

Gibson Dam Water Supply and Projected Operation *December 2022*



— BUREAU OF —
RECLAMATION



Gibson Dam

Forecast	<i>Minimum</i>	<i>Median</i>	<i>Maximum</i>
Monthly Inflow (kaf)	7.0	9.5	13.0
Monthly Average Release (cfs)	100	100	100
Monthly Average Release Over Diversion Dam (cfs)	125	125	125
End of Month Content (kaf)	6.7	9.2	12.7



Watershed above Gibson Dam

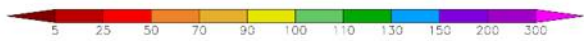
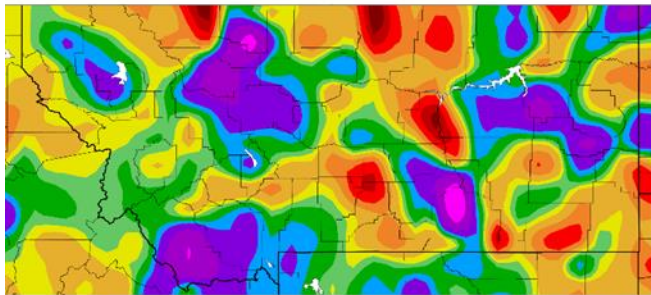
December 2022 Inflow Forecast	
November Volume (kaf)	9.5
Percent of Average (%)	83
Water Year	Historic Inflow (kaf)
2022	13.8
2021	14.5
2020	13.3
2019	9.7
30 Year Average	11.4

CLIMATE SUMMARY

Western Regional Climate Center

November 1- 30 Climate

Percent of Normal Precipitation



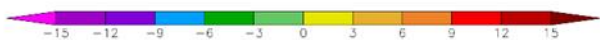
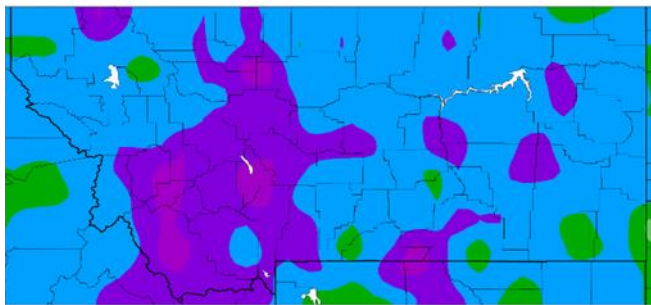
November temperatures were colder than normal while some much-needed moisture fell in the Sun River Basin.

The one-month outlook forecast, dated November 30th, is for as 33-50% chance of above normal precipitation and a 40-50% chance for below normal temperatures during December.

Drought conditions remain severe in the Sun River basin.

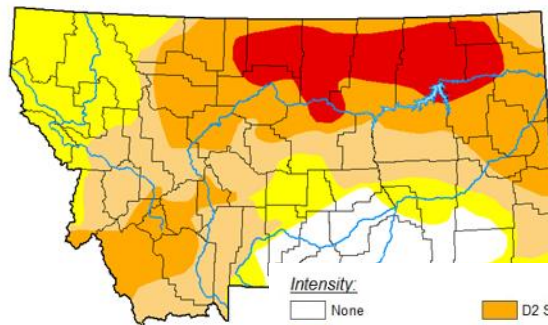
Departure from Normal Temperature

(F)



MT Drought Monitor Map

December 1, 2022



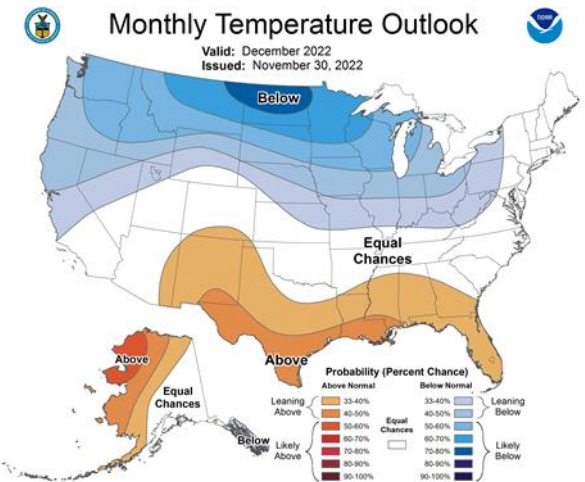
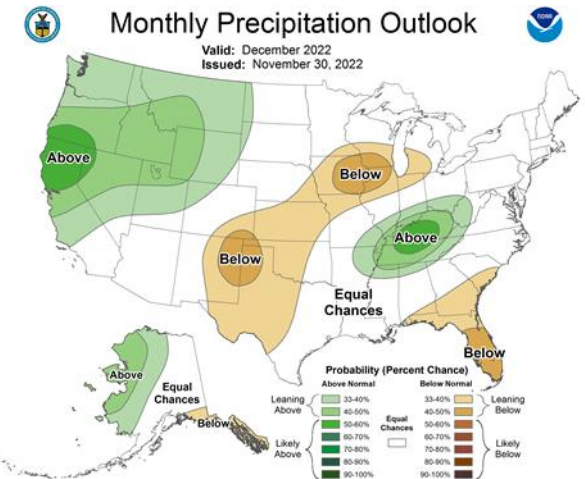
Intensity

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

National Weather Service

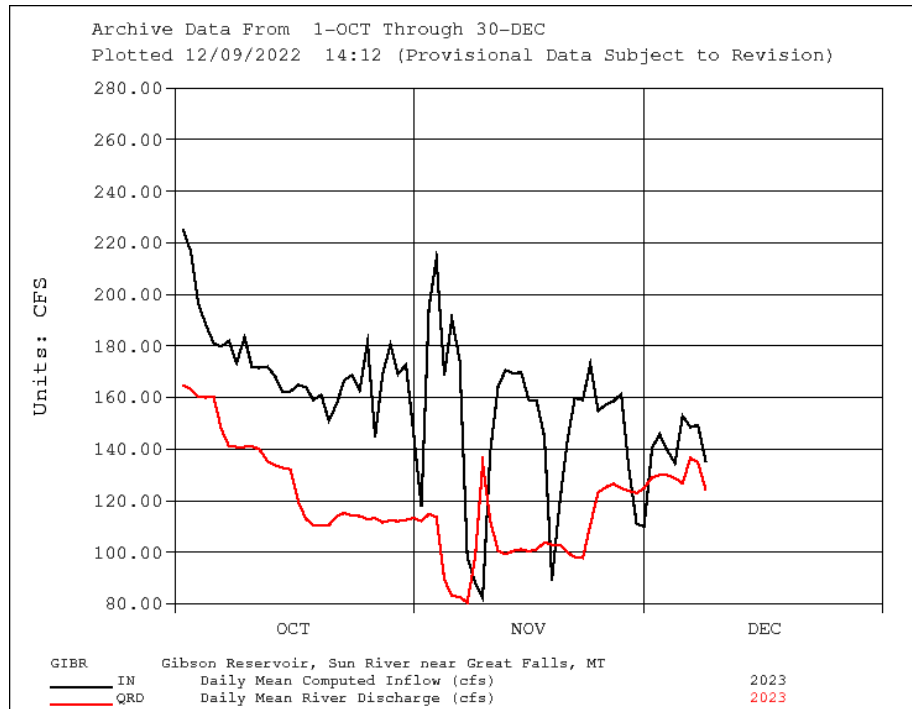
December Weather Outlook



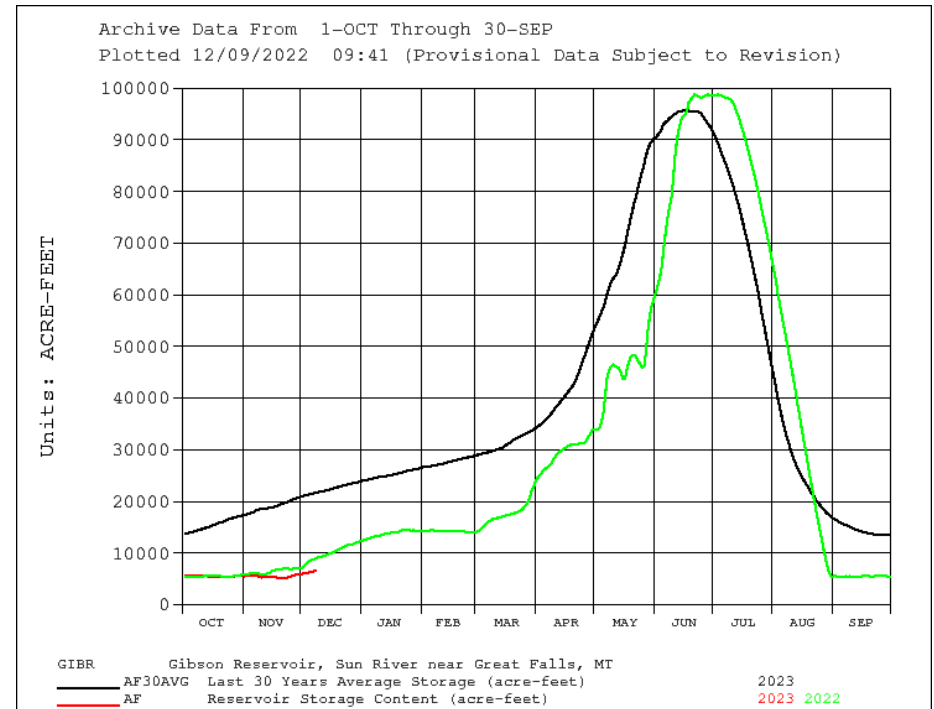
Operations Review

November inflows totaled 8.8 kaf or 63 percent of average, while river release below the Sun River below Diversion Dam averaged near 120 cfs. On December 1, 2022 Gibson Dam elevation was 4,611.4 feet or 5,900 acre-feet. The below graphs summarize the inflows, releases, and storage content throughout water year 2023.

Gibson Dam Inflow & Releases over Diversion Dam (cfs)

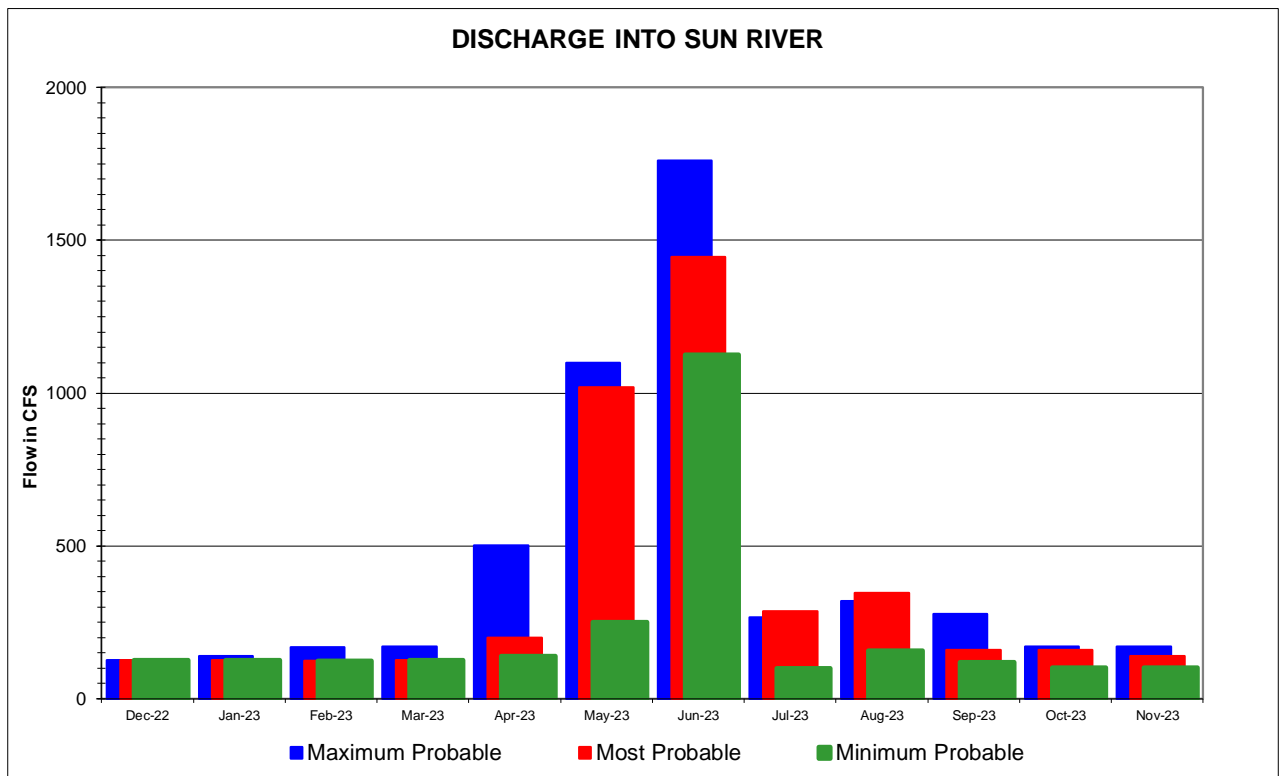
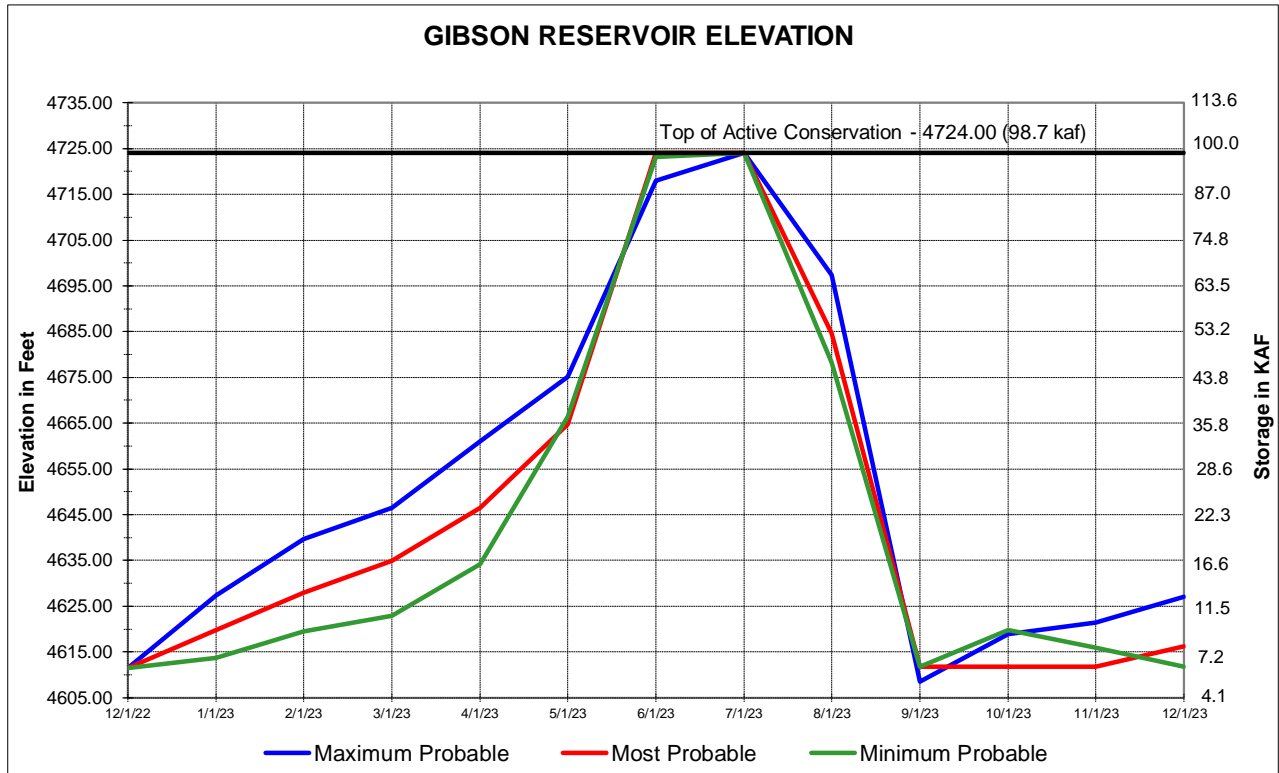


Gibson Dam Storage (af)



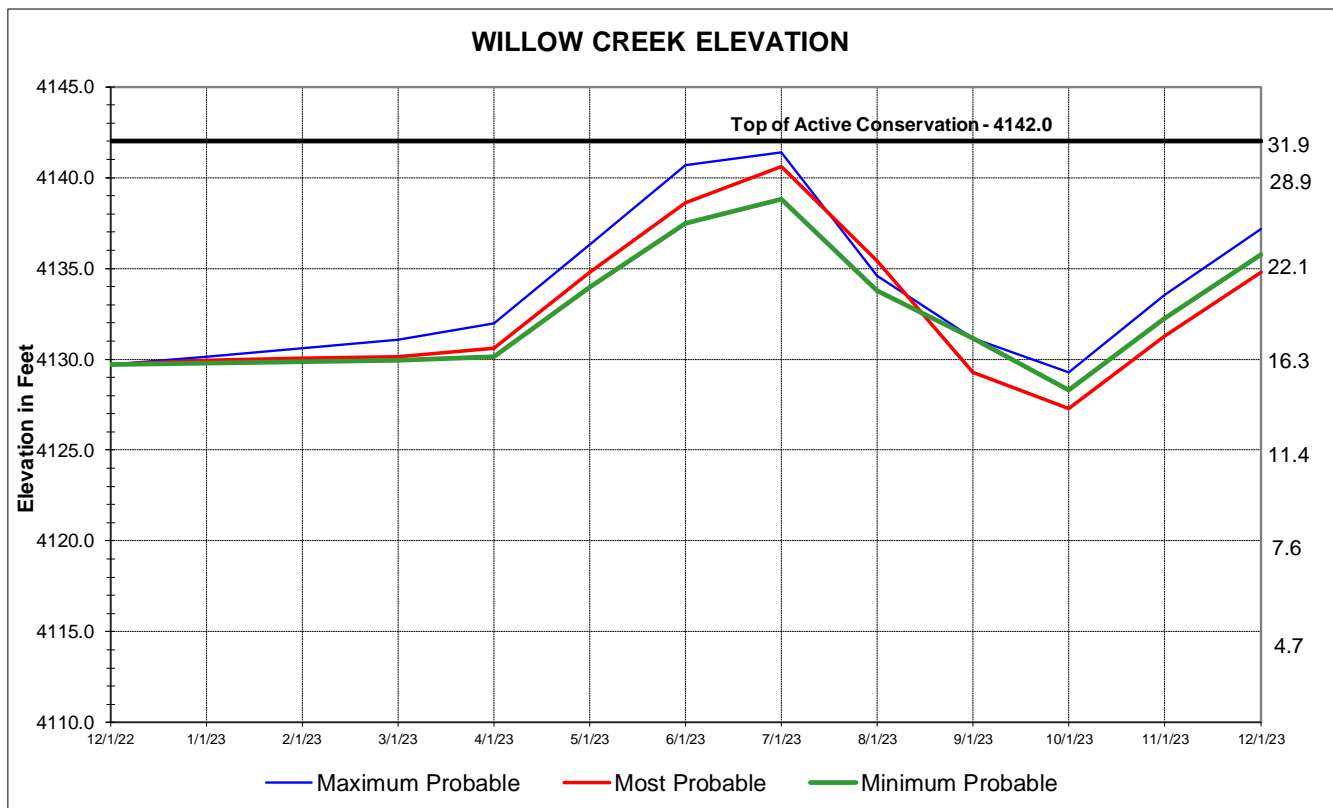
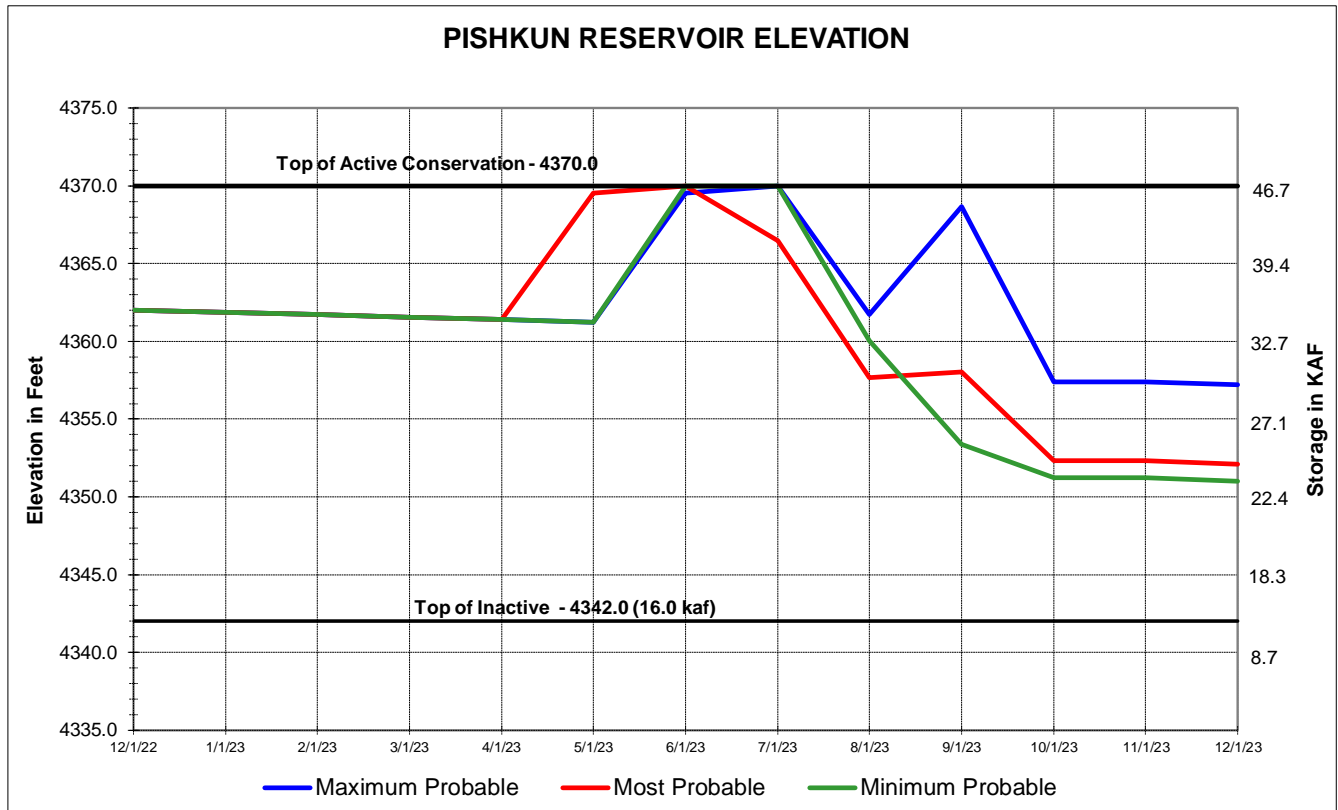
Gibson Dam Operating Outlook

The graphs below depict a range of possible reservoir elevations at Gibson Dam and monthly average river releases below Diversion Dam over time. The most probable plan is based upon the December through February forecast volume. The maximum and minimum plans are based upon ranges of possible inflow volumes due to basin variabilities and forecast uncertainties.



Pishkun Dam & Willow Creek Dam Operating Outlook

The graphs below depict a range of possible reservoir elevations at Pishkun Dam and Willow Creek Dam. The elevations are determined by the available water supply and irrigation demands in the Sun River Basin.



SUN RIVER MONTHLY OPERATIONS – Most Probable Plan

Gibson Reservoir		Initial Cont Elev 4611.41 ft				5.9 kaf Maximum Cont Elev 4724.01 ft				98.7 kaf Minimum Cont Elev 4611.70 ft				6.0 kaf	
2022	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total		
Monthly Inflow	kaf	9.5	10.0	9.2	13.5	40.0	160.0	155.0	50.0	20.0	13.0	12.5	13.0	505.7	
Total Release	kaf	6.2	6.2	5.6	6.9	27.6	96.9	155.0	95.8	66.9	13.0	12.5	11.3	503.9	
Total Release	cfs	101	101	101	112	464	1576	2605	1558	1088	218	203	190		
End-Month Content	kaf	9.2	13.0	16.6	23.2	35.6	98.7	98.7	52.9	6.0	6.0	6.0	7.7		
End-Month Elevation	ft	4619.78	4628.00	4634.96	4646.48	4664.77	4724.01	4724.01	4684.68	4611.70	4611.70	4611.70	4616.19		
Sun River Div Dam															
2022	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total		
Gain Below Gibson	cfs	24	24	23	13	44	184	215	78	29	22	20	25		
Rels to WFC	cfs	0	0	0	0	76	75	25	0	0	0	63	76		
Rels to PSC	cfs	0	0	0	0	232	665	1349	1350	773	81	0	0		
Total Diversion	cfs	0	0	0	0	308	740	1375	1350	773	81	63	76		
Flow Over Div Dam	cfs	125	125	124	125	200	1020	1445	286	345	160	159	139		
Willow Crk Operations															
		Initial Cont Elev 4129.67 ft				16.4 kaf Maximum Cont Elev 4143.40 ft				33.9 kaf Minimum Cont Elev 4092.69 ft				0.1 kaf	
2022	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total		
Native Inflow	kaf	0.3	0.1	0.1	0.5	1.0	1.0	1.5	1.0	0.5	0.8	0.8	0.3	7.9	
Total Inflow	kaf	0.3	0.1	0.1	0.5	4.8	4.9	2.8	1.0	0.5	0.8	4.1	4.1	24.0	
WCR Dam Rels	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	7.5	2.8	0.0	0.0	18.2	
End-Month Content	kaf	16.7	16.8	16.9	17.4	22.2	27.1	29.9	23.0	16.0	14.0	18.1	22.2		
End-Month Elevation	ft	4129.96	4130.05	4130.15	4130.62	4134.78	4138.60	4140.63	4135.43	4129.29	4127.27	4131.26	4134.78		
Pishkun Operations															
		Initial Cont Elev 4362.01 ft				35.3 kaf Maximum Cont Elev 4370.07 ft				46.8 kaf Minimum Cont Elev 4341.99 ft				16.0 kaf	
2022	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total		
Rels to PSC	kaf	0.0	0.0	0.0	0.0	13.8	40.9	80.3	83.0	47.5	4.8	0.0	0.0	270.3	
Total Inflow	kaf	0.0	0.0	0.0	0.0	11.7	32.7	65.8	70.5	40.4	4.1	0.0	0.0	225.2	
PSH Dam Rels	kaf	0.0	0.0	0.0	0.0	0.0	32.0	71.0	82.0	40.0	10.0	0.0	0.0	235.0	
End-Month Content	kaf	35.1	34.9	34.7	34.5	46.0	46.7	41.5	30.0	30.4	24.5	24.5	24.3		
End-Month Elevation	ft	4361.86	4361.71	4361.55	4361.40	4369.54	4370.00	4366.49	4357.68	4358.03	4352.32	4352.32	4352.11		
Greenfields Irrig															
2022	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total		
GID Delivery	kaf	0.0	0.0	0.0	0.0	0.0	32.0	71.0	82.0	40.0	10.0	0.0	0.0	235.0	

SUN RIVER MONTHLY OPERATIONS – Minimum Probable Plan

2022	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total	
Monthly Inflow	kaf	7.0	8.5	7.0	11.2	30.0	135.0	130.0	33.0	15.0	9.0	8.0	7.5	401.2
Total Release	kaf	6.2	6.1	5.5	5.6	9.4	74.2	128.9	84.9	55.8	5.8	9.6	9.1	401.1
Total Release	cfs	101	99	99	91	158	1207	2166	1381	908	97	156	153	
End-Month Content	kaf	6.7	9.1	10.6	16.2	36.8	97.6	98.7	46.8	6.0	9.2	7.6	6.0	
End-Month Elevation	ft	4613.63	4619.55	4622.95	4634.22	4666.36	4723.18	4724.01	4678.29	4611.70	4619.78	4615.94	4611.70	
Sun River Div Dam														
2022	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total	
Gain Below Gibson	cfs	24	26	25	34	57	184	215	78	29	22	20	20	
Rels to WFC	cfs	0	0	0	0	76	75	25	0	0	0	75	72	
Rels to PSC	cfs	0	0	0	0	0	1065	1230	1360	779	0	0	0	
Total Diversion	cfs	0	0	0	0	76	1140	1255	1360	779	0	75	72	
Flow Over Div Dam	cfs	125	125	124	125	139	250	1126	99	158	119	101	101	
Willow Crk Operations														
2022	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total	
Native Inflow	kaf	0.1	0.1	0.1	0.2	0.5	0.5	0.5	0.5	0.1	0.3	0.3	0.5	3.7
Total Inflow	kaf	0.1	0.1	0.1	0.2	4.3	4.4	1.8	0.5	0.1	0.3	4.2	4.2	20.3
WCR Dam Rels	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.9	3.1	3.3	0.0	0.0	13.3
End-Month Content	kaf	16.5	16.6	16.7	16.9	21.2	25.6	27.4	21.0	18.0	15.0	19.2	23.4	
End-Month Elevation	ft	4129.77	4129.86	4129.96	4130.15	4133.95	4137.47	4138.82	4133.79	4131.17	4128.30	4132.24	4135.75	
Pishkun Operations														
2022	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total	
Rels to PSC	kaf	0.0	0.0	0.0	0.0	0.0	65.5	73.2	83.6	47.9	0.0	0.0	0.0	270.2
Total Inflow	kaf	0.0	0.0	0.0	0.0	0.0	52.4	60.0	71.1	40.7	0.0	0.0	0.0	224.2
PSH Dam Rels	kaf	0.0	0.0	0.0	0.0	0.0	40.0	60.0	85.0	48.0	2.0	0.0	0.0	235.0
End-Month Content	kaf	35.1	34.9	34.7	34.5	34.3	46.7	46.7	32.8	25.5	23.5	23.5	23.3	
End-Month Elevation	ft	4361.86	4361.71	4361.55	4361.40	4361.24	4370.00	4370.00	4360.05	4353.37	4351.24	4351.24	4351.02	
Greenfields Irrig														
2022	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total	
GID Delivery	kaf	0.0	0.0	0.0	0.0	0.0	40.0	60.0	85.0	48.0	2.0	0.0	0.0	235.0

SUN RIVER MONTHLY OPERATIONS – Maximum Probable Plan

Gibson Reservoir		Initial Cont Elev 4611.41 ft				Maximum Cont Elev 4724.01 ft				Minimum Cont Elev 4608.47 ft					
		5.9 kaf				98.7 kaf				5.0 kaf					
2022		Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total	
Monthly Inflow	kaf	13.0	13.5	12.0	18.0	42.0	180.0	180.0	65.0	27.0	19.0	15.0	16.0	600.5	
Total Release	kaf	6.2	7.0	8.0	8.4	30.9	133.1	172.1	97.6	88.1	15.2	13.9	13.4	593.9	
Total Release	cfs	101	114	144	137	519	2165	2892	1587	1433	255	226	225		
End-Month Content	kaf	12.7	19.2	23.2	32.8	43.9	90.8	98.7	66.1	5.0	8.8	9.9	12.5		
End-Month Elevation	ft	4627.39	4639.67	4646.48	4660.97	4675.05	4717.98	4724.01	4697.36	4608.47	4618.84	4621.39	4626.98		
Sun River Div Dam		Initial Cont Elev 4129.67 ft				Maximum Cont Elev 4143.40 ft				Minimum Cont Elev 4092.69 ft					
2022		16.4 kaf				33.9 kaf				0.1 kaf					
2022		Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total	
Gain Below Gibson	cfs	24	26	25	34	57	184	215	78	29	22	20	20		
Rels to WFC	cfs	0	0	0	0	76	55	0	0	0	0	75	76		
Rels to PSC	cfs	0	0	0	0	0	1194	1346	1400	1143	0	0	0		
Total Diversion	kaf	0.0	0.0	0.0	0.0	4.5	76.8	80.1	86.1	70.3	0.0	4.6	4.5	326.9	
Total Diversion	cfs	0	0	0	0	76	1249	1346	1400	1143	0	75	76		
Flow Over Div Dam	kaf	7.7	8.6	9.4	10.5	29.8	67.6	104.8	16.3	19.6	16.5	10.5	10.1	311.4	
Flow Over Div Dam	cfs	125	140	169	171	501	1099	1761	265	319	277	171	170		
Willow Crk Operations		Initial Cont Elev 4129.67 ft				Maximum Cont Elev 4143.40 ft				Minimum Cont Elev 4092.69 ft					
2022		16.4 kaf				33.9 kaf				0.1 kaf					
2022		Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total	
Native Inflow	kaf	0.5	0.5	0.5	1.0	1.4	3.0	4.0	2.0	1.0	0.8	0.8	0.7	16.2	
Total Inflow	kaf	0.5	0.5	0.5	1.0	5.2	5.9	4.0	2.0	1.0	0.8	4.7	4.5	30.6	
WCR Dam Rels	kaf	0.0	0.0	0.0	0.0	0.0	0.0	3.0	11.0	5.0	2.8	0.0	0.0	21.8	
End-Month Content	kaf	16.9	17.4	17.9	18.9	24.1	30.0	31.0	22.0	18.0	16.0	20.7	25.2		
End-Month Elevation	ft	4130.15	4130.62	4131.08	4131.98	4136.30	4140.70	4141.40	4134.61	4131.17	4129.29	4133.53	4137.16		
Pishkun Operations		Initial Cont Elev 4362.01 ft				Maximum Cont Elev 4370.07 ft				Minimum Cont Elev 4341.99 ft					
2022		35.3 kaf				46.8 kaf				16.0 kaf					
2022		Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total	
Rels to PSC	kaf	0.0	0.0	0.0	0.0	0.0	73.4	80.1	86.1	70.3	0.0	0.0	0.0	309.9	
Total Inflow	kaf	0.0	0.0	0.0	0.0	0.0	58.7	65.7	73.2	59.8	0.0	0.0	0.0	257.4	
PSH Dam Rels	kaf	0.0	0.0	0.0	0.0	0.0	47.0	65.0	85.0	50.0	15.0	0.0	0.0	262.0	
End-Month Content	kaf	35.1	34.9	34.7	34.5	34.3	46.0	46.7	34.9	44.7	29.7	29.7	29.5		
End-Month Elevation	ft	4361.86	4361.71	4361.55	4361.40	4361.24	4369.54	4370.00	4361.71	4368.68	4357.41	4357.41	4357.23		
Greenfields Irrig		Initial Cont Elev 4362.01 ft				Maximum Cont Elev 4370.07 ft				Minimum Cont Elev 4341.99 ft					
2022		35.3 kaf				46.8 kaf				16.0 kaf					
2022		Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total	
GID Delivery	kaf	0.0	0.0	0.0	0.0	0.0	47.0	65.0	85.0	50.0	15.0	0.0	0.0	262.0	

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