

## **PASO ROBLES GROUNDWATER BASIN HYDROLOGIC MONITORING FOR GROUNDWATER DEPENDENT ECOSYSTEMS**

The scope outlined herein for Creek Lands Conservation is not a full scope for contractual purposes but rather for initial grant writing purposes. As an experienced non-profit that works with a wide range of stakeholders, Creek Lands Conservation (501(c)3) is uniquely positioned to assist groups involved with the monitoring and management of groundwater dependent ecosystems under the Sustainable Groundwater Management Act (SGMA). To further develop and refine the scope herein for contractual purposes, Creek Lands Conservation needs to improve their understanding of the team composition, as well as, the number of sites or length of river that CLC would be directly involved with. This scope and attached budget were compiled at the request of the Shandon-San Juan Water District for the Paso Robles Groundwater Basin.

### **Who is Creek Lands Conservation?**

Creek Lands Conservation is a not-for profit that works alongside a wide range of stakeholders to sustainably manage and restore land and water resources, with a focus on aquatic ecosystems such as rivers, creeks, wetlands, and estuaries. We work with agricultural and other private landowners, local businesses, allied conservation nonprofits, and government agencies to find practical, science-based solutions to complex problems. Our work commonly encompasses consideration of entire watersheds from ridgetops to the near coast environment and includes water conservation, stormwater management, species conservation, riparian management, and sustainable municipal and agricultural land-water practices. Together with our partners, Creek Lands Conservation is in a position to assist our Central Coast communities into a future with enhanced balance between the human needs and natural ecosystems.

Creek Lands Conservation staff have been involved in various Salinas watershed efforts in recent years including the development of watershed wide steelhead conceptual model (2019), evaluating the proposed reduction of wastewater discharge from the Paso Robles wastewater treatment plant on the Salinas River ecosystem (2018), and monitoring ecologically relevant spring and summer low flows in the Salinas River and its tributaries (2016-2018). In addition, CLC is leading a near completed field and flume study with the Cal Poly Irrigation Training and Research Center (ITRC) evaluating the accuracy and error of flow measurement methods commonly utilized in practice as applied to the measurement of low flows.

### **Task 1. Meetings and Coordination**

Creek Lands Conservation (CLC) will (1.1) review existing documents produced to date related on GDE's for the Paso Groundwater Basin; (1.2) attend up to three meetings with stakeholders and their consultants; (1.3) develop recommendations pertaining to both existing and future Groundwater Dependent Ecosystem's (GDE's) assessment and monitoring activities; and (1.4) provide grant-writing assistance.

Subtasks (1.1), (1.2), and (1.4) are fairly straight forward. However, the specifics of the work under subtask (1.3) could vary depending on the direction given by the Shandon-San Juan Water District and their partners. As an example, under this task CLC could review the benefits and constraints of Groundwater Dependent Ecosystem assessment and monitoring approaches. More specifically, the existing state database on riparian vegetation in the Central Coast region utilized to currently identify potential GDE's is of poor resolution compared to other areas in the State of California. CLC could review and evaluate the benefits and constraints associated with updating GDE mapping utilizing aerial photography and ground truthing methods. When done in conjunction with an improved understanding of hydrologic conditions, such mapping can lead to a science-based identification of high potential GDE's. This task does not include the completion of such work, rather it is provided as an example of the type of assessment and monitoring activities that CLC proposes to evaluate. Depending on the approach selected

by the Shandon-San Juan Water District and their partners, CLC can conduct the work in-house or help the Shandon-San Juan Water district identify other technical experts.

In anticipation of several high priority GDE driven monitoring efforts to better characterize, CLC scoped several optional tasks (Task 2 and 3).

**Estimated Budget: \$12,000**

**Task 2. Support Installation of Flow Gages (Optional)**

This task is to support the installation of flow gages to improve the reliability of data sets to be utilized for lower flow conditions which are critical to GDE's. Currently, ten sites have been identified for surface water flow gages to provide information regarding the presence, the characteristics and condition of GDEs; the characteristics of surface water flows flowing into and out to the sub-basin; and to provide data substantiating the success of proposed recharge projects. Although established USGS methods exist for the installation of stage gages and associated flow measurements, these methods were primarily developed and tested for higher flows. The installation and maintenance of flow gages for the accurate measurement of lower or baseflows may be critical in monitoring groundwater dependent ecosystems. Low flow monitoring requires special consideration of site selection, changing hydraulic controls across a range of flow conditions, and evaluation of methods utilized. CLC has been at the forefront of this type of monitoring and involved in a recent low flow monitoring study with Cal Poly. This associated budget assumes that CLC will help with up to ten gage locations.

**Estimated Budget: \$18,650**

**Task 3. Map Losing and Gaining Reaches (Optional)**

Seasonal mapping of losing and gaining reaches can significantly improve understanding of surface-groundwater connectivity and provide context for the interpretation of data collection at point locations (e.g. flow gages and nested piezometer wells). The associated budget assumes 12 field days per year, preparation and coordination, and mapping of field data.

**Estimated Budget: \$28,520**