California
WATER COMMISSION

Water Storage Investment Program Concept Paper Form

Please complete the questions below and return your completed concept paper by email to cwc@water.ca.gov by 5:00 p.m. on March 31, 2016. Completed concept papers should not exceed four pages.

Contact Information

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Agency/Organization Name: Ca. Land Stewardship Institute	
Agency Type (select one):	☐ Public Agency ☒ Nonprofit Organization ☐ Public Utility ☐ Tribe ☐ Mutual Water Company ☐ Local Joint Powers Authority ☐ Other:

Project Information

Project Name: Reoperation of Lake Curry to benefit steelhead trout in Suisun Creek	
Project Type:	☐ CALFED Surface Storage ☐ Groundwater Storage ☐ Groundwater Contamination Prevention or Remediation ☐ Conjunctive Use ☒ Reservoir Reoperation ☐ Local Surface Storage ☐ Regional Surface Storage ☐Other:
Estimated Project Cost: unknown at this time	
Estimated WSIP Funding Request: unknown at this time	

Please describe your project, including location, water source, facilities, and operations:

The Suisun Creek watershed covers approximately 53 square miles in Solano and Napa counties. Unlike most watersheds in the San Francisco Bay Area, Suisun Creek Watershed has no towns or cities; it is entirely rural with vineyards and cattle ranches. As such Suisun Creek watershed was ranked as one of the top five watersheds in the San Francisco Bay Area for restoration of habitat for threatened steelhead trout (CEMAR 2007).

The Ca. Land Stewardship Institute (CLSI) have monitored water temperatures and dissolved oxygen in the Suisun drainage since 2001. In some locations, water temperatures exceed the 70^{o}F threshold for steelhead, but in many locations colder water temperatures persist. A snorkel survey completed in 2009 for Suisun Creek found juvenile steelhead in the highest numbers in the four miles downstream of Lake Curry with fewer distributed over the downstream reaches of Suisun Creek.

Lake Curry, a 10,700 acre-foot capacity municipal reservoir, is owned by the City of Vallejo. The City no longer needs this reservoir for water supply so a unique opportunity is available to re-operate Lake Curry for downstream salmonids and the creek ecosystem. Currently CLSI is completing the feasibility studies to define the details of a reoperation project. These studies would allow for the development of target temperature objectives for a series of locations downstream of Lake Curry. These objectives would define the maximum allowable water temperature and the maximum number of continuous hours of the maximum allowable temperature for half mile increments of the creek below the dam.

These temperature objectives would be determined through a series of monitoring and water release experiments including:

1. Release 2, 4, and 6 cfs for 1-2 weeks for each release level and monitor temperature, dissolved oxygen and stream flow.
2. Release 5.5 cfs from April 1 to November 1 under normal/wet years and dry/very dry years with temperature and flow monitoring in Suisun Creek to determine effects on cold water habitat.
3. Provide a nominal release of 2.5 cfs in normal/wet years and maintain Lake Curry level at full for dry/very dry years. Evaluate the relationship of the reservoir level to rainfall and summer water temperatures through comparisons of long-term records of these three data sets. This evaluation will determine if dry winters are correlated with hot summers and therefore if conservation of reservoir water for release in dry/very dry years is important.
4. Evaluate the long-term air temperature record from gages in the Lake Curry area. Define an air temperature that triggers the maximum water temperature objectives and therefore changes the release rate. This scenario would provide for a nominal release (2.5 cfs) until weather predictions forecast that air temperatures will reach the trigger air temperature and as a result water releases are increased to 6 or 8 cfs over the heat wave period.
5. Release nominal amounts (2.5 cfs) until the hottest months of the summer—July/August—then increase releases to 6 or 8 cfs unless air temperatures are abnormally mild.
6. In wet years, natural groundwater flows may provide cooler water than reservoir releases. Stopping releases to test this hypothesis should be timed with water temperature and flow monitoring.

The feasibility studies also include analyses of several alternatives for the lake including:

1. City of Vallejo retains ownership of the lake and revises its licensed water right to allow for a winter water diversion from Suisun Creek into the Putah South Canal along with summer/fall water releases from Lake Curry for salmonid fish habitat enhancement. The revenue from the sale of the water may fund operation and maintenance of the lake;
2. Sale of the reservoir from the City of Vallejo to a conservation oriented agency or organization. The reservoir would be operated for the benefit of the salmonids downstream and use of the water right. The annual management cost might be covered by the revenue from the sale of the water once an agreeable method of diverting the approximately 5,058 acre feet of water covered by license #5728 is completed and approved by the State Water Resources Control Board;
3. Development of an environmental water bank or salmonid habitat mitigation bank that would provide funds for reservoir operations;
4. Purchase and management of the lake for water supply to direct diverters along the creek and for creek fish habitats. The number of direct diverters is unknown at this time;
5. Management of the lake for increased freshwater to Suisun Marsh and for instream habitat for salmonids;
6. Sale of the lake and surrounding land for housing development with deed restriction requiring water releases to Suisun Creek.

The feasibility studies will be completed in 2019 and CLSI and our partners are likely to apply for funds from the Water Commission for implementation.

Per Water Code section 79753, the Commission may only fund the public benefits of water storage projects. Further, ecosystem improvements must make up 50% of the funded public benefits (Water Code section 79756(b)). What public benefits does your project provide? (select all that apply):

☒ Ecosystem Improvements ☒ Water Quality Improvements ☐ Flood Control
☐ Emergency Response ☐ Recreation

Please describe the magnitude of the public benefits and how the project will be operated to provide the public benefits:
The purpose of this project is to provide cold water releases into Suisun Creek to benefit threatened steelhead trout. These releases will improve water temperatures in Suisun Creek. These actions will benefit public resources.

Water Code section 79752 requires that funded projects provide measurable improvements to the Delta ecosystem or to the tributaries of the Delta. Please describe how your project provides ecosystem improvements in the Delta or tributaries to the Delta:
Suisun Creek is a tributary to the Suisun March. This project will measurably improve conditions for threatened steelhead trout in Suisun Creek. Increased freshwater flows in Suisun Creek will also increase freshwater flows in Suisun Marsh

Water Code sections 79755 and 79757 require the Commission to make a finding that a project will advance the long-term objectives of restoring ecological health and improving water management for beneficial uses in the Delta prior to allocating funding for a project. Please describe how your project could help advance the long-term objectives of restoring ecological health and improving water management for beneficial uses in the Delta:
The purpose of this project is to restore the ecological health of Suisun Creek, a tributary to Suisun Marsh. Water would be released to benefit cold water habitats in Suisun Creek during the dry season. If possible the point of diversion for the water right for Lake Curry will be relocated downstream to the Putah South Canal and become a high water wintertime diversion providing a water supply benefit to various municipalities or farmers. Revenues from this relocated use of the water will support management of Lake Curry.

Please describe any other benefits provided by your project, such as water supply reliability benefits, and the potential beneficiaries:
Currently the water stored in Lake Curry is not used for water supply. If the timing of the diversion can be changed approximately 4000 ac-ft. of additional water could be provided while using the water stored in Lake Curry can be used to benefit threatened steelhead trout. This change will increase the reliability of local water supply.