



San Joaquin River Restoration Program Monitoring Well Thresholds Technical Memorandum

The Thresholds Technical Memorandum (TM) details the analysis taken to develop groundwater thresholds in San Joaquin River Restoration Program (SJRRP) monitoring wells. This TM is the January deliverable for the Seepage and Conveyance Technical Feedback Group. The Bureau of Reclamation has attempted to use the best available knowledge and research to determine these thresholds. Local knowledge imparted by landowners and water districts familiar with the area is helpful in this development, and Reclamation would appreciate any comments you may have. The thresholds that become finalized in the Seepage Monitoring and Management Plan will be used to help determine Interim Flow releases from that point forward, until new information becomes available.

Thresholds are important to the operation of the Interim Flows program. Thresholds are a tool used as a trigger for Program action. A trigger may be either a predicted or measured groundwater level increasing above the threshold, or a Seepage Hotline call. Either of these occurrences would trigger a site visit to evaluate potential seepage conditions on a particular site. Once the physical processes on the site are determined through the site visit and subsequent monitoring, a threshold may become an operational criterion. Operational criteria will translate directly into response actions, including reducing, diverting or limiting Interim Flows. The 99.7 feet of river stage that the SJRRP operated to in Reach 4A in Fall 2010 was an operational criterion.

Both monitoring locations and thresholds assist in effectively monitoring groundwater conditions. The first method of determining thresholds incorporates the effects on crops from several different components. Crop root zones, ground surface gradients, irrigation, and capillary rise are all included in the thresholds. Reclamation has included draft thresholds in the Monitoring Well Thresholds TM including the values used for each of these factors, as well as explanations of the approach and assumptions made. If you have more current or local information that would change these assumptions, Reclamation would appreciate your comments.

The continued development of thresholds would benefit from landowner input and knowledge. All comments will be accepted; however, threshold development may especially benefit from landowner input and knowledge in the following areas:

- **New well locations**
Shallow groundwater monitoring wells are used to monitor key areas of concern for potential seepage. The well network could benefit from suggestions for additional locations of concern not represented by the existing network.
- **Historical Irrigation Records**
The thresholds consider irrigation records to set an irrigation buffer, as lowering groundwater levels prior to irrigation may allow drainage. Local irrigation practices for leaching, furrow, and drip irrigation would better inform buffer size.

- Irrigation and Planting Times
The thresholds allow for a timing component of thresholds to allow for irrigation and leaching. Information submitted regarding timing of leaching irrigation can better inform the thresholds.
- Areas of poorly drained soils
Reclamation does not currently know of any specific areas of poorly drained soil without artificial drainage requiring an irrigation buffer during leaching times. These buffers may be added as more information is obtained on poorly drained soil areas.
- Crop types near monitoring wells
Root zones depend on crop types. Information regarding local crops may help to inform future buffers.
- Other references for appropriate root zones
The thresholds consider root zones based on crop type. Local root zone information may be more accurate.

Reclamation will revise thresholds based on the comments received. These thresholds will be used to help manage for the reduction or avoidance of seepage impacts. Thresholds are a key step to determine operational criteria to reduce, divert, or limit Interim Flows.

We look forward to receiving your comments by January 31, 2011 consistent with the State Water Resources Control Board Order WR-2010-0029-DWR. Comments must be in writing, and may be emailed to interimflows@restoresjr.net, or mailed to San Joaquin River Restoration Program, MP-170, 2800 Cottage Way, Sacramento, California 95825. Reclamation will provide written responses that may include updates to thresholds by March 1, 2011.