



United States Department of the Interior

BUREAU OF RECLAMATION
Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, CA 95825-1898

NOV 25 2015

IN REPLY REFER TO:

MP-740
ENV-8.00

Ms. Pamela Creedon
Executive Officer
Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive #200
Rancho Cordova, CA 95670

Subject: Bureau of Reclamation Response to Letter and Addendum Request Dated
September 24, 2015

Dear Ms. Creedon:

Reclamation has prepared information in response to the Management Agency Agreement (MAA) Work Plan Addendum request dated September 24, 2015. The Work Plan Addendum guidance document, received October 13, 2015, has been utilized to format and focus Reclamation responses to the information request.

Each Annual Work Plan Addendum Guidance Document phase is listed below with Reclamation's response to questions:

Phase 2 (March 31, 2015, to March 31, 2016)

1. *Does Reclamation plan to hold field demonstrations in GRCD or GB?*
2. *Will Reclamation continue to demonstrate networking systems at the RTMP's Technical Research Team monthly meetings?*

Reclamation has indicated in the 2015 MAA Work Plan that informational meetings for stakeholders will be conducted when necessary or requested. The next scheduled informational meeting is to be during the Lower San Joaquin River Committee meeting in December 2015 or January 2016. Reclamation will present information and demonstrate the forecasting process and web-based information system. Stakeholder participation is important for this meeting and the Lower San Joaquin River Committee Chairs and Manager wish to have the highest number of stakeholders present. The Technical Research Team (TRT) was conceived to meet monthly to provide a public forum to discuss San Joaquin River forecast modeling and present planned improvements to the modeling process. The next scheduled TRT meeting will be in January 2016.

1. *Will Reclamation provide the RTMP stakeholders with a prioritized list of monitoring needs to support a robust forecast tool (e.g. new sites, sites that need to be relocated, upgraded, or repaired)?*
2. *Will Reclamation identify specific sites that it will support (e.g. monitoring, O&M, or calibration)?*
3. *Will Reclamation continue to fund contractor development and refinement of the WARMF model forecasting tool?*
4. *Will Reclamation train staff of the RTMP group and DWR to operate the WARMF model forecasting tool?*
5. *Will Reclamation fund development of model interface dashboards that allow stakeholder view of forecast model output?*

Reclamation participates as a Cooperating Agency in the San Joaquin River Real Time Management stakeholder group. Reclamation has no decision-making authority in the group; participation is focused on providing technical support and expertise when requested from the group. The RTMP framework document approved by the Central Valley Regional Water Quality Control Board lists monitoring sites that are required by the forecasting tool. Furthermore, Reclamation listed monitoring stations in the 2016 MAA Annual Work Plan where it will seek to provide technical support to improve and maintain the forecast. Stakeholders may choose to request support from Reclamation for monitoring sites within their own areas. The Annual Work Plan also states that Reclamation is currently collaborating with Grassland Water District to plan and support monitoring sites and telemetry equipment within the district. Reclamation currently funds training for the forecast model and support to develop publicly available online informational dashboards. These activities are funded for fiscal year 2016 and are scheduled for continued funding in the next fiscal year. Reclamation currently has two stakeholder training events scheduled: An informational presentation during the Lower San Joaquin River Committee meeting in December/January 2015 and an informal training with the DWR staff in November 2015.

1. *How does Reclamation plan to work with stakeholders to identify potential available funding?*
2. *Does Reclamation plan to provide stakeholders with information on funding opportunities that may be available?*
3. *Will Reclamation provide support for Grant proposals? Can Reclamation identify costs for various levels of improved monitoring (e.g. cost to convert existing priority stations; cost to include new stations; costs to maintain forecasting tools)?*
4. *Will Reclamation identify priority monitoring sites that it will fund or cost share to improve the model?*

Reclamation, as a Cooperating Agency in the Real Time Management group, intends to use its resources to identify and communicate funding opportunities as they arise. The Real Time Management group retains decision-making discretion for whether or not a particular funding opportunity is applicable on a particular property. Reclamation has indicated in the 2016 Work Plan that a technical expert will be funded to be used as a resource for stakeholders within the

San Joaquin watershed. The technical expert, in addition to Reclamation staff resources that are listed yearly in the Annual Work Plan, will be prepared to offer technical support (guidance, attend meetings, review documents, etc.) to the Real Time Management group as necessary. These resources will be available when needed to assist stakeholders as they develop all aspects of their own real time management programs. Reclamation has not indicated in the 2016 Work Plan that it will identify priority monitoring sites or provide additional funds for monitoring sites above what is already provided. Reclamation currently operates more than 30 monitoring sites within the San Joaquin River watershed which can be identified most easily on the California Data Exchange Center website.

1. *Will Reclamation complete automation of input data from agency websites and other web portals into the Watershed Analysis Risk Management Framework (WARMF) forecast model?*
2. *Will Reclamation continue to fund the development of WARMF Manager Modules for various stakeholders, which provides a simplified user interface for viewing model runs and forecast online?*
3. *Will Reclamation assess model performance at the sub-watershed level with emphasis on the west-side drainage inflow stations and the wetland entities?*
4. *Will Reclamation prioritize additional monitoring sites that would make the model more robust?*
5. *What type of technical support will Reclamation continue to provide as needed?*

In the 2016 MAA Annual Work Plan Reclamation indicates that resources will be utilized to provide technical support to water districts that choose to share data with the real time management group. Reclamation is currently providing technical support to Turlock Irrigation District for this purpose. Reclamation manages a contract with Systec Systems Inc. (the performance period for the current contract is through 2017) for the WARMF forecast model and public website. A goal of this contract is to increase the amount of automatic data gathering to run the model; a new contract is planned for the future and will be listed in a subsequent MAA Annual Work Plan. One of the goals listed in the contract is to decrease the complexity and time required to run the forecast model. Reclamation is currently working with the contractor to reduce time to gather information and run the model to less than 1 day. The current contract has been used to fund WARMF sub-watershed analysis on a small scale on the west side of the San Joaquin River. These developments are not currently a focus of Reclamation activities; Reclamation efforts are currently focused on running the model, providing training and collaborating to increase the capability of others to run the model. The performance of the model is assessed each time a forecast is generated using a 1-week comparison to known data. One week of recorded data is used to calibrate the model forecast.

Reclamation will continue to provide technical support to the RTMP telemetry system, currently Geostationary Operational Environmental Satellite (GOES) and YSI EcoNet™ telemetry. Reclamation has funded replacement parts to keep stations on the west side of the San Joaquin River operational during fiscal year 2015. Reclamation has also provided technical support to Turlock Irrigation District, which is described in the 2016 Annual Work Plan regarding the type

and format of data required for processing by the forecast model. The irrigation district has indicated that it would like to explore methods to share data to help improve the forecast model. Reclamation will continue to provide technical support as requested to enable participants to share data and communicate between different data collection systems.

1. *How will Reclamation assist the RTMP to recruit new stakeholders?*
2. *Will Reclamation hold a stakeholder workshop to provide training on the WARMF-Online web portal and to encourage stakeholder coordination and cooperation?*

Reclamation is a Cooperating Agency in the RTMP stakeholder group; it does not have decision authority or voting rights within the group. New stakeholders wishing to join the group may contact the group and/or attend any meeting of the group. Reclamation will provide information and support to the group when requested for the purpose of including interested stakeholders.

Reclamation held a forecast model workshop in 2015 and convenes the TRT meeting monthly as public forums to discuss the forecast model and Reclamation activities. Reclamation presents a standing agenda item at the Lower San Joaquin River Committee meeting to update stakeholders on real time salinity management, answer questions and solicit participation. Reclamation will present the forecast model and web tool at the next Lower San Joaquin River Committee meeting. Stakeholders are invited to participate in monthly MAA meetings between Central Valley Board staff and Reclamation. The Reclamation modeler who is responsible for running the forecast model has scheduled a meeting with the DWR Fresno office modeling staff and the forecast model contractor to train and collaborate on running the forecast model. This meeting will occur before the end of the year.

Phase 3 (March 31, 2016 to March 31, 2018)

1. *Will Reclamation develop a schedule for future activities with other water agencies within the LSJR Basin to facilitate inclusion of their data on a real-time basis into the WARMF forecast model?*
2. *Will Reclamation provide training and troubleshooting support during the transition of day-to-day running of the forecasting tool to DWR?*

Each MAA Work Plan will contain information regarding activities and priorities for the coming year. The current Work Plan states that Reclamation will provide technical support and funding to Grassland Water District to assist them with equipment maintenance, staff resources and upgrades to data management and telemetry systems. Turlock Irrigation District has communicated interest in participation and data sharing; Reclamation staff has met informally in 2015 with Turlock Irrigation District staff on more than two occasions to discuss data needs for the forecast model. Reclamation will utilize the schedule contained in the San Joaquin salinity Total Maximum Daily Load (TMDL) as a guide for outreach but it will be the responsibility of stakeholders to request support before the schedule deadline for compliance with the TMDL. Reclamation will continue to make efforts to reach stakeholders through the RTMP group

meetings, Lower San Joaquin River Committee meeting, TRT meeting, technical support meetings with participating stakeholders and any other opportunity.

Reclamation currently runs the forecast model on a weekly schedule. DWR has also shown interest and participated in three meetings in 2015 with Reclamation regarding the WARMF forecast model. DWR participates in the monthly TRT meeting and Reclamation is currently collaborating with DWR staff and management to develop understanding and capacity to run the forecast model. DWR will generate a forecast using the WARMF model during the month of November 2015.

1. *Will Reclamation participate in RTMP meetings and assist the group with evaluating the need for infrastructure and its funding?*

Reclamation is a Cooperating Agency in the RTMP group and will attend meetings. Reclamation does not have voting authority within the group but will provide technical assistance when requested from the group. The technical assistance request from the RTMP group may include evaluating infrastructure needs and funding.

1. *How will Reclamation assist with obtaining key data including reservoir release, irrigation diversion, and irrigation return flow and EC data into the real-time forecasting tool?*
2. *Will Reclamation conduct tours of existing facilities?*
3. *Will Reclamation assist the RTMP stakeholders to execute MOUs with reservoir operators?*
4. *Will Reclamation identify strengths and weaknesses of model and potential improvements?*

The forecasting model utilizes a substantial amount of historical data to simulate the San Joaquin River watershed. This information is used by the model to create averages at each node or location at a particular time. Real-time data and information from diverters, reservoir operators and other stakeholders can help to improve the accuracy of the forecast by providing information at a location that is more accurate than the average values used by default in the model. Reclamation will assist with obtaining key data by contacting stakeholders, providing information and technical support where necessary and using the regular schedule of meetings referenced in the Annual Work Plan (TRT, MAA, RTMP and LSJR Committee) to provide a time and place for discussion and data gathering. Reclamation, as a Cooperating Agency in the RTMP group, will also provide expertise with data management systems and forecast model data needs. Reclamation offers tours of some facilities operated by Reclamation. It is the responsibility of each landowner to determine if they will give tours of real-time management facilities. Reclamation does not have the capability to provide legal counsel to stakeholders for their agreements. Reclamation has contracted to expand and improve the WARMF forecast model; the model used for the forecast is proprietary to Systec Systems Inc. including documentation materials, user manuals, model overview, etc. Systec Systems Inc. has access to information that would facilitate an analysis of strengths and weaknesses of the model, but is not

under contract with Reclamation to perform the analysis. Reclamation reviews the accuracy of the forecast model as a part of the forecasting process.

1. *How will Reclamation assist the RTMP to recruit new stakeholders?*

Reclamation will provide technical support to the RTMP group as requested in association with recruiting new members. Reclamation can make presentations, attend meetings, answer information requests, give training, provide equipment expertise, etc. to accomplish this goal.

The above responses are given in accordance with information presented in the MAA Annual Work Plan. Reclamation makes no offer of actions or activities above what is written in the MAA Annual Work Plan. The best time to discuss Reclamation activities for the coming year is during the comment period for the MAA Annual Work Plan, which is what Reclamation requests in the future.

For information regarding the Reclamation response, please contact Mr. Michael Mosley at mmosley@usbr.gov or 916-978-5119.

Sincerely,



Jobaid Kabir
Chief, Decision and Analysis

cc: James Brownell – Via Email: james.brownell@waterboards.ca.gov
Anne Littlejohn – Via Email: anne.littlejohn@waterboards.ca.gov]