

EXHIBIT 2-A

STATEMENT OF WORK

Proposal for USGS to Develop Water Management Scenarios and Evaluation for the Carmel River Watershed using GSFLOW

PROBLEM

The Carmel River originates in the Santa Lucia Mountains in Central California and drains a 660 km² area before flowing into the Pacific Ocean at Carmel Bay. Competing water needs in the basin has led the Monterey Peninsula Water Management District (MPWMD) to develop an integrated ground water-surface water GSFLOW model of the basin (Markstrom and others, 2008). The previously developed GSFLOW model will be used to simulate instream flow needs for steelhead in the Carmel River and to model different water supply scenarios and their impacts on the Carmel River. A calibrated GSFLOW model has been developed; however, the MPWMD is interested in contracting to the U.S. Geological Survey to provide guidance on implementation of water management scenarios into the GSFLOW model.

SCOPE

This proposal describes a cooperative program that will develop water management scenarios of the Carmel River basin using different configurations of the Los Padres Reservoir and associated stream network that flows through the reservoir. Additionally, different groundwater pumping scenarios will be implemented in the model using data provided by MPWMD. The MPWMD will work in cooperation with the U.S. Geological Survey (USGS).

OBJECTIVES

This study will construct at least five different model (GSFLOW) configurations for the Carmel River basin that emulate different water management options. These different model configurations will report out predicted river flows at various locations along the Carmel River based on historical rainfall. The objective of this study is to predict how Carmel River streamflow is impacted by the management scenarios itemized and described below:

1. Model configured to simulate removal of Los Padres Dam, with a water right of 3,376 acre-feet per year (afy), which reflects the Cease and Desist Order. In addition, a short written summary of changes made to the model.
2. Model configured to simulate removal of Los Padres Dam, a water right of 1,197 afy, which reflects the loss of Cal-Am's Los Padres Reservoir water right of 2,179 acre-feet. In addition, a short written summary of changes made to the model.
3. Model configured to simulate installation of a rubber dam and dredging to Los Padres Reservoir, with a water right of 4,492 afy, which reflects additional storage capacity at Los Padres Reservoir (3,295 acre –feet) and Pre-1914 and Riparian Rights (1,197 acre-feet). In addition, a short written summary of changes made to the model.
4. Model configured to simulate a dredged Los Padres Reservoir (excluding the rubber dam), with a water right of 3,906 afy, which reflects the dredged Los Padres Reservoir capacity (2,709 acre-feet) and Pre-1914 and Riparian Rights (1,197 acre-feet). In addition, a short written summary of changes made to the model.

5. Model configured to simulate the current state of Los Padres Reservoir with a water right of 3,376 afy, which reflects the Cease and Desist Order. In addition, a short written summary of changes made to the model.
6. Finalize MPWMD technical memorandum documenting the construction and calibration of the Carmel River Basin Hydrologic Model (CRBHM).

The Lake Package is used to represent Los Padres Reservoir, and the Streamflow Routing (SFR) Package is used to represent flows in the Carmel River and tributaries, including channel inflows and outflows from the reservoir. To accommodate changes in the physical characteristics of the reservoir, including dredging and installation of the rubber dam, changes will be made to the Lake Package bathymetry files and to the height of the reservoir spillway represented in the Streamflow Routing (SFR) Package.

Los Padres reservoir will be removed from the GSFLOW model by connecting inflowing and outflowing SFR Package segments at the midpoint of the reservoir profile to represent the channel configuration prior to the installation of the reservoir. MPWMD will provide updates to reservoir release schedules for each of the different reservoir configurations (e.g., dredged, rubber dam, and historical conditions).

Changes in groundwater pumping to meet the Cease and Desist Order will be implemented in the GSFLOW model by generating new WELL Package time series input files that reflect reductions in pumping in appropriate wells. MPWMD will provide WELL Package time series files that reflect reductions in groundwater pumping for the Cease and Desist Order.

The MPWMD technical memorandum is under development and requires sections be finalized and supplemented to include additional details. USGS will finalize model descriptions and calibration sections, including updating and modification of illustrations and figures where necessary.

USGS will provide technical support for all aspects of model applications for simulating the management scenarios, including model data management and archival, and review of technical documentation.

BUDGET

| Task | Fiscal Year 2019 |
|---|-------------------------|
| Water management Scenarios | \$50,000 |
| Finalize Technical Memo, Model Technical Support, Stakeholder Updates | \$ 25,000 |
| Total | \$75,000 |