

Instream Flow Recommendations For The Stanislaus, Tuolumne, And Merced Rivers To Maintain The Viability Of The Fall-Run Chinook Salmon Populations

Prepared by

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INTRODUCTION

Maintaining viable Chinook salmon populations requires that escapements do not decline below about 833 adult salmon (a total of 2,500 salmon in 3 years), fluctuations in escapement between wet and dry years are reduced by increasing dry year escapements, and the percentages of hatchery fish are reduced to no more than 10% (Lindley and others 2007, pages 29 and 30 in Mesick 2009). Currently, the Tuolumne River population is at a high risk of extinction (Mesick 2009); final analyses have not been conducted for the Stanislaus and Merced rivers, but it is likely that both populations would be considered to be at a high risk of extinction due to high percentages of hatchery fish. Restoring these populations to viable levels will require implementing the recommended flows in Table 1. The Dry year recommendations are needed to keep escapements above the minimum level of 833 adults per year. The Normal and Wet year recommendations are needed to reduce the percentage of hatchery fish in the population to about 10%.

The recommended flow schedules in Table 1 include: (1) pulse flows in late October to provide the cue required for upstream migration of adult salmon to their natal river; (2) pulse flows to inundate tributary floodplain habitat in winter to augment food resources for salmon fry; (3) adequate flow releases to maintain water temperatures near 59°F (15°C) to the mouth of each tributary during the spring to accelerate smolt outmigration and maximize smolt health; (4) base flows of 275 cfs to provide spawning and rearing habitat for Central Valley steelhead and fall-run Chinook salmon; and (5) up-ramping rates of no more than 2,000 cfs per day and down-ramping rates of no more than 500 cfs during winter and spring, except at the cessation of spring pulse flows during Above Normal and Wet years, when down-ramping rates should be 100 cfs per day to promote riparian tree seedling survival (USFWS 2005).

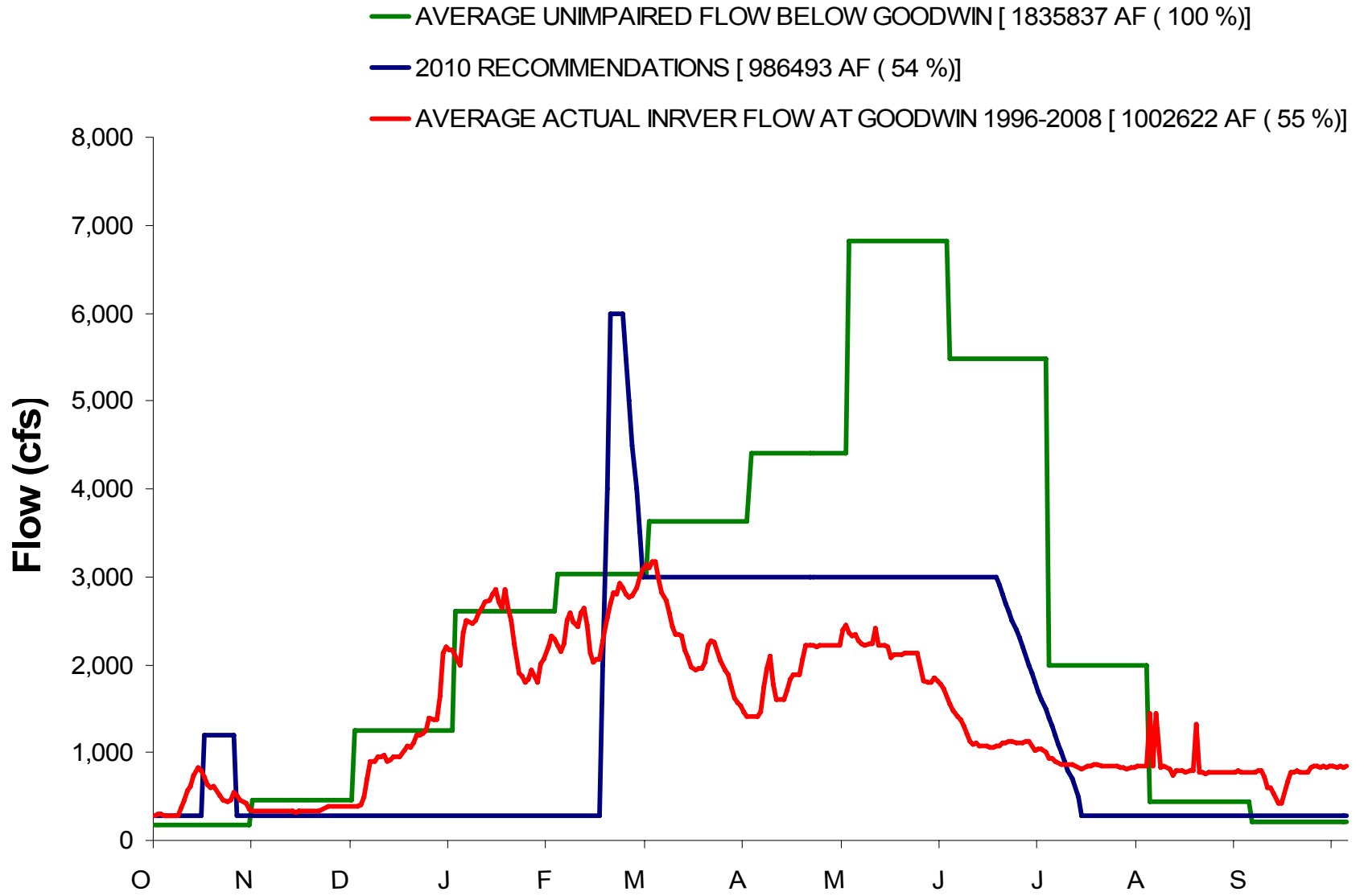
METHODS

The following graphics compare the daily recommended flows schedules in Table 1 with the mean monthly unimpaired flows, and the mean daily flow releases made from 1996 to 2008 for Critical, Dry, Below Normal, Above Normal, and Wet year types. The flow volumes (acre-feet) and percentages of the unimpaired flows are presented on each graph and at the end of Table 1.

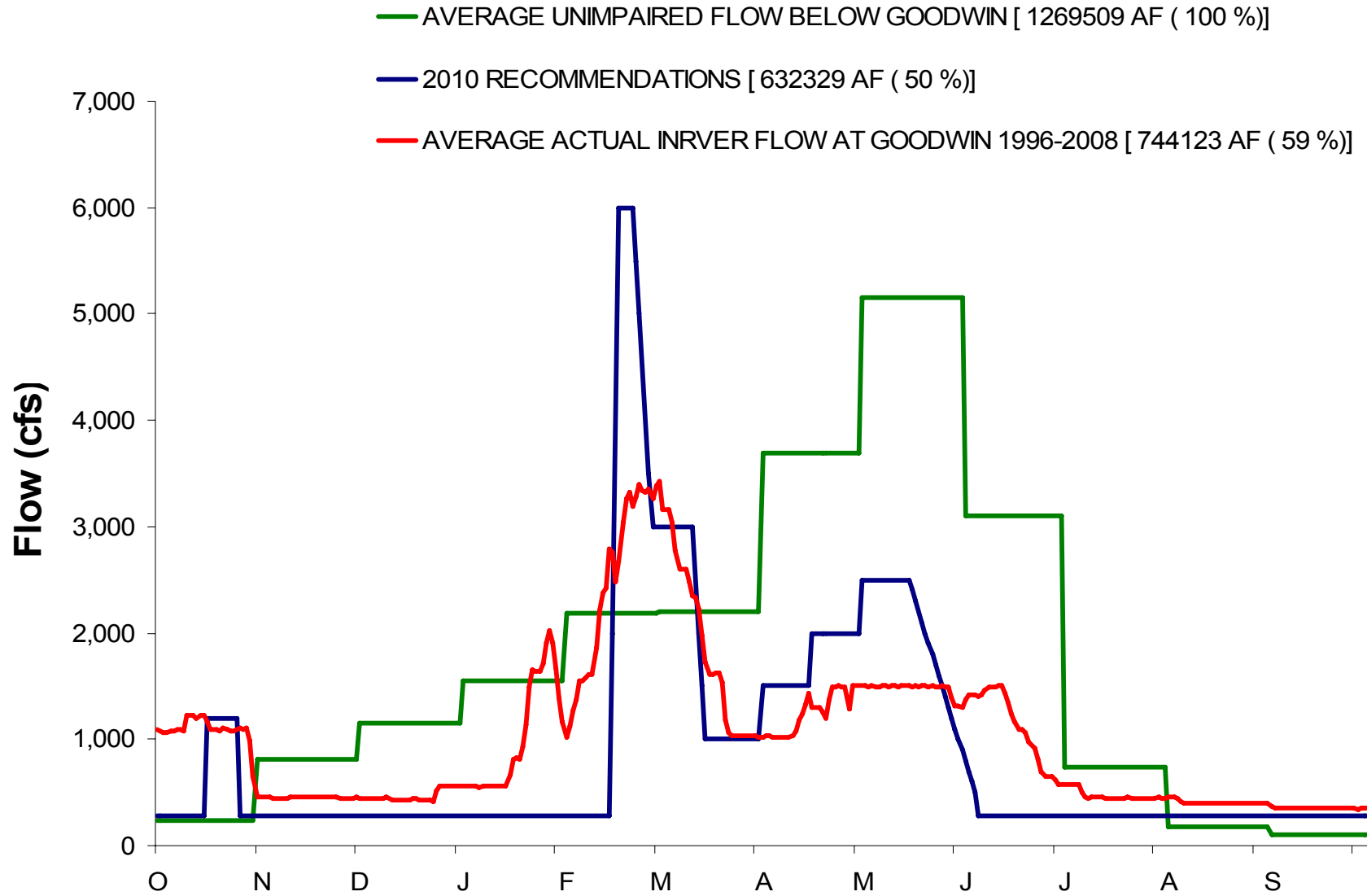
RESULTS

To implement the recommended flow schedules in Table 1, it will be necessary to augment fishery flow volumes during Above Normal water years for the Stanislaus River and reschedule flow releases during the other water year types. For the Tuolumne River, it will be necessary to augment fishery flow volumes during Critical, Dry, and Below Normal water years and reschedule flow releases during Above Normal and Wet years to the extent possible. For the Merced River, it will be necessary to augment fishery flow volumes during all but Wet water years.

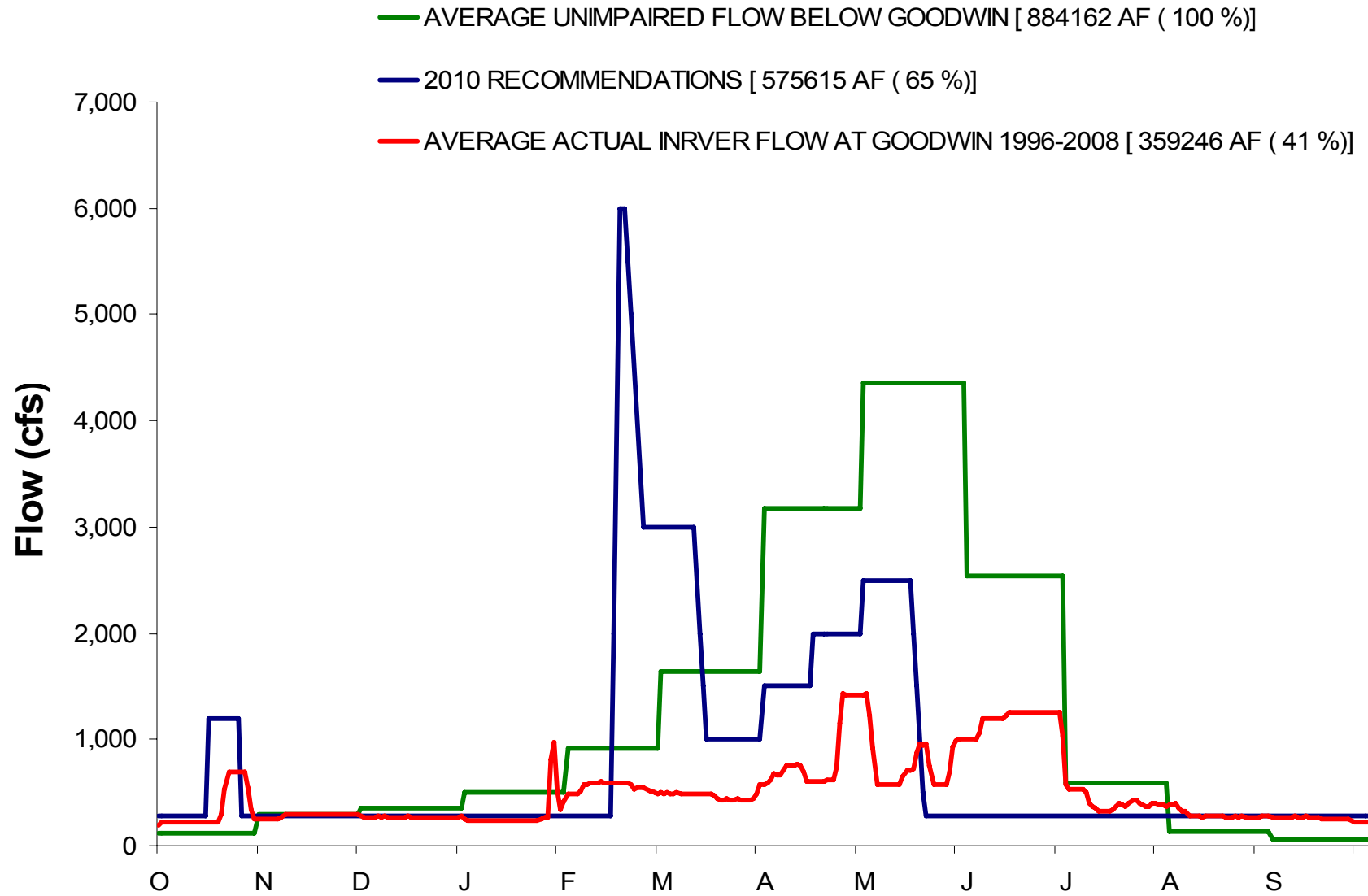
Stanislaus River – Wet Year



Stanislaus River – Above Normal Year

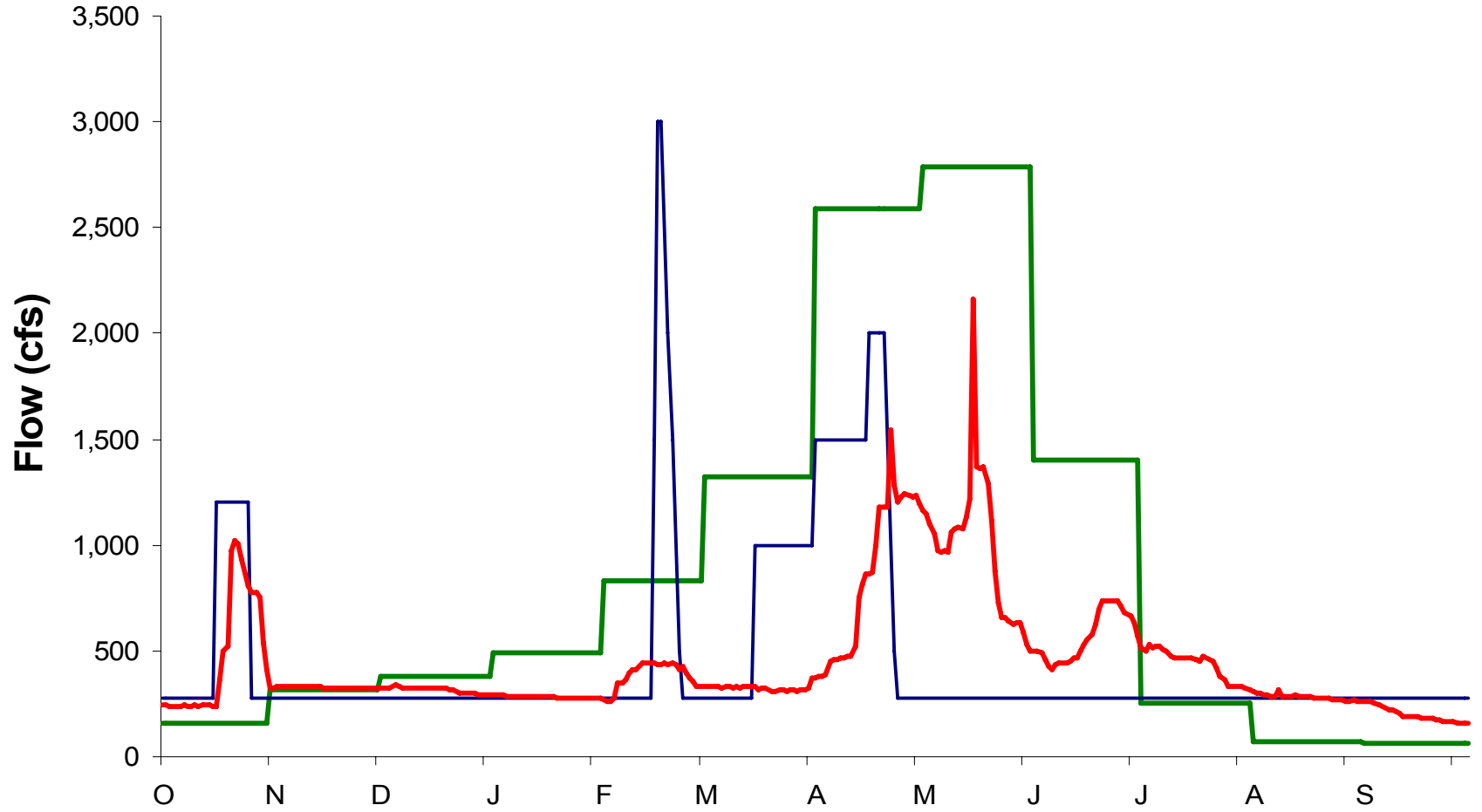


Stanislaus River – Below Normal Year



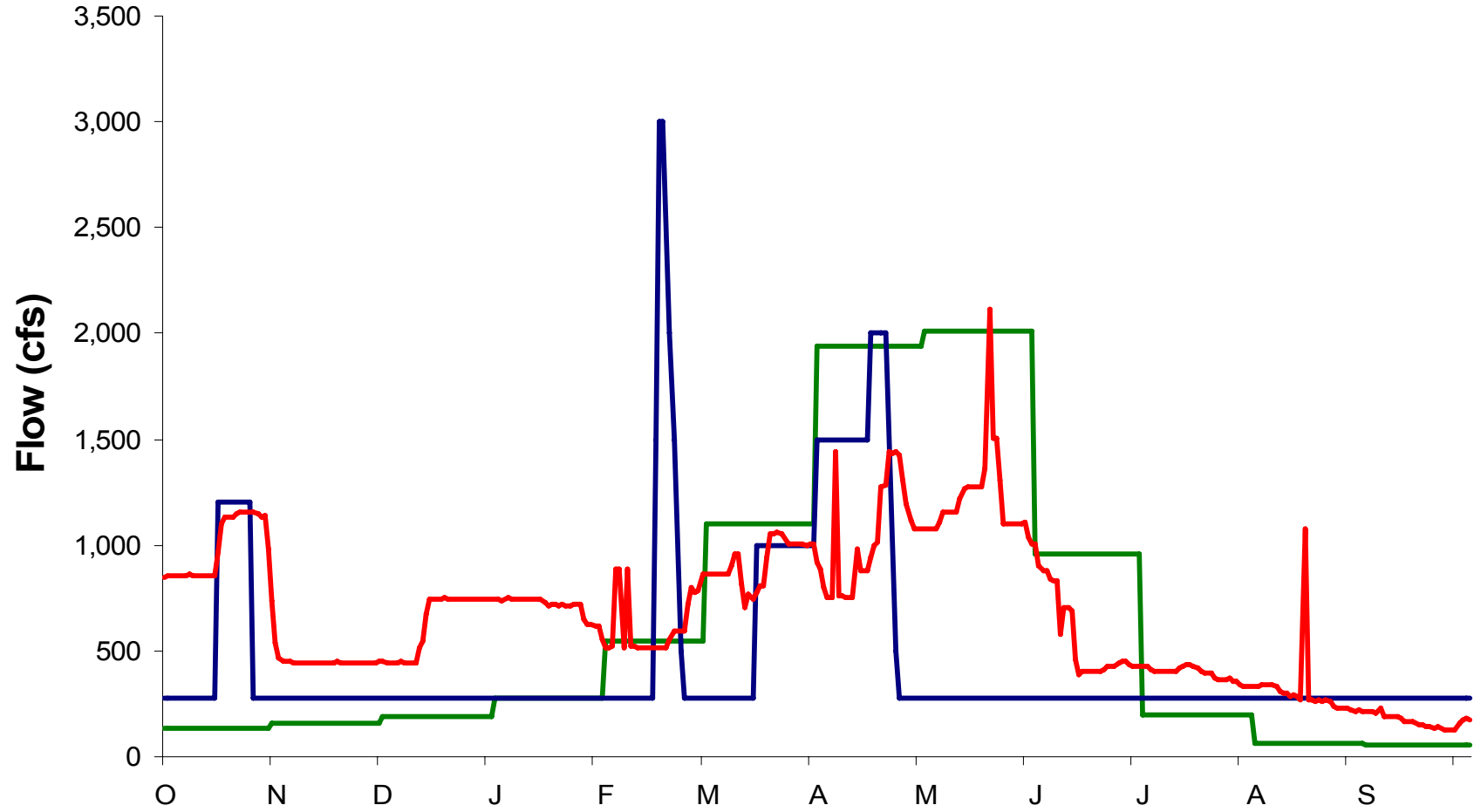
Stanislaus River – Dry Year

- AVERAGE UNIMPAIRED FLOW BELOW GOODWIN [643698 AF (100 %)]
- 2010 RECOMMENDATIONS [325063 AF (50 %)]
- AVERAGE ACTUAL INRVER FLOW AT GOODWIN 1996-2008 [327628 AF (51 %)]

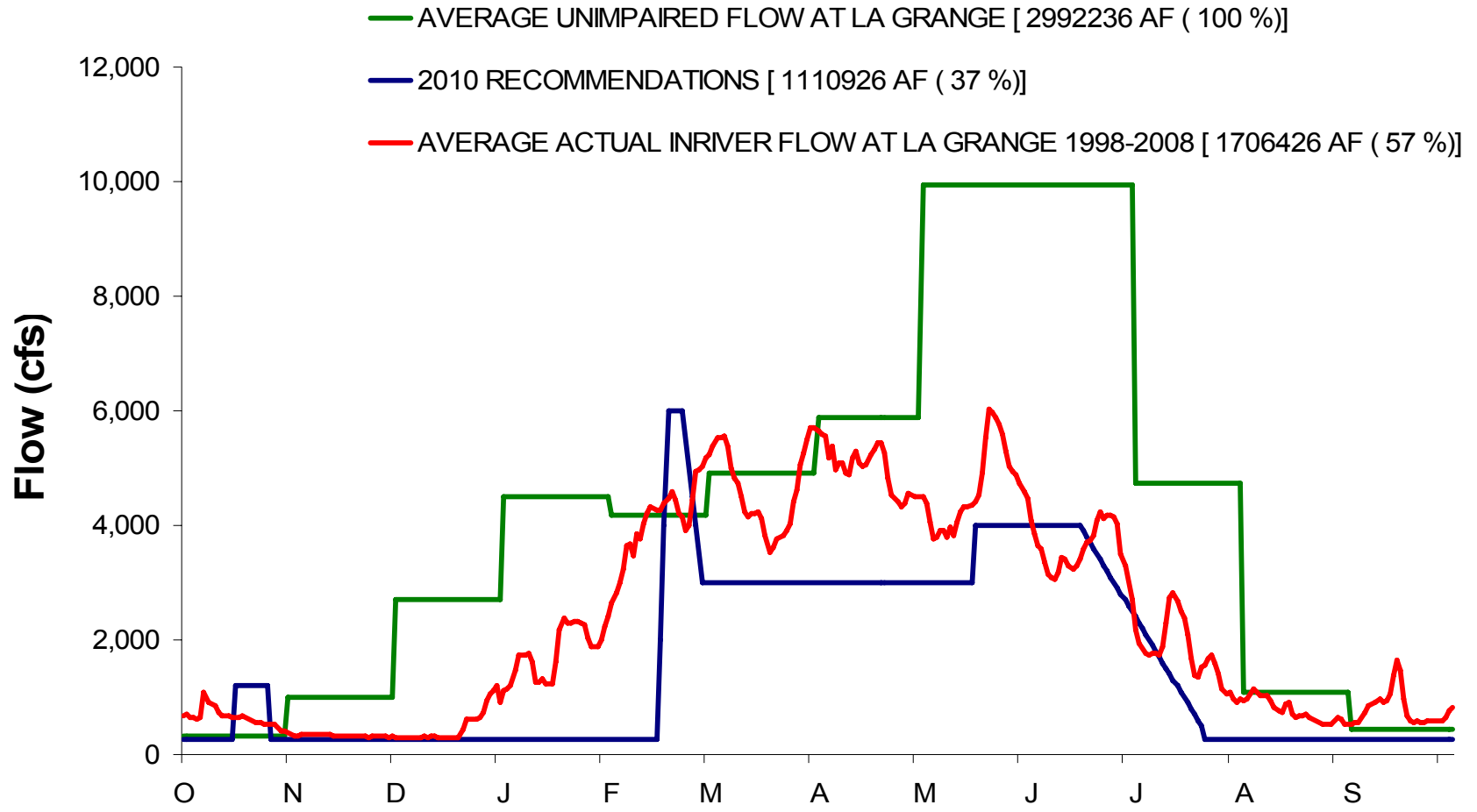


Stanislaus River – Critical Year

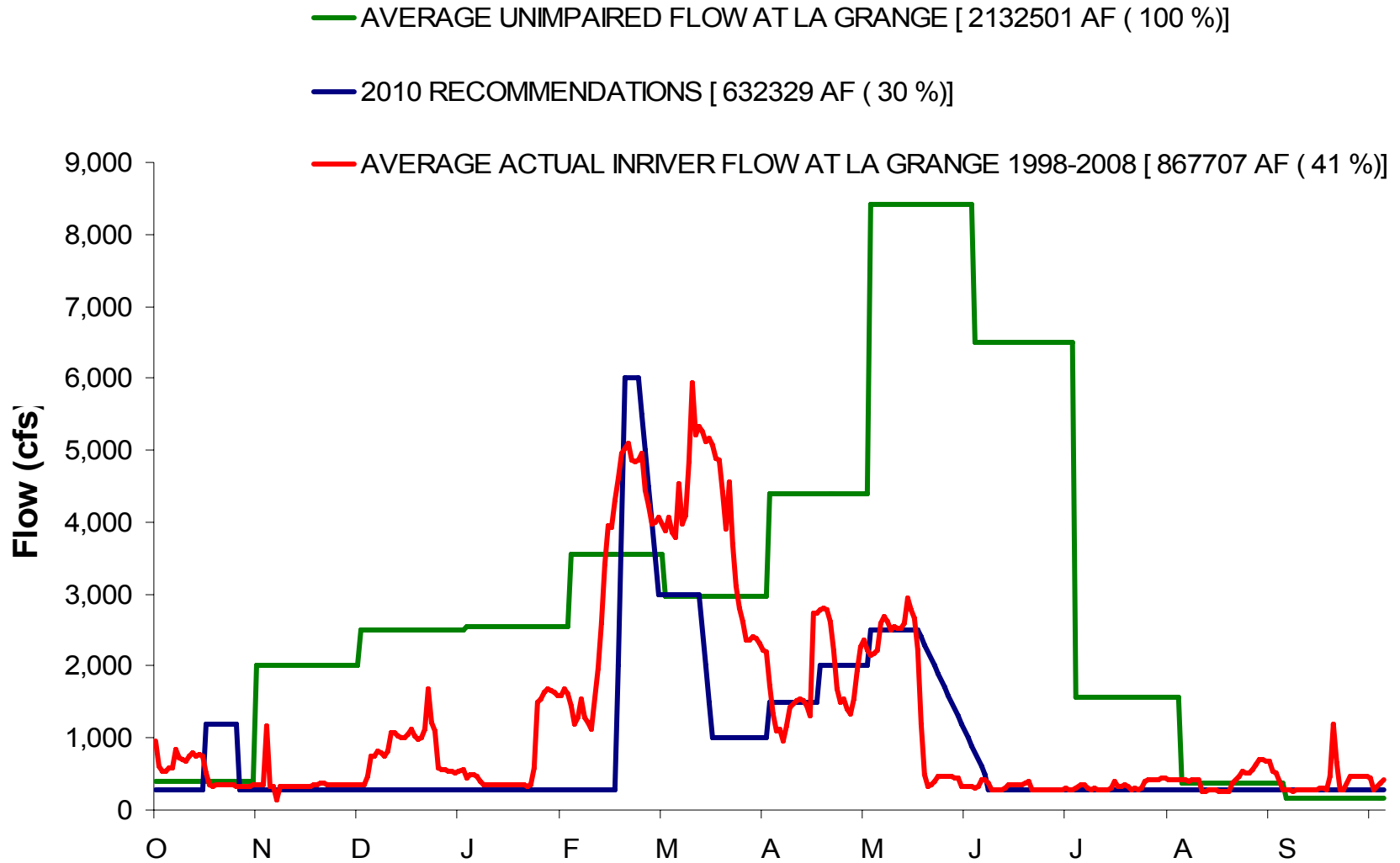
- AVERAGE UNIMPAIRED FLOW BELOW GOODWIN [459819 AF (100 %)]
- 2010 RECOMMENDATIONS [325063 AF (71 %)]
- AVERAGE ACTUAL INRVER FLOW AT GOODWIN 1996-2008 [482552 AF (105 %)]



Tuolumne River – Wet Year



Tuolumne River – Above Normal Year

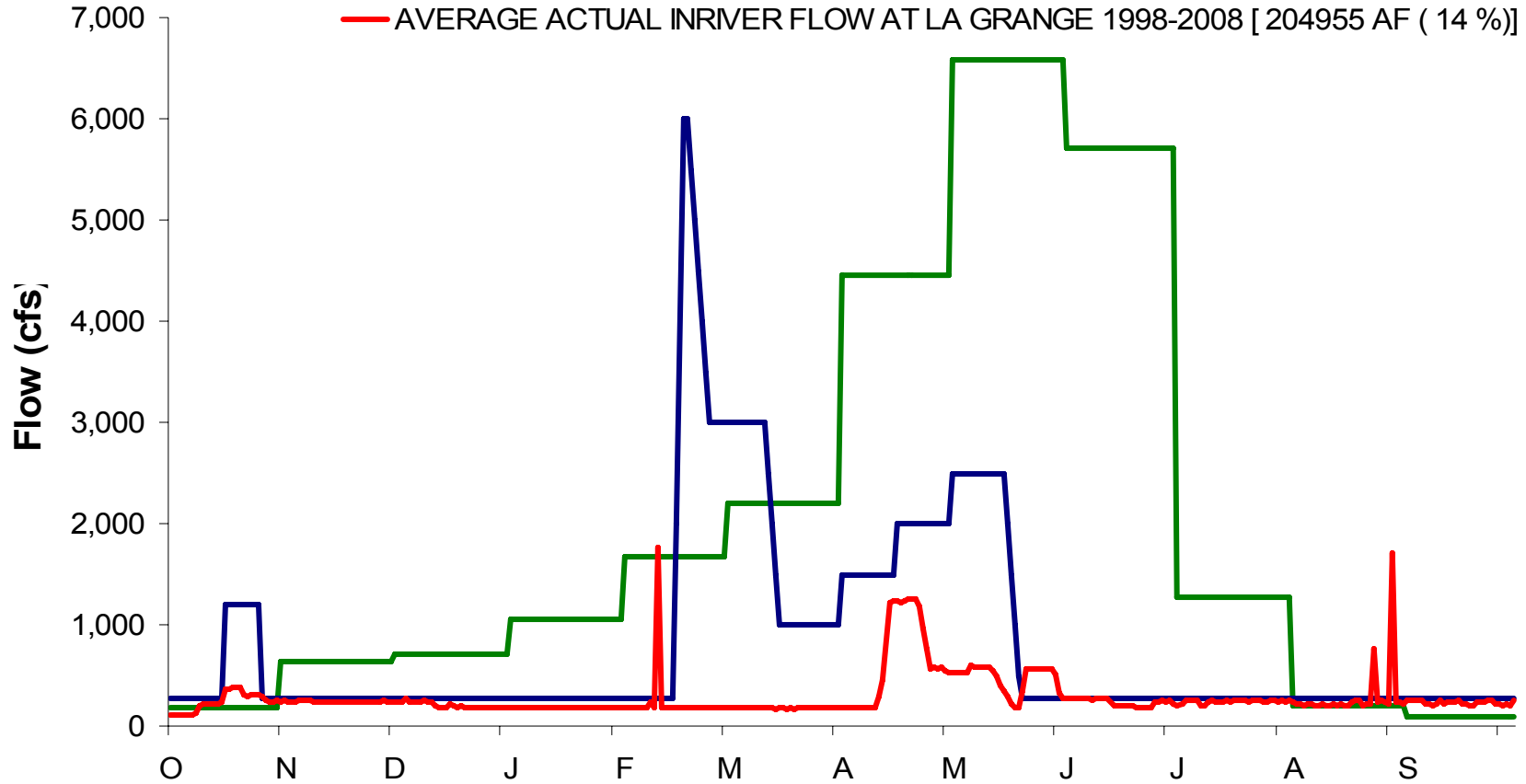


Tuolumne River – Below Normal Year

— AVERAGE UNIMPAIRED FLOW AT LA GRANGE [1491360 AF (100 %)]

— 2010 RECOMMENDATIONS [575615 AF (39 %)]

— AVERAGE ACTUAL INRIVER FLOW AT LA GRANGE 1998-2008 [204955 AF (14 %)]

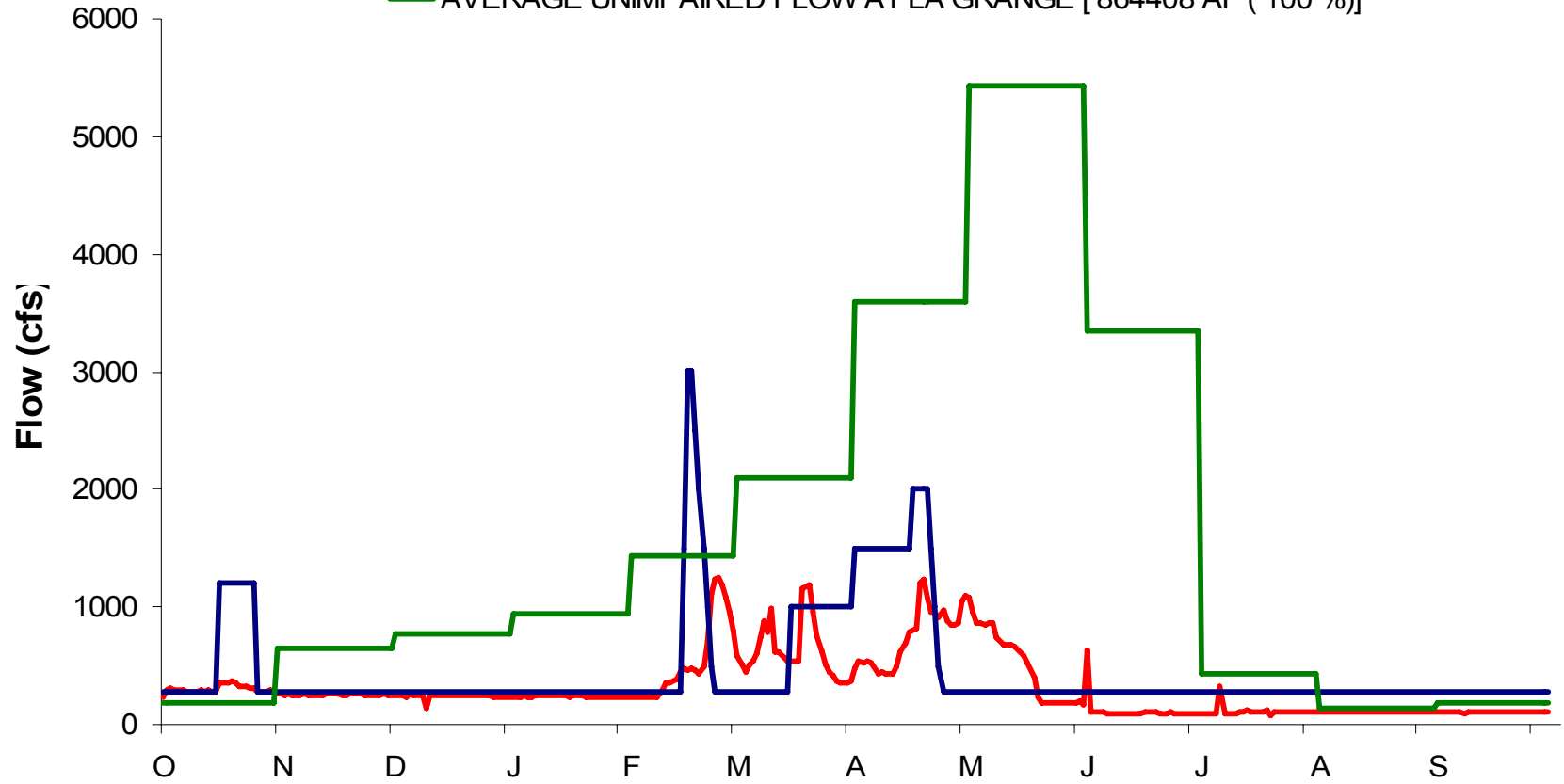


Tuolumne River – Dry Year

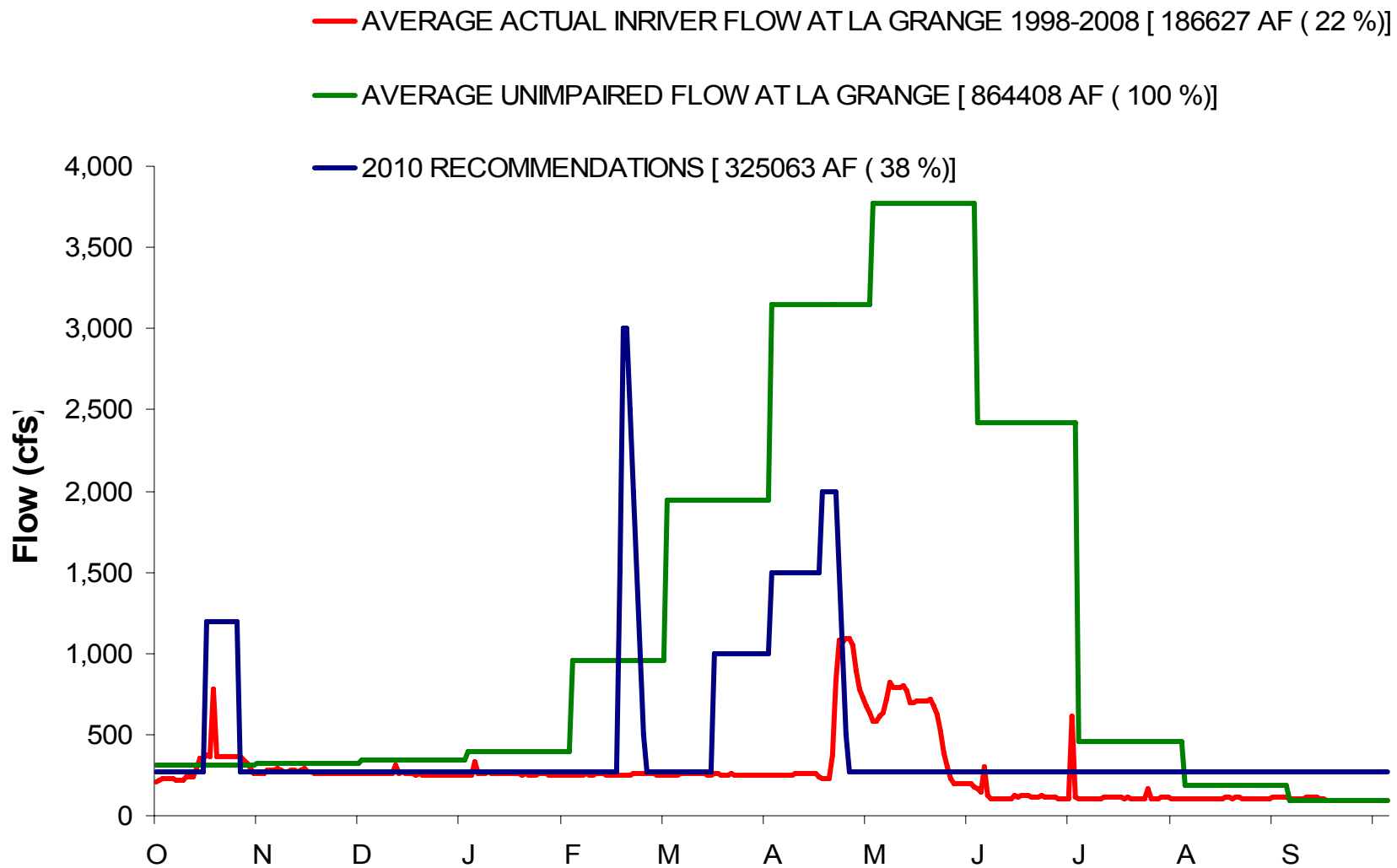
— AVERAGE ACTUAL INRIVER FLOW AT LA GRANGE 1998-2008 [234430 AF (20 %)]

— 2010 RECOMMENDATIONS [325063 AF (28 %)]

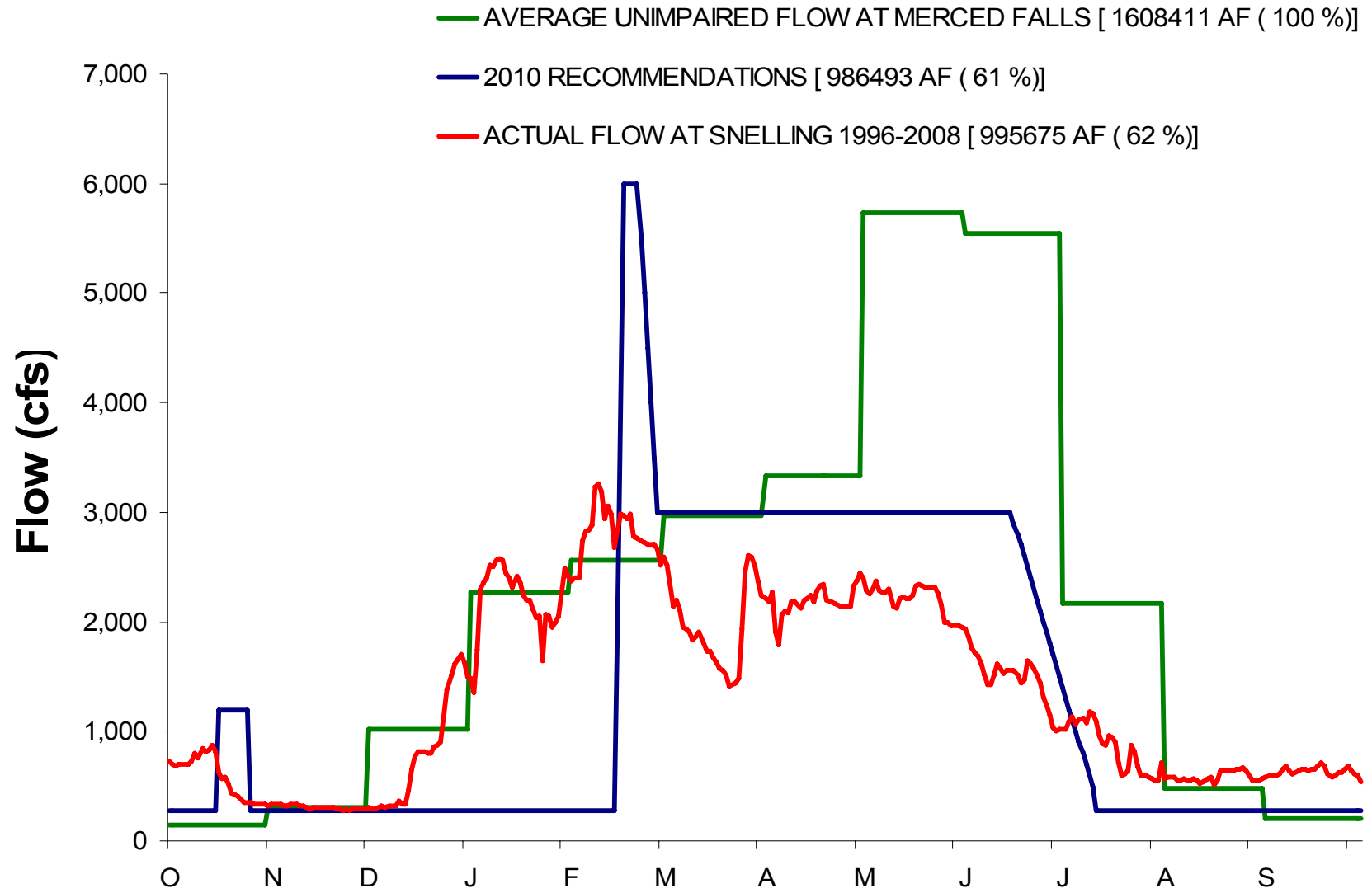
— AVERAGE UNIMPAIRED FLOW AT LA GRANGE [864408 AF (100 %)]



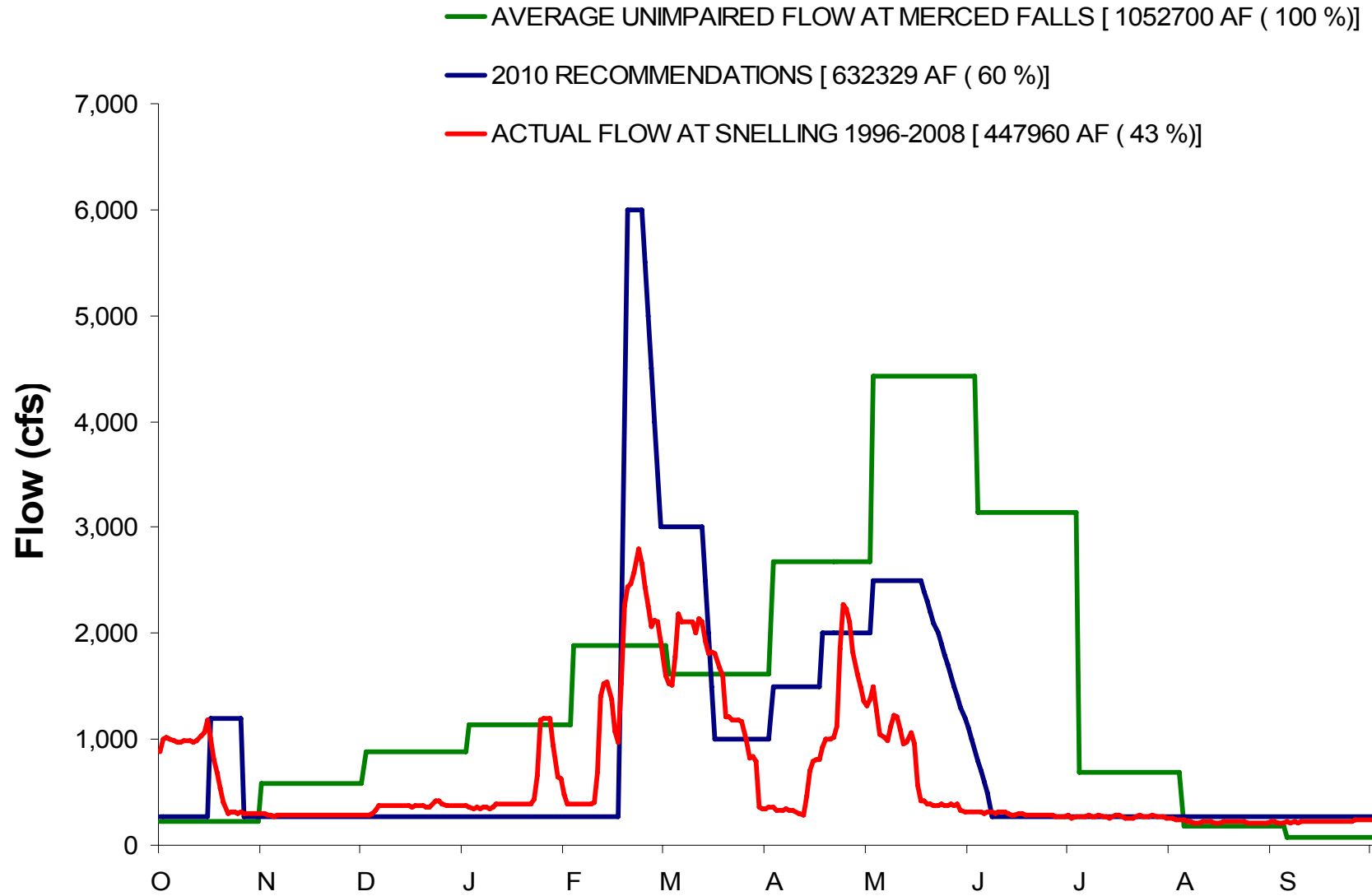
Tuolumne River – Critical Year



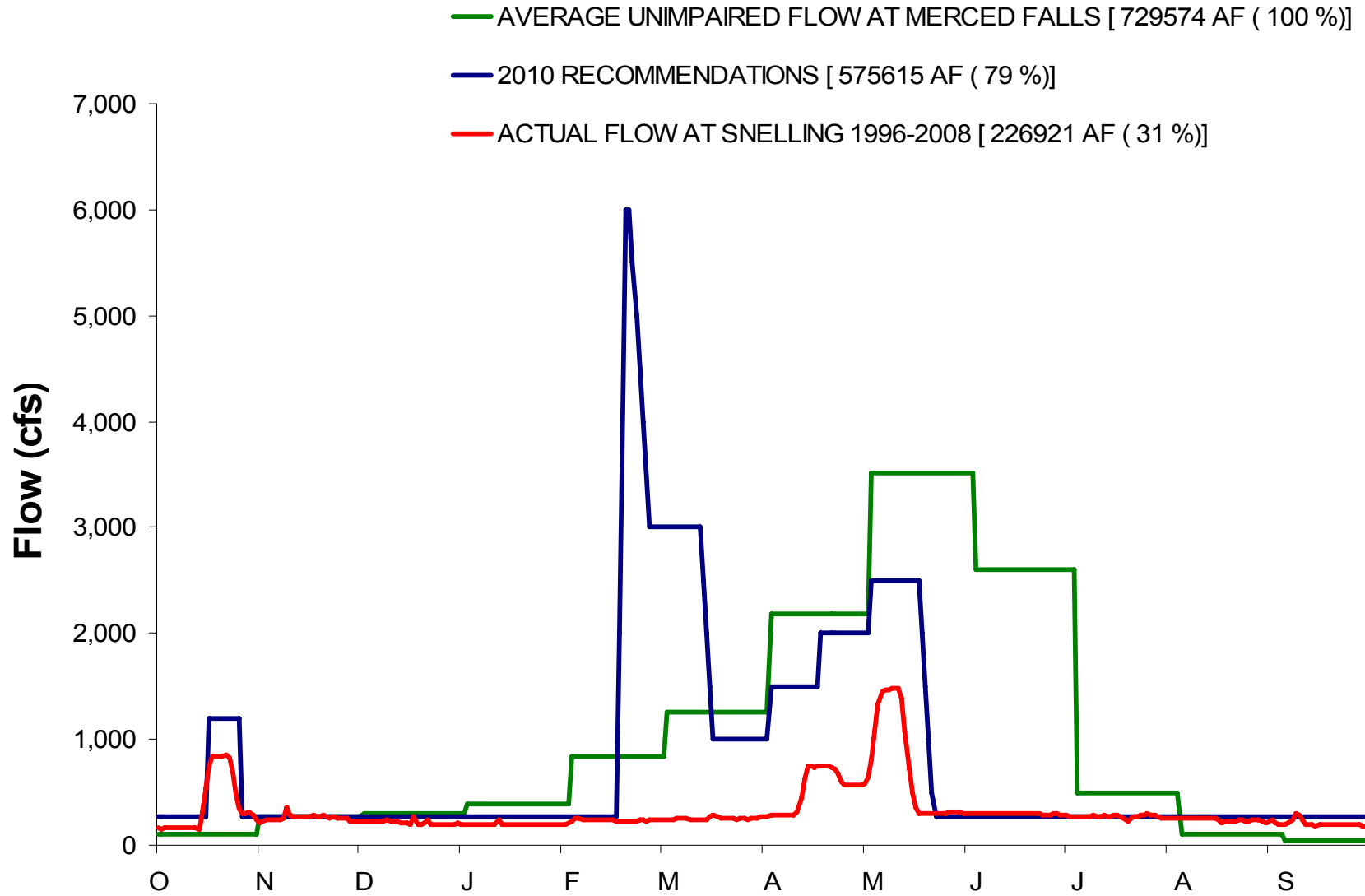
Merced River – Wet Year



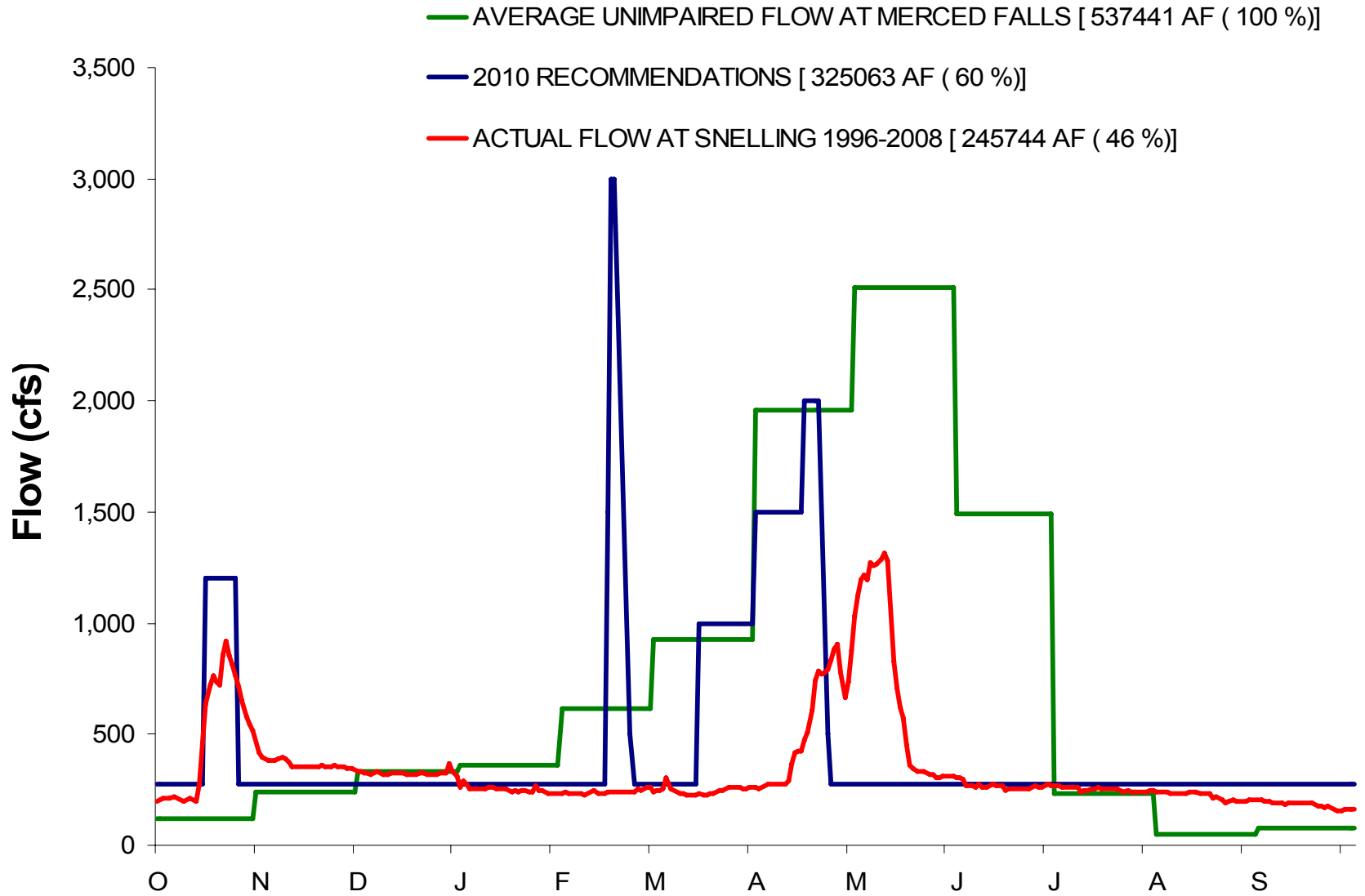
Merced River – Above Normal Year



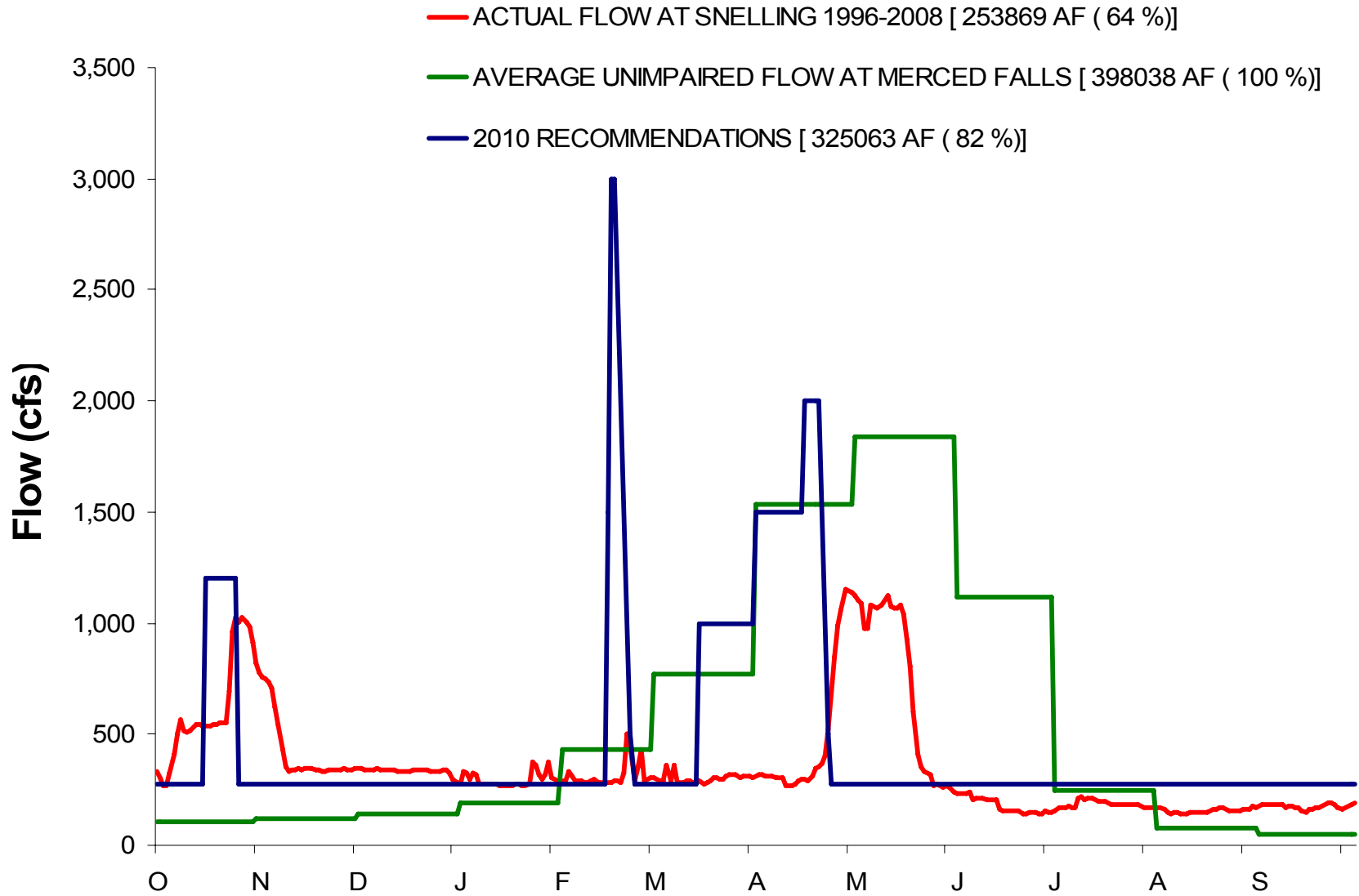
Merced River – Below Normal Year



Merced River – Dry Year



Merced River – Critical Year



REFERENCES

Lindley S.T., R.S. Schick, E. Mora, P.B. Adams, J.J. Anderson, S. Greene, C. Hanson, B.P. May, D.R. McEwan, R.B. MacFarlane, C. Swanson, and J.G. Williams. 2007. Framework for assessing viability of threatened and endangered salmon and steelhead in the Sacramento- San Joaquin Basin. *San Francisco Estuary and Watershed Science* Volume 5, Issue 1 [February 2007], article 4. Available at: <http://repositories.cdlib.org/jmie/sfews/vol5/iss1/art4>

Mesick, C.F. 2009. The High Risk of Extinction for the Natural Fall-Run Chinook Salmon Population in the Lower Tuolumne River due to Insufficient Instream Flow Releases. Report prepared for the U.S. Fish and Wildlife Service, Sacramento, CA. Manuscript submitted to the *California Fish and Game* journal in October 2009.

[USFWS] U.S. Fish and Wildlife Service. 2005. Recommended Streamflow Schedules to meet the AFRP Doubling Goal in the San Joaquin River Basin. 27 September 2005. Copies can be obtained at USFWS, 4001 N. Wilson Way, Stockton CA 95205.

Table 1. Recommended daily streamflow releases (cubic feet per second) for the Stanislaus, Tuolumne, and Merced rivers during Critical, Dry, Below Normal, Above Normal, and Wet water years to maintain the viability of the fall-run Chinook salmon populations and help recover Central Valley steelhead populations.

<u>DATE</u>	<u>Tuolumne</u>	<u>Stanislaus & Merced</u>	<u>Stanislaus, Tuolumne, and Merced Rivers</u>			
	<u>WET</u>	<u>WET</u>	<u>ABOVE NORMAL</u>	<u>BELOW NORMAL</u>	<u>DRY</u>	<u>CRITICAL</u>
1-Oct	275	275	275	275	275	275
2-Oct	275	275	275	275	275	275
3-Oct	275	275	275	275	275	275
4-Oct	275	275	275	275	275	275
5-Oct	275	275	275	275	275	275
6-Oct	275	275	275	275	275	275
7-Oct	275	275	275	275	275	275
8-Oct	275	275	275	275	275	275
9-Oct	275	275	275	275	275	275
10-Oct	275	275	275	275	275	275
11-Oct	275	275	275	275	275	275
12-Oct	275	275	275	275	275	275
13-Oct	275	275	275	275	275	275
14-Oct	275	275	275	275	275	275
15-Oct	275	275	275	275	275	275
16-Oct	1200	1200	1200	1200	1200	1200
17-Oct	1200	1200	1200	1200	1200	1200
18-Oct	1200	1200	1200	1200	1200	1200
19-Oct	1200	1200	1200	1200	1200	1200
20-Oct	1200	1200	1200	1200	1200	1200
21-Oct	1200	1200	1200	1200	1200	1200
22-Oct	1200	1200	1200	1200	1200	1200
23-Oct	1200	1200	1200	1200	1200	1200
24-Oct	1200	1200	1200	1200	1200	1200
25-Oct	1200	1200	1200	1200	1200	1200
26-Oct	275	275	275	275	275	275
27-Oct	275	275	275	275	275	275
28-Oct	275	275	275	275	275	275
29-Oct	275	275	275	275	275	275
30-Oct	275	275	275	275	275	275
31-Oct	275	275	275	275	275	275
1-Nov	275	275	275	275	275	275
2-Nov	275	275	275	275	275	275

<u>DATE</u>	<u>Tuolumne</u>	<u>Stanislaus & Merced</u>	<u>Stanislaus, Tuolumne, and Merced Rivers</u>			
	<u>WET</u>	<u>WET</u>	<u>ABOVE NORMAL</u>	<u>BELOW NORMAL</u>	<u>DRY</u>	<u>CRITICAL</u>
3-Nov	275	275	275	275	275	275
4-Nov	275	275	275	275	275	275
5-Nov	275	275	275	275	275	275
6-Nov	275	275	275	275	275	275
7-Nov	275	275	275	275	275	275
8-Nov	275	275	275	275	275	275
9-Nov	275	275	275	275	275	275
10-Nov	275	275	275	275	275	275
11-Nov	275	275	275	275	275	275
12-Nov	275	275	275	275	275	275
13-Nov	275	275	275	275	275	275
14-Nov	275	275	275	275	275	275
15-Nov	275	275	275	275	275	275
16-Nov	275	275	275	275	275	275
17-Nov	275	275	275	275	275	275
18-Nov	275	275	275	275	275	275
19-Nov	275	275	275	275	275	275
20-Nov	275	275	275	275	275	275
21-Nov	275	275	275	275	275	275
22-Nov	275	275	275	275	275	275
23-Nov	275	275	275	275	275	275
24-Nov	275	275	275	275	275	275
25-Nov	275	275	275	275	275	275
26-Nov	275	275	275	275	275	275
27-Nov	275	275	275	275	275	275
28-Nov	275	275	275	275	275	275
29-Nov	275	275	275	275	275	275
30-Nov	275	275	275	275	275	275
1-Dec	275	275	275	275	275	275
2-Dec	275	275	275	275	275	275
3-Dec	275	275	275	275	275	275
4-Dec	275	275	275	275	275	275
5-Dec	275	275	275	275	275	275
6-Dec	275	275	275	275	275	275
7-Dec	275	275	275	275	275	275
8-Dec	275	275	275	275	275	275
9-Dec	275	275	275	275	275	275

<u>DATE</u>	<u>Tuolumne</u>	<u>Stanislaus & Merced</u>	<u>Stanislaus, Tuolumne, and Merced Rivers</u>			
	<u>WET</u>	<u>WET</u>	<u>ABOVE NORMAL</u>	<u>BELOW NORMAL</u>	<u>DRY</u>	<u>CRITICAL</u>
10-Dec	275	275	275	275	275	275
11-Dec	275	275	275	275	275	275
12-Dec	275	275	275	275	275	275
13-Dec	275	275	275	275	275	275
14-Dec	275	275	275	275	275	275
15-Dec	275	275	275	275	275	275
16-Dec	275	275	275	275	275	275
17-Dec	275	275	275	275	275	275
18-Dec	275	275	275	275	275	275
19-Dec	275	275	275	275	275	275
20-Dec	275	275	275	275	275	275
21-Dec	275	275	275	275	275	275
22-Dec	275	275	275	275	275	275
23-Dec	275	275	275	275	275	275
24-Dec	275	275	275	275	275	275
25-Dec	275	275	275	275	275	275
26-Dec	275	275	275	275	275	275
27-Dec	275	275	275	275	275	275
28-Dec	275	275	275	275	275	275
29-Dec	275	275	275	275	275	275
30-Dec	275	275	275	275	275	275
31-Dec	275	275	275	275	275	275
1-Jan	275	275	275	275	275	275
2-Jan	275	275	275	275	275	275
3-Jan	275	275	275	275	275	275
4-Jan	275	275	275	275	275	275
5-Jan	275	275	275	275	275	275
6-Jan	275	275	275	275	275	275
7-Jan	275	275	275	275	275	275
8-Jan	275	275	275	275	275	275
9-Jan	275	275	275	275	275	275
10-Jan	275	275	275	275	275	275
11-Jan	275	275	275	275	275	275
12-Jan	275	275	275	275	275	275
13-Jan	275	275	275	275	275	275
14-Jan	275	275	275	275	275	275
15-Jan	275	275	275	275	275	275

<u>DATE</u>	<u>Tuolumne</u>	<u>Stanislaus & Merced</u>	<u>Stanislaus, Tuolumne, and Merced Rivers</u>			
	<u>WET</u>	<u>WET</u>	<u>ABOVE NORMAL</u>	<u>BELOW NORMAL</u>	<u>DRY</u>	<u>CRITICAL</u>
16-Jan	275	275	275	275	275	275
17-Jan	275	275	275	275	275	275
18-Jan	275	275	275	275	275	275
19-Jan	275	275	275	275	275	275
20-Jan	275	275	275	275	275	275
21-Jan	275	275	275	275	275	275
22-Jan	275	275	275	275	275	275
23-Jan	275	275	275	275	275	275
24-Jan	275	275	275	275	275	275
25-Jan	275	275	275	275	275	275
26-Jan	275	275	275	275	275	275
27-Jan	275	275	275	275	275	275
28-Jan	275	275	275	275	275	275
29-Jan	275	275	275	275	275	275
30-Jan	275	275	275	275	275	275
31-Jan	275	275	275	275	275	275
1-Feb	275	275	275	275	275	275
2-Feb	275	275	275	275	275	275
3-Feb	275	275	275	275	275	275
4-Feb	275	275	275	275	275	275
5-Feb	275	275	275	275	275	275
6-Feb	275	275	275	275	275	275
7-Feb	275	275	275	275	275	275
8-Feb	275	275	275	275	275	275
9-Feb	275	275	275	275	275	275
10-Feb	275	275	275	275	275	275
11-Feb	275	275	275	275	275	275
12-Feb	275	275	275	275	275	275
13-Feb	275	275	275	275	275	275
14-Feb	275	275	275	275	275	275
15-Feb	2000	2000	2000	2000	1500	1500
16-Feb	4000	4000	4000	4000	3000	3000
17-Feb	6000	6000	6000	6000	3000	3000
18-Feb	6000	6000	6000	6000	2500	2500
19-Feb	6000	6000	6000	5500	2000	2000
20-Feb	6000	6000	6000	5000	1500	1500
21-Feb	6000	6000	6000	4500	1000	1000

<u>DATE</u>	<u>Tuolumne</u>	<u>Stanislaus & Merced</u>	<u>Stanislaus, Tuolumne, and Merced Rivers</u>			
	<u>WET</u>	<u>WET</u>	<u>ABOVE NORMAL</u>	<u>BELOW NORMAL</u>	<u>DRY</u>	<u>CRITICAL</u>
22-Feb	5500	5500	5500	4000	500	500
23-Feb	5000	5000	5000	3500	275	275
24-Feb	4500	4500	4500	3000	275	275
25-Feb	4000	4000	4000	3000	275	275
26-Feb	3500	3500	3500	3000	275	275
27-Feb	3000	3000	3000	3000	275	275
28-Feb	3000	3000	3000	3000	275	275
1-Mar	3000	3000	3000	3000	275	275
2-Mar	3000	3000	3000	3000	275	275
3-Mar	3000	3000	3000	3000	275	275
4-Mar	3000	3000	3000	3000	275	275
5-Mar	3000	3000	3000	3000	275	275
6-Mar	3000	3000	3000	3000	275	275
7-Mar	3000	3000	3000	3000	275	275
8-Mar	3000	3000	3000	3000	275	275
9-Mar	3000	3000	3000	3000	275	275
10-Mar	3000	3000	3000	3000	275	275
11-Mar	3000	3000	3000	3000	275	275
12-Mar	3000	3000	2500	2500	275	275
13-Mar	3000	3000	2000	2000	275	275
14-Mar	3000	3000	1500	1500	275	275
15-Mar	3000	3000	1000	1000	1000	1000
16-Mar	3000	3000	1000	1000	1000	1000
17-Mar	3000	3000	1000	1000	1000	1000
18-Mar	3000	3000	1000	1000	1000	1000
19-Mar	3000	3000	1000	1000	1000	1000
20-Mar	3000	3000	1000	1000	1000	1000
21-Mar	3000	3000	1000	1000	1000	1000
22-Mar	3000	3000	1000	1000	1000	1000
23-Mar	3000	3000	1000	1000	1000	1000
24-Mar	3000	3000	1000	1000	1000	1000
25-Mar	3000	3000	1000	1000	1000	1000
26-Mar	3000	3000	1000	1000	1000	1000
27-Mar	3000	3000	1000	1000	1000	1000
28-Mar	3000	3000	1000	1000	1000	1000
29-Mar	3000	3000	1000	1000	1000	1000
30-Mar	3000	3000	1000	1000	1000	1000

<u>DATE</u>	<u>Tuolumne</u>	<u>Stanislaus & Merced</u>	<u>Stanislaus, Tuolumne, and Merced Rivers</u>			
	<u>WET</u>	<u>WET</u>	<u>ABOVE NORMAL</u>	<u>BELOW NORMAL</u>	<u>DRY</u>	<u>CRITICAL</u>
31-Mar	3000	3000	1000	1000	1000	1000
1-Apr	3000	3000	1500	1500	1500	1500
2-Apr	3000	3000	1500	1500	1500	1500
3-Apr	3000	3000	1500	1500	1500	1500
4-Apr	3000	3000	1500	1500	1500	1500
5-Apr	3000	3000	1500	1500	1500	1500
6-Apr	3000	3000	1500	1500	1500	1500
7-Apr	3000	3000	1500	1500	1500	1500
8-Apr	3000	3000	1500	1500	1500	1500
9-Apr	3000	3000	1500	1500	1500	1500
10-Apr	3000	3000	1500	1500	1500	1500
11-Apr	3000	3000	1500	1500	1500	1500
12-Apr	3000	3000	1500	1500	1500	1500
13-Apr	3000	3000	1500	1500	1500	1500
14-Apr	3000	3000	1500	1500	1500	1500
15-Apr	3000	3000	1500	1500	1500	1500
16-Apr	3000	3000	2000	2000	2000	2000
17-Apr	3000	3000	2000	2000	2000	2000
18-Apr	3000	3000	2000	2000	2000	2000
19-Apr	3000	3000	2000	2000	2000	2000
20-Apr	3000	3000	2000	2000	2000	2000
21-Apr	3000	3000	2000	2000	1500	1500
22-Apr	3000	3000	2000	2000	1000	1000
23-Apr	3000	3000	2000	2000	500	500
24-Apr	3000	3000	2000	2000	275	275
25-Apr	3000	3000	2000	2000	275	275
26-Apr	3000	3000	2000	2000	275	275
27-Apr	3000	3000	2000	2000	275	275
28-Apr	3000	3000	2000	2000	275	275
29-Apr	3000	3000	2000	2000	275	275
30-Apr	3000	3000	2000	2000	275	275
1-May	3000	3000	2500	2500	275	275
2-May	3000	3000	2500	2500	275	275
3-May	3000	3000	2500	2500	275	275
4-May	3000	3000	2500	2500	275	275
5-May	3000	3000	2500	2500	275	275
6-May	3000	3000	2500	2500	275	275

<u>DATE</u>	<u>Tuolumne</u>	<u>Stanislaus & Merced</u>	<u>Stanislaus, Tuolumne, and Merced Rivers</u>			
	<u>WET</u>	<u>WET</u>	<u>ABOVE NORMAL</u>	<u>BELOW NORMAL</u>	<u>DRY</u>	<u>CRITICAL</u>
7-May	3000	3000	2500	2500	275	275
8-May	3000	3000	2500	2500	275	275
9-May	3000	3000	2500	2500	275	275
10-May	3000	3000	2500	2500	275	275
11-May	3000	3000	2500	2500	275	275
12-May	3000	3000	2500	2500	275	275
13-May	3000	3000	2500	2500	275	275
14-May	3000	3000	2500	2500	275	275
15-May	3000	3000	2500	2500	275	275
16-May	4000	3000	2400	2000	275	275
17-May	4000	3000	2300	1500	275	275
18-May	4000	3000	2200	1000	275	275
19-May	4000	3000	2100	500	275	275
20-May	4000	3000	2000	275	275	275
21-May	4000	3000	1900	275	275	275
22-May	4000	3000	1800	275	275	275
23-May	4000	3000	1700	275	275	275
24-May	4000	3000	1600	275	275	275
25-May	4000	3000	1500	275	275	275
26-May	4000	3000	1400	275	275	275
27-May	4000	3000	1300	275	275	275
28-May	4000	3000	1200	275	275	275
29-May	4000	3000	1100	275	275	275
30-May	4000	3000	1000	275	275	275
31-May	4000	3000	900	275	275	275
1-Jun	4000	3000	800	275	275	275
2-Jun	4000	3000	700	275	275	275
3-Jun	4000	3000	600	275	275	275
4-Jun	4000	3000	500	275	275	275
5-Jun	4000	3000	275	275	275	275
6-Jun	4000	3000	275	275	275	275
7-Jun	4000	3000	275	275	275	275
8-Jun	4000	3000	275	275	275	275
9-Jun	4000	3000	275	275	275	275
10-Jun	4000	3000	275	275	275	275
11-Jun	4000	3000	275	275	275	275
12-Jun	4000	3000	275	275	275	275

<u>DATE</u>	<u>Tuolumne</u>	<u>Stanislaus & Merced</u>	<u>Stanislaus, Tuolumne, and Merced Rivers</u>			
	<u>WET</u>	<u>WET</u>	<u>ABOVE NORMAL</u>	<u>BELOW NORMAL</u>	<u>DRY</u>	<u>CRITICAL</u>
13-Jun	4000	3000	275	275	275	275
14-Jun	4000	3000	275	275	275	275
15-Jun	4000	3000	275	275	275	275
16-Jun	3900	2900	275	275	275	275
17-Jun	3800	2800	275	275	275	275
18-Jun	3700	2700	275	275	275	275
19-Jun	3600	2600	275	275	275	275
20-Jun	3500	2500	275	275	275	275
21-Jun	3400	2400	275	275	275	275
22-Jun	3300	2300	275	275	275	275
23-Jun	3200	2200	275	275	275	275
24-Jun	3100	2100	275	275	275	275
25-Jun	3000	2000	275	275	275	275
26-Jun	2900	1900	275	275	275	275
27-Jun	2800	1800	275	275	275	275
28-Jun	2700	1700	275	275	275	275
29-Jun	2600	1600	275	275	275	275
30-Jun	2500	1500	275	275	275	275
1-Jul	2400	1400	275	275	275	275
2-Jul	2300	1300	275	275	275	275
3-Jul	2200	1200	275	275	275	275
4-Jul	2100	1100	275	275	275	275
5-Jul	2000	1000	275	275	275	275
6-Jul	1900	900	275	275	275	275
7-Jul	1800	800	275	275	275	275
8-Jul	1700	700	275	275	275	275
9-Jul	1600	600	275	275	275	275
10-Jul	1500	500	275	275	275	275
11-Jul	1400	275	275	275	275	275
12-Jul	1300	275	275	275	275	275
13-Jul	1200	275	275	275	275	275
14-Jul	1100	275	275	275	275	275
15-Jul	1000	275	275	275	275	275
16-Jul	900	275	275	275	275	275
17-Jul	800	275	275	275	275	275
18-Jul	700	275	275	275	275	275
19-Jul	600	275	275	275	275	275

<u>DATE</u>	<u>Tuolumne</u>	<u>Stanislaus & Merced</u>	<u>Stanislaus, Tuolumne, and Merced Rivers</u>			
	<u>WET</u>	<u>WET</u>	<u>ABOVE NORMAL</u>	<u>BELOW NORMAL</u>	<u>DRY</u>	<u>CRITICAL</u>
20-Jul	500	275	275	275	275	275
21-Jul	275	275	275	275	275	275
22-Jul	275	275	275	275	275	275
23-Jul	275	275	275	275	275	275
24-Jul	275	275	275	275	275	275
25-Jul	275	275	275	275	275	275
26-Jul	275	275	275	275	275	275
27-Jul	275	275	275	275	275	275
28-Jul	275	275	275	275	275	275
29-Jul	275	275	275	275	275	275
30-Jul	275	275	275	275	275	275
31-Jul	275	275	275	275	275	275
1-Aug	275	275	275	275	275	275
2-Aug	275	275	275	275	275	275
3-Aug	275	275	275	275	275	275
4-Aug	275	275	275	275	275	275
5-Aug	275	275	275	275	275	275
6-Aug	275	275	275	275	275	275
7-Aug	275	275	275	275	275	275
8-Aug	275	275	275	275	275	275
9-Aug	275	275	275	275	275	275
10-Aug	275	275	275	275	275	275
11-Aug	275	275	275	275	275	275
12-Aug	275	275	275	275	275	275
13-Aug	275	275	275	275	275	275
14-Aug	275	275	275	275	275	275
15-Aug	275	275	275	275	275	275
16-Aug	275	275	275	275	275	275
17-Aug	275	275	275	275	275	275
18-Aug	275	275	275	275	275	275
19-Aug	275	275	275	275	275	275
20-Aug	275	275	275	275	275	275
21-Aug	275	275	275	275	275	275
22-Aug	275	275	275	275	275	275
23-Aug	275	275	275	275	275	275
24-Aug	275	275	275	275	275	275
25-Aug	275	275	275	275	275	275

<u>DATE</u>	<u>Tuolumne</u>	<u>Stanislaus & Merced</u>	<u>Stanislaus, Tuolumne, and Merced Rivers</u>			
	<u>WET</u>	<u>WET</u>	<u>ABOVE NORMAL</u>	<u>BELOW NORMAL</u>	<u>DRY</u>	<u>CRITICAL</u>
26-Aug	275	275	275	275	275	275
27-Aug	275	275	275	275	275	275
28-Aug	275	275	275	275	275	275
29-Aug	275	275	275	275	275	275
30-Aug	275	275	275	275	275	275
31-Aug	275	275	275	275	275	275
1-Sep	275	275	275	275	275	275
2-Sep	275	275	275	275	275	275
3-Sep	275	275	275	275	275	275
4-Sep	275	275	275	275	275	275
5-Sep	275	275	275	275	275	275
6-Sep	275	275	275	275	275	275
7-Sep	275	275	275	275	275	275
8-Sep	275	275	275	275	275	275
9-Sep	275	275	275	275	275	275
10-Sep	275	275	275	275	275	275
11-Sep	275	275	275	275	275	275
12-Sep	275	275	275	275	275	275
13-Sep	275	275	275	275	275	275
14-Sep	275	275	275	275	275	275
15-Sep	275	275	275	275	275	275
16-Sep	275	275	275	275	275	275
17-Sep	275	275	275	275	275	275
18-Sep	275	275	275	275	275	275
19-Sep	275	275	275	275	275	275
20-Sep	275	275	275	275	275	275
21-Sep	275	275	275	275	275	275
22-Sep	275	275	275	275	275	275
23-Sep	275	275	275	275	275	275
24-Sep	275	275	275	275	275	275
25-Sep	275	275	275	275	275	275
26-Sep	275	275	275	275	275	275
27-Sep	275	275	275	275	275	275
28-Sep	275	275	275	275	275	275
29-Sep	275	275	275	275	275	275
30-Sep	275	275	275	275	275	275

<u>DATE</u>	<u>Tuolumne</u>	<u>Stanislaus & Merced</u>	<u>Stanislaus, Tuolumne, and Merced Rivers</u>			
	<u>WET</u>	<u>WET</u>	<u>ABOVE NORMAL</u>	<u>BELOW NORMAL</u>	<u>DRY</u>	<u>CRITICAL</u>
Flow Volumes Acre-Feet	1,110,926	986,493	632,329	575,615	325,063	325,063
Percent Unimpaired Stanislaus River		54%	50%	65%	50%	71%
Percent Unimpaired Tuolumne River	37%		30%	39%	28%	38%
Percent Unimpaired Merced River		61%	60%	79%	60%	82%