

Attachment 9

Program Preferences

Sonoma City Watersheds Project: Montini Open Space Preserve Storm Water Detention and Recharge Basin; Montini Open Space Preserve and Fryer Creek Habitat Enhancement and Restoration Project; Fryer Creek Culvert Replacement; Montini Open Space Preserve Trail System

The Sonoma County Water Agency, in partnership with the Sonoma County Agricultural Preservation and Open Space District, Sonoma Ecology Center, and the City of Sonoma, proposes to implement a regionally integrated project in the Fryer Creek sub-watershed of the Sonoma Creek watershed between West MacArthur Street north to the Montini Open Space Preserve in the City of Sonoma. This public-private partnership intends to accomplish the following objectives:

- Alleviate flooding within the Fryer Creek sub-watershed and contain the 10-year storm event (10% chance of occurrence event) along the creek by diverting stormwater to a 12-acre foot multi-use detention basin on the Montini Open Space Preserve, replacing a flood-prone culvert at MacArthur Street, and improving channel capacity through strategic [vegetative] habitat enhancement.
- Enhance groundwater recharge and water supply reliability.
- Provide ecosystem benefits through habitat restoration/enhancement on various reaches of Fryer Creek, including removal of a fish passage barrier at MacArthur Street that is identified in the draft Steelhead Recovery Plan as requiring removal.
- Enhance public recreational and educational opportunities by adding 1.8 miles of new trails, an ADA spur, and interpretive elements relating to stormwater detention and groundwater recharge at Montini Open Space Preserve.

In this proposal, site-appropriate flood protection is balanced with environmental stewardship, cost, and community benefit. Surface water quality is protected and enhanced. The project will improve flood protection, reduce downstream sediment deposits, recharge groundwater, improve groundwater supply reliability, improve fish passage, and create a site for public access and education about hydrology and watershed geomorphic processes.

The proposed project is the first phase of a broader project listed in the San Francisco Bay Area Integrated Regional Water Management Plan called **City Watersheds of Sonoma Valley**. The City Watersheds project, which ranked ninth out of 315 projects listed in the IRWMP, is focused on benefitting the Nathanson/Fryer Creek watersheds within and around the City of Sonoma, which together cover approximately 80% of the geographic area of the City of Sonoma. The currently proposed phase of City Watersheds (Phase 1)-- for which Prop 1E grant funding is being sought-- focuses primarily within the Fryer Creek sub-watershed. Future phases of City Watersheds are anticipated to include more project elements within the Nathanson Creek sub-watershed and eventually integrate the entire Sonoma Valley.

The Project will:

- Assist in steelhead migration by improving culvert size and position in Fryer Creek. The project also protects water quality for salmonids by detaining fine sediment from roads, erosion, and other upland sources that otherwise would be deposited onto the streambed.
- Provide regional flood protection, creek habitat enhancement, and preservation of permanent open space.
- Engage the Sonoma County Agricultural Preservation and Open Space District, Sonoma Ecology Center, and the City of Sonoma in an ongoing, inclusive framework for efficient intra-regional cooperation, planning and project implementation.

When completed, the project will improve flood protection, reduce sediment deposition downstream, recharge groundwater, improve salmonid habitat, conserve energy resulting from reduced pumping and importation of potable surface water, and create a site for public access and education about the hydrology, the water cycle, fish habitat, and geomorphic processes in the upper watershed.

The project's alignment with statewide program preferences, the certainty that the proposed project will meet the state program preferences, and the breadth and magnitude to which the state program preferences will be met are discussed below.

Statewide Priorities/Program Preferences

Drought Preparedness

The Montini Open Space Preserve storm water detention/groundwater recharge basin will a) promote water conservation, conjunctive use, reuse, and recycling, and b) efficient groundwater basin management which will result in increased availability of potable water in times of drought. Sonoma Valley faces future long-term challenges in groundwater management that may lead to public water resources conflicts in the future. Between 1970 and 2000 the area of irrigated agriculture within Sonoma Valley has more than tripled. USGS estimated groundwater storage in Sonoma Valley declined by 17,300 acre-feet between 1975 and 2000. These trends are likely to continue; modeling by the USGS projects that by 2030 increased demand on groundwater will result in a reduction of 16,000 to 22,000 AF from storage in the groundwater basin.

Certainty: High. Engineering and geohydrological estimates indicate a high likelihood that the stormwater detention/groundwater recharge basin will capture and reuse stormwater and advance conjunctive use and efficient groundwater basin management.

Breadth and magnitude: The stormwater detention/groundwater recharge basin, the first of its kind in Sonoma Valley, will increase groundwater recharge to the aquifer between 10 and 150 acre-feet per year, and help manage urban stormwater runoff. Beneficiaries would include water users, such as residents and agricultural producers in Sonoma Valley. They also would include the water-management agencies that expend funds and taxpayers that contribute funds to manage scarce water resources.

Use and Reuse Water More Efficiently

The project will result in increased reuse of water and increased urban water use efficiency by capturing, storing, treating, and reusing urban stormwater runoff for non-potable uses and to recharge the groundwater aquifer.

The project also incorporates and implements low impact development design features, techniques, and practices to reduce or eliminate stormwater runoff. The “*Slow it. Spread it. Sink it!*” manual for beneficial stormwater management in the north bay region was made possible by the Sonoma Valley Groundwater Management Program and its partner organizations including: The Sonoma County Water Agency, The North Bay Watershed Association, Southern Sonoma County Resource Conservation District, City of Petaluma, The Water Institute at the Occidental Arts and Ecology Center and The Resource Conservation District of Santa Cruz County.

Slowing down, spreading and sinking stormwater has multiple benefits (e.g. water for irrigation and landscape improvements, conservation of drinking water, and groundwater recharge). The manual provides a wealth of information on best practices for capturing rainwater and managing stormwater. The proposed project takes an important additional step of implementing a larger scale project – a stormwater detention/groundwater recharge basin – that serves a parallel purpose – reducing flood flows and helping recharge groundwater aquifers.

Certainty: High. The Sonoma Ecology Center (SEC) estimates it spends, on average, around \$1.5 million per mile to restore creek channels degraded by high-velocity stormwater flows, flood hazards, and other factors exacerbated by the built environment surrounding these natural features. The stormwater detention groundwater recharge basin would incorporate best practices, reduce stormwater runoff, and recharge groundwater for future potable water reuse for the useful life of the project estimated at 50 years.

Breadth and Magnitude: These benefits (increase groundwater recharge to the aquifer between 10 and 150 acre-feet per year, and help manage urban stormwater runoff) would begin to accrue after construction is completed in 2015, and would continue to accumulate over the 50-year life of the project. The project has the potential to improve water supply reliability for the customers who depend on water from the City of Sonoma. The beneficiaries include the taxpayers of the City of Sonoma, the funders of Sonoma Ecology Center, and taxpayers for other local, state, and federal agencies who help meet regulatory requirements for water quality and protecting special species habitat in the area. The project’s public education components, as part of a larger effort to induce conservation and improve infiltration, have the potential to improve groundwater supply reliability for groundwater users throughout the Sonoma Valley.

Climate Change Response Actions

The proposed project implements Climate Change Response Actions through Adaptation, GHG Reduction, and Energy Consumption Reduction actions. The fundamental goals of the project are to advance and expand conjunctive management, use and reuse water more efficiently, and modify water management systems to address anticipated climate change impacts. To capture

water for beneficial groundwater recharge rather than discharge to San Pablo Bay will improve water use efficiency and water supply reliability. The project will promote a more efficient way to use water/groundwater which will result in reduced energy consumption. The local production and use of water will reduce the amount of power required to pump potable water from the Russian River to Sonoma Valley, which will result in lower energy consumption and reduced greenhouse gas (GHG) production.

The proposed project re-establishes riparian function and enhances upper watershed plant communities through, re-creation of wetlands at the Montini Open Space Preserve stormwater detention site, and riparian restoration (nearly 15,000 native plants) and removal of invasive plant species along 1,200 linear feet of Fryer Creek. The project also will result in climate change adaptation benefits through habitat restoration making Fryer Creek and its associated plant and animal communities more resilient, while also helping communities to adapt by protecting water supplies and attenuating the expected volatility of flood regimes.

Moreover, the Fryer Creek culvert at MacArthur St. is undersized and perched above the channel bed at both the upstream and downstream ends, creating a fish barrier, flow constriction, and sediment trap. The proposed replacement culvert will be larger, and will have lower upstream and downstream invert elevations, which will provide the added flow capacity that is needed and significantly enhance both sediment and fish passage.

Certainty: High. The stormwater detention/groundwater recharge basin will promote water use efficiency and decrease energy consumption. The Fryer Creek culvert will improve fish passage. Habitat restoration on Fryer Creek and at Montini Open Space Preserve will improve climate change adaptation and riparian function.

Breadth and Magnitude: The stormwater detention/groundwater recharge basin will recharge 10 and 150 acre-feet per year. The Fryer Creek culvert will be increased in size from the existing 5.5'x12.5' box culvert to an 8'x15' unit, and will have lower upstream and downstream invert elevations. This approach will provide the added capacity that is needed and eliminate the culvert as a fish passage barrier. Removal of invasive species and planting up to 15,000 plants along 1,200 linear feet of Fryer Creek will provide habitat enhancement. The project will also expand and improve the Montini Open Space Preserve's wetland habitat. The habitat restoration involves expanding the wetland area to 1.8 acres and planting native species.

The City of Sonoma is the primary beneficiary because of the proximity of its wells to the recharge site. Other potential beneficiaries may include other domestic and agricultural groundwater users who experience improvements in groundwater reliability from the increased recharge. Nearby residents and the people of California who value the existence of wetland habitat in the state will also benefit from the project.

Expand Environmental Stewardship

The project reuses runoff (stormwater detention/groundwater recharge basin), and will result in watershed improvement, floodplain improvement, improvements to instream function. The

project will lead to the expansion and restoration of wetland ecological functions. The ponded area will be sufficient to support a wetland area of approximately 1.8 acres. The stormwater detention wetland will hold water from Fryer Creek, increasing groundwater recharge to the aquifer and reducing drainage to Fryer Creek. The undersized culvert and elevated culvert on Fryer Creek will continue to restrict flow and pond water, which encourages sediment deposition upstream. The replaced culvert will be adequately sized and the bottom will be at grade with the creek bed, which eliminates the flow restriction and ponding, and reduces the tendency for sedimentation in the upstream reach. The lowering at the upstream end will enhance the flood benefits of the project, as well as eliminate a sediment deposition area. The project also includes removal of sediment from the channel immediately upstream of the culvert to increase the hydraulic capacity, and the enhancement and revegetation of the stream channel in a 1200-ft reach upstream of the culvert. Sediment removal will provide environmental benefits through improved water quality and salmonid habitat.

Certainty: High. The stormwater detention/groundwater recharge basin will capture and reuse runoff. The Fryer Creek culvert will improve fish passage. Habitat restoration on Fryer Creek and at Montini Open Space Preserve, and sediment removal in Fryer Creek will improve water quality and instream function.

Breadth and Magnitude: The size and extent of the improvements have been discussed above. Economic benefits materializing from improving habitat for endangered Steelhead on Fryer Creek would occur after construction is completed and are more likely to arise on a longer time horizon, especially as additional restoration work is completed in the Fryer Creek watershed. The beneficiaries of the improvements will be the people of California.

Practice Integrated Flood Management

The project will address flood management issues and improve flood protection. The project includes LID techniques to slow and capture stormwater in a new stormwater detention/groundwater recharge basin that will diminish the potential of backwater flooding and improve flood management. The project will also provide improved flood protection and enhanced floodplain ecosystems through riparian revegetation and channel stabilization. The basin will work in conjunction with culvert improvements to reduce flooding lower in the watershed. The project goals are to increase groundwater infiltration, decrease surface flow and velocity, decrease the transport of pollutants, and increase buffers and filters for large storm events.

Certainty: High. The Montini Open Space Preserve stormwater detention/groundwater recharge basin will be designed to improve flood protection; this onsite storage and infiltration system coupled with Fryer Creek culvert improvements, sediment removal, channel modifications, and habitat restoration will yield improved flood management.

Breadth and Magnitude: Results summarized in the FRAM analysis, show significant flood reduction benefits. The project would reduce the incidence and magnitude of flood damage in

the Fryer Creek watershed. As flood extent decreases, fewer properties and public infrastructure are affected.

Protect Surface Water Quality and Groundwater Quality

Flood events can cause environmental damage when flood waters become contaminated with toxic materials and sewage. For example, flooding that damages fuel tanks can pollute waters with gasoline or diesel. Even household chemicals can be problematic for the environment and human health when mixed with flood waters. Stormwater from flood events may also overwhelm the sanitary sewer system, causing sewage to enter natural waterways and pose risks for the health of people and animals that come in contact with the water. Depending on the amount and type of contaminants involved, and on the volume and flow of flood waters, contamination can extend miles downstream from the source. Contamination events generate cleanup costs and may require habitat mitigation to restore degraded natural resources. Reducing the flood severity in Sonoma may reduce the risk of these types of events occurring.

Runoff also carries sediment and other pollutants to Sonoma Creek watershed and San Pablo Bay. For example, excess lawn fertilizers, pet waste, soap from car washing, oil and grease from leaking engines, zinc from tires, and copper from brakes are some contaminants that have been found in runoff in the County. The watershed supports a diverse array of wildlife, including special status species and drains to the San Pablo Bay National Wildlife Refuge. Sonoma Creek is a 303(d)-listed impaired waterbody for sediment, pathogens, and nutrients and sediment TMDLs have been adopted for Sonoma Creek. Fryer Creek which is a tributary of Sonoma Creek is generally dominated by fine sands and silts. These contribute to degraded water quality in the creek and downstream water bodies.

The proposed project will implement a) LID techniques that store and infiltrate runoff while protecting groundwater, and b) protect and restore surface and groundwater quality to safeguard public and environmental health and secure water supplies for beneficial uses. By slowing, spreading, sinking (LID), the project will reduce the risk of groundwater degradation from saline intrusion (pollution prevention through reduced volume/velocity of surface runoff and filtering of pollutants). Implementing riparian revegetation, instream restoration, slope stabilization, and sediment reduction will act to protect and restore surface water quality.

The City of Sonoma depends in part on groundwater to supply its residents with water. The groundwater resources in the Sonoma Valley are limited. Heavy use among municipal, domestic, and agricultural water users has led to declining groundwater levels in some areas of Sonoma Valley. Saline intrusion has degraded the water quality, especially in the southern extent of the Valley. Recharging the aquifer will provide regional benefits for water users.

Certainty: High. The stormwater detention/groundwater recharge basin will capture runoff and reduce the risk of groundwater degradation from saline intrusion. Habitat restoration on Fryer Creek and at Montini Open Space Preserve, and sediment removal in Fryer Creek will improve water quality and instream function.

Breadth and Magnitude: The stormwater detention/groundwater recharge basin will recharge 10 and 150 acre-feet per year and will retain sediment from stormwater before it reaches Fryer Creek. The Fryer Creek culvert will be increased in size from the existing 5.5'x12.5' box culvert to an 8'x15' unit, and will have lower upstream and downstream invert elevations. This approach will provide the added capacity that is needed and eliminate the culvert as a fish passage barrier and will remove the constriction that theoretically has the potential to increase sediment buildup downstream of the project. This sediment could impact water quality or get trapped at another point downstream of the project. Removal of invasive species and planting up to 15,000 plants along 1,200 linear feet of Fryer Creek will provide habitat enhancement, and improved instream function and water quality. As a result of the project, less sediment will accumulate in 1,200 feet of stream channel on Fryer Creek, above the culvert. This will reduce or eliminate the need to dredge sediment at this location on Fryer Creek.

Overall Program Preferences: The proposed project addresses six out of a total of eight Statewide Priorities as shown above. While Statewide Priorities will be met will be on a regional basis, the project does not address the state priorities of Improving Tribal Water and Natural Resources and Ensuring Equitable Distribution of Benefits to DAC's because tribal land and DAC's are not in the region where the project is located.

See summary table next page.

Att9 Program Preferences – Sonoma City Watersheds Project: Montini Open Space Preserve: Storm Water Detention/Groundwater Recharge Basin, Habitat Enhancement and Restoration, and Trail System; and Fryer Creek: Fryer Creek Culvert Replacement and Habitat Enhancement and Restoration

Statewide Priorities met by the Proposed Project

Drought Preparedness	Use and Reuse Water More Efficiently	Climate Change Response Actions			Expand Environmental Stewardship	Practice Integrated Flood Management	Protect Surface Water and Groundwater Quality
		Adaptation to Climate Change	Reduction of Greenhouse Gas (GHG) Emissions	Reduce Energy Consumption			
<input checked="" type="checkbox"/> promote water conservation, conjunctive use, reuse and recycling	<input checked="" type="checkbox"/> Capture, store, treat, and use urban stormwater runoff	<input checked="" type="checkbox"/> Advance and expand conjunctive management	<input checked="" type="checkbox"/> Reduce energy consumption	<input checked="" type="checkbox"/> Water use efficiency	<input checked="" type="checkbox"/> Reuse Runoff	<input checked="" type="checkbox"/> Sustaining water and flood management ecosystems	<input checked="" type="checkbox"/> LID techniques that store and infiltrate runoff while protecting groundwater
<input checked="" type="checkbox"/> Efficient groundwater basin management	<input checked="" type="checkbox"/> Incorporate and implement low impact development design features, techniques, and practices to reduce or eliminate stormwater runoff	<input checked="" type="checkbox"/> Establish migration corridors, reestablish river floodplain hydrologic continuity, reintroduce anadromous fish, and enhance and protect upper watershed forests and meadows	<input type="checkbox"/> Use cleaner energy sources to move and treat water	<input checked="" type="checkbox"/> Water System Energy Efficiency	<input checked="" type="checkbox"/> Floodplain improvement	<input checked="" type="checkbox"/> Improved flood protection	<input checked="" type="checkbox"/> Protect and restore surface and groundwater quality to safeguard public and environmental health and secure water supplies for beneficial uses
<input type="checkbox"/> Achieve long-term water use reduction	<input type="checkbox"/> Increase urban and ag water use efficiency measures	<input checked="" type="checkbox"/> Water management system modifications to address anticipated climate change impacts		<input type="checkbox"/> Water Recycling	<input checked="" type="checkbox"/> Watershed improvement	<input checked="" type="checkbox"/> More sustainable flood and water management systems	<input type="checkbox"/> Salt/nutrient management planning as a component of an IRWM Plan
<input type="checkbox"/> Improve landscape and ag irrigation efficiencies		<input type="checkbox"/> Use and reuse water more efficiently			<input checked="" type="checkbox"/> Instream function improvement	<input checked="" type="checkbox"/> Enhanced floodplain ecosystems	
<input type="checkbox"/> Establish system interties						<input type="checkbox"/> Better emergency preparedness and response	