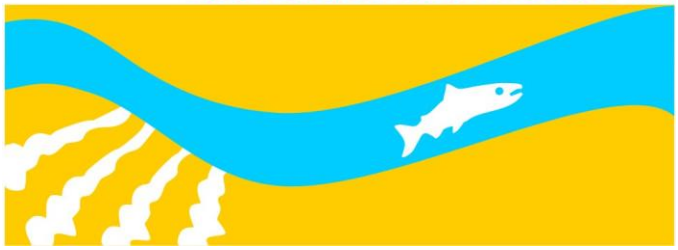
Study 24

Additional Water Level Recorders

Final
2015 Monitoring and Analysis Plan

SAN JOAQUIN RIVER
RESTORATION PROGRAM



January 2015

1.0 Additional Water Level Recorders

Theme(s):

- Channel Capacity Management
- Long-term monitoring

Related Question(s):

Questions not developed for these themes to date.

1.1 Statement of Need

The data for this study specifically address needs related to San Joaquin River Channel Capacity Management Problem Statement and indirectly address certain aspects of other problem statements by providing a continuous record of Water Surface Elevations (WSEs) at key locations during Restoration Flow releases to calibrate hydraulic models being used to assess channel capacity, fishery habitat, channel stability, and many other aspects of Restoration planning and design. They also provide additional data that will help calibrate unsteady hydraulic models of the river by recording flow bench travel times and attenuation.

1.2 Background

There are currently several active stream gages on the main stem San Joaquin River within the Restoration reach. To provide additional data to calibrate the hydraulic and flow-routing models, six additional water-level recorders (WLR) were installed in 2009 and 2010 at key locations in Reaches 1A and 1B to supplement existing stream gages. The additional recorders supply six additional locations where a continuous record of stage can be obtained. These stage readings can be used to assess hydrograph translation characteristics through the upstream reach and corresponding WSEs can be used to validate hydraulic models. Assuming that the stage-discharge relationship remains constant over time, rating curves can also be developed at the sites using opportunistic flow measurements and correlation with flows at the closest upstream and downstream gages to provide estimates of the local discharge.

1.3 Anticipated Outcomes

The study will result in the following outcomes related to channel capacity management:

- Through analysis of the data collected to-date, DWR expects to be able to identify locations where no recorders exist but calibration data is needed. If new locations are identified, DWR expects to add a few additional recorders in those locations.

- Data from the WLRs have been compared to routing model results, and adjustments made to the models, as necessary, to better match the data.

- The data will also be evaluated with respect to the surrounding topography to understand inundation levels associated with Restoration Flows.

- Improved model performance from these comparisons and resulting adjustments to the models will provide more certainty in predicted inundation levels, channel capacities, and other channel characteristics.

1.4 Methods

Type of Study: Data collection

Reach(es): Reach 1A and Reach 1B

The detailed installation procedures of WLRs and WSE calculation methods are presented in 2009 and 2010 Annual Technical Reports (SJRRP, 2010 and 2011, respectively).

These WLRs collect the stage data at an interval of 15 minutes and store those data in data loggers. These data are transferred to the field computer at 2 to 3 month intervals and then converted to WSEs. These WSEs along with time stamps are available on the SJRRP Data Reporting webpage.

The locations of the additional WLRs are shown in Figure 1 along with the other gages.

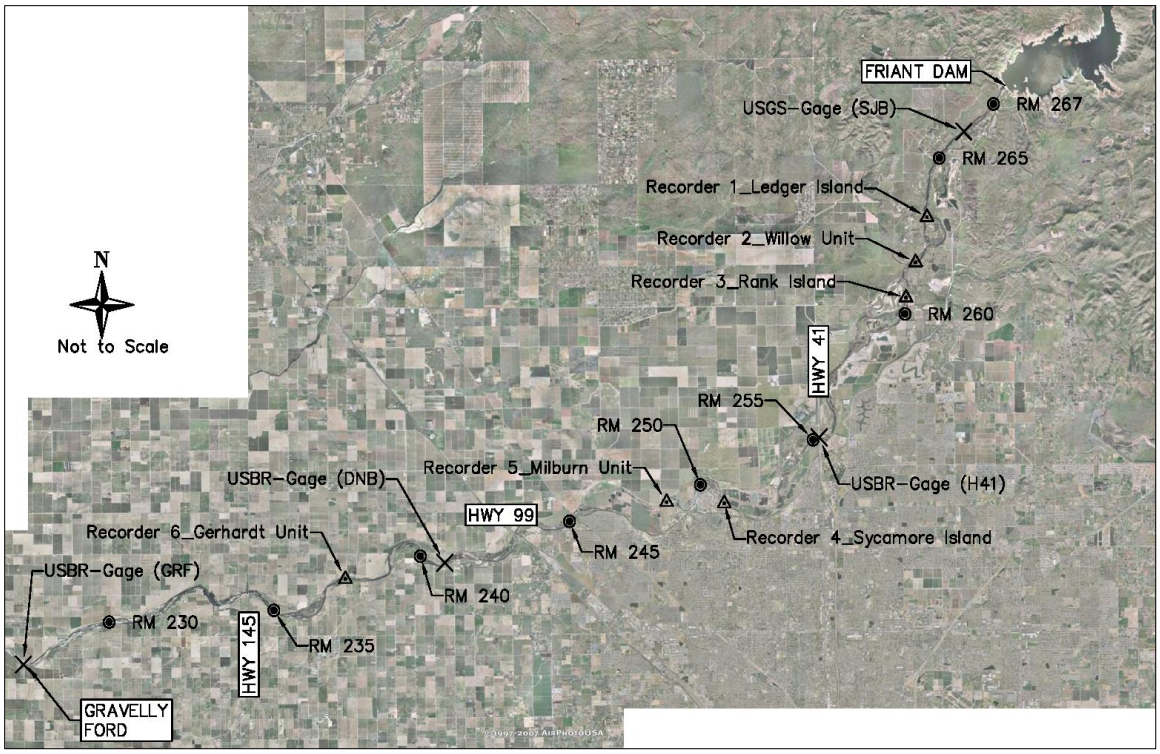


Figure 1. Water Level Recorder and Permanent Gage Locations

1.5 Deliverables and Schedule

WSE data at each recorder site will be reported on the SJRRP Data Reporting webpage. New location data will also be provided for each additional recorder, if anything is installed in the future. The existing recorders will be kept in place if DWR determines a viable stage-discharge relationship can be developed for the sites.

1.6 Budget

The total cost estimate is $35,000 for 2015.

Table 1. Proposed 2015 Budget

Task	Cost
Field Data Collection	$ 10,000
Regular Maintenance	$ 6,000
Batteries and Supplies	$ 200
Unexpected Repairs	$ 1,800
Reporting	$ 5,000
Potential New Recorder Permitting and Installation	$ 12,000
Total	**$ 35,000**

1.7 Point of Contact / Agency Principal Investigator

Dave Encinas, DWR, Dave.Encinas@water.ca.gov, 559-230-3355

1.8 References

San Joaquin River Restoration Program (SJRRP). 2010. Final 2009 Annual Technical Report. February.

———. 2011. Final 2010 Annual Technical Report. April.

SJRRP. *See* San Joaquin River Restoration Program.