

# RECLAMATION

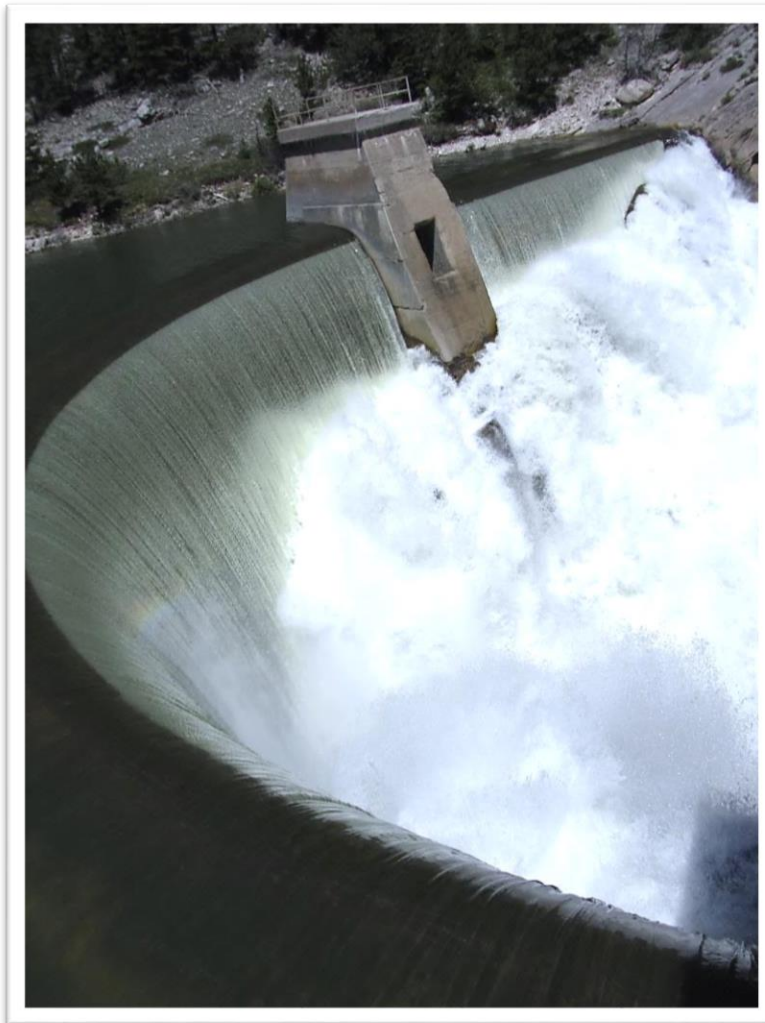
## *Managing Water in the West*

December 7, 2016

Dear Customer:

Attached are the Monthly Water Supply Outlook and projected reservoir and river operating plans for the Sun River Project. The anticipated inflow for December through March period is forecasted at 53,400 acre-feet or 110 percent of the 30-year average. If you have any questions or concerns, please contact me at 406-247-7320 or Clayton Jordan at 406-247-7334.

Stephanie Micek  
Reservoir and River Operations



U. S. Department of the Interior  
Bureau of Reclamation  
Montana Area Office  
River and Reservoir Operations

**SUN RIVER PROJECT OPERATIONS**  
 Water Supply Forecasts and Reservoir Operations  
 December 1, 2016

Reservoir	Elevation	Storage (af)	% Average*	% Full
Gibson	4646.70	23,337	94	24
Pishkun	4347.40	20,173	66	43
Willow Creek	4138.89	27,411	122	86

\*percent of average is based on past 30 years

**Actual Inflows to Gibson Reservoir (1,000 Acre-Feet):**

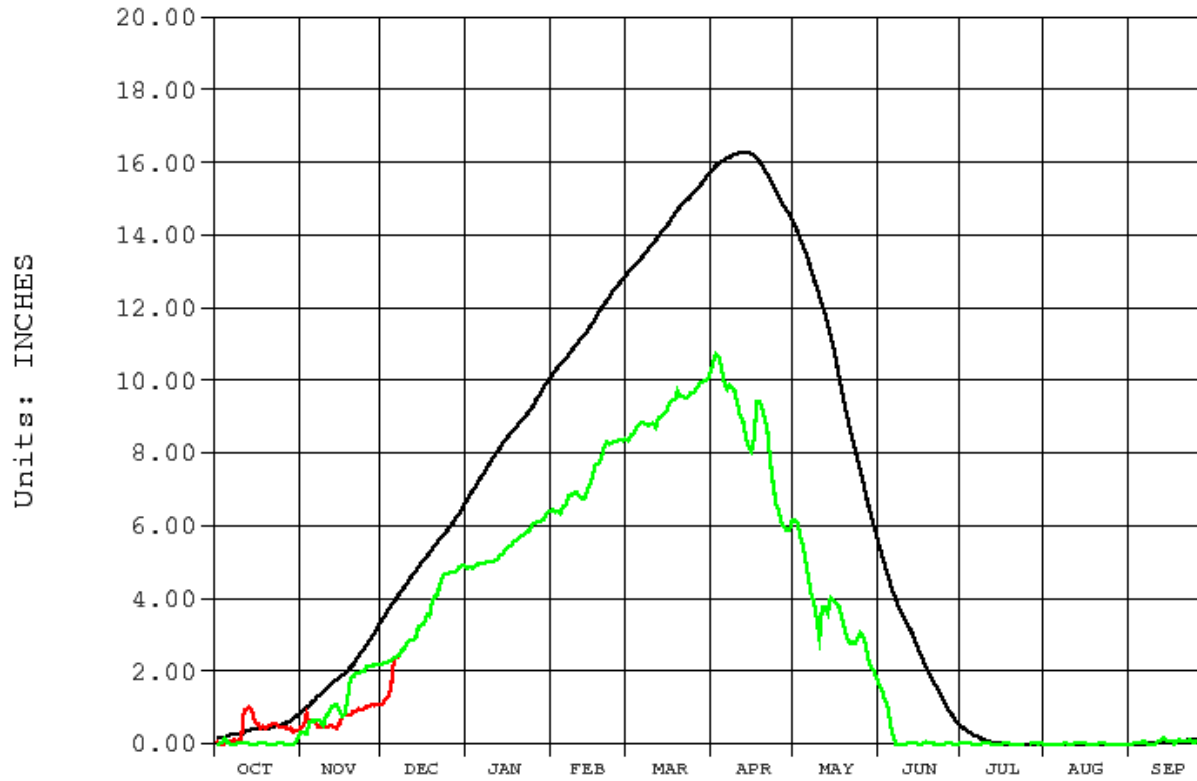
Month	Inflow	Percent of Average
<b>WY 2017</b>		
October	19.5	135
November	22.3	148
<b>WY 2016</b>		
October	9.5	62
November	10.8	67
December	9.2	70
January	8.8	77
February	8.9	86
March	12.4	81
April	69.8	153
May	98.5	66
June	72.0	46
July	24.5	43
August	12.3	53
September	9.9	62
<i>April – July</i>	<i>264.8</i>	<i>65</i>

**WY 2017 December Forecasted Inflow (1,000 Acre-Feet):**

Month	Inflow	Percent of Average
Reclamation	14.9	119

**Gibson Reservoir  
Snow Water Equivalent (SWE)  
60% of Average**

Archive Data From 1-OCT Through 30-SEP  
Plotted 12/07/2016 14:13 (Provisional Data Subject to Revision)



GIBR Gibson Reservoir, Sun River near Great Falls, MT  
 SE\_AVG Snow Water Equivalent Average (inches)  
 SE Snow Water Equivalent (inches)

2017  
 2017 2016

UPPER SUN RIVER MONTHLY OPERATIONS

Gibson Reservoir		Initial Cont Elev 4646.64 ft					Maximum Cont Elev 4724.01 ft					Minimum Cont Elev 4608.47 ft			5.0 kaf
2016	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total		
Monthly Inflow	kaf	14.9	12.8	11.2	14.5	45.0	152.0	156.0	57.0	24.0	20.1	19.3	17.0	543.8	
Spillway Rels	cfs	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total Release	kaf	6.8	6.9	6.2	6.8	51.3	97.0	156.0	113.2	61.5	20.1	8.0	9.3	543.1	
Total Release	cfs	111	112	112	111	862	1578	2622	1841	1000	338	130	156		
End-Month Content	kaf	31.4	37.3	42.3	50.0	43.7	98.7	98.7	42.5	5.0	5.0	16.3	24.0		
End-Month Elevation	ft	4659.00	4667.01	4673.20	4681.70	4674.83	4724.01	4724.01	4673.43	4608.47	4608.47	4634.40	4647.78		
End-Month Area	acre	703.6	771.8	847.9	958.1	871.2	1334.0	1334.0	851.3	271.7	271.7	535.3	616.7		
Net Change Content	kaf	8.1	5.9	5.0	7.7	-6.3	55.0	0.0	-56.2	-37.5	0.0	11.3	7.7	0.7	

2016	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	50	36	0	0	0	0	75	76	
Rels to PSC	cfs	0	0	0	0	351	1153	1333	1360	597	284	0	0	
Total Diversion	kaf	0.0	0.0	0.0	0.0	23.9	73.1	79.3	83.6	36.7	16.9	4.6	4.5	322.6
Total Diversion	cfs	0	0	0	0	402	1189	1333	1360	597	284	75	76	
Flow Over Div Dam	kaf	8.3	8.5	7.6	8.9	30.8	35.2	89.5	34.4	26.6	4.5	4.6	6.0	264.9
Flow Over Div Dam	cfs	135	138	137	145	518	572	1504	559	433	76	75	101	
Min River Rels	kaf	6.1	6.1	5.6	6.1	6.0	6.1	6.0	4.6	4.6	4.5	4.6	6.0	66.3
Min River Rels	cfs	100	100	100	100	100	100	100	75	75	75	75	100	

Willow Crk Operations		Initial Cont Elev 4138.95 ft					Maximum Cont Elev 4142.04 ft					Minimum Cont Elev 4093.42 ft			0.1 kaf
2016	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total		
Native Inflow	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Inflow	kaf	0.0	0.0	0.0	0.0	2.5	1.9	0.0	0.0	0.0	0.0	3.9	3.8	12.1	
WCR Dam Rels	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	11.9	0.0	0.0	19.8	
End-Month Content	kaf	27.5	27.5	27.5	27.5	30.0	31.9	31.9	31.9	24.0	12.1	16.0	19.8		
End-Month Elevation	ft	4138.95	4138.95	4138.95	4138.95	4140.72	4142.04	4142.04	4142.04	4136.39	4125.71	4129.74	4133.12		
Net Change Content	kaf	0.0	0.0	0.0	0.0	2.5	1.9	0.0	0.0	-7.9	-11.9	3.9	3.8	-7.7	

Pishkun Operations		Initial Cont Elev 4347.43 ft					Maximum Cont Elev 4370.07 ft					Minimum Cont Elev 4341.99 ft			16.0 kaf
2016	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	20.9	70.9	79.3	83.6	36.7	16.9	0.0	0.0	308.3	
Total Inflow	kaf	0.0	0.0	0.0	0.0	17.8	56.7	65.0	71.1	31.2	14.4	0.0	0.0	256.2	
PSH Dam Rels	kaf	0.0	0.0	0.0	0.0	0.0	47.0	65.0	85.0	48.0	14.4	0.0	0.0	259.4	
End-Month Content	kaf	20.0	19.8	19.6	19.4	37.0	46.7	46.7	32.8	16.0	16.0	16.0	15.8		
End-Month Elevation	ft	4347.19	4346.95	4346.70	4346.45	4363.28	4370.00	4370.00	4360.05	4341.99	4341.99	4341.99	4341.71		
Net Change Content	kaf	-0.2	-0.2	-0.2	-0.2	17.6	9.7	0.0	-13.9	-16.8	0.0	0.0	-0.2	-4.4	

2016	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total	
GID Demand	kaf	0.0	0.0	0.0	0.0	0.0	47.0	65.0	85.0	48.0	18.0	0.0	0.0	263.0
GID Delivery	kaf	0.0	0.0	0.0	0.0	0.0	47.0	65.0	85.0	48.0	14.4	0.0	0.0	259.4

2016	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total	
Flow Over Div Dam	cfs	135	138	137	145	518	572	1504	559	433	76	75	101	
PSC Return Flow	cfs	0	0	0	0	42	185	217	203	89	42	0	0	
WCR Dam Rels	cfs	0	0	0	0	0	0	0	0	128	200	0	0	
Sr Demand Above	kaf	0.0	0.0	0.0	0.0	0.0	7.7	12.9	13.3	13.3	2.0	0.0	0.0	49.2
Sr Demand Below	kaf	0.0	0.0	0.0	0.0	0.0	0.9	10.6	18.0	14.1	5.0	0.0	0.0	48.6
Flow @ Ft. Shaw Div	cfs	148	153	153	169	608	730	1434	260	231	210	89	109	
Ft Shaw Demand	kaf	0.0	0.0	0.0	0.0	0.7	7.9	8.0	11.4	9.6	8.0	0.0	0.0	45.6
Ft Shaw Tot Deliv	kaf	0.0	0.0	0.0	0.0	0.7	7.9	8.0	11.4	9.6	8.0	0.0	0.0	45.6
Flow blw Ft. Shaw	cfs	148	153	153	169	597	602	1299	75	75	76	89	109	

UPPER SUN RIVER MONTHLY OPERATIONS

Gibson Reservoir		Initial Cont Elev 4646.64 ft					Maximum Cont Elev 4724.01 ft					Minimum Cont Elev 4608.47 ft			
		23.3 kaf					98.7 kaf					5.0 kaf			
2016	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total		
Monthly Inflow	kaf	9.5	10.2	8.7	11.4	30.2	103.5	94.1	34.9	16.4	11.5	11.4	11.1	352.9	
Spillway Rels	cfs	0	0	0	0	0	0	0	0	0	0	0	0		
Total Release	kaf	3.4	3.3	3.0	3.4	32.4	58.4	88.3	110.8	34.2	11.5	7.6	7.8	364.1	
Total Release	cfs	55	54	54	55	545	950	1484	1802	556	193	124	131		
End-Month Content	kaf	29.4	36.3	42.0	50.0	47.8	92.9	98.7	22.8	5.0	5.0	8.8	12.1		
End-Month Elevation	ft	4656.11	4665.70	4672.84	4681.70	4679.37	4719.61	4724.01	4645.82	4608.47	4608.47	4618.84	4626.16		
End-Month Area	acre	681.3	759.4	842.9	958.1	930.5	1299.6	1334.0	603.6	271.7	271.7	423.3	480.9		
Net Change Content	kaf	6.1	6.9	5.7	8.0	-2.2	45.1	5.8	-75.9	-17.8	0.0	3.8	3.3	-11.2	

2016	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	8	0	0	0	0	75	76	
Rels to PSC	cfs	0	0	0	0	450	1051	1333	1360	535	165	0	0	
Total Diversion	kaf	0.0	0.0	0.0	0.0	31.3	65.1	79.3	83.6	32.9	9.8	4.6	4.5	311.1
Total Diversion	cfs	0	0	0	0	526	1059	1333	1360	535	165	75	76	
Flow Over Div Dam	kaf	4.9	4.9	4.4	5.5	4.5	4.6	21.8	32.0	3.1	3.0	4.2	4.5	97.4
Flow Over Div Dam	cfs	80	80	79	89	76	75	366	520	50	50	68	76	
Min River Rels	kaf	4.6	4.6	4.2	4.6	4.5	4.6	4.5	3.1	3.1	3.0	3.1	4.5	48.4
Min River Rels	cfs	75	75	75	75	75	75	75	50	50	50	50	75	

Willow Crk Operations		Initial Cont Elev 4138.95 ft					Maximum Cont Elev 4142.04 ft					Minimum Cont Elev 4093.42 ft			
		27.5 kaf					31.9 kaf					0.1 kaf			
2016	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total		
Native Inflow	kaf	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	
Total Inflow	kaf	0.0	0.0	0.0	0.1	3.9	0.4	0.0	0.0	0.0	0.0	3.9	3.8	12.1	
WCR Dam Rels	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	22.9	1.9	0.0	0.0	25.7	
End-Month Content	kaf	27.5	27.5	27.5	27.6	31.5	31.9	31.9	31.0	8.1	6.2	10.1	13.9		
End-Month Elevation	ft	4138.95	4138.95	4138.95	4139.03	4141.76	4142.04	4142.04	4141.42	4120.70	4117.77	4123.35	4127.64		
Net Change Content	kaf	0.0	0.0	0.0	0.1	3.9	0.4	0.0	-0.9	-22.9	-1.9	3.9	3.8	-13.6	

Pishkun Operations		Initial Cont Elev 4347.43 ft					Maximum Cont Elev 4370.07 ft					Minimum Cont Elev 4341.99 ft			
		20.2 kaf					46.8 kaf					16.0 kaf			
2016	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	26.8	64.6	79.3	83.6	32.9	9.8	0.0	0.0	297.0	
Total Inflow	kaf	0.0	0.0	0.0	0.0	22.8	51.7	65.0	71.1	28.0	8.3	0.0	0.0	246.9	
PSH Dam Rels	kaf	0.0	0.0	0.0	0.0	0.0	47.0	65.0	85.0	44.8	8.3	0.0	0.0	250.1	
End-Month Content	kaf	20.0	19.8	19.6	19.4	42.0	46.7	46.7	32.8	16.0	16.0	16.0	15.8		
End-Month Elevation	ft	4347.19	4346.95	4346.70	4346.45	4366.83	4370.00	4370.00	4360.05	4341.99	4341.99	4341.99	4341.71		
Net Change Content	kaf	-0.2	-0.2	-0.2	-0.2	22.6	4.7	0.0	-13.9	-16.8	0.0	0.0	-0.2	-4.4	

2016	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total	
GID Demand	kaf	0.0	0.0	0.0	0.0	0.0	47.0	65.0	85.0	48.0	18.0	0.0	0.0	263.0
GID Delivery	kaf	0.0	0.0	0.0	0.0	0.0	47.0	65.0	85.0	44.8	8.3	0.0	0.0	250.1

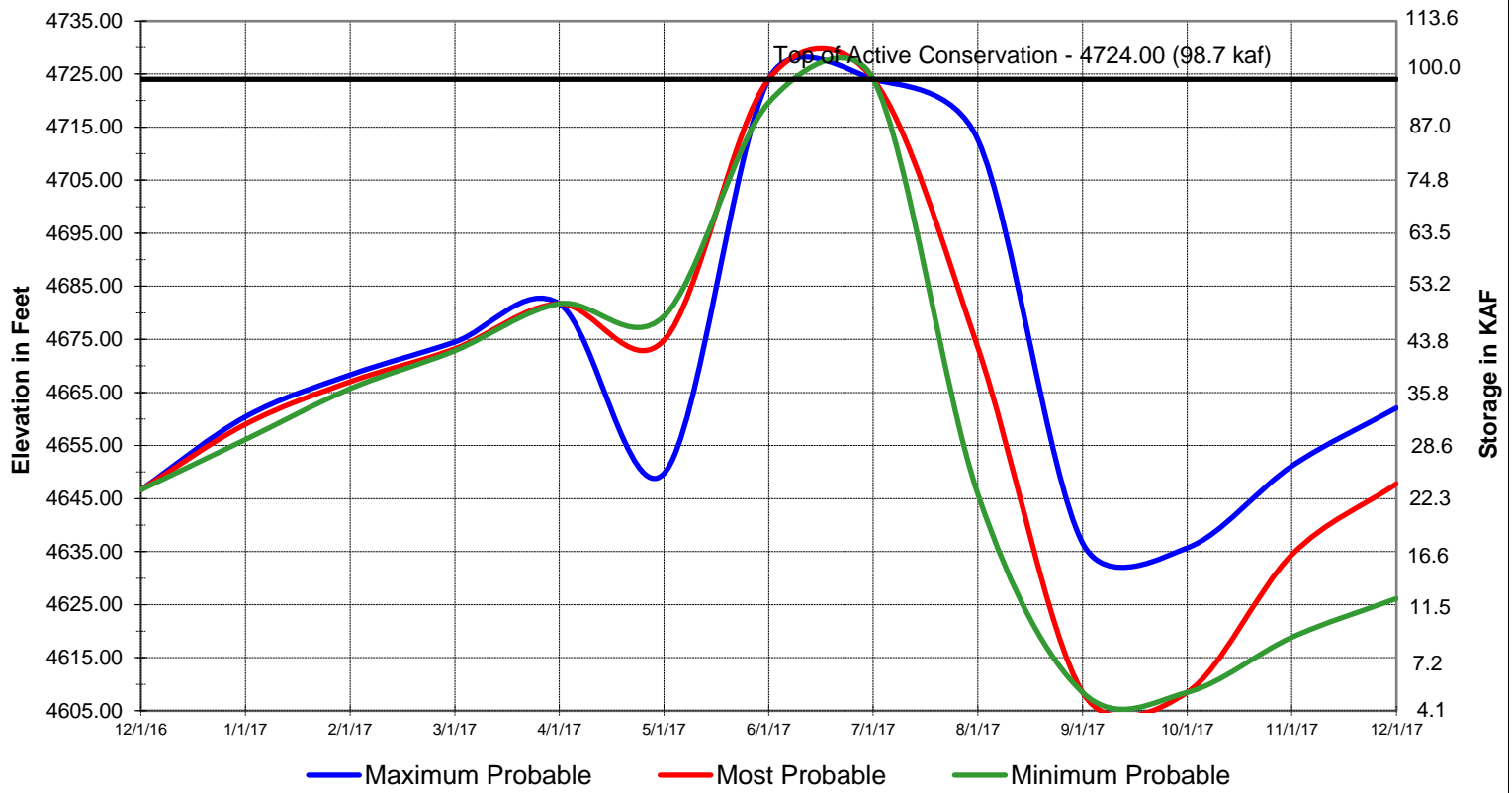
2016	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total	
Flow Over Div Dam	cfs	80	80	79	89	76	75	366	520	50	50	68	76	
PSC Return Flow	cfs	0	0	0	0	54	168	192	203	80	25	0	0	
WCR Dam Rels	cfs	0	0	0	0	0	0	0	15	372	32	0	0	
Sr Demand Above	kaf	0.0	0.0	0.0	0.0	0.0	7.7	12.9	13.3	13.3	2.0	1.0	0.0	50.2
Sr Demand Below	kaf	0.0	0.0	0.0	0.0	0.0	0.9	10.6	18.0	14.1	2.0	1.0	0.0	46.6
Flow @ Ft. Shaw Div	cfs	93	94	95	114	178	215	271	236	207	50	50	84	
Ft Shaw Demand	kaf	0.0	0.0	0.0	0.0	0.7	7.9	8.0	11.4	9.6	0.0	0.0	0.0	37.6
Ft Shaw Tot Deliv	kaf	0.0	0.0	0.0	0.0	0.7	7.9	8.0	11.4	9.6	0.0	0.0	0.0	37.6
Flow blw Ft. Shaw	cfs	93	94	95	114	166	86	136	50	50	50	50	84	

UPPER SUN RIVER MONTHLY OPERATIONS

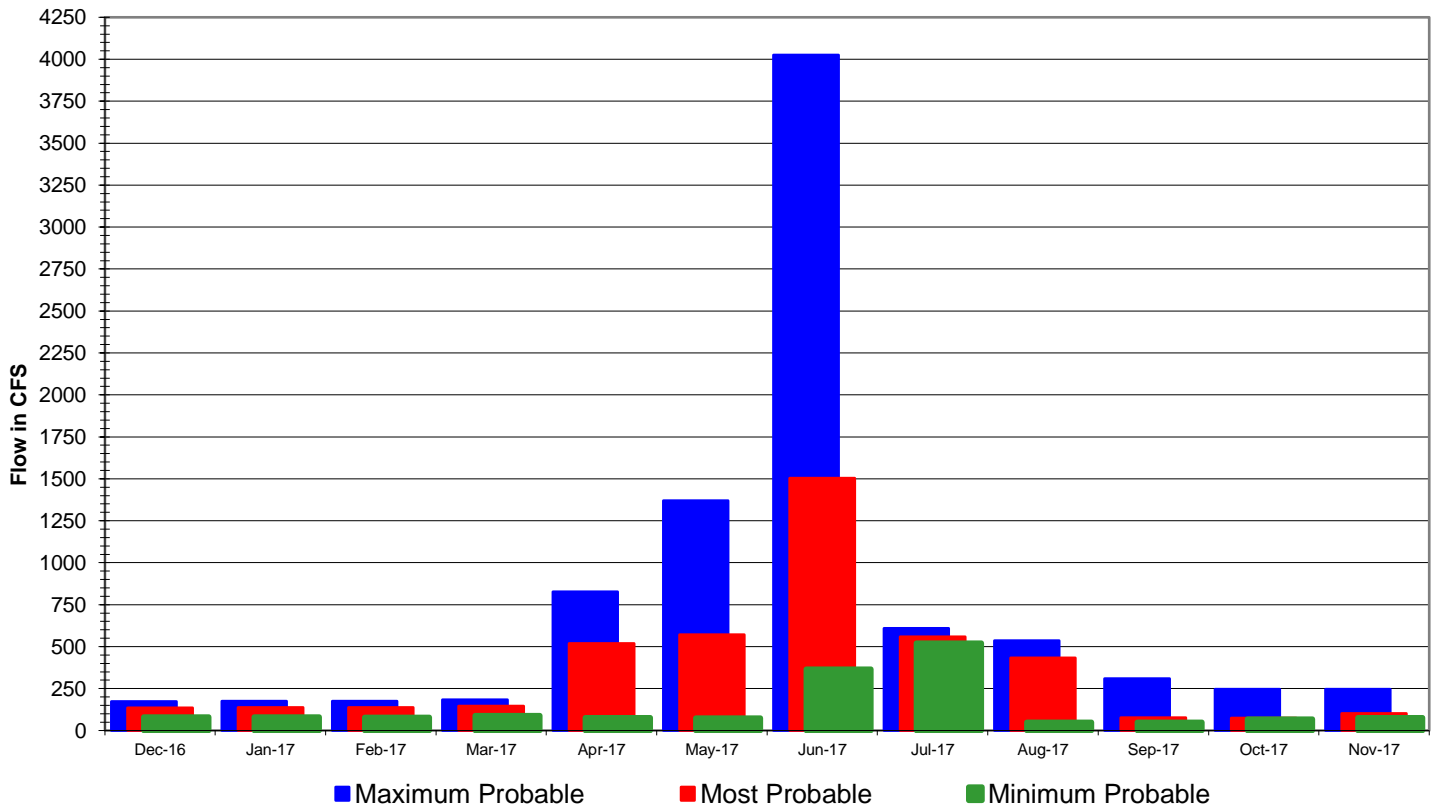
Gibson Reservoir		Initial Cont Elev 4646.64 ft					Maximum Cont Elev 4724.01 ft					Minimum Cont Elev 4608.47 ft				
		23.3 kaf					98.7 kaf					5.0 kaf				
2016	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total			
Monthly Inflow	kaf	18.3	15.1	13.5	15.8	50.0	214.0	306.0	104.0	35.0	24.0	23.0	21.0	839.7		
Spillway Rels	cfs	0	0	0	0	0	0	0	0	0	0	0	0			
Total Release	kaf	9.2	9.2	8.4	9.2	74.8	140.5	306.0	118.7	101.5	24.5	13.9	13.5	829.4		
Total Release	cfs	150	150	151	150	1257	2285	5143	1930	1651	412	226	227			
End-Month Content	kaf	32.4	38.3	43.4	50.0	25.2	98.7	98.7	84.0	17.5	17.0	26.1	33.6			
End-Month Elevation	ft	4660.41	4668.29	4674.48	4681.70	4649.71	4724.01	4724.01	4712.61	4636.62	4635.70	4651.12	4662.07			
End-Month Area	acre	715.7	785.9	866.3	958.1	630.6	1334.0	1334.0	1243.1	548.2	542.8	640.9	729.2			
Net Change Content	kaf	9.1	5.9	5.1	6.6	-24.8	73.5	0.0	-14.7	-66.5	-0.5	9.1	7.5	10.3		
Sun River Div Dam		Initial Cont Elev 4138.95 ft					Maximum Cont Elev 4142.04 ft					Minimum Cont Elev 4093.42 ft				
		27.5 kaf					31.9 kaf					0.1 kaf				
2016	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	8	0	0	0	0	0	0			
Rels to PSC	cfs	0	0	0	0	412	1091	1333	1400	1145	124	0	0			
Total Diversion	kaf	0.0	0.0	0.0	0.0	29.0	67.6	79.3	86.1	70.4	7.4	0.0	0.0	339.8		
Total Diversion	cfs	0	0	0	0	487	1099	1333	1400	1145	124	0	0			
Flow Over Div Dam	kaf	10.7	10.8	9.8	11.3	49.2	84.2	239.5	37.4	32.9	18.4	15.1	14.7	534.0		
Flow Over Div Dam	cfs	174	176	176	184	827	1369	4025	608	535	309	246	247			
Min River Rels	kaf	6.1	6.1	5.6	6.1	6.0	55.3	53.6	4.6	4.6	4.5	4.6	6.0	163.1		
Min River Rels	cfs	100	100	100	100	100	900	900	75	75	75	75	100			
Willow Crk Operations		Initial Cont Elev 4138.95 ft					Maximum Cont Elev 4142.04 ft					Minimum Cont Elev 4093.42 ft				
		27.5 kaf					31.9 kaf					0.1 kaf				
2016	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total			
Native Inflow	kaf	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2		
Total Inflow	kaf	0.0	0.0	0.0	0.1	3.9	0.4	0.0	0.0	0.0	0.0	0.0	0.0	4.4		
WCR Dam Rels	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	3.0	0.0	3.9		
End-Month Content	kaf	27.5	27.5	27.5	27.6	31.5	31.9	31.9	31.9	31.9	31.0	28.0	28.0			
End-Month Elevation	ft	4138.95	4138.95	4138.95	4139.03	4141.76	4142.04	4142.04	4142.04	4142.04	4141.42	4139.31	4139.31			
Net Change Content	kaf	0.0	0.0	0.0	0.1	3.9	0.4	0.0	0.0	0.0	-0.9	-3.0	0.0	0.5		
Pishkun Operations		Initial Cont Elev 4347.43 ft					Maximum Cont Elev 4370.07 ft					Minimum Cont Elev 4341.99 ft				
		20.2 kaf					46.8 kaf					16.0 kaf				
2016	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	24.5	67.1	79.3	86.1	70.4	7.4	0.0	0.0	334.8		
Total Inflow	kaf	0.0	0.0	0.0	0.0	20.8	53.7	65.0	73.2	59.8	6.3	0.0	0.0	278.8		
PSH Dam Rels	kaf	0.0	0.0	0.0	0.0	0.0	47.0	65.0	85.0	48.0	18.0	0.0	0.0	263.0		
End-Month Content	kaf	20.0	19.8	19.6	19.4	40.0	46.7	46.7	34.9	46.7	35.0	35.0	34.8			
End-Month Elevation	ft	4347.19	4346.95	4346.70	4346.45	4365.44	4370.00	4370.00	4361.71	4370.00	4361.78	4361.78	4361.63			
Net Change Content	kaf	-0.2	-0.2	-0.2	-0.2	20.6	6.7	0.0	-11.8	11.8	-11.7	0.0	-0.2	14.6		
Greenfields Irrig		Initial Cont Elev 4347.43 ft					Maximum Cont Elev 4370.07 ft					Minimum Cont Elev 4341.99 ft				
		20.2 kaf					46.8 kaf					16.0 kaf				
2016	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total			
GID Demand	kaf	0.0	0.0	0.0	0.0	0.0	47.0	65.0	85.0	48.0	18.0	0.0	0.0	263.0		
GID Delivery	kaf	0.0	0.0	0.0	0.0	0.0	47.0	65.0	85.0	48.0	18.0	0.0	0.0	263.0		
River Blw Div Dam		Initial Cont Elev 4347.43 ft					Maximum Cont Elev 4370.07 ft					Minimum Cont Elev 4341.99 ft				
		20.2 kaf					46.8 kaf					16.0 kaf				
2016	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total			
Flow Over Div Dam	cfs	174	176	176	184	827	1369	4025	608	535	309	246	247			
PSC Return Flow	cfs	0	0	0	0	50	174	192	179	155	18	0	0			
WCR Dam Rels	cfs	0	0	0	0	0	0	0	0	0	15	49	0			
Sr Demand Above	kaf	0.0	0.0	0.0	0.0	0.0	7.7	12.9	13.3	13.3	2.0	1.0	0.0	50.2		
Sr Demand Below	kaf	0.0	0.0	0.0	0.0	0.0	0.9	10.6	18.0	14.1	5.0	1.0	0.0	49.6		
Flow @ Ft. Shaw Div	cfs	187	190	193	208	926	1516	3929	285	255	235	276	255			
Ft Shaw Demand	kaf	0.0	0.0	0.0	0.0	0.7	7.9	8.0	11.4	9.6	8.0	0.0	0.0	45.6		
Ft Shaw Tot Deliv	kaf	0.0	0.0	0.0	0.0	0.7	7.9	8.0	11.4	9.6	8.0	0.0	0.0	45.6		
Flow blw Ft. Shaw	cfs	187	190	193	208	914	1387	3795	99	99	101	276	255			

# GIBSON RESERVOIR

## GIBSON RESERVOIR ELEVATION

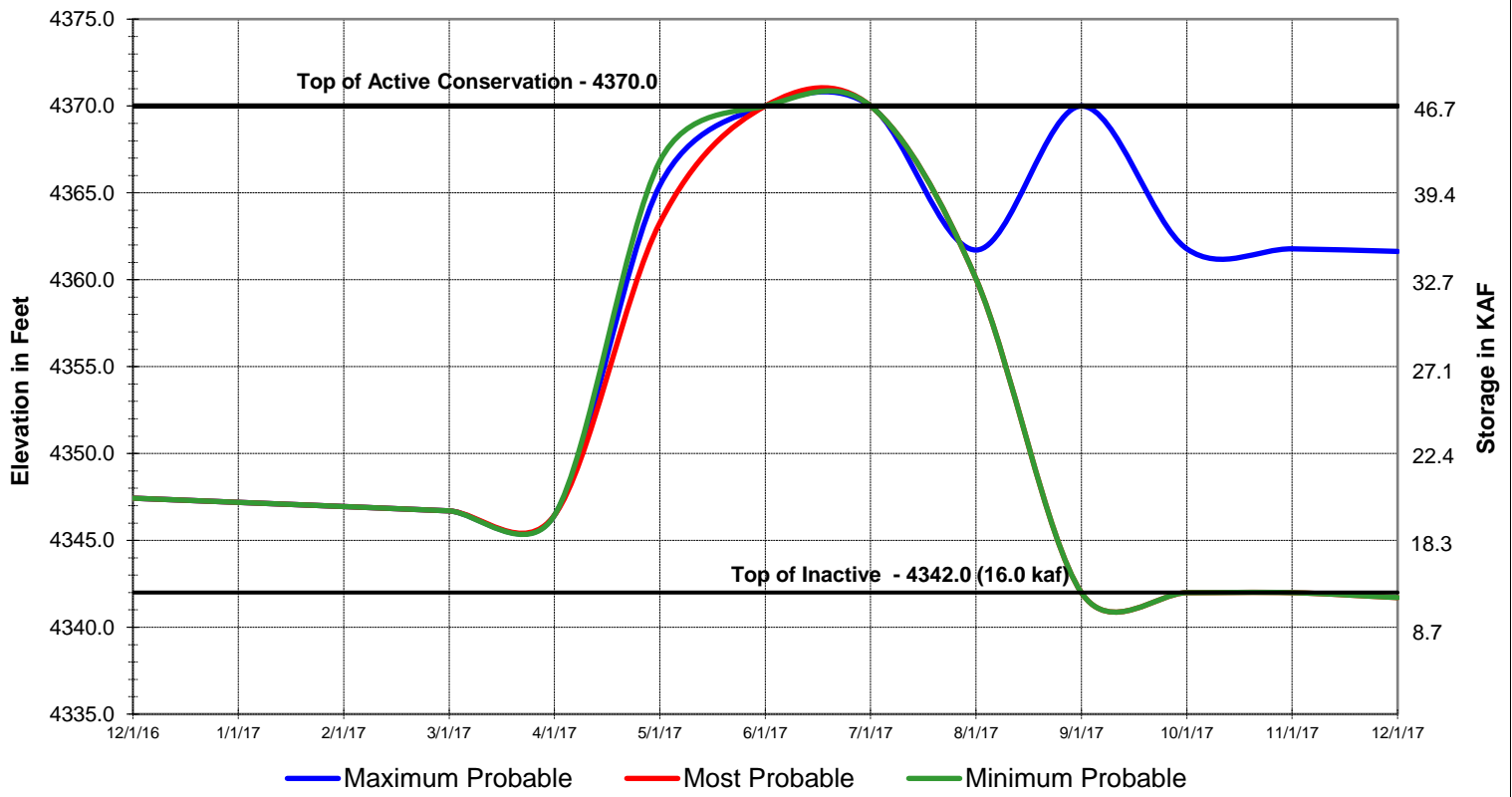


## DISCHARGE INTO SUN RIVER

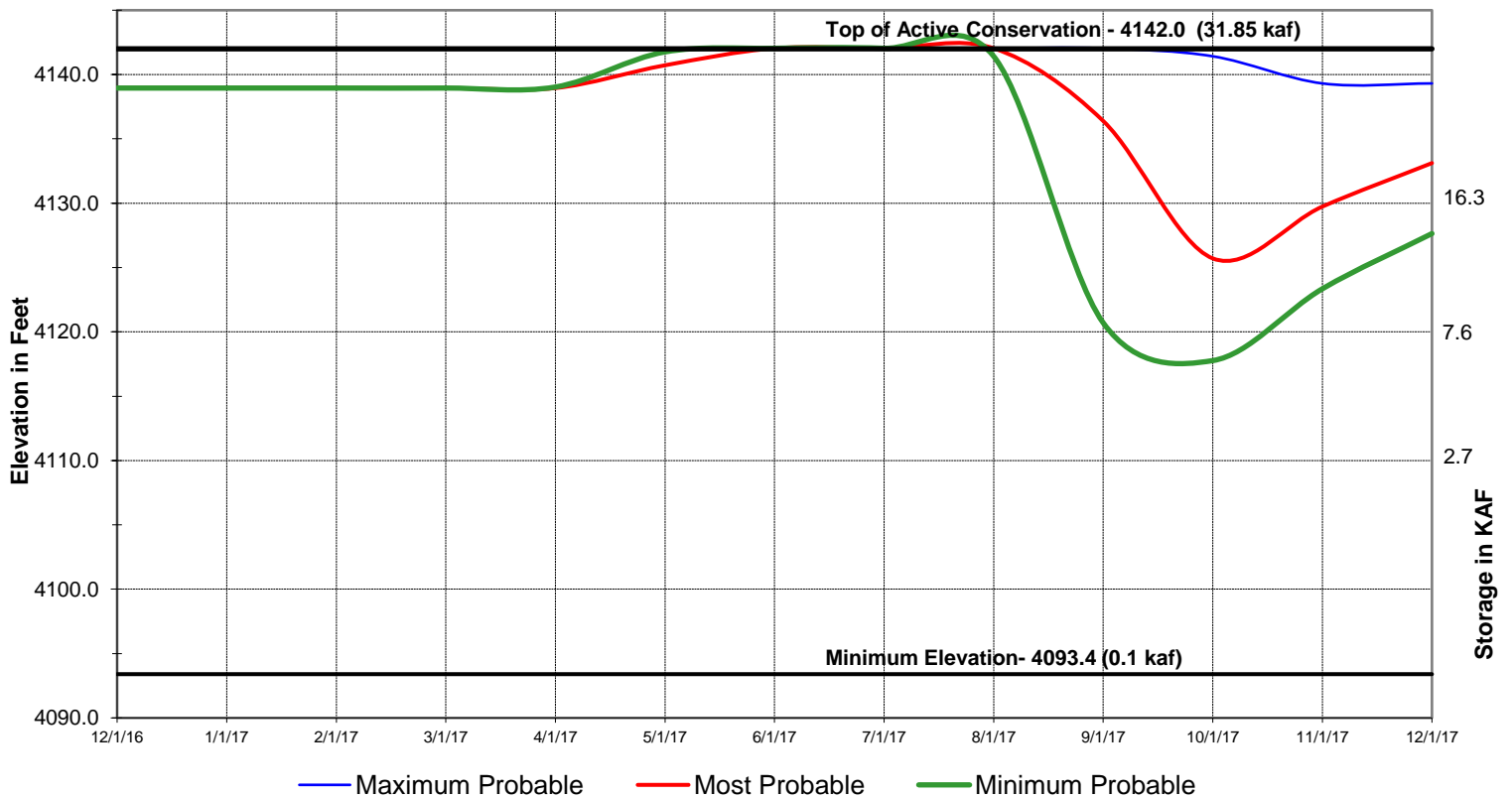


WATER YEAR 2017

### PISHKUN RESERVOIR ELEVATION



### WILLOW CREEK ELEVATION



WATER YEAR 2017