SONOMA COUNTY

575 ADMINISTRATION
DRIVE, ROOM 102A
SANTA ROSA, CA 95403

Summary Report

Agenda Date: 2/26/2019

To: Board of Directors, Sonoma County Water Agency
Department or Agency Name(s): Sonoma County Water Agency
Staff Name and Phone Number: Chris Delaney 707-547-1946
Vote Requirement: 4/5th
Supervisorial District(s): Countywide

Title:
Forecast-Informed Reservoir Operations for Lake Mendocino

Recommended Actions:
In an ongoing effort to build flexibility in the operations of Lake Mendocino to improve water supply resiliency and reliability:

A) Authorize Sonoma County Water Agency's General Manager to execute the fifth amended agreement with HDR Engineering, Inc., to continue to provide forecast-informed reservoir operation design, development, deployment, and related services designed to improve water supply reliability. The amendment increases the amount by $94,412, for continued work on one task and the addition of four new tasks, for a new not-to-exceed agreement total of $374,412 and one-year term extension to June 30, 2020.

B) Adopt a resolution authorizing a budgetary adjustment in the amount of $94,412 programming Russian River Projects available fund balance to finance the Forecast-Informed Reservoir Operations for Lake Mendocino Project.

(4/5th Vote Required)

Executive Summary:
The Sonoma County Water Agency (Sonoma Water) works with the United States Army Corps of Engineers (Corps) to operate water storage facilities at the Lake Mendocino Coyote Valley Dam. In coordination with state and federal agencies, Sonoma Water is exploring methods to better balance flood control and water supply needs by utilizing modern rainfall observation and prediction technology to implement forecast-informed reservoir operations. The goal of this effort is to improve the water supply reliability of Lake Mendocino, but not increase the flood risk to communities downstream of Coyote Valley Dam. This item requests authority for Sonoma Water's General Manager to execute an amended agreement with HDR Engineering, Inc. to provide forecast-informed reservoir operation design, development, deployment, training, project coordination, and other related services for an increased total amount of $374,412, and one-year term extension to June 30, 2020. The work covered under this amended agreement supports ongoing forecast-informed reservoir operations efforts to improve water supply reliability and

habitat conditions for reaches of the Russian River served by releases from Lake Mendocino.

Discussion:

HISTORY OF ITEM/BACKGROUND

Lake Mendocino is located on the East Fork of the Russian River in Mendocino County, California. Created in 1958 by the Coyote Valley Dam, it provides flood control, water supply, recreation and stream flow regulation. The Corps owns and operates the dam in accordance with the Lake Mendocino Water Control Manual (Manual), 1959, revised in 1986. Sonoma Water is the local partner that manages water stored in Lake Mendocino for water supply. The Manual specifies elevations for an upper volume of reservoir storage that must be kept available for capturing storm runoff and reducing flood risk and a lower volume of storage that may be used for water supply. During a flood event, runoff is captured by the reservoir and released soon after to create storage space for another potential storm. The Manual is based on typical historical weather patterns-wet during the winter, dry otherwise.

The Manual utilizes gross estimates of flood potential to establish reservoir storage and release requirements. It does not account for changing conditions in the watershed -- for example, increased variation in dry and wet weather patterns associated with climate change and recent reductions of imported flows into Lake Mendocino from the Eel River through the Potter Valley Project. Also, the Manual's reservoir operational procedures were developed decades ago, without the benefit of current science that more accurately predicts weather and streamflow.

Given reduced supplies, changed hydrologic conditions, and technological advances, some adjustments to the current reservoir operating procedures may be possible to better achieve the goals of maintaining (or possibly improving) flood control while bolstering water supply reliability for downstream users and the environment (e.g., to support recovery of endangered and threatened fish). Modern observation and weather forecasting technology could be used to reduce flood risk by supporting decisions of greater reservoir level drawdown, if the forecast predicts a large storm, and also improve supply reliability by permitting more water to be retained in the reservoir if the forecast is dry.

A multi-agency steering committee (Steering Committee), consisting of the University of California San Diego, Scripps Institute, Sonoma Water, California Department of Water Resources, Corps, National Oceanic and Atmospheric Administration, Bureau of Reclamation, and United States Geological Survey was formed to explore methods for better balancing flood control and water supply needs. The Steering Committee is working together on a preliminary viability assessment to determine if forecast-informed reservoir operations at Lake Mendocino can improve water supply, maintain current flood protection, and achieve additional ecosystem benefits. Recent studies show the potential for improved predictability of atmospheric rivers, which provide 50 percent of the region's precipitation and cause most of the Russian River's floods.

To help address ongoing water supply challenges in the region, each year beginning in 2015 the Corps has approved deviations from normal water control operations defined in the Manual to store up to an additional 5 percent of total storage at Lake Mendocino for water supply. Sonoma Water, with assistance from the Steering Committee, plans to pursue further deviations from the Manual in the coming years, which, if approved, will allow greater levels of additional water supply storage by incorporating research from the preliminary viability assessment.

Sonoma Water and David Ford Consulting Engineers, Inc. entered into an agreement for assistance with the development of a work plan for evaluating whether forecast-informed reservoir operations is a viable strategy to improve water supply reliability while not impacting the existing flood protection capacity of Lake Mendocino, dated December 18, 2014, in the amount of $25,000 and term end date of December 31, 2015. The work plan, *A Comprehensive Plan to Evaluate the Viability of Forecast-Informed Reservoir Operations (FIRO) for Lake Mendocino,* was completed in July 2015.

The First Amended Agreement increased the agreement amount by $69,000, expanded the scope of work to include a viability study, and extended the term for a new not-to-exceed agreement total of $94,000 and end date of December 31, 2016. As a component of the viability study, Sonoma Water developed and evaluated forecast-informed reservoir operations alternatives for Lake Mendocino.

The Second Amended Agreement increased the agreement amount by $36,000, expanded the scope of work to include a review of the Sonoma Water model that was used for the development and evaluation of forecast-informed reservoir operations alternatives, and extended the term for a new not-to-exceed total of $130,000 and term end date of April 30, 2017.

The Third Amended Agreement extended the term of the agreement by six months, at no additional cost, to allow time to prepare the proposed Fourth Amended Agreement for a new term end date of October 31, 2017.

The Fourth Amended Agreement increased the agreement amount by $150,000, expanded the scope of work to include assisting Sonoma Water and the Steering Committee in finalizing the preliminary viability assessment, supporting Sonoma Water in applying for deviations to standard Corps operations of Lake Mendocino to incorporate forecast-informed reservoir operations research, assisting Sonoma Water in developing a model that would incorporate forecast-informed reservoir operations decision support systems to inform real-time operations of Lake Mendocino, and related work, and extended the term for a new not-to-exceed total of $280,000 and term end date of June 30, 2019.

Of these agreement costs to date, $105,000 have been reimbursed through a federal grant from National Oceanic and Atmospheric Administration for the Russian River Habitat Blueprint program.

On September 19, 2018, Sonoma Water consented to an Assignment and Assumption of Agreement between David Ford Consulting Engineers, Inc. and HDR Engineering, Inc., assigning responsibility for this amended agreement to HDR Engineering, Inc. The Assignment and Assumption of Agreement was reviewed and approved by County Counsel.

SELECTION PROCESS

In 2014 and 2015, the proposed work was discussed by phone with the following three firms:

1. David Ford Consulting Engineers, Inc., Sacramento, CA
2. Davids Engineering, Inc., Davis, CA
3. Resource Management Associates, Inc., Fairfield, CA

David Ford is named as key personnel in the proposed amended HDR Engineering, Inc. agreement, because he has specialized expertise in reservoir operations, hydraulic engineering, economic evaluations, and is also familiar with Corps reservoir operation protocols and procedures.

AMENDED AGREEMENT

Under the proposed amended agreement, HDR Engineering, Inc., will assist Sonoma Water and the Steering Committee to develop, deploy, and maintain a decision support system to inform real-time operations of Lake Mendocino that incorporate forecast information prepared by the National Oceanic and Atmospheric Administration National Weather Service. The decision support system will be developed from the California Department of Water Resources Forecast Coordinated Operations platform, which was originally developed for the Yuba-Feather and San Joaquin River Systems, and will be hosted on the California Data Exchange Center database. HDR Engineering, Inc., will provide training of the decisions support system to key Sonoma Water and Corps staff including operators, engineers, and managers. Additionally, HDR Engineering, Inc., will provide maintenance and support services to assist in troubleshooting potential issues and making refinements to the software to support operational needs. The work covered under this amended agreement is important to support ongoing forecast-informed reservoir operations efforts to improve water supply reliability and habitat conditions for reaches of the Russian River served by releases from Lake Mendocino. In addition, the rates of HDR Engineering, Inc., have been increased by approximately 3 percent; this is the first rate increase since the agreement was originally executed on December 18, 2014. The additional cost is $94,412, for a new not-to-exceed agreement total of $374,412, and the end date of the agreement has been extended to June 30, 2020.

Prior Board Actions:

07/18/2017: Approved fourth amended agreement between Water Agency and David Ford Consulting Engineers, Inc. for forecast-informed reservoir operation design, development, deployment, and related services. Cost $150,000, term extended for a new not-to-exceed agreement total of $280,000 and end date of June 30, 2019.

10/25/2016: Approved second amended agreement between Water Agency and David Ford Consulting Engineers, Inc. for forecast-informed reservoir operation design, development, deployment, and related services. Cost $36,000, term extended for a new not-to-exceed agreement total of $130,000 and end date of April 30, 2017.

10/13/2015: Approved first amended agreement between Water Agency and David Ford Consulting Engineers, Inc. for forecast-informed reservoir operation design, development, deployment, and related services. Cost $69,000, term extended for a new not-to-exceed agreement total of $94,000 and end date of December 31, 2016.

06/23/2015: Execute an agreement with Regents of the University of California Scripps Institution of Oceanography to prepare the Lake Mendocino Forecast Informed Reservoir Operations Preliminary Feasibility Study in an amount not to exceed $345,000; agreement terminates on January 31, 2017.

12/18/2014: Approved agreement between Water Agency and David Ford Consulting Engineers, Inc. for forecast-informed reservoir operation design, development, deployment, and related services. Cost $25,000; term end December 31, 2015.

09/16/2014: Execute a 3-year grant agreement with NOAA for the Russian River Habitat Blueprint Planning, Restoration, and Coordination Program (Year 1 funding of $690,000).

FISCAL SUMMARY

Expenditures	**FY 18-19 Adopted**	**FY19-20 Projected**	**FY 20-21 Projected**
Budgeted Expenses			
Additional Appropriation Requested	$94, 412		
Total Expenditures	**$94, 412**		
Funding Sources			
General Fund/WA GF			
State/Federal			
Fees/Other			
Use of Fund Balance	$94, 412		
Contingencies			
Total Sources	**$94, 412**		

Narrative Explanation of Fiscal Impacts:
Additional appropriations of $94,412 are required to amend this agreement. There is no projected fiscal impact in FY 2019/2020 because the full amount of the agreement will be encumbered in FY 2018/2019. With Board approval of the attached budgetary resolution, FY 2018/2019 appropriations of $94,412 will be made in the Russian River Projects Fund. Revenue in this fund is generated from water rates.

Staffing Impacts:			
Position Title (Payroll Classification)	**Monthly Salary Range (A - I Step)**	**Additions (number)**	**Deletions (number)**
N/A			

Narrative Explanation of Staffing Impacts (If Required):
N/A

Attachments:
Attachment 1: Resolution
Attachment 2: Draft Amended Agreement

Related Items "On File" with the Clerk of the Board:
None