

# May 1, 2010 Default Flow Schedule

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## *San Joaquin River Restoration Program*

### **Transmittal to the Restoration Administrator**

The following pages describe the annual allocation and transmittal of a default flow schedule to the Restoration Administrator for the San Joaquin River Restoration Program consistent with the Draft Restoration Flow Guidelines dated January 20, 2010 and channel capacity constraints. Calculations are computed first according to full Restoration Flows and then adjusted for capacity constraints during the Interim Flow Period. The allocation of SJRRP water follows the following process:

1. Total Annual Allocation: computation of the total volume of water available for the SJRRP based on declaration of the forecast unimpaired inflow below Friant Dam.
2. Remaining Annual Allocation: remaining volume of water available for release equal to the total annual allocation minus the amount used.
3. Releases to Date: identification of flow volume released for the purposes of the SJRRP for the contract year beginning March 1<sup>st</sup> including measured rates and estimated future releases.
4. Default Flow Schedule: distribution of the remaining allocation throughout the remainder of the contract year.
5. Operational Constraints: flow release limitations based on downstream channel capacity, regulatory, or legal constraints.

Reclamation provides the Restoration Administrator with a default flow schedule. The Restoration Administrator is requested to return a flow schedule recommendation showing the use of the entire Annual Allocation during the upcoming Restoration Year, and categorize all recommended flows by account (e.g., shifts in the Default Flow Schedule, Buffer Flow releases).

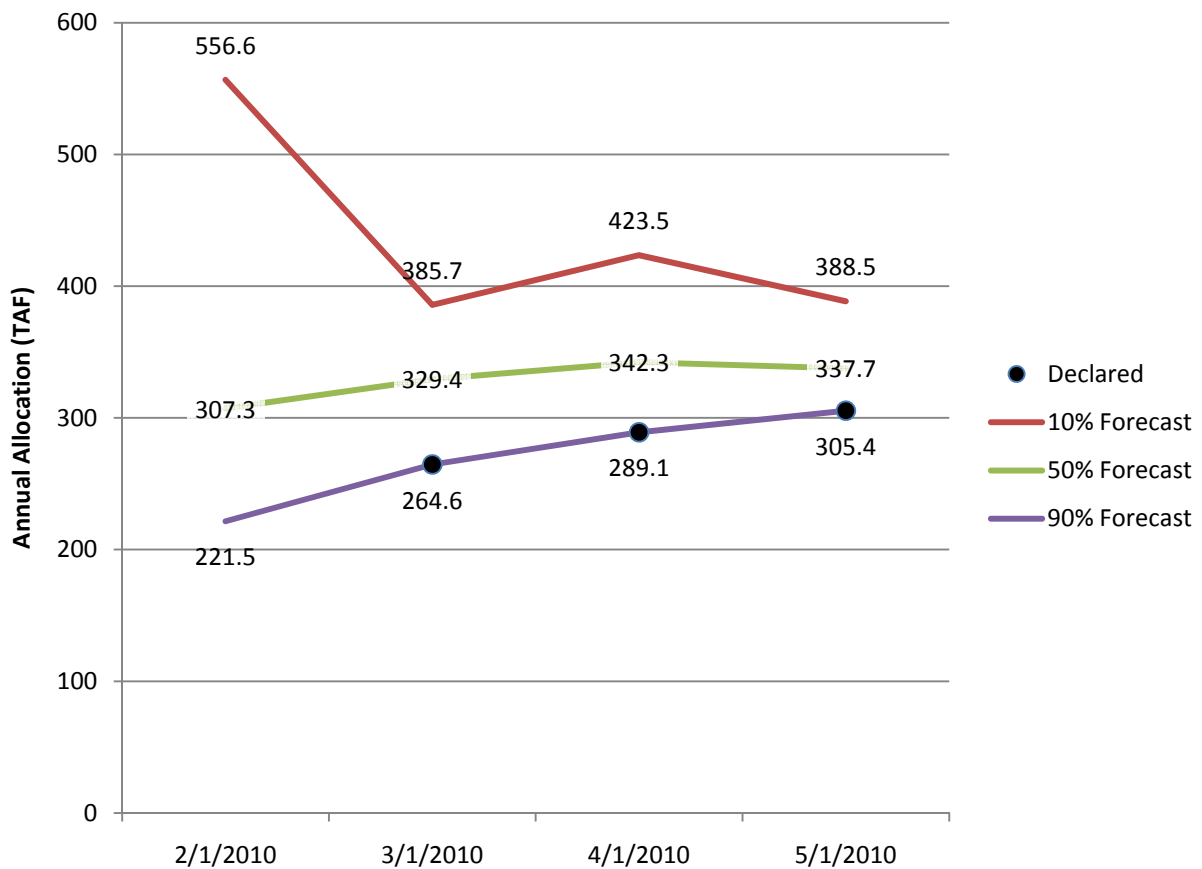
### **Total Annual Allocation**

Table 1 reports forecast unimpaired inflow below Friant Dam for the contract year. The allocation of flows to the SJRRP uses Method 3.1 as documented in the Restoration Flow Guidelines.

**Table 1 – Forecast Unimpaired Inflow below Friant Dam**

Scenario	Forecast 10% (TAF)	Forecast 50% (TAF)	Forecast 90% (TAF)	Forecast Declared (TAF)
Feb. 01, 2010	2,510	1,620	990	990
Mar. 01, 2010	2,180	1,778	1,310	1,310
Apr. 01, 2010	2,450	1,870	1,490	1,490
<b>May. 01, 2010</b>	<b>2,200</b>	<b>1,837</b>	<b>1,607</b>	<b>1,607</b>

Based on the unimpaired inflow forecast, Figure 1 shows the annual allocation to the SJRRP. Figure 1 represents additional flow releases and does not including the riparian holding contract requirement to maintain 5 cfs passing Gravelly Ford.



**Figure 1 – Annual Allocation of SJRRP Flows based on Unimpaired Inflow Forecasts**

Table 2 shows the total annual allocation for the SJRRP and the additional 5 cfs required to meet flow targets passing Gravelly Ford.

**Table 2 – Total Annual Allocation**

Accounting	TAF
Allocation for the SJRRP	305.4
Gravelly Ford Baseline	3.6
Exhibit B Gravelly Ford Target	309.1

## Releases to Date

Releases to date estimate the volume of water released from Friant Dam for the SJRRP up to the effective date of the allocation based on mean daily flows. Gravelly Ford flows in excess of Friant Dam releases do count towards SJRRP releases. Flow information will depend on available records and use, in order or priority:

1. Finalized QA/QC record of Gravelly Ford mean daily flows;
2. Operations spreadsheet estimates of Gravelly Ford mean daily flows; and
3. Anticipated Gravelly Ford flow targets based on the most recent flow schedule

Table 3 shows the accounting of flows. Figure 2 shows the time series of flows.

**Table 3 – Summary of SJRRP Release Accounting**

Accounting	Acre-Feet
Final QA/QC	37,831
Operations Estimates	26,301
Anticipated Target	40,344
<b>Gravelly Ford Flows</b>	<b>104,475</b>
- Baseline at Gravelly Ford	-605
- Excess Tributary Inflows	-1,517
<b>Releases for the SJRRP</b>	<b>103,870</b>

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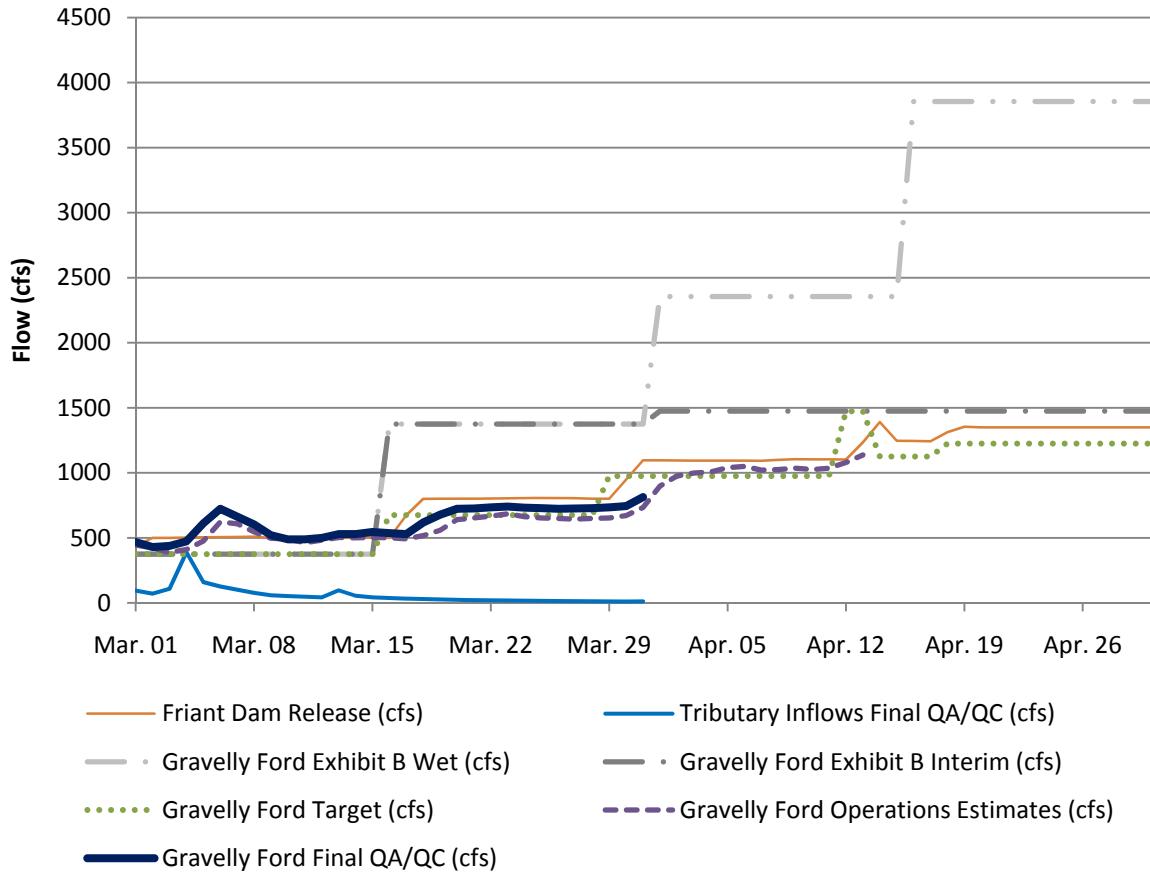


Figure 2 – Flows Passing Gravelly Ford

### Remaining Annual Allocation

The volume of remaining allocation is computed from the flows already passed Gravelly Ford that are attributable to the SJRRP and the total annual allocation. Under a channel capacity limitation, some of the water that could be flexibly released under full Restoration Flows is not available for rescheduling. The remaining allocation reduces the available amount by Exhibit B flows in excess of 1475 cfs at Gravelly Ford for April 1<sup>st</sup> through April 30<sup>th</sup>. Table 4 shows the calculations for the volume of water in excess of channel capacity constraints. Table 5 shows the results of the remaining allocation.

Table 4 – Volume Foregone due to Channel Capacity Constraints

Start	End	Exhibit B Flow Rate (cfs)	Default Flow Rate (cfs)	Channel Capacity Constraint (cfs)	Capped Flow Foregone (cfs)	Daily Volume Foregone (afd)	Duration (days)	Total Volume Foregone (af)
4/1/2010	4/15/2010	2355	2355	1475	880	1,745	15	26,182
4/16/2010	4/30/2010	3855	2316	1475	841	1,668	15	25,021

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**Table 5 – Remaining Annual Allocation**

Accounting	Thousand Acre-Feet
Allocation for the SJRRP	305.4
Releases for the SJRRP	-103.9
April 1-15 Flow Cap	-26.2
April 16-30 Flow Cap	-25.0
Allocation Used	-155.1
<b>Remaining SJRRP Allocation</b>	<b>150.4</b>

**Default Flow Schedule**

The default flow schedule is computed from the lookup tables reported in the Restoration Flow Guidelines Draft dated January 20, 2010. Table 6 shows lists the flow targets for the default schedule at Gravelly Ford, including the 5 cfs baseline release for riparian holding contracts.

**Table 6 – Default Flow Schedule**

Schedule Start	Schedule End	Annual Allocation (taf)	Allocation Used (taf)	Remaining Allocation (taf)	Default Schedule (cfs)	Number of Days	Schedule Volume (taf)	Riparian Baseline (taf)	Default Release (taf)	Cum. Default Release (taf)
Mar. 01, 2010	Mar. 15, 2010	264.6	0.0	264.6	375	15	11.2	0.1	11.0	11.0
Mar. 16, 2010	Mar. 31, 2010	264.6		253.6	1375	16	43.6	0.2	43.5	54.5
Apr. 01, 2010	Apr. 15, 2010	289.1	32.3	256.8	2355	15	70.1	0.1	69.9	124.4
Apr. 16, 2010	Apr. 30, 2010	289.1		186.9	2321	15	69.1	0.1	68.9	193.3
May. 01, 2010	Jun. 30, 2010	305.4	155.1	150.4	433	61	52.4	0.6	51.8	245.1
Jul. 01, 2010	Aug. 31, 2010	305.4		98.6	125	62	15.4	0.6	14.8	259.8
Sep. 01, 2010	Sep. 30, 2010	305.4		83.8	145	30	8.6	0.3	8.3	268.2
Oct. 01, 2010	Oct. 31, 2010	305.4		75.5	195	31	12.0	0.3	11.7	279.9
Nov. 01, 2010	Nov. 06, 2010	305.4		63.8	575	6	6.8	0.1	6.8	286.6
Nov. 07, 2010	Nov. 10, 2010	305.4		57.0	575	4	4.6	0.0	4.5	291.2
Nov. 11, 2010	Dec. 31, 2010	305.4		52.5	235	51	23.8	0.5	23.3	314.4
Jan. 01, 2011	Jan. 31, 2011	305.4		29.3	255	31	15.7	0.3	15.4	329.8
Feb. 01, 2011	Feb. 28, 2011	305.4		13.9	255	28	14.2	0.3	13.9	343.7
						Sub-Total	347.3	3.6	343.7	

The total release will differ from the annual allocation by difference in the volume of water between the default flow schedule and the accept recommendation. Water not released according to the default flow schedule does not count against the allocation used and is therefore “rescheduled” to later in the year and counted twice.

## Operational Constraints

The following operations constraints may limit the release of flows under some scenarios. Some operational constraints may be adjusted pending updated evaluations of field conditions.

1. 1475 cfs passing Gravelly Ford including tributary inflows from Cottonwood and Little Dry Creek to prevent exceeding a flow limit of 1300 cfs in Reach 2B.
2. 700 cfs limit on flows passing Sack Dam due to potential seepage impacts in Reach 4 as described in the April 12<sup>th</sup> bench evaluation.
3. Delta-Mendota Canal demands limit the recapture potential at the Mendota Pool. The ability to recapture flows exceeding 700 cfs may be reduced if no capacity exists to exchange the water.

Table 7 shows the interim flow default schedule. Figure 3 shows the default flow schedule graphically based on flow targets at Gravelly Ford.

**Table 7 – Interim Flow Default Schedule**

Schedule Start	Schedule End	Default Schedule (cfs)	Capacity Limit (cfs)	Interim Default Schedule (cfs)	Number of Days	Interim Default Schedule (taf)	Riparian Baseline (taf)	Interim Default Release (taf)	Cum. Interim Release (taf)
Mar. 01, 2010	Mar. 15, 2010	375.0	1475	375	15	11.2	0.15	11.0	11.0
Mar. 16, 2010	Mar. 31, 2010	1375.0	1475	1375	16	43.6	0.16	43.5	54.5
Apr. 01, 2010	Apr. 15, 2010	2355.0	1475	1475	15	43.9	0.15	43.7	98.2
Apr. 16, 2010	Apr. 30, 2010	2321.2	1475	1475	15	43.9	0.15	43.7	142.0
May. 01, 2010	Jun. 30, 2010	432.9	1475	433	61	52.4	0.60	51.8	193.7
Jul. 01, 2010	Aug. 31, 2010	125.0	1475	125	62	15.4	0.61	14.8	208.5
Sep. 01, 2010	Sep. 30, 2010	145.0	1475	145	30	8.6	0.30	8.3	216.8
Oct. 01, 2010	Oct. 31, 2010	195.0	1475	195	31	12.0	0.31	11.7	228.5
Nov. 01, 2010	Nov. 06, 2010	575.0	1475	575	6	6.8	0.06	6.8	235.3
Nov. 07, 2010	Nov. 10, 2010	575.0	1475	575	4	4.6	0.04	4.5	239.8
Nov. 11, 2010	Dec. 01, 2010	235.0	1475	235	21	9.8	0.51	9.3	249.1
Jan. 01, 2011	Jan. 31, 2011	5.0	1475	5	31	0.3	0.31	0.0	249.1
Feb. 01, 2011	Feb. 28, 2011	255.0	1475	255	28	14.2	0.28	13.9	263.0
					Sum	266.6	3.6	263.0	

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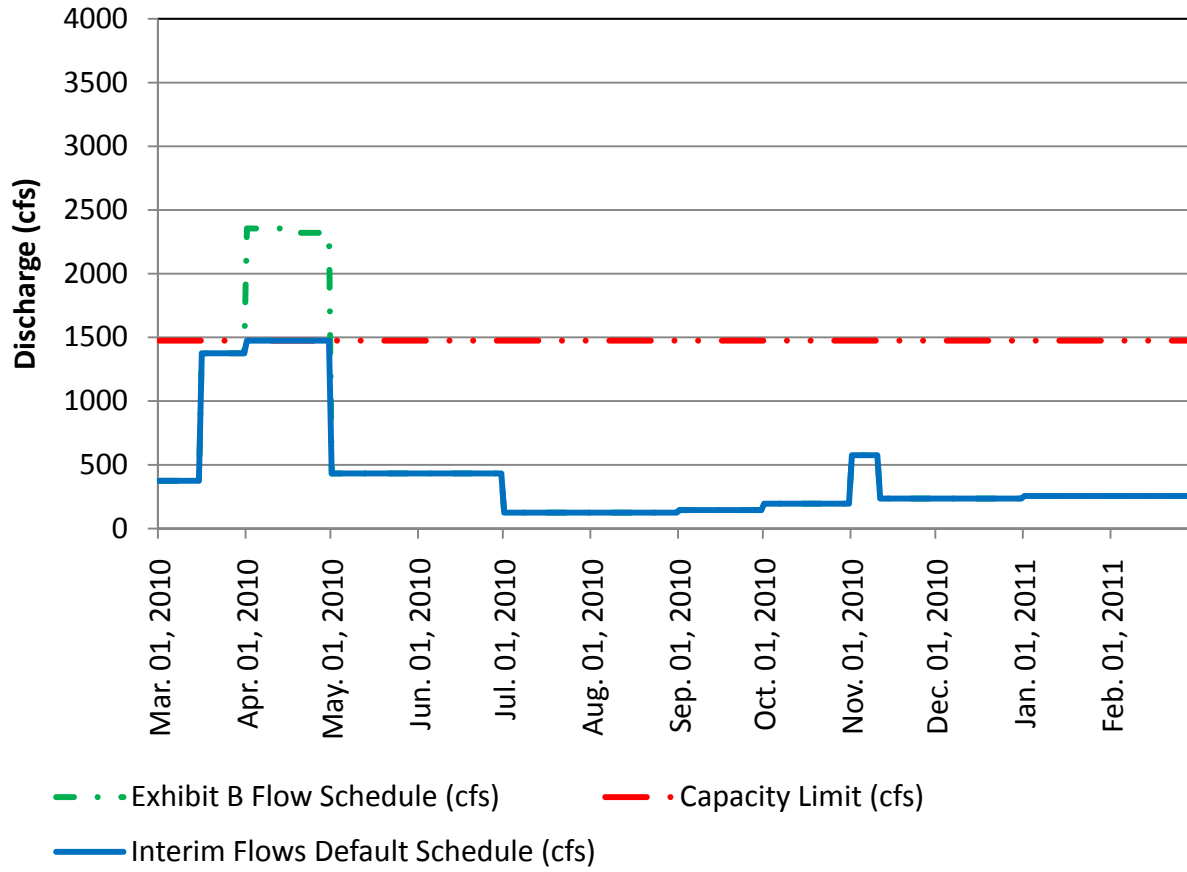


Figure 3 – Gravelly Ford Flow Default Flow Schedule