

SJRRP Flow Bench Evaluation

March 3, 2011

Flows below Friant Dam are recommended by Reclamation to increase to 700 cfs on March 4, 2010.

As of March 3, 2011:

1. Flow rates from provisional real-time data are below known conveyance thresholds (8,000 cfs in Reach 2A, 1,300 cfs in Reach 2B, and 1,300 cfs in Reach 3).
2. Mendota Pool operations' calls did not identify any issues.
3. No hotline calls have been received to date in response to Spring 2011 flows.
4. The real-time groundwater level in Monitoring Well 54B is at 15.96 feet below ground surface, above the preliminary threshold in the well of 17.9 feet below ground surface. Groundwater gradients suggest a steep slope of the groundwater table, so groundwater levels under the field would be approximately 2 feet deeper than those measured in wells. Groundwater levels in the field are likely to be at the threshold. The groundwater level in Monitoring Well MW-10-92 is at 6.12 feet below ground surface, above the preliminary threshold of 6.6 feet below ground surface. These levels are gradually decreasing as bank storage from flood releases drains. Flow releases should be held at no more than 50 cfs release from Sack Dam to allow Reaches 4A and the Eastside Bypass to drain.

5. Table 1 - Measured groundwater levels in Priority Wells

Well	Current Groundwater Level (feet bgs)	Threshold in Well (feet bgs)	Threshold in Field (feet bgs)	Site Visit Conclusion
FA-9	8.25	8.7	5	Groundwater slope of 2.5 feet, below threshold in field
MW-09-47	8.38	10.5	7	Groundwater slope of 3.3 feet, below threshold in field
MA-4	11.82	13.1	7	Groundwater slope of approximately 4.6 feet, below threshold in field
MW-49B	6.02	6.2	4.5	Groundwater slope of 2.4 feet, below threshold in field
MW-55B	9.07	10.7	7	Groundwater slope of approximately 3 feet, below threshold in field
PZ-09-R2B-1	5.22	6.3	5.0	License agreement nearly in place
MW-90	2.51	11.7	7.0	Hold flows to 50 cfs past Sack Dam
MW-94	3.93	7.0	7.0	Hold flows to 50 cfs past Sack Dam
MW-95	5.40	7.2	5.0	Hold flows to 50 cfs past Sack Dam

6. Flows continue to fluctuate in all reaches. Little Dry and Cottonwood Creeks are adding approximately 75 cfs downstream of Friant Dam.
7. Projected groundwater levels from the upcoming increase in flow are below thresholds except for wells MW-09-47 and PZ-09-R2B-1. See Table 3 and the paragraphs below for analysis.
8. The LSJLD has not identified any issues to date.
9. The CCID has not identified any issues to date.
10. The SLCC has not identified any issues to date.

The groundwater level in Monitoring Well MW-09-47 is predicted to rise to 6.48 feet below the ground surface in the field using conservative assumptions of ground elevation differential and groundwater gradient information from a site visit in April 2010. This is half a foot above the field threshold of 7 feet below ground surface. This property currently has tile drains. A site visit is underway to confirm tile drains are protecting crops and this increase in river flows would not impact operations. Planned releases can occur.

The groundwater level in PZ-09-R2B-1 is predicted to rise to 3.18 below the ground surface in the field using conservative assumptions of ground elevation differential. This is 1.8 feet above the threshold in the field of 5 feet below ground surface. Reclamation is working to complete a license agreement for the property. Planned releases can occur.

Data

The weekly groundwater report with manual measurements via electronic well sounder and recent flow data is available at: <http://www.restoresjr.net/flows/Groundwater/Groundwater.html>.

Table 2 shows the anticipated changes in flow targets used to evaluate future groundwater depths based on Exhibit B loss assumptions for Reaches 2A through 3 and an estimated 500 cfs delivery to Arroyo Canal. In Reach 4, a flow of 50 cfs was assumed based on the current operations for thresholds near the Eastside Bypass.

Table 2 Anticipated Change in Flows

	Current Target (cfs)	Average Recent Flow (cfs)	Future Target (cfs)
Reach 2A	75	220	575
Reach 2B	0	170	475
Reach 3	550	625	550
Reach 4A	50	60	50

Table 3 shows the current and maximum rise in groundwater based on estimated changes in river stage and the conceptual model shown in Figure 1. Subsequent pages show the rating curves for each of the key wells from the Mussetter Engineering, Inc., 2008 San Joaquin HEC-RAS Model Documentation Technical Memorandum prepared for California Dept. of Water Resources, Fresno, California, June 2. Maximum groundwater rise in wells on San Juan Ranch in the end of Reach 4A were based on the Washington Avenue gage assuming a direct relationship between river stage and groundwater elevation.

Table 3 Maximum Increases in Groundwater Levels for Key + San Juan Ranch Wells

Well	Site	Current Depth Week of October 30 th (feet bgs)	Maximum Predicted Stage Increase (feet)	Predicted Shallowest Depth (feet)	GS Buffer	Groundwater Slope (feet lower in field than well)	Predicted Depth in Field (feet bgs)	Threshold in Field (feet bgs)
FA-9	Reach 2A – Transect 12 – Left	8.25	1.77	6.48	3.7	2.5	5.28	5
MW-47	Reach 2A – Transect 12 – Right	8.38	1.69	6.68	3.5	3.3	6.48	7
MA-4	Reach 2A – Transect 13 – Right	11.82	1.78	10.04	6.1	4.6	8.54	7
MW-49B	Reach 2A – Transect 13 – Left	6.02	1.78	4.23	1.7	2.4	4.93	4.5
MW-54B	Reach 2B – San Mateo Ave. – Right	15.75	1.41	14.34	7.9	2	8.44	7
MW-55B	Reach 2B – San Mateo Ave. – Left	9.07	1.49	7.58	3.7	3.1	6.98	7
R2B-1	Reach 2B – Right	5.22	0.74	4.48	1.3		3.18	5

bgs = below ground surface

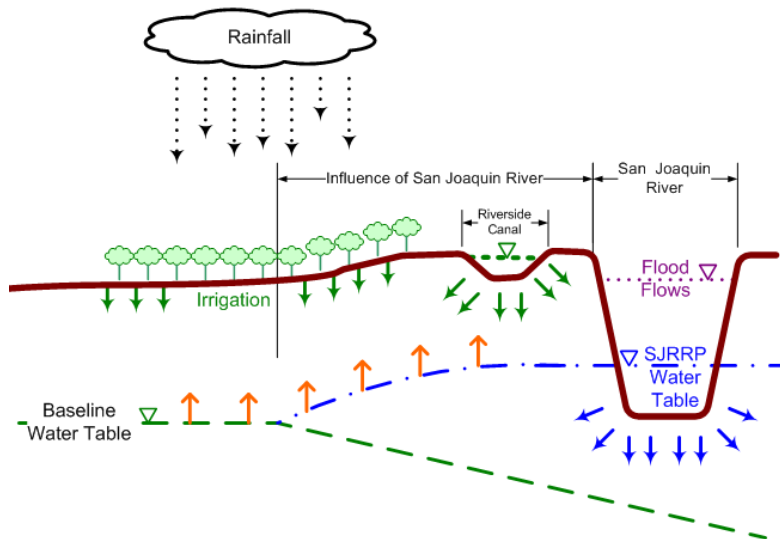


Figure 1 Conceptual Model for Flow Bench Evaluations Estimated Groundwater Depths

