

Initial Hydrologic Modeling Results

For Two Scenarios - Future Without Integrated Plan and
Integrated Plan

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Scenario Descriptions

- Future without Integrated Plan
- Integrated Plan
 - Non-Structural Projects
 - Enhanced Conservation
 - GW Infiltration
 - Structural Projects
 - K to K Pipeline
 - Kachess Inactive Storage
 - Wymer Reservoir
 - Enlarged Bumping Reservoir
 - Enlarged Cle Elum Reservoir

Disclaimer

- Results discussed today are preliminary
- Modeling assumptions are still being refined; results will be updated

Model Overview and Process

- Model description
- Modeling procedures
- Modeling subcommittee membership and meetings
 - Dave Fast Jeff Thomas Chuck Garner
 - Chris Lynch Dale Bambrick Joel Hubble
 - Mark Johnston Ron Van Gundy David Child

Modeling Results

Primary Metrics:

- TWSA
- % Proration
- Reservoir Content & Levels
- Flows at Parker and at Mouth
- Instream Flows

Summary of Preliminary Results

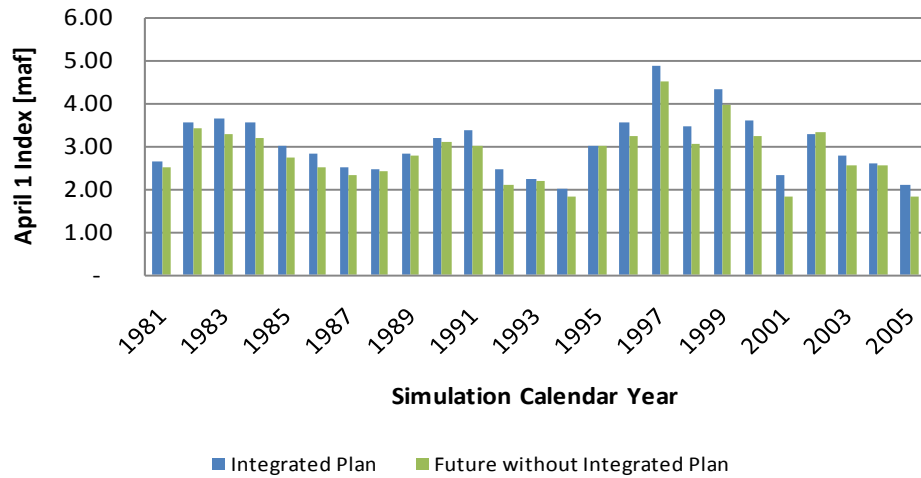
Hydrologic Indicator	Future without Integrated Plan					Non-Structural Conditions					Integrated Plan				
	Average 1981-2005	Drought Year 1994	Drought Year 2001	Drought Year 2005	Wet Year 1997	Average 1981-2005	Drought Year 1994	Drought Year 2001	Drought Year 2005	Wet Year 1997	Average 1981-2005	Drought Year 1994	Drought Year 2001	Drought Year 2005	Wet Year 1997
April 1 TWSA (maf)	2.82	1.83	1.82	1.81	4.52	2.87	1.87	1.89	1.86	4.59	3.05	2.02	2.34	2.11	4.86
April-September flow volume at Parker gage (kaf)	606	249	199	187	1883	640	256	208	188	1964	624	269	187	198	1915
March-October flow volume at Parker gage (kaf)	913	397	328	302	2569	952	404	338	306	2664	938	429	340	333	2660
April-September diversion volume upstream of Parker gage (maf)	1.60	1.27	1.29	1.31	1.68	1.57	1.26	1.31	1.29	1.64	1.60	1.32	1.54	1.43	1.64
September 30 non-Bumping or Wymer reservoir contents (kaf)	302	142	175	157	596	339	158	174	183	630	374	-5	13	-3	787
October 31 non-Bumping or Wymer reservoir contents (kaf)	295	154	192	153	694	331	170	192	180	730	359	-10	12	-4	831
September 30 Bumping and Wymer reservoir contents (kaf)	16	15	15	15	18	16	15	15	15	18	108	3	84	42	179
April-September flow volume at mouth of Yakima River (kaf)	849	326	249	270	2187	1028	452	380	394	2425	1014	471	378	418	2377
Irrigation proration level (percent) ¹	83%	32%	37%	38%	100%	84%	33%	40%	40%	100%	91%	45%	78%	59%	100%

Summary of Water Supply Improvements

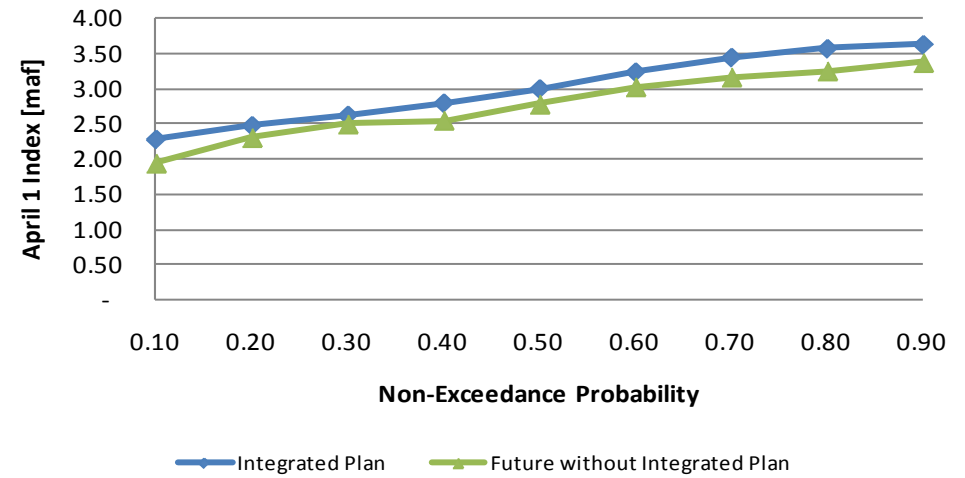
Item	Future without Integrated Plan (FWIP)	Non-Structural Conditions	Improvement (Relative to FWIP)	Integrated Plan	Improvement (Relative to FWIP)
Average 1981-2005					
TWSA [April 1, kaf]	2817.1	2869.6	52.5	3049.0	231.9
March-October flow volume at Parker gage [kaf]	913.0	951.9	38.9	938.3	25.4
Improved Irrigation Deliveries [kaf]	30.7	53.0	22.3	43.9	13.2
Drought Year 1994					
TWSA [April 1, kaf]	1828.1	1866.0	37.9	2019.3	191.2
March-October flow volume at Parker gage [kaf]	397.3	404.4	7.0	428.6	31.3
Improved Irrigation Deliveries [kaf]	36.0	76.8	40.8	83.1	47.1
Drought Year 2001					
TWSA [April 1, kaf]	1823.4	1891.2	67.7	2339.6	516.2
March-October flow volume at Parker gage [kaf]	328.0	337.9	9.9	340.1	12.2
Improved Irrigation Deliveries [kaf]	38.9	83.5	44.6	100.0	61.1
Drought Year 2005					
TWSA [April 1, kaf]	1811.5	1863.7	52.2	2113.9	302.4
March-October flow volume at Parker gage [kaf]	302.2	305.7	3.5	333.2	30.9
Improved Irrigation Deliveries [kaf]	39.2	81.9	42.7	98.0	58.8
Wet Year 1997					
TWSA [April 1, kaf]	4522.5	4587.3	64.8	4855.6	333.2
March-October flow volume at Parker gage [kaf]	2569.2	2664.1	94.9	2660.5	91.3
Improved Irrigation Deliveries [kaf]	17.4	24.6	7.3	24.6	7.3

TWSA: Integrated Plan

Water Supply Index: TWSA

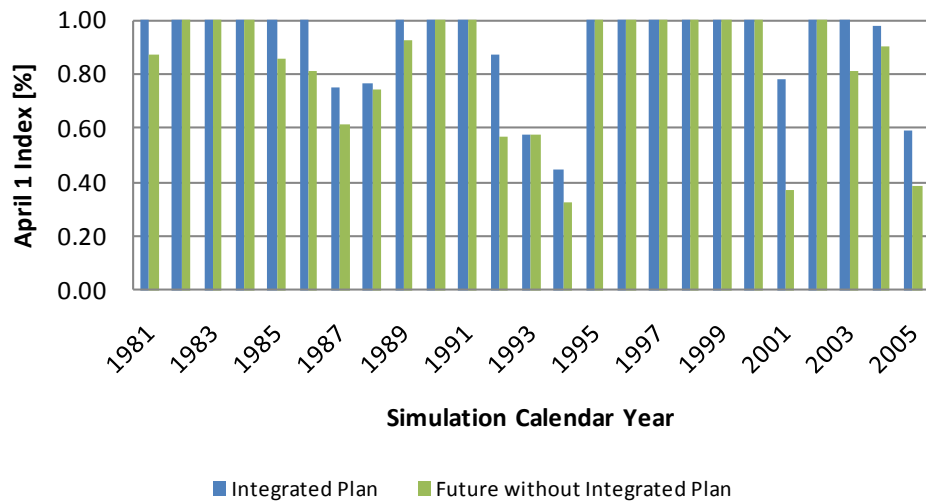


Water Supply Index: TWSA

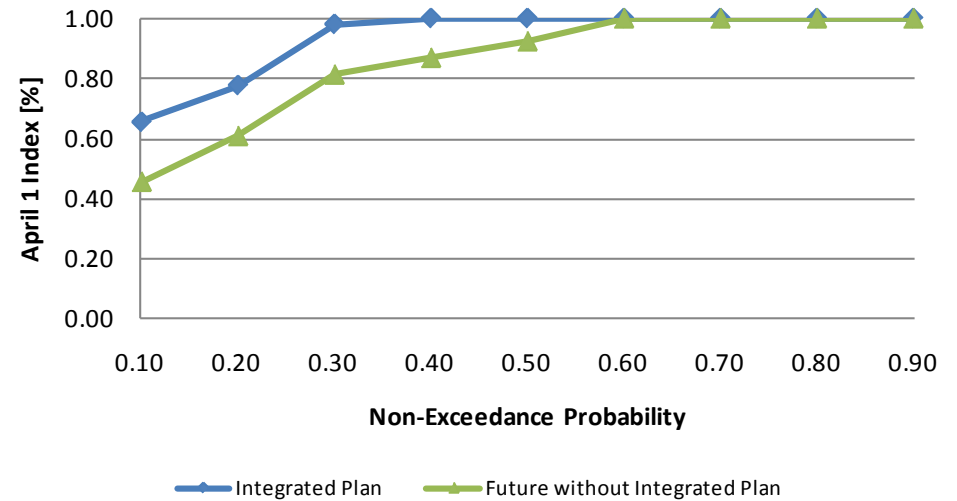


Proration: Integrated Plan

Water Supply Index: Proration

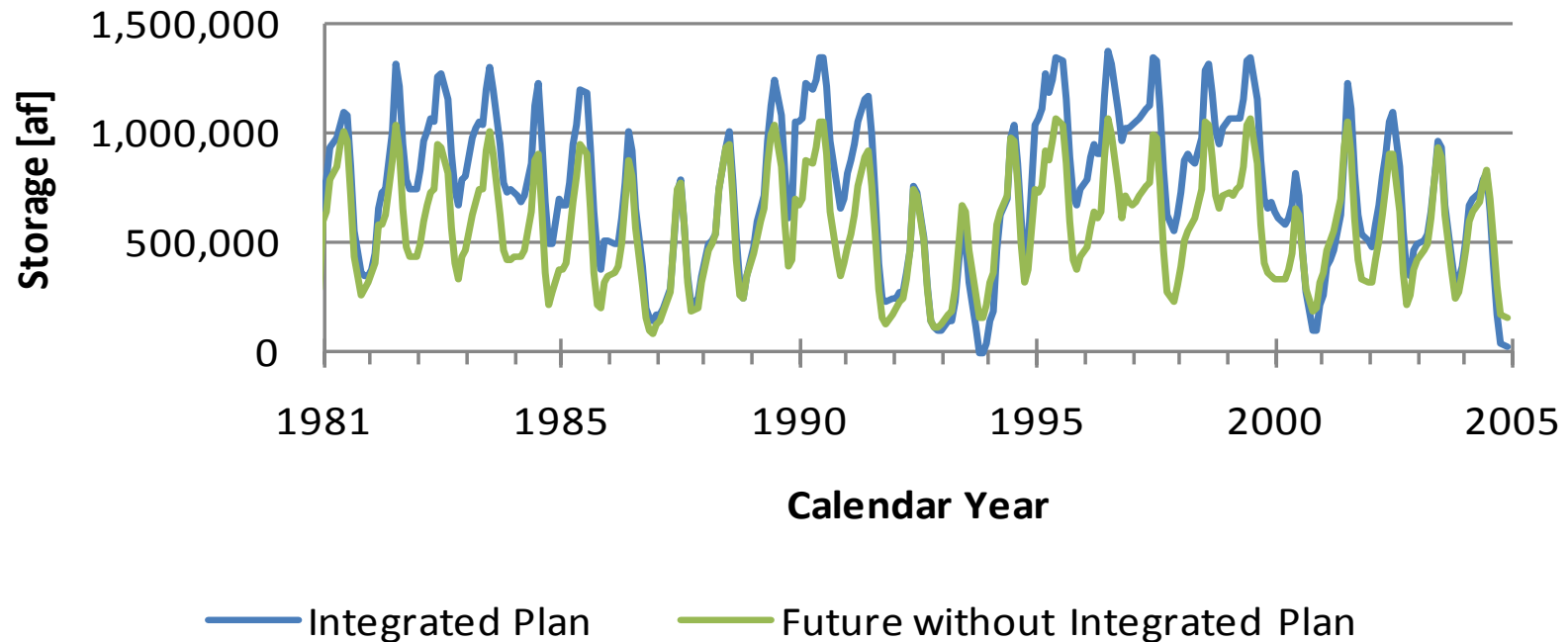


Water Supply Index: Proration



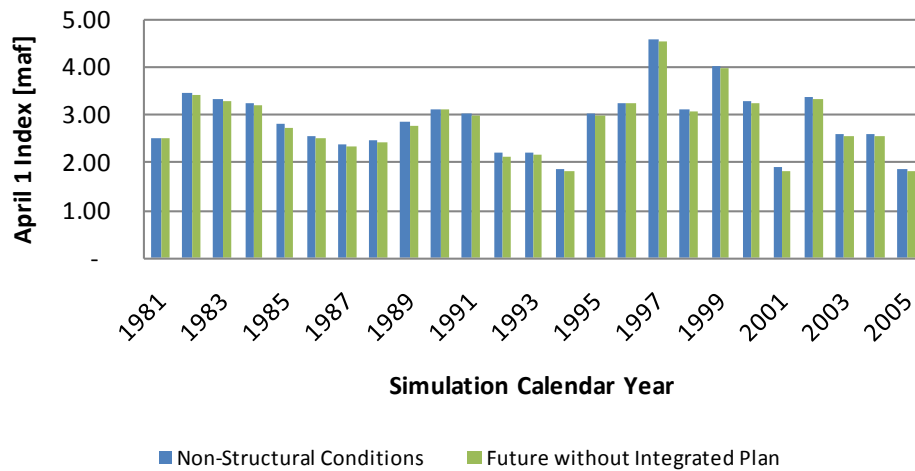
End of Month Storage: Integrated Plan

All Reservoirs End of Month Storage

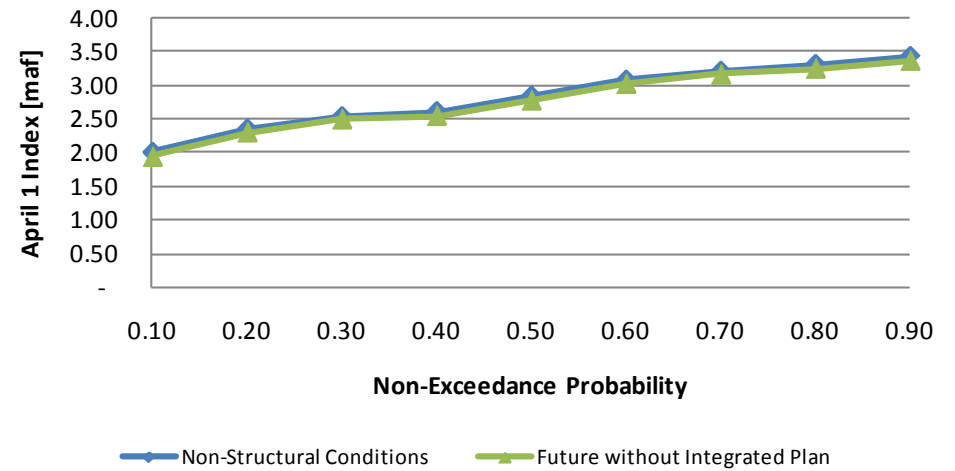


TWSA: Non-Structural

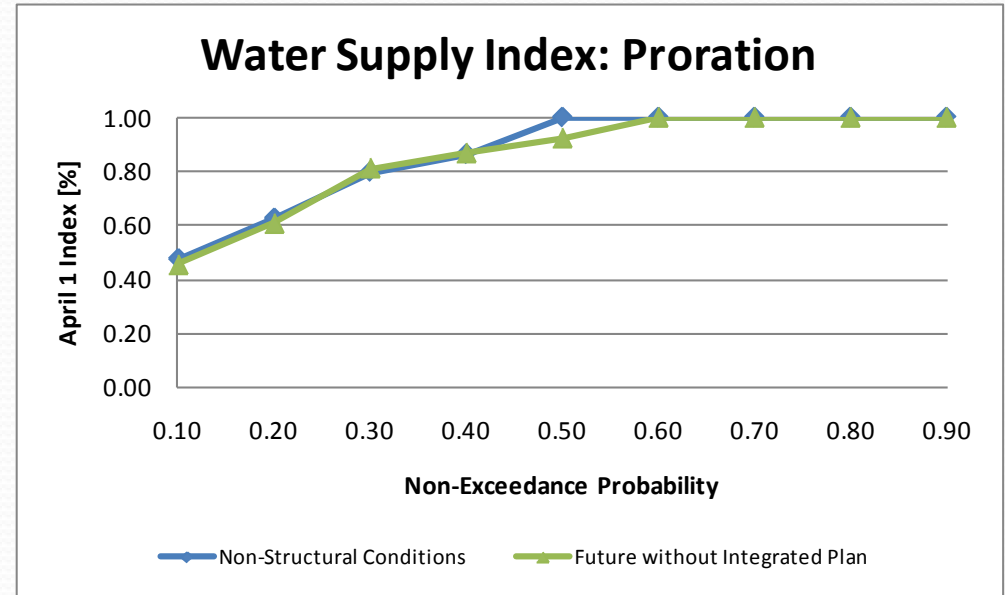
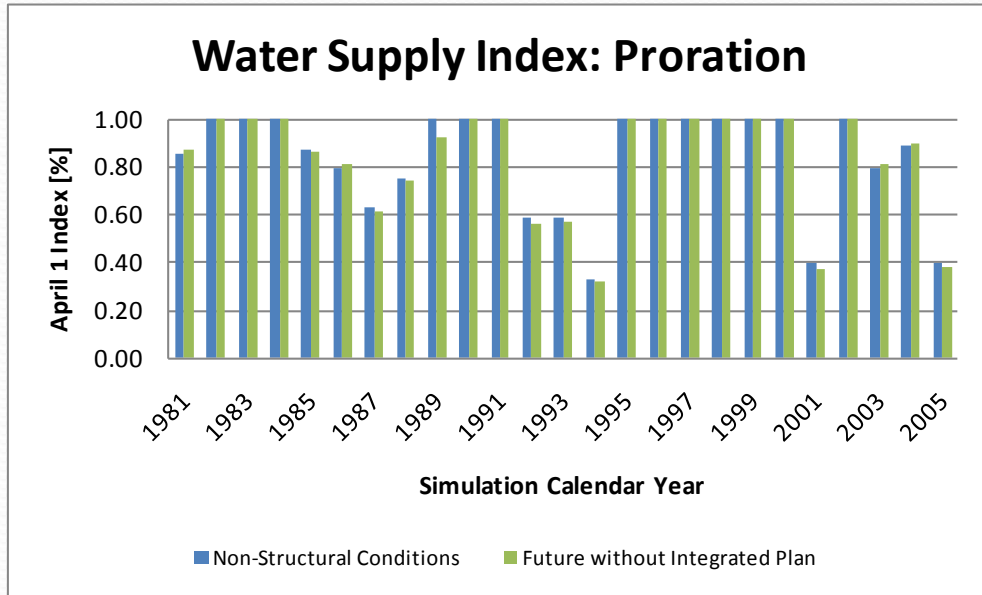
Water Supply Index: TWSA



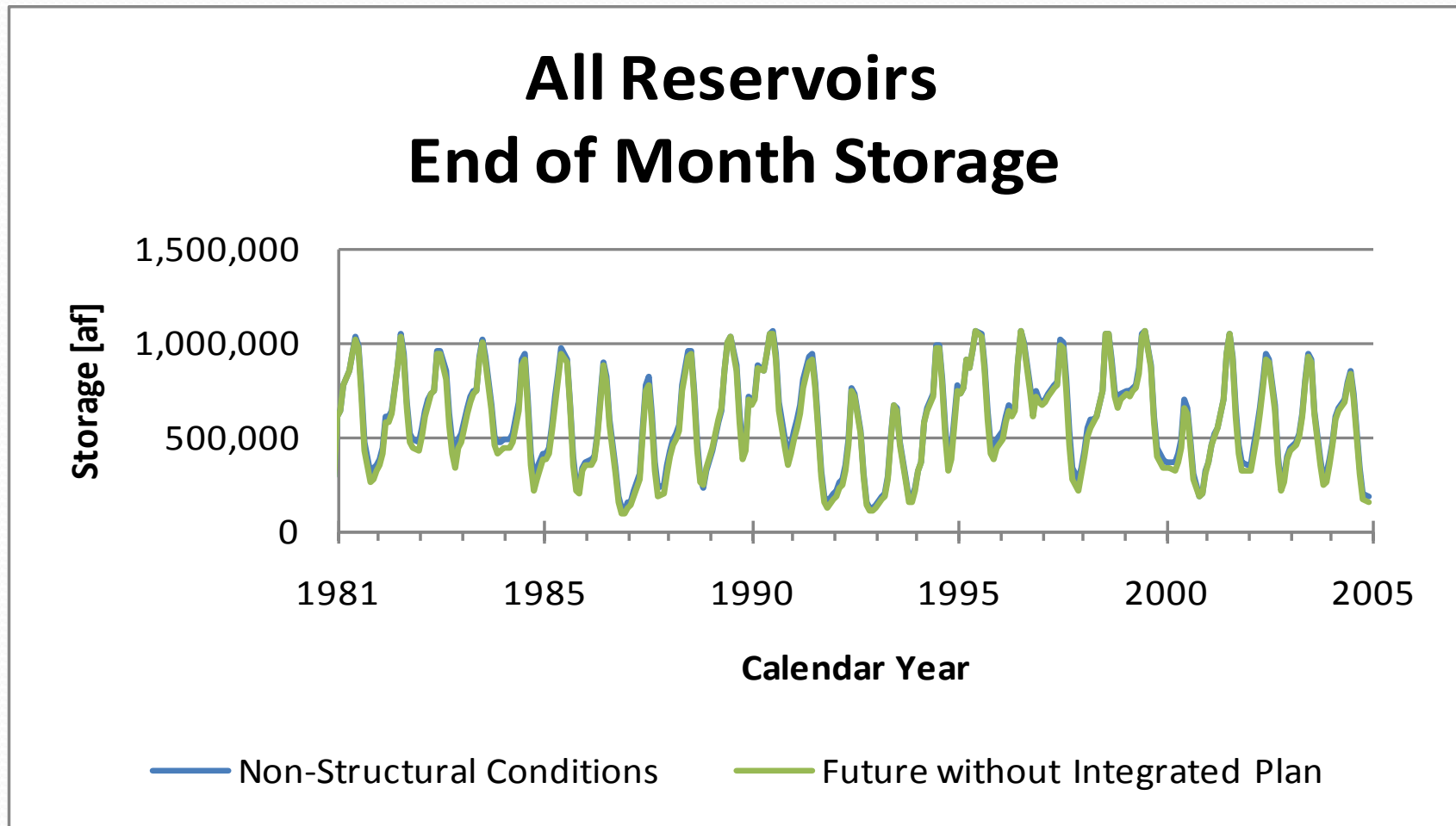
Water Supply Index: TWSA



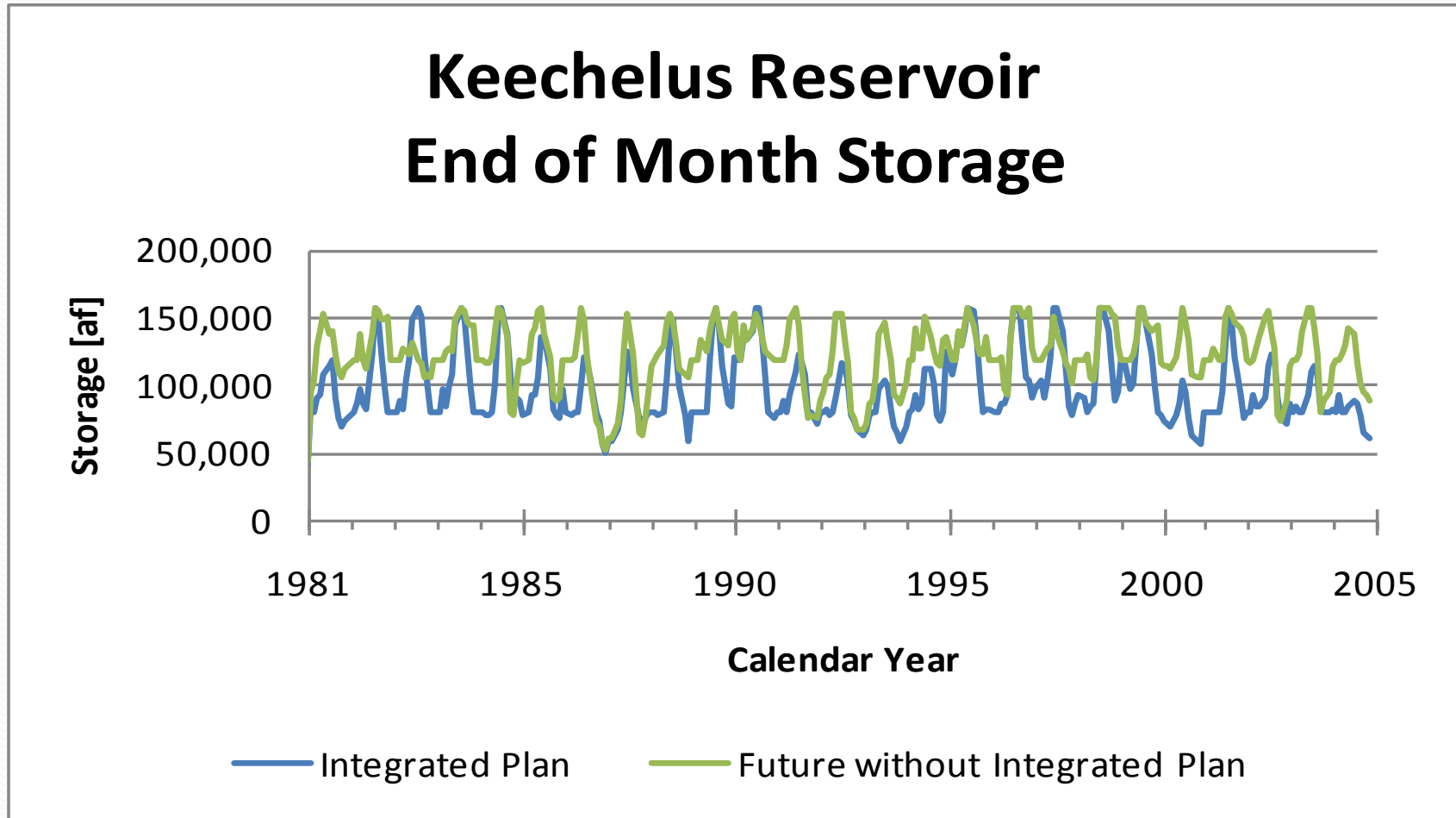
Proration: Non-Structural



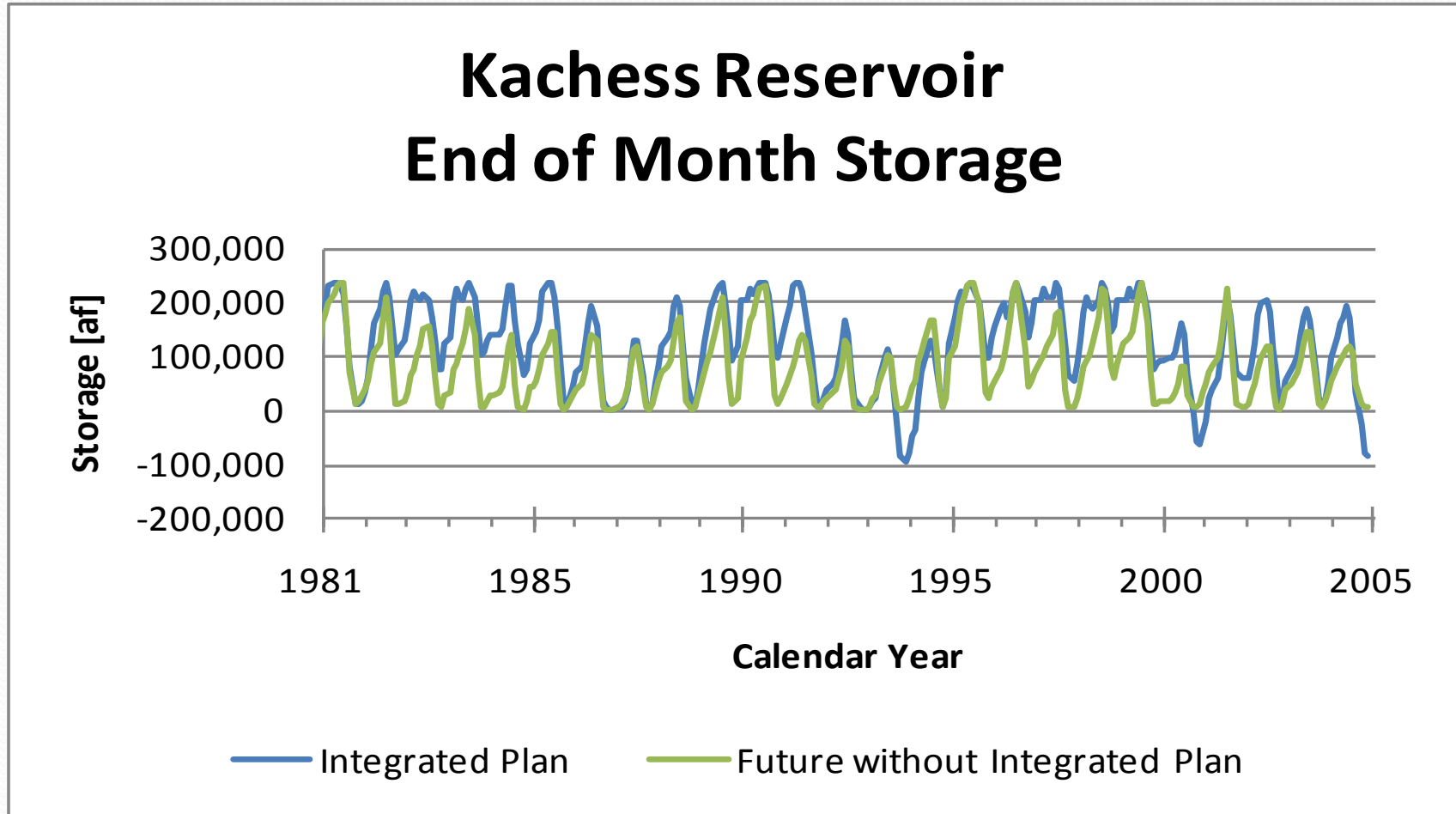
End of Month Storage: Non-Structural



End of Month Storage: Integrated Plan

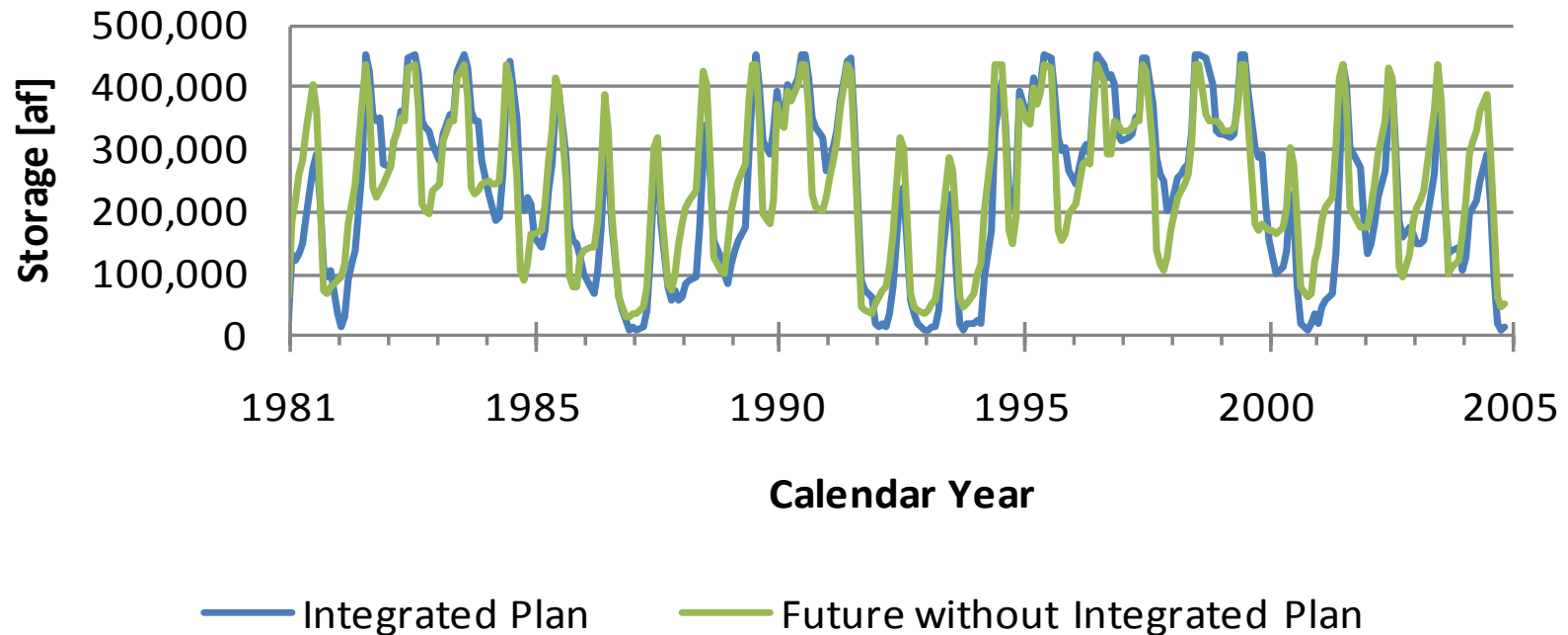


End of Month Storage: Integrated Plan

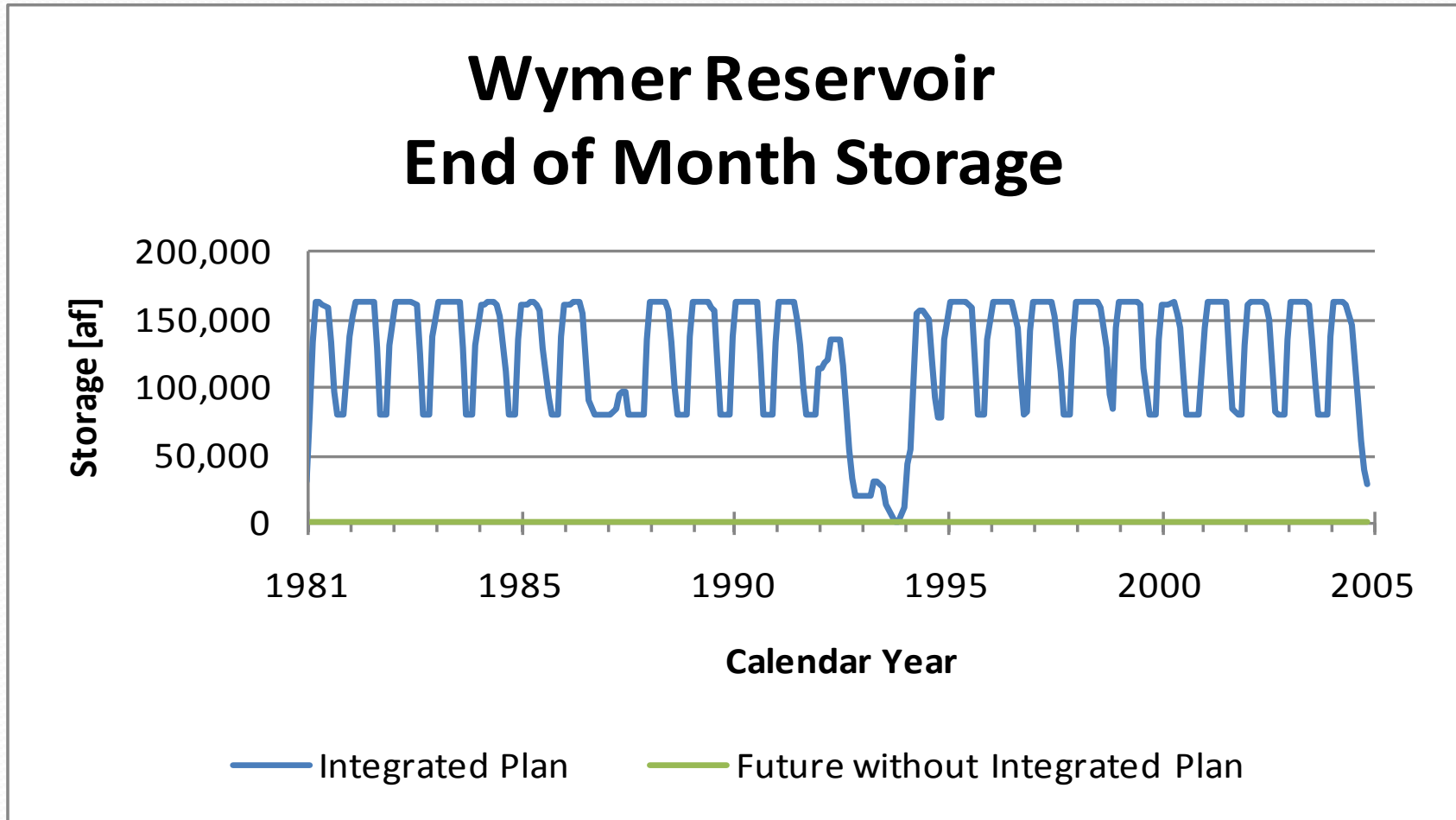


End of Month Storage: Integrated Plan

Cle Elum Reservoir End of Month Storage

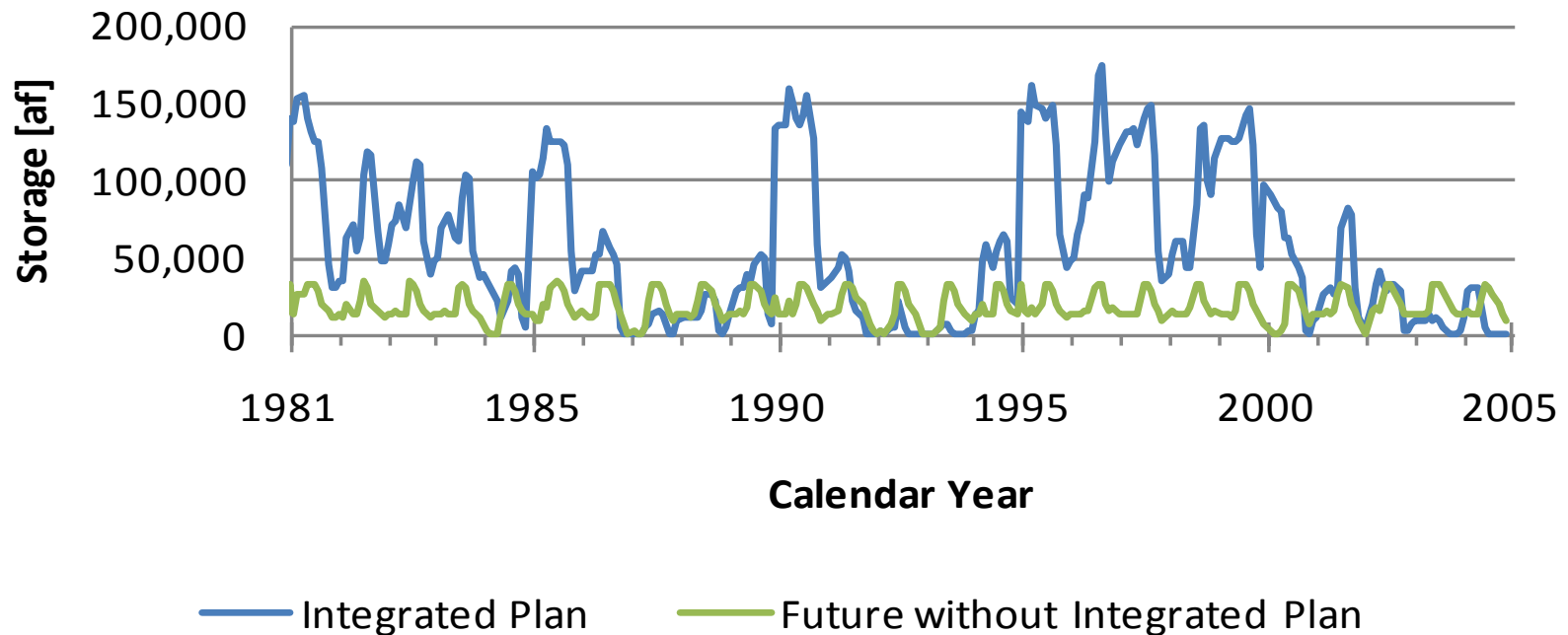


End of Month Storage: Integrated Plan



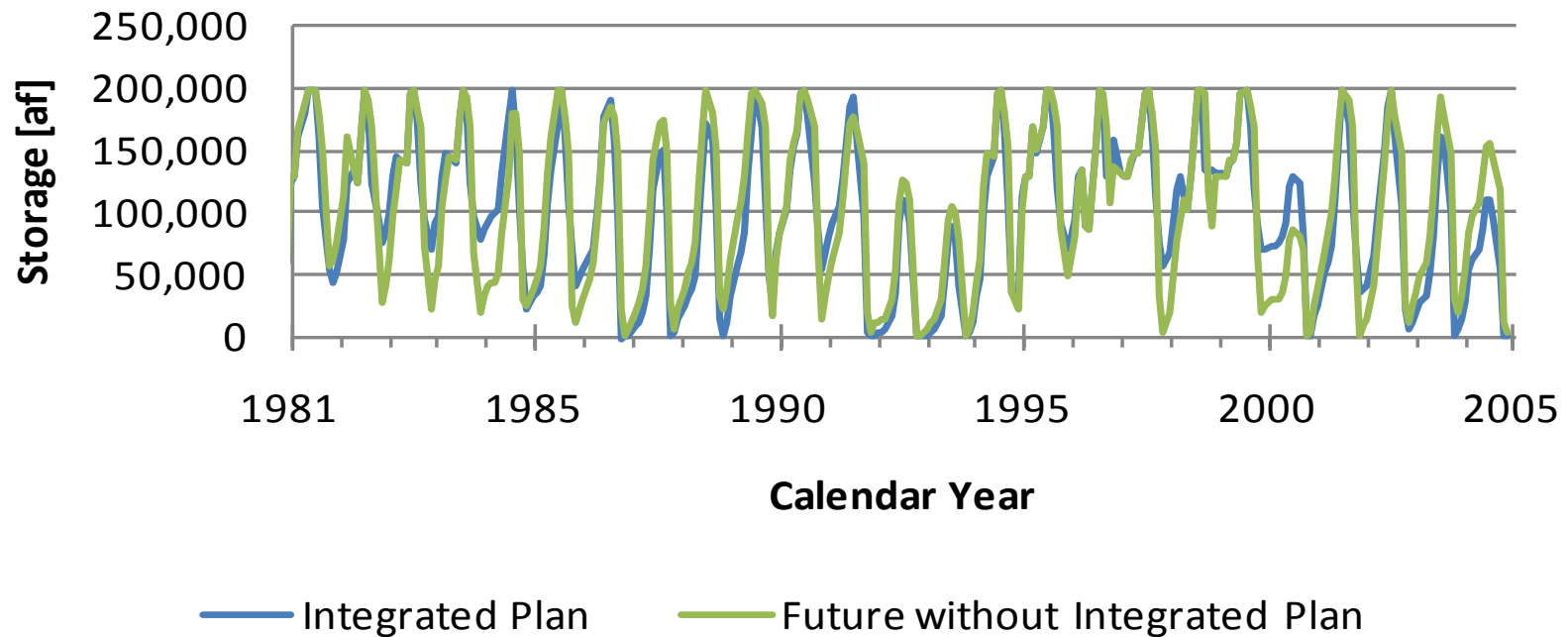
End of Month Storage: Integrated Plan

Bumping Reservoir End of Month Storage

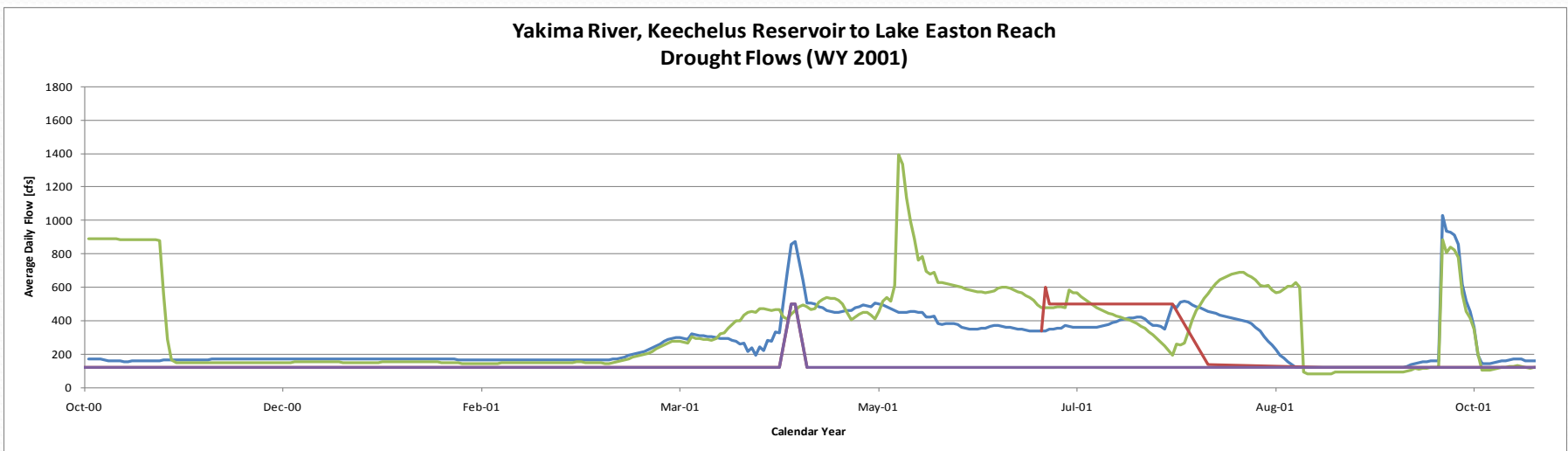
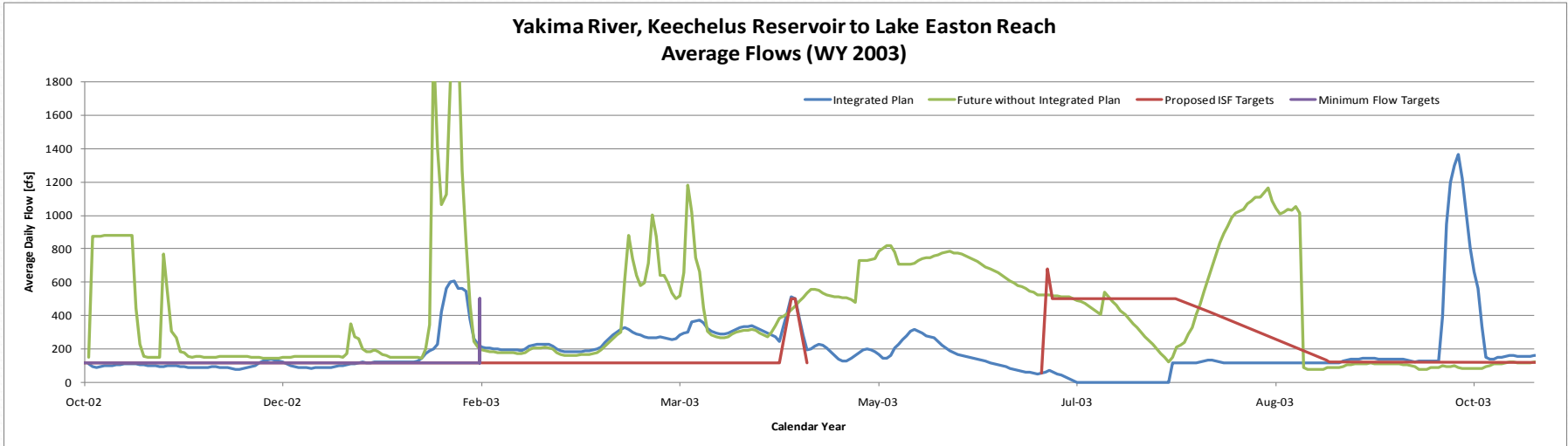


End of Month Storage: Integrated Plan

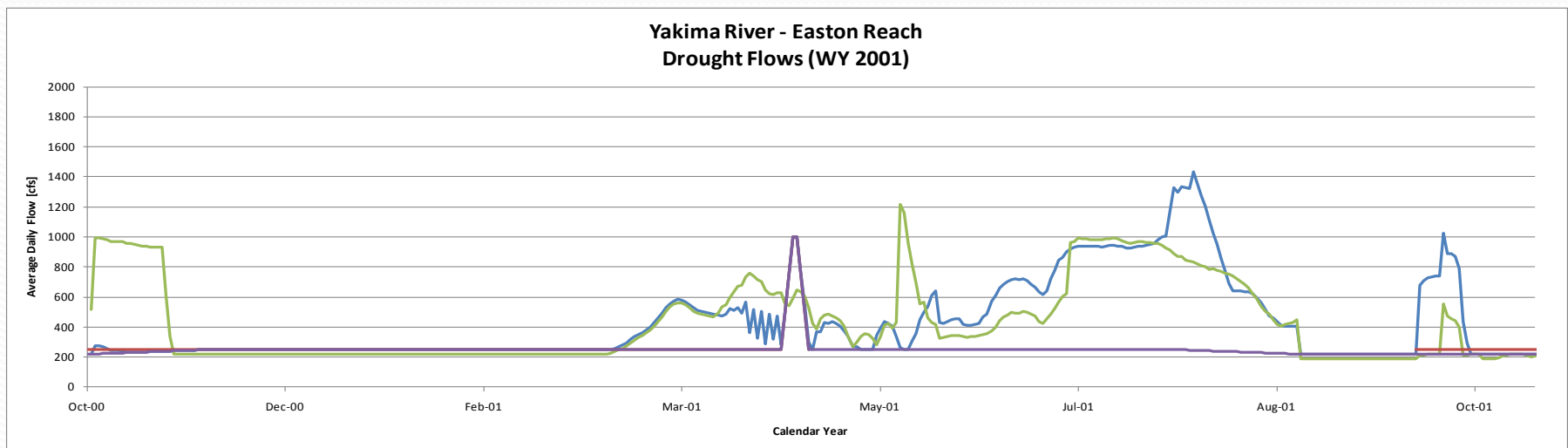
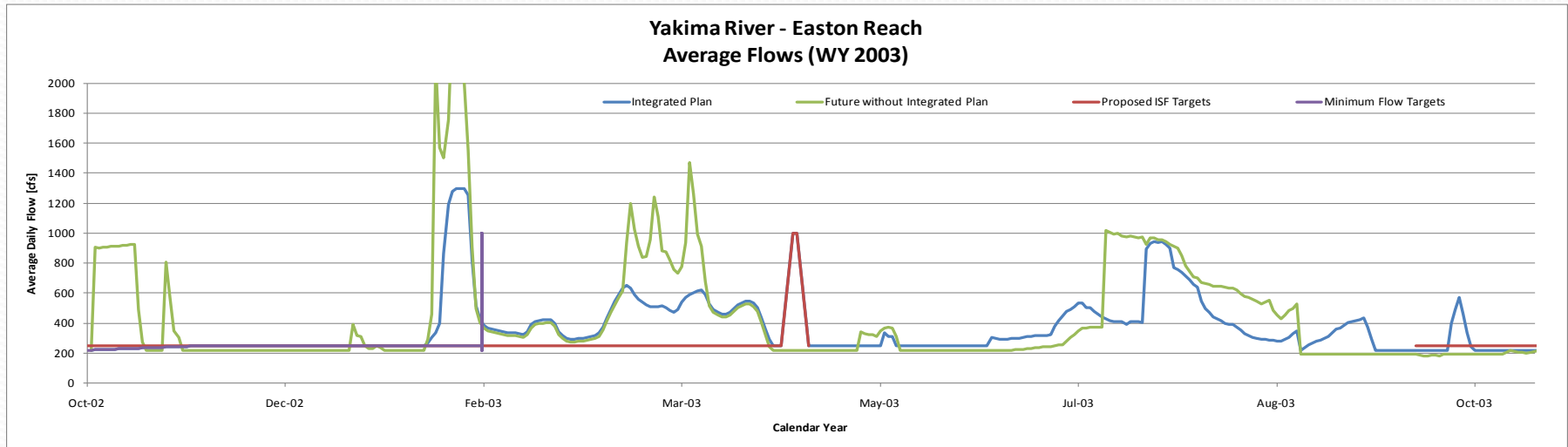
Rimrock Reservoir End of Month Storage



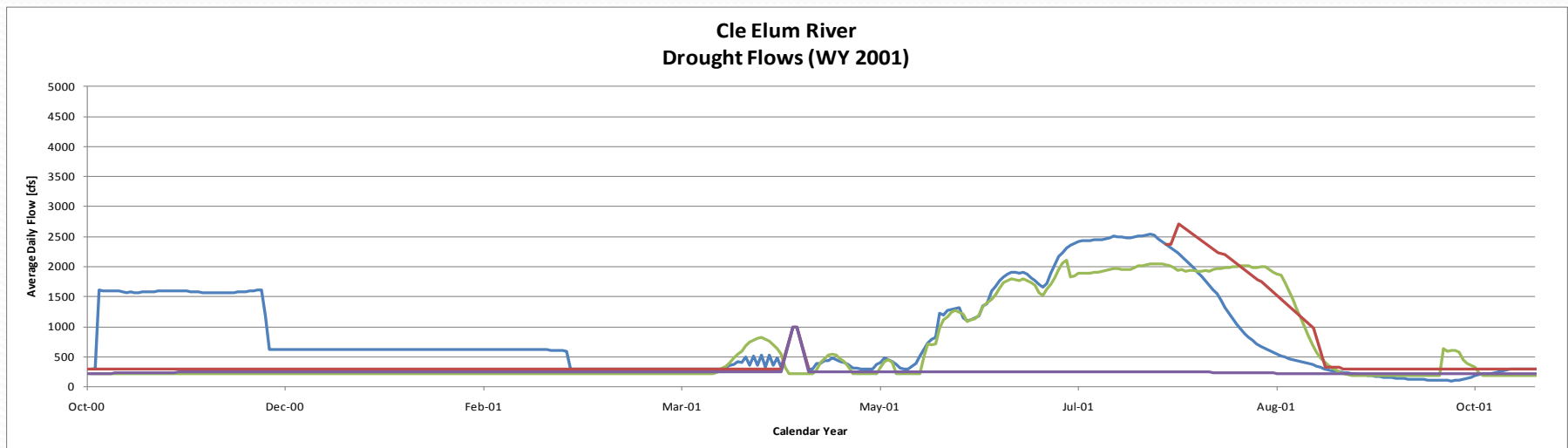
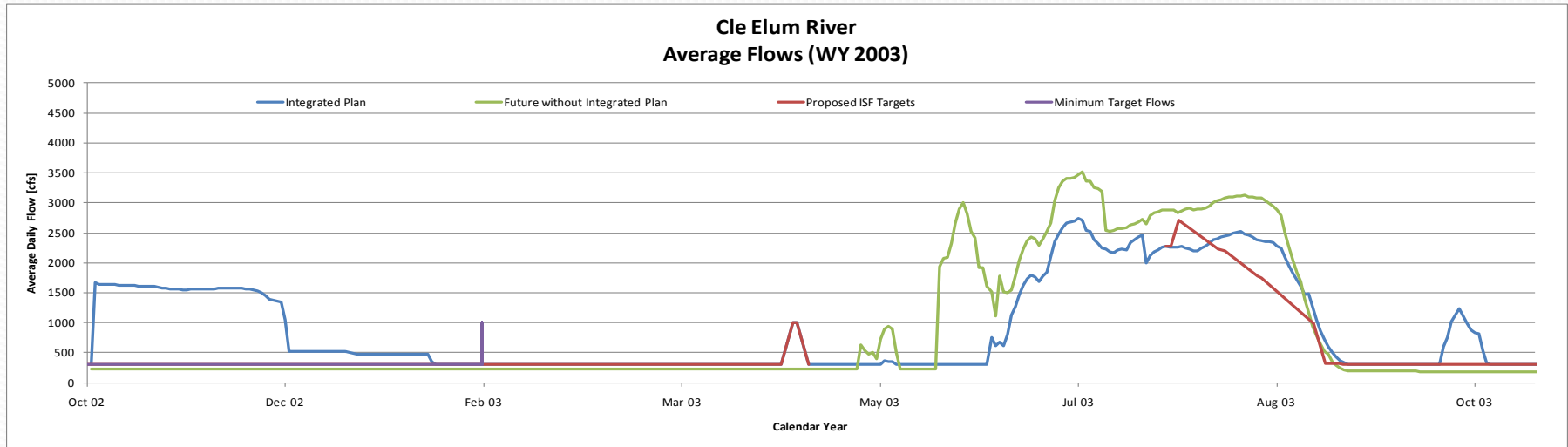
Instream Flow Charts: Integrated Plan



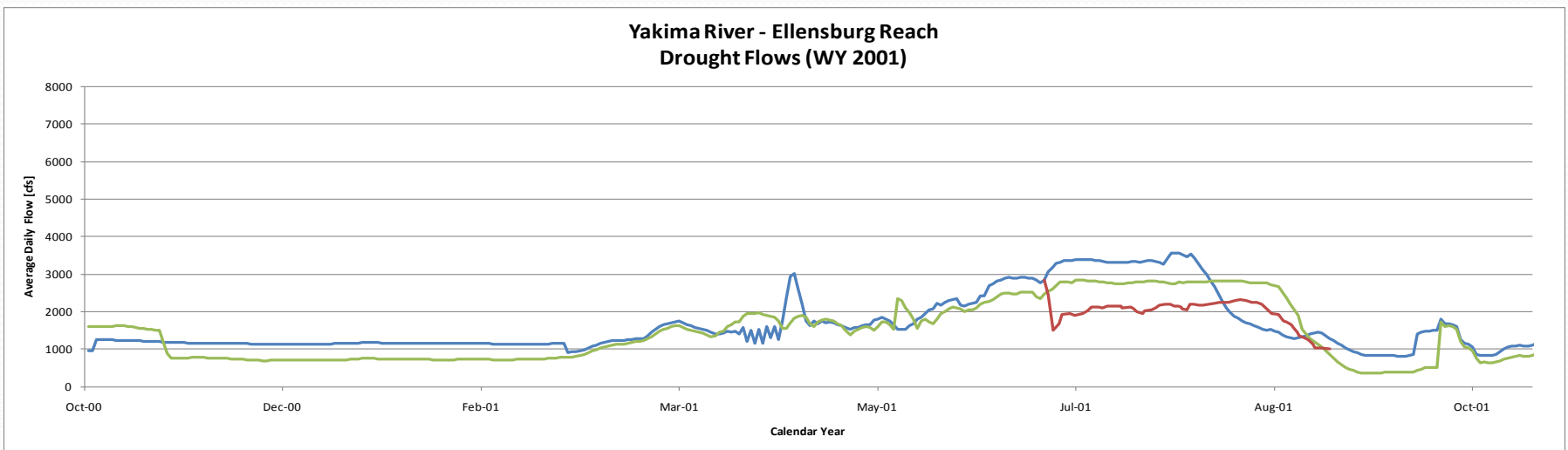
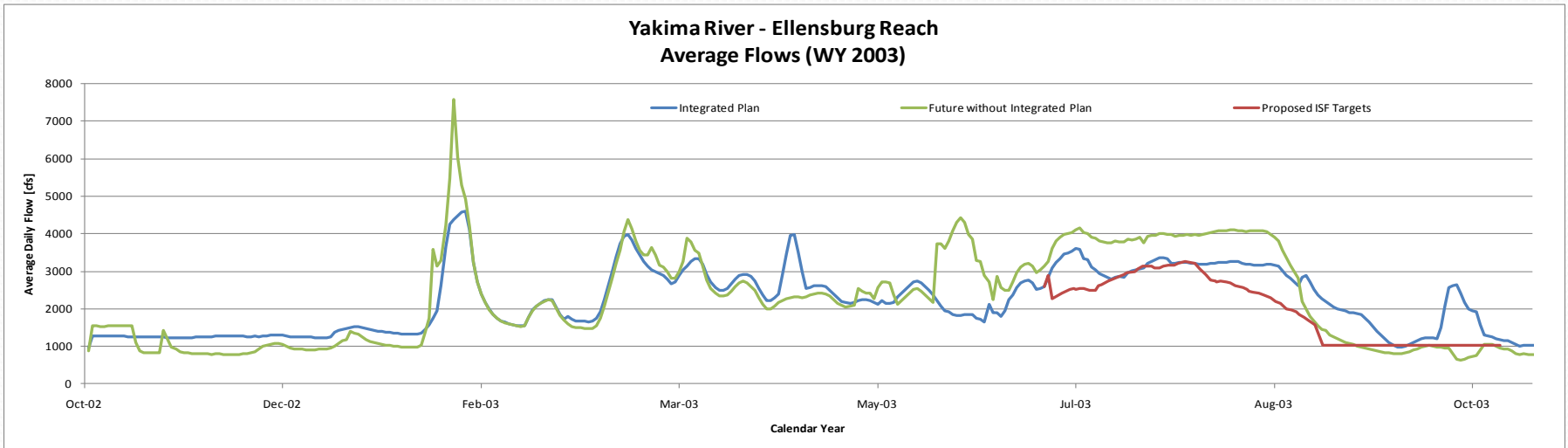
Instream Flow Charts: Integrated Plan



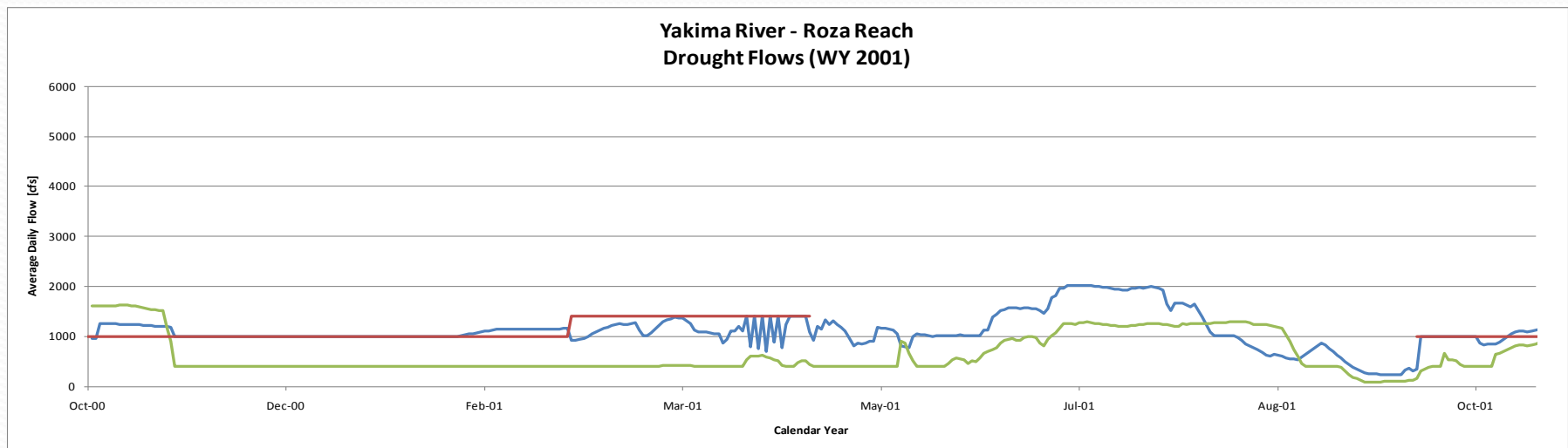
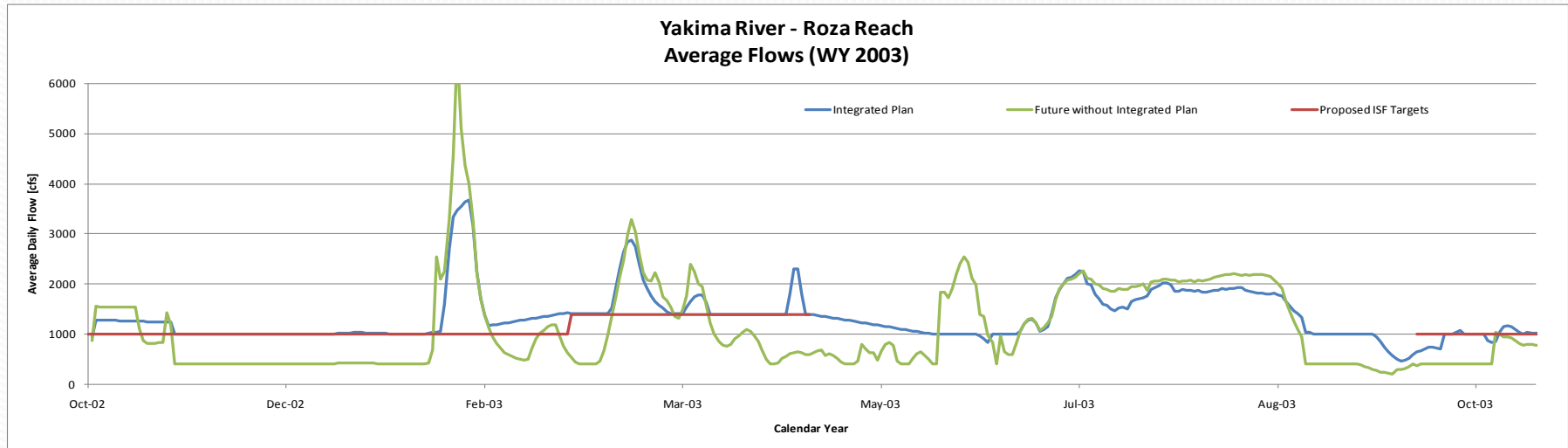
Instream Flow Charts: Integrated Plan



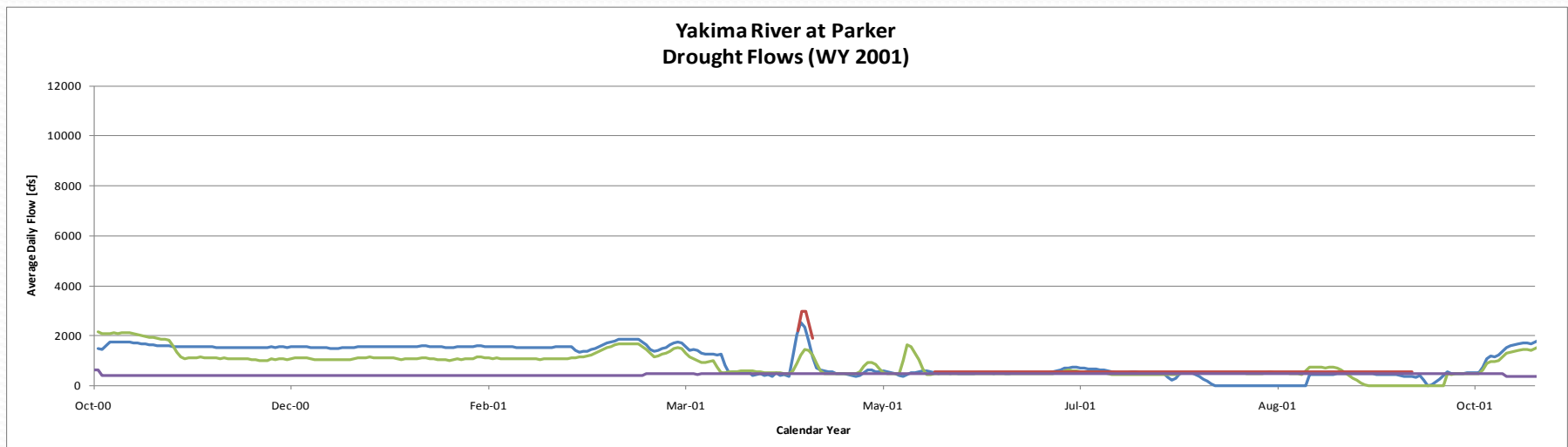
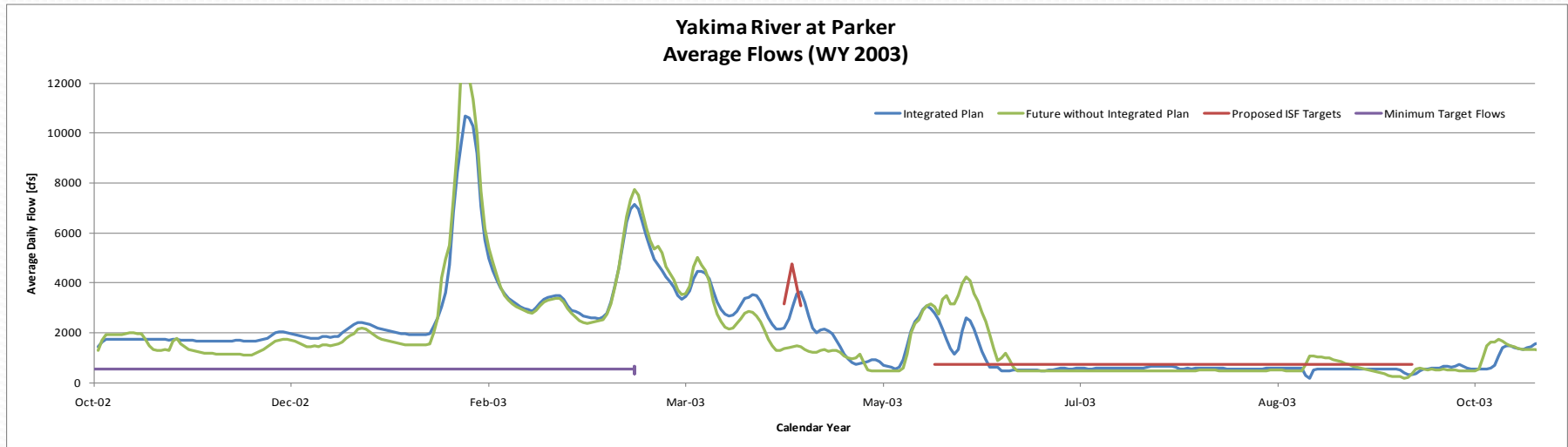
Instream Flow Charts: Integrated Plan



Instream Flow Charts: Integrated Plan



Instream Flow Charts: Integrated Plan



Next Steps

- Technical work to be completed in next 3 – 4 weeks
 - Sub-Committee meeting and receipt of comments
 - Further refinement of results, espec. instream flows
 - Climate change effects on scenarios
 - Technical memo
- Additional results presented at the 9/22 and 10/27 Workgroup mtgs.

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