

Northern CVP Water Temperature Report

December - 2022

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— BUREAU OF —
RECLAMATION

All Data in this Report is Preliminary and Subject to Change

DATE	Mean Daily Water Temperatures (°F)													Mean Daily Release (CFS)			Mean Daily Air Temperatures (°F)			
	TCD ¹	SHD	SPP ¹	KWK	SAC ²	CCR	BSF	BND	RDB	IGO	LWS	DGC	NFH	Shasta Generation	Spring Creek P.P.	Keswick Total	RDD	BSF	RDB	
Nov	57.2	56.5	55.6	55.7	55.4	55.1	54.3	52.8	53.0	55.0	48.3	45.6	46.4	3199	40	3557	49.9	45.8	48.4	
12/01	55.1	53.5	55.4	53.0	52.8	52.8	52.3	? 50.5	? 50.1	? 52.7	? 46.0	42.2	? 41.8	2892	33	3291	43.5	45.5	45.5	
12/02	55.1	53.4	55.2	52.6	52.3	51.6	50.4	49.2	? 49.8	51.6	45.8	41.5	42.2	2731	14	3260	39.0	35.3	37.7	
12/03	55.1	53.4	54.8	52.4	52.1	51.5	50.4	48.8	? 48.6	52.0	45.8	41.0	40.8	2444	14	3296	46.5	39.0	40.2	
12/04	54.6	? 53.2	54.6	52.3	52.2	52.0	51.3	50.2	? 49.5	52.6	45.9	43.3	42.8	2882	14	3295	46.5	45.0	46.3	
12/05	55.1	53.3	54.5	52.3	52.2	52.2	51.4	50.8	50.4	52.4	46.0	44.6	44.9	2923	14	2622	48.5	47.7	48.3	
12/06	55.3	53.6	54.0	52.4	52.2	52.0	50.6	49.9	? 49.5	51.4	45.8	44.2	45.3	2918	224	3263	47.5	44.3	46.7	
12/07	? 55.1	53.6	54.0	52.2	52.0	51.7	50.4	49.2	? 49.1	50.8	45.6	43.1	44.1	2479	25	3270	43.0	39.6	43.3	
12/08	54.4	52.8	53.7	52.3	52.0	51.4	50.8	49.6	? 49.2	50.8	45.4	42.4	43.2	2669	35	3299	43.0	43.5	44.5	
12/09	53.9	52.0	53.3	52.3	51.9	51.2	49.3	49.1	? 49.4	49.9	45.1	40.9	42.2	2609	99	3301	39.5	41.3	45.3	
12/10	53.7	51.7	53.2	52.3	52.0	51.6	49.1	49.0	? 49.0	50.1	? 45.1	? 39.6	? 40.6	2803	35	3294	48.0	50.2	50.7	
12/11	53.5	51.8	53.1	51.6	51.6	51.4	48.7	48.3	48.4	49.9	44.9	41.4	41.0	2645	36	3285	43.0	45.0	46.1	
12/12	53.5	51.6	52.8	51.3	51.0	50.7	48.9	48.1	48.0	49.3	44.8	42.2	42.4	2557	36	3289	42.0	38.5	41.0	
12/13	52.1	51.6	52.6	51.0	50.7	50.3	48.7	47.4	47.3	48.8	44.6	41.9	42.2	2769	36	3295	45.0	39.3	41.9	
12/14	51.6	51.3	52.4	50.9	50.4	50.0	48.6	47.2	47.0	48.1	44.4	41.2	41.6	2561	36	3292	42.0	37.5	39.8	
12/15	51.7	51.3	52.1	50.7	50.3	49.9	48.5	47.1	47.0	48.8	44.2	41.0	41.3	2535	36	3324	45.5	40.9	44.6	
12/16	52.2	51.5	51.8	!	-	50.1	49.7	48.5	46.8	46.8	48.5	44.0	40.7	2574	36	3352	44.5	38.5	41.9	
12/17	53.3	52.6	51.6	!	-	49.9	49.5	48.3	46.6	46.7	48.1	43.8	40.4	2665	36	3367	44.0	36.9	41.1	
12/18	53.0	52.3	51.0	!	-	49.8	49.3	48.1	45.9	46.4	48.0	43.6	40.0	2767	36	3347	41.0	36.0	39.5	
12/19	52.6	52.1	50.6	!	-	49.9	48.9	47.8	44.2	46.1	47.9	43.4	40.1	2888	36	3330	↓ 33.5	33.7	35.4	
12/20	52.3	51.9	50.3	? 51.2	50.7	50.2	48.7	47.3	46.7	48.8	43.3	40.7	40.8	2463	37	3322	46.5	42.0	43.1	
12/21	52.2	51.8	50.3	51.4	51.1	51.0	50.4	49.5	? 48.7	49.1	43.3	41.9	42.5	2673	38	3330	46.5	45.4	47.9	
12/22	52.2	51.6	49.9	51.4	51.0	50.6	49.9	47.4	? 49.3	48.8	43.4	42.6	43.5	2692	37	3332	42.0	40.8	41.3	
12/23	51.8	51.4	49.8	51.6	51.3	51.2	50.6	48.1	49.3	49.1	43.6	43.2	44.3	2460	37	3330	49.5	46.6	46.8	
12/24	51.8	51.3	49.7	51.6	51.4	51.4	51.1	49.4	? 50.2	49.1	43.8	44.1	44.7	2642	37	3332	50.5	47.6	50.3	
12/25	51.8	51.3	49.6	51.6	51.5	51.7	51.4	50.5	? 50.6	49.3	44.0	44.6	45.0	2772	37	3346	51.0	45.5	45.7	
12/26	51.5	51.1	49.9	51.5	51.3	51.2	51.3	50.9	50.7	48.9	44.2	44.5	45.4	2371	227	3343	48.0	46.0	46.1	
12/27	50.9	? 50.3	49.9	51.1	50.7	50.7	50.0	49.1	? 49.5	47.6	44.9	42.5	# -	2288	270	3333	50.0	44.8	45.0	
12/28	51.3	? 50.3	50.0	51.1	50.7	50.7	50.0	49.1	? 49.5	47.6	44.9	42.5	# -	2315	96	3338	47.0	44.8	45.0	
12/29	51.2	!	-	50.1	50.8	50.4	50.2	49.0	48.4	? 48.4	47.9	45.4	42.3	# -	2234	37	3351	44.5	44.1	46.3
12/30	50.8	!	-	49.7	50.3	49.6	49.1	48.1	# -	? 47.1	46.7	45.6	42.0	42.7	2569	37	3366	48.5	37.5	39.3
12/31	51.1	50.9	49.8	50.3	50.0	50.2	49.7	49.1	? 49.2	49.3	45.8	42.8	43.9	2765	37	3338	53.5	50.9	54.3	
Dec	52.9	52.0	51.9	51.6	51.1	50.8	49.8	48.6	48.6	49.5	44.7	42.1	42.5	2631	57	3295	45.3	42.4	44.2	
													Total CFS	81555	1758	102133				
													Total AF	161761	3487	202577				

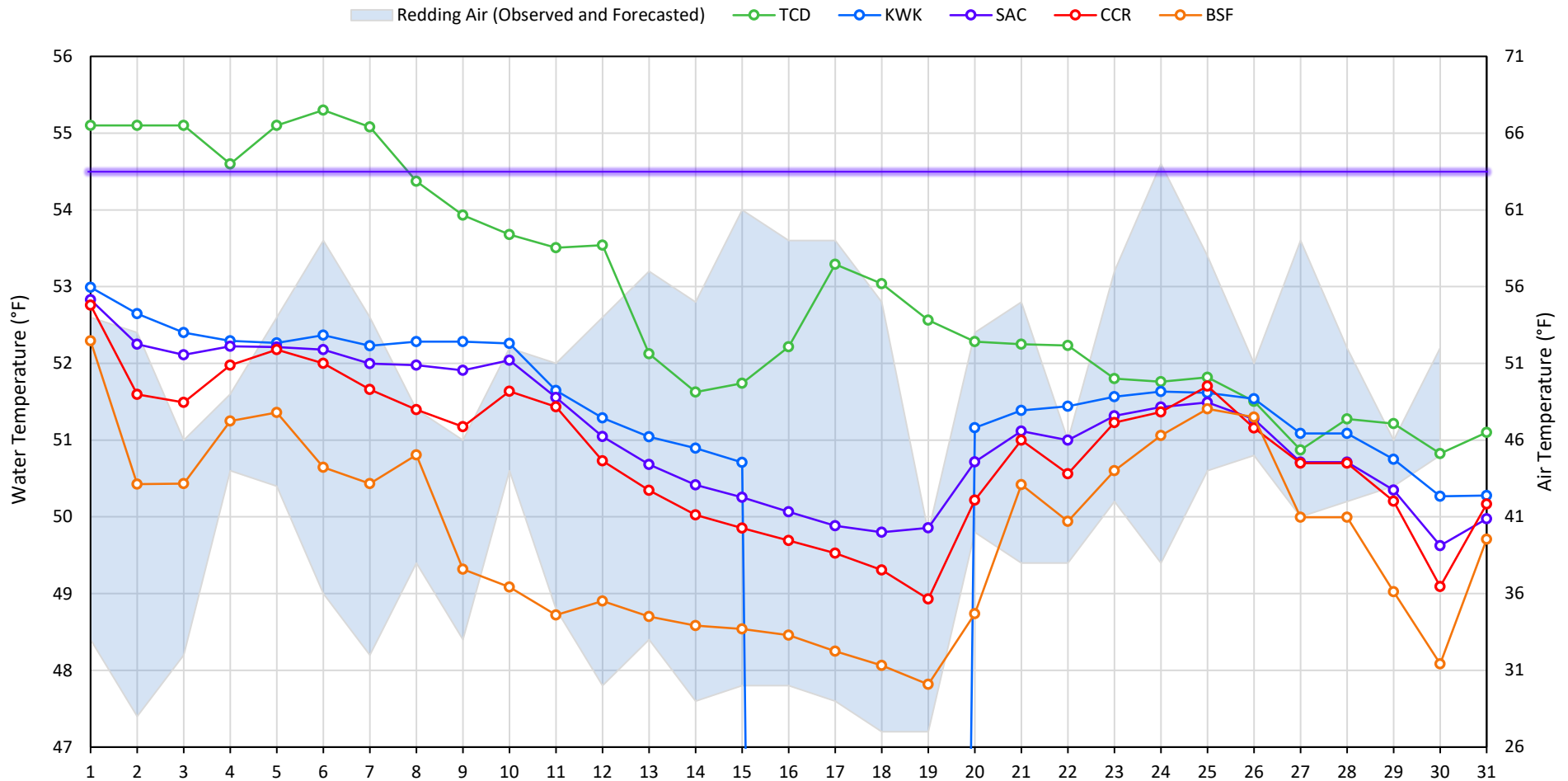
Legend

- ? = 1-9 hours of data missing (Average includes estimations)
- ! = 10 or more hours of data missing (Average not calculated)
- # = Station out of service
- ↑ = Record high air temperature
- ↓ = Record low air temperature
- = Monthly Averages

Notes

- ¹ Temperatures are weighted averages based on individual penstock flow and temperature
- Highlighted cells in the TCD column indicate a TCD change was made on that day
- ² Current Sacramento River control point (see page 4 for more details)

Sacramento River Mean Daily Temperatures



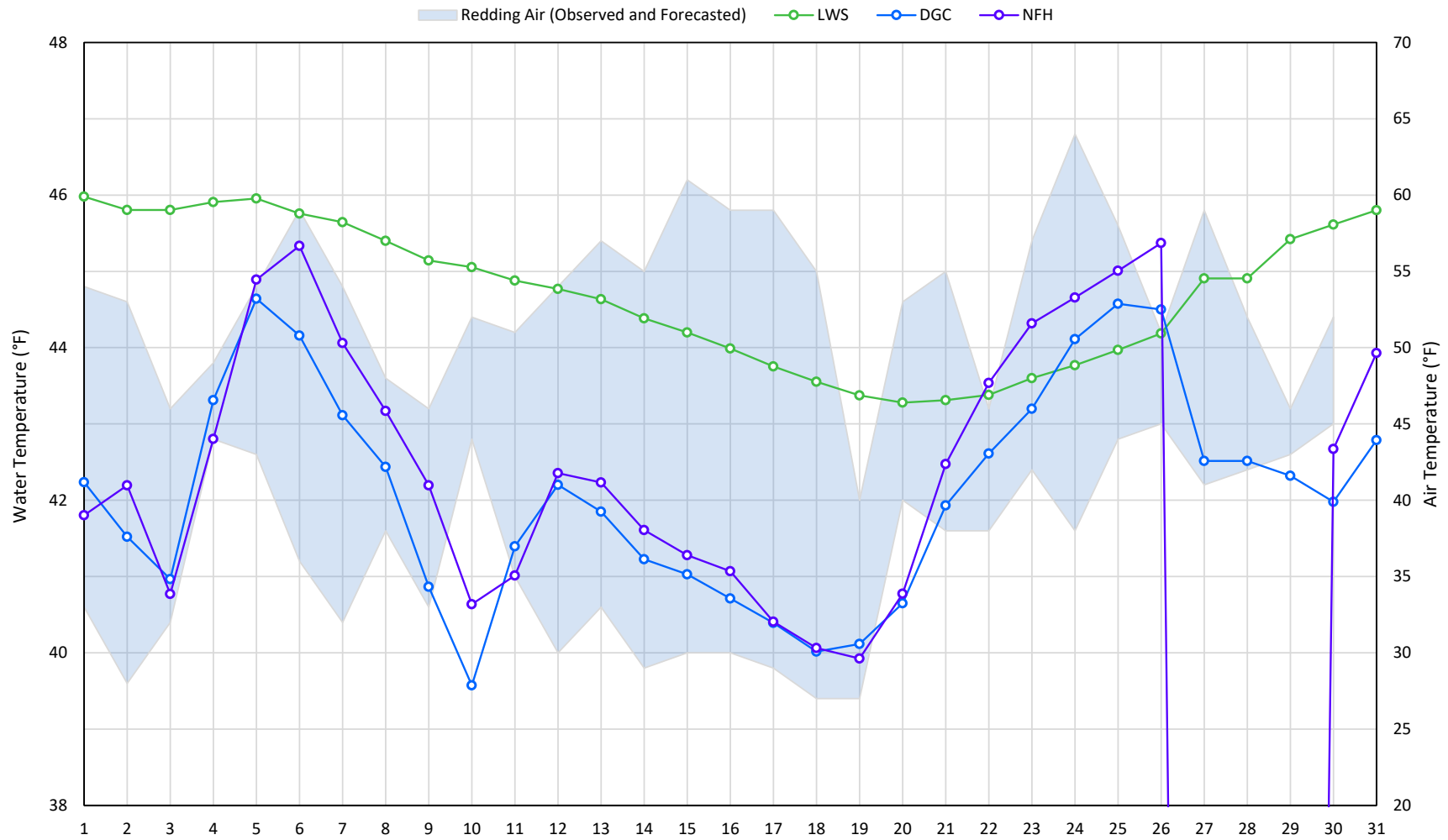
Station Details			
Code	Body of Water	Location ¹	CDEC Link
TCD	N/A	Shasta Power Plant	N/A
SHD	Sacramento River	0.3 miles downstream of Shasta Power Plant	Click Here
SPP	N/A	Spring Creek Power Plant	N/A
KWK	Sacramento River	0.8 miles downstream of Keswick Dam	Click Here
SAC	Sacramento River	4.8 miles downstream of Keswick Dam	Click Here
CCR	Sacramento River	9.7 miles downstream of Keswick Dam	Click Here
BSF	Sacramento River	25 miles downstream of Keswick Dam	Click Here
JLF	Sacramento River	34 miles downstream of Keswick Dam	Click Here
BND	Sacramento River	41 miles downstream of Keswick Dam	Click Here
RDB	Sacramento River	58 miles downstream of Keswick Dam	Click Here
IGO	Clear Creek	7.3 miles downstream of Whiskeytown Dam	Click Here

Water Right Temperature Control Points				
River	Point	Temp. (°F)	Begin Date	End Date
Sacramento	SAC	55	06/15/2021	05/02/2022
Sacramento	SAC	58	05/02/2022	06/07/2022
Sacramento	SAC	54.5	06/07/2022	TBD

Notes

¹ Distances are approximate

Trinity River Mean Daily Temperatures



Station Details			
Code	Body of Water	Location ¹	CDEC Link
LWS	Trinity River	1.1 miles downstream of Lewiston Dam	Click Here
DGC	Trinity River	19 miles downstream of Lewiston Dam	Click Here
NFH	Trinity River	38 miles downstream of Lewiston Dam	Click Here

Water Right Temperature Control Points				
River	Point	Temp. (°F)	Begin Date	End Date
Trinity	DGC	56	Sep-15	Oct-01
Trinity	NFH	56	Oct-01	Dec-31

Notes

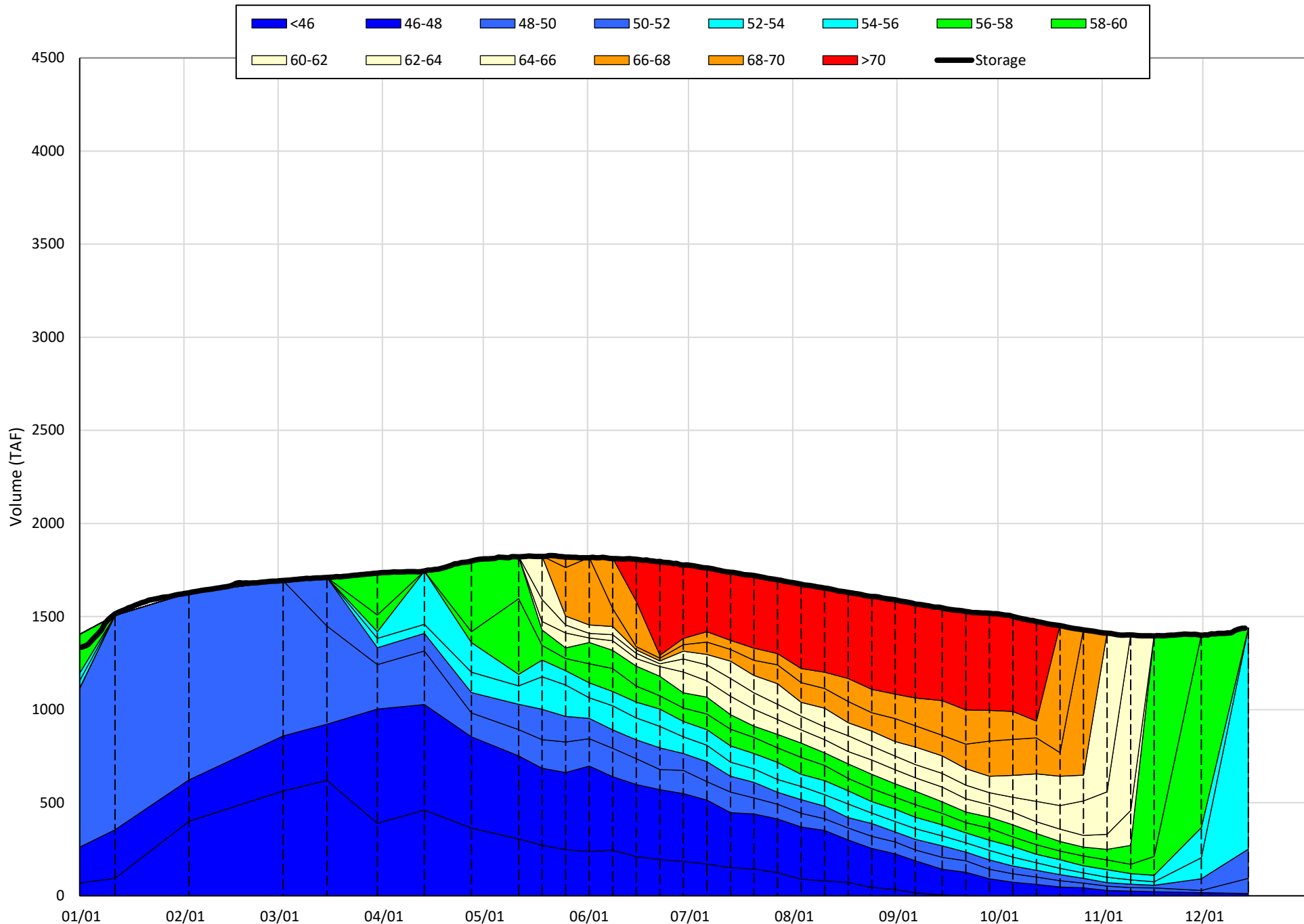
¹ Distances are approximate

Shasta Lake Isothermobaths & Cold Water Pool Statistics

2022

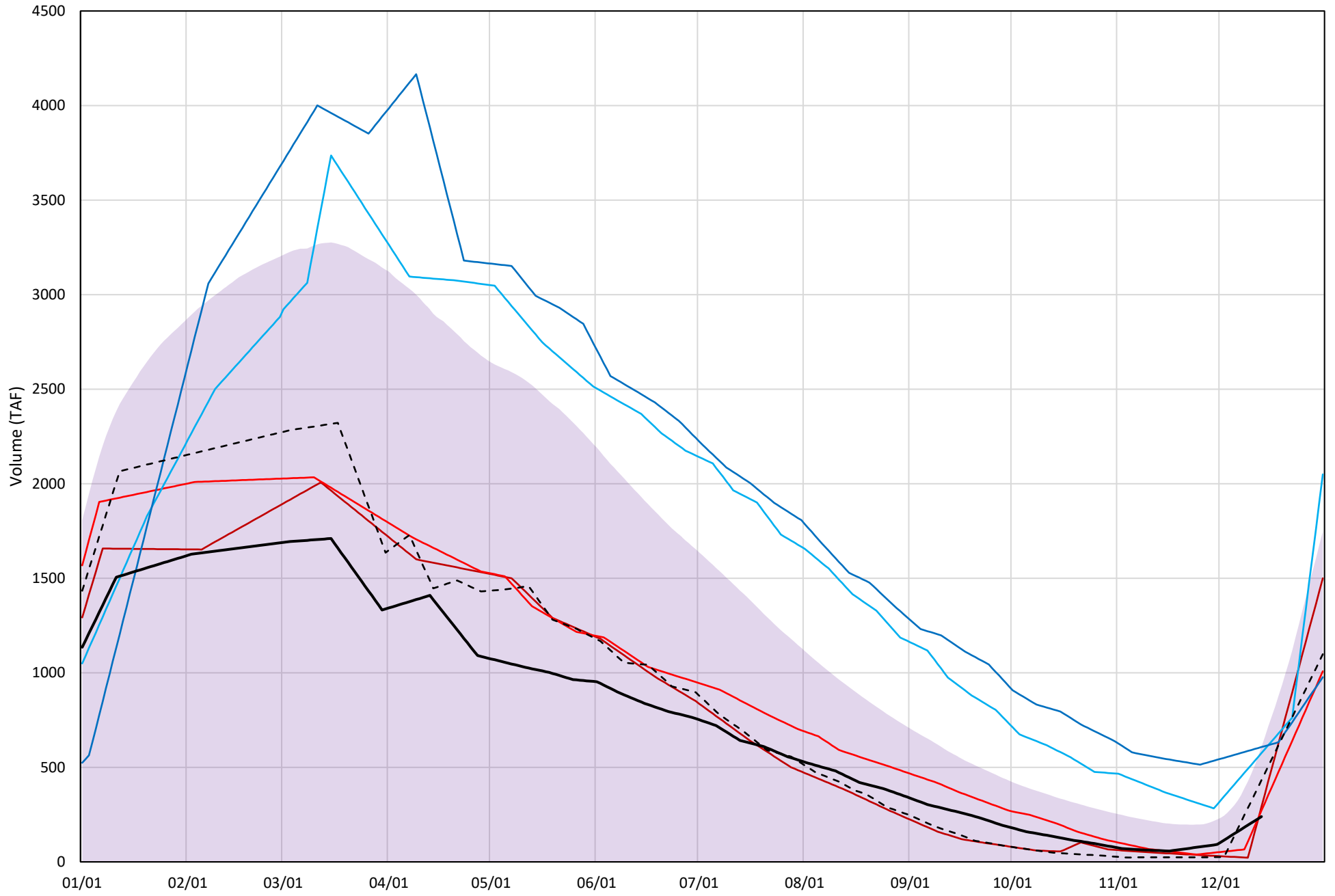
Page	Description
6	- Shasta Lake Isothermobaths Plot
7	- Shasta Lake Cold Water Pool Volume $\leq 52^{\circ}\text{F}$
8	- Shasta Lake Cold Water Pool Volume $\leq 50^{\circ}\text{F}$
9	- Shasta Lake Cold Water Pool Volume $\leq 48^{\circ}\text{F}$
10	- Shasta Lake Cold Water Pool Volume $\leq 52^{\circ}\text{F}$ - Percent Exceedances
11	- Shasta Lake Cold Water Pool Volume $\leq 50^{\circ}\text{F}$ - Percent Exceedances
12	- Shasta Lake Cold Water Pool Volume $\leq 48^{\circ}\text{F}$ - Percent Exceedances
13	- Shasta Lake Cold Water Pool Comparison by Year

Shasta Lake Isothermobaths Plot - 2022



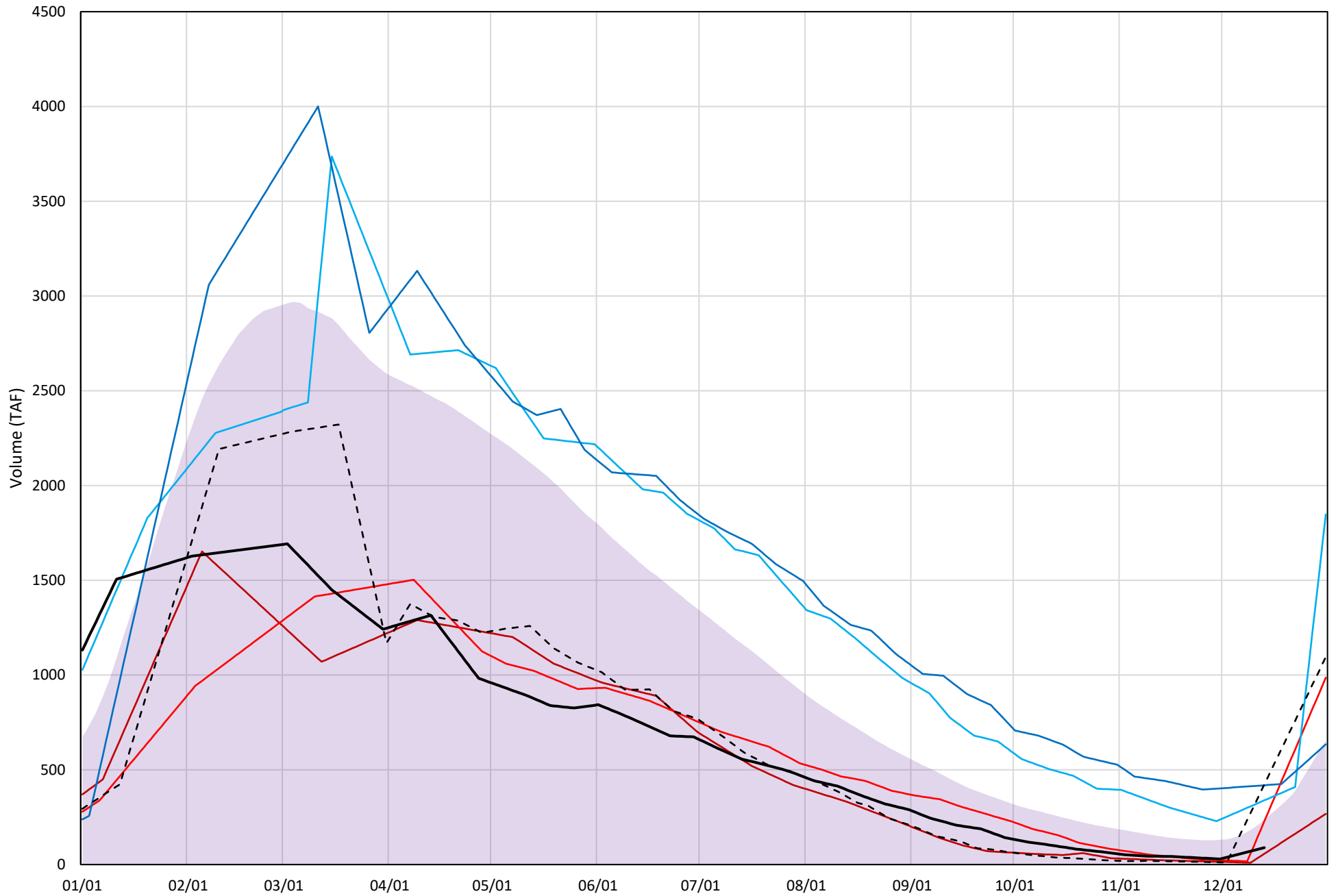
Shasta Lake Cold Water Pool Volume $\leq 52^{\circ}\text{F}$

Avg (1998-2021) 2014 2015 2016 2019 2021 2022



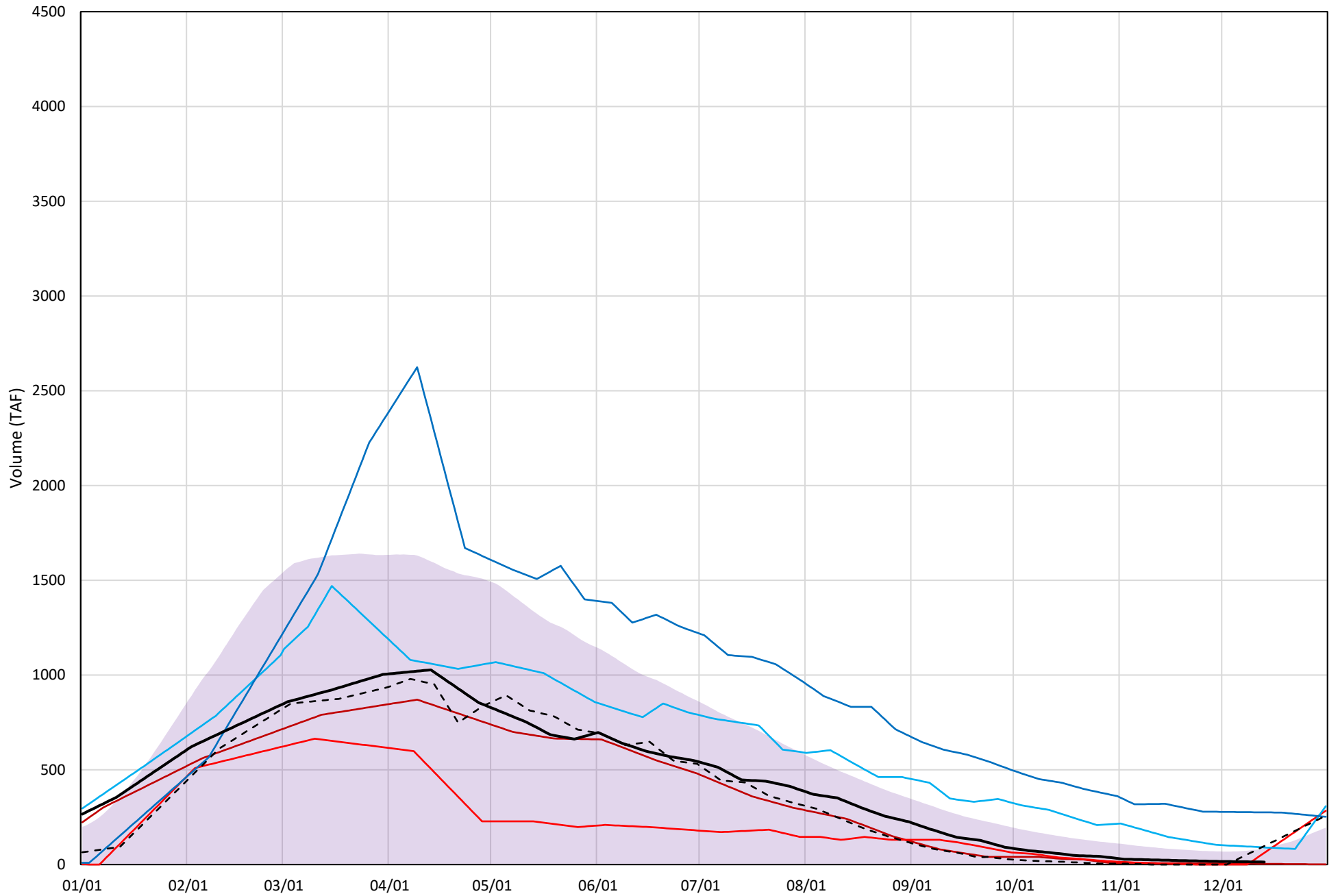
Shasta Lake Cold Water Pool Volume $\leq 50^{\circ}\text{F}$

Avg (1998-2021) 2014 2015 2016 2019 2021 2022



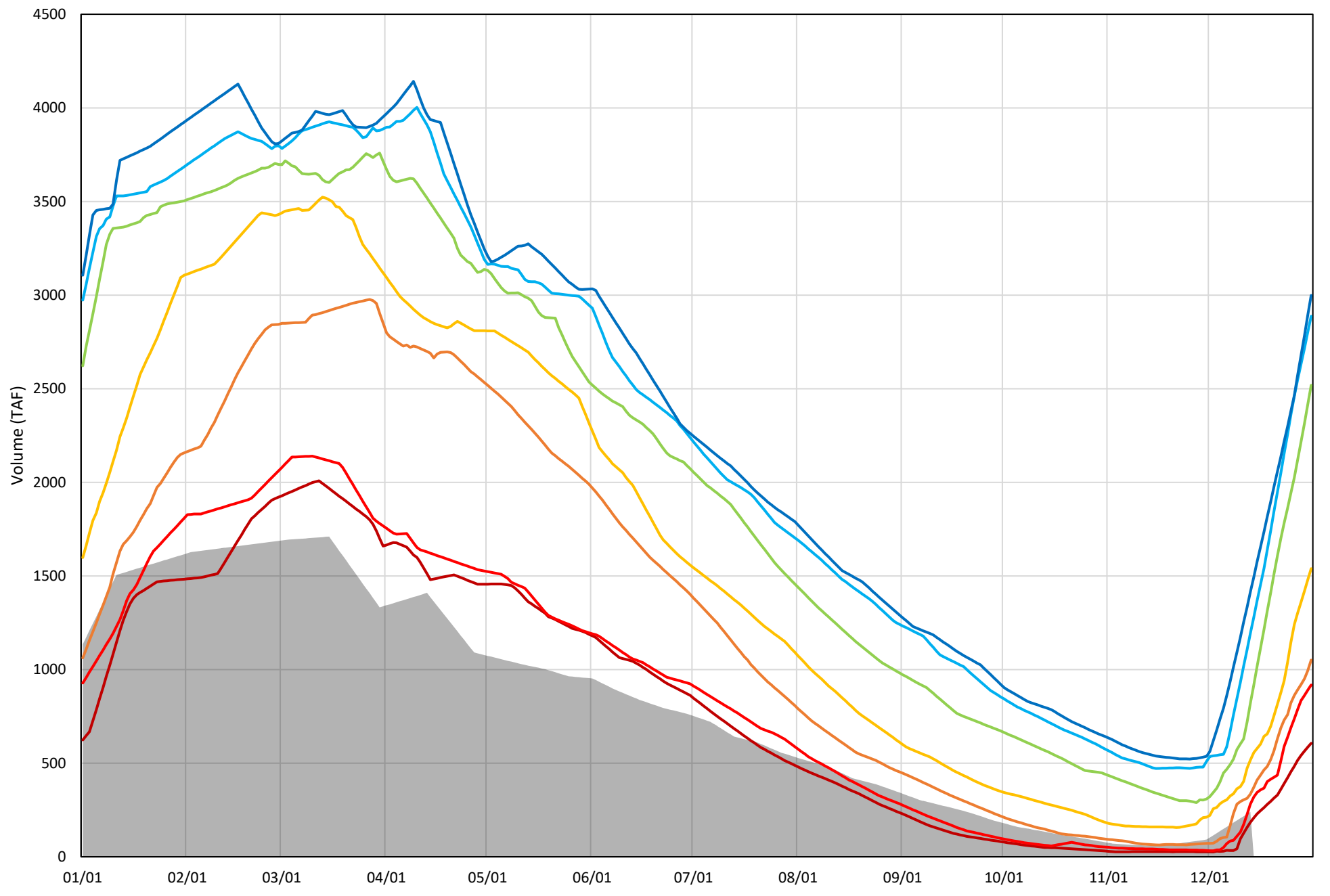
Shasta Lake Cold Water Pool Volume $\leq 48^{\circ}\text{F}$

Avg (1998-2021) 2014 2015 2016 2019 2021 2022



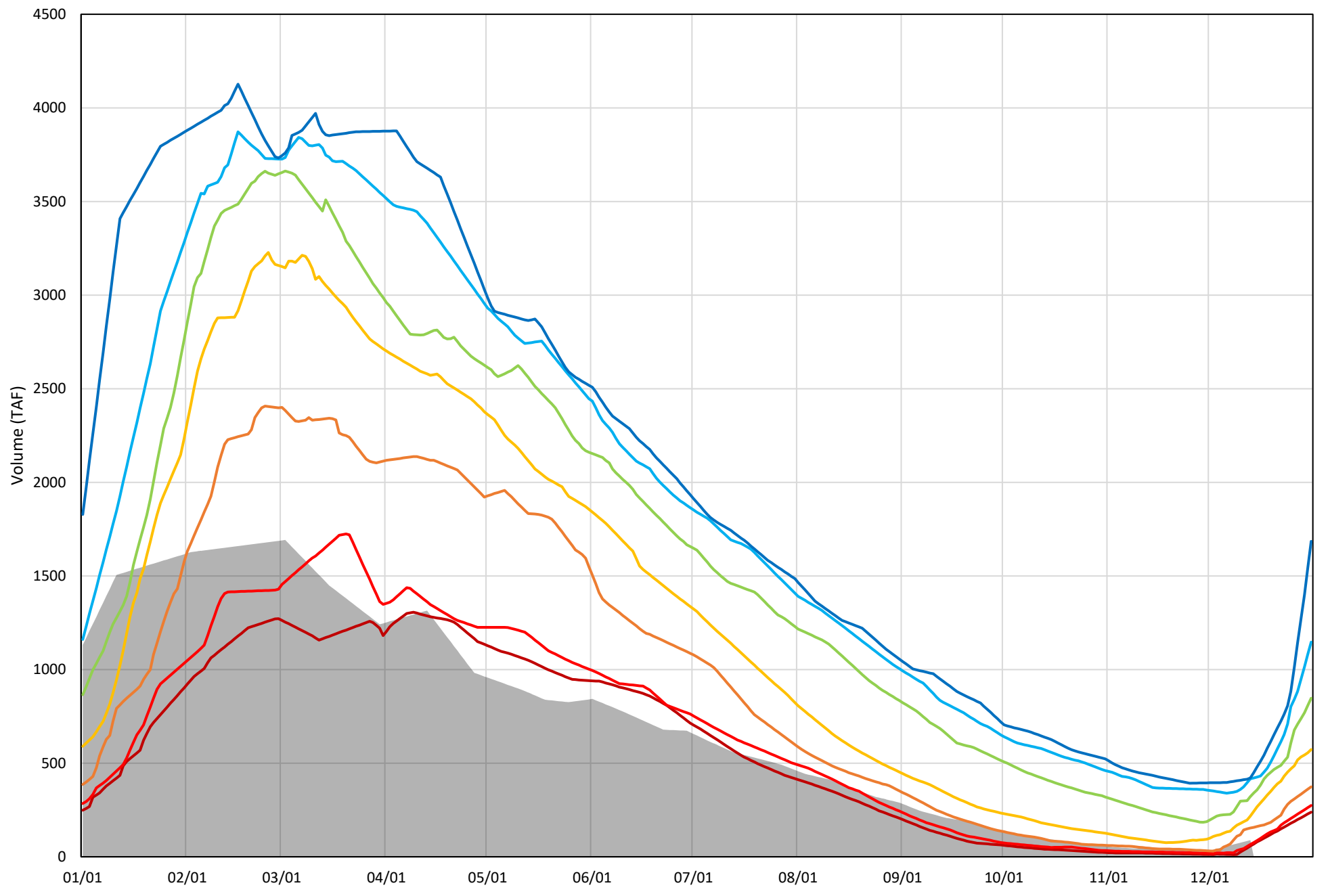
Shasta Lake Cold Water Pool Volume $\leq 52^{\circ}\text{F}$ - Percent Exceedances (1998-2021)

2022 95 90 75 50 25 10 5



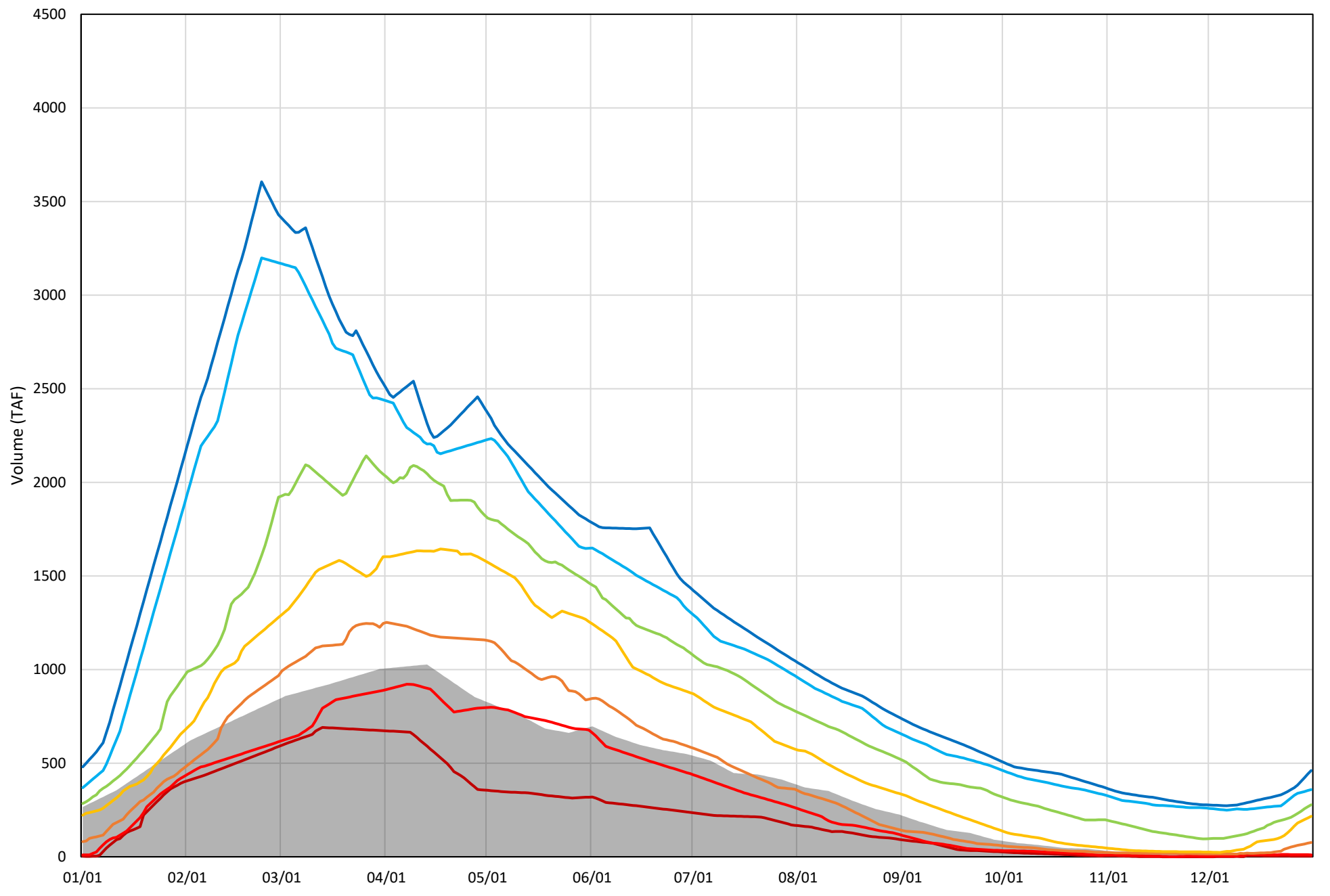
Shasta Lake Cold Water Pool Volume $\leq 50^{\circ}\text{F}$ - Percent Exceedances (1998-2021)

2022 95 90 75 50 25 10 5



Shasta Lake Cold Water Pool Volume $\leq 48^{\circ}\text{F}$ - Percent Exceedances (1998-2021)

2022 95 90 75 50 25 10 5



Shasta Lake Cold Water Pool Comparison by Year (for Specified Date)

Dec-14 2022	Δ TAF				% Δ			
	≤52°	≤50°	≤48°	Abs. Avg.	≤52°	≤50°	≤48°	Abs. Avg.
1998	599	204	35	279	250	228	270	249
1999	91	121	137	116	38	135	1051	408
2000	177	63	7	82	74	71	54	66
2001	139	111	5	85	58	125	36	73
2002	1236	281	140	552	516	314	1074	635
2003	990	120	4	371	413	134	27	192
2004	77	32	-1	37	32	35	-6	24
2005	522	129	48	233	218	144	365	243
2006	916	225	124	422	383	251	952	528
2007	299	11	26	112	125	12	202	113
2008	93	235	40	123	39	262	310	204
2009	402	116	95	204	168	129	726	341
2010	778	148	16	314	325	165	124	205
2011	812	326	286	475	339	364	2196	967
2012	354	127	97	193	148	142	748	346
2013	101	67	20	62	42	75	153	90
2014	51	-33	-9	31	21	-37	-72	44
2015	31	138	49	73	13	154	374	180
2016	335	249	78	221	140	278	595	338
2017	255	221	222	233	106	247	1704	686
2018	-85	-29	-1	38	-35	-32	-8	25
2019	368	329	262	320	153	367	2013	845
2020	103	-19	2	41	43	-21	12	25
2021	193	333	85	203	80	372	650	367
2022	0	0	0	0	0	0	0	0

Historic - Current

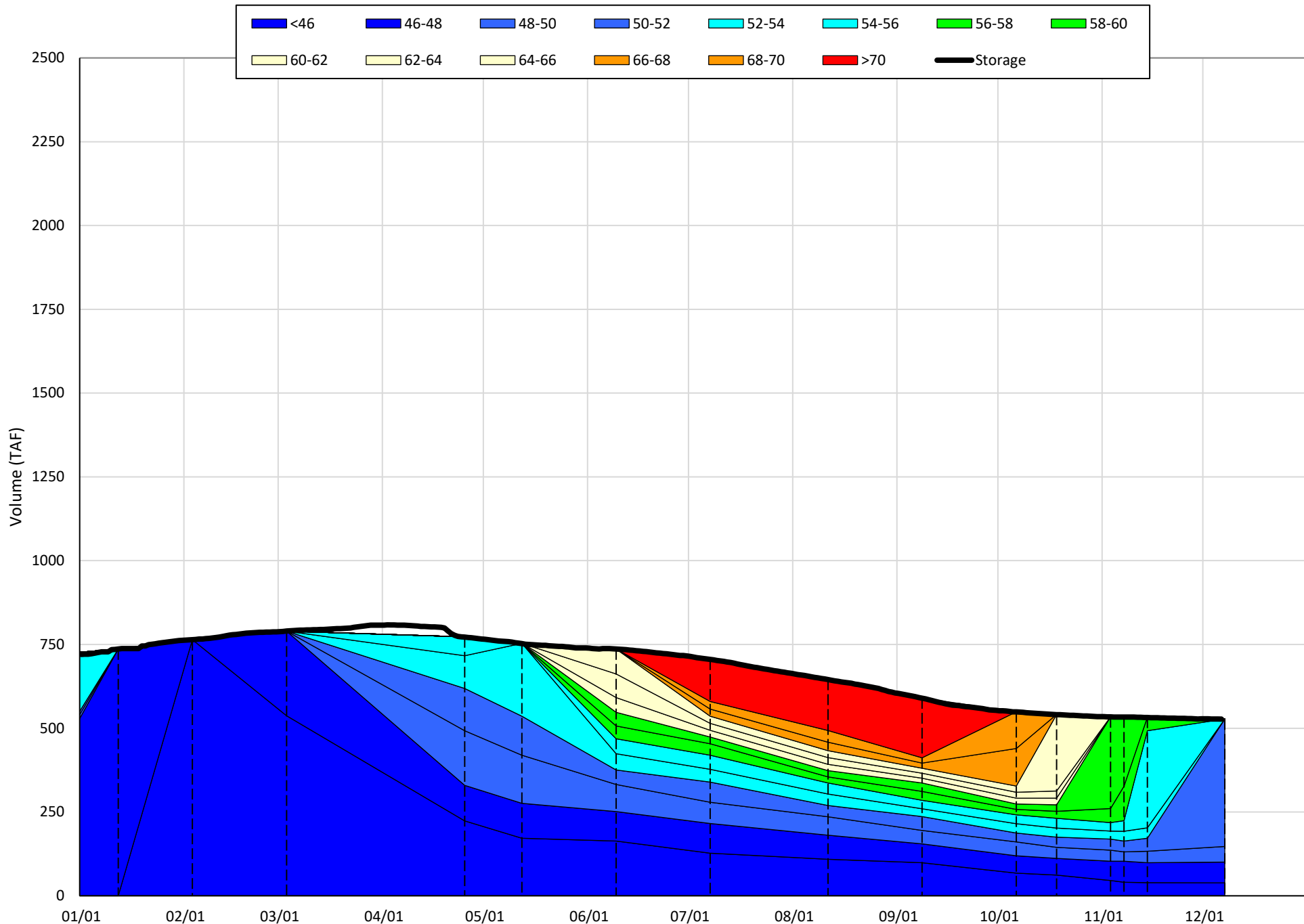
(Historic - Current) / Current

Trinity Lake Isothermobaths & Cold Water Pool Statistics

2022

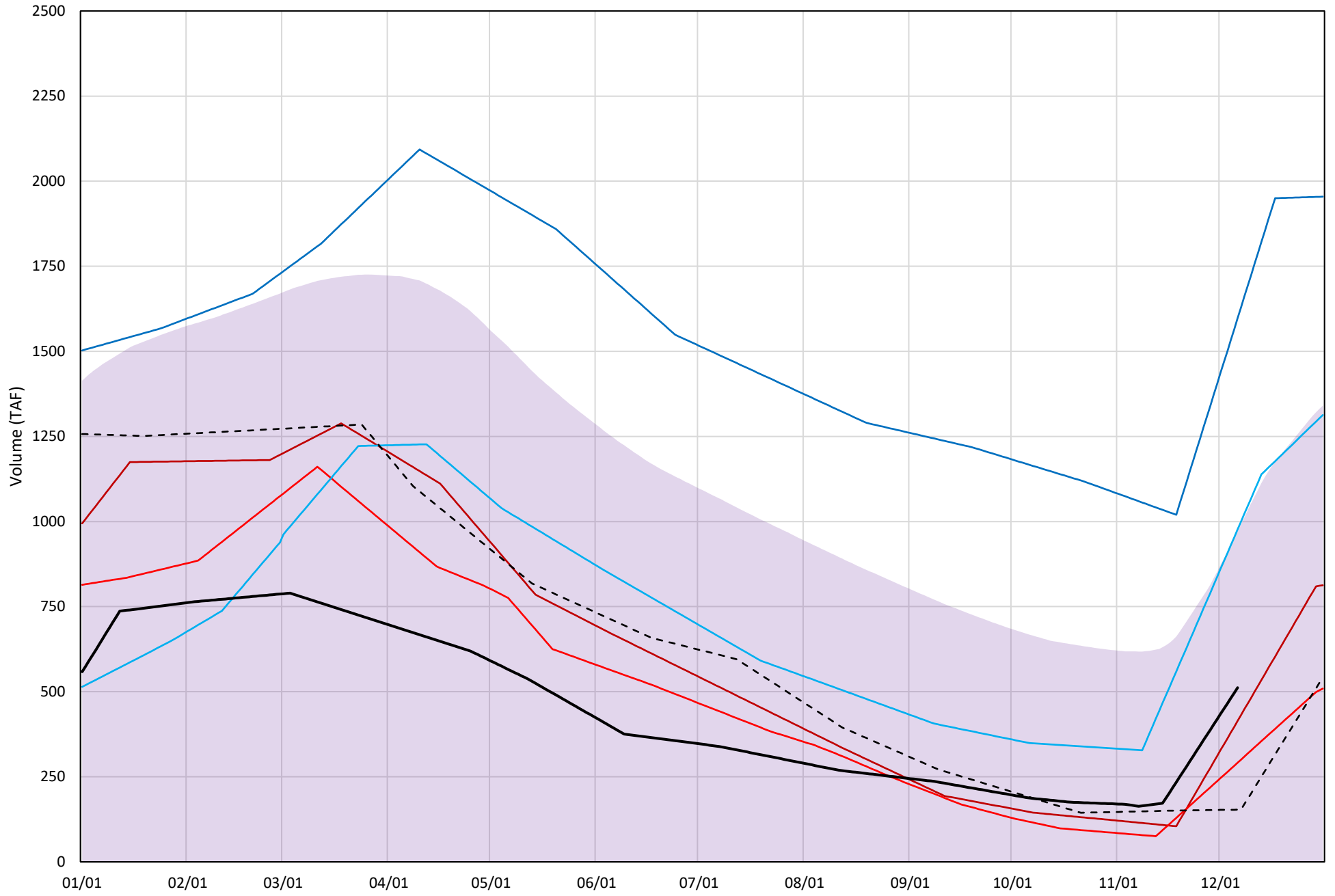
Page	Description
15	- Trinity Lake Isothermobaths Plot
16	- Trinity Lake Cold Water Pool Volume $\leq 52^{\circ}\text{F}$
17	- Trinity Lake Cold Water Pool Volume $\leq 50^{\circ}\text{F}$
18	- Trinity Lake Cold Water Pool Volume $\leq 48^{\circ}\text{F}$
19	- Trinity Lake Cold Water Pool Volume $\leq 52^{\circ}\text{F}$ - Percent Exceedances
20	- Trinity Lake Cold Water Pool Volume $\leq 50^{\circ}\text{F}$ - Percent Exceedances
21	- Trinity Lake Cold Water Pool Volume $\leq 48^{\circ}\text{F}$ - Percent Exceedances
22	- Trinity Lake Cold Water Pool Comparison by Year

Trinity Lake Isothermobaths Plot - 2022



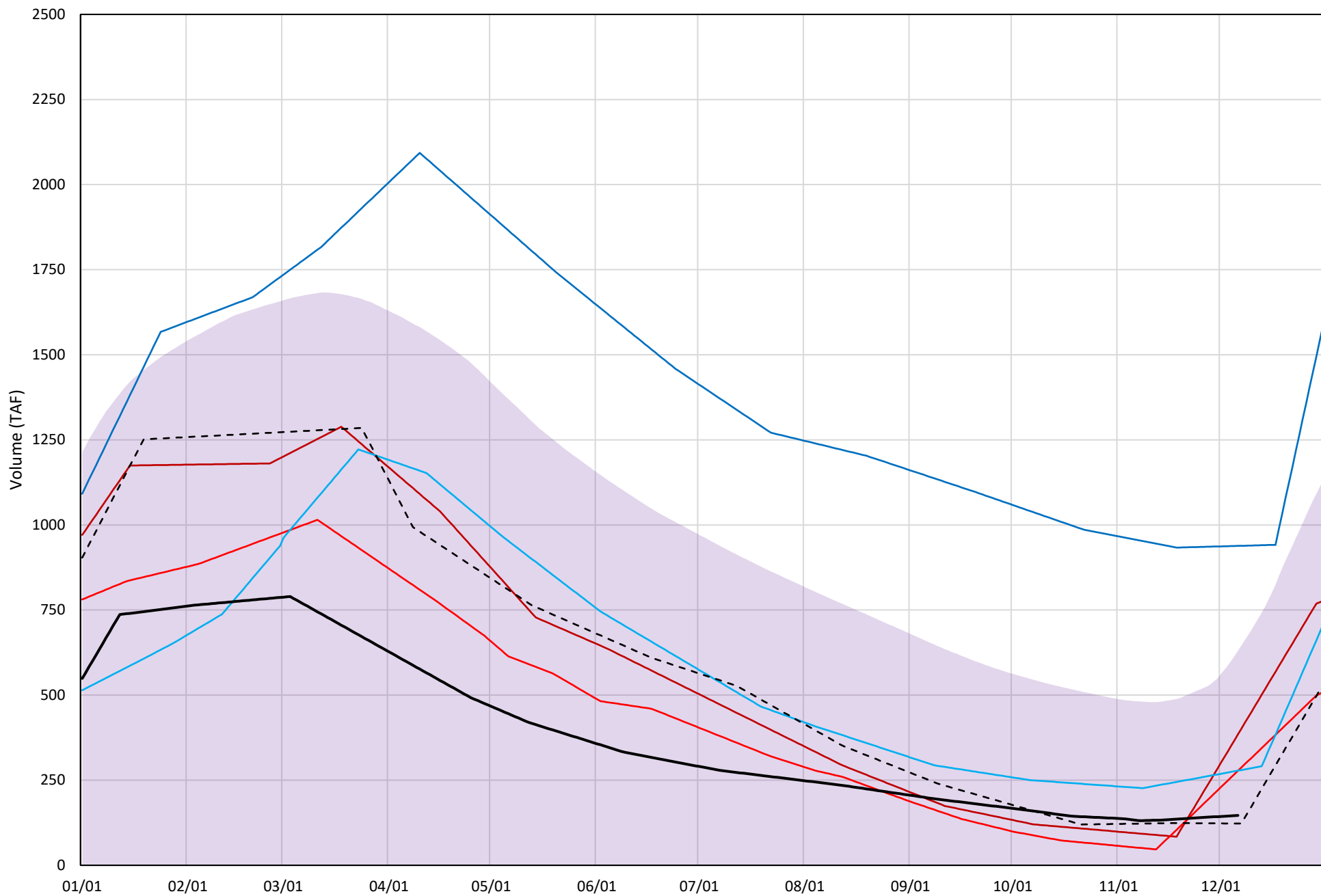
Trinity Lake Cold Water Pool Volume ≤52°F

Avg (2000-2021) 2014 2015 2016 2019 2021 2022



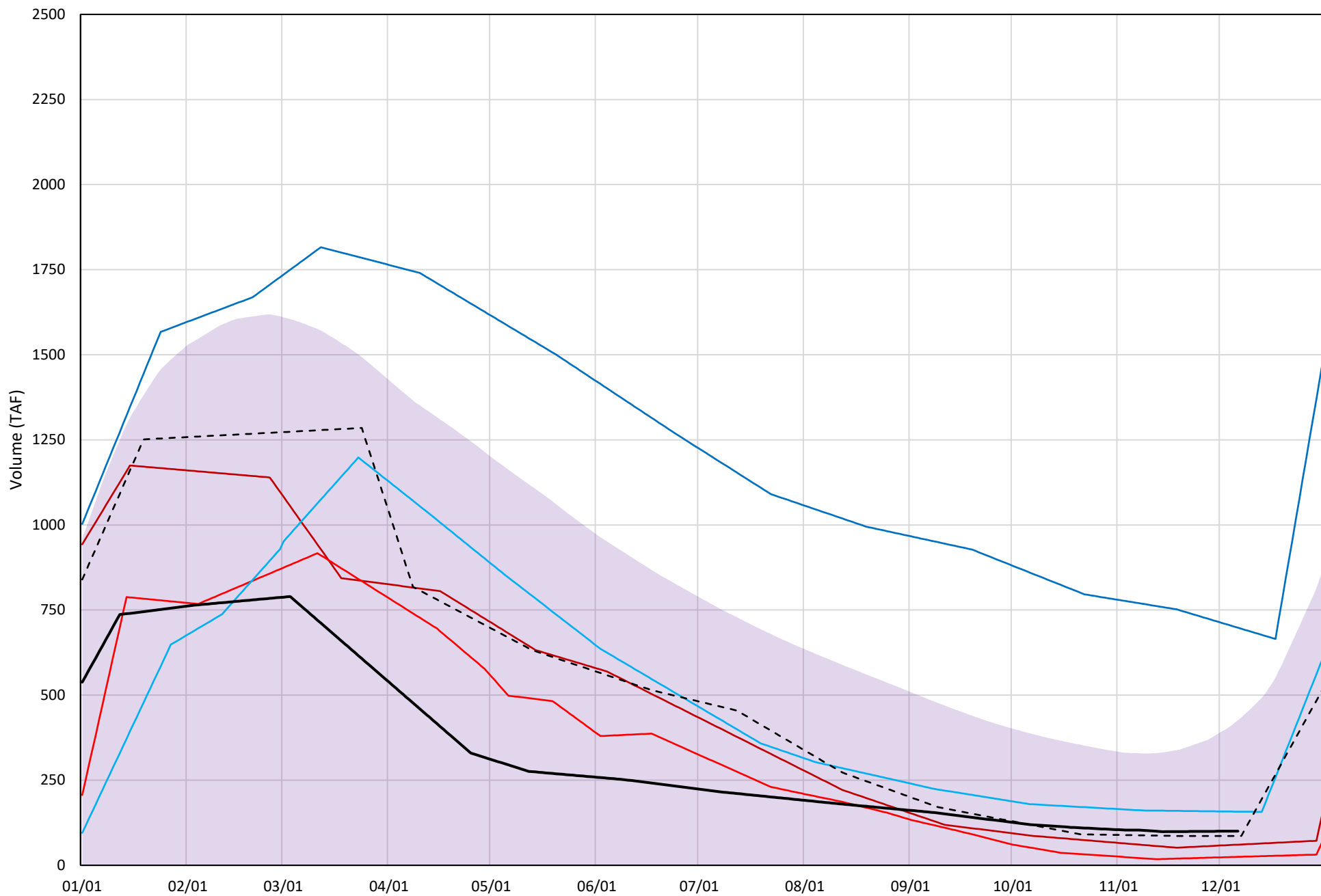
Trinity Lake Cold Water Pool Volume ≤50°F

Avg (2000-2021) 2014 2015 2016 2019 2021 2022

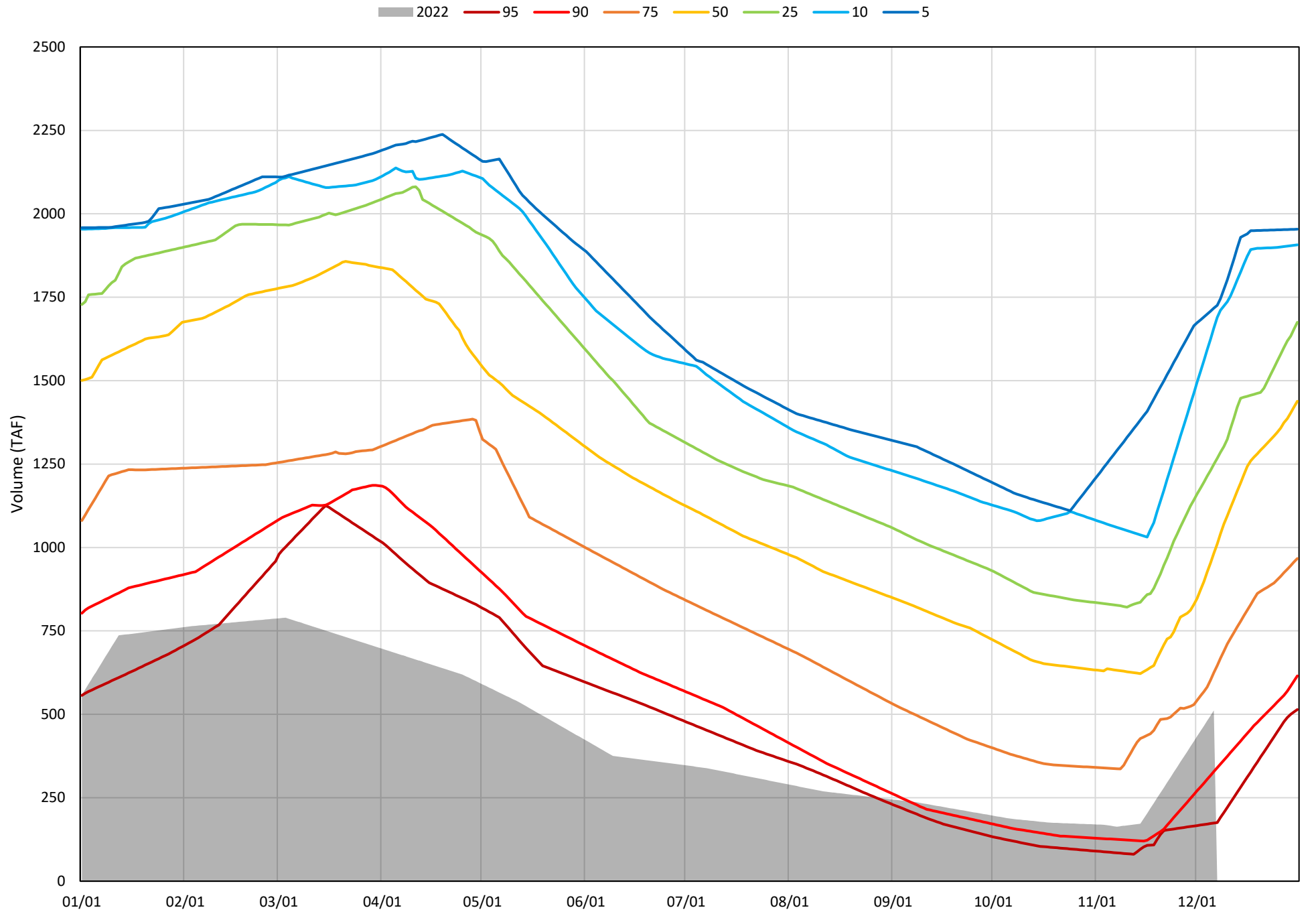


Trinity Lake Cold Water Pool Volume $\leq 48^{\circ}\text{F}$

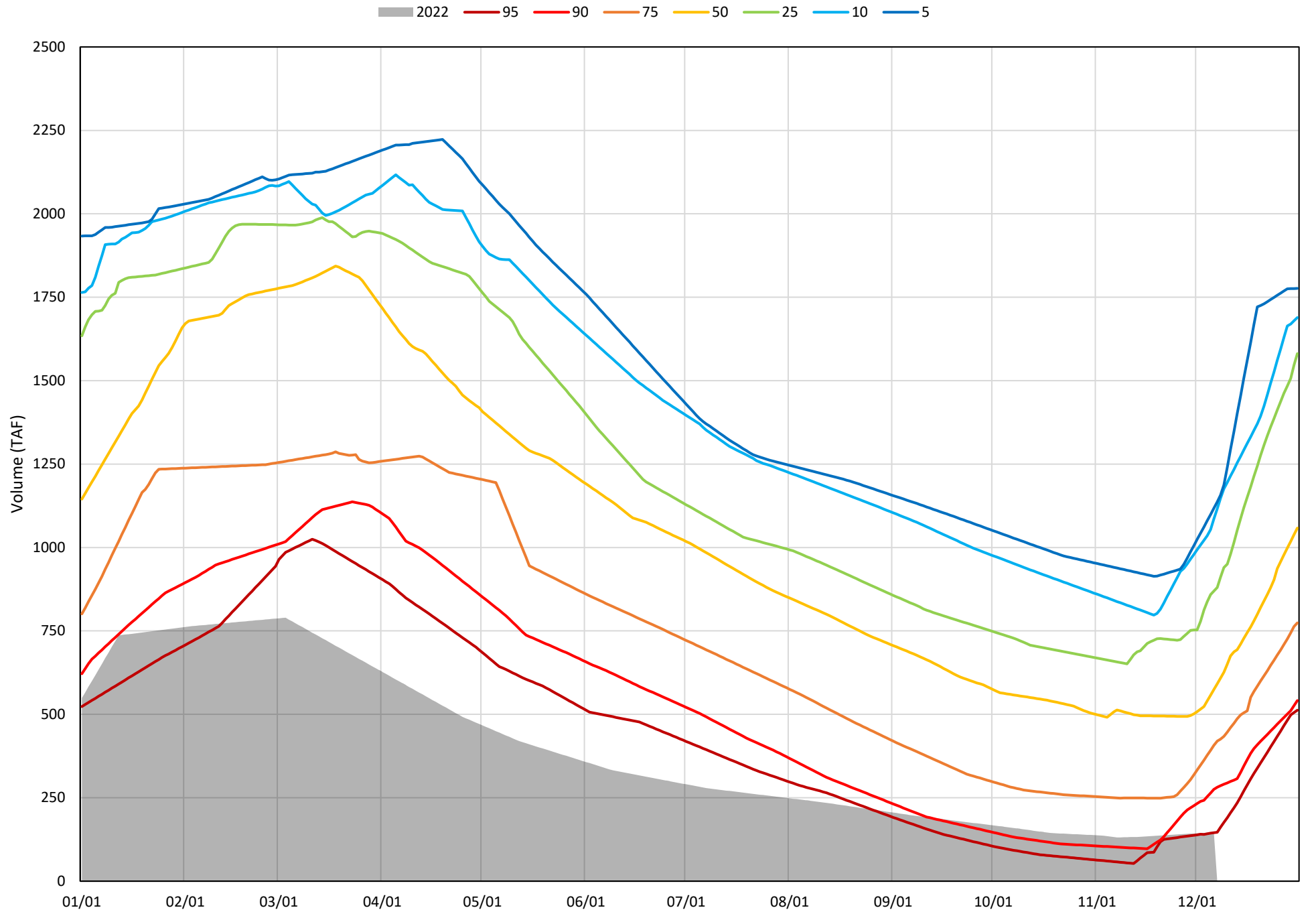
Avg (2000-2021) 2014 2015 2016 2019 2021 2022



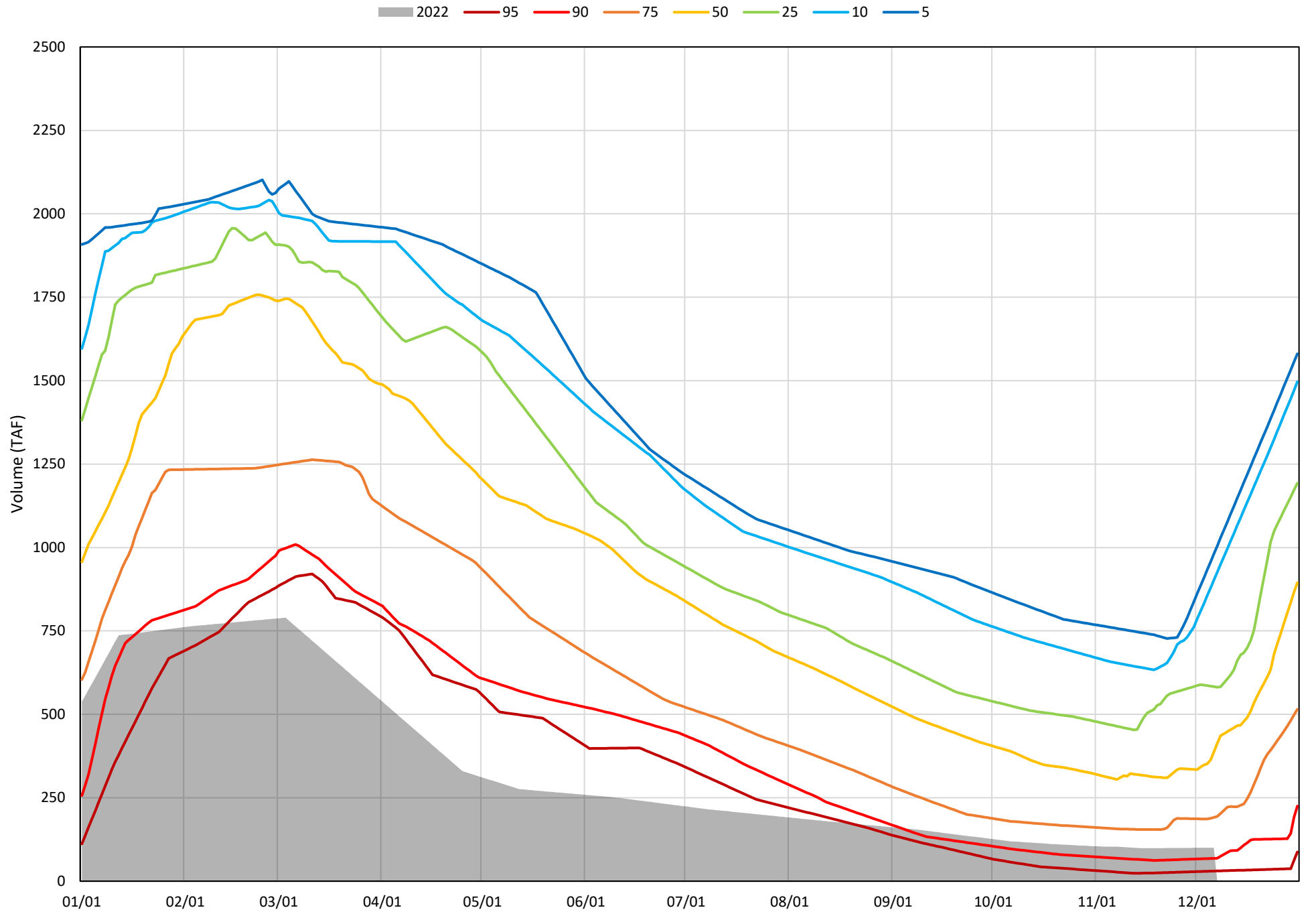
Trinity Lake Cold Water Pool Volume ≤52°F - Percent Exceedances (2000-2021)



Trinity Lake Cold Water Pool Volume ≤50°F - Percent Exceedances (2000-2021)



Trinity Lake Cold Water Pool Volume $\leq 48^{\circ}\text{F}$ - Percent Exceedances (2000-2021)



Trinity Cold Water Pool Comparison by Year (for Specified Date)

Dec-07 2022	Δ TAF				% Δ			
	≤52°	≤50°	≤48°	Abs. Avg.	≤52°	≤50°	≤48°	Abs. Avg.
2000	476	673	167	439	93	458	167	239
2001	127	410	333	290	25	279	332	212
2002	71	368	301	247	14	251	300	188
2003	923	357	136	472	180	243	135	186
2004	654	276	95	342	128	188	94	137
2005	725	971	815	837	142	661	812	538
2006	1211	865	391	822	237	589	389	405
2007	384	699	669	584	75	476	667	406
2008	-44	268	272	195	-9	182	271	154
2009	308	127	79	171	60	87	78	75
2010	690	970	892	851	135	661	888	561
2011	1171	575	374	707	229	392	373	331
2012	508	822	770	700	99	560	767	475
2013	149	445	413	335	29	303	411	248
2014	-98	238	-40	125	-19	162	-40	74
2015	-220	131	-76	142	-43	89	-75	69
2016	464	131	57	218	91	89	57	79
2017	461	649	261	457	90	442	260	264
2018	776	556	444	592	152	378	442	324
2019	1085	792	598	825	212	539	595	449
2020	635	340	236	404	124	232	235	197
2021	-359	-24	-14	132	-70	-16	-14	33
2022	0	0	0	0	0	0	0	0

Historic - Current

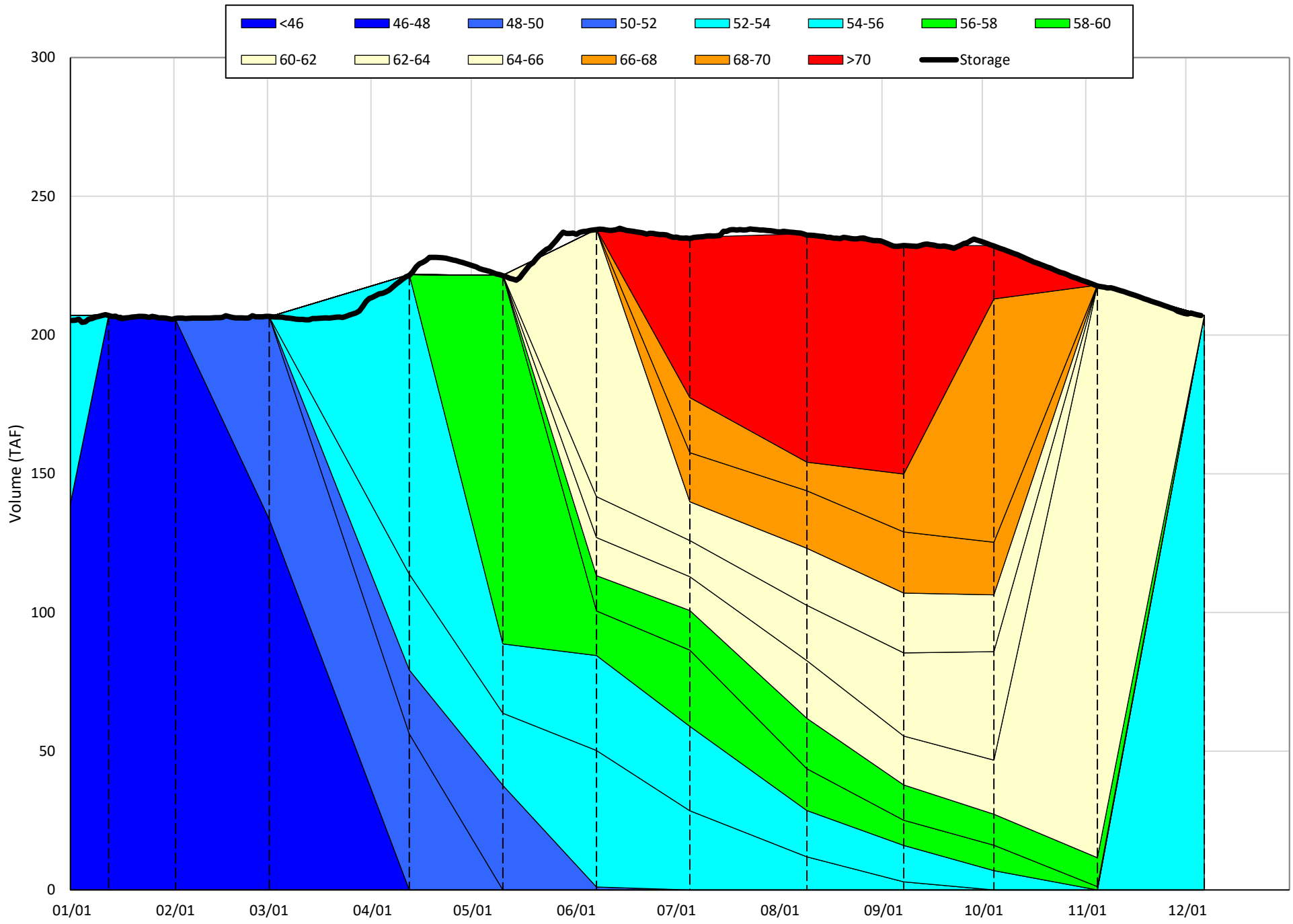
(Historic - Current) / Current

Whiskeytown Lake Isothermobaths & Cold Water Pool Statistics

2022

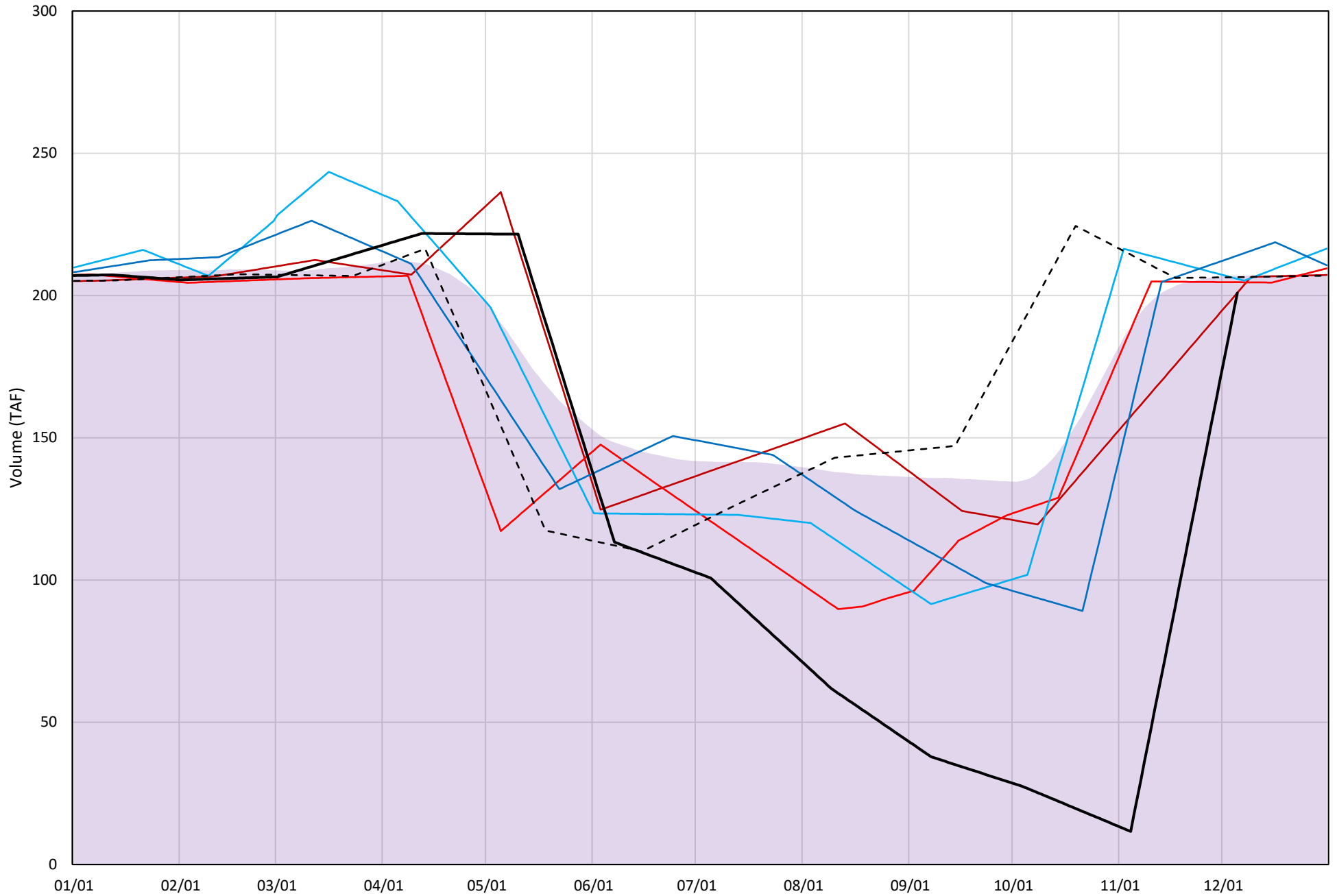
Page	Description
24	- Whiskeytown Lake Isothermobaths Plot
25	- Whiskeytown Lake Cold Water Pool Volume $\leq 60^{\circ}\text{F}$
26	- Whiskeytown Lake Cold Water Pool Volume $\leq 58^{\circ}\text{F}$
27	- Whiskeytown Lake Cold Water Pool Volume $\leq 56^{\circ}\text{F}$
28	- Whiskeytown Lake Cold Water Pool Volume $\leq 60^{\circ}\text{F}$ - Percent Exceedances
29	- Whiskeytown Lake Cold Water Pool Volume $\leq 58^{\circ}\text{F}$ - Percent Exceedances
30	- Whiskeytown Lake Cold Water Pool Volume $\leq 56^{\circ}\text{F}$ - Percent Exceedances
31	- Whiskeytown Lake Cold Water Pool Comparison by Year

Whiskeytown Lake Isothermobaths Plot - 2022



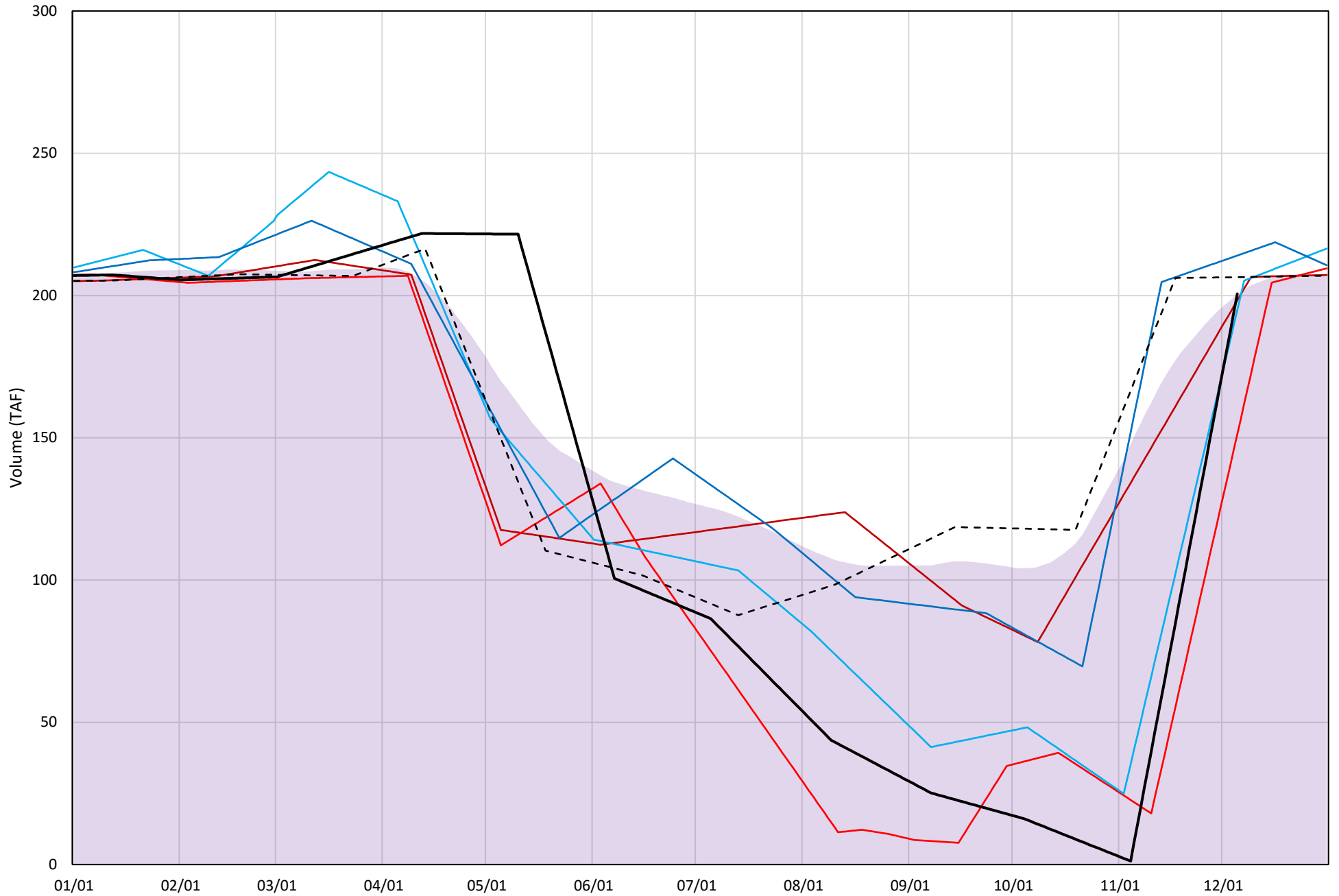
Whiskeytown Lake Cold Water Pool Volume $\leq 60^{\circ}\text{F}$

Avg (2000-2021) 2014 2015 2016 2019 2021 2022



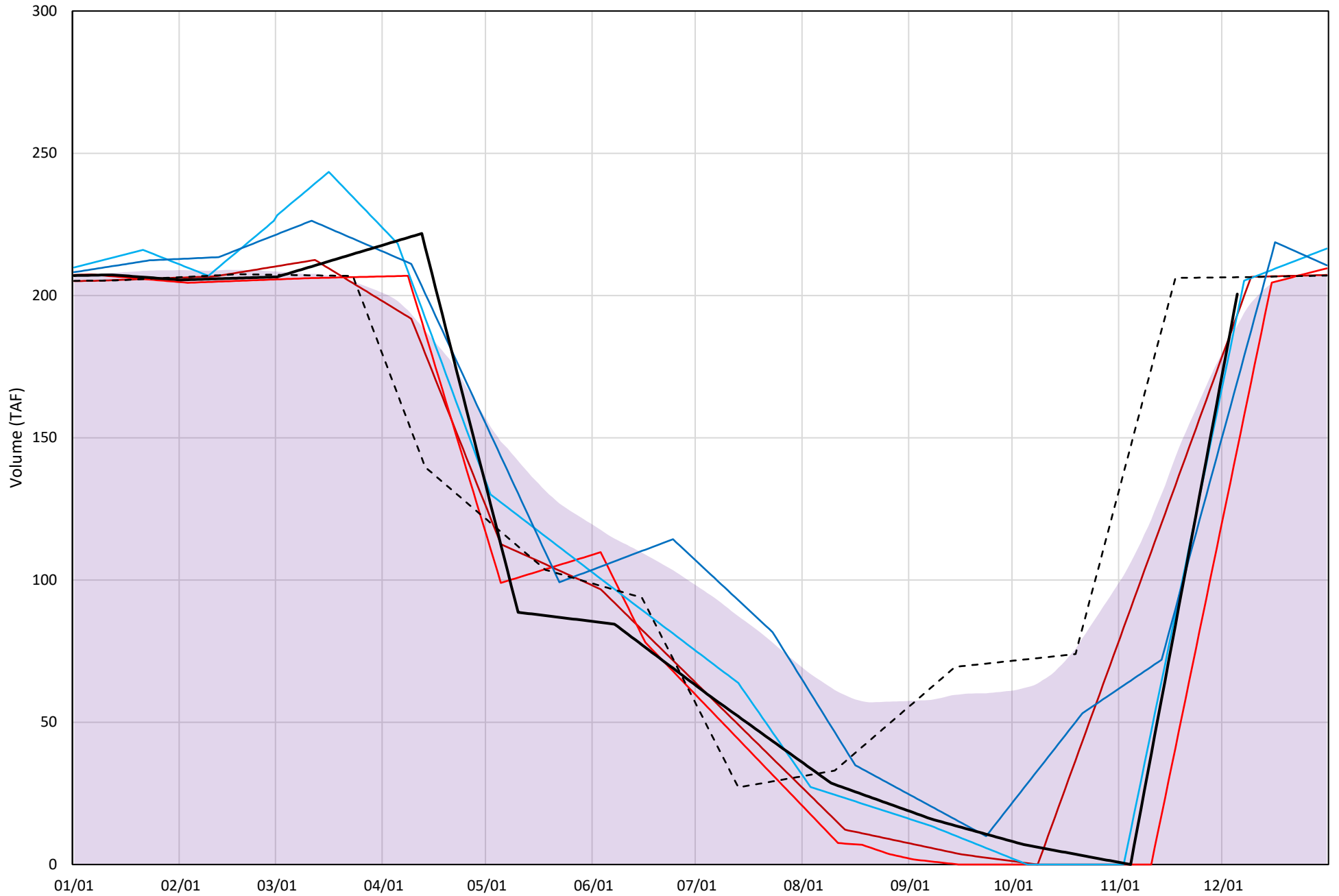
Whiskeytown Lake Cold Water Pool Volume $\leq 58^{\circ}\text{F}$

Avg (2000-2021) 2014 2015 2016 2019 2021 2022

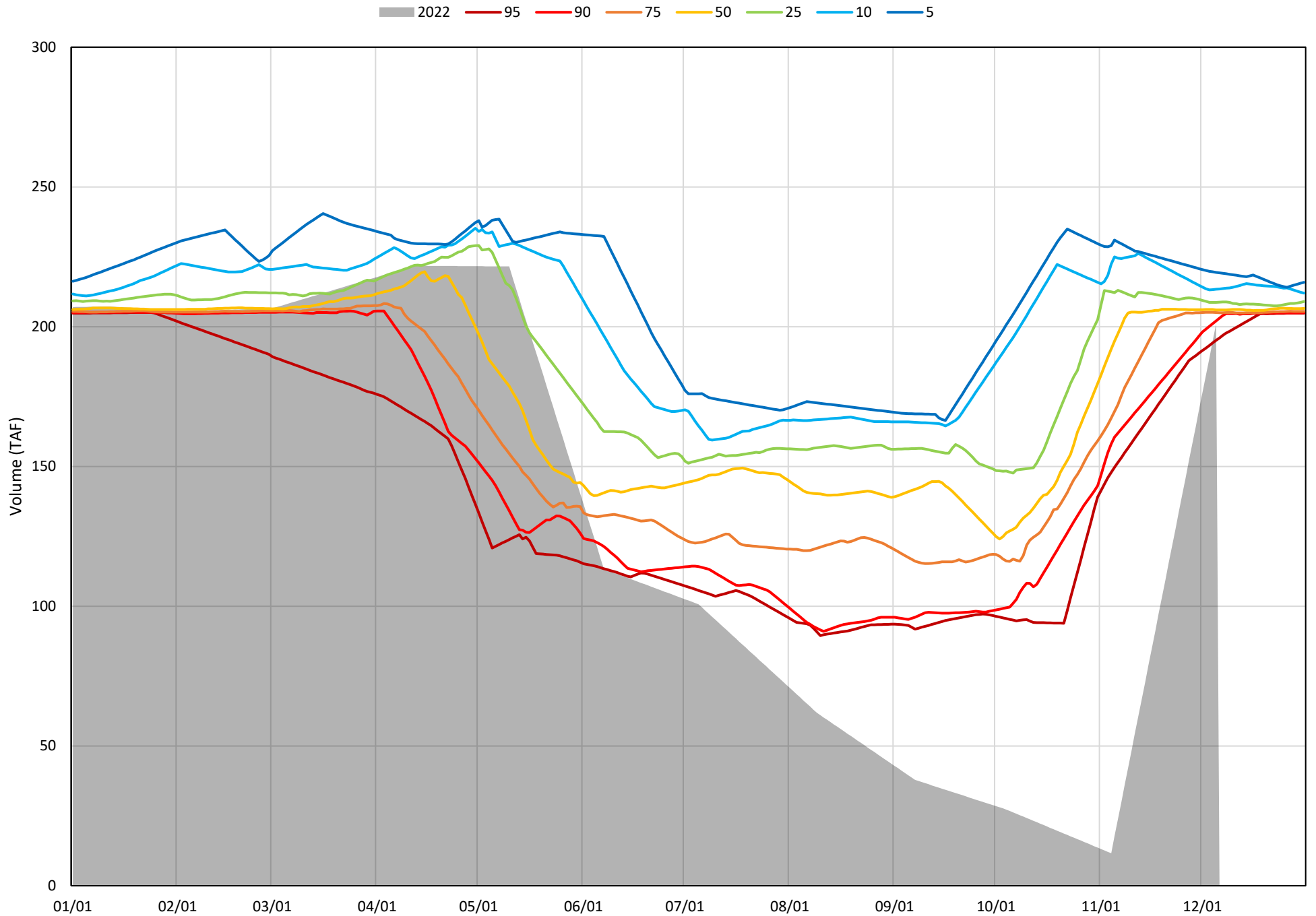


Whiskeytown Lake Cold Water Pool Volume $\leq 56^{\circ}\text{F}$

Avg (2000-2021) 2014 2015 2016 2019 2021 2022

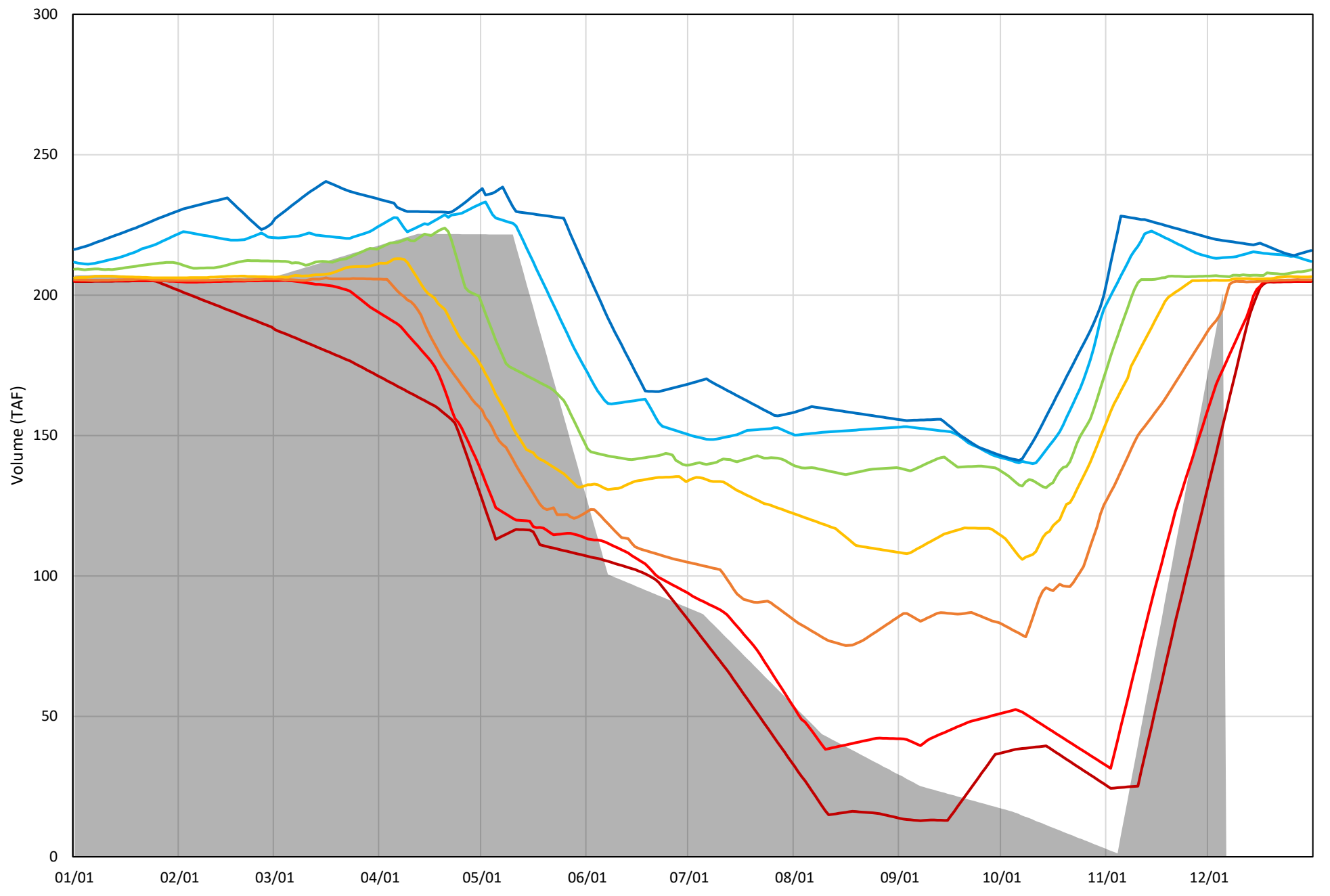


Whiskeytown Lake Cold Water Pool Volume $\leq 60^{\circ}\text{F}$ - Percent Exceedances (2000-2021)



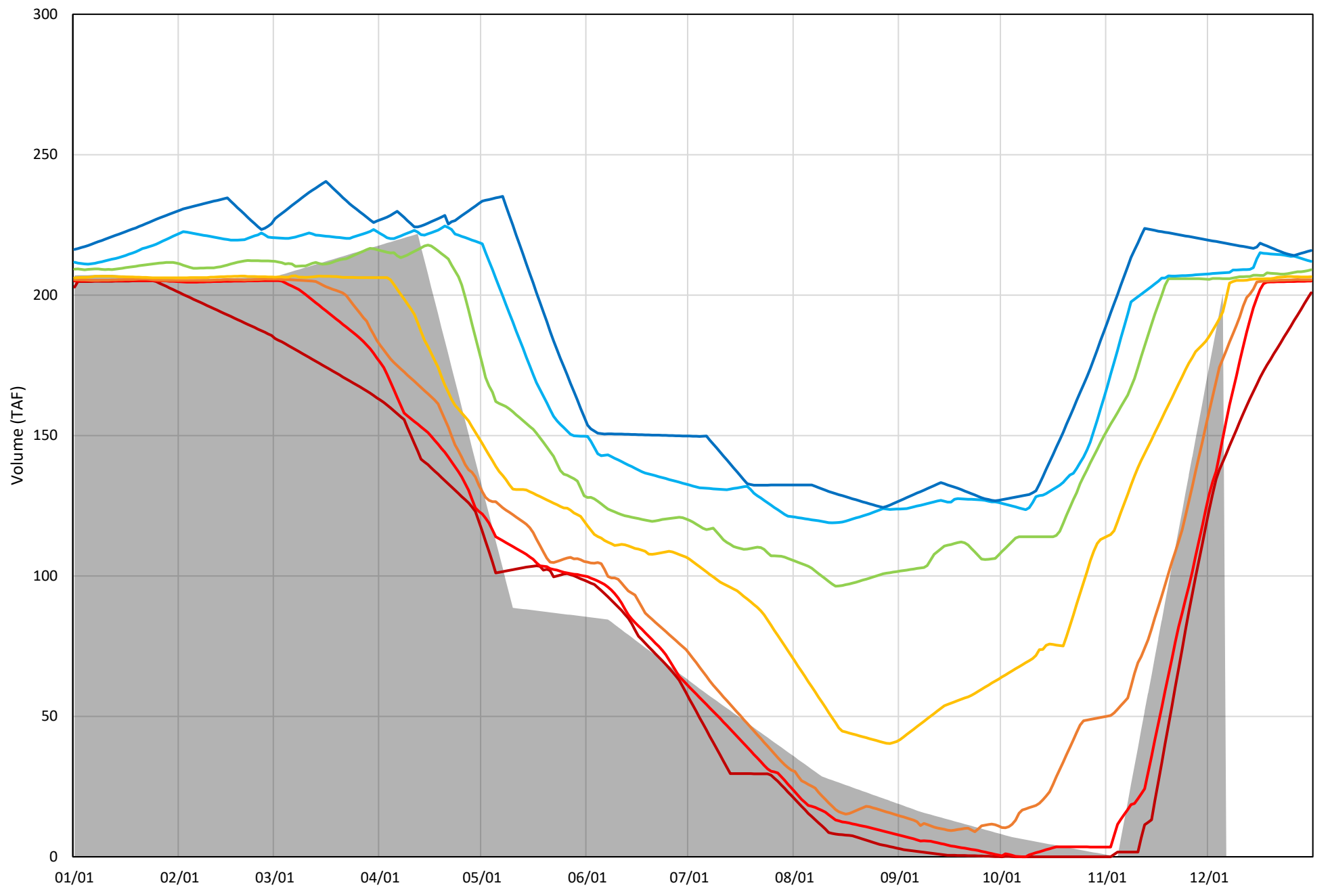
Whiskeytown Lake Cold Water Pool Volume $\leq 58^{\circ}\text{F}$ - Percent Exceedances (2000-2021)

2022 95 90 75 50 25 10 5



Whiskeytown Lake Cold Water Pool Volume $\leq 56^{\circ}\text{F}$ - Percent Exceedances (2000-2021)

2022 95 90 75 50 25 10 5



Whiskeytown Cold Water Pool Comparison by Year (for Specified Date)

Dec-06 2022	Δ TAF				% Δ			
	≤60°	≤58°	≤56°	Abs. Avg.	≤60°	≤58°	≤56°	Abs. Avg.
2000	-6.9	-6.5	-6.5	6.6	-3.4	-3.3	-3.2	3.3
2001	7.7	8.0	8.0	7.9	3.8	4.0	4.0	3.9
2002	4.4	4.7	4.8	4.6	2.2	2.4	2.4	2.3
2003	10.6	10.9	-20.8	14.1	5.3	5.5	-10.4	7.0
2004	19.5	19.8	19.9	19.7	9.7	9.9	9.9	9.8
2005	5.1	5.4	-17.2	9.2	2.5	2.7	-8.6	4.6
2006	4.1	4.5	4.5	4.4	2.1	2.2	2.2	2.2
2007	4.3	4.6	-60.9	23.2	2.1	2.3	-30.4	11.6
2008	5.3	5.6	5.7	5.5	2.6	2.8	2.8	2.8
2009	5.2	5.5	5.5	5.4	2.6	2.7	2.8	2.7
2010	8.3	-5.2	-6.5	6.7	4.1	-2.6	-3.3	3.3
2011	4.9	5.2	5.3	5.2	2.5	2.6	2.6	2.6
2012	6.5	-33.0	-39.8	26.5	3.3	-16.5	-19.9	13.2
2013	10.9	-13.1	-15.3	13.1	5.4	-6.5	-7.6	6.5
2014	0.0	-2.3	-7.3	3.2	0.0	-1.1	-3.6	1.6
2015	3.8	-49.3	-54.4	35.8	1.9	-24.6	-27.1	17.9
2016	5.0	-5.7	-7.1	5.9	2.5	-2.8	-3.5	2.9
2017	3.8	4.1	4.2	4.0	1.9	2.1	2.1	2.0
2018	6.6	7.0	-44.4	19.3	3.3	3.5	-22.1	9.6
2019	13.2	13.5	-30.7	19.1	6.5	6.7	-15.3	9.5
2020	4.2	4.6	4.6	4.5	2.1	2.3	2.3	2.2
2021	5.5	5.9	5.9	5.8	2.8	2.9	2.9	2.9
2022	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

} Historic - Current

} (Historic - Current) / Current