

# Conceptual Conservation Projects

## TO MITIGATE THE IMPACTS OF CLIMATE CHANGE IN THE TULARE BASIN

September 2015



Prepared by:



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## INTRODUCTION

The Tulare Basin Wildlife Partners (TBWP) is an IRS 501 (c) 3 non-profit conservation organization incorporated in the State of California in May 2005. Its mission is to facilitate the engagement of partners, funders, and stakeholders in multi-benefit projects to achieve the goals of promoting ecological and economic health, sustaining agricultural heritage, and enhancing quality of life in the Tulare Basin for current and future generations.

In 2009, the TBWP completed four comprehensive conservation plans for the Tulare Basin including three regions in the Tulare Basin: Sand Ridge - Tulare Lake, Goose Lake and Buena Vista Lake – Kern Lake, and a fourth plan evaluating riparian and wildlife corridors which flow into the Basin. These plans detail goals and management objectives for smaller, sub-management areas within each planning area that will enhance, protect and restore wildlife and their habitats. The four conservation plans together call for landscape-scale conservation measures that will protect 518,000 acres of uplands and 30,000 acres of wetlands and restore 296,000 acres of uplands, 94,000 acres of wetlands, and 20,000 acres of riparian habitat. TBWP uses a wide range of conservation tools to work with willing and interested landowners and government agencies to protect or restore important farmland, rangeland and areas with natural habitat throughout the region.

In February 2010, the TBWP completed its fifth and final planning effort -- the Tulare Basin Conservation Plan Water Supply Strategies Report (Water Report). This uniquely valuable Report sets the stage for Tulare Basin water management entities and the TBWP to partner, collaboratively plan, and implement conservation opportunities to protect, restore, and enhance habitat at the watershed and landscape scale.

In early 2011, the TBWP commenced a new Basin-wide integrated resource management program – the Tulare Basin Watershed Initiative, with funding from the California Department of Conservation Watershed Program, Natural Resources Conservation Service Wetland Reserve Program, and Bureau of Land Management Healthy Lands Initiative. Under this program, project concepts resulting from the four conservation plans and the Water Report will be implemented in collaboration with Tulare Basin Integrated Regional Water Management groups (IRWMs). These groups are participants in the Tulare Basin-wide IRWM Collaboration Group (TB IRWMG) meetings that occur monthly at Provost & Pritchard Consulting Group, Inc. in Visalia. The TB IRWMG includes the Kaweah River Basin IRWM, Kern County IRWM, Poso Creek IRWM, Southern Sierra IRWM, Tule River IRWM, the Kings Basin Water Authority (Upper Kings Basin IRWM Joint Powers Authority), and the Westside IRWM.

## CONCEPTUAL PROJECT SELECTION

The Tulare Basin Wildlife Partners has developed project concepts for potential implementation over the next ten to twenty years based on input from the Tulare (Lake) Basin Working Group, the four conservation plans, the Water Report, findings from the Central Valley Joint Venture Implementation Plan 2006 Update, and the Tulare Basin Watershed Initiative (TBWI). The 2011 TBWI team developed a full project concept list for public use in 2013. This full list is [available here](#) on the TBWP website. The current list is a sub-set of the 2013 list, presenting our highest recommendations for projects addressing climate change adaptation needs in the Tulare Basin watershed. These project concepts are suitable for funding and implementation through a wide array of federal, state and private sources beginning now (September 2015).

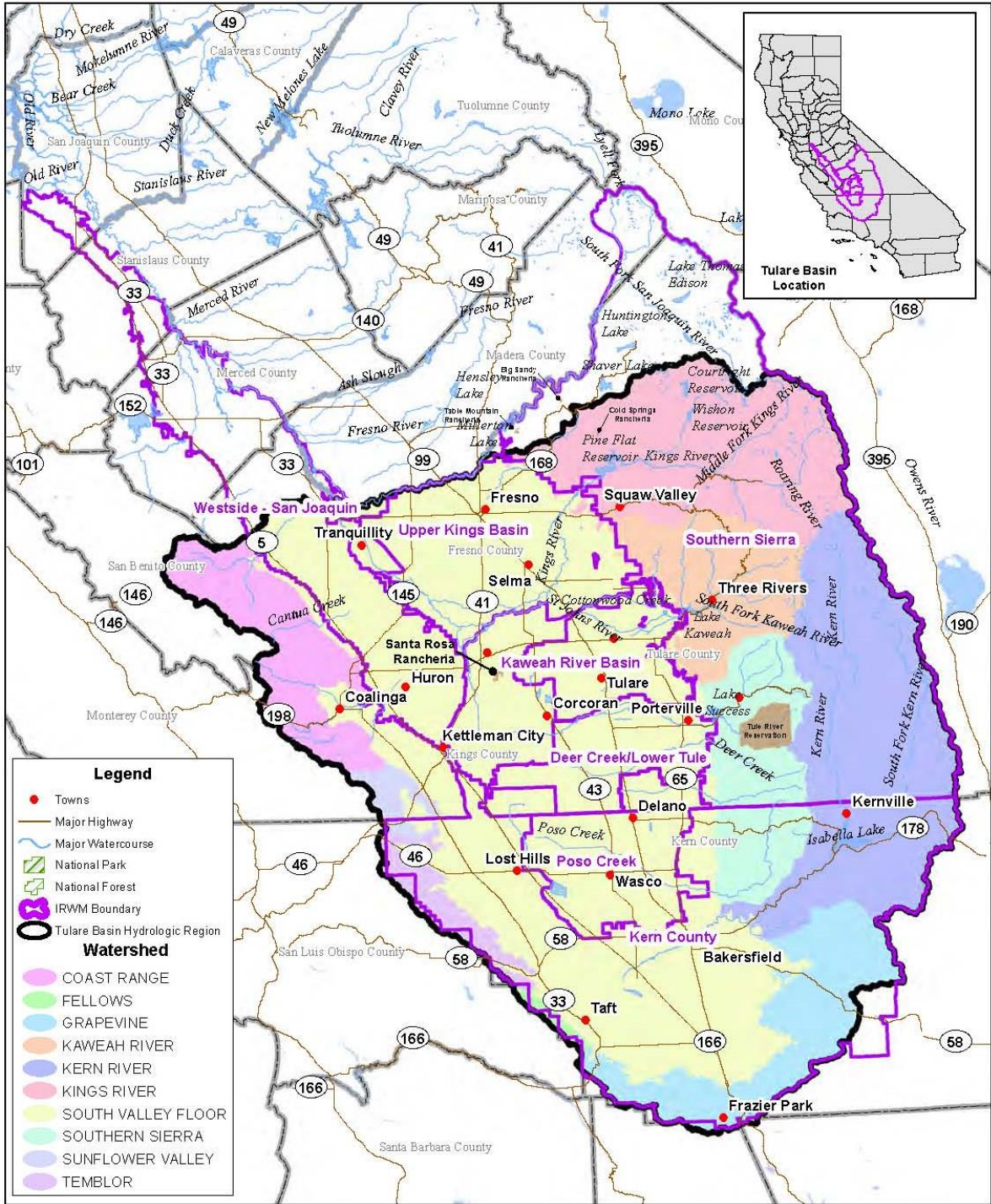
Brief descriptions of the project concepts follow, grouped by watershed. Criteria used to select the proposed projects include: wildlife value, water management, connectivity, availability of funding, and the availability of willing landowners. All of these projects provide for climate change, adaptation, and mitigation. Additional information about water management and land management solutions will be developed by working with the Tulare Basin IRWM groups; Tulare Basin Ground Water Sustainability Management Act stakeholder groups; regional non-governmental organizations; federal, state, and local agencies; private landowners and contributing private foundations, corporations, and individuals.

## SELECT PARTNER ACRONYMS

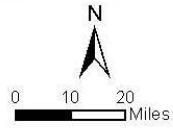
For ease of use, the following key is provided for potential partner names used repeatedly throughout this document. When a partner is only listed a few times, no acronym is provided.

Abbreviation	Name
<b>BLM</b>	Bureau of Land Management
<b>BOR</b>	Bureau of Reclamation
<b>CDFW</b>	California Department of Fish & Wildlife
<b>CDWR</b>	California Department of Water Resources
<b>CSP</b>	California State Parks
<b>CWA</b>	California Waterfowl Association
<b>DU</b>	Ducks Unlimited
<b>IRWM</b>	Integrated Regional Water Management Group
<b>NAS</b>	Naval Air Station Lemoore
<b>NRCS</b>	Natural Resources Conservation Service
<b>RCD</b>	Resource Conservation District
<b>SWSD</b>	Semitropic Water Storage District
<b>SRT</b>	Sequoia Riverlands Trust
<b>TBWA</b>	Tulare Basin Wetlands Association
<b>TBWP</b>	Tulare Basin Wildlife Partners
<b>USFWS</b>	U.S. Fish & Wildlife Service
<b>WCB</b>	Wildlife Conservation Board

# PROJECT AREA: THE TULARE BASIN



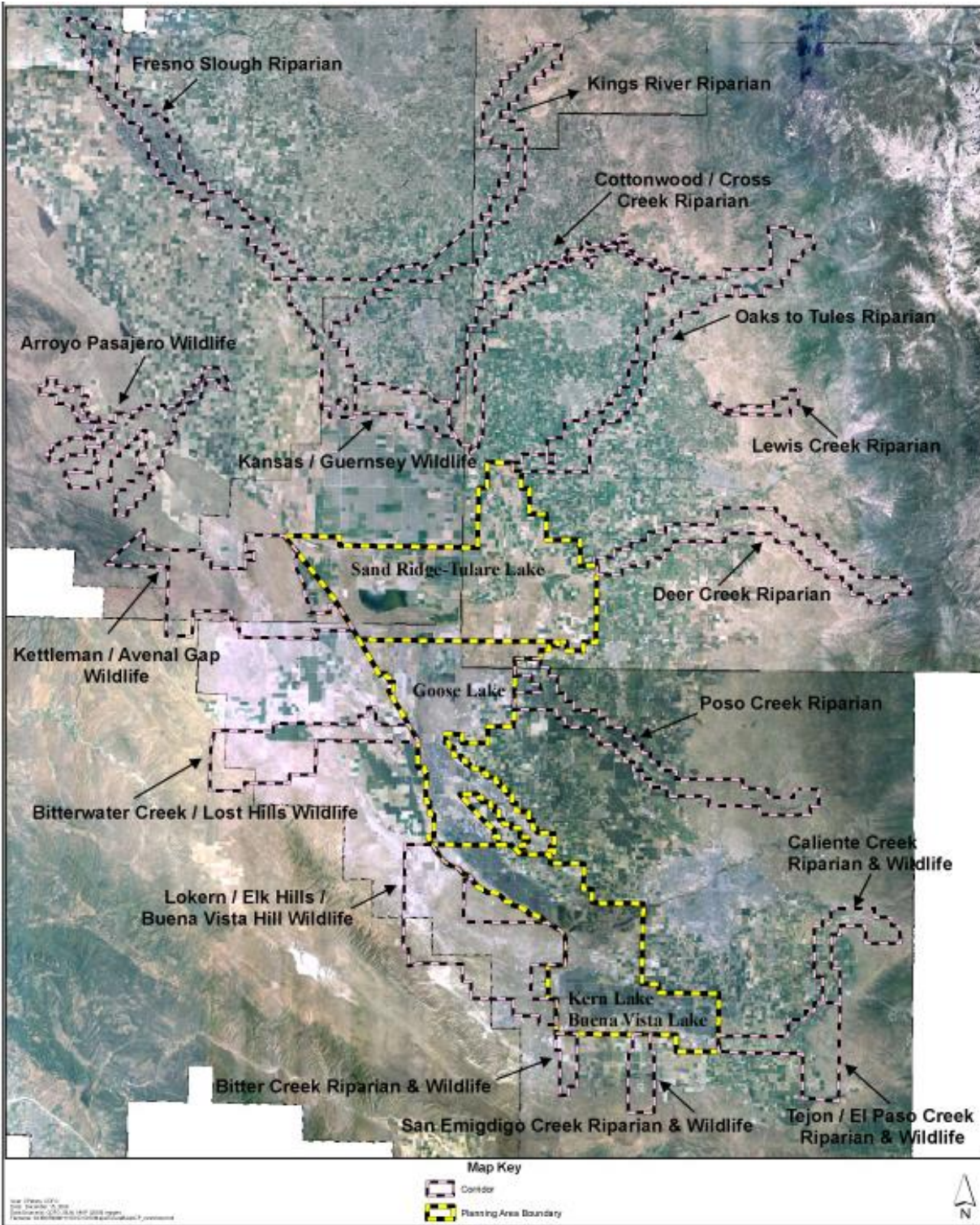
**Tulare Basin Watershed  
IRWM Boundaries**



Date: 2/19/2013



# TULARE BASIN PLANNING AREAS AND CORRIDORS



# CONSERVATION & CLIMATE CHANGE MITIGATION PROJECTS

## FRESNO COUNTY

### Arroyo Pasajero Riparian Corridor & Wildlife Complex

#### **Arroyo Pasajero Flood Control Strategies & Habitat Enhancement**

Location: Fresno County (Riparian & Wildlife Corridor Planning Area)

Description: This project proposes to develop strategies to provide flood protection for Interstate 5, the California Aqueduct, and farmland, while restoring riparian and upland habitat. Possible flood protection strategies include: upper watershed restoration; development of storm water catch basins above Interstate 5; enlargement of an existing flood control basin west of the aqueduct; construction of a siphon under the aqueduct; and development of a floodway connecting to the Kings River.

Size: 65,000 acres

Estimated Funding: To be determined.

Opportunities: All parties agree that the Arroyo Pasajero creek poses a major flooding problem for the Interstate, the Aqueduct, NAS Lemoore, and surrounding farmland. In addition to flood protection, this project would connect Upper and Lower watershed work. Furthermore, because it is west of the aqueduct, it could also benefit Huron and other nearby underserved rural communities. The habitat values of this project have significant potential. The West side of the Valley lacks habitat values, with very little native or riparian habitat remaining. By reverting to historic flows that spill out on the arroyo, riparian habitat benefits will extend northeast. This project would significantly augment habitat value on the West side.

Challenges: Getting competing interests to agree on a win-win solution for stakeholders.

Potential Partners: TBWP, WCB, BOR, NRCS, USFWS, CDFW, California Water Institute (California State University at Fresno)/Westside RCD & Westside IRWM, NAS Lemoore.

## FRESNO & KINGS COUNTY

### Fresno Slough Riparian Corridor

#### **Mendota Wildlife Area Expansion**

Location: Fresno and Kings Counties

Description: Add 1,500 acres of restored upland and 1,500 acres of restored wetland habitats to the Mendota Wildlife Area. Mendota Wildlife Area is the ONLY wetland area in the Tulare Valley that has traditionally retained water year-round in freshwater marshes.

Size: 3,000 acres

Estimated Funding: \$6.0 million

Opportunities: This would expand the existing 6,562-acre wetland area and increase the habitat suitability of the area.

Challenges: Obtaining water for the wetland complex during drought years.

Partners: TBWP, WCB, CDFW, DU, CWA, Upper Kings Basin IRWM JPA, James Irrigation District, Fresno Slough Water District

### **Fresno Slough Riparian Habitat Restoration**

Location: Fresno and Kings Counties

Description: Restore riparian habitat along the Fresno Slough. Fresno Slough is the only riparian corridor in the Tulare Valley that has the potential to carry storm water runoff from the combined flood plains of all 7 major Sierra streams (or watersheds) that flow into the Tulare Valley. During peak flows of major flood years, the Fresno Slough has the potential to be the "Rainbow Connection" by capturing and carrying the combined runoff from the "differently colored" water of all the rivers and creeks in the entire Tulare Basin watershed as those waters flow north into the San Joaquin Basin, en route to the Delta.

Size: 500 acres

Estimated Funding: \$900,000

Opportunities: Only 332 acres of riparian habitat remain in this region; an additional 500 acres of restored riparian habitat would more than double the available habitat.

Challenges: Obtaining sufficient summer and fall soil moisture to maintain native riparian vegetation.

Partners: TBWP, WCB, BOR, NRCS, USFWS, CDFW, Upper Kings Basin IRWM JPA, James Irrigation District, Fresno Slough Water District.

### **Expanding & Linking Alkali Sink & Kerman Ecological Reserves**

Location: Fresno and Kings Counties

Description: This project seeks to protect 3,200 acres of native upland and vernal pool habitat and to restore 2,000 acres of currently farmed land that can serve as linkage corridors to existing protected lands. No water is required for this project. Soils in this area are not class 1 soils, so linkage here could be coupled with land retirement. This project is a matter of linking together upland habitat, identifying marginal farmland for retirement, and planning for restoration.

Size: 5,200 acres

Estimated Funding: \$12 million

Opportunities: There is some very high-quality upland habitat in this area. Connecting these two ecological reserves will help prevent extinctions due to climate change and stochastic (randomly occurring) events.

Challenges: Resistance to retiring farmland and restoring native habitat.

Partners: TBWP, WCB, BOR, NRCS, USFWS, CDFW, Upper Kings Basin IRWM JPA, James Irrigation District, Fresno Slough Water District

### **Fresno Slough Wetlands Reserve Program Expansion & Management**

Location: Fresno and Kings Counties

Description: Expand the NRCS Wetlands Reserve Program along the Fresno Slough by acquiring easements and restoring an additional 1,500 acres of wetlands, as well as 1,500 acres of upland habitat. This slough should be off limits to farming so that the entire channel can be utilized during flood events. Land currently being farmed within this floodplain should be considered for land

retirement. NRCS can provide project assistance to entities from Kern, Kings, Tulare, and Fresno County; water from all four counties has the potential to flow through the Fresno Slough.

Size: 3,000 acres

Estimated Funding: \$5 million

Opportunities: This is an opportunity to add to an existing program to make it even more valuable to wildlife. This area will serve as a stepping stone on the migratory route for waterfowl and other wetland birds in this Tulare Basin portion of the Pacific Flyway.

Challenges: Obtaining water for existing and future Wetlands Reserve Program Easements in this area.

Partners: TBWP, NRCS, DU, CWA, Upper Kings Basin IRWM JPA, Fresno Slough Water District

## KERN COUNTY

### Poso Creek Riparian Corridor

#### Poso Creek Riparian & Upland Habitat Protection

Location: Kern County

Description: Protect the remaining upland and riparian habitat in the corridor through fee title purchase or conservation easements. Poso Creek is emblematic of Tulare Valley's native landscape: a system where riparian habitat and seasonal wetlands border upland desert scrub. It is desirable to foster both wetland and upland ecosystems in tandem because of how they contrast with and complement one another. Also, according to predicted changes in winter precipitation (less snowmelt and more rainstorm runoff), the Poso Creek floodplain is likely to deliver flood flows out to the Ton Tache lakebed more often as a way of naturally augmenting the water supply to this unique historical wetland.

Size: 11,667 acres

Estimated Funding: \$23 million

Opportunities: There is still high-quality riparian habitat remaining in the corridor, habitat which can be expanded through conservation. Poso Creek is not dammed, it has great percolation, great groundwater recharge potential, is a great way to address foreseeable climate change issues (including desertification), has great connectivity, and the potential "extra" water can benefit local duck clubs in both Kern and Tulare counties.

Challenges: Finding willing landowners and obtaining funding.

Partners: TBWP, WCB, BOR, USFWS, CDFW, Poso Creek IRWM, Tule IRWM, Deer Creek Storm Water District

## KINGS COUNTY

### Kings River Riparian Corridor



## **Liberty Ranch Flood Storage and Habitat Enhancement**

*Location:* Liberty Ranch, Kings County (Sand Ridge – Tulare Lake Planning Area)

*Description:* The project goal is to create a major flood storage and habitat restoration area with multi-purpose, multi-benefit conjunctive use solutions that benefit wildlife, landowners, and stakeholders. There are ongoing discussions to build a 67-square-mile, shallow reservoir (system of small holding “ponds”) for storm water and flood water storage, with a permanent freshwater wetland. A year-round freshwater wetland is a natural landscape feature that has been absent from the Tulare Lakebed for 117 years, and would serve as an unparalleled habitat enhancement for dozens of species of migratory water birds on this historically valuable leg of the Pacific Flyway.

*Size:* 50,000 acres, with potential storage of 300,000 to 325,000 AF of water during heavy flood events

*Estimated Funding:* \$60+ million

*Opportunities:* Willing seller, site uniquely situated for flood storage, improved water supply, conveyance and wildlife enhancement. The project is a current focus of Tulare Basin-wide Integrated Regional Watershed Management Planning effort, it has a climate change adaptation strategy/solution, great potential for groundwater recharge, and provides benefits to several underserved rural communities.. More than any other project in the Tulare Basin, this project has the potential to minimize and mitigate flooding in the San Joaquin Valley and Delta.

*Challenges:* Large scale project in need of feasibility study funding and implementation concept development, followed by phased funding and phased implementation

*Partners:* TBWP, CDFW, CDWR, NRCS, USACOE, USFWS, WCB, Sand Ridge Partners, Kings Basin Water Association, SWSD, Westlake Farms, Angiola Water District

## **TULARE COUNTY**

### **Deer Creek Riparian Corridor**

#### **Atwell Island-Alpaugh-Allensworth (AAA) Trails Project**

*Location:* Southwest Tulare County

*Description:* This project would create a bicycle and pedestrian trail to connect the communities of Alpaugh and Allensworth with one another as well as with the Atwell Island Project, a recreational and educational destination that already provides outstanding birdwatching and wildlife viewing. This project would be constructed in conjunction with water retention/detention facilities by Angiola, Deer Creek and/or the Southwest Tulare County Water Resource Management Authority to control flood flows emanating from the White River during heavy precipitation events/cycles.

*Size:* To be determined

*Estimated Funding:* To be determined

*Opportunities:* The project would align with other conservation efforts to achieve multiple benefits, including groundwater recharge, habitat restoration, cultivation of tourism opportunities, reduction of greenhouse gases from car travel between communities, and quality of life enhancement.

*Challenges:* Finding willing sellers and landowners interested in participating.

*Potential Partners:* TBWP, BLM, Friends of Allensworth, SRT, Angiola Water District, Self-Help Enterprises, Tulare County, Southern California Edison, Deer Creek Storm Water District, Southwest Tulare County Water Resource Management Authority, local agricultural interests

### **“Sequoias to the Sloughs” – Deer Creek Riparian & Upland Habitat Protection**

*Location:* Tulare County

*Description:* Protect the remaining riparian and upland habitat in the corridor through fee title purchase or conservation easements. Deer Creek is one of the few undammed streams remaining in California, which enables it to serve the full range of natural ecosystem functions that benefit humans and wildlife. Under climate change models, Deer Creek is likely to flood more often and with greater volume, carrying more rainfall runoff as a result of reduced snowpack accumulation at the headwaters. Deer Creek is emblematic of Tulare Valley’s native landscape, with riparian corridors adjacent to upland desert scrub habitat. It is desirable to foster both riparian and upland ecosystems in tandem, because of how they contrast with and complement one another. This project falls within the responsibilities of the Deer Creek Storm Water District for flood management. Southwest Tulare County Water Resource Management Authority, Angiola Water District, and Deer Creek Storm Water District are already engaged in biological cataloguing and streambed maintenance of Deer Creek from east of Pixley National Wildlife Refuge (NWR) downstream to the Homeland Canal. The Deer Creek Storm Water District already owns several areas of streambed in fee. Upstream “damming” has been determined to likely be without right. Upstream maintenance and native riparian habitat would be greatly enhanced by removal of such “dams.”

*Size:* 5,000 acres

*Estimated Funding:* \$10 million

*Opportunities:* The Sequoias to Sloughs project would expand the amount of protected upland and riparian habitat in the corridor to create and protect a landmark valley-to-foothill wildlife corridor, ideal for recreation and tourism cultivation. Some of the important links on this wildlife corridor include Sequoia National Forest, the Deer Creek-Friant/Kern Canal habitat area, Pixley National Wildlife Refuge, and Atwell Island Project. Ongoing discussions have considered design and construction of setback levees for flood control and habitat enhancement. This area lends itself to be a part of and connected with the AAA Trail project, outlined above.

*Challenges:* Finding willing sellers and landowners interested in participating.

*Partners:* TBWP, SRT, WCB, BOR, NRCS, USFWS, CDFW, Tule River IRWM, Deer Creek Storm Water District, Angiola Water District, Southwest Tulare County Water Resource Management Authority

### **Alpaugh Area Wetland Reserve Voluntary Conservation Agreements**

*Location:* Alpaugh Wetland Reserve Area and Homeland Ranch; Atwell Island; and Ton Tache Basin, Tulare County

*Description:* Protect wetlands through NRCS’s Wetlands Reserve Program’s voluntary conservation agreements. This area lends itself to be a part of and connected with the AAA trail. We believe this project can serve as a model of collaboration with private land owners.

*Size:* 10,000 acres

*Estimated Funding:* \$15 million

*Opportunities:* Potentially superb wildlife habitat

*Challenges:* Identifying additional wetland sites for voluntary conservation agreements; finding water sources.

*Potential Partners:* TBWP, NRCS, BLM, Atwell Island Water District, BOR, White Ranch, Kaweah River Basin IRWM, Angiola Water District, Sandridge Partners, Deer Creek Storm Water District, Southwest Tulare County Water Resource Management Authority, Tule IRWM.

### **Pixley NWR Completion**

*Location:* Pixley National Wildlife Refuge

*Description:* Protect the remaining upland and vernal pool habitat in the corridor through fee title purchase or conservation easements.

*Estimated Funding:* \$4.4 million

*Opportunities:* This is some of the best remaining upland habitat in the Tulare Basin. There is a willing seller for at least a portion of the land. This land is critical for maintaining linkages between Allensworth Ecological Reserve and Creighton Ranch. This project requires no water. Over 5,000 wintering Sandhill Cranes from as far away as Siberia depend on the extensive grassland at Pixley NWR. This area serves as a stepping stone on the migratory route for waterfowl and other wetland birds in this Tulare Basin portion of the Pacific Flyway. Completion of this project will help ensure the habitat values of this property, which is vital to the largest winter flock of Sandhill Cranes in the Tulare Basin.

*Challenges:* There is a threat of agricultural conversion; conservation interests may be outbid by dairy interests.

*Partners:* TBWP, WCB, BOR, NRCS, USFWS, CDFW, Kaweah River Basin IRWM

### **Deer Creek Flood Control Strategies**

*Location:* Tulare County

*Description:* Develop a strategy to control flooding along Deer Creek, while preserving and enhancing the riparian and upland habitats in the watershed. Create setback levees.

*Size:* 8,595 acres

*Estimated Funding:* \$200,000

*Opportunities:* This area has the longest contiguous stretch of riparian habitat in the southern three-quarters of the Tulare Basin. The towns of Allensworth and Alpaugh, two underserved rural communities in the region, face periodic, potentially serious flooding problems. Allowing wild lands to flood along the lower creek and marginal farmland adjacent to the lower end of Deer Creek can help reduce flooding in Allensworth and Alpaugh. (See Sequoias to Sloughs discussion above)

*Challenges:* Involving all stakeholders and reaching consensus on a flood control strategy.

*Partners:* TBWP, WCB, BOR, NRCS, USFWS, CDFW, Tule River IRWM, Sandridge Partners, Angiola Water District, Deer Creek Storm Water District, Southwest Tulare County Water Management Authority

### **Enlarge Core Upland Habitat Area around Pixley National Wildlife Refuge**

*Location:* Pixley National Wildlife Refuge, Tulare County (Sand Ridge – Tulare Lake Planning Area)

*Description:* Acquire lands, conservation easements or otherwise implement conservation strategies to achieve multi-purpose benefits for wildlife, landowners, and local/regional agency stakeholders

*Size:* 720 acres

*Estimated Funding:* \$1 million

*Opportunities:* Willing seller; protects high-quality uplands

*Challenges:* Coordination with existing mitigation planning processes for Measure R transportation projects and High Speed Rail

*Partners:* SRT, TBWP, Westervelt Ecological Services, TCAG, HSR Authority, other permitting agencies

## Oaks to Tules Riparian Corridor

### **Valley Oak Woodland Connectivity and Restoration**

*Location:* Tulare County

*Description:* Acquire lands and/or develop cooperative habitat restoration and management agreements on valley oak riparian forest habitats in the vicinity of the Kaweah Oaks Preserve to reconnect and restore fragmented remnants of this rare habitat type.

*Size:* 1,200 acres

*Estimated Funding:* \$2.8 million

*Opportunities:* Ongoing discussions among multiple parties regarding opportunities for multi-benefit projects in the vicinity of Kaweah Oaks Preserve (storm water layoff, groundwater recharge, habitat enhancements, etc). Kaweah Oaks Preserve is a high-profile preserve, so this project is likely to engender public support.

*Challenges:* Acquiring or negotiating cooperative agreements on the remaining relatively unaltered habitat and areas suitable for restoration.

*Partners:* SRT, City of Visalia, water districts and ditch companies, Kaweah Basin IRWMP, DWR, Cal Fire, WCB

### **Lindsay-Strathmore Irrigation District Lands Protection**

*Location:* Tulare County

*Description:* Lindsay-Strathmore Irrigation District and several other entities own and manage large holdings of native land between Kaweah Oaks Preserve and Kaweah Reservoir. This project would develop a protection strategy for this area and protect the remaining upland and riparian habitat through fee title purchase, mitigation bank development, or voluntary conservation easements.

*Size:* 1,600 acres

*Estimated Funding:* \$150,000

*Opportunities:* This is one of the largest continuous undeveloped riparian habitat areas on the valley floor on the east side of the Tulare Basin. Flood water offsets could be accommodated to benefit riparian habitat while minimizing flood water threats to Visalia and the underserved rural communities of Farmersville and Ivanhoe. Storm water offsets on this property can help to maintain groundwater quality and quantity for the aquifer that serves the Visalia/Tulare Metropolitan area (with a combined urban/residential/rural population of over 200,000). Floodwater offsets on this property are highly desirable as part of Metropolitan Visalia's storm water management program; storm water stored upstream can help relieve peak storm runoff events in Visalia.

*Challenges:* Bringing the various interests together to determine a mutually beneficial protection strategy, conservation easement desirable

*Partners:* TBWP, Lindsay-Strathmore Irrigation District, NRCS, Tulare County RCD, USFWS, CDFW, WCB, Kaweah River Basin IRWM, City of Visalia, City of Tulare