



SUMMARY REPORT

Agenda Date: 12/7/2021

To: Board of Directors, Sonoma County Water Agency
Department or Agency Name(s): Sonoma County Water Agency
Staff Name and Phone Number: Aaron Fulton / 547-1974
Vote Requirement: Majority
Supervisory District(s): Second

Title:

Petaluma Flood Model Integration

Recommended Action:

Authorize Sonoma County Water Agency's General Manager to execute a funding agreement with the City of Petaluma for flood model integration through December 31, 2024, in the not-to-exceed amount of \$240,000 in a form approved by County Counsel.

Executive Summary:

The City of Petaluma (City) is converting its current stormwater management model from XPStorm to the industry-standard open-source Hydrologic Engineering Center River Analysis System and Hydrologic Modeling System (HEC-RAS and HEC-HMS, respectively). Sonoma County Water Agency (Sonoma Water) uses HEC-RAS and HEC-HMS extensively for floodplain management in Flood Control Zone 2A (Zone 2A) and recently developed the model that represents the upper (unincorporated) Petaluma River watershed. The City's model conversion is an opportunity to integrate and link the Sonoma Water and City models and establish a single comprehensive hydrologic and hydraulic model that represents the entire Petaluma River Watershed within Zone 2A. The model conversion will facilitate more effective floodplain management between the two organizations and will be used by Sonoma Water to evaluate future floodplain management actions that benefit the residents of Zone 2A. Sonoma Water proposes to fund the model conversion and integration work under the subject agreement.

Discussion:

HISTORY OF ITEM/BACKGROUND

The City has used the XPStorm platform since 2005 to model rainfall-runoff, storm drain networks, and open channel hydraulics that serve as the basis for the effective FEMA floodplain mapping in the City. Recent developments in hydrologic and hydraulic modeling platforms have enabled a more robust characterization of the channel and floodplain interactions which cause flooding. The City is in the process of converting its current XPStorm model to HEC-HMS and HEC-RAS, which is an industry standard open-source platform.

Sonoma Water recently developed a HEC-HMS and HEC-RAS model of the upper Petaluma River watershed to inform and facilitate flood management strategies. The model focused on the upper Petaluma River, and although linked to the City's XPStorm model, the Sonoma Water and City models are separate and do not function seamlessly with one another. The City's model conversion is an opportunity to integrate and link the Sonoma Water and City models and establish a single comprehensive hydrologic and hydraulic model that

represents the entire Petaluma River watershed within Zone 2A.

The City's model integration project would be performed by WEST Consultants, Inc., under an agreement between the City and WEST Consultants, Inc., and would include the City's recently expanded network of stream gages and rain gages to calibrate and validate the new model.

The modeling update would:

1. Enhance the accuracy of the City's flood plain modeling by incorporating updated channel and floodplain roughness values (Manning's n), topography, and land cover classes (such as vegetation or roads).
2. Provide consistency with the Sonoma Water model and ultimately with FEMA modeling, which has adopted guidance to use HEC-RAS 2D.
3. Provide a comprehensive single model that represents the entire Petaluma River watershed within Zone 2A.
4. Support a FEMA remapping effort within the City of Petaluma
5. Enable more effective and responsive flood plain management and planning.

PROPOSED FUNDING AGREEMENT

The amount of funding will not exceed \$240,000; the term end date will be December 31, 2024.

The agreement will include two options for Sonoma Water to extend this agreement for a period of one year each by providing written notice to City thirty days in advance of the expiration date of the agreement and of the first extension option.

Strategic Plan:

This item directly supports the County's Five-year Strategic Plan and is aligned with the following pillar, goal, and objective.

Pillar: Resilient Infrastructure

Goal: Goal 5: Support, fund, and expand flood protection.

Objective: Objective 3: Evaluate the feasibility, creation, and/or update of Flood Protection Plans and seek out financing mechanisms to establish protection zones countywide by 2026.

Sonoma Water Strategic Plan Alignment:

Flood Protection, Goal 1: Provide efficient and effective flood protection programs. The Project will use Hydrology and Hydraulic models to quantify current hydraulic capacity of existing flood protection systems (Strategy 2, Action 2) and in so doing will enable more informed and collaborative flood risk management between Sonoma Water, Sonoma County, and the City of Petaluma.

Prior Board Actions:

None

FISCAL SUMMARY

Expenditures	FY 21-22 Adopted	FY22-23 Projected	FY 23-24 Projected
Budgeted Expenses	\$240,000		
Additional Appropriation Requested			
Total Expenditures	\$240,000		
Funding Sources			
General Fund/WA GF			
State/Federal			
Fees/Other	\$240,000		
Use of Fund Balance			
Contingencies			
Total Sources	\$240,000		

Narrative Explanation of Fiscal Impacts:

Budgeted amount of \$240,000 is available from FY 2021/2022 appropriations for the Petaluma River Flood Protection Zone 2A fund. No additional appropriation will be required.

Staffing Impacts:			
Position Title (Payroll Classification)	Monthly Salary Range (A-I Step)	Additions (Number)	Deletions (Number)

Narrative Explanation of Staffing Impacts (If Required):

N/A

Attachments:

None

Related Items "On File" with the Clerk of the Board:

None