

**Pajaro River Watershed Integrated Regional Water Management Plan Update  
Project Solicitation Form**

**PROJECT OVERVIEW**

**General Project Information**

|                          |  |
|--------------------------|--|
| <b>Project Title:</b>    | College Lake                           |
| <b>Project Location:</b> | Santa Cruz County, City of Watsonville |
| <b>Estimated Cost:</b>   | \$0                                    |

**Brief Project Description (1 to 2 sentences):**

College Lake project will be the implementation of a set of management measures that maximize benefits for water supply and flood management while preserving habitat for steelhead and other wetland/riparian species and supporting other environmental and community benefits.

**Project Proponent Information**

|                      |  |
|----------------------|--|
| <b>Contact Name:</b> | Kelli Camara   |
| <b>Affiliation:</b>  | Resource Conservation District of Santa Cruz County (RCDSCC)           |
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**Other participating agencies/organizations (if applicable):**

PVWMA, County of Santa Cruz, USFWS, City of Watsonville, NRCS, DFG, Local Community Members

**DETAILED PROJECT INFORMATION**

**Description**

**Please provide a description of your project (including the location) and its purpose, what will be constructed and/or implemented, how the project will function, the area(s) and/or entities that will be affected by or will benefit from the project, and any potential obstacles to implementation.**

The overall goal of this project is to implement the “preferred alternative” for College Lake that is based upon the increased understanding of the hydrology of College Lake that informed a multi-benefit alternative that is supported with collaboration between private landowners and public agencies. Substantial erosion, sedimentation and agricultural runoff problems exist in the watershed and ultimately affect beneficial uses of College Lake. There is a clear need for landowners and land managers to improve watershed functions through the implementation of environmental enhancement projects. This “preferred alternative” maximizes benefits for water supply and flood management, while improving water quality and habitat within the lake. The recommendations developed through this effort are in support of the update of PVWMA’s basin plan and efforts of the Pajaro Community Water Dialogue and can inform the . The hydrologic assessment, alternatives analysis, and integration exercise will provide essential information for the ultimate development and implementation of a multi-benefit project that addresses agricultural water supply, flood management, and environmental enhancement.

Both the Pajaro Valley Water Management Agency (PVWMA) and the U.S. Army Corps of Engineers (USACE) are

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evaluating College Lake for future water supply and flood control projects, respectively. The PVWMA is considering development of College Lake for potential water supply projects. The leading alternative presently being discussed at the committee level is the conveyance of College Lake water to the Coastal Distribution System via a pipeline. Another potential alternative is the "Expanded College Lake" facilities, which calls for increasing the reservoir elevation of the lake and increasing the area of inundation to 420 acres. Stored water would be treated and available as a local source of agricultural supply and possibly used for the Aquifer Storage and Recovery project (ASR). In addition, the USACE Pajaro River Flood Control Project has drafted several alternatives that propose to operate College Lake as a detention basin. The project would involve the construction of an earthen detention levee structure and floodwall with a passive gated outlet structure to limit outflows to 2,500 cfs during the 100-year project design conditions. Pinto Creek would be realigned so that it empties into College Lake behind the containment levee.

PVWMA has been collecting monthly water quality data (for irrigation suitability), and photographs at a number of sites in the College Lake watershed for approximately 10 years. Data collected by PVWMA, which indicates elevated concentrations of nitrogen, suspended solids, pathogenic bacteria and other potential pollutants, such as soluble pesticides, are available for use in the study. In late November 2011, PVWMA deployed data loggers at the College Lake pump house that collect data on pressure (water depth), temperature, electrical conductance, pH and dissolved oxygen. Erosion, sedimentation and elevated levels of nitrates are some of the most significant causes of surface water quality degradation and fishery declines throughout the watershed (Fall Creek Engineering, 2003). Nearby, Pinto Lake has been experiencing toxic blue-green algal blooms (*Microcystis* sp.) and the City of Watsonville has received a Clean Water Act Section 319 (h) grant from the Regional Water Quality Control Board to try to address the issue.

Cassery Creek and two of its tributaries, Banks Creek and Gaffey Creek are known to support the state and federally listed south-central California coast steelhead (*Onchorhynchus mykiss*). It has been unclear whether College Lake simply constitutes a migratory corridor for adult and smolt steelhead, or whether juvenile steelhead are actually utilizing the lake as seasonal rearing habitat in late winter/early spring prior to outmigration in late spring. A steelhead smolt outmigration study was conducted in the spring of 2011 at the outlet of College Lake (Podlech, 2011). While the data for this study were not conclusive due to the small sample size of collected fish, scale analysis of smolts demonstrated that these fish were rearing in the lake and exhibited substantial recent growth rates. Therefore, College Lake appears to function as a productive rearing habitat for juvenile steelhead prior to their outmigration to the ocean and should be managed as such. Also, as a downstream refuge from high winter flows in the small upper watershed creeks, College Lake contributes to an increase in juvenile winter survival, and may aid in overall salmonid population stability and persistence.

**Technical Feasibility**

**Discuss the technical feasibility of the project. If possible, cite references that contain information about the proposed project and detail the technical feasibility of the project.**

The project is currently completing the planning phase which will analyze, integrate and synthesize existing information, collect data to add to a growing base of information and develop a hydrologic model to evaluate and support proposed management and enhancement recommendations. The following objectives/questions are included in this initial technical

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evaluation:

- a. Develop and calibrate a surface water hydrologic model that will provide a water budget for College Lake, as well as allow the simulation of future conditions.
- b. Provide data to support alternative approaches that address the multiple objectives of water supply, flood control and habitat restoration.
- c. Describe and model the movement of water through College Lake into Salsipuedes Creek and thence to Pajaro River and evaluate habitat enhancement, water supply and quality and flood management opportunities. The model should utilize precipitation, pumping scenarios, and other relevant factors to simulate flow through the lake, storage volume, water depth, and extent of inundation on a monthly basis.
- d. Identify structural and operational improvements needed to maximize project objectives.
- e. Given the presence and utilization of the lake and watershed by steelhead and other aquatic and wildlife species of interest, identify critical limiting conditions and describe management improvements to enhance aquatic habitat and steelhead production.
- f. Describe current extent and utilization of wetland habitat and identify opportunities for enhancement of wetland habitat.
- g. Develop a preferred alternative(s) with cost estimates and conceptual (10%) design(s).

**Pajaro River Watershed IRWM Regional Goals & Objectives**

Put an X next to any goal that the proposed project will achieve.

| <b>Water Supply</b> |   |
|---------------------|---|
| <b>X</b>            | 1. Meet 100% of M&I and agriculture demands (both current and future conditions) in wet to dry years including the first year of a drought. |
|                     | 2. Meet 85% M&I and 75% agriculture demands (both current and future conditions) in second and subsequent years of a drought.               |
| x                   | 3. Identify and address water supply needs of disadvantaged communities in the Pajaro River Watershed.                                      |
|                     | 4. Implement water conservation programs to reduce M&I and agricultural water use consistent with SBx7-7 and CVPIA.                         |
| <b>0</b>            | 5. Maximize the use of recycled water during the irrigation season and expand other uses of recycled water.                                 |
|                     | 6. Optimize the use of groundwater and aquifer storage.   |
| x                   | 7. Maximize conjunctive use opportunities including interagency conjunctive use.  |
|                     | 8. Optimize and sustain the use of existing import surface water entitlements from the San Felipe Unit.                                     |
| x                   | 9. Maximize the beneficial use of existing local water supplies while protecting existing surface water rights.                             |

**Water Quality**

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|   |  |
|---|--|
| x | 1. Meet or exceed all applicable groundwater, surface water, wastewater, and recycled water quality regulatory standards.                      |
|   | 2. Identify and address the drinking water quality of disadvantaged communities in the Pajaro River Watershed.                                 |
| x | 3. Protect groundwater resources from contamination including salts and nutrients.   |
|   | 4. Address impacts from surface water runoff through implementation of Best Management Practices or other surface water management strategies. |
| 0 | 5. Meet or exceed delivered water quality targets established by recycled water users.   |

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**Flood Protection**

|   |  |
|---|--|
| x | 1. Implement flood management strategies throughout the watershed that provide multiple benefits.  |
| x | 2. Reach consensus on the Pajaro River Risk Reduction Project necessary to protect existing urban areas and infrastructure from flooding and erosion from the 100- |
| x | 3. Work with stakeholders to preserve existing flood attenuation by implementing land management and conservation strategies throughout the watershed.             |
| x | 4. Develop approaches for adaptive management to minimize maintenance requirements and protect quality and availability of water while preserving ecologic and     |
| x | 5. Provide community benefits beyond flood protection such as public access, open space, recreation, agriculture preservation and economic development.            |

**Environmental Protection and Enhancement**

|   |   |
|---|---|
| x | 1. Address opportunities to enhance the local environment and protect and/or restore natural resources, in cooperation with landowners, when developing water           |
| x | 2. Improve biological and cultural resources, including riparian habitats, habitats supporting sensitive plant or animal species and archaeological/historic sites when |
| x | 3. Address opportunities to protect, enhance, or restore habitat to support Monterey Bay National Marine Sanctuary marine life in conjunction with water supply         |
| x | 4. Address opportunities for open spaces, trails, parks along creeks and other recreational projects in the watershed that can be incorporated with water management    |

**Integration and Coordination**

**Put an X next to any Resource Management Strategies (RMS) that the proposed project will address.**

|  |  |   |
|--|--|---|
| Reduce Water Demand                          | Agricultural Water Use Efficiency            |   |
|  | Urban Water Use Efficiency                   |   |
| Improve Operational Efficiency and Transfers | Conveyance - Delta                           |   |
|  | Conveyance - Regional/local                  | 0 |
|  | System Reoperation                           | 0 |
|  | Water Transfers                              | 0 |
| Increase Water Supply                        | Conjunctive Management & Groundwater Storage | x |
|  | Desalination                                 |   |
|  | Precipitation Enhancement                    |   |
|  | Recycled Municipal Water                     | 0 |
|  | Surface Storage - CALFED                     |   |
|  | Surface Storage - Regional/local             | x |
| Improve Water Quality                        | Drinking Water Treatment & Distribution      |   |
|  | Groundwater Remediation /Aquifer Remediation | 0 |

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|                                |  |          |
|--------------------------------|--|----------|
|                                | Matching Quality to Use                              | x        |
|                                | Pollution Prevention                                 |          |
|                                | Salt & Salinity Management                           | <b>X</b> |
|                                | Urban Runoff Management                              | x        |
| Improve Flood Management       | Flood Risk Management                                | x        |
| Practice Resources Stewardship | Agricultural Lands Stewardship                       | x        |
|                                | Economic Incentives (Loans, Grants, & Water Pricing) |          |
|                                | Ecosystem Restoration                                | x        |
|                                | Forest Management                                    |          |
|                                | Recharge Area Protection                             | x        |
|                                | Water-Dependent Recreation                           | x        |
|                                | Watershed Management                                 | x        |
| Other Strategies               | Crop Idling for Water Transfers                      |          |
|                                | Dewvaporation or Atmospheric Pressure Desalination   |          |
|                                | Fog Collection                                       |          |
|                                | Irrigated Land Retirement                            |          |
|                                | Rainfed Agriculture                                  |          |
|                                | Waterbag Transport/Storage Technology                |          |

**Please describe:** Through a multi-benefit approach, this project will implement an approach for management of the surface water stored in College Lake that will potentially be for a balance of flood management, recharge efforts, water supply, water quality, habitat, recreation and recycled water needs.

**List the projects that were integrated to develop a single proposed project, if applicable.**

PVWMA Basin Management Plan, USACE Pajaro River Flood Control Project, Habitat Recovery Plans,

**List the agencies and organization that are working together to implement the project.**

PVWMA, County of Santa Cruz

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**Climate Change Mitigation and Adaptation**

Put an X next to any climate change adaptation or mitigation strategy the proposed project will contribute to.

**Adaption Strategies**

|   |   |
|---|---|
| x | Improve water supply reliability                        |
| x | Expand conjunctive use of multiple water supply sources |
| 0 | Increase water use and/or reuse efficiency              |
| x | Provide additional water supply                         |
| x | Promote water quality protection                        |
|   | Reduce water demand                                     |
| 0 | Advance / expand recycled water use                     |
|   | Promote urban runoff reuse                              |
|   | Address sea level rise                                  |
| x | Address other anticipated climate change impacts        |
| x | Improve flood control                                   |
| x | Promote habitat protection                              |
| x | Establish migration corridors                           |
|   | Re-establish river-floodplain hydrologic continuity     |
| x | Re-introduce anadromous fish populations to watershed   |
|   | Enhance and protect watershed forest and meadow systems |

**Please describe:** This project will contribute to water supply benefits by providing additional fresh water supply to the Recycled Water Facility in Watsonville. This project will provide additional flood management benefits through water storage and regulation of flow from College Lake. This project will provide habitat benefits by potentially establishing fish passage into the upper watershed of College Lake for steehead. There will potentially be additional recreation benefits along a portion of the lake.

**Mitigation Strategies**

|   |  |
|---|--|
|   | Increase water use efficiency or promote energy-efficient water demand reduction |
|   | Improve water system energy efficiency   |
| x | Advance / expand recycled water use  |
|   | Promote urban runoff reuse   |
|   | Promote use of renewable energy sources  |
|   | Contribute to carbon sequestration   |

**Please describe:** Part of this project could be to supplement the Recycled Water Facility in Watsonville, increasing the supply of recycled water available to the Coastal Distribution System.

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Does the proposed project reduce regional greenhouse gas emissions and/or improve energy efficiency? If so, explain how.

**Social Benefits and Impacts**

Does the project provide specific benefits to disadvantaged communities and/or Native American tribal communities? If so, explain.

The communities of Watsonville and Pajaro could benefit by increased flood management benefits and increased water supply from the use of the College Lake water.

Does the project address any known environmental justice issues?

**Project Cost**

Total Estimated Capital Cost

Annual Operation & Maintenance (O&M) Cost

Cost Basis (Year)

Source(s) of Funding for Capital

Source(s) of Funding for O&M Cost

Project Life (years)

Provide link to project cost estimate, if available

**Economic Feasibility**

Has a benefit:cost or cost effectiveness analysis been completed for your project? If so, please cite reference and briefly summarize. If no economic analysis has been completed for the project, the project may receive zero points out of a possible 100 points for the financial considerations criteria unless the project is a DAC project. If the project is not a DAC project but the B:C ratio is expected to be greater than 1, please provide a justification. **The lack of an economic analysis may also affect the project's readiness score.**

Part of the planning project will be to complete an economic evaluation of the preferred alternatives. This will include potential sources of funding for the projects.

If known, please provide the Benefit:Cost Ratio.



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**Provide a detailed discussion of the benefits the project will provide. To the extent possible, quantify changes and benefits (e.g. water quality and water supply benefits) that will result from project implementation; otherwise, describe benefits qualitatively.**

This project will contribute to water supply benefits by providing additional fresh water supply to the Recycled Water Facility in Watsonville. This project will provide additional flood management benefits through water storage and regulation of flow from College Lake. This project will provide habitat benefits by potentially establishing fish passage into the upper watershed of College Lake for steelhead.

**Project Readiness**

|   |          |
|---|----------|
| <b>Proposed Project Start Date:</b>         | 1-Oct-13 |
| <b>Anticipated Project Completion Date:</b> | 1-Oct-23 |

**Please indicate the status (pending, in process, complete) of the following.**

| <b>Project Element</b>    | <b>Status</b> | <b>% Complete</b> | <b>Estimated Completion Date</b> |
|---------------------------|---------------|-------------------|----------------------------------|
| <i>Feasibility Study</i>  | in process    | 100               | Oct-13                           |
| <i>Preliminary design</i> | in process    | 10                | Oct-13                           |
| <i>CEQA/NEPA</i>          |               |                   |                                  |
| <i>Permit Acquisition</i> |               |                   |                                  |
| <i>Construction Docs</i>  |               |                   |                                  |