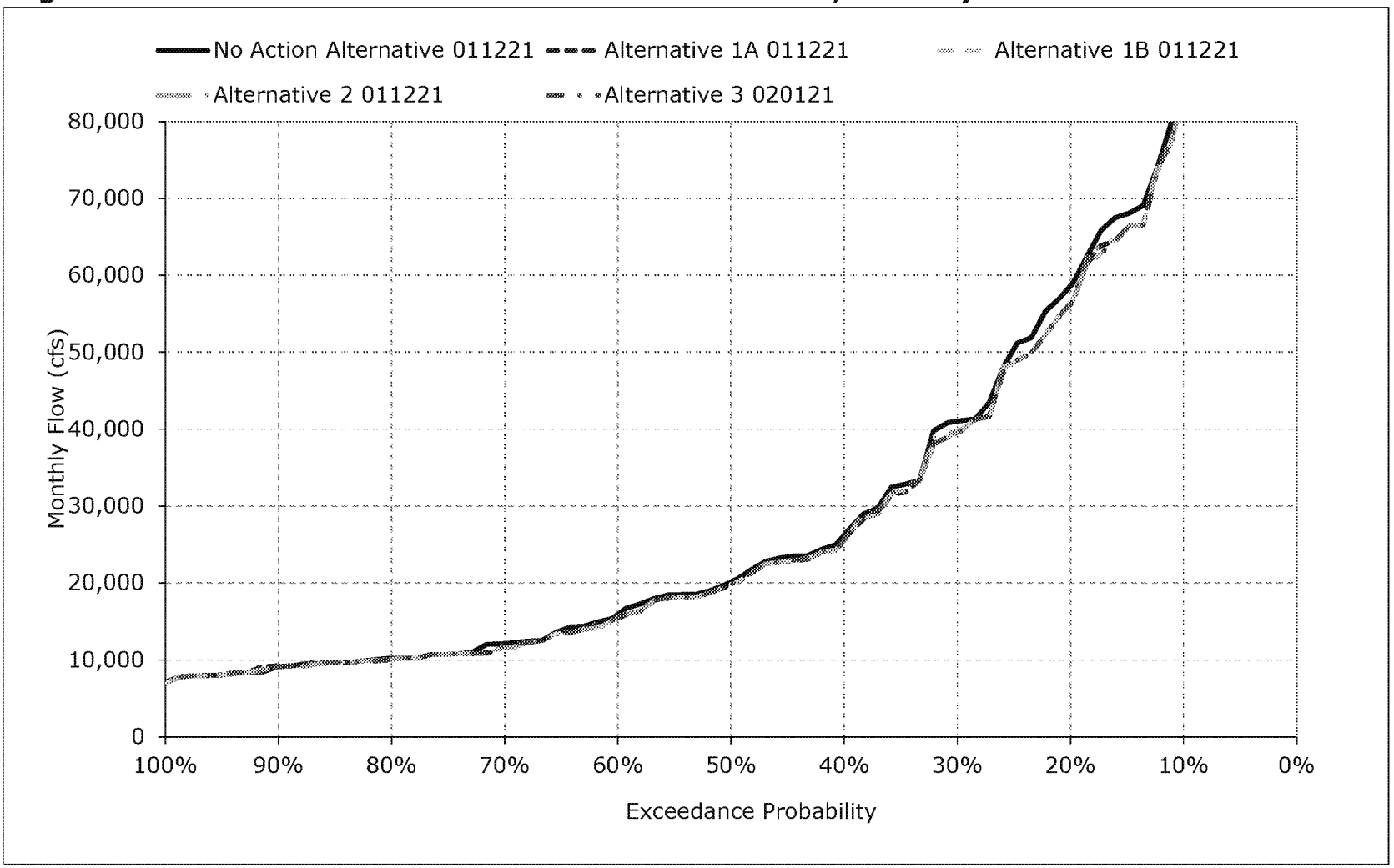


Figure 5B3-4-11. Sacramento River Flow at Rio Vista, February

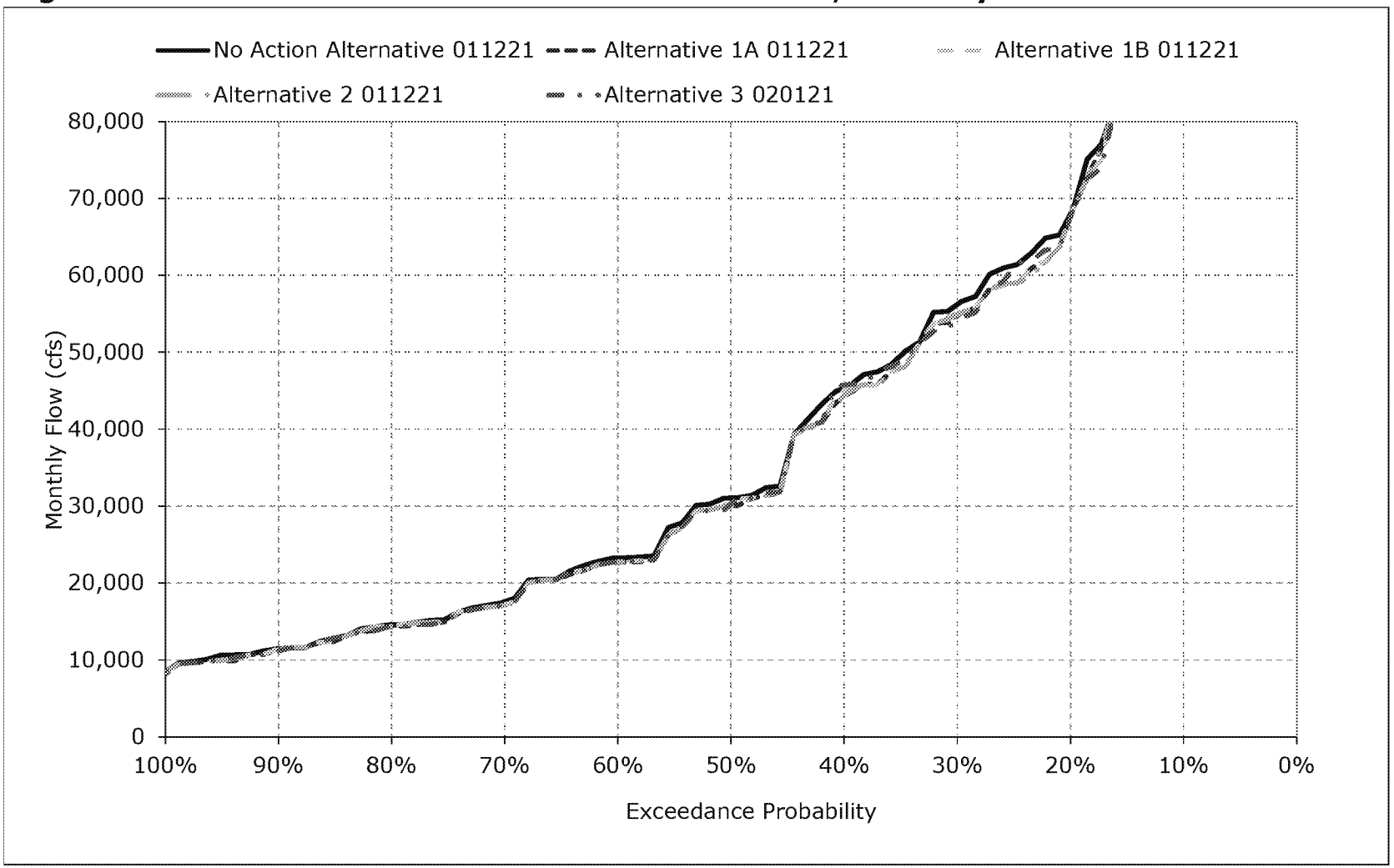


Figure 5B3-4-12. Sacramento River Flow at Rio Vista, March

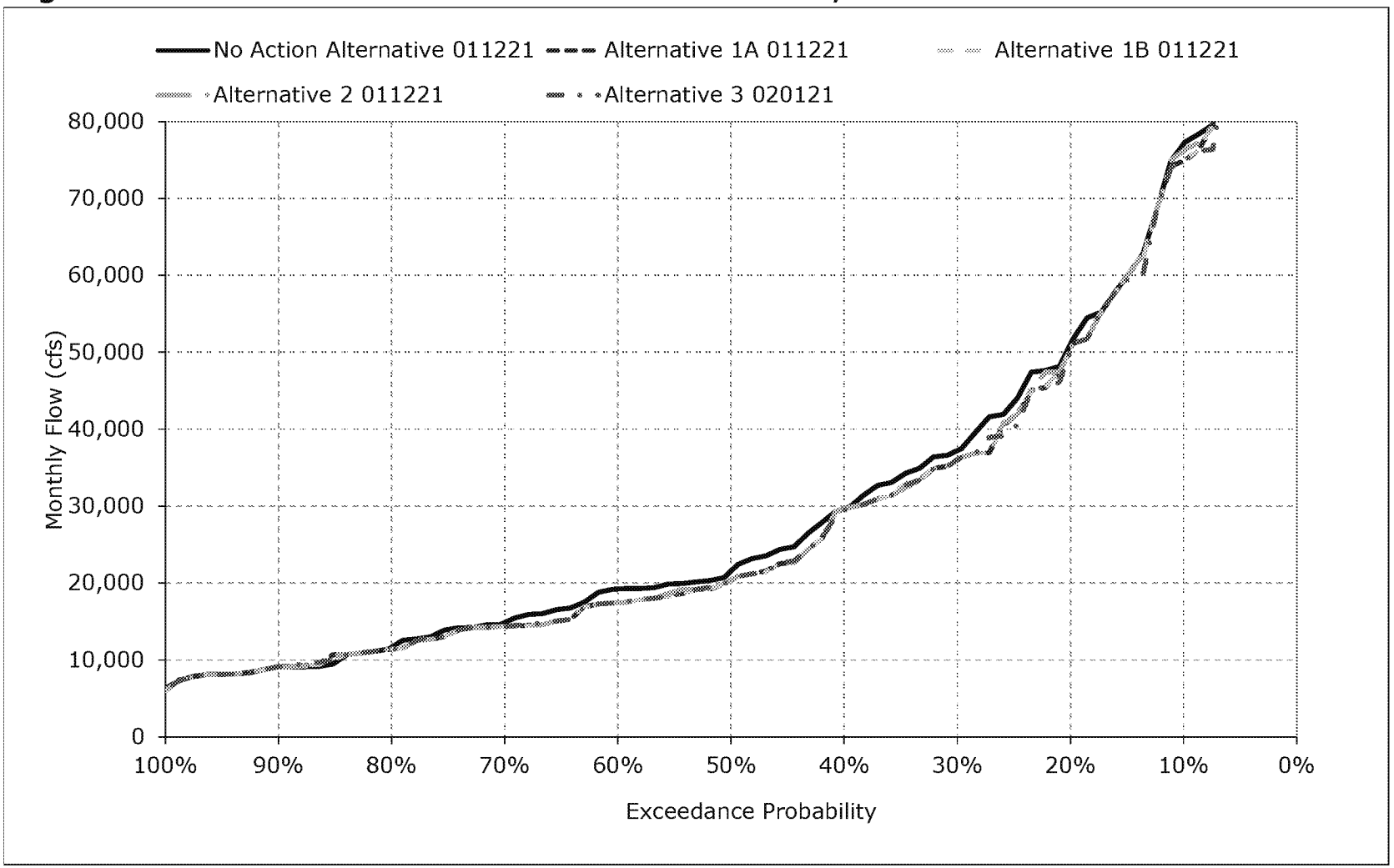


Figure 5B3-4-13. Sacramento River Flow at Rio Vista, April

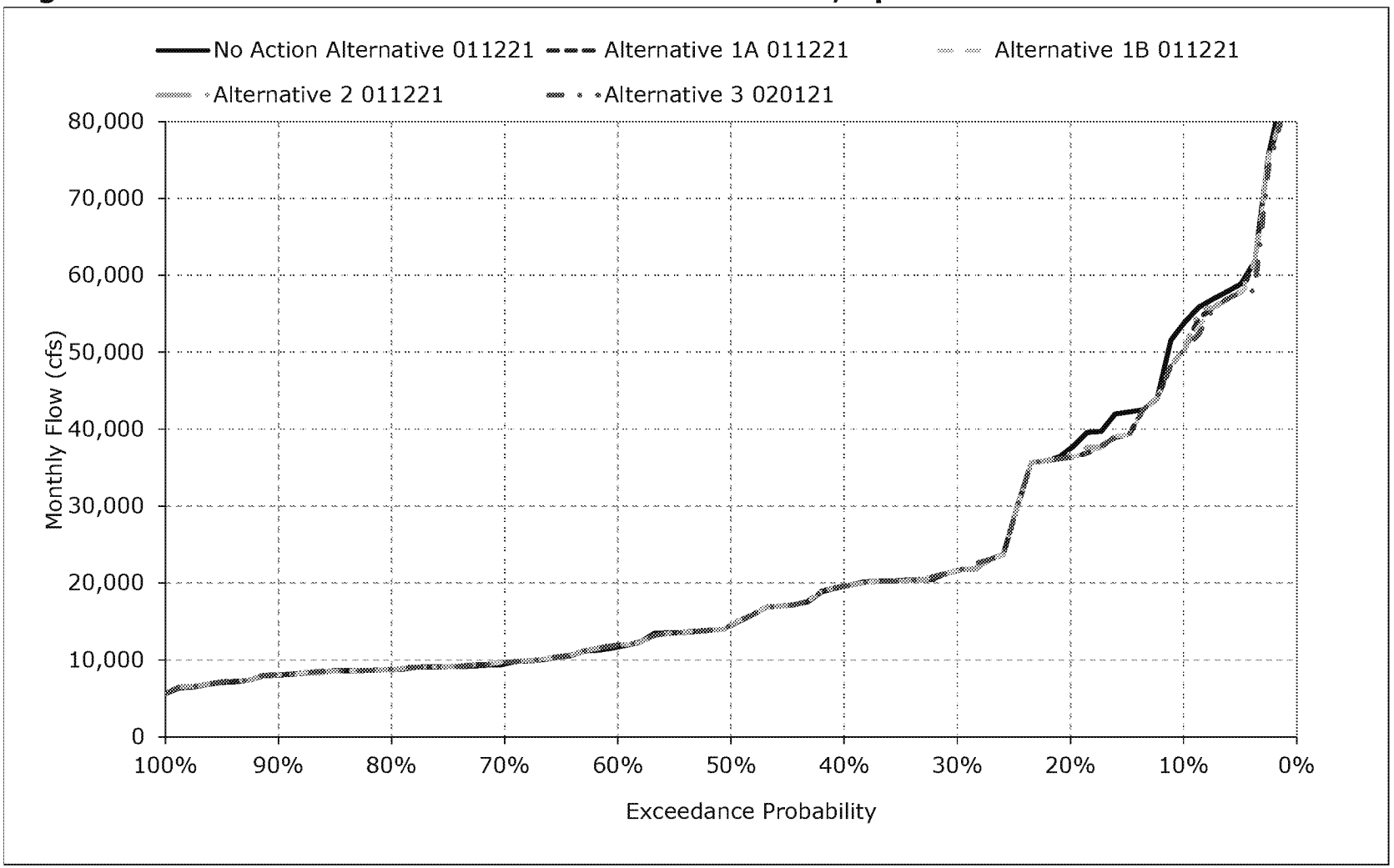


Figure 5B3-4-14. Sacramento River Flow at Rio Vista, May

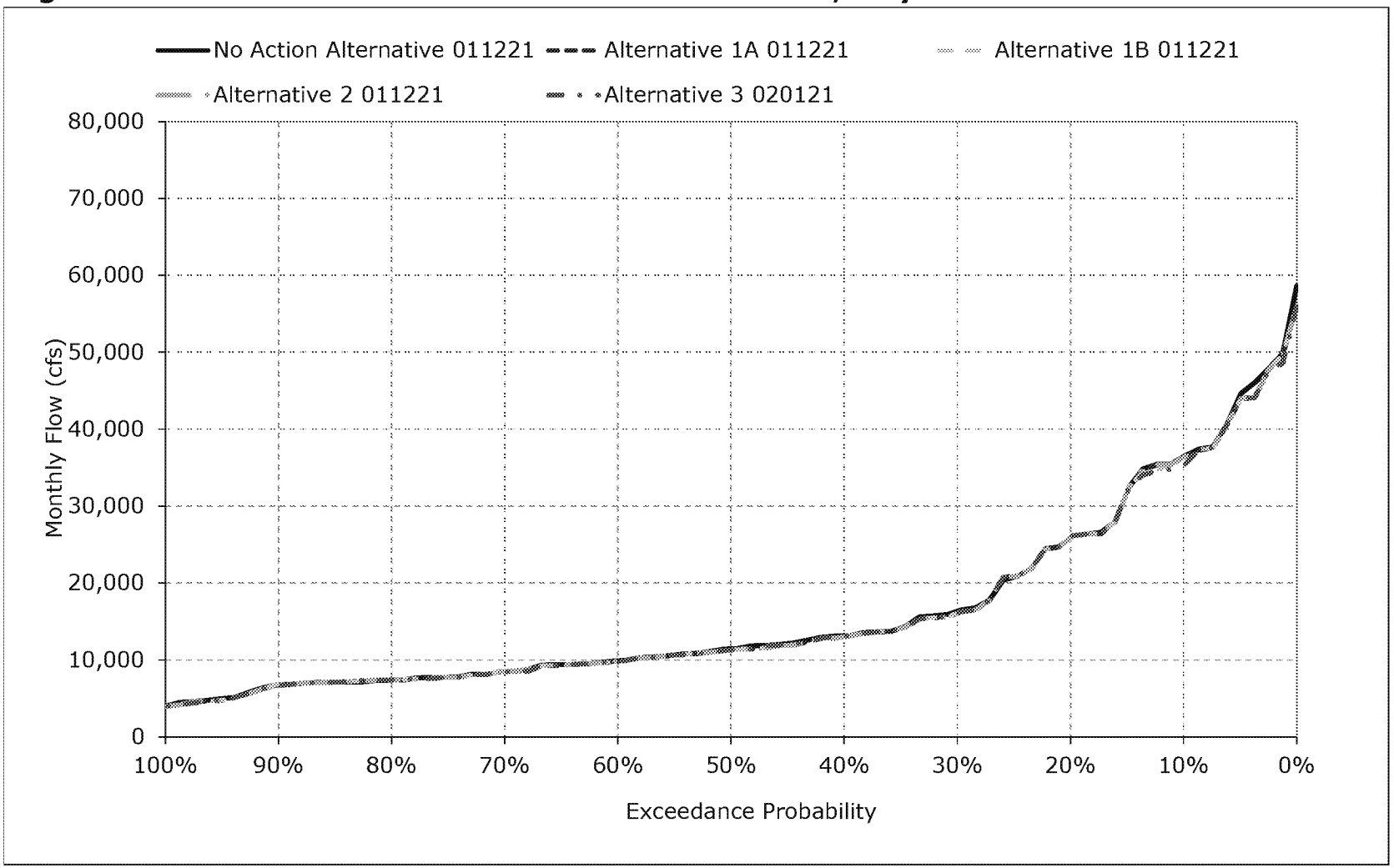


Figure 5B3-4-15. Sacramento River Flow at Rio Vista, June

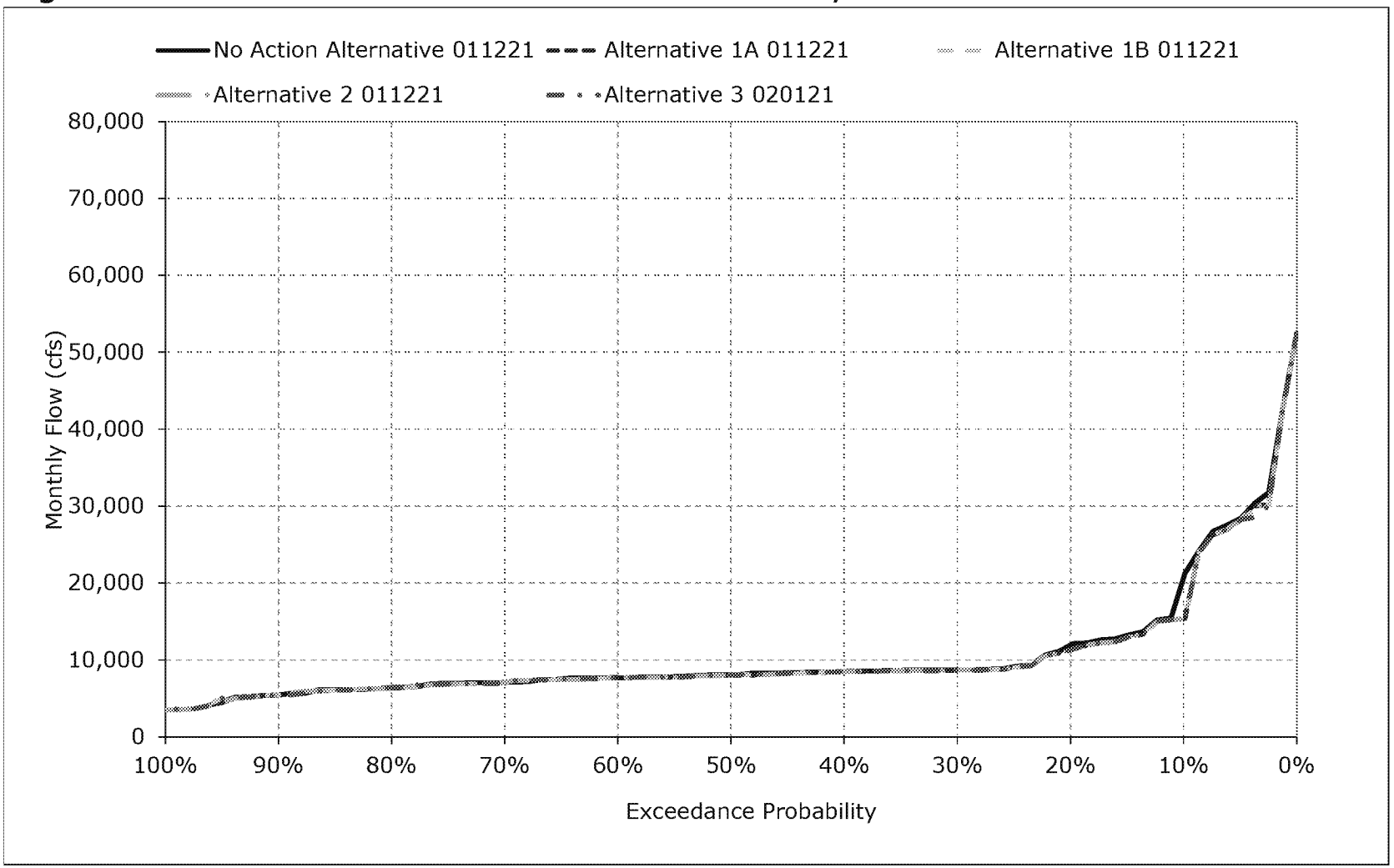


Figure 5B3-4-16. Sacramento River Flow at Rio Vista, July

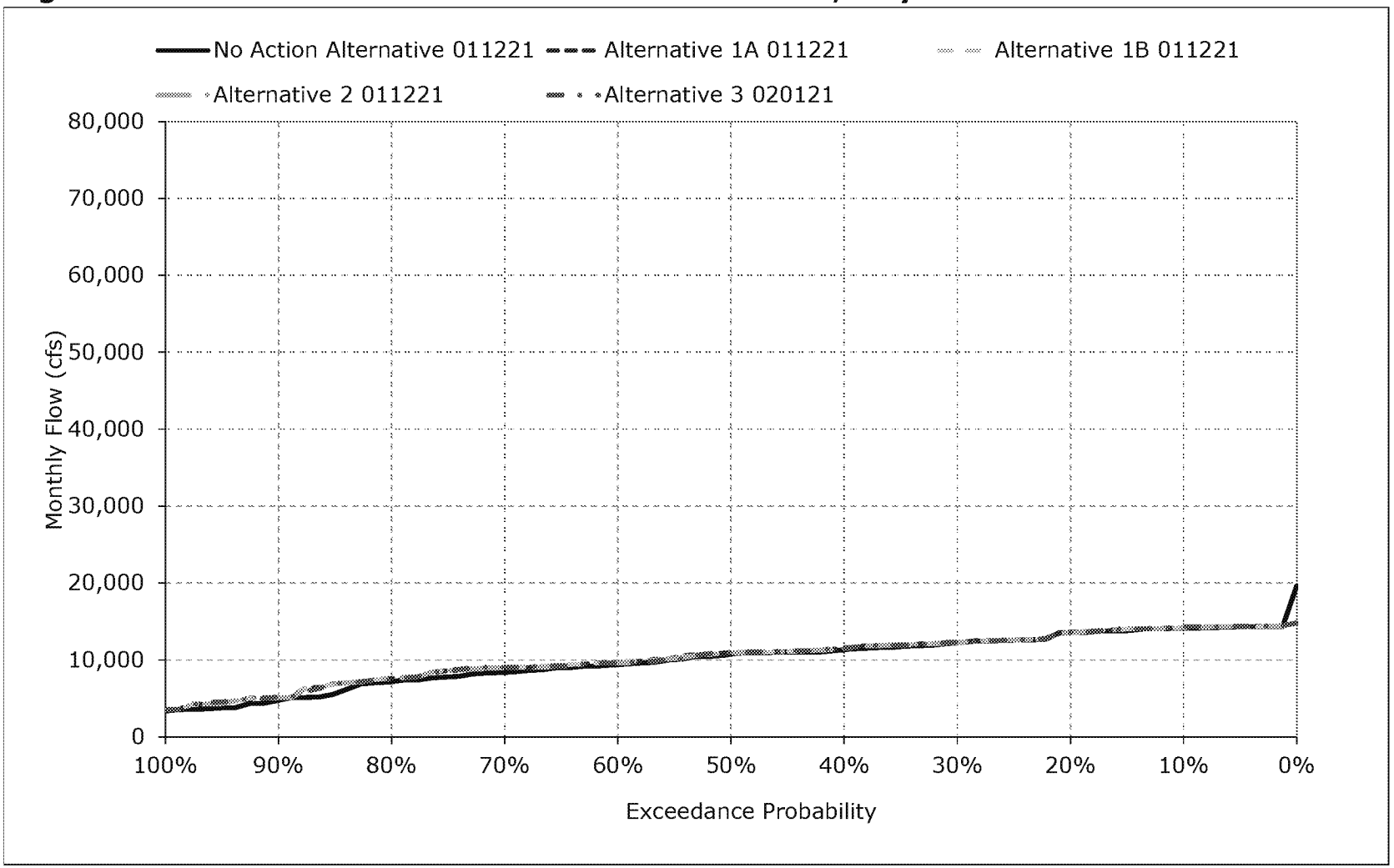


Figure 5B3-4-17. Sacramento River Flow at Rio Vista, August

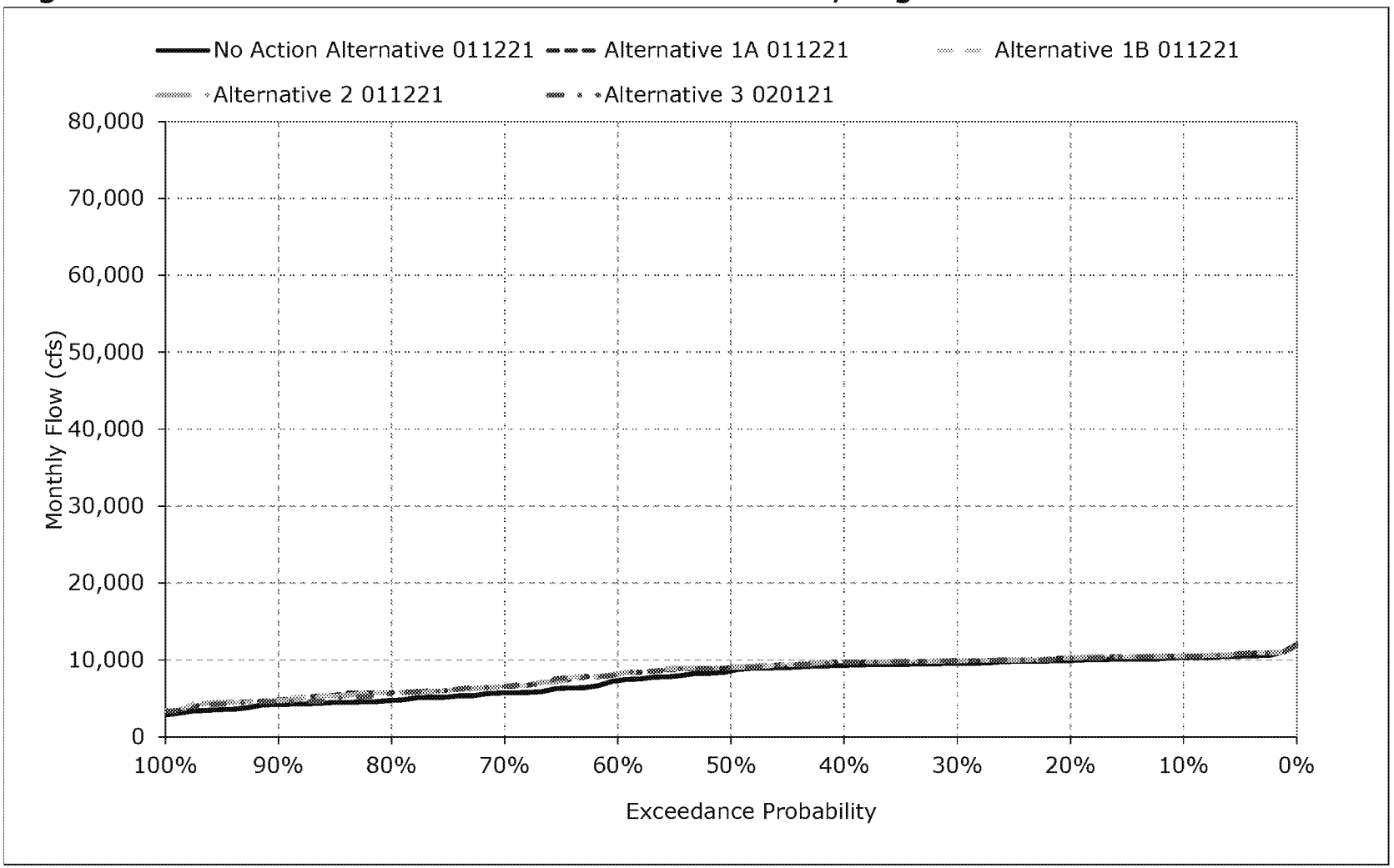


Figure 5B3-4-18. Sacramento River Flow at Rio Vista, September

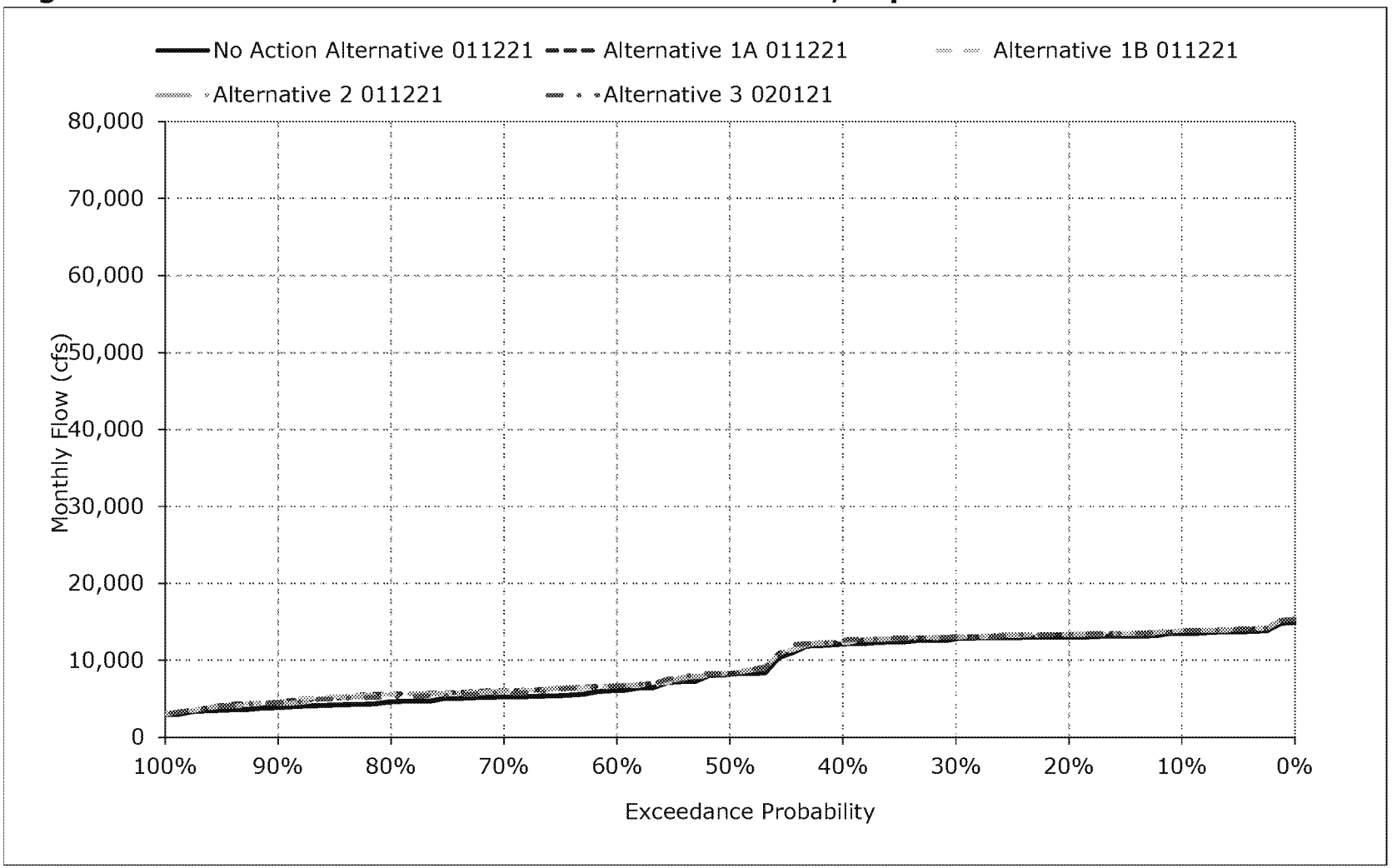


Table 5B3-5-1a. Delta Outflow, No Action Alternative 011221, Monthly Outflow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,109	17,617	65,412	100,632	130,297	90,677	70,631	46,461	30,721	11,670	7,291	12,260
20%	7,500	8,758	34,338	67,689	82,418	64,805	50,018	31,452	14,666	9,565	6,732	11,734
30%	7,188	5,544	19,499	47,332	65,665	44,934	29,806	21,027	10,281	8,238	6,322	11,427
40%	6,875	5,130	12,982	28,023	53,139	35,689	26,435	17,467	8,625	8,000	5,860	11,008
50%	5,199	4,970	10,079	22,501	36,246	26,822	20,762	15,340	7,763	8,000	4,044	3,978
60%	4,257	4,646	6,342	15,799	24,758	22,232	15,403	11,049	7,416	6,500	4,000	3,235
70%	4,000	4,500	5,061	11,697	18,193	16,129	12,554	9,453	7,121	5,492	3,745	3,123
80%	4,000	4,500	4,534	8,788	14,699	12,819	11,389	7,592	6,469	5,000	3,520	3,000
90%	4,000	3,996	4,500	7,680	10,040	9,243	9,466	6,157	5,029	4,000	3,500	3,000
Long Term												
Full Simulation Period[a]	6,162	8,852	22,274	42,069	54,278	43,259	30,348	21,057	12,913	8,190	5,189	7,378
Water Year Types[b,c]												
Wet (32%)	7,958	11,658	26,283	85,174	99,942	80,070	54,824	37,979	23,391	11,761	7,207	12,538
Above Normal (15%)	7,055	8,573	18,791	46,977	62,390	54,780	32,227	23,600	12,011	9,841	6,352	11,369
Below Normal (17%)	6,548	10,240	26,544	21,744	38,228	23,170	21,821	15,309	8,233	7,533	4,029	3,542
Dry (22%)	4,058	7,203	24,672	13,319	22,472	19,468	14,247	9,642	7,046	5,225	3,610	3,094
Critical (15%)	4,083	3,905	8,495	10,608	13,663	11,103	9,539	5,682	5,371	4,019	3,375	3,110

Table 5B3-5-1b. Delta Outflow, Alternative 1A 011221, Monthly Outflow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,203	16,746	63,554	99,957	126,947	88,520	67,883	46,351	30,480	11,827	7,479	12,654
20%	7,890	8,029	34,442	65,295	80,700	63,085	47,414	31,434	14,177	9,672	7,024	12,090
30%	7,604	5,515	19,521	45,523	62,650	42,306	29,920	20,796	10,201	8,322	6,584	11,773
40%	7,234	5,127	12,792	27,342	51,499	35,654	26,466	17,353	8,568	8,000	5,980	11,370
50%	5,794	4,970	9,174	22,121	35,455	25,369	20,794	15,130	7,836	8,000	4,920	4,203
60%	4,884	4,845	6,533	15,518	24,185	20,064	15,428	11,356	7,331	6,816	4,618	3,622
70%	4,484	4,506	5,018	11,284	17,734	15,960	12,773	9,383	7,101	5,501	4,164	3,410
80%	4,316	4,500	4,504	8,680	14,317	12,622	11,398	7,522	6,423	5,000	3,890	3,220
90%	4,000	3,500	4,500	7,696	10,066	9,271	9,479	5,941	4,868	4,051	3,526	3,044
Long Term												
Full Simulation Period[a]	6,497	8,696	22,053	41,212	53,318	42,076	30,018	20,915	12,744	8,242	5,529	7,648
Water Year Types[b,c]												
Wet (32%)	8,156	11,350	26,294	83,876	98,609	78,939	53,936	37,730	23,117	11,705	7,422	12,847
Above Normal (15%)	7,282	8,405	18,650	45,391	61,153	52,703	31,966	23,425	11,693	9,895	6,605	11,707
Below Normal (17%)	6,725	10,002	25,972	21,156	37,152	21,860	21,611	15,154	8,061	7,766	4,589	3,849
Dry (22%)	4,352	7,434	24,449	12,975	21,883	18,280	14,349	9,619	7,019	5,302	4,132	3,406
Critical (15%)	5,072	3,608	8,100	10,350	13,365	10,858	9,557	5,640	5,371	4,056	3,541	3,117

Table 5B3-5-1c. Delta Outflow, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Outflow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	93	-871	-1,858	-675	-3,350	-2,156	-2,748	-110	-241	158	189	394
20%	390	-729	104	-2,394	-1,718	-1,720	-2,604	-18	-489	107	292	356
30%	417	-29	23	-1,808	-3,015	-2,628	115	-231	-80	84	262	346
40%	359	-3	-190	-681	-1,640	-35	31	-114	-56	0	120	362
50%	596	0	-905	-380	-791	-1,453	32	-210	73	0	876	225
60%	626	199	191	-281	-573	-2,167	25	308	-85	316	618	387
70%	484	6	-44	-413	-459	-169	219	-69	-20	9	419	287
80%	316	0	-30	-107	-382	-197	9	-71	-46	0	371	220
90%	0	-496	0	16	26	28	13	-216	-161	51	26	44
Long Term												
Full Simulation Period[a]	335	-156	-221	-857	-960	-1,183	-331	-142	-169	52	340	269
Water Year Types[b,c]												
Wet (32%)	198	-309	11	-1,298	-1,332	-1,131	-888	-249	-273	-56	215	308
Above Normal (15%)	227	-167	-141	-1,585	-1,237	-2,076	-261	-175	-318	53	252	338
Below Normal (17%)	176	-239	-572	-588	-1,076	-1,310	-210	-155	-173	232	560	307
Dry (22%)	294	230	-222	-344	-590	-1,188	103	-23	-27	77	522	312
Critical (15%)	989	-297	-395	-258	-298	-245	18	-42	0	37	166	8

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-5-2a. Delta Outflow, No Action Alternative 011221, Monthly Outflow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,109	17,617	65,412	100,632	130,297	90,677	70,631	46,461	30,721	11,670	7,291	12,260
20%	7,500	8,758	34,338	67,689	82,418	64,805	50,018	31,452	14,666	9,565	6,732	11,734
30%	7,188	5,544	19,499	47,332	65,665	44,934	29,806	21,027	10,281	8,238	6,322	11,427
40%	6,875	5,130	12,982	28,023	53,139	35,689	26,435	17,467	8,625	8,000	5,860	11,008
50%	5,199	4,970	10,079	22,501	36,246	26,822	20,762	15,340	7,763	8,000	4,044	3,978
60%	4,257	4,646	6,342	15,799	24,758	22,232	15,403	11,049	7,416	6,500	4,000	3,235
70%	4,000	4,500	5,061	11,697	18,193	16,129	12,554	9,453	7,121	5,492	3,745	3,123
80%	4,000	4,500	4,534	8,788	14,699	12,819	11,389	7,592	6,469	5,000	3,520	3,000
90%	4,000	3,996	4,500	7,680	10,040	9,243	9,466	6,157	5,029	4,000	3,500	3,000
Long Term												
Full Simulation Period[a]	6,162	8,852	22,274	42,069	54,278	43,259	30,348	21,057	12,913	8,190	5,189	7,378
Water Year Types[b,c]												
Wet (32%)	7,958	11,658	26,283	85,174	99,942	80,070	54,824	37,979	23,391	11,761	7,207	12,538
Above Normal (15%)	7,055	8,573	18,791	46,977	62,390	54,780	32,227	23,600	12,011	9,841	6,352	11,369
Below Normal (17%)	6,548	10,240	26,544	21,744	38,228	23,170	21,821	15,309	8,233	7,533	4,029	3,542
Dry (22%)	4,058	7,203	24,672	13,319	22,472	19,468	14,247	9,642	7,046	5,225	3,610	3,094
Critical (15%)	4,083	3,905	8,495	10,608	13,663	11,103	9,539	5,682	5,371	4,019	3,375	3,110

Table 5B3-5-2b. Delta Outflow, Alternative 1B 011221, Monthly Outflow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,203	16,739	63,479	98,695	126,404	88,598	67,887	46,357	30,490	11,827	7,479	12,663
20%	7,875	7,951	35,424	65,180	80,702	63,065	47,414	31,436	14,176	9,676	7,038	12,025
30%	7,578	5,461	18,747	45,486	63,255	42,216	30,054	20,796	10,201	8,310	6,574	11,715
40%	7,125	5,130	13,043	27,343	51,354	35,651	26,466	17,354	8,554	8,000	5,980	11,319
50%	5,582	4,991	9,252	22,136	35,486	25,293	20,791	15,199	7,779	8,000	4,949	4,185
60%	4,902	4,845	6,437	15,411	24,185	20,062	15,411	11,335	7,375	6,853	4,637	3,664
70%	4,483	4,607	5,044	11,273	17,735	16,006	12,851	9,351	7,100	5,510	4,201	3,429
80%	4,273	4,500	4,505	8,677	14,491	12,622	11,398	7,568	6,423	5,000	3,900	3,236
90%	4,000	3,500	4,500	7,702	10,082	9,270	9,479	5,937	4,868	4,051	3,509	3,044
Long Term												
Full Simulation Period[a]	6,464	8,752	22,209	41,201	53,309	42,062	29,981	20,881	12,728	8,251	5,531	7,637
Water Year Types[b,c]												
Wet (32%)	8,134	11,349	26,330	83,796	98,400	78,924	53,806	37,649	23,088	11,706	7,419	12,863
Above Normal (15%)	7,222	8,490	18,787	45,483	61,145	52,758	31,965	23,403	11,702	9,896	6,597	11,642
Below Normal (17%)	6,766	10,242	26,087	21,179	37,297	21,868	21,631	15,164	8,048	7,795	4,616	3,857
Dry (22%)	4,300	7,411	24,937	12,964	21,972	18,263	14,351	9,594	6,993	5,315	4,128	3,357
Critical (15%)	4,980	3,661	8,084	10,345	13,463	10,755	9,563	5,630	5,370	4,058	3,549	3,141

Table 5B3-5-2c. Delta Outflow, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Outflow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	93	-878	-1,933	-1,937	-3,893	-2,078	-2,744	-105	-230	158	189	403
20%	375	-807	1,086	-2,509	-1,716	-1,741	-2,604	-16	-490	112	306	291
30%	390	-83	-752	-1,845	-2,410	-2,718	248	-231	-80	73	252	287
40%	250	0	62	-681	-1,784	-38	31	-113	-71	0	120	311
50%	383	20	-827	-365	-760	-1,529	30	-140	15	0	905	207
60%	644	198	95	-388	-573	-2,170	8	286	-40	353	637	428
70%	483	107	-18	-425	-458	-123	297	-102	-21	18	456	305
80%	273	0	-29	-111	-208	-197	9	-25	-46	0	380	236
90%	0	-496	0	22	42	27	13	-220	-161	51	9	44
Long Term												
Full Simulation Period[a]	302	-100	-66	-868	-969	-1,197	-367	-176	-184	61	342	259
Water Year Types[b,c]												
Wet (32%)	176	-309	47	-1,378	-1,542	-1,146	-1,018	-330	-302	-55	211	325
Above Normal (15%)	167	-83	-3	-1,493	-1,245	-2,022	-262	-197	-309	55	245	273
Below Normal (17%)	217	2	-457	-565	-931	-1,302	-190	-146	-185	262	587	314
Dry (22%)	242	208	265	-355	-500	-1,205	105	-48	-53	90	518	263
Critical (15%)	897	-244	-411	-262	-200	-349	24	-52	0	38	174	31

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-5-3a. Delta Outflow, No Action Alternative 011221, Monthly Outflow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,109	17,617	65,412	100,632	130,297	90,677	70,631	46,461	30,721	11,670	7,291	12,260
20%	7,500	8,758	34,338	67,689	82,418	64,805	50,018	31,452	14,666	9,565	6,732	11,734
30%	7,188	5,544	19,499	47,332	65,665	44,934	29,806	21,027	10,281	8,238	6,322	11,427
40%	6,875	5,130	12,982	28,023	53,139	35,689	26,435	17,467	8,625	8,000	5,860	11,008
50%	5,199	4,970	10,079	22,501	36,246	26,822	20,762	15,340	7,763	8,000	4,044	3,978
60%	4,257	4,646	6,342	15,799	24,758	22,232	15,403	11,049	7,416	6,500	4,000	3,235
70%	4,000	4,500	5,061	11,697	18,193	16,129	12,554	9,453	7,121	5,492	3,745	3,123
80%	4,000	4,500	4,534	8,788	14,699	12,819	11,389	7,592	6,469	5,000	3,520	3,000
90%	4,000	3,996	4,500	7,680	10,040	9,243	9,466	6,157	5,029	4,000	3,500	3,000
Long Term												
Full Simulation Period[a]	6,162	8,852	22,274	42,069	54,278	43,259	30,348	21,057	12,913	8,190	5,189	7,378
Water Year Types[b,c]												
Wet (32%)	7,958	11,658	26,283	85,174	99,942	80,070	54,824	37,979	23,391	11,761	7,207	12,538
Above Normal (15%)	7,055	8,573	18,791	46,977	62,390	54,780	32,227	23,600	12,011	9,841	6,352	11,369
Below Normal (17%)	6,548	10,240	26,544	21,744	38,228	23,170	21,821	15,309	8,233	7,533	4,029	3,542
Dry (22%)	4,058	7,203	24,672	13,319	22,472	19,468	14,247	9,642	7,046	5,225	3,610	3,094
Critical (15%)	4,083	3,905	8,495	10,608	13,663	11,103	9,539	5,682	5,371	4,019	3,375	3,110

Table 5B3-5-3b. Delta Outflow, Alternative 2 011221, Monthly Outflow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,203	16,728	63,555	98,993	129,090	89,832	67,883	46,364	30,490	11,827	7,479	12,663
20%	7,890	8,060	34,439	65,294	80,187	63,385	47,417	31,434	14,195	9,675	7,037	12,095
30%	7,554	5,326	19,526	45,523	62,936	42,355	29,922	20,796	10,201	8,322	6,603	11,773
40%	7,143	5,041	12,792	27,342	51,517	35,656	26,466	17,354	8,568	8,000	6,207	11,370
50%	5,658	4,949	9,197	22,121	35,455	25,303	20,794	15,130	7,836	8,000	4,920	4,372
60%	4,825	4,762	6,600	15,518	24,185	20,064	15,410	11,356	7,331	6,816	4,715	3,621
70%	4,480	4,507	5,015	11,285	17,735	15,960	12,773	9,383	7,100	5,500	4,224	3,367
80%	4,361	4,500	4,505	8,680	14,491	12,622	11,398	7,522	6,422	5,000	3,890	3,189
90%	4,000	3,500	4,500	7,696	10,067	9,269	9,479	5,941	4,868	4,051	3,616	3,084
Long Term												
Full Simulation Period[a]	6,486	8,654	22,067	41,231	53,366	42,152	30,057	20,915	12,745	8,243	5,547	7,663
Water Year Types[b,c]												
Wet (32%)	8,124	11,352	26,304	83,916	98,706	79,163	54,055	37,733	23,123	11,707	7,461	12,901
Above Normal (15%)	7,286	8,413	18,649	45,391	61,203	52,727	31,968	23,412	11,693	9,895	6,619	11,710
Below Normal (17%)	6,807	9,939	26,003	21,178	37,109	21,868	21,620	15,159	8,061	7,768	4,605	3,898
Dry (22%)	4,344	7,253	24,464	12,975	21,887	18,346	14,347	9,619	7,015	5,301	4,128	3,370
Critical (15%)	4,977	3,651	8,116	10,369	13,475	10,763	9,557	5,639	5,370	4,056	3,557	3,098

Table 5B3-5-3c. Delta Outflow, Alternative 2 011221 minus No Action Alternative 011221, Monthly Outflow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	93	-889	-1,857	-1,639	-1,207	-845	-2,748	-97	-231	158	189	403
20%	390	-698	101	-2,395	-2,231	-1,420	-2,601	-18	-471	110	305	361
30%	367	-218	27	-1,808	-2,728	-2,579	116	-231	-80	84	281	346
40%	268	-89	-190	-682	-1,622	-33	31	-113	-56	0	347	362
50%	459	-22	-882	-380	-791	-1,519	32	-210	73	0	876	395
60%	567	115	258	-281	-573	-2,168	7	308	-85	316	715	386
70%	480	7	-47	-413	-458	-169	219	-69	-21	8	479	243
80%	361	0	-29	-107	-209	-197	9	-71	-47	0	371	189
90%	0	-496	0	16	27	26	13	-216	-161	51	116	84
Long Term												
Full Simulation Period[a]	324	-198	-208	-838	-912	-1,106	-291	-142	-168	53	358	285
Water Year Types[b,c]												
Wet (32%)	166	-306	21	-1,258	-1,236	-907	-769	-246	-268	-54	254	363
Above Normal (15%)	232	-160	-142	-1,586	-1,187	-2,053	-259	-187	-318	54	267	341
Below Normal (17%)	258	-301	-541	-566	-1,119	-1,301	-201	-150	-173	234	576	356
Dry (22%)	286	50	-208	-343	-585	-1,122	100	-23	-31	76	518	277
Critical (15%)	894	-254	-379	-239	-188	-341	18	-43	-1	36	182	-12

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-5-4a. Delta Outflow, No Action Alternative 011221, Monthly Outflow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,109	17,617	65,412	100,632	130,297	90,677	70,631	46,461	30,721	11,670	7,291	12,260
20%	7,500	8,758	34,338	67,689	82,418	64,805	50,018	31,452	14,666	9,565	6,732	11,734
30%	7,188	5,544	19,499	47,332	65,665	44,934	29,806	21,027	10,281	8,238	6,322	11,427
40%	6,875	5,130	12,982	28,023	53,139	35,689	26,435	17,467	8,625	8,000	5,860	11,008
50%	5,199	4,970	10,079	22,501	36,246	26,822	20,762	15,340	7,763	8,000	4,044	3,978
60%	4,257	4,646	6,342	15,799	24,758	22,232	15,403	11,049	7,416	6,500	4,000	3,235
70%	4,000	4,500	5,061	11,697	18,193	16,129	12,554	9,453	7,121	5,492	3,745	3,123
80%	4,000	4,500	4,534	8,788	14,699	12,819	11,389	7,592	6,469	5,000	3,520	3,000
90%	4,000	3,996	4,500	7,680	10,040	9,243	9,466	6,157	5,029	4,000	3,500	3,000
Long Term												
Full Simulation Period[a]	6,162	8,852	22,274	42,069	54,278	43,259	30,348	21,057	12,913	8,190	5,189	7,378
Water Year Types[b,c]												
Wet (32%)	7,958	11,658	26,283	85,174	99,942	80,070	54,824	37,979	23,391	11,761	7,207	12,538
Above Normal (15%)	7,055	8,573	18,791	46,977	62,390	54,780	32,227	23,600	12,011	9,841	6,352	11,369
Below Normal (17%)	6,548	10,240	26,544	21,744	38,228	23,170	21,821	15,309	8,233	7,533	4,029	3,542
Dry (22%)	4,058	7,203	24,672	13,319	22,472	19,468	14,247	9,642	7,046	5,225	3,610	3,094
Critical (15%)	4,083	3,905	8,495	10,608	13,663	11,103	9,539	5,682	5,371	4,019	3,375	3,110

Table 5B3-5-4b. Delta Outflow, Alternative 3 020121, Monthly Outflow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,195	16,727	63,303	99,751	126,603	88,602	67,900	46,366	30,476	11,846	7,479	12,631
20%	7,885	7,958	36,784	65,138	81,322	62,120	47,415	31,447	14,212	9,673	7,038	12,054
30%	7,500	5,642	19,110	45,494	61,756	42,367	30,023	20,798	10,108	8,355	6,608	11,760
40%	7,125	5,092	12,946	27,343	51,341	35,419	26,466	17,371	8,550	8,000	5,980	11,330
50%	5,483	4,936	9,227	22,130	35,490	25,366	20,802	15,234	7,722	8,000	4,920	4,260
60%	4,771	4,647	6,521	16,035	24,186	20,065	15,389	11,335	7,338	6,860	4,521	3,631
70%	4,438	4,500	5,128	11,230	17,743	16,138	12,882	8,995	7,100	5,512	4,019	3,254
80%	4,239	4,500	4,533	8,624	14,317	12,623	11,381	7,577	6,423	5,000	3,892	3,122
90%	4,000	3,516	4,500	7,789	9,968	9,276	9,610	5,931	5,087	4,052	3,500	3,000
Long Term												
Full Simulation Period[a]	6,445	8,796	22,231	41,285	53,410	41,983	29,909	20,860	12,715	8,274	5,481	7,609
Water Year Types[b,c]												
Wet (32%)	8,126	11,349	26,318	83,903	98,579	78,582	53,555	37,634	23,049	11,708	7,427	12,814
Above Normal (15%)	7,153	8,772	18,959	45,554	61,654	52,582	31,990	23,401	11,706	9,948	6,566	11,745
Below Normal (17%)	6,896	10,321	26,559	21,229	37,254	21,846	21,671	15,227	8,023	7,826	4,583	3,890
Dry (22%)	4,293	7,308	24,585	13,078	21,982	18,434	14,347	9,497	7,006	5,364	4,004	3,239
Critical (15%)	4,796	3,741	8,068	10,385	13,288	10,902	9,551	5,594	5,368	4,046	3,445	3,088

Table 5B3-5-4c. Delta Outflow, Alternative 3 020121 minus No Action Alternative 011221, Monthly Outflow (cfs)

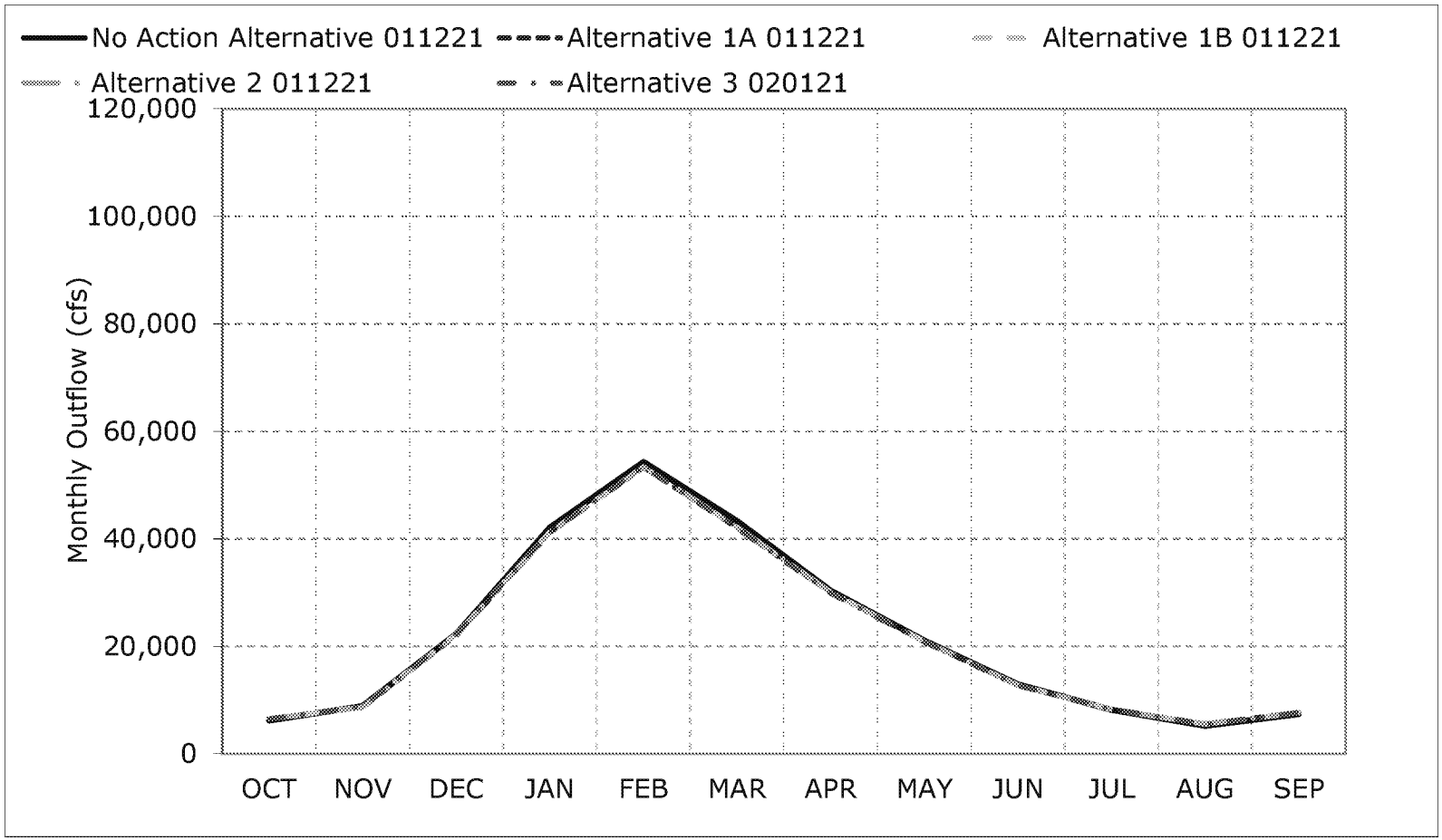
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	86	-890	-2,109	-881	-3,694	-2,075	-2,731	-95	-244	177	189	371
20%	385	-801	2,446	-2,551	-1,095	-2,686	-2,603	-5	-454	108	306	319
30%	312	98	-389	-1,838	-3,909	-2,567	218	-230	-173	117	286	332
40%	250	-38	-36	-680	-1,798	-270	32	-96	-75	0	120	322
50%	285	-34	-852	-370	-757	-1,456	40	-106	-41	0	876	282
60%	514	0	179	236	-572	-2,167	-14	286	-77	360	521	395
70%	438	0	67	-467	-450	9	328	-458	-21	20	274	130
80%	239	0	-1	-164	-383	-196	-8	-15	-46	0	373	122
90%	0	-481	0	109	-72	33	144	-226	58	52	0	0
Long Term												
Full Simulation Period[a]	283	-56	-43	-785	-869	-1,276	-439	-197	-198	83	292	231
Water Year Types[b,c]												
Wet (32%)	168	-309	34	-1,271	-1,363	-1,488	-1,270	-345	-341	-53	220	276
Above Normal (15%)	99	200	168	-1,422	-736	-2,198	-237	-199	-306	107	213	376
Below Normal (17%)	347	80	15	-515	-974	-1,324	-150	-82	-211	293	554	347
Dry (22%)	235	105	-86	-241	-491	-1,034	101	-145	-40	139	394	146
Critical (15%)	713	-164	-427	-223	-375	-201	11	-89	-3	27	70	-22

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

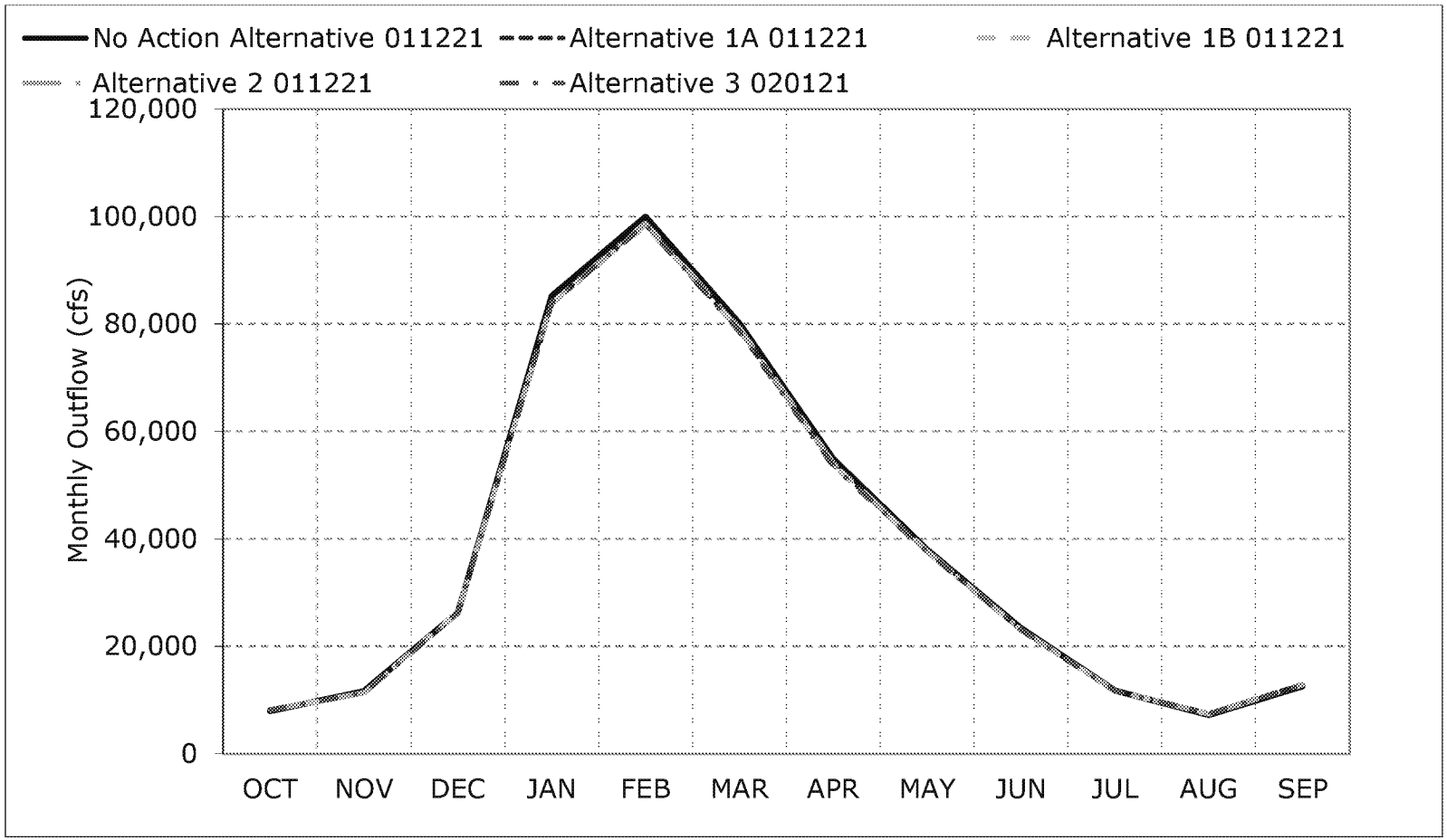
c These results are displayed with calendar year - year type sorting.

Figure 5B3-5-1. Delta Outflow, Long-Term Average Outflow



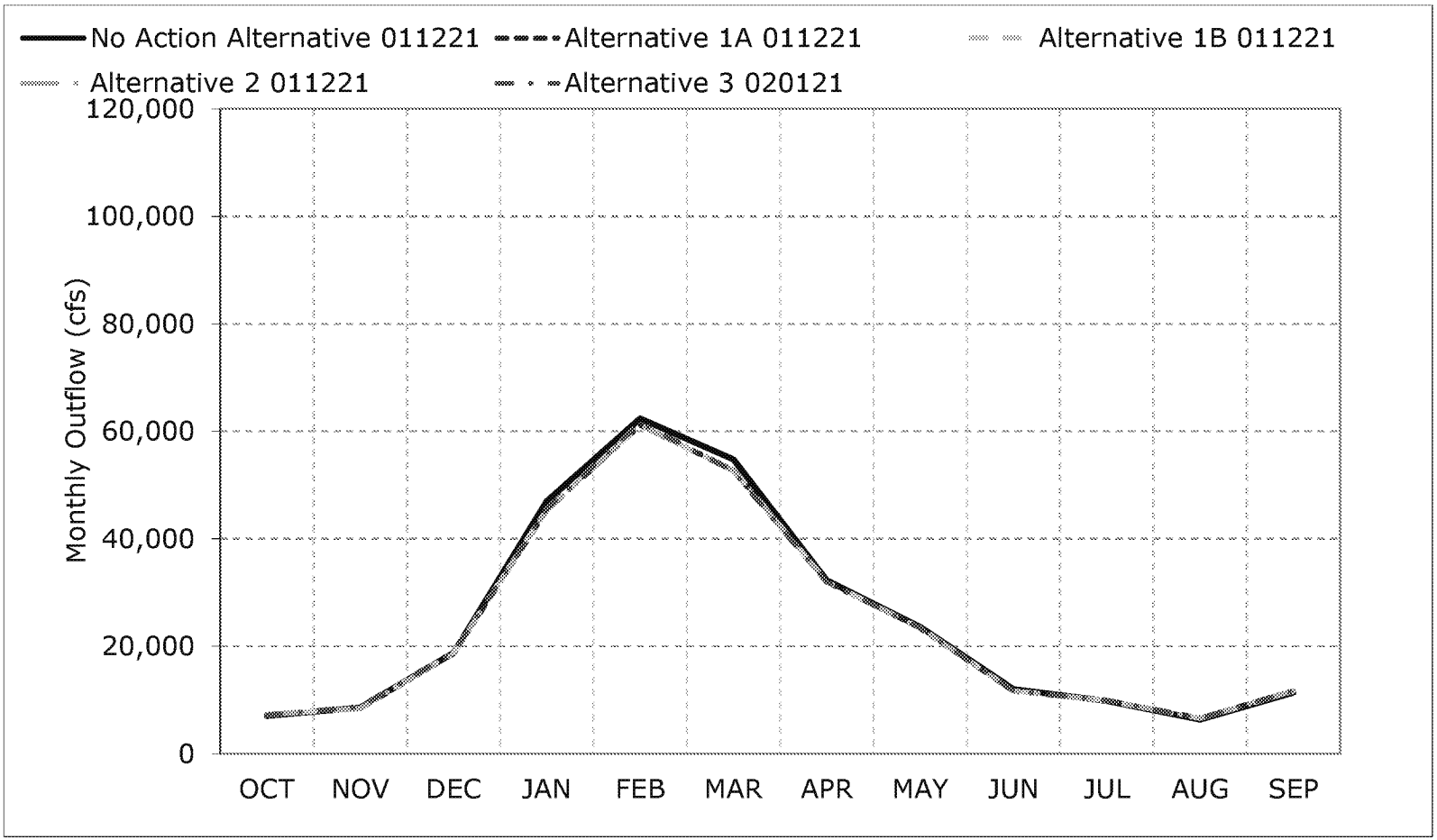
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-5-2. Delta Outflow, Wet Year Average Outflow



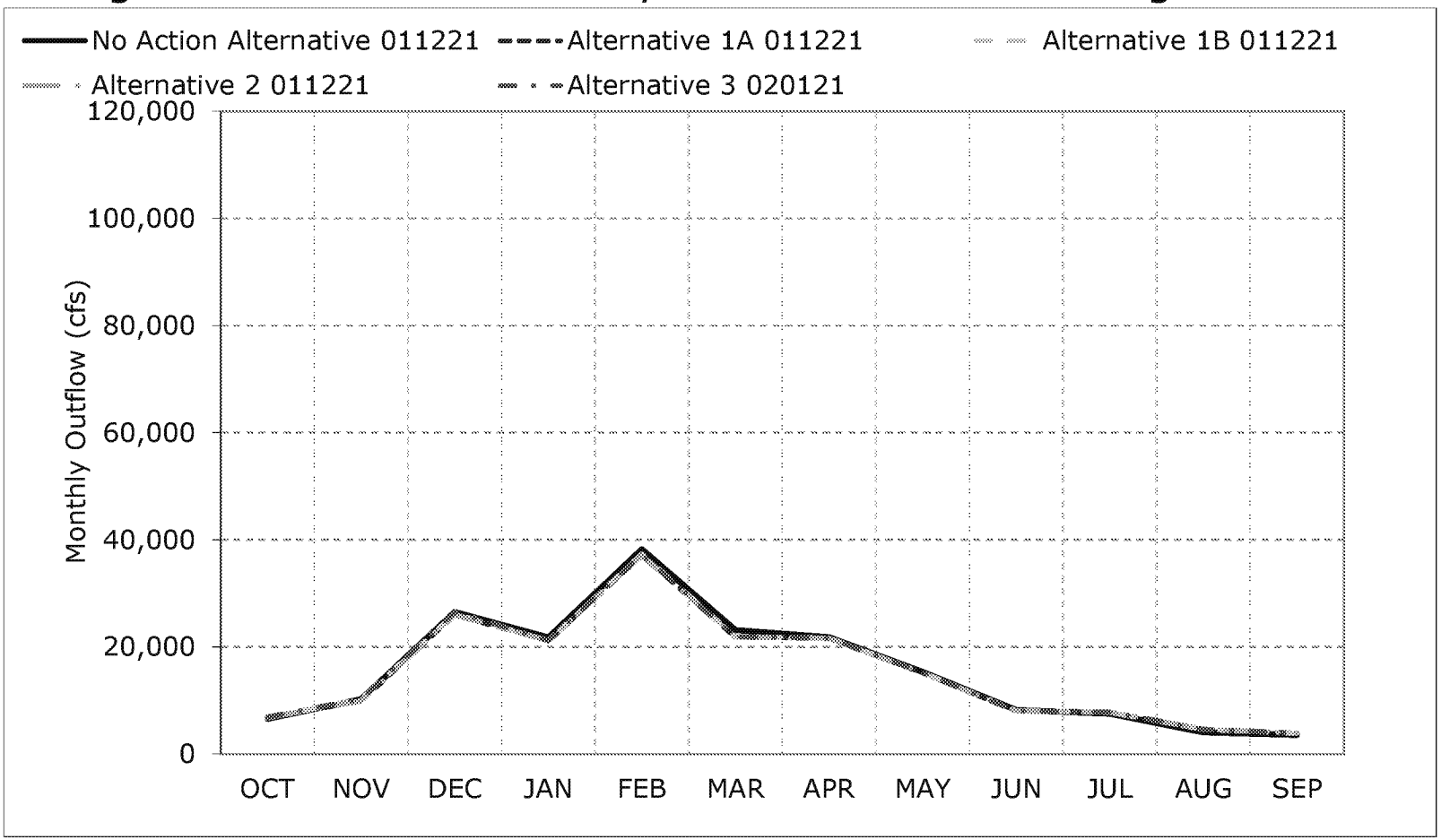
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-5-3. Delta Outflow, Above Normal Year Average Outflow



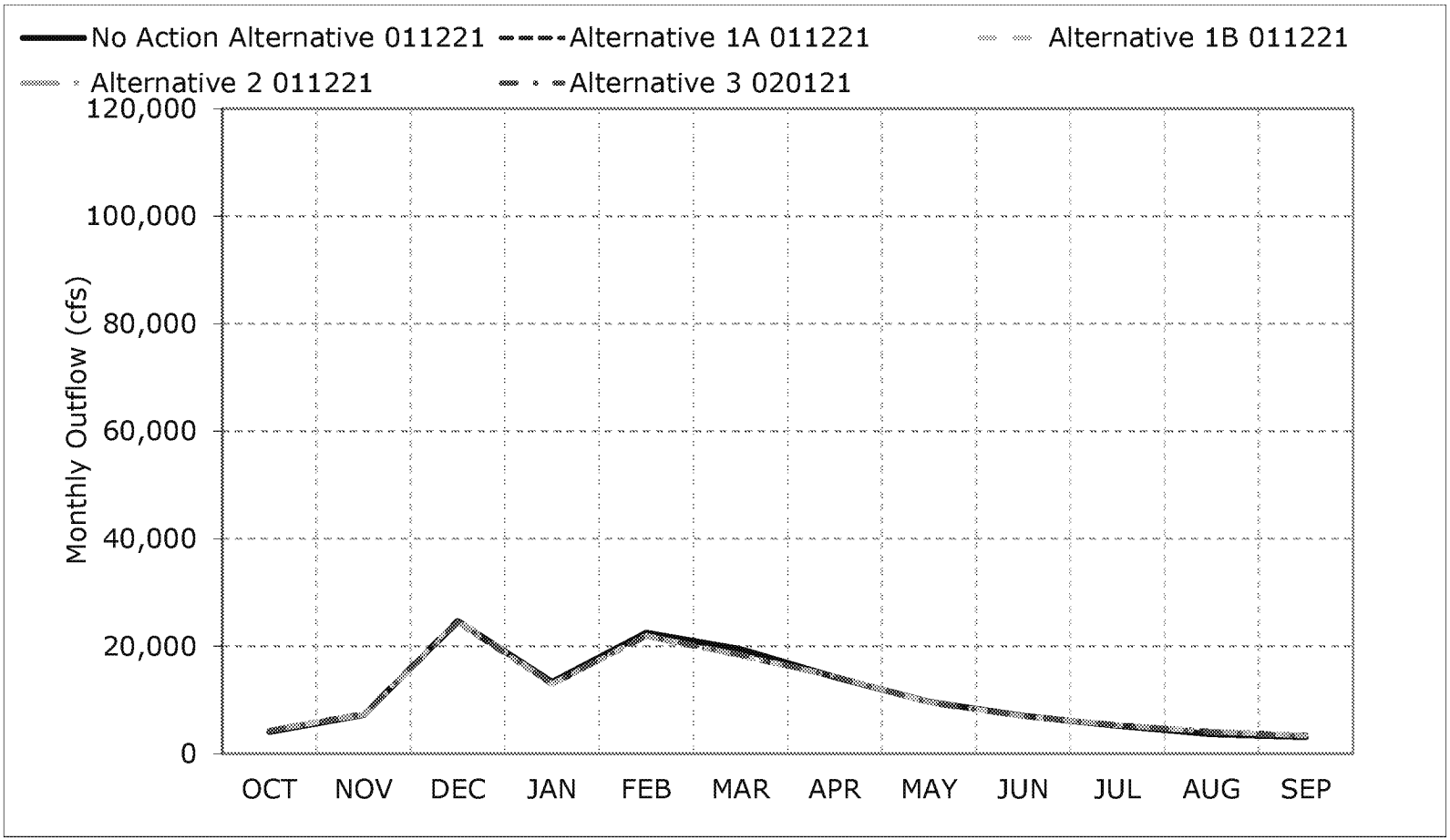
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-5-4. Delta Outflow, Below Normal Year Average Outflow



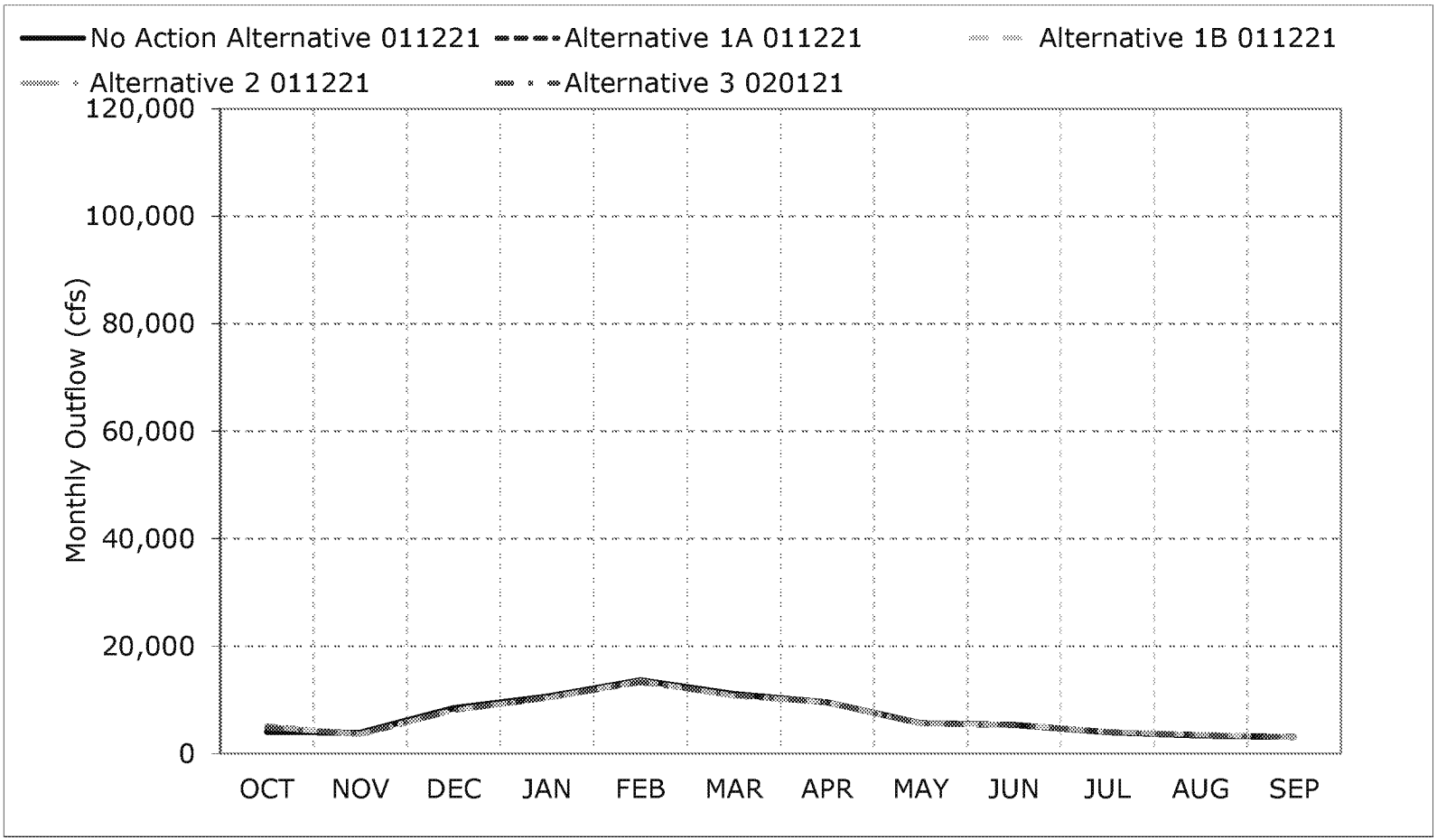
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-5-5. Delta Outflow, Dry Year Average Outflow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-5-6. Delta Outflow, Critical Year Average Outflow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-5-7. Delta Outflow, October

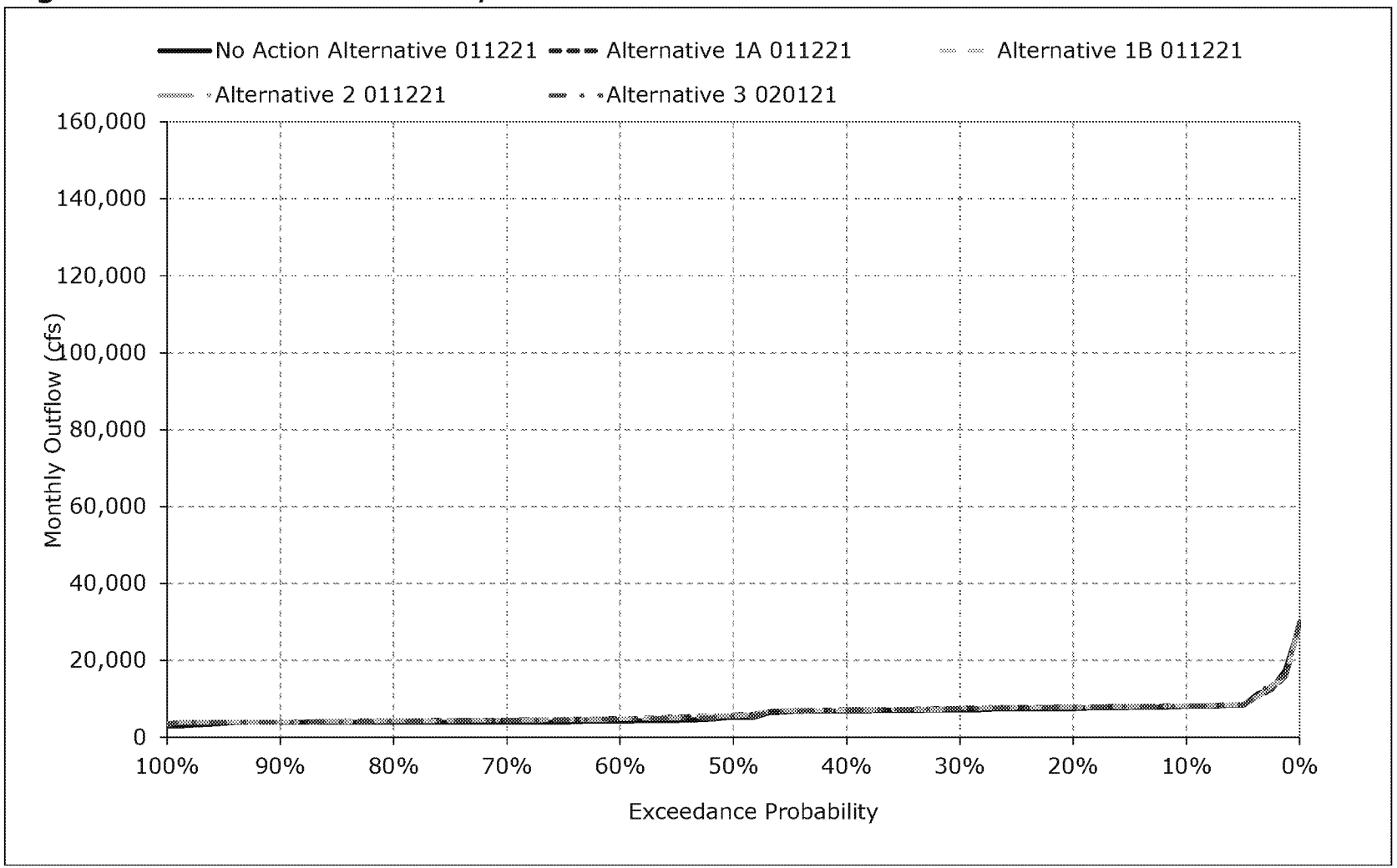


Figure 5B3-5-8. Delta Outflow, November

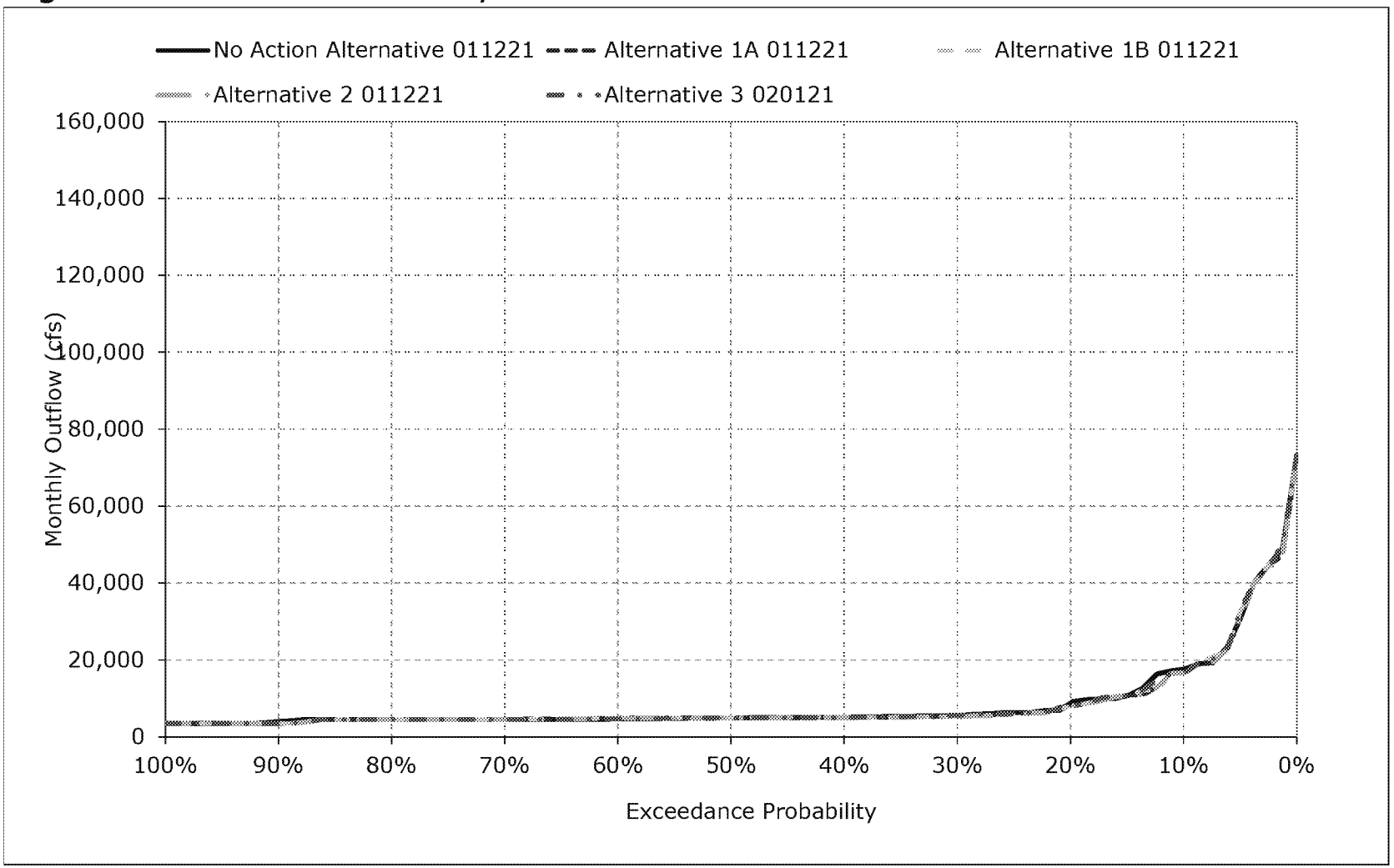


Figure 5B3-5-9. Delta Outflow, December

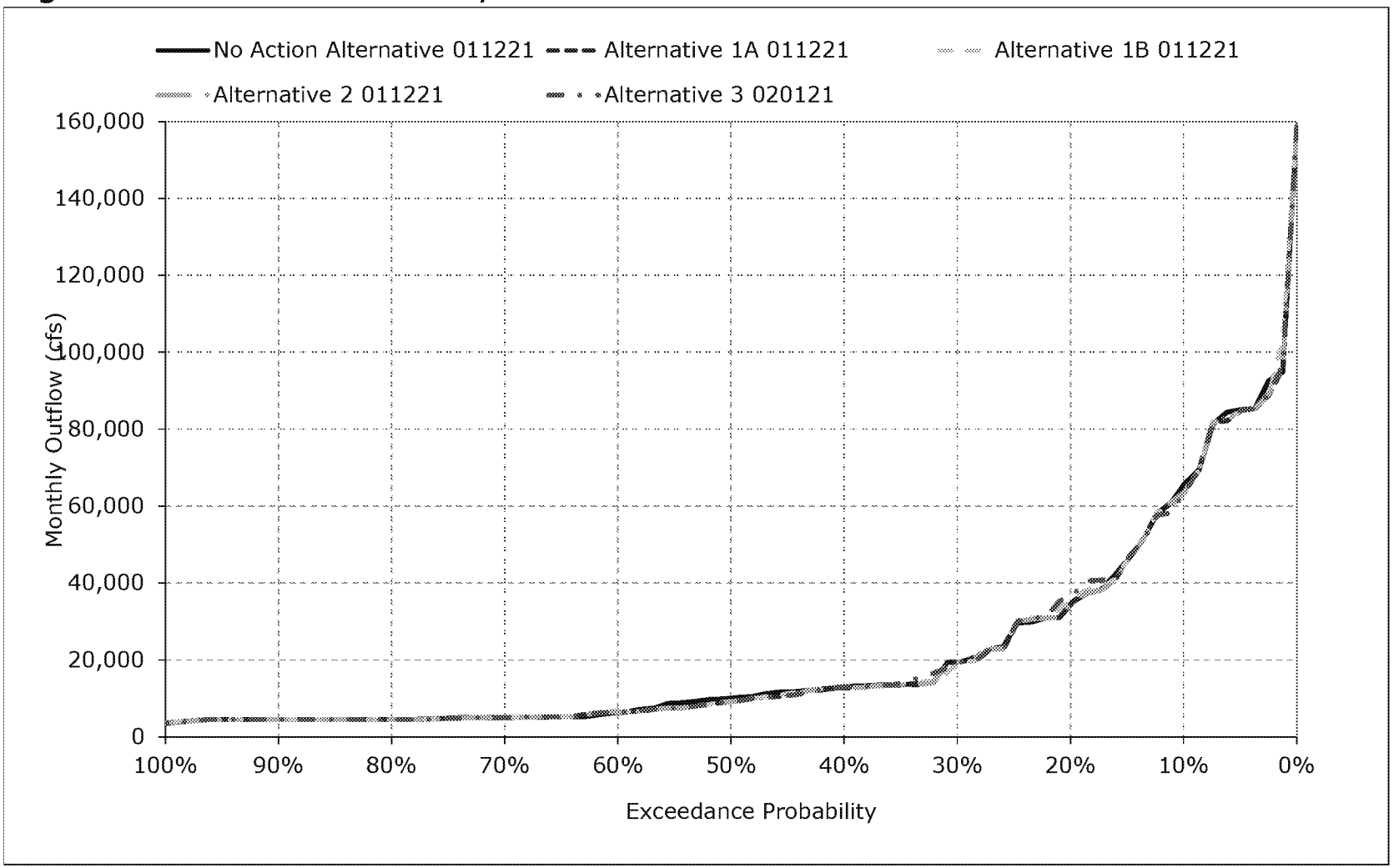


Figure 5B3-5-10. Delta Outflow, January

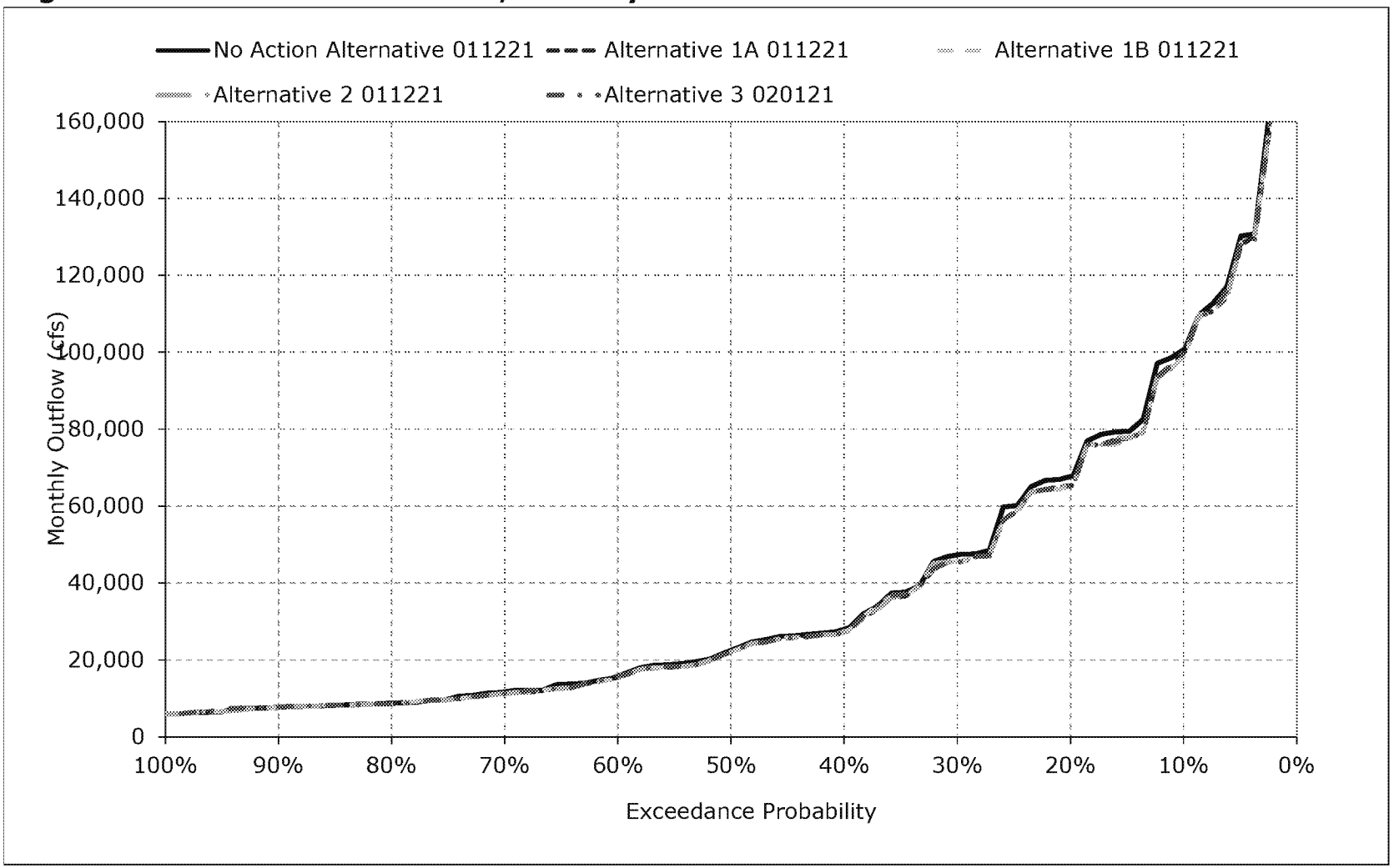


Figure 5B3-5-11. Delta Outflow, February

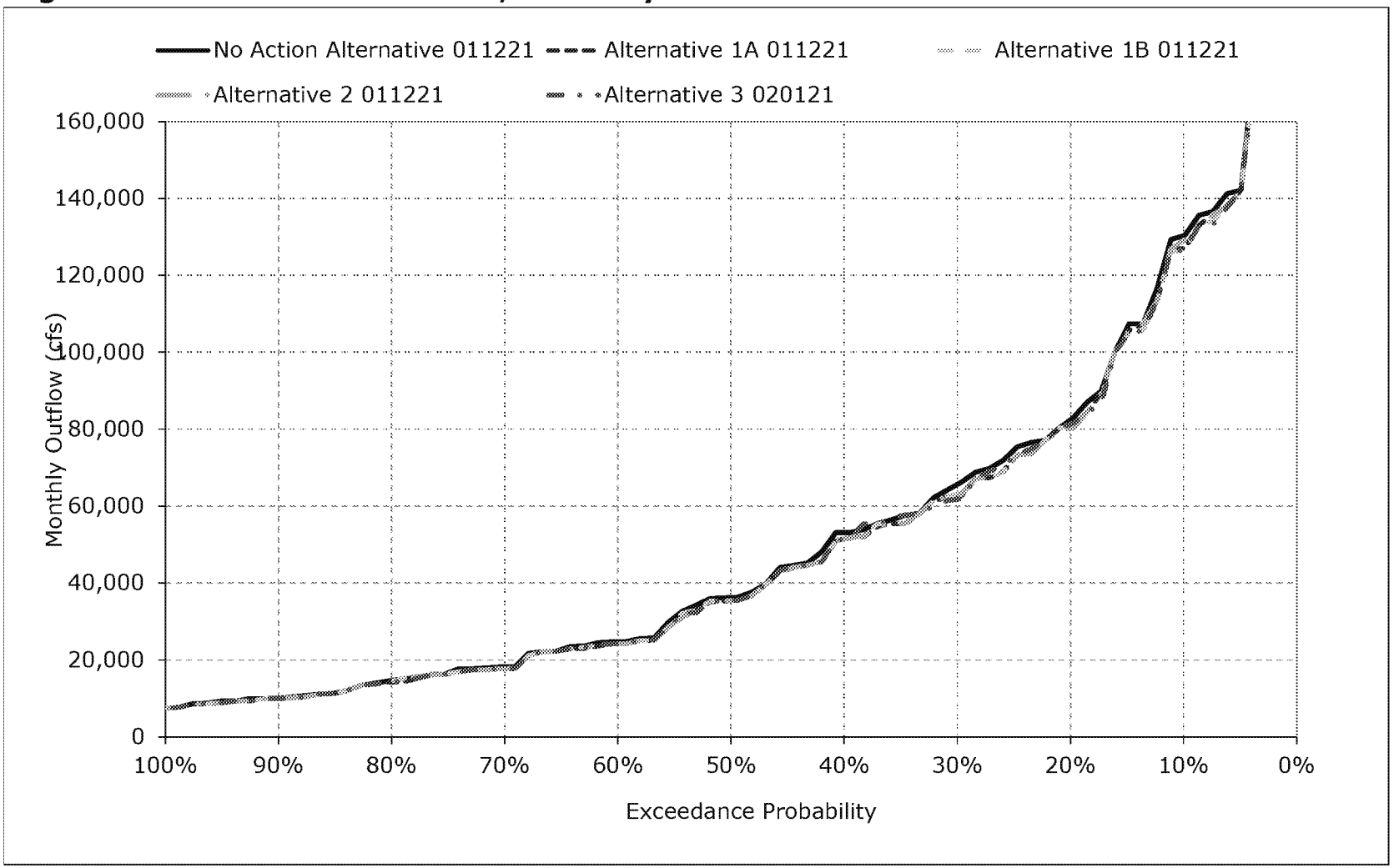


Figure 5B3-5-12. Delta Outflow, March

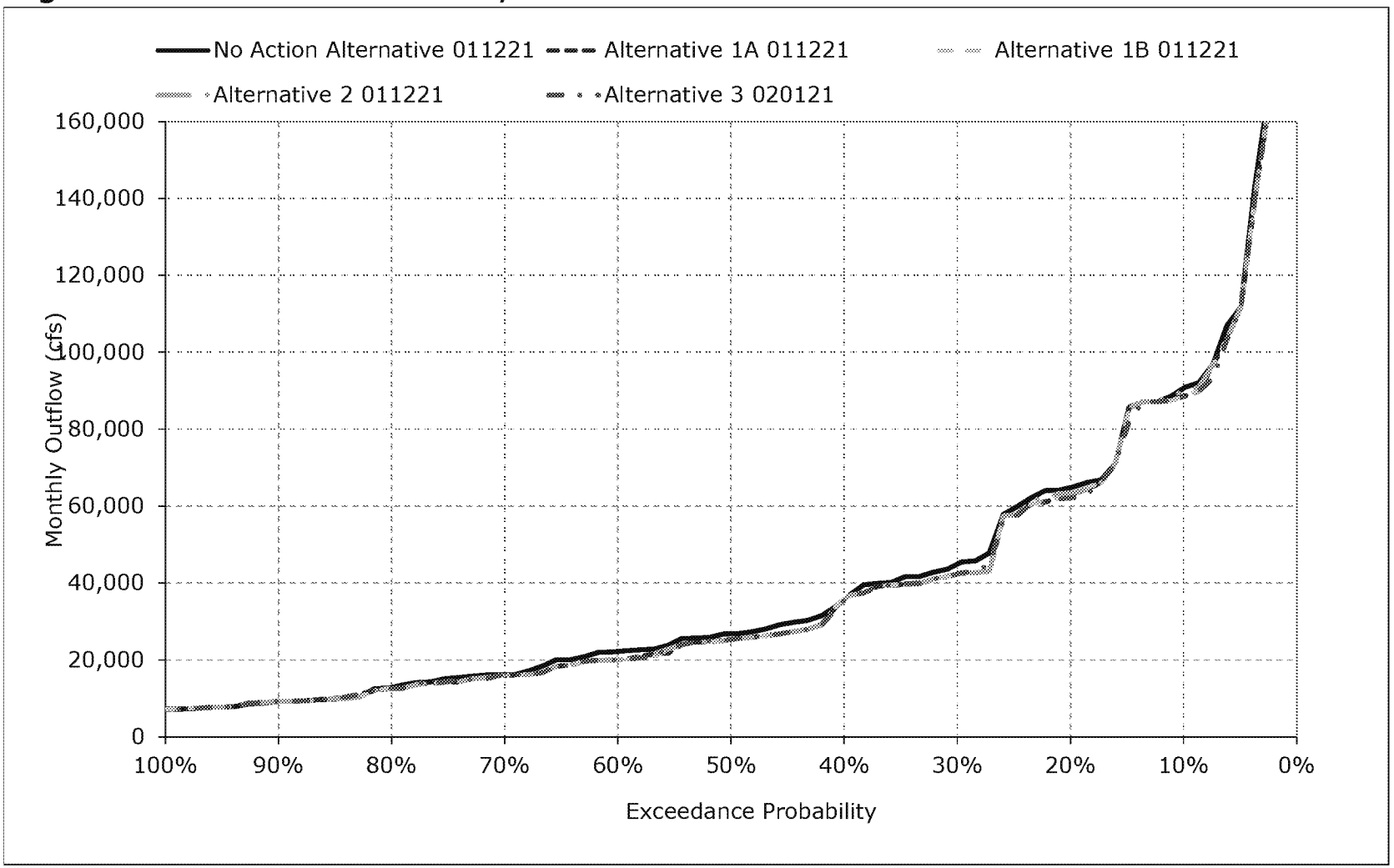


Figure 5B3-5-13. Delta Outflow, April

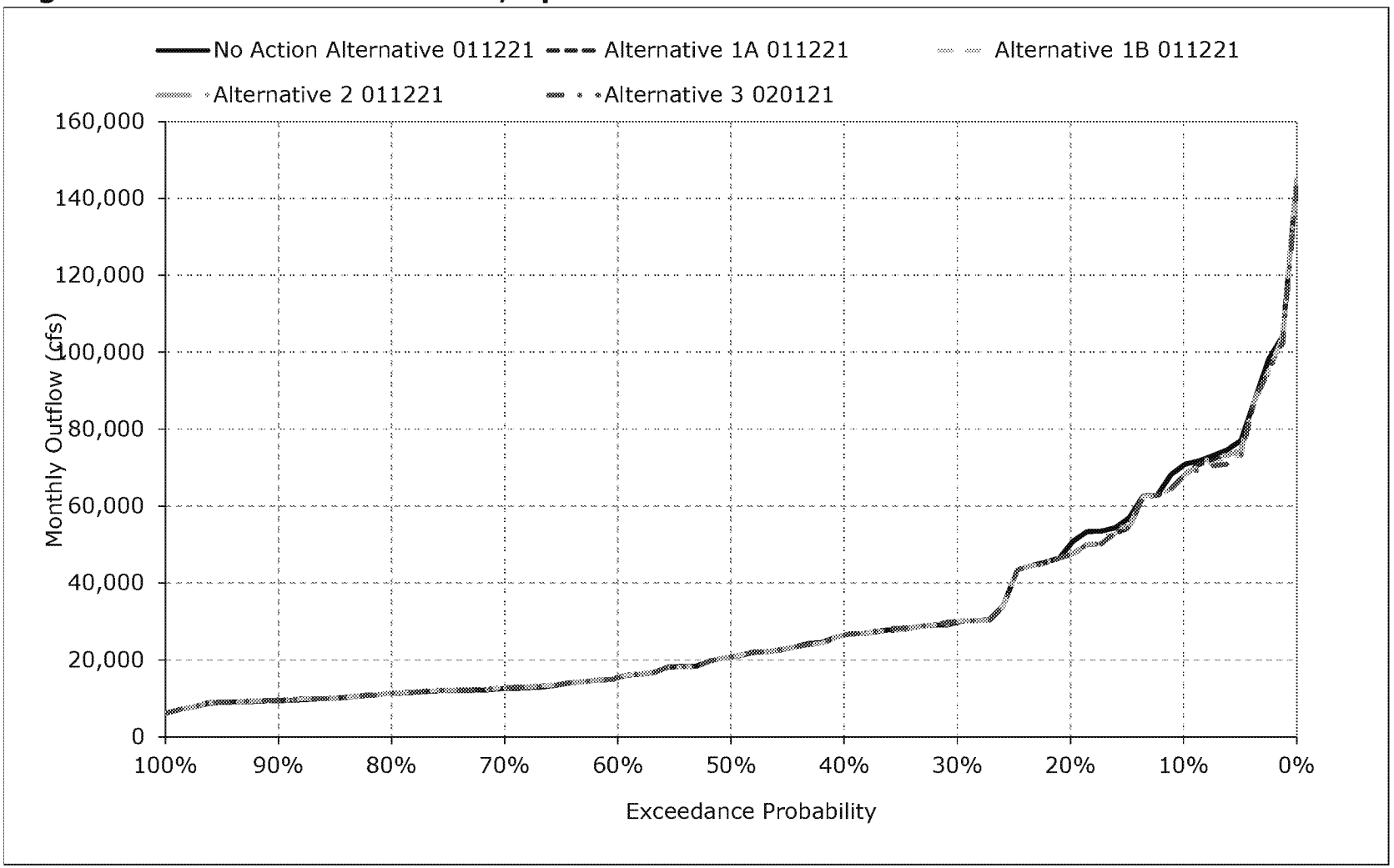


Figure 5B3-5-14. Delta Outflow, May

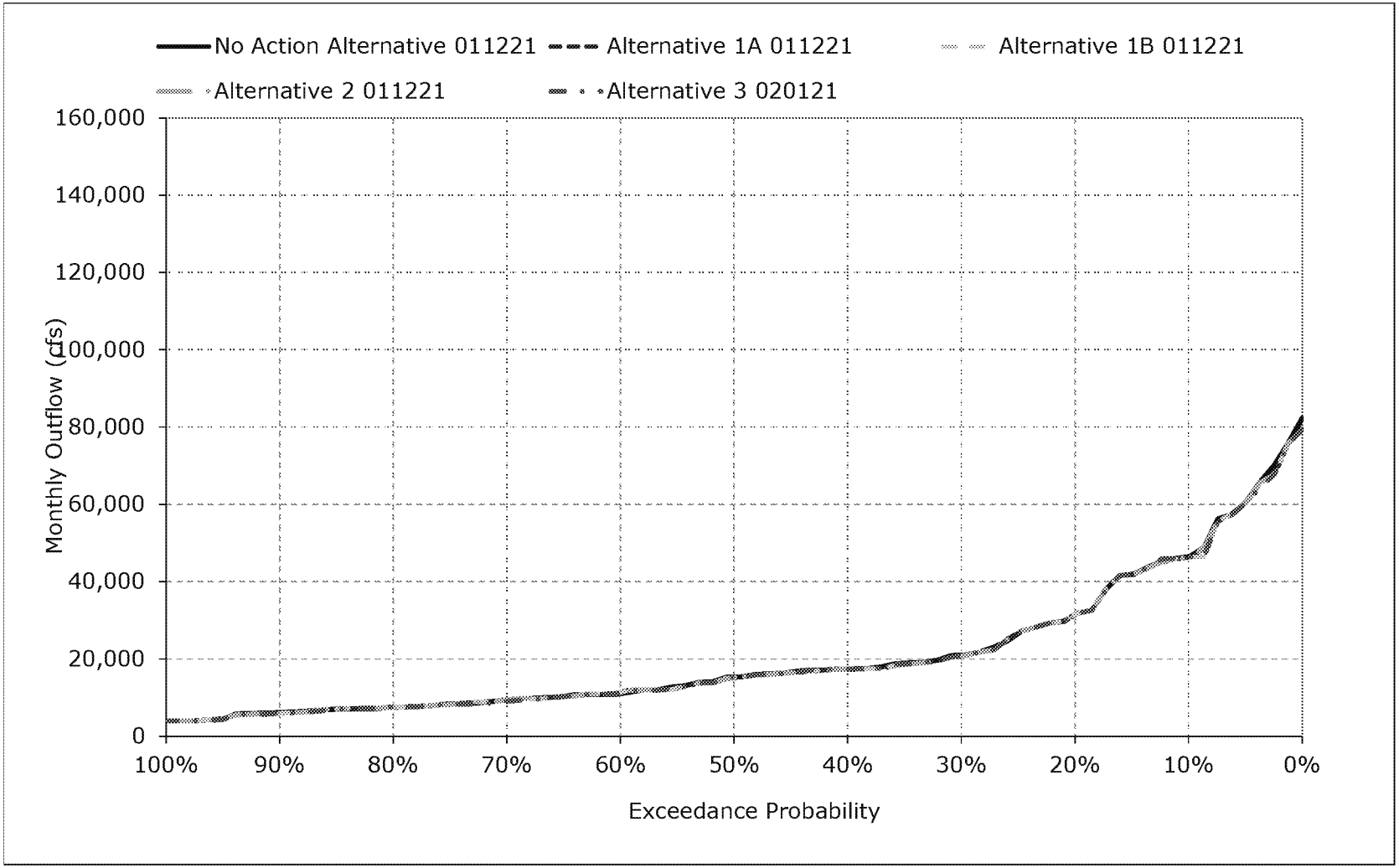


Figure 5B3-5-15. Delta Outflow, June

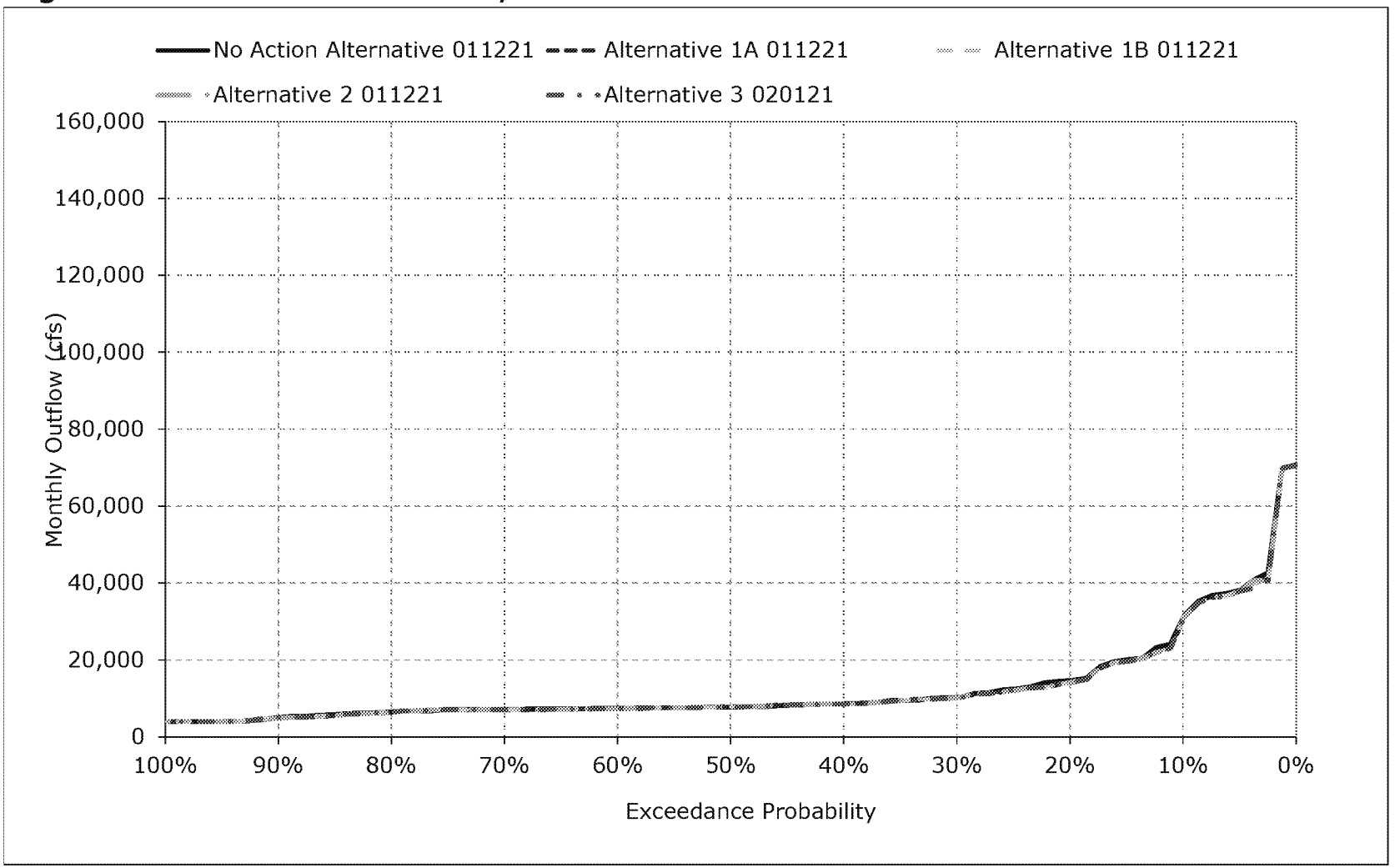


Figure 5B3-5-16. Delta Outflow, July

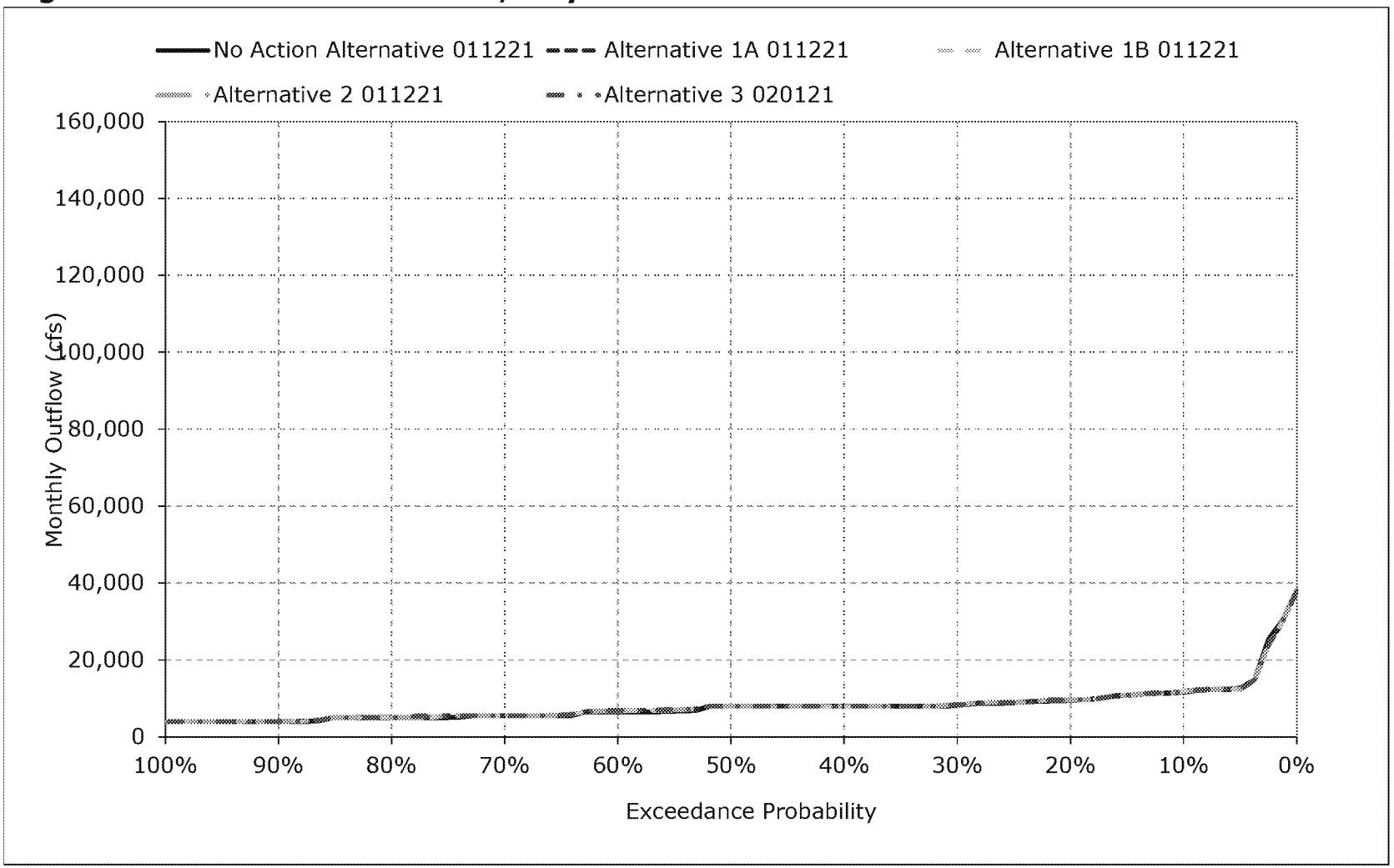


Figure 5B3-5-17. Delta Outflow, August

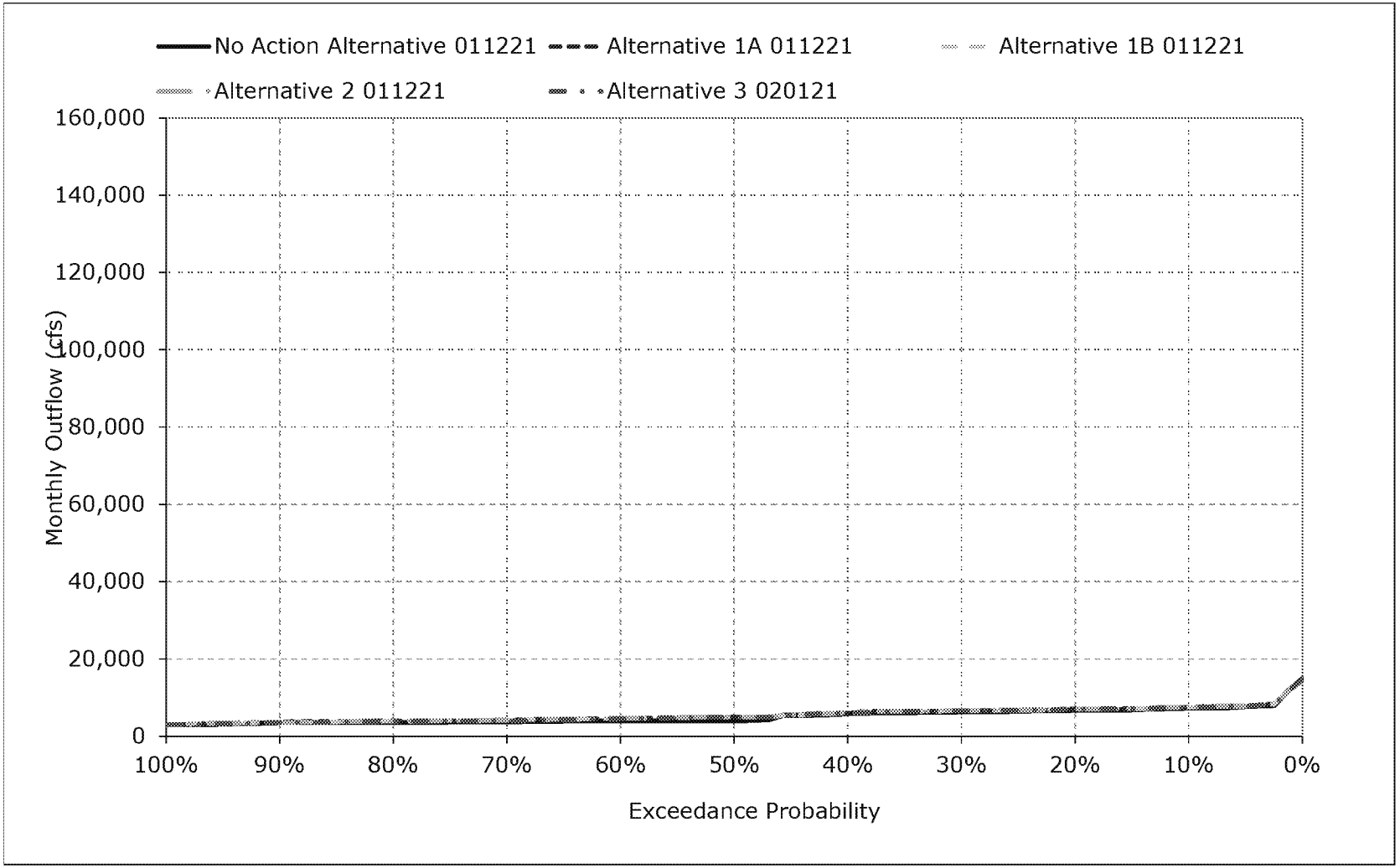


Figure 5B3-5-18. Delta Outflow, September

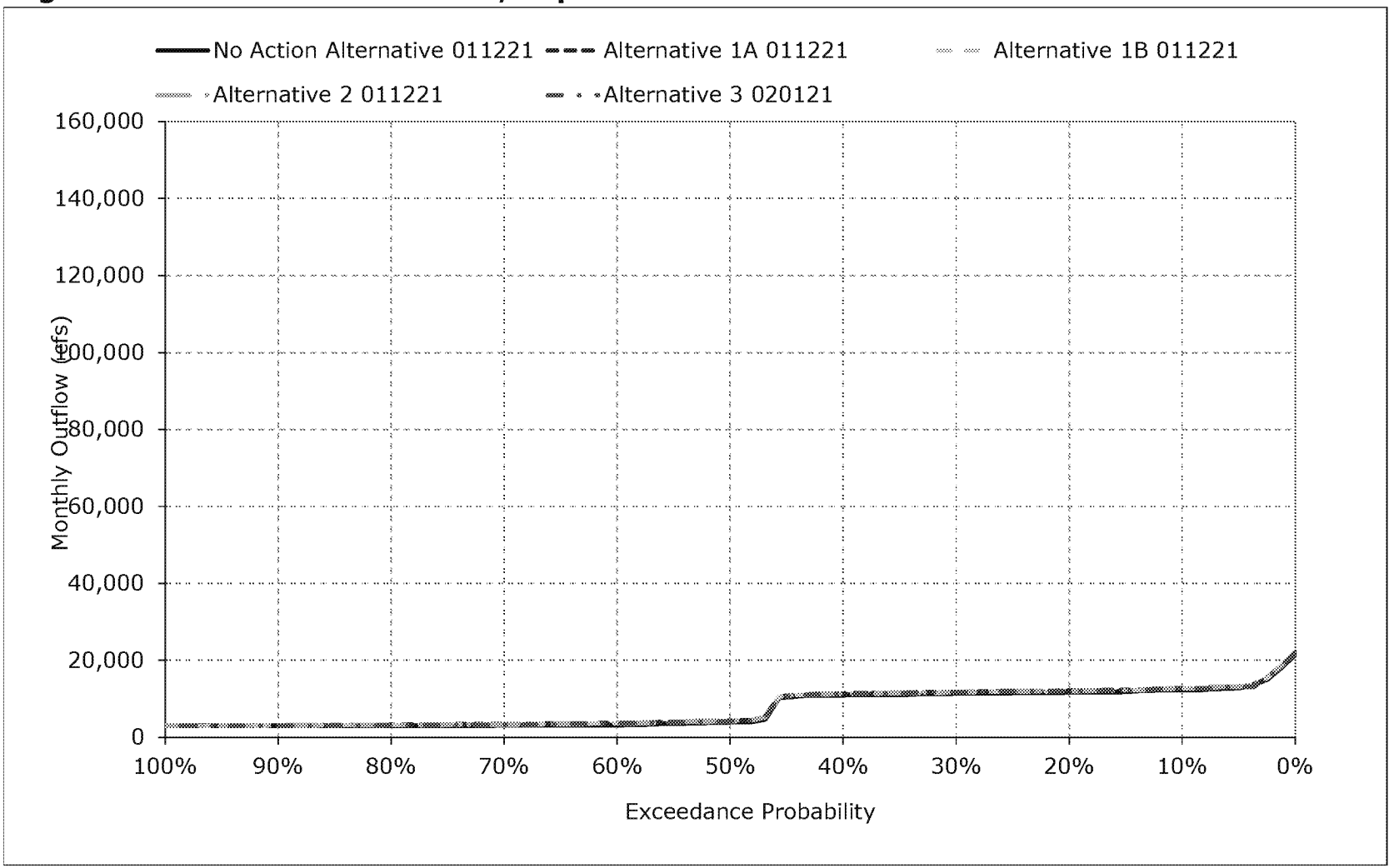


Table 5B3-6-1a. Old and Middle River Flow, No Action Alternative 011221, Monthly Flow (combined flows)(cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-2,764	-3,303	-4,107	-3,645	-3,411	-1,762	-506	-1,140	-1,801	-2,807	-3,558	-3,579
20%	-3,472	-3,883	-5,031	-3,645	-4,464	-3,258	-902	-1,789	-3,736	-4,689	-4,543	-4,993
30%	-4,204	-4,802	-5,290	-4,516	-4,464	-3,258	-1,043	-1,882	-4,660	-7,254	-5,377	-5,955
40%	-4,624	-6,033	-5,290	-4,516	-4,464	-3,258	-1,206	-1,971	-5,000	-8,268	-6,641	-6,631
50%	-5,210	-8,460	-5,290	-4,516	-4,464	-3,258	-1,479	-2,113	-5,000	-8,987	-8,283	-7,710
60%	-5,620	-8,890	-5,807	-5,000	-4,483	-3,258	-1,638	-2,297	-5,000	-9,605	-8,888	-8,594
70%	-6,718	-9,190	-8,781	-5,226	-4,483	-3,258	-1,957	-2,456	-5,000	-10,296	-9,218	-8,801
80%	-7,363	-9,384	-9,595	-5,226	-5,000	-3,258	-2,112	-2,667	-5,000	-10,666	-9,633	-9,090
90%	-8,282	-9,579	-9,725	-5,226	-5,000	-3,500	-2,318	-3,386	-5,000	-11,206	-10,285	-9,281
Long Term												
Full Simulation Period[a]	-5,347	-6,930	-6,368	-3,959	-3,942	-2,456	-1,158	-1,982	-4,260	-7,990	-7,278	-7,008
Water Year Types[b,c]												
Wet (32%)	-6,765	-8,737	-7,264	-2,304	-2,629	-829	-575	-1,616	-4,438	-8,312	-8,444	-8,563
Above Normal (15%)	-5,426	-9,010	-7,924	-4,331	-3,853	-2,754	-1,460	-2,386	-4,914	-9,402	-9,048	-8,647
Below Normal (17%)	-6,292	-6,617	-6,307	-4,707	-4,752	-3,289	-1,440	-2,263	-4,702	-10,508	-9,808	-8,176
Dry (22%)	-4,064	-5,241	-5,101	-5,090	-4,760	-3,307	-1,564	-2,146	-4,449	-7,982	-4,693	-5,428
Critical (15%)	-3,018	-3,836	-4,842	-4,605	-4,705	-3,433	-1,184	-1,799	-2,421	-2,952	-3,906	-3,008

Table 5B3-6-1b. Old and Middle River Flow, Alternative 1A 011221, Monthly Flow (combined flows)(cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-2,824	-3,458	-4,241	-3,645	-3,399	-1,661	-457	-1,138	-1,757	-3,471	-4,572	-4,636
20%	-3,938	-4,763	-5,178	-3,645	-4,464	-3,258	-867	-1,781	-3,570	-5,967	-5,149	-6,053
30%	-4,627	-5,588	-5,290	-4,516	-4,464	-3,258	-1,071	-1,879	-4,563	-7,641	-6,037	-6,508
40%	-5,249	-7,098	-5,290	-4,516	-4,464	-3,258	-1,213	-1,956	-5,000	-8,547	-7,316	-6,854
50%	-5,841	-8,639	-5,292	-4,516	-4,464	-3,258	-1,434	-2,105	-5,000	-9,213	-8,569	-7,843
60%	-6,120	-8,903	-6,351	-5,000	-4,483	-3,258	-1,621	-2,296	-5,000	-9,872	-8,884	-8,633
70%	-6,724	-9,222	-8,784	-5,226	-4,483	-3,258	-2,006	-2,474	-5,000	-10,346	-9,294	-8,832
80%	-7,268	-9,407	-9,538	-5,226	-5,000	-3,258	-2,111	-2,732	-5,000	-10,737	-9,646	-9,117
90%	-8,344	-9,579	-9,708	-5,226	-5,000	-3,500	-2,318	-3,386	-5,000	-11,274	-10,295	-9,350
Long Term												
Full Simulation Period[a]	-5,651	-7,230	-6,428	-3,973	-3,912	-2,460	-1,153	-1,978	-4,259	-8,337	-7,649	-7,352
Water Year Types[b,c]												
Wet (32%)	-6,721	-8,745	-7,256	-2,303	-2,619	-827	-575	-1,608	-4,431	-8,301	-8,457	-8,568
Above Normal (15%)	-5,481	-9,035	-7,890	-4,331	-3,811	-2,754	-1,461	-2,395	-4,911	-9,415	-9,057	-8,685
Below Normal (17%)	-6,750	-7,274	-6,480	-4,707	-4,662	-3,289	-1,433	-2,264	-4,671	-10,531	-10,014	-8,353
Dry (22%)	-4,952	-5,797	-5,271	-5,085	-4,748	-3,307	-1,537	-2,139	-4,452	-8,968	-5,685	-6,225
Critical (15%)	-3,267	-4,243	-4,844	-4,707	-4,683	-3,469	-1,198	-1,790	-2,468	-3,830	-4,677	-3,905

Table 5B3-6-1c. Old and Middle River Flow, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (combined flows)(cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-60	-155	-134	0	12	101	50	3	44	-664	-1,014	-1,057
20%	-466	-880	-147	0	0	0	35	8	166	-1,278	-606	-1,060
30%	-423	-785	0	0	0	0	-28	3	97	-387	-661	-553
40%	-626	-1,065	0	0	0	0	-8	15	0	-279	-675	-223
50%	-632	-179	-1	0	0	0	45	8	0	-227	-287	-133
60%	-501	-12	-544	0	0	0	17	1	0	-267	5	-38
70%	-6	-32	-4	0	0	0	-49	-18	0	-49	-76	-31
80%	95	-23	58	0	0	0	2	-65	0	-70	-13	-27
90%	-62	0	16	0	0	0	0	0	0	-68	-10	-68
Long Term												
Full Simulation Period[a]	-304	-300	-60	-13	30	-5	5	4	1	-347	-371	-344
Water Year Types[b,c]												
Wet (32%)	43	-9	8	1	9	1	1	8	7	11	-13	-4
Above Normal (15%)	-54	-25	34	0	42	0	-1	-9	4	-13	-9	-38
Below Normal (17%)	-458	-657	-173	0	90	0	7	-1	31	-23	-206	-178
Dry (22%)	-888	-556	-170	5	12	0	27	7	-3	-986	-992	-797
Critical (15%)	-249	-407	-2	-102	22	-36	-15	9	-47	-878	-771	-896

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-6-2a. Old and Middle River Flow, No Action Alternative 011221, Monthly Flow (combined flows)(cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-2,764	-3,303	-4,107	-3,645	-3,411	-1,762	-506	-1,140	-1,801	-2,807	-3,558	-3,579
20%	-3,472	-3,883	-5,031	-3,645	-4,464	-3,258	-902	-1,789	-3,736	-4,689	-4,543	-4,993
30%	-4,204	-4,802	-5,290	-4,516	-4,464	-3,258	-1,043	-1,882	-4,660	-7,254	-5,377	-5,955
40%	-4,624	-6,033	-5,290	-4,516	-4,464	-3,258	-1,206	-1,971	-5,000	-8,268	-6,641	-6,631
50%	-5,210	-8,460	-5,290	-4,516	-4,464	-3,258	-1,479	-2,113	-5,000	-8,987	-8,283	-7,710
60%	-5,620	-8,890	-5,807	-5,000	-4,483	-3,258	-1,638	-2,297	-5,000	-9,605	-8,888	-8,594
70%	-6,718	-9,190	-8,781	-5,226	-4,483	-3,258	-1,957	-2,456	-5,000	-10,296	-9,218	-8,801
80%	-7,363	-9,384	-9,595	-5,226	-5,000	-3,258	-2,112	-2,667	-5,000	-10,666	-9,633	-9,090
90%	-8,282	-9,579	-9,725	-5,226	-5,000	-3,500	-2,318	-3,386	-5,000	-11,206	-10,285	-9,281
Long Term												
Full Simulation Period[a]	-5,347	-6,930	-6,368	-3,959	-3,942	-2,456	-1,158	-1,982	-4,260	-7,990	-7,278	-7,008
Water Year Types[b,c]												
Wet (32%)	-6,765	-8,737	-7,264	-2,304	-2,629	-829	-575	-1,616	-4,438	-8,312	-8,444	-8,563
Above Normal (15%)	-5,426	-9,010	-7,924	-4,331	-3,853	-2,754	-1,460	-2,386	-4,914	-9,402	-9,048	-8,647
Below Normal (17%)	-6,292	-6,617	-6,307	-4,707	-4,752	-3,289	-1,440	-2,263	-4,702	-10,508	-9,808	-8,176
Dry (22%)	-4,064	-5,241	-5,101	-5,090	-4,760	-3,307	-1,564	-2,146	-4,449	-7,982	-4,693	-5,428
Critical (15%)	-3,018	-3,836	-4,842	-4,605	-4,705	-3,433	-1,184	-1,799	-2,421	-2,952	-3,906	-3,008

Table 5B3-6-2b. Old and Middle River Flow, Alternative 1B 011221, Monthly Flow (combined flows)(cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-2,966	-3,701	-4,034	-3,645	-3,410	-1,704	-457	-1,198	-1,833	-3,465	-4,566	-4,456
20%	-3,822	-4,601	-5,035	-3,645	-4,464	-3,258	-867	-1,781	-3,682	-6,141	-5,143	-5,930
30%	-4,680	-5,593	-5,290	-4,516	-4,464	-3,258	-1,071	-1,875	-4,577	-7,717	-6,137	-6,478
40%	-5,225	-7,234	-5,290	-4,516	-4,464	-3,258	-1,217	-1,956	-5,000	-8,629	-7,321	-6,847
50%	-5,841	-8,639	-5,290	-4,516	-4,464	-3,258	-1,432	-2,105	-5,000	-9,188	-8,540	-7,845
60%	-6,085	-8,946	-6,323	-5,000	-4,483	-3,258	-1,621	-2,330	-5,000	-9,800	-8,902	-8,680
70%	-6,754	-9,222	-8,787	-5,226	-4,483	-3,258	-2,006	-2,467	-5,000	-10,345	-9,294	-8,905
80%	-7,307	-9,407	-9,557	-5,226	-5,000	-3,258	-2,110	-2,736	-5,000	-10,738	-9,648	-9,168
90%	-8,347	-9,579	-9,708	-5,226	-5,000	-3,500	-2,318	-3,386	-5,000	-11,277	-10,295	-9,355
Long Term												
Full Simulation Period[a]	-5,647	-7,271	-6,329	-3,956	-3,921	-2,459	-1,162	-1,984	-4,272	-8,351	-7,649	-7,352
Water Year Types[b,c]												
Wet (32%)	-6,734	-8,745	-7,311	-2,303	-2,624	-812	-576	-1,608	-4,431	-8,302	-8,458	-8,569
Above Normal (15%)	-5,549	-9,049	-7,898	-4,331	-3,827	-2,754	-1,501	-2,415	-4,911	-9,420	-9,059	-8,739
Below Normal (17%)	-6,669	-7,271	-6,481	-4,707	-4,663	-3,289	-1,435	-2,260	-4,662	-10,506	-9,992	-8,415
Dry (22%)	-4,977	-5,965	-4,686	-5,078	-4,761	-3,307	-1,548	-2,157	-4,519	-9,042	-5,719	-6,167
Critical (15%)	-3,205	-4,259	-4,921	-4,605	-4,703	-3,491	-1,199	-1,787	-2,464	-3,837	-4,651	-3,868

Table 5B3-6-2c. Old and Middle River Flow, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (combined flows)(cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-202	-398	73	0	1	59	49	-58	-32	-658	-1,008	-877
20%	-349	-717	-4	0	0	0	35	8	54	-1,452	-600	-937
30%	-476	-791	0	0	0	0	-28	8	83	-463	-761	-523
40%	-601	-1,200	0	0	0	0	-12	15	0	-361	-681	-216
50%	-631	-180	0	0	0	0	47	8	0	-201	-258	-135
60%	-466	-56	-515	0	0	0	17	-32	0	-195	-14	-85
70%	-37	-32	-6	0	0	0	-49	-11	0	-49	-76	-104
80%	56	-23	39	0	0	0	3	-69	0	-72	-15	-78
90%	-66	0	16	0	0	0	0	0	0	-71	-10	-74
Long Term												
Full Simulation Period[a]	-300	-341	39	3	21	-3	-4	-2	-12	-361	-372	-344
Water Year Types[b,c]												
Wet (32%)	31	-9	-47	1	5	17	0	8	7	10	-14	-6
Above Normal (15%)	-123	-39	26	0	26	-1	-41	-29	4	-17	-11	-92
Below Normal (17%)	-377	-654	-174	0	89	0	5	3	40	2	-184	-239
Dry (22%)	-913	-724	415	11	-2	0	16	-12	-71	-1,060	-1,026	-739
Critical (15%)	-187	-423	-78	0	2	-58	-16	11	-43	-885	-745	-860

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-6-3a. Old and Middle River Flow, No Action Alternative 011221, Monthly Flow (combined flows)(cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-2,764	-3,303	-4,107	-3,645	-3,411	-1,762	-506	-1,140	-1,801	-2,807	-3,558	-3,579
20%	-3,472	-3,883	-5,031	-3,645	-4,464	-3,258	-902	-1,789	-3,736	-4,689	-4,543	-4,993
30%	-4,204	-4,802	-5,290	-4,516	-4,464	-3,258	-1,043	-1,882	-4,660	-7,254	-5,377	-5,955
40%	-4,624	-6,033	-5,290	-4,516	-4,464	-3,258	-1,206	-1,971	-5,000	-8,268	-6,641	-6,631
50%	-5,210	-8,460	-5,290	-4,516	-4,464	-3,258	-1,479	-2,113	-5,000	-8,987	-8,283	-7,710
60%	-5,620	-8,890	-5,807	-5,000	-4,483	-3,258	-1,638	-2,297	-5,000	-9,605	-8,888	-8,594
70%	-6,718	-9,190	-8,781	-5,226	-4,483	-3,258	-1,957	-2,456	-5,000	-10,296	-9,218	-8,801
80%	-7,363	-9,384	-9,595	-5,226	-5,000	-3,258	-2,112	-2,667	-5,000	-10,666	-9,633	-9,090
90%	-8,282	-9,579	-9,725	-5,226	-5,000	-3,500	-2,318	-3,386	-5,000	-11,206	-10,285	-9,281
Long Term												
Full Simulation Period[a]	-5,347	-6,930	-6,368	-3,959	-3,942	-2,456	-1,158	-1,982	-4,260	-7,990	-7,278	-7,008
Water Year Types[b,c]												
Wet (32%)	-6,765	-8,737	-7,264	-2,304	-2,629	-829	-575	-1,616	-4,438	-8,312	-8,444	-8,563
Above Normal (15%)	-5,426	-9,010	-7,924	-4,331	-3,853	-2,754	-1,460	-2,386	-4,914	-9,402	-9,048	-8,647
Below Normal (17%)	-6,292	-6,617	-6,307	-4,707	-4,752	-3,289	-1,440	-2,263	-4,702	-10,508	-9,808	-8,176
Dry (22%)	-4,064	-5,241	-5,101	-5,090	-4,760	-3,307	-1,564	-2,146	-4,449	-7,982	-4,693	-5,428
Critical (15%)	-3,018	-3,836	-4,842	-4,605	-4,705	-3,433	-1,184	-1,799	-2,421	-2,952	-3,906	-3,008

Table 5B3-6-3b. Old and Middle River Flow, Alternative 2 011221, Monthly Flow (combined flows)(cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-2,920	-3,502	-4,076	-3,645	-3,404	-1,759	-457	-1,138	-1,773	-3,480	-4,561	-4,356
20%	-3,836	-4,400	-5,196	-3,645	-4,464	-3,258	-867	-1,781	-3,571	-5,967	-5,015	-6,014
30%	-4,519	-5,589	-5,290	-4,516	-4,464	-3,258	-1,071	-1,879	-4,563	-7,717	-5,950	-6,451
40%	-5,162	-7,090	-5,290	-4,516	-4,464	-3,258	-1,213	-1,956	-5,000	-8,547	-7,314	-6,839
50%	-5,842	-8,639	-5,290	-4,516	-4,464	-3,258	-1,434	-2,105	-5,000	-9,156	-8,524	-7,850
60%	-6,108	-8,903	-6,324	-5,000	-4,483	-3,258	-1,618	-2,296	-5,000	-9,800	-8,884	-8,648
70%	-6,754	-9,222	-8,784	-5,226	-4,483	-3,258	-2,006	-2,474	-5,000	-10,346	-9,294	-8,832
80%	-7,274	-9,410	-9,538	-5,226	-5,000	-3,258	-2,110	-2,735	-5,000	-10,760	-9,648	-9,117
90%	-8,339	-9,579	-9,708	-5,226	-5,000	-3,500	-2,318	-3,386	-5,000	-11,268	-10,298	-9,350
Long Term												
Full Simulation Period[a]	-5,617	-7,209	-6,433	-3,957	-3,920	-2,466	-1,153	-1,980	-4,260	-8,326	-7,624	-7,325
Water Year Types[b,c]												
Wet (32%)	-6,743	-8,745	-7,257	-2,303	-2,619	-825	-575	-1,608	-4,431	-8,302	-8,456	-8,568
Above Normal (15%)	-5,480	-9,040	-7,890	-4,331	-3,815	-2,754	-1,459	-2,406	-4,911	-9,416	-9,057	-8,685
Below Normal (17%)	-6,738	-7,292	-6,483	-4,707	-4,662	-3,289	-1,432	-2,264	-4,671	-10,531	-10,009	-8,338
Dry (22%)	-4,825	-5,675	-5,274	-5,085	-4,770	-3,307	-1,537	-2,139	-4,453	-8,951	-5,672	-6,186
Critical (15%)	-3,192	-4,255	-4,869	-4,602	-4,700	-3,515	-1,199	-1,790	-2,469	-3,780	-4,535	-3,798

Table 5B3-6-3c. Old and Middle River Flow, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (combined flows)(cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-156	-198	31	0	7	4	50	3	27	-673	-1,003	-777
20%	-363	-517	-165	0	0	0	35	8	166	-1,278	-472	-1,021
30%	-315	-787	0	0	0	0	-28	3	97	-463	-573	-496
40%	-539	-1,057	0	0	0	0	-8	15	0	-279	-674	-208
50%	-632	-179	0	0	0	0	45	8	0	-169	-241	-140
60%	-488	-12	-517	0	0	0	20	1	0	-195	5	-54
70%	-36	-32	-4	0	0	0	-49	-18	0	-49	-76	-31
80%	89	-26	58	0	0	0	2	-68	0	-94	-15	-27
90%	-57	0	16	0	0	0	0	0	0	-62	-13	-68
Long Term												
Full Simulation Period[a]	-270	-279	-65	2	22	-11	5	2	0	-337	-346	-317
Water Year Types[b,c]												
Wet (32%)	22	-9	7	1	9	3	1	8	7	10	-12	-5
Above Normal (15%)	-54	-30	34	0	38	0	1	-20	4	-14	-9	-38
Below Normal (17%)	-446	-675	-177	0	90	0	8	-1	31	-23	-201	-162
Dry (22%)	-761	-434	-173	5	-10	0	27	7	-4	-969	-978	-759
Critical (15%)	-174	-419	-27	3	5	-81	-15	9	-48	-828	-629	-790

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-6-4a. Old and Middle River Flow, No Action Alternative 011221, Monthly Flow (combined flows)(cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-2,764	-3,303	-4,107	-3,645	-3,411	-1,762	-506	-1,140	-1,801	-2,807	-3,558	-3,579
20%	-3,472	-3,883	-5,031	-3,645	-4,464	-3,258	-902	-1,789	-3,736	-4,689	-4,543	-4,993
30%	-4,204	-4,802	-5,290	-4,516	-4,464	-3,258	-1,043	-1,882	-4,660	-7,254	-5,377	-5,955
40%	-4,624	-6,033	-5,290	-4,516	-4,464	-3,258	-1,206	-1,971	-5,000	-8,268	-6,641	-6,631
50%	-5,210	-8,460	-5,290	-4,516	-4,464	-3,258	-1,479	-2,113	-5,000	-8,987	-8,283	-7,710
60%	-5,620	-8,890	-5,807	-5,000	-4,483	-3,258	-1,638	-2,297	-5,000	-9,605	-8,888	-8,594
70%	-6,718	-9,190	-8,781	-5,226	-4,483	-3,258	-1,957	-2,456	-5,000	-10,296	-9,218	-8,801
80%	-7,363	-9,384	-9,595	-5,226	-5,000	-3,258	-2,112	-2,667	-5,000	-10,666	-9,633	-9,090
90%	-8,282	-9,579	-9,725	-5,226	-5,000	-3,500	-2,318	-3,386	-5,000	-11,206	-10,285	-9,281
Long Term												
Full Simulation Period[a]	-5,347	-6,930	-6,368	-3,959	-3,942	-2,456	-1,158	-1,982	-4,260	-7,990	-7,278	-7,008
Water Year Types[b,c]												
Wet (32%)	-6,765	-8,737	-7,264	-2,304	-2,629	-829	-575	-1,616	-4,438	-8,312	-8,444	-8,563
Above Normal (15%)	-5,426	-9,010	-7,924	-4,331	-3,853	-2,754	-1,460	-2,386	-4,914	-9,402	-9,048	-8,647
Below Normal (17%)	-6,292	-6,617	-6,307	-4,707	-4,752	-3,289	-1,440	-2,263	-4,702	-10,508	-9,808	-8,176
Dry (22%)	-4,064	-5,241	-5,101	-5,090	-4,760	-3,307	-1,564	-2,146	-4,449	-7,982	-4,693	-5,428
Critical (15%)	-3,018	-3,836	-4,842	-4,605	-4,705	-3,433	-1,184	-1,799	-2,421	-2,952	-3,906	-3,008

Table 5B3-6-4b. Old and Middle River Flow, Alternative 3 020121, Monthly Flow (combined flows)(cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-2,762	-3,940	-4,014	-3,280	-3,422	-1,669	-457	-1,147	-2,018	-3,458	-4,266	-4,207
20%	-3,796	-4,598	-4,957	-3,645	-4,464	-3,258	-876	-1,781	-3,611	-5,525	-5,047	-5,928
30%	-4,753	-5,346	-5,290	-4,516	-4,464	-3,258	-1,071	-1,882	-4,577	-7,824	-6,133	-6,336
40%	-5,247	-6,460	-5,290	-4,516	-4,464	-3,258	-1,220	-1,971	-5,000	-8,599	-7,660	-6,846
50%	-5,707	-8,602	-5,290	-4,516	-4,464	-3,258	-1,444	-2,105	-5,000	-9,143	-8,522	-8,137
60%	-6,148	-9,028	-6,736	-5,000	-4,483	-3,258	-1,621	-2,330	-5,000	-9,894	-8,880	-8,666
70%	-6,671	-9,237	-9,012	-5,226	-4,483	-3,258	-2,006	-2,467	-5,000	-10,346	-9,294	-8,897
80%	-7,561	-9,407	-9,605	-5,226	-5,000	-3,258	-2,109	-2,721	-5,000	-10,765	-9,657	-9,200
90%	-8,463	-9,579	-9,763	-5,226	-5,000	-3,500	-2,318	-3,290	-5,000	-11,275	-10,306	-9,354
Long Term												
Full Simulation Period[a]	-5,670	-7,223	-6,500	-3,942	-3,937	-2,454	-1,163	-1,970	-4,272	-8,335	-7,618	-7,334
Water Year Types[b,c]												
Wet (32%)	-6,732	-8,745	-7,315	-2,303	-2,622	-807	-574	-1,522	-4,431	-8,306	-8,440	-8,548
Above Normal (15%)	-6,001	-9,033	-7,940	-4,331	-3,882	-2,769	-1,484	-2,416	-4,911	-9,458	-9,072	-8,953
Below Normal (17%)	-6,771	-7,233	-6,388	-4,707	-4,680	-3,289	-1,434	-2,259	-4,677	-10,534	-9,992	-8,443
Dry (22%)	-4,939	-5,809	-5,543	-5,051	-4,775	-3,307	-1,559	-2,208	-4,528	-8,973	-5,537	-6,108
Critical (15%)	-2,848	-4,224	-4,858	-4,546	-4,717	-3,451	-1,205	-1,796	-2,431	-3,753	-4,734	-3,628

Table 5B3-6-4c. Old and Middle River Flow, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (combined flows)(cfs)

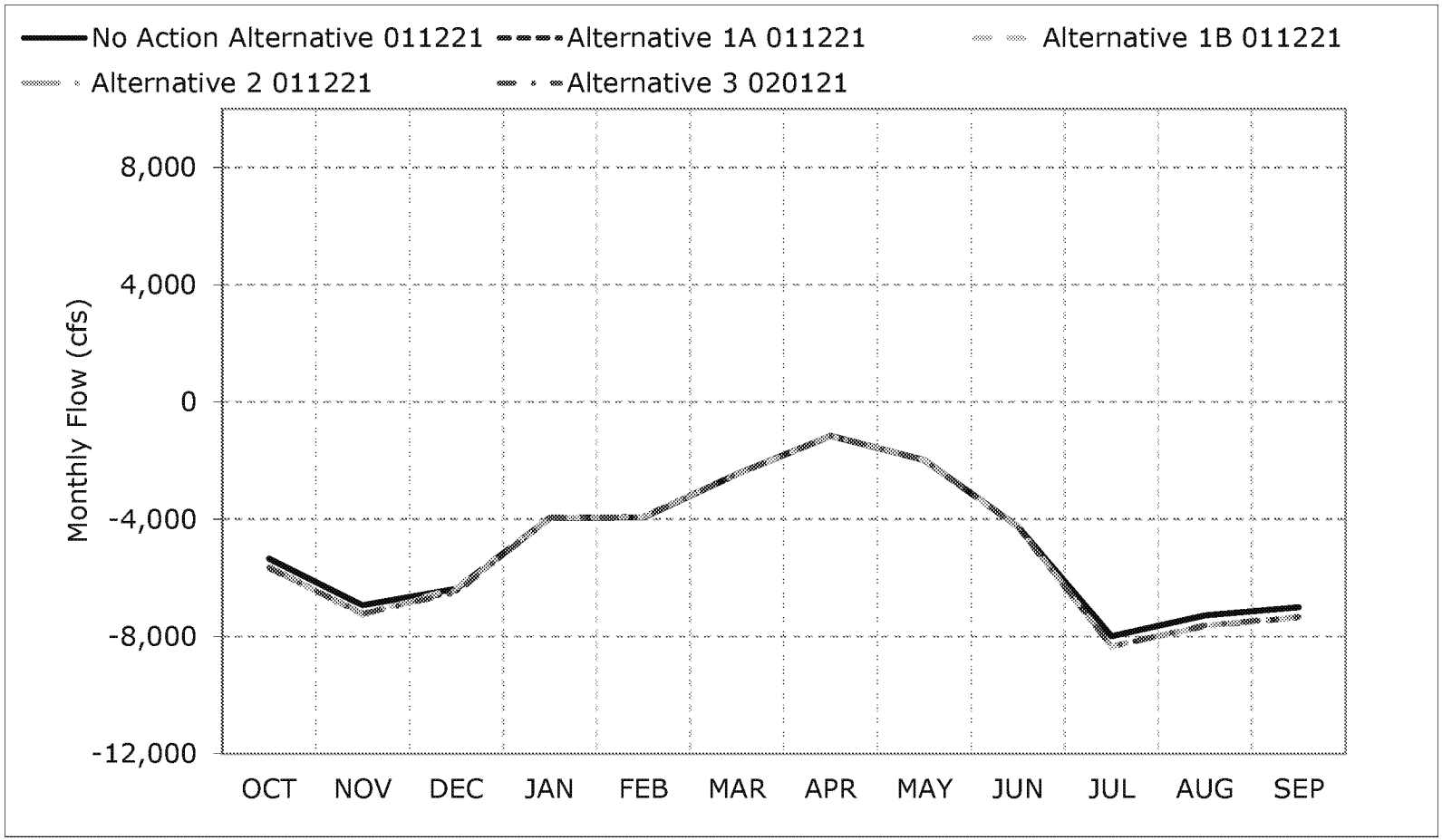
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2	-637	93	365	-11	93	49	-7	-217	-651	-708	-628
20%	-323	-714	74	0	0	0	27	8	125	-836	-504	-934
30%	-549	-544	0	0	0	0	-28	0	83	-570	-757	-381
40%	-623	-426	0	0	0	0	-14	0	0	-331	-1,019	-216
50%	-497	-142	0	0	0	0	34	8	0	-156	-239	-428
60%	-528	-137	-929	0	0	0	16	-33	0	-290	8	-71
70%	47	-47	-231	0	0	0	-49	-11	0	-49	-76	-96
80%	-198	-23	-9	0	0	0	3	-54	0	-99	-24	-110
90%	-182	0	-38	0	0	0	0	95	0	-69	-21	-73
Long Term												
Full Simulation Period[a]	-323	-293	-132	18	5	2	-4	12	-12	-345	-340	-326
Water Year Types[b,c]												
Wet (32%)	32	-9	-51	2	6	21	1	93	7	7	4	15
Above Normal (15%)	-574	-23	-16	0	-29	-15	-24	-30	4	-56	-25	-306
Below Normal (17%)	-479	-616	-82	0	73	-1	6	3	24	-25	-184	-267
Dry (22%)	-875	-567	-442	39	-15	0	5	-63	-80	-991	-844	-681
Critical (15%)	169	-388	-16	59	-12	-17	-22	2	-10	-801	-828	-620

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

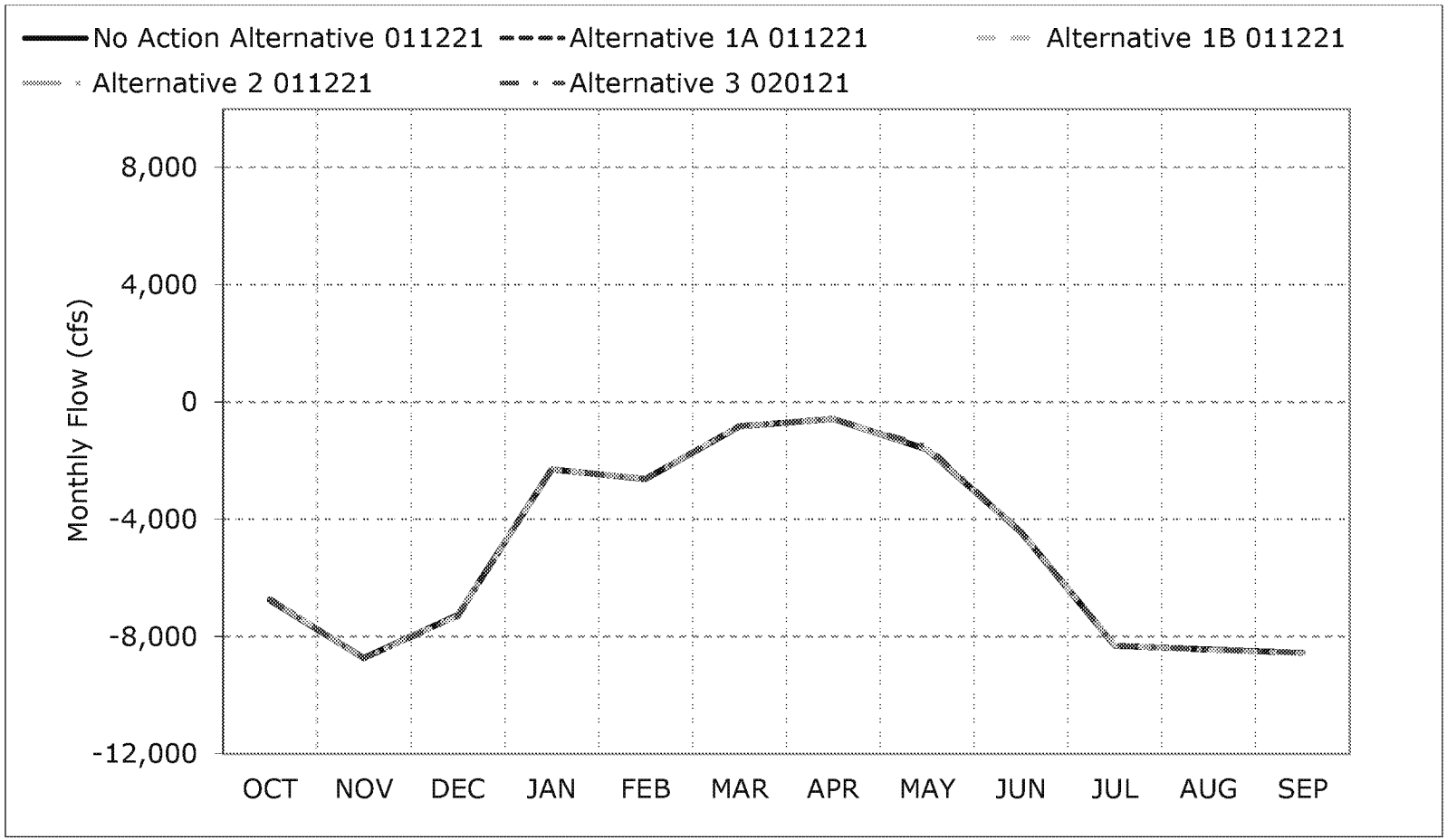
c These results are displayed with calendar year - year type sorting.

Figure 5B3-6-1. Old and Middle River Flow, Long-Term Average Flow



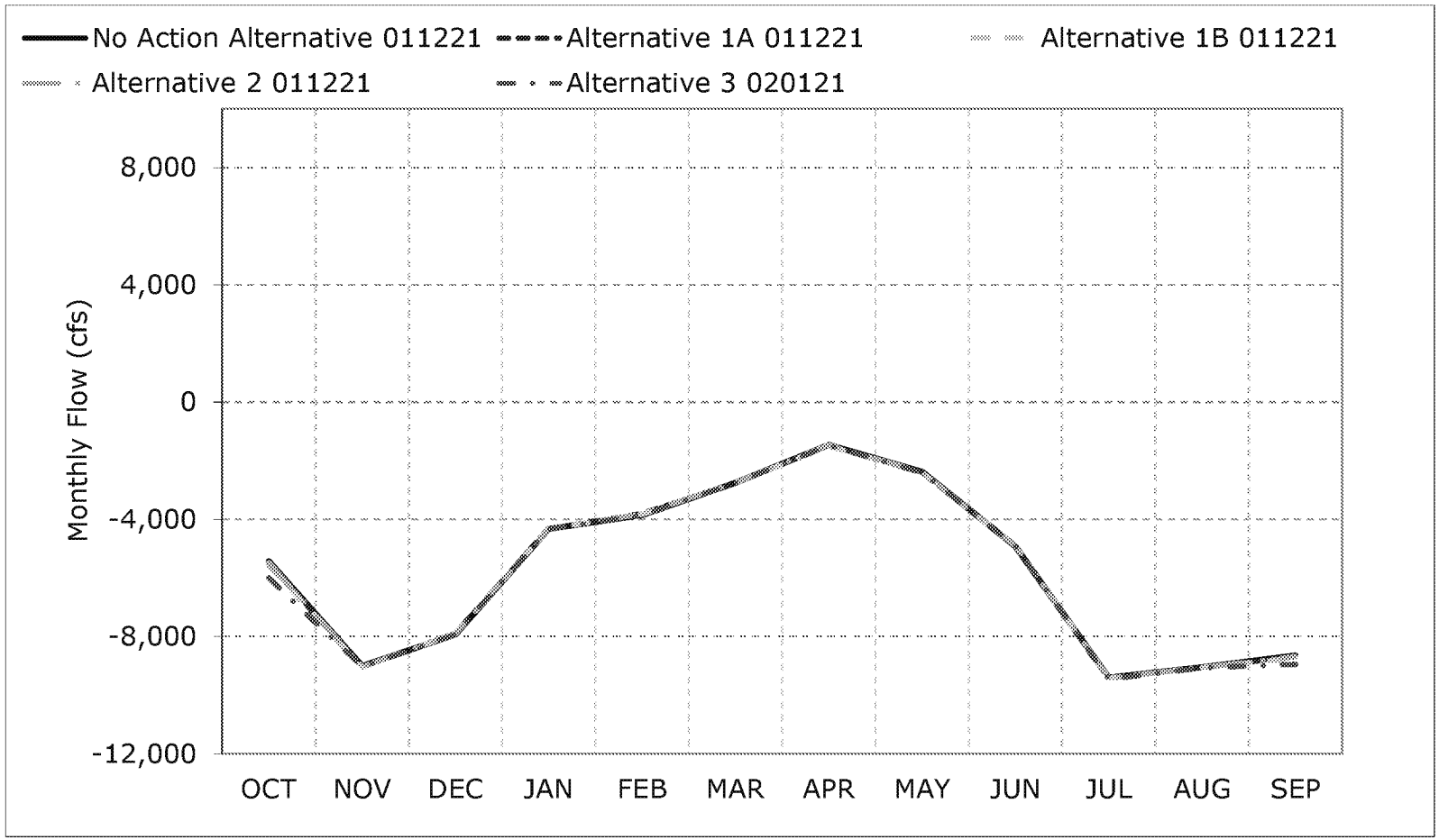
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-6-2. Old and Middle River Flow, Wet Year Average Flow



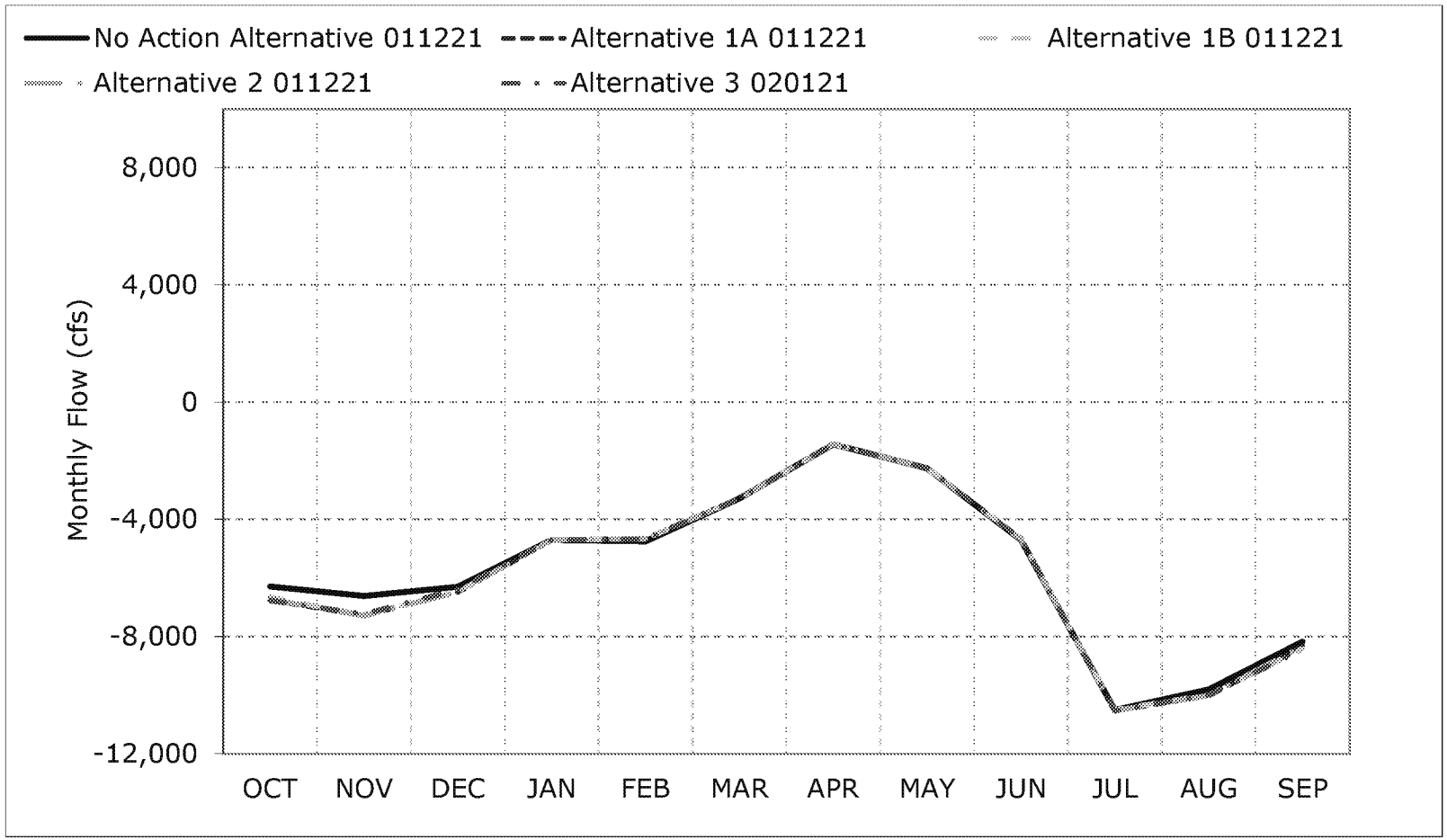
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-6-3. Old and Middle River Flow, Above Normal Year Average Flow



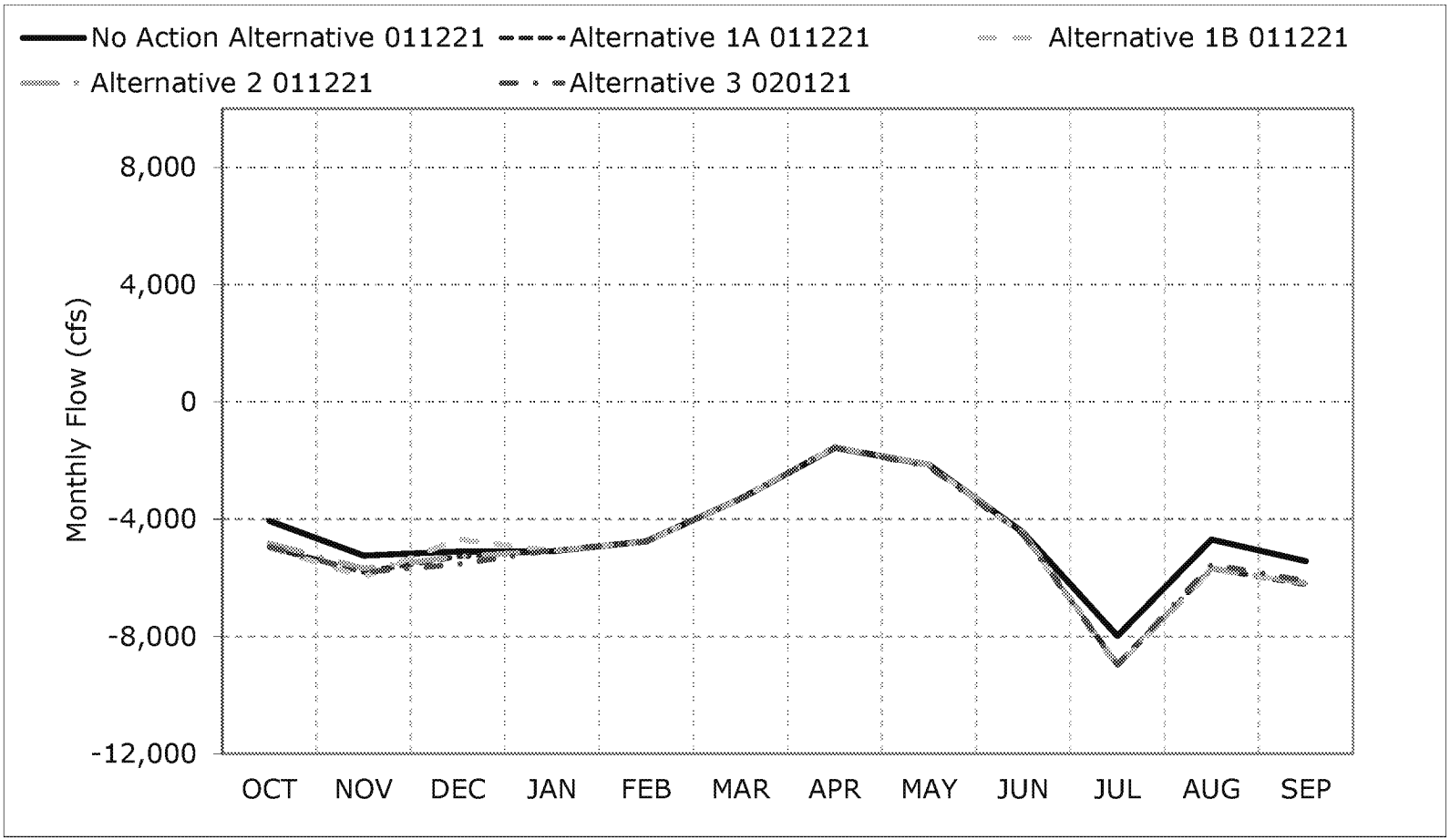
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-6-4. Old and Middle River Flow, Below Normal Year Average Flow



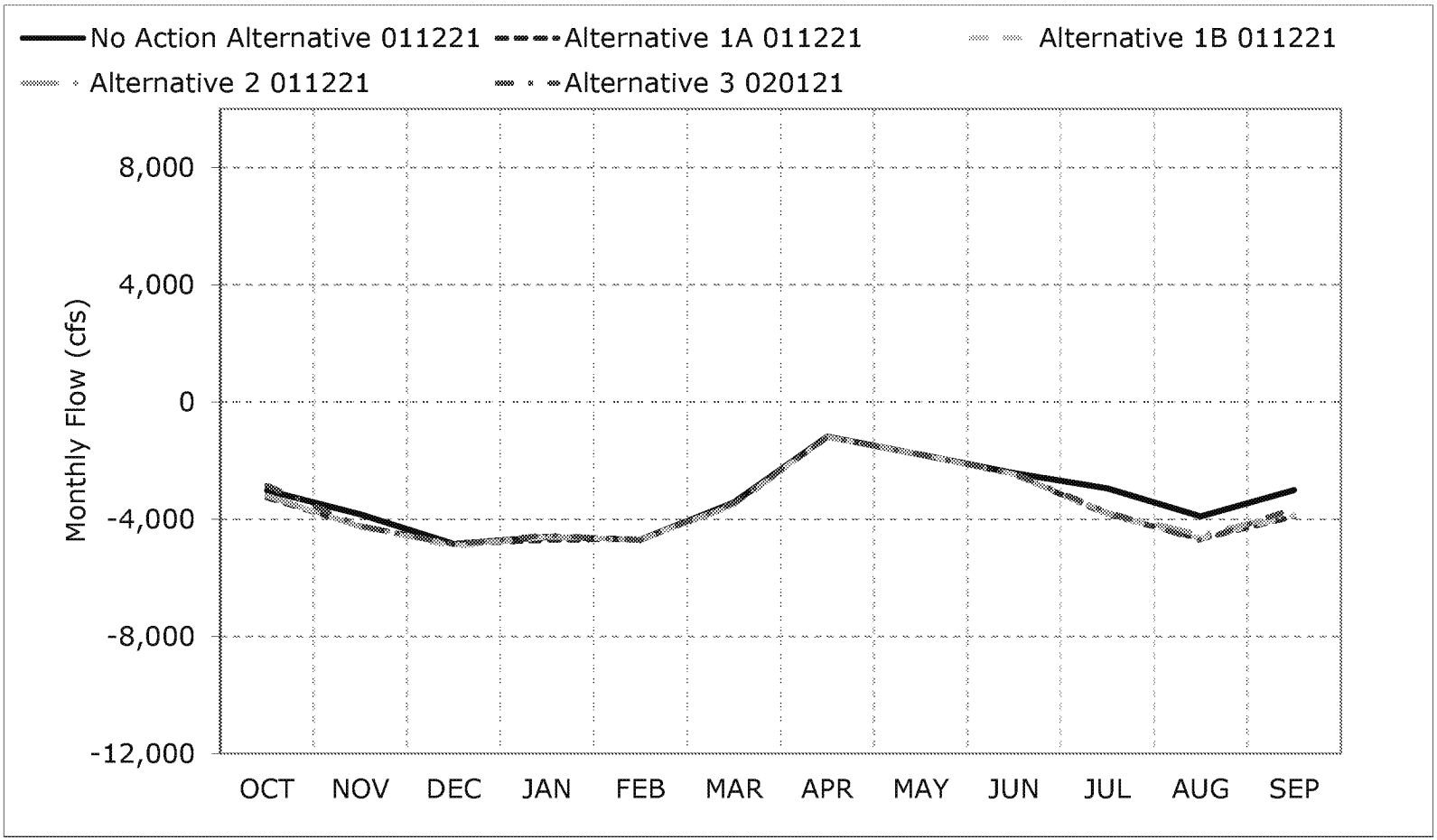
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-6-5. Old and Middle River Flow, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-6-6. Old and Middle River Flow, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-6-7. Old and Middle River Flow, October

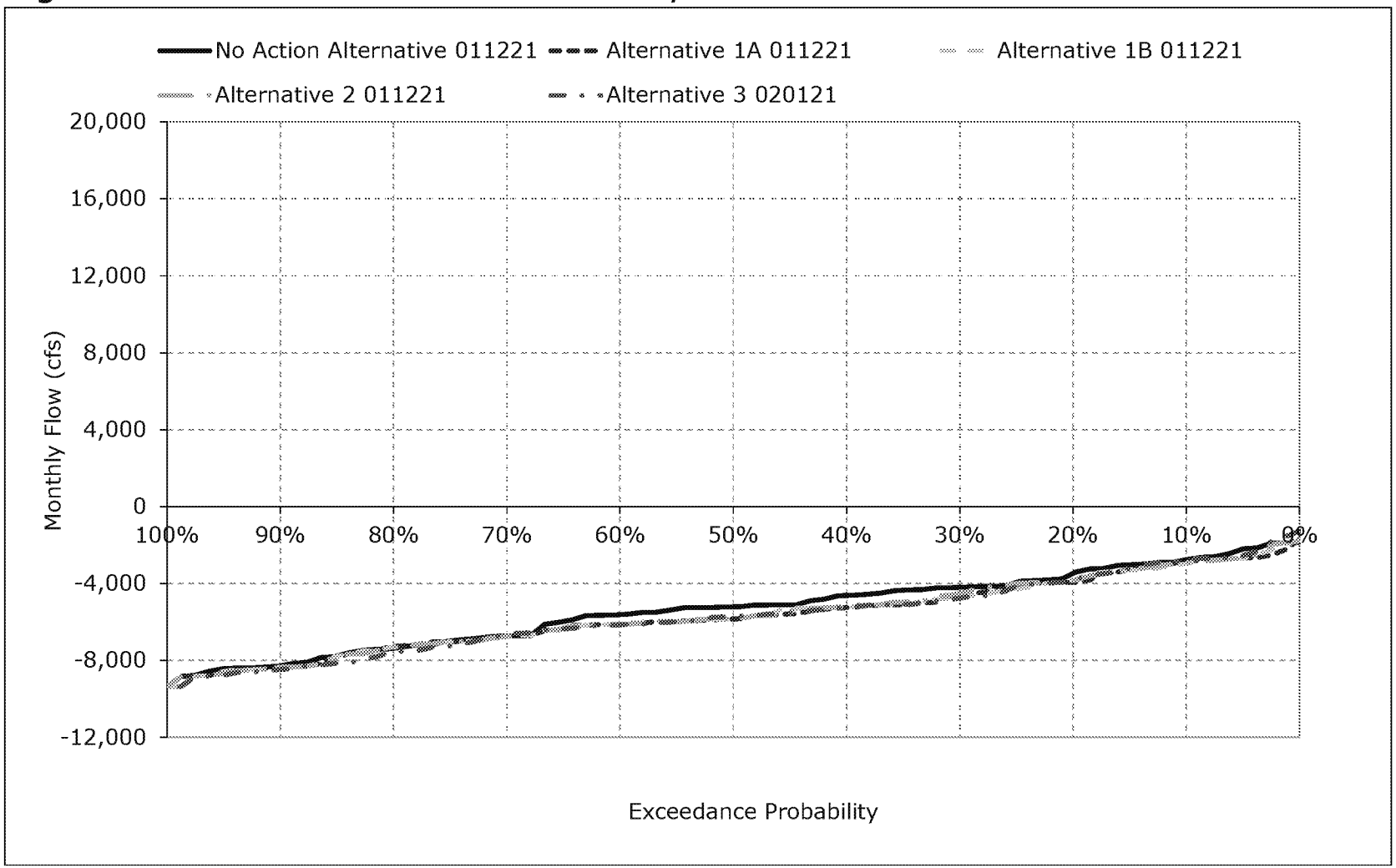


Figure 5B3-6-8. Old and Middle River Flow, November

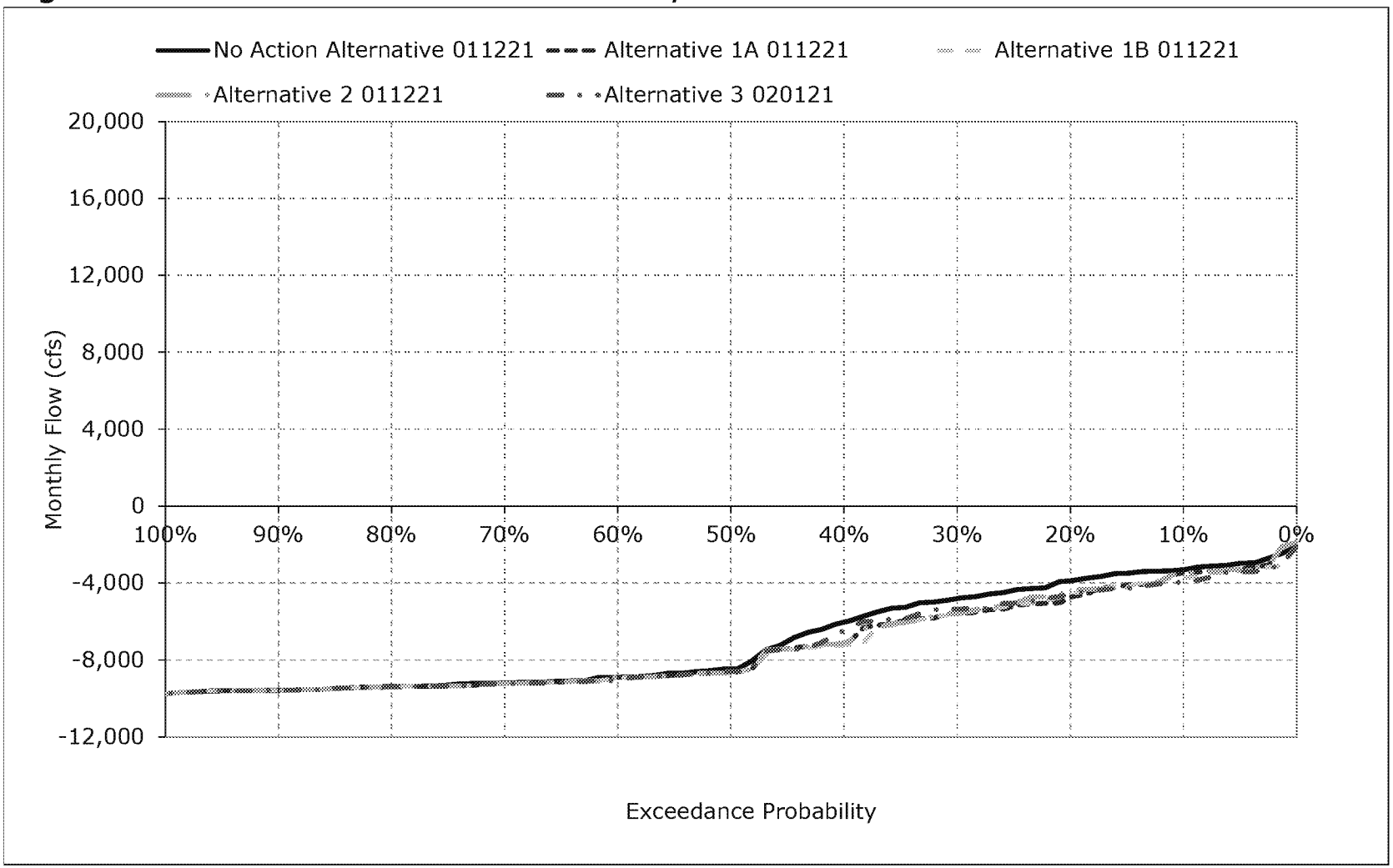


Figure 5B3-6-9. Old and Middle River Flow, December

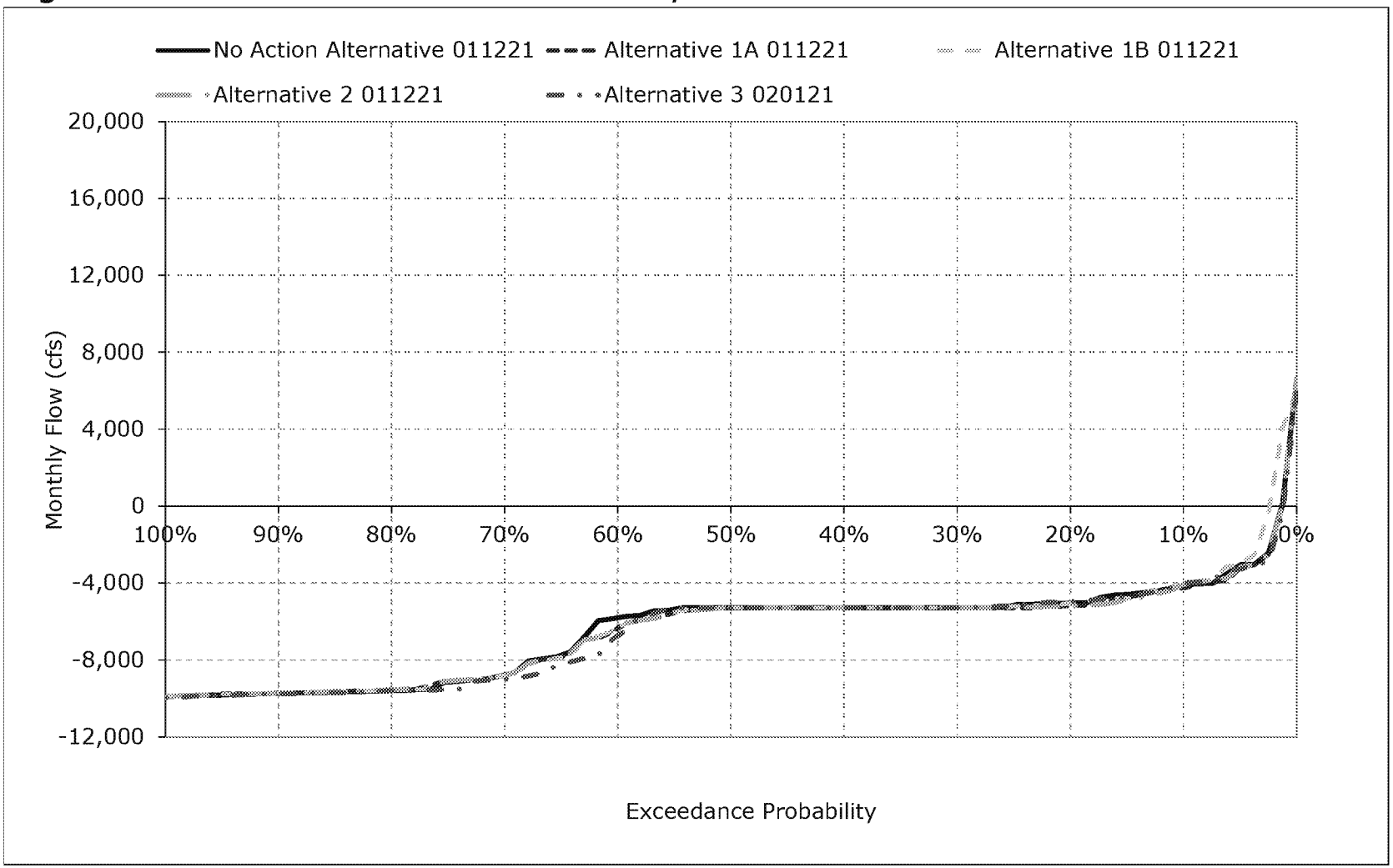


Figure 5B3-6-10. Old and Middle River Flow, January

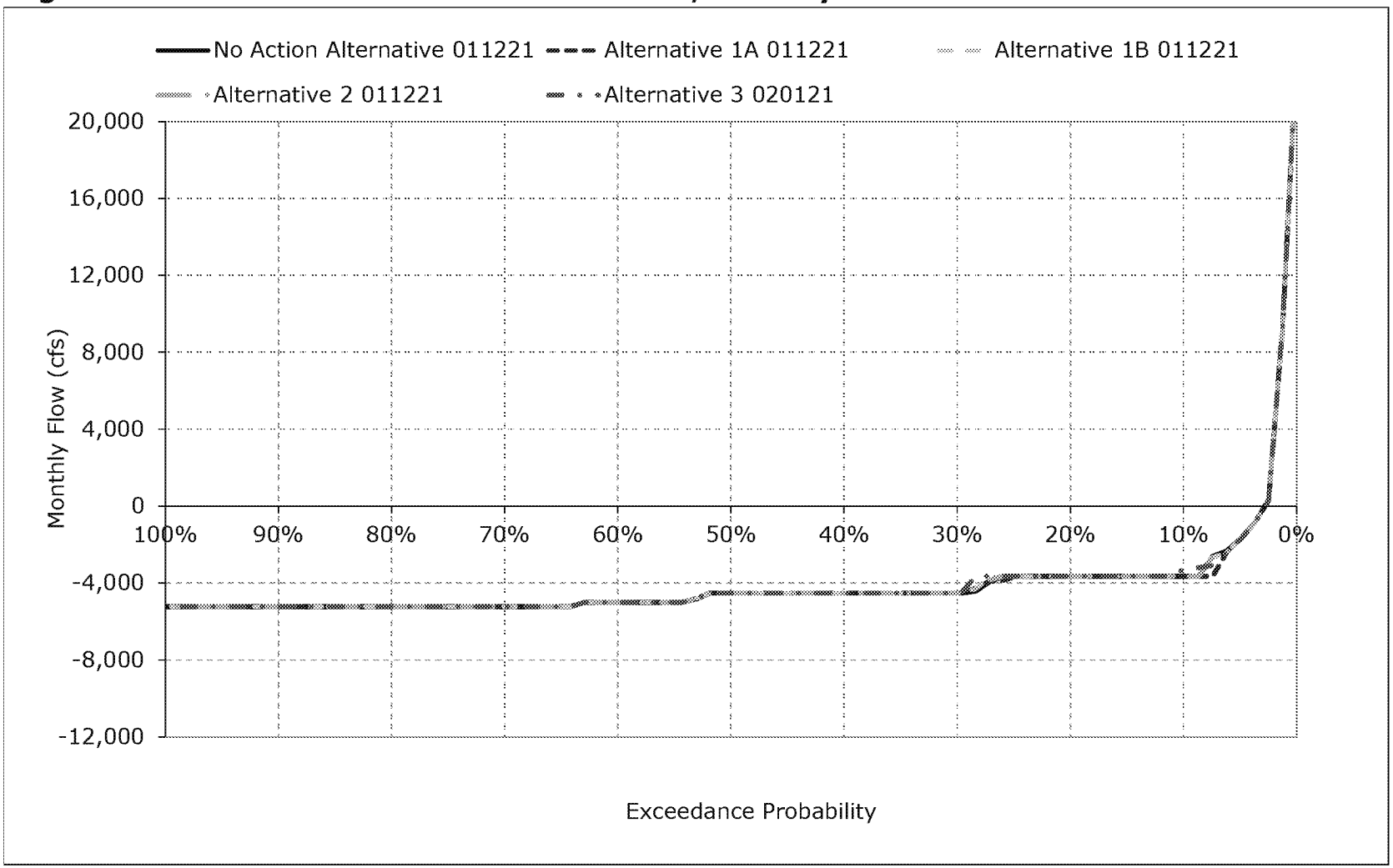


Figure 5B3-6-11. Old and Middle River Flow, February

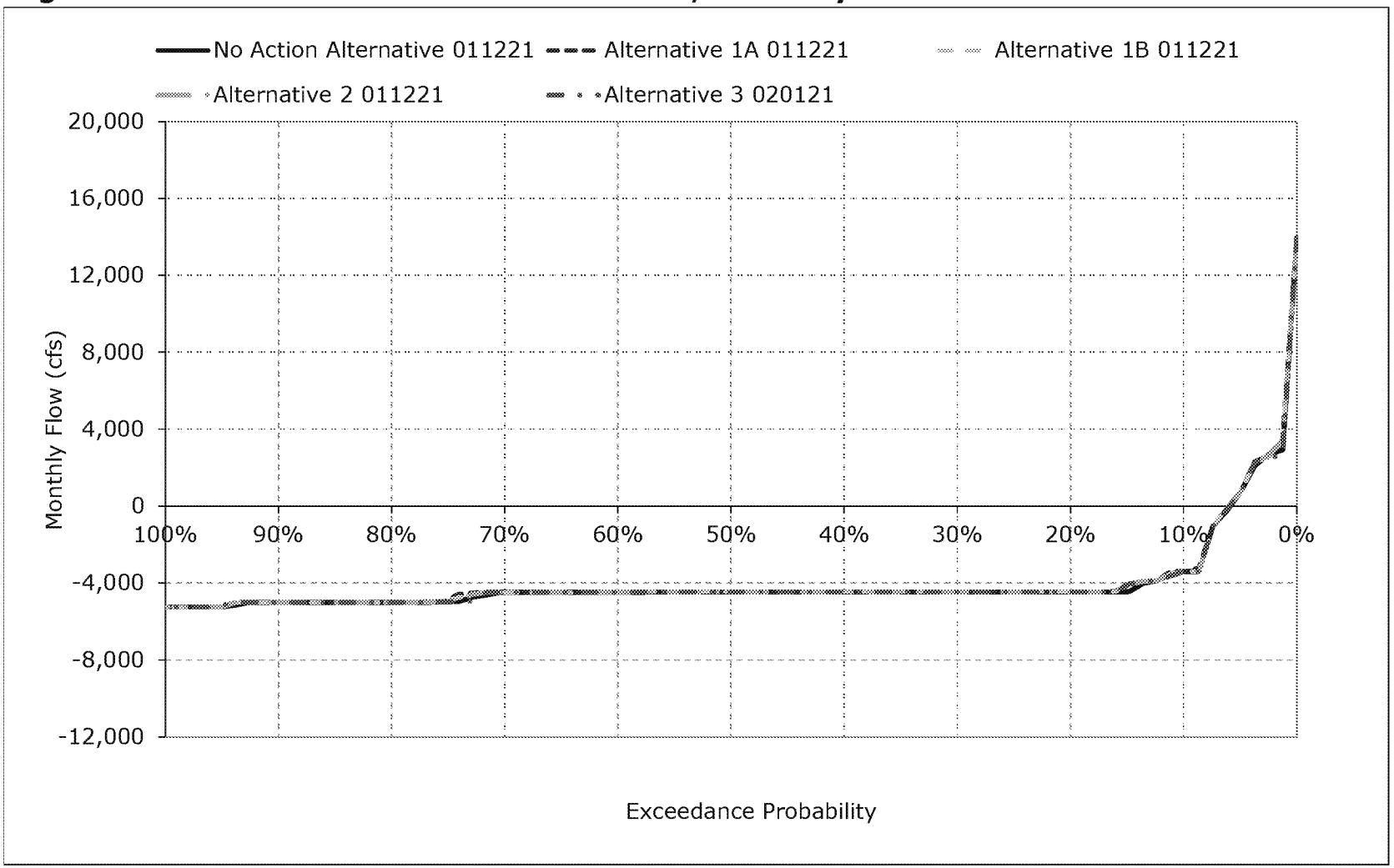


Figure 5B3-6-12. Old and Middle River Flow, March

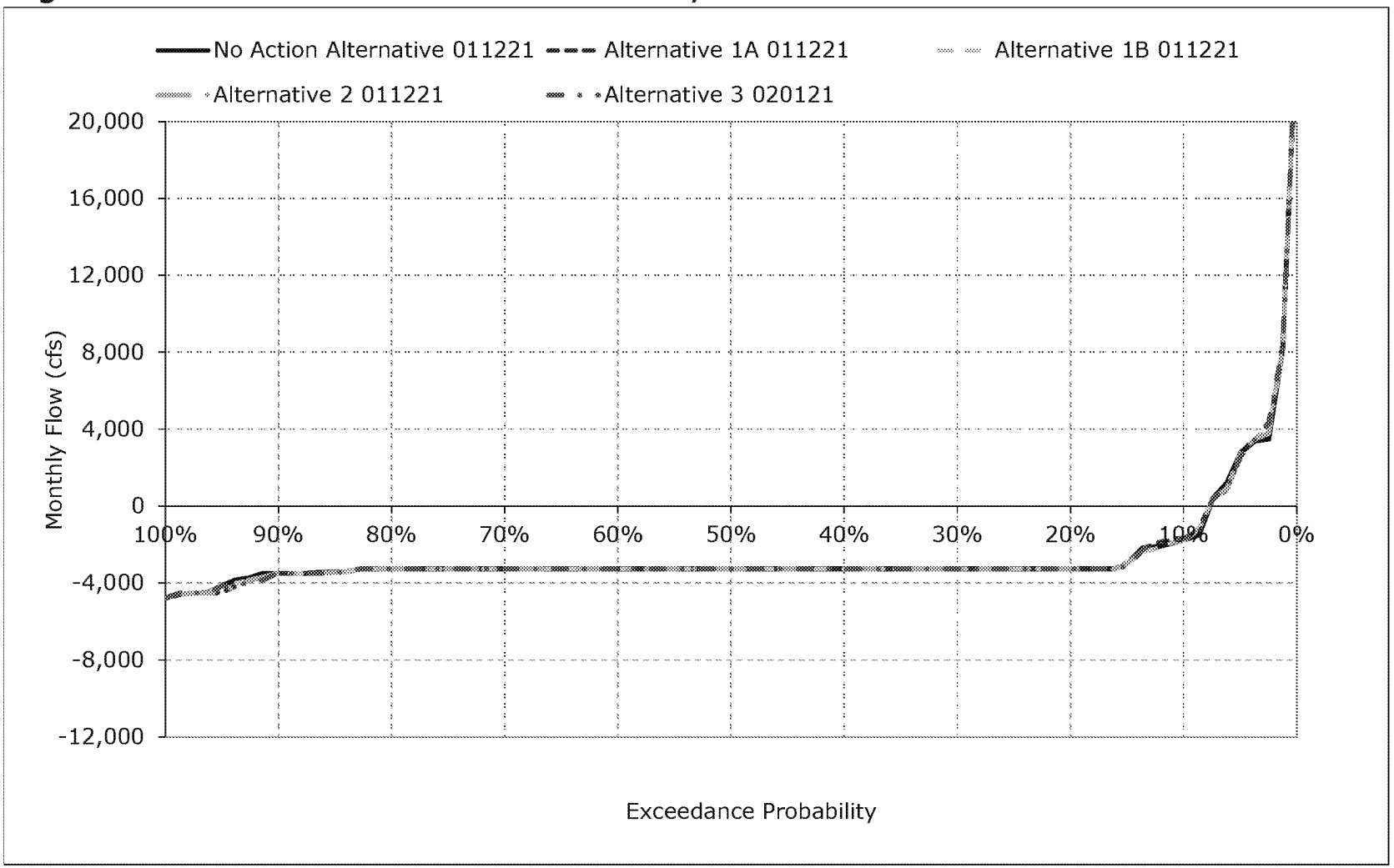


Figure 5B3-6-13. Old and Middle River Flow, April

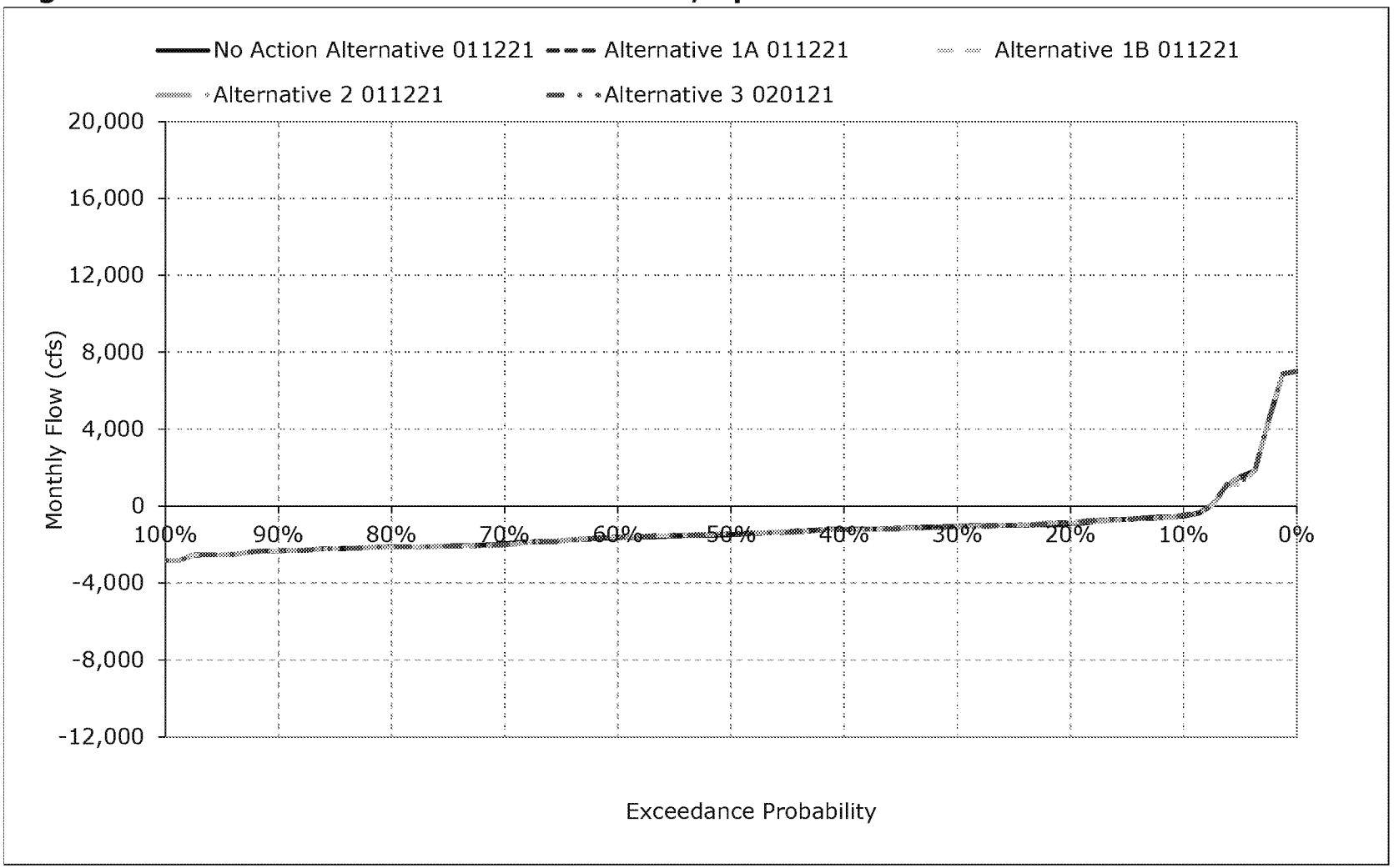


Figure 5B3-6-14. Old and Middle River Flow, May

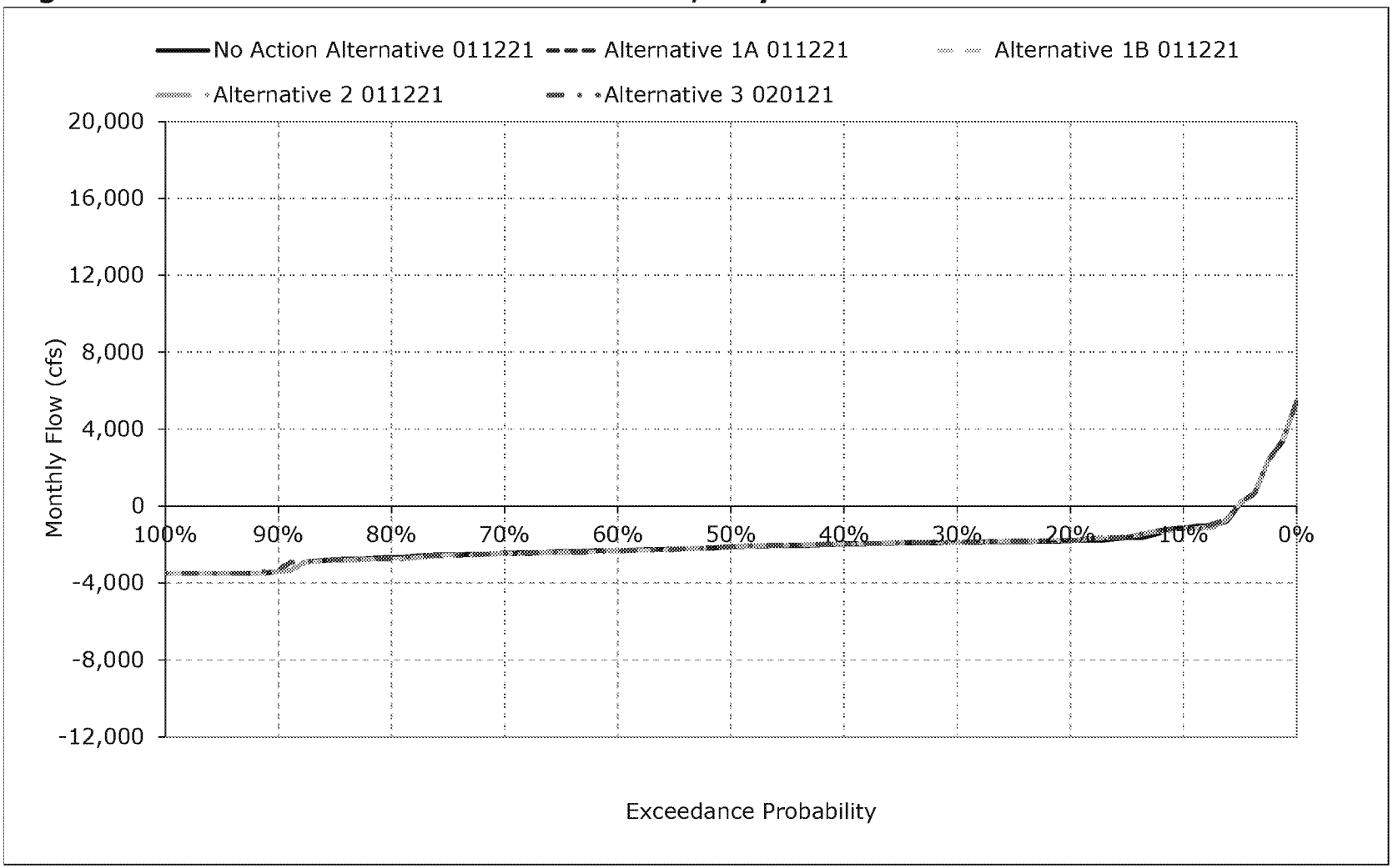


Figure 5B3-6-15. Old and Middle River Flow, June

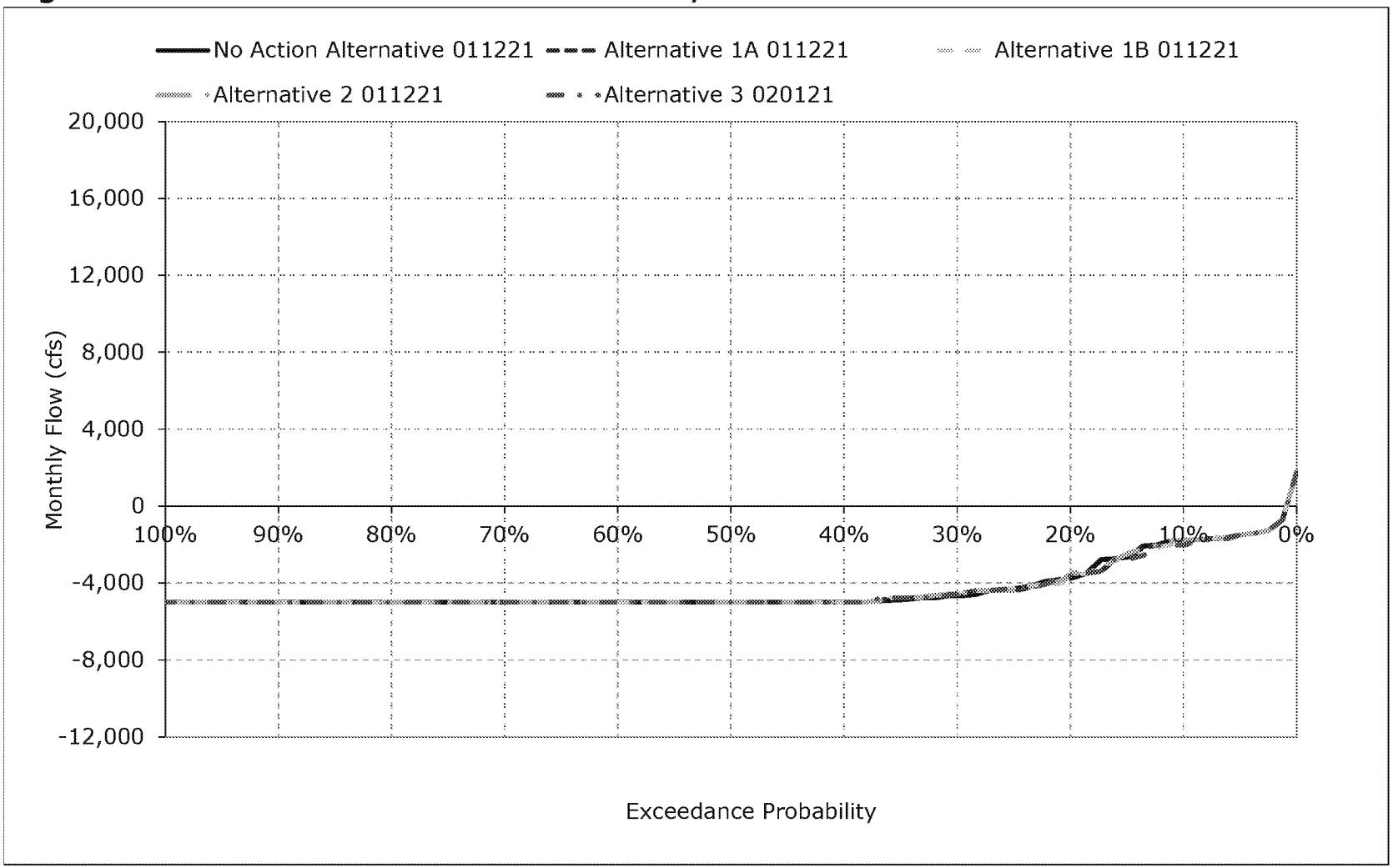


Figure 5B3-6-16. Old and Middle River Flow, July

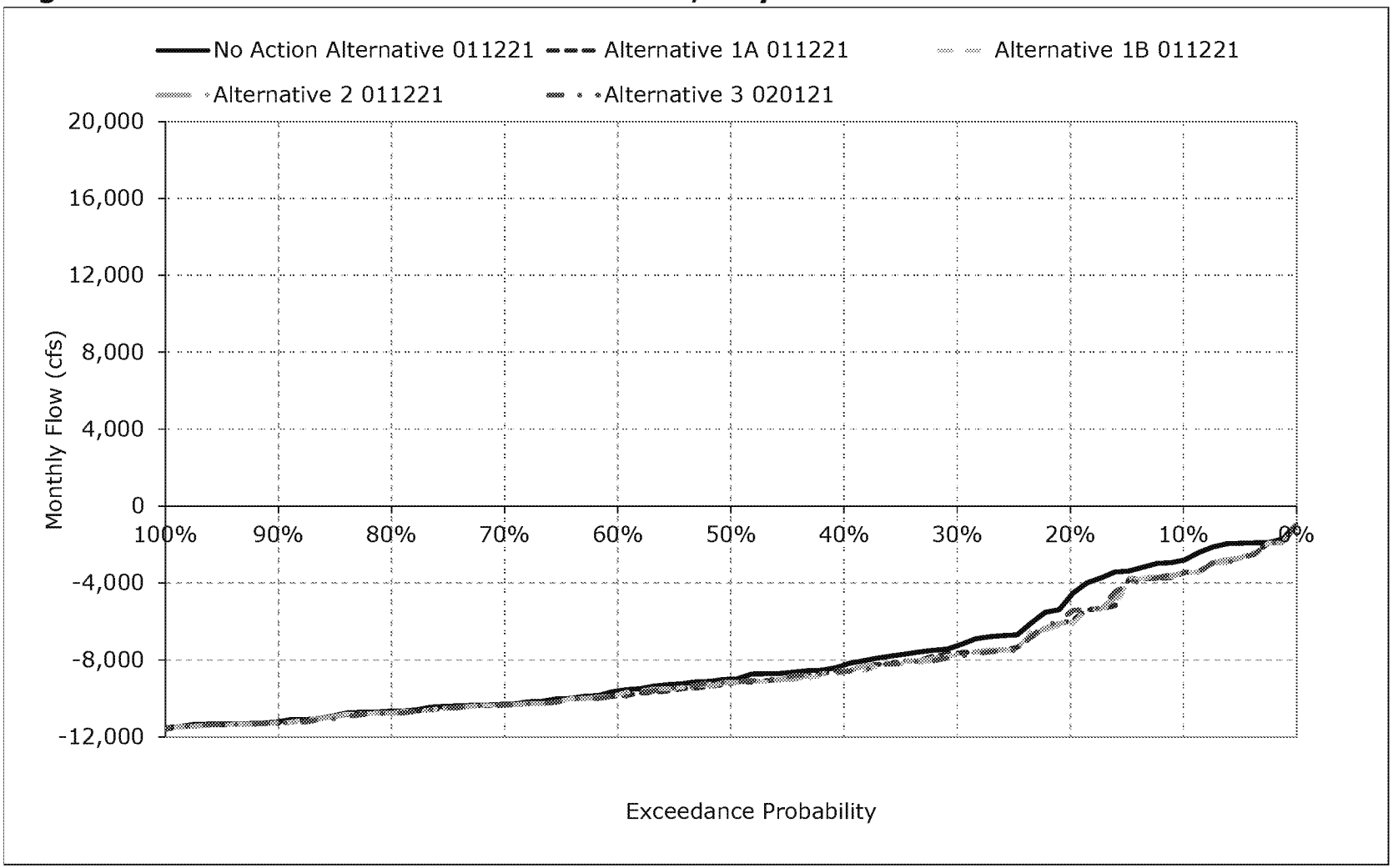


Figure 5B3-6-17. Old and Middle River Flow, August

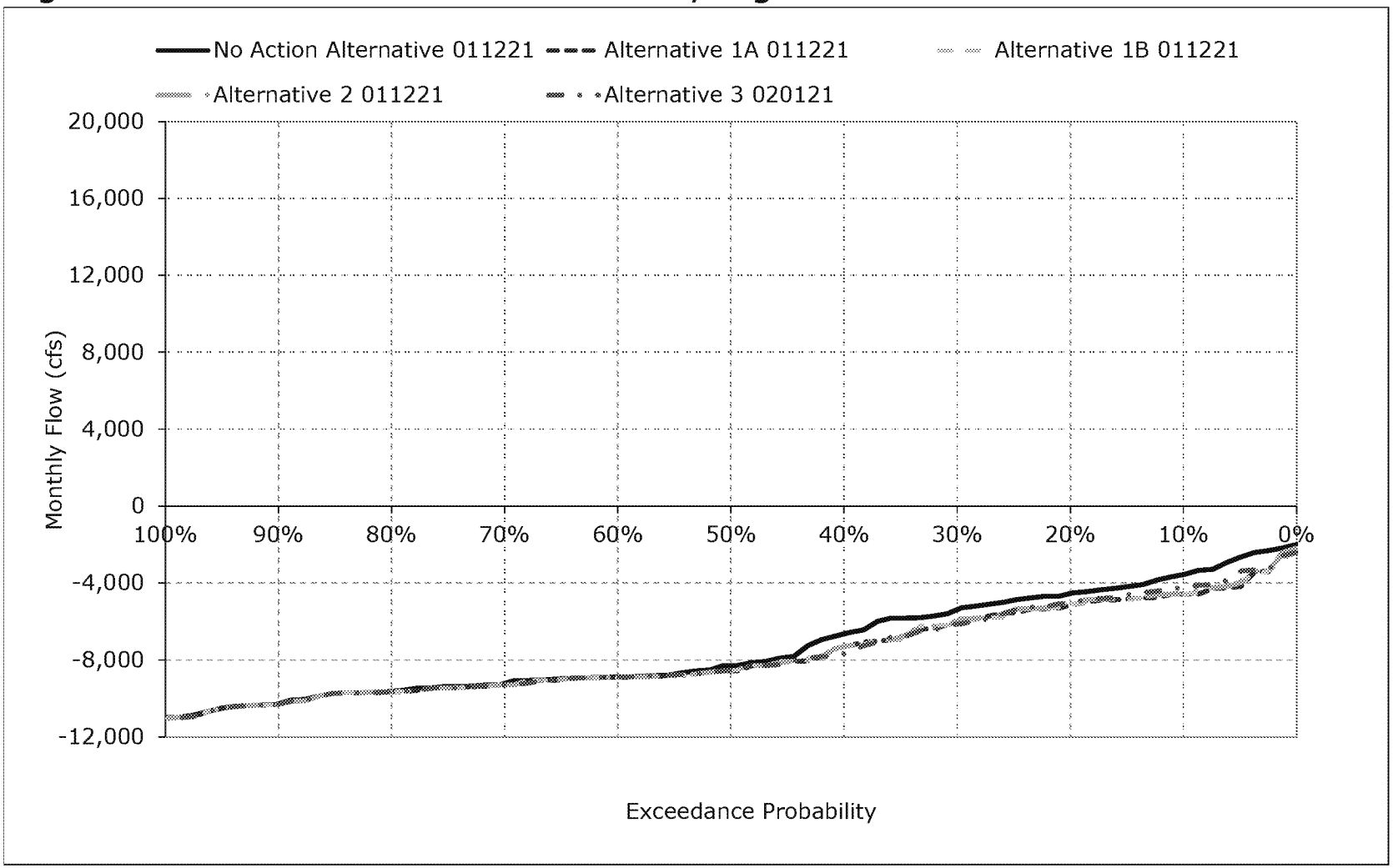


Figure 5B3-6-18. Old and Middle River Flow, September

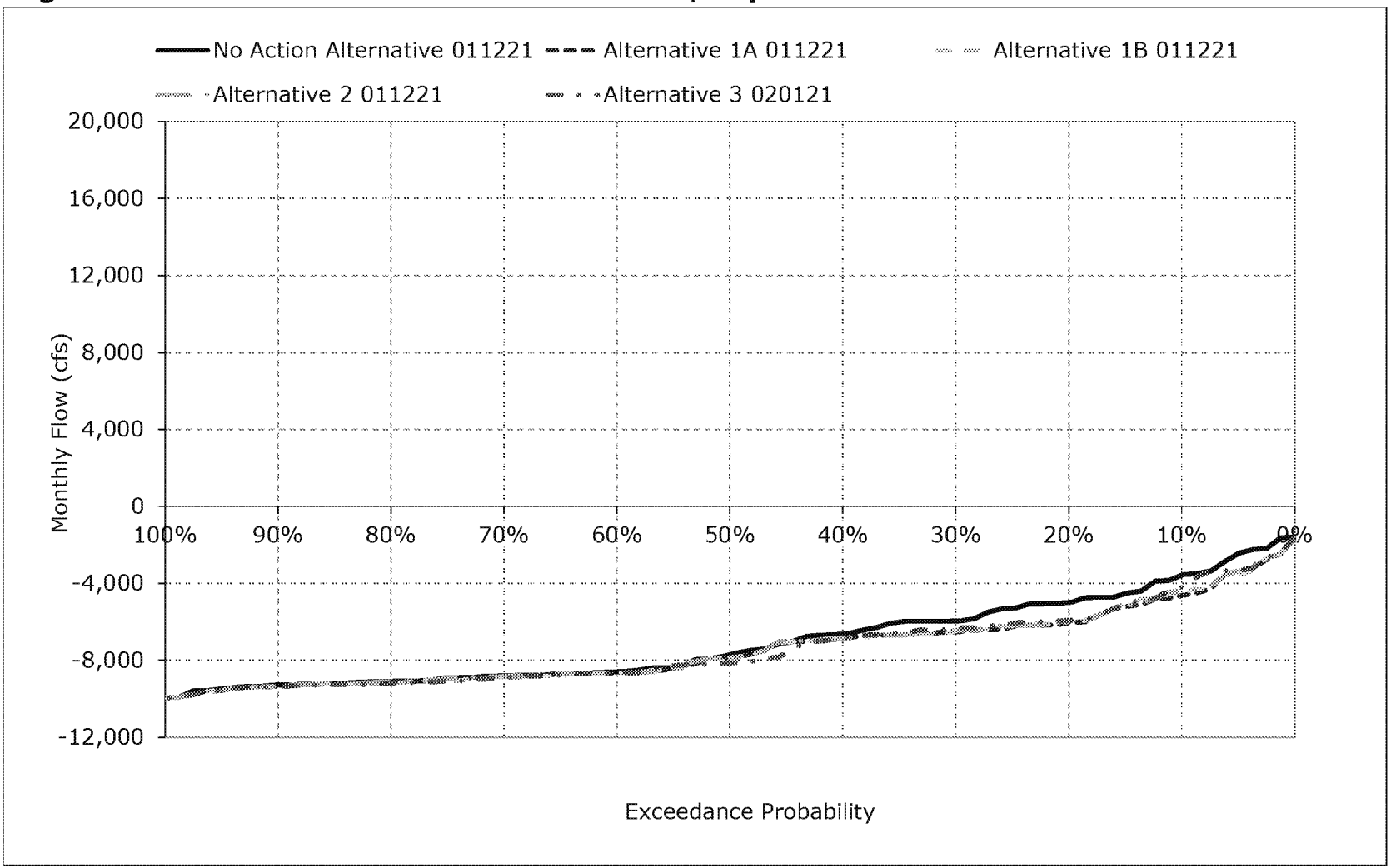


Table 5B3-7-1a. San Joaquin River at Vernalis, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,290	2,898	4,217	10,826	13,951	14,996	13,637	12,723	12,058	7,285	3,349	3,276
20%	2,913	2,582	2,710	5,216	9,726	9,482	10,137	7,705	7,681	3,692	2,801	2,725
30%	2,760	2,230	2,375	3,444	6,922	7,983	8,505	5,663	3,180	2,644	2,482	2,532
40%	2,622	2,006	2,029	2,657	4,429	4,840	7,320	4,508	2,418	1,743	2,198	2,383
50%	2,457	1,855	1,871	2,278	3,500	3,622	6,235	4,016	2,110	1,547	1,480	1,935
60%	2,276	1,739	1,761	2,071	2,705	3,001	4,666	3,350	1,782	1,407	1,404	1,824
70%	2,129	1,635	1,628	1,759	2,247	2,214	3,204	2,288	1,446	1,198	1,333	1,748
80%	1,961	1,513	1,501	1,538	1,852	1,719	2,567	2,057	1,315	1,101	1,237	1,658
90%	1,684	1,377	1,339	1,349	1,584	1,536	1,574	1,419	991	934	1,060	1,464
Long Term												
Full Simulation Period[a]	2,523	2,333	3,090	4,732	6,350	6,636	7,143	5,620	4,502	3,246	2,089	2,323
Water Year Types[b,c]												
Wet (32%)	3,220	3,384	4,517	9,488	11,733	12,943	12,481	10,172	9,283	6,810	3,306	3,297
Above Normal (15%)	2,611	2,058	2,450	4,077	6,370	7,011	7,685	5,702	4,724	2,628	2,020	2,325
Below Normal (17%)	2,489	2,254	3,570	2,959	5,427	4,523	6,436	4,649	2,369	1,859	1,888	2,086
Dry (22%)	2,054	1,689	2,191	1,881	2,336	2,392	3,371	2,516	1,456	1,191	1,286	1,747
Critical (15%)	1,668	1,389	1,424	1,429	1,762	1,429	1,516	1,465	975	845	958	1,355

Table 5B3-7-1b. San Joaquin River at Vernalis, Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,290	2,898	4,217	10,826	13,951	14,996	13,638	12,723	12,058	7,285	3,349	3,276
20%	2,913	2,582	2,710	5,216	9,726	9,482	10,137	7,705	7,681	3,691	2,801	2,725
30%	2,760	2,230	2,375	3,444	6,922	7,983	8,505	5,662	3,181	2,644	2,482	2,532
40%	2,622	2,006	2,029	2,657	4,429	4,840	7,320	4,508	2,418	1,743	2,198	2,383
50%	2,457	1,855	1,871	2,278	3,500	3,622	6,235	4,016	2,110	1,547	1,480	1,935
60%	2,275	1,739	1,761	2,071	2,705	3,001	4,666	3,350	1,782	1,407	1,404	1,824
70%	2,129	1,635	1,628	1,759	2,247	2,214	3,204	2,288	1,446	1,198	1,333	1,748
80%	1,961	1,513	1,501	1,538	1,852	1,719	2,567	2,058	1,315	1,103	1,236	1,658
90%	1,684	1,377	1,339	1,349	1,584	1,536	1,574	1,418	992	934	1,060	1,464
Long Term												
Full Simulation Period[a]	2,523	2,333	3,090	4,732	6,350	6,636	7,143	5,620	4,502	3,246	2,089	2,323
Water Year Types[b,c]												
Wet (32%)	3,220	3,384	4,517	9,488	11,733	12,943	12,481	10,172	9,283	6,810	3,306	3,297
Above Normal (15%)	2,611	2,058	2,450	4,077	6,370	7,011	7,685	5,702	4,724	2,628	2,020	2,325
Below Normal (17%)	2,489	2,254	3,570	2,959	5,427	4,523	6,436	4,649	2,369	1,859	1,888	2,086
Dry (22%)	2,054	1,689	2,191	1,881	2,336	2,392	3,371	2,517	1,457	1,191	1,287	1,747
Critical (15%)	1,668	1,389	1,424	1,429	1,762	1,429	1,516	1,465	975	845	958	1,355

Table 5B3-7-1c. San Joaquin River at Vernalis, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	1	0	2	-1	0
90%	0	0	0	0	0	0	0	-1	1	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-7-2a. San Joaquin River at Vernalis, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,290	2,898	4,217	10,826	13,951	14,996	13,637	12,723	12,058	7,285	3,349	3,276
20%	2,913	2,582	2,710	5,216	9,726	9,482	10,137	7,705	7,681	3,692	2,801	2,725
30%	2,760	2,230	2,375	3,444	6,922	7,983	8,505	5,663	3,180	2,644	2,482	2,532
40%	2,622	2,006	2,029	2,657	4,429	4,840	7,320	4,508	2,418	1,743	2,198	2,383
50%	2,457	1,855	1,871	2,278	3,500	3,622	6,235	4,016	2,110	1,547	1,480	1,935
60%	2,276	1,739	1,761	2,071	2,705	3,001	4,666	3,350	1,782	1,407	1,404	1,824
70%	2,129	1,635	1,628	1,759	2,247	2,214	3,204	2,288	1,446	1,198	1,333	1,748
80%	1,961	1,513	1,501	1,538	1,852	1,719	2,567	2,057	1,315	1,101	1,237	1,658
90%	1,684	1,377	1,339	1,349	1,584	1,536	1,574	1,419	991	934	1,060	1,464
Long Term												
Full Simulation Period[a]	2,523	2,333	3,090	4,732	6,350	6,636	7,143	5,620	4,502	3,246	2,089	2,323
Water Year Types[b,c]												
Wet (32%)	3,220	3,384	4,517	9,488	11,733	12,943	12,481	10,172	9,283	6,810	3,306	3,297
Above Normal (15%)	2,611	2,058	2,450	4,077	6,370	7,011	7,685	5,702	4,724	2,628	2,020	2,325
Below Normal (17%)	2,489	2,254	3,570	2,959	5,427	4,523	6,436	4,649	2,369	1,859	1,888	2,086
Dry (22%)	2,054	1,689	2,191	1,881	2,336	2,392	3,371	2,516	1,456	1,191	1,286	1,747
Critical (15%)	1,668	1,389	1,424	1,429	1,762	1,429	1,516	1,465	975	845	958	1,355

Table 5B3-7-2b. San Joaquin River at Vernalis, Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,290	2,898	4,217	10,826	13,951	14,996	13,638	12,723	12,058	7,285	3,349	3,276
20%	2,913	2,582	2,710	5,216	9,726	9,482	10,137	7,705	7,681	3,692	2,801	2,725
30%	2,760	2,230	2,375	3,444	6,922	7,983	8,505	5,662	3,181	2,644	2,482	2,532
40%	2,622	2,006	2,029	2,657	4,429	4,840	7,320	4,508	2,418	1,743	2,198	2,383
50%	2,457	1,855	1,871	2,278	3,500	3,622	6,235	4,016	2,110	1,547	1,480	1,935
60%	2,275	1,739	1,761	2,071	2,705	3,001	4,666	3,350	1,782	1,407	1,404	1,825
70%	2,129	1,635	1,628	1,759	2,247	2,214	3,203	2,288	1,446	1,198	1,336	1,748
80%	1,961	1,513	1,501	1,538	1,852	1,720	2,567	2,058	1,316	1,103	1,235	1,659
90%	1,684	1,377	1,339	1,349	1,584	1,536	1,574	1,418	993	934	1,060	1,464
Long Term												
Full Simulation Period[a]	2,523	2,333	3,090	4,732	6,350	6,636	7,143	5,620	4,502	3,247	2,089	2,324
Water Year Types[b,c]												
Wet (32%)	3,220	3,384	4,517	9,488	11,733	12,943	12,481	10,172	9,283	6,810	3,306	3,297
Above Normal (15%)	2,611	2,058	2,450	4,077	6,370	7,011	7,685	5,702	4,724	2,628	2,020	2,325
Below Normal (17%)	2,489	2,254	3,570	2,959	5,427	4,523	6,436	4,649	2,369	1,859	1,888	2,086
Dry (22%)	2,054	1,689	2,191	1,881	2,336	2,392	3,371	2,517	1,457	1,191	1,287	1,747
Critical (15%)	1,668	1,389	1,424	1,429	1,762	1,429	1,516	1,465	975	845	958	1,356

Table 5B3-7-2c. San Joaquin River at Vernalis, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	1
70%	1	0	0	0	0	0	0	0	0	0	4	0
80%	0	0	0	0	0	0	0	1	0	2	-2	0
90%	0	0	0	0	0	0	0	-1	1	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	1	1	1	1	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-7-3a. San Joaquin River at Vernalis, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,290	2,898	4,217	10,826	13,951	14,996	13,637	12,723	12,058	7,285	3,349	3,276
20%	2,913	2,582	2,710	5,216	9,726	9,482	10,137	7,705	7,681	3,692	2,801	2,725
30%	2,760	2,230	2,375	3,444	6,922	7,983	8,505	5,663	3,180	2,644	2,482	2,532
40%	2,622	2,006	2,029	2,657	4,429	4,840	7,320	4,508	2,418	1,743	2,198	2,383
50%	2,457	1,855	1,871	2,278	3,500	3,622	6,235	4,016	2,110	1,547	1,480	1,935
60%	2,276	1,739	1,761	2,071	2,705	3,001	4,666	3,350	1,782	1,407	1,404	1,824
70%	2,129	1,635	1,628	1,759	2,247	2,214	3,204	2,288	1,446	1,198	1,333	1,748
80%	1,961	1,513	1,501	1,538	1,852	1,719	2,567	2,057	1,315	1,101	1,237	1,658
90%	1,684	1,377	1,339	1,349	1,584	1,536	1,574	1,419	991	934	1,060	1,464
Long Term												
Full Simulation Period[a]	2,523	2,333	3,090	4,732	6,350	6,636	7,143	5,620	4,502	3,246	2,089	2,323
Water Year Types[b,c]												
Wet (32%)	3,220	3,384	4,517	9,488	11,733	12,943	12,481	10,172	9,283	6,810	3,306	3,297
Above Normal (15%)	2,611	2,058	2,450	4,077	6,370	7,011	7,685	5,702	4,724	2,628	2,020	2,325
Below Normal (17%)	2,489	2,254	3,570	2,959	5,427	4,523	6,436	4,649	2,369	1,859	1,888	2,086
Dry (22%)	2,054	1,689	2,191	1,881	2,336	2,392	3,371	2,516	1,456	1,191	1,286	1,747
Critical (15%)	1,668	1,389	1,424	1,429	1,762	1,429	1,516	1,465	975	845	958	1,355

Table 5B3-7-3b. San Joaquin River at Vernalis, Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,290	2,898	4,217	10,826	13,951	14,996	13,638	12,723	12,058	7,285	3,349	3,276
20%	2,913	2,582	2,710	5,216	9,726	9,482	10,137	7,705	7,681	3,691	2,801	2,725
30%	2,760	2,230	2,375	3,444	6,922	7,983	8,505	5,662	3,181	2,644	2,482	2,532
40%	2,622	2,006	2,029	2,657	4,429	4,840	7,320	4,508	2,419	1,743	2,198	2,383
50%	2,457	1,855	1,871	2,278	3,500	3,622	6,235	4,016	2,110	1,547	1,480	1,935
60%	2,275	1,739	1,761	2,071	2,705	3,001	4,666	3,350	1,782	1,407	1,404	1,824
70%	2,129	1,635	1,628	1,759	2,247	2,214	3,204	2,288	1,446	1,198	1,333	1,748
80%	1,961	1,513	1,501	1,538	1,852	1,719	2,567	2,058	1,315	1,103	1,236	1,658
90%	1,684	1,377	1,339	1,349	1,584	1,536	1,574	1,418	992	934	1,060	1,464
Long Term												
Full Simulation Period[a]	2,523	2,333	3,090	4,732	6,350	6,636	7,143	5,620	4,502	3,246	2,089	2,323
Water Year Types[b,c]												
Wet (32%)	3,220	3,384	4,517	9,488	11,733	12,943	12,481	10,172	9,283	6,810	3,306	3,297
Above Normal (15%)	2,611	2,058	2,450	4,077	6,370	7,011	7,685	5,702	4,724	2,628	2,020	2,325
Below Normal (17%)	2,489	2,254	3,570	2,959	5,427	4,523	6,436	4,649	2,369	1,859	1,888	2,086
Dry (22%)	2,054	1,689	2,191	1,881	2,336	2,392	3,371	2,517	1,457	1,191	1,287	1,747
Critical (15%)	1,668	1,389	1,424	1,429	1,762	1,429	1,516	1,465	975	845	958	1,355

Table 5B3-7-3c. San Joaquin River at Vernalis, Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	1	0	2	-1	0
90%	0	0	0	0	0	0	0	-1	1	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-7-4a. San Joaquin River at Vernalis, No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,290	2,898	4,217	10,826	13,951	14,996	13,637	12,723	12,058	7,285	3,349	3,276
20%	2,913	2,582	2,710	5,216	9,726	9,482	10,137	7,705	7,681	3,692	2,801	2,725
30%	2,760	2,230	2,375	3,444	6,922	7,983	8,505	5,663	3,180	2,644	2,482	2,532
40%	2,622	2,006	2,029	2,657	4,429	4,840	7,320	4,508	2,418	1,743	2,198	2,383
50%	2,457	1,855	1,871	2,278	3,500	3,622	6,235	4,016	2,110	1,547	1,480	1,935
60%	2,276	1,739	1,761	2,071	2,705	3,001	4,666	3,350	1,782	1,407	1,404	1,824
70%	2,129	1,635	1,628	1,759	2,247	2,214	3,204	2,288	1,446	1,198	1,333	1,748
80%	1,961	1,513	1,501	1,538	1,852	1,719	2,567	2,057	1,315	1,101	1,237	1,658
90%	1,684	1,377	1,339	1,349	1,584	1,536	1,574	1,419	991	934	1,060	1,464
Long Term												
Full Simulation Period[a]	2,523	2,333	3,090	4,732	6,350	6,636	7,143	5,620	4,502	3,246	2,089	2,323
Water Year Types[b,c]												
Wet (32%)	3,220	3,384	4,517	9,488	11,733	12,943	12,481	10,172	9,283	6,810	3,306	3,297
Above Normal (15%)	2,611	2,058	2,450	4,077	6,370	7,011	7,685	5,702	4,724	2,628	2,020	2,325
Below Normal (17%)	2,489	2,254	3,570	2,959	5,427	4,523	6,436	4,649	2,369	1,859	1,888	2,086
Dry (22%)	2,054	1,689	2,191	1,881	2,336	2,392	3,371	2,516	1,456	1,191	1,286	1,747
Critical (15%)	1,668	1,389	1,424	1,429	1,762	1,429	1,516	1,465	975	845	958	1,355

Table 5B3-7-4b. San Joaquin River at Vernalis, Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,290	2,898	4,217	10,826	13,951	14,996	13,638	12,723	12,058	7,285	3,349	3,276
20%	2,913	2,582	2,710	5,216	9,726	9,482	10,138	7,705	7,681	3,692	2,801	2,725
30%	2,760	2,230	2,375	3,444	6,922	7,983	8,505	5,663	3,181	2,645	2,482	2,532
40%	2,622	2,006	2,029	2,657	4,429	4,840	7,320	4,508	2,419	1,743	2,198	2,383
50%	2,457	1,855	1,872	2,278	3,499	3,622	6,235	4,016	2,110	1,547	1,480	1,935
60%	2,275	1,739	1,761	2,071	2,705	3,001	4,666	3,350	1,782	1,409	1,404	1,825
70%	2,129	1,635	1,628	1,759	2,247	2,214	3,203	2,288	1,446	1,198	1,338	1,748
80%	1,961	1,513	1,501	1,538	1,852	1,720	2,567	2,056	1,316	1,100	1,236	1,659
90%	1,684	1,377	1,339	1,349	1,584	1,536	1,575	1,419	995	934	1,060	1,464
Long Term												
Full Simulation Period[a]	2,523	2,333	3,090	4,732	6,350	6,636	7,143	5,620	4,502	3,247	2,089	2,324
Water Year Types[b,c]												
Wet (32%)	3,220	3,384	4,517	9,488	11,733	12,943	12,481	10,172	9,283	6,810	3,306	3,297
Above Normal (15%)	2,611	2,058	2,450	4,077	6,369	7,011	7,685	5,702	4,724	2,628	2,020	2,325
Below Normal (17%)	2,489	2,254	3,570	2,959	5,427	4,523	6,436	4,648	2,369	1,859	1,888	2,086
Dry (22%)	2,055	1,689	2,191	1,881	2,336	2,392	3,371	2,517	1,457	1,192	1,287	1,747
Critical (15%)	1,668	1,389	1,424	1,429	1,762	1,429	1,516	1,465	975	845	958	1,356

Table 5B3-7-4c. San Joaquin River at Vernalis, Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

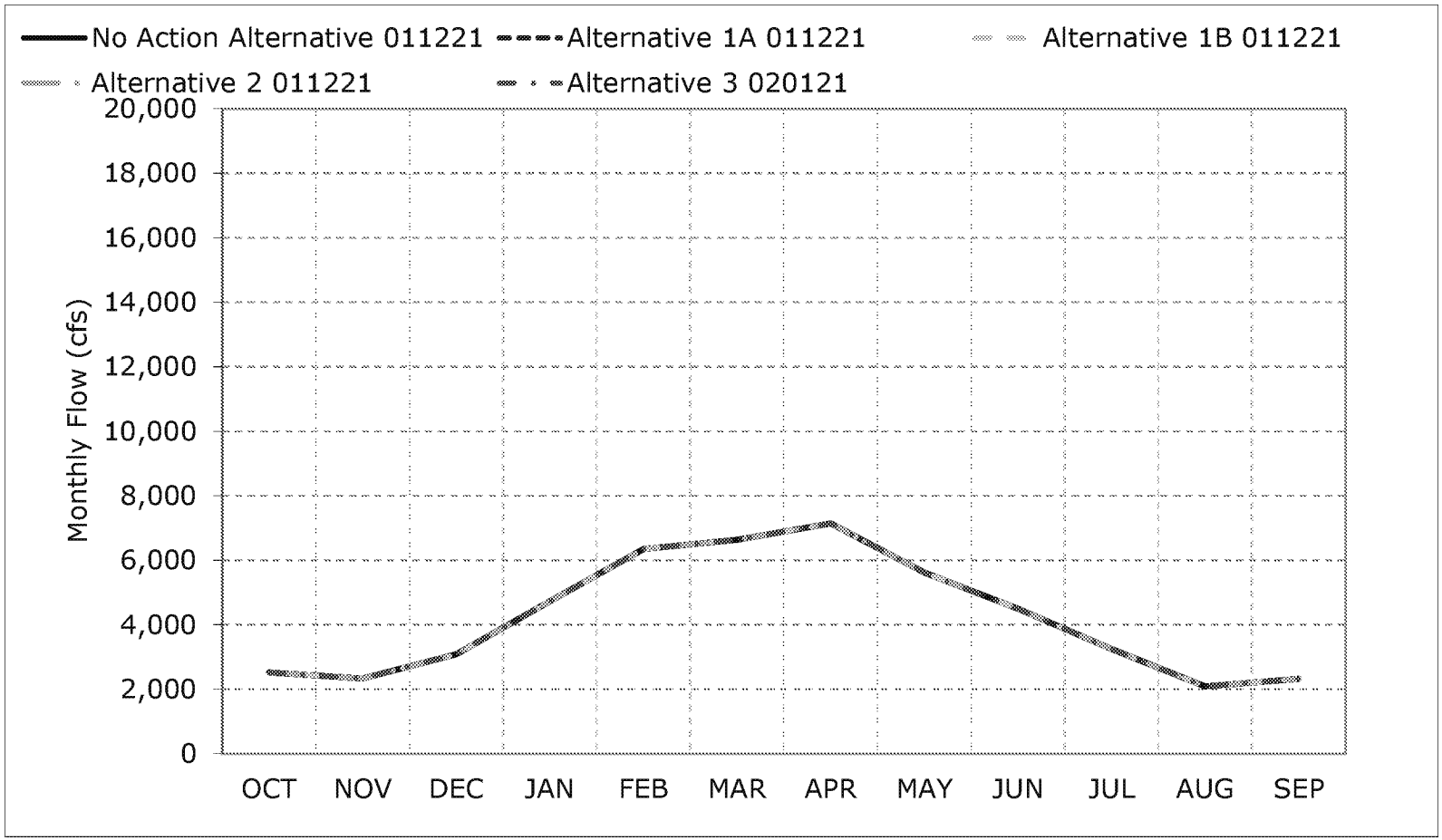
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	1	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	2	0	2
70%	0	0	0	0	0	0	0	1	0	0	6	0
80%	0	0	0	0	0	0	0	0	1	-1	-1	0
90%	0	0	0	0	0	0	0	0	4	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (17%)	0	0	0	0	0	0	0	-1	0	0	0	0
Dry (22%)	0	0	0	0	0	0	0	1	1	1	1	0
Critical (15%)	0	0	0	0	0	0	0	1	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

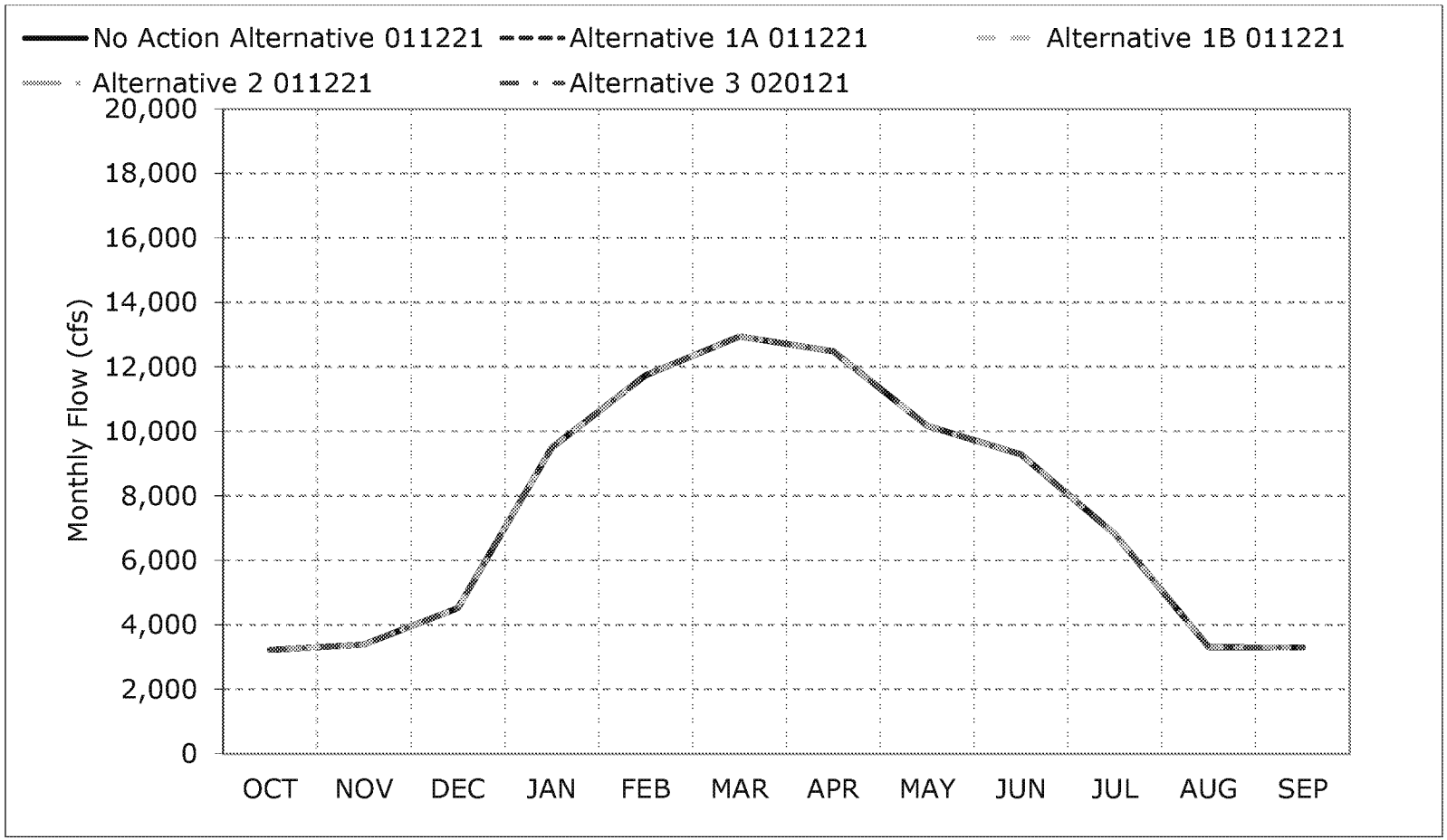
c These results are displayed with calendar year - year type sorting.

Figure 5B3-7-1. San Joaquin River at Vernalis, Long-Term Average Flow



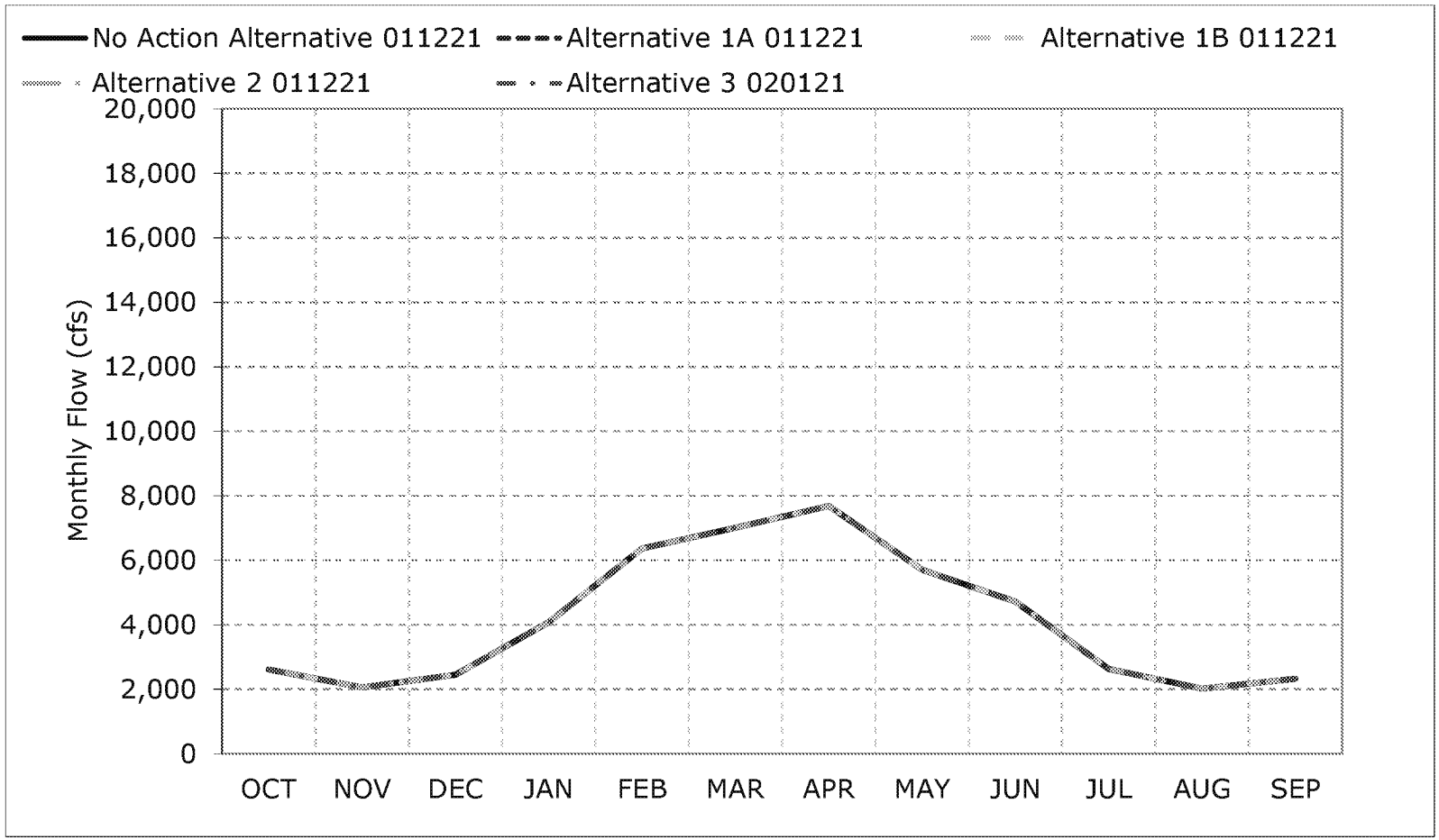
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-7-2. San Joaquin River at Vernalis, Wet Year Average Flow



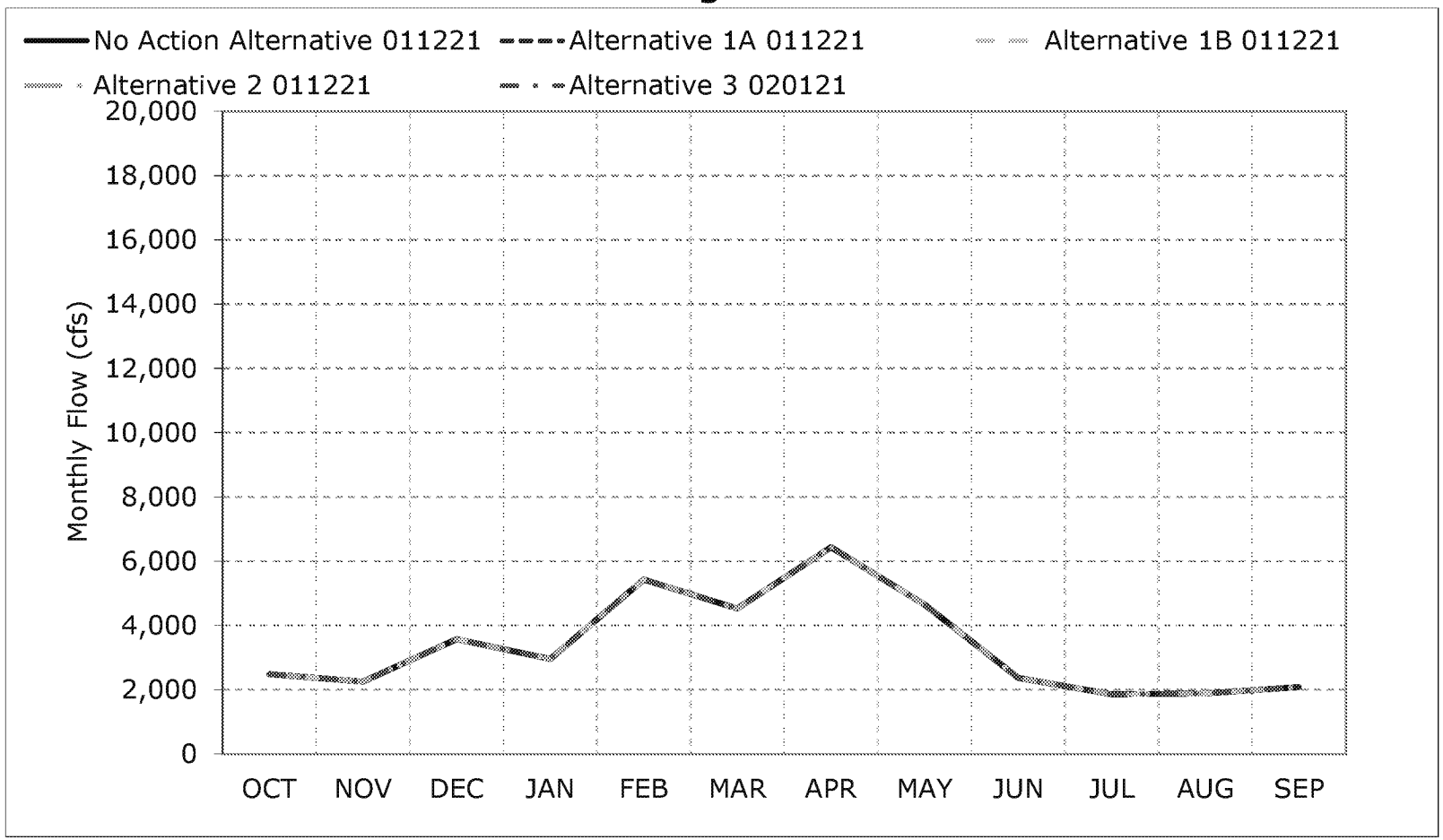
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-7-3. San Joaquin River at Vernalis, Above Normal Year Average Flow



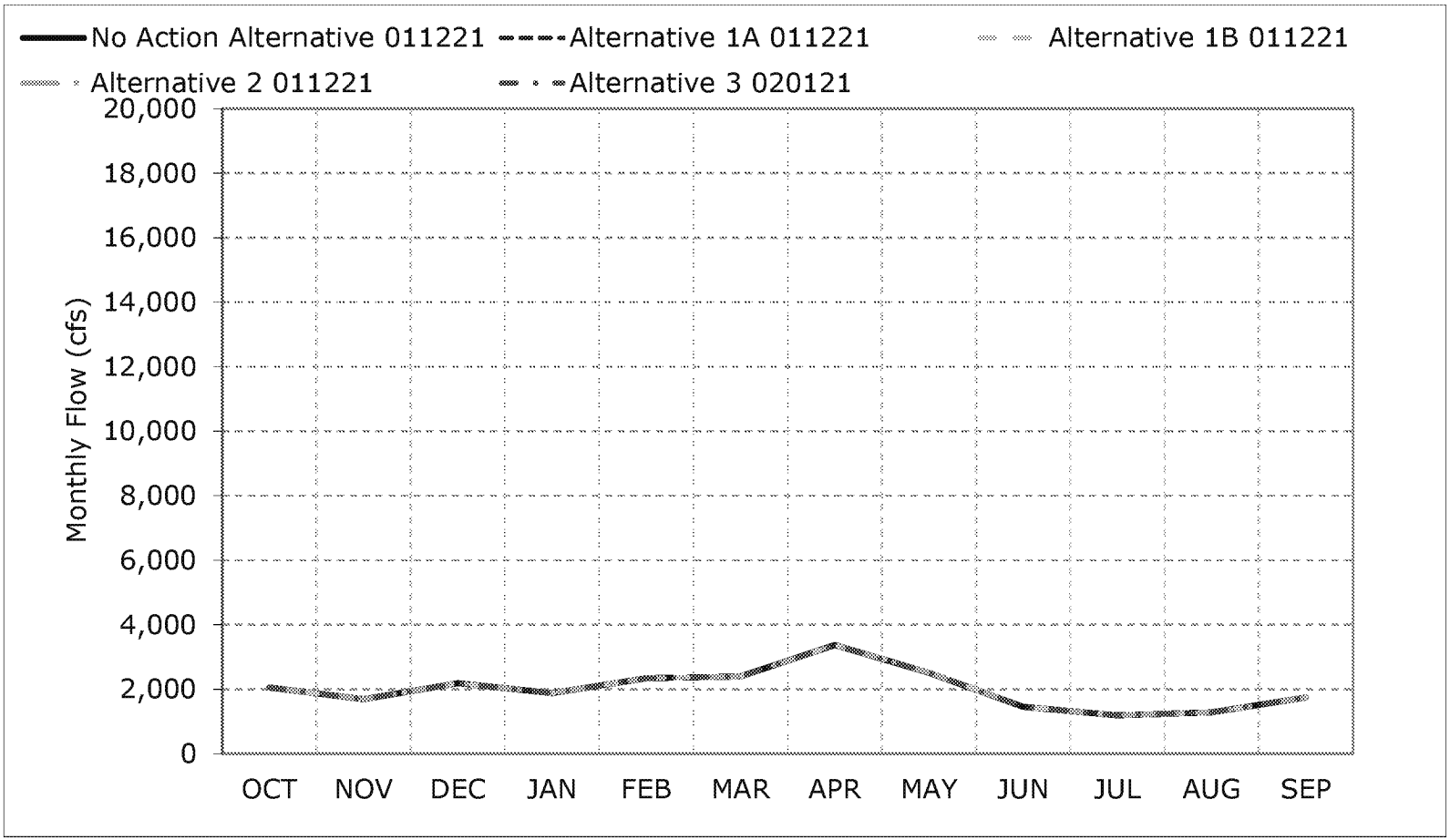
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-7-4. San Joaquin River at Vernalis, Below Normal Year Average Flow



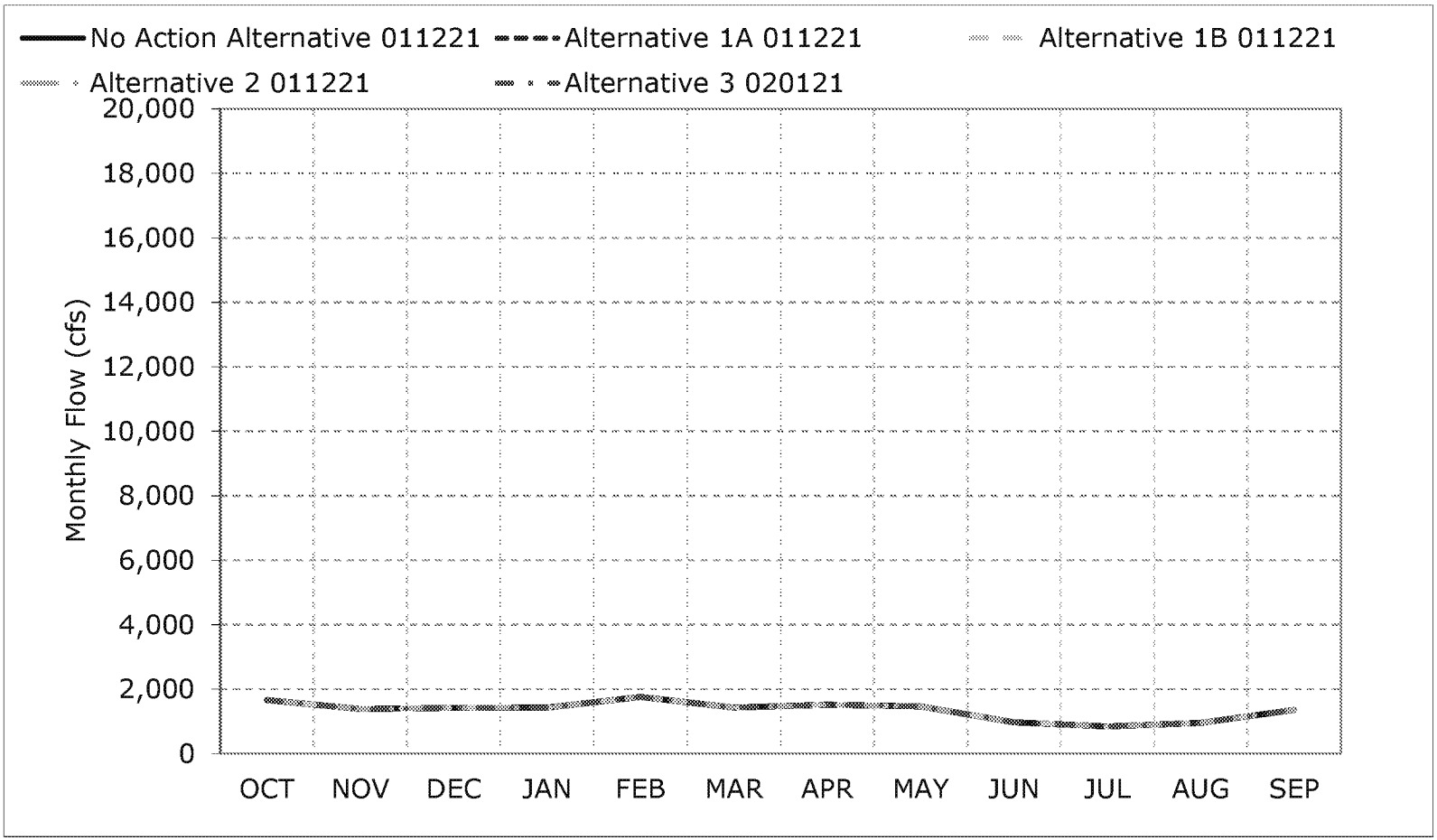
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-7-5. San Joaquin River at Vernalis, Dry Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-7-6. San Joaquin River at Vernalis, Critical Year Average Flow



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-7-7. San Joaquin River at Vernalis, October

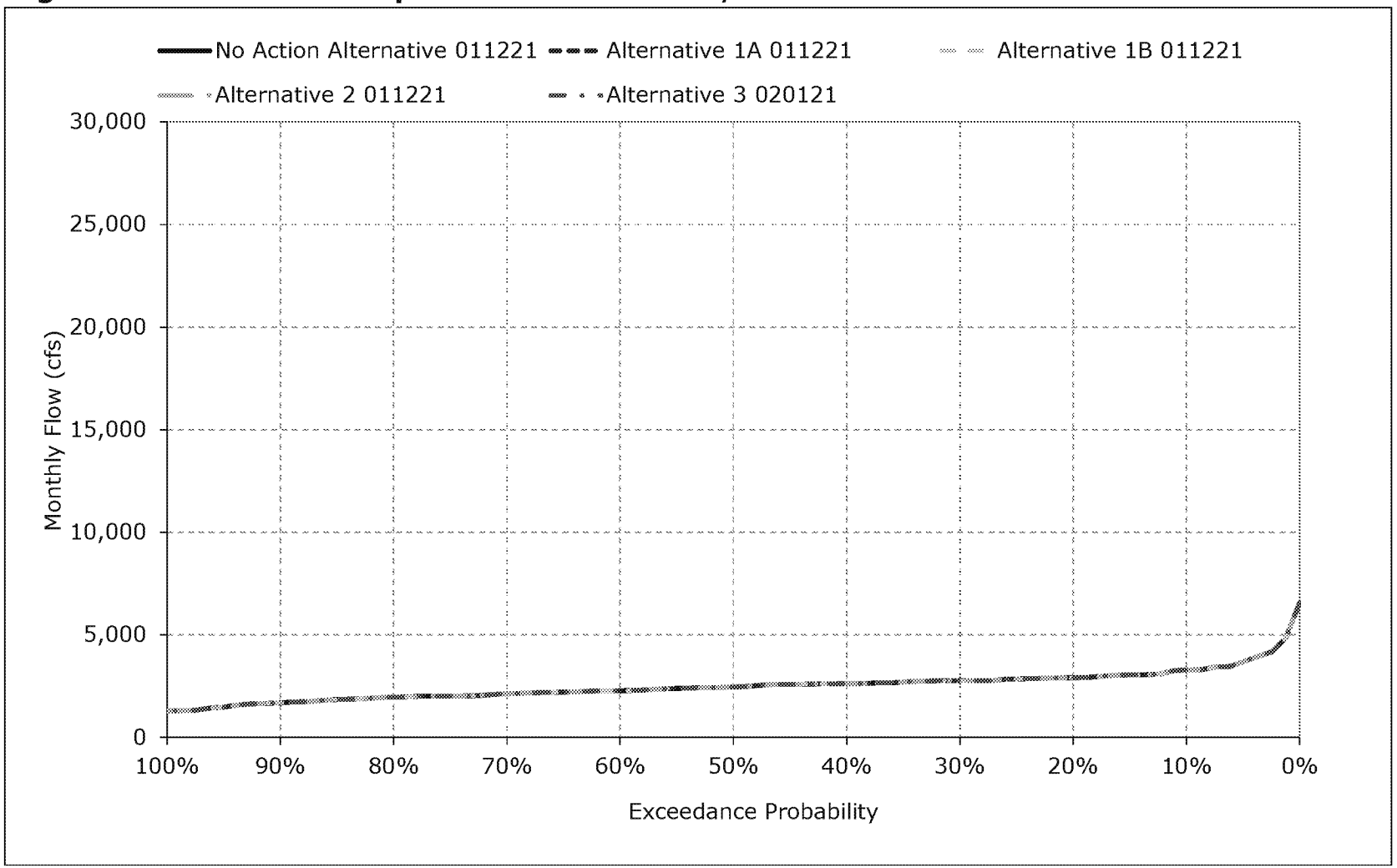


Figure 5B3-7-8. San Joaquin River at Vernalis, November

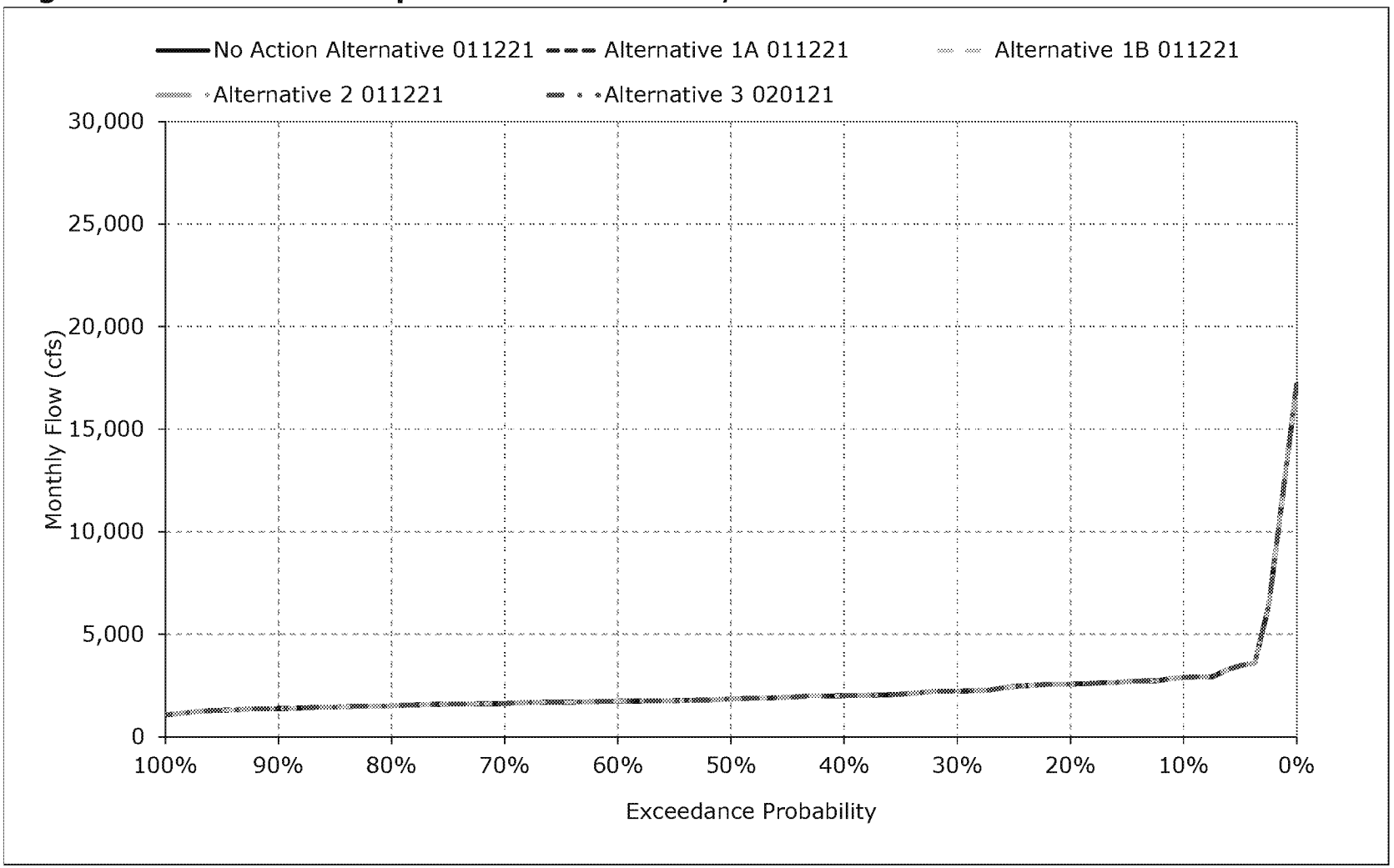


Figure 5B3-7-9. San Joaquin River at Vernalis, December

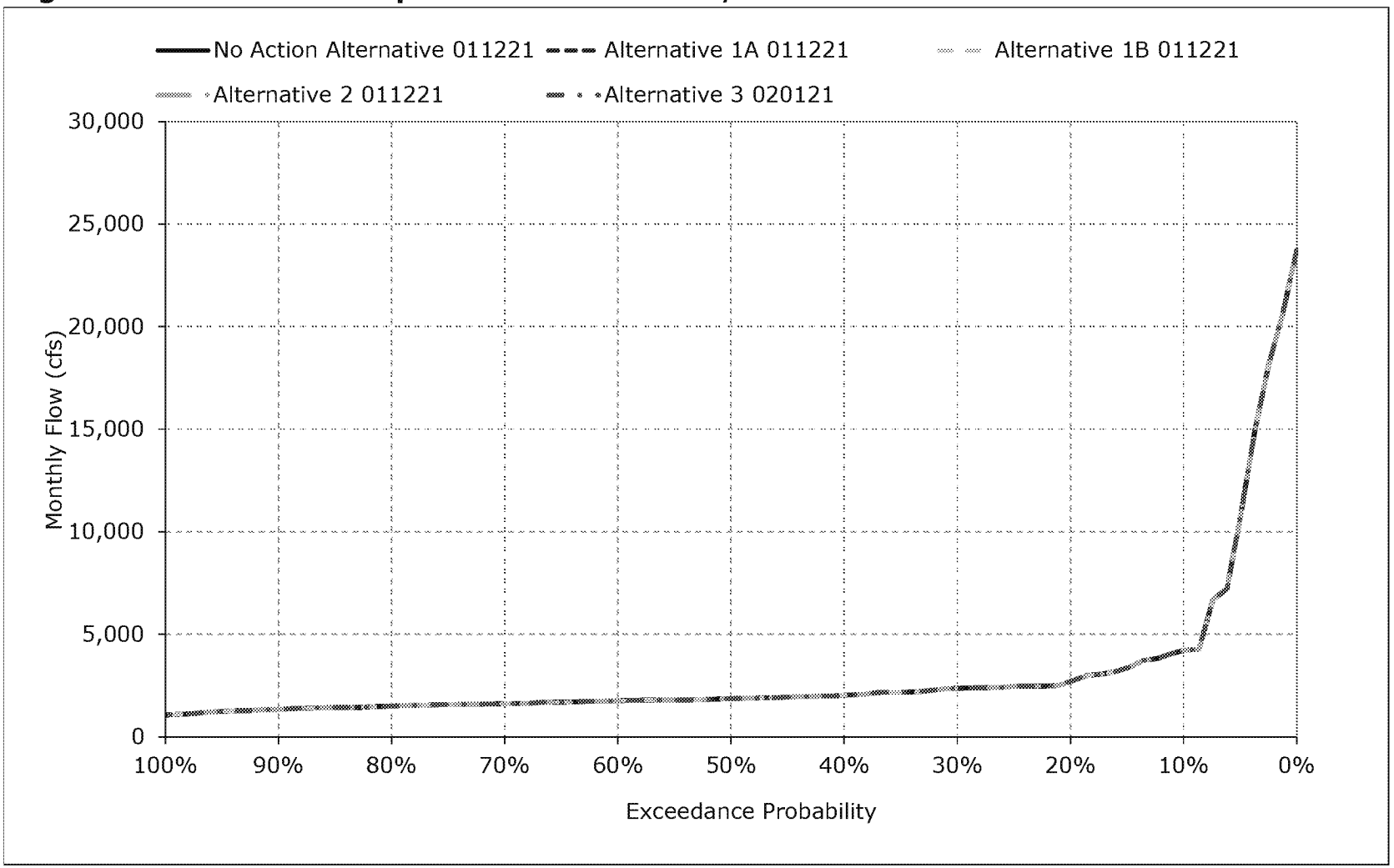


Figure 5B3-7-10. San Joaquin River at Vernalis, January

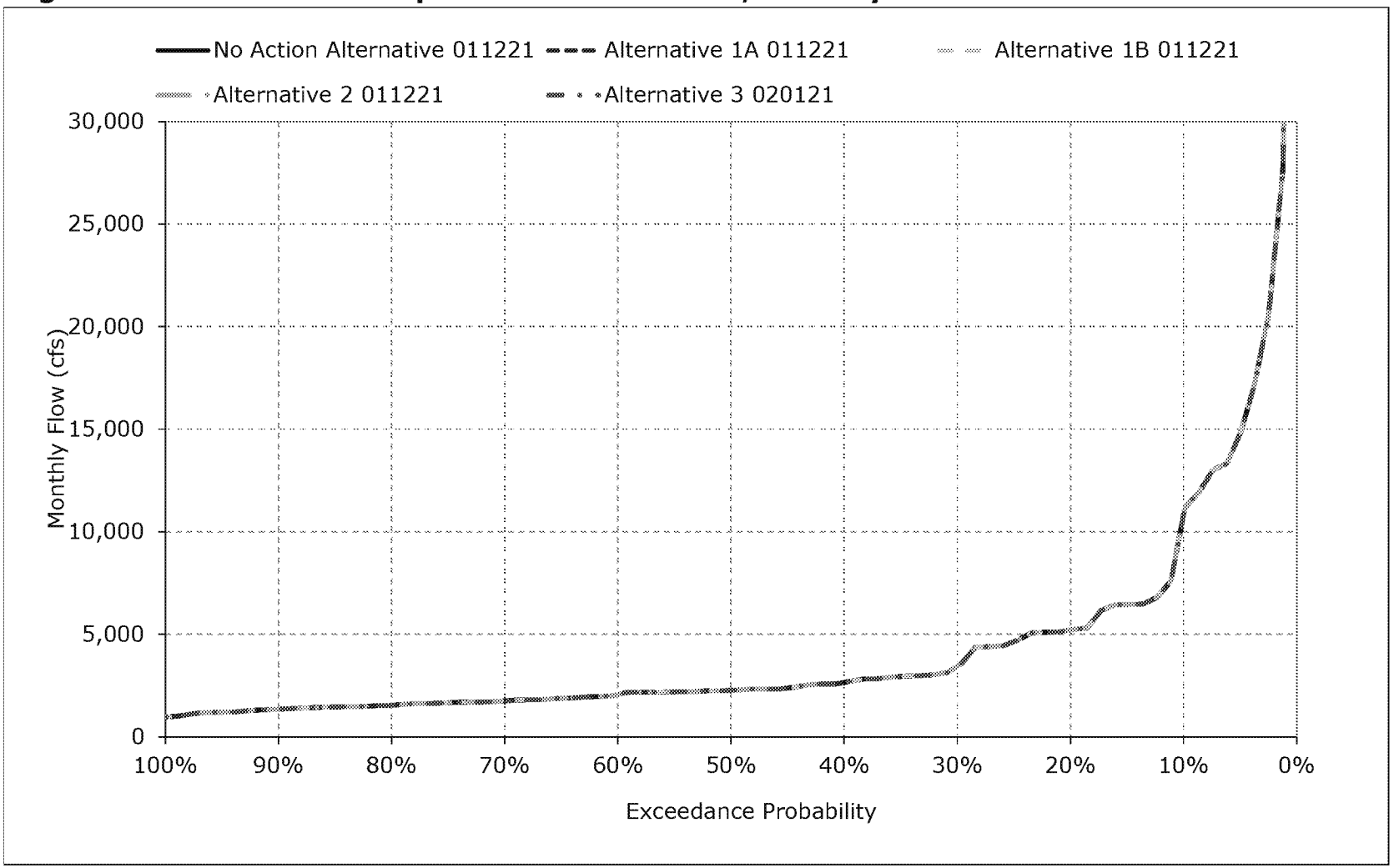


Figure 5B3-7-11. San Joaquin River at Vernalis, February

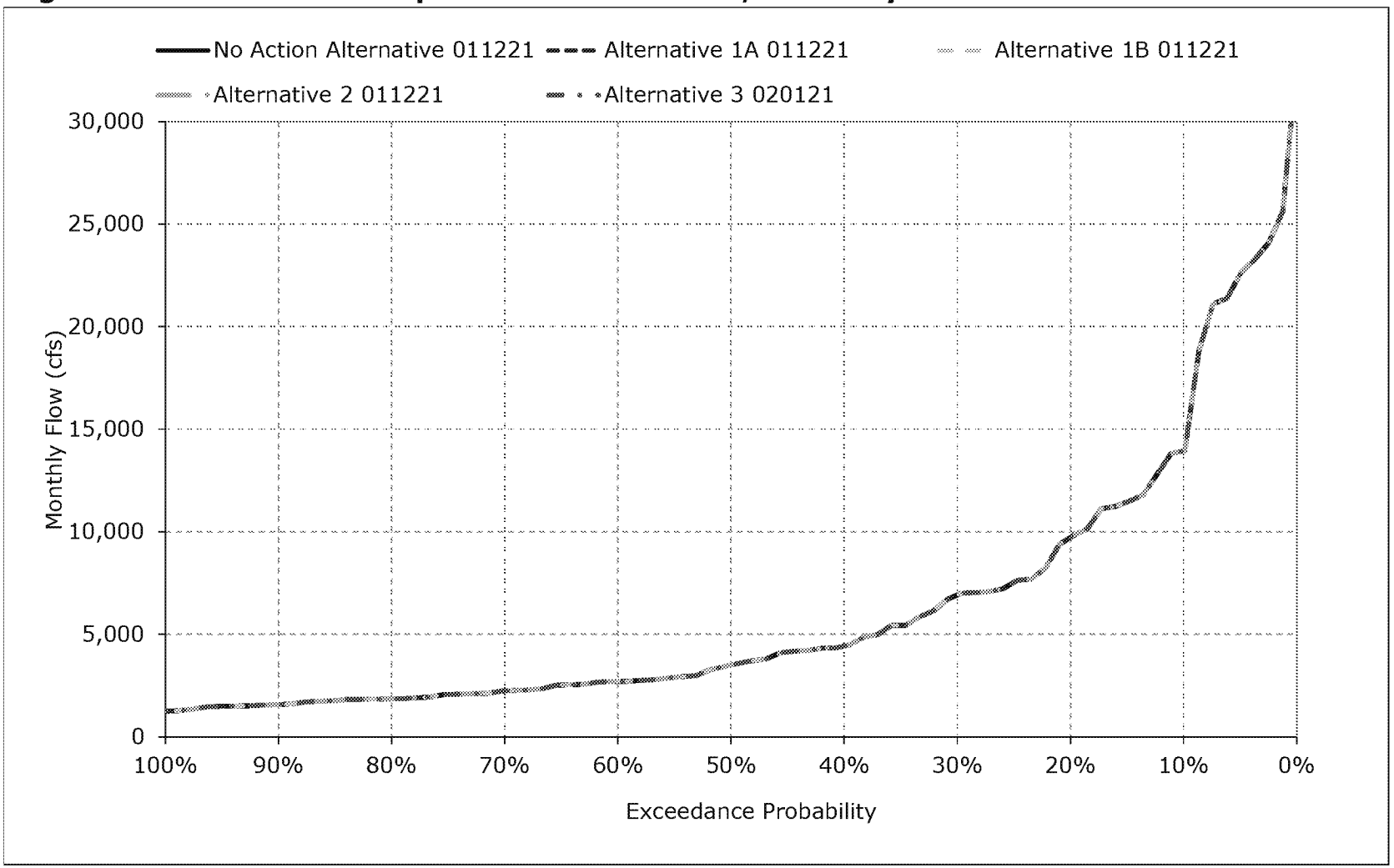


Figure 5B3-7-12. San Joaquin River at Vernalis, March

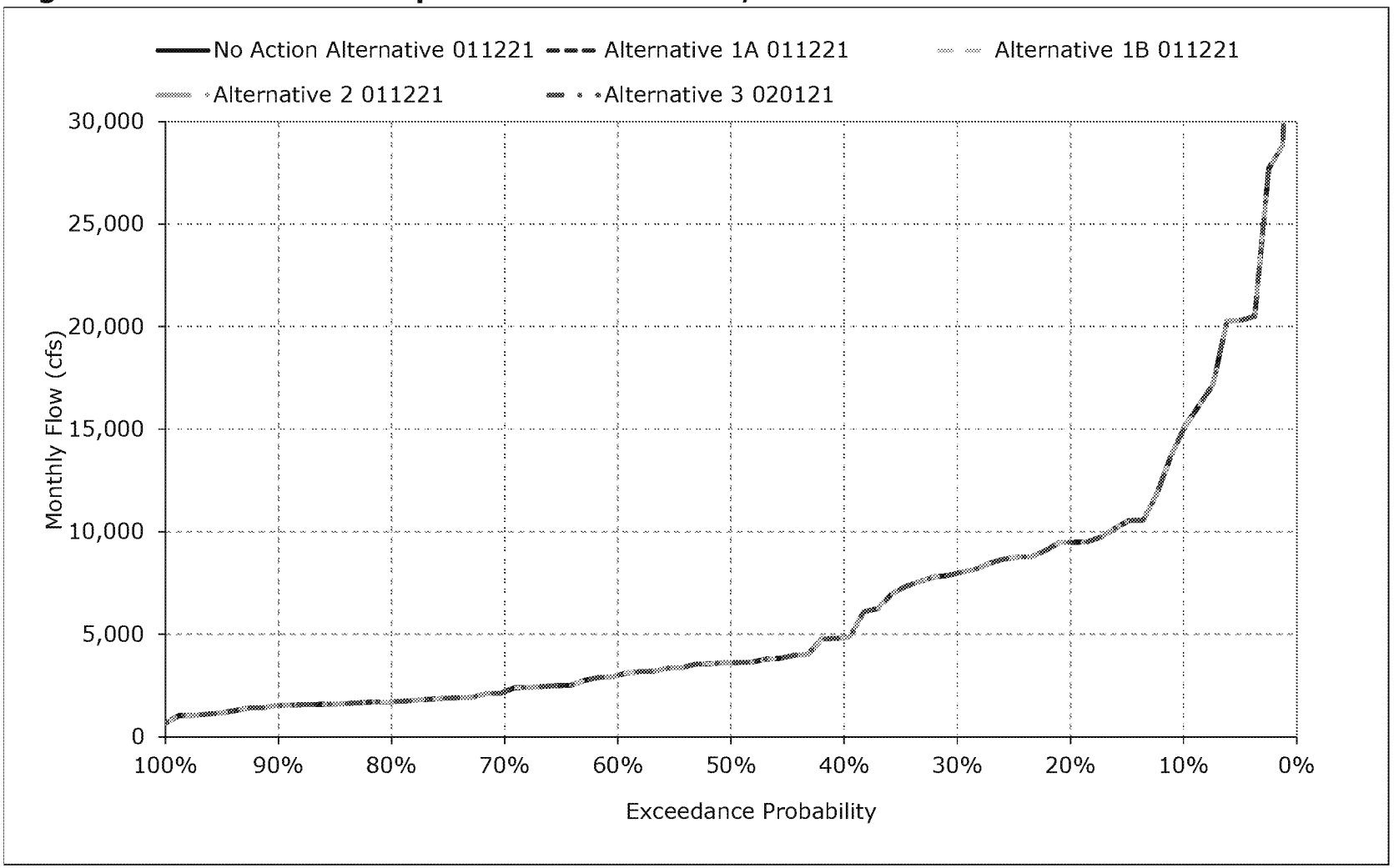


Figure 5B3-7-13. San Joaquin River at Vernalis, April

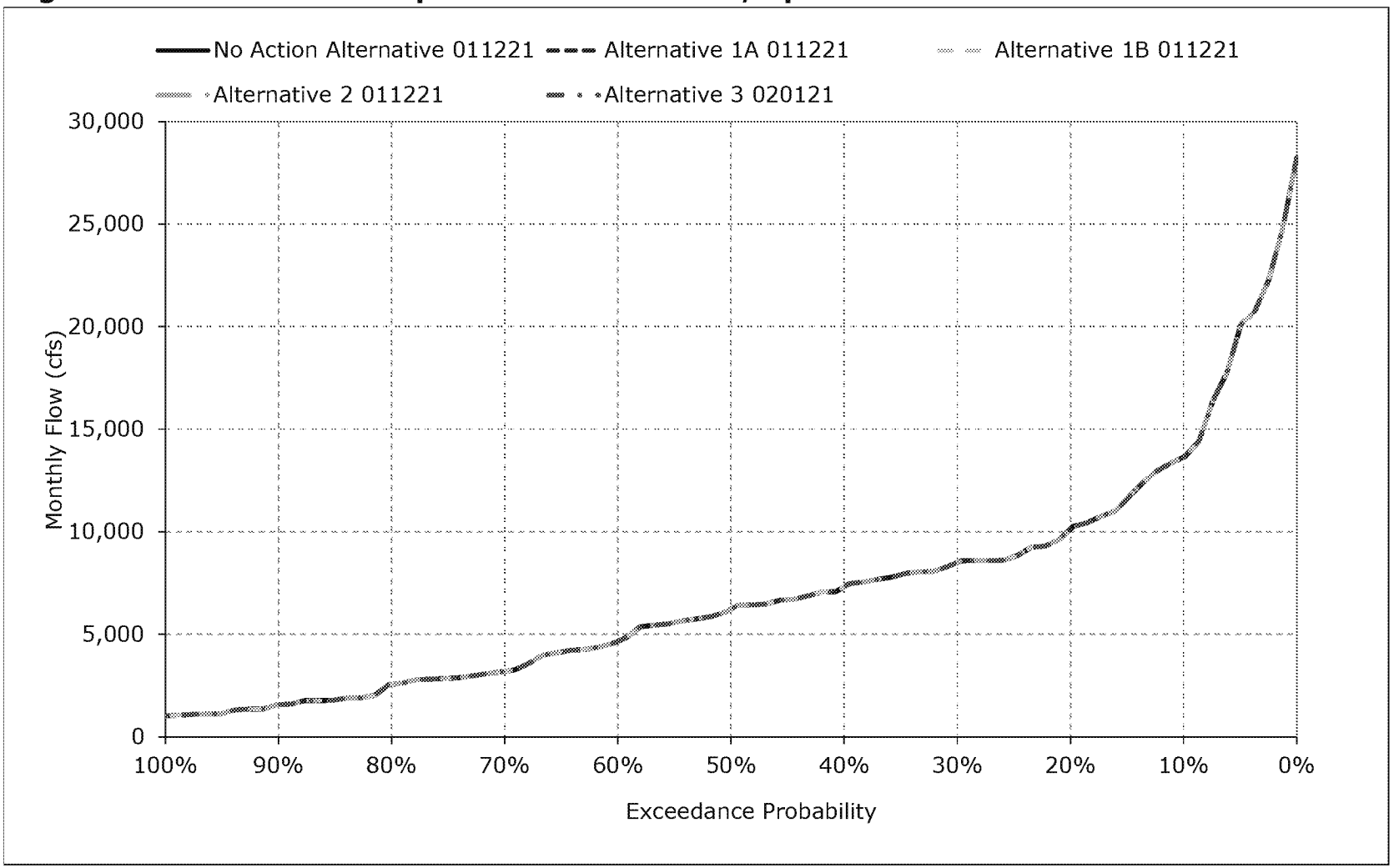


Figure 5B3-7-14. San Joaquin River at Vernalis, May

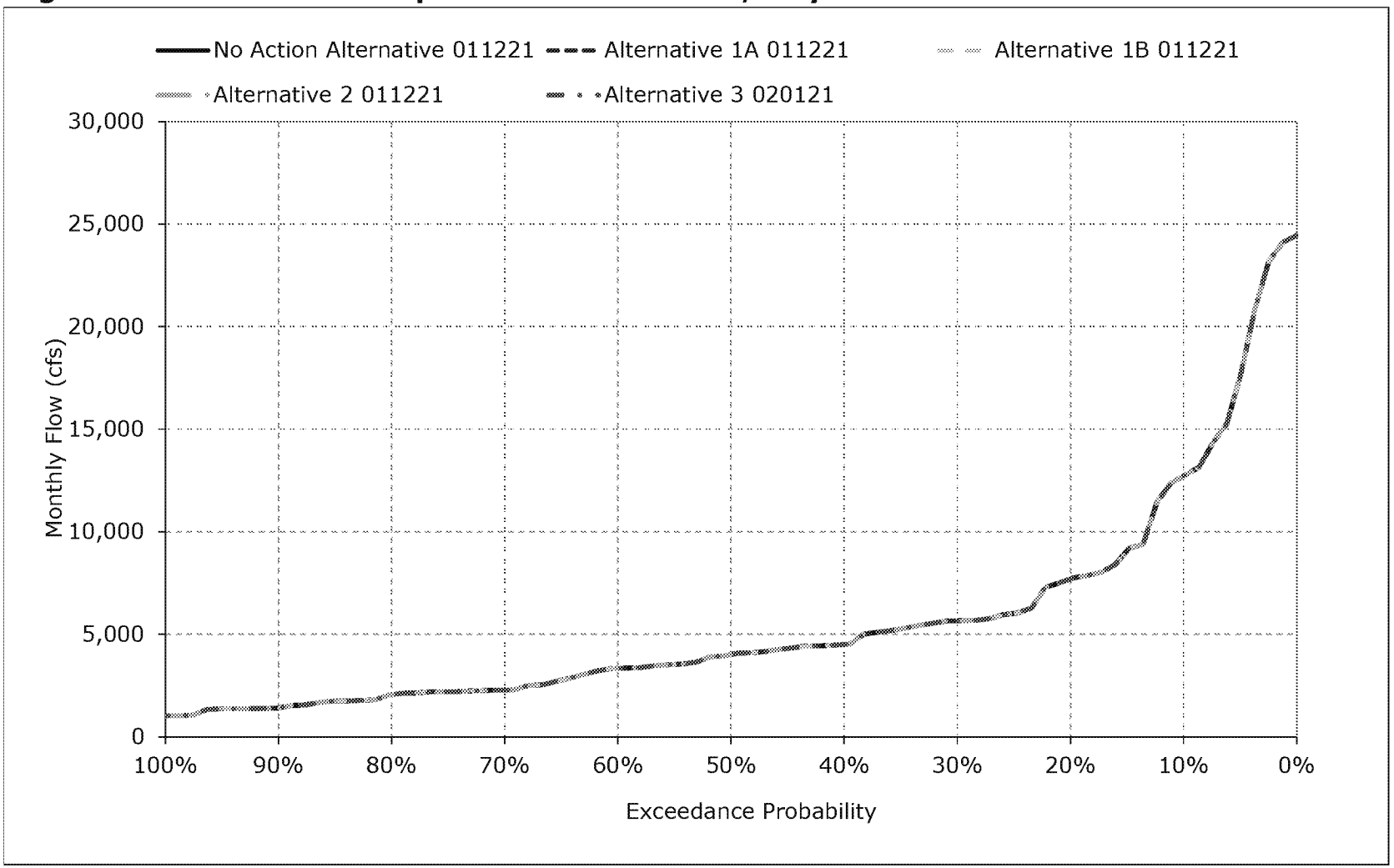


Figure 5B3-7-15. San Joaquin River at Vernalis, June

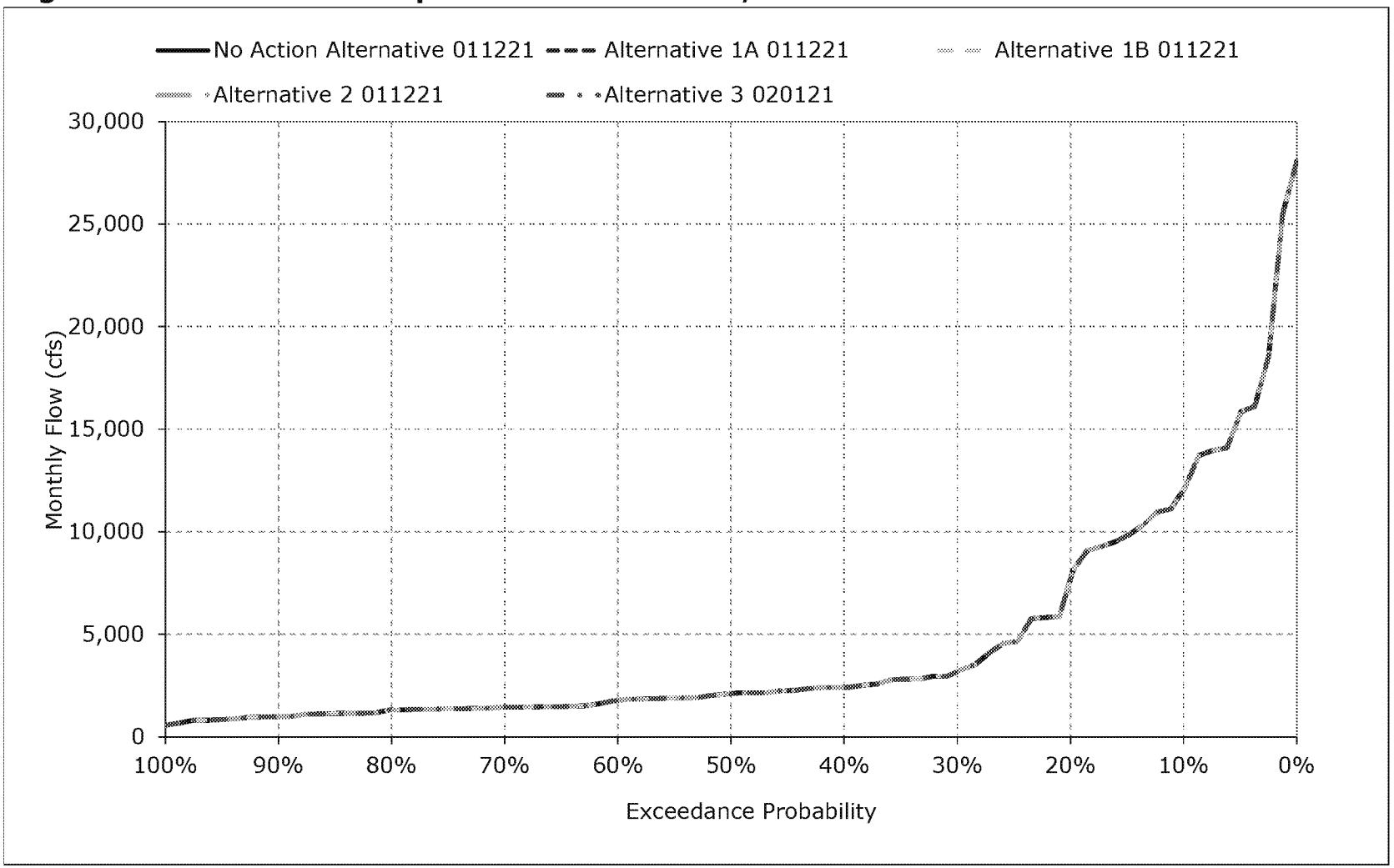


Figure 5B3-7-16. San Joaquin River at Vernalis, July

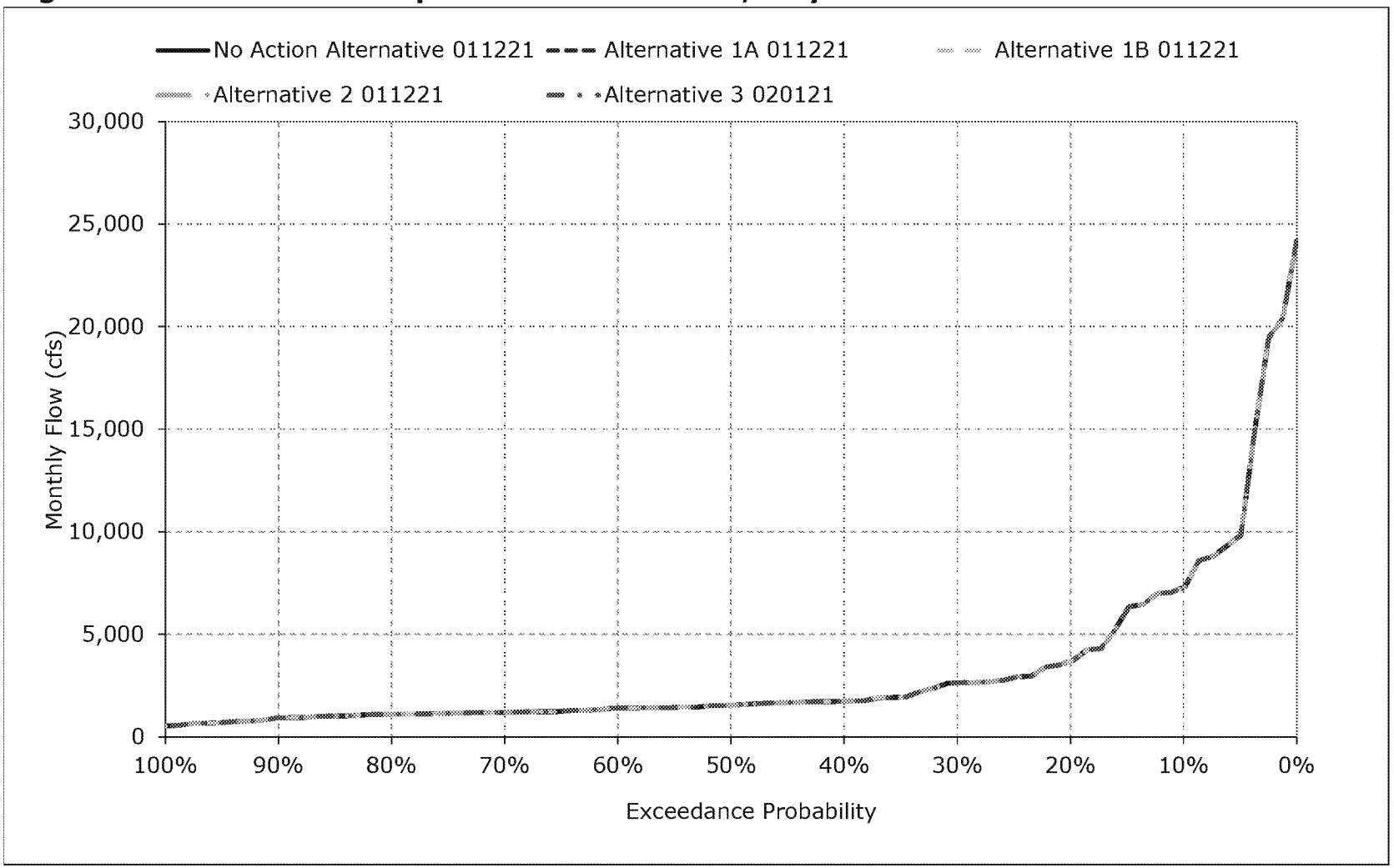


Figure 5B3-7-17. San Joaquin River at Vernalis, August

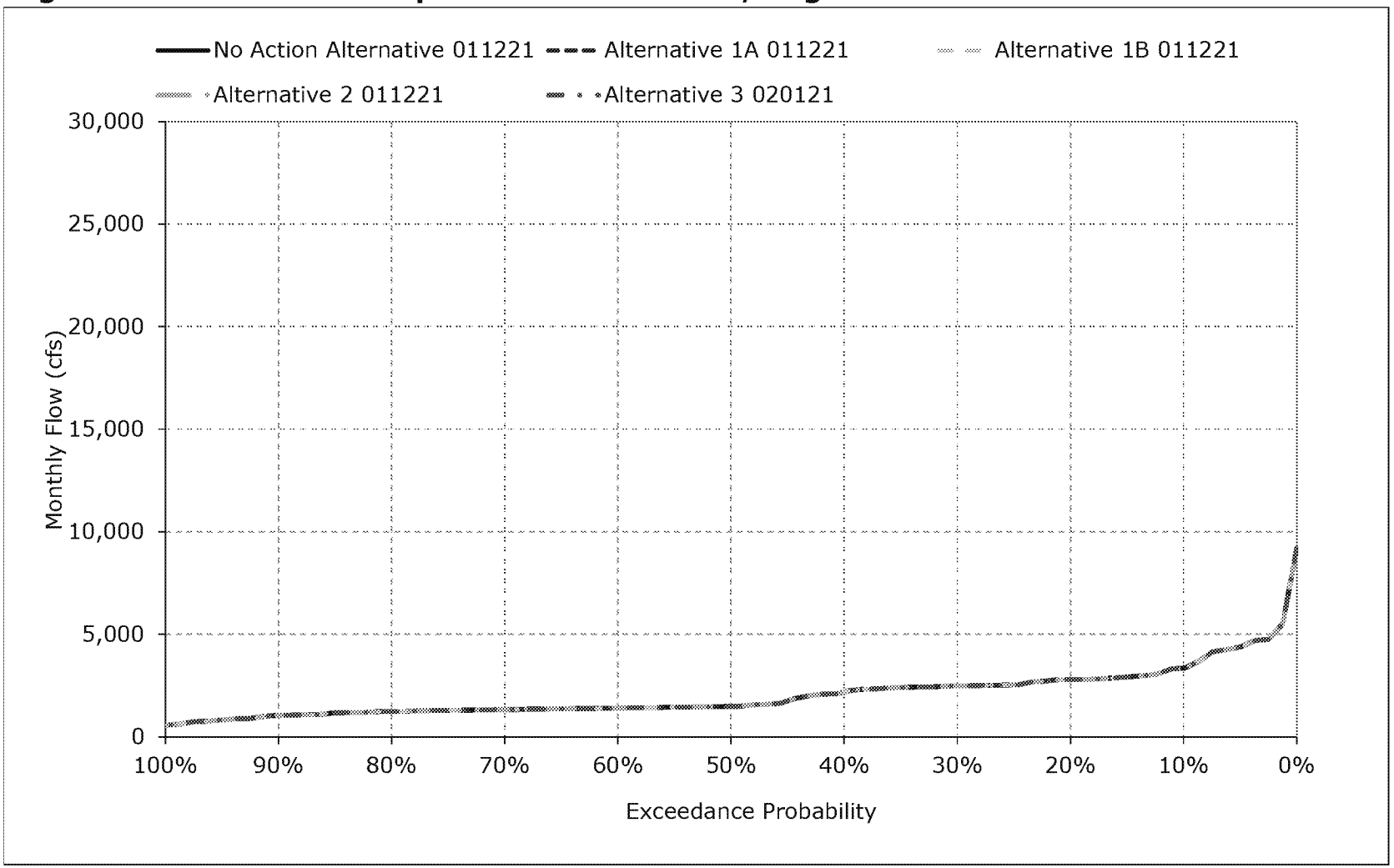


Figure 5B3-7-18. San Joaquin River at Vernalis, September

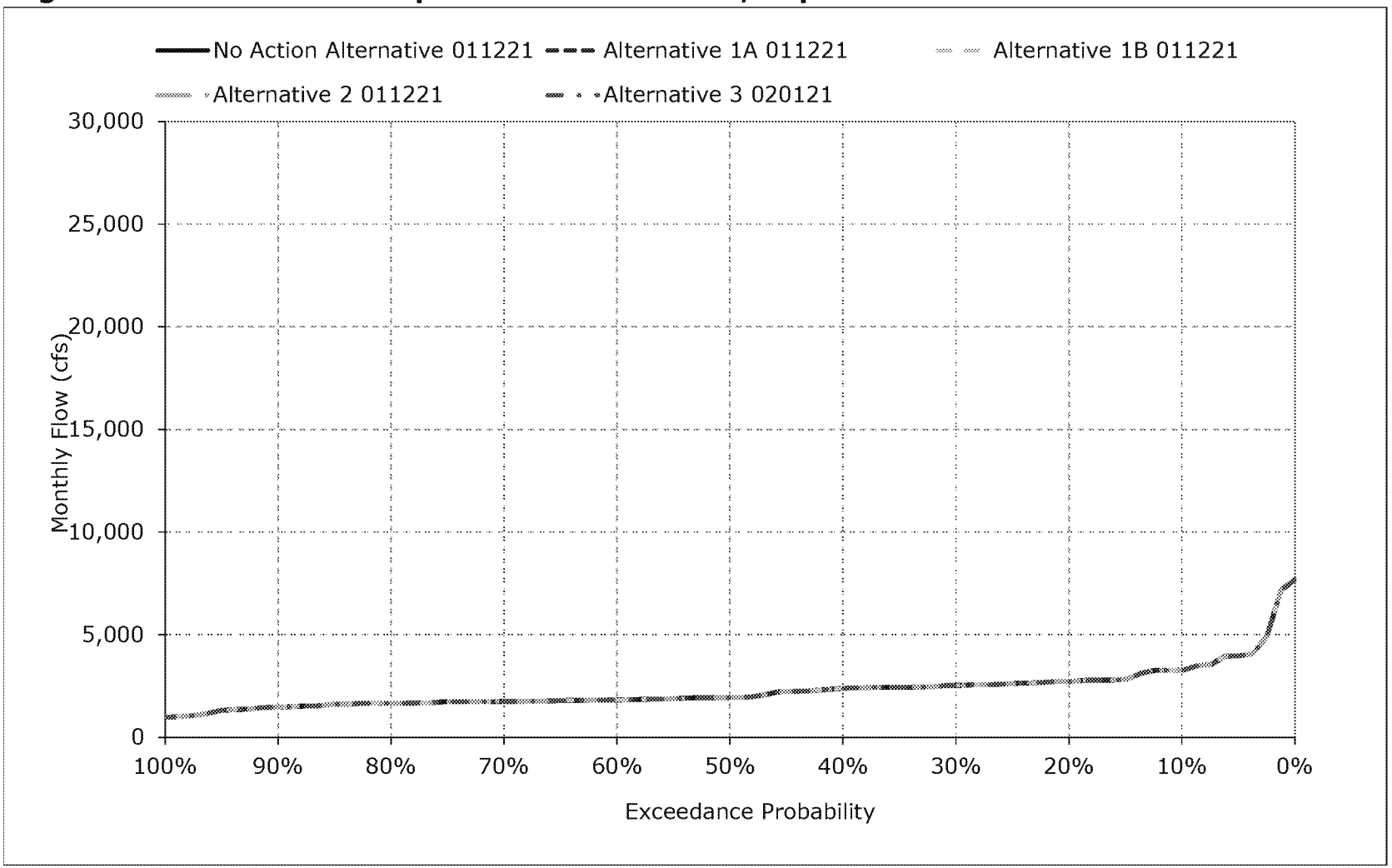


Table 5B3-8-1a. San Joaquin River at Vernalis (60-20-20), No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,290	2,898	4,217	10,826	13,951	14,996	13,637	12,723	12,058	7,285	3,349	3,276
20%	2,913	2,582	2,710	5,216	9,726	9,482	10,137	7,705	7,681	3,692	2,801	2,725
30%	2,760	2,230	2,375	3,444	6,922	7,983	8,505	5,663	3,180	2,644	2,482	2,532
40%	2,622	2,006	2,029	2,657	4,429	4,840	7,320	4,508	2,418	1,743	2,198	2,383
50%	2,457	1,855	1,871	2,278	3,500	3,622	6,235	4,016	2,110	1,547	1,480	1,935
60%	2,276	1,739	1,761	2,071	2,705	3,001	4,666	3,350	1,782	1,407	1,404	1,824
70%	2,129	1,635	1,628	1,759	2,247	2,214	3,204	2,288	1,446	1,198	1,333	1,748
80%	1,961	1,513	1,501	1,538	1,852	1,719	2,567	2,057	1,315	1,101	1,237	1,658
90%	1,684	1,377	1,339	1,349	1,584	1,536	1,574	1,419	991	934	1,060	1,464
Long Term												
Full Simulation Period[a]	2,523	2,333	3,090	4,732	6,350	6,636	7,143	5,620	4,502	3,246	2,089	2,323
Water Year Types[b,c]												
Wet (29%)	3,200	3,525	5,005	9,319	13,056	14,635	13,554	11,626	11,276	7,743	3,517	3,393
Above Normal (20%)	2,858	2,184	2,590	5,309	6,930	5,914	7,824	4,981	2,495	2,054	2,232	2,481
Below Normal (16%)	2,349	2,124	2,917	2,269	2,772	3,236	5,357	3,778	1,915	1,409	1,407	1,825
Dry (16%)	2,064	1,670	2,453	2,122	2,472	2,474	3,213	2,290	1,397	1,198	1,331	1,776
Critical (20%)	1,655	1,398	1,394	1,398	1,766	1,504	1,487	1,452	971	850	972	1,412

Table 5B3-8-1b. San Joaquin River at Vernalis (60-20-20), Alternative 1A 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,290	2,898	4,217	10,826	13,951	14,996	13,638	12,723	12,058	7,285	3,349	3,276
20%	2,913	2,582	2,710	5,216	9,726	9,482	10,137	7,705	7,681	3,691	2,801	2,725
30%	2,760	2,230	2,375	3,444	6,922	7,983	8,505	5,662	3,181	2,644	2,482	2,532
40%	2,622	2,006	2,029	2,657	4,429	4,840	7,320	4,508	2,418	1,743	2,198	2,383
50%	2,457	1,855	1,871	2,278	3,500	3,622	6,235	4,016	2,110	1,547	1,480	1,935
60%	2,275	1,739	1,761	2,071	2,705	3,001	4,666	3,350	1,782	1,407	1,404	1,824
70%	2,129	1,635	1,628	1,759	2,247	2,214	3,204	2,288	1,446	1,198	1,333	1,748
80%	1,961	1,513	1,501	1,538	1,852	1,719	2,567	2,058	1,315	1,103	1,236	1,658
90%	1,684	1,377	1,339	1,349	1,584	1,536	1,574	1,418	992	934	1,060	1,464
Long Term												
Full Simulation Period[a]	2,523	2,333	3,090	4,732	6,350	6,636	7,143	5,620	4,502	3,246	2,089	2,323
Water Year Types[b,c]												
Wet (29%)	3,200	3,525	5,005	9,319	13,056	14,636	13,554	11,626	11,276	7,743	3,516	3,393
Above Normal (20%)	2,858	2,184	2,590	5,309	6,930	5,914	7,824	4,981	2,495	2,054	2,232	2,481
Below Normal (16%)	2,349	2,124	2,917	2,269	2,772	3,236	5,357	3,778	1,915	1,408	1,407	1,825
Dry (16%)	2,064	1,670	2,453	2,122	2,472	2,474	3,213	2,290	1,397	1,199	1,332	1,776
Critical (20%)	1,655	1,398	1,394	1,398	1,766	1,504	1,487	1,452	971	850	972	1,412

Table 5B3-8-1c. San Joaquin River at Vernalis (60-20-20), Alternative 1A 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	1	0	2	-1	0
90%	0	0	0	0	0	0	0	-1	1	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (29%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (20%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (20%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-8-2a. San Joaquin River at Vernalis (60-20-20), No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,290	2,898	4,217	10,826	13,951	14,996	13,637	12,723	12,058	7,285	3,349	3,276
20%	2,913	2,582	2,710	5,216	9,726	9,482	10,137	7,705	7,681	3,692	2,801	2,725
30%	2,760	2,230	2,375	3,444	6,922	7,983	8,505	5,663	3,180	2,644	2,482	2,532
40%	2,622	2,006	2,029	2,657	4,429	4,840	7,320	4,508	2,418	1,743	2,198	2,383
50%	2,457	1,855	1,871	2,278	3,500	3,622	6,235	4,016	2,110	1,547	1,480	1,935
60%	2,276	1,739	1,761	2,071	2,705	3,001	4,666	3,350	1,782	1,407	1,404	1,824
70%	2,129	1,635	1,628	1,759	2,247	2,214	3,204	2,288	1,446	1,198	1,333	1,748
80%	1,961	1,513	1,501	1,538	1,852	1,719	2,567	2,057	1,315	1,101	1,237	1,658
90%	1,684	1,377	1,339	1,349	1,584	1,536	1,574	1,419	991	934	1,060	1,464
Long Term												
Full Simulation Period[a]	2,523	2,333	3,090	4,732	6,350	6,636	7,143	5,620	4,502	3,246	2,089	2,323
Water Year Types[b,c]												
Wet (29%)	3,200	3,525	5,005	9,319	13,056	14,635	13,554	11,626	11,276	7,743	3,517	3,393
Above Normal (20%)	2,858	2,184	2,590	5,309	6,930	5,914	7,824	4,981	2,495	2,054	2,232	2,481
Below Normal (16%)	2,349	2,124	2,917	2,269	2,772	3,236	5,357	3,778	1,915	1,409	1,407	1,825
Dry (16%)	2,064	1,670	2,453	2,122	2,472	2,474	3,213	2,290	1,397	1,198	1,331	1,776
Critical (20%)	1,655	1,398	1,394	1,398	1,766	1,504	1,487	1,452	971	850	972	1,412

Table 5B3-8-2b. San Joaquin River at Vernalis (60-20-20), Alternative 1B 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,290	2,898	4,217	10,826	13,951	14,996	13,638	12,723	12,058	7,285	3,349	3,276
20%	2,913	2,582	2,710	5,216	9,726	9,482	10,137	7,705	7,681	3,692	2,801	2,725
30%	2,760	2,230	2,375	3,444	6,922	7,983	8,505	5,662	3,181	2,644	2,482	2,532
40%	2,622	2,006	2,029	2,657	4,429	4,840	7,320	4,508	2,418	1,743	2,198	2,383
50%	2,457	1,855	1,871	2,278	3,500	3,622	6,235	4,016	2,110	1,547	1,480	1,935
60%	2,275	1,739	1,761	2,071	2,705	3,001	4,666	3,350	1,782	1,407	1,404	1,825
70%	2,129	1,635	1,628	1,759	2,247	2,214	3,203	2,288	1,446	1,198	1,336	1,748
80%	1,961	1,513	1,501	1,538	1,852	1,720	2,567	2,058	1,316	1,103	1,235	1,659
90%	1,684	1,377	1,339	1,349	1,584	1,536	1,574	1,418	993	934	1,060	1,464
Long Term												
Full Simulation Period[a]	2,523	2,333	3,090	4,732	6,350	6,636	7,143	5,620	4,502	3,247	2,089	2,324
Water Year Types[b,c]												
Wet (29%)	3,200	3,525	5,005	9,319	13,056	14,636	13,554	11,626	11,275	7,743	3,516	3,393
Above Normal (20%)	2,858	2,184	2,590	5,309	6,930	5,914	7,824	4,981	2,495	2,054	2,232	2,481
Below Normal (16%)	2,349	2,124	2,917	2,269	2,772	3,236	5,357	3,778	1,915	1,408	1,407	1,825
Dry (16%)	2,065	1,670	2,453	2,122	2,472	2,474	3,213	2,290	1,398	1,199	1,332	1,776
Critical (20%)	1,655	1,398	1,394	1,398	1,766	1,505	1,487	1,452	972	851	973	1,412

Table 5B3-8-2c. San Joaquin River at Vernalis (60-20-20), Alternative 1B 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	1
70%	1	0	0	0	0	0	0	0	0	0	4	0
80%	0	0	0	0	0	0	0	1	0	2	-2	0
90%	0	0	0	0	0	0	0	-1	1	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (29%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (20%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (16%)	0	0	0	0	0	0	0	0	1	1	1	0
Critical (20%)	0	0	0	0	0	0	0	0	1	1	1	0

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-8-3a. San Joaquin River at Vernalis (60-20-20), No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,290	2,898	4,217	10,826	13,951	14,996	13,637	12,723	12,058	7,285	3,349	3,276
20%	2,913	2,582	2,710	5,216	9,726	9,482	10,137	7,705	7,681	3,692	2,801	2,725
30%	2,760	2,230	2,375	3,444	6,922	7,983	8,505	5,663	3,180	2,644	2,482	2,532
40%	2,622	2,006	2,029	2,657	4,429	4,840	7,320	4,508	2,418	1,743	2,198	2,383
50%	2,457	1,855	1,871	2,278	3,500	3,622	6,235	4,016	2,110	1,547	1,480	1,935
60%	2,276	1,739	1,761	2,071	2,705	3,001	4,666	3,350	1,782	1,407	1,404	1,824
70%	2,129	1,635	1,628	1,759	2,247	2,214	3,204	2,288	1,446	1,198	1,333	1,748
80%	1,961	1,513	1,501	1,538	1,852	1,719	2,567	2,057	1,315	1,101	1,237	1,658
90%	1,684	1,377	1,339	1,349	1,584	1,536	1,574	1,419	991	934	1,060	1,464
Long Term												
Full Simulation Period[a]	2,523	2,333	3,090	4,732	6,350	6,636	7,143	5,620	4,502	3,246	2,089	2,323
Water Year Types[b,c]												
Wet (29%)	3,200	3,525	5,005	9,319	13,056	14,635	13,554	11,626	11,276	7,743	3,517	3,393
Above Normal (20%)	2,858	2,184	2,590	5,309	6,930	5,914	7,824	4,981	2,495	2,054	2,232	2,481
Below Normal (16%)	2,349	2,124	2,917	2,269	2,772	3,236	5,357	3,778	1,915	1,409	1,407	1,825
Dry (16%)	2,064	1,670	2,453	2,122	2,472	2,474	3,213	2,290	1,397	1,198	1,331	1,776
Critical (20%)	1,655	1,398	1,394	1,398	1,766	1,504	1,487	1,452	971	850	972	1,412

Table 5B3-8-3b. San Joaquin River at Vernalis (60-20-20), Alternative 2 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,290	2,898	4,217	10,826	13,951	14,996	13,638	12,723	12,058	7,285	3,349	3,276
20%	2,913	2,582	2,710	5,216	9,726	9,482	10,137	7,705	7,681	3,691	2,801	2,725
30%	2,760	2,230	2,375	3,444	6,922	7,983	8,505	5,662	3,181	2,644	2,482	2,532
40%	2,622	2,006	2,029	2,657	4,429	4,840	7,320	4,508	2,419	1,743	2,198	2,383
50%	2,457	1,855	1,871	2,278	3,500	3,622	6,235	4,016	2,110	1,547	1,480	1,935
60%	2,275	1,739	1,761	2,071	2,705	3,001	4,666	3,350	1,782	1,407	1,404	1,824
70%	2,129	1,635	1,628	1,759	2,247	2,214	3,204	2,288	1,446	1,198	1,333	1,748
80%	1,961	1,513	1,501	1,538	1,852	1,719	2,567	2,058	1,315	1,103	1,236	1,658
90%	1,684	1,377	1,339	1,349	1,584	1,536	1,574	1,418	992	934	1,060	1,464
Long Term												
Full Simulation Period[a]	2,523	2,333	3,090	4,732	6,350	6,636	7,143	5,620	4,502	3,246	2,089	2,323
Water Year Types[b,c]												
Wet (29%)	3,200	3,525	5,005	9,319	13,056	14,636	13,554	11,626	11,276	7,743	3,516	3,393
Above Normal (20%)	2,858	2,184	2,590	5,309	6,930	5,914	7,824	4,981	2,495	2,054	2,232	2,481
Below Normal (16%)	2,349	2,124	2,917	2,269	2,772	3,236	5,357	3,778	1,915	1,408	1,407	1,825
Dry (16%)	2,064	1,670	2,453	2,122	2,472	2,474	3,213	2,290	1,397	1,199	1,332	1,776
Critical (20%)	1,655	1,398	1,394	1,398	1,766	1,504	1,487	1,452	971	850	972	1,412

Table 5B3-8-3c. San Joaquin River at Vernalis (60-20-20), Alternative 2 011221 minus No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	1	0	2	-1	0
90%	0	0	0	0	0	0	0	-1	1	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (29%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (20%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (20%)	0	0	0	0	0	0	0	0	0	0	0	0

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B3-8-4a. San Joaquin River at Vernalis (60-20-20), No Action Alternative 011221, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,290	2,898	4,217	10,826	13,951	14,996	13,637	12,723	12,058	7,285	3,349	3,276
20%	2,913	2,582	2,710	5,216	9,726	9,482	10,137	7,705	7,681	3,692	2,801	2,725
30%	2,760	2,230	2,375	3,444	6,922	7,983	8,505	5,663	3,180	2,644	2,482	2,532
40%	2,622	2,006	2,029	2,657	4,429	4,840	7,320	4,508	2,418	1,743	2,198	2,383
50%	2,457	1,855	1,871	2,278	3,500	3,622	6,235	4,016	2,110	1,547	1,480	1,935
60%	2,276	1,739	1,761	2,071	2,705	3,001	4,666	3,350	1,782	1,407	1,404	1,824
70%	2,129	1,635	1,628	1,759	2,247	2,214	3,204	2,288	1,446	1,198	1,333	1,748
80%	1,961	1,513	1,501	1,538	1,852	1,719	2,567	2,057	1,315	1,101	1,237	1,658
90%	1,684	1,377	1,339	1,349	1,584	1,536	1,574	1,419	991	934	1,060	1,464
Long Term												
Full Simulation Period[a]	2,523	2,333	3,090	4,732	6,350	6,636	7,143	5,620	4,502	3,246	2,089	2,323
Water Year Types[b,c]												
Wet (29%)	3,200	3,525	5,005	9,319	13,056	14,635	13,554	11,626	11,276	7,743	3,517	3,393
Above Normal (20%)	2,858	2,184	2,590	5,309	6,930	5,914	7,824	4,981	2,495	2,054	2,232	2,481
Below Normal (16%)	2,349	2,124	2,917	2,269	2,772	3,236	5,357	3,778	1,915	1,409	1,407	1,825
Dry (16%)	2,064	1,670	2,453	2,122	2,472	2,474	3,213	2,290	1,397	1,198	1,331	1,776
Critical (20%)	1,655	1,398	1,394	1,398	1,766	1,504	1,487	1,452	971	850	972	1,412

Table 5B3-8-4b. San Joaquin River at Vernalis (60-20-20), Alternative 3 020121, Monthly Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,290	2,898	4,217	10,826	13,951	14,996	13,638	12,723	12,058	7,285	3,349	3,276
20%	2,913	2,582	2,710	5,216	9,726	9,482	10,138	7,705	7,681	3,692	2,801	2,725
30%	2,760	2,230	2,375	3,444	6,922	7,983	8,505	5,663	3,181	2,645	2,482	2,532
40%	2,622	2,006	2,029	2,657	4,429	4,840	7,320	4,508	2,419	1,743	2,198	2,383
50%	2,457	1,855	1,872	2,278	3,499	3,622	6,235	4,016	2,110	1,547	1,480	1,935
60%	2,275	1,739	1,761	2,071	2,705	3,001	4,666	3,350	1,782	1,409	1,404	1,825
70%	2,129	1,635	1,628	1,759	2,247	2,214	3,203	2,288	1,446	1,198	1,338	1,748
80%	1,961	1,513	1,501	1,538	1,852	1,720	2,567	2,056	1,316	1,100	1,236	1,659
90%	1,684	1,377	1,339	1,349	1,584	1,536	1,575	1,419	995	934	1,060	1,464
Long Term												
Full Simulation Period[a]	2,523	2,333	3,090	4,732	6,350	6,636	7,143	5,620	4,502	3,247	2,089	2,324
Water Year Types[b,c]												
Wet (29%)	3,200	3,525	5,005	9,319	13,056	14,635	13,554	11,626	11,276	7,743	3,516	3,393
Above Normal (20%)	2,858	2,184	2,590	5,309	6,930	5,914	7,824	4,981	2,495	2,054	2,232	2,481
Below Normal (16%)	2,349	2,124	2,917	2,269	2,772	3,236	5,357	3,778	1,915	1,408	1,407	1,825
Dry (16%)	2,065	1,670	2,453	2,122	2,472	2,474	3,213	2,290	1,398	1,199	1,332	1,776
Critical (20%)	1,655	1,398	1,395	1,398	1,766	1,505	1,487	1,453	972	851	973	1,412

Table 5B3-8-4c. San Joaquin River at Vernalis (60-20-20), Alternative 3 020121 minus No Action Alternative 011221, Monthly Flow (cfs)

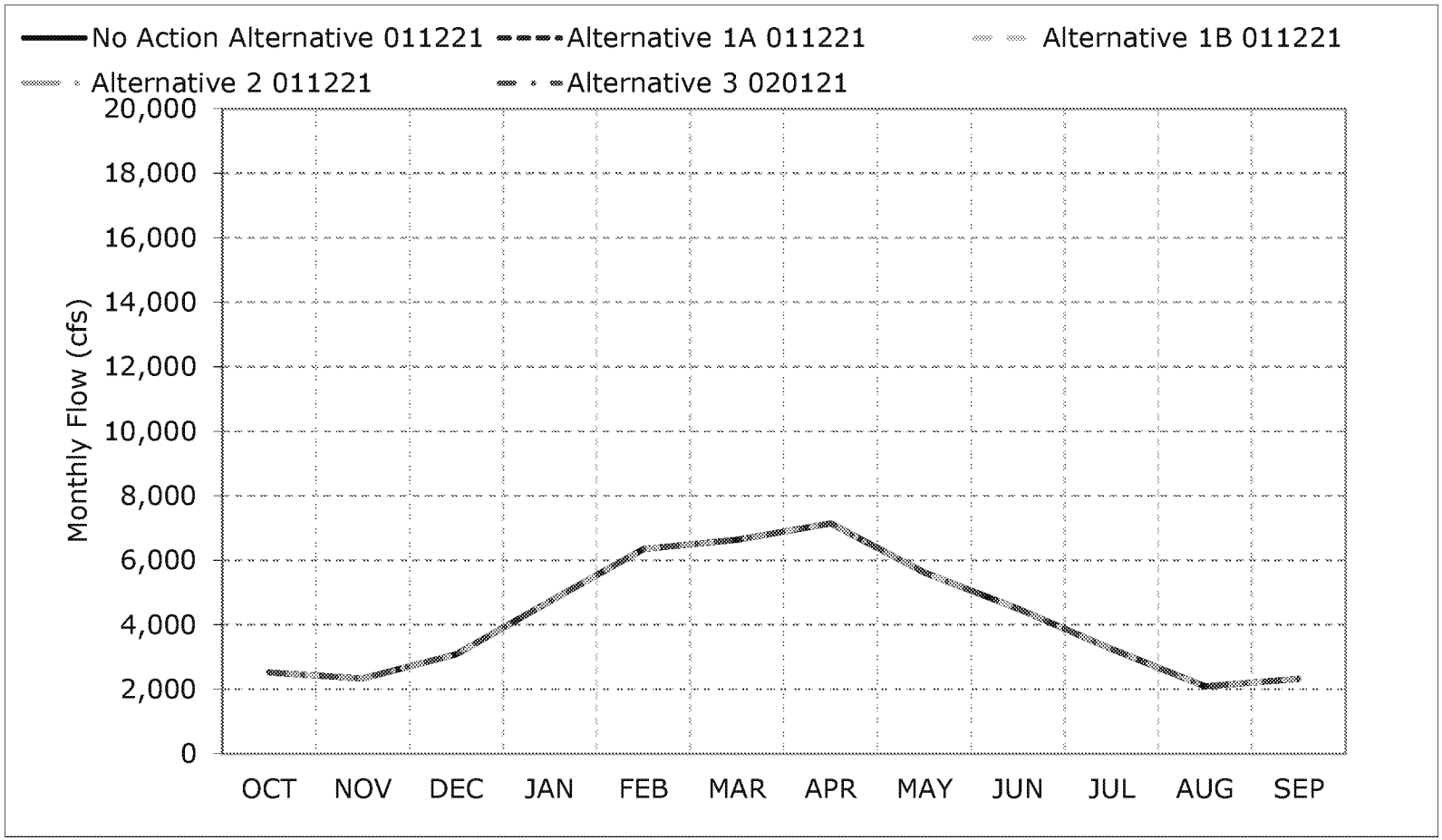
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	1	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	2	0	2
70%	0	0	0	0	0	0	0	1	0	0	6	0
80%	0	0	0	0	0	0	0	0	1	-1	-1	0
90%	0	0	0	0	0	0	0	0	4	0	0	0
Long Term												
Full Simulation Period[a]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[b,c]												
Wet (29%)	0	0	0	0	0	0	0	-1	0	0	0	0
Above Normal (20%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (16%)	0	0	0	0	0	0	0	1	1	1	1	0
Critical (20%)	0	0	0	0	0	0	0	1	1	1	1	0

a Based on the 82-year simulation period.

b As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

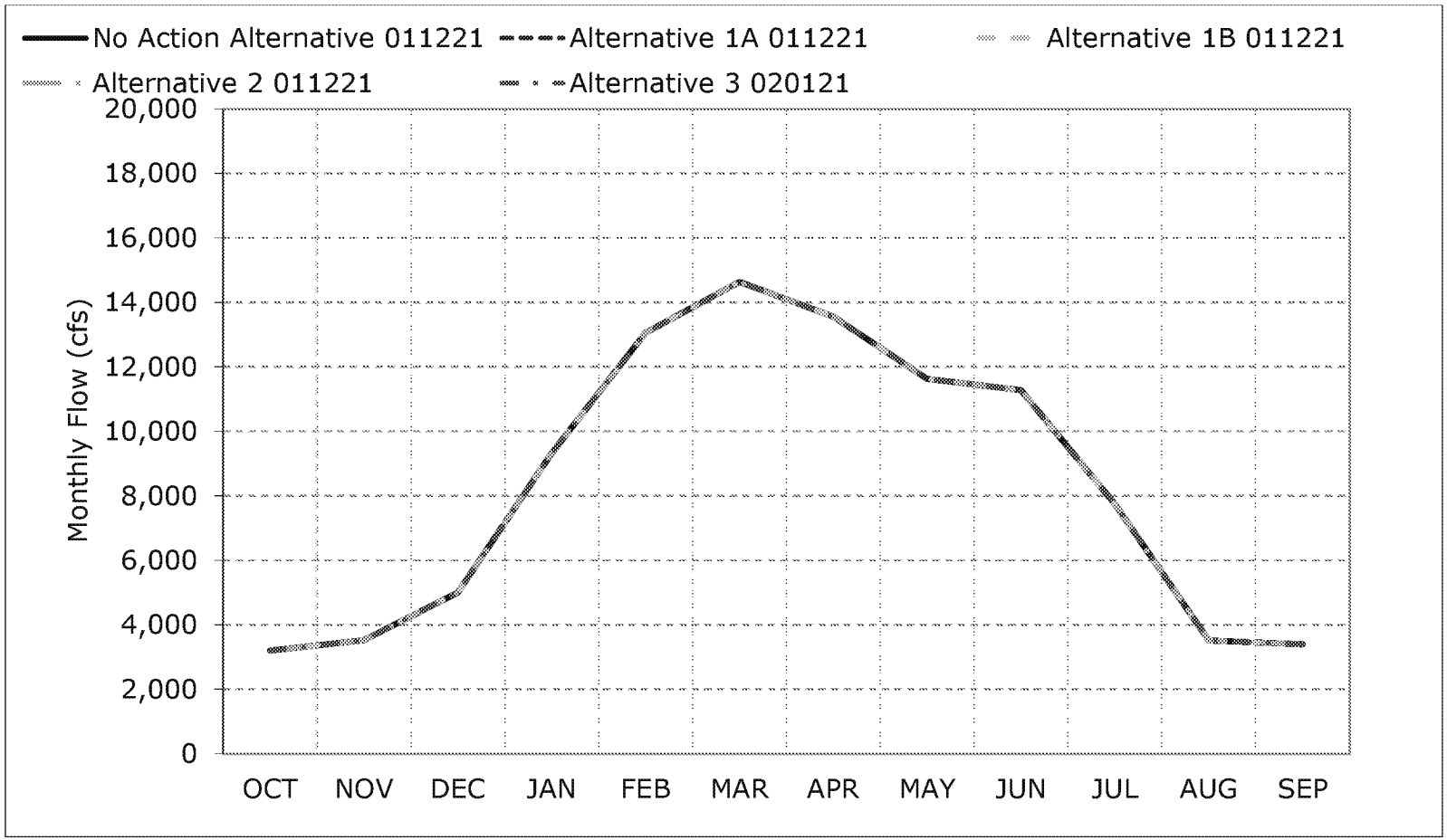
c These results are displayed with calendar year - year type sorting.

Figure 5B3-8-1. San Joaquin River at Vernalis (60-20-20), Long-Term Average Flow



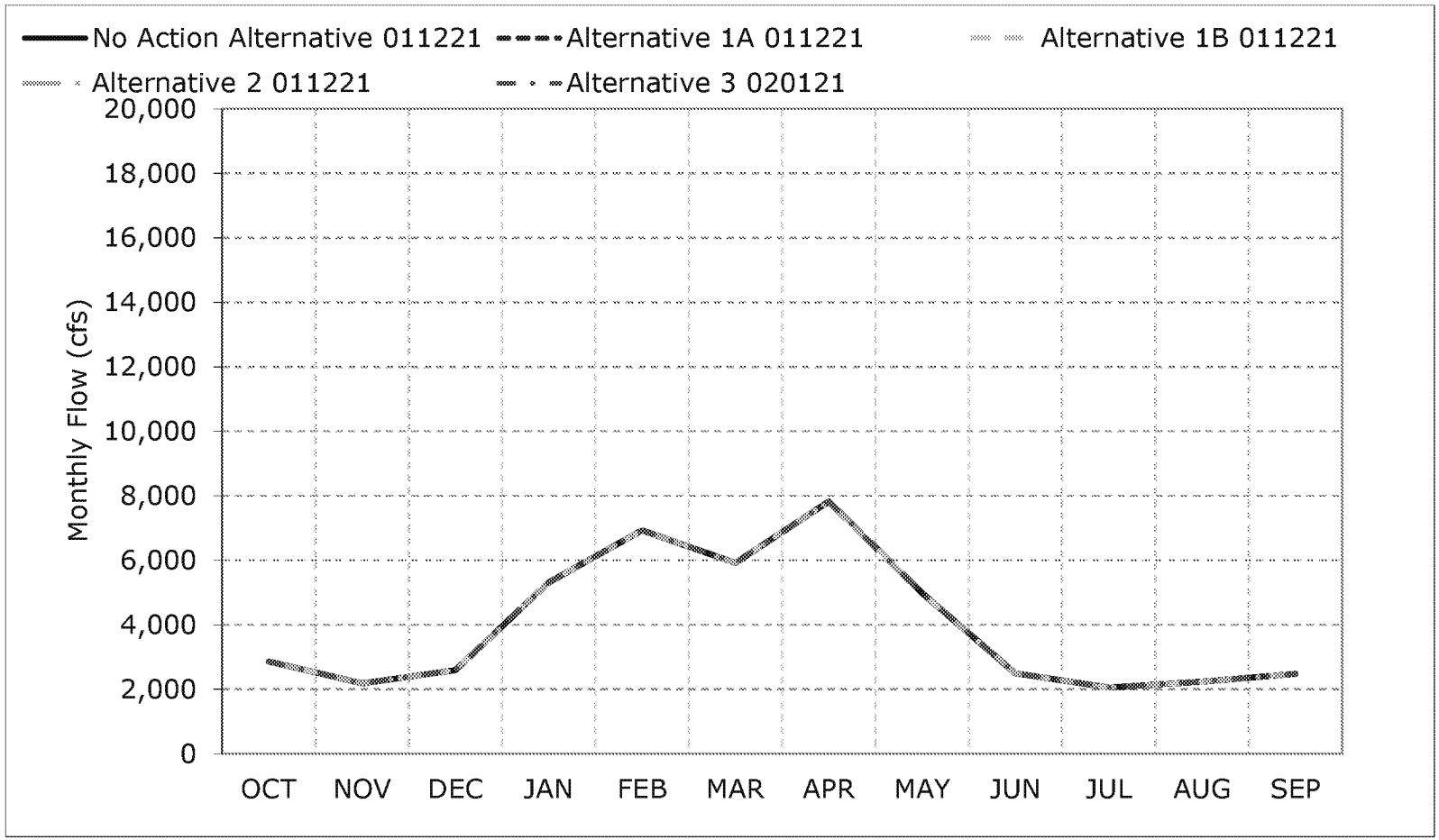
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-8-2. San Joaquin River at Vernalis (60-20-20), Wet Year Average Flow



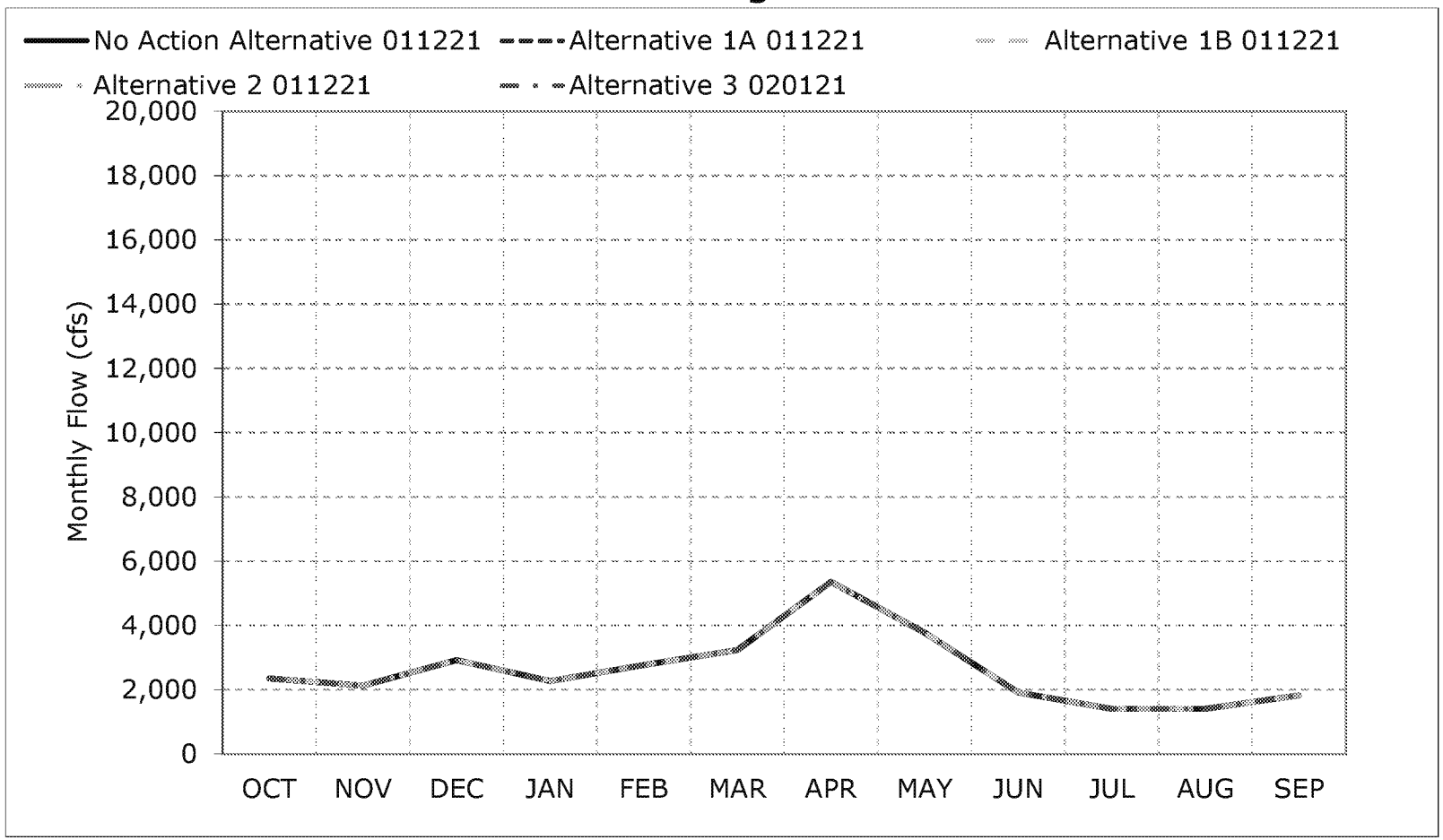
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-8-3. San Joaquin River at Vernalis (60-20-20), Above Normal Year Average Flow



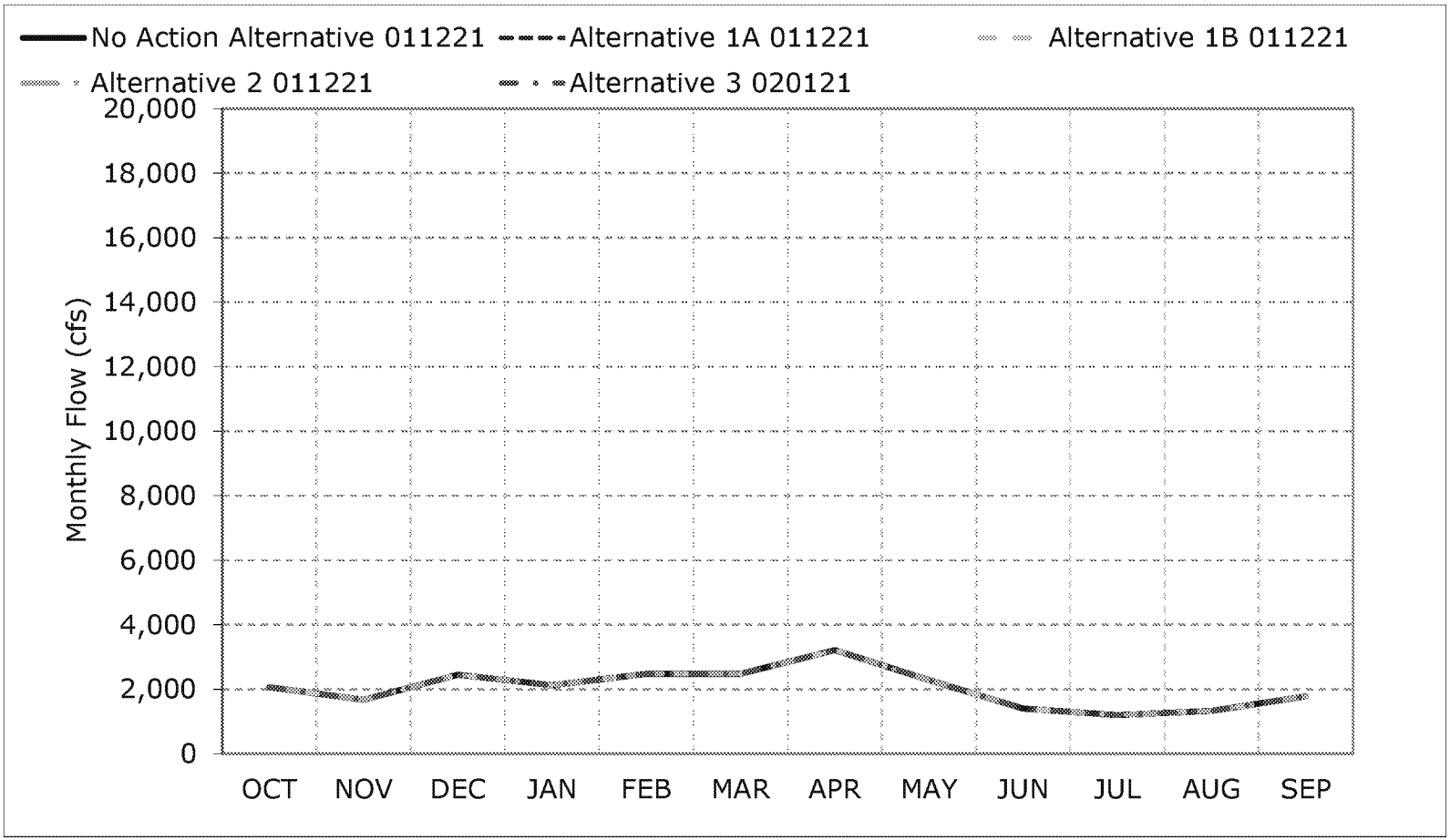
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-8-4. San Joaquin River at Vernalis (60-20-20), Below Normal Year Average Flow



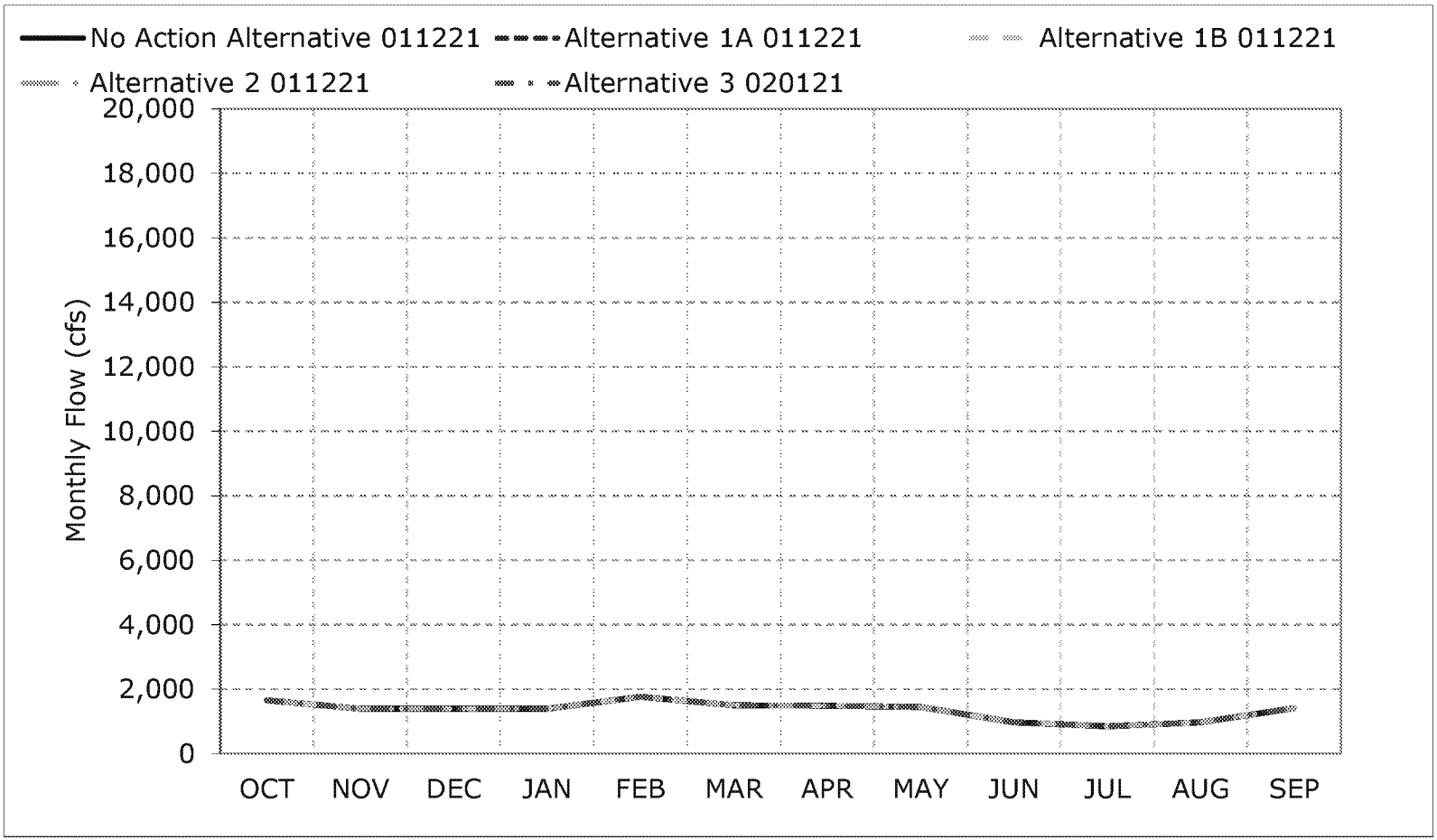
*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-8-5. San Joaquin River at Vernalis (60-20-20), Dry Year Average Flow



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B3-8-6. San Joaquin River at Vernalis (60-20-20), Critical Year Average Flow



*As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Appendix 5B4 – Regional Delivery Operations (CalSim II)

The following results of the CalSim II model are included for regional delivery operations at key project locations for the following alternatives:

- No Action Alternative 011221
- Alternative 1A 011221
- Alternative 1B 011221
- Alternative 2 011221
- Alternative 3 020121

Section	Output Parameters	Table Numbers	Figure Numbers
Delivery Ops	Total Delta Exports	5B4-1-1a to 5B4-1-4c	5B4-1-1 to 5B4-1-18
Delivery Ops	Jones PP Exports	5B4-2-1a to 5B4-2-4c	5B4-2-1 to 5B4-2-18
Delivery Ops	SWP Banks PP Exports	5B4-3-1a to 5B4-3-4c	5B4-3-1 to 5B4-3-18
Delivery Ops	CVP Banks PP Exports	5B4-4-1a to 5B4-4-4c	5B4-4-1 to 5B4-4-18
Delivery Ops	SWP and CVP Banks PP Exports	5B4-5-1a to 5B4-5-4c	5B4-5-1 to 5B4-5-18
Delivery Ops	Barker Slough Pumping Plant	5B4-6-1a to 5B4-6-4c	5B4-6-1 to 5B4-6-18
Delivery Ops	San Luis Reservoir Storage	5B4-7-1a to 5B4-7-4c	5B4-7-1 to 5B4-7-12
Delivery Ops	San Luis Reservoir Elevation	5B4-8-1a to 5B4-8-4c	5B4-8-1 to 5B4-8-12
Delivery Ops	San Luis Reservoir Surface Area	5B4-9-1a to 5B4-9-4c	5B4-9-1 to 5B4-9-12
Delivery Ops	CVP San Luis Reservoir Storage	5B4-10-1a to 5B4-10-4c	5B4-10-1 to 5B4-10-12
Delivery Ops	SWP San Luis Reservoir Storage	5B4-11-1a to 5B4-11-4c	5B4-11-1 to 5B4-11-12

Report formats

- Monthly tables comparing an alternative against the No Action alternative (exceedance values, long-term average, and average by water year type)
- Monthly pattern charts (long-term average and average by water year type) including all alternatives
- Monthly exceedance charts (all months) including all alternatives

Table 5B4-1-1a. Total Delta Exports, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	10,322	11,280	11,714	9,216	12,179	9,337	8,051	8,949	9,643	11,401	11,013	11,280
20%	9,430	11,280	11,605	8,122	9,469	7,913	6,247	6,280	7,408	11,280	10,351	10,738
30%	8,560	11,280	11,203	7,228	8,649	7,436	4,607	4,376	5,538	11,222	10,142	10,594
40%	7,326	11,280	9,412	7,057	7,913	5,856	4,073	4,114	5,369	11,067	10,142	10,428
50%	6,760	10,540	7,717	6,902	7,007	5,445	3,660	3,791	5,122	10,645	9,727	9,580
60%	6,139	7,714	7,106	6,685	6,586	5,142	3,104	3,486	4,974	10,052	7,492	8,215
70%	5,526	6,188	6,754	6,478	6,384	4,723	2,417	3,302	4,719	8,593	5,643	6,931
80%	4,765	5,092	6,387	6,248	6,194	4,481	1,877	2,740	4,432	6,471	4,551	5,735
90%	3,738	4,169	5,475	5,294	5,965	4,190	1,432	2,111	1,275	2,324	3,233	4,089
Long Term												
Full Simulation Period[a]	6,949	8,643	8,555	7,201	7,979	6,167	4,157	4,510	5,474	8,825	7,868	8,450
Water Year Types[b,c]												
Wet (32%)	8,908	11,174	10,387	8,365	9,741	8,179	6,689	6,650	7,810	10,889	9,768	10,692
Above Normal (15%)	7,073	10,711	9,892	7,196	8,025	6,563	4,234	4,791	6,224	10,112	9,720	10,160
Below Normal (17%)	7,977	8,284	8,671	6,828	8,157	5,781	3,764	4,190	5,020	10,855	10,432	9,641
Dry (22%)	5,276	6,492	6,685	6,708	6,533	4,644	2,492	2,998	4,323	7,796	4,668	6,394
Critical (15%)	3,890	4,735	5,917	5,856	6,080	4,146	1,551	2,237	1,921	2,240	3,707	3,577

Table 5B4-1-1b. Total Delta Exports, Alternative 1A 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	10,531	11,280	11,731	9,216	12,212	9,334	8,051	9,015	9,643	11,446	11,019	11,280
20%	9,437	11,280	11,626	8,122	9,138	7,910	6,247	6,280	7,326	11,312	10,428	10,775
30%	8,567	11,280	11,001	7,228	8,649	7,436	4,568	4,379	5,538	11,233	10,142	10,655
40%	7,857	11,280	9,456	7,057	7,913	5,856	4,070	4,112	5,369	11,111	10,142	10,490
50%	7,185	10,604	7,848	6,902	7,007	5,445	3,663	3,807	5,122	10,676	9,858	9,599
60%	6,786	8,733	7,195	6,685	6,586	5,142	3,107	3,506	4,971	10,112	8,260	8,303
70%	6,099	7,009	6,865	6,478	6,384	4,734	2,438	3,312	4,700	8,954	6,280	7,687
80%	5,030	6,227	6,505	6,248	6,137	4,494	1,761	2,678	4,363	7,138	5,244	7,081
90%	3,925	4,703	5,617	5,290	5,829	4,293	1,403	2,117	1,239	3,291	4,669	5,173
Long Term												
Full Simulation Period[a]	7,282	8,972	8,621	7,215	7,946	6,173	4,142	4,507	5,474	9,200	8,270	8,827
Water Year Types[b,c]												
Wet (32%)	8,860	11,184	10,379	8,364	9,731	8,179	6,679	6,643	7,802	10,877	9,782	10,697
Above Normal (15%)	7,132	10,738	9,855	7,196	7,981	6,563	4,218	4,801	6,220	10,126	9,730	10,202
Below Normal (17%)	8,481	9,006	8,861	6,828	8,059	5,781	3,733	4,191	4,987	10,880	10,655	9,836
Dry (22%)	6,250	7,102	6,872	6,702	6,520	4,644	2,463	2,991	4,327	8,863	5,742	7,270
Critical (15%)	4,164	5,182	5,919	5,968	6,056	4,186	1,566	2,227	1,972	3,190	4,541	4,561

Table 5B4-1-1c. Total Delta Exports, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	209	0	18	0	33	-3	0	66	0	45	5	0
20%	7	0	21	0	-331	-3	0	0	-82	32	77	37
30%	8	0	-202	0	0	0	-39	3	0	11	0	62
40%	531	0	44	0	0	0	-3	-2	0	44	0	62
50%	425	65	131	0	0	0	3	17	0	31	132	19
60%	647	1,020	89	0	0	0	3	20	-4	60	767	88
70%	573	822	111	0	0	11	21	11	-20	361	637	755
80%	265	1,135	118	0	-58	13	-116	-62	-69	667	693	1,346
90%	188	534	141	-4	-136	103	-29	6	-36	967	1,436	1,085
Long Term												
Full Simulation Period[a]	334	329	66	15	-33	6	-15	-4	-1	376	402	377
Water Year Types[b,c]												
Wet (32%)	-48	9	-8	-1	-10	-1	-10	-7	-8	-12	14	5
Above Normal (15%)	60	27	-37	0	-44	0	-16	10	-4	14	10	42
Below Normal (17%)	503	721	190	0	-99	0	-31	1	-33	25	223	195
Dry (22%)	975	610	186	-5	-13	0	-29	-7	3	1,067	1,074	875
Critical (15%)	274	447	3	112	-24	41	16	-10	51	950	834	985

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-1-2a. Total Delta Exports, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	10,322	11,280	11,714	9,216	12,179	9,337	8,051	8,949	9,643	11,401	11,013	11,280
20%	9,430	11,280	11,605	8,122	9,469	7,913	6,247	6,280	7,408	11,280	10,351	10,738
30%	8,560	11,280	11,203	7,228	8,649	7,436	4,607	4,376	5,538	11,222	10,142	10,594
40%	7,326	11,280	9,412	7,057	7,913	5,856	4,073	4,114	5,369	11,067	10,142	10,428
50%	6,760	10,540	7,717	6,902	7,007	5,445	3,660	3,791	5,122	10,645	9,727	9,580
60%	6,139	7,714	7,106	6,685	6,586	5,142	3,104	3,486	4,974	10,052	7,492	8,215
70%	5,526	6,188	6,754	6,478	6,384	4,723	2,417	3,302	4,719	8,593	5,643	6,931
80%	4,765	5,092	6,387	6,248	6,194	4,481	1,877	2,740	4,432	6,471	4,551	5,735
90%	3,738	4,169	5,475	5,294	5,965	4,190	1,432	2,111	1,275	2,324	3,233	4,089
Long Term												
Full Simulation Period[a]	6,949	8,643	8,555	7,201	7,979	6,167	4,157	4,510	5,474	8,825	7,868	8,450
Water Year Types[b,c]												
Wet (32%)	8,908	11,174	10,387	8,365	9,741	8,179	6,689	6,650	7,810	10,889	9,768	10,692
Above Normal (15%)	7,073	10,711	9,892	7,196	8,025	6,563	4,234	4,791	6,224	10,112	9,720	10,160
Below Normal (17%)	7,977	8,284	8,671	6,828	8,157	5,781	3,764	4,190	5,020	10,855	10,432	9,641
Dry (22%)	5,276	6,492	6,685	6,708	6,533	4,644	2,492	2,998	4,323	7,796	4,668	6,394
Critical (15%)	3,890	4,735	5,917	5,856	6,080	4,146	1,551	2,237	1,921	2,240	3,707	3,577

Table 5B4-1-2b. Total Delta Exports, Alternative 1B 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	10,526	11,280	11,713	9,216	12,280	9,334	8,051	9,152	9,643	11,446	11,020	11,280
20%	9,438	11,280	11,605	8,122	9,200	7,910	6,247	6,280	7,326	11,312	10,432	10,874
30%	8,688	11,280	10,837	7,228	8,649	7,310	4,568	4,379	5,538	11,233	10,142	10,712
40%	7,864	11,280	9,412	7,057	7,913	5,856	4,014	4,112	5,369	11,097	10,142	10,531
50%	7,171	10,677	7,848	6,902	7,007	5,445	3,663	3,809	5,122	10,693	9,869	9,599
60%	6,766	8,822	7,196	6,685	6,586	5,142	3,107	3,506	4,970	10,147	8,268	8,336
70%	6,076	7,159	6,838	6,478	6,384	4,734	2,438	3,298	4,700	8,990	6,349	7,775
80%	5,042	6,071	6,311	6,248	6,137	4,482	1,779	2,681	4,360	7,199	5,200	7,002
90%	3,952	4,801	5,612	5,290	5,906	4,293	1,403	2,127	1,745	3,241	4,477	5,047
Long Term												
Full Simulation Period[a]	7,279	9,017	8,512	7,197	7,957	6,173	4,148	4,513	5,488	9,216	8,270	8,828
Water Year Types[b,c]												
Wet (32%)	8,874	11,184	10,437	8,364	9,735	8,167	6,675	6,642	7,802	10,877	9,783	10,698
Above Normal (15%)	7,208	10,754	9,863	7,196	7,997	6,564	4,262	4,822	6,220	10,131	9,732	10,261
Below Normal (17%)	8,391	9,003	8,862	6,828	8,060	5,781	3,717	4,187	4,977	10,853	10,632	9,903
Dry (22%)	6,278	7,287	6,230	6,695	6,535	4,644	2,479	3,011	4,400	8,944	5,779	7,206
Critical (15%)	4,096	5,199	6,003	5,856	6,078	4,211	1,568	2,224	1,968	3,198	4,513	4,523

Table 5B4-1-2c. Total Delta Exports, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	203	0	-1	0	101	-3	0	203	0	45	7	0
20%	7	0	0	0	-269	-3	1	0	-82	32	81	136
30%	129	0	-366	0	0	-127	-39	3	0	11	0	119
40%	538	0	0	0	0	0	-59	-2	0	29	0	103
50%	412	138	131	0	0	0	3	18	0	48	142	19
60%	628	1,108	89	0	0	0	3	20	-4	95	775	120
70%	550	971	84	0	0	11	21	-4	-19	397	706	843
80%	277	979	-76	0	-58	1	-98	-59	-72	728	649	1,267
90%	215	632	137	-4	-60	103	-29	16	470	917	1,244	958
Long Term												
Full Simulation Period[a]	330	374	-43	-3	-22	6	-9	3	13	391	402	378
Water Year Types[b,c]												
Wet (32%)	-34	9	50	-1	-5	-12	-14	-7	-8	-11	15	6
Above Normal (15%)	135	43	-29	0	-28	1	28	32	-4	19	12	101
Below Normal (17%)	414	718	191	0	-98	0	-47	-3	-43	-2	199	263
Dry (22%)	1,002	795	-455	-12	2	0	-13	13	77	1,148	1,111	812
Critical (15%)	205	464	86	0	-2	65	17	-13	46	958	806	946

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-1-3a. Total Delta Exports, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	10,322	11,280	11,714	9,216	12,179	9,337	8,051	8,949	9,643	11,401	11,013	11,280
20%	9,430	11,280	11,605	8,122	9,469	7,913	6,247	6,280	7,408	11,280	10,351	10,738
30%	8,560	11,280	11,203	7,228	8,649	7,436	4,607	4,376	5,538	11,222	10,142	10,594
40%	7,326	11,280	9,412	7,057	7,913	5,856	4,073	4,114	5,369	11,067	10,142	10,428
50%	6,760	10,540	7,717	6,902	7,007	5,445	3,660	3,791	5,122	10,645	9,727	9,580
60%	6,139	7,714	7,106	6,685	6,586	5,142	3,104	3,486	4,974	10,052	7,492	8,215
70%	5,526	6,188	6,754	6,478	6,384	4,723	2,417	3,302	4,719	8,593	5,643	6,931
80%	4,765	5,092	6,387	6,248	6,194	4,481	1,877	2,740	4,432	6,471	4,551	5,735
90%	3,738	4,169	5,475	5,294	5,965	4,190	1,432	2,111	1,275	2,324	3,233	4,089
Long Term												
Full Simulation Period[a]	6,949	8,643	8,555	7,201	7,979	6,167	4,157	4,510	5,474	8,825	7,868	8,450
Water Year Types[b,c]												
Wet (32%)	8,908	11,174	10,387	8,365	9,741	8,179	6,689	6,650	7,810	10,889	9,768	10,692
Above Normal (15%)	7,073	10,711	9,892	7,196	8,025	6,563	4,234	4,791	6,224	10,112	9,720	10,160
Below Normal (17%)	7,977	8,284	8,671	6,828	8,157	5,781	3,764	4,190	5,020	10,855	10,432	9,641
Dry (22%)	5,276	6,492	6,685	6,708	6,533	4,644	2,492	2,998	4,323	7,796	4,668	6,394
Critical (15%)	3,890	4,735	5,917	5,856	6,080	4,146	1,551	2,237	1,921	2,240	3,707	3,577

Table 5B4-1-3b. Total Delta Exports, Alternative 2 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	10,534	11,280	11,731	9,216	12,212	9,334	8,051	9,140	9,643	11,446	11,022	11,280
20%	9,500	11,280	11,626	8,122	9,148	7,910	6,247	6,280	7,326	11,312	10,428	10,775
30%	8,691	11,280	10,996	7,228	8,649	7,436	4,568	4,379	5,538	11,233	10,142	10,656
40%	7,898	11,280	9,460	7,057	7,913	5,856	4,070	4,112	5,369	11,117	10,142	10,490
50%	7,184	10,604	7,848	6,902	7,007	5,445	3,663	3,807	5,122	10,723	9,858	9,580
60%	6,700	8,732	7,198	6,685	6,586	5,142	3,107	3,506	4,971	10,113	8,259	8,240
70%	5,981	7,049	6,865	6,478	6,384	4,734	2,438	3,313	4,700	8,973	6,251	7,531
80%	4,925	5,759	6,486	6,248	6,170	4,494	1,761	2,678	4,363	7,198	5,163	7,028
90%	3,937	4,700	5,662	5,290	5,906	4,293	1,403	2,117	1,257	3,293	4,458	5,017
Long Term												
Full Simulation Period[a]	7,245	8,949	8,626	7,199	7,955	6,179	4,141	4,508	5,474	9,189	8,243	8,798
Water Year Types[b,c]												
Wet (32%)	8,884	11,184	10,379	8,364	9,731	8,177	6,679	6,642	7,802	10,878	9,781	10,697
Above Normal (15%)	7,132	10,744	9,854	7,196	7,985	6,563	4,216	4,812	6,220	10,127	9,730	10,202
Below Normal (17%)	8,467	9,026	8,865	6,828	8,059	5,781	3,728	4,191	4,987	10,880	10,650	9,819
Dry (22%)	6,111	6,969	6,876	6,702	6,544	4,644	2,463	2,991	4,328	8,844	5,727	7,227
Critical (15%)	4,081	5,194	5,947	5,853	6,075	4,237	1,567	2,227	1,973	3,136	4,388	4,444

Table 5B4-1-3c. Total Delta Exports, Alternative 2 011221 minus No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	212	0	18	0	33	-3	0	190	0	45	9	0
20%	69	0	21	0	-321	-3	0	0	-82	32	77	37
30%	131	0	-207	0	0	0	-39	3	0	11	0	62
40%	572	0	48	0	0	0	-3	-2	0	50	0	62
50%	424	65	131	0	0	0	2	17	0	78	132	0
60%	561	1,019	91	0	0	0	3	20	-4	61	767	25
70%	455	862	111	0	0	11	21	11	-19	380	608	600
80%	159	666	99	0	-25	13	-116	-62	-69	727	612	1,293
90%	200	531	187	-4	-60	103	-29	6	-18	970	1,225	928
Long Term												
Full Simulation Period[a]	296	306	71	-2	-24	12	-16	-2	0	364	375	348
Water Year Types[b,c]												
Wet (32%)	-24	9	-8	-1	-10	-3	-10	-7	-8	-11	13	5
Above Normal (15%)	59	33	-38	0	-40	0	-18	22	-4	15	10	42
Below Normal (17%)	490	741	194	0	-99	0	-35	1	-34	25	217	178
Dry (22%)	835	477	190	-6	11	0	-29	-7	5	1,049	1,059	833
Critical (15%)	191	460	30	-3	-5	91	16	-10	52	897	681	867

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-1-4a. Total Delta Exports, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	10,322	11,280	11,714	9,216	12,179	9,337	8,051	8,949	9,643	11,401	11,013	11,280
20%	9,430	11,280	11,605	8,122	9,469	7,913	6,247	6,280	7,408	11,280	10,351	10,738
30%	8,560	11,280	11,203	7,228	8,649	7,436	4,607	4,376	5,538	11,222	10,142	10,594
40%	7,326	11,280	9,412	7,057	7,913	5,856	4,073	4,114	5,369	11,067	10,142	10,428
50%	6,760	10,540	7,717	6,902	7,007	5,445	3,660	3,791	5,122	10,645	9,727	9,580
60%	6,139	7,714	7,106	6,685	6,586	5,142	3,104	3,486	4,974	10,052	7,492	8,215
70%	5,526	6,188	6,754	6,478	6,384	4,723	2,417	3,302	4,719	8,593	5,643	6,931
80%	4,765	5,092	6,387	6,248	6,194	4,481	1,877	2,740	4,432	6,471	4,551	5,735
90%	3,738	4,169	5,475	5,294	5,965	4,190	1,432	2,111	1,275	2,324	3,233	4,089
Long Term												
Full Simulation Period[a]	6,949	8,643	8,555	7,201	7,979	6,167	4,157	4,510	5,474	8,825	7,868	8,450
Water Year Types[b,c]												
Wet (32%)	8,908	11,174	10,387	8,365	9,741	8,179	6,689	6,650	7,810	10,889	9,768	10,692
Above Normal (15%)	7,073	10,711	9,892	7,196	8,025	6,563	4,234	4,791	6,224	10,112	9,720	10,160
Below Normal (17%)	7,977	8,284	8,671	6,828	8,157	5,781	3,764	4,190	5,020	10,855	10,432	9,641
Dry (22%)	5,276	6,492	6,685	6,708	6,533	4,644	2,492	2,998	4,323	7,796	4,668	6,394
Critical (15%)	3,890	4,735	5,917	5,856	6,080	4,146	1,551	2,237	1,921	2,240	3,707	3,577

Table 5B4-1-4b. Total Delta Exports, Alternative 3 020121, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	10,713	11,280	11,731	9,216	12,280	9,332	8,051	8,495	9,643	11,441	11,035	11,280
20%	9,787	11,280	11,637	8,122	9,526	7,909	6,255	6,280	7,326	11,312	10,433	10,825
30%	8,513	11,280	11,463	7,228	8,649	7,260	4,568	4,379	5,538	11,233	10,142	10,708
40%	7,880	11,280	9,806	7,057	7,913	5,856	4,019	4,112	5,369	11,157	10,142	10,489
50%	7,182	10,724	7,923	6,902	7,007	5,445	3,663	3,809	5,122	10,769	9,886	9,673
60%	6,900	8,626	7,251	6,685	6,586	5,142	3,107	3,506	4,934	10,274	8,280	8,763
70%	6,163	6,640	6,801	6,478	6,384	4,734	2,438	3,316	4,700	8,819	6,345	7,302
80%	4,999	5,952	6,318	6,248	6,276	4,494	1,843	2,712	4,363	7,514	5,075	6,978
90%	3,756	5,095	5,645	5,290	5,918	4,293	1,433	2,201	1,648	3,452	4,142	4,834
Long Term												
Full Simulation Period[a]	7,303	8,964	8,699	7,181	7,974	6,169	4,150	4,497	5,487	9,198	8,236	8,808
Water Year Types[b,c]												
Wet (32%)	8,873	11,184	10,442	8,363	9,734	8,162	6,679	6,549	7,802	10,881	9,763	10,675
Above Normal (15%)	7,703	10,736	9,909	7,196	8,056	6,580	4,244	4,823	6,220	10,173	9,747	10,497
Below Normal (17%)	8,503	8,961	8,760	6,828	8,078	5,781	3,720	4,186	4,994	10,882	10,632	9,933
Dry (22%)	6,236	7,115	7,170	6,665	6,550	4,644	2,488	3,068	4,410	8,869	5,582	7,142
Critical (15%)	3,704	5,161	5,934	5,792	6,094	4,178	1,574	2,235	1,932	3,107	4,603	4,263

Table 5B4-1-4c. Total Delta Exports, Alternative 3 020121 minus No Action Alternative 011221, Monthly Delivery (cfs)

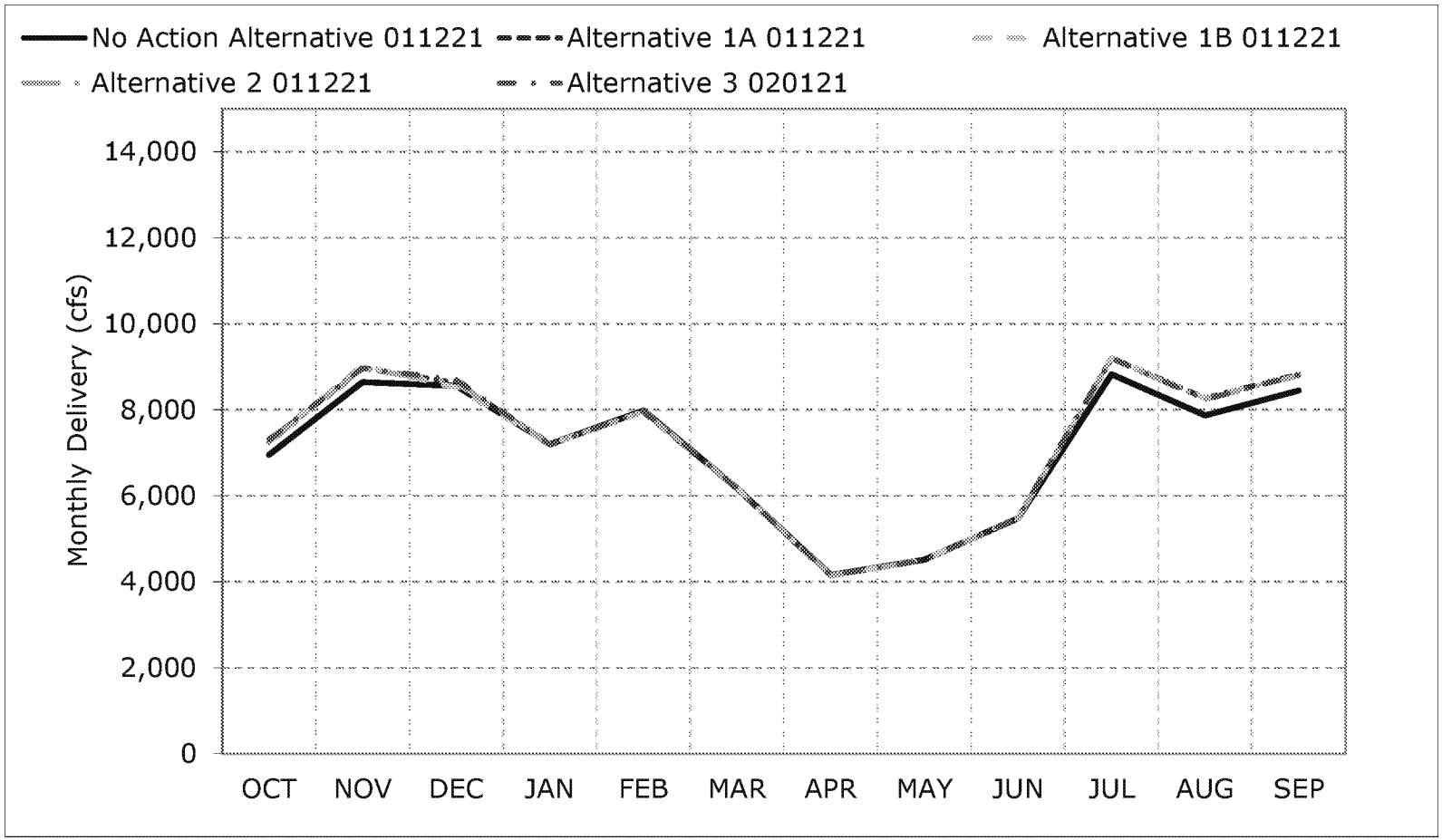
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	391	0	18	0	100	-5	0	-454	0	40	21	0
20%	357	0	32	0	57	-3	8	0	-82	32	82	87
30%	-47	0	259	0	0	-176	-39	3	0	11	0	115
40%	554	0	394	0	0	0	-54	-2	0	90	0	61
50%	423	184	205	0	0	0	2	19	0	124	159	92
60%	762	912	145	0	0	0	3	20	-40	222	788	548
70%	637	453	47	0	0	11	22	14	-19	227	703	371
80%	234	860	-68	0	82	14	-34	-27	-69	1,042	525	1,243
90%	18	925	169	-4	-48	103	1	90	373	1,128	909	745
Long Term												
Full Simulation Period[a]	354	321	144	-19	-6	2	-6	-13	13	374	368	358
Water Year Types[b,c]												
Wet (32%)	-35	10	54	-2	-7	-17	-10	-101	-8	-7	-5	-17
Above Normal (15%)	630	25	17	0	31	16	10	32	-4	60	27	336
Below Normal (17%)	526	676	90	0	-80	1	-44	-4	-26	28	199	293
Dry (22%)	961	623	485	-43	17	0	-4	69	87	1,073	914	747
Critical (15%)	-186	426	18	-64	14	32	24	-2	11	867	896	686

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

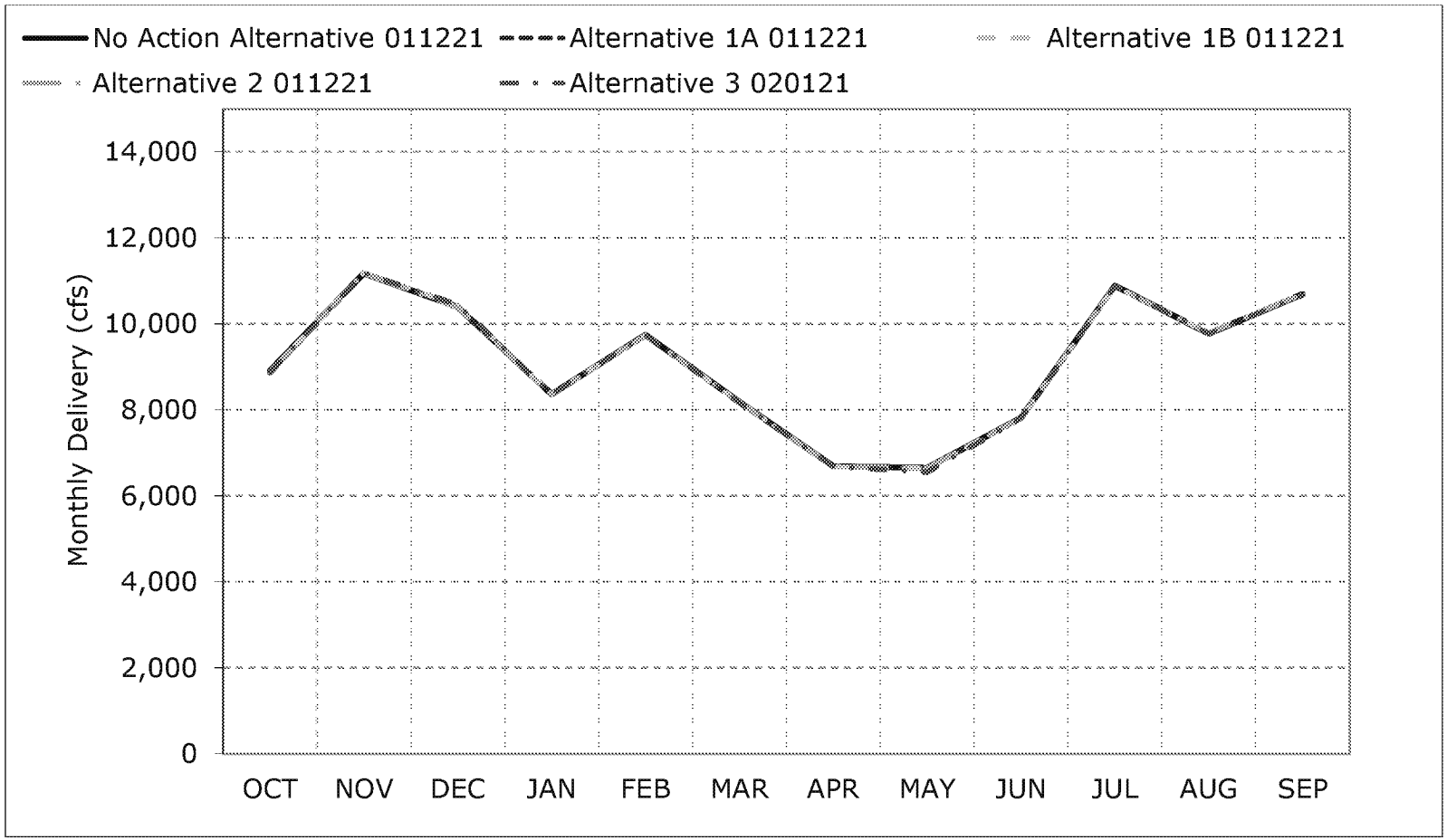
c These results are displayed with calendar year - year type sorting.

Figure 5B4-1-1. Total Delta Exports, Long-Term Average Delivery



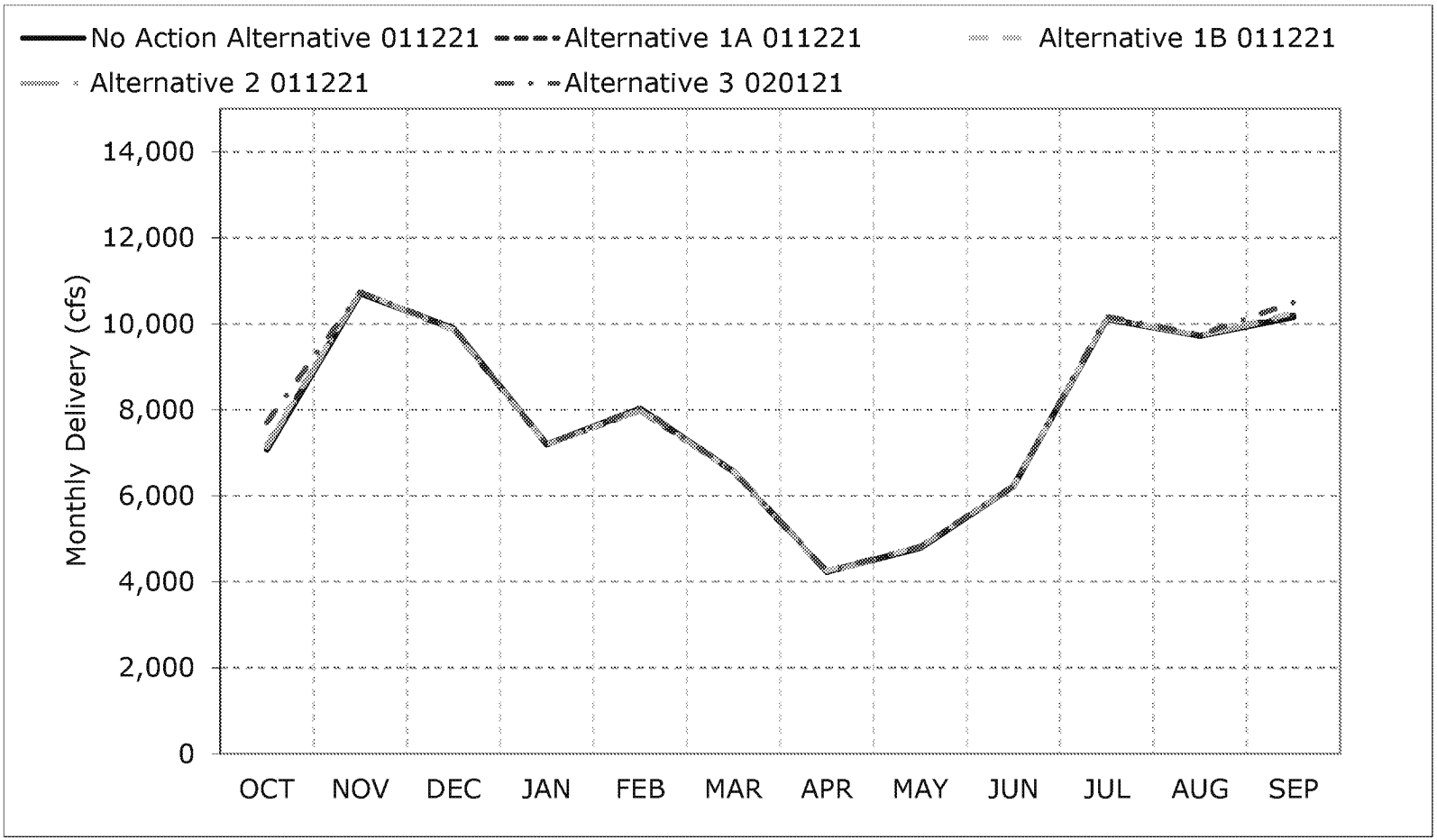
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-1-2. Total Delta Exports, Wet Year Average Delivery



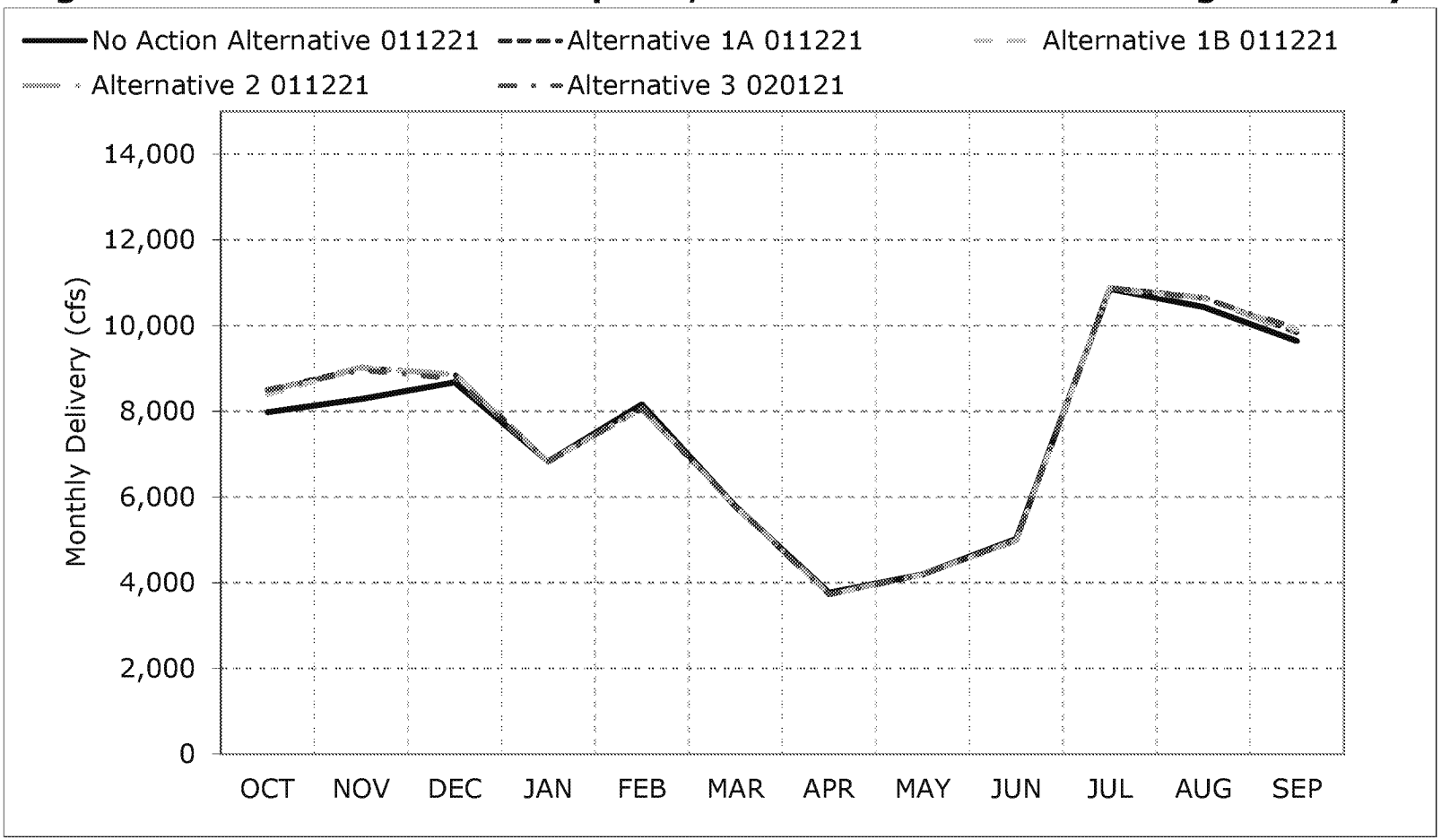
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-1-3. Total Delta Exports, Above Normal Year Average Delivery



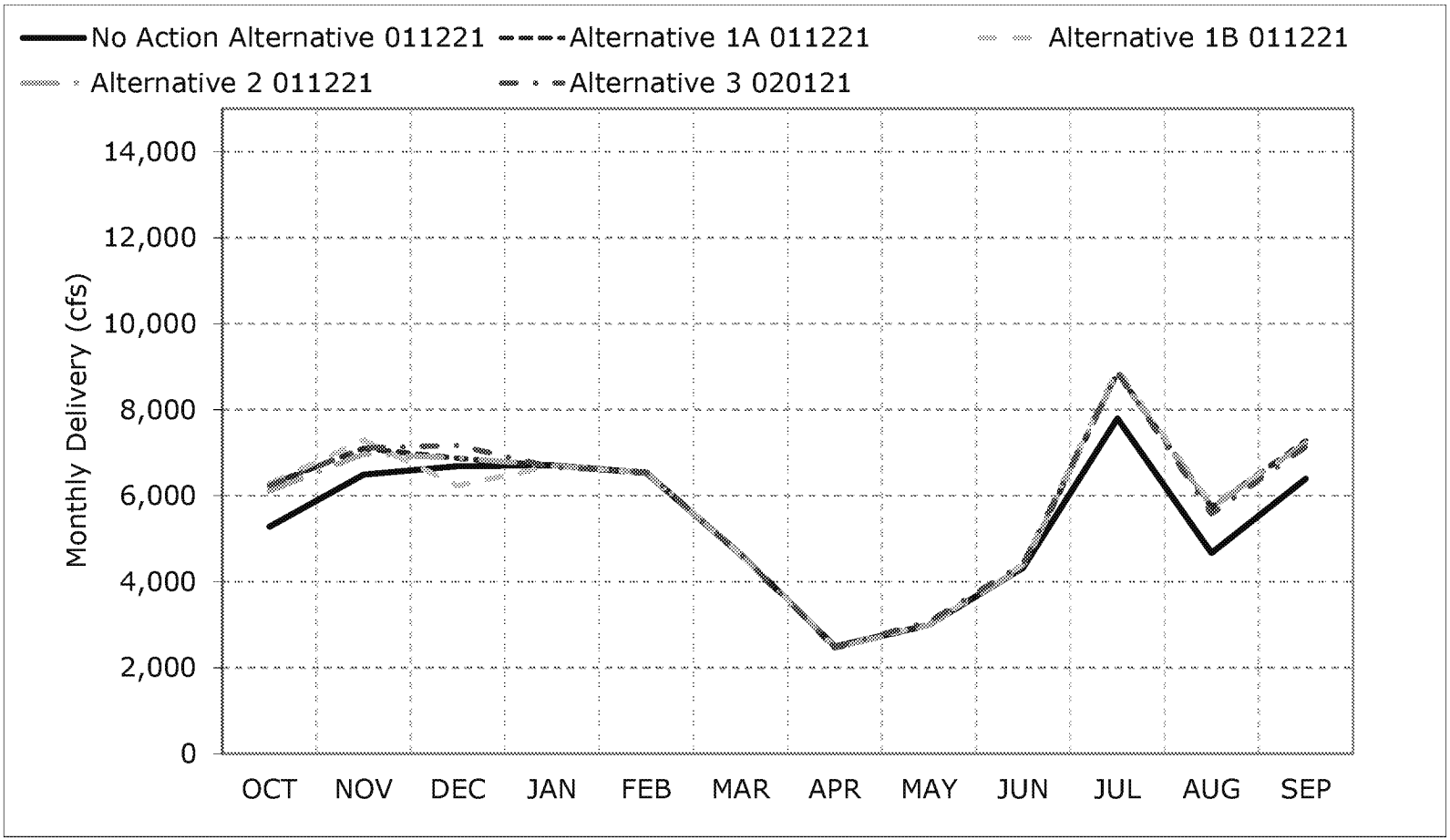
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-1-4. Total Delta Exports, Below Normal Year Average Delivery



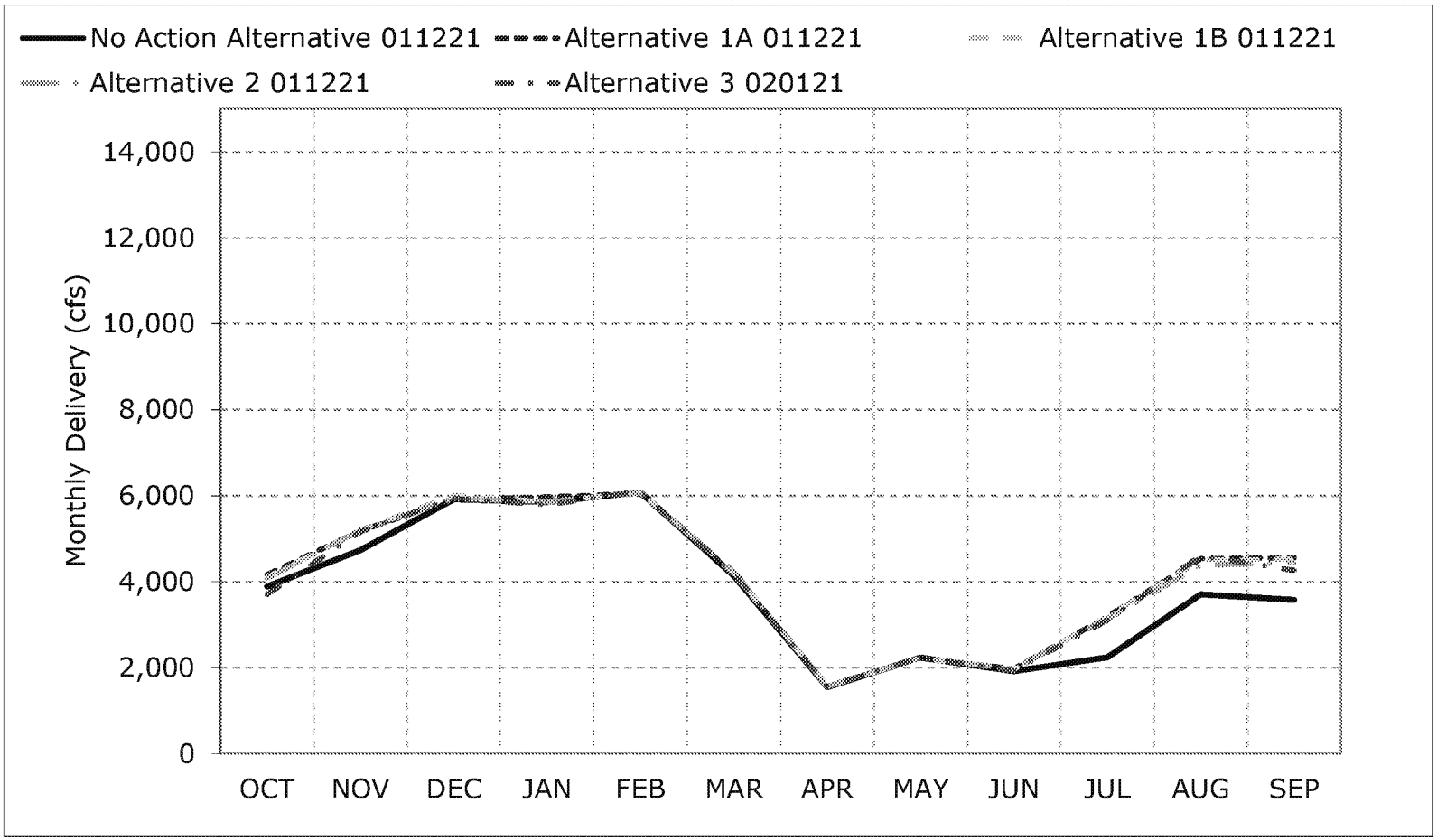
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-1-5. Total Delta Exports, Dry Year Average Delivery



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-1-6. Total Delta Exports, Critical Year Average Delivery



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-1-7. Total Delta Exports, October

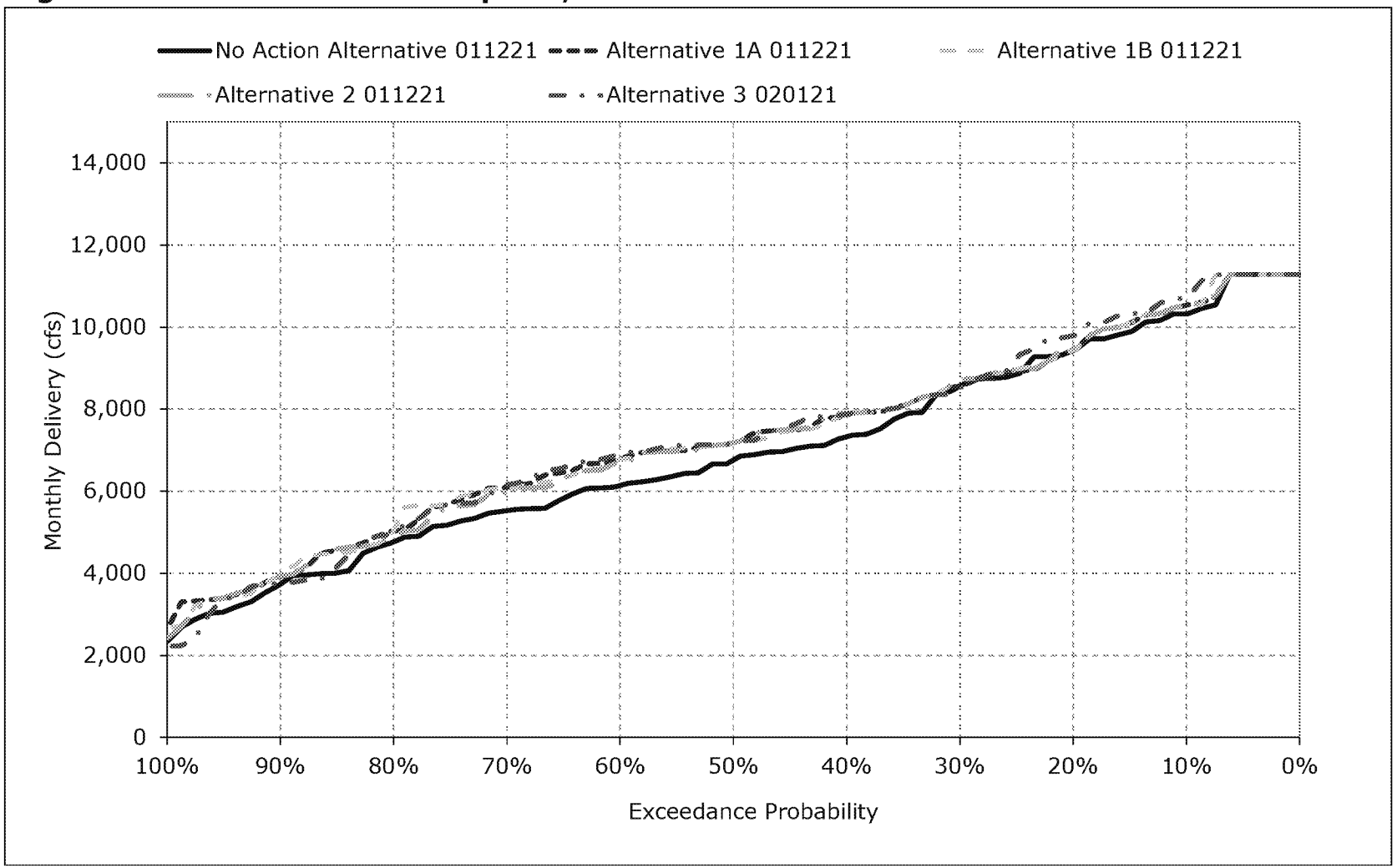


Figure 5B4-1-8. Total Delta Exports, November

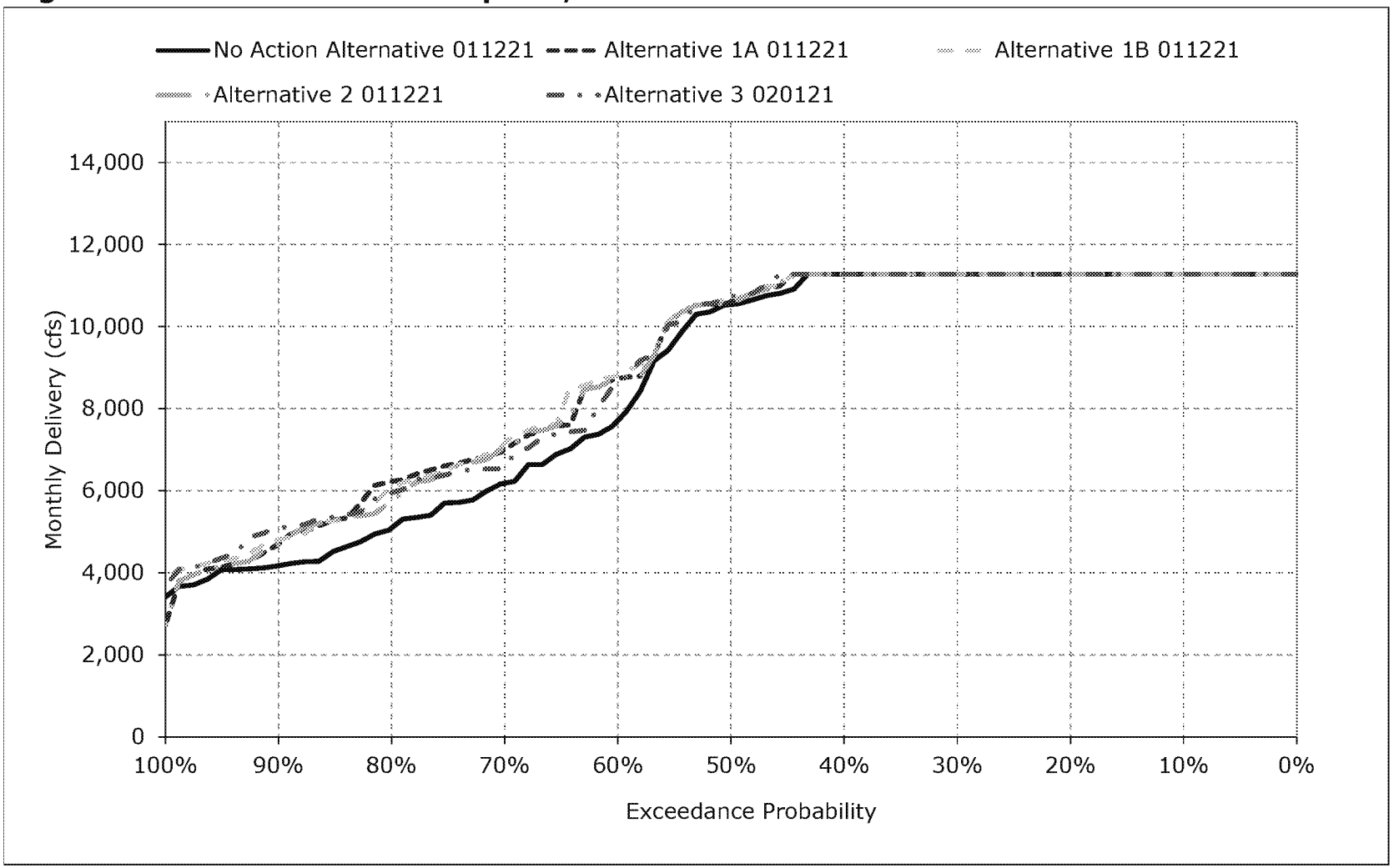


Figure 5B4-1-9. Total Delta Exports, December

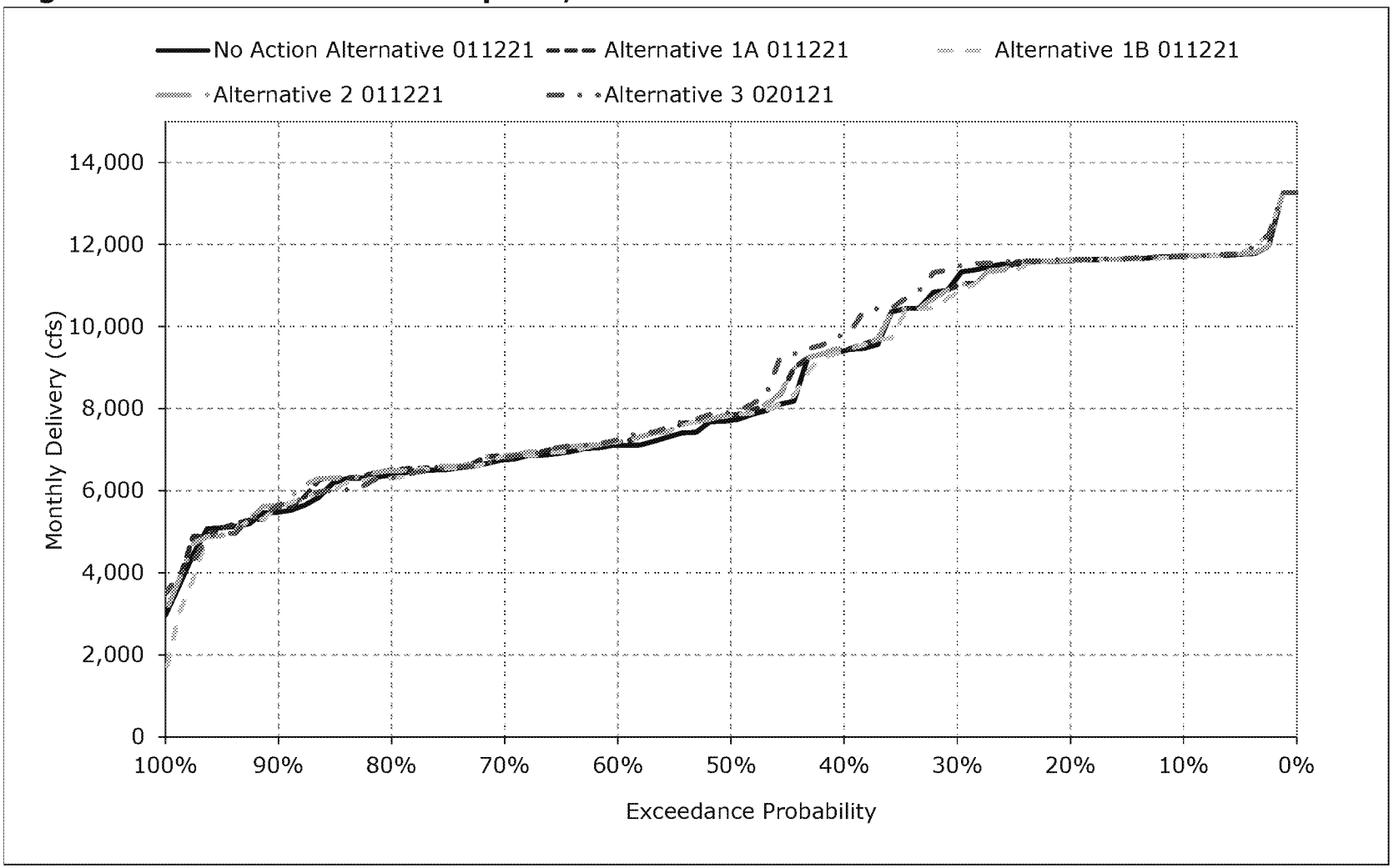


Figure 5B4-1-10. Total Delta Exports, January

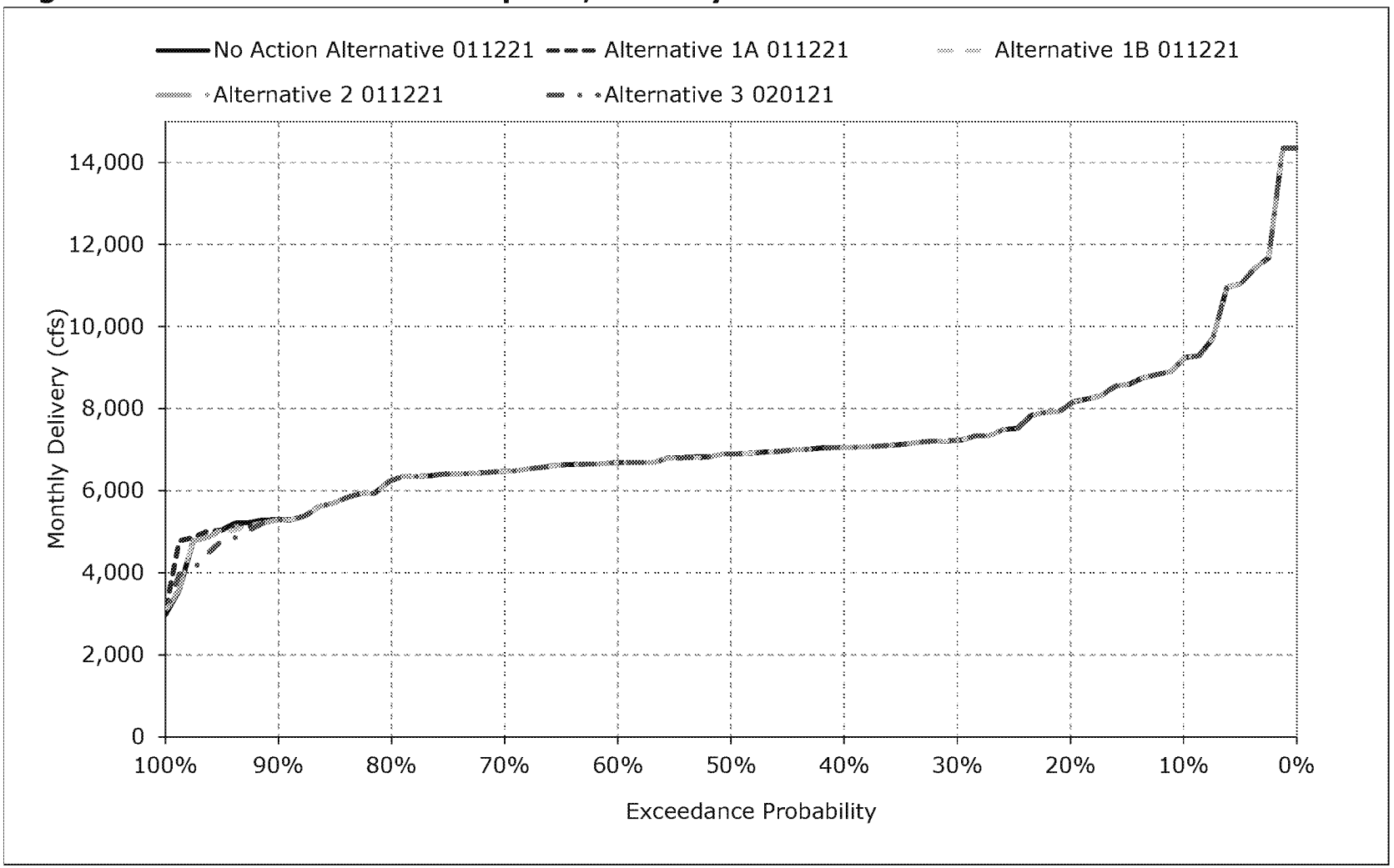


Figure 5B4-1-11. Total Delta Exports, February

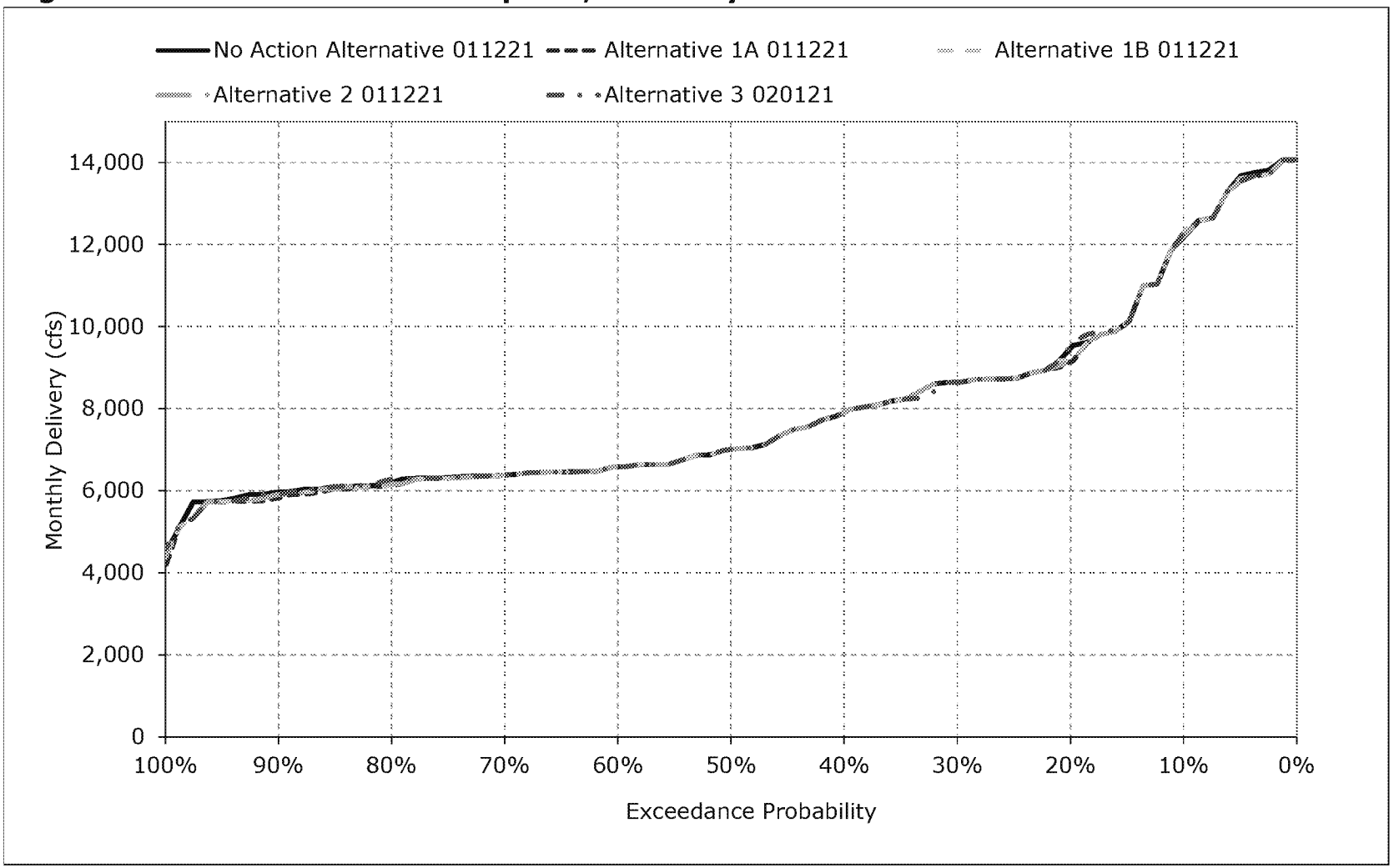


Figure 5B4-1-12. Total Delta Exports, March

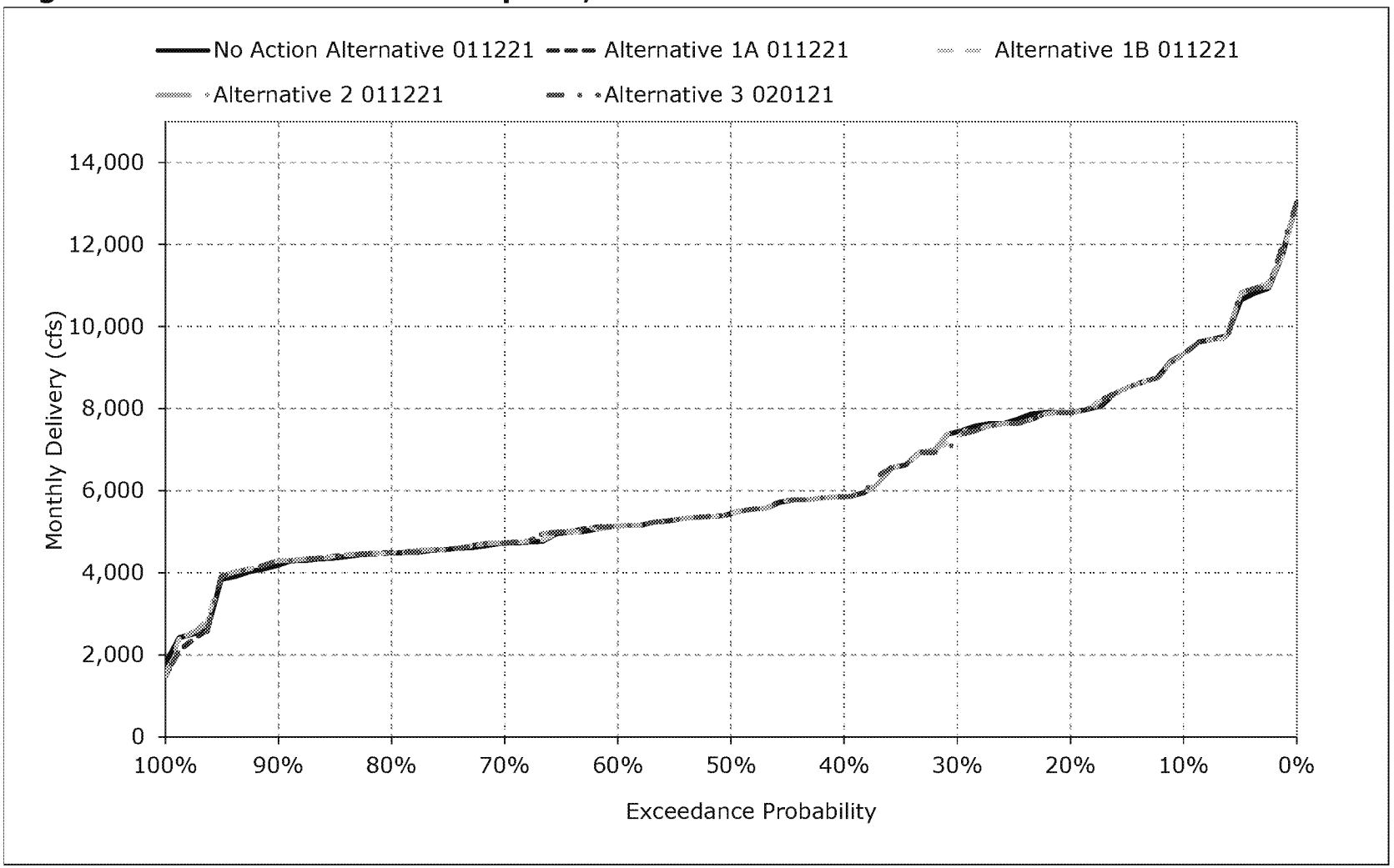


Figure 5B4-1-13. Total Delta Exports, April

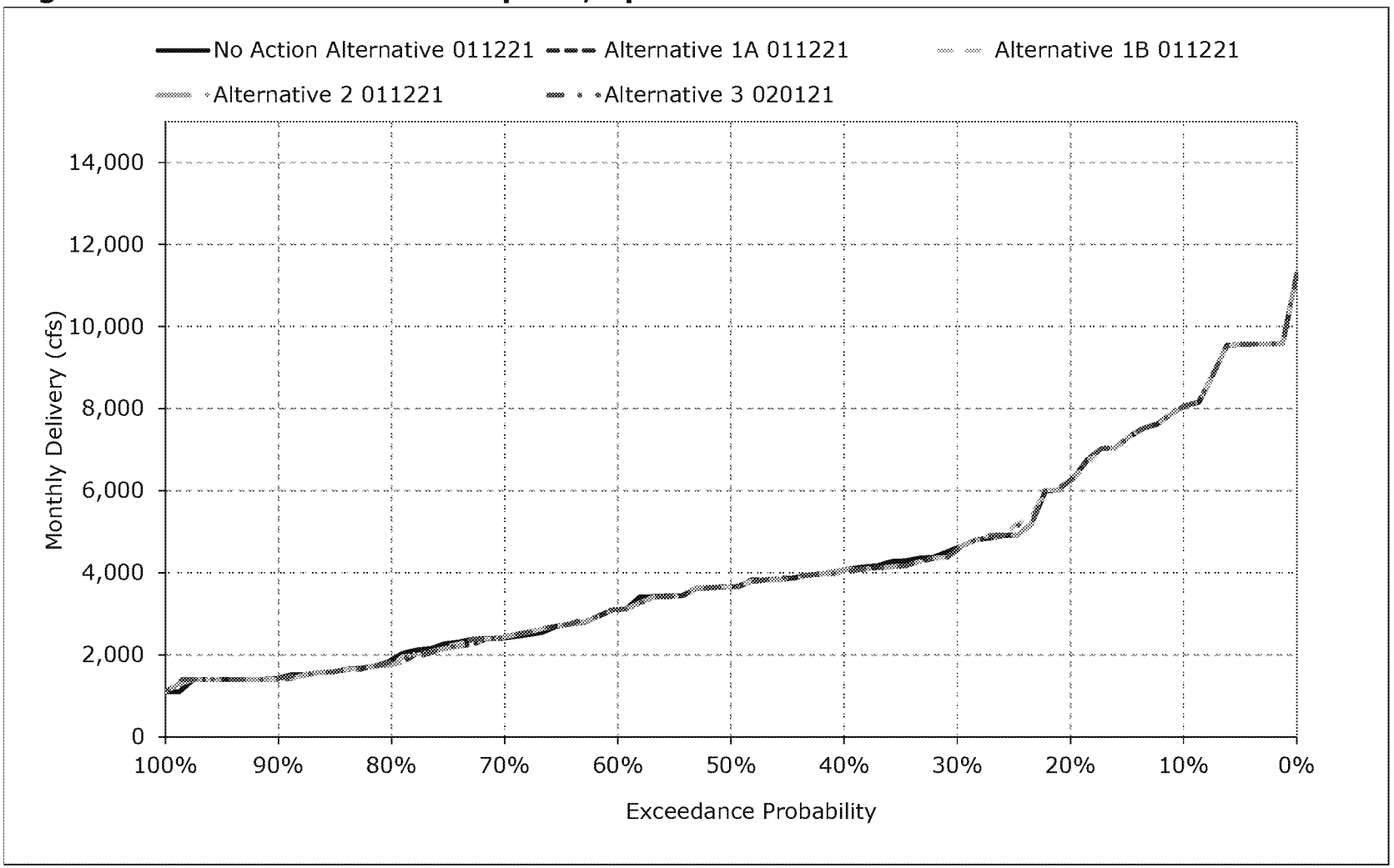


Figure 5B4-1-14. Total Delta Exports, May

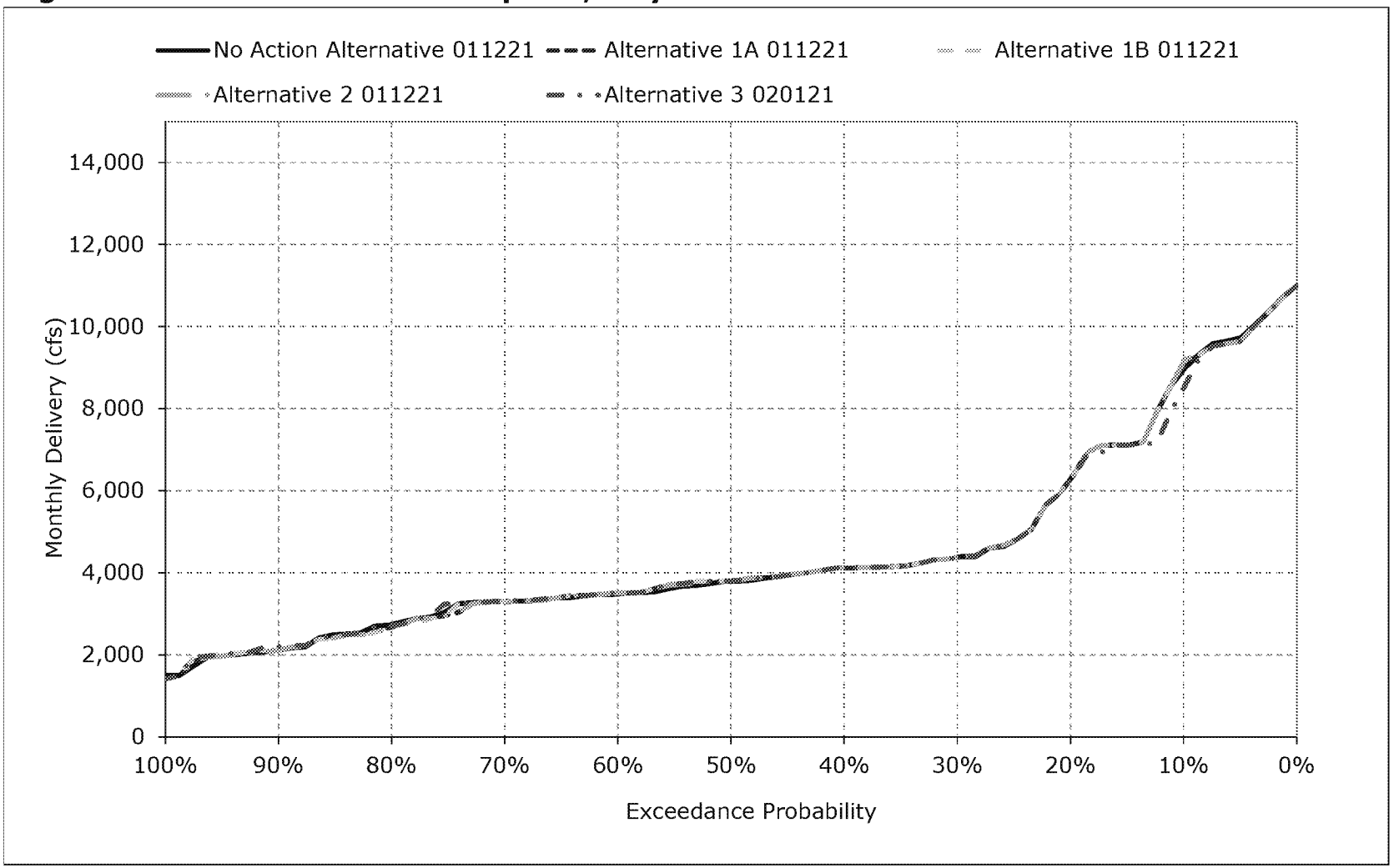


Figure 5B4-1-15. Total Delta Exports, June

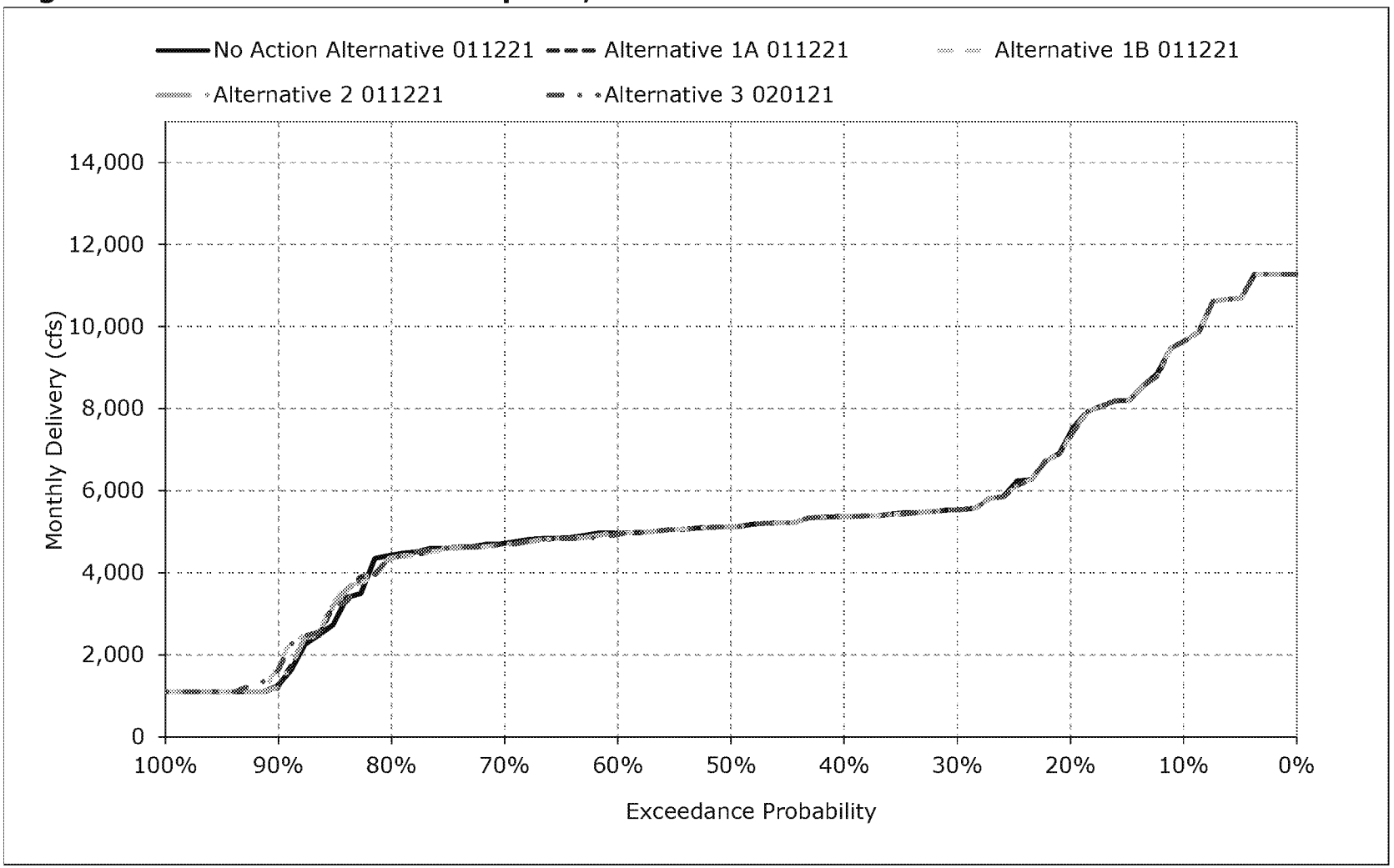


Figure 5B4-1-16. Total Delta Exports, July

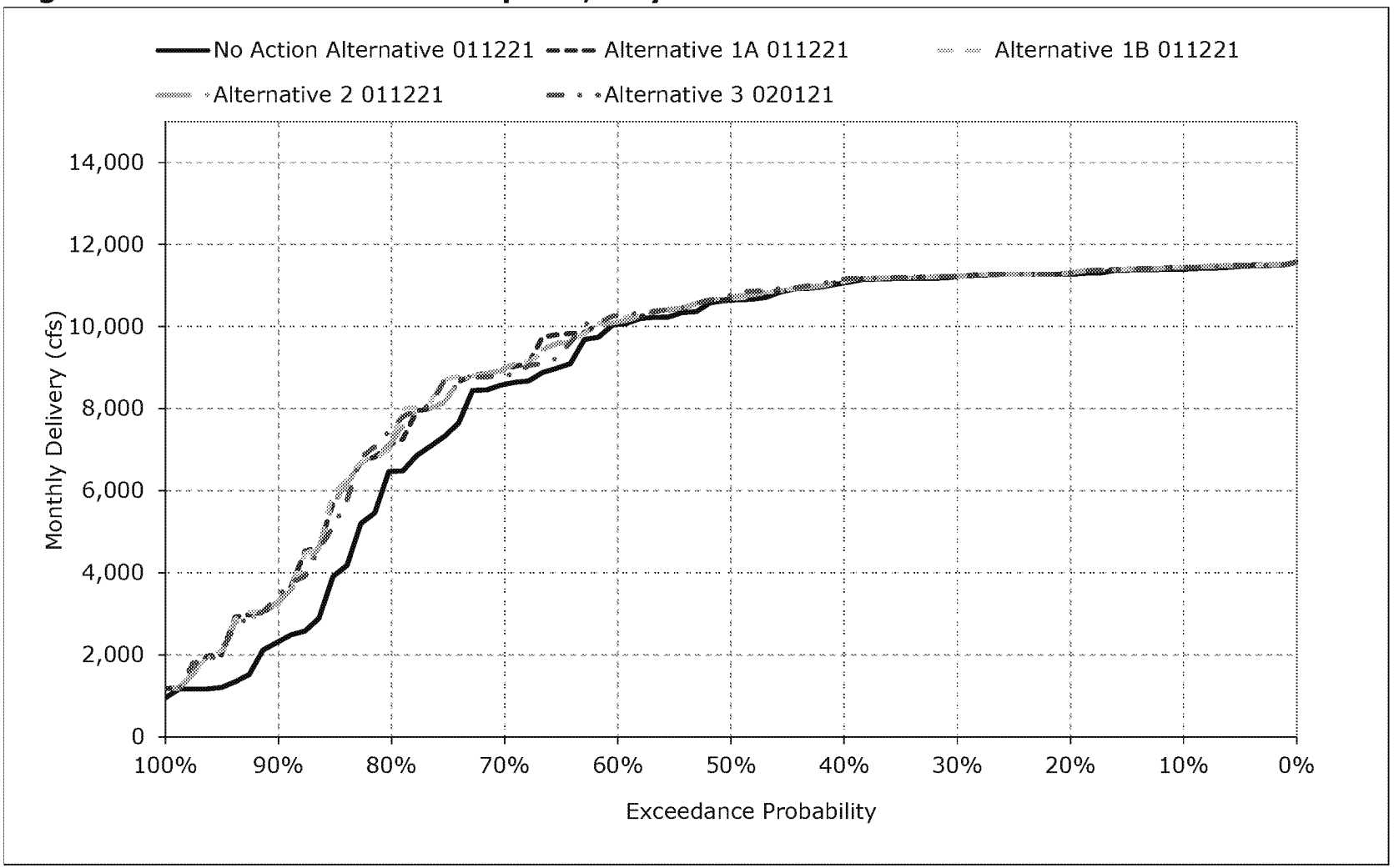


Figure 5B4-1-17. Total Delta Exports, August

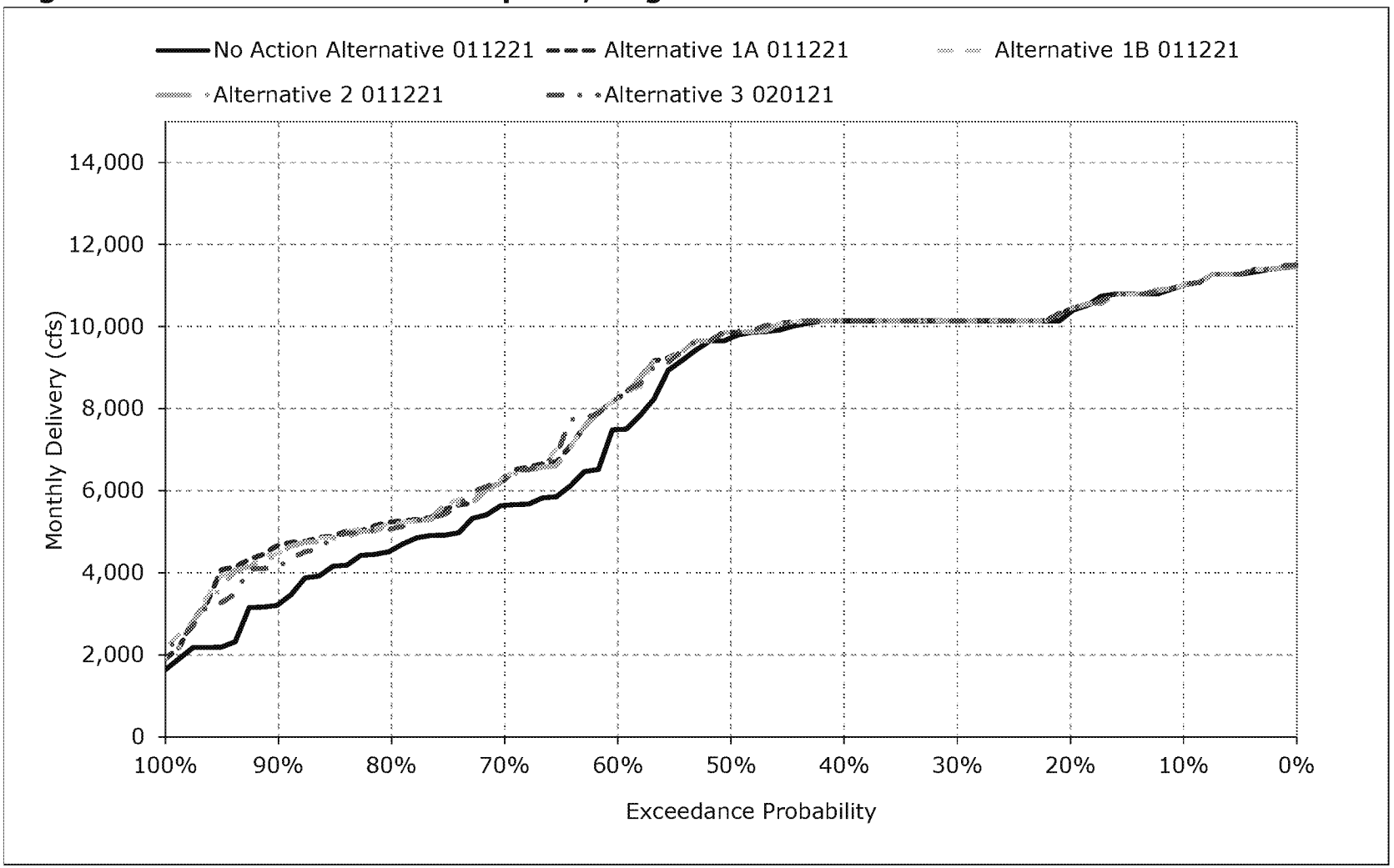


Figure 5B4-1-18. Total Delta Exports, September

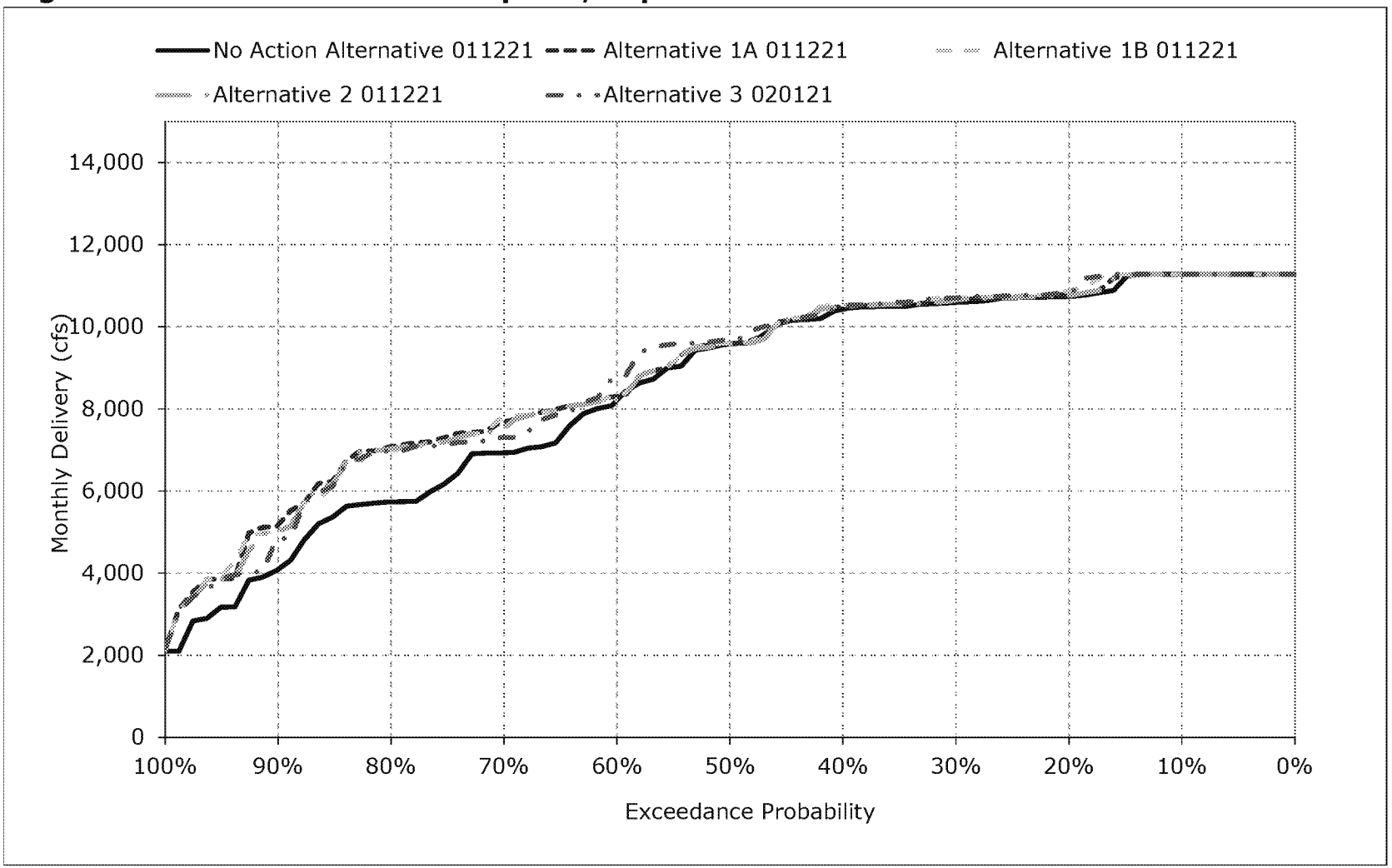


Table 5B4-2-1a. Jones PP Exports, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,600	4,600	4,600	4,600	4,600	4,539	3,807	4,315	4,600	4,600	4,600	4,600
20%	4,600	4,600	4,600	4,508	4,600	3,565	3,565	4,038	4,516	4,600	4,600	4,600
30%	3,964	4,600	4,600	4,277	4,600	3,233	3,110	3,691	3,751	4,581	4,600	4,600
40%	3,623	4,600	4,567	4,147	4,217	3,088	2,896	3,391	3,515	4,516	4,600	4,201
50%	3,367	4,600	4,294	4,016	3,985	2,779	2,810	3,163	3,355	4,450	4,425	4,044
60%	3,175	3,725	3,985	3,874	3,872	2,597	2,381	2,881	3,204	4,045	4,206	3,835
70%	2,924	3,332	3,479	3,562	3,724	2,396	1,803	2,715	3,028	3,415	3,681	3,441
80%	2,664	2,850	3,219	3,174	3,462	2,192	1,368	2,250	2,005	2,183	3,164	3,183
90%	2,246	2,087	2,483	2,629	2,498	1,659	800	1,722	917	1,059	1,857	2,321
Long Term												
Full Simulation Period[a]	3,402	3,779	3,871	3,785	3,884	2,883	2,520	3,099	3,155	3,610	3,878	3,791
Water Year Types[b,c]												
Wet (32%)	4,129	4,600	4,299	3,801	3,920	3,173	3,336	3,881	4,109	4,483	4,560	4,310
Above Normal (15%)	3,051	4,522	4,483	3,984	4,134	3,126	3,113	3,485	3,767	3,906	4,498	3,522
Below Normal (17%)	3,703	3,686	4,060	3,856	4,032	2,802	2,604	3,255	3,251	4,246	3,778	4,356
Dry (22%)	2,905	2,982	3,390	3,913	3,810	2,706	1,878	2,456	2,699	3,287	3,225	3,771
Critical (15%)	2,574	2,560	2,835	3,278	3,493	2,369	1,026	1,804	1,046	1,167	2,876	2,309

Table 5B4-2-1b. Jones PP Exports, Alternative 1A 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,600	4,600	4,600	4,600	4,600	4,578	3,777	4,315	4,600	4,600	4,600	4,600
20%	4,600	4,600	4,600	4,508	4,600	3,610	3,494	4,068	4,509	4,600	4,600	4,600
30%	3,953	4,600	4,600	4,277	4,600	3,221	3,111	3,691	3,746	4,580	4,600	4,600
40%	3,661	4,600	4,542	4,147	4,217	3,046	2,896	3,394	3,524	4,517	4,600	4,225
50%	3,393	4,600	4,292	4,016	3,985	2,779	2,799	3,191	3,338	4,450	4,384	4,047
60%	3,206	3,987	3,985	3,874	3,872	2,606	2,380	2,901	3,202	4,017	4,091	3,874
70%	2,820	3,394	3,562	3,616	3,776	2,428	1,818	2,719	3,028	3,441	3,541	3,492
80%	2,610	3,007	3,311	3,189	3,488	2,228	1,287	2,211	2,089	2,495	2,912	3,240
90%	1,978	2,089	2,846	2,873	2,498	1,717	800	1,694	929	1,450	1,720	2,333
Long Term												
Full Simulation Period[a]	3,378	3,830	3,911	3,804	3,892	2,890	2,503	3,094	3,172	3,636	3,802	3,809
Water Year Types[b,c]												
Wet (32%)	4,124	4,600	4,295	3,798	3,920	3,202	3,319	3,883	4,106	4,467	4,543	4,316
Above Normal (15%)	3,094	4,513	4,471	3,984	4,136	3,084	3,095	3,489	3,759	3,915	4,509	3,564
Below Normal (17%)	3,716	3,836	4,196	3,869	4,061	2,789	2,573	3,257	3,252	4,247	3,763	4,340
Dry (22%)	2,888	2,997	3,536	3,915	3,825	2,702	1,848	2,442	2,773	3,399	3,101	3,795
Critical (15%)	2,388	2,719	2,747	3,393	3,490	2,418	1,041	1,783	1,066	1,199	2,586	2,355

Table 5B4-2-1c. Jones PP Exports, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	39	-29	0	0	0	0	0
20%	0	0	0	0	0	46	-71	30	-8	0	0	0
30%	-11	0	0	0	0	-12	2	0	-5	-1	0	0
40%	38	0	-25	0	0	-42	0	3	9	1	0	24
50%	26	0	-1	0	0	0	-11	27	-17	0	-41	3
60%	31	262	0	0	0	9	-1	20	-3	-28	-115	39
70%	-103	62	82	53	52	32	16	4	0	26	-139	51
80%	-55	157	92	14	26	36	-81	-40	84	312	-253	57
90%	-268	1	363	244	0	58	0	-28	11	391	-137	12
Long Term												
Full Simulation Period[a]	-24	51	39	18	8	7	-17	-5	17	26	-76	17
Water Year Types[b,c]												
Wet (32%)	-4	0	-4	-4	0	29	-16	2	-2	-15	-17	6
Above Normal (15%)	43	-9	-13	0	2	-42	-18	4	-8	9	11	42
Below Normal (17%)	13	150	137	13	29	-13	-31	1	1	0	-15	-16
Dry (22%)	-17	15	146	2	14	-4	-29	-14	73	111	-125	25
Critical (15%)	-186	160	-88	115	-3	49	16	-21	20	32	-290	46

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-2-2a. Jones PP Exports, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,600	4,600	4,600	4,600	4,600	4,539	3,807	4,315	4,600	4,600	4,600	4,600
20%	4,600	4,600	4,600	4,508	4,600	3,565	3,565	4,038	4,516	4,600	4,600	4,600
30%	3,964	4,600	4,600	4,277	4,600	3,233	3,110	3,691	3,751	4,581	4,600	4,600
40%	3,623	4,600	4,567	4,147	4,217	3,088	2,896	3,391	3,515	4,516	4,600	4,201
50%	3,367	4,600	4,294	4,016	3,985	2,779	2,810	3,163	3,355	4,450	4,425	4,044
60%	3,175	3,725	3,985	3,874	3,872	2,597	2,381	2,881	3,204	4,045	4,206	3,835
70%	2,924	3,332	3,479	3,562	3,724	2,396	1,803	2,715	3,028	3,415	3,681	3,441
80%	2,664	2,850	3,219	3,174	3,462	2,192	1,368	2,250	2,005	2,183	3,164	3,183
90%	2,246	2,087	2,483	2,629	2,498	1,659	800	1,722	917	1,059	1,857	2,321
Long Term												
Full Simulation Period[a]	3,402	3,779	3,871	3,785	3,884	2,883	2,520	3,099	3,155	3,610	3,878	3,791
Water Year Types[b,c]												
Wet (32%)	4,129	4,600	4,299	3,801	3,920	3,173	3,336	3,881	4,109	4,483	4,560	4,310
Above Normal (15%)	3,051	4,522	4,483	3,984	4,134	3,126	3,113	3,485	3,767	3,906	4,498	3,522
Below Normal (17%)	3,703	3,686	4,060	3,856	4,032	2,802	2,604	3,255	3,251	4,246	3,778	4,356
Dry (22%)	2,905	2,982	3,390	3,913	3,810	2,706	1,878	2,456	2,699	3,287	3,225	3,771
Critical (15%)	2,574	2,560	2,835	3,278	3,493	2,369	1,026	1,804	1,046	1,167	2,876	2,309

Table 5B4-2-2b. Jones PP Exports, Alternative 1B 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,600	4,600	4,600	4,600	4,600	4,523	3,778	4,315	4,600	4,600	4,600	4,600
20%	4,600	4,600	4,600	4,508	4,600	3,575	3,494	4,068	4,521	4,600	4,600	4,600
30%	3,947	4,600	4,600	4,277	4,600	3,221	3,111	3,691	3,746	4,580	4,600	4,600
40%	3,650	4,600	4,452	4,147	4,215	3,038	2,896	3,394	3,524	4,517	4,600	4,296
50%	3,426	4,600	4,248	4,016	4,019	2,753	2,782	3,195	3,354	4,450	4,385	4,072
60%	3,210	4,049	3,964	3,874	3,872	2,621	2,372	2,901	3,202	4,022	4,090	3,924
70%	2,975	3,496	3,514	3,562	3,776	2,470	1,827	2,719	3,028	3,413	3,548	3,522
80%	2,631	3,236	3,305	3,174	3,462	2,273	1,340	2,169	2,097	2,480	2,911	3,260
90%	2,032	2,128	2,715	2,670	2,498	1,723	800	1,691	1,358	1,475	1,791	2,334
Long Term												
Full Simulation Period[a]	3,398	3,885	3,870	3,787	3,891	2,892	2,501	3,099	3,188	3,652	3,804	3,832
Water Year Types[b,c]												
Wet (32%)	4,124	4,600	4,296	3,798	3,920	3,195	3,314	3,883	4,106	4,469	4,543	4,317
Above Normal (15%)	3,114	4,513	4,471	3,984	4,130	3,166	3,090	3,497	3,753	3,934	4,510	3,623
Below Normal (17%)	3,702	3,849	4,189	3,869	4,041	2,740	2,555	3,255	3,245	4,224	3,743	4,371
Dry (22%)	2,948	3,246	3,310	3,910	3,839	2,703	1,865	2,460	2,858	3,478	3,130	3,842
Critical (15%)	2,428	2,710	2,812	3,284	3,491	2,420	1,043	1,780	1,062	1,197	2,582	2,346

Table 5B4-2-2c. Jones PP Exports, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	-16	-29	0	0	0	0	0
20%	0	0	0	0	0	10	-71	31	5	0	0	0
30%	-17	0	0	0	0	-12	2	0	-5	-1	0	0
40%	27	0	-115	0	-2	-50	0	3	9	2	0	95
50%	58	0	-46	0	33	-25	-28	32	-1	0	-40	28
60%	35	324	-21	0	0	24	-9	20	-2	-23	-116	89
70%	52	164	35	0	52	74	24	5	0	-2	-132	81
80%	-34	386	86	0	0	81	-27	-81	92	297	-254	78
90%	-214	41	231	41	0	64	0	-31	440	416	-66	13
Long Term												
Full Simulation Period[a]	-4	107	-2	1	7	9	-19	0	33	42	-73	41
Water Year Types[b,c]												
Wet (32%)	-4	0	-3	-4	-1	22	-21	2	-2	-14	-16	7
Above Normal (15%)	63	-8	-13	0	-5	40	-24	13	-14	28	13	101
Below Normal (17%)	-1	163	130	13	10	-62	-48	0	-7	-22	-35	15
Dry (22%)	43	264	-80	-3	28	-3	-13	4	159	191	-95	72
Critical (15%)	-146	150	-23	6	-2	52	17	-24	16	30	-295	37

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-2-3a. Jones PP Exports, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,600	4,600	4,600	4,600	4,600	4,539	3,807	4,315	4,600	4,600	4,600	4,600
20%	4,600	4,600	4,600	4,508	4,600	3,565	3,565	4,038	4,516	4,600	4,600	4,600
30%	3,964	4,600	4,600	4,277	4,600	3,233	3,110	3,691	3,751	4,581	4,600	4,600
40%	3,623	4,600	4,567	4,147	4,217	3,088	2,896	3,391	3,515	4,516	4,600	4,201
50%	3,367	4,600	4,294	4,016	3,985	2,779	2,810	3,163	3,355	4,450	4,425	4,044
60%	3,175	3,725	3,985	3,874	3,872	2,597	2,381	2,881	3,204	4,045	4,206	3,835
70%	2,924	3,332	3,479	3,562	3,724	2,396	1,803	2,715	3,028	3,415	3,681	3,441
80%	2,664	2,850	3,219	3,174	3,462	2,192	1,368	2,250	2,005	2,183	3,164	3,183
90%	2,246	2,087	2,483	2,629	2,498	1,659	800	1,722	917	1,059	1,857	2,321
Long Term												
Full Simulation Period[a]	3,402	3,779	3,871	3,785	3,884	2,883	2,520	3,099	3,155	3,610	3,878	3,791
Water Year Types[b,c]												
Wet (32%)	4,129	4,600	4,299	3,801	3,920	3,173	3,336	3,881	4,109	4,483	4,560	4,310
Above Normal (15%)	3,051	4,522	4,483	3,984	4,134	3,126	3,113	3,485	3,767	3,906	4,498	3,522
Below Normal (17%)	3,703	3,686	4,060	3,856	4,032	2,802	2,604	3,255	3,251	4,246	3,778	4,356
Dry (22%)	2,905	2,982	3,390	3,913	3,810	2,706	1,878	2,456	2,699	3,287	3,225	3,771
Critical (15%)	2,574	2,560	2,835	3,278	3,493	2,369	1,026	1,804	1,046	1,167	2,876	2,309

Table 5B4-2-3b. Jones PP Exports, Alternative 2 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,600	4,600	4,600	4,600	4,600	4,581	3,778	4,315	4,600	4,600	4,600	4,600
20%	4,600	4,600	4,600	4,508	4,600	3,610	3,494	4,068	4,509	4,600	4,600	4,600
30%	3,959	4,600	4,600	4,277	4,600	3,221	3,111	3,691	3,746	4,580	4,600	4,600
40%	3,689	4,600	4,542	4,147	4,257	3,046	2,896	3,394	3,524	4,517	4,600	4,255
50%	3,392	4,600	4,292	4,016	4,019	2,779	2,784	3,191	3,364	4,450	4,384	4,047
60%	3,243	3,987	3,985	3,874	3,872	2,621	2,362	2,901	3,202	4,013	4,091	3,874
70%	2,883	3,377	3,561	3,562	3,776	2,428	1,818	2,719	3,028	3,441	3,542	3,492
80%	2,610	3,103	3,344	3,174	3,462	2,227	1,287	2,211	2,087	2,468	2,909	3,241
90%	1,992	2,088	2,846	2,653	2,498	1,723	800	1,694	946	1,453	1,720	2,333
Long Term												
Full Simulation Period[a]	3,387	3,820	3,917	3,789	3,894	2,896	2,501	3,095	3,173	3,634	3,801	3,810
Water Year Types[b,c]												
Wet (32%)	4,124	4,600	4,295	3,798	3,920	3,200	3,319	3,883	4,106	4,467	4,543	4,316
Above Normal (15%)	3,093	4,513	4,471	3,984	4,133	3,123	3,093	3,489	3,759	3,920	4,509	3,564
Below Normal (17%)	3,725	3,819	4,196	3,869	4,048	2,787	2,565	3,256	3,259	4,244	3,755	4,347
Dry (22%)	2,892	2,973	3,537	3,915	3,848	2,702	1,848	2,442	2,774	3,400	3,101	3,796
Critical (15%)	2,429	2,711	2,787	3,294	3,489	2,427	1,042	1,783	1,066	1,182	2,586	2,350

Table 5B4-2-3c. Jones PP Exports, Alternative 2 011221 minus No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	41	-29	0	0	0	0	0
20%	0	0	0	0	0	46	-71	31	-8	0	0	0
30%	-5	0	0	0	0	-12	1	0	-5	-1	0	0
40%	66	0	-25	0	40	-42	0	3	9	1	0	54
50%	25	0	-1	0	33	0	-25	27	9	0	-41	2
60%	68	262	0	0	0	24	-19	20	-3	-32	-115	39
70%	-40	45	82	0	52	32	15	4	0	26	-139	51
80%	-55	253	125	0	0	35	-81	-40	82	285	-255	58
90%	-254	1	363	24	0	64	0	-28	29	394	-137	12
Long Term												
Full Simulation Period[a]	-15	42	45	4	10	13	-19	-5	19	24	-77	18
Water Year Types[b,c]												
Wet (32%)	-4	0	-4	-4	0	27	-16	2	-2	-15	-17	6
Above Normal (15%)	43	-9	-13	0	-2	-2	-20	4	-8	14	11	42
Below Normal (17%)	22	133	137	13	17	-15	-38	1	8	-2	-23	-9
Dry (22%)	-13	-9	146	1	38	-4	-29	-14	75	113	-124	25
Critical (15%)	-145	152	-47	16	-4	58	16	-21	20	15	-290	41

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-2-4a. Jones PP Exports, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,600	4,600	4,600	4,600	4,600	4,539	3,807	4,315	4,600	4,600	4,600	4,600
20%	4,600	4,600	4,600	4,508	4,600	3,565	3,565	4,038	4,516	4,600	4,600	4,600
30%	3,964	4,600	4,600	4,277	4,600	3,233	3,110	3,691	3,751	4,581	4,600	4,600
40%	3,623	4,600	4,567	4,147	4,217	3,088	2,896	3,391	3,515	4,516	4,600	4,201
50%	3,367	4,600	4,294	4,016	3,985	2,779	2,810	3,163	3,355	4,450	4,425	4,044
60%	3,175	3,725	3,985	3,874	3,872	2,597	2,381	2,881	3,204	4,045	4,206	3,835
70%	2,924	3,332	3,479	3,562	3,724	2,396	1,803	2,715	3,028	3,415	3,681	3,441
80%	2,664	2,850	3,219	3,174	3,462	2,192	1,368	2,250	2,005	2,183	3,164	3,183
90%	2,246	2,087	2,483	2,629	2,498	1,659	800	1,722	917	1,059	1,857	2,321
Long Term												
Full Simulation Period[a]	3,402	3,779	3,871	3,785	3,884	2,883	2,520	3,099	3,155	3,610	3,878	3,791
Water Year Types[b,c]												
Wet (32%)	4,129	4,600	4,299	3,801	3,920	3,173	3,336	3,881	4,109	4,483	4,560	4,310
Above Normal (15%)	3,051	4,522	4,483	3,984	4,134	3,126	3,113	3,485	3,767	3,906	4,498	3,522
Below Normal (17%)	3,703	3,686	4,060	3,856	4,032	2,802	2,604	3,255	3,251	4,246	3,778	4,356
Dry (22%)	2,905	2,982	3,390	3,913	3,810	2,706	1,878	2,456	2,699	3,287	3,225	3,771
Critical (15%)	2,574	2,560	2,835	3,278	3,493	2,369	1,026	1,804	1,046	1,167	2,876	2,309

Table 5B4-2-4b. Jones PP Exports, Alternative 3 020121, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,600	4,600	4,600	4,600	4,600	4,199	3,777	4,315	4,600	4,600	4,600	4,600
20%	4,600	4,600	4,600	4,508	4,600	3,515	3,494	4,068	4,527	4,600	4,600	4,600
30%	4,299	4,600	4,600	4,277	4,600	3,182	3,111	3,691	3,755	4,581	4,600	4,600
40%	3,793	4,600	4,600	4,147	4,257	2,916	2,896	3,394	3,544	4,518	4,600	4,481
50%	3,595	4,600	4,347	4,016	3,984	2,765	2,782	3,209	3,404	4,473	4,423	4,087
60%	3,259	3,997	4,046	3,874	3,852	2,577	2,361	2,906	3,204	4,157	4,090	3,926
70%	3,075	3,501	3,561	3,562	3,736	2,385	1,836	2,739	3,028	3,648	3,667	3,558
80%	2,692	3,184	3,266	3,174	3,462	2,234	1,291	2,232	2,117	2,470	3,139	3,312
90%	2,350	2,379	2,381	2,684	2,488	1,723	803	1,680	1,263	1,406	1,841	2,506
Long Term												
Full Simulation Period[a]	3,497	3,884	3,866	3,774	3,879	2,820	2,503	3,119	3,203	3,694	3,851	3,886
Water Year Types[b,c]												
Wet (32%)	4,121	4,600	4,300	3,797	3,921	3,101	3,318	3,883	4,106	4,467	4,543	4,317
Above Normal (15%)	3,535	4,513	4,451	3,984	4,083	3,075	3,072	3,498	3,759	4,185	4,525	3,859
Below Normal (17%)	3,830	3,832	4,081	3,869	4,036	2,543	2,557	3,290	3,273	4,253	3,756	4,465
Dry (22%)	3,121	3,234	3,410	3,892	3,826	2,707	1,874	2,515	2,890	3,479	3,149	3,856
Critical (15%)	2,279	2,738	2,771	3,226	3,484	2,445	1,049	1,789	1,078	1,196	2,838	2,353

Table 5B4-2-4c. Jones PP Exports, Alternative 3 020121 minus No Action Alternative 011221, Monthly Delivery (cfs)

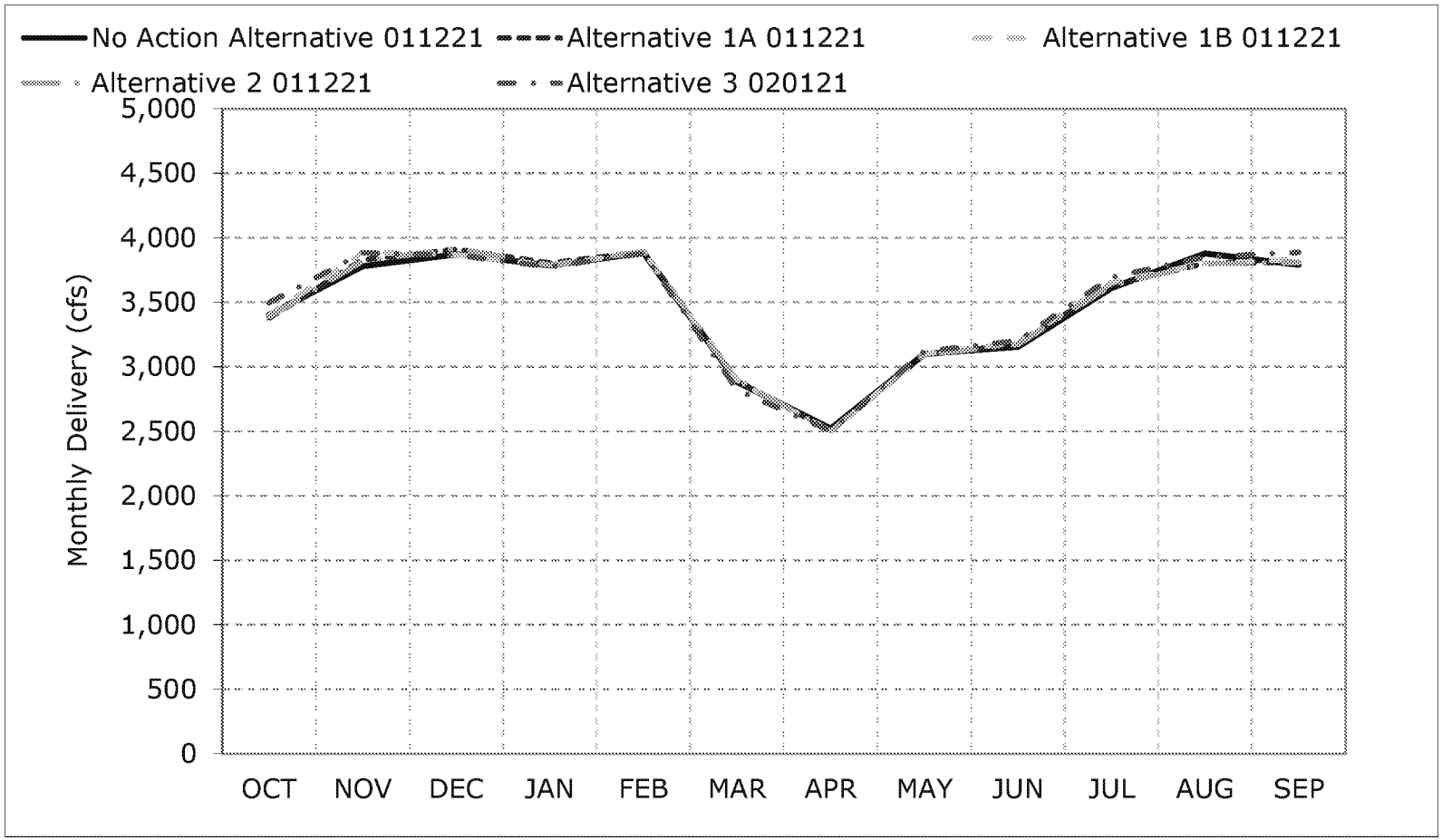
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	-340	-30	0	0	0	0	0
20%	0	0	0	0	0	-49	-71	31	10	0	0	0
30%	336	0	0	0	0	-50	1	0	4	0	0	0
40%	170	0	33	0	40	-172	0	3	29	3	0	280
50%	228	0	53	0	-1	-13	-28	46	49	23	-2	43
60%	84	272	61	0	-20	-20	-21	25	0	111	-115	91
70%	151	169	82	0	13	-11	33	24	0	233	-14	117
80%	28	333	47	0	0	42	-77	-18	112	286	-25	129
90%	104	292	-102	55	-10	64	3	-42	345	347	-16	185
Long Term												
Full Simulation Period[a]	95	105	-6	-12	-5	-63	-17	19	48	83	-27	95
Water Year Types[b,c]												
Wet (32%)	-7	0	1	-4	0	-72	-18	2	-2	-16	-17	7
Above Normal (15%)	485	-8	-32	0	-51	-51	-42	13	-8	278	28	336
Below Normal (17%)	128	146	22	13	4	-260	-47	35	22	7	-22	109
Dry (22%)	216	252	20	-21	16	1	-4	59	190	191	-76	85
Critical (15%)	-295	178	-64	-52	-9	76	24	-14	32	29	-38	44

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

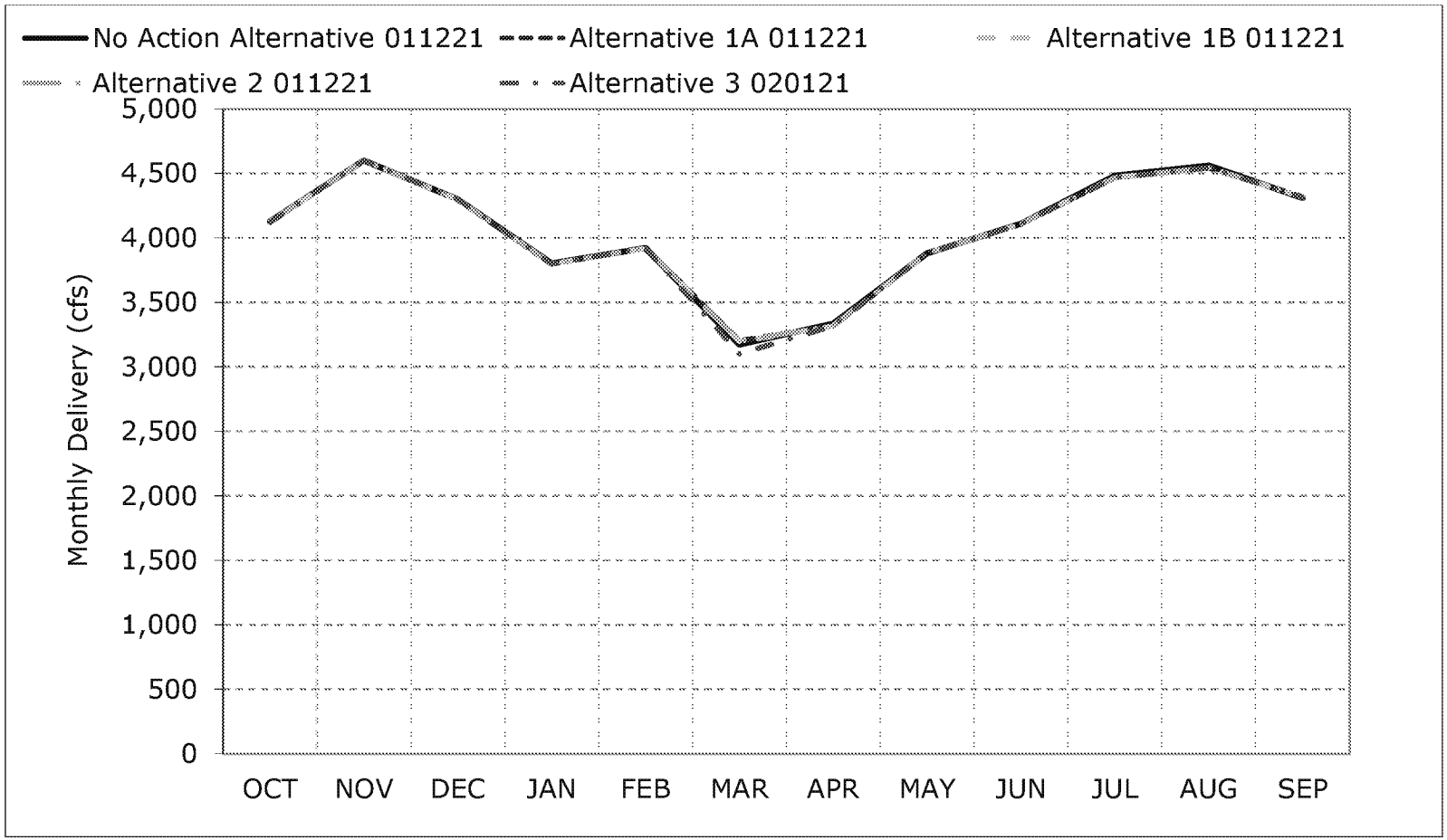
c These results are displayed with calendar year - year type sorting.

Figure 5B4-2-1. Jones PP Exports, Long-Term Average Delivery



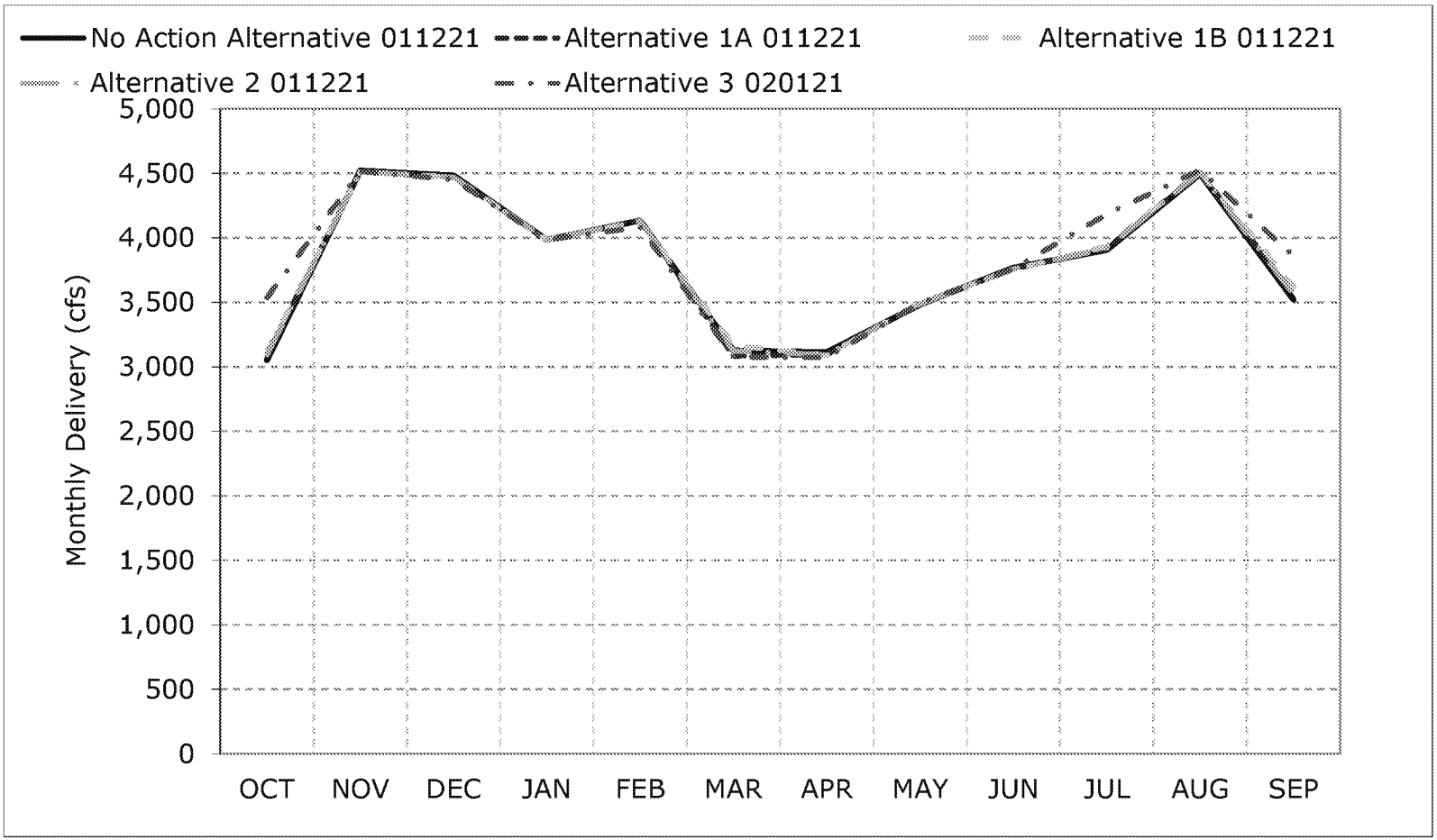
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-2-2. Jones PP Exports, Wet Year Average Delivery



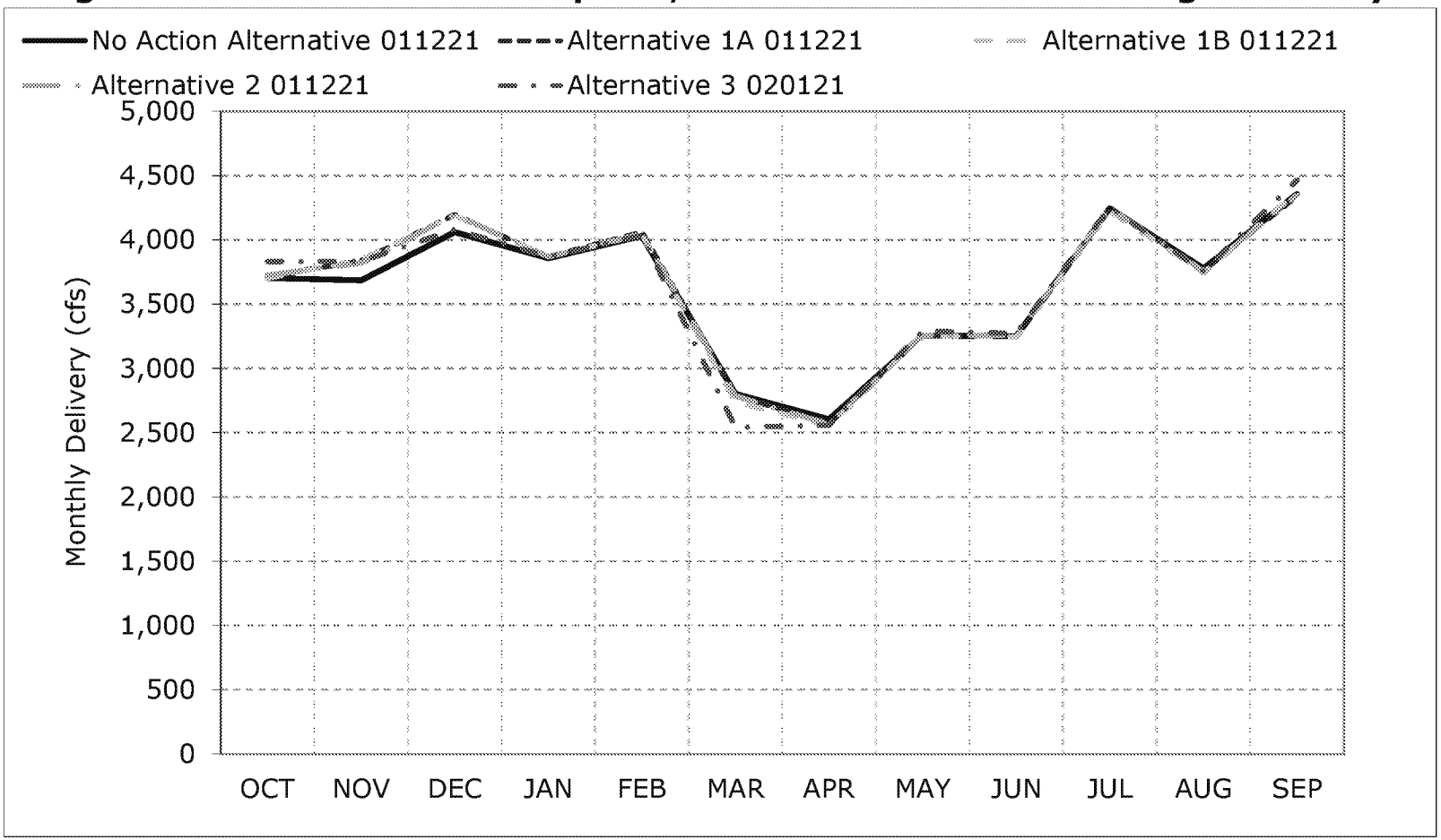
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-2-3. Jones PP Exports, Above Normal Year Average Delivery



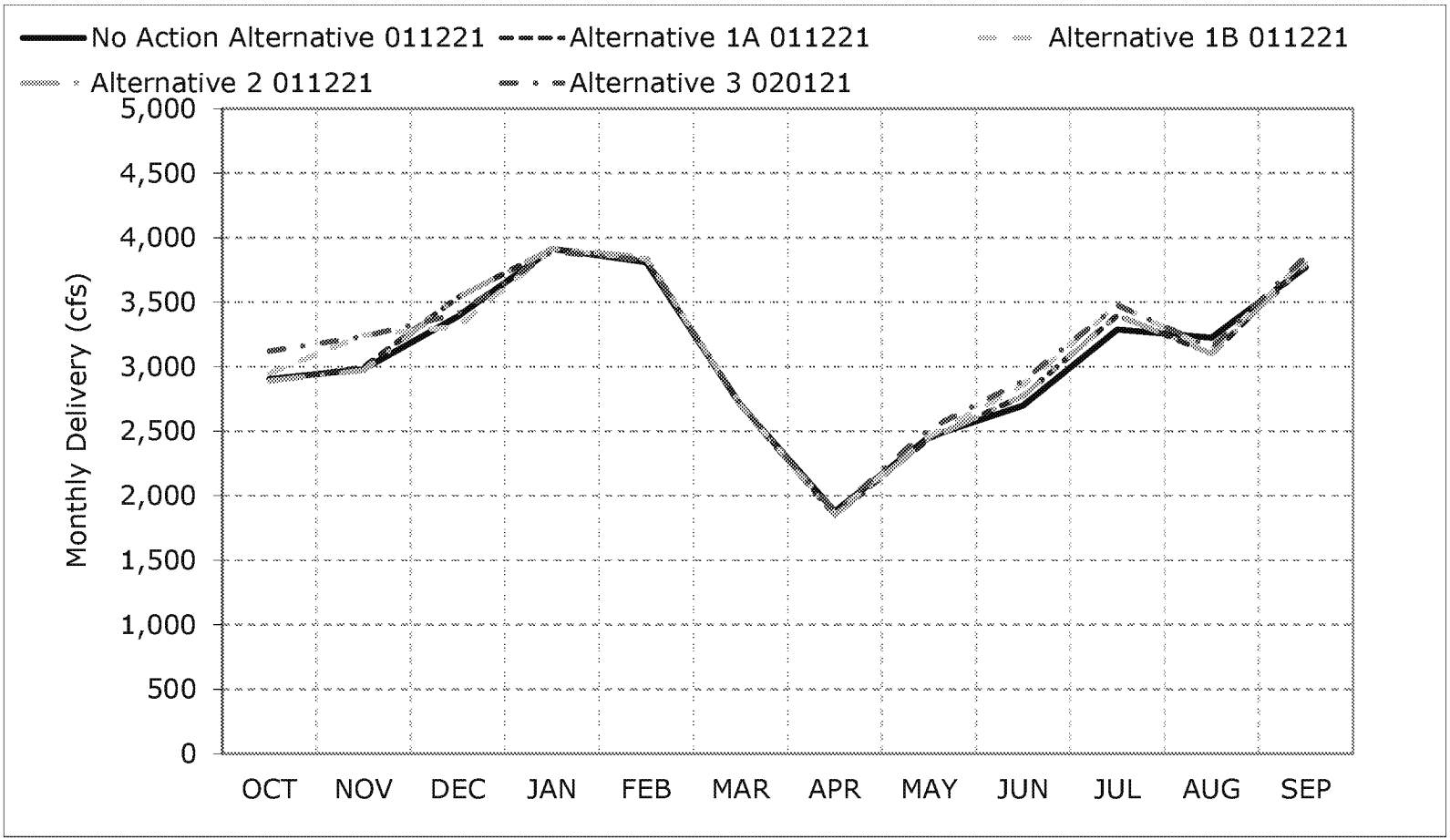
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-2-4. Jones PP Exports, Below Normal Year Average Delivery



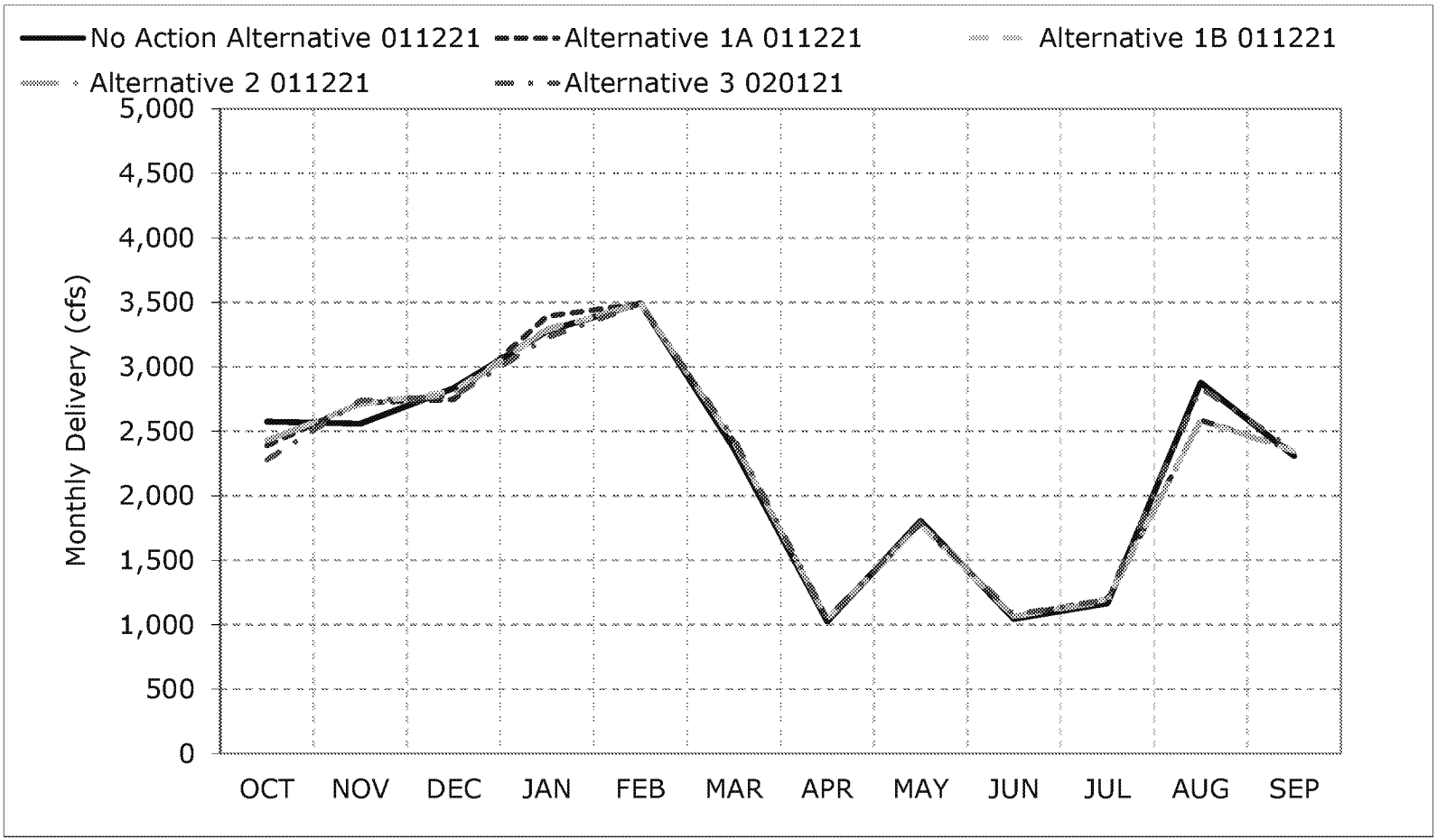
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-2-5. Jones PP Exports, Dry Year Average Delivery



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-2-6. Jones PP Exports, Critical Year Average Delivery



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-2-7. Jones PP Exports, October

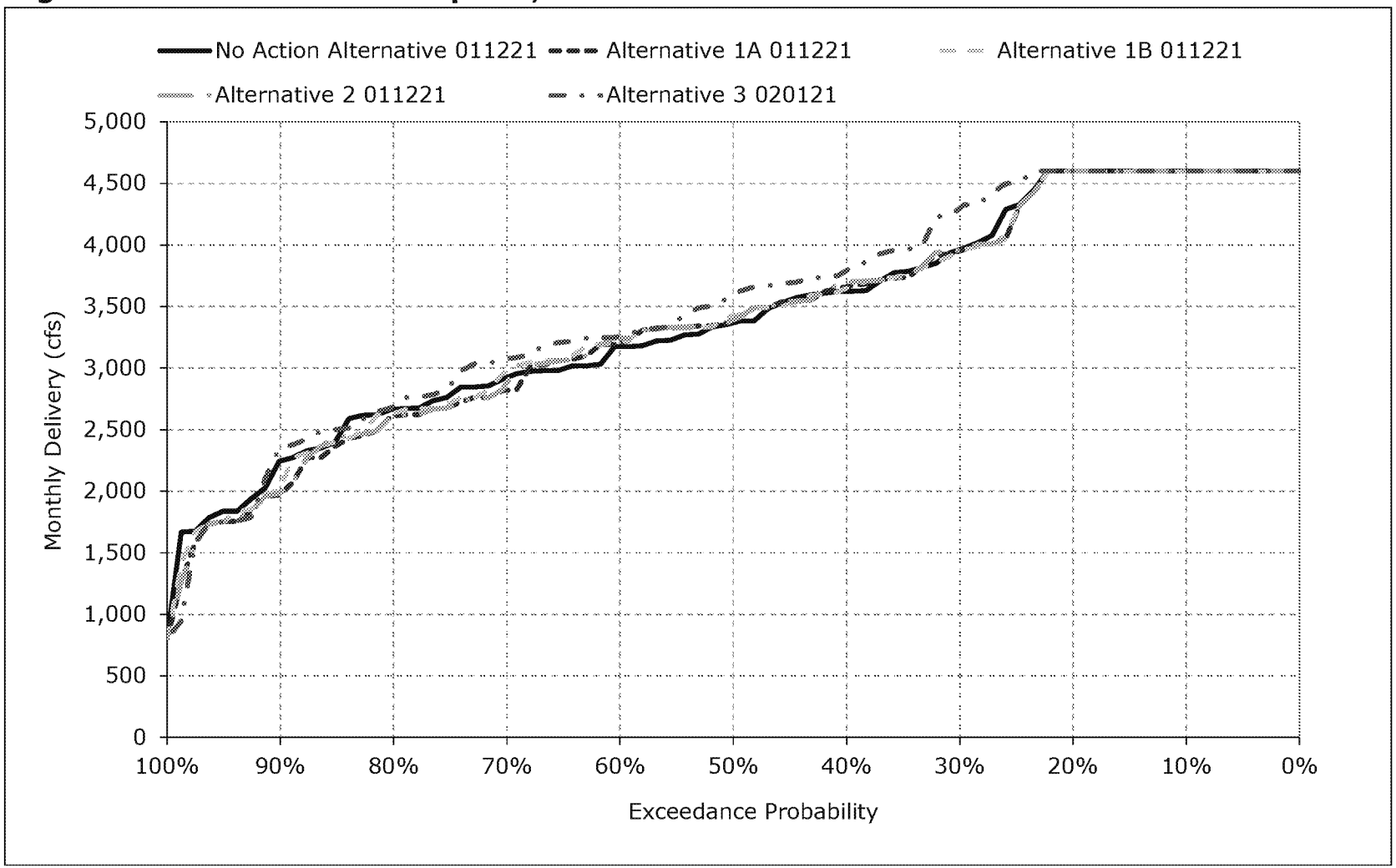


Figure 5B4-2-8. Jones PP Exports, November

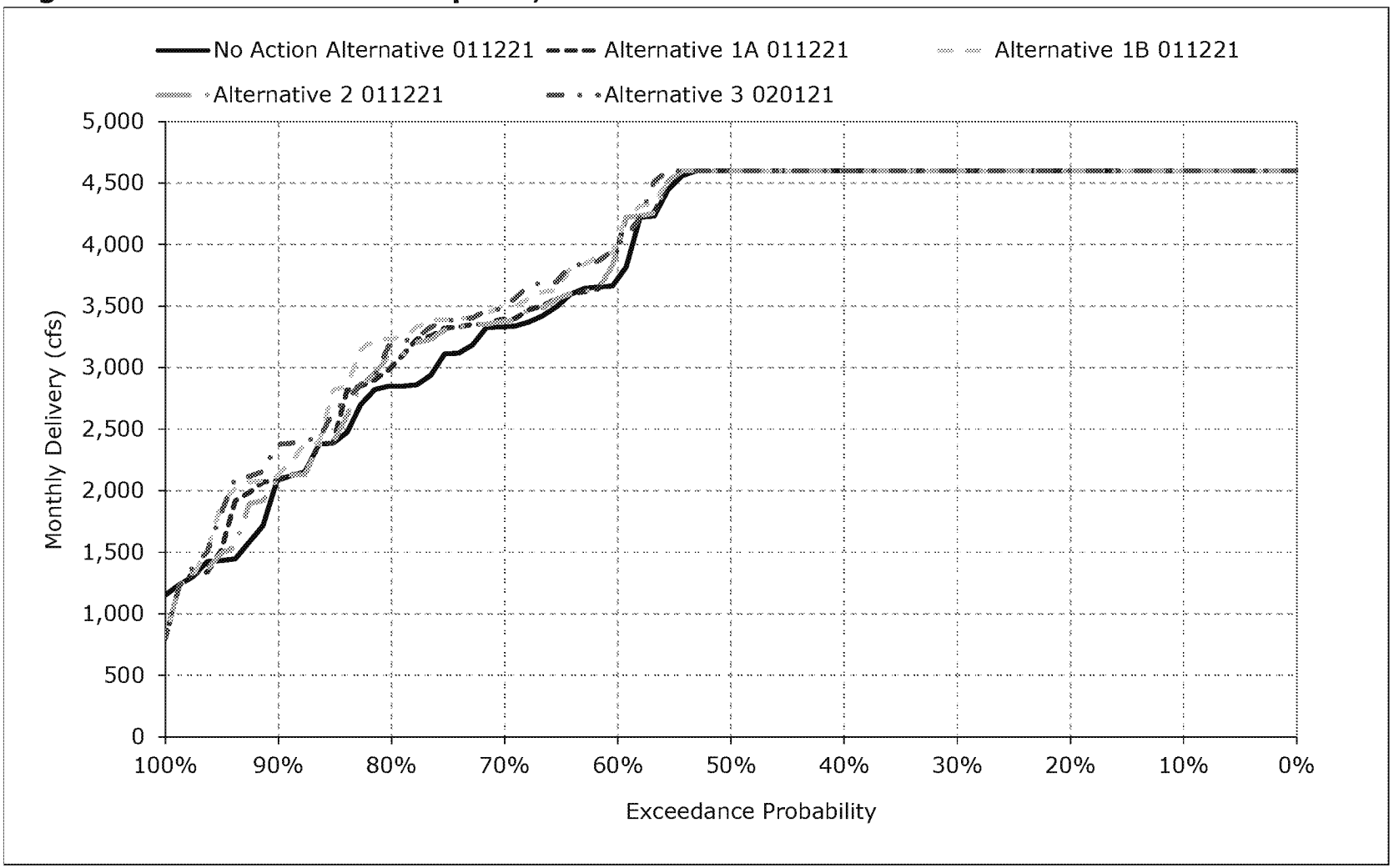


Figure 5B4-2-9. Jones PP Exports, December

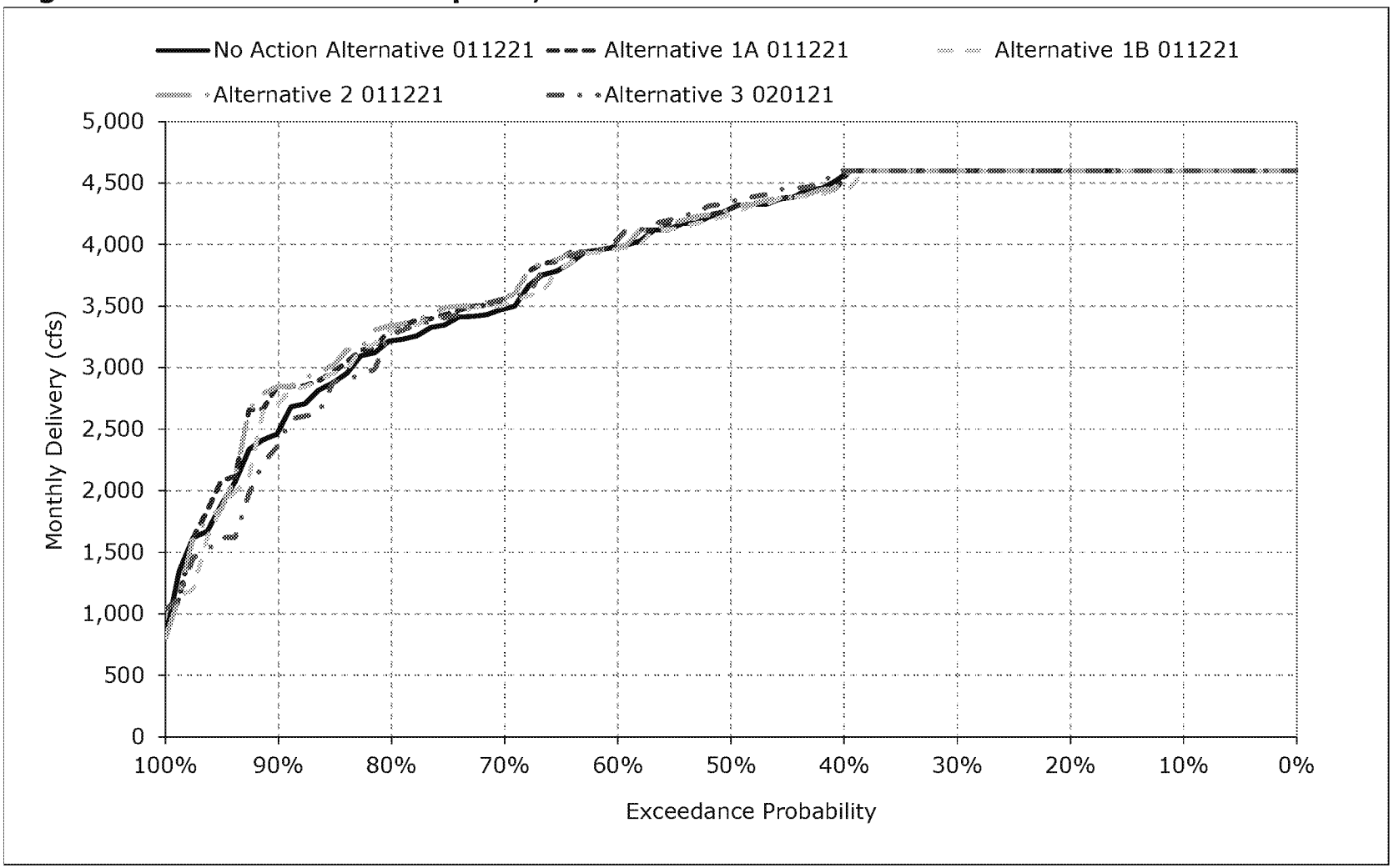


Figure 5B4-2-10. Jones PP Exports, January

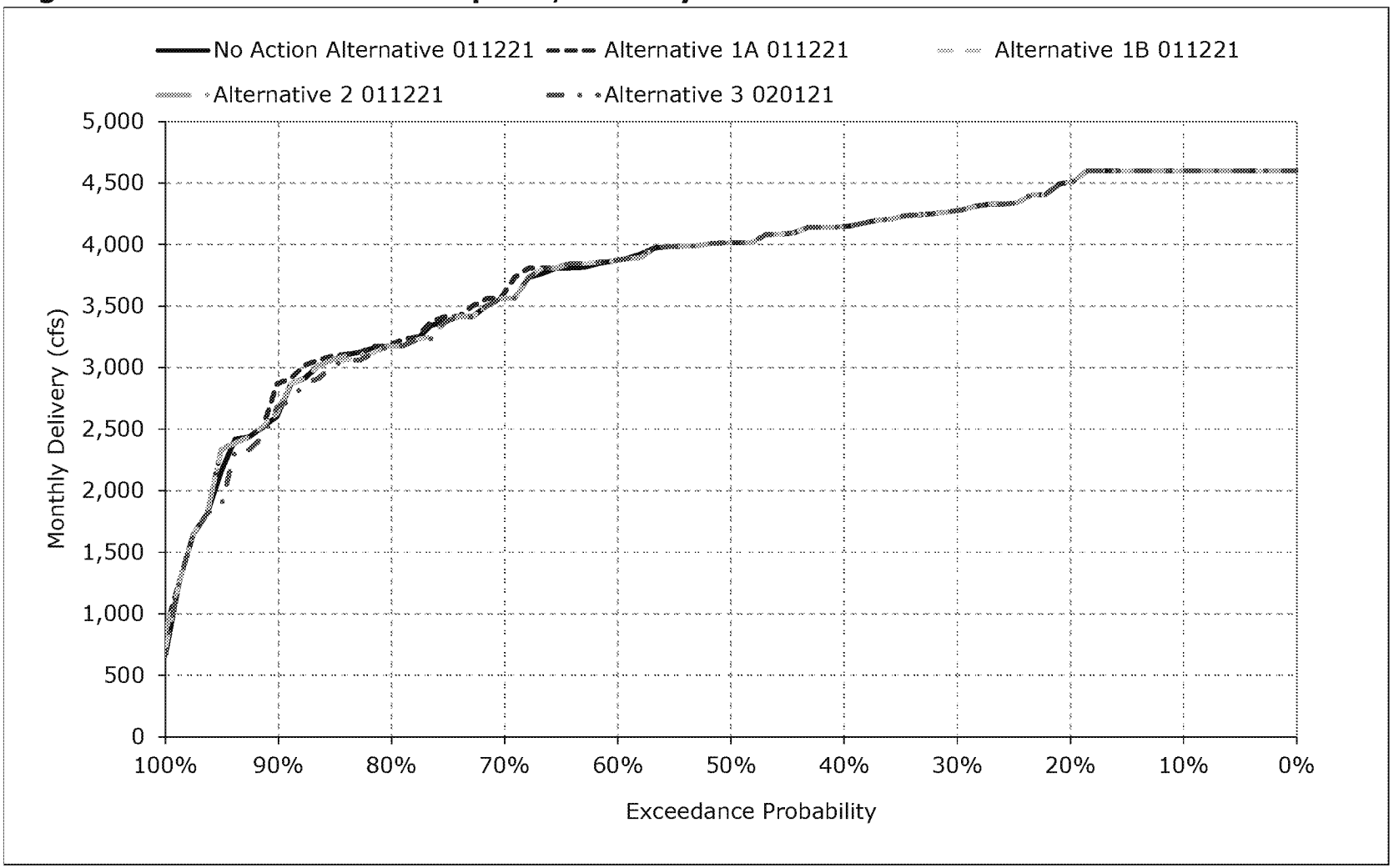


Figure 5B4-2-11. Jones PP Exports, February

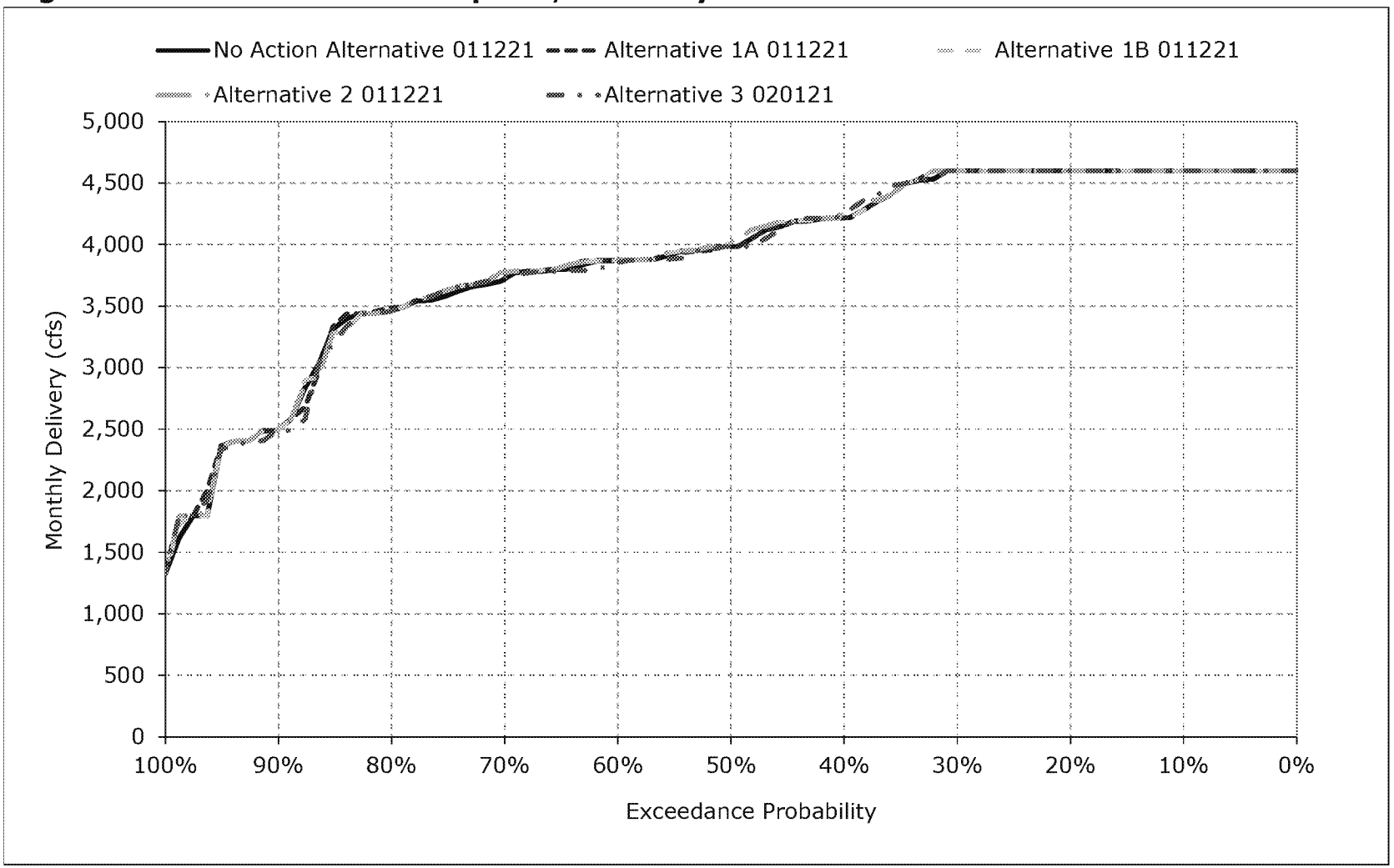


Figure 5B4-2-12. Jones PP Exports, March

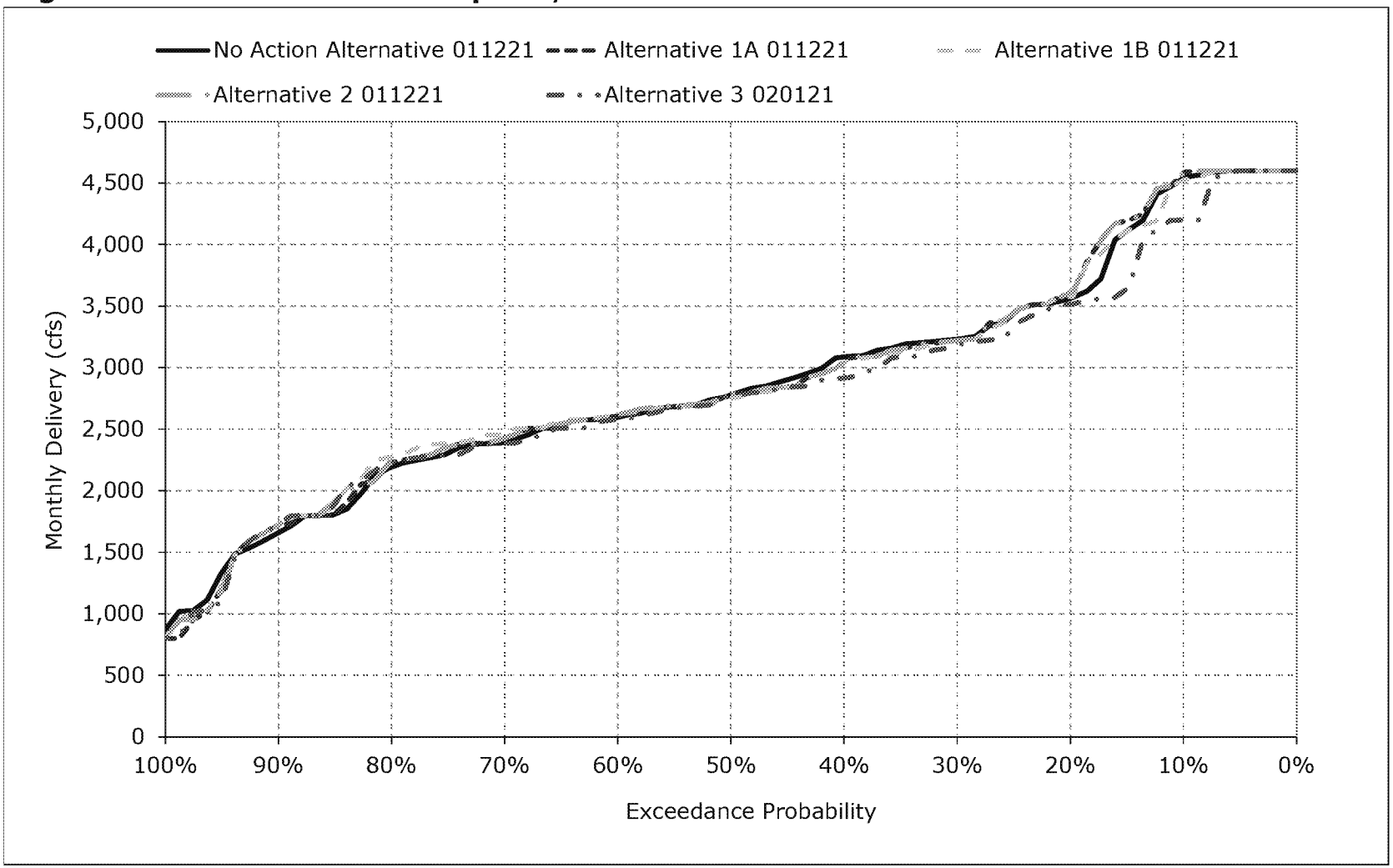


Figure 5B4-2-13. Jones PP Exports, April

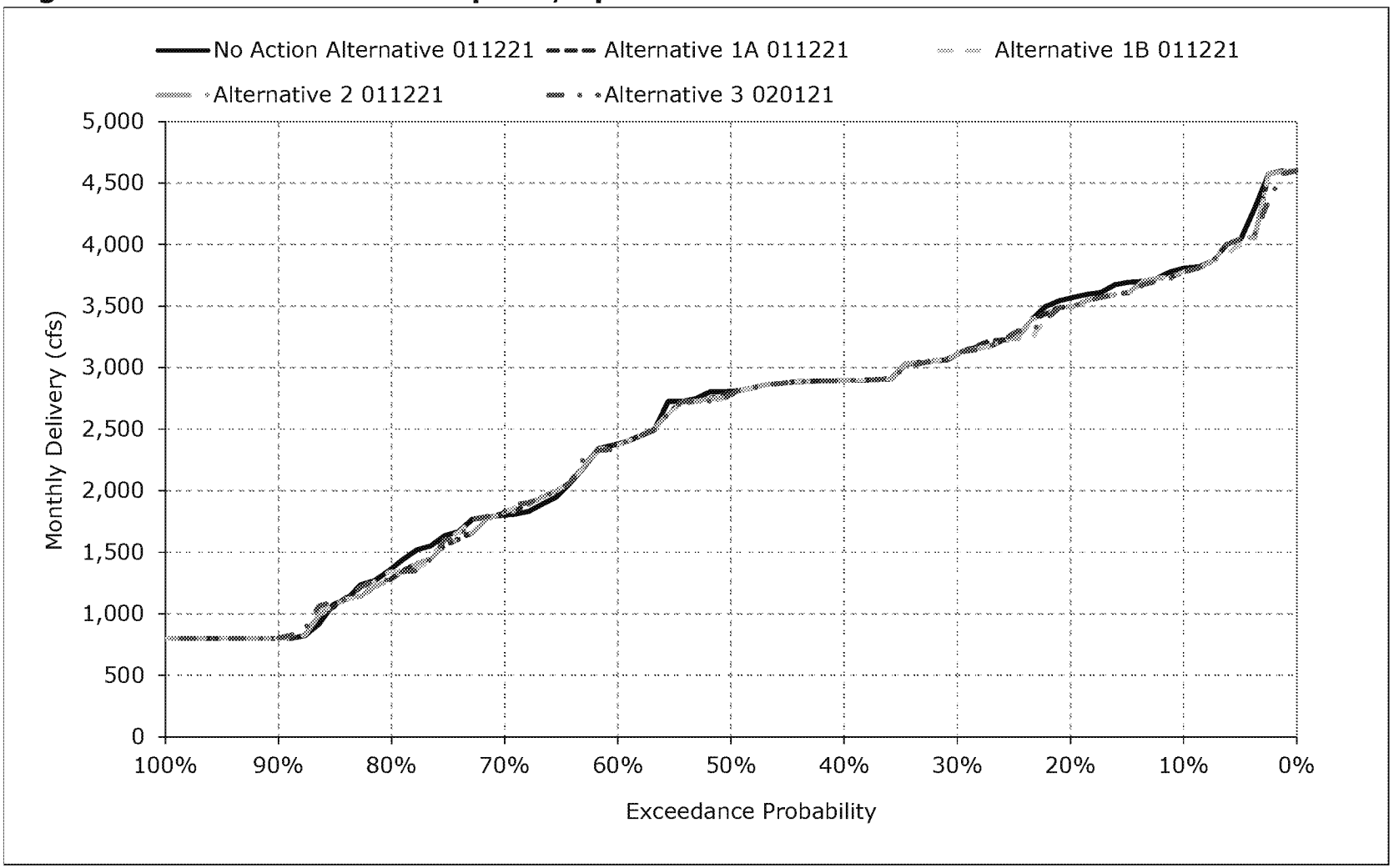


Figure 5B4-2-14. Jones PP Exports, May

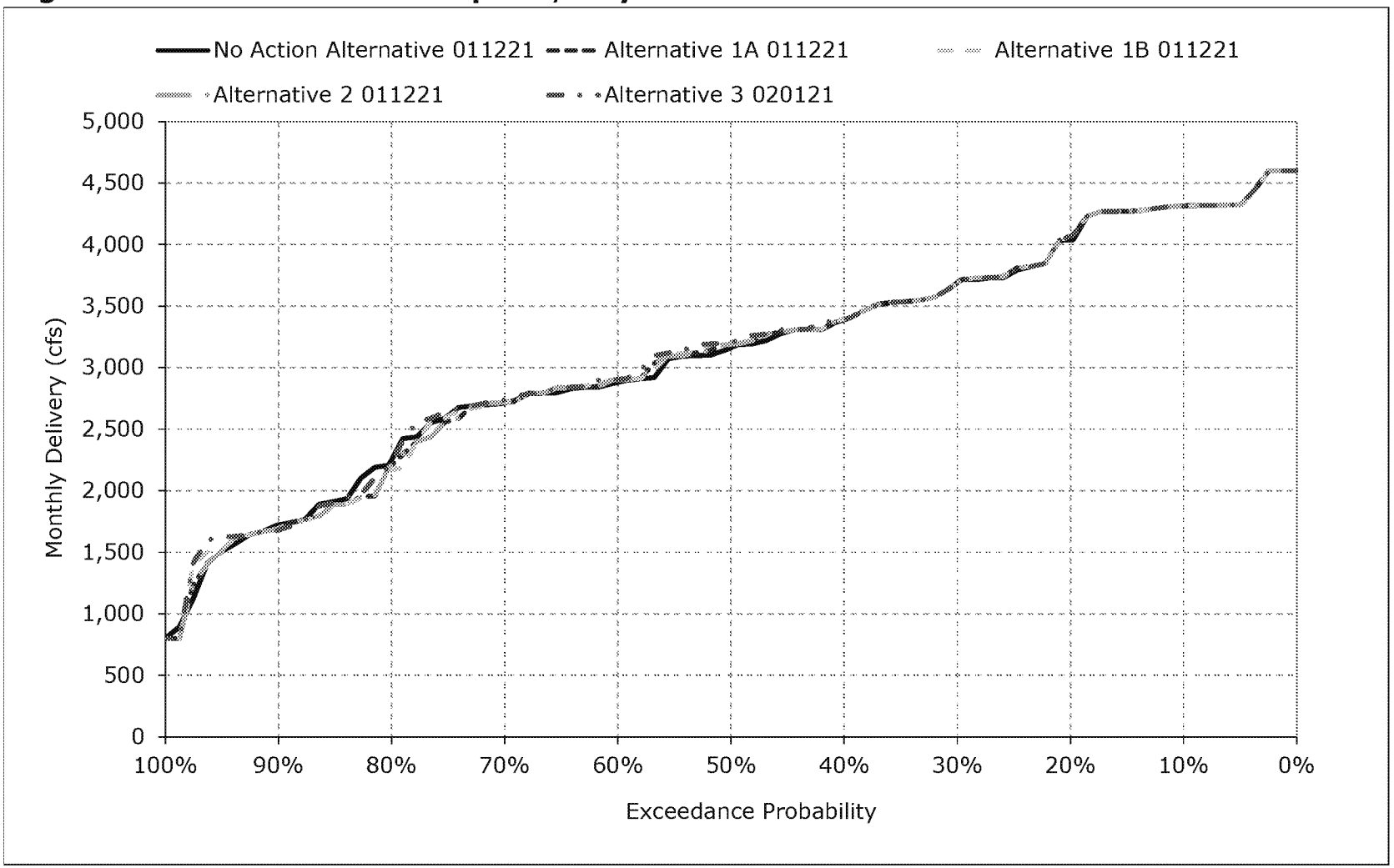


Figure 5B4-2-15. Jones PP Exports, June

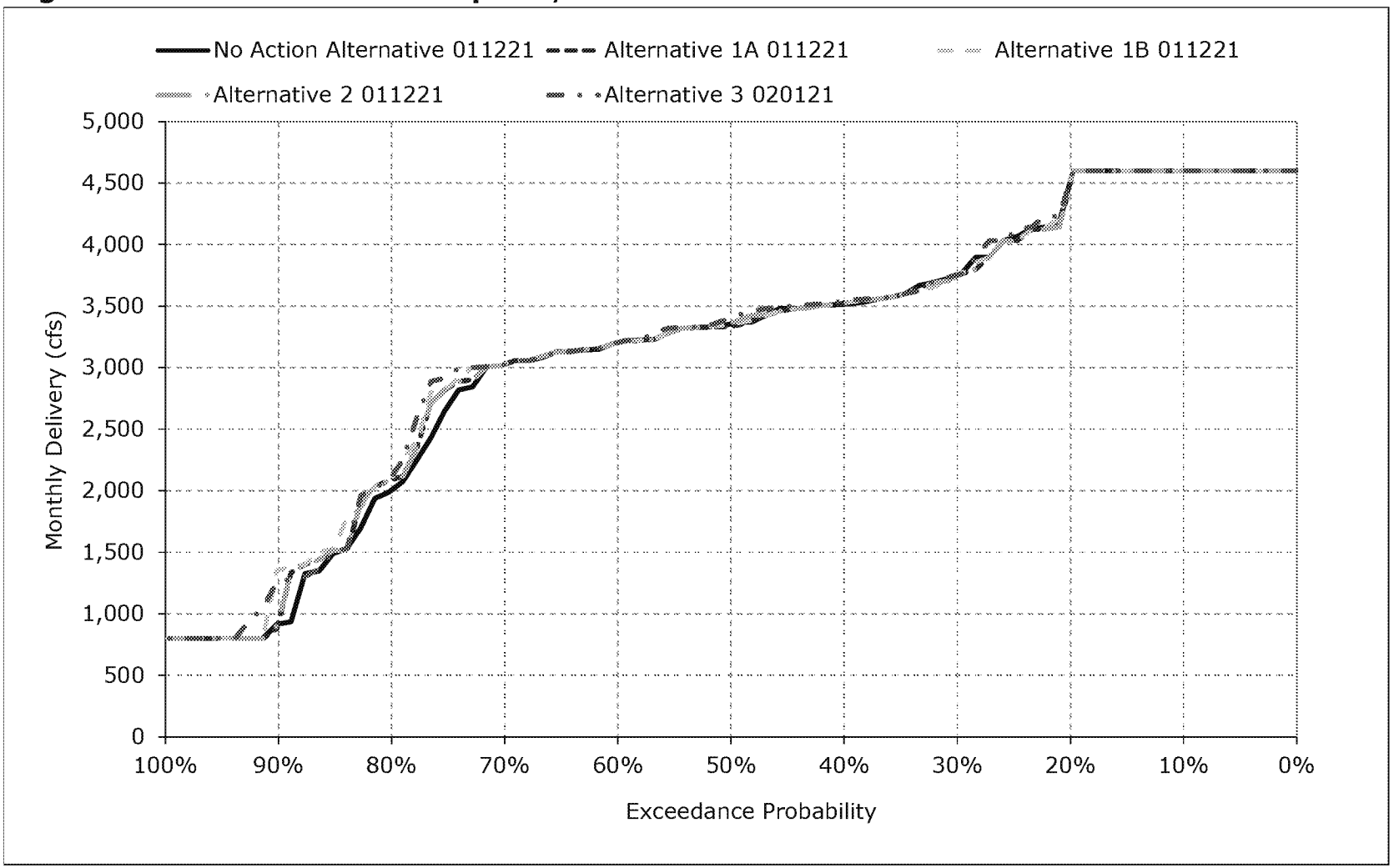


Figure 5B4-2-16. Jones PP Exports, July

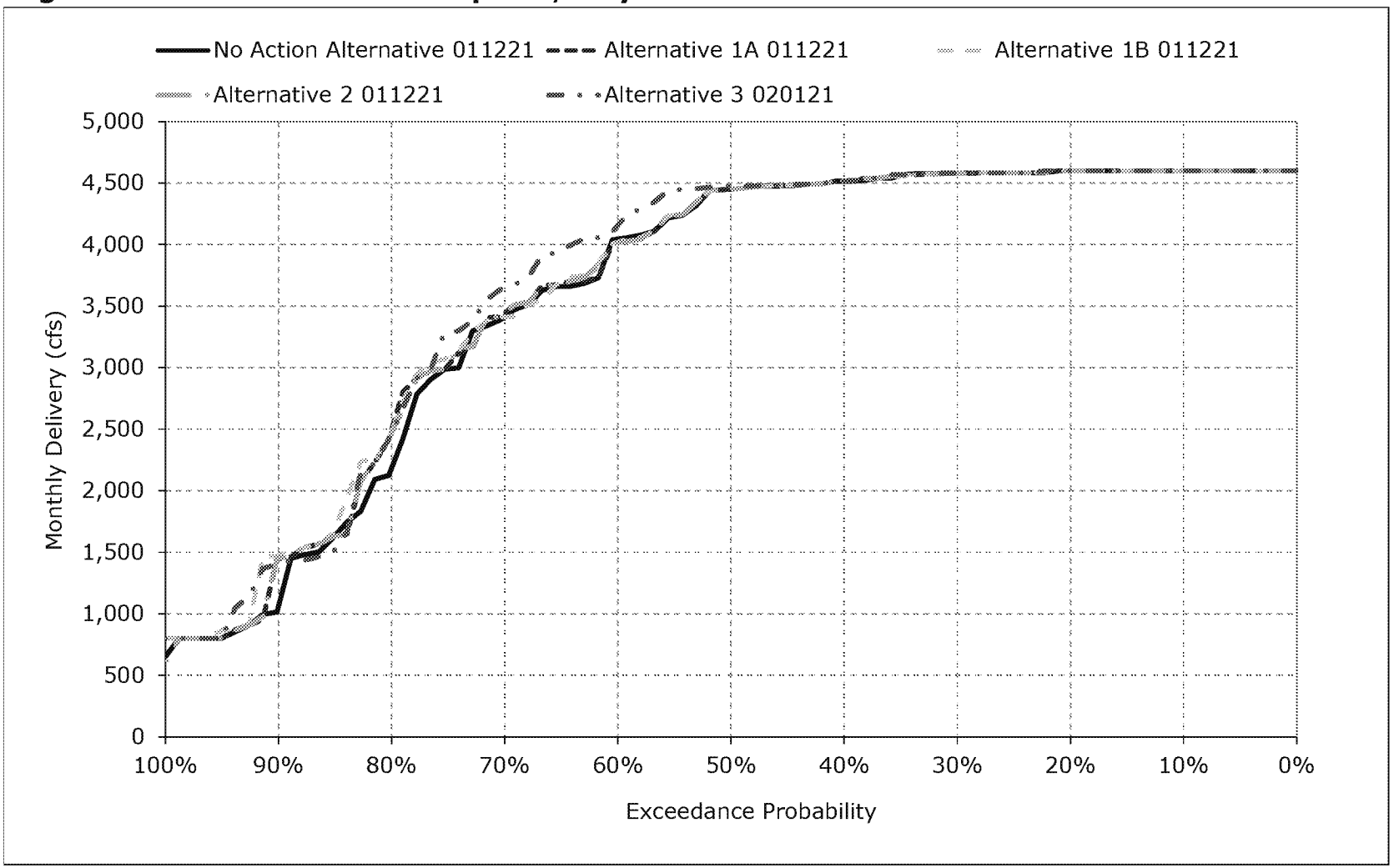


Figure 5B4-2-17. Jones PP Exports, August

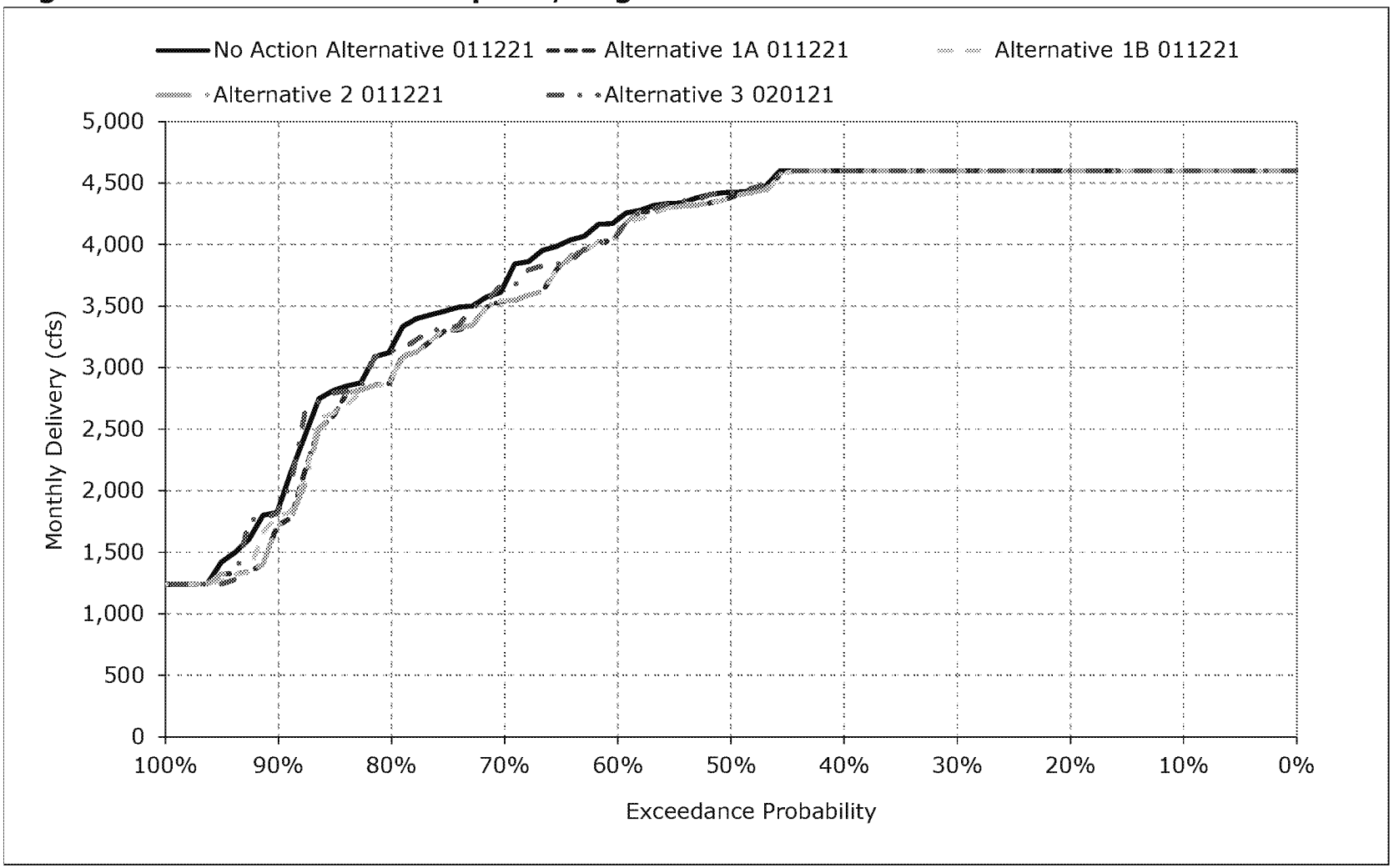


Figure 5B4-2-18. Jones PP Exports, September

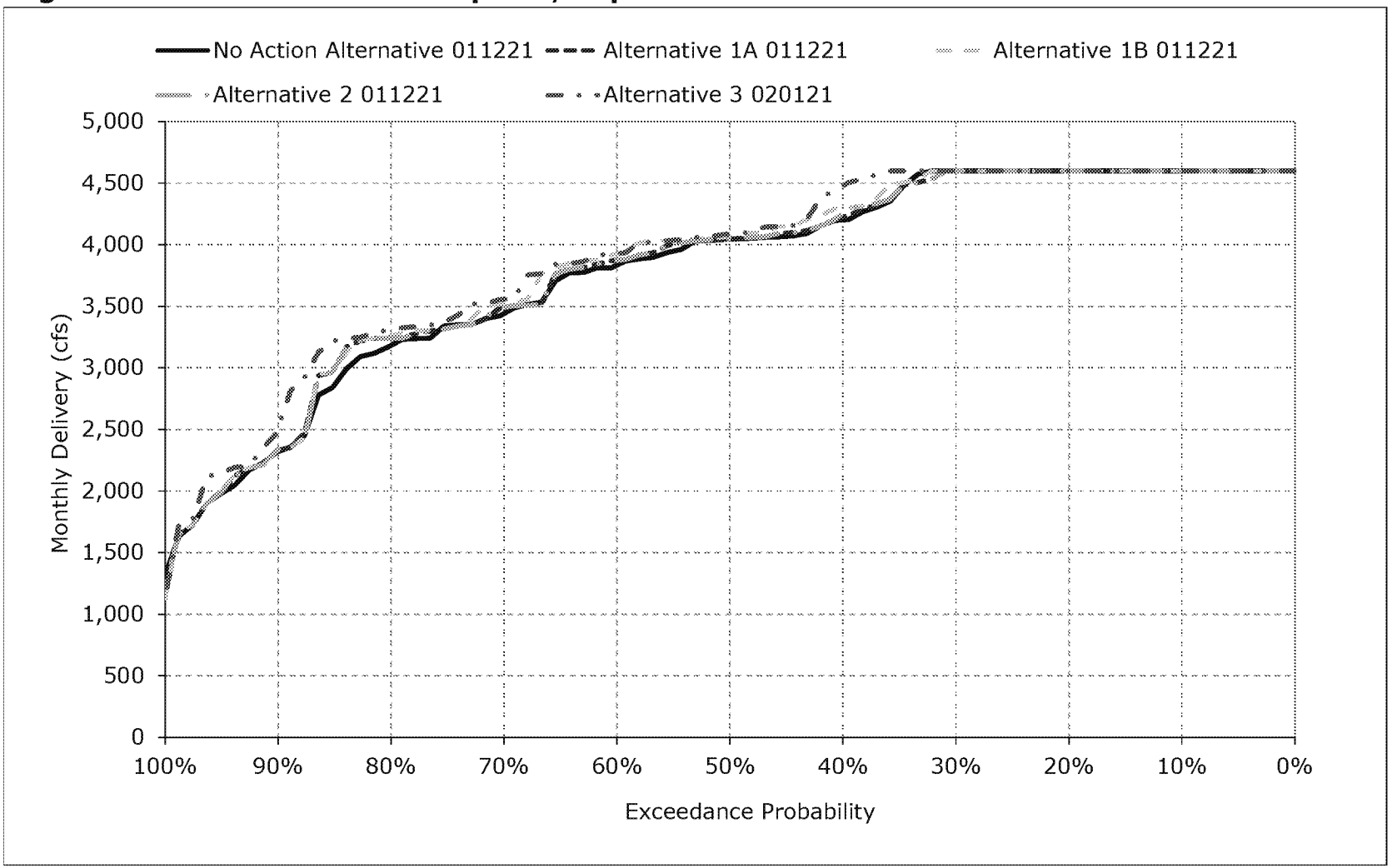


Table 5B4-3-1a. SWP Banks PP Exports, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	5,682	6,680	7,113	6,083	7,835	6,779	4,654	4,724	5,043	6,680	6,680	6,680
20%	4,722	6,680	7,011	4,188	5,479	4,774	2,507	2,360	3,281	6,680	6,192	6,680
30%	4,129	6,561	6,925	3,395	4,310	3,887	1,106	690	2,579	6,192	5,542	6,680
40%	3,792	5,569	4,814	2,881	4,015	3,304	691	600	2,124	6,192	5,542	6,589
50%	3,405	4,554	3,868	2,792	3,072	2,407	639	600	1,895	6,192	5,542	4,980
60%	2,993	3,726	3,261	2,683	2,675	2,134	600	600	1,776	5,849	3,225	3,124
70%	2,425	3,250	2,967	2,650	2,581	1,892	600	600	1,630	4,900	572	2,570
80%	2,061	2,373	2,746	2,499	2,455	1,768	600	600	1,058	1,936	300	2,314
90%	1,129	1,738	2,558	2,122	2,296	1,614	600	324	300	300	300	1,693
Long Term												
Full Simulation Period[a]	3,428	4,493	4,586	3,415	4,059	3,284	1,637	1,411	2,320	4,798	3,706	4,459
Water Year Types[b,c]												
Wet (32%)	4,779	5,921	5,840	4,563	5,767	5,006	3,353	2,769	3,701	6,027	5,208	6,382
Above Normal (15%)	3,874	5,292	5,378	3,212	3,891	3,437	1,120	1,306	2,457	5,853	5,222	6,638
Below Normal (17%)	3,910	4,504	4,572	2,972	4,013	2,978	1,160	935	1,769	6,299	6,379	4,246
Dry (22%)	2,367	3,509	3,260	2,794	2,723	1,937	614	543	1,624	3,826	644	2,533
Critical (15%)	1,084	2,062	3,082	2,578	2,587	1,777	525	433	875	789	407	1,251

Table 5B4-3-1b. SWP Banks PP Exports, Alternative 1A 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	5,715	6,680	7,113	6,063	7,839	6,599	4,655	4,789	5,043	6,680	6,680	6,680
20%	4,844	6,680	7,011	4,188	5,479	4,774	2,649	2,360	3,275	6,680	6,184	6,680
30%	4,147	6,619	6,800	3,401	4,213	3,759	1,106	700	2,511	6,192	5,542	6,680
40%	3,747	5,669	4,820	2,881	3,908	3,304	691	600	2,131	6,192	5,542	6,603
50%	3,408	4,736	3,880	2,792	3,072	2,363	639	600	1,895	6,192	5,542	4,980
60%	2,995	3,800	3,278	2,678	2,675	2,134	600	600	1,790	5,725	3,397	3,244
70%	2,424	3,324	2,979	2,627	2,566	1,892	600	600	1,564	4,872	426	2,538
80%	1,983	2,385	2,754	2,499	2,455	1,762	600	600	1,078	1,564	300	2,329
90%	1,010	1,968	2,543	2,122	2,294	1,592	600	356	300	300	300	1,714
Long Term												
Full Simulation Period[a]	3,404	4,566	4,591	3,412	4,027	3,280	1,639	1,412	2,302	4,777	3,720	4,470
Water Year Types[b,c]												
Wet (32%)	4,736	5,914	5,842	4,566	5,762	4,975	3,360	2,760	3,696	6,024	5,239	6,381
Above Normal (15%)	3,891	5,285	5,344	3,212	3,845	3,479	1,123	1,312	2,461	5,849	5,221	6,638
Below Normal (17%)	4,041	4,848	4,587	2,960	3,926	2,992	1,160	935	1,735	6,296	6,410	4,275
Dry (22%)	2,368	3,492	3,251	2,787	2,696	1,941	614	549	1,554	3,800	639	2,533
Critical (15%)	841	2,209	3,142	2,575	2,566	1,750	525	444	906	698	409	1,293

Table 5B4-3-1c. SWP Banks PP Exports, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	33	0	0	-20	4	-180	1	66	0	0	0	0
20%	121	0	0	0	0	0	142	0	-6	0	-8	0
30%	18	57	-125	6	-97	-128	0	10	-68	0	0	0
40%	-45	100	5	0	-107	0	0	0	7	0	0	15
50%	3	182	13	0	0	-44	1	0	0	0	0	0
60%	2	75	17	-6	0	0	0	0	14	-124	172	119
70%	0	74	12	-24	-15	0	0	0	-66	-28	-146	-32
80%	-78	13	8	0	0	-6	0	0	20	-372	0	15
90%	-119	231	-15	0	-2	-22	0	31	0	0	0	21
Long Term												
Full Simulation Period[a]	-24	73	5	-3	-32	-4	2	1	-18	-21	14	11
Water Year Types[b,c]												
Wet (32%)	-43	-7	2	2	-5	-31	6	-9	-6	-3	30	-1
Above Normal (15%)	17	-7	-34	0	-46	41	3	6	4	-4	-1	0
Below Normal (17%)	131	343	14	-13	-87	13	0	0	-34	-2	31	29
Dry (22%)	1	-17	-9	-7	-27	4	0	7	-70	-26	-5	0
Critical (15%)	-243	147	60	-3	-21	-27	0	11	31	-91	1	43

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-3-2a. SWP Banks PP Exports, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	5,682	6,680	7,113	6,083	7,835	6,779	4,654	4,724	5,043	6,680	6,680	6,680
20%	4,722	6,680	7,011	4,188	5,479	4,774	2,507	2,360	3,281	6,680	6,192	6,680
30%	4,129	6,561	6,925	3,395	4,310	3,887	1,106	690	2,579	6,192	5,542	6,680
40%	3,792	5,569	4,814	2,881	4,015	3,304	691	600	2,124	6,192	5,542	6,589
50%	3,405	4,554	3,868	2,792	3,072	2,407	639	600	1,895	6,192	5,542	4,980
60%	2,993	3,726	3,261	2,683	2,675	2,134	600	600	1,776	5,849	3,225	3,124
70%	2,425	3,250	2,967	2,650	2,581	1,892	600	600	1,630	4,900	572	2,570
80%	2,061	2,373	2,746	2,499	2,455	1,768	600	600	1,058	1,936	300	2,314
90%	1,129	1,738	2,558	2,122	2,296	1,614	600	324	300	300	300	1,693
Long Term												
Full Simulation Period[a]	3,428	4,493	4,586	3,415	4,059	3,284	1,637	1,411	2,320	4,798	3,706	4,459
Water Year Types[b,c]												
Wet (32%)	4,779	5,921	5,840	4,563	5,767	5,006	3,353	2,769	3,701	6,027	5,208	6,382
Above Normal (15%)	3,874	5,292	5,378	3,212	3,891	3,437	1,120	1,306	2,457	5,853	5,222	6,638
Below Normal (17%)	3,910	4,504	4,572	2,972	4,013	2,978	1,160	935	1,769	6,299	6,379	4,246
Dry (22%)	2,367	3,509	3,260	2,794	2,723	1,937	614	543	1,624	3,826	644	2,533
Critical (15%)	1,084	2,062	3,082	2,578	2,587	1,777	525	433	875	789	407	1,251

Table 5B4-3-2b. SWP Banks PP Exports, Alternative 1B 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	5,715	6,680	7,095	6,078	7,839	6,180	4,668	4,926	5,043	6,680	6,680	6,680
20%	4,849	6,680	7,009	4,188	5,479	4,774	2,700	2,360	3,275	6,680	6,173	6,680
30%	4,222	6,619	6,177	3,412	4,213	3,763	1,107	700	2,508	6,192	5,542	6,680
40%	3,775	5,694	4,720	2,881	3,908	3,300	691	600	2,131	6,192	5,542	6,603
50%	3,405	4,801	3,723	2,792	3,072	2,363	639	600	1,895	6,192	5,542	4,999
60%	2,983	3,946	3,241	2,678	2,675	2,134	600	600	1,790	5,752	3,411	3,241
70%	2,440	3,355	2,937	2,635	2,581	1,892	600	600	1,565	5,112	522	2,537
80%	1,985	2,373	2,687	2,499	2,472	1,766	600	600	1,067	1,566	300	2,329
90%	1,013	1,838	2,526	2,122	2,294	1,614	600	356	300	300	300	1,689
Long Term												
Full Simulation Period[a]	3,417	4,583	4,501	3,411	4,038	3,279	1,647	1,414	2,300	4,788	3,723	4,476
Water Year Types[b,c]												
Wet (32%)	4,750	5,927	5,840	4,566	5,764	4,966	3,361	2,759	3,696	6,024	5,239	6,381
Above Normal (15%)	3,946	5,308	5,344	3,212	3,867	3,398	1,172	1,325	2,466	5,839	5,221	6,638
Below Normal (17%)	4,024	4,832	4,588	2,960	3,946	3,041	1,161	932	1,733	6,297	6,406	4,326
Dry (22%)	2,375	3,558	2,833	2,785	2,696	1,941	614	552	1,542	3,844	657	2,533
Critical (15%)	854	2,195	3,153	2,572	2,586	1,790	525	444	906	714	409	1,279

Table 5B4-3-2c. SWP Banks PP Exports, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	33	0	-18	-5	4	-599	14	203	0	0	0	0
20%	127	0	-2	0	0	0	193	0	-6	0	-19	0
30%	92	58	-748	17	-97	-124	0	10	-71	0	0	0
40%	-18	125	-94	0	-107	-5	0	0	7	0	0	15
50%	-1	248	-145	0	0	-44	1	0	0	0	0	19
60%	-11	220	-19	-6	0	0	0	0	14	-97	187	117
70%	15	105	-30	-16	0	0	0	0	-66	212	-50	-33
80%	-77	0	-59	0	18	-2	0	0	9	-371	0	15
90%	-116	100	-33	0	-2	0	0	32	0	0	0	-5
Long Term												
Full Simulation Period[a]	-11	90	-86	-4	-22	-5	10	3	-20	-11	17	18
Water Year Types[b,c]												
Wet (32%)	-29	6	0	3	-3	-40	8	-10	-6	-4	31	-1
Above Normal (15%)	72	16	-34	0	-23	-39	52	19	9	-14	-1	0
Below Normal (17%)	114	327	15	-13	-68	62	1	-3	-36	-2	27	79
Dry (22%)	7	49	-427	-9	-27	3	0	9	-82	18	13	0
Critical (15%)	-230	134	71	-6	0	13	0	11	31	-75	2	29

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-3-3a. SWP Banks PP Exports, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	5,682	6,680	7,113	6,083	7,835	6,779	4,654	4,724	5,043	6,680	6,680	6,680
20%	4,722	6,680	7,011	4,188	5,479	4,774	2,507	2,360	3,281	6,680	6,192	6,680
30%	4,129	6,561	6,925	3,395	4,310	3,887	1,106	690	2,579	6,192	5,542	6,680
40%	3,792	5,569	4,814	2,881	4,015	3,304	691	600	2,124	6,192	5,542	6,589
50%	3,405	4,554	3,868	2,792	3,072	2,407	639	600	1,895	6,192	5,542	4,980
60%	2,993	3,726	3,261	2,683	2,675	2,134	600	600	1,776	5,849	3,225	3,124
70%	2,425	3,250	2,967	2,650	2,581	1,892	600	600	1,630	4,900	572	2,570
80%	2,061	2,373	2,746	2,499	2,455	1,768	600	600	1,058	1,936	300	2,314
90%	1,129	1,738	2,558	2,122	2,296	1,614	600	324	300	300	300	1,693
Long Term												
Full Simulation Period[a]	3,428	4,493	4,586	3,415	4,059	3,284	1,637	1,411	2,320	4,798	3,706	4,459
Water Year Types[b,c]												
Wet (32%)	4,779	5,921	5,840	4,563	5,767	5,006	3,353	2,769	3,701	6,027	5,208	6,382
Above Normal (15%)	3,874	5,292	5,378	3,212	3,891	3,437	1,120	1,306	2,457	5,853	5,222	6,638
Below Normal (17%)	3,910	4,504	4,572	2,972	4,013	2,978	1,160	935	1,769	6,299	6,379	4,246
Dry (22%)	2,367	3,509	3,260	2,794	2,723	1,937	614	543	1,624	3,826	644	2,533
Critical (15%)	1,084	2,062	3,082	2,578	2,587	1,777	525	433	875	789	407	1,251

Table 5B4-3-3b. SWP Banks PP Exports, Alternative 2 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	5,715	6,680	7,113	6,064	7,839	6,337	4,689	4,914	5,043	6,680	6,680	6,680
20%	4,861	6,680	7,011	4,188	5,479	4,774	2,649	2,360	3,275	6,680	6,166	6,680
30%	4,162	6,619	6,798	3,401	4,213	3,759	1,106	700	2,512	6,192	5,542	6,680
40%	3,748	5,674	4,820	2,881	3,908	3,304	691	600	2,131	6,192	5,542	6,603
50%	3,408	4,732	3,877	2,792	3,072	2,363	639	600	1,895	6,192	5,542	4,980
60%	2,979	3,800	3,278	2,678	2,675	2,134	600	600	1,790	5,725	3,395	3,244
70%	2,424	3,372	2,967	2,636	2,581	1,892	600	600	1,564	5,044	462	2,537
80%	1,972	2,571	2,754	2,499	2,472	1,766	600	600	1,078	1,565	300	2,346
90%	1,009	1,969	2,558	2,122	2,294	1,614	600	356	300	300	300	1,693
Long Term												
Full Simulation Period[a]	3,410	4,583	4,587	3,409	4,033	3,280	1,640	1,414	2,301	4,778	3,715	4,469
Water Year Types[b,c]												
Wet (32%)	4,760	5,915	5,842	4,566	5,762	4,975	3,360	2,760	3,696	6,024	5,238	6,381
Above Normal (15%)	3,891	5,285	5,343	3,212	3,852	3,440	1,123	1,324	2,461	5,845	5,221	6,638
Below Normal (17%)	4,014	4,847	4,587	2,960	3,939	2,994	1,163	935	1,727	6,296	6,379	4,277
Dry (22%)	2,368	3,576	3,252	2,787	2,696	1,941	614	549	1,554	3,799	645	2,534
Critical (15%)	861	2,197	3,117	2,559	2,586	1,791	525	444	907	706	409	1,283

Table 5B4-3-3c. SWP Banks PP Exports, Alternative 2 011221 minus No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	33	0	0	-19	4	-442	35	190	0	0	0	0
20%	139	0	0	0	0	0	142	0	-6	0	-26	0
30%	32	58	-127	6	-97	-128	0	10	-67	0	0	0
40%	-45	105	5	0	-107	0	0	0	7	0	0	15
50%	3	179	9	0	0	-44	1	0	0	0	0	0
60%	-14	75	17	-6	0	0	0	0	14	-124	171	120
70%	-1	122	0	-15	0	0	0	0	-66	144	-110	-33
80%	-90	198	8	0	18	-2	0	0	20	-372	0	32
90%	-121	231	0	0	-2	0	0	31	0	0	0	-1
Long Term												
Full Simulation Period[a]	-18	90	1	-6	-26	-4	3	3	-19	-21	10	10
Water Year Types[b,c]												
Wet (32%)	-20	-6	2	2	-5	-31	7	-9	-6	-3	30	-1
Above Normal (15%)	17	-7	-35	0	-39	3	2	18	4	-8	-1	0
Below Normal (17%)	104	342	14	-13	-75	15	3	0	-42	-2	0	30
Dry (22%)	1	67	-8	-7	-27	4	0	6	-70	-28	1	1
Critical (15%)	-223	135	35	-19	-1	14	0	11	31	-83	2	33

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-3-4a. SWP Banks PP Exports, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	5,682	6,680	7,113	6,083	7,835	6,779	4,654	4,724	5,043	6,680	6,680	6,680
20%	4,722	6,680	7,011	4,188	5,479	4,774	2,507	2,360	3,281	6,680	6,192	6,680
30%	4,129	6,561	6,925	3,395	4,310	3,887	1,106	690	2,579	6,192	5,542	6,680
40%	3,792	5,569	4,814	2,881	4,015	3,304	691	600	2,124	6,192	5,542	6,589
50%	3,405	4,554	3,868	2,792	3,072	2,407	639	600	1,895	6,192	5,542	4,980
60%	2,993	3,726	3,261	2,683	2,675	2,134	600	600	1,776	5,849	3,225	3,124
70%	2,425	3,250	2,967	2,650	2,581	1,892	600	600	1,630	4,900	572	2,570
80%	2,061	2,373	2,746	2,499	2,455	1,768	600	600	1,058	1,936	300	2,314
90%	1,129	1,738	2,558	2,122	2,296	1,614	600	324	300	300	300	1,693
Long Term												
Full Simulation Period[a]	3,428	4,493	4,586	3,415	4,059	3,284	1,637	1,411	2,320	4,798	3,706	4,459
Water Year Types[b,c]												
Wet (32%)	4,779	5,921	5,840	4,563	5,767	5,006	3,353	2,769	3,701	6,027	5,208	6,382
Above Normal (15%)	3,874	5,292	5,378	3,212	3,891	3,437	1,120	1,306	2,457	5,853	5,222	6,638
Below Normal (17%)	3,910	4,504	4,572	2,972	4,013	2,978	1,160	935	1,769	6,299	6,379	4,246
Dry (22%)	2,367	3,509	3,260	2,794	2,723	1,937	614	543	1,624	3,826	644	2,533
Critical (15%)	1,084	2,062	3,082	2,578	2,587	1,777	525	433	875	789	407	1,251

Table 5B4-3-4b. SWP Banks PP Exports, Alternative 3 020121, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	6,073	6,680	7,115	6,083	7,839	6,210	4,691	4,523	5,043	6,680	6,680	6,680
20%	4,839	6,680	7,011	4,188	5,534	4,951	2,632	2,145	3,433	6,680	6,176	6,680
30%	4,164	6,664	6,948	3,430	4,293	4,235	1,107	700	2,482	6,192	5,542	6,680
40%	3,758	5,670	5,156	2,881	3,908	3,371	691	600	2,098	6,192	5,542	6,379
50%	3,448	4,571	4,275	2,792	3,072	2,574	639	600	1,882	6,192	5,542	4,980
60%	2,997	3,814	3,376	2,678	2,706	2,145	600	600	1,790	5,593	3,374	3,212
70%	2,438	3,416	2,967	2,598	2,586	1,892	600	600	1,565	4,846	622	2,522
80%	1,941	2,624	2,746	2,399	2,516	1,763	600	600	996	1,822	300	2,344
90%	1,013	1,911	2,558	2,116	2,305	1,595	600	366	300	300	300	1,688
Long Term												
Full Simulation Period[a]	3,421	4,572	4,708	3,407	4,063	3,347	1,648	1,379	2,284	4,777	3,721	4,474
Water Year Types[b,c]												
Wet (32%)	4,751	5,927	5,837	4,566	5,762	5,055	3,361	2,666	3,696	6,029	5,220	6,358
Above Normal (15%)	4,020	5,321	5,440	3,212	3,973	3,504	1,172	1,326	2,461	5,620	5,222	6,638
Below Normal (17%)	4,005	4,826	4,592	2,960	3,955	3,239	1,163	896	1,721	6,305	6,391	4,359
Dry (22%)	2,363	3,523	3,730	2,773	2,723	1,937	614	553	1,520	3,940	686	2,539
Critical (15%)	842	2,164	3,134	2,565	2,610	1,733	525	445	854	695	409	1,264

Table 5B4-3-4c. SWP Banks PP Exports, Alternative 3 020121 minus No Action Alternative 011221, Monthly Delivery (cfs)

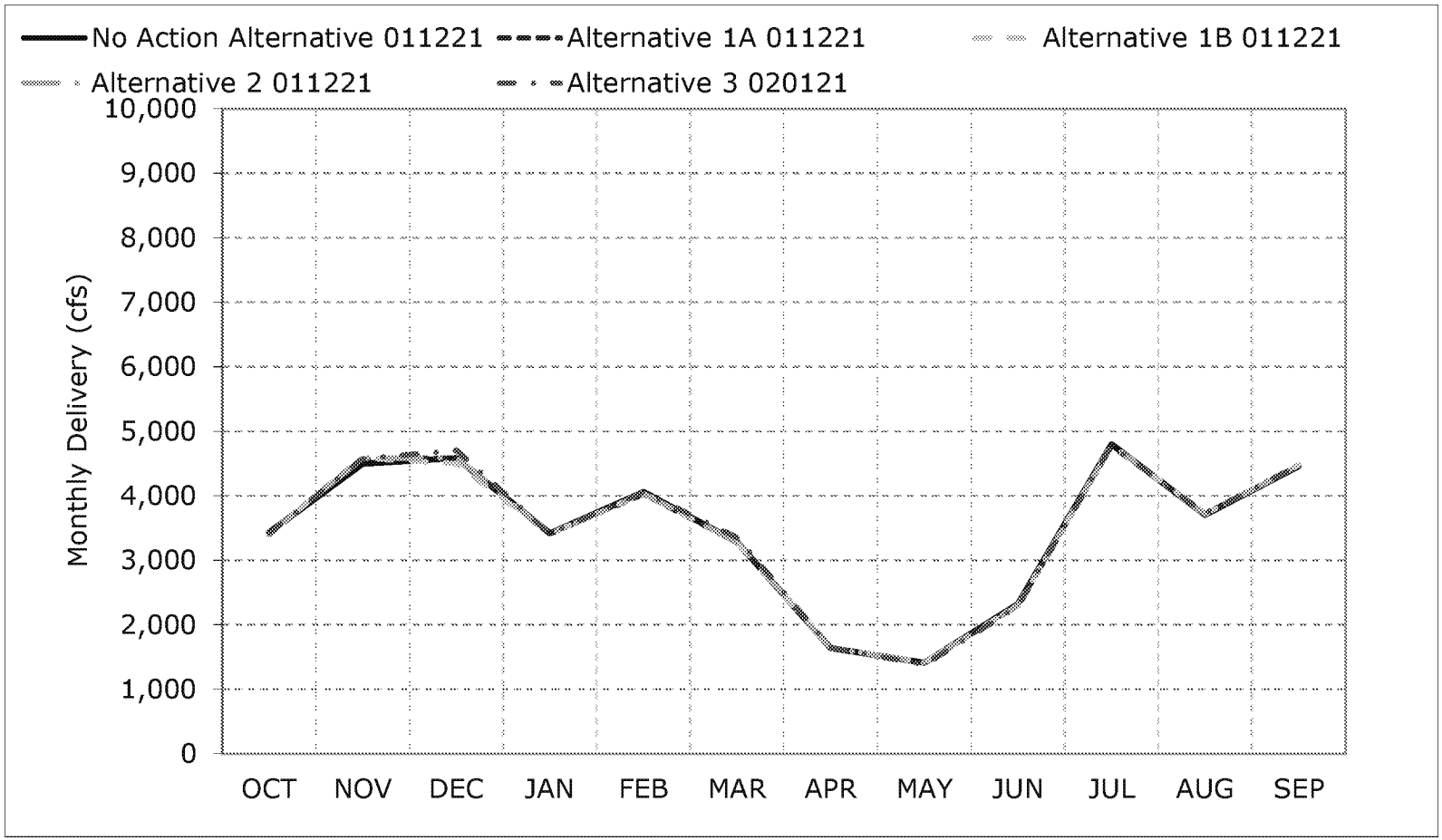
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	391	0	2	0	4	-569	37	-201	0	0	0	0
20%	117	0	0	0	55	177	125	-216	152	0	-16	0
30%	35	103	23	35	-17	348	0	10	-97	0	0	0
40%	-35	101	341	0	-107	66	0	0	-26	0	0	-210
50%	43	17	408	0	0	168	1	0	-13	0	0	0
60%	4	88	116	-6	31	11	0	0	14	-256	149	88
70%	13	166	0	-53	5	0	0	0	-66	-54	50	-48
80%	-120	252	0	-100	62	-5	0	0	-62	-114	0	30
90%	-117	174	0	-6	9	-18	0	42	0	0	0	-5
Long Term												
Full Simulation Period[a]	-8	79	122	-8	4	63	11	-32	-35	-21	15	15
Water Year Types[b,c]												
Wet (32%)	-28	6	-3	3	-5	49	8	-102	-6	2	12	-24
Above Normal (15%)	146	28	62	0	82	67	52	20	4	-233	-1	0
Below Normal (17%)	95	322	19	-13	-58	260	3	-39	-48	6	12	113
Dry (22%)	-4	14	470	-21	0	-1	0	10	-104	114	42	6
Critical (15%)	-243	102	52	-12	23	-44	0	12	-21	-94	1	13

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

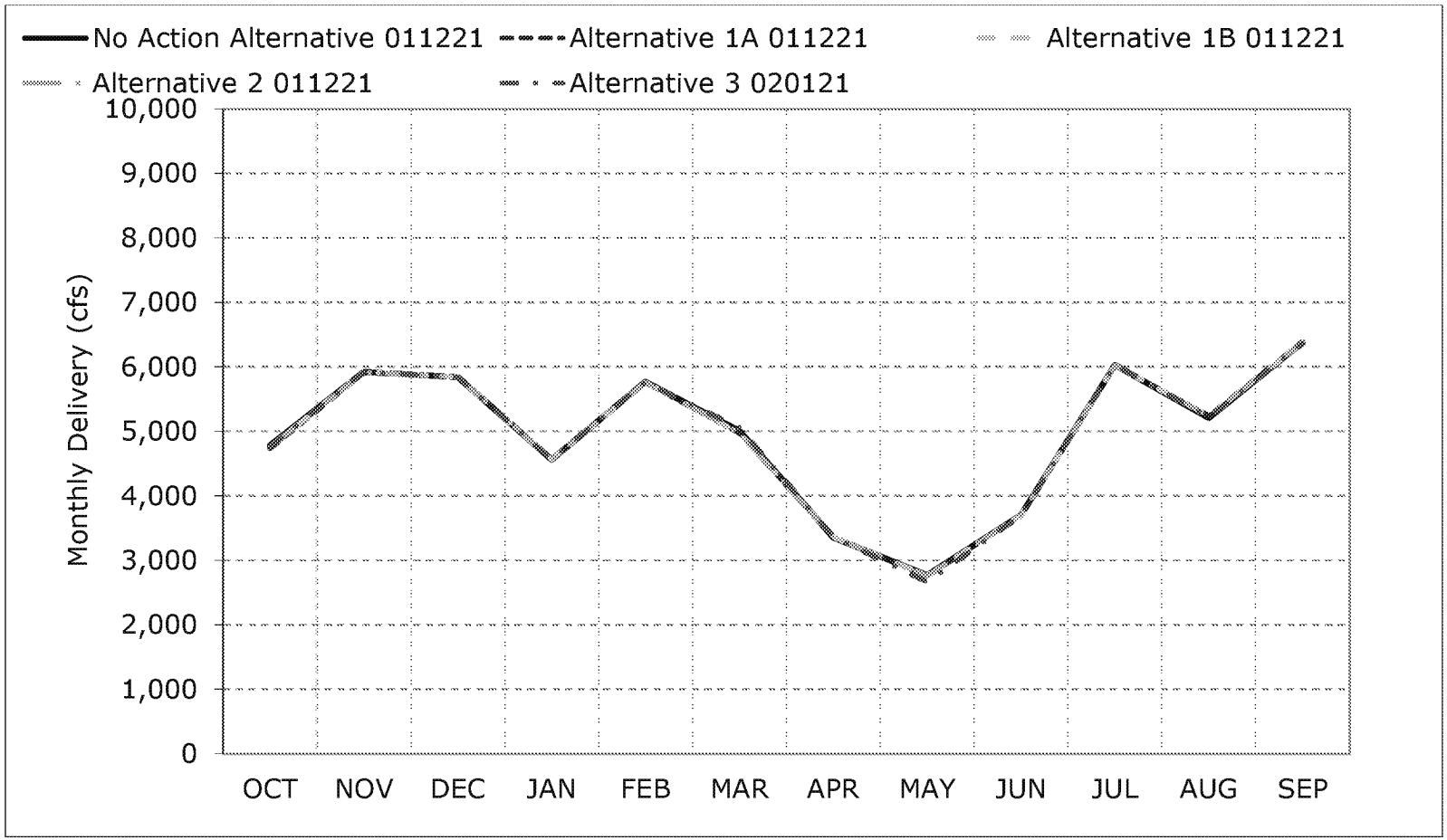
c These results are displayed with calendar year - year type sorting.

Figure 5B4-3-1. SWP Banks PP Exports, Long-Term Average Delivery



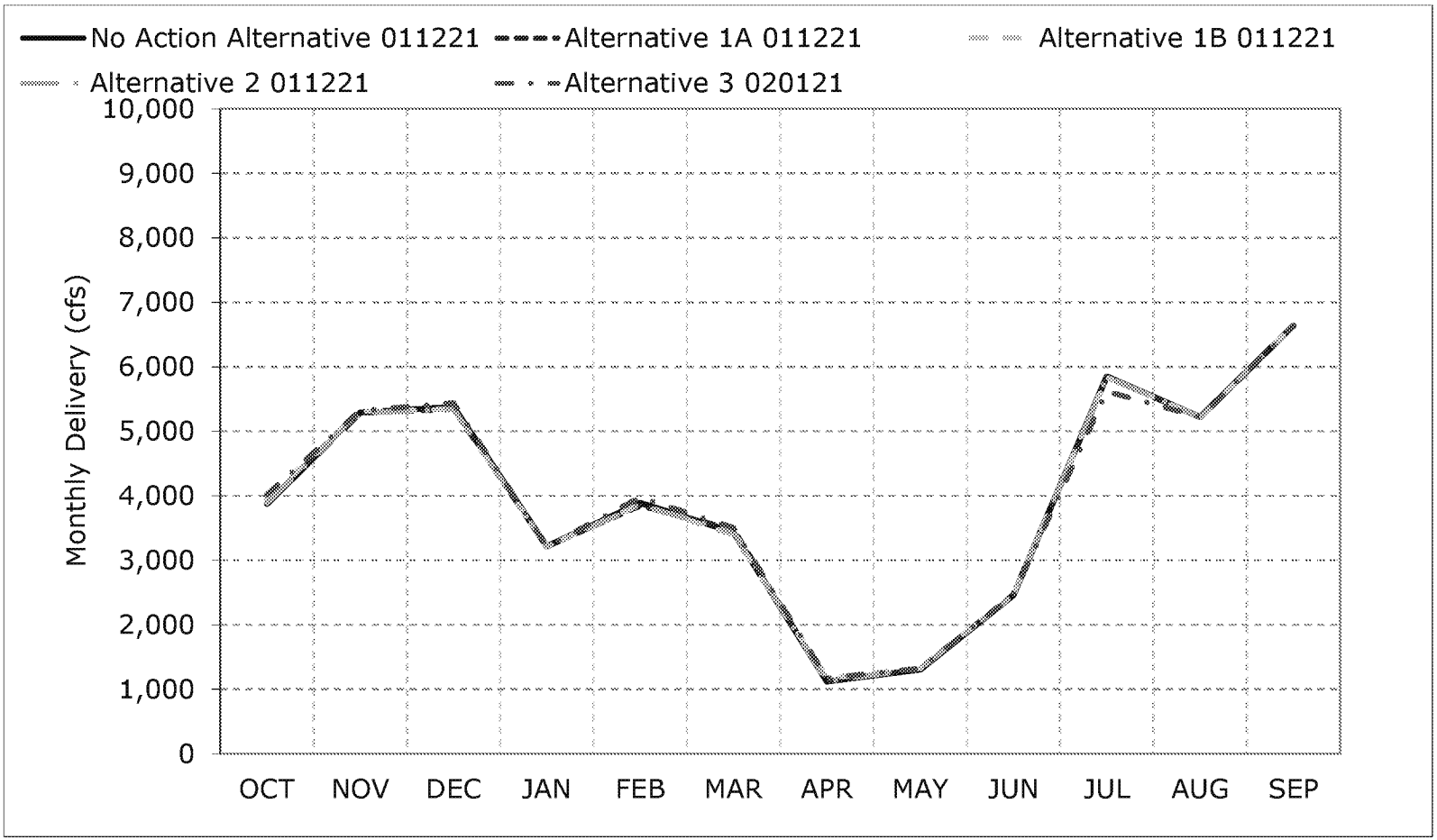
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-3-2. SWP Banks PP Exports, Wet Year Average Delivery



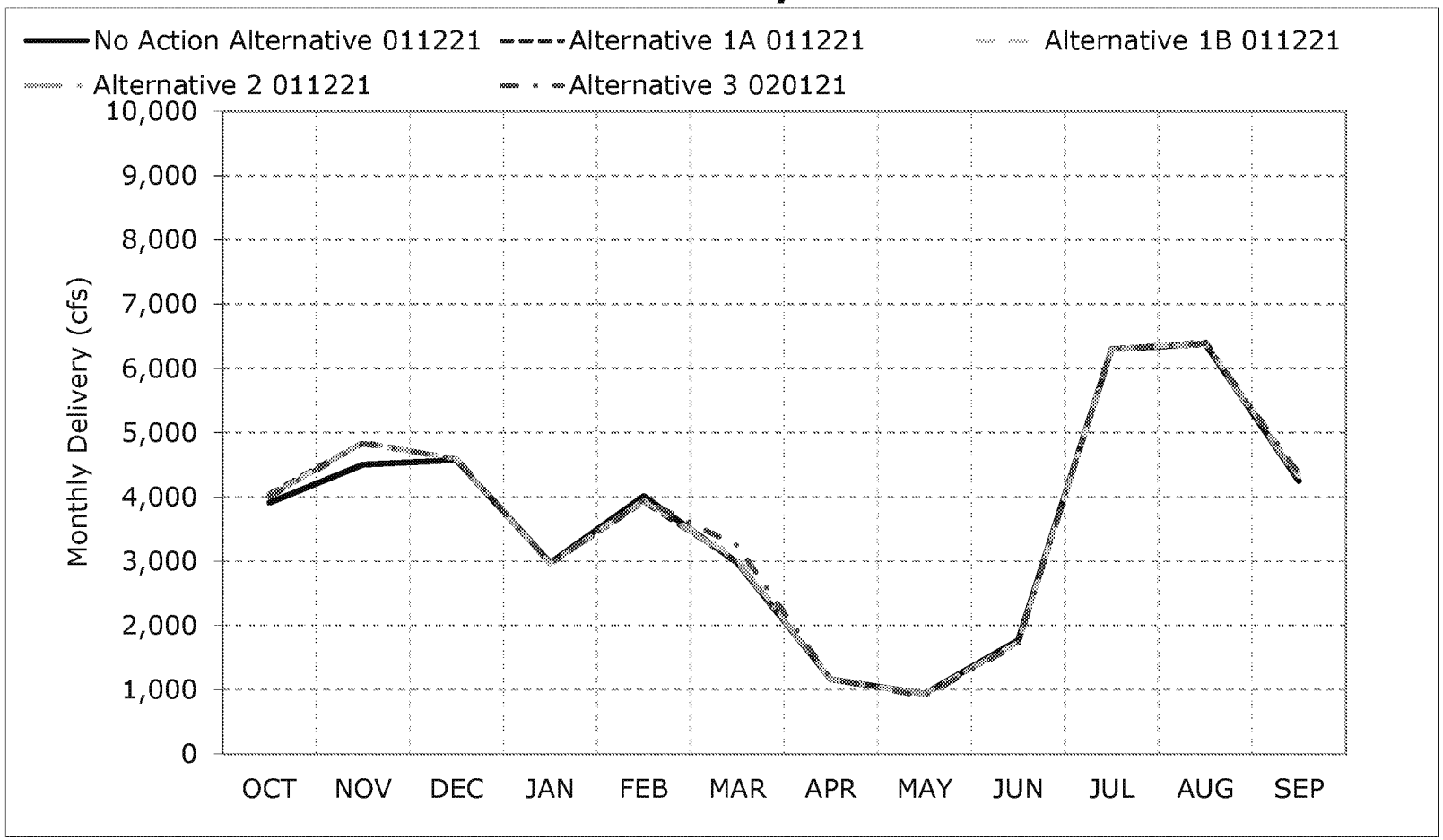
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-3-3. SWP Banks PP Exports, Above Normal Year Average Delivery



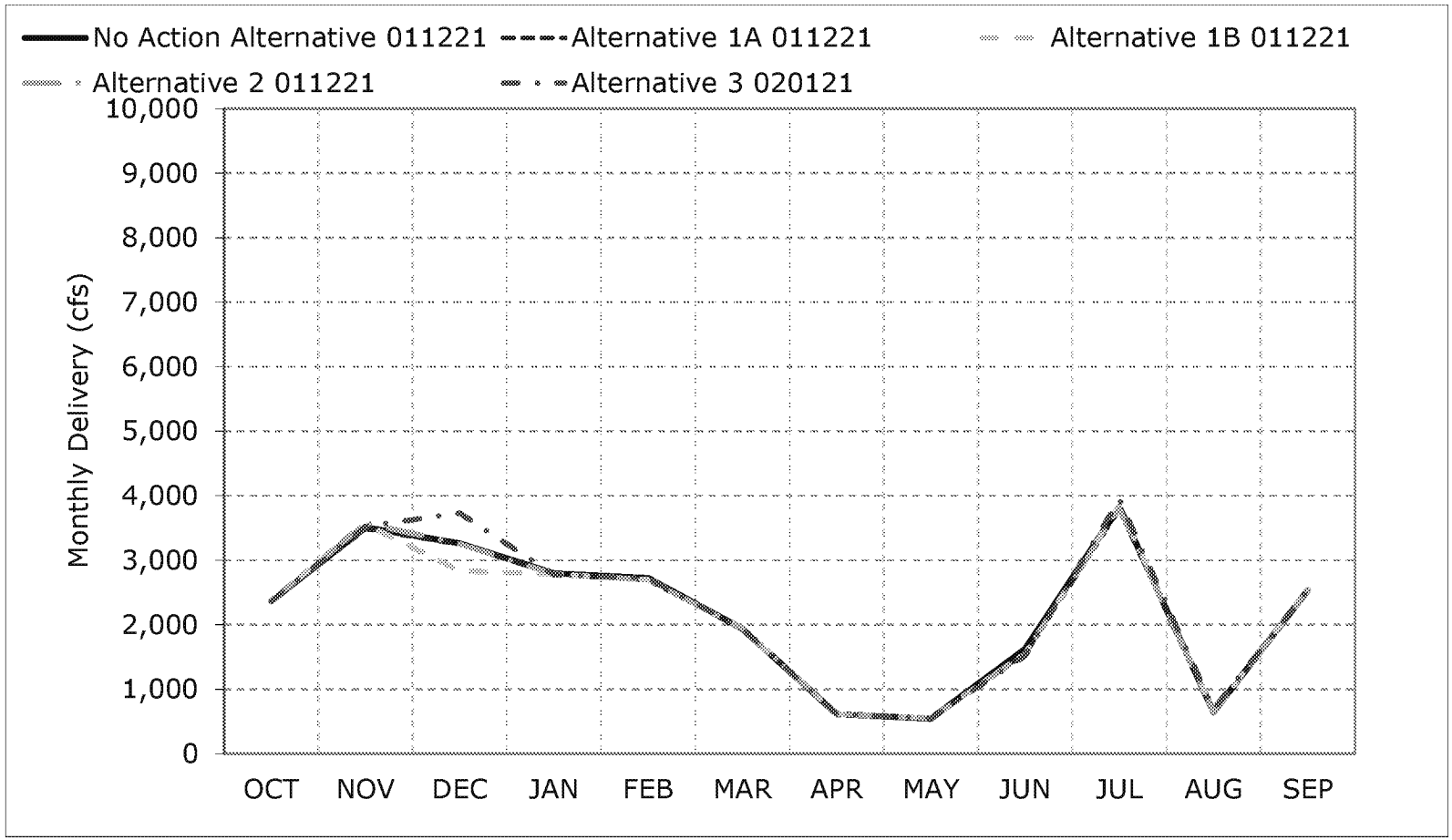
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-3-4. SWP Banks PP Exports, Below Normal Year Average Delivery



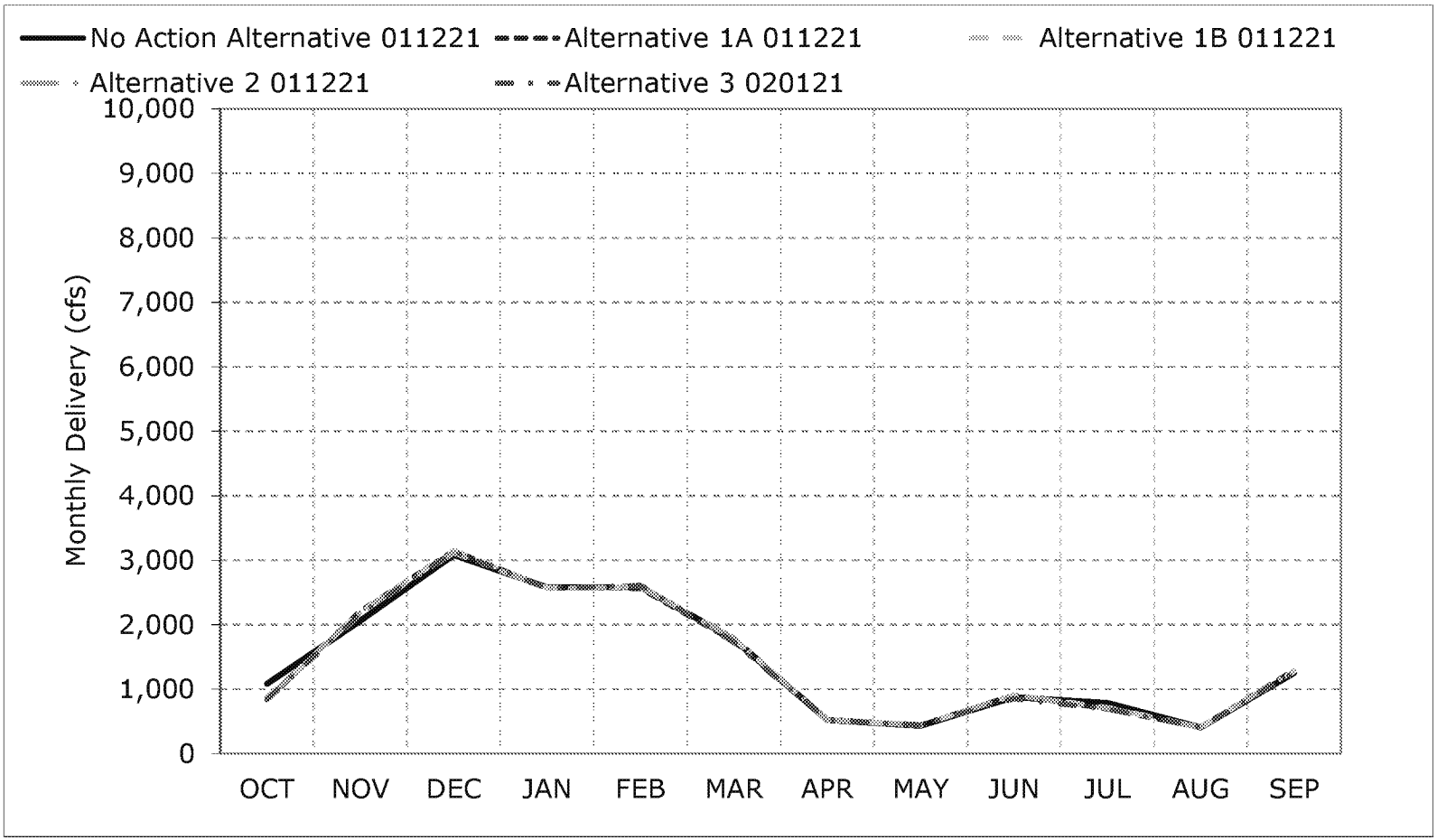
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-3-5. SWP Banks PP Exports, Dry Year Average Delivery



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-3-6. SWP Banks PP Exports, Critical Year Average Delivery



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-3-7. SWP Banks PP Exports, October

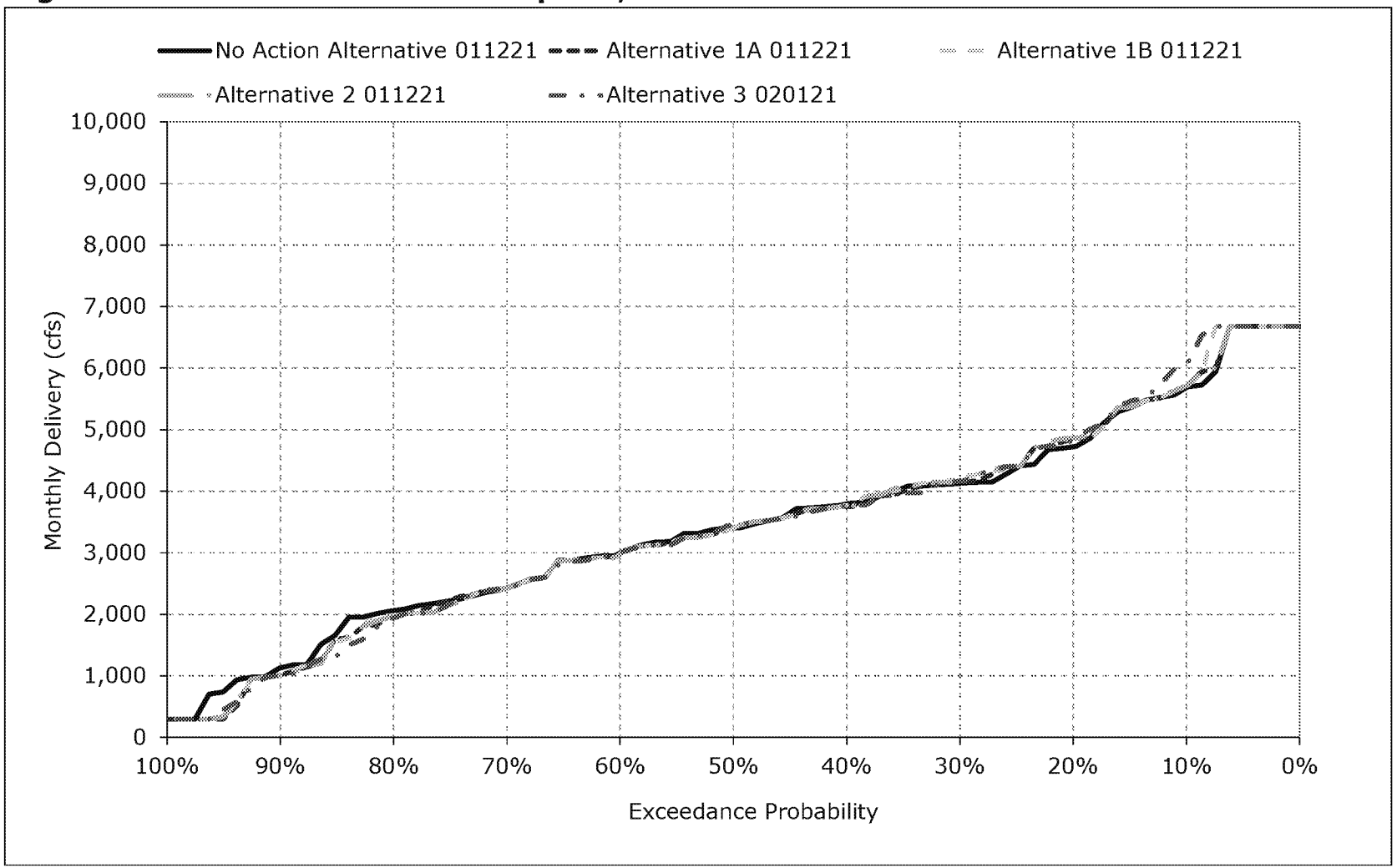


Figure 5B4-3-8. SWP Banks PP Exports, November

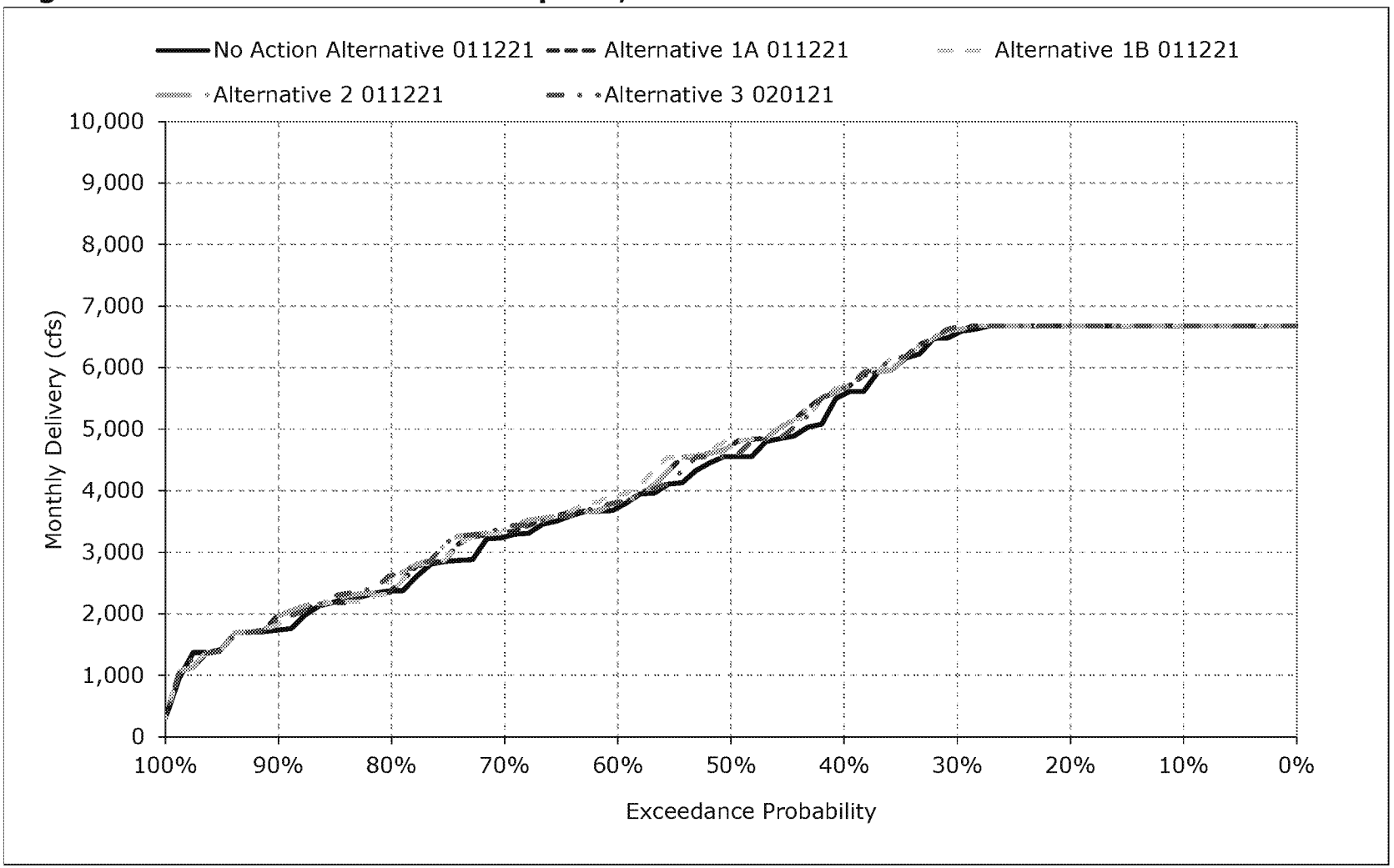


Figure 5B4-3-9. SWP Banks PP Exports, December

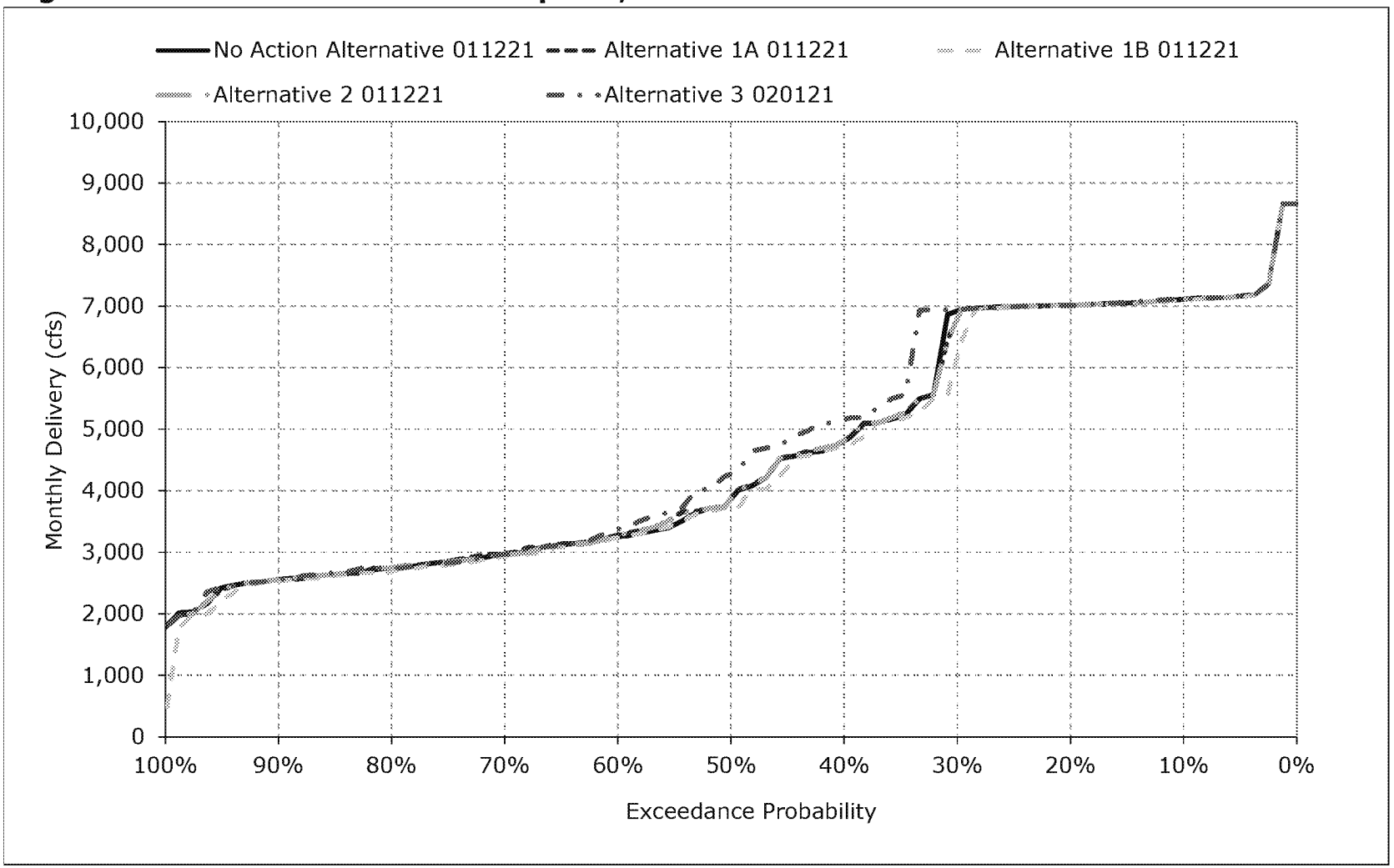


Figure 5B4-3-10. SWP Banks PP Exports, January

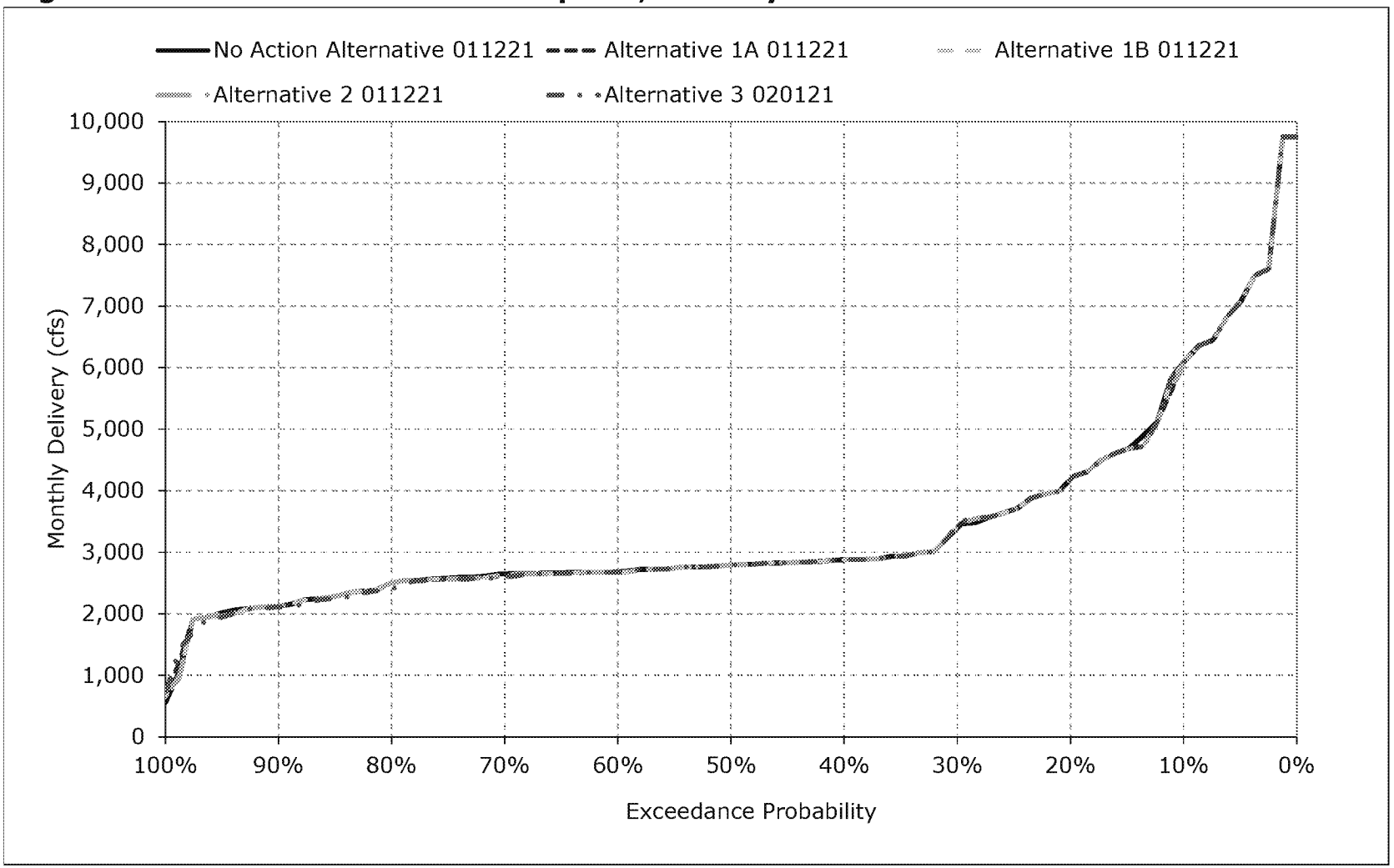


Figure 5B4-3-11. SWP Banks PP Exports, February

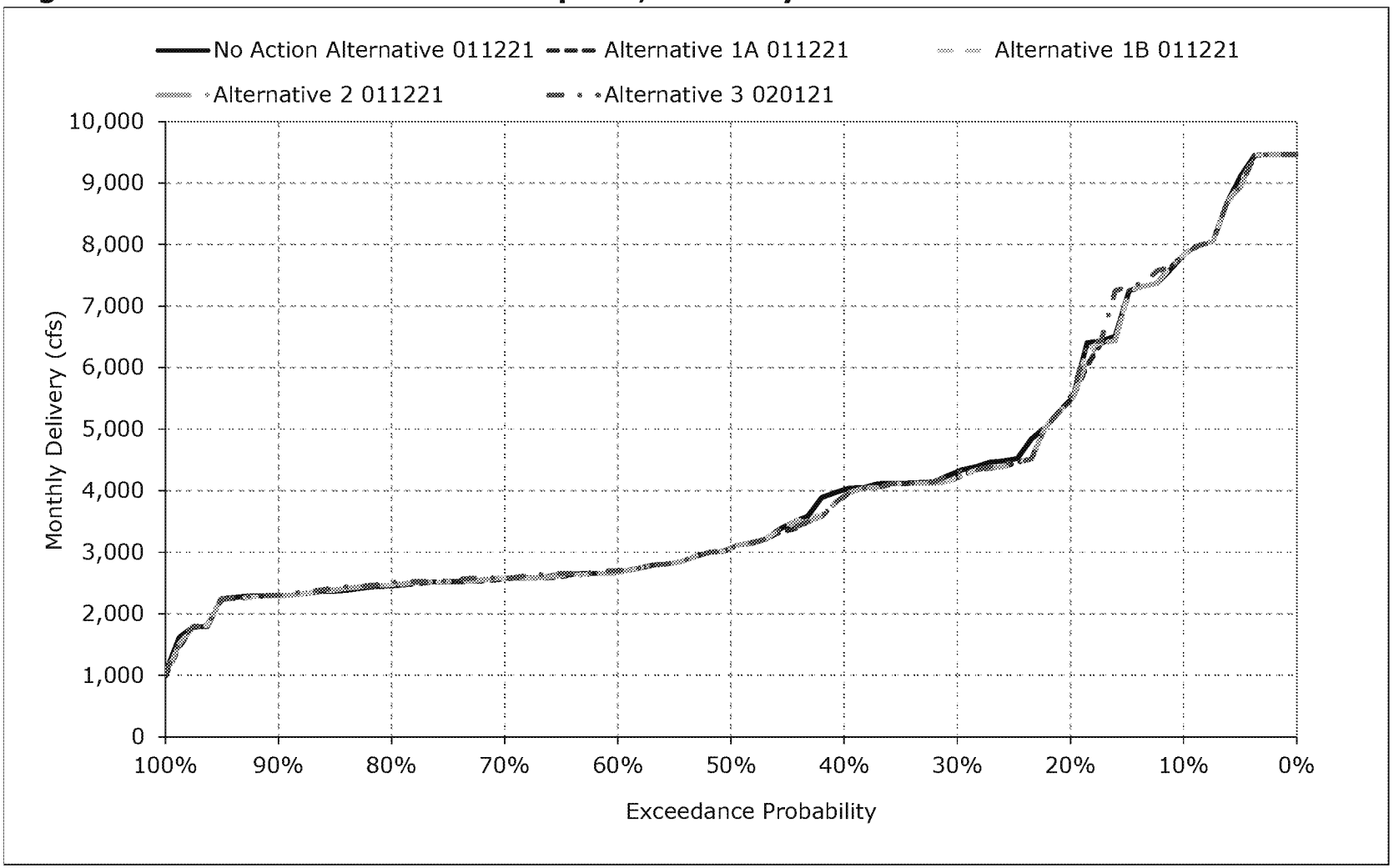


Figure 5B4-3-12. SWP Banks PP Exports, March

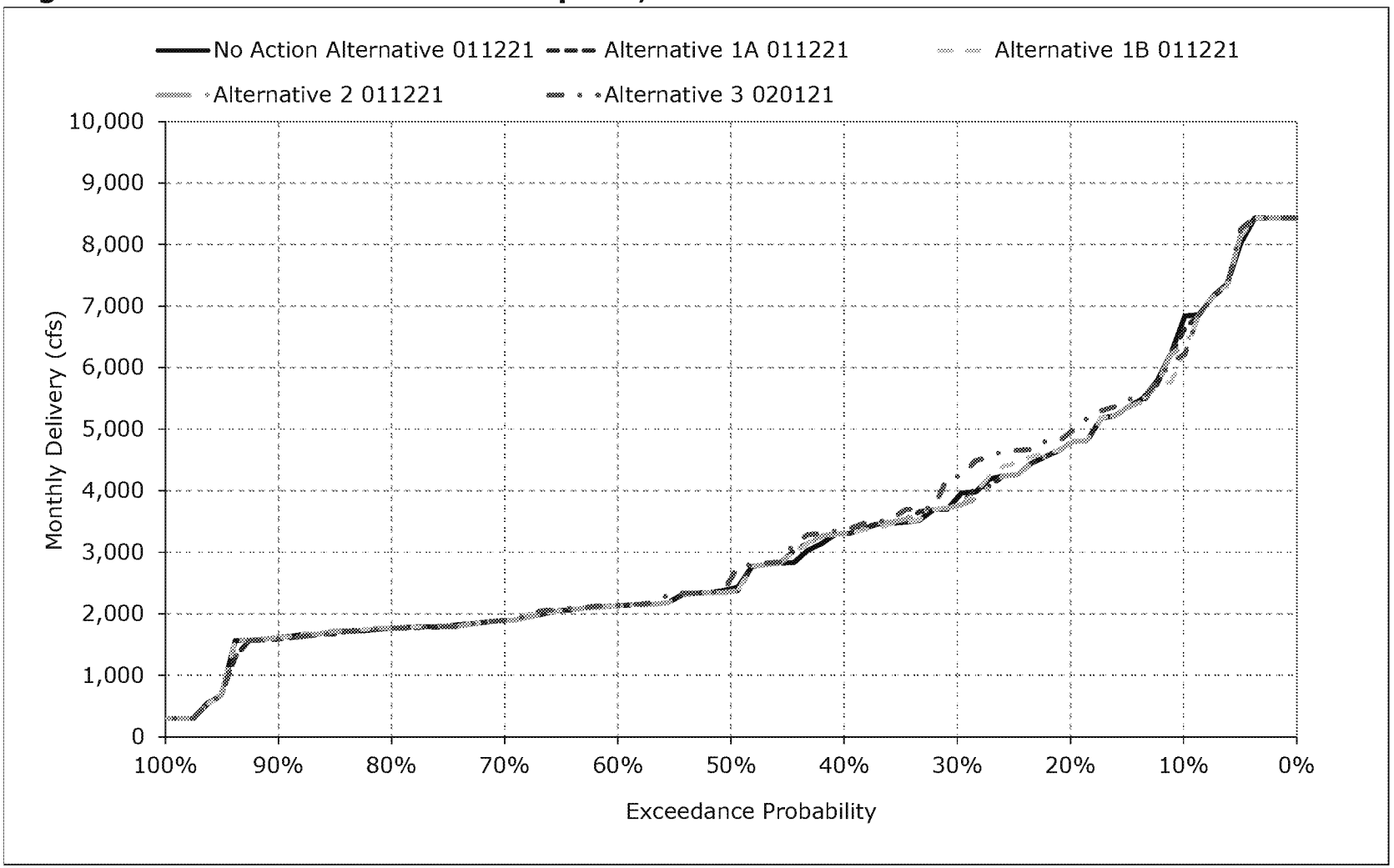


Figure 5B4-3-13. SWP Banks PP Exports, April

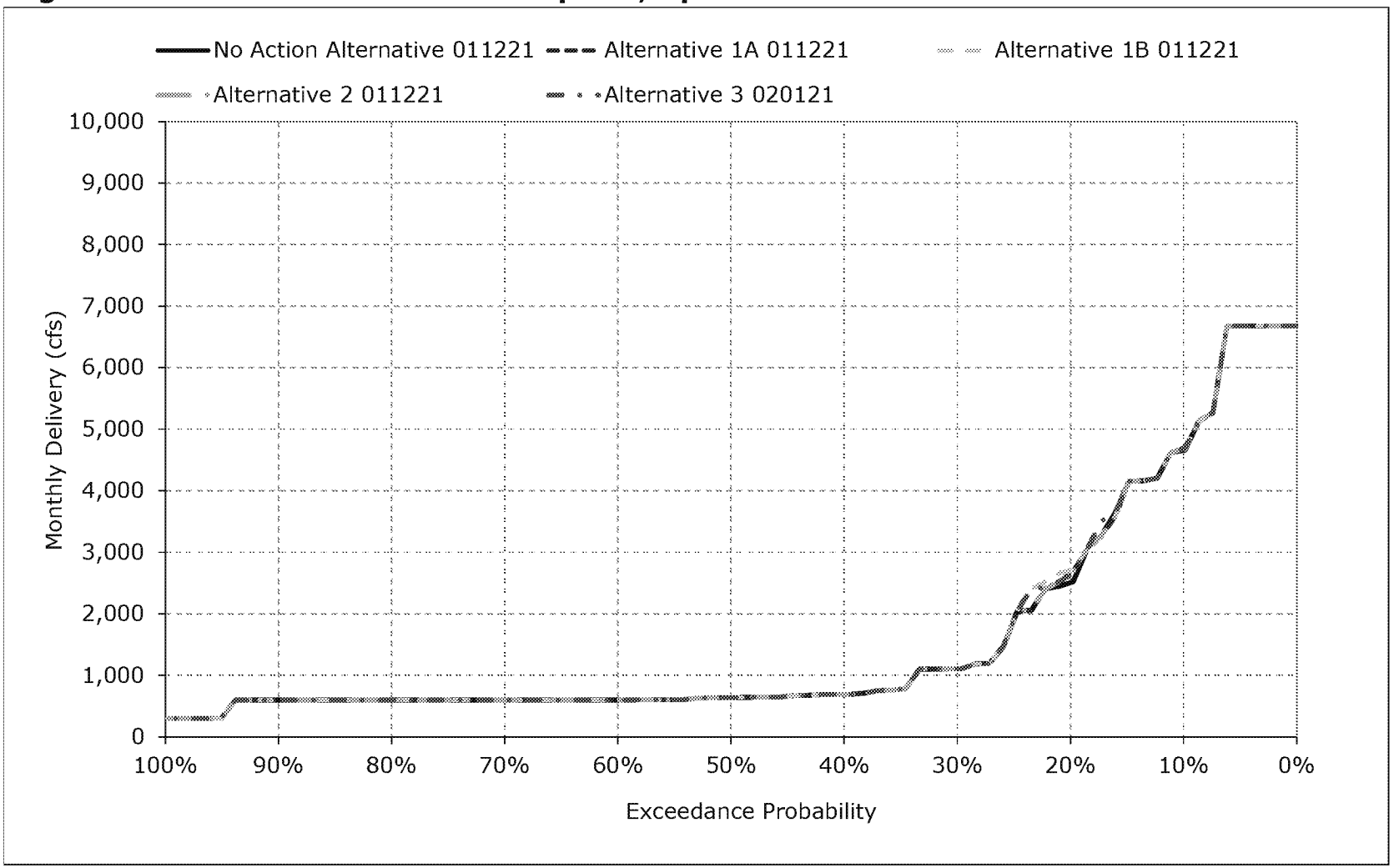


Figure 5B4-3-14. SWP Banks PP Exports, May

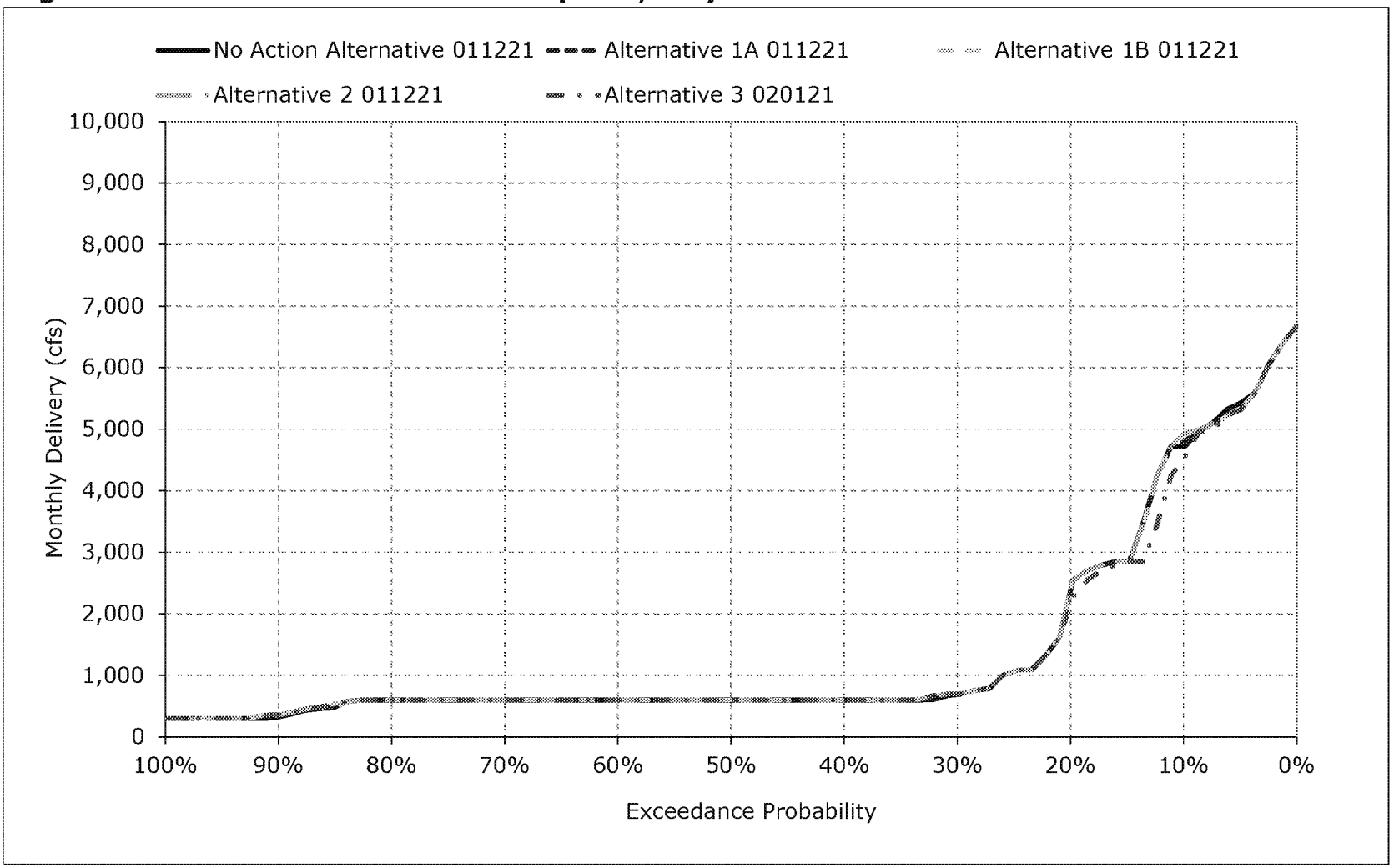


Figure 5B4-3-15. SWP Banks PP Exports, June

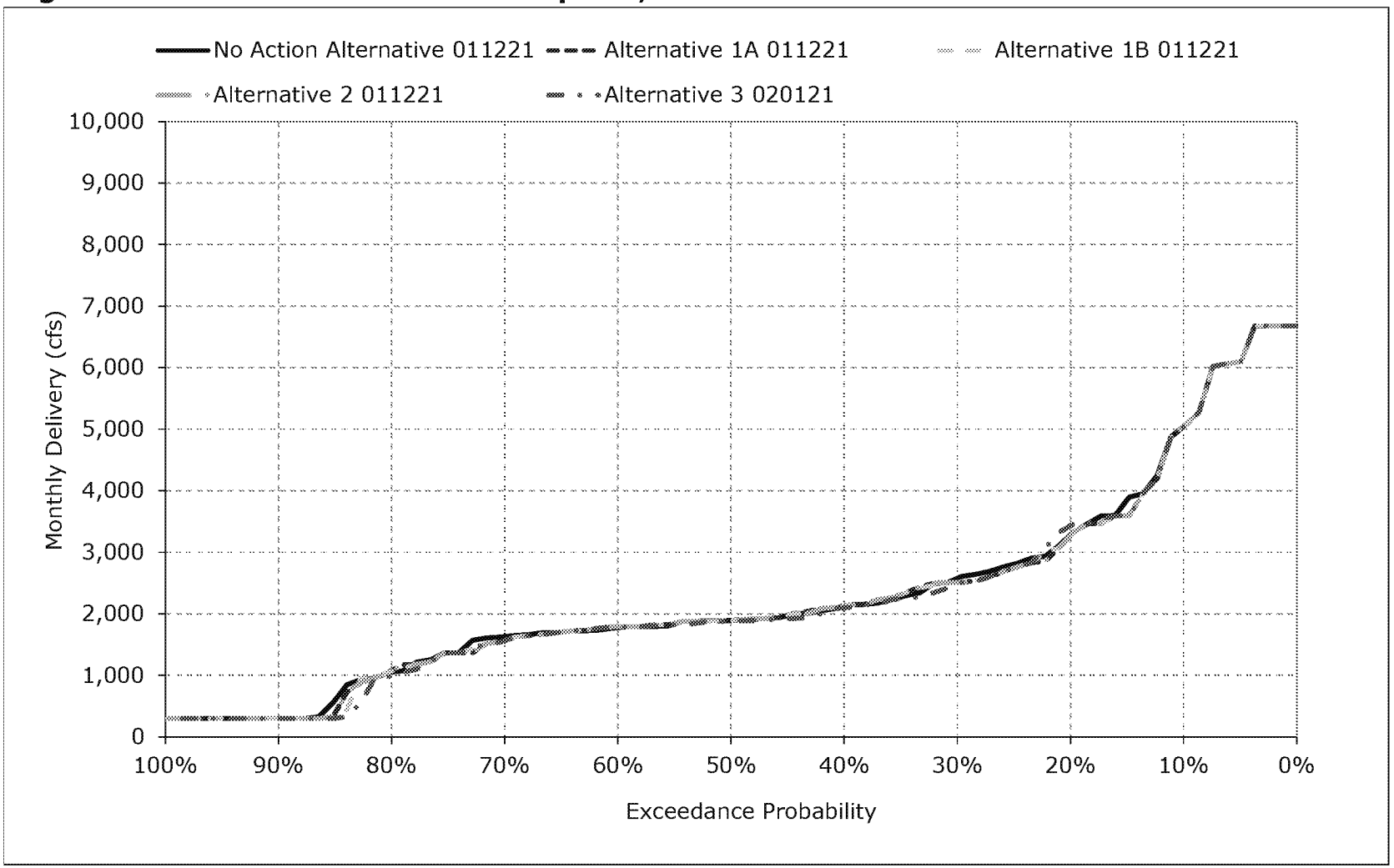


Figure 5B4-3-16. SWP Banks PP Exports, July

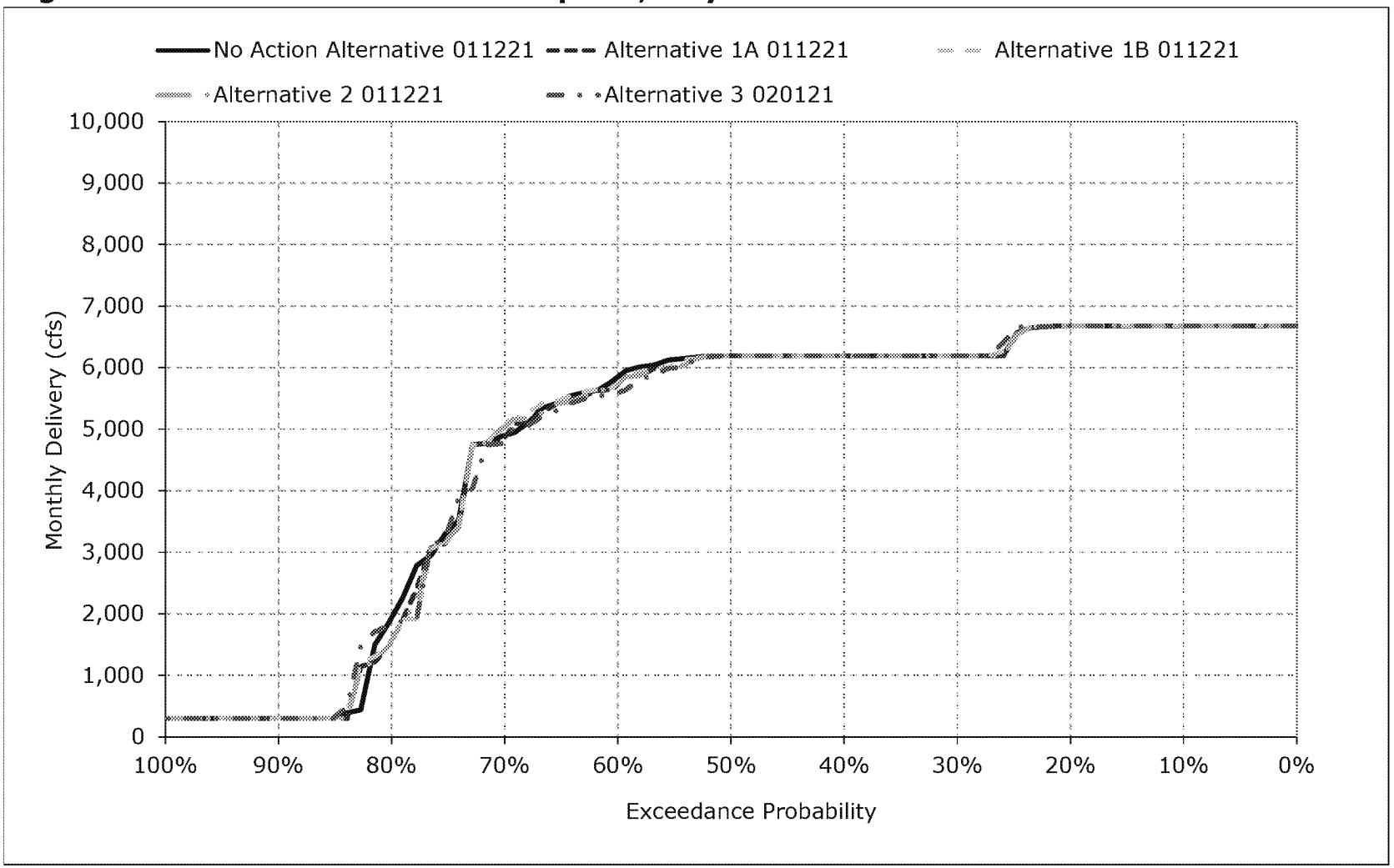


Figure 5B4-3-17. SWP Banks PP Exports, August

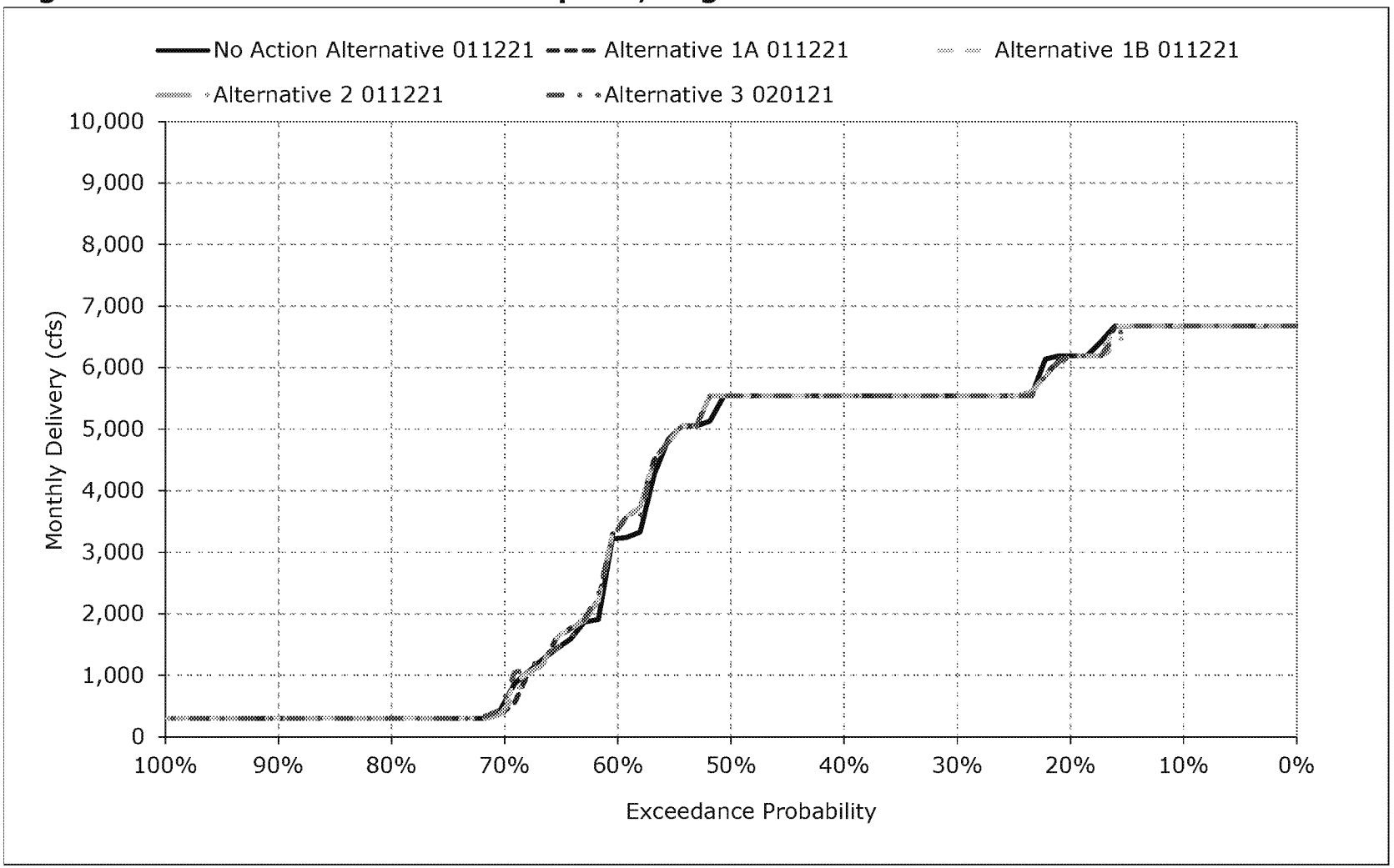


Figure 5B4-3-18. SWP Banks PP Exports, September

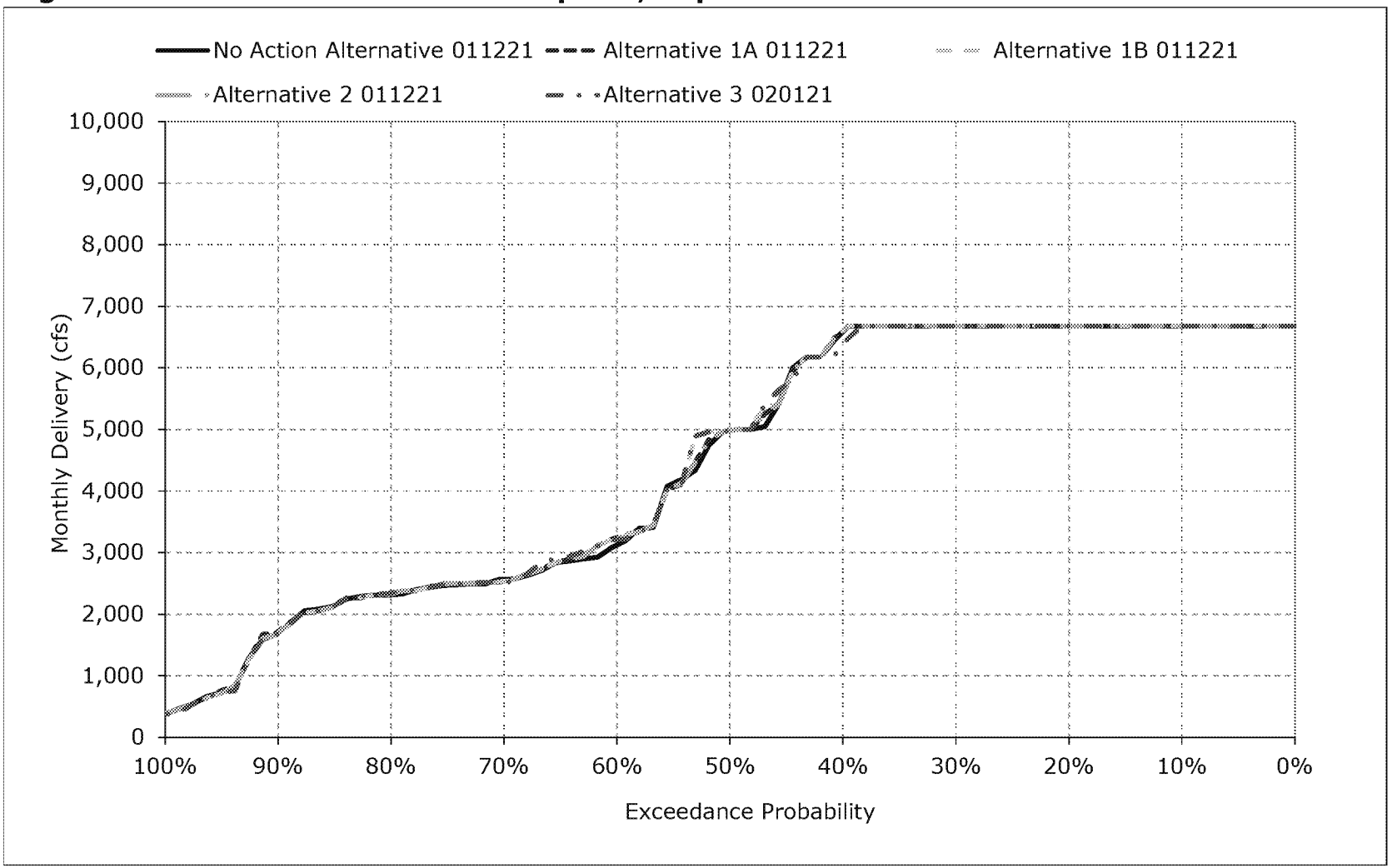


Table 5B4-4-1a. CVP Banks PP Exports, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	253	1,676	34	0	0	0	0	0	0	487	728	1,128
20%	0	608	0	0	0	0	0	0	0	0	0	0
30%	0	157	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	107	354	95	0	36	0	0	0	0	112	134	180
Water Year Types[b,c]												
Wet (32%)	0	639	242	0	54	0	0	0	0	50	0	0
Above Normal (15%)	148	866	27	0	0	0	0	0	0	0	0	0
Below Normal (17%)	323	49	39	0	112	0	0	0	0	115	11	985
Dry (22%)	0	0	35	0	0	0	0	0	0	267	557	52
Critical (15%)	205	110	0	0	0	0	0	0	0	125	69	0

Table 5B4-4-1b. CVP Banks PP Exports, Alternative 1A 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	406	1,683	21	0	0	0	0	0	0	477	699	1,137
20%	0	662	0	0	0	0	0	0	0	0	0	0
30%	0	59	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	113	344	92	0	28	3	0	0	0	115	128	184
Water Year Types[b,c]												
Wet (32%)	0	645	232	0	49	1	0	0	0	50	0	0
Above Normal (15%)	148	871	25	0	0	0	0	0	0	0	0	0
Below Normal (17%)	310	26	40	0	72	0	0	0	0	115	23	1,011
Dry (22%)	0	0	35	0	0	0	0	0	0	272	523	52
Critical (15%)	262	52	0	0	0	18	0	0	0	130	60	0

Table 5B4-4-1c. CVP Banks PP Exports, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	153	7	-13	0	0	0	0	0	0	-10	-30	9
20%	0	54	0	0	0	0	0	0	0	0	0	0
30%	0	-98	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	6	-9	-3	0	-9	3	0	0	0	2	-7	4
Water Year Types[b,c]												
Wet (32%)	0	7	-10	0	-5	1	0	0	0	0	0	0
Above Normal (15%)	0	5	-2	0	0	0	0	0	0	0	0	0
Below Normal (17%)	-13	-22	2	0	-41	0	0	0	0	0	12	26
Dry (22%)	0	0	0	0	0	0	0	0	0	5	-33	0
Critical (15%)	56	-58	0	0	0	18	0	0	0	6	-9	0

a Based on the 82-year simulation period.
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
c These results are displayed with calendar year - year type sorting.

Table 5B4-4-2a. CVP Banks PP Exports, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	253	1,676	34	0	0	0	0	0	0	487	728	1,128
20%	0	608	0	0	0	0	0	0	0	0	0	0
30%	0	157	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	107	354	95	0	36	0	0	0	0	112	134	180
Water Year Types[b,c]												
Wet (32%)	0	639	242	0	54	0	0	0	0	50	0	0
Above Normal (15%)	148	866	27	0	0	0	0	0	0	0	0	0
Below Normal (17%)	323	49	39	0	112	0	0	0	0	115	11	985
Dry (22%)	0	0	35	0	0	0	0	0	0	267	557	52
Critical (15%)	205	110	0	0	0	0	0	0	0	125	69	0

Table 5B4-4-2b. CVP Banks PP Exports, Alternative 1B 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	197	1,683	71	0	0	0	0	0	0	482	766	1,142
20%	0	512	0	0	0	0	0	0	0	0	0	0
30%	0	82	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	108	347	113	0	29	2	0	0	0	116	142	182
Water Year Types[b,c]												
Wet (32%)	0	632	292	0	52	6	0	0	0	50	0	0
Above Normal (15%)	148	866	33	0	0	0	0	0	0	0	0	0
Below Normal (17%)	316	27	48	0	72	0	0	0	0	110	27	1,000
Dry (22%)	0	0	35	0	0	0	0	0	0	289	576	52
Critical (15%)	221	104	0	0	0	0	0	0	0	122	73	0

Table 5B4-4-2c. CVP Banks PP Exports, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-55	7	38	0	0	0	0	0	0	-5	37	14
20%	0	-95	0	0	0	0	0	0	0	0	0	0
30%	0	-75	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	1	-7	18	0	-8	2	0	0	0	3	7	3
Water Year Types[b,c]												
Wet (32%)	0	-6	50	0	-2	6	0	0	0	0	0	0
Above Normal (15%)	0	0	6	0	0	0	0	0	0	0	0	0
Below Normal (17%)	-7	-22	10	0	-40	0	0	0	0	-6	16	15
Dry (22%)	0	0	0	0	0	0	0	0	0	22	19	1
Critical (15%)	15	-6	0	0	0	0	0	0	0	-3	3	0

a Based on the 82-year simulation period.
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
c These results are displayed with calendar year - year type sorting.

Table 5B4-4-3a. CVP Banks PP Exports, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	253	1,676	34	0	0	0	0	0	0	487	728	1,128
20%	0	608	0	0	0	0	0	0	0	0	0	0
30%	0	157	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	107	354	95	0	36	0	0	0	0	112	134	180
Water Year Types[b,c]												
Wet (32%)	0	639	242	0	54	0	0	0	0	50	0	0
Above Normal (15%)	148	866	27	0	0	0	0	0	0	0	0	0
Below Normal (17%)	323	49	39	0	112	0	0	0	0	115	11	985
Dry (22%)	0	0	35	0	0	0	0	0	0	267	557	52
Critical (15%)	205	110	0	0	0	0	0	0	0	125	69	0

Table 5B4-4-3b. CVP Banks PP Exports, Alternative 2 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	303	1,683	21	0	0	0	0	0	0	478	717	928
20%	0	663	0	0	0	0	0	0	0	0	0	0
30%	0	59	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	110	347	92	0	28	3	0	0	0	113	134	178
Water Year Types[b,c]												
Wet (32%)	0	645	233	0	49	1	0	0	0	50	0	0
Above Normal (15%)	148	871	25	0	0	0	0	0	0	0	0	0
Below Normal (17%)	310	26	40	0	72	0	0	0	0	115	54	976
Dry (22%)	0	0	35	0	0	0	0	0	0	272	523	52
Critical (15%)	241	74	0	0	0	18	0	0	0	122	68	0

Table 5B4-4-3c. CVP Banks PP Exports, Alternative 2 011221 minus No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	50	7	-12	0	0	0	0	0	0	-9	-12	-201
20%	0	56	0	0	0	0	0	0	0	0	0	0
30%	0	-99	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	3	-6	-3	0	-9	3	0	0	0	1	0	-2
Water Year Types[b,c]												
Wet (32%)	0	6	-9	0	-5	1	0	0	0	0	0	0
Above Normal (15%)	0	5	-2	0	0	0	0	0	0	0	0	0
Below Normal (17%)	-13	-22	1	0	-41	0	0	0	0	0	43	-9
Dry (22%)	0	0	0	0	0	0	0	0	0	5	-33	0
Critical (15%)	35	-36	0	0	0	18	0	0	0	-2	-1	0

a Based on the 82-year simulation period.
b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
c These results are displayed with calendar year - year type sorting.

Table 5B4-4-4a. CVP Banks PP Exports, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	253	1,676	34	0	0	0	0	0	0	487	728	1,128
20%	0	608	0	0	0	0	0	0	0	0	0	0
30%	0	157	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	107	354	95	0	36	0	0	0	0	112	134	180
Water Year Types[b,c]												
Wet (32%)	0	639	242	0	54	0	0	0	0	50	0	0
Above Normal (15%)	148	866	27	0	0	0	0	0	0	0	0	0
Below Normal (17%)	323	49	39	0	112	0	0	0	0	115	11	985
Dry (22%)	0	0	35	0	0	0	0	0	0	267	557	52
Critical (15%)	205	110	0	0	0	0	0	0	0	125	69	0

Table 5B4-4-4b. CVP Banks PP Exports, Alternative 3 020121, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	406	1,683	28	0	0	0	0	0	0	496	756	1,031
20%	0	521	0	0	0	0	0	0	0	0	0	0
30%	0	29	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	117	343	103	0	31	2	0	0	0	123	144	178
Water Year Types[b,c]												
Wet (32%)	0	632	297	0	51	5	0	0	0	50	0	0
Above Normal (15%)	148	835	3	0	0	0	0	0	0	0	0	0
Below Normal (17%)	345	21	48	0	87	0	0	0	0	115	38	974
Dry (22%)	35	0	0	0	0	0	0	0	0	295	586	53
Critical (15%)	197	111	0	0	0	0	0	0	0	156	60	0

Table 5B4-4-4c. CVP Banks PP Exports, Alternative 3 020121 minus No Action Alternative 011221, Monthly Delivery (cfs)

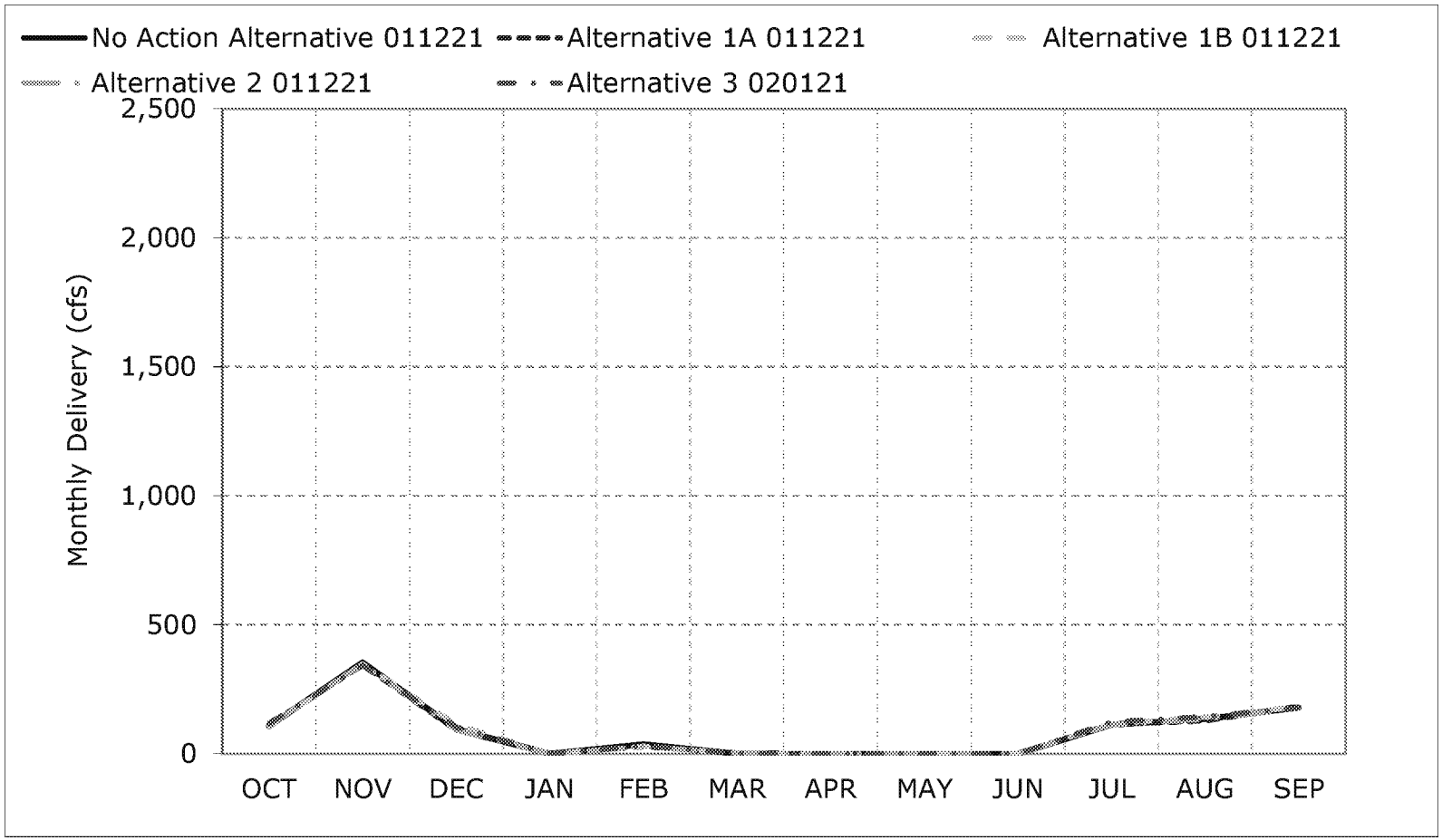
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	153	7	-5	0	0	0	0	0	0	9	27	-97
20%	0	-87	0	0	0	0	0	0	0	0	0	0
30%	0	-128	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[a]	10	-11	8	0	-5	2	0	0	0	11	10	-2
Water Year Types[b,c]												
Wet (32%)	0	-6	54	0	-2	5	0	0	0	0	0	0
Above Normal (15%)	0	-30	-24	0	0	0	0	0	0	0	0	0
Below Normal (17%)	22	-28	9	0	-26	0	0	0	0	0	27	-11
Dry (22%)	35	0	-35	0	0	0	0	0	0	29	29	1
Critical (15%)	-9	1	0	0	0	0	0	0	0	31	-9	0

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

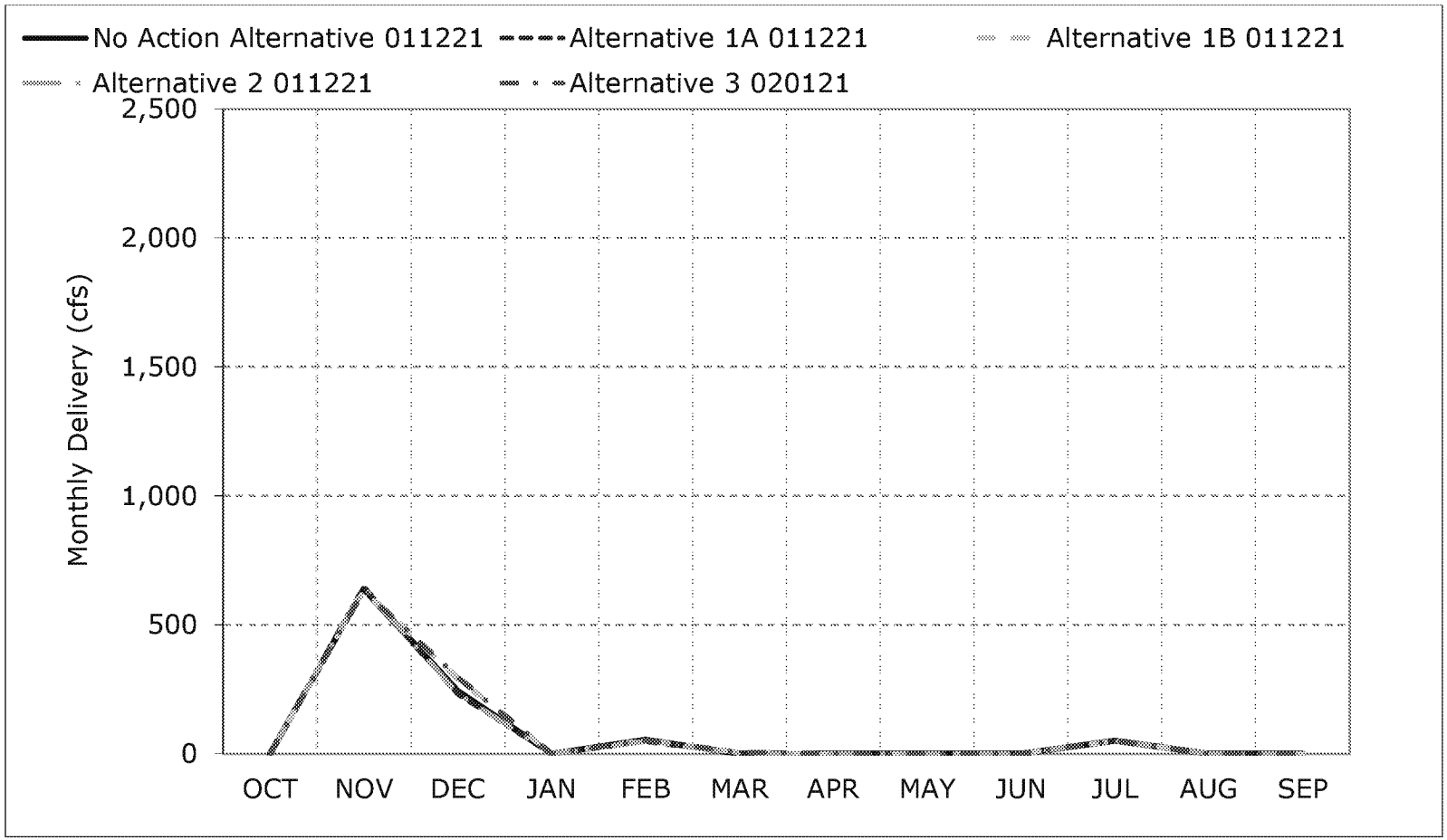
c These results are displayed with calendar year - year type sorting.

Figure 5B4-4-1. CVP Banks PP Exports, Long-Term Average Delivery



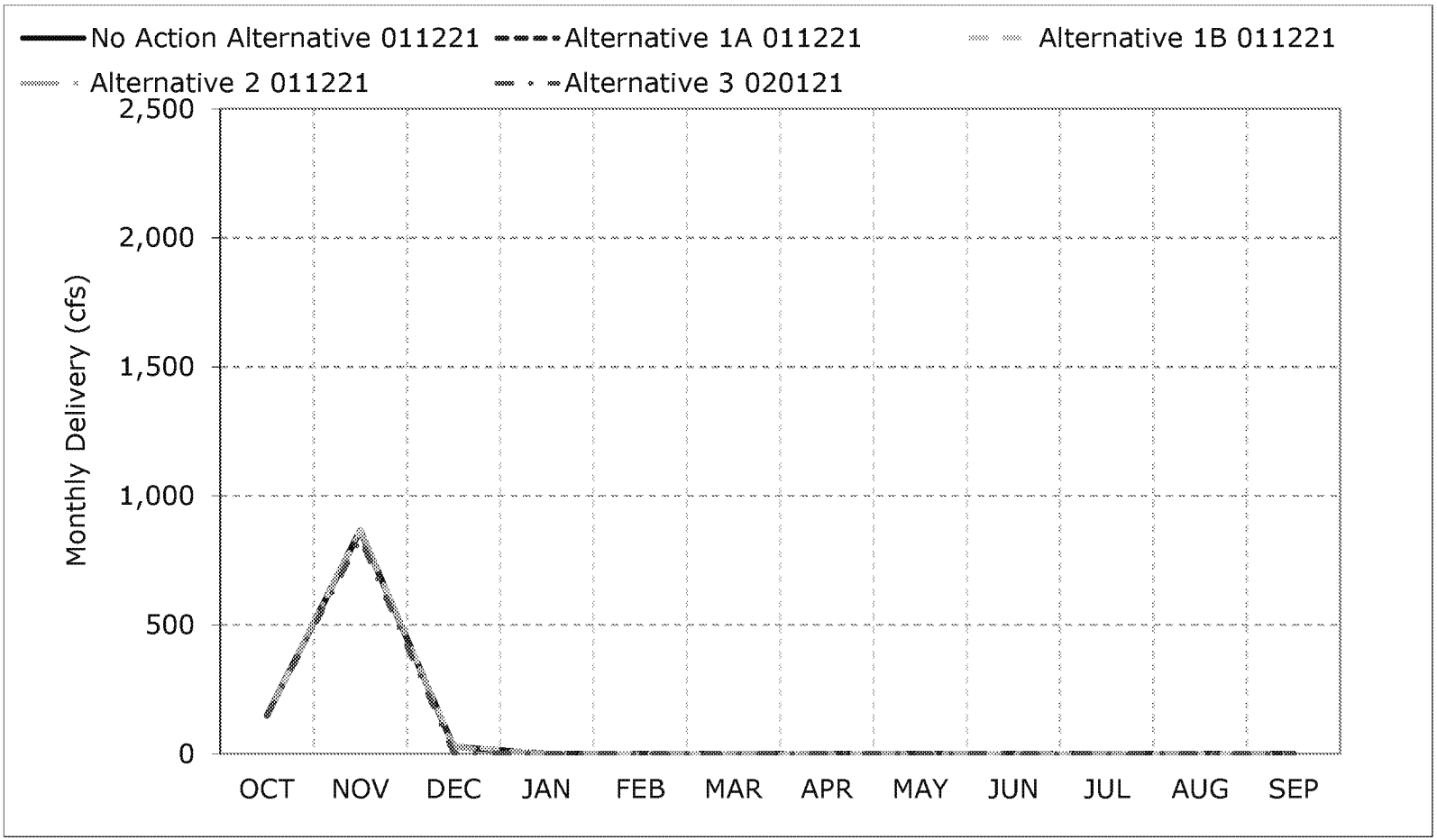
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-4-2. CVP Banks PP Exports, Wet Year Average Delivery



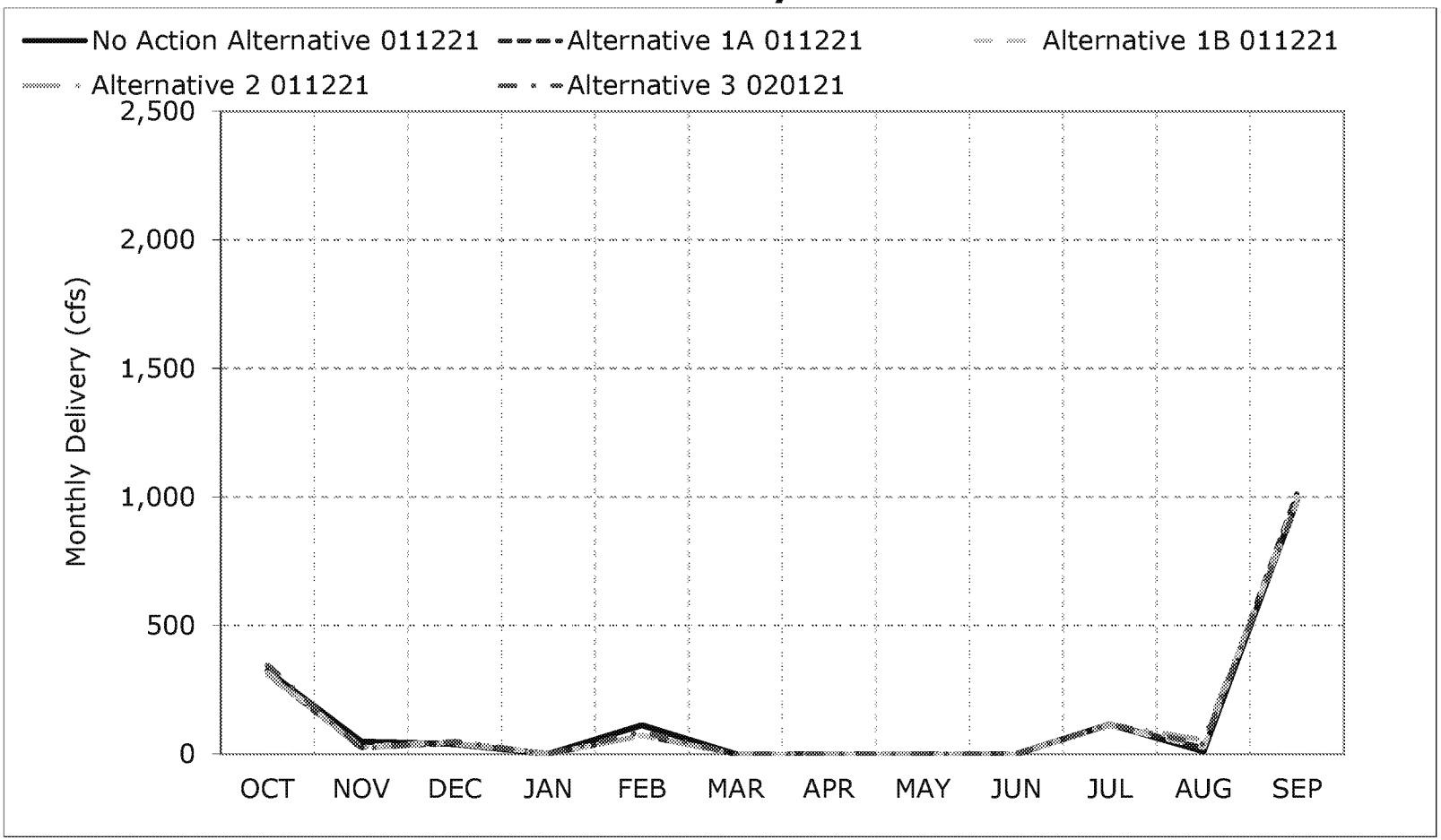
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-4-3. CVP Banks PP Exports, Above Normal Year Average Delivery



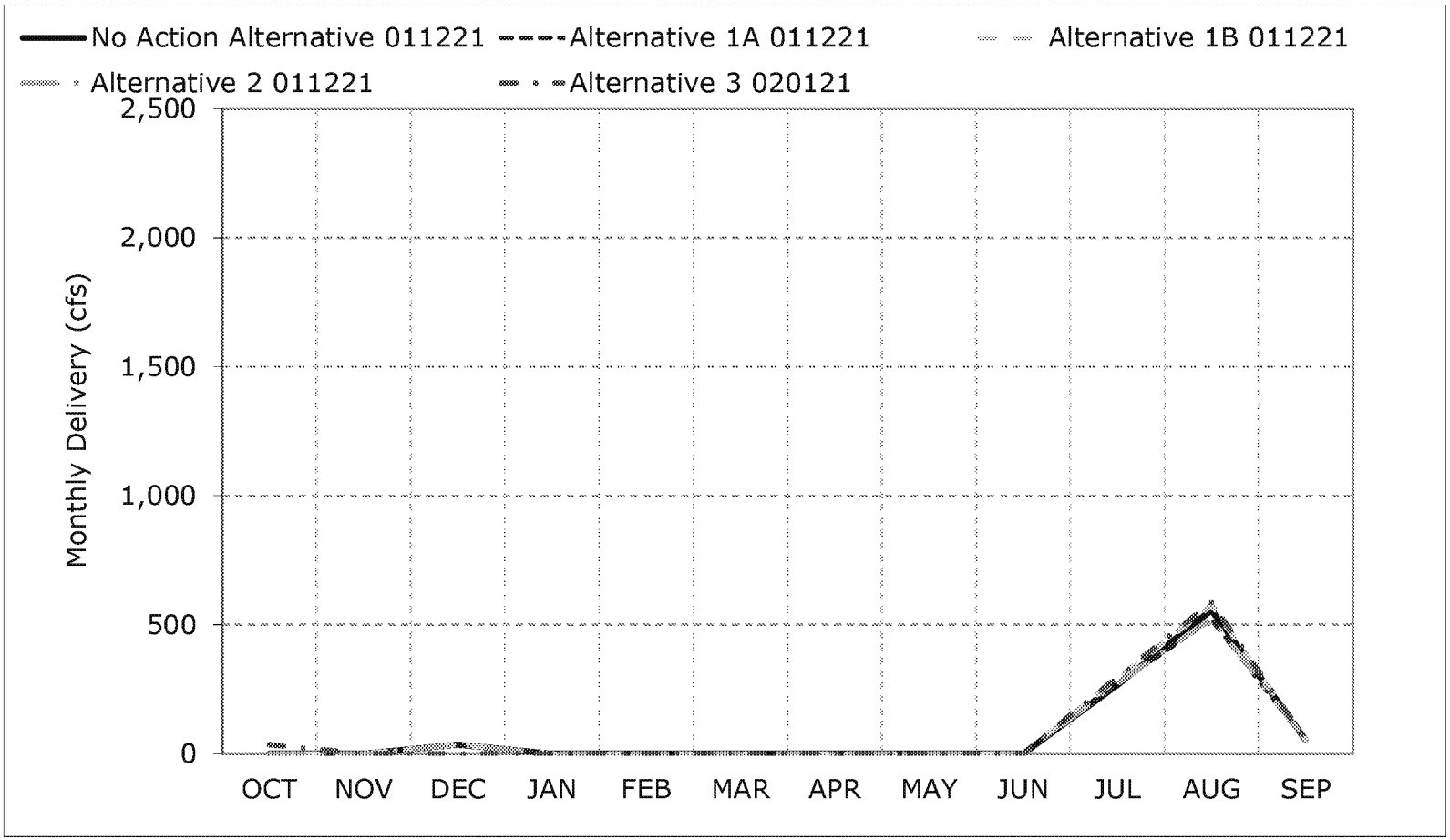
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-4-4. CVP Banks PP Exports, Below Normal Year Average Delivery



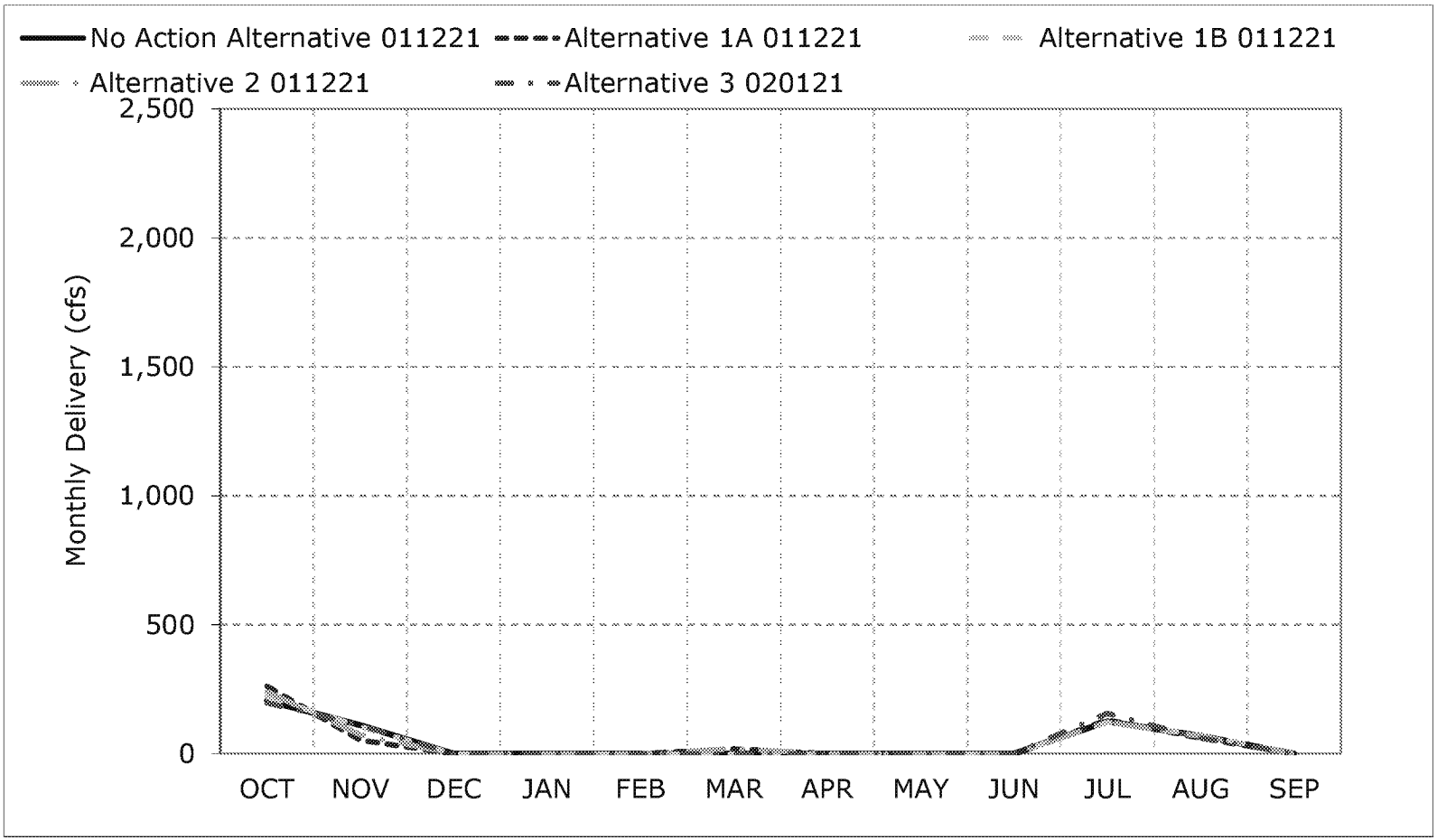
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-4-5. CVP Banks PP Exports, Dry Year Average Delivery



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-4-6. CVP Banks PP Exports, Critical Year Average Delivery



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-4-7. CVP Banks PP Exports, October

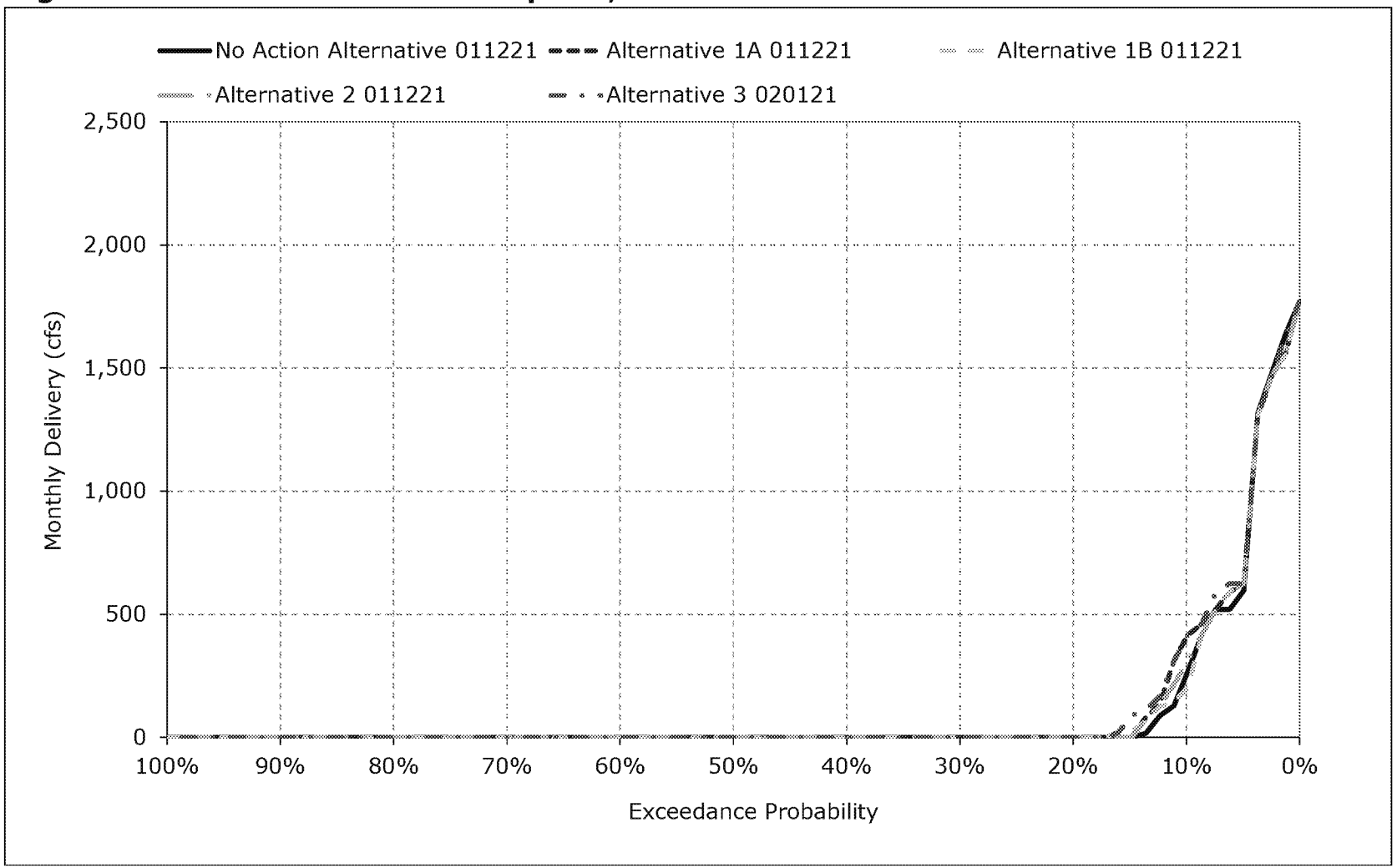


Figure 5B4-4-8. CVP Banks PP Exports, November

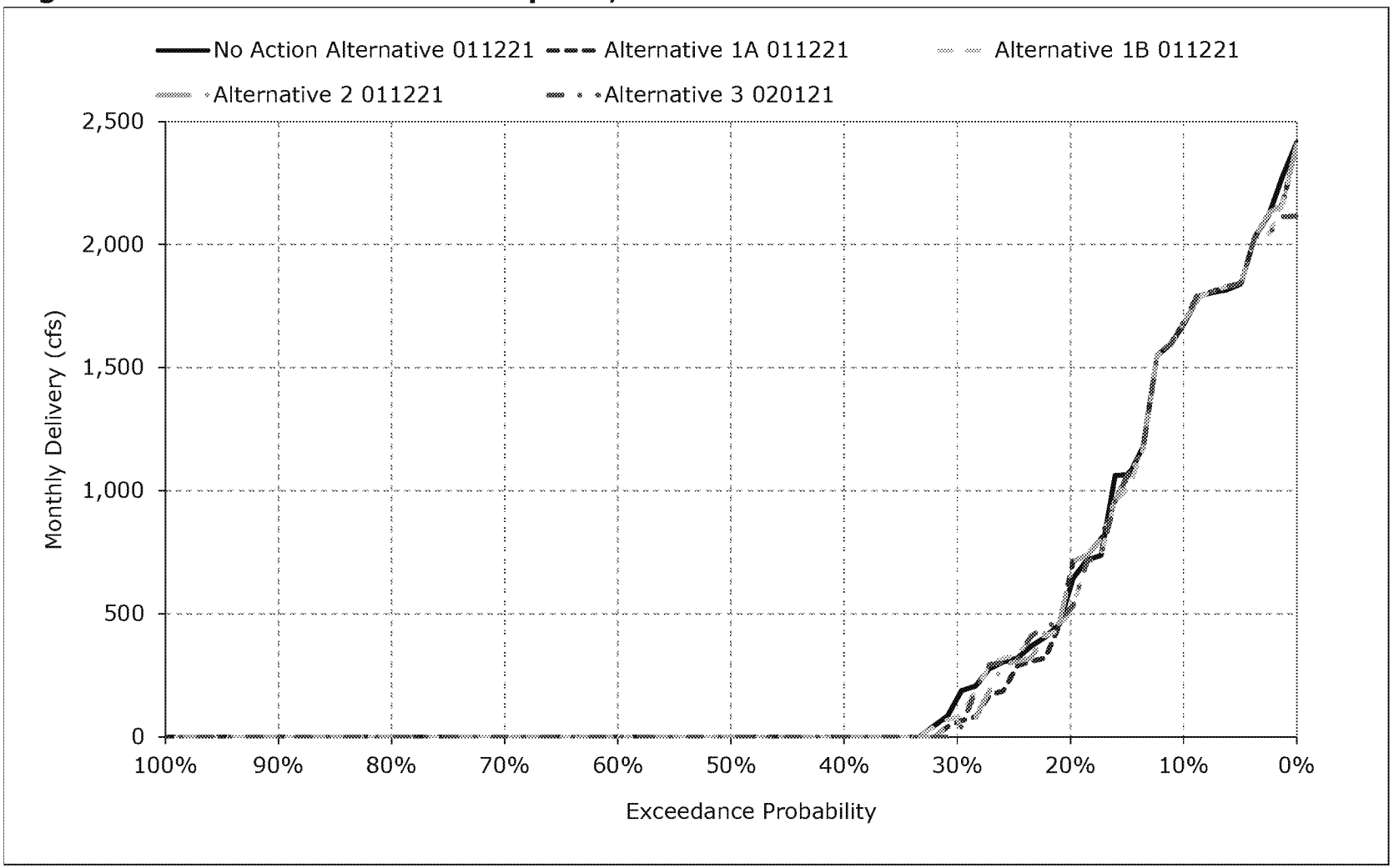


Figure 5B4-4-9. CVP Banks PP Exports, December

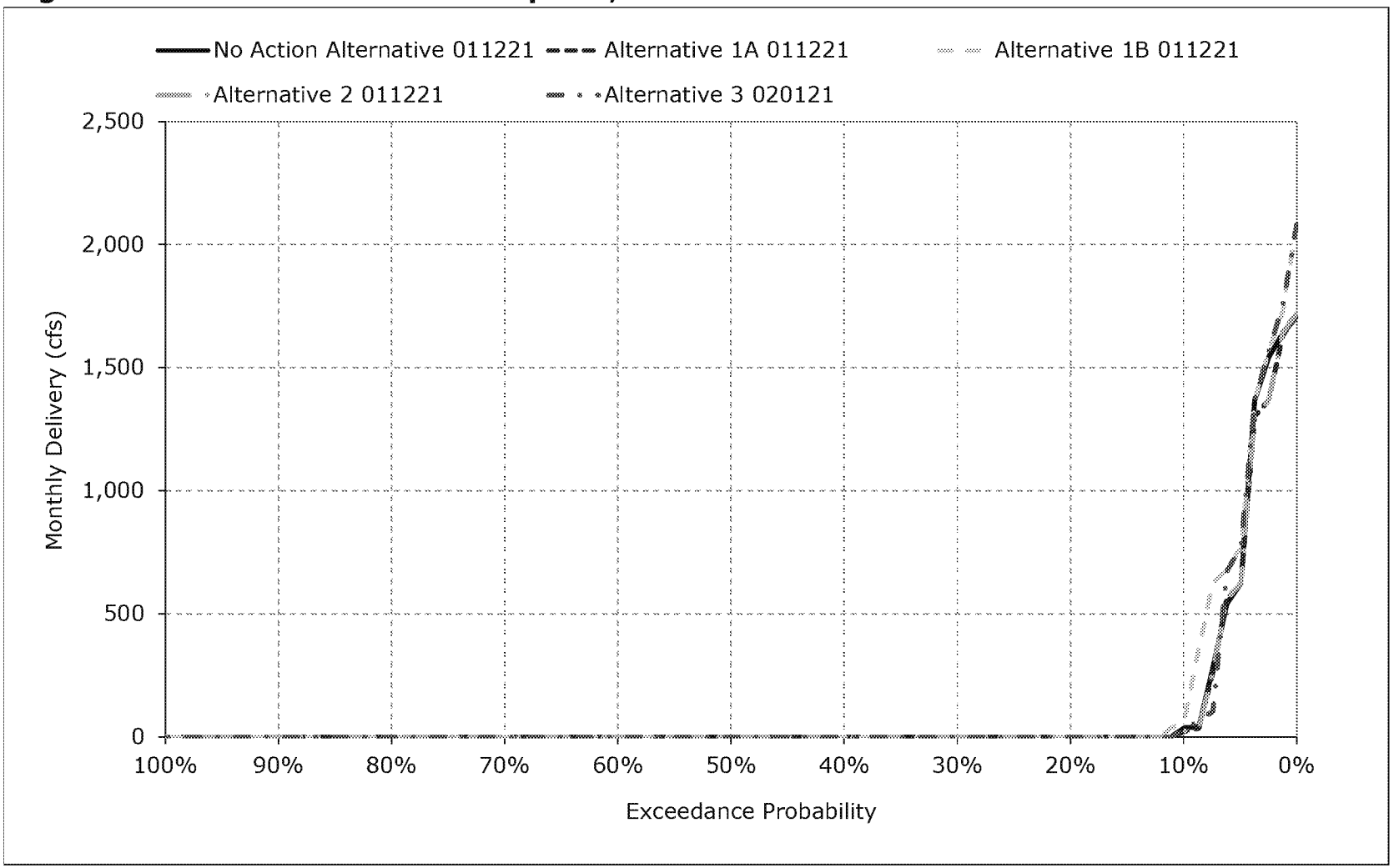


Figure 5B4-4-10. CVP Banks PP Exports, January

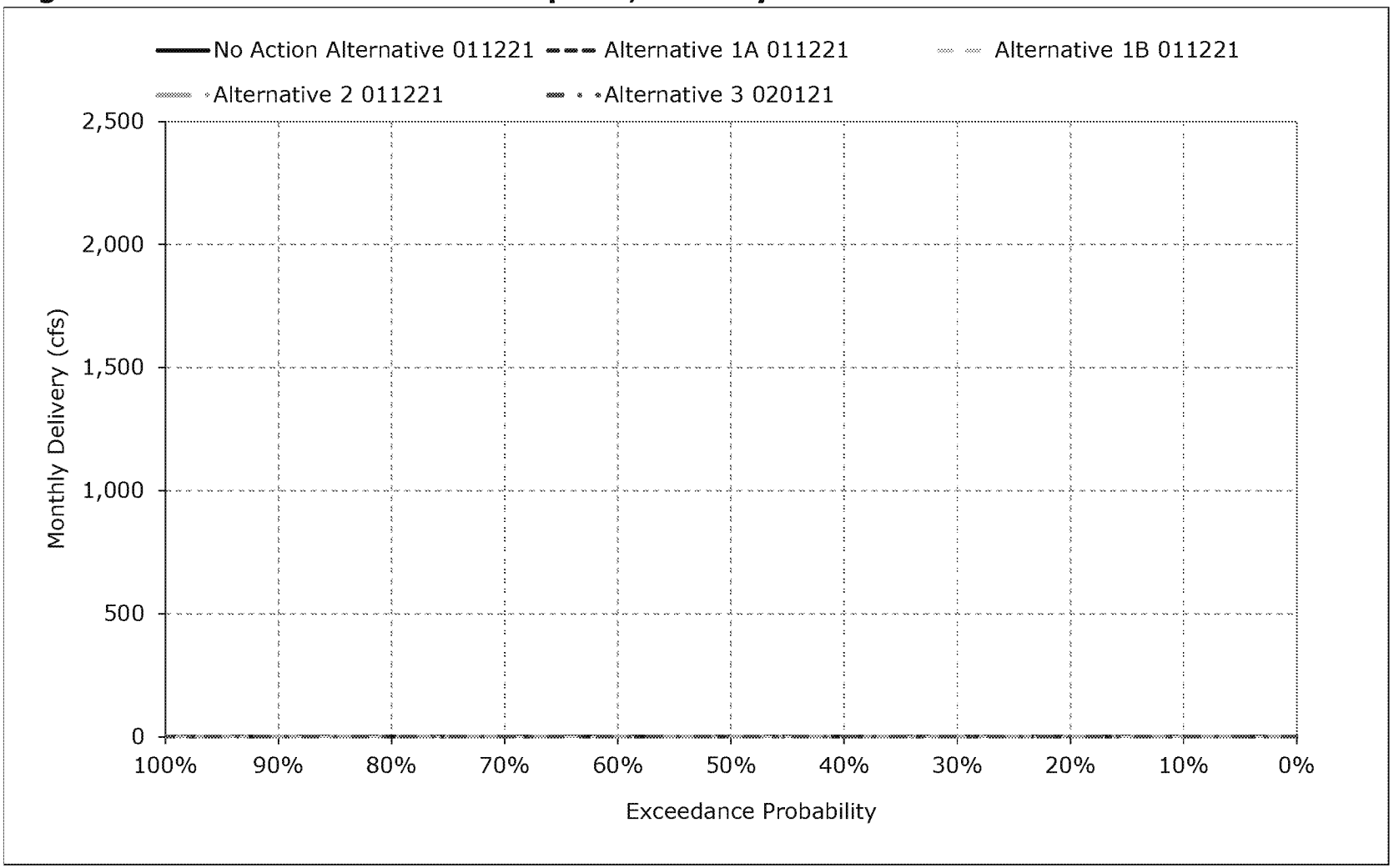


Figure 5B4-4-11. CVP Banks PP Exports, February

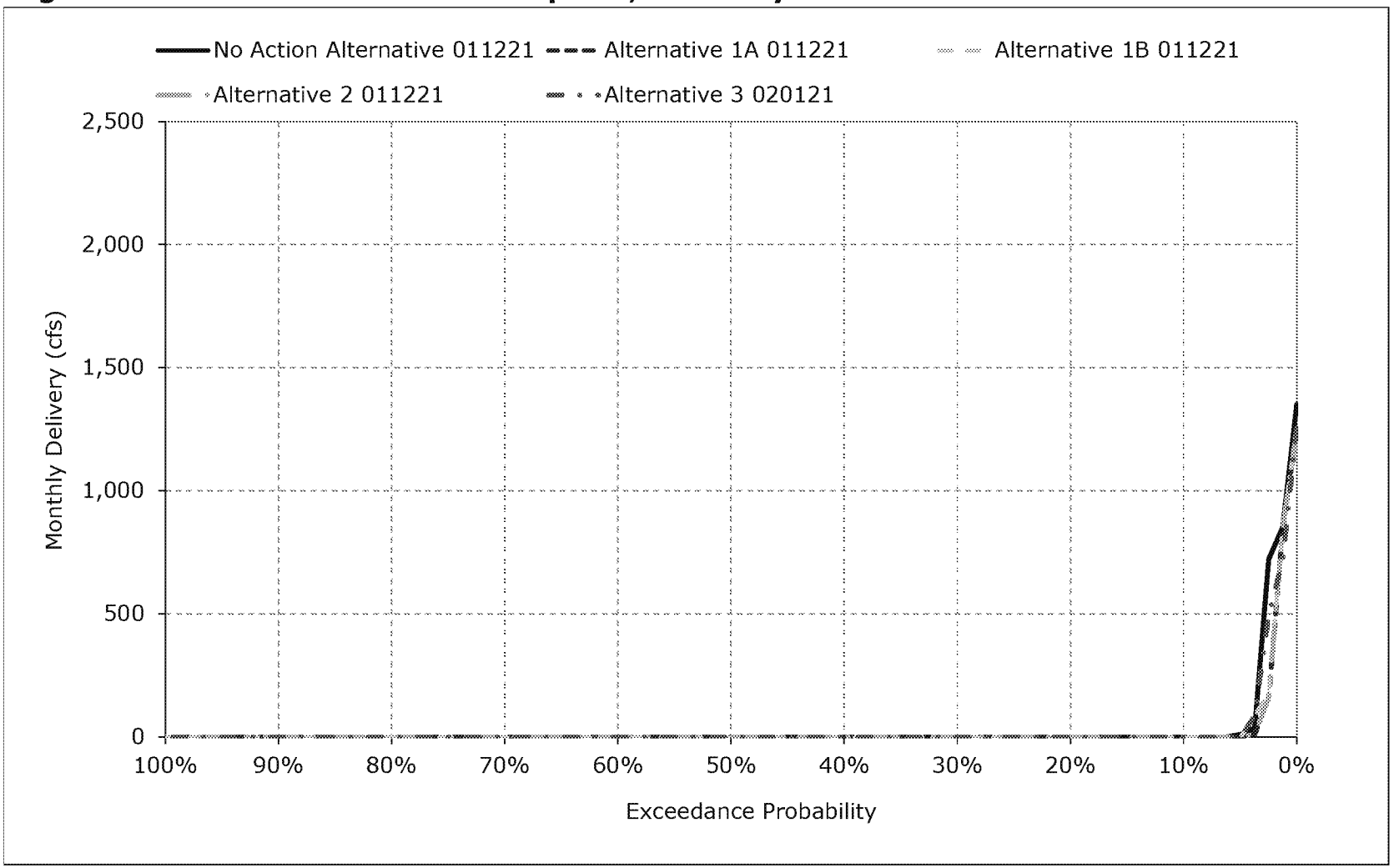


Figure 5B4-4-12. CVP Banks PP Exports, March

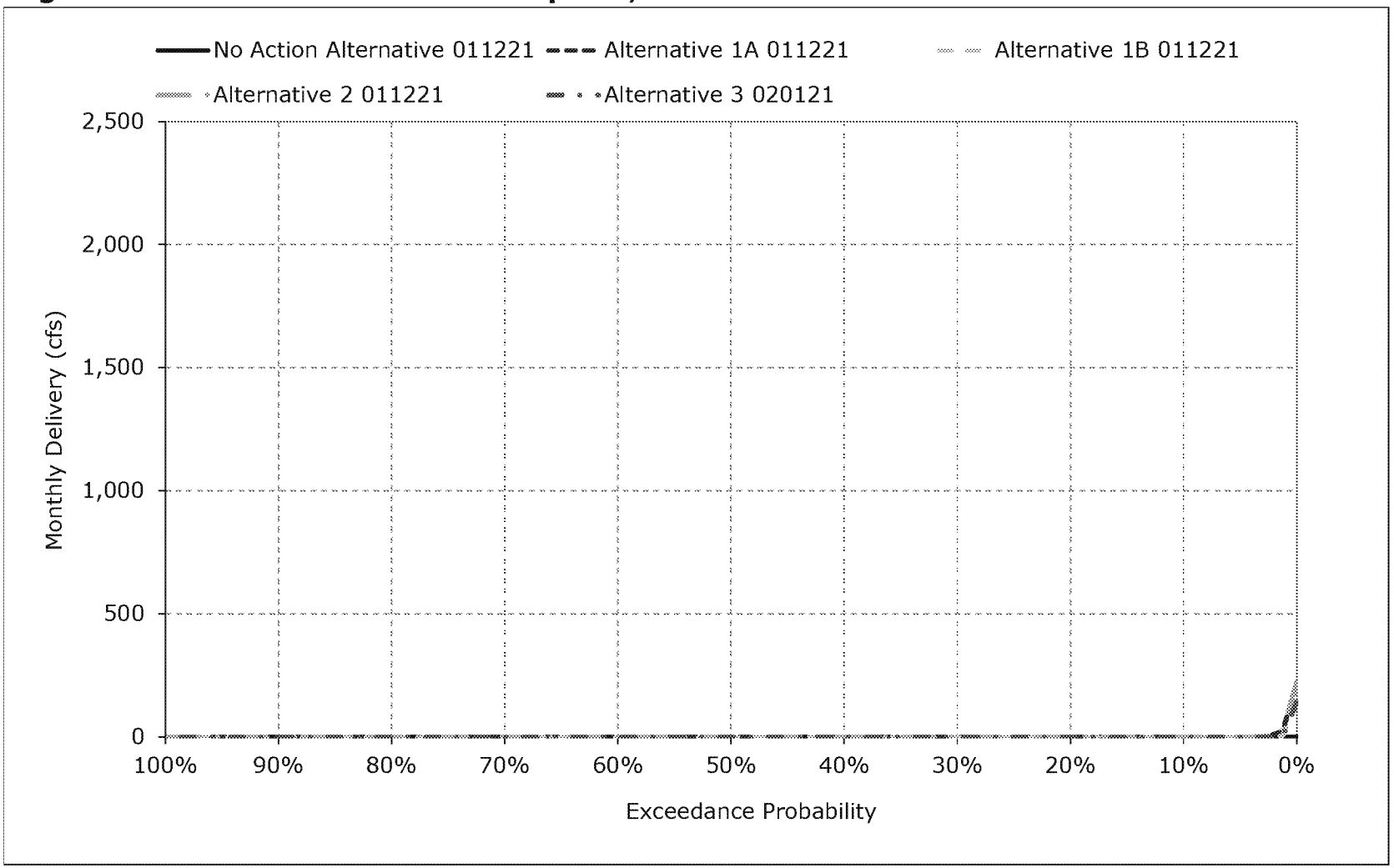


Figure 5B4-4-13. CVP Banks PP Exports, April

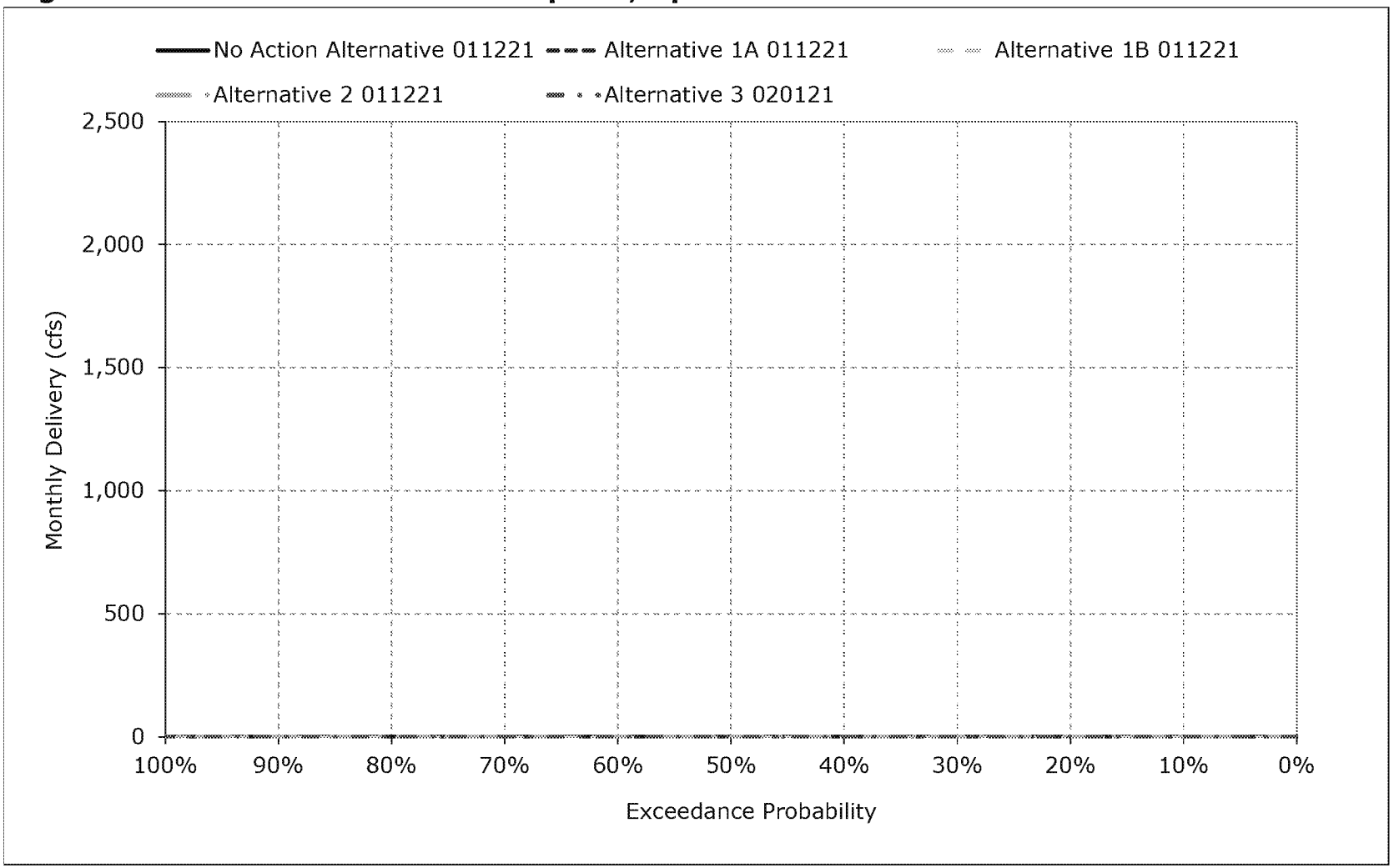


Figure 5B4-4-14. CVP Banks PP Exports, May

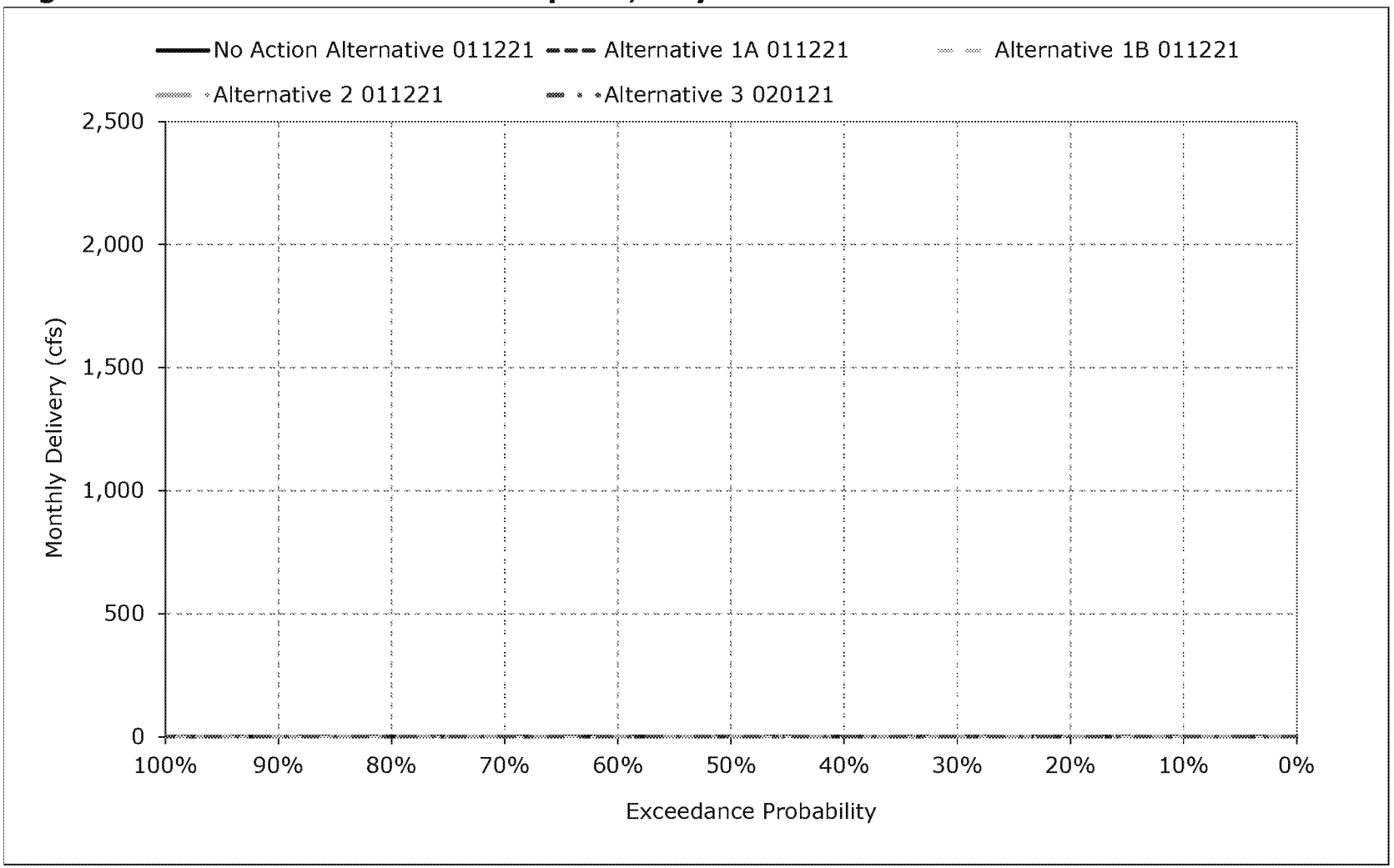


Figure 5B4-4-15. CVP Banks PP Exports, June

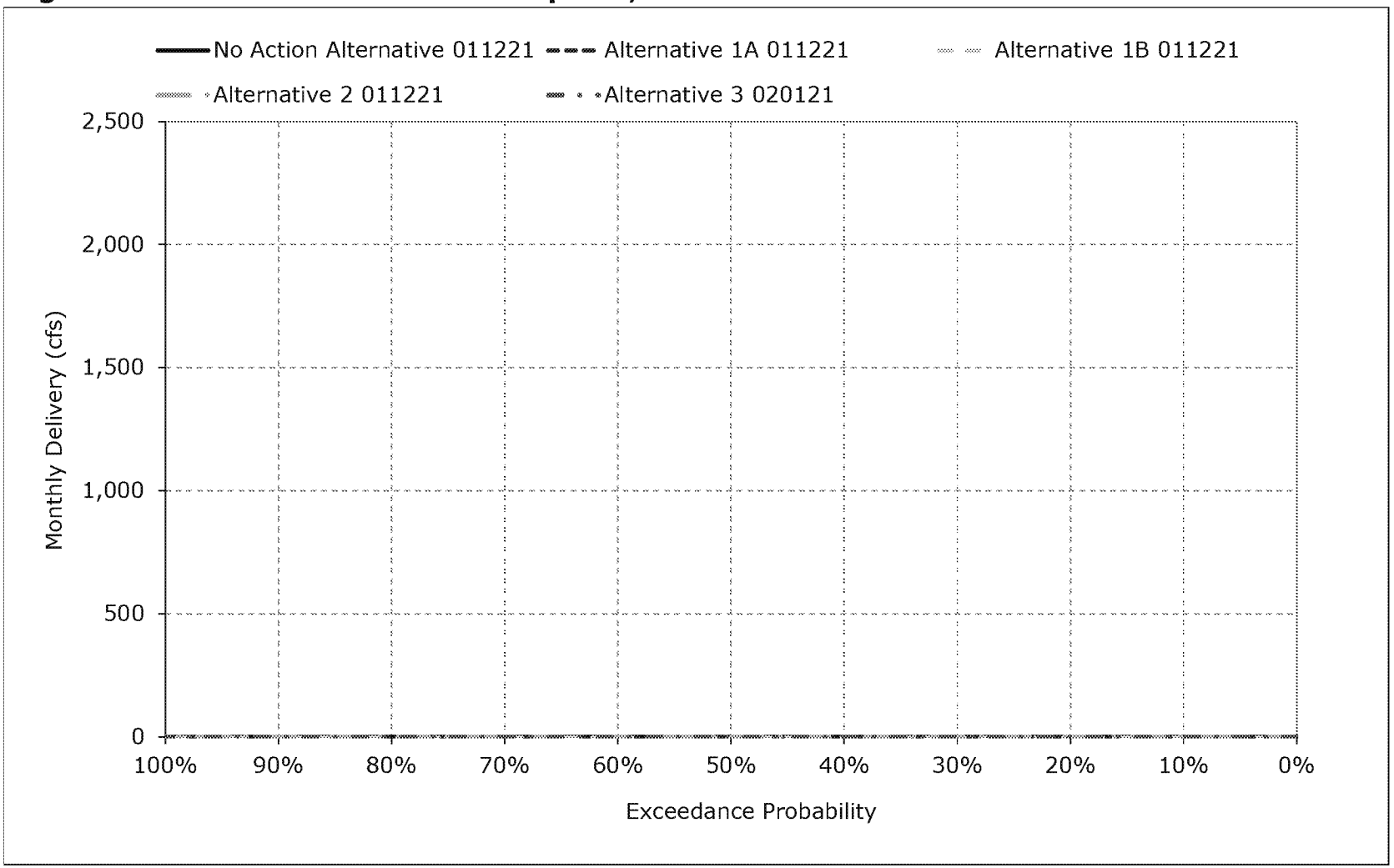


Figure 5B4-4-16. CVP Banks PP Exports, July

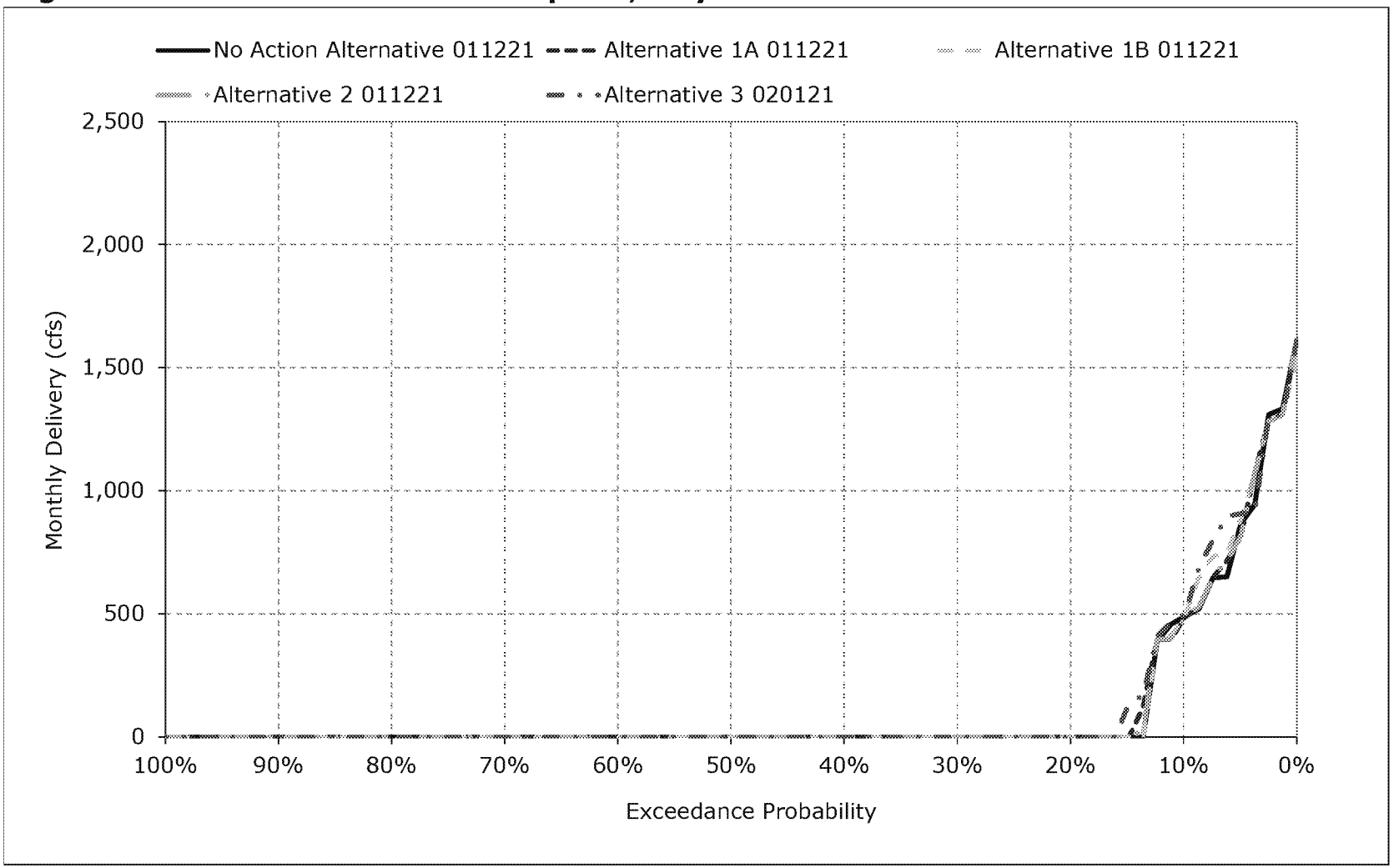


Figure 5B4-4-17. CVP Banks PP Exports, August

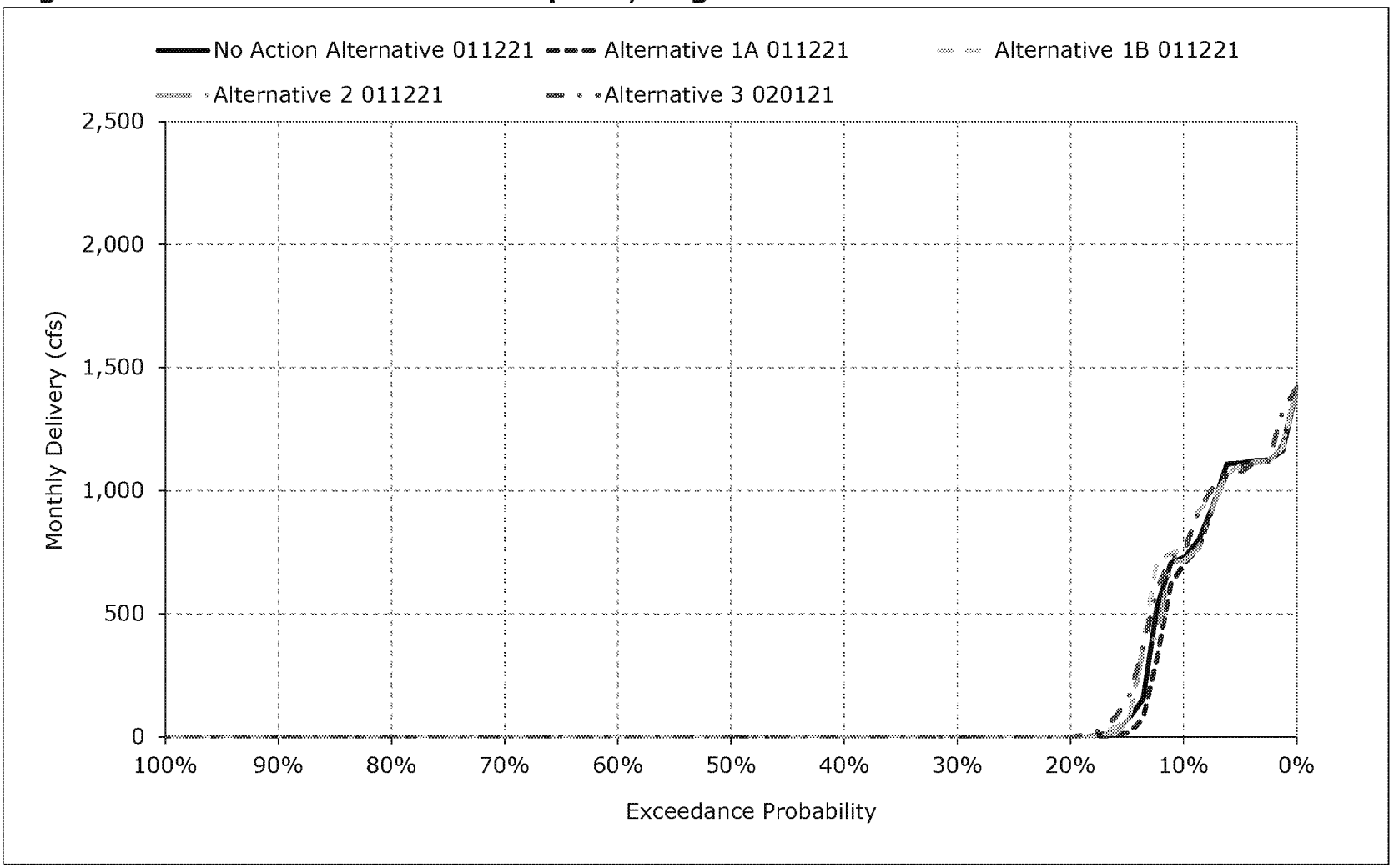


Figure 5B4-4-18. CVP Banks PP Exports, September

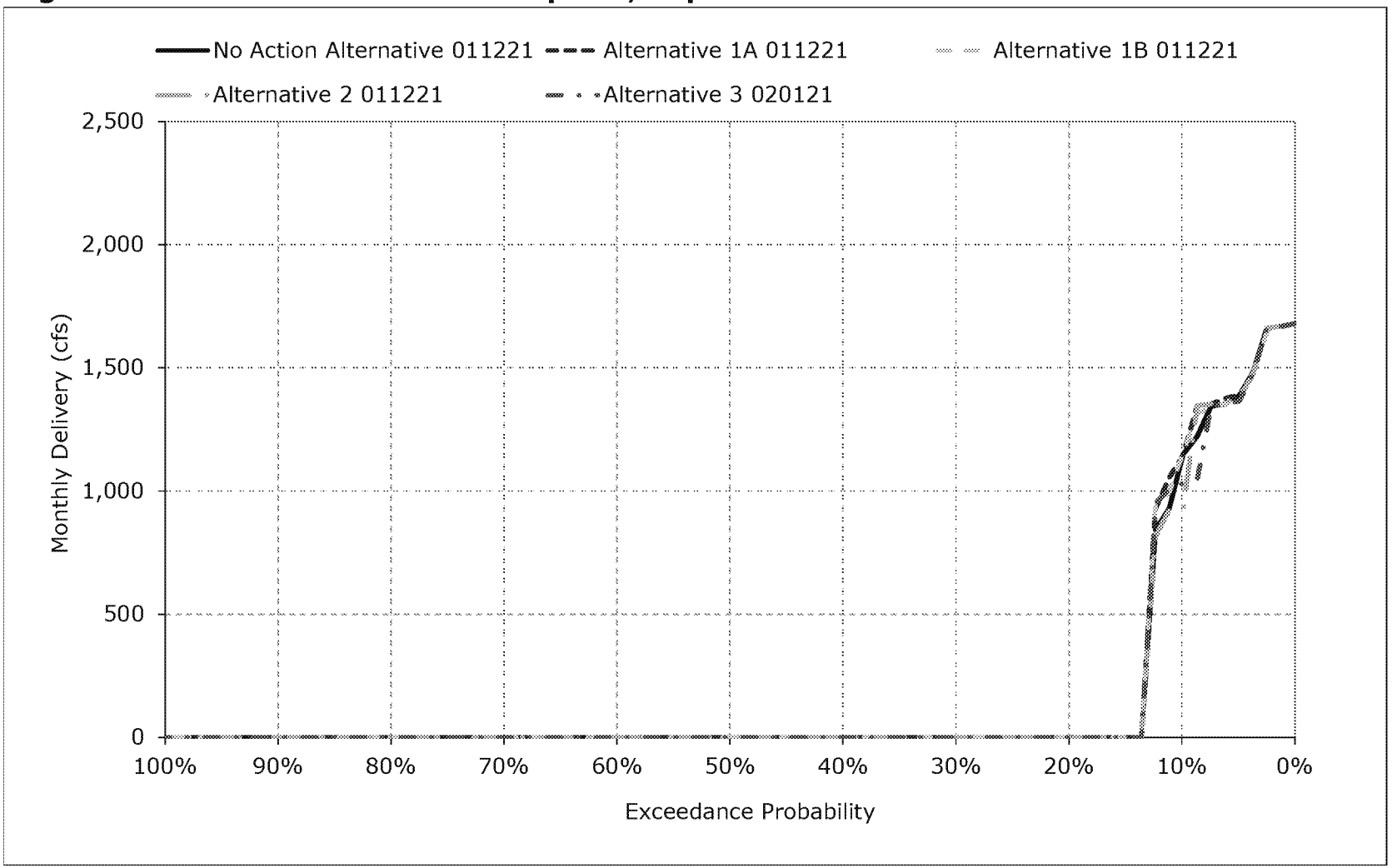


Table 5B4-5-1a. SWP and CVP Banks PP Exports, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	5,920	6,680	7,114	6,083	7,949	6,779	4,654	4,724	5,043	6,680	6,680	6,680
20%	5,256	6,680	7,032	4,188	5,479	4,774	2,507	2,360	3,281	6,680	6,192	6,680
30%	4,163	6,680	6,963	3,395	4,310	3,887	1,106	690	2,579	6,192	5,542	6,680
40%	3,814	6,667	5,012	2,881	4,027	3,304	691	600	2,124	6,192	5,542	6,589
50%	3,405	5,868	3,948	2,792	3,072	2,407	639	600	1,895	6,192	5,542	5,569
60%	2,993	4,493	3,279	2,683	2,675	2,134	600	600	1,776	5,977	3,275	4,217
70%	2,507	3,250	2,967	2,650	2,581	1,892	600	600	1,630	5,353	1,423	2,659
80%	2,096	2,373	2,746	2,499	2,455	1,768	600	600	1,058	2,861	496	2,314
90%	1,194	1,810	2,558	2,122	2,296	1,614	600	324	300	300	300	1,693
Long Term												
Full Simulation Period[a]	3,535	4,847	4,681	3,415	4,096	3,284	1,637	1,411	2,320	4,911	3,840	4,638
Water Year Types[b,c]												
Wet (32%)	4,779	6,559	6,082	4,563	5,820	5,006	3,353	2,769	3,701	6,078	5,208	6,382
Above Normal (15%)	4,022	6,158	5,405	3,212	3,891	3,437	1,120	1,306	2,457	5,853	5,222	6,638
Below Normal (17%)	4,233	4,553	4,611	2,972	4,126	2,978	1,160	935	1,769	6,414	6,390	5,231
Dry (22%)	2,367	3,509	3,295	2,794	2,723	1,937	614	543	1,624	4,093	1,201	2,584
Critical (15%)	1,290	2,172	3,082	2,578	2,587	1,777	525	433	875	914	477	1,251

Table 5B4-5-1b. SWP and CVP Banks PP Exports, Alternative 1A 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	6,374	6,680	7,131	6,063	7,952	6,599	4,655	4,789	5,043	6,680	6,680	6,680
20%	5,301	6,680	7,032	4,188	5,479	4,774	2,649	2,360	3,275	6,680	6,192	6,680
30%	4,163	6,680	6,963	3,401	4,213	3,759	1,106	700	2,511	6,192	5,542	6,680
40%	3,747	6,667	5,004	2,881	3,988	3,304	691	600	2,131	6,192	5,542	6,663
50%	3,408	5,968	3,880	2,792	3,072	2,363	639	600	1,895	6,192	5,542	5,453
60%	2,995	4,641	3,326	2,678	2,675	2,134	600	600	1,790	5,920	3,634	4,237
70%	2,424	3,467	3,003	2,627	2,566	1,892	600	600	1,564	5,220	1,406	2,666
80%	2,014	2,385	2,754	2,499	2,455	1,762	600	600	1,078	2,999	371	2,329
90%	1,082	1,968	2,543	2,122	2,294	1,592	600	356	300	300	300	1,714
Long Term												
Full Simulation Period[a]	3,517	4,910	4,683	3,412	4,055	3,283	1,639	1,412	2,302	4,892	3,847	4,654
Water Year Types[b,c]												
Wet (32%)	4,736	6,559	6,074	4,566	5,810	4,976	3,360	2,760	3,696	6,075	5,239	6,381
Above Normal (15%)	4,039	6,156	5,369	3,212	3,845	3,479	1,123	1,312	2,461	5,849	5,221	6,638
Below Normal (17%)	4,351	4,874	4,627	2,960	3,998	2,992	1,160	935	1,735	6,412	6,433	5,286
Dry (22%)	2,368	3,492	3,286	2,787	2,696	1,941	614	549	1,554	4,072	1,163	2,584
Critical (15%)	1,103	2,261	3,142	2,575	2,566	1,769	525	444	906	829	469	1,293

Table 5B4-5-1c. SWP and CVP Banks PP Exports, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	454	0	18	-20	4	-180	1	66	0	0	0	0
20%	44	0	0	0	0	0	142	0	-6	0	0	0
30%	0	0	0	6	-97	-128	0	10	-68	0	0	0
40%	-67	0	-8	0	-39	0	0	0	7	0	0	74
50%	3	100	-67	0	0	-44	1	0	0	0	0	-116
60%	2	148	47	-6	0	0	0	0	14	-57	359	19
70%	-82	217	37	-24	-15	0	0	0	-66	-133	-17	7
80%	-83	13	8	0	0	-6	0	0	20	138	-125	15
90%	-112	158	-15	0	-2	-22	0	31	0	0	0	21
Long Term												
Full Simulation Period[a]	-18	64	2	-3	-41	-1	2	1	-18	-19	7	15
Water Year Types[b,c]												
Wet (32%)	-43	0	-8	2	-10	-30	6	-9	-6	-3	30	-1
Above Normal (15%)	17	-2	-36	0	-46	41	3	6	4	-4	-1	0
Below Normal (17%)	118	321	16	-13	-128	13	0	0	-34	-2	43	55
Dry (22%)	1	-17	-9	-7	-27	4	0	7	-70	-21	-38	0
Critical (15%)	-187	89	60	-3	-21	-8	0	11	31	-85	-8	43

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-5-2a. SWP and CVP Banks PP Exports, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	5,920	6,680	7,114	6,083	7,949	6,779	4,654	4,724	5,043	6,680	6,680	6,680
20%	5,256	6,680	7,032	4,188	5,479	4,774	2,507	2,360	3,281	6,680	6,192	6,680
30%	4,163	6,680	6,963	3,395	4,310	3,887	1,106	690	2,579	6,192	5,542	6,680
40%	3,814	6,667	5,012	2,881	4,027	3,304	691	600	2,124	6,192	5,542	6,589
50%	3,405	5,868	3,948	2,792	3,072	2,407	639	600	1,895	6,192	5,542	5,569
60%	2,993	4,493	3,279	2,683	2,675	2,134	600	600	1,776	5,977	3,275	4,217
70%	2,507	3,250	2,967	2,650	2,581	1,892	600	600	1,630	5,353	1,423	2,659
80%	2,096	2,373	2,746	2,499	2,455	1,768	600	600	1,058	2,861	496	2,314
90%	1,194	1,810	2,558	2,122	2,296	1,614	600	324	300	300	300	1,693
Long Term												
Full Simulation Period[a]	3,535	4,847	4,681	3,415	4,096	3,284	1,637	1,411	2,320	4,911	3,840	4,638
Water Year Types[b,c]												
Wet (32%)	4,779	6,559	6,082	4,563	5,820	5,006	3,353	2,769	3,701	6,078	5,208	6,382
Above Normal (15%)	4,022	6,158	5,405	3,212	3,891	3,437	1,120	1,306	2,457	5,853	5,222	6,638
Below Normal (17%)	4,233	4,553	4,611	2,972	4,126	2,978	1,160	935	1,769	6,414	6,390	5,231
Dry (22%)	2,367	3,509	3,295	2,794	2,723	1,937	614	543	1,624	4,093	1,201	2,584
Critical (15%)	1,290	2,172	3,082	2,578	2,587	1,777	525	433	875	914	477	1,251

Table 5B4-5-2b. SWP and CVP Banks PP Exports, Alternative 1B 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	6,462	6,680	7,113	6,078	7,960	6,180	4,668	4,926	5,043	6,680	6,680	6,680
20%	5,311	6,680	7,027	4,188	5,479	4,774	2,700	2,360	3,275	6,680	6,192	6,680
30%	4,267	6,680	6,940	3,412	4,213	3,763	1,107	700	2,508	6,192	5,542	6,680
40%	3,775	6,669	4,902	2,881	3,988	3,300	691	600	2,131	6,192	5,542	6,680
50%	3,405	5,981	3,723	2,792	3,072	2,363	639	600	1,895	6,192	5,542	5,452
60%	2,983	4,715	3,278	2,678	2,675	2,134	600	600	1,790	5,980	3,635	4,238
70%	2,440	3,500	2,937	2,635	2,581	1,892	600	600	1,565	5,312	1,419	2,655
80%	2,013	2,373	2,687	2,499	2,472	1,766	600	600	1,067	2,986	506	2,329
90%	1,103	1,987	2,526	2,122	2,294	1,614	600	356	300	300	300	1,689
Long Term												
Full Simulation Period[a]	3,525	4,930	4,614	3,411	4,066	3,281	1,647	1,414	2,300	4,904	3,865	4,659
Water Year Types[b,c]												
Wet (32%)	4,750	6,559	6,132	4,566	5,816	4,972	3,361	2,759	3,696	6,074	5,239	6,381
Above Normal (15%)	4,093	6,174	5,377	3,212	3,867	3,398	1,172	1,325	2,466	5,839	5,221	6,638
Below Normal (17%)	4,340	4,859	4,636	2,960	4,018	3,041	1,161	932	1,733	6,406	6,433	5,326
Dry (22%)	2,375	3,558	2,868	2,785	2,696	1,941	614	552	1,542	4,133	1,233	2,585
Critical (15%)	1,075	2,300	3,153	2,572	2,586	1,790	525	444	906	835	482	1,279

Table 5B4-5-2c. SWP and CVP Banks PP Exports, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	542	0	-1	-5	11	-599	14	203	0	0	0	0
20%	54	0	-5	0	0	0	193	0	-6	0	0	0
30%	104	0	-23	17	-97	-124	0	10	-71	0	0	0
40%	-40	2	-110	0	-39	-5	0	0	7	0	0	91
50%	-1	113	-225	0	0	-44	1	0	0	0	0	-116
60%	-11	222	-1	-6	0	0	0	0	14	2	361	21
70%	-67	250	-30	-16	0	0	0	0	-66	-41	-5	-4
80%	-83	0	-59	0	18	-2	0	0	9	126	10	15
90%	-91	177	-33	0	-2	0	0	32	0	0	0	-5
Long Term												
Full Simulation Period[a]	-10	84	-67	-4	-29	-3	10	3	-20	-7	25	20
Water Year Types[b,c]												
Wet (32%)	-29	0	50	3	-5	-35	8	-10	-6	-4	31	-1
Above Normal (15%)	72	16	-28	0	-23	-39	52	19	9	-14	-1	0
Below Normal (17%)	107	305	25	-13	-108	62	1	-3	-36	-8	43	94
Dry (22%)	7	49	-427	-9	-27	3	0	9	-82	40	32	1
Critical (15%)	-215	128	71	-6	0	13	0	11	31	-78	5	29

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-5-3a. SWP and CVP Banks PP Exports, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	5,920	6,680	7,114	6,083	7,949	6,779	4,654	4,724	5,043	6,680	6,680	6,680
20%	5,256	6,680	7,032	4,188	5,479	4,774	2,507	2,360	3,281	6,680	6,192	6,680
30%	4,163	6,680	6,963	3,395	4,310	3,887	1,106	690	2,579	6,192	5,542	6,680
40%	3,814	6,667	5,012	2,881	4,027	3,304	691	600	2,124	6,192	5,542	6,589
50%	3,405	5,868	3,948	2,792	3,072	2,407	639	600	1,895	6,192	5,542	5,569
60%	2,993	4,493	3,279	2,683	2,675	2,134	600	600	1,776	5,977	3,275	4,217
70%	2,507	3,250	2,967	2,650	2,581	1,892	600	600	1,630	5,353	1,423	2,659
80%	2,096	2,373	2,746	2,499	2,455	1,768	600	600	1,058	2,861	496	2,314
90%	1,194	1,810	2,558	2,122	2,296	1,614	600	324	300	300	300	1,693
Long Term												
Full Simulation Period[a]	3,535	4,847	4,681	3,415	4,096	3,284	1,637	1,411	2,320	4,911	3,840	4,638
Water Year Types[b,c]												
Wet (32%)	4,779	6,559	6,082	4,563	5,820	5,006	3,353	2,769	3,701	6,078	5,208	6,382
Above Normal (15%)	4,022	6,158	5,405	3,212	3,891	3,437	1,120	1,306	2,457	5,853	5,222	6,638
Below Normal (17%)	4,233	4,553	4,611	2,972	4,126	2,978	1,160	935	1,769	6,414	6,390	5,231
Dry (22%)	2,367	3,509	3,295	2,794	2,723	1,937	614	543	1,624	4,093	1,201	2,584
Critical (15%)	1,290	2,172	3,082	2,578	2,587	1,777	525	433	875	914	477	1,251

Table 5B4-5-3b. SWP and CVP Banks PP Exports, Alternative 2 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	6,374	6,680	7,131	6,064	7,952	6,337	4,689	4,914	5,043	6,680	6,680	6,680
20%	5,301	6,680	7,032	4,188	5,479	4,774	2,649	2,360	3,275	6,680	6,192	6,680
30%	4,244	6,680	6,963	3,401	4,213	3,759	1,106	700	2,512	6,192	5,542	6,680
40%	3,748	6,667	5,004	2,881	3,988	3,304	691	600	2,131	6,192	5,542	6,661
50%	3,408	5,968	3,877	2,792	3,072	2,363	639	600	1,895	6,192	5,542	5,449
60%	2,979	4,637	3,326	2,678	2,675	2,134	600	600	1,790	5,920	3,635	4,236
70%	2,424	3,535	2,967	2,636	2,581	1,892	600	600	1,564	5,220	1,416	2,667
80%	2,013	2,571	2,754	2,499	2,472	1,766	600	600	1,078	3,002	371	2,346
90%	1,060	1,969	2,558	2,122	2,294	1,614	600	356	300	300	300	1,693
Long Term												
Full Simulation Period[a]	3,520	4,930	4,679	3,409	4,061	3,283	1,640	1,414	2,301	4,891	3,850	4,647
Water Year Types[b,c]												
Wet (32%)	4,760	6,559	6,075	4,566	5,810	4,976	3,360	2,760	3,696	6,075	5,238	6,381
Above Normal (15%)	4,039	6,156	5,368	3,212	3,852	3,440	1,123	1,324	2,461	5,845	5,221	6,638
Below Normal (17%)	4,324	4,873	4,627	2,960	4,010	2,994	1,163	935	1,727	6,412	6,433	5,253
Dry (22%)	2,368	3,576	3,287	2,787	2,696	1,941	614	549	1,554	4,071	1,169	2,585
Critical (15%)	1,102	2,271	3,117	2,559	2,586	1,810	525	444	907	829	478	1,283

Table 5B4-5-3c. SWP and CVP Banks PP Exports, Alternative 2 011221 minus No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	454	0	18	-19	4	-442	35	190	0	0	0	0
20%	45	0	0	0	0	0	142	0	-6	0	0	0
30%	81	0	0	6	-97	-128	0	10	-67	0	0	0
40%	-67	0	-8	0	-39	0	0	0	7	0	0	72
50%	3	100	-71	0	0	-44	1	0	0	0	0	-120
60%	-14	144	47	-6	0	0	0	0	14	-57	360	19
70%	-83	285	0	-15	0	0	0	0	-66	-133	-8	7
80%	-83	198	8	0	18	-2	0	0	20	141	-125	32
90%	-134	159	0	0	-2	0	0	31	0	0	0	-1
Long Term												
Full Simulation Period[a]	-16	84	-2	-6	-35	-1	3	3	-19	-20	10	8
Water Year Types[b,c]												
Wet (32%)	-20	0	-7	2	-10	-30	7	-9	-6	-3	30	-1
Above Normal (15%)	17	-2	-37	0	-39	3	2	18	4	-8	-1	0
Below Normal (17%)	91	320	16	-13	-115	15	3	0	-42	-2	43	21
Dry (22%)	1	67	-8	-7	-27	4	0	6	-70	-22	-32	1
Critical (15%)	-188	99	35	-19	-1	32	0	11	31	-85	1	33

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-5-4a. SWP and CVP Banks PP Exports, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	5,920	6,680	7,114	6,083	7,949	6,779	4,654	4,724	5,043	6,680	6,680	6,680
20%	5,256	6,680	7,032	4,188	5,479	4,774	2,507	2,360	3,281	6,680	6,192	6,680
30%	4,163	6,680	6,963	3,395	4,310	3,887	1,106	690	2,579	6,192	5,542	6,680
40%	3,814	6,667	5,012	2,881	4,027	3,304	691	600	2,124	6,192	5,542	6,589
50%	3,405	5,868	3,948	2,792	3,072	2,407	639	600	1,895	6,192	5,542	5,569
60%	2,993	4,493	3,279	2,683	2,675	2,134	600	600	1,776	5,977	3,275	4,217
70%	2,507	3,250	2,967	2,650	2,581	1,892	600	600	1,630	5,353	1,423	2,659
80%	2,096	2,373	2,746	2,499	2,455	1,768	600	600	1,058	2,861	496	2,314
90%	1,194	1,810	2,558	2,122	2,296	1,614	600	324	300	300	300	1,693
Long Term												
Full Simulation Period[a]	3,535	4,847	4,681	3,415	4,096	3,284	1,637	1,411	2,320	4,911	3,840	4,638
Water Year Types[b,c]												
Wet (32%)	4,779	6,559	6,082	4,563	5,820	5,006	3,353	2,769	3,701	6,078	5,208	6,382
Above Normal (15%)	4,022	6,158	5,405	3,212	3,891	3,437	1,120	1,306	2,457	5,853	5,222	6,638
Below Normal (17%)	4,233	4,553	4,611	2,972	4,126	2,978	1,160	935	1,769	6,414	6,390	5,231
Dry (22%)	2,367	3,509	3,295	2,794	2,723	1,937	614	543	1,624	4,093	1,201	2,584
Critical (15%)	1,290	2,172	3,082	2,578	2,587	1,777	525	433	875	914	477	1,251

Table 5B4-5-4b. SWP and CVP Banks PP Exports, Alternative 3 020121, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	6,524	6,680	7,131	6,083	7,960	6,210	4,691	4,523	5,043	6,680	6,680	6,680
20%	5,464	6,680	7,037	4,188	5,534	4,951	2,632	2,145	3,433	6,680	6,192	6,680
30%	4,244	6,680	6,976	3,430	4,293	4,235	1,107	700	2,482	6,192	5,542	6,680
40%	3,758	6,670	5,888	2,881	3,908	3,371	691	600	2,098	6,192	5,542	6,660
50%	3,448	6,028	4,483	2,792	3,072	2,574	639	600	1,882	6,192	5,542	5,440
60%	2,997	4,551	3,376	2,678	2,706	2,145	600	600	1,790	5,920	3,571	4,309
70%	2,500	3,461	2,967	2,598	2,586	1,892	600	600	1,565	5,098	1,417	2,642
80%	2,016	2,624	2,746	2,399	2,516	1,763	600	600	996	2,893	508	2,344
90%	1,052	1,979	2,558	2,116	2,305	1,595	600	366	300	317	300	1,688
Long Term												
Full Simulation Period[a]	3,537	4,915	4,811	3,407	4,094	3,349	1,648	1,379	2,284	4,900	3,865	4,652
Water Year Types[b,c]												
Wet (32%)	4,751	6,559	6,133	4,566	5,813	5,061	3,361	2,666	3,696	6,080	5,220	6,358
Above Normal (15%)	4,168	6,156	5,443	3,212	3,973	3,504	1,172	1,326	2,461	5,620	5,222	6,638
Below Normal (17%)	4,350	4,847	4,640	2,960	4,042	3,239	1,163	896	1,721	6,420	6,428	5,333
Dry (22%)	2,398	3,523	3,730	2,773	2,723	1,937	614	553	1,520	4,236	1,272	2,591
Critical (15%)	1,039	2,275	3,134	2,565	2,610	1,733	525	445	854	851	469	1,264

Table 5B4-5-4c. SWP and CVP Banks PP Exports, Alternative 3 020121 minus No Action Alternative 011221, Monthly Delivery (cfs)

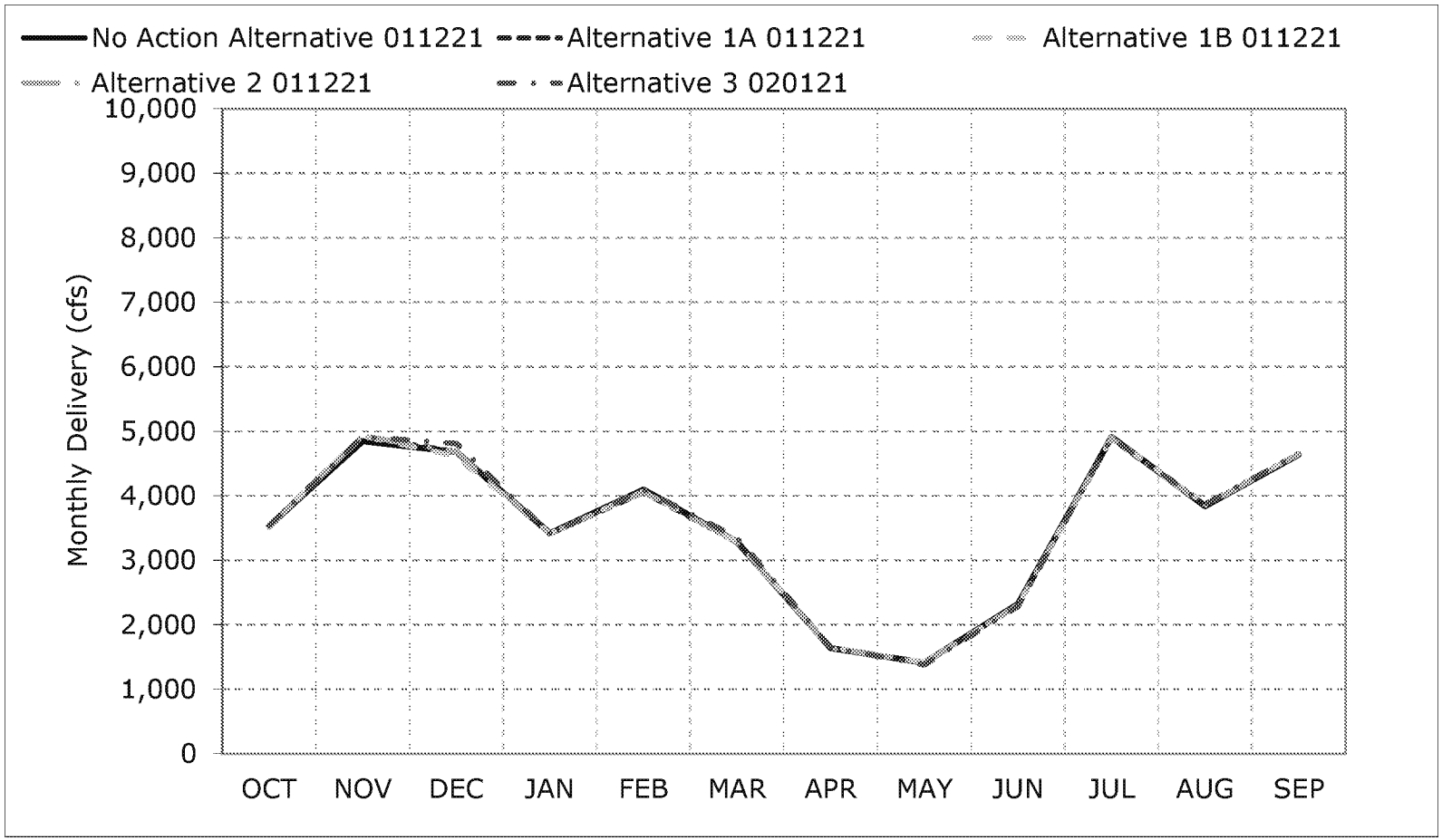
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	603	0	18	0	11	-569	37	-201	0	0	0	0
20%	207	0	5	0	55	177	125	-216	152	0	0	0
30%	81	0	13	35	-17	348	0	10	-97	0	0	0
40%	-57	3	876	0	-118	66	0	0	-26	0	0	71
50%	43	160	535	0	0	168	1	0	-13	0	0	-129
60%	4	57	97	-6	31	11	0	0	14	-57	297	91
70%	-7	211	0	-53	5	0	0	0	-66	-255	-7	-17
80%	-80	252	0	-100	62	-5	0	0	-62	32	11	30
90%	-141	169	0	-6	9	-18	0	42	0	17	0	-5
Long Term												
Full Simulation Period[a]	2	68	130	-8	-1	65	11	-32	-35	-10	25	13
Water Year Types[b,c]												
Wet (32%)	-28	0	51	3	-7	54	8	-102	-6	2	12	-24
Above Normal (15%)	146	-2	38	0	82	67	52	20	4	-233	-1	0
Below Normal (17%)	117	294	29	-13	-84	260	3	-39	-48	6	38	102
Dry (22%)	31	14	435	-21	0	-1	0	10	-104	143	71	7
Critical (15%)	-251	103	52	-12	23	-44	0	12	-21	-63	-8	13

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

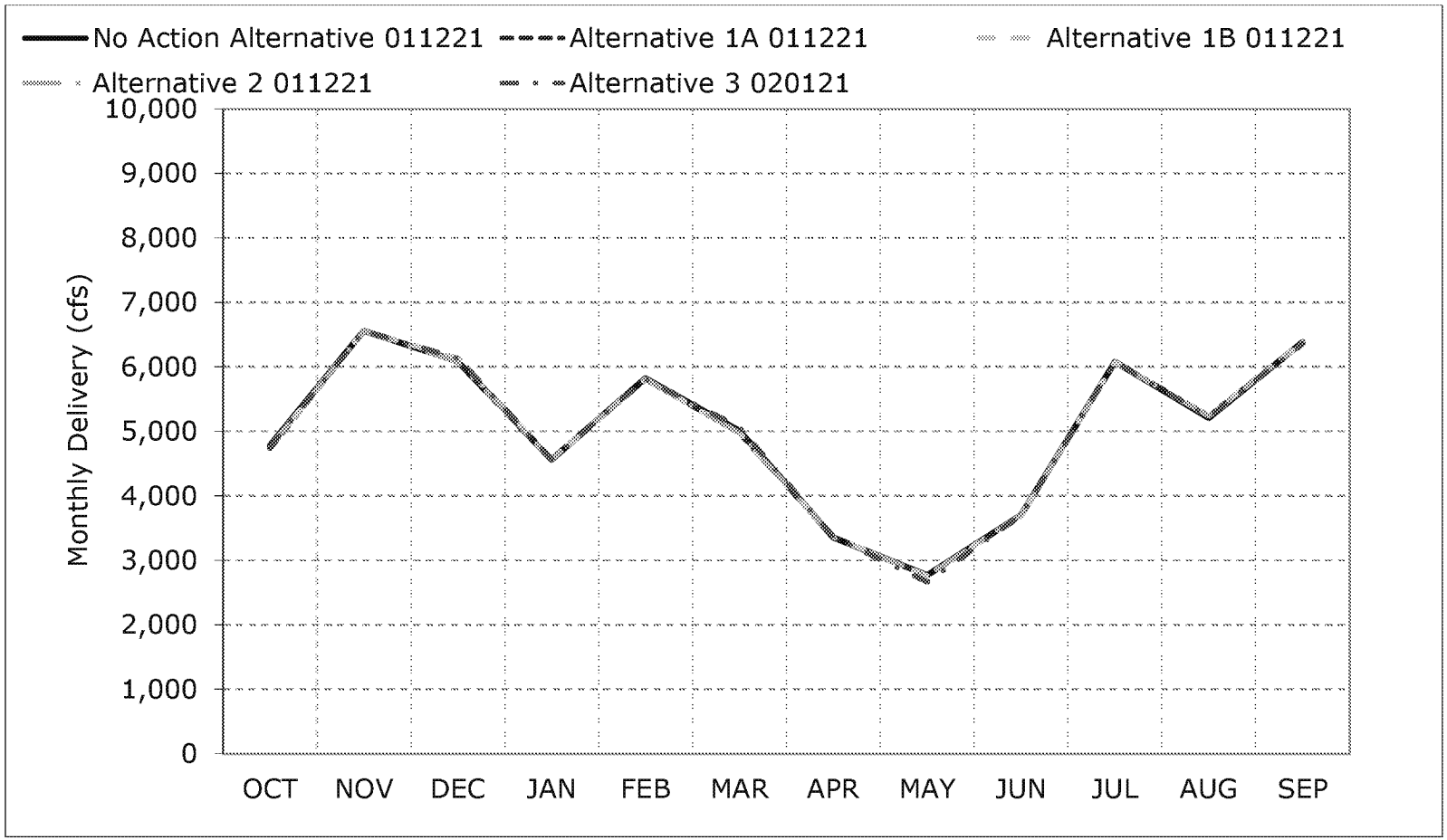
c These results are displayed with calendar year - year type sorting.

Figure 5B4-5-1. SWP and CVP Banks PP Exports, Long-Term Average Delivery



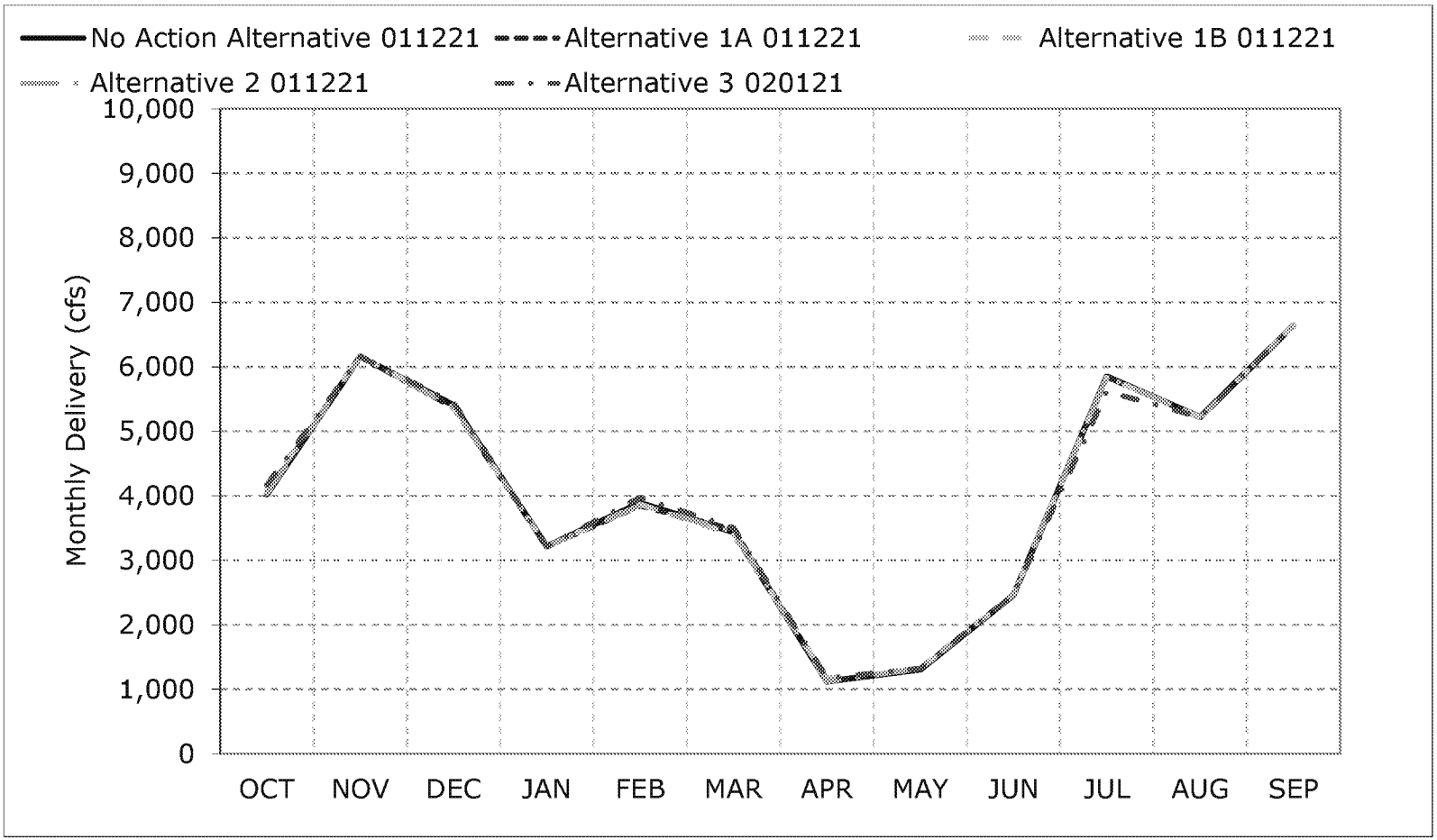
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-5-2. SWP and CVP Banks PP Exports, Wet Year Average Delivery



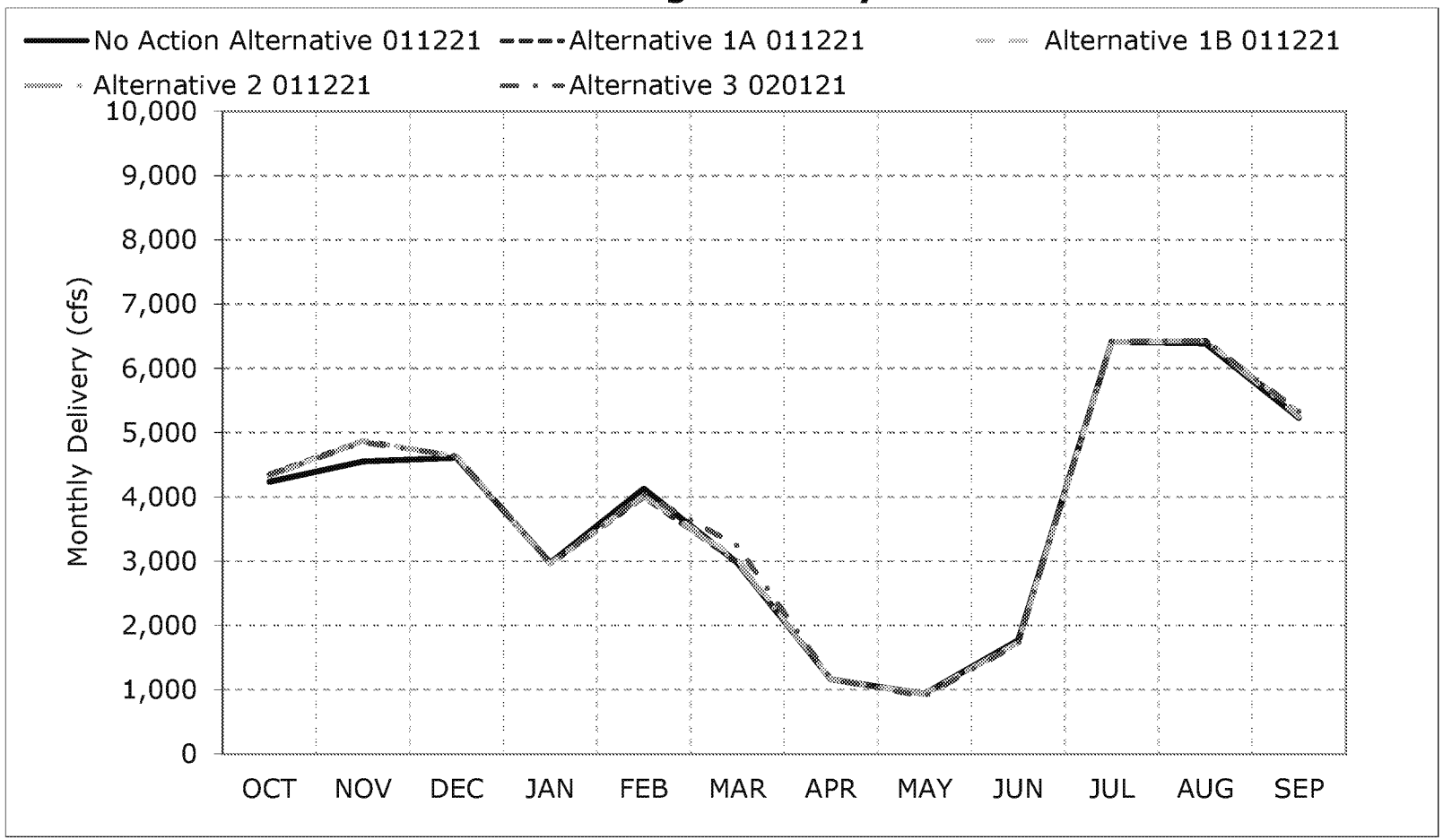
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-5-3. SWP and CVP Banks PP Exports, Above Normal Year Average Delivery



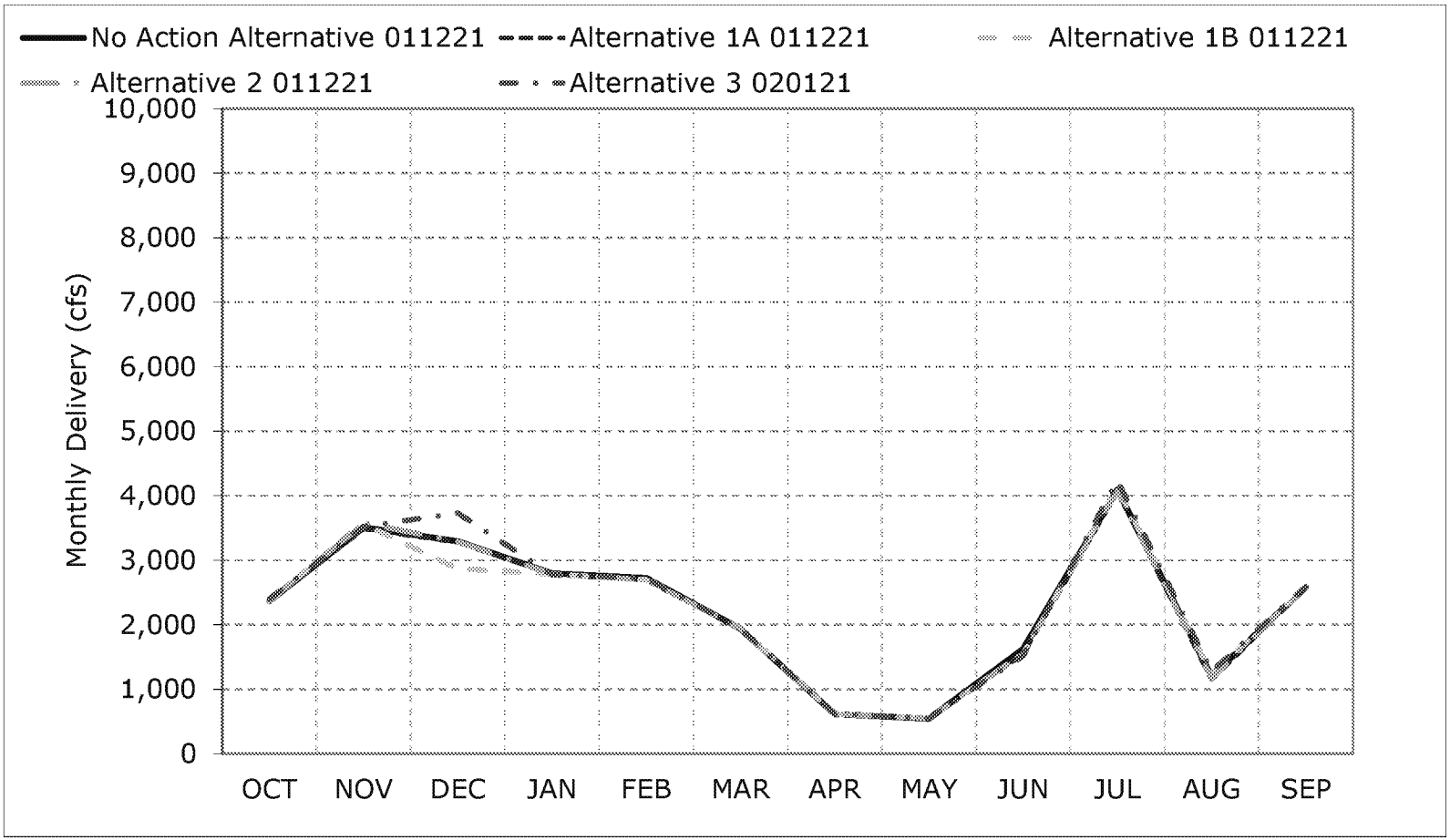
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-5-4. SWP and CVP Banks PP Exports, Below Normal Year Average Delivery



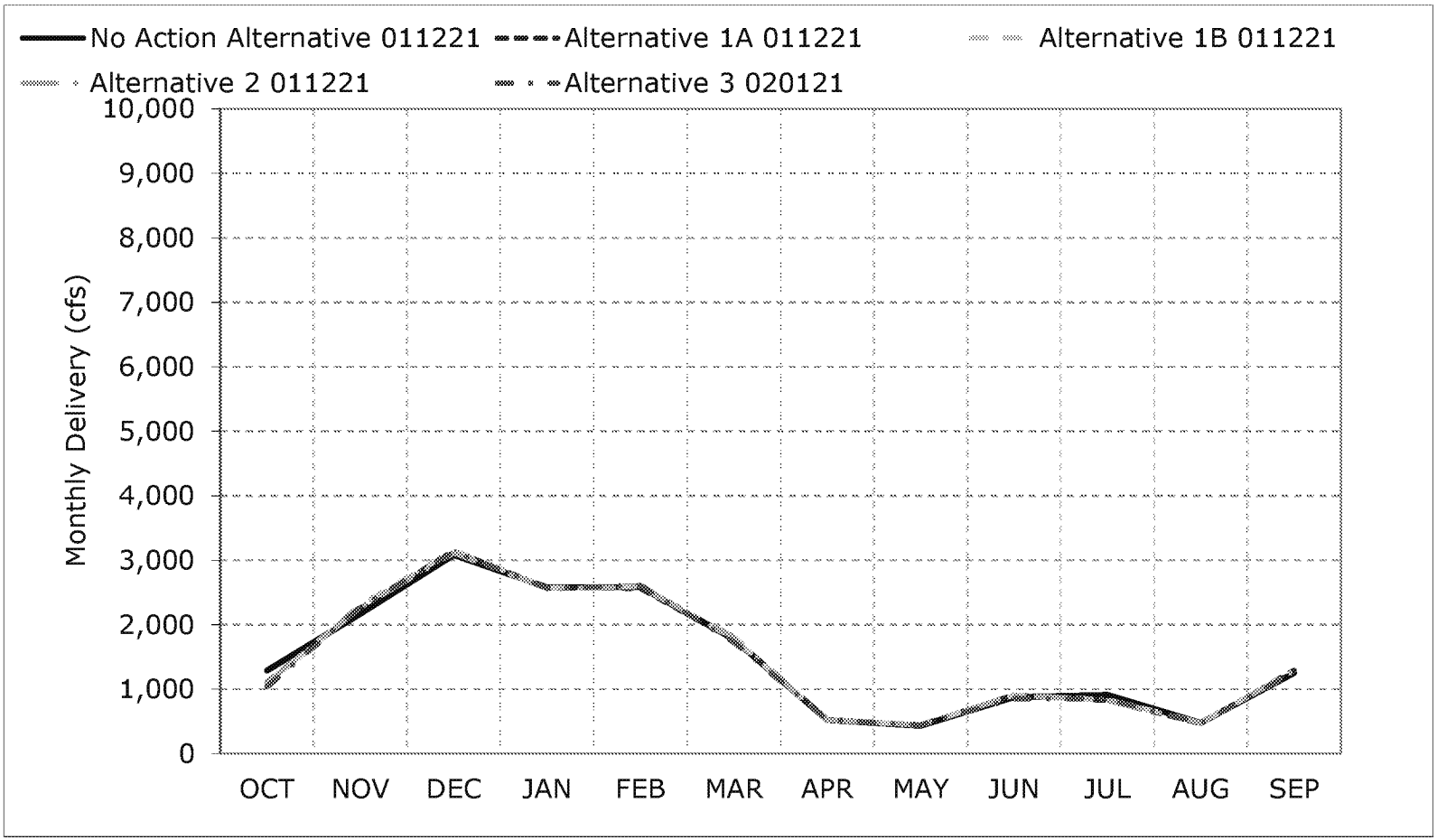
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-5-5. SWP and CVP Banks PP Exports, Dry Year Average Delivery



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-5-6. SWP and CVP Banks PP Exports, Critical Year Average Delivery



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-5-7. SWP and CVP Banks PP Exports, October

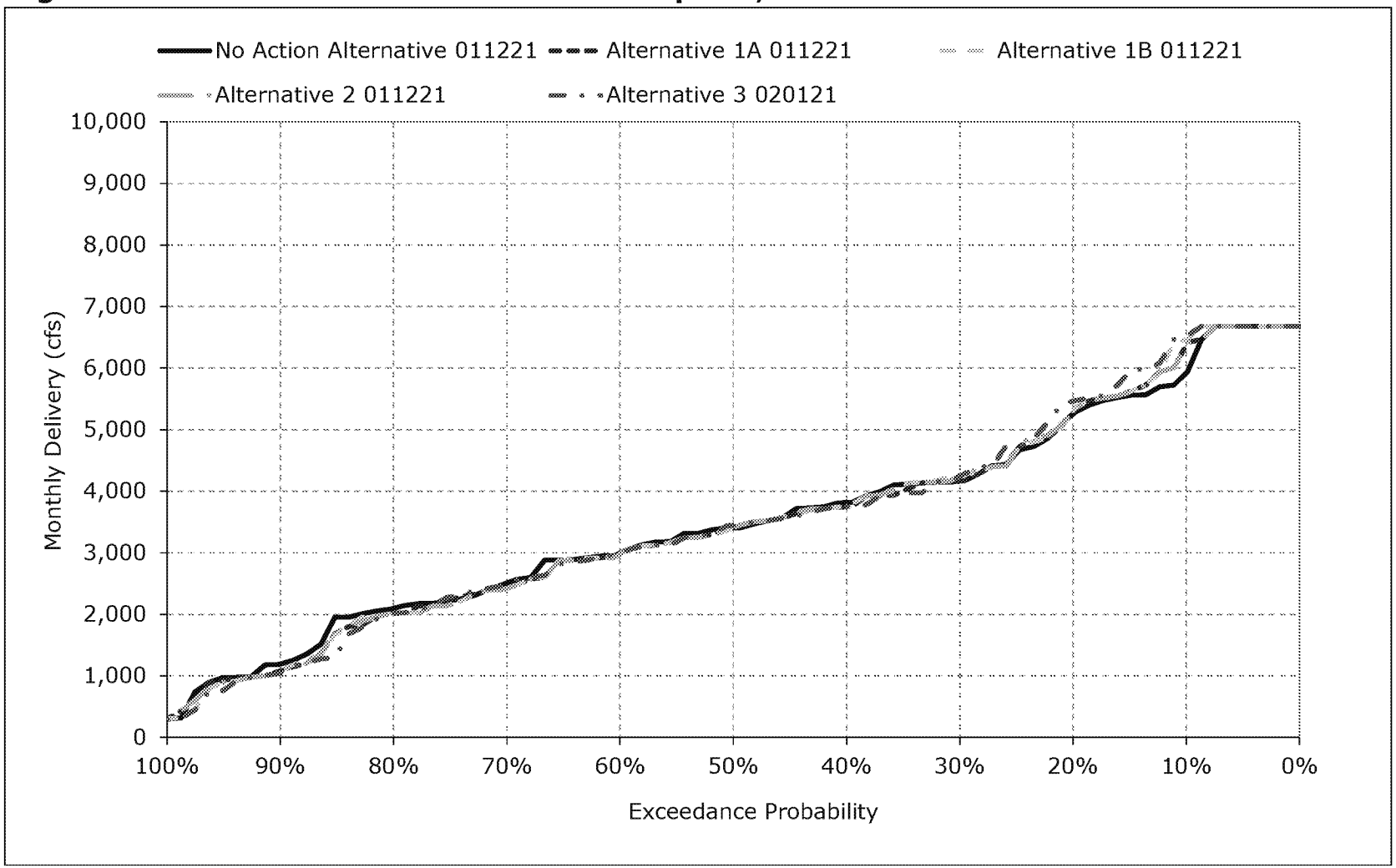


Figure 5B4-5-8. SWP and CVP Banks PP Exports, November

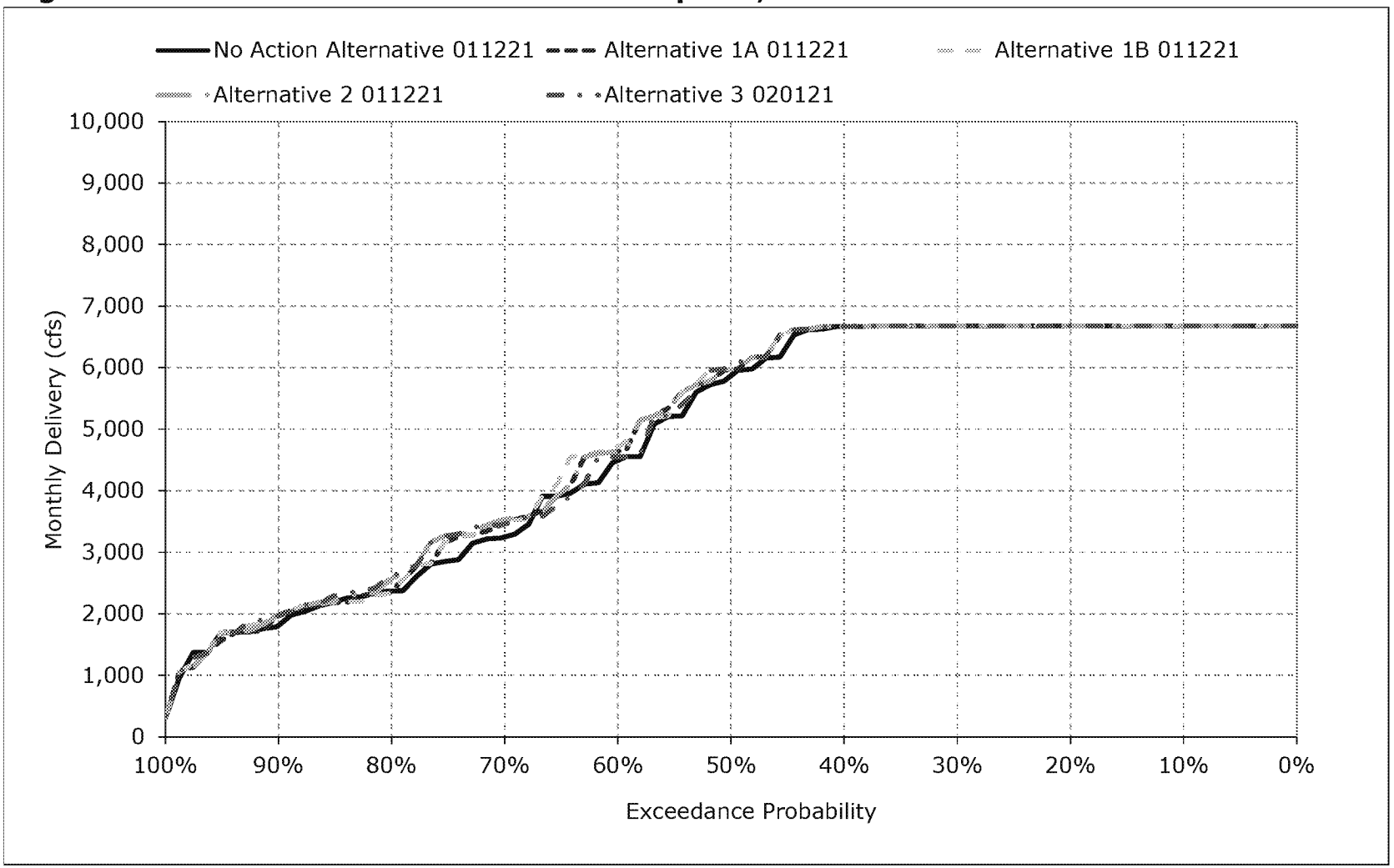


Figure 5B4-5-9. SWP and CVP Banks PP Exports, December

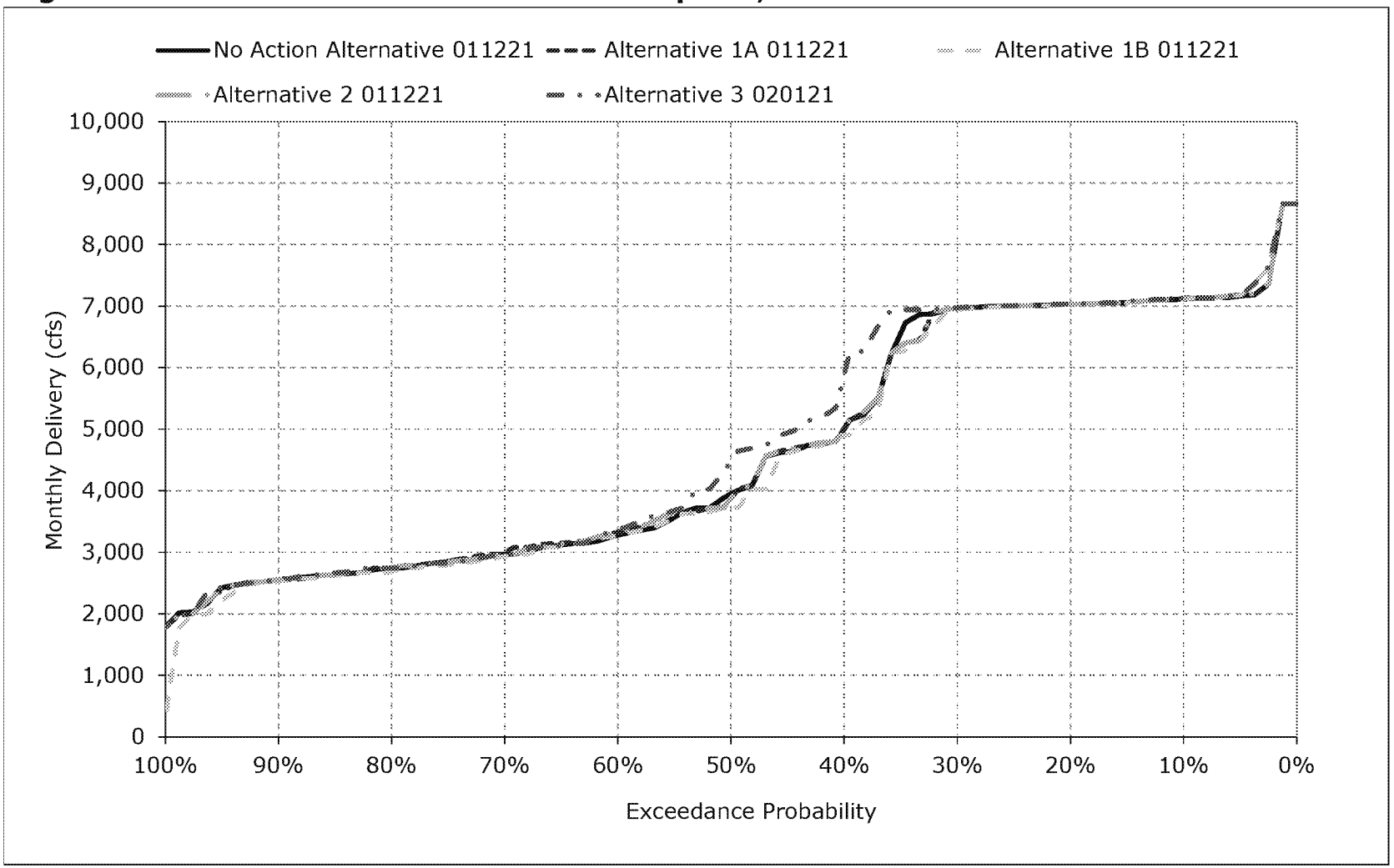


Figure 5B4-5-10. SWP and CVP Banks PP Exports, January

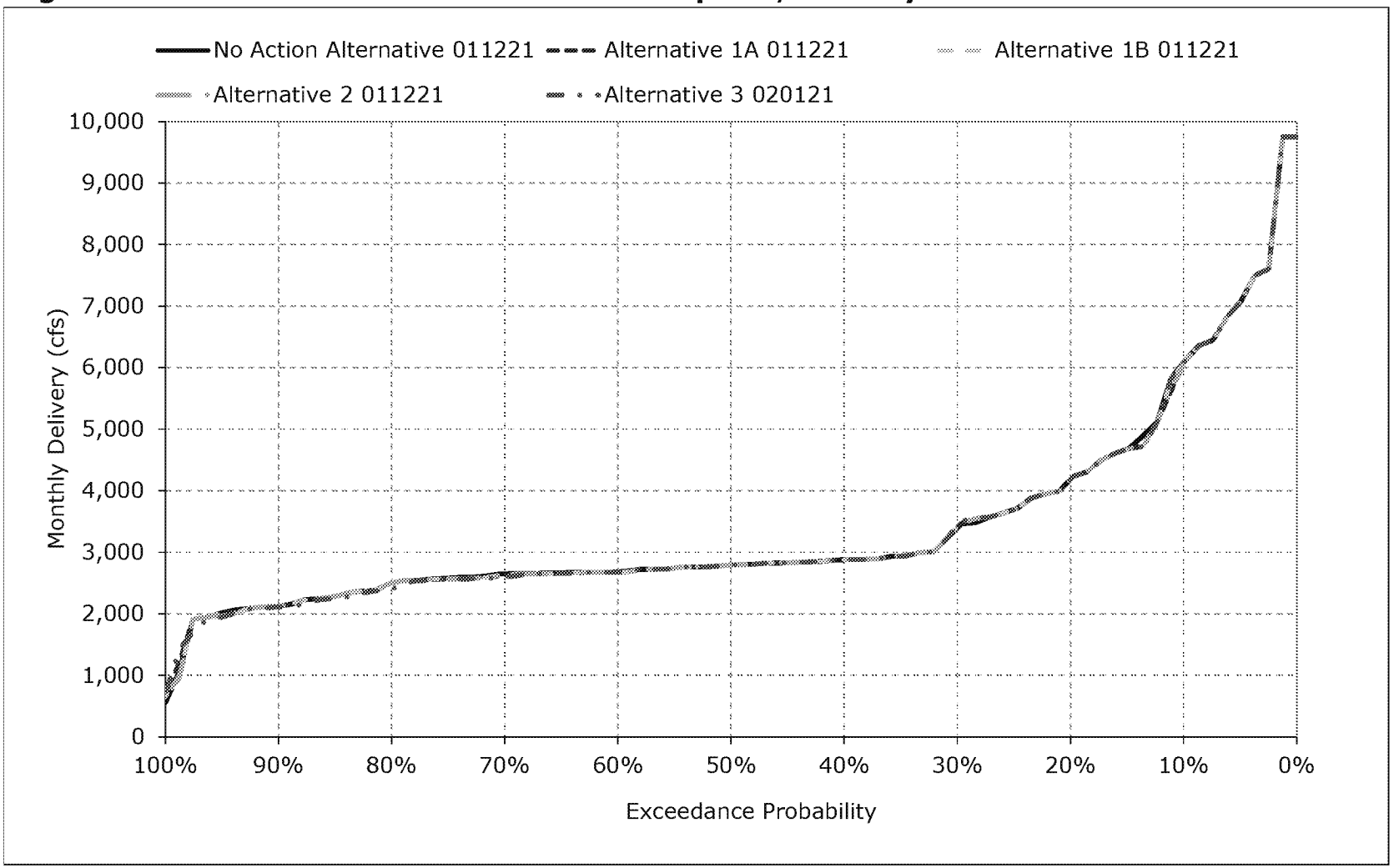


Figure 5B4-5-11. SWP and CVP Banks PP Exports, February

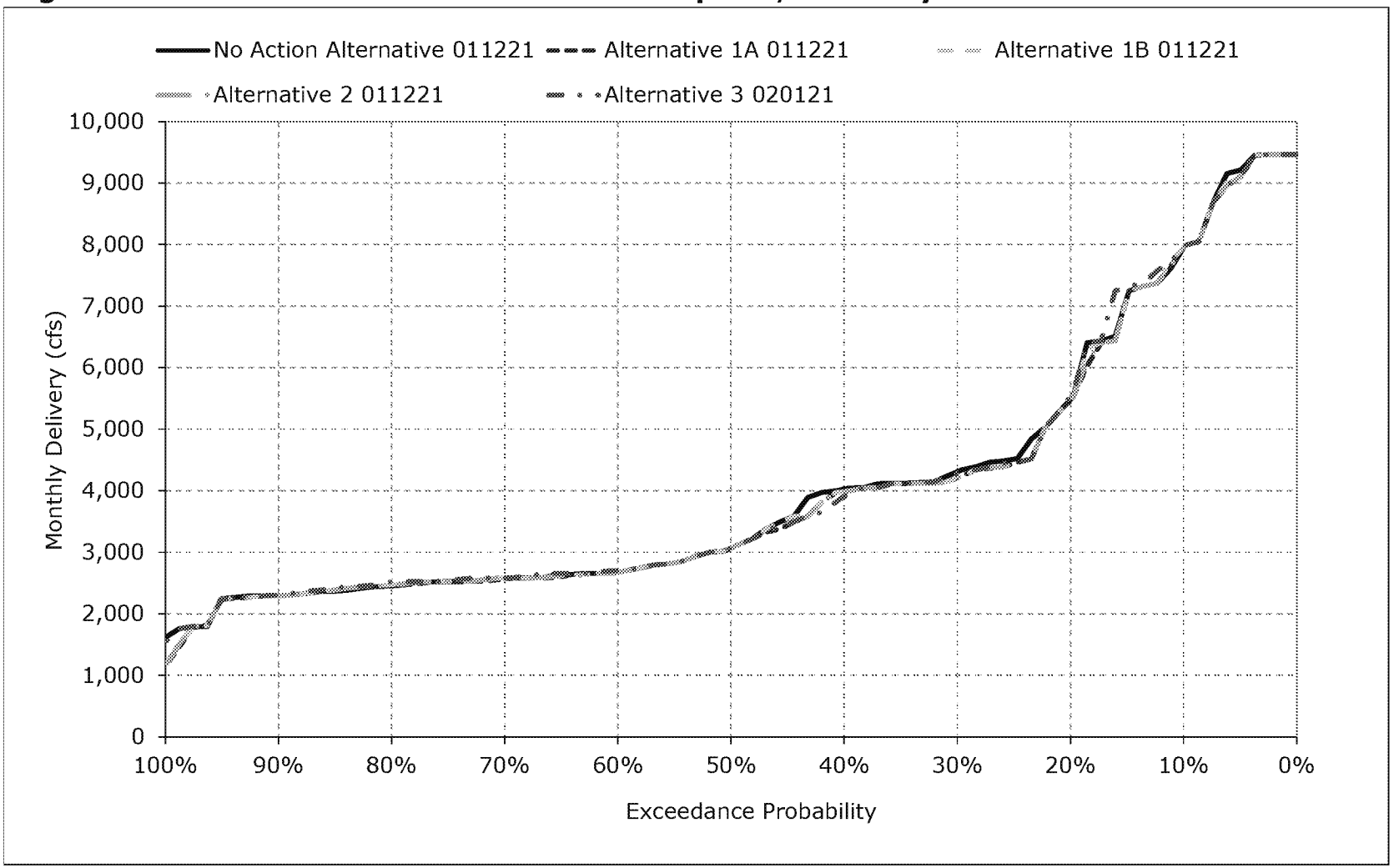


Figure 5B4-5-12. SWP and CVP Banks PP Exports, March

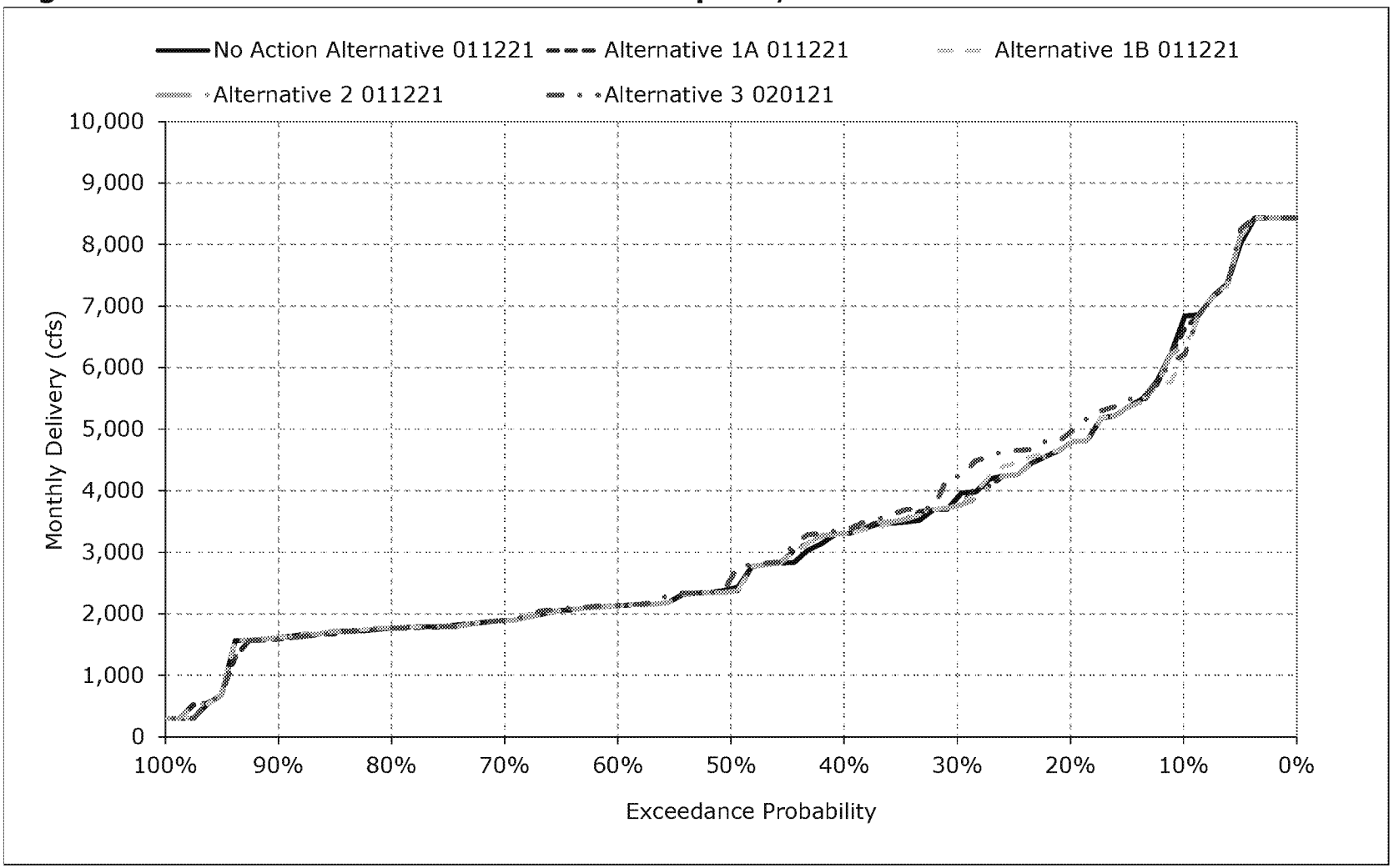


Figure 5B4-5-13. SWP and CVP Banks PP Exports, April

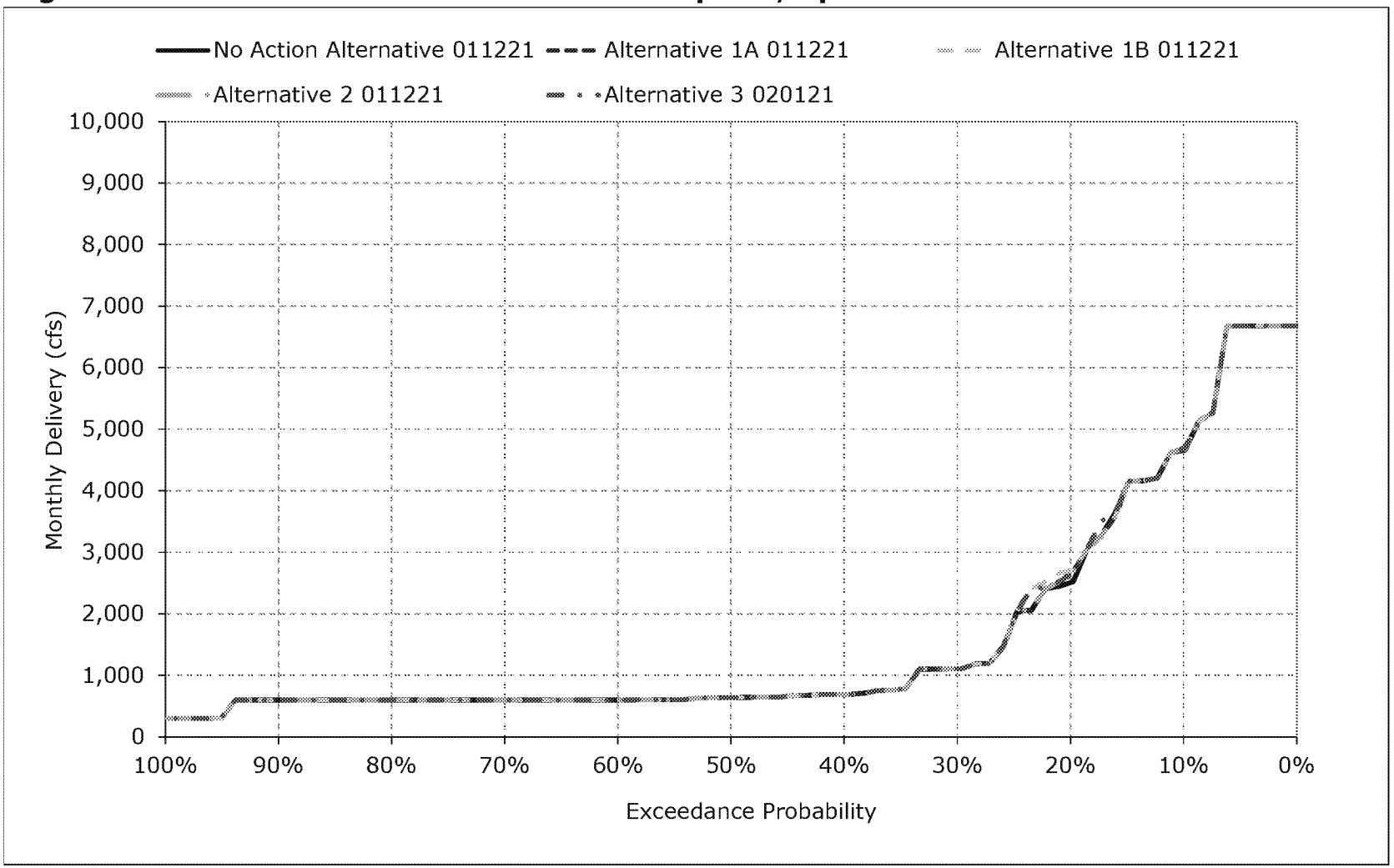


Figure 5B4-5-14. SWP and CVP Banks PP Exports, May

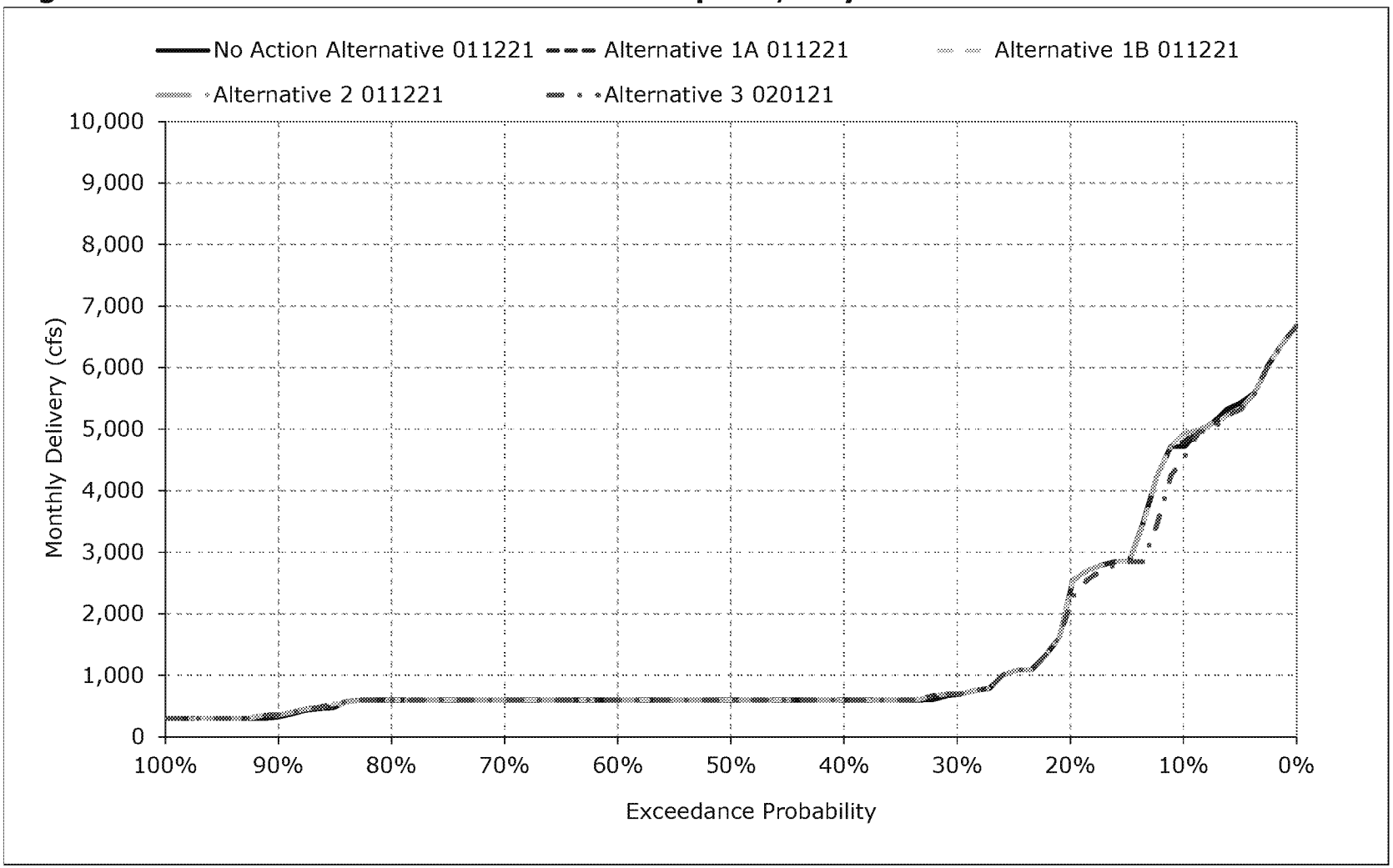


Figure 5B4-5-15. SWP and CVP Banks PP Exports, June

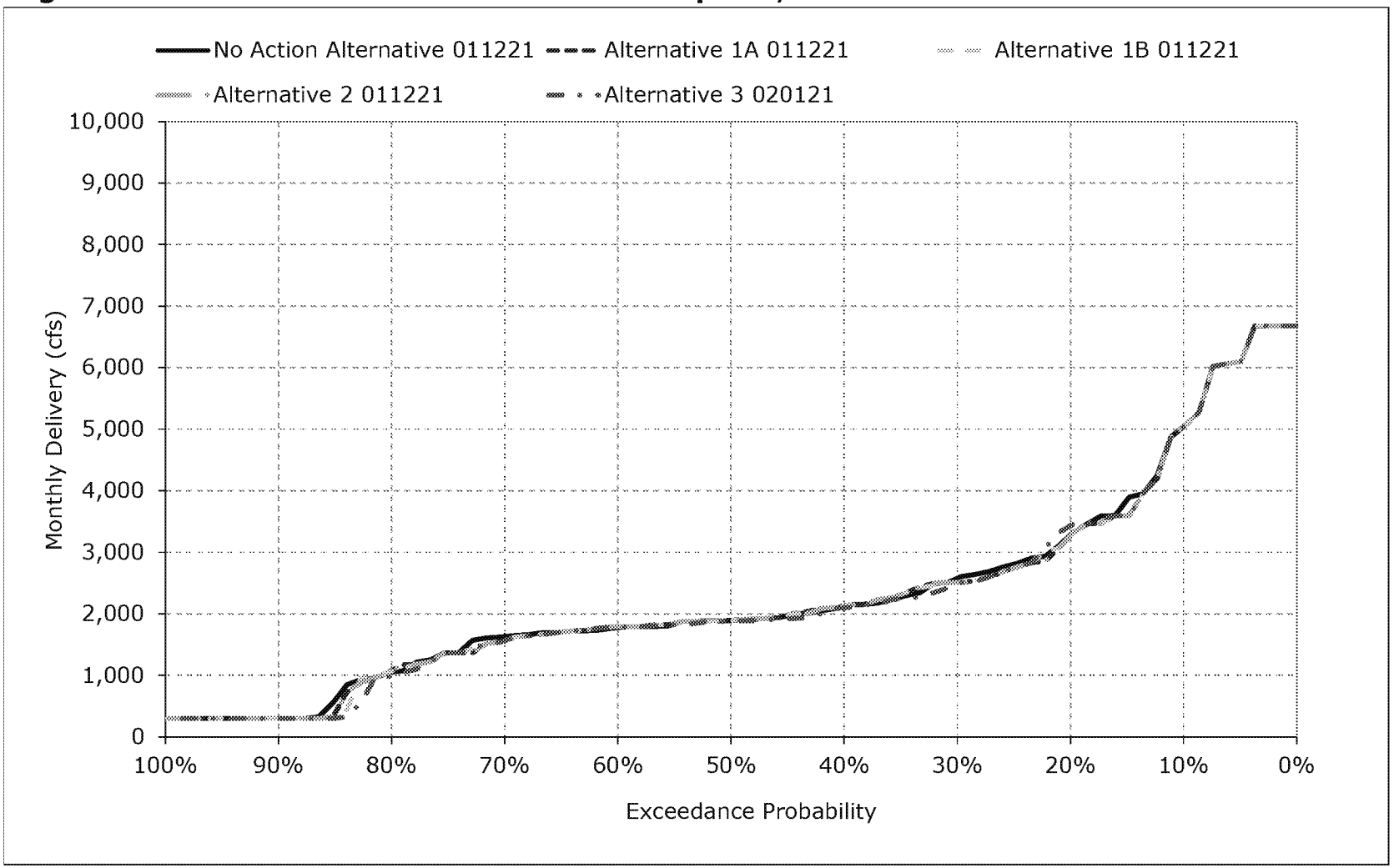


Figure 5B4-5-16. SWP and CVP Banks PP Exports, July

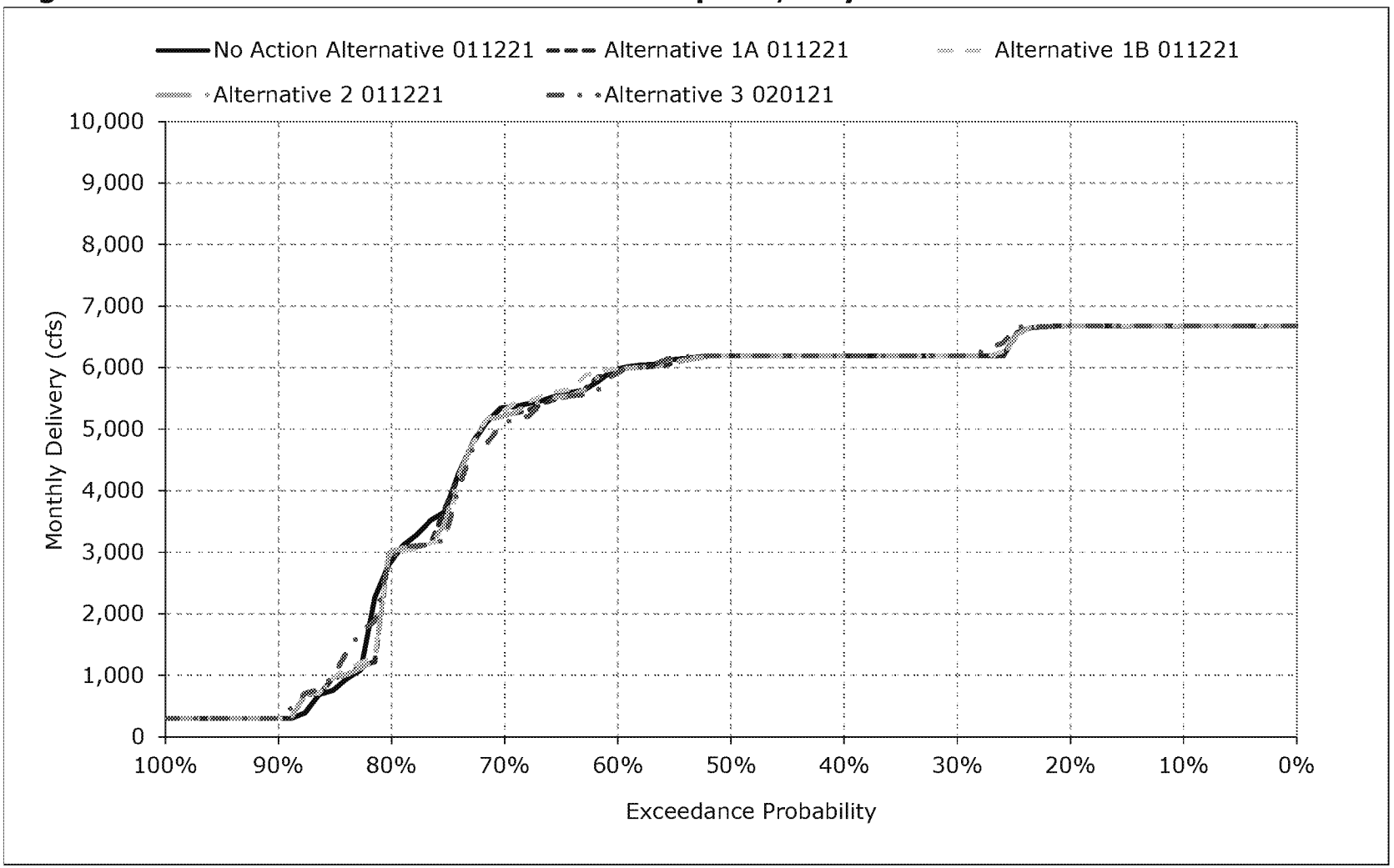


Figure 5B4-5-17. SWP and CVP Banks PP Exports, August

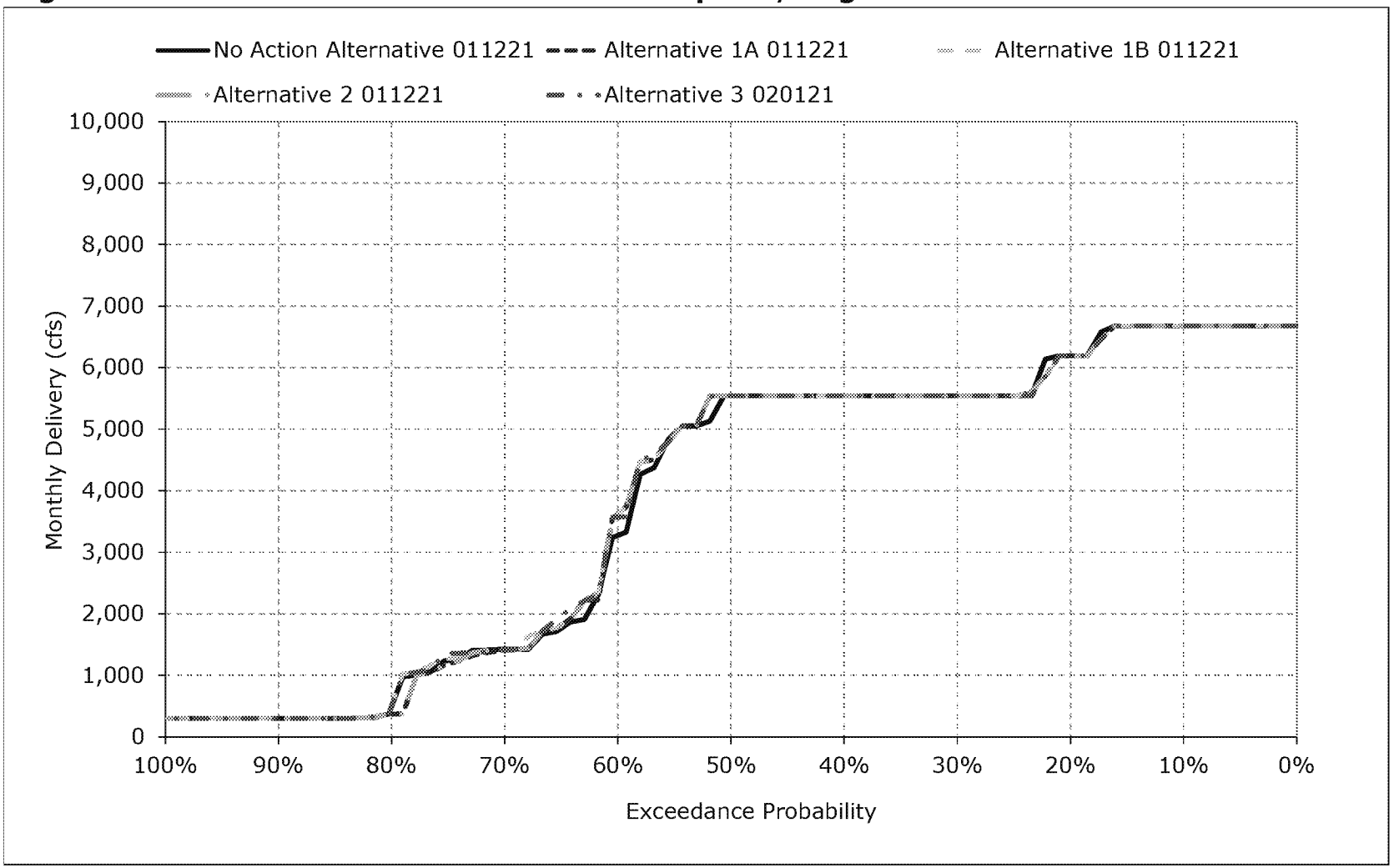


Figure 5B4-5-18. SWP and CVP Banks PP Exports, September

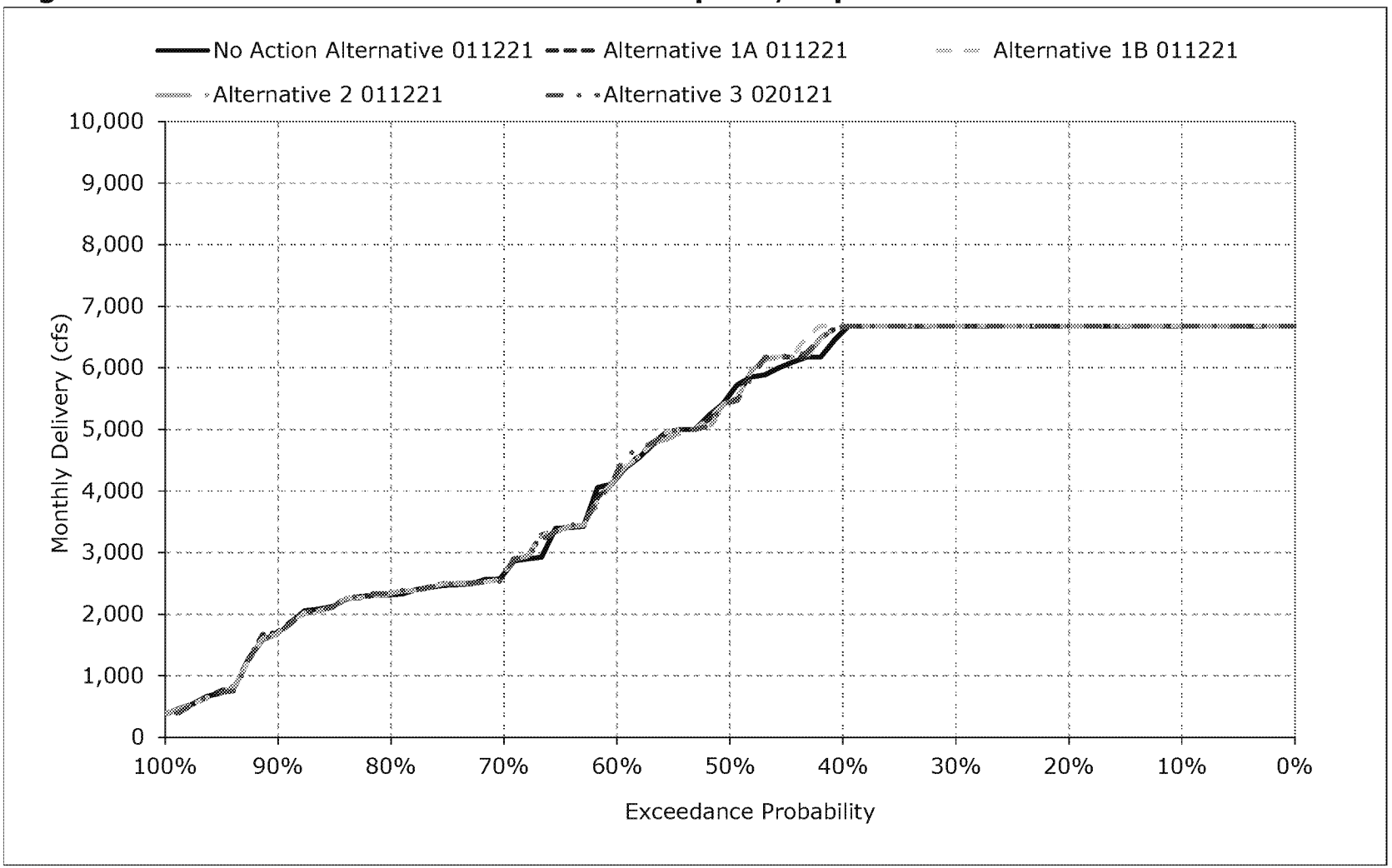


Table 5B4-6-1a. Barker Slough Pumping Plant, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	153	175	175	175	175	175	175	175	175	159	153	175
20%	133	175	175	175	175	175	175	175	175	115	151	175
30%	111	128	175	175	175	175	175	175	175	110	110	160
40%	111	128	175	175	175	175	175	175	167	110	110	150
50%	111	122	175	175	175	175	175	175	159	106	105	121
60%	107	103	175	175	175	175	175	175	128	105	105	111
70%	103	81	115	175	175	175	175	163	120	98	99	110
80%	101	77	98	175	175	175	175	135	115	97	96	108
90%	89	63	63	175	145	105	110	93	71	64	96	108
Long Term												
Full Simulation Period[a]	113	116	144	168	165	162	162	154	141	110	111	135
Water Year Types[b,c]												
Wet (32%)	124	139	155	175	174	175	175	175	169	121	123	126
Above Normal (15%)	111	116	162	174	175	175	175	171	148	105	105	108
Below Normal (17%)	125	118	135	172	169	175	175	158	135	97	96	143
Dry (22%)	106	103	124	170	159	159	159	148	143	132	129	164
Critical (15%)	89	80	141	138	142	112	113	98	78	75	84	131

Table 5B4-6-1b. Barker Slough Pumping Plant, Alternative 1A 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	154	175	175	175	175	175	175	175	175	175	173	175
20%	144	175	175	175	175	175	175	175	175	137	151	175
30%	123	128	175	175	175	175	175	175	173	120	123	175
40%	111	128	175	175	175	175	175	175	167	119	119	155
50%	111	123	175	175	175	175	175	175	159	111	118	125
60%	107	105	174	175	175	175	175	175	128	110	110	111
70%	103	81	113	175	175	175	175	148	120	110	110	110
80%	102	77	83	175	175	175	175	135	115	105	105	110
90%	89	59	62	175	142	105	110	93	71	85	104	108
Long Term												
Full Simulation Period[a]	115	115	140	168	165	161	163	154	141	121	121	139
Water Year Types[b,c]												
Wet (32%)	125	137	153	175	174	175	175	175	169	121	122	124
Above Normal (15%)	115	116	161	174	175	175	175	171	147	105	105	108
Below Normal (17%)	118	118	135	172	168	175	175	158	135	119	118	154
Dry (22%)	115	109	115	170	159	154	159	146	143	150	146	171
Critical (15%)	88	73	137	138	139	110	114	96	78	94	103	140

Table 5B4-6-1c. Barker Slough Pumping Plant, Alternative 1A 011221 minus No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	16	20	0
20%	11	0	0	0	0	0	0	0	0	22	0	0
30%	11	0	0	0	0	0	0	0	-2	9	12	15
40%	0	0	0	0	0	0	0	0	0	8	9	6
50%	0	2	0	0	0	0	0	0	0	5	13	5
60%	0	2	-1	0	0	0	0	0	0	5	5	1
70%	0	0	-2	0	0	0	0	-15	0	12	11	0
80%	0	0	-15	0	0	0	0	0	0	8	8	3
90%	0	-4	-1	0	-3	0	0	0	0	20	8	0
Long Term												
Full Simulation Period[a]	2	0	-3	0	-1	-1	0	0	0	11	10	4
Water Year Types[b,c]												
Wet (32%)	1	-2	-2	0	0	0	0	0	0	0	-1	-2
Above Normal (15%)	4	0	-2	0	0	0	0	0	-1	0	0	0
Below Normal (17%)	-6	0	0	0	0	0	0	0	0	22	22	11
Dry (22%)	9	6	-9	0	0	-5	0	-1	0	18	17	6
Critical (15%)	-1	-7	-4	0	-3	-1	2	-1	0	19	19	8

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-6-2a. Barker Slough Pumping Plant, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	153	175	175	175	175	175	175	175	175	159	153	175
20%	133	175	175	175	175	175	175	175	175	115	151	175
30%	111	128	175	175	175	175	175	175	175	110	110	160
40%	111	128	175	175	175	175	175	175	167	110	110	150
50%	111	122	175	175	175	175	175	175	159	106	105	121
60%	107	103	175	175	175	175	175	175	128	105	105	111
70%	103	81	115	175	175	175	175	163	120	98	99	110
80%	101	77	98	175	175	175	175	135	115	97	96	108
90%	89	63	63	175	145	105	110	93	71	64	96	108
Long Term												
Full Simulation Period[a]	113	116	144	168	165	162	162	154	141	110	111	135
Water Year Types[b,c]												
Wet (32%)	124	139	155	175	174	175	175	175	169	121	123	126
Above Normal (15%)	111	116	162	174	175	175	175	171	148	105	105	108
Below Normal (17%)	125	118	135	172	169	175	175	158	135	97	96	143
Dry (22%)	106	103	124	170	159	159	159	148	143	132	129	164
Critical (15%)	89	80	141	138	142	112	113	98	78	75	84	131

Table 5B4-6-2b. Barker Slough Pumping Plant, Alternative 1B 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	154	175	175	175	175	175	175	175	175	175	173	175
20%	144	175	175	175	175	175	175	175	175	137	151	175
30%	111	128	175	175	175	175	175	175	173	120	123	175
40%	111	128	175	175	175	175	175	175	167	119	119	155
50%	111	123	175	175	175	175	175	175	159	111	118	140
60%	107	94	149	175	175	175	175	175	128	110	110	115
70%	103	81	113	175	175	175	175	148	120	110	110	110
80%	101	66	85	175	175	175	175	135	115	105	105	110
90%	89	59	55	175	157	105	110	93	71	85	104	108
Long Term												
Full Simulation Period[a]	114	114	139	167	166	161	163	154	141	121	121	140
Water Year Types[b,c]												
Wet (32%)	125	137	153	175	174	175	175	175	169	121	122	126
Above Normal (15%)	115	116	161	174	175	175	175	171	147	105	105	111
Below Normal (17%)	118	118	137	172	168	175	175	158	135	119	118	154
Dry (22%)	113	108	112	170	158	154	160	146	143	151	146	170
Critical (15%)	88	69	133	135	148	113	114	96	78	94	103	141

Table 5B4-6-2c. Barker Slough Pumping Plant, Alternative 1B 011221 minus No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	16	20	0
20%	11	0	0	0	0	0	0	0	0	22	0	0
30%	0	0	0	0	0	0	0	0	-2	9	12	15
40%	0	0	0	0	0	0	0	0	0	8	9	5
50%	0	2	0	0	0	0	0	0	0	5	13	20
60%	0	-10	-26	0	0	0	0	0	0	5	5	5
70%	-1	0	-2	0	0	0	0	-15	0	12	11	0
80%	0	-11	-14	0	0	0	0	0	0	8	8	3
90%	0	-4	-7	0	12	0	0	0	0	20	8	0
Long Term												
Full Simulation Period[a]	1	-1	-4	-1	1	-1	0	0	0	11	10	5
Water Year Types[b,c]												
Wet (32%)	1	-2	-2	0	0	0	0	0	0	0	-1	0
Above Normal (15%)	4	0	-2	0	0	0	0	0	-1	0	0	4
Below Normal (17%)	-6	0	2	0	0	0	0	0	0	22	22	11
Dry (22%)	7	5	-11	0	0	-5	1	-1	0	19	17	5
Critical (15%)	-1	-11	-8	-4	6	1	2	-1	0	19	19	9

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-6-3a. Barker Slough Pumping Plant, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	153	175	175	175	175	175	175	175	175	159	153	175
20%	133	175	175	175	175	175	175	175	175	115	151	175
30%	111	128	175	175	175	175	175	175	175	110	110	160
40%	111	128	175	175	175	175	175	175	167	110	110	150
50%	111	122	175	175	175	175	175	175	159	106	105	121
60%	107	103	175	175	175	175	175	175	128	105	105	111
70%	103	81	115	175	175	175	175	163	120	98	99	110
80%	101	77	98	175	175	175	175	135	115	97	96	108
90%	89	63	63	175	145	105	110	93	71	64	96	108
Long Term												
Full Simulation Period[a]	113	116	144	168	165	162	162	154	141	110	111	135
Water Year Types[b,c]												
Wet (32%)	124	139	155	175	174	175	175	175	169	121	123	126
Above Normal (15%)	111	116	162	174	175	175	175	171	148	105	105	108
Below Normal (17%)	125	118	135	172	169	175	175	158	135	97	96	143
Dry (22%)	106	103	124	170	159	159	159	148	143	132	129	164
Critical (15%)	89	80	141	138	142	112	113	98	78	75	84	131

Table 5B4-6-3b. Barker Slough Pumping Plant, Alternative 2 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	154	175	175	175	175	175	175	175	175	175	173	175
20%	144	175	175	175	175	175	175	175	175	137	152	175
30%	111	128	175	175	175	175	175	175	173	120	123	175
40%	111	128	175	175	175	175	175	175	167	119	119	155
50%	111	123	175	175	175	175	175	175	159	111	118	133
60%	107	107	174	175	175	175	175	175	128	110	110	111
70%	103	81	113	175	175	175	175	148	120	110	110	110
80%	101	77	83	175	175	175	175	135	115	105	105	109
90%	89	59	55	175	156	105	110	93	71	85	104	108
Long Term												
Full Simulation Period[a]	114	115	140	167	166	161	163	154	141	121	122	139
Water Year Types[b,c]												
Wet (32%)	125	137	154	175	174	175	175	175	169	121	123	126
Above Normal (15%)	115	116	161	174	175	175	175	171	147	105	105	108
Below Normal (17%)	118	118	135	172	168	175	175	158	135	119	118	154
Dry (22%)	112	112	115	170	159	154	159	146	143	150	146	171
Critical (15%)	88	69	133	135	148	110	114	96	78	94	103	137

Table 5B4-6-3c. Barker Slough Pumping Plant, Alternative 2 011221 minus No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	16	20	0
20%	11	0	0	0	0	0	0	0	0	22	1	0
30%	0	0	0	0	0	0	0	0	-2	9	12	15
40%	0	0	0	0	0	0	0	0	0	8	9	5
50%	0	2	0	0	0	0	0	0	0	5	13	12
60%	0	4	-1	0	0	0	0	0	0	5	5	1
70%	-1	0	-2	0	0	0	0	-15	0	12	11	0
80%	0	0	-15	0	0	0	0	0	0	8	8	1
90%	0	-4	-7	0	11	0	0	0	0	20	8	0
Long Term												
Full Simulation Period[a]	1	0	-4	-1	1	-1	0	0	0	11	10	4
Water Year Types[b,c]												
Wet (32%)	1	-2	-1	0	0	0	0	0	0	0	0	0
Above Normal (15%)	4	0	-2	0	0	0	0	0	-1	0	0	0
Below Normal (17%)	-6	0	0	0	0	0	0	0	0	22	22	11
Dry (22%)	6	9	-9	0	0	-5	0	-1	0	18	17	6
Critical (15%)	-1	-11	-8	-4	6	-1	2	-1	0	19	19	5

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-6-4a. Barker Slough Pumping Plant, No Action Alternative 011221, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	153	175	175	175	175	175	175	175	175	159	153	175
20%	133	175	175	175	175	175	175	175	175	115	151	175
30%	111	128	175	175	175	175	175	175	175	110	110	160
40%	111	128	175	175	175	175	175	175	167	110	110	150
50%	111	122	175	175	175	175	175	175	159	106	105	121
60%	107	103	175	175	175	175	175	175	128	105	105	111
70%	103	81	115	175	175	175	175	163	120	98	99	110
80%	101	77	98	175	175	175	175	135	115	97	96	108
90%	89	63	63	175	145	105	110	93	71	64	96	108
Long Term												
Full Simulation Period[a]	113	116	144	168	165	162	162	154	141	110	111	135
Water Year Types[b,c]												
Wet (32%)	124	139	155	175	174	175	175	175	169	121	123	126
Above Normal (15%)	111	116	162	174	175	175	175	171	148	105	105	108
Below Normal (17%)	125	118	135	172	169	175	175	158	135	97	96	143
Dry (22%)	106	103	124	170	159	159	159	148	143	132	129	164
Critical (15%)	89	80	141	138	142	112	113	98	78	75	84	131

Table 5B4-6-4b. Barker Slough Pumping Plant, Alternative 3 020121, Monthly Delivery (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	154	175	175	175	175	175	175	175	175	175	173	175
20%	145	175	175	175	175	175	175	175	175	137	149	175
30%	111	128	175	175	175	175	175	175	175	120	123	175
40%	111	128	175	175	175	175	175	175	167	119	118	155
50%	111	122	175	175	175	175	175	175	159	111	118	140
60%	107	84	174	175	175	175	175	175	128	110	110	111
70%	102	78	113	175	175	175	175	148	120	110	110	110
80%	91	63	98	175	175	175	175	135	115	105	105	110
90%	89	59	63	175	145	105	111	93	71	82	104	108
Long Term												
Full Simulation Period[a]	114	113	143	168	165	161	163	154	141	121	121	140
Water Year Types[b,c]												
Wet (32%)	125	137	154	175	174	175	175	175	169	121	121	124
Above Normal (15%)	111	112	155	174	175	175	175	171	148	105	105	111
Below Normal (17%)	121	118	137	172	168	175	175	158	135	119	118	155
Dry (22%)	111	101	126	170	158	154	161	146	143	151	146	170
Critical (15%)	88	73	137	138	142	112	114	96	78	94	103	141

Table 5B4-6-4c. Barker Slough Pumping Plant, Alternative 3 020121 minus No Action Alternative 011221, Monthly Delivery (cfs)

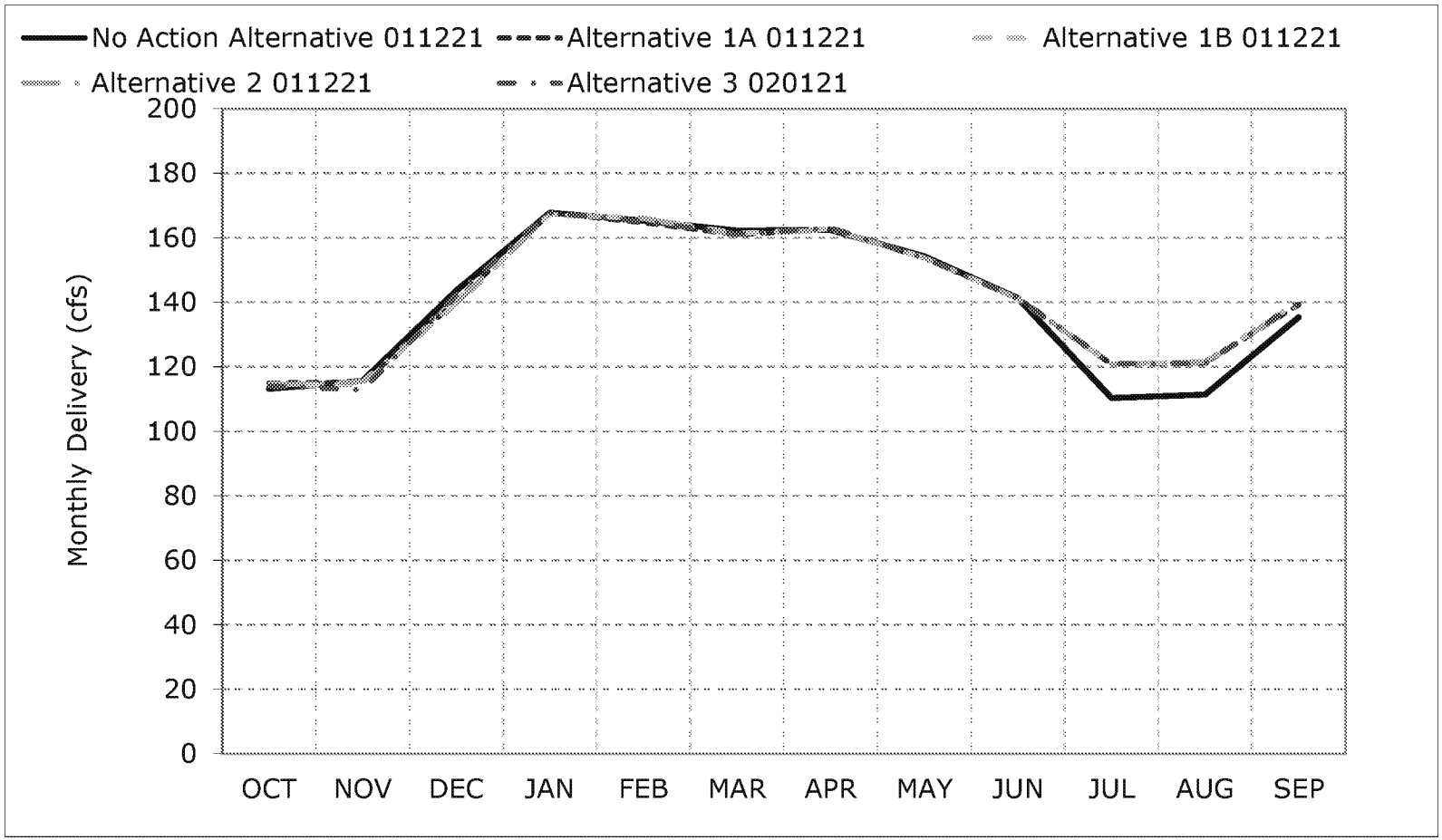
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	16	20	0
20%	12	0	0	0	0	0	0	0	0	22	-2	0
30%	0	0	0	0	0	0	0	0	0	9	12	15
40%	0	0	0	0	0	0	0	0	0	8	9	5
50%	0	0	0	0	0	0	0	0	0	5	13	19
60%	0	-20	-1	0	0	0	0	0	0	5	5	1
70%	-1	-3	-2	0	0	0	0	-15	0	12	11	0
80%	-10	-13	0	0	0	0	0	0	0	8	8	3
90%	0	-4	0	0	0	0	1	0	0	17	8	0
Long Term												
Full Simulation Period[a]	1	-3	-1	0	0	-1	1	-1	0	11	10	5
Water Year Types[b,c]												
Wet (32%)	1	-2	-1	0	0	0	0	0	0	0	-2	-2
Above Normal (15%)	0	-4	-7	0	0	0	0	0	0	0	0	4
Below Normal (17%)	-3	0	2	0	0	0	0	0	0	22	22	12
Dry (22%)	5	-2	2	0	0	-5	2	-1	0	19	17	5
Critical (15%)	-1	-7	-4	0	-1	0	2	-2	0	19	19	9

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

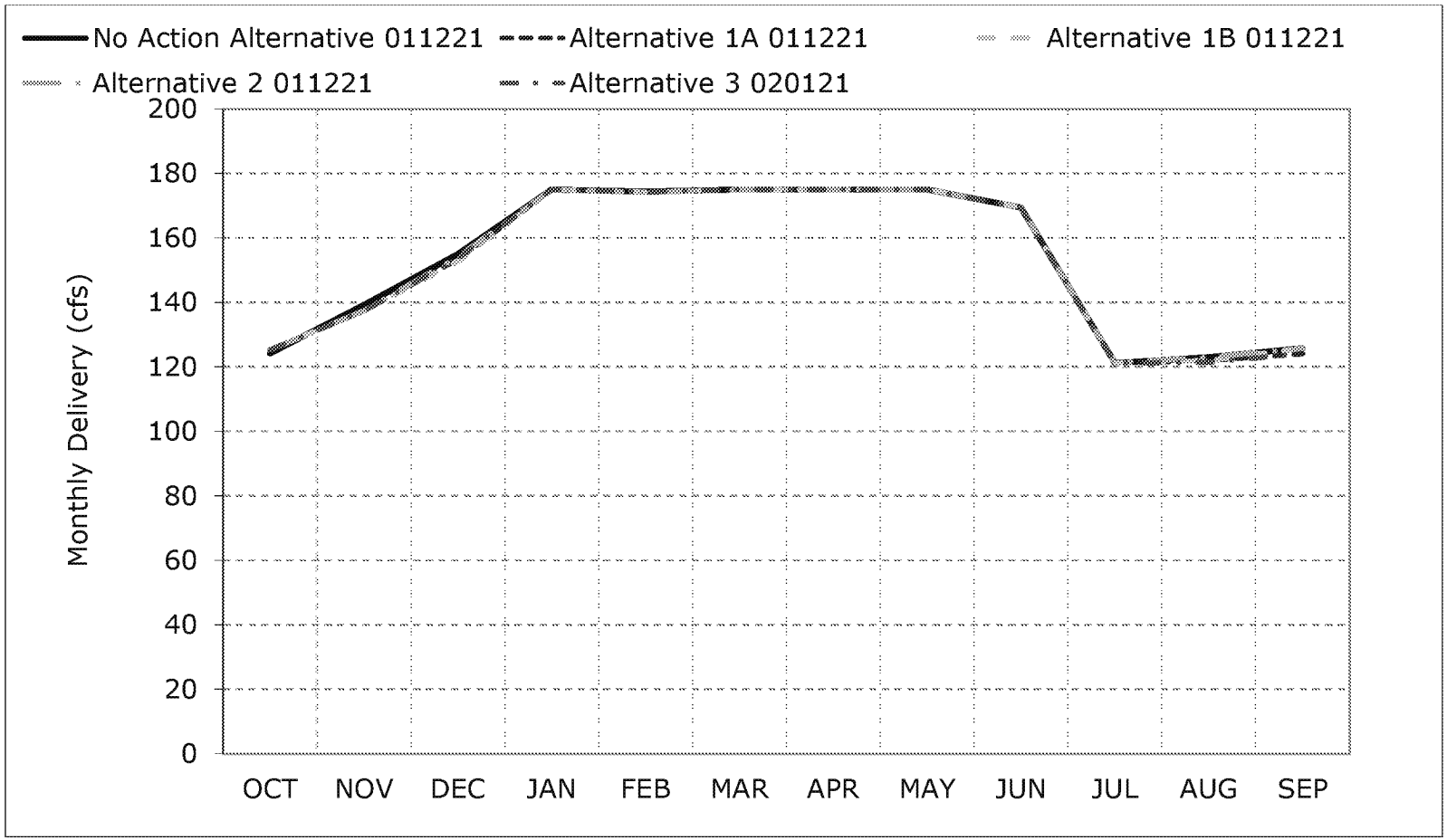
c These results are displayed with calendar year - year type sorting.

Figure 5B4-6-1. Barker Slough Pumping Plant, Long-Term Average Delivery



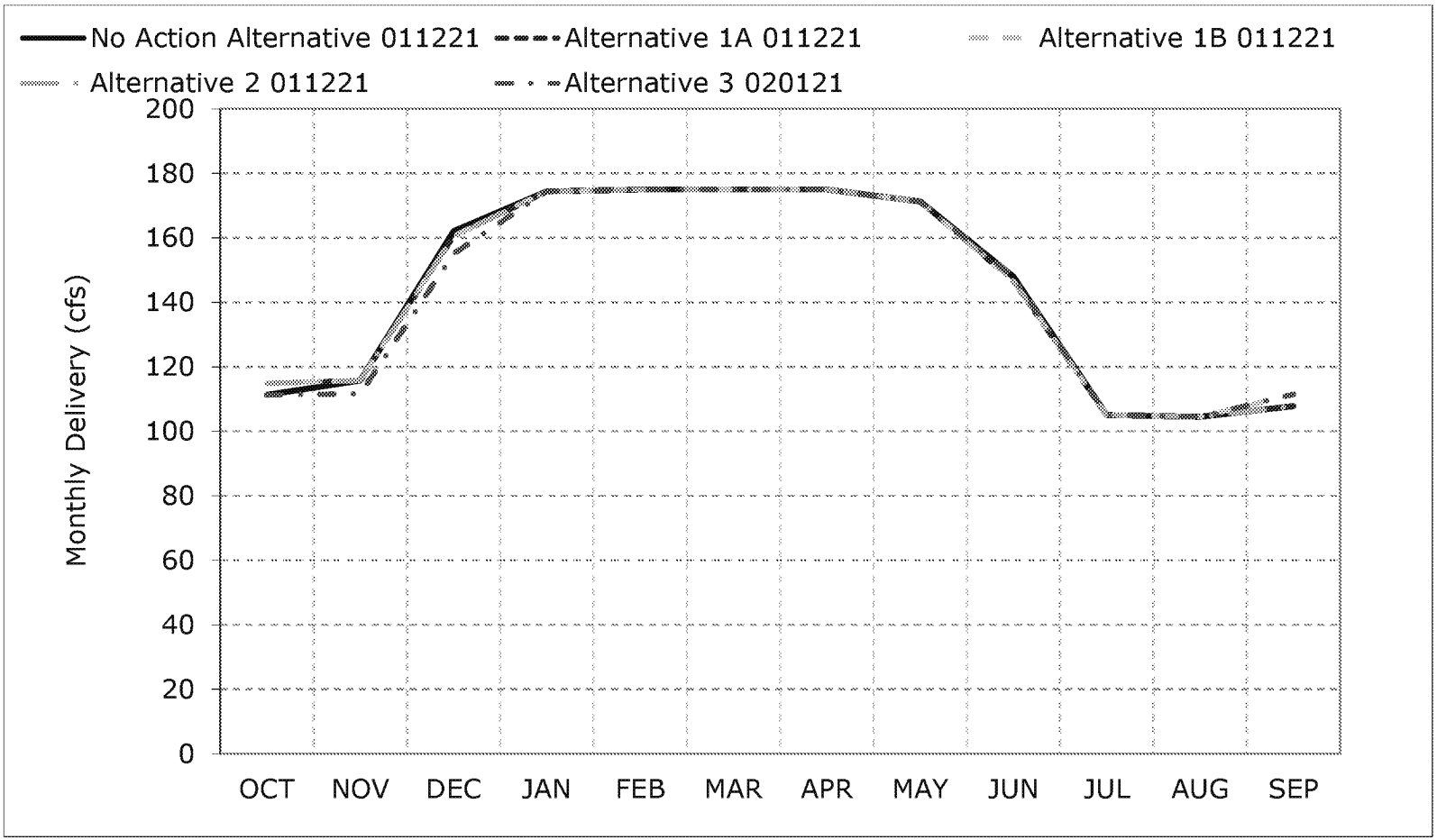
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-6-2. Barker Slough Pumping Plant, Wet Year Average Delivery



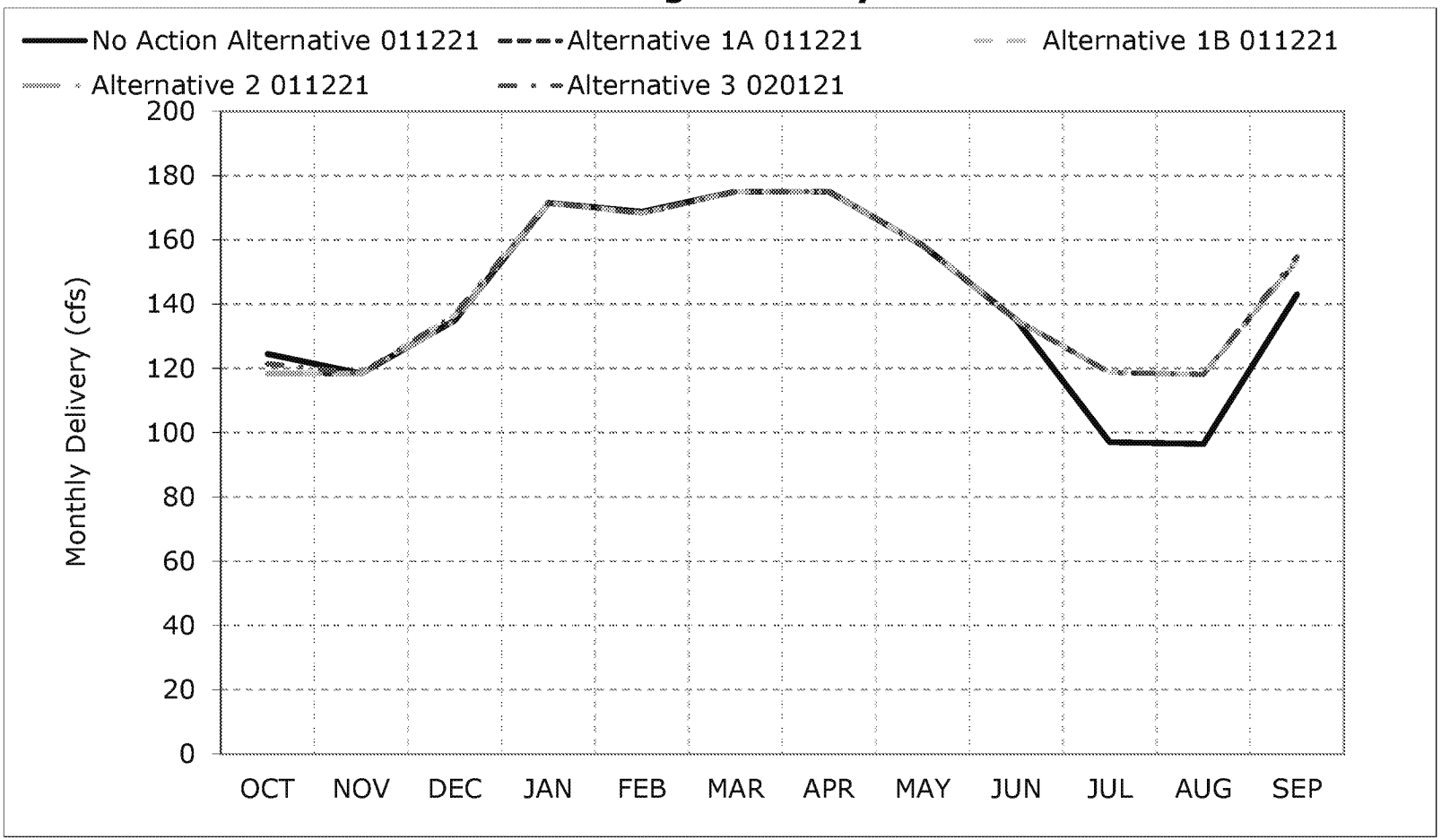
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-6-3. Barker Slough Pumping Plant, Above Normal Year Average Delivery



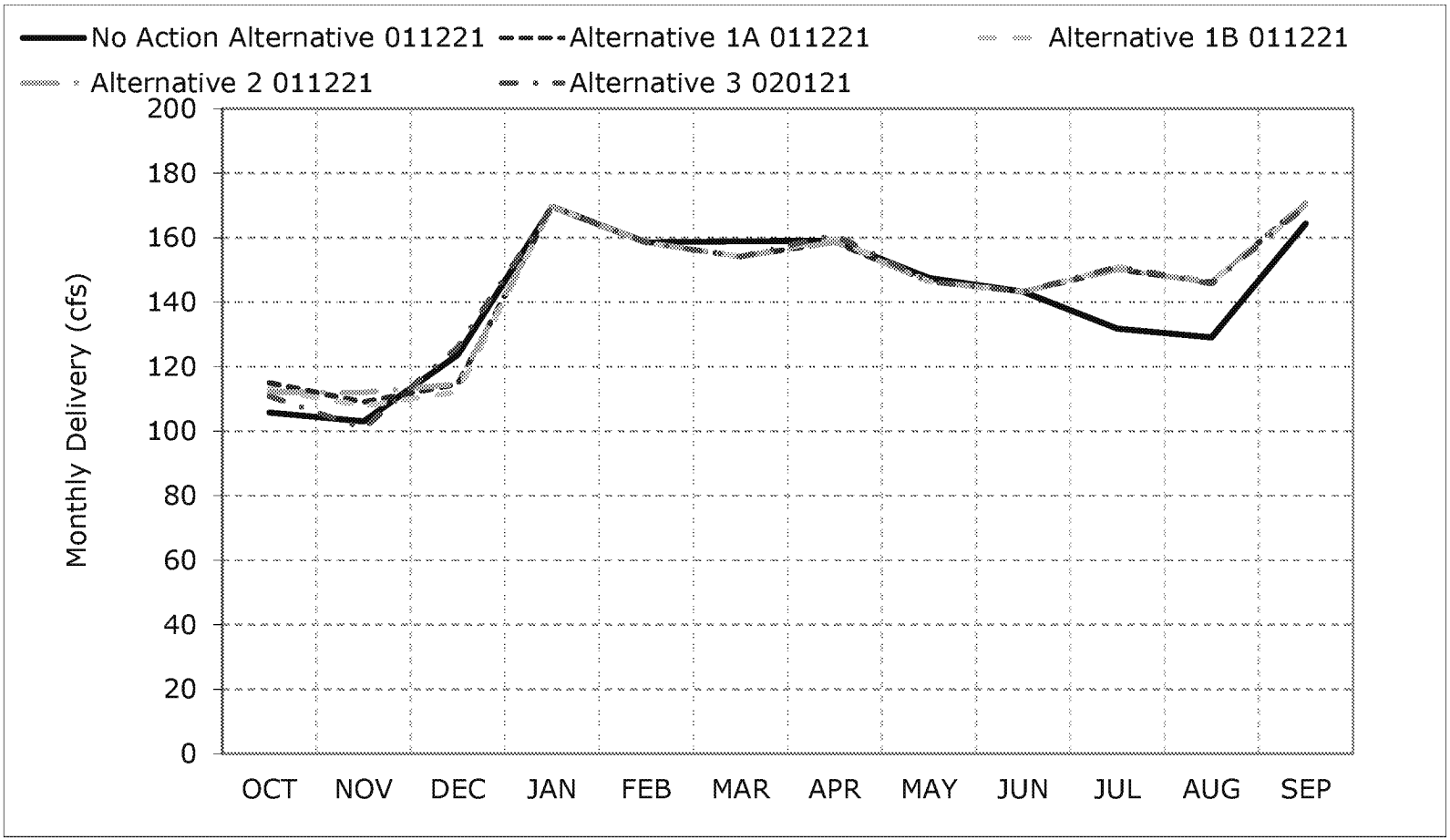
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-6-4. Barker Slough Pumping Plant, Below Normal Year Average Delivery



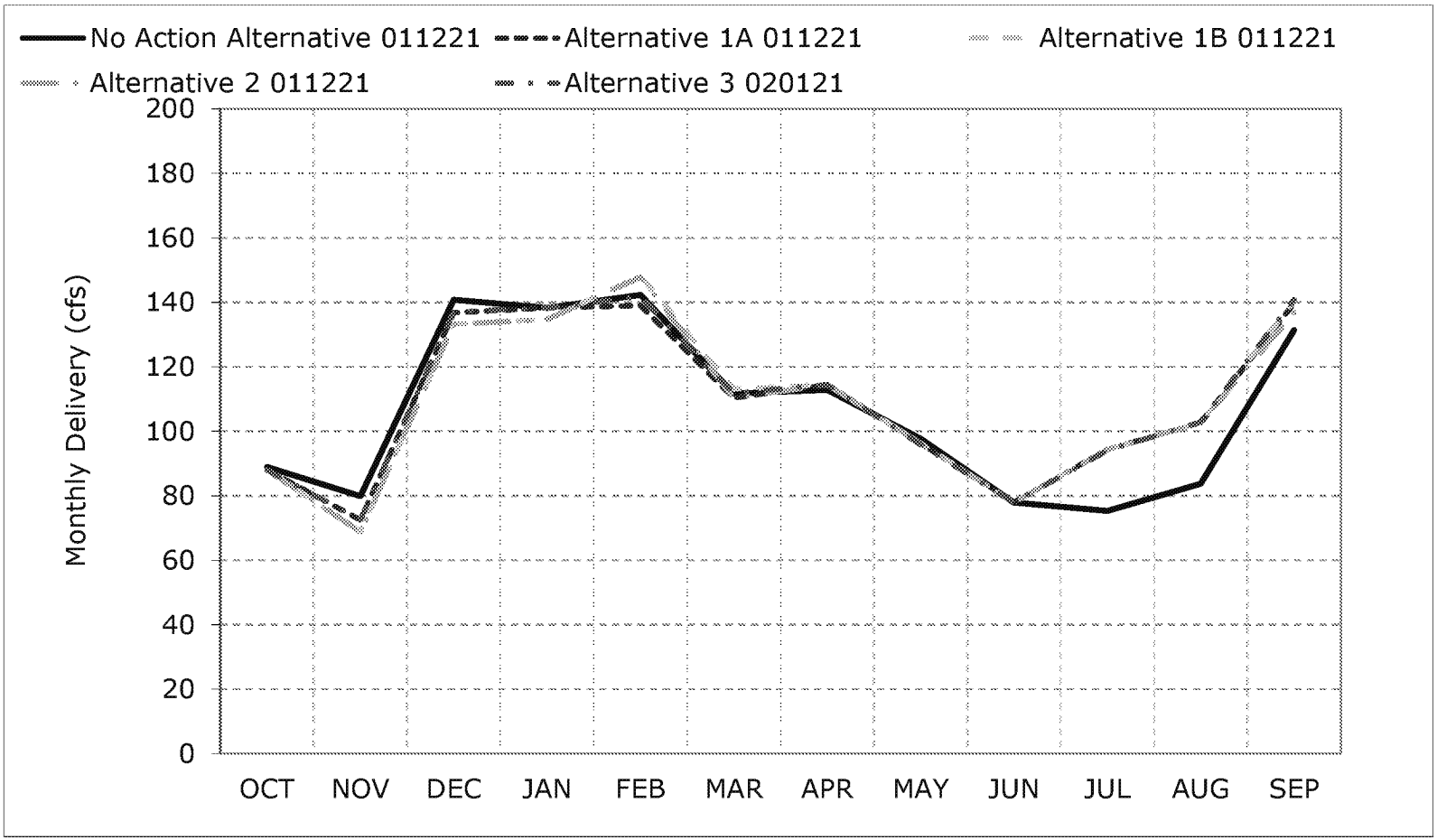
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-6-5. Barker Slough Pumping Plant, Dry Year Average Delivery



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-6-6. Barker Slough Pumping Plant, Critical Year Average Delivery



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with calendar year - year type sorting.

Figure 5B4-6-7. Barker Slough Pumping Plant, October

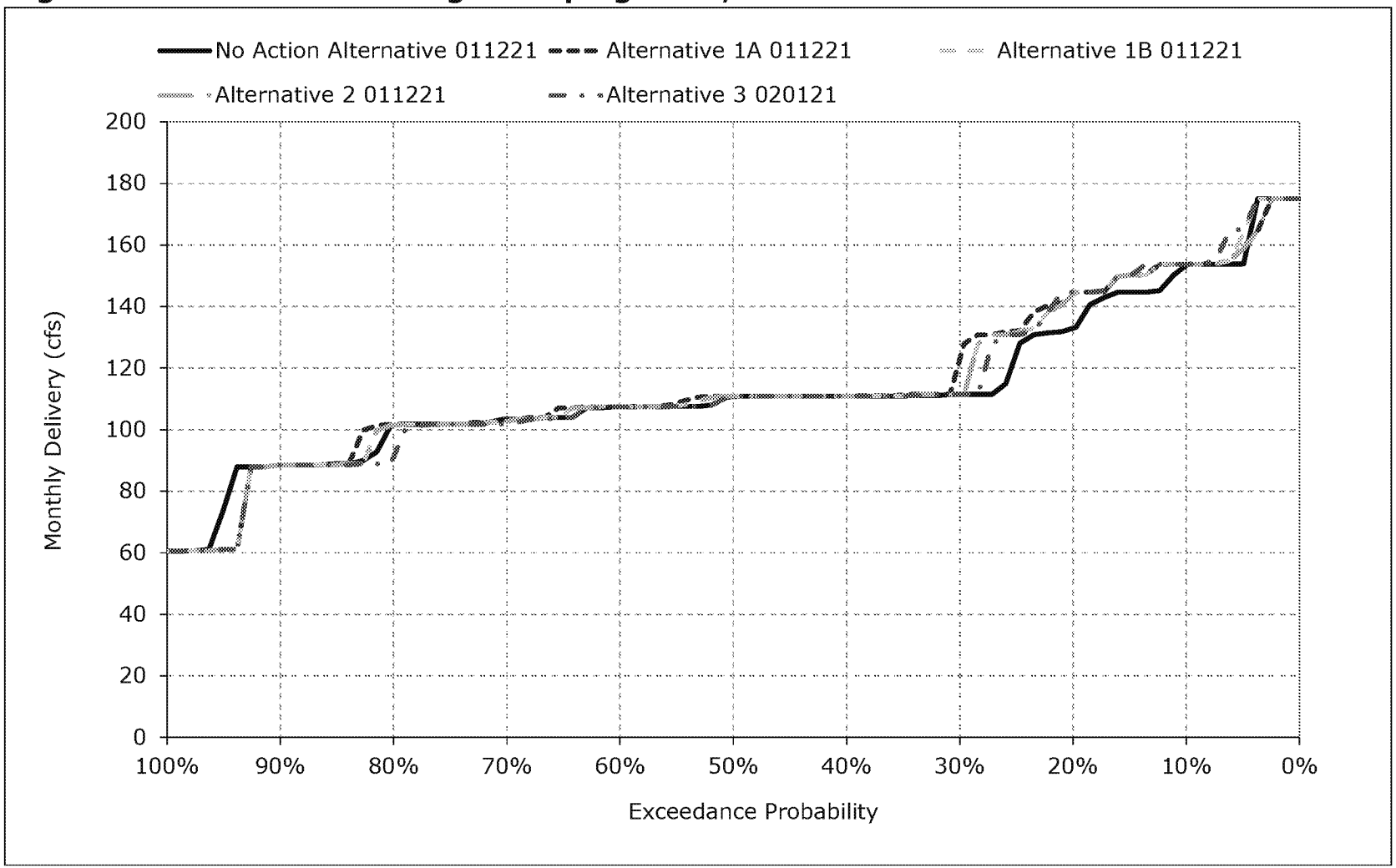


Figure 5B4-6-8. Barker Slough Pumping Plant, November

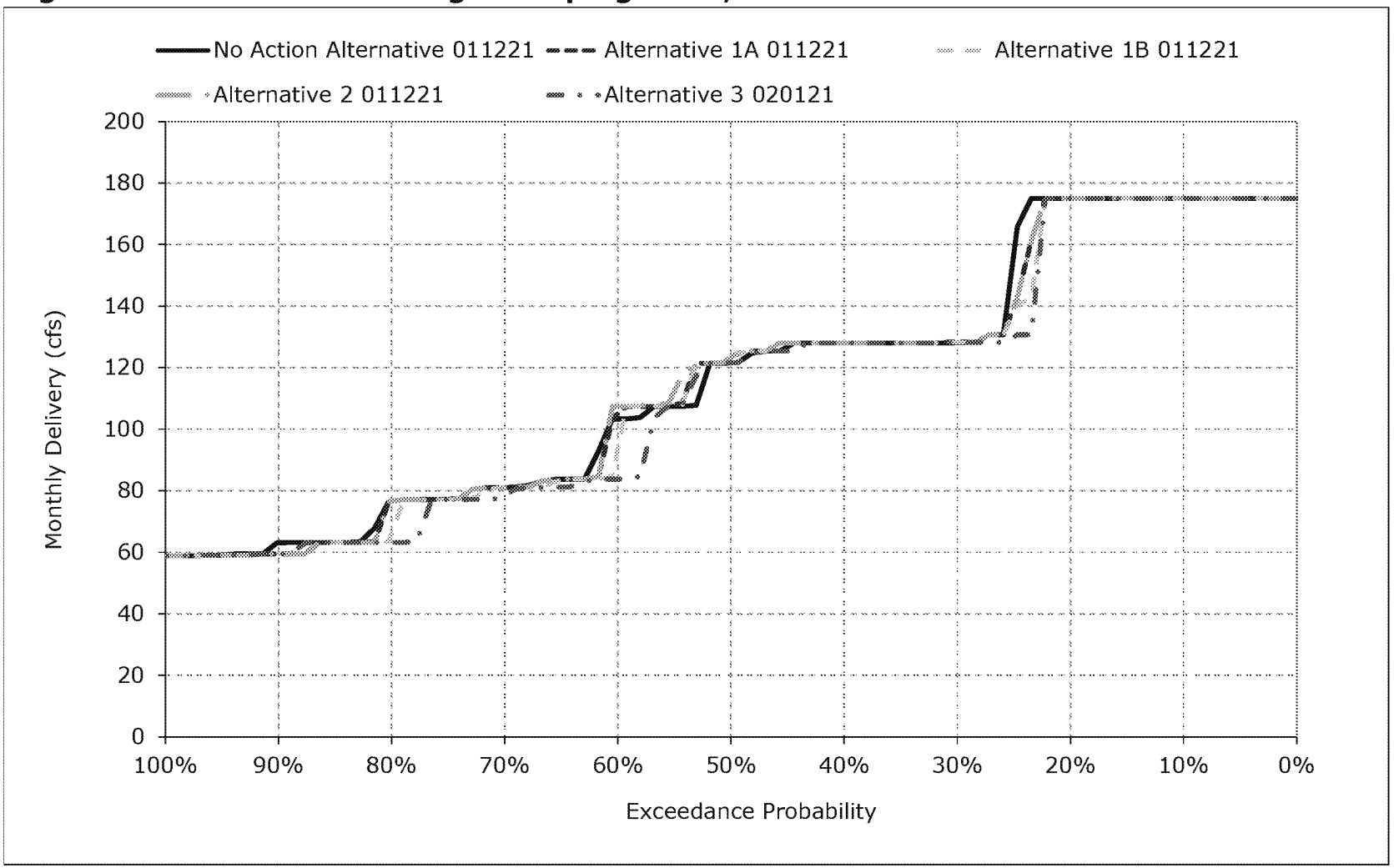


Figure 5B4-6-9. Barker Slough Pumping Plant, December

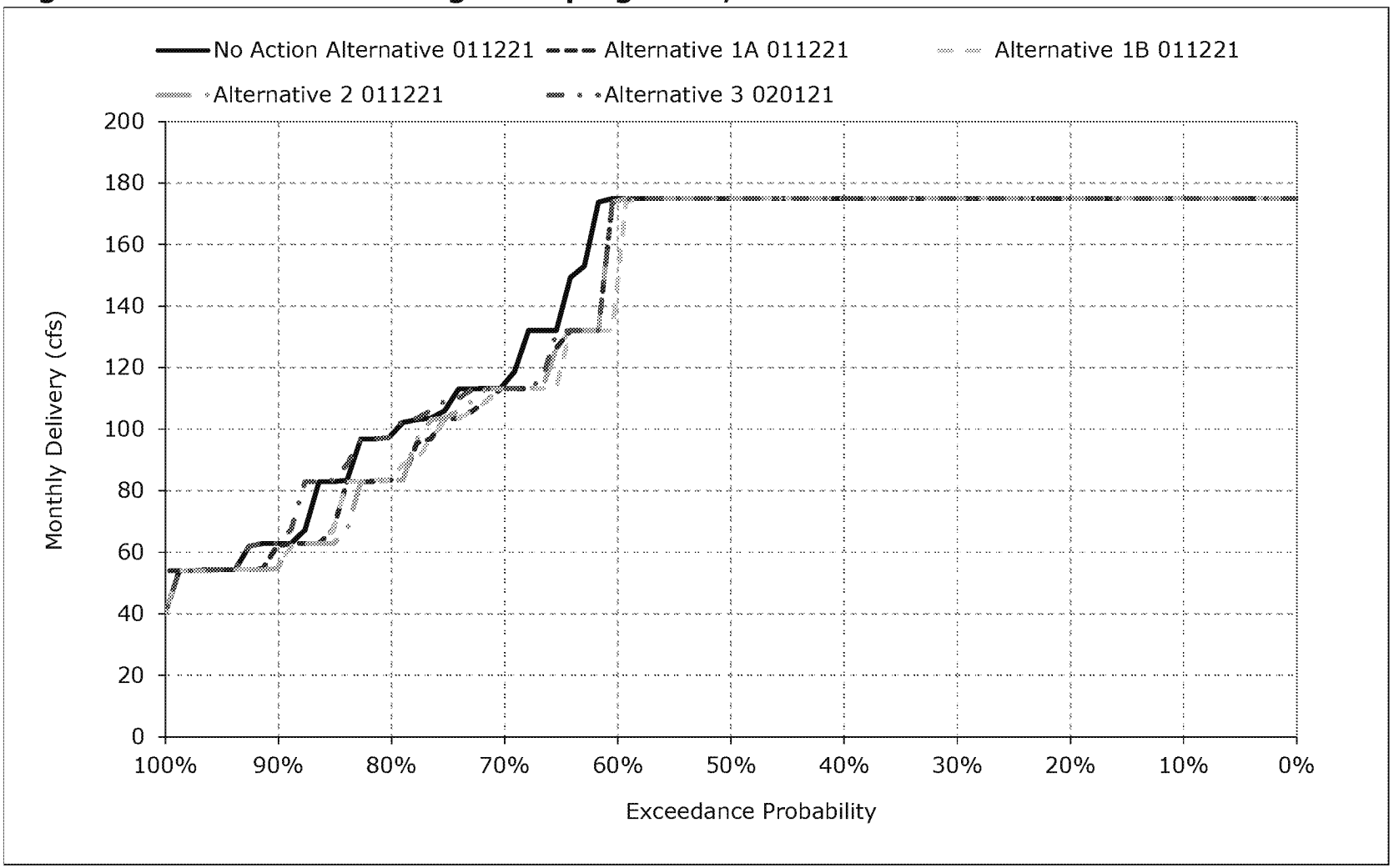


Figure 5B4-6-10. Barker Slough Pumping Plant, January

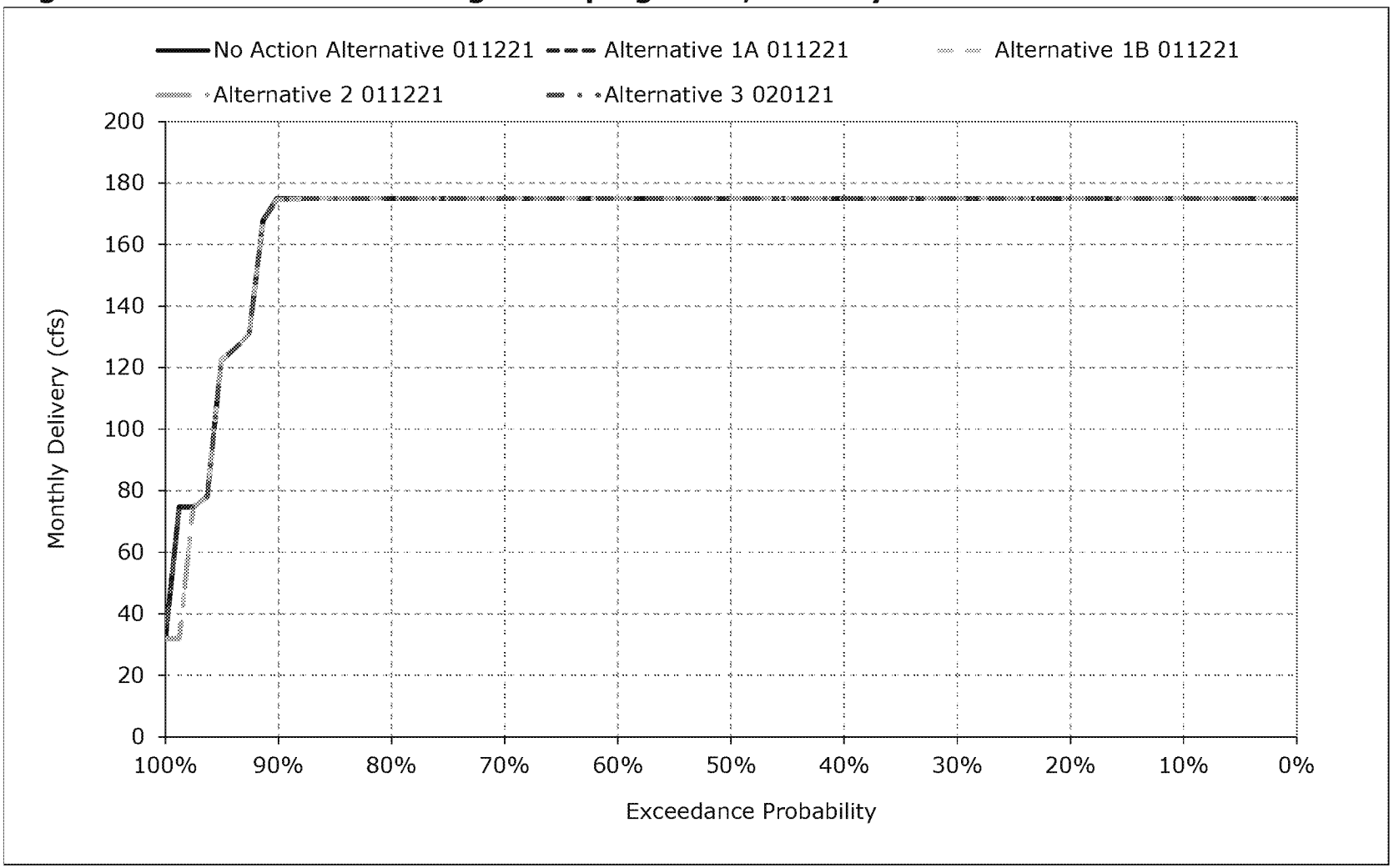


Figure 5B4-6-11. Barker Slough Pumping Plant, February

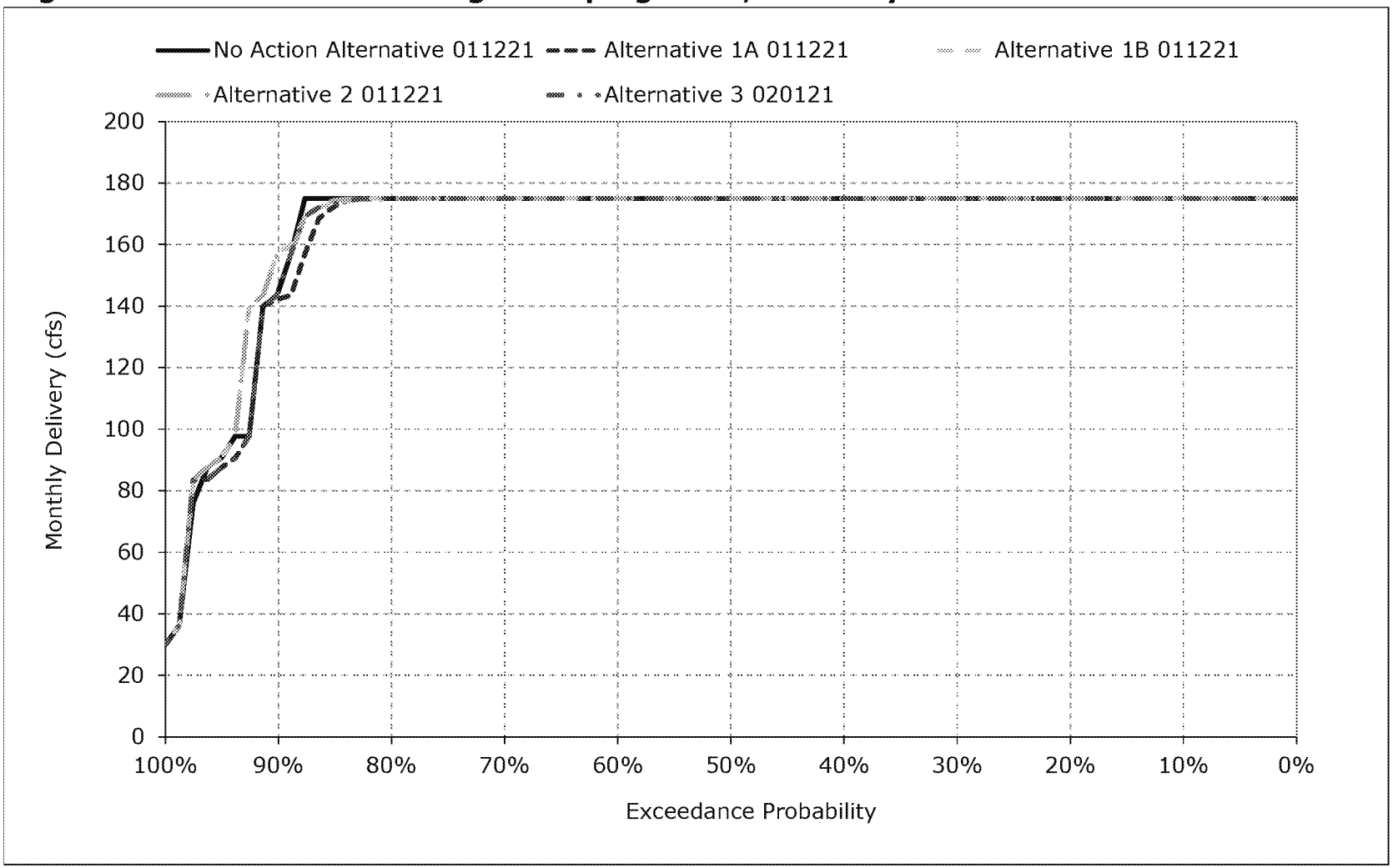


Figure 5B4-6-12. Barker Slough Pumping Plant, March

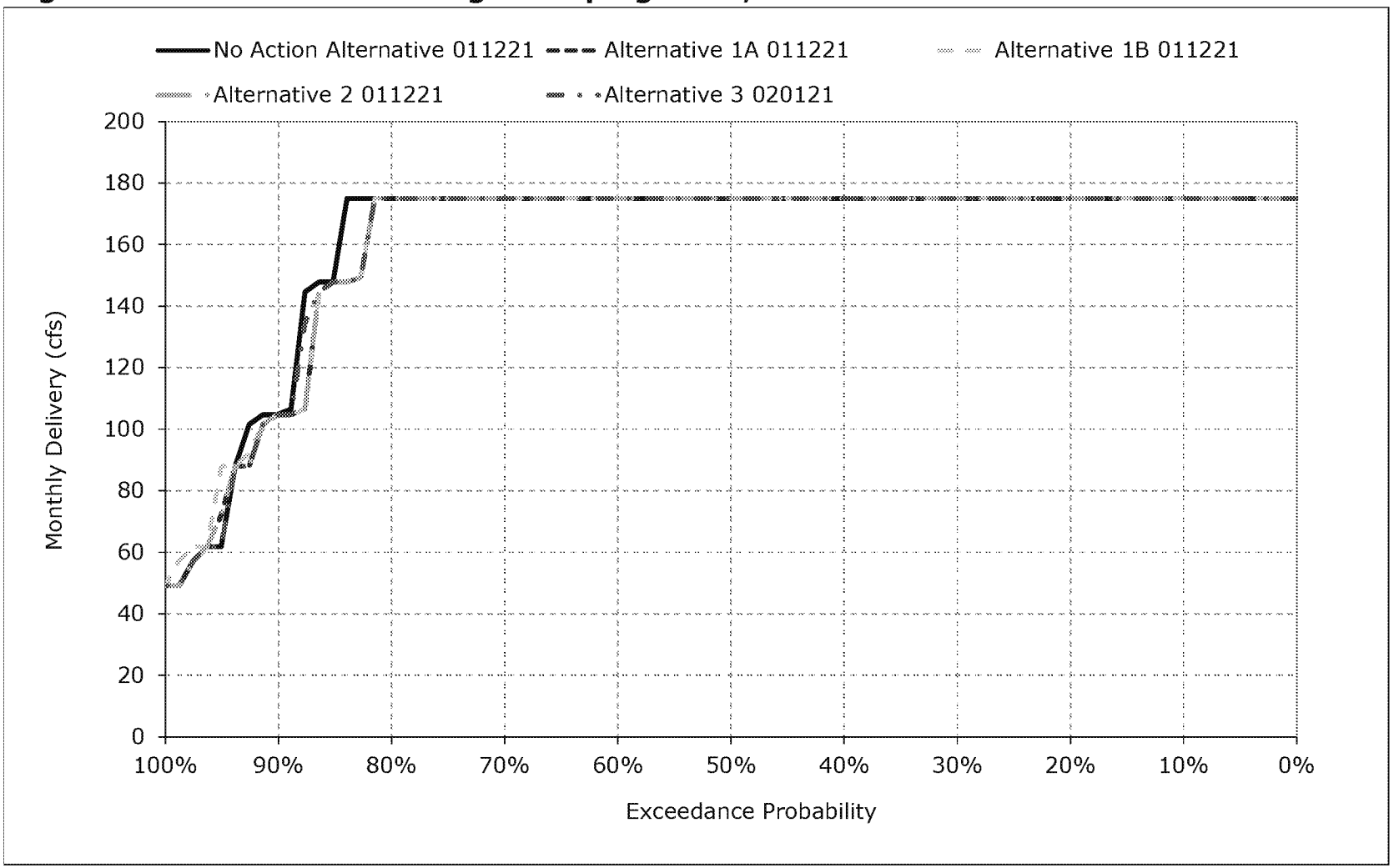


Figure 5B4-6-13. Barker Slough Pumping Plant, April

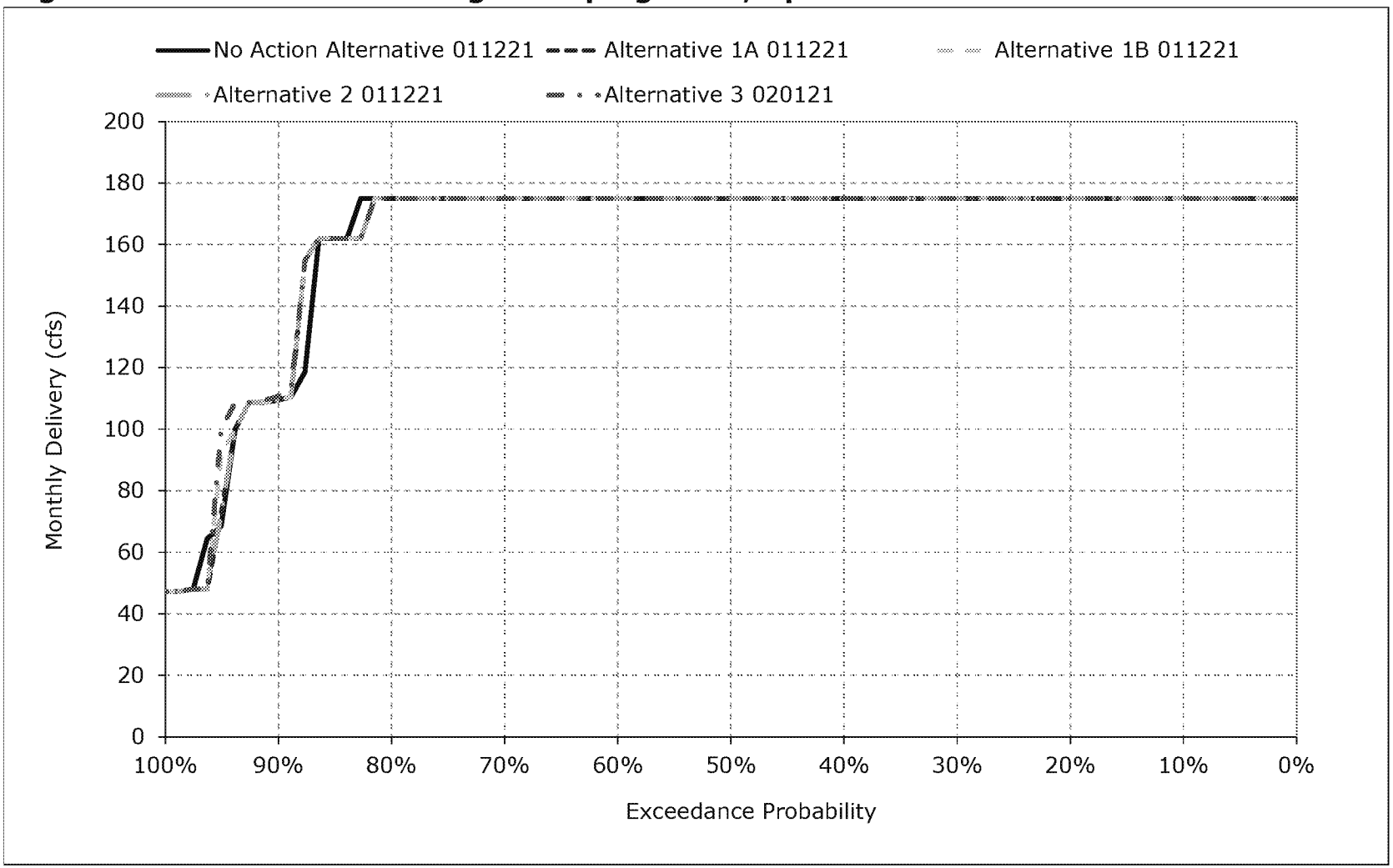


Figure 5B4-6-14. Barker Slough Pumping Plant, May

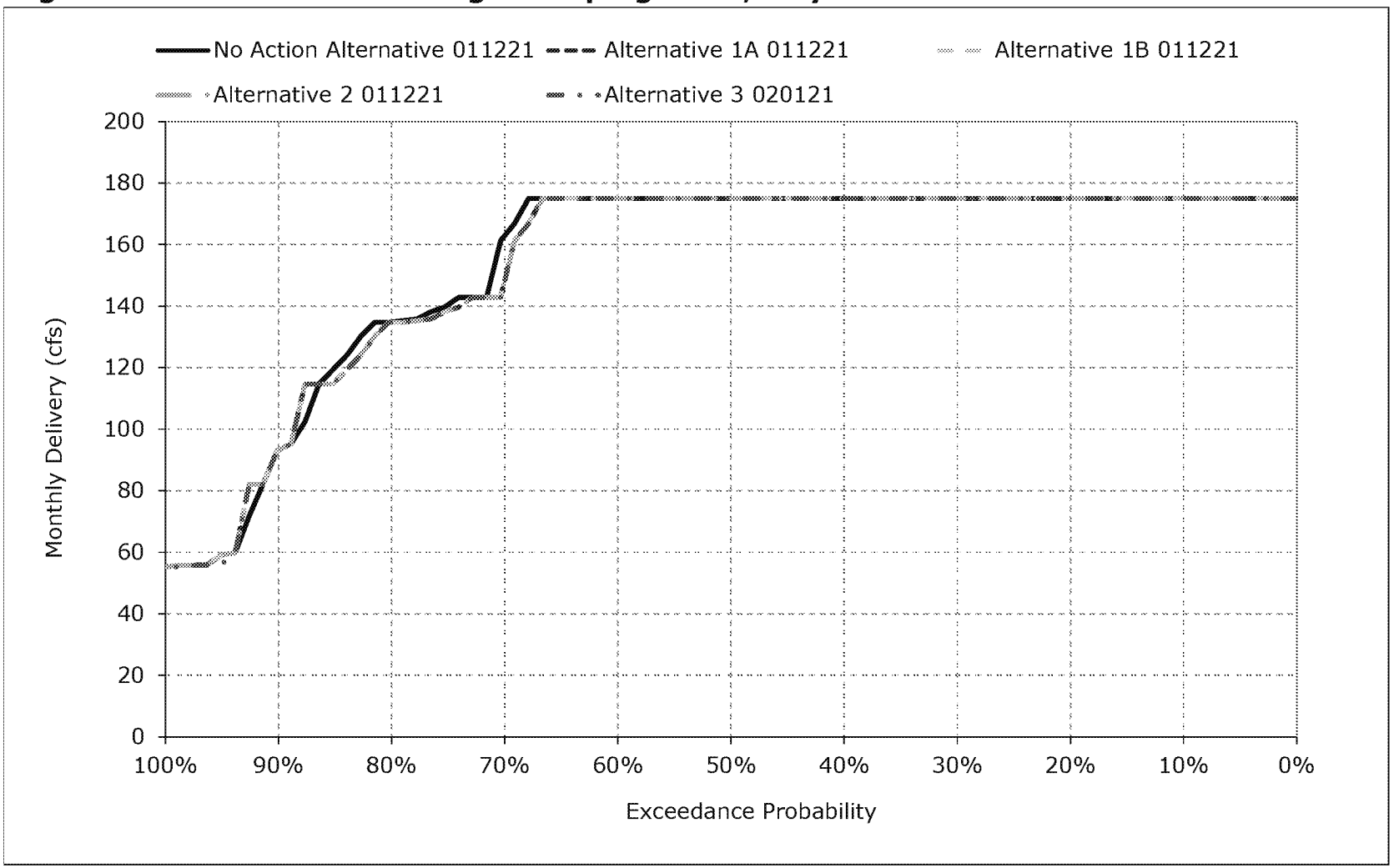


Figure 5B4-6-15. Barker Slough Pumping Plant, June

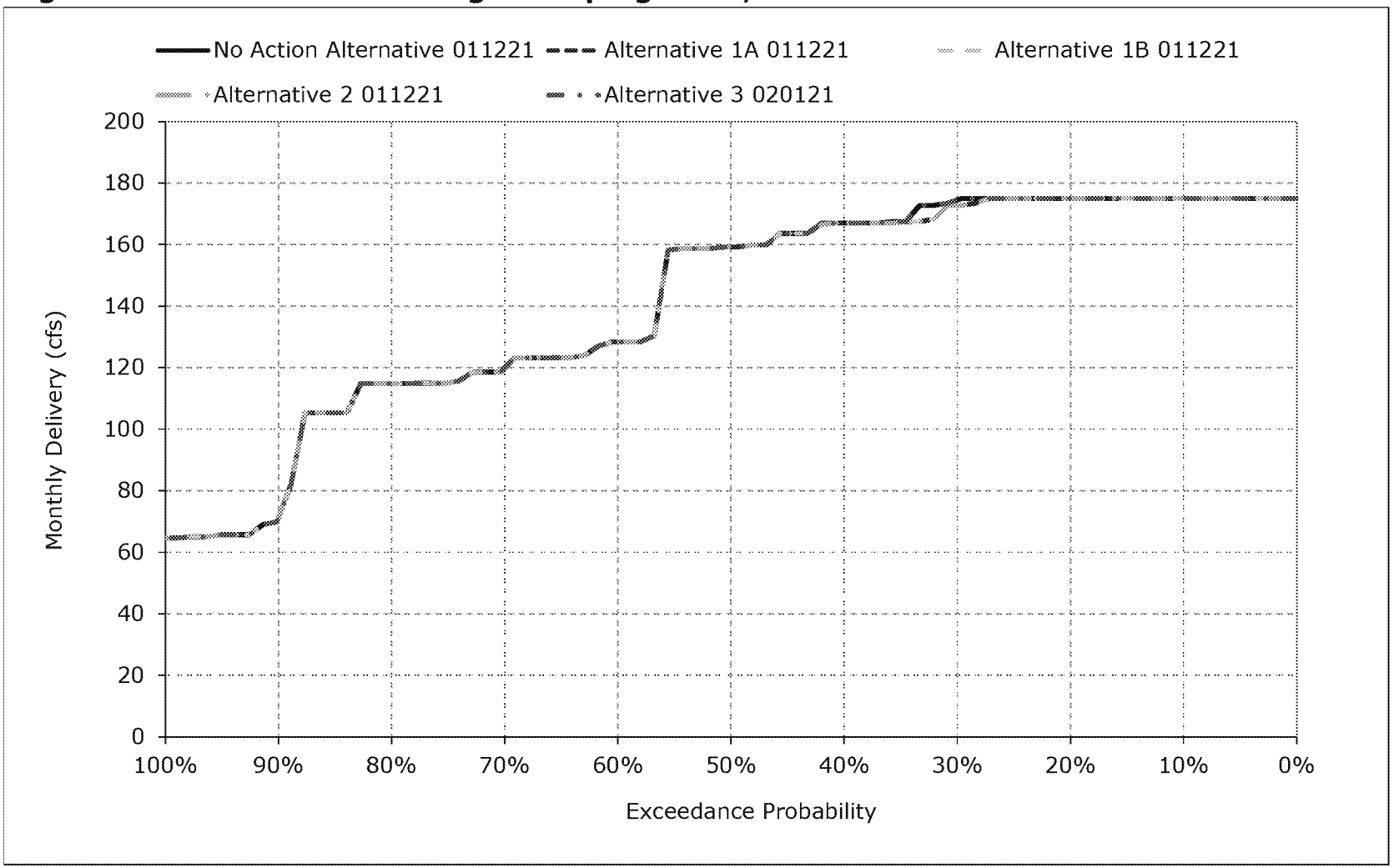


Figure 5B4-6-16. Barker Slough Pumping Plant, July

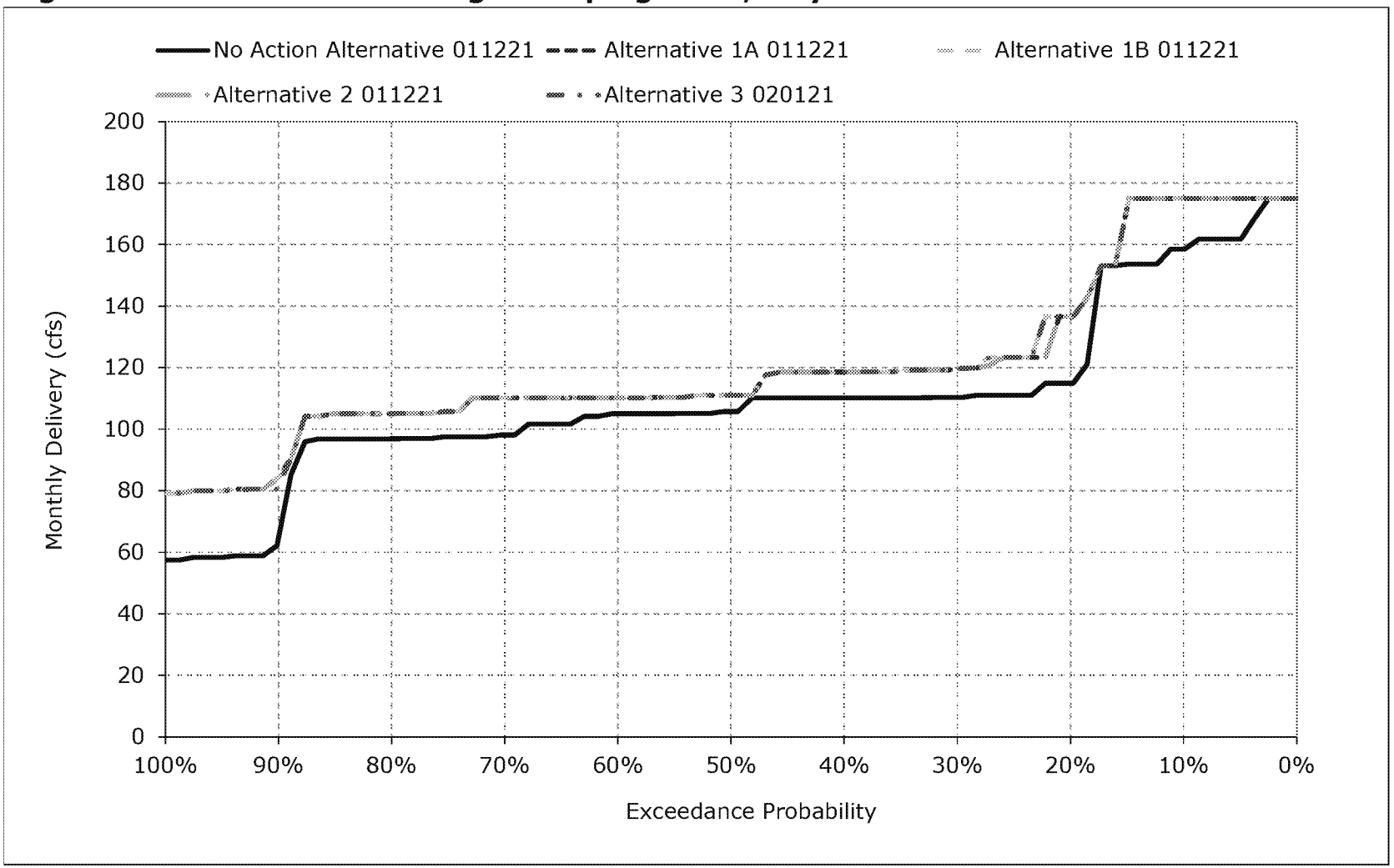


Figure 5B4-6-17. Barker Slough Pumping Plant, August

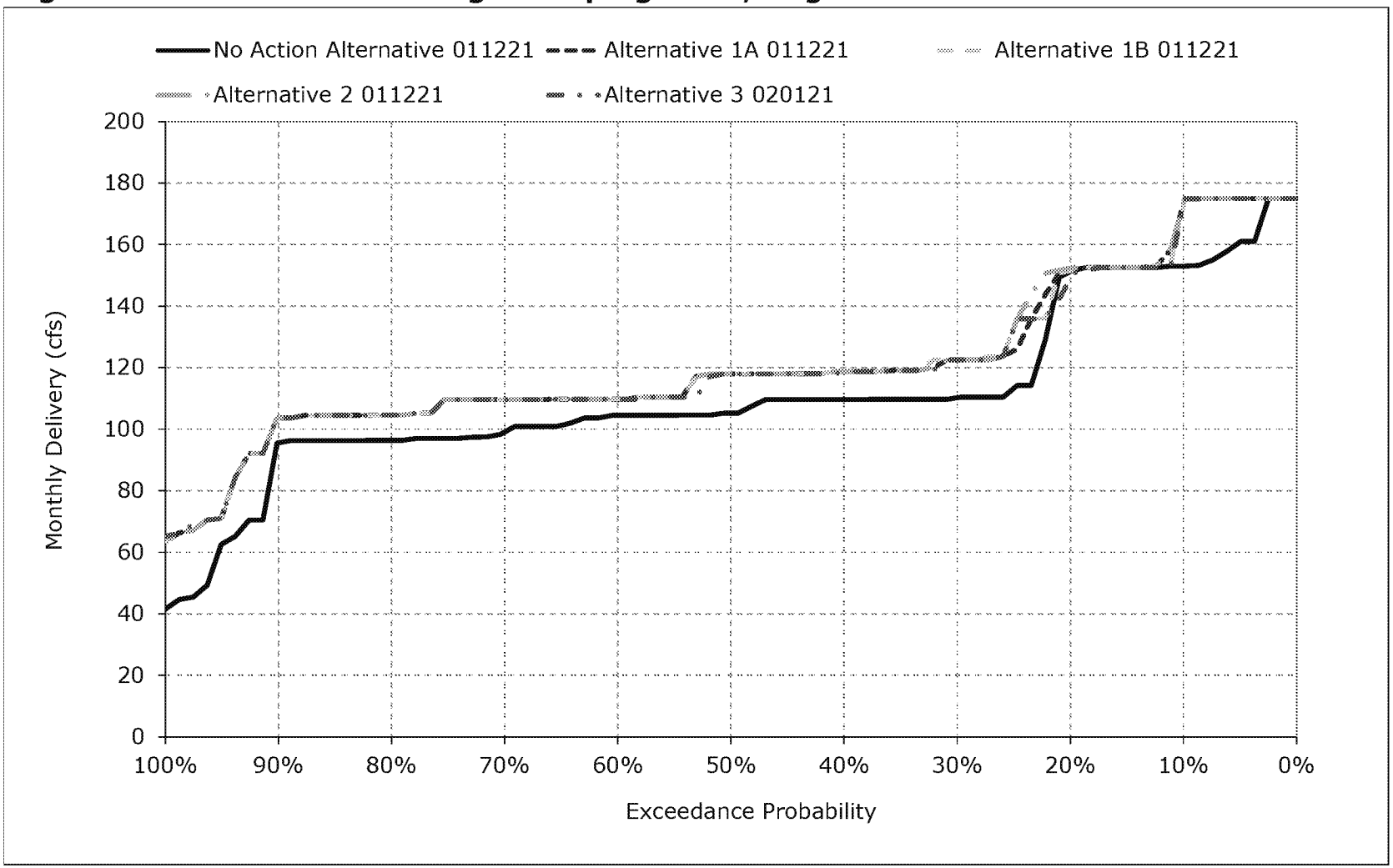


Figure 5B4-6-18. Barker Slough Pumping Plant, September

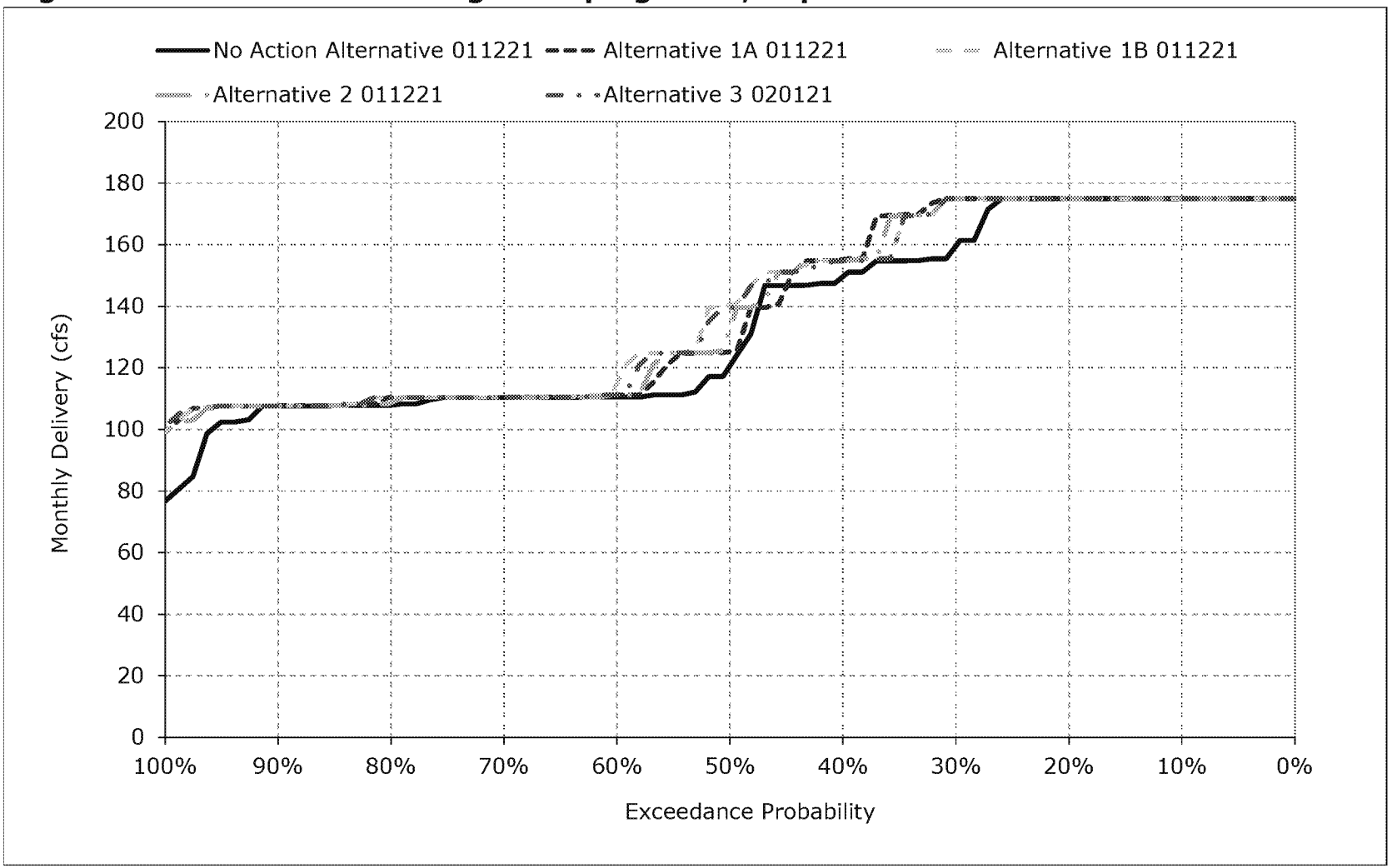


Table 5B4-7-1a. San Luis Storage (CVP and SWP), No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,192	1,372	1,688	1,851	2,038	2,039	2,038	2,039	1,741	1,351	1,011	1,055
20%	741	1,098	1,426	1,693	1,891	2,039	1,943	1,744	1,346	994	687	704
30%	594	923	1,288	1,564	1,797	1,964	1,870	1,566	1,129	848	561	555
40%	554	846	1,213	1,435	1,725	1,852	1,782	1,502	1,037	749	510	503
50%	507	737	1,088	1,350	1,574	1,708	1,605	1,377	936	662	456	470
60%	451	632	939	1,241	1,446	1,590	1,459	1,229	880	581	418	439
70%	365	551	862	1,106	1,346	1,478	1,370	1,150	790	536	282	328
80%	275	464	746	1,011	1,292	1,388	1,285	1,071	664	440	247	263
90%	231	374	557	868	1,163	1,272	1,164	887	544	305	178	203
Long Term												
Full Simulation Period[a]	587	814	1,111	1,362	1,572	1,683	1,599	1,395	1,024	746	519	536
Water Year Types[b,c]												
Wet (32%)	901	1,181	1,523	1,472	1,688	1,832	1,825	1,673	1,323	1,019	753	807
Above Normal (15%)	437	706	1,053	1,339	1,545	1,651	1,542	1,290	865	560	373	434
Below Normal (17%)	509	700	982	1,413	1,640	1,732	1,603	1,325	848	610	473	463
Dry (22%)	427	619	869	1,289	1,484	1,575	1,437	1,206	874	667	374	385
Critical (15%)	386	549	791	1,196	1,399	1,497	1,403	1,265	961	615	427	362

Table 5B4-7-1b. San Luis Storage (CVP and SWP), Alternative 1A 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,184	1,404	1,686	1,857	2,038	2,039	2,019	2,039	1,741	1,351	1,011	1,038
20%	760	1,103	1,441	1,683	1,886	2,039	1,943	1,720	1,340	986	695	703
30%	621	940	1,321	1,600	1,809	1,967	1,876	1,570	1,127	848	566	563
40%	553	866	1,223	1,489	1,720	1,844	1,770	1,505	1,024	764	513	509
50%	516	739	1,143	1,372	1,597	1,740	1,590	1,343	935	663	469	476
60%	445	631	958	1,256	1,480	1,595	1,466	1,243	885	594	389	417
70%	363	560	865	1,099	1,342	1,477	1,370	1,146	800	533	289	343
80%	259	460	711	1,010	1,294	1,366	1,282	1,078	657	437	242	264
90%	227	352	531	838	1,118	1,227	1,162	891	545	317	174	201
Long Term												
Full Simulation Period[a]	582	816	1,116	1,365	1,572	1,684	1,598	1,394	1,023	746	515	534
Water Year Types[b,c]												
Wet (32%)	900	1,181	1,524	1,471	1,687	1,833	1,825	1,672	1,323	1,018	754	809
Above Normal (15%)	447	715	1,058	1,363	1,555	1,656	1,548	1,296	870	565	377	440
Below Normal (17%)	520	739	1,030	1,413	1,632	1,724	1,594	1,317	845	607	472	464
Dry (22%)	414	605	860	1,301	1,497	1,587	1,445	1,211	874	672	366	376
Critical (15%)	357	533	773	1,176	1,378	1,485	1,393	1,256	958	613	412	353

Table 5B4-7-1c. San Luis Storage (CVP and SWP), Alternative 1A 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-8	32	-3	5	0	0	-19	0	-1	0	0	-17
20%	19	5	15	-11	-5	0	-1	-24	-6	-9	8	0
30%	26	17	34	36	13	3	6	4	-2	1	4	9
40%	-1	21	10	54	-5	-8	-12	2	-13	16	3	6
50%	9	2	55	23	23	32	-15	-34	0	2	13	6
60%	-6	-1	19	15	34	5	6	14	5	13	-30	-22
70%	-2	9	3	-6	-4	-1	0	-4	11	-3	7	15
80%	-16	-3	-34	-1	2	-22	-3	7	-7	-3	-5	0
90%	-5	-22	-26	-30	-46	-45	-2	4	1	12	-4	-2
Long Term												
Full Simulation Period[a]	-4	2	4	3	0	1	0	-1	0	1	-3	-2
Water Year Types[b,c]												
Wet (32%)	-1	-1	1	-1	-1	1	-1	0	0	0	1	1
Above Normal (15%)	9	8	5	24	10	6	6	6	4	4	3	6
Below Normal (17%)	11	39	48	0	-7	-8	-9	-8	-3	-3	-1	1
Dry (22%)	-13	-14	-9	13	13	13	9	5	0	5	-8	-10
Critical (15%)	-28	-16	-19	-20	-21	-12	-10	-9	-3	-2	-15	-9

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-7-2a. San Luis Storage (CVP and SWP), No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,192	1,372	1,688	1,851	2,038	2,039	2,038	2,039	1,741	1,351	1,011	1,055
20%	741	1,098	1,426	1,693	1,891	2,039	1,943	1,744	1,346	994	687	704
30%	594	923	1,288	1,564	1,797	1,964	1,870	1,566	1,129	848	561	555
40%	554	846	1,213	1,435	1,725	1,852	1,782	1,502	1,037	749	510	503
50%	507	737	1,088	1,350	1,574	1,708	1,605	1,377	936	662	456	470
60%	451	632	939	1,241	1,446	1,590	1,459	1,229	880	581	418	439
70%	365	551	862	1,106	1,346	1,478	1,370	1,150	790	536	282	328
80%	275	464	746	1,011	1,292	1,388	1,285	1,071	664	440	247	263
90%	231	374	557	868	1,163	1,272	1,164	887	544	305	178	203
Long Term												
Full Simulation Period[a]	587	814	1,111	1,362	1,572	1,683	1,599	1,395	1,024	746	519	536
Water Year Types[b,c]												
Wet (32%)	901	1,181	1,523	1,472	1,688	1,832	1,825	1,673	1,323	1,019	753	807
Above Normal (15%)	437	706	1,053	1,339	1,545	1,651	1,542	1,290	865	560	373	434
Below Normal (17%)	509	700	982	1,413	1,640	1,732	1,603	1,325	848	610	473	463
Dry (22%)	427	619	869	1,289	1,484	1,575	1,437	1,206	874	667	374	385
Critical (15%)	386	549	791	1,196	1,399	1,497	1,403	1,265	961	615	427	362

Table 5B4-7-2b. San Luis Storage (CVP and SWP), Alternative 1B 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,186	1,404	1,684	1,855	2,038	2,039	2,009	2,039	1,741	1,351	1,012	1,042
20%	764	1,110	1,446	1,694	1,888	2,039	1,943	1,718	1,340	986	710	703
30%	625	947	1,330	1,623	1,827	1,972	1,887	1,569	1,131	863	567	547
40%	572	871	1,215	1,477	1,690	1,850	1,773	1,508	1,018	764	512	510
50%	521	757	1,109	1,364	1,600	1,729	1,589	1,335	946	663	466	481
60%	446	657	941	1,256	1,479	1,595	1,454	1,247	888	595	388	415
70%	362	562	862	1,106	1,341	1,483	1,376	1,148	800	536	292	343
80%	259	460	713	1,007	1,299	1,391	1,299	1,082	665	436	238	267
90%	230	353	547	862	1,118	1,234	1,168	891	544	318	175	201
Long Term												
Full Simulation Period[a]	585	822	1,115	1,366	1,573	1,684	1,600	1,395	1,024	747	515	535
Water Year Types[b,c]												
Wet (32%)	900	1,181	1,523	1,474	1,692	1,836	1,826	1,674	1,324	1,019	754	808
Above Normal (15%)	456	725	1,070	1,354	1,546	1,649	1,543	1,294	869	565	377	444
Below Normal (17%)	523	740	1,033	1,422	1,641	1,729	1,600	1,322	848	609	473	470
Dry (22%)	420	629	846	1,295	1,491	1,582	1,441	1,206	870	671	366	378
Critical (15%)	354	529	773	1,185	1,388	1,494	1,402	1,264	962	613	410	349

Table 5B4-7-2c. San Luis Storage (CVP and SWP), Alternative 1B 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-6	32	-4	3	0	0	-28	0	-1	1	1	-13
20%	23	12	20	0	-2	0	-1	-26	-6	-8	22	0
30%	31	24	42	59	31	8	17	3	3	15	5	-8
40%	19	25	2	43	-35	-2	-9	6	-19	15	2	7
50%	14	20	21	15	26	21	-16	-42	10	1	10	12
60%	-5	25	2	16	33	5	-5	18	8	14	-30	-24
70%	-3	11	1	0	-5	5	5	-2	10	0	10	15
80%	-16	-3	-33	-4	8	3	15	11	1	-3	-9	4
90%	-1	-21	-10	-6	-46	-38	4	4	0	13	-3	-2
Long Term												
Full Simulation Period[a]	-1	9	3	4	1	1	1	0	0	1	-3	-1
Water Year Types[b,c]												
Wet (32%)	-1	-1	0	2	4	3	1	1	1	0	1	1
Above Normal (15%)	19	19	17	15	1	-1	1	4	4	5	3	10
Below Normal (17%)	14	40	51	9	1	-3	-3	-3	-1	-1	0	7
Dry (22%)	-7	10	-24	7	7	7	4	0	-3	4	-8	-8
Critical (15%)	-31	-20	-19	-11	-12	-3	-2	-2	1	-1	-17	-14

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-7-3a. San Luis Storage (CVP and SWP), No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,192	1,372	1,688	1,851	2,038	2,039	2,038	2,039	1,741	1,351	1,011	1,055
20%	741	1,098	1,426	1,693	1,891	2,039	1,943	1,744	1,346	994	687	704
30%	594	923	1,288	1,564	1,797	1,964	1,870	1,566	1,129	848	561	555
40%	554	846	1,213	1,435	1,725	1,852	1,782	1,502	1,037	749	510	503
50%	507	737	1,088	1,350	1,574	1,708	1,605	1,377	936	662	456	470
60%	451	632	939	1,241	1,446	1,590	1,459	1,229	880	581	418	439
70%	365	551	862	1,106	1,346	1,478	1,370	1,150	790	536	282	328
80%	275	464	746	1,011	1,292	1,388	1,285	1,071	664	440	247	263
90%	231	374	557	868	1,163	1,272	1,164	887	544	305	178	203
Long Term												
Full Simulation Period[a]	587	814	1,111	1,362	1,572	1,683	1,599	1,395	1,024	746	519	536
Water Year Types[b,c]												
Wet (32%)	901	1,181	1,523	1,472	1,688	1,832	1,825	1,673	1,323	1,019	753	807
Above Normal (15%)	437	706	1,053	1,339	1,545	1,651	1,542	1,290	865	560	373	434
Below Normal (17%)	509	700	982	1,413	1,640	1,732	1,603	1,325	848	610	473	463
Dry (22%)	427	619	869	1,289	1,484	1,575	1,437	1,206	874	667	374	385
Critical (15%)	386	549	791	1,196	1,399	1,497	1,403	1,265	961	615	427	362

Table 5B4-7-3b. San Luis Storage (CVP and SWP), Alternative 2 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,184	1,404	1,687	1,856	2,037	2,039	2,010	2,039	1,741	1,351	1,012	1,039
20%	760	1,084	1,441	1,684	1,886	2,039	1,943	1,718	1,340	986	700	703
30%	624	940	1,321	1,600	1,811	1,967	1,880	1,570	1,127	848	566	559
40%	558	870	1,223	1,487	1,718	1,844	1,769	1,505	1,024	784	511	509
50%	516	739	1,132	1,372	1,612	1,731	1,591	1,344	946	663	466	475
60%	440	632	958	1,256	1,480	1,595	1,466	1,245	895	598	389	418
70%	361	560	868	1,097	1,344	1,478	1,371	1,147	800	534	289	343
80%	259	460	720	1,010	1,295	1,385	1,290	1,078	657	437	239	260
90%	227	353	546	852	1,119	1,227	1,162	891	534	317	173	201
Long Term												
Full Simulation Period[a]	583	817	1,117	1,365	1,572	1,685	1,599	1,396	1,024	747	515	534
Water Year Types[b,c]												
Wet (32%)	901	1,182	1,524	1,472	1,689	1,834	1,826	1,673	1,324	1,019	754	809
Above Normal (15%)	447	716	1,060	1,361	1,553	1,657	1,547	1,296	869	565	376	439
Below Normal (17%)	519	735	1,028	1,418	1,637	1,728	1,599	1,323	851	613	474	466
Dry (22%)	414	608	865	1,298	1,495	1,585	1,443	1,209	872	669	365	375
Critical (15%)	358	533	774	1,176	1,379	1,488	1,396	1,259	960	613	411	351

Table 5B4-7-3c. San Luis Storage (CVP and SWP), Alternative 2 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-8	32	-2	4	-1	0	-28	0	-1	1	1	-16
20%	19	-14	15	-9	-5	0	-1	-26	-6	-8	13	0
30%	29	17	33	36	14	3	10	4	-2	1	5	5
40%	4	24	10	53	-7	-8	-12	3	-13	35	1	6
50%	9	2	43	23	38	23	-14	-34	11	1	10	6
60%	-11	0	19	15	35	5	6	16	15	17	-30	-21
70%	-4	9	6	-9	-2	0	1	-4	11	-2	6	15
80%	-17	-3	-26	-1	3	-2	5	7	-7	-2	-8	-3
90%	-5	-21	-11	-16	-44	-45	-2	4	-10	12	-5	-2
Long Term												
Full Simulation Period[a]	-4	3	6	3	0	2	1	0	1	1	-3	-2
Water Year Types[b,c]												
Wet (32%)	0	1	1	0	1	2	0	0	0	0	1	1
Above Normal (15%)	10	9	6	23	8	6	6	7	4	4	3	6
Below Normal (17%)	10	35	46	5	-3	-4	-4	-2	2	3	1	3
Dry (22%)	-13	-10	-5	9	11	11	7	3	-1	2	-9	-10
Critical (15%)	-27	-15	-18	-20	-21	-9	-7	-6	-1	-2	-16	-12

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-7-4a. San Luis Storage (CVP and SWP), No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,192	1,372	1,688	1,851	2,038	2,039	2,038	2,039	1,741	1,351	1,011	1,055
20%	741	1,098	1,426	1,693	1,891	2,039	1,943	1,744	1,346	994	687	704
30%	594	923	1,288	1,564	1,797	1,964	1,870	1,566	1,129	848	561	555
40%	554	846	1,213	1,435	1,725	1,852	1,782	1,502	1,037	749	510	503
50%	507	737	1,088	1,350	1,574	1,708	1,605	1,377	936	662	456	470
60%	451	632	939	1,241	1,446	1,590	1,459	1,229	880	581	418	439
70%	365	551	862	1,106	1,346	1,478	1,370	1,150	790	536	282	328
80%	275	464	746	1,011	1,292	1,388	1,285	1,071	664	440	247	263
90%	231	374	557	868	1,163	1,272	1,164	887	544	305	178	203
Long Term												
Full Simulation Period[a]	587	814	1,111	1,362	1,572	1,683	1,599	1,395	1,024	746	519	536
Water Year Types[b,c]												
Wet (32%)	901	1,181	1,523	1,472	1,688	1,832	1,825	1,673	1,323	1,019	753	807
Above Normal (15%)	437	706	1,053	1,339	1,545	1,651	1,542	1,290	865	560	373	434
Below Normal (17%)	509	700	982	1,413	1,640	1,732	1,603	1,325	848	610	473	463
Dry (22%)	427	619	869	1,289	1,484	1,575	1,437	1,206	874	667	374	385
Critical (15%)	386	549	791	1,196	1,399	1,497	1,403	1,265	961	615	427	362

Table 5B4-7-4b. San Luis Storage (CVP and SWP), Alternative 3 020121, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,190	1,460	1,692	1,855	2,039	2,039	2,009	2,039	1,741	1,351	1,012	1,042
20%	742	1,158	1,482	1,721	1,923	2,039	1,936	1,718	1,343	986	688	662
30%	642	972	1,375	1,631	1,824	1,959	1,877	1,584	1,137	865	557	555
40%	575	870	1,264	1,531	1,707	1,860	1,781	1,522	1,011	772	508	518
50%	533	746	1,163	1,371	1,611	1,740	1,631	1,361	949	664	467	501
60%	445	656	964	1,257	1,480	1,601	1,497	1,258	905	594	407	415
70%	376	563	834	1,108	1,351	1,481	1,357	1,139	794	534	285	330
80%	271	467	730	1,023	1,311	1,356	1,273	1,068	669	448	240	266
90%	225	372	575	862	1,124	1,242	1,178	917	540	314	175	203
Long Term												
Full Simulation Period[a]	593	829	1,134	1,380	1,586	1,690	1,605	1,399	1,025	748	516	538
Water Year Types[b,c]												
Wet (32%)	894	1,174	1,518	1,477	1,694	1,835	1,826	1,668	1,319	1,014	749	802
Above Normal (15%)	482	750	1,096	1,363	1,560	1,659	1,550	1,299	873	569	363	443
Below Normal (17%)	543	754	1,045	1,463	1,681	1,751	1,623	1,345	867	628	486	486
Dry (22%)	433	639	918	1,311	1,501	1,589	1,447	1,213	875	673	371	383
Critical (15%)	354	530	769	1,197	1,393	1,490	1,399	1,258	954	605	418	357

Table 5B4-7-4c. San Luis Storage (CVP and SWP), Alternative 3 020121 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-2	88	4	3	1	0	-29	0	-1	1	1	-12
20%	1	60	56	28	32	0	-8	-26	-3	-8	0	-42
30%	47	49	87	67	27	-5	7	18	9	17	-5	0
40%	21	24	51	96	-18	7	-1	19	-25	24	-2	16
50%	26	9	74	21	37	33	25	-16	14	2	11	31
60%	-6	24	25	16	34	11	38	29	24	13	-11	-23
70%	11	12	-28	3	5	3	-14	-11	5	-2	3	2
80%	-4	3	-16	12	19	-32	-12	-3	5	9	-7	3
90%	-6	-2	19	-6	-40	-30	14	30	-4	10	-4	1
Long Term												
Full Simulation Period[a]	7	15	23	19	14	7	7	4	2	3	-3	2
Water Year Types[b,c]												
Wet (32%)	-7	-7	-5	5	6	2	1	-5	-5	-5	-5	-5
Above Normal (15%)	45	43	43	24	15	8	8	10	7	9	-10	10
Below Normal (17%)	34	54	63	50	41	19	20	21	19	17	13	23
Dry (22%)	6	20	49	22	17	14	10	7	1	6	-3	-3
Critical (15%)	-32	-19	-22	0	-7	-7	-4	-8	-8	-10	-9	-5

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Figure 5B4-7-1. San Luis Storage (CVP and SWP), October

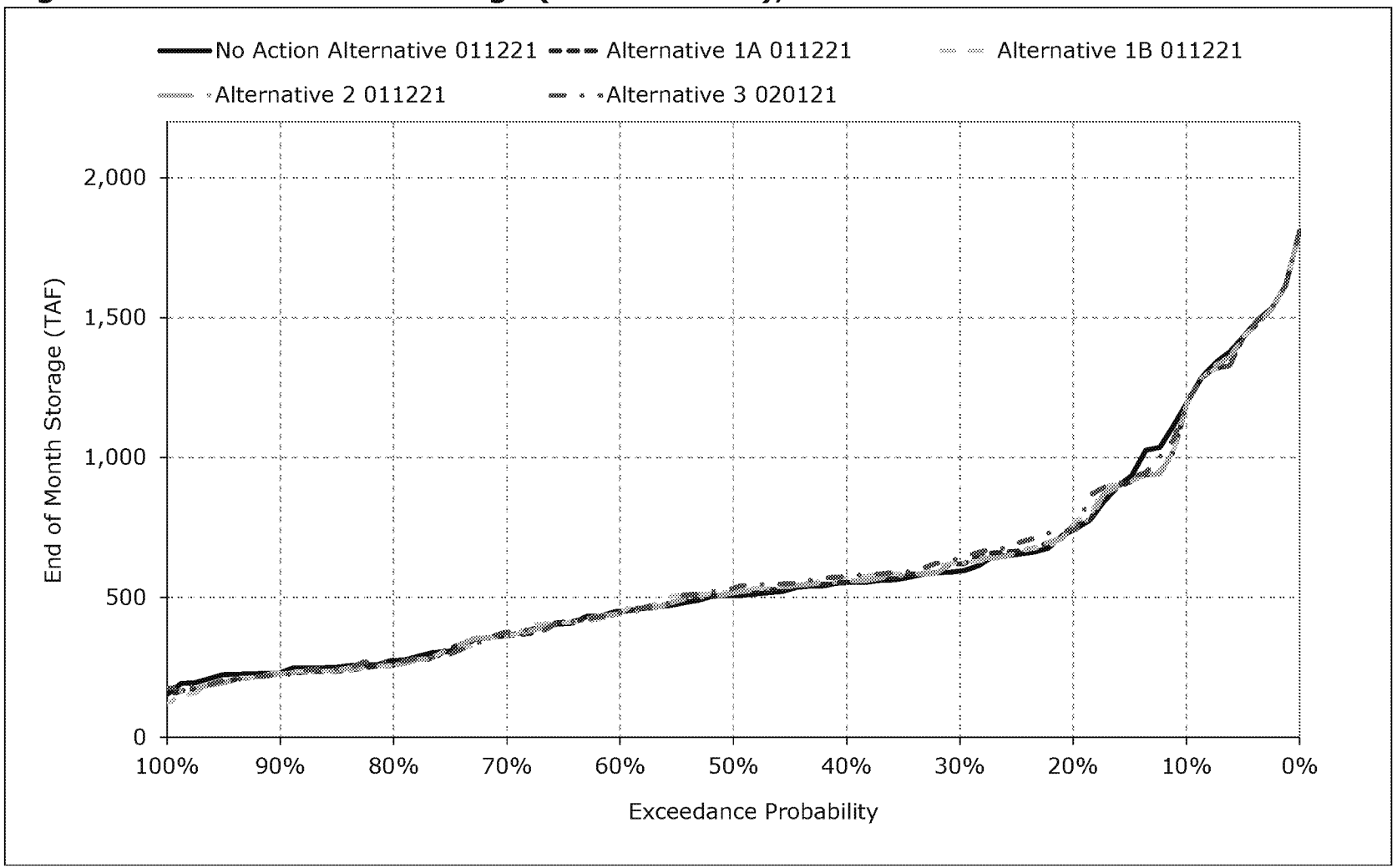


Figure 5B4-7-2. San Luis Storage (CVP and SWP), November

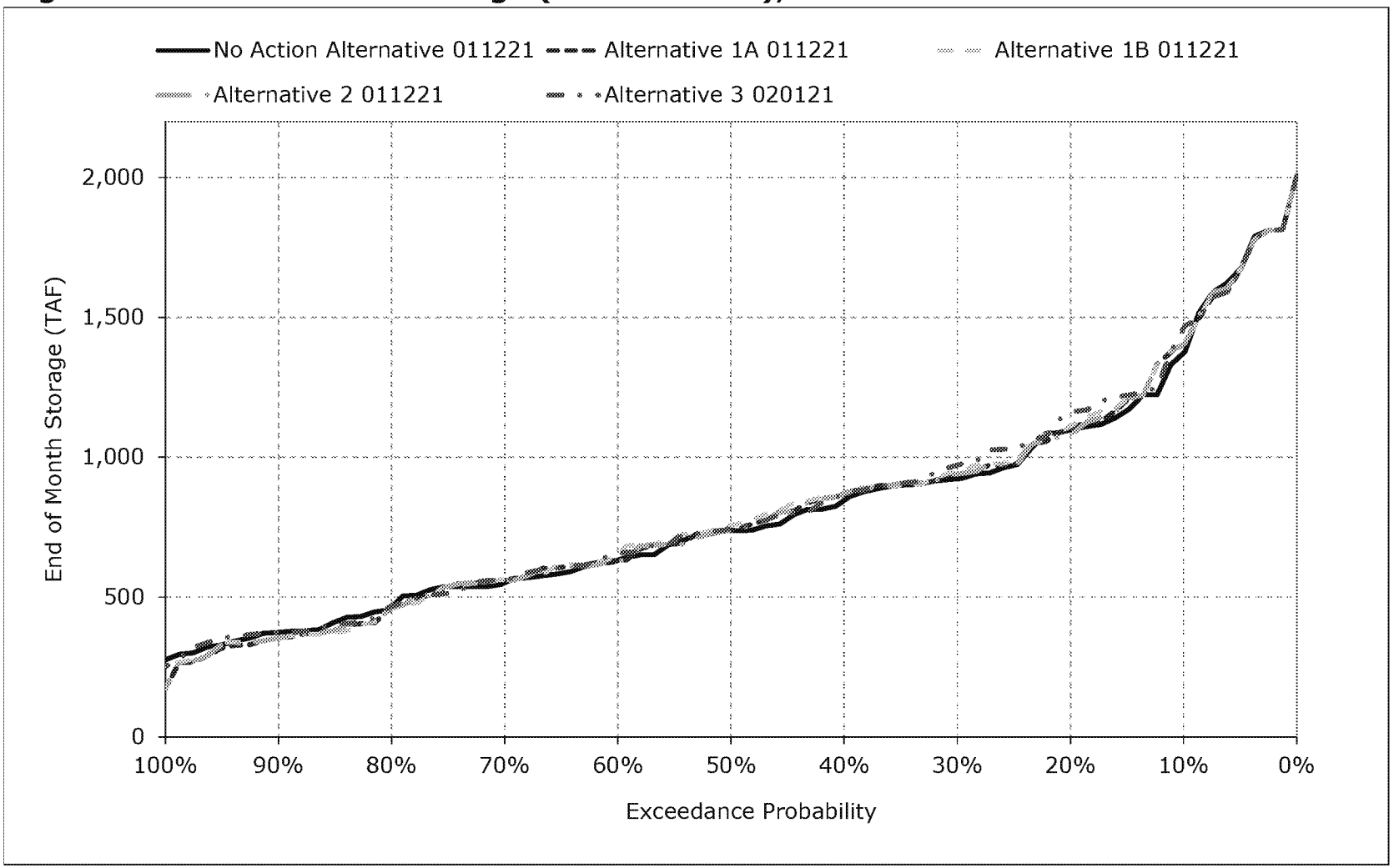


Figure 5B4-7-3. San Luis Storage (CVP and SWP), December

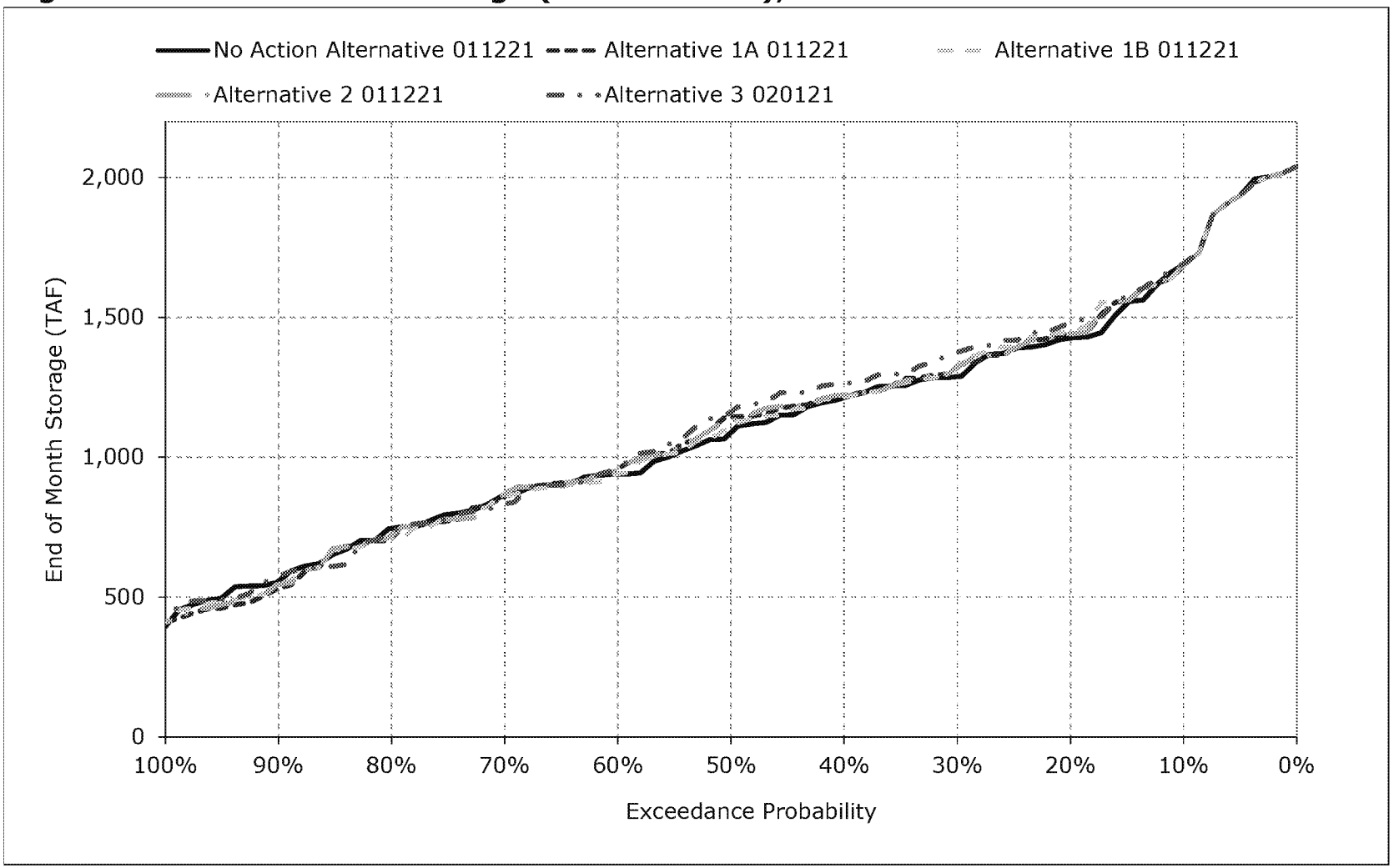


Figure 5B4-7-4. San Luis Storage (CVP and SWP), January

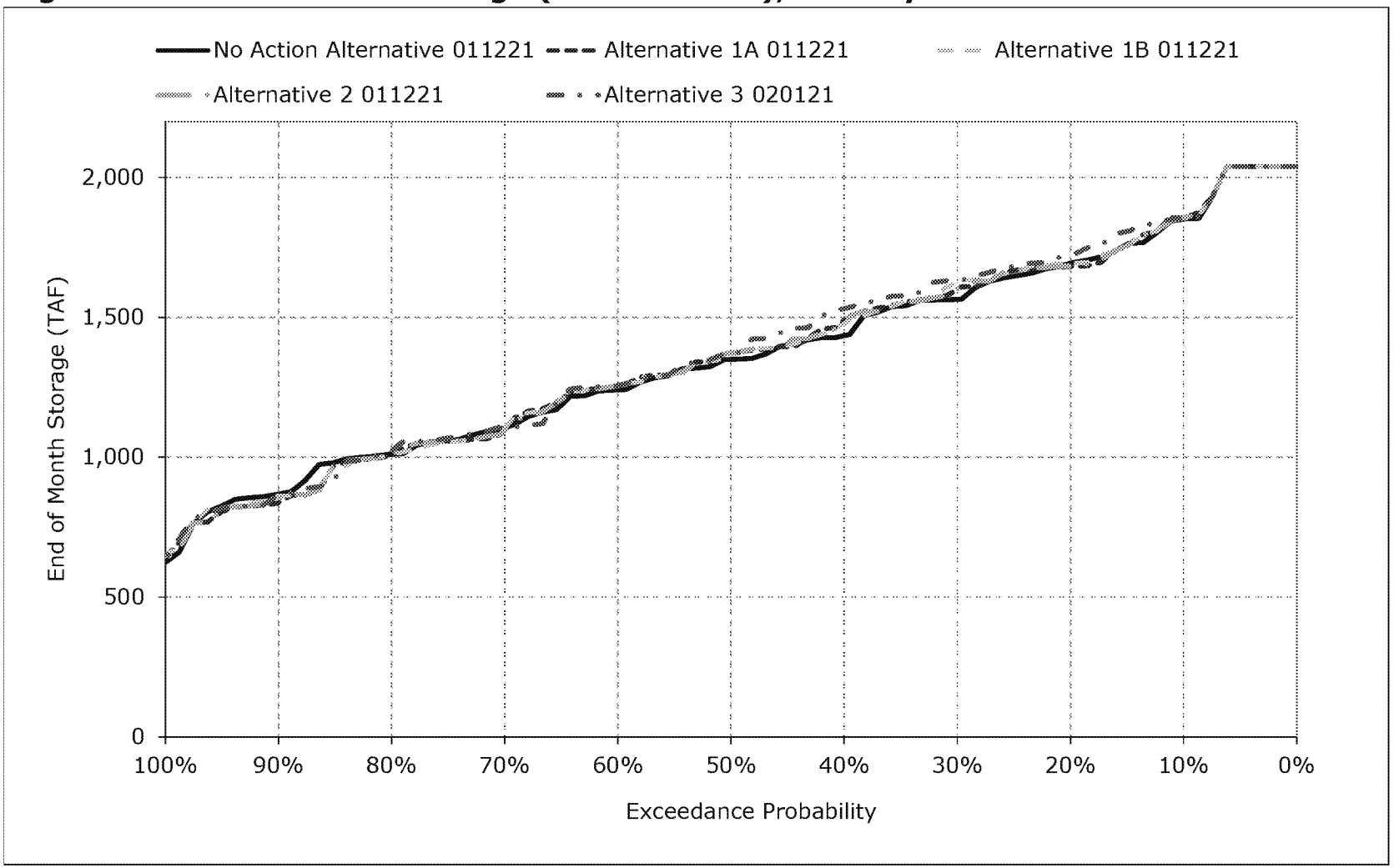


Figure 5B4-7-5. San Luis Storage (CVP and SWP), February

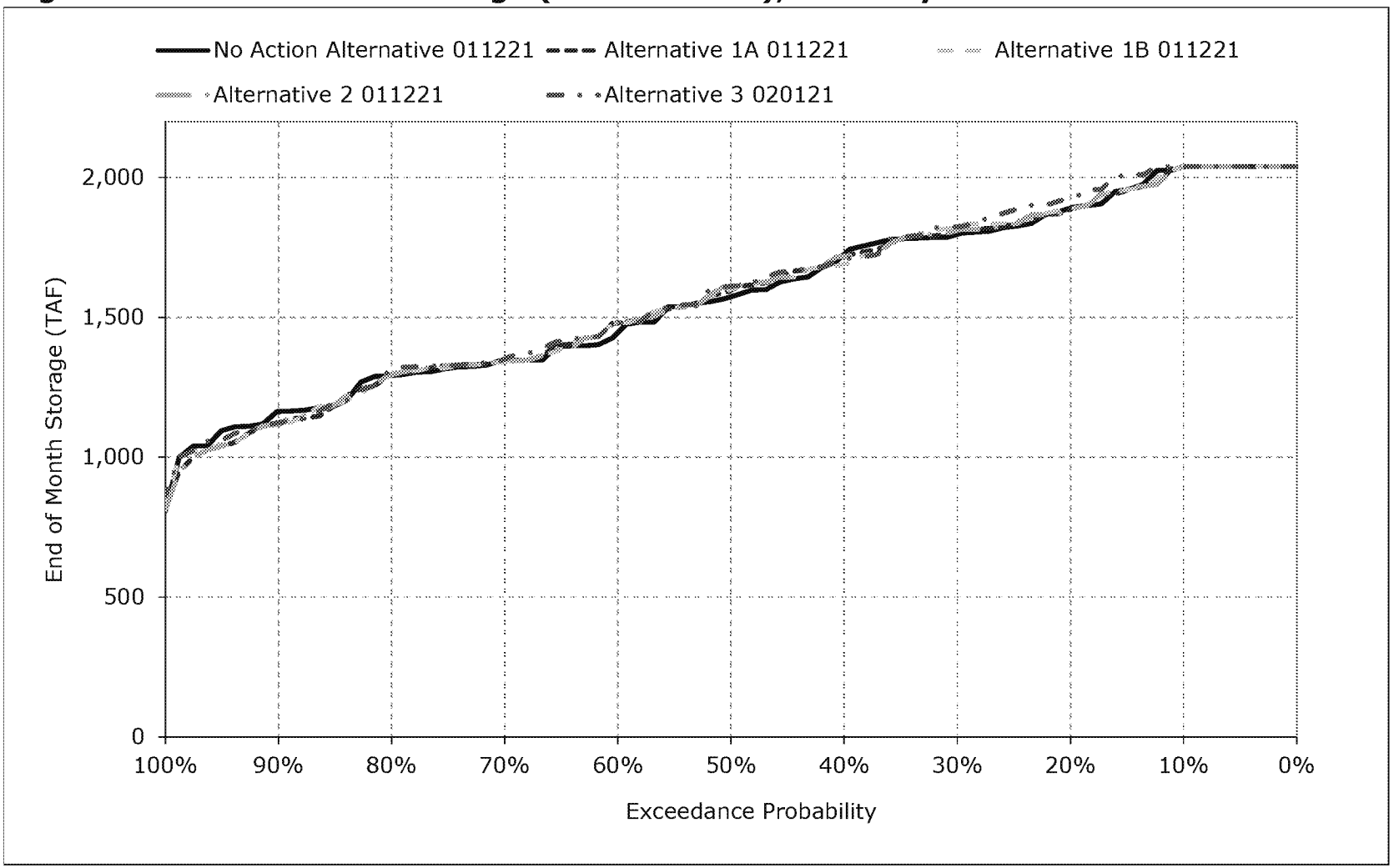


Figure 5B4-7-6. San Luis Storage (CVP and SWP), March

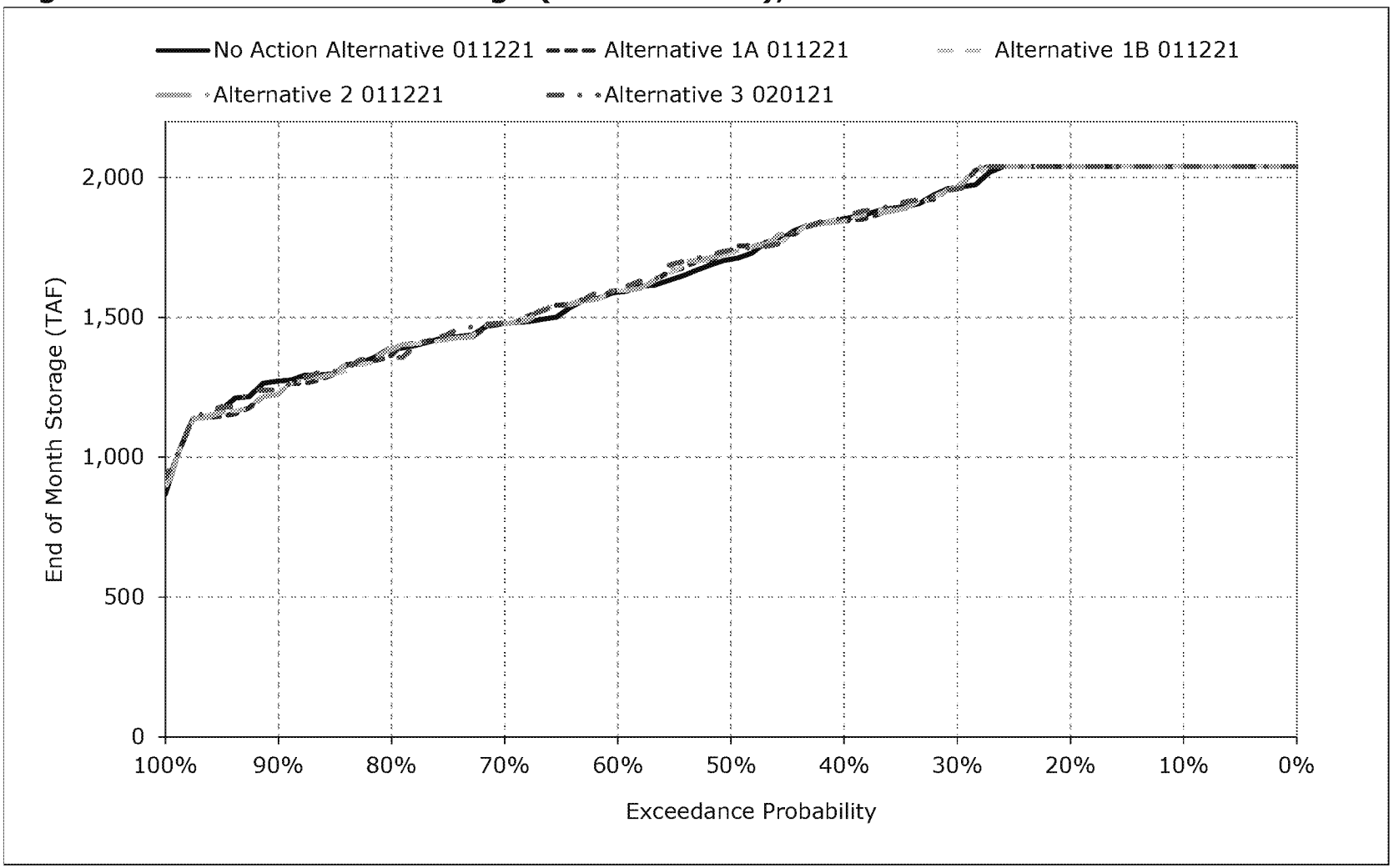


Figure 5B4-7-7. San Luis Storage (CVP and SWP), April

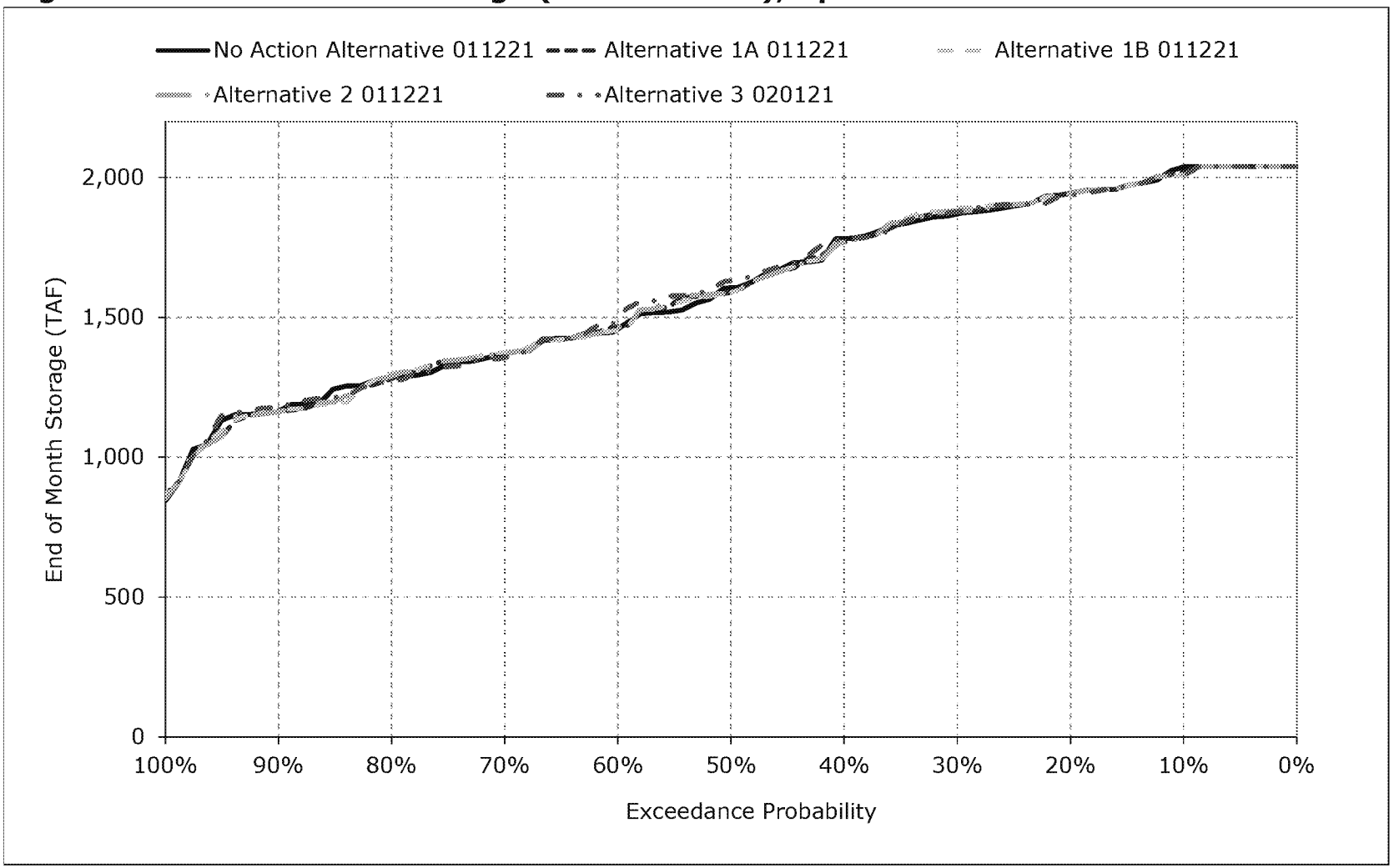


Figure 5B4-7-8. San Luis Storage (CVP and SWP), May

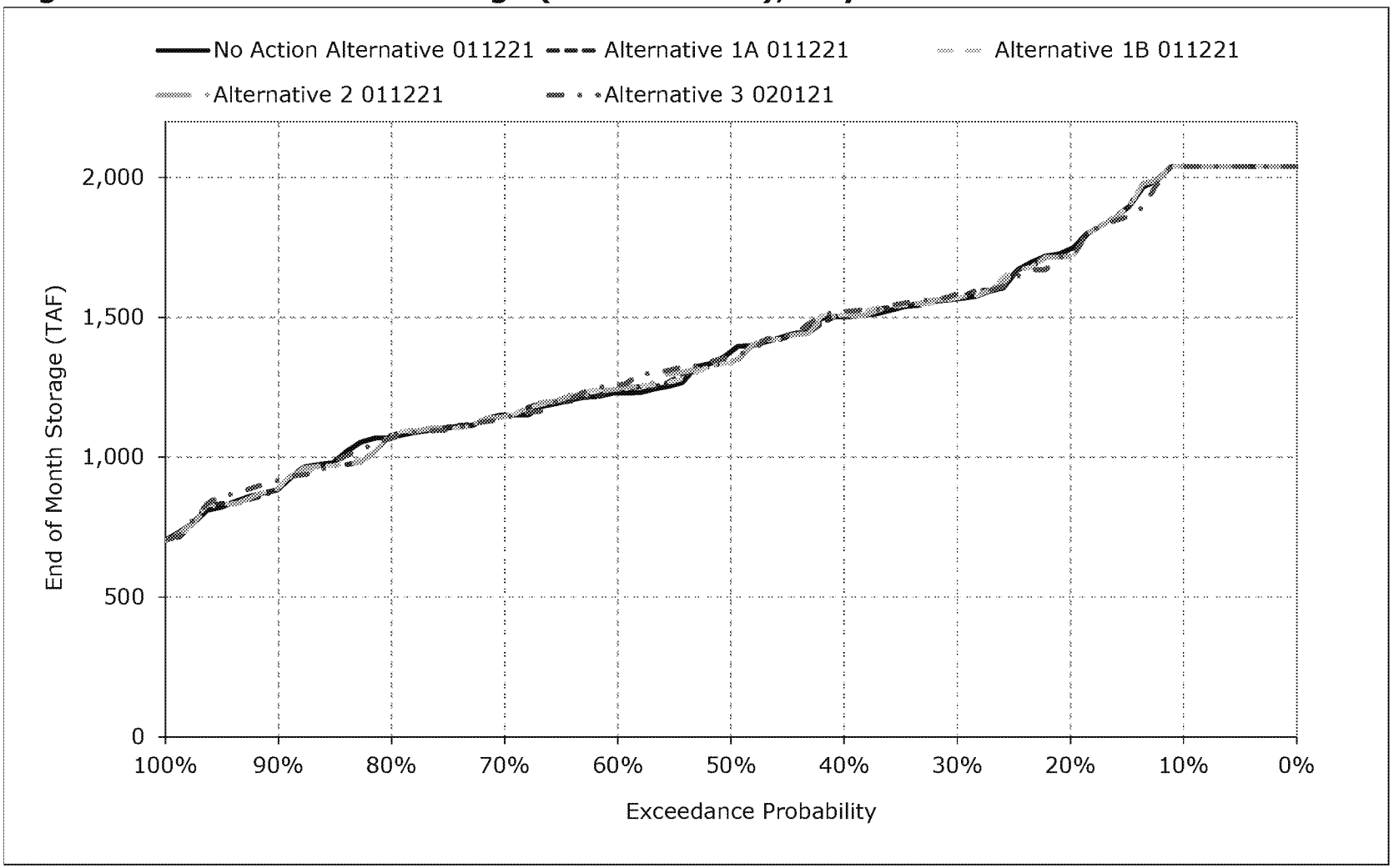


Figure 5B4-7-9. San Luis Storage (CVP and SWP), June

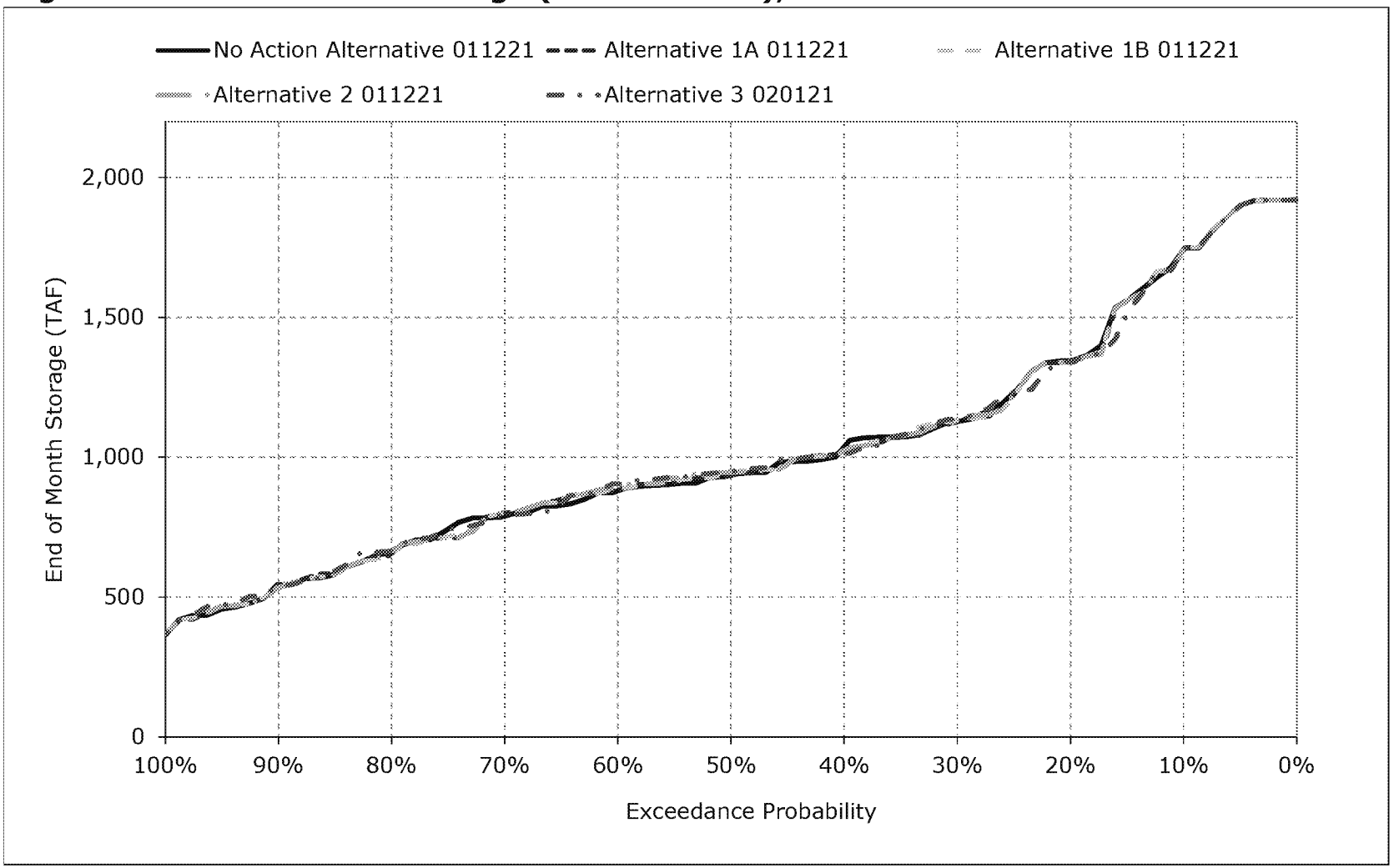


Figure 5B4-7-10. San Luis Storage (CVP and SWP), July

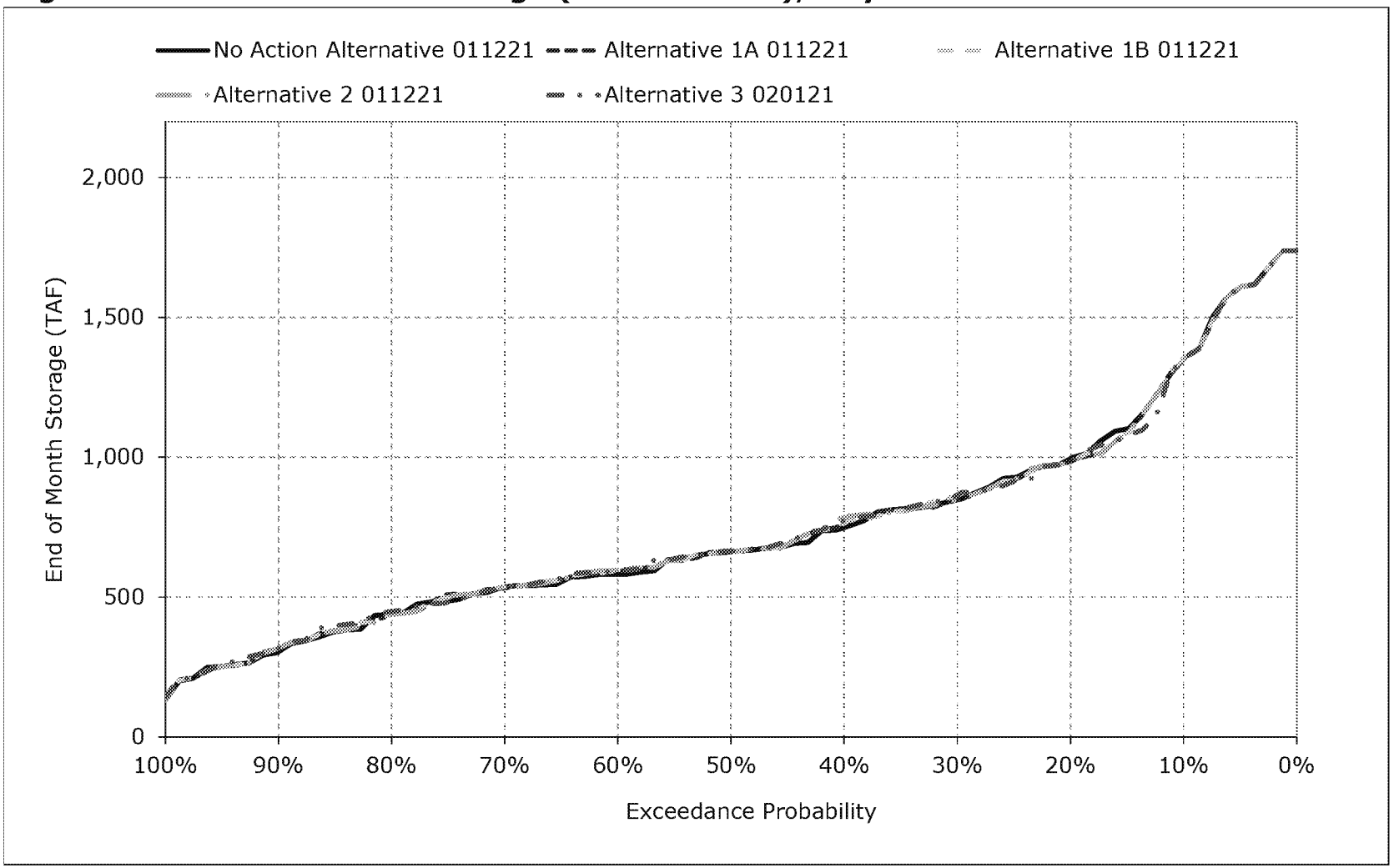


Figure 5B4-7-11. San Luis Storage (CVP and SWP), August

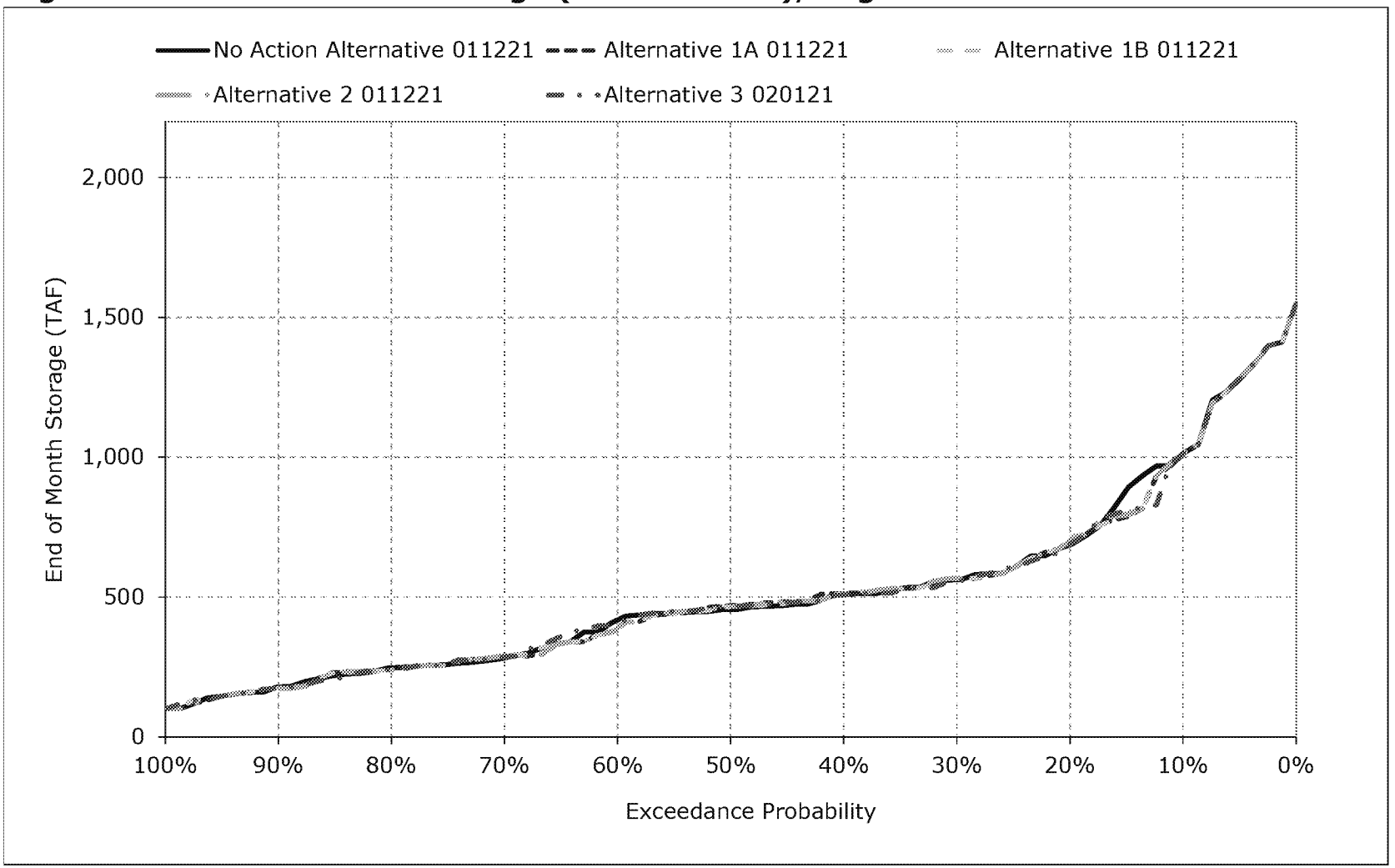


Figure 5B4-7-12. San Luis Storage (CVP and SWP), September

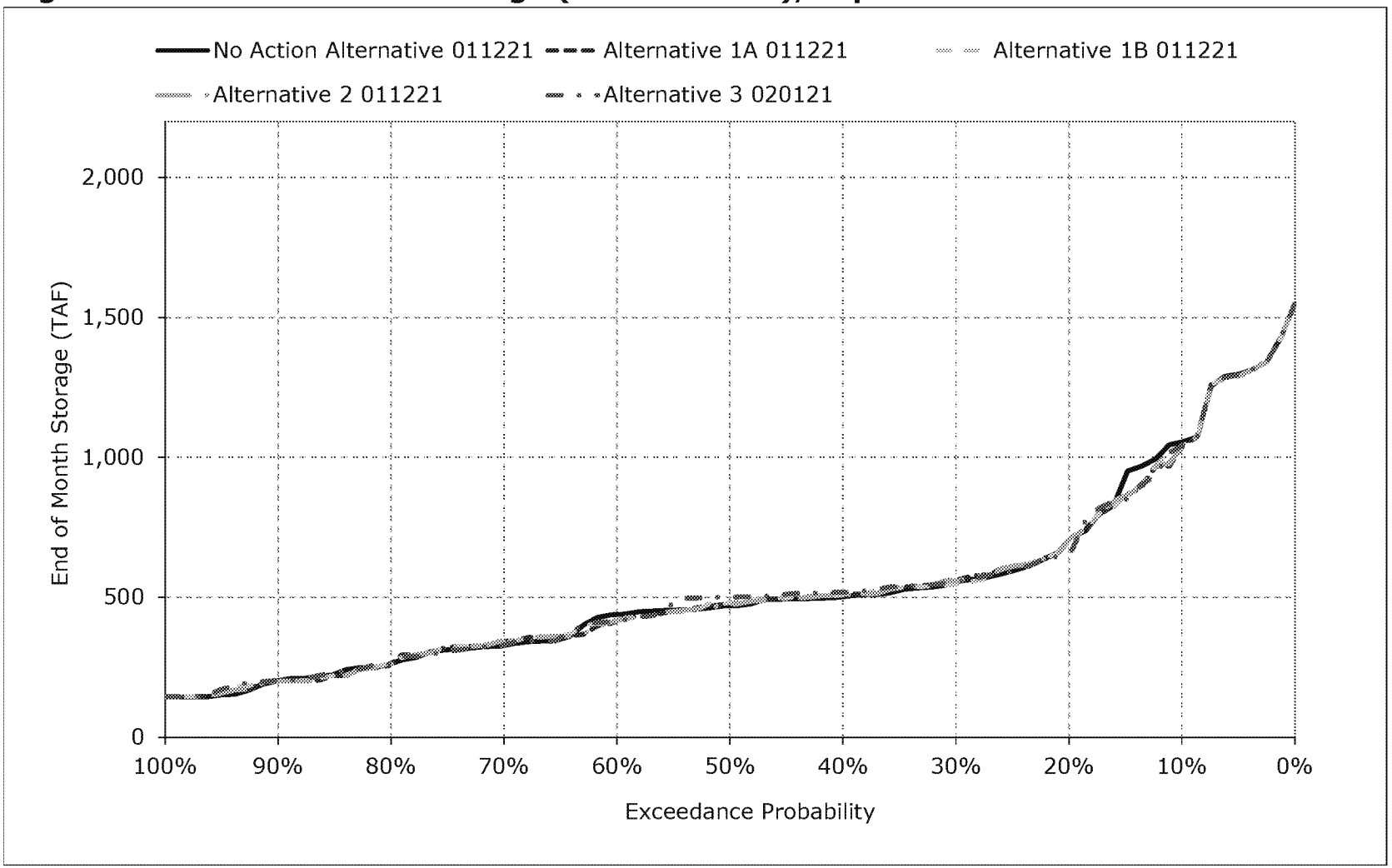


Table 5B4-8-1a. San Luis Reservoir (SWP and CVP), No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	443	479	514	543	544	544	544	544	520	452	436	434
20%	411	443	483	518	544	544	544	537	494	428	396	399
30%	396	431	470	508	533	544	544	525	479	419	371	371
40%	384	425	464	499	524	543	538	519	470	411	353	362
50%	378	419	457	492	517	533	535	513	464	407	349	349
60%	373	413	454	489	512	530	525	506	460	404	348	348
70%	368	406	447	484	507	523	518	500	455	391	341	348
80%	355	398	442	479	503	515	511	493	448	385	329	335
90%	336	394	432	469	494	509	503	486	432	375	329	331
Long Term												
Full Simulation Period[a]	385	425	465	498	519	530	527	512	470	410	365	367
Water Year Types[b,c]												
Wet (32%)	398	445	485	506	528	539	540	528	487	422	371	374
Above Normal (15%)	349	409	456	497	520	532	531	513	465	390	345	335
Below Normal (17%)	384	420	461	501	524	533	530	512	463	405	349	362
Dry (22%)	382	412	449	487	507	518	511	493	453	404	361	369
Critical (15%)	401	426	456	492	511	524	517	507	469	418	395	387

Table 5B4-8-1b. San Luis Reservoir (SWP and CVP), Alternative 1A 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	443	481	514	543	544	544	544	544	519	452	435	434
20%	404	443	483	517	544	544	544	537	494	429	384	391
30%	389	429	472	507	534	544	544	526	480	419	364	367
40%	383	423	464	499	525	544	539	519	470	412	352	361
50%	378	418	459	494	517	533	534	511	462	407	348	348
60%	373	411	455	489	512	530	525	504	458	404	348	348
70%	360	407	448	484	506	523	516	498	456	391	342	347
80%	349	399	441	479	503	516	511	493	448	386	329	335
90%	337	394	430	469	492	509	501	487	433	375	329	331
Long Term												
Full Simulation Period[a]	383	424	464	497	519	530	527	512	469	410	363	366
Water Year Types[b,c]												
Wet (32%)	398	445	485	505	527	539	540	528	487	422	370	374
Above Normal (15%)	351	409	456	498	522	533	532	513	465	390	344	336
Below Normal (17%)	384	421	465	502	525	534	530	513	464	405	349	362
Dry (22%)	377	407	447	487	507	518	510	491	451	403	356	365
Critical (15%)	393	421	452	490	509	523	516	507	468	418	390	383

Table 5B4-8-1c. San Luis Reservoir (SWP and CVP), Alternative 1A 011221 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	2	0	0	0	0	0	0	0	0	-1	0
20%	-7	0	0	-1	0	0	0	0	0	1	-12	-8
30%	-7	-2	2	-1	1	0	1	1	1	0	-7	-4
40%	-1	-1	0	1	2	0	1	0	0	1	-1	-1
50%	0	0	2	2	0	0	-1	-2	-2	-1	-1	0
60%	-1	-1	1	0	0	1	-1	-2	-2	1	0	0
70%	-7	0	0	0	-1	-1	-2	-2	0	1	0	-1
80%	-5	1	-1	0	0	0	0	0	0	1	0	0
90%	1	0	-3	1	-2	0	-2	2	1	0	0	0
Long Term												
Full Simulation Period[a]	-2	-1	0	0	0	0	0	0	0	0	-2	-1
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	1	1	0	1	1	1	0	0	0	0	0	0
Below Normal (17%)	0	2	3	1	1	1	0	0	0	0	0	-1
Dry (22%)	-5	-4	-1	-1	0	0	-1	-2	-1	-1	-4	-4
Critical (15%)	-8	-4	-5	-2	-2	-1	-1	-1	-1	0	-6	-4

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-8-2a. San Luis Reservoir (SWP and CVP), No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	443	479	514	543	544	544	544	544	520	452	436	434
20%	411	443	483	518	544	544	544	537	494	428	396	399
30%	396	431	470	508	533	544	544	525	479	419	371	371
40%	384	425	464	499	524	543	538	519	470	411	353	362
50%	378	419	457	492	517	533	535	513	464	407	349	349
60%	373	413	454	489	512	530	525	506	460	404	348	348
70%	368	406	447	484	507	523	518	500	455	391	341	348
80%	355	398	442	479	503	515	511	493	448	385	329	335
90%	336	394	432	469	494	509	503	486	432	375	329	331
Long Term												
Full Simulation Period[a]	385	425	465	498	519	530	527	512	470	410	365	367
Water Year Types[b,c]												
Wet (32%)	398	445	485	506	528	539	540	528	487	422	371	374
Above Normal (15%)	349	409	456	497	520	532	531	513	465	390	345	335
Below Normal (17%)	384	420	461	501	524	533	530	512	463	405	349	362
Dry (22%)	382	412	449	487	507	518	511	493	453	404	361	369
Critical (15%)	401	426	456	492	511	524	517	507	469	418	395	387

Table 5B4-8-2b. San Luis Reservoir (SWP and CVP), Alternative 1B 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	443	482	514	543	544	544	544	544	519	452	435	436
20%	402	445	483	517	544	544	544	537	495	429	384	392
30%	389	430	471	508	534	544	544	525	479	418	363	366
40%	384	423	464	500	526	544	539	519	471	411	351	362
50%	378	419	459	493	517	534	534	513	462	407	348	352
60%	374	415	455	489	512	530	525	504	459	404	348	348
70%	367	408	448	484	506	522	516	499	456	391	343	347
80%	349	400	442	479	503	516	511	493	448	385	329	335
90%	335	394	431	470	492	511	501	487	433	375	329	331
Long Term												
Full Simulation Period[a]	384	425	465	498	519	530	527	512	469	410	363	366
Water Year Types[b,c]												
Wet (32%)	398	445	485	506	527	539	540	528	487	422	370	374
Above Normal (15%)	352	410	457	497	521	533	532	513	465	391	344	337
Below Normal (17%)	384	422	465	503	526	534	530	513	464	405	349	363
Dry (22%)	378	412	448	486	506	517	510	491	451	403	356	365
Critical (15%)	392	421	452	492	510	524	517	507	469	418	389	383

Table 5B4-8-2c. San Luis Reservoir (SWP and CVP), Alternative 1B 011221 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	3	0	0	0	0	0	0	0	0	-1	2
20%	-9	2	0	-1	0	0	0	0	1	1	-12	-7
30%	-7	-1	1	0	1	0	0	0	1	0	-8	-5
40%	0	-1	0	2	3	1	1	0	0	0	-1	0
50%	0	0	2	1	0	0	-1	-1	-2	0	-1	3
60%	0	2	1	0	0	1	-1	-2	-1	1	0	0
70%	-1	2	1	0	-1	-1	-2	-1	0	1	2	-1
80%	-5	2	0	0	0	1	0	0	0	0	0	0
90%	0	0	-1	1	-2	2	-2	2	1	0	0	0
Long Term												
Full Simulation Period[a]	-2	0	0	0	0	0	0	0	0	0	-2	-1
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	3	2	1	1	1	1	1	1	0	1	0	1
Below Normal (17%)	0	2	4	2	2	1	0	0	0	0	0	0
Dry (22%)	-3	1	-1	-1	-1	-1	-1	-2	-2	-1	-5	-3
Critical (15%)	-9	-5	-4	0	-1	0	0	0	0	0	-6	-5

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-8-3a. San Luis Reservoir (SWP and CVP), No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	443	479	514	543	544	544	544	544	520	452	436	434
20%	411	443	483	518	544	544	544	537	494	428	396	399
30%	396	431	470	508	533	544	544	525	479	419	371	371
40%	384	425	464	499	524	543	538	519	470	411	353	362
50%	378	419	457	492	517	533	535	513	464	407	349	349
60%	373	413	454	489	512	530	525	506	460	404	348	348
70%	368	406	447	484	507	523	518	500	455	391	341	348
80%	355	398	442	479	503	515	511	493	448	385	329	335
90%	336	394	432	469	494	509	503	486	432	375	329	331
Long Term												
Full Simulation Period[a]	385	425	465	498	519	530	527	512	470	410	365	367
Water Year Types[b,c]												
Wet (32%)	398	445	485	506	528	539	540	528	487	422	371	374
Above Normal (15%)	349	409	456	497	520	532	531	513	465	390	345	335
Below Normal (17%)	384	420	461	501	524	533	530	512	463	405	349	362
Dry (22%)	382	412	449	487	507	518	511	493	453	404	361	369
Critical (15%)	401	426	456	492	511	524	517	507	469	418	395	387

Table 5B4-8-3b. San Luis Reservoir (SWP and CVP), Alternative 2 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	443	482	514	543	544	544	544	544	519	452	435	435
20%	403	444	483	517	544	544	544	537	495	429	384	389
30%	389	429	472	507	534	544	544	525	480	419	364	367
40%	384	423	464	499	525	544	539	519	470	411	352	361
50%	378	419	458	494	517	533	534	512	462	407	348	348
60%	373	411	455	489	512	530	525	504	458	404	348	348
70%	359	407	448	484	506	522	515	498	456	391	342	347
80%	349	399	442	479	503	516	511	493	448	386	329	335
90%	337	394	430	469	492	508	501	487	433	375	329	331
Long Term												
Full Simulation Period[a]	383	424	464	497	519	530	527	512	469	410	363	366
Water Year Types[b,c]												
Wet (32%)	398	445	485	506	527	539	540	528	487	422	370	374
Above Normal (15%)	351	409	456	498	521	533	532	513	465	390	344	336
Below Normal (17%)	384	421	465	502	525	534	530	513	464	405	349	362
Dry (22%)	377	407	447	486	507	518	510	491	451	403	356	365
Critical (15%)	393	422	452	490	509	523	517	507	469	418	390	383

Table 5B4-8-3c. San Luis Reservoir (SWP and CVP), Alternative 2 011221 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	3	0	0	0	0	0	0	0	0	-1	1
20%	-8	1	0	-1	0	0	0	0	1	1	-12	-10
30%	-7	-2	2	0	1	0	1	0	1	0	-8	-4
40%	0	-2	0	1	2	0	1	0	0	0	-1	-1
50%	0	0	2	2	0	0	-1	-2	-2	-1	-1	0
60%	-1	-2	1	0	0	1	-1	-2	-2	1	0	0
70%	-8	1	0	0	-1	-1	-2	-2	0	1	0	-1
80%	-5	1	-1	0	0	0	0	0	0	1	0	0
90%	1	0	-2	1	-2	-1	-2	2	1	0	0	0
Long Term												
Full Simulation Period[a]	-2	-1	0	0	0	0	0	0	0	0	-2	-1
Water Year Types[b,c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (15%)	1	1	0	1	1	1	1	0	0	1	0	0
Below Normal (17%)	0	2	3	1	1	0	0	0	0	0	0	-1
Dry (22%)	-4	-5	-2	-1	0	0	-1	-2	-1	-1	-4	-4
Critical (15%)	-8	-4	-4	-2	-2	-1	-1	-1	0	0	-6	-4

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-8-4a. San Luis Reservoir (SWP and CVP), No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	443	479	514	543	544	544	544	544	520	452	436	434
20%	411	443	483	518	544	544	544	537	494	428	396	399
30%	396	431	470	508	533	544	544	525	479	419	371	371
40%	384	425	464	499	524	543	538	519	470	411	353	362
50%	378	419	457	492	517	533	535	513	464	407	349	349
60%	373	413	454	489	512	530	525	506	460	404	348	348
70%	368	406	447	484	507	523	518	500	455	391	341	348
80%	355	398	442	479	503	515	511	493	448	385	329	335
90%	336	394	432	469	494	509	503	486	432	375	329	331
Long Term												
Full Simulation Period[a]	385	425	465	498	519	530	527	512	470	410	365	367
Water Year Types[b,c]												
Wet (32%)	398	445	485	506	528	539	540	528	487	422	371	374
Above Normal (15%)	349	409	456	497	520	532	531	513	465	390	345	335
Below Normal (17%)	384	420	461	501	524	533	530	512	463	405	349	362
Dry (22%)	382	412	449	487	507	518	511	493	453	404	361	369
Critical (15%)	401	426	456	492	511	524	517	507	469	418	395	387

Table 5B4-8-4b. San Luis Reservoir (SWP and CVP), Alternative 3 020121, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	442	482	514	543	544	544	544	544	519	452	429	432
20%	405	440	483	518	544	544	544	537	494	427	386	395
30%	395	432	474	512	537	544	544	527	480	419	369	372
40%	388	426	467	505	528	544	540	521	471	411	352	364
50%	380	422	464	496	518	535	534	512	462	406	348	356
60%	375	419	455	489	515	531	524	505	459	404	348	348
70%	370	413	450	486	507	522	516	499	456	393	343	348
80%	362	401	444	482	503	516	511	494	448	388	329	336
90%	347	394	440	470	493	513	502	487	433	380	329	331
Long Term												
Full Simulation Period[a]	387	428	467	499	520	531	528	512	470	411	363	368
Water Year Types[b,c]												
Wet (32%)	398	445	485	507	528	539	540	528	487	422	370	374
Above Normal (15%)	366	419	464	500	523	533	532	514	465	396	345	342
Below Normal (17%)	388	425	466	505	528	534	530	513	464	405	349	365
Dry (22%)	382	415	452	488	508	519	511	492	453	405	357	366
Critical (15%)	394	422	452	492	510	524	518	507	468	416	392	386

Table 5B4-8-4c. San Luis Reservoir (SWP and CVP), Alternative 3 020121 minus No Action Alternative 011221, End of Month Elevation (Feet)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-1	3	0	0	0	0	0	0	0	0	-7	-2
20%	-6	-2	0	1	0	0	0	0	0	-1	-10	-4
30%	-1	1	3	4	4	0	1	1	1	1	-3	1
40%	4	2	3	6	5	1	2	2	1	0	-1	2
50%	2	4	8	3	1	2	-1	-2	-1	-1	-1	7
60%	1	6	1	0	2	1	-2	-1	-1	0	0	0
70%	3	6	2	2	0	-2	-2	0	0	3	2	0
80%	7	3	2	3	0	1	0	1	0	3	0	1
90%	11	0	8	1	-2	4	-1	1	1	5	0	0
Long Term												
Full Simulation Period[a]	2	3	2	2	1	1	0	0	0	1	-1	1
Water Year Types[b,c]												
Wet (32%)	0	0	0	1	1	0	0	0	0	0	0	0
Above Normal (15%)	17	11	8	3	2	1	1	1	1	6	0	7
Below Normal (17%)	4	5	5	4	4	1	0	0	0	0	0	2
Dry (22%)	1	3	3	1	1	1	0	0	0	0	-3	-2
Critical (15%)	-8	-4	-5	0	-1	0	0	-1	-1	-2	-3	-2

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Figure 5B4-8-1. San Luis Reservoir (SWP and CVP), October

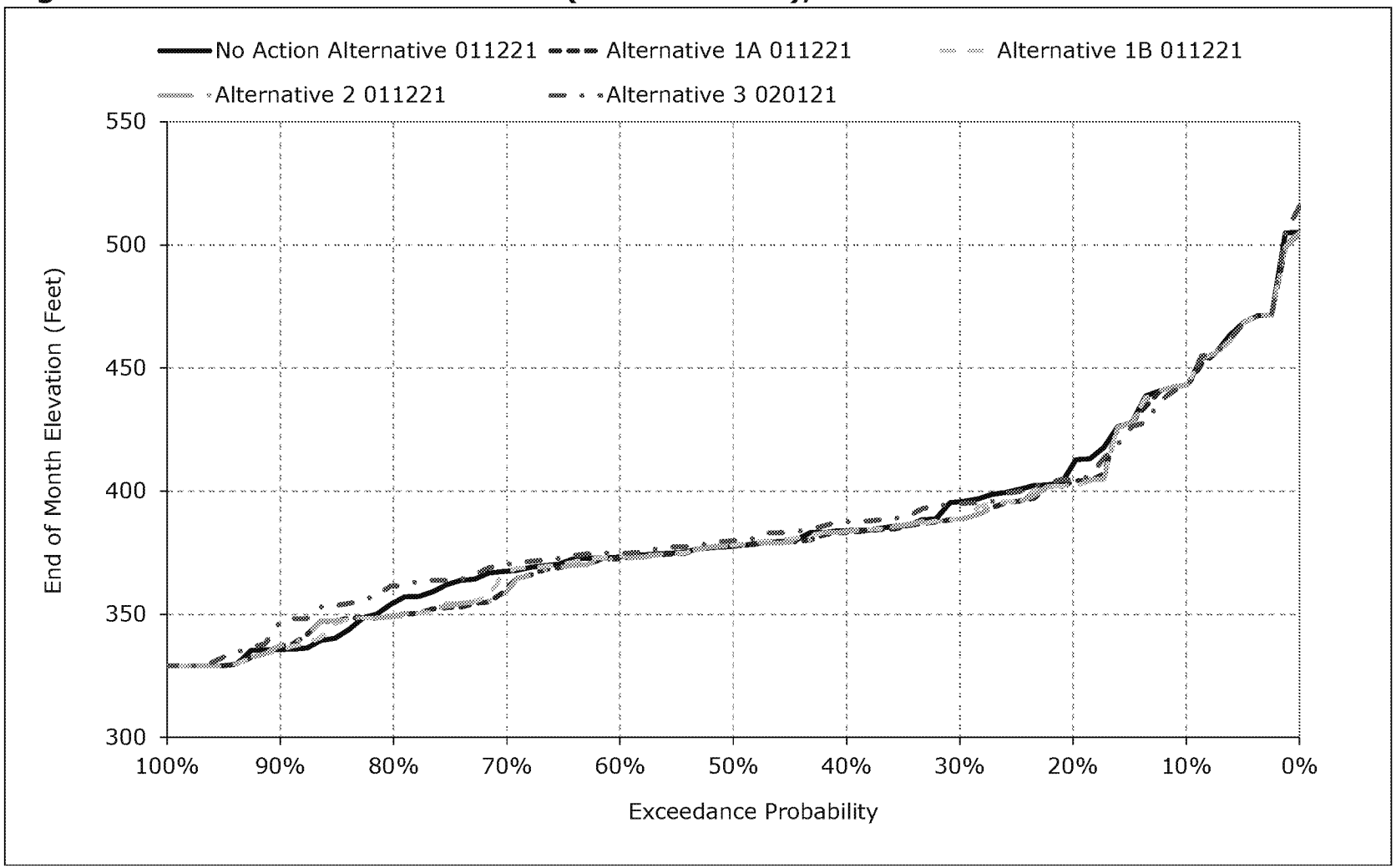


Figure 5B4-8-2. San Luis Reservoir (SWP and CVP), November

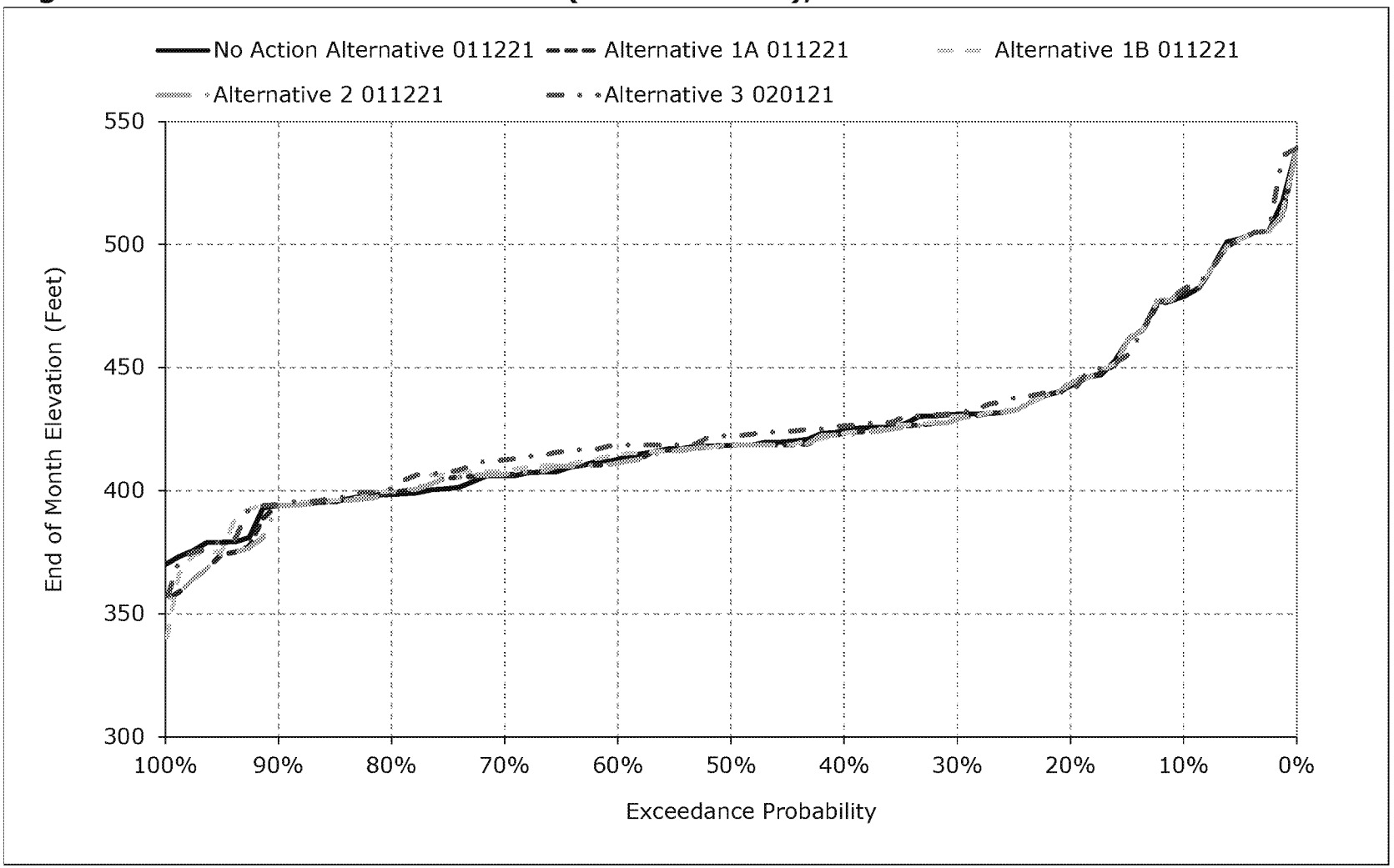


Figure 5B4-8-3. San Luis Reservoir (SWP and CVP), December

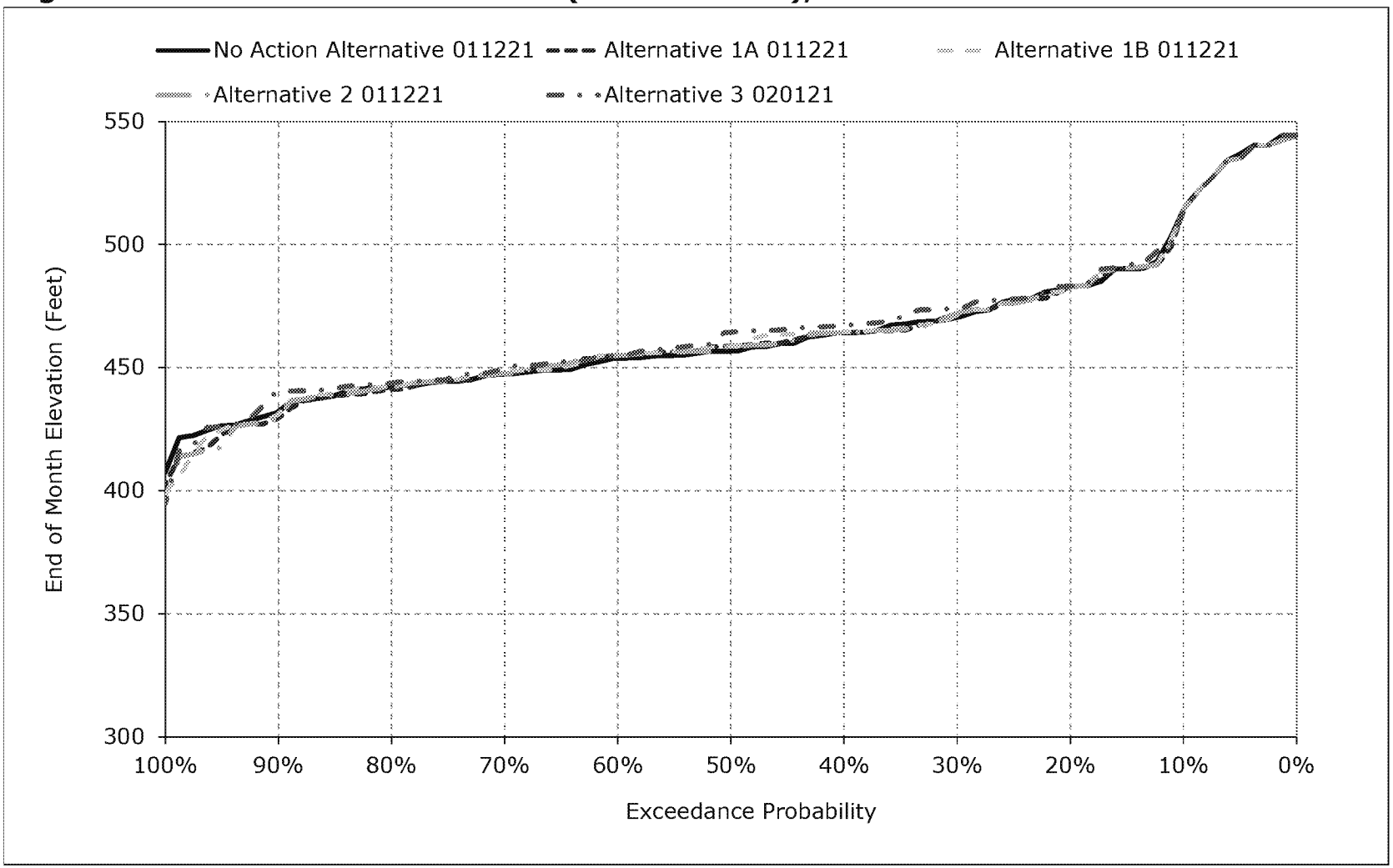


Figure 5B4-8-4. San Luis Reservoir (SWP and CVP), January

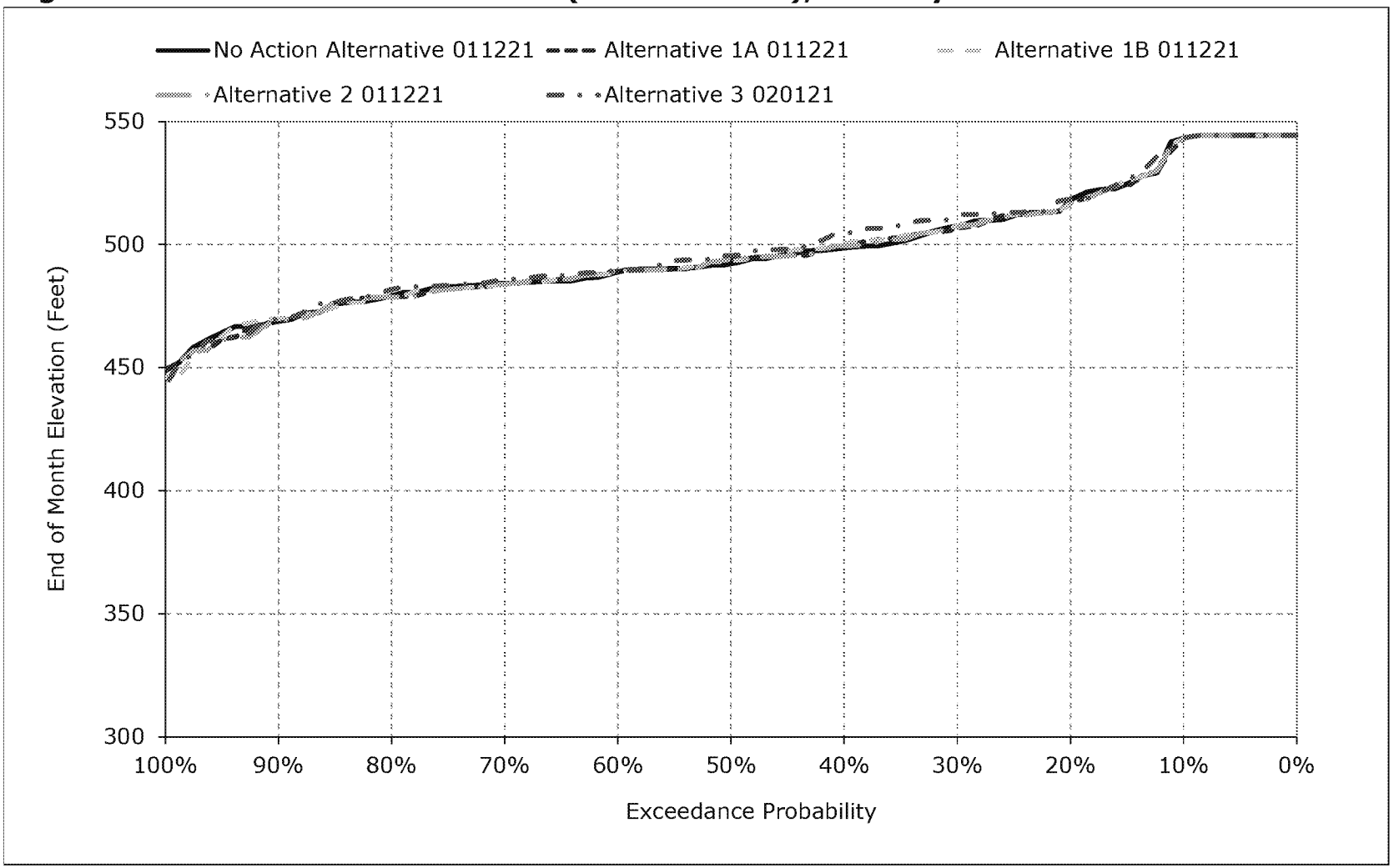


Figure 5B4-8-5. San Luis Reservoir (SWP and CVP), February

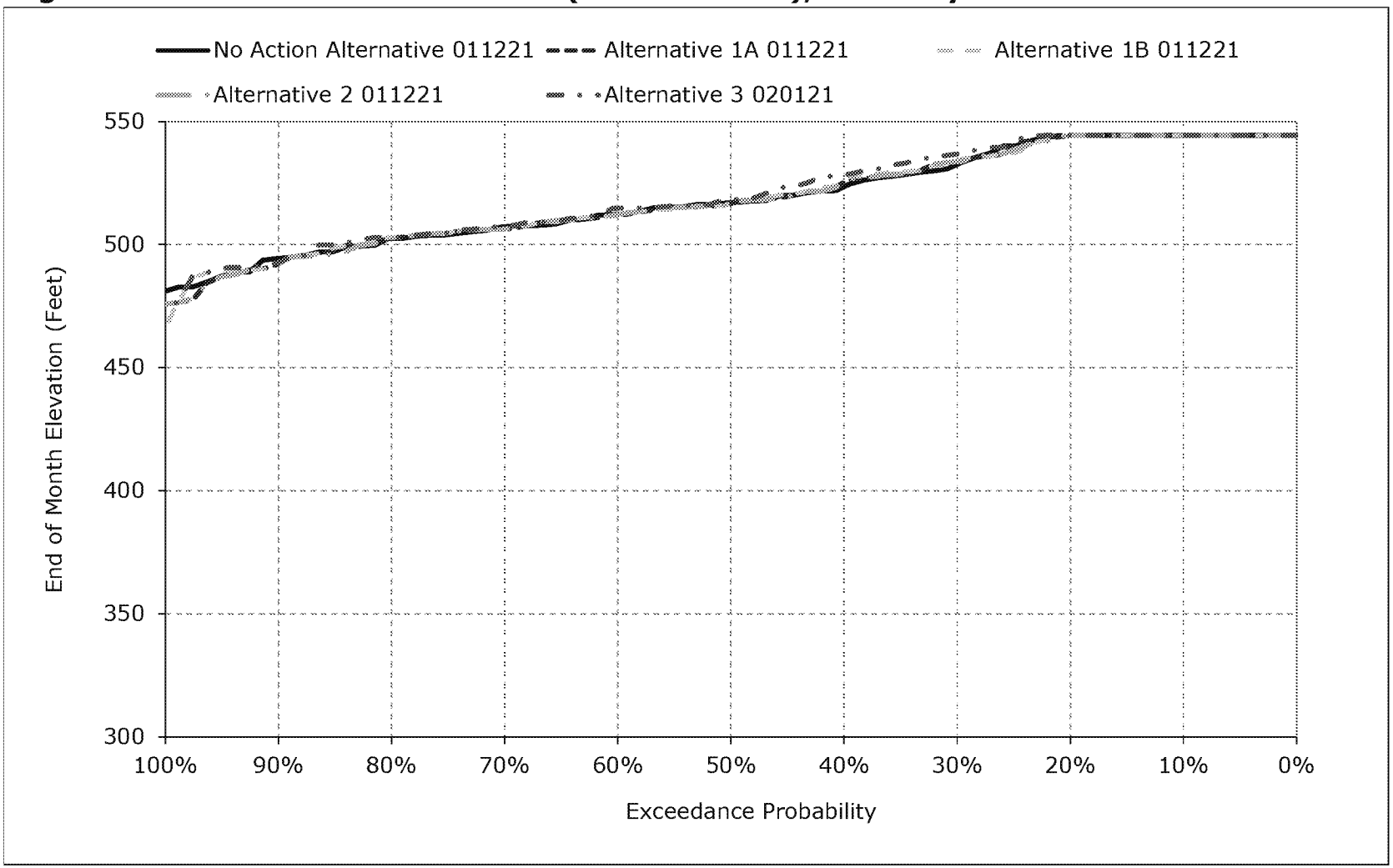


Figure 5B4-8-6. San Luis Reservoir (SWP and CVP), March

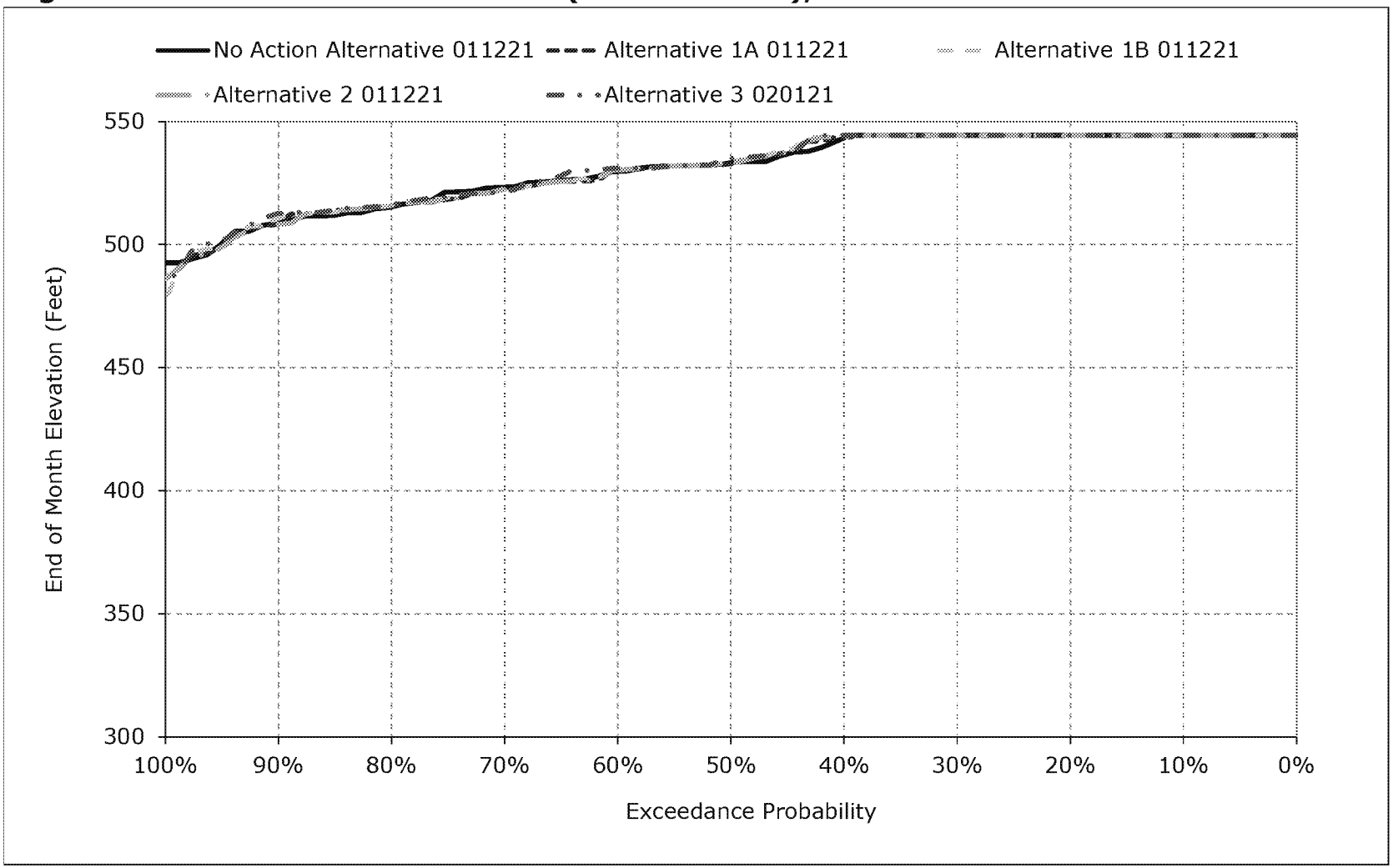


Figure 5B4-8-7. San Luis Reservoir (SWP and CVP), April

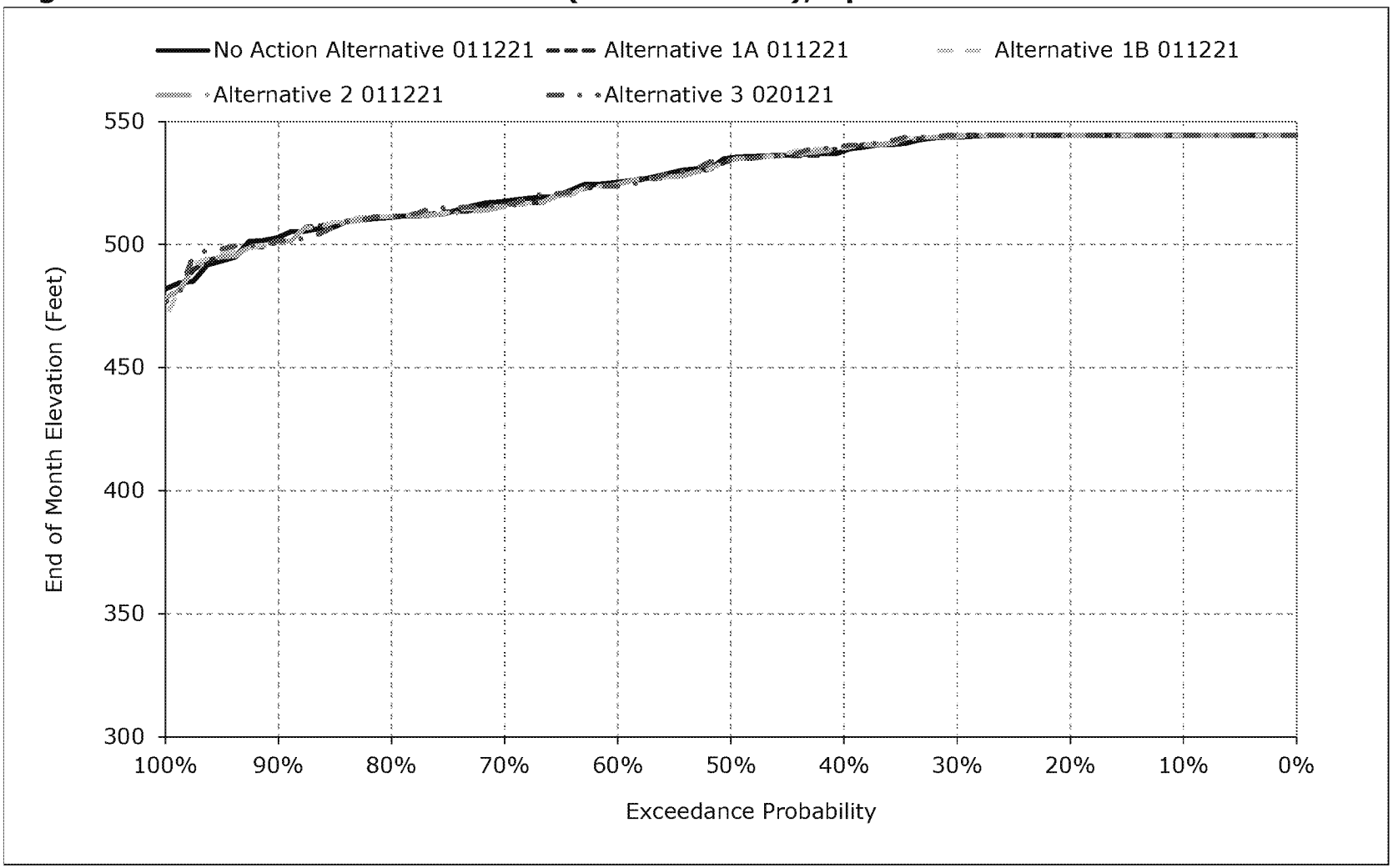


Figure 5B4-8-8. San Luis Reservoir (SWP and CVP), May

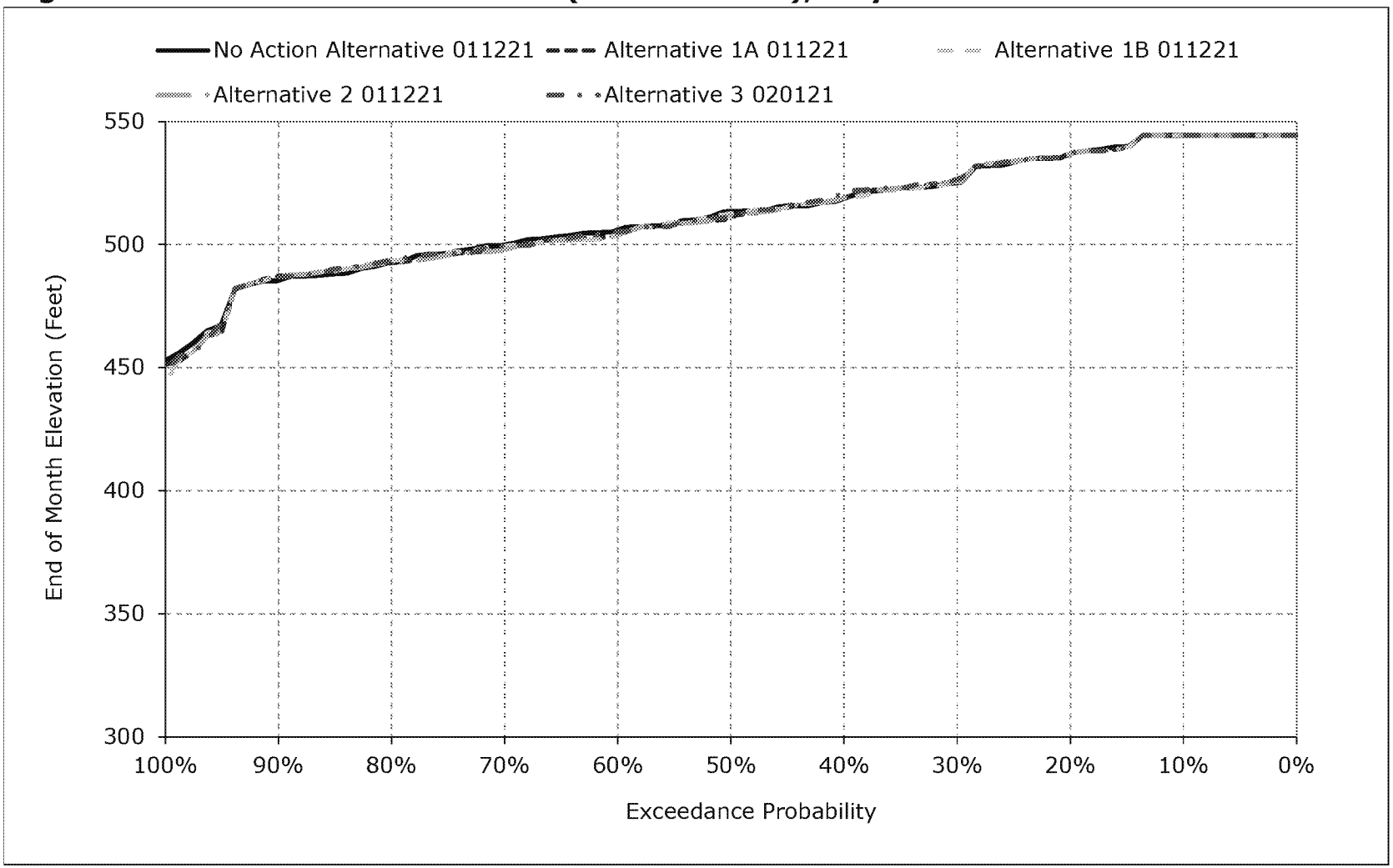


Figure 5B4-8-9. San Luis Reservoir (SWP and CVP), June

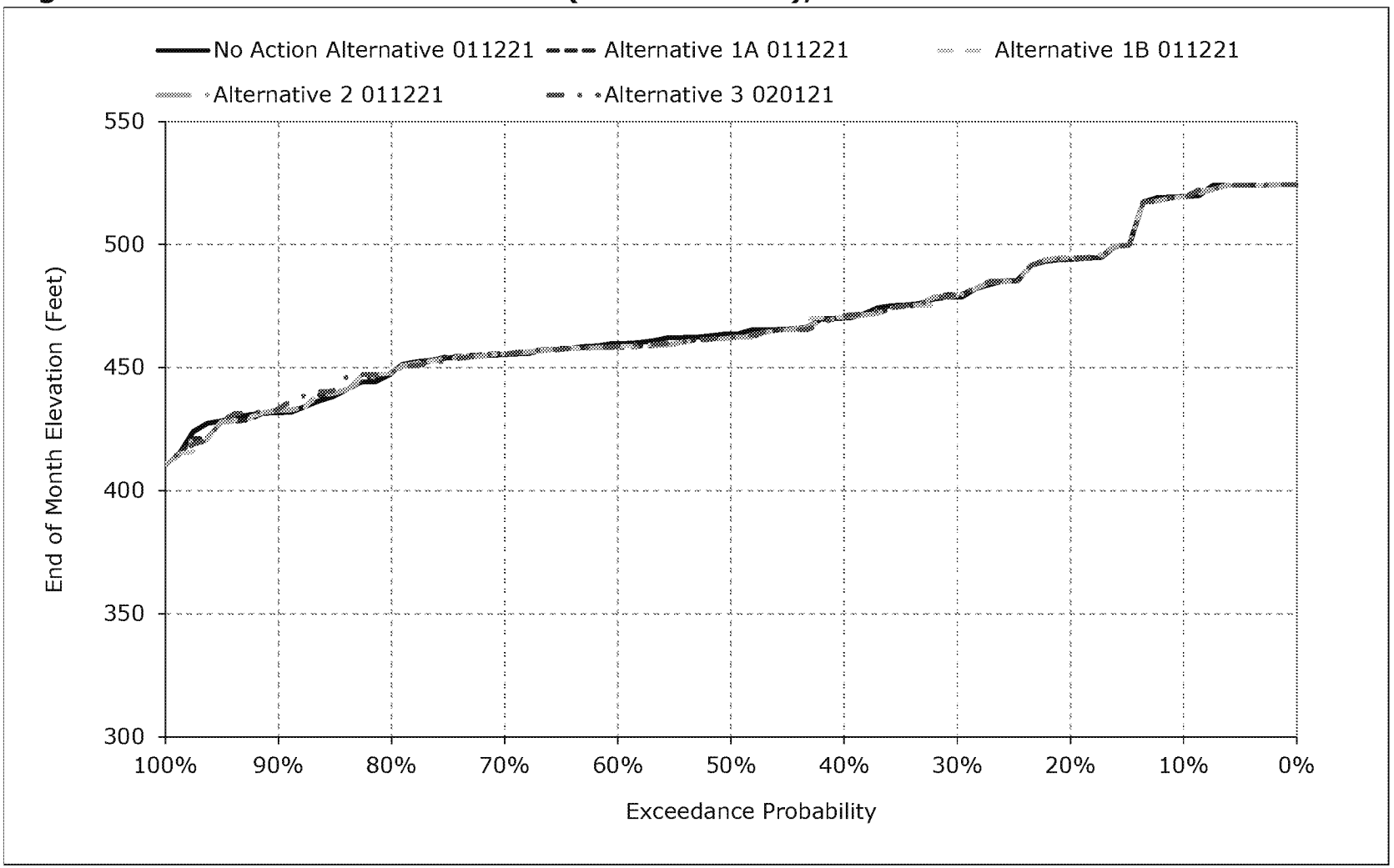


Figure 5B4-8-10. San Luis Reservoir (SWP and CVP), July

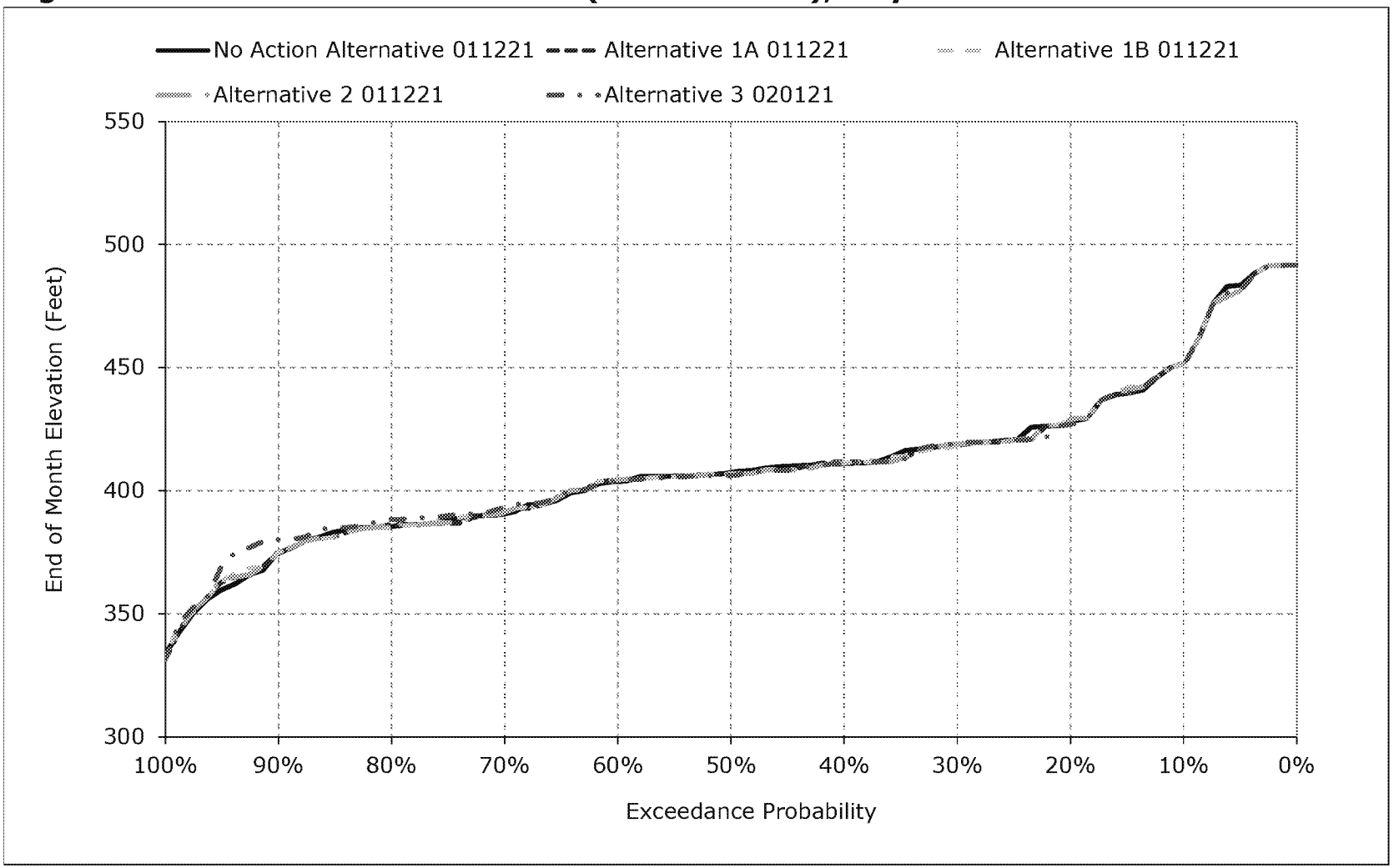


Figure 5B4-8-11. San Luis Reservoir (SWP and CVP), August

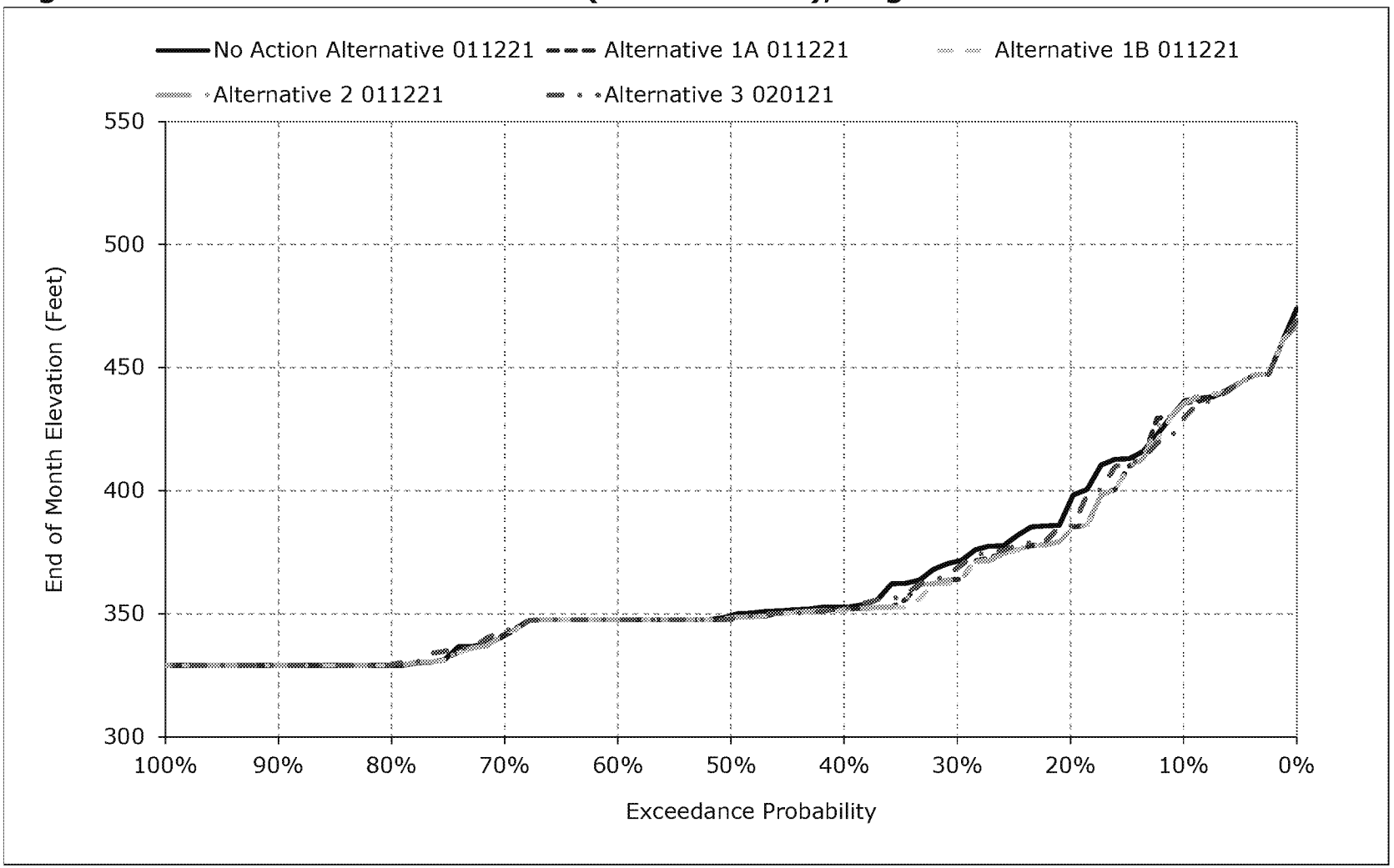


Figure 5B4-8-12. San Luis Reservoir (SWP and CVP), September

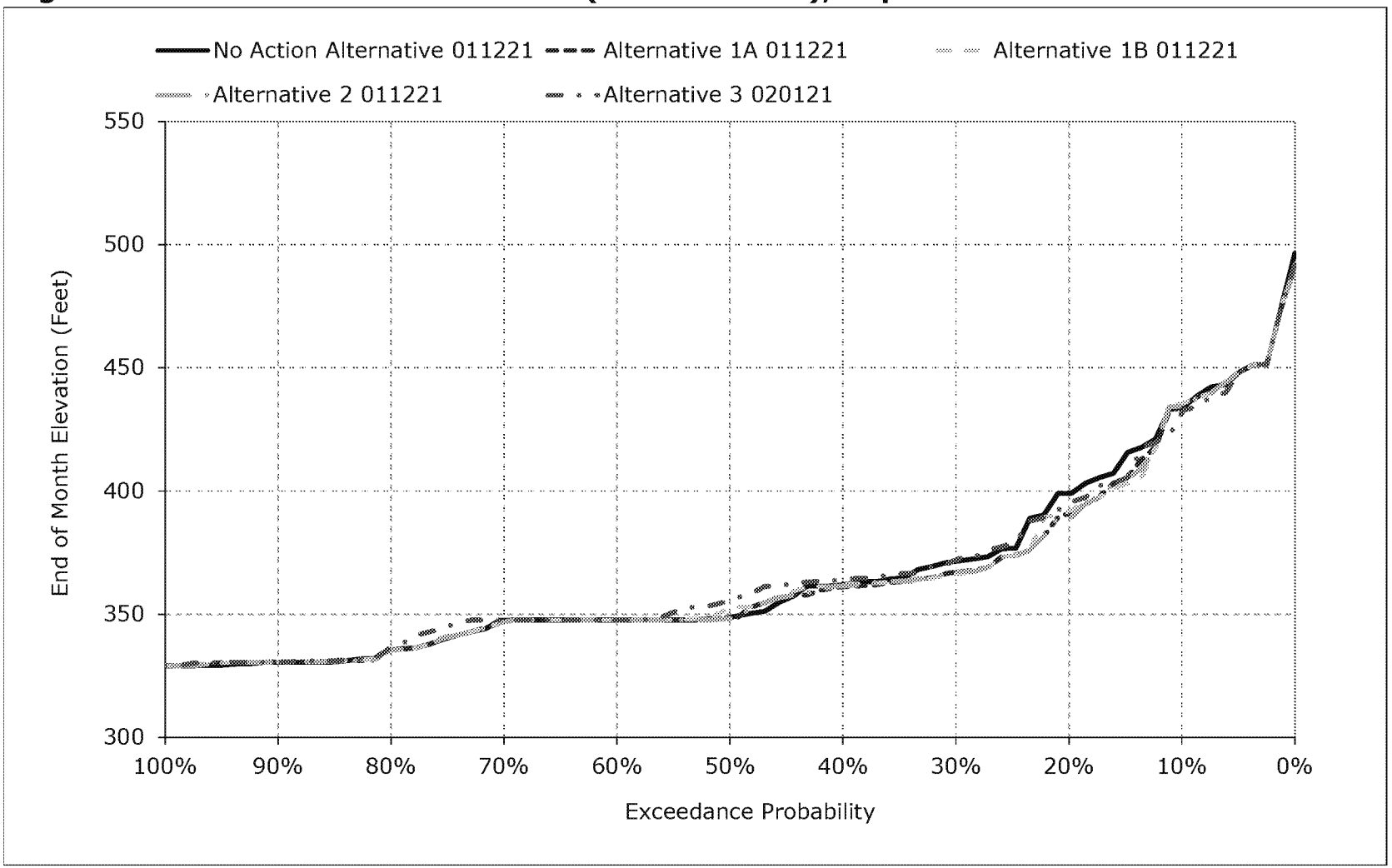


Table 5B4-9-1a. San Luis Reservoir Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,582	5,134	5,636	6,032	6,047	6,047	6,047	6,047	5,713	4,727	4,464	4,431
20%	3,988	4,574	5,192	5,688	6,047	6,047	6,047	5,950	5,357	4,330	3,668	3,746
30%	3,667	4,382	5,008	5,547	5,894	6,047	6,038	5,791	5,130	4,147	3,099	3,102
40%	3,394	4,266	4,913	5,420	5,768	6,034	5,966	5,703	5,004	3,990	2,531	2,820
50%	3,247	4,142	4,804	5,332	5,679	5,903	5,929	5,628	4,907	3,916	2,417	2,400
60%	3,148	4,025	4,759	5,283	5,613	5,854	5,794	5,523	4,850	3,842	2,364	2,364
70%	2,996	3,890	4,655	5,214	5,541	5,766	5,687	5,438	4,783	3,549	2,162	2,363
80%	2,588	3,731	4,568	5,138	5,476	5,656	5,595	5,338	4,663	3,427	1,778	1,978
90%	1,989	3,626	4,399	4,985	5,361	5,564	5,481	5,233	4,393	3,180	1,778	1,822
Long Term												
Full Simulation Period[a]	3,309	4,214	4,903	5,399	5,701	5,858	5,818	5,608	4,981	3,901	2,758	2,830
Water Year Types[b,c]												
Wet (32%)	3,542	4,558	5,209	5,515	5,819	5,979	5,994	5,827	5,241	4,097	2,863	2,953
Above Normal (15%)	2,364	3,930	4,787	5,390	5,721	5,883	5,870	5,614	4,911	3,457	2,240	1,965
Below Normal (17%)	3,384	4,141	4,865	5,449	5,775	5,901	5,850	5,612	4,890	3,828	2,417	2,811
Dry (22%)	3,270	3,961	4,655	5,253	5,534	5,692	5,596	5,331	4,721	3,823	2,677	2,890
Critical (15%)	3,720	4,219	4,771	5,319	5,591	5,771	5,680	5,543	4,986	4,122	3,570	3,357

Table 5B4-9-1b. San Luis Reservoir Surface Area, Alternative 1A 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,583	5,159	5,631	6,027	6,047	6,047	6,047	6,047	5,710	4,727	4,451	4,430
20%	3,843	4,577	5,189	5,677	6,045	6,047	6,047	5,952	5,356	4,344	3,397	3,555
30%	3,503	4,348	5,031	5,532	5,909	6,047	6,044	5,800	5,145	4,152	2,885	2,983
40%	3,376	4,240	4,914	5,433	5,793	6,037	5,981	5,706	5,006	4,002	2,499	2,792
50%	3,250	4,141	4,834	5,354	5,675	5,898	5,916	5,597	4,883	3,904	2,382	2,387
60%	3,129	3,996	4,778	5,287	5,609	5,862	5,783	5,498	4,827	3,856	2,364	2,364
70%	2,772	3,899	4,659	5,209	5,529	5,755	5,666	5,416	4,789	3,563	2,176	2,339
80%	2,415	3,753	4,552	5,132	5,478	5,663	5,600	5,337	4,664	3,444	1,778	1,976
90%	2,035	3,626	4,357	4,994	5,332	5,561	5,455	5,257	4,408	3,173	1,778	1,826
Long Term												
Full Simulation Period[a]	3,258	4,187	4,895	5,398	5,699	5,857	5,814	5,603	4,975	3,899	2,710	2,795
Water Year Types[b,c]												
Wet (32%)	3,542	4,558	5,209	5,509	5,813	5,977	5,991	5,823	5,239	4,095	2,858	2,953
Above Normal (15%)	2,406	3,947	4,794	5,409	5,739	5,892	5,876	5,620	4,914	3,472	2,231	1,977
Below Normal (17%)	3,380	4,181	4,917	5,467	5,786	5,910	5,854	5,616	4,895	3,836	2,409	2,789
Dry (22%)	3,160	3,850	4,628	5,244	5,529	5,687	5,583	5,309	4,697	3,803	2,573	2,808
Critical (15%)	3,495	4,136	4,692	5,293	5,564	5,759	5,669	5,531	4,977	4,120	3,422	3,256

Table 5B4-9-1c. San Luis Reservoir Surface Area, Alternative 1A 011221 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1	25	-5	-5	0	0	0	0	-3	0	-13	-1
20%	-144	3	-3	-11	-1	0	0	1	-1	14	-272	-191
30%	-164	-34	23	-15	15	0	7	10	16	5	-214	-119
40%	-18	-26	1	12	25	4	15	3	2	12	-32	-28
50%	3	-1	31	22	-4	-5	-13	-32	-23	-12	-35	-13
60%	-18	-29	18	4	-5	7	-11	-25	-23	14	0	0
70%	-224	9	4	-5	-12	-11	-21	-22	6	14	13	-24
80%	-173	22	-16	-6	3	7	6	-1	1	16	0	-2
90%	46	0	-42	9	-30	-4	-27	25	15	-8	0	3
Long Term												
Full Simulation Period[a]	-51	-27	-8	-2	-2	-1	-4	-6	-6	-2	-48	-35
Water Year Types[b,c]												
Wet (32%)	0	0	-1	-6	-6	-2	-3	-3	-2	-2	-4	1
Above Normal (15%)	42	16	7	20	18	9	6	6	3	15	-8	12
Below Normal (17%)	-4	40	52	18	12	9	5	5	5	8	-8	-22
Dry (22%)	-110	-111	-27	-8	-5	-5	-12	-22	-23	-20	-104	-82
Critical (15%)	-225	-83	-80	-26	-27	-12	-10	-12	-9	-3	-148	-101

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-9-2a. San Luis Reservoir Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,582	5,134	5,636	6,032	6,047	6,047	6,047	6,047	5,713	4,727	4,464	4,431
20%	3,988	4,574	5,192	5,688	6,047	6,047	6,047	5,950	5,357	4,330	3,668	3,746
30%	3,667	4,382	5,008	5,547	5,894	6,047	6,038	5,791	5,130	4,147	3,099	3,102
40%	3,394	4,266	4,913	5,420	5,768	6,034	5,966	5,703	5,004	3,990	2,531	2,820
50%	3,247	4,142	4,804	5,332	5,679	5,903	5,929	5,628	4,907	3,916	2,417	2,400
60%	3,148	4,025	4,759	5,283	5,613	5,854	5,794	5,523	4,850	3,842	2,364	2,364
70%	2,996	3,890	4,655	5,214	5,541	5,766	5,687	5,438	4,783	3,549	2,162	2,363
80%	2,588	3,731	4,568	5,138	5,476	5,656	5,595	5,338	4,663	3,427	1,778	1,978
90%	1,989	3,626	4,399	4,985	5,361	5,564	5,481	5,233	4,393	3,180	1,778	1,822
Long Term												
Full Simulation Period[a]	3,309	4,214	4,903	5,399	5,701	5,858	5,818	5,608	4,981	3,901	2,758	2,830
Water Year Types[b,c]												
Wet (32%)	3,542	4,558	5,209	5,515	5,819	5,979	5,994	5,827	5,241	4,097	2,863	2,953
Above Normal (15%)	2,364	3,930	4,787	5,390	5,721	5,883	5,870	5,614	4,911	3,457	2,240	1,965
Below Normal (17%)	3,384	4,141	4,865	5,449	5,775	5,901	5,850	5,612	4,890	3,828	2,417	2,811
Dry (22%)	3,270	3,961	4,655	5,253	5,534	5,692	5,596	5,331	4,721	3,823	2,677	2,890
Critical (15%)	3,720	4,219	4,771	5,319	5,591	5,771	5,680	5,543	4,986	4,122	3,570	3,357

Table 5B4-9-2b. San Luis Reservoir Surface Area, Alternative 1B 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,588	5,181	5,635	6,031	6,047	6,047	6,047	6,047	5,710	4,727	4,451	4,456
20%	3,807	4,610	5,189	5,679	6,046	6,047	6,047	5,952	5,365	4,345	3,395	3,576
30%	3,503	4,368	5,024	5,548	5,913	6,047	6,041	5,791	5,141	4,140	2,861	2,956
40%	3,387	4,239	4,919	5,446	5,804	6,047	5,982	5,705	5,011	3,995	2,487	2,815
50%	3,258	4,145	4,833	5,346	5,677	5,908	5,918	5,617	4,882	3,907	2,392	2,507
60%	3,153	4,065	4,778	5,281	5,608	5,863	5,783	5,497	4,831	3,856	2,364	2,364
70%	2,976	3,932	4,666	5,209	5,529	5,751	5,658	5,431	4,789	3,563	2,217	2,339
80%	2,415	3,766	4,571	5,133	5,482	5,665	5,601	5,345	4,670	3,422	1,778	1,976
90%	1,974	3,631	4,384	5,000	5,332	5,590	5,455	5,258	4,412	3,181	1,778	1,825
Long Term												
Full Simulation Period[a]	3,269	4,212	4,902	5,400	5,701	5,859	5,816	5,603	4,976	3,902	2,705	2,803
Water Year Types[b,c]												
Wet (32%)	3,541	4,557	5,208	5,513	5,816	5,979	5,992	5,825	5,240	4,096	2,858	2,953
Above Normal (15%)	2,444	3,964	4,807	5,399	5,729	5,893	5,877	5,622	4,916	3,491	2,228	2,001
Below Normal (17%)	3,386	4,190	4,924	5,481	5,797	5,913	5,854	5,616	4,896	3,835	2,407	2,815
Dry (22%)	3,187	3,958	4,642	5,233	5,521	5,680	5,579	5,301	4,694	3,805	2,559	2,818
Critical (15%)	3,488	4,118	4,697	5,312	5,584	5,771	5,681	5,542	4,983	4,118	3,414	3,242

Table 5B4-9-2c. San Luis Reservoir Surface Area, Alternative 1B 011221 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	5	47	-2	-1	0	0	0	0	-3	0	-13	25
20%	-181	36	-3	-9	0	0	0	1	8	15	-273	-169
30%	-164	-14	15	1	19	0	3	0	11	-7	-237	-146
40%	-7	-26	5	25	36	13	16	1	7	5	-44	-5
50%	11	2	29	14	-2	5	-11	-11	-25	-9	-25	107
60%	5	40	18	-2	-5	9	-11	-26	-19	14	0	0
70%	-20	42	11	-5	-13	-15	-29	-7	6	15	55	-24
80%	-173	35	4	-4	6	9	6	7	6	-6	0	-3
90%	-15	4	-16	15	-30	25	-26	25	18	1	0	3
Long Term												
Full Simulation Period[a]	-40	-2	-1	1	0	1	-2	-5	-5	1	-54	-27
Water Year Types[b,c]												
Wet (32%)	-1	-1	-1	-2	-3	1	-2	-2	-1	-1	-5	0
Above Normal (15%)	80	33	21	9	8	10	7	8	5	34	-11	36
Below Normal (17%)	2	49	59	31	22	12	5	4	6	7	-10	4
Dry (22%)	-83	-3	-13	-19	-13	-12	-17	-30	-27	-18	-117	-72
Critical (15%)	-232	-100	-74	-7	-7	0	2	-1	-3	-5	-157	-116

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-9-3a. San Luis Reservoir Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,582	5,134	5,636	6,032	6,047	6,047	6,047	6,047	5,713	4,727	4,464	4,431
20%	3,988	4,574	5,192	5,688	6,047	6,047	6,047	5,950	5,357	4,330	3,668	3,746
30%	3,667	4,382	5,008	5,547	5,894	6,047	6,038	5,791	5,130	4,147	3,099	3,102
40%	3,394	4,266	4,913	5,420	5,768	6,034	5,966	5,703	5,004	3,990	2,531	2,820
50%	3,247	4,142	4,804	5,332	5,679	5,903	5,929	5,628	4,907	3,916	2,417	2,400
60%	3,148	4,025	4,759	5,283	5,613	5,854	5,794	5,523	4,850	3,842	2,364	2,364
70%	2,996	3,890	4,655	5,214	5,541	5,766	5,687	5,438	4,783	3,549	2,162	2,363
80%	2,588	3,731	4,568	5,138	5,476	5,656	5,595	5,338	4,663	3,427	1,778	1,978
90%	1,989	3,626	4,399	4,985	5,361	5,564	5,481	5,233	4,393	3,180	1,778	1,822
Long Term												
Full Simulation Period[a]	3,309	4,214	4,903	5,399	5,701	5,858	5,818	5,608	4,981	3,901	2,758	2,830
Water Year Types[b,c]												
Wet (32%)	3,542	4,558	5,209	5,515	5,819	5,979	5,994	5,827	5,241	4,097	2,863	2,953
Above Normal (15%)	2,364	3,930	4,787	5,390	5,721	5,883	5,870	5,614	4,911	3,457	2,240	1,965
Below Normal (17%)	3,384	4,141	4,865	5,449	5,775	5,901	5,850	5,612	4,890	3,828	2,417	2,811
Dry (22%)	3,270	3,961	4,655	5,253	5,534	5,692	5,596	5,331	4,721	3,823	2,677	2,890
Critical (15%)	3,720	4,219	4,771	5,319	5,591	5,771	5,680	5,543	4,986	4,122	3,570	3,357

Table 5B4-9-3b. San Luis Reservoir Surface Area, Alternative 2 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,585	5,179	5,634	6,029	6,047	6,047	6,047	6,047	5,710	4,727	4,451	4,441
20%	3,819	4,590	5,189	5,678	6,045	6,047	6,047	5,952	5,366	4,346	3,397	3,521
30%	3,503	4,348	5,033	5,541	5,908	6,047	6,044	5,795	5,144	4,154	2,876	2,982
40%	3,385	4,226	4,915	5,433	5,793	6,037	5,982	5,706	5,007	3,998	2,499	2,804
50%	3,250	4,145	4,829	5,356	5,673	5,904	5,915	5,604	4,883	3,904	2,382	2,387
60%	3,130	3,994	4,777	5,287	5,612	5,863	5,782	5,497	4,826	3,855	2,364	2,364
70%	2,736	3,905	4,659	5,209	5,529	5,752	5,656	5,413	4,786	3,563	2,176	2,339
80%	2,417	3,753	4,559	5,131	5,478	5,663	5,600	5,339	4,664	3,445	1,778	1,976
90%	2,035	3,626	4,363	4,994	5,332	5,556	5,455	5,258	4,408	3,173	1,778	1,825
Long Term												
Full Simulation Period[a]	3,260	4,185	4,895	5,395	5,698	5,857	5,814	5,602	4,975	3,899	2,709	2,795
Water Year Types[b,c]												
Wet (32%)	3,542	4,558	5,209	5,510	5,814	5,978	5,991	5,824	5,239	4,096	2,858	2,953
Above Normal (15%)	2,406	3,947	4,794	5,404	5,734	5,893	5,877	5,620	4,915	3,476	2,231	1,977
Below Normal (17%)	3,382	4,179	4,916	5,464	5,783	5,906	5,850	5,613	4,893	3,835	2,406	2,795
Dry (22%)	3,162	3,842	4,622	5,239	5,528	5,686	5,583	5,308	4,697	3,803	2,572	2,808
Critical (15%)	3,509	4,138	4,700	5,293	5,564	5,760	5,671	5,533	4,978	4,116	3,421	3,251

Table 5B4-9-3c. San Luis Reservoir Surface Area, Alternative 2 011221 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2	45	-3	-3	0	0	0	0	-3	0	-13	10
20%	-169	16	-3	-10	-1	0	0	2	9	17	-272	-224
30%	-164	-34	25	-6	14	0	7	4	14	7	-223	-120
40%	-9	-40	1	12	24	4	17	3	3	8	-33	-16
50%	3	2	26	25	-6	1	-14	-24	-23	-13	-35	-13
60%	-18	-31	17	3	-1	9	-12	-25	-24	14	0	0
70%	-260	15	4	-5	-12	-14	-31	-26	3	14	13	-24
80%	-171	22	-9	-7	3	7	6	1	1	18	1	-2
90%	46	0	-37	9	-30	-9	-27	25	15	-8	0	3
Long Term												
Full Simulation Period[a]	-49	-29	-8	-4	-4	-1	-4	-6	-6	-2	-49	-34
Water Year Types[b,c]												
Wet (32%)	0	0	-1	-5	-5	-1	-3	-3	-2	-1	-4	1
Above Normal (15%)	42	16	7	15	13	9	6	6	4	20	-8	12
Below Normal (17%)	-2	38	52	15	8	5	1	1	3	7	-11	-17
Dry (22%)	-108	-119	-33	-14	-6	-6	-13	-22	-24	-20	-104	-82
Critical (15%)	-210	-81	-71	-26	-27	-11	-9	-10	-8	-6	-150	-106

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-9-4a. San Luis Reservoir Surface Area, No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,582	5,134	5,636	6,032	6,047	6,047	6,047	6,047	5,713	4,727	4,464	4,431
20%	3,988	4,574	5,192	5,688	6,047	6,047	6,047	5,950	5,357	4,330	3,668	3,746
30%	3,667	4,382	5,008	5,547	5,894	6,047	6,038	5,791	5,130	4,147	3,099	3,102
40%	3,394	4,266	4,913	5,420	5,768	6,034	5,966	5,703	5,004	3,990	2,531	2,820
50%	3,247	4,142	4,804	5,332	5,679	5,903	5,929	5,628	4,907	3,916	2,417	2,400
60%	3,148	4,025	4,759	5,283	5,613	5,854	5,794	5,523	4,850	3,842	2,364	2,364
70%	2,996	3,890	4,655	5,214	5,541	5,766	5,687	5,438	4,783	3,549	2,162	2,363
80%	2,588	3,731	4,568	5,138	5,476	5,656	5,595	5,338	4,663	3,427	1,778	1,978
90%	1,989	3,626	4,399	4,985	5,361	5,564	5,481	5,233	4,393	3,180	1,778	1,822
Long Term												
Full Simulation Period[a]	3,309	4,214	4,903	5,399	5,701	5,858	5,818	5,608	4,981	3,901	2,758	2,830
Water Year Types[b,c]												
Wet (32%)	3,542	4,558	5,209	5,515	5,819	5,979	5,994	5,827	5,241	4,097	2,863	2,953
Above Normal (15%)	2,364	3,930	4,787	5,390	5,721	5,883	5,870	5,614	4,911	3,457	2,240	1,965
Below Normal (17%)	3,384	4,141	4,865	5,449	5,775	5,901	5,850	5,612	4,890	3,828	2,417	2,811
Dry (22%)	3,270	3,961	4,655	5,253	5,534	5,692	5,596	5,331	4,721	3,823	2,677	2,890
Critical (15%)	3,720	4,219	4,771	5,319	5,591	5,771	5,680	5,543	4,986	4,122	3,570	3,357

Table 5B4-9-4b. San Luis Reservoir Surface Area, Alternative 3 020121, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,569	5,179	5,632	6,028	6,047	6,047	6,047	6,047	5,710	4,727	4,347	4,393
20%	3,863	4,535	5,198	5,698	6,047	6,047	6,047	5,952	5,362	4,314	3,436	3,650
30%	3,649	4,391	5,060	5,602	5,949	6,047	6,047	5,811	5,150	4,161	3,027	3,115
40%	3,479	4,302	4,959	5,505	5,835	6,047	5,991	5,734	5,015	3,992	2,514	2,888
50%	3,298	4,219	4,918	5,377	5,697	5,927	5,919	5,602	4,889	3,892	2,373	2,623
60%	3,181	4,142	4,776	5,290	5,647	5,872	5,772	5,513	4,834	3,846	2,364	2,364
70%	3,075	4,021	4,692	5,236	5,545	5,743	5,666	5,433	4,787	3,611	2,224	2,364
80%	2,805	3,787	4,594	5,177	5,482	5,665	5,601	5,353	4,668	3,493	1,786	2,004
90%	2,334	3,637	4,538	4,998	5,339	5,616	5,461	5,253	4,417	3,303	1,778	1,826
Long Term												
Full Simulation Period[a]	3,373	4,262	4,933	5,422	5,720	5,866	5,821	5,607	4,981	3,923	2,729	2,860
Water Year Types[b,c]												
Wet (32%)	3,538	4,556	5,208	5,532	5,832	5,981	5,994	5,827	5,241	4,098	2,858	2,953
Above Normal (15%)	2,852	4,140	4,907	5,431	5,752	5,902	5,882	5,627	4,921	3,613	2,239	2,173
Below Normal (17%)	3,463	4,238	4,938	5,511	5,825	5,912	5,852	5,613	4,894	3,838	2,408	2,884
Dry (22%)	3,297	4,013	4,708	5,263	5,546	5,701	5,596	5,323	4,721	3,832	2,601	2,851
Critical (15%)	3,543	4,150	4,693	5,312	5,584	5,774	5,685	5,533	4,969	4,091	3,507	3,330

Table 5B4-9-4c. San Luis Reservoir Surface Area, Alternative 3 020121 minus No Action Alternative 011221, End of Month Surface-Area (Acres)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-13	45	-4	-4	0	0	0	0	-3	0	-117	-39
20%	-124	-39	6	10	0	0	0	2	5	-16	-232	-96
30%	-18	9	52	56	56	0	9	20	20	14	-72	13
40%	84	36	46	84	67	13	25	31	10	1	-17	68
50%	51	77	115	46	18	24	-10	-26	-18	-24	-44	223
60%	33	117	16	7	34	18	-22	-10	-15	5	0	0
70%	79	131	37	22	3	-23	-21	-5	4	62	62	2
80%	218	56	27	39	6	9	6	15	5	65	9	26
90%	344	11	139	13	-22	52	-20	20	24	123	0	4
Long Term												
Full Simulation Period[a]	64	48	30	23	19	8	3	-1	0	22	-29	30
Water Year Types[b,c]												
Wet (32%)	-4	-2	-1	17	13	2	0	0	0	0	-5	0
Above Normal (15%)	488	210	120	41	31	18	12	14	10	156	-1	208
Below Normal (17%)	79	97	74	61	50	11	2	1	4	10	-9	73
Dry (22%)	27	52	53	10	11	9	0	-8	0	9	-76	-40
Critical (15%)	-177	-69	-78	-7	-7	3	5	-10	-17	-31	-64	-28

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Figure 5B4-9-1. San Luis Reservoir Surface Area, October

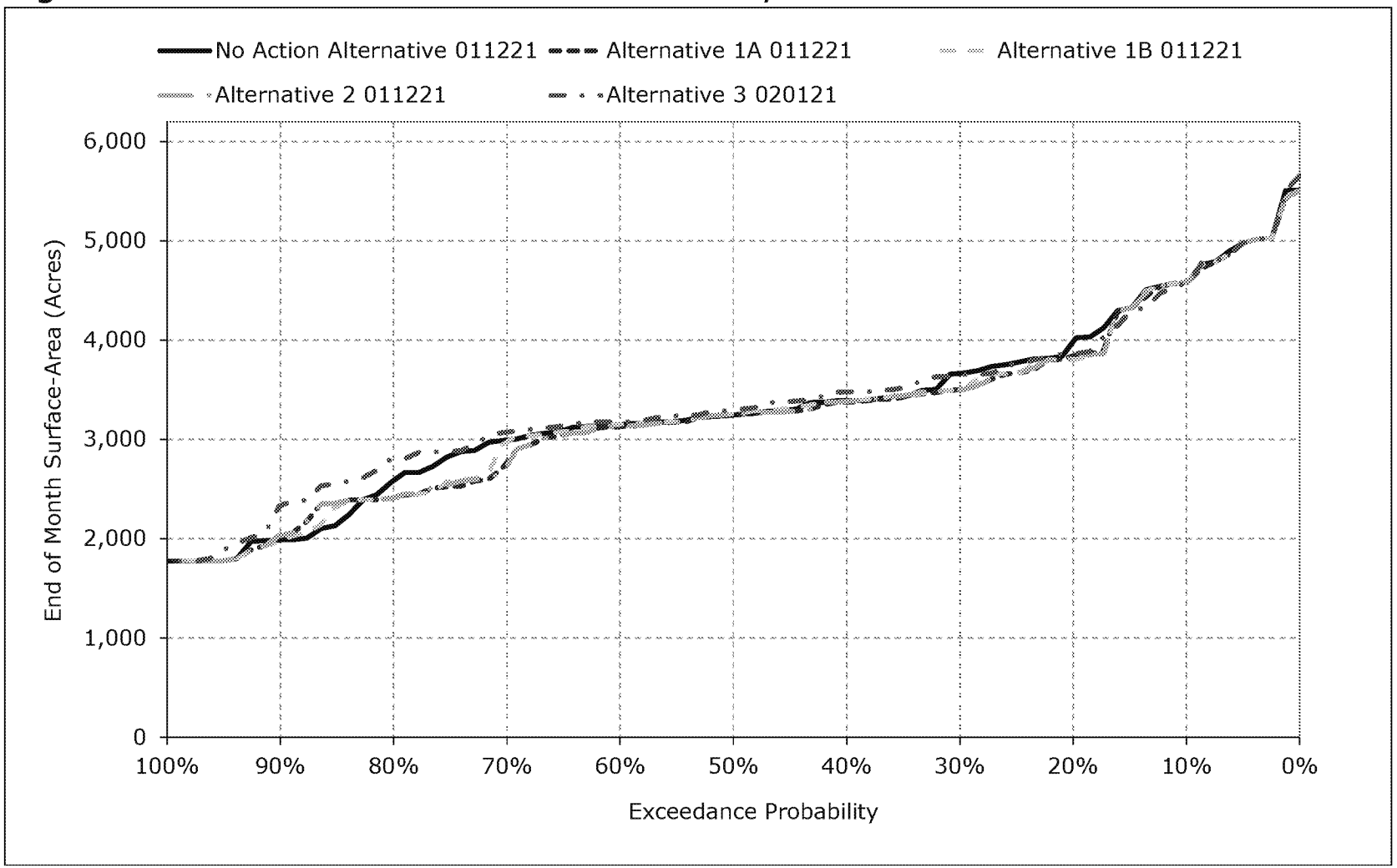


Figure 5B4-9-2. San Luis Reservoir Surface Area, November

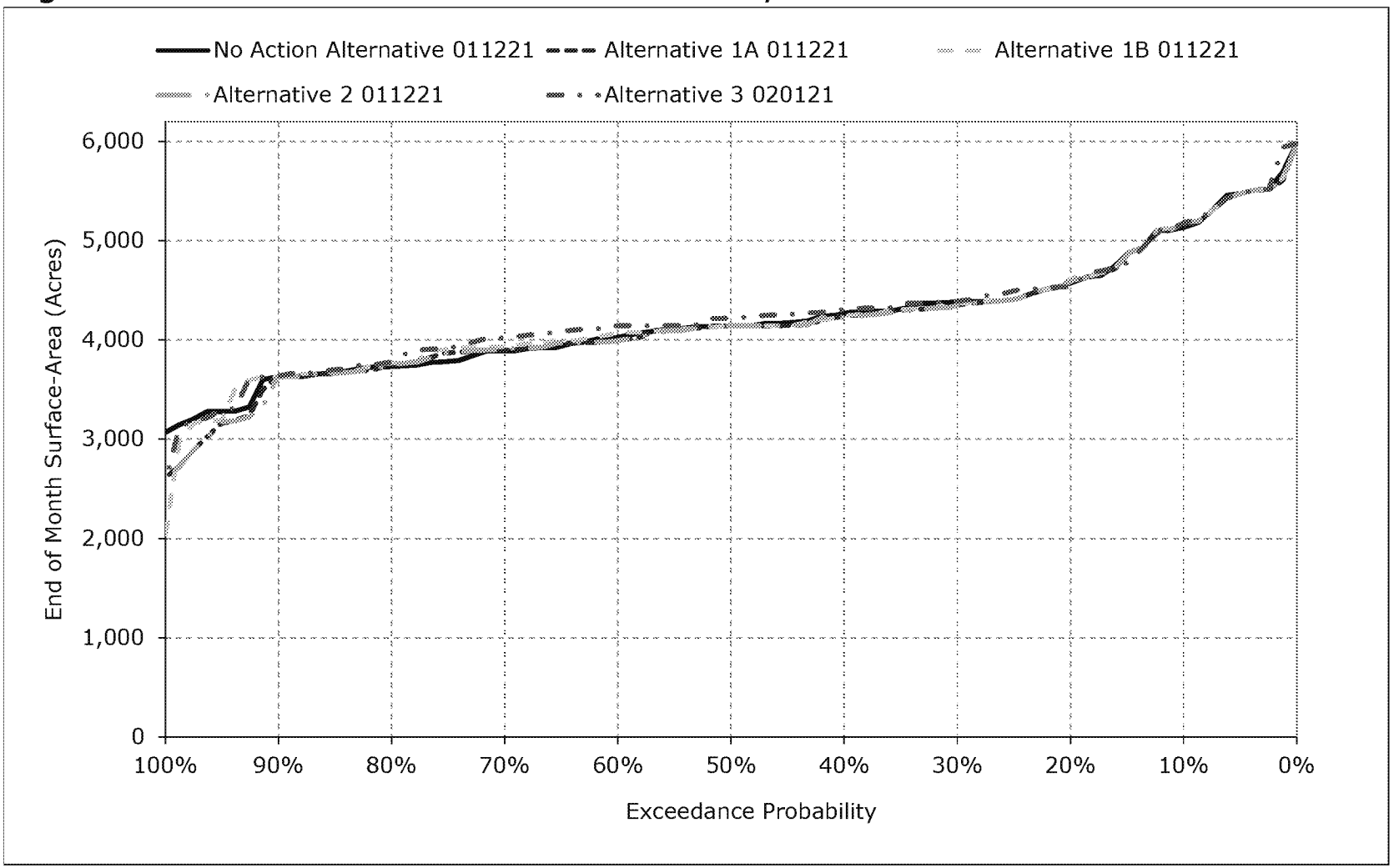


Figure 5B4-9-3. San Luis Reservoir Surface Area, December

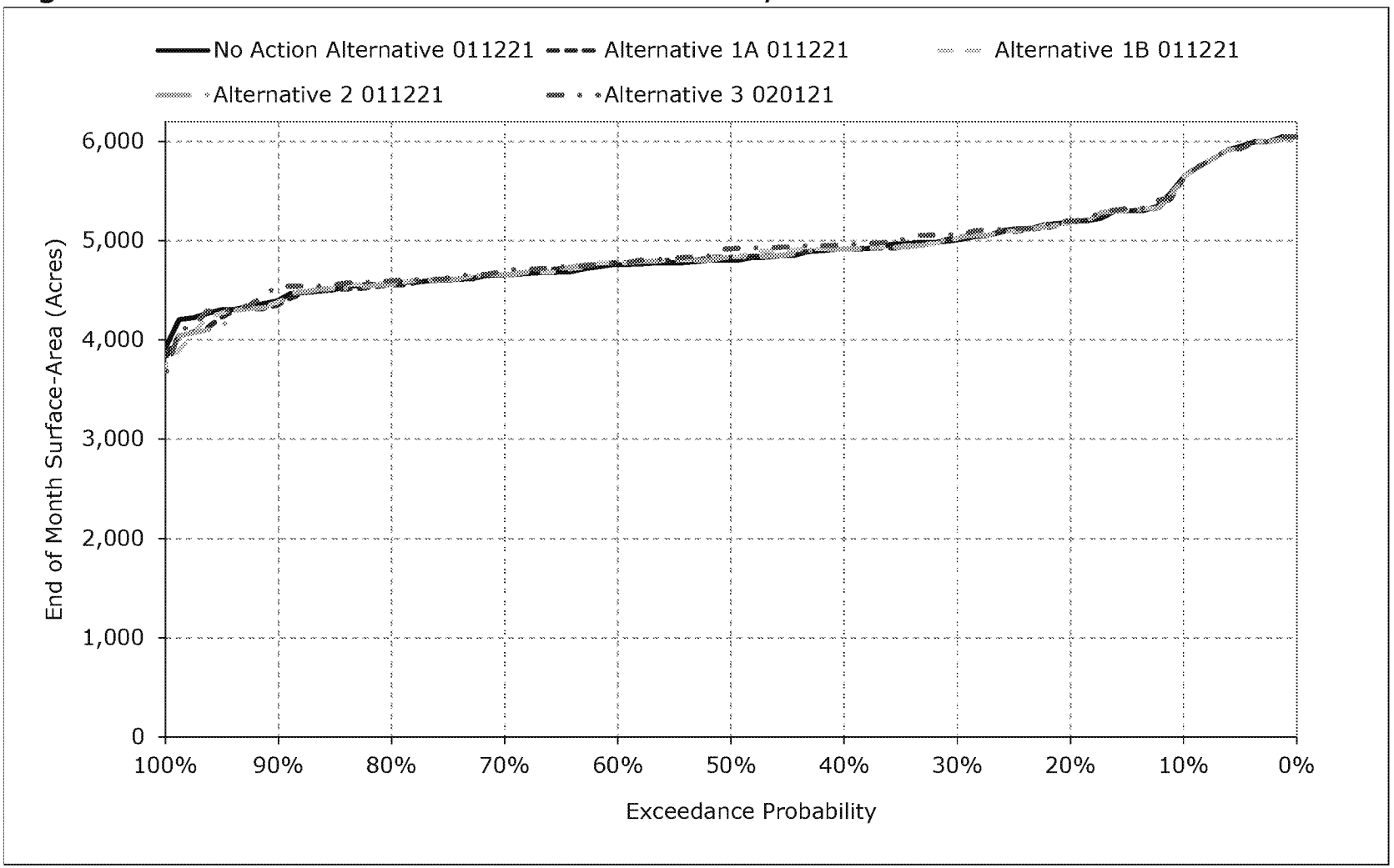


Figure 5B4-9-4. San Luis Reservoir Surface Area, January

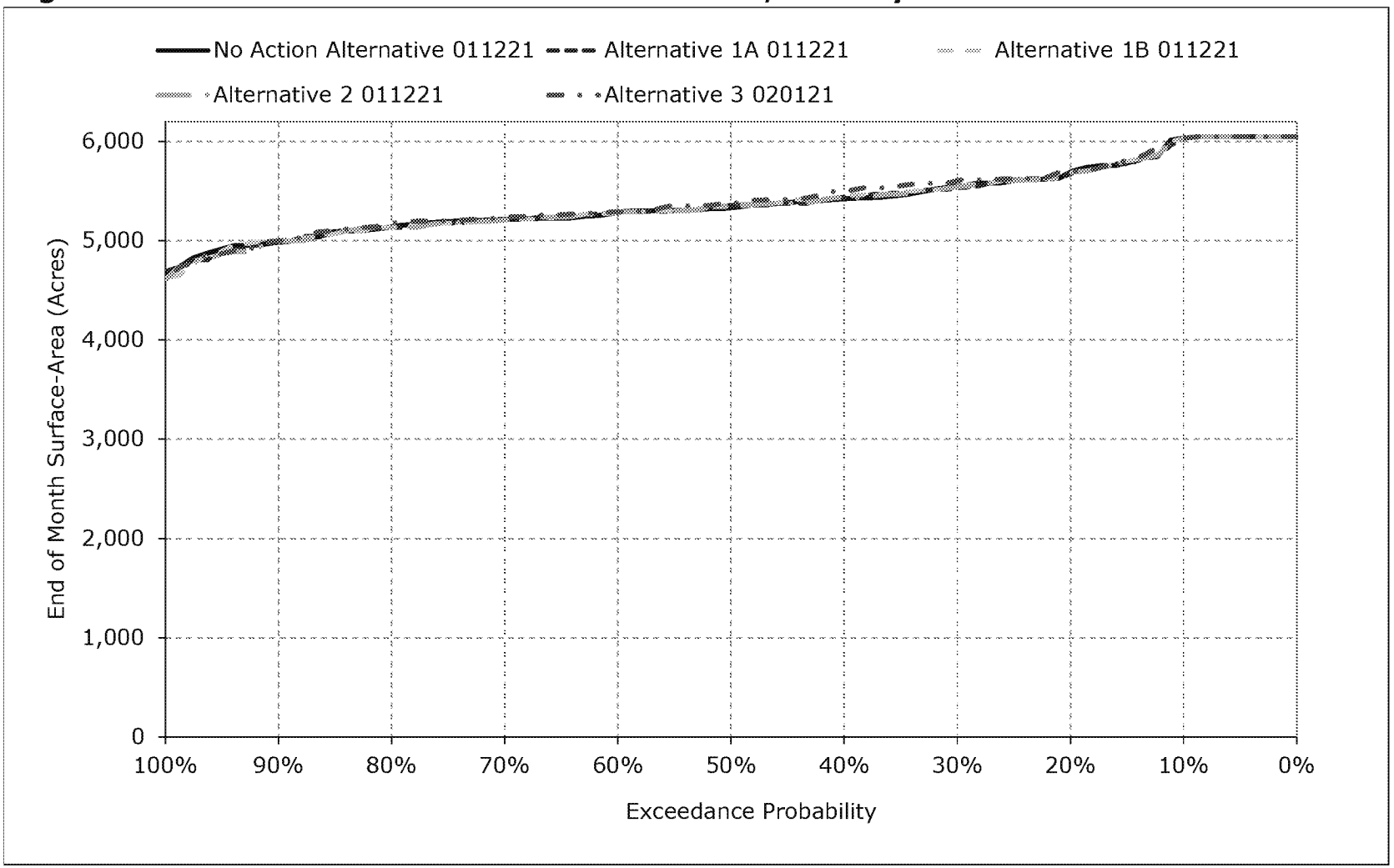


Figure 5B4-9-5. San Luis Reservoir Surface Area, February

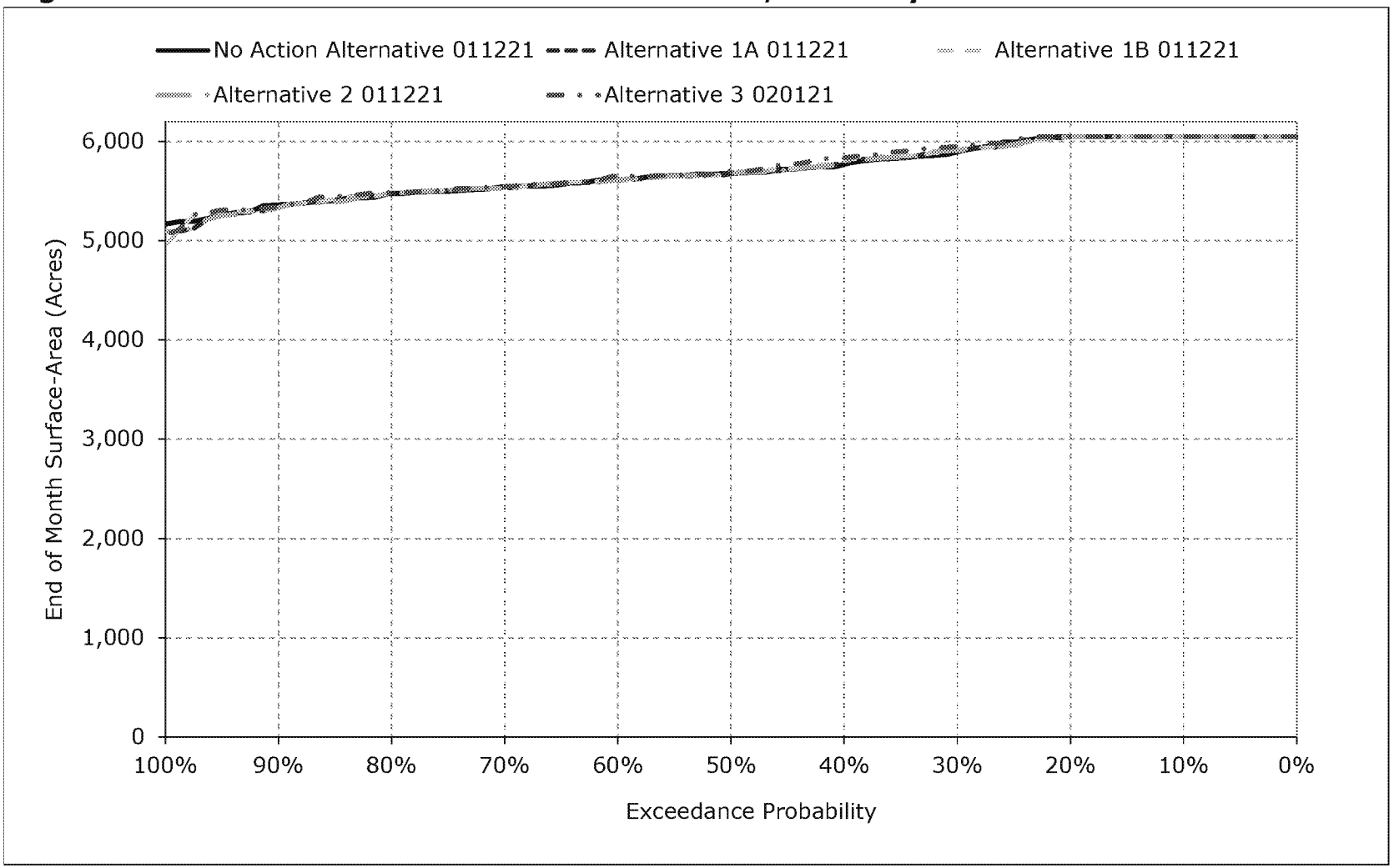


Figure 5B4-9-6. San Luis Reservoir Surface Area, March

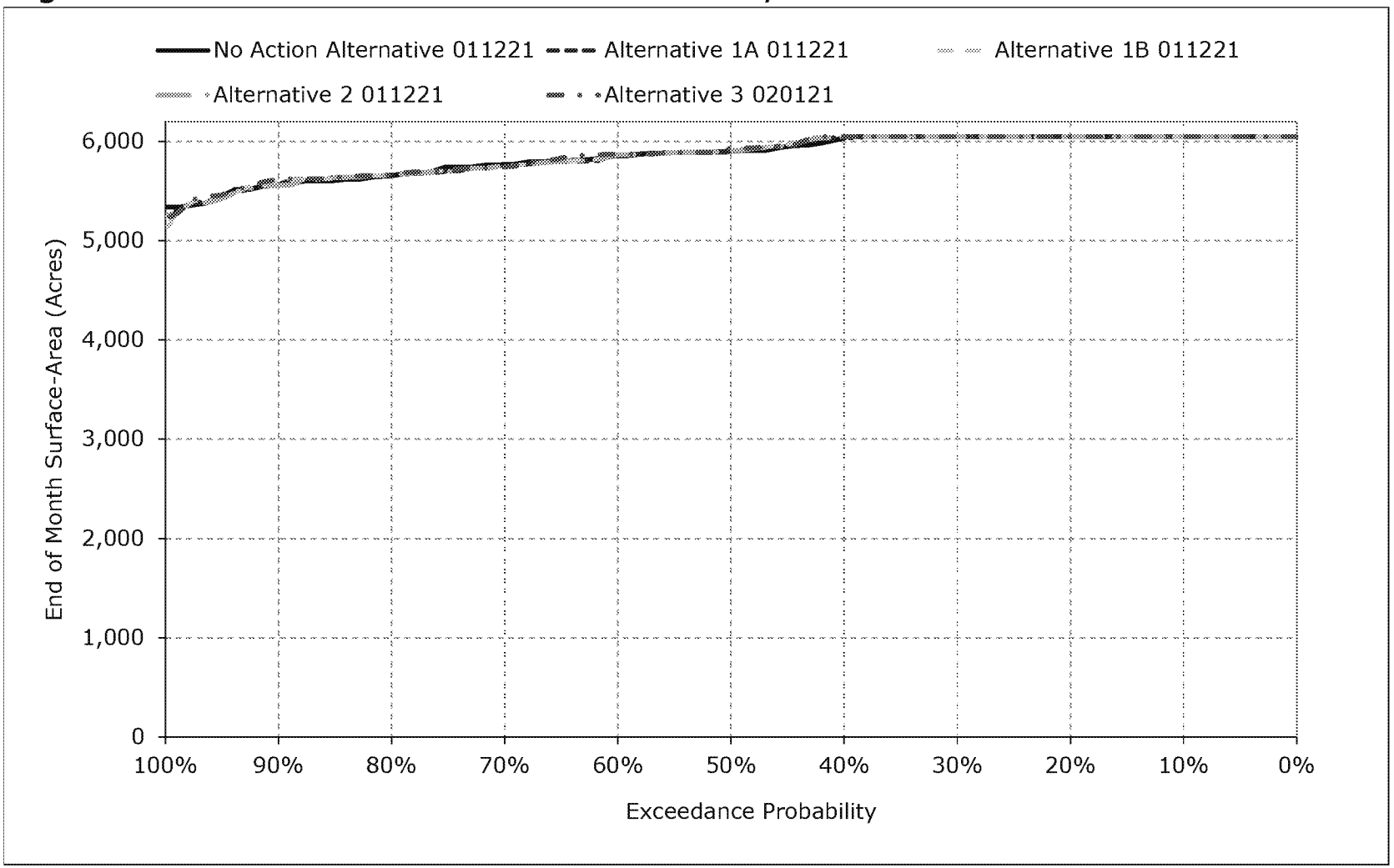


Figure 5B4-9-7. San Luis Reservoir Surface Area, April

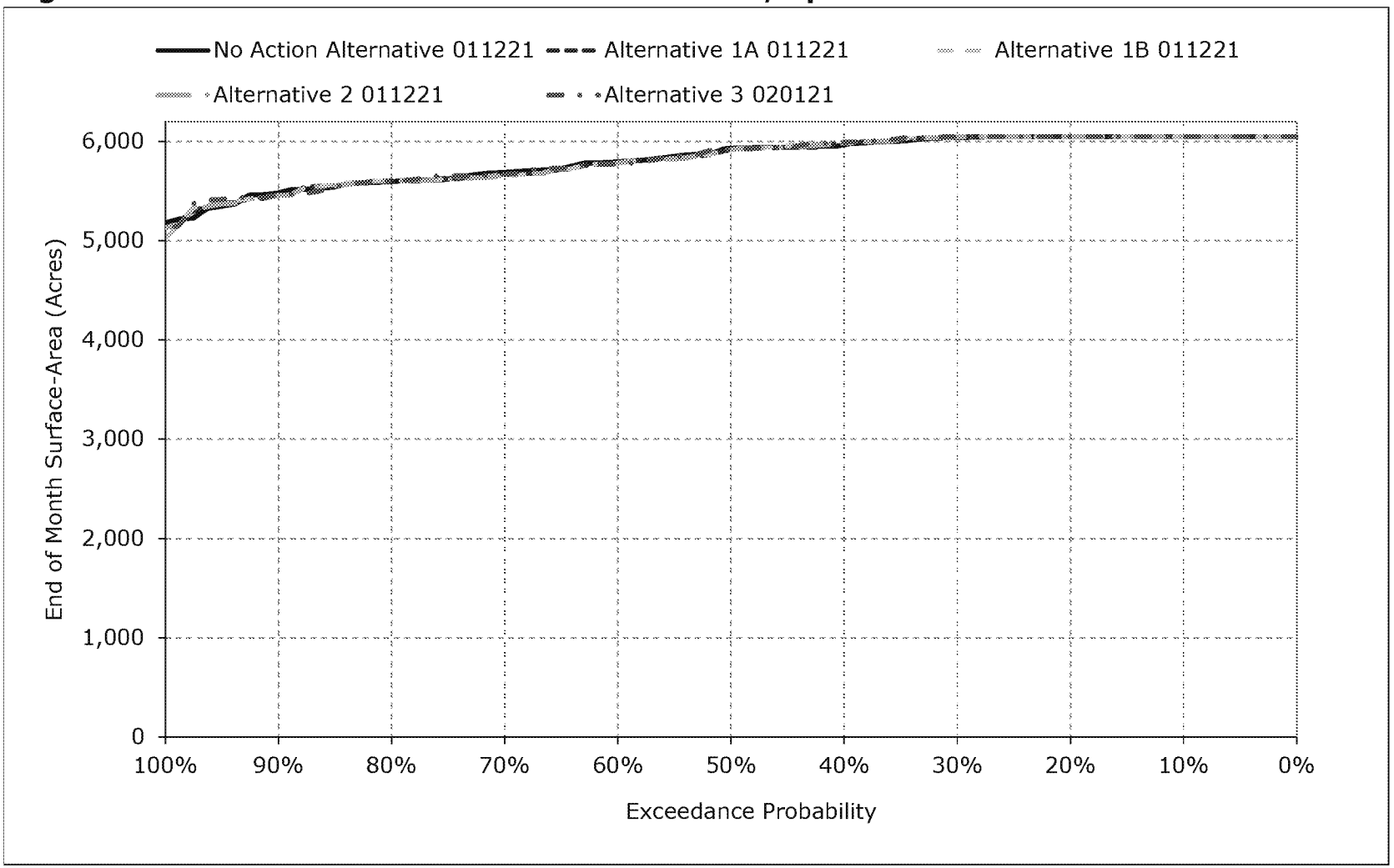


Figure 5B4-9-8. San Luis Reservoir Surface Area, May

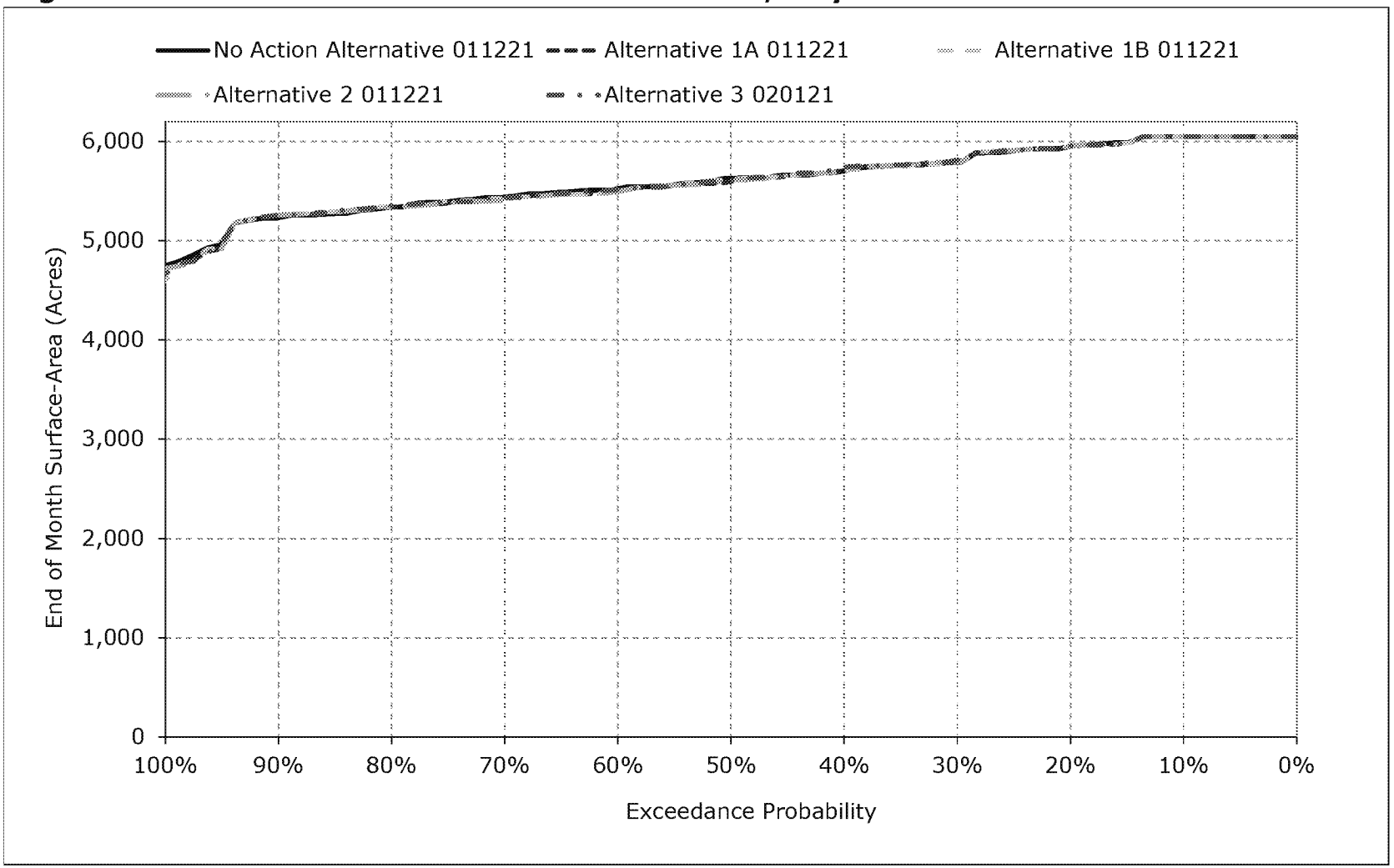


Figure 5B4-9-9. San Luis Reservoir Surface Area, June

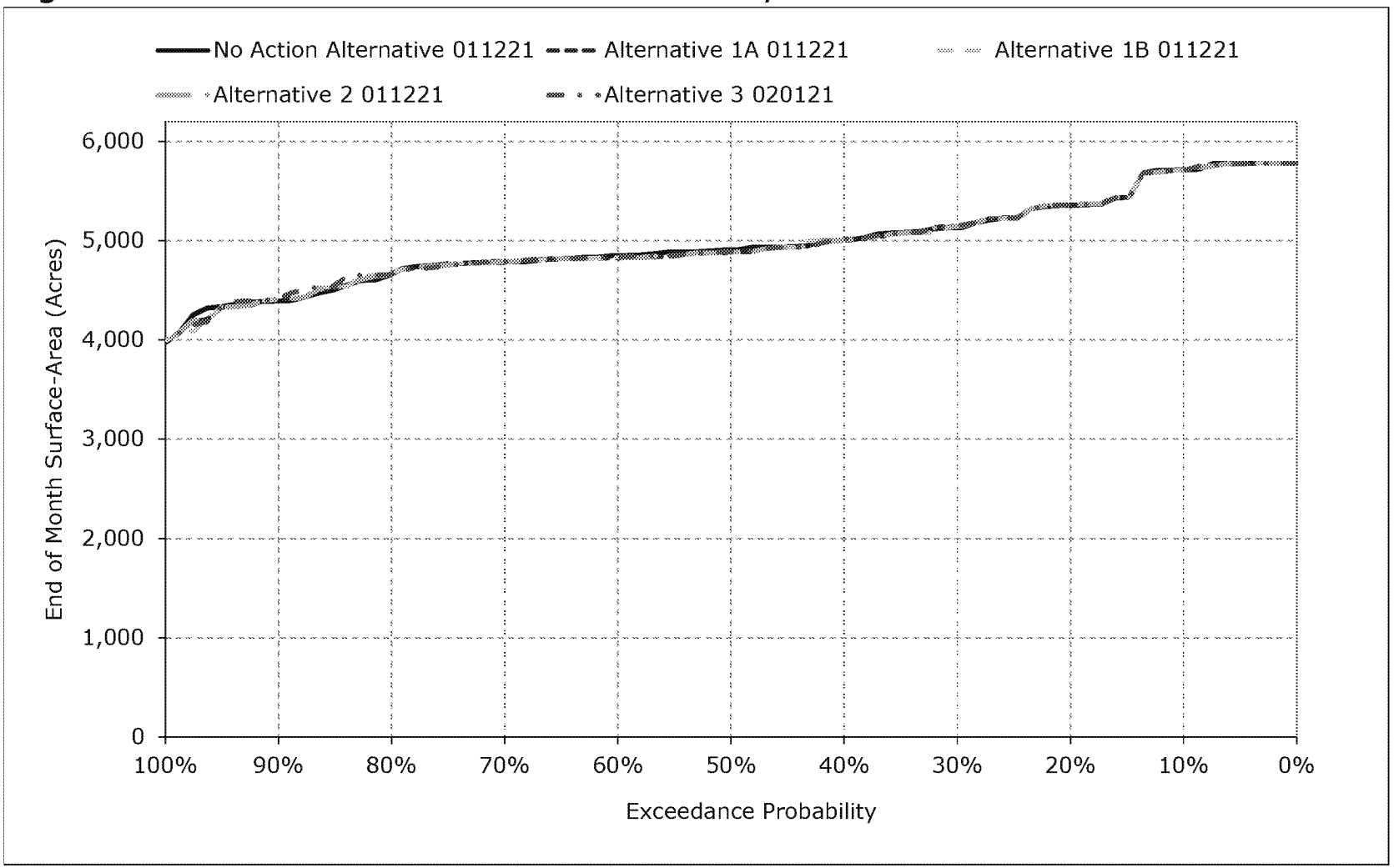


Figure 5B4-9-10. San Luis Reservoir Surface Area, July

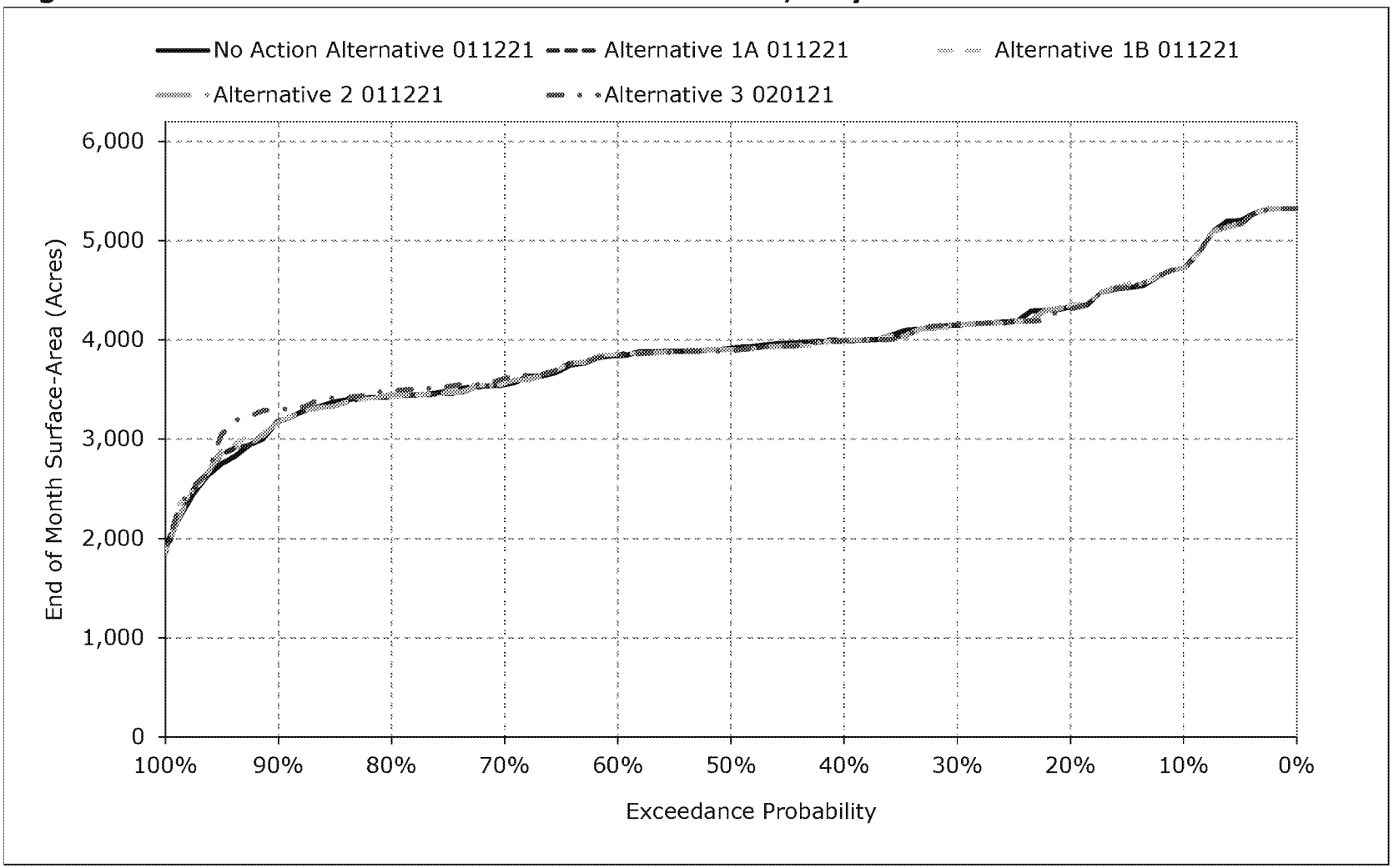


Figure 5B4-9-11. San Luis Reservoir Surface Area, August

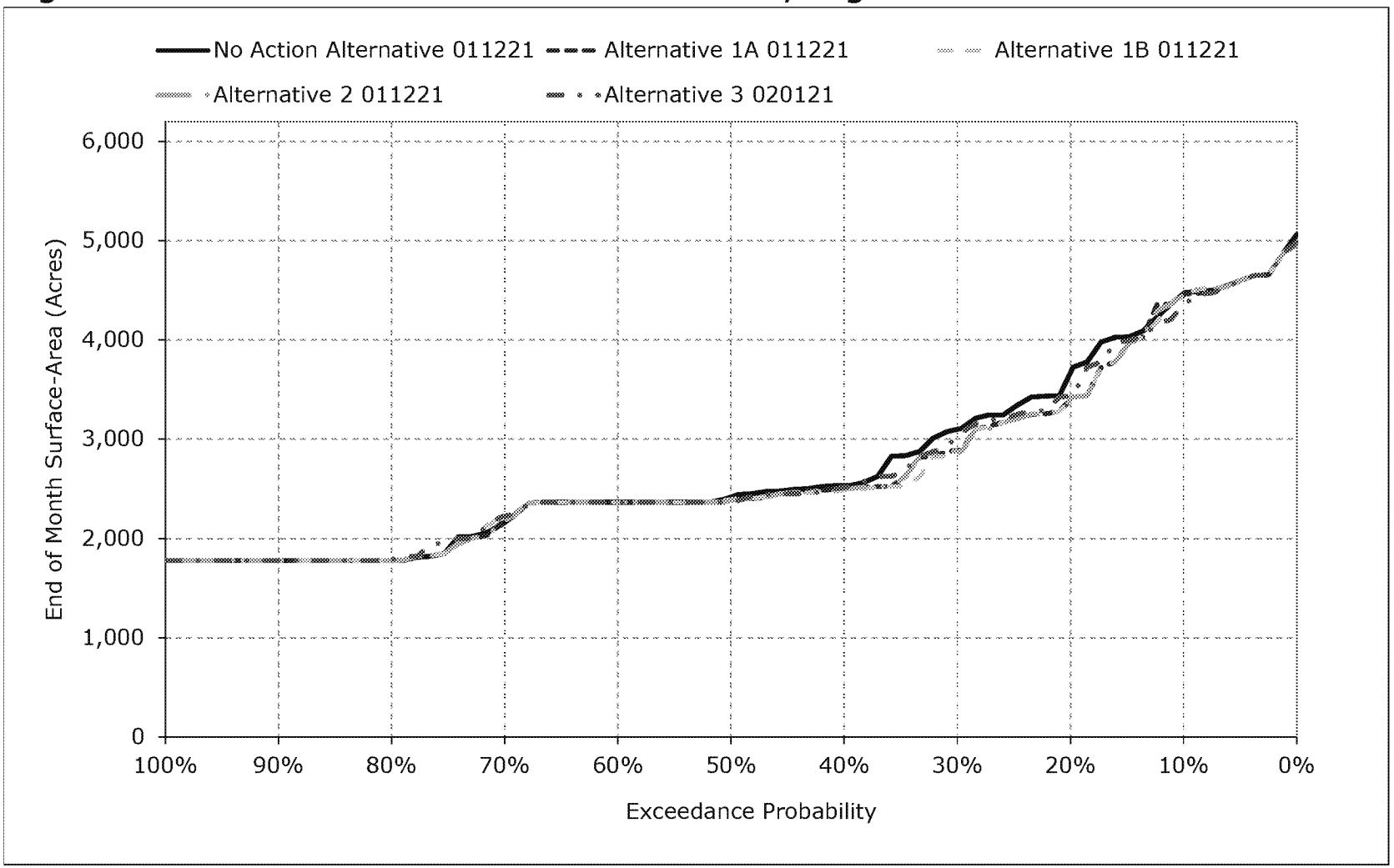


Figure 5B4-9-12. San Luis Reservoir Surface Area, September

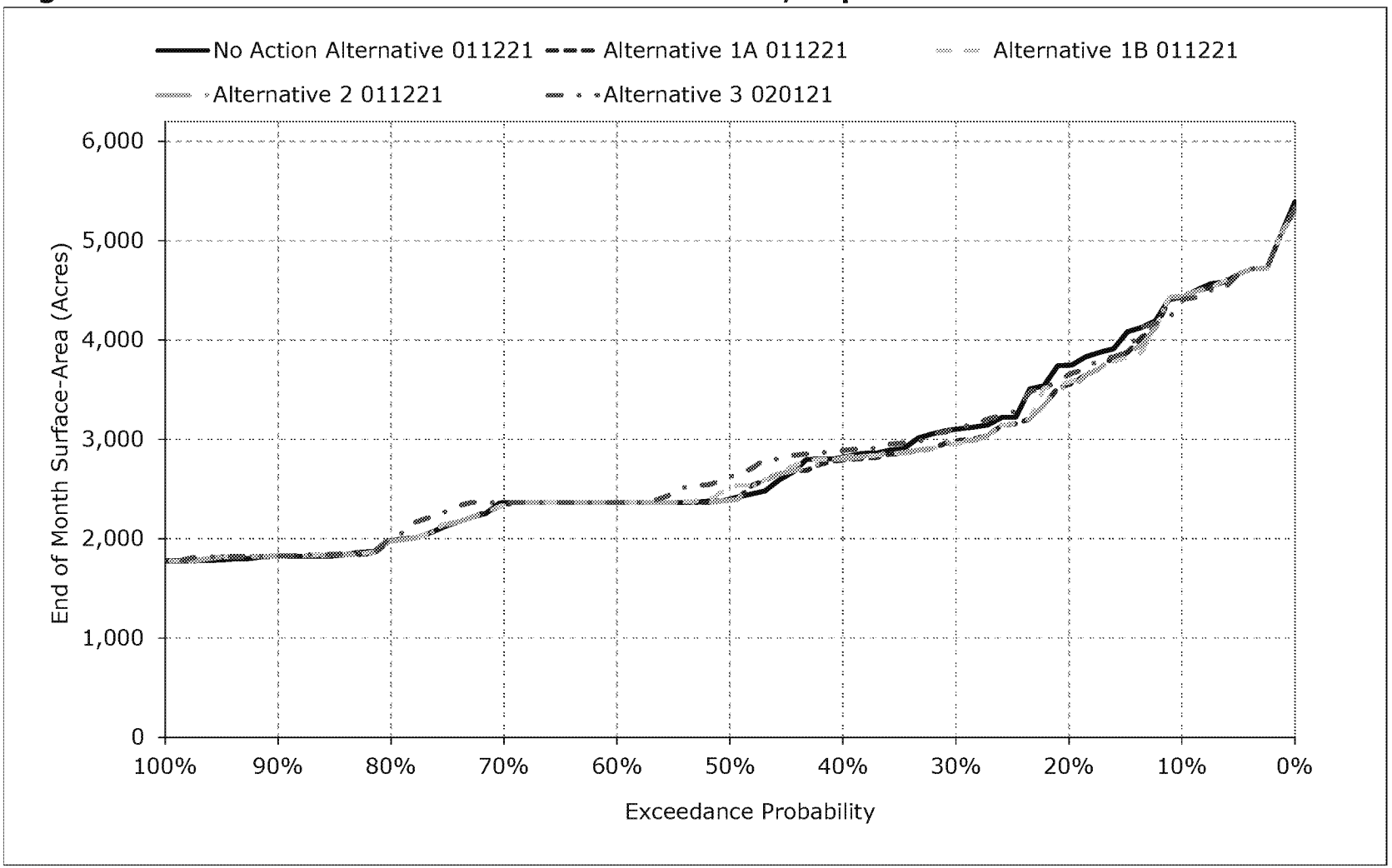


Table 5B4-10-1a. San Luis CVP Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	431	607	794	965	972	972	972	972	826	470	399	390
20%	293	429	626	815	972	972	972	927	685	362	234	245
30%	234	377	564	759	901	972	968	858	605	324	150	150
40%	193	348	532	710	849	966	934	822	563	293	103	125
50%	172	324	495	675	811	905	917	791	530	279	94	93
60%	157	300	480	657	785	885	859	750	510	264	90	90
70%	138	273	451	633	757	848	815	717	488	216	74	90
80%	107	243	427	608	731	802	778	677	453	198	45	60
90%	61	228	381	556	686	766	733	640	380	162	45	48
Long Term												
Full Simulation Period[a]	216	362	540	708	825	890	874	789	564	300	151	159
Water Year Types[b,c]												
Wet (32%)	271	454	645	754	874	942	948	877	655	358	177	189
Above Normal (15%)	102	286	493	701	833	899	895	789	539	223	86	60
Below Normal (17%)	194	331	520	728	854	908	886	789	532	272	95	129
Dry (22%)	196	305	462	652	757	819	781	683	481	272	136	161
Critical (15%)	265	363	498	678	780	853	814	759	557	323	246	223

Table 5B4-10-1b. San Luis CVP Storage, Alternative 1A 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	431	615	792	963	972	972	972	972	824	470	395	390
20%	264	429	625	811	971	972	972	928	684	366	194	217
30%	210	367	572	753	908	972	971	862	610	325	130	137
40%	191	343	532	714	859	968	941	823	563	296	100	123
50%	172	323	505	683	809	903	911	779	522	276	91	92
60%	154	294	486	658	783	888	855	740	503	267	90	90
70%	121	275	452	632	752	843	806	708	490	218	76	88
80%	94	246	423	606	732	805	780	677	453	201	45	60
90%	65	228	370	559	675	765	723	648	384	161	45	49
Long Term												
Full Simulation Period[a]	209	358	538	708	824	890	872	787	563	299	144	153
Water Year Types[b,c]												
Wet (32%)	271	454	645	752	871	941	947	876	654	358	176	189
Above Normal (15%)	105	289	495	708	840	904	898	792	540	225	85	62
Below Normal (17%)	194	339	536	734	859	912	888	790	533	273	95	128
Dry (22%)	181	290	456	650	755	818	776	675	474	268	121	147
Critical (15%)	239	347	477	669	771	848	810	754	554	323	229	208

Table 5B4-10-1c. San Luis CVP Storage, Alternative 1A 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	8	-2	-2	0	0	0	0	-1	0	-4	0
20%	-29	1	-1	-4	-1	0	0	1	-1	4	-40	-28
30%	-24	-9	8	-6	7	0	3	4	5	1	-20	-13
40%	-3	-5	0	5	10	2	7	1	1	2	-2	-2
50%	0	0	10	9	-2	-2	-6	-12	-8	-2	-3	-1
60%	-3	-6	6	1	-2	3	-5	-10	-8	3	0	0
70%	-17	2	1	-2	-5	-5	-9	-9	2	2	1	-2
80%	-13	3	-4	-2	1	3	2	0	0	2	0	0
90%	4	0	-11	3	-12	-1	-10	8	4	-1	0	0
Long Term												
Full Simulation Period[a]	-7	-4	-2	-1	-1	0	-1	-2	-2	-1	-6	-5
Water Year Types[b,c]												
Wet (32%)	0	0	0	-2	-3	-1	-2	-1	-1	0	-1	0
Above Normal (15%)	4	3	2	7	7	4	3	3	1	1	-1	2
Below Normal (17%)	-1	8	17	6	5	4	2	2	1	1	0	-2
Dry (22%)	-16	-15	-7	-3	-2	-2	-5	-8	-7	-4	-15	-14
Critical (15%)	-26	-16	-21	-9	-10	-5	-4	-5	-3	0	-18	-15

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-10-2a. San Luis CVP Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	431	607	794	965	972	972	972	972	826	470	399	390
20%	293	429	626	815	972	972	972	927	685	362	234	245
30%	234	377	564	759	901	972	968	858	605	324	150	150
40%	193	348	532	710	849	966	934	822	563	293	103	125
50%	172	324	495	675	811	905	917	791	530	279	94	93
60%	157	300	480	657	785	885	859	750	510	264	90	90
70%	138	273	451	633	757	848	815	717	488	216	74	90
80%	107	243	427	608	731	802	778	677	453	198	45	60
90%	61	228	381	556	686	766	733	640	380	162	45	48
Long Term												
Full Simulation Period[a]	216	362	540	708	825	890	874	789	564	300	151	159
Water Year Types[b,c]												
Wet (32%)	271	454	645	754	874	942	948	877	655	358	177	189
Above Normal (15%)	102	286	493	701	833	899	895	789	539	223	86	60
Below Normal (17%)	194	331	520	728	854	908	886	789	532	272	95	129
Dry (22%)	196	305	462	652	757	819	781	683	481	272	136	161
Critical (15%)	265	363	498	678	780	853	814	759	557	323	246	223

Table 5B4-10-2b. San Luis CVP Storage, Alternative 1B 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	432	622	794	964	972	972	972	972	824	470	395	397
20%	257	438	625	811	972	972	972	928	688	367	194	220
30%	210	373	569	759	910	972	969	858	609	323	128	135
40%	192	343	534	719	864	972	942	822	565	294	99	125
50%	173	324	505	680	811	908	912	787	521	277	92	101
60%	158	308	486	656	783	888	855	740	504	267	90	90
70%	137	282	454	632	752	841	803	714	490	218	79	88
80%	94	249	428	606	734	805	780	680	455	198	45	60
90%	60	228	377	561	675	776	723	648	385	162	45	49
Long Term												
Full Simulation Period[a]	211	363	541	709	825	891	873	787	563	299	144	154
Water Year Types[b,c]												
Wet (32%)	271	454	645	753	872	942	948	876	654	358	176	189
Above Normal (15%)	110	293	499	704	835	904	898	793	540	226	85	65
Below Normal (17%)	195	341	539	739	864	913	888	790	534	274	95	129
Dry (22%)	185	308	460	646	753	815	775	672	474	268	120	148
Critical (15%)	238	345	479	676	777	853	815	759	556	322	227	205

Table 5B4-10-2c. San Luis CVP Storage, Alternative 1B 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1	16	-1	-1	0	0	0	0	-1	0	-4	7
20%	-36	10	-1	-4	0	0	0	1	3	4	-40	-25
30%	-24	-4	5	0	9	0	2	0	4	-1	-22	-15
40%	-1	-5	2	10	15	6	7	0	2	1	-3	0
50%	2	0	10	6	-1	3	-5	-4	-8	-2	-2	8
60%	1	8	6	-1	-2	4	-5	-10	-6	3	0	0
70%	-2	8	3	-2	-5	-6	-12	-3	2	2	4	-2
80%	-13	6	1	-2	2	4	2	3	2	-1	0	0
90%	-1	1	-4	5	-12	10	-10	9	5	0	0	0
Long Term												
Full Simulation Period[a]	-5	1	1	1	0	1	-1	-2	-1	0	-7	-5
Water Year Types[b,c]												
Wet (32%)	0	0	0	-1	-1	0	-1	-1	0	0	-1	0
Above Normal (15%)	8	7	6	3	3	5	3	3	2	2	-1	5
Below Normal (17%)	0	10	19	11	9	5	2	1	2	1	-1	0
Dry (22%)	-11	4	-2	-6	-4	-4	-6	-10	-8	-4	-15	-13
Critical (15%)	-27	-18	-19	-2	-3	0	1	0	-1	0	-19	-17

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-10-3a. San Luis CVP Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	431	607	794	965	972	972	972	972	826	470	399	390
20%	293	429	626	815	972	972	972	927	685	362	234	245
30%	234	377	564	759	901	972	968	858	605	324	150	150
40%	193	348	532	710	849	966	934	822	563	293	103	125
50%	172	324	495	675	811	905	917	791	530	279	94	93
60%	157	300	480	657	785	885	859	750	510	264	90	90
70%	138	273	451	633	757	848	815	717	488	216	74	90
80%	107	243	427	608	731	802	778	677	453	198	45	60
90%	61	228	381	556	686	766	733	640	380	162	45	48
Long Term												
Full Simulation Period[a]	216	362	540	708	825	890	874	789	564	300	151	159
Water Year Types[b,c]												
Wet (32%)	271	454	645	754	874	942	948	877	655	358	177	189
Above Normal (15%)	102	286	493	701	833	899	895	789	539	223	86	60
Below Normal (17%)	194	331	520	728	854	908	886	789	532	272	95	129
Dry (22%)	196	305	462	652	757	819	781	683	481	272	136	161
Critical (15%)	265	363	498	678	780	853	814	759	557	323	246	223

Table 5B4-10-3b. San Luis CVP Storage, Alternative 2 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	432	622	793	964	972	972	972	972	824	470	395	393
20%	259	433	625	811	971	972	972	928	688	367	194	212
30%	210	367	572	757	908	972	971	860	610	326	129	137
40%	192	340	532	714	859	968	942	823	564	295	100	124
50%	172	324	504	684	809	906	911	782	522	276	91	92
60%	154	294	486	658	785	888	855	740	502	267	90	90
70%	119	276	452	632	752	842	802	706	489	218	76	88
80%	94	246	425	605	732	805	780	678	453	201	45	60
90%	65	228	371	559	675	763	723	648	384	161	45	49
Long Term												
Full Simulation Period[a]	209	358	539	707	824	890	872	787	563	299	144	153
Water Year Types[b,c]												
Wet (32%)	271	454	645	752	872	941	947	876	654	358	176	189
Above Normal (15%)	105	289	495	706	838	904	898	792	540	225	85	62
Below Normal (17%)	194	339	536	733	858	910	887	789	533	273	95	128
Dry (22%)	181	288	455	648	755	817	776	674	474	268	121	147
Critical (15%)	241	348	480	669	771	849	811	755	555	322	228	207

Table 5B4-10-3c. San Luis CVP Storage, Alternative 2 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1	15	-1	-1	0	0	0	0	-1	0	-4	3
20%	-33	4	-1	-4	-1	0	0	1	4	4	-40	-33
30%	-24	-9	8	-2	6	0	3	2	5	1	-21	-13
40%	-1	-8	0	5	10	2	8	1	1	2	-2	-1
50%	0	0	9	10	-2	1	-7	-10	-8	-2	-3	-1
60%	-3	-6	6	1	-1	4	-5	-10	-8	3	0	0
70%	-20	3	1	-2	-5	-6	-13	-10	1	2	1	-2
80%	-13	3	-2	-2	1	3	2	0	0	3	0	0
90%	4	0	-10	3	-12	-3	-10	8	4	-1	0	0
Long Term												
Full Simulation Period[a]	-6	-4	-1	-1	-1	0	-2	-2	-2	-1	-6	-5
Water Year Types[b,c]												
Wet (32%)	0	0	0	-2	-2	0	-1	-1	0	0	-1	0
Above Normal (15%)	4	3	2	5	5	5	3	3	1	1	-1	2
Below Normal (17%)	0	8	16	5	3	2	0	0	1	1	-1	-1
Dry (22%)	-15	-16	-8	-4	-2	-2	-5	-8	-7	-4	-15	-14
Critical (15%)	-24	-15	-18	-9	-10	-5	-3	-4	-2	-1	-18	-15

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-10-4a. San Luis CVP Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	431	607	794	965	972	972	972	972	826	470	399	390
20%	293	429	626	815	972	972	972	927	685	362	234	245
30%	234	377	564	759	901	972	968	858	605	324	150	150
40%	193	348	532	710	849	966	934	822	563	293	103	125
50%	172	324	495	675	811	905	917	791	530	279	94	93
60%	157	300	480	657	785	885	859	750	510	264	90	90
70%	138	273	451	633	757	848	815	717	488	216	74	90
80%	107	243	427	608	731	802	778	677	453	198	45	60
90%	61	228	381	556	686	766	733	640	380	162	45	48
Long Term												
Full Simulation Period[a]	216	362	540	708	825	890	874	789	564	300	151	159
Water Year Types[b,c]												
Wet (32%)	271	454	645	754	874	942	948	877	655	358	177	189
Above Normal (15%)	102	286	493	701	833	899	895	789	539	223	86	60
Below Normal (17%)	194	331	520	728	854	908	886	789	532	272	95	129
Dry (22%)	196	305	462	652	757	819	781	683	481	272	136	161
Critical (15%)	265	363	498	678	780	853	814	759	557	323	246	223

Table 5B4-10-4b. San Luis CVP Storage, Alternative 3 020121, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	427	622	793	963	972	972	972	972	824	470	368	380
20%	268	418	628	819	972	972	972	928	687	358	200	231
30%	231	379	581	781	927	972	972	866	612	327	142	152
40%	206	355	547	743	877	972	946	834	566	294	101	130
50%	179	339	534	693	819	916	913	781	524	274	91	110
60%	162	324	485	659	799	892	850	746	505	265	90	90
70%	146	300	461	641	758	838	806	714	489	225	79	90
80%	124	253	434	621	734	806	780	683	454	208	46	62
90%	88	229	419	561	678	786	726	647	386	180	45	49
Long Term												
Full Simulation Period[a]	221	373	550	717	833	893	875	789	564	302	146	159
Water Year Types[b,c]												
Wet (32%)	271	454	645	760	879	943	948	877	655	358	176	189
Above Normal (15%)	147	329	532	717	845	908	900	795	542	242	86	80
Below Normal (17%)	208	353	544	751	876	912	887	789	533	274	94	135
Dry (22%)	198	320	478	656	762	824	782	681	481	272	123	152
Critical (15%)	238	346	477	676	777	854	816	755	551	317	236	214

Table 5B4-10-4c. San Luis CVP Storage, Alternative 3 020121 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-4	15	-2	-2	0	0	0	0	-1	0	-31	-10
20%	-25	-11	2	4	0	0	0	1	2	-4	-34	-14
30%	-3	2	17	22	25	0	4	8	7	3	-8	2
40%	12	7	15	33	28	6	12	13	4	0	-1	5
50%	8	15	39	18	7	11	-5	-10	-6	-5	-3	17
60%	5	23	5	2	13	7	-9	-4	-5	1	0	0
70%	8	26	10	8	1	-9	-9	-2	1	9	5	0
80%	17	10	7	13	2	4	2	6	1	10	1	2
90%	26	2	38	5	-9	20	-8	7	7	18	0	0
Long Term												
Full Simulation Period[a]	5	11	10	9	8	3	1	0	0	2	-5	0
Water Year Types[b,c]												
Wet (32%)	0	-1	0	6	5	1	0	0	0	0	-1	0
Above Normal (15%)	46	43	39	15	12	8	6	5	3	19	0	19
Below Normal (17%)	14	22	24	24	22	5	1	0	1	1	-1	5
Dry (22%)	2	16	16	4	5	4	0	-2	0	0	-12	-10
Critical (15%)	-27	-17	-21	-1	-3	1	2	-4	-6	-6	-10	-8

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Figure 5B4-10-1. San Luis CVP Storage, October

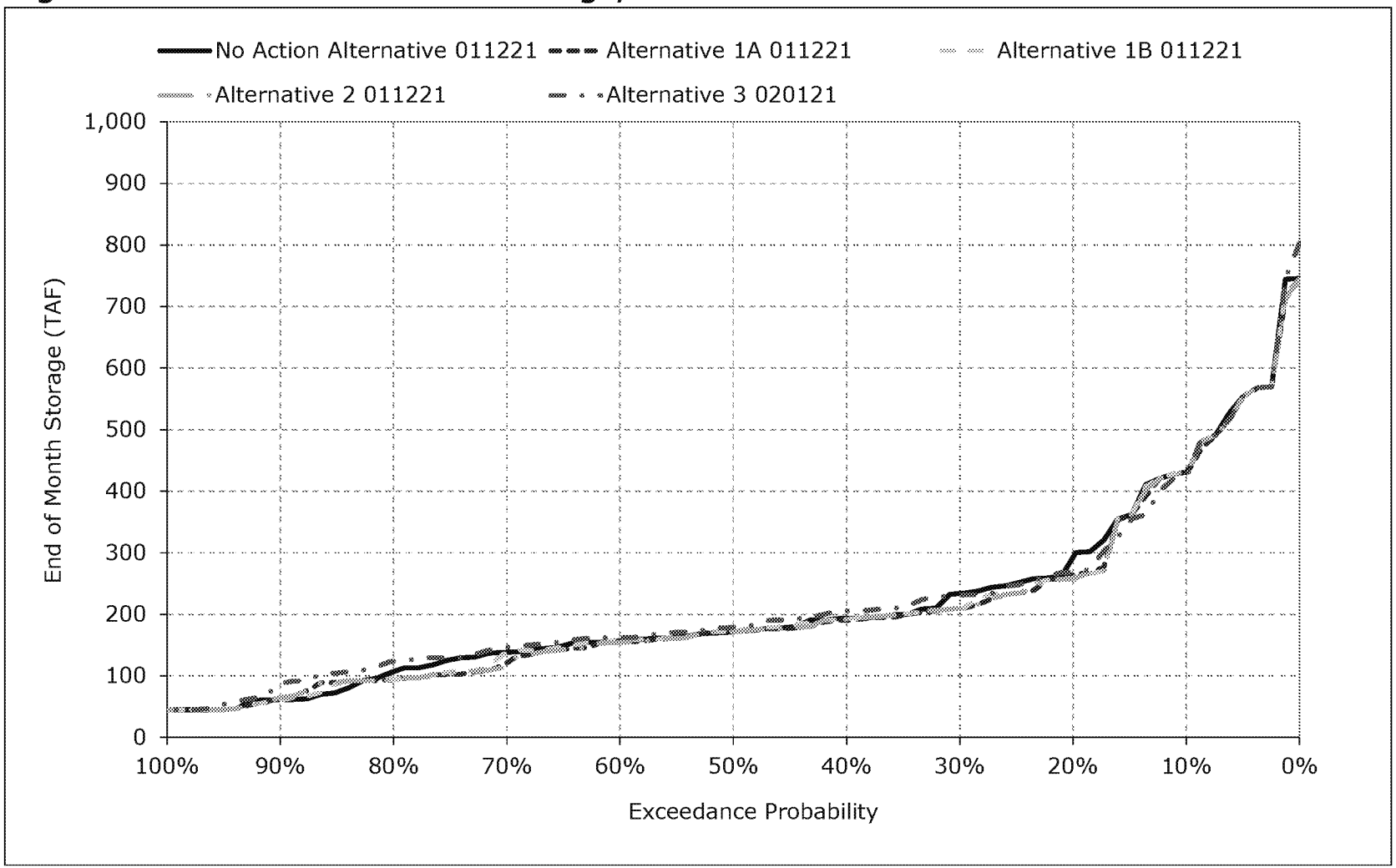


Figure 5B4-10-2. San Luis CVP Storage, November

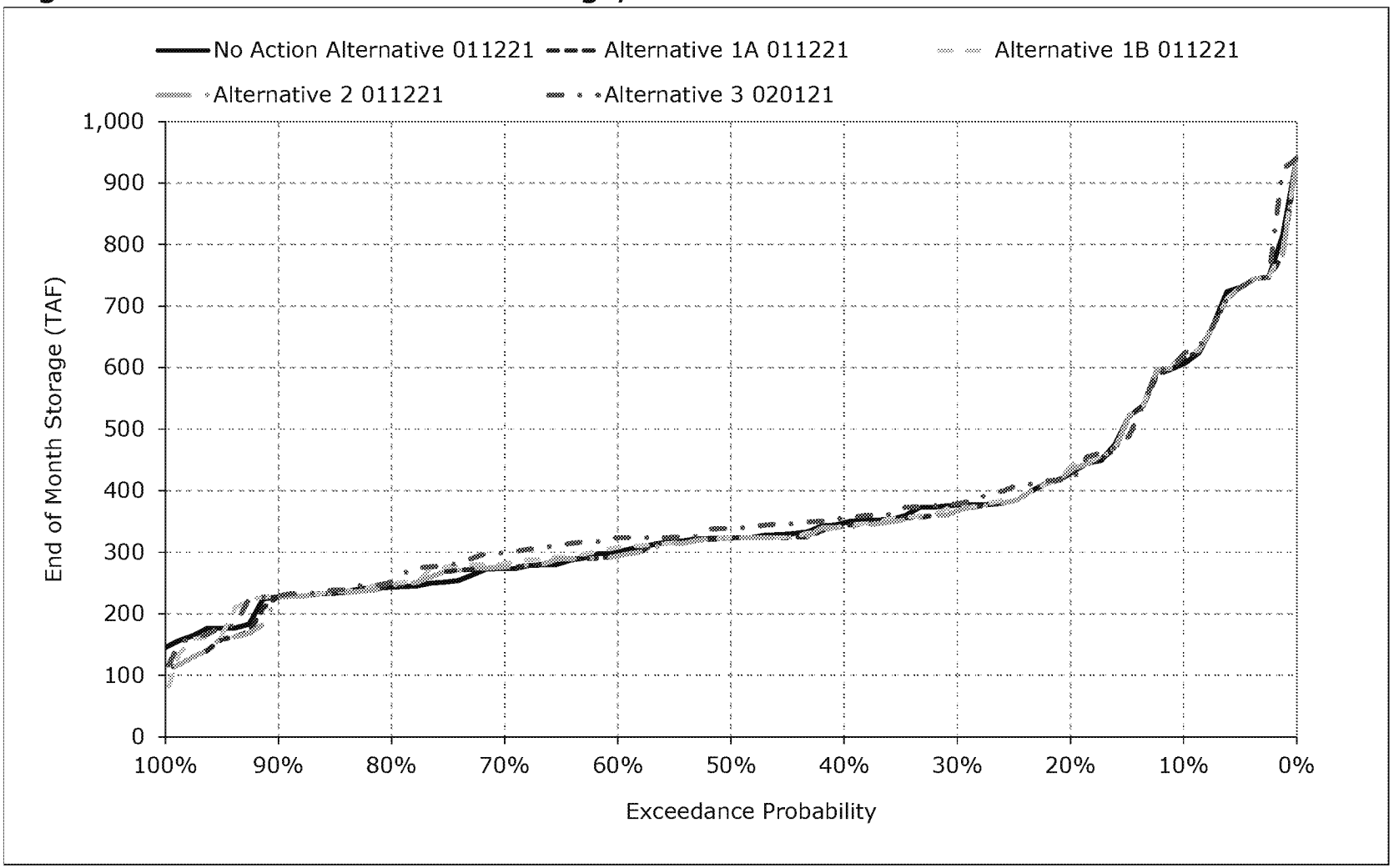


Figure 5B4-10-3. San Luis CVP Storage, December

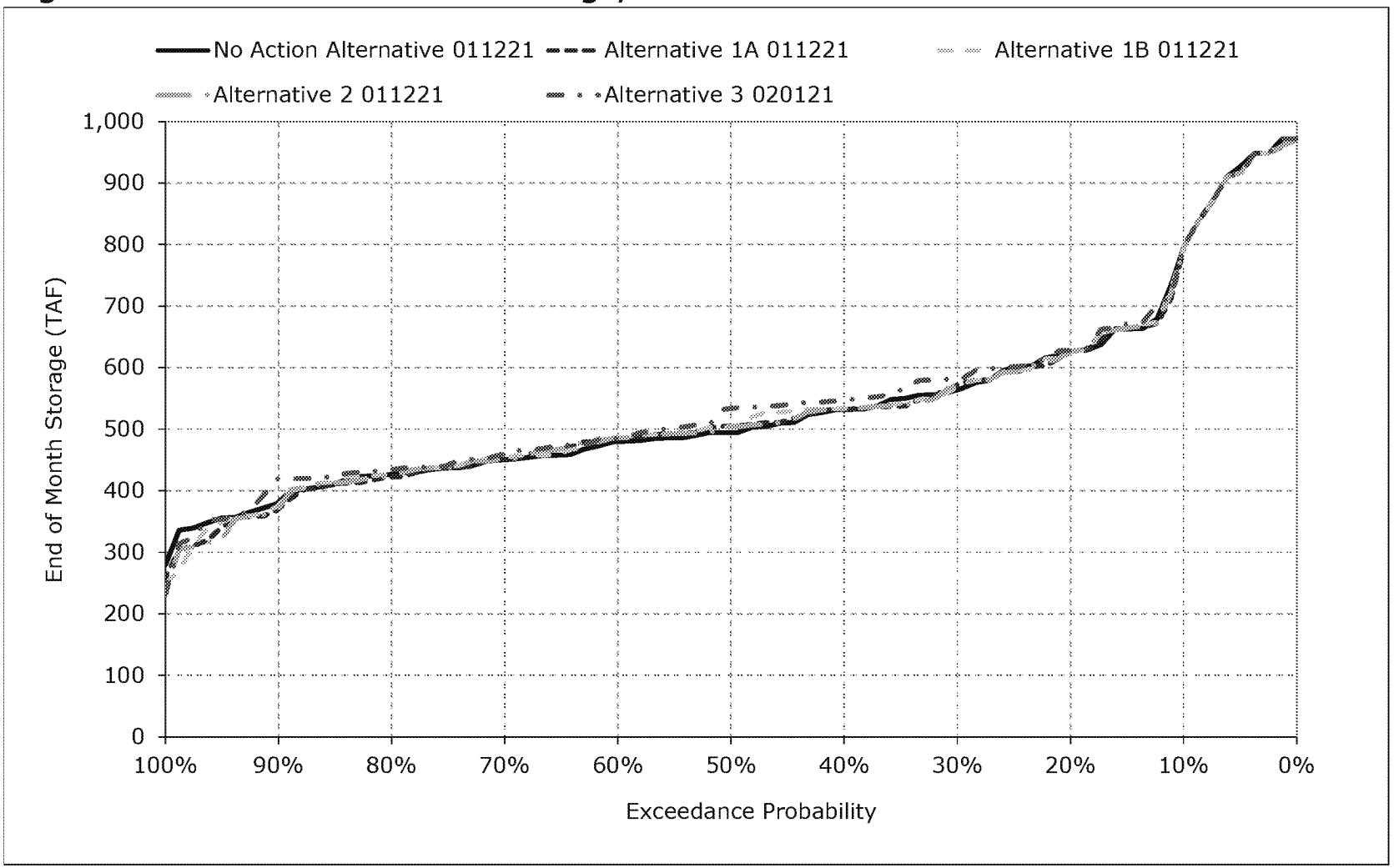


Figure 5B4-10-4. San Luis CVP Storage, January

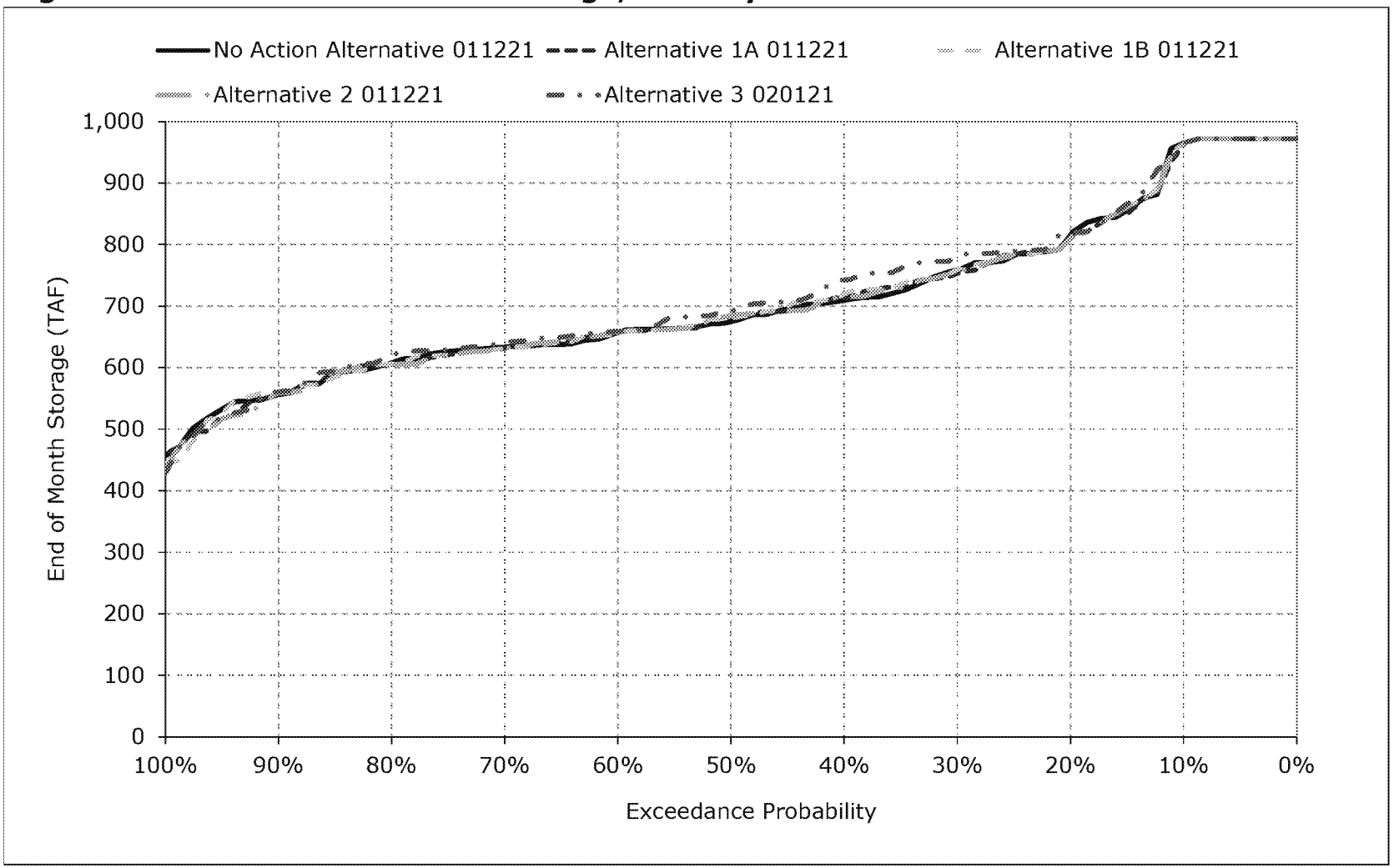


Figure 5B4-10-5. San Luis CVP Storage, February

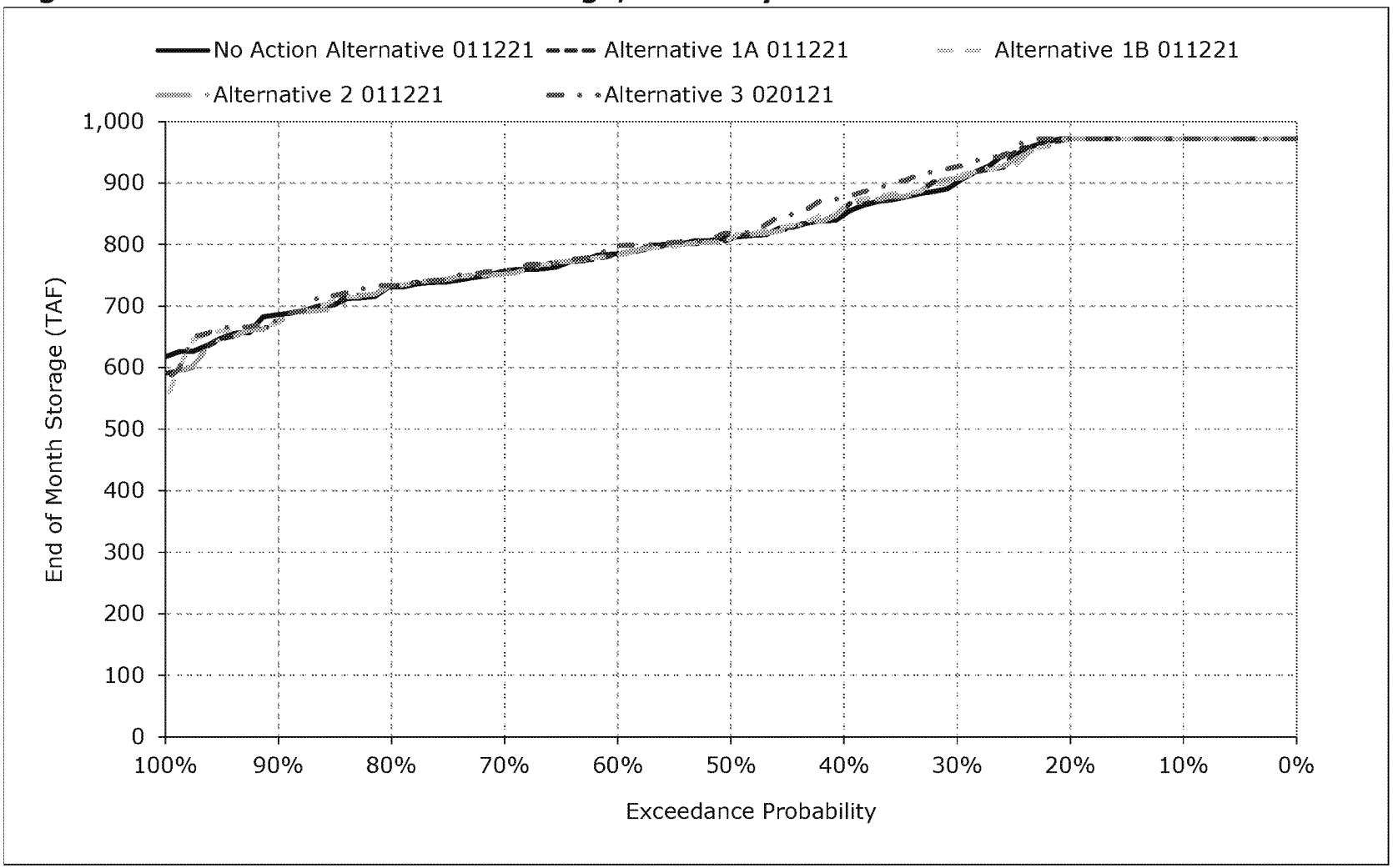


Figure 5B4-10-6. San Luis CVP Storage, March

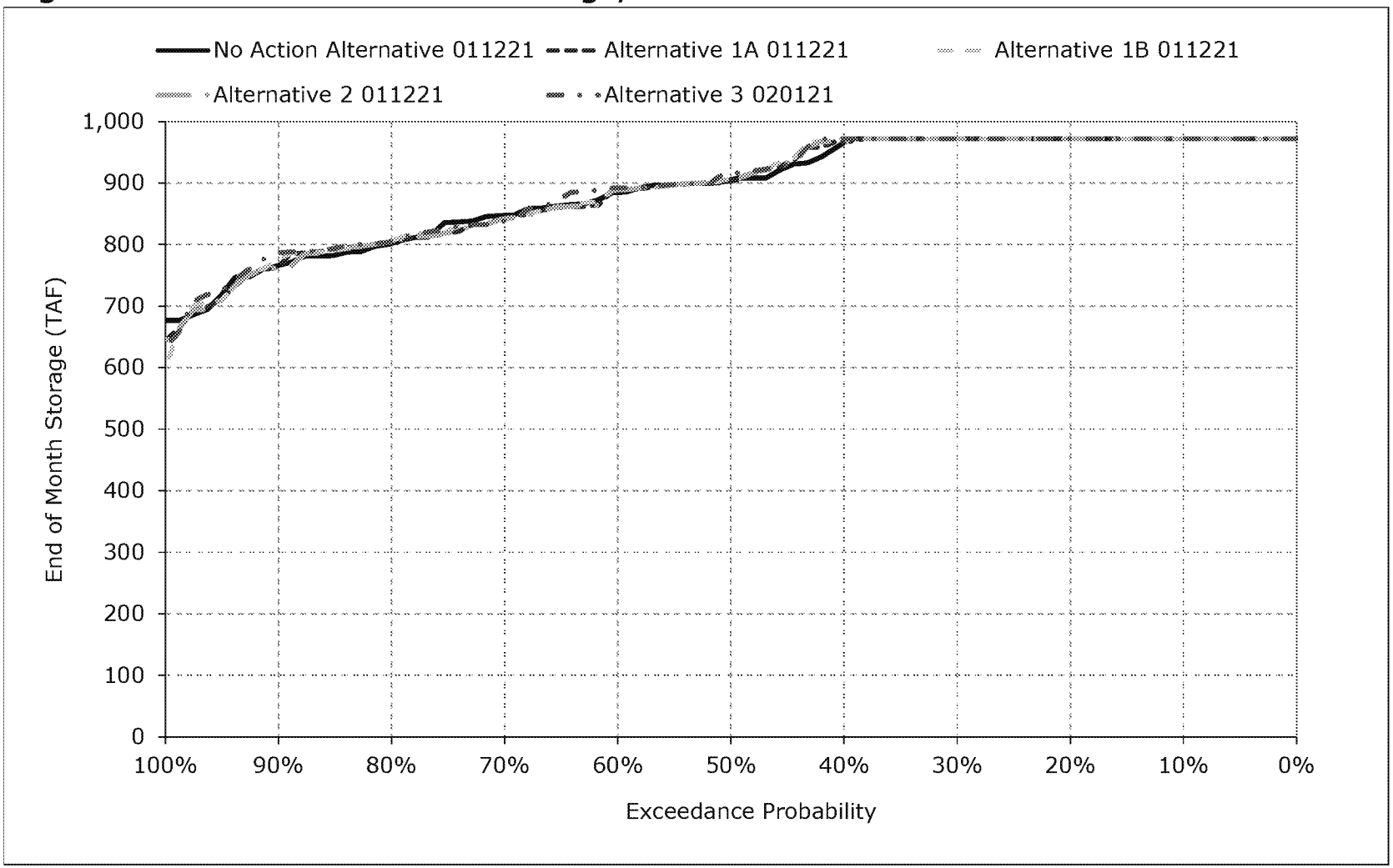


Figure 5B4-10-7. San Luis CVP Storage, April

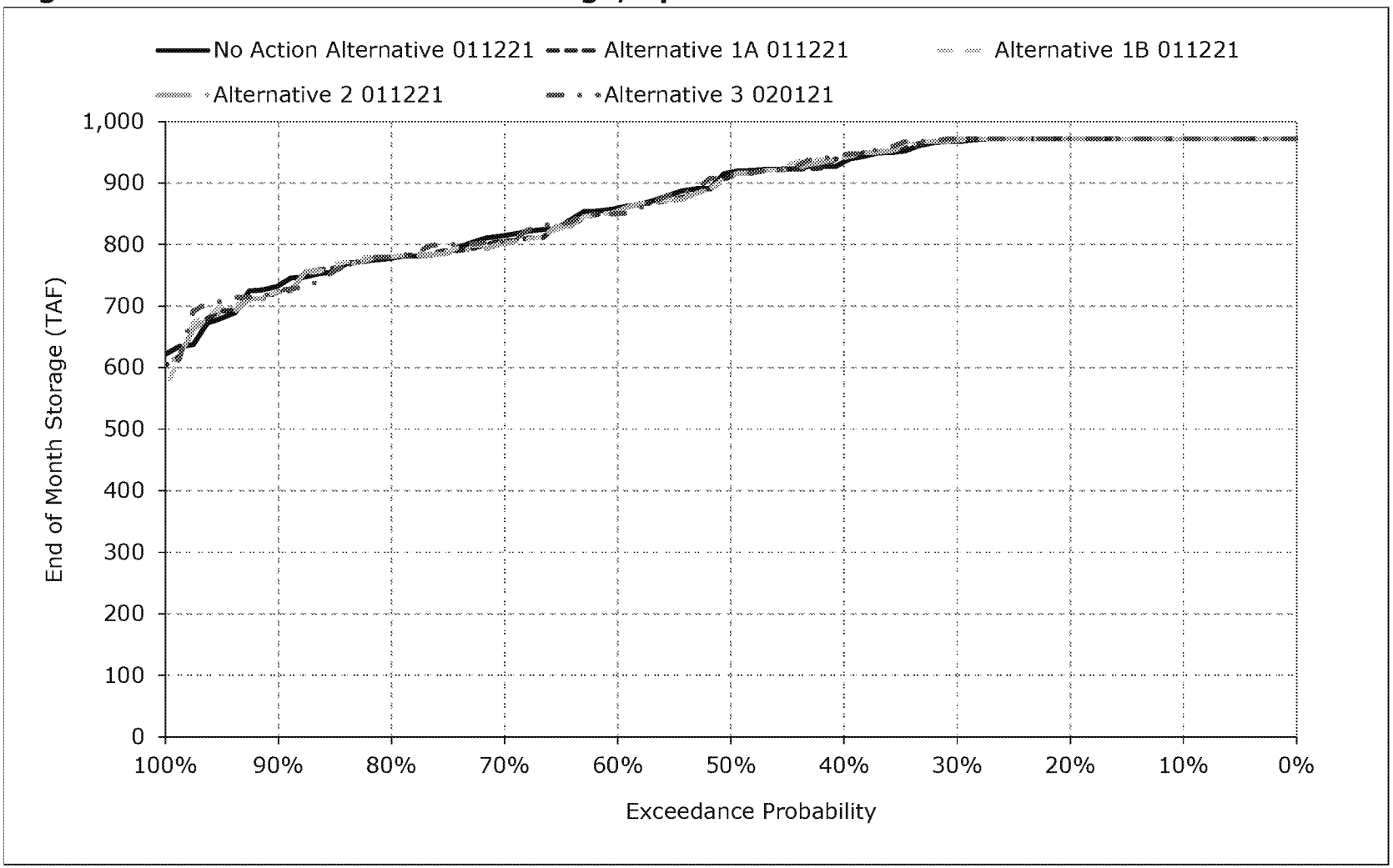


Figure 5B4-10-8. San Luis CVP Storage, May

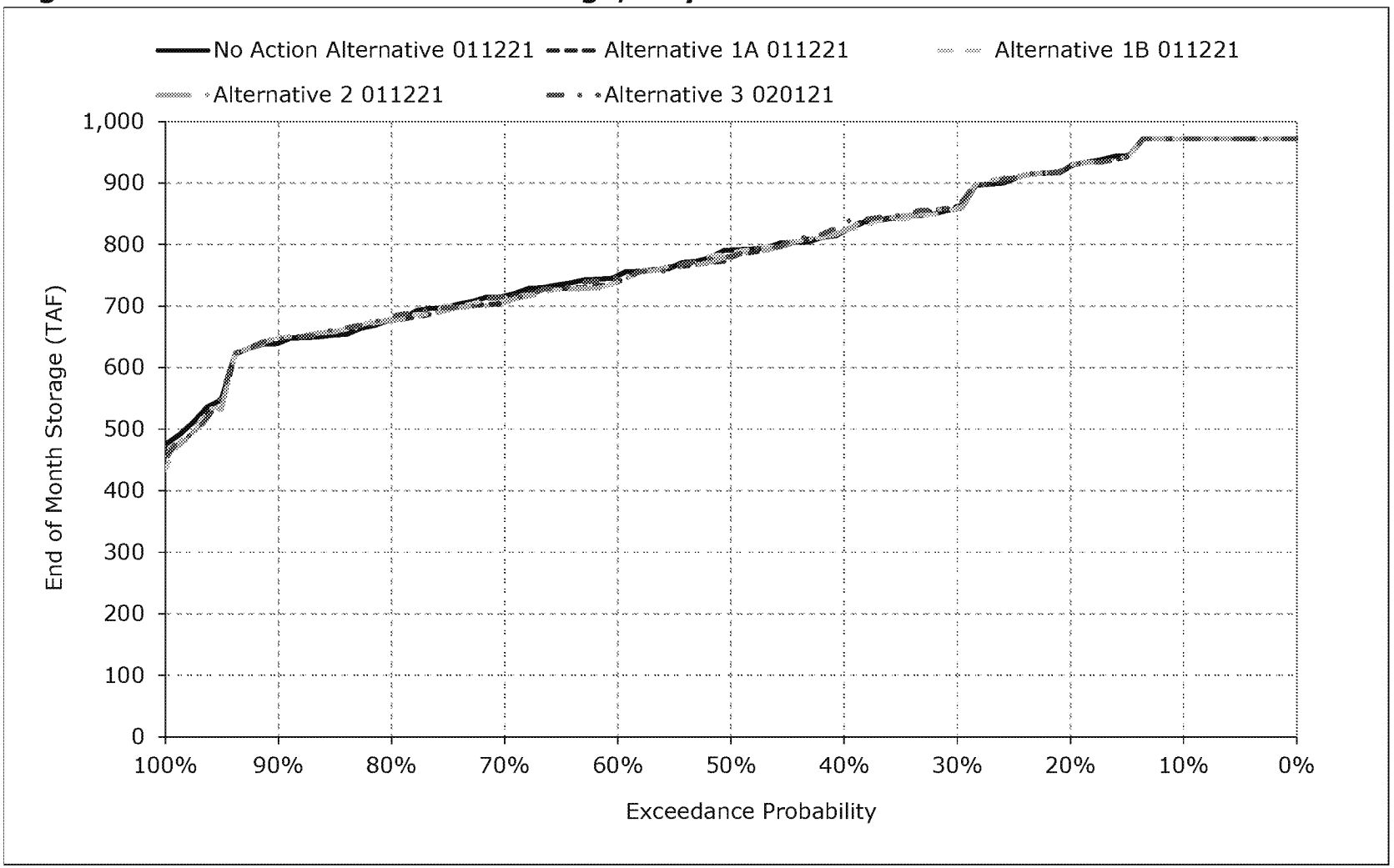


Figure 5B4-10-9. San Luis CVP Storage, June

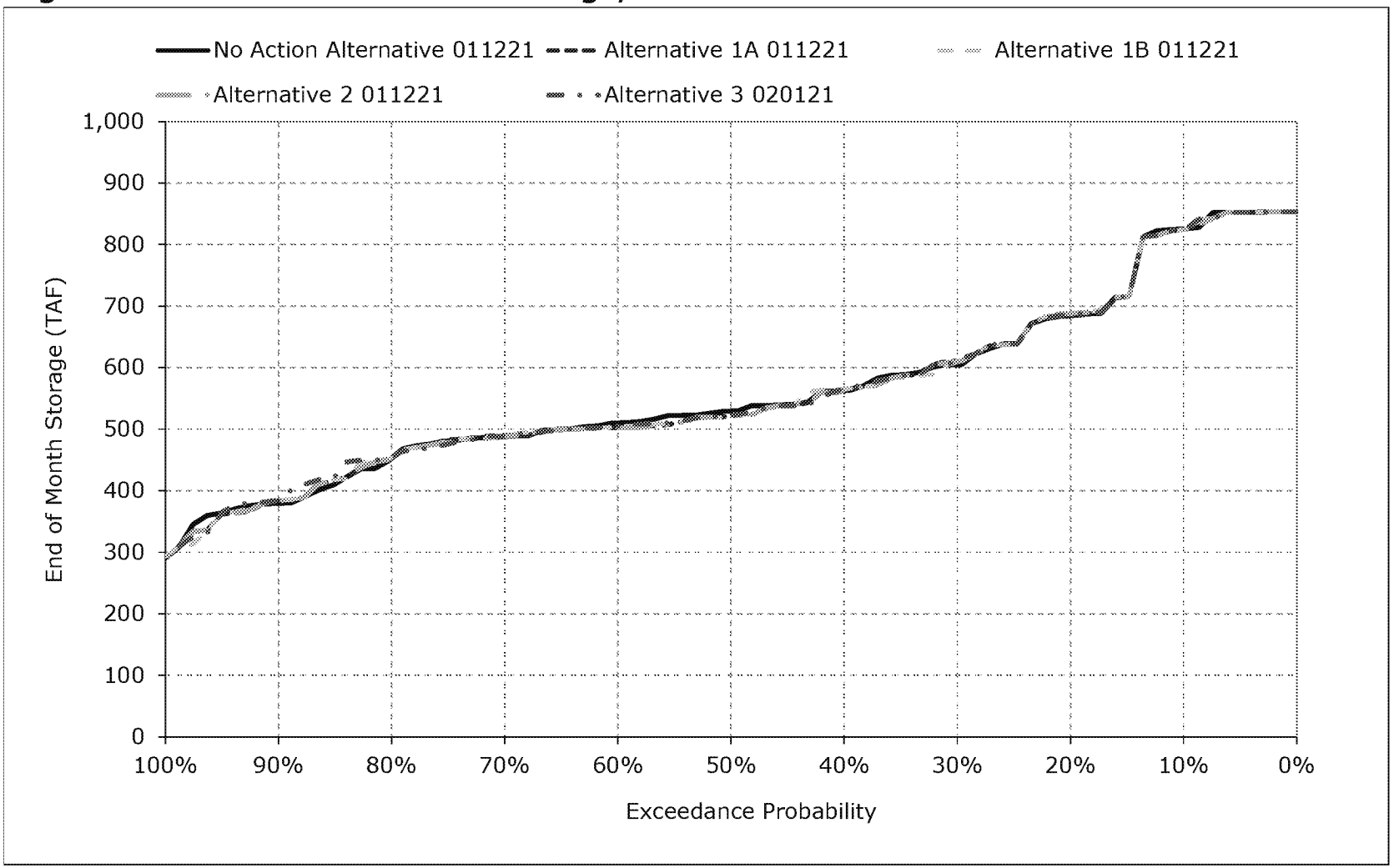


Figure 5B4-10-10. San Luis CVP Storage, July

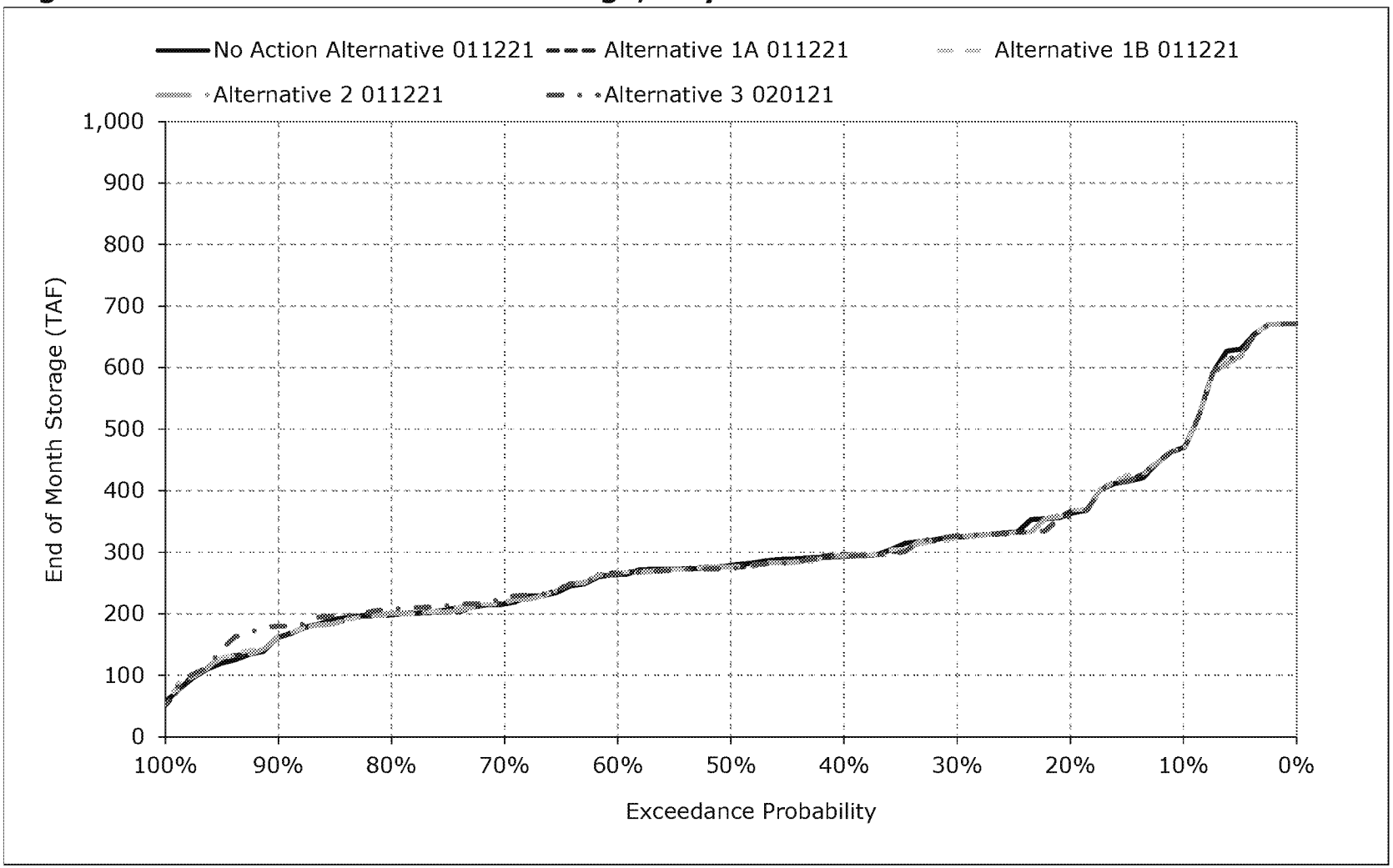


Figure 5B4-10-11. San Luis CVP Storage, August

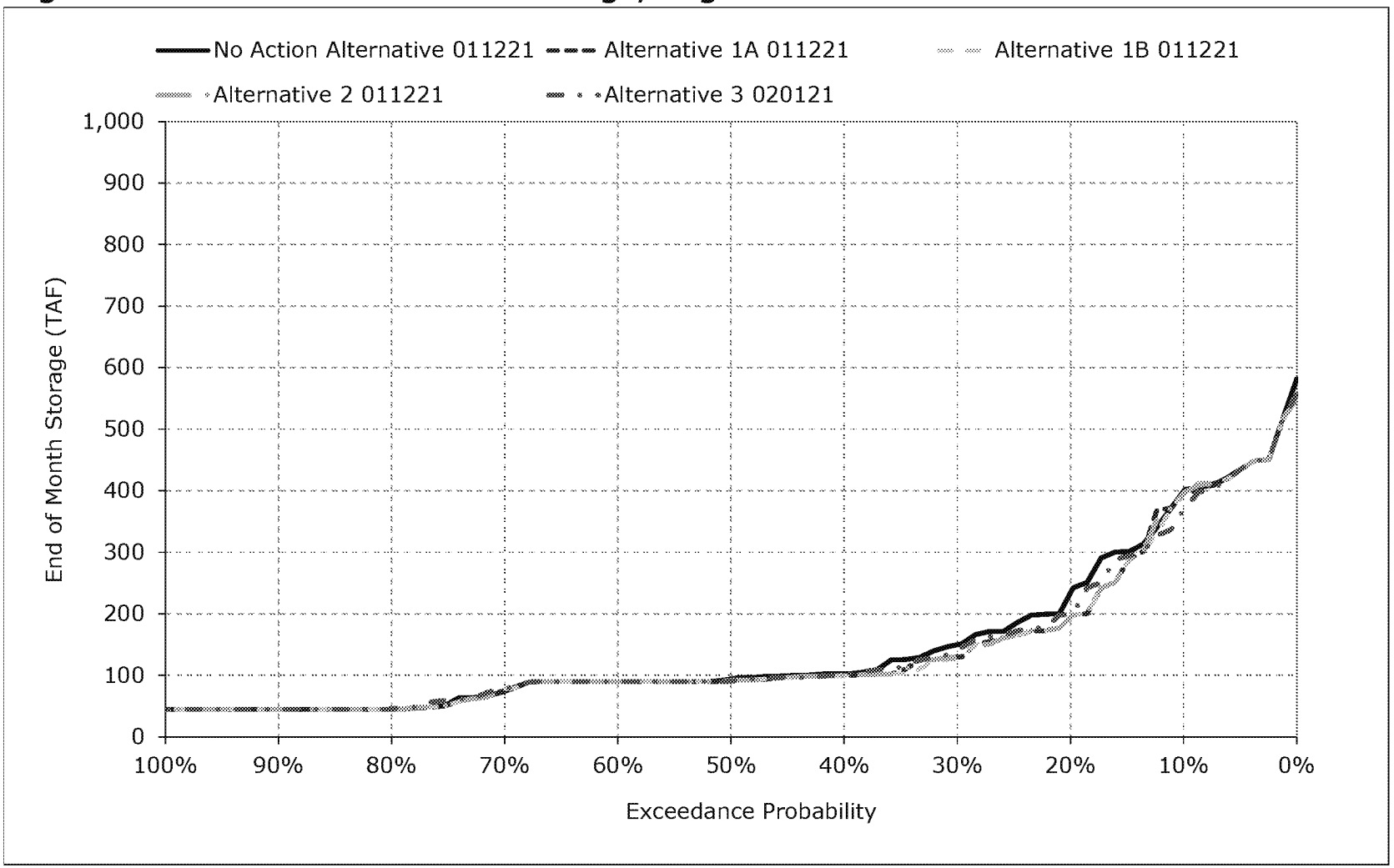


Figure 5B4-10-12. San Luis CVP Storage, September

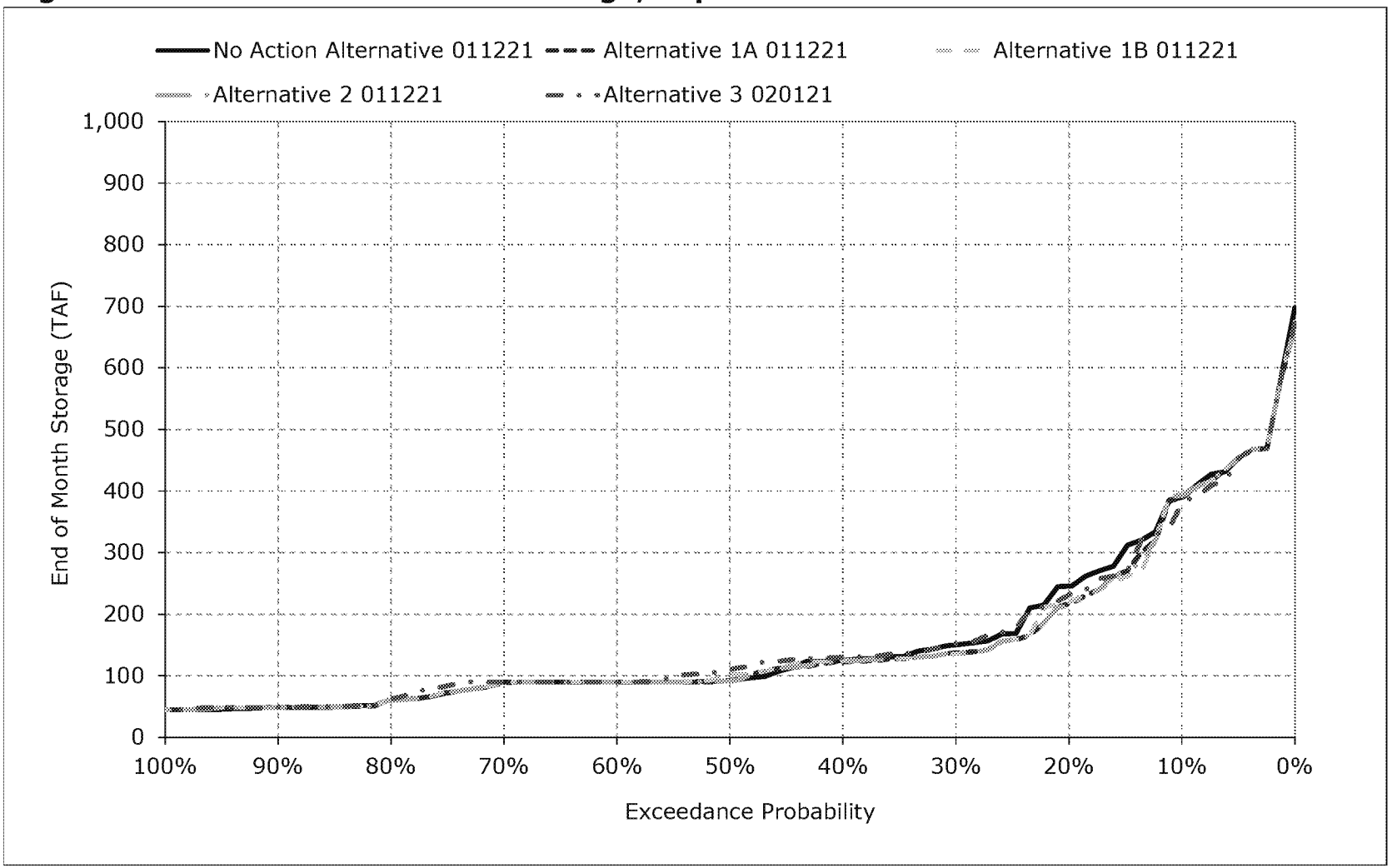


Table 5B4-11-1a. San Luis SWP Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	796	895	1,067	1,067	1,067	1,067	1,066	1,067	924	885	793	800
20%	564	778	885	946	1,051	1,067	980	831	658	666	550	585
30%	452	570	776	844	946	1,061	935	739	547	543	441	447
40%	376	483	699	743	850	926	896	721	485	474	388	401
50%	320	404	545	657	755	858	731	629	441	423	342	319
60%	267	311	466	572	679	730	664	526	373	360	230	271
70%	169	264	343	465	588	651	549	434	280	286	175	210
80%	131	146	262	364	497	531	457	326	208	178	155	152
90%	66	59	132	246	363	431	370	240	55	105	103	77
Long Term												
Full Simulation Period[a]	371	451	571	653	747	793	725	606	459	446	368	377
Water Year Types[b,c]												
Wet (32%)	630	727	878	718	814	891	877	796	669	661	576	618
Above Normal (15%)	336	420	560	637	712	751	647	500	327	337	287	373
Below Normal (17%)	315	369	462	685	785	825	716	536	316	338	378	334
Dry (22%)	230	314	407	636	727	755	655	524	392	395	238	224
Critical (15%)	121	186	293	519	619	644	589	506	404	292	181	140

Table 5B4-11-1b. San Luis SWP Storage, Alternative 1A 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	817	920	1,067	1,067	1,067	1,067	1,047	1,067	922	885	793	802
20%	563	760	907	965	1,058	1,067	980	823	657	660	556	585
30%	468	568	793	855	962	1,062	935	745	559	555	434	455
40%	375	505	707	742	854	919	913	721	490	470	393	415
50%	328	415	554	664	753	863	738	615	458	421	351	317
60%	277	308	466	569	679	733	671	543	364	361	234	272
70%	170	280	371	478	603	679	571	438	288	290	182	223
80%	130	142	250	335	514	521	433	315	211	171	156	154
90%	66	55	120	241	354	402	365	233	55	112	105	79
Long Term												
Full Simulation Period[a]	373	457	578	657	747	794	726	607	460	447	371	381
Water Year Types[b,c]												
Wet (32%)	629	726	879	719	816	892	878	797	669	661	578	620
Above Normal (15%)	341	426	564	655	715	753	650	504	330	340	291	378
Below Normal (17%)	326	400	493	679	773	812	706	526	312	334	378	336
Dry (22%)	233	315	404	652	741	770	669	536	400	404	245	228
Critical (15%)	118	186	296	507	608	637	583	502	404	290	184	145

Table 5B4-11-1c. San Luis SWP Storage, Alternative 1A 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	21	26	0	0	0	0	-19	0	-1	0	0	2
20%	-1	-18	22	20	6	0	0	-8	-1	-6	6	0
30%	16	-2	17	11	16	2	0	6	12	12	-7	9
40%	-1	22	8	-1	5	-7	16	0	6	-4	5	13
50%	8	12	8	7	-2	6	6	-14	17	-2	9	-2
60%	10	-2	1	-3	0	3	7	17	-9	1	3	0
70%	2	16	28	13	15	28	22	4	8	4	7	13
80%	-1	-4	-13	-29	17	-10	-24	-11	3	-7	1	2
90%	0	-4	-12	-5	-9	-29	-5	-7	0	7	2	2
Long Term												
Full Simulation Period[a]	3	6	6	4	0	1	1	1	1	1	3	3
Water Year Types[b,c]												
Wet (32%)	-1	-1	1	2	2	2	1	1	0	0	2	2
Above Normal (15%)	6	5	4	17	3	1	3	4	3	3	4	4
Below Normal (17%)	12	30	31	-6	-12	-12	-10	-10	-4	-4	0	3
Dry (22%)	3	1	-2	16	15	14	14	13	7	9	7	4
Critical (15%)	-3	0	3	-11	-12	-7	-6	-4	0	-2	3	5

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-11-2a. San Luis SWP Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	796	895	1,067	1,067	1,067	1,067	1,066	1,067	924	885	793	800
20%	564	778	885	946	1,051	1,067	980	831	658	666	550	585
30%	452	570	776	844	946	1,061	935	739	547	543	441	447
40%	376	483	699	743	850	926	896	721	485	474	388	401
50%	320	404	545	657	755	858	731	629	441	423	342	319
60%	267	311	466	572	679	730	664	526	373	360	230	271
70%	169	264	343	465	588	651	549	434	280	286	175	210
80%	131	146	262	364	497	531	457	326	208	178	155	152
90%	66	59	132	246	363	431	370	240	55	105	103	77
Long Term												
Full Simulation Period[a]	371	451	571	653	747	793	725	606	459	446	368	377
Water Year Types[b,c]												
Wet (32%)	630	727	878	718	814	891	877	796	669	661	576	618
Above Normal (15%)	336	420	560	637	712	751	647	500	327	337	287	373
Below Normal (17%)	315	369	462	685	785	825	716	536	316	338	378	334
Dry (22%)	230	314	407	636	727	755	655	524	392	395	238	224
Critical (15%)	121	186	293	519	619	644	589	506	404	292	181	140

Table 5B4-11-2b. San Luis SWP Storage, Alternative 1B 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	818	921	1,067	1,067	1,067	1,067	1,037	1,067	924	889	793	803
20%	559	768	907	965	1,060	1,067	981	822	654	660	560	585
30%	471	601	761	865	963	1,062	936	743	546	559	437	455
40%	387	520	684	740	855	916	922	727	489	473	393	413
50%	329	417	547	666	751	864	739	612	467	419	349	316
60%	283	309	465	572	679	733	668	542	366	361	234	273
70%	171	279	364	478	594	676	566	438	286	293	186	224
80%	132	138	235	335	514	520	446	331	211	175	156	154
90%	60	55	121	236	352	418	367	233	55	112	104	78
Long Term												
Full Simulation Period[a]	375	459	574	657	748	794	727	608	461	448	371	381
Water Year Types[b,c]												
Wet (32%)	629	727	878	721	819	893	879	798	670	661	578	620
Above Normal (15%)	346	432	571	650	711	746	645	501	329	340	292	379
Below Normal (17%)	328	399	495	682	777	816	712	532	314	336	378	340
Dry (22%)	235	321	385	649	738	767	666	534	397	403	246	229
Critical (15%)	116	184	294	510	611	641	587	505	406	291	183	143

Table 5B4-11-2c. San Luis SWP Storage, Alternative 1B 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	22	27	0	0	0	0	-28	0	1	4	1	3
20%	-5	-11	22	20	9	0	0	-9	-4	-6	10	0
30%	19	31	-15	21	17	2	1	4	-2	16	-4	9
40%	10	37	-15	-3	5	-10	25	6	4	-2	5	11
50%	10	14	2	8	-4	6	8	-17	26	-4	7	-3
60%	16	-1	0	0	0	3	4	16	-7	1	3	2
70%	2	15	21	12	6	25	17	4	6	7	11	14
80%	1	-8	-28	-29	16	-10	-11	5	3	-2	1	1
90%	-6	-4	-12	-9	-11	-13	-3	-7	0	7	2	1
Long Term												
Full Simulation Period[a]	4	8	2	4	1	1	2	2	1	2	3	4
Water Year Types[b,c]												
Wet (32%)	-1	-1	0	3	5	3	2	2	1	0	2	1
Above Normal (15%)	10	12	10	12	-1	-6	-2	1	2	3	4	5
Below Normal (17%)	14	30	32	-3	-8	-8	-4	-4	-2	-2	0	7
Dry (22%)	4	7	-22	13	12	11	11	10	4	8	8	5
Critical (15%)	-5	-2	1	-9	-8	-3	-2	-1	2	-1	2	4

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-11-3a. San Luis SWP Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	796	895	1,067	1,067	1,067	1,067	1,066	1,067	924	885	793	800
20%	564	778	885	946	1,051	1,067	980	831	658	666	550	585
30%	452	570	776	844	946	1,061	935	739	547	543	441	447
40%	376	483	699	743	850	926	896	721	485	474	388	401
50%	320	404	545	657	755	858	731	629	441	423	342	319
60%	267	311	466	572	679	730	664	526	373	360	230	271
70%	169	264	343	465	588	651	549	434	280	286	175	210
80%	131	146	262	364	497	531	457	326	208	178	155	152
90%	66	59	132	246	363	431	370	240	55	105	103	77
Long Term												
Full Simulation Period[a]	371	451	571	653	747	793	725	606	459	446	368	377
Water Year Types[b,c]												
Wet (32%)	630	727	878	718	814	891	877	796	669	661	576	618
Above Normal (15%)	336	420	560	637	712	751	647	500	327	337	287	373
Below Normal (17%)	315	369	462	685	785	825	716	536	316	338	378	334
Dry (22%)	230	314	407	636	727	755	655	524	392	395	238	224
Critical (15%)	121	186	293	519	619	644	589	506	404	292	181	140

Table 5B4-11-3b. San Luis SWP Storage, Alternative 2 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	817	920	1,067	1,067	1,067	1,067	1,038	1,067	924	889	793	803
20%	561	759	907	965	1,058	1,067	980	823	657	660	557	585
30%	470	566	793	855	951	1,064	935	745	558	547	436	455
40%	375	506	699	744	862	919	915	722	488	474	392	413
50%	328	415	545	664	748	863	753	618	463	421	350	317
60%	277	306	465	568	679	733	669	543	385	361	233	271
70%	171	275	371	477	603	679	566	438	288	290	182	222
80%	130	157	256	340	513	522	433	330	211	174	156	154
90%	60	55	120	236	357	416	367	232	55	112	104	78
Long Term												
Full Simulation Period[a]	374	458	578	658	748	795	727	609	462	448	371	381
Water Year Types[b,c]												
Wet (32%)	630	728	879	720	817	893	878	797	669	661	578	620
Above Normal (15%)	342	427	565	655	715	753	649	504	329	340	291	377
Below Normal (17%)	325	396	492	685	779	818	712	533	318	340	380	338
Dry (22%)	233	320	410	650	740	768	667	535	398	402	244	228
Critical (15%)	117	185	293	507	608	640	585	504	405	291	183	143

Table 5B4-11-3c. San Luis SWP Storage, Alternative 2 011221 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	21	26	0	0	0	0	-28	0	1	4	1	3
20%	-4	-20	22	20	6	0	0	-8	-1	-6	7	0
30%	17	-4	17	10	5	4	0	6	10	4	-5	9
40%	-1	23	0	1	12	-8	18	1	3	0	3	11
50%	8	12	0	7	-6	6	22	-11	22	-2	8	-1
60%	10	-4	-1	-4	0	3	5	17	11	1	3	0
70%	2	11	27	12	15	28	17	4	8	4	7	12
80%	-1	11	-6	-24	16	-9	-24	4	3	-4	1	1
90%	-6	-4	-12	-9	-6	-15	-3	-7	0	7	1	1
Long Term												
Full Simulation Period[a]	3	7	7	4	2	2	2	3	2	2	3	3
Water Year Types[b,c]												
Wet (32%)	0	1	1	2	3	2	2	1	1	0	2	2
Above Normal (15%)	6	6	5	18	3	2	3	4	3	3	3	4
Below Normal (17%)	10	27	30	0	-6	-6	-4	-2	2	2	2	5
Dry (22%)	2	6	3	14	13	13	12	11	6	6	6	4
Critical (15%)	-3	0	0	-12	-11	-4	-4	-2	1	-1	2	4

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Table 5B4-11-4a. San Luis SWP Storage, No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	796	895	1,067	1,067	1,067	1,067	1,066	1,067	924	885	793	800
20%	564	778	885	946	1,051	1,067	980	831	658	666	550	585
30%	452	570	776	844	946	1,061	935	739	547	543	441	447
40%	376	483	699	743	850	926	896	721	485	474	388	401
50%	320	404	545	657	755	858	731	629	441	423	342	319
60%	267	311	466	572	679	730	664	526	373	360	230	271
70%	169	264	343	465	588	651	549	434	280	286	175	210
80%	131	146	262	364	497	531	457	326	208	178	155	152
90%	66	59	132	246	363	431	370	240	55	105	103	77
Long Term												
Full Simulation Period[a]	371	451	571	653	747	793	725	606	459	446	368	377
Water Year Types[b,c]												
Wet (32%)	630	727	878	718	814	891	877	796	669	661	576	618
Above Normal (15%)	336	420	560	637	712	751	647	500	327	337	287	373
Below Normal (17%)	315	369	462	685	785	825	716	536	316	338	378	334
Dry (22%)	230	314	407	636	727	755	655	524	392	395	238	224
Critical (15%)	121	186	293	519	619	644	589	506	404	292	181	140

Table 5B4-11-4b. San Luis SWP Storage, Alternative 3 020121, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	813	912	1,067	1,067	1,067	1,067	1,037	1,067	925	884	777	793
20%	578	752	913	972	1,067	1,067	974	827	658	666	522	564
30%	473	572	794	875	968	1,066	936	739	548	545	435	455
40%	391	493	713	750	859	932	918	727	489	481	400	414
50%	328	405	620	681	741	829	772	625	464	428	355	341
60%	264	319	475	585	684	732	657	546	383	366	236	268
70%	168	273	370	467	617	683	593	426	292	274	174	219
80%	132	159	251	348	522	536	467	334	208	181	155	153
90%	58	56	125	236	355	402	371	255	55	117	106	73
Long Term												
Full Simulation Period[a]	372	455	584	663	753	797	730	610	461	446	370	379
Water Year Types[b,c]												
Wet (32%)	623	721	873	717	815	892	878	791	664	656	572	613
Above Normal (15%)	335	421	564	646	715	751	650	505	331	327	278	364
Below Normal (17%)	335	401	501	711	805	839	736	556	334	354	392	351
Dry (22%)	235	319	440	654	739	765	665	532	393	401	248	231
Critical (15%)	116	183	292	520	616	637	583	502	402	288	182	143

Table 5B4-11-4c. San Luis SWP Storage, Alternative 3 020121 minus No Action Alternative 011221, End of Month Storage (TAF)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	16	18	0	0	0	0	-29	0	1	-1	-15	-7
20%	14	-26	28	27	16	0	-7	-4	-1	0	-28	-21
30%	20	2	18	30	22	5	1	1	1	2	-6	8
40%	15	10	14	6	9	6	22	6	4	7	12	12
50%	8	1	75	23	-13	-28	41	-3	24	6	13	22
60%	-3	8	9	13	5	1	-8	20	10	6	5	-3
70%	-1	9	26	2	28	32	44	-9	12	-12	-1	9
80%	1	13	-11	-17	25	5	10	8	0	4	0	1
90%	-7	-3	-7	-10	-8	-29	1	15	0	12	4	-4
Long Term												
Full Simulation Period[a]	1	4	13	10	6	4	5	4	2	1	2	2
Water Year Types[b,c]												
Wet (32%)	-7	-6	-5	-1	1	1	1	-5	-5	-5	-4	-5
Above Normal (15%)	-1	0	4	9	3	-1	3	4	4	-10	-10	-10
Below Normal (17%)	20	32	38	26	19	14	19	20	18	16	14	18
Dry (22%)	4	5	33	18	12	10	10	9	1	6	9	7
Critical (15%)	-5	-3	-1	2	-3	-7	-6	-4	-2	-4	2	3

a Based on the 82-year simulation period.

b As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).

c These results are displayed with calendar year - year type sorting.

Figure 5B4-11-1. San Luis SWP Storage, October

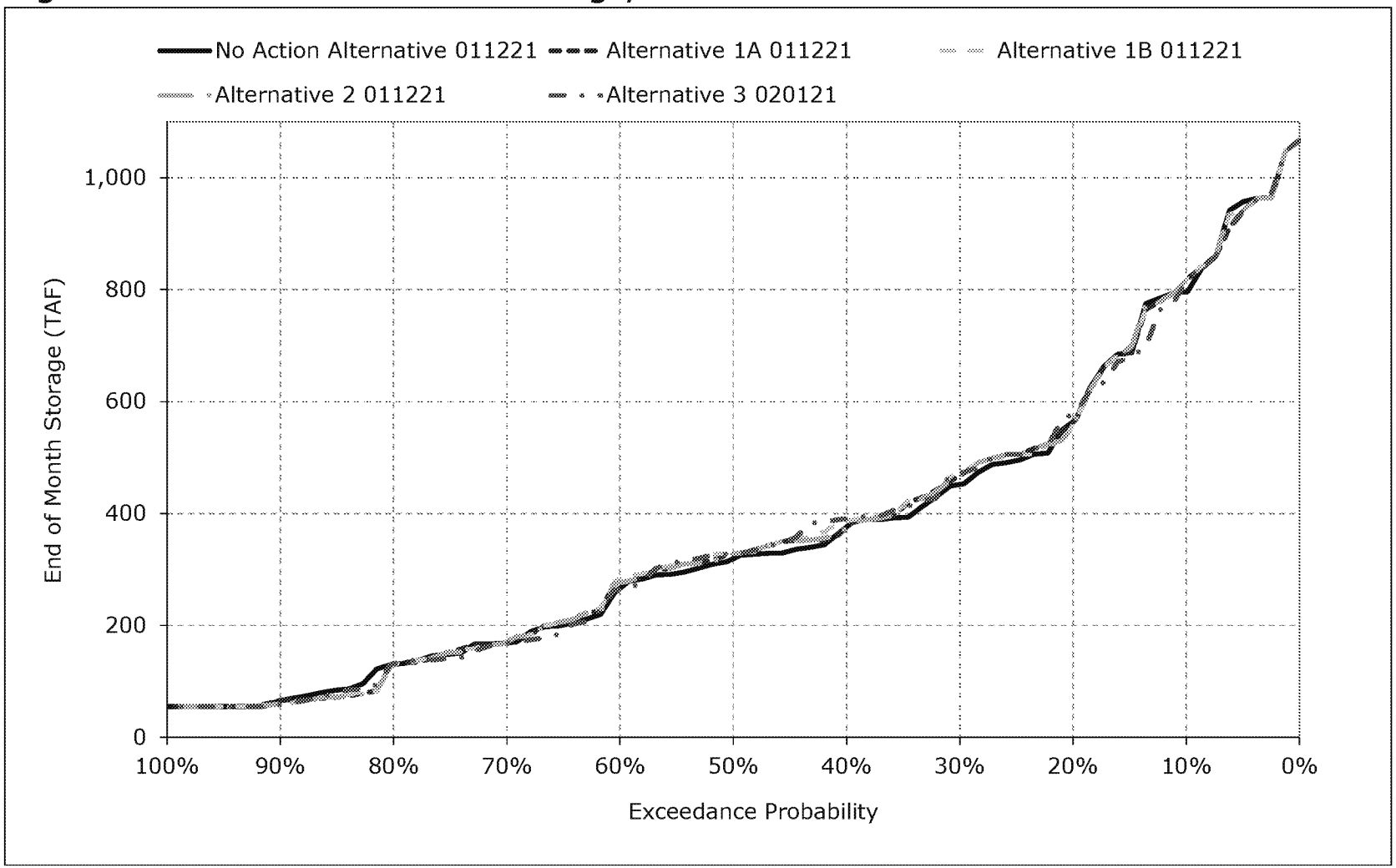


Figure 5B4-11-2. San Luis SWP Storage, November

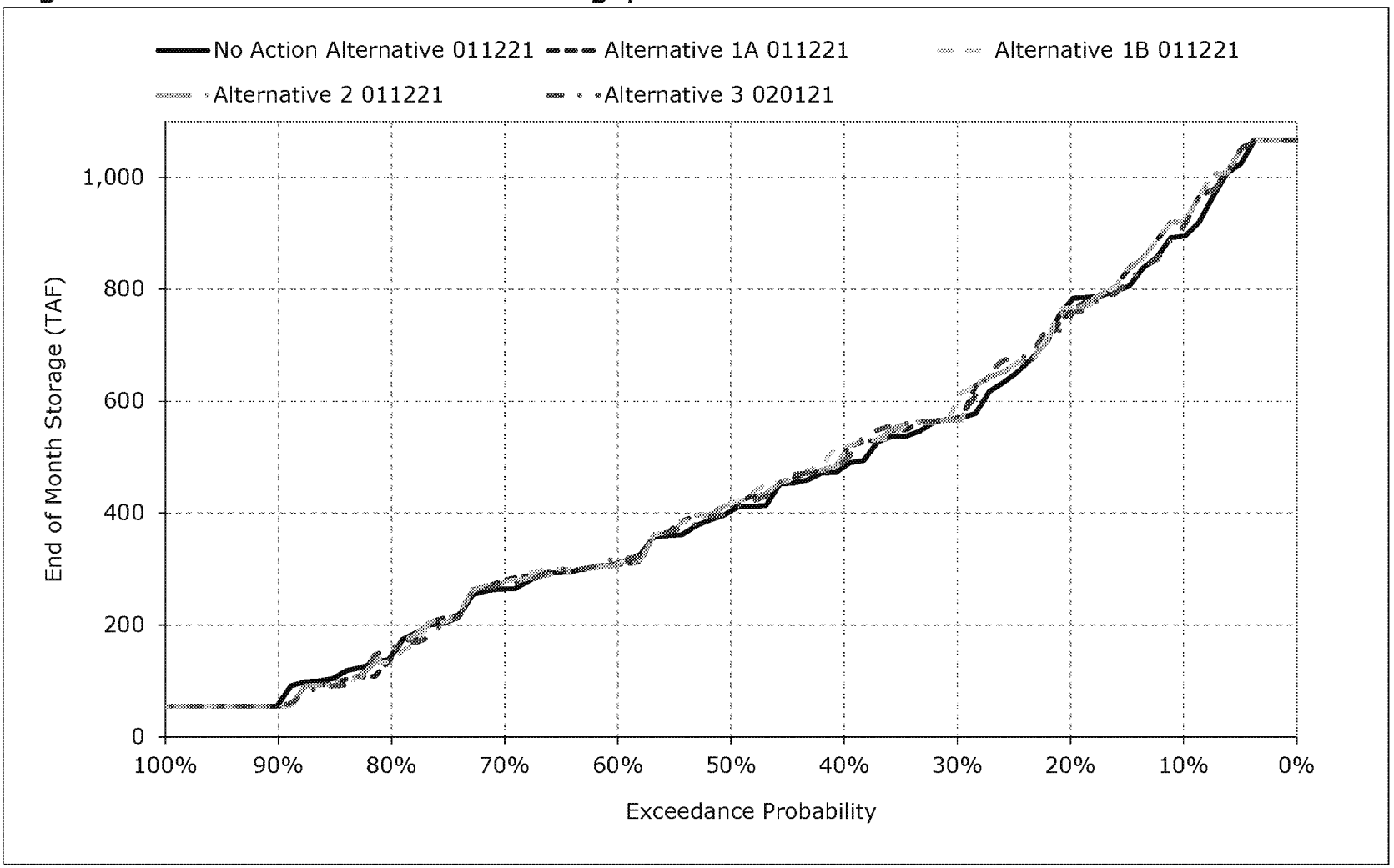


Figure 5B4-11-3. San Luis SWP Storage, December

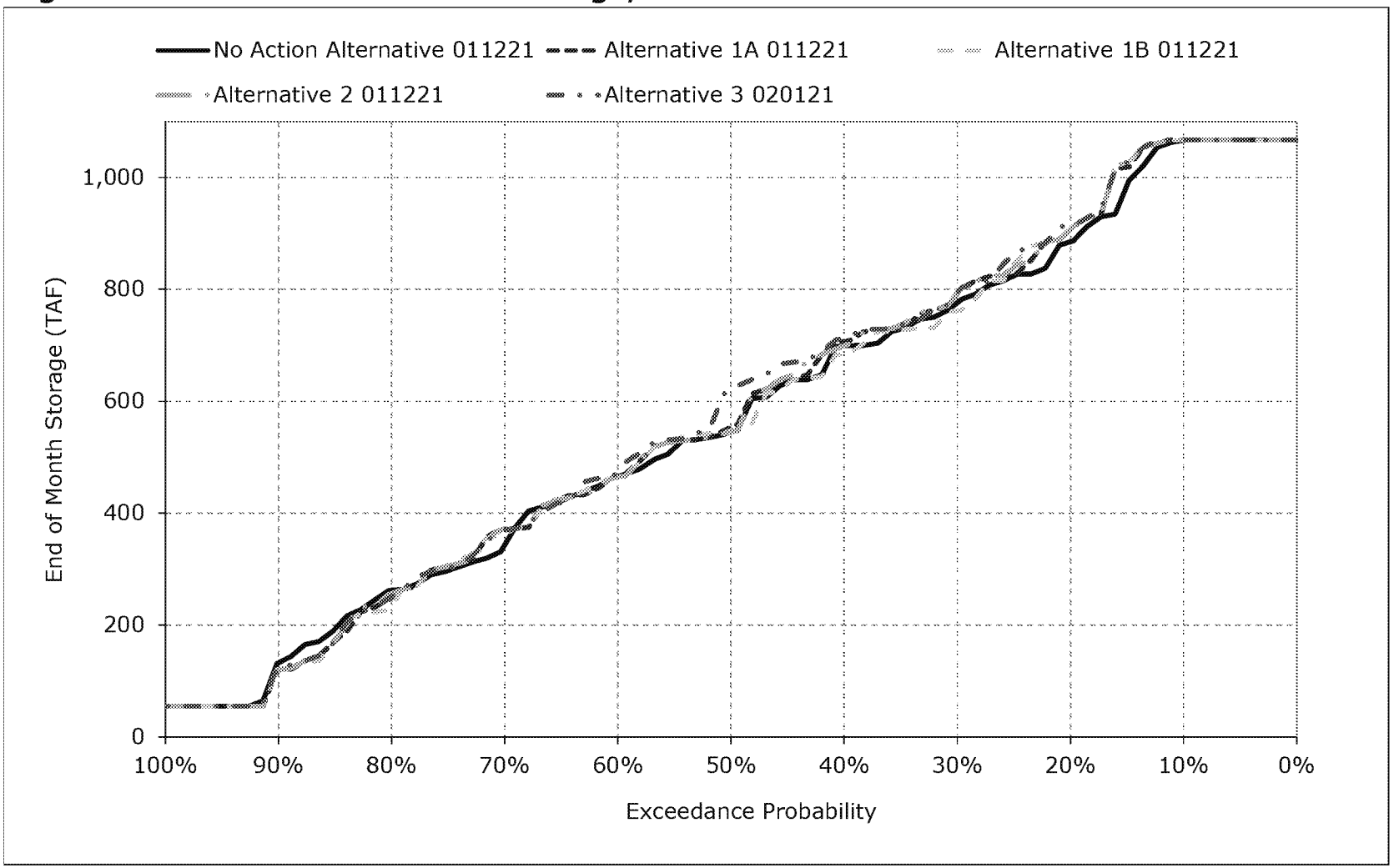


Figure 5B4-11-4. San Luis SWP Storage, January

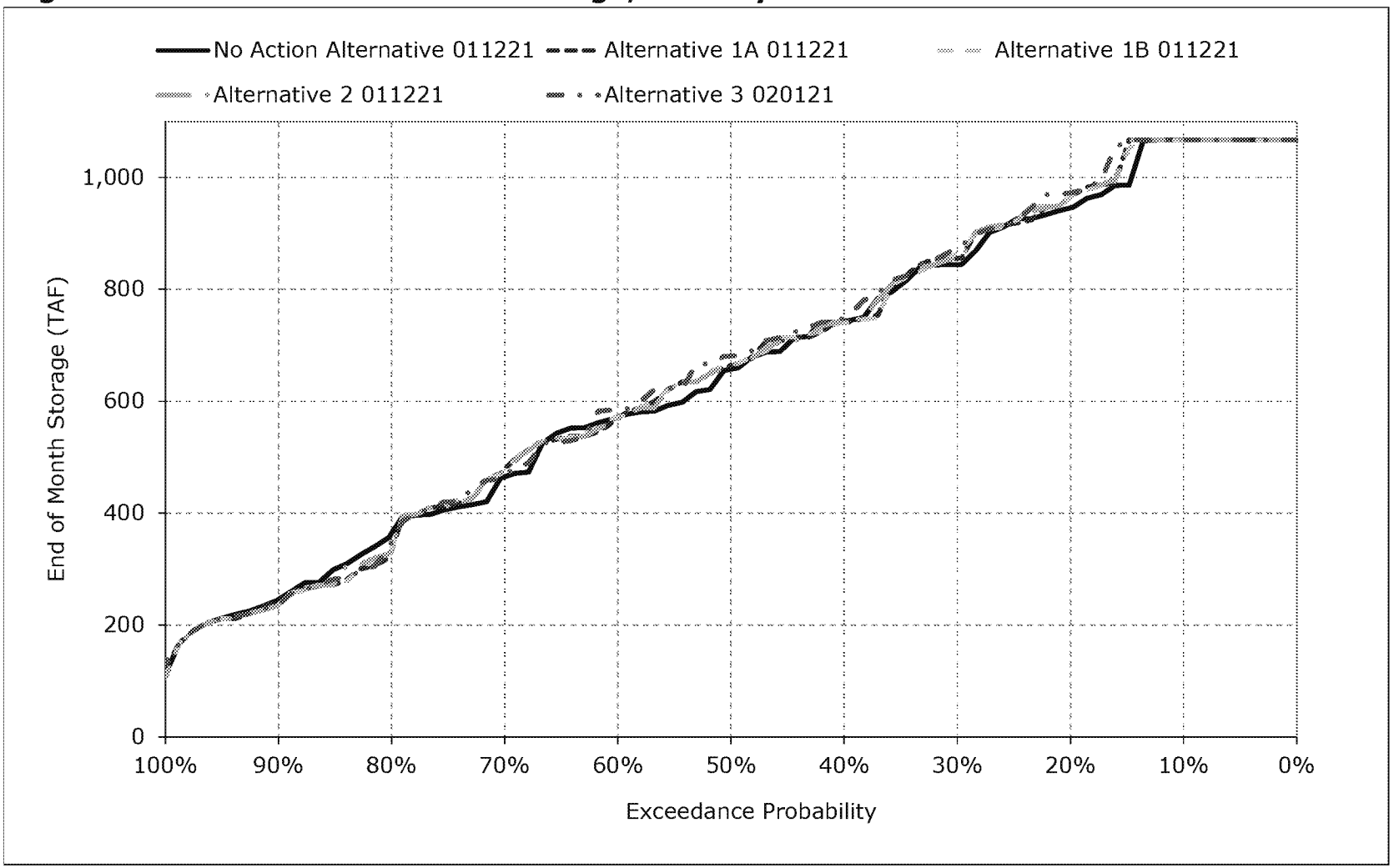


Figure 5B4-11-5. San Luis SWP Storage, February

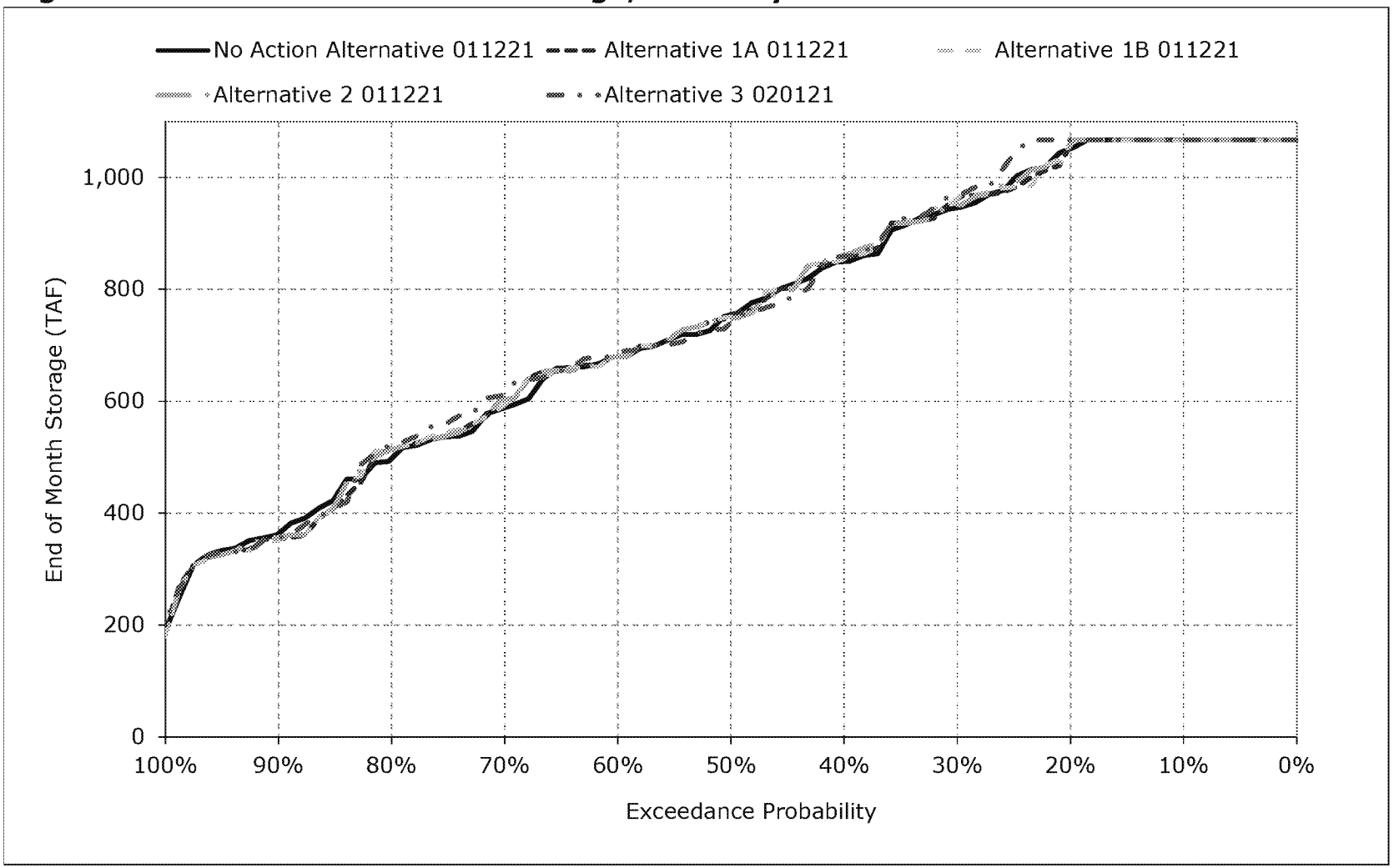


Figure 5B4-11-6. San Luis SWP Storage, March

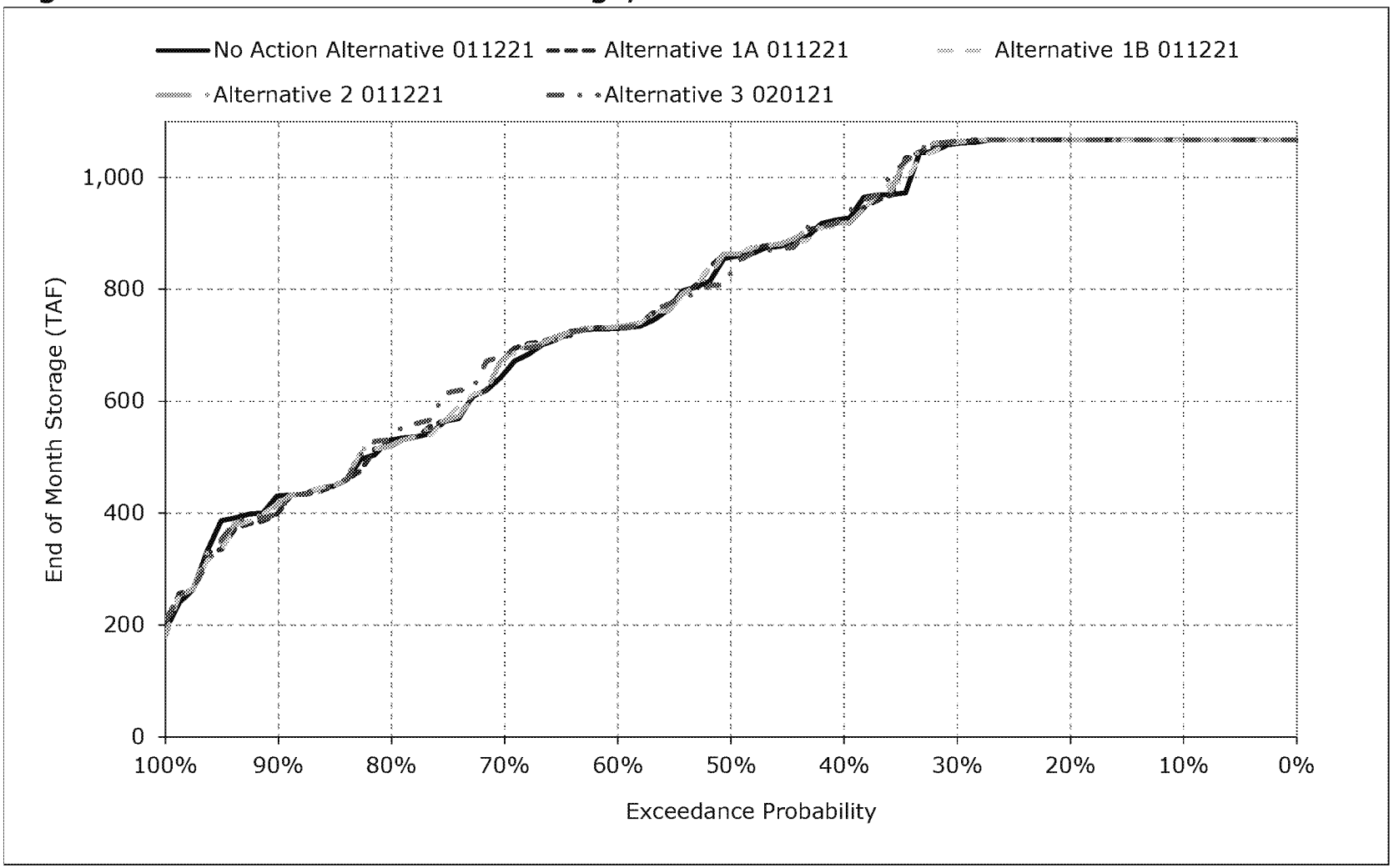


Figure 5B4-11-7. San Luis SWP Storage, April

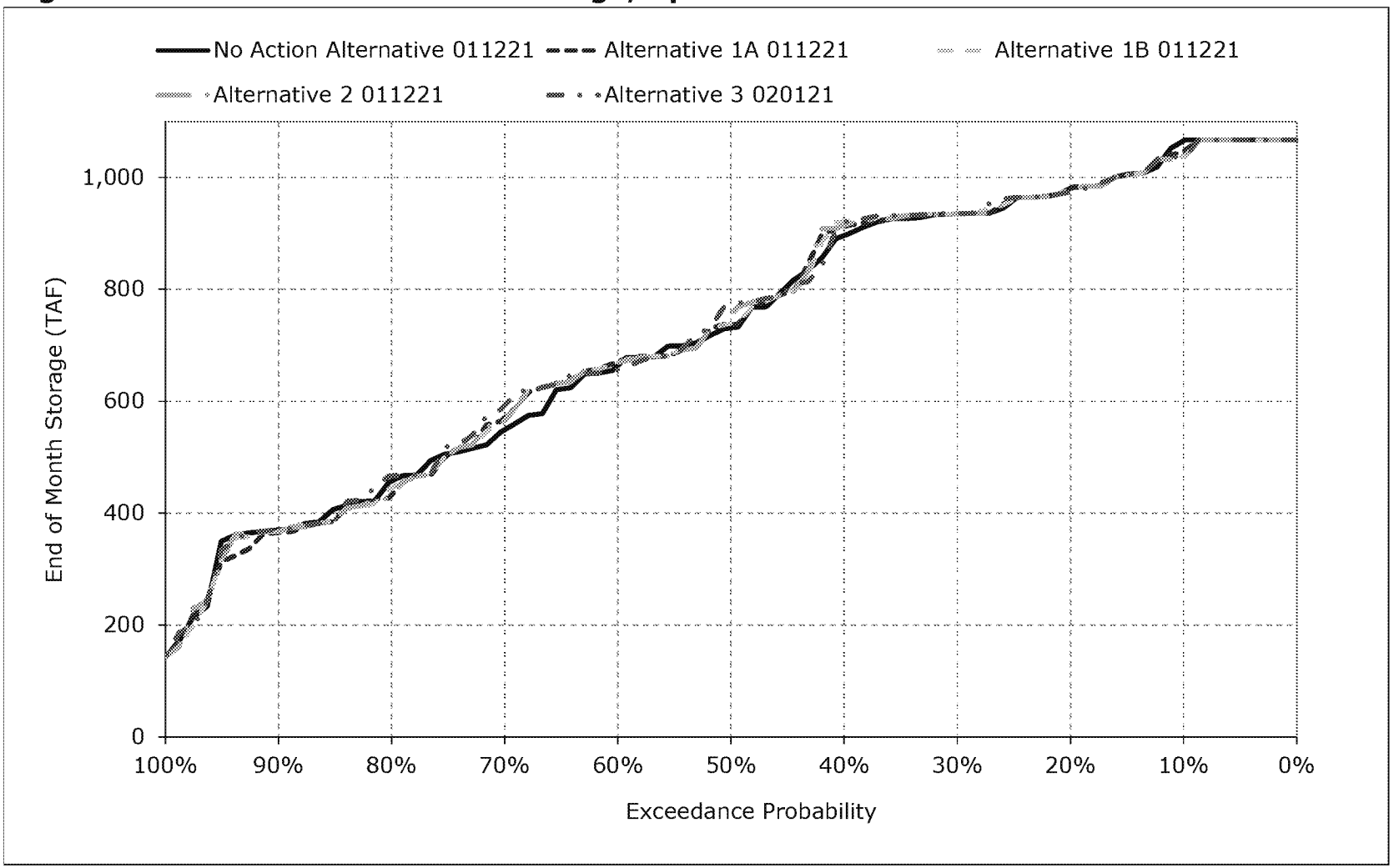


Figure 5B4-11-8. San Luis SWP Storage, May

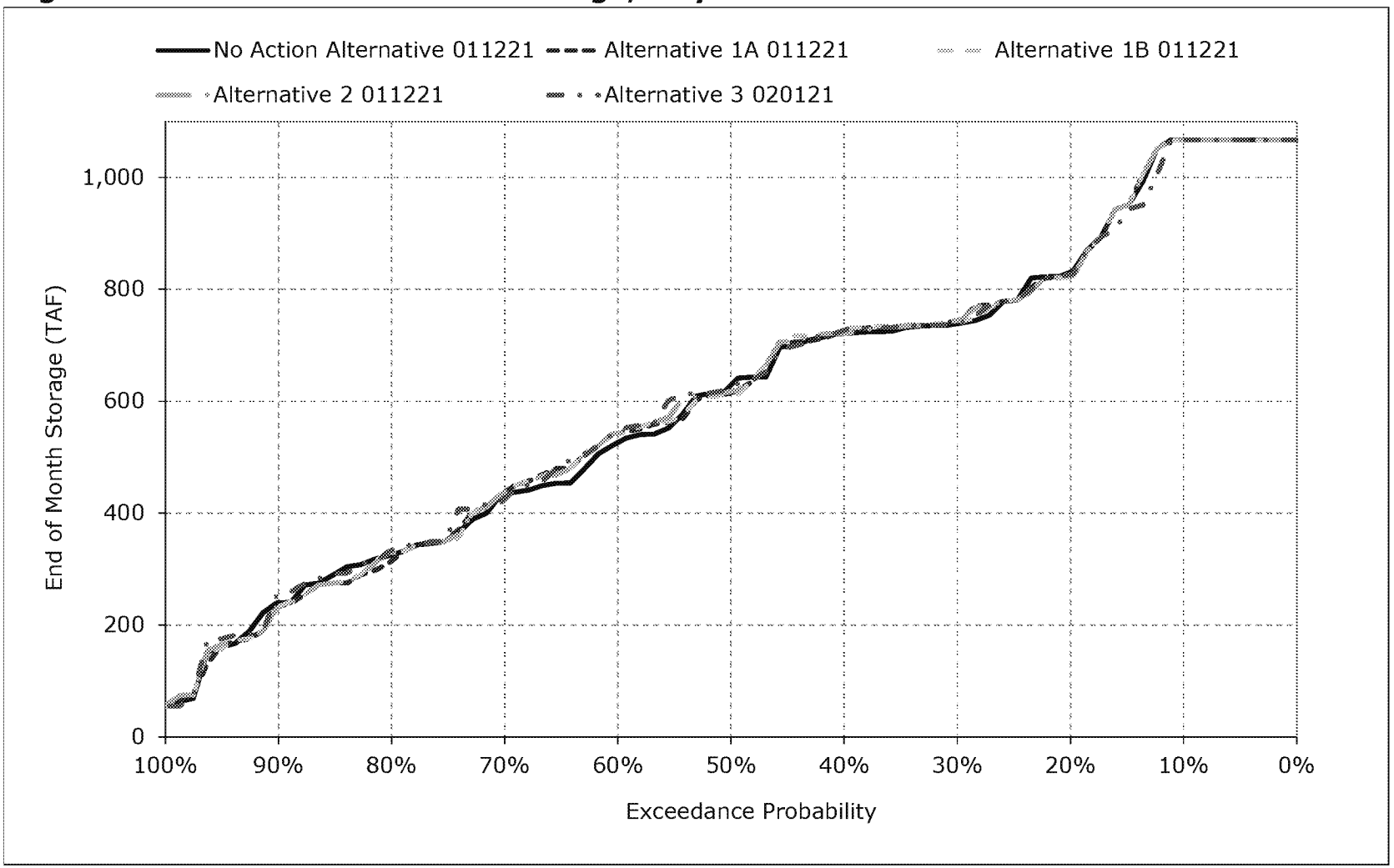


Figure 5B4-11-9. San Luis SWP Storage, June

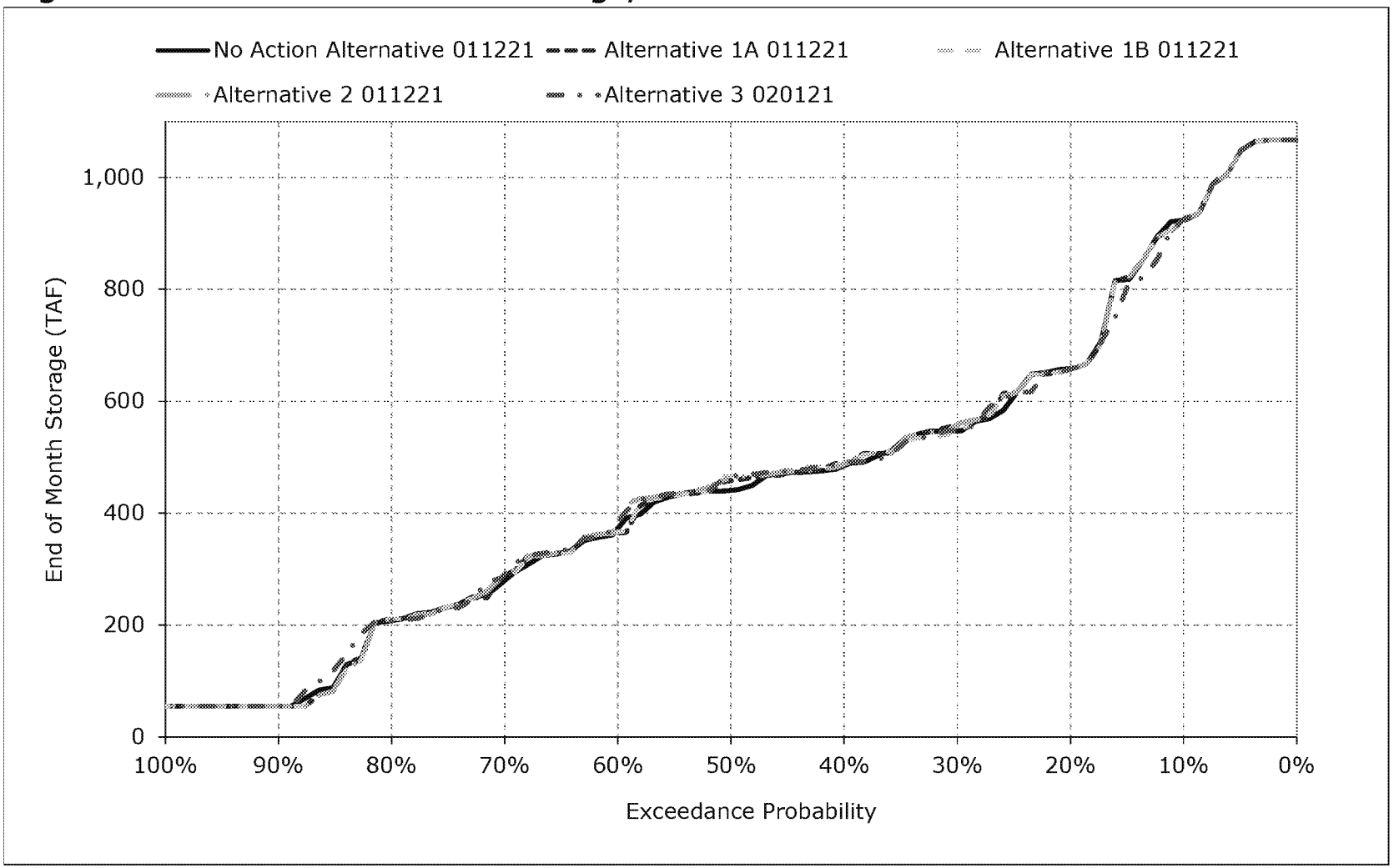


Figure 5B4-11-10. San Luis SWP Storage, July

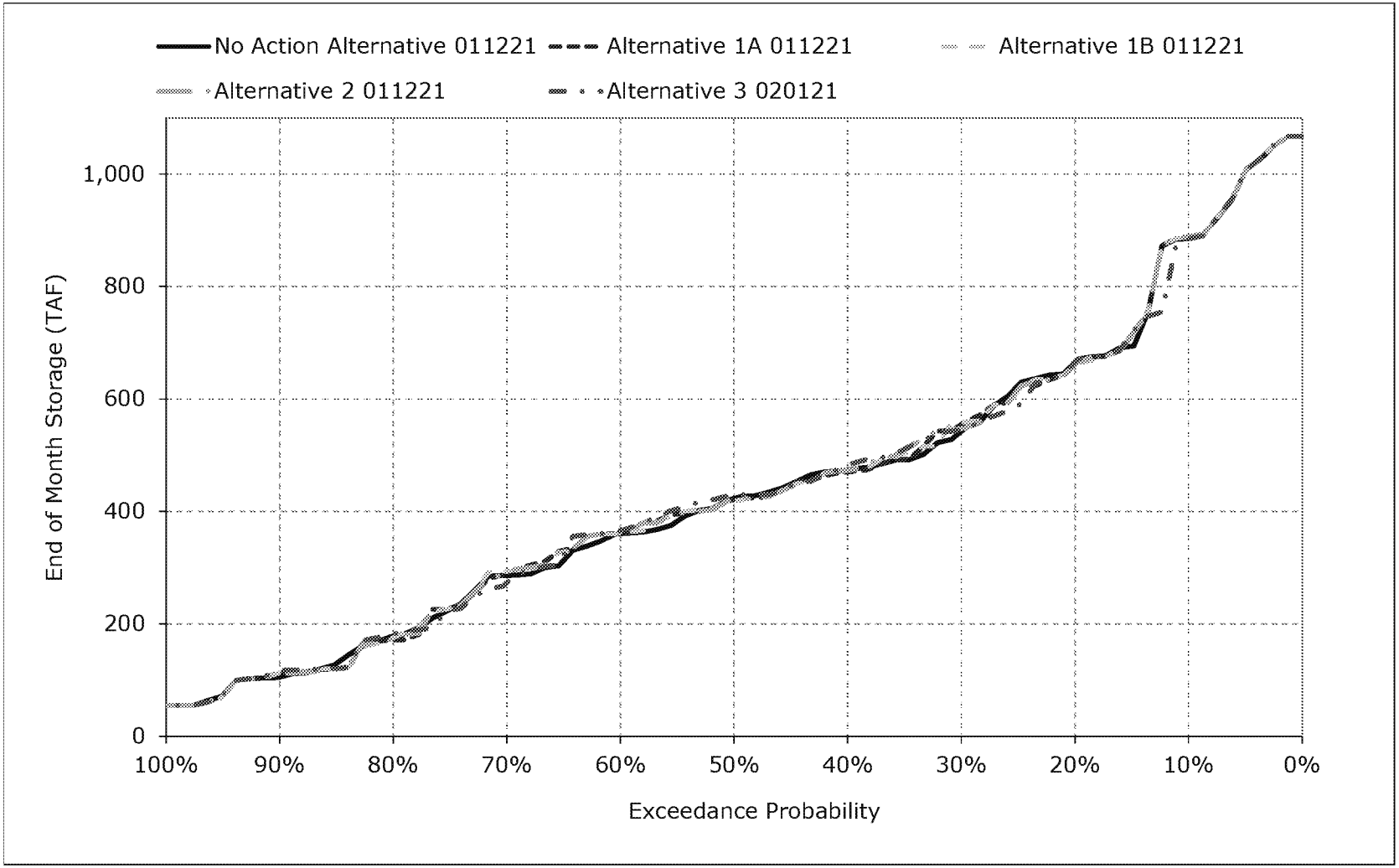


Figure 5B4-11-11. San Luis SWP Storage, August

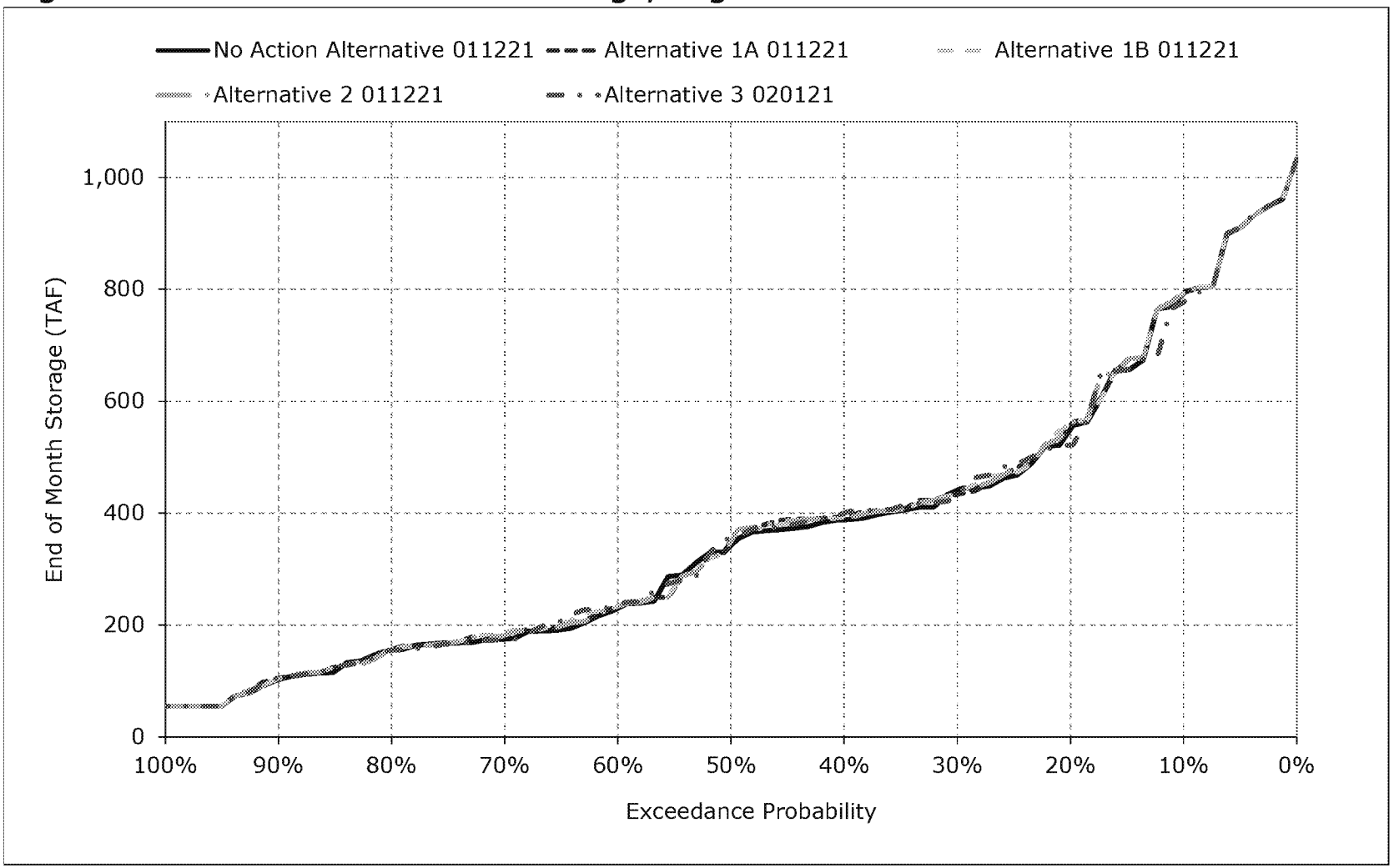
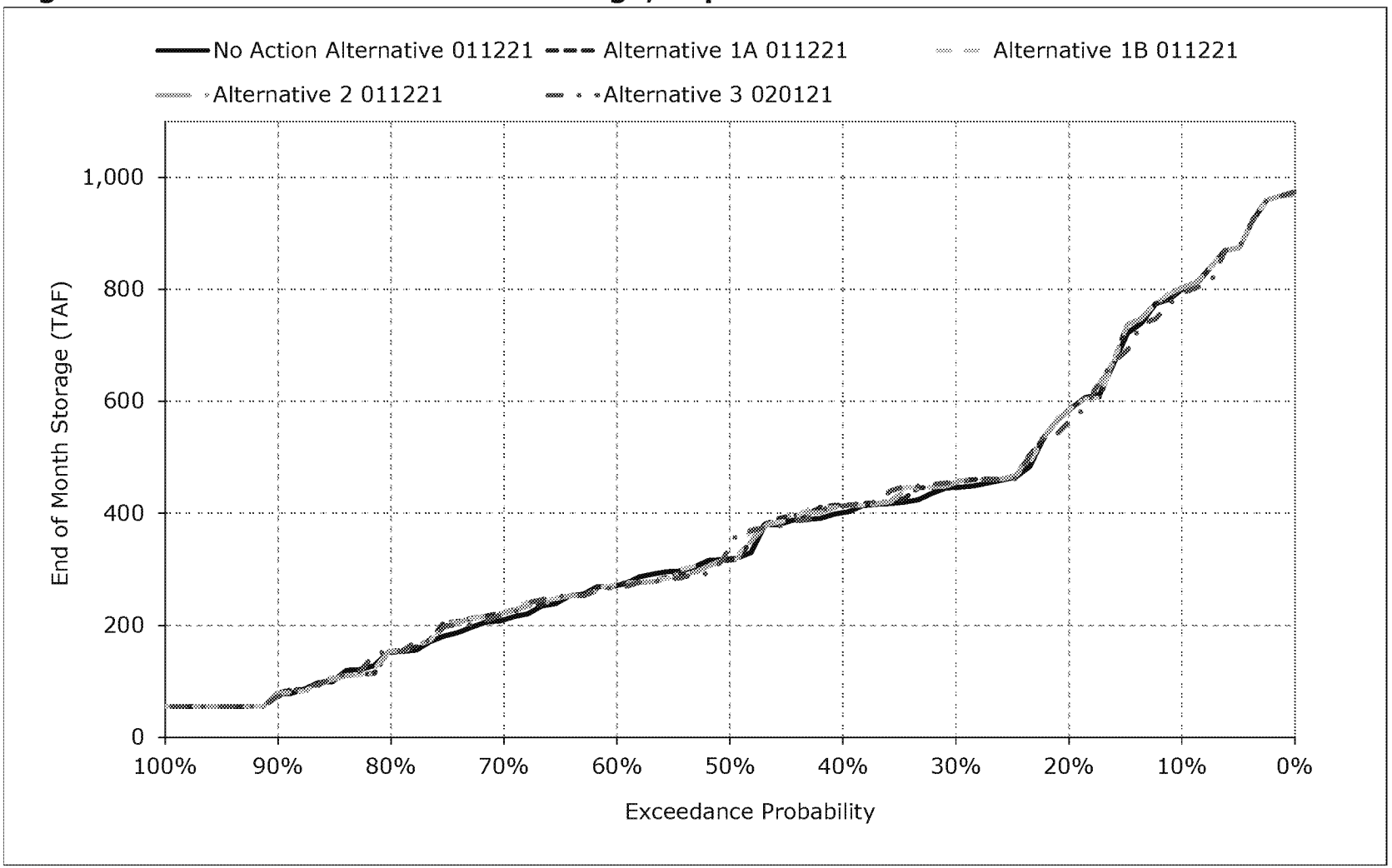


Figure 5B4-11-12. San Luis SWP Storage, September



JACOBS

Memorandum

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Project Name	Sites Reservoir Project	
Subject	Model Results to Support the May 2021 Administrative Revised Draft EIR/SDEIS: No Action Alternative, Alternative 1A, Alternative 1B, Alternative 2, and Alternative 3 – CalSim II Results Appendices	
Attention	Ali Forsythe/Sites Project Authority	John Spranza/HDR
	Erin Heydinger/HDR	Monique Briard/ICF
	Nicole Williams/ICF	
From	Robert Leaf/JACOBS	Steve Micko/JACOBS
	Reed Thayer/JACOBS	
Date	March 5, 2021	

1. Introduction

The Sites Reservoir Project team has developed model simulations to support quantitative analysis of Sites long-term operations as part of developing an Administrative Revised Draft EIR/SDEIS, for completion in May 2021.

The results of these model simulations are provided for informational and review purposes. If there are any questions regarding the results of these simulations, please contact the modeling team.

2. Modeled Scenarios

Model results appendices are provided for the alternatives tabulated below.

Model Name	Label Name (as seen in spreadsheet)	Description
No Action Alternative 011221	NAA 011221	Baseline simulation (Reclamation 2020 Benchmark)
Alternative 1A 011221	ALT 1A 011221	1.5 MAF Reservoir
Alternative 1B 011221	ALT 1B 011221	1.5 MAF Reservoir with 91 TAF of Reclamation Investment
Alternative 2 011221	ALT 2 011221	1.27 MAF Reservoir
Alternative 3 020121	ALT 3 020121	1.5 MAF Reservoir with 345 TAF of Reclamation Investment

Draft_0007944

The CalSim II model was used to simulate Sites Reservoir, CVP, and SWP water operations, including reservoir operations, river flows and diversions at key project-related locations.

The CalSim II models used were developed in coordination with and reviewed by Sites Project Authority (Authority) and revised according to direction provided by the Authority.

This model (CalSim II) has been jointly developed by Reclamation and the California Department of Water Resources (DWR) over many years. This model is useful so long as the results are interpreted consistent with the model limitations.

3. Model Results for Modeled Scenarios

Reports for a range of outputs have been prepared. These results are included in the following attachments:

3.1. SPJPA_RDEIR_SDEIS_Appendix5B1_ProjectOperations_20210304.pdf (CalSim II)
3.2. SPJPA_RDEIR_SDEIS_Appendix5B2_RiverOperations_20210305.pdf (CalSim II)
3.3. SPJPA_RDEIR_SDEIS_Appendix5B3_DeltaOperations_20210304.pdf (CalSim II)
3.4. SPJPA_RDEIR_SDEIS_Appendix5B4_RegionalDeliveryOperations_20210304.pdf (CalSim II)

Each attachment includes a cover page cataloging the results included and formats used.

From: Arsenijevic, Jelica [Jelica.Arsenijevic@hdrinc.com]
Sent: 3/8/2021 9:59:33 AM
To: Roberts, Matthew J CIV USARMY CESPK (USA) [Matthew.J.Roberts@usace.army.mil]
CC: Spranza, John [john.spranza@hdrinc.com]; Alicia Forsythe [aforsythe@sitesproject.org]; Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
Subject: Sites: Preliminary Project Description of Environmental Document
Attachments: Sites_Preliminary-Project-Description_20210219.pdf

Good morning
I wanted to alert you that Chapter 2, *Preliminary Project Description* of the REIR/SEIS is available for early review on the Authorities website (https://sitesproject.org/resources/information-materials/). Please feel free to review and provide any questions/concerns prior to the entirety of the REIR/SEIS being released later this summer.

I've also attached it for ease.

Jelica Arsenijevic
Environmental Project Manager

Due to COVID-19, I will be working from home. Please contact me via cell # listed below. Be safe out there!

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Sites Reservoir Project
Preliminary Project Description and Alternatives

February 2021

This Preliminary Project Description has been prepared as a preliminary draft document in support of preparing a Revised Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS) for the Sites Reservoir Project (Project). The purpose for circulating this document at this time is to facilitate early coordination on initial approaches currently under consideration by the Authority. Therefore, the content of this document will be subject to continued discussions and modifications, and it may not be included in its entirety in the RDEIR/SDEIS. The Authority is not soliciting comments on this Preliminary Project Description and formal responses will not be provided for any comments received. As required by CEQA and NEPA, a public review and comment period will be provided upon publication of the RDEIR/SDEIS, which is currently anticipated to be released in late summer 2021.

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Chapter 2 Project Description and Alternatives

This chapter describes the proposed Sites Reservoir Project (Project) and alternatives analyzed in this Recirculated Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS). The alternatives were developed in light of the California Environmental Quality Act (CEQA) objectives and the National Environmental Policy Act (NEPA) purpose and need as described in Chapter 1, Introduction. This chapter is supported by Appendices 2A, 2B, 2C, and 2D which provide additional detail on the alternatives screening, construction means and methods and best management practices (BMPs).

2.1 Alternatives Development Process

The range of alternatives evaluated in this RDEIR/SDEIS is the product of an extensive screening process, that has included public input and involvement, occurring over several decades and involving multiple distinct water resource planning efforts. Those planning efforts considered a wide variety of factors, including feasibility and opportunities for reducing significant impacts while meeting applicable program and project objectives and purpose and need. See Appendix 2A, *Alternatives Screening and Evaluation*, and Appendix 2B, *Additional Alternatives Screening and Evaluation*, for information on alternatives considered but eliminated and the alternatives that are evaluated in this document.

2.1.1 Evaluated Prior to 2019

Beginning in 1995, the CALFED Bay-Delta Program (CALFED) initiated the evaluation of expanded surface water storage in the Sacramento and San Joaquin Valleys as part of a long-term comprehensive plan to restore the ecological health and improve water management to protect beneficial uses in the Sacramento–San Joaquin Delta (Delta) and the Delta watershed. During preparation of the CALFED Environmental Impact Report/Environmental Impact Statement (EIR/EIS), the CALFED Program initially identified 52 potential surface storage locations and retained 12 reservoir locations statewide for further study. The screening criteria applied indicated a preference for offstream over onstream surface water storage to avoid redirected impacts on aquatic species in the primary tributaries of the Delta.

Following the CALFED Programmatic Record of Decision (CALFED ROD) in 2000, the California Department of Water Resources (DWR) and the Bureau of Reclamation (Reclamation) continued to evaluate potential locations for a reservoir on the western side of the Sacramento Valley as part of the Surface Water Storage Investigation (Reclamation and DWR, 2006). The objectives of this effort were to formulate a project that would enhance water management flexibility in the Sacramento Valley, increase the reliability of water supplies in California, and provide storage and operational benefits to enhance water supply reliability and improve water quality and ecosystems. The results of the analysis identified four potential alternatives: Red Bank (Dippingvat and Schoenfield Reservoirs), Newville Reservoir, Colusa Reservoir, and Sites Reservoir. These four reservoir alternatives were evaluated against

additional screening criteria. This secondary screening conducted after the CALFED ROD found the Sites Reservoir location most able to meet the goals and objectives of the Surface Water Storage Investigation, while minimizing environmental impacts and providing the greatest potential benefits.

The Surface Water Storage Investigation also evaluated a variety of water sources (and associated conveyance options) including diversions from the Colusa Basin Drain (CBD), Sacramento River, and local tributaries. The evaluation process culminated in selection of the existing Tehama-Colusa Canal (TC Canal) and GCID diversion and conveyance facilities in addition to a new pipeline from the Sacramento River near the Moulton Weir (the Delevan Pipeline). These facilities were determined to be the most reliable and capable of meeting the goals and objectives of the study effort conducted after the CALFED ROD.

The 2017 Public Draft Environmental Impact Report/Environmental Impact Statement (2017 Draft EIR/EIS) for the Project evaluated four surface water reservoir size and conveyance options, and another alternative that would not include proposed power generation at the Delevan release structure. All alternatives included a Sites Reservoir to be filled using existing Sacramento River diversion facilities and the new Delevan Pumping Plant on the Sacramento River to allow for diversion and release of flows to the Sacramento River. Associated facilities for all alternatives were similar but varied in location and size. Appendix 2B, Additional Alternatives Screening and Evaluation, provides a more detailed table of differences between the Action Alternatives in this RDEIR/SDEIS and those in the 2017 Draft EIR/EIS.

In August 2017, the Authority submitted a Water Storage Investment Program (WSIP) application to the California Water Commission (CWC) to determine the Project's eligibility for funding under Proposition 1. The WSIP application evaluated the technical, economic, financial, and environmental feasibility of the Project. The CWC made nine specific determinations, including determining that the Project provides a net ecosystem improvement, provides measurable improvements to the Delta ecosystem, and that the Project would advance the long-term objectives of restoring the ecological health and water management beneficial uses of the Delta. The CWC conditionally approved $816 million in funding for the Project (California Water Commission undated).

2.1.2 Value Planning Process and Alternatives Post-2019

In October 2019, the Authority pursued a value planning process to determine if further refinements to the Project were warranted. Between October 2019 and April 2020, the Authority considered previous input from state and federal agencies, non-governmental organizations, elected officials, landowners, and local communities, and decided to "right size" the Project to better meet the needs of Sites Storage Partners[1], the statewide water supply and the environment. Multiple alternatives were considered during the value planning process that took into

[1] The governmental agencies, water organizations and others who have funded and received a storage allocation in Sites Reservoir and the resulting water supply or water supply related environmental benefits from the Project. Storage Partners could include local agencies, the State of California, and the Federal Government.

consideration the public and agency comments received on the 2017 Draft EIR/EIS (Sites Project Authority 2020). The primary objectives of this process were to:

- Improve water supply and water supply reliability;
- Provide Incremental Level 4 water supply for refuges;
- Improve the survival of anadromous fish; and
- Enhance the Delta ecosystem.

The secondary objectives of the value planning process were to provide opportunities for flood damage reduction and recreation.

Value planning alternatives combined different types and sizes of diversion, release, reservoir, road, and bridge facilities. The Authority analyzed operational, environmental, and permitting considerations for different alternatives. For example, operational considerations included the ability of several reservoir sizes and conveyance capacities to meet participant subscriptions and participation by the State of California through WSIP. Environmental considerations included reducing the footprints of facilities or eliminating facilities to avoid or minimize impacts and reducing the amount of water diverted to storage. In addition, the Authority evaluated the costs of facilities proposed for each alternative to understand whether each alternative achieved a reasonable cost-per-acre-foot that the Sites Storage Partners could support.

The value planning process identified three recommended alternatives. Alternative Value Planning (VP) 5 involved a 1.3 million-acre-feet (MAF) reservoir and used an existing regulating reservoir (Funks Reservoir) and a new regulating reservoir (the Terminal Regulating Reservoir [TRR]) to fill Sites Reservoir with releases (1,000 cubic feet per second [cfs]) from the southern end of the TC Canal through a pipeline that went to the CBD. Alternative VP 6 was similar to Alternative VP 5, but the releases from the southern end of the TC Canal were conveyed through a pipeline that extended to the Sacramento River. Alternative VP 7 was similar to Alternative VP 5 but included a 1.5-MAF reservoir. The value planning process culminated in a Value Planning Report that was adopted by the Authority in April 2020 (Sites Project Authority 2020). The alternatives in this RDEIR/SDEIS are based on VP 5, VP 6, and VP 7 in the Value Planning Report.

2.2 CEQA and NEPA Requirements

2.2.1 CEQA Requirements

The Authority, as the State lead agency, is responsible for the development of alternatives that meet CEQA requirements. Section 15126.6 of the State CEQA Guidelines requires that:

- An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of

potentially feasible alternatives that will foster informed decision-making and public participation. An EIR is not required to consider alternatives which are infeasible.

- The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects.
- The specific alternative of "no project" shall also be evaluated along with its impact.
- The EIR should briefly discuss the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination.... Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are:
    - Failure to meet most of the basic project objectives.
    - Infeasibility.
    - Inability to avoid significant environmental impacts.

This RDEIR/SDEIS is prepared in accordance with both NEPA and CEQA, with the Action Alternatives analyzed at an equal level of analysis (consistent with NEPA standards).

2.2.2 NEPA Requirements

Reclamation, as the Federal lead agency, is responsible for the development of alternatives that meet NEPA requirements. For the Project alternatives, including the proposed action, NEPA requires that Federal government agencies shall (40 CFR Section 1502.14):

(a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.

(b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.

(c) Include reasonable alternatives not within the jurisdiction of the lead agency.

(d) Include the alternative of no action.

(e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.

(f) Include appropriate mitigation measures not already included in the proposed action or alternatives.

2.3 Overview of Alternatives

The Project would utilize existing infrastructure to divert unregulated and unappropriated flow from the Sacramento River at Red Bluff and Hamilton City and convey water to a new off-

stream reservoir west of Maxwell, California. New and existing facilities would move water into and out of the reservoir, with ultimate release back to the Sacramento River system via existing canals and a new pipeline located near Dunnigan. Construction of the reservoir would necessitate construction of a bridge or bypass road to connect Maxwell with the community of Lodoga. Additional components would include future development of new recreation facilities at the reservoir. This RDEIR/SDEIS presents the No Project Alternative and three Action Alternatives to implement the Project. Project alternatives include:

- No Project Alternative
- Alternative 1, 1.5 MAF reservoir, bridge, release to the CBD, and a range of Reclamation investment up to 7 percent of the Project costs
- Alternative 2, 1.3 MAF reservoir, South Road, partial release to the CBD and Sacramento River, and no Reclamation investment
- Alternative 3, 1.5 MAF reservoir, bridge, release to the CBD, and Reclamation investment up to 25 percent of the Project costs

The Action Alternatives analyzed in this RDEIR/SDEIS are generally based on the results of the value planning process. Alternative 1 is based on Alternative VP 7, and Alternative 2 is based on Alternatives VP 5 and VP 6. Alternative 3 is generally based on VP 7 with increased federal participation of up to 25 percent of the Project costs. Project facilities for the Action Alternatives are shown in Figure 2-1, Figure 2-2, Figure 2-3, and Figure 2-4. Table 2-1 provides a summary of the Action Alternatives. Alternative 1 is the Authority's proposed Project under CEQA.

Table 2-1. Summary of Action Alternatives

Facilities/Operations	Alternative 1	Alternative 2	Alternative 3
Diversion/Reservoir Infrastructure Details			
Reservoir Size	1.5 MAF	1.3 MAF	Same as Alternative 1
Dams [Scaled to the size of the reservoir]	Golden Gate and Sites Dams; 7 saddle dams; 2 saddle dikes	Golden Gate and Sites Dams; 4 saddle dams; 3 saddle dikes	Same as Alternative 1
Spillway	One spillway on Saddle Dam 8B	Similar to Alternative 1	Same as Alternative 1
Funks Reservoir (existing)	New Funks Pump Generating Plant (PGP) and Funks pipelines	Similar to Alternative 1	Same as Alternative 1
Terminal Regulating Reservoir (TRR)	Construction of TRR PGP and TRR pipelines	Same as Alternative 1	Same as Alternative 1
Hydropower	Incidental power generation up to 40 megawatts each at Funks PGP and TRR PGP	Same as Alternative 1	Same as Alternative 1
Diversion(s)	Diversion from Sacramento River into	Same as Alternative 1	Same as Alternative 1

Facilities/Operations	Alternative 1	Alternative 2	Alternative 3
	existing TC Canal at Red Bluff and the existing GCID Main Canal at Hamilton City		
Emergency Release Flow	Releases into Funks Creek and Stone Corral Creek via Inlet/Outlet Works, Sites Dam; structures in Saddle Dams 3 and 5 to release north to Hunters Creek watershed; Release from spillway on Saddle Dam 8B north to Hunters Creek watershed	Similar releases via Inlet/Outlet Works, Sites Dam, and spillway on Saddle Dam 8B; No emergency release structures on Saddle Dams 3 and 5	Same as Alternative 1
Recreation			
Multiple Facilities Consistent with the Authority's WSIP Application	Two primary areas with infrastructure: 1. Peninsula Hills Recreation Area 2. Stone Corral Creek Recreation Area An additional day-use boat ramp	Same as Alternative 1	Same as Alternative 1
Transportation/Circulation			
Provide Route to West Side of Reservoir	Permanent bridge crossing the reservoir and relocation of a portion of Huffmaster Road with gravel road to residents at the south end of the reservoir	Paved roadway including the relocated segment of Huffmaster Road and a new South Road on the west side of the reservoir	Same as Alternative 1
Operations			
Diversion Criteria	Bypass flows; Pulse flow protection measure to be applied	Same as Alternative 1	Same as Alternative 1
Reclamation Involvement	1. Funding Partner (up to 7% investment) with operational exchanges; or, 2. Operational Exchanges Only	Operational Exchanges Only a. Within Year Exchanges b. Real-time Exchanges	Funding Partner, up to 25% investment, and Operational Exchanges: a. Within Year Exchanges b. Real-time Exchanges

Facilities/Operations	Alternative 1	Alternative 2	Alternative 3
	a. Within Year Exchanges b. Real-time Exchanges		
Department of Water Resources (DWR) Involvement	Operational Exchanges with Oroville and use of SWP facilities South-of-Delta	Same as Alternative 1 (volumes may vary, however)	Similar to Alternative 1 (volumes may vary, however)
Releases into Funks Creek and Stone Corral Creek	Specific flow criteria to maintain flows to protect downstream water right holders and ecological function	Same as Alternative 1	Same as Alternative 1
Conveyance Dunnigan Release	Release 1,000 cfs into new pipeline to CBD	Release into new pipeline to Sacramento River, partial release to the CBD	Same as Alternative 1

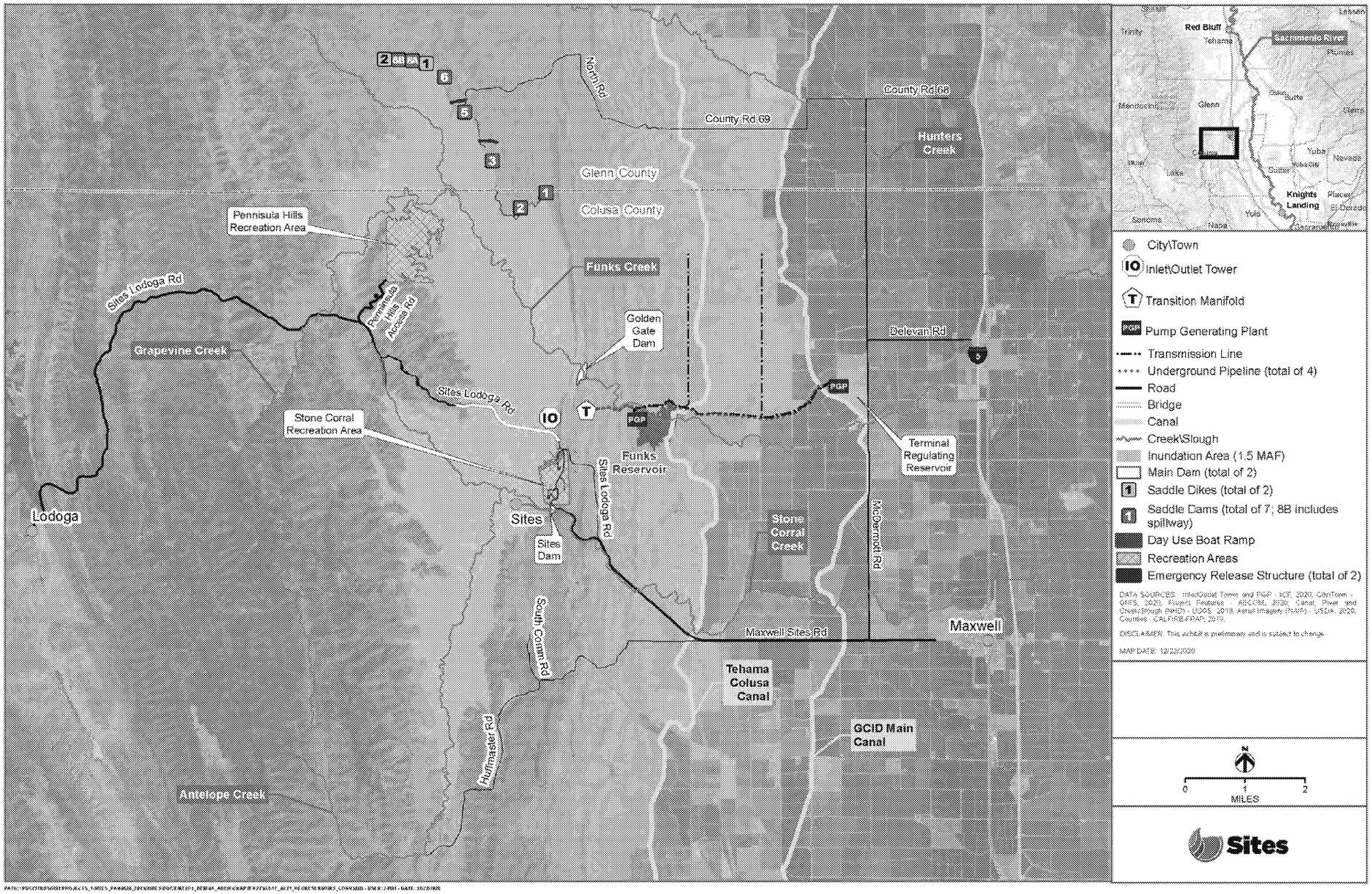


Figure 2-1. Alternatives 1 and 3 Regulating Reservoirs and Conveyance and Sites Reservoir Facilities

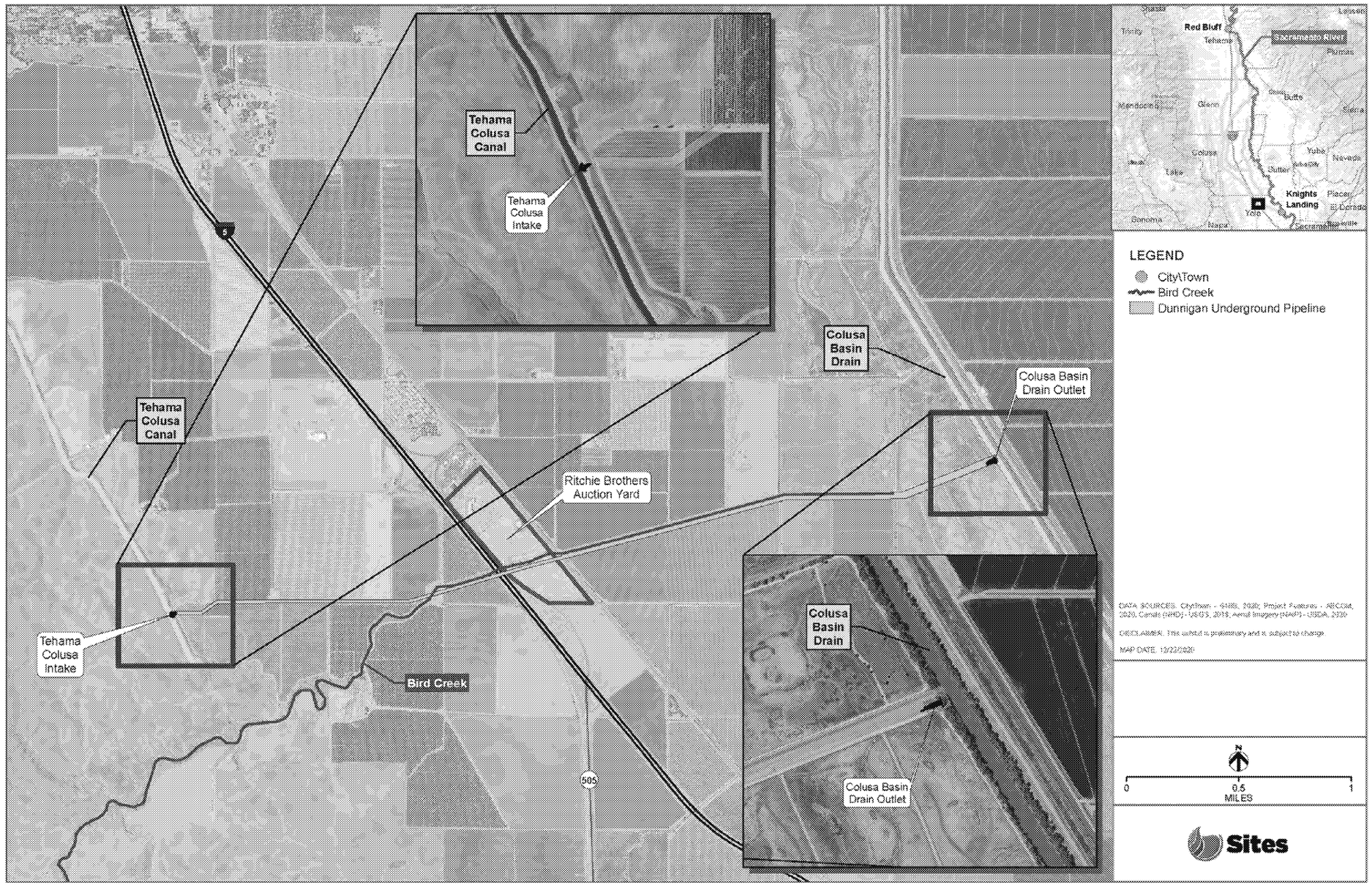


Figure 2-2. Alternatives 1 and 3 Conveyance to Sacramento River Components

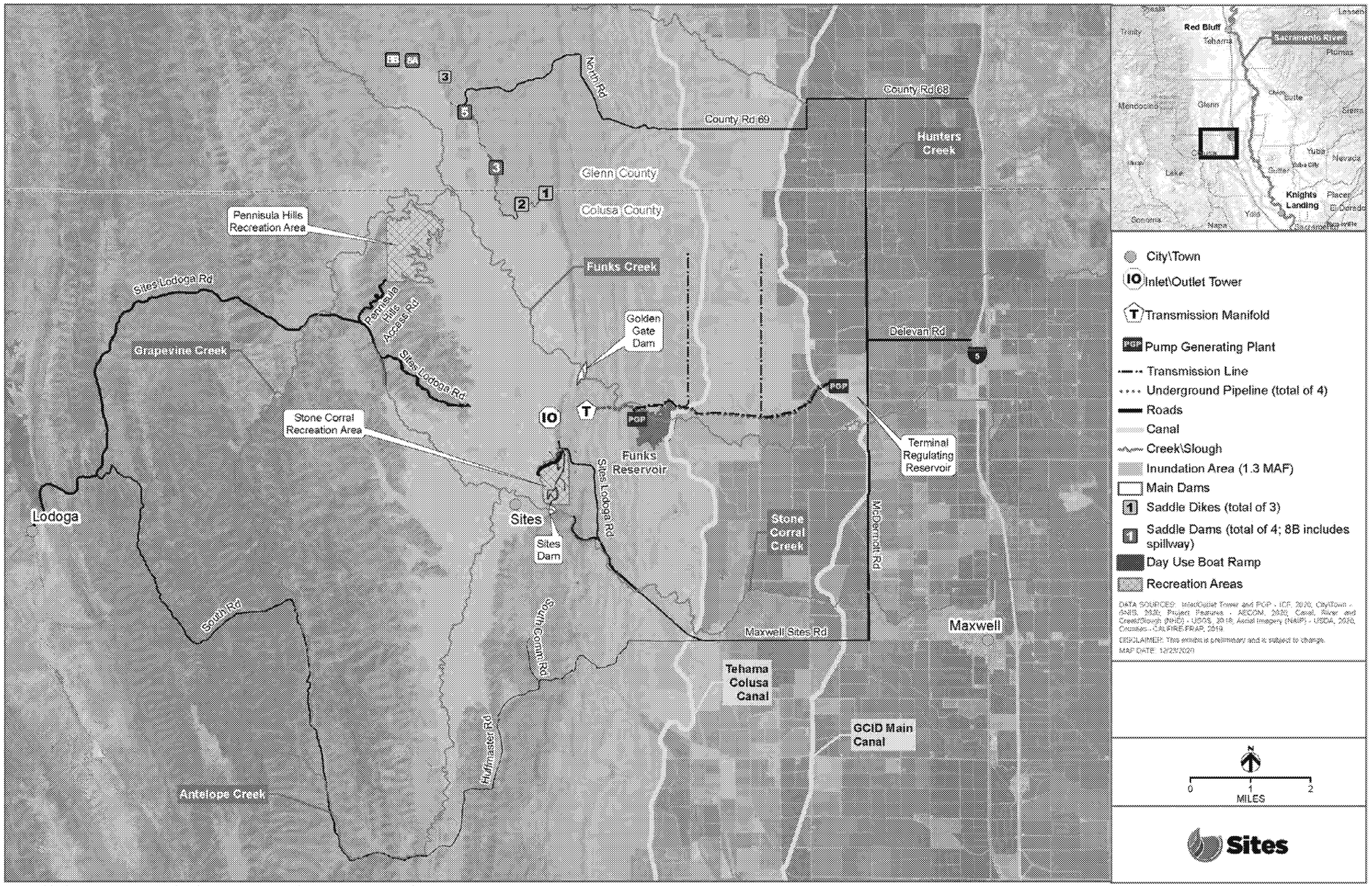


Figure 2-3. Alternative 2 Regulating Reservoirs and Conveyance and Sites Reservoir Facilities



Figure 2-4. Alternative 2 Conveyance to Sacramento River Components

It should be noted that the Authority could decide to approve a version of Alternative 2 (with a 1.3-MAF reservoir) that incorporates the bridge component of Alternative 1, or the CBD release component of Alternative 1 instead of release to the Sacramento River, or both of these distinct components. Similarly, the Authority could decide to approve a version of Alternative 1 (with a 1.5-MAF reservoir), or a version of Alternative 3, that incorporates the roadway improvements without the bridge as contemplated by Alternative 2, or the Sacramento River release component of Alternative 2 instead of the CBD release, or both of these distinct components. In this way, the evaluation of Alternatives 1, 2 and 3 actually incorporates a spectrum of multiple options for the decision-makers about the Project facilities and components.

2.4 No Project/Action Alternative

The CEQA Guidelines require that an EIR analyze the No Project Alternative. Evaluation of the No Project Alternative allows decision makers to compare the impacts of approving a proposed project with the impacts of not approving the proposed project. This RDEIR/SDEIS evaluates a No Project Alternative that assumes the Project would not be implemented and considers what would be reasonably expected to occur in the foreseeable future if the Project were not approved, based on current plans and consistent with available infrastructure and community services.

NEPA similarly requires an analysis of an alternative in which the project is not implemented assuming continuation of existing policies and management direction into the future. Under NEPA, the No Action Alternative accounts for reasonably foreseeable changes in existing conditions. Existing conditions includes changes that would reasonably be expected to occur in the foreseeable future if the Project were not approved, based on current plans and consistent with available infrastructure and community services.

For this RDEIR/SDEIS, the term *No Project Alternative* describes both the No Project Alternative and No Action Alternative for CEQA and NEPA purposes, respectively. Because none of the proposed facilities would be constructed or operated, the No Project Alternative would not materially change conditions as compared to existing conditions. The No Project Alternative assumes the same regulatory criteria as existing conditions. This is because reasonably foreseeable programs and projects included within the No Project Alternative affect water supply, water quality, or anadromous fisheries conditions and are part of existing conditions. For example, the implementation of the 2019 Biological Opinions from the U.S. Fish and Wildlife Service and National Marine Fishery Service for the Reinitiation of Consultation on the Coordinated Operations of the CVP and SWP (ROC on LTO; USFWS 2019 and NMFS 2019) and the Incidental Take Permit for Long-term Operations of the State Water Project in the Sacramento-San Joaquin Delta (SWP ITP; CDFW 2020) are included in both existing conditions and the No Project Alternative.

In addition, DWR's projected future land use and water use are typically included as fundamental assumptions in the CALSIM II model (see Appendix 1A, Introduction to Appendices and Modeling Information, and Chapter 5, Surface Hydrology Resources, for more information regarding CALSIM) as part of the impact evaluation process. These 2030 water demand conditions indicate that the vast majority of the CVP and SWP water contractors would

use their total contract amounts and that most senior water rights users also would fully use most of their water rights, depending on the hydrologic condition. The Sites Project Authority (Authority) has accepted this assumption for this analysis. This increased demand in addition to the projects currently under construction and those that have received approvals and permits at the time of preparation of the RDEIR/SDEIS constitute the No Project Alternative. Furthermore, the rural nature of the area and limited potential for growth and development in Colusa, Glenn and Yolo Counties within the 2030 study period used for this RDEIR/SDEIS supports similarities between the No Project Alternative and existing conditions.

Under the No Project Alternative, existing conditions outlined in the following resource chapters would not be altered by the Project. However, Project benefits would also not be achieved. Under the No Project Alternative, flood control, ecosystem improvement, and recreation benefits that are part of the Project would not be funded and implemented as part of WSIP. The No Project Alternative would also not provide water supply reliability, operational flexibility, benefits to anadromous fish, water supply for refuges and Delta ecosystem benefits sought with potential Reclamation investment. Finally, the No Project Alternative would eliminate one opportunity to provide a multi-benefit project consistent with the Governor's Water Resilience Portfolio. The No Project Alternative would not meet the Project objectives and purpose and need stated in Chapter 1 but is analyzed in this RDEIR/SDEIS, consistent with CEQA and NEPA requirements.

2.5 Elements Common to All Action Alternatives

Project facilities, operations and maintenance, construction considerations, commitments and BMPs, and Proposition 1 benefits common to all of the Action Alternatives are described below.

2.5.1 Facilities Common to All Action Alternatives

The facilities common to all the Action Alternatives are described below. Design and construction considerations for these facilities are also described. Additional detail for construction means and methods are described in Appendix 2C, Construction Means, Methods, and Assumptions.

2.5.1.1 Sacramento River Diversion and Conveyance to Regulating Reservoirs

All Action Alternatives include the diversion of water from the Sacramento River at the existing RBPP into the existing TC Canal and at the existing Hamilton City Pump Station into the existing GCID Main Canal. The RBPP and TC Canal are owned by Reclamation and operated by the Tehama Colusa Canal Authority. The RBPP has an existing fish screen that meets NMFS and CDFW fish screen criteria. The Hamilton City Pump Station and GCID Main Canal are owned and operated by GCID. The Hamilton City Pump Station has an existing fish screen that meets NMFS and CDFW fish screen criteria. Some improvements would be made to these facilities to allow for Project operations concurrent with these facilities continuing to meet their intended purposes. The location of these improvements is shown in Figure 2-5 and these improvements are described below.

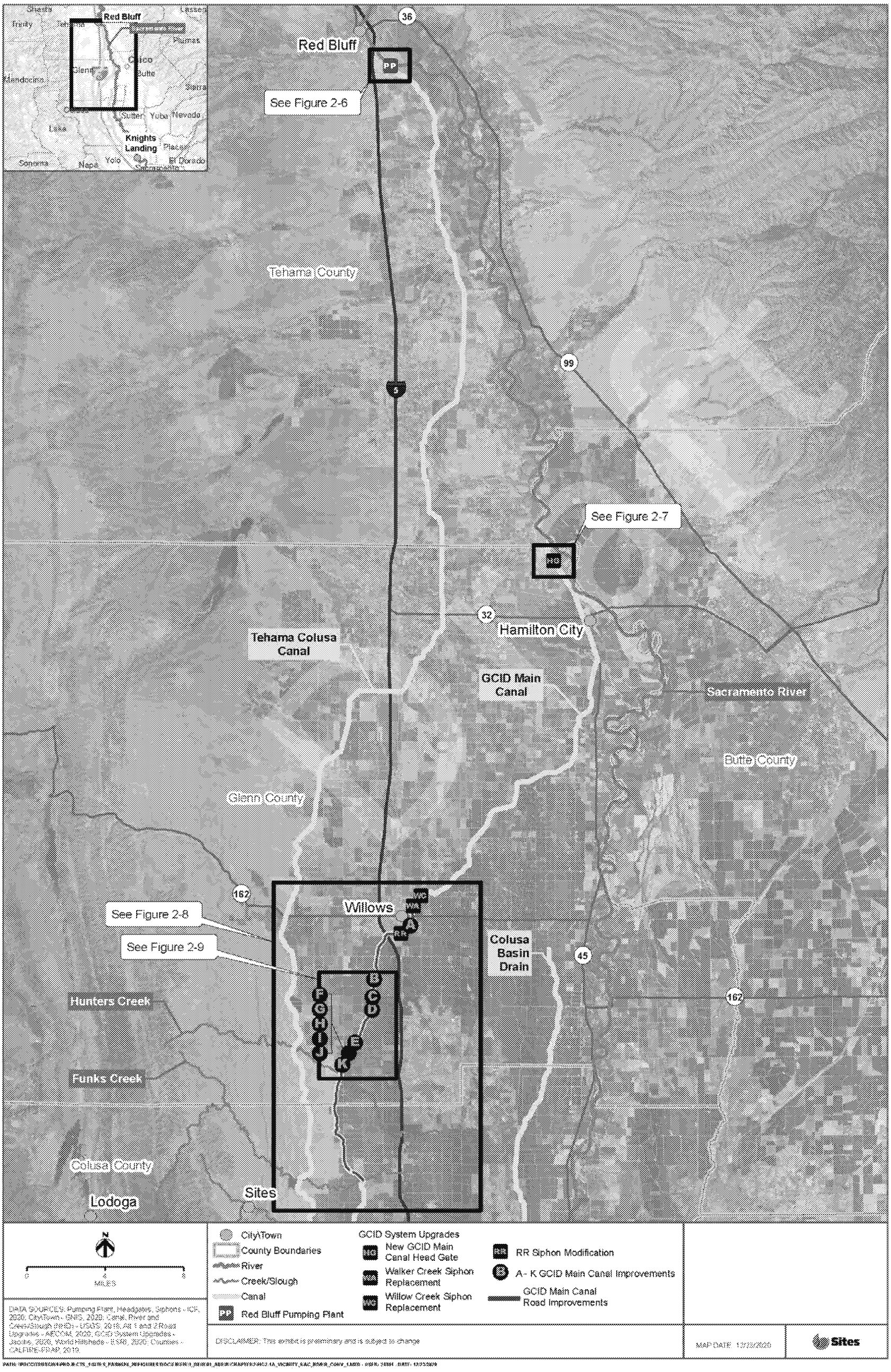


Figure 2-5. Sacramento River Conveyance Components

Tehama-Colusa Canal Diversion

All Action Alternatives include the installation of two additional 250-cfs vertical axial-flow pumps into existing concrete pump bays at the RBPP. The addition of these two pumps would increase the capacity from 2,000 to 2,500 cfs, as well as provide redundancy. See Figure 2-6 for a vicinity map of the RBPP and see Appendix 2C for plan and profile views of the proposed pumps.

The installation of the additional pumps at the RBPP under all of the Action Alternatives would occur at existing facilities and would require limited construction equipment and personnel over a period of approximately 2 months.

GCID Main Canal Diversion and System Upgrades

The GCID system may require several different upgrades to support the operation of Sites Reservoir. The specific details of these upgrades would be confirmed during future hydraulic modeling and assessment of conditions. However, for the purposes of this document and the impact analyses contained herein, it is assumed construction would be performed at various locations along the GCID Main Canal, as described below.

All Action Alternatives would require a new 3,000-cfs Main Canal head gate structure about 0.25 mile downstream of Hamilton City Pump Station (Figure 2-7). This new structure is required because the existing head gate structure would not be adequate for proposed winter operation due to the decrease in water elevation across the structure during high river levels. The existing head gate structure would be left in place to continue to serve as a bridge between County Road 203 and County Road 205 in Glenn County. This structure would continue to operate during construction of the new head gate structure and diversion activities would continue throughout construction. The new head gate structure would be constructed upstream of the existing structure and would include eight automated gates. The water level and flow control functions would involve operating conditions that would result in water surface drops across the head gate of between 3 and 15 feet. The canal reach immediately downstream of the new head gate structure would be lined with concrete for approximately 35 feet to prevent erosion.

GCID typically dewaters their Main Canal for up to 6 weeks each year between early January and late February for maintenance activities. This is the time of year that the Project seeking to utilize the GCID Hamilton City Pump Station and GCID Main Canal to divert and convey under the Project. To reduce this current winter shutdown period from 6 weeks to 2 weeks, other improvements would be required to integrate Sites Reservoir into the GCID system. All Action Alternatives would involve replacing the Walker Creek siphon (MP 24.48) and Willow Creek siphon (MP 24.68) on the Main Canal to allow for increased capacity (Figure 2-8 and Figure 2-9). The siphon under the Union Pacific Railroad (i.e., railroad siphon) at MP 26.6 would be improved by adding an additional barrel to allow for increased capacity.

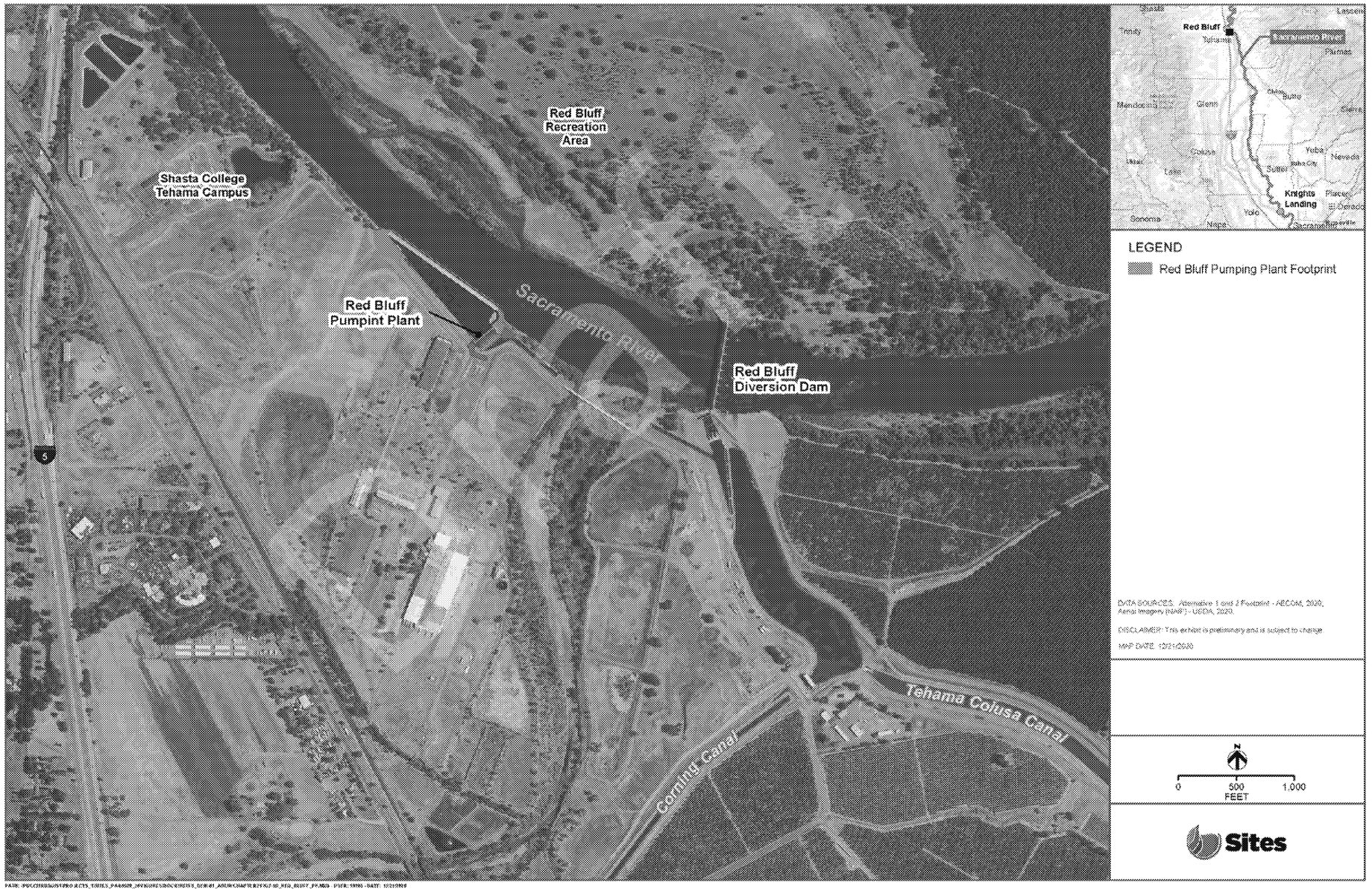


Figure 2-6. Red Bluff Pumping Plant



Figure 2-7. GCID Main Canal Head Gate Structure

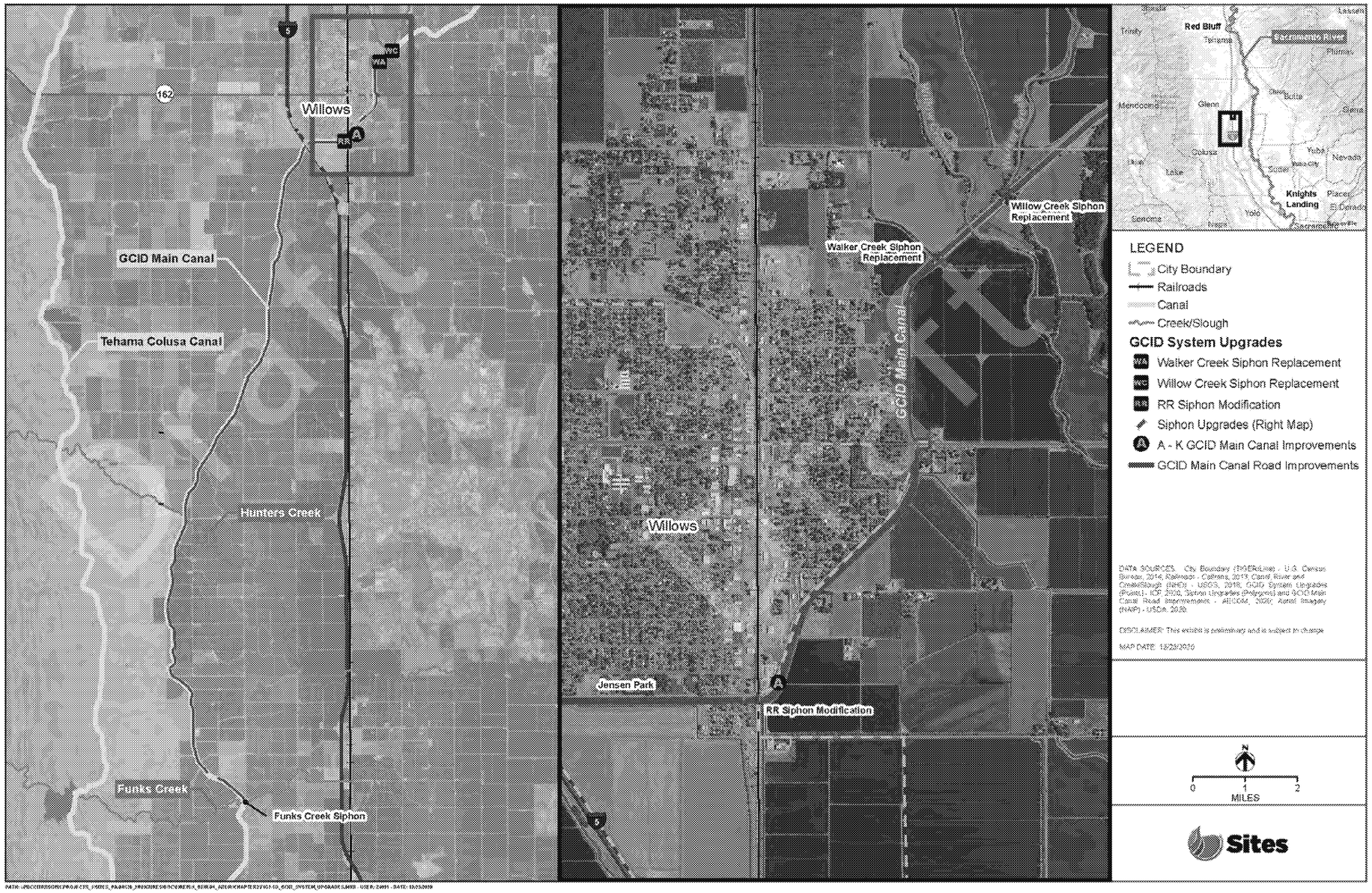


Figure 2-8. GCID System Upgrades



Figure 2-9. GCID System Upgrades Continued

All Action Alternatives would entail Main Canal improvements between MP 26 and MP 41.3 to increase the freeboard between Willows and the TRR to a standard 2.5 feet; under existing conditions the freeboard range is 1 to 2 feet. All Action Alternatives would also require road improvements to approximately 17 miles of left bank canal road between the existing Willow Creek siphon and the existing Funks Creek siphon to ensure an all-weather road surface (see Figure 2-8). These road improvements would primarily consist of adding approximately 6 inches of aggregate base material. GCID would manage the facility upgrades using an approach consistent with their existing management practices.

Construction of improvements along with GCID Main Canal would occur in the winter during the regular shutdown period. For the additional siphons on the Main Canal, a portion of the canal around the siphon would be dewatered using an earth coffer dam lined with geomembrane and sump pumps. Using a bore-and-jack procedure a new barrel would be installed, and new headwalls on the upstream and downstream end would be installed to approximately match the existing headwall. Construction staging areas would be in the immediate area of the improvements. The proposed upgrade of the railroad siphon would require coordination and planning with the railroad owners. Construction restrictions may exist regarding minimizing interference with regular railroad operations. To the extent possible, upgrades to the railroad siphon would take place during periods of lowest train traffic, and railroad shutdown time would be minimized.

Earthwork related to the GCID Main Canal to increase the freeboard to 2.5 feet would require a total fill of 5,000 cubic yards. There would be no excavation and only minor reshaping and addition of fill to the sides of the canal. The fill would be sourced from other project spoils and there would be no net import. Construction related to roughly 17 miles of road improvements would require approximately 27,000 cubic yards of aggregate base. It is anticipated the aggregate would be imported from a rock plant within 20 miles of the GCID Main Canal. The GCID improvements along the Main Canal and the existing road would occur within existing rights-of-way and construction would not permanently remove any existing crops.

2.5.1.2 Regulating Reservoirs and Conveyance Complex

Multiple facilities would be required to control the conveyance of water between Sites Reservoir and the TC Canal and GCID Main Canal. These facilities would include regulating reservoirs, pipelines, pumping generating plants (PGPs), switchyards, and administration and maintenance buildings. These facilities are described below.

Terminal Regulating Reservoir

Pumping from the GCID Main Canal to Sites Reservoir would require construction of the TRR facilities. There would be four primary facilities: the TRR, the TRR PGP, an electrical substation, and TRR pipelines. The TRR facilities would be located in Colusa County north of the GCID Main Canal and west of McDermott Road. The approximately 150-acre site would be accessed by an asphalt concrete paved road off McDermott Road. Paved parking would be provided near the PGP. Asphalt concrete paved roads would provide onsite vehicle access between the TRR PGP and electrical substation, with facility spacing to accommodate an operational crane. The proposed TRR PGP and electrical substation would encompass approximately 7 acres and would be enclosed with security fence with access gates on the south

and east sides. See Figure 2-10, Terminal Regulating Reservoir Facilities Site Plan, for the locations of the proposed TRR-related facilities.

The TRR facilities are within a designated Federal Emergency Management Agency (FEMA) Special Flood Hazard Area, Zone A, Without Based Flood Elevation. Site drainage would be conveyed offsite to the existing GCID Main Canal or directly into the TRR through shallow swales or overland flow.

The new TRR would encompass approximately 100 acres immediately east of the GCID Main Canal and have a storage capacity of approximately 600 acre-feet (AF). The TRR would have earthen embankments around its perimeter and an impermeable lining consisting of a geomembrane overlying geocomposite placed over compacted earth. The TRR would be hydraulically connected to the GCID Main Canal to allow water to be conveyed to and from the Sites Reservoir. The TRR would accommodate inflows of up to 1,800 cfs. The GCID Main Canal would be the conveyance source of water for the TRR and its PGP to pump water to Sites Reservoir. The canal would also be the primary conveyance for releases of water from the TRR and its PGP from Sites Reservoir. The spillway for the TRR would be located at the southernmost corner of the reservoir and discharge into Funks Creek.

Access between the east and west sides of the GCID Main Canal adjacent to the TRR would be over a new bridge between the TRR embankment near the gate structures and the west side of the GCID Main Canal. The bridge is anticipated to consist of a pre-cast concrete span between the banks of the GCID Main Canal with concrete abutments founded on piles.

TRR Pumping Generating Plant

A TRR PGP would pump water from the TRR to Sites Reservoir; the PGP would include hydroelectric turbines to generate electricity when water was released from Sites Reservoir to the TRR. The PGP would include the following three facilities in five buildings: one pump station, two turbine generator buildings, and two energy dissipating structures (Figure 2-11, TRR Pump Generating Plant Facilities). The pumping plant would have a design capacity of 1,800 cfs, the generating plant 1,000 cfs, and the energy dissipation 1,000 cfs.

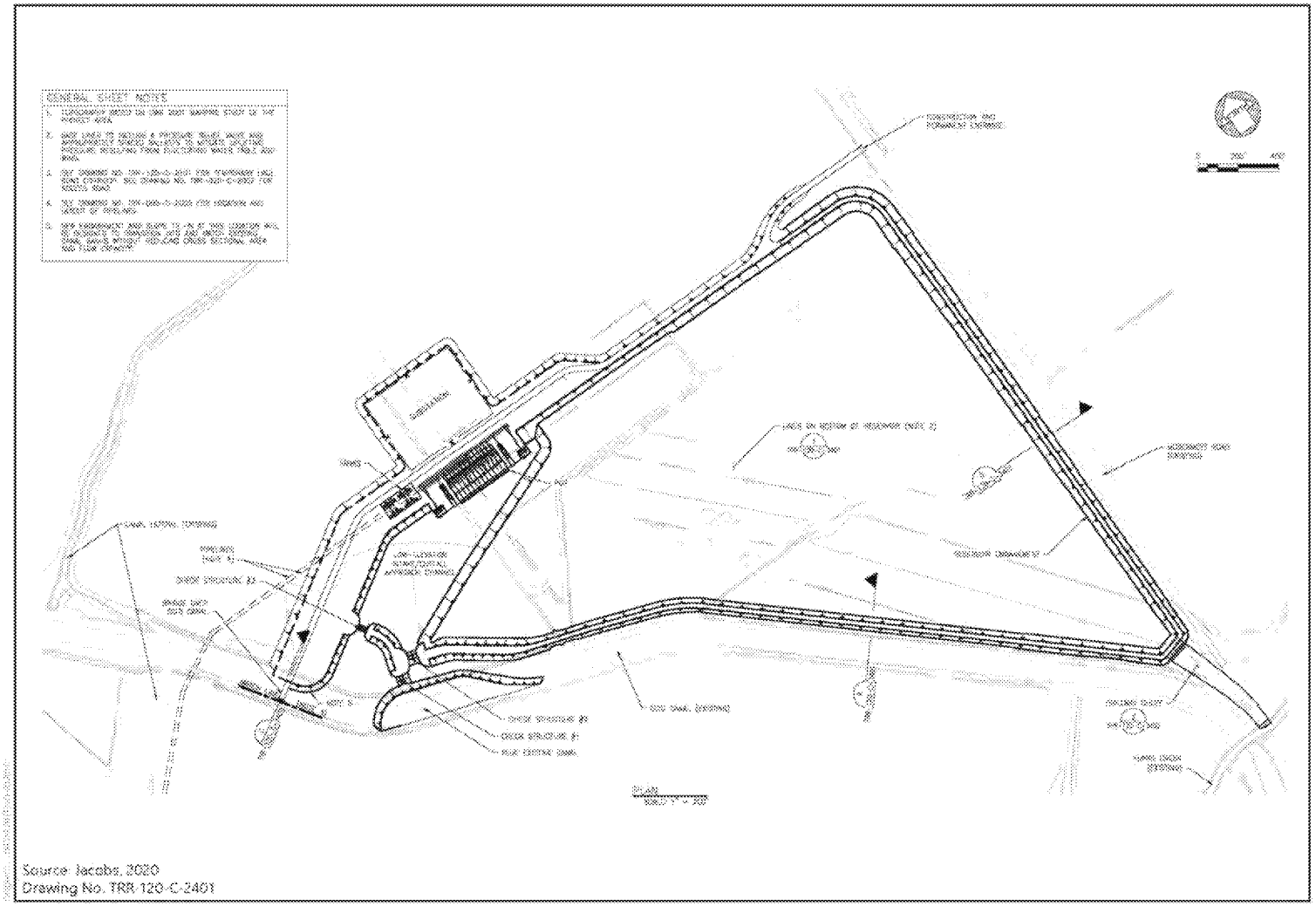


Figure 2-10. Terminal Regulating Reservoir Facilities Site Plan

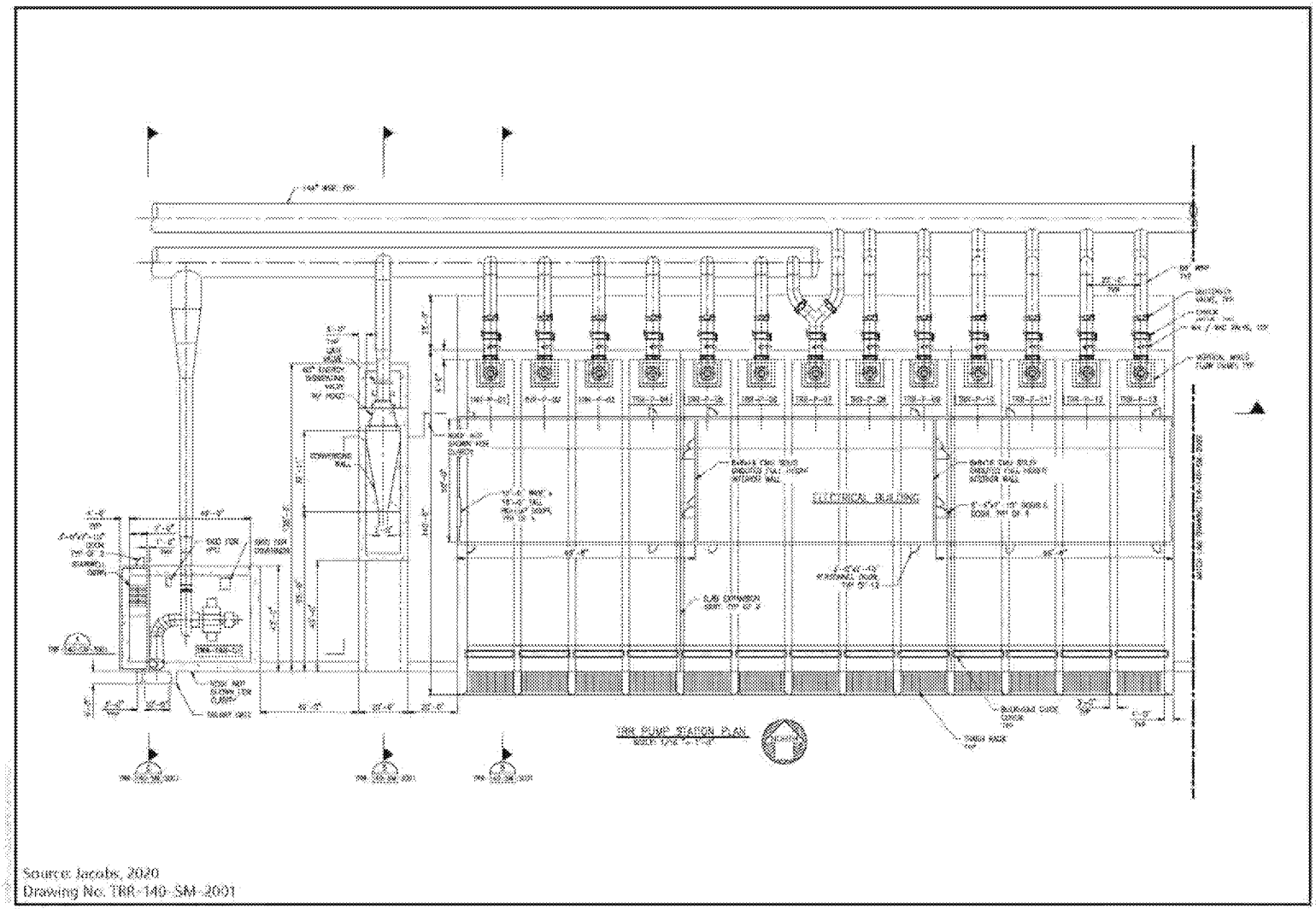


Figure 2-11. TRR Pump Generating Plant Facilities

The pump station would support the pumps at the edge of the TRR and be designed to minimize pump vibration. A trashrack would be installed at the front of the wet well to exclude debris. Bulkhead slots would be provided at each wet well to allow bulkheads to be installed and isolate pump bays for maintenance. The pump station would contain 13 pumps in a single row. Six pumps each would feed into two 12-foot-diameter pipes connecting to the turbines (discussed below), and there would be a single standby pump that could feed into either pipe. It is anticipated that all pumps would have a variable frequency drive to adjust to the variable pumping heads while staying within the pump operating range and efficiency.

The two turbine generator buildings would house the turbines, generator, draft tube, associated piping appurtenances, and other electrical equipment. There would be two 13-kilowatt turbines (one for each 12-foot-diameter pipe) that would have a horizontal laying flow pattern. The turbines would discharge water into a draft tube prior to exiting into the TRR. Because the discharge would need to be submerged, the turbines would be in an underground structure with a roof. The aboveground portion of the turbine generator buildings would consist of concrete masonry unit walls.

The two energy dissipation valve structures would allow releases back to the TRR as back-up to the hydroelectric turbine facilities. These structures would each contain a stilling basin and fixed cone valve to dissipate energy before water enters the TRR. There would be a 60-inch fixed cone valve on each of the two 12-foot-diameter pipes for a total of two 60-inch fixed cone valves and a total flow of 1,000 cfs.

TRR Electrical Substation

The TRR PGP would require a substation to provide electricity to the associated facilities described above. The electrical substation would connect to existing Pacific Gas and Electric Company (PG&E) or Western Area Power Administration (WAPA) lines. The facility would be constructed on approximately 1.5 acres within the TRR PGP footprint to the north of the TRR. The dimensions of the electrical substation would depend on whether it is connected with PG&E or WAPA lines. The substation would be approximately 460 feet long by 300 feet wide if connected to PG&E lines and be 300 feet long by 240 feet wide if connected to WAPA lines. Figure 2-12, TRR Electrical Substation, provides a plan view of the facility.

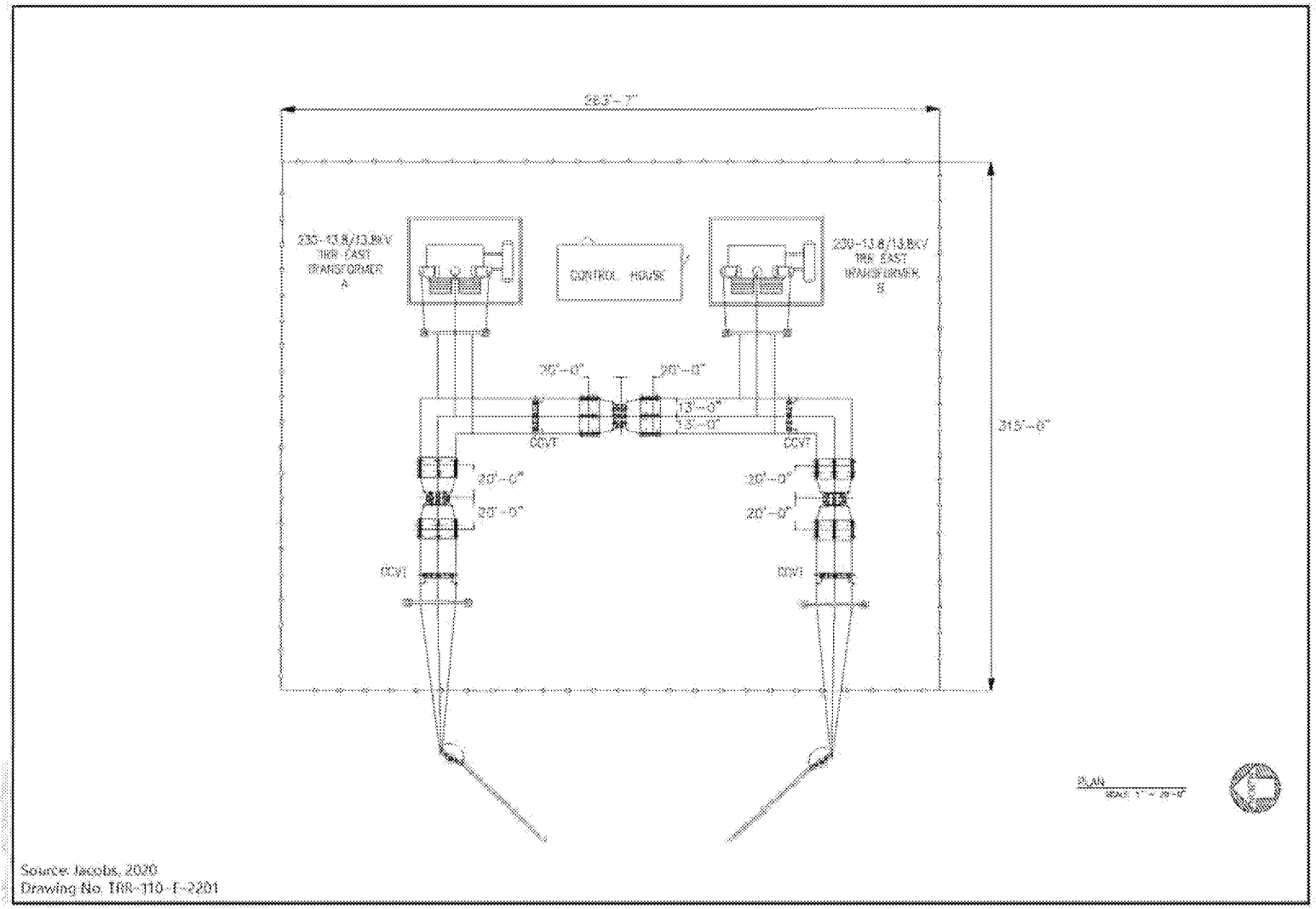


Figure 2-12. TRR Electrical Substation

The electrical substation would use electrical equipment that meets the standards of the National Electrical Manufacturers Association, American National Standards Institute, and Institution of Electrical and Electronics Engineers. Additionally, equipment that is listed or labeled as meeting the safety standards or ratings identified by Underwriter Laboratories or a nationally recognized testing laboratory would also be used. The substation design would include primary safety equipment (e.g., circuit breakers, utility-grade relays) and meet the total pumping power requirements or total generation requirements. For more information regarding the pumping power requirements or total generation requirements, please see Section 2.5.2.2, *Energy Generation and Energy Use*. The substation would have sufficient redundancy such that the failure of any one component would permit the substation to be safely and reliably isolated from the transmission system under fault conditions.

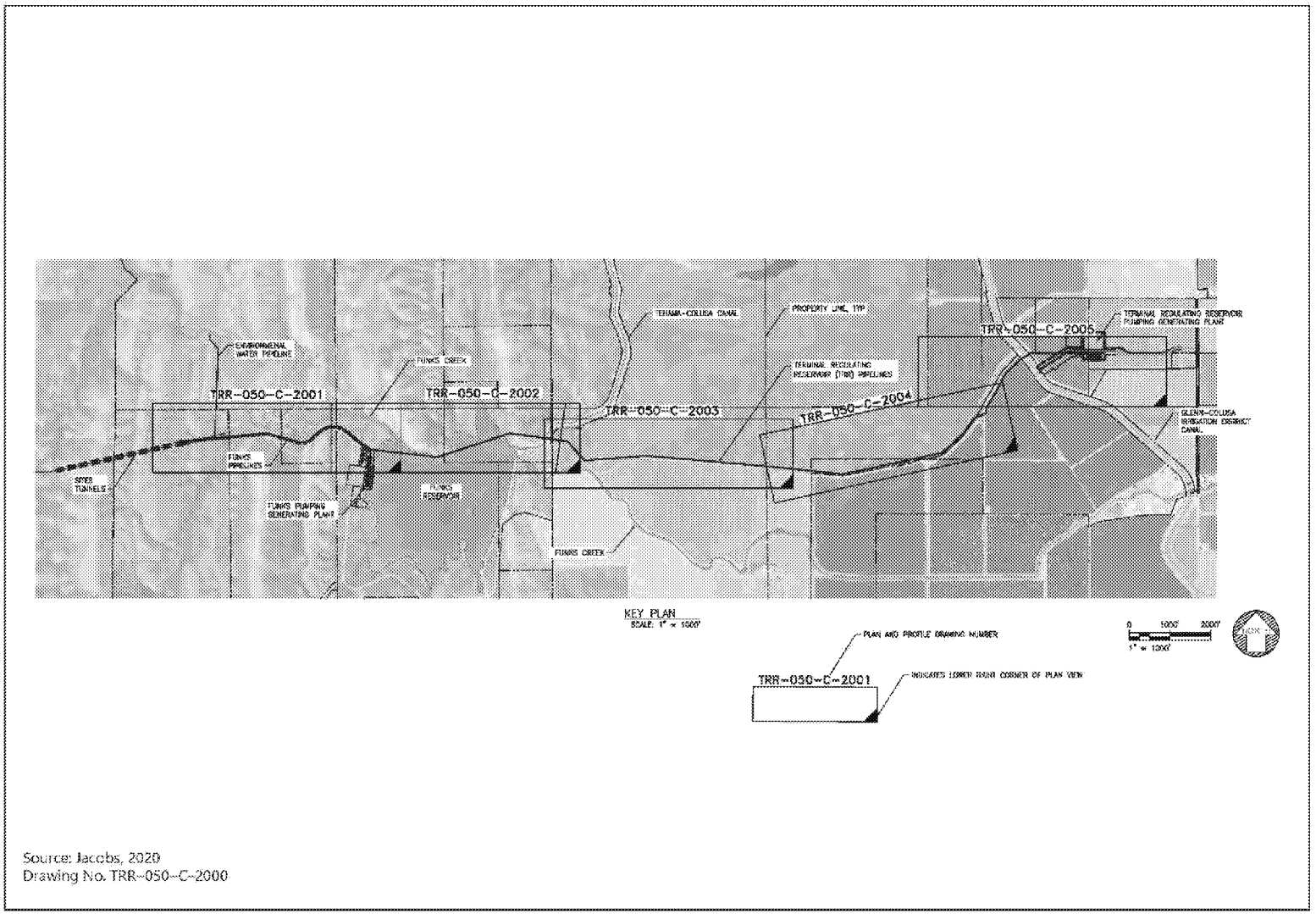
TRR Pipelines

Two underground TRR pipelines would convey water approximately 4.5 miles between the TRR PGP and Sites Reservoir. See Figure 2-13, TRR Pipelines, for the location and alignment route of the pipelines. The 12-foot-diameter pipes would extend from the TRR PGP, under Funks Reservoir, and terminate at the transition manifold south of Funks Creek near the Golden Gate Dam. Both TRR pipelines would connect to one of the two side-by-side, 23-foot-inside diameter I/O tunnels at the transition manifold.

The pipelines would parallel the Funks pipelines and Funks Creek and would generally be from 6 feet to 30 feet below ground surface after installation (does not include depth below ground surface where tunneling occurs, which could be up to 100 feet). Trenching for pipelines would include the use of excavators and would be excavated to meet all applicable requirements. Between the TRR and Funks Reservoir, the pipelines would cross the TC Canal using a trenchless method or open cut, depending on construction schedule. East of the TC Canal, the TRR pipelines would run parallel to a drainage canal until they reached the GCID Main Canal where they would cross using a trenchless method or open cut, depending on construction schedule.

Funks Reservoir

The existing Funks Reservoir would be used to store and pump water from the TC Canal to and from Sites Reservoir. Excavation of existing accumulated sediment from Funks Reservoir would be required, as would the construction of three facilities: Funks PGP, an electrical substation, and Funks pipelines. These facilities would be constructed in Colusa County, west of the TC Canal, on approximately 7 acres. The overall site would be enclosed by a security fence with access gates on the south and northwest sides. See Figure 2-14, Funks Reservoir Facilities Site Plan, for the location of the facilities.



Source: Jacobs, 2020
Drawing No. TRR-050-C-2000

Figure 2-13. TRR Pipelines

Predecisional Working Document—For Discussion Purposes Only

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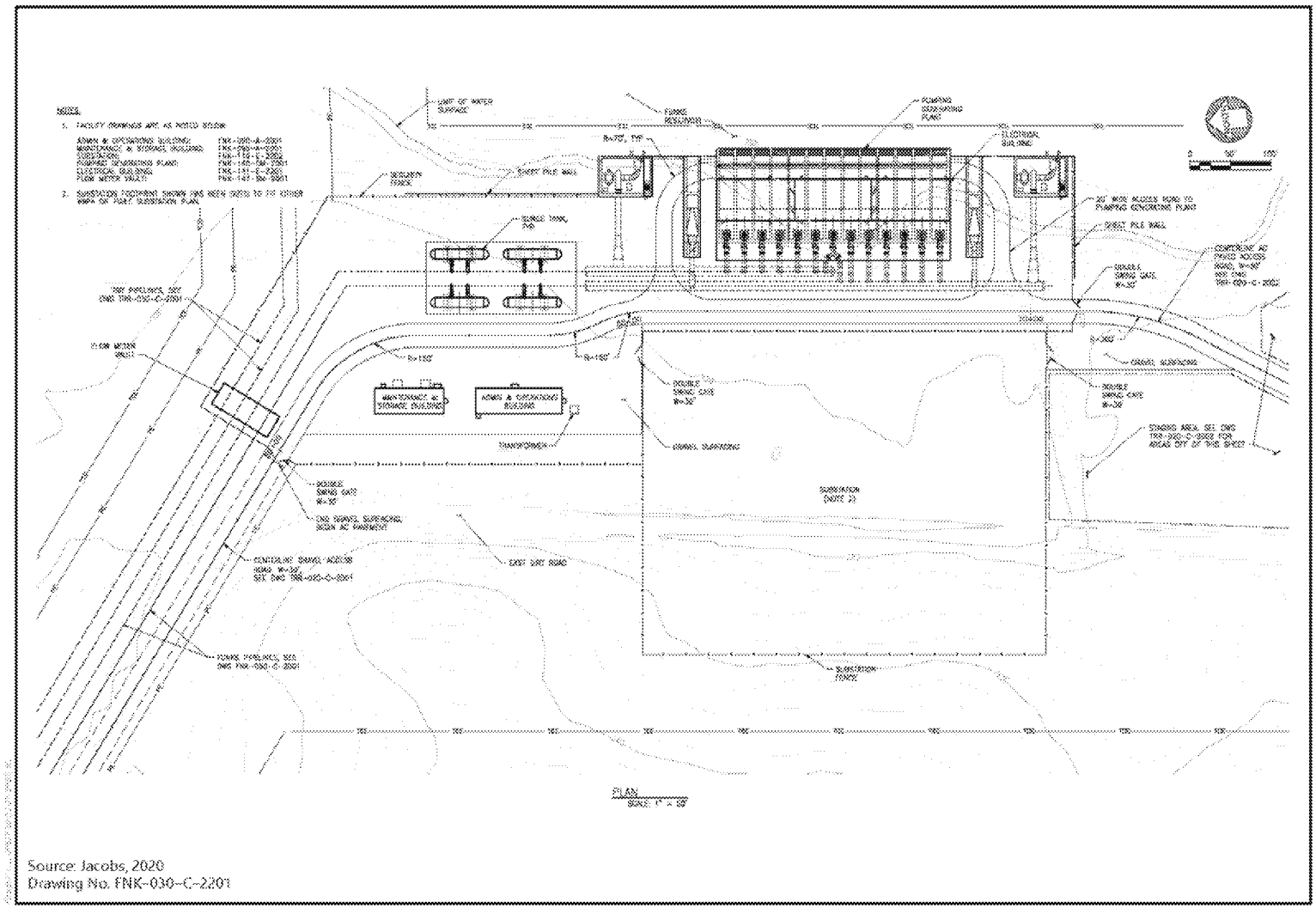


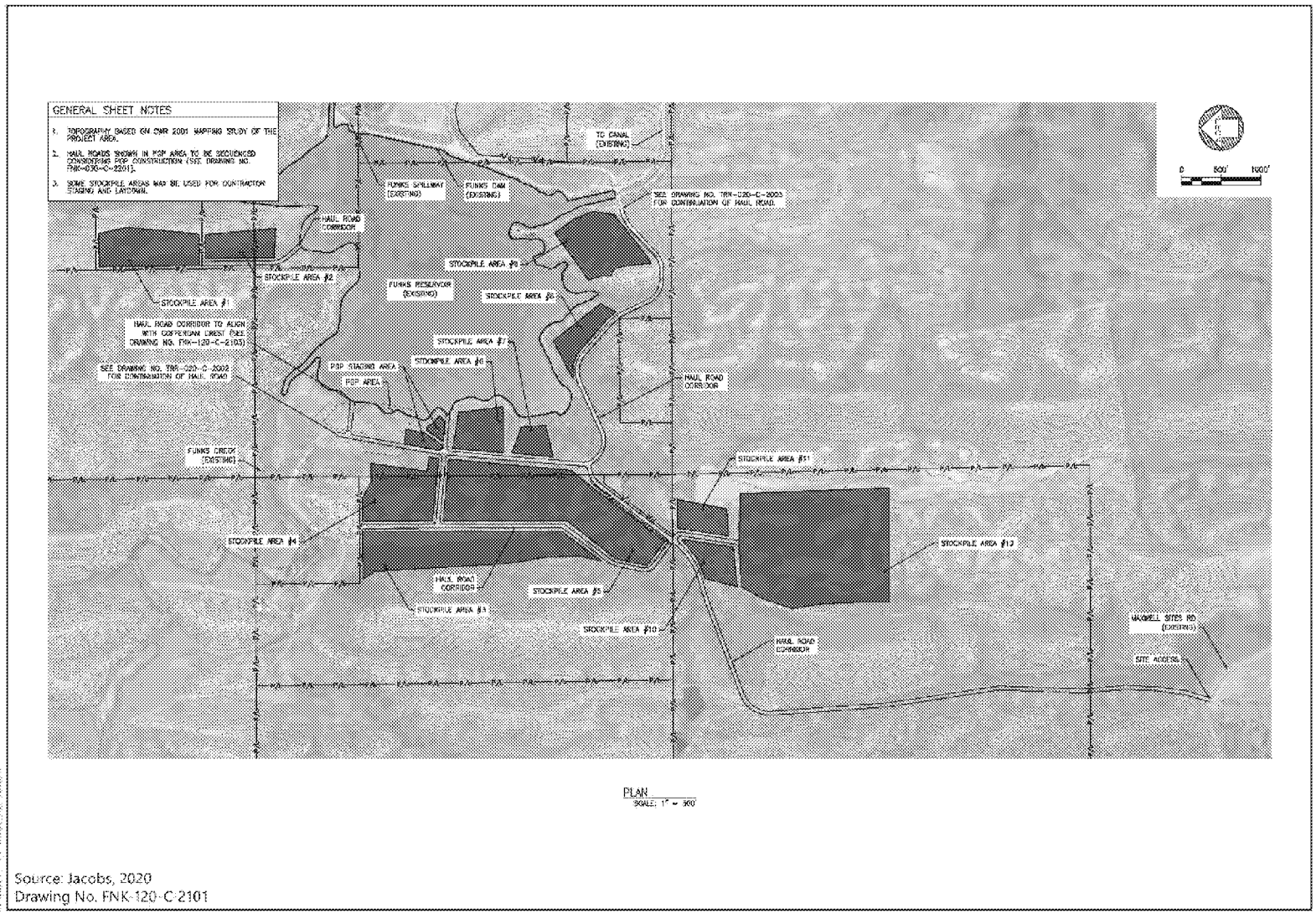
Figure 2-14. Funks Reservoir Facilities Site Plan

Access to the Funks Reservoir-related facilities would be provided at the north and south ends of the site. A gravel parking area would be provided near the PGP. Asphalt concrete paved, onsite vehicular access would be provided between the Funks PGP and electrical substation, with facility spacing to accommodate an operational crane. The facilities site would be accessed by an asphalt concrete paved road from Maxwell Sites Road to the south. Existing gravel roads would be improved to be 30 feet wide, with asphalt concrete surfacing for the southern access route, and would be relocated through the site. A gravel bypass road may be provided to the west of the site. On the north side of the facilities site, the existing dirt road would be improved to be a gravel road that would follow the existing road alignment until it reaches the TRR pipeline. At that location, a new access road would be built along the Funks and TRR pipelines to the connection with the I/O tunnels.

The proposed location of the Funks Reservoir-related facilities is in a FEMA Area of Minimal Flood Hazard, Zone X. Onsite drainage would be conveyed offsite directly into Funks Reservoir through shallow swales or overland flow. Offsite stormwater runoff would be collected on the west side of the site in a ditch, conveyed around the site, and deposited into Funks Reservoir.

The existing Funks Reservoir would be used as a source of water to pump to Sites Reservoir and would receive water discharged from the reservoir. The Funks Reservoir operational WSE can only vary slightly from the TC Canal and the reservoir WSE typically ranges from 200 to 205 feet, although the preferred operational WSE range is 202 to 204 feet.

All Action Alternatives would not alter the footprint of Funks Reservoir; however, 740,000 cubic yards of sediment that has accumulated since originally constructed would be excavated from the reservoir. The excavation is anticipated to restore the original capacity of Funks Reservoir. Excavation would proceed to an elevation of approximately 197 feet in the reservoir and 185.5 feet near the Funks PGP on the western side. The bottom of Funks Reservoir would be reshaped to allow large, unimpeded flows to and from the Funks PGP. The excavated sediment would be deposited adjacent to Funks Reservoir as shown on Figure 2-15. For the purposes of this analysis, the sediment is assumed to remain near Funks Reservoir.



Source: Jacobs, 2020
Drawing No. FNK-120-C-2101

Figure 2-15. Funks Reservoir Stockpile and Haul Route Plan

Funks Pumping Generating Plant

The Funks PGP would be used to pump water from Funks Reservoir to Sites Reservoir. The PGP would be constructed on the northwest side of Funks Reservoir. The PGP would include the following three facilities in five buildings: one pump station, two turbine generator buildings, and two energy dissipating structures. An electrical building would also be constructed behind the pumps as part of the pump station. See Figure 2-16, Funks Pump Generating Plant Facilities.

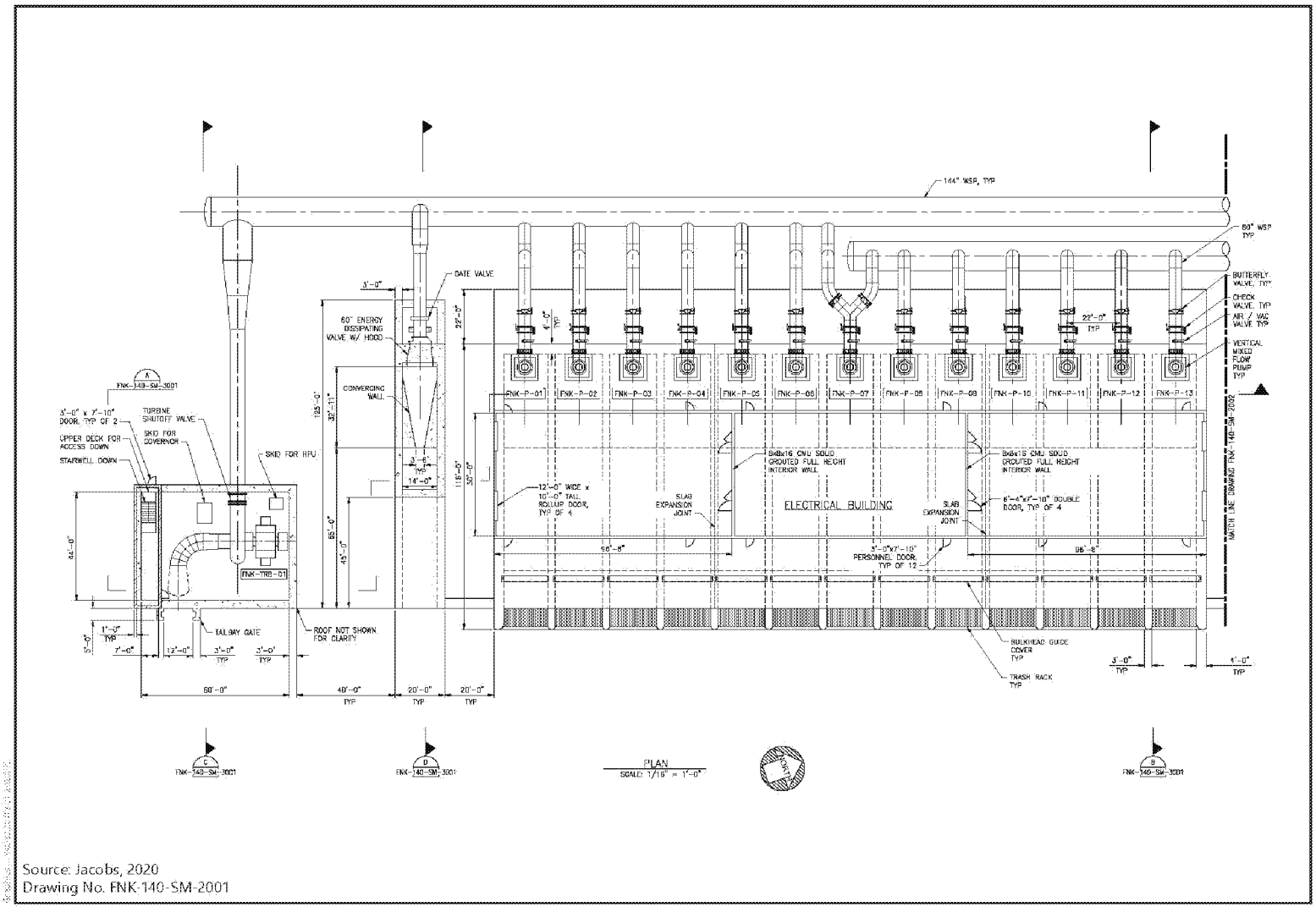
The Funks pump station would be similar to the TRR pump station, except that the orientation of 12-foot-diameter pipelines would be different. The pump station would have a flow rate of 2,100 cfs. The turbine generator buildings would be the same as described for the TRR PGP, and each generator would have a design criterion of 1,000 cfs for redundancy. There would be two turbines, 20-megwatt and 14.5megawatt. Each of the two energy dissipation structures would consist of a single 60-inch fixed cone valve with a design criterion of 1,000 cfs. There would be a 60-inch fixed cone valve on each of the two 12-foot-diameter pipes for a total of two fixed cone valves and a total flow of 2,000 cfs (1,000 cfs each).

Funks Electrical Substation

As with the TRR PGP, the Funks PGP would require a substation to provide electricity to the Funks PGP facilities. This substation would connect to either existing WAPA or PG&E lines. The substation would be located west of Funks Reservoir in the footprint of the Funks PGP and would encompass approximately 3 acres. The Funks electrical substation would be similar to the TRR electrical substation; it would be approximately 460 feet long by 300 feet wide if connected to PG&E lines and would be 300 feet long by 240 feet wide if connected to WAPA lines. There is no difference between the Funks substation and the TRR substation. The substation would be designed to accommodate the total pumping power requirements (import) or total generation requirements (export).

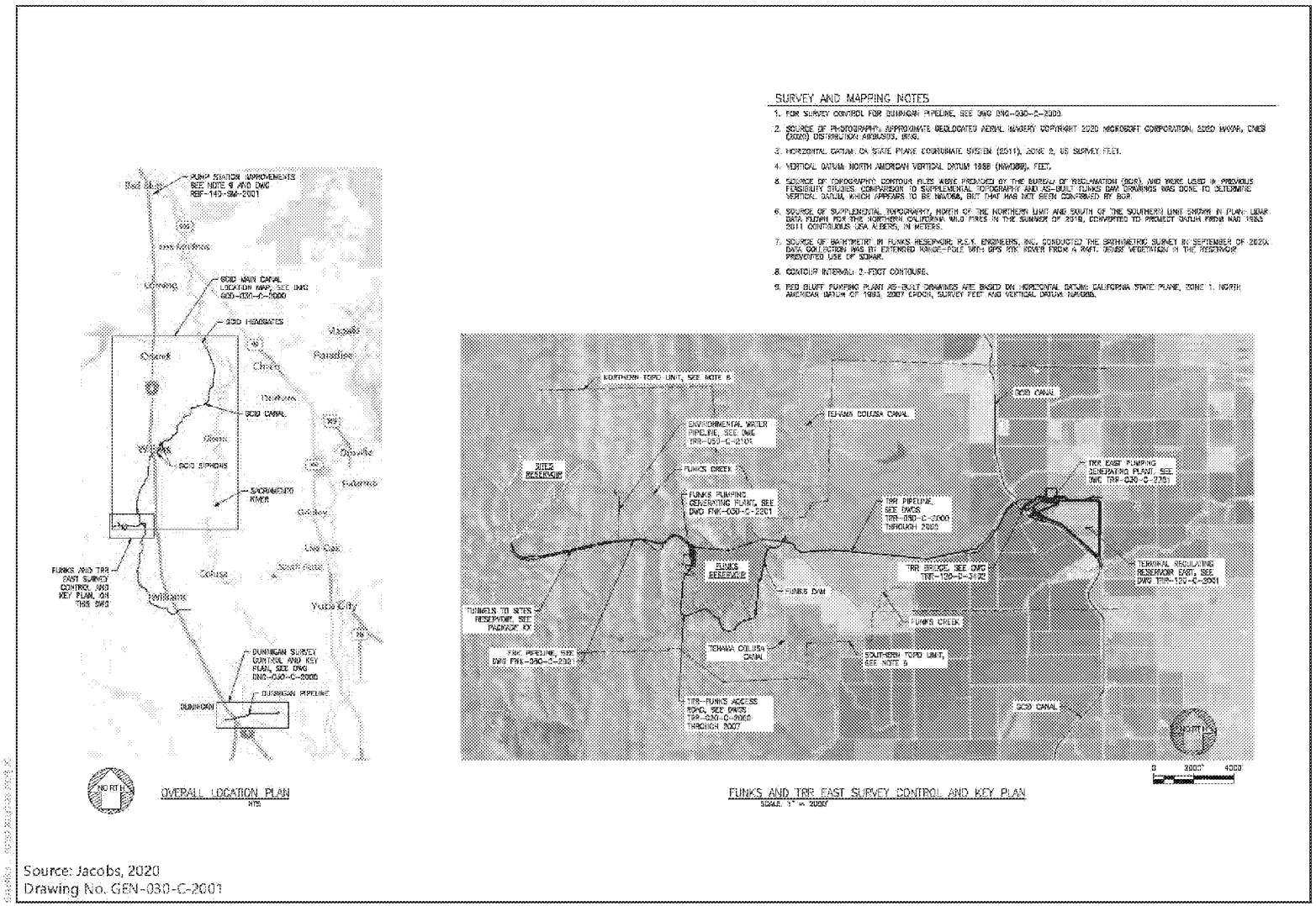
Funks Pipelines

Two underground Funks pipelines would convey water approximately 1 mile between the Funks PGP and Sites Reservoir. See Figure 2-17, Conveyance Complex Pipelines, for the location and alignment route of the pipelines. The 12-foot-diameter pipes would extend from the Funks Reservoir and Funks PGP and terminate at the transition manifold south of Funks Creek near the Golden Gate Dam. The Funks pipelines generally run parallel to the TRR pipelines. After curving around Funks Creek and hilly areas, the Funks pipelines run south, deviating from the TRR pipeline alignment, to the Funks PGP. Both TRR pipelines would connect to one of the two side-by-side, 23-foot-diameter I/O tunnels at the transition manifold. After installation, the pipelines would generally be from 6 feet to 25 feet below ground surface.



Source: Jacobs, 2020
Drawing No. FNK-140-SM-2001

Figure 2-16. Funks Pump Generating Plant Facilities



Source: Jacobs, 2020
Drawing No. GEN-030-C-2001

Figure 2-17. Conveyance Complex Pipelines

Transition Manifold

The transition manifold would be constructed at the base of Golden Gate Dam to connect Sites Reservoir to Funks Reservoir and the TRR. The transition manifold would be installed approximately 6 feet below ground and would be approximately 114 feet long by 92 feet wide. The structure would connect the four 12-foot-diameter conveyance pipelines from Funks Reservoir and TRR to two 23-foot-diameter tunnels extending from the Sites Reservoir Inlet/Outlet Works (I/O Works), which are discussed in Section 2.5.1.4, *Sites Reservoir and Related Facilities*. The transition manifold would have isolation valves to close off the pipelines and allow for maintenance.

In addition to the transition manifold structure, a 12-inch-diameter underground pipeline would extend 2,800 feet north from the manifold to Funks Creek, where it would discharge via an energy-dissipation structure/outlet into the creek. The pressure-reducing valve to dissipate energy before the water is discharged into Funks Creek is necessary because the water pressure would be equal to the Sites Reservoir elevation. The pipeline would be sized to accommodate a range of discharges (zero to 100 cfs) to provide water for the approximately 1.8-mile stretch of Funks Creek below Golden Gate Dam to Funks Reservoir.

Construction of the Transition Manifold would happen after the I/O Tunnels are constructed. Construction means and methods would be similar to that of the TRR Pipelines and Funks Pipelines.

Electrical Transmission Connections

New high-voltage transmission lines would be required to provide power to the Funks and TRR PGPs. Transmission lines connecting Funks and TRR substations would also be required. Interconnecting to the existing transmission system would be necessary to provide the electricity needed to operate the large pumps at the TRR and Funks Reservoir. This interconnection would also enable the energy produced at the Funks and TRR PGPs to enter the transmission system during periods of operation that use their respective turbines/generators.

The general laydown areas and construction means and methods of the three substations and high voltage transmission lines that connect either PG&E or WAPA facilities to Sites facilities are provided in Appendix 2C.

North-South Transmission Connections

A new north-south transmission line originating between Funks Reservoir and TRR would connect to WAPA or PG&E existing facilities. Two 230-kilovolt (kV) lines owned and operated by WAPA are located north of Funks Reservoir, and four 230-kV lines owned and operated by PG&E are located west and north of the TRR. WAPA and PG&E are defined as the Transmission Owner and the Transmission Operator of their respective high-voltage transmission lines. Each of these lines is a potential point of interconnection (POI) location; a POI to a high-voltage electric transmission line would be required to provide power. See Figure 2-18, WAPA Schematic Sketch, and Figure 2-19, PG&E Schematic Sketch, for a schematic sketch showing the WAPA and PG&E alternative POI arrangements and the required transmission line lengths to the Funks and TRR electrical substations. The POI would require a

third substation, which is expected to be located adjacent to either the WAPA lines or the PG&E 230-kV lines.

The POI between the electrical substations and existing transmission lines would require that an application for interconnection request be submitted and processed under the California Independent System Operator (CalISO) interconnection process. The location of the POI to the WAPA or PG&E 230-kV transmission lines would depend on the results of a system impact study completed by WAPA or PG&E in conjunction with CalISO.

East-West Transmission Lines

There would also be an interconnection between the Funks and TRR PGPs, and it is anticipated that the transmission lines would parallel the pipelines within the same easement. Up to four 230-kV transmission lines would be required: two for the source supply to either of the PGPs and two between the Funks and TRR electrical substations. The two looped source circuits would be installed on a set of common double-circuit steel monopole structures and would require separate easements because they would not parallel any of the proposed pipelines (Figure 2-20, Double-Circuit Source Transmission Poles). The two transmission lines between the Funks and TRR electrical substations would be installed on their own common set of double circuit steel monopole structures within the pipeline easement (Figure 2-21, Funks to TRR Electrical Interconnection).

2.5.1.3 Administration, Operations and Maintenance, and Storage Buildings

All Action Alternatives would involve the construction of an administration and operations building and a maintenance and storage building. These buildings would be located along the existing gravel access road to the Funks PGP on approximately 0.15 acre. The administration and operations building would be a one-story building encompassing approximately 3,400 square feet. The maintenance building would be a one-story building encompassing roughly 2,700 square feet that would include space for equipment storage and maintenance rooms to support the Project facilities.

The utilities that would be required for these buildings would be a septic system at least 100 feet away from Funks Reservoir and Funks Creek (per county code), potable water provided via groundwater wells, and electricity obtained from the Funks Reservoir switchyard. The building designs would be in accordance with the California Building Code and would provide asphalt concrete paved onsite parking and vehicular access. See Figure 2-22, Administration and Operations Building, and Figure 2-23, Maintenance and Storage Building, for the plan view and elevation view of these two buildings.

Construction of the proposed buildings would include the following: clearing and grading; transporting materials and placing them at staging areas; constructing ancillary facilities (e.g., potable water source, septic system, lighting, concrete pad for refueling island, aboveground fuel tanks, perimeter fencing); and performing site restoration after construction is complete.

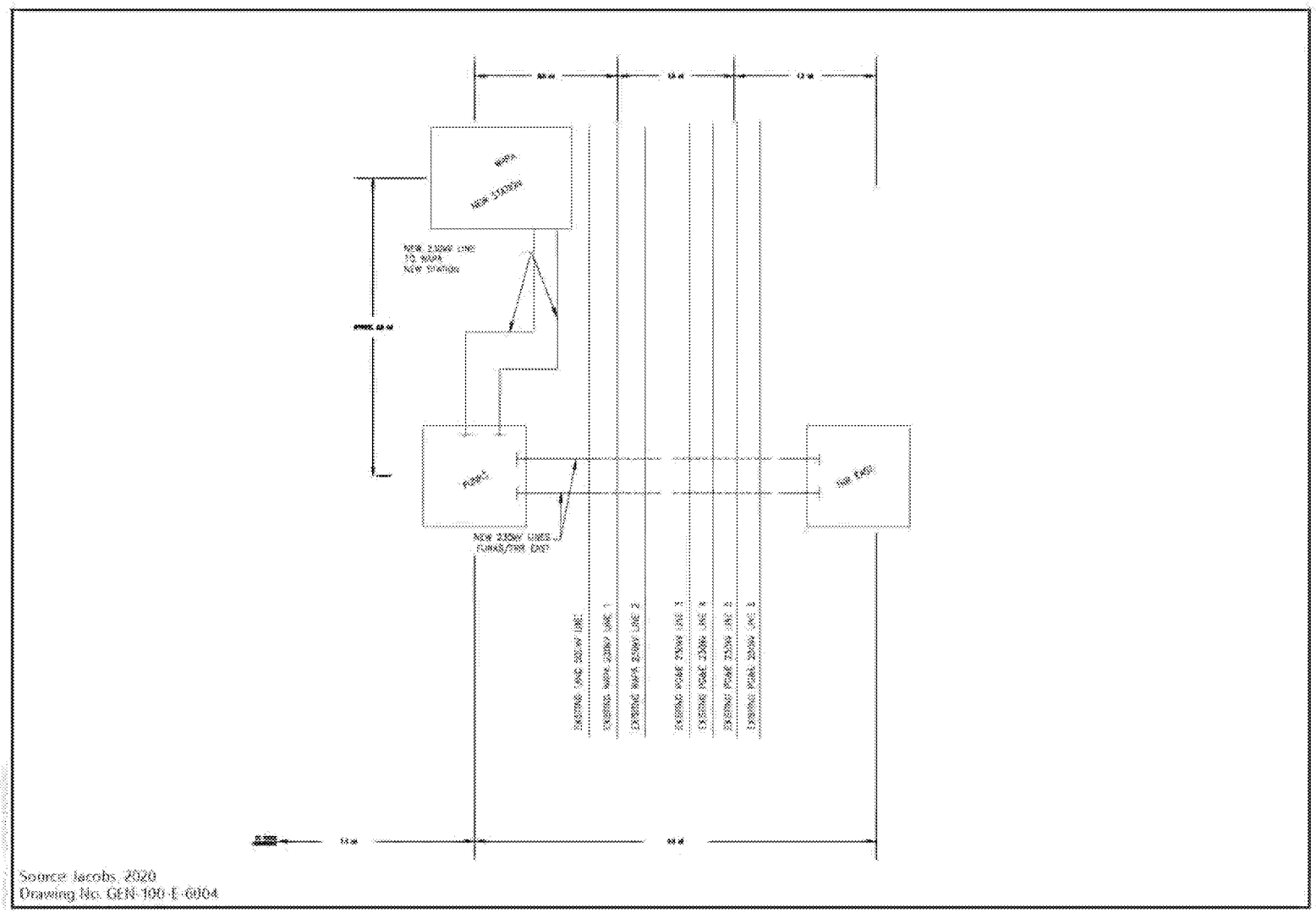


Figure 2-18. WAPA Schematic Sketch

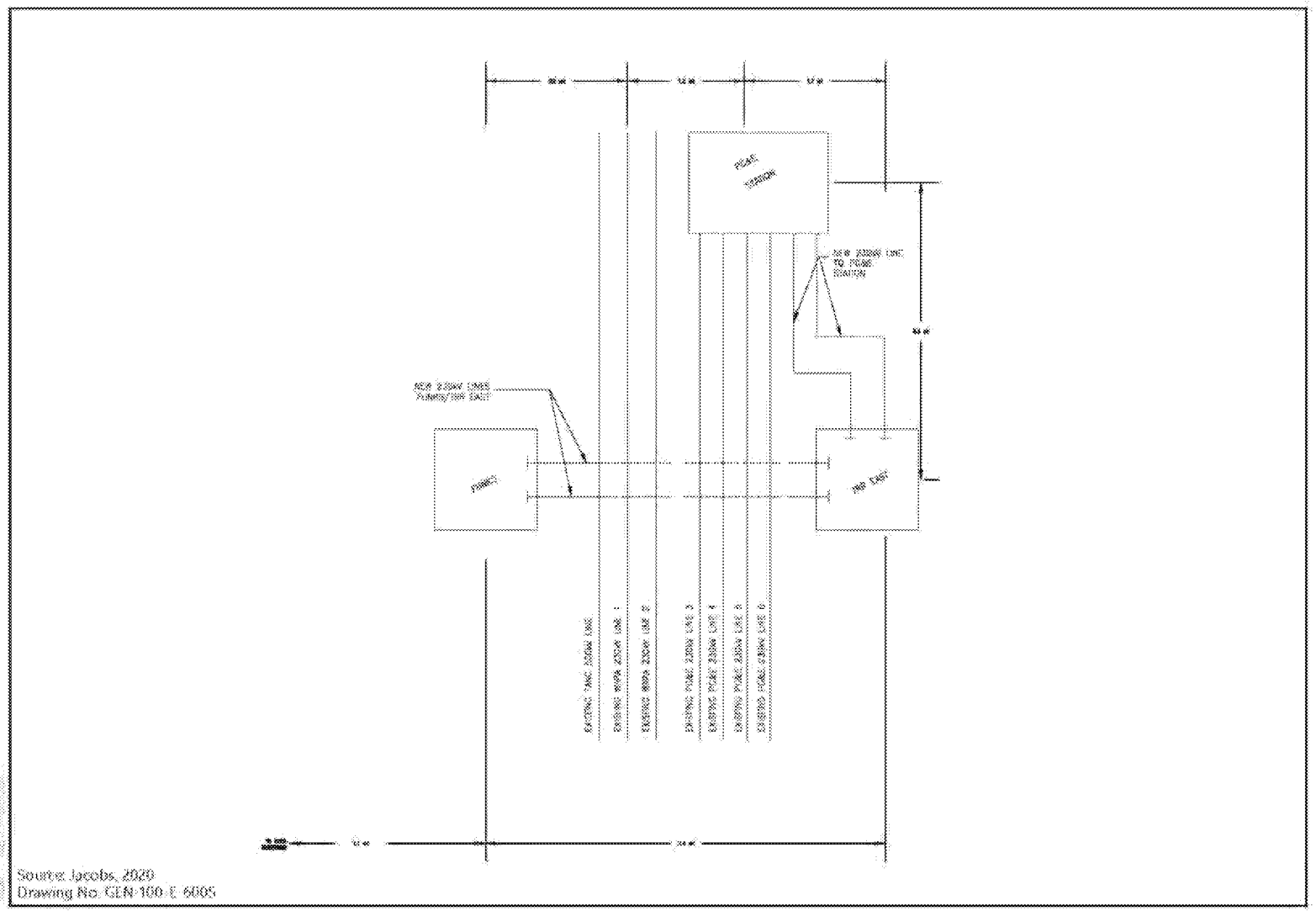
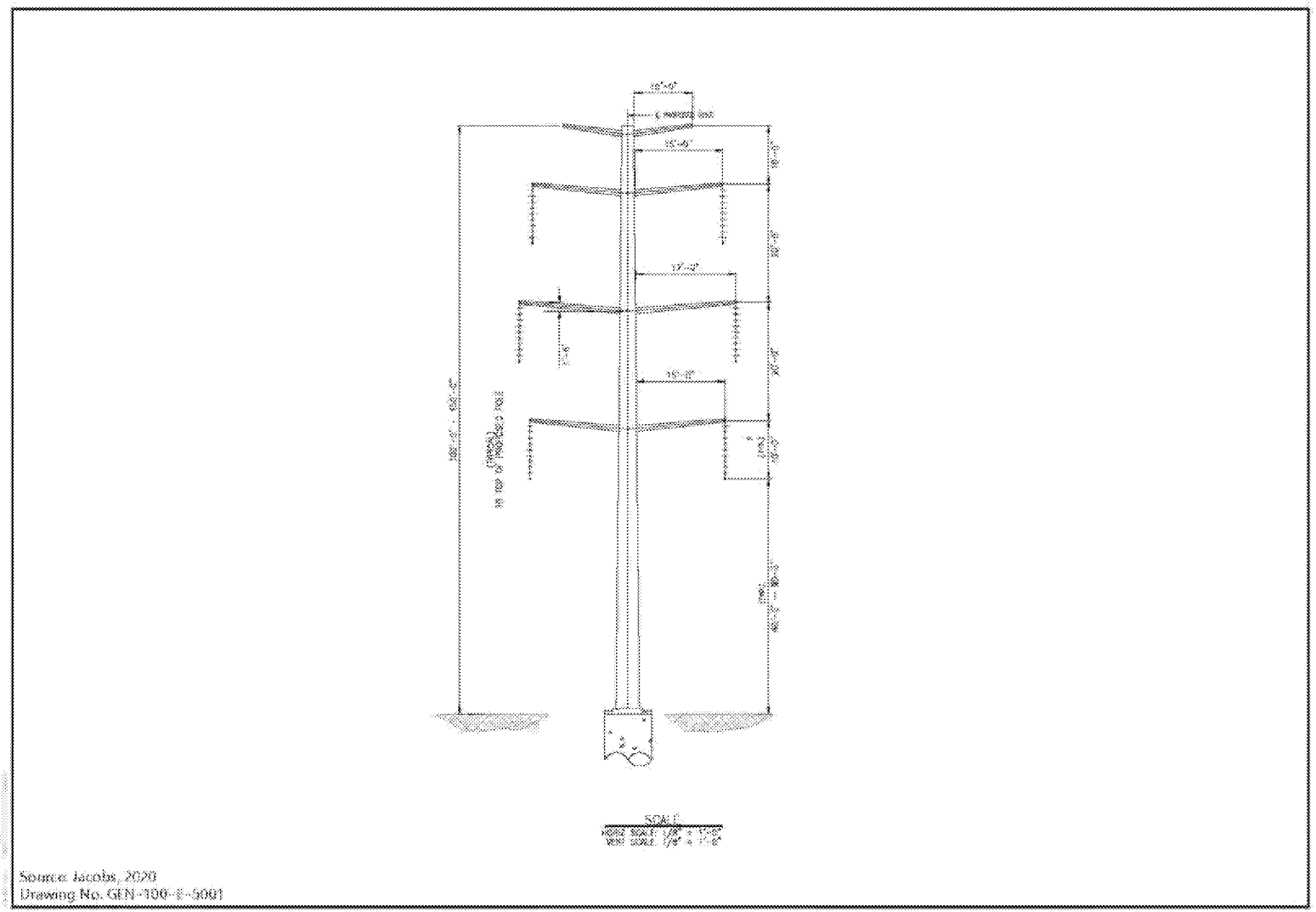


Figure 2-19. PG&E Schematic Sketch



Source: Jacobs, 2020
Drawing No. GEN-100-E-3001

Figure 2-20. Double-Circuit Source Transmission Poles

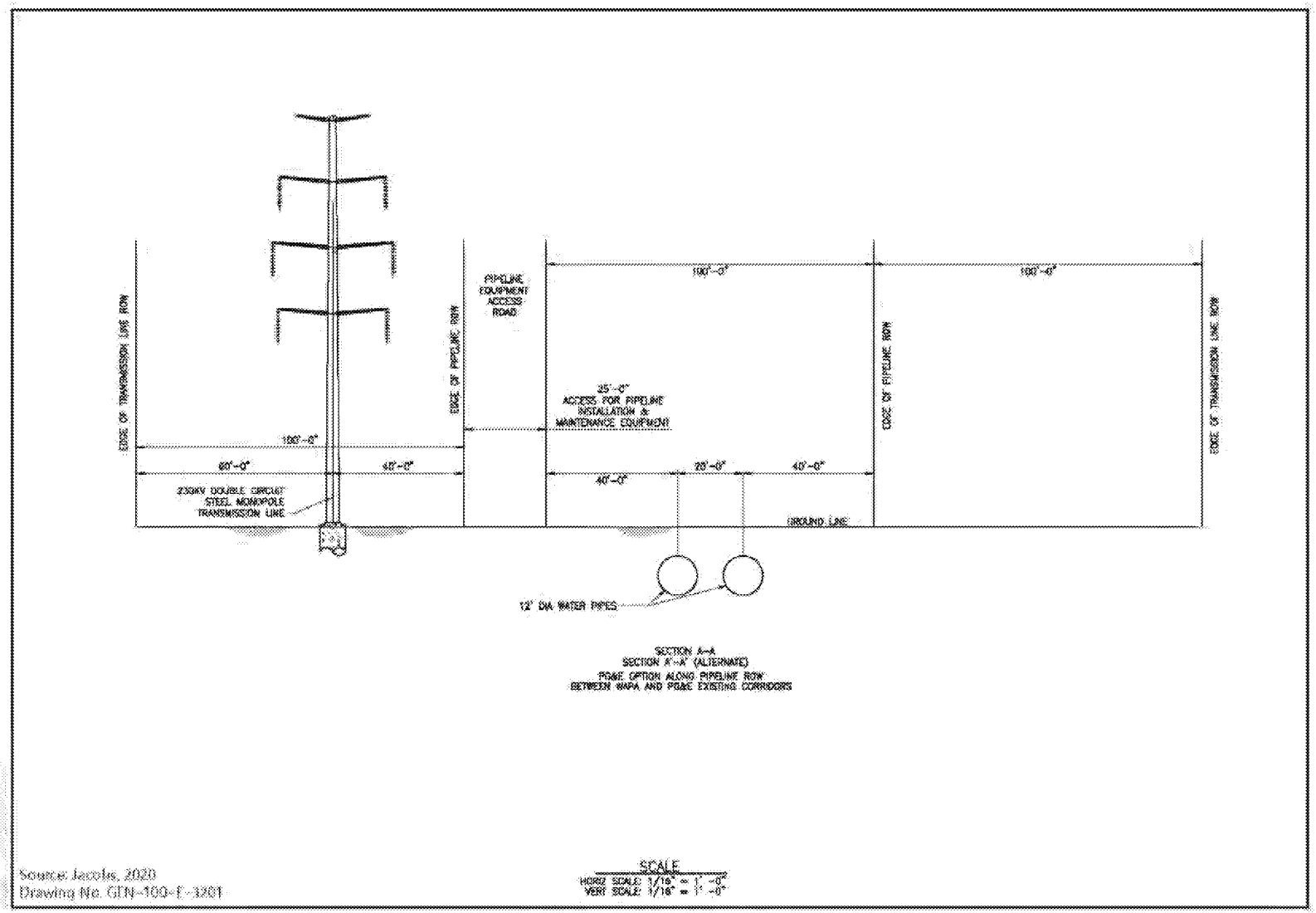


Figure 2-21. Funks to TRR Electrical Interconnection

2.5.1.4 Sites Reservoir and Related Facilities

Under all Action Alternatives, water would be impounded by the Golden Gate Dam on Funks Creek and the Sites Dam on Stone Corral Creek; a series of saddle dams along the eastern and northern rims of reservoir would close off topographic saddles in the surrounding ridges to form Sites Reservoir. See Figure 2-1 and Figure 2-3 for the location of the Sites Reservoir, Golden Gate Dam, saddle dams, and I/O Works.

Inlet/Outlet Works

The I/O Works for the reservoir are generally located to the south of Golden Gate Dam in Sites Reservoir. See Figure 2-24 (plan) and Figure 2-25 (profile), Inlet/Outlet Works Site, for a plan and profile view of the I/O Works. The I/O Works consists of a low-level intake, multi-level I/O tower, and two I/O tunnels. These structures are described in the subsections below, and Appendix 2C provides the engineering schematics for each structure.

The I/O Works would be designed to meet maximum water supply commitments, as well as safely pass emergency releases per DSOD requirements. The I/O Works would allow a maximum release of 16,000 cfs; the parallel I/O tunnels are designed to each convey half of the emergency drawdown flows (anticipated to be approximately 8,000 cfs each). The I/O Works would meet summer irrigation demands downstream with an estimated maximum release flow of 3,100 cfs. The I/O Works would also allow inflows pumped into the reservoir from the canals; the maximum inflows are anticipated to be 3,900 cfs.

Construction of the I/O Works would disturb approximately 30 acres in the reservoir inundation area and a similarly sized area at the downstream tunnel portal. The construction disturbance would consist of the footprint of the two intakes; tunnel portals; materials, spoils, and equipment staging areas; and access roads. A portion of the footprint outside the reservoir inundation area would overlap with the disturbance area for the conveyance system. Major construction activities associated with the I/O Works would consist of dewatering the construction site with an onsite treatment facility, excavating the hillside for the downstream and upstream tunnel portals, tunneling and hauling tunnel muck to a disposal area, using spoils from the tunnels for Golden Gate Dam or disposing of them in the reservoir inundation area, excavating for the multi-level tower shaft, building the multi-level tower, constructing the access bridge to the multi-level tower, building the low-level intake, and completing finished grading and site clean-up.

The construction of the tunnels that connect the Sites Reservoir to the Funks and TRR pipelines would require excavating the tunnel, installing the tunnel support systems, and controlling groundwater. The I/O tunnels would be constructed using a combination of drill and blast and road header excavation, depending on the strength of the rock, and pre-excavation measures would be used to stabilize the ground and reduce groundwater inflow. As construction proceeded, support systems would be installed and then the reinforced cast-in-place concrete tunnels and steel carrier pipe would be installed.

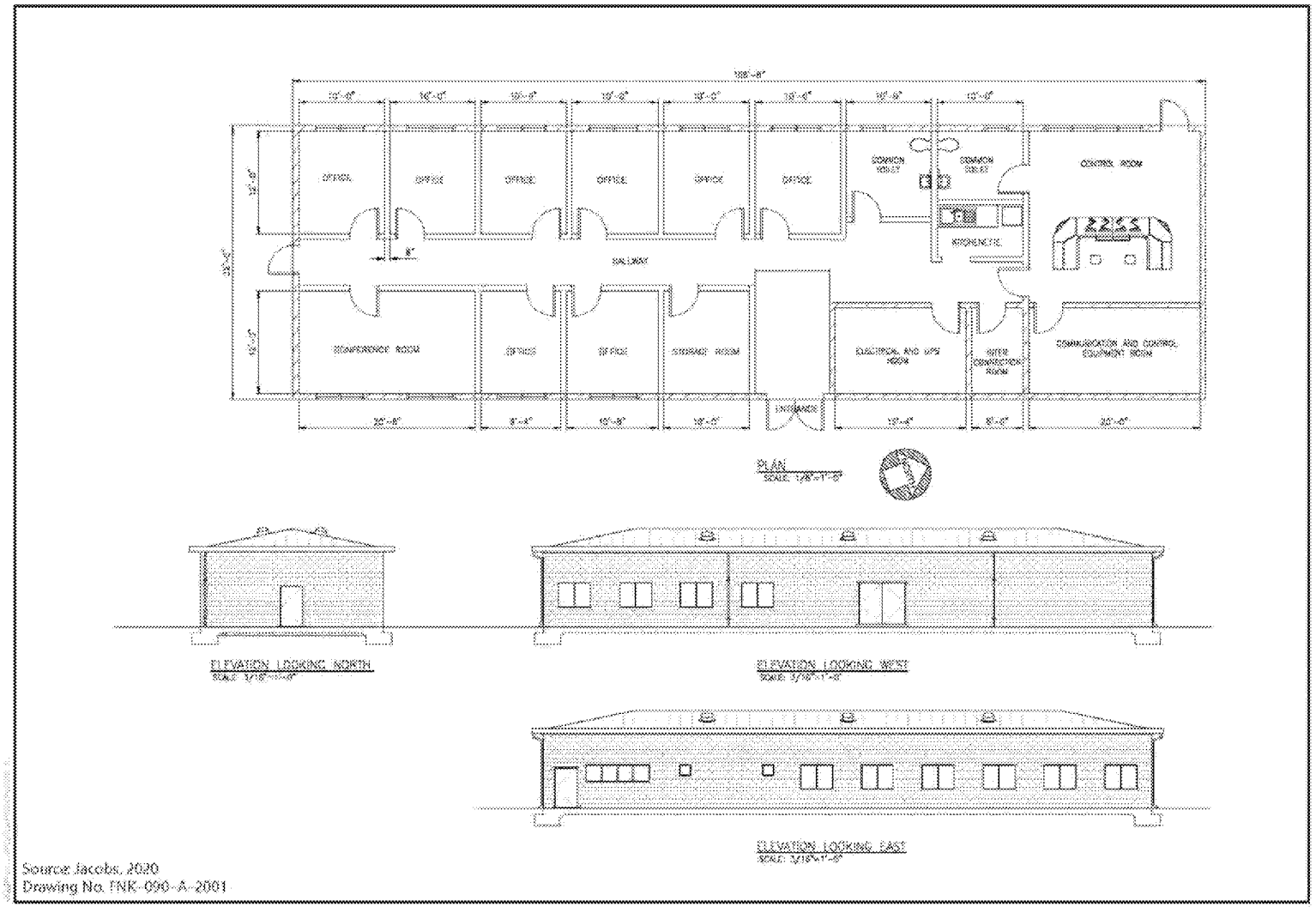


Figure 2-22. Administration and Operations Building

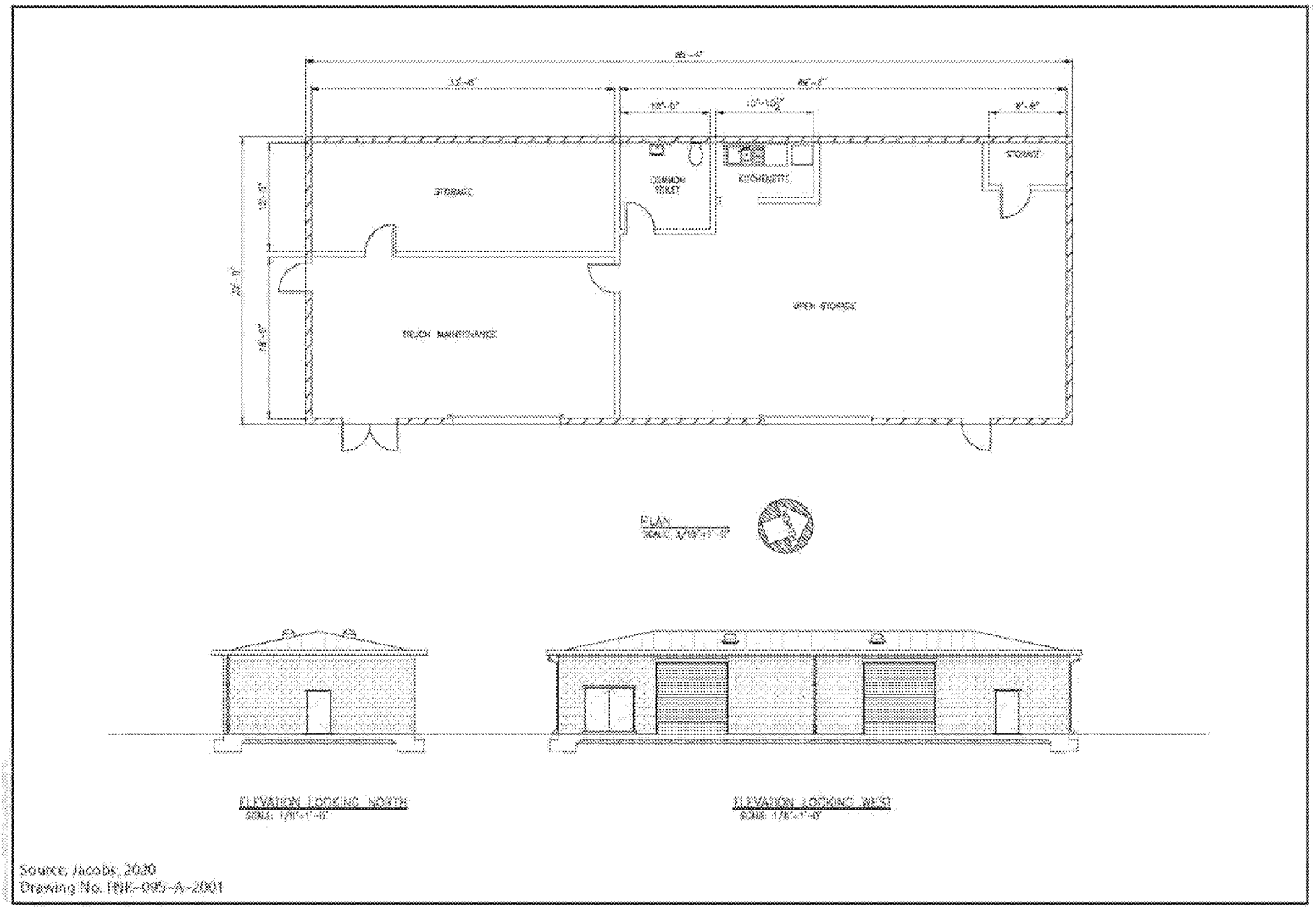
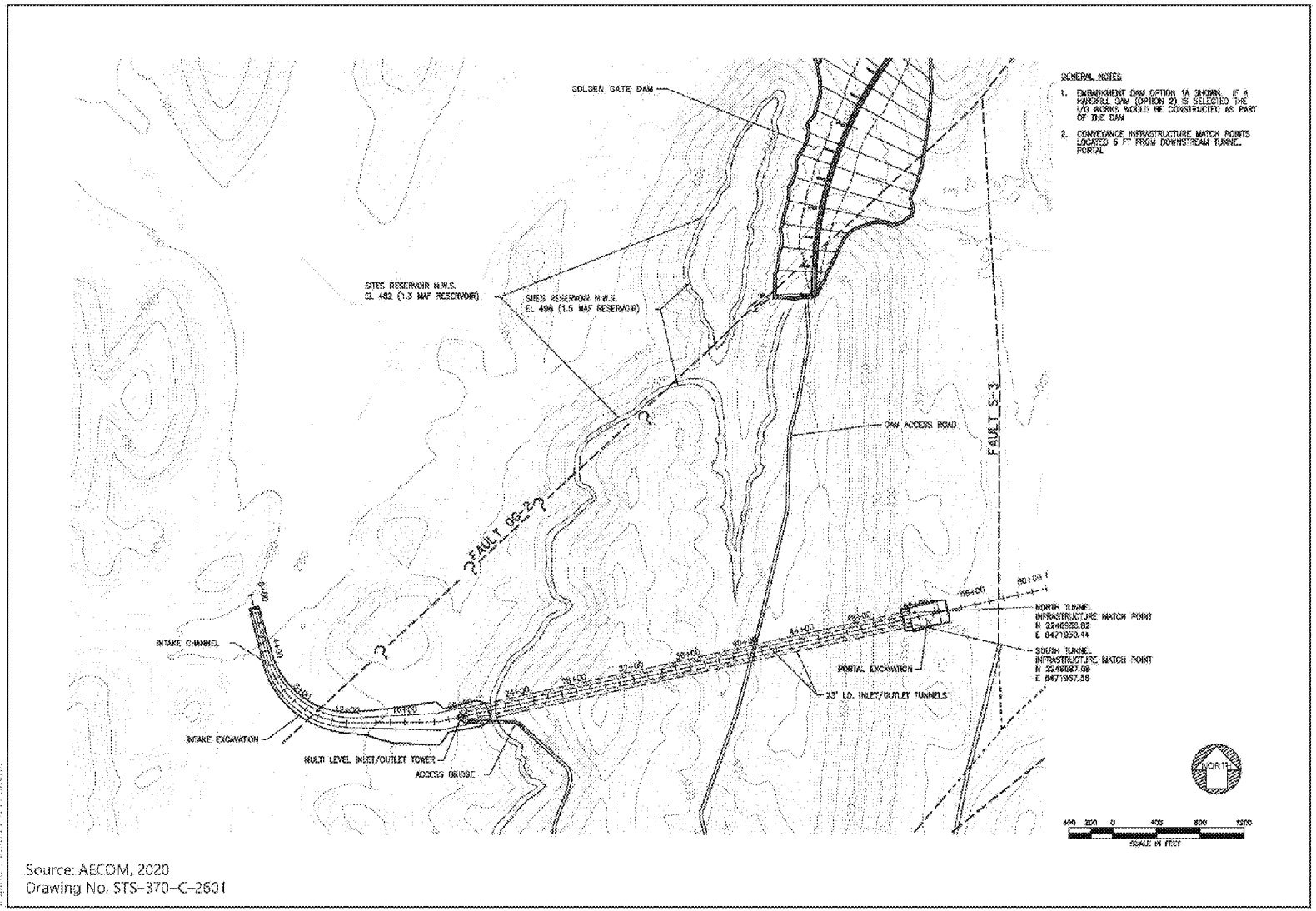


Figure 2-23. Maintenance and Storage Building



Source: AECOM, 2020
Drawing No. STS-370-C-2601

Figure 2-24. Plan of Inlet/Outlet Works Site

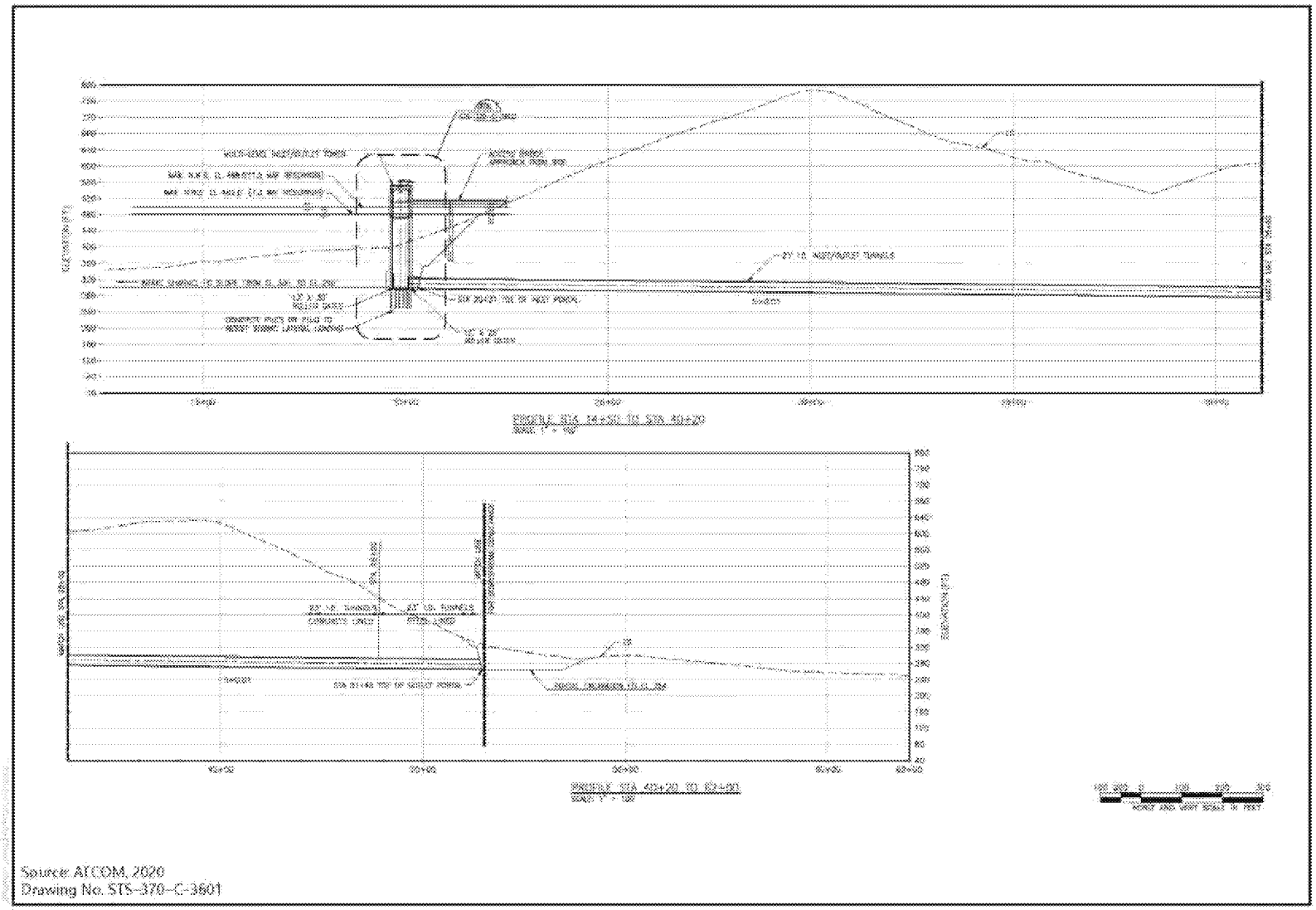


Figure 2-25. Profile of Inlet/Outlet Works Site

Low-Level Intake

The low-level intake would be used to meet DSOD-required emergency drawdown releases (refer to Section 2.5.2.1, *Water Operations - Emergency Release*, for more information about these requirements). This intake would also release stored water below the lowest ports in the I/O tower during drought conditions.

The low-level intake would be at an elevation of 300 feet to allow for sediment accumulation over a 100-year project life. Flows would not be pumped in directly from the Sacramento River, and the main source of sediment is expected to be from local runoff in the reservoir watershed. The intake channel would be excavated down to an elevation of approximately 290 feet. The installation of bar-type trashracks would protect the I/O tunnels from damage and keep debris from clogging the flow streams. The low-level intake would be designed to allow for inspection and maintenance.

I/O Tower

The 300-foot-tall, multi-level I/O tower would allow flows into and out of the reservoir through the use of ports around the tower's perimeter. These ports would be at multiple elevations and equipped with roller gates or valves, which would allow for operational flexibility, including managing the temperature/quality of water released from the reservoir. The tower would also have moveable fish screens. The movable fish screens would be sized as design progresses and criteria are established by the Authority in consultation with the applicable regulatory agencies. Head gates at the bottom (below ground surface) of the I/O tower would allow access to the I/O tunnels. The lower portion of the I/O tower would be anchored in bedrock, and the connections at the tower and abutments would accommodate differential movement that may occur during the design seismic event. Table 2-2 summarizes key design characteristics for the I/O tower.

Table 2-2. Summary of I/O Tower Design Characteristics for All Alternatives

Key Characteristic	Alternative 1 and 3	Alternative 2
Maximum Normal Water Surface Elevation*	498 feet above mean sea level	482 feet above mean sea level
Top of Tower Elevation	558 feet above mean sea level	542 feet above mean sea level
Top Tier Port Centerline Elevation	470 feet above mean sea level	450 feet above mean sea level
Maximum Number of Ports	21 (3 each at 7 tiers)	18 (3 each at 6 tiers)
Minimum Port Size	5.5-foot-wide by 7-foot-high rectangular ports have been assumed; Ports would be sized such that the maximum operational drawdown (3,900 cfs) can be achieved with ports at two levels (6 ports total)	

*This would also be the maximum normal operating water elevation

Seven operating levels (or tiers) are anticipated based on the current design. The upper tiers would be spaced 20 feet on center, with centerlines at elevations ranging from 350 to 450 feet (Alternative 2) or 470 feet (Alternative 1 and 3). The lowest tier would be located 10 feet on center below the next lowest tier at 340 feet elevation (all Action Alternatives). At each tier there would be three ports on alternating faces of the hexagonally shaped tower. The ports would be

constructed at different elevations to allow flexibility to withdraw water based on its quality (e.g., temperature, turbidity) needs. These ports would be controlled by roller gates or valves.

The head gates would be located in the I/O tower base (below ground surface) to allow the isolation of its tunnels for maintenance, inspection, and operational needs. The head gates would be designed to prevent outflow from the I/O tower at the full range of reservoir levels. The gates would be able to open (i.e., raised) and close under all normal reservoir operations and if emergency releases were required. Gates for either I/O tunnel would be closed to prevent outflow for operational purposes (downstream release or equipment preference, maintenance, or dewatering for inspection or equipment change out). Emergency raising and lowering of the gates by emergency power upon loss of electricity would be required.

A bridge would provide access to the I/O tower from the nearby access road. The bridge would be designed to accommodate equipment and materials required for maintenance of the tower. The bridge's length would depend on the access road design but is expected to be approximately 300 feet.

Two 23-foot-diameter I/O tunnels would extend from the I/O tower through the ridge on the right abutment of Golden Gate Dam. They would daylight on the other side of the ridge and connect to the transition manifold. The tunnels would each be about 3,110 feet long, connect to the multi-level tower at approximately 300 feet elevation, and have a downstream slope of 1%.

Dams and Dikes

All Action Alternatives would include Sites Dam and Golden Gate Dam along with a number of saddle dams and saddle dikes. The height of these facilities and the number of saddle dams and dikes varies between the Action Alternatives as summarized in Table 2-3. Sites Dam, Golden Gate Dam and the saddle dams and saddle dikes are discussed in more detail below.

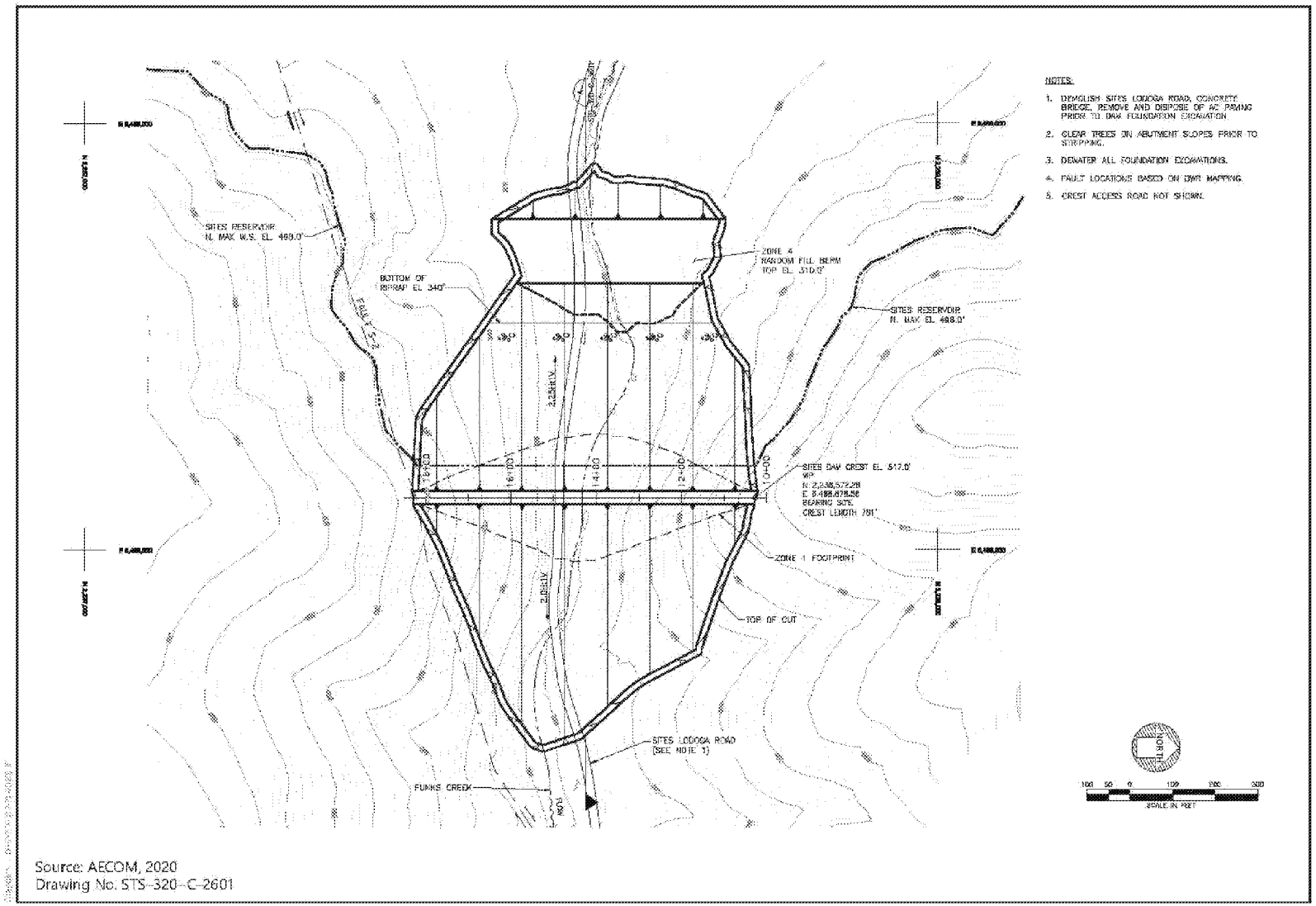
Table 2-3. Main Dam, Saddle Dam and Saddle Dike Summary for All Alternatives

Dam/Dike	Alternative 1 and 3		Alternative 2	
	Maximum Height Above Streambed (feet)	Length (feet)	Maximum Height Above Streambed (feet)	Length (feet)
Sites Dam	267	781	250	729
Golden Gate Dam	287	2,221	270	2,063
Saddle Dam 1	27	318	--	--
Saddle Dam 2	57	250	--	--
Saddle Dam 3	107	3,422	90	2,677
Saddle Dam 5	77	1,894	60	1,747
Saddle Dam 6	47	362	--	--
Saddle Dam 8A	82	1,300	62	1,140
Saddle Dam 8B	37	475	20	277
Saddle Dike 1	12	122	10	148
Saddle Dike 2	12	198	20	79
Saddle Dike 3	--	--	30	247

Sites Dam and Diversion Tunnel

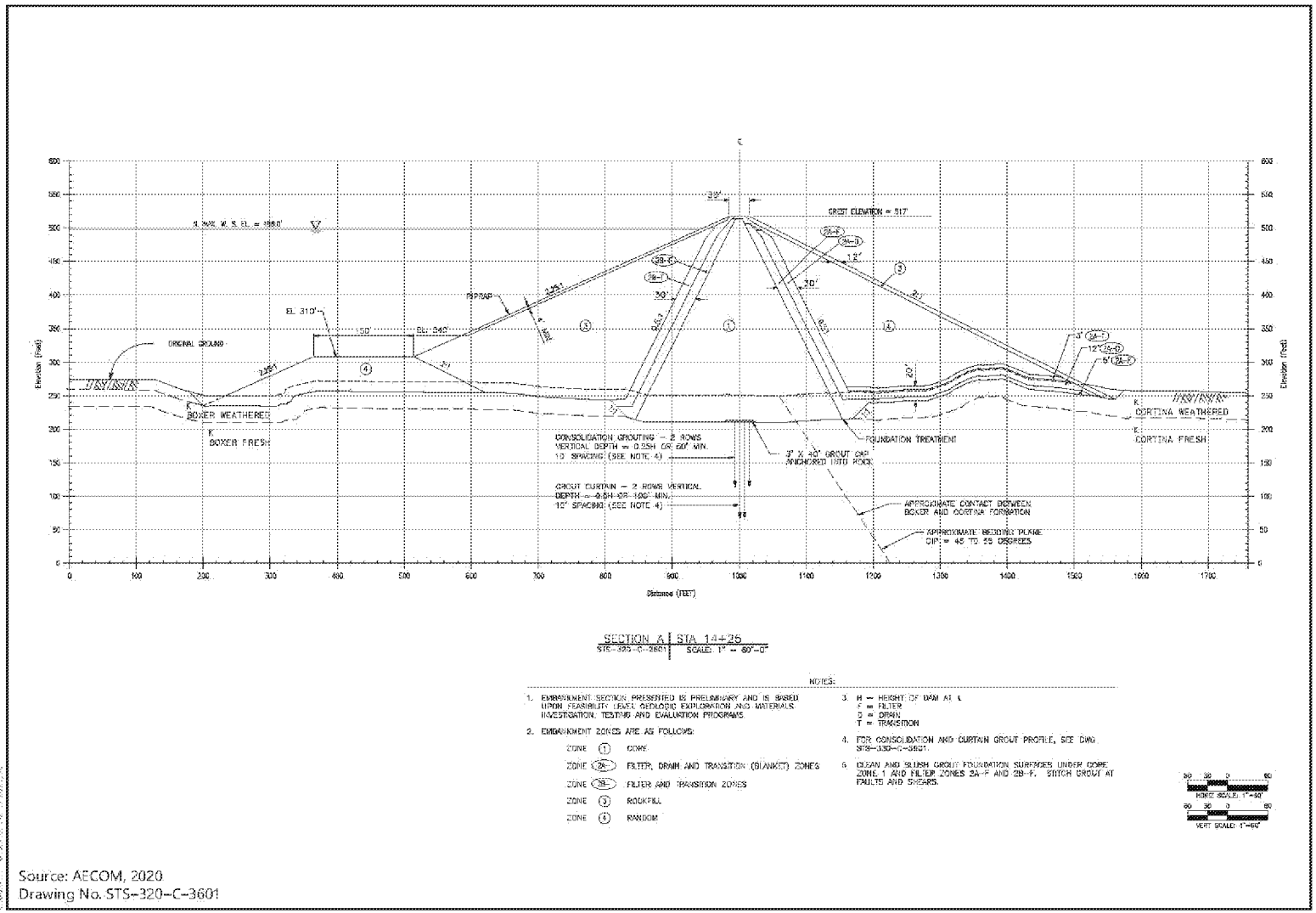
Sites Dam would be on Stone Corral Creek approximately 0.25 mile east of the community of Sites and 8 miles west of the community of Maxwell. The dam would be designed to safely accommodate potential fault displacement by providing widened filter, drainage, and transition zones. Sites Dam would be an embankment dam consisting of a combination of earth and rockfill embankment zones with a central impervious core, exterior upstream rockfill shell, and downstream earthen shell. The upstream and downstream slopes of the dam embankment would be 2.25:1 (horizontal: vertical; H:V) and 2H:1V, respectively. The upstream and downstream slopes of the dam's central core would be 0.5H:1V. Figure 2-26 provides a plan view of Sites Dam and Figure 2-27 provides a section view of Sites Dam.

Sites Dam would have a permanent diversion pipeline and tunnel that would be constructed in the left abutment of the dam. The approximately 1,600-foot-long tunnel would contain a 1,900-foot-long pipe with an internal diameter of 12 feet. The pipe would be fitted with one or more valves sized to release flow up to 100 cfs into Stone Corral Creek. The Sites Dam piping system is expected to include a bar trashrack, a slide gate, a separate fish screen and inlet valve to support Stone Corral Creek release flows, a stoplog bulkhead, and a permanent air vent assembly. The fish screen would be designed and sized to meet the requirements for aquatic life protection.



Source: AECOM, 2020
Drawing No. STS-320-C-2601

Figure 2-26. Sites Dam Plan



Source: AECOM, 2020
Drawing No. STS-320-C-3601

Figure 2-27. Sites Dam Section

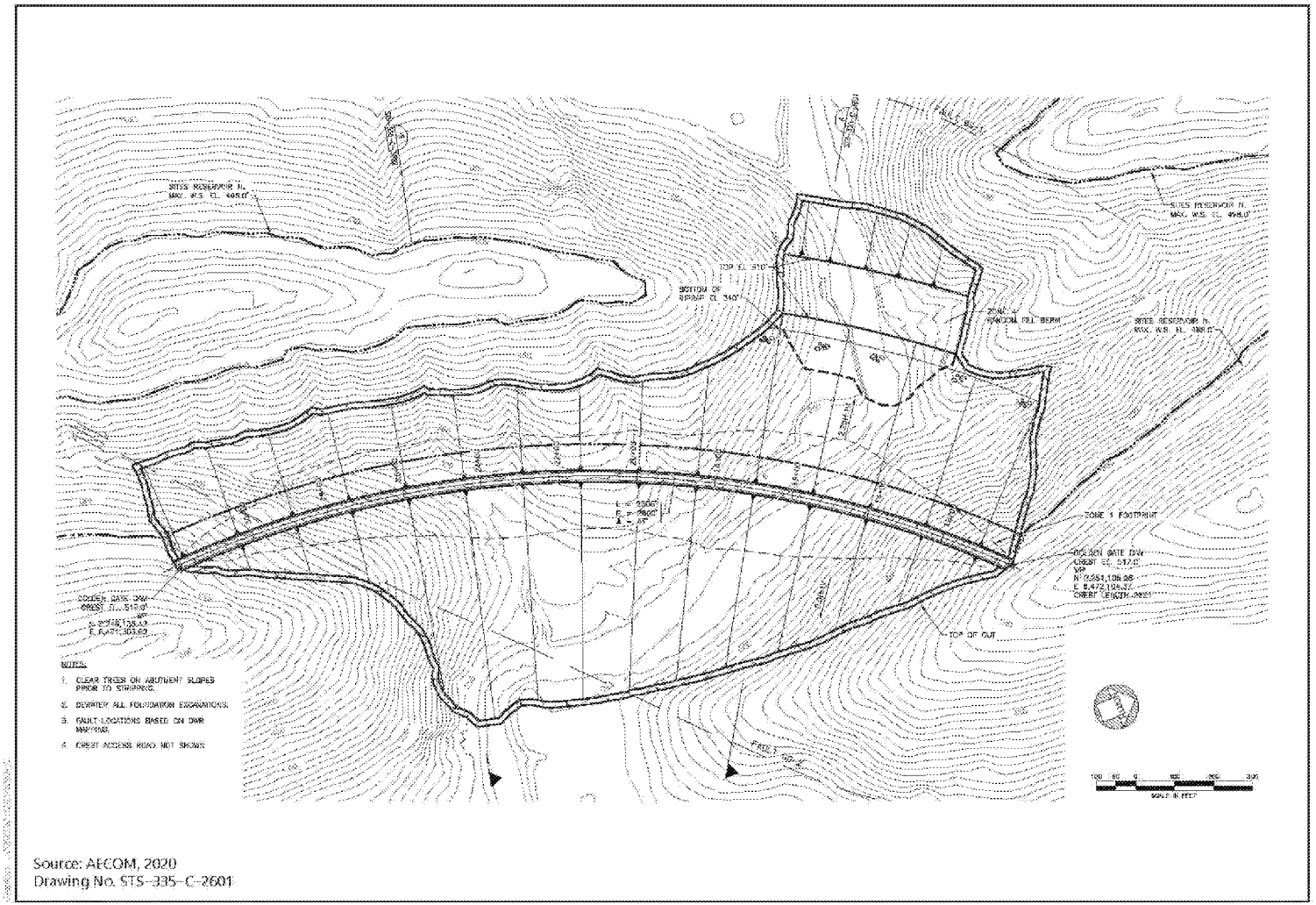
Stone Corral Creek would be diverted for construction of Sites Dam. A coffer dam would be installed to enable construction of the dam embankments in dry conditions. During construction storm flows would be conveyed in the 12-foot-diameter diversion tunnel through the ridge at Sites Dam. This tunnel would prevent a potential seepage path from forming through the embankment. Water in Stone Corral Creek would be diverted directly from the creek into the creek diversion pipeline through the Sites Dam abutment and into Stone Corral Creek on the east side of the Sites Dam work area. The outlet tunnel with two 84-inch-diameter fixed cone valves would accommodate these releases, and an energy dissipating chamber would reduce the velocity of the water released.

Golden Gate Dam

Golden Gate Dam would be on Funks Creek approximately 1.8 miles west of Funks Reservoir. The dam type and material, upstream slopes, and downstream slopes would be the same as described above for Sites Dam. Golden Gate Dam would not have a permanent diversion tunnel; all releases made would be through the I/O Works. Figure 2-28 provides a plan view of Golden Gate Dam and Figure 2-29 provides a section view of Golden Gate Dam.

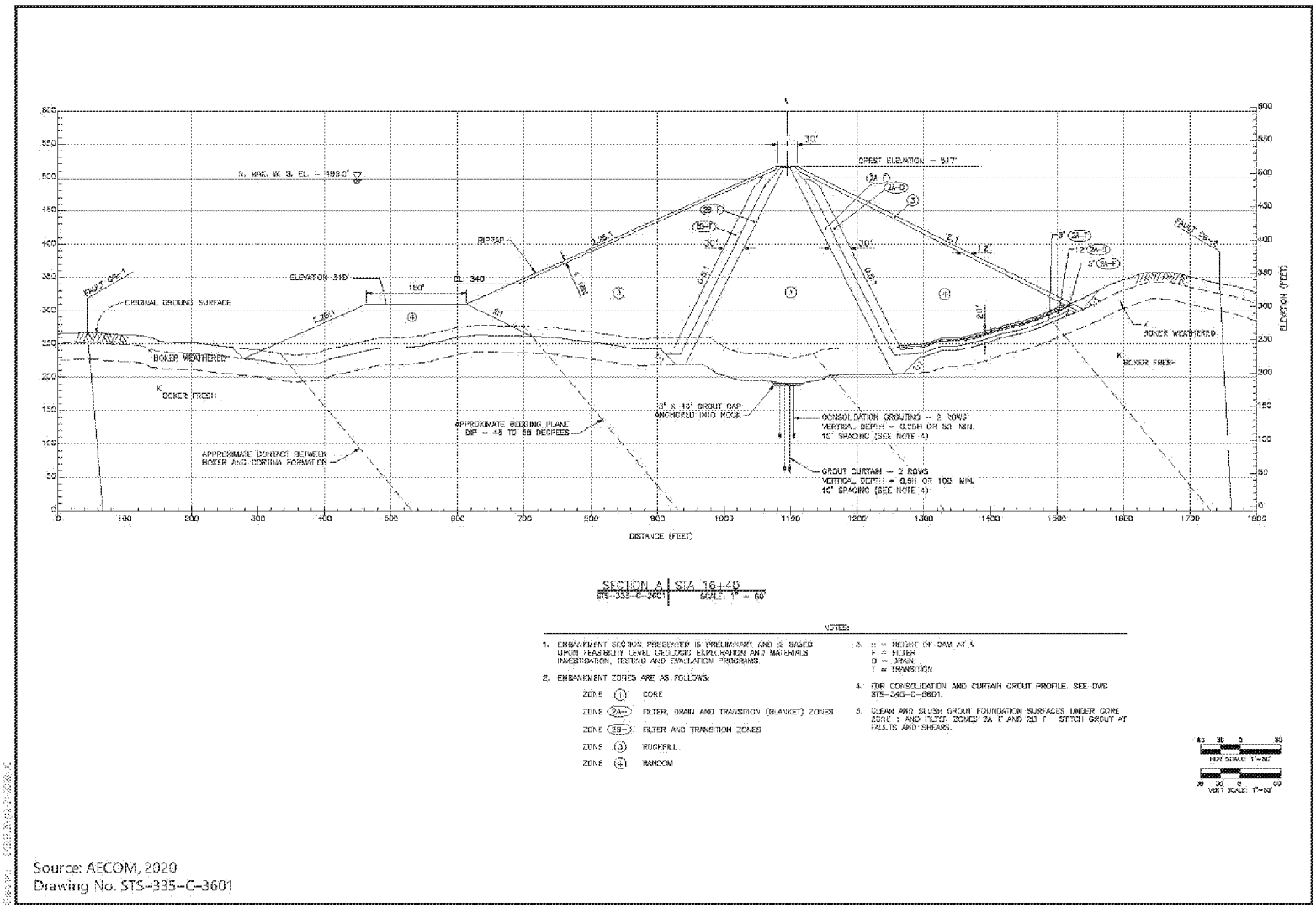
Funks Creek would be diverted for construction of Golden Gate Dam. A coffer dam would be installed to enable construction of the dam embankments in dry conditions. At Golden Gate Dam, a 48-inch-diameter diversion pipe would be placed in the foundation of the dam to divert Funks Creek but would be filled in and decommissioned after construction and prior to use of the dam. However, the coffer dam would be left in place and become part of the main dam.

During construction, water would pond behind the coffer dam on Funks Creek, flow through the temporary pipe underneath the Golden Gate Dam construction site to the east side of the dam, and then re-enter the Funks Creek channel. The coffer dam should provide enough residence for settling to occur for typical flows in Funks Creek.



Source: AECOM, 2020
Drawing No. STS-335-C-2601

Figure 2-28. Golden Gate Dam Plan



Source: AECOM, 2020
Drawing No. STS-335-C-3601

Figure 2-29. Golden Gate Dam Section

Predecisional Working Document—For Discussion Purposes Only

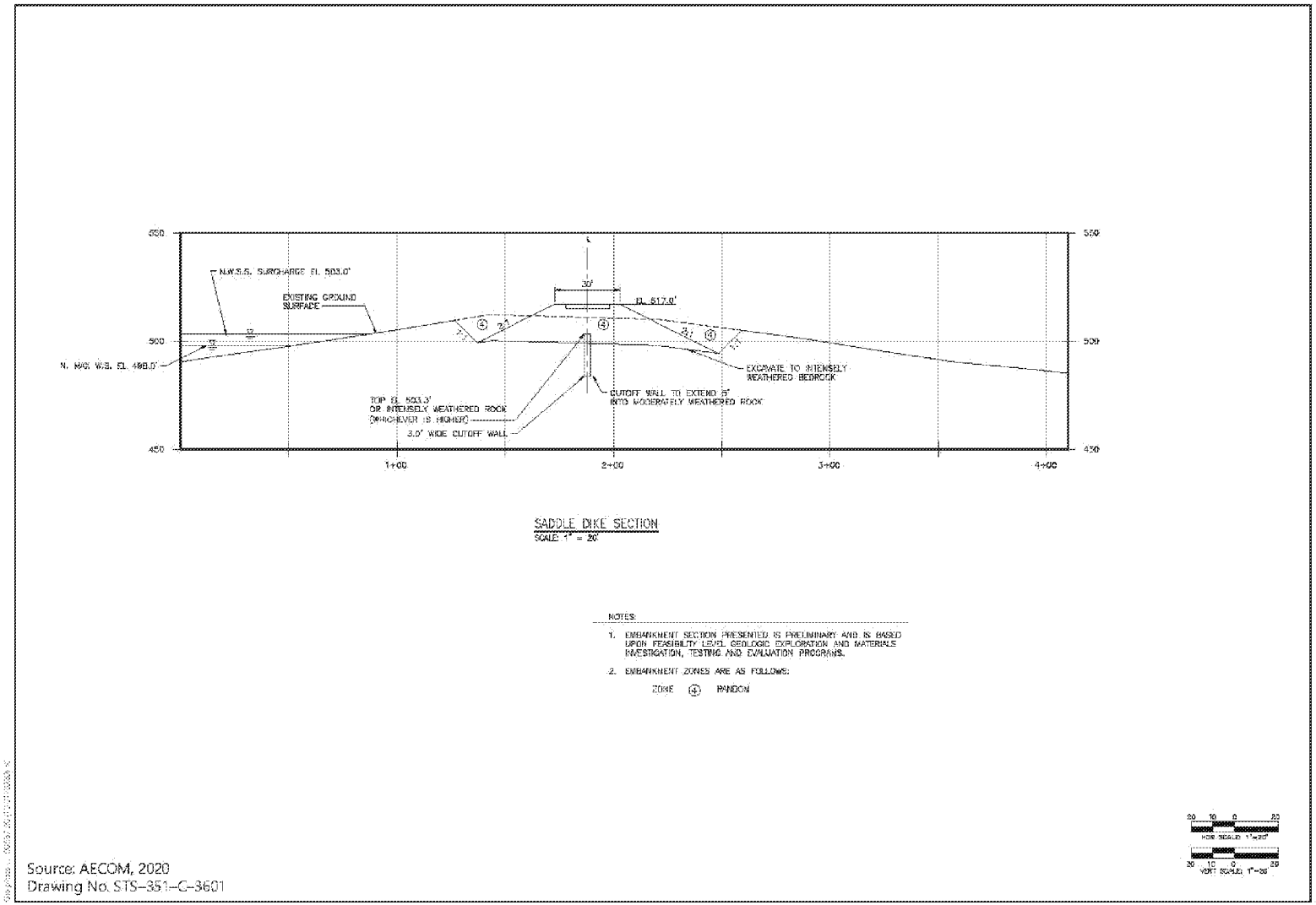
Saddle Dams and Saddle Dikes

The saddle dam and saddle dike material would be the same as described above for the Sites Dam. The number and locations of the saddle dams are based on the size of the reservoir because the saddle dams would be needed at topographic saddle low points along the eastern ridge of the reservoir. The upstream and downstream slopes of saddle dams are 3H:1V and 2.5H:1V, respectively. The upstream slope of the central core for the saddle dams would be 1H:1V with a vertical downstream face. See Figure 2-30 for saddle dam and dike locations. Saddle Dams 3, 5, and 8B would have slightly different design features that are discussed below.

Saddle dikes would be required at topographic saddle low points along the northern end of the reservoir. The saddle dikes would not retain water like the saddle dams but would raise two saddles that are below the minimum crest elevation to an elevation above the maximum reservoir elevation during the Probable Maximum Flood (PMF). The upstream and downstream slopes of saddle dikes would be 2H:1V. The saddle dikes would not have a central core. A typical saddle dike section is presented on Figure 2-30, Saddle Dike Section.

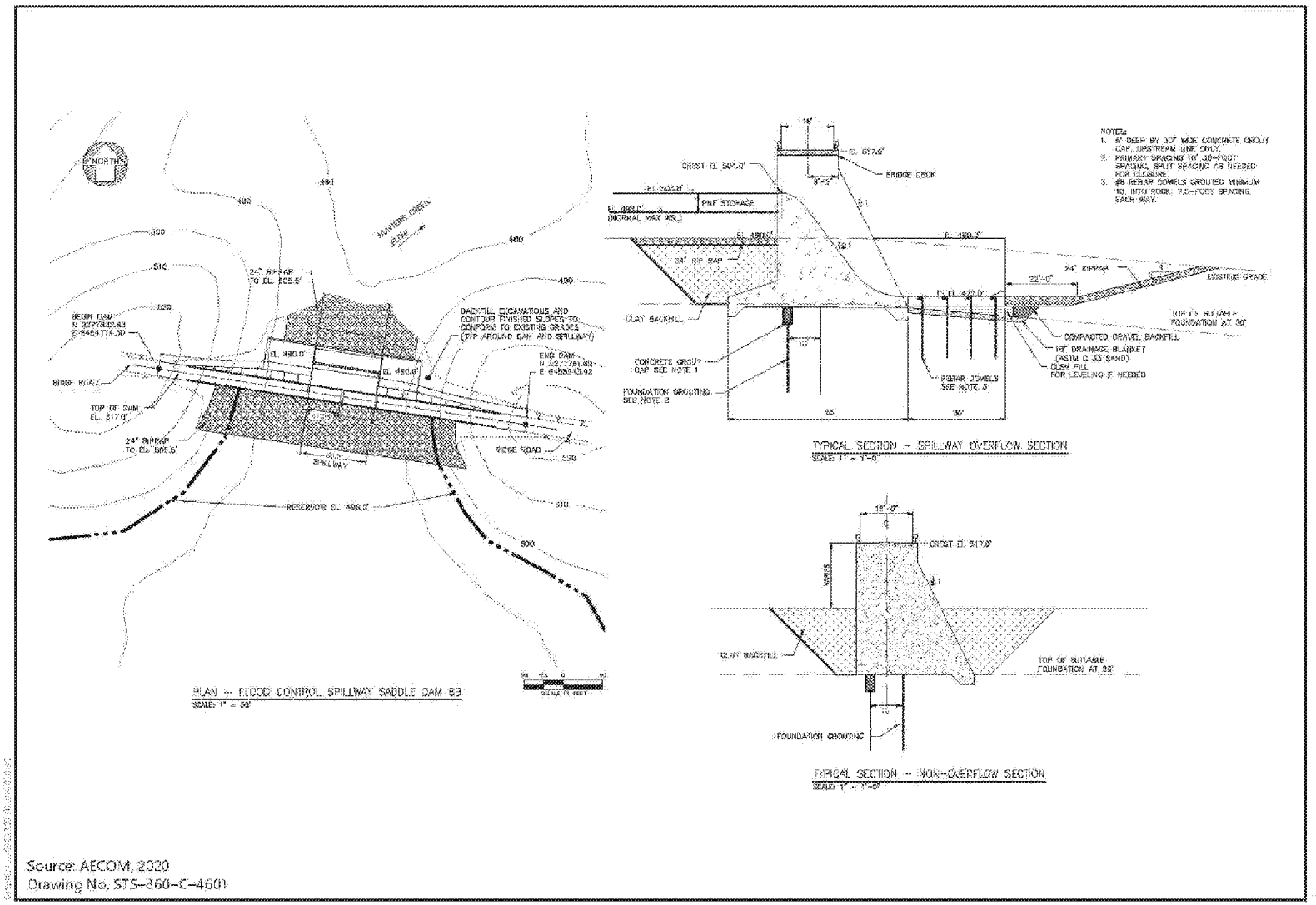
Saddle Dams 3 and 5 would be designed to release emergency flows. Therefore, these two saddle dams would have an intake in the reservoir, a tunnel under the ridge, and an outlet structure to provide energy dissipation and controlled emergency releases of water to the local receiving drainage, Hunters Creek. The intake would be a reinforced concrete structure of appropriate length (approximately 65 linear feet with trashracks). The tunnel would be reinforced concrete with a steel liner; its diameter is expected to range from 10 to 12 feet, and it would be approximately 830 linear feet. The energy dissipation structure would be a reinforced concrete structure containing one or multiple energy dissipation valves within steel-lined chambers to contain spray and provide controlled release of water to Hunters Creek. The size of the energy dissipation chambers would be determined based on manufacturer recommendations. A riprap-lined basin would extend for a minimum of 100 feet downstream of the energy dissipation structure to transition the discharge to the receiving channel.

Saddle Dam 8B would contain the reservoir spillway (see Figure 2-31). The crest width for the dam would be designed to accommodate a 16-foot-wide crest road with suitable concrete or metal guardrails on both sides. The length of the spillway crest section would be based on flood routing analyses, and the crest elevation would be based on the size of the reservoir and normal operating water surface elevation. This elevation would allow storage of the PMF without spilling and have sufficient capacity to pass the volume of over-pumping water in the unlikely event that over-pumping occurred for more than 10 days; it would also enable controlled emergency releases to the local receiving drainage, Hunters Creek. See Figure 2-31, Saddle Dam 8B Spillway, for a schematic of the spillway.



Source: AECOM, 2020
Drawing No. STS–351–C–3601

Figure 2-30. Saddle Dike Section



Source: AECOM, 2020
Drawing No. STS-360-C-4601

Figure 2-31. Saddle Dam 8B Spillway

Dam Monitoring

Instrumentation would be installed in the dam abutments, dam embankments, and downstream of the dams. The objectives of instrumenting the dams include developing physical data for comparison to assumptions made for the design analyses, anticipated behavior based during the studies, and monitoring of dam performance during construction, first filling of the reservoir, and long-term operation of the Project.

The types and locations of instrumentation would be selected to measure specific engineering parameters, including deformation, seepage flows, piezometric levels, pore-water pressure, and seismic response. Types of instrumentation could include piezometers, inclinometers, extensometers, survey monuments, weirs, and strong motion accelerographs. A reservoir level indicator and meteorological station would also be included, and an automated data acquisition system would provide for remote data acquisition of the dams.

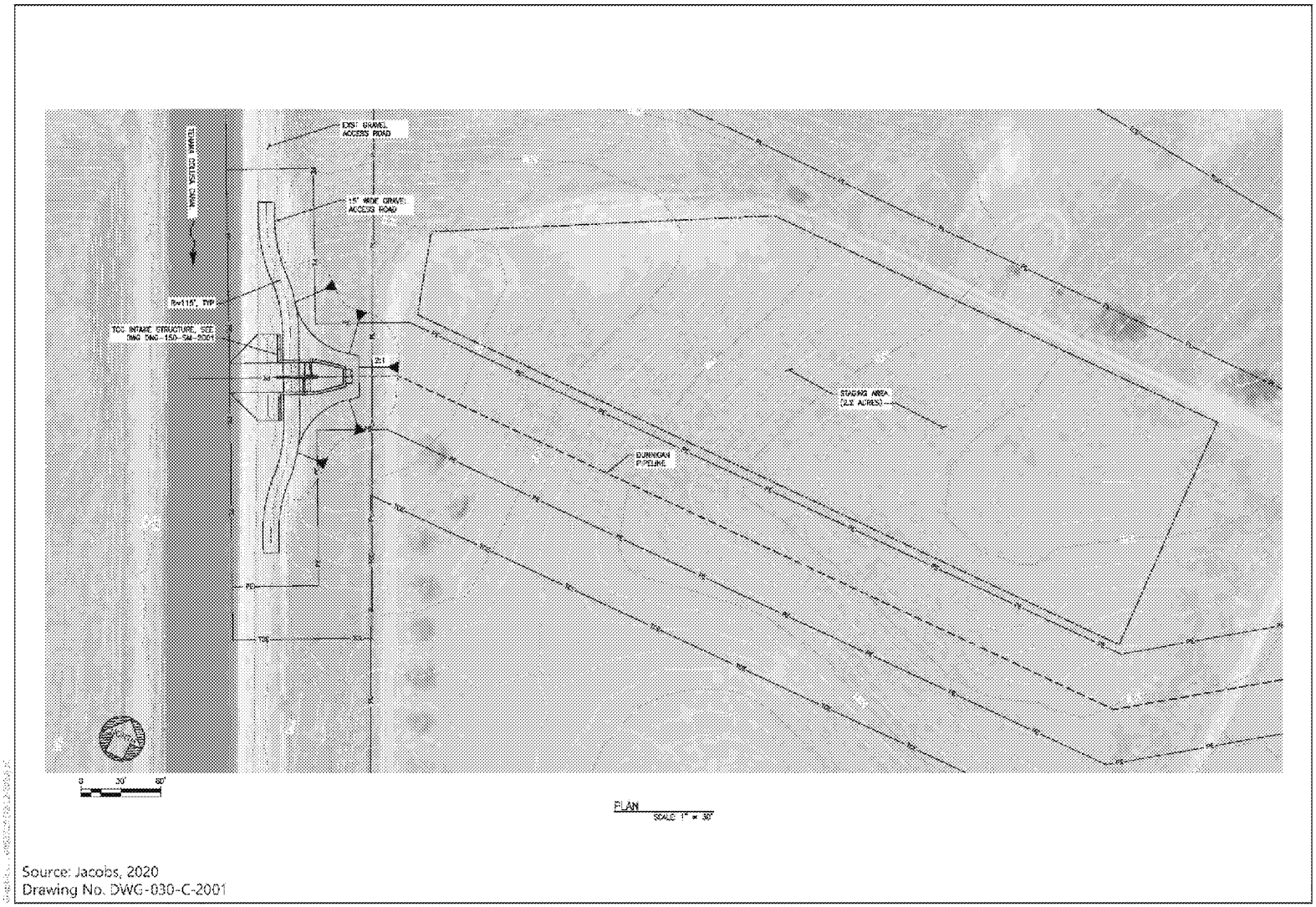
2.5.1.5 Conveyance to Sacramento River

Water released from Sites Reservoir would be conveyed south of the reservoir using the existing TC Canal and a new Dunnigan Pipeline. The water would flow south about 40 miles to near the end of the TC Canal, where it would be diverted into the Dunnigan Pipeline. The flows would subsequently be conveyed to the CBD and ultimately reach the Sacramento River. See Figure 2-2, Alternative 1 and 3 Conveyance to Sacramento River Components, for the location of the facilities associated with conveying water to the CBD and Sacramento River.

TC Canal Intake

A new intake would be required to move water from the TC Canal into the Dunnigan Pipeline. See Figure 2-32, TC Canal Intake Site Plan, for a site plan of the intake. The TC Canal intake site would encompass approximately 0.5 acre and be accessed from the existing TC Canal access road. The intake would be a concrete structure sized for a flow of 1,000 cfs that supports the control gates and associated gate operators. Power would be needed for SCADA control and gate operation to let water into the Dunnigan Pipeline; however, there would be a gravity outlet structure from the TC Canal into the Dunnigan Pipeline and no pumping would be required. A concrete bridge deck would provide vehicular access across the top of the intake. Stoplog slots at the inlet and outlet channels would enable isolation of the control gates for maintenance.

Temporary disturbance for construction of the TC Canal intake adjacent to the TC Canal would require 2 acres for temporary construction for about 1 year. The staging area would be located on the east side of the TC Canal and just north of the Dunnigan Pipeline. Access to this structure is anticipated to be from the existing TC Canal access road.



Source: Jacobs, 2020
Drawing No. DWG-030-C-2001

Figure 2-32. TC Canal Intake Site Plan

Dunnigan Pipeline

The Dunnigan Pipeline would convey water released from the TC Canal to the CBD. See Figure 2-33, Dunnigan CBD Discharge Site Plan, for the location of this facility. The Dunnigan pipeline would be about 4 miles long, have a minimum depth of 6 feet below ground surface, and have an inside diameter of approximately 9 feet (Alternative 1 and 3) to 10.5 feet (Alternative 2). The Dunnigan Pipeline would extend through existing agricultural lands, as well as crossing Interstate 5 (I-5), Road 99W, the railroad, and a commercial auction yard between I-5 and Road 99W. The tunneled crossings at I-5, Road 99W and the railroad would be 300 feet long and 250 feet long, respectively, and would require 12-5-foot-diameter casings.

A CBD outlet with an energy dissipation facility would be required at the downstream end of the pipeline prior to discharging the water into the CBD. Two 60-inch-diameter, fixed-cone valves would be placed at the discharge stilling basin to dissipate energy and adjust the flow. Hoods on the fixed-cones valves would control spray. The conveyance through the Dunnigan Pipeline to the CBD would use gravity (i.e., no pump station) and have a flow up to 1,000 cfs.

Construction of the Dunnigan Pipeline from the TC Canal to the CBD would require dewatering, trenching, and pile driving or a vibration hammer. Dewatering would be necessary for a segment of the pipeline to reduce groundwater levels to 20 or 30 feet below ground surface along its length. Trenching and pipeline installation would be completed after dewatering. Pile driving or a vibration hammer would be used to install piles for construction of the CBD outlet. Construction would include open cut of approximately 100 feet to cross Bird Creek in the dry season.

2.5.1.6 Recreation Areas

The Project proposes the development of two primary recreation areas and a day-use boat ramp. The recreation areas would also require a network of new roads and upgrades to existing roads for maintenance and local access (see Section 2.5.1.7, *New and Existing Roadways* a). Figure 2-34, Recreation Areas, shows a conceptual site map of each recreation area and the recreation areas are described below.

- **Peninsula Hills Recreation Area** – The Peninsula Hills Recreation Area would be located on the northwest shore of the Sites Reservoir, to the north of the existing Sites Lodoga Road and across the reservoir from the Stone Corral Creek Recreation Area. Access would be provided by the existing Sites Lodoga Road west of the reservoir. This recreation area would encompass up to 373 acres and would include a kiosk, access to electricity and potable water, 10 picnic sites (with parking at each site), and hiking trails. There would also be 19 vault toilets, 200 campsites (car and recreational vehicle), and one group camp area.



Source: Jacobs, 2020
Drawing No. DWG-030-C-2002

Figure 2-33. Dunnigan CBD Discharge Site Plan

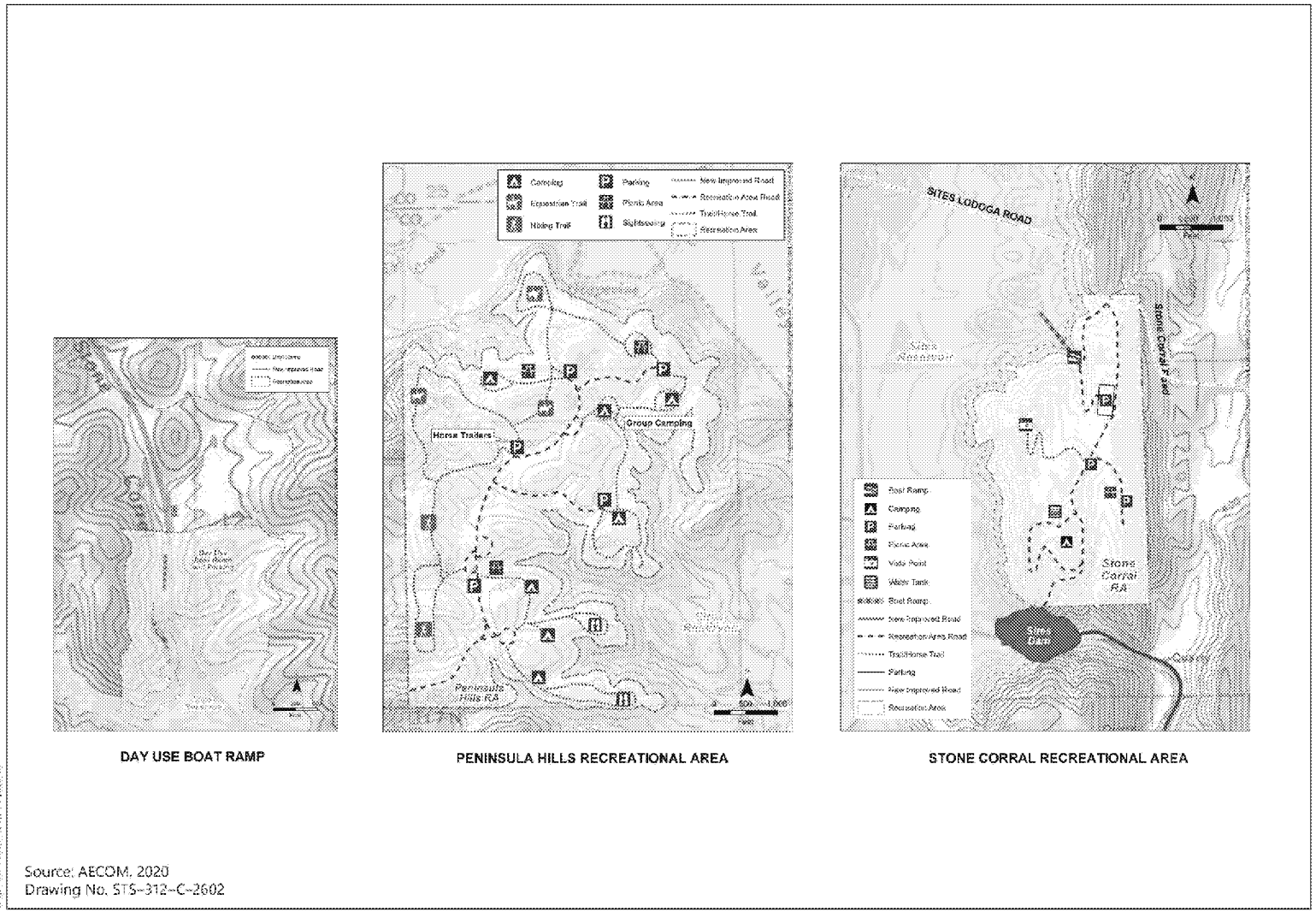


Figure 2-34. Recreation Areas

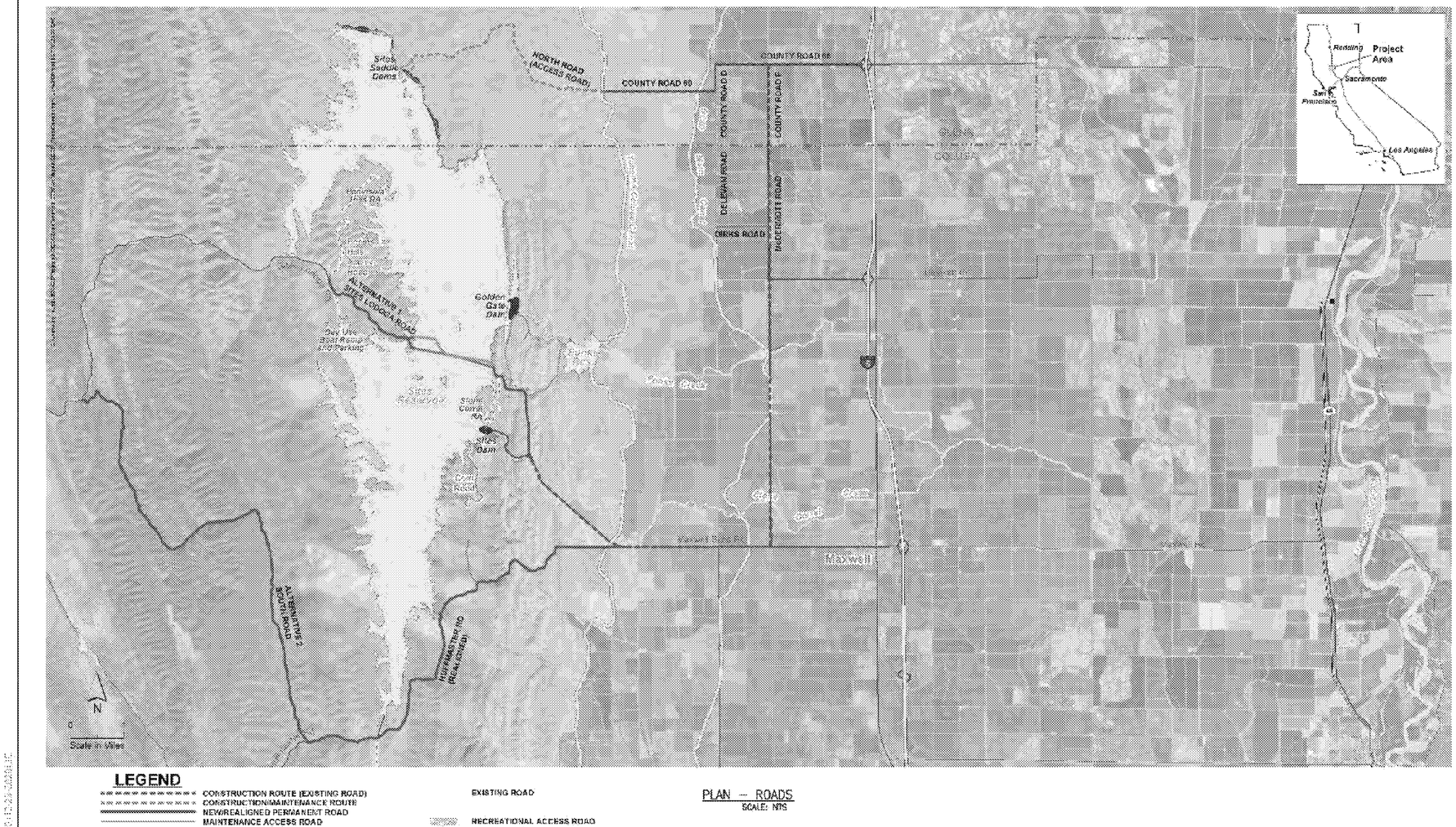
- **Stone Corral Creek Recreation Area** – The Stone Corral Creek Recreation Area would be located on the eastern shore of the Sites Reservoir, north of the existing Maxwell Sites Road and Sites Dam. Access would be provided from Sites Dam and Sites Lodoga Road near the eastern end of the bridge across the reservoir. This recreation area would encompass up to 235 acres and its facilities would include a kiosk, access to electricity and potable water, 10 picnic sites (with parking at each site), and hiking trails. There would also be 10 vault toilets and 50 campsites (car and recreational vehicle).
- **Day-Use Boat Ramp and Parking Areas** – The day-use boat ramp would be located on the western side of the reservoir where the existing Sites Lodoga Road intersects with the proposed inundation area for the reservoir. A parking area would be added to the existing Sites Lodoga Road where it exits the inundation area footprint of the reservoir. The boat ramp and parking area would encompass up to 10 acres and include a kiosk, access to potable water, and one vault toilet.

Construction of the recreation areas and facilities would consist of clearing and grubbing, excavating, backfilling, constructing roads and parking lots, installing utility connections, constructing amenities, constructing the boat ramps, and restoring temporarily disturbed areas. It is anticipated that all construction activities associated with the recreation areas would occur within the proposed footprints of the recreation areas and the temporary and permanent access road areas.

The Authority is also considering a recreation area on the north side of the reservoir within Glenn County. This area may consist of a day-use boat ramp, parking area, picnic facilities, kiosk, access to potable water, and one vault toilet encompassing up to 10 acres. As this facility is conceptual in nature, it is not analyzed in this RDEIR/SDEIS and would require additional CEQA and NEPA analysis if developed and as appropriate.

2.5.1.7 New and Existing Roadways

Approximately 46 miles of new paved and unpaved roads would provide construction and maintenance access to the proposed facilities, as well as public access to the proposed recreation areas. Table 2-4 identifies these roads and their purposes (i.e., construction access, local access, and maintenance access). Figure 2-35, Alternatives 1, 2, and 3 Road Site Map, shows the locations of all local access, construction access, and maintenance access roads that would be needed. The general objectives and maintenance responsibilities for these road types are discussed below, and more detailed information for construction access, local access, and maintenance access roads is subsequently presented in the corresponding subsections. The proposed road improvements and roadway designs are being coordinated with Colusa and Glenn Counties.



Source: AECOM, 2020
Drawing No. STS–305–C–2601

Note: Comm. Road North to be removed

Figure 2-35. Alternatives 1, 2, and 3 Road Site Map

Construction access roads would be designed to provide the necessary roadway improvements specific to the movement of construction equipment and transport of materials. Roadways that would be used for construction access and local access would be designed to achieve the objectives for both uses and prioritize needs for local traffic use and safety. Roads used solely for construction access would be designed with two 12-foot-wide gravel lanes and up to 2-foot-wide shoulders. These roads would be used for maintenance access after completion of construction. Permanent facility access roads constructed from gravel and asphalt would facilitate operation and maintenance. These access roads would require new construction or the relocation of existing public county roads. Temporary gravel roads would also be built during construction. The maintenance of roads used for both construction and local access would be the construction contractor's responsibility during construction and the responsibility of the Colusa or Glenn County department having jurisdiction over them after construction.

Local access roads that would be improved or relocated for construction purposes would provide reliable infrastructure for the traveling public, accommodate transportation needs, and be consistent with state and local design standards. Local access roads would generally have two 12-foot-wide lanes with paved shoulders, and their postconstruction maintenance would be the responsibility of the Glenn or Colusa County department with jurisdiction over them.

Maintenance access roads would be constructed or improved in accordance with the equipment and personnel required for operations and maintenance of specific facilities. As discussed above, roads installed for construction access would be repurposed for maintenance following construction. Repurposed maintenance roads would have one 15-foot-wide minimum gravel lane with no shoulders.

Table 2-4. Sites Project Roads & Purposes Common to all Alternatives

Roads	Road Purpose		Approx. Current Length (miles)	Approx. Proposed Improved Length (miles)	Improvement Types
	Colusa County[2]	Glenn County[2]			
Road 68	--	Local, Construction	3	3	Shoulder improvements/ intersection widening, two structure improvements
Road D	--	Local, Construction	0.5	0.5	Shoulder improvements/ intersection widening, two structure improvements
Road 69	--	Local, Construction	2	2	Shoulder improvements/ intersection widening, three structure improvements
North Road	--	Construction, Maintenance	0	5	New gravel road

Roads	Road Purpose		Approx. Current Length (miles)	Approx. Proposed Improved Length (miles)	Improvement Types
	Colusa County[2]	Glenn County[2]			
Delevan Road	Local, Construction		2	2	Shoulder improvements/ widening
McDermott Road	Local, Construction	Local, Construction	8	4	Shoulder improvements/ widening/paving, five structure improvements
Saddle Dam Road – North (5–9) (provide access to northern portions of Sites Reservoir and the saddle dams)	--	Construction, Maintenance	1	2	New gravel road
Saddle Dam Road – South (1–5)	Maintenance	Maintenance	0	3	New road
Huffmaster Road realigned	Local	--	12	7	Gravel road for residents
Sites Lodoga Temporary Detour Road (Shoo-Fly)	Local, Construction	--	1	1	New, temporary gravel road
Day-Use Boat Ramp (westside)	Local	--	0	0.3	New paved road
Peninsula Hills Recreation Area (provide access from Sites Lodoga Road to the proposed Peninsula Hills Recreation Area)	Local	--	0	4	New gravel road
Potential Access Road A (O&M/PGP/GG Dam)	Maintenance	--	0	1	New road
Potential Access Road B (O&M/PGP/GG Dam)	Maintenance	--	0	0.4	New road

Roads	Road Purpose		Approx. Current Length (miles)	Approx. Proposed Improved Length (miles)	Improvement Types
	Colusa County[2]	Glenn County[2]			
Potential Access Road C1 (O&M/PGP)	Maintenance	--	0.4	0.4	Existing road
Potential Access Road C2 (O&M/PGP/GG Dam)	Maintenance	--	0.6	0.6	Existing jeep road
Stone Corral Creek Recreation Area/Sites Dam	Local	--	0	2.5	New road
Comm Road South	Local	--	0	1	New road

Table Notes:
Local access includes local road for public use and recreational access.
Any improvement type identified as a new road has an approximate current length of 0.

The roadway alignments discussed below are based on service needs and existing planning-level-based mapping to establish a corridor width along roadways. Corridor widths would vary depending on the level of topographical relief—greater relief requires greater flexibility throughout the design process to allow the engineers to move the road within the corridor.

Several existing roads would be improved to support the construction of Sites Reservoir facilities (e.g., main dams and saddle dams) and enable construction vehicles to safely pass one another if needed. After construction of the reservoir was completed, these roads would be maintained to support the operation of the Sites Reservoir. Some of these roads would also be available for public use. This subsection describes the expected routes for construction access and the roadway improvements that would be needed to accommodate construction and maintenance access.

The disturbance area for roads would include the footprints of the proposed roads and stream crossings, the staging areas for materials and equipment, and the area needed to construct the facilities and access roads. Traffic that was not construction related would be diverted around construction disturbance areas in accordance with a traffic management plan.

Initial construction activities would involve establishing staging areas, surveying and marking roadways, clearing, and grading. Road construction would entail making road cuts and fills; hauling away excess cut materials; constructing culverts; laying aggregate road base and asphalt; erecting fences, guardrails, and signs; installing roadway striping and reflectors; restoring temporary disturbance areas; and cleaning up the work sites.

Construction Access

Construction access for the reservoir and supporting facilities would occur on public roads from I-5 to the reservoir site on the north and at Sites Lodoga Road on the east. These roads currently cross small creeks and irrigation canals, and the crossings are generally reinforced through concrete box culverts. There are three primary construction access routes for consideration that would most likely be defined for use by the construction contractor.

The first construction access route would be on 5.5 miles of existing approximately 24 feet wide paved road from I-5 west along Road 68, south on Road D, and west on Road 69 to just west of the TC Canal. From here the road reverts to a single lane (± 12 feet wide) gravel road (North Road), which would be temporary and continue for approximately 5 miles along existing ranch roads and trails to the north end of the reservoir at the saddle dams. From this location, the contractor would establish their own onsite access roads within the limits of the reservoir.

The second construction access route would be on 7.2 miles of existing paved road from I-5 west along Delevan Road, north along McDermott Road, and west on Road 69 to just west of the TC Canal as noted above. Approximately 1.5 miles of McDermott Road between Dirks Road and West Glenn Road consist of gravel; therefore, it is assumed paving would be needed to accommodate the volume of heavy construction traffic.

The third construction access route would be on 12 miles of existing paved road from I-5 along Delevan Road, south along McDermott Road to Maxwell Sites Road, and then west to the existing gravel access road to Funks Reservoir. The first mile of this gravel road would be the initial segment of the Sites Lodoga Road realignment. This gravel road would also provide access to the Funks PGP and Golden Gate Dam. Maxwell Sites Road would provide access to Sites Dam. Construction equipment/materials would not be permitted to pass through the community of Maxwell on the Maxwell Sites Road, thus the construction access roads would circumvent Maxwell.

The existing roads are nonstandard in geometry and have inadequate roadbed structural section to accommodate the large, heavy vehicles that would be used to transport construction equipment and materials. These roads consist of Road 68, Road D, Road 69, Delevan Road, and McDermott Road. They are narrow and typically include two paved 11-foot- or 12-foot-wide lanes and 1- to 3-foot-wide earthen shoulders. The pavement conditions of Road 68, Road D, and Road 69 pavement conditions are "at risk", "poor", and "very poor", respectively, upon visual inspection by project engineers. A segment of McDermott Road in Colusa County is gravel. Road 69 transitions to a single-lane, gravel road west of the TC Canal. The following improvements would need to be implemented on these roadways:

- Roadbed and intersection widening to allow for safe mobility of construction traffic that would be comingled with local vehicular and agricultural equipment traffic.
- Roadbed reconstruction to enable use by large, heavy vehicles transporting construction equipment and materials
- Horizonal and vertical curve corrections
- Drainage feature improvements to allow for proper drainage

Reconstruction of the roads above would include the addition of new 2-foot-wide paved shoulders to each lane, as well as potential modifications to existing creek and irrigation canal crossings (as described below). The new shoulders would be within the public right-of-way, as would any temporary work areas needed to reconstruct the roads. All existing roadway improvements would be designed to avoid or minimize impacts on existing utility infrastructure and public right-of-way. Once the roads are constructed, all county roads would be maintained by Glenn or Colusa County, while specific access and maintenance roads (e.g., North Road, South Comm Road) would be maintained by the Authority.

The following roads involve the noted number of structures that would need to be crossed. It is assumed that these structures would need to be widened, strengthened, or replaced, depending on their structural condition and load rating capacity.

- Road 68 – two structures
- Road D – two structures
- Road 69 – three structures (two on paved roads crossing the TC Canal and GCID Main Canal, and one on a gravel road)
- McDermott Road – five structures

Local Access

In addition to the local roads described above that would be improved for construction purposes and then remain local access roads, a number of other public local roads would be relocated or developed to accommodate reservoir facilities. These roads include Sites Lodoga Road, Huffmaster Road, Comm Road South, and recreation area roads. There would also be one temporary detour during construction, the Sites Lodoga Temporary Detour Road. Permanent changes to Sites Lodoga Road and Huffmaster Road are discussed in Section 2.6, Alternative 1 Specific Elements and Section 2.7, Alternative 2 Specific Elements below.

- **Comm Road South** – Access to existing communication facilities would consist of a gravel road that would start near the northern end of Huffmaster Road and proceed north to the communications tower.

- **Recreation Area Roads** – New recreation area roads would provide access from Sites Lodoga Road to the Peninsula Hills Recreation Area, day-use boat ramp, and Stone Corral Creek Recreation Area. The access road to Peninsula Hills Recreation Area on the west side of Sites Reservoir would be paved. The access road to the day-use boat ramp, which would also be on the west side of the reservoir, would be paved. The access road to the Stone Corral Creek Recreation Area on the east side of the reservoir would be paved and gravel.

- **Sites Lodoga Temporary Detour Road** – A temporary detour road would be constructed to expedite construction and maintain traffic movement through the reservoir site during the construction of Sites Dam and the bridge across the reservoir (including fill prisms). This road would convey local traffic for a period of approximately 1 year and would be aligned around the Sites Dam site partially on the Sites Lodoga realignment

from Maxwell Sites Road to near the easterly bridge at the top of the ridge. The temporary detour road would then split off to the south and traverse hilly terrain before Comm Road South rejoining Sites Lodoga Road near its intersection with Peterson Road.

Maintenance Access

New and existing maintenance access roads would provide access to the main dams, saddle dams and dikes, I/O Works, and Funks PGP. Except for the existing road to Funks Reservoir, the maintenance access roads would be single-lane, 15-foot-wide gravel roads with no shoulder. Comm Road South would be a local access and maintenance access road.

North Road would begin at the end of the unpaved Road 69, continue 5 miles to the reservoir's edge, and connect with several new maintenance access roads that would provide access to the saddle dams and dikes. Access Road A1 would be a new gravel road along the crest of the Golden Gate Dam with minor cuts/fills. Access Roads B1 and B2 would be new gravel roads connecting to the I/O Works and Golden Gate Dam with minor cuts/fills. Access Road C1 is expected to be a two-lane, 30-foot-wide, paved road to access Funks Reservoir and the existing road to the reservoir would be maintained. Access Road C2 would be improved from an existing jeep trail at the east base of the Golden Gate Dam to a gravel road that would extend off Access Road C1.

2.5.1.8 Project Buffer

The Authority would acquire and maintain a project buffer encompassing the lands beyond the facility footprints. The buffer width would be 100 feet around the Sites Reservoir and related facilities, all buildings, most aboveground components, and recreation areas. The buffer may be less than 100 feet wide if a facility is near a property boundary and the proposed uses do not conflict with the adjacent land uses. Buffers are not anticipated for underground or buried facilities (i.e., Dunnigan Pipeline), transmission lines, or roads (both public and Project maintenance access roads).

Although buffer areas would generally remain undeveloped, the Authority would install limited features and perform periodic maintenance primarily related to reducing fire hazards. These actions would include erecting and maintaining fencing, grading fire breaks/trails, maintaining vegetation (e.g., grazing, tilling, or disking), and performing limited prescribed/controlled burns. The Authority may manage buffer areas as wildlife habitat where appropriate.

2.5.2 Operations and Maintenance Common to All Action Alternatives

This section describes the operations and maintenance activities common to all of the Action Alternatives.

2.5.2.1 Water Operations

The Project would provide water supply and water supply related environmental benefits to the Sites Storage Partners. Water would be diverted into Sites Reservoir from the Sacramento River at the existing RBPP into the TC Canal and at the existing GCID Hamilton City Pump Station into the GCID Main Canal. Both of these facilities have existing fish screens. Once in the TC Canal, water would be conveyed to the existing Funks Reservoir and pumped into the new Sites Reservoir via the Funks PGP and associated facilities. Once in the GCID Main Canal, water

would be conveyed to the new TRR and pumped into the new Sites Reservoir via the TRR PGP and associated facilities. Water could be diverted to storage in Sites Reservoir when the diversion criteria are met and when the Delta is in excess conditions. Diversions to storage could occur anytime between September 1 to June 15, the timeframe that the Sacramento River is not fully appropriated. Water would be held in storage in Sites Reservoir until requested for release by a Sites Storage Partner. Water releases would generally be made from May to November, but could occur at any time of the year depending on the Storage Partner's need and conveyance capacity to convey water to its intended point of delivery. Water would be released from Sites Reservoir via the I/O Works back through the TRR PGP and into the TRR or back through Funks PGP back into Funks Reservoir. Water released could be used along the GCID Main Canal, along the TC Canal, or conveyed to the new Dunnigan Pipeline and discharged to the Colusa Basin Drain and conveyed via the Sacramento River or the Yolo Bypass to a variety of locations in Delta and south-of-Delta[2]. Exchanges of water may also occur with the CVP and SWP. Water would also be diverted and impounded from Funks and Stone Corral Creeks and releases from Golden Gate Dam and Sites Dam, respectively, would occur into Funks and Stone Corral Creeks. Water operations are described in more detail below.

The Authority intends to apply for and obtain a water right permit from the State Water Resources Control Board (SWRCB) for the operations of Sites Reservoir. Actual operations would be subject to the terms and conditions of this water right along with all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time. Operations under all Action Alternatives would also require coordination with Reclamation and DWR as described below. The Authority is working with Reclamation and DWR to develop mutually agreeable operating agreements that would describe the approach for coordinating operations with Sites and the CVP and SWP operations, respectively.

Diversion to Sites Reservoir

Sites Reservoir would be filled through the diversion of Sacramento River water that generally originates from unregulated tributaries to the Sacramento River downstream from Keswick Dam. Only a small amount of the diversions to Sites Reservoir would come from flood releases from Shasta Lake. Diversions to Sites Reservoir would be made from the Sacramento River at the existing RBPP (River Mile 243) near Red Bluff into the TC Canal and at the existing GCID Hamilton City Pump Station (River Mile 205) near Hamilton City into the GCID Main Canal. Water could be diverted to storage in Sites Reservoir from September 1 to June 15. Diversions would only occur when all of the following conditions are met:

- Flows in the Sacramento River exceed the minimum diversion criteria (described below);
- The Delta is in "excess" conditions as determined by Reclamation and DWR;

[2] The term south-of-Delta or phrase south of the Delta is used to refer to areas that can receive water from the south Delta pumping facilities, including the SWP Banks Pumping Plant, Reclamation's Jones and Rock Slough pumping plants, and Contra Costa Water District's pumping plants. This includes areas south and west of the Delta, such as Contra Costa, Alameda, and Santa Clara counties.

- Senior downstream water rights, existing CVP and SWP and other water rights diversions including CVP 215 water and Article 3F water and SWP Article 21 (interruptible supply), and other more senior flow priorities (such as diversions associated with Freeport Regional Water Project and existing Los Vaqueros Reservoir) have been satisfied;
- Flows are available for diversion above flows needed to meet all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time that diversion occurs. This would include, but is not limited to any flow requirements in Water Right Decision 1641 (SWRCB, 2000), the 2019 ROC on LTO Biological Opinions (USFWS 2019 and NMFS 2019) and the SWP ITP (CDFW 2020); and
- There is available capacity at the RBPP and in the TC Canal and GCID facilities to divert and convey water to Sites Reservoir, above the capacity needed for deliveries to existing TC Canal users and within the GCID service area.

The RBPP would serve as the primary diversion location and would divert water from the Sacramento River to Funks Reservoir through the TC Canal and into the Sites Reservoir through the Funks PGP and the I/O Works. Up to 2,100 cfs, plus losses, would be diverted at the RBPP for the Project. The RBPP has an existing fish screen that meets NMFS and CDFW fish screen criteria through which all flows diverted for the Project would be screened. The Hamilton City Pump Station would serve as the secondary diversion location and would divert water from the Sacramento River to the new TRR through the GCID Main Canal and into the Sites Reservoir through the TRR PGP and the I/O Works. Up to 1,800 cfs, plus losses, would be diverted at the Hamilton City Pump Station for the Project. The Hamilton City Pump Station has an existing fish screen that meets NMFS and CDFW fish screen criteria through which all flows diverted for the Project would be screened. Although the RBPP will be the primary diversion point, both facilities would be operated simultaneously when river conditions, facilities, and capacity are available for a maximum combined diversion rate of 3,900 cfs, plus losses.

Estimated total annual diversion of Sacramento River water from both diversion facilities to Sites Reservoir could be up to the full reservoir amount. Based on model simulations, the estimated annual diversions would usually range from 60 thousand acre-feet (TAF) per year to 390 TAF per year, depending on hydrologic conditions, availability of Sacramento River water, and diversion and conveyance facility capacities.

Diversion Criteria

The Project would be operated to meet the diversion criteria summarized in Table 2-5 and described in more detail below. All diversion criteria must be met for the Project to divert.

Table 2-5. Summary of Project Diversion Criteria

Location (Listed from North to South)	Criteria
Bend Bridge Pulse Protection	Protection of all qualified precipitation-generated pulse events (i.e., peaks in river flow rather than scheduled operational events) from October to May based on the detection of fish presence and migration during the beginning of the flow event. For each event where fish presence and migration is detected, diversions from the Sacramento Riverwould cease for 7 days.
Minimum Bypass Flows in the Sacramento River at the RBPP	3,250 cfs minimum bypass flow at all times; rate of diversion controlled by fish screen design
Minimum Bypass Flows in the Sacramento River at the Hamilton City Pump Station	4,000 cfs minimum bypass flow at all times; rate of diversion controlled by fish screen design
Minimum Bypass Flows in the Sacramento River at Wilkins Slough	8,000 cfs in April and May; 5,000 cfs all other times
Fremont Weir Notch Protections	No more than 1% reduction in flow over weir when spill over the weir are less than 600 cfs. No more than a 10% reduction when flow over weir when spills over the weir are between 600 cfs and 6,000 cfs. No restriction when flows over the weir are greater than 6,000 cfs
Freeport, Net Delta Outflow Index, X2, and Delta Water Quality	Operations consistent with all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time that diversion occurs

Bend Bridge Pulse Protection

All Action Alternatives would implement a pulse flow protection measure to be applied to all qualified precipitation generated peaks in the hydrograph that originate primarily from tributaries to the Sacramento River that flow into the mainstem Sacramento River downstream of Keswick Dam from October through May. The pulse flow protection measure addresses the survival of migrating juvenile winter-, spring-, fall-, and late fall-run Chinook salmon (*Oncorhynchus tshawytscha*), and steelhead (*Oncorhynchus mykiss*) through the middle reaches of the Sacramento River. Pulse flows during this period would provide flow continuity between the upper and lower Sacramento River (i.e., below Wilkins Slough) and are expected to enhance survival of these migratory fish (Michel et al. 2015, In Press ; Notch 2017) as fish movement is thought to occur in response to increased flow, water-year type and turbidity associated with the beginning of a precipitation-generated high-flow event (Poytress et al. 2014, Cavallo et al. 2015).

Pulse protection would occur from October through May to address outmigration of juvenile winter-, spring-, fall- and late fall-run Chinook salmon, as well as a portion of the steelhead juvenile outmigration period. The Project's Adaptive Management Plan would include a fish monitoring program capable of detecting a migratory fish response during the beginning of a

precipitation-generated high flow event and continuing research would be utilized to operate to, and further refine the pulse flow protection strategy.

The Adaptive Management Plan and fish monitoring program would be developed in cooperation with Reclamation and the fishery resource agencies, including CDFW, NMFS, and USFWS and would be integrated with existing fish monitoring programs to the extent possible. For example, the USFWS monitoring program at RBDD, conducted for purposes of estimating fish production indices in the spawning reach above RBDD, is particularly relevant. This program could be supplemented with additional monitoring sites downstream, as necessary. The Authority would coordinate with the fishery resource agencies to define an appropriate capture rate or other metric to define the onset of a fish pulse stimulated by increasing flows and turbidity from storm events. The following criteria define a qualified pulse event:

- Outmigration of anadromous fish is detected based on the Adaptive Management Plan and fish monitoring program.
- If the 3-day trailing average of Sacramento River flow at Bend Bridge exceeds 8,000 cfs and 3-day trailing average tributary flow upstream of Bend Bridge (Cow Creek, Cottonwood Creek and Battle Creek) exceeds 2,500 cfs, a pulse event is initiated if the previous day was not already in a pulse event. This flow level is consistent with Sacramento River flow of 10,700 cfs at Wilkins Slough (considering increases from tributary inflows).
- A pulse event terminates seven days after initiation.
- After completion of a pulse event, the following conditions must occur before another pulse event is triggered: (1) 3-day trailing average of Sacramento River flow at Bend Bridge was less than 7,500 cfs for seven consecutive days; and (2) 3-day trailing average of tributary flow upstream of Bend Bridge (Cow Creek, Cottonwood Creek and Battle Creek) was less than 2,500 cfs for seven consecutive days.

Project diversions from the Sacramento River would not occur during a qualified pulse event. Diversions are otherwise unrestricted by the Bend Bridge Pulse Flow protection criteria.

Minimum Bypass Flows in the Sacramento River at the RBPP

A minimum bypass flow in the Sacramento River at the RBPP of 3,250 cfs would be in place at all times to stabilize flows in the Sacramento River and protect salmon redds. When flow in the Sacramento River is less than 3,250 cfs at the RBPP, the Project would not divert. When flows in the Sacramento River exceed 3,250 cfs at the RBPP, diversions at the RBPP may occur and the rate of diversion at the RBPP would be controlled by and scaled to the fish screen design as shown in Figure 2-36, until the full 2,100 cfs diversion could be achieved at flows of approximately 7,860 cfs in the Sacramento River.

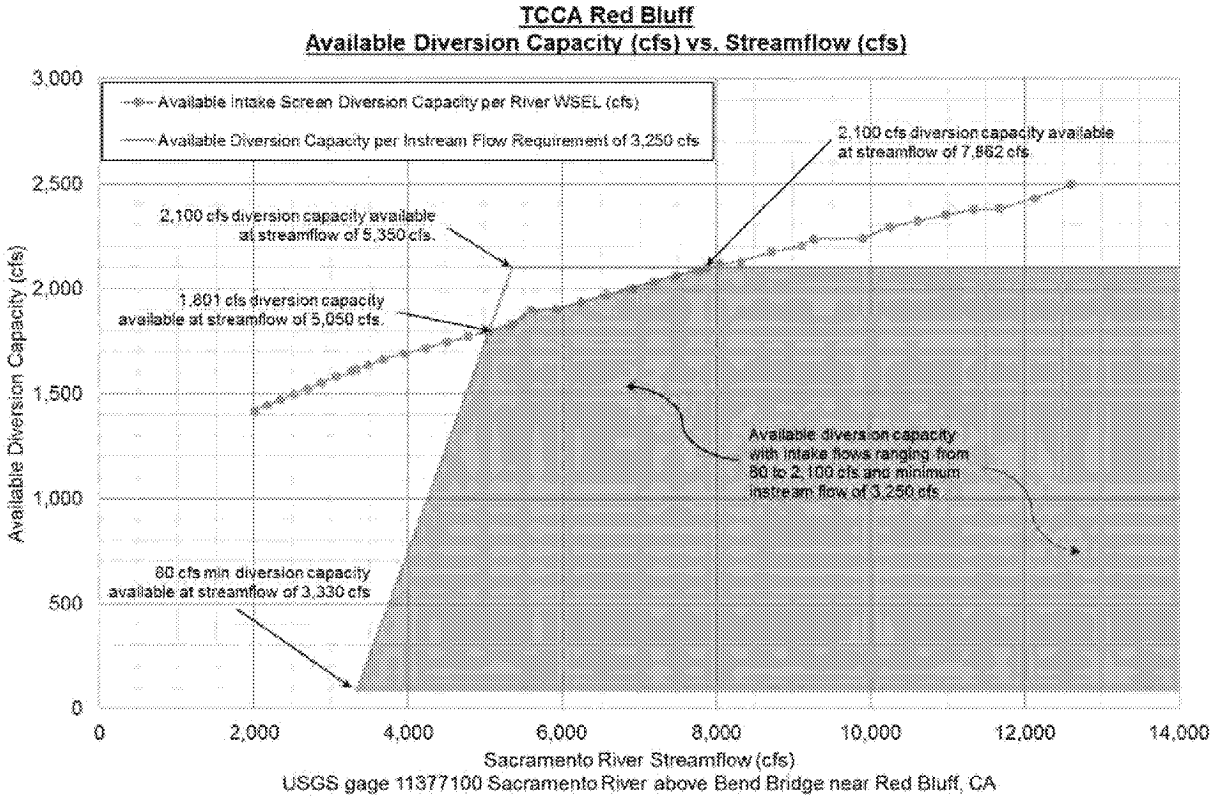


Figure 2-36. Available Diversion Capacity versus Streamflow at RBPP

Minimum Bypass Flows in the Sacramento River at the Hamilton City Pump Station

A minimum bypass flow in the Sacramento River at the Hamilton City Pump Station of 4,000 cfs would be in place at all times to stabilize flows in the Sacramento River and ensure proper function of the fish screen. When flow in the Sacramento River is less than 4,000 cfs at the Hamilton City Pump Station, the Project would not divert. When flows in the Sacramento River exceed 4,000 cfs at the Hamilton City Pump Station, diversion at the Hamilton City Pump Station may occur and the rate of diversion at the Hamilton City Pump Station would be controlled by and scaled to the fish screen design as shown in Figure 2-37, until the full 1,800 cfs diversion could be achieved at flows of about 5,800 cfs in the Sacramento River.

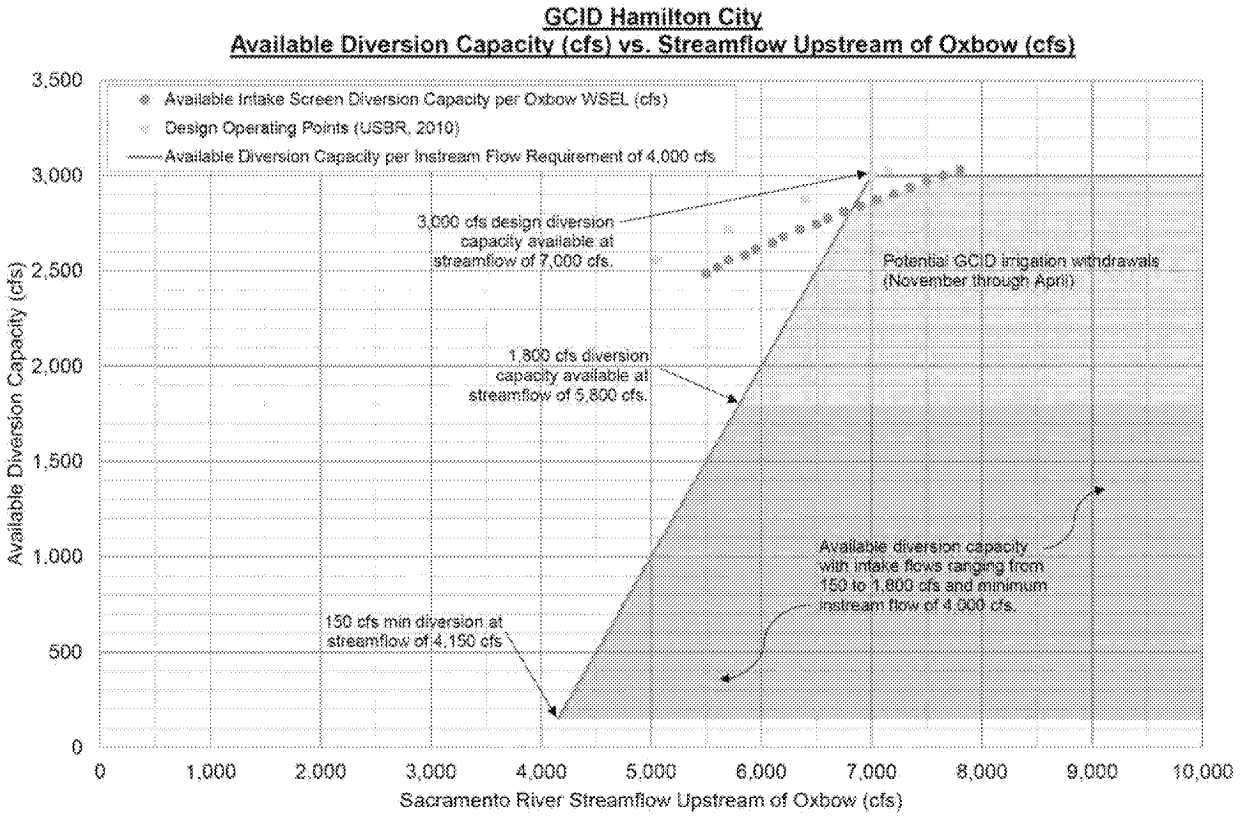


Figure 2-37. Available Diversion Capacity versus Streamflow at the Hamilton City Pump Station

Minimum Bypass Flows in the Sacramento River at Wilkins Slough

In addition to the minimum bypass flows in the Sacramento River at RBPP and the Hamilton City Pump Station, a minimum bypass flow of 8,000 cfs in the Sacramento River at Wilkins Slough would be in place in April and May and 5,000 cfs at all other times. This bypass flow regime is consistent with recommendations of 10,700 cfs at Wilkins Slough (considering increases from tributary inflows) and based on research performed over the last 30 years; focusing on recent studies that relate survival of outmigrating juvenile Chinook salmon to flows in the Sacramento River (Michel 2010, del Rosario et al. 2013, Poytress et al. 2014, Michel et al. 2015, Iglesias et al. 2017, Notch 2017. Henderson et al. 2018, Hassrick et al. In Prep, and Michel et al. In Press).

Fremont Weir Notch Protections

The Project's diversion criteria have been formulated to avoid impacts on Reclamation's ability to implement its obligations in the 2019 NMFS ROC on LTO Biological Opinion to implement the Yolo Bypass Restoration Salmonid Habitat Restoration and Fish Passage Implementation Plan and provide 17,000+ acres of inundation in the Yolo Bypass from December to April (NMFS 2019). For the purposes of modeling the effects of the Project, Project diversions may occur if no more than a 1% reduction in flow over the weir would occur when spills over the weir are less than 600 cfs. Project diversions may occur if no more than a 10% reduction in flow

over the weir would occur when spills over the weir are between 600 cfs and 6,000 cfs. When flows over the Fremont Weir are greater than 6,000 cfs there would be no restriction on Project diversions. These limitations are intended to reduce changes to spill frequency and duration.

Freeport, Net Delta Outflow Index, X2, and Delta Water Quality

For lower Sacramento River and Delta locations, the Project would operate in a manner that would not adversely affect the ability of others to meet all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time that diversion occurs.

Storage in Sites Reservoir

Water would be stored in Sites Reservoir until requested for release by a Sites Storage Partner. The Authority would prepare a Reservoir Management Plan that would describe the management of water resources in Sites Reservoir which would include a plan for monitoring water quality (see Section 2.5.2.4 for more information on the Reservoir Management Plan).

Releases from Sites Reservoir

Releases from Sites Reservoir would be made in any water year type to meet the needs of the Sites Storage Partners, including the water supply related environmental benefits under WSIP. The releases would be made from the I/O Works in Sites Reservoir and conveyed via pipeline to either Funks Reservoir or the TRR. Under normal operating conditions, 2,000 cfs would be released from the I/O Works to Funks Reservoir and 1,000 cfs would be released from the I/O Works to the TRR. The I/O Works would allow withdrawal of water from Sites Reservoir over a range of depths to manage release water temperatures.

From Funks Reservoir or the TRR, releases would be conveyed as follows:

- **Release for Sites Storage Partners Along the TC Canal and the GCID Main Canal** – Releases would be made to Funks Reservoir or the TRR and conveyed to the respective Sites Storage Partner via the existing TC Canal and GCID facilities.
- **Releases for Sites Storage Partners Along the Sacramento River** – Releases for Sites Storage Partners along the Sacramento River would generally be made via exchange as water from Sites Reservoir cannot be physically conveyed to any Sites Storage Partner on the Sacramento River between the GCID Hamilton City Pump Station and Knights Landing. Real-time exchanges, primarily with GCID, but also with Reclamation would be used for these Sites Storage Partners.
- **Releases for Sites Storage Partners Along the CBD, Yolo Bypass, and North Bay Aqueduct** – Releases for Sites Storage Partners, including some of the Proposition 1 water, would be made to Funks Reservoir. This water would then be conveyed down the TC Canal to the new Dunnigan Pipeline and released into the CBD. The water would then be conveyed down the CBD, through the Knights Landing Ridgecut, to the Yolo Bypass/Cache Sough Complex for Proposition 1 benefits or for diversion into the North Bay Aqueduct.

- **Releases for Sites Storage Partners South-of-Delta** – Releases for Sites Storage Partners who are located south of the Delta, including water for Incremental Level 4 Refuge water supply benefits under WSIP, can take a combination of different paths under all Action Alternatives. Releases could be made to Funks Reservoir, conveyed down the TC Canal to the new Dunnigan Pipeline and released into the CBD. This water would then be conveyed down the CBD, through the Knights Landing Ridgecut, to the Yolo Bypass/Cache Sough Complex and into the North Delta. Once in the Delta, this water could be diverted at any of the South Delta pumping facilities (SWP's Banks Pumping Plant, Reclamation's Jones Pumping Plant or Rock Slough Pumping Plant, or Contra Costa Water District's pumping plants) and conveyed to the respective Sites Storage Partner using existing conveyance facilities and mechanisms. Alternatively, once releases are in the CBD, they could be conveyed to the Sacramento River via the Knights Landing Outfall Gates. Once in the Sacramento River, these releases would enter the Delta and could be diverted at any of the South Delta pumping facilities. Releases for Sites Storage Partners who are located south of the Delta, including water for Incremental Level 4 Refuge water benefits under WSIP, may also be made by exchanges with Reclamation and DWR. Releases for Sites Storage Partners south-of-Delta would generally be made during July to November to coincide with available pumping capacity at the South Delta pumping facilities and would be subject to applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time.

Releases would be coordinated with Reclamation and DWR to ensure there are no conflicts with CVP and SWP operations and no adverse effects to the CVP and SWP. In addition, releases would be coordinated with Reclamation and DWR to ensure that there is available capacity to redivert releases at the South Delta pumping facilities for any releases that would be pumped at these locations. The majority of releases to the Sacramento River would occur when the CVP and SWP are in balanced conditions, that is releases from upstream reservoirs and unregulated flow approximately equal water supply needed to meet Sacramento Valley in-basin uses and CVP and SWP exports.

Sites Reservoir is currently estimated to have a dead pool of approximately 17,700 AF, below which water cannot physically be removed from the reservoir using the I/O Works. However, the Authority is currently planning to operate to a dead pool of 120,000 AF under normal conditions. The operational dead pool amount may be revised and reduced in final design. Sites Reservoir may also be drawn down below the operational dead pool in drought situations.

Coordination with CVP and SWP

Operations of all Action Alternatives would be coordinated with Reclamation and DWR to prevent conflicts with the CVP and SWP operations or add additional obligations on the CVP or SWP to meet applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time. The Authority is currently working with Reclamation and DWR to establish operating agreements with both agencies that would describe the details of the coordination and collaboration that would take place in the operations of the Project.

It is expected that the Project would also be incorporated into existing and future technical and advisory teams in which Reclamation and DWR participate in to coordinate the CVP and SWP operations with the regulatory agencies. This could include, but would not be limited to, the Sacramento River Temperature Task Group and Delta Operations for Salmon and Sturgeon Group. This would allow for better and more efficient coordination of the Project's operations, in concert with the CVP and SWP operations, with the regulatory agencies along with providing opportunities to work collaboratively to achieve species benefits in the Sacramento Valley and the Delta.

All of the Action Alternatives also include the possibility of exchanges of water with the CVP and SWP. Exchanges have the potential to assist the CVP and SWP in meeting their regulatory obligations. Exchanges are expected to primarily occur with Shasta Lake and Lake Oroville, but could also occur with Folsom Lake and real-time with local participants. Exchanges would only be conducted when they would be neutral or beneficial to CVP and SWP operations and not impact the ability of the CVP or SWP to meet applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time. Exchanges are described in more detail below.

- **Shasta Lake Exchanges** – Exchanges under the Project with Shasta Lake would be formulated to target cold-water pool preservation and anadromous fish benefits. Shasta Lake exchanges would occur in years when forecasted temperature-based mortality of early life stage winter-run Chinook salmon would be reduced if the exchange is in place. Under a Shasta Lake exchange, water would be released from Sites Reservoir in the spring to meet CVP purposes, including CVP water service and/or repayment contractors in the Sacramento Valley that could physically receive water from Sites Reservoir. By reducing releases from Shasta Lake in the spring, storage and the cold-water pool in Shasta Lake would be preserved for use later in the year, typically during critical months of the cold-water pool management season (August and September). In late-summer and fall (i.e., August through November), Reclamation would release an equivalent amount of water from Shasta Lake for Sites Storage Partners. All exchange water would be released from Shasta Lake in late summer and fall and no exchanged water would be carried over from year to year.
- **Lake Oroville Exchanges** – Exchanges under the Project with Lake Oroville would be formulated to facilitate Sites Project deliveries to Sites Storage Partners and refuges south of the Delta and may also improve cold-water pool conditions at Lake Oroville. Exchanges with Lake Oroville are expected to happen more frequently and would be driven by a variety of factors. Under a Lake Oroville exchange, water would be released from Sites Reservoir primarily in June and July to meet SWP purposes. By reducing releases from Lake Oroville in these months, storage and the cold-water pool in Lake Oroville would be preserved for use later in the year, typically during critical months of the cold-water pool management season (August and September). In late-summer and fall (i.e., August through November), DWR would release an equivalent amount of water from Lake Oroville for Sites Storage Partners. All exchange water would be released from Lake Oroville in late summer and fall and no exchanged water would be carried over from year to year.

- **Folsom Lake Exchanges** – Exchanges with Folsom Lake would be operated similarly to exchanges with Shasta Lake. Sites Reservoir would release water in the spring and early summer to meet CVP purposes in lieu of Reclamation releases at Folsom Lake. An equivalent amount of water would then be released from Folsom Lake in the late summer and fall for Sites Storage Partners. All exchange water would be released from Folsom Lake in late summer and fall and no exchanged water would be carried over from year to year.
- **Real-Time Exchanges with Local Participants** – To support timing of releases and deliveries to Sites Storage Partners north and south of the Delta, in-lieu exchanges with local participants may occur. This type of exchange is most likely to occur with GCID, but could also occur with Sacramento River Settlement Contractors and Reclamation. Instead of diverting all of its CVP supply from the Sacramento River, the contractor would receive a portion of its CVP supply from Sites Reservoir. A portion of the water released from Shasta Lake to meet the contractor's CVP supply would be left in the Sacramento River (not diverted by the contractor) and used for other Sites Storage Partners.

Funks Creek and Stone Corral Creek Releases

The Project includes releases from Sites Reservoir into both Funks and Stone Corral Creeks. These releases would be made to comply with California Fish and Game Code Section 5937 and ensure no harm to downstream water right holders on these creeks. At this time, access to the creeks is restricted and there is not sufficient existing information on these two creeks, including current fish assemblage, channel capacity, and existing habitat, to determine a specific release pattern or approach to releases into these two creeks. Field studies would be conducted once access is obtained and before final design for Sites and Golden Gate Dam is completed to determine the following:

- Existing fish assemblage in these creeks, including fish species presence and habitat use;
- Characterization of habitats available (e.g., spawning, rearing, foraging, and sheltering habitats) at varying flow levels;
- Characterization of flows, including assessing the base flow during the summer months;
- Conducting a fluvial geomorphologic study to characterize bed load and flow levels necessary for mobilization; and
- Hydrological studies to define flow temperature relationships.

Using information from these field studies, along with currently available information, the Authority would prepare a Funks and Stone Corral Creeks Operations Plan that would identify the approach for releases, including release schedule and volumes, a monitoring plan, and an adaptive management plan to maintain fish in good condition consistent with California Fish and Game Code Section 5937. Releases into these creeks need to be made in consideration of the flood control benefits of the Project and in such a way as to not overtop the stream banks and flood downstream areas.

Water released into Funks Creek would be made through the transition manifold at the base of Golden Gate Dam and a new pipeline that terminates at Funks Creek below Golden Gate Dam. These facilities are currently being designed to carry up to 100 cfs with a release range of 0 to 100 cfs into Funks Creek. Water released into Stone Corral Creek would be made through the permanent outlet at Sites Dam. This outlet is currently being designed with a release range of 0 to 100 cfs, with an emergency release capacity of up to 2,500 cfs.

Flood Control

All Action Alternatives would provide flood damage reduction benefits to the communities of Maxwell and Colusa, local agricultural lands and rural homes and I-5 by impounding Funks Creek and Stone Corral Creeks. These flood control benefits are inherent in the design of the Project and no specific operational criteria are necessary to achieve these benefits.

Emergency Release

All Action Alternatives include the design and operation of facilities to meet DSOD criteria and requirements for emergency reservoir drawdown. During an emergency release event, Saddle Dams 3 and 5 (Alternative 1 and 3) and Saddle Dam 8B (all Action Alternatives), the I/O Works, and Sites Dam would operate simultaneously to release water. Once the water level fell below the levels of the saddle dam intakes, the I/O Works and Sites Dam would operate solely to release the remaining water. The emergency releases would be in accordance with DSOD requirements and would occur as follows:

- Under Alternative 1 and 3 only, the emergency release structures at Saddle Dams 3 and 5, located at the north end of the reservoir, would release water into the Hunters Creek watershed. These two structures could only be used during the emergency drawdown in the first 7 days, at a rate of 1,000 and 1,200 cfs, until the water level fell below their outlet.
- Under All Action Alternatives, the spillway on Saddle Dam 8B would also release to Hunters Creek. The size of the spillway would accommodate the peak outflow of a PMF event or the steady-state flow if an over-pumping event occurred. The design and size of the spillway assumed that a PMF overflow event and an over-pumping event have a very low probability of simultaneous occurrence.
- The permanent outlet on Sites Dam would release to Stone Corral Creek at a maximum rate of approximately 2,500 cfs.
- The I/O tunnels would release to Funks Reservoir and TRR at a rate of 16,000 cfs, with 9,000 cfs being discharged to Funks Reservoir and 7,000 cfs to the TRR with a maximum velocity of 40 feet per second in the pipelines. To achieve the flows needed for the emergency releases, the velocities in the pipes would exceed the 20 cfs criteria normally used by Reclamation. Discharges to the Funks Reservoir would be accommodated because its spillway is designed for 22,000 cfs which is greater than the 16,000 cfs emergency drawdown flow. The TRR would need to be designed with a spillway into Funks Creek of roughly 7,000 cfs to allow for this. Additional energy dissipation structures at Funks Reservoir and the TRR would be required for the emergency flows.

2.5.2.2 Energy Generation and Energy Use

All Action Alternatives would require power to run facilities and pump water and would also generate incidental power. The pumping energy requirements and power generation are summarized in Table 2-6 and Table 2-7 for all Action Alternatives.

Table 2-6. Pumping Summary for All Action Alternatives

Site	Net Pumping Power (MW)	Other Auxiliary Loads (MW)	Transformer and T Line Losses (MW)	Total Pumping Power (MW)	Total Pumping Power @ 0.85 PF (MVA)
Funks	67.1	1	0.1	68.2	80.2
TRR	75.4	1	0.1	76.5	90.0
Total	142.5	2	0.2	144.7	170.2

Notes:

MW = megawatts; PF = power factor; MVA = megavolt amperes

Table 2-7. Generating Summary for All Action Alternatives

Site	Net Generating Power (MW)	Other Auxiliary Loads (MW)	Transformer and T Line Losses (MW)	Total Power Generation (MW)	Total Power Generation @ 0.85 PF (MVA)
Funks	48.1	1	0.1	47.0	55.3
TRR	27.4	1	0.1	26.3	31.0
Total	75.5	2	0.2	73.3	86.2

Notes:

MW = megawatts; PF = power factor; MVA = megavolt amperes

All Action Alternatives would generate incidental power only when water is released from Sites Reservoir at the Funks and TRR PGPs. Power generation would be limited to 40 megawatts per facility and as such, would not require a Federal Energy Regulatory Commission license per the "Qualifying Conduit Hydropower Facility" under the Hydropower Regulatory Efficiency Act of 2013, as amended by America's Water Infrastructure Act of 2018. All Action Alternatives would include electrical substations at Funks Reservoir and the TRR. These substations would service a net pumping energy demand estimated at 80 megavolt amperes (MVA) at Funks Reservoir and 90 MVA at the TRR (i.e., 170 MVA of demand load total). Because of the size of the pumping units, no backup generation is planned for pumping facilities.

While hydropower generation would be an incidental benefit of conveying water through specific Project facilities and would be influenced by the timing of releases and movement of water and seasonal operational decisions, the Authority would work to schedule releases and outages such that it sought to maximize power generation to offset the Project's power needs. Additional operations power needs beyond those generated by the Project would be purchased from market sources, with a target of purchasing at least 60% of the Project's operations power needs from renewable, carbon-free sources from the start of operations to 2045. Starting in

2045, the Authority would target purchasing 100% of the Project's operations power needs from renewable, carbon-free sources. This target does not include any operational power needs attributable to Reclamation's participation, including the conveyance and pumping of Incremental Level 4 Refuge water supply.

2.5.2.3 Facility Operations and Maintenance

Operations and maintenance activities for all facilities, including recreational areas, would include debris removal, vegetation control, rodent control, erosion control and protection, routine inspections (dams, tunnels, pipelines, PGPs, I/O Works, fencing, signs, and gates), painting, cleaning, repairs, and other routine tasks to maintain the facilities in accordance with design standards after construction and commissioning. Routine visual inspection of the facilities would be conducted to monitor performance and prevent mechanical and structural failures. The Authority would implement operations and maintenance BMPs that are described in Section 2.5.4, *Project Commitments and Best Management Practices Common to All Alternatives*.

The RBPP has an established operations and maintenance plan. The two new pumps at the facility would be incorporated into the existing plan and operated and maintained as part of the overall activities at the facility. Improvements to the GCID facilities would likewise be incorporated into GCID's regular operations and maintenance activities.

Operations and maintenance activities unique to the TRR include daily visual inspections, setting and checking water control structures, annual and five-year dam safety inspections, quarterly vegetation and weed abatement and rodent control, annual preventative leak location surveys and evaluations of the reservoir liner, instrumentation monitoring and maintenance, and annual debris removal at the spillway outfall to Funks creek. Replacement of the TRR liner may be needed on an infrequent basis. Operations and maintenance activities unique to the TRR and Funks pumping plants and hydroelectric turbines would include greasing, painting, oiling, and generally keeping the pumps in good operating condition. Activities would also include annual inspections of pumps, interior coating condition inspection, pump leakage inspections, temperature and pressure checks, and clean exterior surfaces and check for leaks. Repair and replacement of pump components would be needed on a periodic basis. Monthly brake airline filter and lubricator inspection and maintenance would also be completed at the hydroelectric turbines. Energy dissipating units would be visually inspected and lubrication of bearings would be conducted on an as needed basis.

Operations and maintenance activities unique to the electrical switchgear include visual and mechanical inspections, moisture and corrosion inspections, general wiring checks, and insulator and barrier checks. A series of tests would be conduction on regular intervals, including but not limited to insulation electrical test, control wiring electrical tests, circuit breakers and switch tests, system function tests, and surge arrestor tests. Electrical switchgear would be maintained, repaired or replaced as needed to continue safe and efficient operations.

Pipelines and tunnels would be inspected at least every 5 years and remote operated vehicle (ROV) inspections would be acceptable. ROV inspections would not require dewatering the tunnels or pipelines. If physical inspections of tunnel interiors would be required, the tunnels would be completely shut down. Tunnel inspections may be completed during normally

scheduled shutdowns when water is not being conveyed in or out of the reservoir. The tunnel shutdown duration could run from a few days (inspection) to 2 weeks (if maintenance is required).

Different components of the I/O Works would need to be inspected and maintained at varying frequencies. Any port gate that was not operated in a given year based on reservoir level would be functionally tested at least once during that year. In general, pipeline appurtenances (e.g., air/vacuum valves, blowoffs) would be inspected and functionally tested where possible annually. Most of the mechanical components in the multi-level I/O tower could be functionally tested and/or maintained without requiring a shutdown (as there would be multiple tiers from which to draw water).

Maintenance of access roads includes replacing gravel or scraping and filling of ruts to keep the roads in good condition along with pavement replacement and repair for paved roads. Minor structures maintenance includes repair or replacement of gates, locks or fences, painting gates, replacing lost or damaged signage, and lubricating gates.

Maintenance of lands could include grading fire breaks/trails, maintaining vegetation (e.g., grazing, tilling, or disking), and performing limited prescribed/controlled burns.

In general, operations and maintenance activities could occur on a daily, annually, periodically (as needed), and long-term basis. It is estimated that 45 operations and maintenance workers would be needed to perform operations and maintenance activities (based on three shifts per day, 365 days a year).

2.5.2.4 *Operations and Management Plans*

The Authority would develop and implement a number of operations and management plans to govern the operations and maintenance activities of Project. These plans are described below.

Reservoir Operations Plan

The Reservoir Operations Plan would describe the management of water operations, including releases into Funks and Stone Corral Creeks. This plan would include but may not be limited to the following:

- **Diversions to Sites Reservoir** – Mechanics on how diversions are scheduled and managed, including diversion criteria and operating requirements for diversions.
- **Storage in Sites Reservoir** – How losses and evaporation are accounted for, how exchanges and transfers are managed (both between Sites Storage Partners and with non-Sites Storage Partners), and the process for leasing or sharing storage space.
- **Releases from Sites Reservoir** – When and how water can be released to each facility, how release orders are made and adjusted, and how releases are prioritized when necessary.
- **Flows in Funks and Stone Corral Creeks** – Release operations for releases into Funks and Stone Corral Creeks.

- **Flood Control and Health and Safety Considerations** – Descriptions of how emergencies should be handled and processes for notification in the event of emergencies. Emergency flow releases will be addressed in an Emergency Action Plan.

A draft of the Reservoir Operations Plan is expected to be completed in late 2021, with additional refinements and subsequent drafts as operational components are finalized (such as final permit conditions and agreements with Reclamation and DWR are completed). A complete Reservoir Operations Plan would be prepared at least one year prior to Project operations being initiated.

Reservoir Management Plan

The Reservoir Management Plan would describe the management of water resources within Sites Reservoir. This plan would include but may not be limited to the following:

- **Fisheries Management** – Target fisheries species composition and management activities for Sites Reservoir, including stocking strategies (if any), habitat enhancement measures, and monitoring efforts.
- **Reservoir Water Quality** – Baseline water quality metrics, standards, testing and monitoring protocols.
- **Vector Management** – Protocols and practices for communicating/coordinating with vector control authorities and determining how vector control would be managed at Sites Reservoir and the TRR.

The Reservoir Management Plan would be completed at least one year prior to Project operations being initiated.

Land Management Plan

The Land Management Plan would describe the management and maintenance activities on all non-recreation land resources held in fee or easement by the Authority. This plan would include management actions for buffer areas and the specific type and frequency of maintenance activities by location. Land management, maintenance, and monitoring actions for any mitigation areas owned by the Authority would also be described. The Land Management Plan would be completed within a year of the first fee title acquisition by the Authority and would be amended as needed as additional lands are acquired.

Recreation Management Plan

The Recreation Management Plan would describe the types, management, maintenance and monitoring activities on all Project recreation lands and areas. Development of the Recreation Management Plan would be coordinated with Colusa and Glenn counties and the local police, fire, and emergency response entities and organizations to ensure appropriate emergency response resources are available to respond to recreation emergencies. The Recreation Management Plan would be completed at least one year prior to the opening of Project recreational facilities.

Initial Reservoir Fill Plan

The Initial Reservoir Fill Plan would describe the monitoring program for Sites and Golden Gate Dams along with the saddle dams, saddle dikes, and areas around the reservoir that would be implemented during the initial filling of Sites Reservoir. The Initial Reservoir Fill Plan would be completed as part of the DSOD approval process and would be completed at least one year prior to beginning to fill Sites Reservoir.

Standard Operating Procedures

The Authority would prepare Standard Operating Procedures for all major Project facilities. These Standard Operating Procedures would include operational guidelines for facilities along with a schedule for inspection, monitoring and maintenance. The Standard Operating Procedures are expected to be completed as part of the DSOD approval process and would be completed prior to beginning operations of the specific Project facility.

Security Plan

The Authority would prepare a Security Plan for all major Project facilities. Preparation of the Security Plan would be coordinated with local, state, and federal law enforcement agencies to ensure a comprehensive security review and assessment along with appropriate security measures implemented for all major Project facilities. The Security Plan is expected to be completed as part of the DSOD approval process and would be completed during final design.

Emergency Action Plan

Consistent with California Water Code sections 6160, 6161, and 6002.5, an Emergency Action Plan would be prepared and submitted to the Governor's Office of Emergency Services (CalOES). The Emergency Action Plan would comply with SB 92 and CalOES's Emergency Action Plan requirements. The Emergency Action Plan would include, but may not be limited to the following: summary of responsibilities; notification procedures and flowchart; emergency response process; preparedness for different emergencies; and potential inundation mapping. The Emergency Action Plan would also identify the frequency for desktop and full exercises to prepare for emergencies.

2.5.3 Construction Considerations Common to All Action Alternatives

This section summarizes the activities associated with construction of the Project. Appendix 2C, Construction Means, Methods, and Assumptions, provides additional detail regarding the construction means and methods for various facilities that are ultimately incorporated into the impact analysis throughout Chapters 5 to 31 of this document.

2.5.3.1 Geotechnical Investigations

To support the engineering and final design of all facilities, the Authority would undertake preconstruction geologic, geotechnical, and geophysical investigations and testing. These geotechnical investigations and associated testing would also be required to support DSOD permitting processes. The investigations would be implemented in various locations in and around the footprints of the various facilities. Proposed investigations would be focused in areas where additional or updated data are needed for engineering cost refinement, for design, and to prepare permit applications. Depending on the time of year these activities would take place,

almost all of the geotechnical borings and geophysical work areas would require biological monitoring and/or some pre-activity clearance assessment and/or surveys due to their proximity to sensitive biological resources, particularly because the precise location of each individual investigation within its associated project feature has not been determined. The site-specific geotechnical investigations would include surface geologic mapping and surface and subsurface geophysical investigations as described below.

- Surface geologic mapping would generally involve noninvasive evaluation and documentation of geologic features and topography and would consist of soil mapping, walking surveys, and geophysical surveys.
- Surface geophysical investigations would generally involve non- or minimally invasive surface testing, such as seismic, gravitational, magnetic, electrical, and electromagnetic testing, and documentation of surface and subsurface site characteristics.
- Subsurface geotechnical investigations would involve surface and subsurface evaluation and documentation of site characteristics using test pits, borings and cone penetration test (CPT) probes, and fault trenching for different facilities.
    - All subsurface geotechnical investigation techniques would require some degree of ground disturbance, including spot leveling of areas directly below truck leveling jacks and holes measuring 2 to 10 inches in diameter through which augers and sampling equipment would be lowered to collect subsurface data and samples. Some drilling locations would require a bulldozer to create temporary roads for drill rig access. Test pits would be roughly 10 to 12 feet deep, and fault trenching would vary roughly 10 to 30 feet deep.
    - Borehole drilling would be performed using a drill rig that utilizes a combination of pilot bit, hollow stem flight augers, and rotary diamond core drilling. The hollow stem augers would likely have 8.5-inch outer diameter, and 4.25-inch inner diameter, with a 5-foot-long split tube inner barrel for dry core sample collection. Standard Penetration Test samplers may also be used at 5-foot intervals. All drill cuttings and any drilling fluids would be contained onsite in drums or bins and removed from the site to an existing permitted landfill or waste treatment facility. The temporary disturbance area would be approximately 20 by 50 feet (0.025 acre). Once each boring is complete, augers and testing equipment would be removed, the boring grouted and capped with soil, and the area cleared of work items (as required by permit requirements and at a minimum in accordance with California regulations and industry standards [Water Well Standards, DWR 74-81 and 74-90]). The permanent disturbance area would be approximately 1 square foot per borehole, except where a bulldozer created a larger area to access some locations.
    - CPTs are minimally invasive and consist of a specialized vehicle that inserts a 1.7-inch-diameter cone (probe) into the ground with a hydraulic direct push system. The temporary disturbance area would be approximately 20 by 50 feet (0.025 acre). Once each test is complete the rod would be retracted, the hole grouted and capped with soil, and the area cleared of work items (as required by permit requirements and at a minimum in accordance with California regulations and industry standards [Water

Well Standards, DWR 74-81 and 74-90]). The permanent disturbance area would be approximately 1 square foot per borehole.

Activities at most investigation areas would require approximately five personnel, including a driller/operator and one to two assistants, a utility locator, and a geologist/engineer to log the conditions encountered. Biological and cultural monitoring could also be required based on biological and cultural sensitivity and the type of activity being conducted. Each geotechnical investigation site would be active for a period ranging from 1 workday for CPT probes to 10 workdays for deep drill holes.

Additional details regarding geotechnical investigations for several of the key facilities are discussed below.

I/O Works

The investigation footprint for the I/O Works would encompass the area around each portal, at the I/O tower, and along each tunnel alignment. Geotechnical work would occur within the footprint of the construction area for these facilities. It is assumed that a boring would be required every 500 feet between the two I/O tunnel alignments and that each boring would extend two tunnel diameters below the tunnel invert, for a depth of approximately 70 feet.

A seismic fault study would map the faults adjacent to the I/O Works and ensure the location of the alignment would minimize fault crossings. The geotechnical investigation footprint for the seismic fault study would encompass the area between the mapped faults and I/O Works.

Current access to the site is limited given the existing topography and lack of access roads. It is assumed that track-mounted drill rigs would be used for the accessible locations and helicopters would be required to transport drill rigs to remote locations.

Dams and Reservoir

The dam foundations and reservoir rim would be the subject of specific geotechnical investigations. The investigations for the dams would involve geologic mapping, geophysics, borings, test pits, test excavations, and fault trenching. In-situ testing would include downhole geophysics (suspension and televiewer), packer testing, and dilatometer use. Piezometers would be installed at select locations to collect data on groundwater depth.

Objectives for the dam foundation and reservoir rim would differ. The objectives of the dam foundation exploration would be to evaluate excavation methods, excavated material use for dam construction, dewatering requirements for foundation excavation, foundation deformability, hydraulic conductivity and strength, foundation treatment, and foundation grouting/cutoff requirements. The dam foundation exploration objectives would also be to confirm fault locations and fault rupture potential. The objective of the exploration of the reservoir rim would be to evaluate seepage and stability. This investigation would use geologic mapping, geophysical investigations, and borings. In-situ testing would include downhole geophysics (televiewer) and packer testing.

Laboratory testing for the dam foundation and reservoir rim may include point load and unconfined compression on rock and index testing of soils. Laboratory testing for the rim of the reservoir may also include testing of remolded joint/shear material for strength evaluation.

Onsite Borrow Areas

The onsite borrow areas would have specific geotechnical investigations.

The objectives of the exploration for the borrow areas would be to confirm that the volume of materials available is at least 1.5 times the volume required and to evaluate excavation methods, excavation slopes at borrow locations, dewatering for borrow excavations, volume of materials generated from excavation, material types generated by excavation, requirements for processing of materials, properties of materials when placed and compacted in the dams, use of rock for riprap and aggregates, and types and volumes of materials generated from required excavations (i.e., at proposed locations of dams, structures, and tunnels).

The investigations for the borrow areas would involve geologic mapping, geophysics, borings, test pits, test excavations, test blasting and test fills. In-situ testing would include downhole geophysics (suspension and televiewer) and rippability studies. Laboratory testing would include point load and unconfined compression on rock and index testing of soils. Laboratory testing would also involve testing remolded samples for compaction, strength, permeability, compressibility, and erosion potential. Test fills would be performed on rockfill and random fill materials.

2.5.3.2 Land Acquisition and Resident Relocation Program

Prior to initiation of construction activities, land acquisition or establishment of temporary or permanent easements on private properties would be required. Overall, construction is expected to take approximately 6 years for reservoir facilities and 2 years for conveyance facilities. Construction of the reservoir facilities and the conveyance facilities would be conducted concurrently for a total construction duration of 6 years. Several factors could affect this anticipated schedule. Additional adjustments to the schedule would be addressed as required during Project development and implementation.

2.5.3.3 Additional Biological Surveys

After land acquisition and prior to construction actions, the Authority would complete additional biological surveys to confirm mapped habitat types and determine the presence/absence of biological resources including, but not limited to, special-status species, state and federal waters, sensitive plant communities and other applicable resources identified as sensitive by state, and/or federal agencies and discussed in Chapter 9, *Vegetation Resources*; Chapter 10, *Wildlife Resources*; and Chapter 11, *Aquatic Biological Resources* of this document. The Authority would use this information to assess the need for further technical studies (such as protocol surveys) and/or consultations with USFWS, CDFW, U. S. Army Corps of Engineers and/or State and Regional Water Quality Control Boards and identify resources that would be avoided during construction. In addition, the Authority would use this information to determine final mitigation types and acres for those areas that cannot be avoided.

2.5.3.4 Cultural Resources Management Plan

The Authority will develop and implement a Cultural Resources Management Plan prior to construction activities to guide the overall technical cultural resources efforts during construction activities. The Cultural Resources Management Plan will include, but not be limited to, a research design for the evaluation of known and predicted resources in the study area, methods used to assess the Project's effects to resources found prior to and during construction, procedures for the curation of recovered materials, procedures to be followed in the event of unanticipated discoveries, and procedures for the recovery and treatment of Native American and Non-Native American human remains. The Cultural Resources Management Plan is expected to be reviewed by the signatory parties to the Project's Programmatic Agreement under Section 106 of the National Historic Preservation Act.

2.5.3.5 Cemetery Relocation

Two private cemeteries in the inundation area would be relocated to a site approved for interment of human remains per requirements of the California Health and Safety Code (HSC § 7500-7527). The code requires a written order from the local health department or county superior court before human remains in a cemetery may be moved. The disinterment, transportation, and removal of human remains is subject to rules and regulations adopted by the board of health or health officer of the county.

2.5.3.6 Construction Disturbance Areas and Access

Construction activities would be confined to designated construction disturbance areas. These areas would also be used for construction vehicle and equipment parking and construction material storage. Special or sensitive sites near construction disturbance areas would be clearly marked (e.g., with temporary fencing, staking and flagging, pylons) prior to construction initiation. Construction personnel would be trained to recognize these markers and understand the equipment movement restrictions involved. Marking materials would be maintained until final cleanup and/or site restoration is completed, after which they would be removed. Potential staging areas would be located near each of the facilities. Construction-related traffic and local access routes are described in Section 2.5.1.7, New and Existing Roadways.

Demolition

Demolition would take place within the reservoir inundation area once lands are acquired. Demolition would include 20 houses, 25 barns, and 40 other structures (i.e., sheds, silos, and pump house); removal of existing septic tanks and other underground storage tanks; and removal of existing roads, fences, and other utilities. Demolition debris would be reused and recycled to the extent possible. Any materials not recyclable would be transported and disposed of at an approved landfill(s).

No demolition or relocation would be required for the TC Canal diversion, TRR-related facilities, Funks Reservoir-related facilities, or facilities associated with conveyance to the Sacramento River (i.e., TC Canal intake, Dunnigan Pipeline, or CBD outlet).

Clearing, Grubbing, and Topsoil Preservation

Clearing and grubbing would be required in the inundation area footprint and for most built facilities (i.e., dam facilities, I/O Works, Funks Reservoir facilities, TRR facilities, and Dunnigan Pipeline) and would entail removing and disposing of woody vegetation. This work is estimated to occur over 3 years. Materials cleared and grubbed would be composted, reused, placed in the reservoir inundation area to provide future fish habitat, or recycled to the extent possible.

Prior to construction, measures would be taken to preserve topsoil. In the inundation area where disturbance would occur, the topsoil material would be excavated, stockpiled separately, and used in one of several ways: for restoration of temporary work areas outside the inundation area, for support of native or naturalized plant species around a facility following construction, or for placement in agricultural areas. In the irrigated agricultural areas around the TRR and Dunnigan Pipeline, topsoil would be removed, stored, and replaced in areas of orchards, row crops, and rice fields. The topsoil would be restored so it has the same composition except where it is located on permanent maintenance roads. In the rangeland areas between the TRR and Funks Reservoir along the TRR pipeline route, the topsoil would be removed, stored, and replaced. This soil would be used to restore the rangeland to its same composition, except where it is located on permanent maintenance roads. The commercial area between I-5 and SR 99 would be restored to the pre-construction condition (i.e., unpaved large lot).

2.5.3.7 Construction Duration, Timing, and Sequence

Construction may start as early as spring 2024, depending on the timing of funding, design, and permitting. Initial activities would include developing the Sites Reservoir inundation area, constructing the access roads, and realigning/constructing the Sites Lodoga Road or South Road. Durations of construction were based on production rates associated with the anticipated equipment types needed for construction.

Construction of the Project components would generally be expected to occur in the sequence shown in Table 2-8 and detailed in Appendix 2C, Construction Means, Methods, and Assumptions. Some construction activities would be concurrent with the road relocations, but the existing Sites Lodoga Road and Huffmaster Road would not be closed until the road realignments were completed.

Table 2-8. General Construction Timing and Sequencing

Task Name	Duration	Start	Finish
Reservoir Site Development			
Reservoir Footprint Mitigation Actions	500 days	Q3 2025	Q2 2027
Site Access & Staging Development	100 days	Q3 2025	Q1 2026
Demolition & Clearing	100 days	Q3 2025	Q1 2026
Roads and Bridge			
Northern Construction Access Roads	284 days	Q3 2024	Q3 2025
Southern Construction Access Roads	274 days	Q3 2024	Q3 2025
Sites Lodoga Road Realignment and Bridge	680 days	Q3 2024	Q2 2027

Task Name	Duration	Start	Finish
Huffmaster Road Realignment	801 days	Q3 2024	Q3 2027
Process & Haul Filter Materials to Project	1180 days	Q1 2025	Q3 2029
Dams and Dikes			
Golden Gate Dam	1195 days	Q3 2024	Q2 2029
Sites Dam	956 days	Q3 2025	Q1 2029
Saddle Dam 3	771 days	Q3 2025	Q3 2028
Saddle Dam 5	821 days	Q3 2025	Q4 2028
Minor Saddle Dams (1, 2, 6, 8A)	711 days	Q4 2025	Q3 2028
Saddle Dam 8B - Spillway	257 days	Q4 2025	Q4 2026
Emergency Release Structure No. 1	285 days	Q4 2025	Q1 2027
Emergency Release Structure No. 2	410 days	Q1 2026	Q4 2027
Inlet Outlet Facilities	1015 days	Q4 2025	Q3 2029
Conveyance to Sacramento River			
Dunnigan Pipeline - Alt 1	355 days	Q3 2024	Q1 2026
Dunnigan Pipeline - Alt 2	505 days	Q2 2024	Q1 2027
Regulating Reservoirs and Conveyance			
Funks/TRR Pipelines	965 days	Q1 2025	Q4 2028
Funks Reservoir	523 days	Q2 2025	Q2 2027
Funks Pumping Generating Plant	1062 days	Q2 2025	Q2 2029
TRR East Reservoir	780 days	Q3 2025	Q3 2028
TRR East Pumping Generating Plant	1010 days	Q3 2025	Q4 2028
Transmission Powerlines	875 days	Q2 2025	Q3 2028
Substations	755 days	Q1 2026	Q1 2029
Sacramento River Diversion and Conveyance			
Red Bluff Pumping Plant Improvements	560 days	Q1 2025	Q1 2027
GCID Improvements	680 days	Q2 2025	Q4 2027

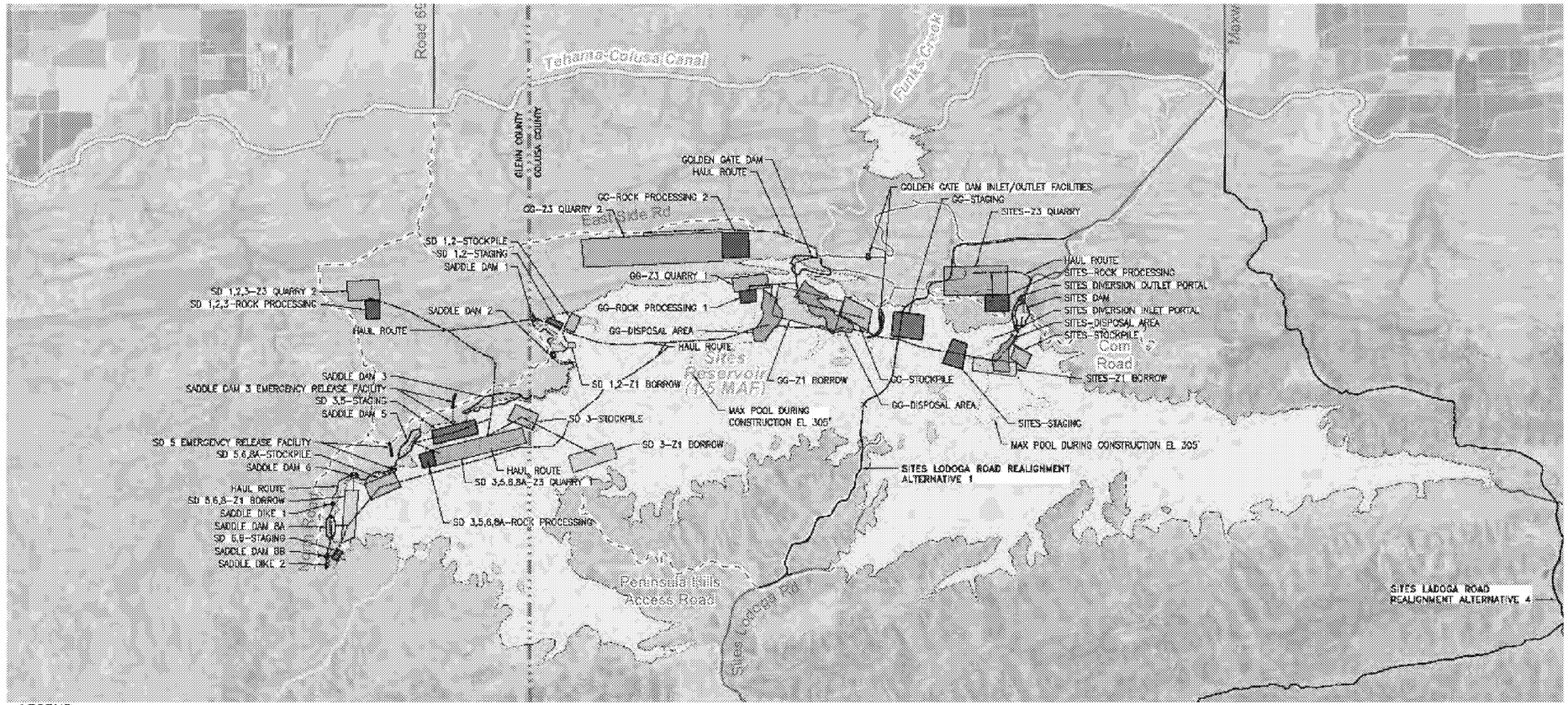
Table Notes
Q = Quarter

The general sequence of nonroad construction would begin with Golden Gate Dam, the I/O Works, and Dunnigan Pipeline, followed by Sites Dam, the larger saddle dams, regulating reservoirs and most associated facilities and pipelines. These facilities would be constructed over several years. Construction of the emergency release structures and substations would be initiated last in the sequence. The recreation areas would be completed after construction of the main dams and saddle dams and generally concurrently with the regulating reservoirs and conveyance complex for a period of 2 years (expected between 2025 and 2027).

Construction within 1,000 feet of occupied residences would be restricted between 10:00 p.m. and 7:00 a.m. to eliminate potential noise concerns. Construction in areas beyond 1,000 feet of occupied residents may occur 24 hours a day, 7 days a week.

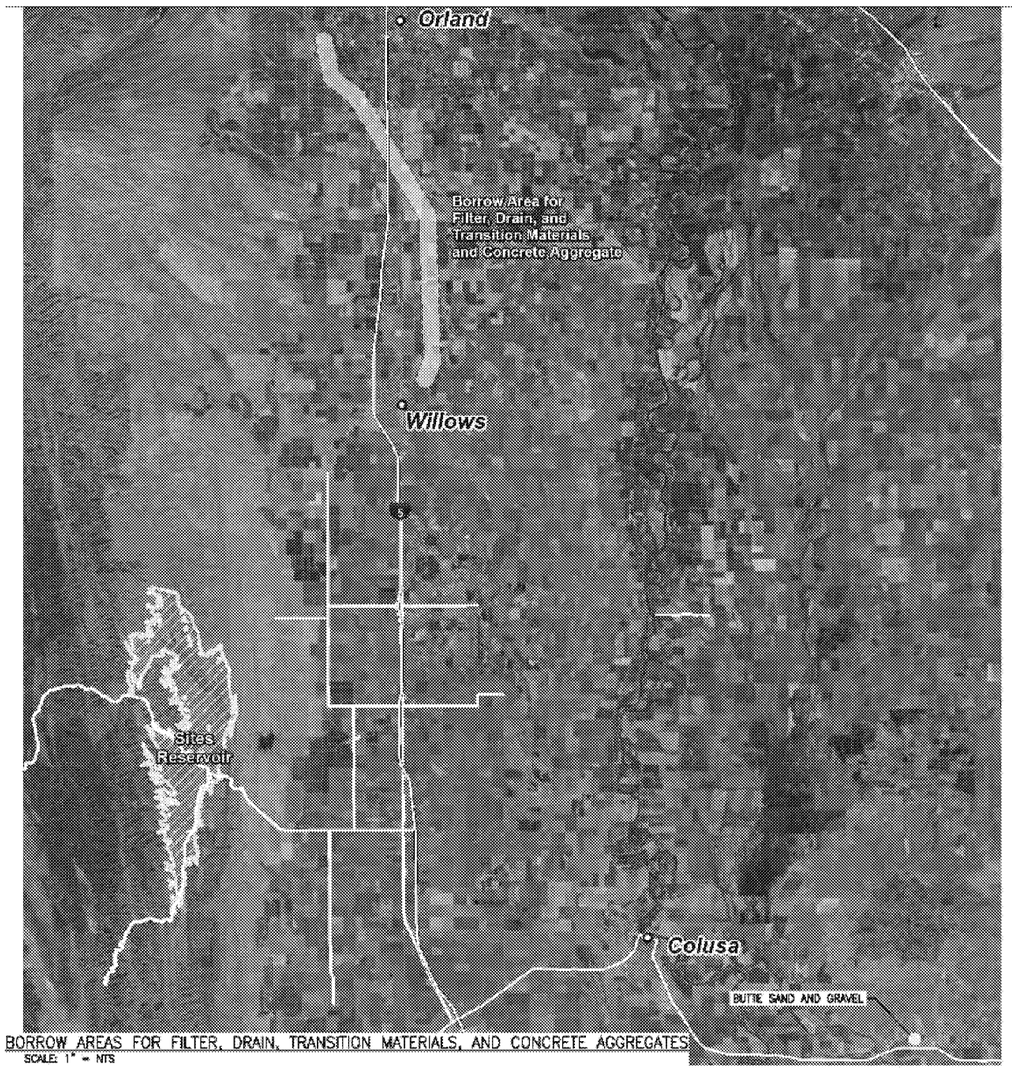
2.5.3.8 Borrow Areas and Quarries

It is anticipated that all earth and rockfill for the reservoir facilities (approximately 80% of materials required) would come from onsite sources (within the Sites Reservoir area or just outside Antelope Valley) and all aggregate for dam construction (approximately 20% of material required) would be obtained from offsite commercial sources. Figure 2-38 shows potential onsite sources and Figure 2-39 shows potential offsite commercial sources.



Source: AECOM, 2020
Drawing No. STS-315-C-2003

Figure 2-38. Onsite Borrow Area Details



Source: AECOM, 2020
Drawing No. STS–315–C–2002

Figure 2-39. Offsite Aggregate Areas

2.5.3.9 Construction Utilities

Approximately 750,000 to 1,000,000 gallons/day (500 to 700 gallons per minute) would be needed for constructing the Golden Gate Dam, Sites Dam, saddle dams, saddle dikes, and I/O Works over a period of 4 years. As such, a total of approximately 3,360 acre-feet per year (AFY) to 4,480 AFY would be required over the 4 years. Approximately 75,000 gallons per day would be required for conveyance facilities over a period of 4.5 years. This water would be obtained from three potential sources: existing surface water from the Sites Storage Partners pursuant to existing water rights agreements; existing groundwater wells in the Sites Reservoir inundation area; and new groundwater wells in the Sites Reservoir inundation area. Batch water treatment plants would be used to treat water, as necessary, for the intended use. Construction water would be reused to the extent possible.

Anticipated construction energy needs are shown in Table 2-9.

Table 2-9. Estimated Temporary Construction Power Requirements

Location/Facility	Required Load, 3-Phase, KVA
Golden Gate and Sites Dams	
Contractor's and Owner's Office Complex	300
GG Quarry Feeder/Jaw for Rockfill	500
Sites Quarry Feeder/Jaw for Rockfill	500
GG Concrete Batch Plant	600
Sites Concrete Batch Plant	600
Contractor's Shop Complex	300
Saddle Dams	
Contractor's and Owner's Office Complex	300
Saddle Dams Quarry Feeder/Jaw for Rockfill	500
Concrete Batch Plant	600
Contractor's Shop Complex	300
Inlet-Outlet Facilities	
Contractor's and Owner's Office Complex	300
Concrete Batch Plant	600
Contractor's Shop Complex	200
Roads	
Contractor's and Owner's Office Complex	300
Asphalt Batch Plant	600
Contractor's Shop Complex	200
Conveyance	
Contractor's and Owner's Office Complex (3)	300 each
Concrete Batch Plant & CDSM Batch Plant	600 each

2.5.3.10 Batch Plants

For dam construction, batch plants would be established in the inundation area of the Sites Reservoir or in staging areas outside the inundation area near various reservoir facilities. Concrete batch plants would be necessary for the I/O Works, Golden Gate Dam, Sites Dam, diversions, saddle dams, and the bridge crossing the reservoir. Asphalt batch plants would be used for paving activities of public access and maintenance roads.

A concrete batch plant is equipment that combines water, admixtures, sand, aggregate, fly ash and cement to form concrete. In general, the concrete batch plant is anticipated to have the following features: mobile or semi-mobile (modular stationary) plants; capacity of 100 to 500 cubic yards per hour; at least three aggregate feed bins; and computerized batching/proportioning.

An asphalt batch plant is equipment that combines aggregate and asphalt to form asphalt to be used for road construction. In general, the asphalt batch plant is anticipated to have the following features: mobile or semi-mobile (modular stationary) plants; drum mixer type plant, but could be a weigh-batch type; capacity of 200 to 500 tones per hour, but could be lower for some of the smaller portions; at least four aggregate feed bins; and computerized batching/proportioning.

2.5.3.11 Construction Traffic and Equipment

Approximately 1,700 construction personnel would be working at the peak of construction. 1,000 of these personnel would be involved with reservoir facilities and 700 would be working on conveyance facilities. Expected highway truck trips per day associated with construction will range from 0.5 for installation of the new pump at the RBPP to 360 estimated trips for the construction of dams, dikes and other reservoir-related activities. Similarly, personnel vehicle trips associated with the same facilities will range from 2 to over 600 per day. Estimated vehicle trips per day for all construction activities are included in Appendix 2C.

Construction workers would likely commute to construction sites from regional population centers such as Maxwell, Willows, Orland, Williams, and Colusa, and from other northern California counties when specialty trades or skillsets are not available regionally.

Daily construction traffic would consist of trucks hauling equipment and materials to and from the worksites and the daily arrival and departure of construction workers. Construction traffic on local roadways would include dump trucks, bottom-dump trucks, concrete trucks, flatbed trucks for delivering construction equipment and permanent project equipment, pickups, water trucks, equipment maintenance vehicles, and other delivery trucks. Dump trucks would be used for earth moving and clearing, removal of excavated material, and import of other structural and paving materials. Other delivery trucks would deliver construction equipment, job trailer items, concrete-forming materials, reinforcing steel and structural steel, piping materials, foundation piles and sheet piling, sand and gravel from offsite sources, new facility equipment, and other construction-related deliveries. Construction equipment/materials would not be permitted to pass through the community of Maxwell on the Maxwell Sites Road.

2.5.3.12 In-Channel Construction

Cofferdams would be required along Stone Corral and Funks Creeks for construction of Sites Dam and Golden Gate Dam, respectively. The cofferdams would be incorporated into the upstream toe of the embankment dams and would be constructed of material likely derived from the excavation of the dam foundations. The crest of the cofferdams would be set at elevation 310 feet (5 feet above highwater during construction). The Sites Dam would require approximately 260,000 cubic yards of Zone 4 fill for the cofferdam in Stone Corral Creek, and the Golden Gate Dam would require approximately 800,000 cubic yards of Zone 4 fill for the cofferdam in Funks Creek.

Construction of the Funks pipelines would generally skirt Funks Creek and not intersect the waterway but two large fills needed for the Funks Pipeline and TRR Pipeline could be placed near the south creek bank. Construction of the TRR pipelines would cross the GCID Main Canal, TC Canal, and the Funks Reservoir. Trenching of the TRR pipelines under the GCID Main Canal and TC Canal would occur during the 6-week winter shutdown period. If possible, trenching would be scheduled for a time when the canals were dry, such that trenching would result in in-channel construction but not in-water construction. Construction of the TRR pipelines would require in-channel work where they cross Funks Reservoir. An earth and geomembrane liner coffer dam would be constructed to allow work to occur under dry conditions.

Construction of the Dunnigan Pipeline would require installation of water level and flow control gates at the concrete-lined TC Canal intake. The tie-in between the intake and the TC Canal would be done during the winter shutdown period, and a small portion of the TC Canal would be dewatered. In-channel work would be required at the CBD to install the energy dissipating control structure, and a coffer dam would be constructed so that the work would be completed in the dry.

2.5.4 Project Commitments and Best Management Practices Common to all Alternatives

A number of BMPs and environmental commitments are proposed to be implemented during Project design, construction and operation/maintenance. The BMPs and environmental commitments are considered part of the Project and discussed in detail in Appendix 2D. The following provides a list of activities or topics covered:

- Conform with Applicable Design Standards and Building Codes
- Perform Geotechnical Evaluations and Prepare Geotechnical Data Reports
- Utility and Infrastructure Verification and/or Relocation
- Natural Gas and Water Wells Decommissioning
- Road Abandonment
- Minimize Soil Disturbance and Topsoil Storage and Handling Plan
- Stormwater Pollution Prevention Plan(s) and Best Management Practices (storm water and non-storm water)

- Spill Prevention and Hazardous Materials Management / Accidental Spill Prevention, Containment, and Countermeasure Plans and Response Measures
- Comply with Requirements of RWQCB Order 5-00-175
- Groundwater/ Dewatering Water Supply
- Construction Equipment, Truck, and Traffic Management Plan
- Visual/Aesthetic Design, Construction, and Operation Practices
- Fire Safety and Suppression / Fire Prevention and Control Plan
- Worker Health and Safety Plan
- Blasting Standard Requirements
- Mosquito and Vector Control During Construction
- Construction, Operation and Maintenance Noise Management
- Construction and Operations Emergency Action Plan
- Electrical Power Guidelines and EMF Field Management Plan
- Air Quality Measures (Construction Equipment Exhaust Reduction Plan, Fugitive Dust Control Plans, Construction Best Management Practices to Reduce Greenhouse Gas Emissions)
- Environmental Site Assessment(s) and Hazardous Materials Management Plans
- Construction Site Security
- Notification of Maintenance Activities in Waterways
- Worker Environmental Awareness Program
- Fish Rescue and Salvage Plans for Funks Reservoir, Stone Corral Creek, and Funks Creek for Alternative 1; for Sacramento River for Alternative 2
- Construction BMPs and Monitoring for Fish, Wildlife, and Plant Species Habitats, and Natural Communities
- Control of Invasive Plant Species during Construction

2.5.5 Proposition 1 Benefits Common to All Action Alternatives

The Project was conditionally awarded Proposition 1, WSIP funding by the CWC to provide public benefits for flood damage reduction, recreation, and ecosystem benefits. All of the Action Alternative include providing these benefits including entering into a contract with DWR for the flood damage reduction and recreation benefits, a contact with the California Department of Fish and Wildlife for the ecosystem benefits, and a contract with the CWC for final funding award.

The Project would provide flood damage reduction benefits to portions of Colusa County, including Maxwell and the surrounding agricultural areas. Incidental storage in Sites Reservoir would capture and store flood flows from the Funks and Stone Corral Creek watersheds. These

flood damage reduction benefits are inherent to the Project design and would occur regardless of the Project's operations for water supply and water-related environmental benefits.

The Project would provide recreation benefits through the recreation facilities described previously in this chapter.

The ecosystem benefits funded by the CWC include providing water for Incremental Level 4 refuge water needs for Central Valley Project Improvement Act (CVPIA) refuges both north and south of the Delta and providing additional flow into the Yolo Bypass to benefit Delta smelt (*Hypomesus transpacificus*). Incremental Level 4 refuge water deliveries could occur in any year type and at any time of year. For those refuges located south-of-Delta, it is assumed that water would be moved from July to November though the Delta. Additional flows into the Yolo Bypass could occur at any time of year, but are assumed to occur during the summer and fall months (August through October) of all water year types. These deliveries increase desirable food sources for Delta smelt and other fish species in the late summer and early fall. The Authority envisions that CDFW would take an active role in managing the ecosystem water and would work with CDFW to schedule and adjust releases of ecosystem water to address real-time conditions and needs.

As described in Section 2.5.2., *Coordination with CVP and SWP*, above, additional ecosystem benefits beyond those funded by the CWC may occur via exchanges with Shasta Lake, Lake Oroville, or – likely to a lesser extent – Folsom Lake.

2.6 Alternative 1 Specific Elements

Alternative 1 is the Authority's proposed Project under CEQA. See Figure 2-1 and Figure 2-2 for a plan view of the Alternative 1 features. The unique features of Alternative 1 include the following:

- Reservoir capacity would be 1.5 MAF;
- A bridge across the reservoir would provide access to the west of the Project; and
- Reclamation investment would range from no investment to up to 7% investment.

Alternative 1 would impound surface water at the Golden Gate Dam on Funks Creek, Sites Dam on Stone Corral Creek, and a series of seven saddle dams along the eastern and northern rims of the reservoir would close off topographic saddles in the surrounding ridges to form Sites Reservoir. The 1.5 MAF reservoir under Alternative 1 would inundate approximately 13,200 acres of Antelope Valley in Colusa County. Alternative 1 would convey water from the Sacramento River through existing or upgraded TC Canal and GCID Main Canal facilities to new and upgraded regulating reservoirs and into the new Sites Reservoir. Existing and new facilities would convey water from Sites Reservoir for uses along the TC Canal, along the GCID Main Canal and down the TC Canal to the new Dunnigan Pipeline and the CBD for release, and flows would enter the Yolo Bypass or Sacramento River. Construction roads, local roads, and maintenance roads would be developed or realigned to accommodate the reservoir facilities, including the realignment of Sites Lodoga Road with a new bridge over the reservoir. Alternative

1 would involve two primary recreation areas, Peninsula Hills Recreation Area and Stone Corral Creek Recreation Area, and a day-use boat ramp. These areas would provide multiple recreational amenities, including campsites, boat access, horse trails, hiking trails, and vista points.

Releases from Sites Reservoir would be made to meet environmental purposes, such as for the delivery of Incremental Level 4 water to refuges or fall food production in the Yolo Bypass for north Delta fish species. Releases would also be made for Sites Storage Partners based on their requests to meet their respective water supply portfolio needs and any water conveyed south of the Delta would comply with all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time. Under Alternative 1, operational exchanges may also occur with Reclamation in Shasta Lake and Folsom Reservoir and with DWR in Lake Oroville. Alternative 1 includes a range of Reclamation investment in the Project, from no investment to up to an assumed 7 percent Reclamation investment.

2.6.1 Sites Reservoir and Related Facilities

Under Alternative 1, Sites Reservoir would be 1.5 MAF and would inundate approximately 13,200 acres. It would have a maximum normal WSE of 498 feet above mean sea level and would require I/O Works, seven saddle dams (1, 2, 3, 5, 6, 8A, and 8B), and two saddle dikes (1 and 2). See Figure 2-1, Alternatives 1 and 3 Regulating Reservoirs and Conveyance and Sites Reservoir Facilities for the location of the Sites Reservoir, Golden Gate Dam, saddle dams, and I/O Works under Alternative 1. Table 2-10 provides the general characteristics of the proposed Sites Reservoir under Alternative 1.

Table 2-10. General Reservoir Characteristics of Alternative 1

Key Characteristic	Detail
Nominal Reservoir Gross Storage	1.5 MAF
Maximum Normal Operating Water Elevation	498 feet above mean sea level
Minimum Normal Operating Water Elevation	340 feet above mean sea level
Top of Dead Pool	300 feet above mean sea level
Active Storage Capacity[1]	1.4 MAF

[1] Between minimum normal operating water elevation (El. 340.0 feet) and maximum normal operating elevation

A total of nine dams (Golden Gate Dam, Sites Dam, and seven saddle dams) would create the 1.5 MAF Sites Reservoir under Alternative 1. Two saddle dikes would be required to close off topographic saddles in the ridges near Saddle Dams 8A and 8B. The dam crests would be 30 feet wide and would include asphalt paved or gravel maintenance roads. The nominal crest would be at elevation 517 feet for all dams, including Saddle Dam 8B. See Table 2-3. for a summary of the dam heights for Alternative 1.

2.6.2 New and Existing Roadways

Sites Lodoga Road is an east-west, two-lane major collector road that extends through the community of Maxwell, which is adjacent to I-5, and provides an important emergency and

evacuation route in a limited roadway network to and from the rural communities of Lodoga and Stonyford. Sites Lodoga Road becomes Maxwell Sites Road east of the community of Sites, which is in the inundation area. The Sites Reservoir would eliminate east-west access to I-5 (east of the reservoir) from Stonyford and Lodoga (west of the reservoir) because it would inundate the current alignment of Sites Lodoga Road. Because Sites Dam and the inundation area would eliminate access on Sites Lodoga Road, an alternative method for access west of the reservoir would be needed. Under Alternative 1, this access is provided by realigning a segment of Sites Lodoga Road and constructing a bridge over the reservoir. The relocated segment of Sites Lodoga Road would include 5-foot-wide shoulders adjacent to the two 12-foot-wide lanes to accommodate bicycles and would connect to the new bridge.

The realigned Sites Lodoga Road would be placed across the reservoir and extend 7,800 feet; it would necessitate the construction of four fill prisms that would be up to 150 feet tall and would support two shorter bridge segments approximately 3,450 and 4,050 feet long. Figure 2-40, Sites Lodoga Road Realignment and Bridge, shows a typical cross section of the road and the bridge that would be needed to cross the reservoir. The roadway and bridge profile would be at 2 feet above the maximum flood plus wave height. The maximum flood plus wave height is set at 10 feet above the normal WSE (elevation 498 feet for the 1.5 MAF reservoir).

The bridge structure would consist of a cast-in-place, prestressed concrete box girder that would have two lanes with a total width of 35.5 feet and 4-foot-wide shoulders. The bridge would have California Department of Transportation-approved edge barriers with small-diameter electrical conduits, a suicide prevention barrier, emergency phone service facilities, deck drains, and an opening for potential utilities. The bridge design does not include sidewalks due to the remote rural nature of this site. The bridge would be exposed to high winds; therefore, high wind advisory facilities, such as static roadside signs or extinguishable message signs that are illuminated when instruments measure high winds, would be installed.

The disturbance area for bridge construction would include the footprint of the bridge structure, the staging areas for materials and equipment, and the area needed to construct the facilities and access roads. Traffic that was not construction related would be diverted around construction disturbance areas in accordance with a traffic management plan. Initial construction activities would involve establishing staging areas, surveying and marking roadways, clearing, and grading. Bridge construction would consist of constructing the foundation and prisms, including drilled-pier installation; bridge columns; and bridge spans.

The Huffmaster Road realignment, which is associated with the easterly segment of Sites Lodoga Road Realignment, would move the affected segment out of the Sites Reservoir footprint. The realigned Huffmaster Road would be a gravel road to serve the residences at the end of Huffmaster Road.

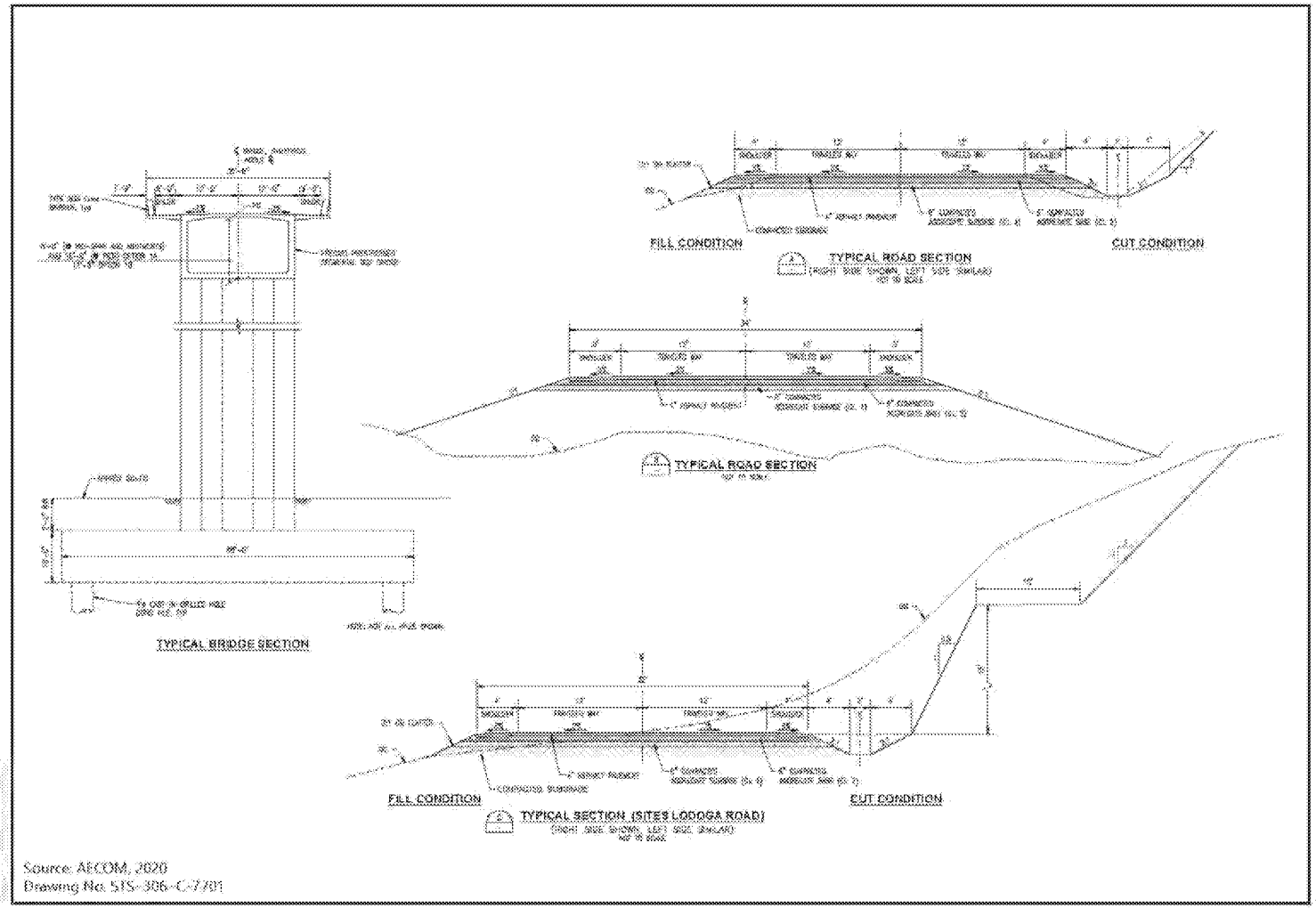


Figure 2-40. Sites Lodoga Road Realignment and Bridge

2.6.3 Operations and Maintenance

In addition to the operations and maintenance activities common to all Action Alternatives, operations and maintenance activities under Alternative 1 would include Reclamation as a Storage Partner in the Project and maintenance of the bridge as described below.

Water Operations

Alternative 1 includes a range of potential investment in the Project by Reclamation. For the purposes of modeling, two options have been identified under this alternative – Alternative 1A includes no Reclamation investment and Alternative 1B includes up to 7 percent Reclamation investment, which equates to about 91,000 AF of storage allocation dedicated to Reclamation in Sites Reservoir. With investment from Reclamation, 7 percent of Sites Reservoir storage would be managed as a CVP supply under Alternative 1. Reclamation's share of Sites water would be flexibly used by Reclamation to meet CVP objectives providing water for water supply and environmental needs. Increased storage, diversion, and release capacity provides the CVP with additional opportunities to store and release water when it may have been otherwise constrained. Releases for Reclamation would generally be made for a variety of purposes as identified and directed by Reclamation and would be made in the same manner as described for all Storage Partners.

Bridge Maintenance

There are no day-to-day operations of the bridge (no moving components of the bridge that would be operated on a daily basis). Typical bridge maintenance activities would include replacing damaged or missing signage, replacing or repairing railings, replacing or repairing damage to the bridge deck (road surface), sealing joints, repairing erosion on approaches, unplugging drains and removing debris, and checking for and repairing faulty electrical contacts. The bridge would be periodically inspected through walking through inspection to detect any obvious defects, hazards or potential problems and to also monitor known problems. The bridge would also be periodically inspected by Caltrans to detect any major structural concerns. Repairs and replacements would be made as needed based on these inspections.

2.7 Alternative 2 Specific Elements

The unique features of Alternative 2 include the following:

- Reservoir capacity would be 1.3 MAF;
- A local access road around the southern end of the reservoir would provide access to the west of the Project; and
- Dunnigan Pipeline would extend to and discharge at the Sacramento River with a partial discharge at the CBD.

See Figure 2-1 and Figure 2-2 for a plan view of the Alternative 2 features.

Alternative 2 would impound surface water at the Golden Gate Dam on Funks Creek, Sites Dam on Stone Corral Creek, and a series of four saddle dams along the eastern and northern rims of

reservoir would close off topographic saddles in the surrounding ridges to form Sites Reservoir. The 1.3-MAF reservoir would inundate approximately 12,600 acres and require four saddle dams and three saddle dikes. Alternative 2 would convey water from the Sacramento River through existing or upgraded TC Canal and GCID Main Canal facilities to new and upgraded regulating reservoirs and into the new Sites Reservoir. Existing and new facilities would convey water from Sites Reservoir for uses along the TC Canal, along the GCID Main Canal and down the TC Canal to the new Dunnigan Pipeline and to the Sacramento River for direct release to the river. Alternative 2 also includes a partial release into the CBD, and flows would enter the Yolo Bypass or Sacramento River. Construction roads, local roads, and maintenance roads would be developed or realigned to accommodate the reservoir facilities, including the realignment of Sites Lodoga Road with a new local access road around the southern end of the reservoir. Alternative 1 would involve two primary recreation areas, Peninsula Hills Recreation Area and Stone Corral Creek Recreation Area, and a day-use boat ramp. These areas would provide multiple recreational amenities, including campsites, boat access, horse trails, hiking trails, and vista points.

Releases from Sites Reservoir would be made to meet environmental purposes, such as for the delivery of Incremental Level 4 water to refuges or fall food production in the Yolo Bypass for north Delta fish species. Releases would also be made for Sites Storage Partners based on their requests to meet their respective water supply portfolio needs, and any water conveyed south of the Delta would comply with all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time. Under Alternative 2, operational exchanges may also occur with Reclamation in Shasta Lake and Folsom Reservoir and with DWR in Lake Oroville. Alternative 2 does not include Reclamation investment in the Project.

2.7.1 Sites Reservoir and Related Facilities

Under Alternative 2, Sites Reservoir would be 1.3 MAF and would inundate approximately 12,600 acres (600 acres less than Alternative 1). It would have a maximum normal WSE of 482 feet above mean sea level (17 feet lower than Alternative 1) and would require I/O Works, four saddle dams (3, 5, 8A, and 8B) and three saddle dikes (1, 2, and 3). Figure 2-3 shows the location of Sites Dam and Golden Gate Dam and the location of the four saddle dams and three saddle dikes under Alternative 2. Under Alternative 2, Saddle Dams 3 and 5 would not have emergency release systems into the Hunters Creek watershed. Figure 2-11 provides the general characteristics of the proposed Sites Reservoir under Alternative 2.

Table 2-11. General Reservoir Characteristics of Alternative 2

Key Characteristic	Detail
Nominal Reservoir Gross Storage	1.3 MAF
Maximum Normal Operating Water Elevation	482 feet above mean sea level
Minimum Normal Operating Water Elevation	340 feet above mean sea level
Top of Dead Pool	300 feet above mean sea level
Active Storage Capacity[1]	1.2 MAF

[1] Between minimum normal operating water elevation (El. 340.0 feet) and maximum normal operating elevation

2.7.2 Conveyance to Sacramento River

As with Alternative 1, a portion of the water released from Sites Reservoir would be conveyed using the existing TC Canal, and for those Sites Storage Partners located south of the Delta, would be conveyed using the new Dunnigan Pipeline. The water would flow south approximately 40 miles to near the end of the TC Canal. At this point, flow would be diverted into the Dunnigan Pipeline. A gravity outlet structure from the TC Canal into the Dunnigan Pipeline would be constructed to control the flow in the pipeline. No pumping would be required. Power would be needed for SCADA control and operating the gates to let water into the pipeline and at the discharge point.

Under Alternative 2, the Dunnigan Pipeline would extend 10 additional miles, pass through the western levee of the Sacramento River, and discharge into the Sacramento River at approximately River Mile 100.8 (Figure 2-41, Dunnigan Sacramento River Discharge Site Plan). At the CBD, there would also be a discharge structure similar to Alternative 1, but the structure would be smaller and would divert only a portion of the flow, while the remaining flow would continue to the Sacramento River.

The pipeline would have a 10.5-foot-inside diameter with three tunneled crossings (I-5, Road 99W, the railroad, and CBD) that require 12-foot (144-inch) casings. The pipeline would cross under SR 45 and a levee.

The pipeline would terminate in a discharge and energy dissipation structure. The discharge structure would extend through the Sacramento River levee and would be made up of ten 36-inch diameter pipes that would each have a check valve to dissipate energy. The structure would be located such that it was outside the levee prism, or area of influence, on the west side of the levee slope. The ten 36-inch diameter pipelines would be designed to penetrate the levee above the high high-water mark.

The discharge structure would include a vertical drop exclusion barrier to prevent the passage of anadromous fish into the pipeline. The minimum vertical drop would be 10 feet at the top of the levee onto a 20,000 square foot area of riprap extending to the river. This design would place the check valves far enough above the water surface elevation to prevent access by fish. Discharges would occur when the river was low and therefore the check valves would be distant from the water's edge. Discharge would likely be May to October but could extend into November.

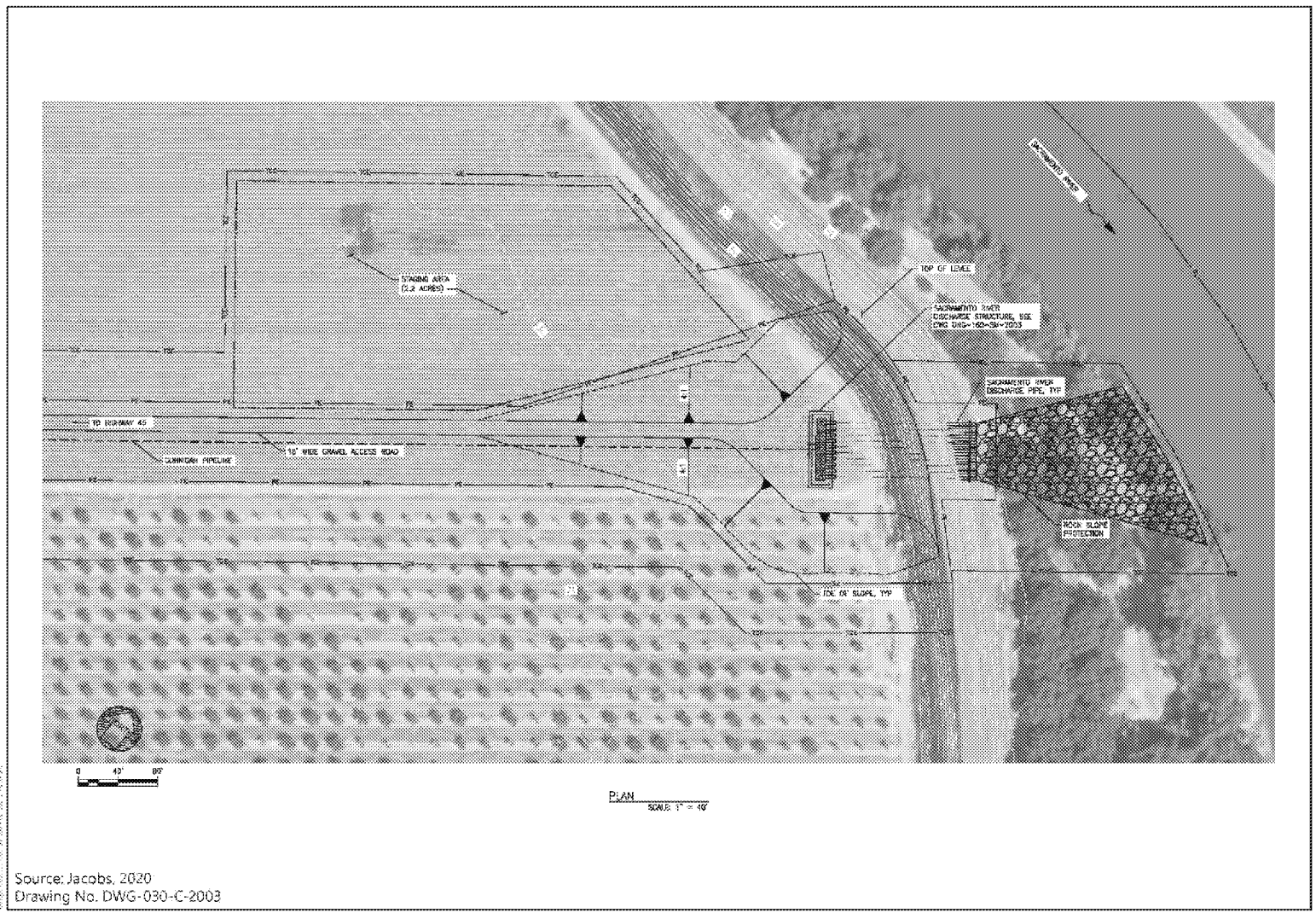


Figure 2-41. Dunnigan Sacramento River Discharge Site Plan

Construction would not occur in the winter unless it was a critically dry year. A non-winter construction window would be targeted because even small amounts of rain cause the roads to become slick, which would slow and/or prevent the movement of construction equipment. The construction window would exclude mid-October through March 31. Because groundwater is 3 feet below ground surface, the contractor would install dewatering wells every 50 to 100 feet. However, excavating and placing pipes closely, spatially and temporarily, would avoid running the dewatering system for long periods. Construction of the Dunnigan Pipeline would require crossing nearly 20 irrigation laterals and drainage canals. Bypass pipes would be used to allow irrigation water to flow down canals and also allow drainage water from irrigation to flow. Boring may be required under SR 45, if open cut is not possible. A boring will be required under the levees adjacent to the CBD and under the CBD.

The discharge structure would be located on the west bank of the river about 1 mile upstream of the Rough and Ready Pumping Plant. As described in Appendix 2D, Best Management Practices, in-water construction activities in the Sacramento River would occur during the work window of September 1 through October 15. This work would include constructing a coffer dam. Once the coffer dam is completed, work would continue in the dry and could occur outside the in-water work window. Pile driving or a vibration hammer would be used to install piles on the land side of the levee.

2.7.3 New and Existing Roadways

Realignment of Huffmaster Road and construction of the new South Road would occur under Alternative 2 (Figure 2-35). As with Alternative 1, Sites Dam and the inundation area would inundate 4.2 miles of the Sites Lodoga Road and eliminate access on this 13-mile-long collector road. Similar to Alternative 1, the relocated segment of Sites Lodoga Road would include 5-foot-wide shoulders adjacent to the two 12-foot-wide lanes to accommodate bicycles and would provide access to the Stone Corral Recreation Area. Similar to Alternative 1, Huffmaster Road would be realigned for approximately 9 miles. A new South Road would be constructed and connect to the end of the realigned portion of Huffmaster Road. It would be approximately 20 miles. The total length of the realigned portion of Huffmaster Road and the new South Road would be approximately 30 miles, all of which would be paved.

All other permanent access, maintenance, detour and construction roads would be the same for the reservoir facilities between Alternatives 1 and 2. These roads would be needed regardless of the inundation area size to serve the planned facilities and recreation areas.

The South Road would generally require more excavation and more aggregate when compared to the bridge under Alternative 1. These materials are listed in Appendix 2C, Construction Methods, Means, and Assumptions, Table Alt 2, Preliminary Quantities for Roads.

2.7.4 Operations and Maintenance

Operations and maintenance activities under Alternative 2 would be the same as those described for all Action Alternatives above. In addition to the water operations activities described above that are common to all Action Alternatives, Alternative 2 includes releases directly to the Sacramento River from the extended Dunnigan Pipeline, with a partial release into the CBD.

2.8 Alternative 3 Specific Elements

Alternative 3 facilities and project components would be the same as Alternative 1, as described above. Operationally, Alternative 3 would include increased Reclamation participation and investment, with investment of up to 25 percent of the Project cost.

Under Alternative 3, Reclamation would have an increased investment in Sites Reservoir of up to 25 percent as compared to up to 7 percent in Alternative 1. The increased level of Reclamation investment would result in up to 25 percent of Sites Reservoir storage space being dedicated to Reclamation's use. Reclamation's share of Sites water would be flexibly used by Reclamation to meet CVP objectives providing water for water supply and environmental needs. The increased level of Reclamation investment would also result in increased opportunities for maintaining cold water pool in Shasta Lake, Folsom Lake and Lake Oroville through Reclamation operating its up to 25 percent investment as part of the integration of the CVP.

Increased Reclamation investment in the Project would require some reduction in local participation for Alternative 3 as compared with Alternative 1. Alternative 3 assumes that Sites Storage Partners that are local agencies would reduce their participation in the Project to accommodate the investment by Reclamation. The State's Proposition 1 investment for ecosystem, flood control and recreation benefits does not change with the increased Reclamation investment in Alternative 3.

All other components of Alternative 3 are the same as those for Alternative 1.

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Subject: Sites Preliminary Project Description
Attachments: Sites_Preliminary-Project-Description_20210219.pdf

Hello from the Site's Team,

In case you had not heard already, Chapter 2, *Preliminary Project Description* for the REIR/SEIS is available for early review on the Authority's website (https://sitesproject.org/resources/information-materials/). If you have any initial informal questions/concerns please send them over to us, the formal comment period will open when the entirety of the REIR/SEIS is released later this summer.

I've also attached it for ease of review.

Thanks,
John

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Sites Reservoir Project
Preliminary Project Description and Alternatives

February 2021

This Preliminary Project Description has been prepared as a preliminary draft document in support of preparing a Revised Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS) for the Sites Reservoir Project (Project). The purpose for circulating this document at this time is to facilitate early coordination on initial approaches currently under consideration by the Authority. Therefore, the content of this document will be subject to continued discussions and modifications, and it may not be included in its entirety in the RDEIR/SDEIS. The Authority is not soliciting comments on this Preliminary Project Description and formal responses will not be provided for any comments received. As required by CEQA and NEPA, a public review and comment period will be provided upon publication of the RDEIR/SDEIS, which is currently anticipated to be released in late summer 2021.

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Chapter 2 Project Description and Alternatives

This chapter describes the proposed Sites Reservoir Project (Project) and alternatives analyzed in this Recirculated Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS). The alternatives were developed in light of the California Environmental Quality Act (CEQA) objectives and the National Environmental Policy Act (NEPA) purpose and need as described in Chapter 1, Introduction. This chapter is supported by Appendices 2A, 2B, 2C, and 2D which provide additional detail on the alternatives screening, construction means and methods and best management practices (BMPs).

2.1 Alternatives Development Process

The range of alternatives evaluated in this RDEIR/SDEIS is the product of an extensive screening process, that has included public input and involvement, occurring over several decades and involving multiple distinct water resource planning efforts. Those planning efforts considered a wide variety of factors, including feasibility and opportunities for reducing significant impacts while meeting applicable program and project objectives and purpose and need. See Appendix 2A, *Alternatives Screening and Evaluation*, and Appendix 2B, *Additional Alternatives Screening and Evaluation*, for information on alternatives considered but eliminated and the alternatives that are evaluated in this document.

2.1.1 Evaluated Prior to 2019

Beginning in 1995, the CALFED Bay-Delta Program (CALFED) initiated the evaluation of expanded surface water storage in the Sacramento and San Joaquin Valleys as part of a long-term comprehensive plan to restore the ecological health and improve water management to protect beneficial uses in the Sacramento–San Joaquin Delta (Delta) and the Delta watershed. During preparation of the CALFED Environmental Impact Report/Environmental Impact Statement (EIR/EIS), the CALFED Program initially identified 52 potential surface storage locations and retained 12 reservoir locations statewide for further study. The screening criteria applied indicated a preference for offstream over onstream surface water storage to avoid redirected impacts on aquatic species in the primary tributaries of the Delta.

Following the CALFED Programmatic Record of Decision (CALFED ROD) in 2000, the California Department of Water Resources (DWR) and the Bureau of Reclamation (Reclamation) continued to evaluate potential locations for a reservoir on the western side of the Sacramento Valley as part of the Surface Water Storage Investigation (Reclamation and DWR, 2006). The objectives of this effort were to formulate a project that would enhance water management flexibility in the Sacramento Valley, increase the reliability of water supplies in California, and provide storage and operational benefits to enhance water supply reliability and improve water quality and ecosystems. The results of the analysis identified four potential alternatives: Red Bank (Dippingvat and Schoenfield Reservoirs), Newville Reservoir, Colusa Reservoir, and Sites Reservoir. These four reservoir alternatives were evaluated against

additional screening criteria. This secondary screening conducted after the CALFED ROD found the Sites Reservoir location most able to meet the goals and objectives of the Surface Water Storage Investigation, while minimizing environmental impacts and providing the greatest potential benefits.

The Surface Water Storage Investigation also evaluated a variety of water sources (and associated conveyance options) including diversions from the Colusa Basin Drain (CBD), Sacramento River, and local tributaries. The evaluation process culminated in selection of the existing Tehama-Colusa Canal (TC Canal) and GCID diversion and conveyance facilities in addition to a new pipeline from the Sacramento River near the Moulton Weir (the Delevan Pipeline). These facilities were determined to be the most reliable and capable of meeting the goals and objectives of the study effort conducted after the CALFED ROD.

The 2017 Public Draft Environmental Impact Report/Environmental Impact Statement (2017 Draft EIR/EIS) for the Project evaluated four surface water reservoir size and conveyance options, and another alternative that would not include proposed power generation at the Delevan release structure. All alternatives included a Sites Reservoir to be filled using existing Sacramento River diversion facilities and the new Delevan Pumping Plant on the Sacramento River to allow for diversion and release of flows to the Sacramento River. Associated facilities for all alternatives were similar but varied in location and size. Appendix 2B, Additional Alternatives Screening and Evaluation, provides a more detailed table of differences between the Action Alternatives in this RDEIR/SDEIS and those in the 2017 Draft EIR/EIS.

In August 2017, the Authority submitted a Water Storage Investment Program (WSIP) application to the California Water Commission (CWC) to determine the Project's eligibility for funding under Proposition 1. The WSIP application evaluated the technical, economic, financial, and environmental feasibility of the Project. The CWC made nine specific determinations, including determining that the Project provides a net ecosystem improvement, provides measurable improvements to the Delta ecosystem, and that the Project would advance the long-term objectives of restoring the ecological health and water management beneficial uses of the Delta. The CWC conditionally approved $816 million in funding for the Project (California Water Commission undated).

2.1.2 Value Planning Process and Alternatives Post-2019

In October 2019, the Authority pursued a value planning process to determine if further refinements to the Project were warranted. Between October 2019 and April 2020, the Authority considered previous input from state and federal agencies, non-governmental organizations, elected officials, landowners, and local communities, and decided to "right size" the Project to better meet the needs of Sites Storage Partners[1], the statewide water supply and the environment. Multiple alternatives were considered during the value planning process that took into

[1] The governmental agencies, water organizations and others who have funded and received a storage allocation in Sites Reservoir and the resulting water supply or water supply related environmental benefits from the Project. Storage Partners could include local agencies, the State of California, and the Federal Government.

consideration the public and agency comments received on the 2017 Draft EIR/EIS (Sites Project Authority 2020). The primary objectives of this process were to:

- Improve water supply and water supply reliability;
- Provide Incremental Level 4 water supply for refuges;
- Improve the survival of anadromous fish; and
- Enhance the Delta ecosystem.

The secondary objectives of the value planning process were to provide opportunities for flood damage reduction and recreation.

Value planning alternatives combined different types and sizes of diversion, release, reservoir, road, and bridge facilities. The Authority analyzed operational, environmental, and permitting considerations for different alternatives. For example, operational considerations included the ability of several reservoir sizes and conveyance capacities to meet participant subscriptions and participation by the State of California through WSIP. Environmental considerations included reducing the footprints of facilities or eliminating facilities to avoid or minimize impacts and reducing the amount of water diverted to storage. In addition, the Authority evaluated the costs of facilities proposed for each alternative to understand whether each alternative achieved a reasonable cost-per-acre-foot that the Sites Storage Partners could support.

The value planning process identified three recommended alternatives. Alternative Value Planning (VP) 5 involved a 1.3 million-acre-feet (MAF) reservoir and used an existing regulating reservoir (Funks Reservoir) and a new regulating reservoir (the Terminal Regulating Reservoir [TRR]) to fill Sites Reservoir with releases (1,000 cubic feet per second [cfs]) from the southern end of the TC Canal through a pipeline that went to the CBD. Alternative VP 6 was similar to Alternative VP 5, but the releases from the southern end of the TC Canal were conveyed through a pipeline that extended to the Sacramento River. Alternative VP 7 was similar to Alternative VP 5 but included a 1.5-MAF reservoir. The value planning process culminated in a Value Planning Report that was adopted by the Authority in April 2020 (Sites Project Authority 2020). The alternatives in this RDEIR/SDEIS are based on VP 5, VP 6, and VP 7 in the Value Planning Report.

2.2 CEQA and NEPA Requirements

2.2.1 CEQA Requirements

The Authority, as the State lead agency, is responsible for the development of alternatives that meet CEQA requirements. Section 15126.6 of the State CEQA Guidelines requires that:

- An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of

potentially feasible alternatives that will foster informed decision-making and public participation. An EIR is not required to consider alternatives which are infeasible.

- The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects.
- The specific alternative of "no project" shall also be evaluated along with its impact.
- The EIR should briefly discuss the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination.... Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are:
    - Failure to meet most of the basic project objectives.
    - Infeasibility.
    - Inability to avoid significant environmental impacts.

This RDEIR/SDEIS is prepared in accordance with both NEPA and CEQA, with the Action Alternatives analyzed at an equal level of analysis (consistent with NEPA standards).

2.2.2 NEPA Requirements

Reclamation, as the Federal lead agency, is responsible for the development of alternatives that meet NEPA requirements. For the Project alternatives, including the proposed action, NEPA requires that Federal government agencies shall (40 CFR Section 1502.14):

(a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.

(b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.

(c) Include reasonable alternatives not within the jurisdiction of the lead agency.

(d) Include the alternative of no action.

(e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.

(f) Include appropriate mitigation measures not already included in the proposed action or alternatives.

2.3 Overview of Alternatives

The Project would utilize existing infrastructure to divert unregulated and unappropriated flow from the Sacramento River at Red Bluff and Hamilton City and convey water to a new off-

stream reservoir west of Maxwell, California. New and existing facilities would move water into and out of the reservoir, with ultimate release back to the Sacramento River system via existing canals and a new pipeline located near Dunnigan. Construction of the reservoir would necessitate construction of a bridge or bypass road to connect Maxwell with the community of Lodoga. Additional components would include future development of new recreation facilities at the reservoir. This RDEIR/SDEIS presents the No Project Alternative and three Action Alternatives to implement the Project. Project alternatives include:

- No Project Alternative
- Alternative 1, 1.5 MAF reservoir, bridge, release to the CBD, and a range of Reclamation investment up to 7 percent of the Project costs
- Alternative 2, 1.3 MAF reservoir, South Road, partial release to the CBD and Sacramento River, and no Reclamation investment
- Alternative 3, 1.5 MAF reservoir, bridge, release to the CBD, and Reclamation investment up to 25 percent of the Project costs

The Action Alternatives analyzed in this RDEIR/SDEIS are generally based on the results of the value planning process. Alternative 1 is based on Alternative VP 7, and Alternative 2 is based on Alternatives VP 5 and VP 6. Alternative 3 is generally based on VP 7 with increased federal participation of up to 25 percent of the Project costs. Project facilities for the Action Alternatives are shown in Figure 2-1, Figure 2-2, Figure 2-3, and Figure 2-4. Table 2-1 provides a summary of the Action Alternatives. Alternative 1 is the Authority's proposed Project under CEQA.

Table 2-1. Summary of Action Alternatives

Facilities/Operations	Alternative 1	Alternative 2	Alternative 3
Diversion/Reservoir Infrastructure Details			
Reservoir Size	1.5 MAF	1.3 MAF	Same as Alternative 1
Dams [Scaled to the size of the reservoir]	Golden Gate and Sites Dams; 7 saddle dams; 2 saddle dikes	Golden Gate and Sites Dams; 4 saddle dams; 3 saddle dikes	Same as Alternative 1
Spillway	One spillway on Saddle Dam 8B	Similar to Alternative 1	Same as Alternative 1
Funks Reservoir (existing)	New Funks Pump Generating Plant (PGP) and Funks pipelines	Similar to Alternative 1	Same as Alternative 1
Terminal Regulating Reservoir (TRR)	Construction of TRR PGP and TRR pipelines	Same as Alternative 1	Same as Alternative 1
Hydropower	Incidental power generation up to 40 megawatts each at Funks PGP and TRR PGP	Same as Alternative 1	Same as Alternative 1
Diversion(s)	Diversion from Sacramento River into	Same as Alternative 1	Same as Alternative 1

Facilities/Operations	Alternative 1	Alternative 2	Alternative 3
	existing TC Canal at Red Bluff and the existing GCID Main Canal at Hamilton City		
Emergency Release Flow	Releases into Funks Creek and Stone Corral Creek via Inlet/Outlet Works, Sites Dam; structures in Saddle Dams 3 and 5 to release north to Hunters Creek watershed; Release from spillway on Saddle Dam 8B north to Hunters Creek watershed	Similar releases via Inlet/Outlet Works, Sites Dam, and spillway on Saddle Dam 8B; No emergency release structures on Saddle Dams 3 and 5	Same as Alternative 1
Recreation			
Multiple Facilities Consistent with the Authority's WSIP Application	Two primary areas with infrastructure: 1. Peninsula Hills Recreation Area 2. Stone Corral Creek Recreation Area An additional day-use boat ramp	Same as Alternative 1	Same as Alternative 1
Transportation/Circulation			
Provide Route to West Side of Reservoir	Permanent bridge crossing the reservoir and relocation of a portion of Huffmaster Road with gravel road to residents at the south end of the reservoir	Paved roadway including the relocated segment of Huffmaster Road and a new South Road on the west side of the reservoir	Same as Alternative 1
Operations			
Diversion Criteria	Bypass flows; Pulse flow protection measure to be applied	Same as Alternative 1	Same as Alternative 1
Reclamation Involvement	1. Funding Partner (up to 7% investment) with operational exchanges; or, 2. Operational Exchanges Only	Operational Exchanges Only a. Within Year Exchanges b. Real-time Exchanges	Funding Partner, up to 25% investment, and Operational Exchanges: a. Within Year Exchanges b. Real-time Exchanges

Facilities/Operations	Alternative 1	Alternative 2	Alternative 3
	a. Within Year Exchanges b. Real-time Exchanges		
Department of Water Resources (DWR) Involvement	Operational Exchanges with Oroville and use of SWP facilities South-of-Delta	Same as Alternative 1 (volumes may vary, however)	Similar to Alternative 1 (volumes may vary, however)
Releases into Funks Creek and Stone Corral Creek	Specific flow criteria to maintain flows to protect downstream water right holders and ecological function	Same as Alternative 1	Same as Alternative 1
Conveyance Dunnigan Release	Release 1,000 cfs into new pipeline to CBD	Release into new pipeline to Sacramento River, partial release to the CBD	Same as Alternative 1

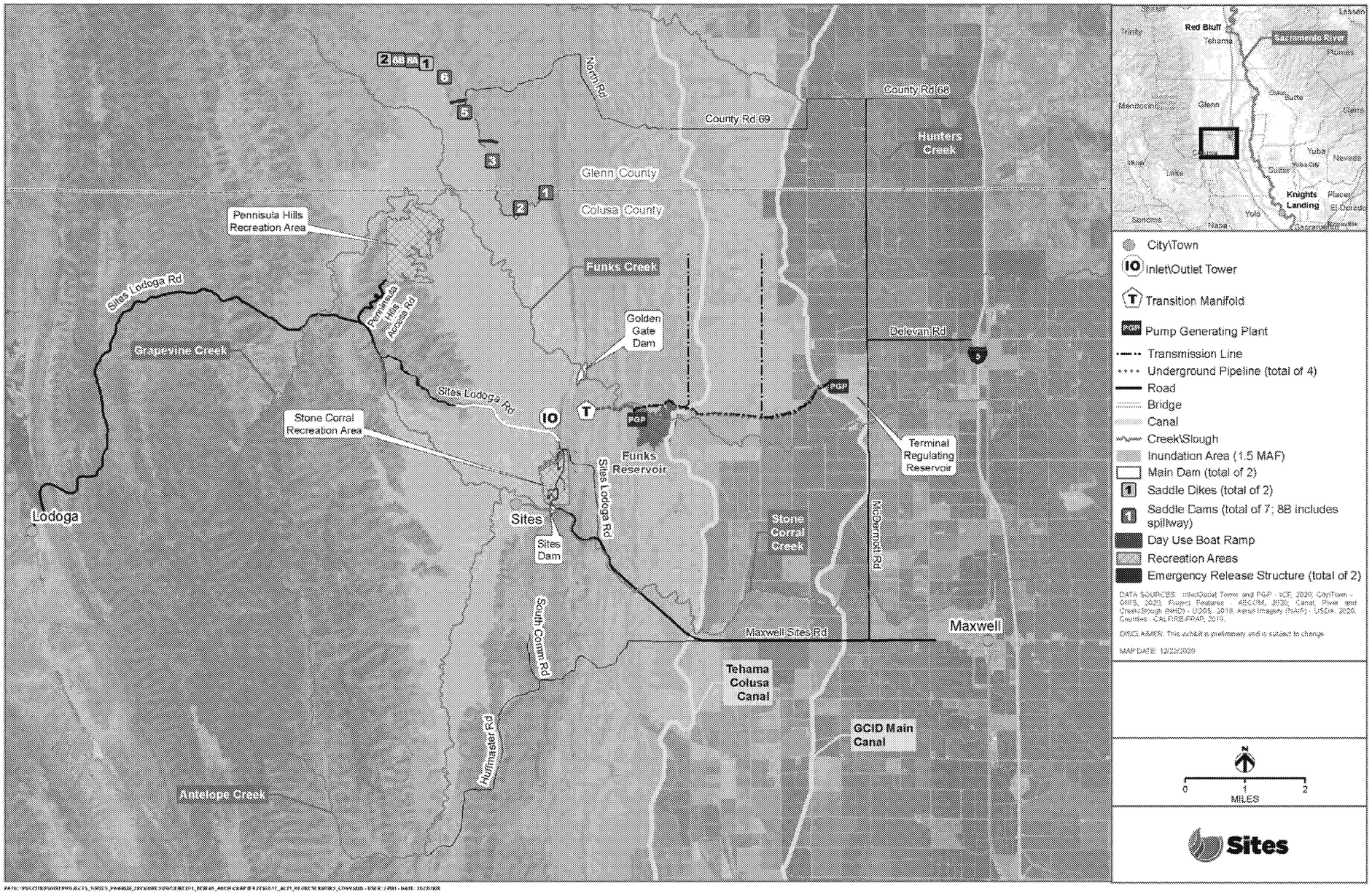


Figure 2-1. Alternatives 1 and 3 Regulating Reservoirs and Conveyance and Sites Reservoir Facilities

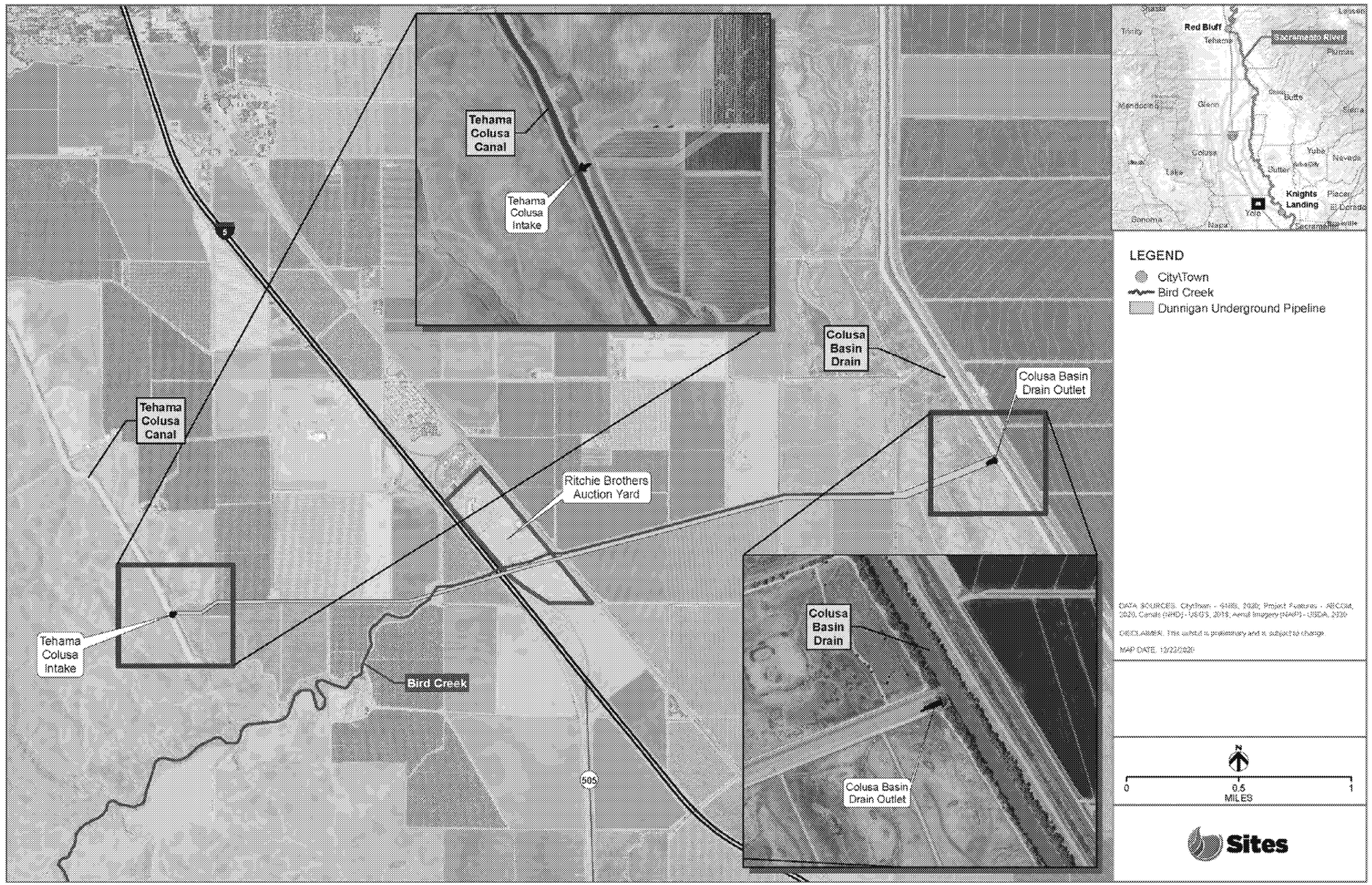


Figure 2-2. Alternatives 1 and 3 Conveyance to Sacramento River Components

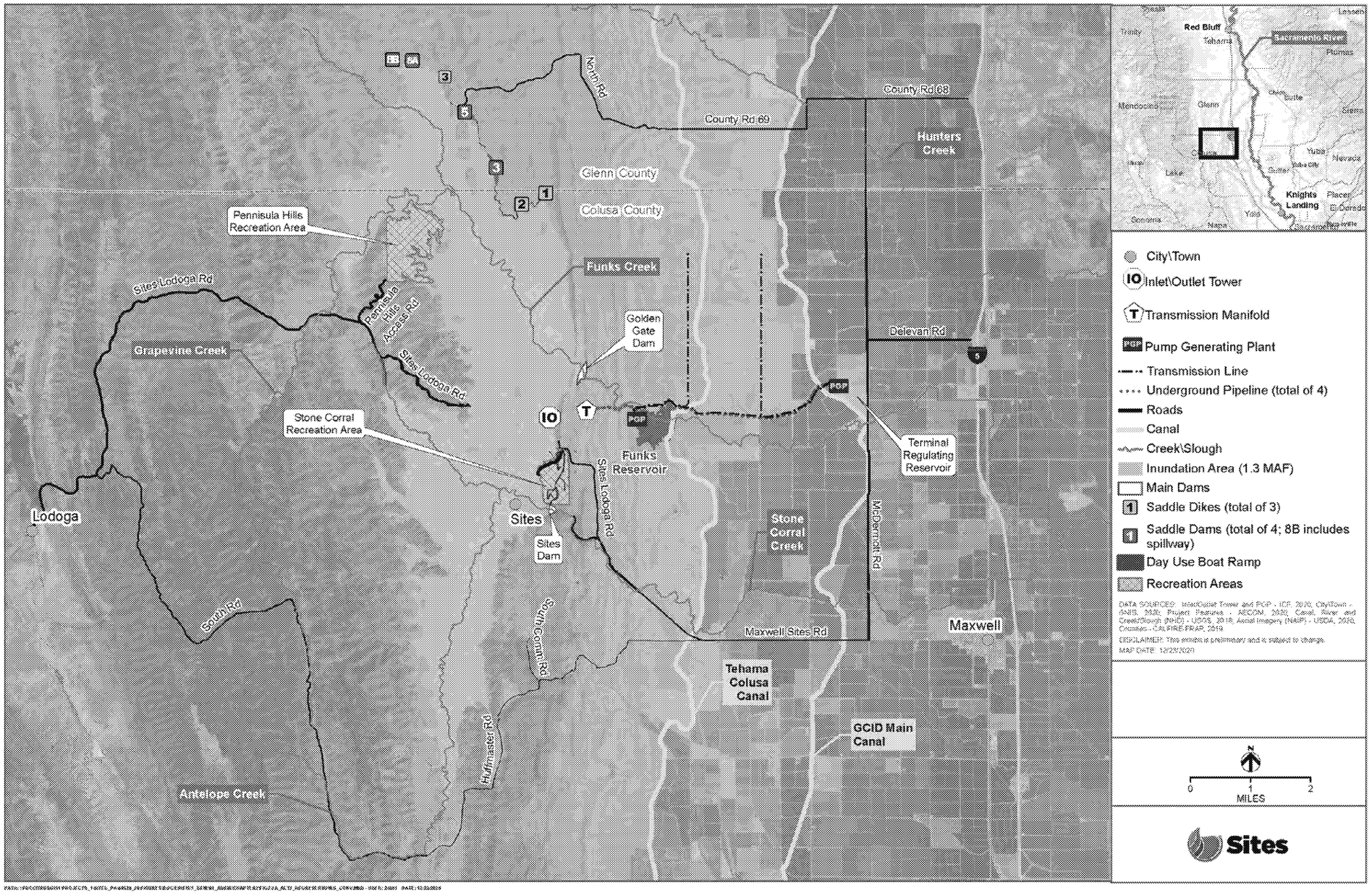


Figure 2-3. Alternative 2 Regulating Reservoirs and Conveyance and Sites Reservoir Facilities



Figure 2-4. Alternative 2 Conveyance to Sacramento River Components

It should be noted that the Authority could decide to approve a version of Alternative 2 (with a 1.3-MAF reservoir) that incorporates the bridge component of Alternative 1, or the CBD release component of Alternative 1 instead of release to the Sacramento River, or both of these distinct components. Similarly, the Authority could decide to approve a version of Alternative 1 (with a 1.5-MAF reservoir), or a version of Alternative 3, that incorporates the roadway improvements without the bridge as contemplated by Alternative 2, or the Sacramento River release component of Alternative 2 instead of the CBD release, or both of these distinct components. In this way, the evaluation of Alternatives 1, 2 and 3 actually incorporates a spectrum of multiple options for the decision-makers about the Project facilities and components.

2.4 No Project/Action Alternative

The CEQA Guidelines require that an EIR analyze the No Project Alternative. Evaluation of the No Project Alternative allows decision makers to compare the impacts of approving a proposed project with the impacts of not approving the proposed project. This RDEIR/SDEIS evaluates a No Project Alternative that assumes the Project would not be implemented and considers what would be reasonably expected to occur in the foreseeable future if the Project were not approved, based on current plans and consistent with available infrastructure and community services.

NEPA similarly requires an analysis of an alternative in which the project is not implemented assuming continuation of existing policies and management direction into the future. Under NEPA, the No Action Alternative accounts for reasonably foreseeable changes in existing conditions. Existing conditions includes changes that would reasonably be expected to occur in the foreseeable future if the Project were not approved, based on current plans and consistent with available infrastructure and community services.

For this RDEIR/SDEIS, the term *No Project Alternative* describes both the No Project Alternative and No Action Alternative for CEQA and NEPA purposes, respectively. Because none of the proposed facilities would be constructed or operated, the No Project Alternative would not materially change conditions as compared to existing conditions. The No Project Alternative assumes the same regulatory criteria as existing conditions. This is because reasonably foreseeable programs and projects included within the No Project Alternative affect water supply, water quality, or anadromous fisheries conditions and are part of existing conditions. For example, the implementation of the 2019 Biological Opinions from the U.S. Fish and Wildlife Service and National Marine Fishery Service for the Reinitiation of Consultation on the Coordinated Operations of the CVP and SWP (ROC on LTO; USFWS 2019 and NMFS 2019) and the Incidental Take Permit for Long-term Operations of the State Water Project in the Sacramento-San Joaquin Delta (SWP ITP; CDFW 2020) are included in both existing conditions and the No Project Alternative.

In addition, DWR's projected future land use and water use are typically included as fundamental assumptions in the CALSIM II model (see Appendix 1A, Introduction to Appendices and Modeling Information, and Chapter 5, Surface Hydrology Resources, for more information regarding CALSIM) as part of the impact evaluation process. These 2030 water demand conditions indicate that the vast majority of the CVP and SWP water contractors would

use their total contract amounts and that most senior water rights users also would fully use most of their water rights, depending on the hydrologic condition. The Sites Project Authority (Authority) has accepted this assumption for this analysis. This increased demand in addition to the projects currently under construction and those that have received approvals and permits at the time of preparation of the RDEIR/SDEIS constitute the No Project Alternative. Furthermore, the rural nature of the area and limited potential for growth and development in Colusa, Glenn and Yolo Counties within the 2030 study period used for this RDEIR/SDEIS supports similarities between the No Project Alternative and existing conditions.

Under the No Project Alternative, existing conditions outlined in the following resource chapters would not be altered by the Project. However, Project benefits would also not be achieved. Under the No Project Alternative, flood control, ecosystem improvement, and recreation benefits that are part of the Project would not be funded and implemented as part of WSIP. The No Project Alternative would also not provide water supply reliability, operational flexibility, benefits to anadromous fish, water supply for refuges and Delta ecosystem benefits sought with potential Reclamation investment. Finally, the No Project Alternative would eliminate one opportunity to provide a multi-benefit project consistent with the Governor's Water Resilience Portfolio. The No Project Alternative would not meet the Project objectives and purpose and need stated in Chapter 1 but is analyzed in this RDEIR/SDEIS, consistent with CEQA and NEPA requirements.

2.5 Elements Common to All Action Alternatives

Project facilities, operations and maintenance, construction considerations, commitments and BMPs, and Proposition 1 benefits common to all of the Action Alternatives are described below.

2.5.1 Facilities Common to All Action Alternatives

The facilities common to all the Action Alternatives are described below. Design and construction considerations for these facilities are also described. Additional detail for construction means and methods are described in Appendix 2C, Construction Means, Methods, and Assumptions.

2.5.1.1 Sacramento River Diversion and Conveyance to Regulating Reservoirs

All Action Alternatives include the diversion of water from the Sacramento River at the existing RBPP into the existing TC Canal and at the existing Hamilton City Pump Station into the existing GCID Main Canal. The RBPP and TC Canal are owned by Reclamation and operated by the Tehama Colusa Canal Authority. The RBPP has an existing fish screen that meets NMFS and CDFW fish screen criteria. The Hamilton City Pump Station and GCID Main Canal are owned and operated by GCID. The Hamilton City Pump Station has an existing fish screen that meets NMFS and CDFW fish screen criteria. Some improvements would be made to these facilities to allow for Project operations concurrent with these facilities continuing to meet their intended purposes. The location of these improvements is shown in Figure 2-5 and these improvements are described below.

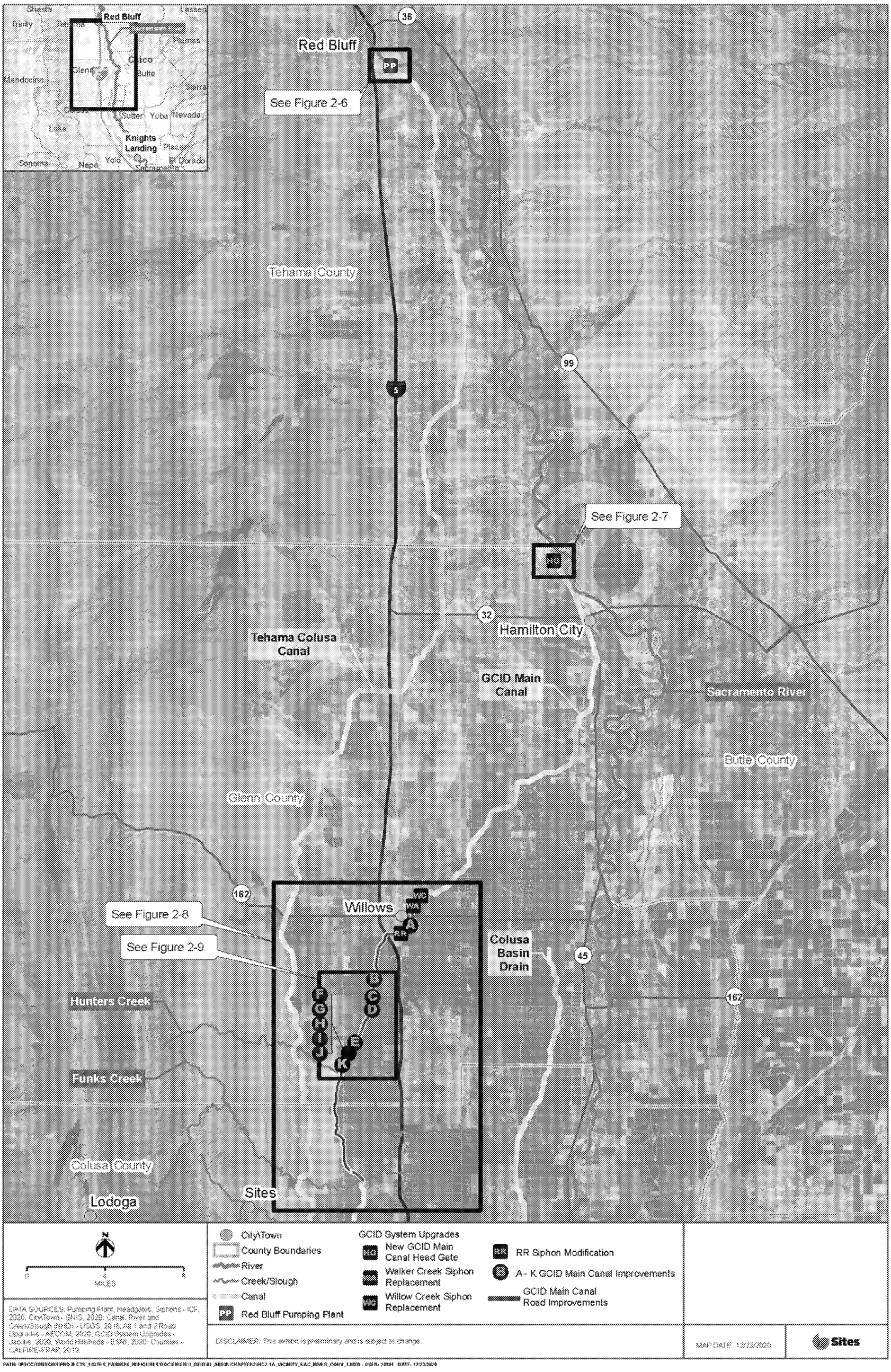


Figure 2-5. Sacramento River Conveyance Components

Tehama-Colusa Canal Diversion

All Action Alternatives include the installation of two additional 250-cfs vertical axial-flow pumps into existing concrete pump bays at the RBPP. The addition of these two pumps would increase the capacity from 2,000 to 2,500 cfs, as well as provide redundancy. See Figure 2-6 for a vicinity map of the RBPP and see Appendix 2C for plan and profile views of the proposed pumps.

The installation of the additional pumps at the RBPP under all of the Action Alternatives would occur at existing facilities and would require limited construction equipment and personnel over a period of approximately 2 months.

GCID Main Canal Diversion and System Upgrades

The GCID system may require several different upgrades to support the operation of Sites Reservoir. The specific details of these upgrades would be confirmed during future hydraulic modeling and assessment of conditions. However, for the purposes of this document and the impact analyses contained herein, it is assumed construction would be performed at various locations along the GCID Main Canal, as described below.

All Action Alternatives would require a new 3,000-cfs Main Canal head gate structure about 0.25 mile downstream of Hamilton City Pump Station (Figure 2-7). This new structure is required because the existing head gate structure would not be adequate for proposed winter operation due to the decrease in water elevation across the structure during high river levels. The existing head gate structure would be left in place to continue to serve as a bridge between County Road 203 and County Road 205 in Glenn County. This structure would continue to operate during construction of the new head gate structure and diversion activities would continue throughout construction. The new head gate structure would be constructed upstream of the existing structure and would include eight automated gates. The water level and flow control functions would involve operating conditions that would result in water surface drops across the head gate of between 3 and 15 feet. The canal reach immediately downstream of the new head gate structure would be lined with concrete for approximately 35 feet to prevent erosion.

GCID typically dewaters their Main Canal for up to 6 weeks each year between early January and late February for maintenance activities. This is the time of year that the Project seeking to utilize the GCID Hamilton City Pump Station and GCID Main Canal to divert and convey under the Project. To reduce this current winter shutdown period from 6 weeks to 2 weeks, other improvements would be required to integrate Sites Reservoir into the GCID system. All Action Alternatives would involve replacing the Walker Creek siphon (MP 24.48) and Willow Creek siphon (MP 24.68) on the Main Canal to allow for increased capacity (Figure 2-8 and Figure 2-9). The siphon under the Union Pacific Railroad (i.e., railroad siphon) at MP 26.6 would be improved by adding an additional barrel to allow for increased capacity.

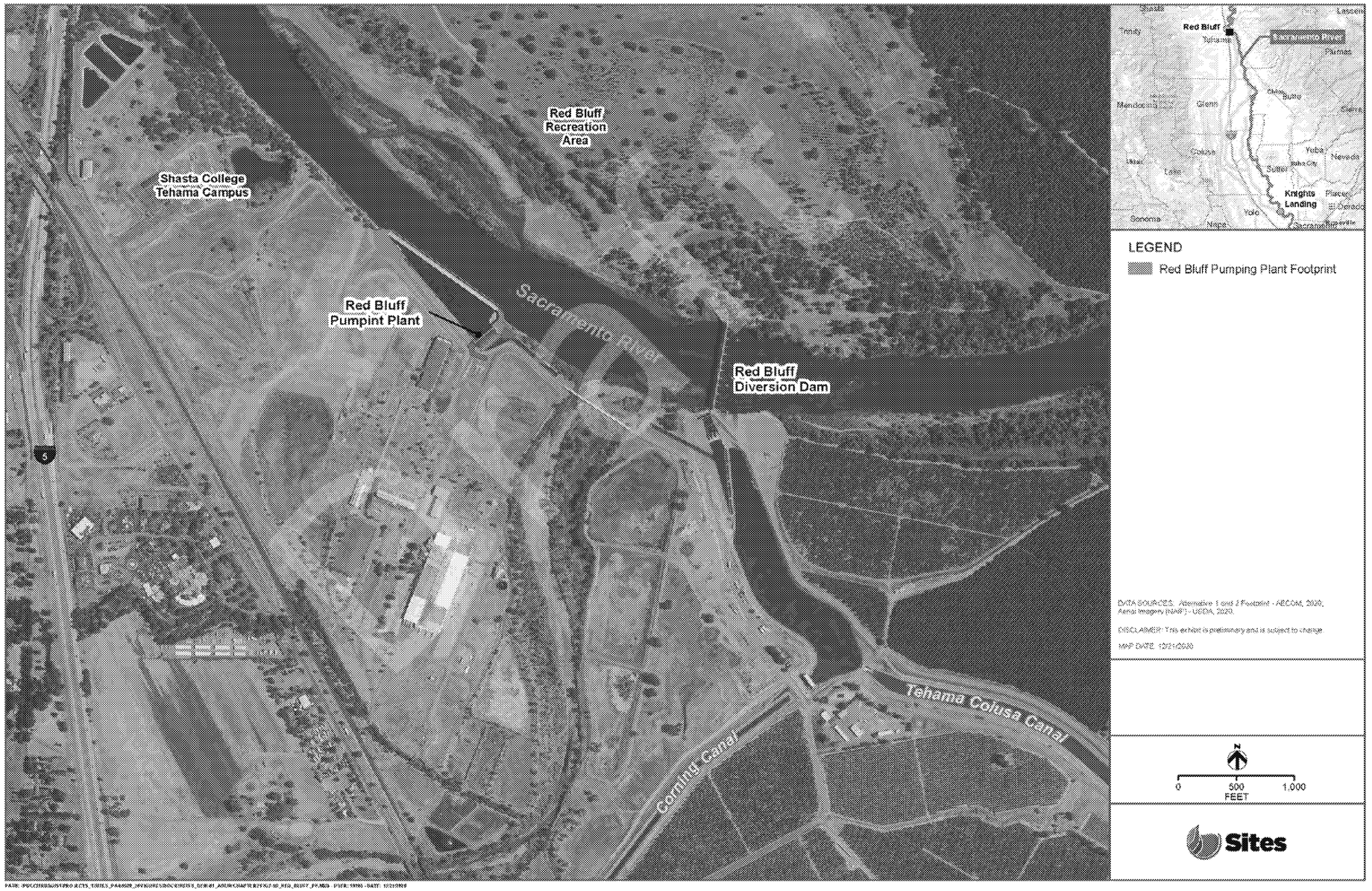


Figure 2-6. Red Bluff Pumping Plant



Figure 2-7. GCID Main Canal Head Gate Structure

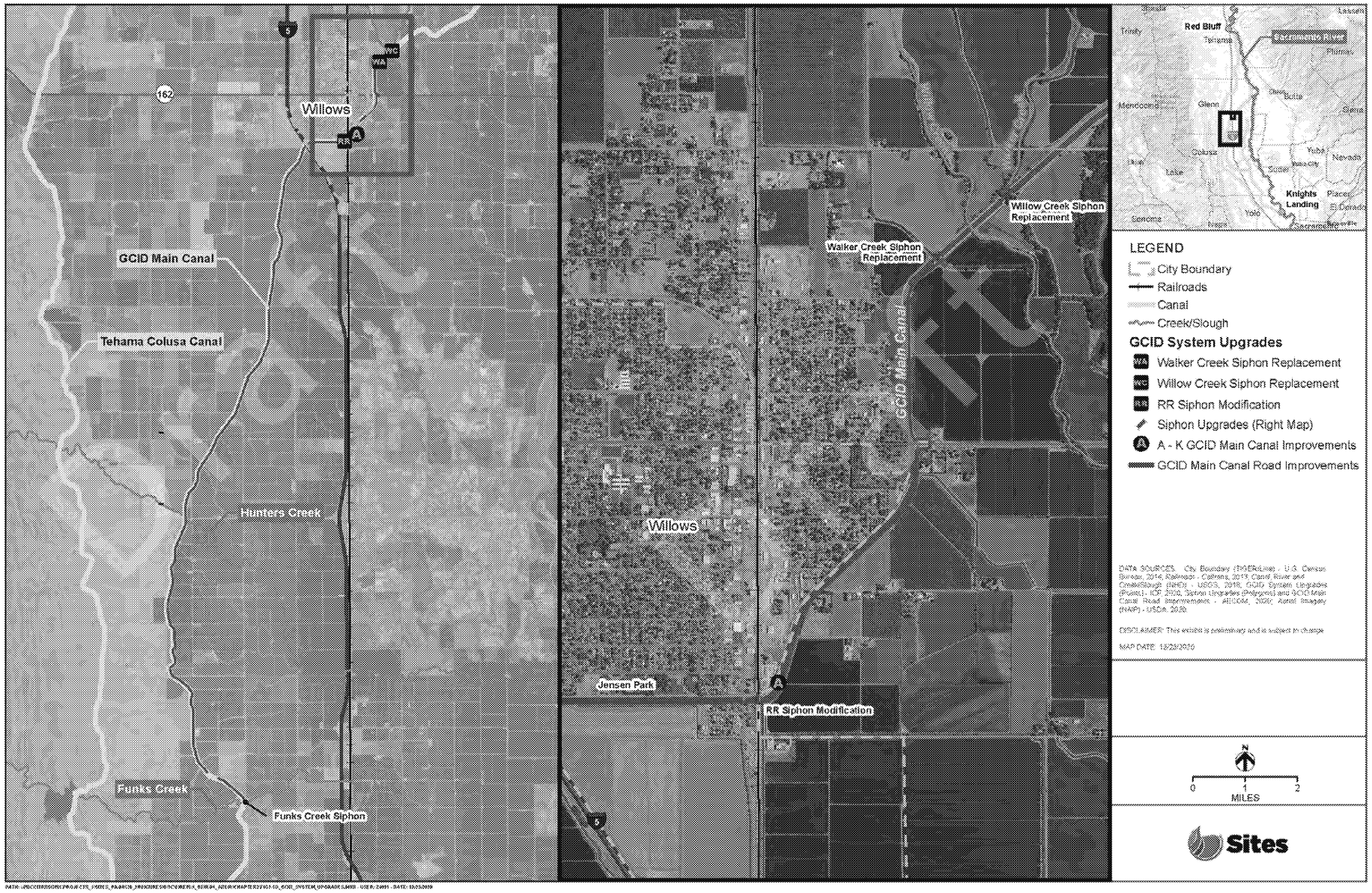


Figure 2-8. GCID System Upgrades



Figure 2-9. GCID System Upgrades Continued

All Action Alternatives would entail Main Canal improvements between MP 26 and MP 41.3 to increase the freeboard between Willows and the TRR to a standard 2.5 feet; under existing conditions the freeboard range is 1 to 2 feet. All Action Alternatives would also require road improvements to approximately 17 miles of left bank canal road between the existing Willow Creek siphon and the existing Funks Creek siphon to ensure an all-weather road surface (see Figure 2-8). These road improvements would primarily consist of adding approximately 6 inches of aggregate base material. GCID would manage the facility upgrades using an approach consistent with their existing management practices.

Construction of improvements along with GCID Main Canal would occur in the winter during the regular shutdown period. For the additional siphons on the Main Canal, a portion of the canal around the siphon would be dewatered using an earth coffer dam lined with geomembrane and sump pumps. Using a bore-and-jack procedure a new barrel would be installed, and new headwalls on the upstream and downstream end would be installed to approximately match the existing headwall. Construction staging areas would be in the immediate area of the improvements. The proposed upgrade of the railroad siphon would require coordination and planning with the railroad owners. Construction restrictions may exist regarding minimizing interference with regular railroad operations. To the extent possible, upgrades to the railroad siphon would take place during periods of lowest train traffic, and railroad shutdown time would be minimized.

Earthwork related to the GCID Main Canal to increase the freeboard to 2.5 feet would require a total fill of 5,000 cubic yards. There would be no excavation and only minor reshaping and addition of fill to the sides of the canal. The fill would be sourced from other project spoils and there would be no net import. Construction related to roughly 17 miles of road improvements would require approximately 27,000 cubic yards of aggregate base. It is anticipated the aggregate would be imported from a rock plant within 20 miles of the GCID Main Canal. The GCID improvements along the Main Canal and the existing road would occur within existing rights-of-way and construction would not permanently remove any existing crops.

2.5.1.2 Regulating Reservoirs and Conveyance Complex

Multiple facilities would be required to control the conveyance of water between Sites Reservoir and the TC Canal and GCID Main Canal. These facilities would include regulating reservoirs, pipelines, pumping generating plants (PGPs), switchyards, and administration and maintenance buildings. These facilities are described below.

Terminal Regulating Reservoir

Pumping from the GCID Main Canal to Sites Reservoir would require construction of the TRR facilities. There would be four primary facilities: the TRR, the TRR PGP, an electrical substation, and TRR pipelines. The TRR facilities would be located in Colusa County north of the GCID Main Canal and west of McDermott Road. The approximately 150-acre site would be accessed by an asphalt concrete paved road off McDermott Road. Paved parking would be provided near the PGP. Asphalt concrete paved roads would provide onsite vehicle access between the TRR PGP and electrical substation, with facility spacing to accommodate an operational crane. The proposed TRR PGP and electrical substation would encompass approximately 7 acres and would be enclosed with security fence with access gates on the south

and east sides. See Figure 2-10, Terminal Regulating Reservoir Facilities Site Plan, for the locations of the proposed TRR-related facilities.

The TRR facilities are within a designated Federal Emergency Management Agency (FEMA) Special Flood Hazard Area, Zone A, Without Based Flood Elevation. Site drainage would be conveyed offsite to the existing GCID Main Canal or directly into the TRR through shallow swales or overland flow.

The new TRR would encompass approximately 100 acres immediately east of the GCID Main Canal and have a storage capacity of approximately 600 acre-feet (AF). The TRR would have earthen embankments around its perimeter and an impermeable lining consisting of a geomembrane overlying geocomposite placed over compacted earth. The TRR would be hydraulically connected to the GCID Main Canal to allow water to be conveyed to and from the Sites Reservoir. The TRR would accommodate inflows of up to 1,800 cfs. The GCID Main Canal would be the conveyance source of water for the TRR and its PGP to pump water to Sites Reservoir. The canal would also be the primary conveyance for releases of water from the TRR and its PGP from Sites Reservoir. The spillway for the TRR would be located at the southernmost corner of the reservoir and discharge into Funks Creek.

Access between the east and west sides of the GCID Main Canal adjacent to the TRR would be over a new bridge between the TRR embankment near the gate structures and the west side of the GCID Main Canal. The bridge is anticipated to consist of a pre-cast concrete span between the banks of the GCID Main Canal with concrete abutments founded on piles.

TRR Pumping Generating Plant

A TRR PGP would pump water from the TRR to Sites Reservoir; the PGP would include hydroelectric turbines to generate electricity when water was released from Sites Reservoir to the TRR. The PGP would include the following three facilities in five buildings: one pump station, two turbine generator buildings, and two energy dissipating structures (Figure 2-11, TRR Pump Generating Plant Facilities). The pumping plant would have a design capacity of 1,800 cfs, the generating plant 1,000 cfs, and the energy dissipation 1,000 cfs.

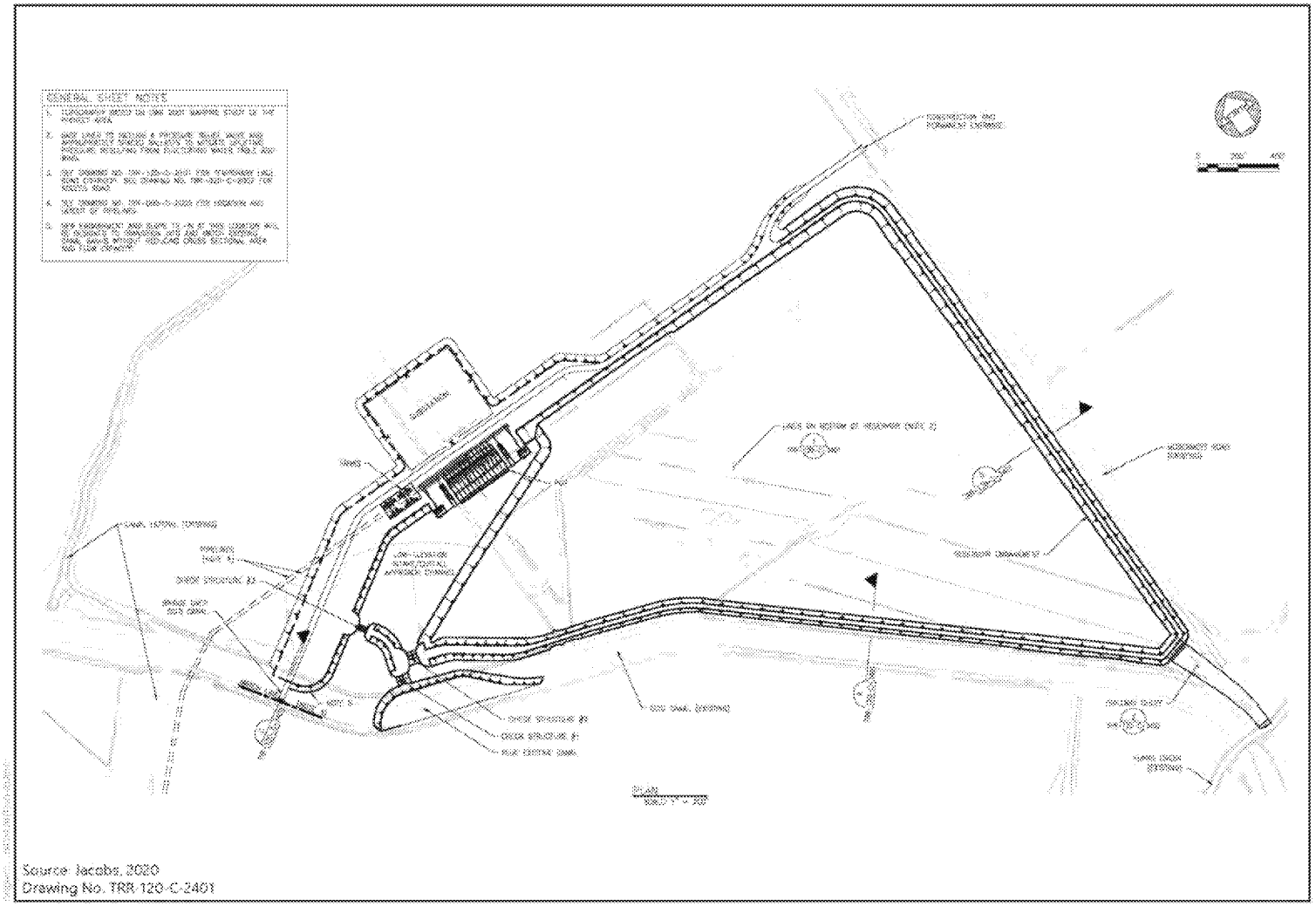


Figure 2-10. Terminal Regulating Reservoir Facilities Site Plan

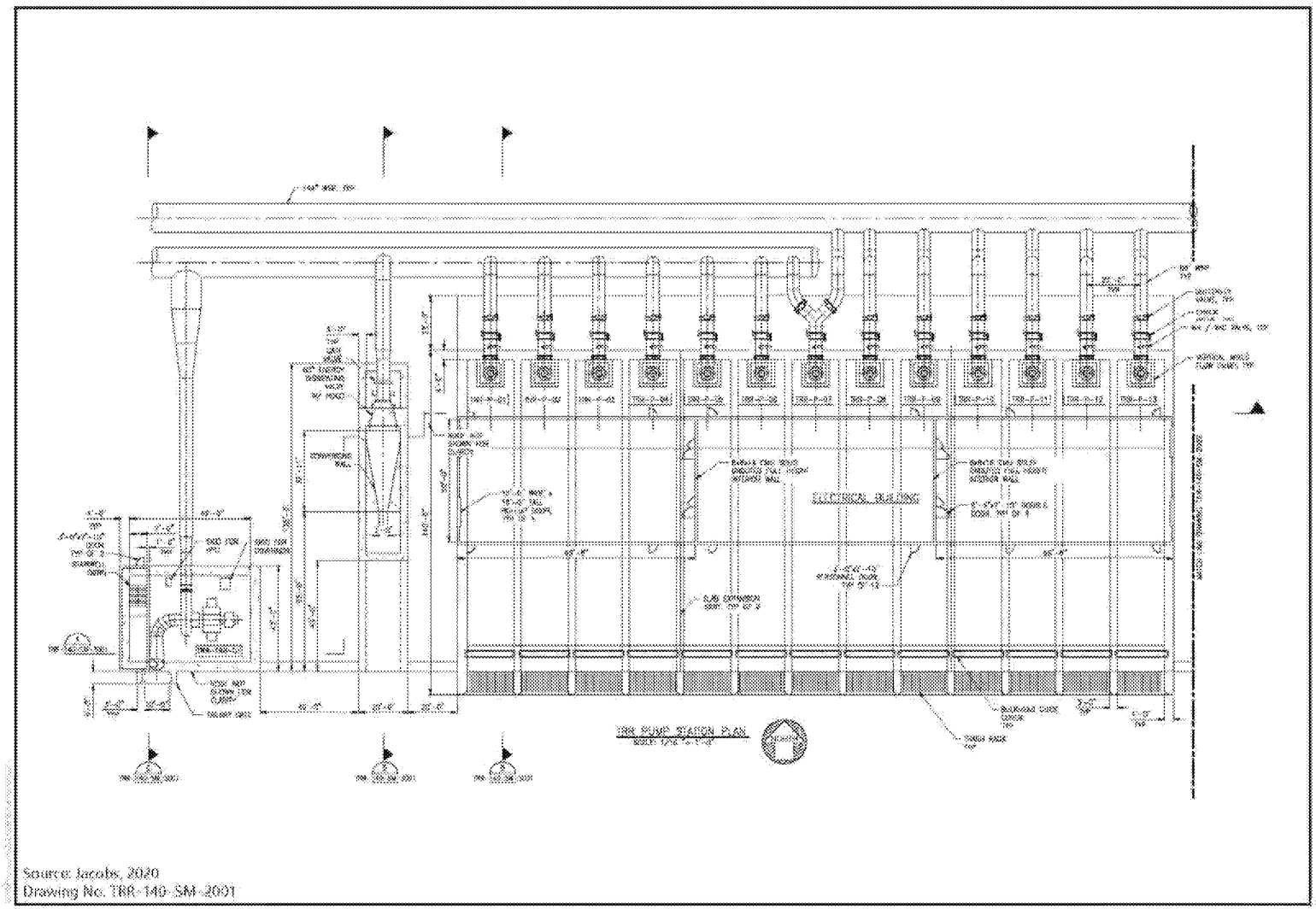


Figure 2-11. TRR Pump Generating Plant Facilities

The pump station would support the pumps at the edge of the TRR and be designed to minimize pump vibration. A trashrack would be installed at the front of the wet well to exclude debris. Bulkhead slots would be provided at each wet well to allow bulkheads to be installed and isolate pump bays for maintenance. The pump station would contain 13 pumps in a single row. Six pumps each would feed into two 12-foot-diameter pipes connecting to the turbines (discussed below), and there would be a single standby pump that could feed into either pipe. It is anticipated that all pumps would have a variable frequency drive to adjust to the variable pumping heads while staying within the pump operating range and efficiency.

The two turbine generator buildings would house the turbines, generator, draft tube, associated piping appurtenances, and other electrical equipment. There would be two 13-kilowatt turbines (one for each 12-foot-diameter pipe) that would have a horizontal laying flow pattern. The turbines would discharge water into a draft tube prior to exiting into the TRR. Because the discharge would need to be submerged, the turbines would be in an underground structure with a roof. The aboveground portion of the turbine generator buildings would consist of concrete masonry unit walls.

The two energy dissipation valve structures would allow releases back to the TRR as back-up to the hydroelectric turbine facilities. These structures would each contain a stilling basin and fixed cone valve to dissipate energy before water enters the TRR. There would be a 60-inch fixed cone valve on each of the two 12-foot-diameter pipes for a total of two 60-inch fixed cone valves and a total flow of 1,000 cfs.

TRR Electrical Substation

The TRR PGP would require a substation to provide electricity to the associated facilities described above. The electrical substation would connect to existing Pacific Gas and Electric Company (PG&E) or Western Area Power Administration (WAPA) lines. The facility would be constructed on approximately 1.5 acres within the TRR PGP footprint to the north of the TRR. The dimensions of the electrical substation would depend on whether it is connected with PG&E or WAPA lines. The substation would be approximately 460 feet long by 300 feet wide if connected to PG&E lines and be 300 feet long by 240 feet wide if connected to WAPA lines. Figure 2-12, TRR Electrical Substation, provides a plan view of the facility.

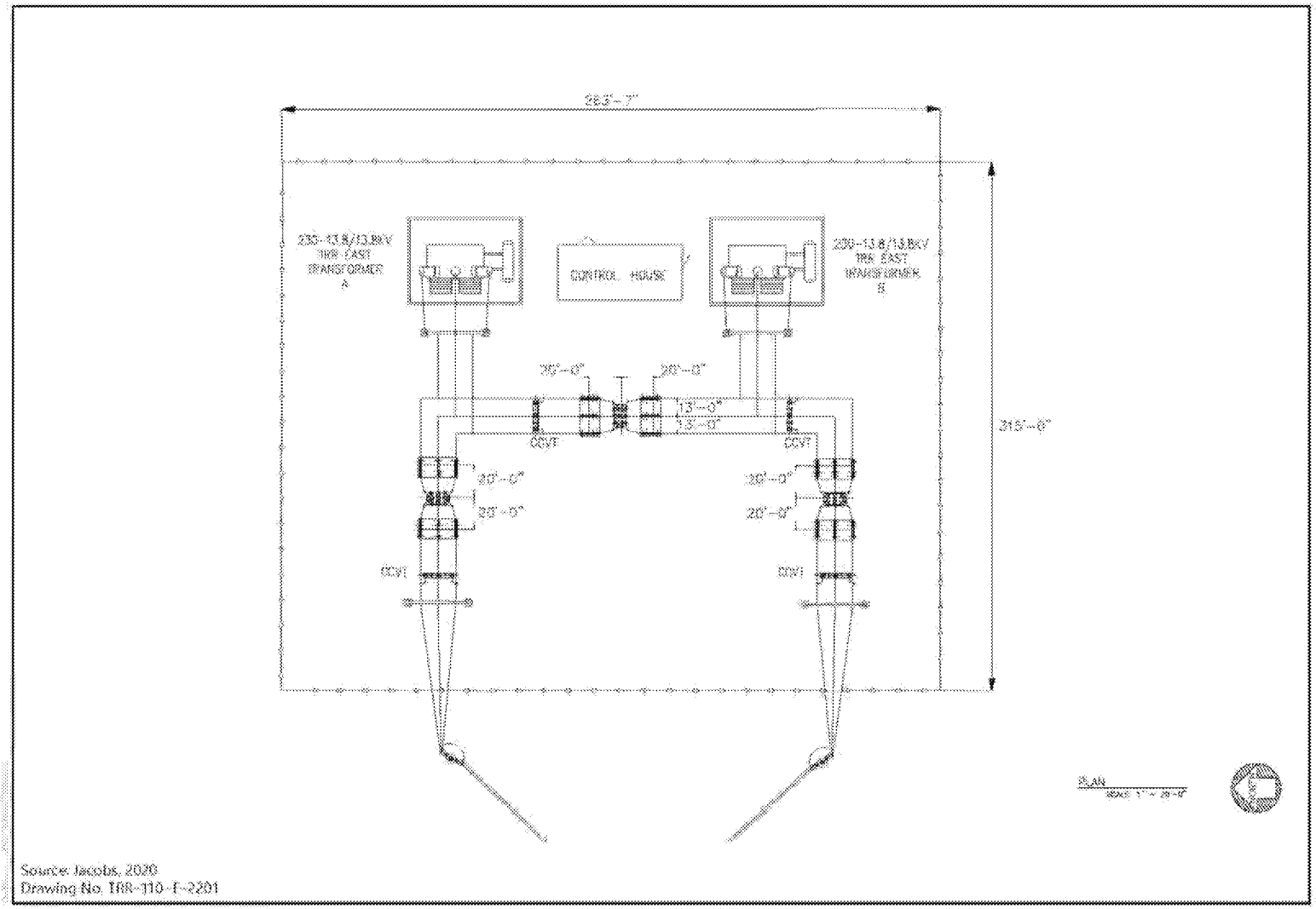


Figure 2-12. TRR Electrical Substation

The electrical substation would use electrical equipment that meets the standards of the National Electrical Manufacturers Association, American National Standards Institute, and Institution of Electrical and Electronics Engineers. Additionally, equipment that is listed or labeled as meeting the safety standards or ratings identified by Underwriter Laboratories or a nationally recognized testing laboratory would also be used. The substation design would include primary safety equipment (e.g., circuit breakers, utility-grade relays) and meet the total pumping power requirements or total generation requirements. For more information regarding the pumping power requirements or total generation requirements, please see Section 2.5.2.2, *Energy Generation and Energy Use*. The substation would have sufficient redundancy such that the failure of any one component would permit the substation to be safely and reliably isolated from the transmission system under fault conditions.

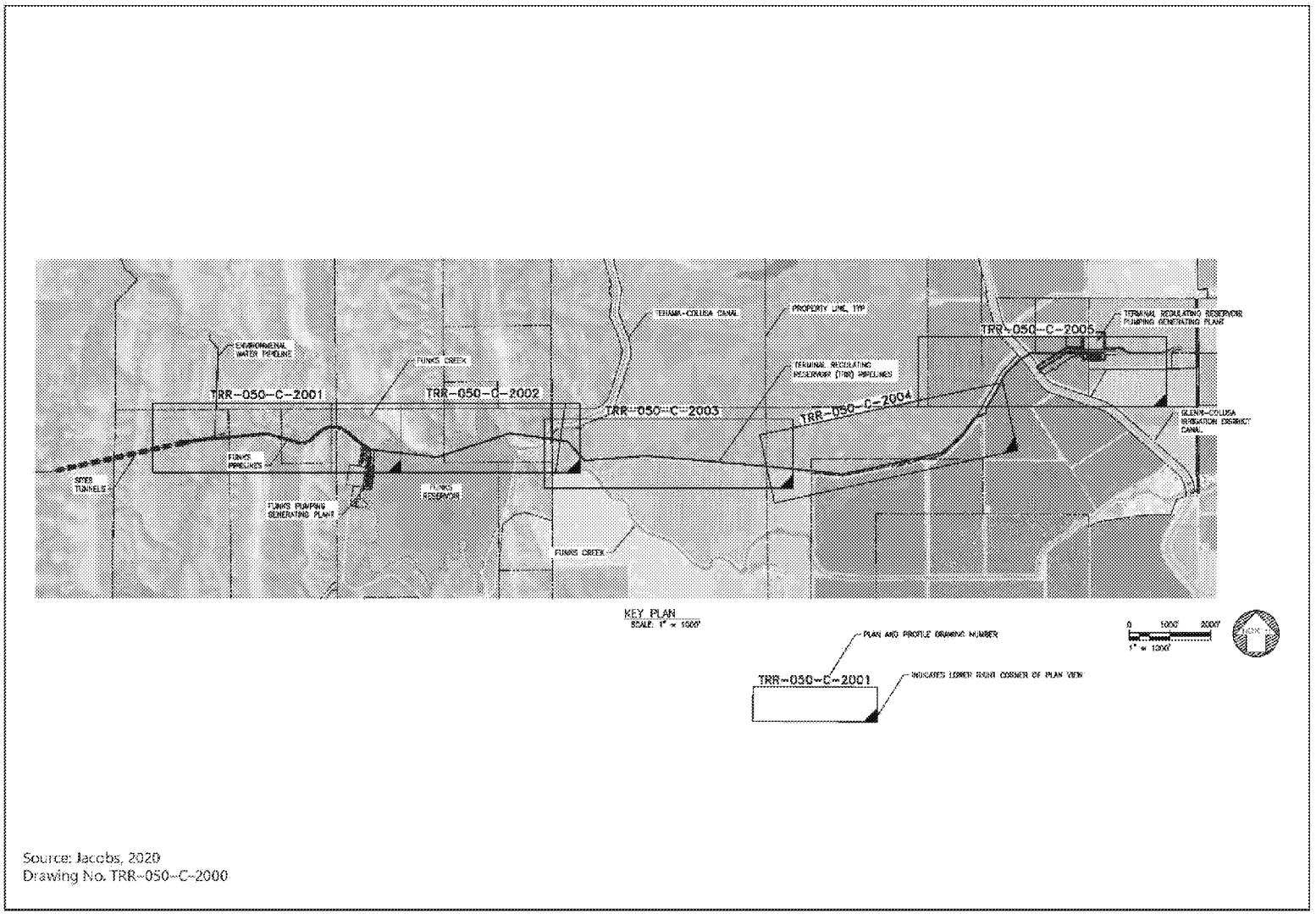
TRR Pipelines

Two underground TRR pipelines would convey water approximately 4.5 miles between the TRR PGP and Sites Reservoir. See Figure 2-13, TRR Pipelines, for the location and alignment route of the pipelines. The 12-foot-diameter pipes would extend from the TRR PGP, under Funks Reservoir, and terminate at the transition manifold south of Funks Creek near the Golden Gate Dam. Both TRR pipelines would connect to one of the two side-by-side, 23-foot-inside diameter I/O tunnels at the transition manifold.

The pipelines would parallel the Funks pipelines and Funks Creek and would generally be from 6 feet to 30 feet below ground surface after installation (does not include depth below ground surface where tunneling occurs, which could be up to 100 feet). Trenching for pipelines would include the use of excavators and would be excavated to meet all applicable requirements. Between the TRR and Funks Reservoir, the pipelines would cross the TC Canal using a trenchless method or open cut, depending on construction schedule. East of the TC Canal, the TRR pipelines would run parallel to a drainage canal until they reached the GCID Main Canal where they would cross using a trenchless method or open cut, depending on construction schedule.

Funks Reservoir

The existing Funks Reservoir would be used to store and pump water from the TC Canal to and from Sites Reservoir. Excavation of existing accumulated sediment from Funks Reservoir would be required, as would the construction of three facilities: Funks PGP, an electrical substation, and Funks pipelines. These facilities would be constructed in Colusa County, west of the TC Canal, on approximately 7 acres. The overall site would be enclosed by a security fence with access gates on the south and northwest sides. See Figure 2-14, Funks Reservoir Facilities Site Plan, for the location of the facilities.



Source: Jacobs, 2020
Drawing No. TRR-050-C-2000

Figure 2-13. TRR Pipelines

Predecisional Working Document—For Discussion Purposes Only

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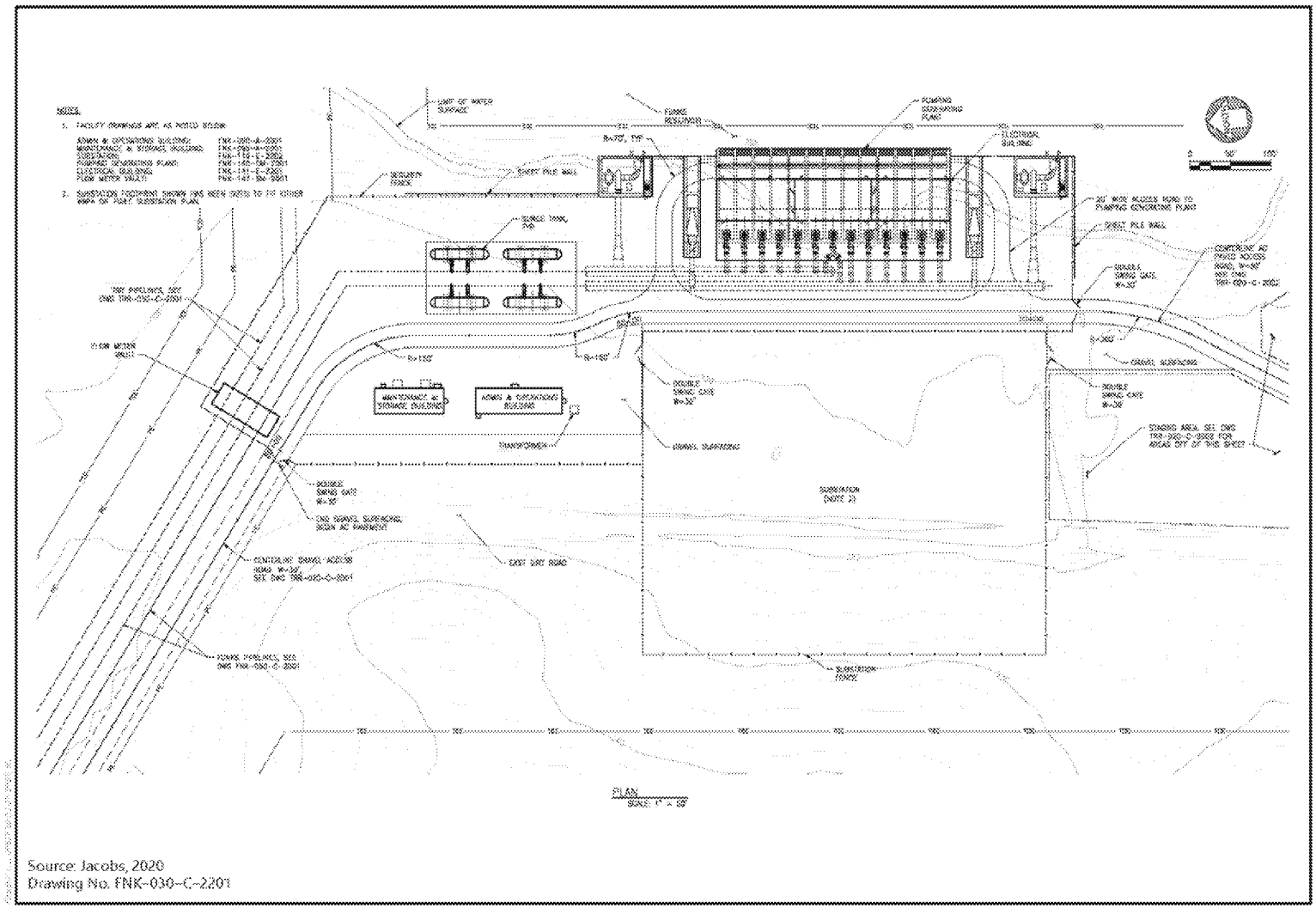


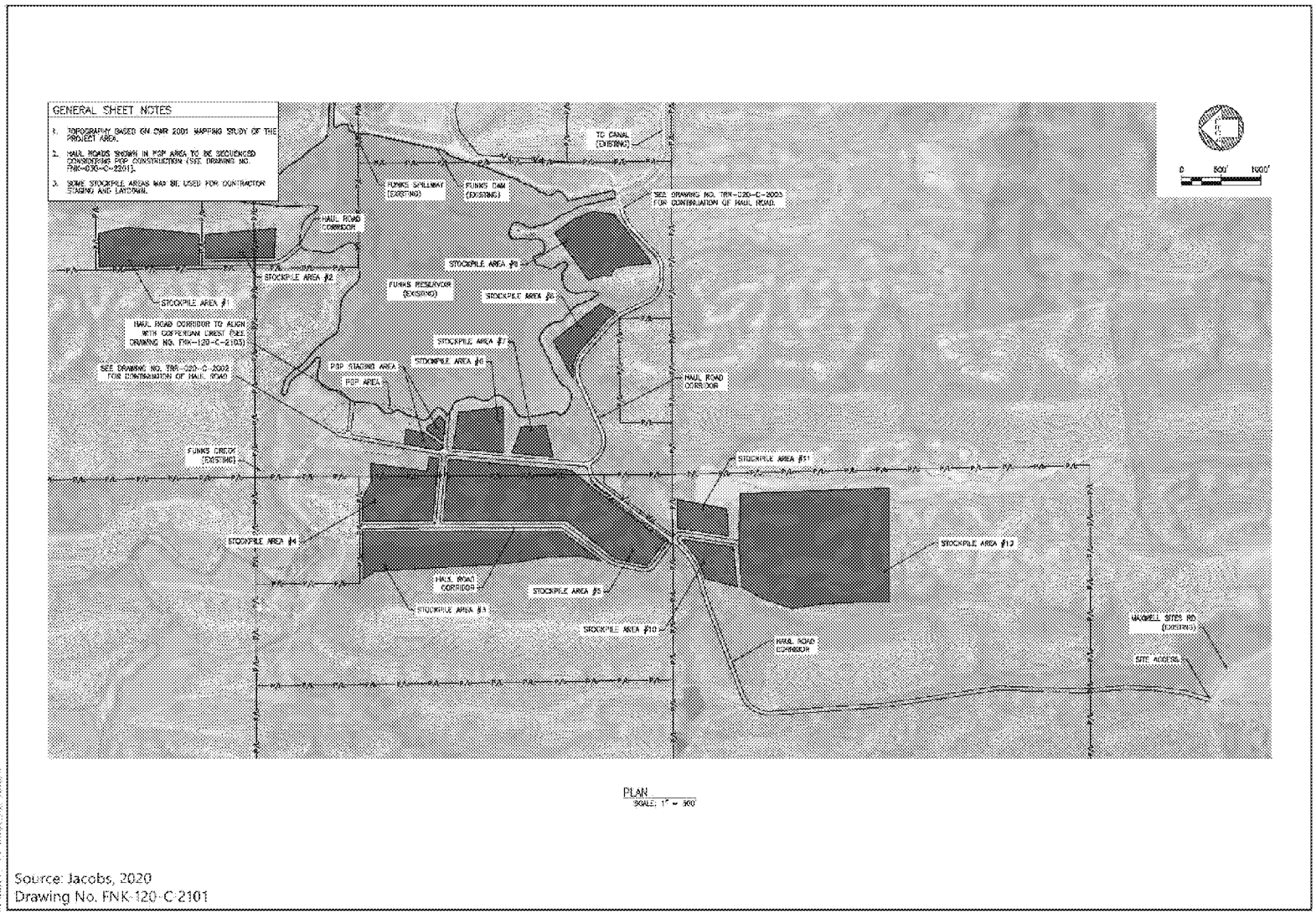
Figure 2-14. Funks Reservoir Facilities Site Plan

Access to the Funks Reservoir-related facilities would be provided at the north and south ends of the site. A gravel parking area would be provided near the PGP. Asphalt concrete paved, onsite vehicular access would be provided between the Funks PGP and electrical substation, with facility spacing to accommodate an operational crane. The facilities site would be accessed by an asphalt concrete paved road from Maxwell Sites Road to the south. Existing gravel roads would be improved to be 30 feet wide, with asphalt concrete surfacing for the southern access route, and would be relocated through the site. A gravel bypass road may be provided to the west of the site. On the north side of the facilities site, the existing dirt road would be improved to be a gravel road that would follow the existing road alignment until it reaches the TRR pipeline. At that location, a new access road would be built along the Funks and TRR pipelines to the connection with the I/O tunnels.

The proposed location of the Funks Reservoir-related facilities is in a FEMA Area of Minimal Flood Hazard, Zone X. Onsite drainage would be conveyed offsite directly into Funks Reservoir through shallow swales or overland flow. Offsite stormwater runoff would be collected on the west side of the site in a ditch, conveyed around the site, and deposited into Funks Reservoir.

The existing Funks Reservoir would be used as a source of water to pump to Sites Reservoir and would receive water discharged from the reservoir. The Funks Reservoir operational WSE can only vary slightly from the TC Canal and the reservoir WSE typically ranges from 200 to 205 feet, although the preferred operational WSE range is 202 to 204 feet.

All Action Alternatives would not alter the footprint of Funks Reservoir; however, 740,000 cubic yards of sediment that has accumulated since originally constructed would be excavated from the reservoir. The excavation is anticipated to restore the original capacity of Funks Reservoir. Excavation would proceed to an elevation of approximately 197 feet in the reservoir and 185.5 feet near the Funks PGP on the western side. The bottom of Funks Reservoir would be reshaped to allow large, unimpeded flows to and from the Funks PGP. The excavated sediment would be deposited adjacent to Funks Reservoir as shown on Figure 2-15. For the purposes of this analysis, the sediment is assumed to remain near Funks Reservoir.



Source: Jacobs, 2020
Drawing No. FNK-120-C-2101

Figure 2-15. Funks Reservoir Stockpile and Haul Route Plan

Funks Pumping Generating Plant

The Funks PGP would be used to pump water from Funks Reservoir to Sites Reservoir. The PGP would be constructed on the northwest side of Funks Reservoir. The PGP would include the following three facilities in five buildings: one pump station, two turbine generator buildings, and two energy dissipating structures. An electrical building would also be constructed behind the pumps as part of the pump station. See Figure 2-16, Funks Pump Generating Plant Facilities.

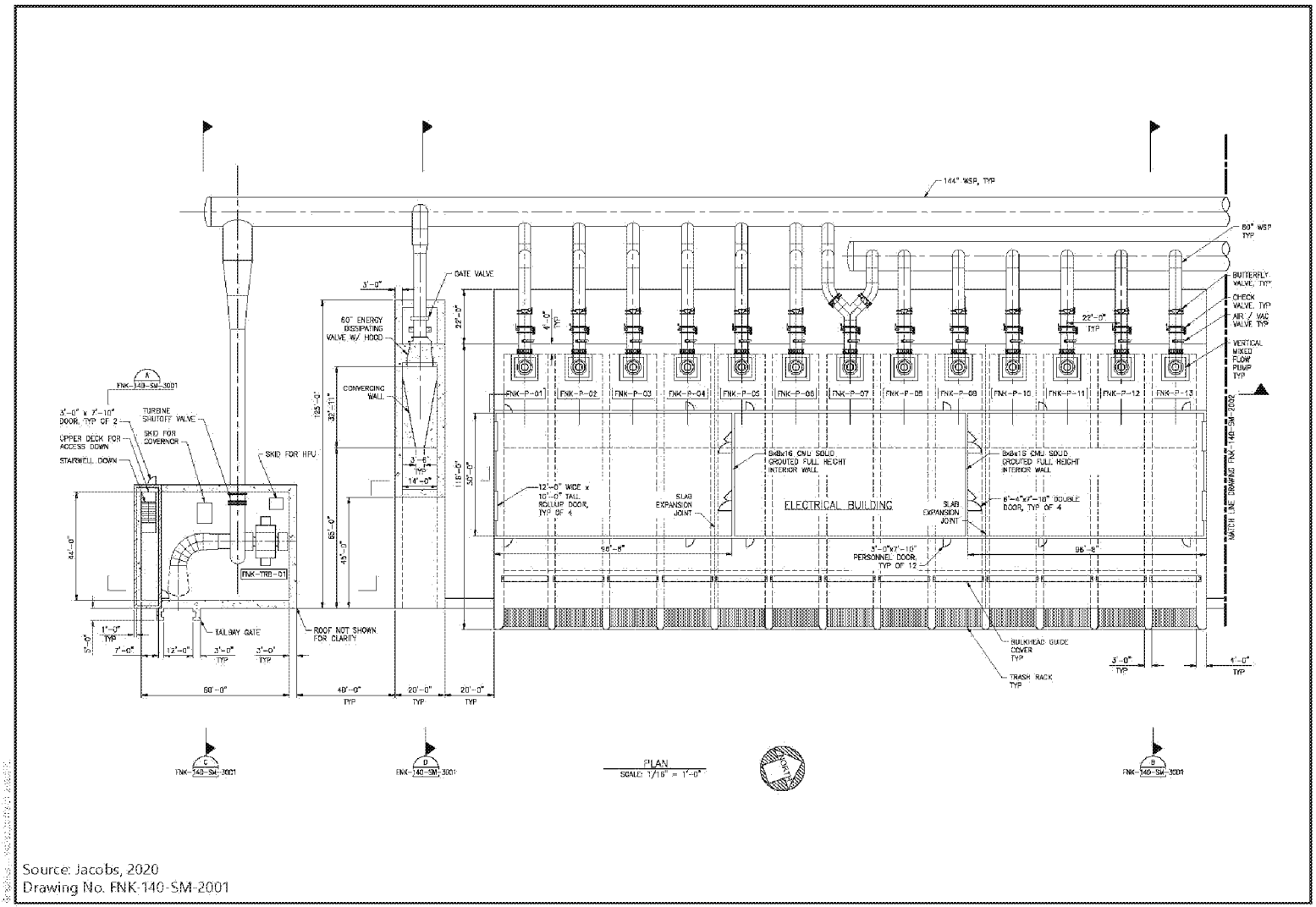
The Funks pump station would be similar to the TRR pump station, except that the orientation of 12-foot-diameter pipelines would be different. The pump station would have a flow rate of 2,100 cfs. The turbine generator buildings would be the same as described for the TRR PGP, and each generator would have a design criterion of 1,000 cfs for redundancy. There would be two turbines, 20-megwatt and 14.5megawatt. Each of the two energy dissipation structures would consist of a single 60-inch fixed cone valve with a design criterion of 1,000 cfs. There would be a 60-inch fixed cone valve on each of the two 12-foot-diameter pipes for a total of two fixed cone valves and a total flow of 2,000 cfs (1,000 cfs each).

Funks Electrical Substation

As with the TRR PGP, the Funks PGP would require a substation to provide electricity to the Funks PGP facilities. This substation would connect to either existing WAPA or PG&E lines. The substation would be located west of Funks Reservoir in the footprint of the Funks PGP and would encompass approximately 3 acres. The Funks electrical substation would be similar to the TRR electrical substation; it would be approximately 460 feet long by 300 feet wide if connected to PG&E lines and would be 300 feet long by 240 feet wide if connected to WAPA lines. There is no difference between the Funks substation and the TRR substation. The substation would be designed to accommodate the total pumping power requirements (import) or total generation requirements (export).

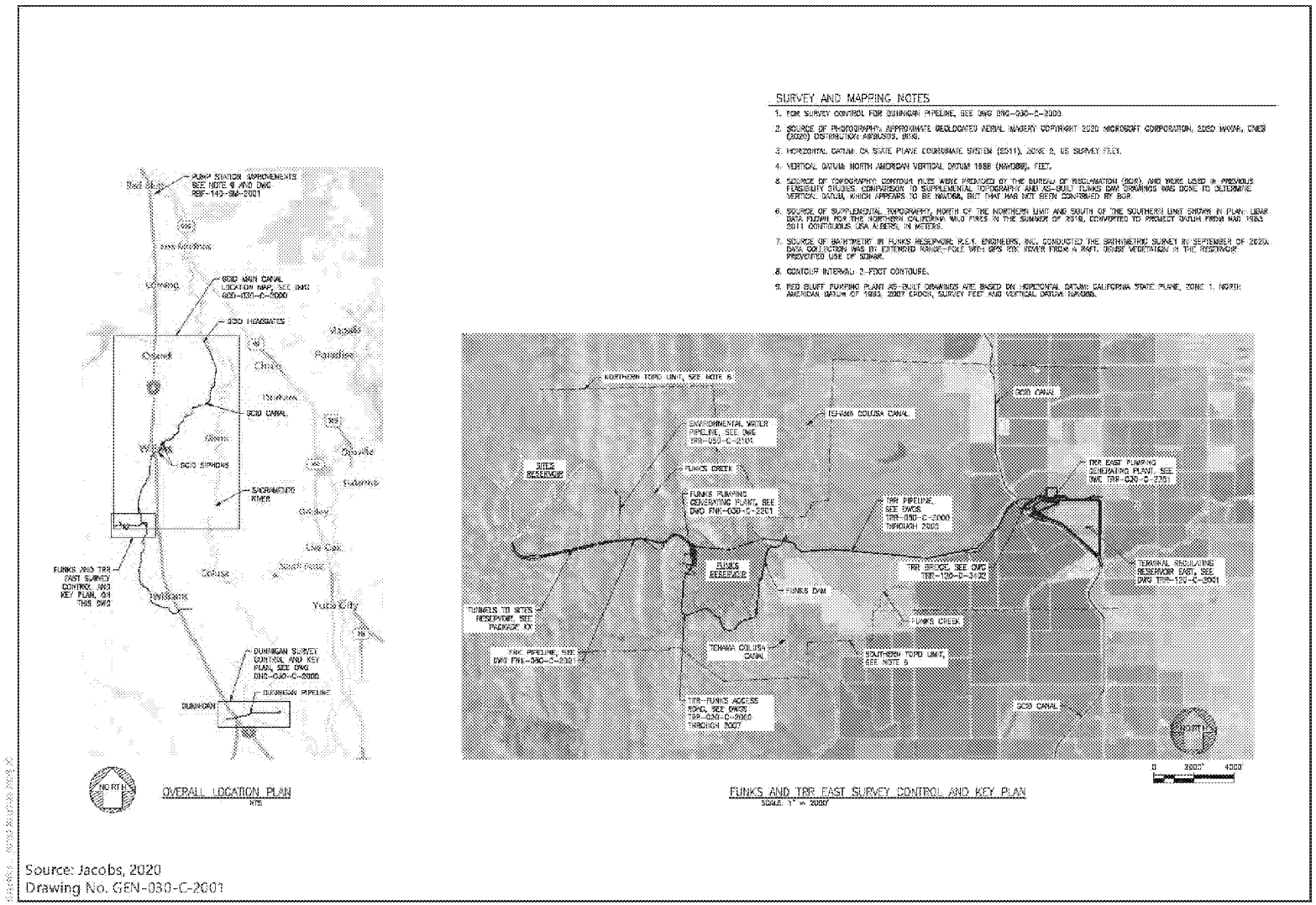
Funks Pipelines

Two underground Funks pipelines would convey water approximately 1 mile between the Funks PGP and Sites Reservoir. See Figure 2-17, Conveyance Complex Pipelines, for the location and alignment route of the pipelines. The 12-foot-diameter pipes would extend from the Funks Reservoir and Funks PGP and terminate at the transition manifold south of Funks Creek near the Golden Gate Dam. The Funks pipelines generally run parallel to the TRR pipelines. After curving around Funks Creek and hilly areas, the Funks pipelines run south, deviating from the TRR pipeline alignment, to the Funks PGP. Both TRR pipelines would connect to one of the two side-by-side, 23-foot-diameter I/O tunnels at the transition manifold. After installation, the pipelines would generally be from 6 feet to 25 feet below ground surface.



Source: Jacobs, 2020
Drawing No. FNK-140-SM-2001

Figure 2-16. Funks Pump Generating Plant Facilities



Source: Jacobs, 2020
Drawing No. GEN-030-C-2001

Figure 2-17. Conveyance Complex Pipelines

Transition Manifold

The transition manifold would be constructed at the base of Golden Gate Dam to connect Sites Reservoir to Funks Reservoir and the TRR. The transition manifold would be installed approximately 6 feet below ground and would be approximately 114 feet long by 92 feet wide. The structure would connect the four 12-foot-diameter conveyance pipelines from Funks Reservoir and TRR to two 23-foot-diameter tunnels extending from the Sites Reservoir Inlet/Outlet Works (I/O Works), which are discussed in Section 2.5.1.4, *Sites Reservoir and Related Facilities*. The transition manifold would have isolation valves to close off the pipelines and allow for maintenance.

In addition to the transition manifold structure, a 12-inch-diameter underground pipeline would extend 2,800 feet north from the manifold to Funks Creek, where it would discharge via an energy-dissipation structure/outlet into the creek. The pressure-reducing valve to dissipate energy before the water is discharged into Funks Creek is necessary because the water pressure would be equal to the Sites Reservoir elevation. The pipeline would be sized to accommodate a range of discharges (zero to 100 cfs) to provide water for the approximately 1.8-mile stretch of Funks Creek below Golden Gate Dam to Funks Reservoir.

Construction of the Transition Manifold would happen after the I/O Tunnels are constructed. Construction means and methods would be similar to that of the TRR Pipelines and Funks Pipelines.

Electrical Transmission Connections

New high-voltage transmission lines would be required to provide power to the Funks and TRR PGPs. Transmission lines connecting Funks and TRR substations would also be required. Interconnecting to the existing transmission system would be necessary to provide the electricity needed to operate the large pumps at the TRR and Funks Reservoir. This interconnection would also enable the energy produced at the Funks and TRR PGPs to enter the transmission system during periods of operation that use their respective turbines/generators.

The general laydown areas and construction means and methods of the three substations and high voltage transmission lines that connect either PG&E or WAPA facilities to Sites facilities are provided in Appendix 2C.

North-South Transmission Connections

A new north-south transmission line originating between Funks Reservoir and TRR would connect to WAPA or PG&E existing facilities. Two 230-kilovolt (kV) lines owned and operated by WAPA are located north of Funks Reservoir, and four 230-kV lines owned and operated by PG&E are located west and north of the TRR. WAPA and PG&E are defined as the Transmission Owner and the Transmission Operator of their respective high-voltage transmission lines. Each of these lines is a potential point of interconnection (POI) location; a POI to a high-voltage electric transmission line would be required to provide power. See Figure 2-18, WAPA Schematic Sketch, and Figure 2-19, PG&E Schematic Sketch, for a schematic sketch showing the WAPA and PG&E alternative POI arrangements and the required transmission line lengths to the Funks and TRR electrical substations. The POI would require a

third substation, which is expected to be located adjacent to either the WAPA lines or the PG&E 230-kV lines.

The POI between the electrical substations and existing transmission lines would require that an application for interconnection request be submitted and processed under the California Independent System Operator (CalISO) interconnection process. The location of the POI to the WAPA or PG&E 230-kV transmission lines would depend on the results of a system impact study completed by WAPA or PG&E in conjunction with CalISO.

East-West Transmission Lines

There would also be an interconnection between the Funks and TRR PGPs, and it is anticipated that the transmission lines would parallel the pipelines within the same easement. Up to four 230-kV transmission lines would be required: two for the source supply to either of the PGPs and two between the Funks and TRR electrical substations. The two looped source circuits would be installed on a set of common double-circuit steel monopole structures and would require separate easements because they would not parallel any of the proposed pipelines (Figure 2-20, Double-Circuit Source Transmission Poles). The two transmission lines between the Funks and TRR electrical substations would be installed on their own common set of double circuit steel monopole structures within the pipeline easement (Figure 2-21, Funks to TRR Electrical Interconnection).

2.5.1.3 Administration, Operations and Maintenance, and Storage Buildings

All Action Alternatives would involve the construction of an administration and operations building and a maintenance and storage building. These buildings would be located along the existing gravel access road to the Funks PGP on approximately 0.15 acre. The administration and operations building would be a one-story building encompassing approximately 3,400 square feet. The maintenance building would be a one-story building encompassing roughly 2,700 square feet that would include space for equipment storage and maintenance rooms to support the Project facilities.

The utilities that would be required for these buildings would be a septic system at least 100 feet away from Funks Reservoir and Funks Creek (per county code), potable water provided via groundwater wells, and electricity obtained from the Funks Reservoir switchyard. The building designs would be in accordance with the California Building Code and would provide asphalt concrete paved onsite parking and vehicular access. See Figure 2-22, Administration and Operations Building, and Figure 2-23, Maintenance and Storage Building, for the plan view and elevation view of these two buildings.

Construction of the proposed buildings would include the following: clearing and grading; transporting materials and placing them at staging areas; constructing ancillary facilities (e.g., potable water source, septic system, lighting, concrete pad for refueling island, aboveground fuel tanks, perimeter fencing); and performing site restoration after construction is complete.

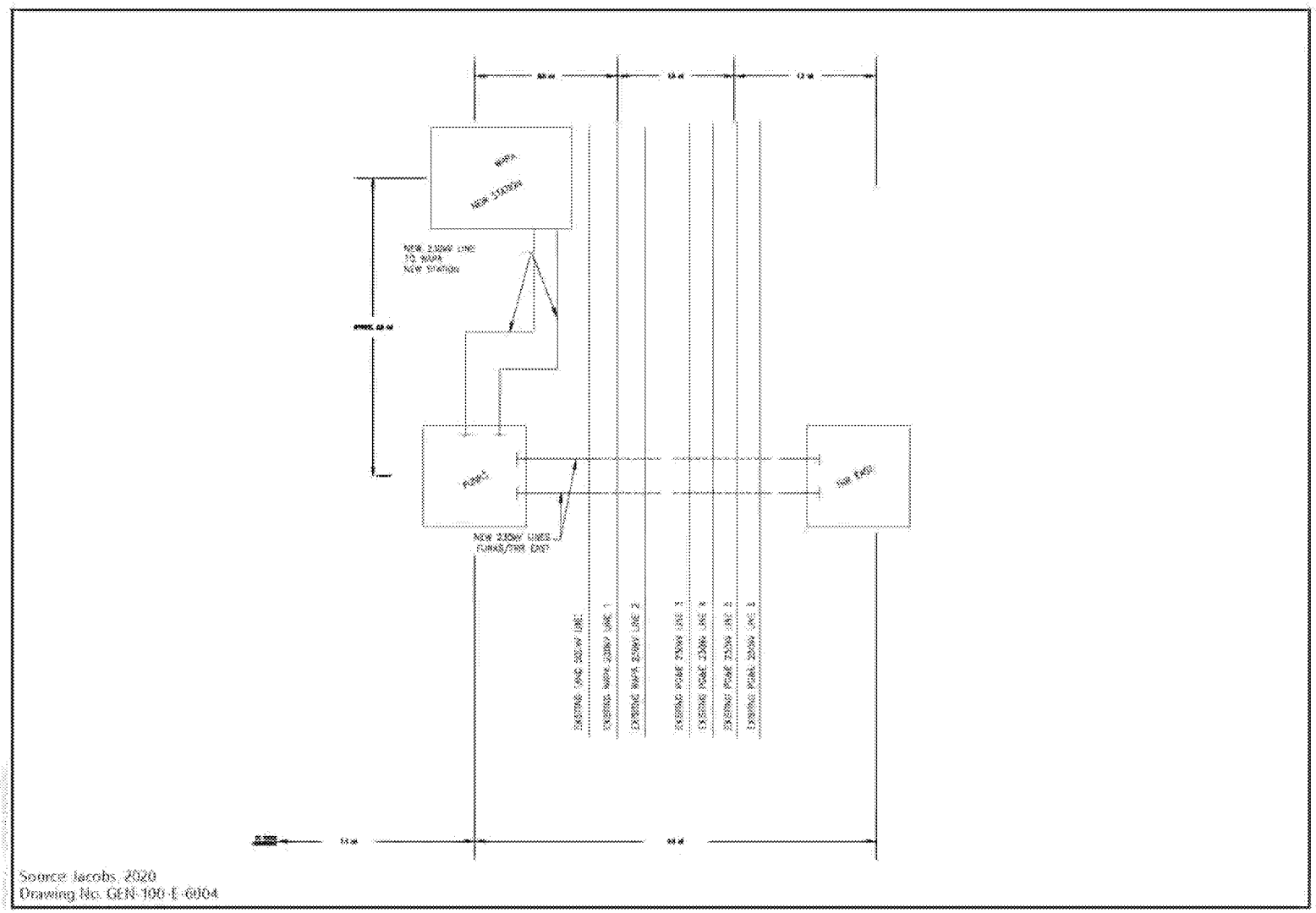


Figure 2-18. WAPA Schematic Sketch

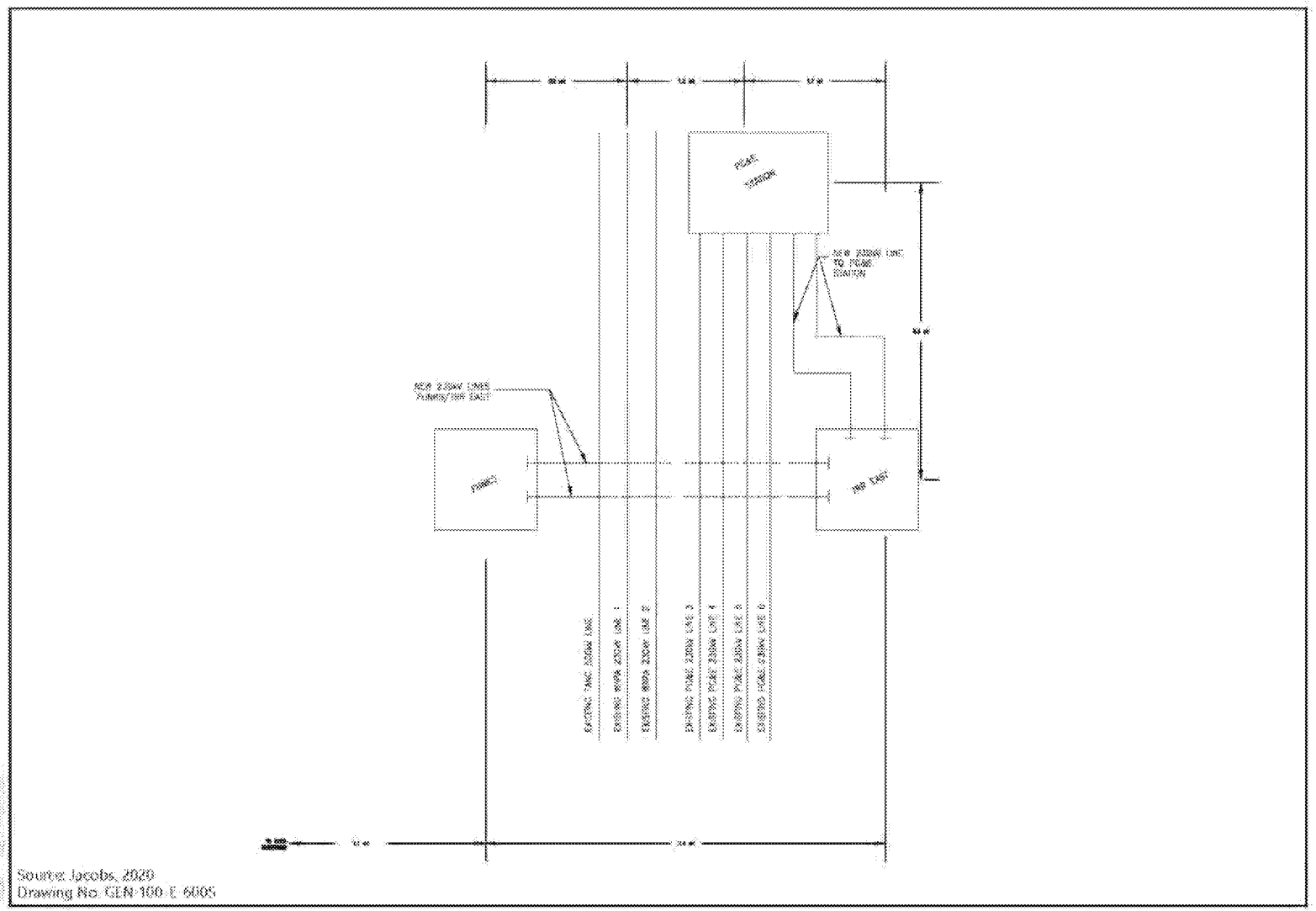


Figure 2-19. PG&E Schematic Sketch

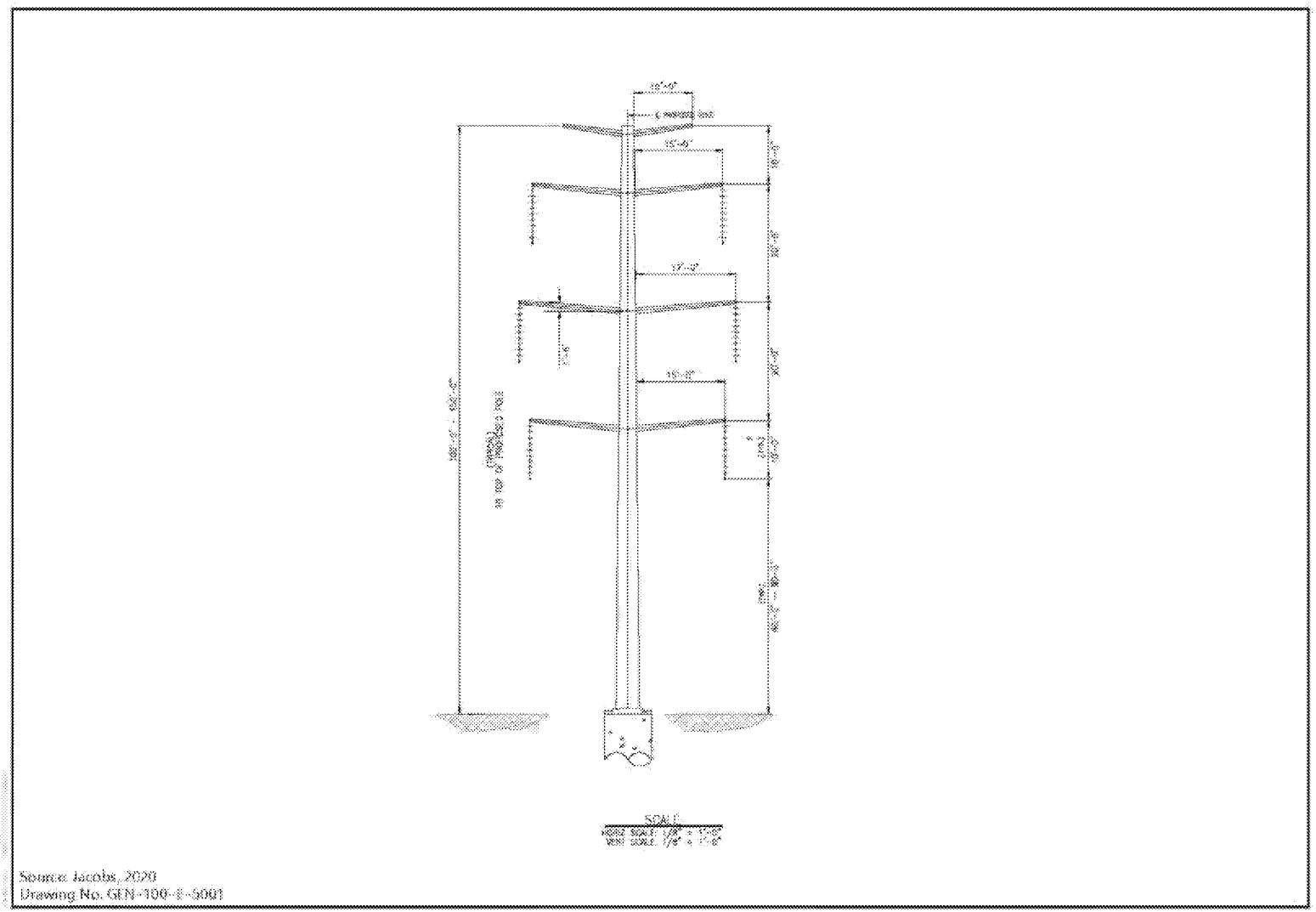


Figure 2-20. Double-Circuit Source Transmission Poles

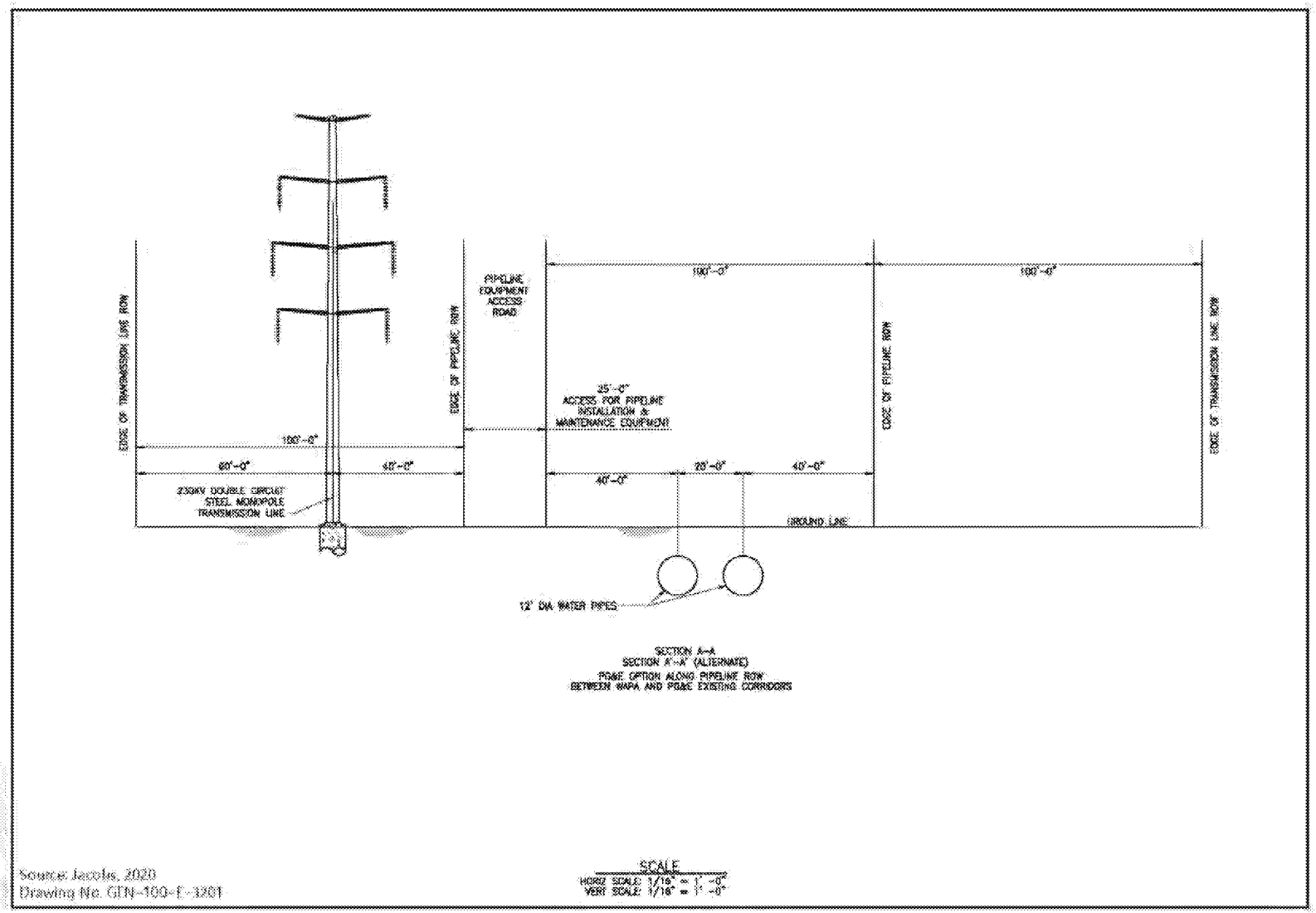


Figure 2-21. Funks to TRR Electrical Interconnection

2.5.1.4 Sites Reservoir and Related Facilities

Under all Action Alternatives, water would be impounded by the Golden Gate Dam on Funks Creek and the Sites Dam on Stone Corral Creek; a series of saddle dams along the eastern and northern rims of reservoir would close off topographic saddles in the surrounding ridges to form Sites Reservoir. See Figure 2-1 and Figure 2-3 for the location of the Sites Reservoir, Golden Gate Dam, saddle dams, and I/O Works.

Inlet/Outlet Works

The I/O Works for the reservoir are generally located to the south of Golden Gate Dam in Sites Reservoir. See Figure 2-24 (plan) and Figure 2-25 (profile), Inlet/Outlet Works Site, for a plan and profile view of the I/O Works. The I/O Works consists of a low-level intake, multi-level I/O tower, and two I/O tunnels. These structures are described in the subsections below, and Appendix 2C provides the engineering schematics for each structure.

The I/O Works would be designed to meet maximum water supply commitments, as well as safely pass emergency releases per DSOD requirements. The I/O Works would allow a maximum release of 16,000 cfs; the parallel I/O tunnels are designed to each convey half of the emergency drawdown flows (anticipated to be approximately 8,000 cfs each). The I/O Works would meet summer irrigation demands downstream with an estimated maximum release flow of 3,100 cfs. The I/O Works would also allow inflows pumped into the reservoir from the canals; the maximum inflows are anticipated to be 3,900 cfs.

Construction of the I/O Works would disturb approximately 30 acres in the reservoir inundation area and a similarly sized area at the downstream tunnel portal. The construction disturbance would consist of the footprint of the two intakes; tunnel portals; materials, spoils, and equipment staging areas; and access roads. A portion of the footprint outside the reservoir inundation area would overlap with the disturbance area for the conveyance system. Major construction activities associated with the I/O Works would consist of dewatering the construction site with an onsite treatment facility, excavating the hillside for the downstream and upstream tunnel portals, tunneling and hauling tunnel muck to a disposal area, using spoils from the tunnels for Golden Gate Dam or disposing of them in the reservoir inundation area, excavating for the multi-level tower shaft, building the multi-level tower, constructing the access bridge to the multi-level tower, building the low-level intake, and completing finished grading and site clean-up.

The construction of the tunnels that connect the Sites Reservoir to the Funks and TRR pipelines would require excavating the tunnel, installing the tunnel support systems, and controlling groundwater. The I/O tunnels would be constructed using a combination of drill and blast and road header excavation, depending on the strength of the rock, and pre-excavation measures would be used to stabilize the ground and reduce groundwater inflow. As construction proceeded, support systems would be installed and then the reinforced cast-in-place concrete tunnels and steel carrier pipe would be installed.

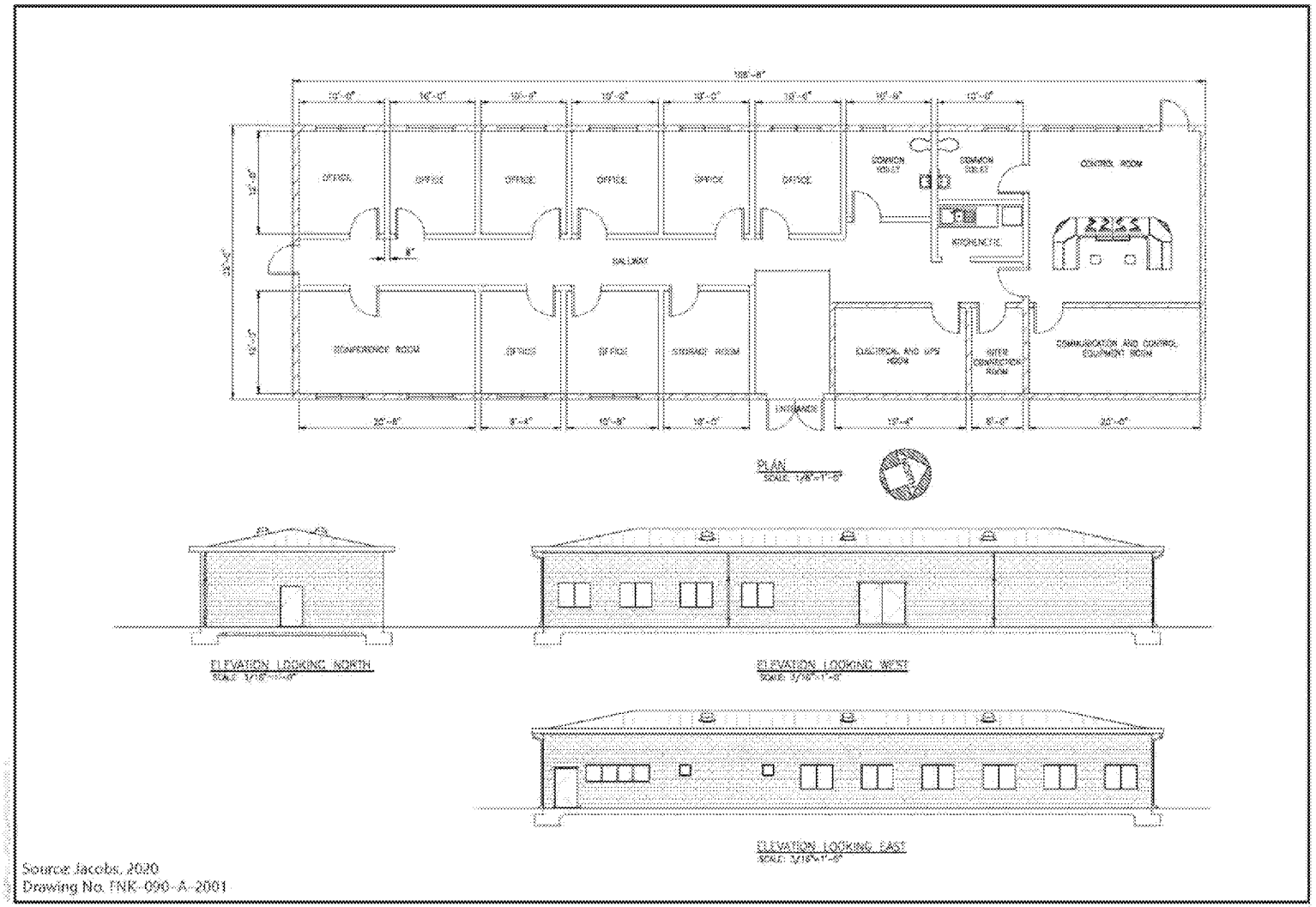


Figure 2-22. Administration and Operations Building

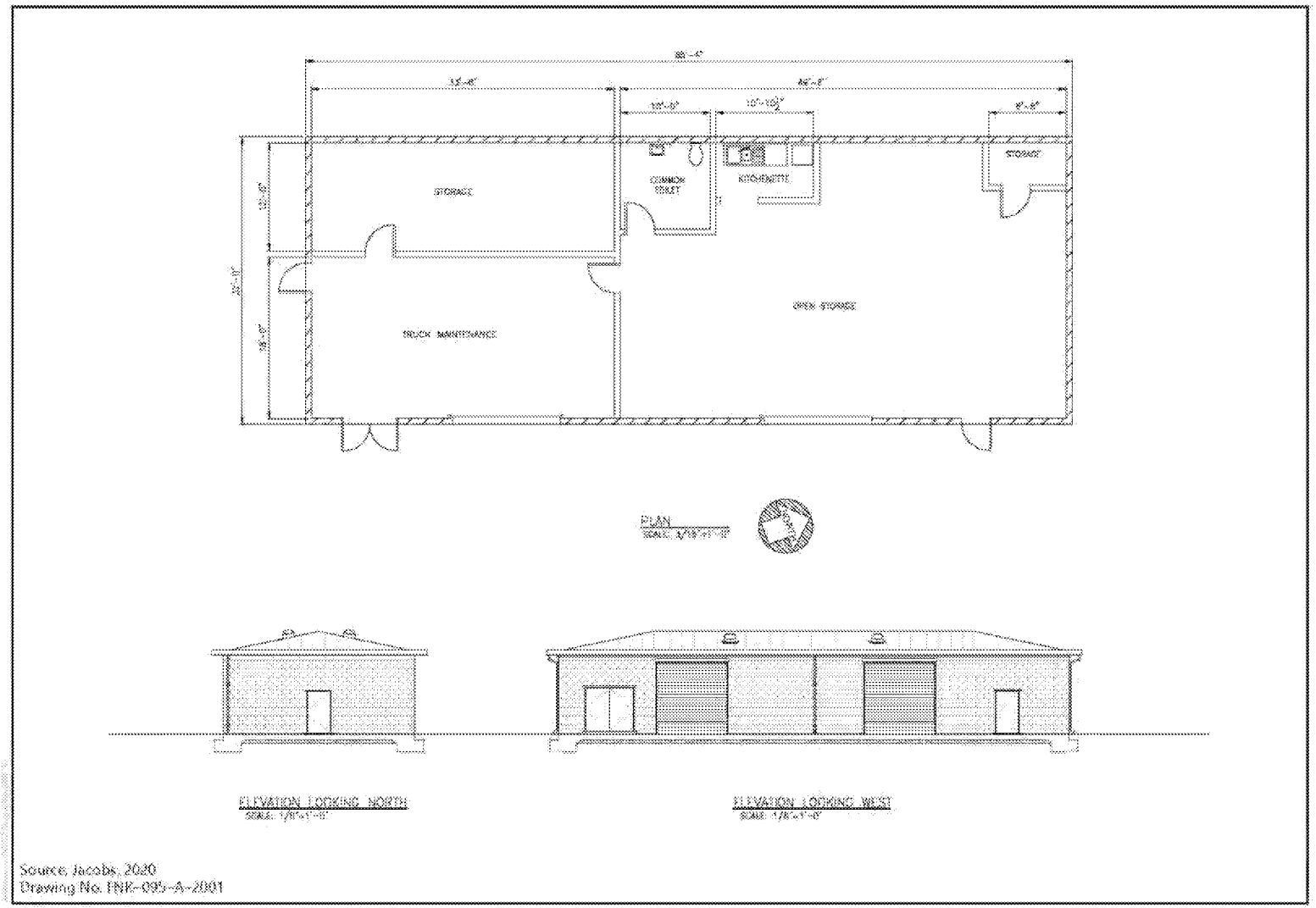
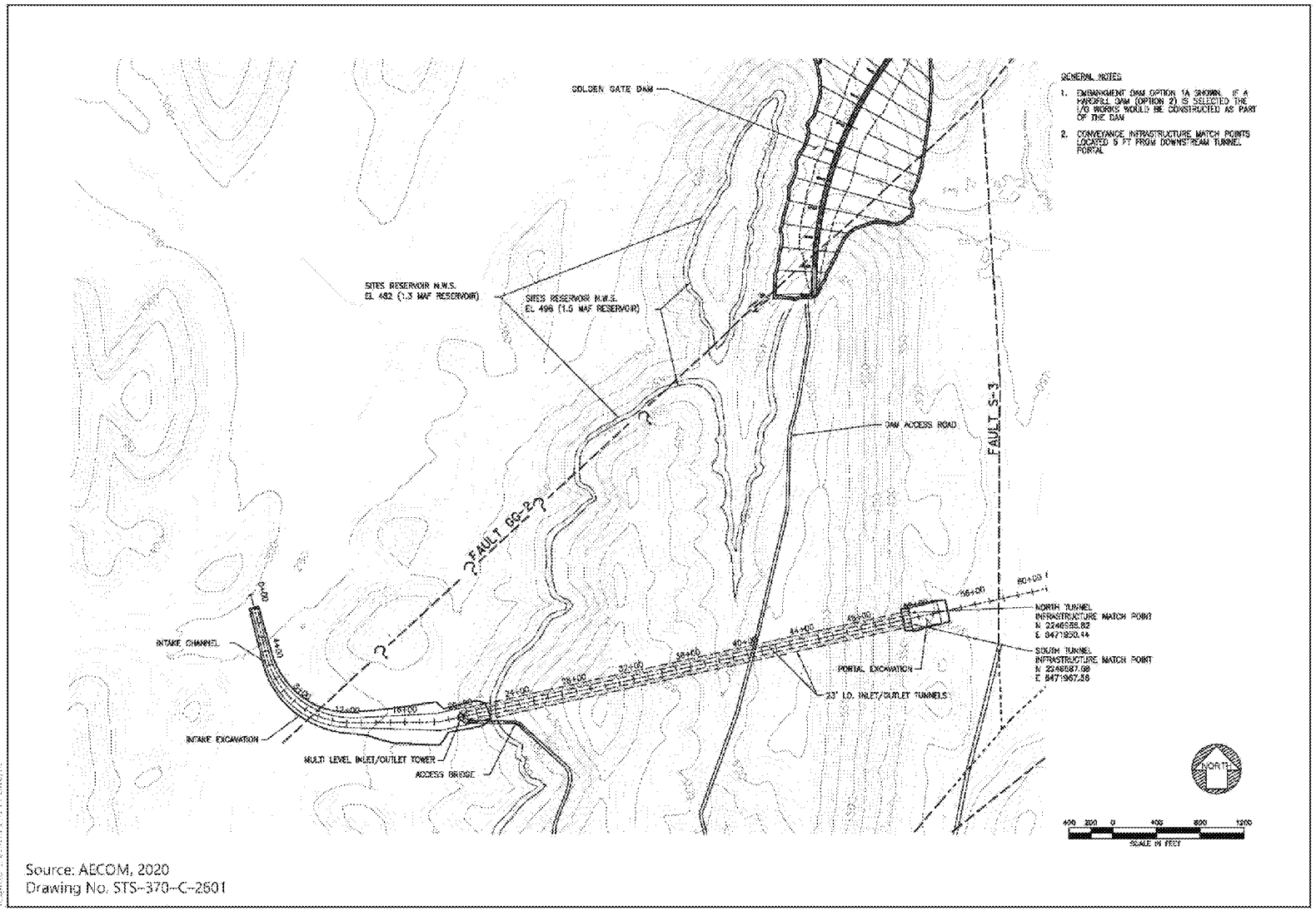


Figure 2-23. Maintenance and Storage Building



Source: AECOM, 2020
Drawing No. STS-370-C-2601

Figure 2-24. Plan of Inlet/Outlet Works Site

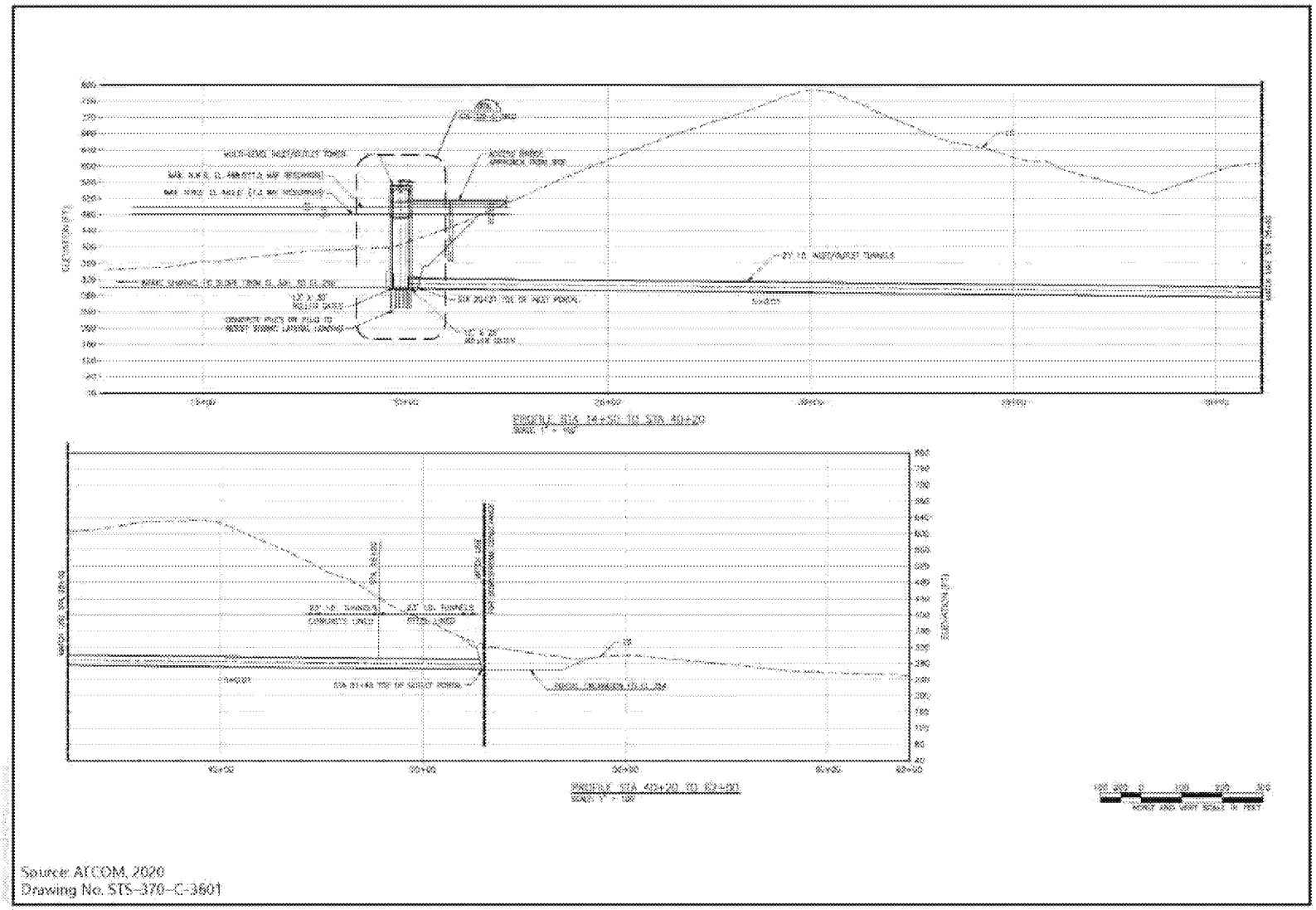


Figure 2-25. Profile of Inlet/Outlet Works Site

Low-Level Intake

The low-level intake would be used to meet DSOD-required emergency drawdown releases (refer to Section 2.5.2.1, *Water Operations - Emergency Release*, for more information about these requirements). This intake would also release stored water below the lowest ports in the I/O tower during drought conditions.

The low-level intake would be at an elevation of 300 feet to allow for sediment accumulation over a 100-year project life. Flows would not be pumped in directly from the Sacramento River, and the main source of sediment is expected to be from local runoff in the reservoir watershed. The intake channel would be excavated down to an elevation of approximately 290 feet. The installation of bar-type trashracks would protect the I/O tunnels from damage and keep debris from clogging the flow streams. The low-level intake would be designed to allow for inspection and maintenance.

I/O Tower

The 300-foot-tall, multi-level I/O tower would allow flows into and out of the reservoir through the use of ports around the tower's perimeter. These ports would be at multiple elevations and equipped with roller gates or valves, which would allow for operational flexibility, including managing the temperature/quality of water released from the reservoir. The tower would also have moveable fish screens. The movable fish screens would be sized as design progresses and criteria are established by the Authority in consultation with the applicable regulatory agencies. Head gates at the bottom (below ground surface) of the I/O tower would allow access to the I/O tunnels. The lower portion of the I/O tower would be anchored in bedrock, and the connections at the tower and abutments would accommodate differential movement that may occur during the design seismic event. Table 2-2 summarizes key design characteristics for the I/O tower.

Table 2-2. Summary of I/O Tower Design Characteristics for All Alternatives

Key Characteristic	Alternative 1 and 3	Alternative 2
Maximum Normal Water Surface Elevation*	498 feet above mean sea level	482 feet above mean sea level
Top of Tower Elevation	558 feet above mean sea level	542 feet above mean sea level
Top Tier Port Centerline Elevation	470 feet above mean sea level	450 feet above mean sea level
Maximum Number of Ports	21 (3 each at 7 tiers)	18 (3 each at 6 tiers)
Minimum Port Size	5.5-foot-wide by 7-foot-high rectangular ports have been assumed; Ports would be sized such that the maximum operational drawdown (3,900 cfs) can be achieved with ports at two levels (6 ports total)	

*This would also be the maximum normal operating water elevation

Seven operating levels (or tiers) are anticipated based on the current design. The upper tiers would be spaced 20 feet on center, with centerlines at elevations ranging from 350 to 450 feet (Alternative 2) or 470 feet (Alternative 1 and 3). The lowest tier would be located 10 feet on center below the next lowest tier at 340 feet elevation (all Action Alternatives). At each tier there would be three ports on alternating faces of the hexagonally shaped tower. The ports would be

constructed at different elevations to allow flexibility to withdraw water based on its quality (e.g., temperature, turbidity) needs. These ports would be controlled by roller gates or valves.

The head gates would be located in the I/O tower base (below ground surface) to allow the isolation of its tunnels for maintenance, inspection, and operational needs. The head gates would be designed to prevent outflow from the I/O tower at the full range of reservoir levels. The gates would be able to open (i.e., raised) and close under all normal reservoir operations and if emergency releases were required. Gates for either I/O tunnel would be closed to prevent outflow for operational purposes (downstream release or equipment preference, maintenance, or dewatering for inspection or equipment change out). Emergency raising and lowering of the gates by emergency power upon loss of electricity would be required.

A bridge would provide access to the I/O tower from the nearby access road. The bridge would be designed to accommodate equipment and materials required for maintenance of the tower. The bridge's length would depend on the access road design but is expected to be approximately 300 feet.

Two 23-foot-diameter I/O tunnels would extend from the I/O tower through the ridge on the right abutment of Golden Gate Dam. They would daylight on the other side of the ridge and connect to the transition manifold. The tunnels would each be about 3,110 feet long, connect to the multi-level tower at approximately 300 feet elevation, and have a downstream slope of 1%.

Dams and Dikes

All Action Alternatives would include Sites Dam and Golden Gate Dam along with a number of saddle dams and saddle dikes. The height of these facilities and the number of saddle dams and dikes varies between the Action Alternatives as summarized in Table 2-3. Sites Dam, Golden Gate Dam and the saddle dams and saddle dikes are discussed in more detail below.

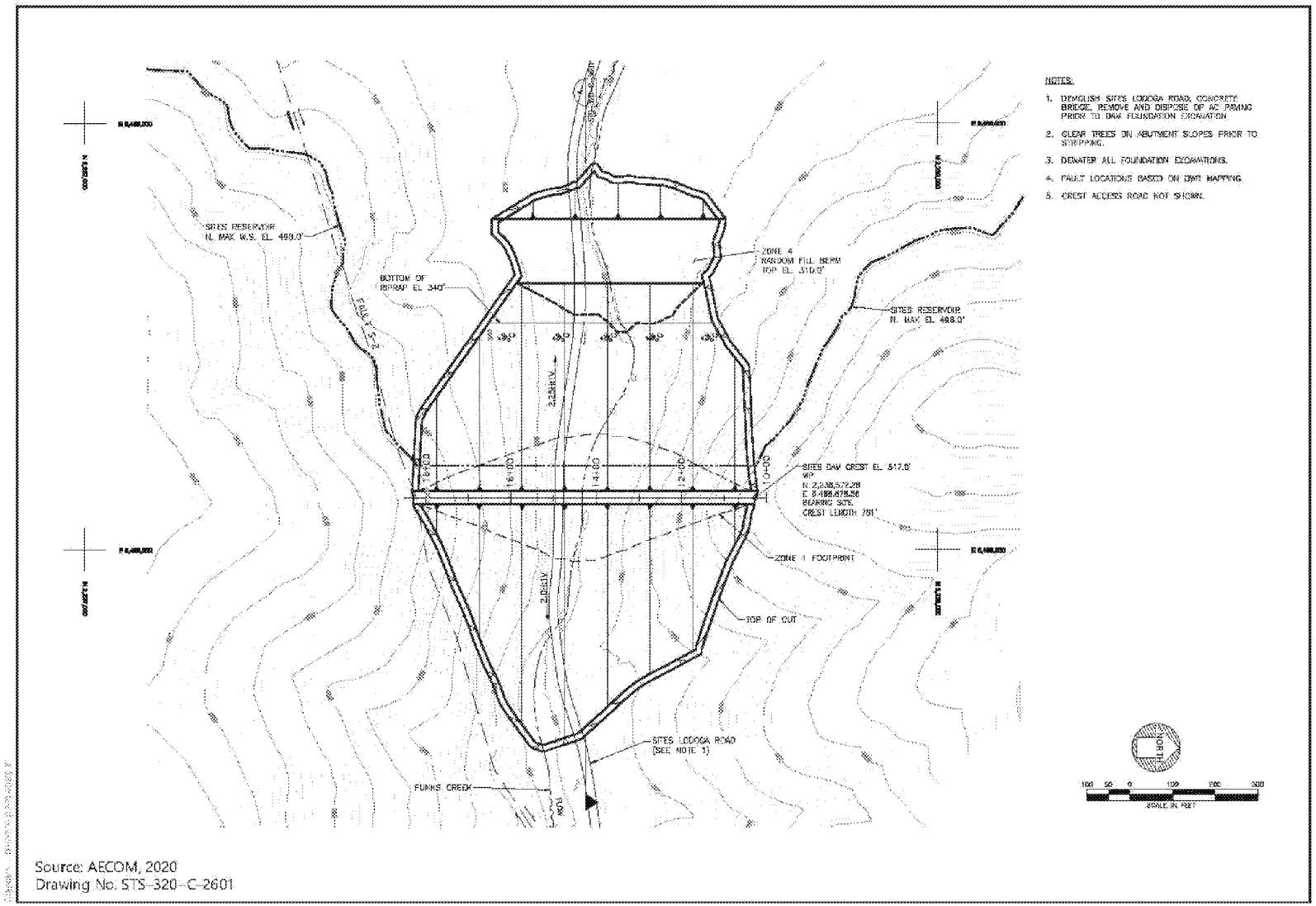
Table 2-3. Main Dam, Saddle Dam and Saddle Dike Summary for All Alternatives

Dam/Dike	Alternative 1 and 3		Alternative 2	
	Maximum Height Above Streambed (feet)	Length (feet)	Maximum Height Above Streambed (feet)	Length (feet)
Sites Dam	267	781	250	729
Golden Gate Dam	287	2,221	270	2,063
Saddle Dam 1	27	318	--	--
Saddle Dam 2	57	250	--	--
Saddle Dam 3	107	3,422	90	2,677
Saddle Dam 5	77	1,894	60	1,747
Saddle Dam 6	47	362	--	--
Saddle Dam 8A	82	1,300	62	1,140
Saddle Dam 8B	37	475	20	277
Saddle Dike 1	12	122	10	148
Saddle Dike 2	12	198	20	79
Saddle Dike 3	--	--	30	247

Sites Dam and Diversion Tunnel

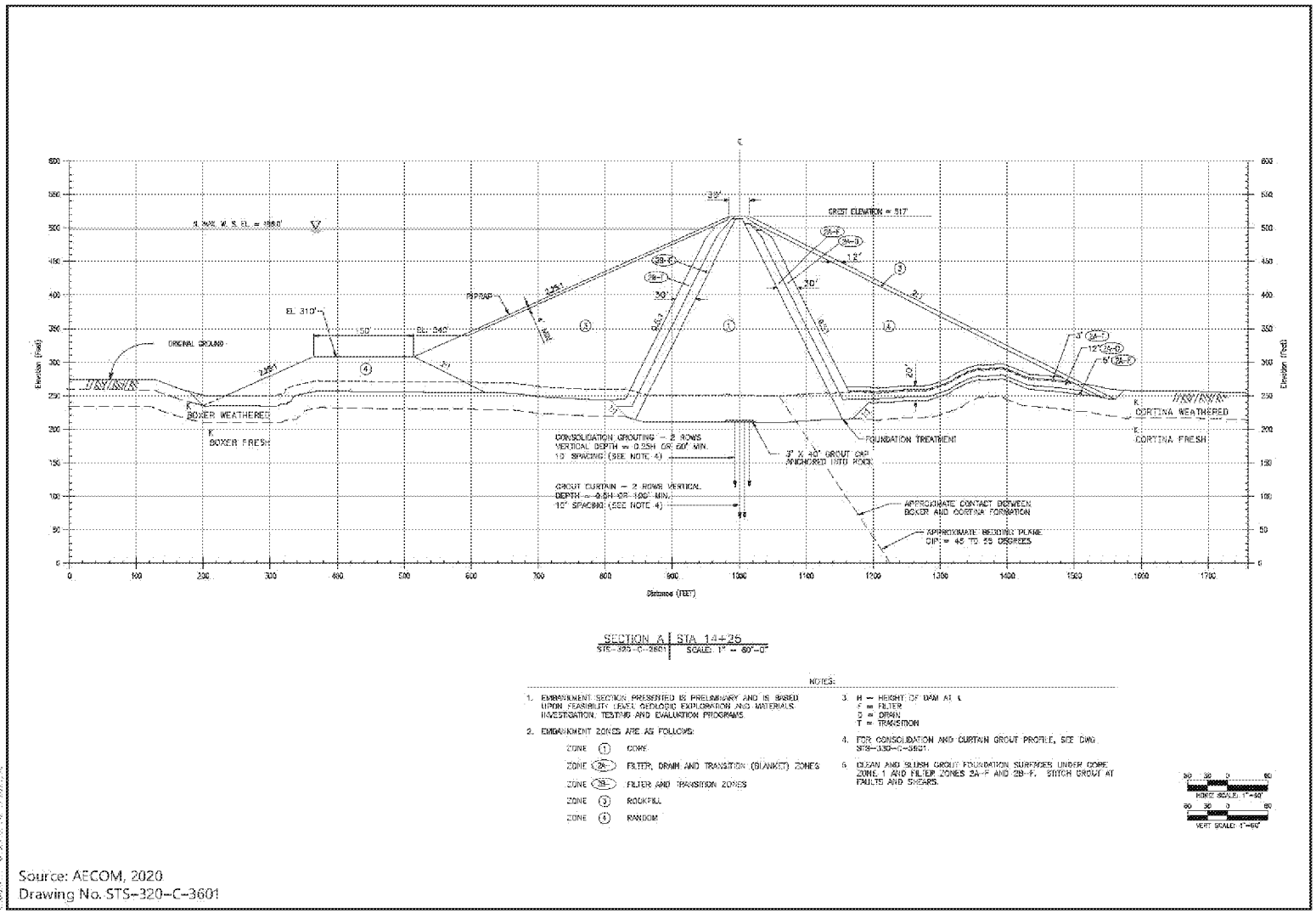
Sites Dam would be on Stone Corral Creek approximately 0.25 mile east of the community of Sites and 8 miles west of the community of Maxwell. The dam would be designed to safely accommodate potential fault displacement by providing widened filter, drainage, and transition zones. Sites Dam would be an embankment dam consisting of a combination of earth and rockfill embankment zones with a central impervious core, exterior upstream rockfill shell, and downstream earthen shell. The upstream and downstream slopes of the dam embankment would be 2.25:1 (horizontal: vertical; H:V) and 2H:1V, respectively. The upstream and downstream slopes of the dam's central core would be 0.5H:1V. Figure 2-26 provides a plan view of Sites Dam and Figure 2-27 provides a section view of Sites Dam.

Sites Dam would have a permanent diversion pipeline and tunnel that would be constructed in the left abutment of the dam. The approximately 1,600-foot-long tunnel would contain a 1,900-foot-long pipe with an internal diameter of 12 feet. The pipe would be fitted with one or more valves sized to release flow up to 100 cfs into Stone Corral Creek. The Sites Dam piping system is expected to include a bar trashrack, a slide gate, a separate fish screen and inlet valve to support Stone Corral Creek release flows, a stoplog bulkhead, and a permanent air vent assembly. The fish screen would be designed and sized to meet the requirements for aquatic life protection.



Source: AECOM, 2020
Drawing No. STS-320-C-2601

Figure 2-26. Sites Dam Plan



Source: AECOM, 2020
Drawing No. STS-320-C-3601

Figure 2-27. Sites Dam Section

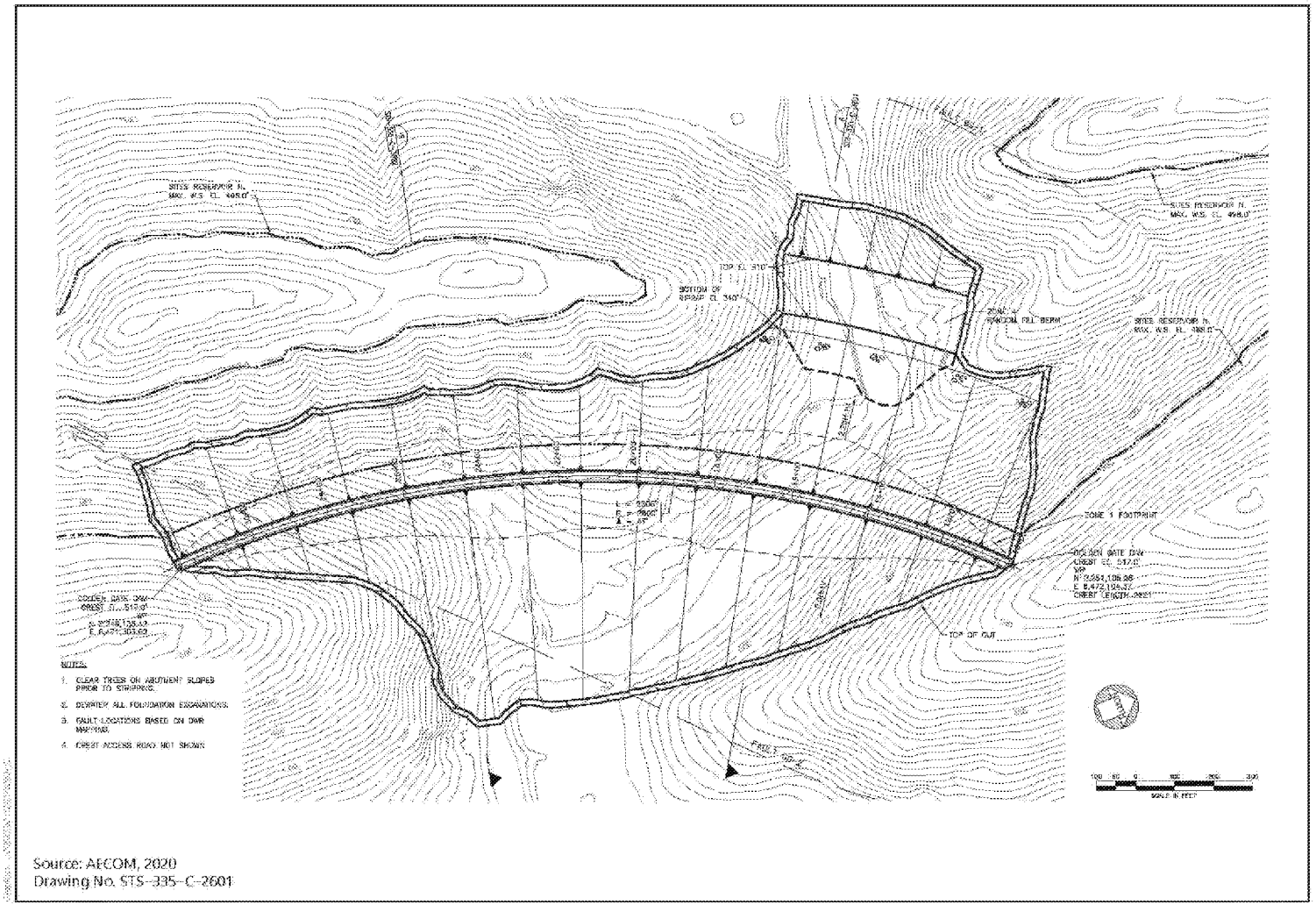
Stone Corral Creek would be diverted for construction of Sites Dam. A coffer dam would be installed to enable construction of the dam embankments in dry conditions. During construction storm flows would be conveyed in the 12-foot-diameter diversion tunnel through the ridge at Sites Dam. This tunnel would prevent a potential seepage path from forming through the embankment. Water in Stone Corral Creek would be diverted directly from the creek into the creek diversion pipeline through the Sites Dam abutment and into Stone Corral Creek on the east side of the Sites Dam work area. The outlet tunnel with two 84-inch-diameter fixed cone valves would accommodate these releases, and an energy dissipating chamber would reduce the velocity of the water released.

Golden Gate Dam

Golden Gate Dam would be on Funks Creek approximately 1.8 miles west of Funks Reservoir. The dam type and material, upstream slopes, and downstream slopes would be the same as described above for Sites Dam. Golden Gate Dam would not have a permanent diversion tunnel; all releases made would be through the I/O Works. Figure 2-28 provides a plan view of Golden Gate Dam and Figure 2-29 provides a section view of Golden Gate Dam.

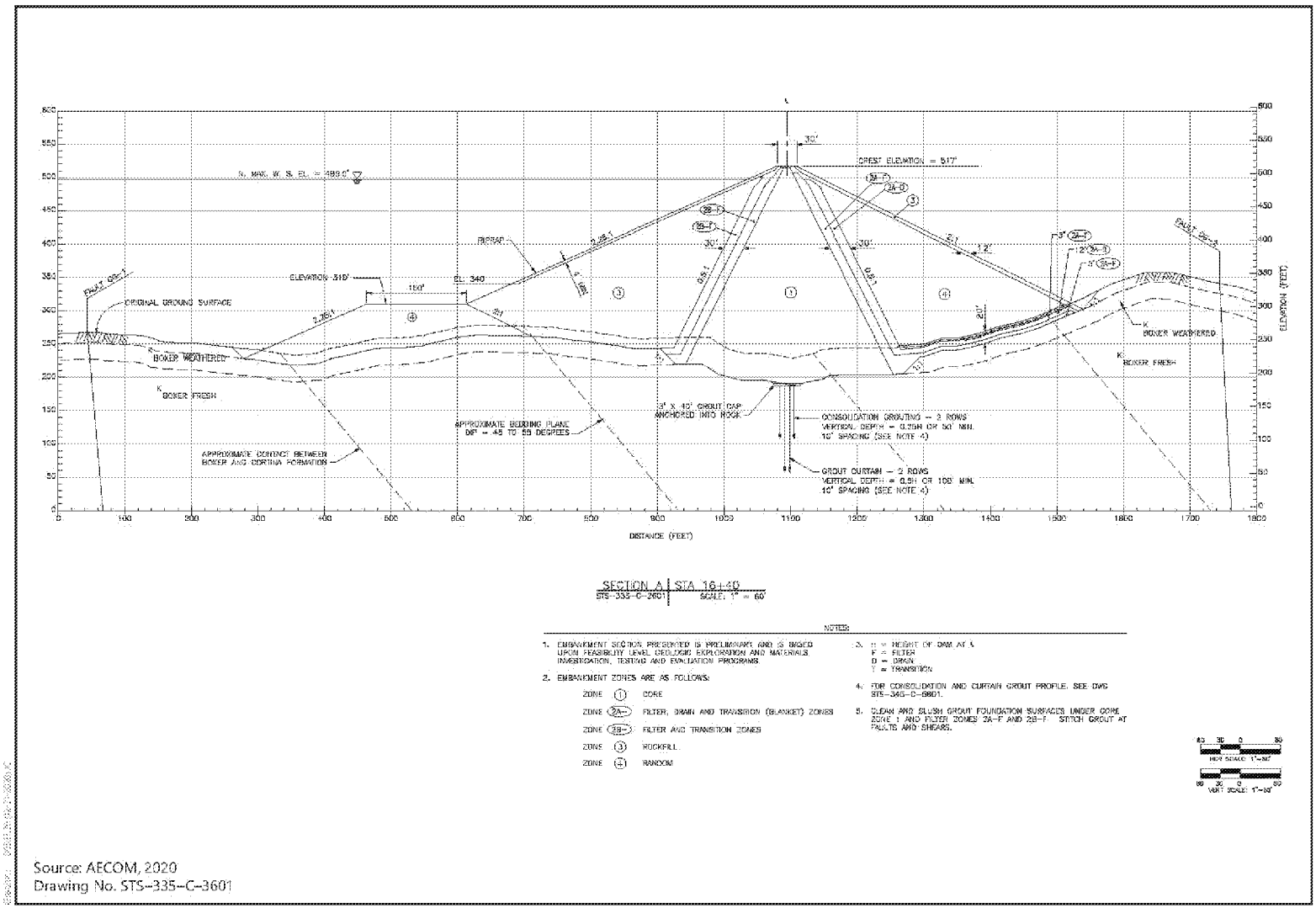
Funks Creek would be diverted for construction of Golden Gate Dam. A coffer dam would be installed to enable construction of the dam embankments in dry conditions. At Golden Gate Dam, a 48-inch-diameter diversion pipe would be placed in the foundation of the dam to divert Funks Creek but would be filled in and decommissioned after construction and prior to use of the dam. However, the coffer dam would be left in place and become part of the main dam.

During construction, water would pond behind the coffer dam on Funks Creek, flow through the temporary pipe underneath the Golden Gate Dam construction site to the east side of the dam, and then re-enter the Funks Creek channel. The coffer dam should provide enough residence for settling to occur for typical flows in Funks Creek.



Source: AECOM, 2020
Drawing No. STS–335–C–2601

Figure 2-28. Golden Gate Dam Plan



Source: AECOM, 2020
Drawing No. STS-335-C-3601

Figure 2-29. Golden Gate Dam Section

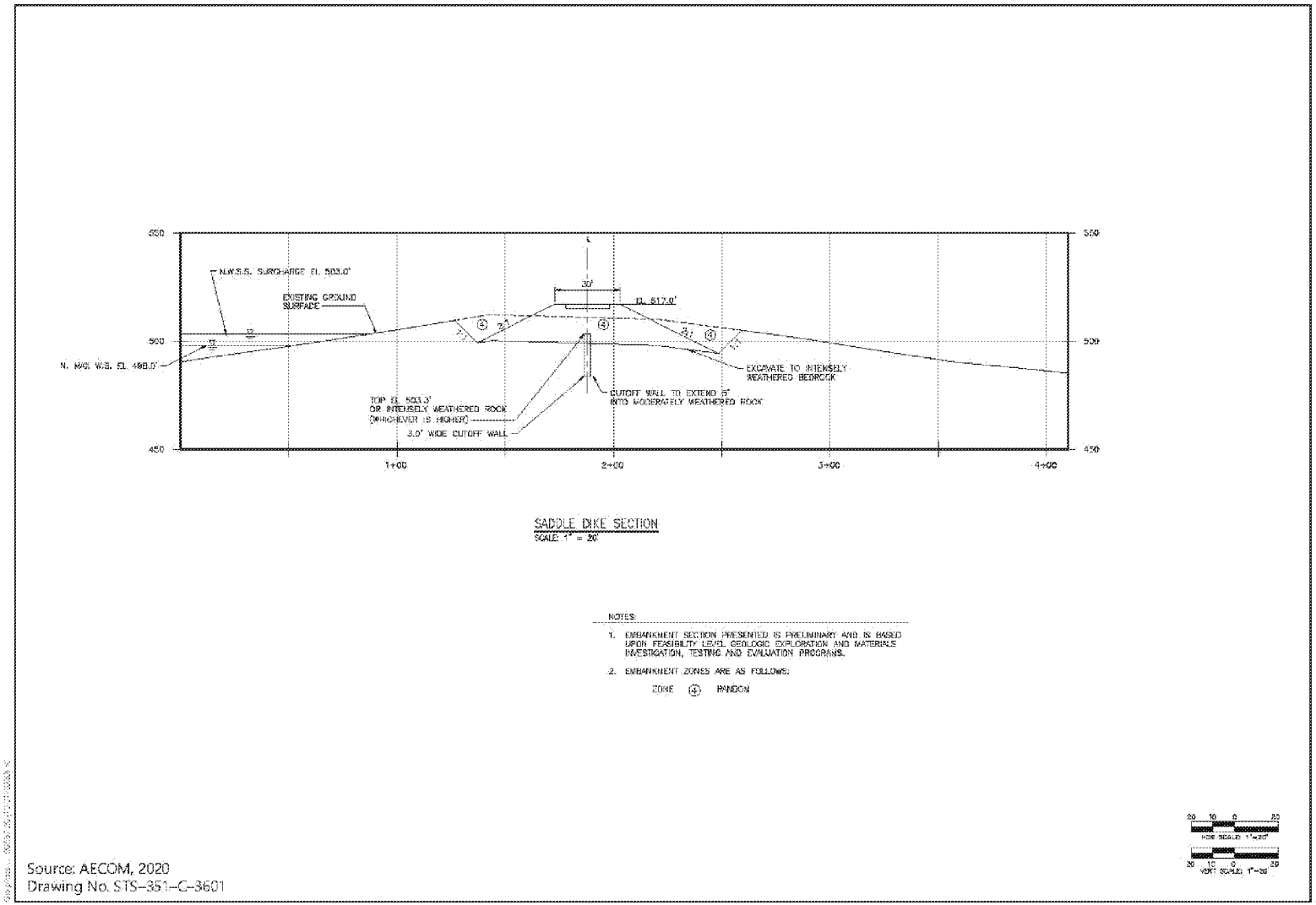
Saddle Dams and Saddle Dikes

The saddle dam and saddle dike material would be the same as described above for the Sites Dam. The number and locations of the saddle dams are based on the size of the reservoir because the saddle dams would be needed at topographic saddle low points along the eastern ridge of the reservoir. The upstream and downstream slopes of saddle dams are 3H:1V and 2.5H:1V, respectively. The upstream slope of the central core for the saddle dams would be 1H:1V with a vertical downstream face. See Figure 2-30 for saddle dam and dike locations. Saddle Dams 3, 5, and 8B would have slightly different design features that are discussed below.

Saddle dikes would be required at topographic saddle low points along the northern end of the reservoir. The saddle dikes would not retain water like the saddle dams but would raise two saddles that are below the minimum crest elevation to an elevation above the maximum reservoir elevation during the Probable Maximum Flood (PMF). The upstream and downstream slopes of saddle dikes would be 2H:1V. The saddle dikes would not have a central core. A typical saddle dike section is presented on Figure 2-30, Saddle Dike Section.

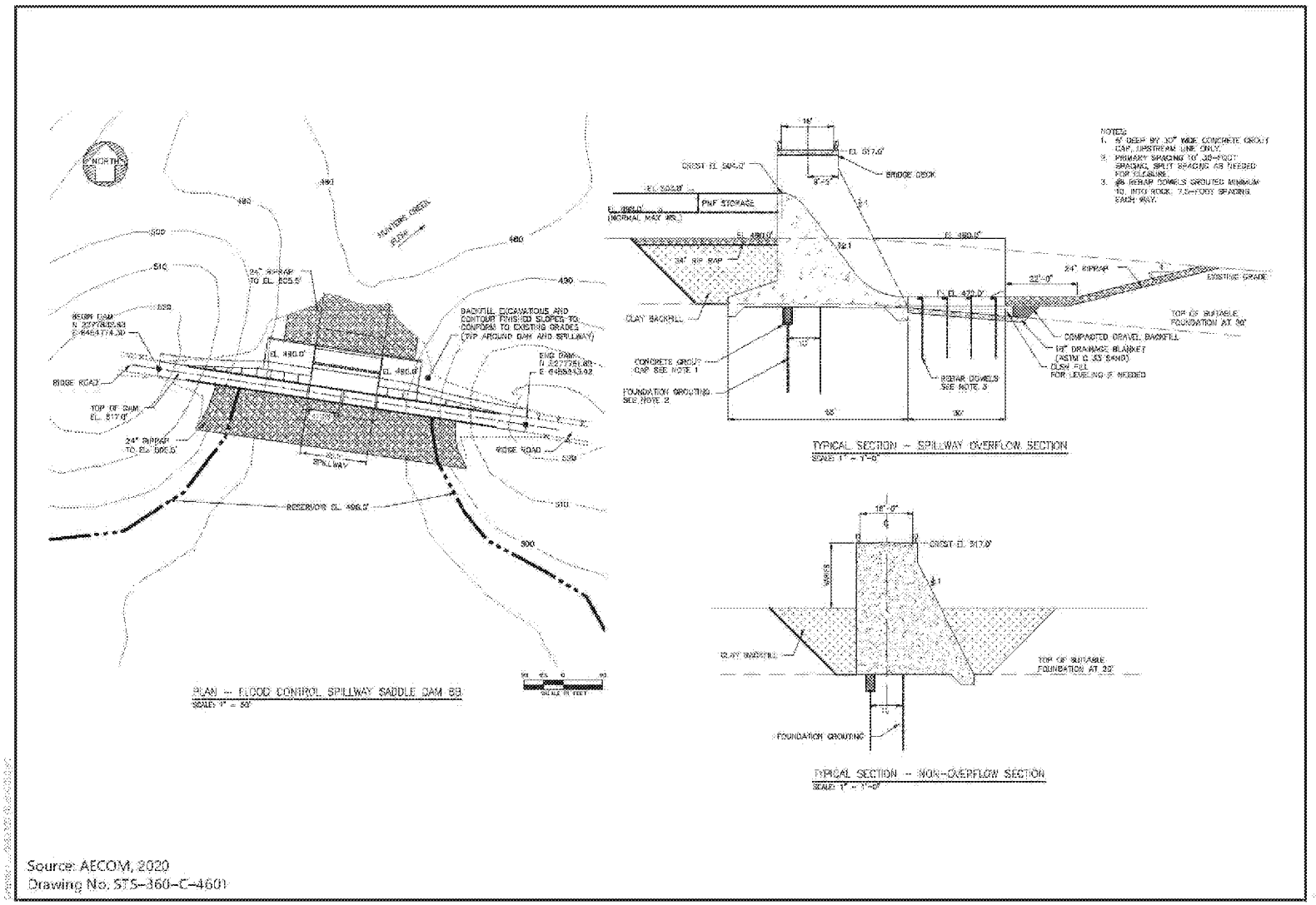
Saddle Dams 3 and 5 would be designed to release emergency flows. Therefore, these two saddle dams would have an intake in the reservoir, a tunnel under the ridge, and an outlet structure to provide energy dissipation and controlled emergency releases of water to the local receiving drainage, Hunters Creek. The intake would be a reinforced concrete structure of appropriate length (approximately 65 linear feet with trashracks). The tunnel would be reinforced concrete with a steel liner; its diameter is expected to range from 10 to 12 feet, and it would be approximately 830 linear feet. The energy dissipation structure would be a reinforced concrete structure containing one or multiple energy dissipation valves within steel-lined chambers to contain spray and provide controlled release of water to Hunters Creek. The size of the energy dissipation chambers would be determined based on manufacturer recommendations. A riprap-lined basin would extend for a minimum of 100 feet downstream of the energy dissipation structure to transition the discharge to the receiving channel.

Saddle Dam 8B would contain the reservoir spillway (see Figure 2-31). The crest width for the dam would be designed to accommodate a 16-foot-wide crest road with suitable concrete or metal guardrails on both sides. The length of the spillway crest section would be based on flood routing analyses, and the crest elevation would be based on the size of the reservoir and normal operating water surface elevation. This elevation would allow storage of the PMF without spilling and have sufficient capacity to pass the volume of over-pumping water in the unlikely event that over-pumping occurred for more than 10 days; it would also enable controlled emergency releases to the local receiving drainage, Hunters Creek. See Figure 2-31, Saddle Dam 8B Spillway, for a schematic of the spillway.



Source: AECOM, 2020
Drawing No. STS–351–C–3601

Figure 2-30. Saddle Dike Section



Source: AECOM, 2020
Drawing No. STS-360-C-4601

Figure 2-31. Saddle Dam 8B Spillway

Dam Monitoring

Instrumentation would be installed in the dam abutments, dam embankments, and downstream of the dams. The objectives of instrumenting the dams include developing physical data for comparison to assumptions made for the design analyses, anticipated behavior based during the studies, and monitoring of dam performance during construction, first filling of the reservoir, and long-term operation of the Project.

The types and locations of instrumentation would be selected to measure specific engineering parameters, including deformation, seepage flows, piezometric levels, pore-water pressure, and seismic response. Types of instrumentation could include piezometers, inclinometers, extensometers, survey monuments, weirs, and strong motion accelerographs. A reservoir level indicator and meteorological station would also be included, and an automated data acquisition system would provide for remote data acquisition of the dams.

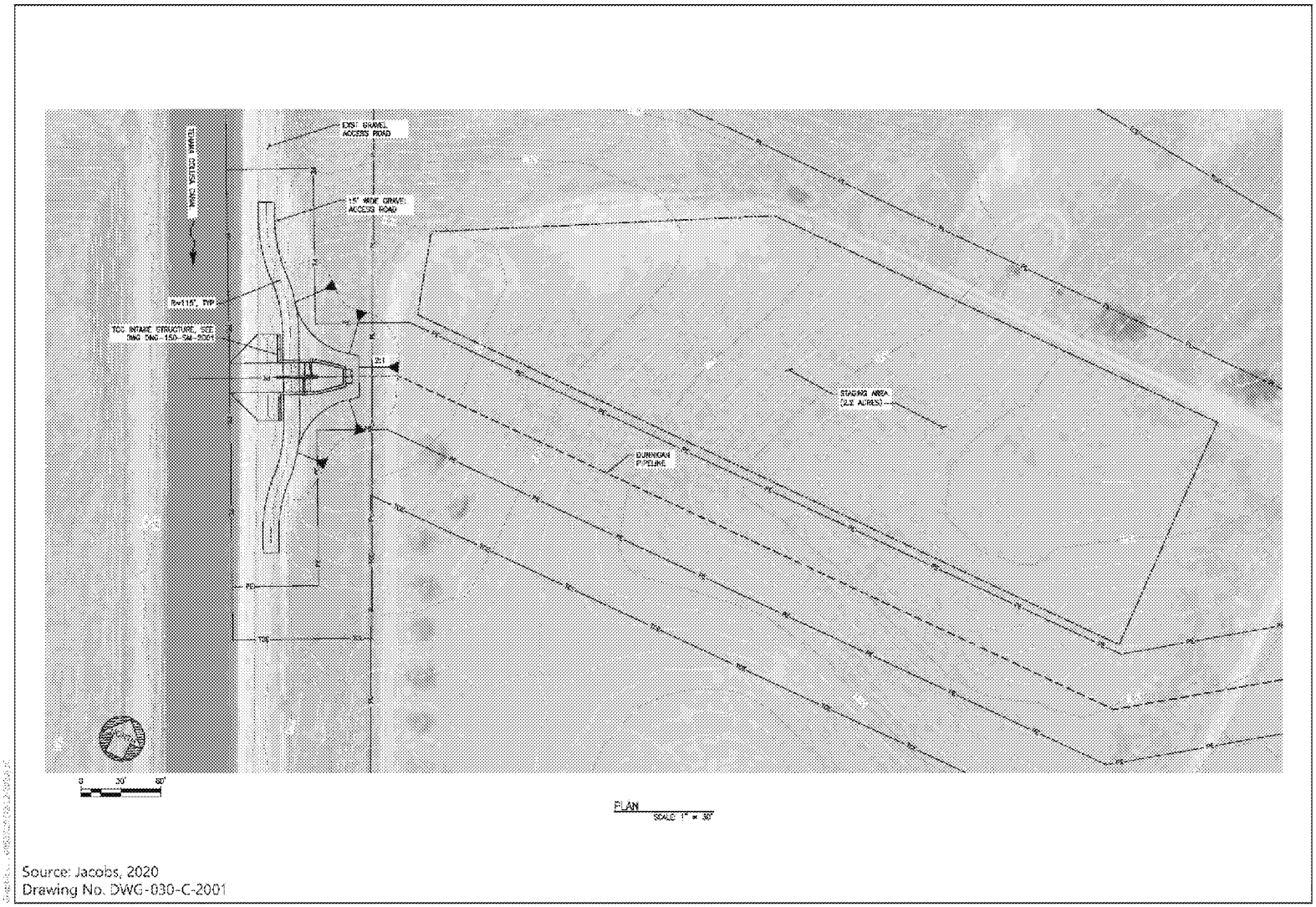
2.5.1.5 Conveyance to Sacramento River

Water released from Sites Reservoir would be conveyed south of the reservoir using the existing TC Canal and a new Dunnigan Pipeline. The water would flow south about 40 miles to near the end of the TC Canal, where it would be diverted into the Dunnigan Pipeline. The flows would subsequently be conveyed to the CBD and ultimately reach the Sacramento River. See Figure 2-2, Alternative 1 and 3 Conveyance to Sacramento River Components, for the location of the facilities associated with conveying water to the CBD and Sacramento River.

TC Canal Intake

A new intake would be required to move water from the TC Canal into the Dunnigan Pipeline. See Figure 2-32, TC Canal Intake Site Plan, for a site plan of the intake. The TC Canal intake site would encompass approximately 0.5 acre and be accessed from the existing TC Canal access road. The intake would be a concrete structure sized for a flow of 1,000 cfs that supports the control gates and associated gate operators. Power would be needed for SCADA control and gate operation to let water into the Dunnigan Pipeline; however, there would be a gravity outlet structure from the TC Canal into the Dunnigan Pipeline and no pumping would be required. A concrete bridge deck would provide vehicular access across the top of the intake. Stoplog slots at the inlet and outlet channels would enable isolation of the control gates for maintenance.

Temporary disturbance for construction of the TC Canal intake adjacent to the TC Canal would require 2 acres for temporary construction for about 1 year. The staging area would be located on the east side of the TC Canal and just north of the Dunnigan Pipeline. Access to this structure is anticipated to be from the existing TC Canal access road.



Source: Jacobs, 2020
Drawing No. DWG-030-C-2001

Figure 2-32. TC Canal Intake Site Plan

Dunnigan Pipeline

The Dunnigan Pipeline would convey water released from the TC Canal to the CBD. See Figure 2-33, Dunnigan CBD Discharge Site Plan, for the location of this facility. The Dunnigan pipeline would be about 4 miles long, have a minimum depth of 6 feet below ground surface, and have an inside diameter of approximately 9 feet (Alternative 1 and 3) to 10.5 feet (Alternative 2). The Dunnigan Pipeline would extend through existing agricultural lands, as well as crossing Interstate 5 (I-5), Road 99W, the railroad, and a commercial auction yard between I-5 and Road 99W. The tunneled crossings at I-5, Road 99W and the railroad would be 300 feet long and 250 feet long, respectively, and would require 12-5-foot-diameter casings.

A CBD outlet with an energy dissipation facility would be required at the downstream end of the pipeline prior to discharging the water into the CBD. Two 60-inch-diameter, fixed-cone valves would be placed at the discharge stilling basin to dissipate energy and adjust the flow. Hoods on the fixed-cones valves would control spray. The conveyance through the Dunnigan Pipeline to the CBD would use gravity (i.e., no pump station) and have a flow up to 1,000 cfs.

Construction of the Dunnigan Pipeline from the TC Canal to the CBD would require dewatering, trenching, and pile driving or a vibration hammer. Dewatering would be necessary for a segment of the pipeline to reduce groundwater levels to 20 or 30 feet below ground surface along its length. Trenching and pipeline installation would be completed after dewatering. Pile driving or a vibration hammer would be used to install piles for construction of the CBD outlet. Construction would include open cut of approximately 100 feet to cross Bird Creek in the dry season.

2.5.1.6 Recreation Areas

The Project proposes the development of two primary recreation areas and a day-use boat ramp. The recreation areas would also require a network of new roads and upgrades to existing roads for maintenance and local access (see Section 2.5.1.7, *New and Existing Roadways* a). Figure 2-34, Recreation Areas, shows a conceptual site map of each recreation area and the recreation areas are described below.

- **Peninsula Hills Recreation Area** – The Peninsula Hills Recreation Area would be located on the northwest shore of the Sites Reservoir, to the north of the existing Sites Lodoga Road and across the reservoir from the Stone Corral Creek Recreation Area. Access would be provided by the existing Sites Lodoga Road west of the reservoir. This recreation area would encompass up to 373 acres and would include a kiosk, access to electricity and potable water, 10 picnic sites (with parking at each site), and hiking trails. There would also be 19 vault toilets, 200 campsites (car and recreational vehicle), and one group camp area.



Source: Jacobs, 2020
Drawing No. DWG-030-C-2002

Figure 2-33. Dunnigan CBD Discharge Site Plan

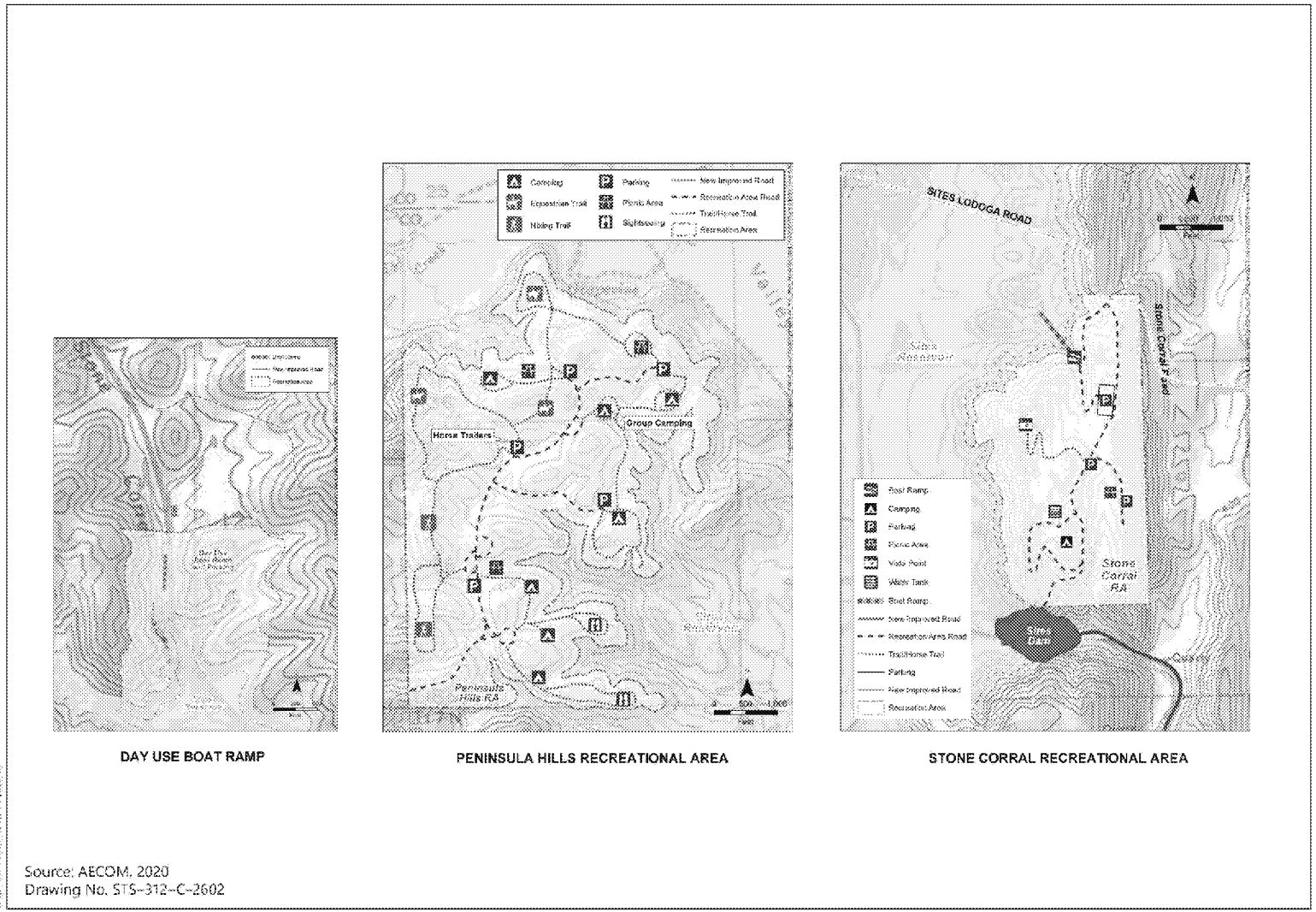


Figure 2-34. Recreation Areas

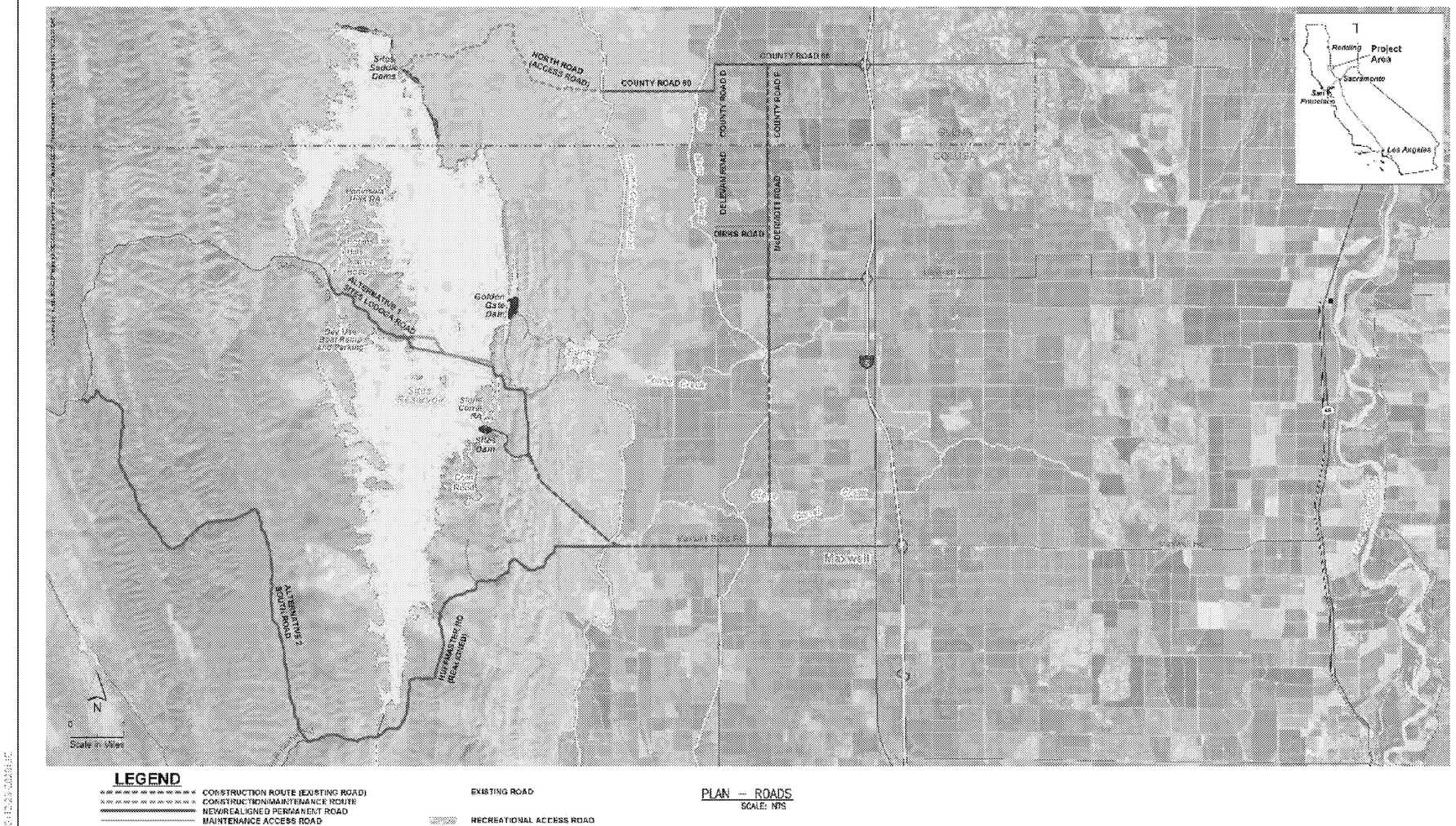
- **Stone Corral Creek Recreation Area** – The Stone Corral Creek Recreation Area would be located on the eastern shore of the Sites Reservoir, north of the existing Maxwell Sites Road and Sites Dam. Access would be provided from Sites Dam and Sites Lodoga Road near the eastern end of the bridge across the reservoir. This recreation area would encompass up to 235 acres and its facilities would include a kiosk, access to electricity and potable water, 10 picnic sites (with parking at each site), and hiking trails. There would also be 10 vault toilets and 50 campsites (car and recreational vehicle).
- **Day-Use Boat Ramp and Parking Areas** – The day-use boat ramp would be located on the western side of the reservoir where the existing Sites Lodoga Road intersects with the proposed inundation area for the reservoir. A parking area would be added to the existing Sites Lodoga Road where it exits the inundation area footprint of the reservoir. The boat ramp and parking area would encompass up to 10 acres and include a kiosk, access to potable water, and one vault toilet.

Construction of the recreation areas and facilities would consist of clearing and grubbing, excavating, backfilling, constructing roads and parking lots, installing utility connections, constructing amenities, constructing the boat ramps, and restoring temporarily disturbed areas. It is anticipated that all construction activities associated with the recreation areas would occur within the proposed footprints of the recreation areas and the temporary and permanent access road areas.

The Authority is also considering a recreation area on the north side of the reservoir within Glenn County. This area may consist of a day-use boat ramp, parking area, picnic facilities, kiosk, access to potable water, and one vault toilet encompassing up to 10 acres. As this facility is conceptual in nature, it is not analyzed in this RDEIR/SDEIS and would require additional CEQA and NEPA analysis if developed and as appropriate.

2.5.1.7 New and Existing Roadways

Approximately 46 miles of new paved and unpaved roads would provide construction and maintenance access to the proposed facilities, as well as public access to the proposed recreation areas. Table 2-4 identifies these roads and their purposes (i.e., construction access, local access, and maintenance access). Figure 2-35, Alternatives 1, 2, and 3 Road Site Map, shows the locations of all local access, construction access, and maintenance access roads that would be needed. The general objectives and maintenance responsibilities for these road types are discussed below, and more detailed information for construction access, local access, and maintenance access roads is subsequently presented in the corresponding subsections. The proposed road improvements and roadway designs are being coordinated with Colusa and Glenn Counties.



Source: AECOM, 2020
Drawing No. STS–305–C–2601

Note: Comm. Road North to be removed

Figure 2-35. Alternatives 1, 2, and 3 Road Site Map

Construction access roads would be designed to provide the necessary roadway improvements specific to the movement of construction equipment and transport of materials. Roadways that would be used for construction access and local access would be designed to achieve the objectives for both uses and prioritize needs for local traffic use and safety. Roads used solely for construction access would be designed with two 12-foot-wide gravel lanes and up to 2-foot-wide shoulders. These roads would be used for maintenance access after completion of construction. Permanent facility access roads constructed from gravel and asphalt would facilitate operation and maintenance. These access roads would require new construction or the relocation of existing public county roads. Temporary gravel roads would also be built during construction. The maintenance of roads used for both construction and local access would be the construction contractor's responsibility during construction and the responsibility of the Colusa or Glenn County department having jurisdiction over them after construction.

Local access roads that would be improved or relocated for construction purposes would provide reliable infrastructure for the traveling public, accommodate transportation needs, and be consistent with state and local design standards. Local access roads would generally have two 12-foot-wide lanes with paved shoulders, and their postconstruction maintenance would be the responsibility of the Glenn or Colusa County department with jurisdiction over them.

Maintenance access roads would be constructed or improved in accordance with the equipment and personnel required for operations and maintenance of specific facilities. As discussed above, roads installed for construction access would be repurposed for maintenance following construction. Repurposed maintenance roads would have one 15-foot-wide minimum gravel lane with no shoulders.

Table 2-4. Sites Project Roads & Purposes Common to all Alternatives

Roads	Road Purpose		Approx. Current Length (miles)	Approx. Proposed Improved Length (miles)	Improvement Types
	Colusa County[2]	Glenn County[2]			
Road 68	--	Local, Construction	3	3	Shoulder improvements/ intersection widening, two structure improvements
Road D	--	Local, Construction	0.5	0.5	Shoulder improvements/ intersection widening, two structure improvements
Road 69	--	Local, Construction	2	2	Shoulder improvements/ intersection widening, three structure improvements
North Road	--	Construction, Maintenance	0	5	New gravel road

Roads	Road Purpose		Approx. Current Length (miles)	Approx. Proposed Improved Length (miles)	Improvement Types
	Colusa County[2]	Glenn County[2]			
Delevan Road	Local, Construction		2	2	Shoulder improvements/ widening
McDermott Road	Local, Construction	Local, Construction	8	4	Shoulder improvements/ widening/paving, five structure improvements
Saddle Dam Road – North (5–9) (provide access to northern portions of Sites Reservoir and the saddle dams)	--	Construction, Maintenance	1	2	New gravel road
Saddle Dam Road – South (1–5)	Maintenance	Maintenance	0	3	New road
Huffmaster Road realigned	Local	--	12	7	Gravel road for residents
Sites Lodoga Temporary Detour Road (Shoo-Fly)	Local, Construction	--	1	1	New, temporary gravel road
Day-Use Boat Ramp (westside)	Local	--	0	0.3	New paved road
Peninsula Hills Recreation Area (provide access from Sites Lodoga Road to the proposed Peninsula Hills Recreation Area)	Local	--	0	4	New gravel road
Potential Access Road A (O&M/PGP/GG Dam)	Maintenance	--	0	1	New road
Potential Access Road B (O&M/PGP/GG Dam)	Maintenance	--	0	0.4	New road

Roads	Road Purpose		Approx. Current Length (miles)	Approx. Proposed Improved Length (miles)	Improvement Types
	Colusa County[2]	Glenn County[2]			
Potential Access Road C1 (O&M/PGP)	Maintenance	--	0.4	0.4	Existing road
Potential Access Road C2 (O&M/PGP/GG Dam)	Maintenance	--	0.6	0.6	Existing jeep road
Stone Corral Creek Recreation Area/Sites Dam	Local	--	0	2.5	New road
Comm Road South	Local	--	0	1	New road

Table Notes:
Local access includes local road for public use and recreational access.
Any improvement type identified as a new road has an approximate current length of 0.

The roadway alignments discussed below are based on service needs and existing planning-level-based mapping to establish a corridor width along roadways. Corridor widths would vary depending on the level of topographical relief—greater relief requires greater flexibility throughout the design process to allow the engineers to move the road within the corridor.

Several existing roads would be improved to support the construction of Sites Reservoir facilities (e.g., main dams and saddle dams) and enable construction vehicles to safely pass one another if needed. After construction of the reservoir was completed, these roads would be maintained to support the operation of the Sites Reservoir. Some of these roads would also be available for public use. This subsection describes the expected routes for construction access and the roadway improvements that would be needed to accommodate construction and maintenance access.

The disturbance area for roads would include the footprints of the proposed roads and stream crossings, the staging areas for materials and equipment, and the area needed to construct the facilities and access roads. Traffic that was not construction related would be diverted around construction disturbance areas in accordance with a traffic management plan.

Initial construction activities would involve establishing staging areas, surveying and marking roadways, clearing, and grading. Road construction would entail making road cuts and fills; hauling away excess cut materials; constructing culverts; laying aggregate road base and asphalt; erecting fences, guardrails, and signs; installing roadway striping and reflectors; restoring temporary disturbance areas; and cleaning up the work sites.

Construction Access

Construction access for the reservoir and supporting facilities would occur on public roads from I-5 to the reservoir site on the north and at Sites Lodoga Road on the east. These roads currently cross small creeks and irrigation canals, and the crossings are generally reinforced through concrete box culverts. There are three primary construction access routes for consideration that would most likely be defined for use by the construction contractor.

The first construction access route would be on 5.5 miles of existing approximately 24 feet wide paved road from I-5 west along Road 68, south on Road D, and west on Road 69 to just west of the TC Canal. From here the road reverts to a single lane (± 12 feet wide) gravel road (North Road), which would be temporary and continue for approximately 5 miles along existing ranch roads and trails to the north end of the reservoir at the saddle dams. From this location, the contractor would establish their own onsite access roads within the limits of the reservoir.

The second construction access route would be on 7.2 miles of existing paved road from I-5 west along Delevan Road, north along McDermott Road, and west on Road 69 to just west of the TC Canal as noted above. Approximately 1.5 miles of McDermott Road between Dirks Road and West Glenn Road consist of gravel; therefore, it is assumed paving would be needed to accommodate the volume of heavy construction traffic.

The third construction access route would be on 12 miles of existing paved road from I-5 along Delevan Road, south along McDermott Road to Maxwell Sites Road, and then west to the existing gravel access road to Funks Reservoir. The first mile of this gravel road would be the initial segment of the Sites Lodoga Road realignment. This gravel road would also provide access to the Funks PGP and Golden Gate Dam. Maxwell Sites Road would provide access to Sites Dam. Construction equipment/materials would not be permitted to pass through the community of Maxwell on the Maxwell Sites Road, thus the construction access roads would circumvent Maxwell.

The existing roads are nonstandard in geometry and have inadequate roadbed structural section to accommodate the large, heavy vehicles that would be used to transport construction equipment and materials. These roads consist of Road 68, Road D, Road 69, Delevan Road, and McDermott Road. They are narrow and typically include two paved 11-foot- or 12-foot-wide lanes and 1- to 3-foot-wide earthen shoulders. The pavement conditions of Road 68, Road D, and Road 69 pavement conditions are "at risk", "poor", and "very poor", respectively, upon visual inspection by project engineers. A segment of McDermott Road in Colusa County is gravel. Road 69 transitions to a single-lane, gravel road west of the TC Canal. The following improvements would need to be implemented on these roadways:

- Roadbed and intersection widening to allow for safe mobility of construction traffic that would be comingled with local vehicular and agricultural equipment traffic.
- Roadbed reconstruction to enable use by large, heavy vehicles transporting construction equipment and materials
- Horizonal and vertical curve corrections
- Drainage feature improvements to allow for proper drainage

Reconstruction of the roads above would include the addition of new 2-foot-wide paved shoulders to each lane, as well as potential modifications to existing creek and irrigation canal crossings (as described below). The new shoulders would be within the public right-of-way, as would any temporary work areas needed to reconstruct the roads. All existing roadway improvements would be designed to avoid or minimize impacts on existing utility infrastructure and public right-of-way. Once the roads are constructed, all county roads would be maintained by Glenn or Colusa County, while specific access and maintenance roads (e.g., North Road, South Comm Road) would be maintained by the Authority.

The following roads involve the noted number of structures that would need to be crossed. It is assumed that these structures would need to be widened, strengthened, or replaced, depending on their structural condition and load rating capacity.

- Road 68 – two structures
- Road D – two structures
- Road 69 – three structures (two on paved roads crossing the TC Canal and GCID Main Canal, and one on a gravel road)
- McDermott Road – five structures

Local Access

In addition to the local roads described above that would be improved for construction purposes and then remain local access roads, a number of other public local roads would be relocated or developed to accommodate reservoir facilities. These roads include Sites Lodoga Road, Huffmaster Road, Comm Road South, and recreation area roads. There would also be one temporary detour during construction, the Sites Lodoga Temporary Detour Road. Permanent changes to Sites Lodoga Road and Huffmaster Road are discussed in Section 2.6, Alternative 1 Specific Elements and Section 2.7, Alternative 2 Specific Elements below.

- **Comm Road South** – Access to existing communication facilities would consist of a gravel road that would start near the northern end of Huffmaster Road and proceed north to the communications tower.

- **Recreation Area Roads** – New recreation area roads would provide access from Sites Lodoga Road to the Peninsula Hills Recreation Area, day-use boat ramp, and Stone Corral Creek Recreation Area. The access road to Peninsula Hills Recreation Area on the west side of Sites Reservoir would be paved. The access road to the day-use boat ramp, which would also be on the west side of the reservoir, would be paved. The access road to the Stone Corral Creek Recreation Area on the east side of the reservoir would be paved and gravel.

- **Sites Lodoga Temporary Detour Road** – A temporary detour road would be constructed to expedite construction and maintain traffic movement through the reservoir site during the construction of Sites Dam and the bridge across the reservoir (including fill prisms). This road would convey local traffic for a period of approximately 1 year and would be aligned around the Sites Dam site partially on the Sites Lodoga realignment

from Maxwell Sites Road to near the easterly bridge at the top of the ridge. The temporary detour road would then split off to the south and traverse hilly terrain before Comm Road South rejoining Sites Lodoga Road near its intersection with Peterson Road.

Maintenance Access

New and existing maintenance access roads would provide access to the main dams, saddle dams and dikes, I/O Works, and Funks PGP. Except for the existing road to Funks Reservoir, the maintenance access roads would be single-lane, 15-foot-wide gravel roads with no shoulder. Comm Road South would be a local access and maintenance access road.

North Road would begin at the end of the unpaved Road 69, continue 5 miles to the reservoir's edge, and connect with several new maintenance access roads that would provide access to the saddle dams and dikes. Access Road A1 would be a new gravel road along the crest of the Golden Gate Dam with minor cuts/fills. Access Roads B1 and B2 would be new gravel roads connecting to the I/O Works and Golden Gate Dam with minor cuts/fills. Access Road C1 is expected to be a two-lane, 30-foot-wide, paved road to access Funks Reservoir and the existing road to the reservoir would be maintained. Access Road C2 would be improved from an existing jeep trail at the east base of the Golden Gate Dam to a gravel road that would extend off Access Road C1.

2.5.1.8 Project Buffer

The Authority would acquire and maintain a project buffer encompassing the lands beyond the facility footprints. The buffer width would be 100 feet around the Sites Reservoir and related facilities, all buildings, most aboveground components, and recreation areas. The buffer may be less than 100 feet wide if a facility is near a property boundary and the proposed uses do not conflict with the adjacent land uses. Buffers are not anticipated for underground or buried facilities (i.e., Dunnigan Pipeline), transmission lines, or roads (both public and Project maintenance access roads).

Although buffer areas would generally remain undeveloped, the Authority would install limited features and perform periodic maintenance primarily related to reducing fire hazards. These actions would include erecting and maintaining fencing, grading fire breaks/trails, maintaining vegetation (e.g., grazing, tilling, or disking), and performing limited prescribed/controlled burns. The Authority may manage buffer areas as wildlife habitat where appropriate.

2.5.2 Operations and Maintenance Common to All Action Alternatives

This section describes the operations and maintenance activities common to all of the Action Alternatives.

2.5.2.1 Water Operations

The Project would provide water supply and water supply related environmental benefits to the Sites Storage Partners. Water would be diverted into Sites Reservoir from the Sacramento River at the existing RBPP into the TC Canal and at the existing GCID Hamilton City Pump Station into the GCID Main Canal. Both of these facilities have existing fish screens. Once in the TC Canal, water would be conveyed to the existing Funks Reservoir and pumped into the new Sites Reservoir via the Funks PGP and associated facilities. Once in the GCID Main Canal, water

would be conveyed to the new TRR and pumped into the new Sites Reservoir via the TRR PGP and associated facilities. Water could be diverted to storage in Sites Reservoir when the diversion criteria are met and when the Delta is in excess conditions. Diversions to storage could occur anytime between September 1 to June 15, the timeframe that the Sacramento River is not fully appropriated. Water would be held in storage in Sites Reservoir until requested for release by a Sites Storage Partner. Water releases would generally be made from May to November, but could occur at any time of the year depending on the Storage Partner's need and conveyance capacity to convey water to its intended point of delivery. Water would be released from Sites Reservoir via the I/O Works back through the TRR PGP and into the TRR or back through Funks PGP back into Funks Reservoir. Water released could be used along the GCID Main Canal, along the TC Canal, or conveyed to the new Dunnigan Pipeline and discharged to the Colusa Basin Drain and conveyed via the Sacramento River or the Yolo Bypass to a variety of locations in Delta and south-of-Delta[2]. Exchanges of water may also occur with the CVP and SWP. Water would also be diverted and impounded from Funks and Stone Corral Creeks and releases from Golden Gate Dam and Sites Dam, respectively, would occur into Funks and Stone Corral Creeks. Water operations are described in more detail below.

The Authority intends to apply for and obtain a water right permit from the State Water Resources Control Board (SWRCB) for the operations of Sites Reservoir. Actual operations would be subject to the terms and conditions of this water right along with all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time. Operations under all Action Alternatives would also require coordination with Reclamation and DWR as described below. The Authority is working with Reclamation and DWR to develop mutually agreeable operating agreements that would describe the approach for coordinating operations with Sites and the CVP and SWP operations, respectively.

Diversion to Sites Reservoir

Sites Reservoir would be filled through the diversion of Sacramento River water that generally originates from unregulated tributaries to the Sacramento River downstream from Keswick Dam. Only a small amount of the diversions to Sites Reservoir would come from flood releases from Shasta Lake. Diversions to Sites Reservoir would be made from the Sacramento River at the existing RBPP (River Mile 243) near Red Bluff into the TC Canal and at the existing GCID Hamilton City Pump Station (River Mile 205) near Hamilton City into the GCID Main Canal. Water could be diverted to storage in Sites Reservoir from September 1 to June 15. Diversions would only occur when all of the following conditions are met:

- Flows in the Sacramento River exceed the minimum diversion criteria (described below);
- The Delta is in "excess" conditions as determined by Reclamation and DWR;

[2] The term south-of-Delta or phrase south of the Delta is used to refer to areas that can receive water from the south Delta pumping facilities, including the SWP Banks Pumping Plant, Reclamation's Jones and Rock Slough pumping plants, and Contra Costa Water District's pumping plants. This includes areas south and west of the Delta, such as Contra Costa, Alameda, and Santa Clara counties.

- Senior downstream water rights, existing CVP and SWP and other water rights diversions including CVP 215 water and Article 3F water and SWP Article 21 (interruptible supply), and other more senior flow priorities (such as diversions associated with Freeport Regional Water Project and existing Los Vaqueros Reservoir) have been satisfied;
- Flows are available for diversion above flows needed to meet all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time that diversion occurs. This would include, but is not limited to any flow requirements in Water Right Decision 1641 (SWRCB, 2000), the 2019 ROC on LTO Biological Opinions (USFWS 2019 and NMFS 2019) and the SWP ITP (CDFW 2020); and
- There is available capacity at the RBPP and in the TC Canal and GCID facilities to divert and convey water to Sites Reservoir, above the capacity needed for deliveries to existing TC Canal users and within the GCID service area.

The RBPP would serve as the primary diversion location and would divert water from the Sacramento River to Funks Reservoir through the TC Canal and into the Sites Reservoir through the Funks PGP and the I/O Works. Up to 2,100 cfs, plus losses, would be diverted at the RBPP for the Project. The RBPP has an existing fish screen that meets NMFS and CDFW fish screen criteria through which all flows diverted for the Project would be screened. The Hamilton City Pump Station would serve as the secondary diversion location and would divert water from the Sacramento River to the new TRR through the GCID Main Canal and into the Sites Reservoir through the TRR PGP and the I/O Works. Up to 1,800 cfs, plus losses, would be diverted at the Hamilton City Pump Station for the Project. The Hamilton City Pump Station has an existing fish screen that meets NMFS and CDFW fish screen criteria through which all flows diverted for the Project would be screened. Although the RBPP will be the primary diversion point, both facilities would be operated simultaneously when river conditions, facilities, and capacity are available for a maximum combined diversion rate of 3,900 cfs, plus losses.

Estimated total annual diversion of Sacramento River water from both diversion facilities to Sites Reservoir could be up to the full reservoir amount. Based on model simulations, the estimated annual diversions would usually range from 60 thousand acre-feet (TAF) per year to 390 TAF per year, depending on hydrologic conditions, availability of Sacramento River water, and diversion and conveyance facility capacities.

Diversion Criteria

The Project would be operated to meet the diversion criteria summarized in Table 2-5 and described in more detail below. All diversion criteria must be met for the Project to divert.

Table 2-5. Summary of Project Diversion Criteria

Location (Listed from North to South)	Criteria
Bend Bridge Pulse Protection	Protection of all qualified precipitation-generated pulse events (i.e., peaks in river flow rather than scheduled operational events) from October to May based on the detection of fish presence and migration during the beginning of the flow event. For each event where fish presence and migration is detected, diversions from the Sacramento Riverwould cease for 7 days.
Minimum Bypass Flows in the Sacramento River at the RBPP	3,250 cfs minimum bypass flow at all times; rate of diversion controlled by fish screen design
Minimum Bypass Flows in the Sacramento River at the Hamilton City Pump Station	4,000 cfs minimum bypass flow at all times; rate of diversion controlled by fish screen design
Minimum Bypass Flows in the Sacramento River at Wilkins Slough	8,000 cfs in April and May; 5,000 cfs all other times
Fremont Weir Notch Protections	No more than 1% reduction in flow over weir when spill over the weir are less than 600 cfs. No more than a 10% reduction when flow over weir when spills over the weir are between 600 cfs and 6,000 cfs. No restriction when flows over the weir are greater than 6,000 cfs
Freeport, Net Delta Outflow Index, X2, and Delta Water Quality	Operations consistent with all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time that diversion occurs

Bend Bridge Pulse Protection

All Action Alternatives would implement a pulse flow protection measure to be applied to all qualified precipitation generated peaks in the hydrograph that originate primarily from tributaries to the Sacramento River that flow into the mainstem Sacramento River downstream of Keswick Dam from October through May. The pulse flow protection measure addresses the survival of migrating juvenile winter-, spring-, fall-, and late fall-run Chinook salmon (*Oncorhynchus tshawytscha*), and steelhead (*Oncorhynchus mykiss*) through the middle reaches of the Sacramento River. Pulse flows during this period would provide flow continuity between the upper and lower Sacramento River (i.e., below Wilkins Slough) and are expected to enhance survival of these migratory fish (Michel et al. 2015, In Press ; Notch 2017) as fish movement is thought to occur in response to increased flow, water-year type and turbidity associated with the beginning of a precipitation-generated high-flow event (Poytress et al. 2014, Cavallo et al. 2015).

Pulse protection would occur from October through May to address outmigration of juvenile winter-, spring-, fall- and late fall-run Chinook salmon, as well as a portion of the steelhead juvenile outmigration period. The Project's Adaptive Management Plan would include a fish monitoring program capable of detecting a migratory fish response during the beginning of a

precipitation-generated high flow event and continuing research would be utilized to operate to, and further refine the pulse flow protection strategy.

The Adaptive Management Plan and fish monitoring program would be developed in cooperation with Reclamation and the fishery resource agencies, including CDFW, NMFS, and USFWS and would be integrated with existing fish monitoring programs to the extent possible. For example, the USFWS monitoring program at RBDD, conducted for purposes of estimating fish production indices in the spawning reach above RBDD, is particularly relevant. This program could be supplemented with additional monitoring sites downstream, as necessary. The Authority would coordinate with the fishery resource agencies to define an appropriate capture rate or other metric to define the onset of a fish pulse stimulated by increasing flows and turbidity from storm events. The following criteria define a qualified pulse event:

- Outmigration of anadromous fish is detected based on the Adaptive Management Plan and fish monitoring program.
- If the 3-day trailing average of Sacramento River flow at Bend Bridge exceeds 8,000 cfs and 3-day trailing average tributary flow upstream of Bend Bridge (Cow Creek, Cottonwood Creek and Battle Creek) exceeds 2,500 cfs, a pulse event is initiated if the previous day was not already in a pulse event. This flow level is consistent with Sacramento River flow of 10,700 cfs at Wilkins Slough (considering increases from tributary inflows).
- A pulse event terminates seven days after initiation.
- After completion of a pulse event, the following conditions must occur before another pulse event is triggered: (1) 3-day trailing average of Sacramento River flow at Bend Bridge was less than 7,500 cfs for seven consecutive days; and (2) 3-day trailing average of tributary flow upstream of Bend Bridge (Cow Creek, Cottonwood Creek and Battle Creek) was less than 2,500 cfs for seven consecutive days.

Project diversions from the Sacramento River would not occur during a qualified pulse event. Diversions are otherwise unrestricted by the Bend Bridge Pulse Flow protection criteria.

Minimum Bypass Flows in the Sacramento River at the RBPP

A minimum bypass flow in the Sacramento River at the RBPP of 3,250 cfs would be in place at all times to stabilize flows in the Sacramento River and protect salmon redds. When flow in the Sacramento River is less than 3,250 cfs at the RBPP, the Project would not divert. When flows in the Sacramento River exceed 3,250 cfs at the RBPP, diversions at the RBPP may occur and the rate of diversion at the RBPP would be controlled by and scaled to the fish screen design as shown in Figure 2-36, until the full 2,100 cfs diversion could be achieved at flows of approximately 7,860 cfs in the Sacramento River.

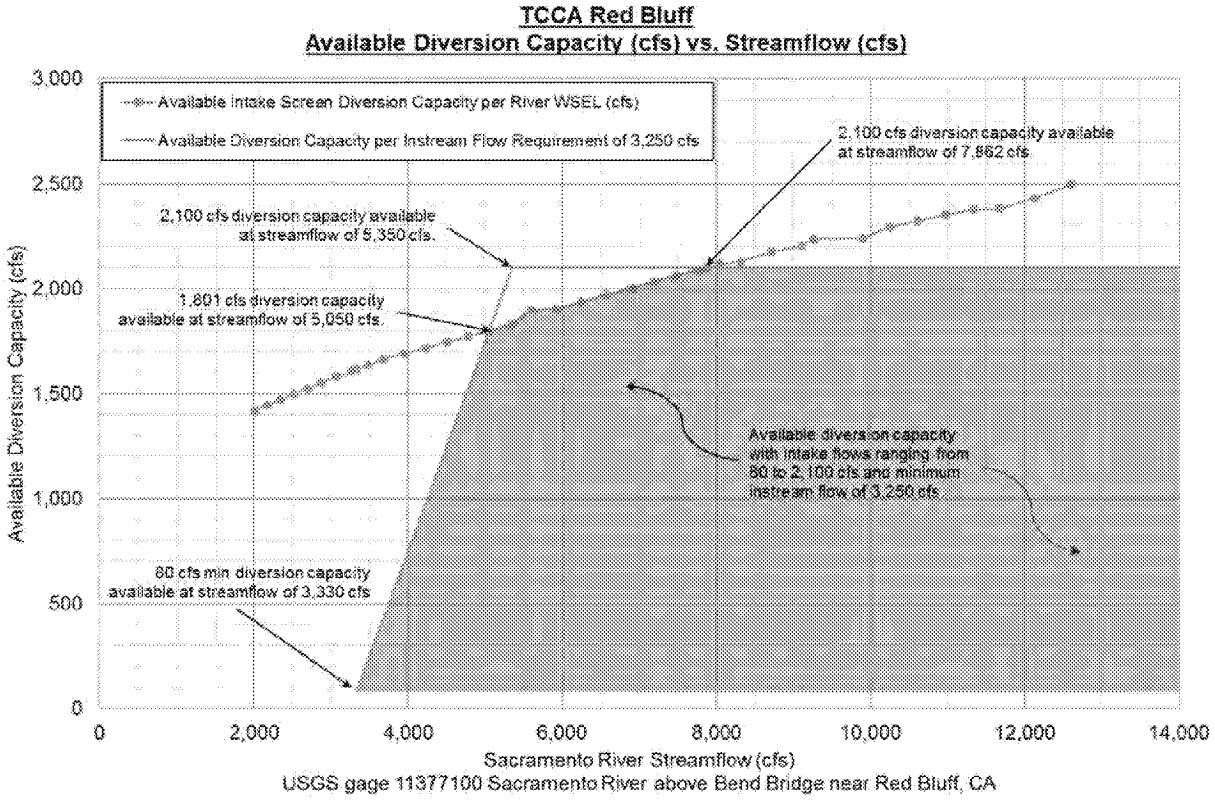


Figure 2-36. Available Diversion Capacity versus Streamflow at RBPP

Minimum Bypass Flows in the Sacramento River at the Hamilton City Pump Station

A minimum bypass flow in the Sacramento River at the Hamilton City Pump Station of 4,000 cfs would be in place at all times to stabilize flows in the Sacramento River and ensure proper function of the fish screen. When flow in the Sacramento River is less than 4,000 cfs at the Hamilton City Pump Station, the Project would not divert. When flows in the Sacramento River exceed 4,000 cfs at the Hamilton City Pump Station, diversion at the Hamilton City Pump Station may occur and the rate of diversion at the Hamilton City Pump Station would be controlled by and scaled to the fish screen design as shown in Figure 2-37, until the full 1,800 cfs diversion could be achieved at flows of about 5,800 cfs in the Sacramento River.

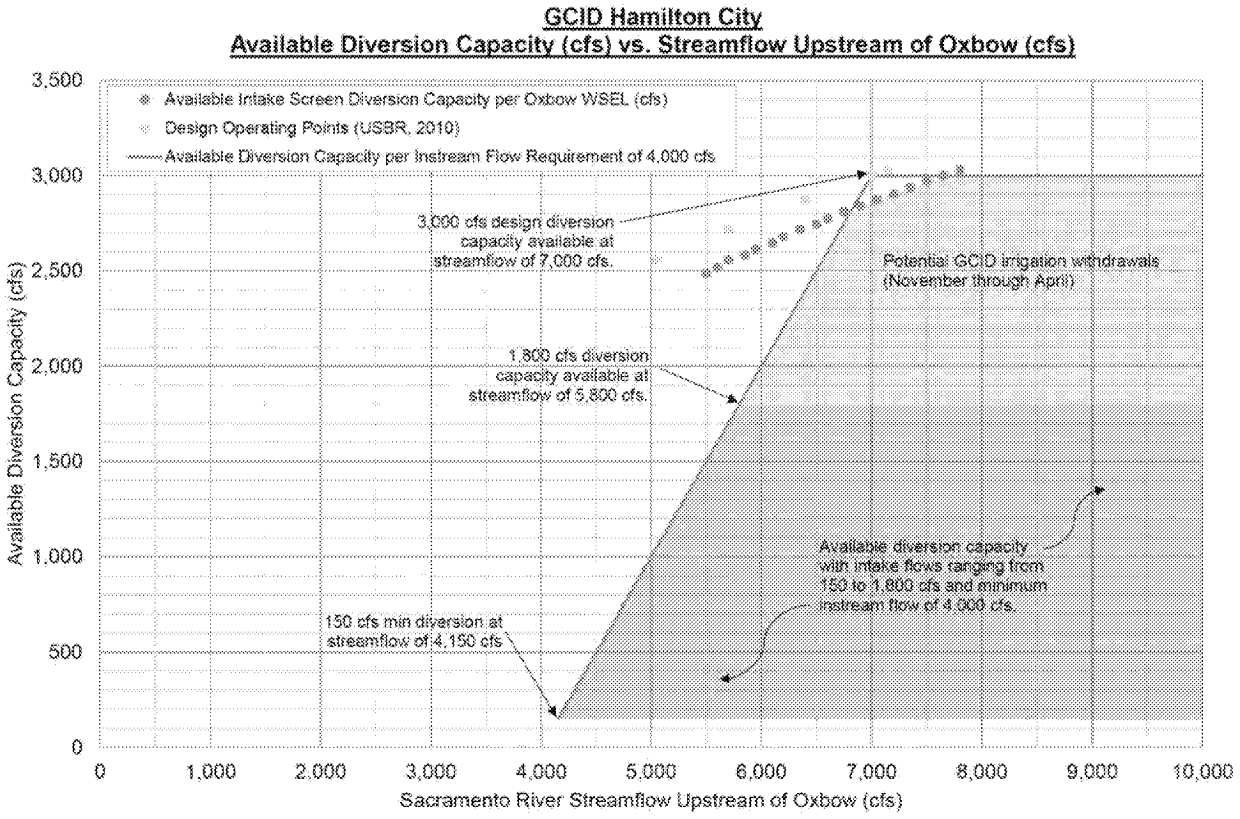


Figure 2-37. Available Diversion Capacity versus Streamflow at the Hamilton City Pump Station

Minimum Bypass Flows in the Sacramento River at Wilkins Slough

In addition to the minimum bypass flows in the Sacramento River at RBPP and the Hamilton City Pump Station, a minimum bypass flow of 8,000 cfs in the Sacramento River at Wilkins Slough would be in place in April and May and 5,000 cfs at all other times. This bypass flow regime is consistent with recommendations of 10,700 cfs at Wilkins Slough (considering increases from tributary inflows) and based on research performed over the last 30 years; focusing on recent studies that relate survival of outmigrating juvenile Chinook salmon to flows in the Sacramento River (Michel 2010, del Rosario et al. 2013, Poytress et al. 2014, Michel et al. 2015, Iglesias et al. 2017, Notch 2017. Henderson et al. 2018, Hassrick et al. In Prep, and Michel et al. In Press).

Fremont Weir Notch Protections

The Project's diversion criteria have been formulated to avoid impacts on Reclamation's ability to implement its obligations in the 2019 NMFS ROC on LTO Biological Opinion to implement the Yolo Bypass Restoration Salmonid Habitat Restoration and Fish Passage Implementation Plan and provide 17,000+ acres of inundation in the Yolo Bypass from December to April (NMFS 2019). For the purposes of modeling the effects of the Project, Project diversions may occur if no more than a 1% reduction in flow over the weir would occur when spills over the weir are less than 600 cfs. Project diversions may occur if no more than a 10% reduction in flow

over the weir would occur when spills over the weir are between 600 cfs and 6,000 cfs. When flows over the Fremont Weir are greater than 6,000 cfs there would be no restriction on Project diversions. These limitations are intended to reduce changes to spill frequency and duration.

Freeport, Net Delta Outflow Index, X2, and Delta Water Quality

For lower Sacramento River and Delta locations, the Project would operate in a manner that would not adversely affect the ability of others to meet all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time that diversion occurs.

Storage in Sites Reservoir

Water would be stored in Sites Reservoir until requested for release by a Sites Storage Partner. The Authority would prepare a Reservoir Management Plan that would describe the management of water resources in Sites Reservoir which would include a plan for monitoring water quality (see Section 2.5.2.4 for more information on the Reservoir Management Plan).

Releases from Sites Reservoir

Releases from Sites Reservoir would be made in any water year type to meet the needs of the Sites Storage Partners, including the water supply related environmental benefits under WSIP. The releases would be made from the I/O Works in Sites Reservoir and conveyed via pipeline to either Funks Reservoir or the TRR. Under normal operating conditions, 2,000 cfs would be released from the I/O Works to Funks Reservoir and 1,000 cfs would be released from the I/O Works to the TRR. The I/O Works would allow withdrawal of water from Sites Reservoir over a range of depths to manage release water temperatures.

From Funks Reservoir or the TRR, releases would be conveyed as follows:

- **Release for Sites Storage Partners Along the TC Canal and the GCID Main Canal** – Releases would be made to Funks Reservoir or the TRR and conveyed to the respective Sites Storage Partner via the existing TC Canal and GCID facilities.
- **Releases for Sites Storage Partners Along the Sacramento River** – Releases for Sites Storage Partners along the Sacramento River would generally be made via exchange as water from Sites Reservoir cannot be physically conveyed to any Sites Storage Partner on the Sacramento River between the GCID Hamilton City Pump Station and Knights Landing. Real-time exchanges, primarily with GCID, but also with Reclamation would be used for these Sites Storage Partners.
- **Releases for Sites Storage Partners Along the CBD, Yolo Bypass, and North Bay Aqueduct** – Releases for Sites Storage Partners, including some of the Proposition 1 water, would be made to Funks Reservoir. This water would then be conveyed down the TC Canal to the new Dunnigan Pipeline and released into the CBD. The water would then be conveyed down the CBD, through the Knights Landing Ridgecut, to the Yolo Bypass/Cache Sough Complex for Proposition 1 benefits or for diversion into the North Bay Aqueduct.

- **Releases for Sites Storage Partners South-of-Delta** – Releases for Sites Storage Partners who are located south of the Delta, including water for Incremental Level 4 Refuge water supply benefits under WSIP, can take a combination of different paths under all Action Alternatives. Releases could be made to Funks Reservoir, conveyed down the TC Canal to the new Dunnigan Pipeline and released into the CBD. This water would then be conveyed down the CBD, through the Knights Landing Ridgecut, to the Yolo Bypass/Cache Sough Complex and into the North Delta. Once in the Delta, this water could be diverted at any of the South Delta pumping facilities (SWP's Banks Pumping Plant, Reclamation's Jones Pumping Plant or Rock Slough Pumping Plant, or Contra Costa Water District's pumping plants) and conveyed to the respective Sites Storage Partner using existing conveyance facilities and mechanisms. Alternatively, once releases are in the CBD, they could be conveyed to the Sacramento River via the Knights Landing Outfall Gates. Once in the Sacramento River, these releases would enter the Delta and could be diverted at any of the South Delta pumping facilities. Releases for Sites Storage Partners who are located south of the Delta, including water for Incremental Level 4 Refuge water benefits under WSIP, may also be made by exchanges with Reclamation and DWR. Releases for Sites Storage Partners south-of-Delta would generally be made during July to November to coincide with available pumping capacity at the South Delta pumping facilities and would be subject to applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time.

Releases would be coordinated with Reclamation and DWR to ensure there are no conflicts with CVP and SWP operations and no adverse effects to the CVP and SWP. In addition, releases would be coordinated with Reclamation and DWR to ensure that there is available capacity to redivert releases at the South Delta pumping facilities for any releases that would be pumped at these locations. The majority of releases to the Sacramento River would occur when the CVP and SWP are in balanced conditions, that is releases from upstream reservoirs and unregulated flow approximately equal water supply needed to meet Sacramento Valley in-basin uses and CVP and SWP exports.

Sites Reservoir is currently estimated to have a dead pool of approximately 17,700 AF, below which water cannot physically be removed from the reservoir using the I/O Works. However, the Authority is currently planning to operate to a dead pool of 120,000 AF under normal conditions. The operational dead pool amount may be revised and reduced in final design. Sites Reservoir may also be drawn down below the operational dead pool in drought situations.

Coordination with CVP and SWP

Operations of all Action Alternatives would be coordinated with Reclamation and DWR to prevent conflicts with the CVP and SWP operations or add additional obligations on the CVP or SWP to meet applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time. The Authority is currently working with Reclamation and DWR to establish operating agreements with both agencies that would describe the details of the coordination and collaboration that would take place in the operations of the Project.

It is expected that the Project would also be incorporated into existing and future technical and advisory teams in which Reclamation and DWR participate in to coordinate the CVP and SWP operations with the regulatory agencies. This could include, but would not be limited to, the Sacramento River Temperature Task Group and Delta Operations for Salmon and Sturgeon Group. This would allow for better and more efficient coordination of the Project's operations, in concert with the CVP and SWP operations, with the regulatory agencies along with providing opportunities to work collaboratively to achieve species benefits in the Sacramento Valley and the Delta.

All of the Action Alternatives also include the possibility of exchanges of water with the CVP and SWP. Exchanges have the potential to assist the CVP and SWP in meeting their regulatory obligations. Exchanges are expected to primarily occur with Shasta Lake and Lake Oroville, but could also occur with Folsom Lake and real-time with local participants. Exchanges would only be conducted when they would be neutral or beneficial to CVP and SWP operations and not impact the ability of the CVP or SWP to meet applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time. Exchanges are described in more detail below.

- **Shasta Lake Exchanges** – Exchanges under the Project with Shasta Lake would be formulated to target cold-water pool preservation and anadromous fish benefits. Shasta Lake exchanges would occur in years when forecasted temperature-based mortality of early life stage winter-run Chinook salmon would be reduced if the exchange is in place. Under a Shasta Lake exchange, water would be released from Sites Reservoir in the spring to meet CVP purposes, including CVP water service and/or repayment contractors in the Sacramento Valley that could physically receive water from Sites Reservoir. By reducing releases from Shasta Lake in the spring, storage and the cold-water pool in Shasta Lake would be preserved for use later in the year, typically during critical months of the cold-water pool management season (August and September). In late-summer and fall (i.e., August through November), Reclamation would release an equivalent amount of water from Shasta Lake for Sites Storage Partners. All exchange water would be released from Shasta Lake in late summer and fall and no exchanged water would be carried over from year to year.
- **Lake Oroville Exchanges** – Exchanges under the Project with Lake Oroville would be formulated to facilitate Sites Project deliveries to Sites Storage Partners and refuges south of the Delta and may also improve cold-water pool conditions at Lake Oroville. Exchanges with Lake Oroville are expected to happen more frequently and would be driven by a variety of factors. Under a Lake Oroville exchange, water would be released from Sites Reservoir primarily in June and July to meet SWP purposes. By reducing releases from Lake Oroville in these months, storage and the cold-water pool in Lake Oroville would be preserved for use later in the year, typically during critical months of the cold-water pool management season (August and September). In late-summer and fall (i.e., August through November), DWR would release an equivalent amount of water from Lake Oroville for Sites Storage Partners. All exchange water would be released from Lake Oroville in late summer and fall and no exchanged water would be carried over from year to year.

- **Folsom Lake Exchanges** – Exchanges with Folsom Lake would be operated similarly to exchanges with Shasta Lake. Sites Reservoir would release water in the spring and early summer to meet CVP purposes in lieu of Reclamation releases at Folsom Lake. An equivalent amount of water would then be released from Folsom Lake in the late summer and fall for Sites Storage Partners. All exchange water would be released from Folsom Lake in late summer and fall and no exchanged water would be carried over from year to year.
- **Real-Time Exchanges with Local Participants** – To support timing of releases and deliveries to Sites Storage Partners north and south of the Delta, in-lieu exchanges with local participants may occur. This type of exchange is most likely to occur with GCID, but could also occur with Sacramento River Settlement Contractors and Reclamation. Instead of diverting all of its CVP supply from the Sacramento River, the contractor would receive a portion of its CVP supply from Sites Reservoir. A portion of the water released from Shasta Lake to meet the contractor's CVP supply would be left in the Sacramento River (not diverted by the contractor) and used for other Sites Storage Partners.

Funks Creek and Stone Corral Creek Releases

The Project includes releases from Sites Reservoir into both Funks and Stone Corral Creeks. These releases would be made to comply with California Fish and Game Code Section 5937 and ensure no harm to downstream water right holders on these creeks. At this time, access to the creeks is restricted and there is not sufficient existing information on these two creeks, including current fish assemblage, channel capacity, and existing habitat, to determine a specific release pattern or approach to releases into these two creeks. Field studies would be conducted once access is obtained and before final design for Sites and Golden Gate Dam is completed to determine the following:

- Existing fish assemblage in these creeks, including fish species presence and habitat use;
- Characterization of habitats available (e.g., spawning, rearing, foraging, and sheltering habitats) at varying flow levels;
- Characterization of flows, including assessing the base flow during the summer months;
- Conducting a fluvial geomorphologic study to characterize bed load and flow levels necessary for mobilization; and
- Hydrological studies to define flow temperature relationships.

Using information from these field studies, along with currently available information, the Authority would prepare a Funks and Stone Corral Creeks Operations Plan that would identify the approach for releases, including release schedule and volumes, a monitoring plan, and an adaptive management plan to maintain fish in good condition consistent with California Fish and Game Code Section 5937. Releases into these creeks need to be made in consideration of the flood control benefits of the Project and in such a way as to not overtop the stream banks and flood downstream areas.

Water released into Funks Creek would be made through the transition manifold at the base of Golden Gate Dam and a new pipeline that terminates at Funks Creek below Golden Gate Dam. These facilities are currently being designed to carry up to 100 cfs with a release range of 0 to 100 cfs into Funks Creek. Water released into Stone Corral Creek would be made through the permanent outlet at Sites Dam. This outlet is currently being designed with a release range of 0 to 100 cfs, with an emergency release capacity of up to 2,500 cfs.

Flood Control

All Action Alternatives would provide flood damage reduction benefits to the communities of Maxwell and Colusa, local agricultural lands and rural homes and I-5 by impounding Funks Creek and Stone Corral Creeks. These flood control benefits are inherent in the design of the Project and no specific operational criteria are necessary to achieve these benefits.

Emergency Release

All Action Alternatives include the design and operation of facilities to meet DSOD criteria and requirements for emergency reservoir drawdown. During an emergency release event, Saddle Dams 3 and 5 (Alternative 1 and 3) and Saddle Dam 8B (all Action Alternatives), the I/O Works, and Sites Dam would operate simultaneously to release water. Once the water level fell below the levels of the saddle dam intakes, the I/O Works and Sites Dam would operate solely to release the remaining water. The emergency releases would be in accordance with DSOD requirements and would occur as follows:

- Under Alternative 1 and 3 only, the emergency release structures at Saddle Dams 3 and 5, located at the north end of the reservoir, would release water into the Hunters Creek watershed. These two structures could only be used during the emergency drawdown in the first 7 days, at a rate of 1,000 and 1,200 cfs, until the water level fell below their outlet.
- Under All Action Alternatives, the spillway on Saddle Dam 8B would also release to Hunters Creek. The size of the spillway would accommodate the peak outflow of a PMF event or the steady-state flow if an over-pumping event occurred. The design and size of the spillway assumed that a PMF overflow event and an over-pumping event have a very low probability of simultaneous occurrence.
- The permanent outlet on Sites Dam would release to Stone Corral Creek at a maximum rate of approximately 2,500 cfs.
- The I/O tunnels would release to Funks Reservoir and TRR at a rate of 16,000 cfs, with 9,000 cfs being discharged to Funks Reservoir and 7,000 cfs to the TRR with a maximum velocity of 40 feet per second in the pipelines. To achieve the flows needed for the emergency releases, the velocities in the pipes would exceed the 20 cfs criteria normally used by Reclamation. Discharges to the Funks Reservoir would be accommodated because its spillway is designed for 22,000 cfs which is greater than the 16,000 cfs emergency drawdown flow. The TRR would need to be designed with a spillway into Funks Creek of roughly 7,000 cfs to allow for this. Additional energy dissipation structures at Funks Reservoir and the TRR would be required for the emergency flows.

2.5.2.2 Energy Generation and Energy Use

All Action Alternatives would require power to run facilities and pump water and would also generate incidental power. The pumping energy requirements and power generation are summarized in Table 2-6 and Table 2-7 for all Action Alternatives.

Table 2-6. Pumping Summary for All Action Alternatives

Site	Net Pumping Power (MW)	Other Auxiliary Loads (MW)	Transformer and T Line Losses (MW)	Total Pumping Power (MW)	Total Pumping Power @ 0.85 PF (MVA)
Funks	67.1	1	0.1	68.2	80.2
TRR	75.4	1	0.1	76.5	90.0
Total	142.5	2	0.2	144.7	170.2

Notes:

MW = megawatts; PF = power factor; MVA = megavolt amperes

Table 2-7. Generating Summary for All Action Alternatives

Site	Net Generating Power (MW)	Other Auxiliary Loads (MW)	Transformer and T Line Losses (MW)	Total Power Generation (MW)	Total Power Generation @ 0.85 PF (MVA)
Funks	48.1	1	0.1	47.0	55.3
TRR	27.4	1	0.1	26.3	31.0
Total	75.5	2	0.2	73.3	86.2

Notes:

MW = megawatts; PF = power factor; MVA = megavolt amperes

All Action Alternatives would generate incidental power only when water is released from Sites Reservoir at the Funks and TRR PGPs. Power generation would be limited to 40 megawatts per facility and as such, would not require a Federal Energy Regulatory Commission license per the "Qualifying Conduit Hydropower Facility" under the Hydropower Regulatory Efficiency Act of 2013, as amended by America's Water Infrastructure Act of 2018. All Action Alternatives would include electrical substations at Funks Reservoir and the TRR. These substations would service a net pumping energy demand estimated at 80 megavolt amperes (MVA) at Funks Reservoir and 90 MVA at the TRR (i.e., 170 MVA of demand load total). Because of the size of the pumping units, no backup generation is planned for pumping facilities.

While hydropower generation would be an incidental benefit of conveying water through specific Project facilities and would be influenced by the timing of releases and movement of water and seasonal operational decisions, the Authority would work to schedule releases and outages such that it sought to maximize power generation to offset the Project's power needs. Additional operations power needs beyond those generated by the Project would be purchased from market sources, with a target of purchasing at least 60% of the Project's operations power needs from renewable, carbon-free sources from the start of operations to 2045. Starting in

2045, the Authority would target purchasing 100% of the Project's operations power needs from renewable, carbon-free sources. This target does not include any operational power needs attributable to Reclamation's participation, including the conveyance and pumping of Incremental Level 4 Refuge water supply.

2.5.2.3 Facility Operations and Maintenance

Operations and maintenance activities for all facilities, including recreational areas, would include debris removal, vegetation control, rodent control, erosion control and protection, routine inspections (dams, tunnels, pipelines, PGPs, I/O Works, fencing, signs, and gates), painting, cleaning, repairs, and other routine tasks to maintain the facilities in accordance with design standards after construction and commissioning. Routine visual inspection of the facilities would be conducted to monitor performance and prevent mechanical and structural failures. The Authority would implement operations and maintenance BMPs that are described in Section 2.5.4, *Project Commitments and Best Management Practices Common to All Alternatives*.

The RBPP has an established operations and maintenance plan. The two new pumps at the facility would be incorporated into the existing plan and operated and maintained as part of the overall activities at the facility. Improvements to the GCID facilities would likewise be incorporated into GCID's regular operations and maintenance activities.

Operations and maintenance activities unique to the TRR include daily visual inspections, setting and checking water control structures, annual and five-year dam safety inspections, quarterly vegetation and weed abatement and rodent control, annual preventative leak location surveys and evaluations of the reservoir liner, instrumentation monitoring and maintenance, and annual debris removal at the spillway outfall to Funks creek. Replacement of the TRR liner may be needed on an infrequent basis. Operations and maintenance activities unique to the TRR and Funks pumping plants and hydroelectric turbines would include greasing, painting, oiling, and generally keeping the pumps in good operating condition. Activities would also include annual inspections of pumps, interior coating condition inspection, pump leakage inspections, temperature and pressure checks, and clean exterior surfaces and check for leaks. Repair and replacement of pump components would be needed on a periodic basis. Monthly brake airline filter and lubricator inspection and maintenance would also be completed at the hydroelectric turbines. Energy dissipating units would be visually inspected and lubrication of bearings would be conducted on an as needed basis.

Operations and maintenance activities unique to the electrical switchgear include visual and mechanical inspections, moisture and corrosion inspections, general wiring checks, and insulator and barrier checks. A series of tests would be conduction on regular intervals, including but not limited to insulation electrical test, control wiring electrical tests, circuit breakers and switch tests, system function tests, and surge arrestor tests. Electrical switchgear would be maintained, repaired or replaced as needed to continue safe and efficient operations.

Pipelines and tunnels would be inspected at least every 5 years and remote operated vehicle (ROV) inspections would be acceptable. ROV inspections would not require dewatering the tunnels or pipelines. If physical inspections of tunnel interiors would be required, the tunnels would be completely shut down. Tunnel inspections may be completed during normally

scheduled shutdowns when water is not being conveyed in or out of the reservoir. The tunnel shutdown duration could run from a few days (inspection) to 2 weeks (if maintenance is required).

Different components of the I/O Works would need to be inspected and maintained at varying frequencies. Any port gate that was not operated in a given year based on reservoir level would be functionally tested at least once during that year. In general, pipeline appurtenances (e.g., air/vacuum valves, blowoffs) would be inspected and functionally tested where possible annually. Most of the mechanical components in the multi-level I/O tower could be functionally tested and/or maintained without requiring a shutdown (as there would be multiple tiers from which to draw water).

Maintenance of access roads includes replacing gravel or scraping and filling of ruts to keep the roads in good condition along with pavement replacement and repair for paved roads. Minor structures maintenance includes repair or replacement of gates, locks or fences, painting gates, replacing lost or damaged signage, and lubricating gates.

Maintenance of lands could include grading fire breaks/trails, maintaining vegetation (e.g., grazing, tilling, or disking), and performing limited prescribed/controlled burns.

In general, operations and maintenance activities could occur on a daily, annually, periodically (as needed), and long-term basis. It is estimated that 45 operations and maintenance workers would be needed to perform operations and maintenance activities (based on three shifts per day, 365 days a year).

2.5.2.4 *Operations and Management Plans*

The Authority would develop and implement a number of operations and management plans to govern the operations and maintenance activities of Project. These plans are described below.

Reservoir Operations Plan

The Reservoir Operations Plan would describe the management of water operations, including releases into Funks and Stone Corral Creeks. This plan would include but may not be limited to the following:

- **Diversions to Sites Reservoir** – Mechanics on how diversions are scheduled and managed, including diversion criteria and operating requirements for diversions.
- **Storage in Sites Reservoir** – How losses and evaporation are accounted for, how exchanges and transfers are managed (both between Sites Storage Partners and with non-Sites Storage Partners), and the process for leasing or sharing storage space.
- **Releases from Sites Reservoir** – When and how water can be released to each facility, how release orders are made and adjusted, and how releases are prioritized when necessary.
- **Flows in Funks and Stone Corral Creeks** – Release operations for releases into Funks and Stone Corral Creeks.

- **Flood Control and Health and Safety Considerations** – Descriptions of how emergencies should be handled and processes for notification in the event of emergencies. Emergency flow releases will be addressed in an Emergency Action Plan.

A draft of the Reservoir Operations Plan is expected to be completed in late 2021, with additional refinements and subsequent drafts as operational components are finalized (such as final permit conditions and agreements with Reclamation and DWR are completed). A complete Reservoir Operations Plan would be prepared at least one year prior to Project operations being initiated.

Reservoir Management Plan

The Reservoir Management Plan would describe the management of water resources within Sites Reservoir. This plan would include but may not be limited to the following:

- **Fisheries Management** – Target fisheries species composition and management activities for Sites Reservoir, including stocking strategies (if any), habitat enhancement measures, and monitoring efforts.
- **Reservoir Water Quality** – Baseline water quality metrics, standards, testing and monitoring protocols.
- **Vector Management** – Protocols and practices for communicating/coordinating with vector control authorities and determining how vector control would be managed at Sites Reservoir and the TRR.

The Reservoir Management Plan would be completed at least one year prior to Project operations being initiated.

Land Management Plan

The Land Management Plan would describe the management and maintenance activities on all non-recreation land resources held in fee or easement by the Authority. This plan would include management actions for buffer areas and the specific type and frequency of maintenance activities by location. Land management, maintenance, and monitoring actions for any mitigation areas owned by the Authority would also be described. The Land Management Plan would be completed within a year of the first fee title acquisition by the Authority and would be amended as needed as additional lands are acquired.

Recreation Management Plan

The Recreation Management Plan would describe the types, management, maintenance and monitoring activities on all Project recreation lands and areas. Development of the Recreation Management Plan would be coordinated with Colusa and Glenn counties and the local police, fire, and emergency response entities and organizations to ensure appropriate emergency response resources are available to respond to recreation emergencies. The Recreation Management Plan would be completed at least one year prior to the opening of Project recreational facilities.

Initial Reservoir Fill Plan

The Initial Reservoir Fill Plan would describe the monitoring program for Sites and Golden Gate Dams along with the saddle dams, saddle dikes, and areas around the reservoir that would be implemented during the initial filling of Sites Reservoir. The Initial Reservoir Fill Plan would be completed as part of the DSOD approval process and would be completed at least one year prior to beginning to fill Sites Reservoir.

Standard Operating Procedures

The Authority would prepare Standard Operating Procedures for all major Project facilities. These Standard Operating Procedures would include operational guidelines for facilities along with a schedule for inspection, monitoring and maintenance. The Standard Operating Procedures are expected to be completed as part of the DSOD approval process and would be completed prior to beginning operations of the specific Project facility.

Security Plan

The Authority would prepare a Security Plan for all major Project facilities. Preparation of the Security Plan would be coordinated with local, state, and federal law enforcement agencies to ensure a comprehensive security review and assessment along with appropriate security measures implemented for all major Project facilities. The Security Plan is expected to be completed as part of the DSOD approval process and would be completed during final design.

Emergency Action Plan

Consistent with California Water Code sections 6160, 6161, and 6002.5, an Emergency Action Plan would be prepared and submitted to the Governor's Office of Emergency Services (CalOES). The Emergency Action Plan would comply with SB 92 and CalOES's Emergency Action Plan requirements. The Emergency Action Plan would include, but may not be limited to the following: summary of responsibilities; notification procedures and flowchart; emergency response process; preparedness for different emergencies; and potential inundation mapping. The Emergency Action Plan would also identify the frequency for desktop and full exercises to prepare for emergencies.

2.5.3 Construction Considerations Common to All Action Alternatives

This section summarizes the activities associated with construction of the Project. Appendix 2C, Construction Means, Methods, and Assumptions, provides additional detail regarding the construction means and methods for various facilities that are ultimately incorporated into the impact analysis throughout Chapters 5 to 31 of this document.

2.5.3.1 Geotechnical Investigations

To support the engineering and final design of all facilities, the Authority would undertake preconstruction geologic, geotechnical, and geophysical investigations and testing. These geotechnical investigations and associated testing would also be required to support DSOD permitting processes. The investigations would be implemented in various locations in and around the footprints of the various facilities. Proposed investigations would be focused in areas where additional or updated data are needed for engineering cost refinement, for design, and to prepare permit applications. Depending on the time of year these activities would take place,

almost all of the geotechnical borings and geophysical work areas would require biological monitoring and/or some pre-activity clearance assessment and/or surveys due to their proximity to sensitive biological resources, particularly because the precise location of each individual investigation within its associated project feature has not been determined. The site-specific geotechnical investigations would include surface geologic mapping and surface and subsurface geophysical investigations as described below.

- Surface geologic mapping would generally involve noninvasive evaluation and documentation of geologic features and topography and would consist of soil mapping, walking surveys, and geophysical surveys.
- Surface geophysical investigations would generally involve non- or minimally invasive surface testing, such as seismic, gravitational, magnetic, electrical, and electromagnetic testing, and documentation of surface and subsurface site characteristics.
- Subsurface geotechnical investigations would involve surface and subsurface evaluation and documentation of site characteristics using test pits, borings and cone penetration test (CPT) probes, and fault trenching for different facilities.
    - All subsurface geotechnical investigation techniques would require some degree of ground disturbance, including spot leveling of areas directly below truck leveling jacks and holes measuring 2 to 10 inches in diameter through which augers and sampling equipment would be lowered to collect subsurface data and samples. Some drilling locations would require a bulldozer to create temporary roads for drill rig access. Test pits would be roughly 10 to 12 feet deep, and fault trenching would vary roughly 10 to 30 feet deep.
    - Borehole drilling would be performed using a drill rig that utilizes a combination of pilot bit, hollow stem flight augers, and rotary diamond core drilling. The hollow stem augers would likely have 8.5-inch outer diameter, and 4.25-inch inner diameter, with a 5-foot-long split tube inner barrel for dry core sample collection. Standard Penetration Test samplers may also be used at 5-foot intervals. All drill cuttings and any drilling fluids would be contained onsite in drums or bins and removed from the site to an existing permitted landfill or waste treatment facility. The temporary disturbance area would be approximately 20 by 50 feet (0.025 acre). Once each boring is complete, augers and testing equipment would be removed, the boring grouted and capped with soil, and the area cleared of work items (as required by permit requirements and at a minimum in accordance with California regulations and industry standards [Water Well Standards, DWR 74-81 and 74-90]). The permanent disturbance area would be approximately 1 square foot per borehole, except where a bulldozer created a larger area to access some locations.
    - CPTs are minimally invasive and consist of a specialized vehicle that inserts a 1.7-inch-diameter cone (probe) into the ground with a hydraulic direct push system. The temporary disturbance area would be approximately 20 by 50 feet (0.025 acre). Once each test is complete the rod would be retracted, the hole grouted and capped with soil, and the area cleared of work items (as required by permit requirements and at a minimum in accordance with California regulations and industry standards [Water

Well Standards, DWR 74-81 and 74-90]). The permanent disturbance area would be approximately 1 square foot per borehole.

Activities at most investigation areas would require approximately five personnel, including a driller/operator and one to two assistants, a utility locator, and a geologist/engineer to log the conditions encountered. Biological and cultural monitoring could also be required based on biological and cultural sensitivity and the type of activity being conducted. Each geotechnical investigation site would be active for a period ranging from 1 workday for CPT probes to 10 workdays for deep drill holes.

Additional details regarding geotechnical investigations for several of the key facilities are discussed below.

I/O Works

The investigation footprint for the I/O Works would encompass the area around each portal, at the I/O tower, and along each tunnel alignment. Geotechnical work would occur within the footprint of the construction area for these facilities. It is assumed that a boring would be required every 500 feet between the two I/O tunnel alignments and that each boring would extend two tunnel diameters below the tunnel invert, for a depth of approximately 70 feet.

A seismic fault study would map the faults adjacent to the I/O Works and ensure the location of the alignment would minimize fault crossings. The geotechnical investigation footprint for the seismic fault study would encompass the area between the mapped faults and I/O Works.

Current access to the site is limited given the existing topography and lack of access roads. It is assumed that track-mounted drill rigs would be used for the accessible locations and helicopters would be required to transport drill rigs to remote locations.

Dams and Reservoir

The dam foundations and reservoir rim would be the subject of specific geotechnical investigations. The investigations for the dams would involve geologic mapping, geophysics, borings, test pits, test excavations, and fault trenching. In-situ testing would include downhole geophysics (suspension and televiewer), packer testing, and dilatometer use. Piezometers would be installed at select locations to collect data on groundwater depth.

Objectives for the dam foundation and reservoir rim would differ. The objectives of the dam foundation exploration would be to evaluate excavation methods, excavated material use for dam construction, dewatering requirements for foundation excavation, foundation deformability, hydraulic conductivity and strength, foundation treatment, and foundation grouting/cutoff requirements. The dam foundation exploration objectives would also be to confirm fault locations and fault rupture potential. The objective of the exploration of the reservoir rim would be to evaluate seepage and stability. This investigation would use geologic mapping, geophysical investigations, and borings. In-situ testing would include downhole geophysics (televiewer) and packer testing.

Laboratory testing for the dam foundation and reservoir rim may include point load and unconfined compression on rock and index testing of soils. Laboratory testing for the rim of the reservoir may also include testing of remolded joint/shear material for strength evaluation.

Onsite Borrow Areas

The onsite borrow areas would have specific geotechnical investigations.

The objectives of the exploration for the borrow areas would be to confirm that the volume of materials available is at least 1.5 times the volume required and to evaluate excavation methods, excavation slopes at borrow locations, dewatering for borrow excavations, volume of materials generated from excavation, material types generated by excavation, requirements for processing of materials, properties of materials when placed and compacted in the dams, use of rock for riprap and aggregates, and types and volumes of materials generated from required excavations (i.e., at proposed locations of dams, structures, and tunnels).

The investigations for the borrow areas would involve geologic mapping, geophysics, borings, test pits, test excavations, test blasting and test fills. In-situ testing would include downhole geophysics (suspension and televiewer) and rippability studies. Laboratory testing would include point load and unconfined compression on rock and index testing of soils. Laboratory testing would also involve testing remolded samples for compaction, strength, permeability, compressibility, and erosion potential. Test fills would be performed on rockfill and random fill materials.

2.5.3.2 Land Acquisition and Resident Relocation Program

Prior to initiation of construction activities, land acquisition or establishment of temporary or permanent easements on private properties would be required. Overall, construction is expected to take approximately 6 years for reservoir facilities and 2 years for conveyance facilities. Construction of the reservoir facilities and the conveyance facilities would be conducted concurrently for a total construction duration of 6 years. Several factors could affect this anticipated schedule. Additional adjustments to the schedule would be addressed as required during Project development and implementation.

2.5.3.3 Additional Biological Surveys

After land acquisition and prior to construction actions, the Authority would complete additional biological surveys to confirm mapped habitat types and determine the presence/absence of biological resources including, but not limited to, special-status species, state and federal waters, sensitive plant communities and other applicable resources identified as sensitive by state, and/or federal agencies and discussed in Chapter 9, *Vegetation Resources*; Chapter 10, *Wildlife Resources*; and Chapter 11, *Aquatic Biological Resources* of this document. The Authority would use this information to assess the need for further technical studies (such as protocol surveys) and/or consultations with USFWS, CDFW, U. S. Army Corps of Engineers and/or State and Regional Water Quality Control Boards and identify resources that would be avoided during construction. In addition, the Authority would use this information to determine final mitigation types and acres for those areas that cannot be avoided.

2.5.3.4 Cultural Resources Management Plan

The Authority will develop and implement a Cultural Resources Management Plan prior to construction activities to guide the overall technical cultural resources efforts during construction activities. The Cultural Resources Management Plan will include, but not be limited to, a research design for the evaluation of known and predicted resources in the study area, methods used to assess the Project's effects to resources found prior to and during construction, procedures for the curation of recovered materials, procedures to be followed in the event of unanticipated discoveries, and procedures for the recovery and treatment of Native American and Non-Native American human remains. The Cultural Resources Management Plan is expected to be reviewed by the signatory parties to the Project's Programmatic Agreement under Section 106 of the National Historic Preservation Act.

2.5.3.5 Cemetery Relocation

Two private cemeteries in the inundation area would be relocated to a site approved for interment of human remains per requirements of the California Health and Safety Code (HSC § 7500-7527). The code requires a written order from the local health department or county superior court before human remains in a cemetery may be moved. The disinterment, transportation, and removal of human remains is subject to rules and regulations adopted by the board of health or health officer of the county.

2.5.3.6 Construction Disturbance Areas and Access

Construction activities would be confined to designated construction disturbance areas. These areas would also be used for construction vehicle and equipment parking and construction material storage. Special or sensitive sites near construction disturbance areas would be clearly marked (e.g., with temporary fencing, staking and flagging, pylons) prior to construction initiation. Construction personnel would be trained to recognize these markers and understand the equipment movement restrictions involved. Marking materials would be maintained until final cleanup and/or site restoration is completed, after which they would be removed. Potential staging areas would be located near each of the facilities. Construction-related traffic and local access routes are described in Section 2.5.1.7, New and Existing Roadways.

Demolition

Demolition would take place within the reservoir inundation area once lands are acquired. Demolition would include 20 houses, 25 barns, and 40 other structures (i.e., sheds, silos, and pump house); removal of existing septic tanks and other underground storage tanks; and removal of existing roads, fences, and other utilities. Demolition debris would be reused and recycled to the extent possible. Any materials not recyclable would be transported and disposed of at an approved landfill(s).

No demolition or relocation would be required for the TC Canal diversion, TRR-related facilities, Funks Reservoir-related facilities, or facilities associated with conveyance to the Sacramento River (i.e., TC Canal intake, Dunnigan Pipeline, or CBD outlet).

Clearing, Grubbing, and Topsoil Preservation

Clearing and grubbing would be required in the inundation area footprint and for most built facilities (i.e., dam facilities, I/O Works, Funks Reservoir facilities, TRR facilities, and Dunnigan Pipeline) and would entail removing and disposing of woody vegetation. This work is estimated to occur over 3 years. Materials cleared and grubbed would be composted, reused, placed in the reservoir inundation area to provide future fish habitat, or recycled to the extent possible.

Prior to construction, measures would be taken to preserve topsoil. In the inundation area where disturbance would occur, the topsoil material would be excavated, stockpiled separately, and used in one of several ways: for restoration of temporary work areas outside the inundation area, for support of native or naturalized plant species around a facility following construction, or for placement in agricultural areas. In the irrigated agricultural areas around the TRR and Dunnigan Pipeline, topsoil would be removed, stored, and replaced in areas of orchards, row crops, and rice fields. The topsoil would be restored so it has the same composition except where it is located on permanent maintenance roads. In the rangeland areas between the TRR and Funks Reservoir along the TRR pipeline route, the topsoil would be removed, stored, and replaced. This soil would be used to restore the rangeland to its same composition, except where it is located on permanent maintenance roads. The commercial area between I-5 and SR 99 would be restored to the pre-construction condition (i.e., unpaved large lot).

2.5.3.7 Construction Duration, Timing, and Sequence

Construction may start as early as spring 2024, depending on the timing of funding, design, and permitting. Initial activities would include developing the Sites Reservoir inundation area, constructing the access roads, and realigning/constructing the Sites Lodoga Road or South Road. Durations of construction were based on production rates associated with the anticipated equipment types needed for construction.

Construction of the Project components would generally be expected to occur in the sequence shown in Table 2-8 and detailed in Appendix 2C, Construction Means, Methods, and Assumptions. Some construction activities would be concurrent with the road relocations, but the existing Sites Lodoga Road and Huffmaster Road would not be closed until the road realignments were completed.

Table 2-8. General Construction Timing and Sequencing

Task Name	Duration	Start	Finish
Reservoir Site Development			
Reservoir Footprint Mitigation Actions	500 days	Q3 2025	Q2 2027
Site Access & Staging Development	100 days	Q3 2025	Q1 2026
Demolition & Clearing	100 days	Q3 2025	Q1 2026
Roads and Bridge			
Northern Construction Access Roads	284 days	Q3 2024	Q3 2025
Southern Construction Access Roads	274 days	Q3 2024	Q3 2025
Sites Lodoga Road Realignment and Bridge	680 days	Q3 2024	Q2 2027

Task Name	Duration	Start	Finish
Huffmaster Road Realignment	801 days	Q3 2024	Q3 2027
Process & Haul Filter Materials to Project	1180 days	Q1 2025	Q3 2029
Dams and Dikes			
Golden Gate Dam	1195 days	Q3 2024	Q2 2029
Sites Dam	956 days	Q3 2025	Q1 2029
Saddle Dam 3	771 days	Q3 2025	Q3 2028
Saddle Dam 5	821 days	Q3 2025	Q4 2028
Minor Saddle Dams (1, 2, 6, 8A)	711 days	Q4 2025	Q3 2028
Saddle Dam 8B - Spillway	257 days	Q4 2025	Q4 2026
Emergency Release Structure No. 1	285 days	Q4 2025	Q1 2027
Emergency Release Structure No. 2	410 days	Q1 2026	Q4 2027
Inlet Outlet Facilities	1015 days	Q4 2025	Q3 2029
Conveyance to Sacramento River			
Dunnigan Pipeline - Alt 1	355 days	Q3 2024	Q1 2026
Dunnigan Pipeline - Alt 2	505 days	Q2 2024	Q1 2027
Regulating Reservoirs and Conveyance			
Funks/TRR Pipelines	965 days	Q1 2025	Q4 2028
Funks Reservoir	523 days	Q2 2025	Q2 2027
Funks Pumping Generating Plant	1062 days	Q2 2025	Q2 2029
TRR East Reservoir	780 days	Q3 2025	Q3 2028
TRR East Pumping Generating Plant	1010 days	Q3 2025	Q4 2028
Transmission Powerlines	875 days	Q2 2025	Q3 2028
Substations	755 days	Q1 2026	Q1 2029
Sacramento River Diversion and Conveyance			
Red Bluff Pumping Plant Improvements	560 days	Q1 2025	Q1 2027
GCID Improvements	680 days	Q2 2025	Q4 2027

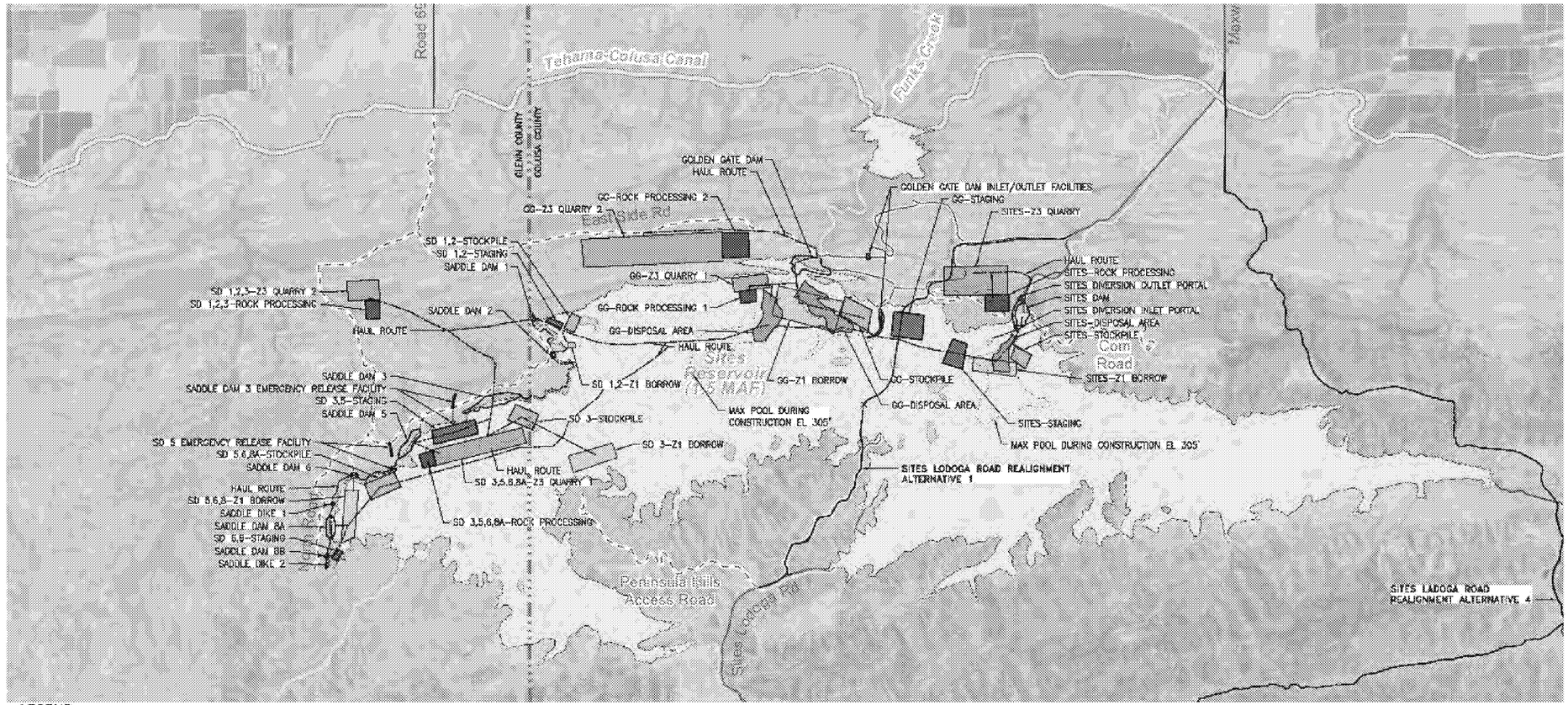
Table Notes
Q = Quarter

The general sequence of nonroad construction would begin with Golden Gate Dam, the I/O Works, and Dunnigan Pipeline, followed by Sites Dam, the larger saddle dams, regulating reservoirs and most associated facilities and pipelines. These facilities would be constructed over several years. Construction of the emergency release structures and substations would be initiated last in the sequence. The recreation areas would be completed after construction of the main dams and saddle dams and generally concurrently with the regulating reservoirs and conveyance complex for a period of 2 years (expected between 2025 and 2027).

Construction within 1,000 feet of occupied residences would be restricted between 10:00 p.m. and 7:00 a.m. to eliminate potential noise concerns. Construction in areas beyond 1,000 feet of occupied residents may occur 24 hours a day, 7 days a week.

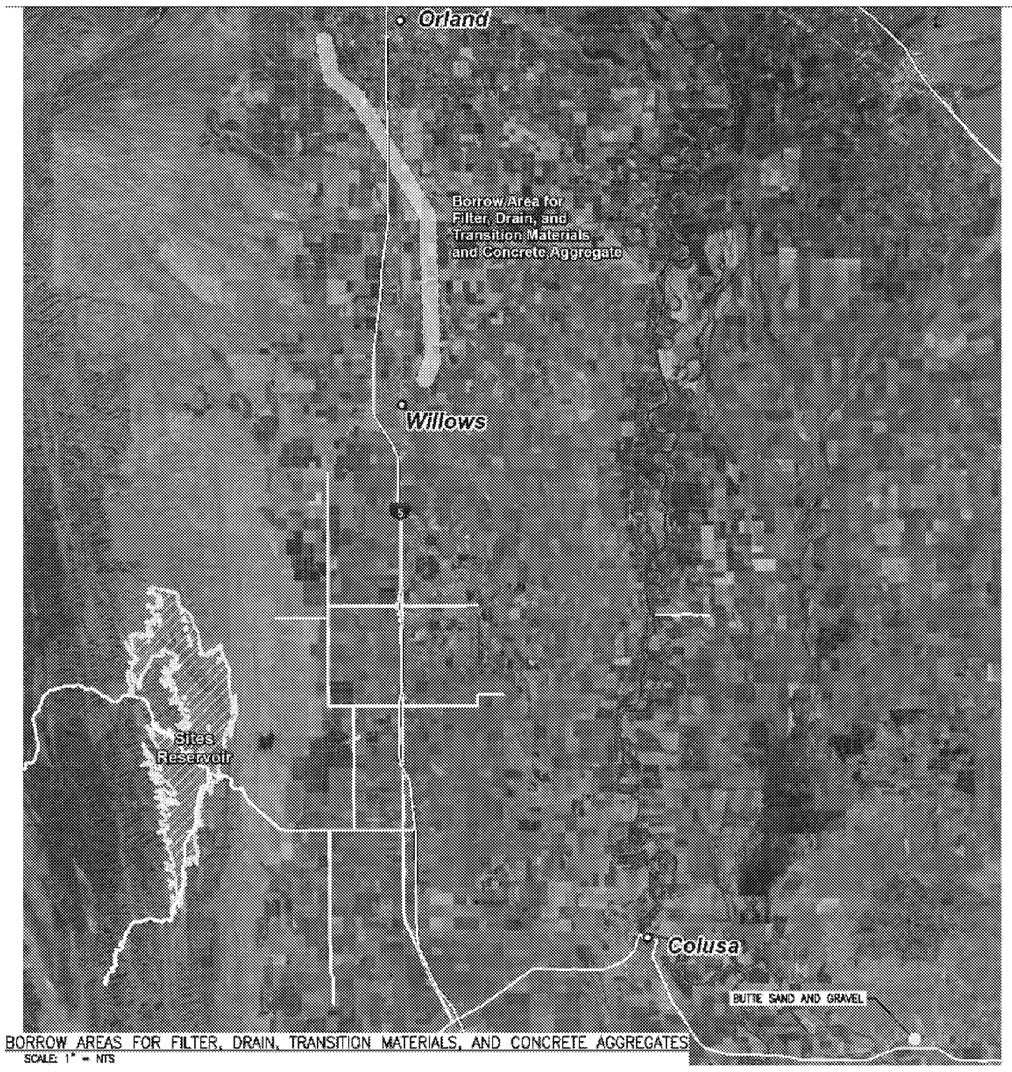
2.5.3.8 Borrow Areas and Quarries

It is anticipated that all earth and rockfill for the reservoir facilities (approximately 80% of materials required) would come from onsite sources (within the Sites Reservoir area or just outside Antelope Valley) and all aggregate for dam construction (approximately 20% of material required) would be obtained from offsite commercial sources. Figure 2-38 shows potential onsite sources and Figure 2-39 shows potential offsite commercial sources.



Source: AECOM, 2020
Drawing No. STS-315-C-2003

Figure 2-38. Onsite Borrow Area Details



Source: AECOM, 2020
Drawing No. STS–315–C–2002

Figure 2-39. Offsite Aggregate Areas

2.5.3.9 Construction Utilities

Approximately 750,000 to 1,000,000 gallons/day (500 to 700 gallons per minute) would be needed for constructing the Golden Gate Dam, Sites Dam, saddle dams, saddle dikes, and I/O Works over a period of 4 years. As such, a total of approximately 3,360 acre-feet per year (AFY) to 4,480 AFY would be required over the 4 years. Approximately 75,000 gallons per day would be required for conveyance facilities over a period of 4.5 years. This water would be obtained from three potential sources: existing surface water from the Sites Storage Partners pursuant to existing water rights agreements; existing groundwater wells in the Sites Reservoir inundation area; and new groundwater wells in the Sites Reservoir inundation area. Batch water treatment plants would be used to treat water, as necessary, for the intended use. Construction water would be reused to the extent possible.

Anticipated construction energy needs are shown in Table 2-9.

Table 2-9. Estimated Temporary Construction Power Requirements

Location/Facility	Required Load, 3-Phase, KVA
Golden Gate and Sites Dams	
Contractor's and Owner's Office Complex	300
GG Quarry Feeder/Jaw for Rockfill	500
Sites Quarry Feeder/Jaw for Rockfill	500
GG Concrete Batch Plant	600
Sites Concrete Batch Plant	600
Contractor's Shop Complex	300
Saddle Dams	
Contractor's and Owner's Office Complex	300
Saddle Dams Quarry Feeder/Jaw for Rockfill	500
Concrete Batch Plant	600
Contractor's Shop Complex	300
Inlet-Outlet Facilities	
Contractor's and Owner's Office Complex	300
Concrete Batch Plant	600
Contractor's Shop Complex	200
Roads	
Contractor's and Owner's Office Complex	300
Asphalt Batch Plant	600
Contractor's Shop Complex	200
Conveyance	
Contractor's and Owner's Office Complex (3)	300 each
Concrete Batch Plant & CDSM Batch Plant	600 each

2.5.3.10 Batch Plants

For dam construction, batch plants would be established in the inundation area of the Sites Reservoir or in staging areas outside the inundation area near various reservoir facilities. Concrete batch plants would be necessary for the I/O Works, Golden Gate Dam, Sites Dam, diversions, saddle dams, and the bridge crossing the reservoir. Asphalt batch plants would be used for paving activities of public access and maintenance roads.

A concrete batch plant is equipment that combines water, admixtures, sand, aggregate, fly ash and cement to form concrete. In general, the concrete batch plant is anticipated to have the following features: mobile or semi-mobile (modular stationary) plants; capacity of 100 to 500 cubic yards per hour; at least three aggregate feed bins; and computerized batching/proportioning.

An asphalt batch plant is equipment that combines aggregate and asphalt to form asphalt to be used for road construction. In general, the asphalt batch plant is anticipated to have the following features: mobile or semi-mobile (modular stationary) plants; drum mixer type plant, but could be a weigh-batch type; capacity of 200 to 500 tones per hour, but could be lower for some of the smaller portions; at least four aggregate feed bins; and computerized batching/proportioning.

2.5.3.11 Construction Traffic and Equipment

Approximately 1,700 construction personnel would be working at the peak of construction. 1,000 of these personnel would be involved with reservoir facilities and 700 would be working on conveyance facilities. Expected highway truck trips per day associated with construction will range from 0.5 for installation of the new pump at the RBPP to 360 estimated trips for the construction of dams, dikes and other reservoir-related activities. Similarly, personnel vehicle trips associated with the same facilities will range from 2 to over 600 per day. Estimated vehicle trips per day for all construction activities are included in Appendix 2C.

Construction workers would likely commute to construction sites from regional population centers such as Maxwell, Willows, Orland, Williams, and Colusa, and from other northern California counties when specialty trades or skillsets are not available regionally.

Daily construction traffic would consist of trucks hauling equipment and materials to and from the worksites and the daily arrival and departure of construction workers. Construction traffic on local roadways would include dump trucks, bottom-dump trucks, concrete trucks, flatbed trucks for delivering construction equipment and permanent project equipment, pickups, water trucks, equipment maintenance vehicles, and other delivery trucks. Dump trucks would be used for earth moving and clearing, removal of excavated material, and import of other structural and paving materials. Other delivery trucks would deliver construction equipment, job trailer items, concrete-forming materials, reinforcing steel and structural steel, piping materials, foundation piles and sheet piling, sand and gravel from offsite sources, new facility equipment, and other construction-related deliveries. Construction equipment/materials would not be permitted to pass through the community of Maxwell on the Maxwell Sites Road.

2.5.3.12 In-Channel Construction

Cofferdams would be required along Stone Corral and Funks Creeks for construction of Sites Dam and Golden Gate Dam, respectively. The cofferdams would be incorporated into the upstream toe of the embankment dams and would be constructed of material likely derived from the excavation of the dam foundations. The crest of the cofferdams would be set at elevation 310 feet (5 feet above highwater during construction). The Sites Dam would require approximately 260,000 cubic yards of Zone 4 fill for the cofferdam in Stone Corral Creek, and the Golden Gate Dam would require approximately 800,000 cubic yards of Zone 4 fill for the cofferdam in Funks Creek.

Construction of the Funks pipelines would generally skirt Funks Creek and not intersect the waterway but two large fills needed for the Funks Pipeline and TRR Pipeline could be placed near the south creek bank. Construction of the TRR pipelines would cross the GCID Main Canal, TC Canal, and the Funks Reservoir. Trenching of the TRR pipelines under the GCID Main Canal and TC Canal would occur during the 6-week winter shutdown period. If possible, trenching would be scheduled for a time when the canals were dry, such that trenching would result in in-channel construction but not in-water construction. Construction of the TRR pipelines would require in-channel work where they cross Funks Reservoir. An earth and geomembrane liner coffer dam would be constructed to allow work to occur under dry conditions.

Construction of the Dunnigan Pipeline would require installation of water level and flow control gates at the concrete-lined TC Canal intake. The tie-in between the intake and the TC Canal would be done during the winter shutdown period, and a small portion of the TC Canal would be dewatered. In-channel work would be required at the CBD to install the energy dissipating control structure, and a coffer dam would be constructed so that the work would be completed in the dry.

2.5.4 Project Commitments and Best Management Practices Common to all Alternatives

A number of BMPs and environmental commitments are proposed to be implemented during Project design, construction and operation/maintenance. The BMPs and environmental commitments are considered part of the Project and discussed in detail in Appendix 2D. The following provides a list of activities or topics covered:

- Conform with Applicable Design Standards and Building Codes
- Perform Geotechnical Evaluations and Prepare Geotechnical Data Reports
- Utility and Infrastructure Verification and/or Relocation
- Natural Gas and Water Wells Decommissioning
- Road Abandonment
- Minimize Soil Disturbance and Topsoil Storage and Handling Plan
- Stormwater Pollution Prevention Plan(s) and Best Management Practices (storm water and non-storm water)

- Spill Prevention and Hazardous Materials Management / Accidental Spill Prevention, Containment, and Countermeasure Plans and Response Measures
- Comply with Requirements of RWQCB Order 5-00-175
- Groundwater/ Dewatering Water Supply
- Construction Equipment, Truck, and Traffic Management Plan
- Visual/Aesthetic Design, Construction, and Operation Practices
- Fire Safety and Suppression / Fire Prevention and Control Plan
- Worker Health and Safety Plan
- Blasting Standard Requirements
- Mosquito and Vector Control During Construction
- Construction, Operation and Maintenance Noise Management
- Construction and Operations Emergency Action Plan
- Electrical Power Guidelines and EMF Field Management Plan
- Air Quality Measures (Construction Equipment Exhaust Reduction Plan, Fugitive Dust Control Plans, Construction Best Management Practices to Reduce Greenhouse Gas Emissions)
- Environmental Site Assessment(s) and Hazardous Materials Management Plans
- Construction Site Security
- Notification of Maintenance Activities in Waterways
- Worker Environmental Awareness Program
- Fish Rescue and Salvage Plans for Funks Reservoir, Stone Corral Creek, and Funks Creek for Alternative 1; for Sacramento River for Alternative 2
- Construction BMPs and Monitoring for Fish, Wildlife, and Plant Species Habitats, and Natural Communities
- Control of Invasive Plant Species during Construction

2.5.5 Proposition 1 Benefits Common to All Action Alternatives

The Project was conditionally awarded Proposition 1, WSIP funding by the CWC to provide public benefits for flood damage reduction, recreation, and ecosystem benefits. All of the Action Alternative include providing these benefits including entering into a contract with DWR for the flood damage reduction and recreation benefits, a contact with the California Department of Fish and Wildlife for the ecosystem benefits, and a contract with the CWC for final funding award.

The Project would provide flood damage reduction benefits to portions of Colusa County, including Maxwell and the surrounding agricultural areas. Incidental storage in Sites Reservoir would capture and store flood flows from the Funks and Stone Corral Creek watersheds. These

flood damage reduction benefits are inherent to the Project design and would occur regardless of the Project's operations for water supply and water-related environmental benefits.

The Project would provide recreation benefits through the recreation facilities described previously in this chapter.

The ecosystem benefits funded by the CWC include providing water for Incremental Level 4 refuge water needs for Central Valley Project Improvement Act (CVPIA) refuges both north and south of the Delta and providing additional flow into the Yolo Bypass to benefit Delta smelt (*Hypomesus transpacificus*). Incremental Level 4 refuge water deliveries could occur in any year type and at any time of year. For those refuges located south-of-Delta, it is assumed that water would be moved from July to November though the Delta. Additional flows into the Yolo Bypass could occur at any time of year, but are assumed to occur during the summer and fall months (August through October) of all water year types. These deliveries increase desirable food sources for Delta smelt and other fish species in the late summer and early fall. The Authority envisions that CDFW would take an active role in managing the ecosystem water and would work with CDFW to schedule and adjust releases of ecosystem water to address real-time conditions and needs.

As described in Section 2.5.2., *Coordination with CVP and SWP*, above, additional ecosystem benefits beyond those funded by the CWC may occur via exchanges with Shasta Lake, Lake Oroville, or – likely to a lesser extent – Folsom Lake.

2.6 Alternative 1 Specific Elements

Alternative 1 is the Authority's proposed Project under CEQA. See Figure 2-1 and Figure 2-2 for a plan view of the Alternative 1 features. The unique features of Alternative 1 include the following:

- Reservoir capacity would be 1.5 MAF;
- A bridge across the reservoir would provide access to the west of the Project; and
- Reclamation investment would range from no investment to up to 7% investment.

Alternative 1 would impound surface water at the Golden Gate Dam on Funks Creek, Sites Dam on Stone Corral Creek, and a series of seven saddle dams along the eastern and northern rims of the reservoir would close off topographic saddles in the surrounding ridges to form Sites Reservoir. The 1.5 MAF reservoir under Alternative 1 would inundate approximately 13,200 acres of Antelope Valley in Colusa County. Alternative 1 would convey water from the Sacramento River through existing or upgraded TC Canal and GCID Main Canal facilities to new and upgraded regulating reservoirs and into the new Sites Reservoir. Existing and new facilities would convey water from Sites Reservoir for uses along the TC Canal, along the GCID Main Canal and down the TC Canal to the new Dunnigan Pipeline and the CBD for release, and flows would enter the Yolo Bypass or Sacramento River. Construction roads, local roads, and maintenance roads would be developed or realigned to accommodate the reservoir facilities, including the realignment of Sites Lodoga Road with a new bridge over the reservoir. Alternative

1 would involve two primary recreation areas, Peninsula Hills Recreation Area and Stone Corral Creek Recreation Area, and a day-use boat ramp. These areas would provide multiple recreational amenities, including campsites, boat access, horse trails, hiking trails, and vista points.

Releases from Sites Reservoir would be made to meet environmental purposes, such as for the delivery of Incremental Level 4 water to refuges or fall food production in the Yolo Bypass for north Delta fish species. Releases would also be made for Sites Storage Partners based on their requests to meet their respective water supply portfolio needs and any water conveyed south of the Delta would comply with all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time. Under Alternative 1, operational exchanges may also occur with Reclamation in Shasta Lake and Folsom Reservoir and with DWR in Lake Oroville. Alternative 1 includes a range of Reclamation investment in the Project, from no investment to up to an assumed 7 percent Reclamation investment.

2.6.1 Sites Reservoir and Related Facilities

Under Alternative 1, Sites Reservoir would be 1.5 MAF and would inundate approximately 13,200 acres. It would have a maximum normal WSE of 498 feet above mean sea level and would require I/O Works, seven saddle dams (1, 2, 3, 5, 6, 8A, and 8B), and two saddle dikes (1 and 2). See Figure 2-1, Alternatives 1 and 3 Regulating Reservoirs and Conveyance and Sites Reservoir Facilities for the location of the Sites Reservoir, Golden Gate Dam, saddle dams, and I/O Works under Alternative 1. Table 2-10 provides the general characteristics of the proposed Sites Reservoir under Alternative 1.

Table 2-10. General Reservoir Characteristics of Alternative 1

Key Characteristic	Detail
Nominal Reservoir Gross Storage	1.5 MAF
Maximum Normal Operating Water Elevation	498 feet above mean sea level
Minimum Normal Operating Water Elevation	340 feet above mean sea level
Top of Dead Pool	300 feet above mean sea level
Active Storage Capacity[1]	1.4 MAF

[1] Between minimum normal operating water elevation (El. 340.0 feet) and maximum normal operating elevation

A total of nine dams (Golden Gate Dam, Sites Dam, and seven saddle dams) would create the 1.5 MAF Sites Reservoir under Alternative 1. Two saddle dikes would be required to close off topographic saddles in the ridges near Saddle Dams 8A and 8B. The dam crests would be 30 feet wide and would include asphalt paved or gravel maintenance roads. The nominal crest would be at elevation 517 feet for all dams, including Saddle Dam 8B. See Table 2-3. for a summary of the dam heights for Alternative 1.

2.6.2 New and Existing Roadways

Sites Lodoga Road is an east-west, two-lane major collector road that extends through the community of Maxwell, which is adjacent to I-5, and provides an important emergency and

evacuation route in a limited roadway network to and from the rural communities of Lodoga and Stonyford. Sites Lodoga Road becomes Maxwell Sites Road east of the community of Sites, which is in the inundation area. The Sites Reservoir would eliminate east-west access to I-5 (east of the reservoir) from Stonyford and Lodoga (west of the reservoir) because it would inundate the current alignment of Sites Lodoga Road. Because Sites Dam and the inundation area would eliminate access on Sites Lodoga Road, an alternative method for access west of the reservoir would be needed. Under Alternative 1, this access is provided by realigning a segment of Sites Lodoga Road and constructing a bridge over the reservoir. The relocated segment of Sites Lodoga Road would include 5-foot-wide shoulders adjacent to the two 12-foot-wide lanes to accommodate bicycles and would connect to the new bridge.

The realigned Sites Lodoga Road would be placed across the reservoir and extend 7,800 feet; it would necessitate the construction of four fill prisms that would be up to 150 feet tall and would support two shorter bridge segments approximately 3,450 and 4,050 feet long. Figure 2-40, Sites Lodoga Road Realignment and Bridge, shows a typical cross section of the road and the bridge that would be needed to cross the reservoir. The roadway and bridge profile would be at 2 feet above the maximum flood plus wave height. The maximum flood plus wave height is set at 10 feet above the normal WSE (elevation 498 feet for the 1.5 MAF reservoir).

The bridge structure would consist of a cast-in-place, prestressed concrete box girder that would have two lanes with a total width of 35.5 feet and 4-foot-wide shoulders. The bridge would have California Department of Transportation-approved edge barriers with small-diameter electrical conduits, a suicide prevention barrier, emergency phone service facilities, deck drains, and an opening for potential utilities. The bridge design does not include sidewalks due to the remote rural nature of this site. The bridge would be exposed to high winds; therefore, high wind advisory facilities, such as static roadside signs or extinguishable message signs that are illuminated when instruments measure high winds, would be installed.

The disturbance area for bridge construction would include the footprint of the bridge structure, the staging areas for materials and equipment, and the area needed to construct the facilities and access roads. Traffic that was not construction related would be diverted around construction disturbance areas in accordance with a traffic management plan. Initial construction activities would involve establishing staging areas, surveying and marking roadways, clearing, and grading. Bridge construction would consist of constructing the foundation and prisms, including drilled-pier installation; bridge columns; and bridge spans.

The Huffmaster Road realignment, which is associated with the easterly segment of Sites Lodoga Road Realignment, would move the affected segment out of the Sites Reservoir footprint. The realigned Huffmaster Road would be a gravel road to serve the residences at the end of Huffmaster Road.

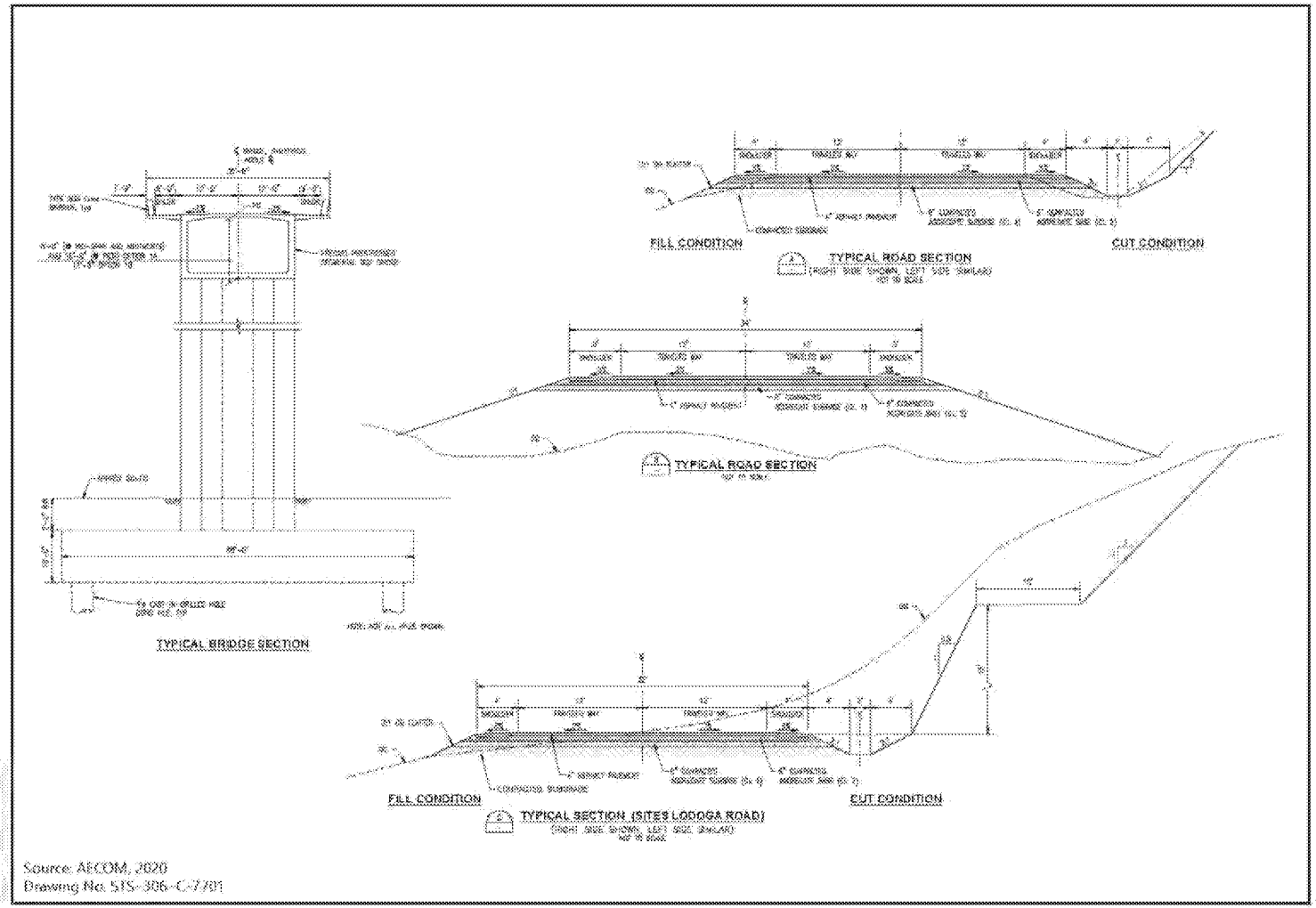


Figure 2-40. Sites Lodoga Road Realignment and Bridge

2.6.3 Operations and Maintenance

In addition to the operations and maintenance activities common to all Action Alternatives, operations and maintenance activities under Alternative 1 would include Reclamation as a Storage Partner in the Project and maintenance of the bridge as described below.

Water Operations

Alternative 1 includes a range of potential investment in the Project by Reclamation. For the purposes of modeling, two options have been identified under this alternative – Alternative 1A includes no Reclamation investment and Alternative 1B includes up to 7 percent Reclamation investment, which equates to about 91,000 AF of storage allocation dedicated to Reclamation in Sites Reservoir. With investment from Reclamation, 7 percent of Sites Reservoir storage would be managed as a CVP supply under Alternative 1. Reclamation's share of Sites water would be flexibly used by Reclamation to meet CVP objectives providing water for water supply and environmental needs. Increased storage, diversion, and release capacity provides the CVP with additional opportunities to store and release water when it may have been otherwise constrained. Releases for Reclamation would generally be made for a variety of purposes as identified and directed by Reclamation and would be made in the same manner as described for all Storage Partners.

Bridge Maintenance

There are no day-to-day operations of the bridge (no moving components of the bridge that would be operated on a daily basis). Typical bridge maintenance activities would include replacing damaged or missing signage, replacing or repairing railings, replacing or repairing damage to the bridge deck (road surface), sealing joints, repairing erosion on approaches, unplugging drains and removing debris, and checking for and repairing faulty electrical contacts. The bridge would be periodically inspected through walking through inspection to detect any obvious defects, hazards or potential problems and to also monitor known problems. The bridge would also be periodically inspected by Caltrans to detect any major structural concerns. Repairs and replacements would be made as needed based on these inspections.

2.7 Alternative 2 Specific Elements

The unique features of Alternative 2 include the following:

- Reservoir capacity would be 1.3 MAF;
- A local access road around the southern end of the reservoir would provide access to the west of the Project; and
- Dunnigan Pipeline would extend to and discharge at the Sacramento River with a partial discharge at the CBD.

See Figure 2-1 and Figure 2-2 for a plan view of the Alternative 2 features.

Alternative 2 would impound surface water at the Golden Gate Dam on Funks Creek, Sites Dam on Stone Corral Creek, and a series of four saddle dams along the eastern and northern rims of

reservoir would close off topographic saddles in the surrounding ridges to form Sites Reservoir. The 1.3-MAF reservoir would inundate approximately 12,600 acres and require four saddle dams and three saddle dikes. Alternative 2 would convey water from the Sacramento River through existing or upgraded TC Canal and GCID Main Canal facilities to new and upgraded regulating reservoirs and into the new Sites Reservoir. Existing and new facilities would convey water from Sites Reservoir for uses along the TC Canal, along the GCID Main Canal and down the TC Canal to the new Dunnigan Pipeline and to the Sacramento River for direct release to the river. Alternative 2 also includes a partial release into the CBD, and flows would enter the Yolo Bypass or Sacramento River. Construction roads, local roads, and maintenance roads would be developed or realigned to accommodate the reservoir facilities, including the realignment of Sites Lodoga Road with a new local access road around the southern end of the reservoir. Alternative 1 would involve two primary recreation areas, Peninsula Hills Recreation Area and Stone Corral Creek Recreation Area, and a day-use boat ramp. These areas would provide multiple recreational amenities, including campsites, boat access, horse trails, hiking trails, and vista points.

Releases from Sites Reservoir would be made to meet environmental purposes, such as for the delivery of Incremental Level 4 water to refuges or fall food production in the Yolo Bypass for north Delta fish species. Releases would also be made for Sites Storage Partners based on their requests to meet their respective water supply portfolio needs, and any water conveyed south of the Delta would comply with all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time. Under Alternative 2, operational exchanges may also occur with Reclamation in Shasta Lake and Folsom Reservoir and with DWR in Lake Oroville. Alternative 2 does not include Reclamation investment in the Project.

2.7.1 Sites Reservoir and Related Facilities

Under Alternative 2, Sites Reservoir would be 1.3 MAF and would inundate approximately 12,600 acres (600 acres less than Alternative 1). It would have a maximum normal WSE of 482 feet above mean sea level (17 feet lower than Alternative 1) and would require I/O Works, four saddle dams (3, 5, 8A, and 8B) and three saddle dikes (1, 2, and 3). Figure 2-3 shows the location of Sites Dam and Golden Gate Dam and the location of the four saddle dams and three saddle dikes under Alternative 2. Under Alternative 2, Saddle Dams 3 and 5 would not have emergency release systems into the Hunters Creek watershed. Figure 2-11 provides the general characteristics of the proposed Sites Reservoir under Alternative 2.

Table 2-11. General Reservoir Characteristics of Alternative 2

Key Characteristic	Detail
Nominal Reservoir Gross Storage	1.3 MAF
Maximum Normal Operating Water Elevation	482 feet above mean sea level
Minimum Normal Operating Water Elevation	340 feet above mean sea level
Top of Dead Pool	300 feet above mean sea level
Active Storage Capacity[1]	1.2 MAF

[1] Between minimum normal operating water elevation (El. 340.0 feet) and maximum normal operating elevation

2.7.2 Conveyance to Sacramento River

As with Alternative 1, a portion of the water released from Sites Reservoir would be conveyed using the existing TC Canal, and for those Sites Storage Partners located south of the Delta, would be conveyed using the new Dunnigan Pipeline. The water would flow south approximately 40 miles to near the end of the TC Canal. At this point, flow would be diverted into the Dunnigan Pipeline. A gravity outlet structure from the TC Canal into the Dunnigan Pipeline would be constructed to control the flow in the pipeline. No pumping would be required. Power would be needed for SCADA control and operating the gates to let water into the pipeline and at the discharge point.

Under Alternative 2, the Dunnigan Pipeline would extend 10 additional miles, pass through the western levee of the Sacramento River, and discharge into the Sacramento River at approximately River Mile 100.8 (Figure 2-41, Dunnigan Sacramento River Discharge Site Plan). At the CBD, there would also be a discharge structure similar to Alternative 1, but the structure would be smaller and would divert only a portion of the flow, while the remaining flow would continue to the Sacramento River.

The pipeline would have a 10.5-foot-inside diameter with three tunneled crossings (I-5, Road 99W, the railroad, and CBD) that require 12-foot (144-inch) casings. The pipeline would cross under SR 45 and a levee.

The pipeline would terminate in a discharge and energy dissipation structure. The discharge structure would extend through the Sacramento River levee and would be made up of ten 36-inch diameter pipes that would each have a check valve to dissipate energy. The structure would be located such that it was outside the levee prism, or area of influence, on the west side of the levee slope. The ten 36-inch diameter pipelines would be designed to penetrate the levee above the high high-water mark.

The discharge structure would include a vertical drop exclusion barrier to prevent the passage of anadromous fish into the pipeline. The minimum vertical drop would be 10 feet at the top of the levee onto a 20,000 square foot area of riprap extending to the river. This design would place the check valves far enough above the water surface elevation to prevent access by fish. Discharges would occur when the river was low and therefore the check valves would be distant from the water's edge. Discharge would likely be May to October but could extend into November.

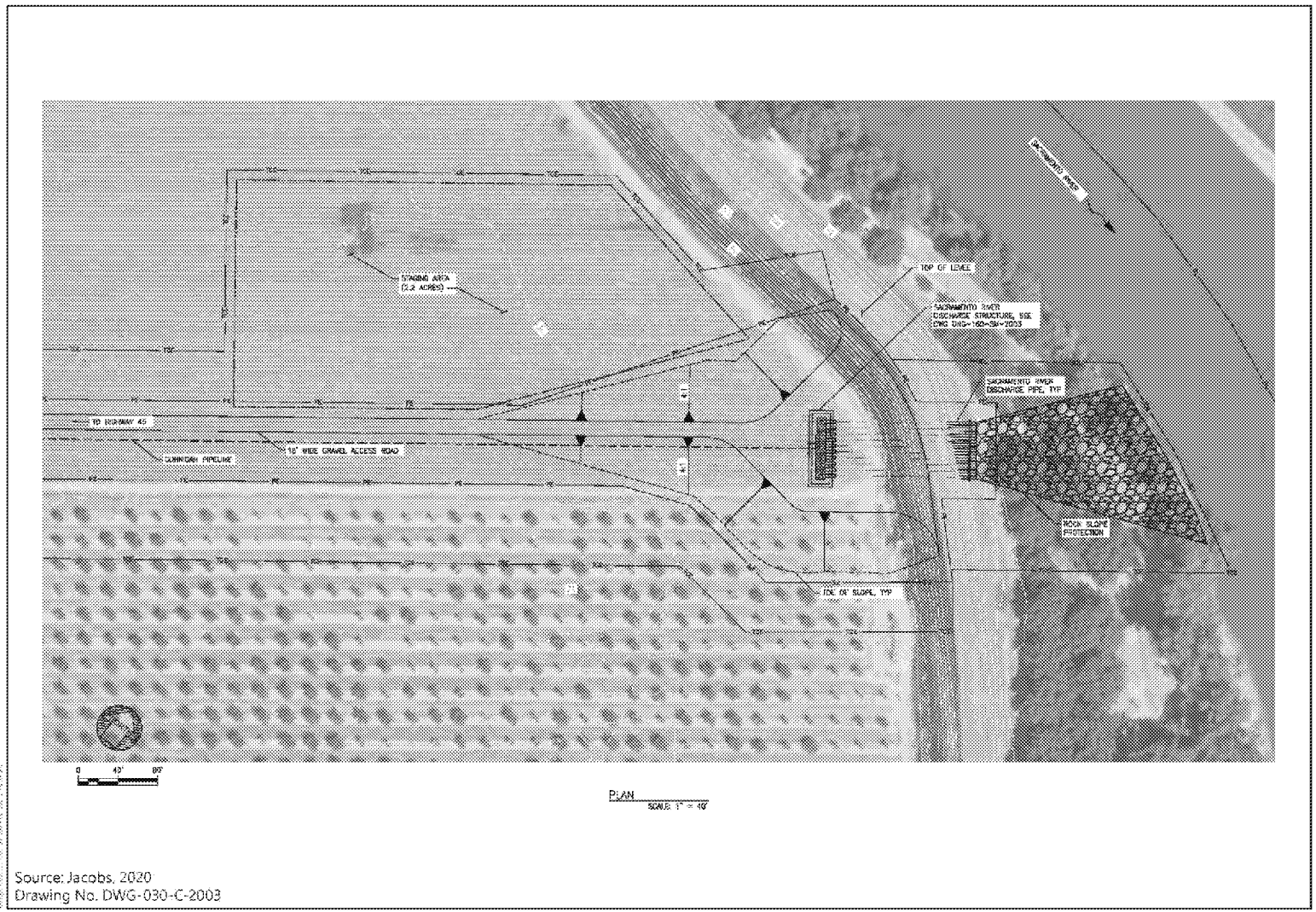


Figure 2-41. Dunnigan Sacramento River Discharge Site Plan

Construction would not occur in the winter unless it was a critically dry year. A non-winter construction window would be targeted because even small amounts of rain cause the roads to become slick, which would slow and/or prevent the movement of construction equipment. The construction window would exclude mid-October through March 31. Because groundwater is 3 feet below ground surface, the contractor would install dewatering wells every 50 to 100 feet. However, excavating and placing pipes closely, spatially and temporarily, would avoid running the dewatering system for long periods. Construction of the Dunnigan Pipeline would require crossing nearly 20 irrigation laterals and drainage canals. Bypass pipes would be used to allow irrigation water to flow down canals and also allow drainage water from irrigation to flow. Boring may be required under SR 45, if open cut is not possible. A boring will be required under the levees adjacent to the CBD and under the CBD.

The discharge structure would be located on the west bank of the river about 1 mile upstream of the Rough and Ready Pumping Plant. As described in Appendix 2D, Best Management Practices, in-water construction activities in the Sacramento River would occur during the work window of September 1 through October 15. This work would include constructing a coffer dam. Once the coffer dam is completed, work would continue in the dry and could occur outside the in-water work window. Pile driving or a vibration hammer would be used to install piles on the land side of the levee.

2.7.3 New and Existing Roadways

Realignment of Huffmaster Road and construction of the new South Road would occur under Alternative 2 (Figure 2-35). As with Alternative 1, Sites Dam and the inundation area would inundate 4.2 miles of the Sites Lodoga Road and eliminate access on this 13-mile-long collector road. Similar to Alternative 1, the relocated segment of Sites Lodoga Road would include 5-foot-wide shoulders adjacent to the two 12-foot-wide lanes to accommodate bicycles and would provide access to the Stone Corral Recreation Area. Similar to Alternative 1, Huffmaster Road would be realigned for approximately 9 miles. A new South Road would be constructed and connect to the end of the realigned portion of Huffmaster Road. It would be approximately 20 miles. The total length of the realigned portion of Huffmaster Road and the new South Road would be approximately 30 miles, all of which would be paved.

All other permanent access, maintenance, detour and construction roads would be the same for the reservoir facilities between Alternatives 1 and 2. These roads would be needed regardless of the inundation area size to serve the planned facilities and recreation areas.

The South Road would generally require more excavation and more aggregate when compared to the bridge under Alternative 1. These materials are listed in Appendix 2C, Construction Methods, Means, and Assumptions, Table Alt 2, Preliminary Quantities for Roads.

2.7.4 Operations and Maintenance

Operations and maintenance activities under Alternative 2 would be the same as those described for all Action Alternatives above. In addition to the water operations activities described above that are common to all Action Alternatives, Alternative 2 includes releases directly to the Sacramento River from the extended Dunnigan Pipeline, with a partial release into the CBD.

2.8 Alternative 3 Specific Elements

Alternative 3 facilities and project components would be the same as Alternative 1, as described above. Operationally, Alternative 3 would include increased Reclamation participation and investment, with investment of up to 25 percent of the Project cost.

Under Alternative 3, Reclamation would have an increased investment in Sites Reservoir of up to 25 percent as compared to up to 7 percent in Alternative 1. The increased level of Reclamation investment would result in up to 25 percent of Sites Reservoir storage space being dedicated to Reclamation's use. Reclamation's share of Sites water would be flexibly used by Reclamation to meet CVP objectives providing water for water supply and environmental needs. The increased level of Reclamation investment would also result in increased opportunities for maintaining cold water pool in Shasta Lake, Folsom Lake and Lake Oroville through Reclamation operating its up to 25 percent investment as part of the integration of the CVP.

Increased Reclamation investment in the Project would require some reduction in local participation for Alternative 3 as compared with Alternative 1. Alternative 3 assumes that Sites Storage Partners that are local agencies would reduce their participation in the Project to accommodate the investment by Reclamation. The State's Proposition 1 investment for ecosystem, flood control and recreation benefits does not change with the increased Reclamation investment in Alternative 3.

All other components of Alternative 3 are the same as those for Alternative 1.

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From: Rude, Pete/RDD [Pete.Rude@jacobs.com]
Sent: 3/9/2021 8:36:27 AM
To: Brian Rahman [brian@zglobal.biz]; Luu, Henry [Henry.Luu@hdrinc.com]
CC: Marcia Kivett [MKivett@sitesproject.org]
Subject: RE: Follow-up - Sites Reservoir Project-PGE Tariff question

My availability this week is below.

Peter H. Rude, PE (*CA, HI, CO*) /Jacobs/ Civil Engineer & Principal Project Manager
1-530-229-3396 (office)/ 1-530-917-4164 (mobile)/ 2525 Airpark Drive, Redding, CA 96001
pete.rude@jacobs.com / www.jacobs.com

From: Brian Rahman <brian@zglobal.biz>
Sent: Tuesday, March 09, 2021 8:00 AM
To: Luu, Henry <Henry.Luu@hdrinc.com>; Rude, Pete/RDD <Pete.Rude@jacobs.com>
Cc: Marcia Kivett <mkivett@sitesproject.org>
Subject: [EXTERNAL] RE: Follow-up - Sites Reservoir Project-PGE Tariff question

My Availability this week:

Tuesday 3/9 – after 2:30 (pete not available)
Wednesday 3/10 – 8:00 – 11:30, 1:00 – 5:00 (pete all available except 3-4pm)
Thursday 3/11 – After 11:00 (pete only available 1-2pm and 3-4pm)
Friday 3/12 – 8:00 – 5:00 (pete all available except 9-10am)

Thanks,
Brian

From: Luu, Henry <Henry.Luu@hdrinc.com>
Sent: Tuesday, March 9, 2021 6:48 AM
To: Rude, Pete/RDD <Pete.Rude@jacobs.com>; Brian Rahman <brian@zglobal.biz>
Cc: Marcia Kivett <mkivett@sitesproject.org>
Subject: RE: Follow-up - Sites Reservoir Project-PGE Tariff question

Pete and Brian,

Marcia will help schedule a meeting. What does your availability look like this week?

Henry H. Luu, PE
D 916.679.8857 M 916.754.7566

hdrinc.com/follow-us

From: Rude, Pete/RDD <Pete.Rude@jacobs.com>
Sent: Monday, March 8, 2021 4:27 PM
To: Luu, Henry <Henry.Luu@hdrinc.com>; Jerry Brown <jbrown@sitesproject.org>
Cc: Brian Rahman <brian@zglobal.biz>
Subject: RE: Follow-up - Sites Reservoir Project-PGE Tariff question

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Hi Henry and Jerry,

I just got off the phone with Brian Rahman/ZGlobal. Per below, we don't want to be going through PGE to purchase power, we want to purchase power at the wholesale rate through CAISO. I think it would be best if you two spoke directly to Brian, that way you can ask all your questions and I am not a bottleneck.

Also Brian and I spoke about the idea of Sites only purchasing green energy. That may have some drawbacks that Brian can discuss with you. Obviously the decision is one to be made by Sites, but I want to make sure you have all the information you need before that decision is made as it has cost implications.

Thanks

Peter H. Rude, PE (*CA, HI, CO*) /Jacobs/ Civil Engineer & Principal Project Manager
1-530-229-3396 (office)/ 1-530-917-4164 (mobile)/ 2525 Airpark Drive, Redding, CA 96001
pete.rude@jacobs.com / www.jacobs.com

From: Brian Rahman <brian@zglobal.biz>
Sent: Monday, March 08, 2021 12:53 PM
To: Rude, Pete/RDD <Pete.Rude@jacobs.com>
Cc: Christine Vangelatos <christine@zglobal.biz>
Subject: [EXTERNAL] RE: Follow-up - Sites Reservoir Project-PGE Tariff question

Hi Pete,
Sorry I missed this. I think we need to discuss. You don't want to operate under any of the PG&E rate schedules. You want to transact at the wholesale level via CAISO Markets. I feel like the local PG&E folks are not getting the scope of the project and are sending you down the wrong road. I am open after 3:00 today if you like to have a call in advance of team call tomorrow.

Thanks,

Brian Rahman PE
Executive Director of Engineering
Northern CA Office: 604 Sutter Street, Suite 250, Folsom, CA 95630
Phone:(916) 985-9461 Cell: (916) 221-0532
Southern CA Office: 750 W. Main Street, El Centro, CA 92243
Phone:(760) 355-0288 | email: Brian@zglobal.biz
http://www.zglobal.biz

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From: Rude, Pete/RDD <Pete.Rude@jacobs.com>
Sent: Monday, March 8, 2021 12:11 PM
To: Brian Rahman <brian@zglobal.biz>; Christine Vangelatos <christine@zglobal.biz>
Subject: FW: Follow-up - Sites Reservoir Project-PGE Tariff question

HI Brian and Christine – resending attached and below question of a chart. The client brought it up this morning at our weekly call and I don't believe I have heard back from you on this. Happy to discuss.

Peter H. Rude, PE (*CA, HI, CO*) /Jacobs/ Civil Engineer & Principal Project Manager
1-530-229-3396 (office)/ 1-530-917-4164 (mobile)/ 2525 Airpark Drive, Redding, CA 96001
pete.rude@jacobs.com / www.jacobs.com

From: Rude, Pete/RDD
Sent: Thursday, February 25, 2021 6:28 PM
To: brian@zglobal.biz; Christine Vangelatos <christine@zglobal.biz>
Subject: FW: Follow-up - Sites Reservoir Project-PGE question

Hi Brian and Christine,

Please see e-mail chain below and attached. Is this something you can respond to? Jerry Browns' question(s) below. If you can is this something you can do in the next few days? Please proceed as I am in the field all day tomorrow in Fresno – but I will have my cell phone if you have any questions. Thanks!

Peter H. Rude, PE (*CA, HI, CO*) /Jacobs/ Civil Engineer & Principal Project Manager
1-530-229-3396 (office)/ 1-530-917-4164 (mobile)/ 2525 Airpark Drive, Redding, CA 96001
pete.rude@jacobs.com / www.jacobs.com

From: Luu, Henry <Henry.Luu@hdrinc.com>
Sent: Thursday, February 25, 2021 4:47 PM
To: Rude, Pete/RDD <Pete.Rude@jacobs.com>
Subject: [EXTERNAL] FW: Follow-up - Sites Reservoir Project

Pete,

See email chain below. I assume this is in Brian's realm of expertise and his team can support/provide what Jerry is looking for? Can you check with zGlobal to get an ETA? Let me know if we need to chat.

Thanks,

Henry H. Luu, PE
D 916.679.8857 M 916.754.7566

hdrinc.com/follow-us

From: Jerry Brown <jbrown@sitesproject.org>
Sent: Thursday, February 25, 2021 4:39 PM
To: Luu, Henry <Henry.Luu@hdrinc.com>
Cc: JP Robinette <JRobinette@BrwnCald.com>
Subject: FW: Follow-up - Sites Reservoir Project

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Henry - Lots to digest here but can you get the right person on the team familiar with reading PGE tariff schedules to give us a simple chart of $ per kw-hr estimate of variable energy cost by season. Also based on my past experience with the E-20 schedule there is a fixed demand charge that goes into effect after 15 minutes of operations and it varies between peak, part peak and off-peak conditions so we need to consider that as well. The chart should show 100% renewable too.

Bottom line these costs greatly affect annual O&M which is part of the affordability analysis. JP will need to feed results into the updated pro-forma.

JP I think the 19-25 cents per kw-hr I gave you for PGE energy is in line with these costs. A more experienced reader of PGE tariff sheets would be able to confirm this.

Also, based on our power meeting yesterday with Reclamation we ae still good with the power provider assumptions for each station I provided previously.

From: "Monninger, James" <J9Mq@pge.com>
Date: Thursday, February 25, 2021 at 4:21 PM
To: Jerry Brown <jbrown@sitesproject.org>
Subject: RE: Follow-up - Sites Reservoir Project

Jerry:

Per your request, based on the information you have shared with me regarding the water pumping that will be required for filling the reservoir, it is likely that each electric meter associated with that water pumping load will have a maximum demand greater than 1 MW (these are the tariffs currently in place):

- Standard Rate: E-20 (if < 70% of water's end use goes to agricultural uses)
- Ag Rate: AG-5 (if ≥ 70% of water's end use goes to agricultural uses and I believe this is what you indicated would be where the water would ultimately flow)

If you would like to have 100% renewable electricity (generation component of your rate), then you would choose E-GT (and your otherwise applicable rate would be AG-5).

I have provided these three tariffs for your reference.

Hope this helps,

Jim

Jim Monninger | Senior Manager
Local Customer Experience
Sacramento and Sierra Divisions
Office: 530-896-4222
Cell Phone: 415-450-5004
Email: j9mq@pge.com

From: Jerry Brown <jbrown@sitesproject.org>
Sent: Thursday, February 25, 2021 3:39 PM
To: Monninger, James <J9Mq@pge.com>
Subject: Re: Follow-up - Sites Reservoir Project

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Thanks Jim – My only item was to get an update on "which tariff the Sites project facilities would fall under?". You had mentioned last time that you were talking to your rates people and they would be able to give us a preliminary determination. Is that done?

I'm fine with pushing our meeting later today back to March but I was hoping for the tariff information.

Thanks
Jerry

From: "Monninger, James" <J9Mq@pge.com>
Date: Thursday, February 25, 2021 at 3:13 PM
To: Jerry Brown <jbrown@sitesproject.org>
Subject: Re: Follow-up - Sites Reservoir Project

Jerry:

I don't have any updates. I haven't made any progress on the open items from our last meeting as I have been involved with electric outages issues stemming from the mid-January "atmospheric river" event.

Get Outlook for iOS

From: Jerry Brown <jbrown@sitesproject.org>
Sent: Friday, December 18, 2020 5:28:48 PM
To: Monninger, James <J9Mq@pge.com>
Cc: Marcia Kivett <MKivett@sitesproject.org>
Subject: Follow-up - Sites Reservoir Project

*****CAUTION: This email was sent from an EXTERNAL source. Think before clicking links or opening attachments.*****
Hi Jim – Hope you are well. In our conversation earlier this month about the power supply needs for our statewide water project located in Colusa County (near your hometown) we spoke about following up on two fronts 1) me providing a list of concepts of what we would be looking for from PGE at this time, which of course would be supplemented/adjusted for PGE's interests by you and would be discussed, and 2) setting a next meeting after the new year (which I believe Marcia has done).

The attached write-up addresses #1 and will serve to stimulate conversation for our meeting next month. Looking forward to it.

Jerry
We respect your privacy. Please review our privacy policy for more information.
http://www.pge.com/en/about/company/privacy/customer/index.page

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From: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
Sent: 3/9/2021 9:10:49 AM
To: Alicia Forsythe [aforsythe@sitesproject.org]; Kevin Spesert [kspesert@sitesproject.org]
Subject: FW: NML Data Request for Emergency Response Information

From: Dekar, Melissa D <mdekar@usbr.gov>
Sent: Friday, March 5, 2021 10:09 AM
To: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Cc: Davis, Ryan A <rdavis@usbr.gov>
Subject: FW: NML Data Request for Emergency Response Information

Good morning Laurie,

Additional data below. Let me know if you need anything else!

Melissa

From: Popkins, Diana F <dpopkins@usbr.gov>
Sent: Friday, March 5, 2021 9:59 AM
To: Dekar, Melissa D <mdekar@usbr.gov>
Cc: Davenport, Cynthia A <CDavenport@usbr.gov>; MCGRAW, MICHAEL H <MMcGraw@usbr.gov>
Subject: RE: NML Data Request for Emergency Response Information

Hi Melissa,
I received the stats back from Calaveras County:

36 emergency calls for the road into and within Glory Hole recreation area
55 calls for the boat launch area within that rec area
5 calls on the lake
42 calls for the Marina
118 for the Natural Bridges recreation area
13 for the Camp 9 recreation area
20 for the Dam area

These numbers are for Jan 2019 - Dec 2020 (as are the in house incident reports I provided earlier).

Thank you,
Diana Popkins
Park Ranger/ Fee Program Manager
U.S. Department of the Interior
Bureau of Reclamation
New Melones Lake

From: Dekar, Melissa D <mdekar@usbr.gov>
Sent: Monday, March 1, 2021 1:50 PM
To: Popkins, Diana F <dpopkins@usbr.gov>

Cc: Davenport, Cynthia A <CDavenport@usbr.gov>; MCGRAW, MICHAEL H <MMcGraw@usbr.gov>
Subject: RE: NML Data Request for Emergency Response Information

Perfect. Thank you!

From: Popkins, Diana F <dpopkins@usbr.gov>
Sent: Monday, March 1, 2021 1:49 PM
To: Dekar, Melissa D <mdekar@usbr.gov>
Cc: Davenport, Cynthia A <CDavenport@usbr.gov>; MCGRAW, MICHAEL H <MMcGraw@usbr.gov>
Subject: RE: NML Data Request for Emergency Response Information

The Tuolumne County numbers are for 2 calendar years, January 2019 to December 2020.

Thank you,
Diana Popkins
Park Ranger/ Fee Program Manager
U.S. Department of the Interior
Bureau of Reclamation
New Melones Lake

From: Dekar, Melissa D <mdekar@usbr.gov>
Sent: Monday, March 1, 2021 1:03 PM
To: Popkins, Diana F <dpopkins@usbr.gov>
Cc: Davenport, Cynthia A <CDavenport@usbr.gov>; MCGRAW, MICHAEL H <MMcGraw@usbr.gov>
Subject: RE: NML Data Request for Emergency Response Information

Diana,

Are these numbers for 2 calendar years or for a one-year period spanning 2019-2020?

Thanks,
Melissa

From: Popkins, Diana F <dpopkins@usbr.gov>
Sent: Sunday, February 28, 2021 1:36 PM
To: Dekar, Melissa D <mdekar@usbr.gov>
Cc: Davenport, Cynthia A <CDavenport@usbr.gov>; MCGRAW, MICHAEL H <MMcGraw@usbr.gov>
Subject: RE: NML Data Request for Emergency Response Information

Hi Melissa,
I contacted both Tuolumne and Calaveras County Sheriff Offices (since we straddle the two counties) to get your requested information.

Tuolumne County reported, from 2019-2020:
177 emergency calls for the lake
72 calls regarding the road that leads into one recreation area
34 calls from our administrative office area

Calaveras County hasn't gotten back to me yet.

I also looked at our in house incident report database (Sheriff-worthy incidents that Rangers discover/are called to) and found for 2019-2020:

42 written for Tuolumne
53 written for Calaveras

I'll let you know once the Calaveras S.O. gets back to me.

Thank you,
Diana Popkins
Park Ranger/ Fee Program Manager
U.S. Department of the Interior
Bureau of Reclamation
New Melones Lake

From: MCGRAW, MICHAEL H <MMcGraw@usbr.gov>
Sent: Thursday, February 25, 2021 2:31 PM
To: Popkins, Diana F <dpopkins@usbr.gov>
Cc: Davenport, Cynthia A <CDavenport@usbr.gov>
Subject: NML Data Request for Emergency Response Information

Hi Diana,

Please refer to the information Cindy received below from BOR Natural Resource Specialist Melissa Dekar. Can you please work with Tyler and/or Nathan this weekend to provide the information Melissa has requested. To collect this information, I would contact both the Tuolumne and Calaveras Sheriff Offices and see if they can provide you with the number "call-outs" they have received for NML over the last two years. Also, get a tally from the IR database of how many emergency related incidents rangers have written since 2019. When you send this information to Melissa, please cc myself and Cindy.

Thank you
Mike

Good morning Cynthia,

I am a Natural Resources Specialist out of the Regional Office and I am assigned to the Sites Reservoir/NODOS Project (Sites Reservoir (sitesproject.org)). We are in the process of addressing the potential impact to emergency service providers once the reservoir and associated recreation facilities are built out. The New Melones setting and recreation facilities are similar to what is proposed for the Sites Reservoir Project so we would like to inform our assessment based on data from New Melones. Would you be able to provide us with the frequency or number of emergency calls received at New Melones associated with reservoir/recreational use?

Thank you,
Melissa

Melissa Dekar
Natural Resources Specialist
Environmental Compliance and Conservation Branch, CGB-152
2800 Cottage Way, Sacramento, CA, 95825
Interior Region 10, Bureau of Reclamation
916-978-6153 mdekar@usbr.gov

Mike McGraw
Supervisory Park Ranger
U.S. Bureau of Reclamation
New Melones Lake
6850 Studhorse Flat Road
Sonora, Ca 95370
209-536-9094 x 229

Sites Reservoir Project
Preliminary Project Description and Alternatives

February 2021

This Preliminary Project Description has been prepared as a preliminary draft document in support of preparing a Revised Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS) for the Sites Reservoir Project (Project). The purpose for circulating this document at this time is to facilitate early coordination on initial approaches currently under consideration by the Authority. Therefore, the content of this document will be subject to continued discussions and modifications, and it may not be included in its entirety in the RDEIR/SDEIS. The Authority is not soliciting comments on this Preliminary Project Description and formal responses will not be provided for any comments received. As required by CEQA and NEPA, a public review and comment period will be provided upon publication of the RDEIR/SDEIS, which is currently anticipated to be released in late summer 2021.

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Chapter 2 Project Description and Alternatives

This chapter describes the proposed Sites Reservoir Project (Project) and alternatives analyzed in this Recirculated Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS). The alternatives were developed in light of the California Environmental Quality Act (CEQA) objectives and the National Environmental Policy Act (NEPA) purpose and need as described in Chapter 1, Introduction. This chapter is supported by Appendices 2A, 2B, 2C, and 2D which provide additional detail on the alternatives screening, construction means and methods and best management practices (BMPs).

2.1 Alternatives Development Process

The range of alternatives evaluated in this RDEIR/SDEIS is the product of an extensive screening process, that has included public input and involvement, occurring over several decades and involving multiple distinct water resource planning efforts. Those planning efforts considered a wide variety of factors, including feasibility and opportunities for reducing significant impacts while meeting applicable program and project objectives and purpose and need. See Appendix 2A, *Alternatives Screening and Evaluation*, and Appendix 2B, *Additional Alternatives Screening and Evaluation*, for information on alternatives considered but eliminated and the alternatives that are evaluated in this document.

2.1.1 Evaluated Prior to 2019

Beginning in 1995, the CALFED Bay-Delta Program (CALFED) initiated the evaluation of expanded surface water storage in the Sacramento and San Joaquin Valleys as part of a long-term comprehensive plan to restore the ecological health and improve water management to protect beneficial uses in the Sacramento–San Joaquin Delta (Delta) and the Delta watershed. During preparation of the CALFED Environmental Impact Report/Environmental Impact Statement (EIR/EIS), the CALFED Program initially identified 52 potential surface storage locations and retained 12 reservoir locations statewide for further study. The screening criteria applied indicated a preference for offstream over onstream surface water storage to avoid redirected impacts on aquatic species in the primary tributaries of the Delta.

Following the CALFED Programmatic Record of Decision (CALFED ROD) in 2000, the California Department of Water Resources (DWR) and the Bureau of Reclamation (Reclamation) continued to evaluate potential locations for a reservoir on the western side of the Sacramento Valley as part of the Surface Water Storage Investigation (Reclamation and DWR, 2006). The objectives of this effort were to formulate a project that would enhance water management flexibility in the Sacramento Valley, increase the reliability of water supplies in California, and provide storage and operational benefits to enhance water supply reliability and improve water quality and ecosystems. The results of the analysis identified four potential alternatives: Red Bank (Dippingvat and Schoenfield Reservoirs), Newville Reservoir, Colusa Reservoir, and Sites Reservoir. These four reservoir alternatives were evaluated against

additional screening criteria. This secondary screening conducted after the CALFED ROD found the Sites Reservoir location most able to meet the goals and objectives of the Surface Water Storage Investigation, while minimizing environmental impacts and providing the greatest potential benefits.

The Surface Water Storage Investigation also evaluated a variety of water sources (and associated conveyance options) including diversions from the Colusa Basin Drain (CBD), Sacramento River, and local tributaries. The evaluation process culminated in selection of the existing Tehama-Colusa Canal (TC Canal) and GCID diversion and conveyance facilities in addition to a new pipeline from the Sacramento River near the Moulton Weir (the Delevan Pipeline). These facilities were determined to be the most reliable and capable of meeting the goals and objectives of the study effort conducted after the CALFED ROD.

The 2017 Public Draft Environmental Impact Report/Environmental Impact Statement (2017 Draft EIR/EIS) for the Project evaluated four surface water reservoir size and conveyance options, and another alternative that would not include proposed power generation at the Delevan release structure. All alternatives included a Sites Reservoir to be filled using existing Sacramento River diversion facilities and the new Delevan Pumping Plant on the Sacramento River to allow for diversion and release of flows to the Sacramento River. Associated facilities for all alternatives were similar but varied in location and size. Appendix 2B, Additional Alternatives Screening and Evaluation, provides a more detailed table of differences between the Action Alternatives in this RDEIR/SDEIS and those in the 2017 Draft EIR/EIS.

In August 2017, the Authority submitted a Water Storage Investment Program (WSIP) application to the California Water Commission (CWC) to determine the Project's eligibility for funding under Proposition 1. The WSIP application evaluated the technical, economic, financial, and environmental feasibility of the Project. The CWC made nine specific determinations, including determining that the Project provides a net ecosystem improvement, provides measurable improvements to the Delta ecosystem, and that the Project would advance the long-term objectives of restoring the ecological health and water management beneficial uses of the Delta. The CWC conditionally approved $816 million in funding for the Project (California Water Commission undated).

2.1.2 Value Planning Process and Alternatives Post-2019

In October 2019, the Authority pursued a value planning process to determine if further refinements to the Project were warranted. Between October 2019 and April 2020, the Authority considered previous input from state and federal agencies, non-governmental organizations, elected officials, landowners, and local communities, and decided to "right size" the Project to better meet the needs of Sites Storage Partners[1], the statewide water supply and the environment. Multiple alternatives were considered during the value planning process that took into

[1] The governmental agencies, water organizations and others who have funded and received a storage allocation in Sites Reservoir and the resulting water supply or water supply related environmental benefits from the Project. Storage Partners could include local agencies, the State of California, and the Federal Government.

consideration the public and agency comments received on the 2017 Draft EIR/EIS (Sites Project Authority 2020). The primary objectives of this process were to:

- Improve water supply and water supply reliability;
- Provide Incremental Level 4 water supply for refuges;
- Improve the survival of anadromous fish; and
- Enhance the Delta ecosystem.

The secondary objectives of the value planning process were to provide opportunities for flood damage reduction and recreation.

Value planning alternatives combined different types and sizes of diversion, release, reservoir, road, and bridge facilities. The Authority analyzed operational, environmental, and permitting considerations for different alternatives. For example, operational considerations included the ability of several reservoir sizes and conveyance capacities to meet participant subscriptions and participation by the State of California through WSIP. Environmental considerations included reducing the footprints of facilities or eliminating facilities to avoid or minimize impacts and reducing the amount of water diverted to storage. In addition, the Authority evaluated the costs of facilities proposed for each alternative to understand whether each alternative achieved a reasonable cost-per-acre-foot that the Sites Storage Partners could support.

The value planning process identified three recommended alternatives. Alternative Value Planning (VP) 5 involved a 1.3 million-acre-feet (MAF) reservoir and used an existing regulating reservoir (Funks Reservoir) and a new regulating reservoir (the Terminal Regulating Reservoir [TRR]) to fill Sites Reservoir with releases (1,000 cubic feet per second [cfs]) from the southern end of the TC Canal through a pipeline that went to the CBD. Alternative VP 6 was similar to Alternative VP 5, but the releases from the southern end of the TC Canal were conveyed through a pipeline that extended to the Sacramento River. Alternative VP 7 was similar to Alternative VP 5 but included a 1.5-MAF reservoir. The value planning process culminated in a Value Planning Report that was adopted by the Authority in April 2020 (Sites Project Authority 2020). The alternatives in this RDEIR/SDEIS are based on VP 5, VP 6, and VP 7 in the Value Planning Report.

2.2 CEQA and NEPA Requirements

2.2.1 CEQA Requirements

The Authority, as the State lead agency, is responsible for the development of alternatives that meet CEQA requirements. Section 15126.6 of the State CEQA Guidelines requires that:

- An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of

potentially feasible alternatives that will foster informed decision-making and public participation. An EIR is not required to consider alternatives which are infeasible.

- The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects.
- The specific alternative of "no project" shall also be evaluated along with its impact.
- The EIR should briefly discuss the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination.... Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are:
    - Failure to meet most of the basic project objectives.
    - Infeasibility.
    - Inability to avoid significant environmental impacts.

This RDEIR/SDEIS is prepared in accordance with both NEPA and CEQA, with the Action Alternatives analyzed at an equal level of analysis (consistent with NEPA standards).

2.2.2 NEPA Requirements

Reclamation, as the Federal lead agency, is responsible for the development of alternatives that meet NEPA requirements. For the Project alternatives, including the proposed action, NEPA requires that Federal government agencies shall (40 CFR Section 1502.14):

(a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.

(b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.

(c) Include reasonable alternatives not within the jurisdiction of the lead agency.

(d) Include the alternative of no action.

(e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.

(f) Include appropriate mitigation measures not already included in the proposed action or alternatives.

2.3 Overview of Alternatives

The Project would utilize existing infrastructure to divert unregulated and unappropriated flow from the Sacramento River at Red Bluff and Hamilton City and convey water to a new off-

stream reservoir west of Maxwell, California. New and existing facilities would move water into and out of the reservoir, with ultimate release back to the Sacramento River system via existing canals and a new pipeline located near Dunnigan. Construction of the reservoir would necessitate construction of a bridge or bypass road to connect Maxwell with the community of Lodoga. Additional components would include future development of new recreation facilities at the reservoir. This RDEIR/SDEIS presents the No Project Alternative and three Action Alternatives to implement the Project. Project alternatives include:

- No Project Alternative
- Alternative 1, 1.5 MAF reservoir, bridge, release to the CBD, and a range of Reclamation investment up to 7 percent of the Project costs
- Alternative 2, 1.3 MAF reservoir, South Road, partial release to the CBD and Sacramento River, and no Reclamation investment
- Alternative 3, 1.5 MAF reservoir, bridge, release to the CBD, and Reclamation investment up to 25 percent of the Project costs

The Action Alternatives analyzed in this RDEIR/SDEIS are generally based on the results of the value planning process. Alternative 1 is based on Alternative VP 7, and Alternative 2 is based on Alternatives VP 5 and VP 6. Alternative 3 is generally based on VP 7 with increased federal participation of up to 25 percent of the Project costs. Project facilities for the Action Alternatives are shown in Figure 2-1, Figure 2-2, Figure 2-3, and Figure 2-4. Table 2-1 provides a summary of the Action Alternatives. Alternative 1 is the Authority's proposed Project under CEQA.

Table 2-1. Summary of Action Alternatives

Facilities/Operations	Alternative 1	Alternative 2	Alternative 3
Diversion/Reservoir Infrastructure Details			
Reservoir Size	1.5 MAF	1.3 MAF	Same as Alternative 1
Dams [Scaled to the size of the reservoir]	Golden Gate and Sites Dams; 7 saddle dams; 2 saddle dikes	Golden Gate and Sites Dams; 4 saddle dams; 3 saddle dikes	Same as Alternative 1
Spillway	One spillway on Saddle Dam 8B	Similar to Alternative 1	Same as Alternative 1
Funks Reservoir (existing)	New Funks Pump Generating Plant (PGP) and Funks pipelines	Similar to Alternative 1	Same as Alternative 1
Terminal Regulating Reservoir (TRR)	Construction of TRR PGP and TRR pipelines	Same as Alternative 1	Same as Alternative 1
Hydropower	Incidental power generation up to 40 megawatts each at Funks PGP and TRR PGP	Same as Alternative 1	Same as Alternative 1
Diversion(s)	Diversion from Sacramento River into	Same as Alternative 1	Same as Alternative 1

Facilities/Operations	Alternative 1	Alternative 2	Alternative 3
	existing TC Canal at Red Bluff and the existing GCID Main Canal at Hamilton City		
Emergency Release Flow	Releases into Funks Creek and Stone Corral Creek via Inlet/Outlet Works, Sites Dam; structures in Saddle Dams 3 and 5 to release north to Hunters Creek watershed; Release from spillway on Saddle Dam 8B north to Hunters Creek watershed	Similar releases via Inlet/Outlet Works, Sites Dam, and spillway on Saddle Dam 8B; No emergency release structures on Saddle Dams 3 and 5	Same as Alternative 1
Recreation			
Multiple Facilities Consistent with the Authority's WSIP Application	Two primary areas with infrastructure: 1. Peninsula Hills Recreation Area 2. Stone Corral Creek Recreation Area An additional day-use boat ramp	Same as Alternative 1	Same as Alternative 1
Transportation/Circulation			
Provide Route to West Side of Reservoir	Permanent bridge crossing the reservoir and relocation of a portion of Huffmaster Road with gravel road to residents at the south end of the reservoir	Paved roadway including the relocated segment of Huffmaster Road and a new South Road on the west side of the reservoir	Same as Alternative 1
Operations			
Diversion Criteria	Bypass flows; Pulse flow protection measure to be applied	Same as Alternative 1	Same as Alternative 1
Reclamation Involvement	1. Funding Partner (up to 7% investment) with operational exchanges; or, 2. Operational Exchanges Only	Operational Exchanges Only a. Within Year Exchanges b. Real-time Exchanges	Funding Partner, up to 25% investment, and Operational Exchanges: a. Within Year Exchanges b. Real-time Exchanges

Facilities/Operations	Alternative 1	Alternative 2	Alternative 3
	a. Within Year Exchanges b. Real-time Exchanges		
Department of Water Resources (DWR) Involvement	Operational Exchanges with Oroville and use of SWP facilities South-of-Delta	Same as Alternative 1 (volumes may vary, however)	Similar to Alternative 1 (volumes may vary, however)
Releases into Funks Creek and Stone Corral Creek	Specific flow criteria to maintain flows to protect downstream water right holders and ecological function	Same as Alternative 1	Same as Alternative 1
Conveyance Dunnigan Release	Release 1,000 cfs into new pipeline to CBD	Release into new pipeline to Sacramento River, partial release to the CBD	Same as Alternative 1

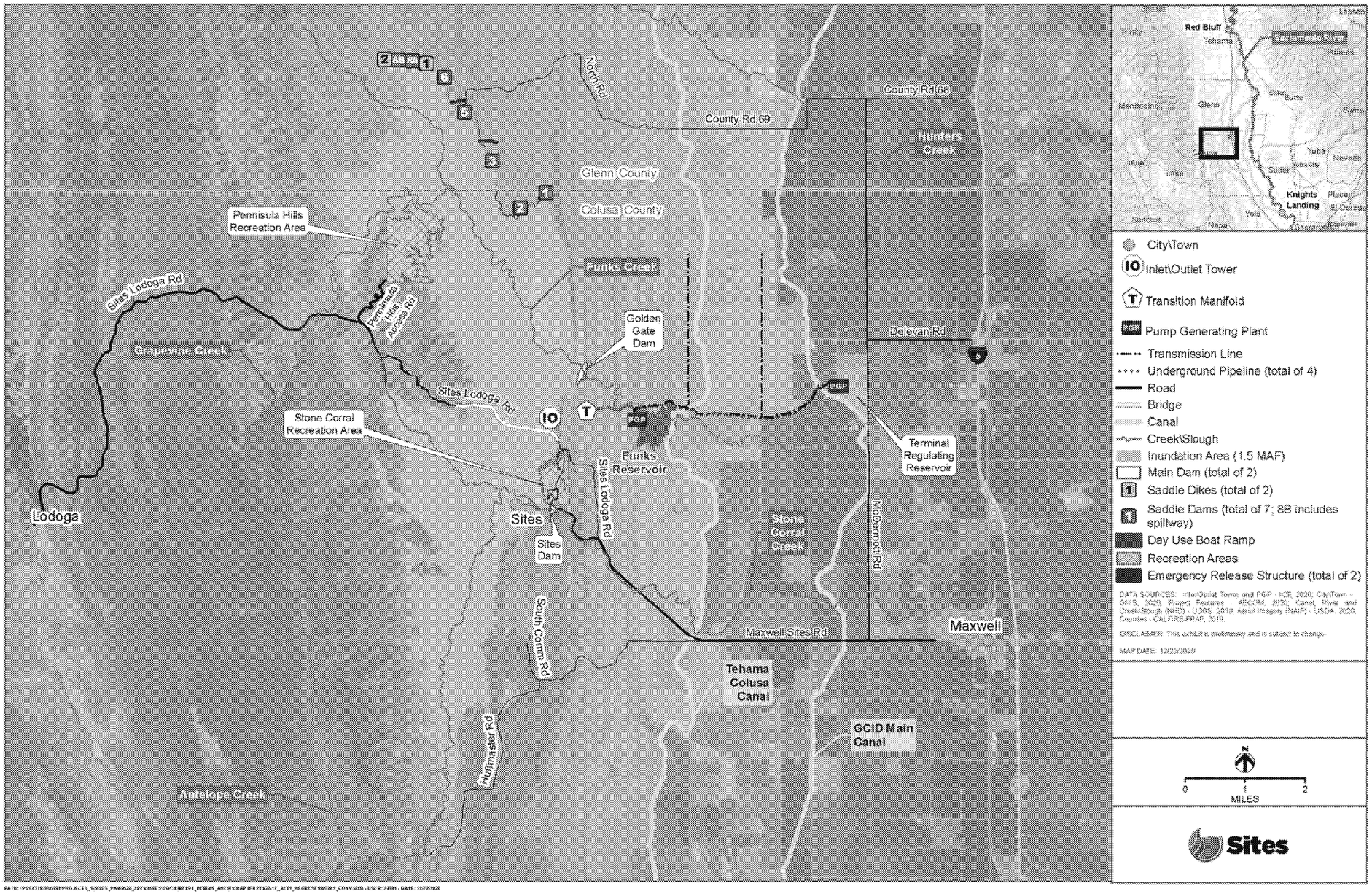


Figure 2-1. Alternatives 1 and 3 Regulating Reservoirs and Conveyance and Sites Reservoir Facilities

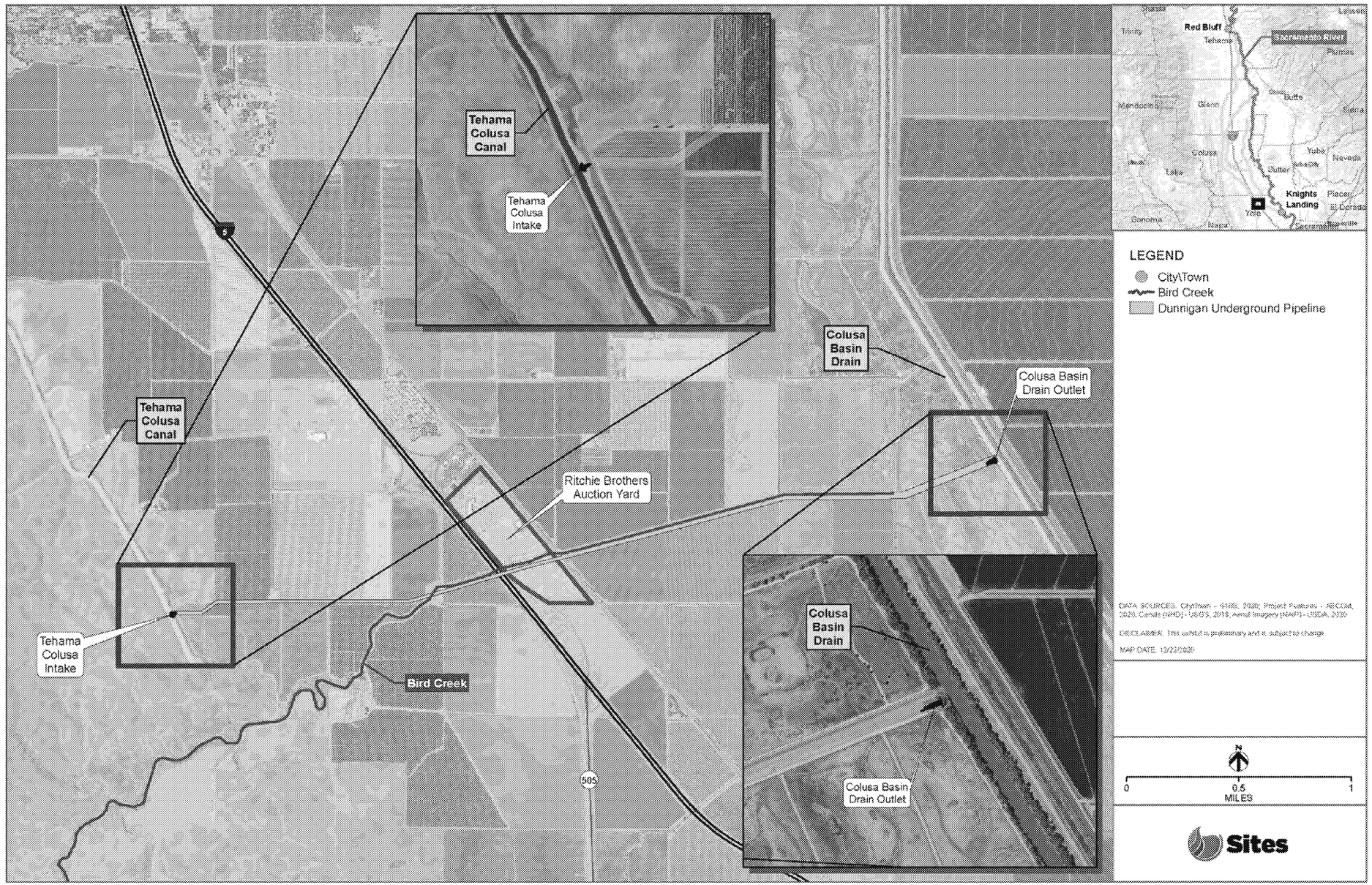


Figure 2-2. Alternatives 1 and 3 Conveyance to Sacramento River Components

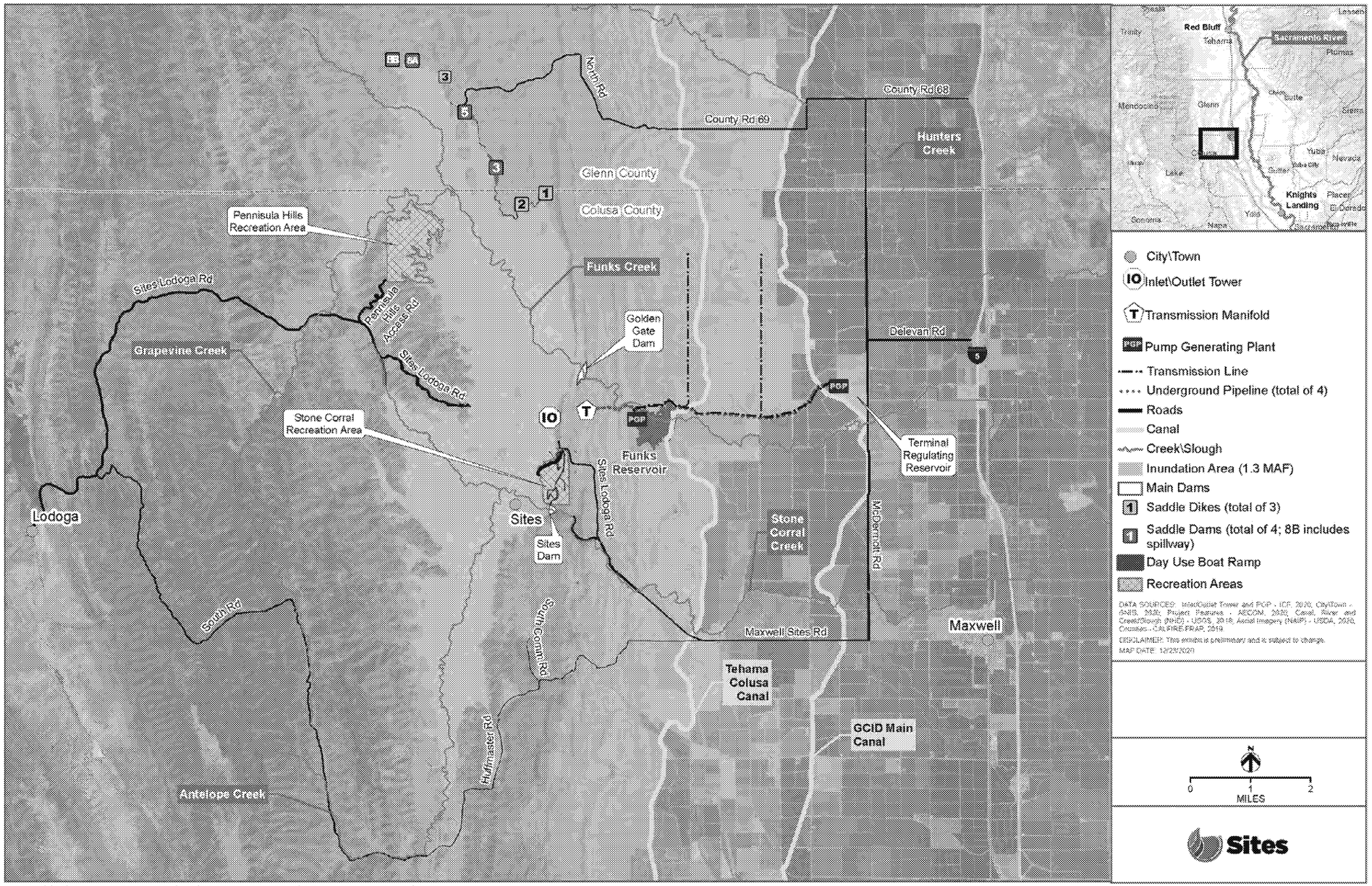


Figure 2-3. Alternative 2 Regulating Reservoirs and Conveyance and Sites Reservoir Facilities



Figure 2-4. Alternative 2 Conveyance to Sacramento River Components

It should be noted that the Authority could decide to approve a version of Alternative 2 (with a 1.3-MAF reservoir) that incorporates the bridge component of Alternative 1, or the CBD release component of Alternative 1 instead of release to the Sacramento River, or both of these distinct components. Similarly, the Authority could decide to approve a version of Alternative 1 (with a 1.5-MAF reservoir), or a version of Alternative 3, that incorporates the roadway improvements without the bridge as contemplated by Alternative 2, or the Sacramento River release component of Alternative 2 instead of the CBD release, or both of these distinct components. In this way, the evaluation of Alternatives 1, 2 and 3 actually incorporates a spectrum of multiple options for the decision-makers about the Project facilities and components.

2.4 No Project/Action Alternative

The CEQA Guidelines require that an EIR analyze the No Project Alternative. Evaluation of the No Project Alternative allows decision makers to compare the impacts of approving a proposed project with the impacts of not approving the proposed project. This RDEIR/SDEIS evaluates a No Project Alternative that assumes the Project would not be implemented and considers what would be reasonably expected to occur in the foreseeable future if the Project were not approved, based on current plans and consistent with available infrastructure and community services.

NEPA similarly requires an analysis of an alternative in which the project is not implemented assuming continuation of existing policies and management direction into the future. Under NEPA, the No Action Alternative accounts for reasonably foreseeable changes in existing conditions. Existing conditions includes changes that would reasonably be expected to occur in the foreseeable future if the Project were not approved, based on current plans and consistent with available infrastructure and community services.

For this RDEIR/SDEIS, the term *No Project Alternative* describes both the No Project Alternative and No Action Alternative for CEQA and NEPA purposes, respectively. Because none of the proposed facilities would be constructed or operated, the No Project Alternative would not materially change conditions as compared to existing conditions. The No Project Alternative assumes the same regulatory criteria as existing conditions. This is because reasonably foreseeable programs and projects included within the No Project Alternative affect water supply, water quality, or anadromous fisheries conditions and are part of existing conditions. For example, the implementation of the 2019 Biological Opinions from the U.S. Fish and Wildlife Service and National Marine Fishery Service for the Reinitiation of Consultation on the Coordinated Operations of the CVP and SWP (ROC on LTO; USFWS 2019 and NMFS 2019) and the Incidental Take Permit for Long-term Operations of the State Water Project in the Sacramento-San Joaquin Delta (SWP ITP; CDFW 2020) are included in both existing conditions and the No Project Alternative.

In addition, DWR's projected future land use and water use are typically included as fundamental assumptions in the CALSIM II model (see Appendix 1A, Introduction to Appendices and Modeling Information, and Chapter 5, Surface Hydrology Resources, for more information regarding CALSIM) as part of the impact evaluation process. These 2030 water demand conditions indicate that the vast majority of the CVP and SWP water contractors would

use their total contract amounts and that most senior water rights users also would fully use most of their water rights, depending on the hydrologic condition. The Sites Project Authority (Authority) has accepted this assumption for this analysis. This increased demand in addition to the projects currently under construction and those that have received approvals and permits at the time of preparation of the RDEIR/SDEIS constitute the No Project Alternative. Furthermore, the rural nature of the area and limited potential for growth and development in Colusa, Glenn and Yolo Counties within the 2030 study period used for this RDEIR/SDEIS supports similarities between the No Project Alternative and existing conditions.

Under the No Project Alternative, existing conditions outlined in the following resource chapters would not be altered by the Project. However, Project benefits would also not be achieved. Under the No Project Alternative, flood control, ecosystem improvement, and recreation benefits that are part of the Project would not be funded and implemented as part of WSIP. The No Project Alternative would also not provide water supply reliability, operational flexibility, benefits to anadromous fish, water supply for refuges and Delta ecosystem benefits sought with potential Reclamation investment. Finally, the No Project Alternative would eliminate one opportunity to provide a multi-benefit project consistent with the Governor's Water Resilience Portfolio. The No Project Alternative would not meet the Project objectives and purpose and need stated in Chapter 1 but is analyzed in this RDEIR/SDEIS, consistent with CEQA and NEPA requirements.

2.5 Elements Common to All Action Alternatives

Project facilities, operations and maintenance, construction considerations, commitments and BMPs, and Proposition 1 benefits common to all of the Action Alternatives are described below.

2.5.1 Facilities Common to All Action Alternatives

The facilities common to all the Action Alternatives are described below. Design and construction considerations for these facilities are also described. Additional detail for construction means and methods are described in Appendix 2C, Construction Means, Methods, and Assumptions.

2.5.1.1 Sacramento River Diversion and Conveyance to Regulating Reservoirs

All Action Alternatives include the diversion of water from the Sacramento River at the existing RBPP into the existing TC Canal and at the existing Hamilton City Pump Station into the existing GCID Main Canal. The RBPP and TC Canal are owned by Reclamation and operated by the Tehama Colusa Canal Authority. The RBPP has an existing fish screen that meets NMFS and CDFW fish screen criteria. The Hamilton City Pump Station and GCID Main Canal are owned and operated by GCID. The Hamilton City Pump Station has an existing fish screen that meets NMFS and CDFW fish screen criteria. Some improvements would be made to these facilities to allow for Project operations concurrent with these facilities continuing to meet their intended purposes. The location of these improvements is shown in Figure 2-5 and these improvements are described below.

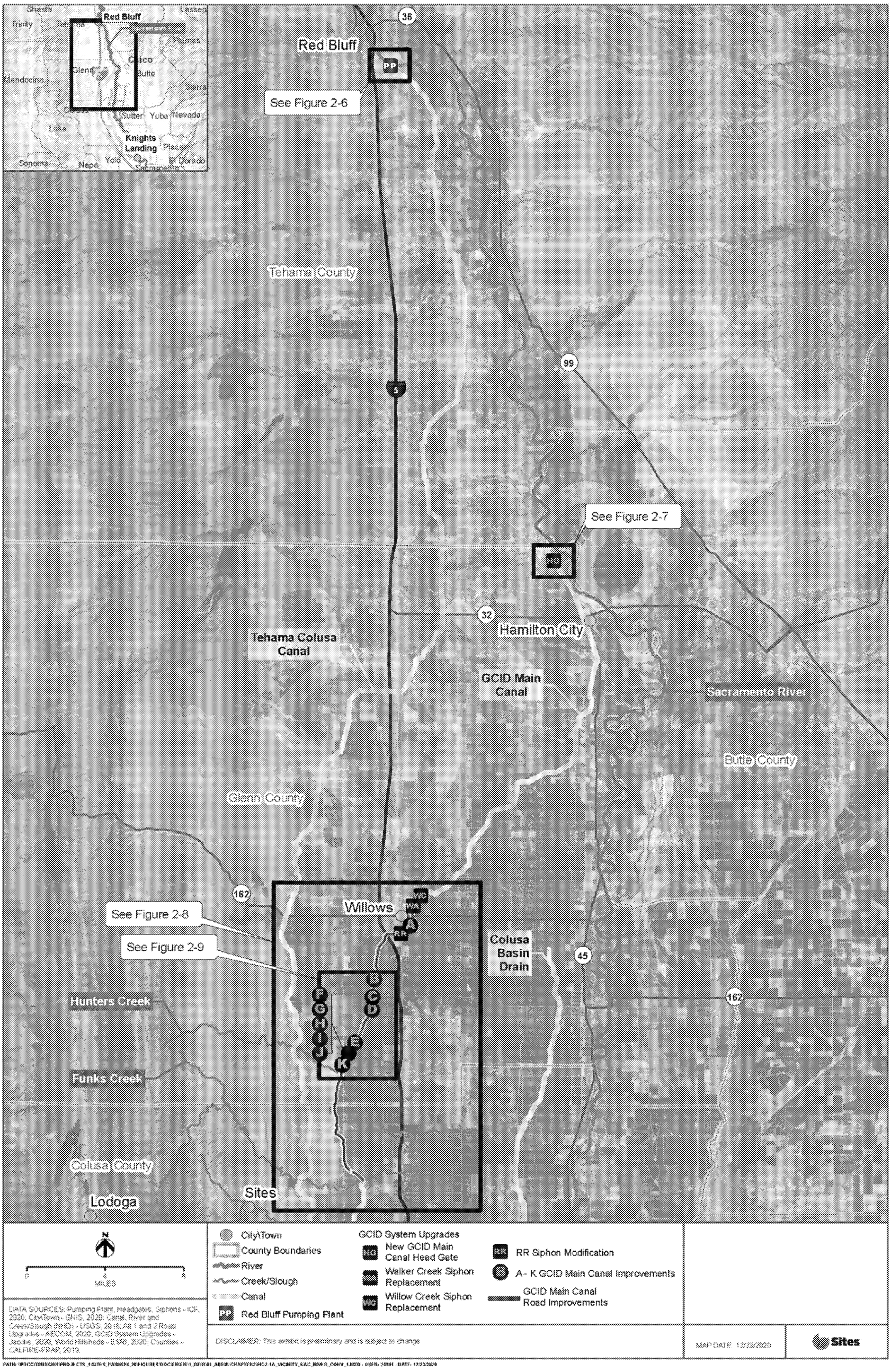


Figure 2-5. Sacramento River Conveyance Components

Tehama-Colusa Canal Diversion

All Action Alternatives include the installation of two additional 250-cfs vertical axial-flow pumps into existing concrete pump bays at the RBPP. The addition of these two pumps would increase the capacity from 2,000 to 2,500 cfs, as well as provide redundancy. See Figure 2-6 for a vicinity map of the RBPP and see Appendix 2C for plan and profile views of the proposed pumps.

The installation of the additional pumps at the RBPP under all of the Action Alternatives would occur at existing facilities and would require limited construction equipment and personnel over a period of approximately 2 months.

GCID Main Canal Diversion and System Upgrades

The GCID system may require several different upgrades to support the operation of Sites Reservoir. The specific details of these upgrades would be confirmed during future hydraulic modeling and assessment of conditions. However, for the purposes of this document and the impact analyses contained herein, it is assumed construction would be performed at various locations along the GCID Main Canal, as described below.

All Action Alternatives would require a new 3,000-cfs Main Canal head gate structure about 0.25 mile downstream of Hamilton City Pump Station (Figure 2-7). This new structure is required because the existing head gate structure would not be adequate for proposed winter operation due to the decrease in water elevation across the structure during high river levels. The existing head gate structure would be left in place to continue to serve as a bridge between County Road 203 and County Road 205 in Glenn County. This structure would continue to operate during construction of the new head gate structure and diversion activities would continue throughout construction. The new head gate structure would be constructed upstream of the existing structure and would include eight automated gates. The water level and flow control functions would involve operating conditions that would result in water surface drops across the head gate of between 3 and 15 feet. The canal reach immediately downstream of the new head gate structure would be lined with concrete for approximately 35 feet to prevent erosion.

GCID typically dewaters their Main Canal for up to 6 weeks each year between early January and late February for maintenance activities. This is the time of year that the Project seeking to utilize the GCID Hamilton City Pump Station and GCID Main Canal to divert and convey under the Project. To reduce this current winter shutdown period from 6 weeks to 2 weeks, other improvements would be required to integrate Sites Reservoir into the GCID system. All Action Alternatives would involve replacing the Walker Creek siphon (MP 24.48) and Willow Creek siphon (MP 24.68) on the Main Canal to allow for increased capacity (Figure 2-8 and Figure 2-9). The siphon under the Union Pacific Railroad (i.e., railroad siphon) at MP 26.6 would be improved by adding an additional barrel to allow for increased capacity.

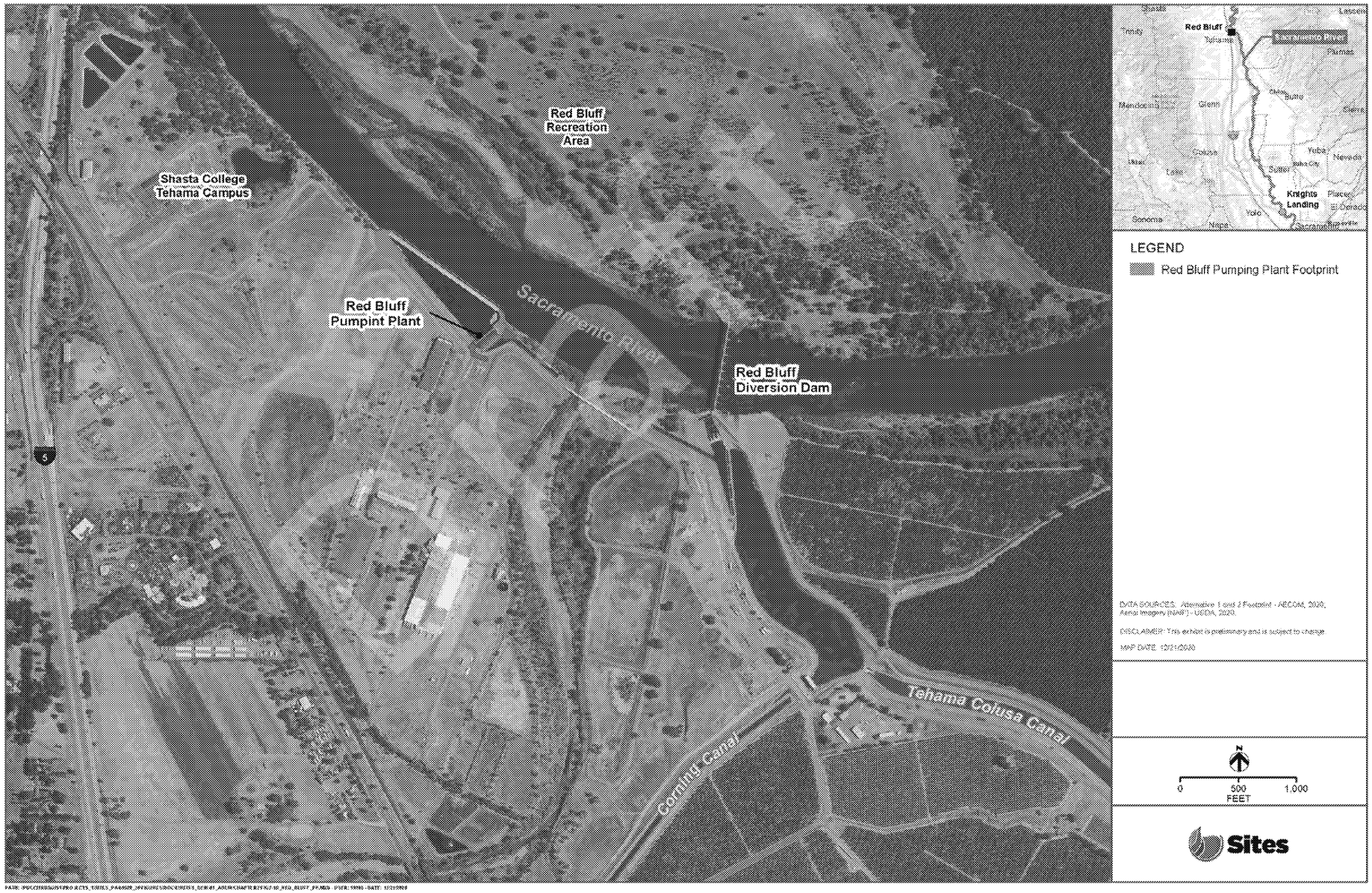


Figure 2-6. Red Bluff Pumping Plant



Figure 2-7. GCID Main Canal Head Gate Structure

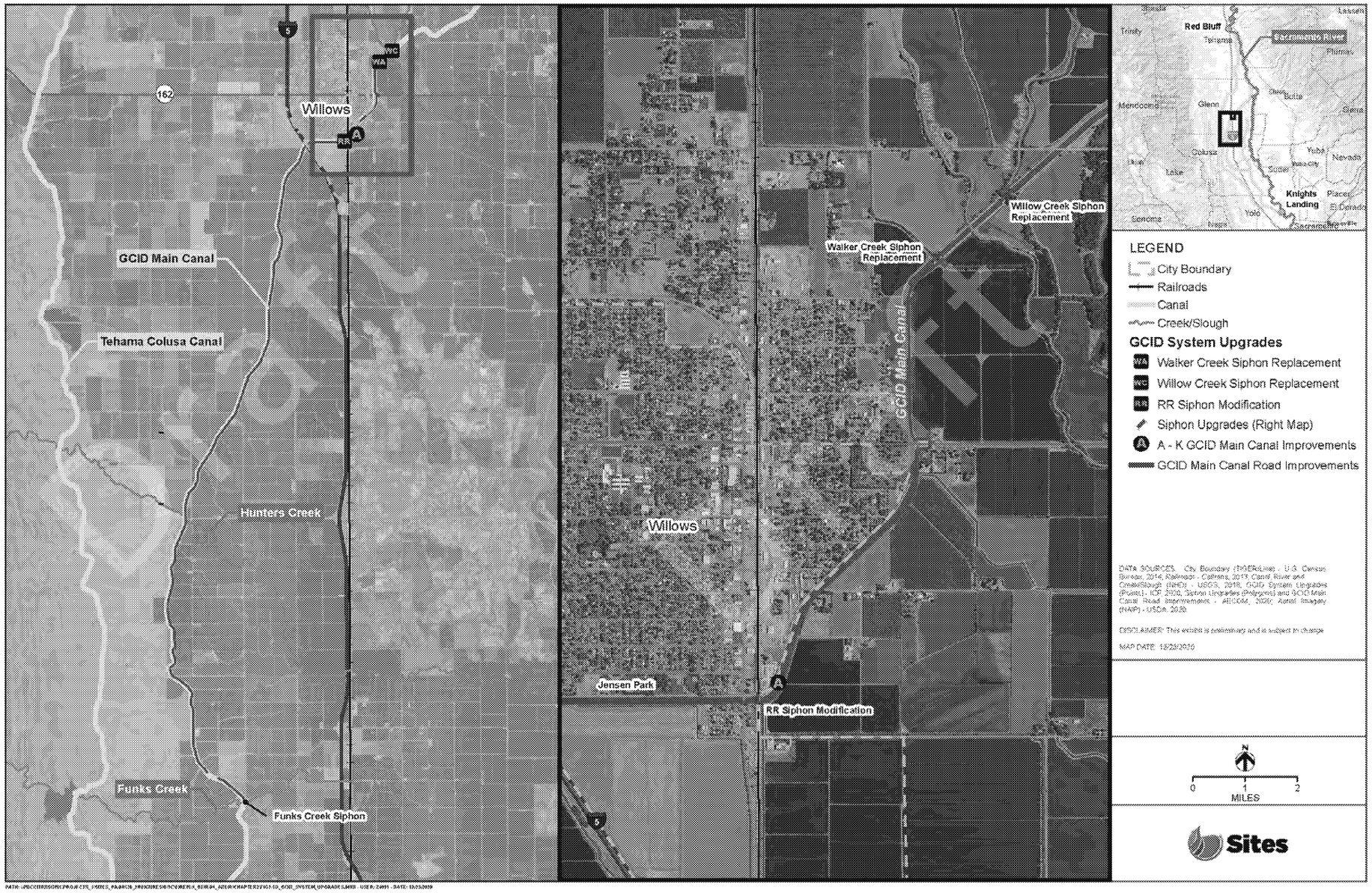


Figure 2-8. GCID System Upgrades



Figure 2-9. GCID System Upgrades Continued

All Action Alternatives would entail Main Canal improvements between MP 26 and MP 41.3 to increase the freeboard between Willows and the TRR to a standard 2.5 feet; under existing conditions the freeboard range is 1 to 2 feet. All Action Alternatives would also require road improvements to approximately 17 miles of left bank canal road between the existing Willow Creek siphon and the existing Funks Creek siphon to ensure an all-weather road surface (see Figure 2-8). These road improvements would primarily consist of adding approximately 6 inches of aggregate base material. GCID would manage the facility upgrades using an approach consistent with their existing management practices.

Construction of improvements along with GCID Main Canal would occur in the winter during the regular shutdown period. For the additional siphons on the Main Canal, a portion of the canal around the siphon would be dewatered using an earth coffer dam lined with geomembrane and sump pumps. Using a bore-and-jack procedure a new barrel would be installed, and new headwalls on the upstream and downstream end would be installed to approximately match the existing headwall. Construction staging areas would be in the immediate area of the improvements. The proposed upgrade of the railroad siphon would require coordination and planning with the railroad owners. Construction restrictions may exist regarding minimizing interference with regular railroad operations. To the extent possible, upgrades to the railroad siphon would take place during periods of lowest train traffic, and railroad shutdown time would be minimized.

Earthwork related to the GCID Main Canal to increase the freeboard to 2.5 feet would require a total fill of 5,000 cubic yards. There would be no excavation and only minor reshaping and addition of fill to the sides of the canal. The fill would be sourced from other project spoils and there would be no net import. Construction related to roughly 17 miles of road improvements would require approximately 27,000 cubic yards of aggregate base. It is anticipated the aggregate would be imported from a rock plant within 20 miles of the GCID Main Canal. The GCID improvements along the Main Canal and the existing road would occur within existing rights-of-way and construction would not permanently remove any existing crops.

2.5.1.2 Regulating Reservoirs and Conveyance Complex

Multiple facilities would be required to control the conveyance of water between Sites Reservoir and the TC Canal and GCID Main Canal. These facilities would include regulating reservoirs, pipelines, pumping generating plants (PGPs), switchyards, and administration and maintenance buildings. These facilities are described below.

Terminal Regulating Reservoir

Pumping from the GCID Main Canal to Sites Reservoir would require construction of the TRR facilities. There would be four primary facilities: the TRR, the TRR PGP, an electrical substation, and TRR pipelines. The TRR facilities would be located in Colusa County north of the GCID Main Canal and west of McDermott Road. The approximately 150-acre site would be accessed by an asphalt concrete paved road off McDermott Road. Paved parking would be provided near the PGP. Asphalt concrete paved roads would provide onsite vehicle access between the TRR PGP and electrical substation, with facility spacing to accommodate an operational crane. The proposed TRR PGP and electrical substation would encompass approximately 7 acres and would be enclosed with security fence with access gates on the south

and east sides. See Figure 2-10, Terminal Regulating Reservoir Facilities Site Plan, for the locations of the proposed TRR-related facilities.

The TRR facilities are within a designated Federal Emergency Management Agency (FEMA) Special Flood Hazard Area, Zone A, Without Based Flood Elevation. Site drainage would be conveyed offsite to the existing GCID Main Canal or directly into the TRR through shallow swales or overland flow.

The new TRR would encompass approximately 100 acres immediately east of the GCID Main Canal and have a storage capacity of approximately 600 acre-feet (AF). The TRR would have earthen embankments around its perimeter and an impermeable lining consisting of a geomembrane overlying geocomposite placed over compacted earth. The TRR would be hydraulically connected to the GCID Main Canal to allow water to be conveyed to and from the Sites Reservoir. The TRR would accommodate inflows of up to 1,800 cfs. The GCID Main Canal would be the conveyance source of water for the TRR and its PGP to pump water to Sites Reservoir. The canal would also be the primary conveyance for releases of water from the TRR and its PGP from Sites Reservoir. The spillway for the TRR would be located at the southernmost corner of the reservoir and discharge into Funks Creek.

Access between the east and west sides of the GCID Main Canal adjacent to the TRR would be over a new bridge between the TRR embankment near the gate structures and the west side of the GCID Main Canal. The bridge is anticipated to consist of a pre-cast concrete span between the banks of the GCID Main Canal with concrete abutments founded on piles.

TRR Pumping Generating Plant

A TRR PGP would pump water from the TRR to Sites Reservoir; the PGP would include hydroelectric turbines to generate electricity when water was released from Sites Reservoir to the TRR. The PGP would include the following three facilities in five buildings: one pump station, two turbine generator buildings, and two energy dissipating structures (Figure 2-11, TRR Pump Generating Plant Facilities). The pumping plant would have a design capacity of 1,800 cfs, the generating plant 1,000 cfs, and the energy dissipation 1,000 cfs.

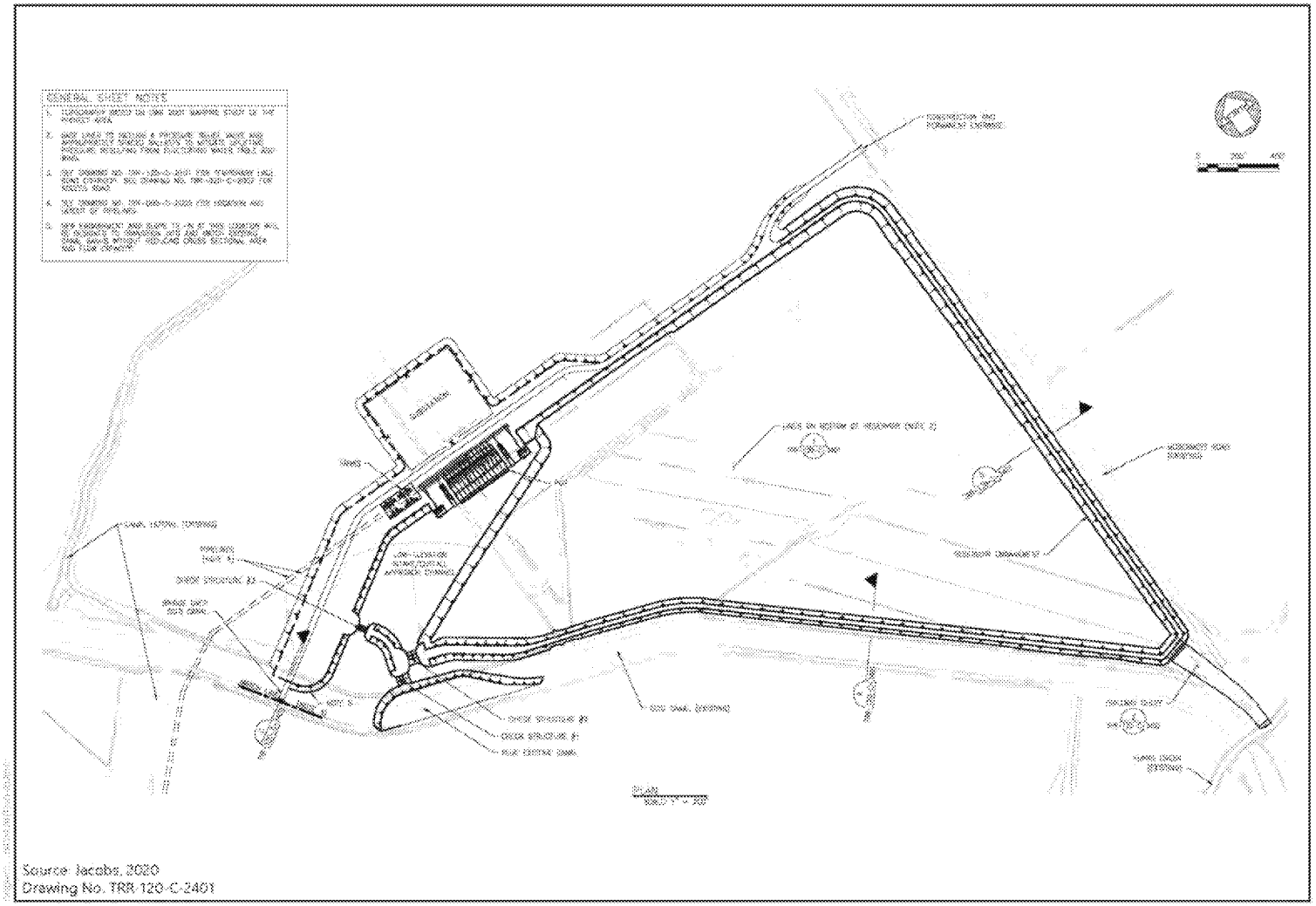


Figure 2-10. Terminal Regulating Reservoir Facilities Site Plan

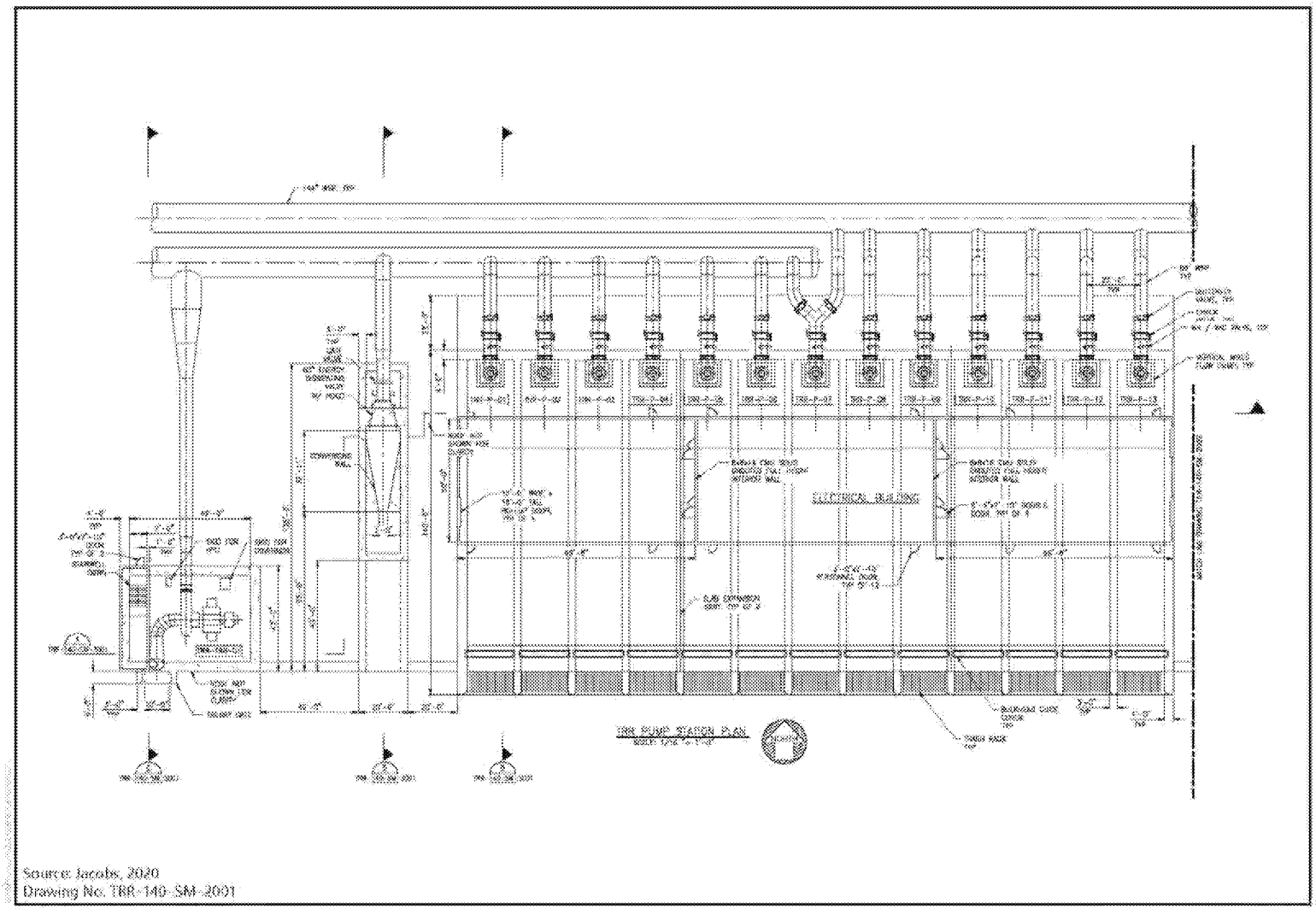


Figure 2-11. TRR Pump Generating Plant Facilities

The pump station would support the pumps at the edge of the TRR and be designed to minimize pump vibration. A trashrack would be installed at the front of the wet well to exclude debris. Bulkhead slots would be provided at each wet well to allow bulkheads to be installed and isolate pump bays for maintenance. The pump station would contain 13 pumps in a single row. Six pumps each would feed into two 12-foot-diameter pipes connecting to the turbines (discussed below), and there would be a single standby pump that could feed into either pipe. It is anticipated that all pumps would have a variable frequency drive to adjust to the variable pumping heads while staying within the pump operating range and efficiency.

The two turbine generator buildings would house the turbines, generator, draft tube, associated piping appurtenances, and other electrical equipment. There would be two 13-kilowatt turbines (one for each 12-foot-diameter pipe) that would have a horizontal laying flow pattern. The turbines would discharge water into a draft tube prior to exiting into the TRR. Because the discharge would need to be submerged, the turbines would be in an underground structure with a roof. The aboveground portion of the turbine generator buildings would consist of concrete masonry unit walls.

The two energy dissipation valve structures would allow releases back to the TRR as back-up to the hydroelectric turbine facilities. These structures would each contain a stilling basin and fixed cone valve to dissipate energy before water enters the TRR. There would be a 60-inch fixed cone valve on each of the two 12-foot-diameter pipes for a total of two 60-inch fixed cone valves and a total flow of 1,000 cfs.

TRR Electrical Substation

The TRR PGP would require a substation to provide electricity to the associated facilities described above. The electrical substation would connect to existing Pacific Gas and Electric Company (PG&E) or Western Area Power Administration (WAPA) lines. The facility would be constructed on approximately 1.5 acres within the TRR PGP footprint to the north of the TRR. The dimensions of the electrical substation would depend on whether it is connected with PG&E or WAPA lines. The substation would be approximately 460 feet long by 300 feet wide if connected to PG&E lines and be 300 feet long by 240 feet wide if connected to WAPA lines. Figure 2-12, TRR Electrical Substation, provides a plan view of the facility.

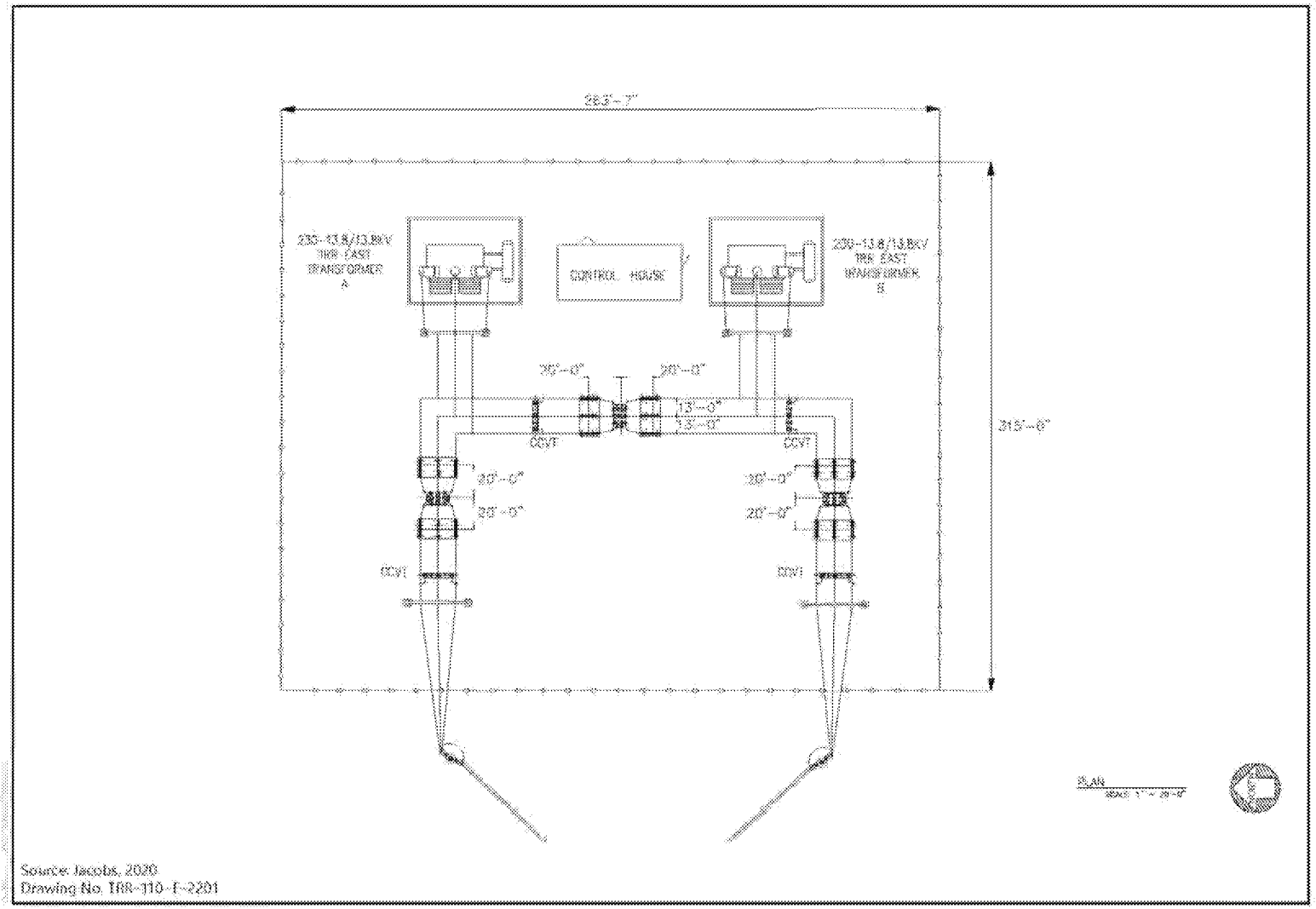


Figure 2-12. TRR Electrical Substation

The electrical substation would use electrical equipment that meets the standards of the National Electrical Manufacturers Association, American National Standards Institute, and Institution of Electrical and Electronics Engineers. Additionally, equipment that is listed or labeled as meeting the safety standards or ratings identified by Underwriter Laboratories or a nationally recognized testing laboratory would also be used. The substation design would include primary safety equipment (e.g., circuit breakers, utility-grade relays) and meet the total pumping power requirements or total generation requirements. For more information regarding the pumping power requirements or total generation requirements, please see Section 2.5.2.2, *Energy Generation and Energy Use*. The substation would have sufficient redundancy such that the failure of any one component would permit the substation to be safely and reliably isolated from the transmission system under fault conditions.

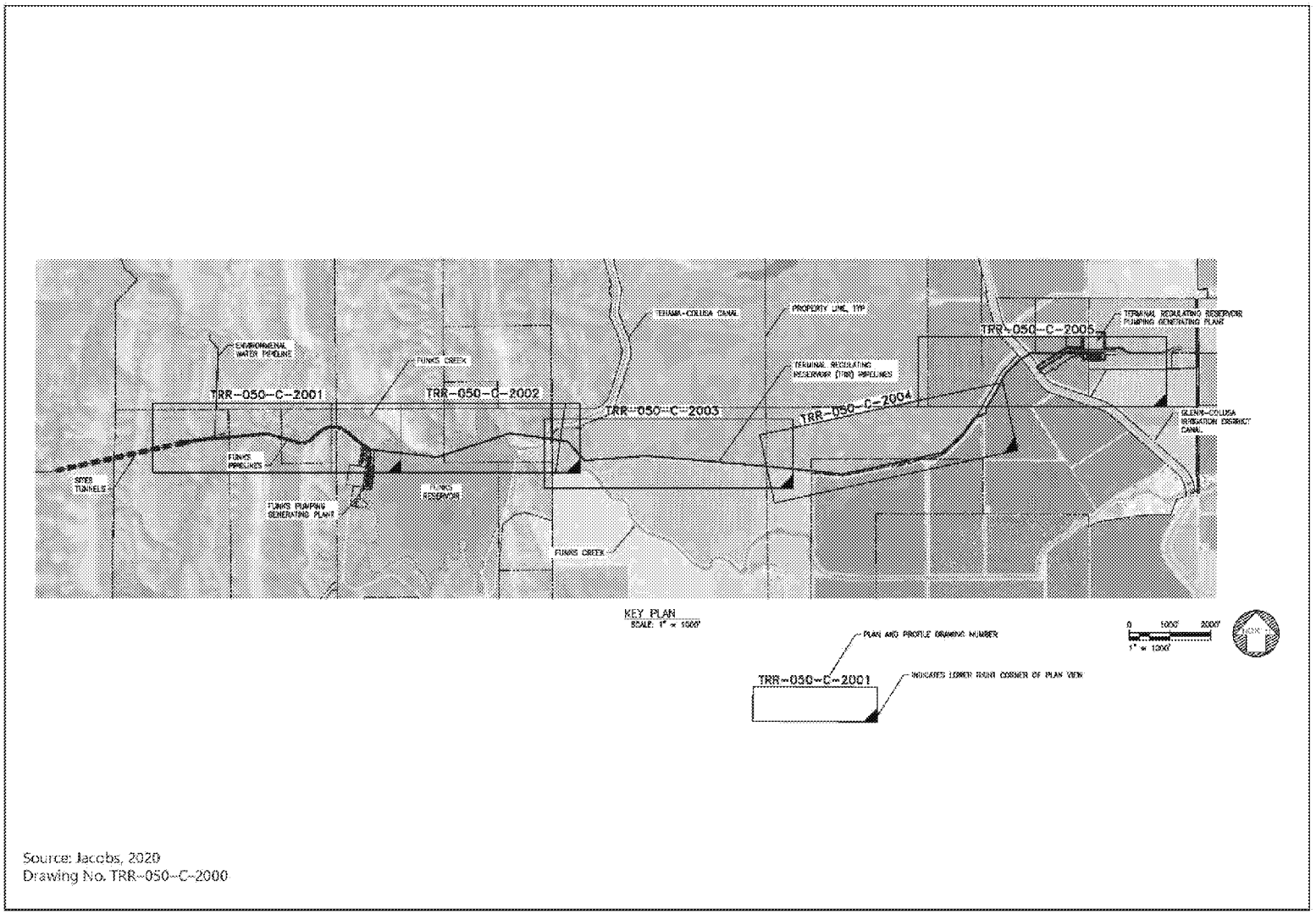
TRR Pipelines

Two underground TRR pipelines would convey water approximately 4.5 miles between the TRR PGP and Sites Reservoir. See Figure 2-13, TRR Pipelines, for the location and alignment route of the pipelines. The 12-foot-diameter pipes would extend from the TRR PGP, under Funks Reservoir, and terminate at the transition manifold south of Funks Creek near the Golden Gate Dam. Both TRR pipelines would connect to one of the two side-by-side, 23-foot-inside diameter I/O tunnels at the transition manifold.

The pipelines would parallel the Funks pipelines and Funks Creek and would generally be from 6 feet to 30 feet below ground surface after installation (does not include depth below ground surface where tunneling occurs, which could be up to 100 feet). Trenching for pipelines would include the use of excavators and would be excavated to meet all applicable requirements. Between the TRR and Funks Reservoir, the pipelines would cross the TC Canal using a trenchless method or open cut, depending on construction schedule. East of the TC Canal, the TRR pipelines would run parallel to a drainage canal until they reached the GCID Main Canal where they would cross using a trenchless method or open cut, depending on construction schedule.

Funks Reservoir

The existing Funks Reservoir would be used to store and pump water from the TC Canal to and from Sites Reservoir. Excavation of existing accumulated sediment from Funks Reservoir would be required, as would the construction of three facilities: Funks PGP, an electrical substation, and Funks pipelines. These facilities would be constructed in Colusa County, west of the TC Canal, on approximately 7 acres. The overall site would be enclosed by a security fence with access gates on the south and northwest sides. See Figure 2-14, Funks Reservoir Facilities Site Plan, for the location of the facilities.



Source: Jacobs, 2020
Drawing No. TRR-050-C-2000

Figure 2-13. TRR Pipelines

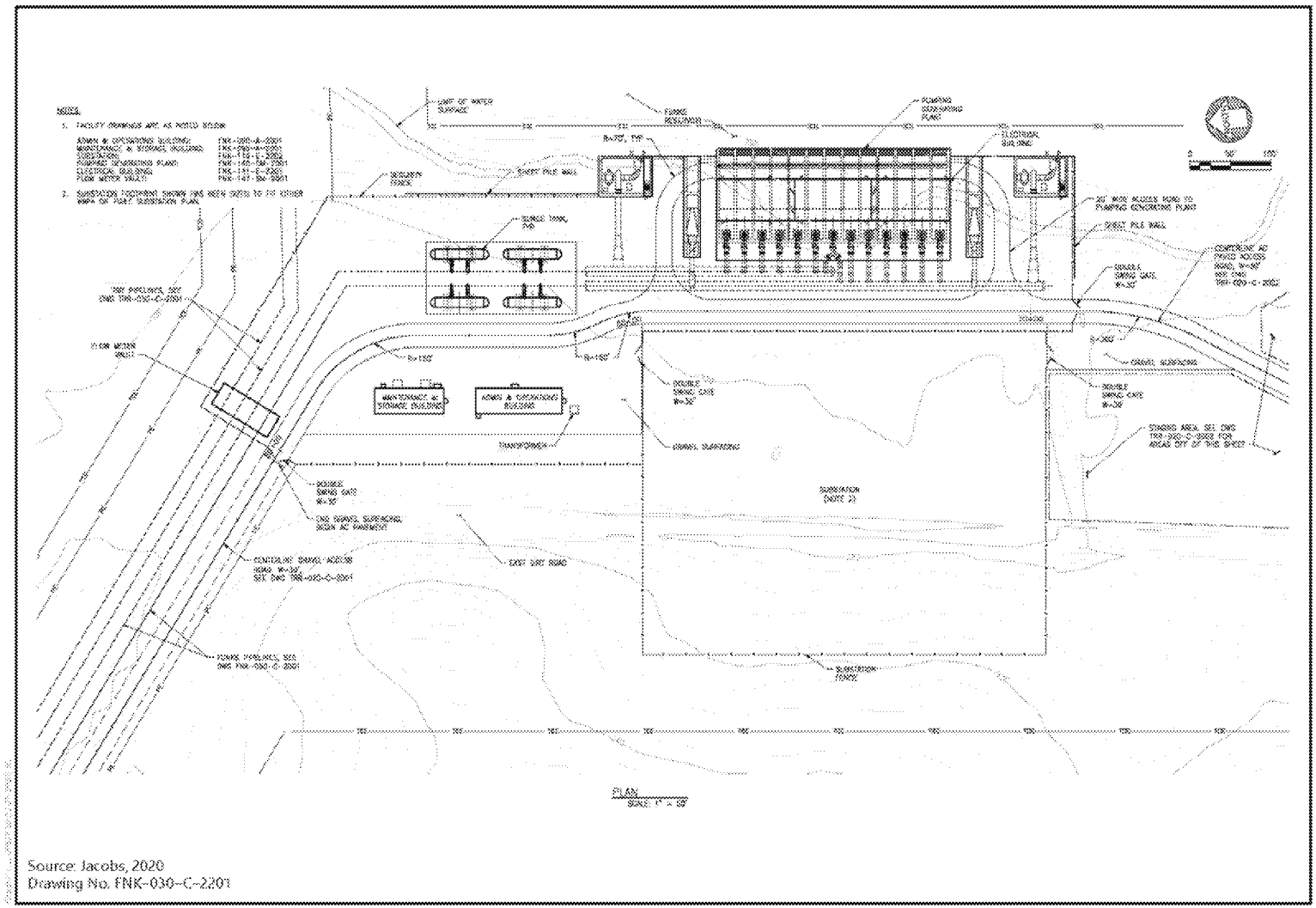


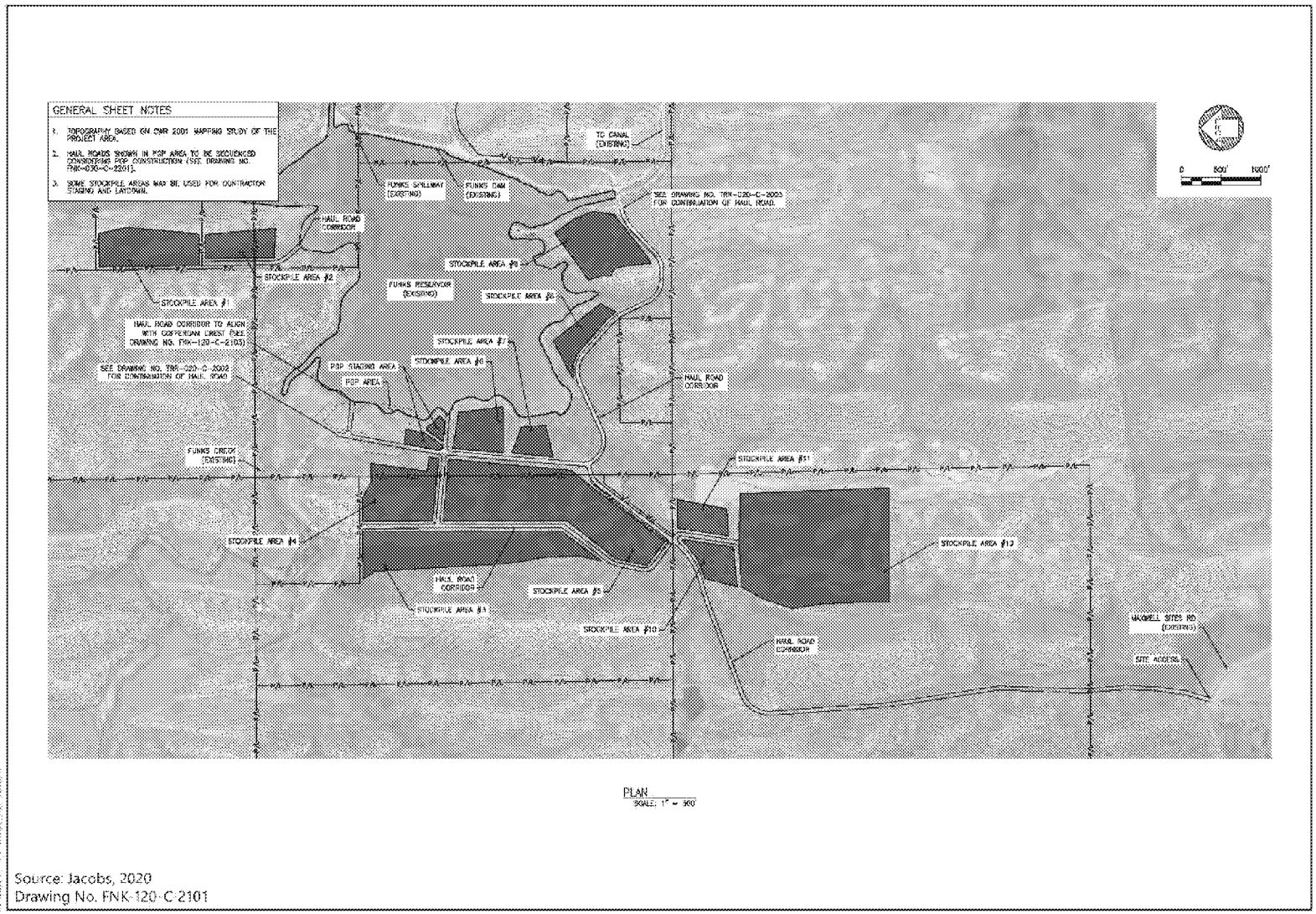
Figure 2-14. Funks Reservoir Facilities Site Plan

Access to the Funks Reservoir-related facilities would be provided at the north and south ends of the site. A gravel parking area would be provided near the PGP. Asphalt concrete paved, onsite vehicular access would be provided between the Funks PGP and electrical substation, with facility spacing to accommodate an operational crane. The facilities site would be accessed by an asphalt concrete paved road from Maxwell Sites Road to the south. Existing gravel roads would be improved to be 30 feet wide, with asphalt concrete surfacing for the southern access route, and would be relocated through the site. A gravel bypass road may be provided to the west of the site. On the north side of the facilities site, the existing dirt road would be improved to be a gravel road that would follow the existing road alignment until it reaches the TRR pipeline. At that location, a new access road would be built along the Funks and TRR pipelines to the connection with the I/O tunnels.

The proposed location of the Funks Reservoir-related facilities is in a FEMA Area of Minimal Flood Hazard, Zone X. Onsite drainage would be conveyed offsite directly into Funks Reservoir through shallow swales or overland flow. Offsite stormwater runoff would be collected on the west side of the site in a ditch, conveyed around the site, and deposited into Funks Reservoir.

The existing Funks Reservoir would be used as a source of water to pump to Sites Reservoir and would receive water discharged from the reservoir. The Funks Reservoir operational WSE can only vary slightly from the TC Canal and the reservoir WSE typically ranges from 200 to 205 feet, although the preferred operational WSE range is 202 to 204 feet.

All Action Alternatives would not alter the footprint of Funks Reservoir; however, 740,000 cubic yards of sediment that has accumulated since originally constructed would be excavated from the reservoir. The excavation is anticipated to restore the original capacity of Funks Reservoir. Excavation would proceed to an elevation of approximately 197 feet in the reservoir and 185.5 feet near the Funks PGP on the western side. The bottom of Funks Reservoir would be reshaped to allow large, unimpeded flows to and from the Funks PGP. The excavated sediment would be deposited adjacent to Funks Reservoir as shown on Figure 2-15. For the purposes of this analysis, the sediment is assumed to remain near Funks Reservoir.



Source: Jacobs, 2020
Drawing No. FNK-120-C-2101

Figure 2-15. Funks Reservoir Stockpile and Haul Route Plan

Funks Pumping Generating Plant

The Funks PGP would be used to pump water from Funks Reservoir to Sites Reservoir. The PGP would be constructed on the northwest side of Funks Reservoir. The PGP would include the following three facilities in five buildings: one pump station, two turbine generator buildings, and two energy dissipating structures. An electrical building would also be constructed behind the pumps as part of the pump station. See Figure 2-16, Funks Pump Generating Plant Facilities.

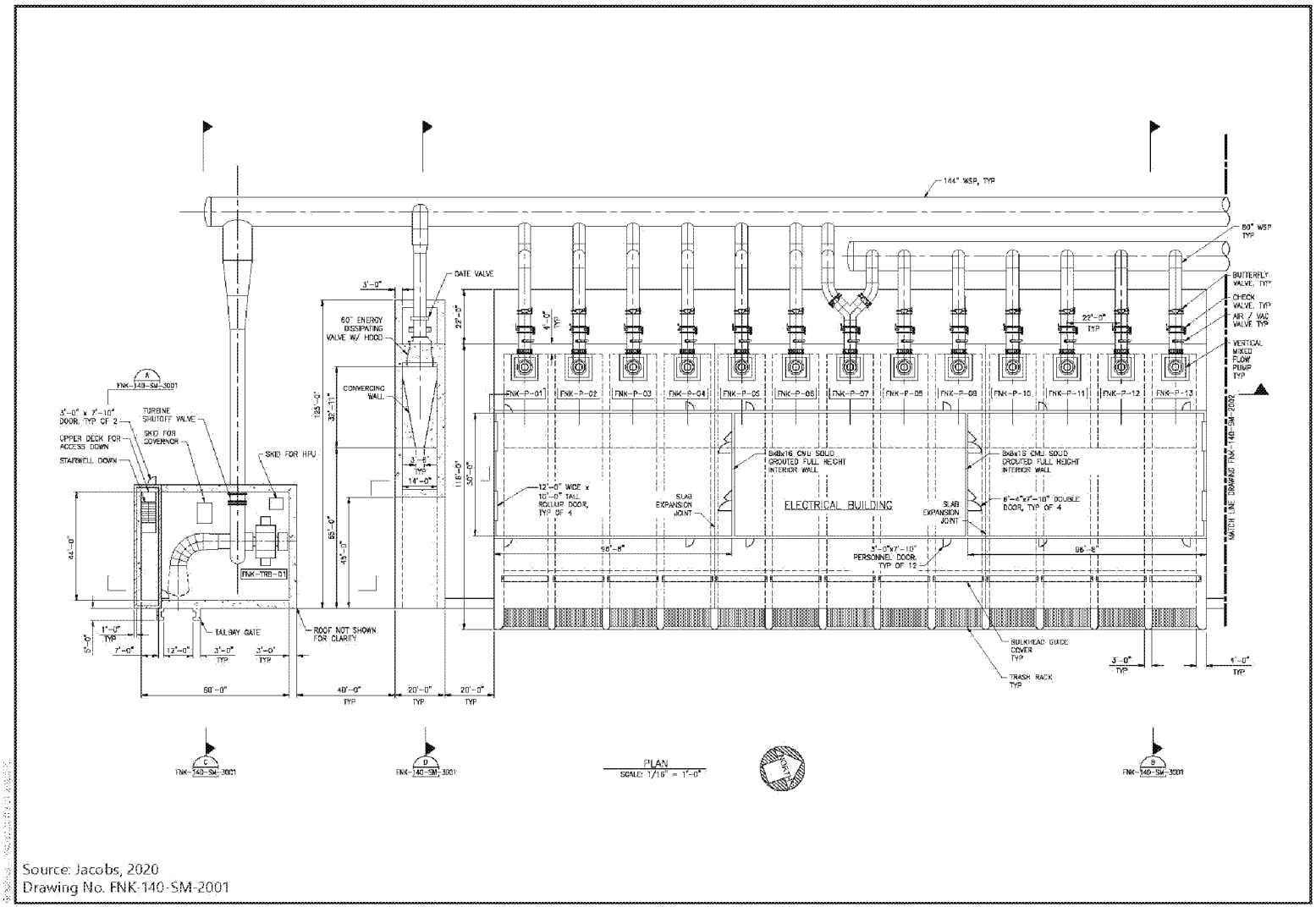
The Funks pump station would be similar to the TRR pump station, except that the orientation of 12-foot-diameter pipelines would be different. The pump station would have a flow rate of 2,100 cfs. The turbine generator buildings would be the same as described for the TRR PGP, and each generator would have a design criterion of 1,000 cfs for redundancy. There would be two turbines, 20-megwatt and 14.5megawatt. Each of the two energy dissipation structures would consist of a single 60-inch fixed cone valve with a design criterion of 1,000 cfs. There would be a 60-inch fixed cone valve on each of the two 12-foot-diameter pipes for a total of two fixed cone valves and a total flow of 2,000 cfs (1,000 cfs each).

Funks Electrical Substation

As with the TRR PGP, the Funks PGP would require a substation to provide electricity to the Funks PGP facilities. This substation would connect to either existing WAPA or PG&E lines. The substation would be located west of Funks Reservoir in the footprint of the Funks PGP and would encompass approximately 3 acres. The Funks electrical substation would be similar to the TRR electrical substation; it would be approximately 460 feet long by 300 feet wide if connected to PG&E lines and would be 300 feet long by 240 feet wide if connected to WAPA lines. There is no difference between the Funks substation and the TRR substation. The substation would be designed to accommodate the total pumping power requirements (import) or total generation requirements (export).

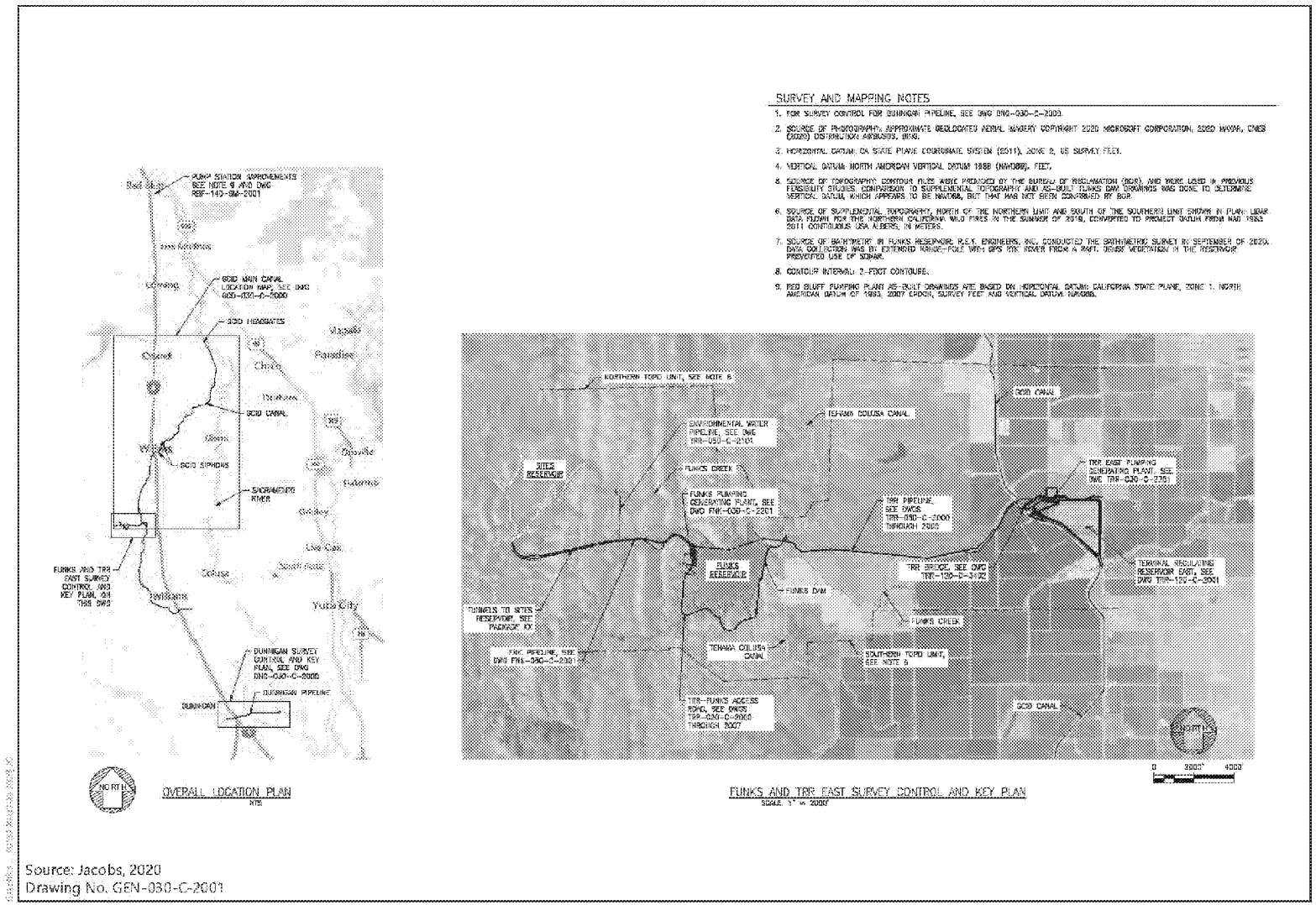
Funks Pipelines

Two underground Funks pipelines would convey water approximately 1 mile between the Funks PGP and Sites Reservoir. See Figure 2-17, Conveyance Complex Pipelines, for the location and alignment route of the pipelines. The 12-foot-diameter pipes would extend from the Funks Reservoir and Funks PGP and terminate at the transition manifold south of Funks Creek near the Golden Gate Dam. The Funks pipelines generally run parallel to the TRR pipelines. After curving around Funks Creek and hilly areas, the Funks pipelines run south, deviating from the TRR pipeline alignment, to the Funks PGP. Both TRR pipelines would connect to one of the two side-by-side, 23-foot-diameter I/O tunnels at the transition manifold. After installation, the pipelines would generally be from 6 feet to 25 feet below ground surface.



Source: Jacobs, 2020
Drawing No. FNK-140-SM-2001

Figure 2-16. Funks Pump Generating Plant Facilities



Source: Jacobs, 2020
Drawing No. GEN-030-C-2001

Figure 2-17. Conveyance Complex Pipelines

Transition Manifold

The transition manifold would be constructed at the base of Golden Gate Dam to connect Sites Reservoir to Funks Reservoir and the TRR. The transition manifold would be installed approximately 6 feet below ground and would be approximately 114 feet long by 92 feet wide. The structure would connect the four 12-foot-diameter conveyance pipelines from Funks Reservoir and TRR to two 23-foot-diameter tunnels extending from the Sites Reservoir Inlet/Outlet Works (I/O Works), which are discussed in Section 2.5.1.4, *Sites Reservoir and Related Facilities*. The transition manifold would have isolation valves to close off the pipelines and allow for maintenance.

In addition to the transition manifold structure, a 12-inch-diameter underground pipeline would extend 2,800 feet north from the manifold to Funks Creek, where it would discharge via an energy-dissipation structure/outlet into the creek. The pressure-reducing valve to dissipate energy before the water is discharged into Funks Creek is necessary because the water pressure would be equal to the Sites Reservoir elevation. The pipeline would be sized to accommodate a range of discharges (zero to 100 cfs) to provide water for the approximately 1.8-mile stretch of Funks Creek below Golden Gate Dam to Funks Reservoir.

Construction of the Transition Manifold would happen after the I/O Tunnels are constructed. Construction means and methods would be similar to that of the TRR Pipelines and Funks Pipelines.

Electrical Transmission Connections

New high-voltage transmission lines would be required to provide power to the Funks and TRR PGPs. Transmission lines connecting Funks and TRR substations would also be required. Interconnecting to the existing transmission system would be necessary to provide the electricity needed to operate the large pumps at the TRR and Funks Reservoir. This interconnection would also enable the energy produced at the Funks and TRR PGPs to enter the transmission system during periods of operation that use their respective turbines/generators.

The general laydown areas and construction means and methods of the three substations and high voltage transmission lines that connect either PG&E or WAPA facilities to Sites facilities are provided in Appendix 2C.

North-South Transmission Connections

A new north-south transmission line originating between Funks Reservoir and TRR would connect to WAPA or PG&E existing facilities. Two 230-kilovolt (kV) lines owned and operated by WAPA are located north of Funks Reservoir, and four 230-kV lines owned and operated by PG&E are located west and north of the TRR. WAPA and PG&E are defined as the Transmission Owner and the Transmission Operator of their respective high-voltage transmission lines. Each of these lines is a potential point of interconnection (POI) location; a POI to a high-voltage electric transmission line would be required to provide power. See Figure 2-18, WAPA Schematic Sketch, and Figure 2-19, PG&E Schematic Sketch, for a schematic sketch showing the WAPA and PG&E alternative POI arrangements and the required transmission line lengths to the Funks and TRR electrical substations. The POI would require a

third substation, which is expected to be located adjacent to either the WAPA lines or the PG&E 230-kV lines.

The POI between the electrical substations and existing transmission lines would require that an application for interconnection request be submitted and processed under the California Independent System Operator (CalISO) interconnection process. The location of the POI to the WAPA or PG&E 230-kV transmission lines would depend on the results of a system impact study completed by WAPA or PG&E in conjunction with CalISO.

East-West Transmission Lines

There would also be an interconnection between the Funks and TRR PGPs, and it is anticipated that the transmission lines would parallel the pipelines within the same easement. Up to four 230-kV transmission lines would be required: two for the source supply to either of the PGPs and two between the Funks and TRR electrical substations. The two looped source circuits would be installed on a set of common double-circuit steel monopole structures and would require separate easements because they would not parallel any of the proposed pipelines (Figure 2-20, Double-Circuit Source Transmission Poles). The two transmission lines between the Funks and TRR electrical substations would be installed on their own common set of double circuit steel monopole structures within the pipeline easement (Figure 2-21, Funks to TRR Electrical Interconnection).

2.5.1.3 Administration, Operations and Maintenance, and Storage Buildings

All Action Alternatives would involve the construction of an administration and operations building and a maintenance and storage building. These buildings would be located along the existing gravel access road to the Funks PGP on approximately 0.15 acre. The administration and operations building would be a one-story building encompassing approximately 3,400 square feet. The maintenance building would be a one-story building encompassing roughly 2,700 square feet that would include space for equipment storage and maintenance rooms to support the Project facilities.

The utilities that would be required for these buildings would be a septic system at least 100 feet away from Funks Reservoir and Funks Creek (per county code), potable water provided via groundwater wells, and electricity obtained from the Funks Reservoir switchyard. The building designs would be in accordance with the California Building Code and would provide asphalt concrete paved onsite parking and vehicular access. See Figure 2-22, Administration and Operations Building, and Figure 2-23, Maintenance and Storage Building, for the plan view and elevation view of these two buildings.

Construction of the proposed buildings would include the following: clearing and grading; transporting materials and placing them at staging areas; constructing ancillary facilities (e.g., potable water source, septic system, lighting, concrete pad for refueling island, aboveground fuel tanks, perimeter fencing); and performing site restoration after construction is complete.

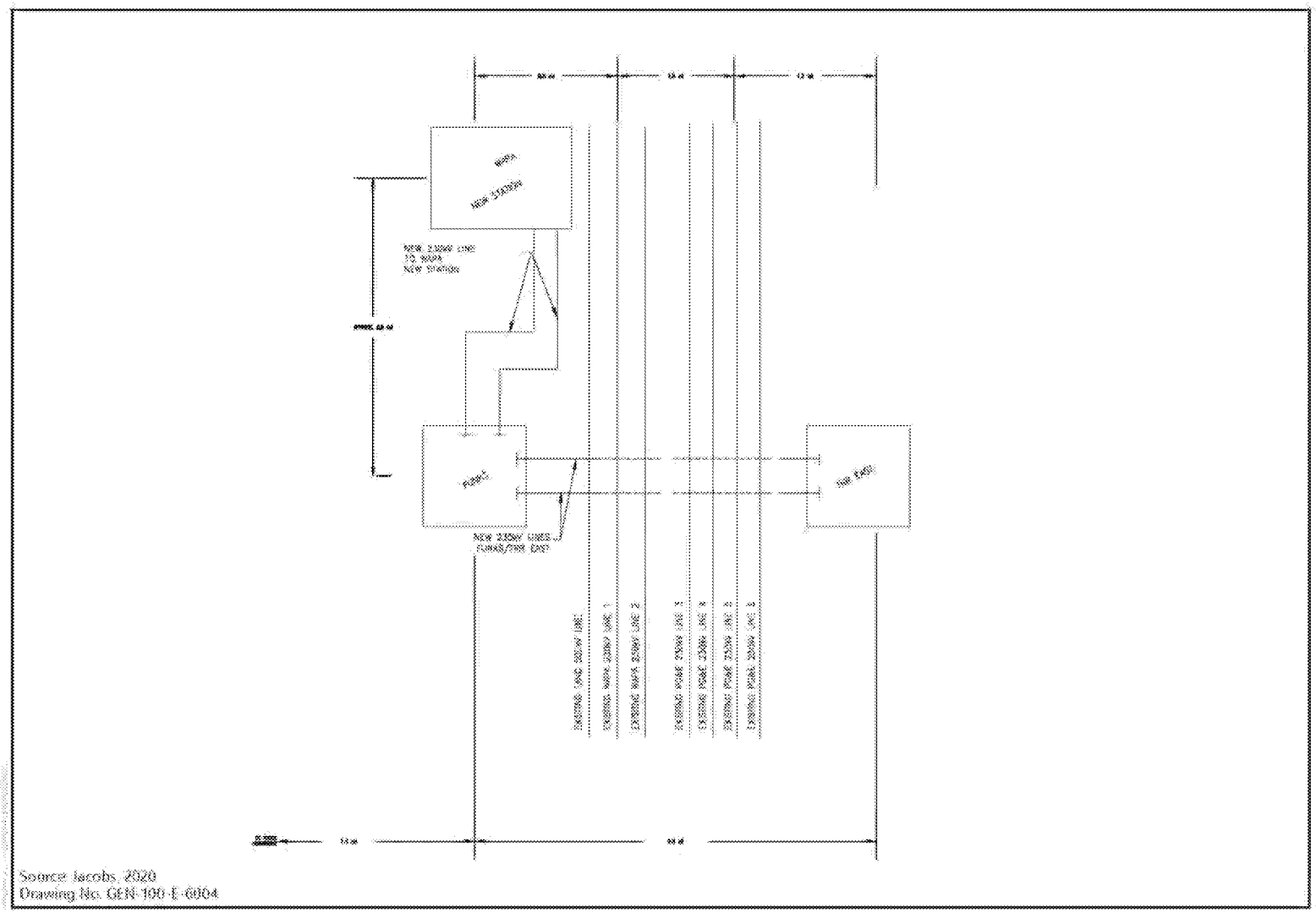


Figure 2-18. WAPA Schematic Sketch

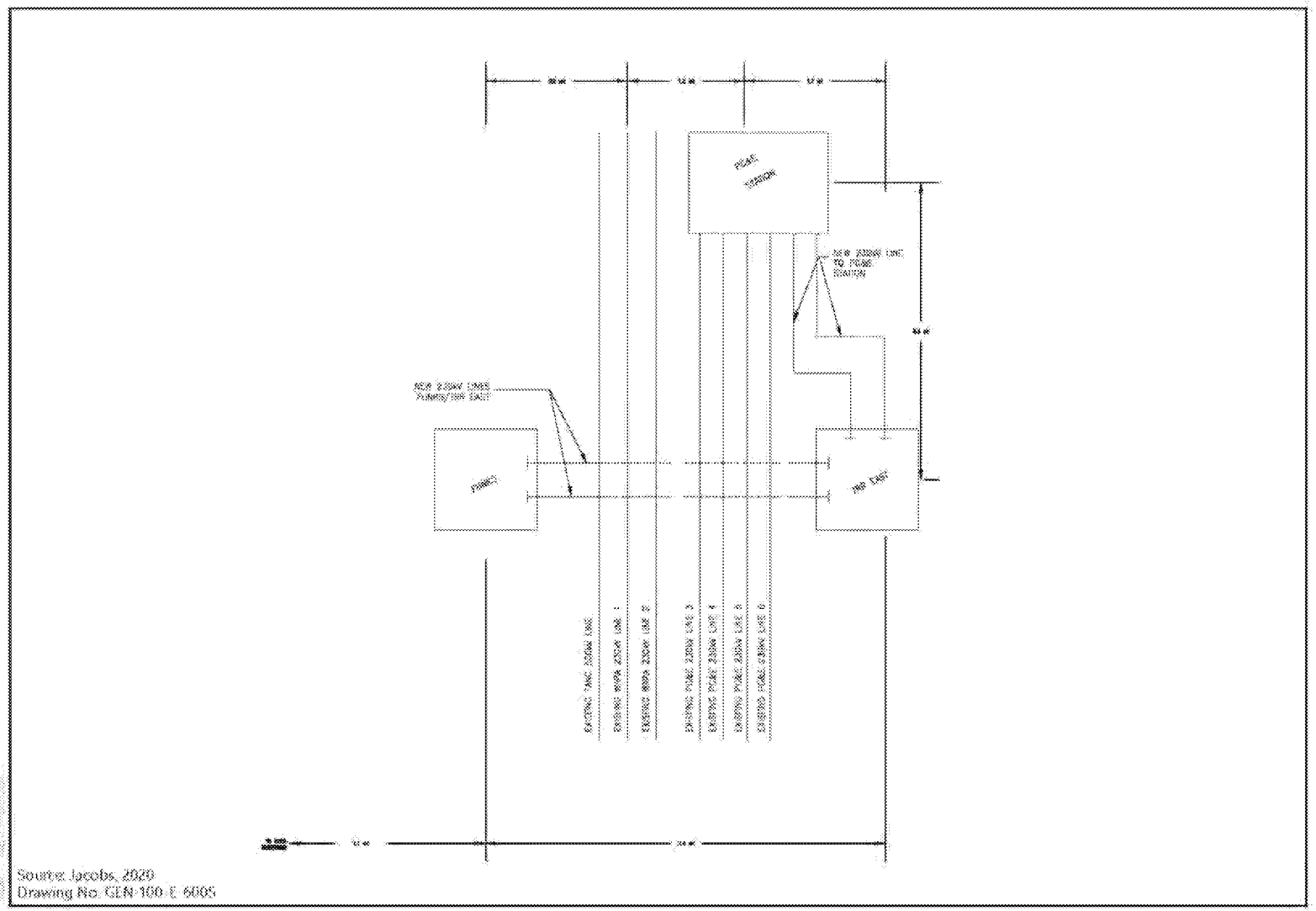
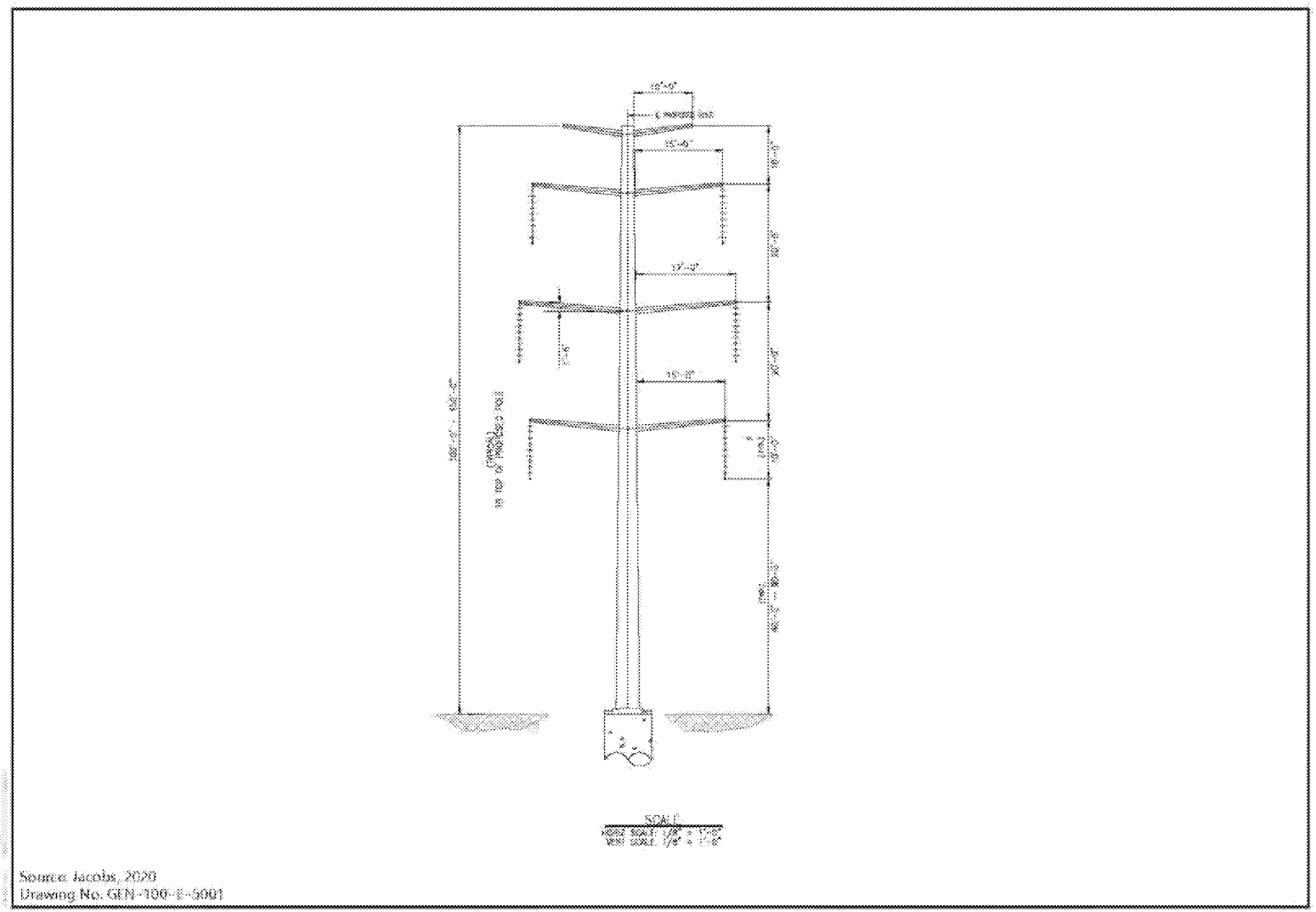


Figure 2-19. PG&E Schematic Sketch



Source: Jacobs, 2020
Drawing No. GEN-100-E-3001

Figure 2-20. Double-Circuit Source Transmission Poles

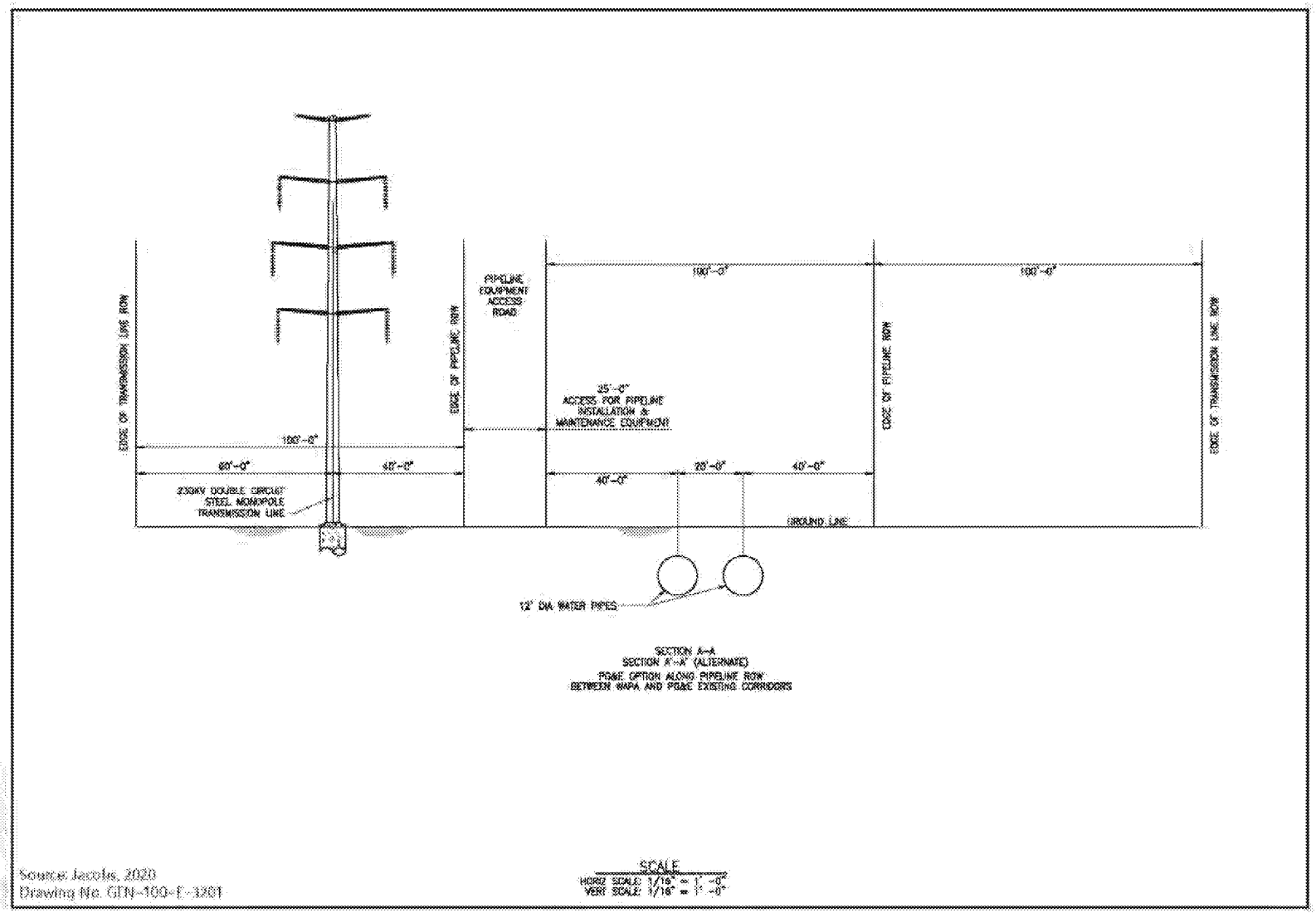


Figure 2-21. Funks to TRR Electrical Interconnection

2.5.1.4 Sites Reservoir and Related Facilities

Under all Action Alternatives, water would be impounded by the Golden Gate Dam on Funks Creek and the Sites Dam on Stone Corral Creek; a series of saddle dams along the eastern and northern rims of reservoir would close off topographic saddles in the surrounding ridges to form Sites Reservoir. See Figure 2-1 and Figure 2-3 for the location of the Sites Reservoir, Golden Gate Dam, saddle dams, and I/O Works.

Inlet/Outlet Works

The I/O Works for the reservoir are generally located to the south of Golden Gate Dam in Sites Reservoir. See Figure 2-24 (plan) and Figure 2-25 (profile), Inlet/Outlet Works Site, for a plan and profile view of the I/O Works. The I/O Works consists of a low-level intake, multi-level I/O tower, and two I/O tunnels. These structures are described in the subsections below, and Appendix 2C provides the engineering schematics for each structure.

The I/O Works would be designed to meet maximum water supply commitments, as well as safely pass emergency releases per DSOD requirements. The I/O Works would allow a maximum release of 16,000 cfs; the parallel I/O tunnels are designed to each convey half of the emergency drawdown flows (anticipated to be approximately 8,000 cfs each). The I/O Works would meet summer irrigation demands downstream with an estimated maximum release flow of 3,100 cfs. The I/O Works would also allow inflows pumped into the reservoir from the canals; the maximum inflows are anticipated to be 3,900 cfs.

Construction of the I/O Works would disturb approximately 30 acres in the reservoir inundation area and a similarly sized area at the downstream tunnel portal. The construction disturbance would consist of the footprint of the two intakes; tunnel portals; materials, spoils, and equipment staging areas; and access roads. A portion of the footprint outside the reservoir inundation area would overlap with the disturbance area for the conveyance system. Major construction activities associated with the I/O Works would consist of dewatering the construction site with an onsite treatment facility, excavating the hillside for the downstream and upstream tunnel portals, tunneling and hauling tunnel muck to a disposal area, using spoils from the tunnels for Golden Gate Dam or disposing of them in the reservoir inundation area, excavating for the multi-level tower shaft, building the multi-level tower, constructing the access bridge to the multi-level tower, building the low-level intake, and completing finished grading and site clean-up.

The construction of the tunnels that connect the Sites Reservoir to the Funks and TRR pipelines would require excavating the tunnel, installing the tunnel support systems, and controlling groundwater. The I/O tunnels would be constructed using a combination of drill and blast and road header excavation, depending on the strength of the rock, and pre-excavation measures would be used to stabilize the ground and reduce groundwater inflow. As construction proceeded, support systems would be installed and then the reinforced cast-in-place concrete tunnels and steel carrier pipe would be installed.

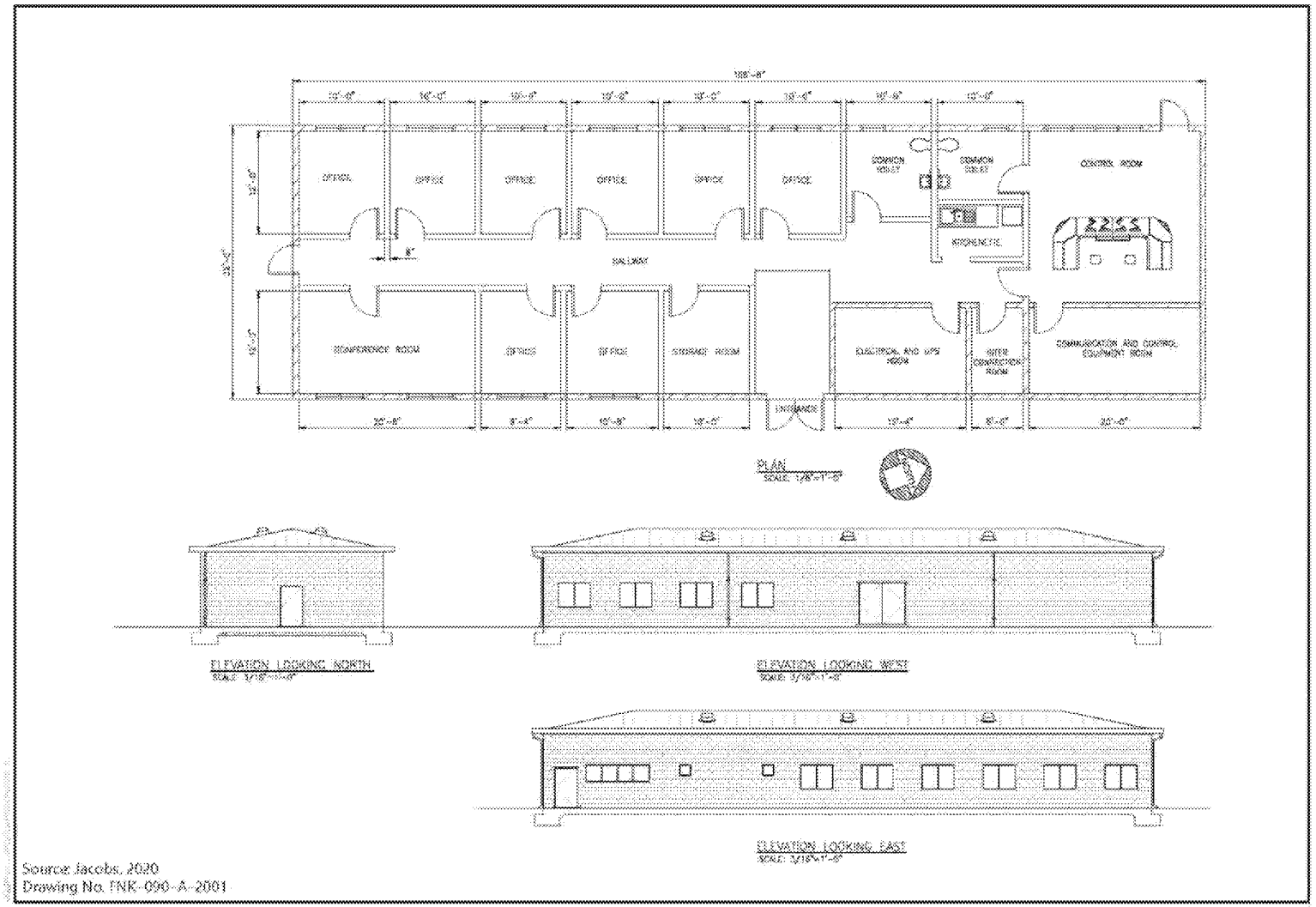


Figure 2-22. Administration and Operations Building

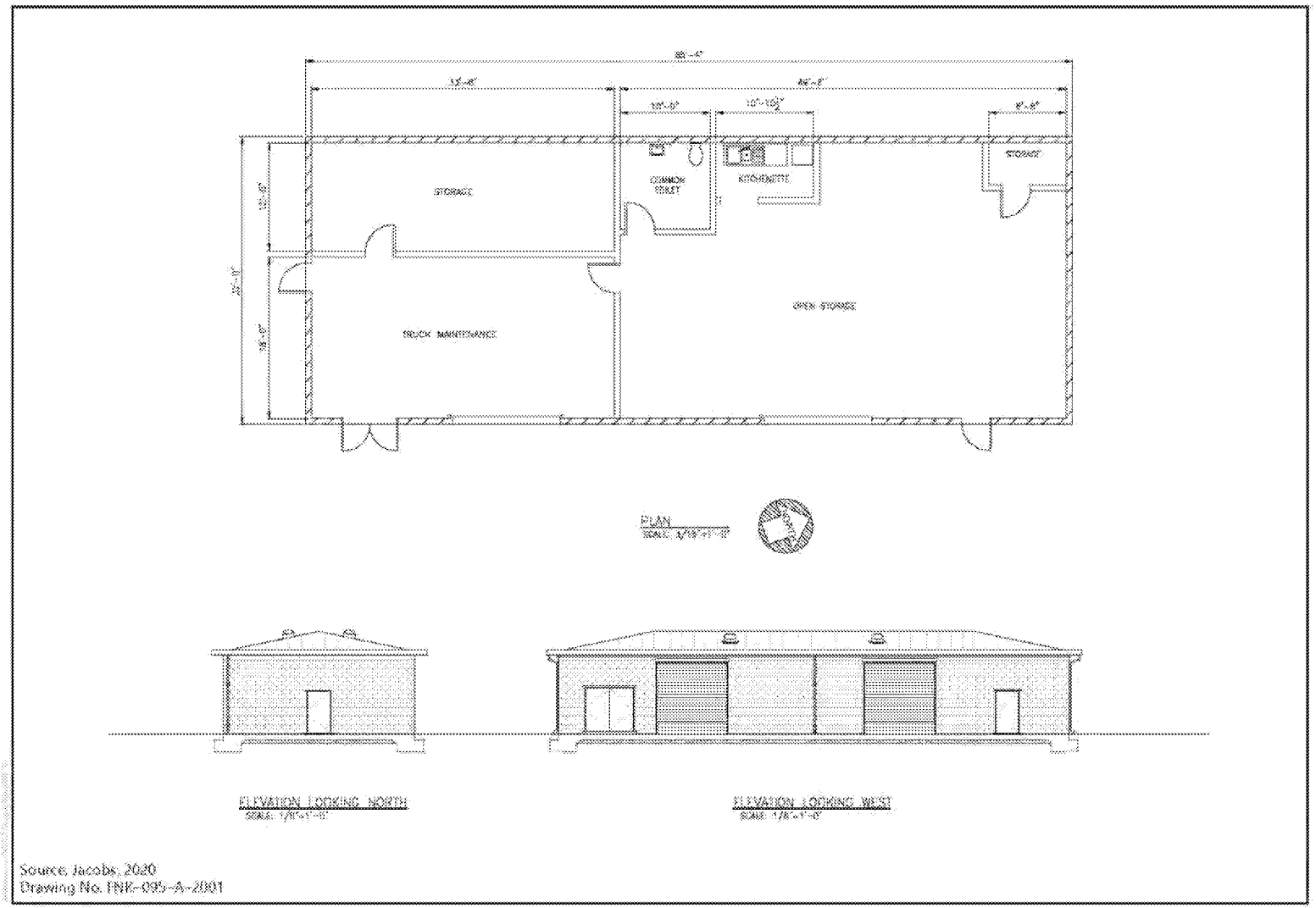
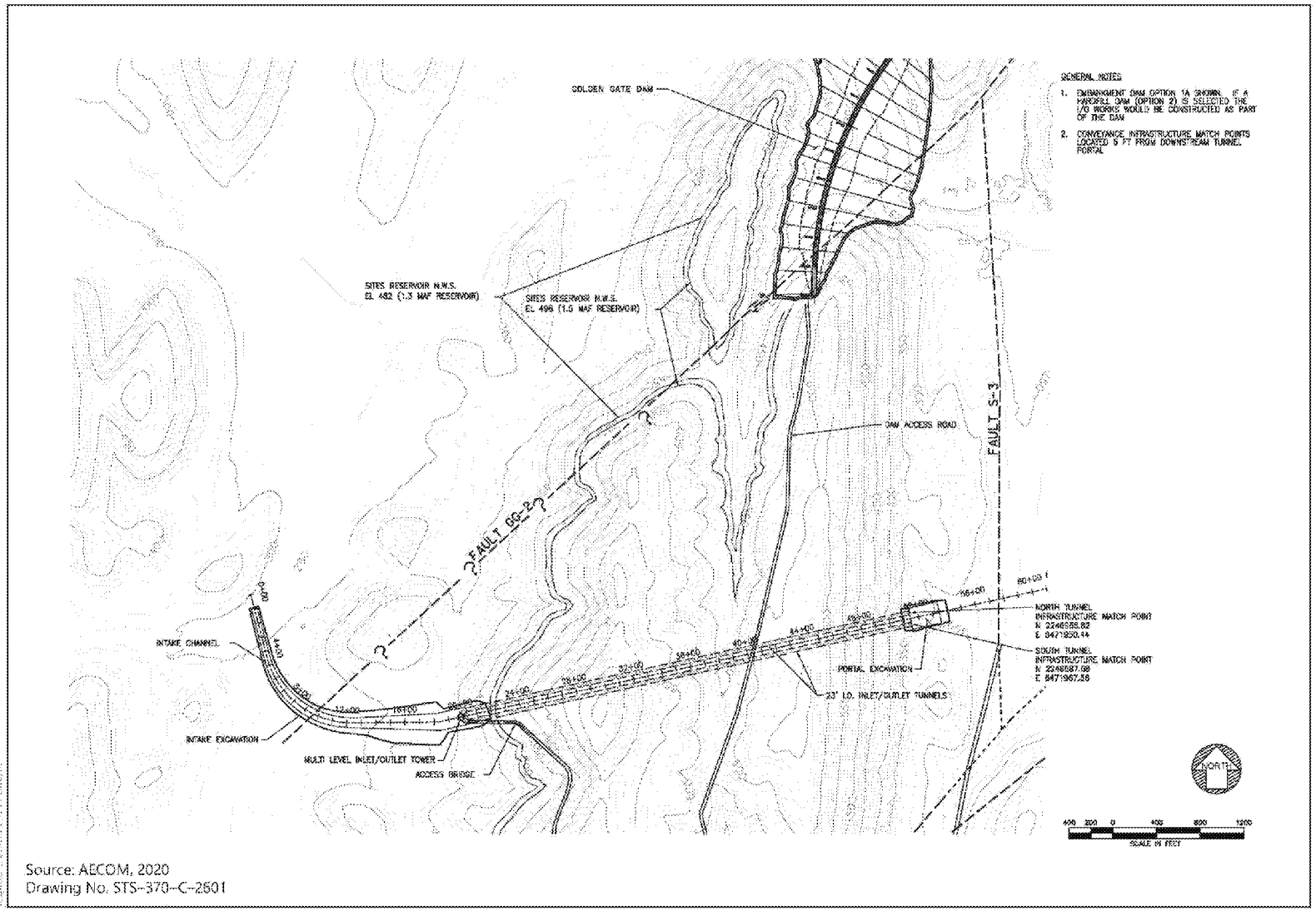


Figure 2-23. Maintenance and Storage Building



Source: AECOM, 2020
Drawing No. STS-370-C-2601

Figure 2-24. Plan of Inlet/Outlet Works Site

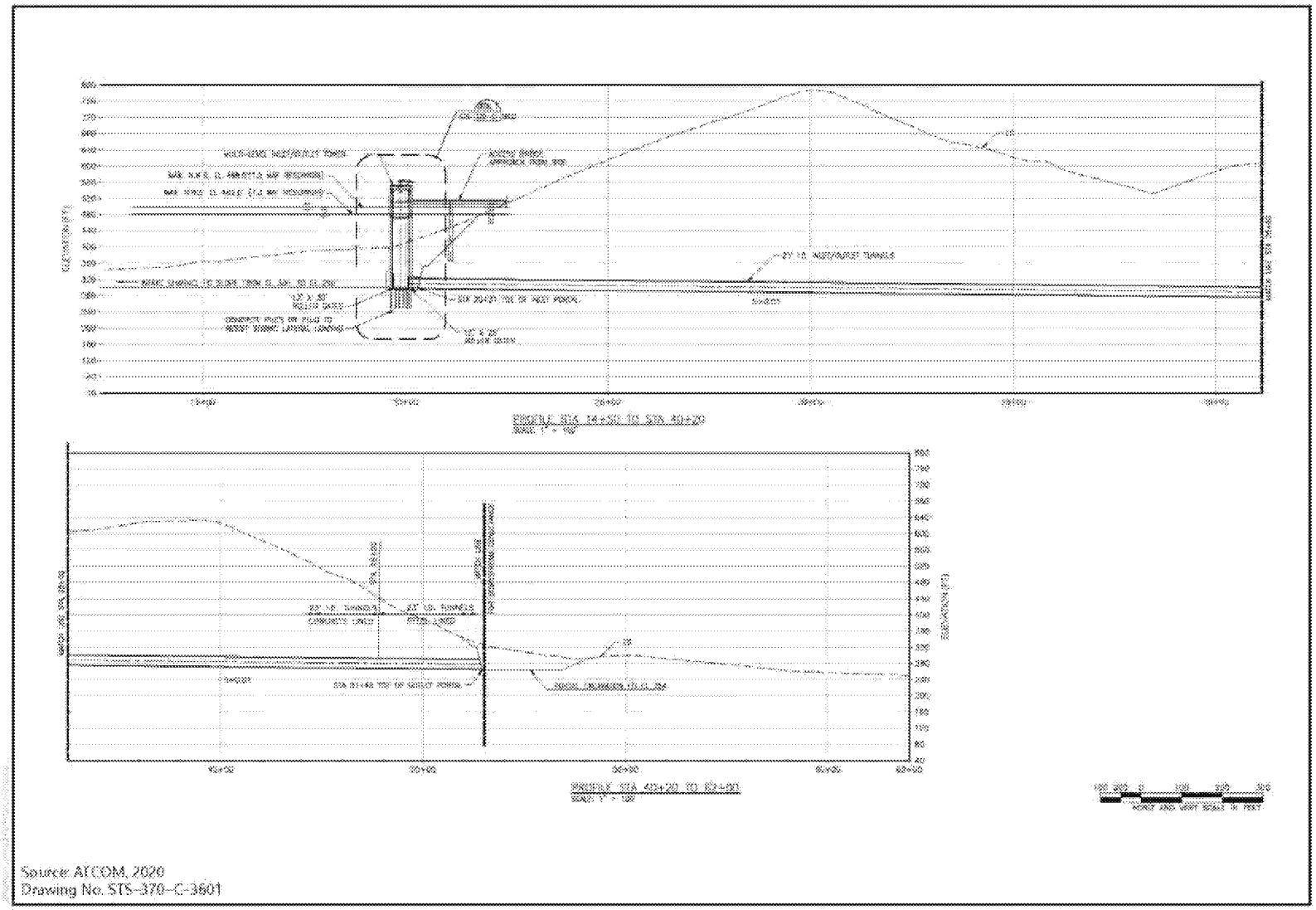


Figure 2-25. Profile of Inlet/Outlet Works Site

Low-Level Intake

The low-level intake would be used to meet DSOD-required emergency drawdown releases (refer to Section 2.5.2.1, *Water Operations - Emergency Release*, for more information about these requirements). This intake would also release stored water below the lowest ports in the I/O tower during drought conditions.

The low-level intake would be at an elevation of 300 feet to allow for sediment accumulation over a 100-year project life. Flows would not be pumped in directly from the Sacramento River, and the main source of sediment is expected to be from local runoff in the reservoir watershed. The intake channel would be excavated down to an elevation of approximately 290 feet. The installation of bar-type trashracks would protect the I/O tunnels from damage and keep debris from clogging the flow streams. The low-level intake would be designed to allow for inspection and maintenance.

I/O Tower

The 300-foot-tall, multi-level I/O tower would allow flows into and out of the reservoir through the use of ports around the tower's perimeter. These ports would be at multiple elevations and equipped with roller gates or valves, which would allow for operational flexibility, including managing the temperature/quality of water released from the reservoir. The tower would also have moveable fish screens. The movable fish screens would be sized as design progresses and criteria are established by the Authority in consultation with the applicable regulatory agencies. Head gates at the bottom (below ground surface) of the I/O tower would allow access to the I/O tunnels. The lower portion of the I/O tower would be anchored in bedrock, and the connections at the tower and abutments would accommodate differential movement that may occur during the design seismic event. Table 2-2 summarizes key design characteristics for the I/O tower.

Table 2-2. Summary of I/O Tower Design Characteristics for All Alternatives

Key Characteristic	Alternative 1 and 3	Alternative 2
Maximum Normal Water Surface Elevation*	498 feet above mean sea level	482 feet above mean sea level
Top of Tower Elevation	558 feet above mean sea level	542 feet above mean sea level
Top Tier Port Centerline Elevation	470 feet above mean sea level	450 feet above mean sea level
Maximum Number of Ports	21 (3 each at 7 tiers)	18 (3 each at 6 tiers)
Minimum Port Size	5.5-foot-wide by 7-foot-high rectangular ports have been assumed; Ports would be sized such that the maximum operational drawdown (3,900 cfs) can be achieved with ports at two levels (6 ports total)	

*This would also be the maximum normal operating water elevation

Seven operating levels (or tiers) are anticipated based on the current design. The upper tiers would be spaced 20 feet on center, with centerlines at elevations ranging from 350 to 450 feet (Alternative 2) or 470 feet (Alternative 1 and 3). The lowest tier would be located 10 feet on center below the next lowest tier at 340 feet elevation (all Action Alternatives). At each tier there would be three ports on alternating faces of the hexagonally shaped tower. The ports would be

constructed at different elevations to allow flexibility to withdraw water based on its quality (e.g., temperature, turbidity) needs. These ports would be controlled by roller gates or valves.

The head gates would be located in the I/O tower base (below ground surface) to allow the isolation of its tunnels for maintenance, inspection, and operational needs. The head gates would be designed to prevent outflow from the I/O tower at the full range of reservoir levels. The gates would be able to open (i.e., raised) and close under all normal reservoir operations and if emergency releases were required. Gates for either I/O tunnel would be closed to prevent outflow for operational purposes (downstream release or equipment preference, maintenance, or dewatering for inspection or equipment change out). Emergency raising and lowering of the gates by emergency power upon loss of electricity would be required.

A bridge would provide access to the I/O tower from the nearby access road. The bridge would be designed to accommodate equipment and materials required for maintenance of the tower. The bridge's length would depend on the access road design but is expected to be approximately 300 feet.

Two 23-foot-diameter I/O tunnels would extend from the I/O tower through the ridge on the right abutment of Golden Gate Dam. They would daylight on the other side of the ridge and connect to the transition manifold. The tunnels would each be about 3,110 feet long, connect to the multi-level tower at approximately 300 feet elevation, and have a downstream slope of 1%.

Dams and Dikes

All Action Alternatives would include Sites Dam and Golden Gate Dam along with a number of saddle dams and saddle dikes. The height of these facilities and the number of saddle dams and dikes varies between the Action Alternatives as summarized in Table 2-3. Sites Dam, Golden Gate Dam and the saddle dams and saddle dikes are discussed in more detail below.

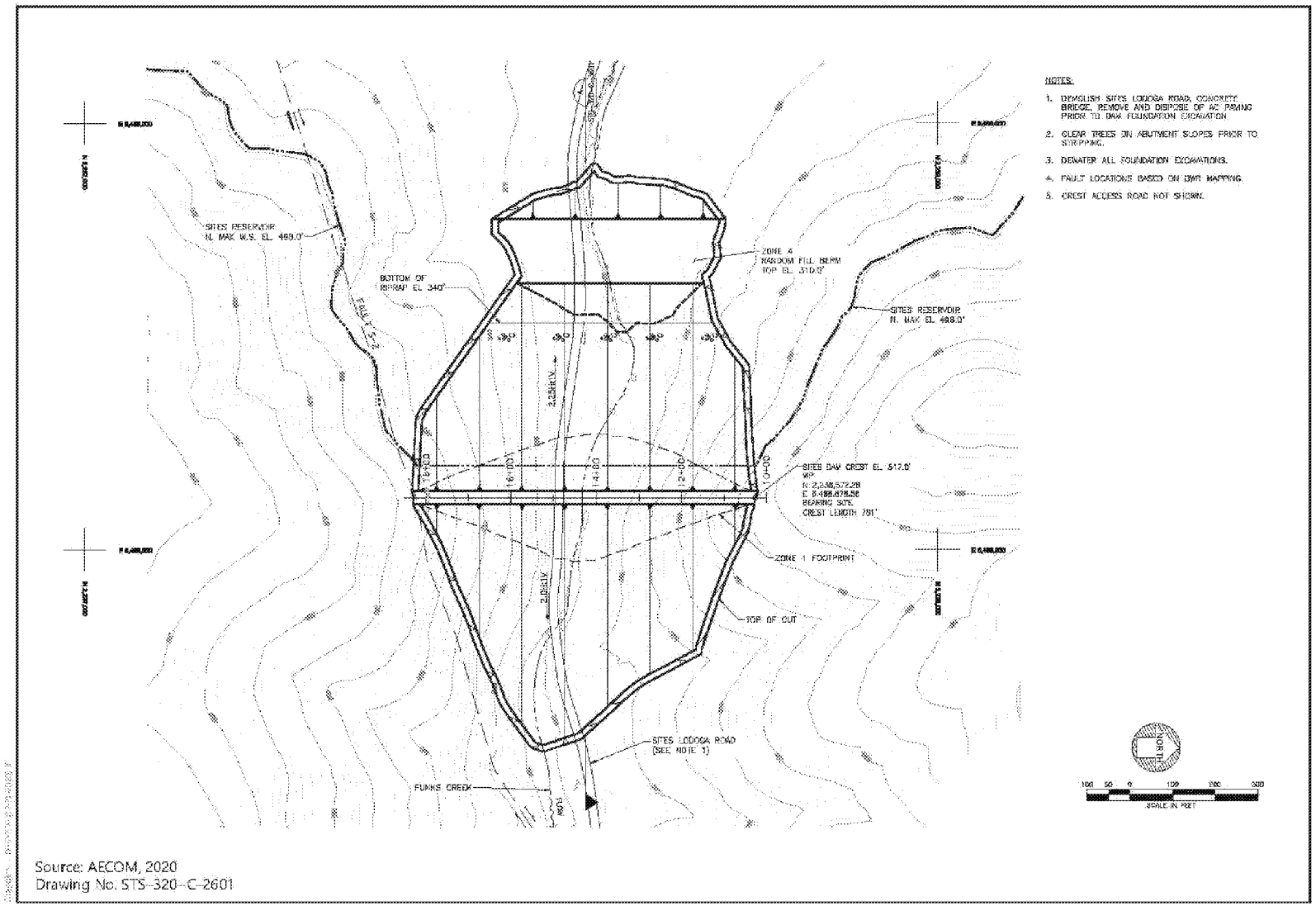
Table 2-3. Main Dam, Saddle Dam and Saddle Dike Summary for All Alternatives

Dam/Dike	Alternative 1 and 3		Alternative 2	
	Maximum Height Above Streambed (feet)	Length (feet)	Maximum Height Above Streambed (feet)	Length (feet)
Sites Dam	267	781	250	729
Golden Gate Dam	287	2,221	270	2,063
Saddle Dam 1	27	318	--	--
Saddle Dam 2	57	250	--	--
Saddle Dam 3	107	3,422	90	2,677
Saddle Dam 5	77	1,894	60	1,747
Saddle Dam 6	47	362	--	--
Saddle Dam 8A	82	1,300	62	1,140
Saddle Dam 8B	37	475	20	277
Saddle Dike 1	12	122	10	148
Saddle Dike 2	12	198	20	79
Saddle Dike 3	--	--	30	247

Sites Dam and Diversion Tunnel

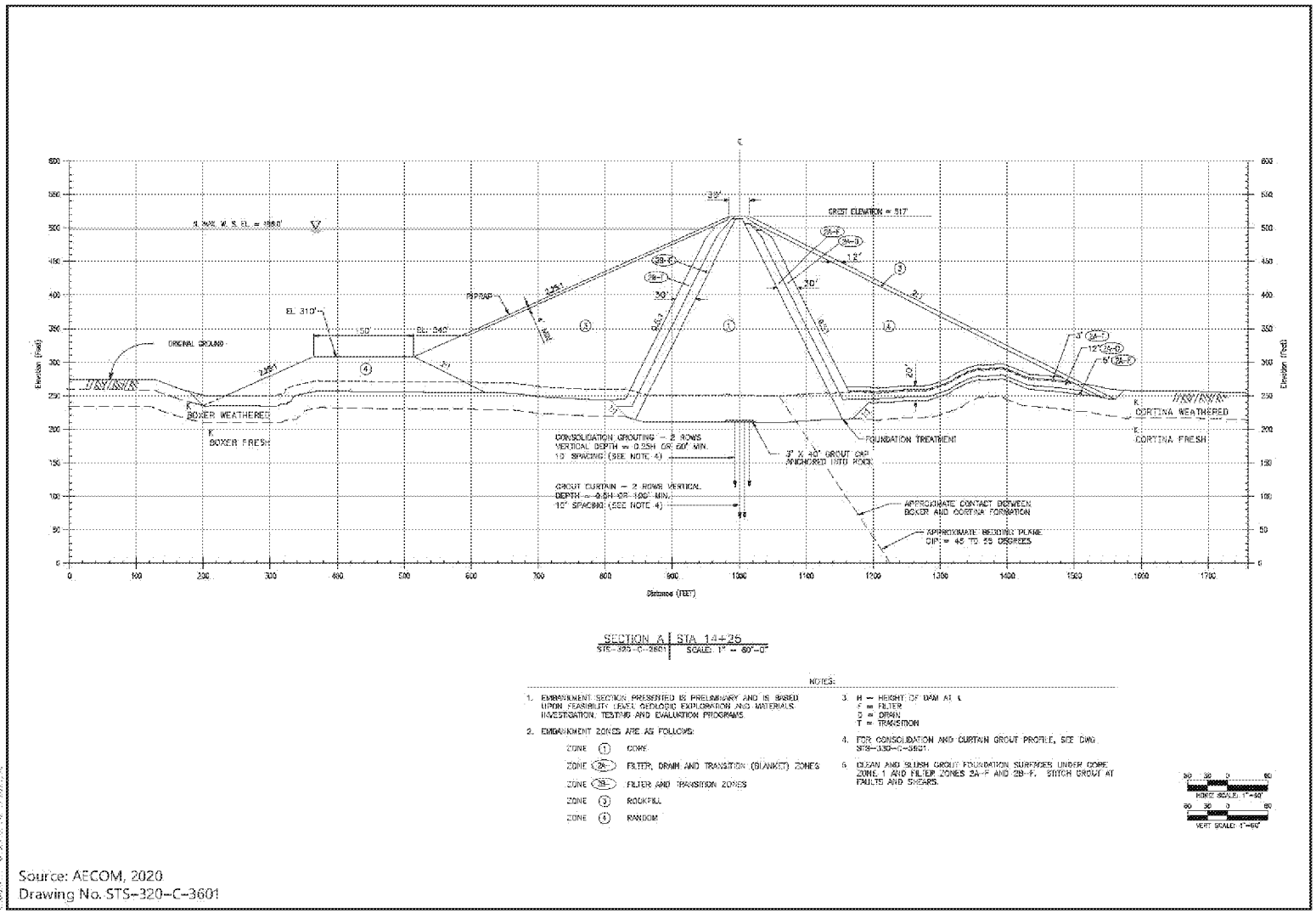
Sites Dam would be on Stone Corral Creek approximately 0.25 mile east of the community of Sites and 8 miles west of the community of Maxwell. The dam would be designed to safely accommodate potential fault displacement by providing widened filter, drainage, and transition zones. Sites Dam would be an embankment dam consisting of a combination of earth and rockfill embankment zones with a central impervious core, exterior upstream rockfill shell, and downstream earthen shell. The upstream and downstream slopes of the dam embankment would be 2.25:1 (horizontal: vertical; H:V) and 2H:1V, respectively. The upstream and downstream slopes of the dam's central core would be 0.5H:1V. Figure 2-26 provides a plan view of Sites Dam and Figure 2-27 provides a section view of Sites Dam.

Sites Dam would have a permanent diversion pipeline and tunnel that would be constructed in the left abutment of the dam. The approximately 1,600-foot-long tunnel would contain a 1,900-foot-long pipe with an internal diameter of 12 feet. The pipe would be fitted with one or more valves sized to release flow up to 100 cfs into Stone Corral Creek. The Sites Dam piping system is expected to include a bar trashrack, a slide gate, a separate fish screen and inlet valve to support Stone Corral Creek release flows, a stoplog bulkhead, and a permanent air vent assembly. The fish screen would be designed and sized to meet the requirements for aquatic life protection.



Source: AECOM, 2020
Drawing No. STS-320-C-2601

Figure 2-26. Sites Dam Plan



Source: AECOM, 2020
Drawing No. STS-320-C-3601

Figure 2-27. Sites Dam Section

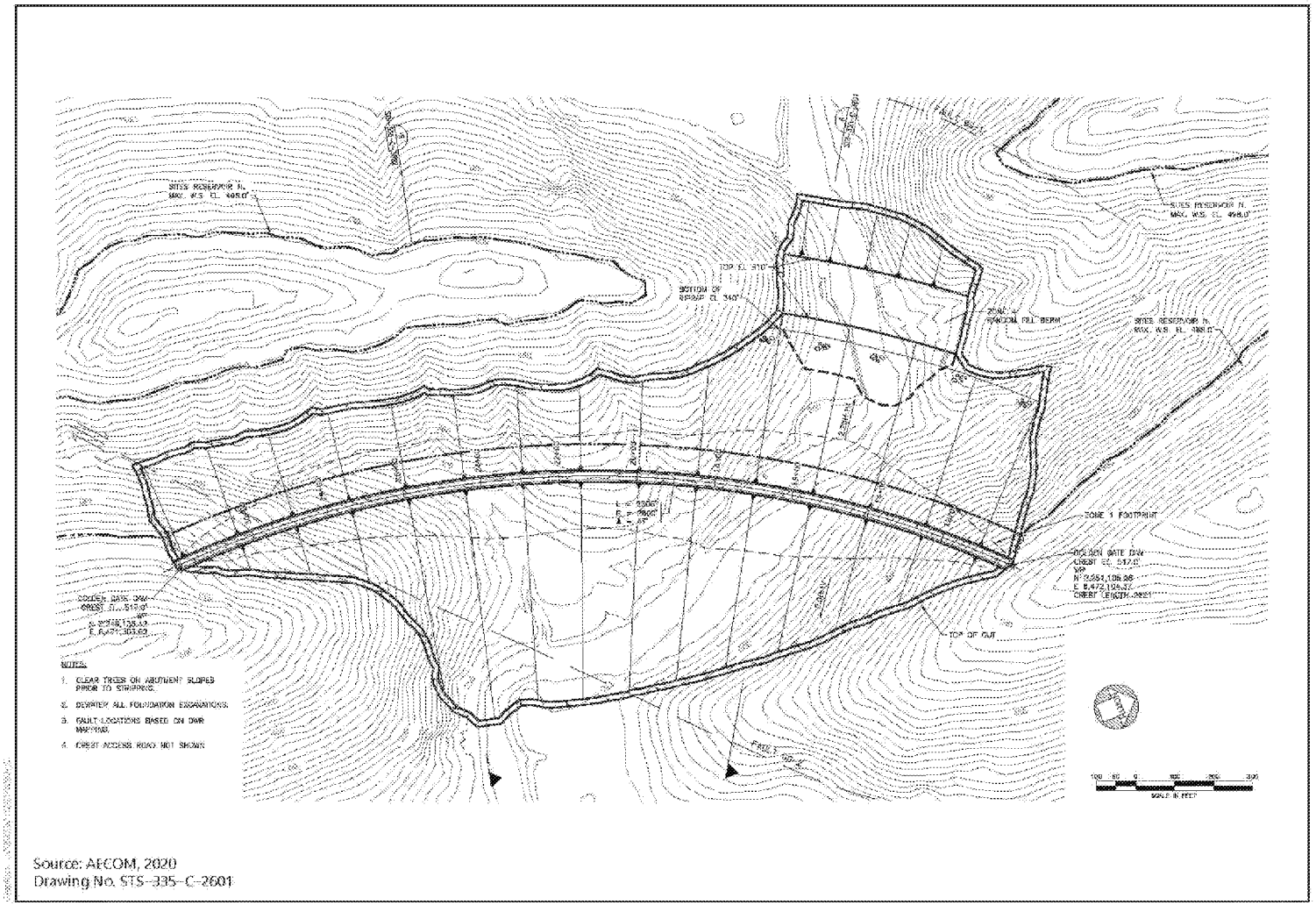
Stone Corral Creek would be diverted for construction of Sites Dam. A coffer dam would be installed to enable construction of the dam embankments in dry conditions. During construction storm flows would be conveyed in the 12-foot-diameter diversion tunnel through the ridge at Sites Dam. This tunnel would prevent a potential seepage path from forming through the embankment. Water in Stone Corral Creek would be diverted directly from the creek into the creek diversion pipeline through the Sites Dam abutment and into Stone Corral Creek on the east side of the Sites Dam work area. The outlet tunnel with two 84-inch-diameter fixed cone valves would accommodate these releases, and an energy dissipating chamber would reduce the velocity of the water released.

Golden Gate Dam

Golden Gate Dam would be on Funks Creek approximately 1.8 miles west of Funks Reservoir. The dam type and material, upstream slopes, and downstream slopes would be the same as described above for Sites Dam. Golden Gate Dam would not have a permanent diversion tunnel; all releases made would be through the I/O Works. Figure 2-28 provides a plan view of Golden Gate Dam and Figure 2-29 provides a section view of Golden Gate Dam.

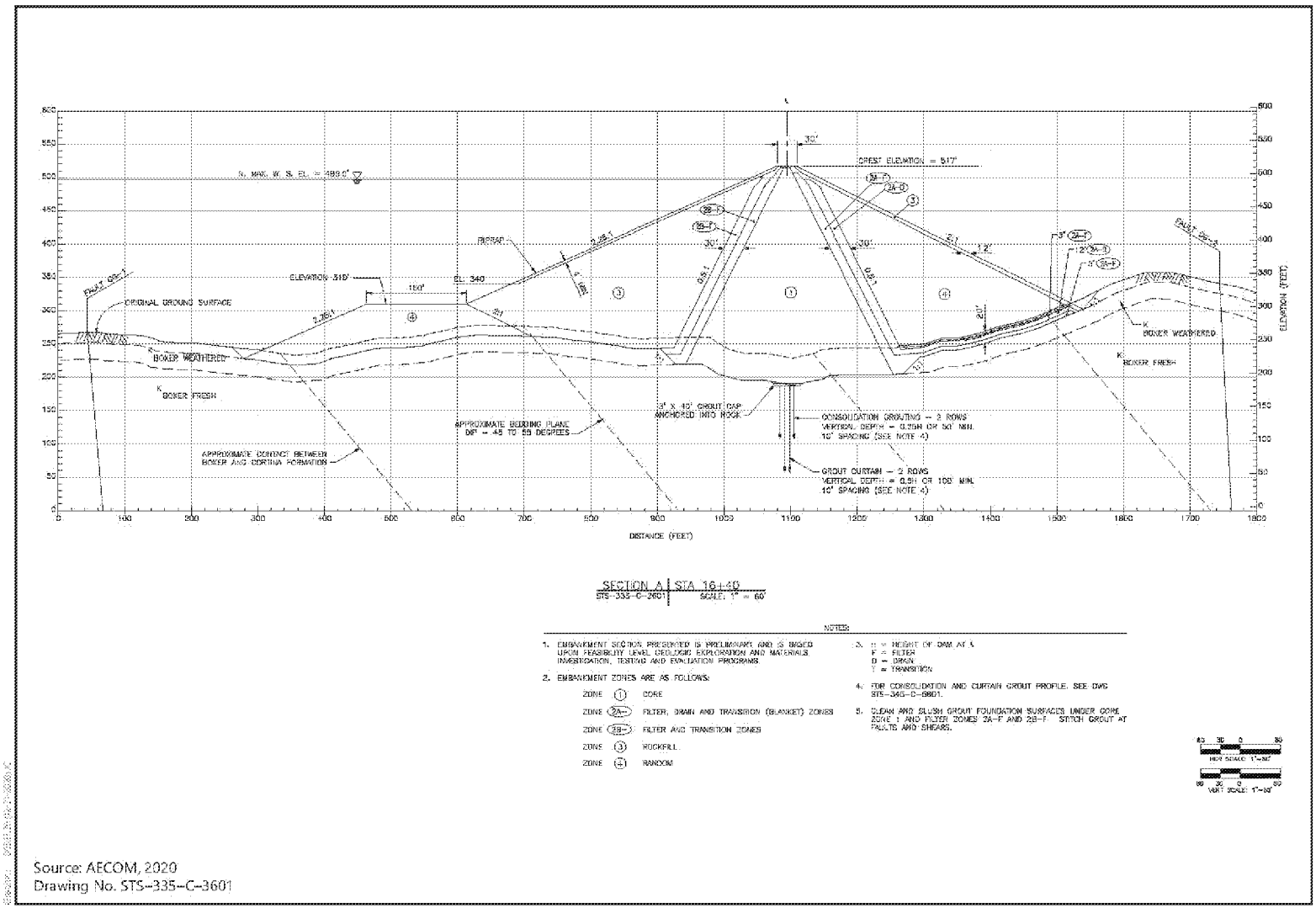
Funks Creek would be diverted for construction of Golden Gate Dam. A coffer dam would be installed to enable construction of the dam embankments in dry conditions. At Golden Gate Dam, a 48-inch-diameter diversion pipe would be placed in the foundation of the dam to divert Funks Creek but would be filled in and decommissioned after construction and prior to use of the dam. However, the coffer dam would be left in place and become part of the main dam.

During construction, water would pond behind the coffer dam on Funks Creek, flow through the temporary pipe underneath the Golden Gate Dam construction site to the east side of the dam, and then re-enter the Funks Creek channel. The coffer dam should provide enough residence for settling to occur for typical flows in Funks Creek.



Source: AECOM, 2020
Drawing No. STS–335–C–2601

Figure 2-28. Golden Gate Dam Plan



Source: AECOM, 2020
Drawing No. STS-335-C-3601

Figure 2-29. Golden Gate Dam Section

Predecisional Working Document—For Discussion Purposes Only

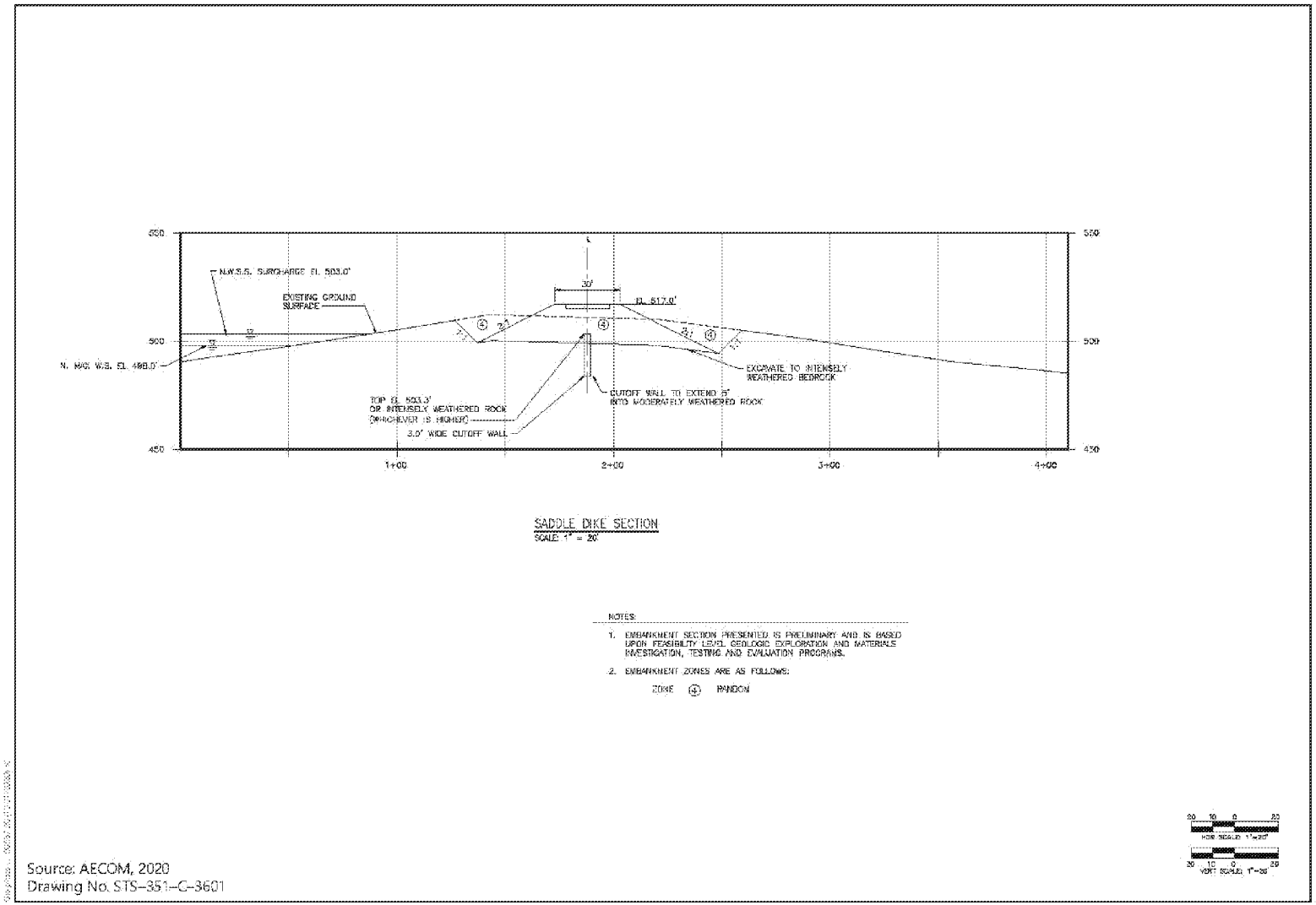
Saddle Dams and Saddle Dikes

The saddle dam and saddle dike material would be the same as described above for the Sites Dam. The number and locations of the saddle dams are based on the size of the reservoir because the saddle dams would be needed at topographic saddle low points along the eastern ridge of the reservoir. The upstream and downstream slopes of saddle dams are 3H:1V and 2.5H:1V, respectively. The upstream slope of the central core for the saddle dams would be 1H:1V with a vertical downstream face. See Figure 2-30 for saddle dam and dike locations. Saddle Dams 3, 5, and 8B would have slightly different design features that are discussed below.

Saddle dikes would be required at topographic saddle low points along the northern end of the reservoir. The saddle dikes would not retain water like the saddle dams but would raise two saddles that are below the minimum crest elevation to an elevation above the maximum reservoir elevation during the Probable Maximum Flood (PMF). The upstream and downstream slopes of saddle dikes would be 2H:1V. The saddle dikes would not have a central core. A typical saddle dike section is presented on Figure 2-30, Saddle Dike Section.

Saddle Dams 3 and 5 would be designed to release emergency flows. Therefore, these two saddle dams would have an intake in the reservoir, a tunnel under the ridge, and an outlet structure to provide energy dissipation and controlled emergency releases of water to the local receiving drainage, Hunters Creek. The intake would be a reinforced concrete structure of appropriate length (approximately 65 linear feet with trashracks). The tunnel would be reinforced concrete with a steel liner; its diameter is expected to range from 10 to 12 feet, and it would be approximately 830 linear feet. The energy dissipation structure would be a reinforced concrete structure containing one or multiple energy dissipation valves within steel-lined chambers to contain spray and provide controlled release of water to Hunters Creek. The size of the energy dissipation chambers would be determined based on manufacturer recommendations. A riprap-lined basin would extend for a minimum of 100 feet downstream of the energy dissipation structure to transition the discharge to the receiving channel.

Saddle Dam 8B would contain the reservoir spillway (see Figure 2-31). The crest width for the dam would be designed to accommodate a 16-foot-wide crest road with suitable concrete or metal guardrails on both sides. The length of the spillway crest section would be based on flood routing analyses, and the crest elevation would be based on the size of the reservoir and normal operating water surface elevation. This elevation would allow storage of the PMF without spilling and have sufficient capacity to pass the volume of over-pumping water in the unlikely event that over-pumping occurred for more than 10 days; it would also enable controlled emergency releases to the local receiving drainage, Hunters Creek. See Figure 2-31, Saddle Dam 8B Spillway, for a schematic of the spillway.



Source: AECOM, 2020
Drawing No. STS–351–C–3601

Figure 2-30. Saddle Dike Section

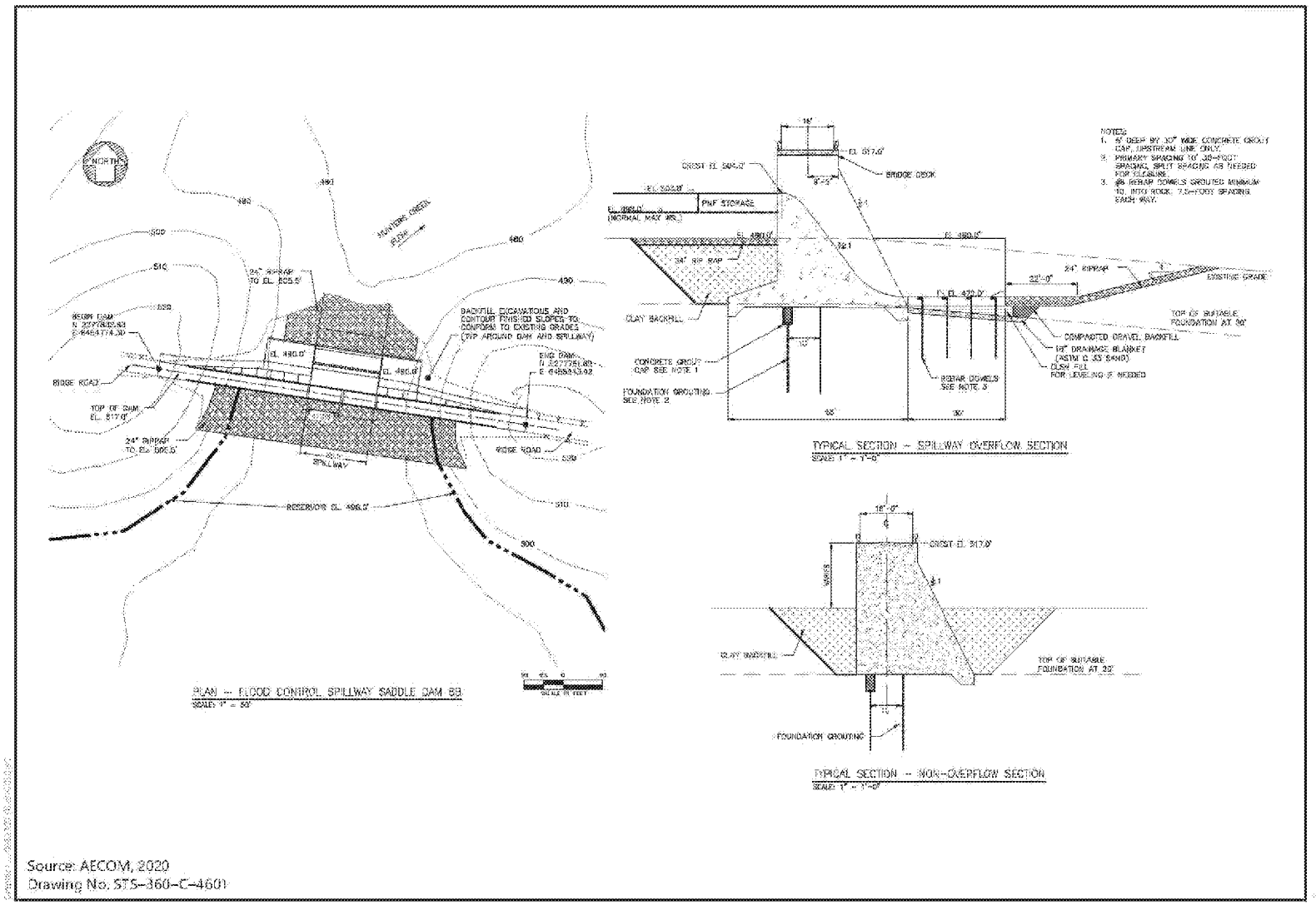


Figure 2-31. Saddle Dam 8B Spillway

Dam Monitoring

Instrumentation would be installed in the dam abutments, dam embankments, and downstream of the dams. The objectives of instrumenting the dams include developing physical data for comparison to assumptions made for the design analyses, anticipated behavior based during the studies, and monitoring of dam performance during construction, first filling of the reservoir, and long-term operation of the Project.

The types and locations of instrumentation would be selected to measure specific engineering parameters, including deformation, seepage flows, piezometric levels, pore-water pressure, and seismic response. Types of instrumentation could include piezometers, inclinometers, extensometers, survey monuments, weirs, and strong motion accelerographs. A reservoir level indicator and meteorological station would also be included, and an automated data acquisition system would provide for remote data acquisition of the dams.

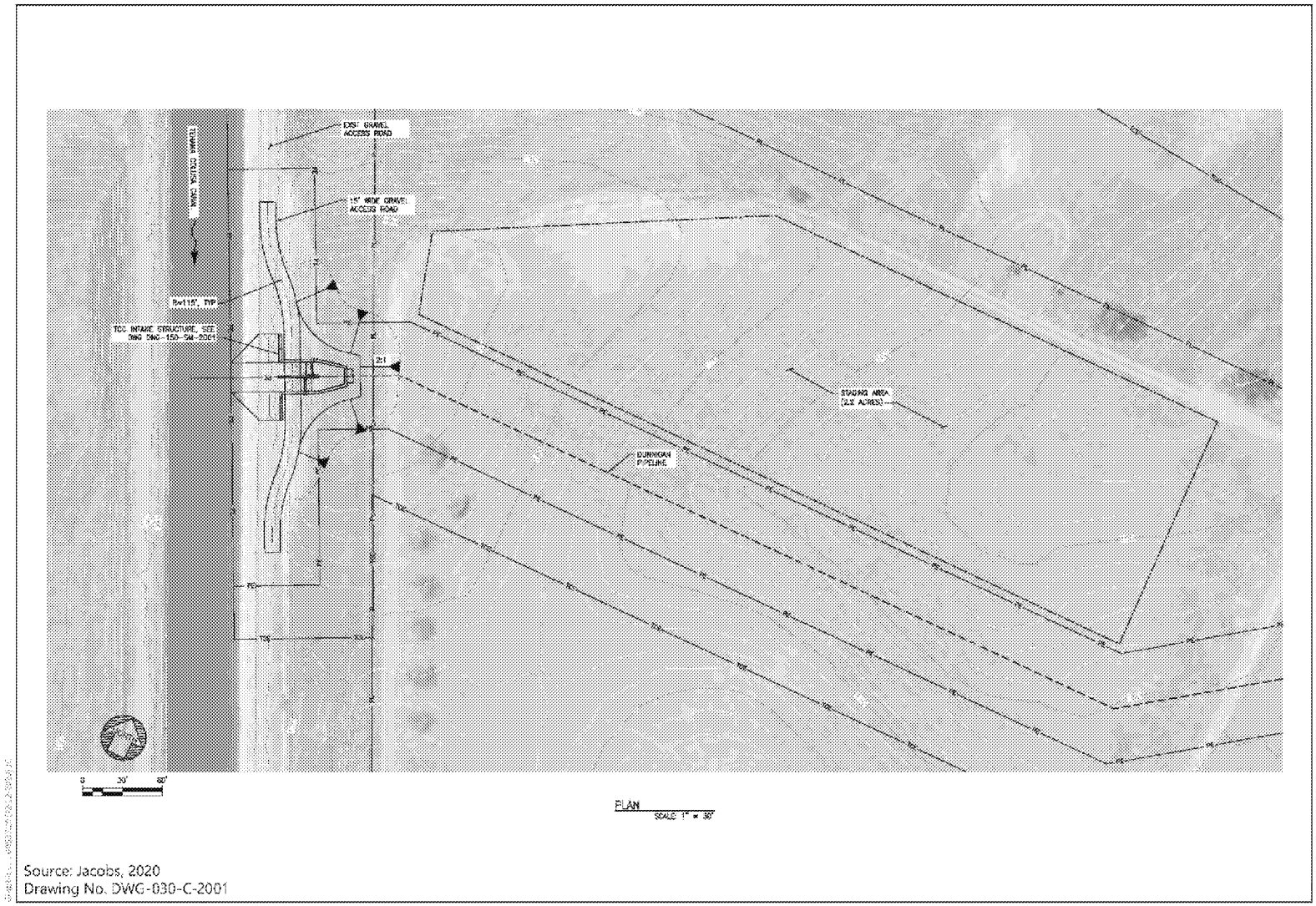
2.5.1.5 Conveyance to Sacramento River

Water released from Sites Reservoir would be conveyed south of the reservoir using the existing TC Canal and a new Dunnigan Pipeline. The water would flow south about 40 miles to near the end of the TC Canal, where it would be diverted into the Dunnigan Pipeline. The flows would subsequently be conveyed to the CBD and ultimately reach the Sacramento River. See Figure 2-2, Alternative 1 and 3 Conveyance to Sacramento River Components, for the location of the facilities associated with conveying water to the CBD and Sacramento River.

TC Canal Intake

A new intake would be required to move water from the TC Canal into the Dunnigan Pipeline. See Figure 2-32, TC Canal Intake Site Plan, for a site plan of the intake. The TC Canal intake site would encompass approximately 0.5 acre and be accessed from the existing TC Canal access road. The intake would be a concrete structure sized for a flow of 1,000 cfs that supports the control gates and associated gate operators. Power would be needed for SCADA control and gate operation to let water into the Dunnigan Pipeline; however, there would be a gravity outlet structure from the TC Canal into the Dunnigan Pipeline and no pumping would be required. A concrete bridge deck would provide vehicular access across the top of the intake. Stoplog slots at the inlet and outlet channels would enable isolation of the control gates for maintenance.

Temporary disturbance for construction of the TC Canal intake adjacent to the TC Canal would require 2 acres for temporary construction for about 1 year. The staging area would be located on the east side of the TC Canal and just north of the Dunnigan Pipeline. Access to this structure is anticipated to be from the existing TC Canal access road.



Source: Jacobs, 2020
Drawing No. DWG-030-C-2001

Figure 2-32. TC Canal Intake Site Plan

Dunnigan Pipeline

The Dunnigan Pipeline would convey water released from the TC Canal to the CBD. See Figure 2-33, Dunnigan CBD Discharge Site Plan, for the location of this facility. The Dunnigan pipeline would be about 4 miles long, have a minimum depth of 6 feet below ground surface, and have an inside diameter of approximately 9 feet (Alternative 1 and 3) to 10.5 feet (Alternative 2). The Dunnigan Pipeline would extend through existing agricultural lands, as well as crossing Interstate 5 (I-5), Road 99W, the railroad, and a commercial auction yard between I-5 and Road 99W. The tunneled crossings at I-5, Road 99W and the railroad would be 300 feet long and 250 feet long, respectively, and would require 12-5-foot-diameter casings.

A CBD outlet with an energy dissipation facility would be required at the downstream end of the pipeline prior to discharging the water into the CBD. Two 60-inch-diameter, fixed-cone valves would be placed at the discharge stilling basin to dissipate energy and adjust the flow. Hoods on the fixed-cones valves would control spray. The conveyance through the Dunnigan Pipeline to the CBD would use gravity (i.e., no pump station) and have a flow up to 1,000 cfs.

Construction of the Dunnigan Pipeline from the TC Canal to the CBD would require dewatering, trenching, and pile driving or a vibration hammer. Dewatering would be necessary for a segment of the pipeline to reduce groundwater levels to 20 or 30 feet below ground surface along its length. Trenching and pipeline installation would be completed after dewatering. Pile driving or a vibration hammer would be used to install piles for construction of the CBD outlet. Construction would include open cut of approximately 100 feet to cross Bird Creek in the dry season.

2.5.1.6 Recreation Areas

The Project proposes the development of two primary recreation areas and a day-use boat ramp. The recreation areas would also require a network of new roads and upgrades to existing roads for maintenance and local access (see Section 2.5.1.7, *New and Existing Roadways* a). Figure 2-34, Recreation Areas, shows a conceptual site map of each recreation area and the recreation areas are described below.

- **Peninsula Hills Recreation Area** – The Peninsula Hills Recreation Area would be located on the northwest shore of the Sites Reservoir, to the north of the existing Sites Lodoga Road and across the reservoir from the Stone Corral Creek Recreation Area. Access would be provided by the existing Sites Lodoga Road west of the reservoir. This recreation area would encompass up to 373 acres and would include a kiosk, access to electricity and potable water, 10 picnic sites (with parking at each site), and hiking trails. There would also be 19 vault toilets, 200 campsites (car and recreational vehicle), and one group camp area.



Source: Jacobs, 2020
Drawing No. DWG-030-C-2002

Figure 2-33. Dunnigan CBD Discharge Site Plan

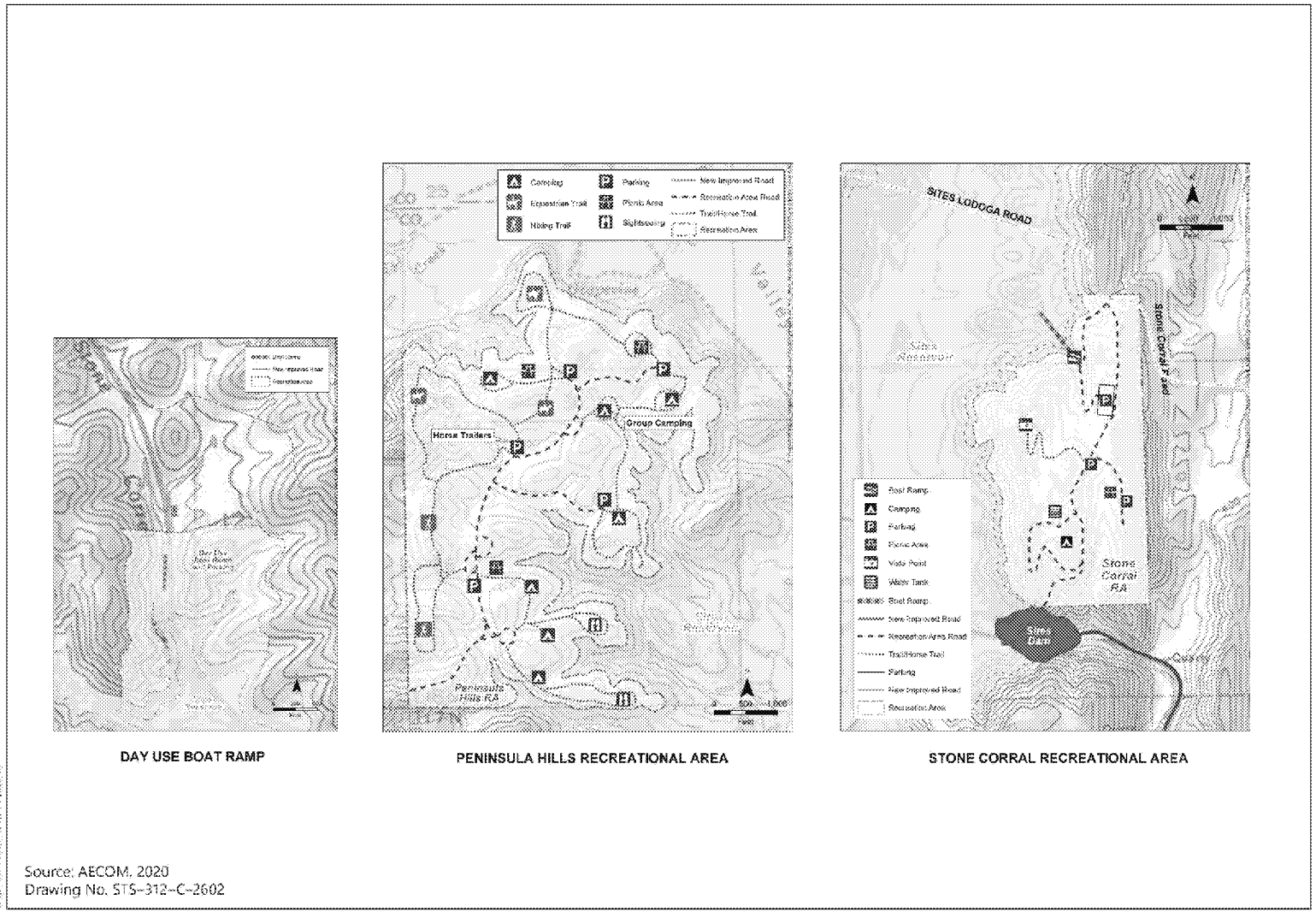


Figure 2-34. Recreation Areas

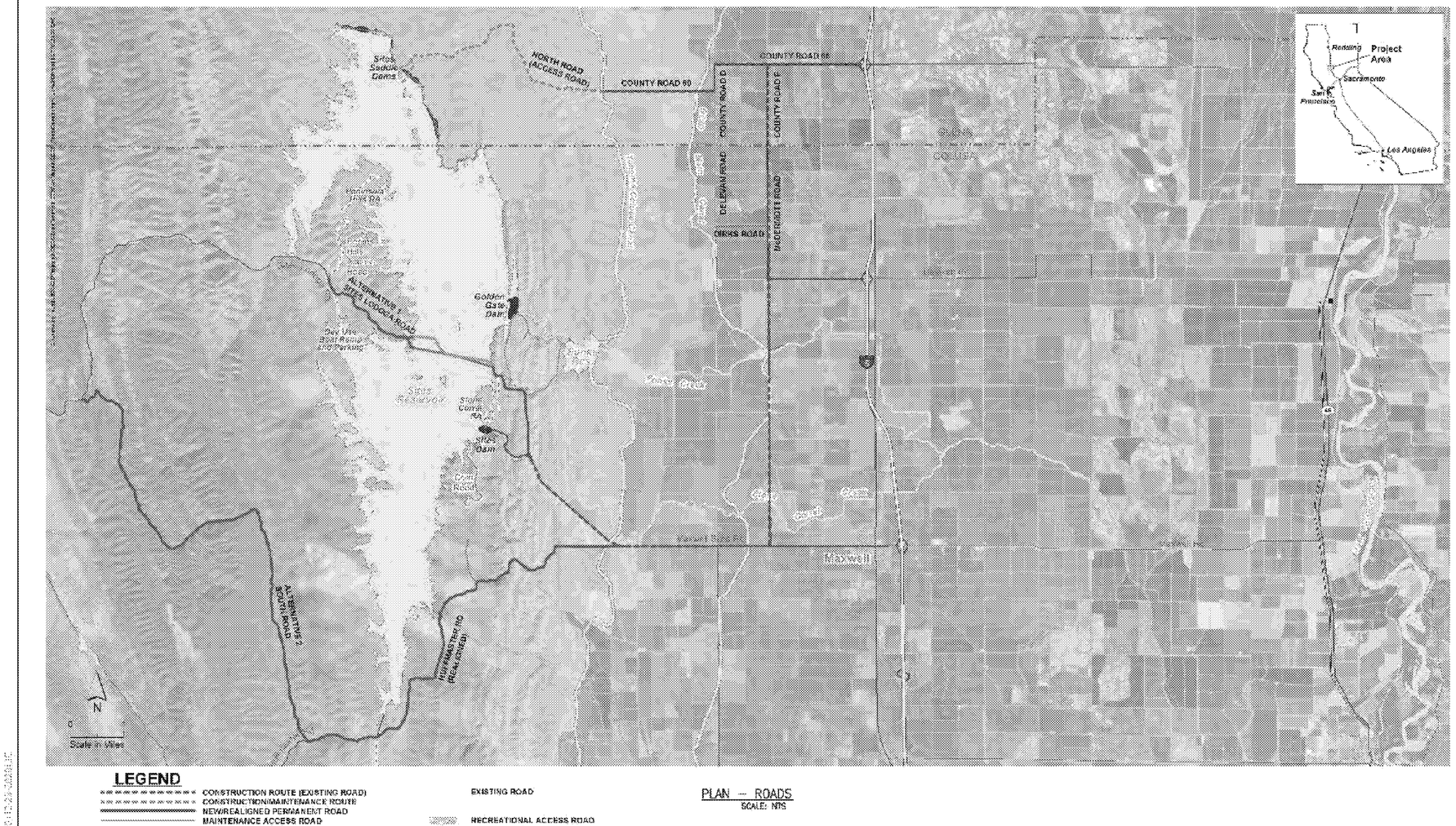
- **Stone Corral Creek Recreation Area** – The Stone Corral Creek Recreation Area would be located on the eastern shore of the Sites Reservoir, north of the existing Maxwell Sites Road and Sites Dam. Access would be provided from Sites Dam and Sites Lodoga Road near the eastern end of the bridge across the reservoir. This recreation area would encompass up to 235 acres and its facilities would include a kiosk, access to electricity and potable water, 10 picnic sites (with parking at each site), and hiking trails. There would also be 10 vault toilets and 50 campsites (car and recreational vehicle).
- **Day-Use Boat Ramp and Parking Areas** – The day-use boat ramp would be located on the western side of the reservoir where the existing Sites Lodoga Road intersects with the proposed inundation area for the reservoir. A parking area would be added to the existing Sites Lodoga Road where it exits the inundation area footprint of the reservoir. The boat ramp and parking area would encompass up to 10 acres and include a kiosk, access to potable water, and one vault toilet.

Construction of the recreation areas and facilities would consist of clearing and grubbing, excavating, backfilling, constructing roads and parking lots, installing utility connections, constructing amenities, constructing the boat ramps, and restoring temporarily disturbed areas. It is anticipated that all construction activities associated with the recreation areas would occur within the proposed footprints of the recreation areas and the temporary and permanent access road areas.

The Authority is also considering a recreation area on the north side of the reservoir within Glenn County. This area may consist of a day-use boat ramp, parking area, picnic facilities, kiosk, access to potable water, and one vault toilet encompassing up to 10 acres. As this facility is conceptual in nature, it is not analyzed in this RDEIR/SDEIS and would require additional CEQA and NEPA analysis if developed and as appropriate.

2.5.1.7 New and Existing Roadways

Approximately 46 miles of new paved and unpaved roads would provide construction and maintenance access to the proposed facilities, as well as public access to the proposed recreation areas. Table 2-4 identifies these roads and their purposes (i.e., construction access, local access, and maintenance access). Figure 2-35, Alternatives 1, 2, and 3 Road Site Map, shows the locations of all local access, construction access, and maintenance access roads that would be needed. The general objectives and maintenance responsibilities for these road types are discussed below, and more detailed information for construction access, local access, and maintenance access roads is subsequently presented in the corresponding subsections. The proposed road improvements and roadway designs are being coordinated with Colusa and Glenn Counties.



Source: AECOM, 2020
Drawing No. STS–305–C–2601

Note: Comm. Road North to be removed

Figure 2-35. Alternatives 1, 2, and 3 Road Site Map

Construction access roads would be designed to provide the necessary roadway improvements specific to the movement of construction equipment and transport of materials. Roadways that would be used for construction access and local access would be designed to achieve the objectives for both uses and prioritize needs for local traffic use and safety. Roads used solely for construction access would be designed with two 12-foot-wide gravel lanes and up to 2-foot-wide shoulders. These roads would be used for maintenance access after completion of construction. Permanent facility access roads constructed from gravel and asphalt would facilitate operation and maintenance. These access roads would require new construction or the relocation of existing public county roads. Temporary gravel roads would also be built during construction. The maintenance of roads used for both construction and local access would be the construction contractor's responsibility during construction and the responsibility of the Colusa or Glenn County department having jurisdiction over them after construction.

Local access roads that would be improved or relocated for construction purposes would provide reliable infrastructure for the traveling public, accommodate transportation needs, and be consistent with state and local design standards. Local access roads would generally have two 12-foot-wide lanes with paved shoulders, and their postconstruction maintenance would be the responsibility of the Glenn or Colusa County department with jurisdiction over them.

Maintenance access roads would be constructed or improved in accordance with the equipment and personnel required for operations and maintenance of specific facilities. As discussed above, roads installed for construction access would be repurposed for maintenance following construction. Repurposed maintenance roads would have one 15-foot-wide minimum gravel lane with no shoulders.

Table 2-4. Sites Project Roads & Purposes Common to all Alternatives

Roads	Road Purpose		Approx. Current Length (miles)	Approx. Proposed Improved Length (miles)	Improvement Types
	Colusa County[2]	Glenn County[2]			
Road 68	--	Local, Construction	3	3	Shoulder improvements/ intersection widening, two structure improvements
Road D	--	Local, Construction	0.5	0.5	Shoulder improvements/ intersection widening, two structure improvements
Road 69	--	Local, Construction	2	2	Shoulder improvements/ intersection widening, three structure improvements
North Road	--	Construction, Maintenance	0	5	New gravel road

Roads	Road Purpose		Approx. Current Length (miles)	Approx. Proposed Improved Length (miles)	Improvement Types
	Colusa County[2]	Glenn County[2]			
Delevan Road	Local, Construction		2	2	Shoulder improvements/ widening
McDermott Road	Local, Construction	Local, Construction	8	4	Shoulder improvements/ widening/paving, five structure improvements
Saddle Dam Road – North (5–9) (provide access to northern portions of Sites Reservoir and the saddle dams)	--	Construction, Maintenance	1	2	New gravel road
Saddle Dam Road – South (1–5)	Maintenance	Maintenance	0	3	New road
Huffmaster Road realigned	Local	--	12	7	Gravel road for residents
Sites Lodoga Temporary Detour Road (Shoo-Fly)	Local, Construction	--	1	1	New, temporary gravel road
Day-Use Boat Ramp (westside)	Local	--	0	0.3	New paved road
Peninsula Hills Recreation Area (provide access from Sites Lodoga Road to the proposed Peninsula Hills Recreation Area)	Local	--	0	4	New gravel road
Potential Access Road A (O&M/PGP/GG Dam)	Maintenance	--	0	1	New road
Potential Access Road B (O&M/PGP/GG Dam)	Maintenance	--	0	0.4	New road

Roads	Road Purpose		Approx. Current Length (miles)	Approx. Proposed Improved Length (miles)	Improvement Types
	Colusa County[2]	Glenn County[2]			
Potential Access Road C1 (O&M/PGP)	Maintenance	--	0.4	0.4	Existing road
Potential Access Road C2 (O&M/PGP/GG Dam)	Maintenance	--	0.6	0.6	Existing jeep road
Stone Corral Creek Recreation Area/Sites Dam	Local	--	0	2.5	New road
Comm Road South	Local	--	0	1	New road

Table Notes:
Local access includes local road for public use and recreational access.
Any improvement type identified as a new road has an approximate current length of 0.

The roadway alignments discussed below are based on service needs and existing planning-level-based mapping to establish a corridor width along roadways. Corridor widths would vary depending on the level of topographical relief—greater relief requires greater flexibility throughout the design process to allow the engineers to move the road within the corridor.

Several existing roads would be improved to support the construction of Sites Reservoir facilities (e.g., main dams and saddle dams) and enable construction vehicles to safely pass one another if needed. After construction of the reservoir was completed, these roads would be maintained to support the operation of the Sites Reservoir. Some of these roads would also be available for public use. This subsection describes the expected routes for construction access and the roadway improvements that would be needed to accommodate construction and maintenance access.

The disturbance area for roads would include the footprints of the proposed roads and stream crossings, the staging areas for materials and equipment, and the area needed to construct the facilities and access roads. Traffic that was not construction related would be diverted around construction disturbance areas in accordance with a traffic management plan.

Initial construction activities would involve establishing staging areas, surveying and marking roadways, clearing, and grading. Road construction would entail making road cuts and fills; hauling away excess cut materials; constructing culverts; laying aggregate road base and asphalt; erecting fences, guardrails, and signs; installing roadway striping and reflectors; restoring temporary disturbance areas; and cleaning up the work sites.

Construction Access

Construction access for the reservoir and supporting facilities would occur on public roads from I-5 to the reservoir site on the north and at Sites Lodoga Road on the east. These roads currently cross small creeks and irrigation canals, and the crossings are generally reinforced through concrete box culverts. There are three primary construction access routes for consideration that would most likely be defined for use by the construction contractor.

The first construction access route would be on 5.5 miles of existing approximately 24 feet wide paved road from I-5 west along Road 68, south on Road D, and west on Road 69 to just west of the TC Canal. From here the road reverts to a single lane (± 12 feet wide) gravel road (North Road), which would be temporary and continue for approximately 5 miles along existing ranch roads and trails to the north end of the reservoir at the saddle dams. From this location, the contractor would establish their own onsite access roads within the limits of the reservoir.

The second construction access route would be on 7.2 miles of existing paved road from I-5 west along Delevan Road, north along McDermott Road, and west on Road 69 to just west of the TC Canal as noted above. Approximately 1.5 miles of McDermott Road between Dirks Road and West Glenn Road consist of gravel; therefore, it is assumed paving would be needed to accommodate the volume of heavy construction traffic.

The third construction access route would be on 12 miles of existing paved road from I-5 along Delevan Road, south along McDermott Road to Maxwell Sites Road, and then west to the existing gravel access road to Funks Reservoir. The first mile of this gravel road would be the initial segment of the Sites Lodoga Road realignment. This gravel road would also provide access to the Funks PGP and Golden Gate Dam. Maxwell Sites Road would provide access to Sites Dam. Construction equipment/materials would not be permitted to pass through the community of Maxwell on the Maxwell Sites Road, thus the construction access roads would circumvent Maxwell.

The existing roads are nonstandard in geometry and have inadequate roadbed structural section to accommodate the large, heavy vehicles that would be used to transport construction equipment and materials. These roads consist of Road 68, Road D, Road 69, Delevan Road, and McDermott Road. They are narrow and typically include two paved 11-foot- or 12-foot-wide lanes and 1- to 3-foot-wide earthen shoulders. The pavement conditions of Road 68, Road D, and Road 69 pavement conditions are "at risk", "poor", and "very poor", respectively, upon visual inspection by project engineers. A segment of McDermott Road in Colusa County is gravel. Road 69 transitions to a single-lane, gravel road west of the TC Canal. The following improvements would need to be implemented on these roadways:

- Roadbed and intersection widening to allow for safe mobility of construction traffic that would be comingled with local vehicular and agricultural equipment traffic.
- Roadbed reconstruction to enable use by large, heavy vehicles transporting construction equipment and materials
- Horizonal and vertical curve corrections
- Drainage feature improvements to allow for proper drainage

Reconstruction of the roads above would include the addition of new 2-foot-wide paved shoulders to each lane, as well as potential modifications to existing creek and irrigation canal crossings (as described below). The new shoulders would be within the public right-of-way, as would any temporary work areas needed to reconstruct the roads. All existing roadway improvements would be designed to avoid or minimize impacts on existing utility infrastructure and public right-of-way. Once the roads are constructed, all county roads would be maintained by Glenn or Colusa County, while specific access and maintenance roads (e.g., North Road, South Comm Road) would be maintained by the Authority.

The following roads involve the noted number of structures that would need to be crossed. It is assumed that these structures would need to be widened, strengthened, or replaced, depending on their structural condition and load rating capacity.

- Road 68 – two structures
- Road D – two structures
- Road 69 – three structures (two on paved roads crossing the TC Canal and GCID Main Canal, and one on a gravel road)
- McDermott Road – five structures

Local Access

In addition to the local roads described above that would be improved for construction purposes and then remain local access roads, a number of other public local roads would be relocated or developed to accommodate reservoir facilities. These roads include Sites Lodoga Road, Huffmaster Road, Comm Road South, and recreation area roads. There would also be one temporary detour during construction, the Sites Lodoga Temporary Detour Road. Permanent changes to Sites Lodoga Road and Huffmaster Road are discussed in Section 2.6, Alternative 1 Specific Elements and Section 2.7, Alternative 2 Specific Elements below.

- **Comm Road South** – Access to existing communication facilities would consist of a gravel road that would start near the northern end of Huffmaster Road and proceed north to the communications tower.

- **Recreation Area Roads** – New recreation area roads would provide access from Sites Lodoga Road to the Peninsula Hills Recreation Area, day-use boat ramp, and Stone Corral Creek Recreation Area. The access road to Peninsula Hills Recreation Area on the west side of Sites Reservoir would be paved. The access road to the day-use boat ramp, which would also be on the west side of the reservoir, would be paved. The access road to the Stone Corral Creek Recreation Area on the east side of the reservoir would be paved and gravel.

- **Sites Lodoga Temporary Detour Road** – A temporary detour road would be constructed to expedite construction and maintain traffic movement through the reservoir site during the construction of Sites Dam and the bridge across the reservoir (including fill prisms). This road would convey local traffic for a period of approximately 1 year and would be aligned around the Sites Dam site partially on the Sites Lodoga realignment

from Maxwell Sites Road to near the easterly bridge at the top of the ridge. The temporary detour road would then split off to the south and traverse hilly terrain before Comm Road South rejoining Sites Lodoga Road near its intersection with Peterson Road.

Maintenance Access

New and existing maintenance access roads would provide access to the main dams, saddle dams and dikes, I/O Works, and Funks PGP. Except for the existing road to Funks Reservoir, the maintenance access roads would be single-lane, 15-foot-wide gravel roads with no shoulder. Comm Road South would be a local access and maintenance access road.

North Road would begin at the end of the unpaved Road 69, continue 5 miles to the reservoir's edge, and connect with several new maintenance access roads that would provide access to the saddle dams and dikes. Access Road A1 would be a new gravel road along the crest of the Golden Gate Dam with minor cuts/fills. Access Roads B1 and B2 would be new gravel roads connecting to the I/O Works and Golden Gate Dam with minor cuts/fills. Access Road C1 is expected to be a two-lane, 30-foot-wide, paved road to access Funks Reservoir and the existing road to the reservoir would be maintained. Access Road C2 would be improved from an existing jeep trail at the east base of the Golden Gate Dam to a gravel road that would extend off Access Road C1.

2.5.1.8 Project Buffer

The Authority would acquire and maintain a project buffer encompassing the lands beyond the facility footprints. The buffer width would be 100 feet around the Sites Reservoir and related facilities, all buildings, most aboveground components, and recreation areas. The buffer may be less than 100 feet wide if a facility is near a property boundary and the proposed uses do not conflict with the adjacent land uses. Buffers are not anticipated for underground or buried facilities (i.e., Dunnigan Pipeline), transmission lines, or roads (both public and Project maintenance access roads).

Although buffer areas would generally remain undeveloped, the Authority would install limited features and perform periodic maintenance primarily related to reducing fire hazards. These actions would include erecting and maintaining fencing, grading fire breaks/trails, maintaining vegetation (e.g., grazing, tilling, or disking), and performing limited prescribed/controlled burns. The Authority may manage buffer areas as wildlife habitat where appropriate.

2.5.2 Operations and Maintenance Common to All Action Alternatives

This section describes the operations and maintenance activities common to all of the Action Alternatives.

2.5.2.1 Water Operations

The Project would provide water supply and water supply related environmental benefits to the Sites Storage Partners. Water would be diverted into Sites Reservoir from the Sacramento River at the existing RBPP into the TC Canal and at the existing GCID Hamilton City Pump Station into the GCID Main Canal. Both of these facilities have existing fish screens. Once in the TC Canal, water would be conveyed to the existing Funks Reservoir and pumped into the new Sites Reservoir via the Funks PGP and associated facilities. Once in the GCID Main Canal, water

would be conveyed to the new TRR and pumped into the new Sites Reservoir via the TRR PGP and associated facilities. Water could be diverted to storage in Sites Reservoir when the diversion criteria are met and when the Delta is in excess conditions. Diversions to storage could occur anytime between September 1 to June 15, the timeframe that the Sacramento River is not fully appropriated. Water would be held in storage in Sites Reservoir until requested for release by a Sites Storage Partner. Water releases would generally be made from May to November, but could occur at any time of the year depending on the Storage Partner's need and conveyance capacity to convey water to its intended point of delivery. Water would be released from Sites Reservoir via the I/O Works back through the TRR PGP and into the TRR or back through Funks PGP back into Funks Reservoir. Water released could be used along the GCID Main Canal, along the TC Canal, or conveyed to the new Dunnigan Pipeline and discharged to the Colusa Basin Drain and conveyed via the Sacramento River or the Yolo Bypass to a variety of locations in Delta and south-of-Delta[2]. Exchanges of water may also occur with the CVP and SWP. Water would also be diverted and impounded from Funks and Stone Corral Creeks and releases from Golden Gate Dam and Sites Dam, respectively, would occur into Funks and Stone Corral Creeks. Water operations are described in more detail below.

The Authority intends to apply for and obtain a water right permit from the State Water Resources Control Board (SWRCB) for the operations of Sites Reservoir. Actual operations would be subject to the terms and conditions of this water right along with all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time. Operations under all Action Alternatives would also require coordination with Reclamation and DWR as described below. The Authority is working with Reclamation and DWR to develop mutually agreeable operating agreements that would describe the approach for coordinating operations with Sites and the CVP and SWP operations, respectively.

Diversion to Sites Reservoir

Sites Reservoir would be filled through the diversion of Sacramento River water that generally originates from unregulated tributaries to the Sacramento River downstream from Keswick Dam. Only a small amount of the diversions to Sites Reservoir would come from flood releases from Shasta Lake. Diversions to Sites Reservoir would be made from the Sacramento River at the existing RBPP (River Mile 243) near Red Bluff into the TC Canal and at the existing GCID Hamilton City Pump Station (River Mile 205) near Hamilton City into the GCID Main Canal. Water could be diverted to storage in Sites Reservoir from September 1 to June 15. Diversions would only occur when all of the following conditions are met:

- Flows in the Sacramento River exceed the minimum diversion criteria (described below);
- The Delta is in "excess" conditions as determined by Reclamation and DWR;

[2] The term south-of-Delta or phrase south of the Delta is used to refer to areas that can receive water from the south Delta pumping facilities, including the SWP Banks Pumping Plant, Reclamation's Jones and Rock Slough pumping plants, and Contra Costa Water District's pumping plants. This includes areas south and west of the Delta, such as Contra Costa, Alameda, and Santa Clara counties.

- Senior downstream water rights, existing CVP and SWP and other water rights diversions including CVP 215 water and Article 3F water and SWP Article 21 (interruptible supply), and other more senior flow priorities (such as diversions associated with Freeport Regional Water Project and existing Los Vaqueros Reservoir) have been satisfied;
- Flows are available for diversion above flows needed to meet all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time that diversion occurs. This would include, but is not limited to any flow requirements in Water Right Decision 1641 (SWRCB, 2000), the 2019 ROC on LTO Biological Opinions (USFWS 2019 and NMFS 2019) and the SWP ITP (CDFW 2020); and
- There is available capacity at the RBPP and in the TC Canal and GCID facilities to divert and convey water to Sites Reservoir, above the capacity needed for deliveries to existing TC Canal users and within the GCID service area.

The RBPP would serve as the primary diversion location and would divert water from the Sacramento River to Funks Reservoir through the TC Canal and into the Sites Reservoir through the Funks PGP and the I/O Works. Up to 2,100 cfs, plus losses, would be diverted at the RBPP for the Project. The RBPP has an existing fish screen that meets NMFS and CDFW fish screen criteria through which all flows diverted for the Project would be screened. The Hamilton City Pump Station would serve as the secondary diversion location and would divert water from the Sacramento River to the new TRR through the GCID Main Canal and into the Sites Reservoir through the TRR PGP and the I/O Works. Up to 1,800 cfs, plus losses, would be diverted at the Hamilton City Pump Station for the Project. The Hamilton City Pump Station has an existing fish screen that meets NMFS and CDFW fish screen criteria through which all flows diverted for the Project would be screened. Although the RBPP will be the primary diversion point, both facilities would be operated simultaneously when river conditions, facilities, and capacity are available for a maximum combined diversion rate of 3,900 cfs, plus losses.

Estimated total annual diversion of Sacramento River water from both diversion facilities to Sites Reservoir could be up to the full reservoir amount. Based on model simulations, the estimated annual diversions would usually range from 60 thousand acre-feet (TAF) per year to 390 TAF per year, depending on hydrologic conditions, availability of Sacramento River water, and diversion and conveyance facility capacities.

Diversion Criteria

The Project would be operated to meet the diversion criteria summarized in Table 2-5 and described in more detail below. All diversion criteria must be met for the Project to divert.

Table 2-5. Summary of Project Diversion Criteria

Location (Listed from North to South)	Criteria
Bend Bridge Pulse Protection	Protection of all qualified precipitation-generated pulse events (i.e., peaks in river flow rather than scheduled operational events) from October to May based on the detection of fish presence and migration during the beginning of the flow event. For each event where fish presence and migration is detected, diversions from the Sacramento Riverwould cease for 7 days.
Minimum Bypass Flows in the Sacramento River at the RBPP	3,250 cfs minimum bypass flow at all times; rate of diversion controlled by fish screen design
Minimum Bypass Flows in the Sacramento River at the Hamilton City Pump Station	4,000 cfs minimum bypass flow at all times; rate of diversion controlled by fish screen design
Minimum Bypass Flows in the Sacramento River at Wilkins Slough	8,000 cfs in April and May; 5,000 cfs all other times
Fremont Weir Notch Protections	No more than 1% reduction in flow over weir when spill over the weir are less than 600 cfs. No more than a 10% reduction when flow over weir when spills over the weir are between 600 cfs and 6,000 cfs. No restriction when flows over the weir are greater than 6,000 cfs
Freeport, Net Delta Outflow Index, X2, and Delta Water Quality	Operations consistent with all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time that diversion occurs

Bend Bridge Pulse Protection

All Action Alternatives would implement a pulse flow protection measure to be applied to all qualified precipitation generated peaks in the hydrograph that originate primarily from tributaries to the Sacramento River that flow into the mainstem Sacramento River downstream of Keswick Dam from October through May. The pulse flow protection measure addresses the survival of migrating juvenile winter-, spring-, fall-, and late fall-run Chinook salmon (*Oncorhynchus tshawytscha*), and steelhead (*Oncorhynchus mykiss*) through the middle reaches of the Sacramento River. Pulse flows during this period would provide flow continuity between the upper and lower Sacramento River (i.e., below Wilkins Slough) and are expected to enhance survival of these migratory fish (Michel et al. 2015, In Press ; Notch 2017) as fish movement is thought to occur in response to increased flow, water-year type and turbidity associated with the beginning of a precipitation-generated high-flow event (Poytress et al. 2014, Cavallo et al. 2015).

Pulse protection would occur from October through May to address outmigration of juvenile winter-, spring-, fall- and late fall-run Chinook salmon, as well as a portion of the steelhead juvenile outmigration period. The Project's Adaptive Management Plan would include a fish monitoring program capable of detecting a migratory fish response during the beginning of a

precipitation-generated high flow event and continuing research would be utilized to operate to, and further refine the pulse flow protection strategy.

The Adaptive Management Plan and fish monitoring program would be developed in cooperation with Reclamation and the fishery resource agencies, including CDFW, NMFS, and USFWS and would be integrated with existing fish monitoring programs to the extent possible. For example, the USFWS monitoring program at RBDD, conducted for purposes of estimating fish production indices in the spawning reach above RBDD, is particularly relevant. This program could be supplemented with additional monitoring sites downstream, as necessary. The Authority would coordinate with the fishery resource agencies to define an appropriate capture rate or other metric to define the onset of a fish pulse stimulated by increasing flows and turbidity from storm events. The following criteria define a qualified pulse event:

- Outmigration of anadromous fish is detected based on the Adaptive Management Plan and fish monitoring program.
- If the 3-day trailing average of Sacramento River flow at Bend Bridge exceeds 8,000 cfs and 3-day trailing average tributary flow upstream of Bend Bridge (Cow Creek, Cottonwood Creek and Battle Creek) exceeds 2,500 cfs, a pulse event is initiated if the previous day was not already in a pulse event. This flow level is consistent with Sacramento River flow of 10,700 cfs at Wilkins Slough (considering increases from tributary inflows).
- A pulse event terminates seven days after initiation.
- After completion of a pulse event, the following conditions must occur before another pulse event is triggered: (1) 3-day trailing average of Sacramento River flow at Bend Bridge was less than 7,500 cfs for seven consecutive days; and (2) 3-day trailing average of tributary flow upstream of Bend Bridge (Cow Creek, Cottonwood Creek and Battle Creek) was less than 2,500 cfs for seven consecutive days.

Project diversions from the Sacramento River would not occur during a qualified pulse event. Diversions are otherwise unrestricted by the Bend Bridge Pulse Flow protection criteria.

Minimum Bypass Flows in the Sacramento River at the RBPP

A minimum bypass flow in the Sacramento River at the RBPP of 3,250 cfs would be in place at all times to stabilize flows in the Sacramento River and protect salmon redds. When flow in the Sacramento River is less than 3,250 cfs at the RBPP, the Project would not divert. When flows in the Sacramento River exceed 3,250 cfs at the RBPP, diversions at the RBPP may occur and the rate of diversion at the RBPP would be controlled by and scaled to the fish screen design as shown in Figure 2-36, until the full 2,100 cfs diversion could be achieved at flows of approximately 7,860 cfs in the Sacramento River.

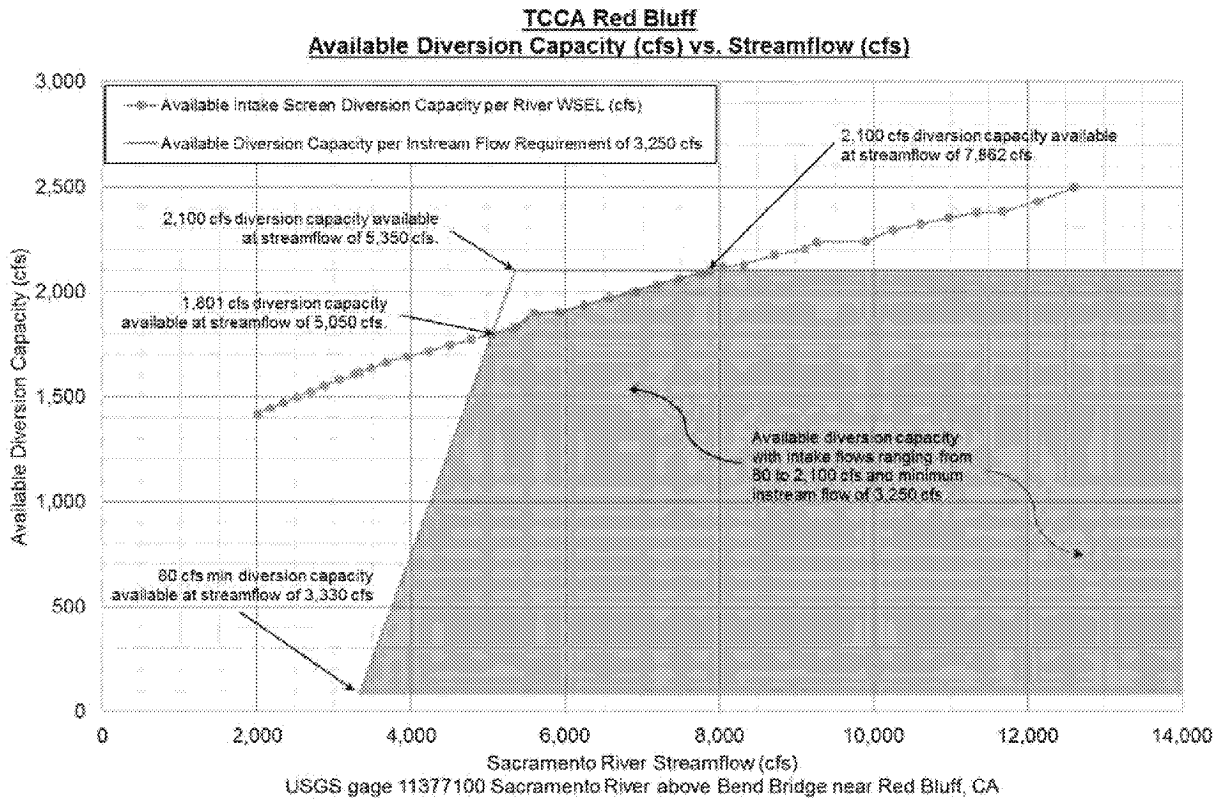


Figure 2-36. Available Diversion Capacity versus Streamflow at RBPP

Minimum Bypass Flows in the Sacramento River at the Hamilton City Pump Station

A minimum bypass flow in the Sacramento River at the Hamilton City Pump Station of 4,000 cfs would be in place at all times to stabilize flows in the Sacramento River and ensure proper function of the fish screen. When flow in the Sacramento River is less than 4,000 cfs at the Hamilton City Pump Station, the Project would not divert. When flows in the Sacramento River exceed 4,000 cfs at the Hamilton City Pump Station, diversion at the Hamilton City Pump Station may occur and the rate of diversion at the Hamilton City Pump Station would be controlled by and scaled to the fish screen design as shown in Figure 2-37, until the full 1,800 cfs diversion could be achieved at flows of about 5,800 cfs in the Sacramento River.

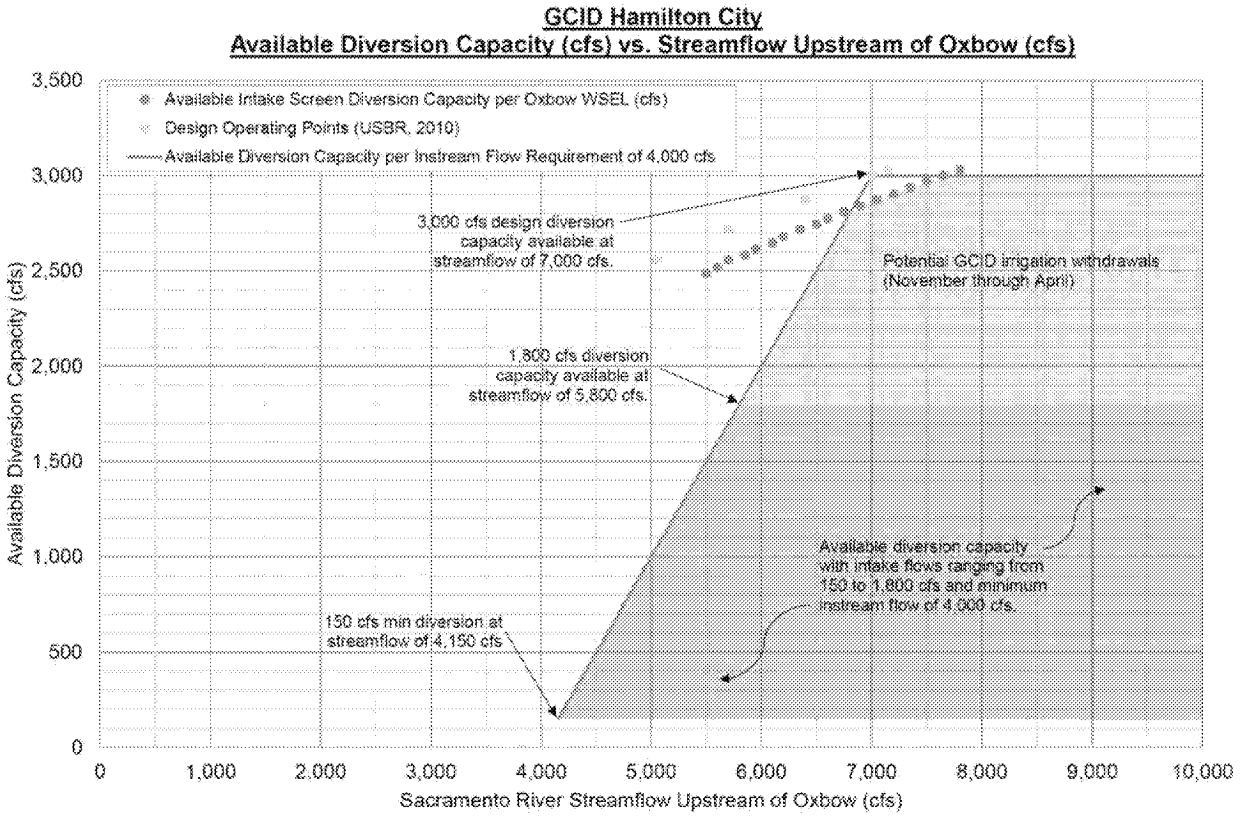


Figure 2-37. Available Diversion Capacity versus Streamflow at the Hamilton City Pump Station

Minimum Bypass Flows in the Sacramento River at Wilkins Slough

In addition to the minimum bypass flows in the Sacramento River at RBPP and the Hamilton City Pump Station, a minimum bypass flow of 8,000 cfs in the Sacramento River at Wilkins Slough would be in place in April and May and 5,000 cfs at all other times. This bypass flow regime is consistent with recommendations of 10,700 cfs at Wilkins Slough (considering increases from tributary inflows) and based on research performed over the last 30 years; focusing on recent studies that relate survival of outmigrating juvenile Chinook salmon to flows in the Sacramento River (Michel 2010, del Rosario et al. 2013, Poytress et al. 2014, Michel et al. 2015, Iglesias et al. 2017, Notch 2017. Henderson et al. 2018, Hassrick et al. In Prep, and Michel et al. In Press).

Fremont Weir Notch Protections

The Project's diversion criteria have been formulated to avoid impacts on Reclamation's ability to implement its obligations in the 2019 NMFS ROC on LTO Biological Opinion to implement the Yolo Bypass Restoration Salmonid Habitat Restoration and Fish Passage Implementation Plan and provide 17,000+ acres of inundation in the Yolo Bypass from December to April (NMFS 2019). For the purposes of modeling the effects of the Project, Project diversions may occur if no more than a 1% reduction in flow over the weir would occur when spills over the weir are less than 600 cfs. Project diversions may occur if no more than a 10% reduction in flow

over the weir would occur when spills over the weir are between 600 cfs and 6,000 cfs. When flows over the Fremont Weir are greater than 6,000 cfs there would be no restriction on Project diversions. These limitations are intended to reduce changes to spill frequency and duration.

Freeport, Net Delta Outflow Index, X2, and Delta Water Quality

For lower Sacramento River and Delta locations, the Project would operate in a manner that would not adversely affect the ability of others to meet all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time that diversion occurs.

Storage in Sites Reservoir

Water would be stored in Sites Reservoir until requested for release by a Sites Storage Partner. The Authority would prepare a Reservoir Management Plan that would describe the management of water resources in Sites Reservoir which would include a plan for monitoring water quality (see Section 2.5.2.4 for more information on the Reservoir Management Plan).

Releases from Sites Reservoir

Releases from Sites Reservoir would be made in any water year type to meet the needs of the Sites Storage Partners, including the water supply related environmental benefits under WSIP. The releases would be made from the I/O Works in Sites Reservoir and conveyed via pipeline to either Funks Reservoir or the TRR. Under normal operating conditions, 2,000 cfs would be released from the I/O Works to Funks Reservoir and 1,000 cfs would be released from the I/O Works to the TRR. The I/O Works would allow withdrawal of water from Sites Reservoir over a range of depths to manage release water temperatures.

From Funks Reservoir or the TRR, releases would be conveyed as follows:

- **Release for Sites Storage Partners Along the TC Canal and the GCID Main Canal** – Releases would be made to Funks Reservoir or the TRR and conveyed to the respective Sites Storage Partner via the existing TC Canal and GCID facilities.
- **Releases for Sites Storage Partners Along the Sacramento River** – Releases for Sites Storage Partners along the Sacramento River would generally be made via exchange as water from Sites Reservoir cannot be physically conveyed to any Sites Storage Partner on the Sacramento River between the GCID Hamilton City Pump Station and Knights Landing. Real-time exchanges, primarily with GCID, but also with Reclamation would be used for these Sites Storage Partners.
- **Releases for Sites Storage Partners Along the CBD, Yolo Bypass, and North Bay Aqueduct** – Releases for Sites Storage Partners, including some of the Proposition 1 water, would be made to Funks Reservoir. This water would then be conveyed down the TC Canal to the new Dunnigan Pipeline and released into the CBD. The water would then be conveyed down the CBD, through the Knights Landing Ridgecut, to the Yolo Bypass/Cache Sough Complex for Proposition 1 benefits or for diversion into the North Bay Aqueduct.

- **Releases for Sites Storage Partners South-of-Delta** – Releases for Sites Storage Partners who are located south of the Delta, including water for Incremental Level 4 Refuge water supply benefits under WSIP, can take a combination of different paths under all Action Alternatives. Releases could be made to Funks Reservoir, conveyed down the TC Canal to the new Dunnigan Pipeline and released into the CBD. This water would then be conveyed down the CBD, through the Knights Landing Ridgecut, to the Yolo Bypass/Cache Sough Complex and into the North Delta. Once in the Delta, this water could be diverted at any of the South Delta pumping facilities (SWP's Banks Pumping Plant, Reclamation's Jones Pumping Plant or Rock Slough Pumping Plant, or Contra Costa Water District's pumping plants) and conveyed to the respective Sites Storage Partner using existing conveyance facilities and mechanisms. Alternatively, once releases are in the CBD, they could be conveyed to the Sacramento River via the Knights Landing Outfall Gates. Once in the Sacramento River, these releases would enter the Delta and could be diverted at any of the South Delta pumping facilities. Releases for Sites Storage Partners who are located south of the Delta, including water for Incremental Level 4 Refuge water benefits under WSIP, may also be made by exchanges with Reclamation and DWR. Releases for Sites Storage Partners south-of-Delta would generally be made during July to November to coincide with available pumping capacity at the South Delta pumping facilities and would be subject to applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time.

Releases would be coordinated with Reclamation and DWR to ensure there are no conflicts with CVP and SWP operations and no adverse effects to the CVP and SWP. In addition, releases would be coordinated with Reclamation and DWR to ensure that there is available capacity to redivert releases at the South Delta pumping facilities for any releases that would be pumped at these locations. The majority of releases to the Sacramento River would occur when the CVP and SWP are in balanced conditions, that is releases from upstream reservoirs and unregulated flow approximately equal water supply needed to meet Sacramento Valley in-basin uses and CVP and SWP exports.

Sites Reservoir is currently estimated to have a dead pool of approximately 17,700 AF, below which water cannot physically be removed from the reservoir using the I/O Works. However, the Authority is currently planning to operate to a dead pool of 120,000 AF under normal conditions. The operational dead pool amount may be revised and reduced in final design. Sites Reservoir may also be drawn down below the operational dead pool in drought situations.

Coordination with CVP and SWP

Operations of all Action Alternatives would be coordinated with Reclamation and DWR to prevent conflicts with the CVP and SWP operations or add additional obligations on the CVP or SWP to meet applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time. The Authority is currently working with Reclamation and DWR to establish operating agreements with both agencies that would describe the details of the coordination and collaboration that would take place in the operations of the Project.

It is expected that the Project would also be incorporated into existing and future technical and advisory teams in which Reclamation and DWR participate in to coordinate the CVP and SWP operations with the regulatory agencies. This could include, but would not be limited to, the Sacramento River Temperature Task Group and Delta Operations for Salmon and Sturgeon Group. This would allow for better and more efficient coordination of the Project's operations, in concert with the CVP and SWP operations, with the regulatory agencies along with providing opportunities to work collaboratively to achieve species benefits in the Sacramento Valley and the Delta.

All of the Action Alternatives also include the possibility of exchanges of water with the CVP and SWP. Exchanges have the potential to assist the CVP and SWP in meeting their regulatory obligations. Exchanges are expected to primarily occur with Shasta Lake and Lake Oroville, but could also occur with Folsom Lake and real-time with local participants. Exchanges would only be conducted when they would be neutral or beneficial to CVP and SWP operations and not impact the ability of the CVP or SWP to meet applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time. Exchanges are described in more detail below.

- **Shasta Lake Exchanges** – Exchanges under the Project with Shasta Lake would be formulated to target cold-water pool preservation and anadromous fish benefits. Shasta Lake exchanges would occur in years when forecasted temperature-based mortality of early life stage winter-run Chinook salmon would be reduced if the exchange is in place. Under a Shasta Lake exchange, water would be released from Sites Reservoir in the spring to meet CVP purposes, including CVP water service and/or repayment contractors in the Sacramento Valley that could physically receive water from Sites Reservoir. By reducing releases from Shasta Lake in the spring, storage and the cold-water pool in Shasta Lake would be preserved for use later in the year, typically during critical months of the cold-water pool management season (August and September). In late-summer and fall (i.e., August through November), Reclamation would release an equivalent amount of water from Shasta Lake for Sites Storage Partners. All exchange water would be released from Shasta Lake in late summer and fall and no exchanged water would be carried over from year to year.
- **Lake Oroville Exchanges** – Exchanges under the Project with Lake Oroville would be formulated to facilitate Sites Project deliveries to Sites Storage Partners and refuges south of the Delta and may also improve cold-water pool conditions at Lake Oroville. Exchanges with Lake Oroville are expected to happen more frequently and would be driven by a variety of factors. Under a Lake Oroville exchange, water would be released from Sites Reservoir primarily in June and July to meet SWP purposes. By reducing releases from Lake Oroville in these months, storage and the cold-water pool in Lake Oroville would be preserved for use later in the year, typically during critical months of the cold-water pool management season (August and September). In late-summer and fall (i.e., August through November), DWR would release an equivalent amount of water from Lake Oroville for Sites Storage Partners. All exchange water would be released from Lake Oroville in late summer and fall and no exchanged water would be carried over from year to year.

- **Folsom Lake Exchanges** – Exchanges with Folsom Lake would be operated similarly to exchanges with Shasta Lake. Sites Reservoir would release water in the spring and early summer to meet CVP purposes in lieu of Reclamation releases at Folsom Lake. An equivalent amount of water would then be released from Folsom Lake in the late summer and fall for Sites Storage Partners. All exchange water would be released from Folsom Lake in late summer and fall and no exchanged water would be carried over from year to year.
- **Real-Time Exchanges with Local Participants** – To support timing of releases and deliveries to Sites Storage Partners north and south of the Delta, in-lieu exchanges with local participants may occur. This type of exchange is most likely to occur with GCID, but could also occur with Sacramento River Settlement Contractors and Reclamation. Instead of diverting all of its CVP supply from the Sacramento River, the contractor would receive a portion of its CVP supply from Sites Reservoir. A portion of the water released from Shasta Lake to meet the contractor's CVP supply would be left in the Sacramento River (not diverted by the contractor) and used for other Sites Storage Partners.

Funks Creek and Stone Corral Creek Releases

The Project includes releases from Sites Reservoir into both Funks and Stone Corral Creeks. These releases would be made to comply with California Fish and Game Code Section 5937 and ensure no harm to downstream water right holders on these creeks. At this time, access to the creeks is restricted and there is not sufficient existing information on these two creeks, including current fish assemblage, channel capacity, and existing habitat, to determine a specific release pattern or approach to releases into these two creeks. Field studies would be conducted once access is obtained and before final design for Sites and Golden Gate Dam is completed to determine the following:

- Existing fish assemblage in these creeks, including fish species presence and habitat use;
- Characterization of habitats available (e.g., spawning, rearing, foraging, and sheltering habitats) at varying flow levels;
- Characterization of flows, including assessing the base flow during the summer months;
- Conducting a fluvial geomorphologic study to characterize bed load and flow levels necessary for mobilization; and
- Hydrological studies to define flow temperature relationships.

Using information from these field studies, along with currently available information, the Authority would prepare a Funks and Stone Corral Creeks Operations Plan that would identify the approach for releases, including release schedule and volumes, a monitoring plan, and an adaptive management plan to maintain fish in good condition consistent with California Fish and Game Code Section 5937. Releases into these creeks need to be made in consideration of the flood control benefits of the Project and in such a way as to not overtop the stream banks and flood downstream areas.

Water released into Funks Creek would be made through the transition manifold at the base of Golden Gate Dam and a new pipeline that terminates at Funks Creek below Golden Gate Dam. These facilities are currently being designed to carry up to 100 cfs with a release range of 0 to 100 cfs into Funks Creek. Water released into Stone Corral Creek would be made through the permanent outlet at Sites Dam. This outlet is currently being designed with a release range of 0 to 100 cfs, with an emergency release capacity of up to 2,500 cfs.

Flood Control

All Action Alternatives would provide flood damage reduction benefits to the communities of Maxwell and Colusa, local agricultural lands and rural homes and I-5 by impounding Funks Creek and Stone Corral Creeks. These flood control benefits are inherent in the design of the Project and no specific operational criteria are necessary to achieve these benefits.

Emergency Release

All Action Alternatives include the design and operation of facilities to meet DSOD criteria and requirements for emergency reservoir drawdown. During an emergency release event, Saddle Dams 3 and 5 (Alternative 1 and 3) and Saddle Dam 8B (all Action Alternatives), the I/O Works, and Sites Dam would operate simultaneously to release water. Once the water level fell below the levels of the saddle dam intakes, the I/O Works and Sites Dam would operate solely to release the remaining water. The emergency releases would be in accordance with DSOD requirements and would occur as follows:

- Under Alternative 1 and 3 only, the emergency release structures at Saddle Dams 3 and 5, located at the north end of the reservoir, would release water into the Hunters Creek watershed. These two structures could only be used during the emergency drawdown in the first 7 days, at a rate of 1,000 and 1,200 cfs, until the water level fell below their outlet.
- Under All Action Alternatives, the spillway on Saddle Dam 8B would also release to Hunters Creek. The size of the spillway would accommodate the peak outflow of a PMF event or the steady-state flow if an over-pumping event occurred. The design and size of the spillway assumed that a PMF overflow event and an over-pumping event have a very low probability of simultaneous occurrence.
- The permanent outlet on Sites Dam would release to Stone Corral Creek at a maximum rate of approximately 2,500 cfs.
- The I/O tunnels would release to Funks Reservoir and TRR at a rate of 16,000 cfs, with 9,000 cfs being discharged to Funks Reservoir and 7,000 cfs to the TRR with a maximum velocity of 40 feet per second in the pipelines. To achieve the flows needed for the emergency releases, the velocities in the pipes would exceed the 20 cfs criteria normally used by Reclamation. Discharges to the Funks Reservoir would be accommodated because its spillway is designed for 22,000 cfs which is greater than the 16,000 cfs emergency drawdown flow. The TRR would need to be designed with a spillway into Funks Creek of roughly 7,000 cfs to allow for this. Additional energy dissipation structures at Funks Reservoir and the TRR would be required for the emergency flows.

2.5.2.2 Energy Generation and Energy Use

All Action Alternatives would require power to run facilities and pump water and would also generate incidental power. The pumping energy requirements and power generation are summarized in Table 2-6 and Table 2-7 for all Action Alternatives.

Table 2-6. Pumping Summary for All Action Alternatives

Site	Net Pumping Power (MW)	Other Auxiliary Loads (MW)	Transformer and T Line Losses (MW)	Total Pumping Power (MW)	Total Pumping Power @ 0.85 PF (MVA)
Funks	67.1	1	0.1	68.2	80.2
TRR	75.4	1	0.1	76.5	90.0
Total	142.5	2	0.2	144.7	170.2

Notes:

MW = megawatts; PF = power factor; MVA = megavolt amperes

Table 2-7. Generating Summary for All Action Alternatives

Site	Net Generating Power (MW)	Other Auxiliary Loads (MW)	Transformer and T Line Losses (MW)	Total Power Generation (MW)	Total Power Generation @ 0.85 PF (MVA)
Funks	48.1	1	0.1	47.0	55.3
TRR	27.4	1	0.1	26.3	31.0
Total	75.5	2	0.2	73.3	86.2

Notes:

MW = megawatts; PF = power factor; MVA = megavolt amperes

All Action Alternatives would generate incidental power only when water is released from Sites Reservoir at the Funks and TRR PGPs. Power generation would be limited to 40 megawatts per facility and as such, would not require a Federal Energy Regulatory Commission license per the "Qualifying Conduit Hydropower Facility" under the Hydropower Regulatory Efficiency Act of 2013, as amended by America's Water Infrastructure Act of 2018. All Action Alternatives would include electrical substations at Funks Reservoir and the TRR. These substations would service a net pumping energy demand estimated at 80 megavolt amperes (MVA) at Funks Reservoir and 90 MVA at the TRR (i.e., 170 MVA of demand load total). Because of the size of the pumping units, no backup generation is planned for pumping facilities.

While hydropower generation would be an incidental benefit of conveying water through specific Project facilities and would be influenced by the timing of releases and movement of water and seasonal operational decisions, the Authority would work to schedule releases and outages such that it sought to maximize power generation to offset the Project's power needs. Additional operations power needs beyond those generated by the Project would be purchased from market sources, with a target of purchasing at least 60% of the Project's operations power needs from renewable, carbon-free sources from the start of operations to 2045. Starting in

2045, the Authority would target purchasing 100% of the Project's operations power needs from renewable, carbon-free sources. This target does not include any operational power needs attributable to Reclamation's participation, including the conveyance and pumping of Incremental Level 4 Refuge water supply.

2.5.2.3 Facility Operations and Maintenance

Operations and maintenance activities for all facilities, including recreational areas, would include debris removal, vegetation control, rodent control, erosion control and protection, routine inspections (dams, tunnels, pipelines, PGPs, I/O Works, fencing, signs, and gates), painting, cleaning, repairs, and other routine tasks to maintain the facilities in accordance with design standards after construction and commissioning. Routine visual inspection of the facilities would be conducted to monitor performance and prevent mechanical and structural failures. The Authority would implement operations and maintenance BMPs that are described in Section 2.5.4, *Project Commitments and Best Management Practices Common to All Alternatives*.

The RBPP has an established operations and maintenance plan. The two new pumps at the facility would be incorporated into the existing plan and operated and maintained as part of the overall activities at the facility. Improvements to the GCID facilities would likewise be incorporated into GCID's regular operations and maintenance activities.

Operations and maintenance activities unique to the TRR include daily visual inspections, setting and checking water control structures, annual and five-year dam safety inspections, quarterly vegetation and weed abatement and rodent control, annual preventative leak location surveys and evaluations of the reservoir liner, instrumentation monitoring and maintenance, and annual debris removal at the spillway outfall to Funks creek. Replacement of the TRR liner may be needed on an infrequent basis. Operations and maintenance activities unique to the TRR and Funks pumping plants and hydroelectric turbines would include greasing, painting, oiling, and generally keeping the pumps in good operating condition. Activities would also include annual inspections of pumps, interior coating condition inspection, pump leakage inspections, temperature and pressure checks, and clean exterior surfaces and check for leaks. Repair and replacement of pump components would be needed on a periodic basis. Monthly brake airline filter and lubricator inspection and maintenance would also be completed at the hydroelectric turbines. Energy dissipating units would be visually inspected and lubrication of bearings would be conducted on an as needed basis.

Operations and maintenance activities unique to the electrical switchgear include visual and mechanical inspections, moisture and corrosion inspections, general wiring checks, and insulator and barrier checks. A series of tests would be conduction on regular intervals, including but not limited to insulation electrical test, control wiring electrical tests, circuit breakers and switch tests, system function tests, and surge arrestor tests. Electrical switchgear would be maintained, repaired or replaced as needed to continue safe and efficient operations.

Pipelines and tunnels would be inspected at least every 5 years and remote operated vehicle (ROV) inspections would be acceptable. ROV inspections would not require dewatering the tunnels or pipelines. If physical inspections of tunnel interiors would be required, the tunnels would be completely shut down. Tunnel inspections may be completed during normally

scheduled shutdowns when water is not being conveyed in or out of the reservoir. The tunnel shutdown duration could run from a few days (inspection) to 2 weeks (if maintenance is required).

Different components of the I/O Works would need to be inspected and maintained at varying frequencies. Any port gate that was not operated in a given year based on reservoir level would be functionally tested at least once during that year. In general, pipeline appurtenances (e.g., air/vacuum valves, blowoffs) would be inspected and functionally tested where possible annually. Most of the mechanical components in the multi-level I/O tower could be functionally tested and/or maintained without requiring a shutdown (as there would be multiple tiers from which to draw water).

Maintenance of access roads includes replacing gravel or scraping and filling of ruts to keep the roads in good condition along with pavement replacement and repair for paved roads. Minor structures maintenance includes repair or replacement of gates, locks or fences, painting gates, replacing lost or damaged signage, and lubricating gates.

Maintenance of lands could include grading fire breaks/trails, maintaining vegetation (e.g., grazing, tilling, or disking), and performing limited prescribed/controlled burns.

In general, operations and maintenance activities could occur on a daily, annually, periodically (as needed), and long-term basis. It is estimated that 45 operations and maintenance workers would be needed to perform operations and maintenance activities (based on three shifts per day, 365 days a year).

2.5.2.4 *Operations and Management Plans*

The Authority would develop and implement a number of operations and management plans to govern the operations and maintenance activities of Project. These plans are described below.

Reservoir Operations Plan

The Reservoir Operations Plan would describe the management of water operations, including releases into Funks and Stone Corral Creeks. This plan would include but may not be limited to the following:

- **Diversions to Sites Reservoir** – Mechanics on how diversions are scheduled and managed, including diversion criteria and operating requirements for diversions.
- **Storage in Sites Reservoir** – How losses and evaporation are accounted for, how exchanges and transfers are managed (both between Sites Storage Partners and with non-Sites Storage Partners), and the process for leasing or sharing storage space.
- **Releases from Sites Reservoir** – When and how water can be released to each facility, how release orders are made and adjusted, and how releases are prioritized when necessary.
- **Flows in Funks and Stone Corral Creeks** – Release operations for releases into Funks and Stone Corral Creeks.

- **Flood Control and Health and Safety Considerations** – Descriptions of how emergencies should be handled and processes for notification in the event of emergencies. Emergency flow releases will be addressed in an Emergency Action Plan.

A draft of the Reservoir Operations Plan is expected to be completed in late 2021, with additional refinements and subsequent drafts as operational components are finalized (such as final permit conditions and agreements with Reclamation and DWR are completed). A complete Reservoir Operations Plan would be prepared at least one year prior to Project operations being initiated.

Reservoir Management Plan

The Reservoir Management Plan would describe the management of water resources within Sites Reservoir. This plan would include but may not be limited to the following:

- **Fisheries Management** – Target fisheries species composition and management activities for Sites Reservoir, including stocking strategies (if any), habitat enhancement measures, and monitoring efforts.
- **Reservoir Water Quality** – Baseline water quality metrics, standards, testing and monitoring protocols.
- **Vector Management** – Protocols and practices for communicating/coordinating with vector control authorities and determining how vector control would be managed at Sites Reservoir and the TRR.

The Reservoir Management Plan would be completed at least one year prior to Project operations being initiated.

Land Management Plan

The Land Management Plan would describe the management and maintenance activities on all non-recreation land resources held in fee or easement by the Authority. This plan would include management actions for buffer areas and the specific type and frequency of maintenance activities by location. Land management, maintenance, and monitoring actions for any mitigation areas owned by the Authority would also be described. The Land Management Plan would be completed within a year of the first fee title acquisition by the Authority and would be amended as needed as additional lands are acquired.

Recreation Management Plan

The Recreation Management Plan would describe the types, management, maintenance and monitoring activities on all Project recreation lands and areas. Development of the Recreation Management Plan would be coordinated with Colusa and Glenn counties and the local police, fire, and emergency response entities and organizations to ensure appropriate emergency response resources are available to respond to recreation emergencies. The Recreation Management Plan would be completed at least one year prior to the opening of Project recreational facilities.

Initial Reservoir Fill Plan

The Initial Reservoir Fill Plan would describe the monitoring program for Sites and Golden Gate Dams along with the saddle dams, saddle dikes, and areas around the reservoir that would be implemented during the initial filling of Sites Reservoir. The Initial Reservoir Fill Plan would be completed as part of the DSOD approval process and would be completed at least one year prior to beginning to fill Sites Reservoir.

Standard Operating Procedures

The Authority would prepare Standard Operating Procedures for all major Project facilities. These Standard Operating Procedures would include operational guidelines for facilities along with a schedule for inspection, monitoring and maintenance. The Standard Operating Procedures are expected to be completed as part of the DSOD approval process and would be completed prior to beginning operations of the specific Project facility.

Security Plan

The Authority would prepare a Security Plan for all major Project facilities. Preparation of the Security Plan would be coordinated with local, state, and federal law enforcement agencies to ensure a comprehensive security review and assessment along with appropriate security measures implemented for all major Project facilities. The Security Plan is expected to be completed as part of the DSOD approval process and would be completed during final design.

Emergency Action Plan

Consistent with California Water Code sections 6160, 6161, and 6002.5, an Emergency Action Plan would be prepared and submitted to the Governor's Office of Emergency Services (CalOES). The Emergency Action Plan would comply with SB 92 and CalOES's Emergency Action Plan requirements. The Emergency Action Plan would include, but may not be limited to the following: summary of responsibilities; notification procedures and flowchart; emergency response process; preparedness for different emergencies; and potential inundation mapping. The Emergency Action Plan would also identify the frequency for desktop and full exercises to prepare for emergencies.

2.5.3 Construction Considerations Common to All Action Alternatives

This section summarizes the activities associated with construction of the Project. Appendix 2C, Construction Means, Methods, and Assumptions, provides additional detail regarding the construction means and methods for various facilities that are ultimately incorporated into the impact analysis throughout Chapters 5 to 31 of this document.

2.5.3.1 Geotechnical Investigations

To support the engineering and final design of all facilities, the Authority would undertake preconstruction geologic, geotechnical, and geophysical investigations and testing. These geotechnical investigations and associated testing would also be required to support DSOD permitting processes. The investigations would be implemented in various locations in and around the footprints of the various facilities. Proposed investigations would be focused in areas where additional or updated data are needed for engineering cost refinement, for design, and to prepare permit applications. Depending on the time of year these activities would take place,

almost all of the geotechnical borings and geophysical work areas would require biological monitoring and/or some pre-activity clearance assessment and/or surveys due to their proximity to sensitive biological resources, particularly because the precise location of each individual investigation within its associated project feature has not been determined. The site-specific geotechnical investigations would include surface geologic mapping and surface and subsurface geophysical investigations as described below.

- Surface geologic mapping would generally involve noninvasive evaluation and documentation of geologic features and topography and would consist of soil mapping, walking surveys, and geophysical surveys.
- Surface geophysical investigations would generally involve non- or minimally invasive surface testing, such as seismic, gravitational, magnetic, electrical, and electromagnetic testing, and documentation of surface and subsurface site characteristics.
- Subsurface geotechnical investigations would involve surface and subsurface evaluation and documentation of site characteristics using test pits, borings and cone penetration test (CPT) probes, and fault trenching for different facilities.
    - All subsurface geotechnical investigation techniques would require some degree of ground disturbance, including spot leveling of areas directly below truck leveling jacks and holes measuring 2 to 10 inches in diameter through which augers and sampling equipment would be lowered to collect subsurface data and samples. Some drilling locations would require a bulldozer to create temporary roads for drill rig access. Test pits would be roughly 10 to 12 feet deep, and fault trenching would vary roughly 10 to 30 feet deep.
    - Borehole drilling would be performed using a drill rig that utilizes a combination of pilot bit, hollow stem flight augers, and rotary diamond core drilling. The hollow stem augers would likely have 8.5-inch outer diameter, and 4.25-inch inner diameter, with a 5-foot-long split tube inner barrel for dry core sample collection. Standard Penetration Test samplers may also be used at 5-foot intervals. All drill cuttings and any drilling fluids would be contained onsite in drums or bins and removed from the site to an existing permitted landfill or waste treatment facility. The temporary disturbance area would be approximately 20 by 50 feet (0.025 acre). Once each boring is complete, augers and testing equipment would be removed, the boring grouted and capped with soil, and the area cleared of work items (as required by permit requirements and at a minimum in accordance with California regulations and industry standards [Water Well Standards, DWR 74-81 and 74-90]). The permanent disturbance area would be approximately 1 square foot per borehole, except where a bulldozer created a larger area to access some locations.
    - CPTs are minimally invasive and consist of a specialized vehicle that inserts a 1.7-inch-diameter cone (probe) into the ground with a hydraulic direct push system. The temporary disturbance area would be approximately 20 by 50 feet (0.025 acre). Once each test is complete the rod would be retracted, the hole grouted and capped with soil, and the area cleared of work items (as required by permit requirements and at a minimum in accordance with California regulations and industry standards [Water

Well Standards, DWR 74-81 and 74-90]). The permanent disturbance area would be approximately 1 square foot per borehole.

Activities at most investigation areas would require approximately five personnel, including a driller/operator and one to two assistants, a utility locator, and a geologist/engineer to log the conditions encountered. Biological and cultural monitoring could also be required based on biological and cultural sensitivity and the type of activity being conducted. Each geotechnical investigation site would be active for a period ranging from 1 workday for CPT probes to 10 workdays for deep drill holes.

Additional details regarding geotechnical investigations for several of the key facilities are discussed below.

I/O Works

The investigation footprint for the I/O Works would encompass the area around each portal, at the I/O tower, and along each tunnel alignment. Geotechnical work would occur within the footprint of the construction area for these facilities. It is assumed that a boring would be required every 500 feet between the two I/O tunnel alignments and that each boring would extend two tunnel diameters below the tunnel invert, for a depth of approximately 70 feet.

A seismic fault study would map the faults adjacent to the I/O Works and ensure the location of the alignment would minimize fault crossings. The geotechnical investigation footprint for the seismic fault study would encompass the area between the mapped faults and I/O Works.

Current access to the site is limited given the existing topography and lack of access roads. It is assumed that track-mounted drill rigs would be used for the accessible locations and helicopters would be required to transport drill rigs to remote locations.

Dams and Reservoir

The dam foundations and reservoir rim would be the subject of specific geotechnical investigations. The investigations for the dams would involve geologic mapping, geophysics, borings, test pits, test excavations, and fault trenching. In-situ testing would include downhole geophysics (suspension and televiewer), packer testing, and dilatometer use. Piezometers would be installed at select locations to collect data on groundwater depth.

Objectives for the dam foundation and reservoir rim would differ. The objectives of the dam foundation exploration would be to evaluate excavation methods, excavated material use for dam construction, dewatering requirements for foundation excavation, foundation deformability, hydraulic conductivity and strength, foundation treatment, and foundation grouting/cutoff requirements. The dam foundation exploration objectives would also be to confirm fault locations and fault rupture potential. The objective of the exploration of the reservoir rim would be to evaluate seepage and stability. This investigation would use geologic mapping, geophysical investigations, and borings. In-situ testing would include downhole geophysics (televiewer) and packer testing.

Laboratory testing for the dam foundation and reservoir rim may include point load and unconfined compression on rock and index testing of soils. Laboratory testing for the rim of the reservoir may also include testing of remolded joint/shear material for strength evaluation.

Onsite Borrow Areas

The onsite borrow areas would have specific geotechnical investigations.

The objectives of the exploration for the borrow areas would be to confirm that the volume of materials available is at least 1.5 times the volume required and to evaluate excavation methods, excavation slopes at borrow locations, dewatering for borrow excavations, volume of materials generated from excavation, material types generated by excavation, requirements for processing of materials, properties of materials when placed and compacted in the dams, use of rock for riprap and aggregates, and types and volumes of materials generated from required excavations (i.e., at proposed locations of dams, structures, and tunnels).

The investigations for the borrow areas would involve geologic mapping, geophysics, borings, test pits, test excavations, test blasting and test fills. In-situ testing would include downhole geophysics (suspension and televiewer) and rippability studies. Laboratory testing would include point load and unconfined compression on rock and index testing of soils. Laboratory testing would also involve testing remolded samples for compaction, strength, permeability, compressibility, and erosion potential. Test fills would be performed on rockfill and random fill materials.

2.5.3.2 Land Acquisition and Resident Relocation Program

Prior to initiation of construction activities, land acquisition or establishment of temporary or permanent easements on private properties would be required. Overall, construction is expected to take approximately 6 years for reservoir facilities and 2 years for conveyance facilities. Construction of the reservoir facilities and the conveyance facilities would be conducted concurrently for a total construction duration of 6 years. Several factors could affect this anticipated schedule. Additional adjustments to the schedule would be addressed as required during Project development and implementation.

2.5.3.3 Additional Biological Surveys

After land acquisition and prior to construction actions, the Authority would complete additional biological surveys to confirm mapped habitat types and determine the presence/absence of biological resources including, but not limited to, special-status species, state and federal waters, sensitive plant communities and other applicable resources identified as sensitive by state, and/or federal agencies and discussed in Chapter 9, *Vegetation Resources*; Chapter 10, *Wildlife Resources*; and Chapter 11, *Aquatic Biological Resources* of this document. The Authority would use this information to assess the need for further technical studies (such as protocol surveys) and/or consultations with USFWS, CDFW, U. S. Army Corps of Engineers and/or State and Regional Water Quality Control Boards and identify resources that would be avoided during construction. In addition, the Authority would use this information to determine final mitigation types and acres for those areas that cannot be avoided.

2.5.3.4 Cultural Resources Management Plan

The Authority will develop and implement a Cultural Resources Management Plan prior to construction activities to guide the overall technical cultural resources efforts during construction activities. The Cultural Resources Management Plan will include, but not be limited to, a research design for the evaluation of known and predicted resources in the study area, methods used to assess the Project's effects to resources found prior to and during construction, procedures for the curation of recovered materials, procedures to be followed in the event of unanticipated discoveries, and procedures for the recovery and treatment of Native American and Non-Native American human remains. The Cultural Resources Management Plan is expected to be reviewed by the signatory parties to the Project's Programmatic Agreement under Section 106 of the National Historic Preservation Act.

2.5.3.5 Cemetery Relocation

Two private cemeteries in the inundation area would be relocated to a site approved for interment of human remains per requirements of the California Health and Safety Code (HSC § 7500-7527). The code requires a written order from the local health department or county superior court before human remains in a cemetery may be moved. The disinterment, transportation, and removal of human remains is subject to rules and regulations adopted by the board of health or health officer of the county.

2.5.3.6 Construction Disturbance Areas and Access

Construction activities would be confined to designated construction disturbance areas. These areas would also be used for construction vehicle and equipment parking and construction material storage. Special or sensitive sites near construction disturbance areas would be clearly marked (e.g., with temporary fencing, staking and flagging, pylons) prior to construction initiation. Construction personnel would be trained to recognize these markers and understand the equipment movement restrictions involved. Marking materials would be maintained until final cleanup and/or site restoration is completed, after which they would be removed. Potential staging areas would be located near each of the facilities. Construction-related traffic and local access routes are described in Section 2.5.1.7, New and Existing Roadways.

Demolition

Demolition would take place within the reservoir inundation area once lands are acquired. Demolition would include 20 houses, 25 barns, and 40 other structures (i.e., sheds, silos, and pump house); removal of existing septic tanks and other underground storage tanks; and removal of existing roads, fences, and other utilities. Demolition debris would be reused and recycled to the extent possible. Any materials not recyclable would be transported and disposed of at an approved landfill(s).

No demolition or relocation would be required for the TC Canal diversion, TRR-related facilities, Funks Reservoir-related facilities, or facilities associated with conveyance to the Sacramento River (i.e., TC Canal intake, Dunnigan Pipeline, or CBD outlet).

Clearing, Grubbing, and Topsoil Preservation

Clearing and grubbing would be required in the inundation area footprint and for most built facilities (i.e., dam facilities, I/O Works, Funks Reservoir facilities, TRR facilities, and Dunnigan Pipeline) and would entail removing and disposing of woody vegetation. This work is estimated to occur over 3 years. Materials cleared and grubbed would be composted, reused, placed in the reservoir inundation area to provide future fish habitat, or recycled to the extent possible.

Prior to construction, measures would be taken to preserve topsoil. In the inundation area where disturbance would occur, the topsoil material would be excavated, stockpiled separately, and used in one of several ways: for restoration of temporary work areas outside the inundation area, for support of native or naturalized plant species around a facility following construction, or for placement in agricultural areas. In the irrigated agricultural areas around the TRR and Dunnigan Pipeline, topsoil would be removed, stored, and replaced in areas of orchards, row crops, and rice fields. The topsoil would be restored so it has the same composition except where it is located on permanent maintenance roads. In the rangeland areas between the TRR and Funks Reservoir along the TRR pipeline route, the topsoil would be removed, stored, and replaced. This soil would be used to restore the rangeland to its same composition, except where it is located on permanent maintenance roads. The commercial area between I-5 and SR 99 would be restored to the pre-construction condition (i.e., unpaved large lot).

2.5.3.7 Construction Duration, Timing, and Sequence

Construction may start as early as spring 2024, depending on the timing of funding, design, and permitting. Initial activities would include developing the Sites Reservoir inundation area, constructing the access roads, and realigning/constructing the Sites Lodoga Road or South Road. Durations of construction were based on production rates associated with the anticipated equipment types needed for construction.

Construction of the Project components would generally be expected to occur in the sequence shown in Table 2-8 and detailed in Appendix 2C, Construction Means, Methods, and Assumptions. Some construction activities would be concurrent with the road relocations, but the existing Sites Lodoga Road and Huffmaster Road would not be closed until the road realignments were completed.

Table 2-8. General Construction Timing and Sequencing

Task Name	Duration	Start	Finish
Reservoir Site Development			
Reservoir Footprint Mitigation Actions	500 days	Q3 2025	Q2 2027
Site Access & Staging Development	100 days	Q3 2025	Q1 2026
Demolition & Clearing	100 days	Q3 2025	Q1 2026
Roads and Bridge			
Northern Construction Access Roads	284 days	Q3 2024	Q3 2025
Southern Construction Access Roads	274 days	Q3 2024	Q3 2025
Sites Lodoga Road Realignment and Bridge	680 days	Q3 2024	Q2 2027

Task Name	Duration	Start	Finish
Huffmaster Road Realignment	801 days	Q3 2024	Q3 2027
Process & Haul Filter Materials to Project	1180 days	Q1 2025	Q3 2029
Dams and Dikes			
Golden Gate Dam	1195 days	Q3 2024	Q2 2029
Sites Dam	956 days	Q3 2025	Q1 2029
Saddle Dam 3	771 days	Q3 2025	Q3 2028
Saddle Dam 5	821 days	Q3 2025	Q4 2028
Minor Saddle Dams (1, 2, 6, 8A)	711 days	Q4 2025	Q3 2028
Saddle Dam 8B - Spillway	257 days	Q4 2025	Q4 2026
Emergency Release Structure No. 1	285 days	Q4 2025	Q1 2027
Emergency Release Structure No. 2	410 days	Q1 2026	Q4 2027
Inlet Outlet Facilities	1015 days	Q4 2025	Q3 2029
Conveyance to Sacramento River			
Dunnigan Pipeline - Alt 1	355 days	Q3 2024	Q1 2026
Dunnigan Pipeline - Alt 2	505 days	Q2 2024	Q1 2027
Regulating Reservoirs and Conveyance			
Funks/TRR Pipelines	965 days	Q1 2025	Q4 2028
Funks Reservoir	523 days	Q2 2025	Q2 2027
Funks Pumping Generating Plant	1062 days	Q2 2025	Q2 2029
TRR East Reservoir	780 days	Q3 2025	Q3 2028
TRR East Pumping Generating Plant	1010 days	Q3 2025	Q4 2028
Transmission Powerlines	875 days	Q2 2025	Q3 2028
Substations	755 days	Q1 2026	Q1 2029
Sacramento River Diversion and Conveyance			
Red Bluff Pumping Plant Improvements	560 days	Q1 2025	Q1 2027
GCID Improvements	680 days	Q2 2025	Q4 2027

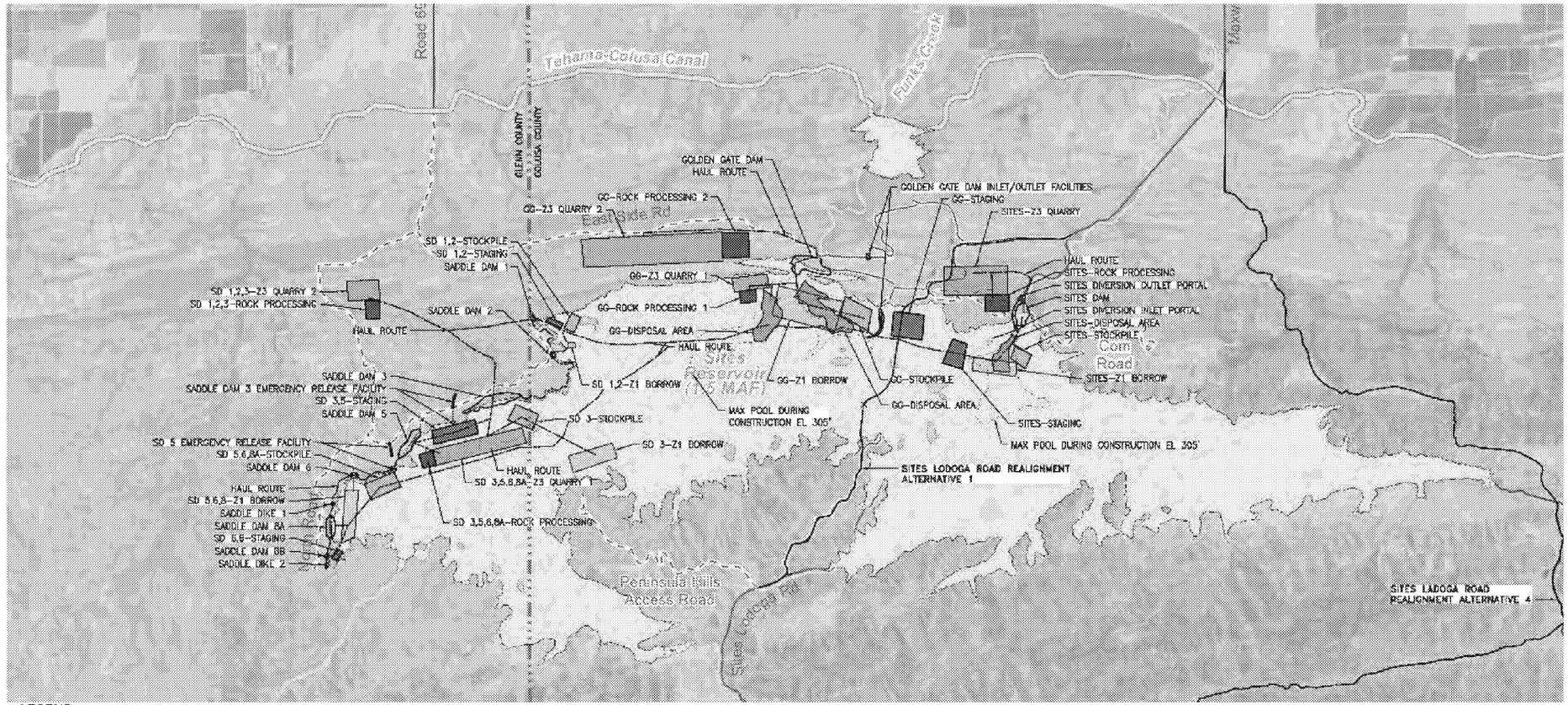
Table Notes
Q = Quarter

The general sequence of nonroad construction would begin with Golden Gate Dam, the I/O Works, and Dunnigan Pipeline, followed by Sites Dam, the larger saddle dams, regulating reservoirs and most associated facilities and pipelines. These facilities would be constructed over several years. Construction of the emergency release structures and substations would be initiated last in the sequence. The recreation areas would be completed after construction of the main dams and saddle dams and generally concurrently with the regulating reservoirs and conveyance complex for a period of 2 years (expected between 2025 and 2027).

Construction within 1,000 feet of occupied residences would be restricted between 10:00 p.m. and 7:00 a.m. to eliminate potential noise concerns. Construction in areas beyond 1,000 feet of occupied residents may occur 24 hours a day, 7 days a week.

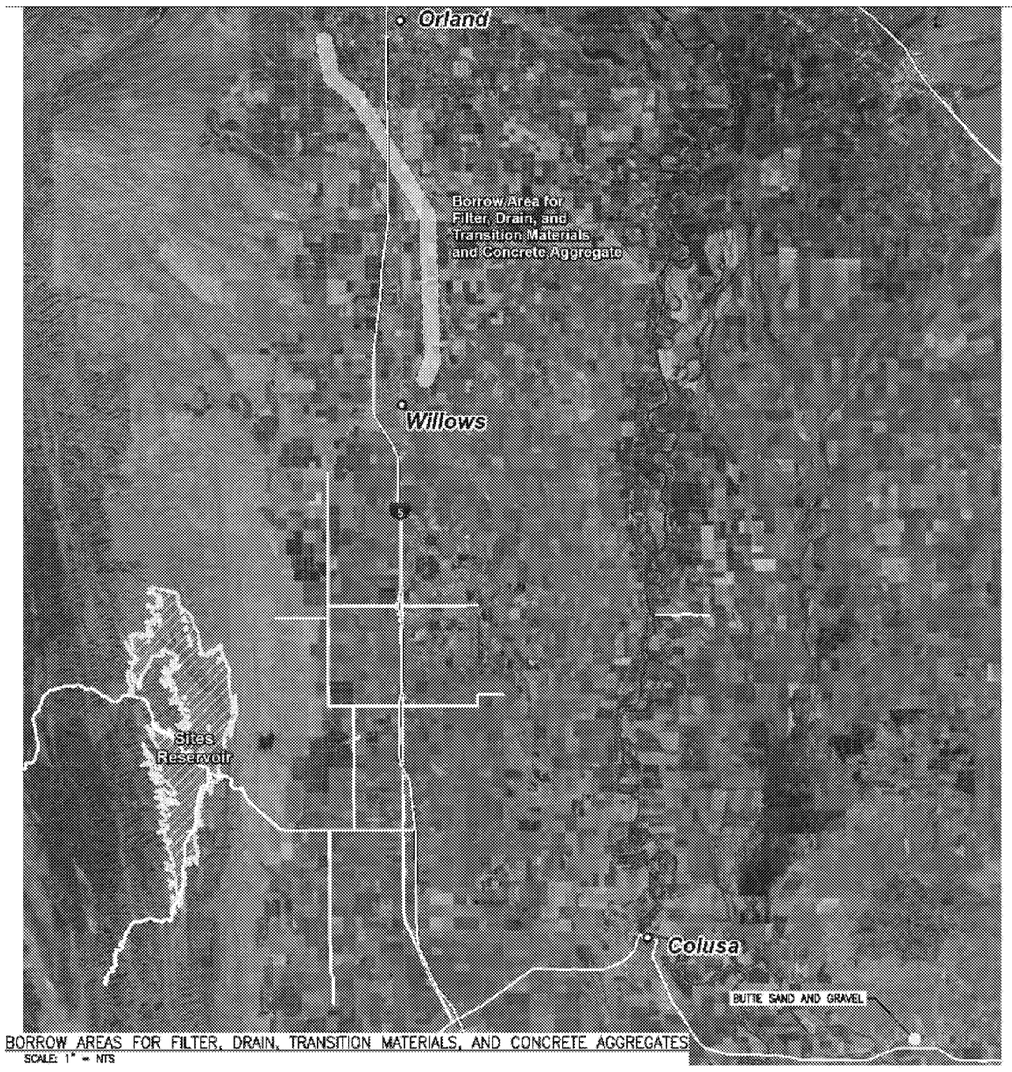
2.5.3.8 Borrow Areas and Quarries

It is anticipated that all earth and rockfill for the reservoir facilities (approximately 80% of materials required) would come from onsite sources (within the Sites Reservoir area or just outside Antelope Valley) and all aggregate for dam construction (approximately 20% of material required) would be obtained from offsite commercial sources. Figure 2-38 shows potential onsite sources and Figure 2-39 shows potential offsite commercial sources.



Source: AECOM, 2020
Drawing No. STS-315-C-2003

Figure 2-38. Onsite Borrow Area Details



Source: AECOM, 2020
Drawing No. STS–315–C–2002

Figure 2-39. Offsite Aggregate Areas

2.5.3.9 Construction Utilities

Approximately 750,000 to 1,000,000 gallons/day (500 to 700 gallons per minute) would be needed for constructing the Golden Gate Dam, Sites Dam, saddle dams, saddle dikes, and I/O Works over a period of 4 years. As such, a total of approximately 3,360 acre-feet per year (AFY) to 4,480 AFY would be required over the 4 years. Approximately 75,000 gallons per day would be required for conveyance facilities over a period of 4.5 years. This water would be obtained from three potential sources: existing surface water from the Sites Storage Partners pursuant to existing water rights agreements; existing groundwater wells in the Sites Reservoir inundation area; and new groundwater wells in the Sites Reservoir inundation area. Batch water treatment plants would be used to treat water, as necessary, for the intended use. Construction water would be reused to the extent possible.

Anticipated construction energy needs are shown in Table 2-9.

Table 2-9. Estimated Temporary Construction Power Requirements

Location/Facility	Required Load, 3-Phase, KVA
Golden Gate and Sites Dams	
Contractor's and Owner's Office Complex	300
GG Quarry Feeder/Jaw for Rockfill	500
Sites Quarry Feeder/Jaw for Rockfill	500
GG Concrete Batch Plant	600
Sites Concrete Batch Plant	600
Contractor's Shop Complex	300
Saddle Dams	
Contractor's and Owner's Office Complex	300
Saddle Dams Quarry Feeder/Jaw for Rockfill	500
Concrete Batch Plant	600
Contractor's Shop Complex	300
Inlet-Outlet Facilities	
Contractor's and Owner's Office Complex	300
Concrete Batch Plant	600
Contractor's Shop Complex	200
Roads	
Contractor's and Owner's Office Complex	300
Asphalt Batch Plant	600
Contractor's Shop Complex	200
Conveyance	
Contractor's and Owner's Office Complex (3)	300 each
Concrete Batch Plant & CDSM Batch Plant	600 each

2.5.3.10 Batch Plants

For dam construction, batch plants would be established in the inundation area of the Sites Reservoir or in staging areas outside the inundation area near various reservoir facilities. Concrete batch plants would be necessary for the I/O Works, Golden Gate Dam, Sites Dam, diversions, saddle dams, and the bridge crossing the reservoir. Asphalt batch plants would be used for paving activities of public access and maintenance roads.

A concrete batch plant is equipment that combines water, admixtures, sand, aggregate, fly ash and cement to form concrete. In general, the concrete batch plant is anticipated to have the following features: mobile or semi-mobile (modular stationary) plants; capacity of 100 to 500 cubic yards per hour; at least three aggregate feed bins; and computerized batching/proportioning.

An asphalt batch plant is equipment that combines aggregate and asphalt to form asphalt to be used for road construction. In general, the asphalt batch plant is anticipated to have the following features: mobile or semi-mobile (modular stationary) plants; drum mixer type plant, but could be a weigh-batch type; capacity of 200 to 500 tones per hour, but could be lower for some of the smaller portions; at least four aggregate feed bins; and computerized batching/proportioning.

2.5.3.11 Construction Traffic and Equipment

Approximately 1,700 construction personnel would be working at the peak of construction. 1,000 of these personnel would be involved with reservoir facilities and 700 would be working on conveyance facilities. Expected highway truck trips per day associated with construction will range from 0.5 for installation of the new pump at the RBPP to 360 estimated trips for the construction of dams, dikes and other reservoir-related activities. Similarly, personnel vehicle trips associated with the same facilities will range from 2 to over 600 per day. Estimated vehicle trips per day for all construction activities are included in Appendix 2C.

Construction workers would likely commute to construction sites from regional population centers such as Maxwell, Willows, Orland, Williams, and Colusa, and from other northern California counties when specialty trades or skillsets are not available regionally.

Daily construction traffic would consist of trucks hauling equipment and materials to and from the worksites and the daily arrival and departure of construction workers. Construction traffic on local roadways would include dump trucks, bottom-dump trucks, concrete trucks, flatbed trucks for delivering construction equipment and permanent project equipment, pickups, water trucks, equipment maintenance vehicles, and other delivery trucks. Dump trucks would be used for earth moving and clearing, removal of excavated material, and import of other structural and paving materials. Other delivery trucks would deliver construction equipment, job trailer items, concrete-forming materials, reinforcing steel and structural steel, piping materials, foundation piles and sheet piling, sand and gravel from offsite sources, new facility equipment, and other construction-related deliveries. Construction equipment/materials would not be permitted to pass through the community of Maxwell on the Maxwell Sites Road.

2.5.3.12 In-Channel Construction

Cofferdams would be required along Stone Corral and Funks Creeks for construction of Sites Dam and Golden Gate Dam, respectively. The cofferdams would be incorporated into the upstream toe of the embankment dams and would be constructed of material likely derived from the excavation of the dam foundations. The crest of the cofferdams would be set at elevation 310 feet (5 feet above highwater during construction). The Sites Dam would require approximately 260,000 cubic yards of Zone 4 fill for the cofferdam in Stone Corral Creek, and the Golden Gate Dam would require approximately 800,000 cubic yards of Zone 4 fill for the cofferdam in Funks Creek.

Construction of the Funks pipelines would generally skirt Funks Creek and not intersect the waterway but two large fills needed for the Funks Pipeline and TRR Pipeline could be placed near the south creek bank. Construction of the TRR pipelines would cross the GCID Main Canal, TC Canal, and the Funks Reservoir. Trenching of the TRR pipelines under the GCID Main Canal and TC Canal would occur during the 6-week winter shutdown period. If possible, trenching would be scheduled for a time when the canals were dry, such that trenching would result in in-channel construction but not in-water construction. Construction of the TRR pipelines would require in-channel work where they cross Funks Reservoir. An earth and geomembrane liner coffer dam would be constructed to allow work to occur under dry conditions.

Construction of the Dunnigan Pipeline would require installation of water level and flow control gates at the concrete-lined TC Canal intake. The tie-in between the intake and the TC Canal would be done during the winter shutdown period, and a small portion of the TC Canal would be dewatered. In-channel work would be required at the CBD to install the energy dissipating control structure, and a coffer dam would be constructed so that the work would be completed in the dry.

2.5.4 Project Commitments and Best Management Practices Common to all Alternatives

A number of BMPs and environmental commitments are proposed to be implemented during Project design, construction and operation/maintenance. The BMPs and environmental commitments are considered part of the Project and discussed in detail in Appendix 2D. The following provides a list of activities or topics covered:

- Conform with Applicable Design Standards and Building Codes
- Perform Geotechnical Evaluations and Prepare Geotechnical Data Reports
- Utility and Infrastructure Verification and/or Relocation
- Natural Gas and Water Wells Decommissioning
- Road Abandonment
- Minimize Soil Disturbance and Topsoil Storage and Handling Plan
- Stormwater Pollution Prevention Plan(s) and Best Management Practices (storm water and non-storm water)

- Spill Prevention and Hazardous Materials Management / Accidental Spill Prevention, Containment, and Countermeasure Plans and Response Measures
- Comply with Requirements of RWQCB Order 5-00-175
- Groundwater/ Dewatering Water Supply
- Construction Equipment, Truck, and Traffic Management Plan
- Visual/Aesthetic Design, Construction, and Operation Practices
- Fire Safety and Suppression / Fire Prevention and Control Plan
- Worker Health and Safety Plan
- Blasting Standard Requirements
- Mosquito and Vector Control During Construction
- Construction, Operation and Maintenance Noise Management
- Construction and Operations Emergency Action Plan
- Electrical Power Guidelines and EMF Field Management Plan
- Air Quality Measures (Construction Equipment Exhaust Reduction Plan, Fugitive Dust Control Plans, Construction Best Management Practices to Reduce Greenhouse Gas Emissions)
- Environmental Site Assessment(s) and Hazardous Materials Management Plans
- Construction Site Security
- Notification of Maintenance Activities in Waterways
- Worker Environmental Awareness Program
- Fish Rescue and Salvage Plans for Funks Reservoir, Stone Corral Creek, and Funks Creek for Alternative 1; for Sacramento River for Alternative 2
- Construction BMPs and Monitoring for Fish, Wildlife, and Plant Species Habitats, and Natural Communities
- Control of Invasive Plant Species during Construction and Operation

2.5.5 Proposition 1 Benefits Common to All Action Alternatives

The Project was conditionally awarded Proposition 1, WSIP funding by the CWC to provide public benefits for flood damage reduction, recreation, and ecosystem benefits. All of the Action Alternative include providing these benefits including entering into a contract with DWR for the flood damage reduction and recreation benefits, a contact with the California Department of Fish and Wildlife for the ecosystem benefits, and a contract with the CWC for final funding award.

The Project would provide flood damage reduction benefits to portions of Colusa County, including Maxwell and the surrounding agricultural areas. Incidental storage in Sites Reservoir would capture and store flood flows from the Funks and Stone Corral Creek watersheds. These

flood damage reduction benefits are inherent to the Project design and would occur regardless of the Project's operations for water supply and water-related environmental benefits.

The Project would provide recreation benefits through the recreation facilities described previously in this chapter.

The ecosystem benefits funded by the CWC include providing water for Incremental Level 4 refuge water needs for Central Valley Project Improvement Act (CVPIA) refuges both north and south of the Delta and providing additional flow into the Yolo Bypass to benefit Delta smelt (*Hypomesus transpacificus*). Incremental Level 4 refuge water deliveries could occur in any year type and at any time of year. For those refuges located south-of-Delta, it is assumed that water would be moved from July to November though the Delta. Additional flows into the Yolo Bypass could occur at any time of year, but are assumed to occur during the summer and fall months (August through October) of all water year types. These deliveries increase desirable food sources for Delta smelt and other fish species in the late summer and early fall. The Authority envisions that CDFW would take an active role in managing the ecosystem water and would work with CDFW to schedule and adjust releases of ecosystem water to address real-time conditions and needs.

As described in Section 2.5.2., *Coordination with CVP and SWP*, above, additional ecosystem benefits beyond those funded by the CWC may occur via exchanges with Shasta Lake, Lake Oroville, or – likely to a lesser extent – Folsom Lake.

2.6 Alternative 1 Specific Elements

Alternative 1 is the Authority's proposed Project under CEQA. See Figure 2-1 and Figure 2-2 for a plan view of the Alternative 1 features. The unique features of Alternative 1 include the following:

- Reservoir capacity would be 1.5 MAF;
- A bridge across the reservoir would provide access to the west of the Project; and
- Reclamation investment would range from no investment to up to 7% investment.

Alternative 1 would impound surface water at the Golden Gate Dam on Funks Creek, Sites Dam on Stone Corral Creek, and a series of seven saddle dams along the eastern and northern rims of the reservoir would close off topographic saddles in the surrounding ridges to form Sites Reservoir. The 1.5 MAF reservoir under Alternative 1 would inundate approximately 13,200 acres of Antelope Valley in Colusa County. Alternative 1 would convey water from the Sacramento River through existing or upgraded TC Canal and GCID Main Canal facilities to new and upgraded regulating reservoirs and into the new Sites Reservoir. Existing and new facilities would convey water from Sites Reservoir for uses along the TC Canal, along the GCID Main Canal and down the TC Canal to the new Dunnigan Pipeline and the CBD for release, and flows would enter the Yolo Bypass or Sacramento River. Construction roads, local roads, and maintenance roads would be developed or realigned to accommodate the reservoir facilities, including the realignment of Sites Lodoga Road with a new bridge over the reservoir. Alternative

1 would involve two primary recreation areas, Peninsula Hills Recreation Area and Stone Corral Creek Recreation Area, and a day-use boat ramp. These areas would provide multiple recreational amenities, including campsites, boat access, horse trails, hiking trails, and vista points.

Releases from Sites Reservoir would be made to meet environmental purposes, such as for the delivery of Incremental Level 4 water to refuges or fall food production in the Yolo Bypass for north Delta fish species. Releases would also be made for Sites Storage Partners based on their requests to meet their respective water supply portfolio needs and any water conveyed south of the Delta would comply with all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time. Under Alternative 1, operational exchanges may also occur with Reclamation in Shasta Lake and Folsom Reservoir and with DWR in Lake Oroville. Alternative 1 includes a range of Reclamation investment in the Project, from no investment to up to an assumed 7 percent Reclamation investment.

2.6.1 Sites Reservoir and Related Facilities

Under Alternative 1, Sites Reservoir would be 1.5 MAF and would inundate approximately 13,200 acres. It would have a maximum normal WSE of 498 feet above mean sea level and would require I/O Works, seven saddle dams (1, 2, 3, 5, 6, 8A, and 8B), and two saddle dikes (1 and 2). See Figure 2-1, Alternatives 1 and 3 Regulating Reservoirs and Conveyance and Sites Reservoir Facilities for the location of the Sites Reservoir, Golden Gate Dam, saddle dams, and I/O Works under Alternative 1. Table 2-10 provides the general characteristics of the proposed Sites Reservoir under Alternative 1.

Table 2-10. General Reservoir Characteristics of Alternative 1

Key Characteristic	Detail
Nominal Reservoir Gross Storage	1.5 MAF
Maximum Normal Operating Water Elevation	498 feet above mean sea level
Minimum Normal Operating Water Elevation	340 feet above mean sea level
Top of Dead Pool	300 feet above mean sea level
Active Storage Capacity[1]	1.4 MAF

[1] Between minimum normal operating water elevation (El. 340.0 feet) and maximum normal operating elevation

A total of nine dams (Golden Gate Dam, Sites Dam, and seven saddle dams) would create the 1.5 MAF Sites Reservoir under Alternative 1. Two saddle dikes would be required to close off topographic saddles in the ridges near Saddle Dams 8A and 8B. The dam crests would be 30 feet wide and would include asphalt paved or gravel maintenance roads. The nominal crest would be at elevation 517 feet for all dams, including Saddle Dam 8B. See Table 2-3. for a summary of the dam heights for Alternative 1.

2.6.2 New and Existing Roadways

Sites Lodoga Road is an east-west, two-lane major collector road that extends through the community of Maxwell, which is adjacent to I-5, and provides an important emergency and

evacuation route in a limited roadway network to and from the rural communities of Lodoga and Stonyford. Sites Lodoga Road becomes Maxwell Sites Road east of the community of Sites, which is in the inundation area. The Sites Reservoir would eliminate east-west access to I-5 (east of the reservoir) from Stonyford and Lodoga (west of the reservoir) because it would inundate the current alignment of Sites Lodoga Road. Because Sites Dam and the inundation area would eliminate access on Sites Lodoga Road, an alternative method for access west of the reservoir would be needed. Under Alternative 1, this access is provided by realigning a segment of Sites Lodoga Road and constructing a bridge over the reservoir. The relocated segment of Sites Lodoga Road would include 5-foot-wide shoulders adjacent to the two 12-foot-wide lanes to accommodate bicycles and would connect to the new bridge.

The realigned Sites Lodoga Road would be placed across the reservoir and extend 7,800 feet; it would necessitate the construction of four fill prisms that would be up to 150 feet tall and would support two shorter bridge segments approximately 3,450 and 4,050 feet long. Figure 2-40, Sites Lodoga Road Realignment and Bridge, shows a typical cross section of the road and the bridge that would be needed to cross the reservoir. The roadway and bridge profile would be at 2 feet above the maximum flood plus wave height. The maximum flood plus wave height is set at 10 feet above the normal WSE (elevation 498 feet for the 1.5 MAF reservoir).

The bridge structure would consist of a cast-in-place, prestressed concrete box girder that would have two lanes with a total width of 35.5 feet and 4-foot-wide shoulders. The bridge would have California Department of Transportation-approved edge barriers with small-diameter electrical conduits, a suicide prevention barrier, emergency phone service facilities, deck drains, and an opening for potential utilities. The bridge design does not include sidewalks due to the remote rural nature of this site. The bridge would be exposed to high winds; therefore, high wind advisory facilities, such as static roadside signs or extinguishable message signs that are illuminated when instruments measure high winds, would be installed.

The disturbance area for bridge construction would include the footprint of the bridge structure, the staging areas for materials and equipment, and the area needed to construct the facilities and access roads. Traffic that was not construction related would be diverted around construction disturbance areas in accordance with a traffic management plan. Initial construction activities would involve establishing staging areas, surveying and marking roadways, clearing, and grading. Bridge construction would consist of constructing the foundation and prisms, including drilled-pier installation; bridge columns; and bridge spans.

The Huffmaster Road realignment, which is associated with the easterly segment of Sites Lodoga Road Realignment, would move the affected segment out of the Sites Reservoir footprint. The realigned Huffmaster Road would be a gravel road to serve the residences at the end of Huffmaster Road.

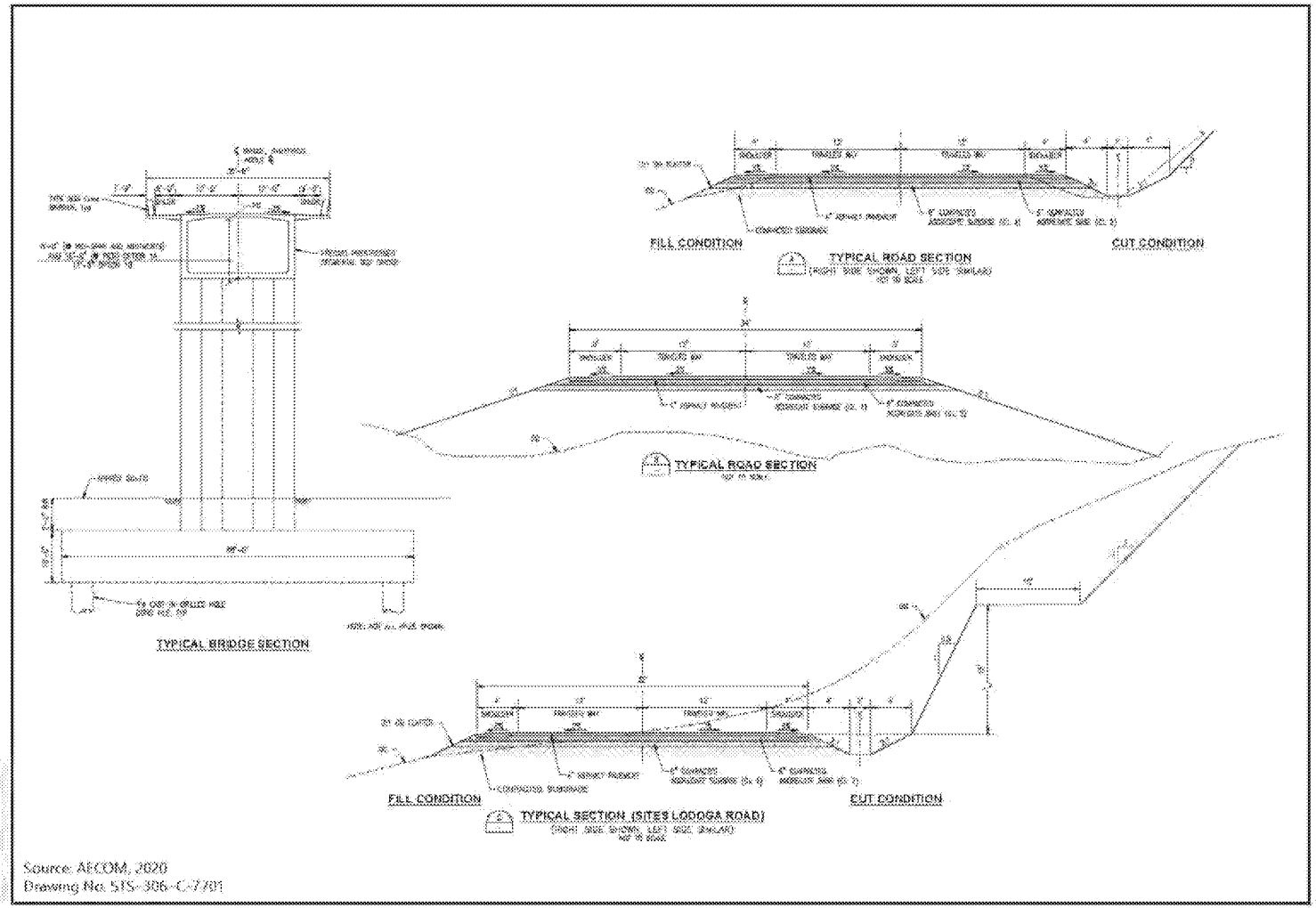


Figure 2-40. Sites Lodoga Road Realignment and Bridge

2.6.3 Operations and Maintenance

In addition to the operations and maintenance activities common to all Action Alternatives, operations and maintenance activities under Alternative 1 would include Reclamation as a Storage Partner in the Project and maintenance of the bridge as described below.

Water Operations

Alternative 1 includes a range of potential investment in the Project by Reclamation. For the purposes of modeling, two options have been identified under this alternative – Alternative 1A includes no Reclamation investment and Alternative 1B includes up to 7 percent Reclamation investment, which equates to about 91,000 AF of storage allocation dedicated to Reclamation in Sites Reservoir. With investment from Reclamation, 7 percent of Sites Reservoir storage would be managed as a CVP supply under Alternative 1. Reclamation's share of Sites water would be flexibly used by Reclamation to meet CVP objectives providing water for water supply and environmental needs. Increased storage, diversion, and release capacity provides the CVP with additional opportunities to store and release water when it may have been otherwise constrained. Releases for Reclamation would generally be made for a variety of purposes as identified and directed by Reclamation and would be made in the same manner as described for all Storage Partners.

Bridge Maintenance

There are no day-to-day operations of the bridge (no moving components of the bridge that would be operated on a daily basis). Typical bridge maintenance activities would include replacing damaged or missing signage, replacing or repairing railings, replacing or repairing damage to the bridge deck (road surface), sealing joints, repairing erosion on approaches, unplugging drains and removing debris, and checking for and repairing faulty electrical contacts. The bridge would be periodically inspected through walking through inspection to detect any obvious defects, hazards or potential problems and to also monitor known problems. The bridge would also be periodically inspected by Caltrans to detect any major structural concerns. Repairs and replacements would be made as needed based on these inspections.

2.7 Alternative 2 Specific Elements

The unique features of Alternative 2 include the following:

- Reservoir capacity would be 1.3 MAF;
- A local access road around the southern end of the reservoir would provide access to the west of the Project; and
- Dunnigan Pipeline would extend to and discharge at the Sacramento River with a partial discharge at the CBD.

See Figure 2-1 and Figure 2-2 for a plan view of the Alternative 2 features.

Alternative 2 would impound surface water at the Golden Gate Dam on Funks Creek, Sites Dam on Stone Corral Creek, and a series of four saddle dams along the eastern and northern rims of

reservoir would close off topographic saddles in the surrounding ridges to form Sites Reservoir. The 1.3-MAF reservoir would inundate approximately 12,600 acres and require four saddle dams and three saddle dikes. Alternative 2 would convey water from the Sacramento River through existing or upgraded TC Canal and GCID Main Canal facilities to new and upgraded regulating reservoirs and into the new Sites Reservoir. Existing and new facilities would convey water from Sites Reservoir for uses along the TC Canal, along the GCID Main Canal and down the TC Canal to the new Dunnigan Pipeline and to the Sacramento River for direct release to the river. Alternative 2 also includes a partial release into the CBD, and flows would enter the Yolo Bypass or Sacramento River. Construction roads, local roads, and maintenance roads would be developed or realigned to accommodate the reservoir facilities, including the realignment of Sites Lodoga Road with a new local access road around the southern end of the reservoir. Alternative 1 would involve two primary recreation areas, Peninsula Hills Recreation Area and Stone Corral Creek Recreation Area, and a day-use boat ramp. These areas would provide multiple recreational amenities, including campsites, boat access, horse trails, hiking trails, and vista points.

Releases from Sites Reservoir would be made to meet environmental purposes, such as for the delivery of Incremental Level 4 water to refuges or fall food production in the Yolo Bypass for north Delta fish species. Releases would also be made for Sites Storage Partners based on their requests to meet their respective water supply portfolio needs, and any water conveyed south of the Delta would comply with all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time. Under Alternative 2, operational exchanges may also occur with Reclamation in Shasta Lake and Folsom Reservoir and with DWR in Lake Oroville. Alternative 2 does not include Reclamation investment in the Project.

2.7.1 Sites Reservoir and Related Facilities

Under Alternative 2, Sites Reservoir would be 1.3 MAF and would inundate approximately 12,600 acres (600 acres less than Alternative 1). It would have a maximum normal WSE of 482 feet above mean sea level (17 feet lower than Alternative 1) and would require I/O Works, four saddle dams (3, 5, 8A, and 8B) and three saddle dikes (1, 2, and 3). Figure 2-3 shows the location of Sites Dam and Golden Gate Dam and the location of the four saddle dams and three saddle dikes under Alternative 2. Under Alternative 2, Saddle Dams 3 and 5 would not have emergency release systems into the Hunters Creek watershed. Figure 2-11 provides the general characteristics of the proposed Sites Reservoir under Alternative 2.

Table 2-11. General Reservoir Characteristics of Alternative 2

Key Characteristic	Detail
Nominal Reservoir Gross Storage	1.3 MAF
Maximum Normal Operating Water Elevation	482 feet above mean sea level
Minimum Normal Operating Water Elevation	340 feet above mean sea level
Top of Dead Pool	300 feet above mean sea level
Active Storage Capacity[1]	1.2 MAF

[1] Between minimum normal operating water elevation (El. 340.0 feet) and maximum normal operating elevation

2.7.2 Conveyance to Sacramento River

As with Alternative 1, a portion of the water released from Sites Reservoir would be conveyed using the existing TC Canal, and for those Sites Storage Partners located south of the Delta, would be conveyed using the new Dunnigan Pipeline. The water would flow south approximately 40 miles to near the end of the TC Canal. At this point, flow would be diverted into the Dunnigan Pipeline. A gravity outlet structure from the TC Canal into the Dunnigan Pipeline would be constructed to control the flow in the pipeline. No pumping would be required. Power would be needed for SCADA control and operating the gates to let water into the pipeline and at the discharge point.

Under Alternative 2, the Dunnigan Pipeline would extend 10 additional miles, pass through the western levee of the Sacramento River, and discharge into the Sacramento River at approximately River Mile 100.8 (Figure 2-41, Dunnigan Sacramento River Discharge Site Plan). At the CBD, there would also be a discharge structure similar to Alternative 1, but the structure would be smaller and would divert only a portion of the flow, while the remaining flow would continue to the Sacramento River.

The pipeline would have a 10.5-foot-inside diameter with three tunneled crossings (I-5, Road 99W, the railroad, and CBD) that require 12-foot (144-inch) casings. The pipeline would cross under SR 45 and a levee.

The pipeline would terminate in a discharge and energy dissipation structure. The discharge structure would extend through the Sacramento River levee and would be made up of ten 36-inch diameter pipes that would each have a check valve to dissipate energy. The structure would be located such that it was outside the levee prism, or area of influence, on the west side of the levee slope. The ten 36-inch diameter pipelines would be designed to penetrate the levee above the high high-water mark.

The discharge structure would include a vertical drop exclusion barrier to prevent the passage of anadromous fish into the pipeline. The minimum vertical drop would be 10 feet at the top of the levee onto a 20,000 square foot area of riprap extending to the river. This design would place the check valves far enough above the water surface elevation to prevent access by fish. Discharges would occur when the river was low and therefore the check valves would be distant from the water's edge. Discharge would likely be May to October but could extend into November.

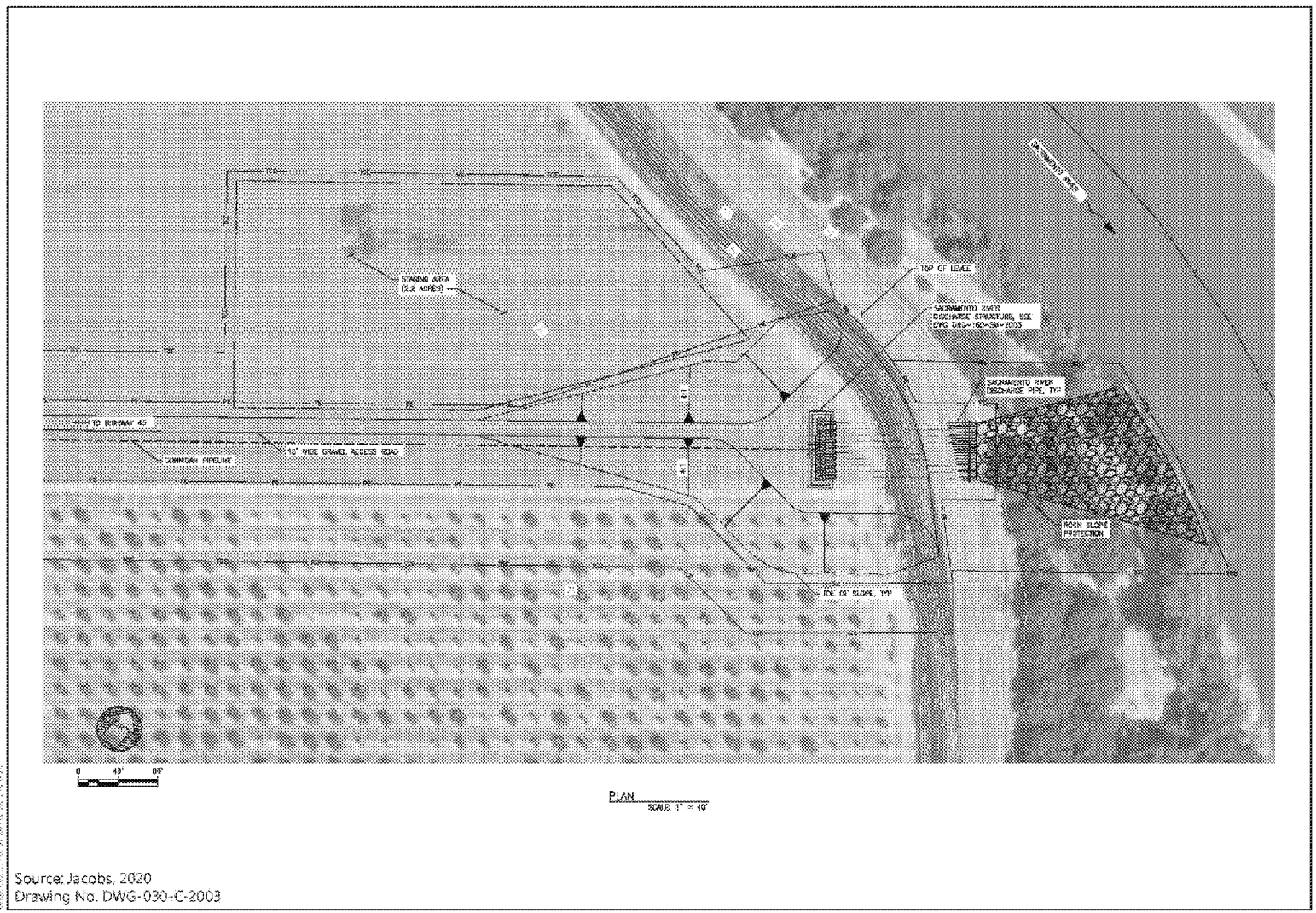


Figure 2-41. Dunnigan Sacramento River Discharge Site Plan

Construction would not occur in the winter unless it was a critically dry year. A non-winter construction window would be targeted because even small amounts of rain cause the roads to become slick, which would slow and/or prevent the movement of construction equipment. The construction window would exclude mid-October through March 31. Because groundwater is 3 feet below ground surface, the contractor would install dewatering wells every 50 to 100 feet. However, excavating and placing pipes closely, spatially and temporarily, would avoid running the dewatering system for long periods. Construction of the Dunnigan Pipeline would require crossing nearly 20 irrigation laterals and drainage canals. Bypass pipes would be used to allow irrigation water to flow down canals and also allow drainage water from irrigation to flow. Boring may be required under SR 45, if open cut is not possible. A boring will be required under the levees adjacent to the CBD and under the CBD.

The discharge structure would be located on the west bank of the river about 1 mile upstream of the Rough and Ready Pumping Plant. As described in Appendix 2D, Best Management Practices, in-water construction activities in the Sacramento River would occur during the work window of September 1 through October 15. This work would include constructing a coffer dam. Once the coffer dam is completed, work would continue in the dry and could occur outside the in-water work window. Pile driving or a vibration hammer would be used to install piles on the land side of the levee.

2.7.3 New and Existing Roadways

Realignment of Huffmaster Road and construction of the new South Road would occur under Alternative 2 (Figure 2-35). As with Alternative 1, Sites Dam and the inundation area would inundate 4.2 miles of the Sites Lodoga Road and eliminate access on this 13-mile-long collector road. Similar to Alternative 1, the relocated segment of Sites Lodoga Road would include 5-foot-wide shoulders adjacent to the two 12-foot-wide lanes to accommodate bicycles and would provide access to the Stone Corral Recreation Area. Similar to Alternative 1, Huffmaster Road would be realigned for approximately 9 miles. A new South Road would be constructed and connect to the end of the realigned portion of Huffmaster Road. It would be approximately 20 miles. The total length of the realigned portion of Huffmaster Road and the new South Road would be approximately 30 miles, all of which would be paved.

All other permanent access, maintenance, detour and construction roads would be the same for the reservoir facilities between Alternatives 1 and 2. These roads would be needed regardless of the inundation area size to serve the planned facilities and recreation areas.

The South Road would generally require more excavation and more aggregate when compared to the bridge under Alternative 1. These materials are listed in Appendix 2C, Construction Methods, Means, and Assumptions, Table Alt 2, Preliminary Quantities for Roads.

2.7.4 Operations and Maintenance

Operations and maintenance activities under Alternative 2 would be the same as those described for all Action Alternatives above. In addition to the water operations activities described above that are common to all Action Alternatives, Alternative 2 includes releases directly to the Sacramento River from the extended Dunnigan Pipeline, with a partial release into the CBD.

2.8 Alternative 3 Specific Elements

Alternative 3 facilities and project components would be the same as Alternative 1, as described above. Operationally, Alternative 3 would include increased Reclamation participation and investment, with investment of up to 25 percent of the Project cost.

Under Alternative 3, Reclamation would have an increased investment in Sites Reservoir of up to 25 percent as compared to up to 7 percent in Alternative 1. The increased level of Reclamation investment would result in up to 25 percent of Sites Reservoir storage space being dedicated to Reclamation's use. Reclamation's share of Sites water would be flexibly used by Reclamation to meet CVP objectives providing water for water supply and environmental needs. The increased level of Reclamation investment would also result in increased opportunities for maintaining cold water pool in Shasta Lake, Folsom Lake and Lake Oroville through Reclamation operating its up to 25 percent investment as part of the integration of the CVP.

Increased Reclamation investment in the Project would require some reduction in local participation for Alternative 3 as compared with Alternative 1. Alternative 3 assumes that Sites Storage Partners that are local agencies would reduce their participation in the Project to accommodate the investment by Reclamation. The State's Proposition 1 investment for ecosystem, flood control and recreation benefits does not change with the increased Reclamation investment in Alternative 3.

All other components of Alternative 3 are the same as those for Alternative 1.

2.9 References Cited

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Michel, Cyril J., Jeremy J. Notch, Flora Cordoleani, and Eric M. Danner. In Press. Ecological nonlinearities inform the design of functional flows for imperiled fish in a highly modified river.

Michel, C. J., A. J. Ammann, S. T. Lindley, P. T. Sandstrom, E. D. Chapman, M. J. Thomas, G. P. Singer, A. P. Klimley, and R. B. MacFarlane. 2015. Chinook salmon outmigration

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From: Heydinger, Erin [Erin.Heydinger@hdrinc.com]
Sent: 3/9/2021 5:50:50 PM
To: Jerry Brown [jbrown@sitesproject.org]; JP Robinette [jrobinette@brwncald.com]
CC: Alicia Forsythe [aforsythe@sitesproject.org]
Subject: FW: Sites dEIR development meeting
Attachments: Daily_Divertible_Storable_Tool_Results_DEIRS_Alternatives_20210309.xlsx; Daily_Divertible_Storable_Flow_for_Sites_Project_Package_20210309.7z

Hi Jerry and JP,

You might find this interesting. This is a very high level look at flows on the Sacramento river vs. how much we're able to divert on a daily timestep. This is an estimate only (or, more of an estimate that usual) since it's outside of the CalSim period. JP – this might be helpful for you to get a sense of the ranges being discussed at TCCA and GCID for the operating agreements.

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: Micko, Steve/SAC <Steve.Micko@jacobs.com>
Sent: Tuesday, March 9, 2021 1:56 PM
To: Spranza, John <John.Spranza@hdrinc.com>; Greenwood, Marin <Marin.Greenwood@icf.com>; Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Hendrick, Mike <mike.hendrick@icf.com>; Lecky, Jim <jim.lecky@icf.com>
Cc: Briard, Monique <Monique.Briard@icf.com>; Heydinger, Erin <Erin.Heydinger@hdrinc.com>; Hassrick, Jason <jason.hassrick@icf.com>; Whittington, Chad/SAC <Chad.Whittington@jacobs.com>; Unger, Sophie <sophie.unger@icf.com>; Wilder, Rick <rick.wilder@icf.com>
Subject: RE: Sites dEIR development meeting

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Marin,

Recent year daily diversions at Red Bluff and Hamilton City, and Sacramento River flow below Wilkins Slough is provided in the attached spreadsheet.
The daily divertible flow tool, documentation, and memo of package are provided in attached 7z file.

Please note that this tool has been developed to assess hypothetical diversions from Sites in recent years.
Application of the tool's results for ecosystem analyses is novel. As such, we should consider results from this analysis with caution.

Best,
Steve

From: Micko, Steve/SAC
Sent: Monday, March 8, 2021 10:12 AM
To: Spranza, John <John.Spranza@hdrinc.com>; Greenwood, Marin <Marin.Greenwood@icf.com>; Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Hendrick, Mike <mike.hendrick@icf.com>; Lecky, Jim <jim.lecky@icf.com>
Cc: Briard, Monique <Monique.Briard@icf.com>; Heydinger, Erin <erin.heydinger@hdrinc.com>; Hassrick, Jason

<jason.hassrick@icf.com>; Whittington, Chad/SAC <Chad.Whittington@jacobs.com>; Unger, Sophie <sophie.unger@icf.com>; Wilder, Rick <rick.wilder@icf.com>
Subject: RE: Sites dEIR development meeting

Hi John,

We're working on it. Daily data will be out today.

Best,
Steve

From: Spranza, John <John.Spranza@hdrinc.com>
Sent: Friday, March 5, 2021 11:02 AM
To: Greenwood, Marin <Marin.Greenwood@icf.com>; Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Hendrick, Mike <mike.hendrick@icf.com>; Lecky, Jim <jim.lecky@icf.com>
Cc: Micko, Steve/SAC <Steve.Micko@jacobs.com>; Briard, Monique <Monique.Briard@icf.com>; Heydinger, Erin <erin.heydinger@hdrinc.com>; Hassrick, Jason <jason.hassrick@icf.com>; Whittington, Chad/SAC <Chad.Whittington@jacobs.com>; Unger, Sophie <sophie.unger@icf.com>; Wilder, Rick <rick.wilder@icf.com>
Subject: [EXTERNAL] RE: Sites dEIR development meeting

Rob,
Rob and Steve,

I wanted to check on the status of this request. How are we doing?

I also recall that Rick Wilder requested some SALMOD data in an excel file and Sophie Unger is looking for some data Calsim-related data for floodplain inundation analysis.

Thanks for keeping this moving.

John

John Spranza

D 916.679.8858 M 818.640.2487

From: Greenwood, Marin <Marin.Greenwood@icf.com>
Sent: Wednesday, February 24, 2021 2:37 PM
To: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Spranza, John <John.Spranza@hdrinc.com>; Hendrick, Mike <mike.hendrick@icf.com>; Lecky, Jim <jim.lecky@icf.com>
Cc: Micko, Steve/SAC <Steve.Micko@jacobs.com>; Briard, Monique <Monique.Briard@icf.com>; Heydinger, Erin <Erin.Heydinger@hdrinc.com>; Hassrick, Jason <Jason.Hassrick@icf.com>; Whittington, Chad/SAC <Chad.Whittington@jacobs.com>
Subject: RE: Sites dEIR development meeting

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Thanks, Rob – we'd be looking for daily diversions at Red Bluff and Hamilton City, as well as daily Sac. R. at Wilkins Slough data, for all the years you've run. Thanks again.

MARIN GREENWOOD | ICF | marin.greenwood@icf.com | +1.530.400.8081 mobile

From: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>
Sent: Wednesday, February 24, 2021 14:34
To: Greenwood, Marin <Marin.Greenwood@icf.com>; John Spranza <John.Spranza@hdrinc.com>; Hendrick, Mike <Mike.Hendrick@icf.com>; Lecky, Jim <Jim.Lecky@icf.com>
Cc: Micko, Steve/SAC <Steve.Micko@jacobs.com>; Briard, Monique <Monique.Briard@icf.com>; Heydinger, Erin <erin.heydinger@hdrinc.com>; Hassrick, Jason <Jason.Hassrick@icf.com>; Whittington, Chad/SAC <Chad.Whittington@jacobs.com>
Subject: RE: Sites dEIR development meeting

Marin,

Steve and Chad are preparing a package for the team's use.
We thought we would make the model available to you as we have shared it with at least one agency as well.
It is useful to review the diversion criteria and how the criteria are applied.
The model also includes fish data.

In addition we can pull data from the run of the current criteria and provide that in a separate spreadseet.
What specific records are you requesting?

Rob

From: Greenwood, Marin <Marin.Greenwood@icf.com>
Sent: Wednesday, February 24, 2021 1:48 PM
To: Spranza, John <john.spranza@hdrinc.com>; Hendrick, Mike <mike.hendrick@icf.com>; Lecky, Jim <jim.lecky@icf.com>
Cc: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Micko, Steve/SAC <Steve.Micko@jacobs.com>; Briard, Monique <Monique.Briard@icf.com>; Heydinger, Erin <erin.heydinger@hdrinc.com>; Hassrick, Jason <jason.hassrick@icf.com>
Subject: [EXTERNAL] RE: Sites dEIR development meeting

We received and reviewed Cyril's software code and are able to successfully recreate the analysis from his paper. So for us to explore scenarios, please send daily model outputs, Rob/Steve.

MARIN GREENWOOD | **ICF** | marin.greenwood@icf.com | **+1.530.400.8081 mobile**

From: Spranza, John <John.Spranza@hdrinc.com>
Sent: Wednesday, February 24, 2021 08:27
To: Greenwood, Marin <Marin.Greenwood@icf.com>; Hendrick, Mike <Mike.Hendrick@icf.com>; Lecky, Jim <Jim.Lecky@icf.com>
Cc: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Micko, Steve/SAC <Steve.Micko@jacobs.com>; Briard, Monique <Monique.Briard@icf.com>; Heydinger, Erin <Erin.Heydinger@hdrinc.com>; Hassrick, Jason <Jason.Hassrick@icf.com>
Subject: RE: Sites dEIR development meeting

Great news. Thanks.

John Spranza

D 916.679.8858 M 818.640.2487

From: Greenwood, Marin <Marin.Greenwood@icf.com>
Sent: Tuesday, February 23, 2021 4:50 PM
To: Hendrick, Mike <mike.hendrick@icf.com>; Lecky, Jim <jim.lecky@icf.com>; Spranza, John <John.Spranza@hdrinc.com>
Cc: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Micko, Steve/SAC <Steve.Micko@jacobs.com>; Briard, Monique <Monique.Briard@icf.com>; Heydinger, Erin <Erin.Heydinger@hdrinc.com>; Hassrick, Jason <Jason.Hassrick@icf.com>
Subject: RE: Sites dEIR development meeting

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Hello all: thanks for today's call. Following up on the Michel et al. modeling piece, Jason and I discussed this with Cyril Michel today and he will provide us with necessary R software modeling code probably tomorrow.

Rob/Steve: please send us the daily ops model Wilkins Slough flows and Sites hypothetical diversions and we will subset the necessary months/years to match Cyril's time period (generally 2013-2019).

Please let me know if there are questions. Thanks in advance.

MARIN GREENWOOD | ICF | marin.greenwood@icf.com | +1.530.400.8081 mobile

-----Original Appointment-----
From: Hendrick, Mike <Mike.Hendrick@icf.com>
Sent: Friday, February 19, 2021 13:15
To: Hendrick, Mike; Lecky, Jim; Greenwood, Marin; John Spranza
Cc: Leaf, Rob/SAC; Micko, Steve/SAC; Briard, Monique; Heydinger, Erin
Subject: Sites dEIR development meeting
When: Tuesday, February 23, 2021 11:00-12:00 (UTC-08:00) Pacific Time (US & Canada).
Where: Microsoft Teams Meeting

Join on your computer or mobile app
Click here to join the meeting

Or call in (audio only)
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Daily Divertible & Storable Flow for Sites Project Package 20210309

Files included in package:

- Sites Daily Divertible & Storable Flow Tool (version 20210309)
  - Divertible_Storable_Flow_for_Sites_Project_20210309.xlsm
- Sites daily Divertible & Storable Flow Tool Documentation (version 20210228)
  - Sites_Reservoir_Daily_Divertible_Flow_Tool_Documentation_20210228.docx
- Sites Storable Flow Results for DEIRS Alternatives
  - Daily_Divertible_Storable_Tool_Results_DEIRS_Alternatives_20210309.xlsx
  - This includes 10/1/2008 – 5/31/2018 daily timeseries for:
    - Storable Flow through TCC
    - Storable Flow through GCC
    - Total Storable Flow
    - Sacramento River at Wilkins Slough (after Sites diversions)

The Daily Divertible & Storable Flow Tool (version 20210309) is setup with the assumptions for the DEIRS Alternatives, which are provided in Table 1 and Table 2. These assumptions were also used to generate the results in "Daily_Divertible_Storable_Tool_Results_DEIRS_Alternatives_20210309.xlsx".

Table 1. Facility Assumptions used in the Daily Divertible & Storable Flow Tool (version 20210309) for DEIR/EIS Analysis.

Sites Facilities	
Sites Storage Capacity	1.5 MAF
Initial Sites Storage	200 TAF
Sites Diversion Season	November - May
Red Bluff Diversion Capacity	2,100 CFS
Red Bluff Bypass Flow	3,250 CFS
TCC Minimum Pumping Level	125 CFS
Hamilton City Diversion Capacity	1,800 CFS

Hamilton City Bypass Flow	4,000 CFS
GCC Minimum Pumping Level	100 CFS
GCC Maintenance Window	January 25th – February 7th
Facilities (Not Sites Specific)	
Fremont Weir	Fremont Weir Notch

Table 2. Regulatory Assumptions used in the Daily Divertible & Storable Flow Tool (version 20210309) for DEIR/EIS Analysis.

Regulations	
Bend Bridge Pulse Protection	
Bend Bridge Pulse Protection Season	October - May
Bend Bridge Pulse Protection Initiation Criteria	3-day average Sacramento River must exceed 8,000 cfs; 3-day average tributary flow must exceed 2,500 cfs
Bend Bridge Pulse Protection Duration	7 days upon initiation
Bend Bridge Pulse Protection Re-setting Criteria	After completion of pulse protection period, resetting criteria must be met for another pulse protection period to commence: 3-day Sacramento River flow must go below 7,500 cfs for 7 consecutive days; 3-day moving average tributary flow must go below 2,500 cfs for 7 consecutive days
Wilkins Slough Bypass Flow	8,000 cfs April - May; all other times, 5,000 cfs

Fremont Weir Notch Criteria	Prioritize the Fremont Weir Notch, Yolo Bypass preferred alternative, flow over weir within 10% when spill range between 600 cfs and 6,000 cfs; First 600 cfs of spill are protected within 1%
Flows into the Sutter Bypass System	None
Freeport Bypass Flow	None
Surplus Delta Outflow	7 days of flow availability in February – March is required before diversions can be made in those months
SWP ITP Delta Outflow	44,500 cfs April - May

Sites Reservoir Daily Divertible & Storable Flow Tool

1. Objective

The Daily Divertible & Storable Flow Tool (Divertible Flow Tool/Daily Modeling Tool) has been developed to evaluate and test diversion criteria in a real-time operations context. The Tool determine daily divertible and storable flow for Sites Project in October 1st, 2008 – May 31st, 2018 based on water availability and user specified conveyance constraints and diversion criteria. The spreadsheet generates timeseries of diverted and stored flow at three intake locations – Red Bluff, Hamilton City, and Delevan. Furthermore, the Divertible Flow Tool can be used to supplement CalSim II by:

- Representing the effects of operations criteria on a daily timestep
- Allowing for relative comparisons between monthly and daily approaches
- Providing results for more recent years (WY 2009 – 2018)

Several differences between CalSim II and the daily Divertible Flow Tool should be considered when both models are used in conjunction to evaluate Sites operations. Firstly, CalSim II yields results on a monthly timestep and the Divertible Flow Tool operates on a daily timestep. Different approaches are sometimes necessary to simulate monthly conditions as opposed to daily conditions, and implementing operation criteria on a daily timestep tends to be more conservative. Additionally, the two modeling tools include different simulation periods. CalSim II includes WY 1922 – 2003 while the Divertible Flow Tool includes WY 2009 – 2018. Table 1-1 shows the difference in proportion of Water Year Types (WYTs) for each modeling tool. As shown, the Divertible Flow Tool includes a drier period than does CalSim II.

Table 1-1. Proportion of Water Year Types in CalSim II and the Daily Divertible Flow Tool

WYT	CalSim II (1922-2003)	Divertible Flow Tool (2009-2018)
Wet	32%	20%
Above Normal	15%	0%
Below Normal	17%	40%
Dry	22%	20%
Critical	15%	20%

Another key difference is that CalSim II provides a continuous simulation over an 82-year period, while the Divertible Flow Tool simulates each year as a separate event. Furthermore, the daily modeling tool only provides estimated fill volumes, whereas CalSim II also includes release operations.

With the above considerations in mind, the daily Divertible Flow Tool serves as a valuable resource that can supplement CalSim II by evaluating Sites operations in real-time.

2. Available, Divertible, and Storable Flow

The Divertible Flow Tool uses outputs from the Flow Availability Tool, which estimates flow available for potential diversion to Sites Reservoir, subject to hydrology and regulations outside the scope of Sites Project operations (i.e., Delta Outflow standards, downstream water quality regulations, and other criteria from D-1641). The Divertible Flow Tool can then be used to evaluate various combinations of hydrology and Sites-related operations criteria. Divertible and storable flow are defined as follows:

- Divertible Flow = Flow available for potential diversion to Sites Reservoir subject to flow requirements and conveyance constraints associated with Sites Project.
- Storable Flow = "Divertible Flow" subject to storable capacity.

3. User Specifications and Input Assumptions

Figure 3-1 shows a snapshot of the Tool's dashboard, where users can specify various regulations and constraints corresponding to project operations. The table situated in the top-center displays monthly available, divertible, and storable flows associated with user specifications. The charts show daily hydrographs for the Sacramento River and the divertible and storable flow available at each intake.

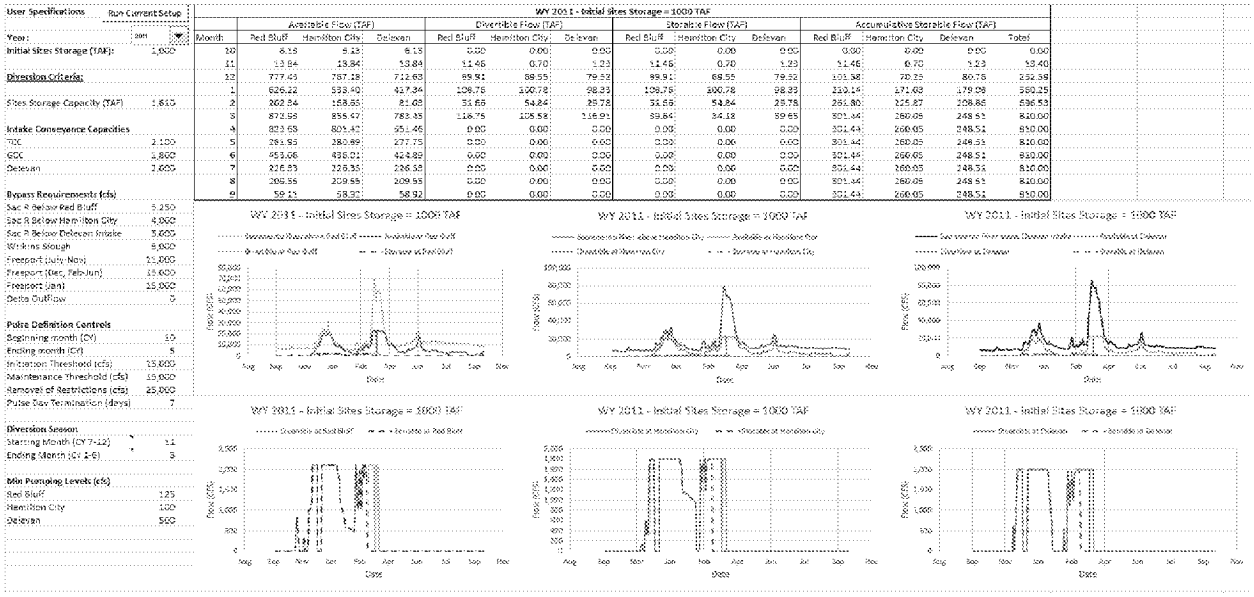


Figure 3-1. Snapshot of the Divertible Flow Tools User Dashboard.

The dashboard gives users the ability to specify the following:

- Year (hydrology) (WY 2009 – 2018)
- Initial Sites Storage (end of September storage)
- Sites Storage Capacity (TAF)
- Intake Conveyance Capacity (cfs)
    - Red Bluff (TCC)
    - Hamilton City (GCC)

    - Delevan
- Bypass Flow Requirements (cfs)
    - Sacramento River at Red Bluff
    - Sacramento River at Hamilton City
    - Sacramento River at Delevan
    - Sacramento River at Wilkins Slough
    - Sacramento River at Freeport
- Pulse Flow Criteria at Bend Bridge
    - Initiation Flow Threshold
    - Maintenance Flow Threshold
    - Pulse Duration Limit
- Delta Outflow Criteria
- Fremont Weir Notch (on/off switch)
- Weir Spill Protection
    - Fremont Weir Spills
    - Aggregate Weir Spills to Sutter Bypass (from Moulton Weir, Colusa Weir, & Tisdale Weir)
- Minimum Pumping Level (cfs)
    - Red Bluff (TCC)
    - Hamilton City (GCC)
    - Delevan
- Low Level Pumping (diversion rate at each intake when Sacramento River flow at a certain location is less than its associated bypass flow requirement) (cfs)
    - Wilkins Slough Bypass override
    - Freeport override
    - Bend Bridge pulse protection override
- Intake Prioritization
- Diversion Season (range of months)
- Intake Season (specify when diversions are permitted at each intake) (range of months)
- Surplus Outflow (February – March)

3.1 Year (Hydrology)

Users can toggle through 10 different Water Years (WYs) – 2009 through 2018. However, WY 2018 only includes information up to May 31st. Each year provides a different hydrologic condition. The water year hydrologic classifications associated with each year are provided in Table 3-1. Water Year Hydrologic Classification Index (CDEC, 2019).Table 3-1. Each year is associated with flow availabilities that were estimated in the Flow Availability Tool.

Table 3-1. Water Year Hydrologic Classification Index (CDEC, 2019).

Water Year	Water Year Type
2009	D
2010	BN
2011	W
2012	BN
2013	D
2014	C
2015	C
2016	BN
2017	W
2018	BN

3.2 Initial Sites Storage (End of September)

Initial Sites storage has potential to affect the quantity of flow that is stored in the reservoir. Through a range of initial Sites storages, users can evaluate the duration for the reservoir to reach capacity, which occurs when storable flow no longer equals divertible flow. In drier years, storage capacity may never be reached even when initial storage is set relatively high. Dead pool storage is assumed 120 TAF.

3.3 Sites Storage Capacity

Default Sites storage capacity is 1.81 MAF. However, users can enter any desired value.

3.4 Intake Capacity

The default intake capacities of the Tehama Colusa Canal (Red Bluff intake), Glenn Colusa Canal (Hamilton City intake), and the proposed Delevan Pipeline are 2,100 cfs, 1,800 cfs, and 2,000 cfs, respectively. However, users can enter any desired value.

3.5 Bypass Flow Requirements

A bypass flow requirement can be specified along the Sacramento River at five locations:

1. Red Bluff
2. Hamilton City
3. Delevan
4. Wilkins Slough
5. Freeport

Furthermore, users can specify a range of months at which the Wilkins Slough and Freeport bypass requirements are implemented (by entering the starting month in column C and entering the ending month in column D). Freeport includes four different cells at which bypass criteria can be entered. The first cell ("B22") dictates bypass criteria over a user-specified range of months. The next three cells ("B23:B25") dictate bypass criteria that persist under the primary Freeport bypass criteria for various times of the year.

3.6 Pulse Flow Criteria at Bend Bridge

The pulse flow criteria at Bend Bridge was developed to protect fish migration during naturally occurring, storm-induced, pulse flow events in the Sacramento River. Pulse flows are defined as extended peak river flows at Bend Bridge that originate from storm event tributary inflows downstream of Keswick Dam. A pulse is initiated once the three-day running average flow at Bend Bridge exceeds the "Initiation Threshold". The pulse persists as long as the three-day running average flow at Bend Bridge remains above the "Maintenance Threshold". If the three-day running average flow at Bend Bridge exceeds the "Removal of Restrictions Threshold", then Sites diversions are permitted as long as flow at Bend Bridge remains above the Maintenance Threshold. The "Reset Threshold" represents the value at which the 3-day moving average flow at Bend Bridge must not exceed for a given number of days before another pulse protected event can be triggered. The "Pulse Protection Duration" can be used to set the number of consecutive days that a pulse period can last before the protection criteria is removed. For example, if the Pulse Duration Limit is set to 7 days, then diversions to Sites are permitted after flow at Bend Bridge exceeds the pulse flow threshold for over 7 consecutive days. The Bend Bridge pulse protection criteria can be further modified in the "BB_Pulse_Definitions" tab. The current set of criteria assumes the following:

1. Season:
    a. Pulse protection can be initiated in October through May
2. Initiation:
    a. 3-day moving average Sacramento River flow at Bend Bridge must exceed 8,000 cfs,
    b. And the 3-day moving average tributary flow upstream of Bend Bridge (Cow Creek, Cottonwood Creek, and Battle Creek) must exceed 2,500 cfs
3. Duration:
    a. Pulse protection lasts for 7 days upon initiation
4. Re-setting condition:
    a. After completion of a pulse protection period, the following conditions must occur before another pulse event is triggered:
        i. 3-day moving average of Bend Bridge flow was less than 7,500 cfs for 7 consecutive days,
        ii. 3-day moving average tributary flow up upstream of Bend Bridge (Cow Creek, Cottonwood Creek, and Battle Creek) was less than 2,500 cfs for 7 consecutive days

3.7 Delta Outflow Criteria

The Divertible Flow Tool includes a few options to constrain Sites diversion based on Delta Outflow requirements. "Delta Outflow (SWP ITP) is intended to represent the 44,500 cfs flow requirement included in the 2020 SWP ITP. "Delta Outflow (Additional) is intended for any supplemental delta outflow constraints.

Users can also turn on or off NDOI criteria, which implements Delta Outflow targets for a specified period (default of March 1st through May 31st) based on WaterFix longfin smelt protection criteria (Incidental Take Permit No 2081-2016-055-03, WaterFix, CDFW, page 186). Outflow targets are determined based on a table derived from a linear relationship between the 50% exceedance forecast for the current month's Eight River Index (8RI) and recent historic Delta outflow (1980 – 2016). These tables have been stored in the "Ref. Tables" tab.

3.8 Fremont Weir Notch

The Fremont Weir Notch and its associated flow protection criteria can be turned on or off in the Divertible Flow Tool. Spills over the Fremont Weir Notch are based on a rule curve used in CalSim II. Furthermore, the Sites diversion criteria protects spills of 6,000 cfs from November 1st through March 15th and spills of 600 cfs from March 16th through April 30th. Figure 3-2 and Figure 3-3 demonstrate the effect of the Fremont Weir notch and its associated protection criteria on spills and diversions to Sites in an example scenario for WY 2010. The notch protection criteria cause a reduction in diversions to Sites, most notably in February when nearly all diversions are restricted because notch spills range from 0 – 6,000 cfs for most of the month.

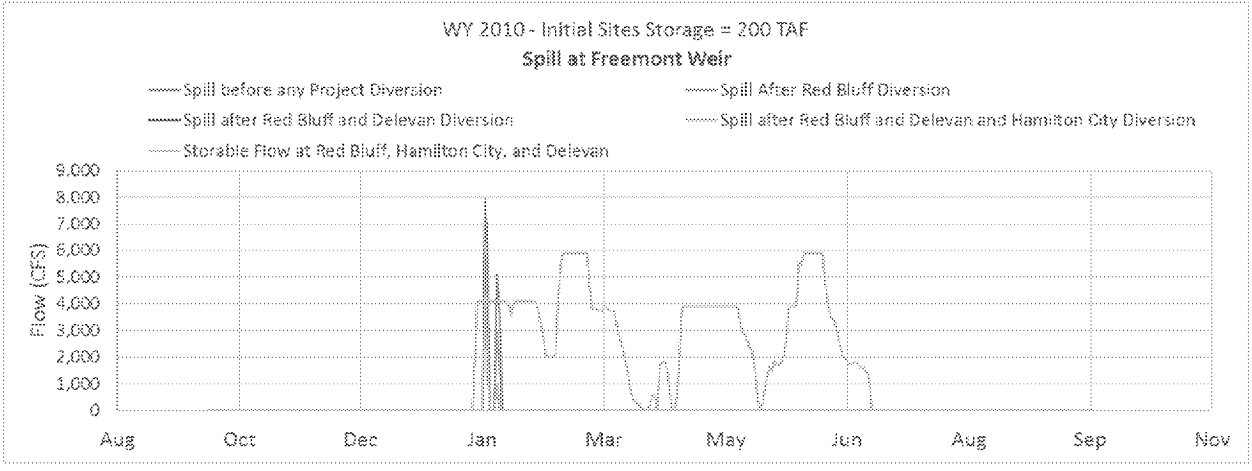


Figure 3-2. Spill at Fremont Weir vs Storable Flow – Without the Fremont Weir Notch.

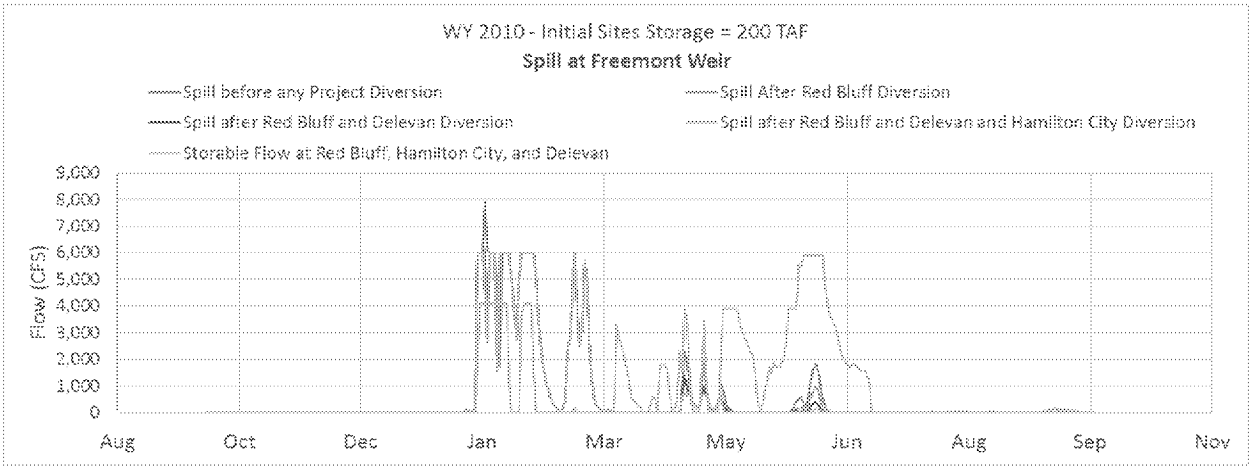


Figure 3-3. Spill at Fremont Weir vs Storable Flow – With the Fremont Weir Notch (and associated protection criteria).

In the daily modeling tool, users may specify buffer values for Fremont Weir notch protection. Two buffer values may be specified – one for spills between 0 and 600 cfs (low-spill buffer), and one for spills between 600 and 6,000 cfs (high-spill buffer). The buffer values are entered as percentages of flow above certain thresholds that may be diverted to Sites. For example, consider a case where the user enters a low-spill buffer of 1% and a high-spill buffer of 5%. The following would take effect:

- November 1 – March 15
    - When spills range between 0 – 600 cfs, 5% of the flow above 600 cfs may be diverted
    - When spills range between 600 – 6,000 cfs, 1% of the flow above 6,000 cfs may be diverted
- March 16 – April 30
    - When spills range between 0 – 600 cfs, 1% of the flow above 600 cfs may be diverted

3.9 Protection of Aggregate Weir Spills to the Sutter Bypass

The Tool provides users the ability to implement protection of spills into the Sutter Bypass via Colusa Weir, Moulton Weir, and Tisdale Weir. Users can specify the upper bound of the total spill range that must be protected, a buffer on the specified spill range, and the percent of spill that can be diverted to Sites in the specified spill range.

3.10 Minimum Pumping Level

Each intake is assigned a minimum level of flow that can be diverted into Sites Reservoir. If flow availability is below an intake's minimum pumping level, then the intake will not be utilized. The smallest pumps at Red Bluff and Hamilton City have capacities of 125 cfs and 100 cfs, respectively.

3.11 Low Level Pumping

Users can specify low level pumping rates when Sacramento River flow at a certain location is less than its associated bypass flow requirement and above the user specified "low level pumping initiation flow". For example, if the low level pumping rate at Red Bluff is set to 300 cfs, the initiation flow rate at Wilkins Slough is 5,000 cfs, the bypass flow rate at Wilkins Slough is 10,000 cfs, and the actual flow rate at Wilkins Slough is 8,000 cfs, then the Red Bluff intake can divert up to 300 cfs from the river. Low level

pumping rates can be used to override three bypass flow criteria: Bend Bridge pulse protection, Wilkins Slough bypass flows, and Freeport bypass flows.

3.12 Intake Prioritization

Intake prioritization is not modifiable in this version of the Divertible & Storable Flow Tool. The current setup prioritizes diversions at Red Bluff and then at Hamilton City.

3.13 Diversion Season

A diversion window can be defined to constrain the months in which the Divertible Flow Tool will attempt to allocate water into Sites Reservoir. Users can enter a starting month (from July through December) and ending month (from January through June). The default diversion season is November through May. Diversions to Sites would not be expected in June through October, as this is the period coincides with the season of Sites deliveries.

3.14 Intake Season

The Intake Season refers to the months in which diversions are permitted at each intake. For example, if the Red Bluff starting month is set to 1 and its ending month is set to 6, then diversion through the Red Bluff intake can only be made from January through June.

3.15 Freeport Pulse and Post Pulse Protective Criteria

Pulse & Post-Pulse criteria based on the 2016 CWF ITP have been integrated into the Daily Divertible Flow Tool. Sites intakes can be operated within a range of pulse protection and post-pulse protection levels (1 through 3) in place when winter run chinook salmon (CHNWR) and spring run chinook salmon (CHNSR) migration is occurring. The post-pulse protection operations are defined in Sub Table A of the CWF ITP. In the daily modeling tool, two interpretations of the criteria for transition among pulse-protection levels are included:

- Fish presence (Knights Landing Catch Index (KLCI)) (CWF ITP)
- Sacramento River flow at Freemont (CalSim II based logic)

Table 3-2 identifies the assumptions implemented in the CWF ITP (criteria based on fish presence) and the assumptions implemented in CalSim II.

Table 3-2. Pulse and Post-Pulse Assumptions of CWF ITP vs CalSim II.

Pulse and Post-Pulse Assumptions	
CWF ITP	**CalSim II**
• **All pulses** of CHNWR and CHNSR shall be protected from October 1 – June 30.	• **One or two pulses** shall be protected from October 1 – June 30 (depending on whether a pulse ends before December 1).
• Beginning October 1st, whenever the initial pulse begins, low level pumping takes effect.	• Beginning October 1st, whenever the initial Sacramento River pulse begins, low level pumping takes effect.
• A Sacramento River pulse is determined based on real-time monitoring of juvenile fish movement (see Condition of Approval 9.9.5.1). A fish pulse is defined as a **Knights Landing Catch**	• The initiation of the pulse is defined by the following criteria: (1) **Wilkins Slough flow changing by more than 45% within a five day**

Index (KLCI) ≥ 5 where KLCI = (# of CHNWR + # of CHNSR)/(Total Hours Fished/24). • Pulse protection operations shall be implemented within 24 hours of detection of a fish pulse.	**period** and (2) **Wilkins Slough flow becomes greater than 12,000 cfs**.
• Pulse protection ends after **five consecutive days of daily KLCI < 5**.	• The pulse protection and the low level pumping continues until (1) **Wilkins Slough returns to pre-pulse flows** (flow on first day of the within-5 day increase), (2) **Wilkins Slough flows decrease for five consecutive days**, or (3) **Wilkins Slough flows are greater than 20,000 cfs for 10 consecutive days**.
• Number of allowable pulses is not specified; ASSUME ALL ELIGIBLE PULSES (KLCI ≥ 5) ARE PROTECTED.	• Number of allowable pulses in unlimited; ASSUME ALL ELIGIBLE PULSES ARE PROTECTED.
• Once the pulse protection ends, **post-pulse bypass flow operations may remain at Level 1 diversion depending on fish presence, abundance, and movement in the north Delta**; however, the exact levels will be determined through initial operating studies evaluating the level of protection provided at various levels of diversions.	• After a pulse has ended, the allowable diversion will go to post-pulse operations through June that can transition through three levels of protection.
• The criteria for transitioning between and among pulse-protection, **Level 1, Level 2, and/or Level 3 operations are based on real-time fish monitoring** and hydrologic/ behavioral cues upstream of and in the Delta that will be studied as part of the Project's Adaptive Management Program. Based on the outcome of the studies pursued under that program, additional information about appropriate triggers, off-ramps, and other RTO management of NDD intake operations may be integrated into the Test Period Operations Plan and the Full Project Operations Plan.	• After the initial pulse(s), **Level I post-pulse bypass rules are applied until 15 days of bypass flows above 20,000 cfs have accrued since the pulse ended**. Then **Level II post-pulse bypass rules are applied until 30 days of bypass flows above 20,000 cfs have accrued** since the pulse ended. Then Level III post-pulse bypass rules are applied.
• **The NDDTT shall develop criteria for transitioning between and among pulse protection, Levels 1, 2 and 3 based on best available science**. The NDDTT shall recommend transitional criteria to the TOT and IICG for consideration through the Adaptive Management Program, to ensure that the Project will achieve the objectives of Biological Criteria 1 and 2.	• Under the post-pulse operations allowable diversion will be greater of the low-level pumping or the diversion allowed by the following post-pulse bypass flow rules.

Taken from the "Pulse_Post-Pulse_Figs" tab of the daily modeling tool, Figure 3-4. Fish-based Pulse and Post-Pulse Protection Levels in WY 2016. Figure 3-4 and Figure 3-5 demonstrate the difference in pulse and post-pulse protection levels under the two interpretations. In Figure 3-4, the purple dots represent the KCLI for winter run and spring run chinook salmon. Whenever the KCLI exceeds 4, pulse protection operations are initiated, as represented by the red shading. In the daily modeling tool, users may specify KCLI thresholds to determine pulse and post-pulse conditions. In this example, post-pulse Levels 1 and Level 2 have KCLI thresholds of 3 and 1, respectively. Thus, if the KCLI for a given day is between 3 and

5, Level 1 is implemented. If the KCLI is between 1 and 3, Level 2 is implemented. Finally, if the KCLI is 0, Level 3 operations take effect.

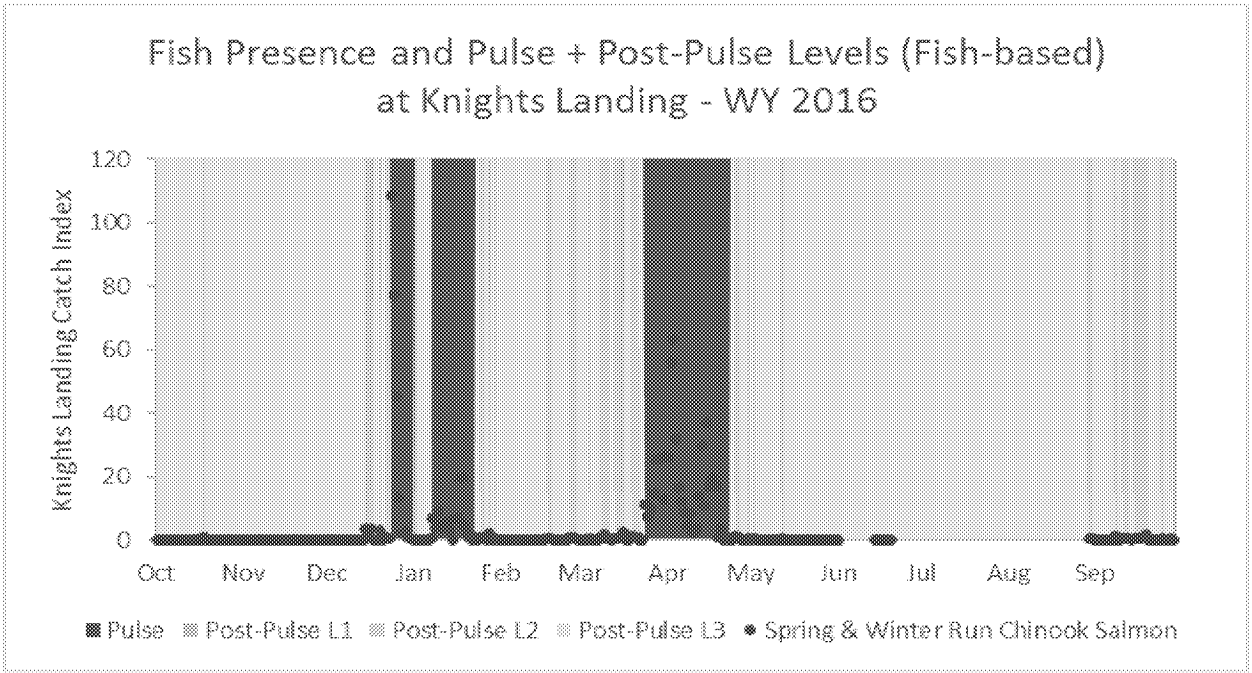


Figure 3-4. Fish-based Pulse and Post-Pulse Protection Levels in WY 2016.

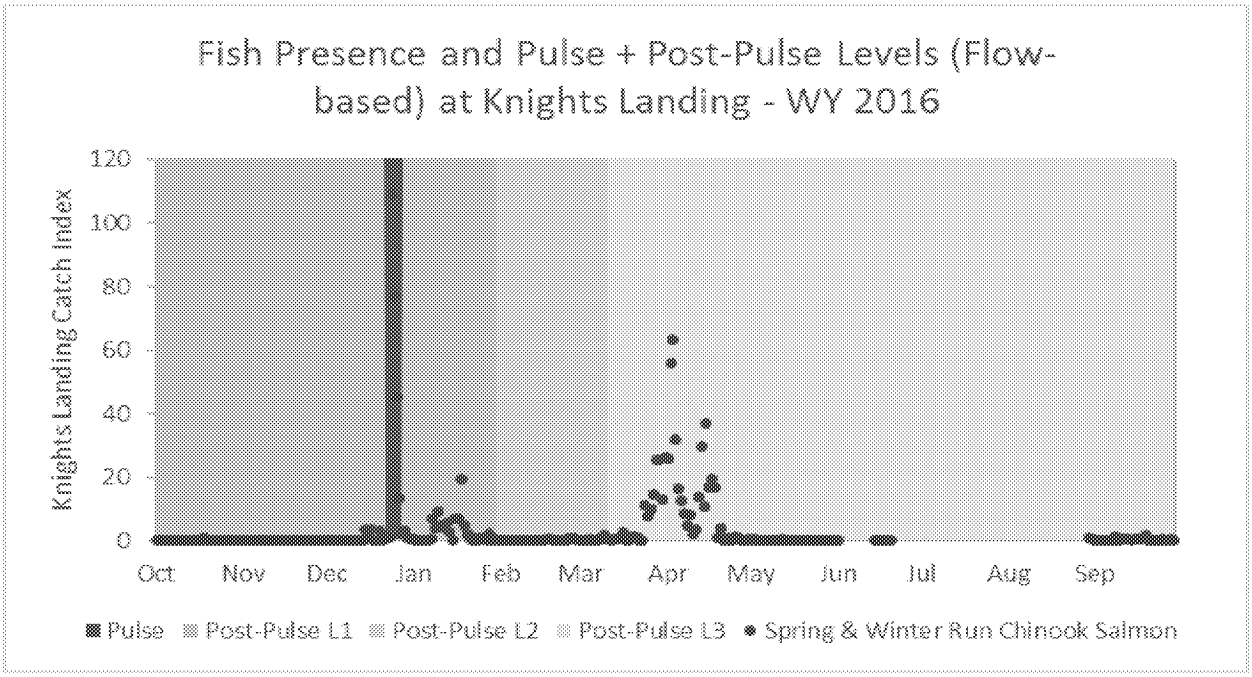


Figure 3-5. Flow-based (CalSim II) Pulse and Post-Pulse Protection Levels in WY 2016.

In the daily modeling tool, users may specify starting and ending months of the pulse and post-pulse protection periods (i.e., the October through June period defined in the CWF ITP may be modified).

3.16 Surplus Outflow (Feb-Mar)

This criterion provides a margin of safety so as to not shift regulatory burden of X2 onto SWP or CVP operations. It is only used in February and March. Diversions are only permitted after a specified number of days that flow is available in February through March.

3.17 Additional Protective Criteria

The "Table1" and "ProtectiveCrit" tabs includes additional protective criteria to limit project diversions under user-specified flow conditions and time periods. The table in "Table1" can be used to implement a set of rules to limit diversion at each intake to a certain percentage of total Sacramento River flow, based on local conditions. Inputs to this table can be specified in the "Protective Criteria & Ramp Down Specs" section of the "User_Specifications" tab.

The tables in "ProtectiveCrit" perform similar functions; however, diversions are instead limited to a proportion of total intake conveyance capacity.

The additional protective criteria are only activated if Cell B91 in the "User_Specifications" tab is set to "Yes".

4. Results

The Divertible Flow Tool evaluates various combinations of hydrographs, diversion regulations, and initial storage conditions. For example, users can manipulate pulse flow protection criteria, minimum pumping levels, or intake diversion seasons to generate different divertible and storable flow results under a range of hydrologic conditions. Consequently, the tool may be useful in evaluating the effects of varying operations criteria on diversions to Sites Reservoir.

4.1 Sacramento River Flow, Delta Outflow, and X2

Monthly available, divertible, and storable flow results for a given water year are displayed in the table and figures of the "User_Specifications" tab. The table also includes accumulated storage, representing the total amount of water diverted into Sites throughout the year.

The "Hydrographs" tab includes figures that show Sacramento River flows before and after project diversions at the following locations:

- Red Bluff
- Hamilton City
- Delevan
- Wilkins Slough
- Knights Landing
- Spill at Fremont Weir
- Freeport

The "Hydrographs" tab also includes the figures demonstrating the effect of Sites diversions on Delta Outflow and X2 position. Figure 4-1 through Figure 4-9 demonstrate example charts from the "Hydrographs" tab.

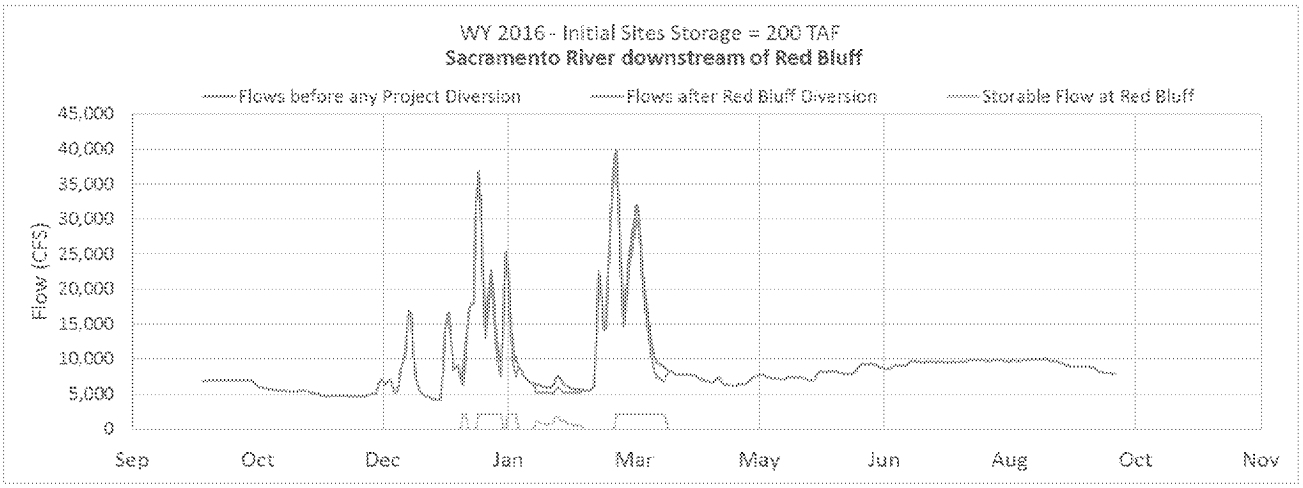


Figure 4-1. Sites Storable Flow Effect on Sacramento River Flow at Red Bluff – WY 2016.

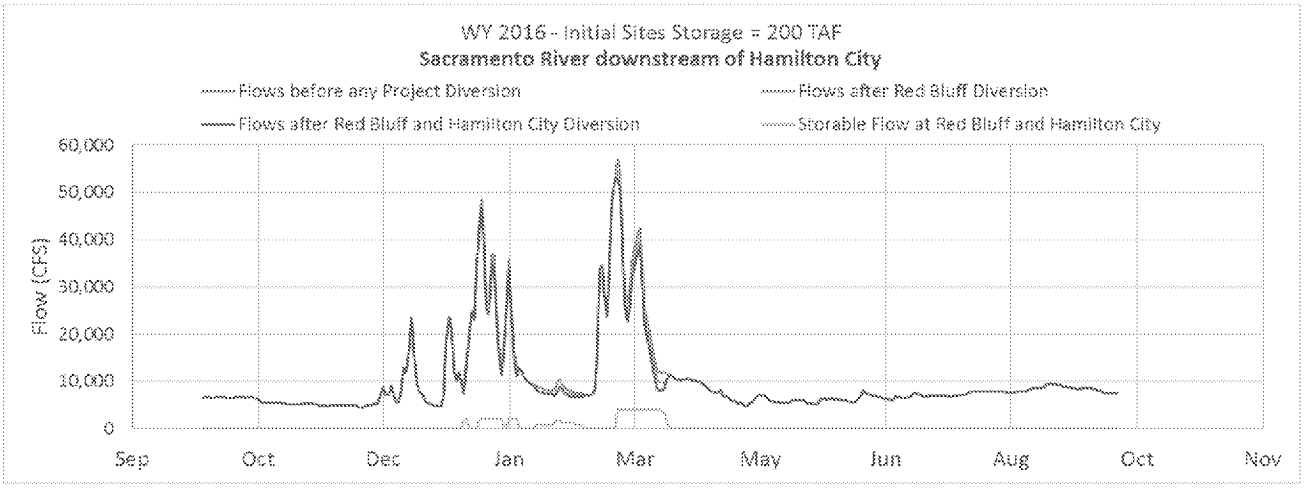


Figure 4-2. Sites Storable Flow Effect on Sacramento River Flow at Hamilton City – WY 2016.

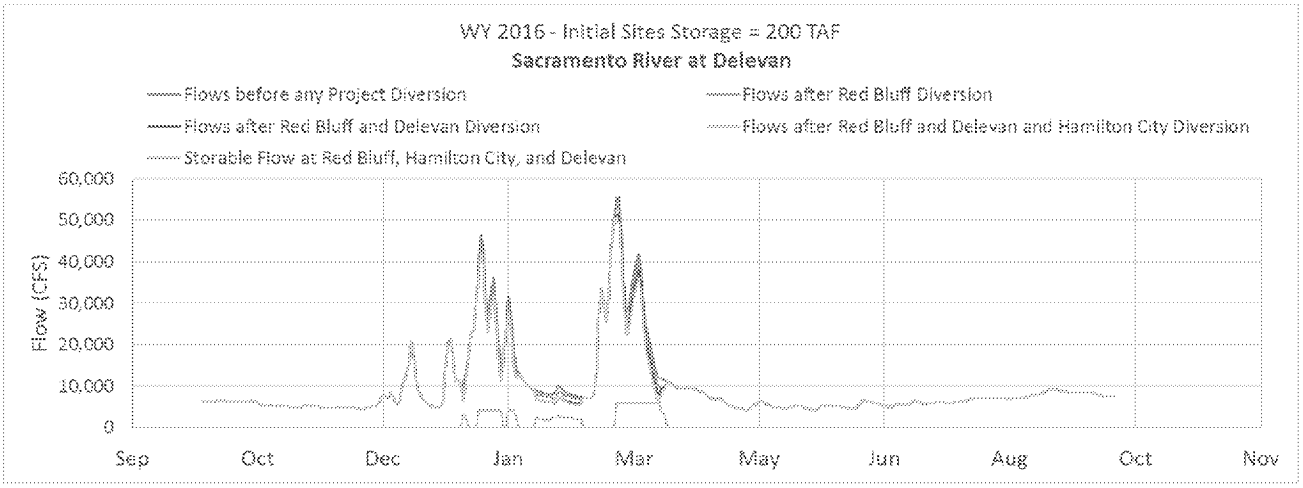


Figure 4-3. Sites Storable Flow Effect on Sacramento River Flow at Delevan – WY 2016.

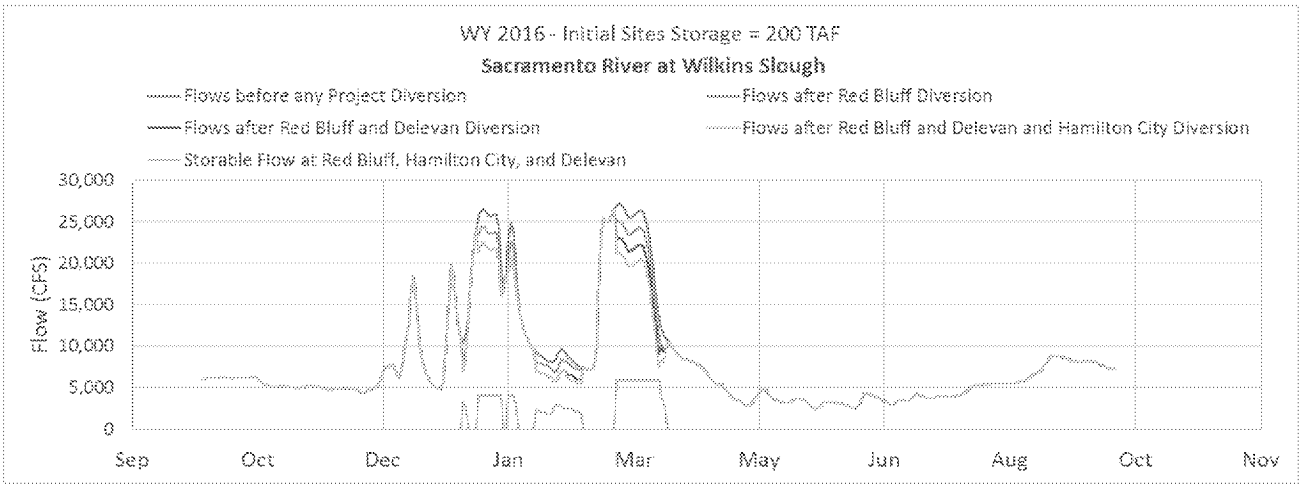


Figure 4-4. Sites Storable Flow Effect on Sacramento River Flow at Wilkins Slough – WY 2016.

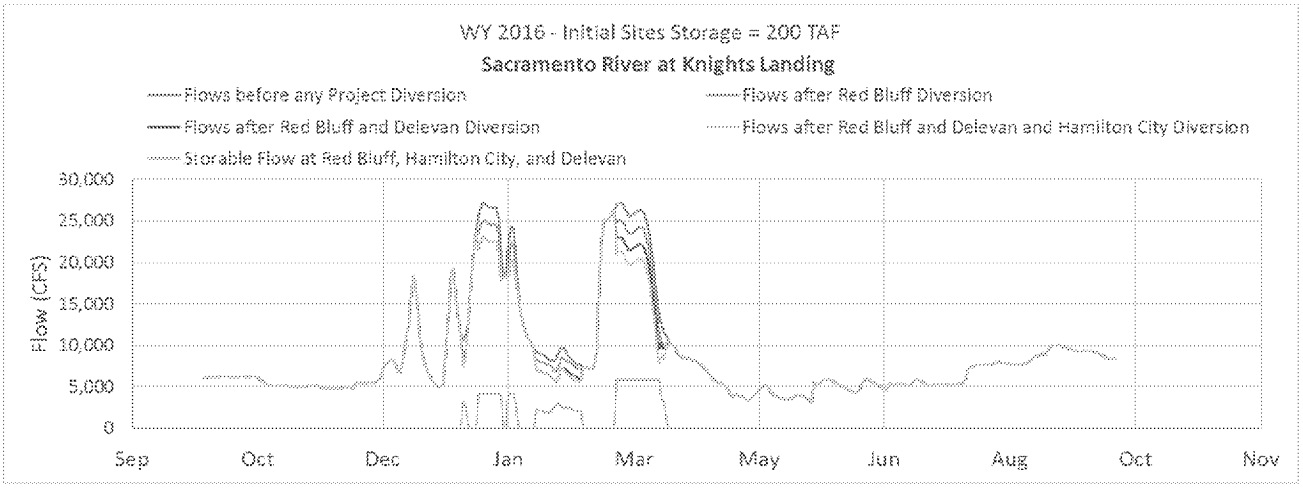


Figure 4-5. Sites Storable Flow Effect on Sacramento River Flow at Knights Landing – WY 2016.

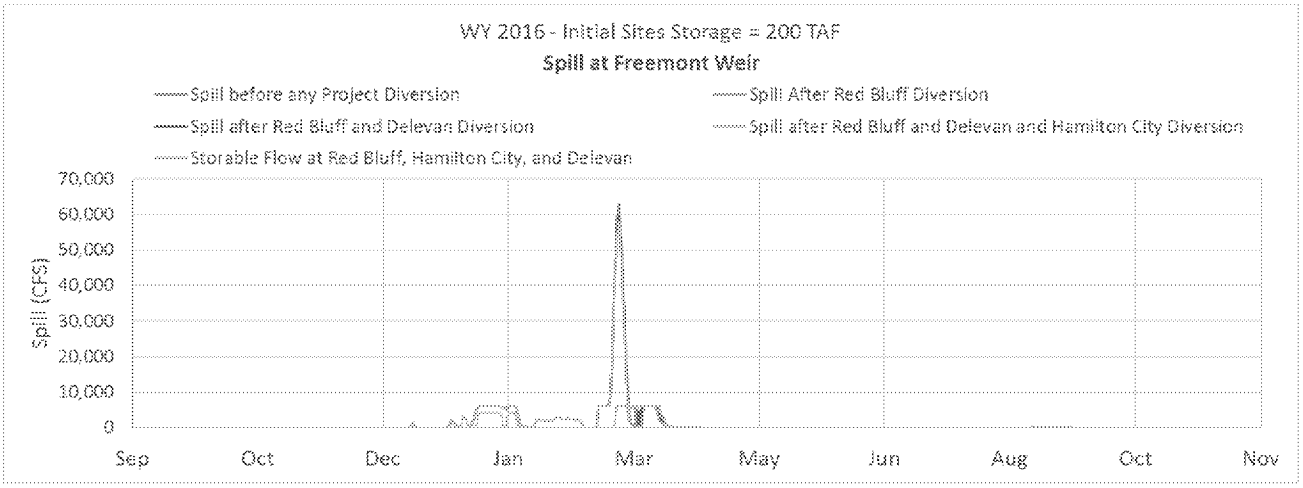


Figure 4-6. Sites Storable Flow Effect on Fremont Weir Spills – WY 2016.

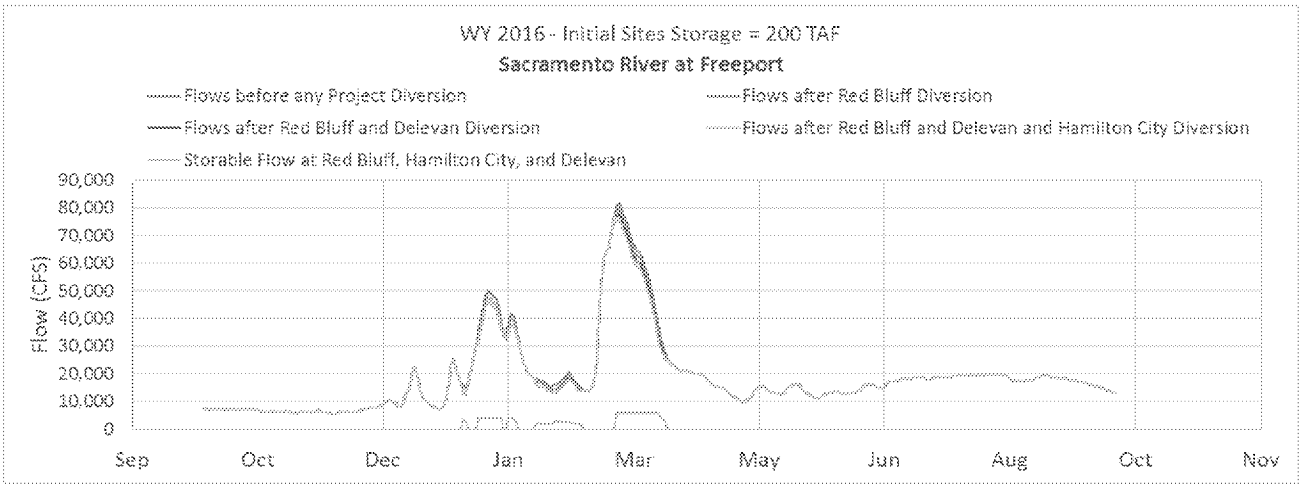


Figure 4-7. Sites Storable Flow Effect on Sacramento River Flow at Freeport – WY 2016.

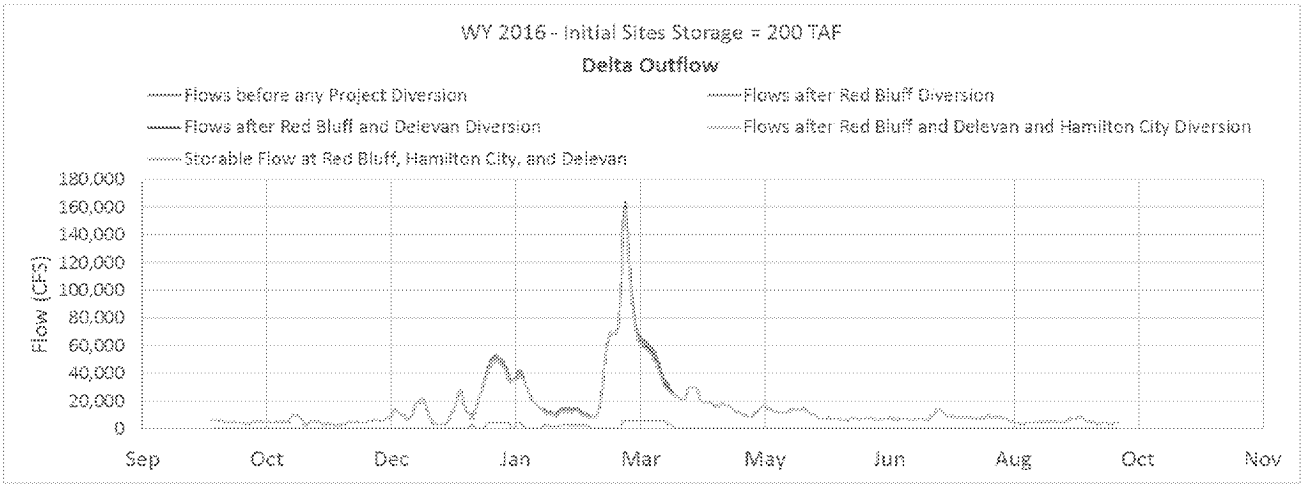


Figure 4-8. Sites Storable Flow Effect on Delta Outflow – WY 2016.

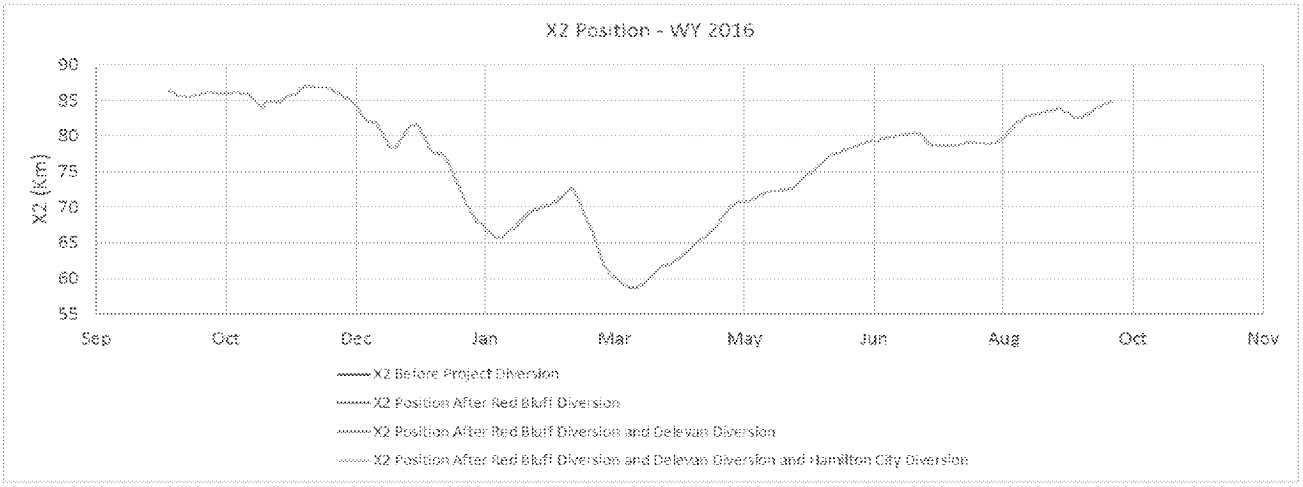


Figure 4-9. Sites Storable Flow Effect on X2 – WY 2016.

4.2 Fish Presence

Sacramento River fish data has been collected and integrated into the Divertible Flow Tool at the following locations:

- **Red Bluff Dam** (October 1st 2008 – May 31st 2018)
    - Source: Red Bluff Fish & Wildlife Office, USFWS (collated into a spreadsheet by LeAnne Rojas, 4/15/2019, using data from: http://www.cbr.washington.edu/sacramento/data/query_redbluff_daily.html)
- **Hamilton City** (March 2nd 2013 – May 31st 2018)
    - Source: GCID (collated into a spreadsheet by LeAnne Rojas on 4/16/2019, based on data provided by GCID (Josef Loera) via John Spranza (HDR) on 4/1/2019)
- **Tisdale** (July 7th 2010 – May 31st 2018)
    - Source: CDFW (collated into a spreadsheet by LeAnne Rojas on 4/18/2019, from data provided by Diane Coulon (DFW) on 4/11/2019)
- **Knights Landing** (October 1st 2008 – May 31st 2018)
    - Source: CDFW (collated into a spreadsheet by LeAnne Rojas based on workbooks provided by Jason Julienne (DFW) on 4/24/2019)

The relationship between flows and fish presence can be evaluated in several tabs towards the back of the spreadsheet. The "Fish_Count_OneYr" tab include figures of Sacramento River flow and storable flow vs fish count at the four locations listed above. Figure 4-10 demonstrates an example figure from this tab. At Red Bluff, the term "fish count" is defined as the estimated daily number of fish passage through the Sacramento River at Red Bluff. At Hamilton City, Tisdale, and Knights Landing, "fish count" is defined as the estimated daily number of fish caught in rotary screw traps at each location.

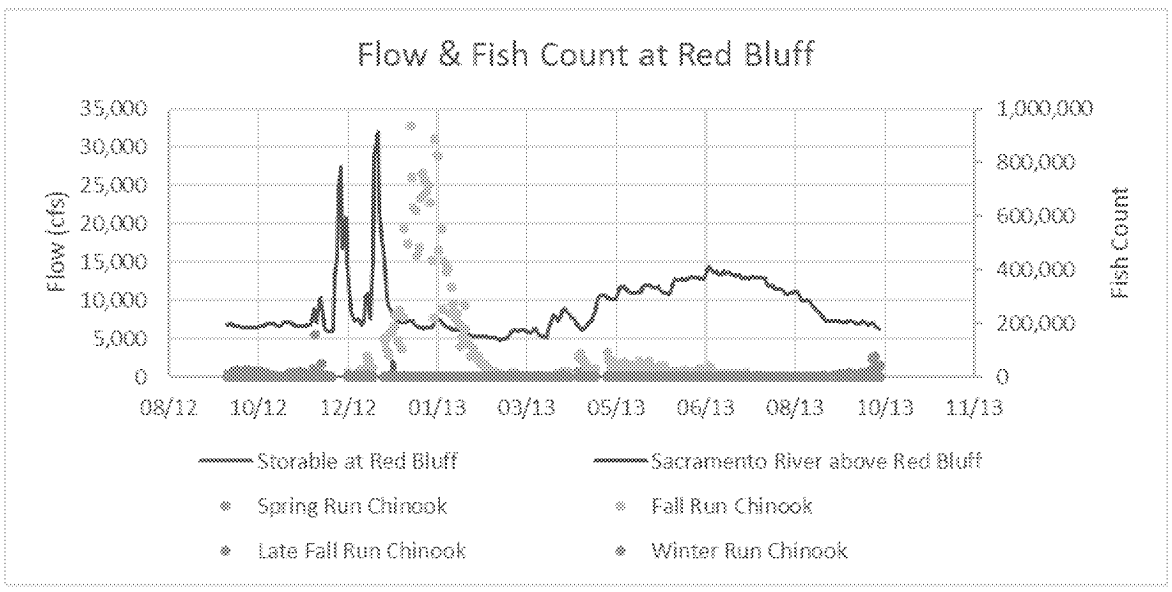


Figure 4-10. Sacramento River Flow vs Fish Presence at Red Bluff in WY 2013.

4.3 Controlling Constraints

The "Controls" tab includes tables displaying the number of instances each constraint controls the quantity of storable flow in each month of the selected year. A controlling constraint is defined as the primary limiter of storable flow to Sites Reservoir. For example, if no flow is available for the project because the river is in "Balanced Conditions", then the controlling constraint is identified as "Balance" in the Divertible Flow Tool. A table of controls has been developed for each intake location (Red Bluff, Hamilton City, and Delevan) in the "Controls" tab. Additionally, daily timeseries of controlling constraints can be viewed in columns "AS:AU" of the "Divertible_Flow_OneYr" tab.

4.4 Annual Simulations

On the "User_Specification" tab, users can generate results for all 10 years (WY 2009 – 2018) by clicking on the "Run Current Setup" button at the top of the page. This button will simulate available flow, divertible flow, and storable flow for each year under current user specifications. Furthermore, the initial Sites storage will be reset at the start of each year. Daily inputs and outputs will be copied into the "ScenID_Main" tab, monthly results are populated in the "Monthly_Report" tab, and annual inputs and outputs are populated in the "Ann_Fills" tab.

The Excel spreadsheet includes several macros to iterate through multiple combinations of years and input conditions (user-specified constraints). Before running one of these macros using the "Run Full Simulation Period" button on the "User_Specifications" tab, the macros should be updated to accommodate for whatever analysis is desired. The daily, monthly, and annual results will be copied into the "ScenID_Main" tab, "Monthly_Report" tab, and "Ann_fills" tab. Each 10-year period will be assigned a Scenario ID number corresponding to a particular set of inputs.

From: Leaf, Rob/SAC [Rob.Leaf@jacobs.com]
Sent: 3/10/2021 1:25:12 PM
To: Alicia Forsythe [aforsythe@sitesproject.org]
CC: Heydinger, Erin [erin.heydinger@hdrinc.com]; Spranza, John [john.spranza@hdrinc.com]; steve.micko@jacobs.com; Thayer, Reed/SAC [Reed.Thayer@jacobs.com]
Subject: RE: Sites Project - Trinity River Small Group Discussion
Attachments: SitesMetrics_rev14_4scn__ALT1B_011221_SA_unfixTrinity.pdf; NODOS_Trend_Reporting_rev44dpcy_DV6_MultiClim_CALSIM_NAA_ALT1B_011221_SA_unfixTrinity.xlsm

Ali,

As you know, for all of the Sites Project alternatives we have held the operations of the Trinity River "fixed" to the No Action alternative condition instead of allowing CalSim II to dynamically operate the river in the with project alternatives. This was based on comments we received from Reclamation during the development of the 2020 Federal Feasibility Report model runs.

With the reformulated project (VP7) and the new diversion/operations criteria we have developed, we don't expect significant changes to the Trinity River operations regardless of the approach to Trinity River operations. For the EIRS and WSIP analyses we have continued to "fix" Trinity River operations rather than let the model dynamically operate the river.

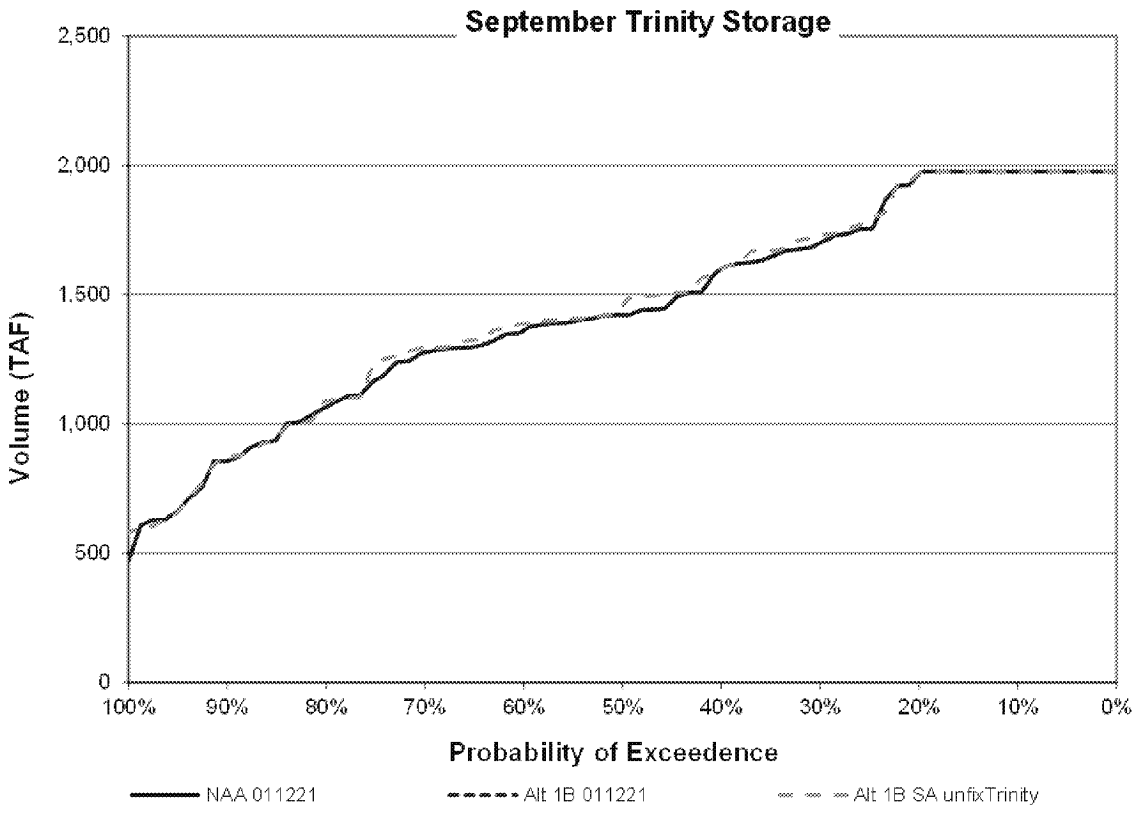
Without further background information, I expect that we will be criticized for not allowing CalSim II to dynamically operate the Trinity River. We would even be accused of "hiding" potential impacts. For that reason, I have prepared a sensitivity analysis of Alternative 1B comparing the approaches. Please see the attached.

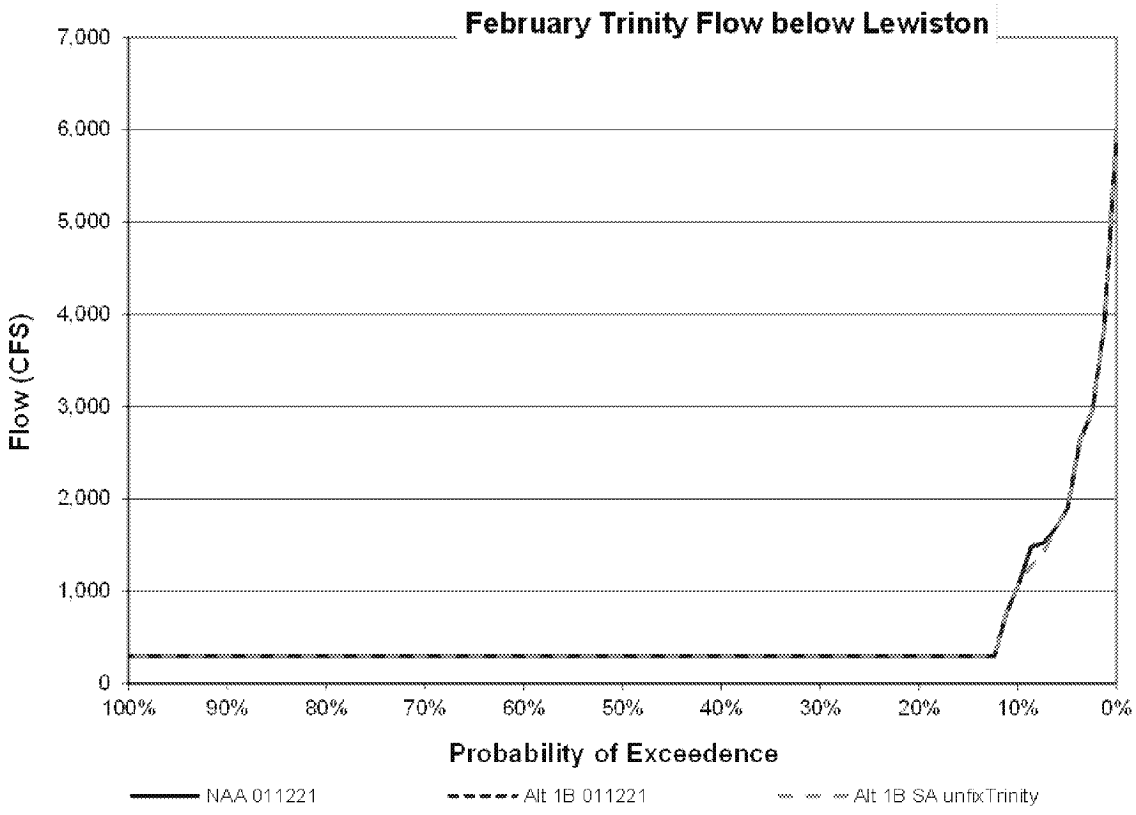
The conclusion is that changes to the performance of Alternative 1B are negligible overall. There however is a potential increased benefit to storage in the Trinity River from the dynamic approach. This increase in Trinity Lake storage is associated with a slight reduction in flows down the Trinity River in a few years in February and March apparently in below normal conditions. I expect these changes are less than significant.

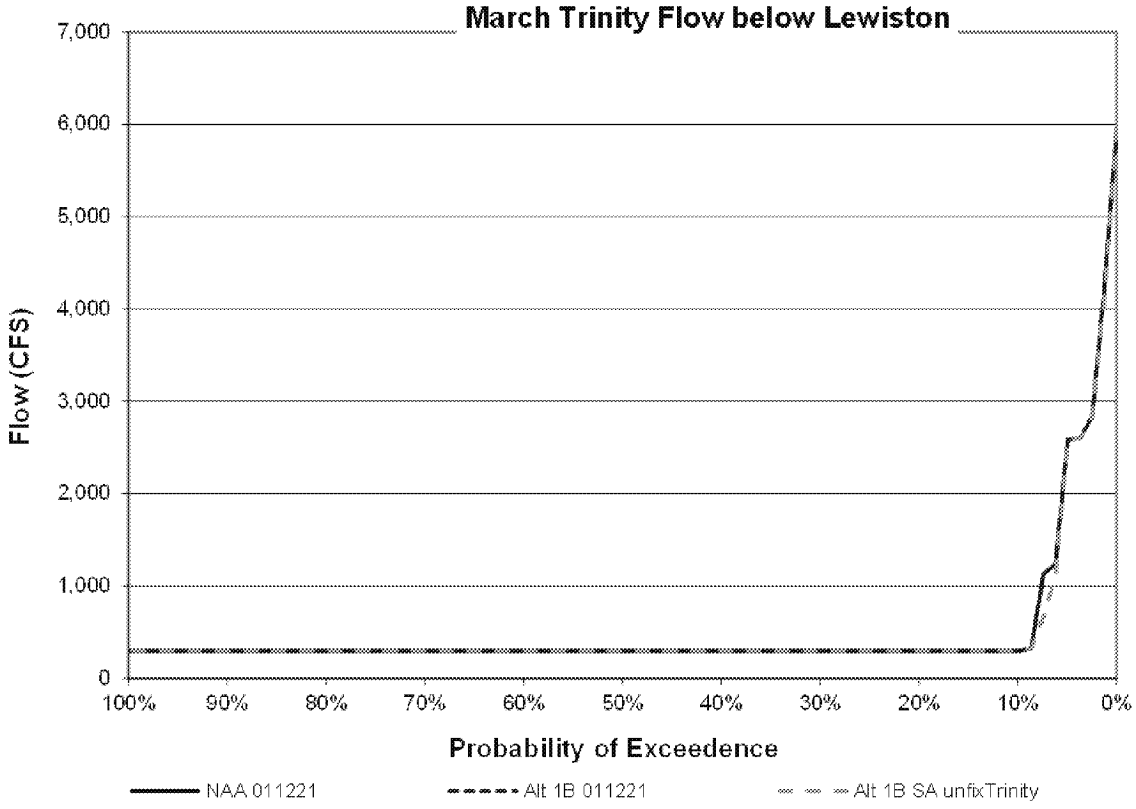
Either approach is reasonable under the reasoning that Reclamation's operational flexibility to operate Shasta and Trinity Lakes as needed is not limited by the Sites Project. In fact Reclamation has an opportunity to improve both and may so choose. The two approaches represent two out of many options Reclamation could consider. It is in Reclamation's hands either way and not the responsibility of the Sites Project.

See below for some selected charts from the trend reporting spreadsheet attached.

Rob


September Trinity Storage
2,500
2,000
1,500
1,000
500
0
Volume (TAF)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Probability of Exceedence
NAA 011221
Alt 1B 011221
Alt 1B SA unfixTrinity


February Trinity Flow below Lewiston
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Flow (CFS)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Probability of Exceedence
NAA 011221
Alt 1B 011221
Alt 1B SA unfixTrinity



From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Tuesday, March 2, 2021 10:52 AM
To: tstokely@att.net; J C POLOS <summerchum@yahoo.com>; Hank Seemann <HSeemann@co.humboldt.ca.us>; Craig Tucker <craig@suitsandsigns.com>; rebecca wu <rebeccadawnwu@yahoo.com>; john@goldengatesalmon.org
Cc: Heydinger, Erin <erin.heydinger@hdrinc.com>; Spranza, John <john.spranza@hdrinc.com>; Micko, Steve/SAC <Steve.Micko@jacobs.com>; Leaf, Rob/SAC <Rob.Leaf@jacobs.com>
Subject: [EXTERNAL] Sites Project - Trinity River Small Group Discussion

Hi all – You have all expressed an interest in learning more about how the Sites Project may affect the Trinity River. We'd like to host a small group meeting to share results from our CalSim modeling and talk about how we are approaching the Trinity River issues in our EIR/EIS and get your input and feedback.

Below is a doodle poll to schedule this meeting. I will use the results from the Doodle Poll as of close of business Friday to schedule the meeting, so please complete the poll as soon as possible.

https://www.doodle.com/poll/inhc2e7egbmzf94g?utm_source=poll&utm_medium=link

An agenda will be provided with the meeting invite.

We look forward to the discussion.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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NOTICE - This communication may contain confidential and privileged information that is for the sole use of the intended recipient. Any viewing, copying or distribution of, or reliance on this message by unintended recipients is strictly prohibited. If you have received this message in error, please notify us immediately by replying to the message and deleting it from your computer.

CVP/SWP Deliveries Table

Deliveries (TAF/year) (change from No Project Alternative conditions) [a]	ALT 1A 011221		ALT 1B 011221		ALT 1B 011221 SA unfixTrinity	
	Average	Dry and Critical	Average	Dry and Critical	Average	Dry and Critical
	1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) Historic Climate		1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) Historic Climate		1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) Historic Climate	
CVP Deliveries	3	10	11	29	11	27
NOD Ag	-1	2	0	5	1	6
NOD M&I	0	0	0	0	0	0
SOD Ag	3	8	10	24	9	21
SOD M&I	0	0	1	0	0	0
Subtotal - CVP Operational Flexibility *(Diff from Alt A1 CVP values)*	0	0	**8**	**19**	**8**	**17**
CVP Refuge Water Supply	**1**	**2**	**1**	**2**	**1**	**1**
NOD (Level 2)	1	2	1	2	1	1
SOD (Level 2)	0	0	0	0	0	0
SWP Deliveries	-1	-2	-2	0	3	3
SWP SOD Ag (Table A)	0	0	0	0	0	0
SWP SOD M&I (Table A)	-4	-3	-1	2	1	5
SWP SOD Interruptible (Article 21)	3	0	-1	-1	2	-2
Total change in CVP/SWP Deliveries with CVP Operational Flexibility	3	9	10	31	15	31
Total change in CVP/SWP Deliveries without CVP Operational Flexibility	3	9	2	12	7	14

Notes:

[a] *Values shown are the net change between the Project Alternative and No Project Alternative*
Results are dependent on storage allocations (see storage allocation table)

Authority Deliveries Table

Deliveries (TAF/year) (change from No Project Alternative conditions) [a]	ALT 1A 011221		ALT 1B 011221		ALT 1B 011221 SA unfixTrinity	
	Average	Dry and Critical	Average	Dry and Critical	Average	Dry and Critical
	1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) Historic Climate		1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) Historic Climate		1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) Historic Climate	
Authority PWA Deliveries	**128**	**307**	**119**	**286**	**119**	**285**
NOD	31	64	29	60	29	60
SOD	97	243	91	226	91	225
CVP Operational Flexibility	0	0	**8**	**19**	**8**	**17**
Sub-Total Supplemental Deliveries for Water Supply	**128**	**307**	**127**	**305**	**127**	**302**
Refuge Water Supply	**21**	**35**	**20**	**34**	**20**	**32**
NOD (Level 4)	5	6	5	6	5	6
SOD (Level 4)	16	28	15	27	15	26
Yolo Bypass Habitat Water Supply	**38**	**23**	**36**	**21**	**37**	**19**
Total Authority Deliveries	**187**	**365**	**184**	**359**	**184**	**353**
Percentage of Total Authority Deliveries						
Authority PWA Deliveries - North of Delta	16%	18%	16%	17%	16%	17%
Authority PWA Deliveries - South of Delta	52%	67%	49%	63%	49%	64%
CVP Deliveries - Operational Flexibility	0%	0%	4%	5%	4%	5%
Refuge Water Supply	11%	9%	11%	9%	11%	9%
Yolo Bypass Habitat Water Supply	21%	6%	20%	6%	20%	5%

Consideration of Incidental Change to CVP and SWP Deliveries						
Incidental Change to CVP and SWP Deliveries without CVP Operational Flexibility	3	9	2	12	7	14
Total Authority, CVP and SWP Deliveries	191	374	186	371	191	367
Incremental Change as a Percentage of Total Authority Deliveres	2%	3%	1%	3%	4%	4%
Incremental Change as a Percentage of Total Authority, CVP and SWP Deliveres	2%	2%	1%	3%	4%	4%

Notes:

[a] *Values shown are the net change between the Project Alternative and No Project Alternative*

Results are dependent on storage allocations (see storage allocation table)

Storage Table

Storage Increases (TAF) (above No Project Alternative conditions) [a]	ALT 1A 011221		ALT 1B 011221		ALT 1B 011221 SA unfixTrinity	
	Average	Dry and Critical	Average	Dry and Critical	Average	Dry and Critical
	1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) Historic Climate		1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) Historic Climate		1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) Historic Climate	
Additional end-of-September storage	**28**	**52**	**50**	**72**	**58**	**85**
Trinity	0	0	0	0	13	18
Shasta	12	23	28	39	24	38
CVP Storage	*7*	*10*	*25*	*31*	*21*	*30*
Subtotal - CVP OpFlex Storage (Diff from Alt A1 CVP values	*0*	*0*	*18*	*21*	*14*	*19*
Storage exchanged from Sites	*5*	*13*	*3*	*9*	*3*	*8*
Oroville	13	24	12	21	13	21
SWP Storage	*-6*	*-14*	*-6*	*-16*	*-6*	*-16*
Sites Delta Participants Storage	*19*	*38*	*17*	*36*	*18*	*37*
Folsom	3	5	9	12	7	8
Subtotal - CVP OpFlex Storage (Diff from Alt A1 CVP values	*0*	*0*	*6*	*7*	*4*	*3*
Percentage of Total Additional End-of-September Storage						
Portion of total additional end-of-September storage						
Trinity	0%	0%	0%	0%	23%	21%
Shasta	41%	44%	57%	55%	41%	45%
Oroville	47%	46%	24%	29%	22%	25%
Folsom	12%	10%	19%	16%	13%	10%

Notes:

[a] *Values shown are the net change between the Project Alternative and No Project Alternative*

Results are dependent on storage allocations (see storage allocation table)

Sites Releases Table

Releases (TAF/year)	ALT 1A 011221		ALT 1B 011221		ALT 1B 011221 SA unfixTrinity	
	Average	Dry and Critical	Average	Dry and Critical	Average	Dry and Critical
	1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) Historic Climate		1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) Historic Climate		1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) Historic Climate	
Releases for Authority PWA Deliveries - North of Delta	31	64	29	60	29	60
Assumed transfer from North of Delta to South of Delta	7	6	6	6	6	6
Releases for Authority PWA Deliveries - South of Delta	111	266	105	250	104	247
Releases for CVP Deliveries - Operational Flexibility	0	0	28	26	28	28
Releases for Refuge Water Supply	25	39	24	38	24	37
Releases for Yolo Bypass Habitat Water Supply	44	27	41	24	42	22
Total Releases	**217**	**402**	**234**	**404**	**233**	**399**
Percentage of Total Releases from Sites						
Releases for Authority PWA Deliveries - North of Delta	14%	16%	12%	15%	12%	15%
Assumed transfer from North of Delta to South of Delta	3%	2%	3%	2%	3%	2%
Releases for Authority PWA Deliveries - South of Delta	51%	66%	45%	62%	45%	62%
Releases for CVP Deliveries - Operational Flexibility	0%	0%	12%	7%	12%	7%
Releases for Refuge Water Supply	11%	10%	10%	9%	10%	9%
Releases for Yolo Bypass Habitat Water Supply	20%	7%	18%	6%	18%	5%

Notes:

Results are dependent on storage allocations (see storage allocation table)

Sites Fills Table

Fills (TAF/year)	ALT 1A 011221		ALT 1B 011221		ALT 1B 011221 SA unfixTrinity	
	Average	Dry and Critical	Average	Dry and Critical	Average	Dry and Critical
	1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) Historic Climate		1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) Historic Climate		1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) Historic Climate	
Fills for Authority PWA Deliveries - North of Delta	45	19	43	16	42	16
Fills for Authority PWA Deliveries - South of Delta	122	48	115	43	115	42
Fills for CVP Deliveries - Operational Flexibility	0	0	29	16	29	17
Fills for Refuge Water Supply	26	11	26	11	25	10
Fills for Yolo Bypass Habitat Water Supply	46	23	43	18	43	17
Total Fill	**240**	**101**	**255**	**104**	**254**	**102**
Percentage of Total Fills						
Fills for Authority PWA Deliveries - North of Delta	19%	19%	17%	15%	17%	16%
Fills for Authority PWA Deliveries - South of Delta	51%	47%	45%	41%	45%	41%
Fills for CVP Deliveries - Operational Flexibility	0%	0%	11%	16%	11%	16%
Fills for Refuge Water Supply	11%	11%	10%	11%	10%	10%
Fills for Yolo Bypass Habitat Water Supply	19%	23%	17%	17%	17%	17%

Notes:

Results are dependent on storage allocations (see storage allocation table)

Sites Storage Allocation Table

Storage Volumes (TAF)	ALT 1A 011221	ALT 1B 011221	ALT 1B 011221 SA unfixTrinity
	1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) Historic Climate	1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) Historic Climate	1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) Historic Climate
Authority PWA Deliveries - North of Delta	279	256	256
TCCA	*150*	*138*	*138*
GCID	*34*	*31*	*31*
RD108	*27*	*25*	*25*
Other Sacramento Valley	*68*	*62*	*62*
Authority PWA Deliveries - South of Delta	857	788	788
CVP Deliveries - Operational Flexibility	0	91	91
Refuge Water Supply	124	124	124
Yolo Bypass Habitat Water Supply	120	120	120
Dead Pool Storage	120	120	120
Total Storage	**1500**	**1499**	**1499**
Percentage of Total Storage Capacity			
Authority PWA Deliveries - North of Delta	19%	17%	17%
Authority PWA Deliveries - South of Delta	57%	53%	53%
CVP Deliveries - Operational Flexibility	0%	6%	6%
Refuge Water Supply	8%	8%	8%
Yolo Bypass Habitat Water Supply	8%	8%	8%
Dead Pool Storage	8%	8%	8%

Notes:

Results are dependent on storage allocations

File Provided Natively

From: Davis-Fadtke, Kristal@Wildlife [Kristal.Davis-Fadtke@wildlife.ca.gov]
Sent: 3/10/2021 2:58:14 PM
To: Spranza, John [john.spranza@hdrinc.com]
CC: Alicia Forsythe [aforsythe@sitesproject.org]; Torres, Juan@Wildlife [Juan.Torres@wildlife.ca.gov]; Barker, Kelley@Wildlife [Kelley.Barker@wildlife.ca.gov]; Purdy, Colin@Wildlife [Colin.Purdy@wildlife.ca.gov]; Johnson, Matt@Wildlife [Matt.Johnson@wildlife.ca.gov]; Huneycutt, Andrew@Wildlife [Andrew.Huneycutt@Wildlife.ca.gov]; Kundargi, Kenneth@Wildlife [Kenneth.Kundargi@wildlife.ca.gov]; Kilgour, Morgan@Wildlife [Morgan.Kilgour@Wildlife.ca.gov]
Subject: RE: Sites Preliminary Project Description

Hi John,

I know you are asking for informal questions/concerns and I want to be clear on your expectations. My team has reviewed the preliminary project description and the concerns the Department raised in our comments on the 2017 DEIR/EIS regarding bypass flow criteria still apply to this project description. We are still reviewing the Calsim model runs and I have asked Rob Sherrick to reach out to Erin directly with his technical questions. I think the upcoming Aquatic Team meeting will be a good forum to dive into a discussion on operational criteria.

If you would like a broader review of the facilities described at this early juncture, please let us know what the deadline would be for that. It is larger effort on our part to request review from our broader team that will be evaluating components of the Sites Project.

Thank you,

Kristal

From: Spranza, John <John.Spranza@hdrinc.com>
Sent: Monday, March 8, 2021 1:47 PM
To: evan.sawyer <evan.sawyer@noaa.gov>; Cathy Marcinkevage - NOAA Federal <cathy.marcinkevage@noaa.gov>; cyril.michel@noaa.gov; Kundargi, Kenneth@Wildlife <Kenneth.Kundargi@wildlife.ca.gov>; Davis-Fadtke, Kristal@Wildlife <Kristal.Davis-Fadtke@wildlife.ca.gov>; La Luz, Felipe@Wildlife <Felipe.LaLuz@wildlife.ca.gov>; Williams, Jonathan@Wildlife <Jonathan.Williams@wildlife.ca.gov>; Kearns, Zachary@Wildlife <Zachary.Kearns@Wildlife.ca.gov>; Grover, Joshua@Wildlife <Joshua.Grover@wildlife.ca.gov>; Sherrick, Robert@Wildlife <Robert.Sherrick@Wildlife.ca.gov>; Johnson, Matt@Wildlife <Matt.Johnson@wildlife.ca.gov>; steven_schoenberg@fws.gov; Torres, Juan@Wildlife <Juan.Torres@wildlife.ca.gov>; Boyd, Ian@Wildlife <Ian.Boyd@Wildlife.ca.gov>; Huneycutt, Andrew@Wildlife <Andrew.Huneycutt@Wildlife.ca.gov>
Cc: aforsythe (aforsythe@sitesproject.org) <aforsythe@sitesproject.org>; Monique Briard (monique.briard@icf.com) <monique.briard@icf.com>; Dekar, Melissa D <mdekar@usbr.gov>; Hendrick, Mike <mike.hendrick@icf.com>; Cordova, Daniel A <dcordova@usbr.gov>; Davis, Ryan A <rdavis@usbr.gov>; Berryman, Ellen (Ellen.Berryman@icf.com) <Ellen.Berryman@icf.com>; Hassrick, Jason (Jason.Hassrick@icf.com) <Jason.Hassrick@icf.com>
Subject: Sites Preliminary Project Description

WARNING: This email originated from outside of CDFW and should be treated with extra caution.

Hello from the Site's Team,

In case you had not heard already, Chapter 2, *Preliminary Project Description* for the REIR/SEIS is available for early review on the Authority's website (https://sitesproject.org/resources/information-materials/). If you have any initial informal questions/concerns please send them over to us, the formal comment period will open when the entirety of the REIR/SEIS is released later this summer.

I've also attached it for ease of review.

Thanks,
John

John Spranza, MS, CCN
Senior Ecologist / Regulatory Specialist

HDR
2379 Gateway Oaks Drive, Suite 200
Sacramento, CA 95833
D 916.679.8858 M 818.640.2487
john.spranza@hdrinc.com

hdrinc.com/follow-us
hdrinc.com/follow-us

From: Heydinger, Erin [Erin.Heydinger@hdrinc.com]
Sent: 3/10/2021 3:47:23 PM
To: Rob Leaf [Rob.Leaf@jacobs.com]; steve.micko@jacobs.com; Thayer, Reed/SAC [Reed.Thayer@jacobs.com]
CC: Alicia Forsythe [aforsythe@sitesproject.org]; Spranza, John [john.spranza@hdrinc.com]
Subject: FW: Sites CalSim II Model

Flag: Follow up

CH team,

Please see below from CDFW on modeling questions. I'm thinking we might need a writeup on assumptions for Funks and Stone Corral. Also, we told CDFW we would provide them with something similar for WSIP benefits (one-page writeup of modeling assumptions).

Ali and John – FYI. This may give us some insight into what sorts of questions CDFW will be asking.

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

hdrinc.com/follow-us

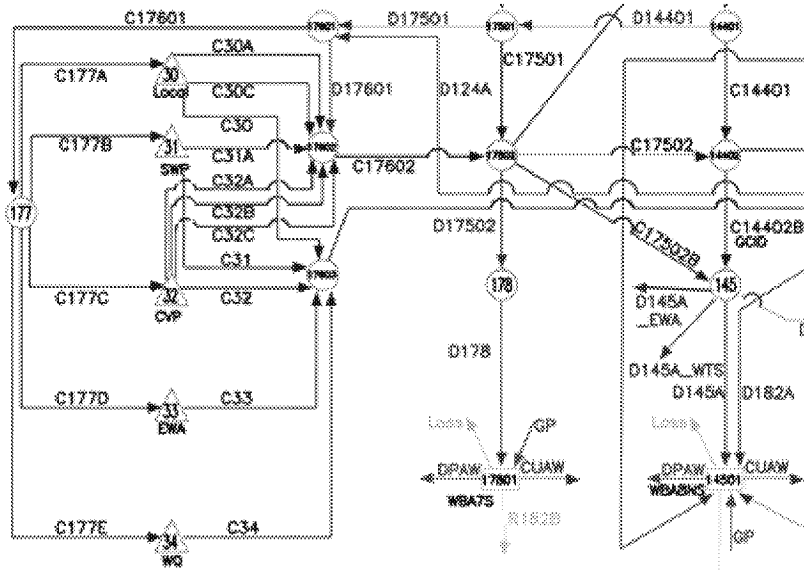
From: Sherrick, Robert@Wildlife <Robert.Sherrick@Wildlife.ca.gov>
Sent: Wednesday, March 10, 2021 3:15 PM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Cc: Davis-Fadtke, Kristal@Wildlife <kristal.davis-fadtke@wildlife.ca.gov>
Subject: RE: Sites CalSim II Model

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Erin,

I have started looking through the Calsim models. I have the following initial questions/comments as I'm trying to go through the model details:

1. The output data indicates that nodes 30 through 34 are used to represent the various storage accounts for Sites Reservoir. These nodes match up with the following portion of the Calsim-II model schematic. It would be very helpful to see a properly labeled and updated version of this schematic with decoded names.



2. The Sites Reservoir Evaporation time series (EVAP_S30) has months in most winters with negative values (precipitation?). How were these values calculated? East Park (S40), which is nearby, does not have negative evaporation. It appears as though the negative evaporation is meant to be a surrogate for local inflow, but would that mean local inflow is dependent upon surface area of the reservoir? Whatever water is modeled as local inflow in the Sites alternatives, needs to be accounted for in the Baseline, otherwise the Sites alternatives are making "new water" in the system. For example in Alt1a evaporation "E30" for WY 1998 amounts to 30 TAF inflow from Nov-May. If "E34" is included it's over 35 TAF. Has one of the aggregated tributary inflows from the Baseline been reduced by this amount?

3. What are the Calsim nodes for instream releases to Funks Creek and/or Stone Corral Creek? Is that C17603 and/or C17502? It looks like it's often set to zero, please verify. What is the assumption for local minimum instream flow?

Thank you,

Rob Sherrick, PE
Senior Hydraulic Engineer
Conservation Engineering
California Department of Fish and Wildlife
M: 916-516-4233

From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Wednesday, February 10, 2021 4:09 PM
To: Davis-Fadtke, Kristal@Wildlife <Kristal.Davis-Fadtke@wildlife.ca.gov>; Evan Sawyer - NOAA Federal <evan.sawyer@noaa.gov>; Miller, Aaron@DWR <Aaron.Miller@water.ca.gov>; Davis, Ryan A <rdavis@usbr.gov>; Sumer, Derya <dsumer@usbr.gov>; Lee Bergfeld <Bergfeld@mbkengineers.com>; Montgomery, Amanda@Waterboards <Amanda.Montgomery@waterboards.ca.gov>; Sherrick, Robert@Wildlife <Robert.Sherrick@Wildlife.ca.gov>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>; Spranza, John <John.Spranza@hdrinc.com>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>; Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Micko, Steve/SAC <Steve.Micko@jacobs.com>; Lecky, Jim <Jim.Lecky@icf.com>; Hendrick, Mike <Mike.Hendrick@icf.com>
Subject: Sites CalSim II Model

Warning: This email originated from outside of CDFW and should be treated with extra caution.

Good afternoon,

We are excited to let you know that the Sites project has completed its CalSim model for the Revised Draft EIR/Supplemental Draft EIS. We would like to give you the opportunity to review the model – it will be used for much of the impacts analysis included in the new document. You can access it at this link (you may have also received a separate email notification):

https://hdrinc-my.sharepoint.com/:f:/p/eheydinger/Eq1KZrFyTgRErqjOkmGMwL4BP3Boe3Jlenj9zs8b2Eukjg

The link includes CalSim models for the No Action Alternative as well as four operating options as described in the attached document. The "spreadsheets" folder includes an Excel file that summarizes the CalSim output. THe link above only works for the folks on this email thread. Please let me know if you would like access granted to others.

We recognize these models will take some time to review. The Authority will also be posting the draft Project Description on its website next week that may be of interest to all of you. So, to allow for adequate review time we will be scheduling a workshop to discuss the models during early March - likely the week of March 8th. The Authority expects to release the Revised Draft EIR/Supplemental Draft EIS in late summer.

Please don't hesitate to reach out with any questions.

Best,
Erin

Erin Heydinger, PE, PMP
Sites Reservoir Integration Lead for Operations

HDR
2379 Gateway Oaks Dr, #200
Sacramento, CA 95833
D 916.679.8863 M 651.307.9758

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From: Leaf, Rob/SAC [Rob.Leaf@jacobs.com]
Sent: 3/11/2021 9:52:59 AM
To: Heydinger, Erin [erin.heydinger@hdrinc.com]
CC: steve.micko@jacobs.com; Alicia Forsythe [aforsythe@sitesproject.org]; Thayer, Reed/SAC [Reed.Thayer@jacobs.com]
Subject: RE: American River Flows - Alt 3

Erin,

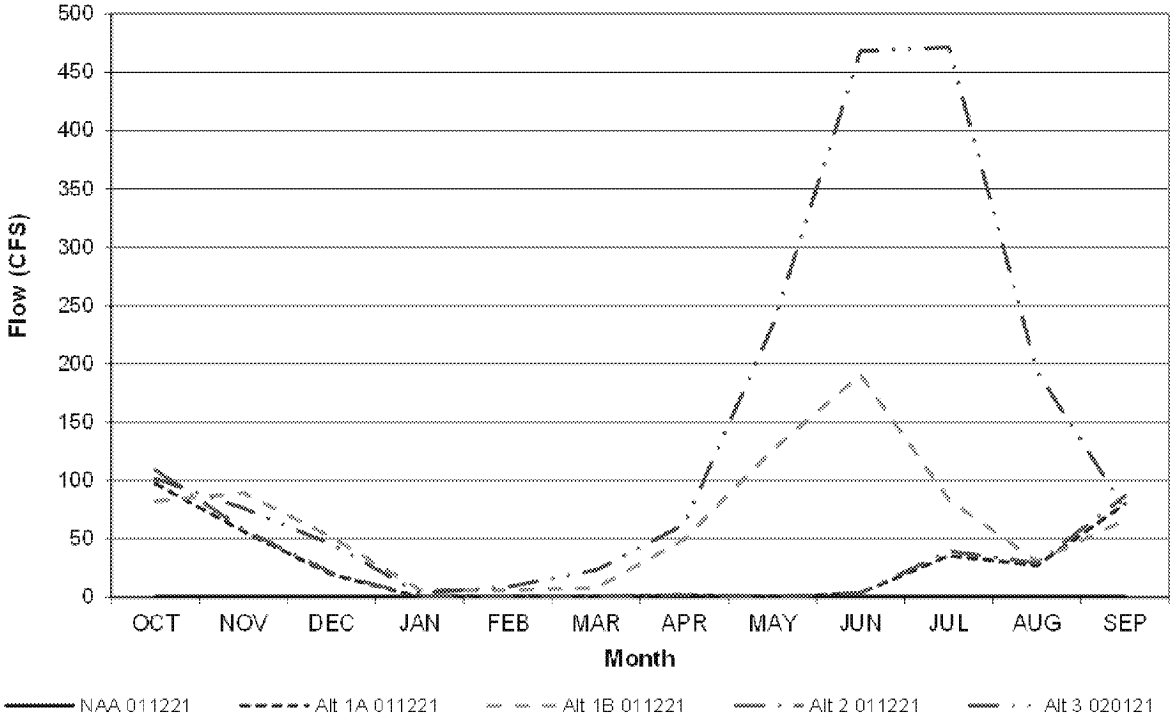
Regarding potential impacts of Sites Project on American River flows and storage:

- There is no Sites Project specific American River objective for flow or storage benefits included in the EIRS/WSIP modeling
- The CalSim II model complies with all existing American River regulations including the FMS in the No Action and Sites Project alternatives
- As Federal investment increases in the Sites Project (1A->1B->3) reoperation of CVP storage in Shasta and Folsom Lakes occurs in response to CVP Op Flex being released from Sites Reservoir
- The releases of CVP Op Flex from Sites Reservoir occur generally in the late Spring and Summer months but are typically greatest in the months of June and July
- Alternative 3 shows that the CVP Op Flex releases in July generally lead to lower releases from Folsom Lake; the reduction of releases in July occurs generally when flows on the American River are greater than 2,500 CFS
- While flows of 2,500 CFS in the month of July are adequate for temperature management, temperature impacts do occur when flows at higher levels are reduced as they are in Alternative 3; the increases in temperature in July occurs generally when temperatures at Watt Ave on the American River are less than 67 degree F
- Folsom Lake carryover storage is significantly increased as a result of the flow changes in July.
- Reclamation has discretion to continue Folsom Lake releases in July at higher levels and/or change their temperature management so as to reduce these impacts
- Alternatively increase Folsom Lake storage could be used for additional benefits on the American river derived from CVP Op Flex releases from Sites

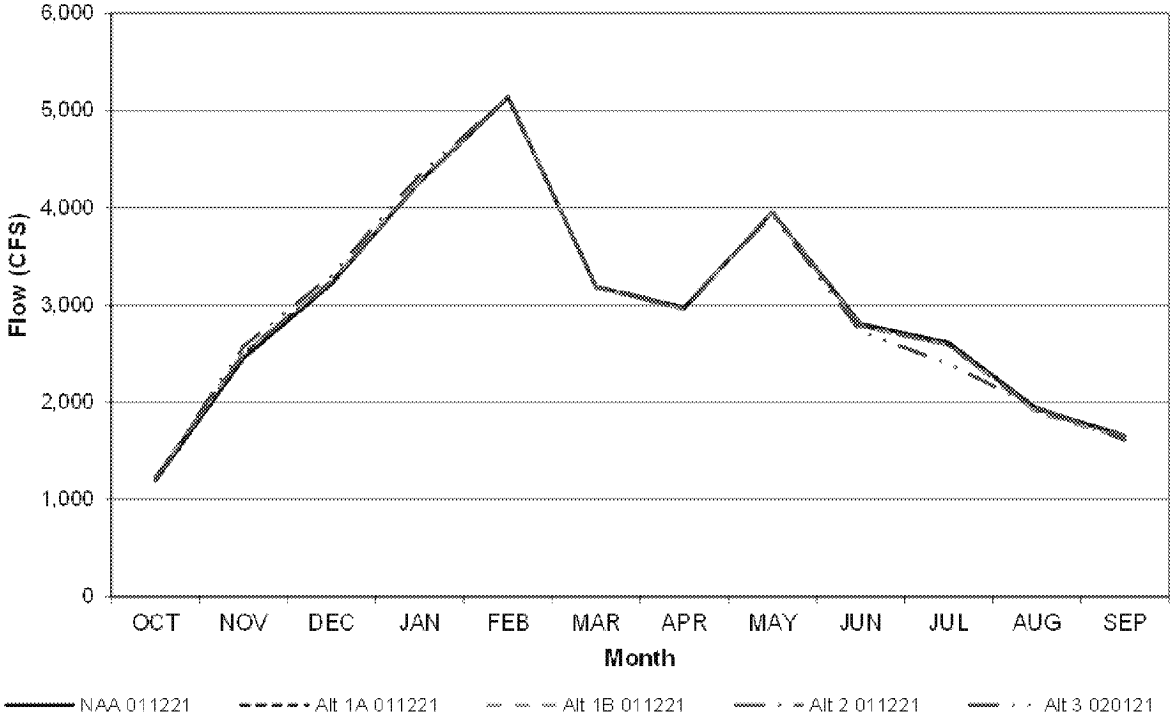
See charts below

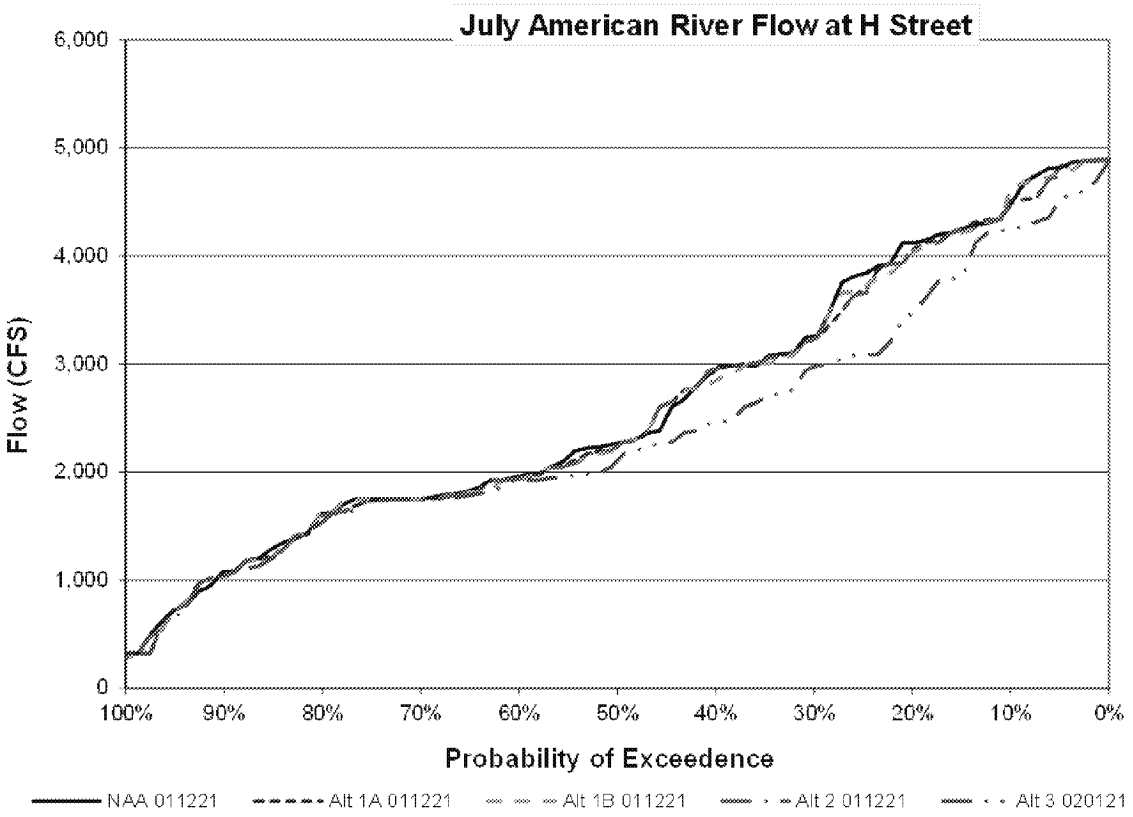
Rob

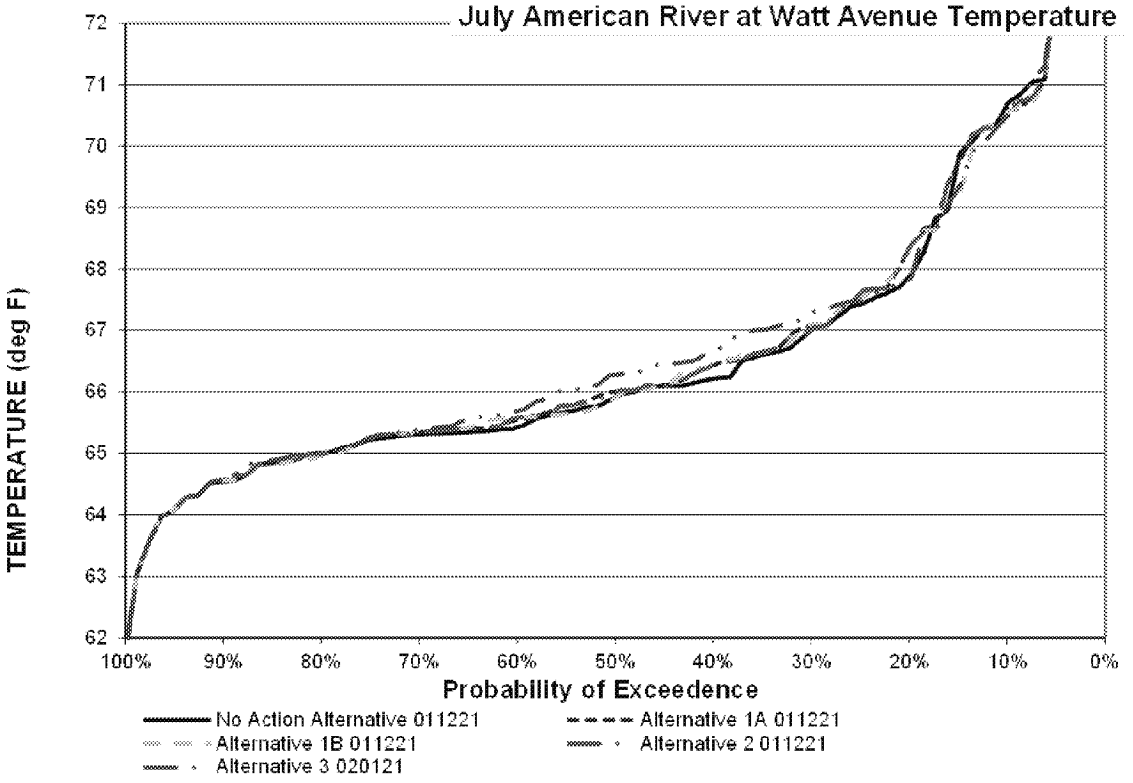
Sites CVP Op Flex Release Averages

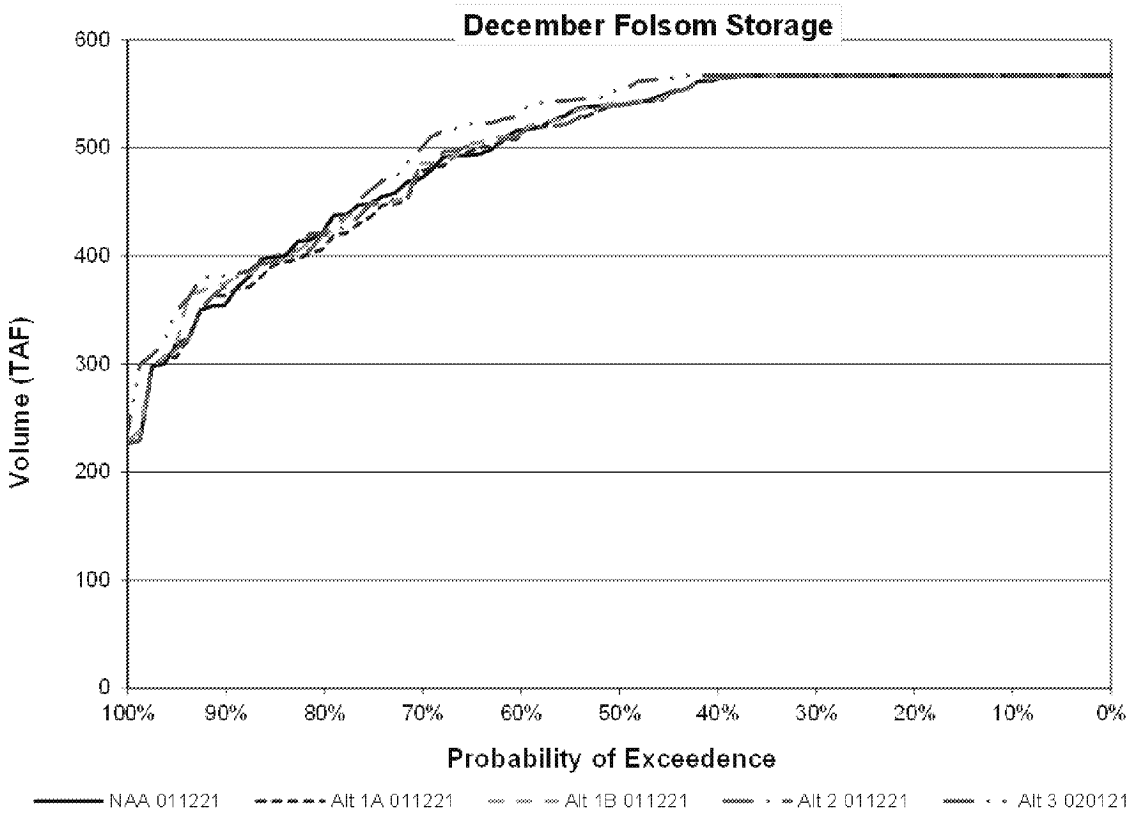


American River Flow at H Street Averages




July American River Flow at H Street
6,000
5,000
4,000
3,000
2,000
1,000
0
Flow (CFS)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Probability of Exceedence
NAA 011221
Alt 1A 011221
Alt 1B 011221
Alt 2 011221
Alt 3 020121


July American River at Watt Avenue Temperature
72
71
70
69
68
67
66
65
64
63
62
TEMPERATURE (deg F)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Probability of Exceedence
No Action Alternative 011221
Alternative 1A 011221
Alternative 1B 011221
Alternative 2 011221
Alternative 3 020121



From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Thursday, March 4, 2021 9:27 AM
To: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>
Cc: Micko, Steve/SAC <Steve.Micko@jacobs.com>; Alicia Forsythe <aforsythe@sitesproject.org>
Subject: [EXTERNAL] American River Flows - Alt 3

Hi Rob,

You mentioned yesterday that we're seeing some decrease in American River flows under Alt 3. Jerry is going to be presenting to RWA and I'm wondering if you can give us a talking point for that result?

Thanks,
Erin

Erin Heydinger, PE, PMP
Asst. Project Manager
Water/Wastewater

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From: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
Sent: 3/11/2021 12:59:13 PM
To: Alicia Forsythe [aforsythe@sitesproject.org]
CC: Spranza, John [john.spranza@hdrinc.com]
Subject: FW: Sites Reservoir: Example Table for Wildlife Chapter

Hi Ali,

Nicole has provided a sample table (scroll all the way to the bottom) that would be developed for each species that shows permanent and temporary habitat effects based on project component (see yellow highlighted column). This will result in a minimum of 20 tables in the EIR/EIS (see email exchange below). While this is useful information, particularly for permitting and if we need to assign mitigation costs based on project components, I don't think we need the per component break down for the EIR/EIS.

Instead, I would like to suggest that ICF try to combine tables for the EIR/EIS and that the 20+ species tables that include impacts by project component be put in an appendix or referenced as on file with the Authority. Let me know what you think – I had meant to bring this up in the meeting I missed on Monday and completely forgot yesterday.

Thanks,

Laurie

From: Williams, Nicole <Nicole.Williams@icf.com>
Sent: Thursday, March 11, 2021 12:22 PM
To: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Cc: Briard, Monique <Monique.Briard@icf.com>
Subject: RE: Sites Reservoir: Example Table for Wildlife Chapter

Hi Laurie – just checking on this. We'd like to start generating tables soon and have an internal deadline for this chapter at the end of this month. Cheers, Nicole

NICOLE L. WILLIAMS
Senior Environmental Planner
ICF
o 916.231.9614
icf.com

From: Williams, Nicole
Sent: Thursday, March 04, 2021 8:37 PM
To: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Cc: Briard, Monique <Monique.Briard@icf.com>
Subject: RE: Sites Reservoir: Example Table for Wildlife Chapter

Hi Laurie – below in bold.

- Is there a reason for breaking it down by project component – does this add to the effects discussion and/or is this to facilitate in the permitting process? **We want to know where the habitat is and align that with project components. Some project components may have no habitat, in which case, we would probably delete the row, if desired.**
- Will there be a corresponding table for land cover by project component or is this intended to cover both? **No. The land cover is identified in the footnotes for each table. See original example.**

- How many species will be addressed in – approximately how many tables would we end up with? It's unknown, but presumably all special status species or special status species groupings that have to be covered by CEQA would likely get a table – see list below. As such, there could be a minimum of **20 tables. Tables a better than numbers in text for a variety of reasons.**

Conservancy Fairy Shrimp, Vernal Pool Fairy Shrimp, and Vernal Pool Tadpole Shrimp
Antioch Dunes Anthicid Beetle
Valley Elderberry Longhorn Beetle
Monarch Butterfly
Crotch Bumble Bee and Western Bumble Bee
Western Spadefoot
California Red-legged Frog
Western Pond Turtle
Giant Gartersnake
Mountain Plover
Northern Harrier
Golden Eagle
Bald Eagle
Swainson's Hawk and White-tailed Kite
Western Yellow-billed Cuckoo, Yellow-breasted Chat, and Yellow Warbler
Burrowing Owl
Bank Swallow
Tri-colored Blackbird
Pallid Bat, Townsend's Big-eared Bat, Silver-haired Bat, Western Red Bat, Hoary Bat, and Long-eared Myotis
American Badger

NICOLE L. WILLIAMS
Senior Environmental Planner
ICF
o 916.231.9614
icf.com

From: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Sent: Thursday, March 04, 2021 3:40 PM
To: Williams, Nicole <Nicole.Williams@icf.com>
Cc: Briard, Monique <Monique.Briard@icf.com>
Subject: RE: Sites Reservoir: Example Table for Wildlife Chapter

Hi Nicole,

I have a couple of questions –

- Is there a reason for breaking it down by project component – does this add to the effects discussion and/or is this to facilitate in the permitting process? We want to know where the habitat is and align that with project components. Some may have no habitat, in which case, we could possibly delete the row.
- Will there be a corresponding table for land cover by project component or is this intended to cover both? No. The land cover is identified in the footnotes.
- How many species will be addressed in – approximately how many tables would we end up with? It's all special status species that have to be covered by CEQA:

Much like the other impact tables, I think Ali is looking for something succinct.

Thanks,

Laurie

From: Williams, Nicole <Nicole.Williams@icf.com>
Sent: Thursday, March 4, 2021 3:03 PM
To: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Cc: Briard, Monique <Monique.Briard@icf.com>
Subject: Sites Reservoir: Example Table for Wildlife Chapter

Hi Laurie,

I wanted to run an example Wildlife table by you (possibly for elevation to Ali) given the comments we've received on various tables throughout the Batch 1A and Batch 1B chapters.

Below is a sample impacts table from the Wildlife chapter. For the most part, we would have one of these tables per species or species group impact discussion. For some species (those that don't have multiple habitat uses like foraging and roosting, or aquatic and upland), the tables would only have two columns (permanent and temporary). If Alt 2 acreages are the exact same, we would just reference the Alt 1/3 table. In other words, we would only have a table for Alt 2 if there was a difference in acreages.

We'd like review and approval by COB Monday if possible.

Table 10-X Alternatives 1 and 3 Acreages of Temporary and Permanent Impacts on Western Red Bat and Hoary Bat in Project Component Areas

Project Components	Permanent Impacts		Temporary Impacts	
	Roosting Habitat[1]	Foraging Habitat[2]	Roosting Habitat	Foraging Habitat
Sacramento River Diversion and Conveyance to Regulating Reservoirs	XX	XX	XX	XX
Regulating Reservoirs and Conveyance Complex	XX	XX	XX	XX
Sites Reservoir Inundation Area	XX	XX	XX	XX
Inlet/Outlet Works	XX	XX	XX	XX
Dams and Dikes	XX	XX	XX	XX
Conveyance to Sacramento River	XX	XX	XX	XX
Roads	XX	XX	XX	XX
Recreation Areas	XX	XX	XX	XX
Alternatives 1 and 3 Total Impacts	XX	XX	XX	XX

[1] Land cover types that provide suitable roosting habitat are blue oak woodland, chamise chaparral, foothill pine, forested wetland, mixed chaparral, oak savanna, orchard, ornamental woodland, and upland riparian.

[2]Land cover types that provide suitable foraging habitat are annual grassland, barren, blue oak woodland, chamise chaparral, ephemeral stream, foothill pine, forested wetland, freshwater marsh, intermittent stream, mixed chaparral, oak savanna, perennial stream, pond, scrub-shrub wetland, seasonal wetland, upland riparian, canal/ditch, developed, disturbed, hayfield [includes alfalfa], managed wetland, orchard, ornamental woodland, reservoir, rice, row crops, ruderal, and vineyard.

NICOLE L. WILLIAMS | Senior Environmental Planner | (o) 916.231.9614 | (m) 530.867.0470 | nicole.williams@icf.com | icf.com
ICF | 980 9th Street Suite 1200 Sacramento CA 95814 |

—

ICF 50 YEARS 1969 - 2019

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Proposed Next Work Period Goals and Objectives

Strategic Plan Goal Area	*Work Period Objective*
1. Affordability	a. Secure a final funding agreement with California Water Commission for the remainder of the MCED.
	b. Execute final operations agreements with federal and state agencies.
	c. Secure federal funding from the WIIN Act and other sources. Receive final federal commitments for project construction and execute Water Storage and Supply Services Contract with Reclamation.
	d. Complete loan applications and related activities to immediately initiate bank financing at the start of the next phase.
	e. Complete and execute Water Supply and Storage Services Contracts with each Local Agency participating in the Project.
	f. Continue to refine affordability analysis based on updated capital and operating cost estimate, cost of capital, cost allocation and benefits analysis.
2. Permittability	a. Complete Final EIR/EIS, Authority adopts the final Project and MMRP and Reclamation executes the Record of Decision.
	b. Complete and obtain all necessary environmental permits and approvals for construction and operations (such as, Biological Opinions, Section 106 Programmatic Agreement, State incidental take permits, Clean Water Act Section 404 and 401 permits).
	c. Receive water right Order and Permit from the SWRCB.
	d. Develop draft and/or final all plans, as appropriate, identified in the EIR/EIS (such as the recreation management plan, traffic management plan, land management plan, operations plan, etc).
	e. Complete and obtain local agency agreements and permits along with any required city or county actions necessary to support the next phase of the Project.
	f. Complete and execute benefit contracts with DWR (flood control and recreation benefits) and CDFW (environmental benefits) for public benefits.
	g. Develop a mitigation acquisition master plan and approach for mitigating the Project effects. Begin biological and cultural resources surveys to refine impacts and mitigation obligations on properties where willing land access can be obtained.
	h. Receive permit to construct from DSOD all jurisdictional dams within the Project.
3. Buildability	a. Complete engineering design to 30% level and provide updated construction and operations cost estimates. Complete further facility designs as needed to get permits and approvals required for WSIP funding.

	b. Evaluate alternative project delivery methods, determine risks for project variances and recommended risk management strategies, finalize construction bid packages, and determine overall Project schedule.
	c. Develop land acquisition master plan, conduct land negotiations and execute land acquisitions with "willing sellers".
	d. Perform geotechnical evaluations of all "willing seller" properties related to long-lead Project facilities.
	e. Continue coordination with local community organizations and agencies to address Project effects during construction and operations.
4. Effectiveness	a. Develop and define the organizational culture, values and management approaches.
	b. Prepare Project controls and processes to ensure continued transparency and efficient operations through detailed design and construction.
	c. Determine the organization structure for the remainder of the Project and create the basic infrastructure to effectuate it at the start of the next work period.

From: Spranza, John [John.Spranza@hdrinc.com]
Sent: 3/12/2021 12:16:53 PM
To: Davis-Fadtke, Kristal@Wildlife [kristal.davis-fadtke@wildlife.ca.gov]
CC: Alicia Forsythe [aforsythe@sitesproject.org]; Torres, Juan@Wildlife [Juan.Torres@wildlife.ca.gov]; Barker, Kelley@Wildlife [Kelley.Barker@wildlife.ca.gov]; Purdy, Colin@Wildlife [Colin.Purdy@wildlife.ca.gov]; Johnson, Matt@Wildlife [Matt.Johnson@wildlife.ca.gov]; Huneycutt, Andrew@Wildlife [Andrew.Huneycutt@Wildlife.ca.gov]; Kundargi, Kenneth@Wildlife [Kenneth.Kundargi@wildlife.ca.gov]; Kilgour, Morgan@Wildlife [Morgan.Kilgour@Wildlife.ca.gov]; Lecky, Jim [jim.lecky@icf.com]; Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
Subject: RE: Sites Preliminary Project Description

Hi Kristal,

We realize there are going to be questions on the bypass criteria and we are going to spend much of the upcoming workshop going over what we proposed, the rational for it and the key effects we are seeing. The "informal" context was more of a contextual statement to let the people we sent this to know that although we do want to hear questions and comments on the preliminary PD, we did not want to give the impression that we would be formally responding to those comments. Rather, we would review and attempt to address them prior to release of the public draft, and if need be, reach out to the individual commenter(s) to better understand the comment/question.

A general timeline for receiving comments or questions would be mid-April, but if you want to send them sooner that would be great.

Please let me know if you have any additional questions.
Have a great weekend.

John

John Spranza

D 916.679.8858 M 818.640.2487

From: Davis-Fadtke, Kristal@Wildlife <Kristal.Davis-Fadtke@wildlife.ca.gov>
Sent: Wednesday, March 10, 2021 2:58 PM
To: Spranza, John <John.Spranza@hdrinc.com>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>; Torres, Juan@Wildlife <Juan.Torres@wildlife.ca.gov>; Barker, Kelley@Wildlife <Kelley.Barker@wildlife.ca.gov>; Purdy, Colin@Wildlife <Colin.Purdy@wildlife.ca.gov>; Johnson, Matt@Wildlife <Matt.Johnson@wildlife.ca.gov>; Huneycutt, Andrew@Wildlife <Andrew.Huneycutt@Wildlife.ca.gov>; Kundargi, Kenneth@Wildlife <Kenneth.Kundargi@wildlife.ca.gov>; Kilgour, Morgan@Wildlife <Morgan.Kilgour@Wildlife.ca.gov>
Subject: RE: Sites Preliminary Project Description

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi John,

I know you are asking for informal questions/concerns and I want to be clear on your expectations. My team has reviewed the preliminary project description and the concerns the Department raised in our comments on the 2017 DEIR/EIS regarding bypass flow criteria still apply to this project description. We are still reviewing the Calsim model runs

and I have asked Rob Sherrick to reach out to Erin directly with his technical questions. I think the upcoming Aquatic Team meeting will be a good forum to dive into a discussion on operational criteria.

If you would like a broader review of the facilities described at this early juncture, please let us know what the deadline would be for that. It is larger effort on our part to request review from our broader team that will be evaluating components of the Sites Project.

Thank you,

Kristal

From: Spranza, John <John.Spranza@hdrinc.com>
Sent: Monday, March 8, 2021 1:47 PM
To: evan.sawyer <evan.sawyer@noaa.gov>; Cathy Marcinkevage - NOAA Federal <cathy.marcinkevage@noaa.gov>; cyril.michel@noaa.gov; Kundargi, Kenneth@Wildlife <Kenneth.Kundargi@wildlife.ca.gov>; Davis-Fadtke, Kristal@Wildlife <Kristal.Davis-Fadtke@wildlife.ca.gov>; La Luz, Felipe@Wildlife <Felipe.LaLuz@wildlife.ca.gov>; Williams, Jonathan@Wildlife <Jonathan.Williams@wildlife.ca.gov>; Kearns, Zachary@Wildlife <Zachary.Kearns@Wildlife.ca.gov>; Grover, Joshua@Wildlife <Joshua.Grover@wildlife.ca.gov>; Sherrick, Robert@Wildlife <Robert.Sherrick@Wildlife.ca.gov>; Johnson, Matt@Wildlife <Matt.Johnson@wildlife.ca.gov>; steven_schoenberg@fws.gov; Torres, Juan@Wildlife <Juan.Torres@wildlife.ca.gov>; Boyd, Ian@Wildlife <Ian.Boyd@Wildlife.ca.gov>; Huneycutt, Andrew@Wildlife <Andrew.Huneycutt@Wildlife.ca.gov>
Cc: aforsythe (aforsythe@sitesproject.org) <aforsythe@sitesproject.org>; Monique Briard (monique.briard@icf.com) <monique.briard@icf.com>; Dekar, Melissa D <mdekar@usbr.gov>; Hendrick, Mike <mike.hendrick@icf.com>; Cordova, Daniel A <dcordova@usbr.gov>; Davis, Ryan A <rdavis@usbr.gov>; Berryman, Ellen (Ellen.Berryman@icf.com) <Ellen.Berryman@icf.com>; Hassrick, Jason (Jason.Hassrick@icf.com) <Jason.Hassrick@icf.com>
Subject: Sites Preliminary Project Description

WARNING: This email originated from outside of CDFW and should be treated with extra caution.

Hello from the Site's Team,

In case you had not heard already, Chapter 2, *Preliminary Project Description* for the REIR/SEIS is available for early review on the Authority's website (https://sitesproject.org/resources/information-materials/). If you have any initial informal questions/concerns please send them over to us, the formal comment period will open when the entirety of the REIR/SEIS is released later this summer.

I've also attached it for ease of review.

Thanks,
John

John Spranza, MS, CCN
Senior Ecologist / Regulatory Specialist

HDR
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Sacramento, CA 95833
D 916.679.8858 M 818.640.2487
john.spranza@hdrinc.com

hdrinc.com/follow-us
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From: jimb@aqualliance.net [jimb@aqualliance.net]
Sent: 3/12/2021 1:01:37 PM
To: Spranza, John [john.spranza@hdrinc.com]
CC: tstokely@att.net; dobegi@nrdc.org; reis@bayecotarium.org; rzwillinger@defenders.org; DLucero@ButteCounty.net [DLucero@buttecounty.net]; rebeccadawnwu@yahoo.com; chicojerry@yahoo.com; steve.micko@jacobs.com; Huber, Anne [Anne.Huber@icf.com]; Williams, Nicole (Nicole.Williams@icf.com) [Nicole.Williams@icf.com]; Alicia Forsythe [aforsythe@sitesproject.org]; Erecius, Lesa [Lesa.Erecius@icf.com]; Davis, Ryan A [rdavis@usbr.gov]; Dekar, Melissa D [mdekar@usbr.gov]
Subject: Re: Sites Project - Water Quality Small Group Discussion

John,
There are plenty of heavy metal/salt issues in the source water and the reservoir footprint to discuss during an initial meeting. I recommend that Sites proponents open the door to discussing these issues that have been brought up repeatedly during the past decades of planning and public meetings. We can discuss water temperature issues in subsequent meetings.
Jim Brobeck, Water Policy Analyst, AquAlliance.

On 2021-03-12 13:26, Spranza, John wrote:
> Unfortunately, we will need to postpone our initial meeting as we are
> waiting on some reservoir temperature modeling results. I will be
> circling back with a new doodle poll next week.
>
> John Spranza
>
> D 916.679.8858 M 818.640.2487
>
> From: Spranza, John
> Sent: Thursday, March 4, 2021 3:29 PM
> To: tstokely@att.net; jimb@aqualliance.net; dobegi@nrdc.org;
> reis@bayecotarium.org; rzwillinger@defenders.org;
> DLucero@ButteCounty.net; rebeccadawnwu@yahoo.com; chicojerry@yahoo.com
> Cc: Micko, Steve/SAC (Steve.Micko@jacobs.com)
> <Steve.Micko@jacobs.com>; Huber, Anne <Anne.Huber@icf.com>; Williams,
> Nicole (Nicole.Williams@icf.com) <Nicole.Williams@icf.com>; aforsythe
> (aforsythe@sitesproject.org) <aforsythe@sitesproject.org>; Erecius,
> Lesa <Lesa.Erecius@icf.com>
> Subject: Sites Project - Water Quality Small Group Discussion
>
> Hello - You have all expressed an interest in learning more about how
> the Sites Project may affect water quality. We'd like to host a small
> group meeting to share results from our water quality modeling and
> talk about how we are approaching the key water quality issues in our
> EIR/EIS and get your input and feedback.
>
> Below is a doodle poll to schedule this meeting. I will use the
> results from the Doodle Poll as of close of business Monday March 8th
> to schedule the meeting, so please complete the poll as soon as
> possible.
>
> Thank you.
>
> John
>
> https://doodle.com/poll/xiqmartb6szg5y3d?utm_source=poll&utm_medium=link
>
>
> John Spranza, MS, CCN
>
> Sites Project Permitting and Agreements Integration Lead
> Senior Ecologist / Regulatory Specialist
>
> HDR
>
> 2379 Gateway Oaks Drive, Suite 200
> Sacramento, CA 95833
> D 916.679.8858 M 818.640.2487
> john.spranza@hdrinc.com
>
> hdrinc.com/follow-us [1]

>
> hdrinc.com/follow-us [1]
>
>
>
> Links:
> ------
> [1] http://hdrinc.com/follow-us

From: Regina Chichizola [regina@californiasalmon.org]
Sent: 3/12/2021 4:57:27 PM
To: Alicia Forsythe [aforsythe@sitesproject.org]
CC: Ron Stork [rstork@friendsoftheriver.org]; Tom Stokely [tgstoked@gmail.com]; Caleen Sisk [caleenwintu@gmail.com]; Morning Star Gali [Mstargali@gmail.com]; vivian helliwell [vhelliwell@mcn.org]; Conroy, Mike [mike@ifrfish.org]
Subject: Why was I not notified of water quality and water rights discussion for Sites Reservoir?

Hello Alicia,

I am wondering if there is a reason that I was not notified of any of the small group discussions related to Sites Reservoir?
I have commented on every part of the process for the Sites Reservoir in writing and in person and have acted as a conduit for Tribes and fishermen for Sites related information and meetings.

That there were water quality and water rights meetings that I was not invited to or notified of makes me very frustrated.

Thank you,
Regina Chichizolas

From: Spranza, John [John.Spranza@hdrinc.com]
Sent: 3/14/2021 9:00:40 AM
To: Alicia Forsythe [aforsythe@sitesproject.org]
Subject: FW: Sites Project - Water Quality Small Group Discussion

For your records.

John Spranza

D 916.679.8858 M 818.640.2487

-----Original Message-----
From: Spranza, John
Sent: Friday, March 12, 2021 11:48 AM
To: jimb@aqualliance.net
Subject: RE: Sites Project - Water Quality Small Group Discussion

Jim,
I completely understand and I should have communicated out to the group that I am trying to determine if the temperature modeling for the reservoir is going to be available to review and analyze prior to our workgroup. I will know this today and send an update.

I am sorry.
John

John Spranza

D 916.679.8858 M 818.640.2487

-----Original Message-----
From: jimb@aqualliance.net <jimb@aqualliance.net>
Sent: Friday, March 12, 2021 9:18 AM
To: Spranza, John <John.Spranza@hdrinc.com>
Subject: Re: Sites Project - Water Quality Small Group Discussion

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Mr. Spranza,
I am looking forward to our conversation on key water quality issues. As other engagements are emerging it is important to schedule the meeting so that we can clear the other dates in our busy schedules. As the poll was closed on March 8 I imagine you have picked one of the most popular time/dates. Please let us know at your earliest convenience.
Jim Brobeck

On 2021-03-04 16:29, Spranza, John wrote:
> Hello - You have all expressed an interest in learning more about how
> the Sites Project may affect water quality. We'd like to host a small
> group meeting to share results from our water quality modeling and
> talk about how we are approaching the key water quality issues in our
> EIR/EIS and get your input and feedback.
>
> Below is a doodle poll to schedule this meeting. I will use the
> results from the Doodle Poll as of close of business Monday March 8th
> to schedule the meeting, so please complete the poll as soon as
> possible.
>
> Thank you.
>
> John
>
> https://nam12.safelinks.protection.outlook.com/?url=https%3A%2F%2Fdood
> le.com%2Fpoll%2Fxiqmartb6szg5y3d%3Futm_source%3Dpoll%26utm_medium%3Dli
> nk&data=04%7C01%7Cjohn.spranza%40hdrinc.com%7C399adbcef2ac4418a489
> 08d8e57ac749%7C3667e201cbdc48b39b425d2d3f16e2a9%7C0%7C1%7C637511662781
> 165975%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJ
> BTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000&sdata=Z3QG34CqLs2jzpUn9%2FdELO5
> Ab3ZyacAHGX8Meoc74tg%3D&reserved=0
>

>
> John Spranza, MS, CCN
>
> Sites Project Permitting and Agreements Integration Lead Senior
> Ecologist / Regulatory Specialist
>
> HDR
>
> 2379 Gateway Oaks Drive, Suite 200
> Sacramento, CA 95833
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> john.spranza@hdrinc.com
>
> hdrinc.com/follow-us [1]
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>
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> Links:
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> [1]
> https://nam12.safelinks.protection.outlook.com/?url=http%3A%2F%2Fhdrin
> c.com%2Ffollow-us&data=04%7C01%7Cjohn.spranza%40hdrinc.com%7C399ad
> bcef2ac4418a48908d8e57ac749%7C3667e201cbdc48b39b425d2d3f16e2a9%7C0%7C1
> %7C637511662781165975%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQ
> IjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000&sdata=NuWs5M0SUF
> bmcCXIl9GR23jLTNn6Nnb6IrpaedSsOCE%3D&reserved=0

From: Ron Stork [RStork@friendsoftheriver.org]
Sent: 3/15/2021 9:18:06 AM
To: Alicia Forsythe [aforsythe@sitesproject.org]; Regina Chichizola [regina@californiasalmon.org]
CC: Tom Stokely [tgstoked@gmail.com]; Caleen Sisk [caleenwintu@gmail.com]; Morning Star Gali [Mstargali@gmail.com]; vivian helliwell [vhelliwell@mcn.org]; Conroy, Mike [mike@ifrfish.org]
Subject: RE: Why was I not notified of water quality and water rights discussion for Sites Reservoir?

Alicia, color me interested — especially in the water rights and Prop 1 discussions. As you may remember, I asked for them back before the first of the year. I know others that are interested in these two discussions, so a redo would be welcomed.

FRIENDS OF
THE RIVER

Ronald Stork
Senior Policy Staff
Friends of the River
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Sacramento CA 95811
916) 442-3155 x 220
rstork@friendsoftheriver.org

www.friendsoftheriver.org

http://www.friendsoftheriver.org/news-events/subscribe-to-for-river-advocate/

From: Alicia Forsythe [mailto:aforsythe@sitesproject.org]
Sent: Friday, March 12, 2021 6:53 PM
To: Regina Chichizola <regina@californiasalmon.org>
Cc: Ron Stork <RStork@friendsoftheriver.org>; Tom Stokely <tgstoked@gmail.com>; Caleen Sisk <caleenwintu@gmail.com>; Morning Star Gali <Mstargali@gmail.com>; vivian helliwell <vhelliwell@mcn.org>; Conroy, Mike <mike@ifrfish.org>
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Hi Regina – I sent a few emails to the whole NGO list identifying that I was only including those that responded to me or responded to the survey, on the invites for the small groups. I double checked to make sure that you didn't accidentally fall off the list and you were on these emails. I'll forward these onto you. I did this as I didn't want to flood everyone on the NGO list with meetings invites and emails that they weren't interested in.

I am happy to include you on the groups moving forward. The following groups will have meetings coming up: Fisheries Protections and Effects; Terrestrial Species Effects; Trinity River Effects; and Water Quality. I assume you will want to be on all of the groups, but let me know if that's not the case.

We have had 2 small group discussions to date - water right approach and Proposition 1 benefits. I've attached the agendas and presentations from both of these meetings. I am happy to schedule calls with you and whomever you'd

like to attend to go over these topics. Please let me know if you'd like to schedule these. I would suggest a hour and a half for each topic, but am flexible and I can shorten if folks would prefer.

I hope you're doing well and have a great weekend. Let me know if you'd like to be in all of the upcoming groups and if you would like to schedule calls on water right approach and Proposition 1 benefits.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Regina Chichizola <regina@californiasalmon.org>
Sent: Friday, March 12, 2021 4:57 PM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Cc: Ron Stork <rstork@friendsoftheriver.org>; Tom Stokely <tgstoked@gmail.com>; Caleen Sisk <caleenwintu@gmail.com>; Morning Star Gali <Mstargali@gmail.com>; vivian helliwell <vhelliwell@mcn.org>; Conroy, Mike <mike@ifrfish.org>
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Hello Alicia,

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That there were water quality and water rights meetings that I was not invited to or notified of makes me very frustrated.

Thank you,
Regina Chichizolas

From: Regina Chichizola [regina@californiasalmon.org]
Sent: 3/15/2021 9:42:19 AM
To: Ron Stork [RStork@friendsoftheriver.org]
CC: Alicia Forsythe [aforsythe@sitesproject.org]; Tom Stokely [tgstoked@gmail.com]; Caleen Sisk [caleenwintu@gmail.com]; Morning Star Gali [Mstargali@gmail.com]; vivian helliwell [vhelliwell@mcn.org]; Conroy, Mike [mike@ifrfish.org]
Subject: Re: Why was I not notified of water quality and water rights discussion for Sites Reservoir?

Flag: Follow up

I agree with Ron. Both of us have commented and attended meetings on Sites at every opportunity. I have even driven seven hours to attend open houses because of the lack of North State hearings.

That we did not respond to an email that was sent during a very busy time during a pandemic is not a showing of disinterest, especially after years of asking to be included.

I expressed interest at the last zoom meeting in December in the Water Rights and Water Quality discussions and at numerous meetings before that.

Please make sure I am on any fisheries, water quality, Trinity, or water rights discussion for the future.

Thanks,
Regina

On Mon, Mar 15, 2021 at 9:18 AM Ron Stork <RStork@friendsoftheriver.org> wrote:

> Alicia, color me interested — especially in the water rights and Prop 1 discussions. As you may remember, I asked for them back before the first of the year. I know others that are interested in these two discussions, so a redo would be welcomed.

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Cc: Ron Stork <RStork@friendsoftheriver.org>; Tom Stokely <tgstoked@gmail.com>; Caleen Sisk <caleenwintu@gmail.com>; Morning Star Gali <Mstargali@gmail.com>; vivian helliwell <vhelliwell@mcn.org>; Conroy, Mike <mike@ifrfish.org>
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Thank you,

Regina Chichizolas

From: Kevin Spesert [kspesert@sitesproject.org]
Sent: 3/15/2021 10:41:45 AM
To: Laverne Bill [LBill@yochadehe-nsn.gov]
CC: Alicia Forsythe [aforsythe@sitesproject.org]; Janis Offermann [janis@horizonh2o.com]
Subject: Sites Preliminary Project Description
Attachments: Sites_Preliminary Project Description_20210219.pdf

Hi Lavern..

It was great chatting with you last week…per our discussion attached is the Preliminary Project Description that we discussed…as we discussed, the Authority is circulating this document now to facilitate early coordination on initial approaches currently under consideration. While we are not soliciting formal comments in the CEQA sense and will not be providing formal responses to any comments received, we do appreciate your input and feedback. If you have any comments, questions, or concerns on the project description, please feel free to reach out to me.

I have also included Ali Forsythe on this email…Ali is the Environmental Planning and Permitting Manger for the Sites Project Authority…so if you have any technical questions concerning the document please feel free to reach out Ali..

Thanks!

Kevin

Kevin Spesert
External Affairs Manager
Sites Project Authority
Phone: 530.632.4071
Email: kspesert@sitesproject.org
Web: www.SitesProject.org
P.O. Box 517
122 Old Hwy 99W
Maxwell, CA 95955

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Sites Reservoir Project
Preliminary Project Description and Alternatives

February 2021

Draft_0008365

This Preliminary Project Description has been prepared as a preliminary draft document in support of preparing a Revised Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS) for the Sites Reservoir Project (Project). The purpose for circulating this document at this time is to facilitate early coordination on initial approaches currently under consideration by the Authority. Therefore, the content of this document will be subject to continued discussions and modifications, and it may not be included in its entirety in the RDEIR/SDEIS. The Authority is not soliciting comments on this Preliminary Project Description and formal responses will not be provided for any comments received. As required by CEQA and NEPA, a public review and comment period will be provided upon publication of the RDEIR/SDEIS, which is currently anticipated to be released in late summer 2021.

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Chapter 2 Project Description and Alternatives

This chapter describes the proposed Sites Reservoir Project (Project) and alternatives analyzed in this Recirculated Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS). The alternatives were developed in light of the California Environmental Quality Act (CEQA) objectives and the National Environmental Policy Act (NEPA) purpose and need as described in Chapter 1, Introduction. This chapter is supported by Appendices 2A, 2B, 2C, and 2D which provide additional detail on the alternatives screening, construction means and methods and best management practices (BMPs).

2.1 Alternatives Development Process

The range of alternatives evaluated in this RDEIR/SDEIS is the product of an extensive screening process, that has included public input and involvement, occurring over several decades and involving multiple distinct water resource planning efforts. Those planning efforts considered a wide variety of factors, including feasibility and opportunities for reducing significant impacts while meeting applicable program and project objectives and purpose and need. See Appendix 2A, *Alternatives Screening and Evaluation*, and Appendix 2B, *Additional Alternatives Screening and Evaluation*, for information on alternatives considered but eliminated and the alternatives that are evaluated in this document.

2.1.1 Evaluated Prior to 2019

Beginning in 1995, the CALFED Bay-Delta Program (CALFED) initiated the evaluation of expanded surface water storage in the Sacramento and San Joaquin Valleys as part of a long-term comprehensive plan to restore the ecological health and improve water management to protect beneficial uses in the Sacramento–San Joaquin Delta (Delta) and the Delta watershed. During preparation of the CALFED Environmental Impact Report/Environmental Impact Statement (EIR/EIS), the CALFED Program initially identified 52 potential surface storage locations and retained 12 reservoir locations statewide for further study. The screening criteria applied indicated a preference for offstream over onstream surface water storage to avoid redirected impacts on aquatic species in the primary tributaries of the Delta.

Following the CALFED Programmatic Record of Decision (CALFED ROD) in 2000, the California Department of Water Resources (DWR) and the Bureau of Reclamation (Reclamation) continued to evaluate potential locations for a reservoir on the western side of the Sacramento Valley as part of the Surface Water Storage Investigation (Reclamation and DWR, 2006). The objectives of this effort were to formulate a project that would enhance water management flexibility in the Sacramento Valley, increase the reliability of water supplies in California, and provide storage and operational benefits to enhance water supply reliability and improve water quality and ecosystems. The results of the analysis identified four potential alternatives: Red Bank (Dippingvat and Schoenfield Reservoirs), Newville Reservoir, Colusa Reservoir, and Sites Reservoir. These four reservoir alternatives were evaluated against

additional screening criteria. This secondary screening conducted after the CALFED ROD found the Sites Reservoir location most able to meet the goals and objectives of the Surface Water Storage Investigation, while minimizing environmental impacts and providing the greatest potential benefits.

The Surface Water Storage Investigation also evaluated a variety of water sources (and associated conveyance options) including diversions from the Colusa Basin Drain (CBD), Sacramento River, and local tributaries. The evaluation process culminated in selection of the existing Tehama-Colusa Canal (TC Canal) and GCID diversion and conveyance facilities in addition to a new pipeline from the Sacramento River near the Moulton Weir (the Delevan Pipeline). These facilities were determined to be the most reliable and capable of meeting the goals and objectives of the study effort conducted after the CALFED ROD.

The 2017 Public Draft Environmental Impact Report/Environmental Impact Statement (2017 Draft EIR/EIS) for the Project evaluated four surface water reservoir size and conveyance options, and another alternative that would not include proposed power generation at the Delevan release structure. All alternatives included a Sites Reservoir to be filled using existing Sacramento River diversion facilities and the new Delevan Pumping Plant on the Sacramento River to allow for diversion and release of flows to the Sacramento River. Associated facilities for all alternatives were similar but varied in location and size. Appendix 2B, Additional Alternatives Screening and Evaluation, provides a more detailed table of differences between the Action Alternatives in this RDEIR/SDEIS and those in the 2017 Draft EIR/EIS.

In August 2017, the Authority submitted a Water Storage Investment Program (WSIP) application to the California Water Commission (CWC) to determine the Project's eligibility for funding under Proposition 1. The WSIP application evaluated the technical, economic, financial, and environmental feasibility of the Project. The CWC made nine specific determinations, including determining that the Project provides a net ecosystem improvement, provides measurable improvements to the Delta ecosystem, and that the Project would advance the long-term objectives of restoring the ecological health and water management beneficial uses of the Delta. The CWC conditionally approved $816 million in funding for the Project (California Water Commission undated).

2.1.2 Value Planning Process and Alternatives Post-2019

In October 2019, the Authority pursued a value planning process to determine if further refinements to the Project were warranted. Between October 2019 and April 2020, the Authority considered previous input from state and federal agencies, non-governmental organizations, elected officials, landowners, and local communities, and decided to "right size" the Project to better meet the needs of Sites Storage Partners[1], the statewide water supply and the environment. Multiple alternatives were considered during the value planning process that took into

[1] The governmental agencies, water organizations and others who have funded and received a storage allocation in Sites Reservoir and the resulting water supply or water supply related environmental benefits from the Project. Storage Partners could include local agencies, the State of California, and the Federal Government.

consideration the public and agency comments received on the 2017 Draft EIR/EIS (Sites Project Authority 2020). The primary objectives of this process were to:

- Improve water supply and water supply reliability;
- Provide Incremental Level 4 water supply for refuges;
- Improve the survival of anadromous fish; and
- Enhance the Delta ecosystem.

The secondary objectives of the value planning process were to provide opportunities for flood damage reduction and recreation.

Value planning alternatives combined different types and sizes of diversion, release, reservoir, road, and bridge facilities. The Authority analyzed operational, environmental, and permitting considerations for different alternatives. For example, operational considerations included the ability of several reservoir sizes and conveyance capacities to meet participant subscriptions and participation by the State of California through WSIP. Environmental considerations included reducing the footprints of facilities or eliminating facilities to avoid or minimize impacts and reducing the amount of water diverted to storage. In addition, the Authority evaluated the costs of facilities proposed for each alternative to understand whether each alternative achieved a reasonable cost-per-acre-foot that the Sites Storage Partners could support.

The value planning process identified three recommended alternatives. Alternative Value Planning (VP) 5 involved a 1.3 million-acre-feet (MAF) reservoir and used an existing regulating reservoir (Funks Reservoir) and a new regulating reservoir (the Terminal Regulating Reservoir [TRR]) to fill Sites Reservoir with releases (1,000 cubic feet per second [cfs]) from the southern end of the TC Canal through a pipeline that went to the CBD. Alternative VP 6 was similar to Alternative VP 5, but the releases from the southern end of the TC Canal were conveyed through a pipeline that extended to the Sacramento River. Alternative VP 7 was similar to Alternative VP 5 but included a 1.5-MAF reservoir. The value planning process culminated in a Value Planning Report that was adopted by the Authority in April 2020 (Sites Project Authority 2020). The alternatives in this RDEIR/SDEIS are based on VP 5, VP 6, and VP 7 in the Value Planning Report.

2.2 CEQA and NEPA Requirements

2.2.1 CEQA Requirements

The Authority, as the State lead agency, is responsible for the development of alternatives that meet CEQA requirements. Section 15126.6 of the State CEQA Guidelines requires that:

- An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of

potentially feasible alternatives that will foster informed decision-making and public participation. An EIR is not required to consider alternatives which are infeasible.

- The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects.
- The specific alternative of "no project" shall also be evaluated along with its impact.
- The EIR should briefly discuss the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination.... Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are:
    - Failure to meet most of the basic project objectives.
    - Infeasibility.
    - Inability to avoid significant environmental impacts.

This RDEIR/SDEIS is prepared in accordance with both NEPA and CEQA, with the Action Alternatives analyzed at an equal level of analysis (consistent with NEPA standards).

2.2.2 NEPA Requirements

Reclamation, as the Federal lead agency, is responsible for the development of alternatives that meet NEPA requirements. For the Project alternatives, including the proposed action, NEPA requires that Federal government agencies shall (40 CFR Section 1502.14):

(a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.

(b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.

(c) Include reasonable alternatives not within the jurisdiction of the lead agency.

(d) Include the alternative of no action.

(e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.

(f) Include appropriate mitigation measures not already included in the proposed action or alternatives.

2.3 Overview of Alternatives

The Project would utilize existing infrastructure to divert unregulated and unappropriated flow from the Sacramento River at Red Bluff and Hamilton City and convey water to a new off-

stream reservoir west of Maxwell, California. New and existing facilities would move water into and out of the reservoir, with ultimate release back to the Sacramento River system via existing canals and a new pipeline located near Dunnigan. Construction of the reservoir would necessitate construction of a bridge or bypass road to connect Maxwell with the community of Lodoga. Additional components would include future development of new recreation facilities at the reservoir. This RDEIR/SDEIS presents the No Project Alternative and three Action Alternatives to implement the Project. Project alternatives include:

- No Project Alternative
- Alternative 1, 1.5 MAF reservoir, bridge, release to the CBD, and a range of Reclamation investment up to 7 percent of the Project costs
- Alternative 2, 1.3 MAF reservoir, South Road, partial release to the CBD and Sacramento River, and no Reclamation investment
- Alternative 3, 1.5 MAF reservoir, bridge, release to the CBD, and Reclamation investment up to 25 percent of the Project costs

The Action Alternatives analyzed in this RDEIR/SDEIS are generally based on the results of the value planning process. Alternative 1 is based on Alternative VP 7, and Alternative 2 is based on Alternatives VP 5 and VP 6. Alternative 3 is generally based on VP 7 with increased federal participation of up to 25 percent of the Project costs. Project facilities for the Action Alternatives are shown in Figure 2-1, Figure 2-2, Figure 2-3, and Figure 2-4. Table 2-1 provides a summary of the Action Alternatives. Alternative 1 is the Authority's proposed Project under CEQA.

Table 2-1. Summary of Action Alternatives

Facilities/Operations	Alternative 1	Alternative 2	Alternative 3
Diversion/Reservoir Infrastructure Details			
Reservoir Size	1.5 MAF	1.3 MAF	Same as Alternative 1
Dams [Scaled to the size of the reservoir]	Golden Gate and Sites Dams; 7 saddle dams; 2 saddle dikes	Golden Gate and Sites Dams; 4 saddle dams; 3 saddle dikes	Same as Alternative 1
Spillway	One spillway on Saddle Dam 8B	Similar to Alternative 1	Same as Alternative 1
Funks Reservoir (existing)	New Funks Pump Generating Plant (PGP) and Funks pipelines	Similar to Alternative 1	Same as Alternative 1
Terminal Regulating Reservoir (TRR)	Construction of TRR PGP and TRR pipelines	Same as Alternative 1	Same as Alternative 1
Hydropower	Incidental power generation up to 40 megawatts each at Funks PGP and TRR PGP	Same as Alternative 1	Same as Alternative 1
Diversion(s)	Diversion from Sacramento River into	Same as Alternative 1	Same as Alternative 1

Facilities/Operations	Alternative 1	Alternative 2	Alternative 3
	existing TC Canal at Red Bluff and the existing GCID Main Canal at Hamilton City		
Emergency Release Flow	Releases into Funks Creek and Stone Corral Creek via Inlet/Outlet Works, Sites Dam; structures in Saddle Dams 3 and 5 to release north to Hunters Creek watershed; Release from spillway on Saddle Dam 8B north to Hunters Creek watershed	Similar releases via Inlet/Outlet Works, Sites Dam, and spillway on Saddle Dam 8B; No emergency release structures on Saddle Dams 3 and 5	Same as Alternative 1
Recreation			
Multiple Facilities Consistent with the Authority's WSIP Application	Two primary areas with infrastructure: 1. Peninsula Hills Recreation Area 2. Stone Corral Creek Recreation Area An additional day-use boat ramp	Same as Alternative 1	Same as Alternative 1
Transportation/Circulation			
Provide Route to West Side of Reservoir	Permanent bridge crossing the reservoir and relocation of a portion of Huffmaster Road with gravel road to residents at the south end of the reservoir	Paved roadway including the relocated segment of Huffmaster Road and a new South Road on the west side of the reservoir	Same as Alternative 1
Operations			
Diversion Criteria	Bypass flows; Pulse flow protection measure to be applied	Same as Alternative 1	Same as Alternative 1
Reclamation Involvement	1. Funding Partner (up to 7% investment) with operational exchanges; or, 2. Operational Exchanges Only	Operational Exchanges Only a. Within Year Exchanges b. Real-time Exchanges	Funding Partner, up to 25% investment, and Operational Exchanges: a. Within Year Exchanges b. Real-time Exchanges

Facilities/Operations	Alternative 1	Alternative 2	Alternative 3
	a. Within Year Exchanges b. Real-time Exchanges		
Department of Water Resources (DWR) Involvement	Operational Exchanges with Oroville and use of SWP facilities South-of-Delta	Same as Alternative 1 (volumes may vary, however)	Similar to Alternative 1 (volumes may vary, however)
Releases into Funks Creek and Stone Corral Creek	Specific flow criteria to maintain flows to protect downstream water right holders and ecological function	Same as Alternative 1	Same as Alternative 1
Conveyance Dunnigan Release	Release 1,000 cfs into new pipeline to CBD	Release into new pipeline to Sacramento River, partial release to the CBD	Same as Alternative 1

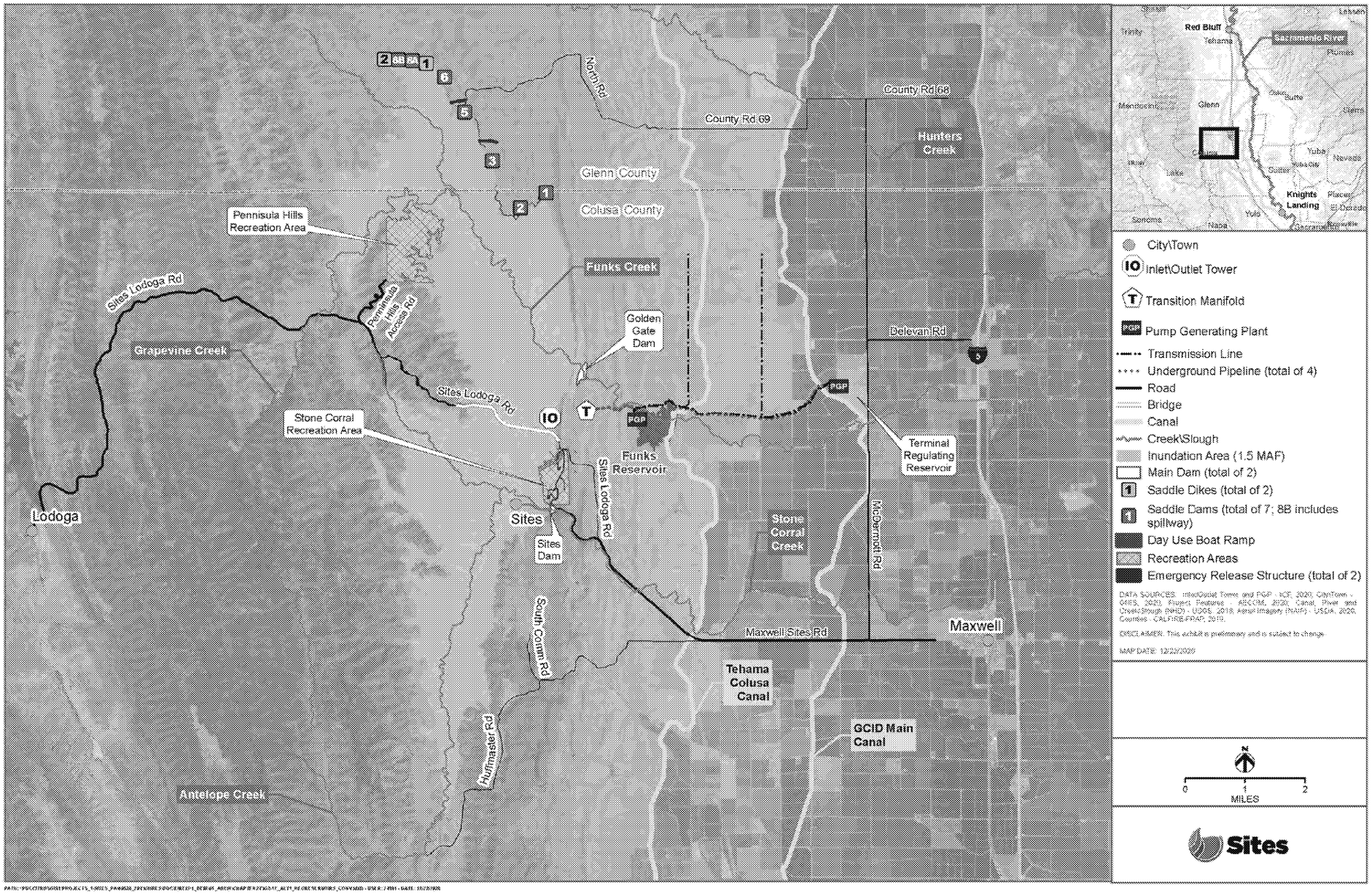


Figure 2-1. Alternatives 1 and 3 Regulating Reservoirs and Conveyance and Sites Reservoir Facilities

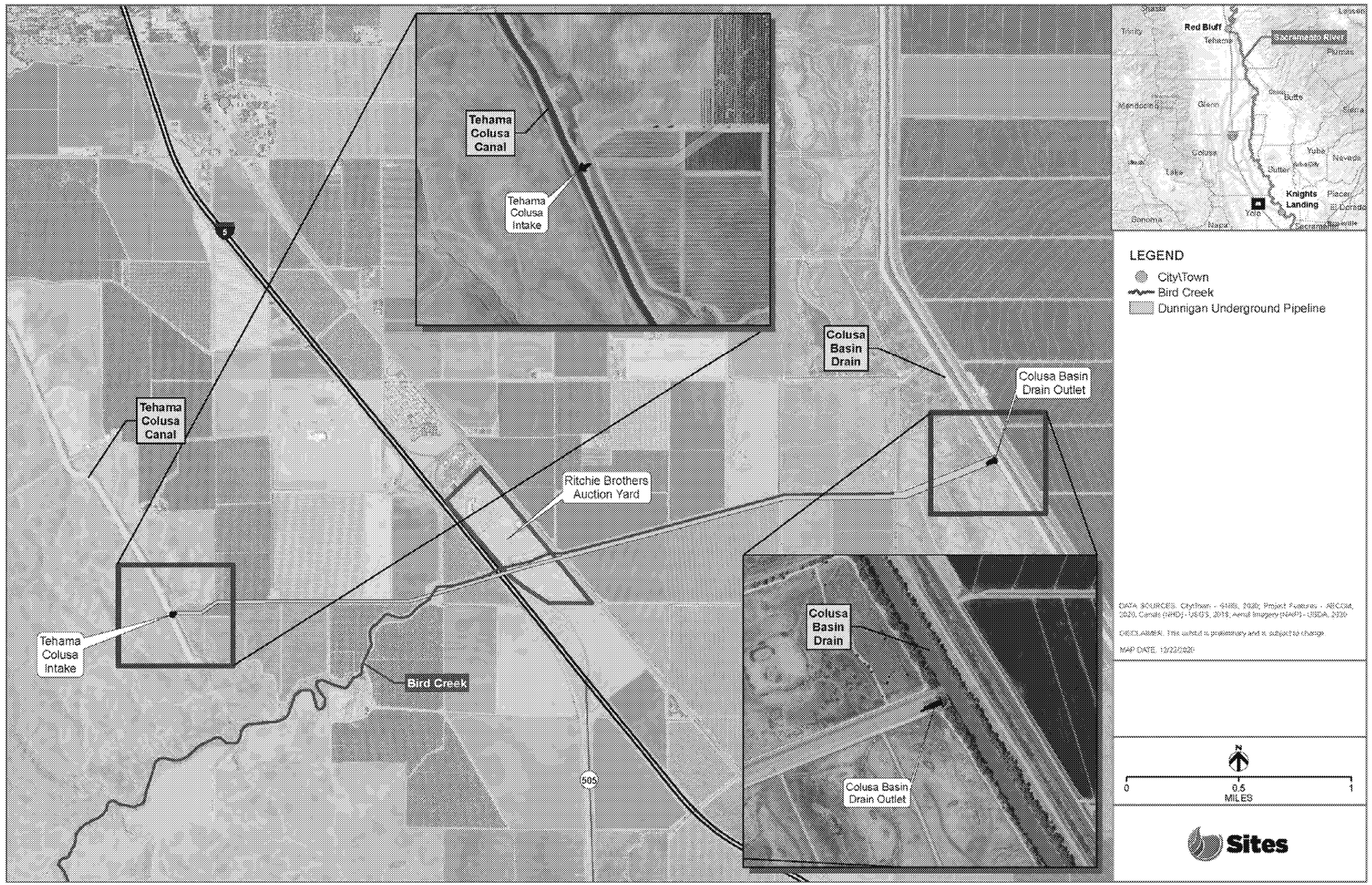


Figure 2-2. Alternatives 1 and 3 Conveyance to Sacramento River Components

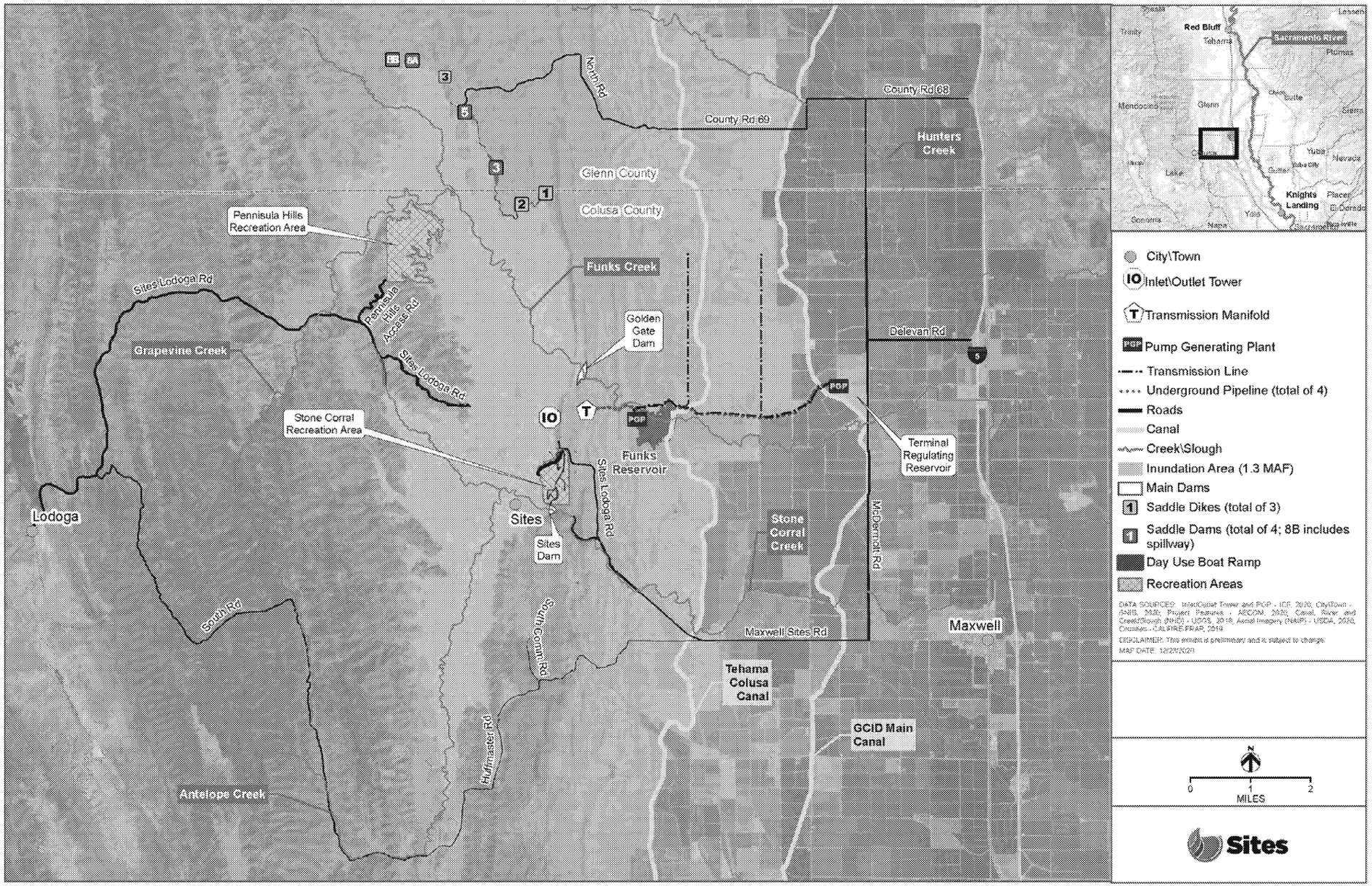


Figure 2-3. Alternative 2 Regulating Reservoirs and Conveyance and Sites Reservoir Facilities



Figure 2-4. Alternative 2 Conveyance to Sacramento River Components

It should be noted that the Authority could decide to approve a version of Alternative 2 (with a 1.3-MAF reservoir) that incorporates the bridge component of Alternative 1, or the CBD release component of Alternative 1 instead of release to the Sacramento River, or both of these distinct components. Similarly, the Authority could decide to approve a version of Alternative 1 (with a 1.5-MAF reservoir), or a version of Alternative 3, that incorporates the roadway improvements without the bridge as contemplated by Alternative 2, or the Sacramento River release component of Alternative 2 instead of the CBD release, or both of these distinct components. In this way, the evaluation of Alternatives 1, 2 and 3 actually incorporates a spectrum of multiple options for the decision-makers about the Project facilities and components.

2.4 No Project/Action Alternative

The CEQA Guidelines require that an EIR analyze the No Project Alternative. Evaluation of the No Project Alternative allows decision makers to compare the impacts of approving a proposed project with the impacts of not approving the proposed project. This RDEIR/SDEIS evaluates a No Project Alternative that assumes the Project would not be implemented and considers what would be reasonably expected to occur in the foreseeable future if the Project were not approved, based on current plans and consistent with available infrastructure and community services.

NEPA similarly requires an analysis of an alternative in which the project is not implemented assuming continuation of existing policies and management direction into the future. Under NEPA, the No Action Alternative accounts for reasonably foreseeable changes in existing conditions. Existing conditions includes changes that would reasonably be expected to occur in the foreseeable future if the Project were not approved, based on current plans and consistent with available infrastructure and community services.

For this RDEIR/SDEIS, the term *No Project Alternative* describes both the No Project Alternative and No Action Alternative for CEQA and NEPA purposes, respectively. Because none of the proposed facilities would be constructed or operated, the No Project Alternative would not materially change conditions as compared to existing conditions. The No Project Alternative assumes the same regulatory criteria as existing conditions. This is because reasonably foreseeable programs and projects included within the No Project Alternative affect water supply, water quality, or anadromous fisheries conditions and are part of existing conditions. For example, the implementation of the 2019 Biological Opinions from the U.S. Fish and Wildlife Service and National Marine Fishery Service for the Reinitiation of Consultation on the Coordinated Operations of the CVP and SWP (ROC on LTO; USFWS 2019 and NMFS 2019) and the Incidental Take Permit for Long-term Operations of the State Water Project in the Sacramento-San Joaquin Delta (SWP ITP; CDFW 2020) are included in both existing conditions and the No Project Alternative.

In addition, DWR's projected future land use and water use are typically included as fundamental assumptions in the CALSIM II model (see Appendix 1A, Introduction to Appendices and Modeling Information, and Chapter 5, Surface Hydrology Resources, for more information regarding CALSIM) as part of the impact evaluation process. These 2030 water demand conditions indicate that the vast majority of the CVP and SWP water contractors would

use their total contract amounts and that most senior water rights users also would fully use most of their water rights, depending on the hydrologic condition. The Sites Project Authority (Authority) has accepted this assumption for this analysis. This increased demand in addition to the projects currently under construction and those that have received approvals and permits at the time of preparation of the RDEIR/SDEIS constitute the No Project Alternative. Furthermore, the rural nature of the area and limited potential for growth and development in Colusa, Glenn and Yolo Counties within the 2030 study period used for this RDEIR/SDEIS supports similarities between the No Project Alternative and existing conditions.

Under the No Project Alternative, existing conditions outlined in the following resource chapters would not be altered by the Project. However, Project benefits would also not be achieved. Under the No Project Alternative, flood control, ecosystem improvement, and recreation benefits that are part of the Project would not be funded and implemented as part of WSIP. The No Project Alternative would also not provide water supply reliability, operational flexibility, benefits to anadromous fish, water supply for refuges and Delta ecosystem benefits sought with potential Reclamation investment. Finally, the No Project Alternative would eliminate one opportunity to provide a multi-benefit project consistent with the Governor's Water Resilience Portfolio. The No Project Alternative would not meet the Project objectives and purpose and need stated in Chapter 1 but is analyzed in this RDEIR/SDEIS, consistent with CEQA and NEPA requirements.

2.5 Elements Common to All Action Alternatives

Project facilities, operations and maintenance, construction considerations, commitments and BMPs, and Proposition 1 benefits common to all of the Action Alternatives are described below.

2.5.1 Facilities Common to All Action Alternatives

The facilities common to all the Action Alternatives are described below. Design and construction considerations for these facilities are also described. Additional detail for construction means and methods are described in Appendix 2C, Construction Means, Methods, and Assumptions.

2.5.1.1 Sacramento River Diversion and Conveyance to Regulating Reservoirs

All Action Alternatives include the diversion of water from the Sacramento River at the existing RBPP into the existing TC Canal and at the existing Hamilton City Pump Station into the existing GCID Main Canal. The RBPP and TC Canal are owned by Reclamation and operated by the Tehama Colusa Canal Authority. The RBPP has an existing fish screen that meets NMFS and CDFW fish screen criteria. The Hamilton City Pump Station and GCID Main Canal are owned and operated by GCID. The Hamilton City Pump Station has an existing fish screen that meets NMFS and CDFW fish screen criteria. Some improvements would be made to these facilities to allow for Project operations concurrent with these facilities continuing to meet their intended purposes. The location of these improvements is shown in Figure 2-5 and these improvements are described below.

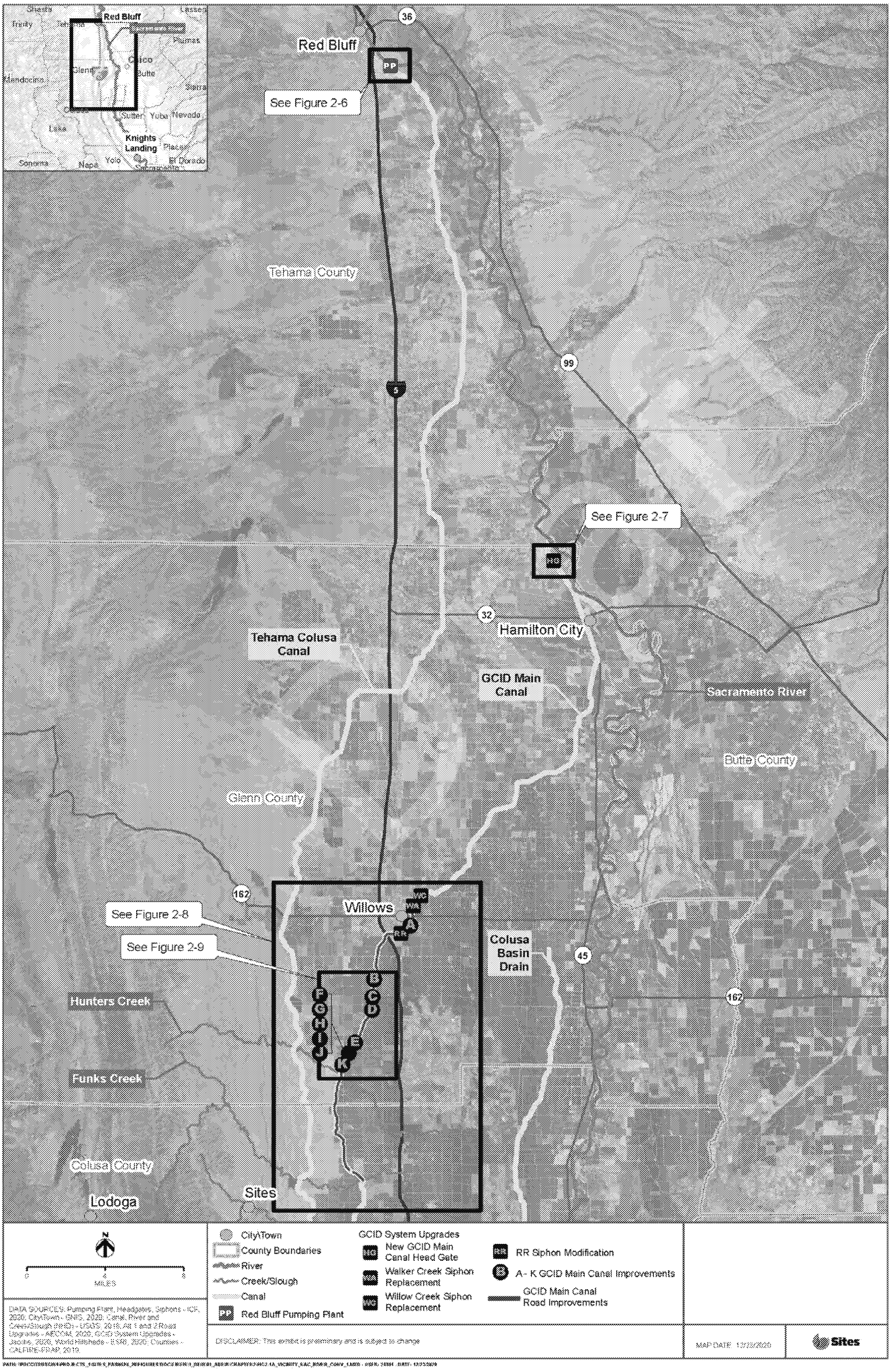


Figure 2-5. Sacramento River Conveyance Components

Tehama-Colusa Canal Diversion

All Action Alternatives include the installation of two additional 250-cfs vertical axial-flow pumps into existing concrete pump bays at the RBPP. The addition of these two pumps would increase the capacity from 2,000 to 2,500 cfs, as well as provide redundancy. See Figure 2-6 for a vicinity map of the RBPP and see Appendix 2C for plan and profile views of the proposed pumps.

The installation of the additional pumps at the RBPP under all of the Action Alternatives would occur at existing facilities and would require limited construction equipment and personnel over a period of approximately 2 months.

GCID Main Canal Diversion and System Upgrades

The GCID system may require several different upgrades to support the operation of Sites Reservoir. The specific details of these upgrades would be confirmed during future hydraulic modeling and assessment of conditions. However, for the purposes of this document and the impact analyses contained herein, it is assumed construction would be performed at various locations along the GCID Main Canal, as described below.

All Action Alternatives would require a new 3,000-cfs Main Canal head gate structure about 0.25 mile downstream of Hamilton City Pump Station (Figure 2-7). This new structure is required because the existing head gate structure would not be adequate for proposed winter operation due to the decrease in water elevation across the structure during high river levels. The existing head gate structure would be left in place to continue to serve as a bridge between County Road 203 and County Road 205 in Glenn County. This structure would continue to operate during construction of the new head gate structure and diversion activities would continue throughout construction. The new head gate structure would be constructed upstream of the existing structure and would include eight automated gates. The water level and flow control functions would involve operating conditions that would result in water surface drops across the head gate of between 3 and 15 feet. The canal reach immediately downstream of the new head gate structure would be lined with concrete for approximately 35 feet to prevent erosion.

GCID typically dewaters their Main Canal for up to 6 weeks each year between early January and late February for maintenance activities. This is the time of year that the Project seeking to utilize the GCID Hamilton City Pump Station and GCID Main Canal to divert and convey under the Project. To reduce this current winter shutdown period from 6 weeks to 2 weeks, other improvements would be required to integrate Sites Reservoir into the GCID system. All Action Alternatives would involve replacing the Walker Creek siphon (MP 24.48) and Willow Creek siphon (MP 24.68) on the Main Canal to allow for increased capacity (Figure 2-8 and Figure 2-9). The siphon under the Union Pacific Railroad (i.e., railroad siphon) at MP 26.6 would be improved by adding an additional barrel to allow for increased capacity.

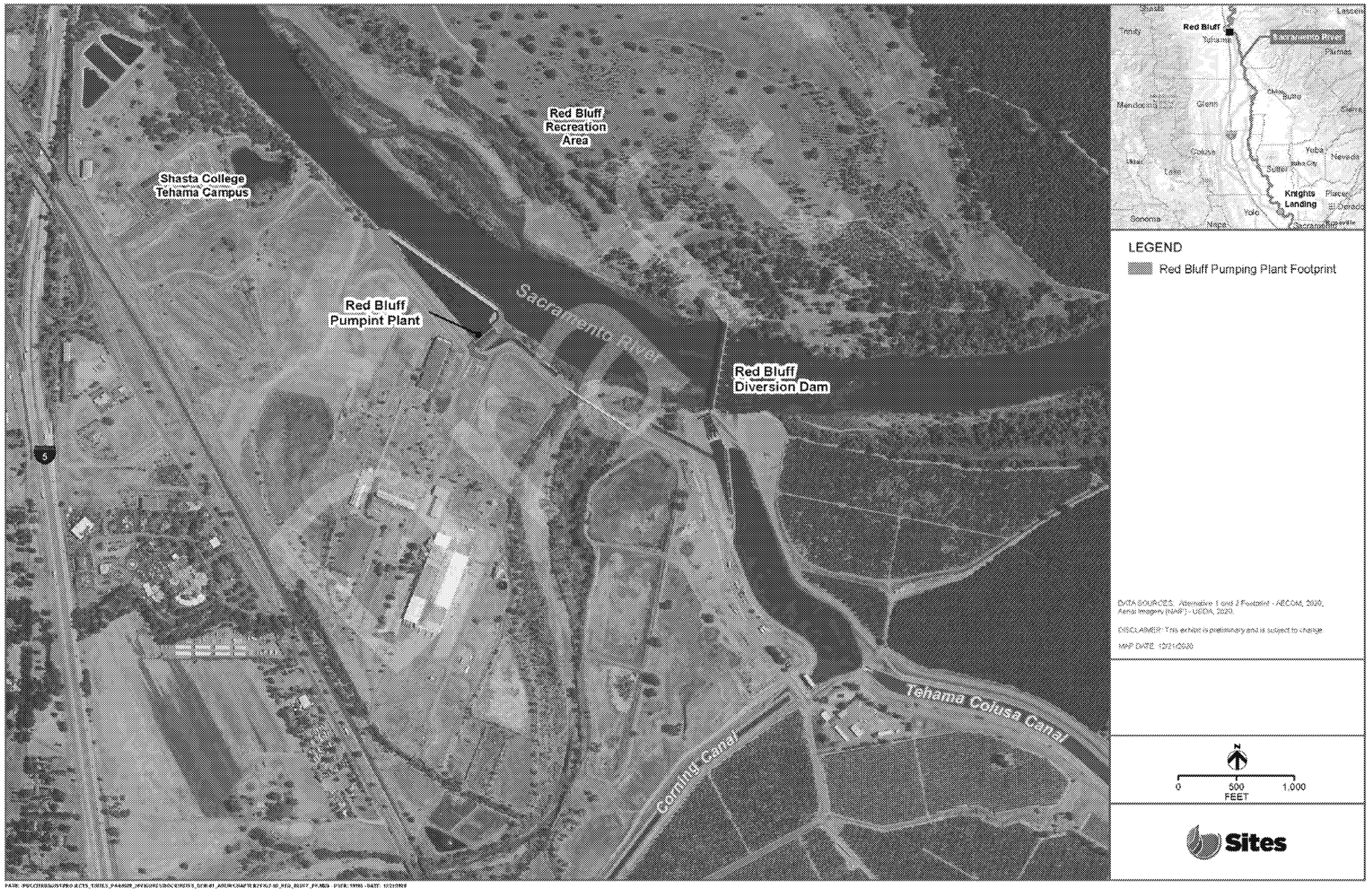


Figure 2-6. Red Bluff Pumping Plant



Figure 2-7. GCID Main Canal Head Gate Structure

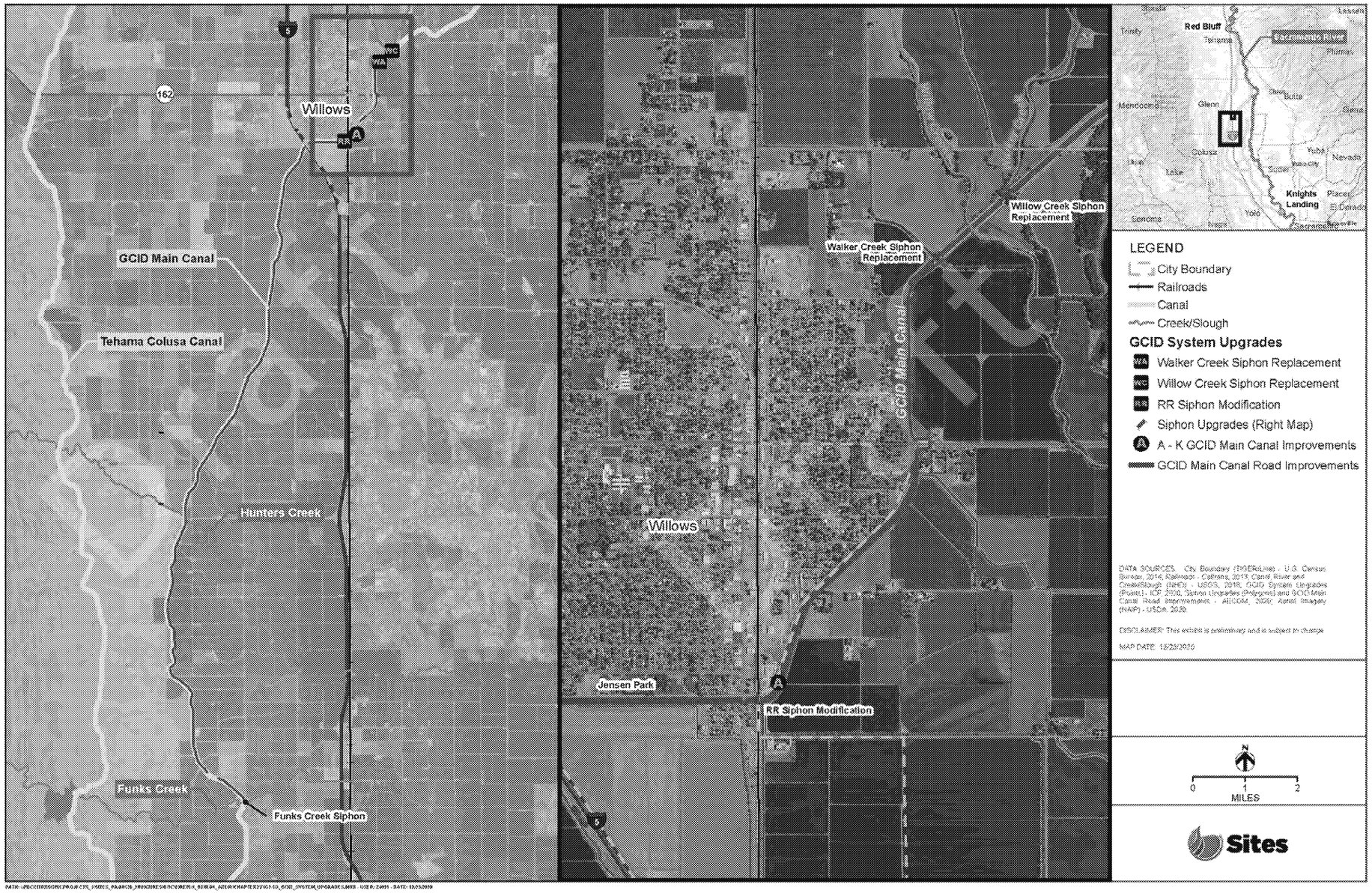


Figure 2-8. GCID System Upgrades



Figure 2-9. GCID System Upgrades Continued

All Action Alternatives would entail Main Canal improvements between MP 26 and MP 41.3 to increase the freeboard between Willows and the TRR to a standard 2.5 feet; under existing conditions the freeboard range is 1 to 2 feet. All Action Alternatives would also require road improvements to approximately 17 miles of left bank canal road between the existing Willow Creek siphon and the existing Funks Creek siphon to ensure an all-weather road surface (see Figure 2-8). These road improvements would primarily consist of adding approximately 6 inches of aggregate base material. GCID would manage the facility upgrades using an approach consistent with their existing management practices.

Construction of improvements along with GCID Main Canal would occur in the winter during the regular shutdown period. For the additional siphons on the Main Canal, a portion of the canal around the siphon would be dewatered using an earth coffer dam lined with geomembrane and sump pumps. Using a bore-and-jack procedure a new barrel would be installed, and new headwalls on the upstream and downstream end would be installed to approximately match the existing headwall. Construction staging areas would be in the immediate area of the improvements. The proposed upgrade of the railroad siphon would require coordination and planning with the railroad owners. Construction restrictions may exist regarding minimizing interference with regular railroad operations. To the extent possible, upgrades to the railroad siphon would take place during periods of lowest train traffic, and railroad shutdown time would be minimized.

Earthwork related to the GCID Main Canal to increase the freeboard to 2.5 feet would require a total fill of 5,000 cubic yards. There would be no excavation and only minor reshaping and addition of fill to the sides of the canal. The fill would be sourced from other project spoils and there would be no net import. Construction related to roughly 17 miles of road improvements would require approximately 27,000 cubic yards of aggregate base. It is anticipated the aggregate would be imported from a rock plant within 20 miles of the GCID Main Canal. The GCID improvements along the Main Canal and the existing road would occur within existing rights-of-way and construction would not permanently remove any existing crops.

2.5.1.2 Regulating Reservoirs and Conveyance Complex

Multiple facilities would be required to control the conveyance of water between Sites Reservoir and the TC Canal and GCID Main Canal. These facilities would include regulating reservoirs, pipelines, pumping generating plants (PGPs), switchyards, and administration and maintenance buildings. These facilities are described below.

Terminal Regulating Reservoir

Pumping from the GCID Main Canal to Sites Reservoir would require construction of the TRR facilities. There would be four primary facilities: the TRR, the TRR PGP, an electrical substation, and TRR pipelines. The TRR facilities would be located in Colusa County north of the GCID Main Canal and west of McDermott Road. The approximately 150-acre site would be accessed by an asphalt concrete paved road off McDermott Road. Paved parking would be provided near the PGP. Asphalt concrete paved roads would provide onsite vehicle access between the TRR PGP and electrical substation, with facility spacing to accommodate an operational crane. The proposed TRR PGP and electrical substation would encompass approximately 7 acres and would be enclosed with security fence with access gates on the south

and east sides. See Figure 2-10, Terminal Regulating Reservoir Facilities Site Plan, for the locations of the proposed TRR-related facilities.

The TRR facilities are within a designated Federal Emergency Management Agency (FEMA) Special Flood Hazard Area, Zone A, Without Based Flood Elevation. Site drainage would be conveyed offsite to the existing GCID Main Canal or directly into the TRR through shallow swales or overland flow.

The new TRR would encompass approximately 100 acres immediately east of the GCID Main Canal and have a storage capacity of approximately 600 acre-feet (AF). The TRR would have earthen embankments around its perimeter and an impermeable lining consisting of a geomembrane overlying geocomposite placed over compacted earth. The TRR would be hydraulically connected to the GCID Main Canal to allow water to be conveyed to and from the Sites Reservoir. The TRR would accommodate inflows of up to 1,800 cfs. The GCID Main Canal would be the conveyance source of water for the TRR and its PGP to pump water to Sites Reservoir. The canal would also be the primary conveyance for releases of water from the TRR and its PGP from Sites Reservoir. The spillway for the TRR would be located at the southernmost corner of the reservoir and discharge into Funks Creek.

Access between the east and west sides of the GCID Main Canal adjacent to the TRR would be over a new bridge between the TRR embankment near the gate structures and the west side of the GCID Main Canal. The bridge is anticipated to consist of a pre-cast concrete span between the banks of the GCID Main Canal with concrete abutments founded on piles.

TRR Pumping Generating Plant

A TRR PGP would pump water from the TRR to Sites Reservoir; the PGP would include hydroelectric turbines to generate electricity when water was released from Sites Reservoir to the TRR. The PGP would include the following three facilities in five buildings: one pump station, two turbine generator buildings, and two energy dissipating structures (Figure 2-11, TRR Pump Generating Plant Facilities). The pumping plant would have a design capacity of 1,800 cfs, the generating plant 1,000 cfs, and the energy dissipation 1,000 cfs.

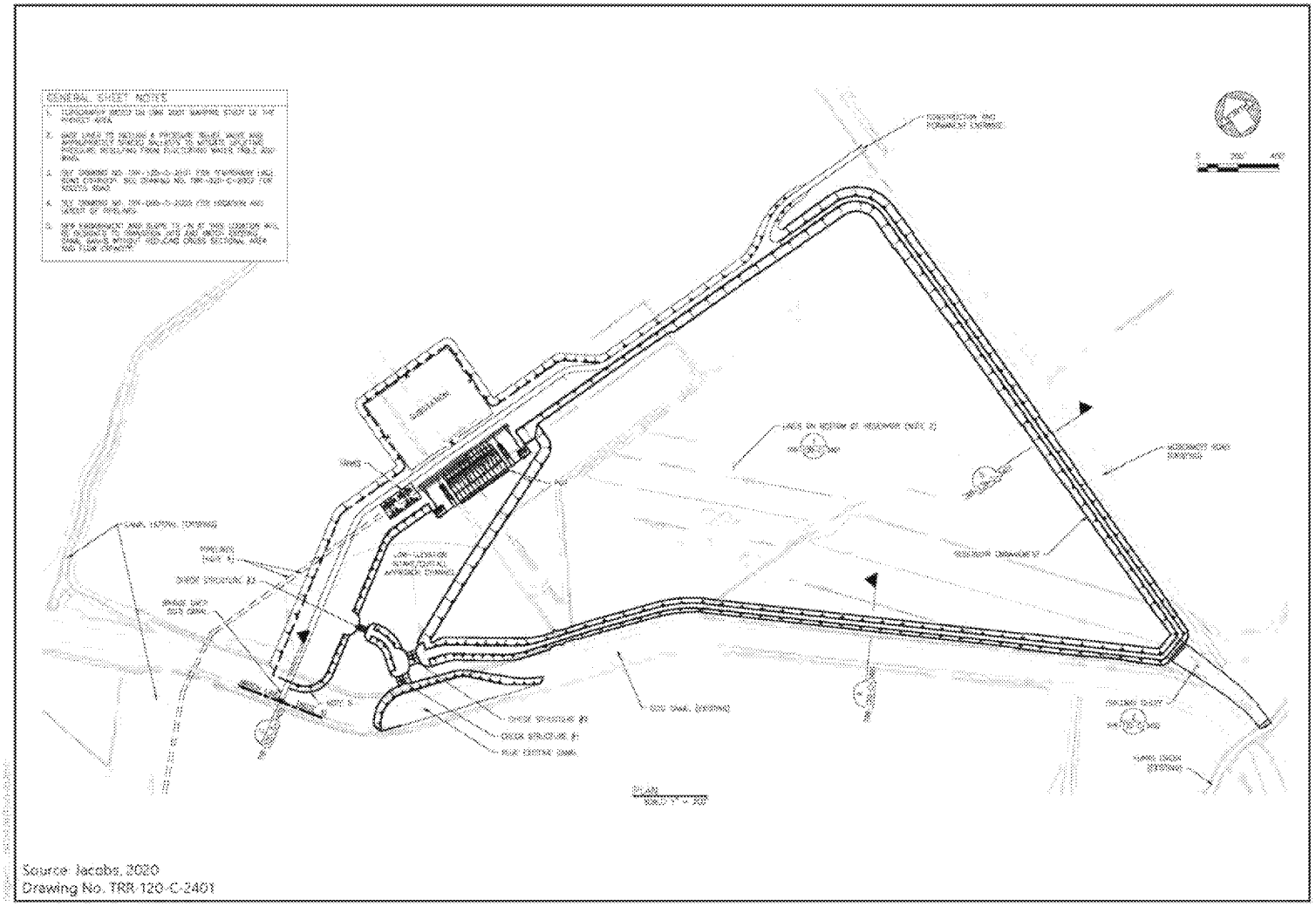


Figure 2-10. Terminal Regulating Reservoir Facilities Site Plan

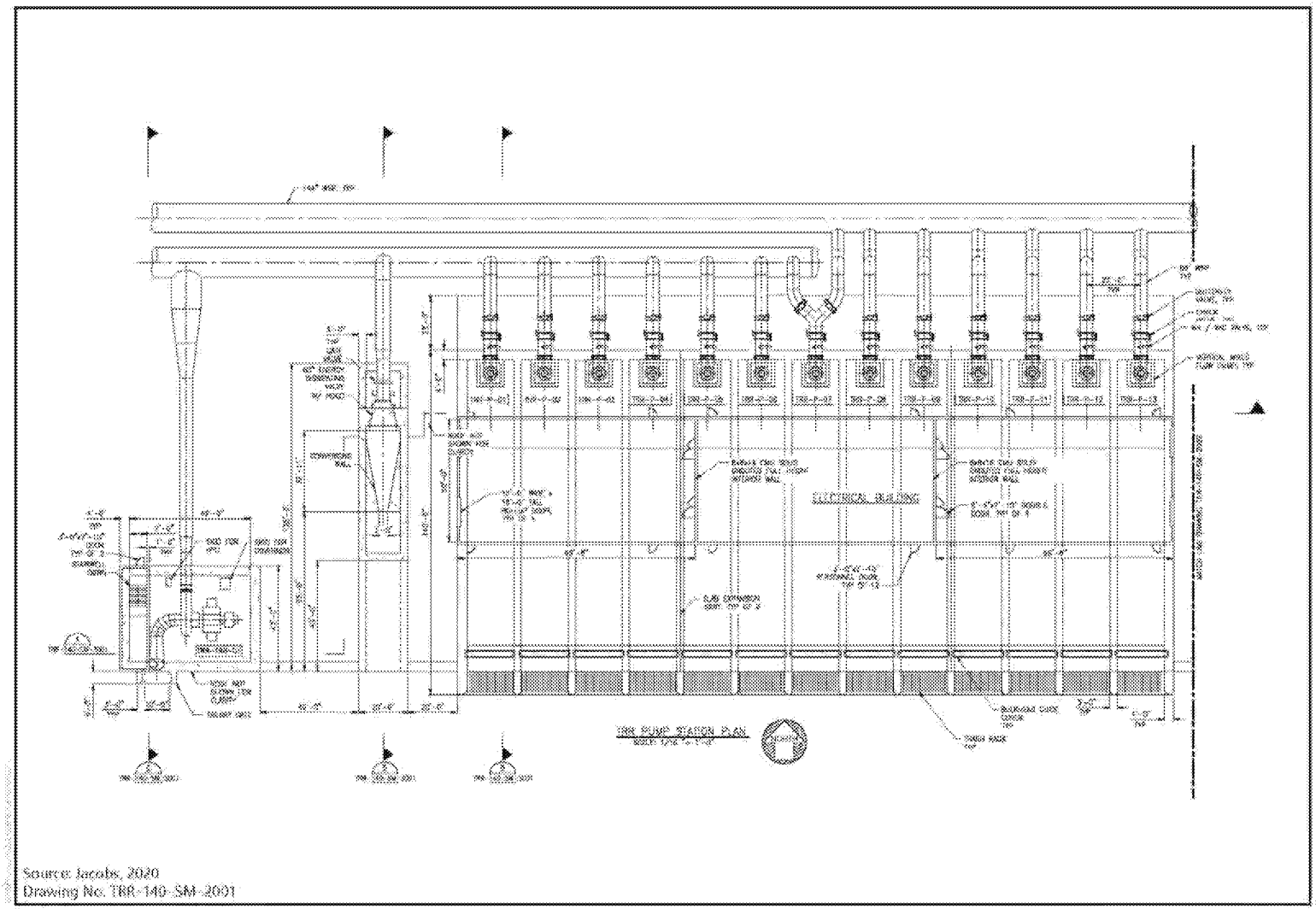


Figure 2-11. TRR Pump Generating Plant Facilities

The pump station would support the pumps at the edge of the TRR and be designed to minimize pump vibration. A trashrack would be installed at the front of the wet well to exclude debris. Bulkhead slots would be provided at each wet well to allow bulkheads to be installed and isolate pump bays for maintenance. The pump station would contain 13 pumps in a single row. Six pumps each would feed into two 12-foot-diameter pipes connecting to the turbines (discussed below), and there would be a single standby pump that could feed into either pipe. It is anticipated that all pumps would have a variable frequency drive to adjust to the variable pumping heads while staying within the pump operating range and efficiency.

The two turbine generator buildings would house the turbines, generator, draft tube, associated piping appurtenances, and other electrical equipment. There would be two 13-kilowatt turbines (one for each 12-foot-diameter pipe) that would have a horizontal laying flow pattern. The turbines would discharge water into a draft tube prior to exiting into the TRR. Because the discharge would need to be submerged, the turbines would be in an underground structure with a roof. The aboveground portion of the turbine generator buildings would consist of concrete masonry unit walls.

The two energy dissipation valve structures would allow releases back to the TRR as back-up to the hydroelectric turbine facilities. These structures would each contain a stilling basin and fixed cone valve to dissipate energy before water enters the TRR. There would be a 60-inch fixed cone valve on each of the two 12-foot-diameter pipes for a total of two 60-inch fixed cone valves and a total flow of 1,000 cfs.

TRR Electrical Substation

The TRR PGP would require a substation to provide electricity to the associated facilities described above. The electrical substation would connect to existing Pacific Gas and Electric Company (PG&E) or Western Area Power Administration (WAPA) lines. The facility would be constructed on approximately 1.5 acres within the TRR PGP footprint to the north of the TRR. The dimensions of the electrical substation would depend on whether it is connected with PG&E or WAPA lines. The substation would be approximately 460 feet long by 300 feet wide if connected to PG&E lines and be 300 feet long by 240 feet wide if connected to WAPA lines. Figure 2-12, TRR Electrical Substation, provides a plan view of the facility.

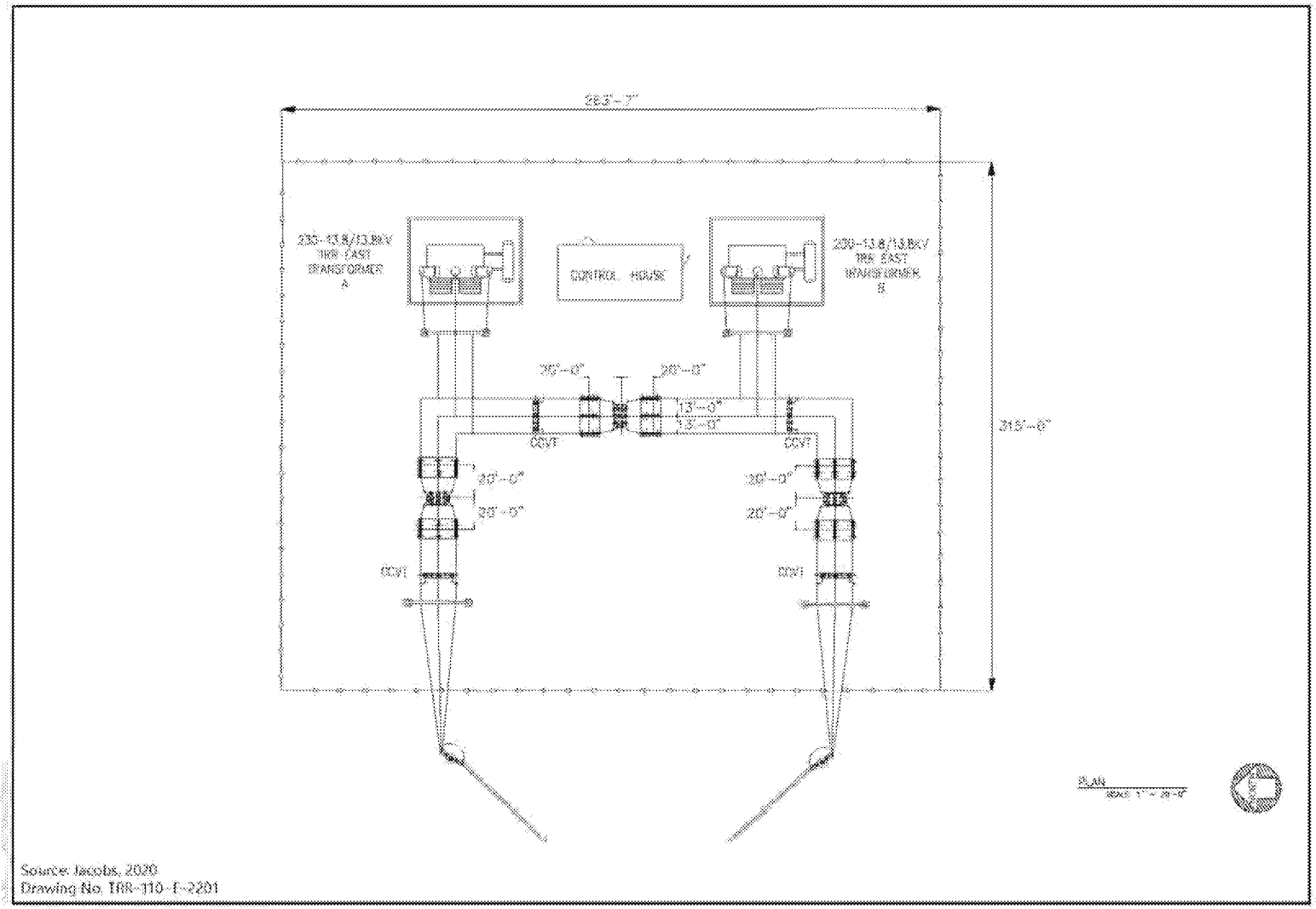


Figure 2-12. TRR Electrical Substation

The electrical substation would use electrical equipment that meets the standards of the National Electrical Manufacturers Association, American National Standards Institute, and Institution of Electrical and Electronics Engineers. Additionally, equipment that is listed or labeled as meeting the safety standards or ratings identified by Underwriter Laboratories or a nationally recognized testing laboratory would also be used. The substation design would include primary safety equipment (e.g., circuit breakers, utility-grade relays) and meet the total pumping power requirements or total generation requirements. For more information regarding the pumping power requirements or total generation requirements, please see Section 2.5.2.2, *Energy Generation and Energy Use*. The substation would have sufficient redundancy such that the failure of any one component would permit the substation to be safely and reliably isolated from the transmission system under fault conditions.

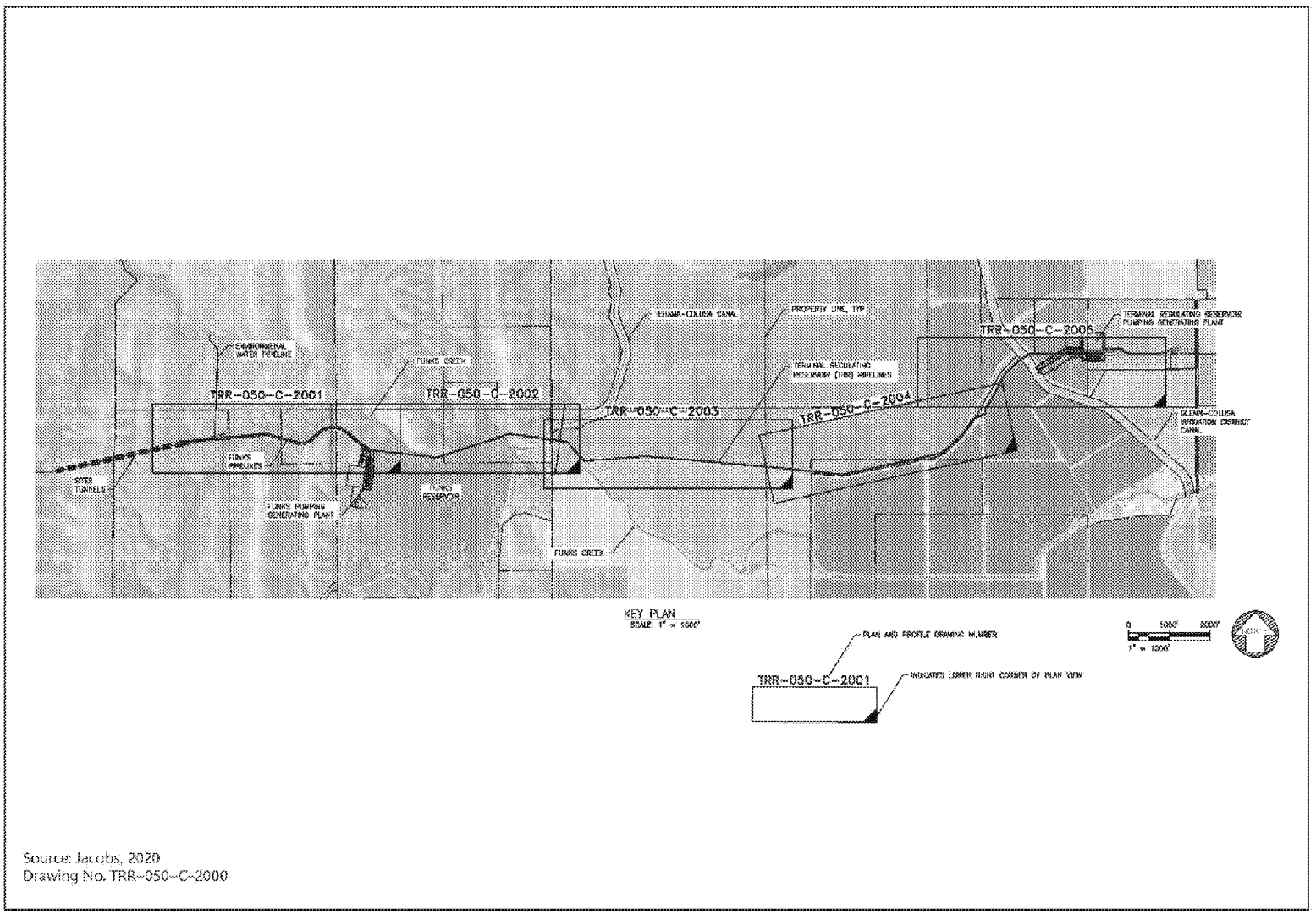
TRR Pipelines

Two underground TRR pipelines would convey water approximately 4.5 miles between the TRR PGP and Sites Reservoir. See Figure 2-13, TRR Pipelines, for the location and alignment route of the pipelines. The 12-foot-diameter pipes would extend from the TRR PGP, under Funks Reservoir, and terminate at the transition manifold south of Funks Creek near the Golden Gate Dam. Both TRR pipelines would connect to one of the two side-by-side, 23-foot-inside diameter I/O tunnels at the transition manifold.

The pipelines would parallel the Funks pipelines and Funks Creek and would generally be from 6 feet to 30 feet below ground surface after installation (does not include depth below ground surface where tunneling occurs, which could be up to 100 feet). Trenching for pipelines would include the use of excavators and would be excavated to meet all applicable requirements. Between the TRR and Funks Reservoir, the pipelines would cross the TC Canal using a trenchless method or open cut, depending on construction schedule. East of the TC Canal, the TRR pipelines would run parallel to a drainage canal until they reached the GCID Main Canal where they would cross using a trenchless method or open cut, depending on construction schedule.

Funks Reservoir

The existing Funks Reservoir would be used to store and pump water from the TC Canal to and from Sites Reservoir. Excavation of existing accumulated sediment from Funks Reservoir would be required, as would the construction of three facilities: Funks PGP, an electrical substation, and Funks pipelines. These facilities would be constructed in Colusa County, west of the TC Canal, on approximately 7 acres. The overall site would be enclosed by a security fence with access gates on the south and northwest sides. See Figure 2-14, Funks Reservoir Facilities Site Plan, for the location of the facilities.



Source: Jacobs, 2020
Drawing No. TRR-050-C-2000

Figure 2-13. TRR Pipelines

Predecisional Working Document—For Discussion Purposes Only

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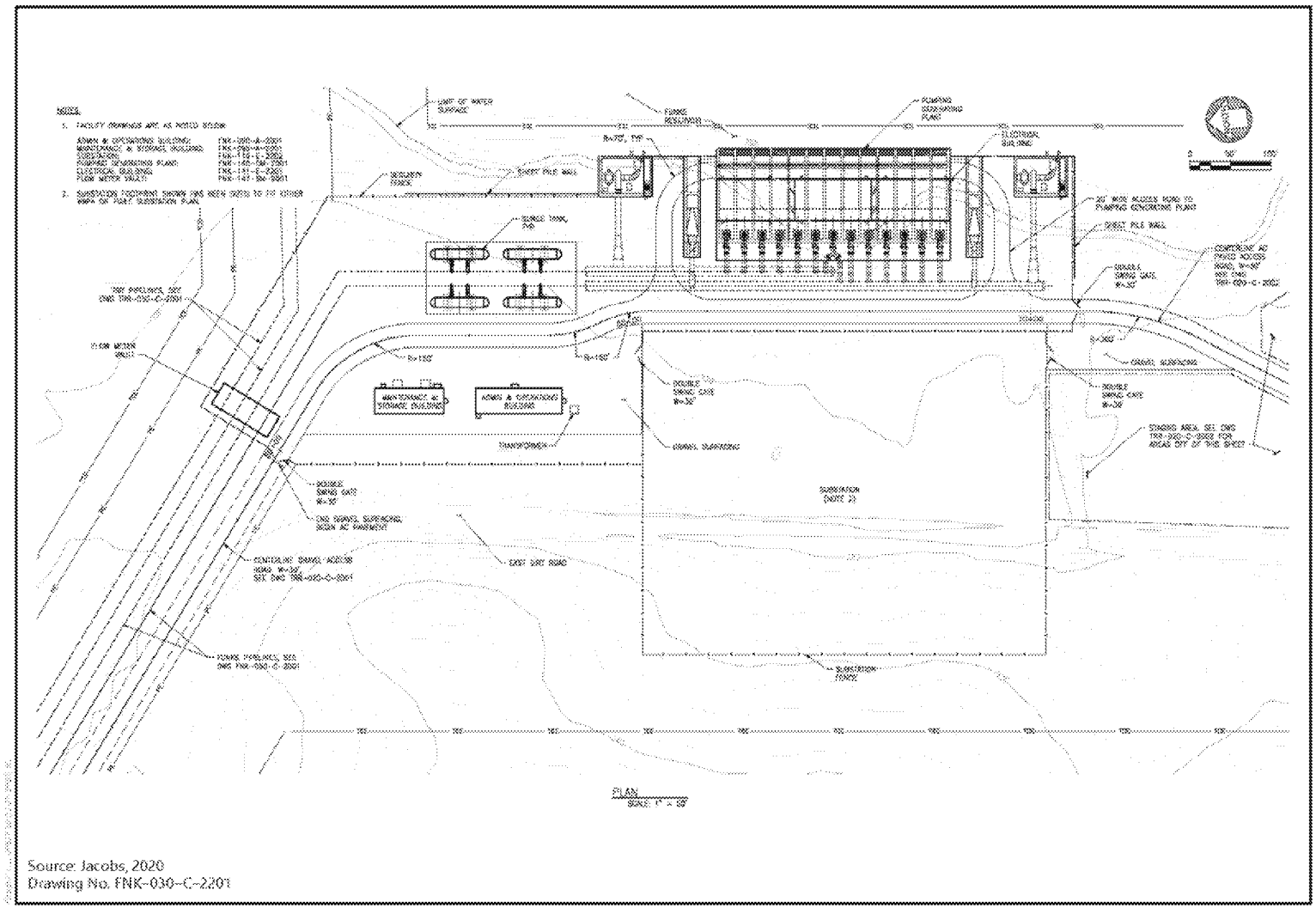


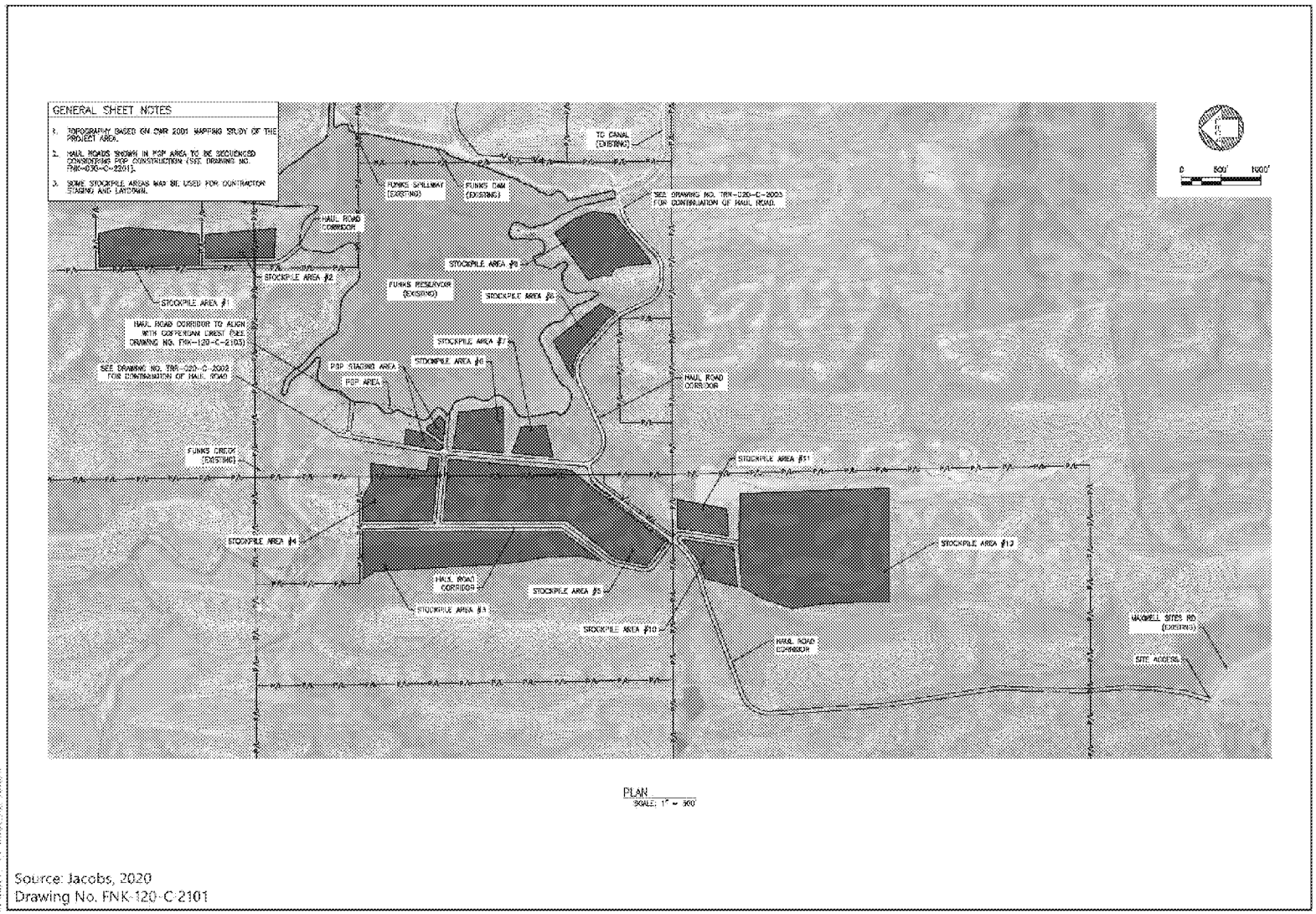
Figure 2-14. Funks Reservoir Facilities Site Plan

Access to the Funks Reservoir-related facilities would be provided at the north and south ends of the site. A gravel parking area would be provided near the PGP. Asphalt concrete paved, onsite vehicular access would be provided between the Funks PGP and electrical substation, with facility spacing to accommodate an operational crane. The facilities site would be accessed by an asphalt concrete paved road from Maxwell Sites Road to the south. Existing gravel roads would be improved to be 30 feet wide, with asphalt concrete surfacing for the southern access route, and would be relocated through the site. A gravel bypass road may be provided to the west of the site. On the north side of the facilities site, the existing dirt road would be improved to be a gravel road that would follow the existing road alignment until it reaches the TRR pipeline. At that location, a new access road would be built along the Funks and TRR pipelines to the connection with the I/O tunnels.

The proposed location of the Funks Reservoir-related facilities is in a FEMA Area of Minimal Flood Hazard, Zone X. Onsite drainage would be conveyed offsite directly into Funks Reservoir through shallow swales or overland flow. Offsite stormwater runoff would be collected on the west side of the site in a ditch, conveyed around the site, and deposited into Funks Reservoir.

The existing Funks Reservoir would be used as a source of water to pump to Sites Reservoir and would receive water discharged from the reservoir. The Funks Reservoir operational WSE can only vary slightly from the TC Canal and the reservoir WSE typically ranges from 200 to 205 feet, although the preferred operational WSE range is 202 to 204 feet.

All Action Alternatives would not alter the footprint of Funks Reservoir; however, 740,000 cubic yards of sediment that has accumulated since originally constructed would be excavated from the reservoir. The excavation is anticipated to restore the original capacity of Funks Reservoir. Excavation would proceed to an elevation of approximately 197 feet in the reservoir and 185.5 feet near the Funks PGP on the western side. The bottom of Funks Reservoir would be reshaped to allow large, unimpeded flows to and from the Funks PGP. The excavated sediment would be deposited adjacent to Funks Reservoir as shown on Figure 2-15. For the purposes of this analysis, the sediment is assumed to remain near Funks Reservoir.



Source: Jacobs, 2020
Drawing No. FNK-120-C-2101

Figure 2-15. Funks Reservoir Stockpile and Haul Route Plan

Funks Pumping Generating Plant

The Funks PGP would be used to pump water from Funks Reservoir to Sites Reservoir. The PGP would be constructed on the northwest side of Funks Reservoir. The PGP would include the following three facilities in five buildings: one pump station, two turbine generator buildings, and two energy dissipating structures. An electrical building would also be constructed behind the pumps as part of the pump station. See Figure 2-16, Funks Pump Generating Plant Facilities.

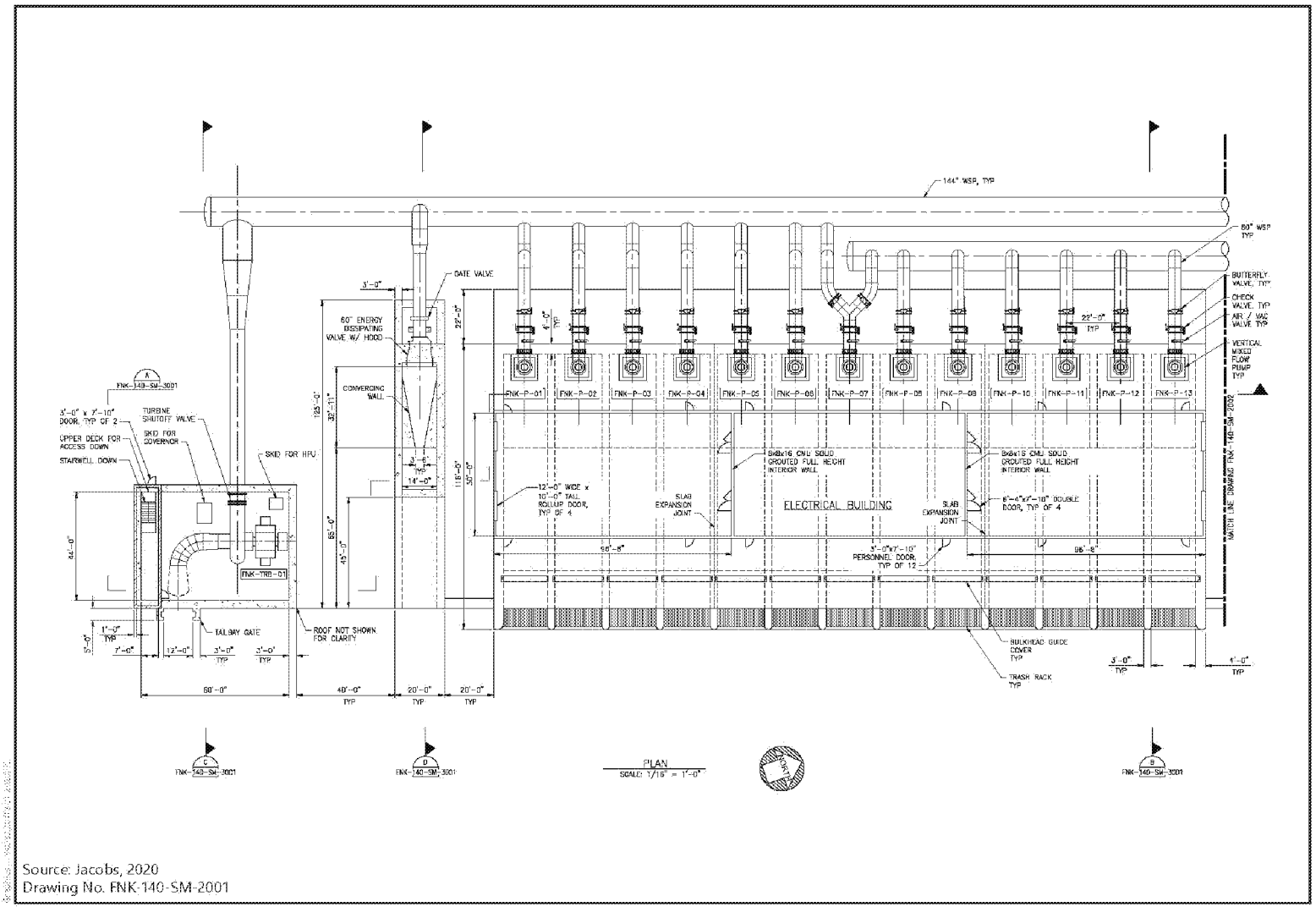
The Funks pump station would be similar to the TRR pump station, except that the orientation of 12-foot-diameter pipelines would be different. The pump station would have a flow rate of 2,100 cfs. The turbine generator buildings would be the same as described for the TRR PGP, and each generator would have a design criterion of 1,000 cfs for redundancy. There would be two turbines, 20-megwatt and 14.5megawatt. Each of the two energy dissipation structures would consist of a single 60-inch fixed cone valve with a design criterion of 1,000 cfs. There would be a 60-inch fixed cone valve on each of the two 12-foot-diameter pipes for a total of two fixed cone valves and a total flow of 2,000 cfs (1,000 cfs each).

Funks Electrical Substation

As with the TRR PGP, the Funks PGP would require a substation to provide electricity to the Funks PGP facilities. This substation would connect to either existing WAPA or PG&E lines. The substation would be located west of Funks Reservoir in the footprint of the Funks PGP and would encompass approximately 3 acres. The Funks electrical substation would be similar to the TRR electrical substation; it would be approximately 460 feet long by 300 feet wide if connected to PG&E lines and would be 300 feet long by 240 feet wide if connected to WAPA lines. There is no difference between the Funks substation and the TRR substation. The substation would be designed to accommodate the total pumping power requirements (import) or total generation requirements (export).

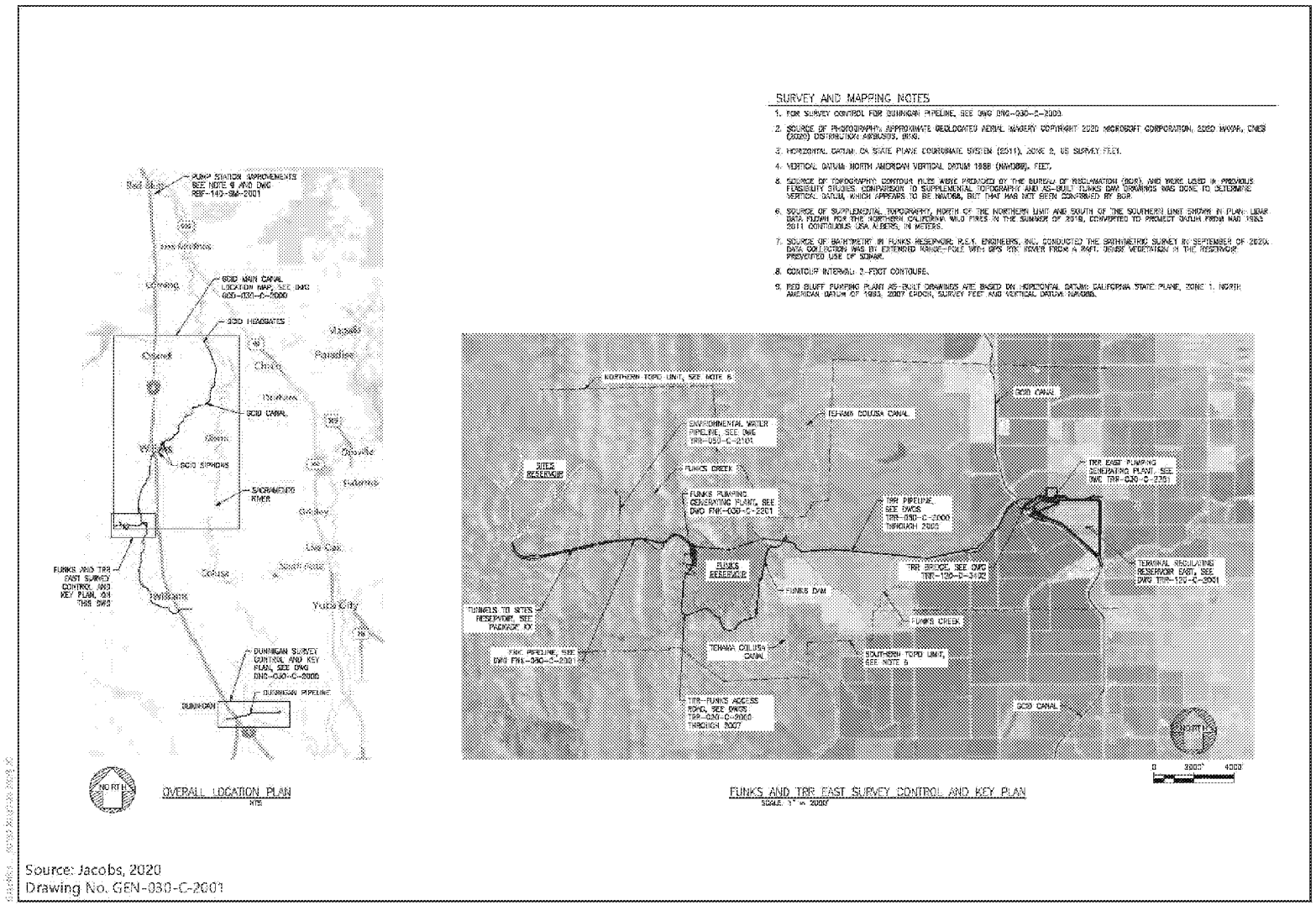
Funks Pipelines

Two underground Funks pipelines would convey water approximately 1 mile between the Funks PGP and Sites Reservoir. See Figure 2-17, Conveyance Complex Pipelines, for the location and alignment route of the pipelines. The 12-foot-diameter pipes would extend from the Funks Reservoir and Funks PGP and terminate at the transition manifold south of Funks Creek near the Golden Gate Dam. The Funks pipelines generally run parallel to the TRR pipelines. After curving around Funks Creek and hilly areas, the Funks pipelines run south, deviating from the TRR pipeline alignment, to the Funks PGP. Both TRR pipelines would connect to one of the two side-by-side, 23-foot-diameter I/O tunnels at the transition manifold. After installation, the pipelines would generally be from 6 feet to 25 feet below ground surface.



Source: Jacobs, 2020
Drawing No. FNK-140-SM-2001

Figure 2-16. Funks Pump Generating Plant Facilities



Source: Jacobs, 2020
Drawing No. GEN-030-C-2001

Figure 2-17. Conveyance Complex Pipelines

Predecisional Working Document—For Discussion Purposes Only

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Transition Manifold

The transition manifold would be constructed at the base of Golden Gate Dam to connect Sites Reservoir to Funks Reservoir and the TRR. The transition manifold would be installed approximately 6 feet below ground and would be approximately 114 feet long by 92 feet wide. The structure would connect the four 12-foot-diameter conveyance pipelines from Funks Reservoir and TRR to two 23-foot-diameter tunnels extending from the Sites Reservoir Inlet/Outlet Works (I/O Works), which are discussed in Section 2.5.1.4, *Sites Reservoir and Related Facilities*. The transition manifold would have isolation valves to close off the pipelines and allow for maintenance.

In addition to the transition manifold structure, a 12-inch-diameter underground pipeline would extend 2,800 feet north from the manifold to Funks Creek, where it would discharge via an energy-dissipation structure/outlet into the creek. The pressure-reducing valve to dissipate energy before the water is discharged into Funks Creek is necessary because the water pressure would be equal to the Sites Reservoir elevation. The pipeline would be sized to accommodate a range of discharges (zero to 100 cfs) to provide water for the approximately 1.8-mile stretch of Funks Creek below Golden Gate Dam to Funks Reservoir.

Construction of the Transition Manifold would happen after the I/O Tunnels are constructed. Construction means and methods would be similar to that of the TRR Pipelines and Funks Pipelines.

Electrical Transmission Connections

New high-voltage transmission lines would be required to provide power to the Funks and TRR PGPs. Transmission lines connecting Funks and TRR substations would also be required. Interconnecting to the existing transmission system would be necessary to provide the electricity needed to operate the large pumps at the TRR and Funks Reservoir. This interconnection would also enable the energy produced at the Funks and TRR PGPs to enter the transmission system during periods of operation that use their respective turbines/generators.

The general laydown areas and construction means and methods of the three substations and high voltage transmission lines that connect either PG&E or WAPA facilities to Sites facilities are provided in Appendix 2C.

North-South Transmission Connections

A new north-south transmission line originating between Funks Reservoir and TRR would connect to WAPA or PG&E existing facilities. Two 230-kilovolt (kV) lines owned and operated by WAPA are located north of Funks Reservoir, and four 230-kV lines owned and operated by PG&E are located west and north of the TRR. WAPA and PG&E are defined as the Transmission Owner and the Transmission Operator of their respective high-voltage transmission lines. Each of these lines is a potential point of interconnection (POI) location; a POI to a high-voltage electric transmission line would be required to provide power. See Figure 2-18, WAPA Schematic Sketch, and Figure 2-19, PG&E Schematic Sketch, for a schematic sketch showing the WAPA and PG&E alternative POI arrangements and the required transmission line lengths to the Funks and TRR electrical substations. The POI would require a

third substation, which is expected to be located adjacent to either the WAPA lines or the PG&E 230-kV lines.

The POI between the electrical substations and existing transmission lines would require that an application for interconnection request be submitted and processed under the California Independent System Operator (CalISO) interconnection process. The location of the POI to the WAPA or PG&E 230-kV transmission lines would depend on the results of a system impact study completed by WAPA or PG&E in conjunction with CalISO.

East-West Transmission Lines

There would also be an interconnection between the Funks and TRR PGPs, and it is anticipated that the transmission lines would parallel the pipelines within the same easement. Up to four 230-kV transmission lines would be required: two for the source supply to either of the PGPs and two between the Funks and TRR electrical substations. The two looped source circuits would be installed on a set of common double-circuit steel monopole structures and would require separate easements because they would not parallel any of the proposed pipelines (Figure 2-20, Double-Circuit Source Transmission Poles). The two transmission lines between the Funks and TRR electrical substations would be installed on their own common set of double circuit steel monopole structures within the pipeline easement (Figure 2-21, Funks to TRR Electrical Interconnection).

2.5.1.3 Administration, Operations and Maintenance, and Storage Buildings

All Action Alternatives would involve the construction of an administration and operations building and a maintenance and storage building. These buildings would be located along the existing gravel access road to the Funks PGP on approximately 0.15 acre. The administration and operations building would be a one-story building encompassing approximately 3,400 square feet. The maintenance building would be a one-story building encompassing roughly 2,700 square feet that would include space for equipment storage and maintenance rooms to support the Project facilities.

The utilities that would be required for these buildings would be a septic system at least 100 feet away from Funks Reservoir and Funks Creek (per county code), potable water provided via groundwater wells, and electricity obtained from the Funks Reservoir switchyard. The building designs would be in accordance with the California Building Code and would provide asphalt concrete paved onsite parking and vehicular access. See Figure 2-22, Administration and Operations Building, and Figure 2-23, Maintenance and Storage Building, for the plan view and elevation view of these two buildings.

Construction of the proposed buildings would include the following: clearing and grading; transporting materials and placing them at staging areas; constructing ancillary facilities (e.g., potable water source, septic system, lighting, concrete pad for refueling island, aboveground fuel tanks, perimeter fencing); and performing site restoration after construction is complete.

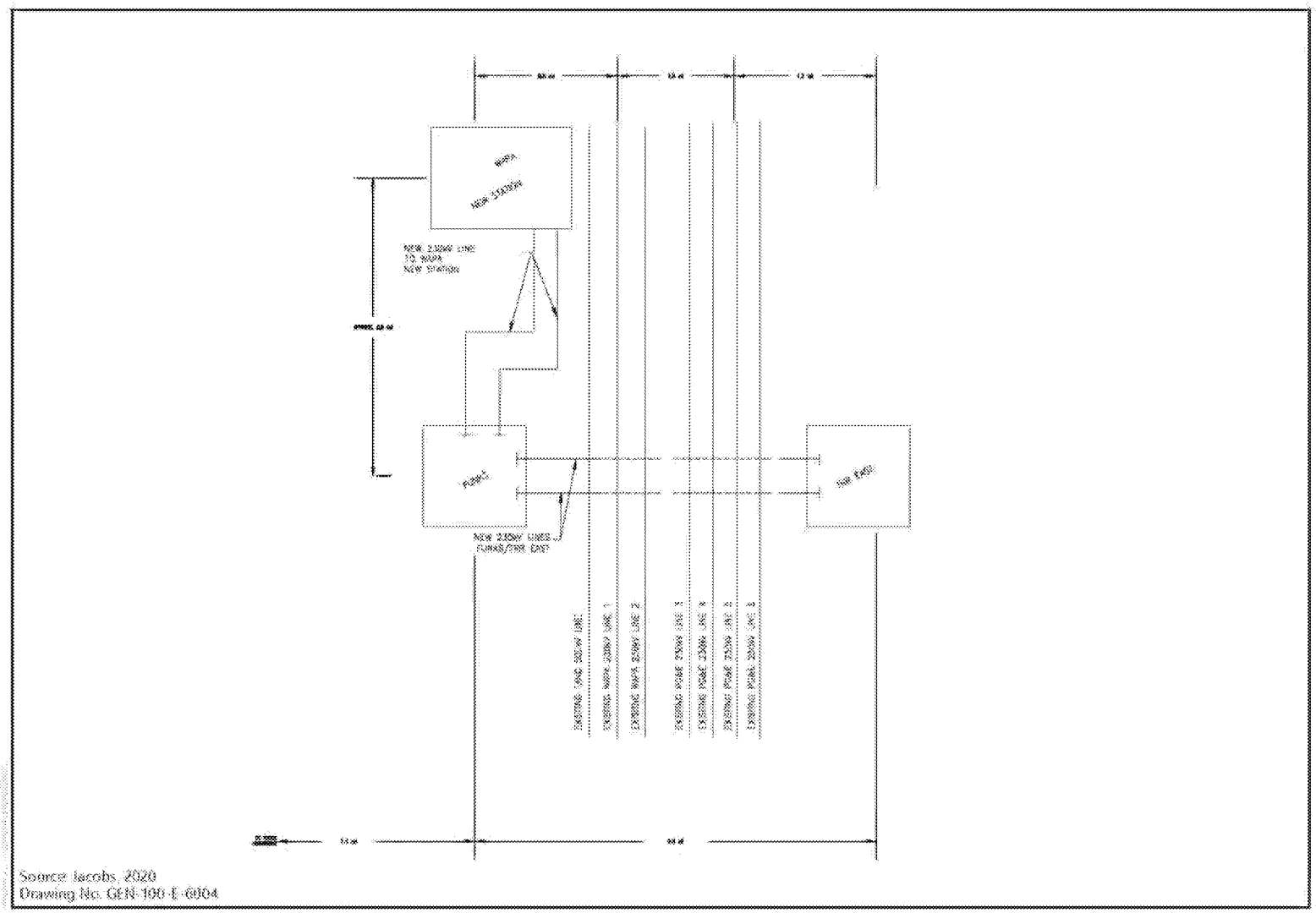


Figure 2-18. WAPA Schematic Sketch

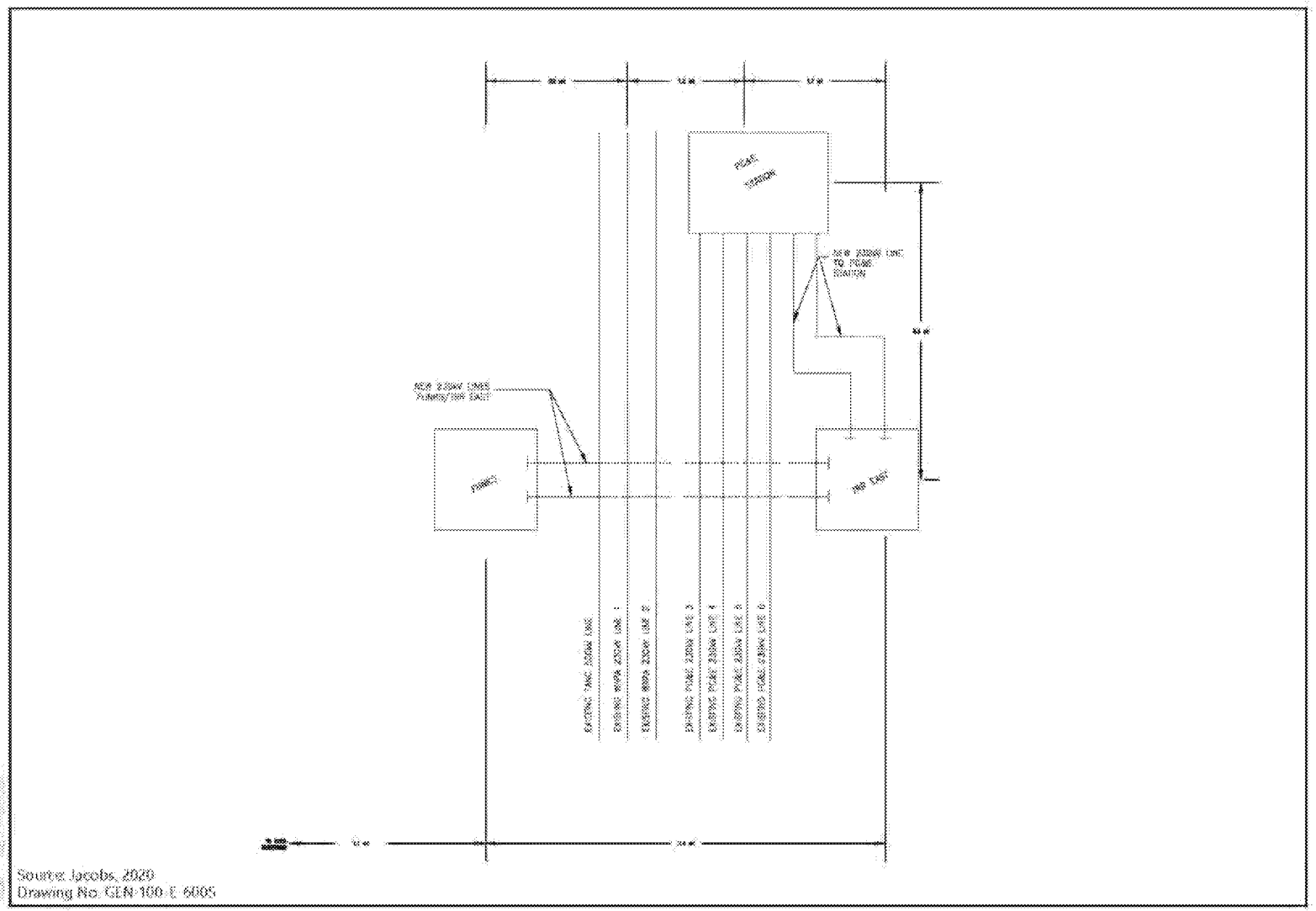
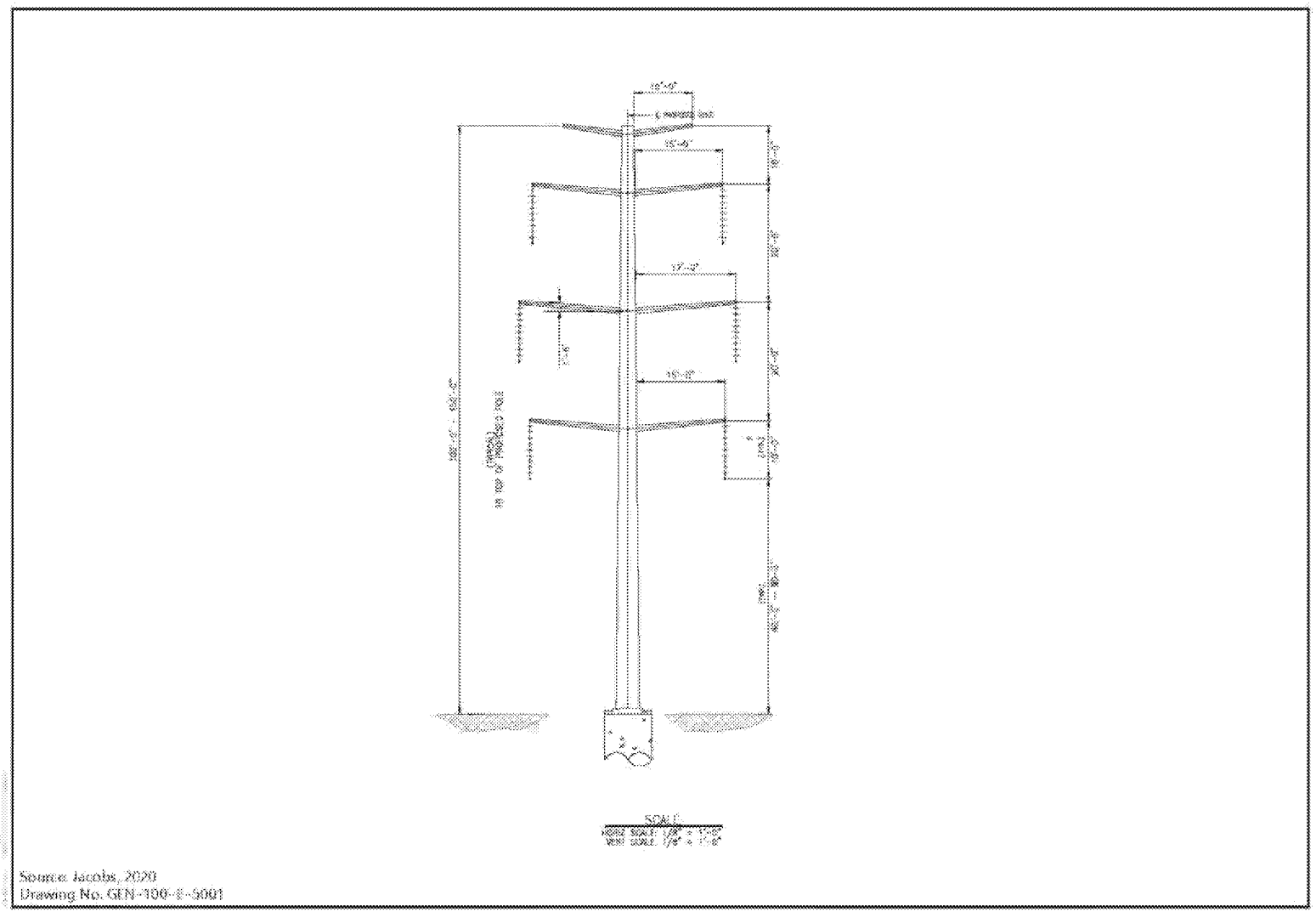


Figure 2-19. PG&E Schematic Sketch



Source: Jacobs, 2020
Drawing No. GEN-100-E-3001

Figure 2-20. Double-Circuit Source Transmission Poles

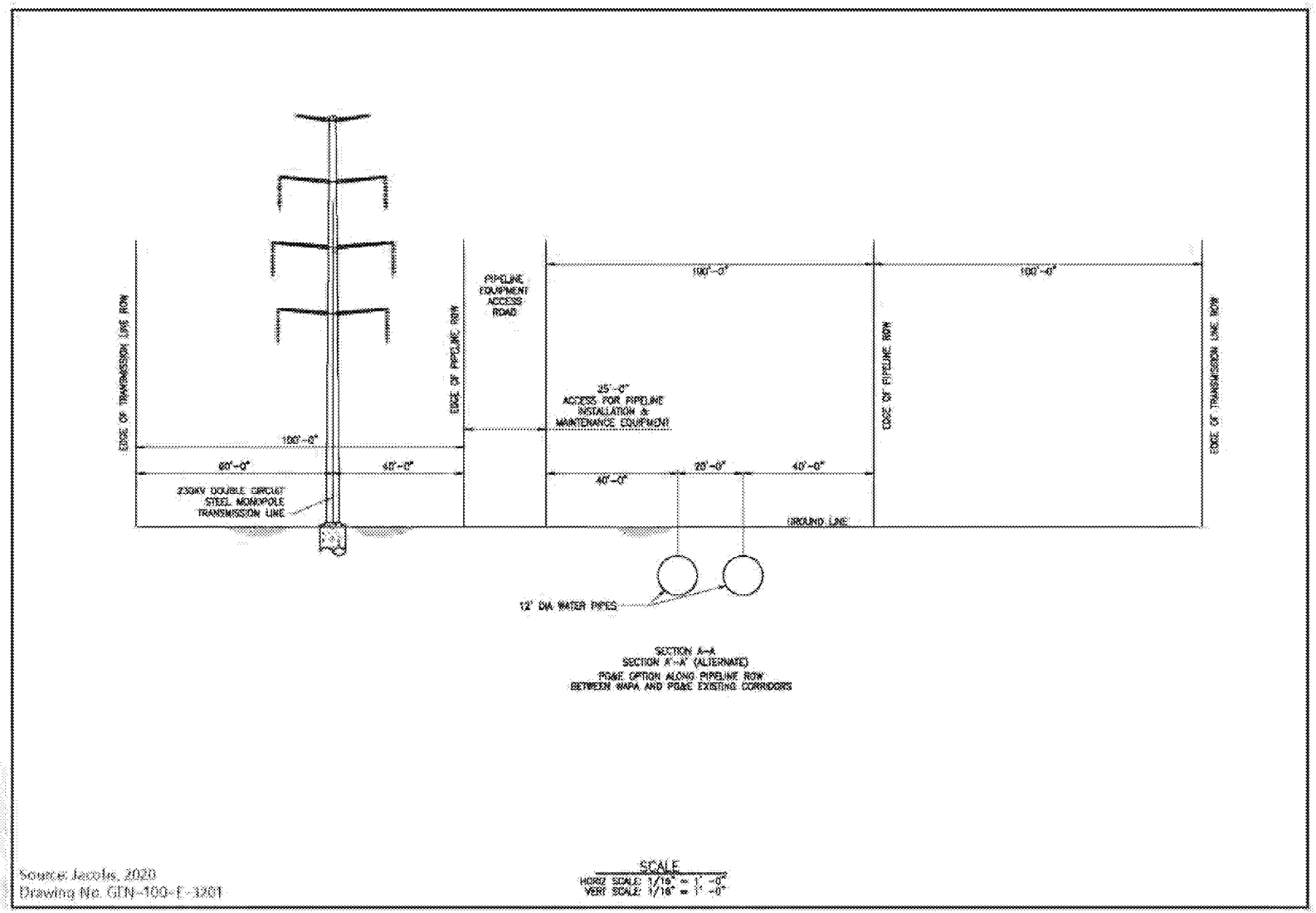


Figure 2-21. Funks to TRR Electrical Interconnection

2.5.1.4 Sites Reservoir and Related Facilities

Under all Action Alternatives, water would be impounded by the Golden Gate Dam on Funks Creek and the Sites Dam on Stone Corral Creek; a series of saddle dams along the eastern and northern rims of reservoir would close off topographic saddles in the surrounding ridges to form Sites Reservoir. See Figure 2-1 and Figure 2-3 for the location of the Sites Reservoir, Golden Gate Dam, saddle dams, and I/O Works.

Inlet/Outlet Works

The I/O Works for the reservoir are generally located to the south of Golden Gate Dam in Sites Reservoir. See Figure 2-24 (plan) and Figure 2-25 (profile), Inlet/Outlet Works Site, for a plan and profile view of the I/O Works. The I/O Works consists of a low-level intake, multi-level I/O tower, and two I/O tunnels. These structures are described in the subsections below, and Appendix 2C provides the engineering schematics for each structure.

The I/O Works would be designed to meet maximum water supply commitments, as well as safely pass emergency releases per DSOD requirements. The I/O Works would allow a maximum release of 16,000 cfs; the parallel I/O tunnels are designed to each convey half of the emergency drawdown flows (anticipated to be approximately 8,000 cfs each). The I/O Works would meet summer irrigation demands downstream with an estimated maximum release flow of 3,100 cfs. The I/O Works would also allow inflows pumped into the reservoir from the canals; the maximum inflows are anticipated to be 3,900 cfs.

Construction of the I/O Works would disturb approximately 30 acres in the reservoir inundation area and a similarly sized area at the downstream tunnel portal. The construction disturbance would consist of the footprint of the two intakes; tunnel portals; materials, spoils, and equipment staging areas; and access roads. A portion of the footprint outside the reservoir inundation area would overlap with the disturbance area for the conveyance system. Major construction activities associated with the I/O Works would consist of dewatering the construction site with an onsite treatment facility, excavating the hillside for the downstream and upstream tunnel portals, tunneling and hauling tunnel muck to a disposal area, using spoils from the tunnels for Golden Gate Dam or disposing of them in the reservoir inundation area, excavating for the multi-level tower shaft, building the multi-level tower, constructing the access bridge to the multi-level tower, building the low-level intake, and completing finished grading and site clean-up.

The construction of the tunnels that connect the Sites Reservoir to the Funks and TRR pipelines would require excavating the tunnel, installing the tunnel support systems, and controlling groundwater. The I/O tunnels would be constructed using a combination of drill and blast and road header excavation, depending on the strength of the rock, and pre-excavation measures would be used to stabilize the ground and reduce groundwater inflow. As construction proceeded, support systems would be installed and then the reinforced cast-in-place concrete tunnels and steel carrier pipe would be installed.

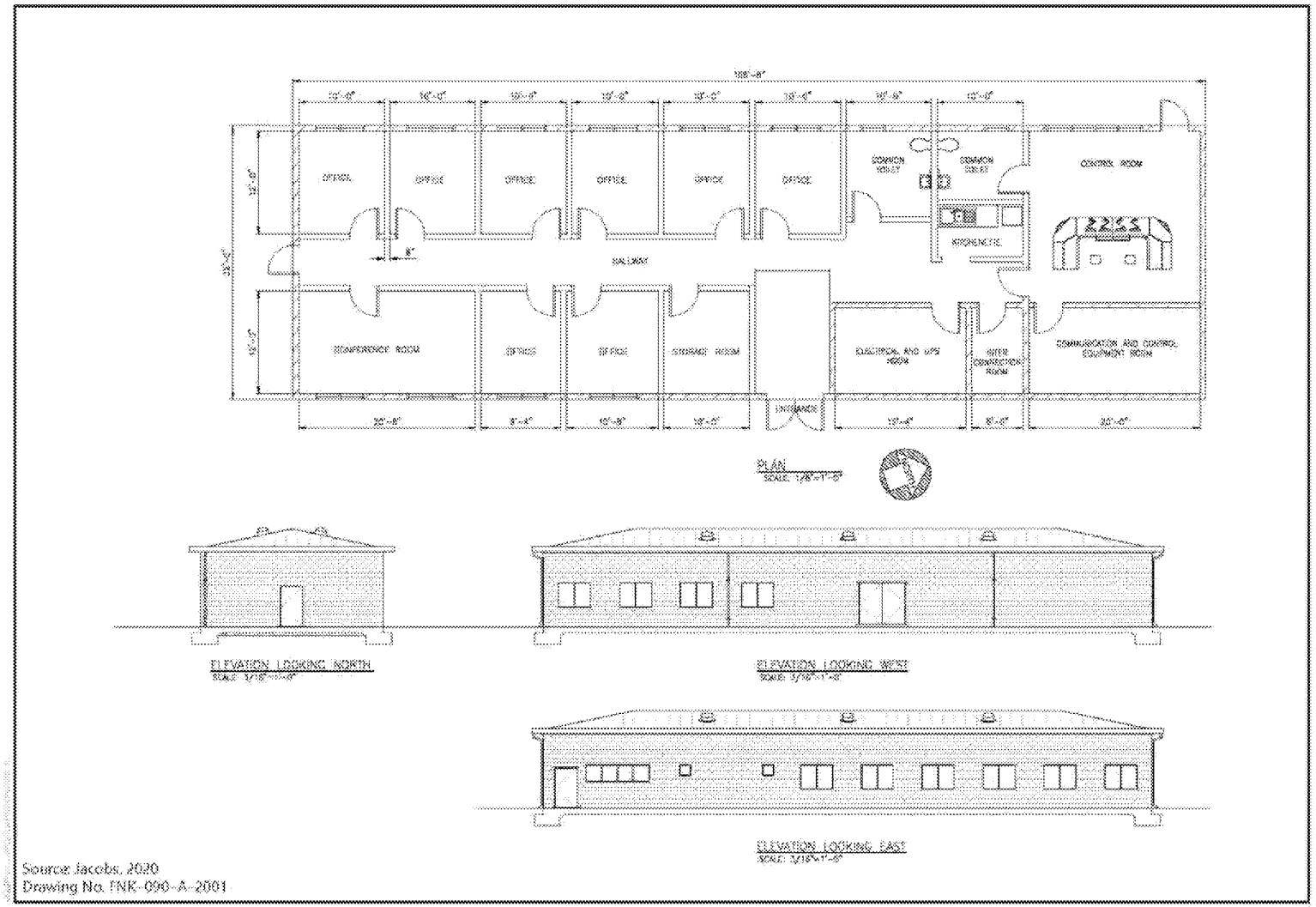


Figure 2-22. Administration and Operations Building

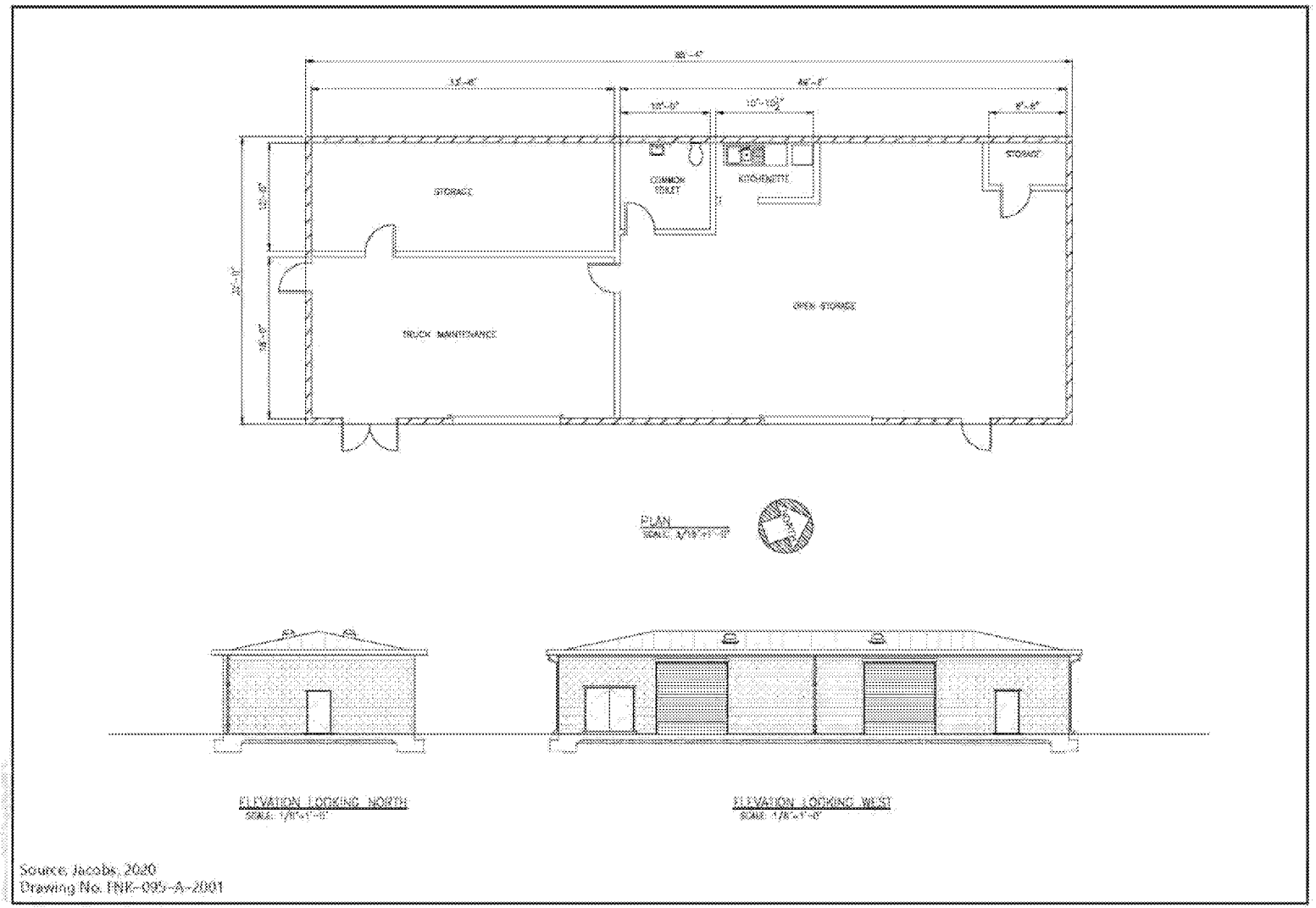
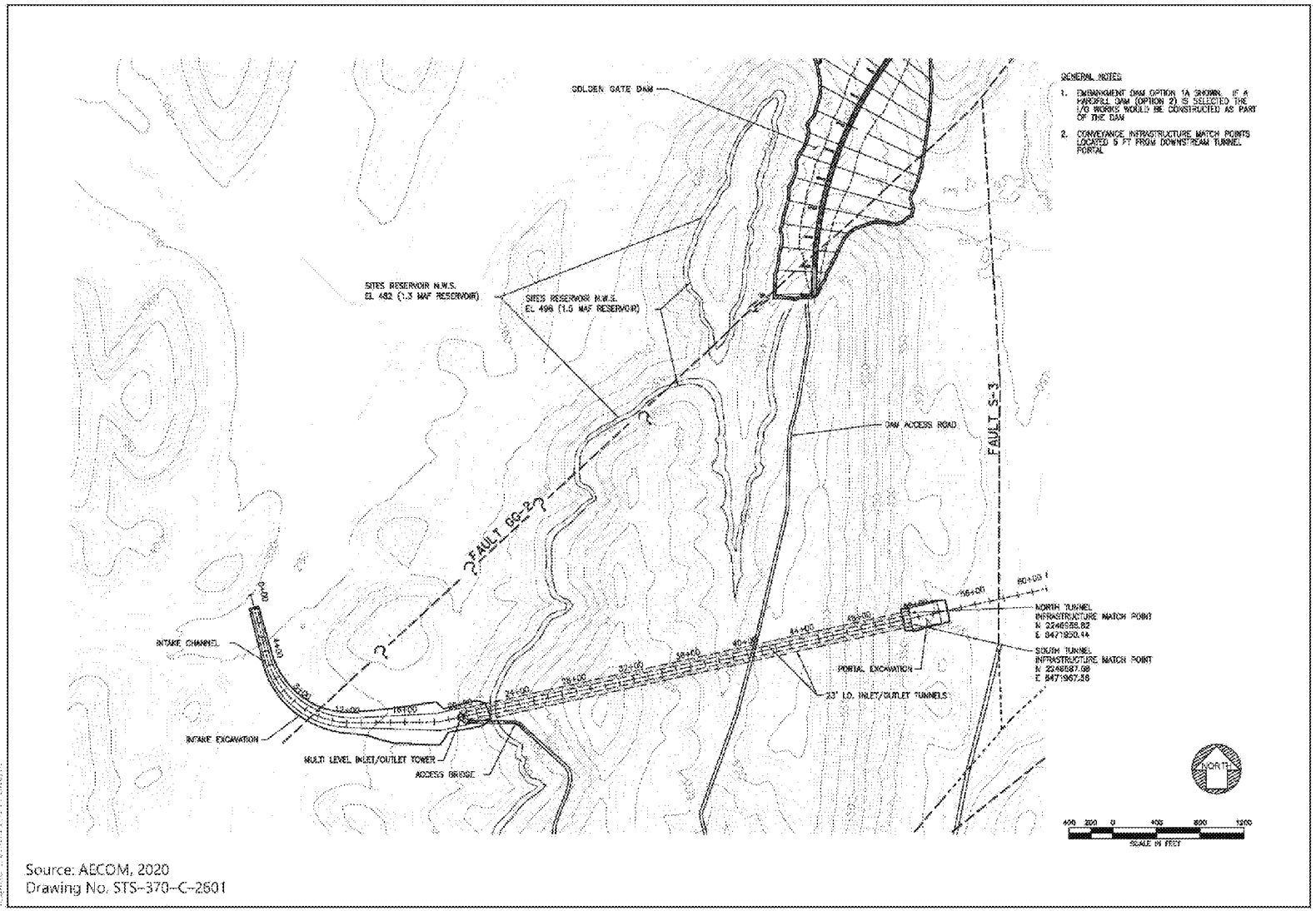


Figure 2-23. Maintenance and Storage Building



Source: AECOM, 2020
Drawing No. STS-370-C-2601

Figure 2-24. Plan of Inlet/Outlet Works Site

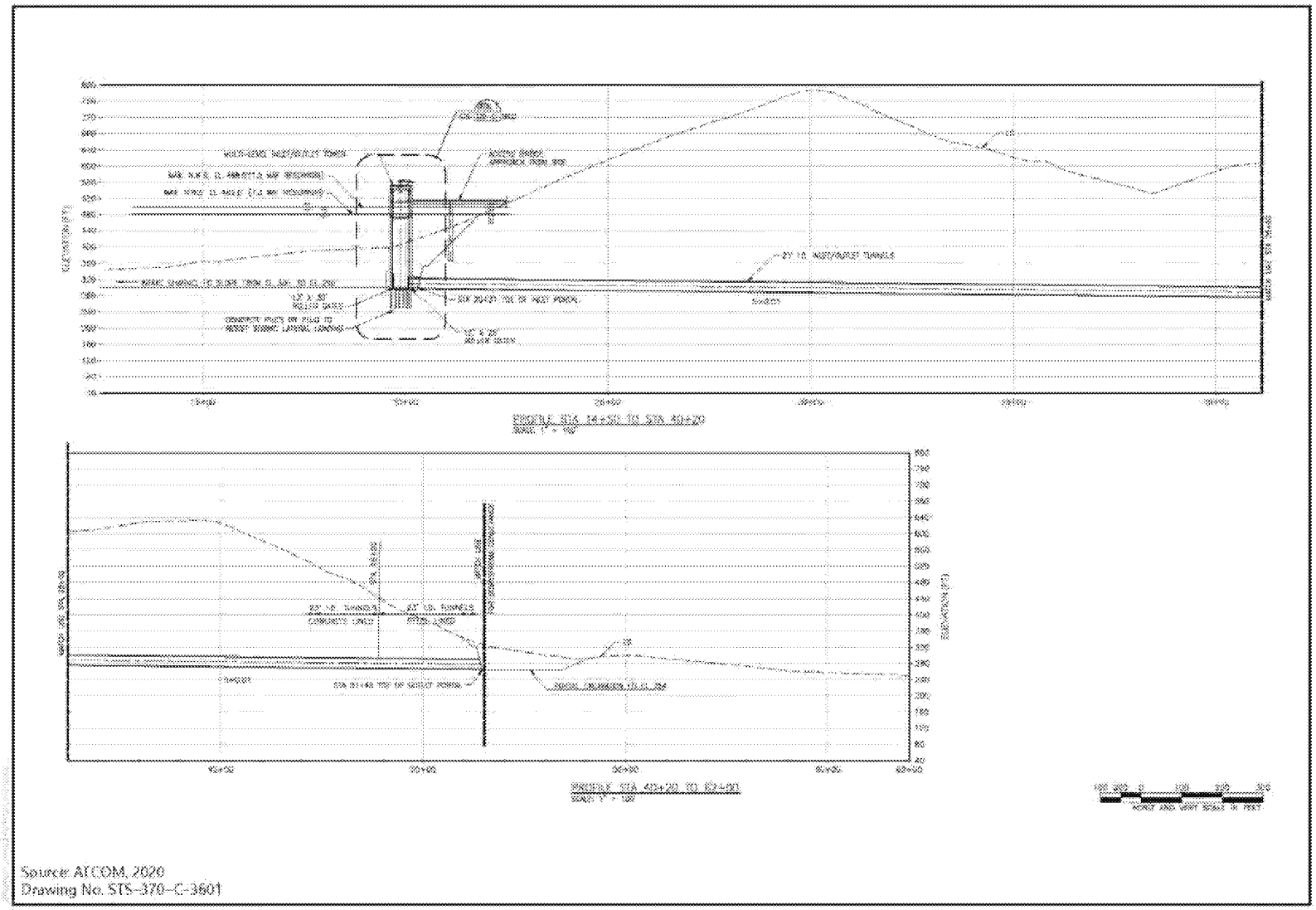


Figure 2-25. Profile of Inlet/Outlet Works Site

Low-Level Intake

The low-level intake would be used to meet DSOD-required emergency drawdown releases (refer to Section 2.5.2.1, *Water Operations - Emergency Release*, for more information about these requirements). This intake would also release stored water below the lowest ports in the I/O tower during drought conditions.

The low-level intake would be at an elevation of 300 feet to allow for sediment accumulation over a 100-year project life. Flows would not be pumped in directly from the Sacramento River, and the main source of sediment is expected to be from local runoff in the reservoir watershed. The intake channel would be excavated down to an elevation of approximately 290 feet. The installation of bar-type trashracks would protect the I/O tunnels from damage and keep debris from clogging the flow streams. The low-level intake would be designed to allow for inspection and maintenance.

I/O Tower

The 300-foot-tall, multi-level I/O tower would allow flows into and out of the reservoir through the use of ports around the tower's perimeter. These ports would be at multiple elevations and equipped with roller gates or valves, which would allow for operational flexibility, including managing the temperature/quality of water released from the reservoir. The tower would also have moveable fish screens. The movable fish screens would be sized as design progresses and criteria are established by the Authority in consultation with the applicable regulatory agencies. Head gates at the bottom (below ground surface) of the I/O tower would allow access to the I/O tunnels. The lower portion of the I/O tower would be anchored in bedrock, and the connections at the tower and abutments would accommodate differential movement that may occur during the design seismic event. Table 2-2 summarizes key design characteristics for the I/O tower.

Table 2-2. Summary of I/O Tower Design Characteristics for All Alternatives

Key Characteristic	Alternative 1 and 3	Alternative 2
Maximum Normal Water Surface Elevation*	498 feet above mean sea level	482 feet above mean sea level
Top of Tower Elevation	558 feet above mean sea level	542 feet above mean sea level
Top Tier Port Centerline Elevation	470 feet above mean sea level	450 feet above mean sea level
Maximum Number of Ports	21 (3 each at 7 tiers)	18 (3 each at 6 tiers)
Minimum Port Size	5.5-foot-wide by 7-foot-high rectangular ports have been assumed; Ports would be sized such that the maximum operational drawdown (3,900 cfs) can be achieved with ports at two levels (6 ports total)	

*This would also be the maximum normal operating water elevation

Seven operating levels (or tiers) are anticipated based on the current design. The upper tiers would be spaced 20 feet on center, with centerlines at elevations ranging from 350 to 450 feet (Alternative 2) or 470 feet (Alternative 1 and 3). The lowest tier would be located 10 feet on center below the next lowest tier at 340 feet elevation (all Action Alternatives). At each tier there would be three ports on alternating faces of the hexagonally shaped tower. The ports would be

constructed at different elevations to allow flexibility to withdraw water based on its quality (e.g., temperature, turbidity) needs. These ports would be controlled by roller gates or valves.

The head gates would be located in the I/O tower base (below ground surface) to allow the isolation of its tunnels for maintenance, inspection, and operational needs. The head gates would be designed to prevent outflow from the I/O tower at the full range of reservoir levels. The gates would be able to open (i.e., raised) and close under all normal reservoir operations and if emergency releases were required. Gates for either I/O tunnel would be closed to prevent outflow for operational purposes (downstream release or equipment preference, maintenance, or dewatering for inspection or equipment change out). Emergency raising and lowering of the gates by emergency power upon loss of electricity would be required.

A bridge would provide access to the I/O tower from the nearby access road. The bridge would be designed to accommodate equipment and materials required for maintenance of the tower. The bridge's length would depend on the access road design but is expected to be approximately 300 feet.

Two 23-foot-diameter I/O tunnels would extend from the I/O tower through the ridge on the right abutment of Golden Gate Dam. They would daylight on the other side of the ridge and connect to the transition manifold. The tunnels would each be about 3,110 feet long, connect to the multi-level tower at approximately 300 feet elevation, and have a downstream slope of 1%.

Dams and Dikes

All Action Alternatives would include Sites Dam and Golden Gate Dam along with a number of saddle dams and saddle dikes. The height of these facilities and the number of saddle dams and dikes varies between the Action Alternatives as summarized in Table 2-3. Sites Dam, Golden Gate Dam and the saddle dams and saddle dikes are discussed in more detail below.

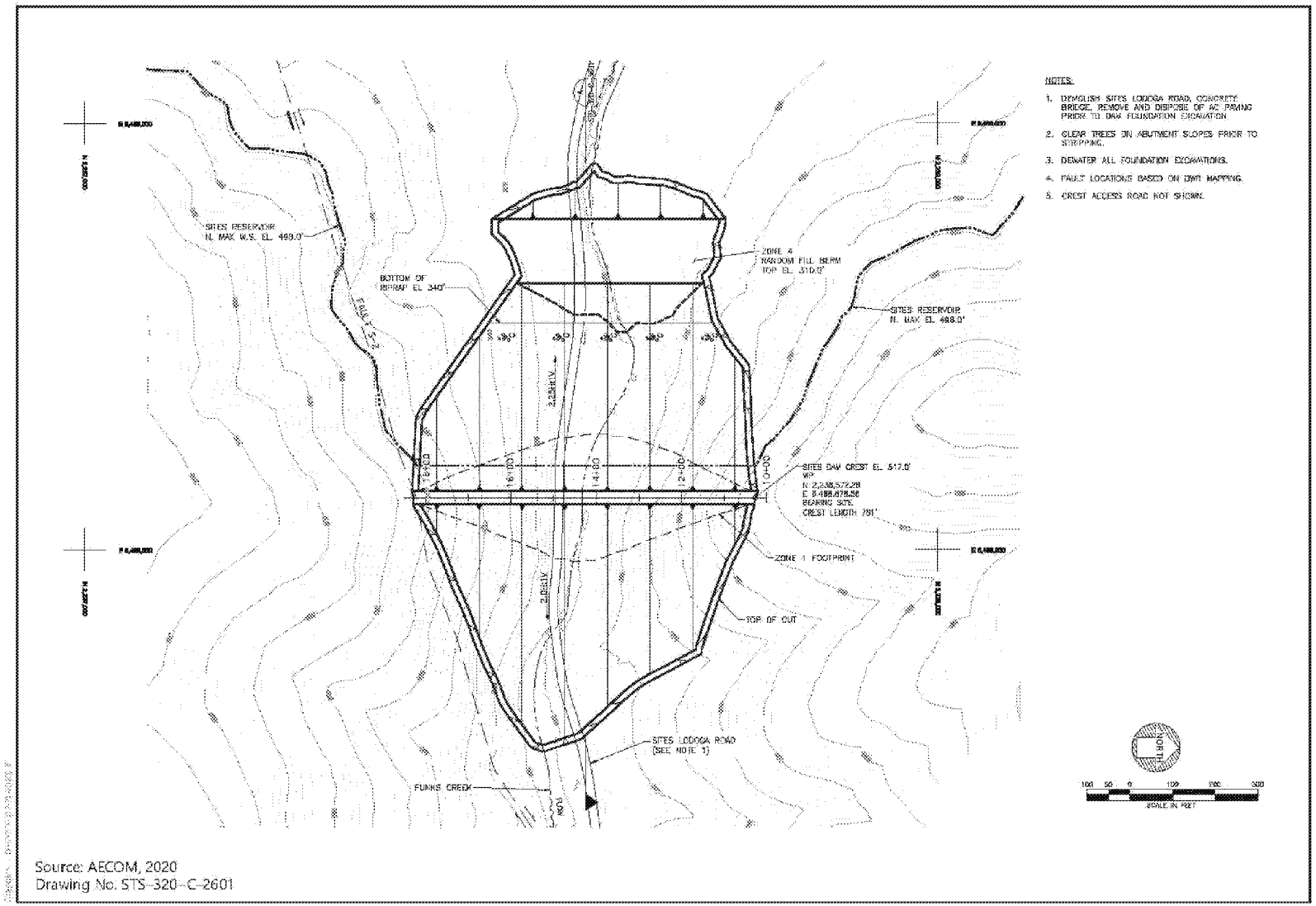
Table 2-3. Main Dam, Saddle Dam and Saddle Dike Summary for All Alternatives

Dam/Dike	Alternative 1 and 3		Alternative 2	
	Maximum Height Above Streambed (feet)	Length (feet)	Maximum Height Above Streambed (feet)	Length (feet)
Sites Dam	267	781	250	729
Golden Gate Dam	287	2,221	270	2,063
Saddle Dam 1	27	318	--	--
Saddle Dam 2	57	250	--	--
Saddle Dam 3	107	3,422	90	2,677
Saddle Dam 5	77	1,894	60	1,747
Saddle Dam 6	47	362	--	--
Saddle Dam 8A	82	1,300	62	1,140
Saddle Dam 8B	37	475	20	277
Saddle Dike 1	12	122	10	148
Saddle Dike 2	12	198	20	79
Saddle Dike 3	--	--	30	247

Sites Dam and Diversion Tunnel

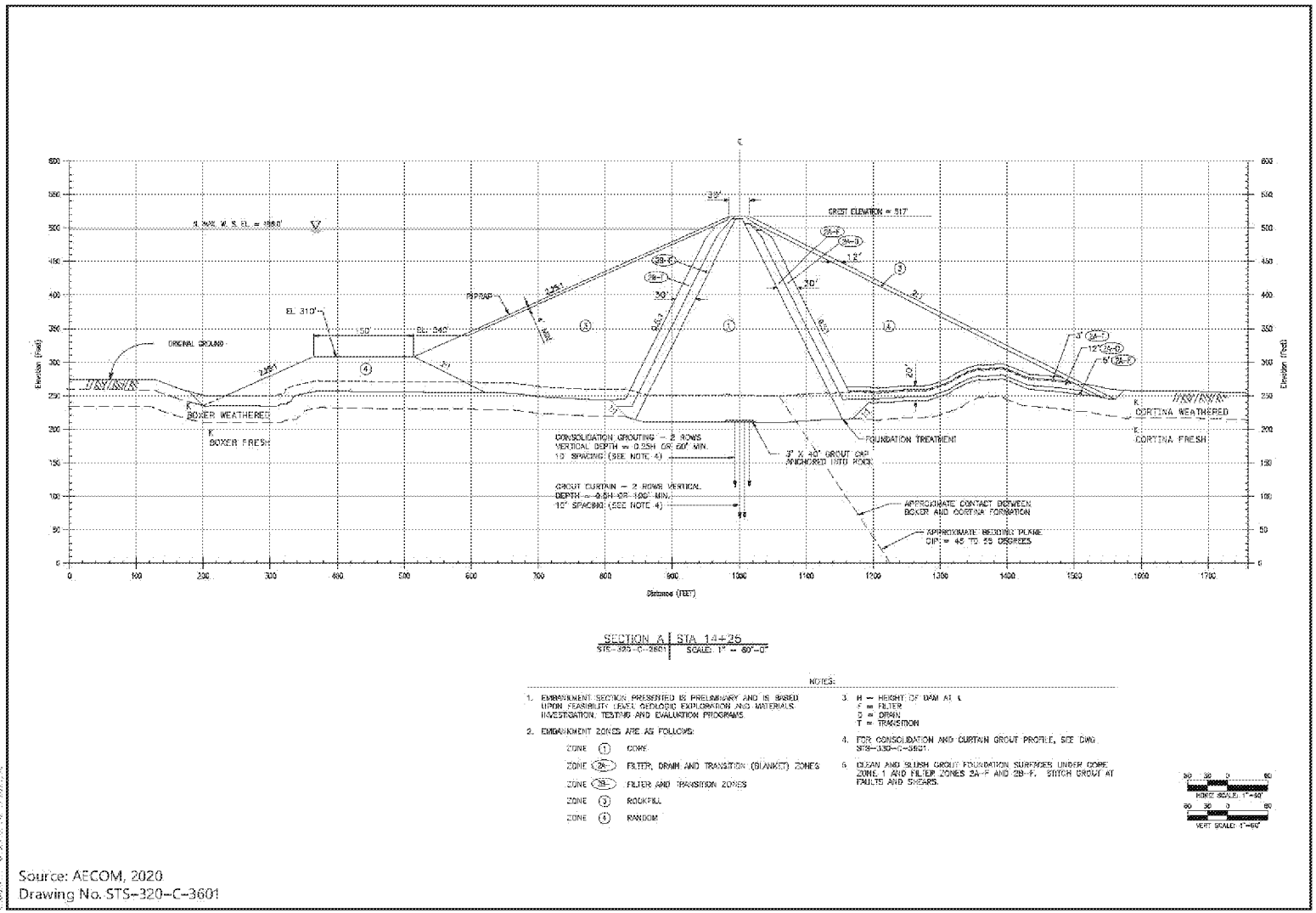
Sites Dam would be on Stone Corral Creek approximately 0.25 mile east of the community of Sites and 8 miles west of the community of Maxwell. The dam would be designed to safely accommodate potential fault displacement by providing widened filter, drainage, and transition zones. Sites Dam would be an embankment dam consisting of a combination of earth and rockfill embankment zones with a central impervious core, exterior upstream rockfill shell, and downstream earthen shell. The upstream and downstream slopes of the dam embankment would be 2.25:1 (horizontal: vertical; H:V) and 2H:1V, respectively. The upstream and downstream slopes of the dam's central core would be 0.5H:1V. Figure 2-26 provides a plan view of Sites Dam and Figure 2-27 provides a section view of Sites Dam.

Sites Dam would have a permanent diversion pipeline and tunnel that would be constructed in the left abutment of the dam. The approximately 1,600-foot-long tunnel would contain a 1,900-foot-long pipe with an internal diameter of 12 feet. The pipe would be fitted with one or more valves sized to release flow up to 100 cfs into Stone Corral Creek. The Sites Dam piping system is expected to include a bar trashrack, a slide gate, a separate fish screen and inlet valve to support Stone Corral Creek release flows, a stoplog bulkhead, and a permanent air vent assembly. The fish screen would be designed and sized to meet the requirements for aquatic life protection.



Source: AECOM, 2020
Drawing No. STS-320-C-2601

Figure 2-26. Sites Dam Plan



Source: AECOM, 2020
Drawing No. STS-320-C-3601

Figure 2-27. Sites Dam Section

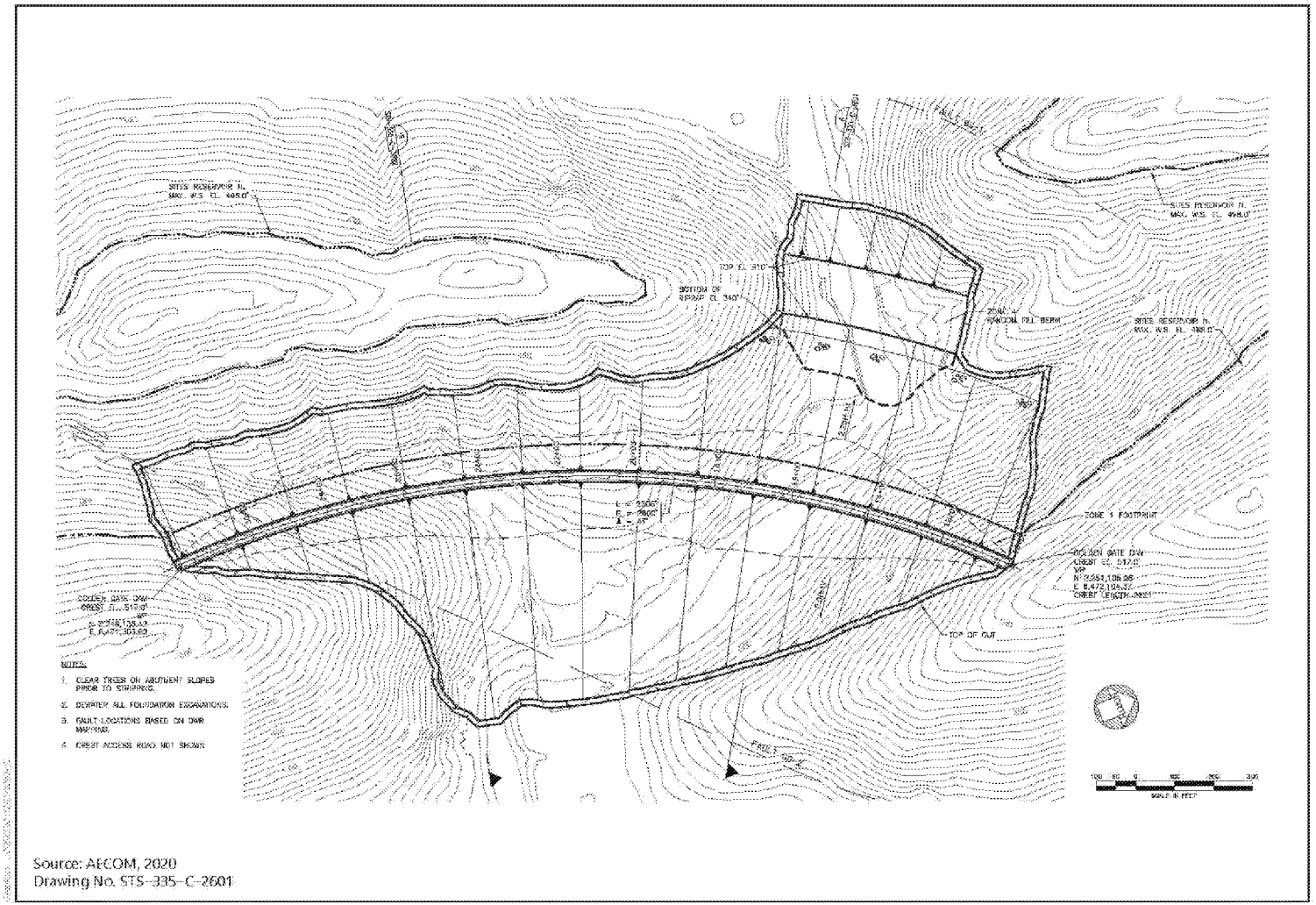
Stone Corral Creek would be diverted for construction of Sites Dam. A coffer dam would be installed to enable construction of the dam embankments in dry conditions. During construction storm flows would be conveyed in the 12-foot-diameter diversion tunnel through the ridge at Sites Dam. This tunnel would prevent a potential seepage path from forming through the embankment. Water in Stone Corral Creek would be diverted directly from the creek into the creek diversion pipeline through the Sites Dam abutment and into Stone Corral Creek on the east side of the Sites Dam work area. The outlet tunnel with two 84-inch-diameter fixed cone valves would accommodate these releases, and an energy dissipating chamber would reduce the velocity of the water released.

Golden Gate Dam

Golden Gate Dam would be on Funks Creek approximately 1.8 miles west of Funks Reservoir. The dam type and material, upstream slopes, and downstream slopes would be the same as described above for Sites Dam. Golden Gate Dam would not have a permanent diversion tunnel; all releases made would be through the I/O Works. Figure 2-28 provides a plan view of Golden Gate Dam and Figure 2-29 provides a section view of Golden Gate Dam.

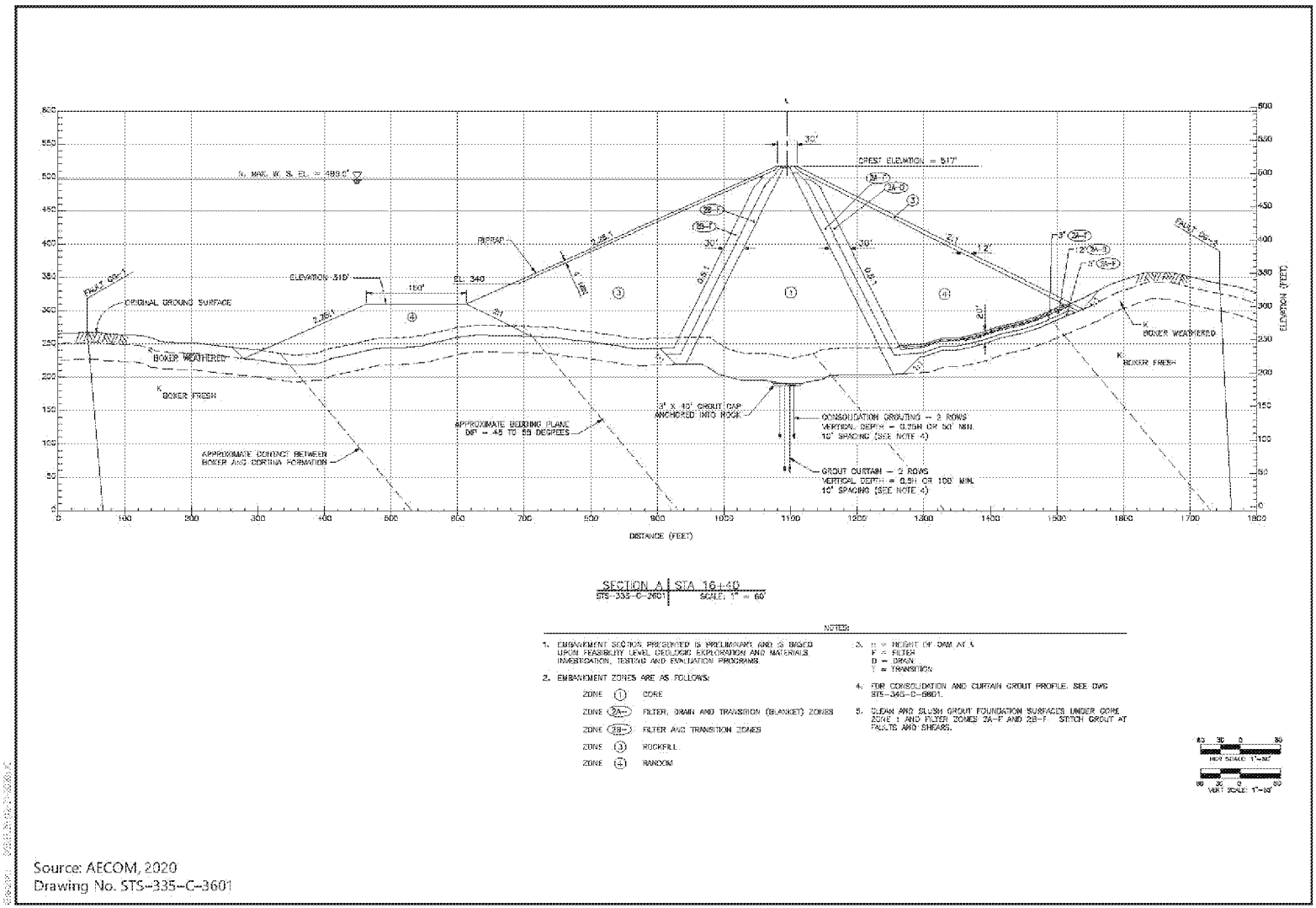
Funks Creek would be diverted for construction of Golden Gate Dam. A coffer dam would be installed to enable construction of the dam embankments in dry conditions. At Golden Gate Dam, a 48-inch-diameter diversion pipe would be placed in the foundation of the dam to divert Funks Creek but would be filled in and decommissioned after construction and prior to use of the dam. However, the coffer dam would be left in place and become part of the main dam.

During construction, water would pond behind the coffer dam on Funks Creek, flow through the temporary pipe underneath the Golden Gate Dam construction site to the east side of the dam, and then re-enter the Funks Creek channel. The coffer dam should provide enough residence for settling to occur for typical flows in Funks Creek.



Source: AECOM, 2020
Drawing No. STS–335–C–2601

Figure 2-28. Golden Gate Dam Plan



Source: AECOM, 2020
Drawing No. STS-335-C-3601

Figure 2-29. Golden Gate Dam Section

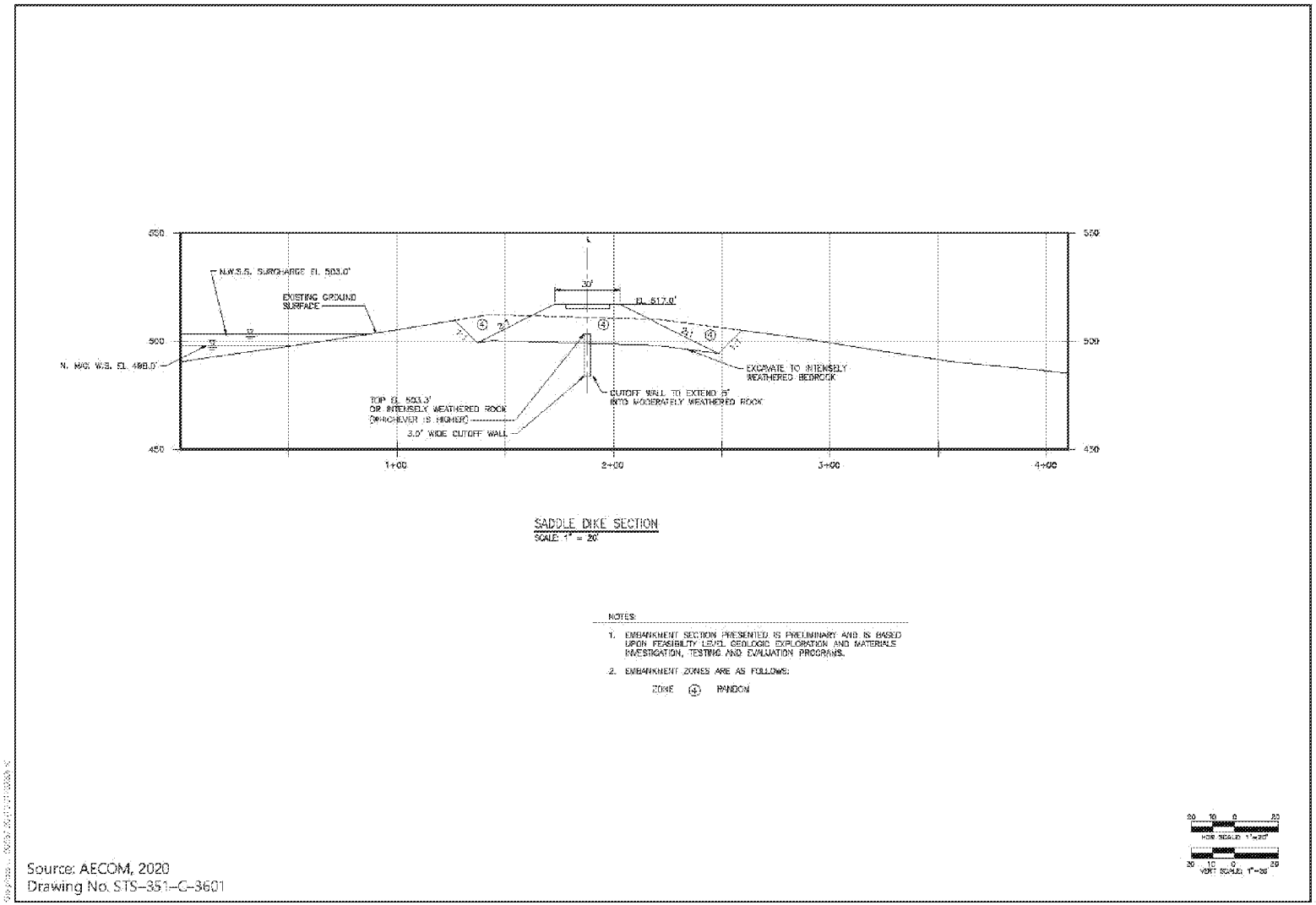
Saddle Dams and Saddle Dikes

The saddle dam and saddle dike material would be the same as described above for the Sites Dam. The number and locations of the saddle dams are based on the size of the reservoir because the saddle dams would be needed at topographic saddle low points along the eastern ridge of the reservoir. The upstream and downstream slopes of saddle dams are 3H:1V and 2.5H:1V, respectively. The upstream slope of the central core for the saddle dams would be 1H:1V with a vertical downstream face. See Figure 2-30 for saddle dam and dike locations. Saddle Dams 3, 5, and 8B would have slightly different design features that are discussed below.

Saddle dikes would be required at topographic saddle low points along the northern end of the reservoir. The saddle dikes would not retain water like the saddle dams but would raise two saddles that are below the minimum crest elevation to an elevation above the maximum reservoir elevation during the Probable Maximum Flood (PMF). The upstream and downstream slopes of saddle dikes would be 2H:1V. The saddle dikes would not have a central core. A typical saddle dike section is presented on Figure 2-30, Saddle Dike Section.

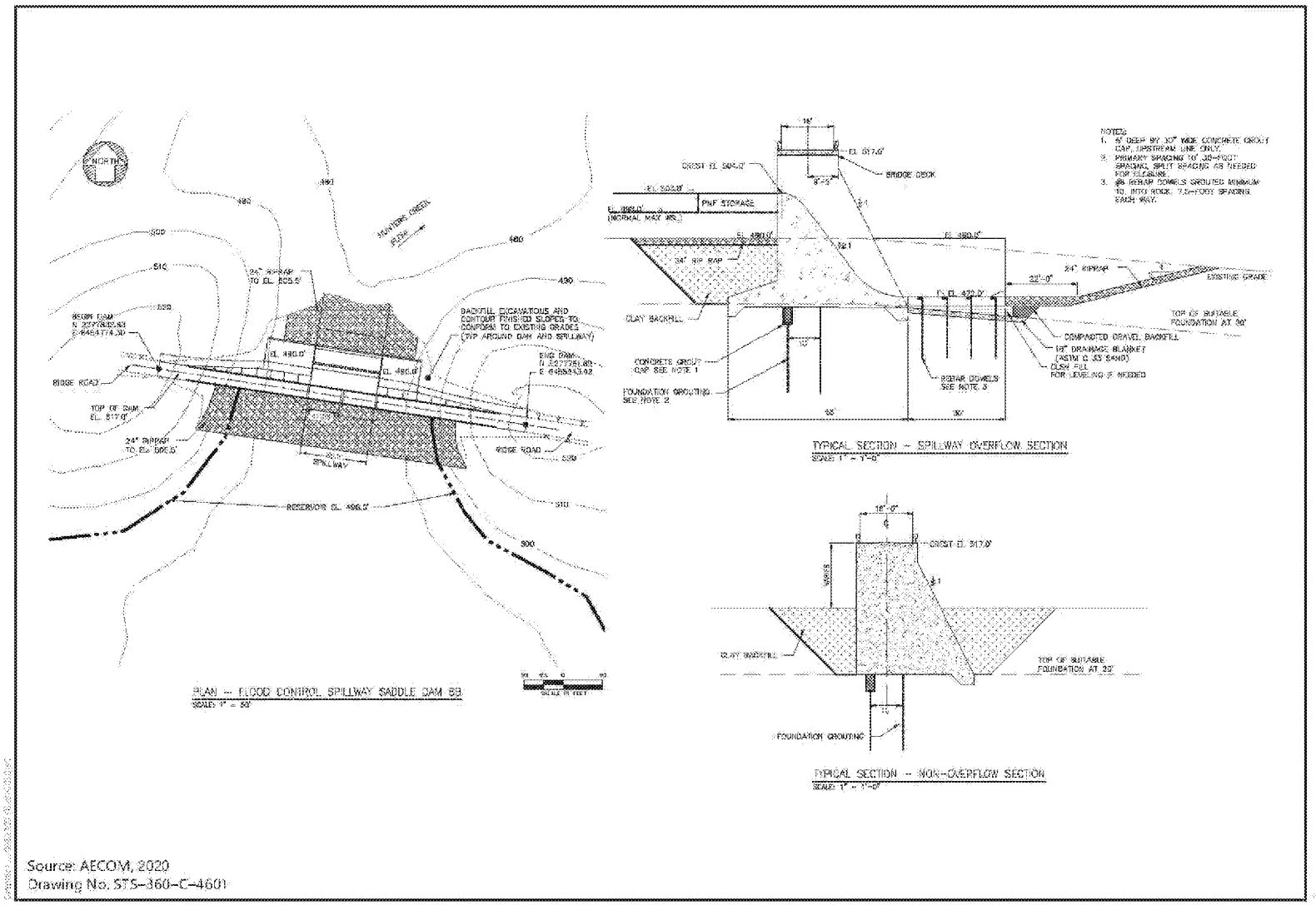
Saddle Dams 3 and 5 would be designed to release emergency flows. Therefore, these two saddle dams would have an intake in the reservoir, a tunnel under the ridge, and an outlet structure to provide energy dissipation and controlled emergency releases of water to the local receiving drainage, Hunters Creek. The intake would be a reinforced concrete structure of appropriate length (approximately 65 linear feet with trashracks). The tunnel would be reinforced concrete with a steel liner; its diameter is expected to range from 10 to 12 feet, and it would be approximately 830 linear feet. The energy dissipation structure would be a reinforced concrete structure containing one or multiple energy dissipation valves within steel-lined chambers to contain spray and provide controlled release of water to Hunters Creek. The size of the energy dissipation chambers would be determined based on manufacturer recommendations. A riprap-lined basin would extend for a minimum of 100 feet downstream of the energy dissipation structure to transition the discharge to the receiving channel.

Saddle Dam 8B would contain the reservoir spillway (see Figure 2-31). The crest width for the dam would be designed to accommodate a 16-foot-wide crest road with suitable concrete or metal guardrails on both sides. The length of the spillway crest section would be based on flood routing analyses, and the crest elevation would be based on the size of the reservoir and normal operating water surface elevation. This elevation would allow storage of the PMF without spilling and have sufficient capacity to pass the volume of over-pumping water in the unlikely event that over-pumping occurred for more than 10 days; it would also enable controlled emergency releases to the local receiving drainage, Hunters Creek. See Figure 2-31, Saddle Dam 8B Spillway, for a schematic of the spillway.



Source: AECOM, 2020
Drawing No. STS–351–C–3601

Figure 2-30. Saddle Dike Section



Source: AECOM, 2020
Drawing No. STS-360-C-4601

Figure 2-31. Saddle Dam 8B Spillway

Dam Monitoring

Instrumentation would be installed in the dam abutments, dam embankments, and downstream of the dams. The objectives of instrumenting the dams include developing physical data for comparison to assumptions made for the design analyses, anticipated behavior based during the studies, and monitoring of dam performance during construction, first filling of the reservoir, and long-term operation of the Project.

The types and locations of instrumentation would be selected to measure specific engineering parameters, including deformation, seepage flows, piezometric levels, pore-water pressure, and seismic response. Types of instrumentation could include piezometers, inclinometers, extensometers, survey monuments, weirs, and strong motion accelerographs. A reservoir level indicator and meteorological station would also be included, and an automated data acquisition system would provide for remote data acquisition of the dams.

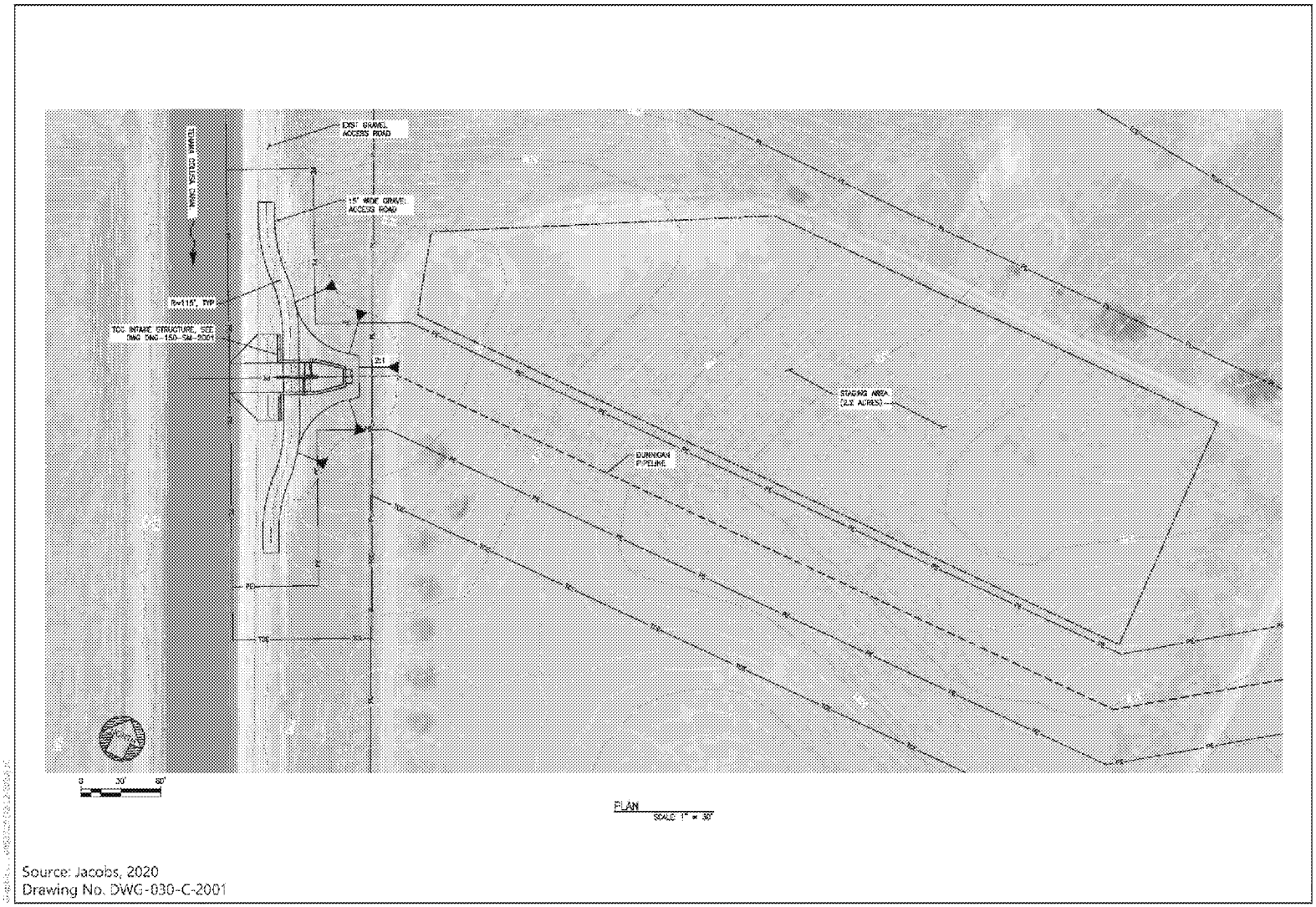
2.5.1.5 Conveyance to Sacramento River

Water released from Sites Reservoir would be conveyed south of the reservoir using the existing TC Canal and a new Dunnigan Pipeline. The water would flow south about 40 miles to near the end of the TC Canal, where it would be diverted into the Dunnigan Pipeline. The flows would subsequently be conveyed to the CBD and ultimately reach the Sacramento River. See Figure 2-2, Alternative 1 and 3 Conveyance to Sacramento River Components, for the location of the facilities associated with conveying water to the CBD and Sacramento River.

TC Canal Intake

A new intake would be required to move water from the TC Canal into the Dunnigan Pipeline. See Figure 2-32, TC Canal Intake Site Plan, for a site plan of the intake. The TC Canal intake site would encompass approximately 0.5 acre and be accessed from the existing TC Canal access road. The intake would be a concrete structure sized for a flow of 1,000 cfs that supports the control gates and associated gate operators. Power would be needed for SCADA control and gate operation to let water into the Dunnigan Pipeline; however, there would be a gravity outlet structure from the TC Canal into the Dunnigan Pipeline and no pumping would be required. A concrete bridge deck would provide vehicular access across the top of the intake. Stoplog slots at the inlet and outlet channels would enable isolation of the control gates for maintenance.

Temporary disturbance for construction of the TC Canal intake adjacent to the TC Canal would require 2 acres for temporary construction for about 1 year. The staging area would be located on the east side of the TC Canal and just north of the Dunnigan Pipeline. Access to this structure is anticipated to be from the existing TC Canal access road.



Source: Jacobs, 2020
Drawing No. DWG-030-C-2001

Figure 2-32. TC Canal Intake Site Plan

Dunnigan Pipeline

The Dunnigan Pipeline would convey water released from the TC Canal to the CBD. See Figure 2-33, Dunnigan CBD Discharge Site Plan, for the location of this facility. The Dunnigan pipeline would be about 4 miles long, have a minimum depth of 6 feet below ground surface, and have an inside diameter of approximately 9 feet (Alternative 1 and 3) to 10.5 feet (Alternative 2). The Dunnigan Pipeline would extend through existing agricultural lands, as well as crossing Interstate 5 (I-5), Road 99W, the railroad, and a commercial auction yard between I-5 and Road 99W. The tunneled crossings at I-5, Road 99W and the railroad would be 300 feet long and 250 feet long, respectively, and would require 12-5-foot-diameter casings.

A CBD outlet with an energy dissipation facility would be required at the downstream end of the pipeline prior to discharging the water into the CBD. Two 60-inch-diameter, fixed-cone valves would be placed at the discharge stilling basin to dissipate energy and adjust the flow. Hoods on the fixed-cones valves would control spray. The conveyance through the Dunnigan Pipeline to the CBD would use gravity (i.e., no pump station) and have a flow up to 1,000 cfs.

Construction of the Dunnigan Pipeline from the TC Canal to the CBD would require dewatering, trenching, and pile driving or a vibration hammer. Dewatering would be necessary for a segment of the pipeline to reduce groundwater levels to 20 or 30 feet below ground surface along its length. Trenching and pipeline installation would be completed after dewatering. Pile driving or a vibration hammer would be used to install piles for construction of the CBD outlet. Construction would include open cut of approximately 100 feet to cross Bird Creek in the dry season.

2.5.1.6 Recreation Areas

The Project proposes the development of two primary recreation areas and a day-use boat ramp. The recreation areas would also require a network of new roads and upgrades to existing roads for maintenance and local access (see Section 2.5.1.7, *New and Existing Roadways* a). Figure 2-34, Recreation Areas, shows a conceptual site map of each recreation area and the recreation areas are described below.

- **Peninsula Hills Recreation Area** – The Peninsula Hills Recreation Area would be located on the northwest shore of the Sites Reservoir, to the north of the existing Sites Lodoga Road and across the reservoir from the Stone Corral Creek Recreation Area. Access would be provided by the existing Sites Lodoga Road west of the reservoir. This recreation area would encompass up to 373 acres and would include a kiosk, access to electricity and potable water, 10 picnic sites (with parking at each site), and hiking trails. There would also be 19 vault toilets, 200 campsites (car and recreational vehicle), and one group camp area.



Source: Jacobs, 2020
Drawing No. DWG-030-C-2002

Figure 2-33. Dunnigan CBD Discharge Site Plan

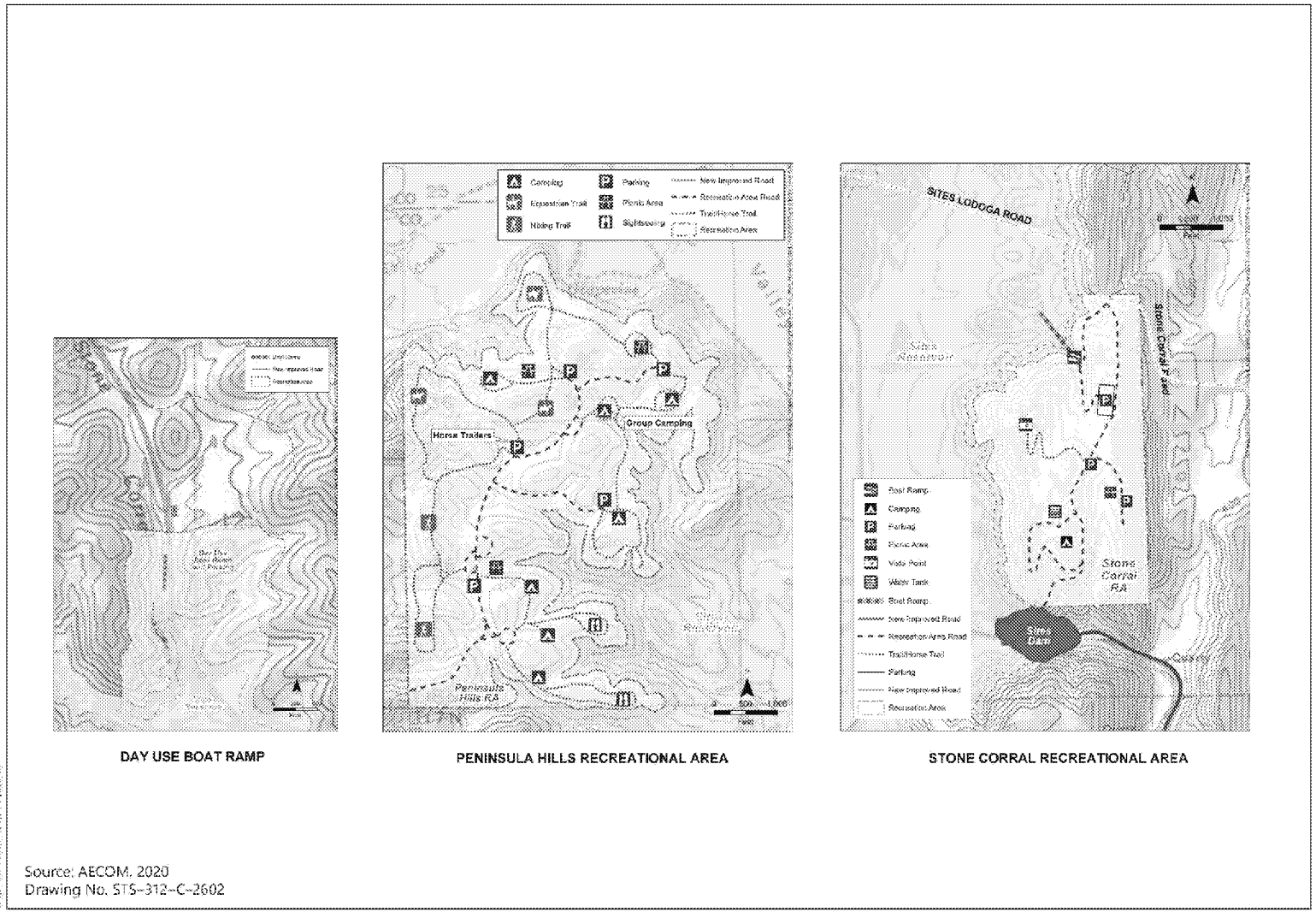


Figure 2-34. Recreation Areas

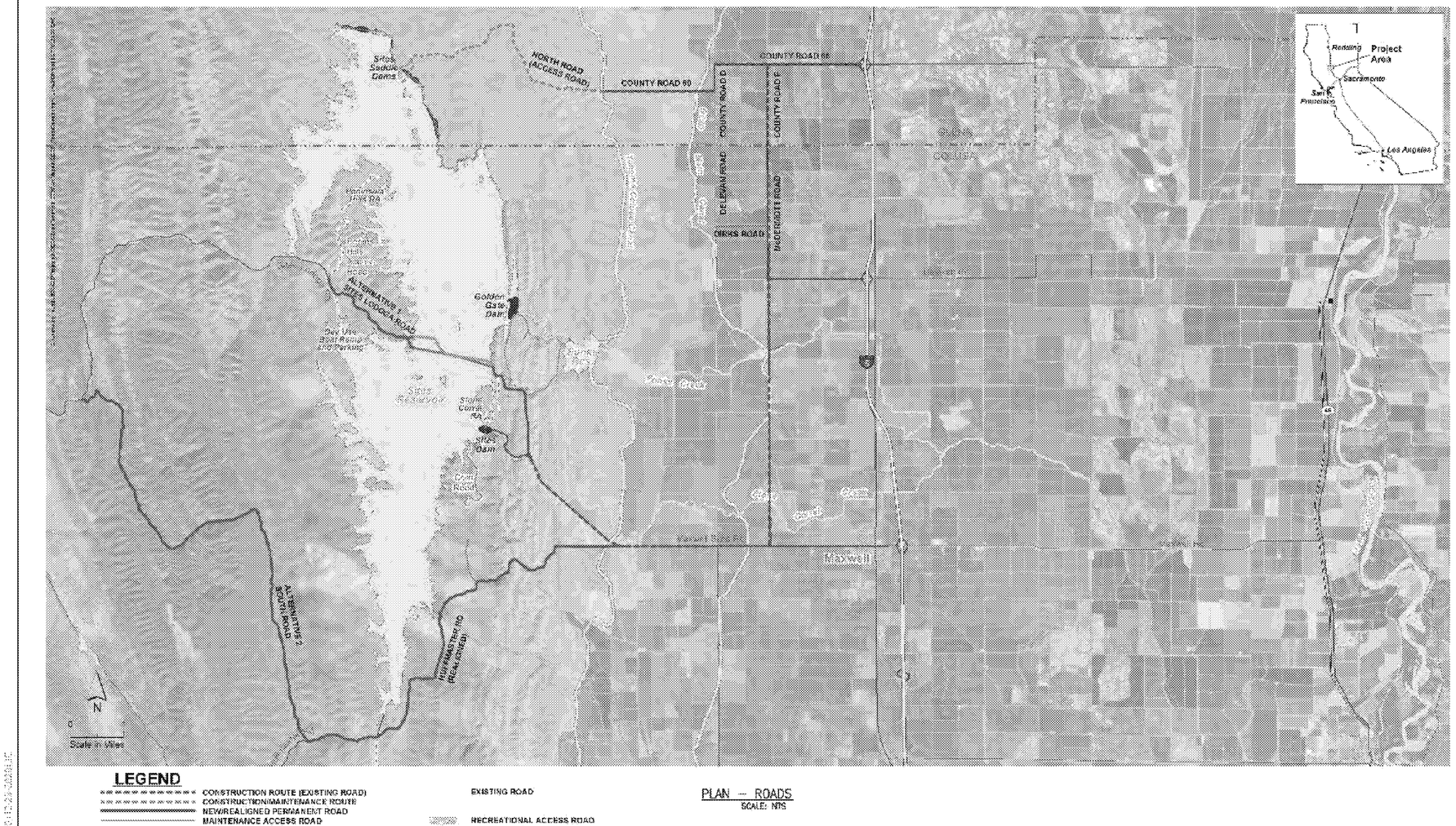
- **Stone Corral Creek Recreation Area** – The Stone Corral Creek Recreation Area would be located on the eastern shore of the Sites Reservoir, north of the existing Maxwell Sites Road and Sites Dam. Access would be provided from Sites Dam and Sites Lodoga Road near the eastern end of the bridge across the reservoir. This recreation area would encompass up to 235 acres and its facilities would include a kiosk, access to electricity and potable water, 10 picnic sites (with parking at each site), and hiking trails. There would also be 10 vault toilets and 50 campsites (car and recreational vehicle).
- **Day-Use Boat Ramp and Parking Areas** – The day-use boat ramp would be located on the western side of the reservoir where the existing Sites Lodoga Road intersects with the proposed inundation area for the reservoir. A parking area would be added to the existing Sites Lodoga Road where it exits the inundation area footprint of the reservoir. The boat ramp and parking area would encompass up to 10 acres and include a kiosk, access to potable water, and one vault toilet.

Construction of the recreation areas and facilities would consist of clearing and grubbing, excavating, backfilling, constructing roads and parking lots, installing utility connections, constructing amenities, constructing the boat ramps, and restoring temporarily disturbed areas. It is anticipated that all construction activities associated with the recreation areas would occur within the proposed footprints of the recreation areas and the temporary and permanent access road areas.

The Authority is also considering a recreation area on the north side of the reservoir within Glenn County. This area may consist of a day-use boat ramp, parking area, picnic facilities, kiosk, access to potable water, and one vault toilet encompassing up to 10 acres. As this facility is conceptual in nature, it is not analyzed in this RDEIR/SDEIS and would require additional CEQA and NEPA analysis if developed and as appropriate.

2.5.1.7 New and Existing Roadways

Approximately 46 miles of new paved and unpaved roads would provide construction and maintenance access to the proposed facilities, as well as public access to the proposed recreation areas. Table 2-4 identifies these roads and their purposes (i.e., construction access, local access, and maintenance access). Figure 2-35, Alternatives 1, 2, and 3 Road Site Map, shows the locations of all local access, construction access, and maintenance access roads that would be needed. The general objectives and maintenance responsibilities for these road types are discussed below, and more detailed information for construction access, local access, and maintenance access roads is subsequently presented in the corresponding subsections. The proposed road improvements and roadway designs are being coordinated with Colusa and Glenn Counties.



Source: AECOM, 2020
Drawing No. STS–305–C–2601

Note: Comm. Road North to be removed

Figure 2-35. Alternatives 1, 2, and 3 Road Site Map

Construction access roads would be designed to provide the necessary roadway improvements specific to the movement of construction equipment and transport of materials. Roadways that would be used for construction access and local access would be designed to achieve the objectives for both uses and prioritize needs for local traffic use and safety. Roads used solely for construction access would be designed with two 12-foot-wide gravel lanes and up to 2-foot-wide shoulders. These roads would be used for maintenance access after completion of construction. Permanent facility access roads constructed from gravel and asphalt would facilitate operation and maintenance. These access roads would require new construction or the relocation of existing public county roads. Temporary gravel roads would also be built during construction. The maintenance of roads used for both construction and local access would be the construction contractor's responsibility during construction and the responsibility of the Colusa or Glenn County department having jurisdiction over them after construction.

Local access roads that would be improved or relocated for construction purposes would provide reliable infrastructure for the traveling public, accommodate transportation needs, and be consistent with state and local design standards. Local access roads would generally have two 12-foot-wide lanes with paved shoulders, and their postconstruction maintenance would be the responsibility of the Glenn or Colusa County department with jurisdiction over them.

Maintenance access roads would be constructed or improved in accordance with the equipment and personnel required for operations and maintenance of specific facilities. As discussed above, roads installed for construction access would be repurposed for maintenance following construction. Repurposed maintenance roads would have one 15-foot-wide minimum gravel lane with no shoulders.

Table 2-4. Sites Project Roads & Purposes Common to all Alternatives

Roads	Road Purpose		Approx. Current Length (miles)	Approx. Proposed Improved Length (miles)	Improvement Types
	Colusa County[2]	Glenn County[2]			
Road 68	--	Local, Construction	3	3	Shoulder improvements/ intersection widening, two structure improvements
Road D	--	Local, Construction	0.5	0.5	Shoulder improvements/ intersection widening, two structure improvements
Road 69	--	Local, Construction	2	2	Shoulder improvements/ intersection widening, three structure improvements
North Road	--	Construction, Maintenance	0	5	New gravel road

Roads	Road Purpose		Approx. Current Length (miles)	Approx. Proposed Improved Length (miles)	Improvement Types
	Colusa County[2]	Glenn County[2]			
Delevan Road	Local, Construction		2	2	Shoulder improvements/ widening
McDermott Road	Local, Construction	Local, Construction	8	4	Shoulder improvements/ widening/paving, five structure improvements
Saddle Dam Road – North (5–9) (provide access to northern portions of Sites Reservoir and the saddle dams)	--	Construction, Maintenance	1	2	New gravel road
Saddle Dam Road – South (1–5)	Maintenance	Maintenance	0	3	New road
Huffmaster Road realigned	Local	--	12	7	Gravel road for residents
Sites Lodoga Temporary Detour Road (Shoo-Fly)	Local, Construction	--	1	1	New, temporary gravel road
Day-Use Boat Ramp (westside)	Local	--	0	0.3	New paved road
Peninsula Hills Recreation Area (provide access from Sites Lodoga Road to the proposed Peninsula Hills Recreation Area)	Local	--	0	4	New gravel road
Potential Access Road A (O&M/PGP/GG Dam)	Maintenance	--	0	1	New road
Potential Access Road B (O&M/PGP/GG Dam)	Maintenance	--	0	0.4	New road

Roads	Road Purpose		Approx. Current Length (miles)	Approx. Proposed Improved Length (miles)	Improvement Types
	Colusa County[2]	Glenn County[2]			
Potential Access Road C1 (O&M/PGP)	Maintenance	--	0.4	0.4	Existing road
Potential Access Road C2 (O&M/PGP/GG Dam)	Maintenance	--	0.6	0.6	Existing jeep road
Stone Corral Creek Recreation Area/Sites Dam	Local	--	0	2.5	New road
Comm Road South	Local	--	0	1	New road

Table Notes:
Local access includes local road for public use and recreational access.
Any improvement type identified as a new road has an approximate current length of 0.

The roadway alignments discussed below are based on service needs and existing planning-level-based mapping to establish a corridor width along roadways. Corridor widths would vary depending on the level of topographical relief—greater relief requires greater flexibility throughout the design process to allow the engineers to move the road within the corridor.

Several existing roads would be improved to support the construction of Sites Reservoir facilities (e.g., main dams and saddle dams) and enable construction vehicles to safely pass one another if needed. After construction of the reservoir was completed, these roads would be maintained to support the operation of the Sites Reservoir. Some of these roads would also be available for public use. This subsection describes the expected routes for construction access and the roadway improvements that would be needed to accommodate construction and maintenance access.

The disturbance area for roads would include the footprints of the proposed roads and stream crossings, the staging areas for materials and equipment, and the area needed to construct the facilities and access roads. Traffic that was not construction related would be diverted around construction disturbance areas in accordance with a traffic management plan.

Initial construction activities would involve establishing staging areas, surveying and marking roadways, clearing, and grading. Road construction would entail making road cuts and fills; hauling away excess cut materials; constructing culverts; laying aggregate road base and asphalt; erecting fences, guardrails, and signs; installing roadway striping and reflectors; restoring temporary disturbance areas; and cleaning up the work sites.

Construction Access

Construction access for the reservoir and supporting facilities would occur on public roads from I-5 to the reservoir site on the north and at Sites Lodoga Road on the east. These roads currently cross small creeks and irrigation canals, and the crossings are generally reinforced through concrete box culverts. There are three primary construction access routes for consideration that would most likely be defined for use by the construction contractor.

The first construction access route would be on 5.5 miles of existing approximately 24 feet wide paved road from I-5 west along Road 68, south on Road D, and west on Road 69 to just west of the TC Canal. From here the road reverts to a single lane (± 12 feet wide) gravel road (North Road), which would be temporary and continue for approximately 5 miles along existing ranch roads and trails to the north end of the reservoir at the saddle dams. From this location, the contractor would establish their own onsite access roads within the limits of the reservoir.

The second construction access route would be on 7.2 miles of existing paved road from I-5 west along Delevan Road, north along McDermott Road, and west on Road 69 to just west of the TC Canal as noted above. Approximately 1.5 miles of McDermott Road between Dirks Road and West Glenn Road consist of gravel; therefore, it is assumed paving would be needed to accommodate the volume of heavy construction traffic.

The third construction access route would be on 12 miles of existing paved road from I-5 along Delevan Road, south along McDermott Road to Maxwell Sites Road, and then west to the existing gravel access road to Funks Reservoir. The first mile of this gravel road would be the initial segment of the Sites Lodoga Road realignment. This gravel road would also provide access to the Funks PGP and Golden Gate Dam. Maxwell Sites Road would provide access to Sites Dam. Construction equipment/materials would not be permitted to pass through the community of Maxwell on the Maxwell Sites Road, thus the construction access roads would circumvent Maxwell.

The existing roads are nonstandard in geometry and have inadequate roadbed structural section to accommodate the large, heavy vehicles that would be used to transport construction equipment and materials. These roads consist of Road 68, Road D, Road 69, Delevan Road, and McDermott Road. They are narrow and typically include two paved 11-foot- or 12-foot-wide lanes and 1- to 3-foot-wide earthen shoulders. The pavement conditions of Road 68, Road D, and Road 69 pavement conditions are "at risk", "poor", and "very poor", respectively, upon visual inspection by project engineers. A segment of McDermott Road in Colusa County is gravel. Road 69 transitions to a single-lane, gravel road west of the TC Canal. The following improvements would need to be implemented on these roadways:

- Roadbed and intersection widening to allow for safe mobility of construction traffic that would be comingled with local vehicular and agricultural equipment traffic.
- Roadbed reconstruction to enable use by large, heavy vehicles transporting construction equipment and materials
- Horizonal and vertical curve corrections
- Drainage feature improvements to allow for proper drainage

Reconstruction of the roads above would include the addition of new 2-foot-wide paved shoulders to each lane, as well as potential modifications to existing creek and irrigation canal crossings (as described below). The new shoulders would be within the public right-of-way, as would any temporary work areas needed to reconstruct the roads. All existing roadway improvements would be designed to avoid or minimize impacts on existing utility infrastructure and public right-of-way. Once the roads are constructed, all county roads would be maintained by Glenn or Colusa County, while specific access and maintenance roads (e.g., North Road, South Comm Road) would be maintained by the Authority.

The following roads involve the noted number of structures that would need to be crossed. It is assumed that these structures would need to be widened, strengthened, or replaced, depending on their structural condition and load rating capacity.

- Road 68 – two structures
- Road D – two structures
- Road 69 – three structures (two on paved roads crossing the TC Canal and GCID Main Canal, and one on a gravel road)
- McDermott Road – five structures

Local Access

In addition to the local roads described above that would be improved for construction purposes and then remain local access roads, a number of other public local roads would be relocated or developed to accommodate reservoir facilities. These roads include Sites Lodoga Road, Huffmaster Road, Comm Road South, and recreation area roads. There would also be one temporary detour during construction, the Sites Lodoga Temporary Detour Road. Permanent changes to Sites Lodoga Road and Huffmaster Road are discussed in Section 2.6, Alternative 1 Specific Elements and Section 2.7, Alternative 2 Specific Elements below.

- **Comm Road South** – Access to existing communication facilities would consist of a gravel road that would start near the northern end of Huffmaster Road and proceed north to the communications tower.

- **Recreation Area Roads** – New recreation area roads would provide access from Sites Lodoga Road to the Peninsula Hills Recreation Area, day-use boat ramp, and Stone Corral Creek Recreation Area. The access road to Peninsula Hills Recreation Area on the west side of Sites Reservoir would be paved. The access road to the day-use boat ramp, which would also be on the west side of the reservoir, would be paved. The access road to the Stone Corral Creek Recreation Area on the east side of the reservoir would be paved and gravel.

- **Sites Lodoga Temporary Detour Road** – A temporary detour road would be constructed to expedite construction and maintain traffic movement through the reservoir site during the construction of Sites Dam and the bridge across the reservoir (including fill prisms). This road would convey local traffic for a period of approximately 1 year and would be aligned around the Sites Dam site partially on the Sites Lodoga realignment

from Maxwell Sites Road to near the easterly bridge at the top of the ridge. The temporary detour road would then split off to the south and traverse hilly terrain before Comm Road South rejoining Sites Lodoga Road near its intersection with Peterson Road.

Maintenance Access

New and existing maintenance access roads would provide access to the main dams, saddle dams and dikes, I/O Works, and Funks PGP. Except for the existing road to Funks Reservoir, the maintenance access roads would be single-lane, 15-foot-wide gravel roads with no shoulder. Comm Road South would be a local access and maintenance access road.

North Road would begin at the end of the unpaved Road 69, continue 5 miles to the reservoir's edge, and connect with several new maintenance access roads that would provide access to the saddle dams and dikes. Access Road A1 would be a new gravel road along the crest of the Golden Gate Dam with minor cuts/fills. Access Roads B1 and B2 would be new gravel roads connecting to the I/O Works and Golden Gate Dam with minor cuts/fills. Access Road C1 is expected to be a two-lane, 30-foot-wide, paved road to access Funks Reservoir and the existing road to the reservoir would be maintained. Access Road C2 would be improved from an existing jeep trail at the east base of the Golden Gate Dam to a gravel road that would extend off Access Road C1.

2.5.1.8 Project Buffer

The Authority would acquire and maintain a project buffer encompassing the lands beyond the facility footprints. The buffer width would be 100 feet around the Sites Reservoir and related facilities, all buildings, most aboveground components, and recreation areas. The buffer may be less than 100 feet wide if a facility is near a property boundary and the proposed uses do not conflict with the adjacent land uses. Buffers are not anticipated for underground or buried facilities (i.e., Dunnigan Pipeline), transmission lines, or roads (both public and Project maintenance access roads).

Although buffer areas would generally remain undeveloped, the Authority would install limited features and perform periodic maintenance primarily related to reducing fire hazards. These actions would include erecting and maintaining fencing, grading fire breaks/trails, maintaining vegetation (e.g., grazing, tilling, or disking), and performing limited prescribed/controlled burns. The Authority may manage buffer areas as wildlife habitat where appropriate.

2.5.2 Operations and Maintenance Common to All Action Alternatives

This section describes the operations and maintenance activities common to all of the Action Alternatives.

2.5.2.1 Water Operations

The Project would provide water supply and water supply related environmental benefits to the Sites Storage Partners. Water would be diverted into Sites Reservoir from the Sacramento River at the existing RBPP into the TC Canal and at the existing GCID Hamilton City Pump Station into the GCID Main Canal. Both of these facilities have existing fish screens. Once in the TC Canal, water would be conveyed to the existing Funks Reservoir and pumped into the new Sites Reservoir via the Funks PGP and associated facilities. Once in the GCID Main Canal, water

would be conveyed to the new TRR and pumped into the new Sites Reservoir via the TRR PGP and associated facilities. Water could be diverted to storage in Sites Reservoir when the diversion criteria are met and when the Delta is in excess conditions. Diversions to storage could occur anytime between September 1 to June 15, the timeframe that the Sacramento River is not fully appropriated. Water would be held in storage in Sites Reservoir until requested for release by a Sites Storage Partner. Water releases would generally be made from May to November, but could occur at any time of the year depending on the Storage Partner's need and conveyance capacity to convey water to its intended point of delivery. Water would be released from Sites Reservoir via the I/O Works back through the TRR PGP and into the TRR or back through Funks PGP back into Funks Reservoir. Water released could be used along the GCID Main Canal, along the TC Canal, or conveyed to the new Dunnigan Pipeline and discharged to the Colusa Basin Drain and conveyed via the Sacramento River or the Yolo Bypass to a variety of locations in Delta and south-of-Delta[2]. Exchanges of water may also occur with the CVP and SWP. Water would also be diverted and impounded from Funks and Stone Corral Creeks and releases from Golden Gate Dam and Sites Dam, respectively, would occur into Funks and Stone Corral Creeks. Water operations are described in more detail below.

The Authority intends to apply for and obtain a water right permit from the State Water Resources Control Board (SWRCB) for the operations of Sites Reservoir. Actual operations would be subject to the terms and conditions of this water right along with all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time. Operations under all Action Alternatives would also require coordination with Reclamation and DWR as described below. The Authority is working with Reclamation and DWR to develop mutually agreeable operating agreements that would describe the approach for coordinating operations with Sites and the CVP and SWP operations, respectively.

Diversion to Sites Reservoir

Sites Reservoir would be filled through the diversion of Sacramento River water that generally originates from unregulated tributaries to the Sacramento River downstream from Keswick Dam. Only a small amount of the diversions to Sites Reservoir would come from flood releases from Shasta Lake. Diversions to Sites Reservoir would be made from the Sacramento River at the existing RBPP (River Mile 243) near Red Bluff into the TC Canal and at the existing GCID Hamilton City Pump Station (River Mile 205) near Hamilton City into the GCID Main Canal. Water could be diverted to storage in Sites Reservoir from September 1 to June 15. Diversions would only occur when all of the following conditions are met:

- Flows in the Sacramento River exceed the minimum diversion criteria (described below);
- The Delta is in "excess" conditions as determined by Reclamation and DWR;

[2] The term south-of-Delta or phrase south of the Delta is used to refer to areas that can receive water from the south Delta pumping facilities, including the SWP Banks Pumping Plant, Reclamation's Jones and Rock Slough pumping plants, and Contra Costa Water District's pumping plants. This includes areas south and west of the Delta, such as Contra Costa, Alameda, and Santa Clara counties.

- Senior downstream water rights, existing CVP and SWP and other water rights diversions including CVP 215 water and Article 3F water and SWP Article 21 (interruptible supply), and other more senior flow priorities (such as diversions associated with Freeport Regional Water Project and existing Los Vaqueros Reservoir) have been satisfied;
- Flows are available for diversion above flows needed to meet all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time that diversion occurs. This would include, but is not limited to any flow requirements in Water Right Decision 1641 (SWRCB, 2000), the 2019 ROC on LTO Biological Opinions (USFWS 2019 and NMFS 2019) and the SWP ITP (CDFW 2020); and
- There is available capacity at the RBPP and in the TC Canal and GCID facilities to divert and convey water to Sites Reservoir, above the capacity needed for deliveries to existing TC Canal users and within the GCID service area.

The RBPP would serve as the primary diversion location and would divert water from the Sacramento River to Funks Reservoir through the TC Canal and into the Sites Reservoir through the Funks PGP and the I/O Works. Up to 2,100 cfs, plus losses, would be diverted at the RBPP for the Project. The RBPP has an existing fish screen that meets NMFS and CDFW fish screen criteria through which all flows diverted for the Project would be screened. The Hamilton City Pump Station would serve as the secondary diversion location and would divert water from the Sacramento River to the new TRR through the GCID Main Canal and into the Sites Reservoir through the TRR PGP and the I/O Works. Up to 1,800 cfs, plus losses, would be diverted at the Hamilton City Pump Station for the Project. The Hamilton City Pump Station has an existing fish screen that meets NMFS and CDFW fish screen criteria through which all flows diverted for the Project would be screened. Although the RBPP will be the primary diversion point, both facilities would be operated simultaneously when river conditions, facilities, and capacity are available for a maximum combined diversion rate of 3,900 cfs, plus losses.

Estimated total annual diversion of Sacramento River water from both diversion facilities to Sites Reservoir could be up to the full reservoir amount. Based on model simulations, the estimated annual diversions would usually range from 60 thousand acre-feet (TAF) per year to 390 TAF per year, depending on hydrologic conditions, availability of Sacramento River water, and diversion and conveyance facility capacities.

Diversion Criteria

The Project would be operated to meet the diversion criteria summarized in Table 2-5 and described in more detail below. All diversion criteria must be met for the Project to divert.

Table 2-5. Summary of Project Diversion Criteria

Location (Listed from North to South)	Criteria
Bend Bridge Pulse Protection	Protection of all qualified precipitation-generated pulse events (i.e., peaks in river flow rather than scheduled operational events) from October to May based on the detection of fish presence and migration during the beginning of the flow event. For each event where fish presence and migration is detected, diversions from the Sacramento Riverwould cease for 7 days.
Minimum Bypass Flows in the Sacramento River at the RBPP	3,250 cfs minimum bypass flow at all times; rate of diversion controlled by fish screen design
Minimum Bypass Flows in the Sacramento River at the Hamilton City Pump Station	4,000 cfs minimum bypass flow at all times; rate of diversion controlled by fish screen design
Minimum Bypass Flows in the Sacramento River at Wilkins Slough	8,000 cfs in April and May; 5,000 cfs all other times
Fremont Weir Notch Protections	No more than 1% reduction in flow over weir when spill over the weir are less than 600 cfs. No more than a 10% reduction when flow over weir when spills over the weir are between 600 cfs and 6,000 cfs. No restriction when flows over the weir are greater than 6,000 cfs
Freeport, Net Delta Outflow Index, X2, and Delta Water Quality	Operations consistent with all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time that diversion occurs

Bend Bridge Pulse Protection

All Action Alternatives would implement a pulse flow protection measure to be applied to all qualified precipitation generated peaks in the hydrograph that originate primarily from tributaries to the Sacramento River that flow into the mainstem Sacramento River downstream of Keswick Dam from October through May. The pulse flow protection measure addresses the survival of migrating juvenile winter-, spring-, fall-, and late fall-run Chinook salmon (*Oncorhynchus tshawytscha*), and steelhead (*Oncorhynchus mykiss*) through the middle reaches of the Sacramento River. Pulse flows during this period would provide flow continuity between the upper and lower Sacramento River (i.e., below Wilkins Slough) and are expected to enhance survival of these migratory fish (Michel et al. 2015, In Press ; Notch 2017) as fish movement is thought to occur in response to increased flow, water-year type and turbidity associated with the beginning of a precipitation-generated high-flow event (Poytress et al. 2014, Cavallo et al. 2015).

Pulse protection would occur from October through May to address outmigration of juvenile winter-, spring-, fall- and late fall-run Chinook salmon, as well as a portion of the steelhead juvenile outmigration period. The Project's Adaptive Management Plan would include a fish monitoring program capable of detecting a migratory fish response during the beginning of a

precipitation-generated high flow event and continuing research would be utilized to operate to, and further refine the pulse flow protection strategy.

The Adaptive Management Plan and fish monitoring program would be developed in cooperation with Reclamation and the fishery resource agencies, including CDFW, NMFS, and USFWS and would be integrated with existing fish monitoring programs to the extent possible. For example, the USFWS monitoring program at RBDD, conducted for purposes of estimating fish production indices in the spawning reach above RBDD, is particularly relevant. This program could be supplemented with additional monitoring sites downstream, as necessary. The Authority would coordinate with the fishery resource agencies to define an appropriate capture rate or other metric to define the onset of a fish pulse stimulated by increasing flows and turbidity from storm events. The following criteria define a qualified pulse event:

- Outmigration of anadromous fish is detected based on the Adaptive Management Plan and fish monitoring program.
- If the 3-day trailing average of Sacramento River flow at Bend Bridge exceeds 8,000 cfs and 3-day trailing average tributary flow upstream of Bend Bridge (Cow Creek, Cottonwood Creek and Battle Creek) exceeds 2,500 cfs, a pulse event is initiated if the previous day was not already in a pulse event. This flow level is consistent with Sacramento River flow of 10,700 cfs at Wilkins Slough (considering increases from tributary inflows).
- A pulse event terminates seven days after initiation.
- After completion of a pulse event, the following conditions must occur before another pulse event is triggered: (1) 3-day trailing average of Sacramento River flow at Bend Bridge was less than 7,500 cfs for seven consecutive days; and (2) 3-day trailing average of tributary flow upstream of Bend Bridge (Cow Creek, Cottonwood Creek and Battle Creek) was less than 2,500 cfs for seven consecutive days.

Project diversions from the Sacramento River would not occur during a qualified pulse event. Diversions are otherwise unrestricted by the Bend Bridge Pulse Flow protection criteria.

Minimum Bypass Flows in the Sacramento River at the RBPP

A minimum bypass flow in the Sacramento River at the RBPP of 3,250 cfs would be in place at all times to stabilize flows in the Sacramento River and protect salmon redds. When flow in the Sacramento River is less than 3,250 cfs at the RBPP, the Project would not divert. When flows in the Sacramento River exceed 3,250 cfs at the RBPP, diversions at the RBPP may occur and the rate of diversion at the RBPP would be controlled by and scaled to the fish screen design as shown in Figure 2-36, until the full 2,100 cfs diversion could be achieved at flows of approximately 7,860 cfs in the Sacramento River.

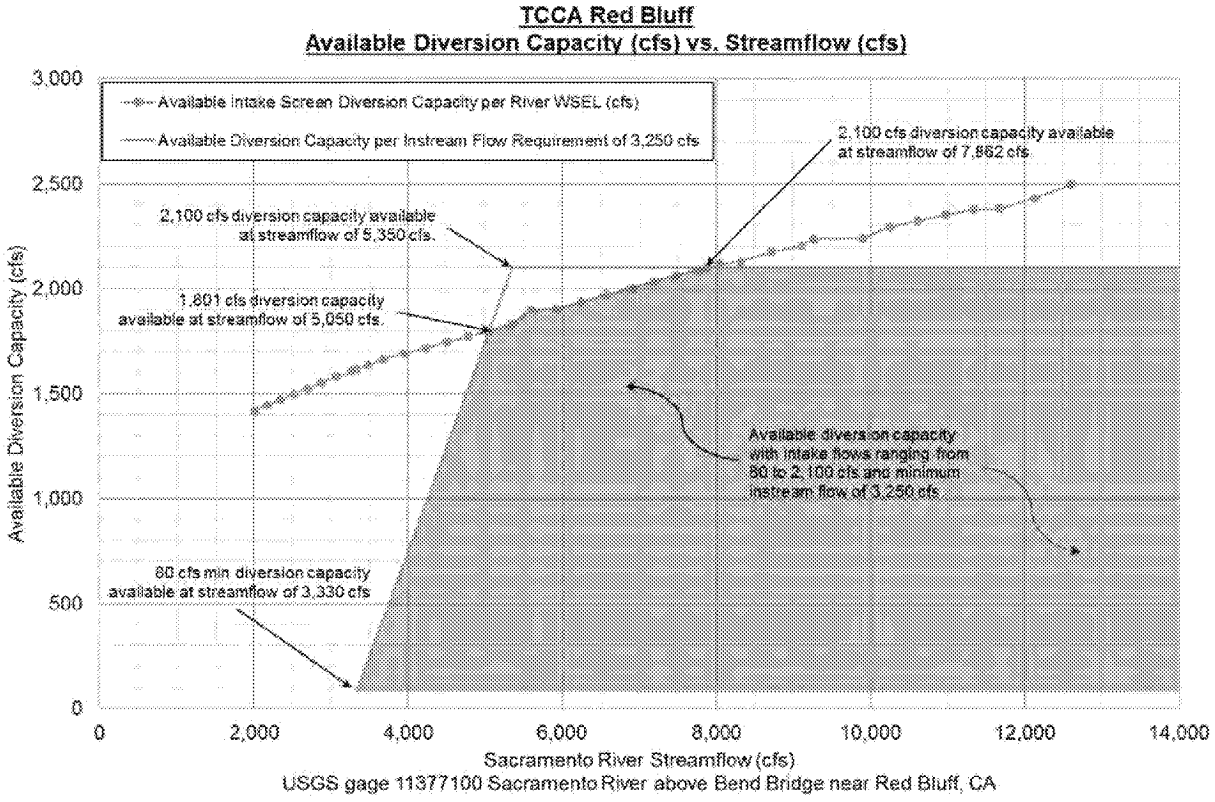


Figure 2-36. Available Diversion Capacity versus Streamflow at RBPP

Minimum Bypass Flows in the Sacramento River at the Hamilton City Pump Station

A minimum bypass flow in the Sacramento River at the Hamilton City Pump Station of 4,000 cfs would be in place at all times to stabilize flows in the Sacramento River and ensure proper function of the fish screen. When flow in the Sacramento River is less than 4,000 cfs at the Hamilton City Pump Station, the Project would not divert. When flows in the Sacramento River exceed 4,000 cfs at the Hamilton City Pump Station, diversion at the Hamilton City Pump Station may occur and the rate of diversion at the Hamilton City Pump Station would be controlled by and scaled to the fish screen design as shown in Figure 2-37, until the full 1,800 cfs diversion could be achieved at flows of about 5,800 cfs in the Sacramento River.

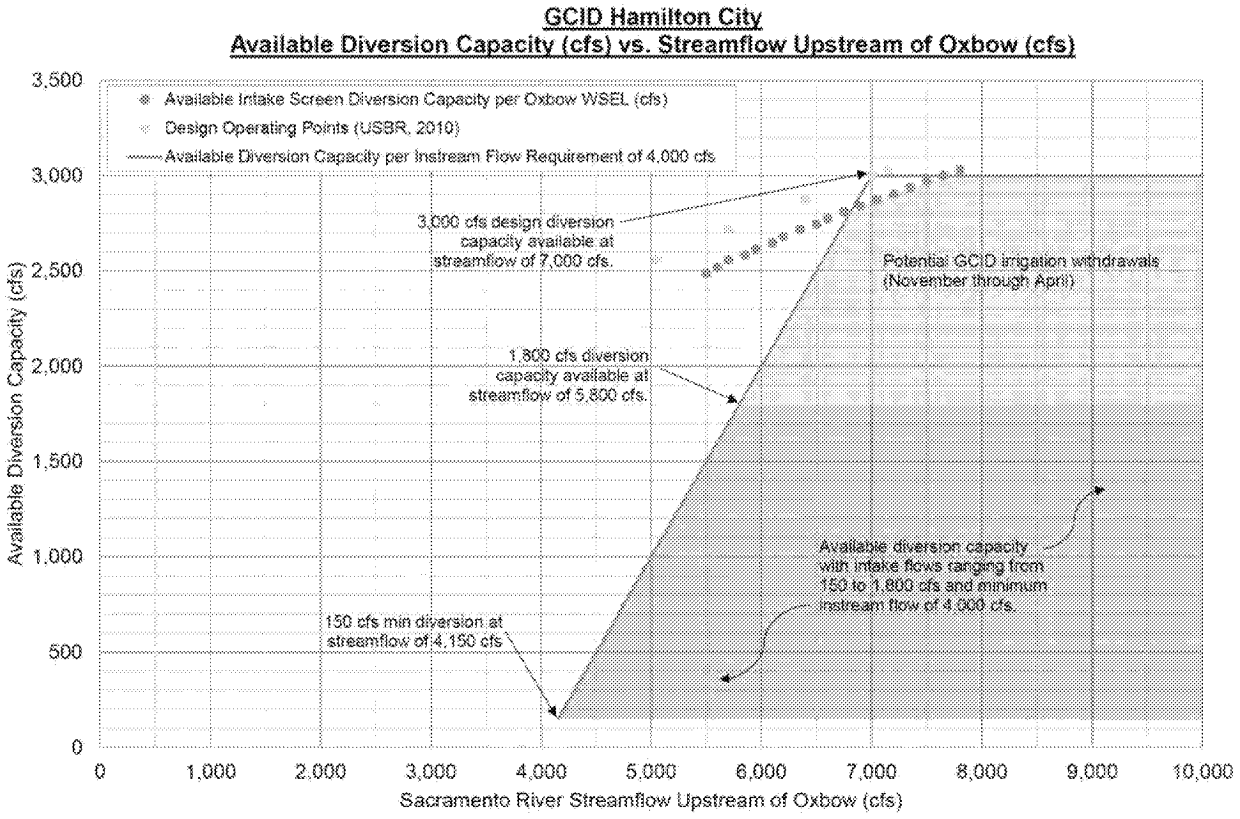


Figure 2-37. Available Diversion Capacity versus Streamflow at the Hamilton City Pump Station

Minimum Bypass Flows in the Sacramento River at Wilkins Slough

In addition to the minimum bypass flows in the Sacramento River at RBPP and the Hamilton City Pump Station, a minimum bypass flow of 8,000 cfs in the Sacramento River at Wilkins Slough would be in place in April and May and 5,000 cfs at all other times. This bypass flow regime is consistent with recommendations of 10,700 cfs at Wilkins Slough (considering increases from tributary inflows) and based on research performed over the last 30 years; focusing on recent studies that relate survival of outmigrating juvenile Chinook salmon to flows in the Sacramento River (Michel 2010, del Rosario et al. 2013, Poytress et al. 2014, Michel et al. 2015, Iglesias et al. 2017, Notch 2017. Henderson et al. 2018, Hassrick et al. In Prep, and Michel et al. In Press).

Fremont Weir Notch Protections

The Project's diversion criteria have been formulated to avoid impacts on Reclamation's ability to implement its obligations in the 2019 NMFS ROC on LTO Biological Opinion to implement the Yolo Bypass Restoration Salmonid Habitat Restoration and Fish Passage Implementation Plan and provide 17,000+ acres of inundation in the Yolo Bypass from December to April (NMFS 2019). For the purposes of modeling the effects of the Project, Project diversions may occur if no more than a 1% reduction in flow over the weir would occur when spills over the weir are less than 600 cfs. Project diversions may occur if no more than a 10% reduction in flow

over the weir would occur when spills over the weir are between 600 cfs and 6,000 cfs. When flows over the Fremont Weir are greater than 6,000 cfs there would be no restriction on Project diversions. These limitations are intended to reduce changes to spill frequency and duration.

Freeport, Net Delta Outflow Index, X2, and Delta Water Quality

For lower Sacramento River and Delta locations, the Project would operate in a manner that would not adversely affect the ability of others to meet all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time that diversion occurs.

Storage in Sites Reservoir

Water would be stored in Sites Reservoir until requested for release by a Sites Storage Partner. The Authority would prepare a Reservoir Management Plan that would describe the management of water resources in Sites Reservoir which would include a plan for monitoring water quality (see Section 2.5.2.4 for more information on the Reservoir Management Plan).

Releases from Sites Reservoir

Releases from Sites Reservoir would be made in any water year type to meet the needs of the Sites Storage Partners, including the water supply related environmental benefits under WSIP. The releases would be made from the I/O Works in Sites Reservoir and conveyed via pipeline to either Funks Reservoir or the TRR. Under normal operating conditions, 2,000 cfs would be released from the I/O Works to Funks Reservoir and 1,000 cfs would be released from the I/O Works to the TRR. The I/O Works would allow withdrawal of water from Sites Reservoir over a range of depths to manage release water temperatures.

From Funks Reservoir or the TRR, releases would be conveyed as follows:

- **Release for Sites Storage Partners Along the TC Canal and the GCID Main Canal** – Releases would be made to Funks Reservoir or the TRR and conveyed to the respective Sites Storage Partner via the existing TC Canal and GCID facilities.
- **Releases for Sites Storage Partners Along the Sacramento River** – Releases for Sites Storage Partners along the Sacramento River would generally be made via exchange as water from Sites Reservoir cannot be physically conveyed to any Sites Storage Partner on the Sacramento River between the GCID Hamilton City Pump Station and Knights Landing. Real-time exchanges, primarily with GCID, but also with Reclamation would be used for these Sites Storage Partners.
- **Releases for Sites Storage Partners Along the CBD, Yolo Bypass, and North Bay Aqueduct** – Releases for Sites Storage Partners, including some of the Proposition 1 water, would be made to Funks Reservoir. This water would then be conveyed down the TC Canal to the new Dunnigan Pipeline and released into the CBD. The water would then be conveyed down the CBD, through the Knights Landing Ridgecut, to the Yolo Bypass/Cache Sough Complex for Proposition 1 benefits or for diversion into the North Bay Aqueduct.

- **Releases for Sites Storage Partners South-of-Delta** – Releases for Sites Storage Partners who are located south of the Delta, including water for Incremental Level 4 Refuge water supply benefits under WSIP, can take a combination of different paths under all Action Alternatives. Releases could be made to Funks Reservoir, conveyed down the TC Canal to the new Dunnigan Pipeline and released into the CBD. This water would then be conveyed down the CBD, through the Knights Landing Ridgecut, to the Yolo Bypass/Cache Sough Complex and into the North Delta. Once in the Delta, this water could be diverted at any of the South Delta pumping facilities (SWP's Banks Pumping Plant, Reclamation's Jones Pumping Plant or Rock Slough Pumping Plant, or Contra Costa Water District's pumping plants) and conveyed to the respective Sites Storage Partner using existing conveyance facilities and mechanisms. Alternatively, once releases are in the CBD, they could be conveyed to the Sacramento River via the Knights Landing Outfall Gates. Once in the Sacramento River, these releases would enter the Delta and could be diverted at any of the South Delta pumping facilities. Releases for Sites Storage Partners who are located south of the Delta, including water for Incremental Level 4 Refuge water benefits under WSIP, may also be made by exchanges with Reclamation and DWR. Releases for Sites Storage Partners south-of-Delta would generally be made during July to November to coincide with available pumping capacity at the South Delta pumping facilities and would be subject to applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time.

Releases would be coordinated with Reclamation and DWR to ensure there are no conflicts with CVP and SWP operations and no adverse effects to the CVP and SWP. In addition, releases would be coordinated with Reclamation and DWR to ensure that there is available capacity to redivert releases at the South Delta pumping facilities for any releases that would be pumped at these locations. The majority of releases to the Sacramento River would occur when the CVP and SWP are in balanced conditions, that is releases from upstream reservoirs and unregulated flow approximately equal water supply needed to meet Sacramento Valley in-basin uses and CVP and SWP exports.

Sites Reservoir is currently estimated to have a dead pool of approximately 17,700 AF, below which water cannot physically be removed from the reservoir using the I/O Works. However, the Authority is currently planning to operate to a dead pool of 120,000 AF under normal conditions. The operational dead pool amount may be revised and reduced in final design. Sites Reservoir may also be drawn down below the operational dead pool in drought situations.

Coordination with CVP and SWP

Operations of all Action Alternatives would be coordinated with Reclamation and DWR to prevent conflicts with the CVP and SWP operations or add additional obligations on the CVP or SWP to meet applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time. The Authority is currently working with Reclamation and DWR to establish operating agreements with both agencies that would describe the details of the coordination and collaboration that would take place in the operations of the Project.

It is expected that the Project would also be incorporated into existing and future technical and advisory teams in which Reclamation and DWR participate in to coordinate the CVP and SWP operations with the regulatory agencies. This could include, but would not be limited to, the Sacramento River Temperature Task Group and Delta Operations for Salmon and Sturgeon Group. This would allow for better and more efficient coordination of the Project's operations, in concert with the CVP and SWP operations, with the regulatory agencies along with providing opportunities to work collaboratively to achieve species benefits in the Sacramento Valley and the Delta.

All of the Action Alternatives also include the possibility of exchanges of water with the CVP and SWP. Exchanges have the potential to assist the CVP and SWP in meeting their regulatory obligations. Exchanges are expected to primarily occur with Shasta Lake and Lake Oroville, but could also occur with Folsom Lake and real-time with local participants. Exchanges would only be conducted when they would be neutral or beneficial to CVP and SWP operations and not impact the ability of the CVP or SWP to meet applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time. Exchanges are described in more detail below.

- **Shasta Lake Exchanges** – Exchanges under the Project with Shasta Lake would be formulated to target cold-water pool preservation and anadromous fish benefits. Shasta Lake exchanges would occur in years when forecasted temperature-based mortality of early life stage winter-run Chinook salmon would be reduced if the exchange is in place. Under a Shasta Lake exchange, water would be released from Sites Reservoir in the spring to meet CVP purposes, including CVP water service and/or repayment contractors in the Sacramento Valley that could physically receive water from Sites Reservoir. By reducing releases from Shasta Lake in the spring, storage and the cold-water pool in Shasta Lake would be preserved for use later in the year, typically during critical months of the cold-water pool management season (August and September). In late-summer and fall (i.e., August through November), Reclamation would release an equivalent amount of water from Shasta Lake for Sites Storage Partners. All exchange water would be released from Shasta Lake in late summer and fall and no exchanged water would be carried over from year to year.
- **Lake Oroville Exchanges** – Exchanges under the Project with Lake Oroville would be formulated to facilitate Sites Project deliveries to Sites Storage Partners and refuges south of the Delta and may also improve cold-water pool conditions at Lake Oroville. Exchanges with Lake Oroville are expected to happen more frequently and would be driven by a variety of factors. Under a Lake Oroville exchange, water would be released from Sites Reservoir primarily in June and July to meet SWP purposes. By reducing releases from Lake Oroville in these months, storage and the cold-water pool in Lake Oroville would be preserved for use later in the year, typically during critical months of the cold-water pool management season (August and September). In late-summer and fall (i.e., August through November), DWR would release an equivalent amount of water from Lake Oroville for Sites Storage Partners. All exchange water would be released from Lake Oroville in late summer and fall and no exchanged water would be carried over from year to year.

- **Folsom Lake Exchanges** – Exchanges with Folsom Lake would be operated similarly to exchanges with Shasta Lake. Sites Reservoir would release water in the spring and early summer to meet CVP purposes in lieu of Reclamation releases at Folsom Lake. An equivalent amount of water would then be released from Folsom Lake in the late summer and fall for Sites Storage Partners. All exchange water would be released from Folsom Lake in late summer and fall and no exchanged water would be carried over from year to year.
- **Real-Time Exchanges with Local Participants** – To support timing of releases and deliveries to Sites Storage Partners north and south of the Delta, in-lieu exchanges with local participants may occur. This type of exchange is most likely to occur with GCID, but could also occur with Sacramento River Settlement Contractors and Reclamation. Instead of diverting all of its CVP supply from the Sacramento River, the contractor would receive a portion of its CVP supply from Sites Reservoir. A portion of the water released from Shasta Lake to meet the contractor's CVP supply would be left in the Sacramento River (not diverted by the contractor) and used for other Sites Storage Partners.

Funks Creek and Stone Corral Creek Releases

The Project includes releases from Sites Reservoir into both Funks and Stone Corral Creeks. These releases would be made to comply with California Fish and Game Code Section 5937 and ensure no harm to downstream water right holders on these creeks. At this time, access to the creeks is restricted and there is not sufficient existing information on these two creeks, including current fish assemblage, channel capacity, and existing habitat, to determine a specific release pattern or approach to releases into these two creeks. Field studies would be conducted once access is obtained and before final design for Sites and Golden Gate Dam is completed to determine the following:

- Existing fish assemblage in these creeks, including fish species presence and habitat use;
- Characterization of habitats available (e.g., spawning, rearing, foraging, and sheltering habitats) at varying flow levels;
- Characterization of flows, including assessing the base flow during the summer months;
- Conducting a fluvial geomorphologic study to characterize bed load and flow levels necessary for mobilization; and
- Hydrological studies to define flow temperature relationships.

Using information from these field studies, along with currently available information, the Authority would prepare a Funks and Stone Corral Creeks Operations Plan that would identify the approach for releases, including release schedule and volumes, a monitoring plan, and an adaptive management plan to maintain fish in good condition consistent with California Fish and Game Code Section 5937. Releases into these creeks need to be made in consideration of the flood control benefits of the Project and in such a way as to not overtop the stream banks and flood downstream areas.

Water released into Funks Creek would be made through the transition manifold at the base of Golden Gate Dam and a new pipeline that terminates at Funks Creek below Golden Gate Dam. These facilities are currently being designed to carry up to 100 cfs with a release range of 0 to 100 cfs into Funks Creek. Water released into Stone Corral Creek would be made through the permanent outlet at Sites Dam. This outlet is currently being designed with a release range of 0 to 100 cfs, with an emergency release capacity of up to 2,500 cfs.

Flood Control

All Action Alternatives would provide flood damage reduction benefits to the communities of Maxwell and Colusa, local agricultural lands and rural homes and I-5 by impounding Funks Creek and Stone Corral Creeks. These flood control benefits are inherent in the design of the Project and no specific operational criteria are necessary to achieve these benefits.

Emergency Release

All Action Alternatives include the design and operation of facilities to meet DSOD criteria and requirements for emergency reservoir drawdown. During an emergency release event, Saddle Dams 3 and 5 (Alternative 1 and 3) and Saddle Dam 8B (all Action Alternatives), the I/O Works, and Sites Dam would operate simultaneously to release water. Once the water level fell below the levels of the saddle dam intakes, the I/O Works and Sites Dam would operate solely to release the remaining water. The emergency releases would be in accordance with DSOD requirements and would occur as follows:

- Under Alternative 1 and 3 only, the emergency release structures at Saddle Dams 3 and 5, located at the north end of the reservoir, would release water into the Hunters Creek watershed. These two structures could only be used during the emergency drawdown in the first 7 days, at a rate of 1,000 and 1,200 cfs, until the water level fell below their outlet.
- Under All Action Alternatives, the spillway on Saddle Dam 8B would also release to Hunters Creek. The size of the spillway would accommodate the peak outflow of a PMF event or the steady-state flow if an over-pumping event occurred. The design and size of the spillway assumed that a PMF overflow event and an over-pumping event have a very low probability of simultaneous occurrence.
- The permanent outlet on Sites Dam would release to Stone Corral Creek at a maximum rate of approximately 2,500 cfs.
- The I/O tunnels would release to Funks Reservoir and TRR at a rate of 16,000 cfs, with 9,000 cfs being discharged to Funks Reservoir and 7,000 cfs to the TRR with a maximum velocity of 40 feet per second in the pipelines. To achieve the flows needed for the emergency releases, the velocities in the pipes would exceed the 20 cfs criteria normally used by Reclamation. Discharges to the Funks Reservoir would be accommodated because its spillway is designed for 22,000 cfs which is greater than the 16,000 cfs emergency drawdown flow. The TRR would need to be designed with a spillway into Funks Creek of roughly 7,000 cfs to allow for this. Additional energy dissipation structures at Funks Reservoir and the TRR would be required for the emergency flows.

2.5.2.2 Energy Generation and Energy Use

All Action Alternatives would require power to run facilities and pump water and would also generate incidental power. The pumping energy requirements and power generation are summarized in Table 2-6 and Table 2-7 for all Action Alternatives.

Table 2-6. Pumping Summary for All Action Alternatives

Site	Net Pumping Power (MW)	Other Auxiliary Loads (MW)	Transformer and T Line Losses (MW)	Total Pumping Power (MW)	Total Pumping Power @ 0.85 PF (MVA)
Funks	67.1	1	0.1	68.2	80.2
TRR	75.4	1	0.1	76.5	90.0
Total	142.5	2	0.2	144.7	170.2

Notes:

MW = megawatts; PF = power factor; MVA = megavolt amperes

Table 2-7. Generating Summary for All Action Alternatives

Site	Net Generating Power (MW)	Other Auxiliary Loads (MW)	Transformer and T Line Losses (MW)	Total Power Generation (MW)	Total Power Generation @ 0.85 PF (MVA)
Funks	48.1	1	0.1	47.0	55.3
TRR	27.4	1	0.1	26.3	31.0
Total	75.5	2	0.2	73.3	86.2

Notes:

MW = megawatts; PF = power factor; MVA = megavolt amperes

All Action Alternatives would generate incidental power only when water is released from Sites Reservoir at the Funks and TRR PGPs. Power generation would be limited to 40 megawatts per facility and as such, would not require a Federal Energy Regulatory Commission license per the "Qualifying Conduit Hydropower Facility" under the Hydropower Regulatory Efficiency Act of 2013, as amended by America's Water Infrastructure Act of 2018. All Action Alternatives would include electrical substations at Funks Reservoir and the TRR. These substations would service a net pumping energy demand estimated at 80 megavolt amperes (MVA) at Funks Reservoir and 90 MVA at the TRR (i.e., 170 MVA of demand load total). Because of the size of the pumping units, no backup generation is planned for pumping facilities.

While hydropower generation would be an incidental benefit of conveying water through specific Project facilities and would be influenced by the timing of releases and movement of water and seasonal operational decisions, the Authority would work to schedule releases and outages such that it sought to maximize power generation to offset the Project's power needs. Additional operations power needs beyond those generated by the Project would be purchased from market sources, with a target of purchasing at least 60% of the Project's operations power needs from renewable, carbon-free sources from the start of operations to 2045. Starting in

2045, the Authority would target purchasing 100% of the Project's operations power needs from renewable, carbon-free sources. This target does not include any operational power needs attributable to Reclamation's participation, including the conveyance and pumping of Incremental Level 4 Refuge water supply.

2.5.2.3 Facility Operations and Maintenance

Operations and maintenance activities for all facilities, including recreational areas, would include debris removal, vegetation control, rodent control, erosion control and protection, routine inspections (dams, tunnels, pipelines, PGPs, I/O Works, fencing, signs, and gates), painting, cleaning, repairs, and other routine tasks to maintain the facilities in accordance with design standards after construction and commissioning. Routine visual inspection of the facilities would be conducted to monitor performance and prevent mechanical and structural failures. The Authority would implement operations and maintenance BMPs that are described in Section 2.5.4, *Project Commitments and Best Management Practices Common to All Alternatives*.

The RBPP has an established operations and maintenance plan. The two new pumps at the facility would be incorporated into the existing plan and operated and maintained as part of the overall activities at the facility. Improvements to the GCID facilities would likewise be incorporated into GCID's regular operations and maintenance activities.

Operations and maintenance activities unique to the TRR include daily visual inspections, setting and checking water control structures, annual and five-year dam safety inspections, quarterly vegetation and weed abatement and rodent control, annual preventative leak location surveys and evaluations of the reservoir liner, instrumentation monitoring and maintenance, and annual debris removal at the spillway outfall to Funks creek. Replacement of the TRR liner may be needed on an infrequent basis. Operations and maintenance activities unique to the TRR and Funks pumping plants and hydroelectric turbines would include greasing, painting, oiling, and generally keeping the pumps in good operating condition. Activities would also include annual inspections of pumps, interior coating condition inspection, pump leakage inspections, temperature and pressure checks, and clean exterior surfaces and check for leaks. Repair and replacement of pump components would be needed on a periodic basis. Monthly brake airline filter and lubricator inspection and maintenance would also be completed at the hydroelectric turbines. Energy dissipating units would be visually inspected and lubrication of bearings would be conducted on an as needed basis.

Operations and maintenance activities unique to the electrical switchgear include visual and mechanical inspections, moisture and corrosion inspections, general wiring checks, and insulator and barrier checks. A series of tests would be conduction on regular intervals, including but not limited to insulation electrical test, control wiring electrical tests, circuit breakers and switch tests, system function tests, and surge arrestor tests. Electrical switchgear would be maintained, repaired or replaced as needed to continue safe and efficient operations.

Pipelines and tunnels would be inspected at least every 5 years and remote operated vehicle (ROV) inspections would be acceptable. ROV inspections would not require dewatering the tunnels or pipelines. If physical inspections of tunnel interiors would be required, the tunnels would be completely shut down. Tunnel inspections may be completed during normally

scheduled shutdowns when water is not being conveyed in or out of the reservoir. The tunnel shutdown duration could run from a few days (inspection) to 2 weeks (if maintenance is required).

Different components of the I/O Works would need to be inspected and maintained at varying frequencies. Any port gate that was not operated in a given year based on reservoir level would be functionally tested at least once during that year. In general, pipeline appurtenances (e.g., air/vacuum valves, blowoffs) would be inspected and functionally tested where possible annually. Most of the mechanical components in the multi-level I/O tower could be functionally tested and/or maintained without requiring a shutdown (as there would be multiple tiers from which to draw water).

Maintenance of access roads includes replacing gravel or scraping and filling of ruts to keep the roads in good condition along with pavement replacement and repair for paved roads. Minor structures maintenance includes repair or replacement of gates, locks or fences, painting gates, replacing lost or damaged signage, and lubricating gates.

Maintenance of lands could include grading fire breaks/trails, maintaining vegetation (e.g., grazing, tilling, or disking), and performing limited prescribed/controlled burns.

In general, operations and maintenance activities could occur on a daily, annually, periodically (as needed), and long-term basis. It is estimated that 45 operations and maintenance workers would be needed to perform operations and maintenance activities (based on three shifts per day, 365 days a year).

2.5.2.4 *Operations and Management Plans*

The Authority would develop and implement a number of operations and management plans to govern the operations and maintenance activities of Project. These plans are described below.

Reservoir Operations Plan

The Reservoir Operations Plan would describe the management of water operations, including releases into Funks and Stone Corral Creeks. This plan would include but may not be limited to the following:

- **Diversions to Sites Reservoir** – Mechanics on how diversions are scheduled and managed, including diversion criteria and operating requirements for diversions.
- **Storage in Sites Reservoir** – How losses and evaporation are accounted for, how exchanges and transfers are managed (both between Sites Storage Partners and with non-Sites Storage Partners), and the process for leasing or sharing storage space.
- **Releases from Sites Reservoir** – When and how water can be released to each facility, how release orders are made and adjusted, and how releases are prioritized when necessary.
- **Flows in Funks and Stone Corral Creeks** – Release operations for releases into Funks and Stone Corral Creeks.

- **Flood Control and Health and Safety Considerations** – Descriptions of how emergencies should be handled and processes for notification in the event of emergencies. Emergency flow releases will be addressed in an Emergency Action Plan.

A draft of the Reservoir Operations Plan is expected to be completed in late 2021, with additional refinements and subsequent drafts as operational components are finalized (such as final permit conditions and agreements with Reclamation and DWR are completed). A complete Reservoir Operations Plan would be prepared at least one year prior to Project operations being initiated.

Reservoir Management Plan

The Reservoir Management Plan would describe the management of water resources within Sites Reservoir. This plan would include but may not be limited to the following:

- **Fisheries Management** – Target fisheries species composition and management activities for Sites Reservoir, including stocking strategies (if any), habitat enhancement measures, and monitoring efforts.
- **Reservoir Water Quality** – Baseline water quality metrics, standards, testing and monitoring protocols.
- **Vector Management** – Protocols and practices for communicating/coordinating with vector control authorities and determining how vector control would be managed at Sites Reservoir and the TRR.

The Reservoir Management Plan would be completed at least one year prior to Project operations being initiated.

Land Management Plan

The Land Management Plan would describe the management and maintenance activities on all non-recreation land resources held in fee or easement by the Authority. This plan would include management actions for buffer areas and the specific type and frequency of maintenance activities by location. Land management, maintenance, and monitoring actions for any mitigation areas owned by the Authority would also be described. The Land Management Plan would be completed within a year of the first fee title acquisition by the Authority and would be amended as needed as additional lands are acquired.

Recreation Management Plan

The Recreation Management Plan would describe the types, management, maintenance and monitoring activities on all Project recreation lands and areas. Development of the Recreation Management Plan would be coordinated with Colusa and Glenn counties and the local police, fire, and emergency response entities and organizations to ensure appropriate emergency response resources are available to respond to recreation emergencies. The Recreation Management Plan would be completed at least one year prior to the opening of Project recreational facilities.

Initial Reservoir Fill Plan

The Initial Reservoir Fill Plan would describe the monitoring program for Sites and Golden Gate Dams along with the saddle dams, saddle dikes, and areas around the reservoir that would be implemented during the initial filling of Sites Reservoir. The Initial Reservoir Fill Plan would be completed as part of the DSOD approval process and would be completed at least one year prior to beginning to fill Sites Reservoir.

Standard Operating Procedures

The Authority would prepare Standard Operating Procedures for all major Project facilities. These Standard Operating Procedures would include operational guidelines for facilities along with a schedule for inspection, monitoring and maintenance. The Standard Operating Procedures are expected to be completed as part of the DSOD approval process and would be completed prior to beginning operations of the specific Project facility.

Security Plan

The Authority would prepare a Security Plan for all major Project facilities. Preparation of the Security Plan would be coordinated with local, state, and federal law enforcement agencies to ensure a comprehensive security review and assessment along with appropriate security measures implemented for all major Project facilities. The Security Plan is expected to be completed as part of the DSOD approval process and would be completed during final design.

Emergency Action Plan

Consistent with California Water Code sections 6160, 6161, and 6002.5, an Emergency Action Plan would be prepared and submitted to the Governor's Office of Emergency Services (CalOES). The Emergency Action Plan would comply with SB 92 and CalOES's Emergency Action Plan requirements. The Emergency Action Plan would include, but may not be limited to the following: summary of responsibilities; notification procedures and flowchart; emergency response process; preparedness for different emergencies; and potential inundation mapping. The Emergency Action Plan would also identify the frequency for desktop and full exercises to prepare for emergencies.

2.5.3 Construction Considerations Common to All Action Alternatives

This section summarizes the activities associated with construction of the Project. Appendix 2C, Construction Means, Methods, and Assumptions, provides additional detail regarding the construction means and methods for various facilities that are ultimately incorporated into the impact analysis throughout Chapters 5 to 31 of this document.

2.5.3.1 Geotechnical Investigations

To support the engineering and final design of all facilities, the Authority would undertake preconstruction geologic, geotechnical, and geophysical investigations and testing. These geotechnical investigations and associated testing would also be required to support DSOD permitting processes. The investigations would be implemented in various locations in and around the footprints of the various facilities. Proposed investigations would be focused in areas where additional or updated data are needed for engineering cost refinement, for design, and to prepare permit applications. Depending on the time of year these activities would take place,

almost all of the geotechnical borings and geophysical work areas would require biological monitoring and/or some pre-activity clearance assessment and/or surveys due to their proximity to sensitive biological resources, particularly because the precise location of each individual investigation within its associated project feature has not been determined. The site-specific geotechnical investigations would include surface geologic mapping and surface and subsurface geophysical investigations as described below.

- Surface geologic mapping would generally involve noninvasive evaluation and documentation of geologic features and topography and would consist of soil mapping, walking surveys, and geophysical surveys.
- Surface geophysical investigations would generally involve non- or minimally invasive surface testing, such as seismic, gravitational, magnetic, electrical, and electromagnetic testing, and documentation of surface and subsurface site characteristics.
- Subsurface geotechnical investigations would involve surface and subsurface evaluation and documentation of site characteristics using test pits, borings and cone penetration test (CPT) probes, and fault trenching for different facilities.
    - All subsurface geotechnical investigation techniques would require some degree of ground disturbance, including spot leveling of areas directly below truck leveling jacks and holes measuring 2 to 10 inches in diameter through which augers and sampling equipment would be lowered to collect subsurface data and samples. Some drilling locations would require a bulldozer to create temporary roads for drill rig access. Test pits would be roughly 10 to 12 feet deep, and fault trenching would vary roughly 10 to 30 feet deep.
    - Borehole drilling would be performed using a drill rig that utilizes a combination of pilot bit, hollow stem flight augers, and rotary diamond core drilling. The hollow stem augers would likely have 8.5-inch outer diameter, and 4.25-inch inner diameter, with a 5-foot-long split tube inner barrel for dry core sample collection. Standard Penetration Test samplers may also be used at 5-foot intervals. All drill cuttings and any drilling fluids would be contained onsite in drums or bins and removed from the site to an existing permitted landfill or waste treatment facility. The temporary disturbance area would be approximately 20 by 50 feet (0.025 acre). Once each boring is complete, augers and testing equipment would be removed, the boring grouted and capped with soil, and the area cleared of work items (as required by permit requirements and at a minimum in accordance with California regulations and industry standards [Water Well Standards, DWR 74-81 and 74-90]). The permanent disturbance area would be approximately 1 square foot per borehole, except where a bulldozer created a larger area to access some locations.
    - CPTs are minimally invasive and consist of a specialized vehicle that inserts a 1.7-inch-diameter cone (probe) into the ground with a hydraulic direct push system. The temporary disturbance area would be approximately 20 by 50 feet (0.025 acre). Once each test is complete the rod would be retracted, the hole grouted and capped with soil, and the area cleared of work items (as required by permit requirements and at a minimum in accordance with California regulations and industry standards [Water

Well Standards, DWR 74-81 and 74-90]). The permanent disturbance area would be approximately 1 square foot per borehole.

Activities at most investigation areas would require approximately five personnel, including a driller/operator and one to two assistants, a utility locator, and a geologist/engineer to log the conditions encountered. Biological and cultural monitoring could also be required based on biological and cultural sensitivity and the type of activity being conducted. Each geotechnical investigation site would be active for a period ranging from 1 workday for CPT probes to 10 workdays for deep drill holes.

Additional details regarding geotechnical investigations for several of the key facilities are discussed below.

I/O Works

The investigation footprint for the I/O Works would encompass the area around each portal, at the I/O tower, and along each tunnel alignment. Geotechnical work would occur within the footprint of the construction area for these facilities. It is assumed that a boring would be required every 500 feet between the two I/O tunnel alignments and that each boring would extend two tunnel diameters below the tunnel invert, for a depth of approximately 70 feet.

A seismic fault study would map the faults adjacent to the I/O Works and ensure the location of the alignment would minimize fault crossings. The geotechnical investigation footprint for the seismic fault study would encompass the area between the mapped faults and I/O Works.

Current access to the site is limited given the existing topography and lack of access roads. It is assumed that track-mounted drill rigs would be used for the accessible locations and helicopters would be required to transport drill rigs to remote locations.

Dams and Reservoir

The dam foundations and reservoir rim would be the subject of specific geotechnical investigations. The investigations for the dams would involve geologic mapping, geophysics, borings, test pits, test excavations, and fault trenching. In-situ testing would include downhole geophysics (suspension and televiewer), packer testing, and dilatometer use. Piezometers would be installed at select locations to collect data on groundwater depth.

Objectives for the dam foundation and reservoir rim would differ. The objectives of the dam foundation exploration would be to evaluate excavation methods, excavated material use for dam construction, dewatering requirements for foundation excavation, foundation deformability, hydraulic conductivity and strength, foundation treatment, and foundation grouting/cutoff requirements. The dam foundation exploration objectives would also be to confirm fault locations and fault rupture potential. The objective of the exploration of the reservoir rim would be to evaluate seepage and stability. This investigation would use geologic mapping, geophysical investigations, and borings. In-situ testing would include downhole geophysics (televiewer) and packer testing.

Laboratory testing for the dam foundation and reservoir rim may include point load and unconfined compression on rock and index testing of soils. Laboratory testing for the rim of the reservoir may also include testing of remolded joint/shear material for strength evaluation.

Onsite Borrow Areas

The onsite borrow areas would have specific geotechnical investigations.

The objectives of the exploration for the borrow areas would be to confirm that the volume of materials available is at least 1.5 times the volume required and to evaluate excavation methods, excavation slopes at borrow locations, dewatering for borrow excavations, volume of materials generated from excavation, material types generated by excavation, requirements for processing of materials, properties of materials when placed and compacted in the dams, use of rock for riprap and aggregates, and types and volumes of materials generated from required excavations (i.e., at proposed locations of dams, structures, and tunnels).

The investigations for the borrow areas would involve geologic mapping, geophysics, borings, test pits, test excavations, test blasting and test fills. In-situ testing would include downhole geophysics (suspension and televiewer) and rippability studies. Laboratory testing would include point load and unconfined compression on rock and index testing of soils. Laboratory testing would also involve testing remolded samples for compaction, strength, permeability, compressibility, and erosion potential. Test fills would be performed on rockfill and random fill materials.

2.5.3.2 Land Acquisition and Resident Relocation Program

Prior to initiation of construction activities, land acquisition or establishment of temporary or permanent easements on private properties would be required. Overall, construction is expected to take approximately 6 years for reservoir facilities and 2 years for conveyance facilities. Construction of the reservoir facilities and the conveyance facilities would be conducted concurrently for a total construction duration of 6 years. Several factors could affect this anticipated schedule. Additional adjustments to the schedule would be addressed as required during Project development and implementation.

2.5.3.3 Additional Biological Surveys

After land acquisition and prior to construction actions, the Authority would complete additional biological surveys to confirm mapped habitat types and determine the presence/absence of biological resources including, but not limited to, special-status species, state and federal waters, sensitive plant communities and other applicable resources identified as sensitive by state, and/or federal agencies and discussed in Chapter 9, *Vegetation Resources*; Chapter 10, *Wildlife Resources*; and Chapter 11, *Aquatic Biological Resources* of this document. The Authority would use this information to assess the need for further technical studies (such as protocol surveys) and/or consultations with USFWS, CDFW, U. S. Army Corps of Engineers and/or State and Regional Water Quality Control Boards and identify resources that would be avoided during construction. In addition, the Authority would use this information to determine final mitigation types and acres for those areas that cannot be avoided.

2.5.3.4 Cultural Resources Management Plan

The Authority will develop and implement a Cultural Resources Management Plan prior to construction activities to guide the overall technical cultural resources efforts during construction activities. The Cultural Resources Management Plan will include, but not be limited to, a research design for the evaluation of known and predicted resources in the study area, methods used to assess the Project's effects to resources found prior to and during construction, procedures for the curation of recovered materials, procedures to be followed in the event of unanticipated discoveries, and procedures for the recovery and treatment of Native American and Non-Native American human remains. The Cultural Resources Management Plan is expected to be reviewed by the signatory parties to the Project's Programmatic Agreement under Section 106 of the National Historic Preservation Act.

2.5.3.5 Cemetery Relocation

Two private cemeteries in the inundation area would be relocated to a site approved for interment of human remains per requirements of the California Health and Safety Code (HSC § 7500-7527). The code requires a written order from the local health department or county superior court before human remains in a cemetery may be moved. The disinterment, transportation, and removal of human remains is subject to rules and regulations adopted by the board of health or health officer of the county.

2.5.3.6 Construction Disturbance Areas and Access

Construction activities would be confined to designated construction disturbance areas. These areas would also be used for construction vehicle and equipment parking and construction material storage. Special or sensitive sites near construction disturbance areas would be clearly marked (e.g., with temporary fencing, staking and flagging, pylons) prior to construction initiation. Construction personnel would be trained to recognize these markers and understand the equipment movement restrictions involved. Marking materials would be maintained until final cleanup and/or site restoration is completed, after which they would be removed. Potential staging areas would be located near each of the facilities. Construction-related traffic and local access routes are described in Section 2.5.1.7, New and Existing Roadways.

Demolition

Demolition would take place within the reservoir inundation area once lands are acquired. Demolition would include 20 houses, 25 barns, and 40 other structures (i.e., sheds, silos, and pump house); removal of existing septic tanks and other underground storage tanks; and removal of existing roads, fences, and other utilities. Demolition debris would be reused and recycled to the extent possible. Any materials not recyclable would be transported and disposed of at an approved landfill(s).

No demolition or relocation would be required for the TC Canal diversion, TRR-related facilities, Funks Reservoir-related facilities, or facilities associated with conveyance to the Sacramento River (i.e., TC Canal intake, Dunnigan Pipeline, or CBD outlet).

Clearing, Grubbing, and Topsoil Preservation

Clearing and grubbing would be required in the inundation area footprint and for most built facilities (i.e., dam facilities, I/O Works, Funks Reservoir facilities, TRR facilities, and Dunnigan Pipeline) and would entail removing and disposing of woody vegetation. This work is estimated to occur over 3 years. Materials cleared and grubbed would be composted, reused, placed in the reservoir inundation area to provide future fish habitat, or recycled to the extent possible.

Prior to construction, measures would be taken to preserve topsoil. In the inundation area where disturbance would occur, the topsoil material would be excavated, stockpiled separately, and used in one of several ways: for restoration of temporary work areas outside the inundation area, for support of native or naturalized plant species around a facility following construction, or for placement in agricultural areas. In the irrigated agricultural areas around the TRR and Dunnigan Pipeline, topsoil would be removed, stored, and replaced in areas of orchards, row crops, and rice fields. The topsoil would be restored so it has the same composition except where it is located on permanent maintenance roads. In the rangeland areas between the TRR and Funks Reservoir along the TRR pipeline route, the topsoil would be removed, stored, and replaced. This soil would be used to restore the rangeland to its same composition, except where it is located on permanent maintenance roads. The commercial area between I-5 and SR 99 would be restored to the pre-construction condition (i.e., unpaved large lot).

2.5.3.7 Construction Duration, Timing, and Sequence

Construction may start as early as spring 2024, depending on the timing of funding, design, and permitting. Initial activities would include developing the Sites Reservoir inundation area, constructing the access roads, and realigning/constructing the Sites Lodoga Road or South Road. Durations of construction were based on production rates associated with the anticipated equipment types needed for construction.

Construction of the Project components would generally be expected to occur in the sequence shown in Table 2-8 and detailed in Appendix 2C, Construction Means, Methods, and Assumptions. Some construction activities would be concurrent with the road relocations, but the existing Sites Lodoga Road and Huffmaster Road would not be closed until the road realignments were completed.

Table 2-8. General Construction Timing and Sequencing

Task Name	Duration	Start	Finish
Reservoir Site Development			
Reservoir Footprint Mitigation Actions	500 days	Q3 2025	Q2 2027
Site Access & Staging Development	100 days	Q3 2025	Q1 2026
Demolition & Clearing	100 days	Q3 2025	Q1 2026
Roads and Bridge			
Northern Construction Access Roads	284 days	Q3 2024	Q3 2025
Southern Construction Access Roads	274 days	Q3 2024	Q3 2025
Sites Lodoga Road Realignment and Bridge	680 days	Q3 2024	Q2 2027

Task Name	Duration	Start	Finish
Huffmaster Road Realignment	801 days	Q3 2024	Q3 2027
Process & Haul Filter Materials to Project	1180 days	Q1 2025	Q3 2029
Dams and Dikes			
Golden Gate Dam	1195 days	Q3 2024	Q2 2029
Sites Dam	956 days	Q3 2025	Q1 2029
Saddle Dam 3	771 days	Q3 2025	Q3 2028
Saddle Dam 5	821 days	Q3 2025	Q4 2028
Minor Saddle Dams (1, 2, 6, 8A)	711 days	Q4 2025	Q3 2028
Saddle Dam 8B - Spillway	257 days	Q4 2025	Q4 2026
Emergency Release Structure No. 1	285 days	Q4 2025	Q1 2027
Emergency Release Structure No. 2	410 days	Q1 2026	Q4 2027
Inlet Outlet Facilities	1015 days	Q4 2025	Q3 2029
Conveyance to Sacramento River			
Dunnigan Pipeline - Alt 1	355 days	Q3 2024	Q1 2026
Dunnigan Pipeline - Alt 2	505 days	Q2 2024	Q1 2027
Regulating Reservoirs and Conveyance			
Funks/TRR Pipelines	965 days	Q1 2025	Q4 2028
Funks Reservoir	523 days	Q2 2025	Q2 2027
Funks Pumping Generating Plant	1062 days	Q2 2025	Q2 2029
TRR East Reservoir	780 days	Q3 2025	Q3 2028
TRR East Pumping Generating Plant	1010 days	Q3 2025	Q4 2028
Transmission Powerlines	875 days	Q2 2025	Q3 2028
Substations	755 days	Q1 2026	Q1 2029
Sacramento River Diversion and Conveyance			
Red Bluff Pumping Plant Improvements	560 days	Q1 2025	Q1 2027
GCID Improvements	680 days	Q2 2025	Q4 2027

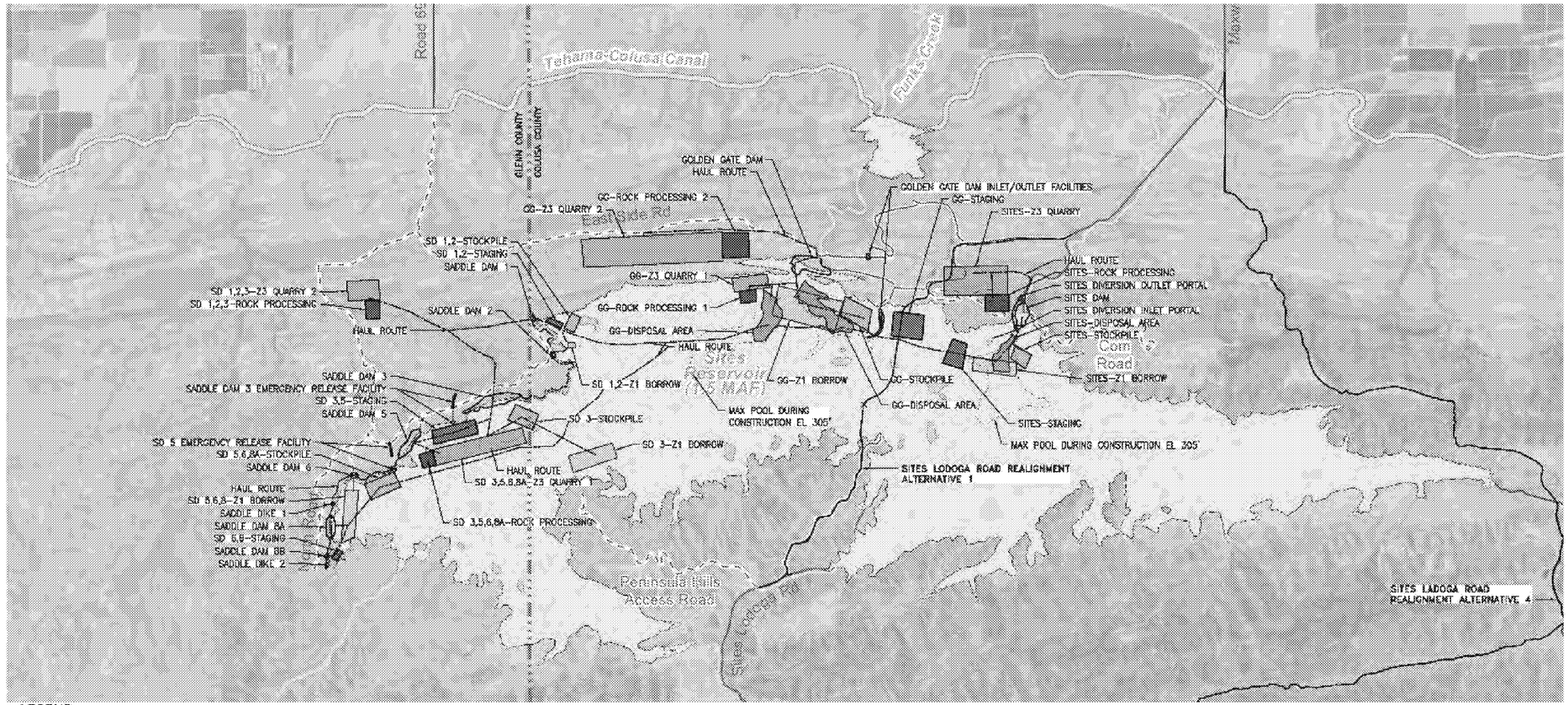
Table Notes
Q = Quarter

The general sequence of nonroad construction would begin with Golden Gate Dam, the I/O Works, and Dunnigan Pipeline, followed by Sites Dam, the larger saddle dams, regulating reservoirs and most associated facilities and pipelines. These facilities would be constructed over several years. Construction of the emergency release structures and substations would be initiated last in the sequence. The recreation areas would be completed after construction of the main dams and saddle dams and generally concurrently with the regulating reservoirs and conveyance complex for a period of 2 years (expected between 2025 and 2027).

Construction within 1,000 feet of occupied residences would be restricted between 10:00 p.m. and 7:00 a.m. to eliminate potential noise concerns. Construction in areas beyond 1,000 feet of occupied residents may occur 24 hours a day, 7 days a week.

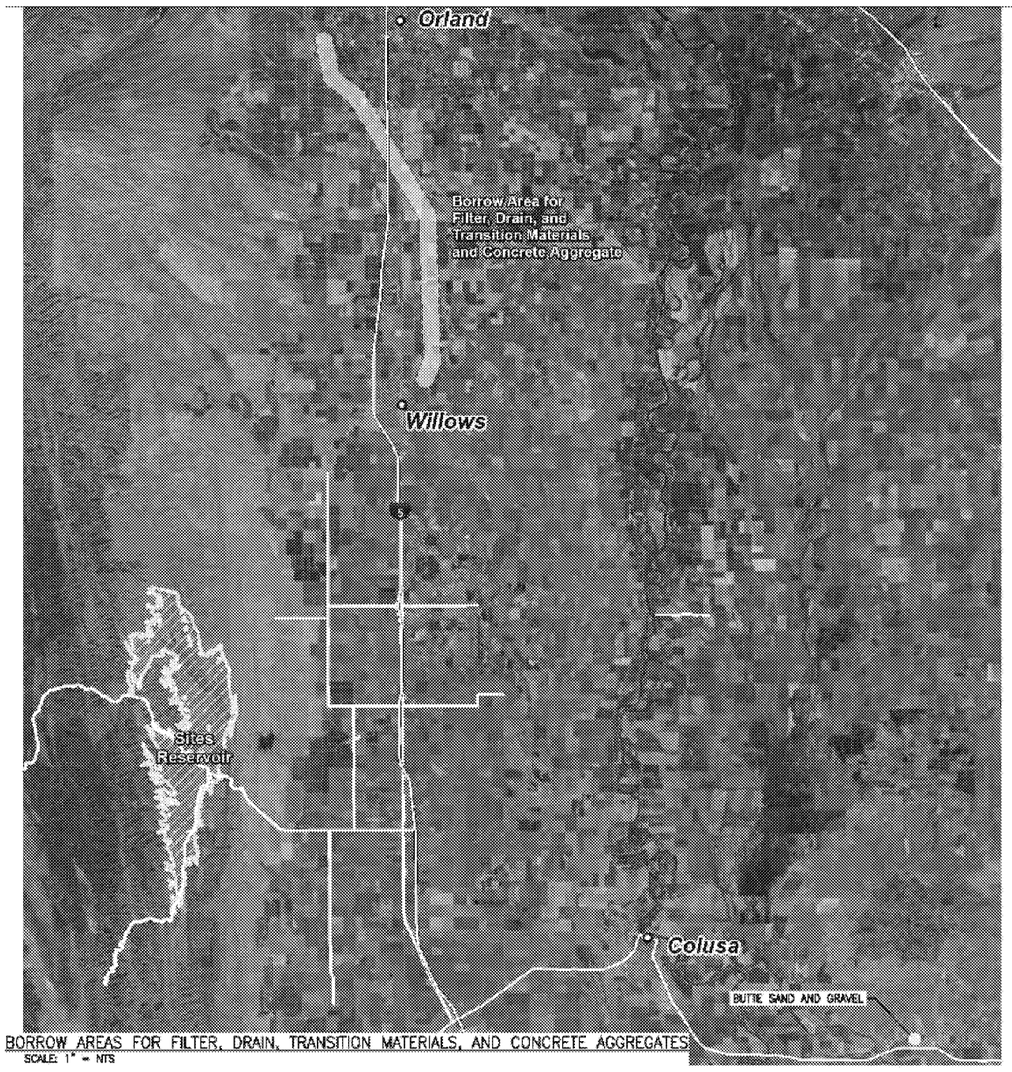
2.5.3.8 Borrow Areas and Quarries

It is anticipated that all earth and rockfill for the reservoir facilities (approximately 80% of materials required) would come from onsite sources (within the Sites Reservoir area or just outside Antelope Valley) and all aggregate for dam construction (approximately 20% of material required) would be obtained from offsite commercial sources. Figure 2-38 shows potential onsite sources and Figure 2-39 shows potential offsite commercial sources.



Source: AECOM, 2020
Drawing No. STS-315-C-2003

Figure 2-38. Onsite Borrow Area Details



Source: AECOM, 2020
Drawing No. STS–315–C–2002

Figure 2-39. Offsite Aggregate Areas

2.5.3.9 Construction Utilities

Approximately 750,000 to 1,000,000 gallons/day (500 to 700 gallons per minute) would be needed for constructing the Golden Gate Dam, Sites Dam, saddle dams, saddle dikes, and I/O Works over a period of 4 years. As such, a total of approximately 3,360 acre-feet per year (AFY) to 4,480 AFY would be required over the 4 years. Approximately 75,000 gallons per day would be required for conveyance facilities over a period of 4.5 years. This water would be obtained from three potential sources: existing surface water from the Sites Storage Partners pursuant to existing water rights agreements; existing groundwater wells in the Sites Reservoir inundation area; and new groundwater wells in the Sites Reservoir inundation area. Batch water treatment plants would be used to treat water, as necessary, for the intended use. Construction water would be reused to the extent possible.

Anticipated construction energy needs are shown in Table 2-9.

Table 2-9. Estimated Temporary Construction Power Requirements

Location/Facility	Required Load, 3-Phase, KVA
Golden Gate and Sites Dams	
Contractor's and Owner's Office Complex	300
GG Quarry Feeder/Jaw for Rockfill	500
Sites Quarry Feeder/Jaw for Rockfill	500
GG Concrete Batch Plant	600
Sites Concrete Batch Plant	600
Contractor's Shop Complex	300
Saddle Dams	
Contractor's and Owner's Office Complex	300
Saddle Dams Quarry Feeder/Jaw for Rockfill	500
Concrete Batch Plant	600
Contractor's Shop Complex	300
Inlet-Outlet Facilities	
Contractor's and Owner's Office Complex	300
Concrete Batch Plant	600
Contractor's Shop Complex	200
Roads	
Contractor's and Owner's Office Complex	300
Asphalt Batch Plant	600
Contractor's Shop Complex	200
Conveyance	
Contractor's and Owner's Office Complex (3)	300 each
Concrete Batch Plant & CDSM Batch Plant	600 each

2.5.3.10 Batch Plants

For dam construction, batch plants would be established in the inundation area of the Sites Reservoir or in staging areas outside the inundation area near various reservoir facilities. Concrete batch plants would be necessary for the I/O Works, Golden Gate Dam, Sites Dam, diversions, saddle dams, and the bridge crossing the reservoir. Asphalt batch plants would be used for paving activities of public access and maintenance roads.

A concrete batch plant is equipment that combines water, admixtures, sand, aggregate, fly ash and cement to form concrete. In general, the concrete batch plant is anticipated to have the following features: mobile or semi-mobile (modular stationary) plants; capacity of 100 to 500 cubic yards per hour; at least three aggregate feed bins; and computerized batching/proportioning.

An asphalt batch plant is equipment that combines aggregate and asphalt to form asphalt to be used for road construction. In general, the asphalt batch plant is anticipated to have the following features: mobile or semi-mobile (modular stationary) plants; drum mixer type plant, but could be a weigh-batch type; capacity of 200 to 500 tones per hour, but could be lower for some of the smaller portions; at least four aggregate feed bins; and computerized batching/proportioning.

2.5.3.11 Construction Traffic and Equipment

Approximately 1,700 construction personnel would be working at the peak of construction. 1,000 of these personnel would be involved with reservoir facilities and 700 would be working on conveyance facilities. Expected highway truck trips per day associated with construction will range from 0.5 for installation of the new pump at the RBPP to 360 estimated trips for the construction of dams, dikes and other reservoir-related activities. Similarly, personnel vehicle trips associated with the same facilities will range from 2 to over 600 per day. Estimated vehicle trips per day for all construction activities are included in Appendix 2C.

Construction workers would likely commute to construction sites from regional population centers such as Maxwell, Willows, Orland, Williams, and Colusa, and from other northern California counties when specialty trades or skillsets are not available regionally.

Daily construction traffic would consist of trucks hauling equipment and materials to and from the worksites and the daily arrival and departure of construction workers. Construction traffic on local roadways would include dump trucks, bottom-dump trucks, concrete trucks, flatbed trucks for delivering construction equipment and permanent project equipment, pickups, water trucks, equipment maintenance vehicles, and other delivery trucks. Dump trucks would be used for earth moving and clearing, removal of excavated material, and import of other structural and paving materials. Other delivery trucks would deliver construction equipment, job trailer items, concrete-forming materials, reinforcing steel and structural steel, piping materials, foundation piles and sheet piling, sand and gravel from offsite sources, new facility equipment, and other construction-related deliveries. Construction equipment/materials would not be permitted to pass through the community of Maxwell on the Maxwell Sites Road.

2.5.3.12 In-Channel Construction

Cofferdams would be required along Stone Corral and Funks Creeks for construction of Sites Dam and Golden Gate Dam, respectively. The cofferdams would be incorporated into the upstream toe of the embankment dams and would be constructed of material likely derived from the excavation of the dam foundations. The crest of the cofferdams would be set at elevation 310 feet (5 feet above highwater during construction). The Sites Dam would require approximately 260,000 cubic yards of Zone 4 fill for the cofferdam in Stone Corral Creek, and the Golden Gate Dam would require approximately 800,000 cubic yards of Zone 4 fill for the cofferdam in Funks Creek.

Construction of the Funks pipelines would generally skirt Funks Creek and not intersect the waterway but two large fills needed for the Funks Pipeline and TRR Pipeline could be placed near the south creek bank. Construction of the TRR pipelines would cross the GCID Main Canal, TC Canal, and the Funks Reservoir. Trenching of the TRR pipelines under the GCID Main Canal and TC Canal would occur during the 6-week winter shutdown period. If possible, trenching would be scheduled for a time when the canals were dry, such that trenching would result in in-channel construction but not in-water construction. Construction of the TRR pipelines would require in-channel work where they cross Funks Reservoir. An earth and geomembrane liner coffer dam would be constructed to allow work to occur under dry conditions.

Construction of the Dunnigan Pipeline would require installation of water level and flow control gates at the concrete-lined TC Canal intake. The tie-in between the intake and the TC Canal would be done during the winter shutdown period, and a small portion of the TC Canal would be dewatered. In-channel work would be required at the CBD to install the energy dissipating control structure, and a coffer dam would be constructed so that the work would be completed in the dry.

2.5.4 Project Commitments and Best Management Practices Common to all Alternatives

A number of BMPs and environmental commitments are proposed to be implemented during Project design, construction and operation/maintenance. The BMPs and environmental commitments are considered part of the Project and discussed in detail in Appendix 2D. The following provides a list of activities or topics covered:

- Conform with Applicable Design Standards and Building Codes
- Perform Geotechnical Evaluations and Prepare Geotechnical Data Reports
- Utility and Infrastructure Verification and/or Relocation
- Natural Gas and Water Wells Decommissioning
- Road Abandonment
- Minimize Soil Disturbance and Topsoil Storage and Handling Plan
- Stormwater Pollution Prevention Plan(s) and Best Management Practices (storm water and non-storm water)

- Spill Prevention and Hazardous Materials Management / Accidental Spill Prevention, Containment, and Countermeasure Plans and Response Measures
- Comply with Requirements of RWQCB Order 5-00-175
- Groundwater/ Dewatering Water Supply
- Construction Equipment, Truck, and Traffic Management Plan
- Visual/Aesthetic Design, Construction, and Operation Practices
- Fire Safety and Suppression / Fire Prevention and Control Plan
- Worker Health and Safety Plan
- Blasting Standard Requirements
- Mosquito and Vector Control During Construction
- Construction, Operation and Maintenance Noise Management
- Construction and Operations Emergency Action Plan
- Electrical Power Guidelines and EMF Field Management Plan
- Air Quality Measures (Construction Equipment Exhaust Reduction Plan, Fugitive Dust Control Plans, Construction Best Management Practices to Reduce Greenhouse Gas Emissions)
- Environmental Site Assessment(s) and Hazardous Materials Management Plans
- Construction Site Security
- Notification of Maintenance Activities in Waterways
- Worker Environmental Awareness Program
- Fish Rescue and Salvage Plans for Funks Reservoir, Stone Corral Creek, and Funks Creek for Alternative 1; for Sacramento River for Alternative 2
- Construction BMPs and Monitoring for Fish, Wildlife, and Plant Species Habitats, and Natural Communities
- Control of Invasive Plant Species during Construction

2.5.5 Proposition 1 Benefits Common to All Action Alternatives

The Project was conditionally awarded Proposition 1, WSIP funding by the CWC to provide public benefits for flood damage reduction, recreation, and ecosystem benefits. All of the Action Alternative include providing these benefits including entering into a contract with DWR for the flood damage reduction and recreation benefits, a contact with the California Department of Fish and Wildlife for the ecosystem benefits, and a contract with the CWC for final funding award.

The Project would provide flood damage reduction benefits to portions of Colusa County, including Maxwell and the surrounding agricultural areas. Incidental storage in Sites Reservoir would capture and store flood flows from the Funks and Stone Corral Creek watersheds. These

flood damage reduction benefits are inherent to the Project design and would occur regardless of the Project's operations for water supply and water-related environmental benefits.

The Project would provide recreation benefits through the recreation facilities described previously in this chapter.

The ecosystem benefits funded by the CWC include providing water for Incremental Level 4 refuge water needs for Central Valley Project Improvement Act (CVPIA) refuges both north and south of the Delta and providing additional flow into the Yolo Bypass to benefit Delta smelt (*Hypomesus transpacificus*). Incremental Level 4 refuge water deliveries could occur in any year type and at any time of year. For those refuges located south-of-Delta, it is assumed that water would be moved from July to November though the Delta. Additional flows into the Yolo Bypass could occur at any time of year, but are assumed to occur during the summer and fall months (August through October) of all water year types. These deliveries increase desirable food sources for Delta smelt and other fish species in the late summer and early fall. The Authority envisions that CDFW would take an active role in managing the ecosystem water and would work with CDFW to schedule and adjust releases of ecosystem water to address real-time conditions and needs.

As described in Section 2.5.2., *Coordination with CVP and SWP*, above, additional ecosystem benefits beyond those funded by the CWC may occur via exchanges with Shasta Lake, Lake Oroville, or – likely to a lesser extent – Folsom Lake.

2.6 Alternative 1 Specific Elements

Alternative 1 is the Authority's proposed Project under CEQA. See Figure 2-1 and Figure 2-2 for a plan view of the Alternative 1 features. The unique features of Alternative 1 include the following:

- Reservoir capacity would be 1.5 MAF;
- A bridge across the reservoir would provide access to the west of the Project; and
- Reclamation investment would range from no investment to up to 7% investment.

Alternative 1 would impound surface water at the Golden Gate Dam on Funks Creek, Sites Dam on Stone Corral Creek, and a series of seven saddle dams along the eastern and northern rims of the reservoir would close off topographic saddles in the surrounding ridges to form Sites Reservoir. The 1.5 MAF reservoir under Alternative 1 would inundate approximately 13,200 acres of Antelope Valley in Colusa County. Alternative 1 would convey water from the Sacramento River through existing or upgraded TC Canal and GCID Main Canal facilities to new and upgraded regulating reservoirs and into the new Sites Reservoir. Existing and new facilities would convey water from Sites Reservoir for uses along the TC Canal, along the GCID Main Canal and down the TC Canal to the new Dunnigan Pipeline and the CBD for release, and flows would enter the Yolo Bypass or Sacramento River. Construction roads, local roads, and maintenance roads would be developed or realigned to accommodate the reservoir facilities, including the realignment of Sites Lodoga Road with a new bridge over the reservoir. Alternative

1 would involve two primary recreation areas, Peninsula Hills Recreation Area and Stone Corral Creek Recreation Area, and a day-use boat ramp. These areas would provide multiple recreational amenities, including campsites, boat access, horse trails, hiking trails, and vista points.

Releases from Sites Reservoir would be made to meet environmental purposes, such as for the delivery of Incremental Level 4 water to refuges or fall food production in the Yolo Bypass for north Delta fish species. Releases would also be made for Sites Storage Partners based on their requests to meet their respective water supply portfolio needs and any water conveyed south of the Delta would comply with all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time. Under Alternative 1, operational exchanges may also occur with Reclamation in Shasta Lake and Folsom Reservoir and with DWR in Lake Oroville. Alternative 1 includes a range of Reclamation investment in the Project, from no investment to up to an assumed 7 percent Reclamation investment.

2.6.1 Sites Reservoir and Related Facilities

Under Alternative 1, Sites Reservoir would be 1.5 MAF and would inundate approximately 13,200 acres. It would have a maximum normal WSE of 498 feet above mean sea level and would require I/O Works, seven saddle dams (1, 2, 3, 5, 6, 8A, and 8B), and two saddle dikes (1 and 2). See Figure 2-1, Alternatives 1 and 3 Regulating Reservoirs and Conveyance and Sites Reservoir Facilities for the location of the Sites Reservoir, Golden Gate Dam, saddle dams, and I/O Works under Alternative 1. Table 2-10 provides the general characteristics of the proposed Sites Reservoir under Alternative 1.

Table 2-10. General Reservoir Characteristics of Alternative 1

Key Characteristic	Detail
Nominal Reservoir Gross Storage	1.5 MAF
Maximum Normal Operating Water Elevation	498 feet above mean sea level
Minimum Normal Operating Water Elevation	340 feet above mean sea level
Top of Dead Pool	300 feet above mean sea level
Active Storage Capacity[1]	1.4 MAF

[1] Between minimum normal operating water elevation (El. 340.0 feet) and maximum normal operating elevation

A total of nine dams (Golden Gate Dam, Sites Dam, and seven saddle dams) would create the 1.5 MAF Sites Reservoir under Alternative 1. Two saddle dikes would be required to close off topographic saddles in the ridges near Saddle Dams 8A and 8B. The dam crests would be 30 feet wide and would include asphalt paved or gravel maintenance roads. The nominal crest would be at elevation 517 feet for all dams, including Saddle Dam 8B. See Table 2-3. for a summary of the dam heights for Alternative 1.

2.6.2 New and Existing Roadways

Sites Lodoga Road is an east-west, two-lane major collector road that extends through the community of Maxwell, which is adjacent to I-5, and provides an important emergency and

evacuation route in a limited roadway network to and from the rural communities of Lodoga and Stonyford. Sites Lodoga Road becomes Maxwell Sites Road east of the community of Sites, which is in the inundation area. The Sites Reservoir would eliminate east-west access to I-5 (east of the reservoir) from Stonyford and Lodoga (west of the reservoir) because it would inundate the current alignment of Sites Lodoga Road. Because Sites Dam and the inundation area would eliminate access on Sites Lodoga Road, an alternative method for access west of the reservoir would be needed. Under Alternative 1, this access is provided by realigning a segment of Sites Lodoga Road and constructing a bridge over the reservoir. The relocated segment of Sites Lodoga Road would include 5-foot-wide shoulders adjacent to the two 12-foot-wide lanes to accommodate bicycles and would connect to the new bridge.

The realigned Sites Lodoga Road would be placed across the reservoir and extend 7,800 feet; it would necessitate the construction of four fill prisms that would be up to 150 feet tall and would support two shorter bridge segments approximately 3,450 and 4,050 feet long. Figure 2-40, Sites Lodoga Road Realignment and Bridge, shows a typical cross section of the road and the bridge that would be needed to cross the reservoir. The roadway and bridge profile would be at 2 feet above the maximum flood plus wave height. The maximum flood plus wave height is set at 10 feet above the normal WSE (elevation 498 feet for the 1.5 MAF reservoir).

The bridge structure would consist of a cast-in-place, prestressed concrete box girder that would have two lanes with a total width of 35.5 feet and 4-foot-wide shoulders. The bridge would have California Department of Transportation-approved edge barriers with small-diameter electrical conduits, a suicide prevention barrier, emergency phone service facilities, deck drains, and an opening for potential utilities. The bridge design does not include sidewalks due to the remote rural nature of this site. The bridge would be exposed to high winds; therefore, high wind advisory facilities, such as static roadside signs or extinguishable message signs that are illuminated when instruments measure high winds, would be installed.

The disturbance area for bridge construction would include the footprint of the bridge structure, the staging areas for materials and equipment, and the area needed to construct the facilities and access roads. Traffic that was not construction related would be diverted around construction disturbance areas in accordance with a traffic management plan. Initial construction activities would involve establishing staging areas, surveying and marking roadways, clearing, and grading. Bridge construction would consist of constructing the foundation and prisms, including drilled-pier installation; bridge columns; and bridge spans.

The Huffmaster Road realignment, which is associated with the easterly segment of Sites Lodoga Road Realignment, would move the affected segment out of the Sites Reservoir footprint. The realigned Huffmaster Road would be a gravel road to serve the residences at the end of Huffmaster Road.

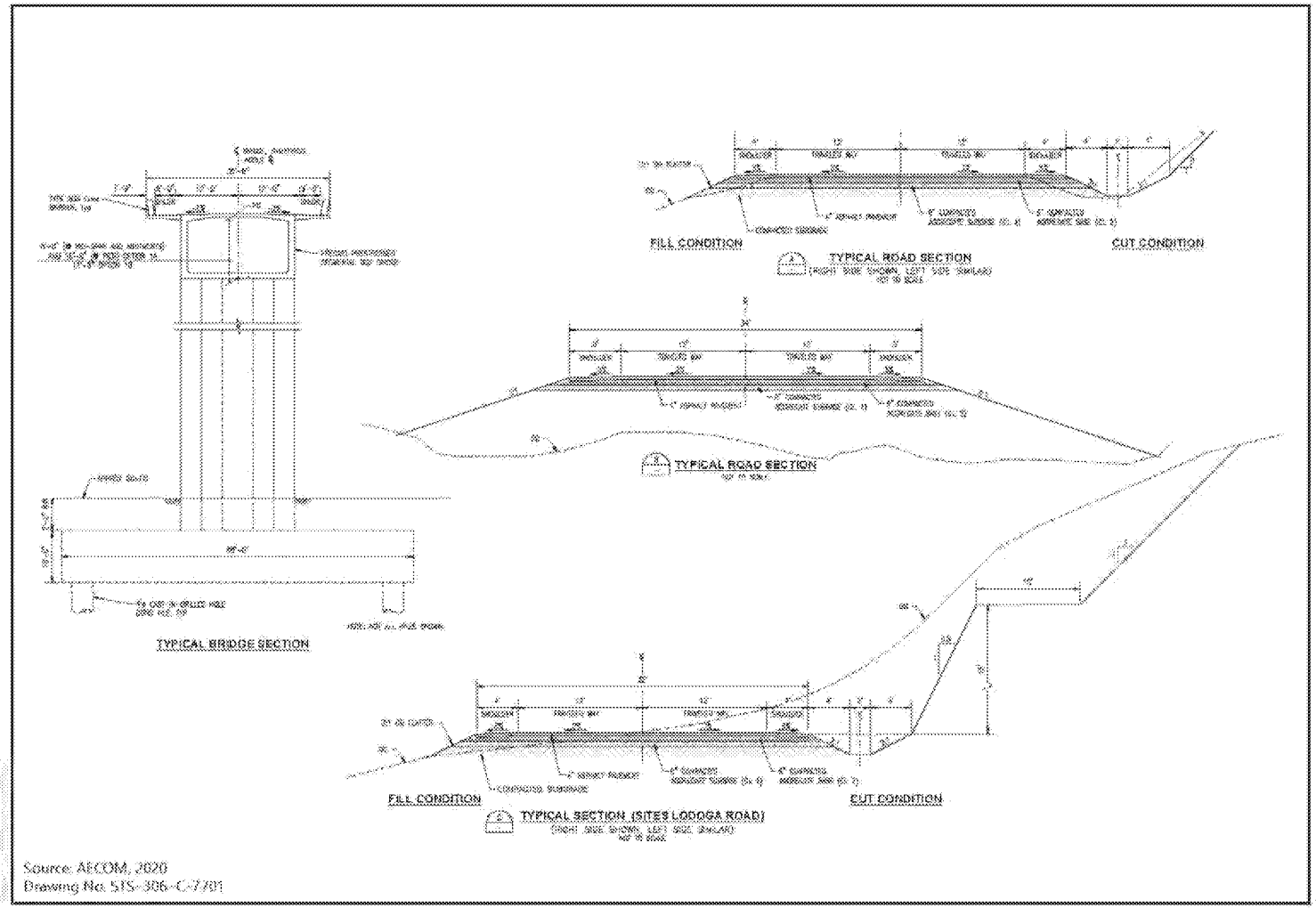


Figure 2-40. Sites Lodoga Road Realignment and Bridge

2.6.3 Operations and Maintenance

In addition to the operations and maintenance activities common to all Action Alternatives, operations and maintenance activities under Alternative 1 would include Reclamation as a Storage Partner in the Project and maintenance of the bridge as described below.

Water Operations

Alternative 1 includes a range of potential investment in the Project by Reclamation. For the purposes of modeling, two options have been identified under this alternative – Alternative 1A includes no Reclamation investment and Alternative 1B includes up to 7 percent Reclamation investment, which equates to about 91,000 AF of storage allocation dedicated to Reclamation in Sites Reservoir. With investment from Reclamation, 7 percent of Sites Reservoir storage would be managed as a CVP supply under Alternative 1. Reclamation's share of Sites water would be flexibly used by Reclamation to meet CVP objectives providing water for water supply and environmental needs. Increased storage, diversion, and release capacity provides the CVP with additional opportunities to store and release water when it may have been otherwise constrained. Releases for Reclamation would generally be made for a variety of purposes as identified and directed by Reclamation and would be made in the same manner as described for all Storage Partners.

Bridge Maintenance

There are no day-to-day operations of the bridge (no moving components of the bridge that would be operated on a daily basis). Typical bridge maintenance activities would include replacing damaged or missing signage, replacing or repairing railings, replacing or repairing damage to the bridge deck (road surface), sealing joints, repairing erosion on approaches, unplugging drains and removing debris, and checking for and repairing faulty electrical contacts. The bridge would be periodically inspected through walking through inspection to detect any obvious defects, hazards or potential problems and to also monitor known problems. The bridge would also be periodically inspected by Caltrans to detect any major structural concerns. Repairs and replacements would be made as needed based on these inspections.

2.7 Alternative 2 Specific Elements

The unique features of Alternative 2 include the following:

- Reservoir capacity would be 1.3 MAF;
- A local access road around the southern end of the reservoir would provide access to the west of the Project; and
- Dunnigan Pipeline would extend to and discharge at the Sacramento River with a partial discharge at the CBD.

See Figure 2-1 and Figure 2-2 for a plan view of the Alternative 2 features.

Alternative 2 would impound surface water at the Golden Gate Dam on Funks Creek, Sites Dam on Stone Corral Creek, and a series of four saddle dams along the eastern and northern rims of

reservoir would close off topographic saddles in the surrounding ridges to form Sites Reservoir. The 1.3-MAF reservoir would inundate approximately 12,600 acres and require four saddle dams and three saddle dikes. Alternative 2 would convey water from the Sacramento River through existing or upgraded TC Canal and GCID Main Canal facilities to new and upgraded regulating reservoirs and into the new Sites Reservoir. Existing and new facilities would convey water from Sites Reservoir for uses along the TC Canal, along the GCID Main Canal and down the TC Canal to the new Dunnigan Pipeline and to the Sacramento River for direct release to the river. Alternative 2 also includes a partial release into the CBD, and flows would enter the Yolo Bypass or Sacramento River. Construction roads, local roads, and maintenance roads would be developed or realigned to accommodate the reservoir facilities, including the realignment of Sites Lodoga Road with a new local access road around the southern end of the reservoir. Alternative 1 would involve two primary recreation areas, Peninsula Hills Recreation Area and Stone Corral Creek Recreation Area, and a day-use boat ramp. These areas would provide multiple recreational amenities, including campsites, boat access, horse trails, hiking trails, and vista points.

Releases from Sites Reservoir would be made to meet environmental purposes, such as for the delivery of Incremental Level 4 water to refuges or fall food production in the Yolo Bypass for north Delta fish species. Releases would also be made for Sites Storage Partners based on their requests to meet their respective water supply portfolio needs, and any water conveyed south of the Delta would comply with all applicable laws, regulations, biological opinions and incidental take permits, and court orders in place at the time. Under Alternative 2, operational exchanges may also occur with Reclamation in Shasta Lake and Folsom Reservoir and with DWR in Lake Oroville. Alternative 2 does not include Reclamation investment in the Project.

2.7.1 Sites Reservoir and Related Facilities

Under Alternative 2, Sites Reservoir would be 1.3 MAF and would inundate approximately 12,600 acres (600 acres less than Alternative 1). It would have a maximum normal WSE of 482 feet above mean sea level (17 feet lower than Alternative 1) and would require I/O Works, four saddle dams (3, 5, 8A, and 8B) and three saddle dikes (1, 2, and 3). Figure 2-3 shows the location of Sites Dam and Golden Gate Dam and the location of the four saddle dams and three saddle dikes under Alternative 2. Under Alternative 2, Saddle Dams 3 and 5 would not have emergency release systems into the Hunters Creek watershed. Figure 2-11 provides the general characteristics of the proposed Sites Reservoir under Alternative 2.

Table 2-11. General Reservoir Characteristics of Alternative 2

Key Characteristic	Detail
Nominal Reservoir Gross Storage	1.3 MAF
Maximum Normal Operating Water Elevation	482 feet above mean sea level
Minimum Normal Operating Water Elevation	340 feet above mean sea level
Top of Dead Pool	300 feet above mean sea level
Active Storage Capacity[1]	1.2 MAF

[1] Between minimum normal operating water elevation (El. 340.0 feet) and maximum normal operating elevation

2.7.2 Conveyance to Sacramento River

As with Alternative 1, a portion of the water released from Sites Reservoir would be conveyed using the existing TC Canal, and for those Sites Storage Partners located south of the Delta, would be conveyed using the new Dunnigan Pipeline. The water would flow south approximately 40 miles to near the end of the TC Canal. At this point, flow would be diverted into the Dunnigan Pipeline. A gravity outlet structure from the TC Canal into the Dunnigan Pipeline would be constructed to control the flow in the pipeline. No pumping would be required. Power would be needed for SCADA control and operating the gates to let water into the pipeline and at the discharge point.

Under Alternative 2, the Dunnigan Pipeline would extend 10 additional miles, pass through the western levee of the Sacramento River, and discharge into the Sacramento River at approximately River Mile 100.8 (Figure 2-41, Dunnigan Sacramento River Discharge Site Plan). At the CBD, there would also be a discharge structure similar to Alternative 1, but the structure would be smaller and would divert only a portion of the flow, while the remaining flow would continue to the Sacramento River.

The pipeline would have a 10.5-foot-inside diameter with three tunneled crossings (I-5, Road 99W, the railroad, and CBD) that require 12-foot (144-inch) casings. The pipeline would cross under SR 45 and a levee.

The pipeline would terminate in a discharge and energy dissipation structure. The discharge structure would extend through the Sacramento River levee and would be made up of ten 36-inch diameter pipes that would each have a check valve to dissipate energy. The structure would be located such that it was outside the levee prism, or area of influence, on the west side of the levee slope. The ten 36-inch diameter pipelines would be designed to penetrate the levee above the high high-water mark.

The discharge structure would include a vertical drop exclusion barrier to prevent the passage of anadromous fish into the pipeline. The minimum vertical drop would be 10 feet at the top of the levee onto a 20,000 square foot area of riprap extending to the river. This design would place the check valves far enough above the water surface elevation to prevent access by fish. Discharges would occur when the river was low and therefore the check valves would be distant from the water's edge. Discharge would likely be May to October but could extend into November.

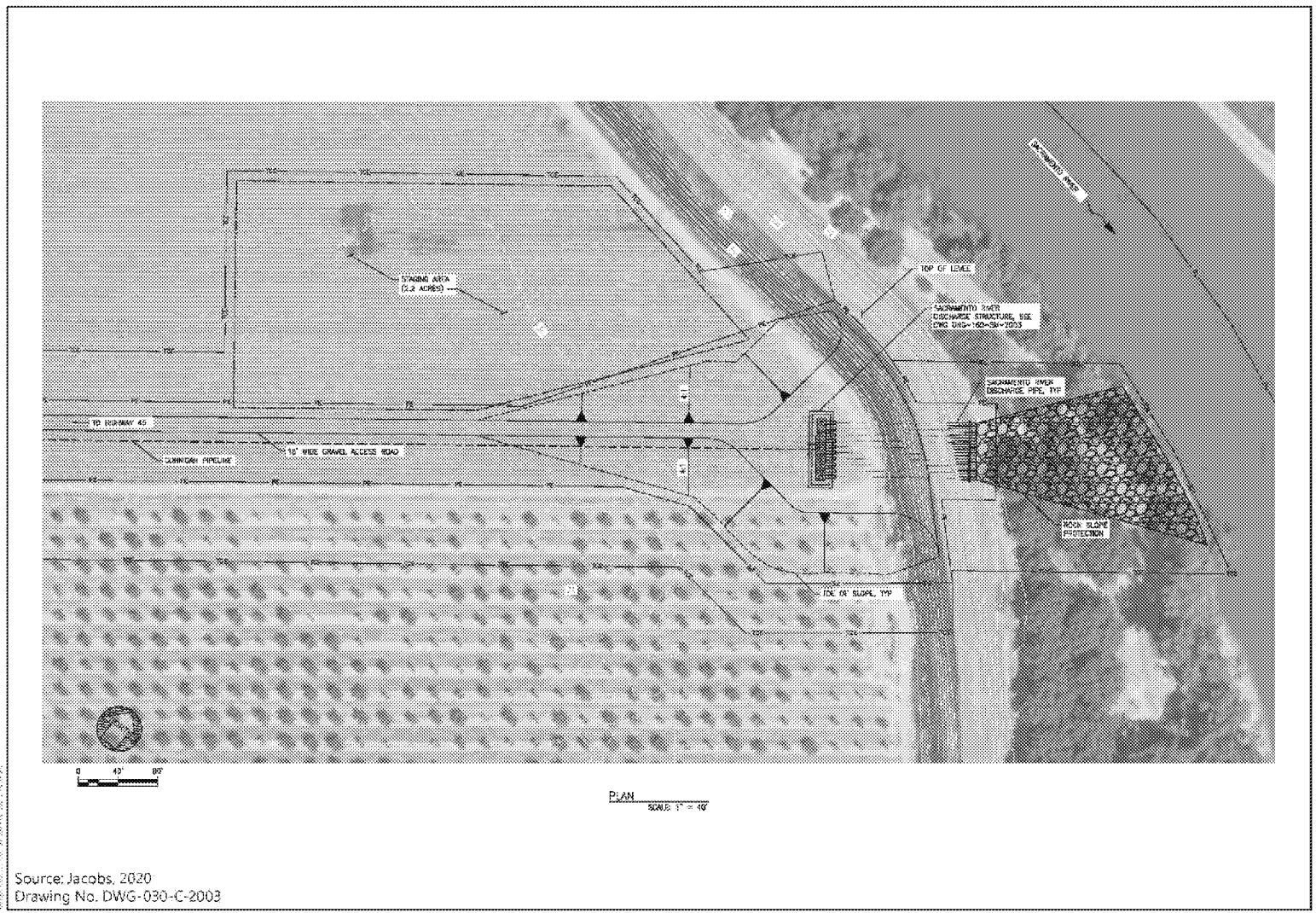


Figure 2-41. Dunnigan Sacramento River Discharge Site Plan

Construction would not occur in the winter unless it was a critically dry year. A non-winter construction window would be targeted because even small amounts of rain cause the roads to become slick, which would slow and/or prevent the movement of construction equipment. The construction window would exclude mid-October through March 31. Because groundwater is 3 feet below ground surface, the contractor would install dewatering wells every 50 to 100 feet. However, excavating and placing pipes closely, spatially and temporarily, would avoid running the dewatering system for long periods. Construction of the Dunnigan Pipeline would require crossing nearly 20 irrigation laterals and drainage canals. Bypass pipes would be used to allow irrigation water to flow down canals and also allow drainage water from irrigation to flow. Boring may be required under SR 45, if open cut is not possible. A boring will be required under the levees adjacent to the CBD and under the CBD.

The discharge structure would be located on the west bank of the river about 1 mile upstream of the Rough and Ready Pumping Plant. As described in Appendix 2D, Best Management Practices, in-water construction activities in the Sacramento River would occur during the work window of September 1 through October 15. This work would include constructing a coffer dam. Once the coffer dam is completed, work would continue in the dry and could occur outside the in-water work window. Pile driving or a vibration hammer would be used to install piles on the land side of the levee.

2.7.3 New and Existing Roadways

Realignment of Huffmaster Road and construction of the new South Road would occur under Alternative 2 (Figure 2-35). As with Alternative 1, Sites Dam and the inundation area would inundate 4.2 miles of the Sites Lodoga Road and eliminate access on this 13-mile-long collector road. Similar to Alternative 1, the relocated segment of Sites Lodoga Road would include 5-foot-wide shoulders adjacent to the two 12-foot-wide lanes to accommodate bicycles and would provide access to the Stone Corral Recreation Area. Similar to Alternative 1, Huffmaster Road would be realigned for approximately 9 miles. A new South Road would be constructed and connect to the end of the realigned portion of Huffmaster Road. It would be approximately 20 miles. The total length of the realigned portion of Huffmaster Road and the new South Road would be approximately 30 miles, all of which would be paved.

All other permanent access, maintenance, detour and construction roads would be the same for the reservoir facilities between Alternatives 1 and 2. These roads would be needed regardless of the inundation area size to serve the planned facilities and recreation areas.

The South Road would generally require more excavation and more aggregate when compared to the bridge under Alternative 1. These materials are listed in Appendix 2C, Construction Methods, Means, and Assumptions, Table Alt 2, Preliminary Quantities for Roads.

2.7.4 Operations and Maintenance

Operations and maintenance activities under Alternative 2 would be the same as those described for all Action Alternatives above. In addition to the water operations activities described above that are common to all Action Alternatives, Alternative 2 includes releases directly to the Sacramento River from the extended Dunnigan Pipeline, with a partial release into the CBD.

2.8 Alternative 3 Specific Elements

Alternative 3 facilities and project components would be the same as Alternative 1, as described above. Operationally, Alternative 3 would include increased Reclamation participation and investment, with investment of up to 25 percent of the Project cost.

Under Alternative 3, Reclamation would have an increased investment in Sites Reservoir of up to 25 percent as compared to up to 7 percent in Alternative 1. The increased level of Reclamation investment would result in up to 25 percent of Sites Reservoir storage space being dedicated to Reclamation's use. Reclamation's share of Sites water would be flexibly used by Reclamation to meet CVP objectives providing water for water supply and environmental needs. The increased level of Reclamation investment would also result in increased opportunities for maintaining cold water pool in Shasta Lake, Folsom Lake and Lake Oroville through Reclamation operating its up to 25 percent investment as part of the integration of the CVP.

Increased Reclamation investment in the Project would require some reduction in local participation for Alternative 3 as compared with Alternative 1. Alternative 3 assumes that Sites Storage Partners that are local agencies would reduce their participation in the Project to accommodate the investment by Reclamation. The State's Proposition 1 investment for ecosystem, flood control and recreation benefits does not change with the increased Reclamation investment in Alternative 3.

All other components of Alternative 3 are the same as those for Alternative 1.

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From: Heydinger, Erin [Erin.Heydinger@hdrinc.com]
Sent: 3/15/2021 3:23:25 PM
To: Alicia Forsythe [aforsythe@sitesproject.org]
Subject: FW: [EXTERNAL] Sites Proect - American River Flows - Alt 3

FYI. I wonder if Reclamation is going to want CH to re-model Alternative 3 for the EIR to adjust American River operations… I'm thinking that if so, the changes will mostly be isolated to the American River but there may be some minor changes on the Sacramento as well.

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: Sumer, Derya <dsumer@usbr.gov>
Sent: Monday, March 15, 2021 9:31 AM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Cc: Davis, Ryan A <rdavis@usbr.gov>; Rob/SAC Leaf <Rob.Leaf@jacobs.com>
Subject: FW: [EXTERNAL] Sites Proect - American River Flows - Alt 3

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Erin,
I understand Rob let you know some of the concerns we have about Alt3 modeling. Rob was going to try and provide another version that hopefully fixes the issue.
I'll provide an update when we have results.
Thanks,
Derya

Derya Sumer, PhD, PE
Water Supply and Operations Analysis Branch Chief
US Bureau of Reclamation
Interior Region 10 · California-Great Basin
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From: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>
Sent: Thursday, March 11, 2021 9:57 AM
To: Sumer, Derya <dsumer@usbr.gov>
Cc: Parker, Nancy L <NParker@usbr.gov>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>; Micko, Steve/SAC <steve.micko@jacobs.com>; Koizumi, Cameron A <ckoizumi@usbr.gov>
Subject: [EXTERNAL] Sites Proect - American River Flows - Alt 3

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Derya,

I prepared this follow up re American River July impacts and provided to the Authority.

Regarding potential impacts of Sites Project on American River flows and storage:

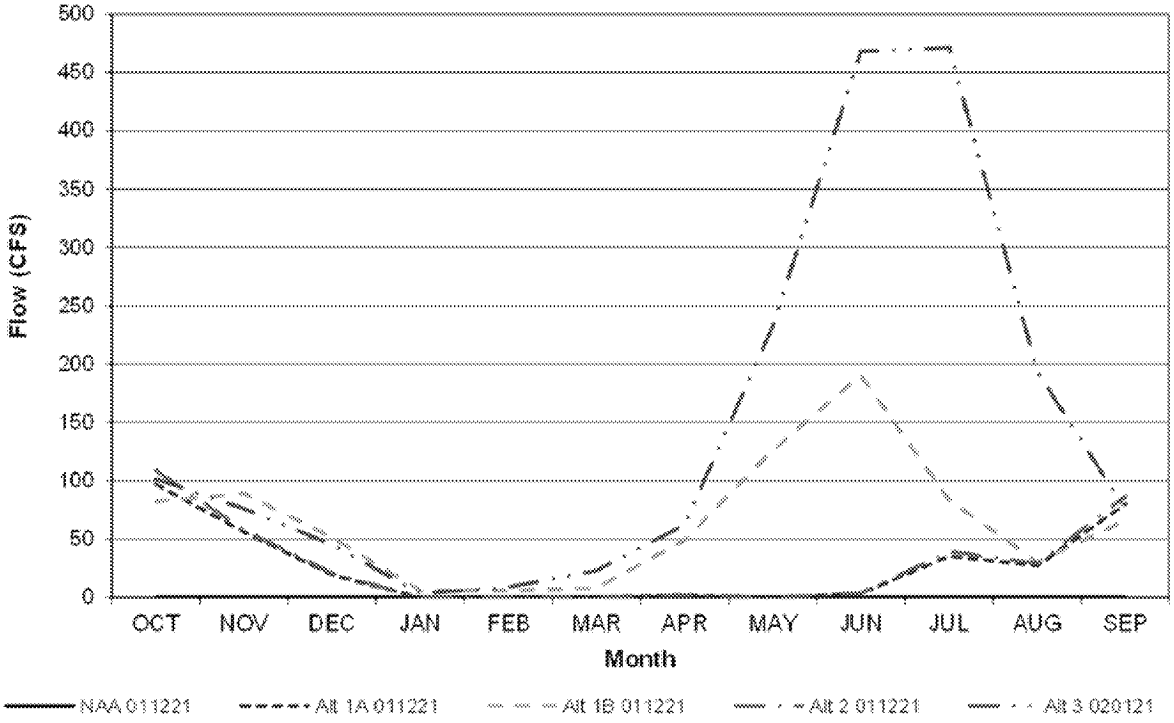
- There is no Sites Project specific American River objective for flow or storage benefits included in the EIRS/WSIP modeling
- The CalSim II model complies with all existing American River regulations including the FMS in the No Action and Sites Project alternatives
- As Federal investment increases in the Sites Project (1A->1B->3) reoperation of CVP storage in Shasta and Folsom Lakes occurs in response to CVP Op Flex being released from Sites Reservoir
- The releases of CVP Op Flex from Sites Reservoir occur generally in the late Spring and Summer months but are typically greatest in the months of June and July
- Alternative 3 shows that the CVP Op Flex releases in July generally lead to lower releases from Folsom Lake; the reduction of releases in July occurs generally when flows on the American River are greater than 2,500 CFS
- While flows of 2,500 CFS in the month of July are adequate for temperature management, temperature impacts do occur when flows at higher levels are reduced as they are in Alternative 3; the increases in temperature in July occurs generally when temperatures at Watt Ave on the American River are less than 67 degree F
- Folsom Lake carryover storage is significantly increased as a result of the flow changes in July.
- Reclamation has discretion to continue Folsom Lake releases in July at higher levels and/or change their temperature management so as to reduce these impacts
- Alternatively increase Folsom Lake storage could be used for additional benefits on the American river derived from CVP Op Flex releases from Sites

See charts below

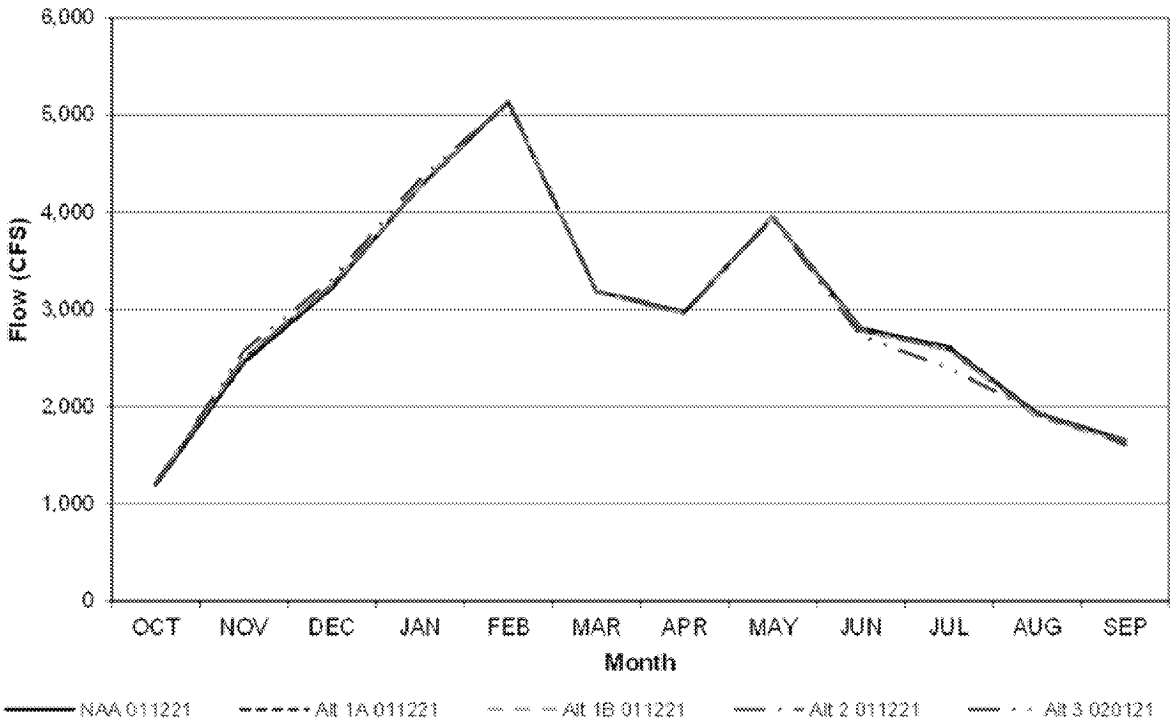
Note that the first chart is C32+C32B, it needs to be added to the trend reporting spreadsheets we have distributed

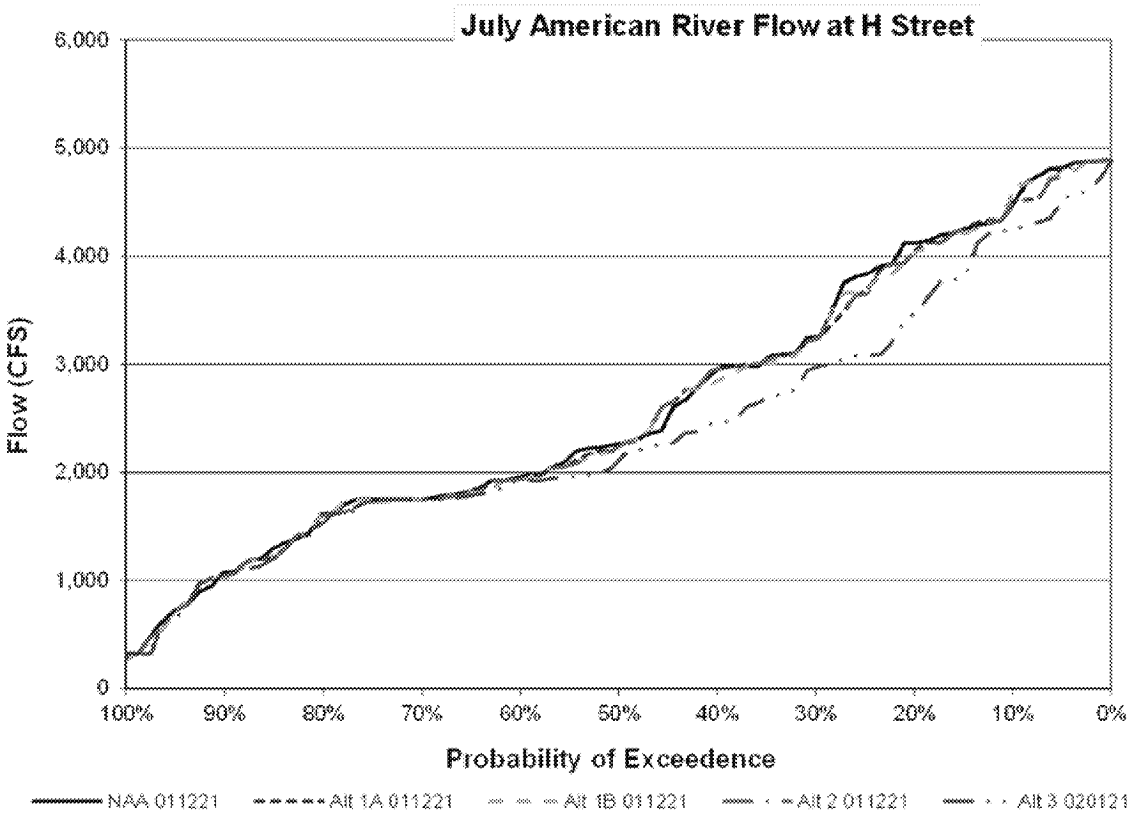
Rob

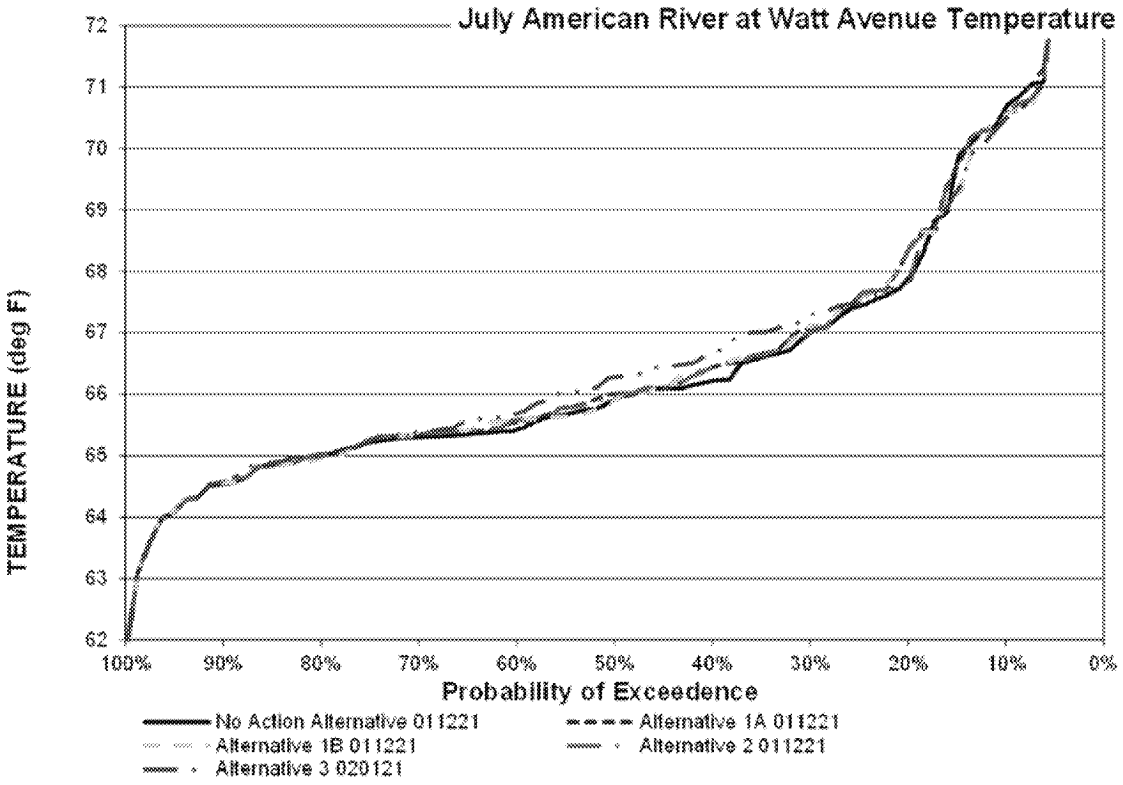
Sites CVP Op Flex Release Averages

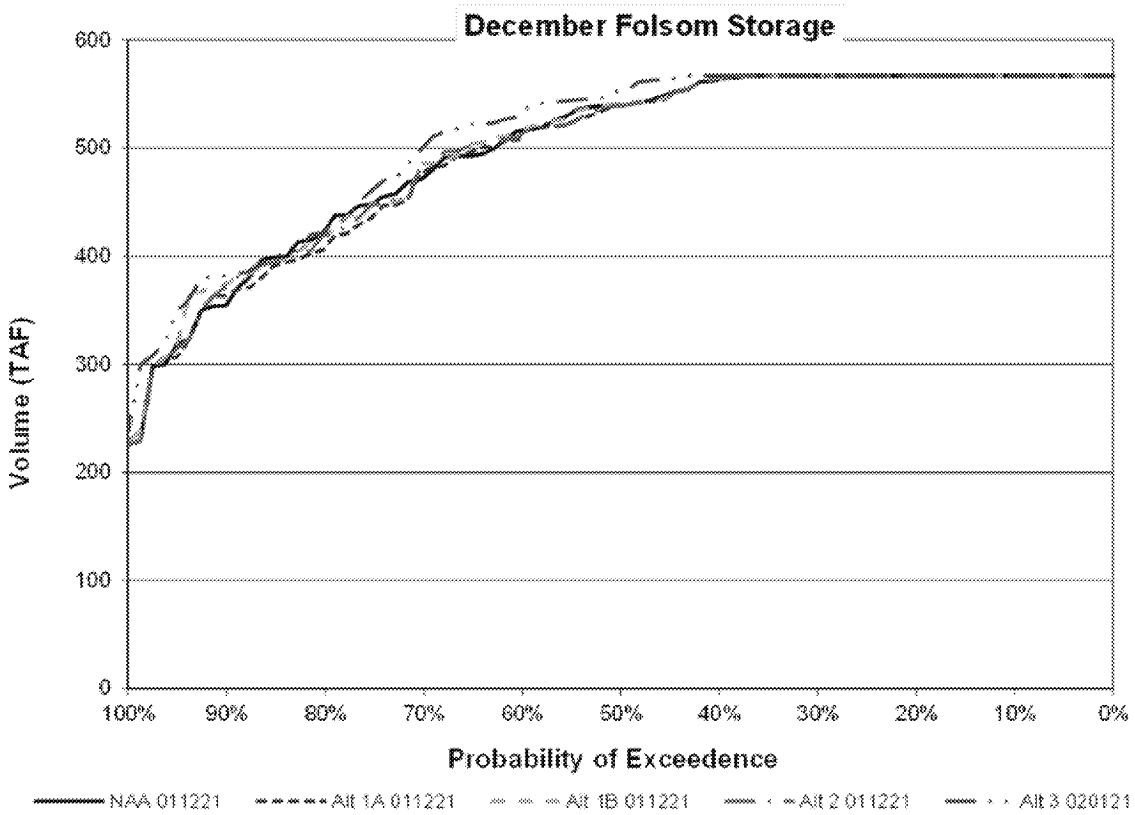


American River Flow at H Street Averages




July American River Flow at H Street
6,000
5,000
4,000
3,000
2,000
1,000
0
Flow (CFS)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Probability of Exceedence
NAA 011221
Alt 1A 011221
Alt 1B 011221
Alt 2 011221
Alt 3 020121


July American River at Watt Avenue Temperature
72
71
70
69
68
67
66
65
64
63
62
TEMPERATURE (deg F)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Probability of Exceedence
No Action Alternative 011221
Alternative 1A 011221
Alternative 1B 011221
Alternative 2 011221
Alternative 3 020121



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Aquatic Species Permitting Update

Mike Hendrick

Sites

Key Aquatic Species Being Analyzed

- Fall-Run Chinook Salmon, Magnuson-Stevens Fishery Conservation and Management Act EFH
- Winter-Run Chinook Salmon, ESA and CESA listed
- Spring-Run Chinook Salmon, ESA and CESA listed
- California Central Valley Steelhead, ESA listed
- Green Sturgeon, ESA listed
- Delta Smelt, ESA and CESA listed
- Longfin Smelt*, CESA listed

Key Aquatic Tools/Methods

- URDSOM: Daily-flow data
- CALSIM II: Hydrological planning tool that provides monthly average flows for the entire SWP and CVP system
- HEC-5Q: Model outputs can be used to evaluate potential (temp-related) changes in upstream habitat conditions
- DSM2: This analysis focuses on potential changes at key channels and junctions throughout the north, central, and south Delta
- Anderson and Martin Model: Estimate water temperature-related mortality of winter-run Chinook salmon eggs to fry

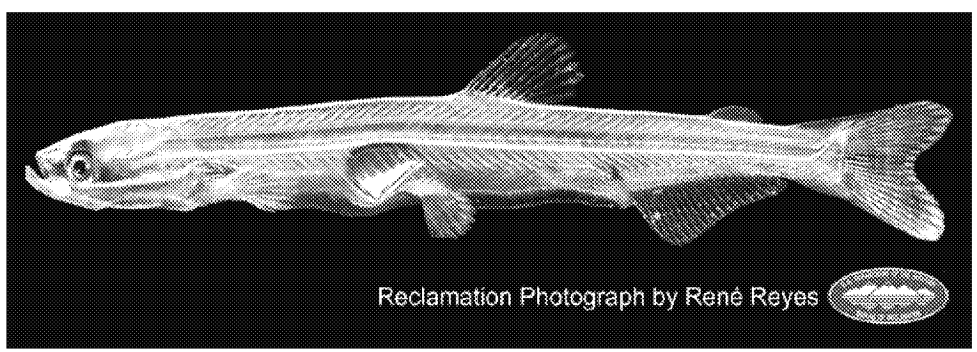
Model Baseline Assumptions Summary

- Contains Actions Within:
  - 2019 Reinitiation of Consultation on the CVP and SWP
  - 2020 SWP Incidental Take Permit
- Examples include:
  - Delta Smelt Summer-Fall Habitat Action (X2)
  - American River 2017 Flow Management Standard
  - Shasta Cold Water Pool
  - Multiple OMR flow requirements

Sample of Preliminary Aquatic Results

Preliminary Results: Longfin Smelt Basic Information

- Longfin smelt is a pelagic estuarine fish that resides in San Francisco Bay
- They spawn in tidal fresh water, through the estuary's low-salinity zone (where brackish and fresh waters meet) and in freshwater in tributaries to the Bay, seaward and into the coastal ocean
- Life cycle of 2 to 3 years, reach a size of 90 to 110 mm (maximum size of 120 to 150 mm)



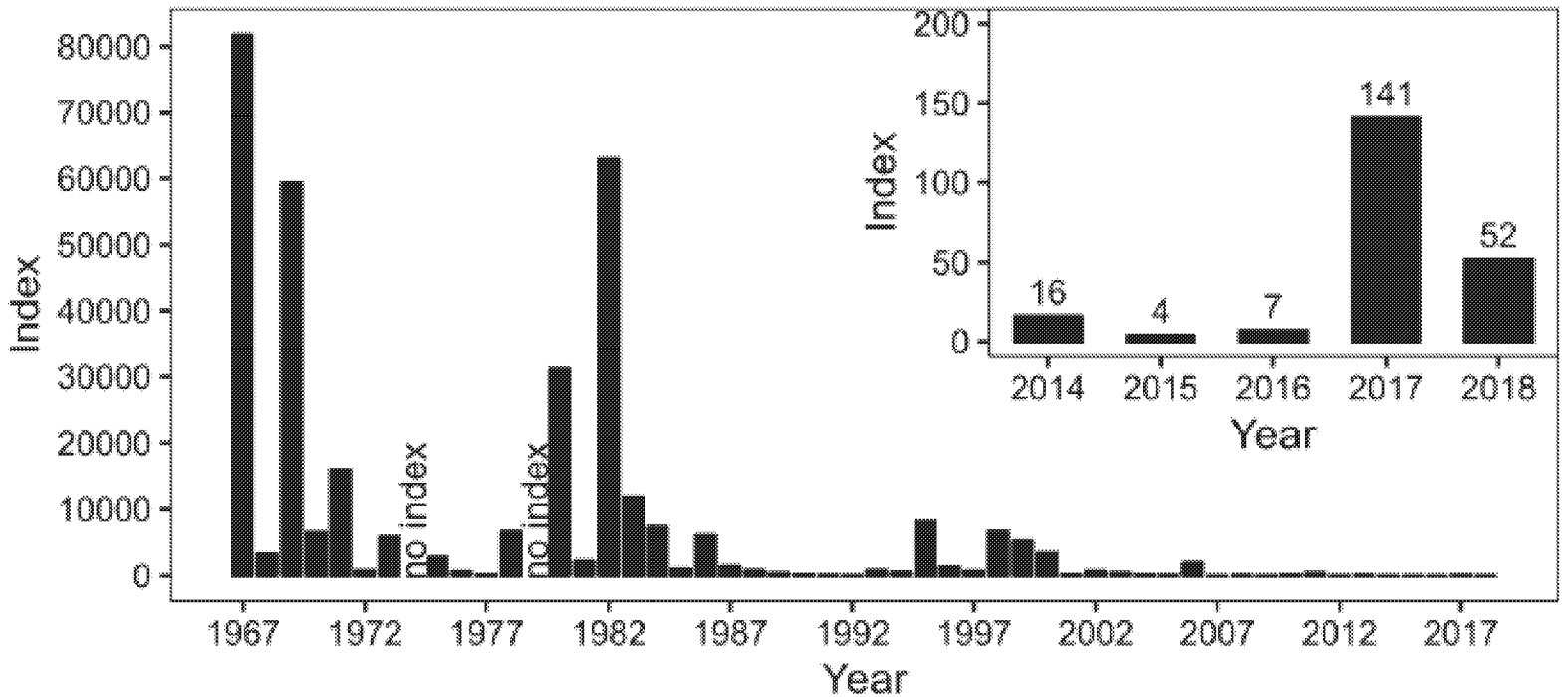
Preliminary Results: Longfin Smelt Sites Operational Effects

- Longfin smelt would not be affected by **summer/fall flow releases from the Colusa Basin Drain** because the species occurs well downstream of the Delta at this point in its life cycle

- **Entrainment:** During the main winter-spring months of potential adult, larval, and juvenile longfin smelt entrainment risk, CalSim modeling indicates little difference between the NAA and Alternatives 1–3. This, together with the fact that south Delta entrainment risk for longfin smelt would continue to be limited based on the California Department of Fish and Wildlife (2020) SWP ITP under the NAA and Alternatives 1–3, suggests that the effect from Alternatives 1–3 on longfin smelt south Delta entrainment risk would be similar to the NAA.

- **Flow-Related Effects…**

Preliminary Results: Longfin Smelt Sites Flow-Related Effects



Source: White 2019

Longfin Smelt Fall Midwater Trawl Abundance Index, 1967–2018

Preliminary Results: Longfin Smelt Sites Flow-Related Effects

- The analyses of flow-related effects (differences in Delta outflow) suggested the potential for small negative effects under the alternatives

Mean Longfin Smelt Fall Midwater Trawl Index Based on January–June X2

Water Year Type	NAA	Alt 1A	Alt 1B	Alt 2	Alt 3
Wet	591	586 (-1%)	585 (-1%)	586 (-1%)	586 (-1%)
Above Normal	360	351 (-3%)	351 (-3%)	351 (-3%)	351 (-3%)
Below Normal	158	152 (-4%)	152 (-4%)	152 (-4%)	152 (-4%)
Dry	72	70 (-3%)	70 (-3%)	70 (-3%)	70 (-2%)
Critically Dry	24	22 (-4%)	23 (-4%)	23 (-4%)	22 (-4%)

Percentage values in parentheses indicate differences of alternatives compared to NAA.

Preliminary Results: Longfin Smelt Sites Potential Mitigation

- Mitigation would be required for the small, uncertain negative outflow-related effects seen in Alternatives 1 – 3
- However, Alternative 1–3 operational impacts would be less than significant with mitigation incorporated for longfin smelt
- Currently, we are proposing tidal habitat restoration mitigation. Tidal habitat would expand the diversity, quantity, and quality of longfin smelt rearing and refuge habitat consistent with recent tidal habitat mitigation required for outflow impacts to the species
- As shown by multiple recent tidal habitat restoration projects in the Delta, there are potential feasible opportunities for tidal habitat restoration directly applicable to longfin smelt
- Tidal habitat restoration mitigation for longfin smelt was calculated based on the same method recently applied by DWR
- Mitigation requirement for each alternative varies between 11 and 15 acres

Aquatics: Next Steps

- Continued development and refinement of:
  - Effects Analysis
  - Effects Determinations
  - Mitigation
- Internal, including Sites Project Authority, technical discussions related to aquatics chapter development
- Technical interagency correspondence
- Increased activity related to ESA (draft BA) and CESA (draft ITP Application)
- Aquatics workshop with agencies in early April

From: Spranza, John [John.Spranza@hdrinc.com]
Sent: 3/16/2021 9:57:55 AM
To: Alicia Forsythe [aforsythe@sitesproject.org]; Berryman, Ellen (Ellen.Berryman@icf.com) [Ellen.Berryman@icf.com]; Oakes, Harry [Harry.Oakes@icf.com]; Webber, Lisa [lisa.webber@icf.com]
CC: Monique Briard (monique.briard@icf.com) [monique.briard@icf.com]
Subject: Terrestrial NGO Workgroup Prep Meeting 1

Morning,
In prep for tomorrow's terrestrial call I wanted to circulate a general summary of the terrestrial comments we received on the 2017 EIR/S.

Talk with you tomorrow.

1. Inadequate assessment of terrestrial biological resources:
- Coordination with CDFW not consistently identified
- Giant garter snake impacts and mitigation inadequate
- Outdated survey information – inaccurate estimation of impacts
- Inadequate assessment of impacts to wildlife refuges – bird strikes associated with powerlines and overall impacts to Delevan National
- Wildlife Refuge (NWR) as well as surrounding private lands; need to evaluate impacts to Colusa and Sutter NWRs
- Additional wetland surveys and mitigation required
- Ecological effects of the Project inadequately analyzed – should address from the top of contributing watersheds

2. Wildlife mitigation actions are too broad:
- Mitigation measures are too broad and need to be more specific by species including ratios/performance standards
- Inadequate evaluation of rare plants and botanical resources:
- Analysis should include guidelines and sufficient information for informed evaluation
- Information is insufficient to determine the impacts on botanical resources within the Project area.
- Botanical surveys must be redone. Data included are from the late 1990s and early 2000s, and do not include all of the Project area
- Accepted scientific protocols should be used to conduct surveys
- Biological surveys, including rare plants, are inadequate

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hdrinc.com/follow-us

From: William Vanderwaal [wvanderwaal@rd108.org]
Sent: 3/17/2021 7:55:56 AM
To: Alicia Forsythe [aforsythe@sitesproject.org]; Michael Azevedo (mjazevedo@countyofcolusa.com) [mjazevedo@countyofcolusa.com]; Jeff Sutton (jsutton@tccanal.com) [jsutton@tccanal.com]; Thad Bettner (tbettner@gcid.net) [tbettner@gcid.net]; fhernandez@cityofamericancanyon.org; Jamie@tnpfarms.com; BenCarter@succeed.net; CCwd2@frontiernet.net; Dan Ruiz (DRuiz@westsidewd.com) [DRuiz@westsidewd.com]
CC: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
Subject: Re: Sites Project - Help with Identifying Possible Cumulative Projects
Attachments: Map Of Projects.PNG

The NCWA list of restoration projects is a good starting point.

At RD-108 you could add:
2016 Water Use Efficiency Project (2 pipelines & 20 Automated canal gates),
Wallace Weir Fish Rescue Improvement

Then GCID & RD-108 each (note we're doing these as the Sac River Settlement Contractors) have $10 M worth (total of $20 M) of CVPIA funded restoration projects in the next 5 years; I attached a map of the projects so you can create a list.

They are probably on the NCWA list, but River Garden Farms has done some work too, Installing Rockwads (juvenile fish habitat), and some other restoration projects associated with levees.

Does the "J" levee work by Hamilton City count as part of this cumulative list? That's a USACE project.

How far in the past does this need to go?

Cheers
Bill V

William Vanderwaal, P.E.
Deputy Manager - RD-108
Manager - Dunnigan WD
(530) 812-6276

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Tuesday, March 16, 2021 7:08 PM
To: Michael Azevedo (mjazevedo@countyofcolusa.com) <mjazevedo@countyofcolusa.com>; William Vanderwaal <wvanderwaal@rd108.org>; Jeff Sutton (jsutton@tccanal.com) <jsutton@tccanal.com>; Thad Bettner (tbettner@gcid.net) <tbettner@gcid.net>; fhernandez@cityofamericancanyon.org <fhernandez@cityofamericancanyon.org>; Jamie@tnpfarms.com <Jamie@tnpfarms.com>; BenCarter@succeed.net <BenCarter@succeed.net>; CCwd2@frontiernet.net <CCwd2@frontiernet.net>; Dan Ruiz (DRuiz@westsidewd.com) <DRuiz@westsidewd.com>
Cc: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Subject: Sites Project - Help with Identifying Possible Cumulative Projects

Hello all – We are beginning to work on the cumulative chapter of the Revised Draft EIR/Supplemental Draft EIS. As part of this, I thought I would check in with you all on local projects in the Sacramento Valley. Below are the projects that we have currently identified for the cumulative chapter. I feel like there might be some big holes in this list.

- North Bay Aqueduct Alternative Intake (Solano County Water Agency)
- Liberty Island Conservation Bank (RD 2093)
- Cache Slough Complex Restoration (DWR/CDFW)
- North Delta Flow Action (DWR/USBR)
- Lower Yolo Restoration Project (State and Federal Contractors Water Agency, DWR)
- Davis-Woodland Water Supply Project
- Maxwell Intertie Project (would not occur if Sites is built)
- Red Bluff Diversion Dam Fish Passage Project (USBR/TCCA)
- Knights Landing Outfall Gates Fish Barrier Project (RD 108)

What projects has your organization recently completed or do you have in the planning stages? Anything folks are aware of planned for the Colusa Basin Drain?

We are contemplating what we are going to do with the tremendous number of fisheries habitat restoration projects along the Sacramento River, but we do have the list that NCWA recently put together.

Just a reminder that cumulative projects are past, present and reasonably feasible projects that could affect the same resources or be located in a similar area to the Sites Project. Generally, we only need to consider project that have at least some environmental documentation (like a Notice of Preparation, negative declaration, or draff EIR). But we do want to make sure that we cast a wide net on cumulative project and we can narrow down based on the criteria in the document. So if in doubt, send me the project title and any info you have on it – in whatever format you have, we will work with it.

We appreciate any input you may have on cumulative projects!

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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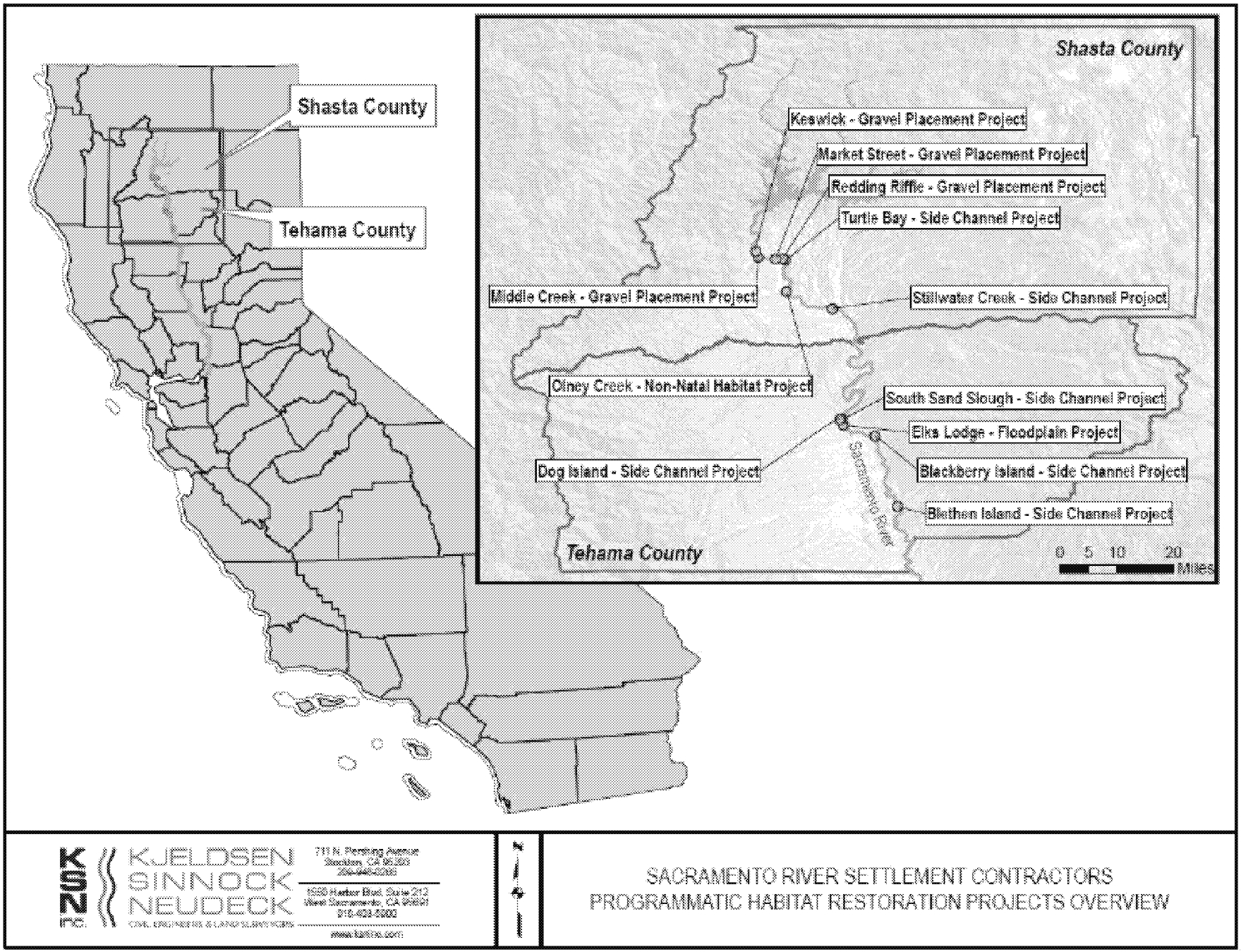


Figure 2. Overview of SRSC proposed projects.

From: Heydinger, Erin [Erin.Heydinger@hdrinc.com]
Sent: 3/17/2021 2:45:46 PM
To: Alicia Forsythe [aforsythe@sitesproject.org]
Subject: RE: Sites Reservoir Aquatic Species Update

Hi Ali,

I'm about to respond to Dee. As a note, it looks like Becky might have questions specifically related to long fin smelt. I am wondering if the ICF team might be best equipped to handle those questions? I'll put something to that effect in the email and can help figure out who are the best folks to get together to answer any questions Met has.

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

hdrinc.com/follow-us

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Wednesday, March 17, 2021 9:55 AM
To: Bradshaw,Dee <VBradshaw@mwdh2o.com>; Sheehan,Rebecca D <RSheehan@mwdh2o.com>; Acuna,Shawn C <SAcuna@mwdh2o.com>; cchilmakuri@swc.org; Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Subject: RE: Sites Reservoir Aquatic Species Update

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Dee and all – My apologies for the delay in getting back to you on this. Yes, Erin Heydinger would be a great touchpoint person. She is with the Project Integration team and is leading our modeling efforts with the CH/Jacobs team. I've included Erin's contact information below.

Erin Heydinger, PE, PMP
Project Manager
Water/Wastewater

HDR
2379 Gateway Oaks Dr, #200
Sacramento, CA 95833
D 916.679.8863 M 651.307.9758

Erin, can you reach out to Becky at Rsheehan@mwdh2o.com?

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Bradshaw,Dee <VBradshaw@mwdh2o.com>
Sent: Monday, March 15, 2021 5:54 PM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Cc: Sheehan,Rebecca D <RSheehan@mwdh2o.com>; Acuna,Shawn C <SAcuna@mwdh2o.com>; cchilmakuri@swc.org
Subject: FW: Sites Reservoir Aquatic Species Update

Ali,

There are a few questions regarding the aquatics analysis and modeling from Metropolitan. Is there a touchpoint person that we can reach out to regarding these questions? I would really appreciate the opportunity to better understand.

Thanks in advance,

Dee

From: Sheehan,Rebecca D <RSheehan@mwdh2o.com>
Sent: Monday, March 15, 2021 5:43 PM
To: Bradshaw,Dee <VBradshaw@mwdh2o.com>
Cc: Acuna,Shawn C <SAcuna@mwdh2o.com>; cchilmakuri@swc.org
Subject: Re: Sites Reservoir Aquatic Species Update

Dee
I have questions regarding this analysis and the modeling generally. Is there a resource that I can be plugged into to understand things like modeling assumptions and analytical tools and representations of uncertainty (for example for LF regression)?
Thanks
Becky

Sent from my iPhone

On Mar 15, 2021, at 4:21 PM, Bradshaw,Dee <VBradshaw@mwdh2o.com> wrote:

All,

I attended the Sites Ad Hoc Environmental Planning and Permitting Work Group today. As part of the permitting updates, Mike Hendrick presented the update regarding aquatic species, featuring long fin smelt. I understand that from this point forward, another aquatic species will be highlighted during this part of the presentation each month. I am sending the presentation to you as an FYI.

Dee

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Sites Reservoir Project and the Colusa Basin Drain

Colusa Drain Mutual Water Company
Shareholder Meeting

March 17, 2021

Sites

Preccecisional Working Document – For Discussion Purposes Only

Agenda

About the Sites Project

Sites and the Colusa Basin Drain

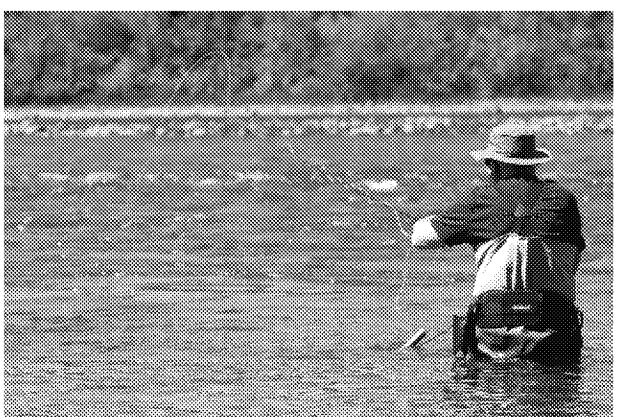
- Flow
- Water elevation
- Water rights

How to participate

Sites Reservoir…

… a generational opportunity to construct a **multi-benefit water storage** project that helps restore **flexibility**, **reliability**, and **resiliency** to our water supply



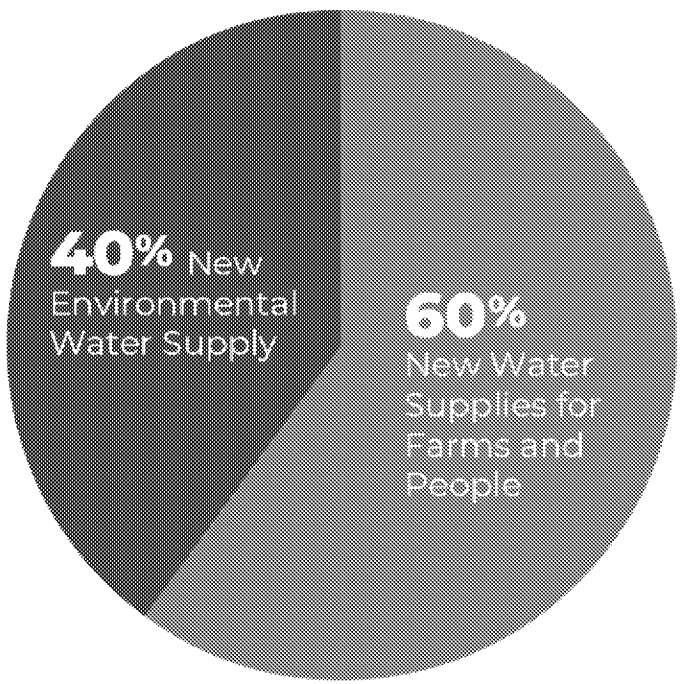


Predecisional Working Document – For Discussion Purposes Only

Resilient Water Supply

SITES PROJECT WATER SUPPLY

Year Type	Water Supply (thousand acre-feet*)
Wet	80-90
Above Normal	92-292
Below Normal	190-296
Dry	398-429
Critically Dry	308-348
Long-Term Average	207-260



*1,000 acre-feet serves about 2,000-3,000 households or supports 200-500 agricultural acres annually.

Sites

Predecisional Working Document – For Discussion Purposes Only

Sites Project Participants

Sacramento Valley

Carter Mutual Water Company

City of American Canyon

Colusa County

Colusa County Water Agency

Cortina Water District

Davis Water District

Dunnigan Water District

Glenn County

Glenn-Colusa Irrigation District

LaGrande Water District

Placer County Water Agency

Reclamation District 108

City of Roseville

Sacramento County Water Agency

City of Sacramento

Tehama-Colusa Canal Authority

Westside Water District

Western Canal Water District

Bay Area

Santa Clara Valley Water District

Zone 7 Water Agency

San Joaquin Valley

Wheeler Ridge-Maricopa Water Storage District

Rosedale-Rio Bravo Water Storage District

Southern California

Antelope Valley – East Kern Water Agency

Coachella Valley Water District

Desert Water Agency

Irvine Ranch Water District

Metropolitan Water District

San Bernardino Valley Municipal Water District

San Gorgonio Pass Water Agency

Santa Clarita Valley Water Agency

Sites

Affordable, Permittable, Buildable

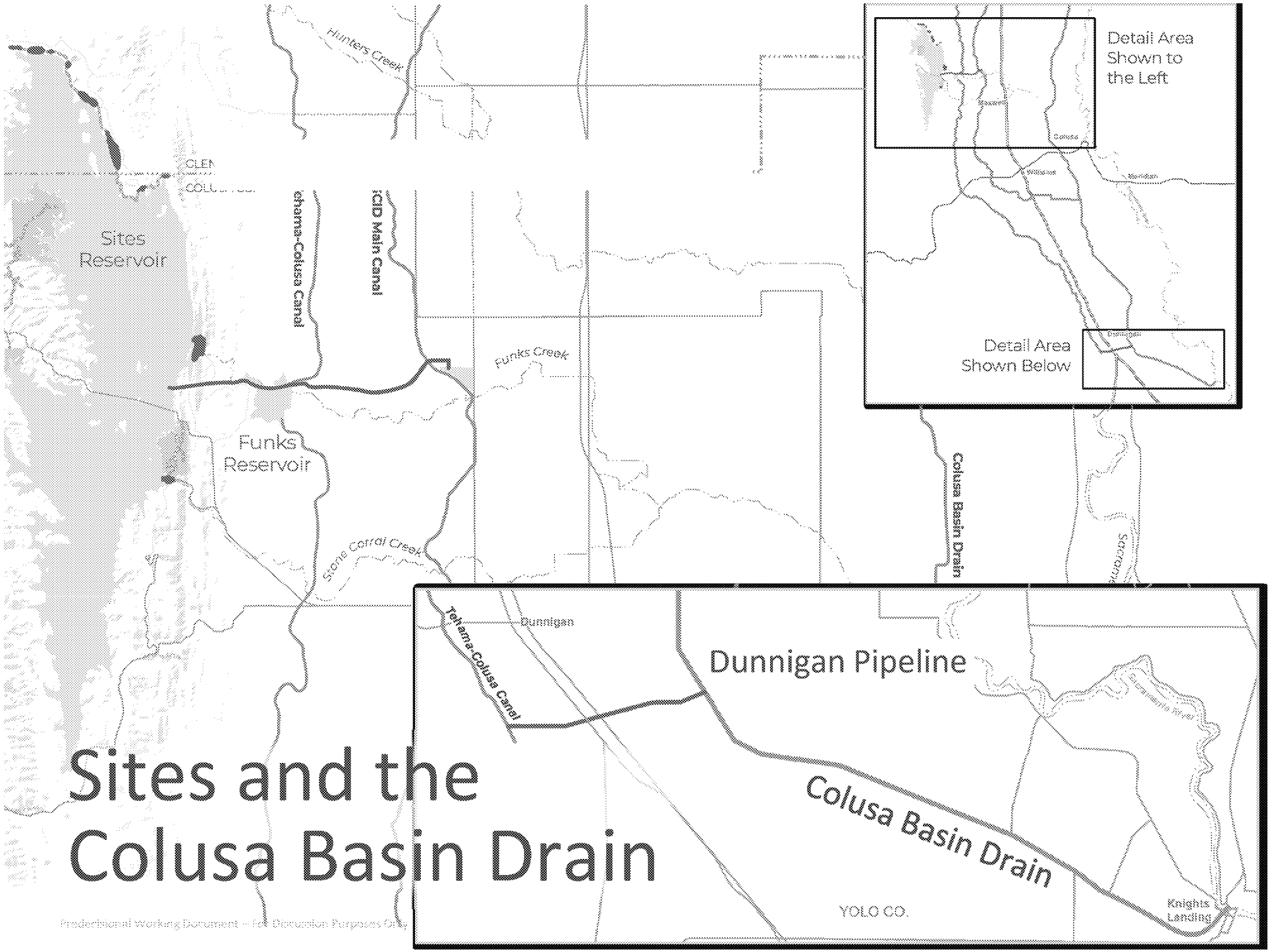
Sites underwent a rigorous value planning effort that resulted in a "right-sized" project. The Sites Reservoir of today:

- Has a smaller footprint than the previous iteration
- Meets the water supply needs of current participants
- Comes at a lower cost by utilizing existing facilities
- Supports State's environmental goals
- Creates flexibility for participants
- Performs under most challenging climate change scenarios

The right-sized project cuts roughly $2 billion from the original proposal.

Sites is now more affordable, permittable, and buildable.

Sites



Sites and the Colusa Basin Drain

Predecisional Working Document – For Discussion Purposes Only

Flow

Sites will increase flow in the CBD most:

- During below normal, dry, and critical years
- From June through November

Sites will have minimal increase to CBD flow:

- During wet and above normal years
- From December through May

Water Elevation

- Sites would reduce flood flows with new dams on Funks and Stone Corral Creek
- Hershey Agreement and other operational agreements related to:
  - Wallace Weir
  - Knights Landing Outfall Gates Setpoint
- Impacted properties, outreach and mitigation is ongoing
- Next steps: more specifics on operations for those interested

Water Rights

The Colusa Basin Drain is the key to the Sites Project's ability to deliver water to downstream users.

- ✓ Sites Project Participants
- ✓ Wildlife refuges
- ✓ Fisheries

How to Participate

Stay informed sitesproject.org

Reach out to:

Kevin Spesert (kspesert@sitesproject.org)

JP Robinette (jrobinette@brwncald.com)

Additional map added after meeting, next page.

Tehama Colusa Canal

Tehama Colusa Intake

Colusa Basin Drain

Colusa Basin Drain Outlet

Tehama Colusa Canal

Ritchie Brothers Auction Yard

Tehama Colusa Intake

Bird Creek

Colusa Basin Drain

Colusa Basin Drain Outlet

5

505

Red Bluff

Sacramento River

Shasta

Lassen

Trinity

Tehama

Plumas

Mendocino

Glenn

Butte

Sierra

Colusa

Yuba

Nevada

Lake

Sutter

Yuba City

Knights Landing

Placer

El Dorado

Yolo

Sonoma

Napa

Sacramento

LEGEND

City\Town

Bird Creek

Dunnigan Underground Pipeline

DATA SOURCES: City\Town - GNIS, 2020; Project Features - AECOM, 2020; Canals (NHD) - USGS, 2018; Aerial Imagery (NAIP) - USDA, 2020.

DISCLAIMER: This exhibit is preliminary and is subject to change.

MAP DATE: 12/22/2020

FIGURE 2-2

ALTERNATIVE 1 AND 3
CONVEYANCE TO SACRAMENTO
RIVER COMPONENTS

N

0 0.5 1
MILES

Sites

PATH: \\PDCCITRDSGIS1\PROJECTS_1\SITES_PA\00528_20\FIGURES\DOC\EIREIS\1_DEIR\01_ADEIR\CHAPTER2\FIG2-1G_ALT1_CONV_SAC_RIVER.MXD - USER: 19105 - DATE: 12/22/2020

Meeting:	**Sites Reservoir Project**	**2021 March 18**
Subject:	**Reservoir Committee Meeting**	**1:30 PM – 4:00 PM**
Location:	Click here to join the meeting	Call in: **1-213-379-5743** Code: **911 064 660#**
Chair:	Jeff Davis (San Gorgonio Pass Water Agency)	
Vice Chair:	Bill Vanderwaal (Reclamation District 108 and Dunnigan Water District)	
Treasurer:	Jamie Traynham (Davis Water District)	

AGENDA

Notice: Pursuant to Executive Orders N-25-20 and N-33-20, issued by Governor Newsom on March 12, 2020, and guidance by the California Department of Public Health dated March 11, 2020, this meeting will be conducted by teleconference. The public may attend the meeting and offer public comments by phone, using the call-in number above. Members of the Committee will participate by teleconference from other locations.

ROLL CALL & CALL TO ORDER:

- Introductions.
- Pledge of Allegiance.
- Approval of March 18, 2021 Agenda.
- Period for Public Comment.

1. Consent Agenda: Approximate start time 1:40 pm

The Executive Director reviewed the following items. To his knowledge, there is no opposition to the action. The items can be acted on in one consolidated motion as recommended or may be removed from the Consent Calendar and separately considered at the request of any person.

1.1 Approve the February 19, 2021 Joint Authority Board & Reservoir Committee Meeting Minutes. **(Attachments A & B)**

1.2 Accept the Sites Project Authority Treasurer's Report. **(Attachment A)**

1.3 Approve the Payment of Claims. **(Attachments A, B & C)**

1.4 Approve a consulting agreement amendment with ICF Jones and Stokes, Inc related to Planning and Analysis (ICF-E) task order for additional scope of work in the amount of $249,998 bringing the not to exceed total contract amount to $3,260,757 for the period of September 1, 2020 through December 31, 2021.

1.5 Approve a consulting agreement amendment with Katz and Associates related to the Communications task order for additional scope of work in the amount

of $224,999 bringing the not to exceed total contract amount to $624,999 for the period of September 1, 2020 through December 31, 2021.

1.6 Approve a new Accounts Payable Approval Policy to ensure timely and efficient payment of vendor and service providers' invoices. This new Policy consolidates sections of the Advance Check Approval Policy into to the new Policy so that the Advance Check Approval Policy will be eliminated. **(Attachment A)**

2. Action Items: Approximate start time 1:45 pm

None.

3. Discussion and Information Items: Approximate start time 1:46 pm

3.1 Review and comment on changes to the Sites Water Storage Policy. **(Attachment A & B)**

3.2 Approve the allocation of storage space in the reservoir to each Storage Partner based on Amendment 2 participation using the final proposed formulaic approach of 1 acre-foot capacity share to 6.234 acre-feet of storage space. Authorize use of storage space for future allocation of Project cost share to each local agency. **(Attachment A)**

3.3 Review and comment on staff's proposed approach for Reservoir Committee and Authority Board review and approval of the Revised Draft Environmental Impact Report for release to the public.

3.4 Review and comment on the development of the Sites Project Proforma 2.0, an updated project financial modeling tool for use by participants to evaluate long-term Project costs and benefits.

3.5 Review and comment on the Financing Action Plan February workshop summary, schedule including upcoming workshops, and action item follow-up. **(Attachment A & B)**

3.6 Receive report on strategic planning progress and reporting and provide input on the proposed work plan objectives for the next work period. **(Attachment A)**

4. Reports: Approximate start time 3:15 pm

4.1 Member's Reports:

4.1.1 Chairpersons' Report:

This time is set aside to allow the Chair/Co-Chair an opportunity to disclose/discuss items related to the Sites Project.

4.1.2 Workgroup Chairpersons' Report:

This time is set aside to allow the Workgroup Chairpersons' an opportunity to disclose/discuss items related to the Sites Project.

4.1.3 Reservoir Committee Participant Reports:

This time is set aside to allow Representatives or their Alternates an opportunity to disclose/discuss items related to the Sites Project.

4.2 Executive Director's Reports:

- Monthly status report. **(Attachment A)**
- Work Plan Key Deliverables Report. **(Attachment B)**
- Meetings Action Items Summary. **(Attachment C)**

5. Recap: Approximate start time 3:55 pm

5.1 Suggested Future Agenda Items.

5.2 Upcoming Meetings:

Authority Board:
Wednesday, March 24, 2021, 1:30 PM – 4:00 PM
(Virtual Information will be provided prior to the meeting)

Reservoir Committee:
Friday, April 16, 2021, 9:00 AM - 12:00 PM
(Virtual Information will be provided prior to the meeting)

Joint Plan of Finance Workshop – Finance & Governance Alternatives:
Friday, April 23, 2021, 9:30 AM - 12:00 PM
(Virtual Information will be provided prior to the meeting)

ADJOURN

PERIOD OF PUBLIC COMMENT: Any person may speak about any subject of concern, provided it is within the jurisdiction of the Reservoir Committee and is not already on today's agenda. The total amount of time allotted for receiving such public communication shall be limited to a total of 10 minutes per issue and each individual or group will be limited to no more than 3 minutes each within the 10 minutes allocated per issue. **Note:** No action shall be taken on comments made under this comment period.

ADA COMPLIANCE: Upon request, agendas will be made available in alternative formats to accommodate persons with disabilities. In addition, any person with a disability who requires a modification or accommodation to participate or attend this meeting may request necessary accommodation. Please make your request to the Board Clerk, specifying your disability, the format in which you would like to receive this Agenda and any other accommodation required no later than 24 hours prior to the start of the meeting.

This meeting will be recorded.

From: Micko, Steve/SAC [Steve.Micko@jacobs.com]
Sent: 3/18/2021 10:06:00 AM
To: Alicia Forsythe [aforsythe@sitesproject.org]; Heydinger, Erin [erin.heydinger@hdrinc.com]; Spranza, John [john.spranza@hdrinc.com]; Leaf, Rob/SAC [Rob.Leaf@jacobs.com]; Ryan A. Davis (rdavis@usbr.gov) [rdavis@usbr.gov]; nwolder@usbr.gov; pzedonis@usbr.gov; Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
Subject: RE: Sites Project - Trinity River Discussion - Prep Meeting

Hi all,

See comment and response concerning the 1959 contract below.

Best,
Steve

Letter # 39

Comment # 3

Comment:
Humboldt County's 50,000 AF
The DEIS does not explicitly account on an annual basis for Humboldt County's 50,000 acre-feet of water reserved under the Trinity River Act of 1955, eight water right permits issued to Reclamation in 1959, and a 1959 water contract between Reclamation and the Humboldt County Board of Supervisors. This volume of water should be included as part of the No Action Alternative for Trinity operations, in addition to the Trinity River Record of Decision (Trinity ROD) and the Long-Term Plan to Protect Adult Salmon in the Lower Klamath River Record of Decision (Lower Klamath ROD). This volume needs to be accounted in all water supply modeling. As noted in PCFFA's scoping comments (Attachment 2) and SCS' comments on the BA (Attachment 3), the Humboldt County and downstream water users water allocation is embodied in a 1959 water contract between the Humboldt County Board of Supervisors and the Bureau of Reclamation and this volume is separate from fishery flows. Use of this water for the Lower Klamath ROD has been upheld by the Ninth Circuit Court of Appeals.

Response:
Reclamation determined that because there is no proposal for action related to Public Law 84386 (annual releases for the benefit of Humboldt County), there is insufficient information to evaluate potential effects. The modeling assumptions are consistent with the LTP late summer flows.

-----Original Appointment-----
From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Friday, March 12, 2021 2:59 PM
To: Alicia Forsythe; Heydinger, Erin; Spranza, John; Micko, Steve/SAC; Leaf, Rob/SAC; Ryan A. Davis (rdavis@usbr.gov); nwolder@usbr.gov; pzedonis@usbr.gov; Laurie Warner Herson
Subject: Sites Project - Trinity River Discussion - Prep Meeting
When: Thursday, March 18, 2021 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: Microsoft Teams Meeting

Prep meeting for our NGO Trinity River discussion

Microsoft Teams meeting

Join on your computer or mobile app
Click here to join the meeting

Or call in (audio only)

+1 916-538-7066,,393084289# United States, Sacramento

Phone Conference ID: 393 084 289#
Find a local number | Reset PIN

Learn More | Meeting options

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From: Jerry Brown [jbrown@sitesproject.org]
Sent: 3/18/2021 4:34:58 PM
To: Spranza, John [john.spranza@hdrinc.com]; Alicia Forsythe [aforsythe@sitesproject.org]
Subject: Re: Permitting Workgroup Presentation

And we should rethink timing of discussing this level of terrestrial issues with NGOs until after we've gotten this addressed. thanks

---

From: Jerry Brown <jbrown@sitesproject.org>
Date: Thursday, March 18, 2021 at 1:17 PM
To: "Spranza, John" <john.spranza@hdrinc.com>, Alicia Forsythe <aforsythe@sitesproject.org>
Subject: Re: Permitting Workgroup Presentation

Yes thanks and the RLF.

From: "Spranza, John" <John.Spranza@hdrinc.com>
Date: Thursday, March 18, 2021 at 1:09 PM
To: Jerry Brown <jbrown@sitesproject.org>, Alicia Forsythe <aforsythe@sitesproject.org>
Subject: RE: Permitting Workgroup Presentation

Yeah Jerry, we absolutely want to make sure the participants are completely informed.

I have the two comments in my notes, both were from Mike A:
1) He did not see GGS on the species list and when we circled back on that it was there, so that was resolved.
2) Second comment was regarding the Tri-colored black bird foraging habitat. I agree he seemed a bit surprised at that and I have a note to follow up with Ali on that to make sure we circle back with him.

I'll chat with Ali tomorrow on the Land Mgt component and the approach moving forward. We can then circle back on this.

Thanks for bringing this up.

John Spranza

D 916.679.8858 M 818.640.2487

From: Jerry Brown <jbrown@sitesproject.org>
Sent: Thursday, March 18, 2021 11:33 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>; Spranza, John <John.Spranza@hdrinc.com>
Subject: Permitting Workgroup Presentation

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

On page 12 of the presentation earlier this week there were acreages shown for various species of concern within our project area and expected to be affected by our work. There was a comment made about concerns with one of the species. There was also a comment about being surprised by one of the species on the list. I think we need to follow-up

on and make sure we are on the same page with our local participants regarding all of these species matters. I'm concerned that if left unaddressed, we could get to the point of asking to release the EIR and have an issue. We have a land management cmte meeting in April (Henry is setting the date now). Should we take this discussion to that group or do you have other ideas? Please let me know how you think we should address this issue.

From: Micko, Steve/SAC [Steve.Micko@jacobs.com]
Sent: 3/19/2021 7:58:37 PM
To: Williams, Nicole [Nicole.Williams@icf.com]
CC: Alicia Forsythe [aforsythe@sitesproject.org]; Spranza, John [john.spranza@hdrinc.com]; Heydinger, Erin [erin.heydinger@hdrinc.com]; Briard, Monique [Monique.Briard@icf.com]; Leaf, Rob/SAC [Rob.Leaf@jacobs.com]; Thayer, Reed/SAC [Reed.Thayer@jacobs.com]
Subject: Sites DEIR/EIS SALMOD Model Results for NAA, ALT 1A, ALT 1B, ALT 2 and ALT3
Attachments: SALMOD_Ann_Mort_ExcP_All_Runs_NODOS_SPJPA2020_Plots_20210310.pdf; SALMOD_Ann_Mortality & Production Summary (LS & Cause)_ALL_Runs_NODOS_SPJPA2020.pdf; Sites_ModelResultsPackage_SALMOD_Mar19_2021.pdf

Hi Nicole,

The attached pdfs contain SALMOD model results for the following alternatives:

- No Action Alternative 011221
- Alternative 1A 011221
- Alternative 1B 011221
- Alternative 2 011221
- Alternative 3 020121

SALMOD_Ann_Mort_ExcP_All_Runs_NODOS_SPJPA2020_Plots_20210310.pdf contains exceedance plots of SALMOD model results.
SALMOD_Ann_Mortality & Production Summary (LS & Cause)_ALL_Runs_NODOS_SPJPA2020.pdf contains summary tables of SALMOD results.

Sites_ModelResultsPackage_SALMOD_Mar19_2021.pdf briefly describes modeled alternatives and models.

Please let me know if you have any questions.

Best,
Steve

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Figure B-a-1. Annual Potential Production for Winter-Run Chinook Salmon

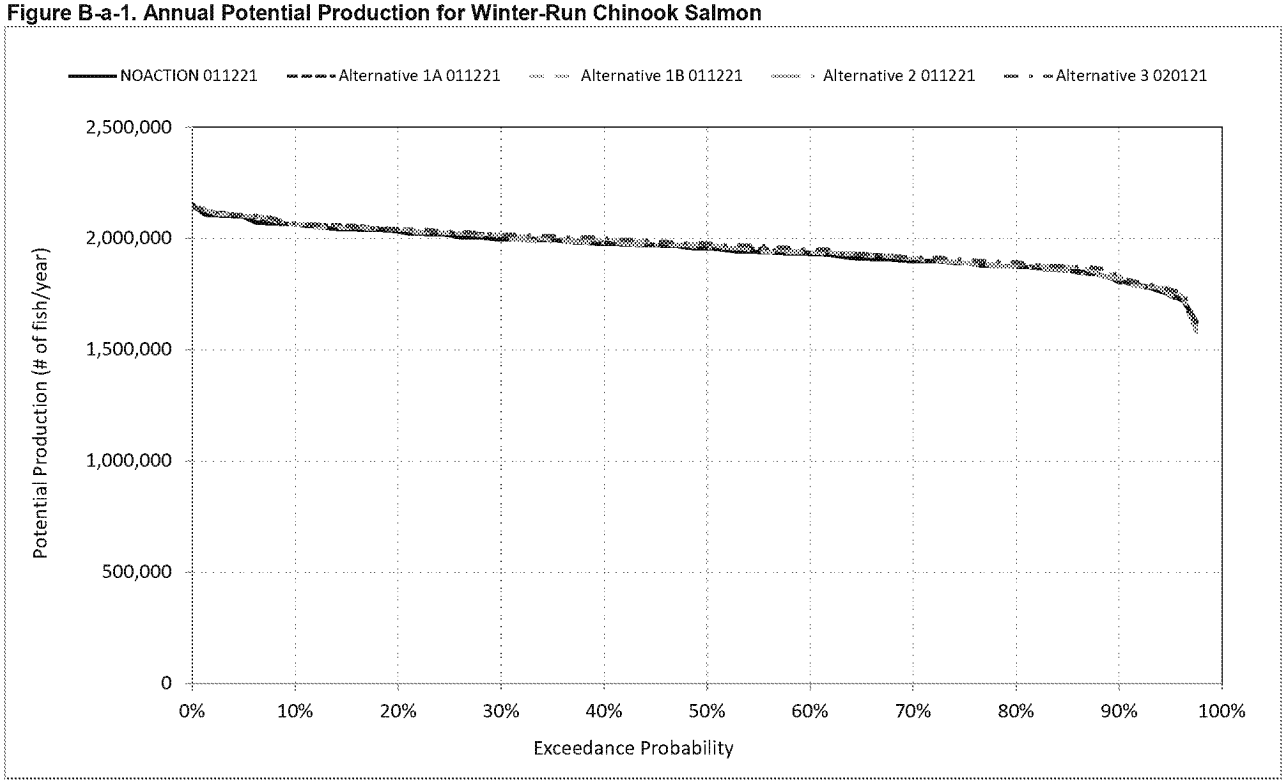


Figure B-a-2. Annual Mortality for Winter-Run Chinook Salmon - Eggs

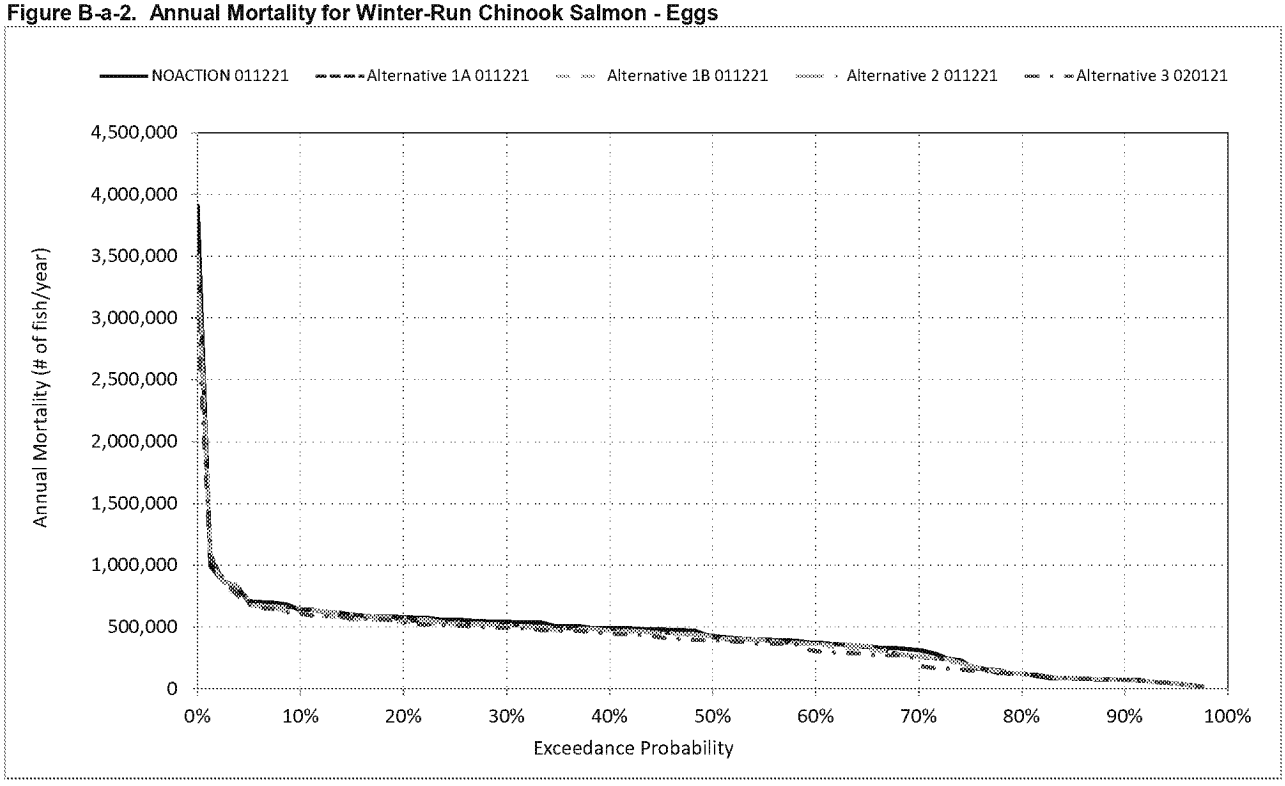


Figure B-a-3. Annual Mortality for Winter-Run Chinook Salmon - Fry

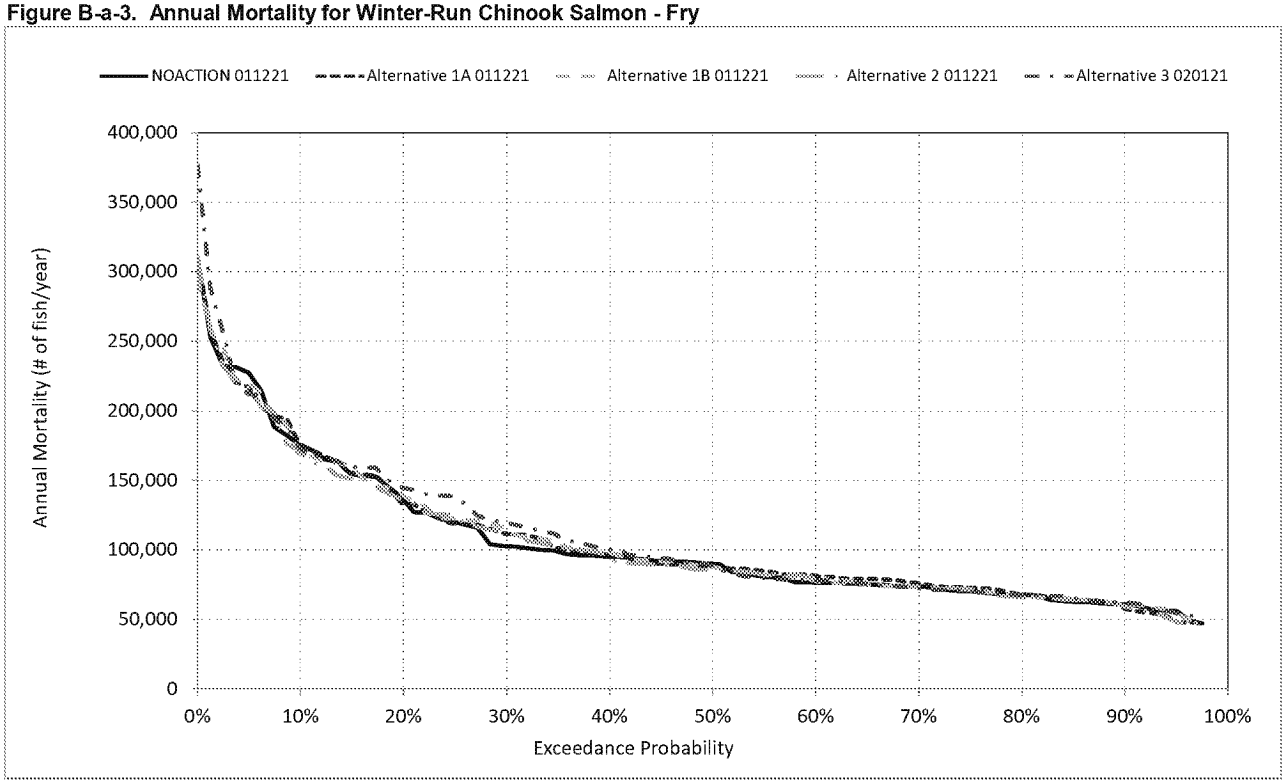


Figure B-a-4. Annual Mortality for Winter-Run Chinook Salmon - Pre-Smolt

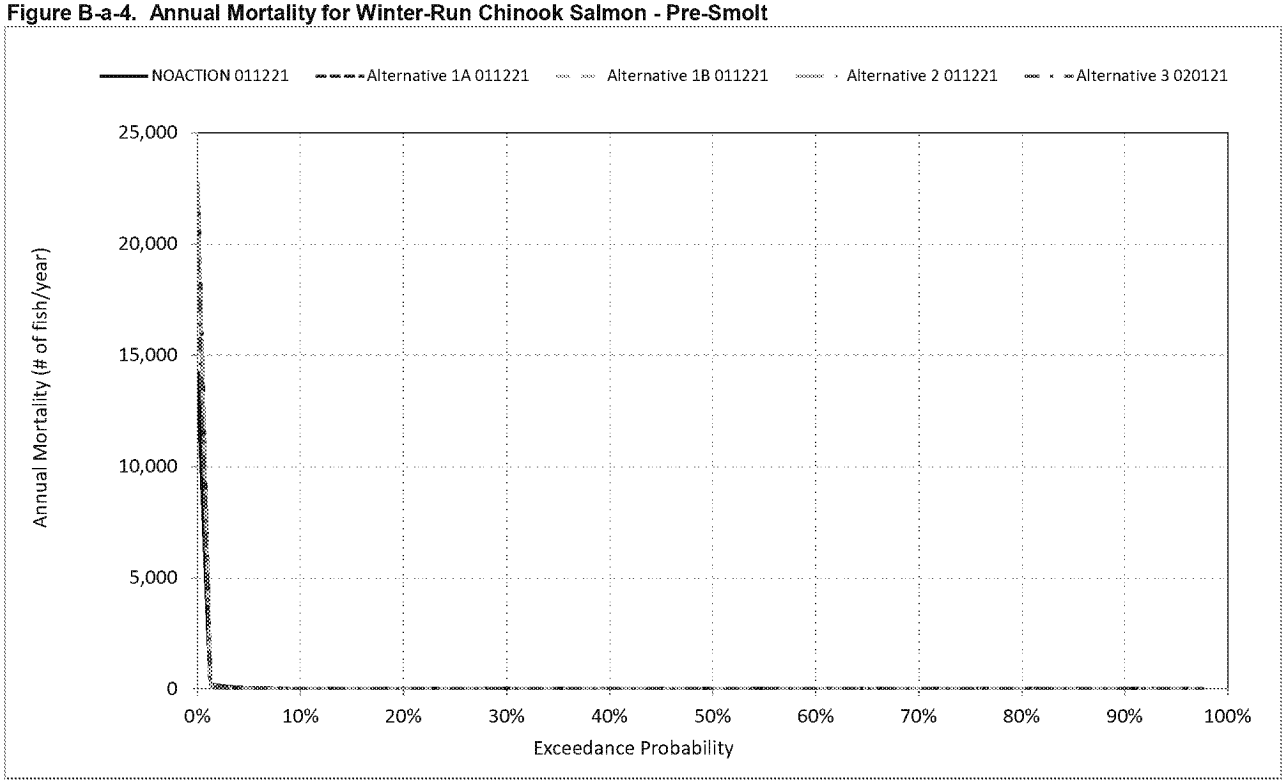


Figure B-a-5. Annual Mortality for Winter-Run Chinook Salmon - Immature Smolt

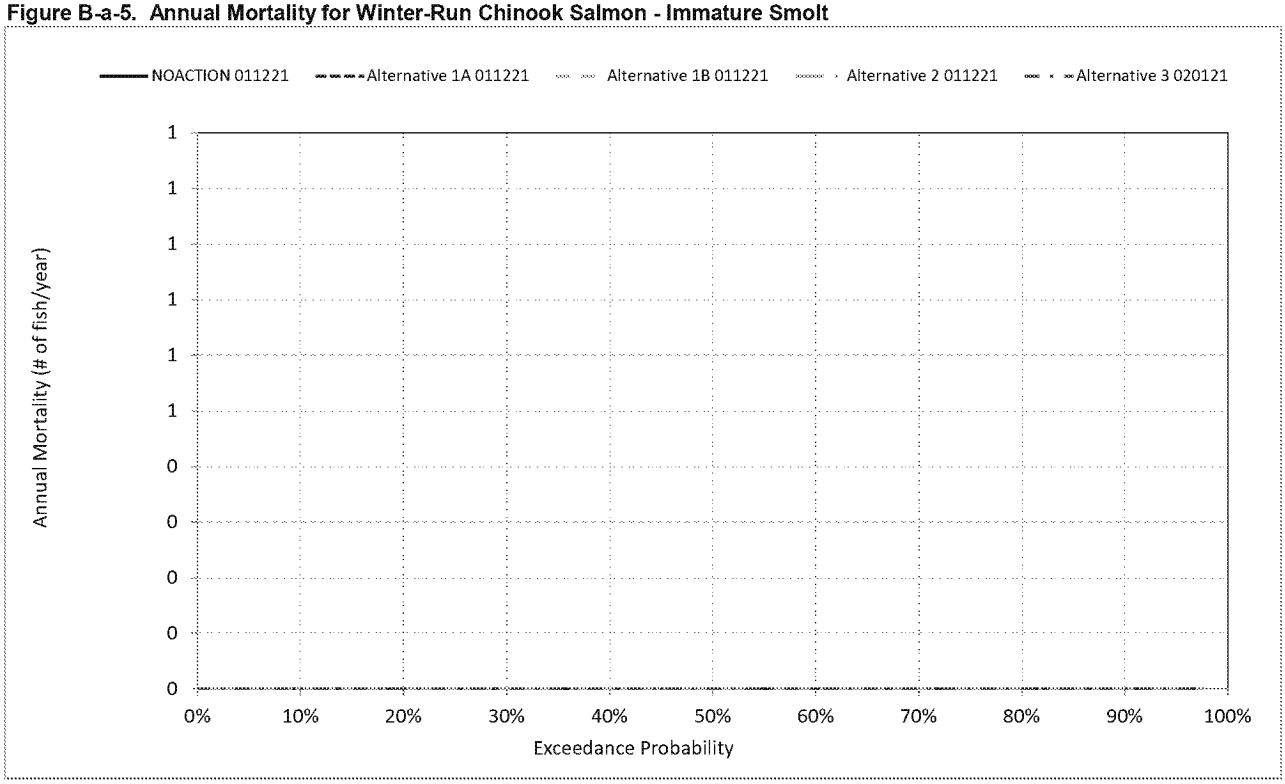


Figure B-a-6. Annual Mortality for Winter-Run Chinook Salmon - Pre- & Immature Smolts

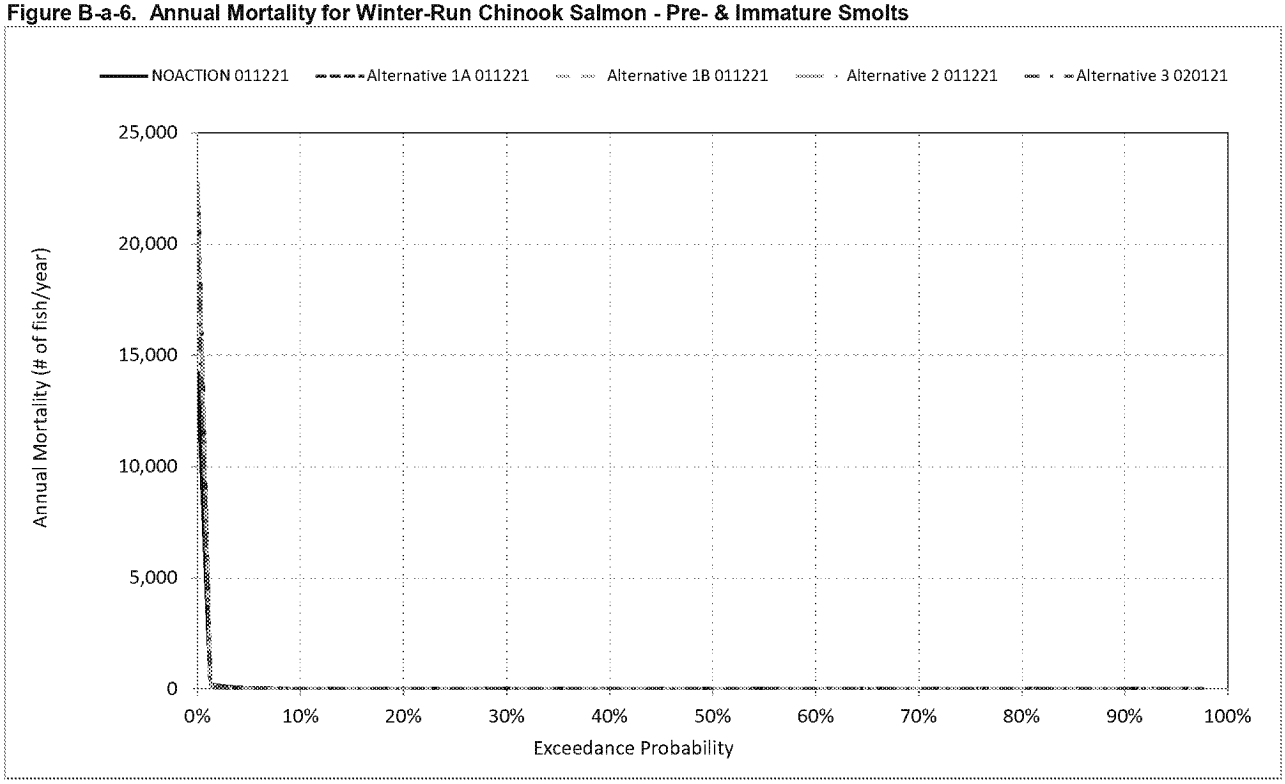


Figure B-a-7. Annual Mortality for Winter-Run Chinook Salmon - All Lifestages

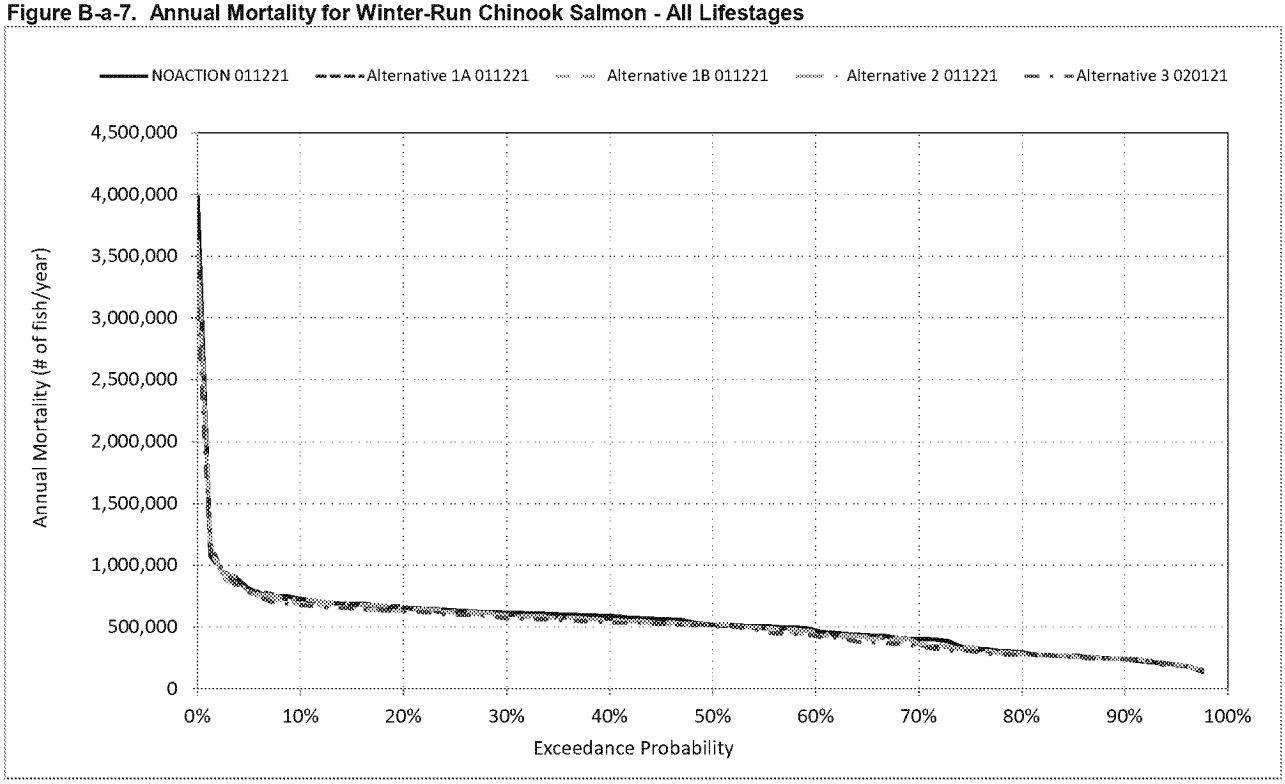


Figure B-a-8. Incubation - Habitat based Annual Mortality for Winter-Run Chinook Salmon

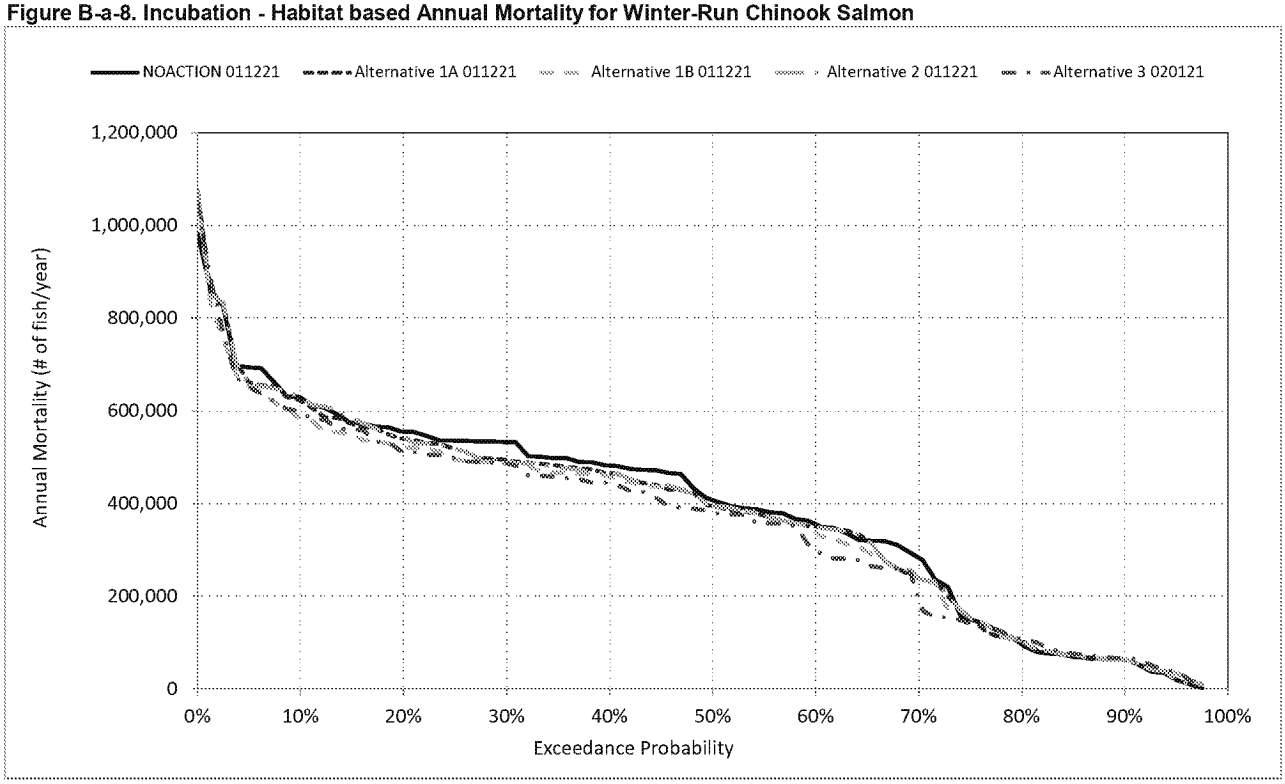


Figure B-a-9. Super-imposition - Habitat based Annual Mortality for Winter-Run Chinook Salmon

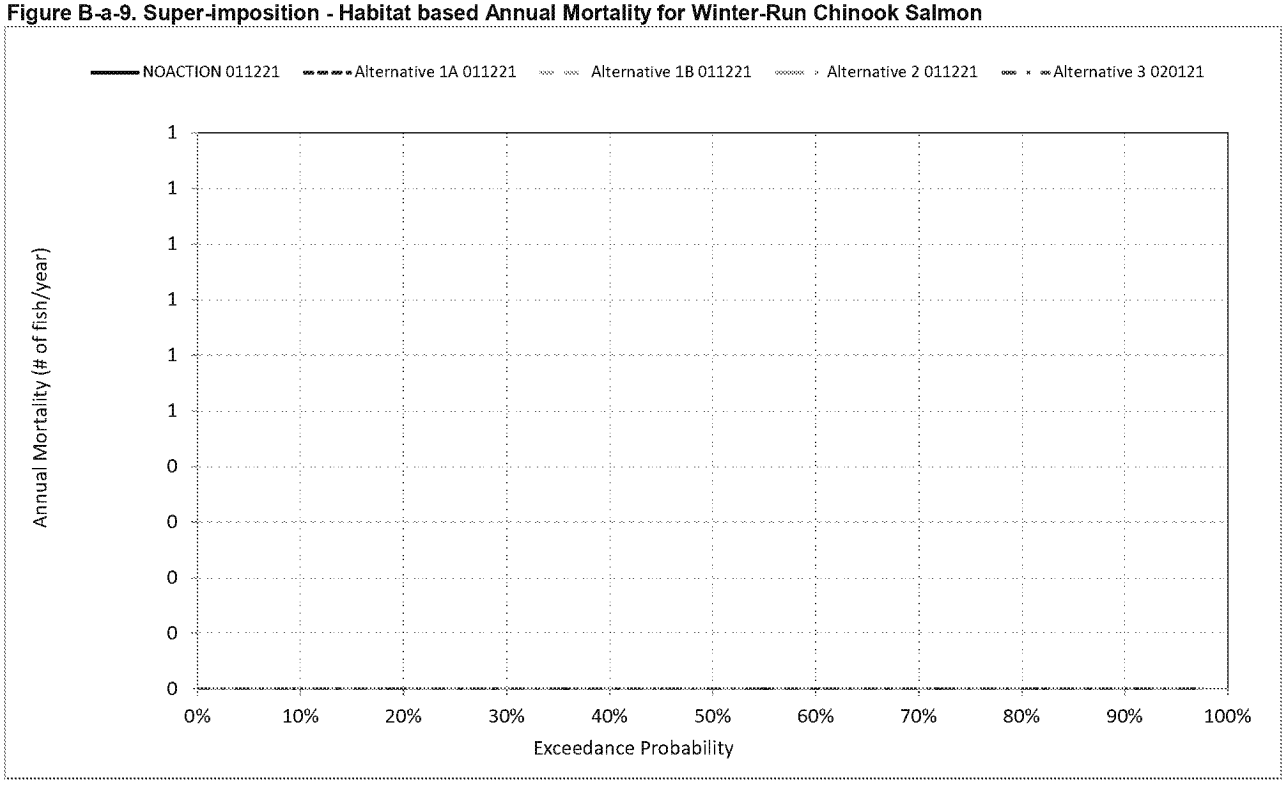


Figure B-a-10. Fry - Habitat based Annual Mortality for Winter-Run Chinook Salmon

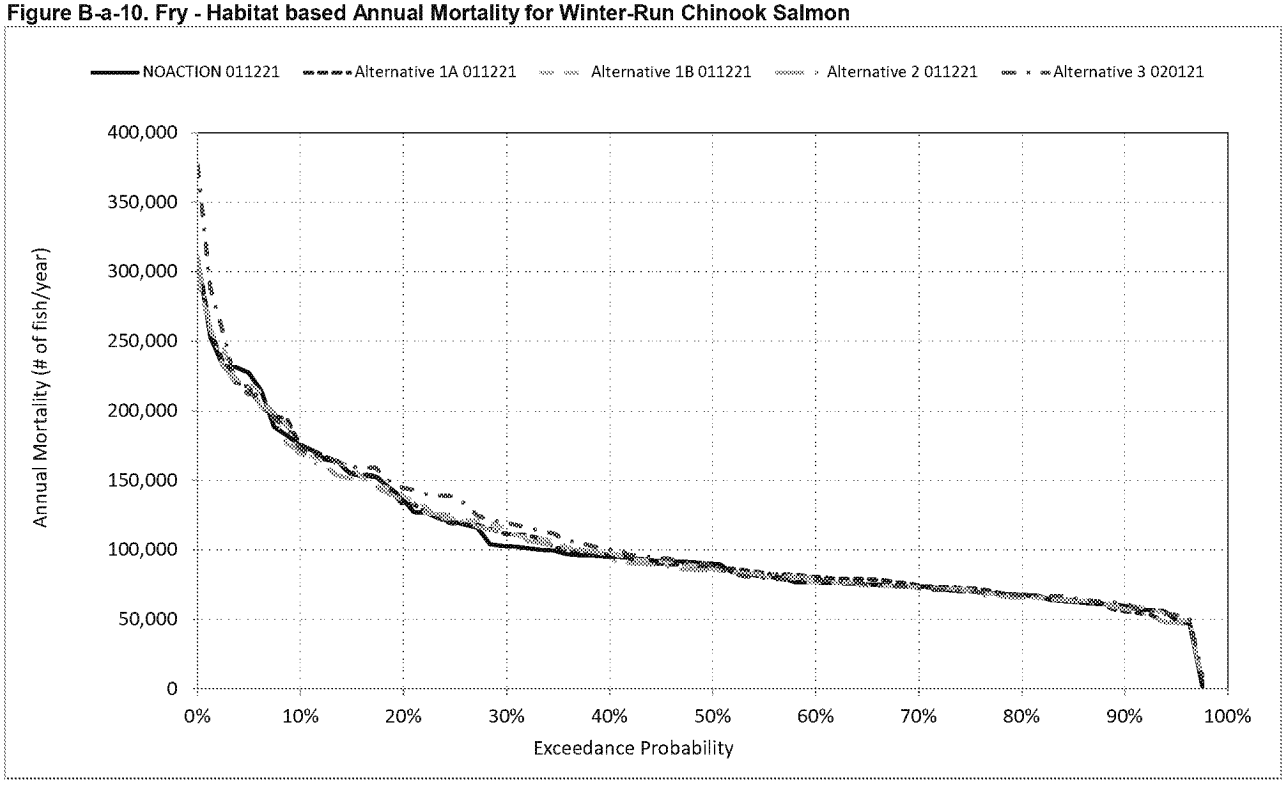


Figure B-a-11. Pre-smolt - Habitat based Annual Mortality for Winter-Run Chinook Salmon

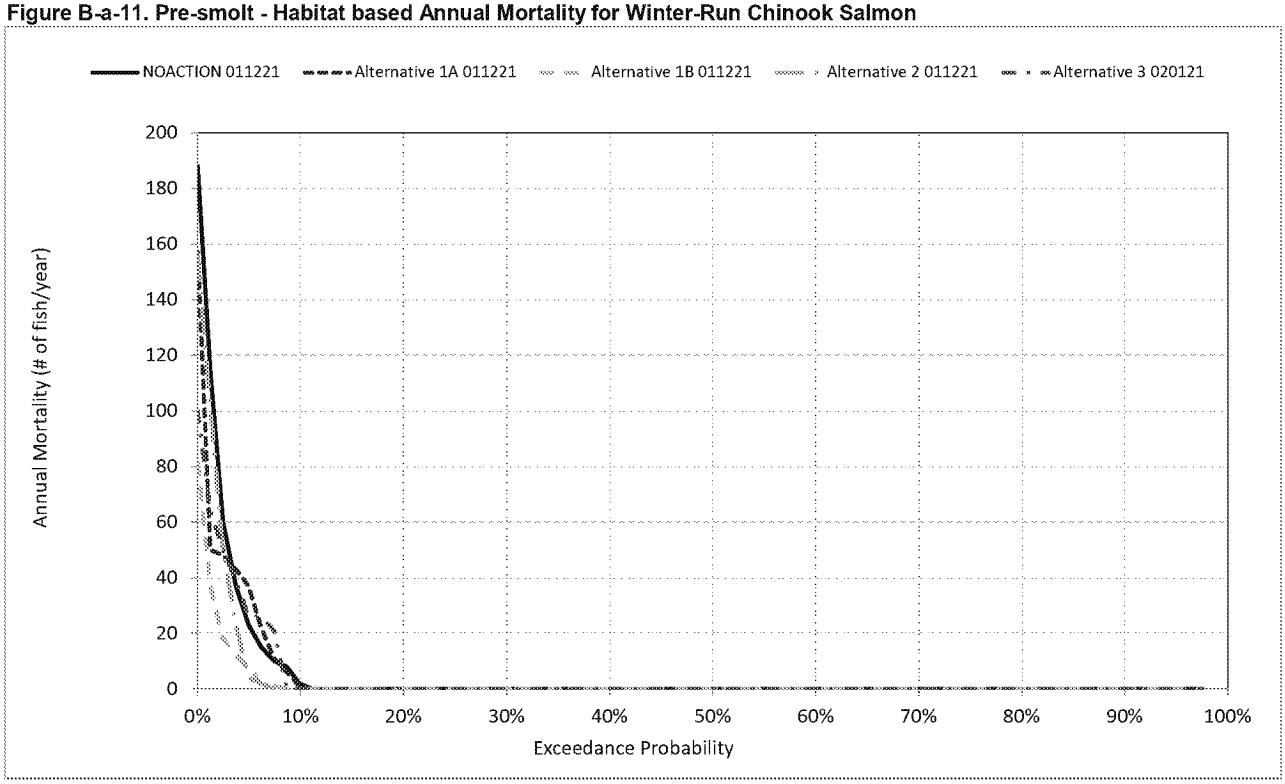


Figure B-a-12. Immature Smolt - Habitat based Annual Mortality for Winter-Run Chinook Salmon

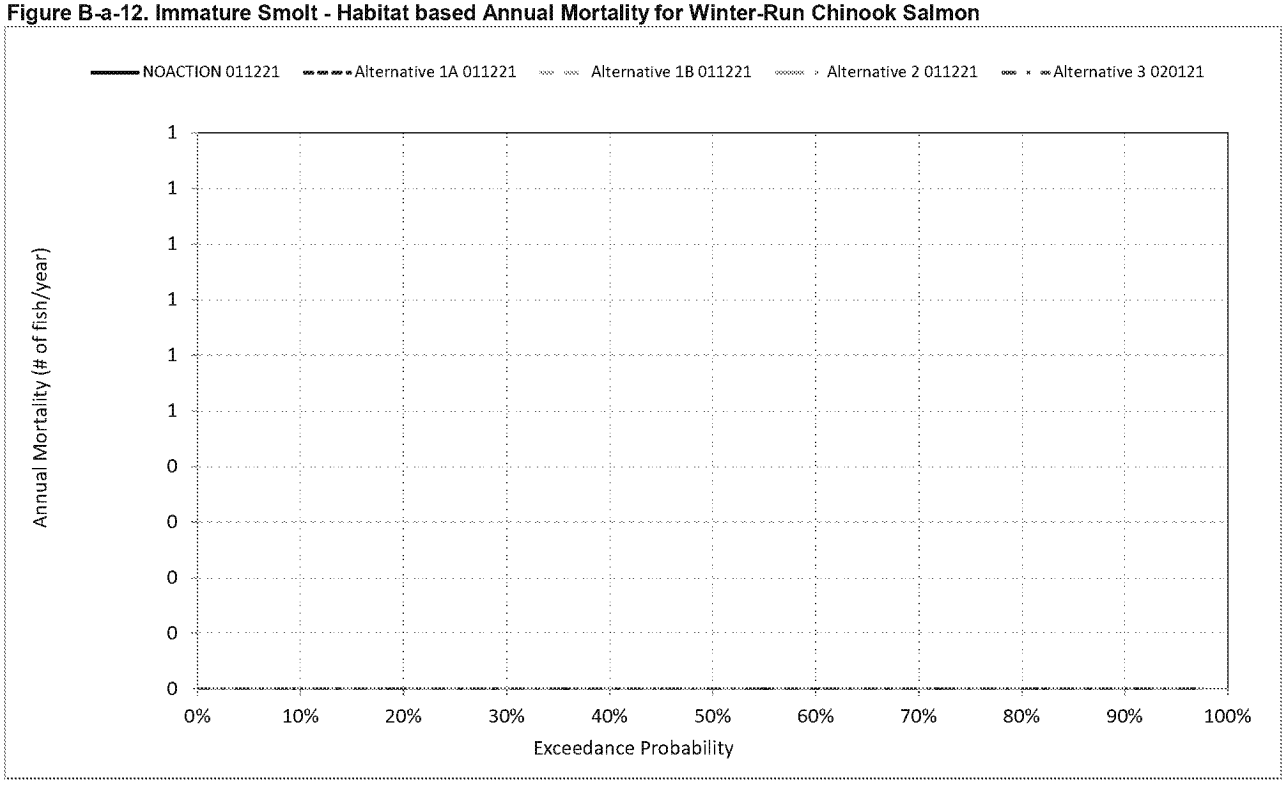


Figure B-a-13. Total Habitat based Annual Mortality for Winter-Run Chinook Salmon

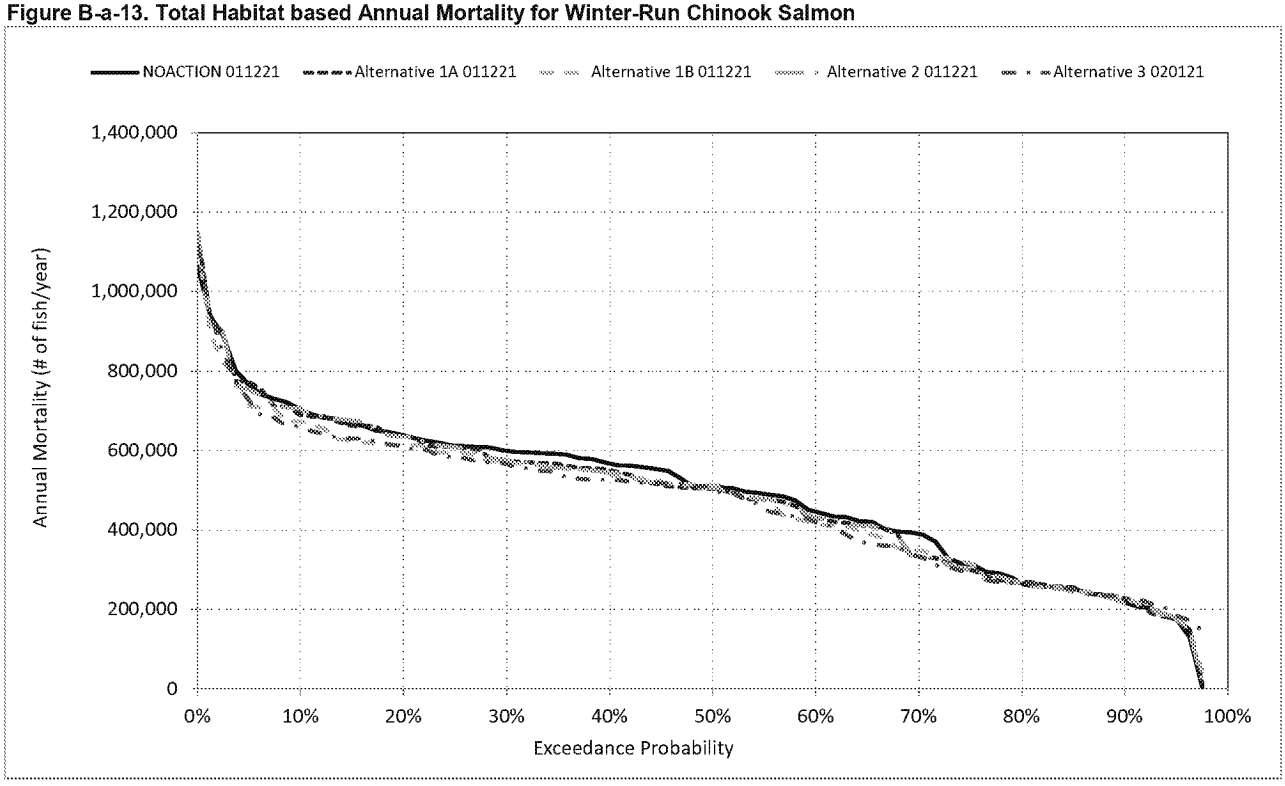


Figure B-a-14. Pre-Spawn Mortality - Temperature based Annual Mortality for Winter-Run Chinook Salmon

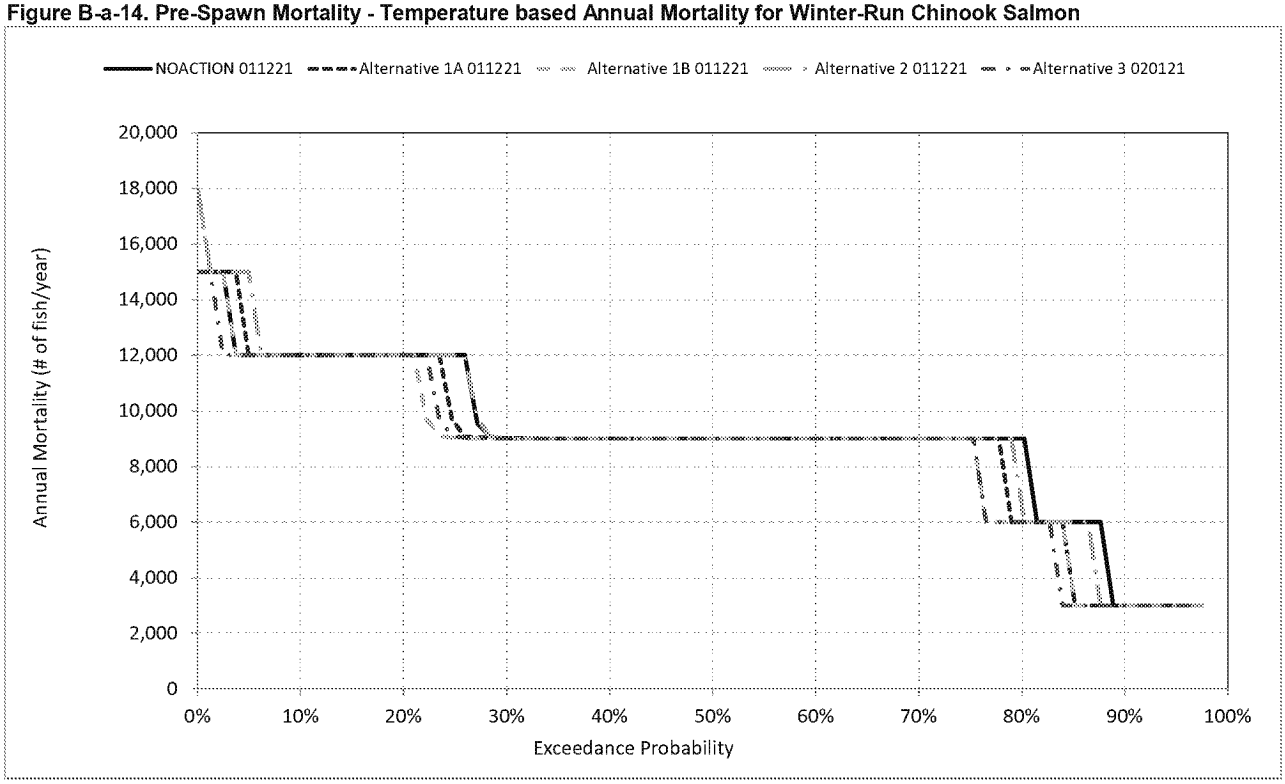


Figure B-a-15. Eggs - Temperature based Annual Mortality for Winter-Run Chinook Salmon

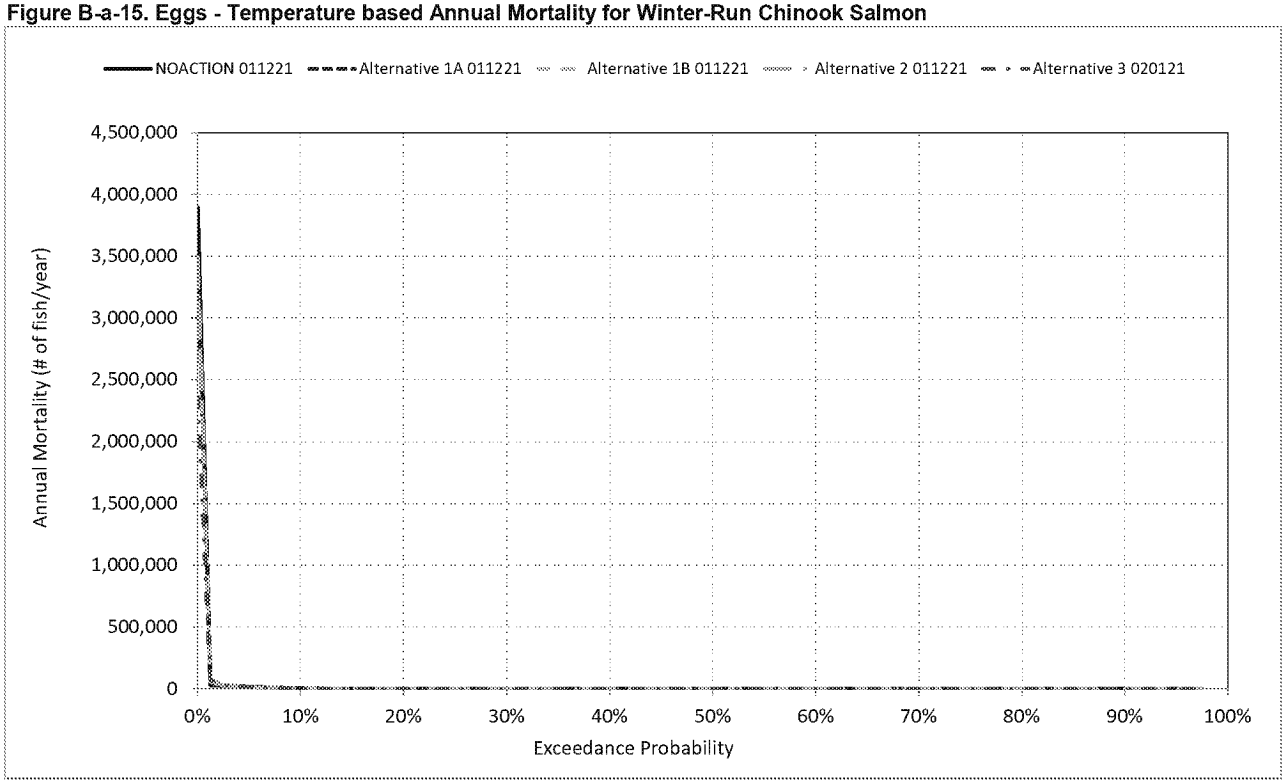


Figure B-a-16. Fry - Temperature based Annual Mortality for Winter-Run Chinook Salmon

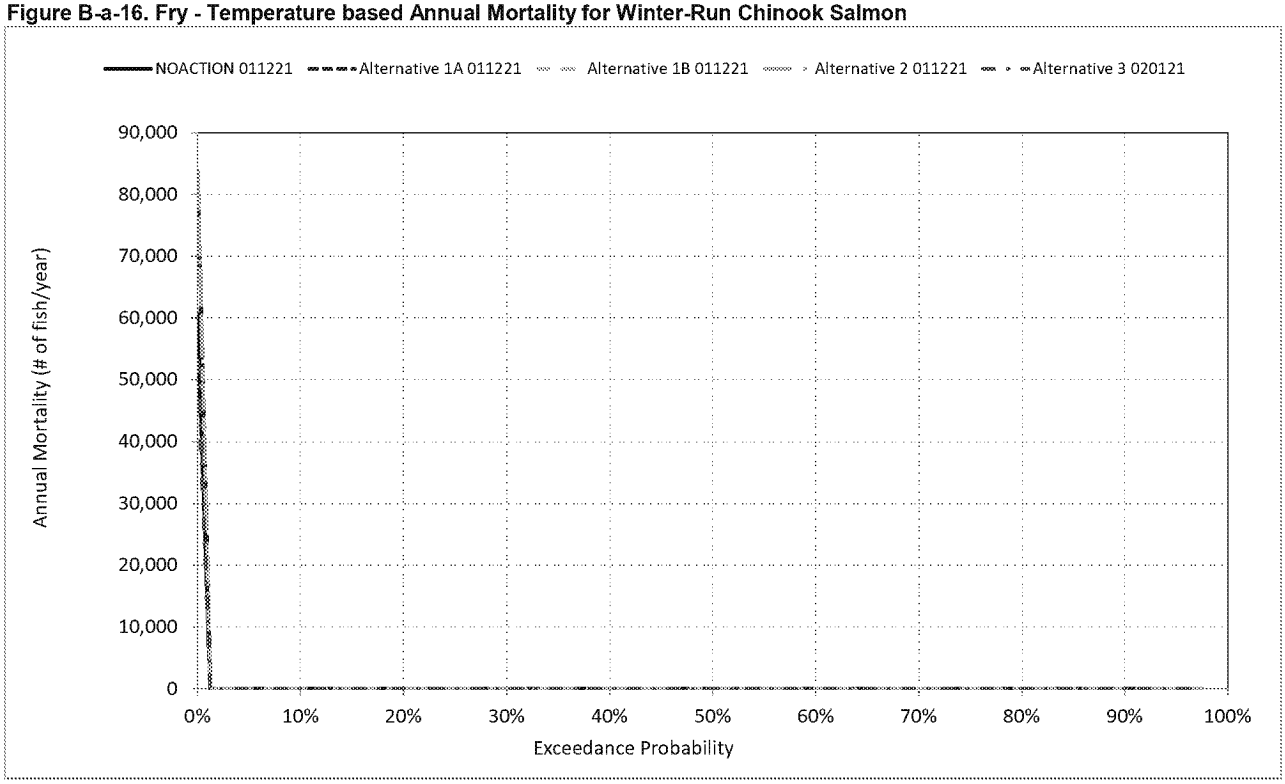


Figure B-a-17. Pre-smolt - Temperature based Annual Mortality for Winter-Run Chinook Salmon

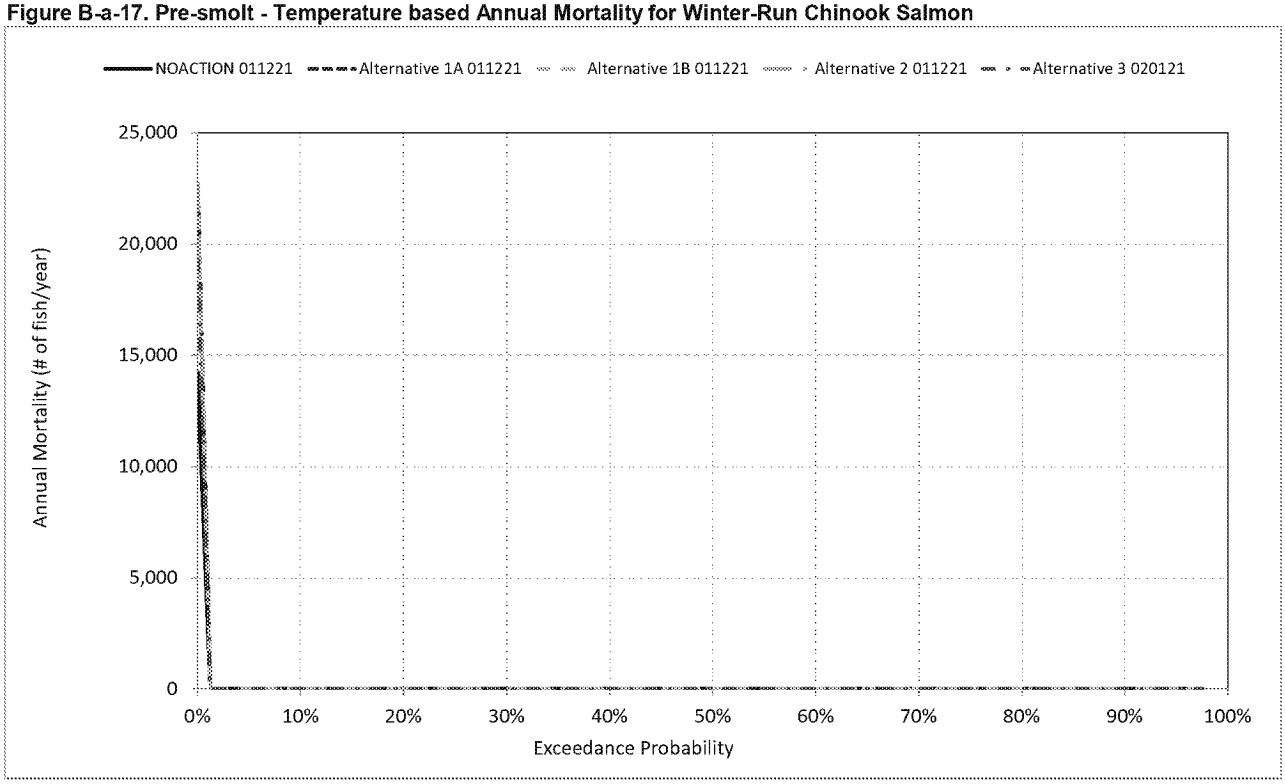


Figure B-a-18. Immature Smolt - Temperature based Annual Mortality for Winter-Run Chinook Salmon

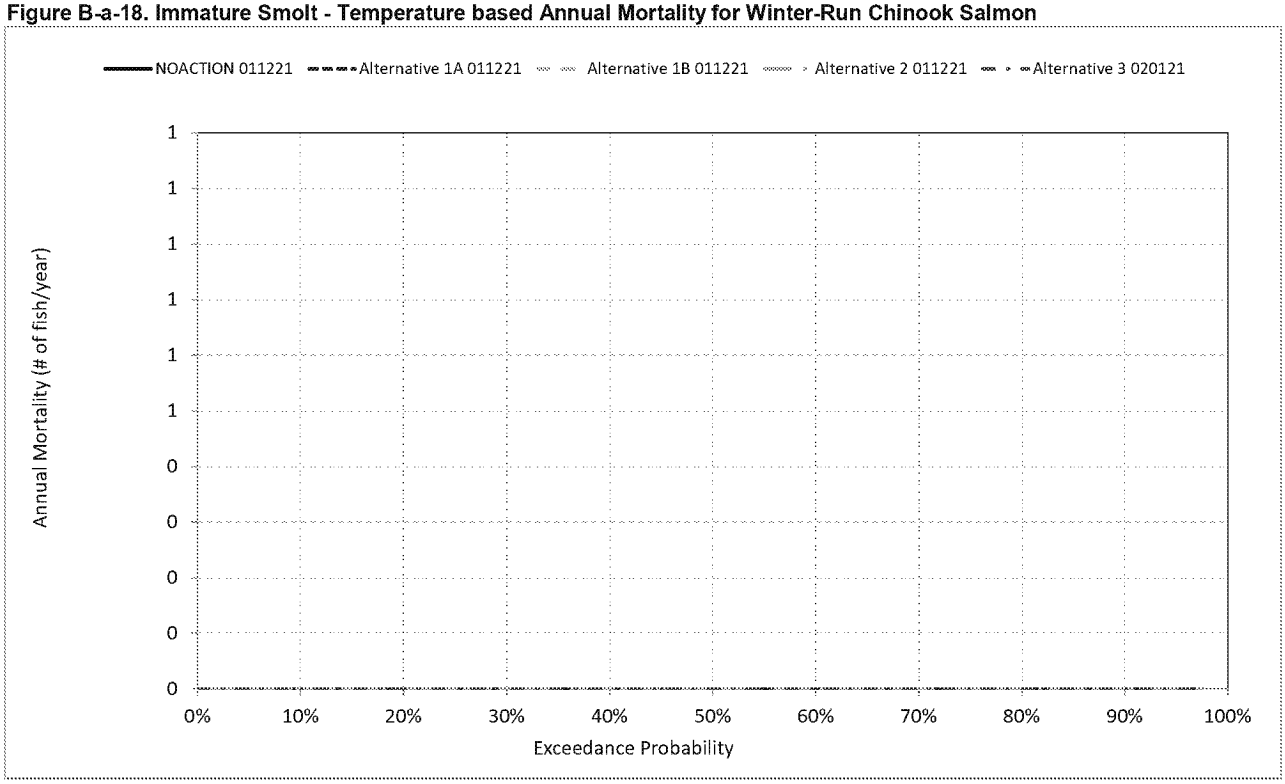


Figure B-a-19. Total Temperature based Annual Mortality for Winter-Run Chinook Salmon

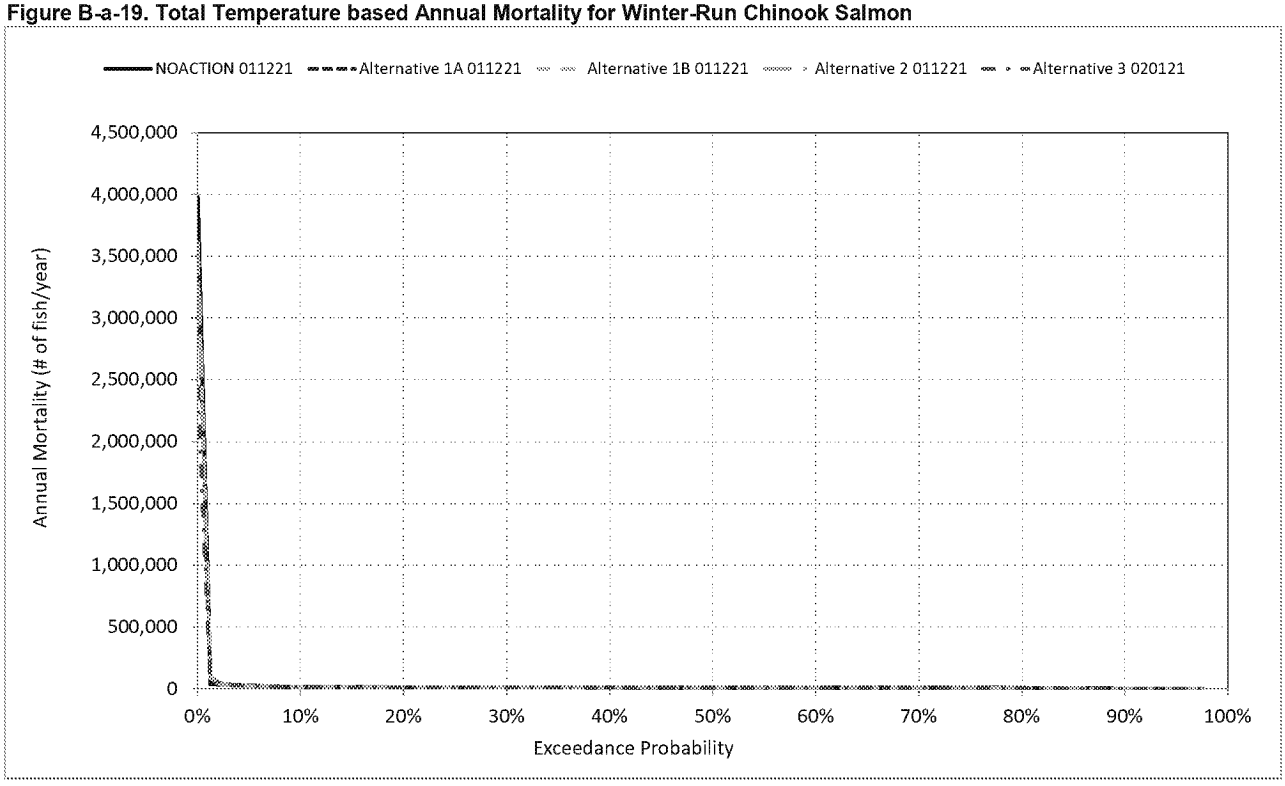


Figure B-b-1. Annual Potential Production for Spring-Run Chinook Salmon

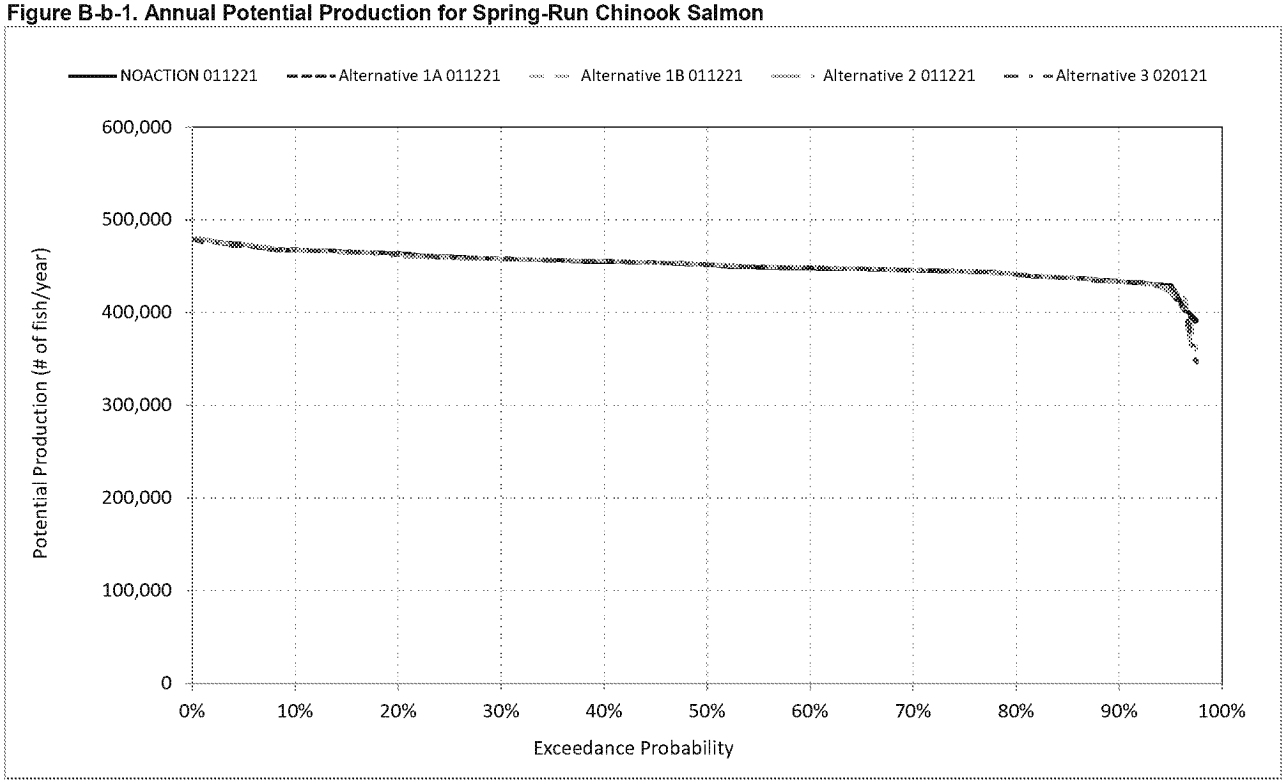


Figure B-b-2. Annual Mortality for Spring-Run Chinook Salmon - Eggs

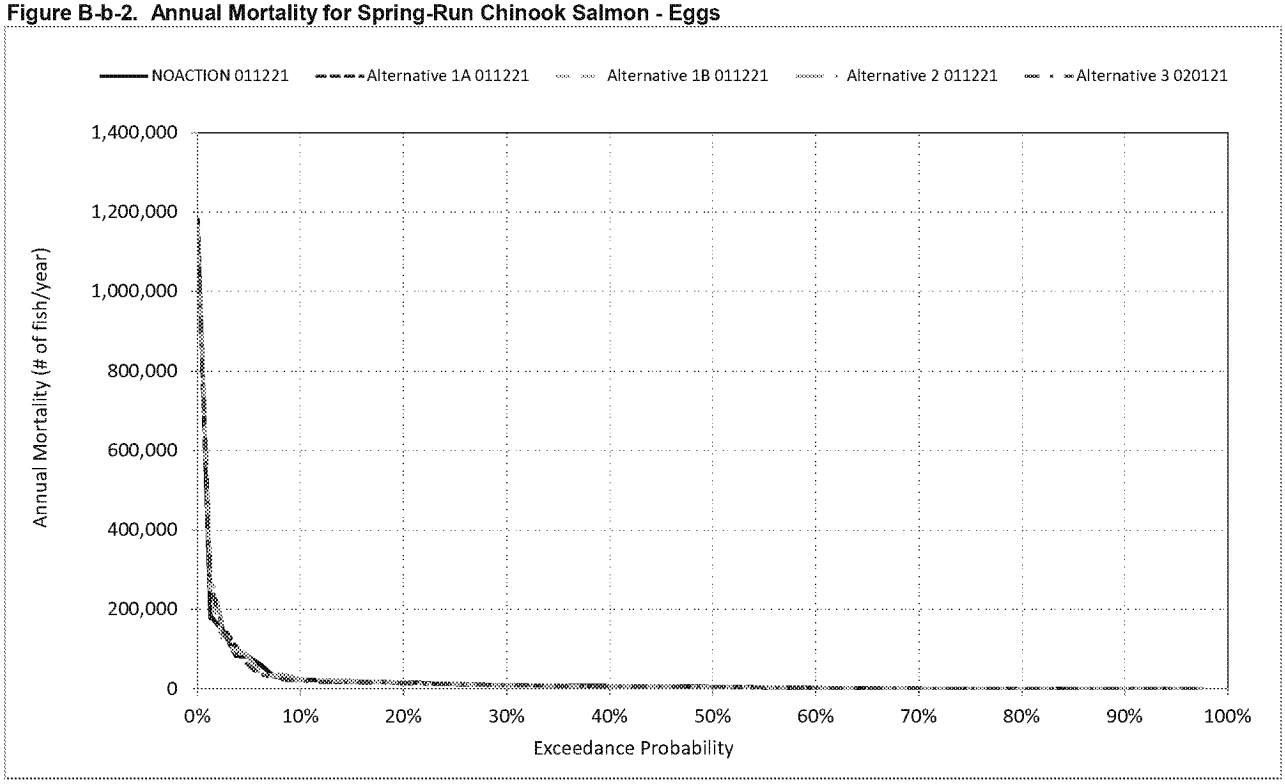


Figure B-b-3. Annual Mortality for Spring-Run Chinook Salmon - Fry

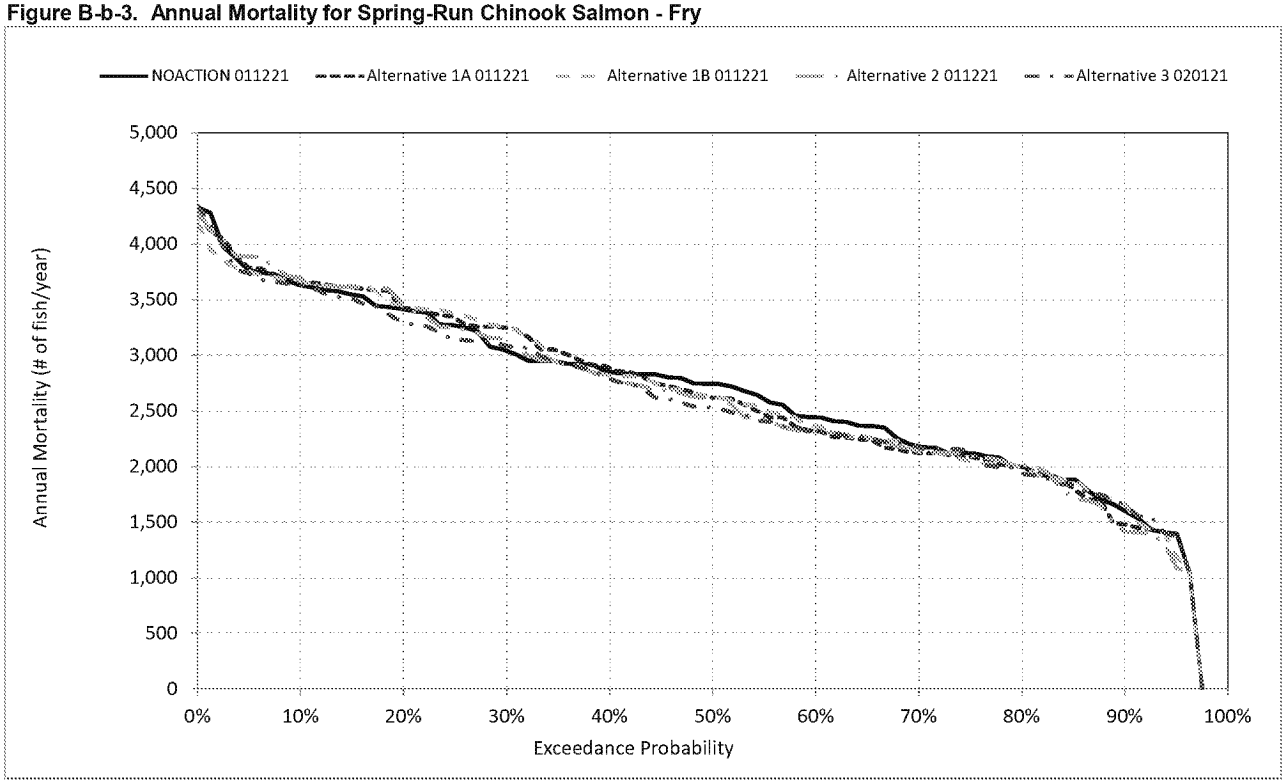


Figure B-b-4. Annual Mortality for Spring-Run Chinook Salmon - Pre-Smolt

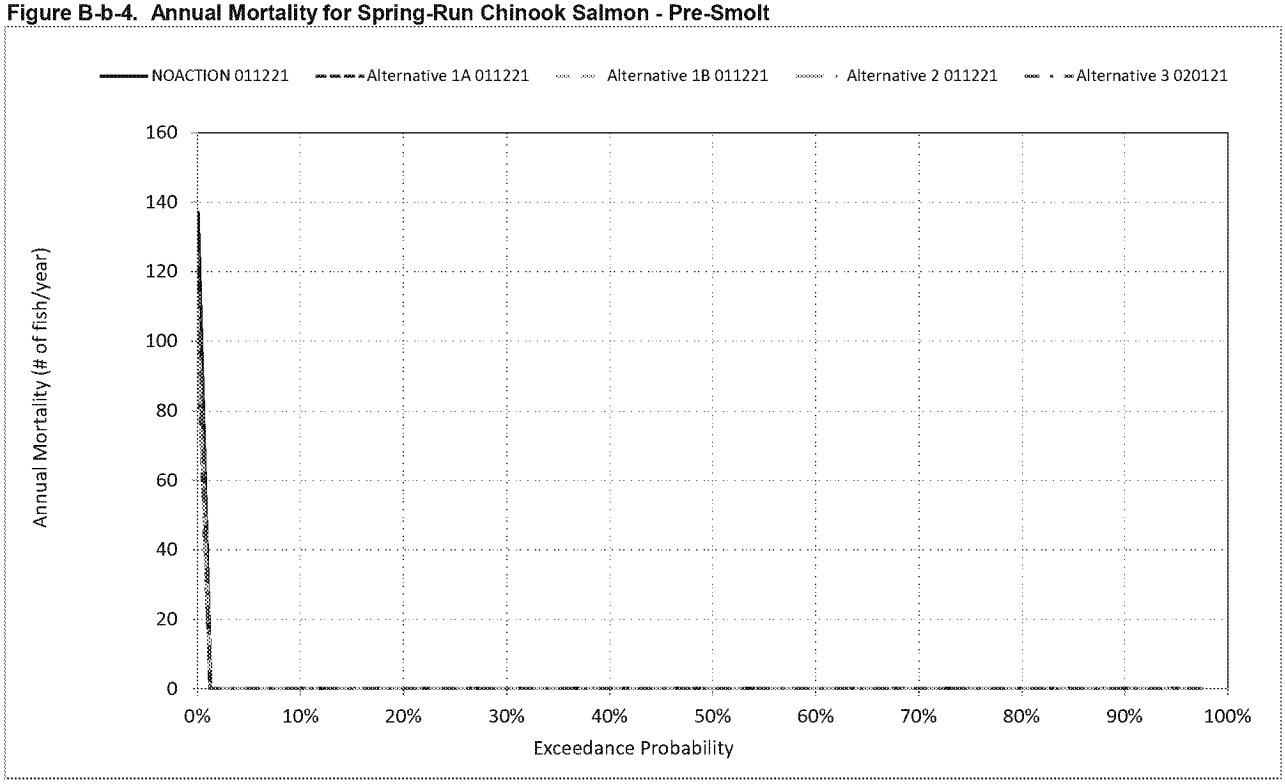


Figure B-b-5. Annual Mortality for Spring-Run Chinook Salmon - Immature Smolt

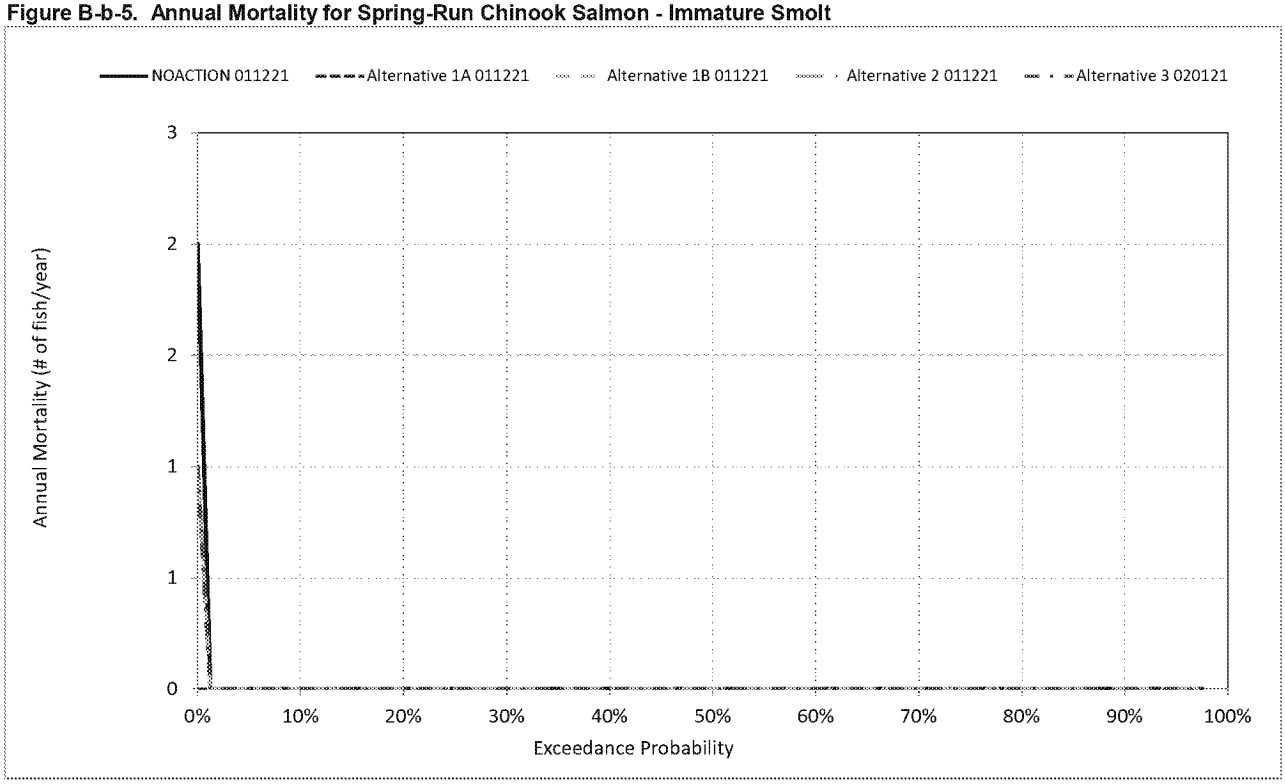


Figure B-b-6. Annual Mortality for Spring-Run Chinook Salmon - Pre- & Immature Smolts

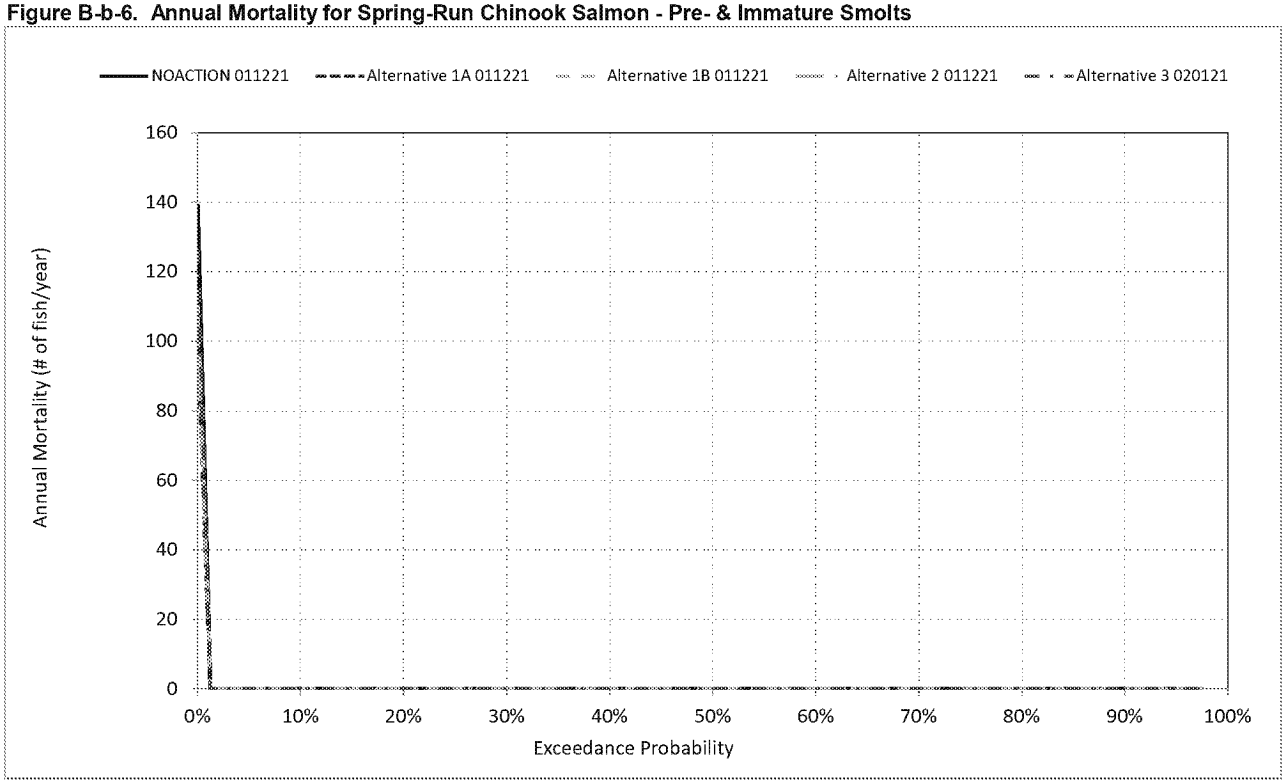


Figure B-b-7. Annual Mortality for Spring-Run Chinook Salmon - All Lifestages

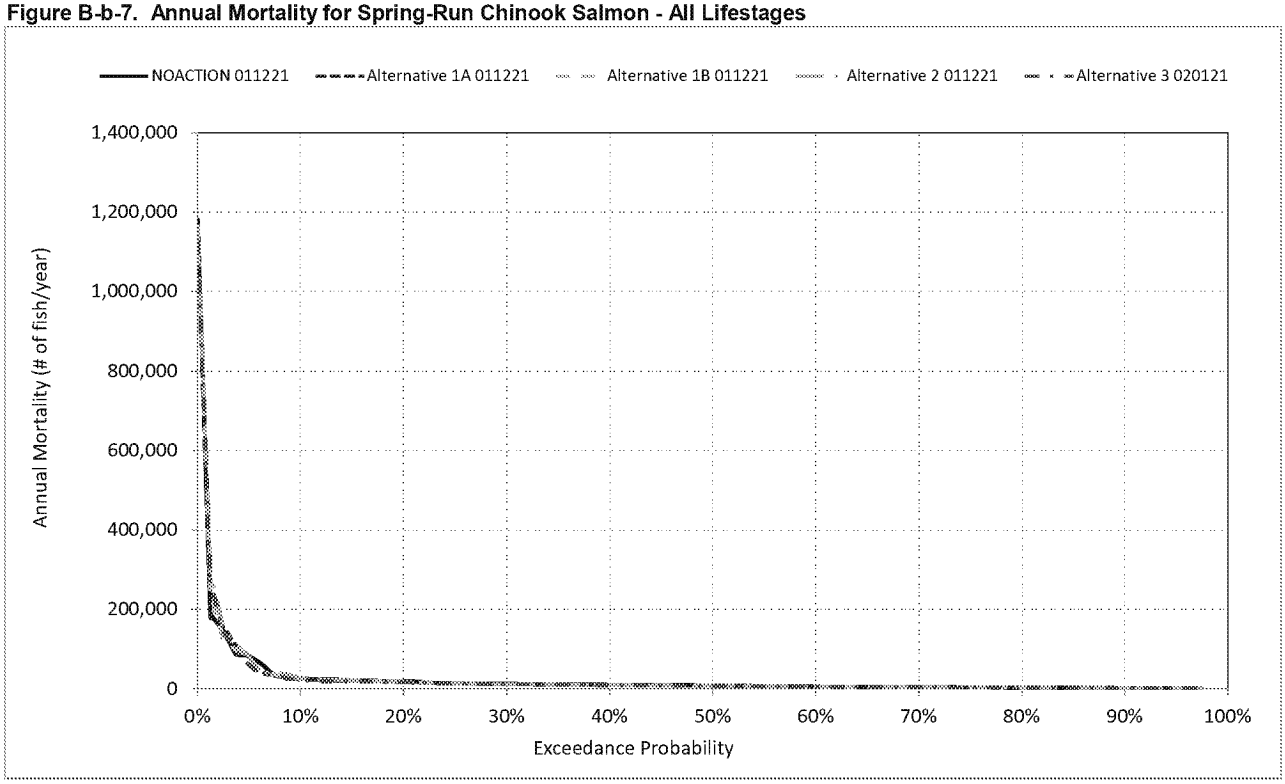


Figure B-b-8. Incubation - Habitat based Annual Mortality for Spring-Run Chinook Salmon

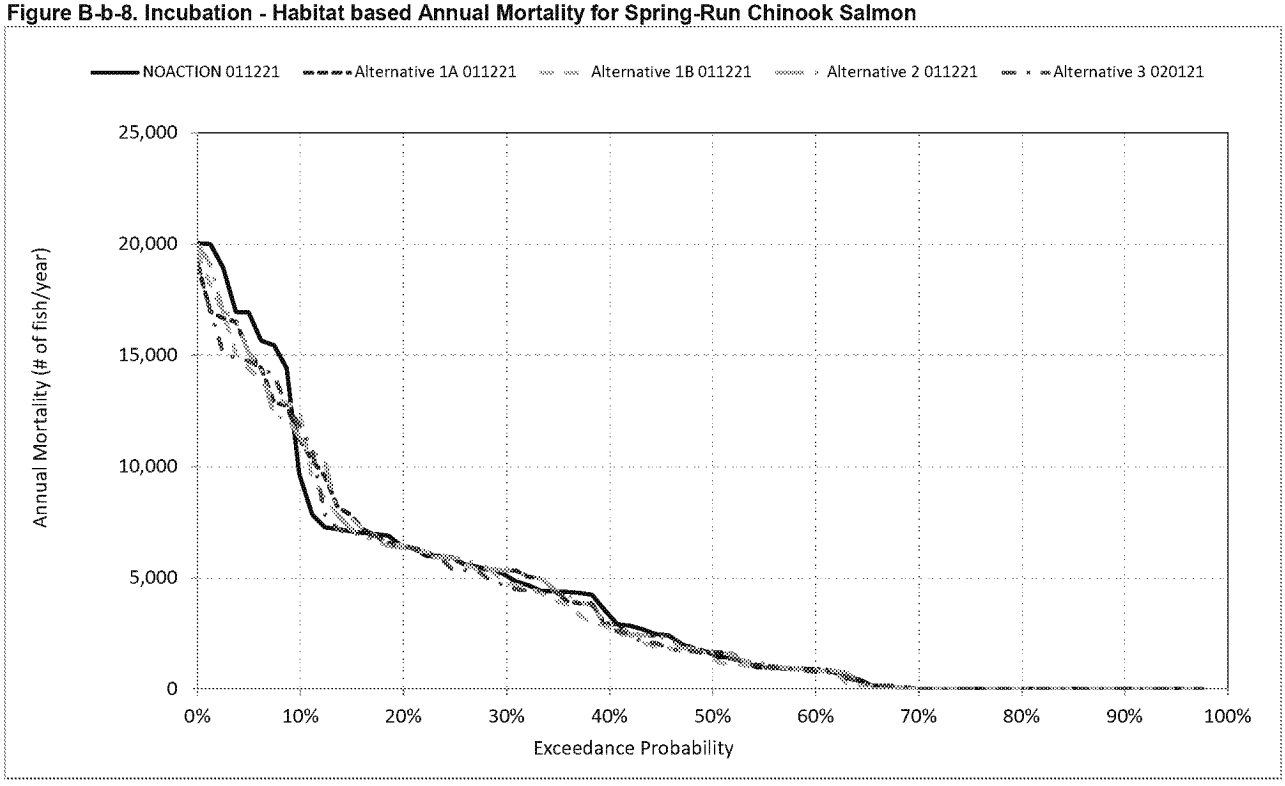


Figure B-b-9. Super-imposition - Habitat based Annual Mortality for Spring-Run Chinook Salmon

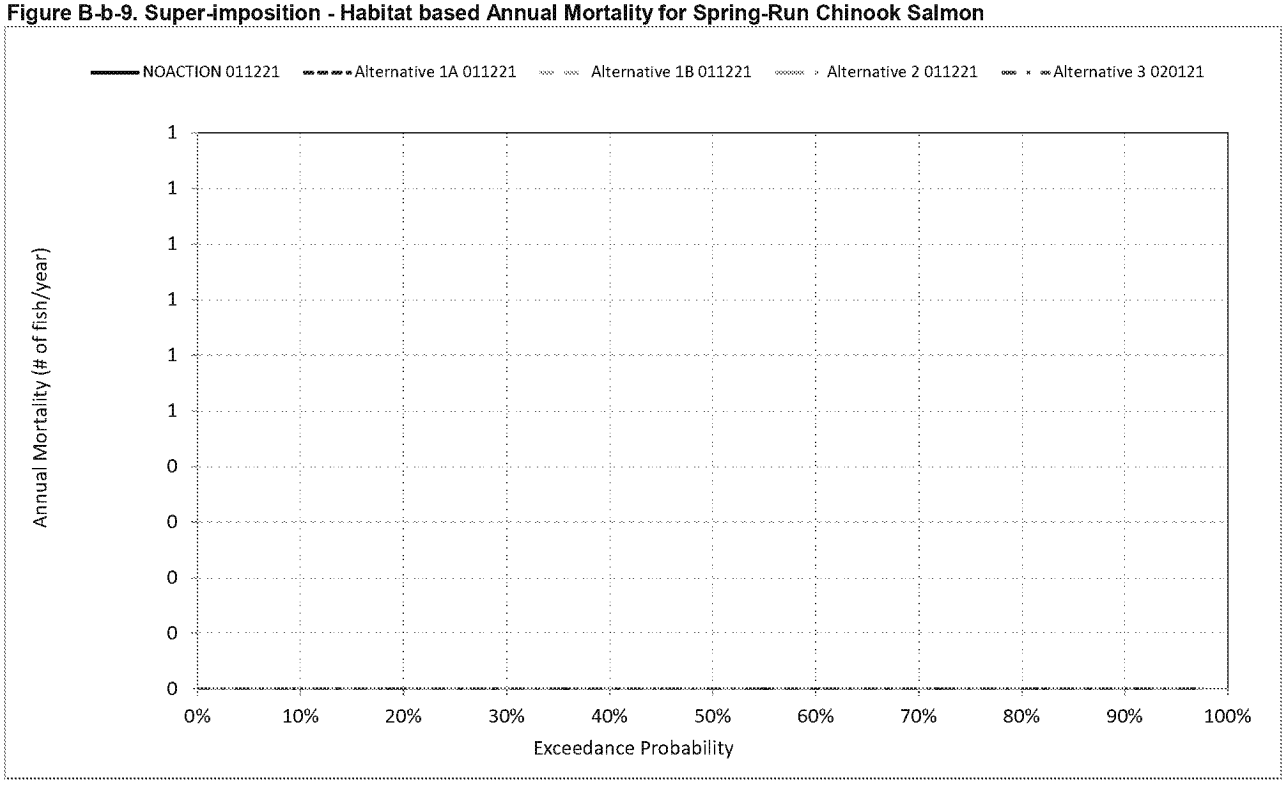


Figure B-b-10. Fry - Habitat based Annual Mortality for Spring-Run Chinook Salmon

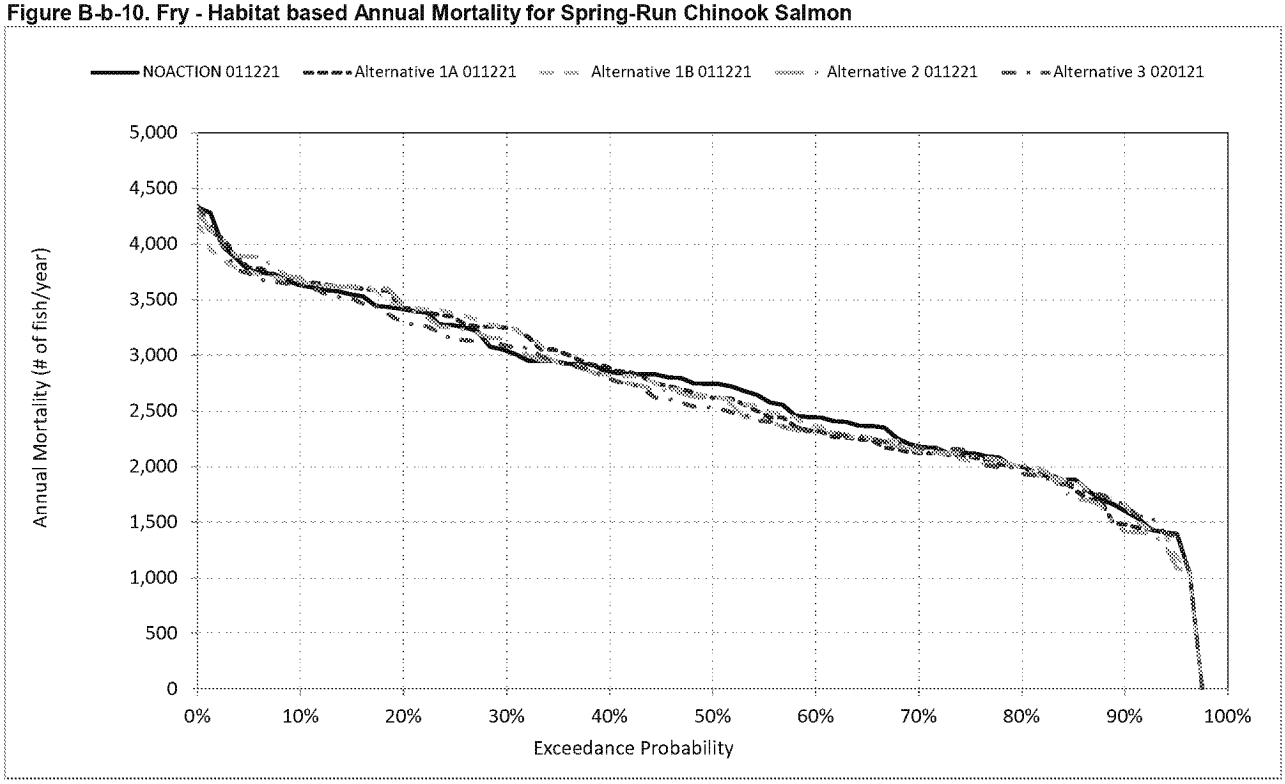


Figure B-b-11. Pre-smolt - Habitat based Annual Mortality for Spring-Run Chinook Salmon

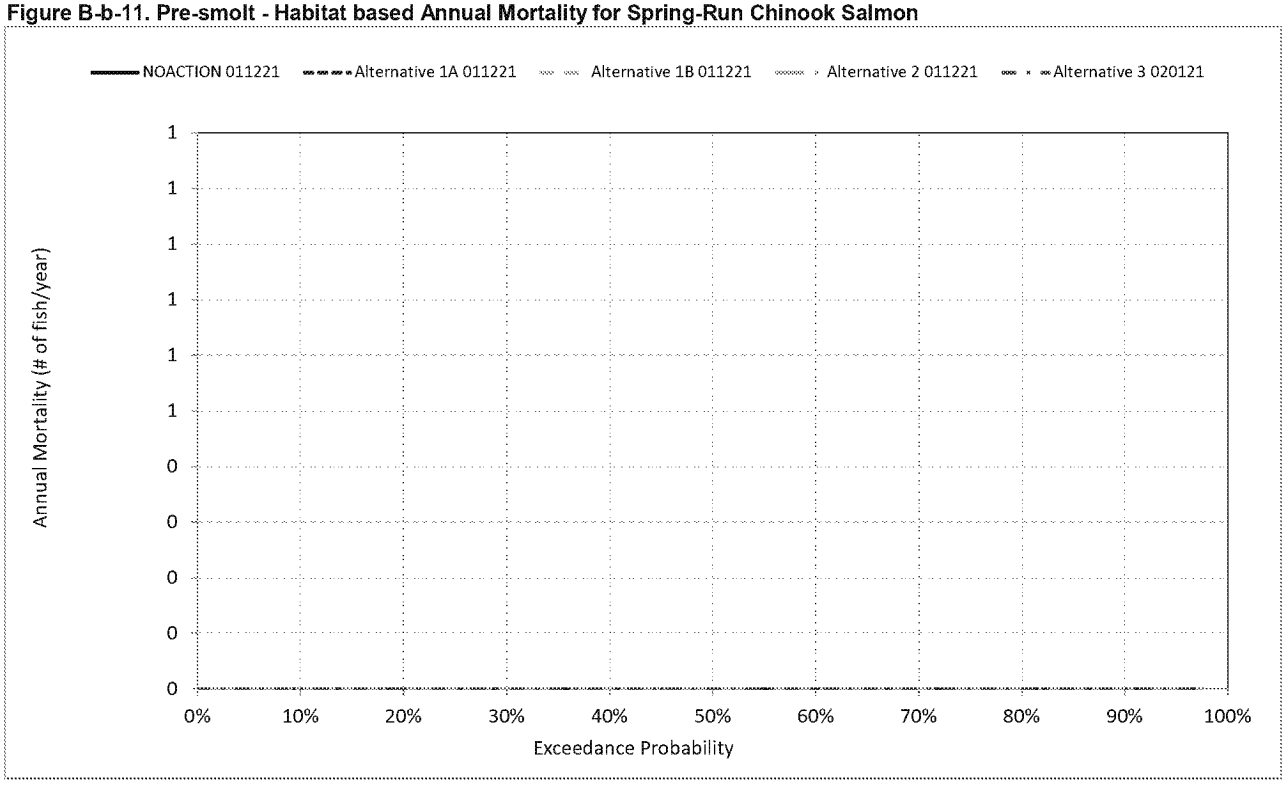


Figure B-b-12. Immature Smolt - Habitat based Annual Mortality for Spring-Run Chinook Salmon

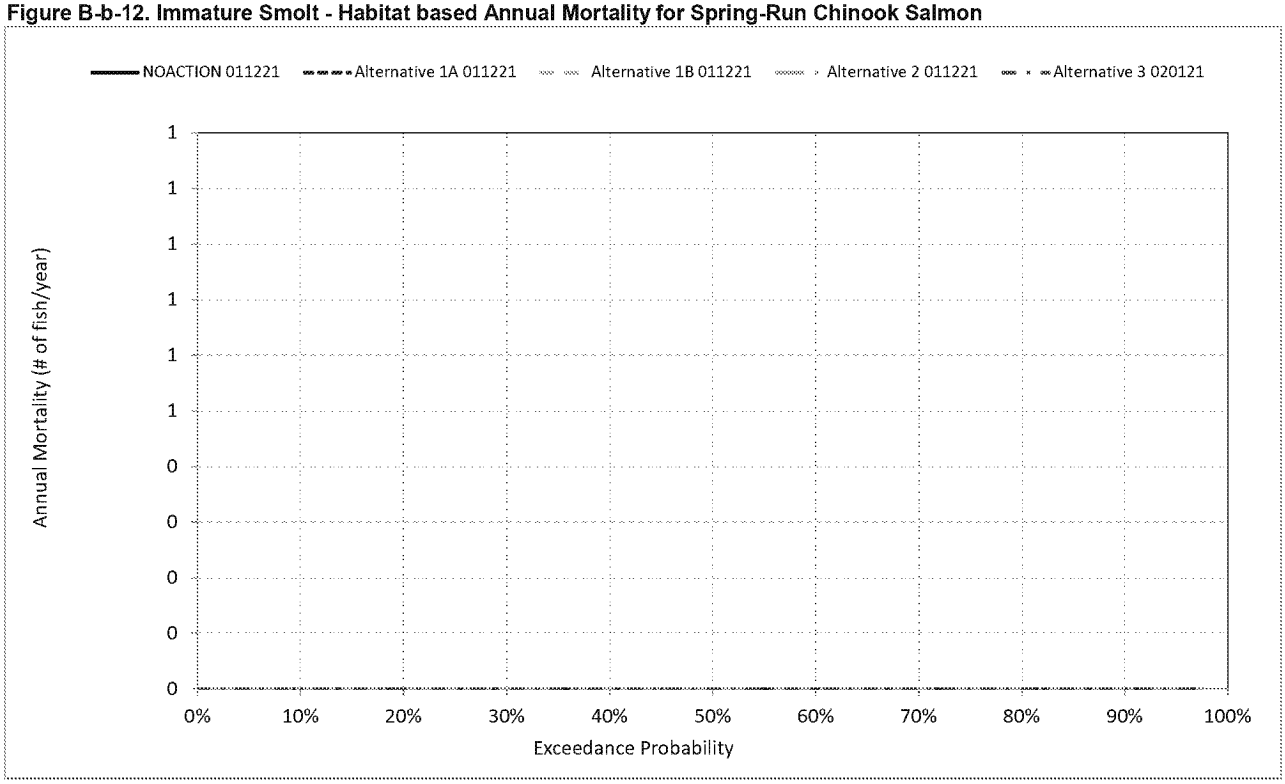


Figure B-b-13. Total Habitat based Annual Mortality for Spring-Run Chinook Salmon

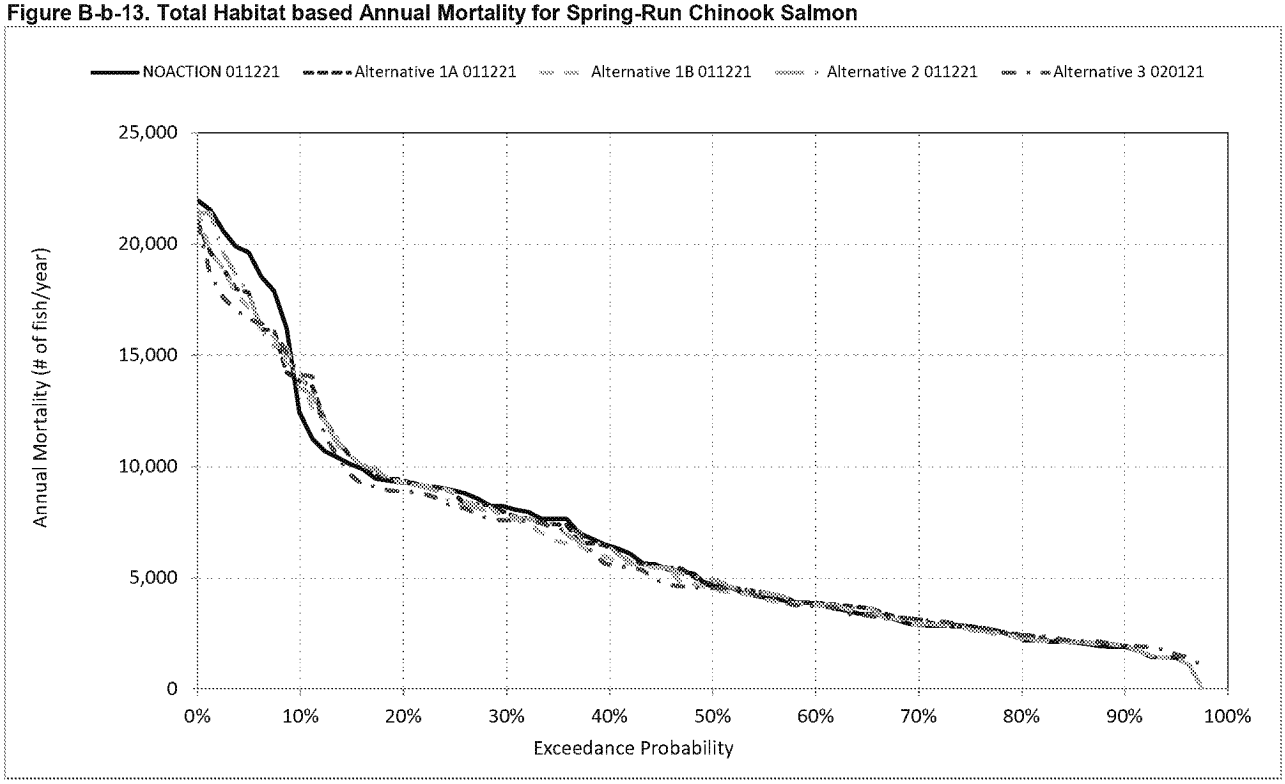


Figure B-b-14. Pre-Spawn Mortality - Temperature based Annual Mortality for Spring-Run Chinook Salmon

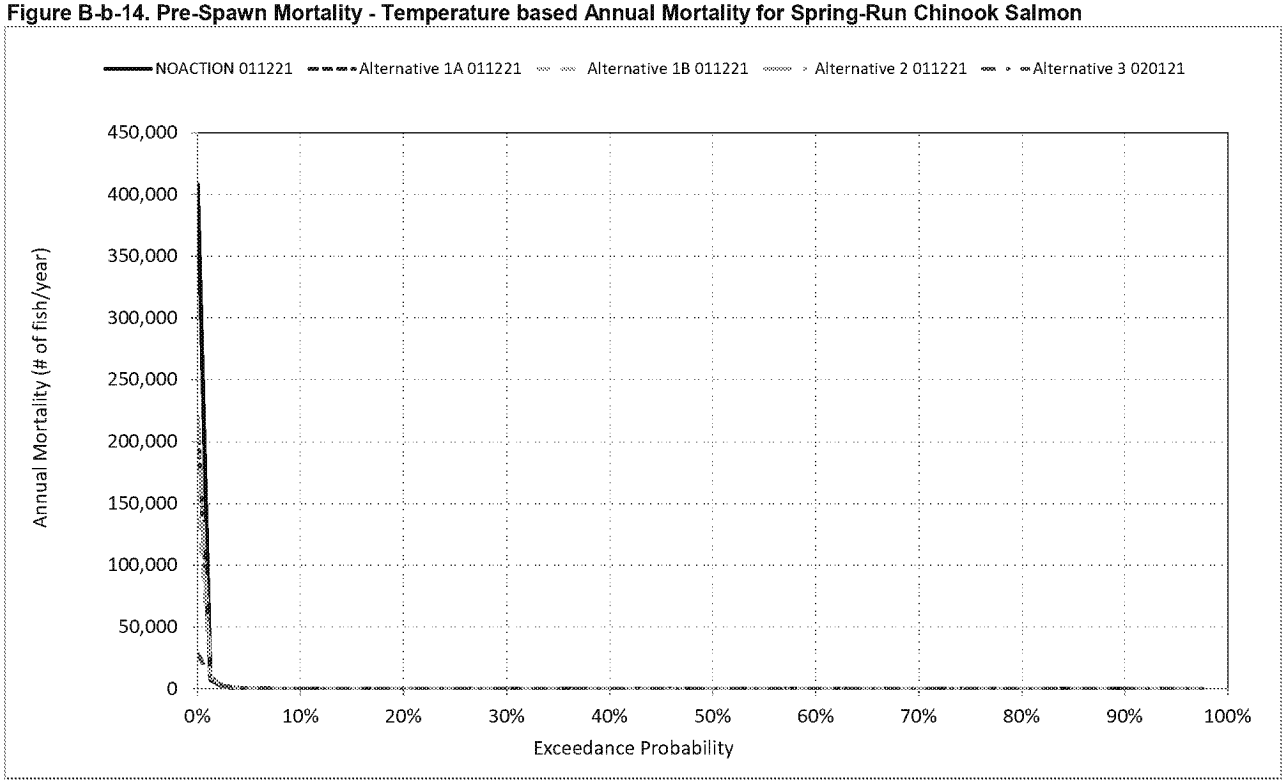


Figure B-b-15. Eggs - Temperature based Annual Mortality for Spring-Run Chinook Salmon

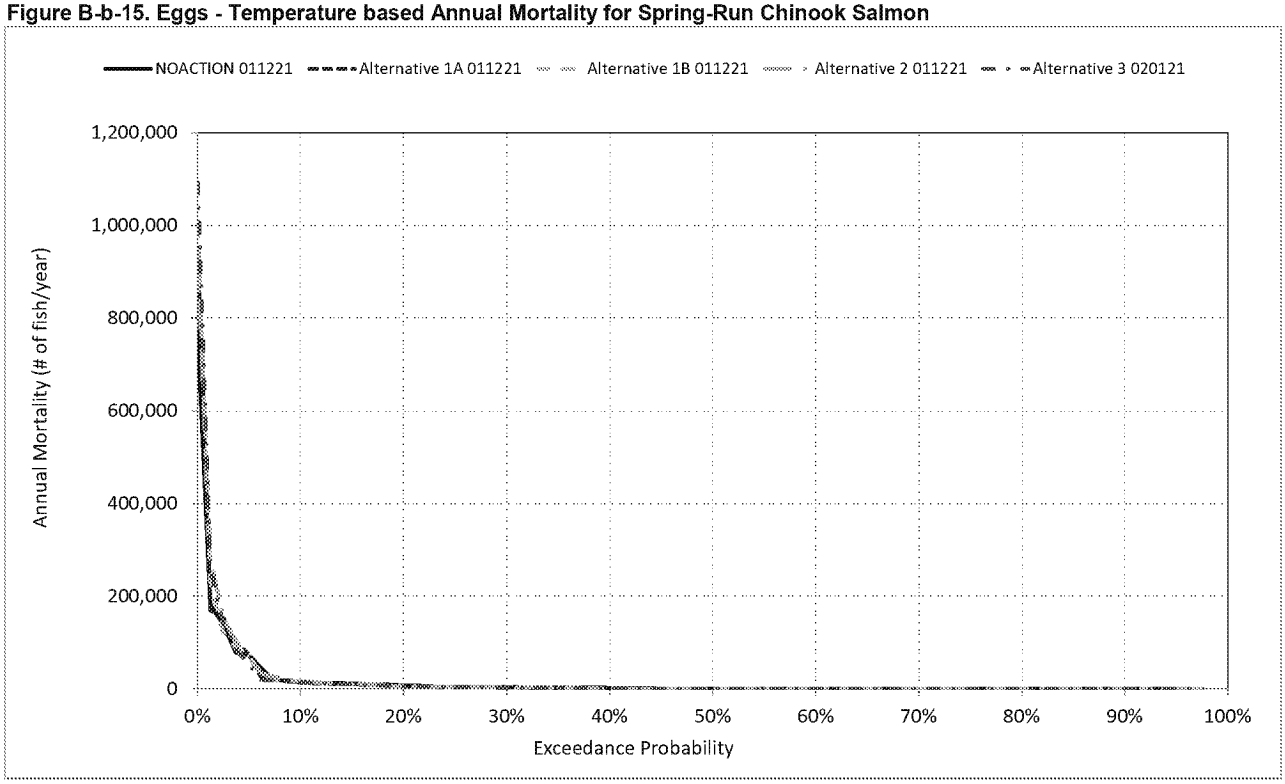


Figure B-b-16. Fry - Temperature based Annual Mortality for Spring-Run Chinook Salmon

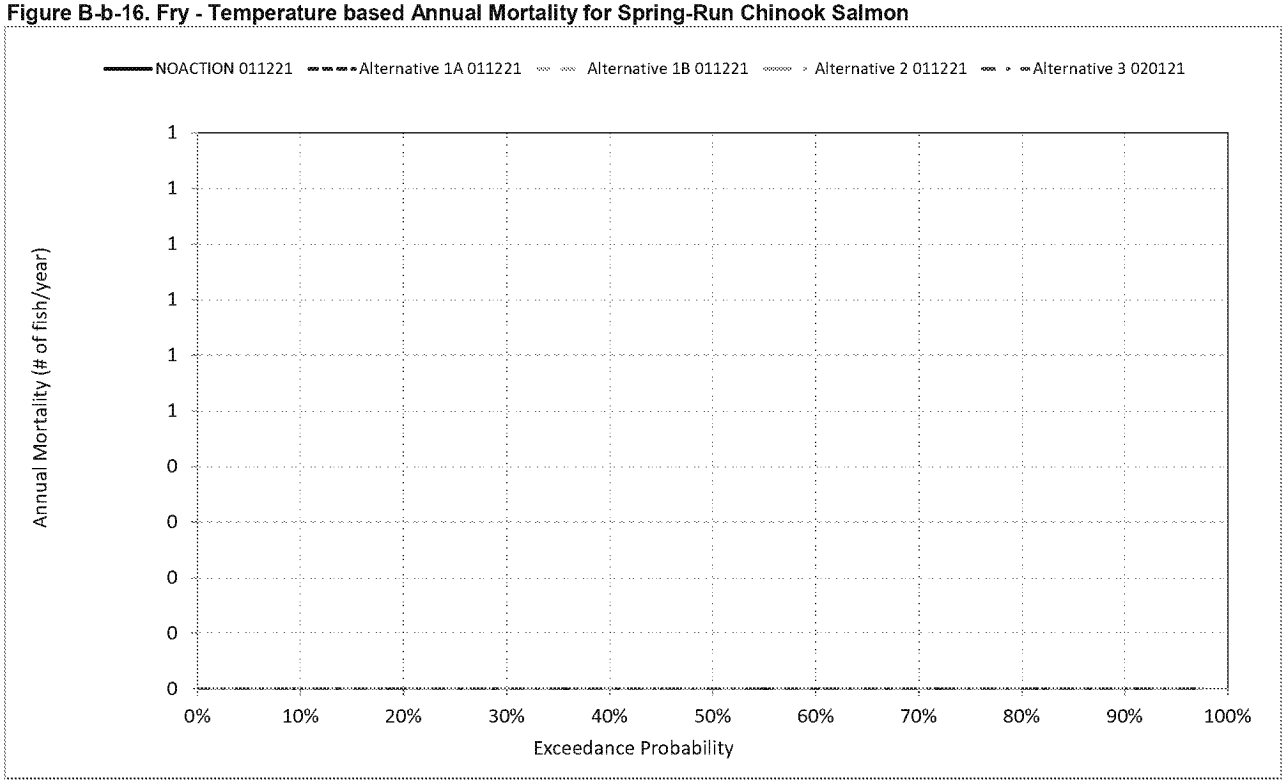


Figure B-b-17. Pre-smolt - Temperature based Annual Mortality for Spring-Run Chinook Salmon

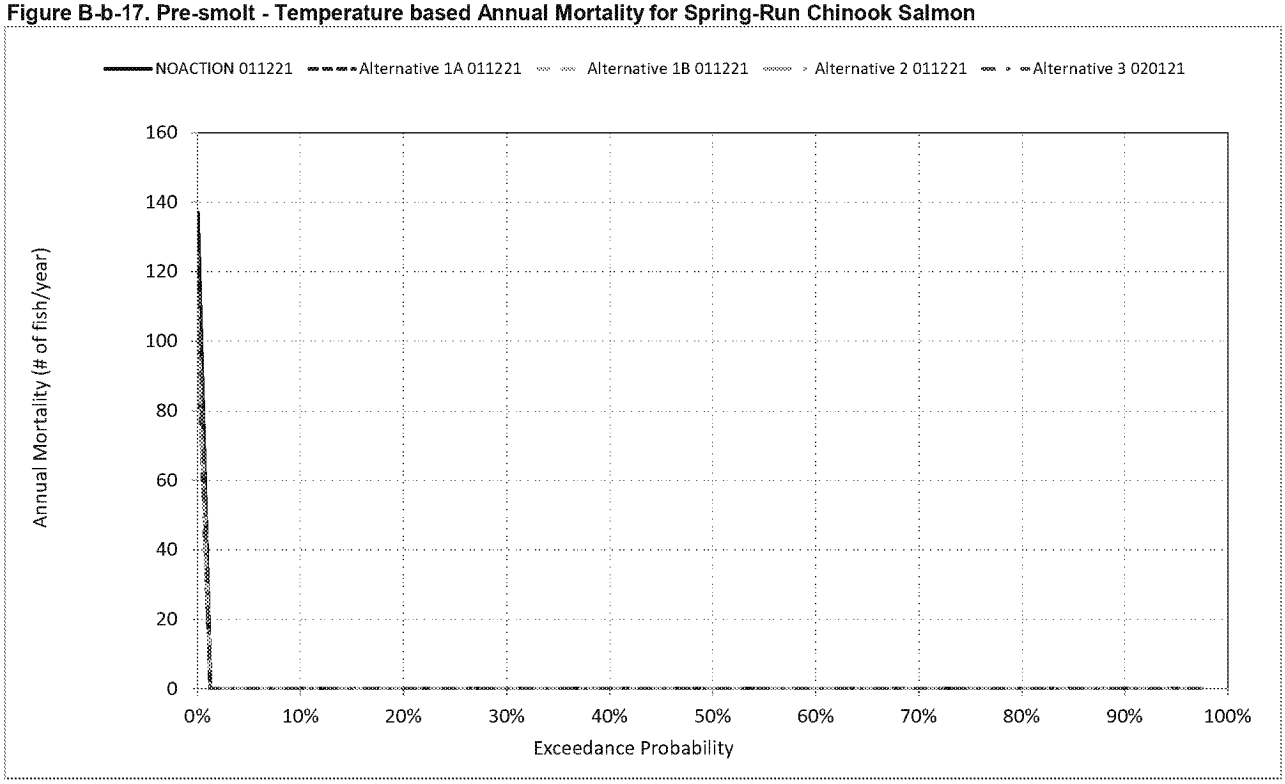


Figure B-b-18. Immature Smolt - Temperature based Annual Mortality for Spring-Run Chinook Salmon

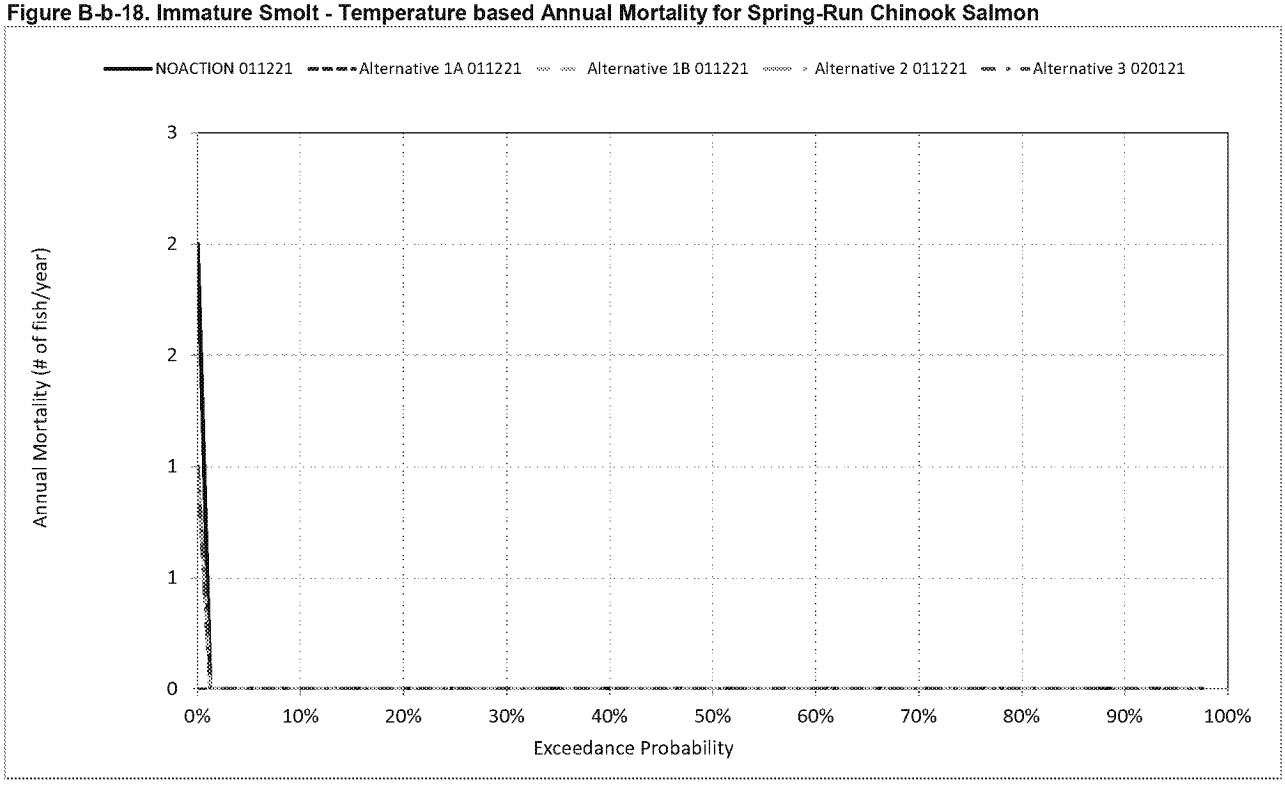


Figure B-b-19. Total Temperature based Annual Mortality for Spring-Run Chinook Salmon

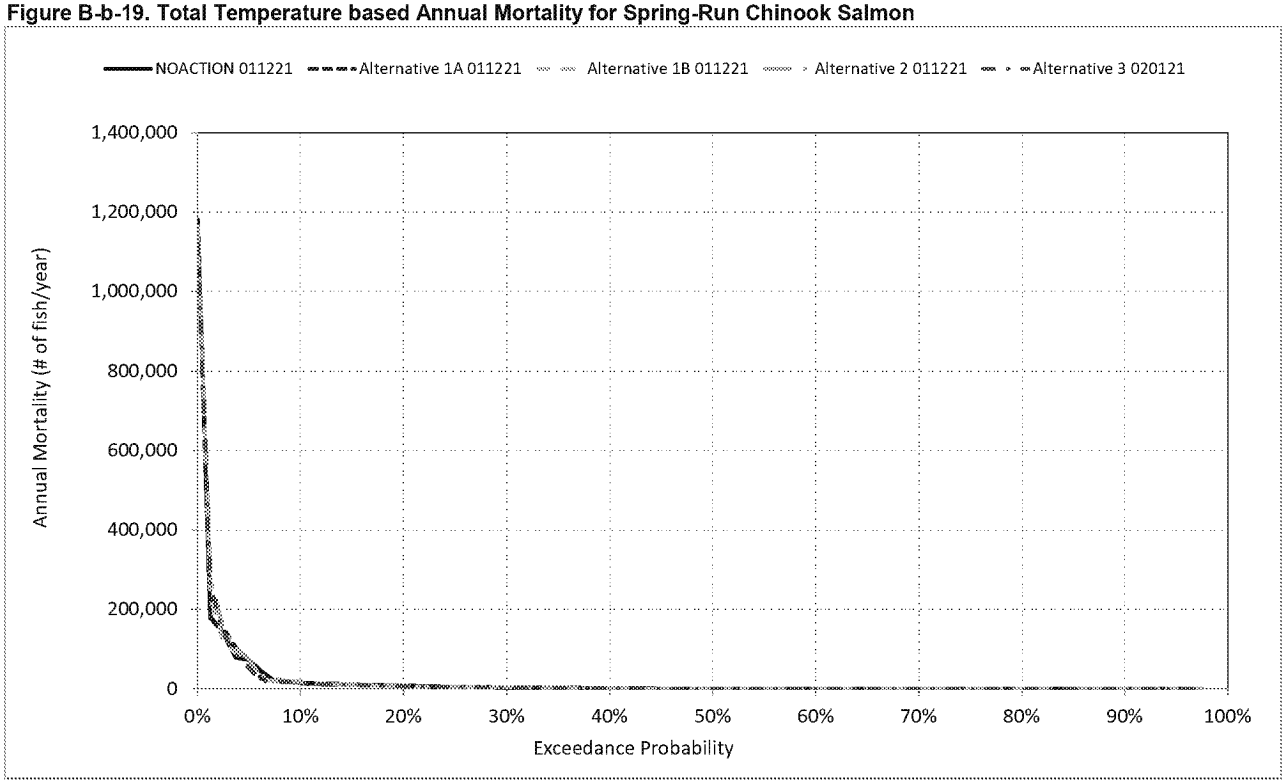


Figure B-c-1. Annual Potential Production for Fall-Run Chinook Salmon

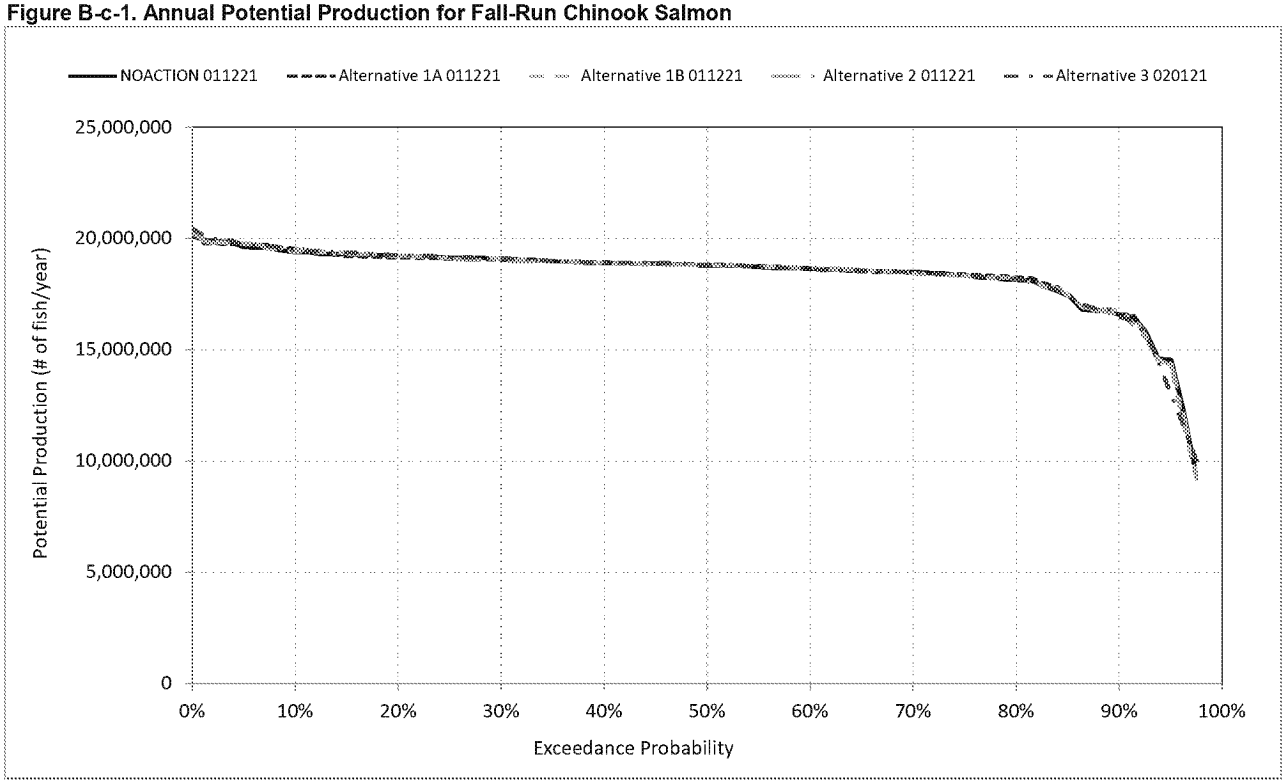


Figure B-c-2. Annual Mortality for Fall-Run Chinook Salmon - Eggs

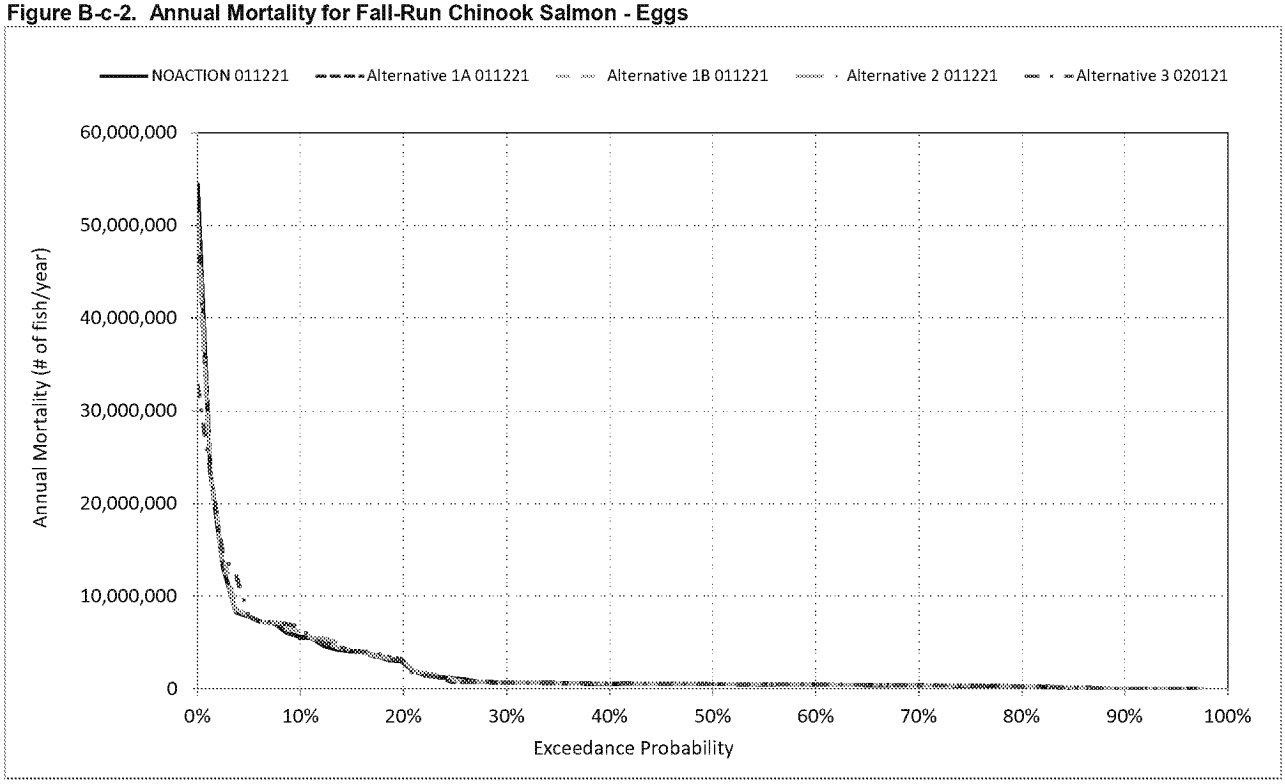


Figure B-c-3. Annual Mortality for Fall-Run Chinook Salmon - Fry

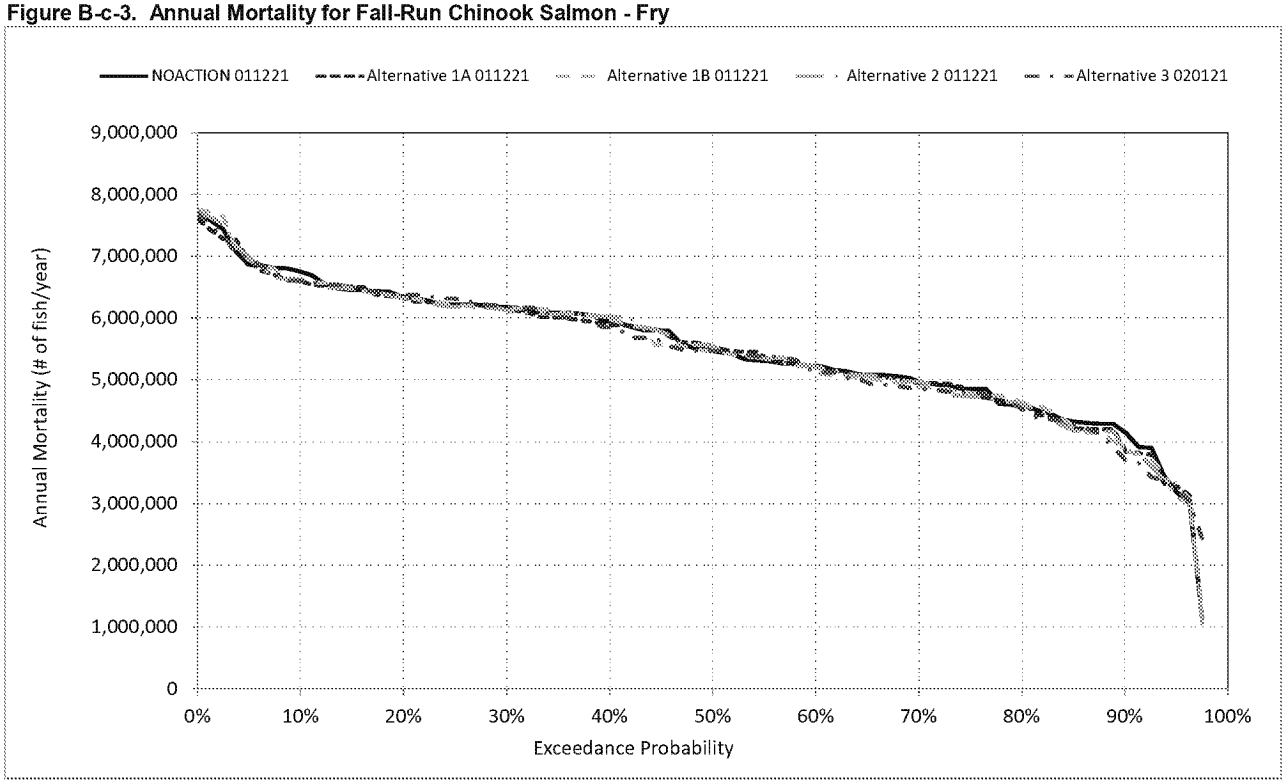


Figure B-c-4. Annual Mortality for Fall-Run Chinook Salmon - Pre-Smolt

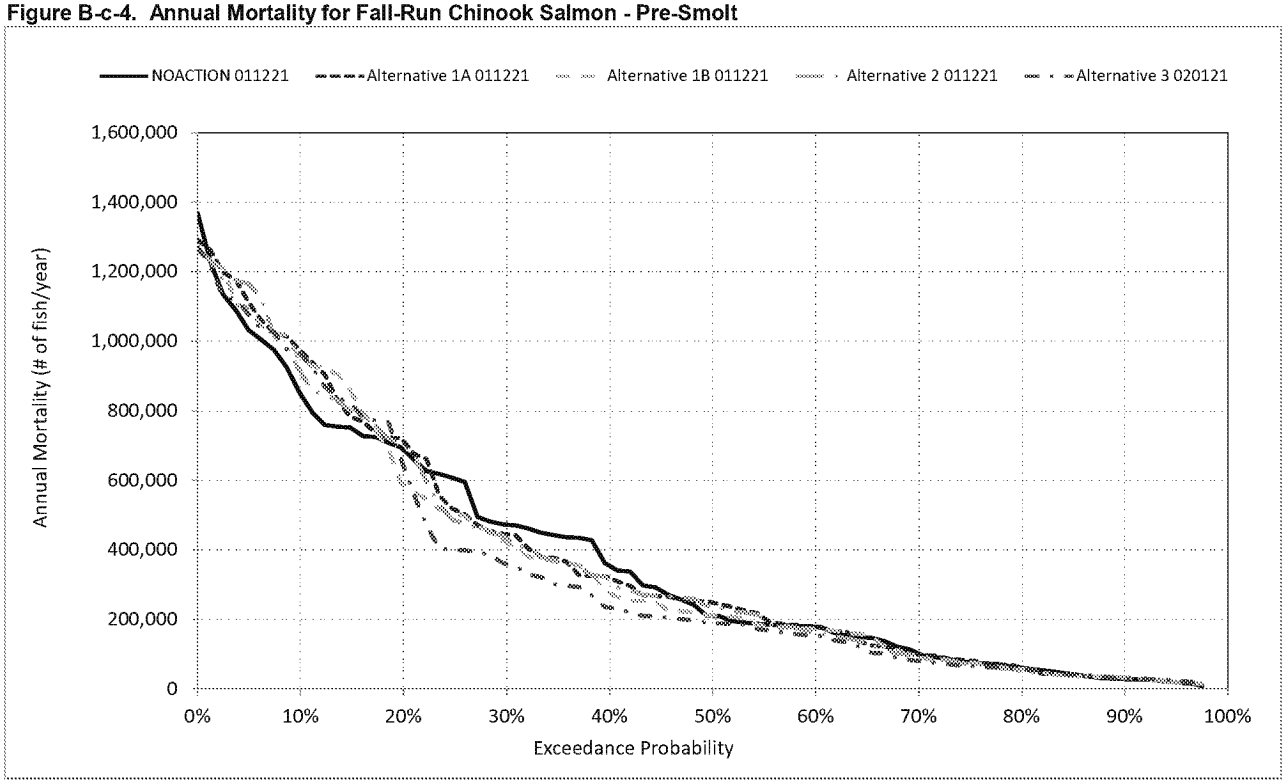


Figure B-c-5. Annual Mortality for Fall-Run Chinook Salmon - Immature Smolt

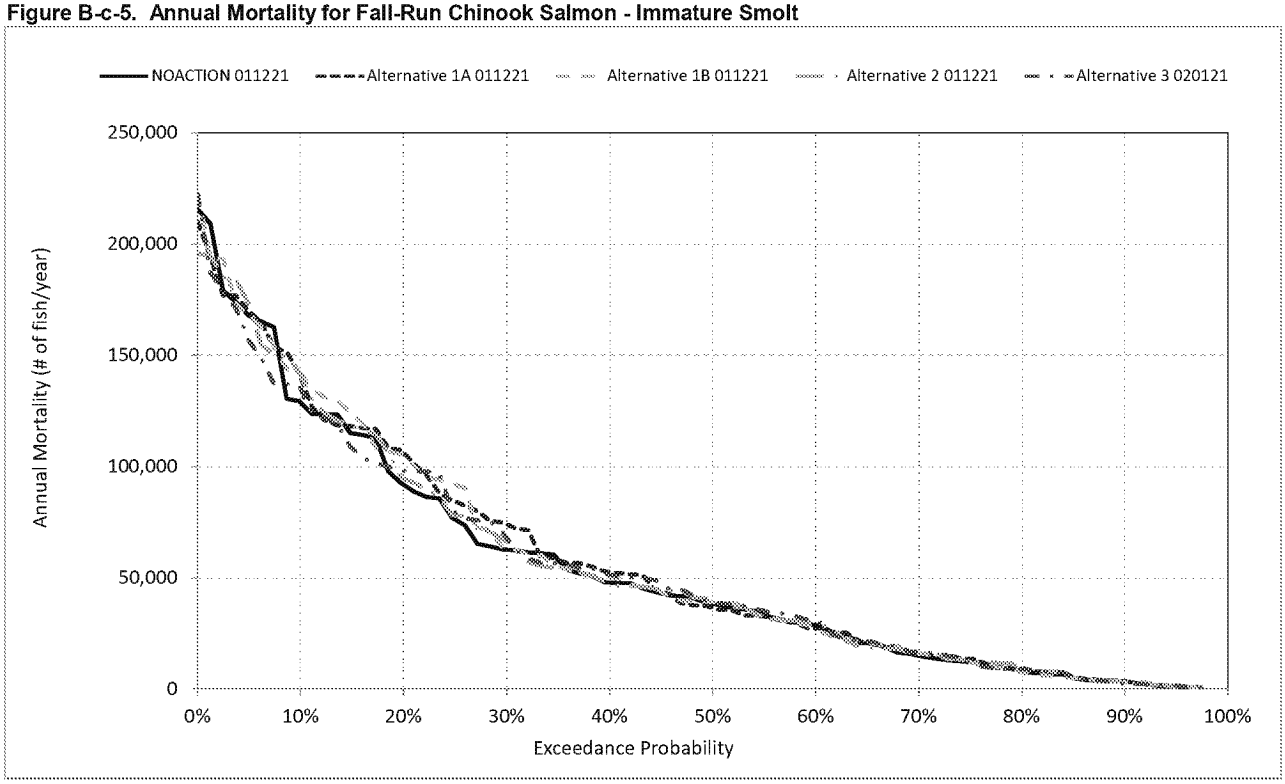


Figure B-c-6. Annual Mortality for Fall-Run Chinook Salmon - Pre- & Immature Smolts

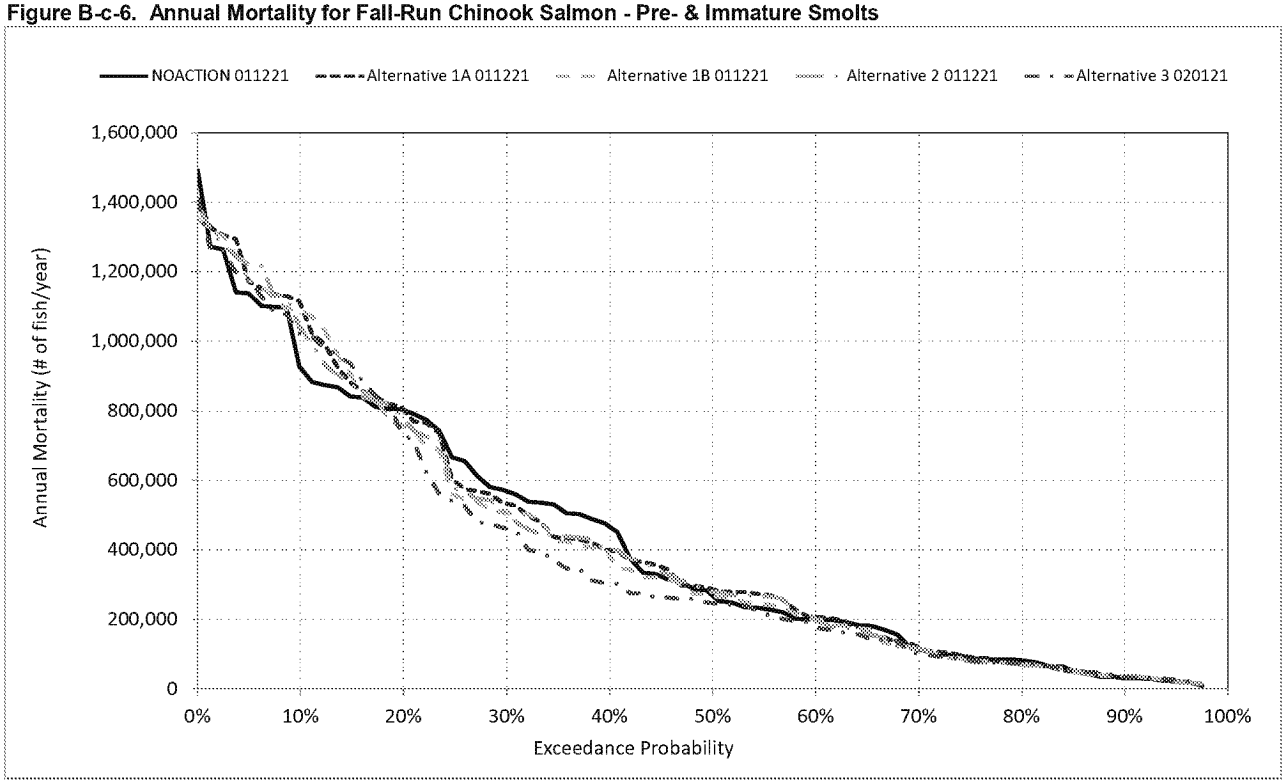


Figure B-c-7. Annual Mortality for Fall-Run Chinook Salmon - All Lifestages

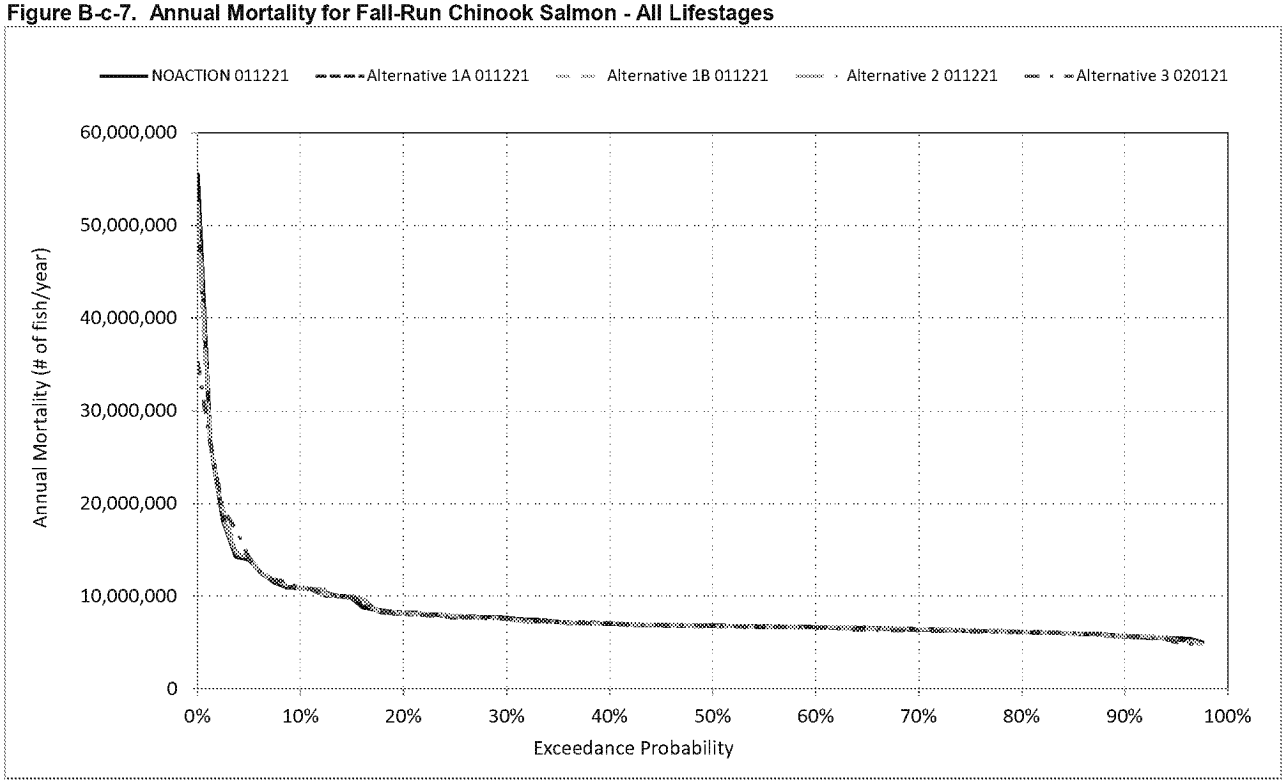


Figure B-c-8. Incubation - Habitat based Annual Mortality for Fall-Run Chinook Salmon

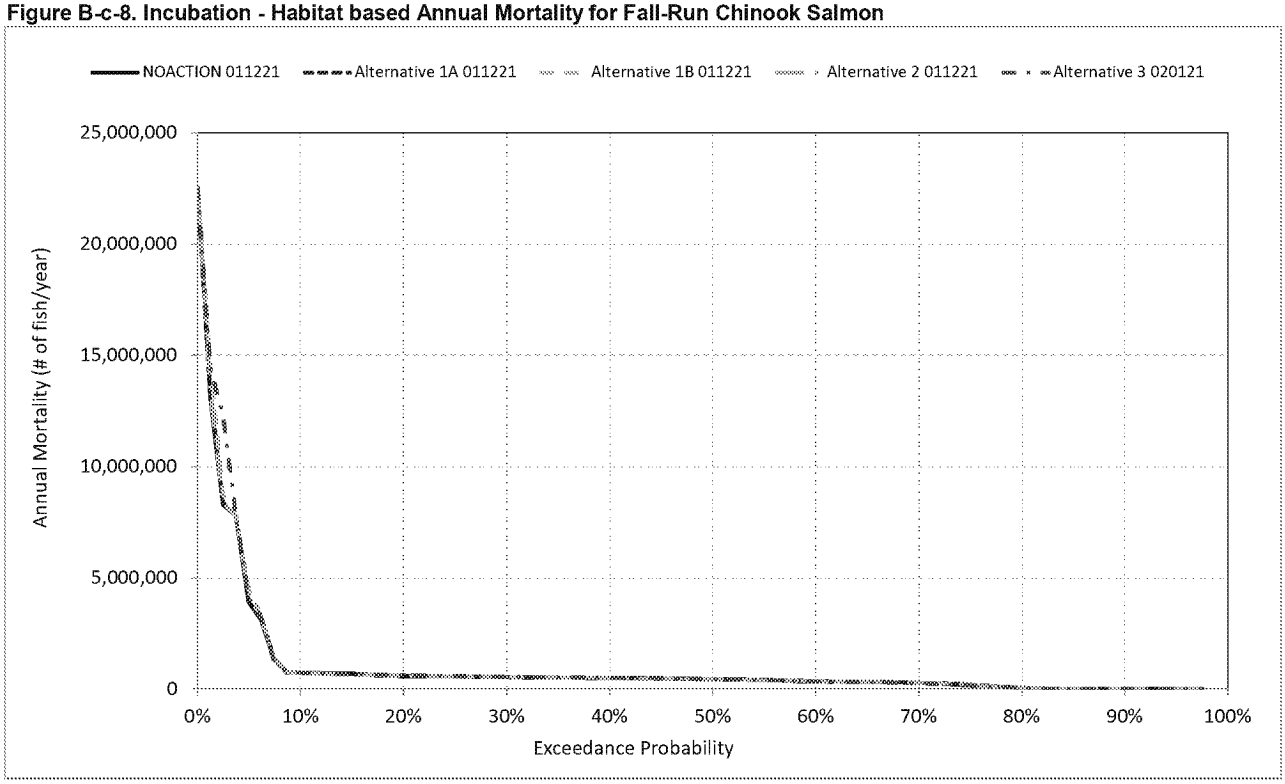


Figure B-c-9. Super-imposition - Habitat based Annual Mortality for Fall-Run Chinook Salmon

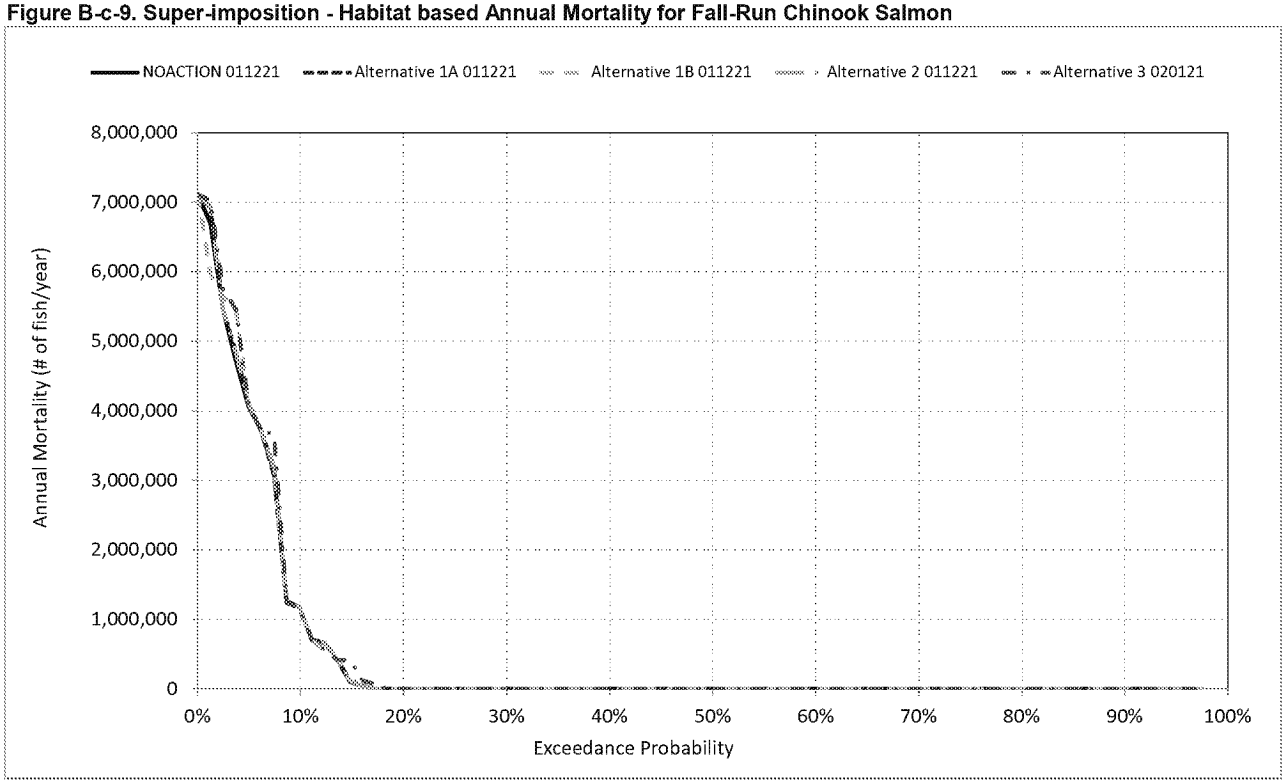


Figure B-c-10. Fry - Habitat based Annual Mortality for Fall-Run Chinook Salmon

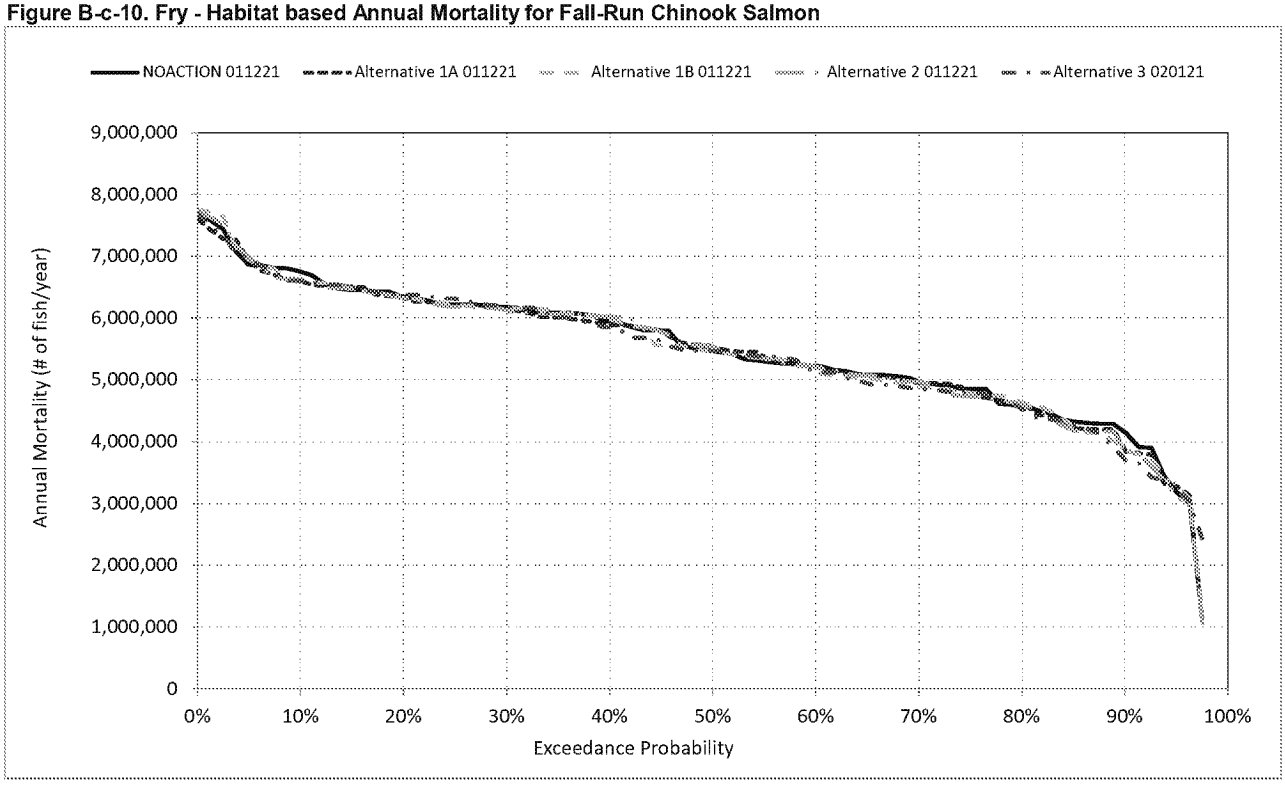


Figure B-c-11. Pre-smolt - Habitat based Annual Mortality for Fall-Run Chinook Salmon

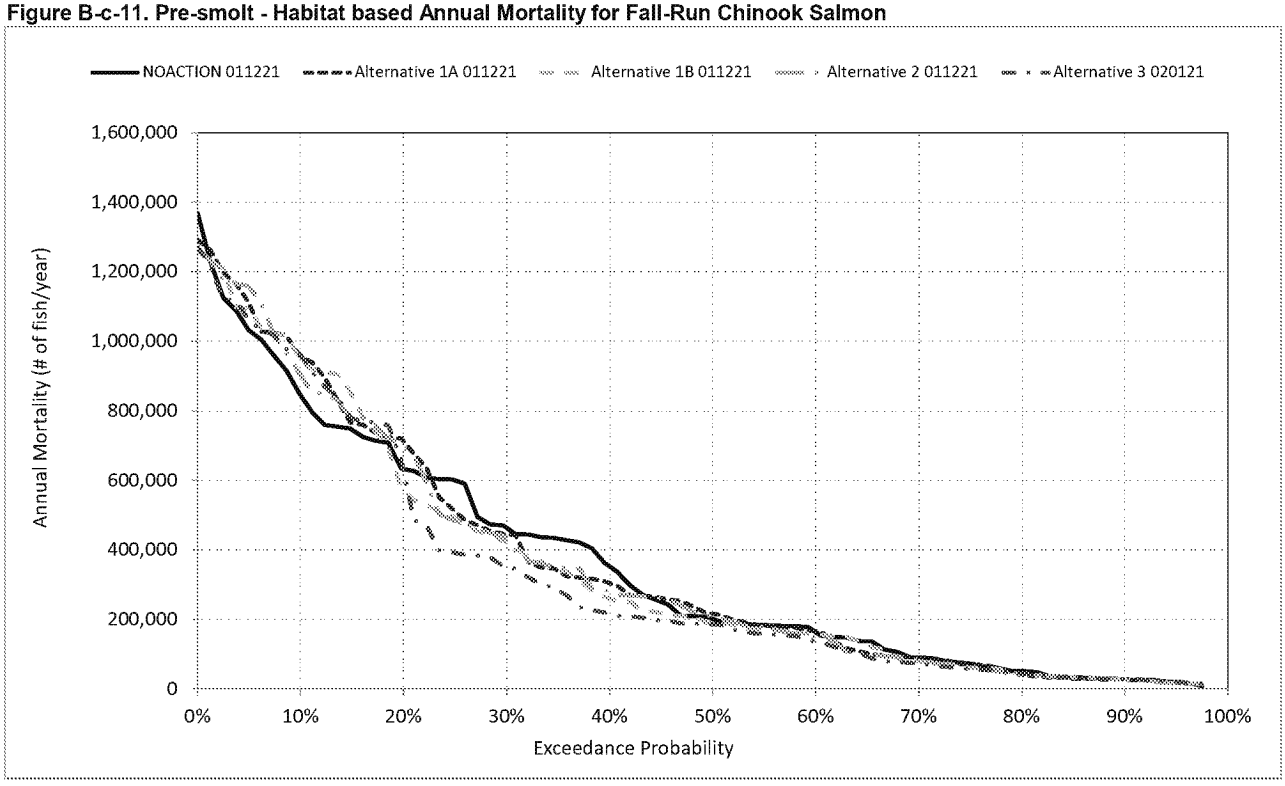


Figure B-c-12. Immature Smolt - Habitat based Annual Mortality for Fall-Run Chinook Salmon

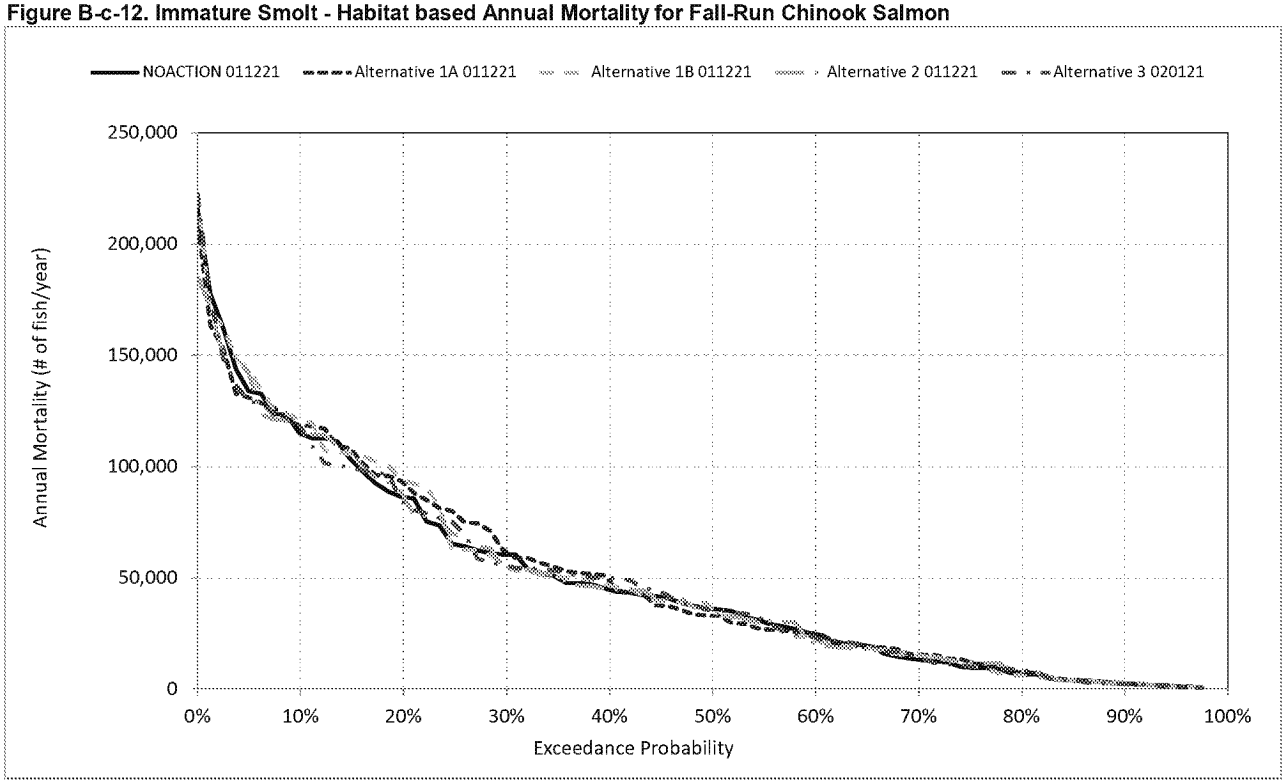


Figure B-c-13. Total Habitat based Annual Mortality for Fall-Run Chinook Salmon

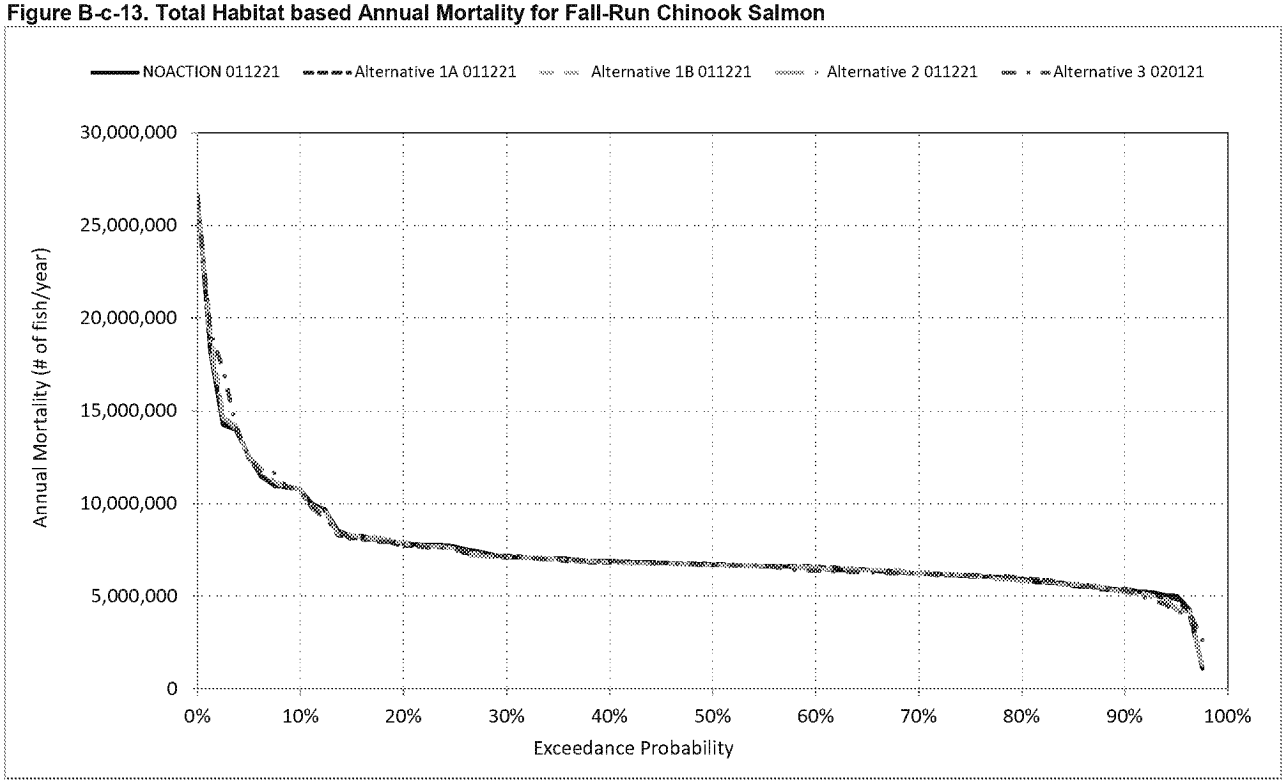


Figure B-c-14. Pre-Spawn Mortality - Temperature based Annual Mortality for Fall-Run Chinook Salmon

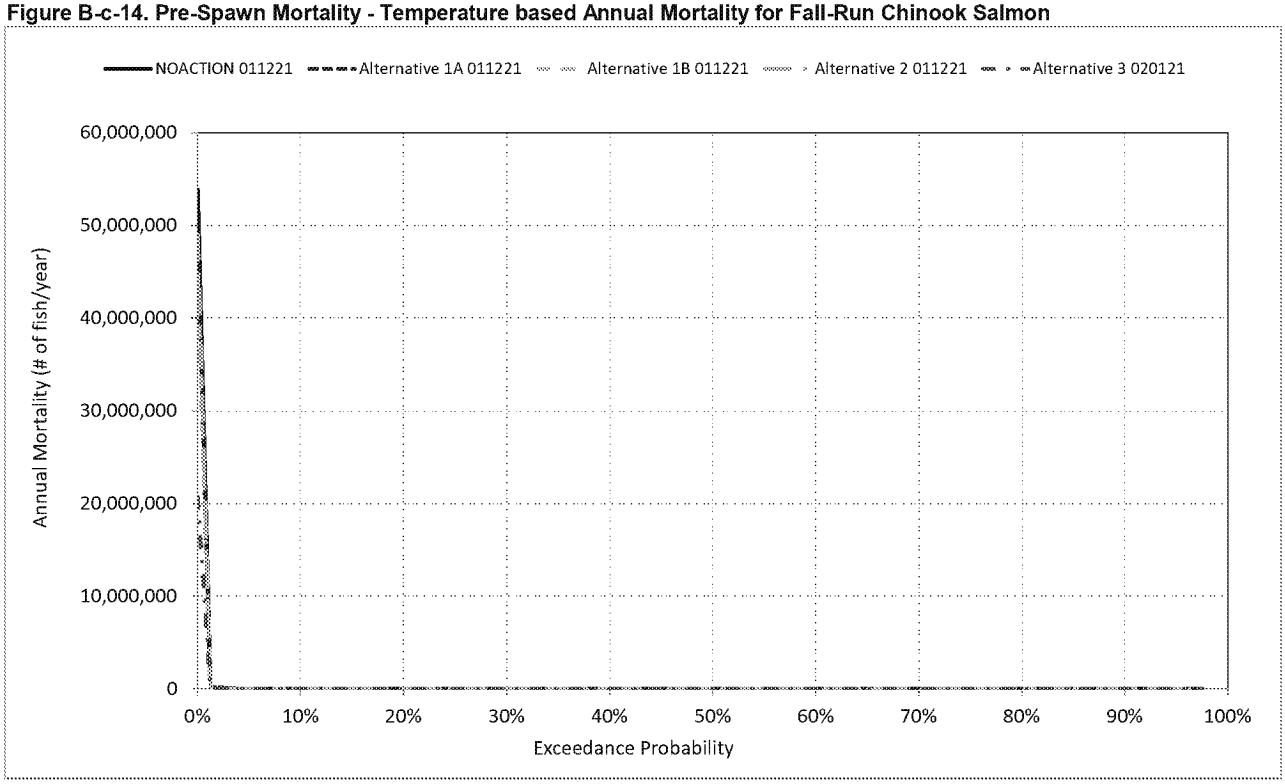


Figure B-c-15. Eggs - Temperature based Annual Mortality for Fall-Run Chinook Salmon

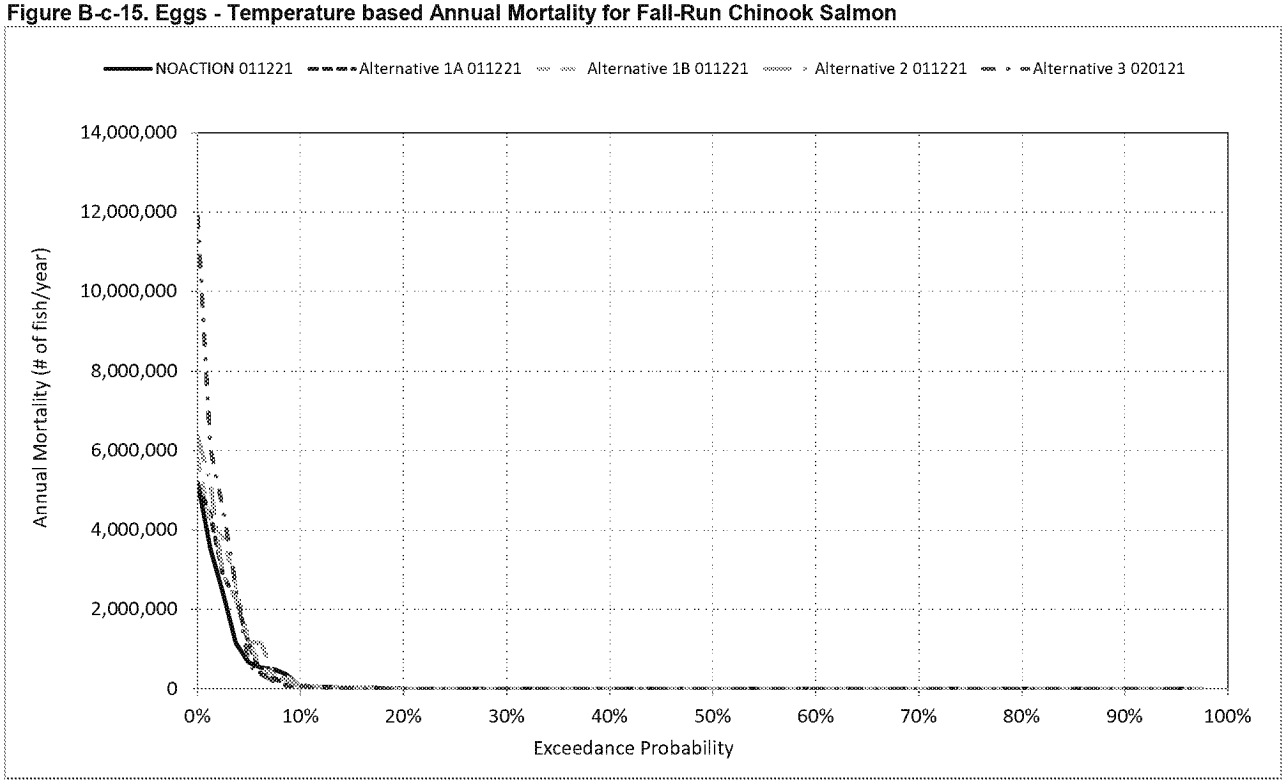


Figure B-c-16. Fry - Temperature based Annual Mortality for Fall-Run Chinook Salmon

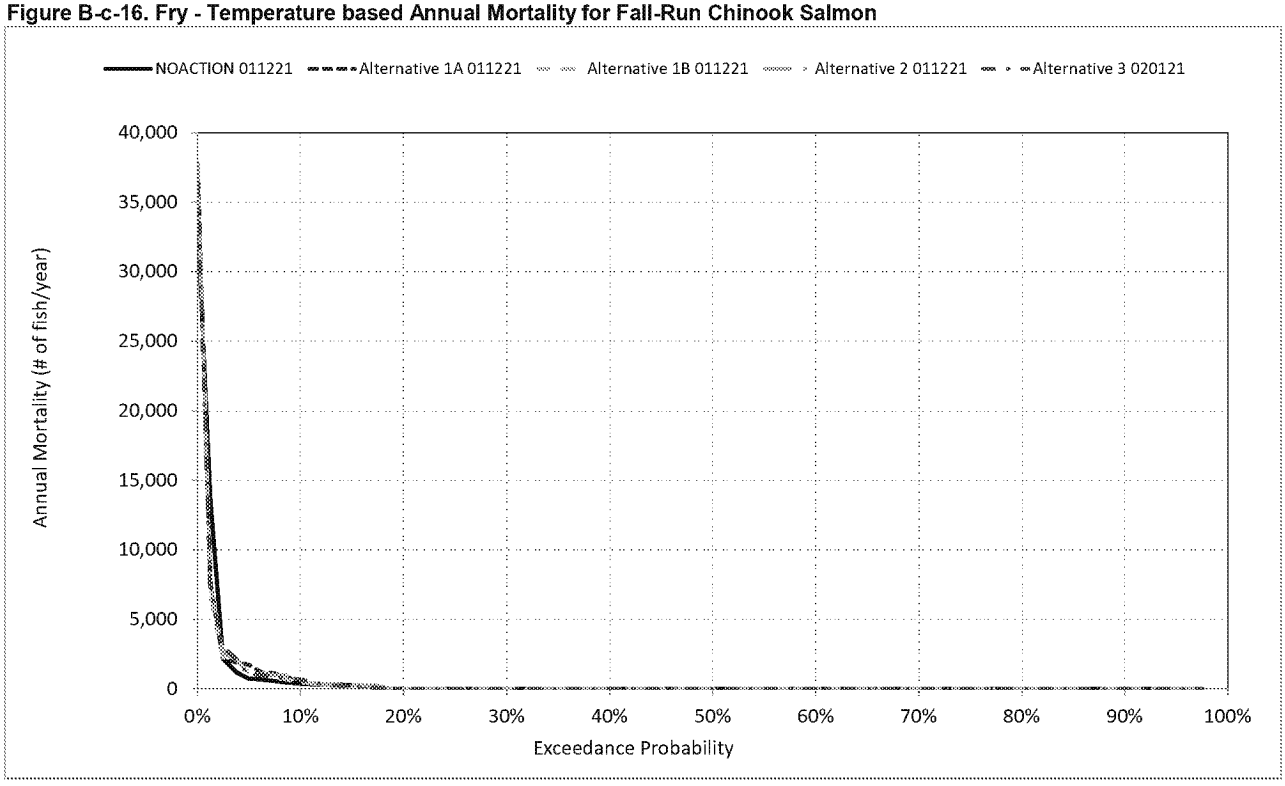


Figure B-c-17. Pre-smolt - Temperature based Annual Mortality for Fall-Run Chinook Salmon

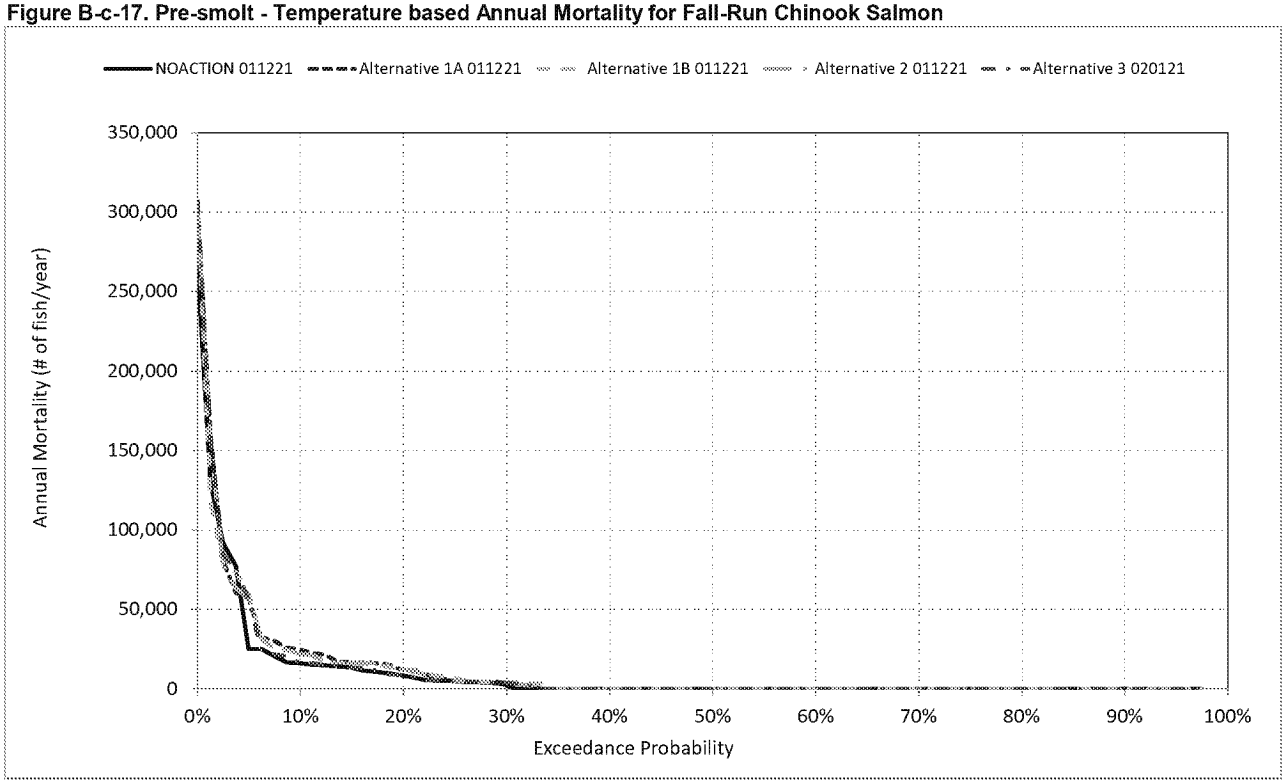


Figure B-c-18. Immature Smolt - Temperature based Annual Mortality for Fall-Run Chinook Salmon

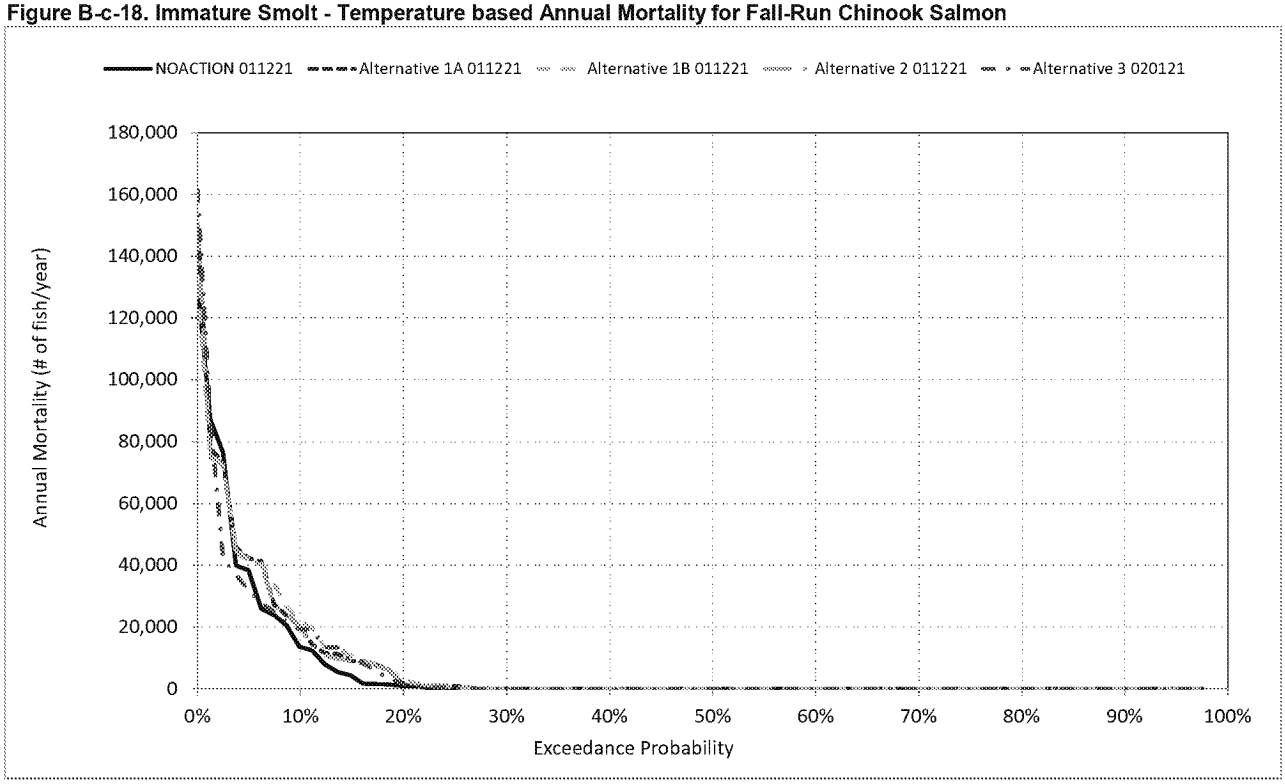


Figure B-c-19. Total Temperature based Annual Mortality for Fall-Run Chinook Salmon

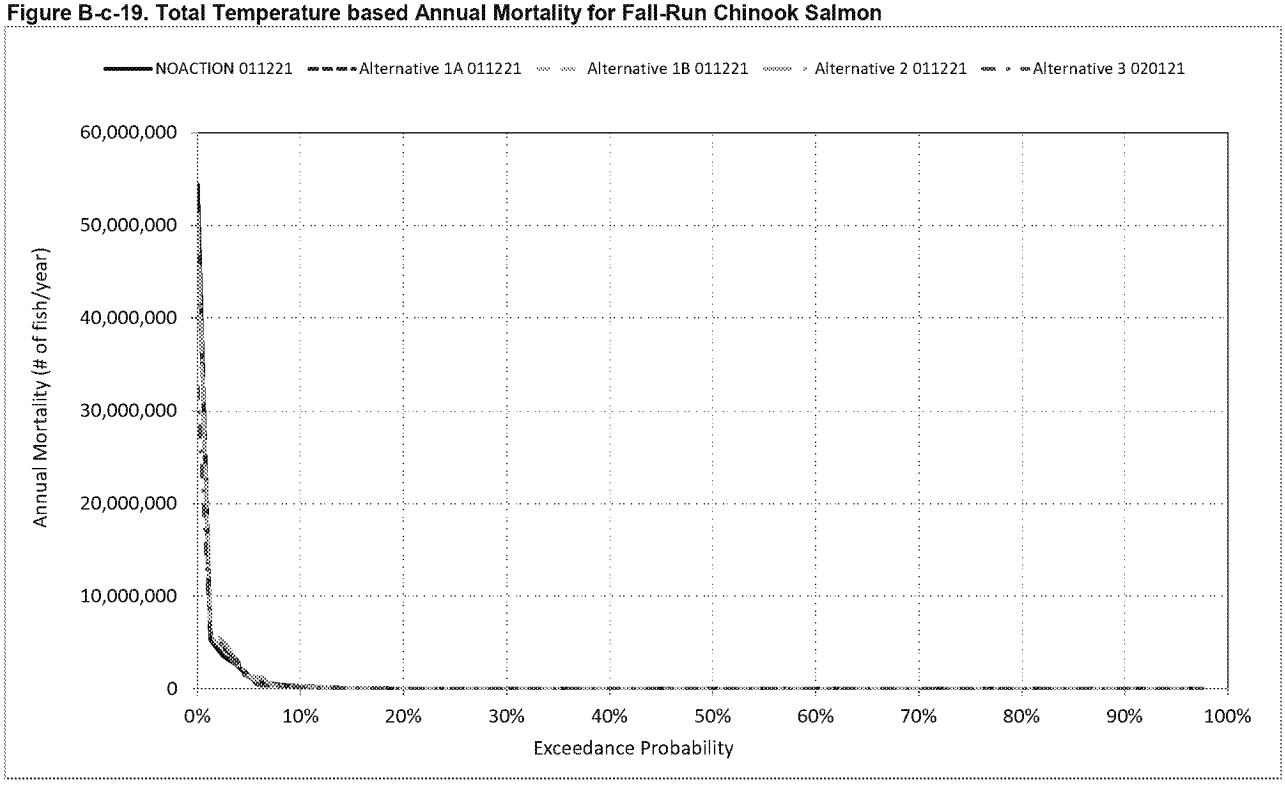


Figure B-d-1. Annual Potential Production for Late Fall-Run Chinook Salmon

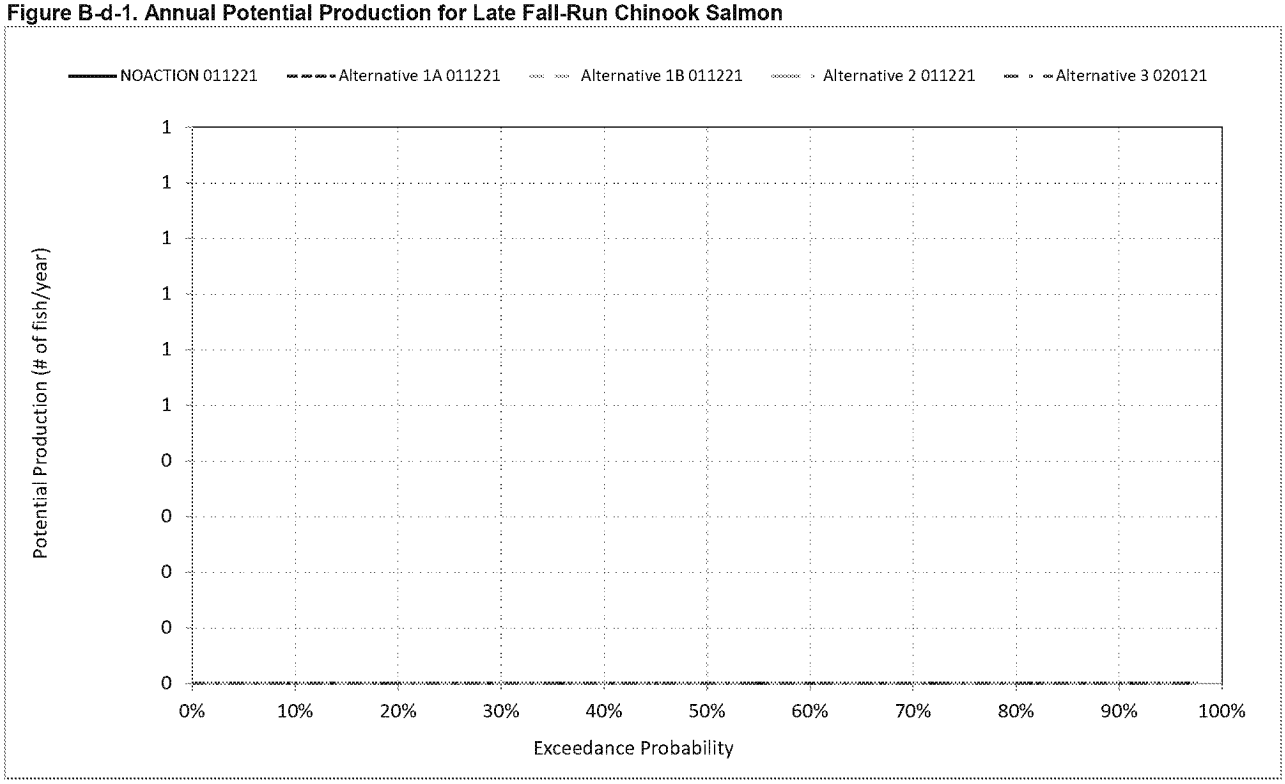


Figure B-d-2. Annual Mortality for Late Fall-Run Chinook Salmon - Eggs

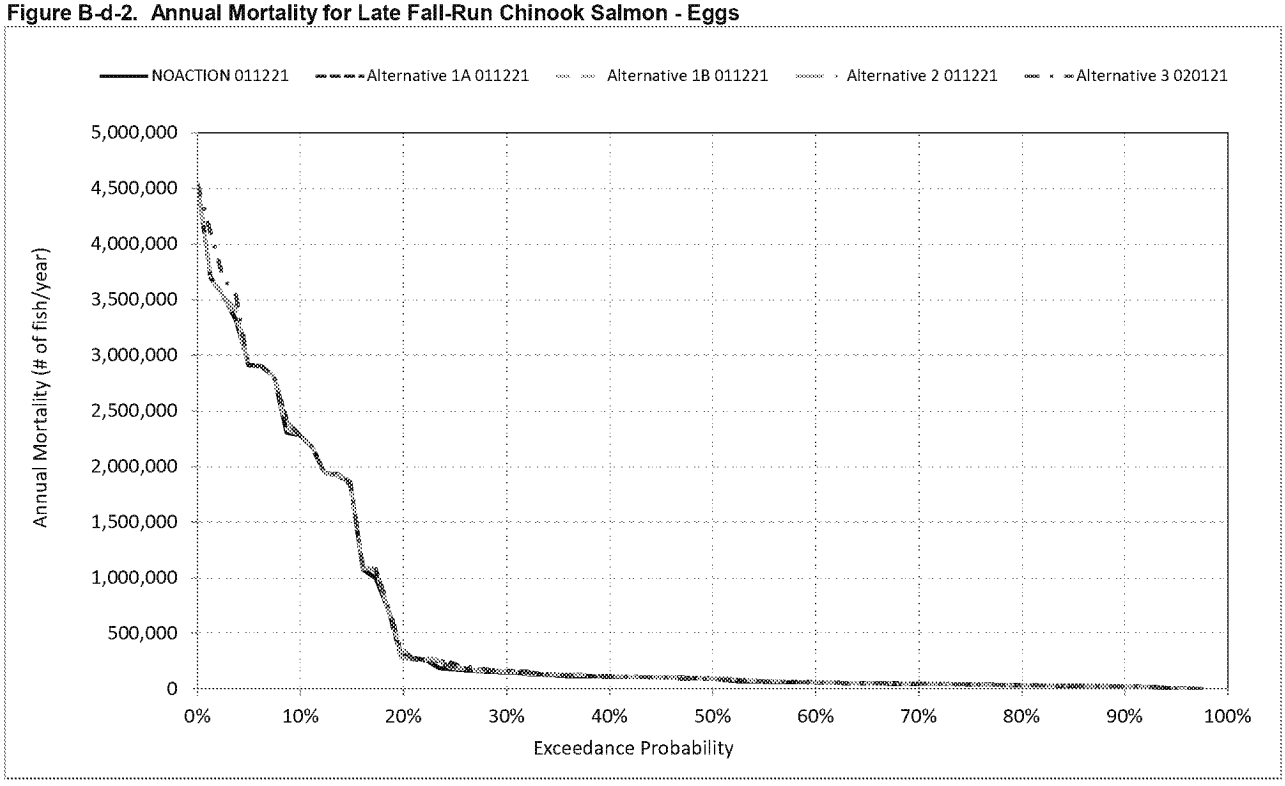


Figure B-d-3. Annual Mortality for Late Fall-Run Chinook Salmon - Fry

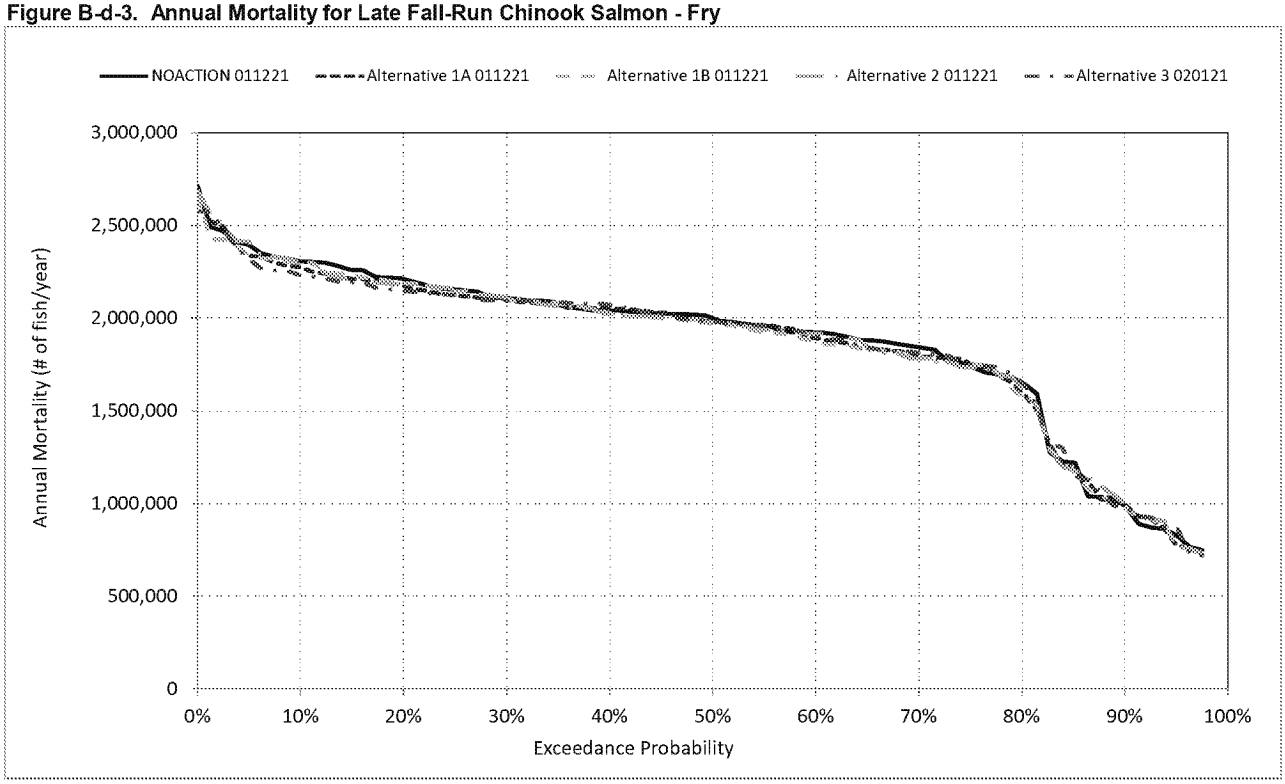


Figure B-d-4. Annual Mortality for Late Fall-Run Chinook Salmon - Pre-Smolt

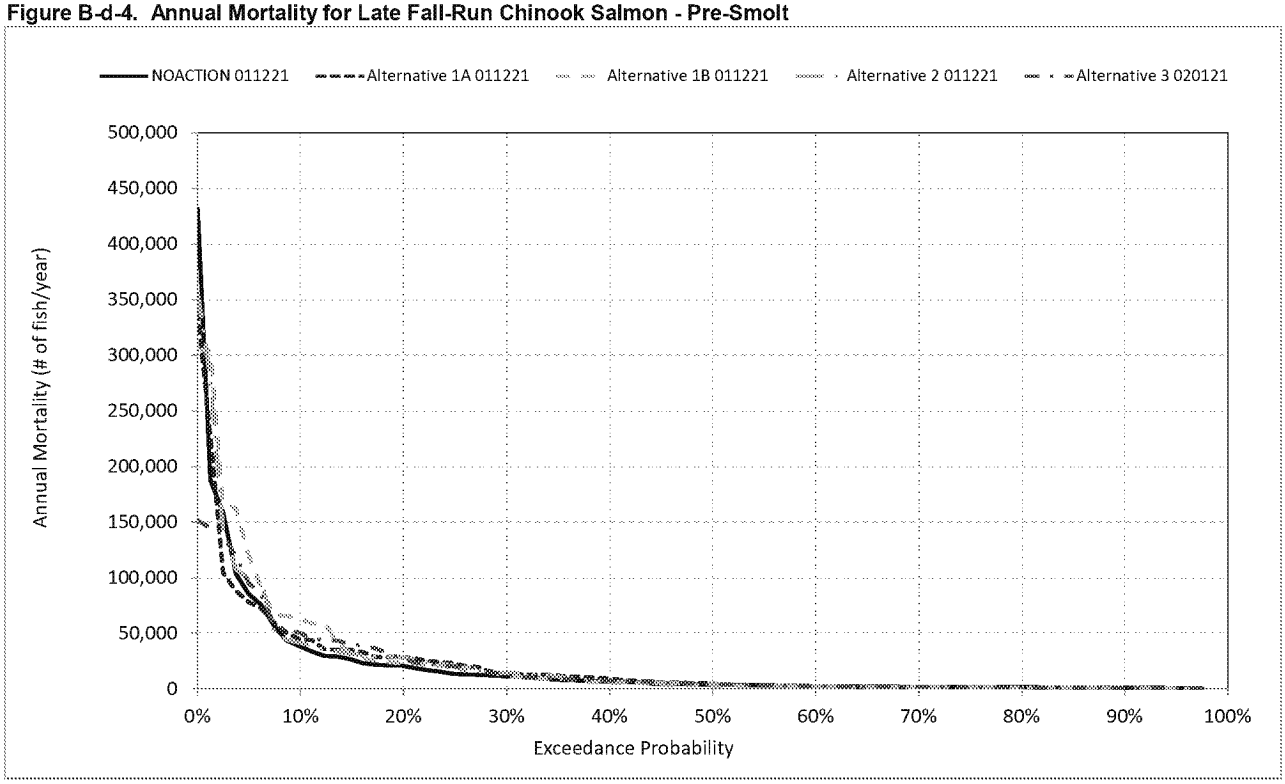


Figure B-d-5. Annual Mortality for Late Fall-Run Chinook Salmon - Immature Smolt

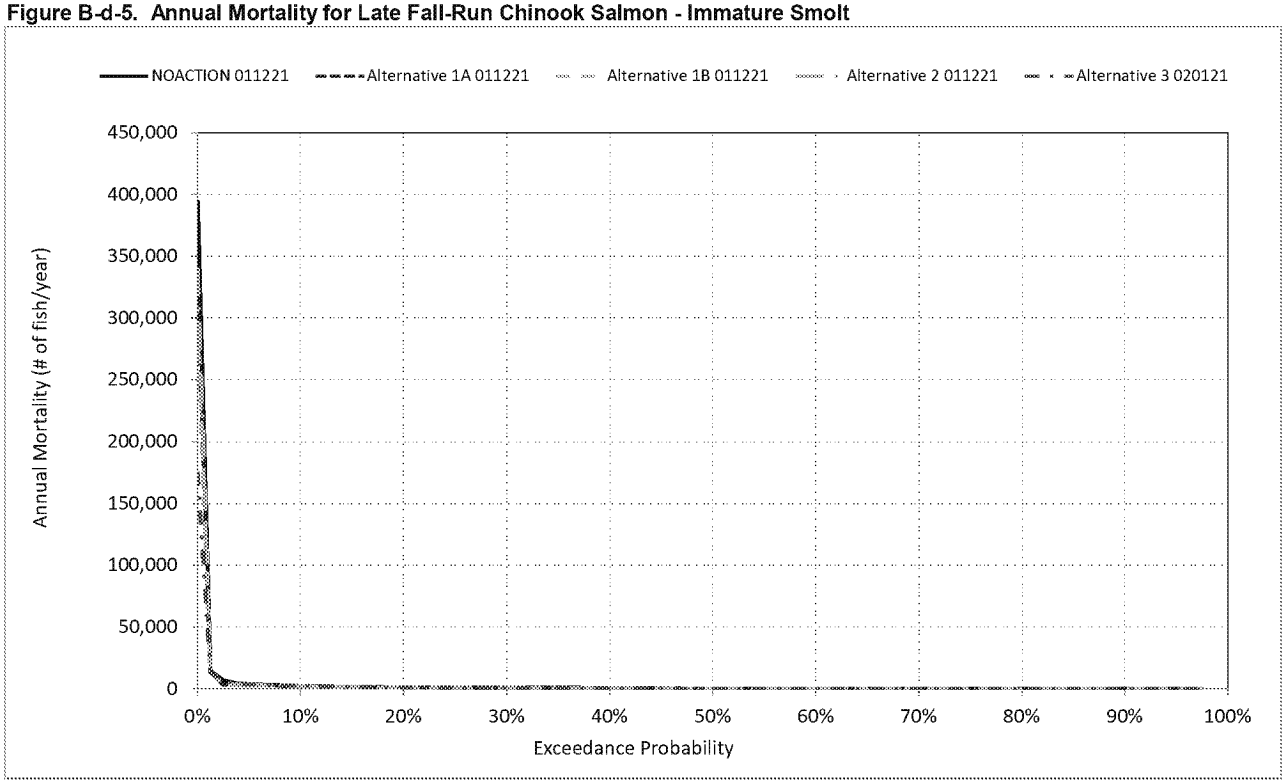


Figure B-d-6. Annual Mortality for Late Fall-Run Chinook Salmon - Pre- & Immature Smolts

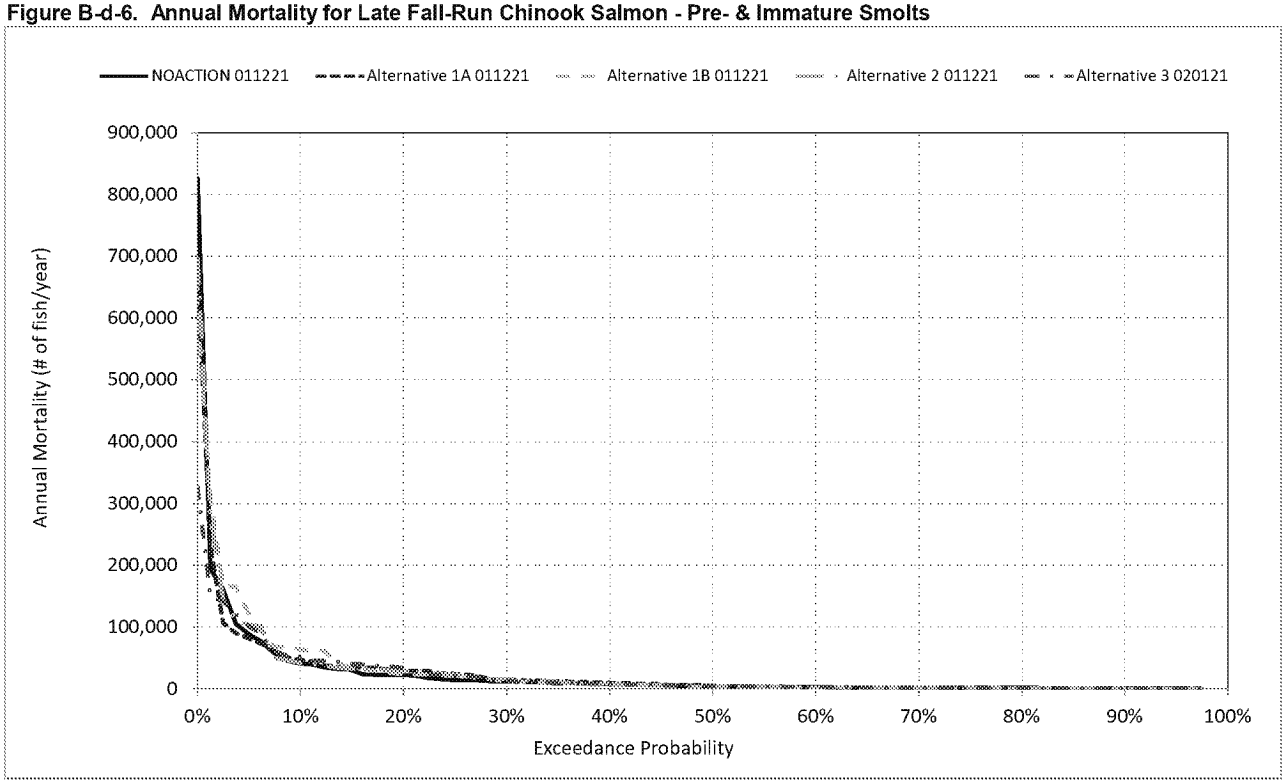


Figure B-d-7. Annual Mortality for Late Fall-Run Chinook Salmon - All Lifestages

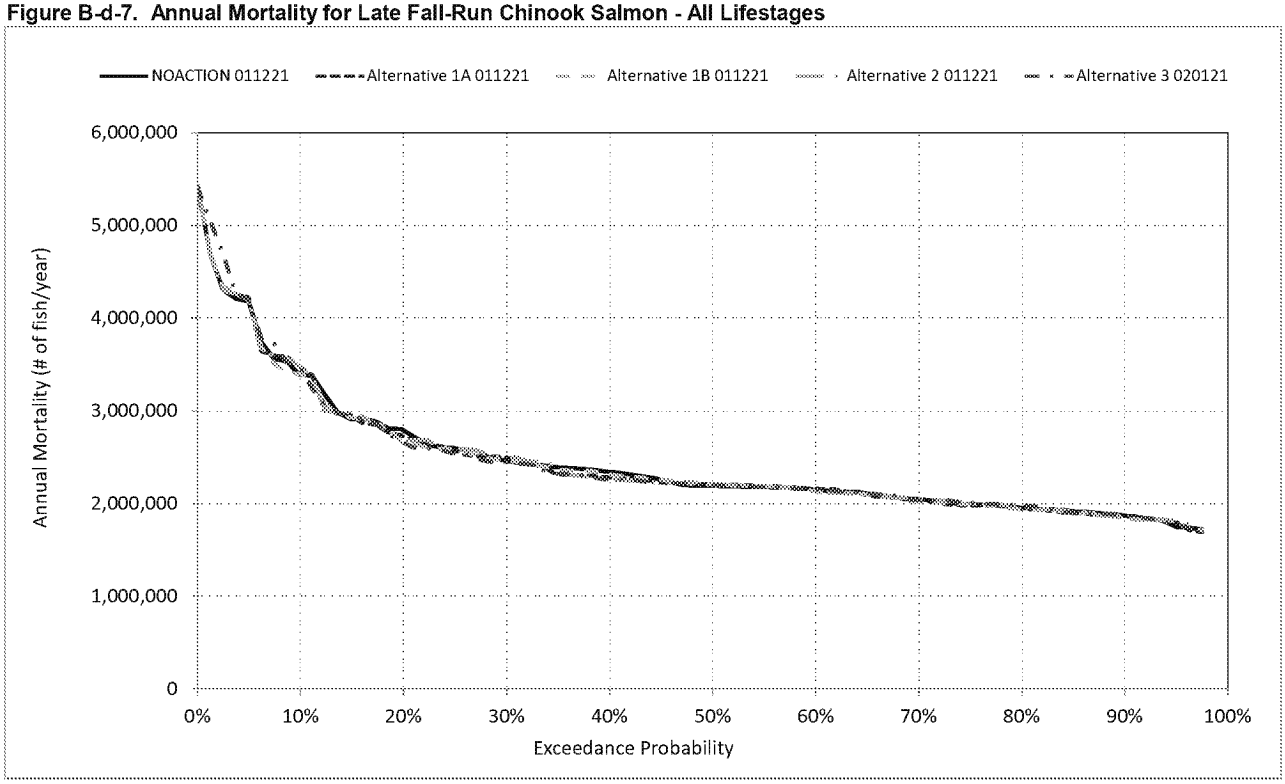


Figure B-d-8. Incubation - Habitat based Annual Mortality for Late Fall-Run Chinook Salmon

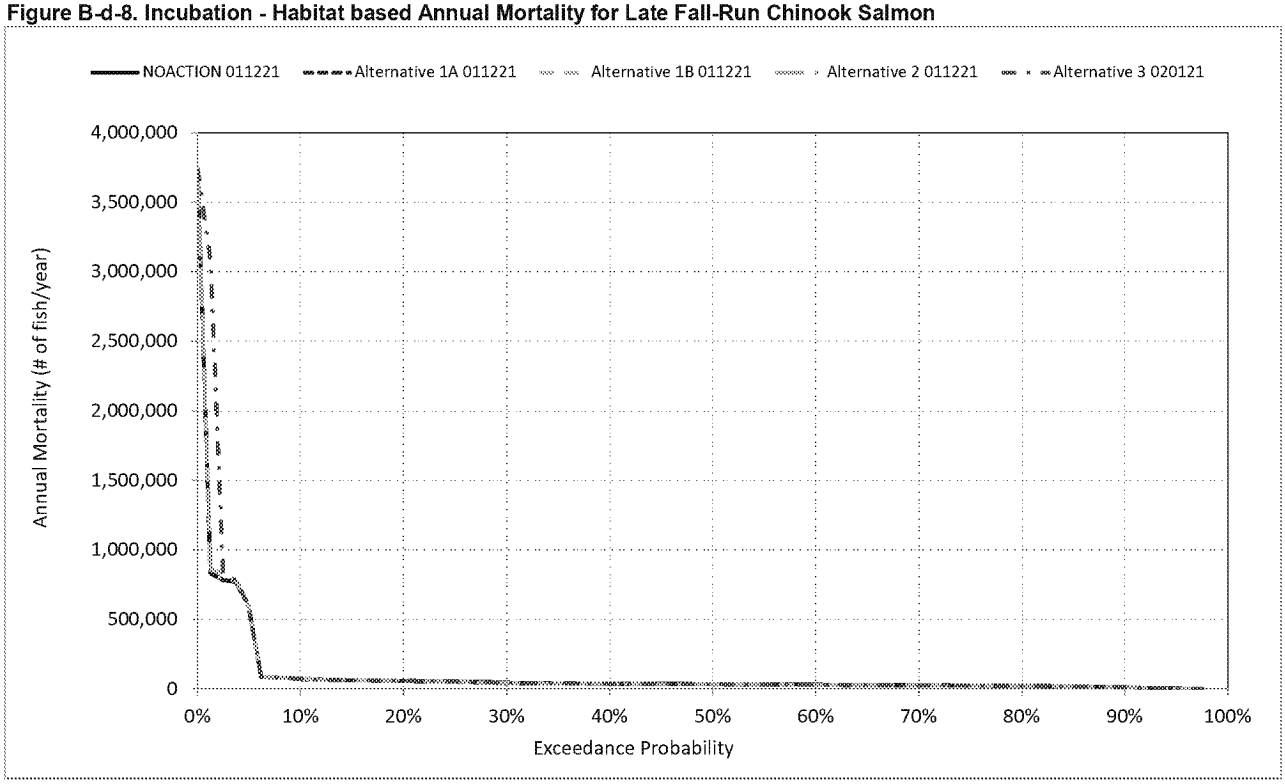


Figure B-d-9. Super-imposition - Habitat based Annual Mortality for Late Fall-Run Chinook Salmon

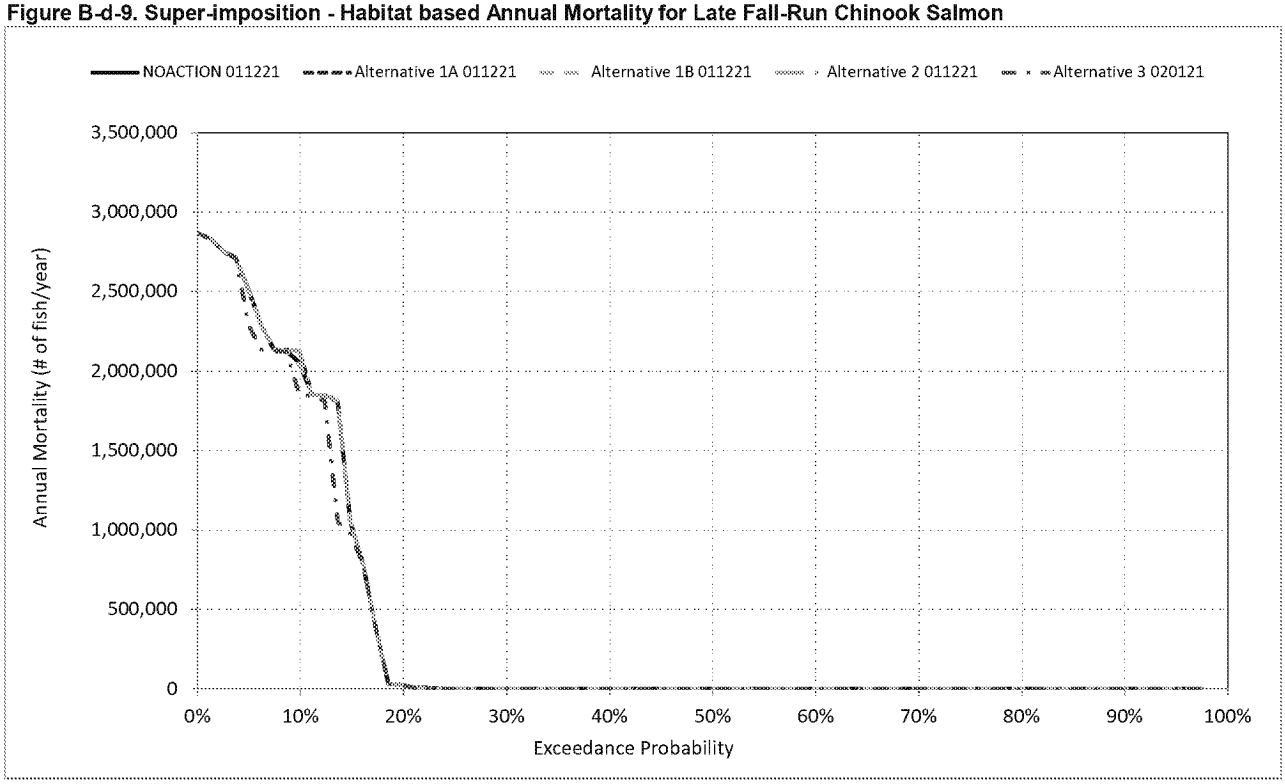


Figure B-d-10. Fry - Habitat based Annual Mortality for Late Fall-Run Chinook Salmon

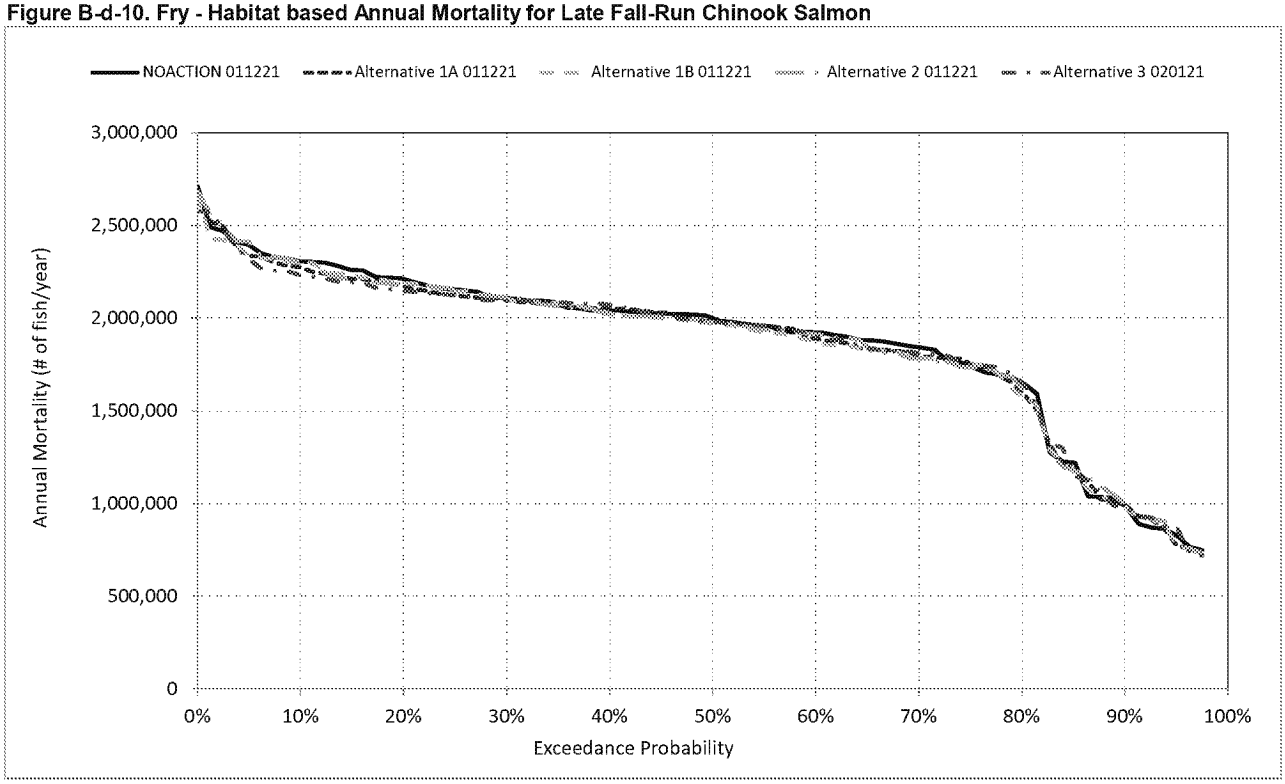


Figure B-d-11. Pre-smolt - Habitat based Annual Mortality for Late Fall-Run Chinook Salmon

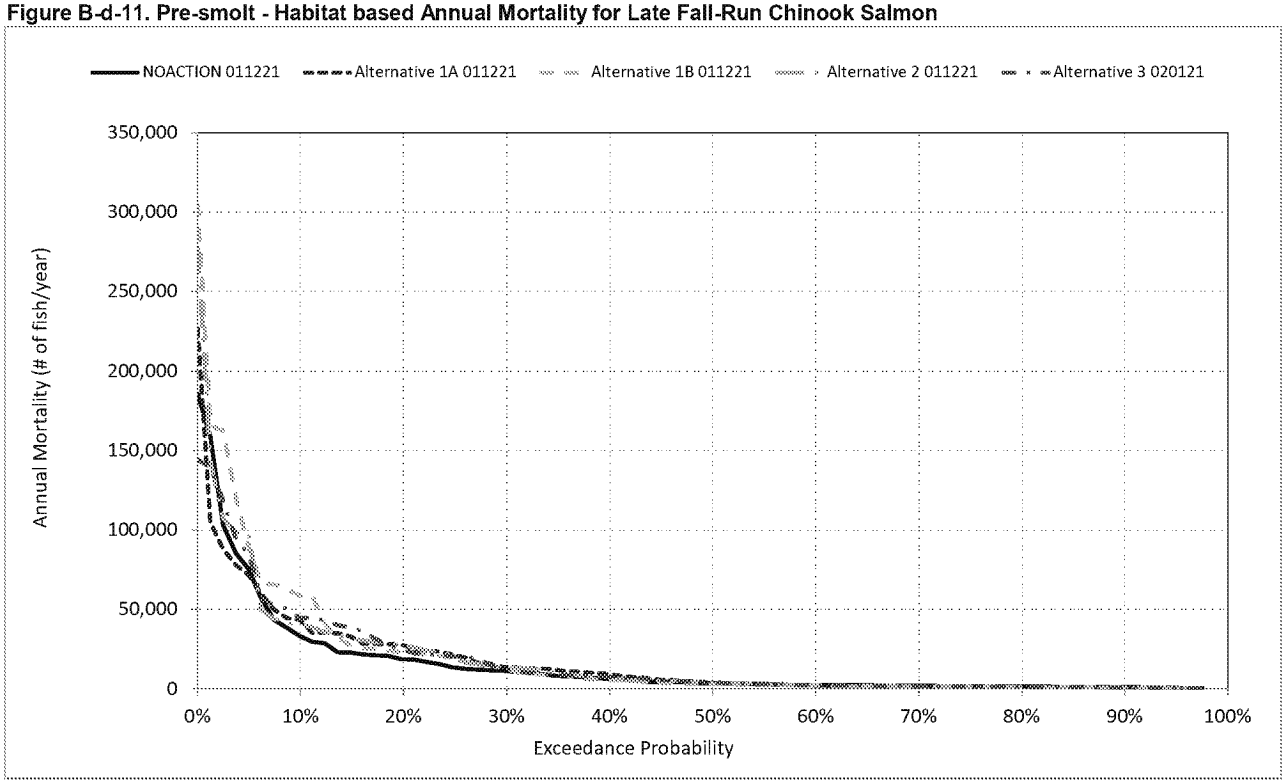


Figure B-d-12. Immature Smolt - Habitat based Annual Mortality for Late Fall-Run Chinook Salmon

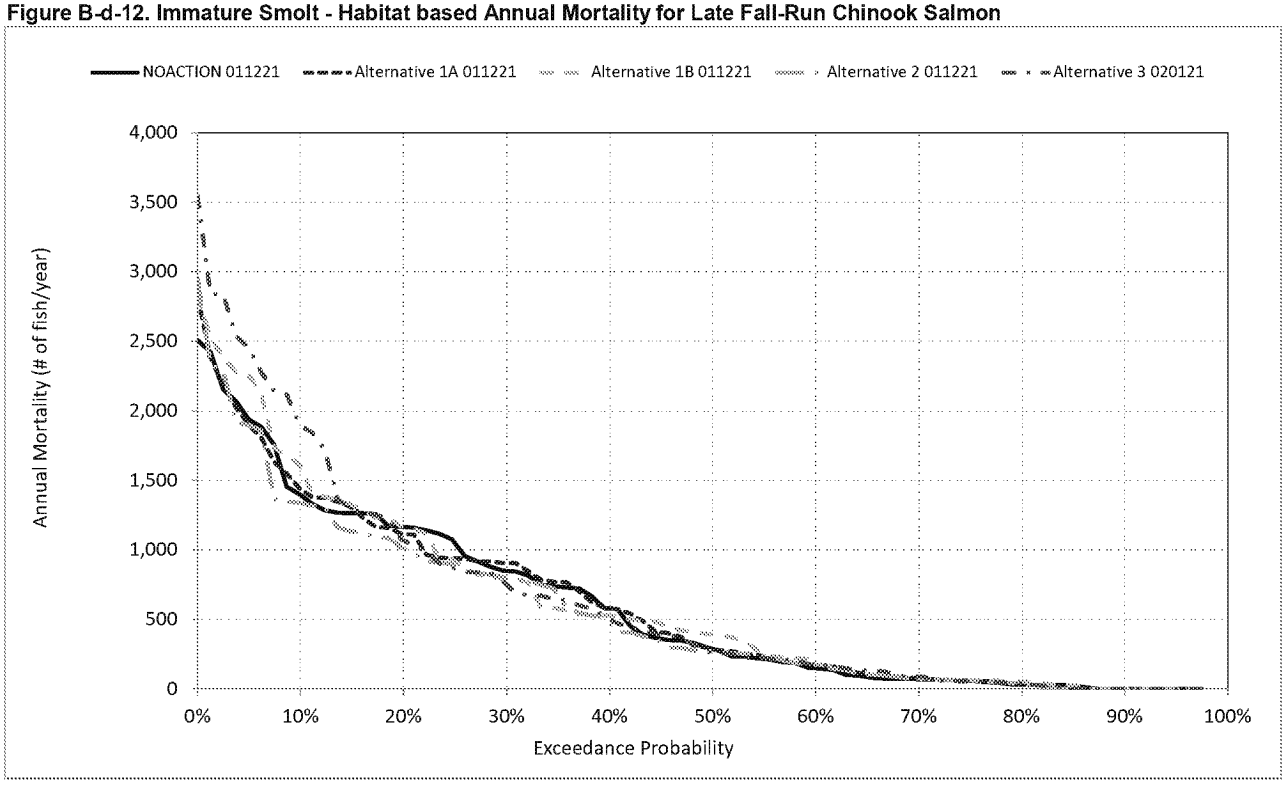


Figure B-d-13. Total Habitat based Annual Mortality for Late Fall-Run Chinook Salmon

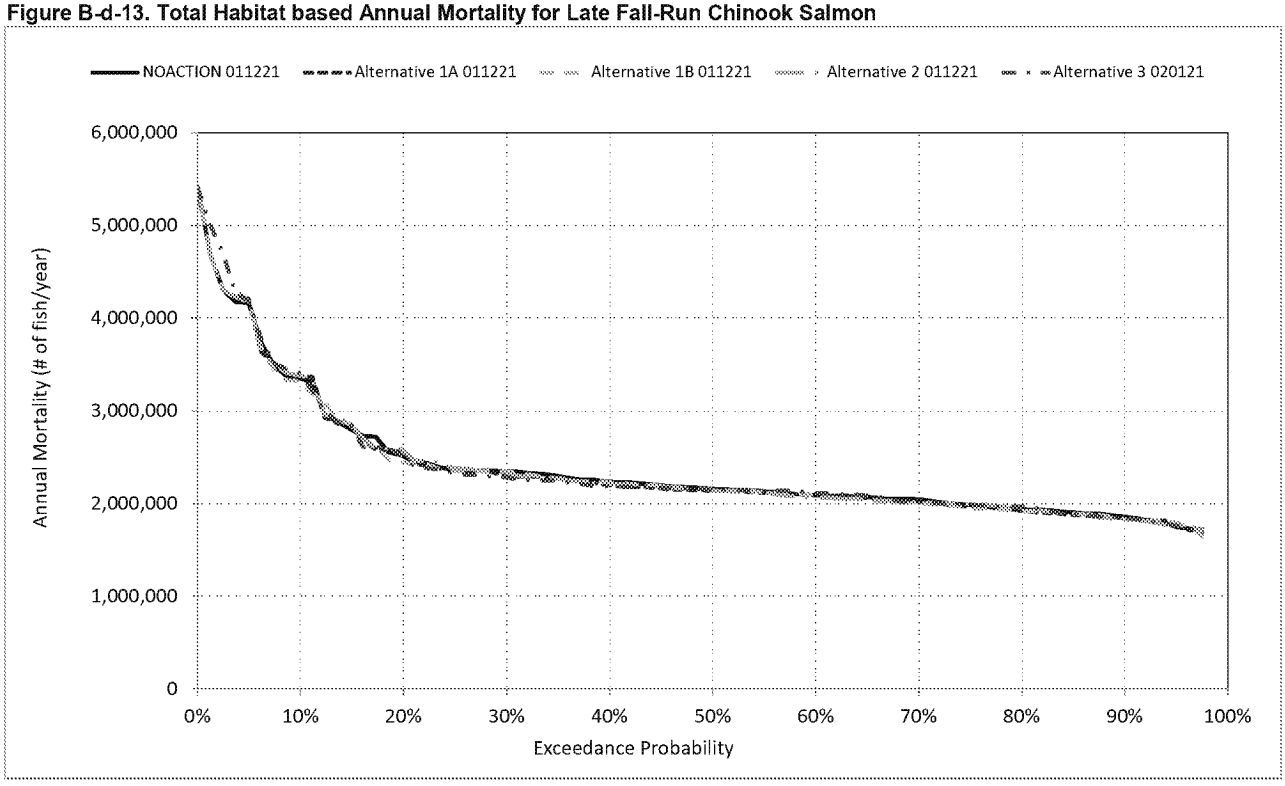


Figure B-d-14. Pre-Spawn Mortality - Temperature based Annual Mortality for Late Fall-Run Chinook Salmon

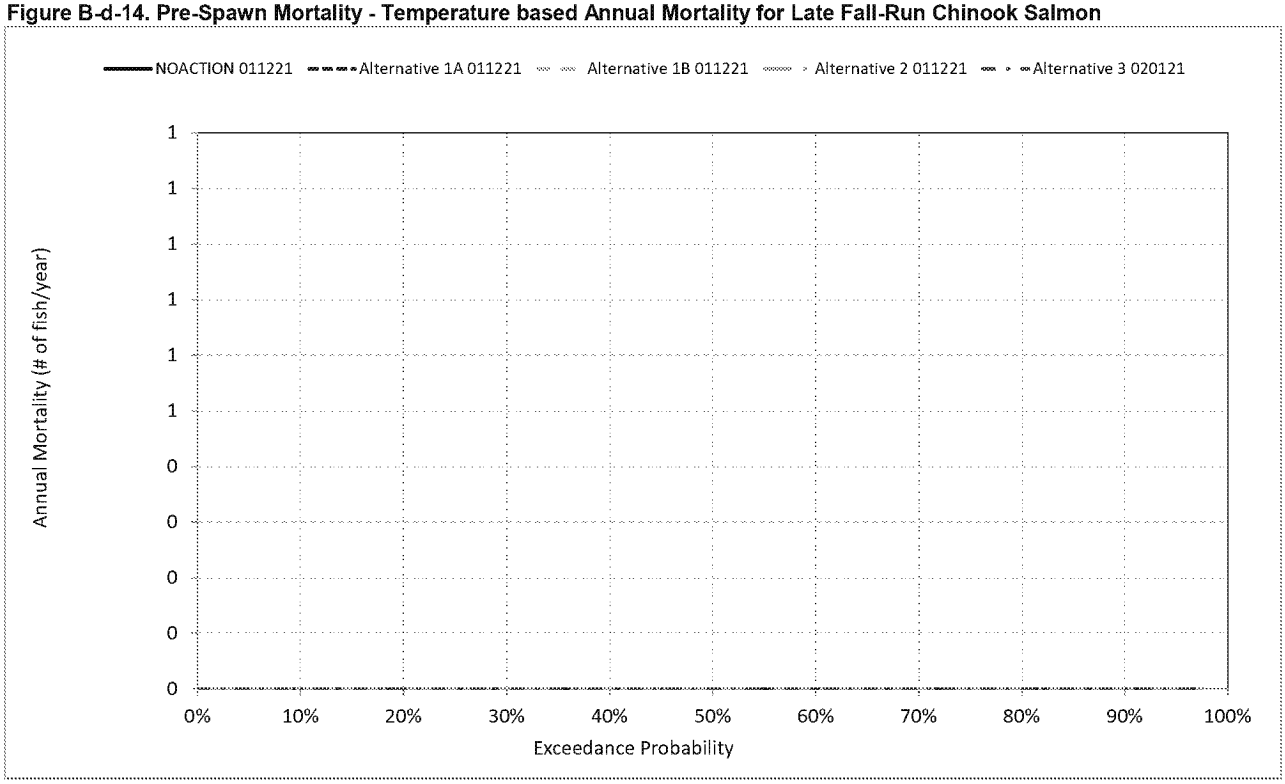


Figure B-d-15. Eggs - Temperature based Annual Mortality for Late Fall-Run Chinook Salmon

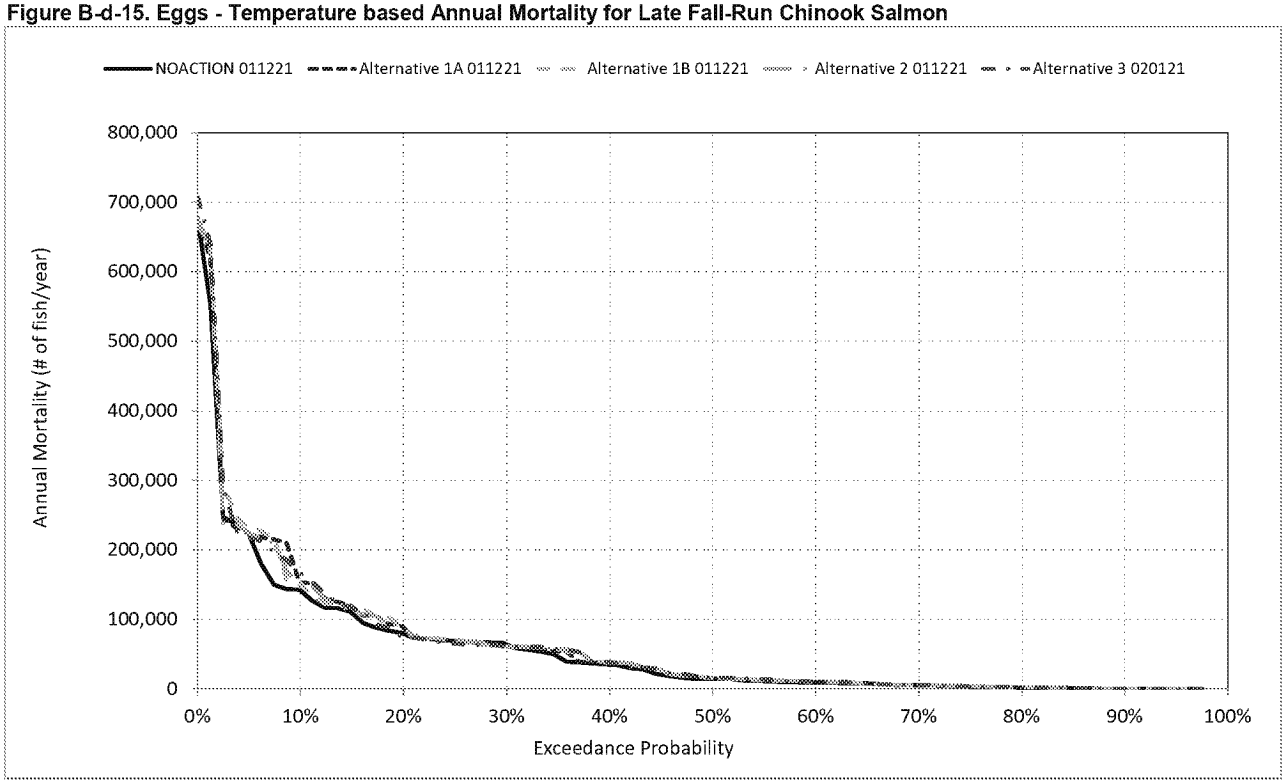


Figure B-d-16. Fry - Temperature based Annual Mortality for Late Fall-Run Chinook Salmon

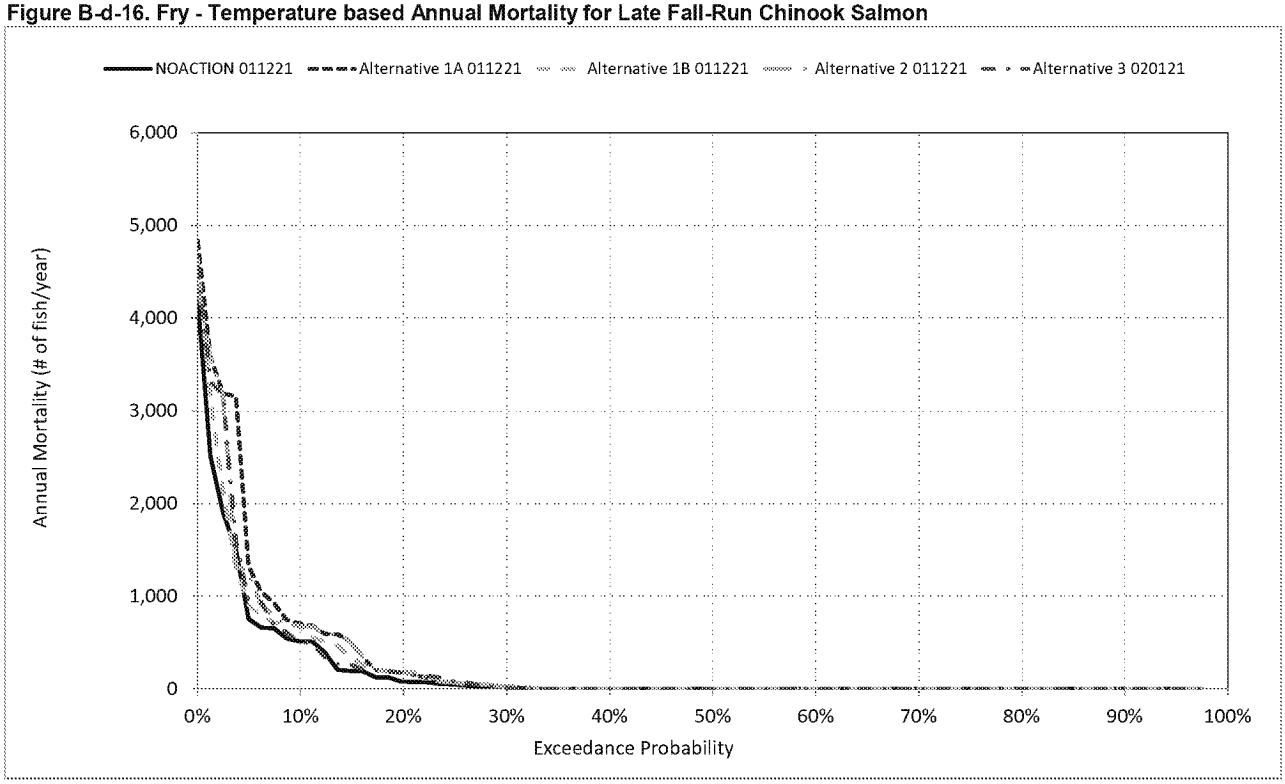


Figure B-d-17. Pre-smolt - Temperature based Annual Mortality for Late Fall-Run Chinook Salmon

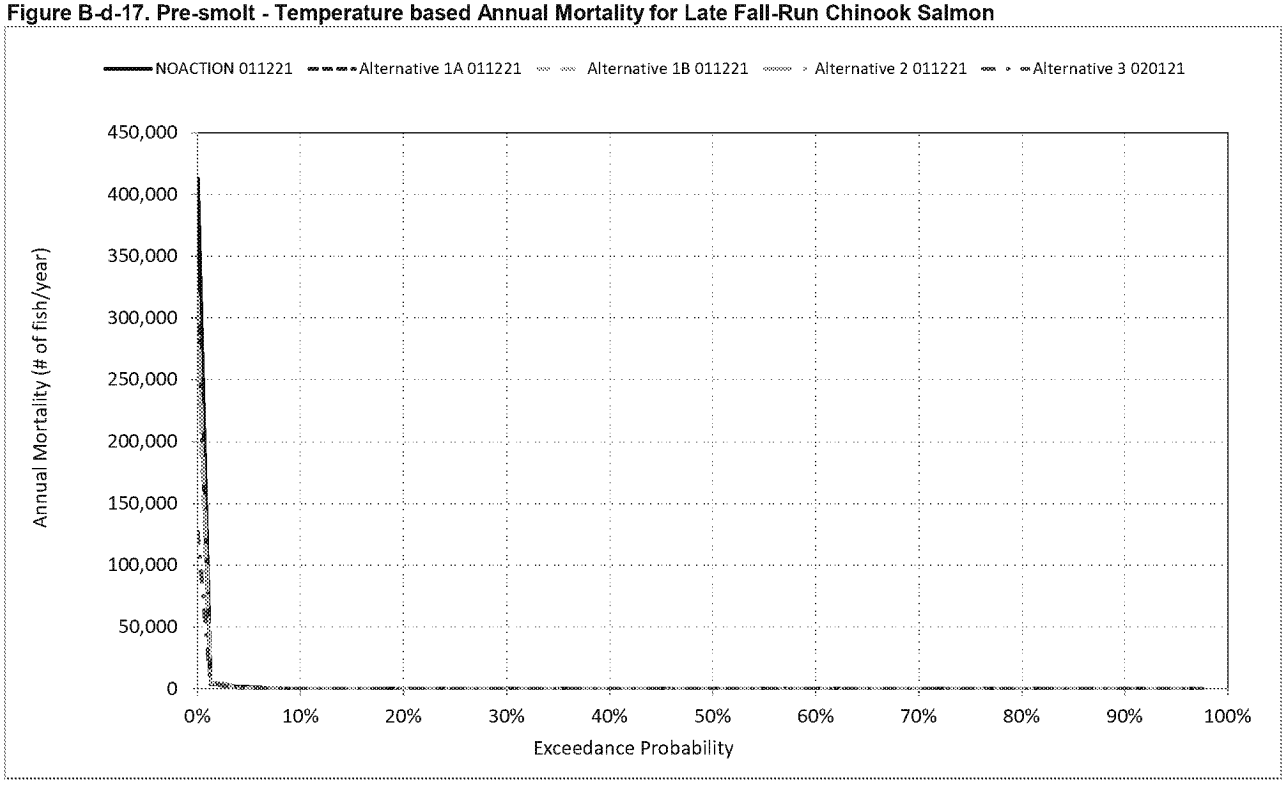


Figure B-d-18. Immature Smolt - Temperature based Annual Mortality for Late Fall-Run Chinook Salmon

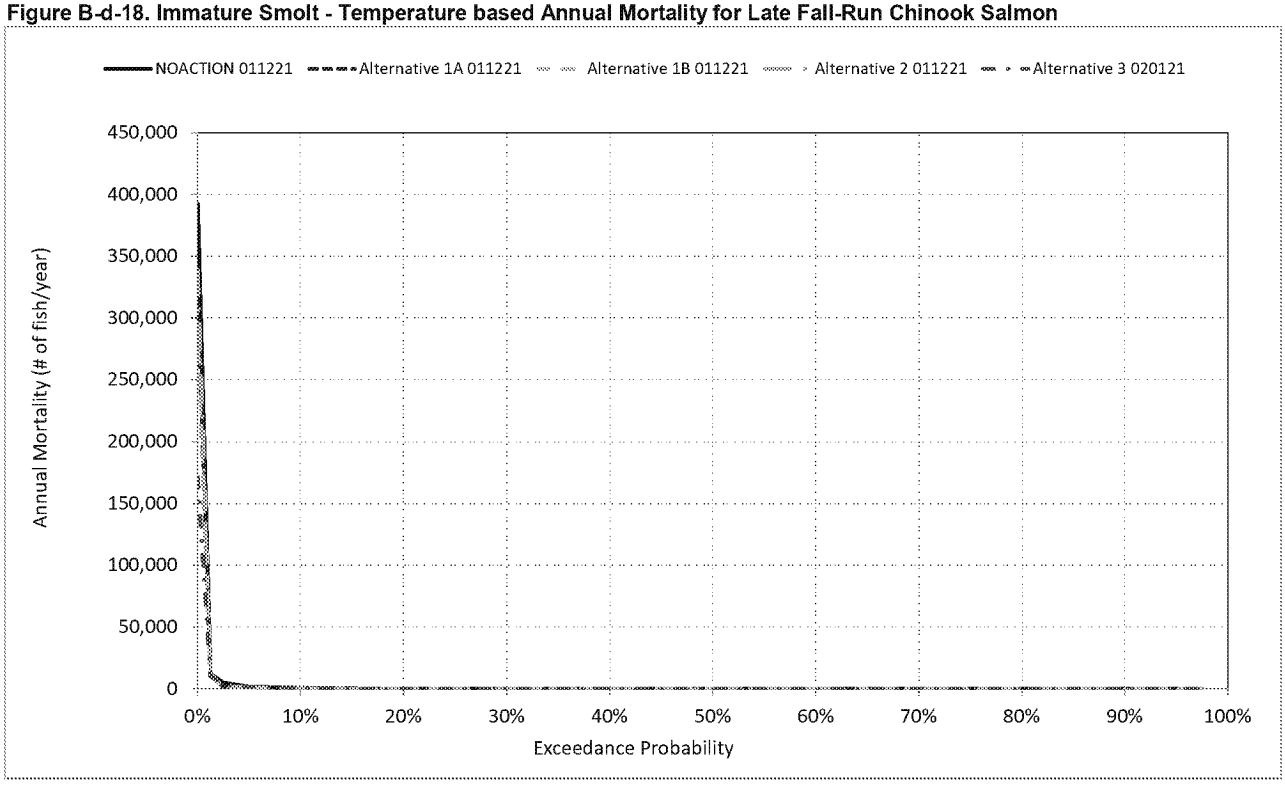


Figure B-d-19. Total Temperature based Annual Mortality for Late Fall-Run Chinook Salmon

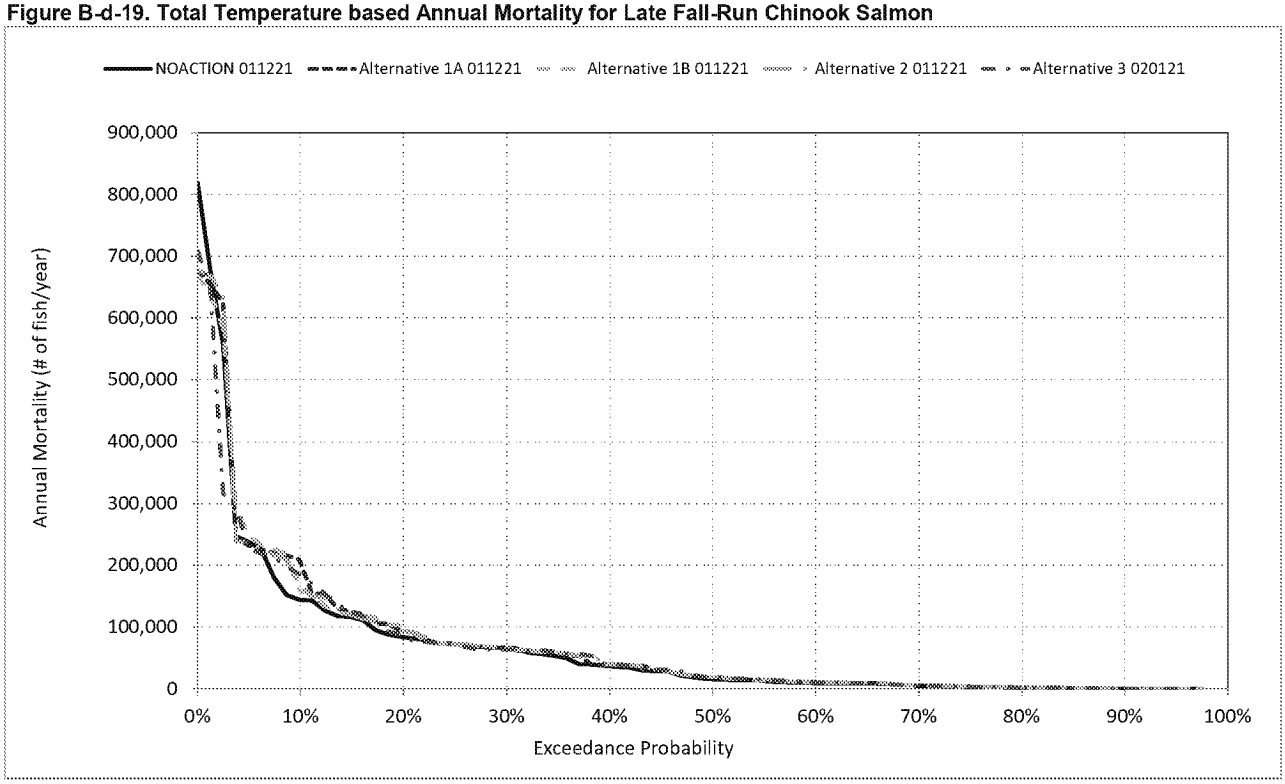


Table 1a-1 Percent Mortality of Listed Life-stages as percentage of total population of that life-stage for Winter-Run Chinook Salmon, NOACTION 011221 vs. Alternative 1A 011221

Long-term Average and Average by Water Year Type Annual Mortality

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
NOACTION 011221	9,120	389,672	50,758	757	104,686	178	6	555,178
Alternative 1A 011221	8,898	378,899	46,043	1,031	105,768	284	5	540,928
Difference	-222	-10,773	-4,715	274	1,082	106	-1	-14,250
Percent Difference[3]	-2	-3	-9	36	1	60	-18	-3
Water Year Types[2]								
Wet (31.7%)								
NOACTION 011221	9,600	354,281	465	0	133,868	0	2	498,217
Alternative 1A 011221	9,030	348,719	512	0	133,833	0	1	492,094
Difference	-571	-5,563	47	0	-35	0	-1	-6,123
Percent Difference	-6	-2	10	0	0	0	-63	-1
Above Normal (14.6%)								
NOACTION 011221	9,000	301,027	391,942	6,056	100,886	1,423	11	810,346
Alternative 1A 011221	9,600	292,432	351,770	8,246	104,505	2,270	5	768,828
Difference	600	-8,595	-40,172	2,190	3,619	847	-6	-41,518
Percent Difference	7	-3	-10	36	4	60	-56	-5
Below Normal (17.1%)								
NOACTION 011221	7,929	368,975	2,522	0	94,025	0	7	473,457
Alternative 1A 011221	7,931	356,293	3,468	0	95,199	0	4	462,895
Difference	3	-12,682	946	0	1,173	0	-3	-10,562
Percent Difference	0	-3	38	0	1	0	-43	-2
Dry (22%)								
NOACTION 011221	9,334	456,215	1,819	0	91,838	0	10	559,217
Alternative 1A 011221	9,001	449,917	2,054	0	91,397	0	9	552,377
Difference	-333	-6,298	235	0	-441	0	-2	-6,840
Percent Difference	-4	-1	13	0	0	0	-16	-1
Critical (14.6%)								
NOACTION 011221	9,251	464,556	5,090	0	76,338	0	0	555,235
Alternative 1A 011221	9,004	436,192	5,575	0	79,904	0	8	530,682
Difference	-248	-28,364	484	0	3,566	0	8	-24,553
Percent Difference	-3	-6	10	0	5	0	0	-4

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

[4] Mortality values do not include base mortality

Table 1a-2 Percent Mortality of Listed Life-stages as percentage of total population of that life-stage for Winter-Run Chinook Salmon, NOACTION 011221 vs. Alternative 1B 011221

Long-term Average and Average by Water Year Type Annual Mortality								
			Annual Mortality[4] (# of Fish/year)					
Analysis Period	Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
NOACTION 011221	9,120	389,672	50,758	757	104,686	178	6	555,178
Alternative 1B 011221	8,748	369,187	44,041	1,052	105,638	279	2	528,946
Difference	-372	-20,486	-6,717	295	952	101	-4	-26,232
Percent Difference[3]	-4	-5	-13	39	1	57	-65	-5
Water Year Types[2]								
Wet (31.7%)								
NOACTION 011221	9,600	354,281	465	0	133,868	0	2	498,217
Alternative 1B 011221	8,915	327,090	575	0	136,188	0	1	472,770
Difference	-685	-27,192	110	0	2,320	0	-1	-25,447
Percent Difference	-7	-8	24	0	2	0	-38	-5
Above Normal (14.6%)								
NOACTION 011221	9,000	301,027	391,942	6,056	100,886	1,423	11	810,346
Alternative 1B 011221	9,600	287,914	334,627	8,412	105,378	2,232	0	748,163
Difference	600	-13,113	-57,316	2,356	4,492	809	-11	-62,183
Percent Difference	7	-4	-15	39	4	57	-99	-8
Below Normal (17.1%)								
NOACTION 011221	7,929	368,975	2,522	0	94,025	0	7	473,457
Alternative 1B 011221	7,503	348,604	4,791	0	94,071	0	2	454,970
Difference	-426	-20,371	2,269	0	46	0	-5	-18,487
Percent Difference	-5	-6	90	0	0	0	-71	-4
Dry (22%)								
NOACTION 011221	9,334	456,215	1,819	0	91,838	0	10	559,217
Alternative 1B 011221	8,667	435,110	1,871	0	88,619	0	5	534,271
Difference	-667	-21,105	52	0	-3,220	0	-6	-24,945
Percent Difference	-7	-5	3	0	-4	0	-57	-4
Critical (14.6%)								
NOACTION 011221	9,251	464,556	5,090	0	76,338	0	0	555,235
Alternative 1B 011221	9,251	453,251	5,107	0	78,688	0	1	546,298
Difference	-1	-11,305	17	0	2,351	0	1	-8,937
Percent Difference	0	-2	0	0	3	0	0	-2

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

[4] Mortality values do not include base mortality

Table 1a-3 Percent Mortality of Listed Life-stages as percentage of total population of that life-stage for Winter-Run Chinook Salmon, NOACTION 011221 vs. Alternative 2 011221

Long-term Average and Average by Water Year Type Annual Mortality

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
NOACTION 011221	9,120	389,672	50,758	757	104,686	178	6	555,178
Alternative 2 011221	9,160	379,977	46,438	1,050	104,177	283	4	541,090
Difference	40	-9,695	-4,320	293	-510	106	-2	-14,088
Percent Difference[3]	0	-2	-9	39	0	59	-26	-3
Water Year Types[2]								
Wet (31.7%)								
NOACTION 011221	9,600	354,281	465	0	133,868	0	2	498,217
Alternative 2 011221	9,491	351,693	512	0	130,408	0	1	492,104
Difference	-109	-2,589	47	0	-3,460	0	-1	-6,113
Percent Difference	-1	-1	10	0	-3	0	-62	-1
Above Normal (14.6%)								
NOACTION 011221	9,000	301,027	391,942	6,056	100,886	1,423	11	810,346
Alternative 2 011221	9,300	292,850	351,177	8,400	104,284	2,268	5	768,283
Difference	300	-8,177	-40,766	2,344	3,398	845	-6	-42,062
Percent Difference	3	-3	-10	39	3	59	-56	-5
Below Normal (17.1%)								
NOACTION 011221	7,929	368,975	2,522	0	94,025	0	7	473,457
Alternative 2 011221	8,789	353,327	6,213	0	94,513	0	8	462,849
Difference	860	-15,648	3,691	0	488	0	1	-10,608
Percent Difference	11	-4	146	0	1	0	13	-2
Dry (22%)								
NOACTION 011221	9,334	456,215	1,819	0	91,838	0	10	559,217
Alternative 2 011221	9,001	450,797	2,036	0	90,266	0	9	552,108
Difference	-333	-5,418	217	0	-1,573	0	-2	-7,109
Percent Difference	-4	-1	12	0	-2	0	-17	-1
Critical (14.6%)								
NOACTION 011221	9,251	464,556	5,090	0	76,338	0	0	555,235
Alternative 2 011221	9,001	438,731	5,528	0	79,392	0	0	532,652
Difference	-250	-25,826	437	0	3,055	0	0	-22,584
Percent Difference	-3	-6	9	0	4	0	0	-4

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

[4] Mortality values do not include base mortality

Table 1a-4 Percent Mortality of Listed Life-stages as percentage of total population of that life-stage for Winter-Run Chinook Salmon, NOACTION 011221 vs. Alternative 3 020121

Long-term Average and Average by Water Year Type Annual Mortality								
	Annual Mortality[4] (# of Fish/year)							
Analysis Period	Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
NOACTION 011221	9,120	389,672	50,758	757	104,686	178	6	555,178
Alternative 3 020121	8,673	361,625	32,099	663	109,384	241	4	512,689
Difference	-447	-28,047	-18,659	-94	4,698	63	-2	-42,489
Percent Difference[3]	-5	-7	-37	-12	4	35	-29	-8
Water Year Types[2]								
Wet (31.7%)								
NOACTION 011221	9,600	354,281	465	0	133,868	0	2	498,217
Alternative 3 020121	9,031	313,541	535	0	139,815	0	1	462,922
Difference	-570	-40,740	70	0	5,947	0	-1	-35,295
Percent Difference	-6	-11	15	0	4	0	-57	-7
Above Normal (14.6%)								
NOACTION 011221	9,000	301,027	391,942	6,056	100,886	1,423	11	810,346
Alternative 3 020121	8,400	340,977	237,904	5,302	102,830	1,926	5	697,344
Difference	-600	39,950	-154,039	-754	1,944	504	-6	-113,001
Percent Difference	-7	13	-39	-12	2	35	-56	-14
Below Normal (17.1%)								
NOACTION 011221	7,929	368,975	2,522	0	94,025	0	7	473,457
Alternative 3 020121	7,074	335,899	5,836	0	97,575	0	10	446,394
Difference	-854	-33,076	3,314	0	3,550	0	3	-27,063
Percent Difference	-11	-9	131	0	4	0	46	-6
Dry (22%)								
NOACTION 011221	9,334	456,215	1,819	0	91,838	0	10	559,217
Alternative 3 020121	9,167	410,853	1,493	0	96,228	0	5	517,747
Difference	-167	-45,362	-326	0	4,390	0	-5	-41,470
Percent Difference	-2	-10	-18	0	5	0	-52	-7
Critical (14.6%)								
NOACTION 011221	9,251	464,556	5,090	0	76,338	0	0	555,235
Alternative 3 020121	9,251	439,185	5,532	0	82,426	0	2	536,396
Difference	-1	-25,371	442	0	6,088	0	2	-18,840
Percent Difference	0	-5	9	0	8	0	0	-3

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

[4] Mortality values do not include base mortality

Table 1b-1 Percent Mortality of Listed Life-stages as percentage of total population of that life-stage for Spring-Run Chinook Salmon, NOACTION 011221 vs. Alternative 1A 011221

Long-term Average and Average by Water Year Type Annual Mortality

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
				Long-term				
Full Simulation Period[1]								
NOACTION 011221	5,266	3,944	18,785	0	2,682	2	0	30,678
Alternative 1A 011221	2,920	3,866	20,853	0	2,666	1	0	30,307
Difference	-2,346	-77	2,068	0	-16	0	0	-371
Percent Difference[3]	-45	-2	11	0	-1	-26	0	-1
				Water Year Types[2]				
Wet (31.7%)								
NOACTION 011221	341	4,879	2,329	0	2,211	0	0	9,761
Alternative 1A 011221	447	4,408	2,249	0	2,161	0	0	9,264
Difference	105	-471	-81	0	-50	0	0	-497
Percent Difference	31	-10	-3	0	-2	0	0	-5
Above Normal (14.6%)								
NOACTION 011221	40,862	1,435	96,688	0	2,495	0	0	141,479
Alternative 1A 011221	21,662	1,818	111,609	0	2,284	0	0	137,372
Difference	-19,200	383	14,921	0	-211	0	0	-4,107
Percent Difference	-47	27	15	0	-8	0	0	-3
Below Normal (17.1%)								
NOACTION 011221	21	3,407	11,239	0	2,825	0	0	17,492
Alternative 1A 011221	70	3,589	13,296	0	3,013	0	0	19,967
Difference	49	181	2,057	0	188	0	0	2,476
Percent Difference	233	5	18	0	7	0	0	14
Dry (22%)								
NOACTION 011221	38	3,581	9,081	0	3,218	0	0	15,919
Alternative 1A 011221	42	3,694	9,103	0	3,058	0	0	15,897
Difference	4	112	22	0	-160	0	0	-22
Percent Difference	9	3	0	0	-5	0	0	0
Critical (14.6%)								
NOACTION 011221	232	5,176	12,881	0	2,887	12	0	21,187
Alternative 1A 011221	300	4,982	11,976	0	3,089	9	0	20,355
Difference	68	-194	-906	0	202	-3	0	-832
Percent Difference	29	-4	-7	0	7	-26	0	-4

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

[4] Mortality values do not include base mortality

Table 1b-2 Percent Mortality of Listed Life-stages as percentage of total population of that life-stage for Spring-Run Chinook Salmon, NOACTION 011221 vs. Alternative 1B 011221

Long-term Average and Average by Water Year Type Annual Mortality

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
NOACTION 011221	5,266	3,944	18,785	0	2,682	2	0	30,678
Alternative 1B 011221	2,192	3,736	21,698	0	2,664	1	0	30,292
Difference	-3,074	-208	2,913	0	-17	0	0	-386
Percent Difference[3]	-58	-5	16	0	-1	-21	0	-1
Water Year Types[2]								
Wet (31.7%)								
NOACTION 011221	341	4,879	2,329	0	2,211	0	0	9,761
Alternative 1B 011221	462	4,277	2,009	0	2,213	0	0	8,961
Difference	121	-602	-320	0	2	0	0	-800
Percent Difference	35	-12	-14	0	0	0	0	-8
Above Normal (14.6%)								
NOACTION 011221	40,862	1,435	96,688	0	2,495	0	0	141,479
Alternative 1B 011221	15,858	1,643	113,276	0	2,416	0	0	133,192
Difference	-25,004	209	16,588	0	-79	0	0	-8,287
Percent Difference	-61	15	17	0	-3	0	0	-6
Below Normal (17.1%)								
NOACTION 011221	21	3,407	11,239	0	2,825	0	0	17,492
Alternative 1B 011221	71	3,229	17,669	0	2,855	0	0	23,824
Difference	50	-179	6,430	0	31	0	0	6,332
Percent Difference	240	-5	57	0	1	0	0	36
Dry (22%)								
NOACTION 011221	38	3,581	9,081	0	3,218	0	0	15,919
Alternative 1B 011221	38	3,635	8,181	0	3,022	0	0	14,876
Difference	0	54	-900	0	-196	0	0	-1,044
Percent Difference	-1	1	-10	0	-6	0	0	-7
Critical (14.6%)								
NOACTION 011221	232	5,176	12,881	0	2,887	12	0	21,187
Alternative 1B 011221	258	5,049	13,022	0	3,091	9	0	21,429
Difference	26	-127	141	0	204	-2	0	242
Percent Difference	11	-2	1	0	7	-21	0	1

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

[4] Mortality values do not include base mortality

Table 1b-3 Percent Mortality of Listed Life-stages as percentage of total population of that life-stage for Spring-Run Chinook Salmon, NOACTION 011221 vs. Alternative 2 011221

Long-term Average and Average by Water Year Type Annual Mortality

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
NOACTION 011221	5,266	3,944	18,785	0	2,682	2	0	30,678
Alternative 2 011221	2,975	3,892	22,526	0	2,638	1	0	32,033
Difference	-2,290	-51	3,741	0	-44	0	0	1,355
Percent Difference[3]	-43	-1	20	0	-2	-24	0	4
Water Year Types[2]								
Wet (31.7%)								
NOACTION 011221	341	4,879	2,329	0	2,211	0	0	9,761
Alternative 2 011221	445	4,521	2,269	0	2,154	0	0	9,390
Difference	104	-359	-60	0	-57	0	0	-371
Percent Difference	31	-7	-3	0	-3	0	0	-4
Above Normal (14.6%)								
NOACTION 011221	40,862	1,435	96,688	0	2,495	0	0	141,479
Alternative 2 011221	22,119	1,751	111,128	0	2,282	0	0	137,280
Difference	-18,743	317	14,440	0	-213	0	0	-4,199
Percent Difference	-46	22	15	0	-9	0	0	-3
Below Normal (17.1%)								
NOACTION 011221	21	3,407	11,239	0	2,825	0	0	17,492
Alternative 2 011221	76	3,454	21,250	0	2,983	0	0	27,762
Difference	55	46	10,011	0	158	0	0	10,271
Percent Difference	262	1	89	0	6	0	0	59
Dry (22%)								
NOACTION 011221	38	3,581	9,081	0	3,218	0	0	15,919
Alternative 2 011221	43	3,753	9,029	0	3,048	0	0	15,873
Difference	4	172	-53	0	-170	0	0	-47
Percent Difference	11	5	-1	0	-5	0	0	0
Critical (14.6%)								
NOACTION 011221	232	5,176	12,881	0	2,887	12	0	21,187
Alternative 2 011221	286	5,034	14,315	0	2,968	9	0	22,612
Difference	55	-142	1,434	0	81	-3	0	1,425
Percent Difference	24	-3	11	0	3	-24	0	7

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

[4] Mortality values do not include base mortality

Table 1b-4 Percent Mortality of Listed Life-stages as percentage of total population of that life-stage for Spring-Run Chinook Salmon, NOACTION 011221 vs. Alternative 3 020121

Long-term Average and Average by Water Year Type Annual Mortality								
	Annual Mortality[4] (# of Fish/year)							
Analysis Period	Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
NOACTION 011221	5,266	3,944	18,785	0	2,682	2	0	30,678
Alternative 3 020121	580	3,716	22,952	0	2,621	2	0	29,870
Difference	-4,686	-228	4,167	0	-61	0	0	-808
Percent Difference[3]	-89	-6	22	0	-2	-9	0	-3
Water Year Types[2]								
Wet (31.7%)								
NOACTION 011221	341	4,879	2,329	0	2,211	0	0	9,761
Alternative 3 020121	457	4,112	2,142	0	2,220	0	0	8,932
Difference	116	-768	-187	0	10	0	0	-829
Percent Difference	34	-16	-8	0	0	0	0	-8
Above Normal (14.6%)								
NOACTION 011221	40,862	1,435	96,688	0	2,495	0	0	141,479
Alternative 3 020121	2,886	1,355	124,637	0	2,459	0	0	131,337
Difference	-37,975	-80	27,949	0	-36	0	0	-10,142
Percent Difference	-93	-6	29	0	-1	0	0	-7
Below Normal (17.1%)								
NOACTION 011221	21	3,407	11,239	0	2,825	0	0	17,492
Alternative 3 020121	85	3,119	19,707	0	2,908	0	0	25,819
Difference	64	-288	8,469	0	83	0	0	8,328
Percent Difference	305	-8	75	0	3	0	0	48
Dry (22%)								
NOACTION 011221	38	3,581	9,081	0	3,218	0	0	15,919
Alternative 3 020121	47	4,247	7,371	0	2,817	0	0	14,482
Difference	9	666	-1,710	0	-401	0	0	-1,437
Percent Difference	22	19	-19	0	-12	0	0	-9
Critical (14.6%)								
NOACTION 011221	232	5,176	12,881	0	2,887	12	0	21,187
Alternative 3 020121	300	4,723	10,459	0	2,994	11	0	18,486
Difference	68	-453	-2,422	0	107	-1	0	-2,701
Percent Difference	29	-9	-19	0	4	-9	0	-13

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

[4] Mortality values do not include base mortality

Table 1c-1 Percent Mortality of Listed Life-stages as percentage of total population of that life-stage for Fall-Run Chinook Salmon, NOACTION 011221 vs. Alternative 1A 011221

Long-term Average and Average by Water Year Type Annual Mortality

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
NOACTION 011221	679,120	1,567,969	183,984	687	5,497,027	16,253	409,349	8,354,390
Alternative 1A 011221	616,765	1,577,386	211,411	706	5,469,192	19,354	410,914	8,305,729
Difference	-62,355	9,417	27,427	20	-27,835	3,101	1,565	-48,661
Percent Difference[3]	-9	1	15	3	-1	19	0	-1
Water Year Types[2]								
Wet (31.7%)								
NOACTION 011221	1,008	3,794,900	14,826	1,328	5,929,397	14,612	109,469	9,865,540
Alternative 1A 011221	1,147	3,817,710	14,679	1,483	5,869,840	17,901	106,573	9,829,334
Difference	139	22,810	-147	155	-59,557	3,290	-2,895	-36,206
Percent Difference	14	1	-1	12	-1	23	-3	0
Above Normal (14.6%)								
NOACTION 011221	5,396,514	228,774	576,009	90	5,681,441	3,219	217,218	12,103,264
Alternative 1A 011221	4,897,805	228,845	748,930	152	5,757,701	3,977	206,799	11,844,207
Difference	-498,709	71	172,921	61	76,260	757	-10,419	-259,057
Percent Difference	-9	0	30	68	1	24	-5	-2
Below Normal (17.1%)								
NOACTION 011221	770	686,544	261,505	95	5,308,797	4,798	426,966	6,689,475
Alternative 1A 011221	0	685,724	321,279	183	5,374,099	9,427	431,410	6,822,121
Difference	-770	-821	59,774	88	65,302	4,629	4,444	132,646
Percent Difference	-100	0	23	92	1	96	1	2
Dry (22%)								
NOACTION 011221	2,020	516,160	174,312	256	5,098,008	16,638	702,477	6,509,871
Alternative 1A 011221	1,740	522,450	176,515	349	5,055,588	21,994	737,430	6,516,066
Difference	-280	6,290	2,202	93	-42,420	5,356	34,953	6,195
Percent Difference	-14	1	1	36	-1	32	5	0
Critical (14.6%)								
NOACTION 011221	24,261	464,988	147,873	1,132	5,224,679	43,456	758,958	6,665,346
Alternative 1A 011221	25,168	469,811	113,900	634	5,092,045	42,935	726,730	6,471,223
Difference	907	4,823	-33,973	-498	-132,634	-521	-32,227	-194,123
Percent Difference	4	1	-23	-44	-3	-1	-4	-3

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

[4] Mortality values do not include base mortality

Table 1c-2 Percent Mortality of Listed Life-stages as percentage of total population of that life-stage for Fall-Run Chinook Salmon, NOACTION 011221 vs. Alternative 1B 011221

Long-term Average and Average by Water Year Type Annual Mortality

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
NOACTION 011221	679,120	1,567,969	183,984	687	5,497,027	16,253	409,349	8,354,390
Alternative 1B 011221	560,637	1,602,605	239,392	676	5,472,615	18,900	399,171	8,293,997
Difference	-118,483	34,636	55,408	-11	-24,412	2,648	-10,178	-60,392
Percent Difference[3]	-17	2	30	-2	0	16	-2	-1
Water Year Types[2]								
Wet (31.7%)								
NOACTION 011221	1,008	3,794,900	14,826	1,328	5,929,397	14,612	109,469	9,865,540
Alternative 1B 011221	382	3,895,088	14,518	1,464	5,908,852	17,960	103,501	9,941,766
Difference	-626	100,188	-308	136	-20,545	3,349	-5,968	76,226
Percent Difference	-62	3	-2	10	0	23	-5	1
Above Normal (14.6%)								
NOACTION 011221	5,396,514	228,774	576,009	90	5,681,441	3,219	217,218	12,103,264
Alternative 1B 011221	4,452,024	231,320	802,165	144	5,824,231	7,069	189,397	11,506,349
Difference	-944,490	2,546	226,156	54	142,790	3,849	-27,821	-596,916
Percent Difference	-18	1	39	59	3	120	-13	-5
Below Normal (17.1%)								
NOACTION 011221	770	686,544	261,505	95	5,308,797	4,798	426,966	6,689,475
Alternative 1B 011221	314	684,375	421,387	252	5,300,652	9,944	409,214	6,826,137
Difference	-456	-2,169	159,882	157	-8,145	5,146	-17,752	136,662
Percent Difference	-59	0	61	165	0	107	-4	2
Dry (22%)								
NOACTION 011221	2,020	516,160	174,312	256	5,098,008	16,638	702,477	6,509,871
Alternative 1B 011221	1,263	525,478	163,115	236	4,990,175	15,996	711,567	6,407,829
Difference	-757	9,318	-11,197	-20	-107,833	-643	9,090	-102,042
Percent Difference	-37	2	-6	-8	-2	-4	1	-2
Critical (14.6%)								
NOACTION 011221	24,261	464,988	147,873	1,132	5,224,679	43,456	758,958	6,665,346
Alternative 1B 011221	24,471	465,253	159,733	568	5,158,706	45,603	734,294	6,588,629
Difference	211	265	11,860	-564	-65,973	2,147	-24,663	-76,718
Percent Difference	1	0	8	-50	-1	5	-3	-1

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

[4] Mortality values do not include base mortality

Table 1c-3 Percent Mortality of Listed Life-stages as percentage of total population of that life-stage for Fall-Run Chinook Salmon, NOACTION 011221 vs. Alternative 2 011221

Long-term Average and Average by Water Year Type Annual Mortality

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
NOACTION 011221	679,120	1,567,969	183,984	687	5,497,027	16,253	409,349	8,354,390
Alternative 2 011221	617,056	1,583,189	248,478	711	5,470,794	19,020	402,744	8,341,993
Difference	-62,064	15,221	64,494	24	-26,234	2,768	-6,605	-12,397
Percent Difference[3]	-9	1	35	3	0	17	-2	0
Water Year Types[2]								
Wet (31.7%)								
NOACTION 011221	1,008	3,794,900	14,826	1,328	5,929,397	14,612	109,469	9,865,540
Alternative 2 011221	1,269	3,838,537	14,772	1,491	5,920,248	17,857	101,833	9,896,007
Difference	261	43,636	-53	162	-9,149	3,245	-7,636	30,467
Percent Difference	26	1	0	12	0	22	-7	0
Above Normal (14.6%)								
NOACTION 011221	5,396,514	228,774	576,009	90	5,681,441	3,219	217,218	12,103,264
Alternative 2 011221	4,898,762	228,461	747,101	152	5,723,192	3,938	211,877	11,813,483
Difference	-497,752	-313	171,092	62	41,751	719	-5,340	-289,782
Percent Difference	-9	0	30	68	1	22	-2	-2
Below Normal (17.1%)								
NOACTION 011221	770	686,544	261,505	95	5,308,797	4,798	426,966	6,689,475
Alternative 2 011221	534	682,865	460,992	248	5,352,146	9,207	397,937	6,903,929
Difference	-236	-3,680	199,487	153	43,349	4,409	-29,029	214,454
Percent Difference	-31	-1	76	161	1	92	-7	3
Dry (22%)								
NOACTION 011221	2,020	516,160	174,312	256	5,098,008	16,638	702,477	6,509,871
Alternative 2 011221	1,911	521,839	171,671	306	4,999,700	20,940	740,828	6,457,195
Difference	-109	5,679	-2,641	50	-98,308	4,302	38,351	-52,676
Percent Difference	-5	1	-2	20	-2	26	5	-1
Critical (14.6%)								
NOACTION 011221	24,261	464,988	147,873	1,132	5,224,679	43,456	758,958	6,665,346
Alternative 2 011221	25,168	467,949	206,601	634	5,131,705	42,680	712,258	6,586,994
Difference	907	2,961	58,727	-498	-92,974	-776	-46,700	-78,352
Percent Difference	4	1	40	-44	-2	-2	-6	-1

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

[4] Mortality values do not include base mortality

Table 1c-4 Percent Mortality of Listed Life-stages as percentage of total population of that life-stage for Fall-Run Chinook Salmon, NOACTION 011221 vs. Alternative 3 020121

Long-term Average and Average by Water Year Type Annual Mortality								
	Annual Mortality[4] (# of Fish/year)							
Analysis Period	Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
NOACTION 011221	679,120	1,567,969	183,984	687	5,497,027	16,253	409,349	8,354,390
Alternative 3 020121	262,927	1,668,231	331,663	680	5,456,495	18,044	375,929	8,113,969
Difference	-416,193	100,262	147,679	-7	-40,532	1,791	-33,421	-240,421
Percent Difference[3]	-61	6	80	-1	-1	11	-8	-3
Water Year Types[2]								
Wet (31.7%)								
NOACTION 011221	1,008	3,794,900	14,826	1,328	5,929,397	14,612	109,469	9,865,540
Alternative 3 020121	713	4,077,768	14,522	1,436	5,818,562	18,061	98,579	10,029,640
Difference	-296	282,867	-303	107	-110,835	3,449	-10,890	164,100
Percent Difference	-29	7	-2	8	-2	24	-10	2
Above Normal (14.6%)								
NOACTION 011221	5,396,514	228,774	576,009	90	5,681,441	3,219	217,218	12,103,264
Alternative 3 020121	2,069,584	254,094	1,642,974	126	5,911,296	7,060	185,321	10,070,455
Difference	-3,326,930	25,320	1,066,966	36	229,856	3,841	-31,897	-2,032,809
Percent Difference	-62	11	185	40	4	119	-15	-17
Below Normal (17.1%)								
NOACTION 011221	770	686,544	261,505	95	5,308,797	4,798	426,966	6,689,475
Alternative 3 020121	754	695,701	440,321	290	5,251,836	9,910	374,947	6,773,760
Difference	-16	9,157	178,816	195	-56,961	5,112	-52,019	84,285
Percent Difference	-2	1	68	205	-1	107	-12	1
Dry (22%)								
NOACTION 011221	2,020	516,160	174,312	256	5,098,008	16,638	702,477	6,509,871
Alternative 3 020121	966	519,633	155,509	256	5,079,164	19,956	646,678	6,422,163
Difference	-1,054	3,473	-18,803	0	-18,844	3,318	-55,799	-87,708
Percent Difference	-52	1	-11	0	0	20	-8	-1
Critical (14.6%)								
NOACTION 011221	24,261	464,988	147,873	1,132	5,224,679	43,456	758,958	6,665,346
Alternative 3 020121	24,321	483,531	63,501	593	5,097,783	33,784	730,715	6,434,228
Difference	60	18,542	-84,372	-539	-126,896	-9,672	-28,242	-231,118
Percent Difference	0	4	-57	-48	-2	-22	-4	-3

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

[4] Mortality values do not include base mortality

Table 1d-1 Percent Mortality of Listed Life-stages as percentage of total population of that life-stage for LateFall-Run Chinook Salmon, NOACTION 011221 vs. Alternative 1A 011221

Long-term Average and Average by Water Year Type Annual Mortality

Analysis Period	Pre-Spawn Mortality	Annual Mortality[4] (# of Fish/year) Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
NOACTION 011221	0	493,970	58,222	193	1,881,741	10,613	16,294	2,461,033
Alternative 1A 011221	0	494,307	63,499	292	1,866,228	8,474	17,927	2,450,727
Difference	0	338	5,276	99	-15,514	-2,139	1,632	-10,307
Percent Difference[3]	0	0	9	51	-1	-20	10	0
Water Year Types[2]								
Wet (31.7%)								
NOACTION 011221	0	1,211,664	39,966	190	1,550,879	9	4,946	2,807,654
Alternative 1A 011221	0	1,211,582	43,196	236	1,547,742	39	6,195	2,808,989
Difference	0	-82	3,230	45	-3,137	30	1,249	1,335
Percent Difference	0	0	8	24	0	321	25	0
Above Normal (14.6%)								
NOACTION 011221	0	646,238	36,350	50	1,737,198	7	3,388	2,423,230
Alternative 1A 011221	0	653,984	40,606	67	1,739,484	16	4,188	2,438,345
Difference	0	7,746	4,256	17	2,287	9	800	15,115
Percent Difference	0	1	12	34	0	134	24	1
Below Normal (17.1%)								
NOACTION 011221	0	42,050	58,869	146	2,105,037	0	8,827	2,214,928
Alternative 1A 011221	0	41,357	61,107	327	2,069,091	0	11,996	2,183,877
Difference	0	-693	2,238	180	-35,946	0	3,170	-31,051
Percent Difference	0	-2	4	123	-2	0	36	-1
Dry (22%)								
NOACTION 011221	0	32,077	87,547	182	2,181,053	808	21,893	2,323,559
Alternative 1A 011221	0	30,903	100,806	320	2,170,104	707	22,749	2,325,589
Difference	0	-1,174	13,259	138	-10,949	-101	856	2,030
Percent Difference	0	-4	15	75	-1	-12	4	0
Critical (14.6%)								
NOACTION 011221	0	32,153	71,264	390	2,009,583	69,516	51,954	2,234,859
Alternative 1A 011221	0	30,695	73,395	522	1,969,412	55,337	54,479	2,183,841
Difference	0	-1,458	2,131	133	-40,171	-14,179	2,526	-51,018
Percent Difference	0	-5	3	34	-2	-20	5	-2

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

[4] Mortality values do not include base mortality

Table 1d-2 Percent Mortality of Listed Life-stages as percentage of total population of that life-stage for LateFall-Run Chinook Salmon, NOACTION 011221 vs. Alternative 1B 011221

Long-term Average and Average by Water Year Type Annual Mortality

Analysis Period	Pre-Spawn Mortality	Annual Mortality[4] (# of Fish/year) Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
NOACTION 011221	0	493,970	58,222	193	1,881,741	10,613	16,294	2,461,033
Alternative 1B 011221	0	494,538	64,197	231	1,860,955	7,537	21,336	2,448,794
Difference	0	568	5,975	38	-20,786	-3,076	5,042	-12,240
Percent Difference[3]	0	0	10	19	-1	-29	31	0
Water Year Types[2]								
Wet (31.7%)								
NOACTION 011221	0	1,211,664	39,966	190	1,550,879	9	4,946	2,807,654
Alternative 1B 011221	0	1,215,207	43,854	228	1,555,467	34	5,579	2,820,370
Difference	0	3,543	3,889	38	4,588	25	634	12,717
Percent Difference	0	0	10	20	0	272	13	0
Above Normal (14.6%)								
NOACTION 011221	0	646,238	36,350	50	1,737,198	7	3,388	2,423,230
Alternative 1B 011221	0	645,362	40,840	79	1,654,501	50	4,058	2,344,891
Difference	0	-876	4,490	30	-82,697	43	671	-78,339
Percent Difference	0	0	12	60	-5	637	20	-3
Below Normal (17.1%)								
NOACTION 011221	0	42,050	58,869	146	2,105,037	0	8,827	2,214,928
Alternative 1B 011221	0	43,033	68,882	333	2,084,250	0	10,881	2,207,379
Difference	0	983	10,014	187	-20,786	0	2,054	-7,549
Percent Difference	0	2	17	128	-1	0	23	0
Dry (22%)								
NOACTION 011221	0	32,077	87,547	182	2,181,053	808	21,893	2,323,559
Alternative 1B 011221	0	30,828	96,099	161	2,164,406	488	32,750	2,324,732
Difference	0	-1,248	8,552	-21	-16,647	-320	10,858	1,173
Percent Difference	0	-4	10	-12	-1	-40	50	0
Critical (14.6%)								
NOACTION 011221	0	32,153	71,264	390	2,009,583	69,516	51,954	2,234,859
Alternative 1B 011221	0	29,719	74,416	347	1,979,203	49,401	64,952	2,198,038
Difference	0	-2,434	3,153	-42	-30,380	-20,115	12,998	-36,821
Percent Difference	0	-8	4	-11	-2	-29	25	-2

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

[4] Mortality values do not include base mortality

Table 1d-3 Percent Mortality of Listed Life-stages as percentage of total population of that life-stage for LateFall-Run Chinook Salmon, NOACTION 011221 vs. Alternative 2 011221

Long-term Average and Average by Water Year Type Annual Mortality

Analysis Period	Pre-Spawn Mortality	Annual Mortality[4] (# of Fish/year) Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
NOACTION 011221	0	493,970	58,222	193	1,881,741	10,613	16,294	2,461,033
Alternative 2 011221	0	494,301	63,224	258	1,870,820	8,674	19,245	2,456,522
Difference	0	332	5,002	65	-10,921	-1,939	2,950	-4,511
Percent Difference[3]	0	0	9	34	-1	-18	18	0
Water Year Types[2]								
Wet (31.7%)								
NOACTION 011221	0	1,211,664	39,966	190	1,550,879	9	4,946	2,807,654
Alternative 2 011221	0	1,211,469	43,489	218	1,561,712	39	5,136	2,822,063
Difference	0	-195	3,523	27	10,833	30	191	14,409
Percent Difference	0	0	9	14	1	326	4	1
Above Normal (14.6%)								
NOACTION 011221	0	646,238	36,350	50	1,737,198	7	3,388	2,423,230
Alternative 2 011221	0	653,966	40,832	67	1,738,859	16	3,201	2,436,939
Difference	0	7,727	4,481	17	1,662	9	-187	13,710
Percent Difference	0	1	12	34	0	134	-6	1
Below Normal (17.1%)								
NOACTION 011221	0	42,050	58,869	146	2,105,037	0	8,827	2,214,928
Alternative 2 011221	0	41,631	60,392	326	2,062,831	0	11,754	2,176,935
Difference	0	-419	1,524	180	-42,205	0	2,927	-37,994
Percent Difference	0	-1	3	123	-2	0	33	-2
Dry (22%)								
NOACTION 011221	0	32,077	87,547	182	2,181,053	808	21,893	2,323,559
Alternative 2 011221	0	30,980	98,227	297	2,158,033	702	28,206	2,316,445
Difference	0	-1,096	10,680	115	-23,020	-106	6,313	-7,114
Percent Difference	0	-3	12	63	-1	-13	29	0
Critical (14.6%)								
NOACTION 011221	0	32,153	71,264	390	2,009,583	69,516	51,954	2,234,859
Alternative 2 011221	0	30,480	75,441	367	1,995,691	56,677	58,480	2,217,136
Difference	0	-1,674	4,177	-23	-13,892	-12,838	6,527	-17,723
Percent Difference	0	-5	6	-6	-1	-18	13	-1

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

[4] Mortality values do not include base mortality

Table 1d-4 Percent Mortality of Listed Life-stages as percentage of total population of that life-stage for LateFall-Run Chinook Salmon, NOACTION 011221 vs. Alternative 3 020121

Long-term Average and Average by Water Year Type Annual Mortality								
					Annual Mortality[4] (# of Fish/year)			
Analysis Period	Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
NOACTION 011221	0	493,970	58,222	193	1,881,741	10,613	16,294	2,461,033
Alternative 3 020121	0	504,404	64,171	239	1,865,776	4,223	18,292	2,457,106
Difference	0	10,434	5,949	46	-15,965	-6,390	1,998	-3,927
Percent Difference[3]	0	2	10	24	-1	-60	12	0
Water Year Types[2]								
Wet (31.7%)								
NOACTION 011221	0	1,211,664	39,966	190	1,550,879	9	4,946	2,807,654
Alternative 3 020121	0	1,241,614	44,137	225	1,564,127	31	4,833	2,854,968
Difference	0	29,950	4,172	35	13,249	22	-113	47,314
Percent Difference	0	2	10	18	1	240	-2	2
Above Normal (14.6%)								
NOACTION 011221	0	646,238	36,350	50	1,737,198	7	3,388	2,423,230
Alternative 3 020121	0	651,668	41,839	94	1,680,852	50	3,546	2,378,048
Difference	0	5,429	5,489	45	-56,346	43	158	-45,181
Percent Difference	0	1	15	91	-3	637	5	-2
Below Normal (17.1%)								
NOACTION 011221	0	42,050	58,869	146	2,105,037	0	8,827	2,214,928
Alternative 3 020121	0	43,542	64,886	295	2,032,370	5	16,370	2,157,467
Difference	0	1,492	6,017	149	-72,667	5	7,543	-57,461
Percent Difference	0	4	10	102	-3	0	85	-3
Dry (22%)								
NOACTION 011221	0	32,077	87,547	182	2,181,053	808	21,893	2,323,559
Alternative 3 020121	0	30,870	96,120	232	2,128,497	697	32,295	2,288,710
Difference	0	-1,207	8,573	50	-52,556	-111	10,402	-34,849
Percent Difference	0	-4	10	27	-2	-14	48	-1
Critical (14.6%)								
NOACTION 011221	0	32,153	71,264	390	2,009,583	69,516	51,954	2,234,859
Alternative 3 020121	0	32,370	77,433	335	2,085,011	26,996	40,982	2,263,126
Difference	0	216	6,170	-55	75,428	-42,520	-10,972	28,267
Percent Difference	0	1	9	-14	4	-61	-21	1

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

[4] Mortality values do not include base mortality

Table 2a-1 Annual Potential Production for Winter-Run Chinook Salmon, NOACTION 011221 vs. Alternative 1A 011221

Long-term Average and Average by Water Year Type Annual Production

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
NOACTION 011221	1,927,994
Alternative 1A 011221	1,935,464
Difference	7,470
Percent Difference[3]	0.4
Water Year Types[2]	
Wet (31.7%)	
NOACTION 011221	1,930,166
Alternative 1A 011221	1,933,662
Difference	3,496
Percent Difference	0.2
Above Normal (14.6%)	
NOACTION 011221	1,796,018
Alternative 1A 011221	1,814,424
Difference	18,406
Percent Difference	1.0
Below Normal (17.1%)	
NOACTION 011221	1,970,579
Alternative 1A 011221	1,979,272
Difference	8,693
Percent Difference	0.4
Dry (22%)	
NOACTION 011221	1,933,233
Alternative 1A 011221	1,935,508
Difference	2,275
Percent Difference	0.1
Critical (14.6%)	
NOACTION 011221	1,975,725
Alternative 1A 011221	1,989,062
Difference	13,337
Percent Difference	0.7

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

Table 2a-2 Annual Potential Production for Winter-Run Chinook Salmon, NOACTION 011221 vs. Alternative 1B 011221

Long-term Average and Average by Water Year Type Annual Production

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
NOACTION 011221	1,927,994
Alternative 1B 011221	1,940,421
Difference	12,427
Percent Difference[3]	0.6
Water Year Types[2]	
Wet (31.7%)	
NOACTION 011221	1,930,166
Alternative 1B 011221	1,940,975
Difference	10,809
Percent Difference	0.6
Above Normal (14.6%)	
NOACTION 011221	1,796,018
Alternative 1B 011221	1,822,958
Difference	26,939
Percent Difference	1.5
Below Normal (17.1%)	
NOACTION 011221	1,970,579
Alternative 1B 011221	1,983,087
Difference	12,508
Percent Difference	0.6
Dry (22%)	
NOACTION 011221	1,933,233
Alternative 1B 011221	1,945,620
Difference	12,387
Percent Difference	0.6
Critical (14.6%)	
NOACTION 011221	1,975,725
Alternative 1B 011221	1,979,531
Difference	3,806
Percent Difference	0.2

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

Table 2a-3 Annual Potential Production for Winter-Run Chinook Salmon, NOACTION 011221 vs. Alternative 2 011221

Long-term Average and Average by Water Year Type Annual Production

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
NOACTION 011221	1,927,994
Alternative 2 011221	1,935,385
Difference	7,391
Percent Difference[3]	0.4
Water Year Types[2]	
Wet (31.7%)	
NOACTION 011221	1,930,166
Alternative 2 011221	1,934,619
Difference	4,453
Percent Difference	0.2
Above Normal (14.6%)	
NOACTION 011221	1,796,018
Alternative 2 011221	1,811,729
Difference	15,710
Percent Difference	0.9
Below Normal (17.1%)	
NOACTION 011221	1,970,579
Alternative 2 011221	1,980,821
Difference	10,242
Percent Difference	0.5
Dry (22%)	
NOACTION 011221	1,933,233
Alternative 2 011221	1,935,511
Difference	2,278
Percent Difference	0.1
Critical (14.6%)	
NOACTION 011221	1,975,725
Alternative 2 011221	1,986,895
Difference	11,169
Percent Difference	0.6

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

Table 2a-4 Annual Potential Production for Winter-Run Chinook Salmon, NOACTION 011221 vs. Alternative 3 020121

Long-term Average and Average by Water Year Type Annual Production

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
NOACTION 011221	1,927,994
Alternative 3 020121	1,950,501
Difference	22,507
Percent Difference[3]	1.2
Water Year Types[2]	
Wet (31.7%)	
NOACTION 011221	1,930,166
Alternative 3 020121	1,950,201
Difference	20,034
Percent Difference	1.0
Above Normal (14.6%)	
NOACTION 011221	1,796,018
Alternative 3 020121	1,849,042
Difference	53,024
Percent Difference	3.0
Below Normal (17.1%)	
NOACTION 011221	1,970,579
Alternative 3 020121	1,987,497
Difference	16,918
Percent Difference	0.9
Dry (22%)	
NOACTION 011221	1,933,233
Alternative 3 020121	1,955,276
Difference	22,043
Percent Difference	1.1
Critical (14.6%)	
NOACTION 011221	1,975,725
Alternative 3 020121	1,985,377
Difference	9,652
Percent Difference	0.5

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

Table 2b-1 Annual Potential Production for Spring-Run Chinook Salmon, NOACTION 011221 vs. Alternative 1A 011221

Long-term Average and Average by Water Year Type Annual Production

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
NOACTION 011221	446,054
Alternative 1A 011221	446,027
Difference	-28
Percent Difference[3]	0.0
Water Year Types[2]	
Wet (31.7%)	
NOACTION 011221	446,722
Alternative 1A 011221	446,858
Difference	136
Percent Difference	0.0
Above Normal (14.6%)	
NOACTION 011221	400,639
Alternative 1A 011221	401,618
Difference	979
Percent Difference	0.2
Below Normal (17.1%)	
NOACTION 011221	449,067
Alternative 1A 011221	447,656
Difference	-1,411
Percent Difference	-0.3
Dry (22%)	
NOACTION 011221	457,582
Alternative 1A 011221	457,783
Difference	201
Percent Difference	0.0
Critical (14.6%)	
NOACTION 011221	461,649
Alternative 1A 011221	461,699
Difference	50
Percent Difference	0.0

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

Table 2b-2 Annual Potential Production for Spring-Run Chinook Salmon, NOACTION 011221 vs. Alternative 1B 011221

Long-term Average and Average by Water Year Type Annual Production

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
NOACTION 011221	446,054
Alternative 1B 011221	445,878
Difference	-176
Percent Difference[3]	0.0
Water Year Types[2]	
Wet (31.7%)	
NOACTION 011221	446,722
Alternative 1B 011221	446,702
Difference	-20
Percent Difference	0.0
Above Normal (14.6%)	
NOACTION 011221	400,639
Alternative 1B 011221	403,529
Difference	2,890
Percent Difference	0.7
Below Normal (17.1%)	
NOACTION 011221	449,067
Alternative 1B 011221	445,669
Difference	-3,398
Percent Difference	-0.8
Dry (22%)	
NOACTION 011221	457,582
Alternative 1B 011221	457,906
Difference	323
Percent Difference	0.1
Critical (14.6%)	
NOACTION 011221	461,649
Alternative 1B 011221	461,587
Difference	-62
Percent Difference	0.0

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

Table 2b-3 Annual Potential Production for Spring-Run Chinook Salmon, NOACTION 011221 vs. Alternative 2 011221

Long-term Average and Average by Water Year Type Annual Production

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
NOACTION 011221	446,054
Alternative 2 011221	445,208
Difference	-846
Percent Difference[3]	-0.2
Water Year Types[2]	
Wet (31.7%)	
NOACTION 011221	446,722
Alternative 2 011221	446,788
Difference	66
Percent Difference	0.0
Above Normal (14.6%)	
NOACTION 011221	400,639
Alternative 2 011221	401,682
Difference	1,043
Percent Difference	0.3
Below Normal (17.1%)	
NOACTION 011221	449,067
Alternative 2 011221	443,966
Difference	-5,101
Percent Difference	-1.1
Dry (22%)	
NOACTION 011221	457,582
Alternative 2 011221	457,698
Difference	116
Percent Difference	0.0
Critical (14.6%)	
NOACTION 011221	461,649
Alternative 2 011221	460,773
Difference	-875
Percent Difference	-0.2

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

Table 2b-4 Annual Potential Production for Spring-Run Chinook Salmon, NOACTION 011221 vs. Alternative 3 020121

Long-term Average and Average by Water Year Type Annual Production

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
NOACTION 011221	446,054
Alternative 3 020121	445,451
Difference	-603
Percent Difference[3]	-0.1
Water Year Types[2]	
Wet (31.7%)	
NOACTION 011221	446,722
Alternative 3 020121	446,481
Difference	-240
Percent Difference	-0.1
Above Normal (14.6%)	
NOACTION 011221	400,639
Alternative 3 020121	402,740
Difference	2,101
Percent Difference	0.5
Below Normal (17.1%)	
NOACTION 011221	449,067
Alternative 3 020121	444,394
Difference	-4,673
Percent Difference	-1.0
Dry (22%)	
NOACTION 011221	457,582
Alternative 3 020121	457,349
Difference	-233
Percent Difference	-0.1
Critical (14.6%)	
NOACTION 011221	461,649
Alternative 3 020121	462,198
Difference	549
Percent Difference	0.1

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

Table 2c-1 Annual Potential Production for Fall-Run Chinook Salmon, NOACTION 011221 vs. Alternative 1A 011221

Long-term Average and Average by Water Year Type Annual Production

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
NOACTION 011221	18,215,670
Alternative 1A 011221	18,235,927
Difference	20,256
Percent Difference[3]	0.1
Water Year Types[2]	
Wet (31.7%)	
NOACTION 011221	17,062,773
Alternative 1A 011221	17,087,773
Difference	25,000
Percent Difference	0.1
Above Normal (14.6%)	
NOACTION 011221	17,175,665
Alternative 1A 011221	17,241,937
Difference	66,272
Percent Difference	0.4
Below Normal (17.1%)	
NOACTION 011221	18,947,118
Alternative 1A 011221	18,889,514
Difference	-57,604
Percent Difference	-0.3
Dry (22%)	
NOACTION 011221	19,176,506
Alternative 1A 011221	19,176,192
Difference	-315
Percent Difference	0.0
Critical (14.6%)	
NOACTION 011221	19,285,676
Alternative 1A 011221	19,379,002
Difference	93,326
Percent Difference	0.5

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

Table 2c-2 Annual Potential Production for Fall-Run Chinook Salmon, NOACTION 011221 vs. Alternative 1B 011221

Long-term Average and Average by Water Year Type Annual Production

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
NOACTION 011221	18,215,670
Alternative 1B 011221	18,233,807
Difference	18,137
Percent Difference[3]	0.1
Water Year Types[2]	
Wet (31.7%)	
NOACTION 011221	17,062,773
Alternative 1B 011221	17,018,019
Difference	-44,754
Percent Difference	-0.3
Above Normal (14.6%)	
NOACTION 011221	17,175,665
Alternative 1B 011221	17,334,317
Difference	158,652
Percent Difference	0.9
Below Normal (17.1%)	
NOACTION 011221	18,947,118
Alternative 1B 011221	18,904,670
Difference	-42,448
Percent Difference	-0.2
Dry (22%)	
NOACTION 011221	19,176,506
Alternative 1B 011221	19,235,262
Difference	58,756
Percent Difference	0.3
Critical (14.6%)	
NOACTION 011221	19,285,676
Alternative 1B 011221	19,332,732
Difference	47,056
Percent Difference	0.2

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

Table 2c-3 Annual Potential Production for Fall-Run Chinook Salmon, NOACTION 011221 vs. Alternative 2 011221

Long-term Average and Average by Water Year Type Annual Production

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
NOACTION 011221	18,215,670
Alternative 2 011221	18,227,958
Difference	12,288
Percent Difference[3]	0.1
Water Year Types[2]	
Wet (31.7%)	
NOACTION 011221	17,062,773
Alternative 2 011221	17,049,033
Difference	-13,740
Percent Difference	-0.1
Above Normal (14.6%)	
NOACTION 011221	17,175,665
Alternative 2 011221	17,255,309
Difference	79,645
Percent Difference	0.5
Below Normal (17.1%)	
NOACTION 011221	18,947,118
Alternative 2 011221	18,882,055
Difference	-65,063
Percent Difference	-0.3
Dry (22%)	
NOACTION 011221	19,176,506
Alternative 2 011221	19,211,399
Difference	34,892
Percent Difference	0.2
Critical (14.6%)	
NOACTION 011221	19,285,676
Alternative 2 011221	19,354,560
Difference	68,884
Percent Difference	0.4

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

Table 2c-4 Annual Potential Production for Fall-Run Chinook Salmon, NOACTION 011221 vs. Alternative 3 020121

Long-term Average and Average by Water Year Type Annual Production

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
NOACTION 011221	18,215,670
Alternative 3 020121	18,294,178
Difference	78,507
Percent Difference[3]	0.4
Water Year Types[2]	
Wet (31.7%)	
NOACTION 011221	17,062,773
Alternative 3 020121	16,985,039
Difference	-77,734
Percent Difference	-0.5
Above Normal (14.6%)	
NOACTION 011221	17,175,665
Alternative 3 020121	17,786,237
Difference	610,573
Percent Difference	3.6
Below Normal (17.1%)	
NOACTION 011221	18,947,118
Alternative 3 020121	18,941,658
Difference	-5,460
Percent Difference	0.0
Dry (22%)	
NOACTION 011221	19,176,506
Alternative 3 020121	19,236,372
Difference	59,866
Percent Difference	0.3
Critical (14.6%)	
NOACTION 011221	19,285,676
Alternative 3 020121	19,385,242
Difference	99,567
Percent Difference	0.5

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

Table 2d-1 Annual Potential Production for LateFall-Run Chinook Salmon, NOACTION 011221 vs. Alternative 1A 011221

Long-term Average and Average by Water Year Type Annual Production

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
NOACTION 011221	2,880,539
Alternative 1A 011221	2,889,522
Difference	8,983
Percent Difference[3]	0.3
Water Year Types[2]	
Wet (31.7%)	
NOACTION 011221	2,758,553
Alternative 1A 011221	2,757,150
Difference	-1,403
Percent Difference	-0.1
Above Normal (14.6%)	
NOACTION 011221	2,899,521
Alternative 1A 011221	2,893,097
Difference	-6,424
Percent Difference	-0.2
Below Normal (17.1%)	
NOACTION 011221	2,923,658
Alternative 1A 011221	2,945,014
Difference	21,356
Percent Difference	0.7
Dry (22%)	
NOACTION 011221	2,943,910
Alternative 1A 011221	2,947,408
Difference	3,498
Percent Difference	0.1
Critical (14.6%)	
NOACTION 011221	2,983,661
Alternative 1A 011221	3,021,779
Difference	38,118
Percent Difference	1.3

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

Table 2d-2 Annual Potential Production for LateFall-Run Chinook Salmon, NOACTION 011221 vs. Alternative 1B 011221

Long-term Average and Average by Water Year Type Annual Production

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
NOACTION 011221	2,880,539
Alternative 1B 011221	2,889,355
Difference	8,816
Percent Difference[3]	0.3
Water Year Types[2]	
Wet (31.7%)	
NOACTION 011221	2,758,553
Alternative 1B 011221	2,749,538
Difference	-9,015
Percent Difference	-0.3
Above Normal (14.6%)	
NOACTION 011221	2,899,521
Alternative 1B 011221	2,950,987
Difference	51,465
Percent Difference	1.8
Below Normal (17.1%)	
NOACTION 011221	2,923,658
Alternative 1B 011221	2,930,087
Difference	6,429
Percent Difference	0.2
Dry (22%)	
NOACTION 011221	2,943,910
Alternative 1B 011221	2,943,248
Difference	-662
Percent Difference	0.0
Critical (14.6%)	
NOACTION 011221	2,983,661
Alternative 1B 011221	3,012,571
Difference	28,910
Percent Difference	1.0

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

Table 2d-3 Annual Potential Production for LateFall-Run Chinook Salmon, NOACTION 011221 vs. Alternative 2 011221

Long-term Average and Average by Water Year Type Annual Production

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
NOACTION 011221	2,880,539
Alternative 2 011221	2,885,779
Difference	5,240
Percent Difference[3]	0.2
Water Year Types[2]	
Wet (31.7%)	
NOACTION 011221	2,758,553
Alternative 2 011221	2,748,619
Difference	-9,935
Percent Difference	-0.4
Above Normal (14.6%)	
NOACTION 011221	2,899,521
Alternative 2 011221	2,894,131
Difference	-5,390
Percent Difference	-0.2
Below Normal (17.1%)	
NOACTION 011221	2,923,658
Alternative 2 011221	2,947,998
Difference	24,340
Percent Difference	0.8
Dry (22%)	
NOACTION 011221	2,943,910
Alternative 2 011221	2,952,542
Difference	8,632
Percent Difference	0.3
Critical (14.6%)	
NOACTION 011221	2,983,661
Alternative 2 011221	3,003,266
Difference	19,605
Percent Difference	0.7

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

Table 2d-4 Annual Potential Production for LateFall-Run Chinook Salmon, NOACTION 011221 vs. Alternative 3 020121

Long-term Average and Average by Water Year Type Annual Production

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
NOACTION 011221	2,880,539
Alternative 3 020121	2,889,112
Difference	8,573
Percent Difference[3]	0.3
Water Year Types[2]	
Wet (31.7%)	
NOACTION 011221	2,758,553
Alternative 3 020121	2,737,640
Difference	-20,914
Percent Difference	-0.8
Above Normal (14.6%)	
NOACTION 011221	2,899,521
Alternative 3 020121	2,937,273
Difference	37,752
Percent Difference	1.3
Below Normal (17.1%)	
NOACTION 011221	2,923,658
Alternative 3 020121	2,957,965
Difference	34,307
Percent Difference	1.2
Dry (22%)	
NOACTION 011221	2,943,910
Alternative 3 020121	2,968,582
Difference	24,672
Percent Difference	0.8
Critical (14.6%)	
NOACTION 011221	2,983,661
Alternative 3 020121	2,977,633
Difference	-6,028
Percent Difference	-0.2

[1] Based on the 80-year simulation period

[2] As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999). Water years may not correspond to the biological years in SALMOD.

[3] Relative difference of the annual average

JACOBS

Memorandum

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Project Name	Sites Reservoir Project	
Subject	Model Results to Support the May 2021 Administrative Revised Draft EIR/SDEIS: No Action Alternative, Alternative 1A, Alternative 1B, Alternative 2, and Alternative 3	
Attention	Ali Forsythe/Sites Project Authority	John Spranza/HDR
	Erin Heydinger/HDR	Monique Briard/ICF
	Nicole Williams/ICF	
From	Robert Leaf/JACOBS	Steve Micko/JACOBS
	Reed Thayer/JACOBS	
Date	March 19, 2021	

1. Introduction

The Sites Reservoir Project team has developed model simulations to support quantitative analysis of Sites long-term operations as part of developing an Administrative Revised Draft EIR/SDEIS, for completion in May 2021.

The results of these model simulations are provided for informational and review purposes. If there are any questions regarding the results of these simulations, please contact the modeling team.

2. Modeled Scenarios

Model results are provided for the alternatives tabulated below.

Model Name	**Label Name (as seen in spreadsheet)**	**Description**
No Action Alternative 011221	NAA 011221	Baseline simulation (Reclamation 2020 Benchmark)
Alternative 1A 011221	ALT 1A 011221	1.5 MAF Reservoir
Alternative 1B 011221	ALT 1B 011221	1.5 MAF Reservoir with 91 TAF of Reclamation Investment
Alternative 2 011221	ALT 2 011221	1.27 MAF Reservoir
Alternative 3 020121	ALT 3 020121	1.5 MAF Reservoir with 345 TAF of Reclamation Investment

The SALMOD model was used to simulate annual production potential for juvenile fall, late-fall, winter, and spring runs of Chinook salmon in the Sacramento River from Keswick Dam to the Red Bluff Diversion Dam.

3. SALMOD Simulations for Modeled Scenarios

Two pdf reports, SALMOD_Ann_Mort_ExcP_All_Runs_NODOS_SPJPA2020_Plots_20210310.pdf and SALMOD_Ann_Mortality & Production Summary (LS & Cause)_ALL_Runs_NODOS_SPJPA2020, are provided.

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Memorandum

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Project Name	Sites Reservoir Project	
Subject	Model Results to Support the May 2021 Administrative Revised Draft EIR/SDEIS: No Action Alternative, Alternative 1A, Alternative 1B, Alternative 2, and Alternative 3 – DSM2, HEC5Q and RecTemp Results Appendices	
Attention	Ali Forsythe/Sites Project Authority	John Spranza/HDR
	Erin Heydinger/HDR	Monique Briard/ICF
	Nicole Williams/ICF	
From	Robert Leaf/JACOBS	Steve Micko/JACOBS
	Reed Thayer/JACOBS	
Date	March 19, 2021	

1. Introduction

The Sites Reservoir Project team has developed model simulations to support quantitative analysis of Sites long-term operations as part of developing an Administrative Revised Draft EIR/SDEIS, for completion in May 2021.

The results of these model simulations are provided for informational and review purposes. If there are any questions regarding the results of these simulations, please contact the modeling team.

2. Modeled Scenarios

Model results appendices are provided for the alternatives tabulated below.

Model Name	**Label Name (as seen in spreadsheet)**	**Description**
No Action Alternative 011221	NAA 011221	Baseline simulation (Reclamation 2020 Benchmark)
Alternative 1A 011221	ALT 1A 011221	1.5 MAF Reservoir
Alternative 1B 011221	ALT 1B 011221	1.5 MAF Reservoir with 91 TAF of Reclamation Investment
Alternative 2 011221	ALT 2 011221	1.27 MAF Reservoir
Alternative 3 020121	ALT 3 020121	1.5 MAF Reservoir with 345 TAF of Reclamation Investment

Draft_0008632

The DSM2 model (Hydro and Qual components) was used to simulate Delta hydrodynamics and salinity conditions based on the results of the CalSim II models.

The HEC5Q (Trinity, Sacramento, and American River models) and Reclamation Temperature Model (Feather River model) models were used to simulate reservoir and riverine temperature conditions based on the results of the CalSim II models.

These models (DSM2, HEC5Q and RecTemp) have been jointly developed by Reclamation and the California Department of Water Resources (DWR) over many years. These models are useful so long as the results are interpreted consistent with the model limitations.

3. Model Results for Modeled Scenarios

Reports for a range of outputs have been prepared. These results are included in the following attachments:

3.1. SPJPA_RDEIR_SDEIS_Appendix_6B1_SacramentoSanJoaquinDeltaModeling_SalinityResults_20210319.pdf (DSM2)
3.2. SPJPA_RDEIR_SDEIS_Appendix_6B2_SacramentoSanJoaquinDeltaModeling_ChlorideResults_20210319.pdf (DSM2)
3.3. SPJPA_RDEIR_SDEIS_Appendix_6B3_SacramentoSanJoaquinDeltaModeling_X2Results_20210319.pdf (DSM2)
3.4. SPJPA_RDEIR_SDEIS_Appendix_6C_RiverTemperature_20210319.pdf (HEC5Q and RecTemp)

Each attachment includes a cover page cataloging the results included and formats used.

From: Marcus Maltby [mmaltby@BrwnCald.com]
Sent: 3/20/2021 3:26:42 PM
To: Jerry Brown [jbrown@sitesproject.org]; Alicia Forsythe [aforsythe@sitesproject.org]; Joe Trapasso [jtrapasso@sitesproject.org]; Kevin Spesert [kspesert@sitesproject.org]; laurie.warner.herson [laurie.warner.herson@phenixenv.com]; Spranza, John [john.spranza@hdrinc.com]; Heydinger, Erin [erin.heydinger@hdrinc.com]; conner [conner@cmdwest.com]; Westcot, Cathy [cathy.westcot@hdrinc.com]; Luu, Henry [henry.luu@hdrinc.com]; JP Robinette [jrobinette@brwncald.com]
CC: Jeff Campbell [jeff@projectcontrolscubed.com]
Subject: Sites March 2021 Bimonthly Schedule Update
Attachments: Sites March 2021 Progress Update Executive Summary Report.pdf; 2021_03_Sites Schedule Update.pdf

Flag: Follow up

Hello All,

Please see attached final March 2021 bimonthly schedule update. An executive summary highlighting key updates and risk items is also attached with the following major takeaways:

1. Of the 14 major deliverables scheduled to be delivered within the current work plan, 2 deliverables gained time, 2 deliverables maintained schedule, and 10 deliverables have been extended or delayed. The delay in the Environmental Feasibility Report poses the most significant risk to the schedule. The extension of this deliverable is likely related to the ICF-E Amendment and additional scope in preparing the environmental feasibility report.
2. The CWC Feasibility Review has increased from 22 calendar days to 123 calendar days, however the review period of the Environmental portion of the CWC Feasibility Report has a duration of 25 calendar days which appears to be a short duration.
3. Four new risks associated with project Permitting have been identified (Risk No. 003, Risk No. 004, Risk No. 005, and Risk No. 006) and one existing risk (Risk No. 002R1) increased its potential impact from medium to high based on input from the Permitting team. Additional risk related analysis can be found in the attached executive summary.
a. Risk Nos. 002R1, 003, 004, 005 are related to Biological Assessment activities
b. Risk No. 006 is related to 401 Application activities

All schedule reports, in .pdf and .xer format, are archived on the Sites sharepoint site at the following location: Bimonthly Schedule Updates

Note: Risk software is also available to review mitigation measures in real time. Please reach out to myself to setup a meeting with PC^3 to walk through any of the risk items outlined above.

Thanks,

Marcus Maltby, PE*
Brown and Caldwell
MMaltby@brwncald.com
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*Professional Registration in Specific States

Sites March 2021 Update Executive Briefing

Report Generated on Tuesday, March 16, 2021
Created by Project Controls Team

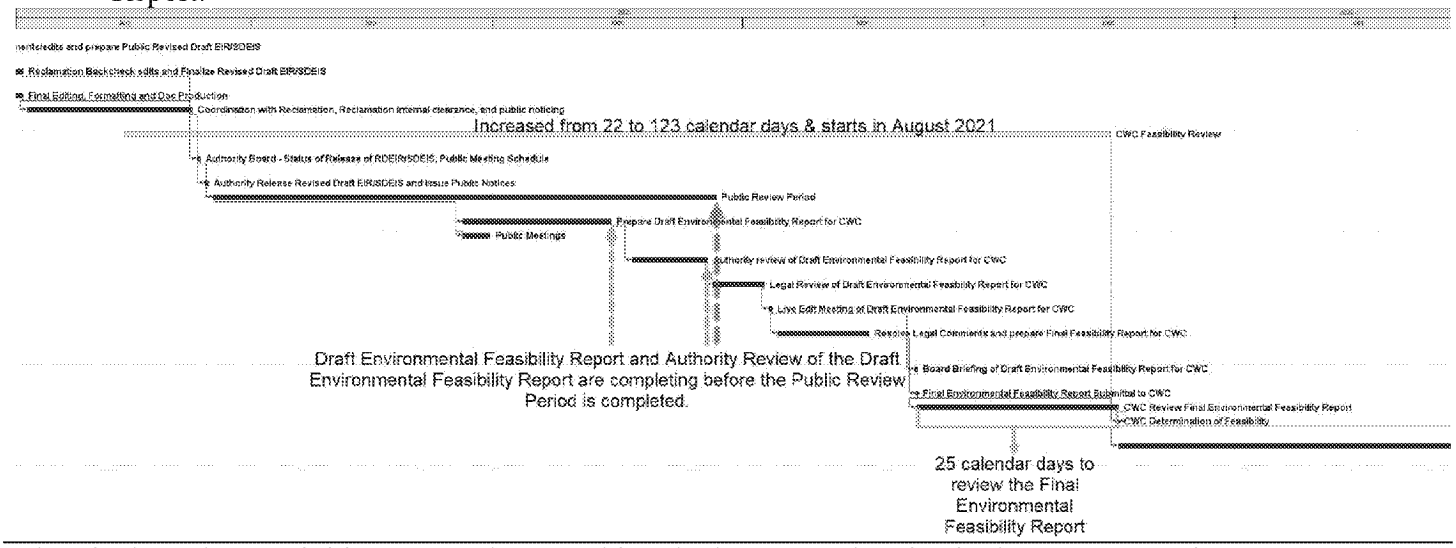
Deliverables Performance Analysis

Deliverable Performance Analysis of Amendment 2 activities by discipline. The variance column indicates calendar days delayed (Red) or calendar days gained (Green) between January 2021 and March 2021 updates.

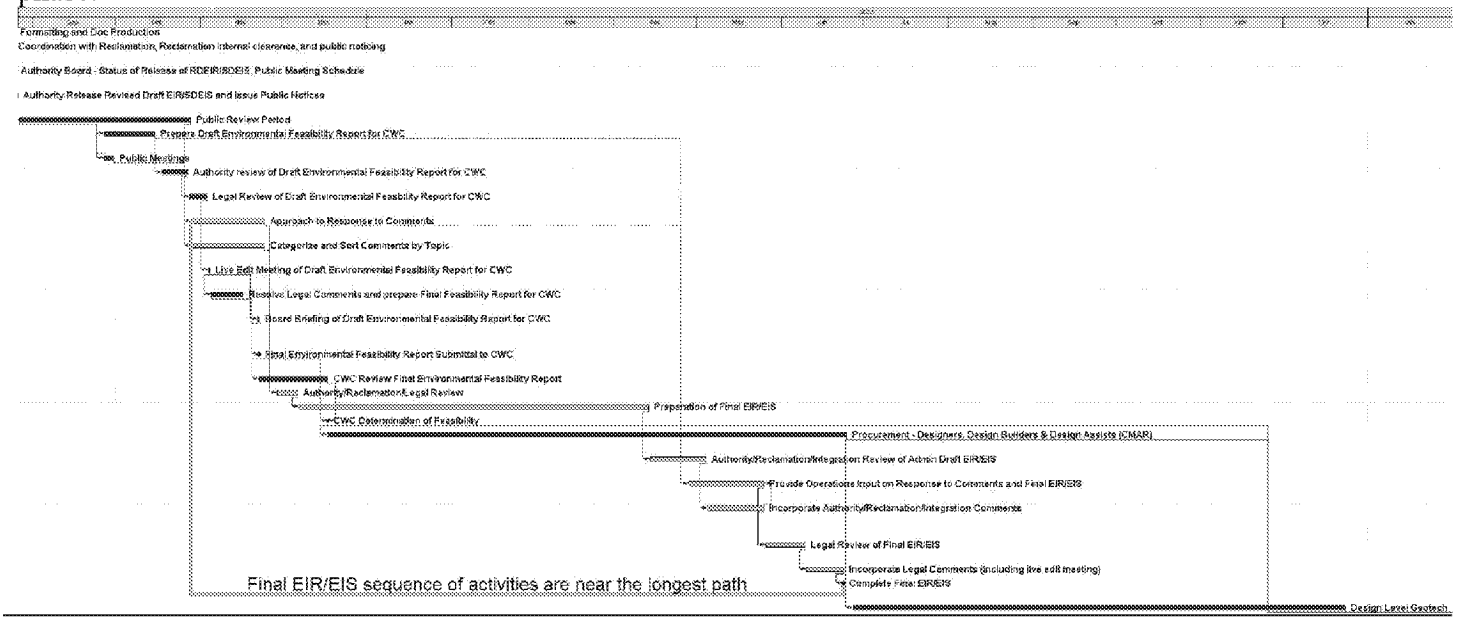
Discipline	Deliverable	Variance Between January'21 and March'21 Updates in Calendar Days
Operations Deliverable	Full Operations Analysis Complete	-66
Operations Deliverable	Appendices for EIR/EIS	-21
Environmental Deliverable	Release Revised Draft EIR/ Supplemental Draft EIS for Public Review	-28
Environmental Deliverable	Authority review of Draft Environmental Feasibility Report for CWC	20
Engineering Deliverable	Develop Class 4 Cost Estimate including Mitigation Measures	-109
Engineering Deliverable	Constructability Analysis	-27
Engineering Deliverable	CWC Determination of Feasibility	11
Permitting Deliverable	Submit Delineation to USACE	0
Permitting Deliverable	Submit 404 Application	0
Permitting Deliverable	Deadline for Signatures on Final PA	-135
Permitting Deliverable	Submit Final Admin Draft BA	-69
Permitting Deliverable	Submit Revised Admin Draft BA to Reclamation	-71
Permitting Deliverable	Reclamation Submit BA to USFWS & NMFS	-101
Permitting Deliverable	Submit 401 Application - Conditional Approval	-54

Critical Path Analysis

- The Public Draft EIR/EIS has been extended or delayed roughly one month.
- The time extension or delay is likely related to ICF-E's task order amendment approved on March 18, 2021.
- Activities to Prepare the Draft Environmental Feasibility Report and the Authority Review of the Draft Environmental Feasibility Report finish before the Public Review Period is completed.
- The CWC Feasibility Review time increased from 22 calendar days to 123 calendar days and the CWC will have 25 calendar days to review the Final Environmental Feasibility Report.



The Final EIR/EIS activities are nearly overtaking the longest path to begin the preconstruction phase.



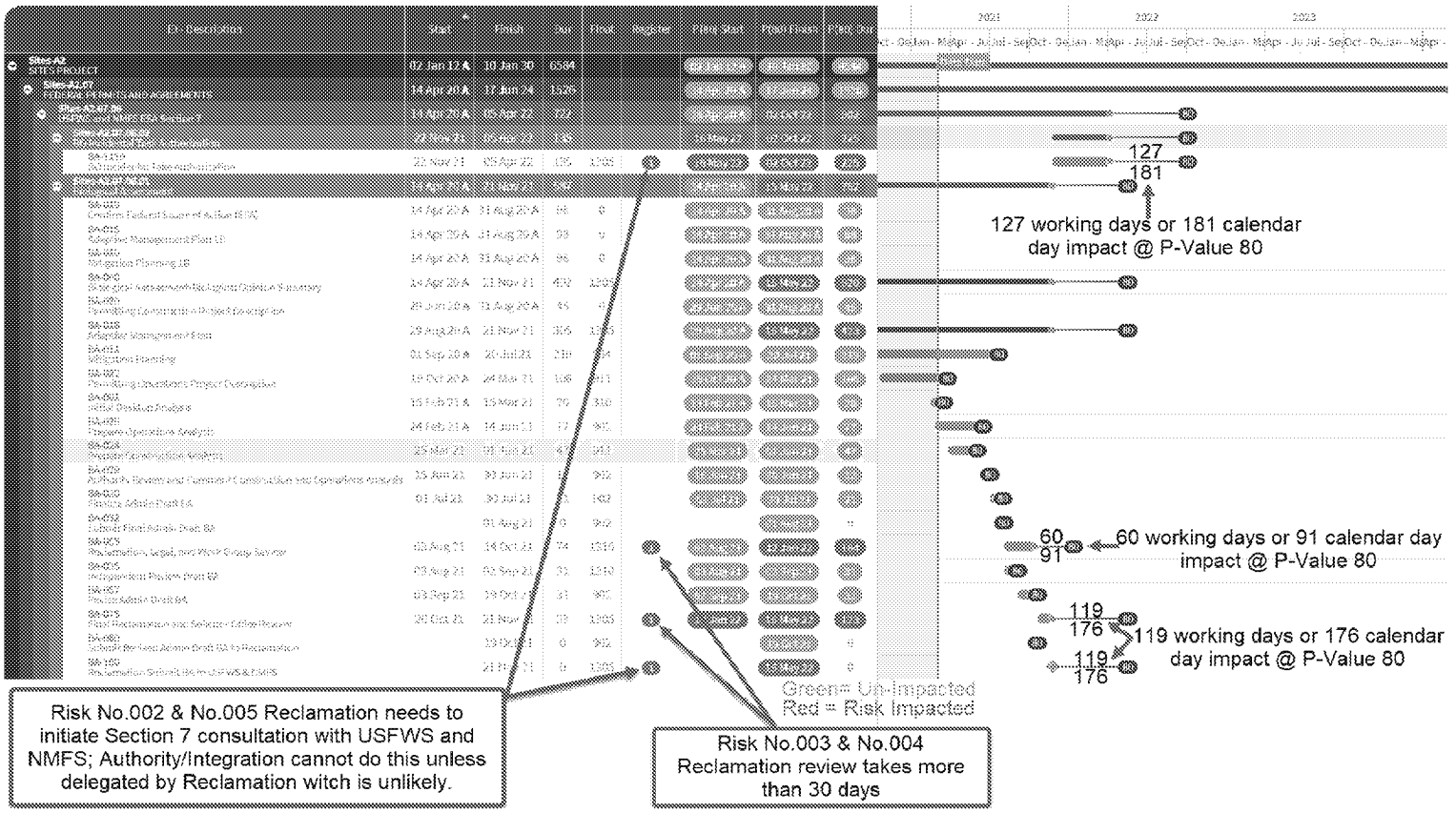
Risk Analysis

Four new risks associated with project Permitting were identified and one existing risk increased its potential impact from medium to high. A risk adjusted schedule has been generated at the Probability of 80% or P-Value of 80. P-Value 80 is determined by performing 1000 iterations of a risk impact on an activity(s), then identifying the date or duration and cost at 80% probability of occurrence.

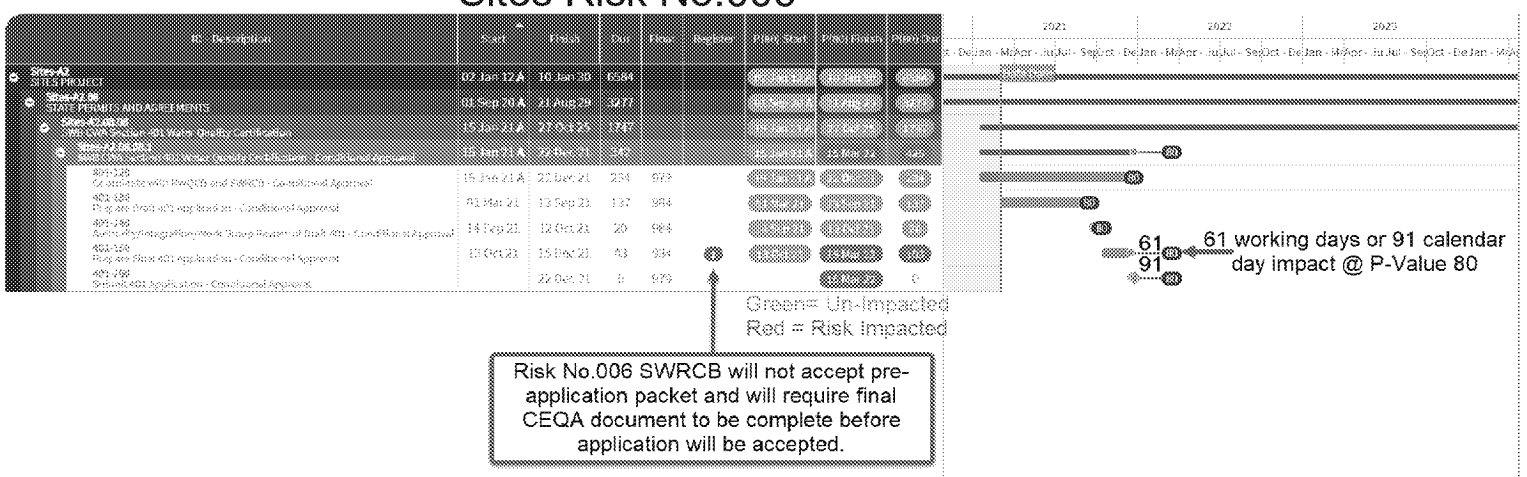
- Risk No.002R1 - Reclamation unlikely to initiate formal Section 7 (ESA) consultation.
  - Increased schedule risk from medium to high risk, 119 working days or 176 calendar day impact to BA-100 "Reclamation Submit BA to USFWS & NMFS."
  - Cost risk impact is medium, up to $100K.
- Risk No.003 - Reclamation review takes more than 30 days.
  - 60 working days or 91 calendar day impact to BA-055 "Reclamation, Legal, and Work Group Review"
  - Cost risk impact is very low, up to $1K.
- Risk No.004 - Reclamation review takes more than 30 days.
  - 119 working days or 176 calendar day impact to BA-075 "Final Reclamation and Solicitor Office Review."
  - Cost risk impact is very low, up to $1K.
- Risk No.005 - Reclamation unlikely to initiate formal Section 7 (ESA) consultation.
  - 127 working days or 181 calendar day impact to BA-1110 "Incidental Take Authorization."
  - Cost risk impact is medium, up to $100K.
- Risk No.006 - SWRCB will not accept pre-application packet and will require final CEQA document to be complete before application will be accepted.
  - 61 working days or 91 calendar day impact to 401-160 "Submit 401 Application – Conditional Approval."
  - Cost risk impact is low, up to $10K.

The risk engine used to generate the risks also can explore mitigation measures. Results can be viewed live.

Sites Risk No.002R1 thru No.005



Sites Risk No.006



Schedule Update
March 2021

Sites
Program Management Team

Date:	March 19, 2021
From:	Jeff Campbell
Quality Review by:	Marcus Maltby

1.0 Schedule Update

The Sites Reservoir Project Master Schedule is updated on a bimonthly basis. The included schedule update is a result of adjustments and revisions made to the previous master schedule based on conversations and input from Service Area Integration Leads for activities occurring during the Amendment 2 work period. All markups provided by integration leads are retained as backup on the Sites Reservoir Project SharePoint site here. This update was completed on March 19, 2021 and incorporates the following modifications:

- Added 21 new activities that contain cost with actual invoices billed to the 21 new activities.
- Added 7 new environmental schedule Authority Review Board activities.
- Added 6 new Water Storage Investment Program (WSIP) Quarterly Report activities.
- Added 7 new Federal Aid Assistance (FAA) Performance Report activities.
- Added 4 USDA Status Report activities
- Added 13 Amendment 3 Work Plan activities leading up to issuing Task Orders.
- Added or modified 97 activities with actual cost.
- Deleted 13 environmental and operations activities that identified tasks that will no longer be performed.

2.0 Decisions Summary

No major decisions impacting the project were discussed during this schedule update period.

3.0 Attachments

Attachment 1 – Program Summary Schedule

Attachment 2 – Program Detail Schedule

Attachment 3 – Critical Path Schedule

Attachment 4 – Engineering Detail Schedule

Attachment 5 – Environmental Detail Schedule

Attachment 6 – Operations Detail Schedule

Attachment 7 – Permitting Detail Schedule

Attachment 8 – Right of Entry Detail Schedule

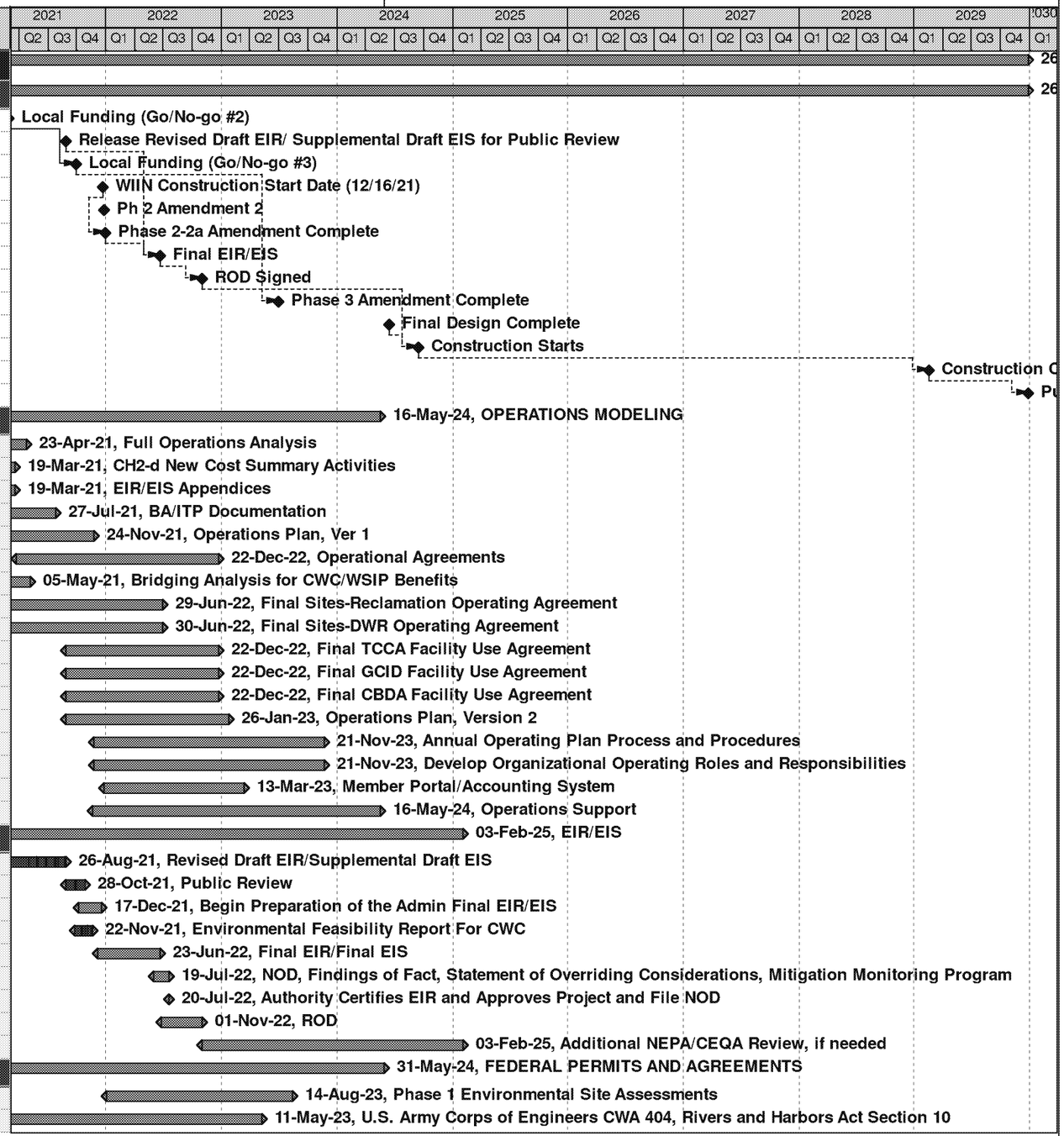
Attachment 1: Program Summary Schedule

Draft_0008640

SITES PROJECT

Date: 19-Mar-21

Activity ID	Activity Name	Remaining Duration	Start	Finish
SITES PROJECT		**2267**	**25-Mar-20 A**	**26-Dec-29**
MILESTONES		**2267**	**01-Mar-21 A**	**26-Dec-29**
MS-002-LF	Local Funding (Go/No-go #2)	0		01-Mar-21
MS-011-DE	Release Revised Draft EIR/ Supplemental Draft EIS for Public I	0		26-Aug-21
MS-003-LF	Local Funding (Go/No-go #3)	0		29-Sep-21
MS-020-CS	WIIN Construction Start Date (12/16/21)	0		23-Dec-21
MS-004-P2	Ph 2 Amendment 2	0		27-Dec-21*
MS-006-Ph2-2	Phase 2-2a Amendment Complete	0		31-Dec-21
MS-250-FE	Final EIR/EIS	0		23-Jun-22
MS-450-RD	ROD Signed	0		01-Nov-22
WP3-010	Phase 3 Amendment Complete	0		30-Jun-23
MS-010-D	Final Design Complete	0		14-Jun-24
MS-500-CS	Construction Starts	0	16-Sep-24	
MS-510-CC	Construction Complete	0		16-Feb-29
MS-600-PB	Public Beneficial Occupancy - Sites Program	0		26-Dec-29
OPERATIONS MODELING		**804**	**15-Jun-20 A**	**16-May-24**
Full Operations Analysis		39	15-Jun-20 A	23-Apr-21
CH2-d New Cost Summary Activities		15	23-Sep-20 A	19-Mar-21
EIR/EIS Appendices		15	01-Mar-21	19-Mar-21
BA/ITP Documentation		104	01-Nov-20 A	27-Jul-21
Operations Plan, Ver 1		187	01-Nov-20 A	24-Nov-21
Operational Agreements		439	22-Mar-21	22-Dec-22
Bridging Analysis for CWC/WSIP Benefits		47	01-Sep-20 A	05-May-21
Final Sites-Reclamation Operating Agreement		334	02-Nov-20 A	29-Jun-22
Final Sites-DWR Operating Agreement		335	02-Nov-20 A	30-Jun-22
Final TCCA Facility Use Agreement		328	27-Aug-21	22-Dec-22
Final GCID Facility Use Agreement		328	27-Aug-21	22-Dec-22
Final CBDA Facility Use Agreement		328	27-Aug-21	22-Dec-22
Operations Plan, Version 2		370	27-Aug-21	26-Jan-23
Annual Operating Plan Process and Procedures		519	25-Nov-21	21-Nov-23
Develop Organizational Operating Roles and Responsibilities		519	25-Nov-21	21-Nov-23
Member Portal/Accounting System		300	28-Dec-21	13-Mar-23
Operations Support		649	22-Nov-21	16-May-24
EIR/EIS		**990**	**10-Dec-20 A**	**03-Feb-25**
Revised Draft EIR/Supplemental Draft EIS		126	10-Dec-20 A	26-Aug-21
Public Review		43	27-Aug-21	28-Oct-21
Begin Preparation of the Admin Final EIR/EIS		48	07-Oct-21	17-Dec-21
Environmental Feasibility Report For CWC		39	27-Sep-21	22-Nov-21
Final EIR/Final EIS		137	07-Dec-21	23-Jun-22
NOD, Findings of Fact, Statement of Overriding Considerations, Mitigation Monitoring		32	03-Jun-22	19-Jul-22
Authority Certifies EIR and Approves Project and File NOD		1	19-Jul-22	20-Jul-22
ROD		90	24-Jun-22	01-Nov-22
Additional NEPA/CEQA Review, if needed		570	02-Nov-22	03-Feb-25
FEDERAL PERMITS AND AGREEMENTS		**814**	**14-Apr-20 A**	**31-May-24**
Phase 1 Environmental Site Assessments		421	03-Jan-22	14-Aug-23
U.S. Army Corps of Engineers CWA 404, Rivers and Harbors Act Section 10		550	05-May-20 A	11-May-23



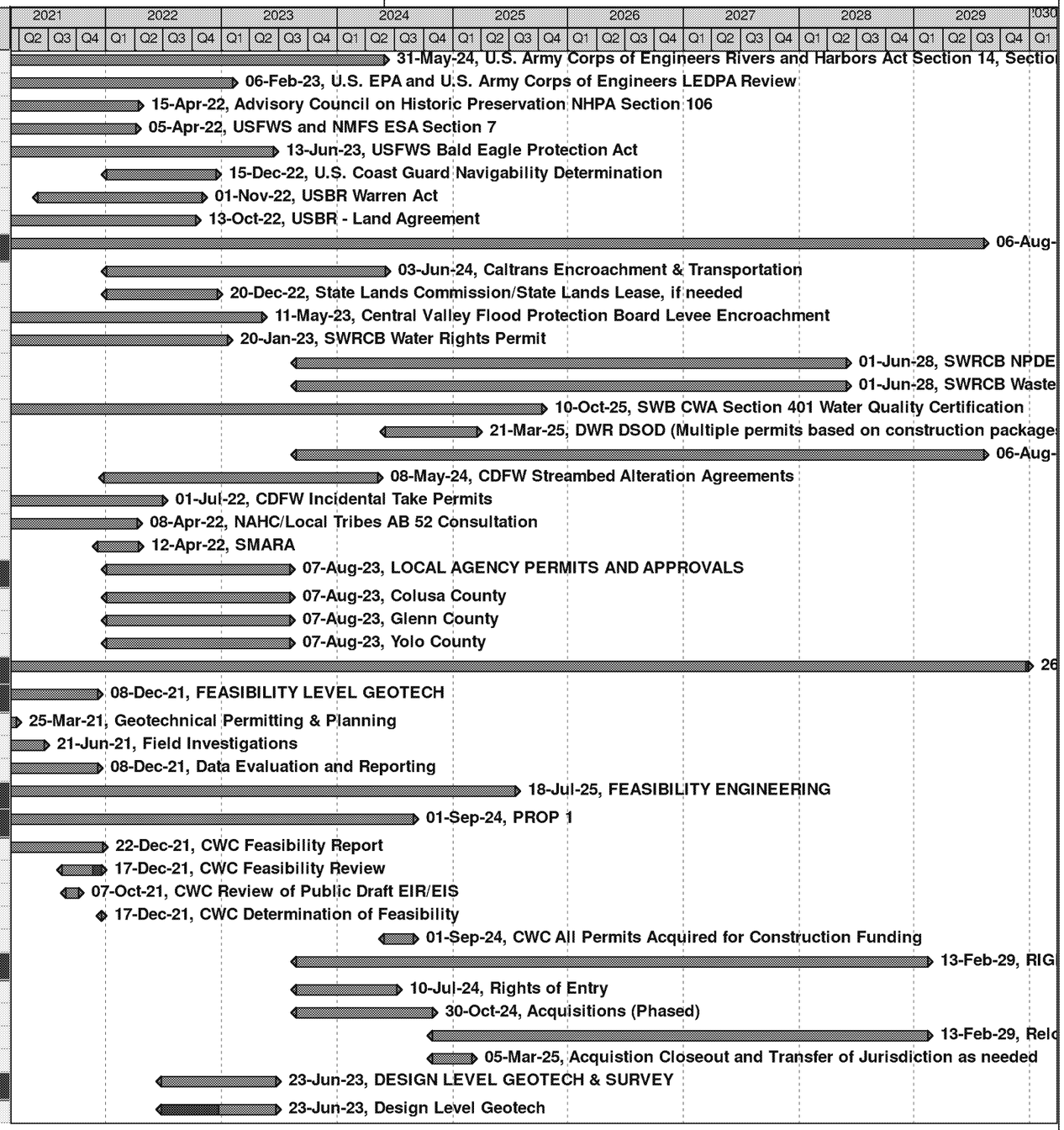
Critical Remaining Work
Milestone
Summary

SITES MASTER SUMMARY SCHEDULE

SITES PROJECT

Date: 19-Mar-21

Activity ID	Activity Name	Remaining Duration	Start	Finish
	U.S. Army Corps of Engineers Rivers and Harbors Act Section 14, Section 408	814	04-Feb-21 A	31-May-24
	U.S. EPA and U.S. Army Corps of Engineers LEDPA Review	506	02-Nov-20 A	06-Feb-23
	Advisory Council on Historic Preservation NHPA Section 106	282	01-Sep-20 A	15-Apr-22
	USFWS and NMFS ESA Section 7	274	14-Apr-20 A	05-Apr-22
	USFWS Bald Eagle Protection Act	572	01-Sep-20 A	13-Jun-23
	U.S. Coast Guard Navigability Determination	239	03-Jan-22	15-Dec-22
	USBR Warren Act	356	01-Jun-21	01-Nov-22
	USBR - Land Agreement	407	02-Nov-20 A	13-Oct-22
	STATE PERMITS AND AGREEMENTS	**2165**	**01-Sep-20 A**	**06-Aug-29**
	Caltrans Encroachment & Transportation	605	03-Jan-22	03-Jun-24
	State Lands Commission/State Lands Lease, if needed	242	03-Jan-22	20-Dec-22
	Central Valley Flood Protection Board Levee Encroachment	501	01-Sep-20 A	11-May-23
	SWRCB Water Rights Permit	472	01-Sep-20 A	20-Jan-23
	SWRCB NPDES and CWA Section 402 (Multiple permits based on construction packa	1234	28-Aug-23	01-Jun-28
	SWRCB Waste Discharge Requirements (Multiple permits based on constr. package	1234	28-Aug-23	01-Jun-28
	SWB CWA Section 401 Water Quality Certification	1169	15-Jan-21 A	10-Oct-25
	DWR DSOD (Multiple permits based on construction packages and/or ROW access)	210	03-Jun-24	21-Mar-25
	Cal OSHA Permits (Multiple permits based on construction packages and/or ROW ac	1541	28-Aug-23	06-Aug-29
	CDFW Streambed Alteration Agreements	591	28-Dec-21	08-May-24
	CDFW Incidental Take Permits	336	01-Sep-20 A	01-Jul-22
	NAHC/Local Tribes AB 52 Consultation	277	01-Sep-20 A	08-Apr-22
	SMARA	86	07-Dec-21	12-Apr-22
	LOCAL AGENCY PERMITS AND APPROVALS	**400**	**03-Jan-22**	**07-Aug-23**
	Colusa County	400	03-Jan-22	07-Aug-23
	Glenn County	400	03-Jan-22	07-Aug-23
	Yolo County	400	03-Jan-22	07-Aug-23
	MITIGATION	**2267**	**28-Aug-20 A**	**26-Dec-29**
	FEASIBILITY LEVEL GEOTECH	**195**	**25-Mar-20 A**	**08-Dec-21**
	Geotechnical Permitting & Planning	19	25-Mar-20 A	25-Mar-21
	Field Investigations	79	04-Jan-21 A	21-Jun-21
	Data Evaluation and Reporting	195	30-Oct-20 A	08-Dec-21
	FEASIBILITY ENGINEERING	**1109**	**28-Aug-20 A**	**18-Jul-25**
	PROP 1	**879**	**30-Oct-20 A**	**01-Sep-24**
	CWC Feasibility Report	205	30-Oct-20 A	22-Dec-21
	CWC Feasibility Review	124	16-Aug-21	17-Dec-21
	CWC Review of Public Draft EIR/EIS	30	27-Aug-21	07-Oct-21
	CWC Determination of Feasibility	0	17-Dec-21	17-Dec-21
	CWC All Permits Acquired for Construction Funding	65	31-May-24	01-Sep-24
	RIGHT OF WAY (ROW)	**1417**	**28-Aug-23**	**13-Feb-29**
	Rights of Entry	218	28-Aug-23	10-Jul-24
	Acquisitions (Phased)	298	28-Aug-23	30-Oct-24
	Relocation Assistance, as needed	1119	31-Oct-24	13-Feb-29
	Acquistion Closeout and Transfer of Jurisdiction as needed	90	31-Oct-24	05-Mar-25
	DESIGN LEVEL GEOTECH & SURVEY	**260**	**27-Jun-22**	**23-Jun-23**
	Design Level Geotech	260	27-Jun-22	23-Jun-23



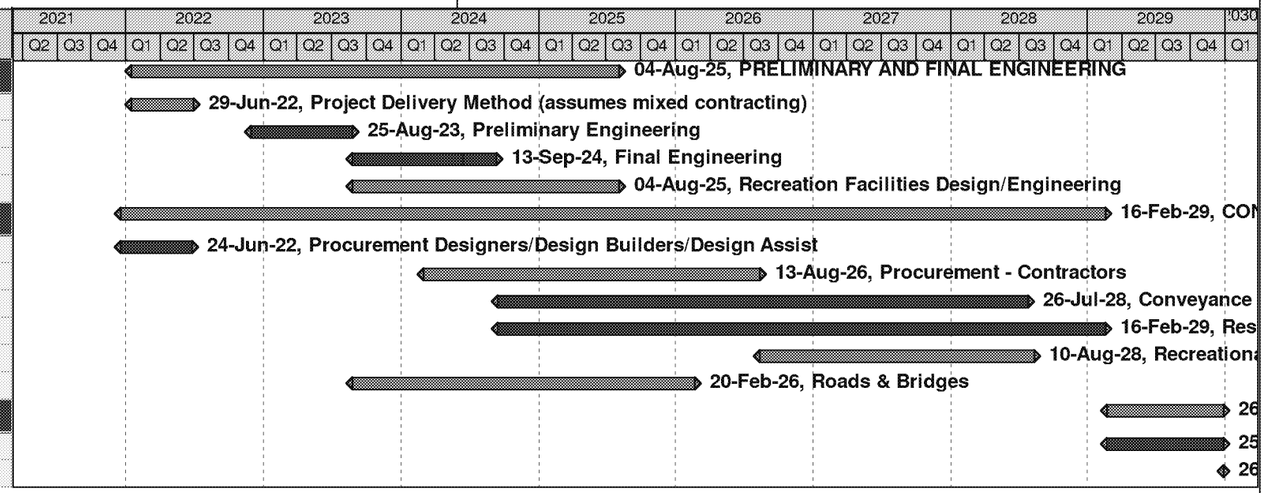
Critical Remaining Work
Milestone
Summary

SITES MASTER SUMMARY SCHEDULE

SITES PROJECT

Date: 19-Mar-21

Activity ID	Activity Name	Remaining Duration	Start	Finish
PRELIMINARY AND FINAL ENGINEERING		**926**	**17-Jan-22**	**04-Aug-25**
	Project Delivery Method (assumes mixed contracting)	118	17-Jan-22	29-Jun-22
	Preliminary Engineering	195	28-Nov-22	25-Aug-23
	Final Engineering	275	28-Aug-23	13-Sep-24
	Recreation Facilities Design/Engineering	506	28-Aug-23	04-Aug-25
CONSTRUCTION		**1870**	**17-Dec-21**	**16-Feb-29**
	Procurement Designers/Design Builders/Design Assist	135	17-Dec-21	24-Jun-22
	Procurement - Contractors	639	04-Mar-24	13-Aug-26
	Conveyance Features	1008	16-Sep-24	26-Jul-28
	Reservoir Features	1155	16-Sep-24	16-Feb-29
	Recreational Features	520	14-Aug-26	10-Aug-28
	Roads & Bridges	650	28-Aug-23	20-Feb-26
OPERATIONS		**223**	**19-Feb-29**	**26-Dec-29**
	Early Operations (Commissioning)	222	19-Feb-29	25-Dec-29
	Full Operations Begins	0	26-Dec-29	26-Dec-29



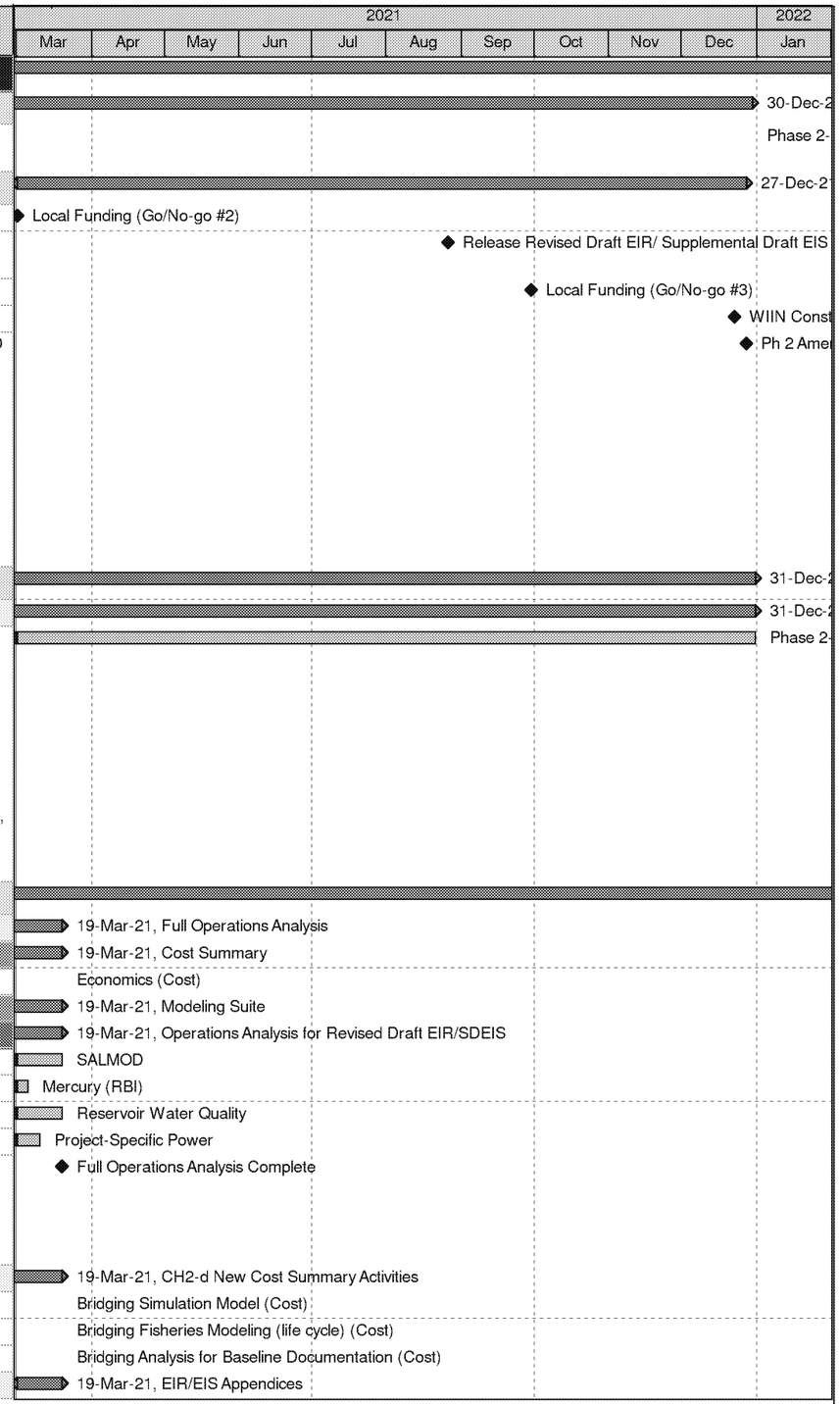
Critical Remaining Work
Milestone
Summary

SITES MASTER SUMMARY SCHEDULE

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Attachment 2: Program Detail Schedule

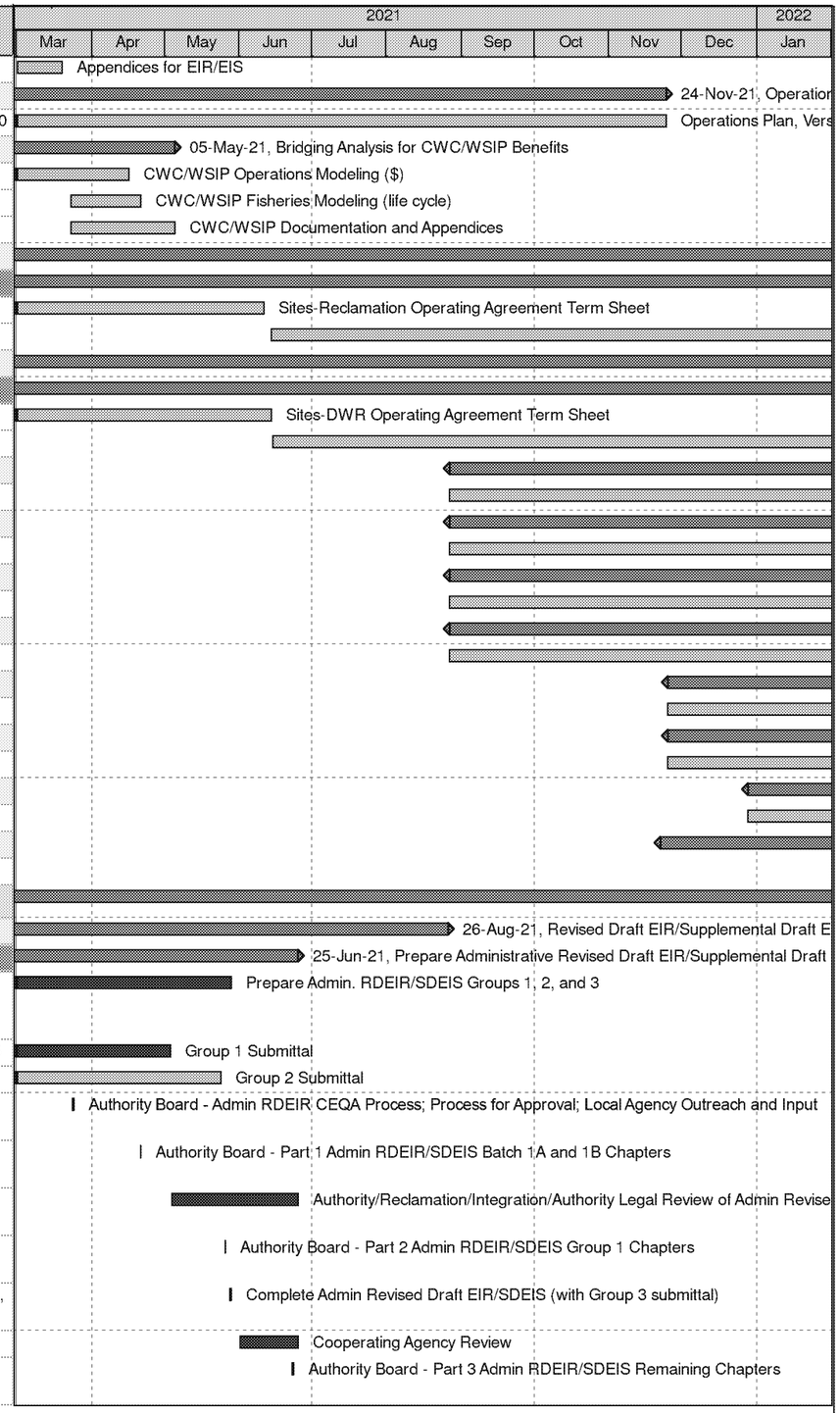
Activity ID	Activity Name	Remaining Duration	% Complete	Start	Finish	Total Float	Predecessors	Successors
SITES PROJECT		798	33.6%	02-Jan-20 A	08-May-24	1469		
PHASES		210	0%	31-Aug-20 A	30-Dec-21	1207		
PH2-2a-1000	Phase 2-2a Amendment	210	0%	31-Aug-20 A	30-Dec-21	1207	MS-005-Ph2-1b, USDA-1020, FAA-1060, WSIP-1130	MS-006-Ph2-2a
MILESTONES		207	0%	01-Mar-21	27-Dec-21	2060		
MS-002-LF	Local Funding (Go/No-go #2)	0	0%		01-Mar-21	2118	MS-001-LF	MS-003-LF
MS-011-DE	Release Revised Draft EIR/ Supplemental Draft EIS for Public Review	0	0%		26-Aug-21	261	EIR-080	MS-250-FE
MS-003-LF	Local Funding (Go/No-go #3)	0	0%		29-Sep-21	2150	MS-002-LF	WP3-010
MS-020-CS	WIIN Construction Start Date (12/16/21)	0	0%		23-Dec-21	177	CES-280, CES-090	MS-006-Ph2-2a
MS-004-P2	Ph 2 Amendment 2	0	0%		27-Dec-21*	4	OP-490, PS-030, INV-00-30, INV-033, RA-010, GC-020, CON-040, PC-010, PC-020, MS-004-P1b, TM-F107, FED-050, EM-00-10, GSR-040, ENG-230, FF-030, TM-D97, TM-D99, TM-F99, TM-H99, TM-I98, TM-I99, TM-D98, EIR-580, CWC-010, TM-F97, TM-F98, GS-30, GS-C50, ORA-010, WP-00-2A, A3WP-1120, PA-450, AR-030, PS-020, RA-00-1B, RCB-20-268	DB-100, STA-100, FO-1090
PROJECT PLANNING		306	0%	01-Sep-20 A	31-Dec-21	109		
Phased Planning		306	0%	01-Sep-20 A	31-Dec-21	109		
PH2-2a-1010	Phase 2-2a Amendment	306	37.14%	01-Sep-20 A	31-Dec-21	109	MS-004-P1b, MS-005-Ph2-1b, ENG-590, TM-B99, TM-B97, MGT-055, MGT-065	MS-006-Ph2-2a, ENG-470, ENG-480, WSIP-1100, WSIP-1090, FAA-1010, USDA-1000, FED-010, FED-080, STA-010, STA-020, LOC-010, LOC-020, LOC-030, LOC-040, LOC-050, LOC-100, LOC-110, LOC-120, LOC-130, LOC-140, LOC-50, LOC-60, LOC-70, LOC-80, LOC-90
OPERATIONS MODELING		683	17.29%	01-Sep-20 A	21-Nov-23	1361		
Full Operations Analysis		15	0%	23-Nov-20 A	19-Mar-21	71		
Cost Summary		15	0%	23-Nov-20 A	19-Mar-21	73		
OP-$-315	Economics (Cost)	15	0%	23-Nov-20 A	19-Mar-21	73	OP-0690	OP-446
Modeling Suite		5	0%	24-Nov-20 A	19-Mar-21	71		
Operations Analysis for Revised Draft EIR/SDEIS		15	0%	23-Nov-20 A	19-Mar-21	71		
OP-0630	SALMOD	15	10%	23-Nov-20 A	19-Mar-21	71	OP-1100	OP-446
OP-0670	Mercury (RBI)	5	80%	23-Nov-20 A	05-Mar-21	81	OP-1100	OP-446, OP-500
OP-0680	Reservoir Water Quality	15	80%	23-Nov-20 A	19-Mar-21	2	OP-1100	OP-446, EIR-019
OP-0695	Project-Specific Power	8	50%	12-Jan-21 A	10-Mar-21	80	OP-0690	OP-446
OP-446	Full Operations Analysis Complete	0	0%		19-Mar-21	71	OP-0600, OP-0610, OP-0620, OP-0630, OP-0640, OP-0650, OP-0660, OP-0670, OP-0680, OP-0690, OP-0665, OP-$-315, OP-452, OP-500, OP-0695, OP-350, OP-370, OP-380	CES-090, OP-480, ENG-390, CFS-020
CH2-d New Cost Summary Activities		15	0%	23-Sep-20 A	19-Mar-21	73		
OP-350	Bridging Simulation Model (Cost)	15	0%	23-Sep-20 A	19-Mar-21	73	OP-0240	OP-446
OP-370	Bridging Fisheries Modeling (life cycle) (Cost)	15	0%	23-Nov-20 A	19-Mar-21	73	OP-0620	OP-446
OP-380	Bridging Analysis for Baseline Documentation (Cost)	15	0%	23-Nov-20 A	19-Mar-21	73	OP-0600	OP-446
EIR/EIS Appendices		15	0%	01-Mar-21	19-Mar-21	50		



Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Sites Project Detailed Planning Schedule

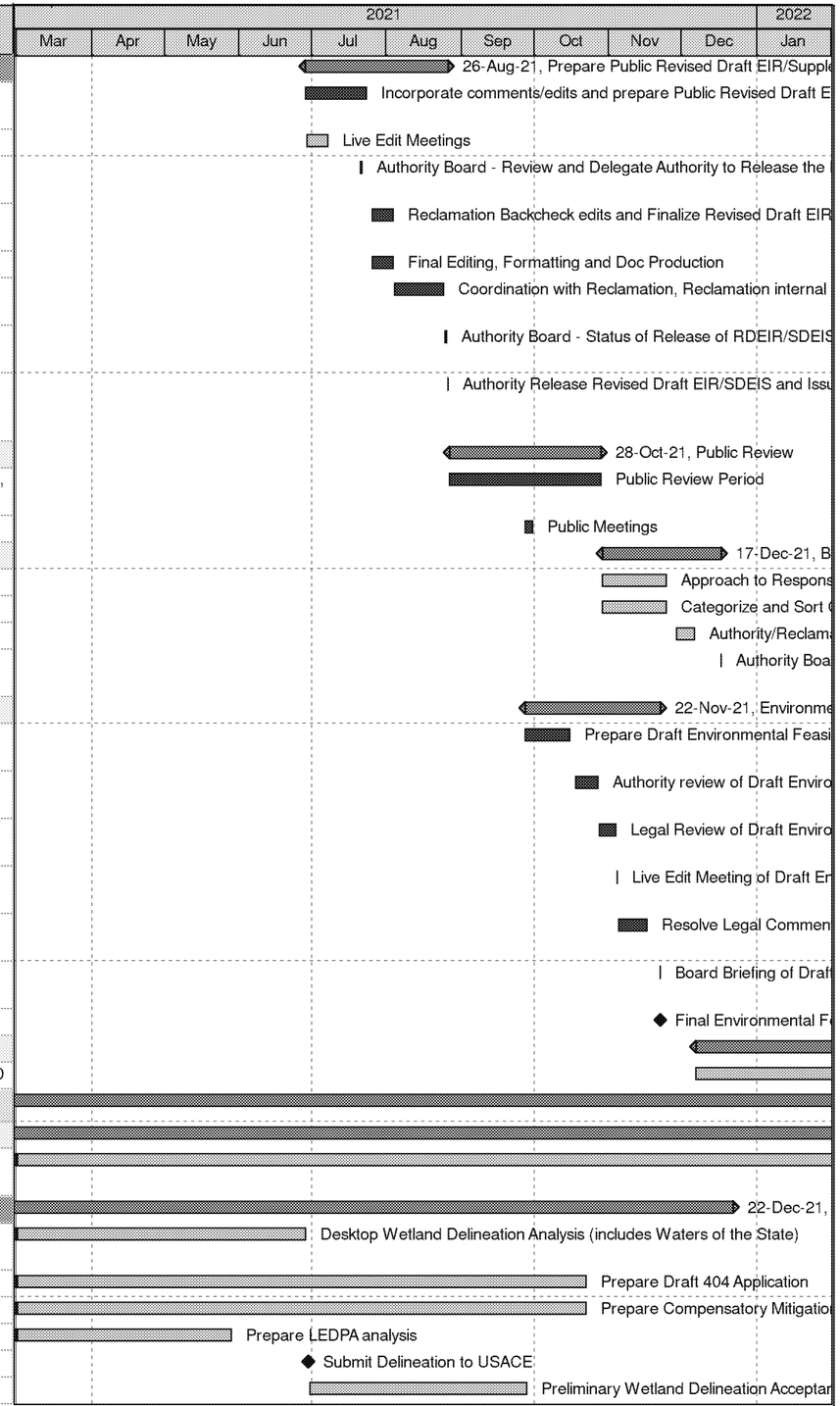
Activity ID	Activity Name	Remaining Duration	% Complete	Start	Finish	Total Float	Predecessors	Successors
OP-320	Appendices for EIR/EIS	15	0%	01-Mar-21	19-Mar-21	50	OP-0660, OP-445, OP-1070	EIR-020, BA-025
Operations Plan, Ver 1		187	17%	01-Nov-20 A	24-Nov-21	87		
OP-470	Operations Plan, Version 1 ($)	187	17%	01-Nov-20 A	24-Nov-21	87	OP-$-460	OP-475, CFS-010, CFS-020
Bridging Analysis for CWC/WSIP Benefits		47	31.27%	01-Sep-20 A	05-May-21	74		
CFS-010	CWC/WSIP Operations Modeling ($)	34	47.69%	01-Sep-20 A	16-Apr-21	87	OP-0230, OP-470	CFS-020
CFS-020	CWC/WSIP Fisheries Modeling (life cycle)	21	0%	23-Mar-21	21-Apr-21	71	CFS-010, OP-0230, OP-446, OP-470	CFS-030
CFS-030	CWC/WSIP Documentation and Appendices	31	0%	23-Mar-21	05-May-21	71	CFS-020	CWC-403
Final Sites-Reclamation Operating Agreement		334	0%	02-Nov-20 A	29-Jun-22	290		
Reclamation Term Sheet		334	0%	02-Nov-20 A	29-Jun-22	290		
OP-1110	Sites-Reclamation Operating Agreement Term Sheet	73	19%	02-Nov-20 A	11-Jun-21	290	OP-1030	OP-1120, OP-1005
OP-1005	Final Sites-Reclamation Operating Agreement	261	0%	14-Jun-21	29-Jun-22	290	POF-040, OP-1110	OP-1015
Final Sites-DWR Operating Agreement		335	0%	02-Nov-20 A	30-Jun-22	289		
DWR Term Sheet		335	0%	02-Nov-20 A	30-Jun-22	289		
OP-1120	Sites-DWR Operating Agreement Term Sheet	74	81.55%	02-Nov-20 A	14-Jun-21	289	OP-1030, OP-1110, OP-00-1A	OP-1015
OP-1015	Final Sites-DWR Operating Agreement	261	0%	15-Jun-21	30-Jun-22	289	POF-040, OP-1005, OP-1120	FD-110
Final TCCA Facility Use Agreement		328	0%	27-Aug-21	22-Dec-22	170		
FO-1020	Final TCCA Facility Use Agreement	328	0%	27-Aug-21	22-Dec-22	170	EIR-080, POF-040	PD-100
Final GCID Facility Use Agreement		328	0%	27-Aug-21	22-Dec-22	170		
FO-1030	Final GCID Facility Use Agreement	328	0%	27-Aug-21	22-Dec-22	170	EIR-080, POF-040	PD-100
Final CBDA Facility Use Agreement		328	0%	27-Aug-21	22-Dec-22	1590		
FO-1040	Final CBDA Facility Use Agreement	328	0%	27-Aug-21	22-Dec-22	1590	EIR-080, POF-040, OP-480, OP-490	FO-1050
Operations Plan, Version 2		370	0%	27-Aug-21	26-Jan-23	1581		
FO-1050	Operations Plan, Version 2	370	0%	27-Aug-21	26-Jan-23	1581	EIR-080, FO-1040	FO-1060
Annual Operating Plan Process and Procedures		519	0%	25-Nov-21	21-Nov-23	1368		
FO-1060	Annual Operating Plan Processes and Procedures	519	0%	25-Nov-21	21-Nov-23	1368	EIR-100, FO-1050	FO-1070
Develop Organizational Operating Roles and Responsibilities		519	0%	25-Nov-21	21-Nov-23	1368		
FO-1070	Develop Organizational Operating Roles and Responsibilitie	519	0%	25-Nov-21	21-Nov-23	1368	FO-1060	OS-1150
Member Portal/Accounting System		300	0%	28-Dec-21	13-Mar-23	382		
FO-1090	Develop Member Portal/Accounting System	300	0%	28-Dec-21	13-Mar-23	382	MS-004-P2	FO-1100
Operations Support		160	0%	22-Nov-21	01-Jul-22	833		
OS-1120	Operations Support for Permitting	160	0%	22-Nov-21	01-Jul-22	833	BA-1110, STA-110	OS-1130
EIR/EIS		280	0%	13-Jan-21 A	13-Apr-22	1		
Revised Draft EIR/Supplemental Draft EIS		126	0%	13-Jan-21 A	26-Aug-21	1		
Prepare Administrative Revised Draft EIR/Supplemental Draft EIS		93	0%	13-Jan-21 A	25-Jun-21	17		
EIR-020	Prepare Admin. RDEIR/SDEIS Groups 1, 2, and 3	64	9.86%	13-Jan-21 A	28-May-21	1	WP2-120, OP-0230, OP-0240, OP-0250, OP-0260, PDE-55, EB-00-00, OP-320, ENG-510, EIR-018	EIR-030, EIR-590
EIR-025	Group 1 Submittal	45	0%	13-Jan-21 A	03-May-21	1	OP-$-460, OP-460	EIR-030, EIR-125, EIR-035
EIR-027	Group 2 Submittal	60	0%	13-Jan-21 A	24-May-21	5	OP-$-455	EIR-030, EIR-135
EIR-065	Authority Board - Admin RDEIR CEQA Process; Process for Approval; Local Agency Outreach and Input	1	0%	24-Mar-21	24-Mar-21	2	EIR-019A	EIR-085
EIR-085	Authority Board - Part 1 Admin RDEIR/SDEIS Batch 1A and 1B Chapters	1	0%	21-Apr-21	21-Apr-21	2	EIR-019A, EIR-065	EIR-035, EIR-125
EIR-035	Authority/Reclamation/Integration/Authority Legal Review of Admin Revised Draft EIR/SDEIS	38	0%	04-May-21	25-Jun-21	1	EIR-025, EIR-085	EIR-040, EIR-590, ENG-236, EIR-060
EIR-125	Authority Board - Part 2 Admin RDEIR/SDEIS Group 1 Chapters	1	0%	26-May-21	26-May-21	2	EIR-025, EIR-085	EIR-030
EIR-030	Complete Admin Revised Draft EIR/SDEIS (with Group 3 submittal)	1	0%	28-May-21	28-May-21	1	EIR-021, EIR-501, EIR-018A, EIR-019A, EIR-020, EIR-025, EIR-027, EIR-125	EIR-135, EIR-590, 404-001, FED-090
EIR-590	Cooperating Agency Review	19	0%	01-Jun-21	25-Jun-21	1	EIR-035, EIR-030, EIR-020	EIR-040
EIR-135	Authority Board - Part 3 Admin RDEIR/SDEIS Remaining Chapters	1	0%	23-Jun-21	23-Jun-21	1	EIR-027, EIR-030, EIR-005	EIR-060



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Activity ID	Activity Name	Remaining Duration	% Complete	Start	Finish	Total Float	Predecessors	Successors
Prepare Public Revised Draft EIR/Supplemental Draft EIS		43	0%	28-Jun-21	26-Aug-21			
EIR-040	Incorporate comments/edits and prepare Public Revised Draft EIR/SDEIS	19	0%	28-Jun-21	23-Jul-21	1	EIR-035, EIR-590	EIR-045, EIR-050, EIR-026
EIR-045	Live Edit Meetings	6	0%	29-Jun-21	07-Jul-21	3	EIR-040	EIR-050, EIR-060
EIR-060	Authority Board - Review and Delegate Authority to Release the RDEIR/SDEIS in August	1	0%	21-Jul-21	21-Jul-21	3	EIR-035, EIR-135, EIR-045	EIR-050
EIR-050	Reclamation Backcheck edits and Finalize Revised Draft EIR/SDEIS	7	0%	26-Jul-21	03-Aug-21	1	EIR-045, EIR-040, EIR-060	EIR-067, EIR-150
EIR-067	Final Editing, Formatting and Doc Production	7	0%	26-Jul-21	03-Aug-21	1	EIR-026, EIR-050	EIR-075, EIR-150
EIR-075	Coordination with Reclamation, Reclamation internal clearance, and public noticing	15	0%	04-Aug-21	24-Aug-21	1	EIR-067	EIR-080, EIR-150
EIR-150	Authority Board - Status of Release of RDEIR/SDEIS, Public Meeting Schedule	1	0%	25-Aug-21	25-Aug-21	1	EIR-067, EIR-050, EIR-026, EIR-075	EIR-090, EIR-080
EIR-080	Authority Release Revised Draft EIR/SDEIS and Issue Public Notices	1	0%	26-Aug-21	26-Aug-21	1	EIR-075, EIR-150	EIR-090, CWC-450, MS-011-DE, FO-1050, FO-1020, FO-1030, FO-1040
Public Review		43	0%	27-Aug-21	28-Oct-21	1		
EIR-090	Public Review Period	63	0%	27-Aug-21	28-Oct-21	3	EIR-080, EIR-150, EIR-487	EIR-530, EIR-100, EIR-092, EIR-095
EIR-530	Public Meetings	4	0%	27-Sep-21	30-Sep-21	3	EIR-090	EIR-100, EIR-110
Begin Preparation of the Admin Final EIR/EIS		33	0%	29-Oct-21	17-Dec-21	79		
EIR-100	Approach to Response to Comments	18	0%	29-Oct-21	24-Nov-21	1	EIR-090, EIR-530	EIR-105, FO-1080, FO-106
EIR-095	Categorize and Sort Comments by Topic	18	0%	29-Oct-21	24-Nov-21	1	EIR-090	EIR-105
EIR-105	Authority/Reclamation/Legal Review	6	0%	29-Nov-21	06-Dec-21	1	EIR-100, EIR-092, EIR-095	EIR-140, EIR-210
EIR-140	Authority Board - Summary of Comments received in the RDEIR/SDEIS and Approach to Responses	1	0%	17-Dec-21	17-Dec-21	104	EIR-105, EIR-110	EIR-210
Environmental Feasibility Report For CWC		39	0%	27-Sep-21	22-Nov-21	0		
EIR-110	Prepare Draft Environmental Feasibility Report for CWC	14	0%	27-Sep-21	15-Oct-21	3	EIR-530	EIR-540, EIR-00-SR, FO-1080, EIR-140
EIR-540	Authority review of Draft Environmental Feasibility Report for CWC	8	0%	18-Oct-21	27-Oct-21	3	EIR-110	EIR-560
EIR-560	Legal Review of Draft Environmental Feasbility Report for CWC	5	0%	28-Oct-21	03-Nov-21	3	EIR-540	EIR-117
EIR-117	Live Edit Meeting of Draft Environmental Feasibility Report for CWC	1	0%	04-Nov-21	04-Nov-21	3	EIR-560	EIR-570, EIR-580
EIR-580	Resolve Legal Comments and prepare Final Feasibility Report for CWC	7	0%	05-Nov-21	16-Nov-21	3	EIR-117	EIR-120, EIR-570, MS-004-P2, EIR-570
EIR-570	Board Briefing of Draft Environmental Feasibility Report for CWC	1	0%	22-Nov-21	22-Nov-21	0	EIR-117, EIR-580, EIR-580	EIR-120
EIR-120	Final Environmental Feasibility Report Submittal to CWC	0	0%		22-Nov-21	0	EIR-580, EIR-00-SR, EIR-570	CWC-500, CWC-490
Final EIR/Final EIS		87	0%	07-Dec-21	13-Apr-22	1		
EIR-210	Preparation of Final EIR/EIS	87	0%	07-Dec-21	13-Apr-22	1	EIR-105, EIR-140	WR-125, EIR-212, STA-140
FEDERAL PERMITS AND AGREEMENTS		572	0%	01-Sep-20 A	13-Jun-23	902		
U.S. Army Corps of Engineers CWA 404, Rivers and Harbors Ac		550	0%	01-Sep-20 A	11-May-23	623		
FED-020	U.S. Army Corps of Engineers CWA 404, Rivers and Harbors Act Section 10	574	3%	04-Feb-21 A	11-May-23	351	EIR-021, 404-025	FED-030
Clean Water Act Section 404		285	0%	01-Sep-20 A	22-Dec-21	559		
404-010	Desktop Wetland Delineation Analysis (includes Waters of the State)	84	50%	01-Sep-20 A	28-Jun-21	336	ENG-220, 404-001	404-020, 404-015, 404-025
404-050	Prepare Draft 404 Application	165	10%	04-Feb-21 A	22-Oct-21	968	404-003, 404-025	404-060, 404-035, 404-035
404-035	Prepare Compensatory Mitigation Plan	165	5%	04-Feb-21 A	22-Oct-21	968	404-050, 404-050	404-060
404-001	Prepare LEDPA analysis	64	0%	05-Feb-21 A	28-May-21	336	VP-070, 404-003, EIR-030	404-010, 404-025
404-020	Submit Delineation to USACE	0	0%		29-Jun-21	984	404-010	404-030
404-030	Preliminary Wetland Delineation Acceptance	90	0%	30-Jun-21	28-Sep-21	1424	404-020, 404-015	404-060

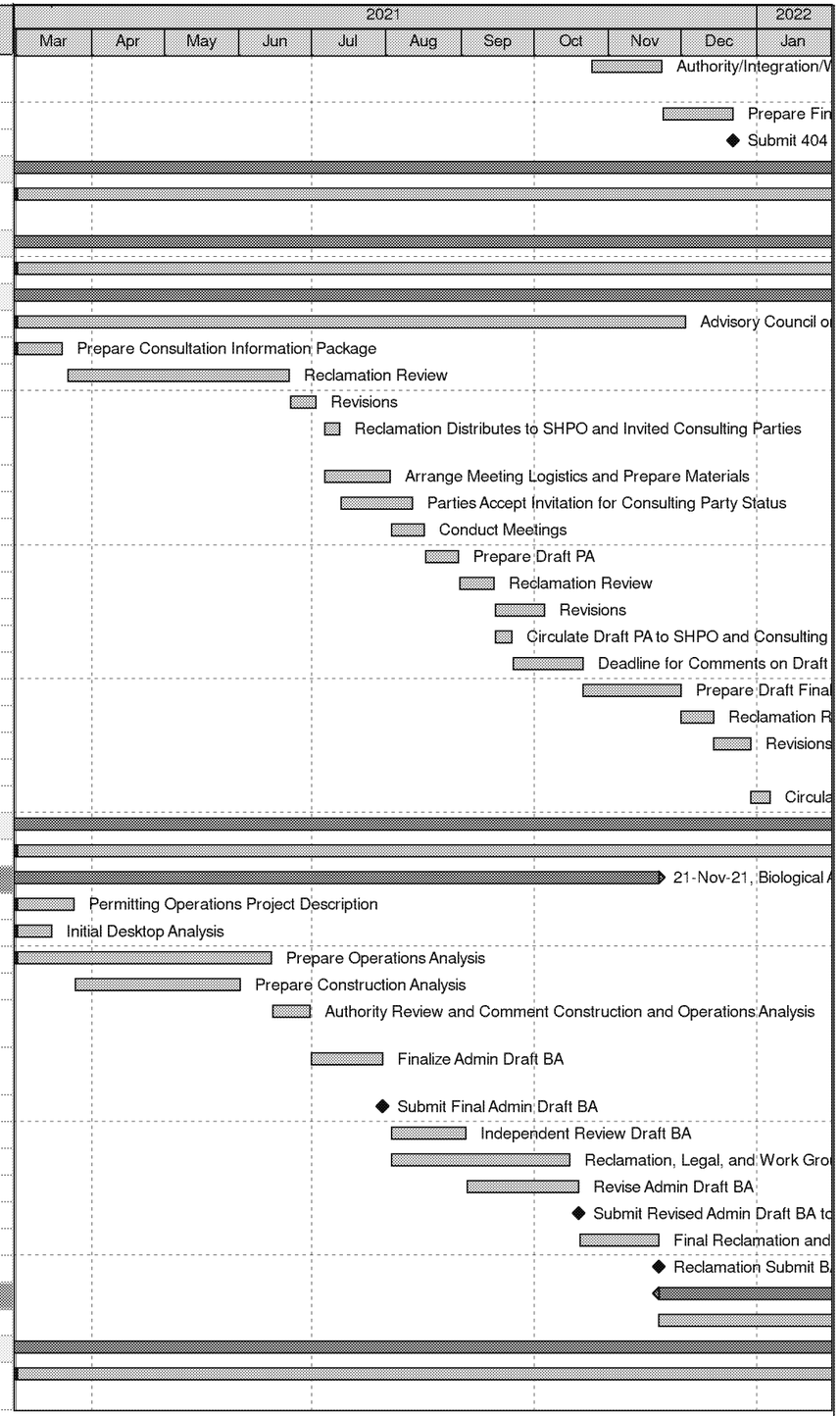


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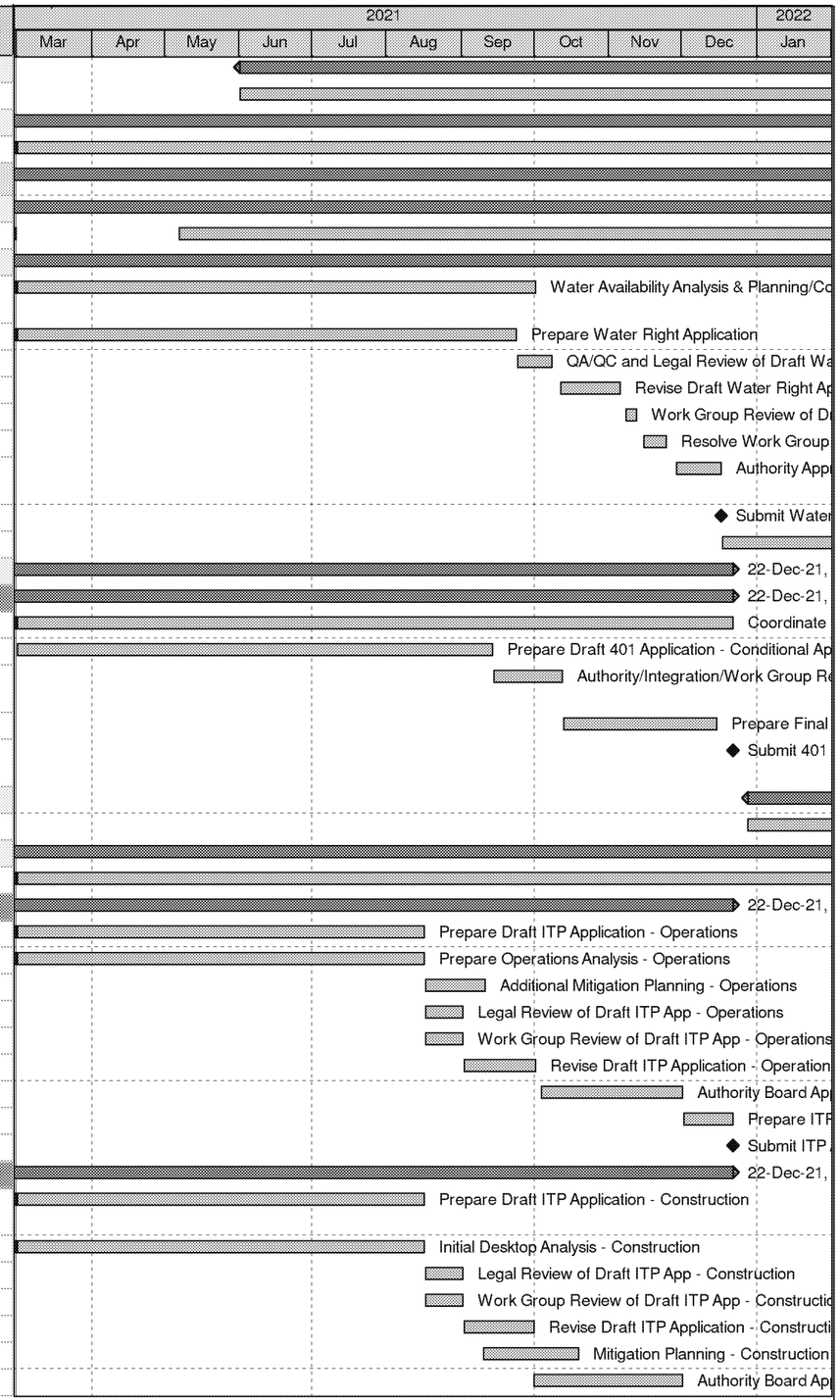
Activity ID	Activity Name	Remaining Duration	% Complete	Start	Finish	Total Float	Predecessors	Successors
404-060	Authority/Integration/Work Group Review of Draft 404 Application	20	0%	25-Oct-21	22-Nov-21	968	404-050, 404-035, 404-030	404-070
404-070	Prepare Final 404 Application	20	0%	23-Nov-21	22-Dec-21	968	404-060	404-120
404-120	Submit 404 Application	0	0%		22-Dec-21	968	404-070, 404-00-00	CWC-510
U.S. Army Corps of Engineers Rivers and Harbors Act Section		574	0%	04-Feb-21 A	11-May-23	351		
FED-030	U.S. Army Corps of Engineers Rivers and Harbors Act Section 14, Section 408	574	0%	04-Feb-21 A	11-May-23	351	FED-020	STA-030
U.S. EPA and U.S. Army Corps of Engineers LEDPA Review		506	0%	02-Nov-20 A	06-Feb-23	419		
FED-040	U.S. EPA and U.S. Army Corps of Engineers LEDPA Revie	506	0%	02-Nov-20 A	06-Feb-23	419	WP2-130	RC-100
Advisory Council on Historic Preservation NHPA Section 106		234	0%	01-Sep-20 A	04-Feb-22	891		
FED-050	Advisory Council on Historic Preservation NHPA Section 10	191	0%	01-Sep-20 A	02-Dec-21	19	106-001	MS-004-P2
106-021	Prepare Consultation Information Package	15	85%	01-Dec-20 A	19-Mar-21	891	106-003	106-022
106-022	Reclamation Review	64	0%	22-Mar-21	21-Jun-21	891	106-021	106-024
106-024	Revisions	9	0%	22-Jun-21	02-Jul-21	891	106-022	106-025, 106-032
106-025	Reclamation Distributes to SHPO and Invited Consulting Parties	5	0%	06-Jul-21	12-Jul-21	906	106-024	106-026, 106-033
106-032	Arrange Meeting Logistics and Prepare Materials	20	0%	06-Jul-21	02-Aug-21	891	106-024	106-042, 106-033
106-026	Parties Accept Invitation for Consulting Party Status	30	0%	13-Jul-21	11-Aug-21	1327	106-025	106-052
106-033	Conduct Meetings	10	0%	03-Aug-21	16-Aug-21	891	106-025, 106-032	106-042, 106-041
106-041	Prepare Draft PA	10	0%	17-Aug-21	30-Aug-21	891	106-033	106-042
106-042	Reclamation Review	10	0%	31-Aug-21	14-Sep-21	891	106-032, 106-033, 106-041	106-044, 106-052
106-044	Revisions	15	0%	15-Sep-21	05-Oct-21	901	106-042	106-061
106-052	Circulate Draft PA to SHPO and Consulting Parties	5	0%	15-Sep-21	21-Sep-21	891	106-026, 106-042	106-053
106-053	Deadline for Comments on Draft PA	30	0%	22-Sep-21	21-Oct-21	1291	106-052	106-061
106-061	Prepare Draft Final PA	25	0%	21-Oct-21	30-Nov-21	890	106-053, 106-044	106-062
106-062	Reclamation Review	10	0%	30-Nov-21	14-Dec-21	890	106-061	106-064
106-064	Revisions	10	0%	14-Dec-21	29-Dec-21	890	106-062	106-072
106-071	Consult with SHPO and Consulting Parties on Draft Final F	25	0%	29-Dec-21	04-Feb-22	891	106-072	106-073
106-072	Circulate Draft Final PA to SHPO and Consulting Parties	5	0%	29-Dec-21	06-Jan-22	890	106-064	106-071, 106-073
USFWS and NMFS ESA Section 7		274	0%	01-Sep-20 A	05-Apr-22	899		
FED-060	USFWS and NMFS ESA Section 7	233	20%	01-Sep-20 A	03-Feb-22	656	WP2-130	RC-100
Biological Assessment		184	0%	19-Oct-20 A	21-Nov-21	992		
BA-022	Permitting Operations Project Description	18	0%	19-Oct-20 A	24-Mar-21	900	OP-220, OP-1100, PDE-55	BA-024
BA-001	Initial Desktop Analysis	11	82%	15-Feb-21 A	15-Mar-21	304	PDE-60, WP2-130, ENG-220, BA-01	BA-024, CES-010
BA-025	Prepare Operations Analysis	74	0%	24-Feb-21 A	14-Jun-21	891	VP-095, BA-010, OP-320	BA-030, BA-029
BA-024	Prepare Construction Analysis	47	0%	25-Mar-21	01-Jun-21	900	BA-001, ENG-220, BA-022	BA-030, BA-029
BA-029	Authority Review and Comment Construction and Operations Analysis	12	0%	15-Jun-21	30-Jun-21	891	BA-025, BA-024	BA-030
BA-030	Finalize Admin Draft BA	21	0%	01-Jul-21	30-Jul-21	891	BA-010, BA-015, BA-024, BA-025, BA-029	BA-035, BA-032
BA-032	Submit Final Admin Draft BA	0	0%		30-Jul-21	891	BA-030	BA-035
BA-035	Independent Review Draft BA	31	0%	03-Aug-21	02-Sep-21	1294	BA-030, BA-032	BA-055, BA-057
BA-055	Reclamation, Legal, and Work Group Review	74	0%	03-Aug-21	15-Oct-21	1294	BA-035	BA-057, BA-075
BA-057	Revise Admin Draft BA	31	0%	03-Sep-21	19-Oct-21	891	BA-055, BA-035, BA-011	BA-075, BA-060
BA-060	Submit Revised Admin Draft BA to Reclamation	0	0%		19-Oct-21	891	BA-057	BA-075
BA-075	Final Reclamation and Solicitor Office Review	33	0%	20-Oct-21	21-Nov-21	1290	BA-055, BA-057, BA-060	BA-1110, BA-100
BA-100	Reclamation Submit BA to USFWS & NMFS	0	0%		21-Nov-21	1290	BA-075, BA-000, BA-016	BA-1110
BO Incidental Take Authorization		135	0%	21-Nov-21	05-Apr-22	1290		
BA-1110	BO Incidental Take Authorization	135	0%	21-Nov-21	05-Apr-22	1290	BA-075, BA-100	OS-1120, CWC-510
USFWS Bald Eagle Protection Act		572	0%	01-Sep-20 A	13-Jun-23	317		
FED-075	USFWS Bald Eagle Protection Act (includes Pre-Application Surveys)	572	0%	01-Sep-20 A	13-Jun-23	317	WP2-130	RC-100



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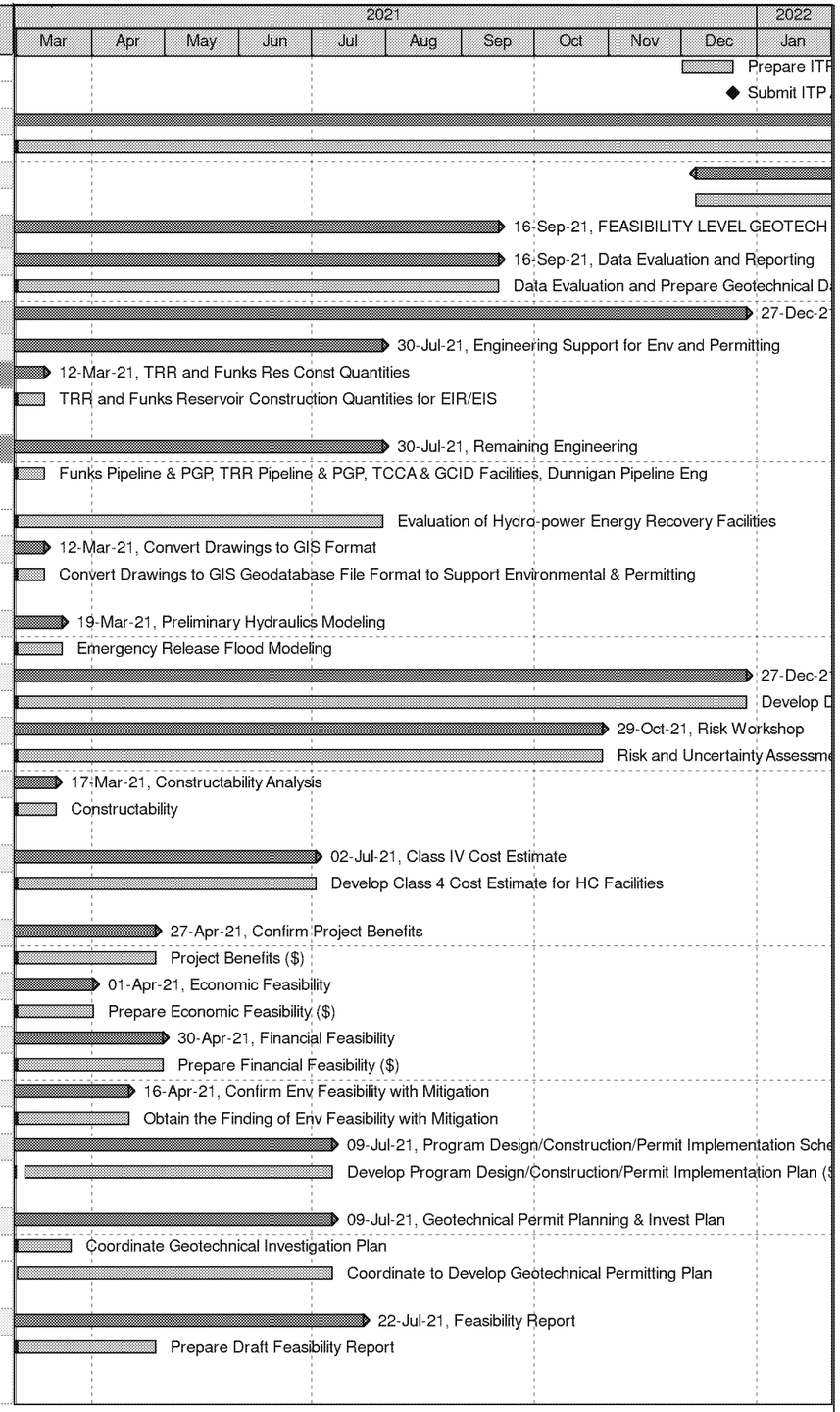
Activity ID	Activity Name	Remaining Duration	% Complete	Start	Finish	Total Float	Predecessors	Successors
USBR Warren Act		356	0%	01-Jun-21	01-Nov-22	1054		
FED-090	USBR Warren Act	356	0%	01-Jun-21	01-Nov-22	1054	EIR-030	EIR-450
USBR - Land Agreement		407	0%	02-Nov-20 A	13-Oct-22	217		
FED-100	USBR Land Agreements	407	16%	02-Nov-20 A	13-Oct-22	217	WP2-130	PD-100
STATE PERMITS AND AGREEMENTS		798	0%	01-Sep-20 A	08-May-24	375		
Central Valley Flood Protection Board Levee Encroachment		501	0%	01-Sep-20 A	11-May-23	339		
STA-030	Central Valley Flood Protection Board Levee Encroachmer	501	15%	01-Sep-20 A	11-May-23	339	WP2-130, FED-030	RC-100
SWRCB Water Rights Permit		241	0%	01-Sep-20 A	16-Feb-22	701		
WR-005	Water Availability Analysis & Planning/Coordination with SWRCB	151	10%	01-Sep-20 A	01-Oct-21	697	WP2-130	WR-025, WR-00-00
WR-025	Prepare Water Right Application	145	12%	01-Feb-21 A	23-Sep-21	697	WR-005	WR-035
WR-035	QA/QC and Legal Review of Draft Water Right Application	11	0%	24-Sep-21	08-Oct-21	697	WR-025	WR-045
WR-045	Revise Draft Water Right Application	19	0%	12-Oct-21	05-Nov-21	697	WR-035	WR-055
WR-055	Work Group Review of Draft Water Right Application	4	0%	08-Nov-21	12-Nov-21	697	WR-045	WR-065
WR-065	Resolve Work Group Comments	8	0%	15-Nov-21	24-Nov-21	697	WR-055	WR-075
WR-075	Authority Approval of Water Right Application, Submit to SWRCB	15	0%	29-Nov-21	17-Dec-21	697	WR-065	WR-085
WR-085	Submit Water Right Application	0	0%		17-Dec-21	697	WR-075	WR-095
WR-095	SWRCB Review of Water Right Application	60	0%	18-Dec-21	16-Feb-22	1016	WR-085	WR-105
SWB CWA Section 401 Water Quality Certification		205	0%	15-Jan-21 A	22-Dec-21	968		
SWB CWA Section 401 Water Quality Certification - Conditional Apj		205	0%	15-Jan-21 A	22-Dec-21	968		
401-120	Coordinate with RWQCB and SWRCB - Conditional Approc	205	5%	15-Jan-21 A	22-Dec-21	968	404-003	401-130, 401-00-00, 401-1
401-130	Prepare Draft 401 Application - Conditional Approval	137	0%	01-Mar-21	13-Sep-21	973	WP2-130, 401-120	401-140
401-140	Authority/Integration/Work Group Review of Draft 401 - Conditional Approval	20	0%	14-Sep-21	12-Oct-21	973	401-130	401-150
401-150	Prepare Final 401 Application - Conditional Approval	43	0%	13-Oct-21	15-Dec-21	973	401-140	401-160
401-160	Submit 401 Application - Conditional Approval	0	0%		22-Dec-21	968	401-150, 401-00-00, CES-270, CES-280, 401-120	CWC-510, 401-170
CDFW Streambed Alteration Agreements		591	0%	28-Dec-21	08-May-24	91		
STA-100	CDFW Streambed Alteration	591	0%	28-Dec-21	08-May-24	91	MS-004-P2	RC-100
CDFW Incidental Take Permits		336	0%	01-Sep-20 A	01-Jul-22	837		
STA-110	CDFW Section 2081	336	0%	01-Sep-20 A	01-Jul-22	54	106-001	OS-1120, CES-010, STA-1
ITP - CESA(Se 2081) Operations		205	0%	30-Sep-20 A	22-Dec-21	968		
CES-210	Prepare Draft ITP Application - Operations	118	5%	30-Sep-20 A	16-Aug-21	968	VP-095	CES-220, CES-230, CES-2
CES-190	Prepare Operations Analysis - Operations	118	5%	30-Sep-20 A	16-Aug-21	1037	OP-0230	CES-200, CES-00-10
CES-200	Additional Mitigation Planning - Operations	18	0%	17-Aug-21	10-Sep-21	1037	CES-190, CES-210, OP-360	CES-270
CES-220	Legal Review of Draft ITP App - Operations	16	0%	17-Aug-21	01-Sep-21	1401	CES-210	CES-240
CES-230	Work Group Review of Draft ITP App - Operations	16	0%	17-Aug-21	01-Sep-21	1401	CES-210	CES-240
CES-240	Revise Draft ITP Application - Operations	21	0%	02-Sep-21	01-Oct-21	968	CES-230, CES-220	CES-250
CES-250	Authority Board Approval of ITP App - Operations	39	0%	04-Oct-21	01-Dec-21	968	CES-240	CES-260
CES-260	Prepare ITP Application to CDFW - Operations	15	0%	02-Dec-21	22-Dec-21	968	CES-250	CWC-510, CES-270
CES-270	Submit ITP Application to CDFW - Operations	0	0%		22-Dec-21	968	CES-260, CES-00-10, CES-200	401-160
ITP - CESA(Se 2081) Construction		294	0%	30-Sep-20 A	22-Dec-21	171		
CES-030	Prepare Draft ITP Application - Construction	118	10%	30-Sep-20 A	16-Aug-21	170	VP-095	CES-040, CES-060, CES-00-00
CES-010	Initial Desktop Analysis - Construction	118	20%	30-Sep-20 A	16-Aug-21	197	ENG-220, VP-095, STA-110, BA-001	CES-020
CES-040	Legal Review of Draft ITP App - Construction	16	0%	17-Aug-21	01-Sep-21	252	CES-030	CES-070
CES-060	Work Group Review of Draft ITP App - Construction	16	0%	17-Aug-21	01-Sep-21	252	CES-030	CES-070
CES-070	Revise Draft ITP Application - Construction	20	0%	02-Sep-21	01-Oct-21	170	CES-060, CES-040	CES-080
CES-025	Mitigation Planning - Construction	27	0%	10-Sep-21	19-Oct-21	197	CES-020	CES-090
CES-080	Authority Board Approval of ITP App - Construction	39	0%	01-Oct-21	01-Dec-21	170	CES-070	CES-090, CES-090



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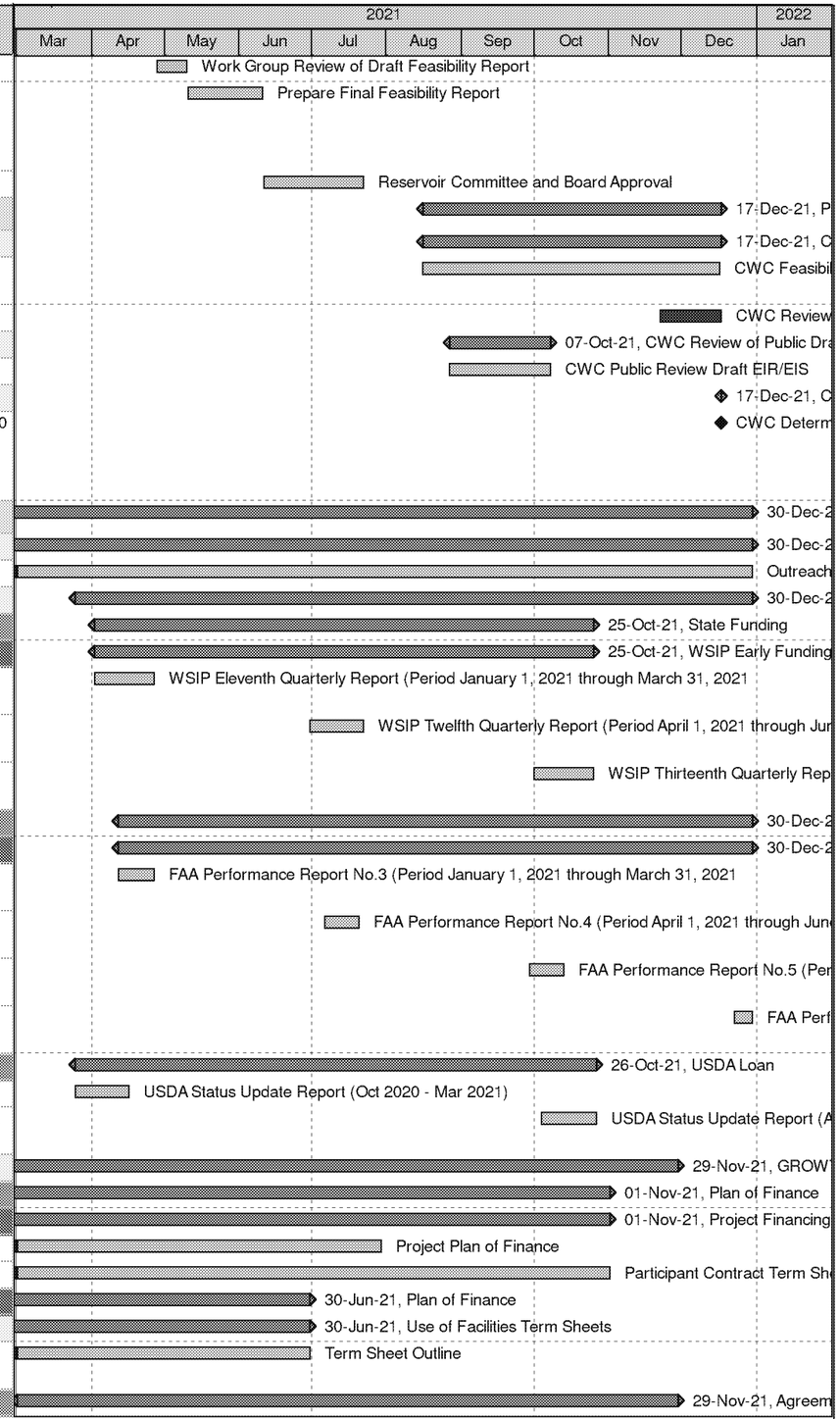
Activity ID	Activity Name	Remaining Duration	% Complete	Start	Finish	Total Float	Predecessors	Successors
CES-090	Prepare ITP Application to CDFW - Construction	15	0%	01-Dec-21	22-Dec-21	170	CES-080, OP-446, CES-080, CES-0	CES-280, MS-020-CS
CES-280	Submit ITP Application to CDFW - Construction	0	0%		22-Dec-21	171	CES-090, CES-00-00	MS-020-CS, 401-160
NAHC/Local Tribes AB 52 Consultation		277	0%	01-Sep-20 A	08-Apr-22	54		
STA-120	NAHC/Local Tribes AB 52 Consultation	277	0%	01-Sep-20 A	08-Apr-22	54	STA-110	EIR-250
SMARA		86	0%	07-Dec-21	12-Apr-22	96		
STA-140	SMARA	86	0%	07-Dec-21	12-Apr-22	96	EIR-210	MS-250-FE
FEASIBILITY LEVEL GEOTECH		140	11.95%	30-Oct-20 A	16-Sep-21	15		
Data Evaluation and Reporting		140	11.95%	30-Oct-20 A	16-Sep-21	15		
GSR-030	Data Evaluation and Prepare Geotechnical Data Reports	140	11.95%	30-Oct-20 A	16-Sep-21	15	GSR-020	GSR-040
FEASIBILITY ENGINEERING		207	47.72%	01-Sep-20 A	27-Dec-21	133		
Engineering Support for Env and Permitting		107	85.83%	01-Sep-20 A	30-Jul-21	95		
TRR and Funks Res Const Quantities		10	74.36%	09-Oct-20 A	12-Mar-21	55		
ENG-510	TRR and Funks Reservoir Construction Quantities for EIR/EIS	10	74.36%	09-Oct-20 A	12-Mar-21	55	ENG-501	ENG-550, ENG-570, EIR-020, ENG-592
Remaining Engineering		107	85.15%	01-Sep-20 A	30-Jul-21	95		
ENG-560	Funks Pipeline & PGP, TRR Pipeline & PGP, TCCA & GCID Facilities, Dunnigan Pipeline Eng	10	88.64%	01-Sep-20 A	12-Mar-21	192	ENG-501	CWC-500
ENG-580	Evaluation of Hydro-power Energy Recovery Facilities	107	43.39%	01-Sep-20 A	30-Jul-21	95	ENG-501	CWC-500
Convert Drawings to GIS Format		10	52.38%	12-Oct-20 A	12-Mar-21	1		
ENG-220	Convert Drawings to GIS Geodatabase File Format to Support Environmental & Permitting	10	52.38%	12-Oct-20 A	12-Mar-21	1	ENG-200	ENG-230, BA-001, CES-010, 404-010, EIR-018, PA-024
Preliminary Hydraulics Modeling		15	87.9%	01-Sep-20 A	19-Mar-21	325		
ENG-466	Emergency Release Flood Modeling	15	87.9%	01-Sep-20 A	19-Mar-21	325	WP2-130	ENG-480, ENG-420
DSOD Engagement		207	0%	01-Sep-20 A	27-Dec-21	85		
ENG-400	Develop DSOD Engagement Plan ($)	207	0%	01-Sep-20 A	27-Dec-21	85	WP2-130	ENG-440, ENG-445, ENG-;
Risk Workshop		170	0%	01-Nov-20 A	29-Oct-21	32		
ENG-290	Risk and Uncertainty Assessment ($)	170	0%	01-Nov-20 A	29-Oct-21	32	ENG-210, EIR-021	CWC-403
Constructability Analysis		13	90%	30-Oct-20 A	17-Mar-21	17		
ENG-370	Constructability	13	90%	30-Oct-20 A	17-Mar-21	17	ENG-233, ENG-236	ENG-380, ENG-320, PA-220, ENG-234, ENG-235, ENG-238
Class IV Cost Estimate		88	0%	08-Sep-20 A	02-Jul-21	17		
ENG-265	Develop Class 4 Cost Estimate for HC Facilities	88	0%	08-Sep-20 A	02-Jul-21	17	EIR-021	ENG-300, ENG-320, ENG-380, ENG-266
Confirm Project Benefits		41	0%	01-Oct-20 A	27-Apr-21	17		
ENG-300	Project Benefits ($)	41	0%	01-Oct-20 A	27-Apr-21	17	ENG-140, ENG-150, ENG-265	ENG-380
Economic Feasibility		23	0%	01-Oct-20 A	01-Apr-21	17		
ENG-350	Prepare Economic Feasibility ($)	23	0%	01-Oct-20 A	01-Apr-21	17	ENG-320	ENG-380
Financial Feasibility		44	0%	01-Oct-20 A	30-Apr-21	17		
ENG-360	Prepare Financial Feasibility ($)	44	0%	01-Oct-20 A	30-Apr-21	17	ENG-320	ENG-380, ENG-340
Confirm Env Feasibility with Mitigation		34	0%	10-Oct-20 A	16-Apr-21	17		
ENG-340	Obtain the Finding of Env Feasibility with Mitigation	34	0%	10-Oct-20 A	16-Apr-21	17	ENG-360, ENG-410	ENG-380, ENG-237
Program Design/Construction/Permit Implementation Schedule		89	0%	01-Oct-20 A	09-Jul-21	14		
ENG-410	Develop Program Design/Construction/Permit Implementation Plan ($)	89	0%	01-Oct-20 A	09-Jul-21	14	ENG-406, ENG-440	ENG-340
Geotechnical Permit Planning & Invest Plan		92	76.84%	30-Oct-20 A	09-Jul-21	14		
ENG-404	Coordinate Geotechnical Investigation Plan	17	83.5%	30-Oct-20 A	23-Mar-21	15	WP2-130, GSR-015	CWC-500, ENG-406
ENG-406	Coordinate to Develop Geotechnical Permitting Plan	92	0%	01-Mar-21	09-Jul-21	14	WP2-130, ENG-404, GSR-015, ENG-440	ENG-410
Feasibility Report		101	47.88%	30-Oct-20 A	22-Jul-21	17		
ENG-380	Prepare Draft Feasibility Report	42	69.57%	30-Oct-20 A	27-Apr-21	17	ENG-210, ENG-350, ENG-340, ENG-360, ENG-370, ENG-265, ENG-300	ENG-390, ENG-385, CWC-010, ENG-435, TM-H97



Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Sites Project Detailed Planning Schedule

Activity ID	Activity Name	Remaining Duration	% Complete	Start	Finish	Total Float	Predecessors	Successors
ENG-385	Work Group Review of Draft Feasibility Report	9	0%	28-Apr-21	10-May-21	17	ENG-380	ENG-390
ENG-390	Prepare Final Feasibility Report	22	0%	11-May-21	10-Jun-21	17	ENG-380, ENG-385, OP-0230, OP-446, ENG-234, ENG-235, ENG-237, ENG-238, TM-H97, ENG-467, ENG-468, ENG-591, ENG-592	ENG-392, 408-010, DLG-010, CWC-403
ENG-392	Reservoir Committee and Board Approval	29	0%	11-Jun-21	22-Jul-21	17	ENG-390, ENG-435, ENG-266	CWC-500, CWC-403
PROP 1		85	0%	16-Aug-21	17-Dec-21	0		
CWC Feasibility Review		124	0%	16-Aug-21	17-Dec-21	0		
CWC-403	CWC Feasibility Review	123	0%	16-Aug-21	16-Dec-21	1	ENG-390, CFS-030, CWC-450, ENG-392, ENG-290	CWC-500
CWC-490	CWC Review Final Environmental Feasibility Report	25	0%	22-Nov-21	17-Dec-21	0	EIR-120	CWC-500
CWC Review of Public Draft EIR/EIS		30	0%	27-Aug-21	07-Oct-21	1		
CWC-450	CWC Public Review Draft EIR/EIS	30	0%	27-Aug-21	07-Oct-21	1	EIR-080, CWC-420	CWC-403
CWC Determination of Feasibility		0	0%	17-Dec-21	17-Dec-21	0		
CWC-500	CWC Determination of Feasibility	0	0%		17-Dec-21*	0	EIR-120, ENG-404, OP-070, ENG-560, ENG-580, ENG-540, ENG-503, ENG-502, TM-H98, CWC-403, ENG-392, CWC-490	PD-100, DB-100, PDC-1000
PROJECT OPERATIONS AND FINANCES		210	3.54%	02-Jan-20 A	30-Dec-21	2057		
COMMUNICATIONS & GOVERNMENT AFFAIRS		210	0%	02-Jan-20 A	30-Dec-21	165		
GS-C60	Outreach to NGO's	210	37.87%	02-Jan-20 A	30-Dec-21	165	MS-004-Ph2	MS-006-Ph2-2a
FUNDING		192	0%	25-Mar-21	30-Dec-21	1207		
State Funding		143	0%	02-Apr-21	25-Oct-21	209		
WSIP Early Funding Administration		143	0%	02-Apr-21	25-Oct-21	209		
WSIP-1110	WSIP Eleventh Quarterly Report (Period January 1, 2021 through March 31, 2021	17	0%	02-Apr-21	26-Apr-21	209	WSIP-1100	WSIP-1120
WSIP-1120	WSIP Twelfth Quarterly Report (Period April 1, 2021 through June 30, 2021	16	0%	30-Jun-21	22-Jul-21	209	WSIP-1110	WSIP-1130
WSIP-1130	WSIP Thirteenth Quarterly Report (Period July 1, 2021 through September 30, 2021	16	0%	01-Oct-21	25-Oct-21	209	WSIP-1120	WSIP-1140, PH2-2a-1000, MS-006-Ph2-2a
Federal Funding		181	0%	12-Apr-21	30-Dec-21	1207		
Financial Assistance Agreement		181	0%	12-Apr-21	30-Dec-21	1207		
FAA-1030	FAA Performance Report No.3 (Period January 1, 2021 through March 31, 2021	11	0%	12-Apr-21	26-Apr-21	217	FAA-1020	FAA-1040
FAA-1040	FAA Performance Report No.4 (Period April 1, 2021 through June 30, 2021	11	0%	06-Jul-21	20-Jul-21	217	FAA-1030	FAA-1050
FAA-1050	FAA Performance Report No.5 (Period July 1, 2021 through September 30, 2021	10	0%	29-Sep-21	13-Oct-21	217	FAA-1040	FAA-1060, MS-006-Ph2-2a
FAA-1060	FAA Performance Report No.6 (Period October 1, 2021 through December 30, 2021	5	0%	23-Dec-21	30-Dec-21	1207	FAA-1050	FAA-1070, PH2-2a-1000
USDA Loan		148	0%	25-Mar-21	26-Oct-21	209		
USDA-1010	USDA Status Update Report (Oct 2020 - Mar 2021)	16	0%	25-Mar-21	16-Apr-21	208	USDA-1000	USDA-1020
USDA-1020	USDA Status Update Report (Apr 2020 - Sept 2021)	16	0%	04-Oct-21	26-Oct-21	208	USDA-1010	USDA-1030, PH2-2a-1000, MS-006-Ph2-2a
GROWTH		188	4.15%	01-Nov-20 A	29-Nov-21	2079		
Plan of Finance		171	4.15%	01-Nov-20 A	01-Nov-21	2096		
Project Financing Work Plan		171	5%	01-Nov-20 A	01-Nov-21	2096		
POF-020	Project Plan of Finance	106	5%	01-Nov-20 A	29-Jul-21	2096	POF-010	POF-030
POF-030	Participant Contract Term Sheet	171	5%	01-Nov-20 A	01-Nov-21	2096	POF-020, POF-001, POF-400	
Plan of Finance		86	0%	01-Dec-20 A	30-Jun-21	296		
Use of Facilities Term Sheets		86	0%	01-Dec-20 A	30-Jun-21	296		
POF-040	Term Sheet Outline	86	0%	01-Dec-20 A	30-Jun-21	296	ENG-190, WP2-130	OP-1005, OP-1015, FO-1020, FO-1030, FO-1040
Agreements		186	0%	01-Mar-21	29-Nov-21	22		

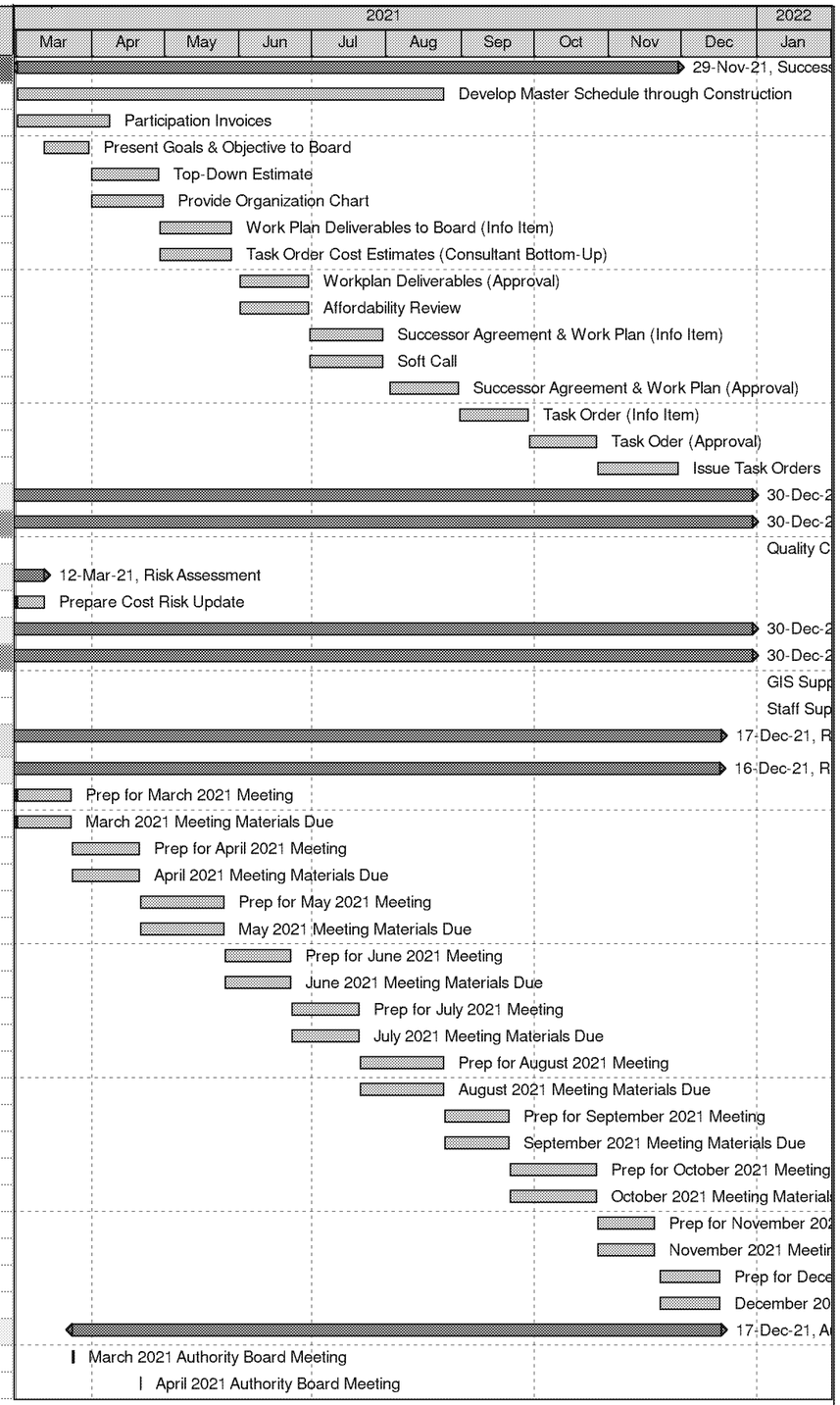


Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Sites Project Detailed Planning Schedule

Draft_0008651

Activity ID	Activity Name	Remaining Duration	% Complete	Start	Finish	Total Float	Predecessors	Successors
Successor Agreement & Work Plan		198	0%	01-Mar-21	29-Nov-21	22		
PA-220	Develop Master Schedule through Construction	124	0%	01-Mar-21	24-Aug-21	22	PA-160, ENG-370	PA-210, A3WP-1000
PA-450	Participation Invoices	28	0%	01-Mar-21	08-Apr-21	182	PA-400	MS-004-P2
A3WP-100	Present Goals & Objective to Board	13	0%	12-Mar-21	30-Mar-21	22	PA-220	A3WP-1010, A3WP-1130
A3WP-101	Top-Down Estimate	20	0%	01-Apr-21	28-Apr-21	22	A3WP-1000	A3WP-1020, A3WP-1030
A3WP-113	Provide Organization Chart	22	0%	01-Apr-21	30-Apr-21	145	A3WP-1000	A3WP-1120
A3WP-102	Work Plan Deliverables to Board (Info Item)	22	0%	29-Apr-21	28-May-21	22	A3WP-1010	A3WP-1050, A3WP-1060
A3WP-103	Task Order Cost Estimates (Consultant Bottom-Up)	22	0%	29-Apr-21	28-May-21	22	A3WP-1010	A3WP-1050, A3WP-1060
A3WP-105	Workplan Deliverables (Approval)	21	0%	01-Jun-21	29-Jun-21	22	A3WP-1020, A3WP-1030	A3WP-1070, A3WP-1080
A3WP-106	Affordability Review	21	0%	01-Jun-21	29-Jun-21	22	A3WP-1020, A3WP-1030	A3WP-1070, A3WP-1080
A3WP-107	Successor Agreement & Work Plan (Info Item)	22	0%	30-Jun-21	30-Jul-21	22	A3WP-1050, A3WP-1060	A3WP-1090
A3WP-108	Soft Call	22	0%	30-Jun-21	30-Jul-21	22	A3WP-1050, A3WP-1060	A3WP-1090
A3WP-109	Successor Agreement & Work Plan (Approval)	21	0%	02-Aug-21	30-Aug-21	22	A3WP-1070, A3WP-1080	A3WP-1100
A3WP-110	Task Order (Info Item)	20	0%	31-Aug-21	28-Sep-21	22	A3WP-1090	A3WP-1110
A3WP-111	Task Oder (Approval)	19	0%	29-Sep-21	26-Oct-21	22	A3WP-1100	A3WP-1120
A3WP-112	Issue Task Orders	21	0%	27-Oct-21	29-Nov-21	22	A3WP-1110, A3WP-1130	MS-004-P2
PROJECT CONTROLS		210	0%	31-Aug-20 A	30-Dec-21	74		
BC New Cost Summary Activities		210	0%	31-Aug-20 A	30-Dec-21	74		
TM-B97	Quality Control (Cost)	210	0%	31-Aug-20 A	30-Dec-21	74	MS-005-Ph2-1b	PH2-2a-1010
Risk Assessment		10	0%	28-Dec-20 A	12-Mar-21	200		
RA-010	Prepare Cost Risk Update	10	0%	28-Dec-20 A	12-Mar-21	200	RA-005	MS-004-P2
SUPPORT		210	0%	31-Aug-20 A	30-Dec-21	74		
RBR New Cost Summary Activities		210	0%	31-Aug-20 A	30-Dec-21	74		
MGT-055	GIS Support (Cost)	210	0%	31-Aug-20 A	30-Dec-21	74	MS-005-Ph2-1b	PH2-2a-1010
MGT-065	Staff Support (Cost)	210	0%	31-Aug-20 A	30-Dec-21	74	MS-005-Ph2-1b	PH2-2a-1010
Res Comm/Authority Board		202	0%	27-Feb-21 A	17-Dec-21	8		
Reservoir Committee/Board Materials DUE		201	0%	27-Feb-21 A	16-Dec-21	1		
RCB-20-288	Prep for March 2021 Meeting	17	0%	27-Feb-21 A	23-Mar-21*	0	RCB-20-278	RCB-20-178
RCB-20-278	March 2021 Meeting Materials Due	17	19.05%	27-Feb-21 A	23-Mar-21*	0	RCB-20-120	RCB-20-288, RCB-20-298
RCB-20-308	Prep for April 2021 Meeting	19	0%	24-Mar-21	20-Apr-21*	1	RCB-20-298	RCB-20-188
RCB-20-298	April 2021 Meeting Materials Due	19	0%	24-Mar-21	20-Apr-21*	1	RCB-20-278	RCB-20-318, RCB-20-308
RCB-20-328	Prep for May 2021 Meeting	25	0%	21-Apr-21	25-May-21*	1	RCB-20-318	RCB-20-198
RCB-20-318	May 2021 Meeting Materials Due	25	0%	21-Apr-21	25-May-21*	1	RCB-20-298	RCB-20-338, RCB-20-328
RCB-20-348	Prep for June 2021 Meeting	19	0%	26-May-21	22-Jun-21*	1	RCB-20-338	RCB-20-208
RCB-20-338	June 2021 Meeting Materials Due	19	0%	26-May-21	22-Jun-21*	1	RCB-20-318	RCB-20-358, RCB-20-348
RCB-20-368	Prep for July 2021 Meeting	19	0%	23-Jun-21	20-Jul-21*	1	RCB-20-358	RCB-20-218
RCB-20-358	July 2021 Meeting Materials Due	19	0%	23-Jun-21	20-Jul-21*	1	RCB-20-338	RCB-20-378, RCB-20-368
RCB-20-388	Prep for August 2021 Meeting	25	0%	21-Jul-21	24-Aug-21*	1	RCB-20-378	RCB-20-228
RCB-20-378	August 2021 Meeting Materials Due	25	0%	21-Jul-21	24-Aug-21*	1	RCB-20-358	RCB-20-398, RCB-20-388
RCB-20-408	Prep for September 2021 Meeting	18	0%	25-Aug-21	20-Sep-21*	1	RCB-20-398	RCB-20-238
RCB-20-398	September 2021 Meeting Materials Due	18	0%	25-Aug-21	20-Sep-21*	1	RCB-20-378	RCB-20-418, RCB-20-408
RCB-20-428	Prep for October 2021 Meeting	25	0%	21-Sep-21	26-Oct-21*	1	RCB-20-418	RCB-20-248
RCB-20-418	October 2021 Meeting Materials Due	25	0%	21-Sep-21	26-Oct-21*	1	RCB-20-398	RCB-20-438, RCB-20-428
RCB-20-448	Prep for November 2021 Meeting	17	0%	27-Oct-21	19-Nov-21*	1	RCB-20-438	RCB-20-258
RCB-20-438	November 2021 Meeting Materials Due	17	0%	27-Oct-21	19-Nov-21*	1	RCB-20-418	RCB-20-458, RCB-20-448
RCB-20-468	Prep for December 2021 Meeting	17	0%	22-Nov-21	16-Dec-21*	1	RCB-20-458	RCB-20-268
RCB-20-458	December 2021 Meeting Materials Due	17	0%	22-Nov-21	16-Dec-21*	1	RCB-20-438	RCB-20-468
Authority Board Meetings		185	0%	24-Mar-21	17-Dec-21	8		
RCB-20-178	March 2021 Authority Board Meeting	1	0%	24-Mar-21	24-Mar-21	183	RCB-20-288, RCB-20-168	RCB-20-188
RCB-20-188	April 2021 Authority Board Meeting	1	0%	21-Apr-21	21-Apr-21	165	RCB-20-178, RCB-20-308	RCB-20-198

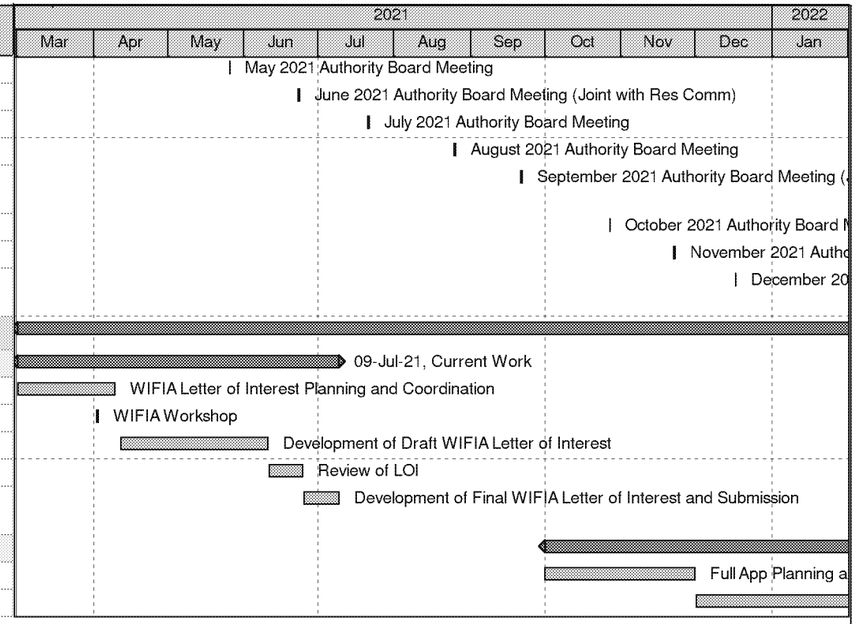


Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Sites Project Detailed Planning Schedule

Draft_0008652

Activity ID	Activity Name	Remaining Duration	% Complete	Start	Finish	Total Float	Predecessors	Successors
RCB-20-198	May 2021 Authority Board Meeting	1	0%	26-May-21	26-May-21	141	RCB-20-188, RCB-20-328	RCB-20-208
RCB-20-208	June 2021 Authority Board Meeting (Joint with Res Comm)	1	0%	23-Jun-21	23-Jun-21	123	RCB-20-198, RCB-20-348	RCB-20-218
RCB-20-218	July 2021 Authority Board Meeting	1	0%	21-Jul-21	21-Jul-21	105	RCB-20-208, RCB-20-368	RCB-20-228
RCB-20-228	August 2021 Authority Board Meeting	1	0%	25-Aug-21	25-Aug-21	81	RCB-20-218, RCB-20-388	RCB-20-238
RCB-20-238	September 2021 Authority Board Meeting (Joint with Res Comm)	1	0%	21-Sep-21	21-Sep-21	64	RCB-20-228, RCB-20-408	RCB-20-248
RCB-20-248	October 2021 Authority Board Meeting	1	0%	27-Oct-21	27-Oct-21	40	RCB-20-238, RCB-20-428	RCB-20-258
RCB-20-258	November 2021 Authority Board Meeting	1	0%	22-Nov-21	22-Nov-21	24	RCB-20-248, RCB-20-448	RCB-20-268
RCB-20-268	December 2021 Authority Board Meeting (Joint with Res Comm)	1	0%	17-Dec-21	17-Dec-21	8	RCB-20-258, RCB-20-468	MS-004-P2
WIFI Schedule Update		378	0%	01-Mar-21	31-Aug-22	1847		
Current Work		92	0%	01-Mar-21	09-Jul-21	1847		
WIFIA-001	WIFIA Letter of Interest Planning and Coordination	29	0%	01-Mar-21	09-Apr-21	1847	MS-005-Ph2-1b	WIFIA-003, WIFIA-002
WIFIA-002	WIFIA Workshop	1	0%	02-Apr-21	02-Apr-21	1852	WIFIA-001	WIFIA-003
WIFIA-003	Development of Draft WIFIA Letter of Interest	43	0%	12-Apr-21	10-Jun-21	1847	WIFIA-002, WIFIA-001	WIFIA-004
WIFIA-004	Review of LOI	14	0%	11-Jun-21	24-Jun-21	2635	WIFIA-003	WIFIA-005
WIFIA-005	Development of Final WIFIA Letter of Interest and Submission	10	0%	25-Jun-21	09-Jul-21	1847	WIFIA-004	WIFIA-006
For the Full Application		228	0%	01-Oct-21	31-Aug-22	1847		
WIFIA-006	Full App Planning and Coordination	39	0%	01-Oct-21	30-Nov-21	1847	WIFIA-005	WIFIA-007
WIFIA-007	Development of Draft WIFIA Application	189	0%	01-Dec-21	31-Aug-22	1847	WIFIA-006	WIFIA-008



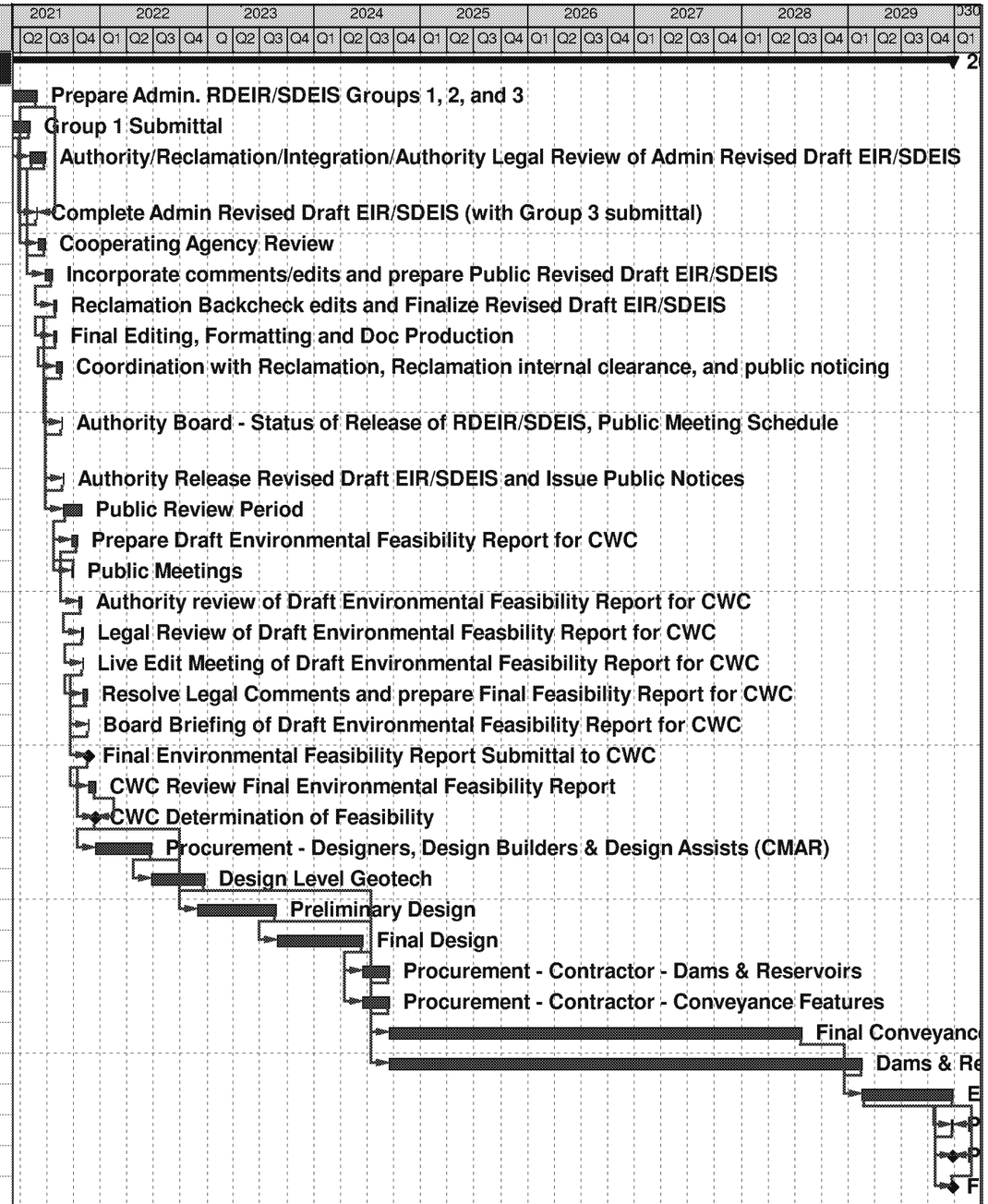
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Sites Project Detailed Planning Schedule

Attachment 3: Critical Path Schedule

Draft_0008654

Activity ID	Activity Name	Remaining Duration	Start	Finish
SITES PROJECT		**2267**	**13-Jan-21 A**	**26-Dec-29**
EIR-020	Prepare Admin. RDEIR/SDEIS Groups 1, 2, and 3	64	13-Jan-21 A	28-May-21
EIR-025	Group 1 Submittal	45	13-Jan-21 A	03-May-21
EIR-035	Authority/Reclamation/Integration/Authority Legal Review of Admin Revised Draft EIR/SDEIS	38	04-May-21	25-Jun-21
EIR-030	Complete Admin Revised Draft EIR/SDEIS (with Group 3 submittal)	1	28-May-21	28-May-21
EIR-590	Cooperating Agency Review	19	01-Jun-21	25-Jun-21
EIR-040	Incorporate comments/edits and prepare Public Revised Draft EIR/SDEIS	19	28-Jun-21	23-Jul-21
EIR-050	Reclamation Backcheck edits and Finalize Revised Draft EIR/SDEIS	7	26-Jul-21	03-Aug-21
EIR-067	Final Editing, Formatting and Doc Production	7	26-Jul-21	03-Aug-21
EIR-075	Coordination with Reclamation, Reclamation internal clearance, and public noticing	15	04-Aug-21	24-Aug-21
EIR-150	Authority Board - Status of Release of RDEIR/SDEIS, Public Meeting Schedule	1	25-Aug-21	25-Aug-21
EIR-080	Authority Release Revised Draft EIR/SDEIS and Issue Public Notices	1	26-Aug-21	26-Aug-21
EIR-090	Public Review Period	63	27-Aug-21	28-Oct-21
EIR-110	Prepare Draft Environmental Feasibility Report for CWC	14	27-Sep-21	15-Oct-21
EIR-530	Public Meetings	4	27-Sep-21	30-Sep-21
EIR-540	Authority review of Draft Environmental Feasibility Report for CWC	8	18-Oct-21	27-Oct-21
EIR-560	Legal Review of Draft Environmental Feasbility Report for CWC	5	28-Oct-21	03-Nov-21
EIR-117	Live Edit Meeting of Draft Environmental Feasibility Report for CWC	1	04-Nov-21	04-Nov-21
EIR-580	Resolve Legal Comments and prepare Final Feasibility Report for CWC	7	05-Nov-21	16-Nov-21
EIR-570	Board Briefing of Draft Environmental Feasibility Report for CWC	1	22-Nov-21	22-Nov-21
EIR-120	Final Environmental Feasibility Report Submittal to CWC	0		22-Nov-21
CWC-490	CWC Review Final Environmental Feasibility Report	25	22-Nov-21	17-Dec-21
CWC-500	CWC Determination of Feasibility	0		17-Dec-21*
PDC-1000	Procurement - Designers, Design Builders & Design Assists (CMAR)	135	17-Dec-21	24-Jun-22
DLG-010	Design Level Geotech	130	27-Jun-22	23-Dec-22
PD-100	Preliminary Design	195	28-Nov-22	25-Aug-23
FD-110	Final Design	210	28-Aug-23	14-Jun-24
FD-120	Procurement - Contractor - Dams & Reservoirs	65	17-Jun-24	13-Sep-24
FD-130	Procurement - Contractor - Conveyance Features	65	17-Jun-24	13-Sep-24
CC-100	Final Conveyance Construction	1008	16-Sep-24	26-Jul-28
RC-100	Dams & Reservoir Construction	1155	16-Sep-24	16-Feb-29
OPR-110	Early Operations (Commissioning)	222	19-Feb-29	25-Dec-29
MIT-030	Post Construction Monitoring Begins	5	20-Dec-29	26-Dec-29
MS-600-PB	Public Beneficial Occupancy - Sites Program	0		26-Dec-29
OPR-120	Full Operations Begins	0		26-Dec-29*



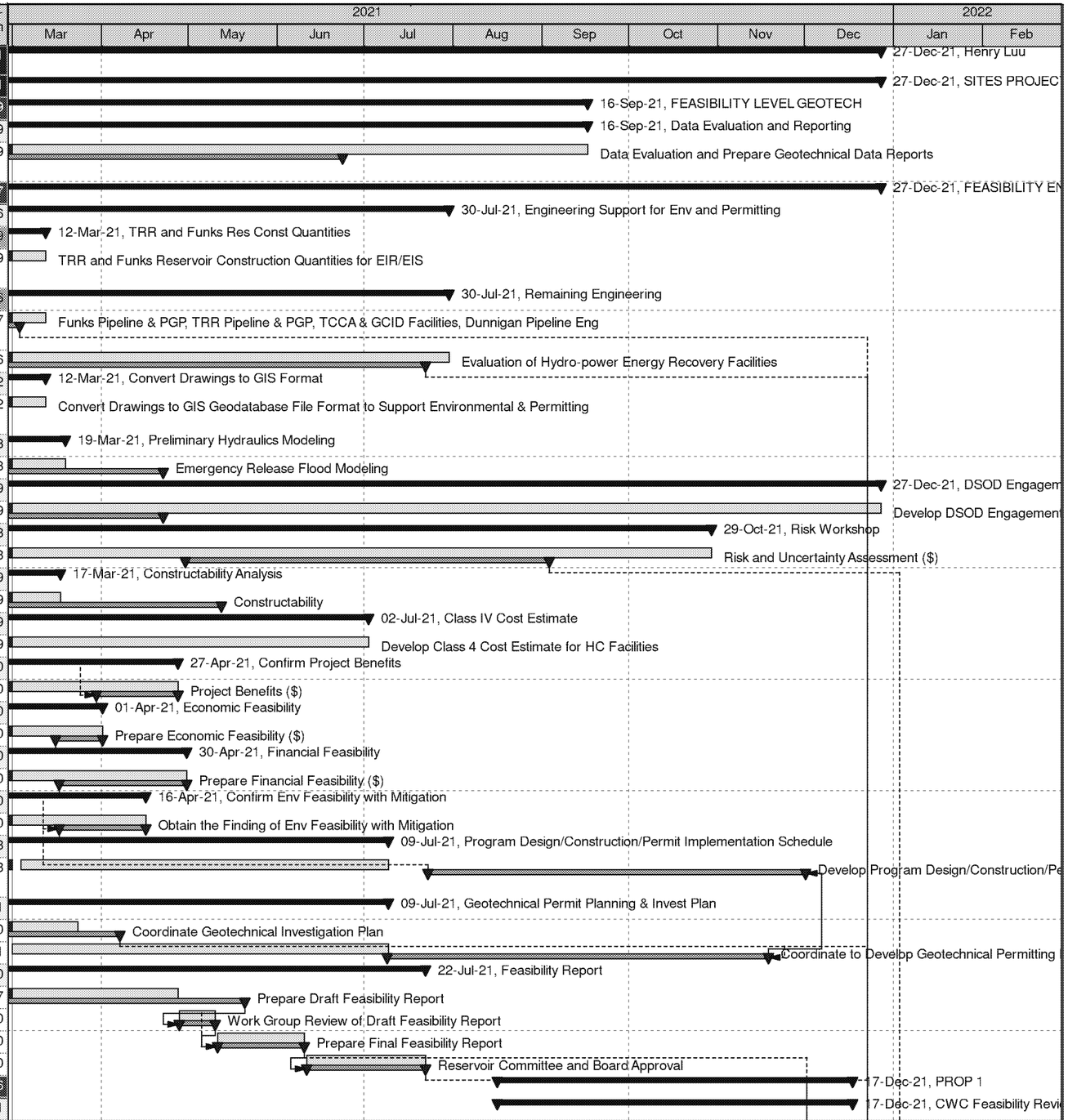
Critical Remaining Work
Milestone
Summary

Sites Project - **Critical Path**

Attachment 4: Engineering Detail Schedule

Draft_0008656

Activity ID	Activity Name	Remaining Duration	% Complete	Start	Finish	Total Float	Dec'20 - Finish
Henry Luu		207	44.63%	01-Sep-20 A	27-Dec-21	133	1
SITES PROJECT		207	44.63%	01-Sep-20 A	27-Dec-21	133	1
FEASIBILITY LEVEL GEOTECH		140	11.95%	30-Oct-20 A	16-Sep-21	15	-59
Data Evaluation and Reporting		140	11.95%	30-Oct-20 A	16-Sep-21	15	-59
GSR-030	Data Evaluation and Prepare Geotechnical Data Reports	140	11.95%	30-Oct-20 A	16-Sep-21	15	-59
FEASIBILITY ENGINEERING		207	47.72%	01-Sep-20 A	27-Dec-21	133	-17
Engineering Support for Env and Permitting		107	85.83%	01-Sep-20 A	30-Jul-21	95	-6
TRR and Funks Res Const Quantities		10	74.36%	09-Oct-20 A	12-Mar-21	55	-49
ENG-510	TRR and Funks Reservoir Construction Quantities for EIR/EIS	10	74.36%	09-Oct-20 A	12-Mar-21	55	-49
Remaining Engineering		107	86.15%	01-Sep-20 A	30-Jul-21	95	-6
ENG-560	Funks Pipeline & PGP, TRR Pipeline & PGP, TCCA & GCID Facilities, Dunnigan Pipeline Eng	10	88.64%	01-Sep-20 A	12-Mar-21	192	-7
ENG-580	Evaluation of Hydro-power Energy Recovery Facilitie	107	43.39%	01-Sep-20 A	30-Jul-21	95	-6
Convert Drawings to GIS Format		10	52.38%	12-Oct-20 A	12-Mar-21	1	-82
ENG-220	Convert Drawings to GIS Geodatabase File Format to Support Environmental & Permitting	10	52.38%	12-Oct-20 A	12-Mar-21	1	-82
Preliminary Hydraulics Modeling		15	87.9%	01-Sep-20 A	19-Mar-21	325	23
ENG-466	Emergency Release Flood Modeling	15	87.9%	01-Sep-20 A	19-Mar-21	325	23
DSOD Engagement		207	0%	01-Sep-20 A	27-Dec-21	85	-169
ENG-400	Develop DSOD Engagement Plan ($)	207	0%	01-Sep-20 A	27-Dec-21	85	-169
Risk Workshop		170	0%	01-Nov-20 A	29-Oct-21	32	-38
ENG-290	Risk and Uncertainty Assessment ($)	170	0%	01-Nov-20 A	29-Oct-21	32	-38
Constructability Analysis		13	90%	30-Oct-20 A	17-Mar-21	17	39
ENG-370	Constructability	13	90%	30-Oct-20 A	17-Mar-21	17	39
Class IV Cost Estimate		88	0%	08-Sep-20 A	02-Jul-21	17	-89
ENG-265	Develop Class 4 Cost Estimate for HC Facilities	88	0%	08-Sep-20 A	02-Jul-21	17	-89
Confirm Project Benefits		41	0%	01-Oct-20 A	27-Apr-21	17	0
ENG-300	Project Benefits ($)	41	0%	01-Oct-20 A	27-Apr-21	17	0
Economic Feasibility		23	0%	01-Oct-20 A	01-Apr-21	17	0
ENG-350	Prepare Economic Feasibility ($)	23	0%	01-Oct-20 A	01-Apr-21	17	0
Financial Feasibility		44	0%	01-Oct-20 A	30-Apr-21	17	0
ENG-360	Prepare Financial Feasibility ($)	44	0%	01-Oct-20 A	30-Apr-21	17	0
Confirm Env Feasibility with Mitigation		34	0%	10-Oct-20 A	16-Apr-21	17	0
ENG-340	Obtain the Finding of Env Feasibility with Mitigation	34	0%	10-Oct-20 A	16-Apr-21	17	0
Program Design/Construction/Permit Implementation Schedule		89	0%	01-Oct-20 A	09-Jul-21	14	98
ENG-410	Develop Program Design/Construction/Permit Implementation Plan ($)	89	0%	01-Oct-20 A	09-Jul-21	14	98
Geotechnical Permit Planning & Invest Plan		92	76.84%	30-Oct-20 A	09-Jul-21	14	91
ENG-404	Coordinate Geotechnical Investigation Plan	17	83.5%	30-Oct-20 A	23-Mar-21	15	10
ENG-406	Coordinate to Develop Geotechnical Permitting Plan	92	0%	01-Mar-21	09-Jul-21	14	91
Feasibility Report		101	47.88%	30-Oct-20 A	22-Jul-21	17	0
ENG-380	Prepare Draft Feasibility Report	42	69.57%	30-Oct-20 A	27-Apr-21	17	17
ENG-385	Work Group Review of Draft Feasibility Report	9	0%	28-Apr-21	10-May-21	17	0
ENG-390	Prepare Final Feasibility Report	22	0%	11-May-21	10-Jun-21	17	0
ENG-392	Reservoir Committee and Board Approval	29	0%	11-Jun-21	22-Jul-21	17	0
PROP 1		85	0%	16-Aug-21	17-Dec-21	0	6
CWC Feasibility Review		124	0%	16-Aug-21	17-Dec-21	0	11

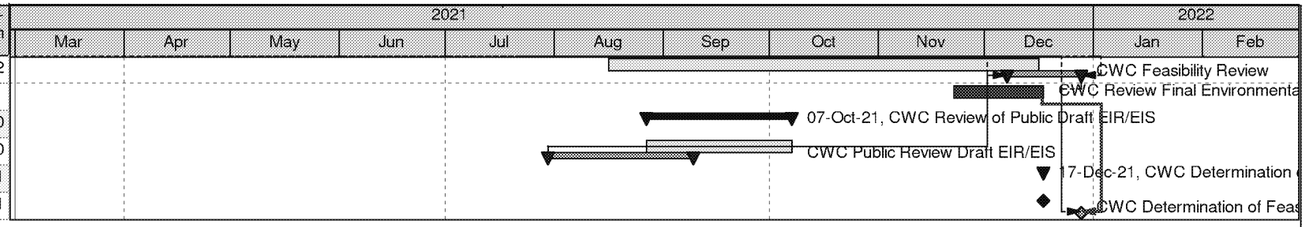


Remaining Level of Effort
Actual Level of Effort
Dec'2020 Update
Actual Work
Remaining Work
Critical Remaining Work
Dec'2020 Milestones
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Summary

Sites Project Authority

ENGINEERING

Activity ID	Activity Name	Remaining Duration	% Complete	Start	Finish	Total Float	Dec'20 - Finish
CWC-403	CWC Feasibility Review	123	0%	16-Aug-21	16-Dec-21	1	12
CWC-490	CWC Review Final Environmental Feasibility Report	25	0%	22-Nov-21	17-Dec-21	0	
CWC Review of Public Draft EIR/EIS		30	0%	27-Aug-21	07-Oct-21	1	-20
CWC-450	CWC Public Review Draft EIR/EIS	30	0%	27-Aug-21	07-Oct-21	1	-20
CWC Determination of Feasibility		0	0%	17-Dec-21	17-Dec-21	0	11
CWC-500	CWC Determination of Feasibility	0	0%		17-Dec-21*	0	11



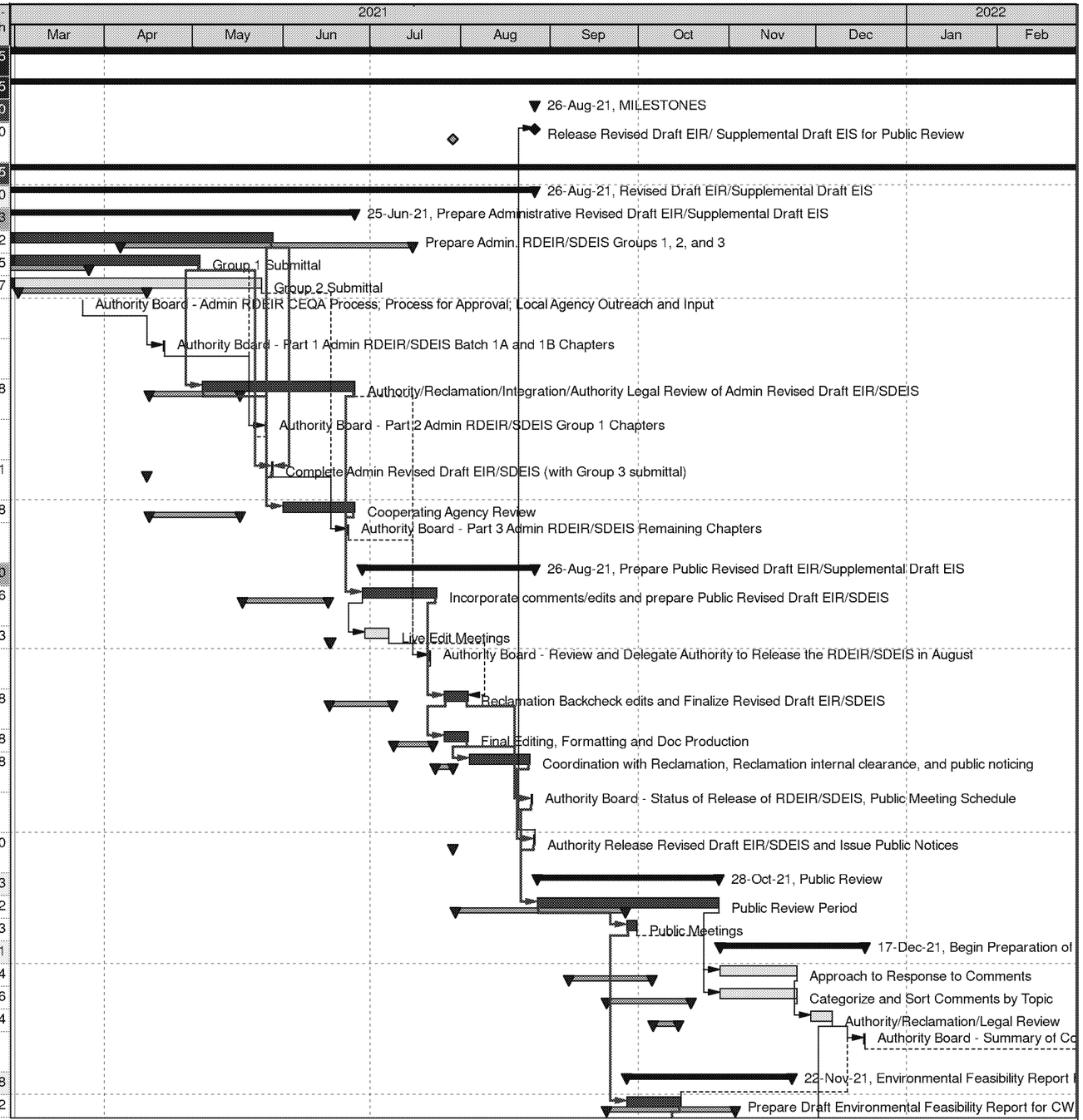
Remaining Level of Effort
Actual Level of Effort
Dec'2020 Update
Actual Work
Remaining Work
Critical Remaining Work
Dec'2020 Milestones
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Summary

Sites Project Authority

ENGINEERING

Attachment 5: Environmental Detail Schedule

Activity ID	Activity Name	Remaining Duration	% Complete	Start	Finish	Total Float	Dec'20 - Finish
Laurie Warner-Herson		280	0%	13-Jan-21 A	13-Apr-22	95	-35
SITES PROJECT		280	0%	13-Jan-21 A	13-Apr-22	95	-35
MILESTONES		0	0%	26-Aug-21	26-Aug-21	261	-20
MS-011-DE	Release Revised Draft EIR/ Supplemental Draft EIS for Public Review	0	0%		26-Aug-21	261	-20
EIR/EIS		280	0%	13-Jan-21 A	13-Apr-22	1	-35
Revised Draft EIR/Supplemental Draft EIS		126	0%	13-Jan-21 A	26-Aug-21	1	-20
Prepare Administrative Revised Draft EIR/Supplemental Draft E		83	0%	13-Jan-21 A	25-Jun-21	17	13
EIR-020	Prepare Admin. RDEIR/SDEIS Groups 1, 2, and 3	64	9.86%	13-Jan-21 A	28-May-21	1	32
EIR-025	Group 1 Submittal	45	0%	13-Jan-21 A	03-May-21	1	-25
EIR-027	Group 2 Submittal	60	0%	13-Jan-21 A	24-May-21	5	-27
EIR-065	Authority Board - Admin RDEIR CEQA Process; Process for Approval; Local Agency Outreach and Input	1	0%	24-Mar-21	24-Mar-21	2	
EIR-085	Authority Board - Part 1 Admin RDEIR/SDEIS Batch 1A and 1B Chapters	1	0%	21-Apr-21	21-Apr-21	2	
EIR-035	Authority/Reclamation/Integration/Authority Legal Review of Admin Revised Draft EIR/SDEIS	38	0%	04-May-21	25-Jun-21	1	-28
EIR-125	Authority Board - Part 2 Admin RDEIR/SDEIS Group 1 Chapters	1	0%	26-May-21	26-May-21	2	
EIR-030	Complete Admin Revised Draft EIR/SDEIS (with Group 3 submittal)	1	0%	28-May-21	28-May-21	1	-31
EIR-590	Cooperating Agency Review	19	0%	01-Jun-21	25-Jun-21	1	-28
EIR-135	Authority Board - Part 3 Admin RDEIR/SDEIS Remaining Chapters	1	0%	23-Jun-21	23-Jun-21	1	
Prepare Public Revised Draft EIR/Supplemental Draft EIS		43	0%	28-Jun-21	26-Aug-21	1	20
EIR-040	Incorporate comments/edits and prepare Public Revised Draft EIR/SDEIS	19	0%	28-Jun-21	23-Jul-21	1	-26
EIR-045	Live Edit Meetings	6	0%	29-Jun-21	07-Jul-21	3	-13
EIR-060	Authority Board - Review and Delegate Authority to Release the RDEIR/SDEIS in August	1	0%	21-Jul-21	21-Jul-21	3	
EIR-050	Reclamation Backcheck edits and Finalize Revised Draft EIR/SDEIS	7	0%	26-Jul-21	03-Aug-21	1	-18
EIR-067	Final Editing, Formatting and Doc Production	7	0%	26-Jul-21	03-Aug-21	1	-8
EIR-075	Coordination with Reclamation, Reclamation internal clearance, and public noticing	15	0%	04-Aug-21	24-Aug-21	1	-18
EIR-150	Authority Board - Status of Release of RDEIR/SDEIS, Public Meeting Schedule	1	0%	25-Aug-21	25-Aug-21	1	
EIR-080	Authority Release Revised Draft EIR/SDEIS and Issue Public Notices	1	0%	26-Aug-21	26-Aug-21	1	-20
Public Review		43	0%	27-Aug-21	28-Oct-21	1	-23
EIR-090	Public Review Period	63	0%	27-Aug-21	28-Oct-21	3	-32
EIR-530	Public Meetings	4	0%	27-Sep-21	30-Sep-21	3	-173
Begin Preparation of the Admin Final EIR/EIS		33	0%	29-Oct-21	17-Dec-21	79	-41
EIR-100	Approach to Response to Comments	18	0%	29-Oct-21	24-Nov-21	1	-34
EIR-095	Categorize and Sort Comments by Topic	18	0%	29-Oct-21	24-Nov-21	1	-26
EIR-105	Authority/Reclamation/Legal Review	6	0%	29-Nov-21	06-Dec-21	1	-34
EIR-140	Authority Board - Summary of Comments received in the RDEIR/SDEIS and Approach to Responses	1	0%	17-Dec-21	17-Dec-21	104	
Environmental Feasibility Report For CWC		39	0%	27-Sep-21	22-Nov-21	0	8
EIR-110	Prepare Draft Environmental Feasibility Report for CW	14	0%	27-Sep-21	15-Oct-21	3	12

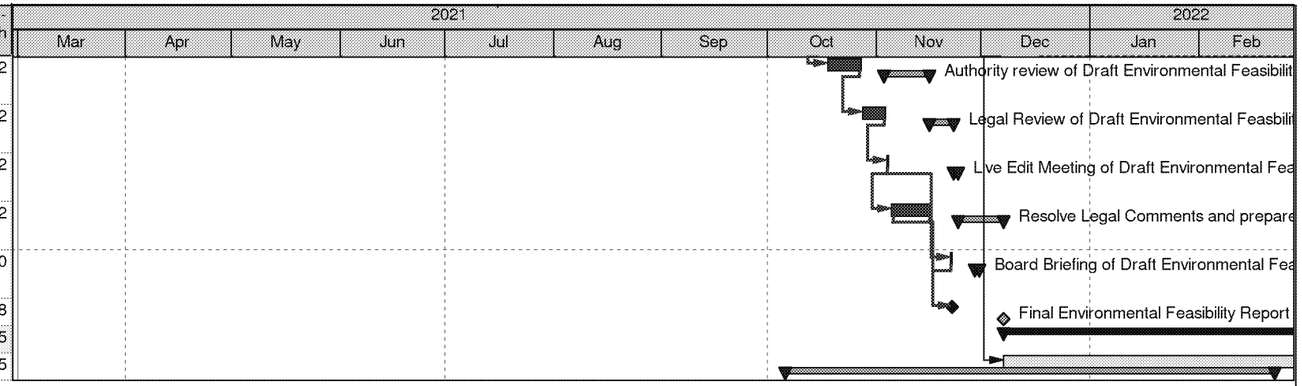


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
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Sites Project Authority

ENVIRONMENTAL

Activity ID	Activity Name	Remaining Duration	% Complete	Start	Finish	Total Float	Dec'20 - Finish
EIR-540	Authority review of Draft Environmental Feasibility Report for CWC	8	0%	18-Oct-21	27-Oct-21	3	12
EIR-560	Legal Review of Draft Environmental Feasbility Report for CWC	5	0%	28-Oct-21	03-Nov-21	3	12
EIR-117	Live Edit Meeting of Draft Environmental Feasibility Report for CWC	1	0%	04-Nov-21	04-Nov-21	3	12
EIR-580	Resolve Legal Comments and prepare Final Feasibility Report for CWC	7	0%	05-Nov-21	16-Nov-21	3	12
EIR-570	Board Briefing of Draft Environmental Feasibility Report for CWC	1	0%	22-Nov-21	22-Nov-21	0	0
EIR-120	Final Environmental Feasibility Report Submittal to CW	0	0%		22-Nov-21	0	8
Final EIR/Final EIS		87	0%	07-Dec-21	13-Apr-22	1	-35
EIR-210	Preparation of Final EIR/EIS	87	0%	07-Dec-21	13-Apr-22	1	-35



Remaining Level of Effort
Actual Level of Effort
Actual Work
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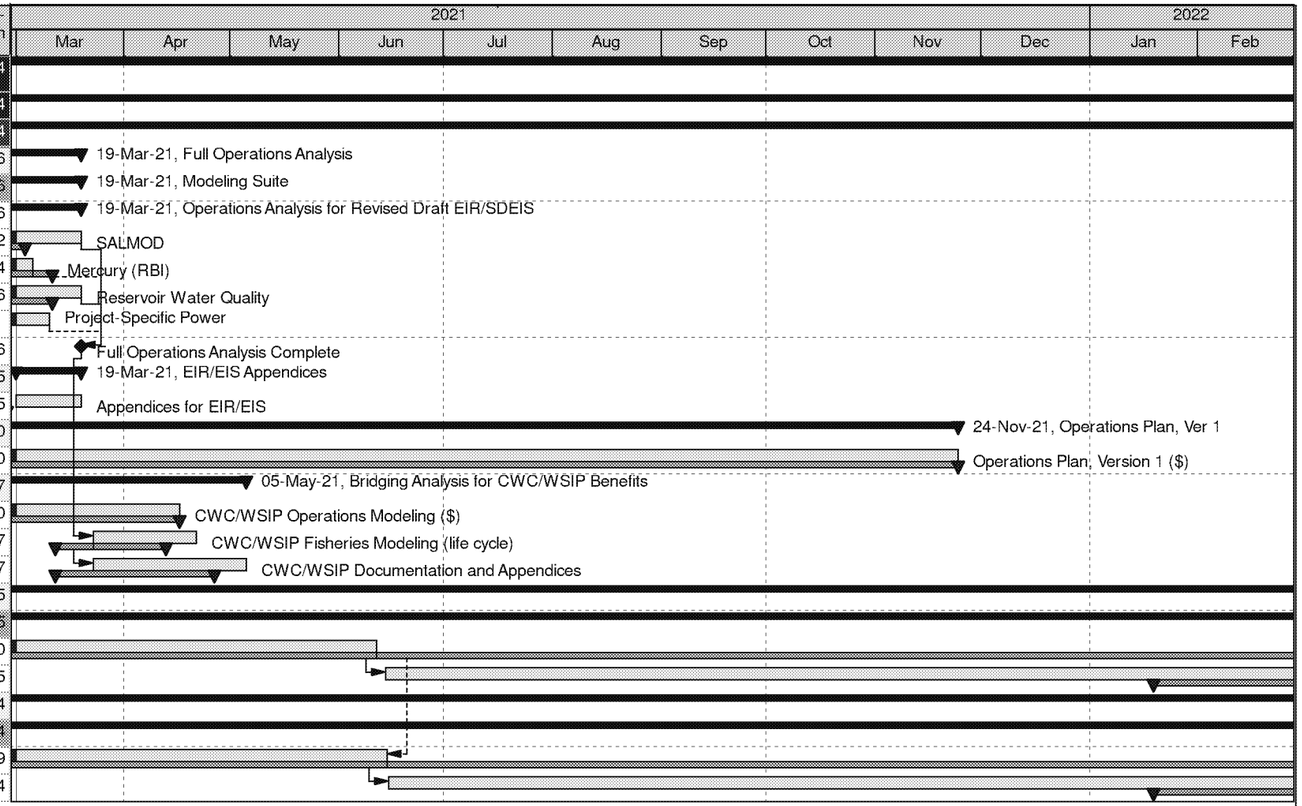
Sites Project Authority

ENVIRONMENTAL

Attachment 6: Operations Detail Schedule

Draft_0008662

Activity ID	Activity Name	Remaining Duration	% Complete	Start	Finish	Total Float	Dec'20 - Finish
Erin Heydinger		335	23.13%	01-Sep-20 A	30-Jun-22	289	214
SITES PROJECT		335	23.13%	01-Sep-20 A	30-Jun-22	289	214
OPERATIONS MODELING		335	23.13%	01-Sep-20 A	30-Jun-22	289	214
Full Operations Analysis		15	0%	23-Nov-20 A	19-Mar-21	71	-6
Modeling Suite		15	0%	23-Nov-20 A	19-Mar-21	71	-6
Operations Analysis for Revised Draft EIR/SDEIS		15	0%	23-Nov-20 A	19-Mar-21	71	-6
OP-0630	SALMOD	15	10%	23-Nov-20 A	19-Mar-21	71	-12
OP-0670	Mercury (RBI)	5	80%	23-Nov-20 A	05-Mar-21	81	4
OP-0680	Reservoir Water Quality	15	80%	23-Nov-20 A	19-Mar-21	2	-6
OP-0695	Project-Specific Power	8	50%	12-Jan-21 A	10-Mar-21	80	
OP-446	Full Operations Analysis Complete	0	0%		19-Mar-21	71	-46
EIR/EIS Appendices		15	0%	01-Mar-21	19-Mar-21	50	-15
OP-320	Appendices for EIR/EIS	15	0%	01-Mar-21	19-Mar-21	50	-15
Operations Plan, Ver 1		187	17%	01-Nov-20 A	24-Nov-21	87	0
OP-470	Operations Plan, Version 1 ($)	187	17%	01-Nov-20 A	24-Nov-21	87	0
Bridging Analysis for CWC/WSIP Benefits		47	31.27%	01-Sep-20 A	05-May-21	74	-7
CFS-010	CWC/WSIP Operations Modeling ($)	34	47.69%	01-Sep-20 A	16-Apr-21	87	0
CFS-020	CWC/WSIP Fisheries Modeling (life cycle)	21	0%	23-Mar-21	21-Apr-21	71	-7
CFS-030	CWC/WSIP Documentation and Appendices	31	0%	23-Mar-21	05-May-21	71	-7
Final Sites-Reclamation Operating Agreement		334	0%	02-Nov-20 A	29-Jun-22	290	215
Reclamation Term Sheet		334	0%	02-Nov-20 A	29-Jun-22	290	215
OP-1110	Sites-Reclamation Operating Agreement Term Sheet	73	19%	02-Nov-20 A	11-Jun-21	290	290
OP-1005	Final Sites-Reclamation Operating Agreement	261	0%	14-Jun-21	29-Jun-22	290	215
Final Sites-DWR Operating Agreement		335	0%	02-Nov-20 A	30-Jun-22	289	214
DWR Term Sheet		335	0%	02-Nov-20 A	30-Jun-22	289	214
OP-1120	Sites-DWR Operating Agreement Term Sheet	74	81.55%	02-Nov-20 A	14-Jun-21	289	289
OP-1015	Final Sites-DWR Operating Agreement	261	0%	15-Jun-21	30-Jun-22	289	214



Remaining Level of Effort
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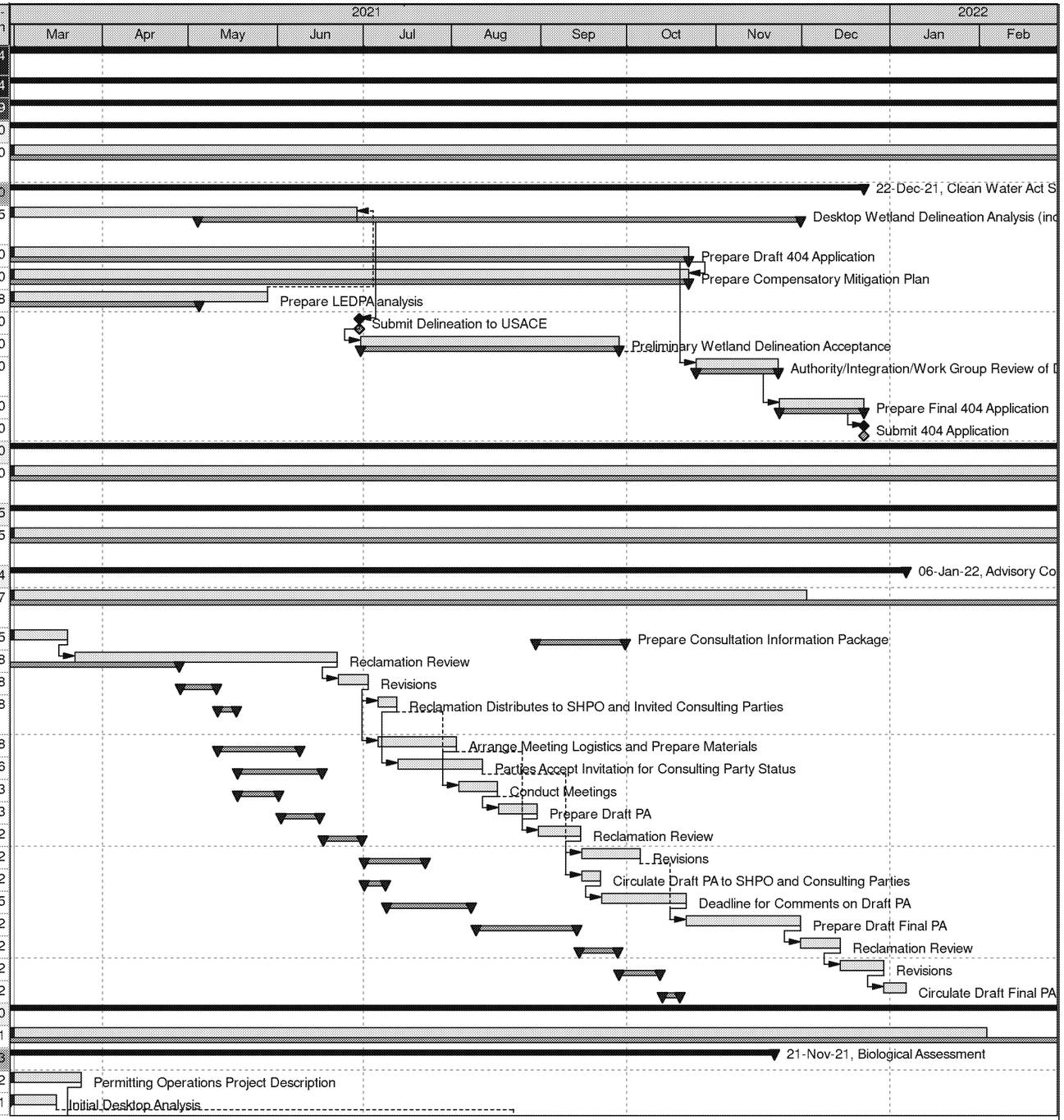
Sites Project Authority

OPERATIONS

Attachment 7: Permitting Detail Schedule

Draft_0008664

Activity ID	Activity Name	Remaining Duration	% Complete	Start	Finish	Total Float	Dec'20 - Finish
John Spranza		798	0%	01-Sep-20 A	08-May-24	676	-24
SITES PROJECT		798	0%	01-Sep-20 A	08-May-24	676	-24
FEDERAL PERMITS AND AGREEMENTS		572	0%	01-Sep-20 A	13-Jun-23	902	39
U.S. Army Corps of Engineers CWA 404, Rivers and Harbors Ac		550	0%	01-Sep-20 A	11-May-23	623	0
FED-020	U.S. Army Corps of Engineers CWA 404, Rivers and Harbors Act Section 10	574	3%	04-Feb-21 A	11-May-23	351	0
Clean Water Act Section 404		205	0%	01-Sep-20 A	22-Dec-21	968	0
404-010	Desktop Wetland Delineation Analysis (includes Waters of the State)	84	50%	01-Sep-20 A	28-Jun-21	336	105
404-050	Prepare Draft 404 Application	165	10%	04-Feb-21 A	22-Oct-21	968	0
404-035	Prepare Compensatory Mitigation Plan	165	5%	04-Feb-21 A	22-Oct-21	968	0
404-001	Prepare LEDPA analysis	64	0%	05-Feb-21 A	28-May-21	336	-18
404-020	Submit Delineation to USACE	0	0%		29-Jun-21	984	0
404-030	Preliminary Wetland Delineation Acceptance	90	0%	30-Jun-21	28-Sep-21	1424	0
404-060	Authority/Integration/Work Group Review of Draft 404 Application	20	0%	25-Oct-21	22-Nov-21	968	0
404-070	Prepare Final 404 Application	20	0%	23-Nov-21	22-Dec-21	968	0
404-120	Submit 404 Application	0	0%		22-Dec-21	968	0
U.S. Army Corps of Engineers Rivers and Harbors Act Section		574	0%	04-Feb-21 A	11-May-23	351	0
FED-030	U.S. Army Corps of Engineers Rivers and Harbors Act Section 14, Section 408	574	0%	04-Feb-21 A	11-May-23	351	0
U.S. EPA and U.S. Army Corps of Engineers LEDPA Review		506	0%	02-Nov-20 A	06-Feb-23	419	45
FED-040	U.S. EPA and U.S. Army Corps of Engineers LEDPA Review	506	0%	02-Nov-20 A	06-Feb-23	419	45
Advisory Council on Historic Preservation NHPA Section 106		214	0%	01-Sep-20 A	06-Jan-22	890	64
FED-050	Advisory Council on Historic Preservation NHPA Section 106	191	0%	01-Sep-20 A	02-Dec-21	19	87
106-021	Prepare Consultation Information Package	15	85%	01-Dec-20 A	19-Mar-21	891	135
106-022	Reclamation Review	64	0%	22-Mar-21	21-Jun-21	891	-38
106-024	Revisions	9	0%	22-Jun-21	02-Jul-21	891	-38
106-025	Reclamation Distributes to SHPO and Invited Consulting Parties	5	0%	06-Jul-21	12-Jul-21	906	-38
106-032	Arrange Meeting Logistics and Prepare Materials	20	0%	06-Jul-21	02-Aug-21	891	-38
106-026	Parties Accept Invitation for Consulting Party Status	30	0%	13-Jul-21	11-Aug-21	1327	-56
106-033	Conduct Meetings	10	0%	03-Aug-21	16-Aug-21	891	-53
106-041	Prepare Draft PA	10	0%	17-Aug-21	30-Aug-21	891	-53
106-042	Reclamation Review	10	0%	31-Aug-21	14-Sep-21	891	-52
106-044	Revisions	15	0%	15-Sep-21	05-Oct-21	901	-52
106-052	Circulate Draft PA to SHPO and Consulting Parties	5	0%	15-Sep-21	21-Sep-21	891	-52
106-053	Deadline for Comments on Draft PA	30	0%	22-Sep-21	21-Oct-21	1291	-75
106-061	Prepare Draft Final PA	25	0%	21-Oct-21	30-Nov-21	890	-52
106-062	Reclamation Review	10	0%	30-Nov-21	14-Dec-21	890	-52
106-064	Revisions	10	0%	14-Dec-21	29-Dec-21	890	-52
106-072	Circulate Draft Final PA to SHPO and Consulting Par	5	0%	29-Dec-21	06-Jan-22	890	-52
USFWS and NMFS ESA Section 7		274	0%	01-Sep-20 A	05-Apr-22	899	-10
FED-060	USFWS and NMFS ESA Section 7	233	20%	01-Sep-20 A	03-Feb-22	656	31
Biological Assessment		184	0%	19-Oct-20 A	21-Nov-21	892	-33
BA-022	Permitting Operations Project Description	18	0%	19-Oct-20 A	24-Mar-21	900	-42
BA-001	Initial Desktop Analysis	11	82%	15-Feb-21 A	15-Mar-21	304	-11

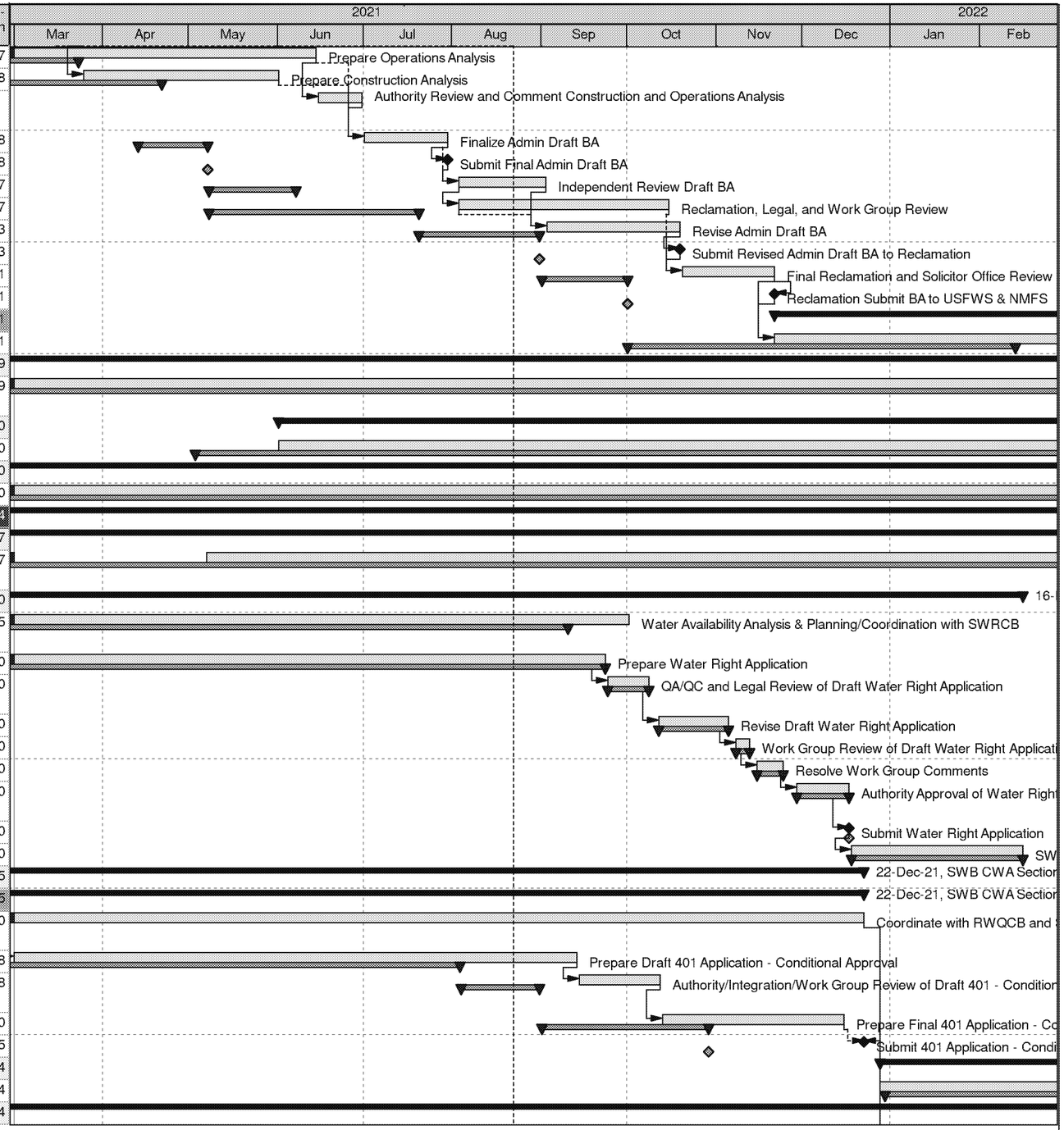


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
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PERMITS

Activity ID	Activity Name	Remaining Duration	% Complete	Start	Finish	Total Float	Dec'20 - Finish
BA-025	Prepare Operations Analysis	74	0%	24-Feb-21 A	14-Jun-21	891	-57
BA-024	Prepare Construction Analysis	47	0%	25-Mar-21	01-Jun-21	900	-28
BA-029	Authority Review and Comment Construction and Operations Analysis	12	0%	15-Jun-21	30-Jun-21	891	
BA-030	Finalize Admin Draft BA	21	0%	01-Jul-21	30-Jul-21	891	-58
BA-032	Submit Final Admin Draft BA	0	0%		30-Jul-21	891	-58
BA-035	Independent Review Draft BA	31	0%	03-Aug-21	02-Sep-21	1294	-87
BA-055	Reclamation, Legal, and Work Group Review	74	0%	03-Aug-21	15-Oct-21	1294	-87
BA-057	Revise Admin Draft BA	31	0%	03-Sep-21	19-Oct-21	891	-33
BA-060	Submit Revised Admin Draft BA to Reclamation	0	0%		19-Oct-21	891	-33
BA-075	Final Reclamation and Solicitor Office Review	33	0%	20-Oct-21	21-Nov-21	1290	-51
BA-100	Reclamation Submit BA to USFWS & NMFS	0	0%		21-Nov-21	1290	-51
BO Incidental Take Authorization		135	0%	21-Nov-21	05-Apr-22	1290	-51
BA-1110	BO Incidental Take Authorization	135	0%	21-Nov-21	05-Apr-22	1290	-51
USFWS Bald Eagle Protection Act		572	0%	01-Sep-20 A	13-Jun-23	317	39
FED-075	USFWS Bald Eagle Protection Act (includes Pre-Application Surveys)	572	0%	01-Sep-20 A	13-Jun-23	317	39
USBR Warren Act		356	0%	01-Jun-21	01-Nov-22	1054	-20
FED-090	USBR Warren Act	356	0%	01-Jun-21	01-Nov-22	1054	-20
USBR - Land Agreement		407	0%	02-Nov-20 A	13-Oct-22	217	40
FED-100	USBR Land Agreements	407	16%	02-Nov-20 A	13-Oct-22	217	40
STATE PERMITS AND AGREEMENTS		798	0%	01-Sep-20 A	08-May-24	375	-24
Central Valley Flood Protection Board Levee Encroachment		501	0%	01-Sep-20 A	11-May-23	339	-37
STA-030	Central Valley Flood Protection Board Levee Encroachment	501	15%	01-Sep-20 A	11-May-23	339	-37
SWRCB Water Rights Permit		241	0%	01-Sep-20 A	16-Feb-22	701	0
WR-005	Water Availability Analysis & Planning/Coordination with SWRCB	151	10%	01-Sep-20 A	01-Oct-21	697	-15
WR-025	Prepare Water Right Application	145	12%	01-Feb-21 A	23-Sep-21	697	0
WR-035	QA/QC and Legal Review of Draft Water Right Application	11	0%	24-Sep-21	08-Oct-21	697	0
WR-045	Revise Draft Water Right Application	19	0%	12-Oct-21	05-Nov-21	697	0
WR-055	Work Group Review of Draft Water Right Application	4	0%	08-Nov-21	12-Nov-21	697	0
WR-065	Resolve Work Group Comments	8	0%	15-Nov-21	24-Nov-21	697	0
WR-075	Authority Approval of Water Right Application, Submit to SWRCB	15	0%	29-Nov-21	17-Dec-21	697	0
WR-085	Submit Water Right Application	0	0%		17-Dec-21	697	0
WR-095	SWRCB Review of Water Right Application	60	0%	18-Dec-21	16-Feb-22	1016	0
SWB CWA Section 401 Water Quality Certification		205	0%	15-Jan-21 A	22-Dec-21	968	-35
SWB CWA Section 401 Water Quality Certification - Conditional		205	0%	15-Jan-21 A	22-Dec-21	968	-35
401-120	Coordinate with RWQCB and SWRCB - Conditional Approval	205	5%	15-Jan-21 A	22-Dec-21	968	-220
401-130	Prepare Draft 401 Application - Conditional Approval	137	0%	01-Mar-21	13-Sep-21	973	-28
401-140	Authority/Integration/Work Group Review of Draft 401 - Conditional Approval	20	0%	14-Sep-21	12-Oct-21	973	-28
401-150	Prepare Final 401 Application - Conditional Approval	43	0%	13-Oct-21	15-Dec-21	973	-30
401-160	Submit 401 Application - Conditional Approval	0	0%		22-Dec-21	968	-35
CDFW Streambed Alteration Agreements		591	0%	28-Dec-21	08-May-24	91	-24
STA-100	CDFW Streambed Alteration	591	0%	28-Dec-21	08-May-24	91	-24
CDFW Incidental Take Permits		336	0%	01-Sep-20 A	01-Jul-22	837	4

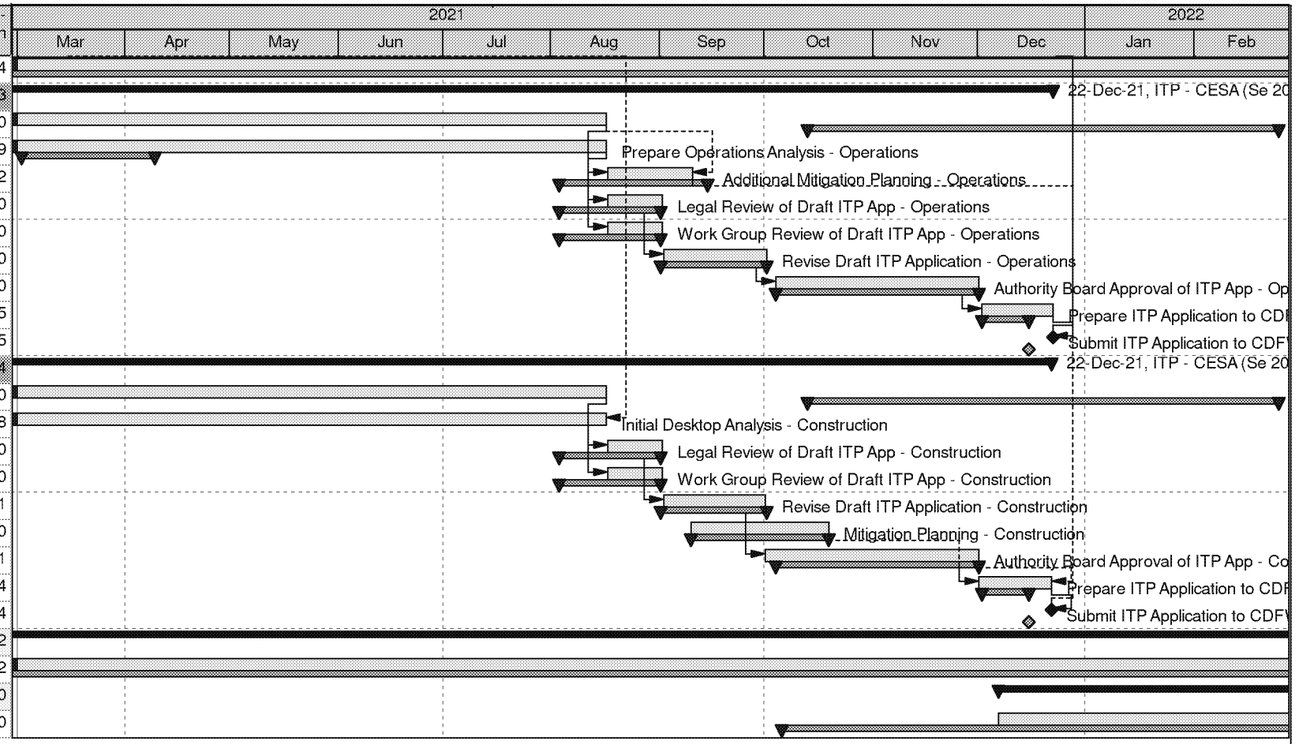


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary
Dec'2020 Milestone
Dec'2020 Update

Sites Project Authority

PERMITS

Activity ID	Activity Name	Remaining Duration	% Complete	Start	Finish	Total Float	Dec'20 - Finish
STA-110	CDFW Section 2081	336	0%	01-Sep-20 A	01-Jul-22	54	4
ITP - CESA (Se 2081) Operations		205	0%	30-Sep-20 A	22-Dec-21	968	43
CES-210	Prepare Draft ITP Application - Operations	118	5%	30-Sep-20 A	16-Aug-21	968	130
CES-190	Prepare Operations Analysis - Operations	118	5%	30-Sep-20 A	16-Aug-21	1037	-89
CES-200	Additional Mitigation Planning - Operations	18	0%	17-Aug-21	10-Sep-21	1037	2
CES-220	Legal Review of Draft ITP App - Operations	16	0%	17-Aug-21	01-Sep-21	1401	0
CES-230	Work Group Review of Draft ITP App - Operations	16	0%	17-Aug-21	01-Sep-21	1401	0
CES-240	Revise Draft ITP Application - Operations	21	0%	02-Sep-21	01-Oct-21	968	0
CES-250	Authority Board Approval of ITP App - Operations	39	0%	04-Oct-21	01-Dec-21	968	0
CES-260	Prepare ITP Application to CDFW - Operations	15	0%	02-Dec-21	22-Dec-21	968	-5
CES-270	Submit ITP Application to CDFW - Operations	0	0%		22-Dec-21	968	-5
ITP - CESA (Se 2081) Construction		204	0%	30-Sep-20 A	22-Dec-21	171	44
CES-030	Prepare Draft ITP Application - Construction	118	10%	30-Sep-20 A	16-Aug-21	170	130
CES-010	Initial Desktop Analysis - Construction	118	20%	30-Sep-20 A	16-Aug-21	197	-148
CES-040	Legal Review of Draft ITP App - Construction	16	0%	17-Aug-21	01-Sep-21	252	0
CES-060	Work Group Review of Draft ITP App - Construction	16	0%	17-Aug-21	01-Sep-21	252	0
CES-070	Revise Draft ITP Application - Construction	20	0%	02-Sep-21	01-Oct-21	170	1
CES-025	Mitigation Planning - Construction	27	0%	10-Sep-21	19-Oct-21	197	0
CES-080	Authority Board Approval of ITP App - Construction	39	0%	01-Oct-21	01-Dec-21	170	1
CES-090	Prepare ITP Application to CDFW - Construction	15	0%	01-Dec-21	22-Dec-21	170	-4
CES-280	Submit ITP Application to CDFW - Construction	0	0%		22-Dec-21	171	-4
NAHC/Local Tribes AB 52 Consultation		277	0%	01-Sep-20 A	08-Apr-22	54	82
STA-120	NAHC/Local Tribes AB 52 Consultation	277	0%	01-Sep-20 A	08-Apr-22	54	82
SMARA		86	0%	07-Dec-21	12-Apr-22	96	0
STA-140	SMARA	86	0%	07-Dec-21	12-Apr-22	96	0



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary
Dec'2020 Milestone
Dec'2020 Update

Sites Project Authority

PERMITS

Attachment 8: Right of Entry Detail Schedule (No Activities Occurring in Amendment 2)

From: Heydinger, Erin [Erin.Heydinger@hdrinc.com]
Sent: 3/23/2021 2:51:59 PM
To: Alicia Forsythe [aforsythe@sitesproject.org]
CC: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
Subject: Project Description Graphics
Attachments: GoldenGate_v1.pdf; Schedule Figure.png

Hi Ali,

Attached are two draft graphics that Luke put together. Please let me know if you have any comments or edits and we can revise. If the dam graphic looks good overall, Luke can coordinate on the other dam drawings in the project description.

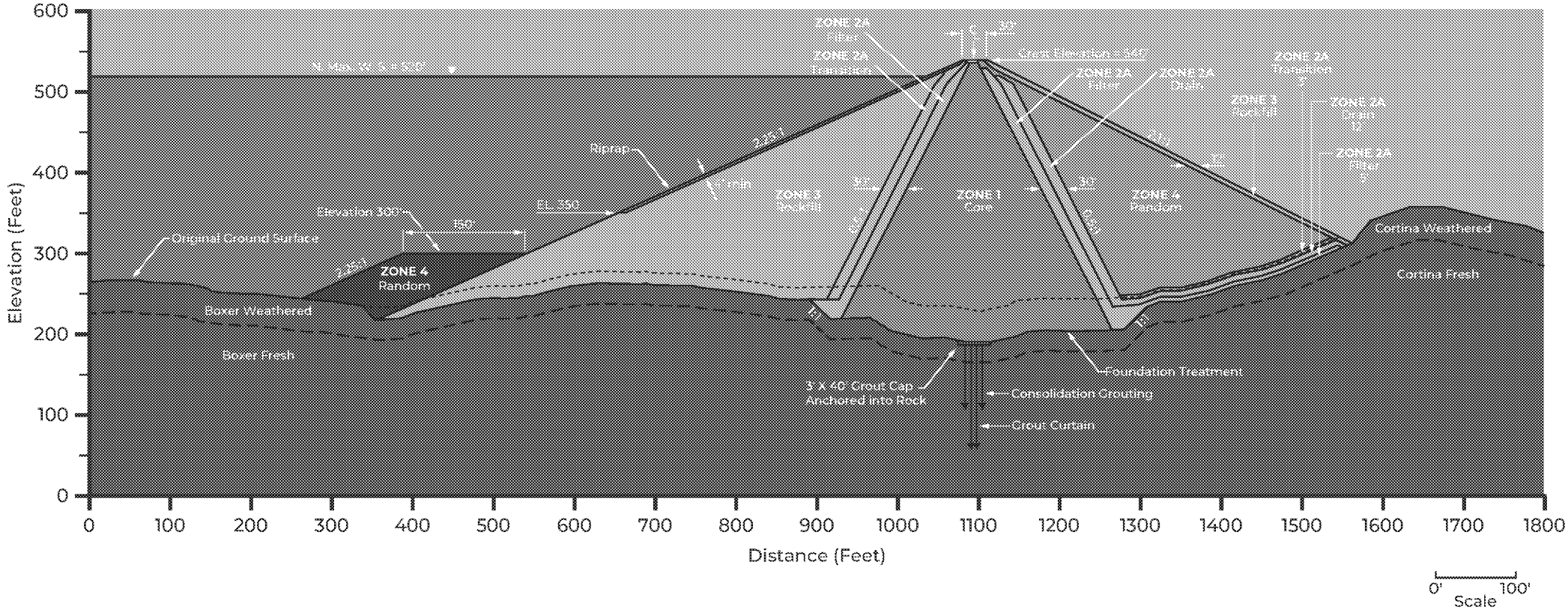
He also does have a draft of the diversion criteria, but I have some changes I'd like him to incorporate. I'll circulate that as soon as I have the revisions.

Thanks!
Erin

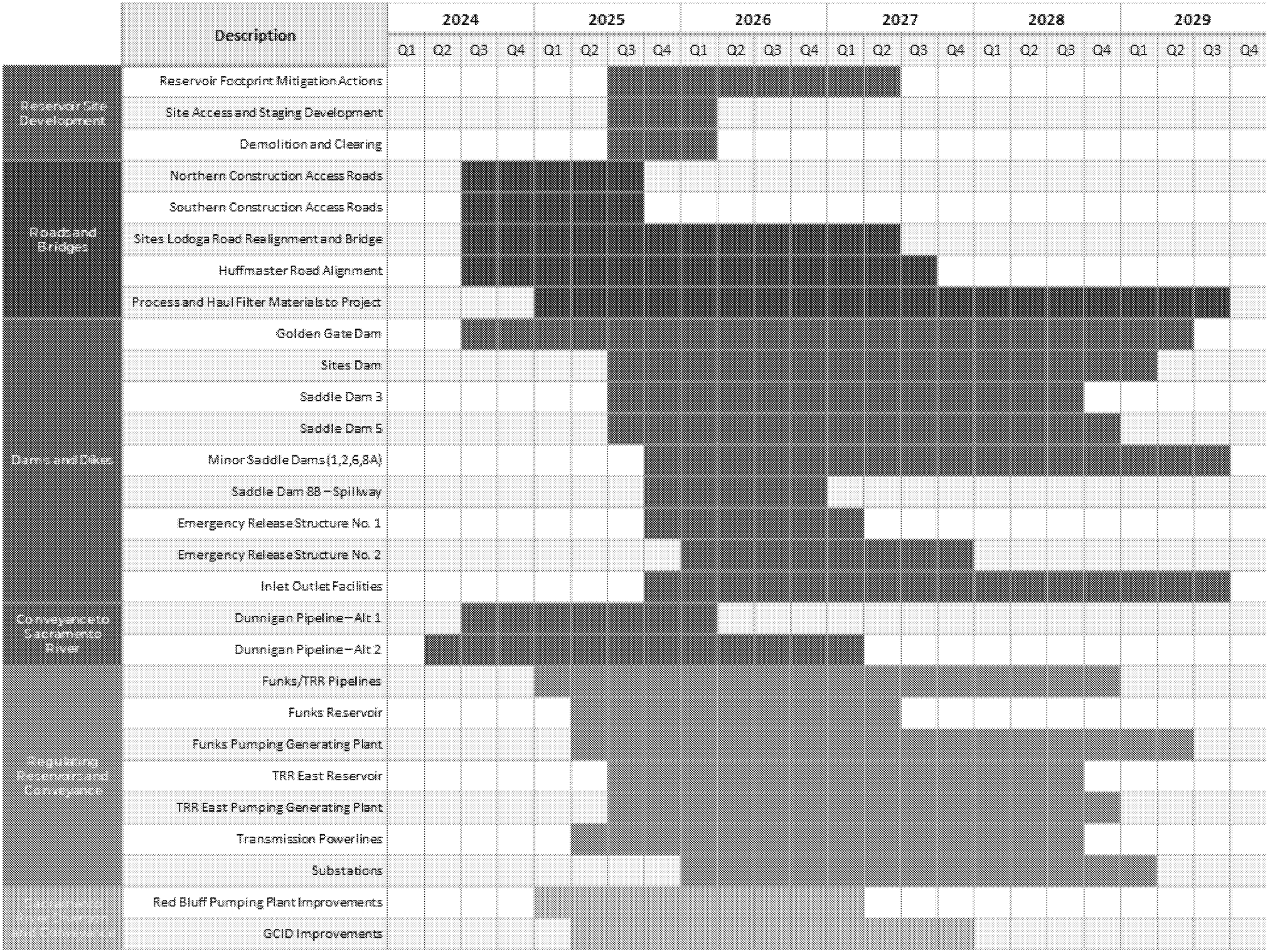
Erin Heydinger, PE, PMP
Project Manager
Water/Wastewater

HDR
2379 Gateway Oaks Dr, #200
Sacramento, CA 95833
D 916.679.8863 M 651.307.9758

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Draft_0008670


Description
2024
2025
2026
2027
2028
2029
Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4
Reservoir Site Development
Reservoir Footprint Mitigation Actions
Site Access and Staging Development
Demolition and Clearing
Roads and Bridges
Northern Construction Access Roads
Southern Construction Access Roads
Sites Lodoga Road Realignment and Bridge
Huffmaster Road Alignment
Process and Haul Filter Materials to Project
Dams and Dikes
Golden Gate Dam
Sites Dam
Saddle Dam 3
Saddle Dam 5
Minor Saddle Dams (1,2,6,8A)
Saddle Dam 8B – Spillway
Emergency Release Structure No. 1
Emergency Release Structure No. 2
Inlet Outlet Facilities
Conveyance to Sacramento River
Dunnigan Pipeline – Alt 1
Dunnigan Pipeline – Alt 2
Regulating Reservoirs and Conveyance
Funks/TRR Pipelines
Funks Reservoir
Funks Pumping Generating Plant
TRR East Reservoir
TRR East Pumping Generating Plant
Transmission Powerlines
Substations
Red Bluff Pumping Plant Improvements
GCID Improvements

From: Spranza, John [John.Spranza@hdrinc.com]
Sent: 3/23/2021 4:33:38 PM
To: Huber, Anne [Anne.Huber@icf.com]; Williams, Nicole (Nicole.Williams@icf.com) [Nicole.Williams@icf.com]; steve.micko@jacobs.com; Alicia Forsythe [aforsythe@sitesproject.org]
Subject: WQ meeting 1 prep call
Attachments: Water Quality Meeting 1 Approach and Key Boles Comments.docx

Folks, as we prep for the first WQ NGO discussion meeting I wanted to revisit the RTC's we received as the author of these questions will be front and center on this call, as will the individuals who have been resubmitting his comments in their own letters as well as the recent Town Hall.

My approach to the 1-hour call is to limit the agenda to a few areas so that we can properly prepare our responses that address the questions. These can be in the form of new data or analyses performed in the current DEIR/S that addresses the specifics of the question or take the form of a listen and acknowledge response should the question be one that really is not a CEQA/NEPA question or analytical question. I have underlined the questions in the attached document that I feel would be relevant to this first meeting which I intend on focusing on:

1) The comments that center on the inflow of constituents of concern from source water (metals primarily) and the constituents that would enter via the inundation of the reservoir site (i.e., salts, metals…).
2) The accumulation, concentration and/or transformation of those constituents in the reservoir (but not the release of this water, that will be next meeting)

These are the specific topics we will cover in this meeting.

- Obtain additional metals data from source waters targeting high flows from which diversions would occur
- Provide information on the water quality impacts from other chemical contaminants that adversely affect water quality in the Sacramento River (including chlorpyrifos, diazinon, chlordane, DDT, mercury, PCBs, and dieldrin) and contaminants in sewer outfalls (such as pharmaceuticals) and other discharges (such as industrial discharges)
- Evaluate the contributions of metals from local tributaries (i.e., Funks Creek and Stone Corral Creek) to the proposed reservoir
- Provide information on the contribution from leaching of metals from the inundation area of the proposed reservoir
- Evaluate physical conditions expected in the reservoir, including thermal stratification and hypolimnetic anoxia,

Lastly, I would like to make sure we are prepared as a team to address the request for more data and how the lack of data would not prevent the project, or conflict with CEQA. Also, be ready to discuss the relevant modeling that we have done and the initial results we have seen. that part of the project's permit applications would be specific to monitoring required under the permit to ensure compliance.

Talk to you all on Thursday, please don't hesitate to call or email with questions or concerns.

John

John Spranza, MS, CCN
Senior Ecologist / Regulatory Specialist

HDR
2379 Gateway Oaks Drive, Suite 200
Sacramento, CA 95833
D 916.679.8858 M 818.640.2487
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Water Quality NGO Meeting 1

Focusing this meeting on:

1) The comments that center on the inflow of constituents of concern from source water (metals primarily) and the constituents that would enter via the inundation of the reservoir site (i.e., salts, metals...).
2) The accumulation, concentration and/or transformation of those constituents in the reservoir (but not the release of this water, that will be next meeting).

These are the specific topics we will cover in this meeting.

- Obtain additional metals data from source waters targeting high flows from which diversions would occur
- Provide information on the water quality impacts from other chemical contaminants that adversely affect water quality in the Sacramento River (including chlorpyrifos, diazinon, chlordane, DDT, mercury, PCBs, and dieldrin) and contaminants in sewer outfalls (such as pharmaceuticals) and other discharges (such as industrial discharges)
- Evaluate the contributions of metals from local tributaries (i.e., Funks Creek and Stone Corral Creek) to the proposed reservoir
- Provide information on the contribution from leaching of metals from the inundation area of the proposed reservoir
- Evaluate physical conditions expected in the reservoir, including thermal stratification and hypolimnetic anoxia,

Jerry Boles Abridged Comments- Effects of Upstream Water Quality

Quality of Analysis

Section 7 – Surface Water Quality does not disclose potential significant adverse issues which have serious ramifications for the viability of the proposed project, but rather ignores or misconstrues available data and reports to incorrectly conclude that there are no significant water quality impacts associated with the proposed project. The EIR claims to have evaluated post-project impacts to the Sacramento River, but there are no analyses provided that indicate that this was done. It is apparent that the preparers of the EIR failed to examine or simply ignored the available data that would show potential significant adverse impacts from the proposed project.

The analyses in Section 7 completely left out any evaluation or projection of water quality that may result in Sites Reservoir from diverting high winter flows from the Sacramento River. The EIR fails to point out that due to metals loads in the various source waters, water in the proposed reservoir may not be suitable for the beneficial uses stated for the proposed project, including enhanced water management flexibility, agricultural and urban water supply, water quality improvement, and ecosystem improvement for fish protection, habitat management, and other environmental needs.

A factual evaluation of the available data is presented below, which shows significant potential adverse impacts associated with the proposed project. Some comments on specific sections of Chapter 7 of the EIR are also presented.

Available Data

The EIR cites the DWR Water Data Library (WDL) online database as the source for water quality data

used to determine impacts from the proposed project. However, very limited data from the WDL are available for evaluating water quality in source waters for the proposed project. The major source water for the proposed project is the Sacramento River, with potential diversion occurring at the Tehama-Colusa Canal, Glenn-Colusa Irrigation District Main Canal, and at Moulton Weir.

The Sacramento River below the Red Bluff Diversion Dam monitoring station of DWR provides information on the quality of water that would be diverted to the proposed project through the Tehama-Colusa Canal. Metals data are available in the WDL for the Sacramento River below the Red Bluff Diversion Dam beginning in February 2006 (Table 1) [Exhibit 1]. However, only 33 samples have been collected since 2006, and only nine of these were from the months in which higher flows most typically occur (December through March) and from which diversions to the proposed project would occur.

Cottonwood Creek contributes the most significant input to the Sacramento River during high runoff events. The Chico-Enterprise Record in an editorial published December 28, 2016 underscored the impact of tributaries on water quality in the Sacramento River. The newspaper stated that of the 100,000 cfs flowing in the river earlier in the month, only 5,000 cfs was coming from Keswick Dam below Shasta Dam – the rest of the 100,000 cfs (95,000 cfs) was coming from tributaries downstream from Keswick Dam, of which Cottonwood Creek provides the dominant flows.

Data from Cottonwood Creek near Cottonwood are even more sporadic than those for the Sacramento River. Data are available for this station in WDL beginning in October 2004, with only seven samples collected from the Cottonwood Creek monitoring station since 2006, and only four of which were collected during the months of expected higher flows of December through March (Table 2) [Exhibit 2]. Data available in the WDL show that only one sample was collected (March 2006) during the same period from both Cottonwood Creek and the Sacramento River below the Red Bluff Diversion Dam since 2006. This one sample shows that metal loads in the Sacramento River are similar to those found in Cottonwood Creek, showing that Cottonwood Creek significantly affects water quality in the Sacramento River. Water quality in Cottonwood Creek will have a significant impact on diversions to the proposed reservoir and water quality data from Cottonwood Creek can be used to approximate and supplement data from the Sacramento River, though the total number of samples from both sites combined are still exceptionally low for a project of this magnitude and potential for adverse effects.

The water quality monitoring station on the Sacramento River at Hamilton City is just downstream from the GCID Main Canal. Data from the WDL is somewhat more extensive at the Hamilton City monitoring site, with metals data available in the WDL beginning in late 2003 to early 2017, though still sporadic with only 78 samples collected in the span of a little more than 13 years (159 months), and only 23 of those collected sometime during the months of expected higher flows of December through March (Table 3) [Exhibit 3]. Samples were collected in each of these months only twice, with the rest of the samples during these months only collected in February months each year since 2008.

The WDL shows that metals data are available for the Sacramento River opposite Moulton Weir monitoring station from mid 2003 to early 2011, for a total of 80 samples, with 27 of those from the expected higher flow months (Table 4) [Exhibit 4].

Water quality sampling during the expected months of higher flows of December through March did not target high flow periods (the periods during which diversions to the proposed project would occur) but were based on a rigid and fixed monthly or semimonthly schedule. Monitoring did not provide any

information on the variation in concentrations of metals over the runoff hydrograph. Even higher concentrations of metals would likely occur during the higher flow periods during these months but were not targeted by the limited monitoring. The relatively low number of samples and lack of samples targeting critical flows (i.e., high runoff events) are nonetheless sufficient to indicate potential significant adverse water quality impacts with the proposed project. These data illustrate the need to collect additional data during appropriate time periods (i.e., during the high flow periods when diversions from the Sacramento River would be occurring) and re-evaluate the potential adverse water quality impacts from the proposed project.

Water Quality

Some metals from both the Sacramento River and Cottonwood Creek, whose concentrations did not exceed criteria in the limited sampling effort, had concentrations that nearly exceed the criteria and standards. These and other metals whose concentrations did not exceed the criteria may have higher concentrations during the higher flow periods that the proposed project would be diverting. Again, these higher flow periods were not targeted during the limited sampling effort.

Even some of the minimum concentrations of metals found in the source waters exceed criteria and standards, which means that the source waters never meet these goals and standards – the criteria are always exceeded and the water is never suitable for the beneficial use or uses the criteria or standards were designed to protect. Water quality in the proposed reservoir for these parameters will exceed the criteria and standards all the time.

Since water quality in the proposed reservoir will reflect that of the source waters, the reservoir will have concentrations of numerous metals, including aluminum, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, silver, and zinc, that exceed a number of criteria and standards developed to protect beneficial uses. In addition, other metals that may not exceed criteria and standards in the source waters may adversely affect reservoir water quality due to synergistic effects. The State Water Resources Control Board (SWRCB 2011) states that "when multiple constituents have been found together in groundwater or surface waters, their combined toxicity should be evaluated" and that "theoretical risks from chemicals found together in a water body shall be considered additive for all chemicals having similar toxicologic effects or having carcinogenic effects." Thus, the adverse effects from the metals delivered to the proposed reservoir from the source waters may have an even greater adverse impact and pose an unacceptable level of risk. Beneficial uses potentially impacted by metals in the proposed reservoir include agricultural water supply (direct toxicity or uptake by crops making the crops unsuitable for use), wildlife (such as fisheating birds), fisheries, recreation (including sport fishing and water contact activities such as swimming), and drinking water supplies for communities that divert water from the Sacramento River.

The contribution of additional metal loads from releases from the proposed Sites Reservoir during the summer could cause concentrations of metals in the Sacramento River to exceed criteria and standards or at least be subject to the antidegradation policy due to an incremental increase in metals in the Sacramento River from the proposed project.

Thus, the proposed project may face prohibition of releases if stored water does not meet water quality criteria or standards or if releases can cause criteria or standards to be exceeded by downstream inputs (i.e., antidegradation policy).

The contribution of additional metal loads from releases from the proposed Sites Reservoir during the summer could cause concentrations of metals in the Sacramento River to exceed criteria and standards or at least be subject to the antidegradation policy due to an incremental increase in metals in the Sacramento River from the proposed project. Thus, the proposed project may face prohibition of releases if stored water does not meet water quality criteria or standards or if releases can cause criteria or standards to be exceeded by downstream inputs (i.e., antidegradation policy).

During dry years, the adverse impacts associated with the project can be expected to be even greater. Flows in the Sacramento River from upstream reservoirs on the Sacramento River (i.e., Shasta Reservoir, Whiskeytown Reservoir) will be minimized during the winter months in an effort to restore water storage levels in those reservoirs. Likewise, during wet or even normal runoff years, releases from the upstream reservoirs during the winter will be curtailed during high runoff periods to prevent downstream flooding. In any of these scenarios, tributary influences, such as Cottonwood Creek, on water quality in the Sacramento River will be much greater. The proposed project would still attempt to capture as much runoff from the Sacramento River as possible, but the water diverted to the proposed project will have even greater concentrations of metals due to the majority of flow being from tributary streams (e.g., Cottonwood Creek) during dry and possibly even wet or normal runoff years.

Similarly, during the summer in dry years, releases from upstream reservoirs (i.e., Shasta Reservoir, Whiskeytown Reservoir) will be minimized. Releases to the Sacramento River from the proposed project will have a greater impact on water quality in the Sacramento River due to less dilution being available due to curtailed flows in the river from upstream reservoirs (i.e., Shasta and Whiskeytown reservoirs).

[also] Since mercury contamination in excess of criteria occurs in lakes that the EIR states are representative of conditions that could be expected in the proposed Sites Reservoir, the EIR should discuss the probability of mercury contamination in the proposed reservoir and ramifications to recreational fishing and wildlife that would consume fish from the reservoir.

Conclusion

The proposed project is, at best, premature. Little or no data have been collected to determine the metals loads in the higher flows of the Sacramento River that would be diverted to the proposed reservoir. An extremely small amount of data have been collected during the months in which higher flows can be expected (December through March), but higher flows during these months were not targeted in the water quality sampling. None the less, the limited data presented in the WDL show high concentrations of a number of metals which exceed numerous water quality criteria and standards in the source waters for the proposed reservoir. Extremely high concentrations of metals are present in the small streams in the reservoir footprint, which occur due to the nature of the soils in the area of the proposed reservoir. Sites Reservoir would inundate these soils resulting in leaching of metals and further incremental loading of metals to the proposed reservoir. There is no discussion in the EIR about the potential impacts of metals leaching from the soils that would be inundated by the proposed reservoir. Prior to moving forward with the project, much additional data are needed during the high flow periods in which diversions would occur from the Sacramento River, metals loading from the smaller tributaries that flow directly into the proposed reservoir, and effects from leaching of metals from soils inundated by the proposed reservoir.

The little analyses presented in the EIR misconstrues, misinterprets, and ignores water quality data that amply demonstrate significant potential adverse impacts from the proposed project. The water quality section (Chapter 7) must be completely rewritten with an objective analysis of the data and potential adverse impacts to water quality both within the reservoir and to downstream resources in the Sacramento River

Whether any of the projected beneficial uses from the proposed project can be realized, and its feasibility to meet project objectives, purpose, and need, also needs to be reconsidered in light of the potential significant adverse water quality impacts from metals.

From: Jerry Brown [jbrown@sitesproject.org]
Sent: 3/24/2021 7:30:56 AM
To: Alicia Forsythe [aforsythe@sitesproject.org]
Subject: Fwd: CEQA

I assume this is already happening. Please confirm. Thanks.

Sent from my iPhone

Begin forwarded message:

From: "Okita, David@DWR" <David.Okita@water.ca.gov>
Date: March 24, 2021 at 7:14:14 AM PDT
To: Jerry Brown <jbrown@sitesproject.org>
Cc: "Cooke, Robert@DWR" <Robert.Cooke@water.ca.gov>, "Maroney, Jagruti@DWR" <Jagruti.Maroney@water.ca.gov>
Subject: CEQA

Jerry...

Just a reminder that DWR, as a responsible agency, wants to be involved in the development of the revised environmental documents for the Sites Project. We will rely on that document to meet DWR's needs for the following actions and plan to issue CEQA findings and a Notice of Determination based on the Sties environmental documents.

- Agreement with Sites Authority for operations

- SWP Long Term Water Supply Contract amendment for participating Contractors and/or agreements

-Water rights petitions

-Emergency Response Public Benefit Agreement

-Flood Control Public Benefit Agreement (no CEQA needed)

We would like to review the Administrative draft to see that it adequately covers these items.

We have recently reviewed the Los Vaqueros EIR/EIS and found that they have adequately covered similar DWR actions in their documents.

David Okita, PE
Department of Water Resources
530 902-7588

From: Micko, Steve/SAC [Steve.Micko@jacobs.com]
Sent: 3/24/2021 3:26:04 PM
To: Heydinger, Erin [erin.heydinger@hdrinc.com]
CC: Leaf, Rob/SAC [Rob.Leaf@jacobs.com]; Thayer, Reed/SAC [Reed.Thayer@jacobs.com]; Alicia Forsythe [aforsythe@sitesproject.org]
Subject: Sites: Prop 1 Summary Table

Hi Erin,

A summary table of EIR/EIS Alt 1B assumptions and results is provided below.
Note that storage, release and delivery are subject to change.
These will be refined as we progress with WSIP FR work.

Please let me know if you have any questions.

Best,
Steve

	Yolo Bypass Habitat Water Supply	**Refuge Water Supply**
Storage	244 TAF	
Season	Aug – Oct	Jan – Dec (mostly Jul – Dec)
Water Year Type	All water year types	All water year types, with a focus in Dry and Critically Dry years
Release	Long-term: 41 TAF Dry and Critical: 24 TAF	Long-term: 24 TAF Dry and Critical: 38 TAF
Conveyance	Tehama-Colusa Canal to Colusa Basin Drain to Knights Landing Ridge Cut to Yolo Bypass	NOD: Glenn-Colusa Canal SOD: Sacramento River to Delta to Jones or Banks PP to DMC and CA Aqueduct to Refuges
Assumed losses	13 percent (in Colusa Basin Drain and Knights Landing Ridge Cut)	Delta Carriage Water Cost for SOD refuge water supply
Deliveries	Long-term: 36 TAF Dry and Critical: 21 TAF	Long-term: 20 TAF Dry and Critical: 34 TAF

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From: Micko, Steve/SAC [Steve.Micko@jacobs.com]
Sent: 3/24/2021 3:47:25 PM
To: Heydinger, Erin [erin.heydinger@hdrinc.com]
CC: Alicia Forsythe [aforsythe@sitesproject.org]; Spranza, John [john.spranza@hdrinc.com]; Leaf, Rob/SAC [Rob.Leaf@jacobs.com]; Thayer, Reed/SAC [Reed.Thayer@jacobs.com]
Subject: RE: Sites CalSim II Model
Attachments: Sites_Reservoir_Schematic_MMv4_011221.pdf

Hi Erin,

I responded to Rob's questions in orange.

Please let me know if you have any questions.

Best,
Steve

From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Wednesday, March 10, 2021 3:47 PM
To: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Micko, Steve/SAC <Steve.Micko@jacobs.com>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>; Spranza, John <john.spranza@hdrinc.com>
Subject: [EXTERNAL] FW: Sites CalSim II Model

CH team,

Please see below from CDFW on modeling questions. I'm thinking we might need a writeup on assumptions for Funks and Stone Corral. Also, we told CDFW we would provide them with something similar for WSIP benefits (one-page writeup of modeling assumptions).

Ali and John – FYI. This may give us some insight into what sorts of questions CDFW will be asking.

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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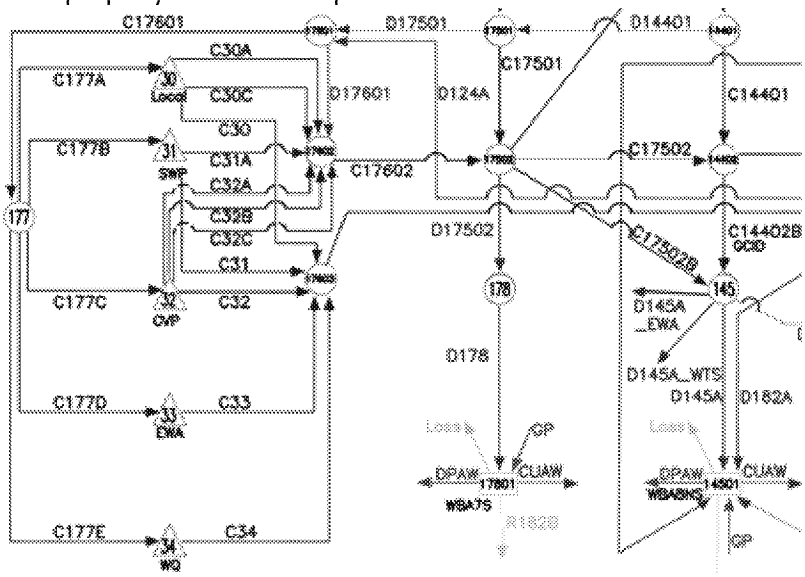
From: Sherrick, Robert@Wildlife <Robert.Sherrick@Wildlife.ca.gov>
Sent: Wednesday, March 10, 2021 3:15 PM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Cc: Davis-Fadtke, Kristal@Wildlife <kristal.davis-fadtke@wildlife.ca.gov>
Subject: RE: Sites CalSim II Model

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Erin,

I have started looking through the Calsim models. I have the following initial questions/comments as I'm trying to go through the model details:

1. The output data indicates that nodes 30 through 34 are used to represent the various storage accounts for Sites Reservoir. These nodes match up with the following portion of the Calsim-II model schematic. It would be very helpful to see a properly labeled and updated version of this schematic with decoded names. Please see attached schematic.



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Thank you,

Rob Sherrick, PE
Senior Hydraulic Engineer
Conservation Engineering
California Department of Fish and Wildlife
M: 916-516-4233

From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Wednesday, February 10, 2021 4:09 PM
To: Davis-Fadtke, Kristal@Wildlife <Kristal.Davis-Fadtke@wildlife.ca.gov>; Evan Sawyer - NOAA Federal <evan.sawyer@noaa.gov>; Miller, Aaron@DWR <Aaron.Miller@water.ca.gov>; Davis, Ryan A <rdavis@usbr.gov>; Sumer, Derya <dsumer@usbr.gov>; Lee Bergfeld <Bergfeld@mbkengineers.com>; Montgomery, Amanda@Waterboards <Amanda.Montgomery@waterboards.ca.gov>; Sherrick, Robert@Wildlife <Robert.Sherrick@Wildlife.ca.gov>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>; Spranza, John <John.Spranza@hdrinc.com>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>; Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Micko, Steve/SAC <Steve.Micko@jacobs.com>;

Lecky, Jim <Jim.Lecky@icf.com>; Hendrick, Mike <Mike.Hendrick@icf.com>
Subject: Sites CalSim II Model

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Good afternoon,

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https://hdrinc-my.sharepoint.com/:f:/p/eheydinger/Eq1KZrFyTgREraiOkmGMwL4BP3Boe3Jlenj9zs8b2Eukjg

The link includes CalSim models for the No Action Alternative as well as four operating options as described in the attached document. The "spreadsheets" folder includes an Excel file that summarizes the CalSim output. THe link above only works for the folks on this email thread. Please let me know if you would like access granted to others.

We recognize these models will take some time to review. The Authority will also be posting the draft Project Description on its website next week that may be of interest to all of you. So, to allow for adequate review time we will be scheduling a workshop to discuss the models during early March - likely the week of March 8th. The Authority expects to release the Revised Draft EIR/Supplemental Draft EIS in late summer.

Please don't hesitate to reach out with any questions.

Best,
Erin

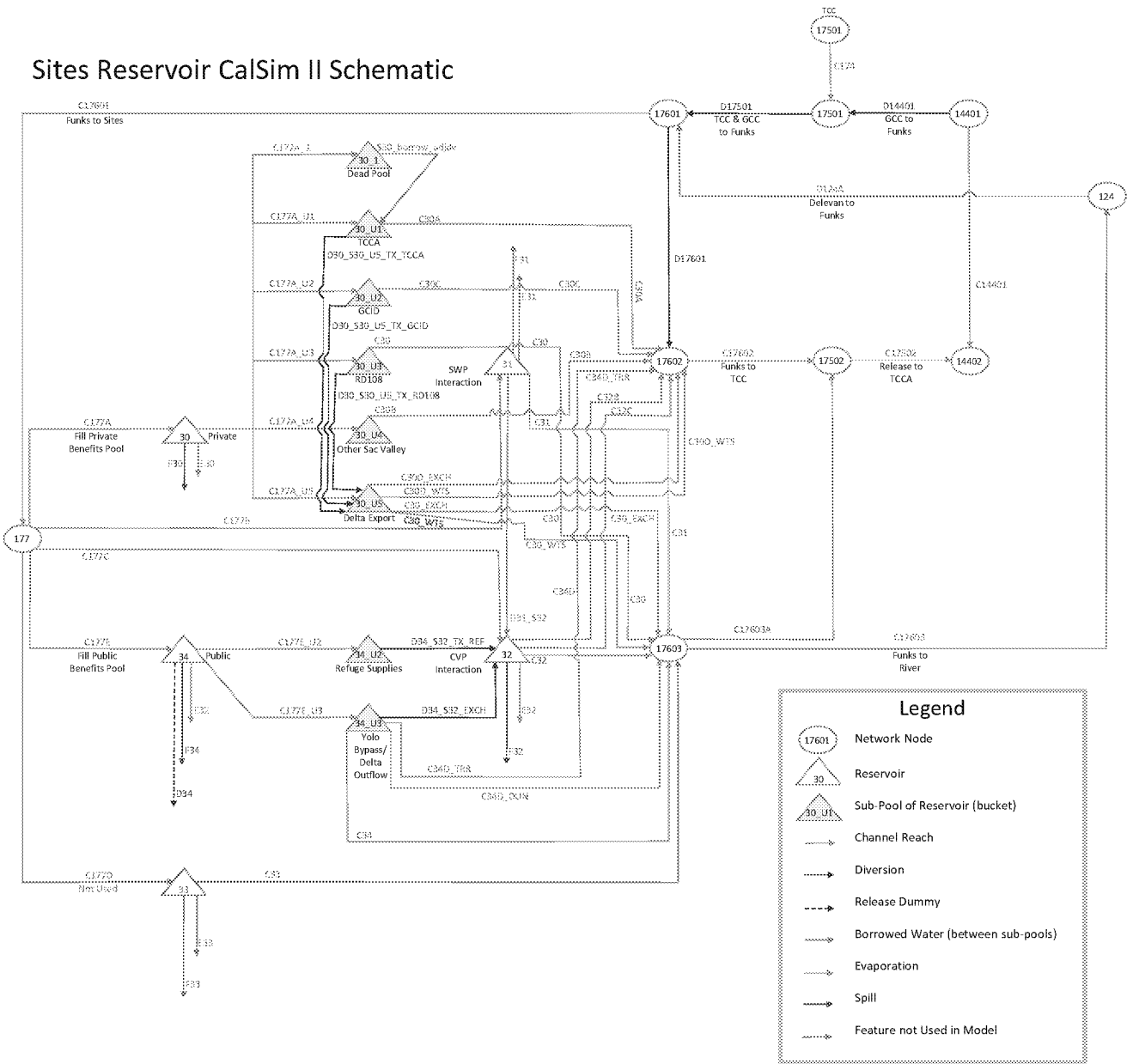
Erin Heydinger, PE, PMP
Sites Reservoir Integration Lead for Operations

HDR
2379 Gateway Oaks Dr, #200
Sacramento, CA 95833
D 916.679.8863 M 651.307.9758

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Sites Reservoir CalSim II Schematic



From: Jerry Brown [jbrown@sitesproject.org]
Sent: 3/24/2021 4:04:57 PM
To: Alicia Forsythe [aforsythe@sitesproject.org]
Subject: Re: Sites - And UWMP Planning

I think we DO NOT need another meeting BUT I do think it would be useful to send a note to the same group you sent the below Jan 23 email (I assume we already took care of action items 2 and 3) as follows. I would check to make sure Amparo is good with doing so before I sent a note.

****

UWMP Group – In discussing final UWMP details with one of you, part of the discussion involved how to address the "reduced reliance" element of the UWMP. We we wanted to let you know that one approach being taken is to include in the reduced reliance appendix the following statement:

As stated in a letter from the Delta Stewardship Council to the Sites Project Authority on May 2, 2018, "Sites Reservoir would be located upstream from the Delta, outside the legal Delta boundary" and "does not meet the definition of a covered action"; consequently, Sites Reservoir has been categorized as a water supply contributing to regional self-reliance in this analysis.

The Sites Team concurs that this make sense and should suffice to meet the UWMP requirements. If you have any questions or other suggestions in this regard feel free to share them with the group or contact me directly.

From: Alicia Forsythe <aforsythe@sitesproject.org>
Date: Wednesday, March 24, 2021 at 2:27 PM
To: Jerry Brown <jbrown@sitesproject.org>
Subject: FW: Sites - And UWMP Planning

Jerry – See the email trail below. Do you think we should have another UWMP Coordination meeting? I am not sure what more we would provide. More to get the members together to see where they are in drafting and if they want/would be wiling to share Sites text with other members. We can talk on our one on one this week.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Flores, Amparo <aflores@zone7water.com>
Sent: Tuesday, March 23, 2021 2:48 PM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Subject: RE: Sites - And UWMP Planning

Thanks—I'm ok without another meeting but there may be interest from others.

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Tuesday, March 23, 2021 12:48 PM
To: Flores, Amparo <aflores@zone7water.com>
Subject: RE: Sites - And UWMP Planning

CAUTION – This email came from outside of Zone 7 Water Agency. Do not open attachments or click on links in suspicious emails.

I think your language looks good. The Delta Stewardship Council included some nice language on benefits to the Delta as a result of Sites in their letter, but I think adding that might just confuse the subject.

Do you think it would be useful to have a second discussion on UWMP prep with the Sites Members to see how each one is framing it up as they have moved further into their development? I can get a doodle poll out to the group to get something scheduled in early April.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Flores, Amparo <aflores@zone7water.com>
Sent: Tuesday, March 23, 2021 10:07 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Subject: RE: Sites - And UWMP Planning

Great—thanks!

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Tuesday, March 23, 2021 10:05 AM
To: Flores, Amparo <aflores@zone7water.com>
Subject: RE: Sites - And UWMP Planning

CAUTION – This email came from outside of Zone 7 Water Agency. Do not open attachments or click on links in suspicious emails.

Amparo – Apologies for the delayed response. I have a 10:30 to noon meeting today and plan to look at this right after that meeting. I just want to double check the letter to see if there is more we can pull from it to support here.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Flores, Amparo <aflores@zone7water.com>
Sent: Monday, March 22, 2021 11:46 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>

Subject: RE: Sites - And UWMP Planning
Importance: High

Ali – Following up on this. Shall we include a bit more from the letter talking about the benefits of Sites to support the statement below?

Thanks,
Amparo

From: Flores, Amparo
Sent: Wednesday, March 17, 2021 5:48 PM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Subject: RE: Sites - And UWMP Planning
Importance: High

Ali,

Does the text below sound reasonable to include in our Appendix on Reduced Reliance? Alternative suggested text is welcome. It would probably be good to have participants use consistent language.

As stated in a letter from the Delta Stewardship Council to the Sites Project Authority on May 2, 2018, "Sites Reservoir would be located upstream from the Delta, outside the legal Delta boundary" and "does not meet the definition of a covered action"; consequently, Sites Reservoir has been categorized as a water supply contributing to regional self-reliance in this analysis.

Amparo

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Saturday, January 23, 2021 12:59 PM
To: ERIC LEITTERMAN (eleitterman@valleywater.org) <eleitterman@valleywater.org>; Robert Cheng (Rcheng@cvwd.org) <Rcheng@cvwd.org>; Bob Tincher <bobt@sbvmwd.com>; fhernandez@cityofamericancanyon.org; Flores, Amparo <aflores@zone7water.com>; dmarks@scvwa.org; leckhart@sgpwa.com; Heidi Williams <HeidiWilliams@valleywater.org>; Matt Howard <matth@sbvmwd.com>; Adekunle Ojo <AdekunleO@sbvmwd.com>
Cc: Heydinger, Erin <erin.heydinger@hdrinc.com>; Jerry Brown <jbrown@sitesproject.org>; Laurie Warner Herson <laurie.warner.herson@phenixenv.com>; Spranza, John <john.spranza@hdrinc.com>
Subject: Sites - And UWMP Planning

CAUTION – This email came from outside of Zone 7 Water Agency. Do not open attachments or click on links in suspicious emails.

Sites Member Agencies – Thank you for the good discussion last week on Sites and your 2020 UWMP efforts. Below are the action items from our call. This email provides resolution to Action Items 1 and 4. We anticipate being able to close out items 2 and 3 next week.

Please let me know if you have any questions or concerns, or would like additional information.

Ali

Action Items --

1. Are the subscription numbers a good long-term average annual number for use in UWMP and future planning?
Response: Yes, these are a good long-term average annual number for use in your UWMP and future planning efforts.

2. What would be a reasonable loss rate through Delta for them to assume?

Response: We are looking into this now with the modeling team.

3. Variability in deliveries / risk projections – CH had previously provided some materials to Zone 7 on variability in deliveries. Are these still applicable and can we provide to all M&I members?
Response; We are looking into this now with the modeling team.

4. Standard Sites project description write-up to use in their plans.
Response: We have reviewed the description prepared by the State Water Contractors (below) and it provides a nice succinct summary overview. Please let me know if you would like a longer, more detailed description.

Sites Reservoir is a proposed new 1,500,000 acre-feet off-stream storage reservoir in northern California near Maxwell. Sacramento River flows will be diverted during excess flow periods and stored in the off-stream reservoir and released for use in the drier periods. Sites Reservoir is expected to provide water supply, environmental, flood and recreational benefits. The proponents of Sites Reservoir include 31 entities including several individual SWP Public Water Agencies. Sites Reservoir is expected to provide approximately 240 TAF (Sites Reservoir Value Planning Report, Table 8-1) of additional deliveries on average to participating agencies under existing conditions. Sites Reservoir is currently undergoing environmental planning and permitting. Full operations of the Sites Reservoir are estimated to start by 2029 following environmental planning, permitting and construction. Sites was conditionally awarded $816 million from the California Water Commission for ecosystem, recreation, and flood control benefits under Proposition 1. Reclamation may also invest in Sites under the Water Infrastructure Improvements for the Nation Act and recently transmitted a final Federal Feasibility Report to Congress for the project.

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Heydinger, Erin [Erin.Heydinger@hdrinc.com]
Sent: 3/24/2021 4:32:51 PM
To: steve.micko@jacobs.com
CC: Leaf, Rob/SAC [Rob.Leaf@jacobs.com]; Thayer, Reed/SAC [Reed.Thayer@jacobs.com]; Alicia Forsythe [aforsythe@sitesproject.org]
Subject: RE: Sites: Prop 1 Summary Table

Thanks!

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: Micko, Steve/SAC <Steve.Micko@jacobs.com>
Sent: Wednesday, March 24, 2021 3:26 PM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Cc: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>; Alicia Forsythe <aforsythe@sitesproject.org>
Subject: Sites: Prop 1 Summary Table

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Erin,

A summary table of EIR/EIS Alt 1B assumptions and results is provided below.
Note that storage, release and delivery are subject to change.
These will be refined as we progress with WSIP FR work.

Please let me know if you have any questions.

Best,
Steve

	Yolo Bypass Habitat Water Supply	**Refuge Water Supply**
Storage	244 TAF	
Season	Aug – Oct	Jan – Dec (mostly Jul – Dec)
Water Year Type	All water year types	All water year types, with a focus in Dry and Critically Dry years
Release	Long-term: 41 TAF Dry and Critical: 24 TAF	Long-term: 24 TAF Dry and Critical: 38 TAF
Conveyance	Tehama-Colusa Canal to Colusa Basin Drain to Knights Landing Ridge Cut to Yolo Bypass	NOD: Glenn-Colusa Canal SOD: Sacramento River to Delta to Jones or Banks PP to DMC and CA Aqueduct to Refuges
Assumed losses	13 percent (in Colusa Basin Drain and Knights Landing Ridge Cut)	Delta Carriage Water Cost for SOD refuge water supply
Deliveries	Long-term: 36 TAF Dry and Critical: 21 TAF	Long-term: 20 TAF Dry and Critical: 34 TAF

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From: Heydinger, Erin [Erin.Heydinger@hdrinc.com]
Sent: 3/24/2021 4:46:59 PM
To: Sherrick, Robert@Wildlife [robert.sherrick@wildlife.ca.gov]
CC: Davis-Fadtke, Kristal@Wildlife [kristal.davis-fadtke@wildlife.ca.gov]
Subject: RE: Sites CalSim II Model
Attachments: Sites_Reservoir_Schematic_MMv4_011221.pdf

Hi Rob,

Thanks for your patience on this as we pulled together some information for you. Please see below in green text for responses as well as the attached schematic and don't hesitate to let me know if you have any further questions. I am also happy to set up a call with you and the Jacobs modelers if needed following the workshop scheduled for April 9th .

Krystal – in response to your request for some additional modeling information on Prop 1 benefits, below is a table with the assumptions and initial modeling output. This is what we have included in the EIR/EIS model. We are working to refine this information for the WSIP feasibility, so we may have some changes to this as we work to update our model using the 2030 and 2070 climate change hydrology.

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Thanks!
Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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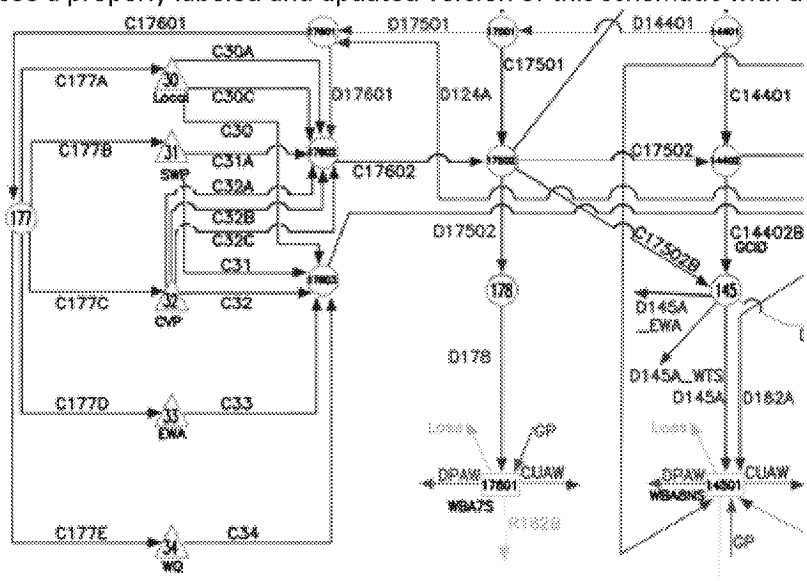
From: Sherrick, Robert@Wildlife <Robert.Sherrick@Wildlife.ca.gov>
Sent: Wednesday, March 10, 2021 3:15 PM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Cc: Davis-Fadtke, Kristal@Wildlife <kristal.davis-fadtke@wildlife.ca.gov>
Subject: RE: Sites CalSim II Model

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Hi Erin,

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3. What are the Calsim nodes for instream releases to Funks Creek and/or Stone Corral Creek? Is that C17603 and/or C17502? It looks like it's often set to zero, please verify. What is the assumption for local minimum instream flow? Neither Funks Creek nor Stone Corral Creek are considered in CalSim II. As such, minimum instream flow for these creeks cannot be considered in the model. However, I believe there has been some communication with Ali Forsythe related to Funks and Stone Corral. We also discuss these creeks in our Project Description document: https://sitesproject.org/resources/information-materials/ > Preliminary Project Description> pg. 2-78

Thank you,

Rob Sherrick, PE
Senior Hydraulic Engineer
Conservation Engineering
California Department of Fish and Wildlife
M: 916-516-4233

From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Wednesday, February 10, 2021 4:09 PM

To: Davis-Fadtke, Kristal@Wildlife <Kristal.Davis-Fadtke@wildlife.ca.gov>; Evan Sawyer - NOAA Federal <evan.sawyer@noaa.gov>; Miller, Aaron@DWR <Aaron.Miller@water.ca.gov>; Davis, Ryan A <rdavis@usbr.gov>; Sumer, Derya <dsumer@usbr.gov>; Lee Bergfeld <Bergfeld@mbkengineers.com>; Montgomery, Amanda@Waterboards <Amanda.Montgomery@waterboards.ca.gov>; Sherrick, Robert@Wildlife <Robert.Sherrick@Wildlife.ca.gov>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>; Spranza, John <John.Spranza@hdrinc.com>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>; Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Micko, Steve/SAC <Steve.Micko@jacobs.com>; Lecky, Jim <Jim.Lecky@icf.com>; Hendrick, Mike <Mike.Hendrick@icf.com>
Subject: Sites CalSim II Model

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Please don't hesitate to reach out with any questions.

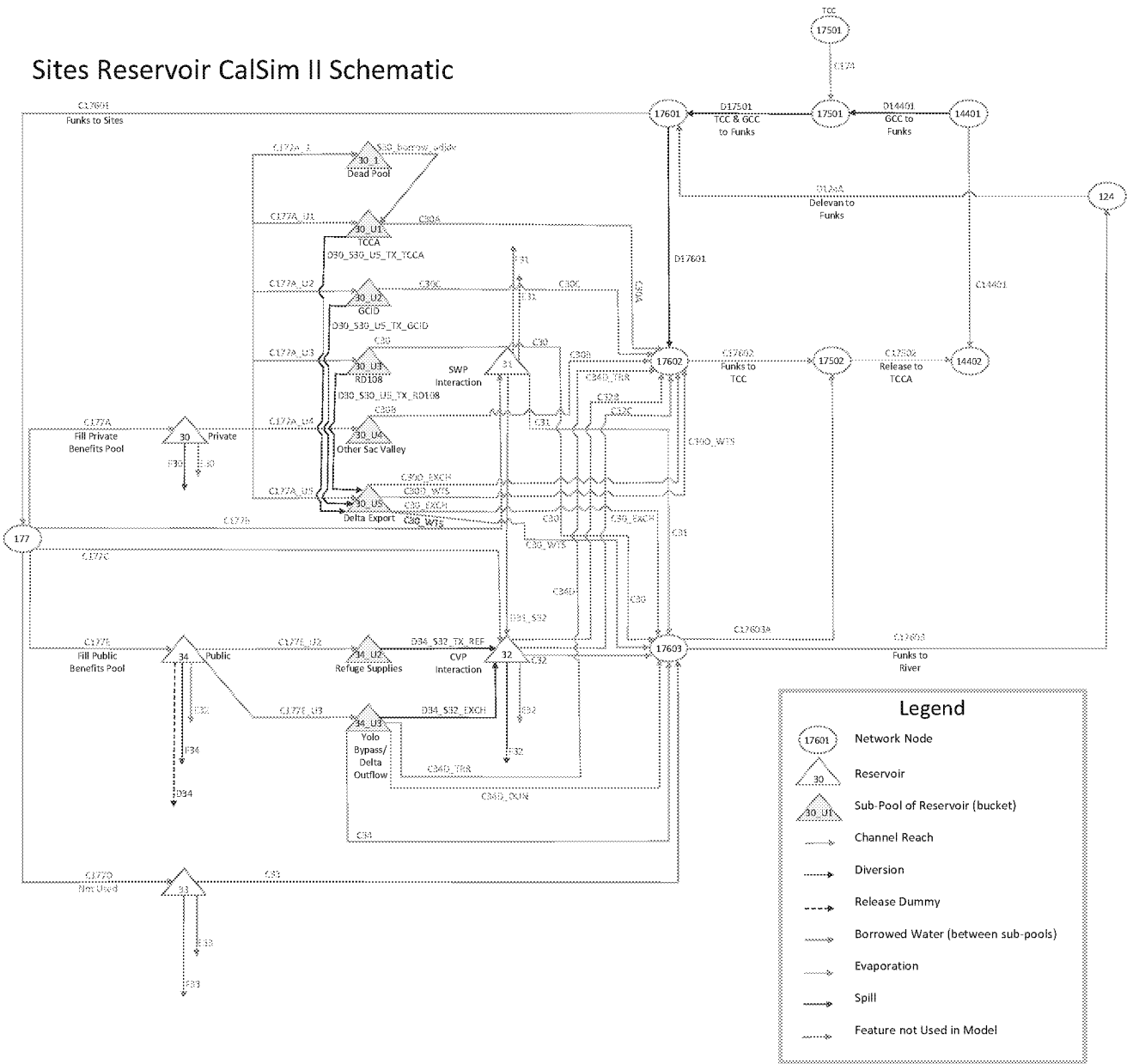
Best,
Erin

Erin Heydinger, PE, PMP
Sites Reservoir Integration Lead for Operations

HDR
2379 Gateway Oaks Dr, #200
Sacramento, CA 95833
D 916.679.8863 M 651.307.9758

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Sites Reservoir CalSim II Schematic



Legend

- Network Node (17601)
- Reservoir (30)
- Sub-Pool of Reservoir (bucket) (30_U1)
- Channel Reach
- Diversion
- Release Dummy
- Borrowed Water (between sub-pools)
- Evaporation
- Spill
- Feature not Used in Model

From: Micko, Steve/SAC [Steve.Micko@jacobs.com]
Sent: 3/24/2021 4:57:20 PM
To: Heydinger, Erin [erin.heydinger@hdrinc.com]; Alicia Forsythe [aforsythe@sitesproject.org]; Spranza, John [john.spranza@hdrinc.com]; Leaf, Rob/SAC [Rob.Leaf@jacobs.com]
CC: Thayer, Reed/SAC [Reed.Thayer@jacobs.com]
Subject: RE: Sites Water as Delta Outflow

Hi all,

High-level tables, describing current assumptions and alternative assumptions, are below.

Hopes this helps,
Steve

CalSim II Model Assumptions in EIR/EIS modeling:

- Dedicate Yolo Bypass flow to Delta outflow
- SWP and CVP do not consider Yolo Bypass flow in Delta outflow and water quality calculations
- Water quality effects of Yolo Bypass are considered in carriage water cost calculations

Table 1. Operations in EIR/EIS CalSim II Modeling

Month	Release to Yolo Bypass	Response		
		Delta Salinity Response	CVP/SWP	Sites Deliveries to SOD
July	None	None	No change	None
August	Yes	Freshening	No change	Increased
September	Yes	Freshening	No change	Increased
October	Yes	Freshening	No change	Increased
November	None	Freshening (due to inertial effect)	No change	Increased
December	None	None	No change	None

Table 2. Alternative Operations

Assumption			Response[1]		
Prop 1	**CVP/SWP**	**Sites**	**Delta Salinity**	**CVP/SWP**	**Sites**
Dedicated to DO	Considered for Delta WQ req	Not considered in carriage water calculations	Increased	Increased storage/export	Decreased SOD deliveries[2]
Not dedicated to DO	Considered for Delta WQ req	Not considered in carriage water calculations	Increased	Increased storage/export	Decreased SOD deliveries[2]
Not dedicated to DO	Considered for Delta WQ req	Considered for carriage water calculations	Increased	Slight increase in storage/export	Slight decrease in SOD deliveries[2]
Not dedicated to DO	Considered for Delta WQ req	Offset carriage water costs	Increased	Slight increase in storage/export	Similar?
Not dedicated to DO	Exported	Not considered for carriage water calculations	Increased	Increased storage/export	Decreased SOD deliveries[2]
Not dedicated to DO	Exported	Considered for carriage water calculations	Increased	Slight increase in storage/export	Slight decrease in SOD deliveries[2]
Not dedicated to DO	Exported	Exported	Increased	Slight increase in storage/export	Similar?

Relative to current assumptions

[2]Sites carriage water costs increase, reducing deliveries to SOD storage partners and refuges. In essence, deliveries to two separate sources of funding are reduced.

-----Original Appointment-----
From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Tuesday, March 9, 2021 4:46 PM
To: Heydinger, Erin; Alicia Forsythe; Spranza, John; Leaf, Rob/SAC; Micko, Steve/SAC
Cc: Thayer, Reed/SAC
Subject: Sites Water as Delta Outflow
When: Tuesday, March 16, 2021 1:00 PM-2:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: Microsoft Teams Meeting

Scheduling as a follow up to Rob Leaf's email copied below. As a note, I will be setting up a separate salinity meeting and will include Jerry on that as it impacts our DWR operating agreements discussion.

Ali and Erin,

I am not sure if this is the appropriate team to discuss the dedication of Sites flows, for the Yolo Bypass, to Delta outflow, supplemental and in addition to all other regulations.
Jerry Johns has had much to say about this in the past; which has seemed to be more policy rather than technical water rights related.
I mentioned this in our call on Wednesday morning as we discussed changes to Delta salinities and preparation for discussions with DWR, Reclamation, Contra Costa WD and others.
So this is an email to get this Delta outflow issue on the list for discussion in the relevant forums.

Rob

Microsoft Teams meeting

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From: Fisher, Linda [Linda.Fisher@hdrinc.com]
Sent: 3/24/2021 9:57:00 PM
To: Risse, Danielle [Danielle.Risse@hdrinc.com]; Lloyd, John [John.Lloyd@hdrinc.com]; Alicia Forsythe [aforsythe@sitesproject.org]
CC: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]; Spranza, John [john.spranza@hdrinc.com]
Subject: FW: Sites Reservoir: RDEIR/SDEIS: Meet this Friday, Cultural Resources & Cultural Resources Meeting

Hi Ali, Danielle, and Jay,

ICF would like the next RDEIR/SDEIS mitigation discussion to be cultural resources. They offered a few days/times. In order to have the discussion sooner rather than later, I would like to propose that the meeting be Friday, 4/9 from 9-10am. This day and time appear to work for everyone based on outlook calendars but please let me know if it does not.

Thank you, Linda

Linda Fisher, M.S.
D 916.817.4962 M 530.400.3212

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From: Williams, Nicole <Nicole.Williams@icf.com>
Sent: Wednesday, March 24, 2021 8:53 PM
To: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>; Fisher, Linda <Linda.Fisher@hdrinc.com>
Cc: Briard, Monique <Monique.Briard@icf.com>
Subject: Sites Reservoir: RDEIR/SDEIS: Meet this Friday, Cultural Resources & Cultural Resources Meeting

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Hello Laurie and Linda,

Thank you for the conversation today.

I can meet any time this Friday from 10am to 12pm to continue our conversation. I can also meet any time Monday after 2pm.

I uploaded the bulleted list of the contents of the Cultural Resource Management Plan to the Sites Authority Sharepoint Site as we discussed: CRMP_WorkingOutline_DRAFT_03242021

Our team is available the following dates/times to discuss this plan and the contents:
Tues. 4/6: 11-12:30, 2 to 3, 4 to 5
Fri. 4/7: 9am to 10am
Mon. 4/12: 11:30 to 1pm
Wed. 4/14: 2pm to 5pm (still checking with a few people but wanted to add it in case it worked)
Fri. 4/16: 2:30 to 5pm

ICF invitees:
Lassell, Susan Susan.Lassell@icf.com
Rogers, Jenifer Jenifer.Rogers@icf.com
Havelaar, Christiaan Christiaan.Havelaar@icf.com
Oakes, Harry Harry.Oakes@icf.com
Nicole Williams or Ellen Unsworth – invite both for now

Monique Briard – optional

I will work with vegetation & wildlife (expected together), fish and water quality (possibly together) to identify other possible dates/times for mitigation measure discussion for those resource topics.

Cheers, Nicole

NICOLE L. WILLIAMS | Senior Environmental Planner | (o) 916.231.9614 | (m) 530.867.0470 | nicole.williams@icf.com | icf.com

ICF | 980 9th Street Suite 1200 Sacramento CA 95814 |

—

ICF 50 YEARS 1969 - 2019

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Sent: 3/25/2021 5:12:54 AM
To: Spranza, John [John.Spranza@hdrinc.com]
Subject: RE: Water Quality Comments - Sites Town Hall

John – I have been absolutely slammed and haven't had a

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Alicia Forsythe
Sent: Friday, March 5, 2021 1:49 PM
To: Spranza, John <John.Spranza@hdrinc.com>
Subject: RE: Water Quality Comments - Sites Town Hall

I am going to call him. I don't want to put him in an awkward position. But I feel like his expertise could be really helpful.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Spranza, John <John.Spranza@hdrinc.com>
Sent: Thursday, March 4, 2021 3:11 PM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Subject: FW: Water Quality Comments - Sites Town Hall

Would it be appropriate to have Bruce on the NGO water quality small group discussion?

John Spranza

D 916.679.8858 M 818.640.2487

From: Spranza, John
Sent: Wednesday, February 3, 2021 9:32 AM
To: Spranza, John <John.Spranza@hdrinc.com>
Subject: FW: Water Quality Comments - Sites Town Hall

John Spranza

D 916.679.8858 M 818.640.2487

From: Bruce Houdesheldt <bruceh@norcalwater.org>
Sent: Tuesday, February 2, 2021 4:08 PM
To: Jerry Brown <jbrown@sitesproject.org>
Subject: Water Quality Comments - Sites Town Hall

There has not been a chlorpyrifos exceedance in Walker Creek or Freshwater Creek in over a decade. And that one was related to spray drift. Here is the State Water Resource Control Board's Water Quality Report Cards for Walker Creek Chlorpyrifos and C. dubia toxicity released in October 2018 and Chlorpyrifos and Diazinon within Sacramento River Tributaries (November 2017) that include Butte Slough and the Sacramento Slough (at the bottom of the Colusa Basin Drain).

Bruce Houdesheldt
Director Water Quality
Northern California Water Association
455 Capitol Mall, Suite 703
Sacramento, California 95814
(916) 442-8333 (office)
(916) 952-1287 (mobile)

From: Jerry Brown <jbrown@sitesproject.org>
Sent: Tuesday, February 2, 2021 3:48 PM
To: Bruce Houdesheldt <bruceh@norcalwater.org>
Subject: Re: 10am tomorrow....SGMA Consultant Coordination - Sacramento River Basin

Thanks Bruce. And below is the chat from the town hall that I referenced describing the water quality comments received. Don't hesitate to reach out if you think of anything else.

Jerry

Approximately (with counting the phone numbers as independent individuals)
- 154 attendees in the beginning
- 137 at 11:20
- 19 participants
- 18 Agent/Consultants

from james Brobeck (Aqualliance) to everyone: 10:30 AM
EIR Needs:
- Obtain additional metals data from source waters targeting high flows from which diversions would occur
- Provide information on the water quality impacts from other chemical contaminants that adversely affect water quality in the Sacramento River (including chlorpyrifos, diazinon, chlordane, DDT, mercury, PCBs, and dieldrin) and contaminants in sewer outfalls (such as pharmaceuticals) and other discharges (such as industrial discharges)
- Evaluate the contributions of metals from local tributaries (i.e., Funks Creek and Stone Corral Creek) to the proposed reservoir
- Provide information on the contribution from leaching of metals from the inundation area of the proposed reservoir

EIR needs

- Evaluate effects of metals to beneficial uses within the proposed reservoir
  - fisheries,
  - wildlife (including state and federal species listed as threatened or endangered),
  - recreation

- Evaluate effects of metals to beneficial uses due to releases from the reservoir, agricultural supply water,
  - effects of metals on crops including incorporation of metals by crops (e.g., arsenic uptake in rice),
  - effects of metals on plants grown for support of wildlife (such as in wildlife refuges),
  - drinking water supplies, fisheries, wildlife (including state and federal species listed as threatened or endangered),

- Evaluate combined toxicity of multiple metals
- Evaluate contributions of metals in reservoir releases related to the SWRCB antidegradation policy
- Evaluate impacts from mercury bioaccumulation in aquatic life (especially fish) in the proposed reservoir, and effects to wildlife that feed on fish from the reservoir and recreational opportunities (i.e., sport fishing)
- Evaluate physical conditions expected in the reservoir, including thermal stratification and hypolimnetic anoxia, and effects on reservoir and downstream aquatic resources

Saline water has been observed to seep from underground salt springs in the vicinity of the Salt Lake fault along the slopes above the valley and along the valley floor within the proposed inundation area of Sites Reservoir. The water from the underground springs accumulates along the trough of the valley and forms Salt Lake" (USGS, 1915).
Extremely high concentrations of metals are present in the small streams in the reservoir footprint, which occur due to the nature of the soils in the area of the proposed reservoir. Sites Reservoir would inundate these soils resulting in leaching of metals and further incremental loading of metals to the proposed reservoir. There is no discussion in the EIR about the potential impacts of metals leaching from the soils that would be inundated by the proposed reservoir.
Please do not avoid the questions on salts and heavy metals presented by Jerry Boles and others.
Investers on this webinar need to be made aware of the metal/salt loading in the source water and the inundation footprint soils.
Jerry Boles, retired Chief of the Water Quality and Biology Section of the Northern District of the Department of Water Resources in Red Bluff, submitted comments on the proposed Sites Reservoir Draft Environmental Impact Report.
Boles explains that during his tenure with DWR he collected data that showed elevated levels of aluminum, arsenic, cadmium, iron, chromium, copper, lead, manganese, mercury, nickel, selenium, and zinc in the Sacramento River with the highest levels coming from tributary flows.
from james Brobeck to everyone: 11:16 AM
The poor quality of the source water will certainly be further degraded if the water is impounded in the proposed off-stream reservoir. Boles explains, ""Extremely high concentrations of metals are present in the small streams in the reservoir footprint, which occur due to the nature of the soils in the area of the proposed reservoir. Sites Reservoir would inundate these soils resulting in leaching of metals and further incremental loading of metals to the proposed reservoir."

from Ali Forsythe to everyone: 11:22 AM
Jim Brobeck - Thank you for all this great information. We are working to address all of these considerations, really based off of Jerry Boles' comments on the 2017 EIR/EIS as part of the Revised Draft EIR/Supplemental Draft EIS. I also expect water quality to be a small group topic. Please feel free to contact me at aforsythe@sitesproject.org if you'd like to part of the upcoming water quality small group discussions.
from james Brobeck to everyone: 11:24 AM
The "right size" does not change the metal/salt comments by Boles and others. I would be happy to forward the Boles comments to interested parties including investers. jimb@aqualliance.net

from Dennis and Joe to everyone: 10:51 AM
What is the status of the discussions with the Regulatory Agencies for use of the water allocated for environmental purposes.

Will there be alternatives in the EIS/EIR that reflect a range of diversion criteria/thresholds from the Sacramento River through the two canals? Ron Stork

from debra lucero to everyone: 11:01 AM
Has this project taken into consideratioon Jerry Boles (former DWR employee) comments about high concentrations of metals - both in the river and possibly at the storage site. I sent this question in via email after reading his lengthy comments to the current EIIR.
from debra lucero to everyone: 11:02 AM
Who will oversee the water quality of this project?

from Eric Christen to everyone: 11:49 AM
Thank you for staffs response to my union PLA question. So just to be clear, when you put in your presenations that you have as a goal "divirsity" anbd "inclusion
from Kim Witten to everyone: 11:49 AM
Can you put your email here so I can contact you. Thanks
from Sarah Rossetto to everyone: 11:50 AM
jbrown@sitesproject.org
to Kim Witten (privately): 11:50 AM
jbrown@sitesproject.org or call him at 925-260-7417
from Eric Christen to everyone: 11:50 AM
that you really do not.
from Eric Christen to everyone: 11:50 AM
Non-union workers and apprentices ar enot welcome on your projects.

from Marguerite Patil - CCWD to everyone: 11:59 AM
Thanks Sites Team! Great Town Hall.
from Anjanette Shadley to everyone: 12:00 PM
Very imformative, thank you! Great job! #BuildSites

From: Bruce Houdesheldt <bruceh@norcalwater.org>
Date: Tuesday, February 2, 2021 at 3:35 PM
To: Jerry Brown <jbrown@sitesproject.org>
Subject: FW: 10am tomorrow....SGMA Consultant Coordination - Sacramento River Basin

Bruce Houdesheldt
Director Water Quality
Northern California Water Association
455 Capitol Mall, Suite 703
Sacramento, California 95814
(916) 442-8333 (office)
(916) 952-1287 (mobile)

From: Lisa Porta <lporta@elmontgomery.com>
Sent: Monday, February 1, 2021 4:32 PM
To: David Guy <dguy@norcalwater.org>; Bruce Houdesheldt <bruceh@norcalwater.org>
Subject: RE: 10am tomorrow....SGMA Consultant Coordination - Sacramento River Basin

David, Bruce,

Have you seen this new groundwater quality report from DWR-NRO?

This is not new data; they used data from wells they monitored between 2015 to 2019 and did a bit of an analysis by Subbasin.
Useful information to add to GSPs. I also asked them if they intend to continue monitoring these wells; and they said they are reviewing their monitoring plan.

Talk to you tomorrow.
Lisa

Lisa Porta, P.E.
MONTGOMERY & ASSOCIATES
(916) 701-0398 (mobile)
lporta@elmontgomery.com
www.elmontgomery.com

From: David Guy <dguy@norcalwater.org>
Sent: Monday, February 1, 2021 4:16 PM
To: 'Byron Clark (byron@davidsengineering.com)' <byron@davidsengineering.com>; 'Eddy Teasdale (eteasdale@lsce.com)' <eteasdale@lsce.com>; 'Jim Blanke (jblanke@woodardcurran.com)' <jblanke@woodardcurran.com>; 'Joe Turner (JTurner@geosyntec.com)' <JTurner@geosyntec.com>; 'Lee Bergfeld (bergfeld@mbkengineers.com)' <bergfeld@mbkengineers.com>; Lisa Porta <lporta@elmontgomery.com>; 'Richard Shatz (rshatz@geiconsultants.com)' <rshatz@geiconsultants.com>; 'Satya Gala (sgala@geiconsultants.com)' <sgala@geiconsultants.com>; Bruce Houdesheldt <bruceh@norcalwater.org>; 'peter.lawson@jacobs.com' <peter.lawson@jacobs.com>; 'Christina Buck (CBuck@buttecounty.net)' <CBuck@buttecounty.net>; Leslie Dumas <ldumas@woodardcurran.com>; John a. McHugh <jmchugh@lsce.com>; 'Christina Buck' <buck.christinar@gmail.com>; Rodriguez, Larry <lrodriguez@geiconsultants.com>; Ali Taghavi (ataghavi@woodardcurran.com) <ataghavi@woodardcurran.com>; 'Kelly Peterson (kpeterson@buttecounty.net)' <kpeterson@buttecounty.net>
Cc: jim@cafwd.org
Subject: 10am tomorrow....SGMA Consultant Coordination - Sacramento River Basin

For the discussion tomorrow at 10:00am, we will discuss:

- **GSP** Development, Coordination

- **GDE's.** As we discussed at the last meeting, TNC is confirmed for our March 2 (10am) meeting. We will discuss how to best structure this discussion to make it productive for you all. Lee has prepared the attached outline to help frame the issues based on our past conversations. Please take a look at this document and we will discuss this in more detail tomorrow.

- **UR 6** – Approach, Monitoring (surface and groundwater)

- **Water Quality Update**

- **Other Issues**

See you tomorrow morning.....



David J. Guy
President
Northern California Water Association
(916) 442-8333

From: Luu, Henry [Henry.Luu@hdrinc.com]
Sent: 3/25/2021 4:58:04 PM
To: Alicia Forsythe [aforsythe@sitesproject.org]
CC: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]; Spranza, John [john.spranza@hdrinc.com]
Subject: RE: Sites - Feasibility Report and Planning / Permitting Needs
Attachments: 20201030_CWCFeasibilityKickoff_Presentation.pptx

Hi Ali,

Yes – Laurie and John has been kept in the loop. The attached slides provide reference for general approach and schedule – the project description section has changed slightly since our kickoff meeting (we will be using the EIR/EIS Project Description instead of the BA) and the schedule has been extended. We can discuss at our next internal coordination meeting.

Henry N. Luu, PE
D 916.679.8857 M 916.754.7566

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From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Thursday, March 25, 2021 3:02 PM
To: Luu, Henry <Henry.Luu@hdrinc.com>
Cc: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>; Spranza, John <John.Spranza@hdrinc.com>
Subject: Sites - Feasibility Report and Planning / Permitting Needs

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Henry – You may already be coordinating with Laurie and John on this, but we should talk about what you need from Planning and Permitting for the Feasibility Report. I'd like to make sure that we understand expectations and timelines so we make sure to meet them.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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CWC Feasibility Study Kickoff Meeting

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Agenda

- Introductions
- Purpose
  - Roles and responsibilities
- Feasibility Study Overview
  - Overall requirements
  - Data and information needs
  - Schedule
- Team Coordination

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Purpose

- Formally kickoff CWC Feasibility process
- Summarize the WSIP requirements for the Feasibility Study
- Make sure all team members understand what will be needed from them
- Discuss future coordination

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Roles and Responsibilities

- AECOM is responsible for the compilation of the main document
- Technical leads/consultants will provide needed analysis and appendices
  - Responsible for QC and formatting of appendices
- Integration team will coordinate data needs

- Authority Agent lead: Joe Trapasso
- Deliverable lead: Jeff Herrin
- Integration lead: Henry Luu

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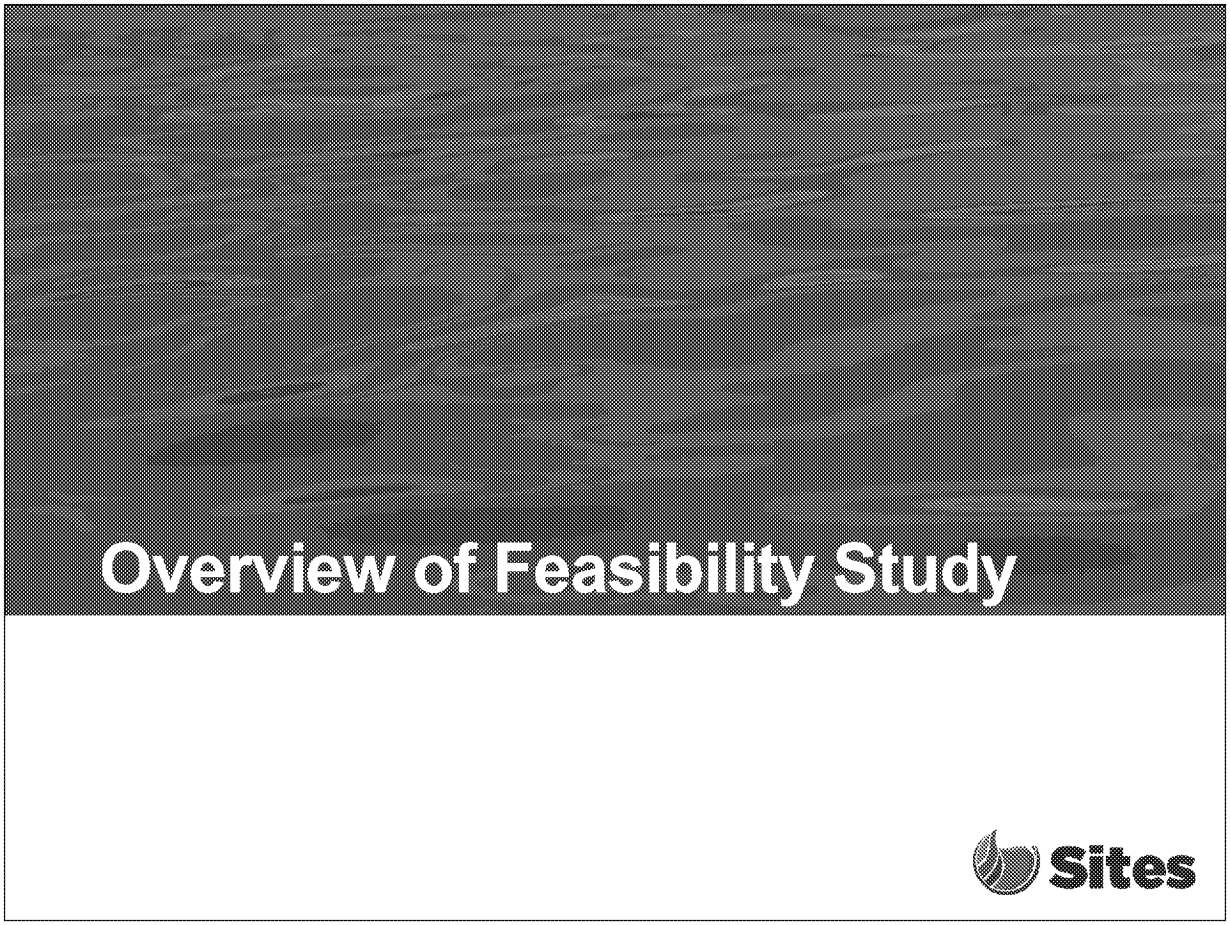
Roles and Responsibilities

Report Section	Title	Coordinating Data Needs	Technical Lead
1.0	Introduction	None	AECOM
2.0	Project Objectives (from EIR)	Laurie Warner Herson – Phenix Environmental	ICF
3.0	Project Description (from BA)	John Spranza - HDR	HDR and ICF
4.0	Technical Feasibility	Rob Leaf – Jacobs	Jacobs and AECOM
5.0	Economic Feasibility	Jeff Herrin - AECOM	AECOM
6.0	Financial Feasibility	Brian Grubbs – Montague DeRose Associates	MDA and AECOM
7.0	Environmental Feasibility	Laurie Warner Herson – Phenix Environmental	HDR and ICF
8.0	Constructability	Jeff Herrin - AECOM	AECOM and Jacobs
Appendix A	Project Description	Laurie Warner Herson – Phenix Environmental	HDR and ICF
Appendix B.1	Construction Cost Estimate	Abrie Horak and Nick Cavalieri	AECOM and Jacobs
Appendix B.2	OM&R Estimate	Jeff Herrin and Pete Rude	AECOM and Jacobs
Appendix B.3	Mitigation Cost Estimate	John Spranza	ICF
Appendix C	Operations Plan	Rob Leaf	Jacobs
Appendix D	Mitigation Plan	John Spranza	HDR
Appendix E	Constructability	Jeff Herrin and Pete Rude	AECOM and Jacobs

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Note that Jeff will be providing a summary of each of these sections in the next part of the presentation

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Feasibility Report Contents (CWC Tech Reference, Nov. 2016)

- Introduction
- Project Benefits
- Project Description
- Technical Feasibility –Is it feasible to deliver the public benefits at projected levels
- Economic Feasibility – BCR, PBR
- Financial Feasibility
- Environmental Feasibility
- Constructability

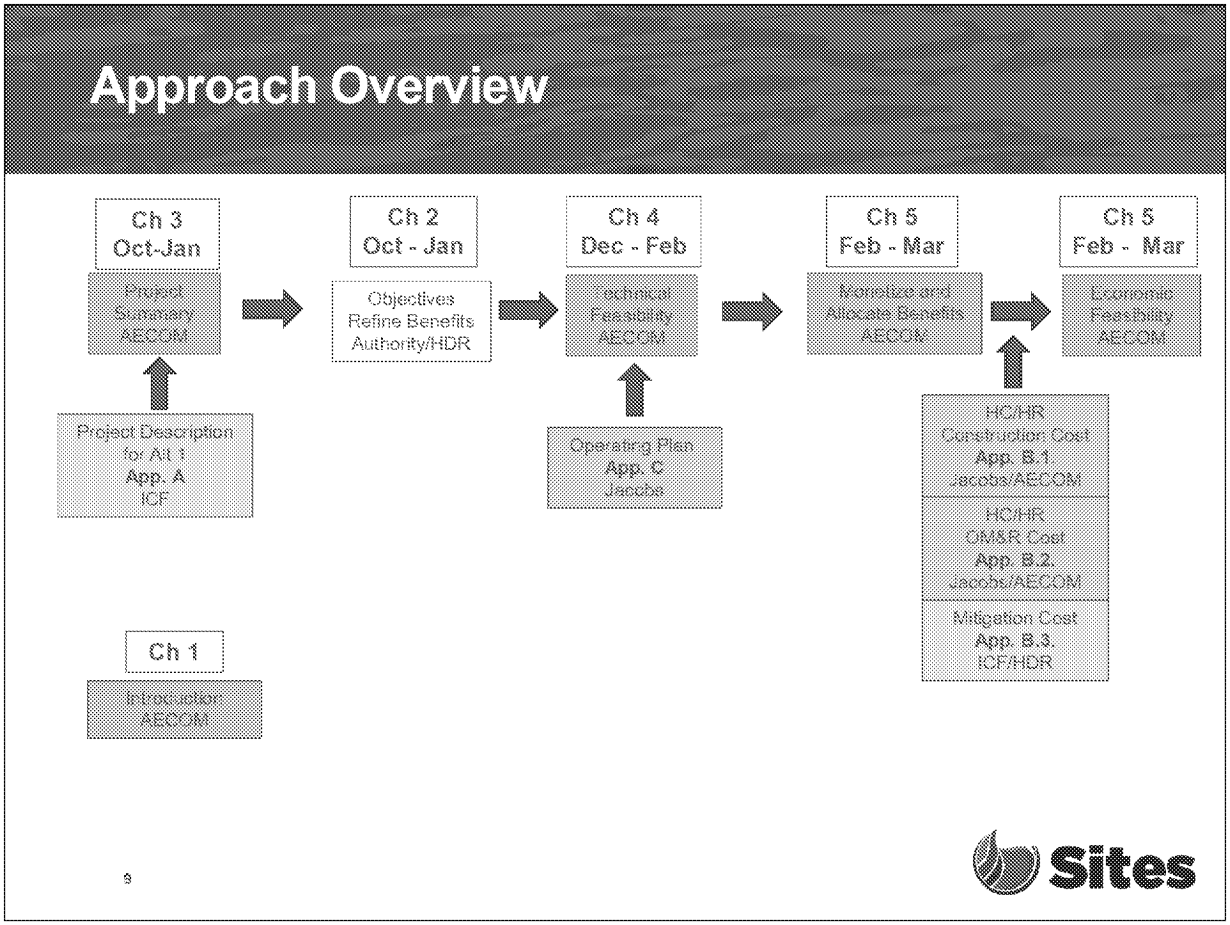
7

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Approach

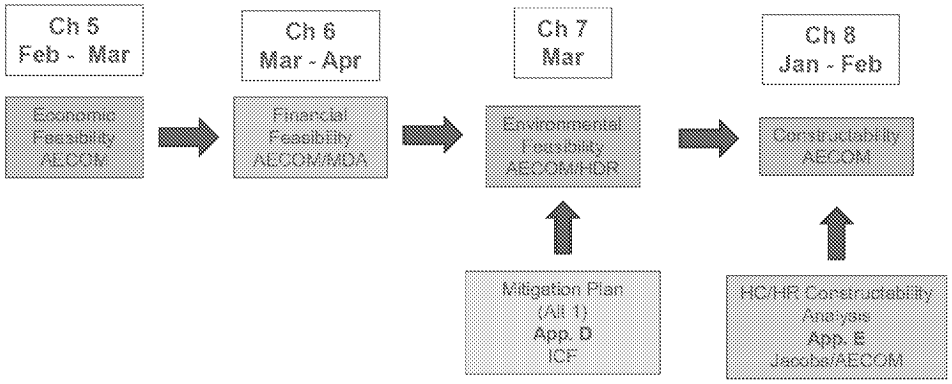
- **Minimize Extra Work:** Use portions of other contracted deliverables as appendices to support conclusions
- **Concise Report**: The main body of the text will refer to appendices for supporting information and only present conclusions
- **Main Body Text:** Drafted by AECOM using appendices
- **QA/QC for Appendices:** Originating firm
- **QA/QC for Main Body Text:** Tech Leads/Lead Verifiers from contributing firms

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Approach Overview



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Report Outline

Section	Title	Description	# Pgs	Lead/Support
1	Introduction	Brief introduction citing history, right-sizing of project, regulations, and objectives	2	AECOM
2	Project Objectives	Describe effect of right-sizing on objectives. State and describe revised project objectives (including how they are measured)	4	AECOM
3	Project Description	Reference Appendix A for the Project Description from the Biological Assessment (limits description to the preferred project)	1	AECOM/J.Spranza
4	Technical Feasibility	Summary of Appendix C Findings – *Note that the specified focus in the Technical Reference is on the reliability of the Project to deliver WSIP benefits*. Should include a brief discussion of how this was modeled.	7	AECOM/Jacobs

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Report Outline

Section	Title	Description	# Pgs	Lead/Support
5	Economic Feasibility	Summary and BCR	3	AECOM
5.1	Project Costs	Brief introduction and reference Appendices B1, B2, and B3.	1	AECOM
5.1.1	Basis of Costs	Describe estimate and base year	0.5	AECOM
5.1.2	Cost Summary Tables	Summary table to roll up costs from B1, B2, and B3	3	AECOM/H. Luu
5.1.3	Contingencies	Describe assumptions and what contingencies were applied	3	AECOM/Jacobs
5.2	Project Benefits Summary	Brief introduction	1	AECOM
5.2.1	Ecosystem Benefits	Backup discussion for ecosystem benefits, including Refuge, Delta Habitat, and Anadromous Fish categories	12	AECOM
5.2.2	Flood Benefits	Backup discussion for flood benefits	5	AECOM
5.2.3	Recreation Benefits	Backup discussion for recreation benefits	5	AECOM
5.2.4	Reserved (Other)	Reserved for other categories (e.g., emergency supply) if needed	2	AECOM
5.2.5	Water Supply	Includes participant supply and CVP/SWP supply if applicable	5	AECOM

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Report Outline

Section	Title	Description	# Pgs	Lead/Support
6	Financial Feasibility	Brief introduction and reference cost assignment	1	AECOM/MDA
6.1	Cost Allocation and Cost Assignment	Introduction and description of SCRB methodology	1	AECOM
6.1.1	Cost Allocation	Allocation of costs to project purposes	4	AECOM
6.1.2	Cost Assignment	Assignment of costs to project participants, including the State	4	AECOM
6.2	Assumptions and Financing Approach	Describe how project participants will pay for their share of the Project's benefits. Include assumptions (e.g., Dept. of Ag Loan, etc.)	3	MDA/AECOM
6.3	Commitments	Describe/document commitment from partners	3	TBD/Herrin

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Report Outline

Section	Title	Description	# Pgs	Lead/Support
7	Environmental Feasibility	Introduction and discussion of any impacts that cannot be mitigated.	1	Spranza/Warner-Herson/Herrin
7.1	EIR/S Status	Status of document and review process	2	Warner-Herson
7.2	Mitigation Plan	Recommend including the mitigation plan from the EIR (or BA) as an Appendix (reference Appendix D). We need to disclose if there will be a Statement of Overriding Considerations.	1	Spranza/Herrin
7.3	Agreement and Permitting Process	Overview discussion and disclose potential effects of outstanding permits and agreements on Project benefits	3	Spranza/Herrin
8	Constructability	Reference Appendix E and summarize findings	1	AECOM

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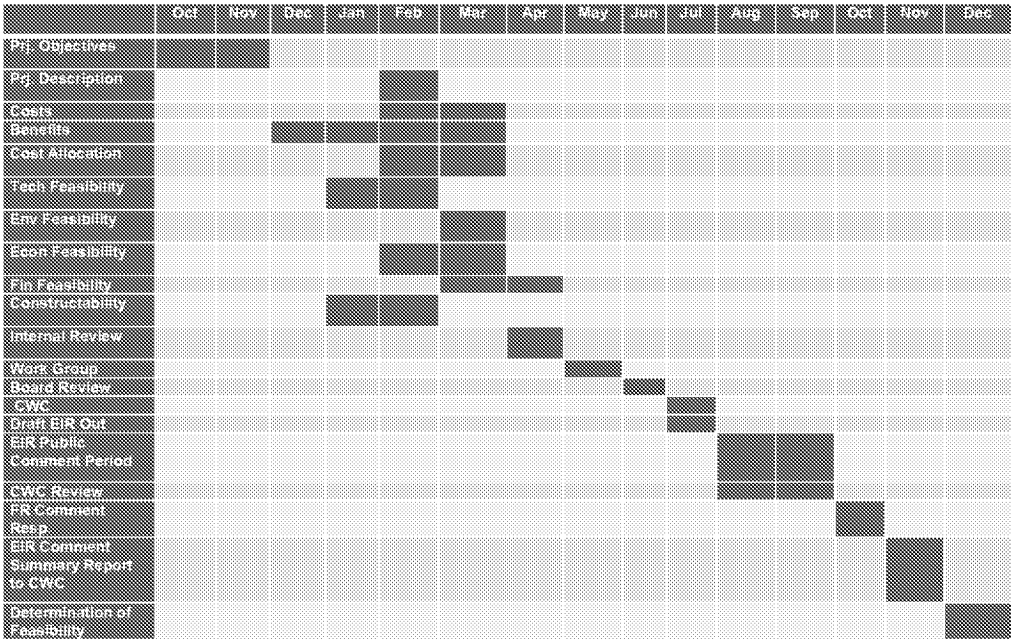
Report Outline - Appendices

Section	Title	Description	# Pgs	Lead/Support
A	Project Description	Recommend using BA because it is limited to the preferred project		Spranza/ICF Insert PDF "as is" (no additional formatting)
B1	Construction Cost Estimate	Brief narrative followed by HR and HC estimate spreadsheets		AECOM/Jacobs Insert PDF "as is" (no additional formatting)
B2	O&M Cost Estimate	Brief narrative followed by HR and HC estimate spreadsheets		AECOM/Jacobs Insert PDF "as is" (no additional formatting)
B3	Mitigation Cost Estimate	TBD		Spranza/ICF
C	Operating Plan	Similar to WSIP Application, but increased emphasis on reliability and reduced emphasis on protections/mitigation	25	Jacobs
D	Mitigation Plan	Assume there is an Appendix in the EIR or BA we can use		Spranza/Herson/ICF
E	Constructability Analysis	Overview of the construction methods and availability of construction materials, work force, and equipment.		AECOM, Jacobs

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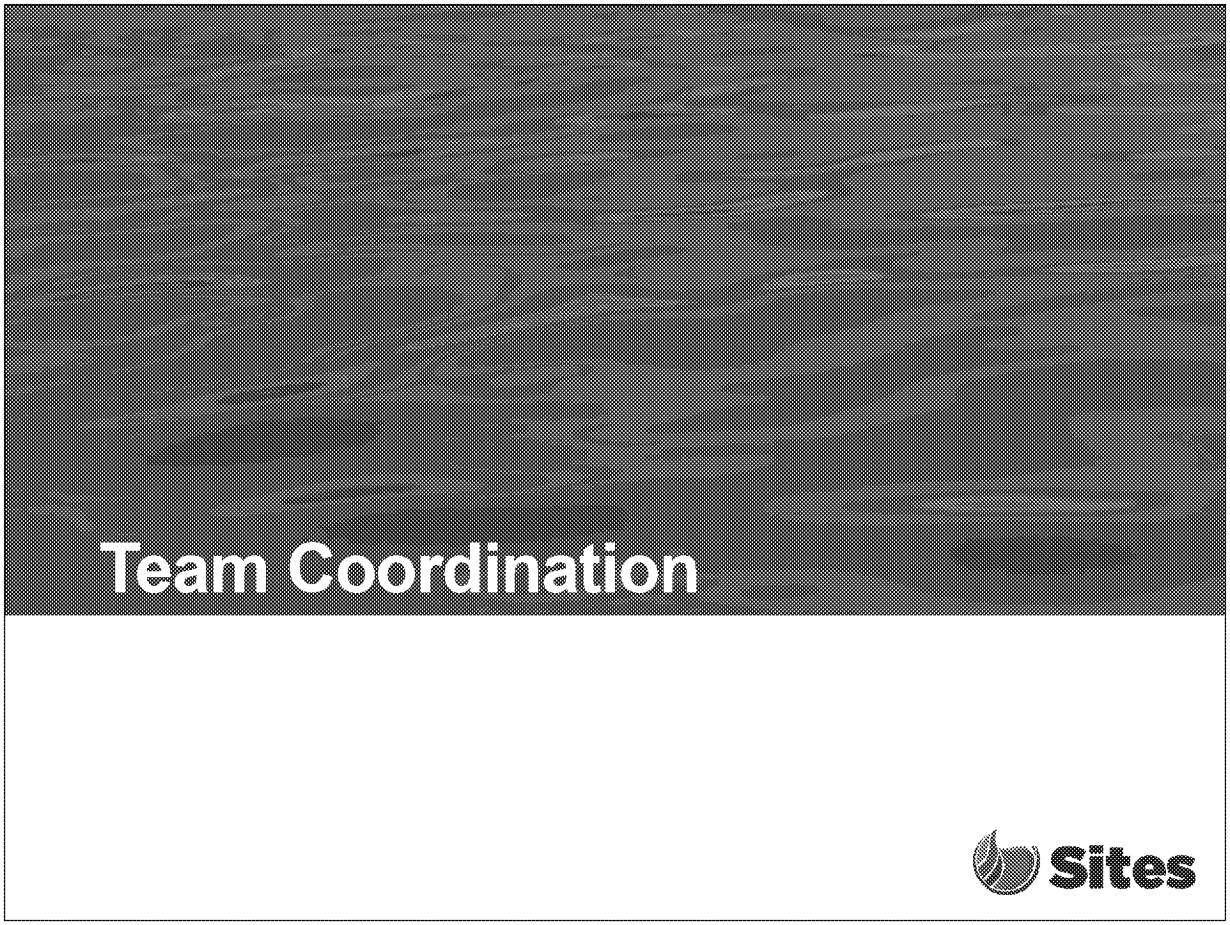
Schedule



16

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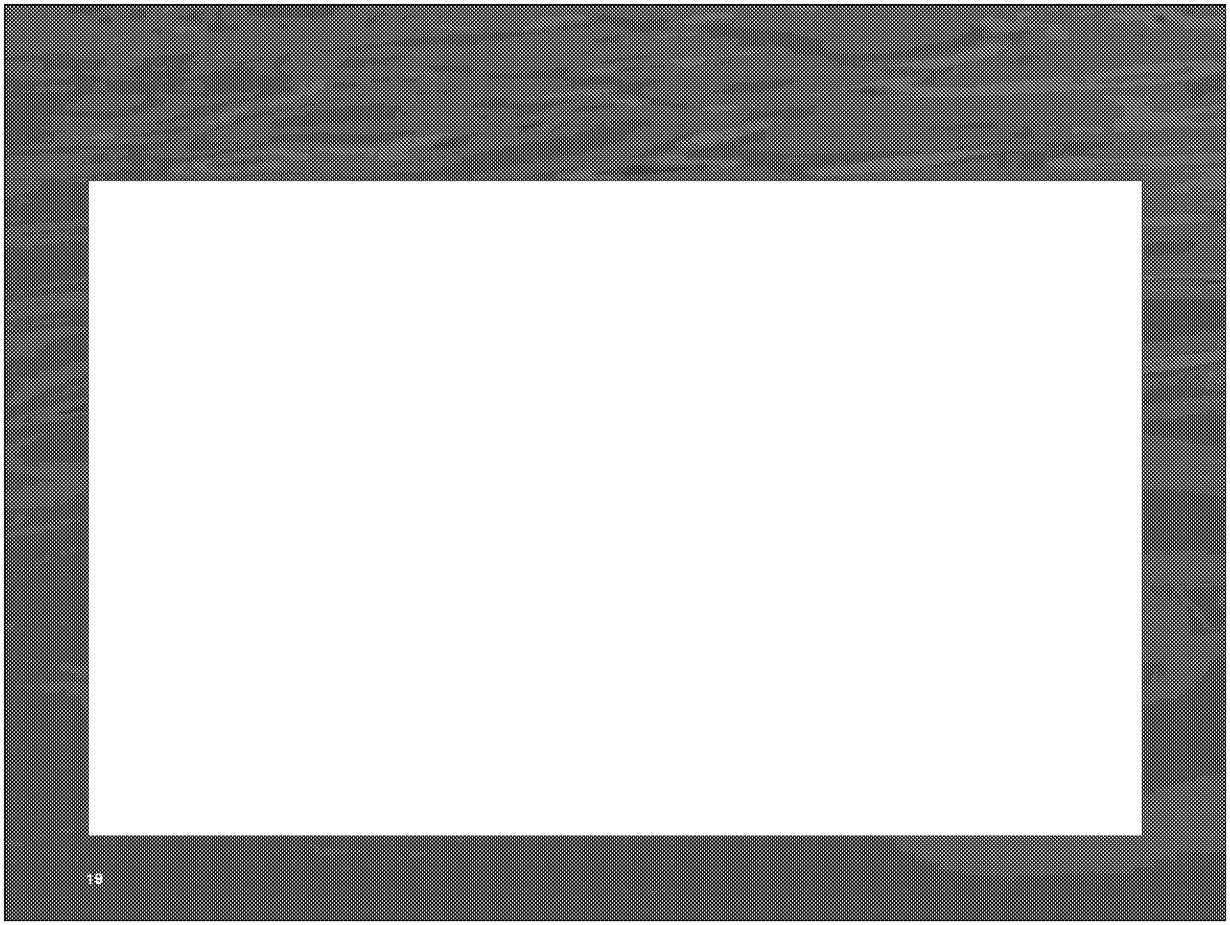
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Team Coordination

- Monthly meetings with this group
- Focused, small-group meetings on individual sections
- Coordinate with integration on data needs and timing



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From: Jeffrey Mount [mount.jeffrey@gmail.com]
Sent: 3/26/2021 11:42:42 AM
To: Jerry Brown [jbrown@sitesproject.org]; Alicia Forsythe [aforsythe@sitesproject.org]
Subject: one pager
Attachments: DRAFT Storing Water for the Environment.docx

Jerry,

Sorry about the delay in getting this one pager to you. We had some last minute changes in the author team. I am going to be asking you to work on rounding up the Prop 1 folks for a 1 hour discussion of the central issues you all are grappling with. We could make it an hour and half. Two hours is too long (zoom blindness).

This is still in draft form, because adjustments will be made until Ellen says OK. But you can distribute to your Prop 1 friends.

Enjoy your weekend!

--

Jeffrey Mount
Public Policy Institute of California and UC Davis
mount.jeffrey@gmail.com

DRAFT

PPIC Water Policy Center

Storing Water for the Environment in California

There is increasing interest in setting aside water that can be flexibly managed for the environment. This is central to recent water quality regulations adopted by the State Water Board for the San Joaquin River, which allocate a block of water to the environment, based on a percentage of unimpaired flow from February through June. On-going negotiations over voluntary agreements to meet flow and water quality standards in the Delta and its watershed also propose a volume of water to be set aside for the environment. And the Proposition 1 Water Storage Investment Program requires that new state-funded surface and groundwater storage projects provide water to improve ecosystem health.

Although there is considerable interest in storing water for the environment, to date there has been no comprehensive assessment of how this would work, including how to divert, store, and allocate water to greatest effect, and what legal issues must be resolved. The PPIC Water Policy Center proposes to examine this issue in detail and to offer recommendations for how to best manage water stored to meet ecosystem health objectives.

This analysis will build on a recent body of work the PPIC Water Policy Center has published—in collaboration with numerous research partners—suggesting reforms to improve freshwater ecosystem health. These include: (i) better planning, improved accounting and the establishment of ecosystem water budgets managed by a trustee; (ii) a shift away from a focus on threated and endangered species toward managing for overall ecosystem health; and (iii) the use of functional flows paired with physical habitat improvements to make the most of water allocated for the environment.

The project will be led by Sarah Null (Utah State University), Jeffrey Mount (PPIC) and Brian Gray (PPIC). Additional members of the author team include Kristen Dybala (Point Blue Conservation Science), Harrison "HB" Zeff (University of North Carolina), Anna Sturrock (University of Essex), and Barton "Buzz" Thompson (Stanford University). A series of late spring/summer 2021 workshops will be held with the water user community, interested stakeholders, state and federal agencies, Proposition 1 project operators, and subject experts. The goal of these workshops will be to identify a suite of key operations, policy and legal questions that need to be addressed. These will be summarized in one or more blog posts in early fall, 2021. A peer-reviewed on-line technical report will be completed in spring 2022 that contains analysis of these questions and recommendations for addressing them. The release of the report will be accompanied by a public presentation with expert panel presentations.

The project will be funded by the PPIC CalTrout Ecosystem Fellowship and a grant from the S. D. Bechtel, Jr. Foundation.

Sites Project Terrestrial Resources Group Discussion

March 26, 2021

Sites

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Agenda

1. Introductions
2. Group Norms
3. Species List
4. Approach to Analysis
    a. Agency Coordination
    b. Access and Survey History
    c. Landcover Mapping
    d. Species Models
    e. Next Steps
5. Mitigation Approach
6. Schedule and Future Meeting Topics
7. Action Items and Next Steps

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Group Norms

- Encourage everyone to be on video
- Mute yourself when others are speaking
- Respectful, professional dialogue
- Ask questions throughout, lets have a dialogue
  - Let the speaker finish their point
  - Use the raise your hand function in Teams if needed

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Species Analyzed and Approach

Land Cover Mapping Resources and Methods

- Previous vegetation and wetland mapping of reservoir and some roads and conveyance routes in 1998-2003 and 2011
- Fall/winter 2020-2021 vegetation and aquatic resource remote mapping of all project component impact areas plus a 300-foot buffer:
  - Aerial photograph interpretation (Google Earth 1998-2020; National Agriculture Imagery Program 2018; Digital Globe 2019)
  - Additional mapping resources include soils maps, USGS topographic maps, NWI maps, existing delineation mapping from 2000 and 2011
- On-going coordination with U.S. Army Corps of Engineers to obtain available delineation data and consensus on mapping methods, aquatic resources delineation verification approach, and permitting strategy

ESA and CESA Terrestrial Species List

Species	Federally Listed	State Listed	Operations	Construction
Keck's checker-mallow	X			X
Palmate-bracted bird's beak	X	X		X
Vernal pool crustaceans	X			X
Valley elderberry longhorn beetle	X			X
California red-legged frog	X			X
Giant garter snake	X	X		X
Tricolored blackbird		X		X
Swainson's hawk		X		X
Western yellow-billed cuckoo	X	X	X*	
Bank swallow		X	X*	

Notes: *Depending on downstream channel effects

CEQA Species List

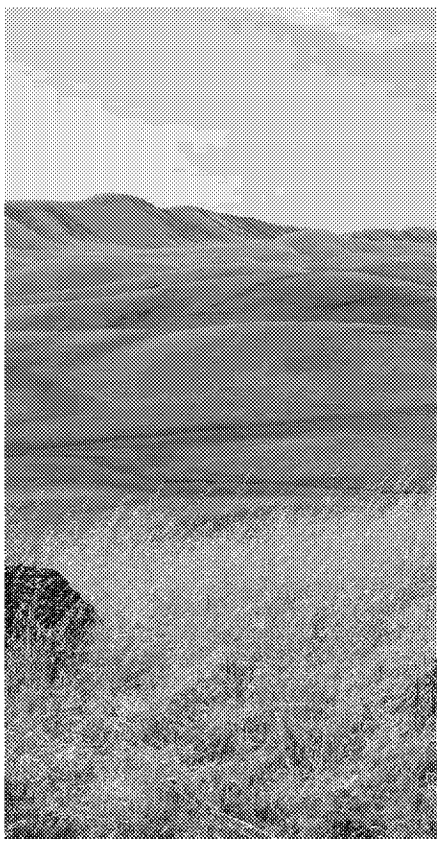
Species Data Resources:

- Non-listed special-status species with potential to occur in study area include 20 wildlife and 12 botanical
- Non-listed special-status species include fully protected wildlife species; animal species of special concern; and California Rare Plant Rank species 1B.1, 1B.2, and 3.2 (no or low potential for other ranked plant species to occur)
- Wildlife surveys of parts of the study area in 1998-2004 and 2010/2011
- Botanical surveys of parts of study area in 1998-1999 and 2000-2003

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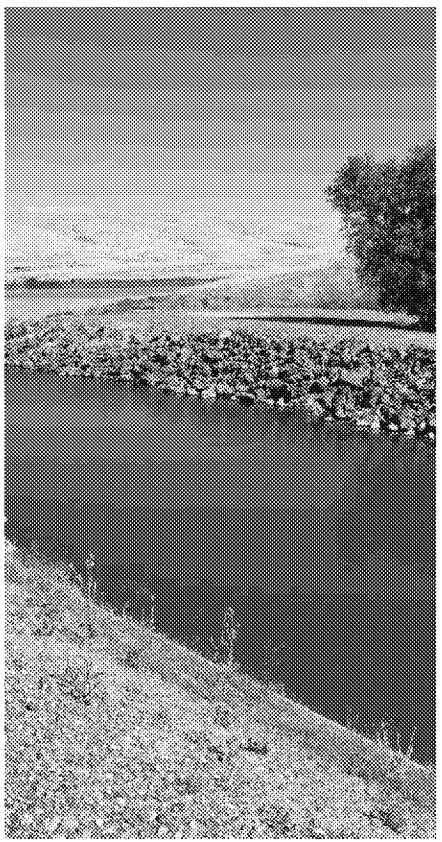
Species Models

- Species habitat models developed in GIS using:
  - Land cover mapping
  - Species range data, CNDDB records
  - Elevations
  - Soil types
- For listed species, developed in coordination with CDFW and USFWS



Approach to Analysis

- Current impact acreages based on
  - Species models
  - Aerial imagery
  - No current field species surveys or habitat mapping
- Subsequent refinements needed
  - Project design changes
  - Land cover mapping
  - Species surveys



Preliminary Impacts on State and Federally Listed Species

Species	Federally Listed	State Listed	Acres Permanent*	Acres Temporary*
Keck's checker-mallow	X		10,094	700
Palmate-bracted bird's beak	X	X	21	8
Vernal pool crustaceans	X		330	37
Valley elderberry longhorn beetle	X		13,535	983
California red-legged frog	X		513 Aquatic/6,826 Upland	22 Aquatic/426 Upland
Giant garter snake	X	X	2 Aquatic/26 Upland	21 Aquatic/19 Upland
Tricolored blackbird		X	13,487 Foraging/42 Nesting	1,043 Foraging/19 Nesting
Swainson's hawk		X	14,170 Foraging/1,083 Nesting	1,035 Foraging/50 Nesting
Western yellow-billed cuckoo	X	X	TBD	TBD
Bank swallow		X	TBD	TBD

*Based off mapped suitable habitat

Approach to Analysis: Next Steps

Challenge: Lack of Property Access

- How to address lack of property access
  - Impact assessment/mitigation measures in permits based on models and assumptions
  - Ground truthing and surveys when property access is granted
  - Amend permits based on refined mapping and species surveys
- The EIR/S, biological assessment and ITP application will outline this process and frontload it into the permits

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Mitigation Approach

Mitigation Approach

- The mitigation options to be examined will include, but are not limited to, the following:
  - On-site mitigation/restoration opportunities
  - Existing habitat and listed-species mitigation and conservation banks
  - Establishment of turn-key banks
  - Purchasing offsite lands from willing landowners to create, enhance, restore or preserve mitigation habitats
  - Obtaining conservation easement and/or in lieu fees
  - Working with local refuges, preserves, resource agencies or municipalities to fund restoration and/or research projects

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Mitigation Approach

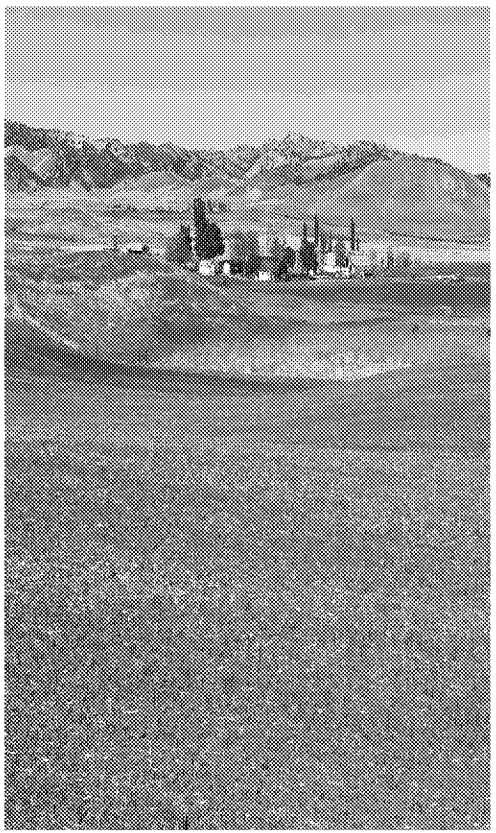
- Ecosystem-level mitigation planning that will integrate wetland, riparian and upland communities for targeted species, other associated species & land cover types
  - Develop database of existing preserves, mitigation/conservation banks, federal/state/regional open space areas
  - Overlay CNDDB occurrences for the region; identify mitigation sites in proximity to existing populations
  - Maximize "patch" size
  - Maximize habitat connectivity benefits (provide migration corridors, promote genetic diversity)
  - Protect/enhance important habitat areas
  - Maintain/improve biodiversity

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Schedule and Next Meeting

Schedule

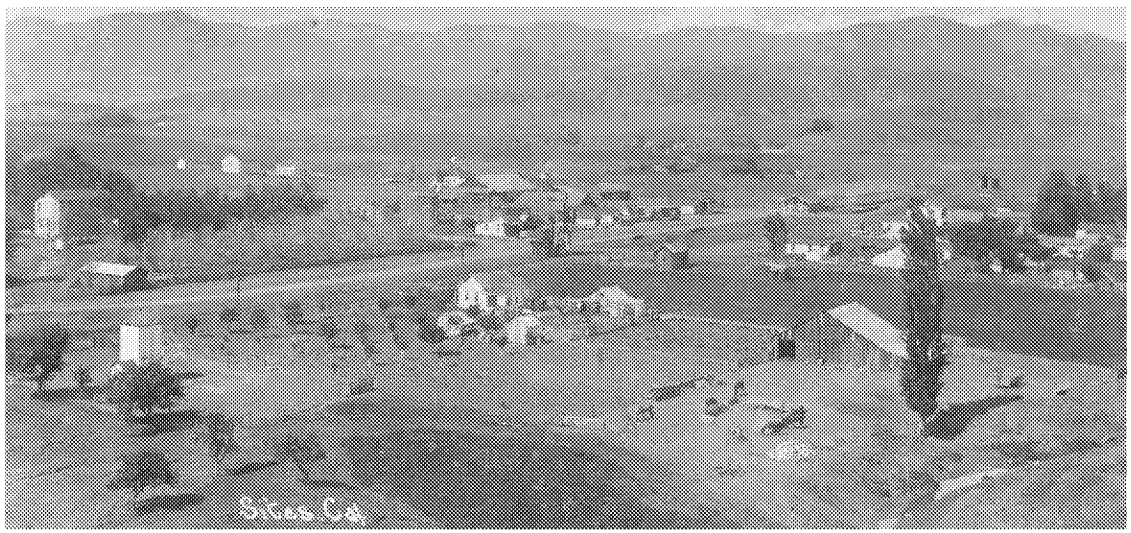
- Summer 2021
  - Draft EIR and Supplemental EIS Released
- December 2021
  - Biological Assessment to Agencies
  - Submit State ITP Applications
- Spring 2022
  - Final EIR/Final EIS
- Spring 2023
  - All permits obtained
- Spring 2024 Construction Begins
- Topics for the next meeting?



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Additional Topics from the Group

- Any additional questions or thoughts?
- Topics for the next meeting?



Action Items and Next Steps



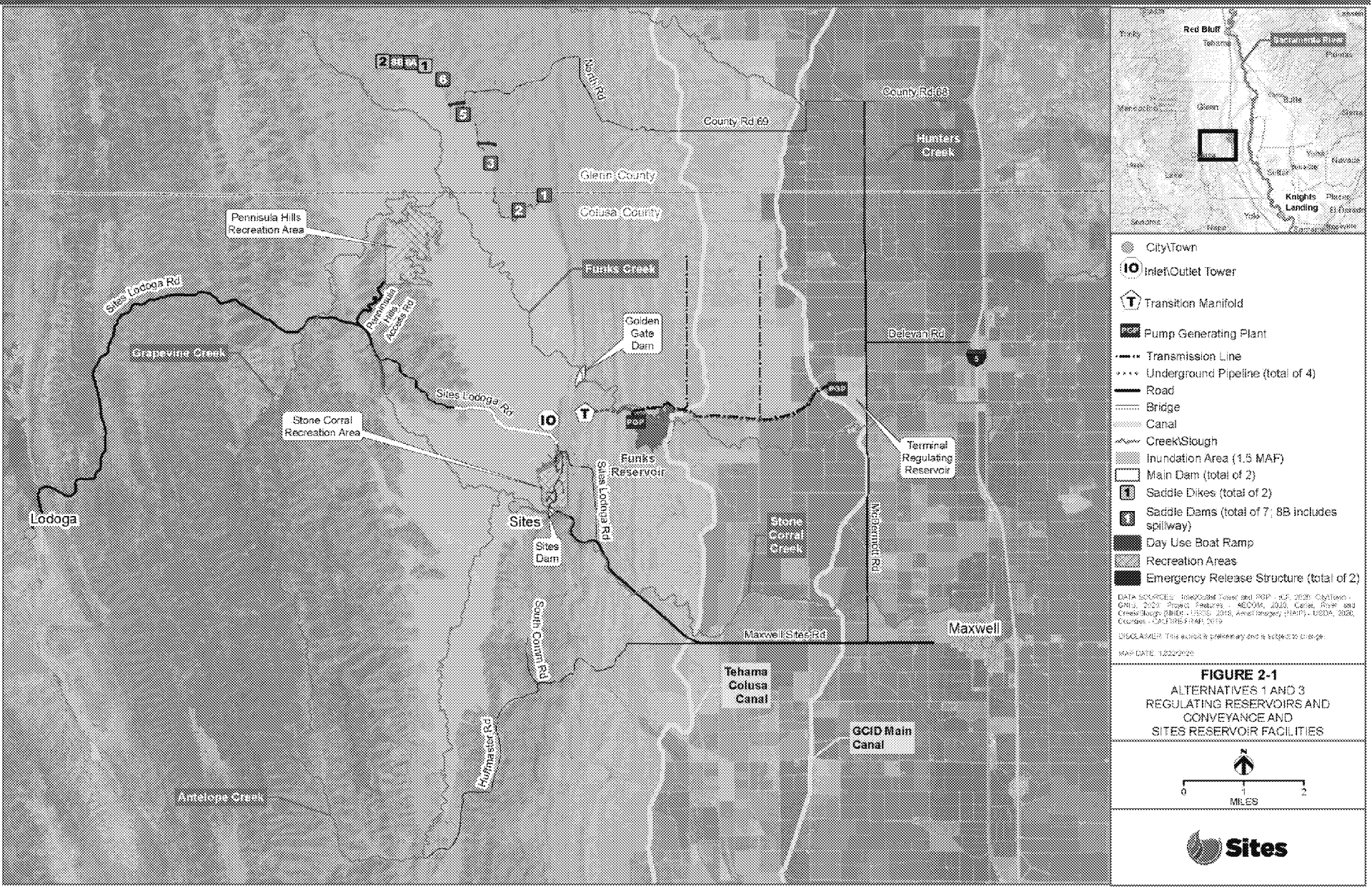
Thank you!


Sites

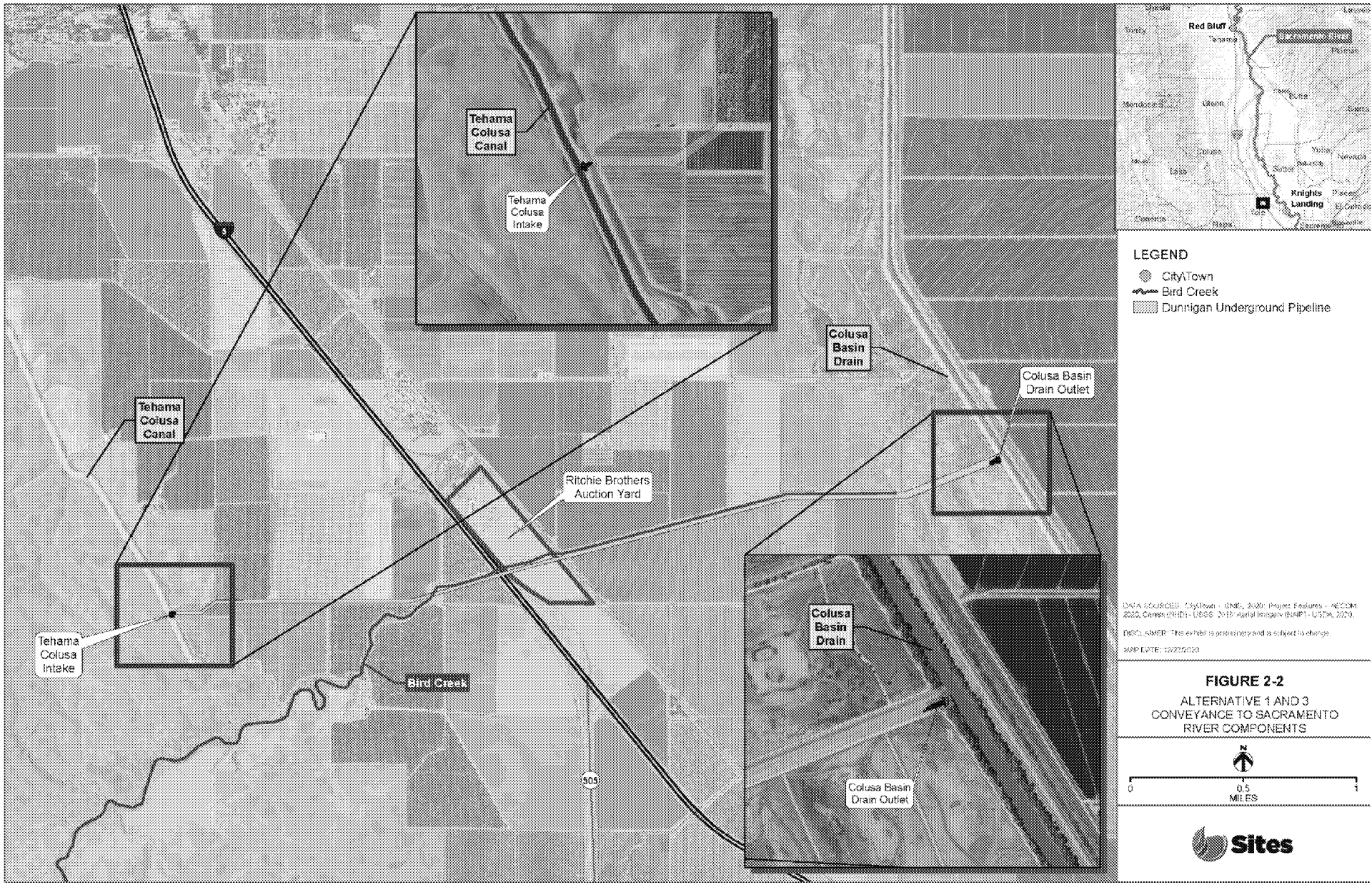
Alt 1 – Authority's Preferred Project

Facilities / Operations	Alternative 1
Reservoir Size	1.5 MAF
Diversion(s)	Diversion from Sacramento River into existing TC Canal at Red Bluff and the existing GCID Main Canal at Hamilton City
Conveyance Release / Dunnigan Release	Release 1,000 cfs into new pipeline to the Colusa Basin Drain
Releases into Funks and Stone Corral Creeks	Specific flow criteria to maintain flows to protect downstream water right holders and ecological function
Reclamation Involvement	• Funding Partner up to 7% Cost-Share • Operational exchanges
DWR Involvement	Operational Exchanges with Oroville and use of SWP facilities South-of-Delta
Hydropower	Incidental power generation up to 40 megawatts each at Funks PGP and TRR PGP

Alt 1 – Preferred Project



Alt 1 – Preferred Project




Sites

From: Fisher, Linda [Linda.Fisher@hdrinc.com]
Sent: 3/26/2021 3:44:01 PM
To: Williams, Nicole [Nicole.Williams@icf.com]
CC: Alicia Forsythe [aforsythe@sitesproject.org]; Briard, Monique [Monique.Briard@icf.com]; Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
Subject: RE: Cumulative Approach

I believe this is a comprehensive list of additional flood control improvements in the lower portion of the project area. I am still trying to determine if there are reasonably foreseeable improvements proposed along the Sacramento River near Colusa. Feel free to edit the descriptions.

Project	Primary Agencies	Status
Sacramento River Bank Protection Project	USACE, CVFPB, SAFCA, WSAFCA, TRLIA	ongoing
Lower Cache Creek/Woodland Flood Risk Management Project	City of Woodland, USACE, DWR, CVFPB	ongoing
Sacramento River Flood Control System Evaluation, Phase III Mid-Valley Sites	USACE, DWR, KLRCDD, RD 108, Yolo County	ongoing
Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project	USBR, DWR	ongoing
DWR Small Communities Flood Risk Reduction Program	DWR, Yolo County	ongoing

Description	References	Working Notes
Sacramento River Bank Protection Project. USACE is responsible for implementation of the Sacramento River Bank Protection Project (SRBPP) in conjunction with its non-federal partner, CVFPB. The SRBPP is a continuing construction project authorized by Section 203 of the Flood Control Act of 1960. The purpose of the project is to provide erosion protection to	https://www.spk.usace.army.mil/Missions/Civil-Works/Sacramento-River-Bank-Protection/	Suggest calling this project out separately

Description	References	Working Notes
the existing levee and flood management facilities of the SRFCP. To date, project work has been carried out in two phases, and a total of approximately 840,000 feet of riverbank has been stabilized. Phase I consisted of 435,000 feet, and Phase II's original authorization was for 405,000 feet. An additional 80,000 feet (a supplement to Phase II) has been authorized under the Water Resources Development Act of 2007 and is being supported by a Post Authorization Change Report, Engineering Documentation Report, and EIS/EIR. The authorization would be applied by USACE to the Sacramento River and other sites within the SRFCP that are identified as critical levee erosion sites.		
The USACE, DWR, and the City of Woodland are preparing a draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) to evaluate	https://www.cityofwoodland.org/1196/Lower-Cache-Creek-Feasibility-Study-LCCF https://www.cityofwoodland.org/DocumentCenter/View/6628/Woodland_FRMP_Final_EIR_January2021_WEB	

Description	References	Working Notes
impacts associated with a proposed flood risk reduction project on Lower Cache Creek. As a part of the overall effort, USACE is also preparing a project feasibility study. Similarly, the City of Woodland is partnering with DWR through its Urban Flood Risk Reduction Program to identify and implement the flood risk reduction project to meet the State's urban level of protection requirements in a cost-effective manner that would be compatible with and supportive of elements of the Integrated Watershed Monitoring Program. Project components may include secondary earthen levees and a diversion channel to redirect overland flood flows into the Yolo Bypass, modification of the Cache Creek Settling Basin to allow conveyance of flood flows into the Yolo Bypass, and various bridge and/or culvert improvements to		

Description	References	Working Notes
facilitate conveyance of flood flows in the diversion channel.		
The Mid-Valley Project is part of the Knights Landing Ridge Drainage District. The project proposes to repair levees at 13 sites northwest of the City of Sacramento which have required flood fighting or experienced seepage and boils during previous flood events. These levees are integral to the system-wide performance of the Sacramento River Flood Control Project and provide direct flood protection to the towns of Knights Landing, Verona and Nicholas, indirect flood protection to the Cities of Sacramento and West Sacramento, while also protecting 93,000 acres of farmland and associated infrastructure that support the Sacramento Valley's capacity as one of the most productive agricultural regions in the world. The repair	https://www.spk.usace.army.mil/Portals/12/documents/usace_project_public_notices/MidValley_FINALEAIS.pdf	

Description	References	Working Notes
of levees in Area 3 will nearly triple the level of flood protection afforded the town of Knights Landing and the adjacent agricultural areas. Area 3 levee reconstruction involves 3.4 miles of levee repair along the Knights Landing Ridge Cut and 1.3 miles of levee repair along the west bank of the Sacramento River. The U.S. Army Corps of Engineer initiated a system-wide evaluation of levees comprising the Sacramento River Flood Control Project which exhibited poor performance, including seepage and boils, or required flood fighting during the 1986 flood. In the Mid-Valley portion of the project, the Corps identified 30 deficient sites with a total required repair length of approximately 20 miles within the 240 miles of levees evaluated. These 30 sites have been grouped into 4 areas		

Description	References	Working Notes
based on the benefits they provide. The repair of 17 sites located within Area 1 was completed in 1998. The remaining 13 sites in three areas across Yolo and Sutter County are still in need of repair. These repairs include seepage and stability berms, levee crown restoration, slurry cutoff walls interior drains and encroachment relocations. Despite the subsequent poor performance of these levees in the 1995 and 1997 flood events, the remaining three areas of the Mid-Valley Project in Yolo and Sutter Counties has never been completed. Most recently, the U.S. Army Corps of Engineer released a Draft Engineering Documentation Report in June 2009 to update the project design, associated total project cost estimate and the economic analysis for the remaining three areas. The repairs		

Description	References	Working Notes
are necessary to simply restore the levees to their designed level of flood protection as originally authorized by Congress in the Flood Control Act of 1917. Mid-Valley Sites 9, 10, and 11 are being evaluated further by Yolo County through the DWR Small Communities Flood Risk Reduction Program. Funding for construction of sites 9, 10, and 11 is not allotted yet but is anticipated.		
DWR and USBR are jointly planning the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project to comply with the NMFS Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and the State Water Project (2009 Biological Opinion) Reasonable and Prudent Actions (RPAs) 1.6.1 and 1.7. RPA Action 1.6.1 requires significantly increased seasonal	https://www.usbr.gov/mp/bdo/yolo-bypass.html https://water.ca.gov/Programs/Environmental-Services/Restoration-Mitigation-Compliance/Yolo-Bypass-Projects	

Description	References	Working Notes
floodplain rearing habitat availability with biologically appropriate frequency and duration from December through April in the lower Sacramento River Basin. RPA Action 1.7 requires improved fish passage throughout the Yolo Bypass. The alternative currently being pursued would construct and operate one or more gated and/or passive diversion channels to improve the connection between the Yolo Bypass and the Sacramento River at the Fremont Weir, and including passage improvements to the Tule Canal. A draft EIR/EIS was prepared to evaluate alternatives to meet the 2009 Biological Opinion requirements. Wallace Weir, described separately, is also intended to partially satisfy RPA Action 1.7.		
In 2017, Yolo County received a grant from the California	https://water.ca.gov/Work-With-Us/Grants-And-Loans/Small-Communities-Flood-Risk-Reduction I have a copy of the Feasibility Study but I don't believe it is online.	

Description	References	Working Notes
Department of Water Resources (DWR) Small Community Flood Risk Reduction Program to complete a feasibility study with a primary goal of identifying a preferred plan to reduce flood risk to Knights Landing. The scope of the study is to identify alternatives, indicate preferred structural and non-structural elements, compare implementation costs and schedules, and identify local funding requirements to assess options which will reduce flood risk to the Knights Landing Basin. The study considers potential solutions to reduce flood risk while sustaining agriculture and the regional economy, providing safe access to the river, improving riverine habitat viability, and addressing regional levee maintenance governance. Based on the preliminary and final screening in the Feasibility Study, Alternative 12 was selected as the		

Description	References	Working Notes
Preferred Alternative that accomplishes the goals of this Study. Cost for the Preferred Alternative are estimated as $72 million that includes levee improvements at $36.3 million, and a new, proposed cross levee at $35.7 million. The Preferred Structural Alternative includes the following: Levee Improvements along the Right Bank of Sacramento River – • 290 feet of combination berm and ditch fill at levee mile 0.86 to 0.90 to address underseepage, through seepage, and landside stability concerns adjacent to the community • 1,010 feet of drained stability berm from levee mile 0.67 to 0.86 to address through seepage concerns adjacent to the community • 2,620 feet of cutoff wall from levee mile 0.13 to 0.67 to address underseepage concerns adjacent to the community		

Description	References	Working Notes
• 793 feet of cutoff wall from levee mile 2.7 to 2.9 to address through seepage concerns • 878 feet of cutoff wall from levee mile 3.0 to 3.2 to address through seepage concerns • 2,400 feet of cutoff wall to address through seepage concerns and 3,157 feet of combination seepage-stability berm to address underseepage and through seepage concerns between levee mile 4.3 and 5.4 Applicable freeboard/geometry repairs Levee Improvements along the Left Bank of KLRC – • 4,830 feet of stability improvements and waterside rock slope protection for erosion repair from levee mile 4.9 to 5.8 adjacent to the community and the Knights Landing waste water ponds New cross levee just easterly of the densely populated community of Knights Landing between the		

Description	References	Working Notes
Sacramento River and the KLRC - • Preferred alignment of the cross levee would be from levee mile 4.9 on the right bank of the Sacramento River and would run approximately 6,800 feet southerly toward levee mile 0.9 of the left bank of KLRC		

Linda Fisher, M.S.
D 916.817.4962 M 530.400.3212

hdrinc.com/follow-us

From: Williams, Nicole <Nicole.Williams@icf.com>
Sent: Friday, March 19, 2021 10:05 AM
To: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>; Briard, Monique <Monique.Briard@icf.com>; Fisher, Linda <Linda.Fisher@hdrinc.com>
Subject: RE: Cumulative Approach

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Laurie – sorry for the delay in this response, it got buried.

Yes: even if an EIR/EIS is 20 years old, if a project is ongoing (still being implemented) we would include it.

For projects that are complete: I think it goes back to the criteria as to if it would be included, not necessarily be limited by a specific year. For example, dams/reservoirs as part of the CVP/SWP system were constructed years ago and I guess could be considered complete, but the operations are still resulting in impacts that affect resources we are evaluating and recreation and activities are occurring at these locations.

Cheers, Nicole

NICOLE L. WILLIAMS
Senior Environmental Planner
ICF

o 916.231.9614
icf.com

From: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Sent: Wednesday, March 17, 2021 11:30 AM
To: Williams, Nicole <Nicole.Williams@icf.com>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>; Briard, Monique <Monique.Briard@icf.com>; Linda Fisher (linda.fisher@hdrinc.com) <linda.fisher@hdrinc.com>
Subject: RE: Cumulative Approach

Hi Nicole – for consistency, what are you using as a cut-off date for past cumulative projects? I assume even if an EIR/EIS is 20 years old, if a project is ongoing (still being implemented) we are going to include it. One example is the Hamilton City Flood Damage Reduction & Ecosystem Restoration Project - the original EIR/EIS was released in 2004 but phases are still being constructed. What about projects that are complete?

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Tuesday, March 16, 2021 6:44 PM
To: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>; Williams, Nicole <Nicole.Williams@icf.com>; Briard, Monique <Monique.Briard@icf.com>; Linda Fisher (linda.fisher@hdrinc.com) <linda.fisher@hdrinc.com>
Subject: RE: Cumulative Approach

Hi all – I took a look at the list and I think its generally good, with the additions that we talked about on the phone. A few other possible projects:

San Joaquin River Interim Flows should be changed to San Joaquin River Restoration Program
DMC Subsidence Project
California Aqueduct Subsidence Project
These both might be projects that are not far enough along in the process.

I will get the list out to our nor cal members tomorrow.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Sent: Monday, March 8, 2021 1:32 PM
To: Alicia Forsythe <aforsythe@sitesproject.org>; Williams, Nicole <Nicole.Williams@icf.com>; Briard, Monique <Monique.Briard@icf.com>; Linda Fisher (linda.fisher@hdrinc.com) <linda.fisher@hdrinc.com>
Subject: Cumulative Approach

I have not created an agenda for tomorrow and instead thought we would rely on the attached to discuss/confirm list of cumulative projects and approach to the cumulative analysis.

Laurie Warner Herson
Principal/Owner

Phenix
Environmental Planning

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laurie.warner.herson@phenixenv.com
State of California Small Business (#1796182)
Supplier Clearinghouse Women Business Enterprise (#16000323)

http://phenixenv.com/

From: Jerry Brown [jbrown@sitesproject.org]
Sent: 3/27/2021 11:27:16 AM
To: Miller, Aaron@DWR [Aaron.Miller@water.ca.gov]
Subject: Re: Sites/DWR Technical Discussion

Thanks Aaron. Getting the notes out promptly. This really helps reinforce the meeting discussion. Its best practice from a project management standpoint. We appreciate your support.

From: "Miller, Aaron@DWR" <Aaron.Miller@water.ca.gov>
Date: Friday, March 26, 2021 at 5:30 PM
To: Marcia Kivett <MKivett@sitesproject.org>, Jerry Brown <jbrown@sitesproject.org>, "Heydinger, Erin" <erin.heydinger@hdrinc.com>, Randal Neudexk <RNeudeck@mwdh2o.com>, Rob Kunde <rkunde@wrmwsd.com>, "Maroney, Jagruti@DWR" <Jagruti.Maroney@water.ca.gov>, "Okita, David@DWR" <David.Okita@water.ca.gov>, "Cooke, Robert@DWR" <Robert.Cooke@water.ca.gov>, "White, Molly@DWR" <Molly.White@water.ca.gov>, "Leahigh, John@DWR" <John.Leahigh@water.ca.gov>, "Dhillon, Devinder@DWR" <Devinder.Dhillon@water.ca.gov>
Subject: RE: Sites/DWR Technical Discussion

Hi all,
Thanks for the great discussion this morning. Following are action items we agreed upon and draft takeaways from today's discussion:

Action Items:
Sites – "Action Item" carryover from previous meeting – regarding delivery schedules (not clear on specifics of the action item)
Sites – Setup small focus group meeting to discuss potential alternate method for determining carriage water
DWR – Research "close excess" terms in other agreements/requirements [Water Quality Response Plan]
DWR – Brainstorm potential SWP (all inclusive) benefits to backing Sites water into Oroville

Takeaways (not captured in term sheet edits):
- Continue to be open to either 2-way or 3-way agreements between DWR, Reclamation, and Sites
- Water Quality Response Plan for JPOD may provide an example developing definition of "Close Excess"
- Frequency of coordination meetings between Sites and Projects will depend on conditions
- Sites Project expects to use SWP facilities to facilitate water deliveries to SOD refuges
- Need to coordinate on operations for refuges between Sites and LVE#2
- Need better understanding of DFW planned use of environmental water (Yolo Bypass, Outflow, etc.)

Please let me know if you have any changes or clarifications.
Have a great weekend!
-Aaron

Aaron J. Miller, PE
Office of the Water Operations Executive Manager
California Department of Water Resources
(916) 651-2448
(916) 879-2449 (mobile)

From: Jerry Brown [jbrown@sitesproject.org]
Sent: 3/29/2021 11:13:52 AM
To: Kevin Spesert [kspesert@sitesproject.org]
Subject: Govt Affairs Biweekly Items

This is what I would like to make sure we cover at 1pm today. Also, FYI, Nina is planning to join us. She specifically asked about STREAM Act and I said we would be covering it during this call.

General:

- DWR/Reclamation Ops Coordination
- NGO Workshops

State:

- Group Mtg w/Nancy Vogel – P1 O&M Costs
- Glenn County Update
- Colusa Superintendent Follow-up

Federal:

- STREAM Act
- Leg Visits

From: Spranza, John [John.Spranza@hdrinc.com]
Sent: 3/29/2021 2:58:21 PM
To: Heydinger, Erin [erin.heydinger@hdrinc.com]; Alicia Forsythe [aforsythe@sitesproject.org]
Subject: FW: Potential Sites Modeling needs

Erin,
Here is ICF's list of what modeling they anticipate will be needed from the Jacobs team. If you would like we can review this during the coordination meeting we are planning.

John Spranza

D 916.679.8858 M 818.640.2487

From: Briard, Monique <Monique.Briard@icf.com>
Sent: Monday, March 29, 2021 1:02 PM
To: Spranza, John <John.Spranza@hdrinc.com>
Cc: Hendrick, Mike <mike.hendrick@icf.com>; Williams, Nicole <Nicole.Williams@icf.com>
Subject: Potential Sites Modeling needs

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

John, So sorry. Mike sent me this on Friday and I read it and moved on without forwarding it to you. Let us know if you have any questions. Monique

The following modeling reruns are anticipated to occur after the August time-frame:

1. We assume that any modeling reruns required for the permit applications will need to be included in the Final EIR/S which means TMs, data outputs, and appendices needed for subjects such as WQ for the EIR/S will need to be updated.
2. Marin & Anderson egg mortality models (currently used for only winter-run egg mortality) may need to be ran for the other races of salmonids. It has been done for spring-run (by NMFS), and as part of the DCP effort this is being investigated.
3. Per anticipated requests from CDFW, might need to look at particle tracking modeling.
4. CDFW may request more details flow-survival modeling.
5. Modeling associated with upstream mitigation, for example side-channel analysis.
6. Possible need associated with bypass modeling requirements.
7. There will likely be last-minute needs that we cannot or have not yet anticipated that are a result of the Agency Workshop and possibly the NGO meetings.

In addition, we are working on a list of data needs/next steps based on Friday's temperature modeling call that I will send to you separately.

From: Jerry Brown [jbrown@sitesproject.org]
Sent: 3/30/2021 8:55:42 AM
To: Heydinger, Erin [Erin.Heydinger@hdrinc.com]
Subject: Re: Follow-ups DWR/Reclamation
Attachments: image001.png; image002.png

I get it, requires more thinking.

From: "Heydinger, Erin" <Erin.Heydinger@hdrinc.com>
Date: Tuesday, March 30, 2021 at 8:36 AM
To: Jerry Brown <jbrown@sitesproject.org>
Subject: RE: Follow-ups DWR/Reclamation

Steve just sent me this follow up. I will talk with them more tomorrow about how we would want to define near-excess.

Hi Erin,

I thought more about this last night.
Regardless of how we define near-excess conditions, I have concerns with looking to JPOD as an example to Sites.
I suggest that the Sites Authority keep distance from JPOD protocols.

Best,
Steve

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

hdrinc.com/follow-us

From: Heydinger, Erin
Sent: Tuesday, March 30, 2021 8:21 AM
To: Jerry Brown <jbrown@sitesproject.org>
Subject: RE: Follow-ups DWR/Reclamation

Hi Jerry,

I had a chance to send the definition from JPOD below. Their response was that, in general, JPOD is too restrictive for Sites. When I asked if we were just talking about 'near excess' their response was that we still need to define when this coordination would occur – we would not want it to occur all the time, so there still would need to be some definition beyond below defining "near excess" and when this would be required.

So I think for the sake of this morning's meeting we do not bring up JPOD but can let folks know we're working through a proposed definition and can meet with a small group to further solidify.

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

From: Jerry Brown <jbrown@sitesproject.org>
Sent: Saturday, March 27, 2021 12:47 PM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Subject: Follow-ups DWR/Reclamation

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Regarding DWR and Reclamation Coordination, I want to get all of this down in one place so we can track it:. Let's discuss at next 1v1

For the Joint Meetings:

1. COA Accounting for Shasta Exchanges - Put together the diagram, tri party agreement principles and simple example COA calculation for DWR/Reclamation Joint Mtg #2.
2. "Close Excess" – put together a "strawman" definition that retains flexibility for actual conditions but is specific enough that we have something we can fall back on if DWR/Reclamation are asking us to stop when we don't feel its warranted. I think this is what John Leahigh was referring to in his comment that a CCWD JPOD condition might be a similar circumstance. This could be part of the definition.

- Prior to commencing JPOD diversions during excess conditions when CCWD is authorized to divert water under its Los Vaqueros water rights, the Department and Reclamation shall conduct water quality modeling that will forecast water quality on a short-term basis in the southern Delta near CCWD's intakes associated with planned JPOD diversions. The Department and Reclamation shall submit results of the modeling forecasts to CCWD and the SWRCB. If CCWD objects to the planned JPOD diversions, and the Department, Reclamation, and CCWD are unable to agree on operations of JPOD, the Department and Reclamation shall contact the Chief of the Division for a determination regarding required mitigation, if any, for potential water quality impacts associated with JPOD operations. In order to substantiate an allegation of potential harm to its use of water, CCWD should submit detailed information concerning how the change in chloride levels would impact CCWD's operation (including potential health concerns, treatments costs, blending ability, and availability of water to meet environmental and customer demands).

3. IL4 Refuge Conveyance SOD – we need to coordinate with what CCWD is doing and see if there is applicability to our situation as well.

For DWR (current remaining issues):

1. Carriage Water – put together a proposal, look at crop idling example or GW substitution. DWR will want to see that the math works. Can we get our deliveries to be on a "table A" like arrangement? Maybe we can get agreement on a special consideration as long as we do something to help DWR in cases where they are unable or at risk of meeting their obligations for water quality in the Delta because Oroville is not full enough or they need a fast response.
2. CBD Use – Work with Engr to lead a discussion of how we intend to use the CBD and how we will monitor our flow into the river from the CBD. We need to make sure and demonstrate how our use of the CBD is beneficial to DWR. Jerry Johns says they will be questioning the amount of loss in the CBD.
3. "Subject to Spill" – I do not believe this is an issue for us because we can modulate our exchange with DWR such that we never leave anything in Oroville.
4. 1707 Filing now or later? – do we need to consult with CDFW regarding their retaining its yolo bypass environmental water through the release to golden gate bridge. Check the Prop 1 application.

For Reclamation:

1. You got the "this is where things stand right now" version of the Ops term sheet out. Good job!
2. The power annex is done for now, right?
3. Water Rights:

a. its semes like Sites water rights team has come to the conclusion that its better to NOT do any CVP water right changes at this time. We need to discuss this point with our negotiating team.

b. Reclamation needs to decide how it uses its benefits. Right now the model assumes Ops Flex.

c. Reclamation needs to review diversion criteria to ensure it is satisfied that proposal does not affect its ability to meet CVP demands

d. Reclamation needs to "unpack" how it would use its water from Sites to optimize its participation.

e. Sites needs to include salinity control and stock watering in its purpose of use.

From: Jerry Brown [jbrown@sitesproject.org]
Sent: 3/30/2021 4:38:59 PM
To: Alicia Forsythe [aforsythe@sitesproject.org]; Heydinger, Erin [erin.heydinger@hdrinc.com]
Subject: EBMUD Freeport Outreach

I spoke with Mike Tognolini Dir of WR today to brief him on the Sites project and what's coming up this year in terms of EIR and water rights. Here are my takeaways from the meeting.

- He was not aware of the recent project changes and was appreciative of the call.
- He said the main concerns/interests they might have regarding the project are:
  - Any changes to delta operations affecting cross channel gates operations. They have concerns that cross channel operations can confuse the Mok River salmon and drop their recovery numbers. I told him I do not believe Sites has any effect on cross channel operation because water moves through the Delta in drier years when more water would help survival.
  - Similar interest to PCWA/Roseville/Sac County in improving Folsom end of yr storage levels. Told him Sites has potential for this but really determined by Reclamation operations.
  - Will consider if they would be interested in Freeport being identified as potential point of rediversion. Sees the potential benefits but also felt it might be more appropriate to wait since this has not been on their radar. Told him we had not modeled any Freeport diversions but that does not mean we can't show it in the water right application. He will get back to us on this.
  - They might be an interested buyer in transfer water, depends on the price. Will think about it more.
- He will talk to his team and let us know if they would like a more thorough briefing on the project.

Will keep you posted.

From: Micko, Steve/SAC [Steve.Micko@jacobs.com]
Sent: 3/31/2021 11:26:38 PM
To: Williams, Nicole [Nicole.Williams@icf.com]
CC: Alicia Forsythe [aforsythe@sitesproject.org]; Spranza, John [john.spranza@hdrinc.com]; Heydinger, Erin [erin.heydinger@hdrinc.com]; Monique Briard (monique.briard@icf.com) [monique.briard@icf.com]; Leaf, Rob/SAC [Rob.Leaf@jacobs.com]; Thayer, Reed/SAC [Reed.Thayer@jacobs.com]
Subject: Sites Mercury Appendix
Attachments: SitesReservoir-Hg-Appdx_AdminDraft_033021.pdf; SitesReservoir-Hg-Appdx_AdminDraft_033021.docx

Hi Nicole,

RBI's mercury appendix for the Sites Reservoir Admin Revised Draft EIR/EIS is attached.

Please let me know if you have any questions.

Best,
Steve

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