

RECLAMATION

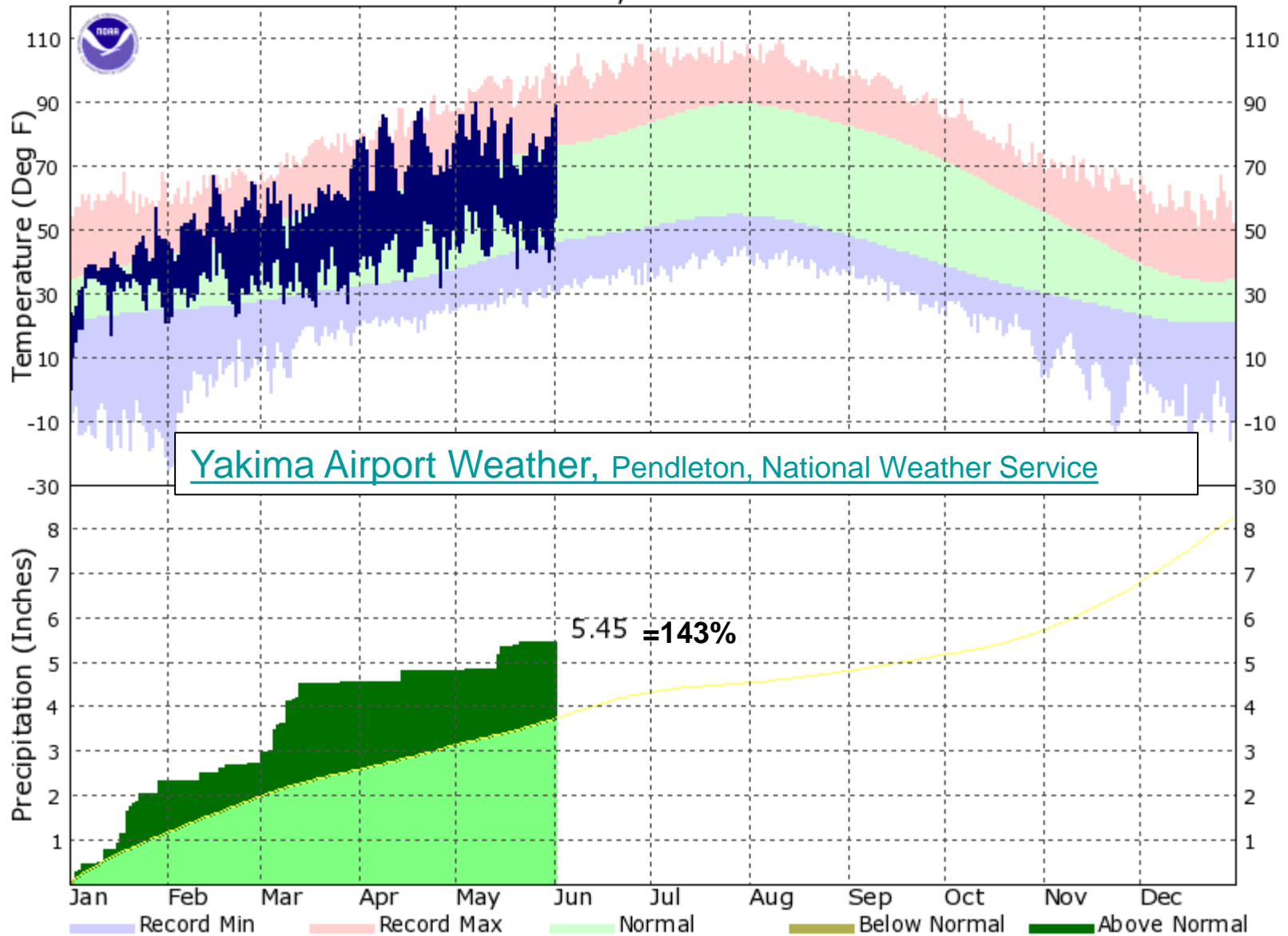
Managing Water in the West

Yakima Basin WY 2016 River Operations Meeting June 3, 2016

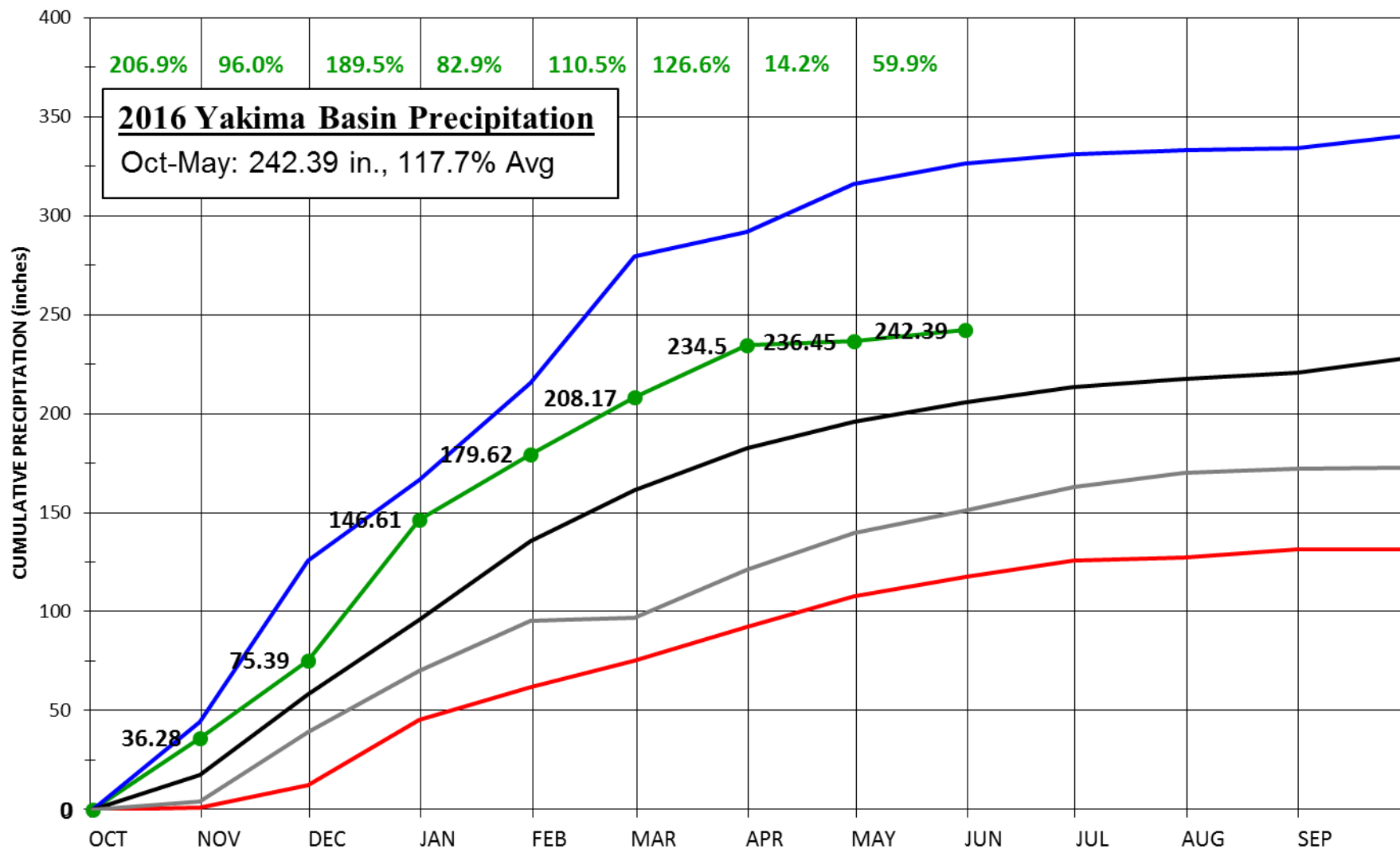


U.S. Department of the Interior
Bureau of Reclamation

YAKIMA, WA - 2016



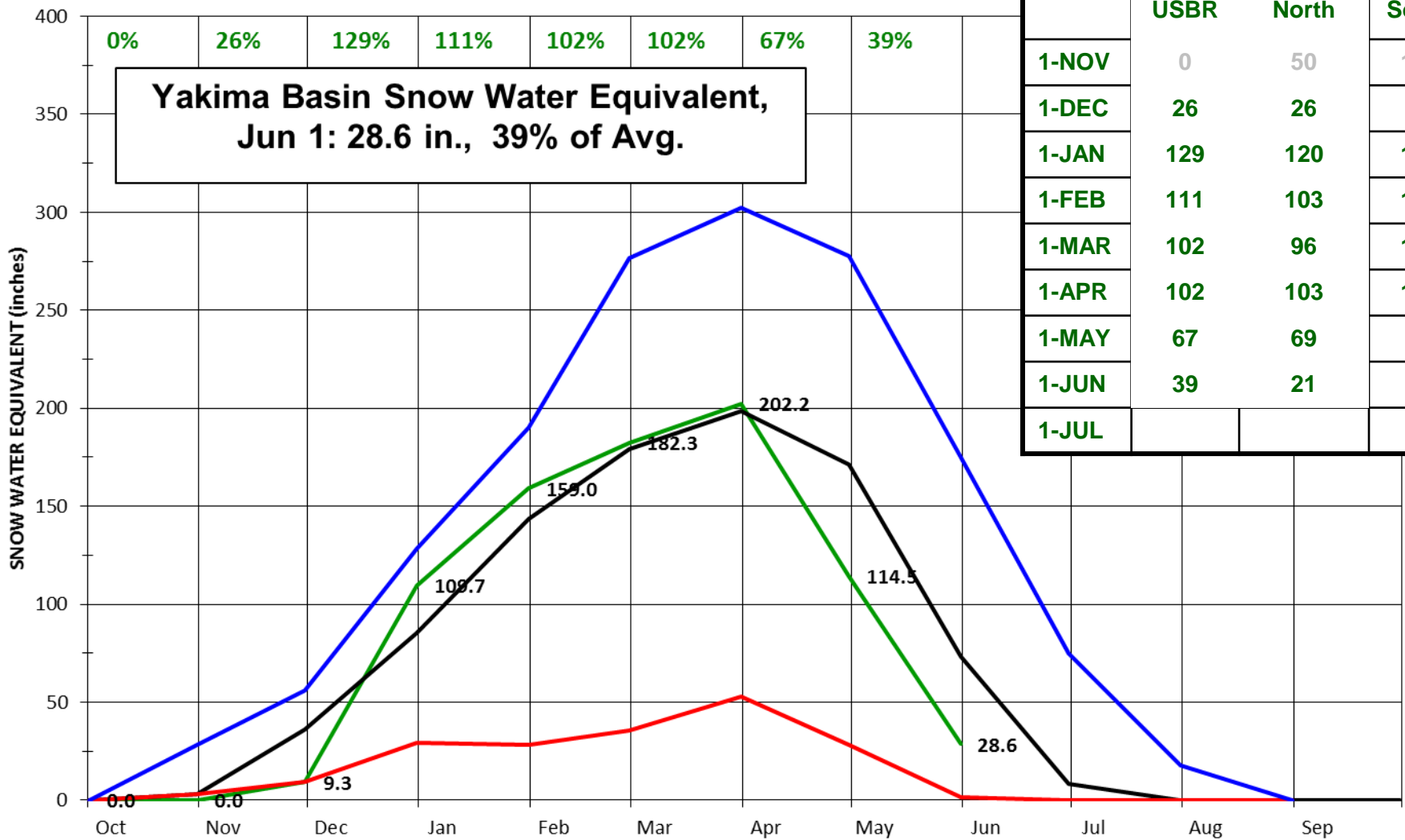
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● WY 2016
 — Average
 — WY1993
 — Maximum
 — Minimum

YAKIMA BASIN
 Combined Cumulative Precipitation
 5 Reservoir Sites
 WATER YEARS 1981-2010

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 YAKIMA FIELD OFFICE
 1917 MARSH ROAD
 YAKIMA, WA 98901



NRCS SWE % AVG

	USBR	North	South
1-NOV	0	50	168
1-DEC	26	26	37
1-JAN	129	120	133
1-FEB	111	103	113
1-MAR	102	96	109
1-APR	102	103	120
1-MAY	67	69	85
1-JUN	39	21	47
1-JUL			

Water Year 2016

Average

Low Year (2005)

High Year (1999)

YAKIMA BASIN WATER YEAR SNOW WATER EQUIVALENT

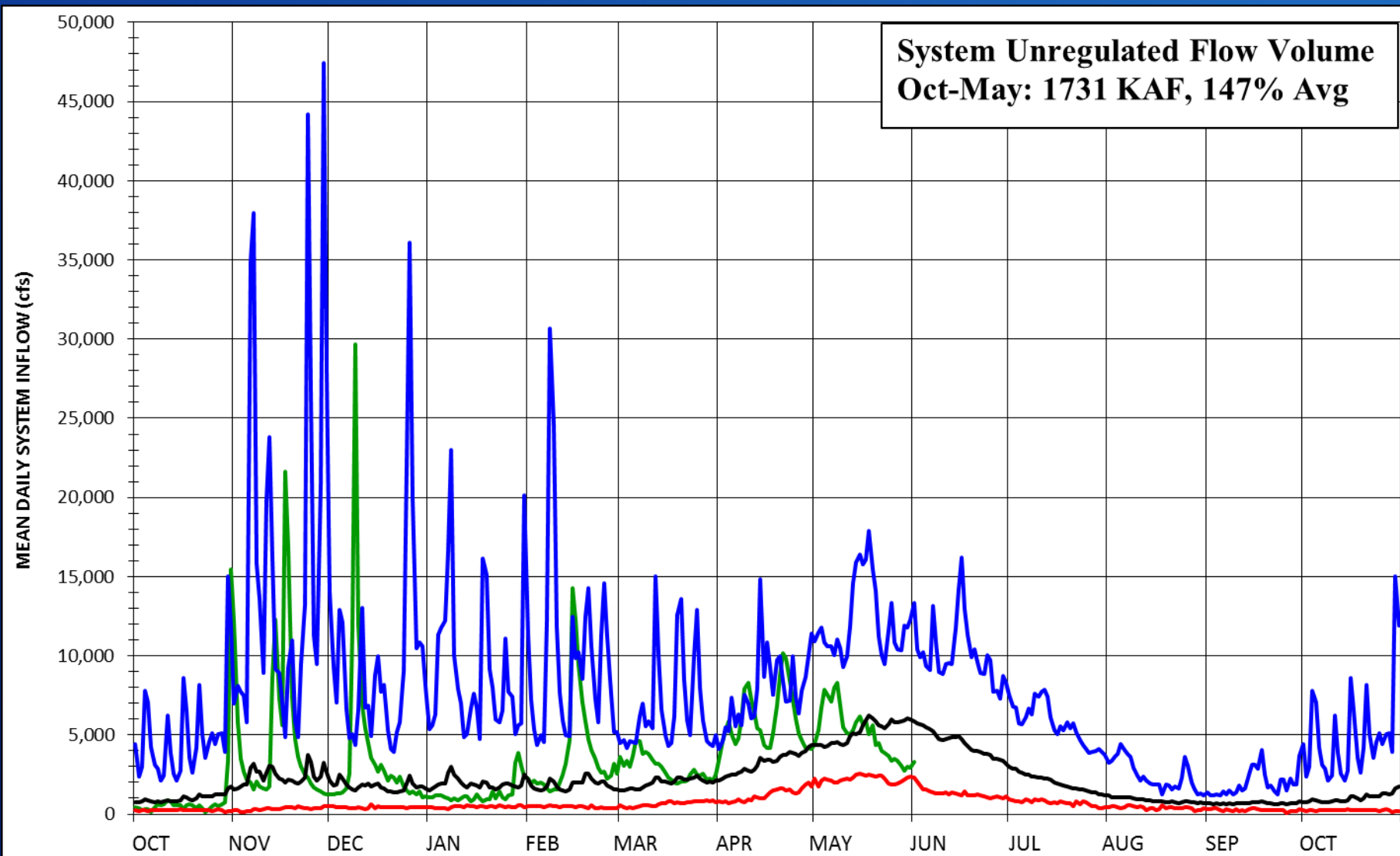
Average based on greater of 1971-2000 or POR-1995

Totals derived from 7 Yakima forecast sites

Corral, Stampede, Olallie, Fish, Bumping, Domerie, & Tunnel Avenue

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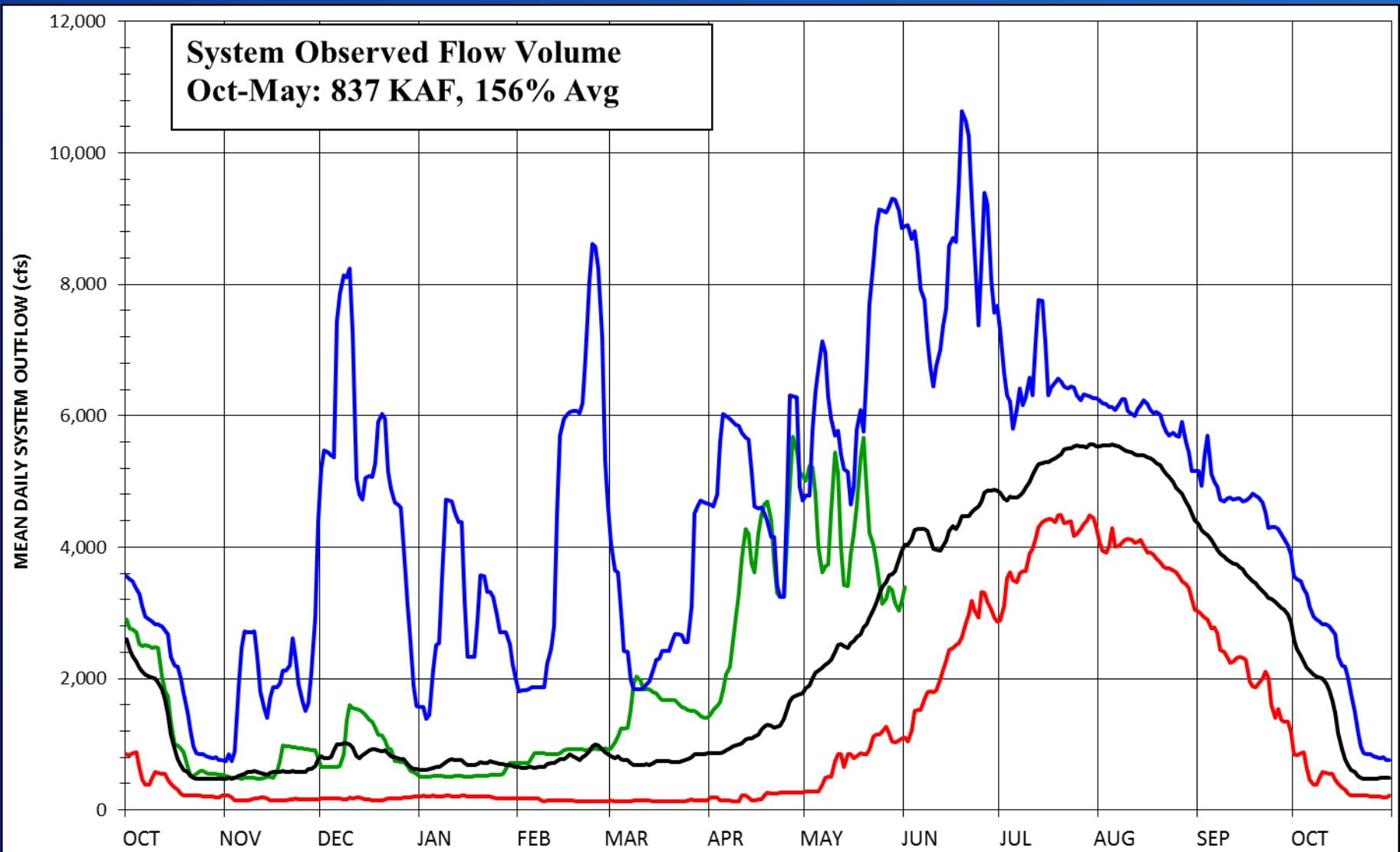
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— Water Year 2016
— Minimum
— Average
— Maximum

**SYSTEM RESERVOIRS
SUM OF INFLOWS
SUMMARY HYDROGRAPH
WATER YEARS 1981-2010**

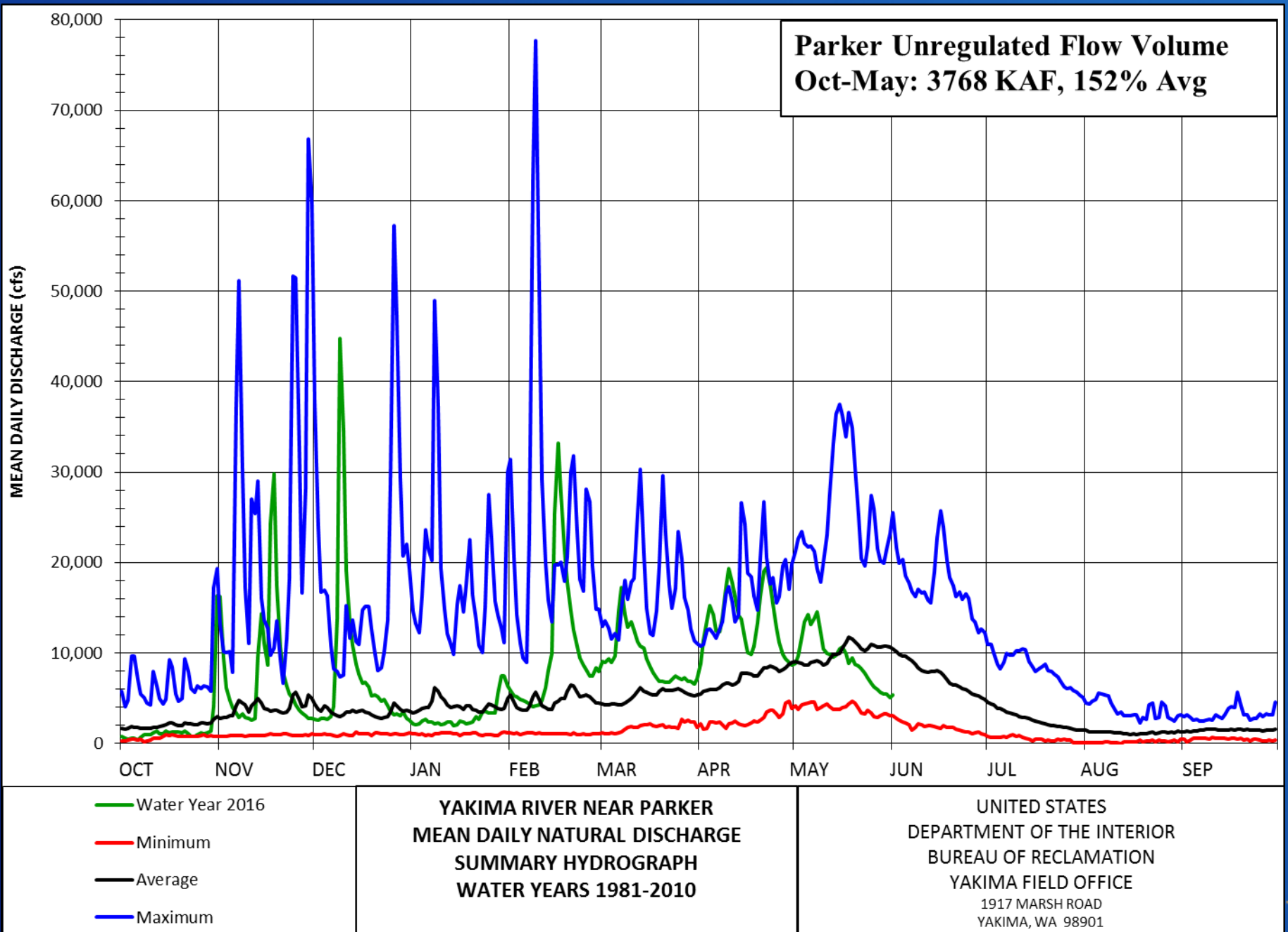
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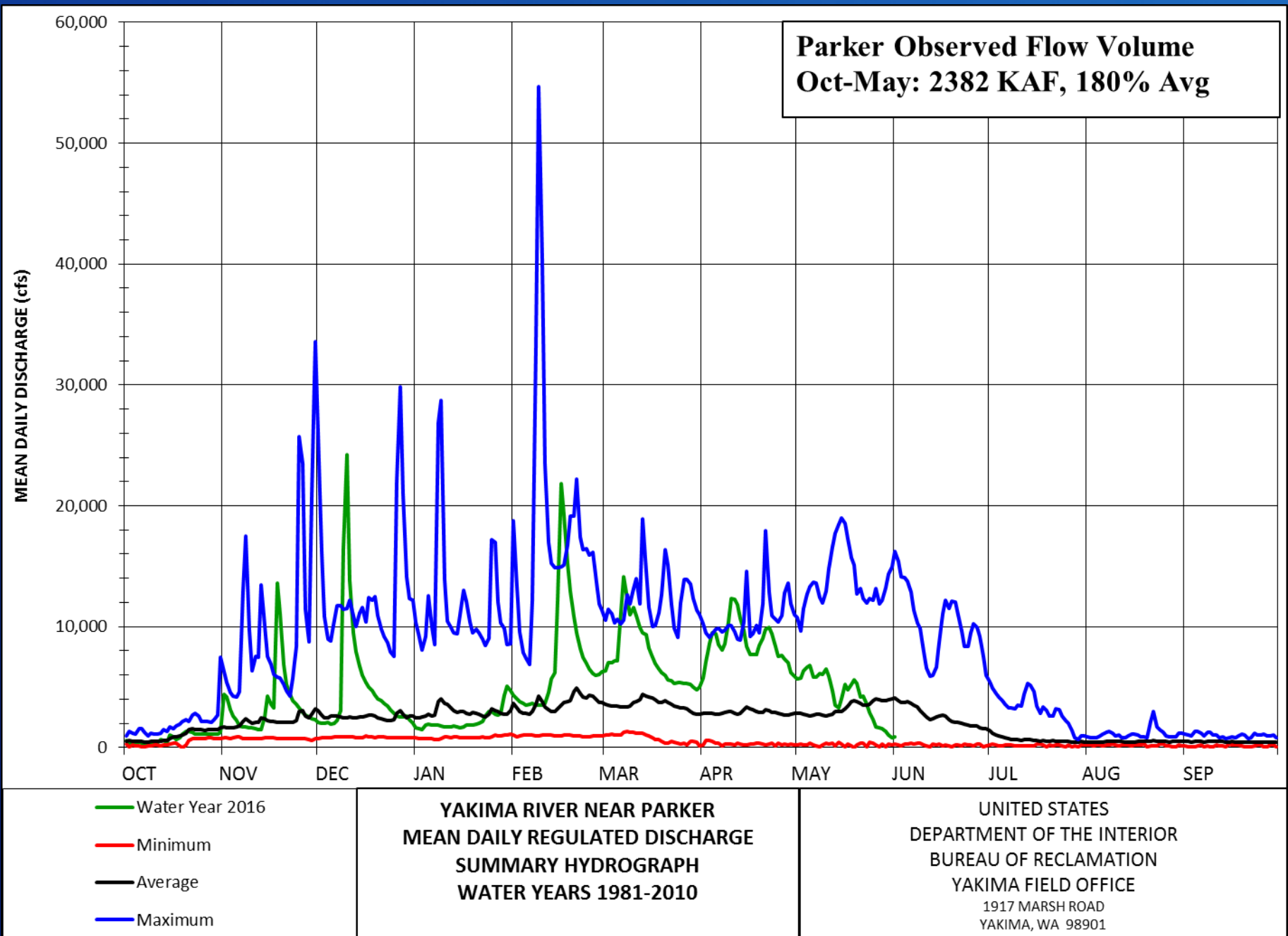


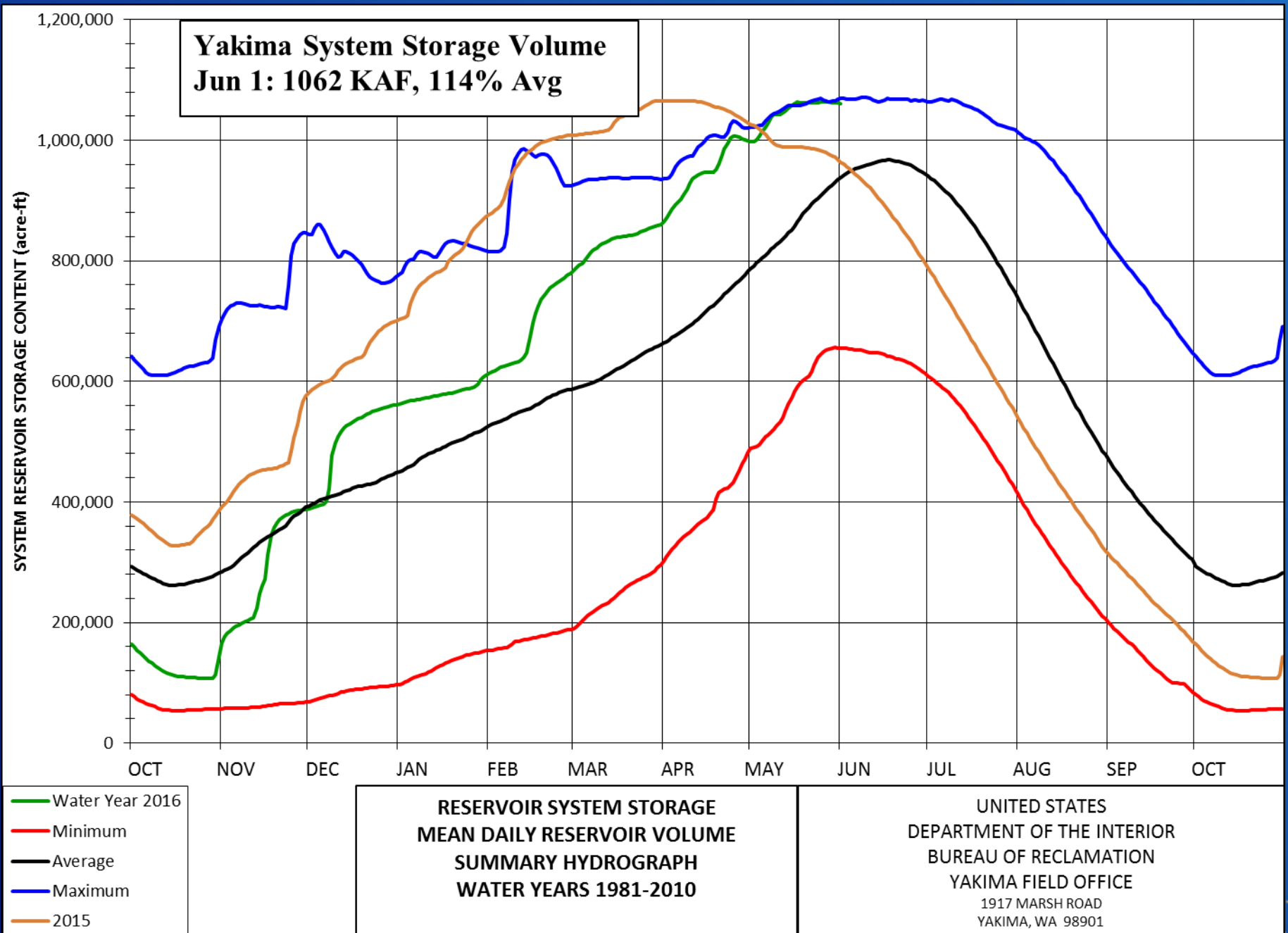
— Water Year 2016
— Minimum
— Average
— Maximum

**SYSTEM RESERVOIRS
SUM OF OUTFLOWS
SUMMARY HYDROGRAPH
WATER YEARS 1981-2010**

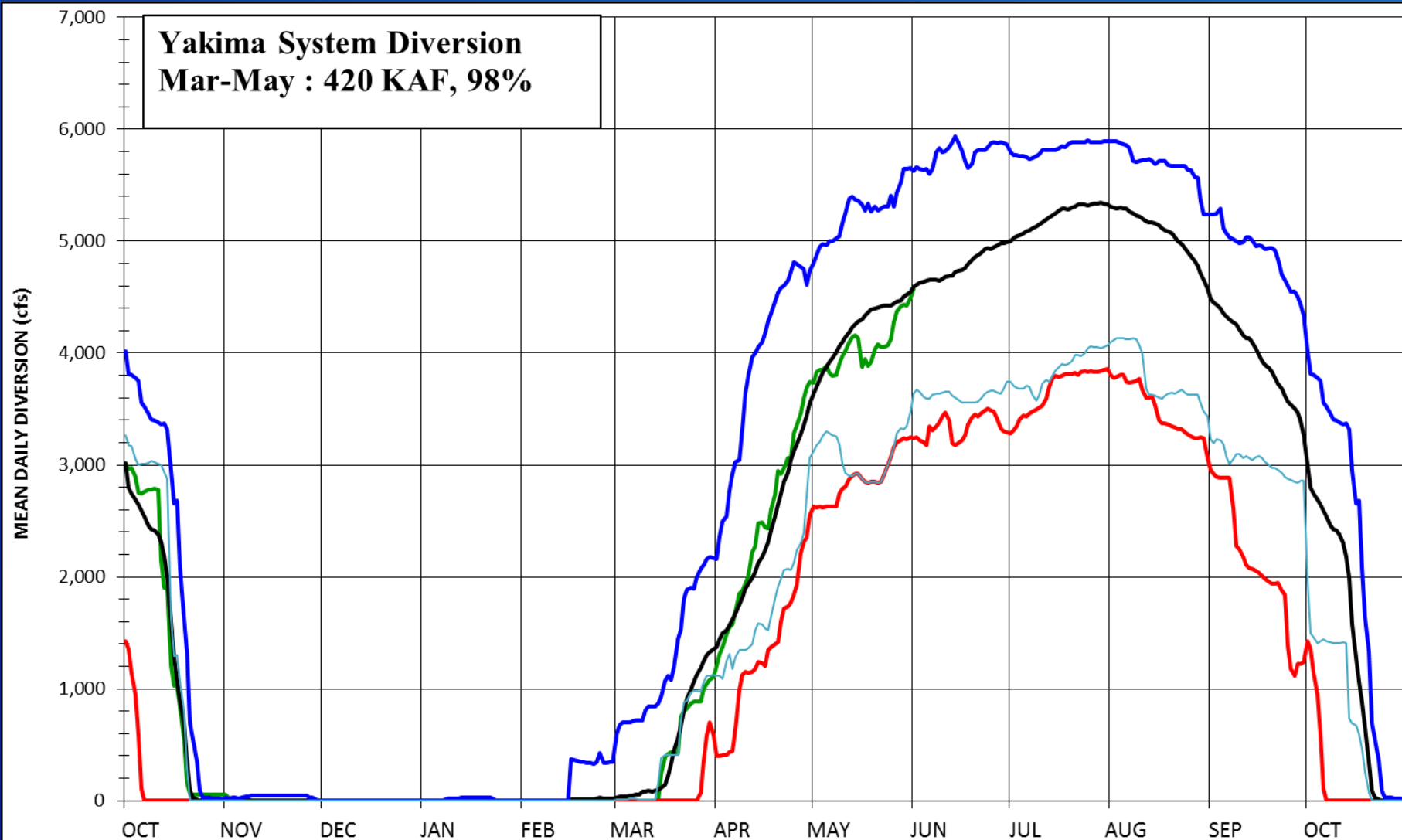
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**Yakima System Diversion
Mar-May : 420 KAF, 98%**



— Water Year 2016
— Minimum
— Average
— Maximum
— 2005

**5 MAJOR IRRIGATION DIVERSIONS
ABOVE PARKER
SUMMARY HYDROGRAPH
WATER YEARS 1981-2010**

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June 1, 2016 TWSA ESTIMATE

June 1 - September 30

Parameter*	+/-/=	Low	Adopted	High
June 1-Sep 30 Natural Flow at Parker est.	+	325	420	570
Return Flow Estimate	+	230	250	270
June 1, Reservoir Content	+	1062	1062	1062
TWSA	=	1617	1732	1902
SEP 30 EST RESERVOIR CONTENT	-	76	76	86
FLOW OVER SUNNYSIDE DAM	-	110	140	175
TWSA FOR IRRIGATION	=	1431	1516	1640
NONPRORATABLE ENTITLEMENT	-	723	723	723
REMAINING TWSA	=	708	793	917
PRORATABLE ENTITLEMENT		917	917	917
% RATIO= REMAINING TWSA/PRORATABLE ENTITLEMENT		77%	86%	100%
TITLE 12 FLOW REQUIREMENTS, cfs	June	300	300	300
Flow available to Title 12, cfs **		126	128	132
Non-storeable Portion of added flow, cfs		46	46	46
Storable portion of added flow, cfs		79	82	85

*Values are in 1,000 ac-ft unless otherwise specified.

** State & YRBWEP Trust, Acquisition, & Conservation additions to Title XII flow range from 126 to 132 cfs.

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June 1, 2016 TWSA Comparison

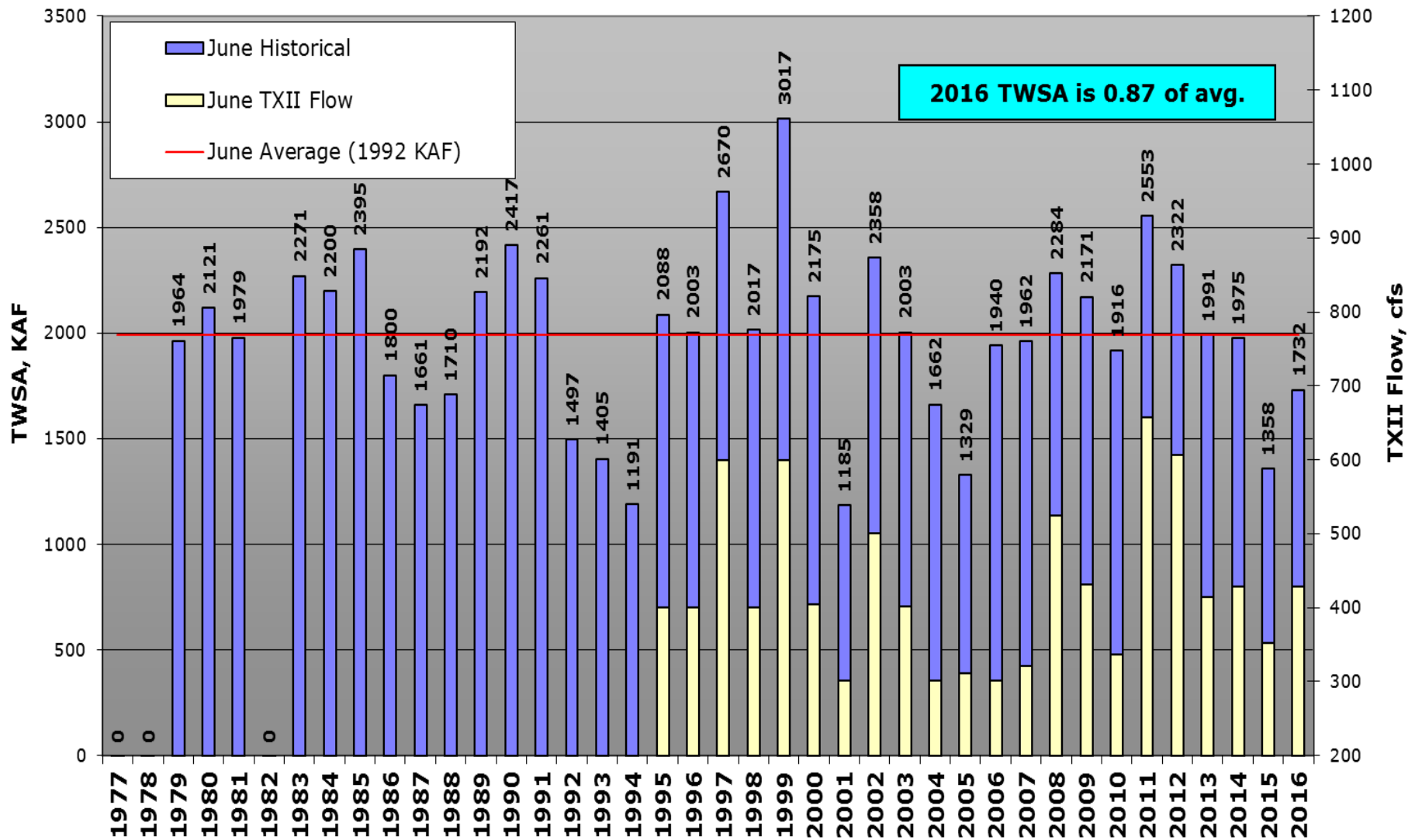
June 1 - September 30

Parameter	" +/- / ="	Jun 2015	Jun 2016	May 2016
June 1-Sep 30 Natural Flow at Parker est.	+	180	420	904
Return Flow Estimate	+	210	250	320
June 1, Reservoir Content	+	968	1062	999
TWSA	=	1358	1732	2223
SEP 30 EST RESERVOIR CONTENT*	-	110	76	76
FLOW OVER SUNNYSIDE DAM	-	105	140	261
TWSA FOR IRRIGATION	=	1143	1516	1885
NONPRORATABLE ENTITLEMENT	-	723	723	909
REMAINING TWSA	=	420	793	976
PRORATABLE ENTITLEMENT		917	917	1145
% RATIO= REMAINING TWSA/PRORATABLE ENTITLEMENT		46%	86%	85%
TITLE XII FLOW REQUIREMENTS, cfs	April	300	300	300
TOTAL FLOW AVAILABLE AT PARKER, cfs ***		428	428	413

*Values are in 1,000 ac-ft unless otherwise specified.

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TWSA Historical Comparison



Extended Range Forecasting 30-90 Day

“July and August will be warm/hot and dry, but some active thunder is possible. As mentioned previously, I think our heat will be more "spiky" rather than consistently warm or hot. Temps will jump above 100, then drop back into 70's and 80's, then Spike again. This is due to the variable ridge aloft and the shifty nature of the Low/Ridge interaction. .” Phil Volker, May 29, 2016.

<u>Period</u>	<u>Temperature</u>	<u>Precipitation</u>
Jun EASTERN WA.-HIGH: +2.5 TO +0.9	LOW: +1.8 TO +0.5	PREC: 38 TO 87% (down)
Jul EASTERN WA.-HIGH: +3.1 TO +0.7	LOW: +2.6 TO +1.1	PREC: 13 TO 75% (N/C)
Aug EASTERN WA.-HIGH: +3.2 TO +1.9	LOW: +2.8 TO +0.7	PREC: 10 TO 78% (N/C)

Warm and dry.

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Climate Prediction Center

- **Seasonal Outlook** (Long range issued May 19. Short range, Jun 2, 2016)

– Period	Temperature	Precipitation
6-10 day	Warm	Dry
8-14 day	Warm	Normal
Jun	Above	Equal chance
Summer	Above	Equal chance
Fall	Above	Above normal
Winter	EC	Above normal

“La Niña is favored to develop during the Northern Hemisphere summer 2016, with about a 75% chance of La Nina during the fall and winter 2016-17.”—**CPC, May 12, 2016.**

<http://www.cpc.ncep.noaa.gov/products/predictions/610day/>

<http://www.cpc.ncep.noaa.gov/products/predictions/814day/>

<http://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/enso.shtml>

<http://www.nws.noaa.gov/climate/outlook.php?wfo=pdt&site=459465>

http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/

http://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/churchill.php

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Yakima Project Summary

- Very dry Apr-May
- Warm Apr-May with high runoff
- Little snowpack remains
- System Storage filled
- TWSA is 87% of average (was 88%).
- Title XII flow is 300 cfs.
- Prorationing is 86%.
- Expect SCD next week as early as Jun8 and n.l.t.
Jun 12?

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