

12 ATTACHMENT 6: MONITORING, ASSESSMENT, AND PERFORMANCE MEASURES

Describe the performance measures that will be used to quantify and verify project performance. Provide a discussion of the monitoring system to be used to verify project performance with respect to the project benefits or objectives identified in the Proposal. Indicate where the data will be collected and the types of analyses to be used. Include a discussion of how monitoring data will be used to measure the performance in meeting the overall goals and objectives of the IRWM Plan.

This attachment presents the planned project monitoring, assessment, and performance measures that will demonstrate that the Proposal will meet its intended goals, achieve measurable outcomes, and provide value to the State of California. The purpose of Attachment 6 is to provide a preview of the information that would go into a monitoring plan.

For Attachment 6, applicants are required to submit Project Performance Measures Tables specific to their Proposal. Project Performance Measures Tables should include the following items:

- *Project goals*
- *Desired outcomes*
- *Output indicators – measures to effectively track output*
- *Outcome indicators – measures to evaluate change that is a direct result of the work*
- *Measurement tools and methods*
- *Targets – measurable targets that are feasible to meet during the life of the Proposal*

A Project Performance Measures Table should be submitted for each project included in the Proposal. When multiple projects carry the same goals and outcomes, a combined table can be developed to cover those projects. The measurement parameters (metrics) should fit the performance evaluation needs of the Proposal. The metrics may include additional acre-feet of water supply, improved water supply reliability and flexibility, water quality measurements, measurement-based estimates of pollution load reductions, acres of habitat successfully restored, feet of stream channel stabilized, groundwater level measurements, stream flow measurements, improved flood control, or other quantitative measures or indicators.

If the grant application is successful, upon implementation of the proposal, the monitoring tables should be used to develop the proposal monitoring plan.

12.1 Packwood Creek Recharge Project

12.1.1 Goals, Objectives and Deliverables

Goals

- Develop additional groundwater recharge capacity through the new structures in Packwood Creek;
- Develop the four new automated water control structures in a way that maximizes both public safety and functional service life;
- Develop facilities to support and maximize a new water transfer agreement between the City of Visalia and Tulare ID for tertiary treated wastewater in exchange for scheduled surplus water delivered to the East side of Visalia;
- Develop additional recharge capacity on the East side of Visalia, which is the most beneficial to the groundwater wells that support domestic water supplies in the City of Visalia;
- Optimize an existing water supply agreement with Tulare ID for surplus water supplies available during average to average wet years; and
- Further the existing regional partnerships between Tulare ID, Kaweah Delta WCD and the City of Visalia; and
- Increase reliability for the City's water supplies and groundwater resources.

Objectives

- Develop four new structures and one modified structures along a 4.5 mile section of Packwood Creek, on the southeast side of Visalia, with automated water control gates that have the ability to be remotely monitored;
- Develop an additional average recharge capacity of 400 AF/year beyond the capacity that currently exists through storm drain basins on the East side of Visalia;
- Develop three new turnout structures from Tulare ID's Main Intake Canal to channels that the City of Visalia would accept transfer water through their new exchange agreement;
- Reduce the seepage in conveyance of transferred surface water supplies so that the largest amount possible is beneficial to the City of Visalia's groundwater resources.

Deliverables

- A facility capable of an additional groundwater recharge capacity of 20 AF/day;
- SCADA remote monitoring of flows through this portion of Packwood Creek to the Project partners;
- A recharge project that can be very actively managed given cooperative efforts from Project partners;
- Measurement facilities that will automatically document the amount of flow into the recharge project area as well as the flow out of the recharge project area;
- Measurable diversion locations from Tulare ID's Main Intake Canal to the St. Johns River, the Kaweah River (and thereby Packwood Creek) and Tulare Irrigation Company Canal; and
- A significant recharge Project completed within the limited resources of the City of Visalia and its Project partners during very challenging economic times.

12.1.2 Discussion of Performance Measures

The performance measures used to verify project performance include:

- Long-term recharge rate when the automated gates are used to increase recharge rates in the Creek;
- Volumes of river and Friant Division CVP surface water recharged through the new facilities in comparison to previous records of recharge efforts;
- Diversions through the three new turnouts from the Tulare ID Main Intake Canal to determine amounts that otherwise would have been lost to the City of Visalia;
- History of project operations to determine how often the City's need for storm drain capacity appears to be in conflict with potential recharge opportunities;
- Maintenance records for the automated gates and other Project features to better understand long-term O&M costs ; and
- Static seasonal groundwater levels in the wells that provide the City of Visalia's domestic water supply to see if the recharge efforts can be identified through any difference in groundwater level trends.

A monitoring program will be put in place that will consist of City of Visalia staff obtaining monitoring well levels and flow measurements from others in order to track recharge operations, facility maintenance, groundwater levels, groundwater quality, and flood layoff. Watermaster reports will be reviewed annually to show the impact to

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existing water rights that the temporary diversion of irrigation supplies had on the downstream water right holder and a description will be generated as to how the water right holder was compensated. This monitoring will help in determining the following parameters:

- 1) Determine long-term recharge rate for the facility;
- 2) Evaluate the effect of groundwater recharge on City groundwater levels adjacent to the facility;
- 3) Evaluate development of operation and maintenance procedures to maintain or enhance recharge rates;
- 4) Evaluate need for measures to increase recharge rates, should long-term rates be found inadequate;
- 5) Evaluate need for measures to reduce groundwater mounding should it be found to adversely affect properties or public facilities adjacent to the facility;
- 6) Evaluate the ability to monitor project operations and to allow controls so that the project accomplishes the goals of developing additional water supplies while not negatively affecting neighboring landowners;
- 7) Evaluate the exchange agreement developed as part of the Project.

Since the City is signatory to Kaweah Delta WCD's GWMP all monitoring will be consistent with existing monitoring formats and policies established in the GWMP.

Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
Import Additional Water Supplies	Additional surface water supplies	Amount of Imported Water	Additional surface water recharged through Packwood Creek	Packwood Creek structure surface water measurements of flows in and out of recharge project	Increase the amount diverted by 400 AF/year
Increase groundwater storage	Provide recharge capacity for additional storage	Completion of recharge facilities	Groundwater levels in the project vicinity	Groundwater monitoring with City monitoring wells to identify mounding and available storage.	Recharge 5,000 AF of additional groundwater

KAWEAH RIVER BASIN IRWM GROUP 2013 IMPLEMENTATION GRANT PROPOSAL

Kaweah Delta WCD

Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
Reduce local groundwater overdraft	Reduction in groundwater overdraft in Visalia and Project vicinity	Amount of water recharged, depths to groundwater within District and at Project site	Hydrographs of City monitor wells near project will show less decline in dry years	Groundwater monitoring using the proposed monitoring well canvass to identify mounding and available storage	Average annual amount of 400 AF of additional groundwater recharge
Make use of surplus water supplies that are often not able to be put to beneficial use by Visalia	Recharge floodwaters and surplus schedulable supplies from Tulare ID and Kaweah Delta WCD	Amount of water recharged, depths to groundwater within District and at Project site	Volumetric measurements of surface water diverted in and through recharge project	Meters installed at turnout and automated gates at structures, documentation of water delivered	Reduce groundwater overdraft in City area by an average 400 AF/year
Minimize flooding damage by diverting some floodwaters	Recharge flood water that would normally not be able to be utilized by water right holders or Friant CVP districts	Amount of water recharged	Measurement of water diverted	Meters installed at turnout and automated gates at structures, documentation of water delivered	Recharge floodwater when available at an increased rate of 20 AF/day

12.1.3 Basin Plan Consistency

The City of Visalia is signatory to Kaweah Delta WCD's GWMP which is consistent with the Basin Plan. The GWMP calls for the reduction and mitigation of the existing basin's current groundwater overdraft through additional groundwater recharge and the beneficial use of floodwater.

12.2 Well 15 Water Quality Project

The goals of this Project are consistent with the Tulare Lake Basin Water Quality Control Plan through the betterment of groundwater quality. A monitoring program will be put into place to assure the chlorine residuals delivered to City of Lindsay customers remain above the amount required to allow for the bacteriological parameter of the water produced by the City of Lindsay's Well No. 15 to remain compliant with all applicable Federal and State drinking water standards. The principal goal of the Project

KAWEAH RIVER BASIN IRWM GROUP 2013 IMPLEMENTATION GRANT PROPOSAL

is to give the City of Lindsay a dependable and compliant source of groundwater to feed into their delivery system, on a year-round basis. The monitoring program will consist of having all three (3) of the proposed climate controlled, continuous recording Chlorine analyzers continually sample for chlorine residuals at two and a half (2.5) minute intervals and if at any point said residuals fall below tolerance levels, the installed alarm and related controls will shut down the Well No. 15 operation. Additional monitoring and performance measures will include Well No. 15 depth to water measurements, continual reading of the Well No. 15 flow meter and annual maintenance on the Chlorine analyzers

Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
Generate a dependable and compliant source of groundwater for the City of Lindsay	Ability to delivery groundwater pumped from Well No. 15, while lifting the mandated Boil Water Advisory as currently required by CDPH	Completion of construction of Pipeline Segment and furnishing and installing of Sampling Station facilities	Removal beyond the 4-log virus (bacteriological parameter) level	Three (3) facilities that continually monitor samples for Chlorine residual levels	Removal of the requirement for the mandated Boil Water Advisory as currently required by CDPH