Collaborative Process
January 16, 2003
Meeting Summary

Prepared for

El Dorado Irrigation District
Placerville, CA 95667

By

1851 Heritage Lane #130
Sacramento, California 95815

EID Proposals A-G
Collaborative Meeting 1/16/03

At the last Collaborative Meeting on January 16, 2003, EID staff developed a compromise proposal. The proposal includes an Operating plan for each year. The operating plan is to include: characterization of the water year type; actual to date and forecasted end-of-month lake levels, mean lake level guidelines, and forecasted reservoir releases, El Dorado canal diversions, and distributions of project water for meeting minimum flow releases, consumptive water supply, and power generation.

Silver Lake Operations Proposal

- EID proposes to supplement that annual Operating Plan as follows for Silver Lake: the Operating Plan will describe the scope and timing of planned project maintenance, repair, or improvement projects that will cause the Kyburz diversion, El Dorado canal, Forebay, powerhouse penstock, and/or Akin Powerhouse to be inoperable.

- If these projects as planned span the entire month of October or longer, then EID's Operating Plan will show a steady drawdown of Silver Lake levels from the Labor Day level so as to meet the DSOD November 1 lake level requirement. EID's objective for the drawdown would be not to drop the lake level to the 12.0 staff gage stage until two days before the planned commencement date of the projects.

- If these projects as planned span less than the entire month of October, then EID's Operating Plan will show a steady drawdown of Silver Lake levels from the Labor Day level to two days before the planned commencement date of the projects, curtailed to the degree that water whose release is deferred can reasonably be expected to be used productively by EID in the remainder of October while still reaching the 12.0 staff gage stage on October 31. During the downtime associated with the projects, discretionary releases for Silver lake would cease. The drawdown would resume at the projects' conclusion. Nothing in this proposal will preclude EID from honoring the Silver Lake Agreement or making such Silver Lake releases as are necessary to meet FERC-mandated minimum flow requirements for Project 184.

Caples Lake Operations Proposal

- A set of minimum pools for Caples Lake were analyzed. The two minimum pools used were 5,000 and 8,500 AF

- Soft targets were also analyzed. The targets used were 8,500 AF and 10,000 AF. EID would be required to attempt to meet this target pool, to the extent it is compatible with other license conditions and all project purposes.

- Flexibility would be built into the minimum pool requirement, so that if snow survey data on February 1, March 1 and April 1 show an expectation of runoff above prescribed thresholds, EID could draw Caples Lake down below the minimum pool be specific amounts keyed to the runoff expectations, so that the likelihood of filling Caples Lake in that year would not be affected.

From the EID staff proposal, we have developed 8 studies to analyze the various components. This proposal can be split into two groups: (1) Proposals A – D (15 day canal maintenance period), and (2) Proposals E –H (31 day canal maintenance period).

The reason for the two groups of proposals is to capture the range of possibilities under two maintenance scenarios. EID anticipates that for the next ten years, the canal maintenance period will be closer to 31 days in October than 15 days. The longer period is necessary in the short term to conduct major repairs needed to improve the condition of the canal and associated facilities. Following the ten year period of major repairs and

improvements of the canal, EID anticipates a 15 day annual canal maintenance period, occurring October 1 – 15. At times, the longer maintenance period may be necessary but not on an annual basis.

Each proposal group contains studies including 4E flow requirements, D1635 storage targets, and Alpine County Caples Lake storage targets. There are variations to the End of February storage targets. The proposals use either a 10,000 AF or 8,500 AF end of February Caples Lake storage target and hard floors of 8,500 AF and 5,000 AF, respectively. It is the hard floors that can cause problems in years following a dry year like 1988 and 1994. To avoid falling below the hard floors, we have developed rules to prevent releases for generation when Caples Lake falls below 11,000 AF and have occasionally drawn more on Silver Lake in the winter months when Caples Lake storage approaches the hard floors.

The following is a description of each proposal.

44-EID-Proposal-A 4E Conditions D1635 storage targets except at Caples Lake. Caples Lake storage targets are those proposed by Alpine County. Operation of Silver Lake as proposed in EID's staff compromise proposal with canal maintenance of 15 days ending October 15. Caples Lake end of February storage target is 8,500 AF with a hard floor of 5,000 AF.

45-EID-Proposal-B 4E Conditions D1635 storage targets except at Caples Lake. Caples Lake storage targets are those proposed by Alpine County. Operation of Silver Lake as proposed in EID's staff compromise proposal with canal maintenance of 15 days ending October 15. Caples Lake end of February storage target is 10,000 AF with a hard floor of 8,500 AF.

46-EID-Proposal-C 4E Conditions D1635 Storage targets. Operation of Silver Lake as proposed in EID's staff compromise proposal with canal maintenance of 15 days ending October 15. End of February Caples storage target of 8,500 AF and a hard floor of 5,000 AF.

47-EID-Proposal-D 4E Conditions D1635 Storage targets. Operation of Silver Lake as proposed in EID's staff compromise proposal with canal maintenance of 15 days ending October 15. End of February Caples storage target of 10,000 AF and a hard floor of 8,500 AF.

48-EID-Proposal-E 4E Conditions D1635 storage targets except at Caples Lake. Caples Lake storage targets are those proposed by Alpine County. Silver Lake Agreement through Labor day with steady Silver Lake draw down through September 30. 31 day Canal maintenance period ending October 31. End of February Caples storage target of 8,500 AF and a hard floor of 5,000 AF.

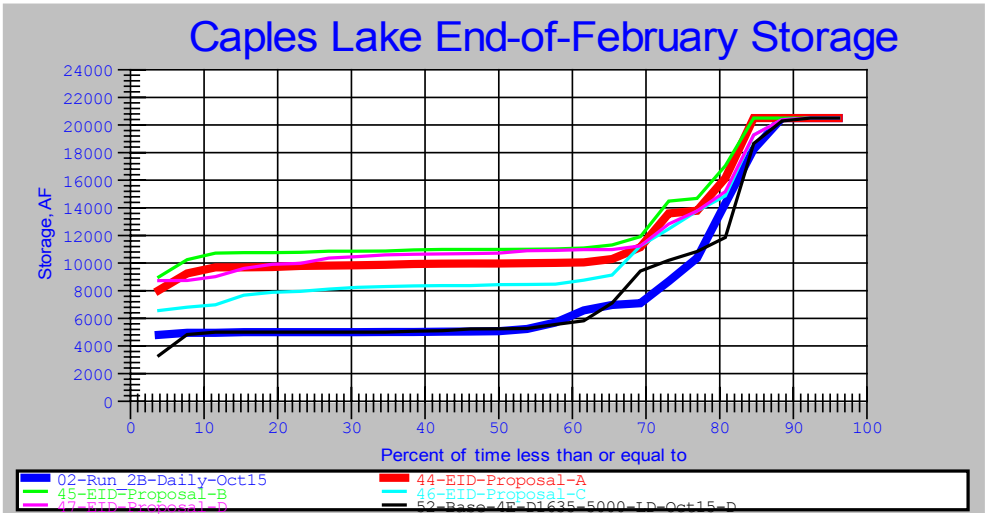
49-EID-Proposal-F 4E Conditions D1635 storage targets except at Caples Lake. Caples Lake storage targets are those proposed by Alpine County. Silver Lake Agreement through Labor Day with steady draw down September 30. 31 Canal maintenance ending October 31. Caples Lake end of February storage target is 10,000 AF with a hard floor of 8,500 AF.

50-EID-Proposal-G 4E Conditions D1635 Storage targets Silver Lake Agreement through Labor day with steady Silver Lake draw down through September 30. 31 day Canal maintenance period ending October 31. End of February Caples storage target of 8,500 AF and a hard floor of 5,000 AF.

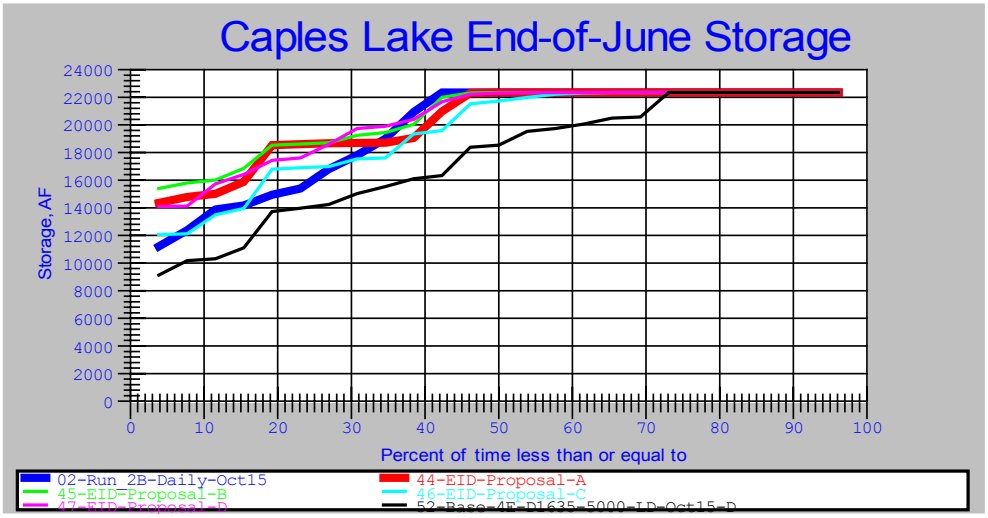
51-EID-Proposal-H 4E Conditions D1635 Storage targets Silver Lake Agreement through Labor day with steady Silver Lake draw down through September 30. 31 day Canal maintenance period ending October 31. End of February Caples storage target of 10,000 AF and a hard floor of 8,500 AF.

Proposals A – D (15 Day Canal Maintenance Period)

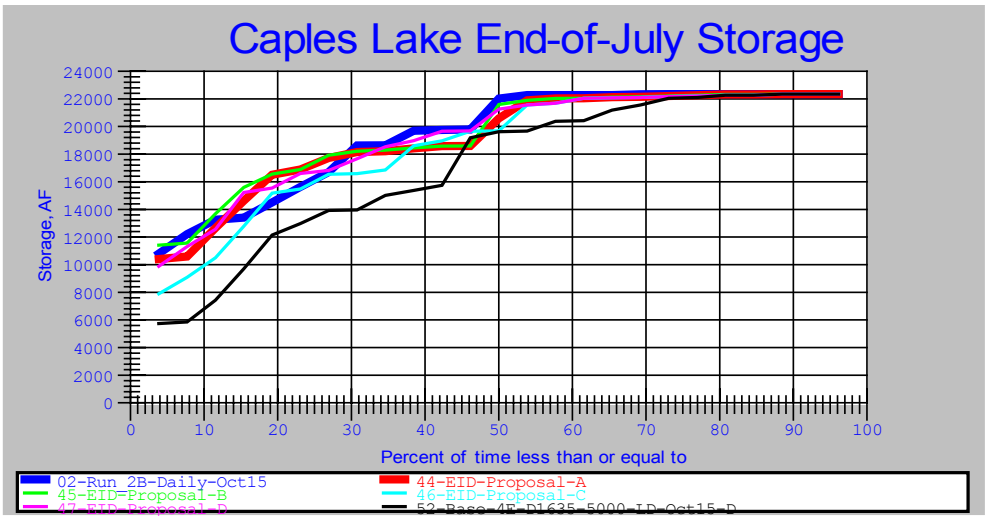
Most of the differences in the proposals manifest themselves as a change in storage at Caples. There are some minor changes in Silver Lake storage, but only in dry years. We have added Run 02 and Run 52 for comparison purposes. Run 02 is Run 2B daily with a 15 day canal maintenance period which occurs from October 1 through October 15 and represents the EID operating policy as it existed before the collaborative process. Run 52 contains modified 4E conditions with D-1635 storage targets. The modifications consist of a 5000 acre foot end-of-February storage target with no hard target at Caples Lake. Run 52 also has a 15 day canal maintenance period from October 1 through October 15. The purpose of Run 52 is to quantify the impacts to Project 184 due to the Caples Lake storage targets.



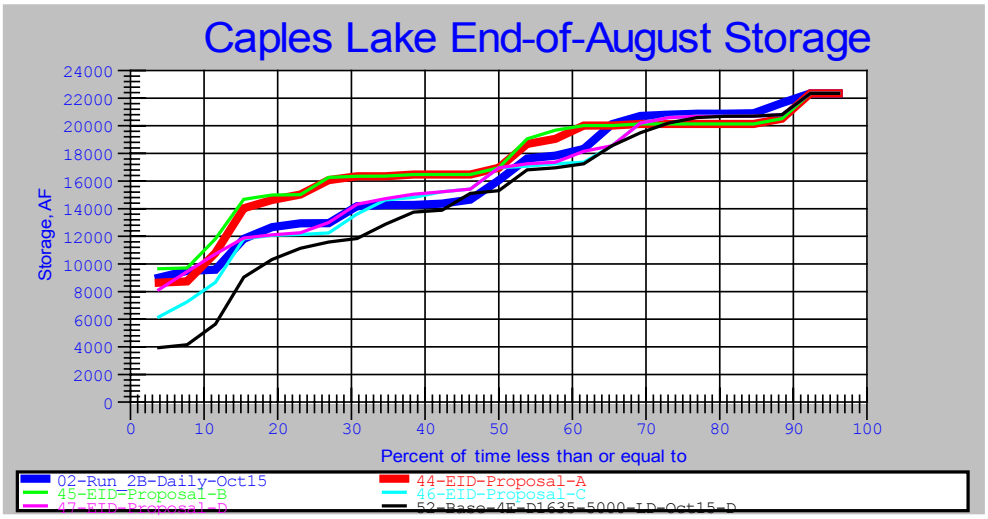
Proposals A and B use the Alpine County Caples Lake storage targets which typically result in higher Caples Lake storage at the end of February. Proposals C and D use the 5 year average D1635 storage values for the storage targets at Caples Lake. Minimum storage floor for Proposals A and C is 5,000 AF. Minimum storage floor for Proposals B and D is 8,500 AF.



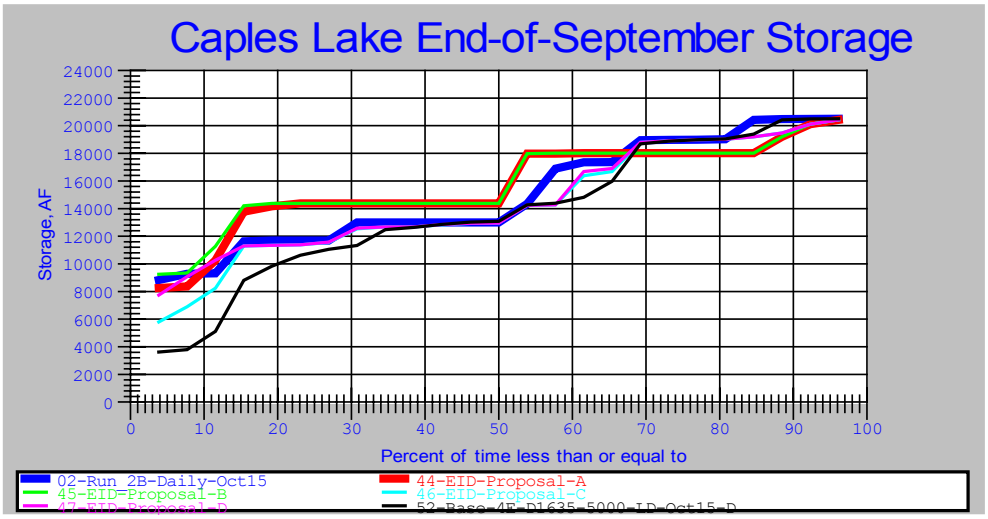
June is typically the time of year when Caples Lake is at it's fullest point. Proposal B fills Caples Lake most often at about 58% of the time.



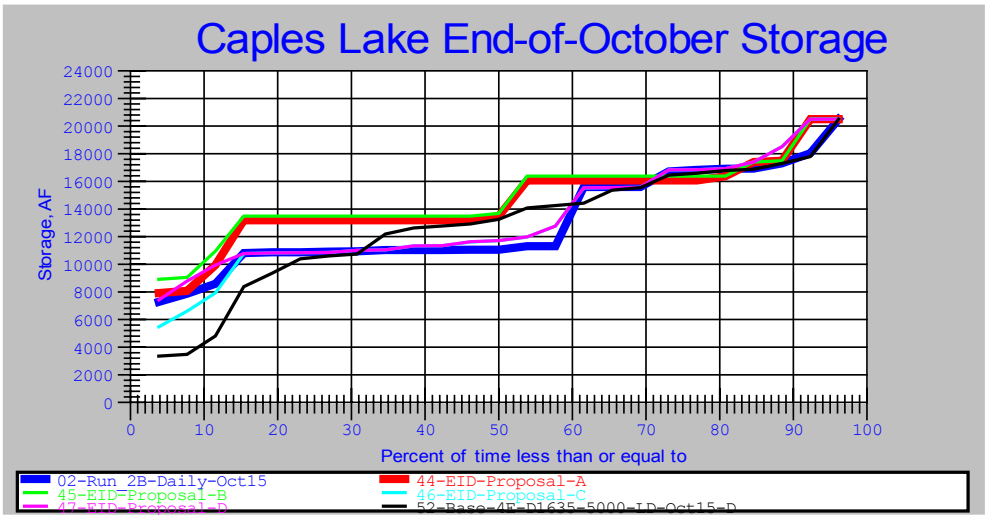
Differences in Caples storage in July ranges from 0 AF in wet years to about 5,500 AF in dry years.



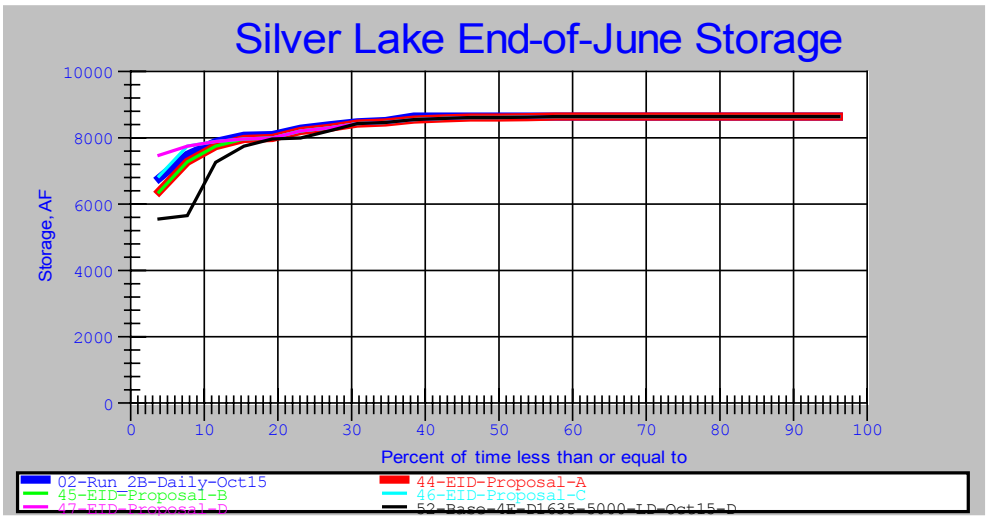
The plot above shows the impacts of the D1635 storage targets versus the Alpine County storage targets. Proposals A and B with the Alpine County storage targets clearly result in higher storage levels in about 70% of the years.



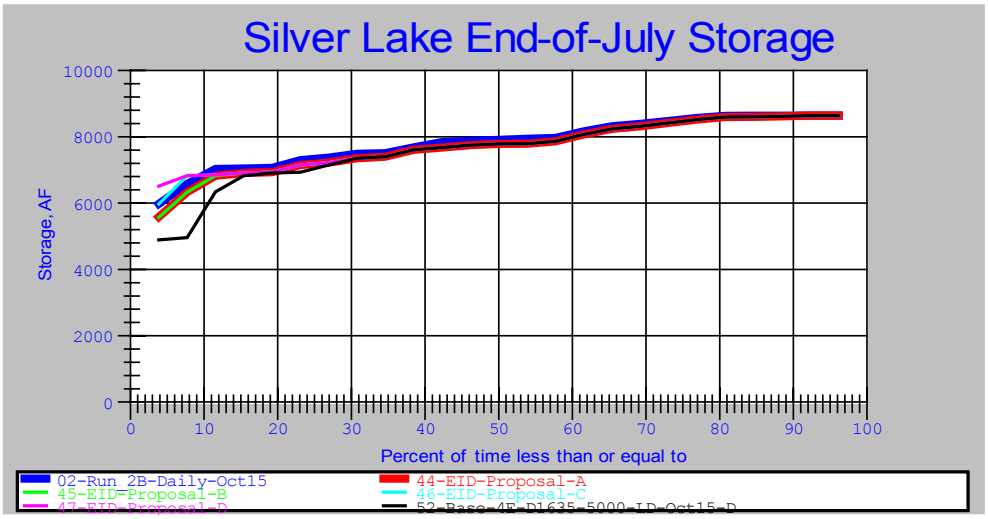
As in August, the different storage targets cause a change in the operation of Caples Lake. In the wettest years, the D1635 storage targets result in higher Caples Lake storage 30% of the time.



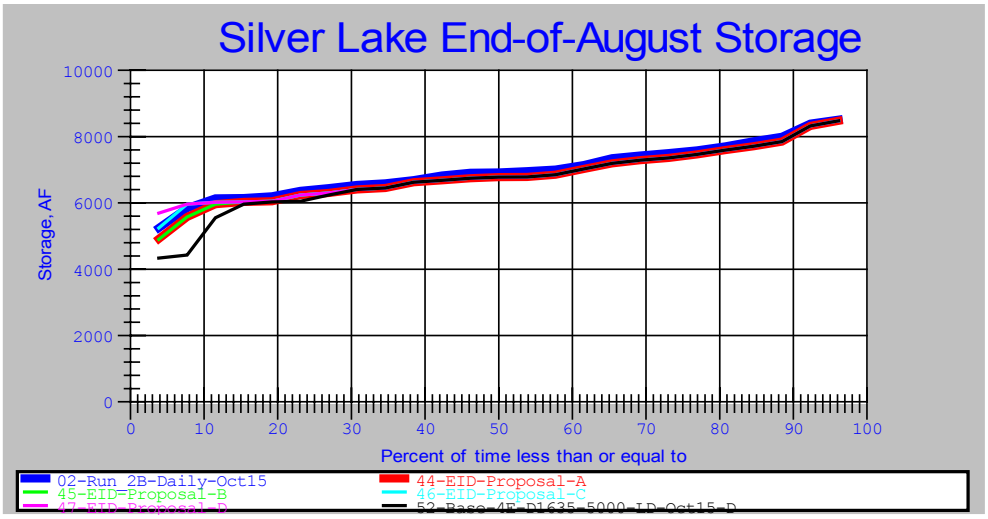
As in September, the October D1635 average storage values are generally lower than Alpine County's targets and the operation results in lower End of October storage for Proposals C and D.



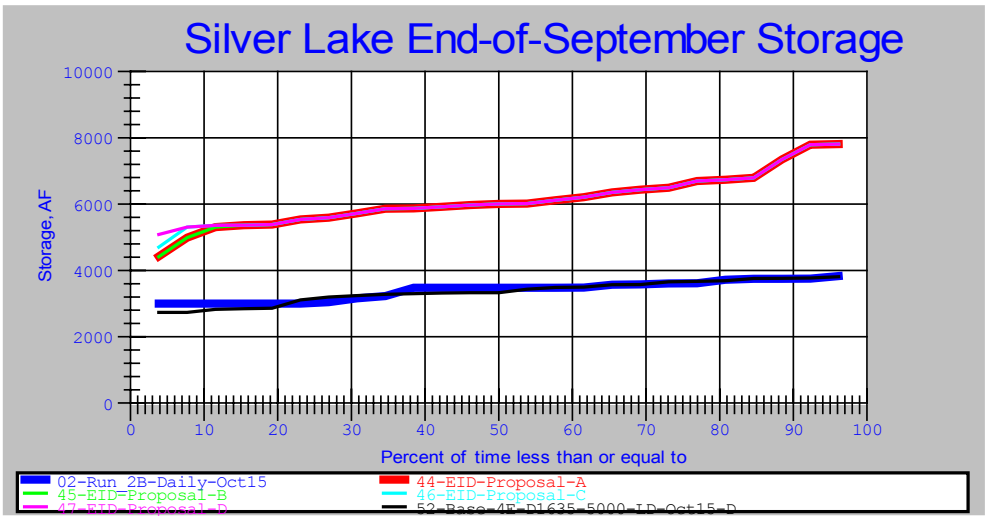
In general, the operation of Silver lake changes very little except in the very driest years. Because the D1635 Caples Lake storage targets are lower than the Alpine County storage targets in the dry years, slightly more water can be saved a Silver Lake.



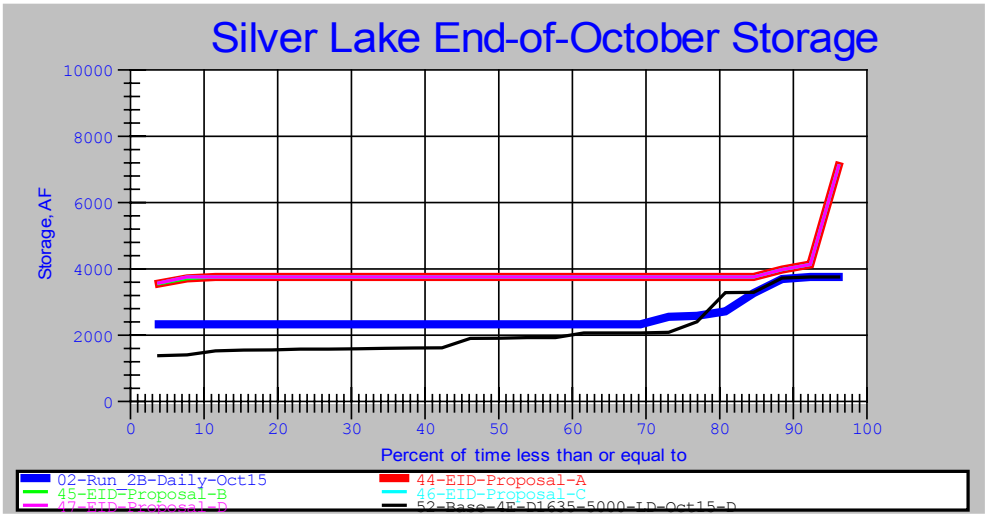
The additional water is stored through the summer because of the Silver Lake Agreement. No discretionary releases are made until after October 15.



The end of August storage chart shows that the storage is falling due to decreasing inflows, releases to meet minimum flow requirements, leakage, and evaporation.



As in August, the end of September Silver Lake storage graph shows that the Silver Lake storage is declining but that the additional storage due to the Caples storage targets still is available in the driest years.



Silver Lake storage at the end of October should be near the DSOD level of 3,756 AF. In most cases the level is at or below 3,756 AF. However, in a few years the basin experienced some late October storms, which pushed the lake level up.

Silver Lake Stage Anaylsis

The following table contains the Silver Lake stage information for Proposals A – D. The table provides stages for important dates from September 1 through October 31. The row beginning with 20% in the "Freq" column gives values in which the stage for the given date will be less than or equal to that value 20% of the time. Conversely, we would expect the stage to be higher than or equal to that value 80% of the time. The same concepts apply to the values in the 50% row and the 80% row.

EID Proposal A- Silver Lake agreement extended through October 15								
Freq	1-Sep	15-Sep	30-Sep	7-Oct	15-Oct	21-Oct	25-Oct	31-Oct
20%	17.4	16.7	15.8	15.5	15.2	14.1	13.2	12
50%	18.8	18	17.2	16.8	16.5	14.9	13.8	12
80%	20.6	19.7	18.8	18.4	18.1	15.9	14.4	12

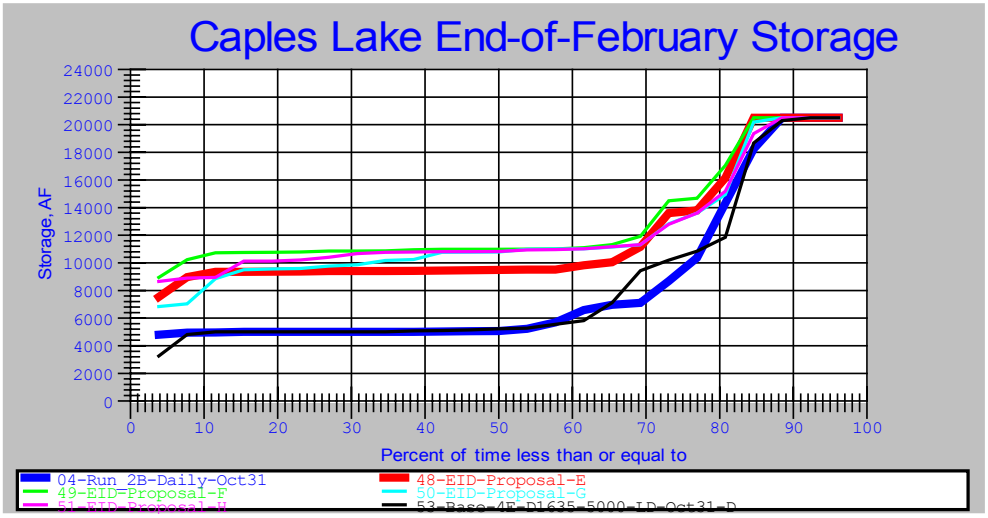
EID Proposal B- Silver Lake agreement extended through October 15								
Freq	1-Sep	15-Sep	30-Sep	7-Oct	15-Oct	21-Oct	25-Oct	31-Oct
20%	17.4	16.7	16	15.5	15.2	14.1	13.2	12
50%	18.8	18	17.2	16.8	16.5	14.9	13.8	12
80%	20.6	19.7	18.8	18.4	18.1	15.9	14.4	12

EID Proposal C- Silver Lake agreement extended through October 15								
Freq	1-Sep	15-Sep	30-Sep	7-Oct	15-Oct	21-Oct	25-Oct	31-Oct
20%	17.4	16.7	16	15.5	15.2	14.1	13.2	12
50%	18.8	18	17.2	16.8	16.5	14.9	13.8	12
80%	20.6	19.7	18.8	18.4	18.1	15.9	14.4	12

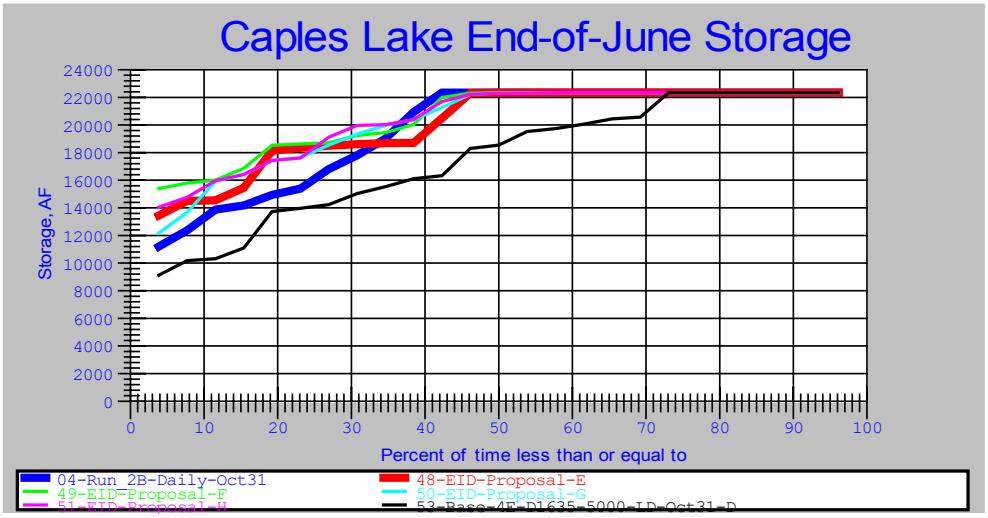
EID Proposal D- Silver Lake agreement extended through October 15								
Freq	1-Sep	15-Sep	30-Sep	7-Oct	15-Oct	21-Oct	25-Oct	31-Oct
20%	17.4	16.7	16	15.5	15.2	14.1	13.2	12
50%	18.8	18	17.2	16.8	16.5	14.9	13.8	12
80%	20.6	19.7	18.8	18.4	18.1	15.9	14.4	12

Proposals E – H (31 Day Canal Maintenance Period)

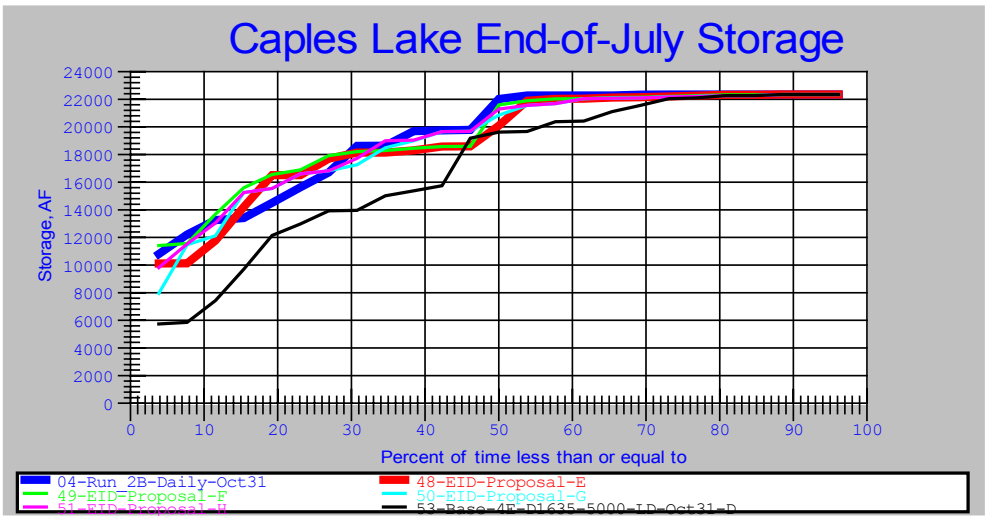
As with the 31 day canal maintenance period scenarios, the differences in these proposals manifest themselves as a change in storage at Caples. There are some minor changes in Silver Lake storage, but only in dry years. In these scenarios, Silver Lake is drawn down to a target of 4,200 AF by the end of September. This brings the reservoir down to near the DSOD level but preserves storage for meeting demands and minimum flow requirements. We have added Run 04 and Run 53 for comparison purposes. Run 04 is Run 2B daily with a 31 day canal maintenance period which occurs from October 1 through October 31 and represents the EID operating policy as it existed before the collaborative process. Run 53 contains modified 4E conditions with D-1635 storage targets. The modifications consist of a 5000 acre foot end-of-February storage target with no hard target at Caples Lake. Run 53 also has a 31 day canal maintenance period from October 1 through October 31. The purpose of Run 53 is to quantify the impacts to Project 184 due to the Caples Lake storage targets.



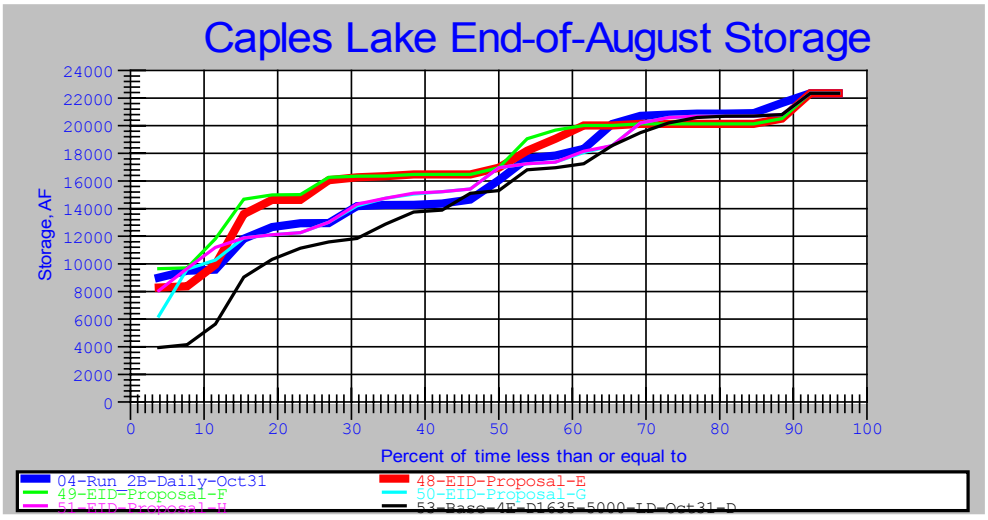
Proposals E and F use the Alpine County storage targets for Caples Lake and Proposals G and H use the D1635 storage targets for Caples Lake. Decision 1635 has no storage targets for the November to May period. In this period, targets are put in place to avoid violating the hard floors.



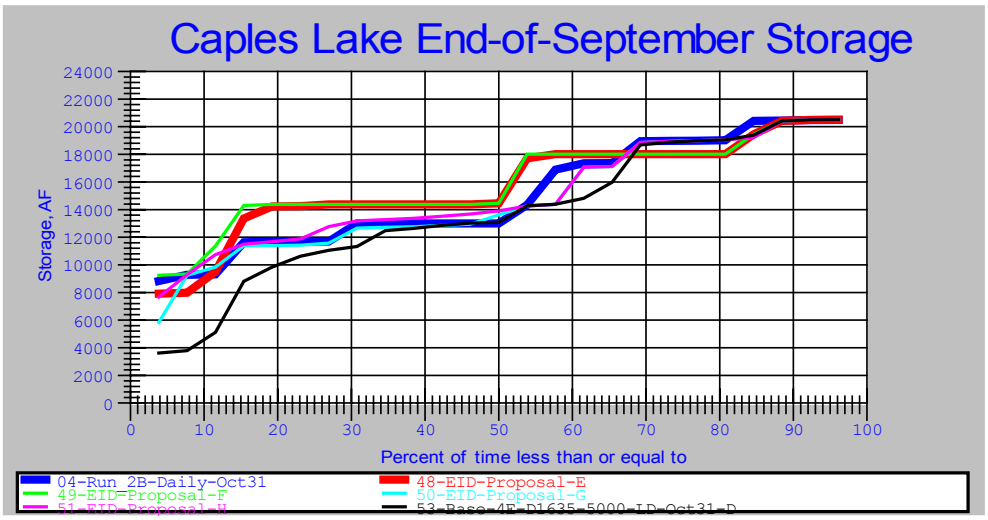
June is typically the time of year when Caples Lake is at it's fullest point. Proposal F fills Caples Lake most often at about 58% of the time. The differences between Proposals E and F and Proposals G and H are largely due to the differences between the Alpine County storage targets and the D1635 storage targets.



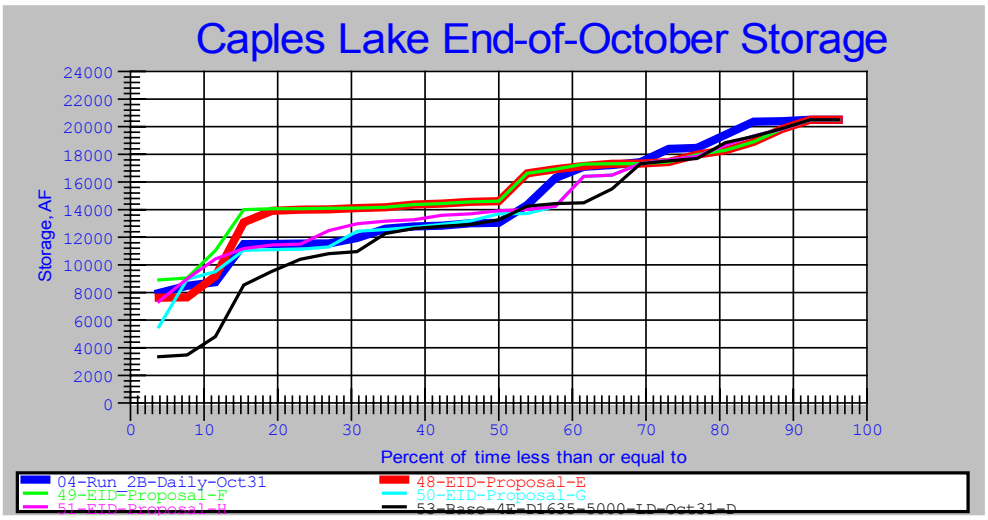
The differences that occur in July are minimal. Caples Lake is full about 50% of the time in all proposals in this month.



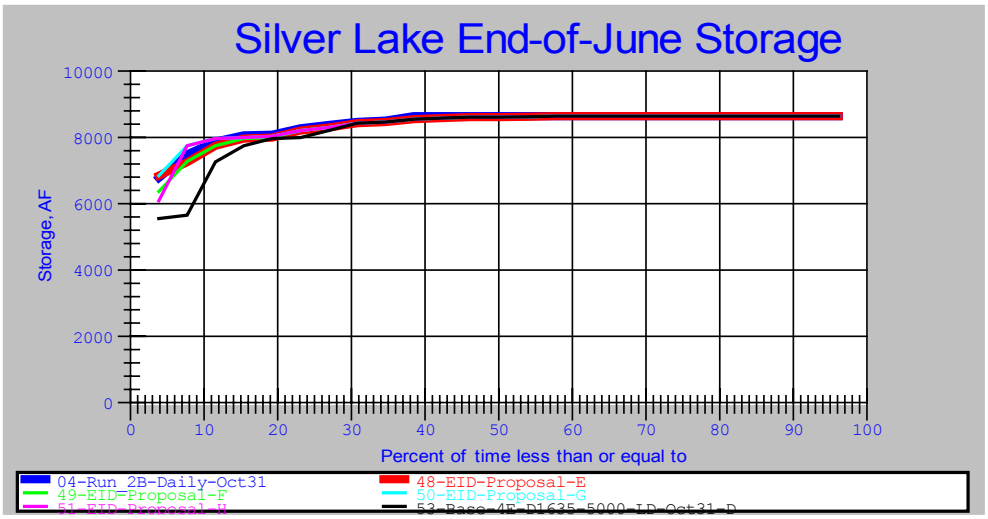
The plot above shows the impacts of the D1635 storage targets versus the Alpine County storage targets. Proposals E and F with the Alpine County storage targets clearly result in higher storage levels in about 70% of the years.



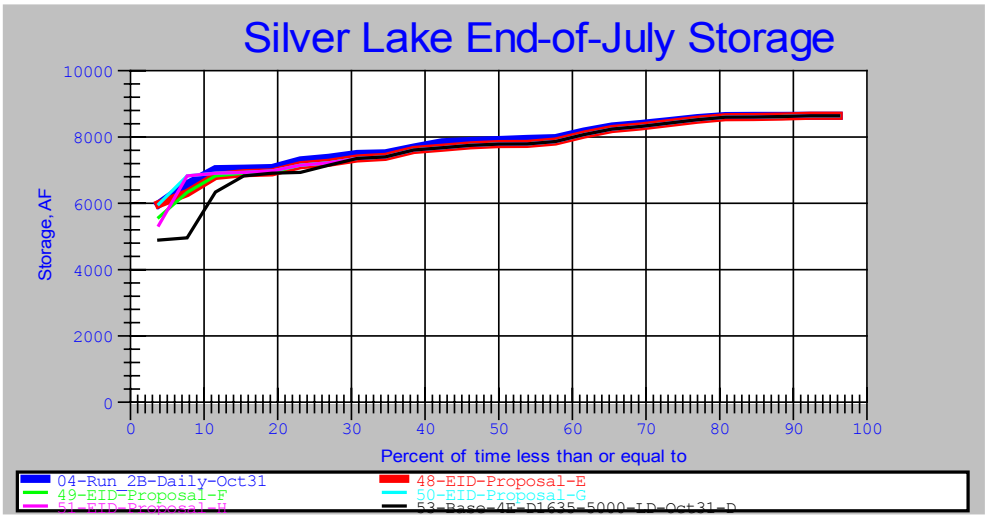
As in August, the different storage targets cause a change in the operation of Caples Lake. In the wettest years, the D1635 storage targets result in higher Caples Lake storage 30% of the time. In other years, Alpine County storage targets result in higher Caples Lake storage.



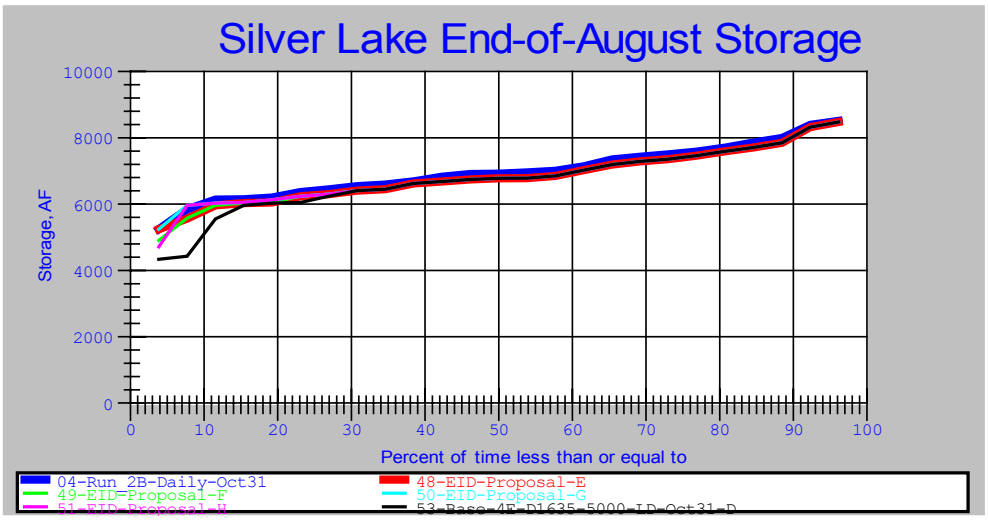
As in September, the October D1635 average storage values are generally lower than Alpine County's targets and the operation results in lower End of October storage for Proposals G and H.



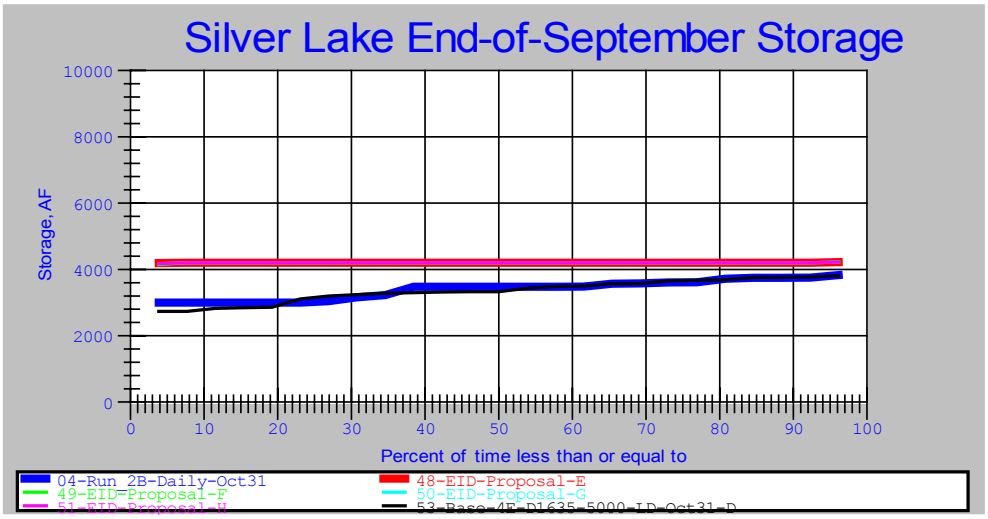
In general, the operation of Silver lake changes very little except in the very driest years. The lack of change is due to the Silver Lake Agreement. Because the D1635 Caples Lake storage targets are lower than the Alpine County storage targets in the dry years, slightly more water can be saved a Silver Lake.



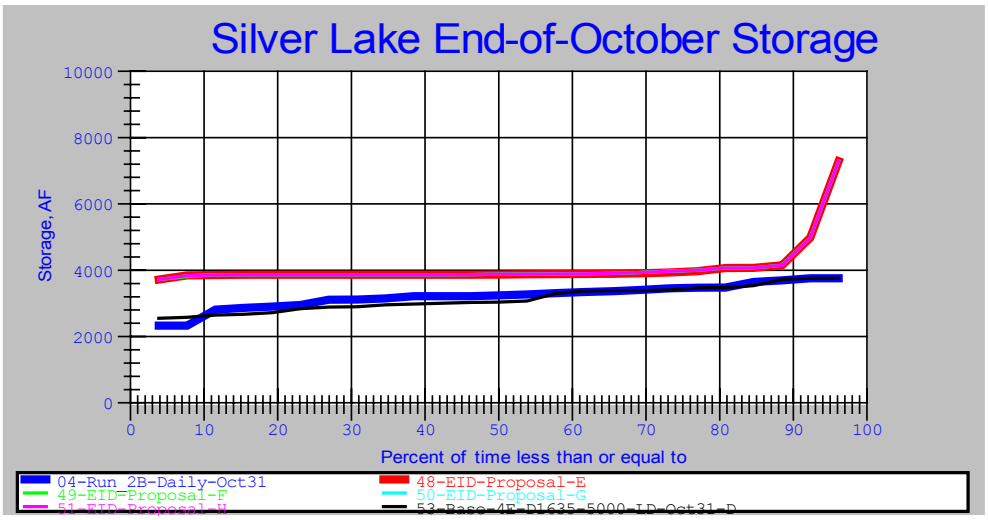
Water is stored through the summer because in accordance with the Silver Lake Agreement. No discretionary releases are made until after Labor Day.



The end of August storage chart shows that the storage is falling due to decreasing inflows, releases to meet minimum flow requirements, leakage, and evaporation.



The end of September storage target is 4,200 AF and is attainable in all years for all proposals. The storage is brought down steadily from Labor Day to this point. 4,200 AF is higher than the 3,756 AF required by DSOD on November 1, but provides enough water to ensure minimum flow requirements and consumptive use demands are met while not bringing down the reservoir below 3,756 AF before November 1.



Silver Lake storage at the end of October should be near the DSOD level of 3,756 AF. In most cases the level is at or below 3,756 AF. However, in a few years the basin experienced some late October storms, which pushed the lake level up.

Silver Lake Stage Analysis

The following table contains the Silver Lake stage information for Proposals E – H. The table provides stages for important dates from September 1 through October 31. The row beginning with 20% in the "Freq" column gives values in which the stage for the given date will be less than or equal to that value 20% of the time. Conversely, we would expect the stage to be higher than or equal to that value 80% of the time. The same concepts apply to the values in the 50% row and the 80% row.

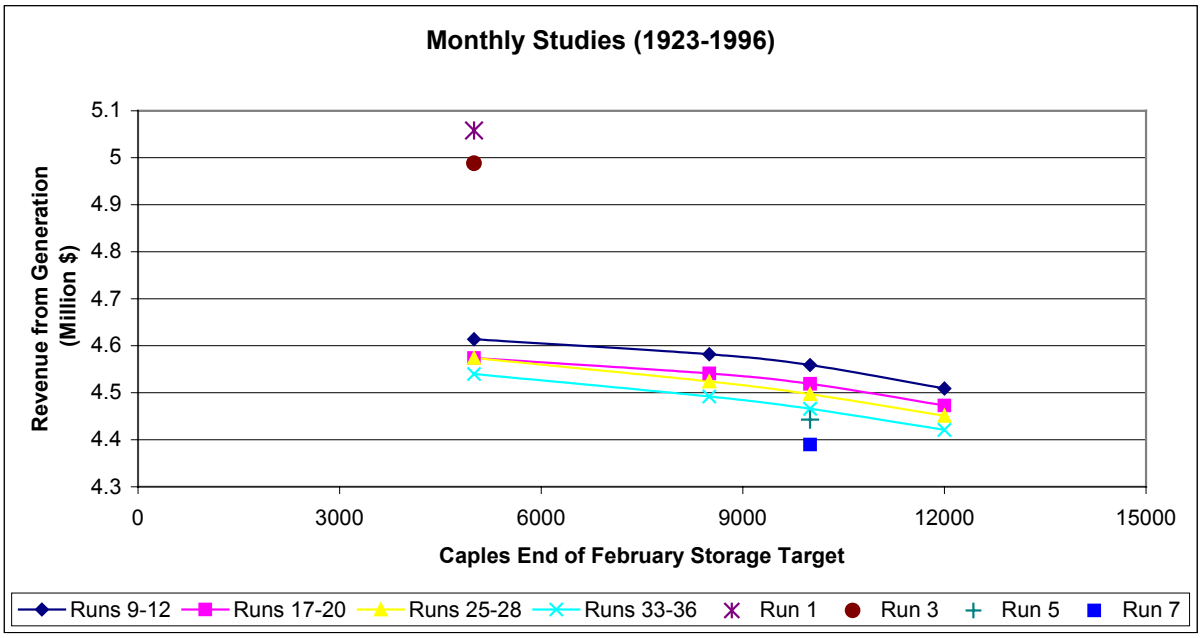
EID Proposal E- Silver Lake agreement through Labor Day w/ steady draw down through September 30.								
Freq	1-Sep	15-Sep	30-Sep	7-Oct	15-Oct	21-Oct	25-Oct	31-Oct
20%	17.4	15.6	13.1	12.9	12.7	12.5	12.4	12.2
50%	18.8	16.2	13.1	12.9	12.7	12.5	12.4	12.2
80%	20.5	17.3	13.1	12.9	12.8	12.7	12.8	12.7
EID Proposal F- Silver Lake agreement through Labor Day w/ steady draw down through September 30.								
Freq	1-Sep	15-Sep	30-Sep	7-Oct	15-Oct	21-Oct	25-Oct	31-Oct
20%	17.4	15.6	13.1	12.9	12.7	12.5	12.4	12.2
50%	18.8	16.2	13.1	12.9	12.7	12.5	12.4	12.3
80%	20.5	17.3	13.1	12.9	12.8	12.8	12.8	12.7
EID Proposal G- Silver Lake agreement through Labor Day w/ steady draw down through September 30.								
Freq	1-Sep	15-Sep	30-Sep	7-Oct	15-Oct	21-Oct	25-Oct	31-Oct
20%	17.5	15.6	13.1	12.9	12.7	12.5	12.4	12.2
50%	18.8	16.2	13.1	12.9	12.7	12.5	12.4	12.3
80%	20.5	17.3	13.1	12.9	12.8	12.8	12.8	12.7
EID Proposal H- Silver Lake agreement through Labor Day w/ steady draw down through September 30.								
Freq	1-Sep	15-Sep	30-Sep	7-Oct	15-Oct	21-Oct	25-Oct	31-Oct
20%	17.5	15.6	13.1	12.9	12.7	12.5	12.4	12.2
50%	18.8	16.2	13.1	12.9	12.7	12.5	12.4	12.3
80%	20.5	17.3	13.1	12.9	12.8	12.8	12.8	12.7

Revenue Analysis

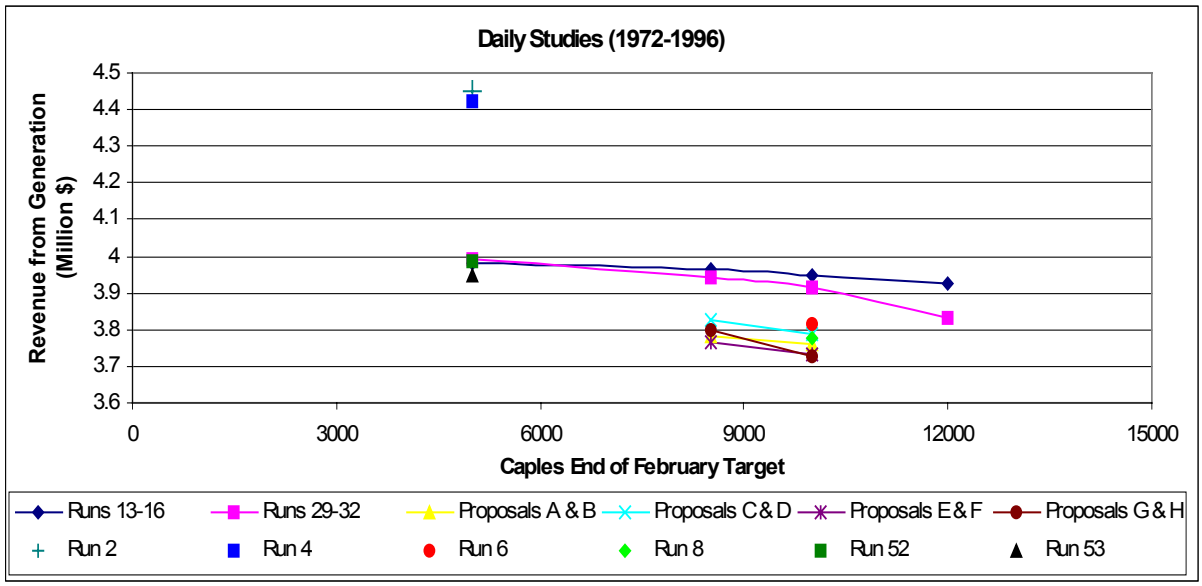
In the last collaborative meeting, Hydrologics presented 43 studies suggested by the various members of the collaborative. After review of those studies, 8 proposals were floated by EID including the key ideas of the 43 studies. A key component in the decision making process is revenues from generation. We have developed data which give an indication of the relative differences in average revenues EID can expect under the various operating scenarios. The following table provides both the estimated Average Revenue from Generation in millions of dollars and the Average Annual Generation in KWH.

	Study	Average Revenue from Generation (Million $)	Average Annual Generation (GWH)
1	01-Run_2B-Monthly-Oct15	5.058	120
01A	01A-Run_2B-Monthly-Oct15(72-96)	4.649	111
2	02-Run_2B-Daily-Oct15	4.453	107
3	03-Run_2B-Monthly-Oct31	4.988	118
03A	03A-Run_2B-Monthly-Oct31(72-96)	4.599	110
4	04-Run_2B-Daily-Oct31	4.42	106
5	05-Base-4E-D1635-10000-LD-Oct15	4.443	106
6	06-Base-4E-D1635-10000-LD-Oct15-D	3.818	92
7	07-Base-4E-D1635-10000-LD-Oct31	4.39	104
8	08-Base-4E-D1635-10000-LD-Oct31-D	3.775	90
9	09-4E-D1635-5000-LD-Oct15	4.614	111
10	10-4E-D1635-8500-LD-Oct15	4.582	110
11	11-4E-D1635-10000-LD-Oct15	4.559	109
12	12-4E-D1635-12000-LD-Oct15	4.509	108
13	13-4E-1635-5000-Sep15-Oct15-D	3.981	96
14	14-4E-D1635-8500-Sep15-Oct15-D	3.962	95
15	15-4E-D1635-10000-Sep15-Oct15-D	3.947	95
16	16-4E-D1635-12000-Sep15-Oct15-D	3.928	95
17	17-4E-D1635-5000-Sep30-Oct15	4.574	110
18	18-4E-D1635-8500-Sep30-Oct15	4.541	109
19	19-4E-D1635-10000-Sep30-Oct15	4.519	109
20	20-4E-D1635-12000-Sep30-Oct15	4.473	107
21	21-Base-4E-Alpine-10000-LD-Oct15	4.394	105
22	22-Base-4E-Alpine-10000-LD-Oct15-D	3.794	91
23	23-Base-4E-Alpine-10000-LD-Oct31	4.342	103
24	24-Base-4E-Alpine-10000-LD-Oct31-D	3.754	90
25	25-4E-Alpine-5000-LD-Oct15	4.574	110
26	26-4E-Alpine-8500-LD-Oct15	4.524	108
27	27-4E-Alpine-10000-LD-Oct15	4.497	108
28	28-4E-Alpine-12000-LD-Oct15	4.451	106
29	29-4E-Alpine-5000-Sep15-Oct15-D	3.992	97
30	30-4E-Alpine-8500-Sep15-Oct15-D	3.943	95
31	31-4E-Alpine-10000-Sep15-Oct15-D	3.913	95
32	32-4E-Alpine-12000-Sep15-Oct15-D	3.833	92
33	33-4E-Alpine-5000-Sep30-Oct15	4.54	109
34	34-4E-Alpine-8500-Sep30-Oct15	4.492	108
35	35-4E-Alpine-10000-Sep30-Oct15	4.466	107
36	36-4E-Alpine-12000-Sep30-Oct15	4.421	106
37	37-4E-Alpine-10000-LD-Oct15-Alt2-D	3.141	76
37A	37A-4E-Alpine-10000-LD-Oct15-Alt2-A-D	3.507	85
38	38-4E-Alpine-10000-LD-Oct15-Alt5-D	3.737	90
39	39-4E-Alpine-10000-LD-Oct15-Alt2&5-D	3.135	76
39A	39A-4E-Alpine-10000-LD-Oct15-Alt2&5-A-D	3.474	85
40	40-4E-Alpine-10000-LD-Oct31-D	3.682	89
41	41-4E-Alpine-10000-Sep15-Oct31-D	3.67	89
42	42-4E-Alpine-10000-Sep30-Oct31-D	3.636	88
43	43-4E-CS-10000-Sep15-Oct31-D	3.723	90
44	44-EID-Proposal-A	3.781	92
45	45-EID-Proposal-B	3.76	91
46	46-EID-Proposal-C	3.828	93
47	47-EID-Proposal-D	3.788	92
48	48-EID-Proposal-E	3.763	91
49	49-EID-Proposal-F	3.735	90
50	50-EID-Proposal-G	3.798	91
51	51-EID-Proposal-H	3.727	89
52	52-4E-D1635-5000-LD-Oct15-D	3.899	96
53	53-4E-D1635-5000-LD-Oct31-D	3.862	95

Because some of the studies use monthly data and some use daily data, we have developed two separate graphs so comparisons can be made. The 8 proposals all use daily data, however we have included the monthly studies as well so the collaborative can evaluate the revenue impacts of the various operational components.



In the chart above, we have plotted four "families" of studies against Runs 1, 3, 5 and 7. The first family (Runs 9–12) uses the 4E flow requirements with the D1635 storage targets, Silver Lake Agreement through Labor Day, and a two week canal maintenance period. With all four families, the only thing that varies is the Caples Lake end of February storage target. The targets are 5000 AF, 8500 AF, 10,000 AF or 12,000 AF. The second family includes Runs 17-20. The only difference between this family and the first family is that the Silver Lake Agreement extends through September 30. The third family includes Runs 25-28 and is the same as the first family except if uses the Alpine County storage targets at Caples Lake rather than the D1635 storage targets. The fourth family includes Runs 33-36 and is the same as the third family except the Silver Lake Agreement is extended through September 30. Runs 1 and 3 are the 2B_Monthly studies with 15 and 30 day canal maintenance periods, respectively. Runs 5 and 7 are the 4E conditions with 15 and 30 day canal maintenance periods, respectively.



The daily studies are also arranged in families where possible. Runs 13-16 use the 4E flow requirements, D1635 storage targets, Silver Lake Agreement through September 15, and a 15 day canal maintenance period. Runs 29-32 are the same except that Alpine County Caples Lake storage targets are used. The proposals are labeled accordingly. Runs 2 and 4 are the daily versions of Run 2B with 15 and 31 day canal maintenance periods, respectively. Runs 6 and 8 are the daily version of the 4E conditions with 15 and 31 day canal maintenance periods, respectively.