TULARE BASIN WILDLIFE PARTNERS

Creating Opportunities for Nature and People

Tulare County Measure R Riparian-Wildlife Corridor Report

Prepared by Tulare Basin Wildlife Partners
for Tulare County Association of Govenments

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Executive Summary

As part of an agreement with the Tulare County Association of Governments, Tulare Basin Wildlife Partners (TBWP) visited nine potential riparian and wildlife corridors in Tulare County during summer 2007. We developed a numerical ranking system and determined the five corridors with highest potential for conservation, recreation and conjunctive uses. The selected corridors include: Deer Creek Riparian Corridor, Kings River Riparian Corridor, Oaks to Tules Riparian Corridor, Lewis Creek Riparian Corridor, and Cottonwood Creek Wildlife Corridor. For each corridor, we provide a brief description and a summary of attributes and opportunities. Opportunities include flood control, groundwater recharge, recreation, tourism, and wildlife. We also provide a brief description of opportunities for an additional eight corridors that were not addressed in depth in this document.

In addition, we list the Measure R transportation improvements and briefly discuss the potential wildlife impacts for each of the projects. The document concludes with an examination of other regional planning efforts that include Tulare County, including the San Joaquin Valley Blueprint, the Tulare County Bike Path Plan, the TBWP's Sand Ridge-Tulare Lake Plan, the Kaweah Delta Water Conservation District Habitat Conservation Plan (HCP), and the USFWS Upland Species Recovery Plan.

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Introduction

In July 2007 Tulare Basin Wildlife Partners (TBWP) entered into an agreement with Tulare County Association of Governments (TCAG) to:

- Identify and prioritize opportunities for natural areas that may be set aside for mitigation banking purposes
- Identify and leverage additional federal, state, and private funding opportunities for mitigation bank creation
- Provide scientifically-based habitat and special status species information on six riparian (river or stream) systems on Tulare County watersheds
- Identify conjunctive use opportunities such as groundwater banking, flood protection, private landowner participation incentives, recreation, and new business opportunities
- Help lay the foundation for sound economic development
- Facilitate, streamline, or avoid federal and/or state regulatory concerns
- Help maintain/ensure local control

The mitigation banking aspects of the project are covered in a separate document that has already been submitted to TCAG (TBWP 2007). This document presents the finding of the riparian and wildlife corridor analysis.

Goals and Objectives

The goals of the Tulare County Measure R Riparian-Wildlife Corridor Project are to: (1) study each of the riparian and wildlife corridors in Tulare County, (2) identify the highest value areas where conservation activities should be focused, (3) identify sensitive areas that will need mitigation during Measure R projects, (4) identify areas for habitat protection, (5) identify potential mitigation sites, and (6) identify conjunctive use opportunities such as groundwater banking, flood protection, recreation, open space access, private landowner participation incentives, and new business opportunities.

The objectives of habitat protection along Tulare County corridors are: (1) to enhance wildlife habitat and movement along natural resource corridors by identifying important areas for wildlife, (2) protect flood–sensitive areas by recommending levee setbacks, floodplain easements, and Wetland Reserve Program opportunities, and (3) synergize conjunctive uses to maximize benefits by identifying areas which can accommodate both wildlife and recreation/open space needs.

Tulare County Corridors

Rankings

The TBWP planning team made site visits to all potential corridors during August 2007. After these visits, we ranked each corridor according to specific attributes (Appendix 1). We used a ranking process to define which Tulare County corridors are most important to wildlife and have the most opportunities. The following criteria were used for ranking the corridors: (1) extent of urban development, (2) channel hydrology & morphology (including modification history – diversions, realignments, dams, etc.), (3) condition of adjacent uplands (riparian or other complementary upland habitats), (4) riparian habitat quality & continuity, (5) presence of special status species (threatened and endangered species and species of special concern, etc.), (6) opportunities for conjunctive use (e.g. degree of groundwater overdraft; opportunities for recharge, recreation, etc.), (7) importance to Tulare Basin wetlands (i.e. Does this channel bring water down to lakes or wetlands? Does it send significant water to the Basin?), and (8) community, social & agency considerations.

Numerical results for the rankings are as follows: Deer Creek 22, Cottonwood Creek 20, Kings River 19, Kaweah Delta 19, Elk Bayou 18, Sand Creek 17, White River15, Lewis Creek 14, and Tule River 12 (Appendix 1). From this list the TBWP planning team selected the Deer Creek Corridor, Kings River Corridor, Oaks to Tules Corridor (which is comprised of Elk Bayou as well as eastern portions of the Kaweah Delta Corridor and the west end of the Tule River Corridor), Cottonwood Creek Corridor, and the eastern end of the Lewis Creek Corridor for detailed study. Lewis Creek Corridor was selected, even though it scored low in the ratings, because it encompasses some of the highest quality riparian habitat in Tulare County. We mapped selected corridors and included Measure R Projects and Sensitive Species locations from California Natural Diversity Data Base (Appendix 2).

Corridors selected for detailed study:

Deer Creek Corridor

Description - Deer Creek is located entirely within Tulare County with its headwaters at the crest of the western slope of the Greenhorn Mountains in Giant Sequoia National Monument. The highest point in the watershed is on Tobias Peak at 8,284 feet (2,525 meters) National Geodetic Vertical Datum (NGVD). The 62 mile (100 km) long watershed of approximately 230,000 acres (92,900 hectares) includes Capinero Creek, Tyler Creek, Rube Creek, Gordon Creek, Pothole Creek, and Fountain Springs Gulch. The creek flows west from the mountains through California Hot Springs, just north of Terra Bella, just north of Earlimart, and ends at the Homeland Canal north of Alpaugh. The westernmost 8 miles was rerouted approximately 4 miles to the north in the 1950s and now flows into the historic Tulare Lake bed via the Homeland Canal. Historically the creek flowed through the town of Allensworth and into the Ton Tache Lake basin, a formerly marshy lowland area between the towns of Allensworth and Alpaugh. Portions of the historic creek channel have not been filled and leveled and can be seen along Avenue 56 between Earlimart and State Highway 43. The low point of the Ton Tache basin is at 204 feet (63 meters) NGVD.

The Deer Creek watershed contains 56 of the 83 habitat types found in Tulare County (Sawyer & Keeler-Wolf 1995). The creek originates in the Red Fir zone on Tobias Peak and flows through numerous higher elevation habitats including White Fir, Mixed Conifer, Black Oak, Canyon Live Oak, and Interior Live Oak. Giant Sequoias reach the southern extent of their geographic range in the upper watershed of Deer Creek. Deer Creek Grove is a small grove with about 35 mature Giant Sequoias and Starvation Grove, a few miles to the north, has about 50 mature Giant Sequoias.

In the middle elevations the watershed is characterized by Blue Oak Woodland and California Buckeye in the uplands and extensive stands of California Sycamore and various willow habitat types along the riparian areas and drainages. At the lower elevations nearly all of the Valley floor lowland habitat types occur along the floodplain portions of the corridor.

This Plan includes an in-depth analysis of the lowland floodplain corridor from Old Stage Road (4 miles northeast of Terra Bella) downstream to just west of Highway 99 near Earlimart. The foothill and high Sierra region east of Old Stage Road has been analyzed in a plan completed by Sequoia Riverlands Trust. The region west of Highway 99 is addressed in the Sand Ridge-Tulare Lake Conservation Plan, completed in 2007 by TBWP.

Attributes – The Deer Creek Corridor was the highest ranked corridor in the study, with a score of 22 (Appendix 1). In the upper watershed, the Deer Creek Corridor is managed by the United States Forest Service (USFS) Sequoia National Forest and is designated as the Giant Sequoia National Monument. There are a few, small in-holdings within the USFS land. The middle elevations of the watershed are privately owned and are managed as grazing land. There are several areas that use hunting access to supplement the grazing operations. A limited amount of firewood harvesting is also conducted in this region. Bureau of Land Management (BLM) owns several parcels in the upper and middle watershed.

Most of the lower watershed between Old Stage Road and the western boundary of the corridor planning area is farm land. Of the 8,595 acres analyzed in this corridor, 6,100 acres (71%) were farmed and 1,894 acres (22%) were native or fallow. A small proportion of the land was canals (96 acres, 1%), developed (90 acres, 1%), or refuse disposal sites (40 acres, 0.5%). A portion of the area was also classified as wetlands (375 acres, 4.4%). This wetland habitat is a conjunctive use groundwater recharge basin/wetland habitat near the Friant-Kern Canal owned by the Terra Bella Irrigation District and monitored by Tulare County Audubon Society. These lands are a model of the kind of conjunctive use that can improve recreation opportunities, control flooding in flood-sensitive areas and provide excellent wildlife habitat in Tulare County.

The western portion of the Corridor, west of the current planning area has a mixed property ownership with more native or fallow land. Pixley National Wildlife Refuge (6,789 acres), Allensworth State Ecological Reserve (4,698 acres), Allensworth State Historic Park (1,035 acres), and BLM's Atwell Island Project (8,000 acres) are all located in this region. In addition, the Natural Resource Conservation Service (NRCS) has purchased several parcels of floodplain easements just west of Allensworth and over 5,000 acres of Wetland Reserve Easements north of Alpaugh, the latter of which are currently being managed as wetlands. These wetlands also serve

as an excellent model of how private interests can contribute to wildlife habitat while simultaneously protecting flood sensitive areas, enhancing groundwater resources and providing recreational opportunities. Local government districts, such as the Alpaugh Irrigation District (1,881 acres), Angiola Water District (773 acres), Atwell Island Water District (689 acres), Pixley Irrigation District (541 acres), and Earlimart Public Utility District (240 acres) also own sizable acreage in this area.

One of the major attributes of the Deer Creek Corridor is that the riparian vegetation is nearly contiguous along the entire corridor from the headwaters to the terminus in the center of the Tulare Basin. Other potential corridors such as the White River, Tule River/Porter Slough, and Cross Creek have major breaks in their streamside growth. With the exception of a few farm ponds and the water recharge basin near Friant-Kern Canal, the Deer Creek watershed is not regulated and there are no major dams. The absence of a dam has a profound favorable influence on the moderate to high quality riparian growth characteristic of this stretch of Deer Creek. The lack of major infestations of invasive plant species such as *Tamarix* and Giant Reed is probably at least partially due to the free flowing nature of the stream. Another important watershed attribute is the variety and extent of public lands at the western end of the stream. This area is already attractive to the many visitors at Pixley NWR and Allensworth SHP and visitation is increasing at the Atwell Island Project.

Opportunities – Recreation and open space potential on the Deer Creek Corridor is high. This corridor is a potential location for a hiking, bicycling, and equestrian trail from the Giant Sequoia groves of the southern Sierra Nevada to the wetlands of the Tulare Basin at Pixley NWR and the Atwell Island Project (TCAG 2007). There is currently a campground at Allensworth SHP, a public and a private campground at California Hot Springs, and a small picnic area/camping area at the Deer Creek Giant Sequoia Grove. Ultimately, several more small camping areas could be established 7 to 10 miles apart for long-distance hikers and bicyclists. This project would require obtaining easements for the trail, access to the trail, and access sites and parking areas. In Kern County, the Kern River Parkway includes over 6,000 acres of trails, parks, and waterways extending over 30 miles from the mouth of the Kern Canyon westerly nearly to Interstate 5 (Highway 43/Enos Lane). The Deer Creek Corridor trail, as envisioned here, would traverse far less of an urban environment than the Kern River Parkway and would provide a more scenic and rural experience.

Ecotourism and Historical Tourism are already important along this corridor. Pixley NWR is an important destination for bird watchers and nature enthusiasts who primarily visit September through March to observe the large (5,000 to 8,000) flocks of wintering Sandhill Cranes. The evening fly-in of thousands of these large birds against the setting sun is a magnificent sight that is not soon forgotten. Allensworth SHP interprets the experience of early African-American settlers in the Tulare Basin and is a destination of thousands of visitors each year. During special events, when docents re-enact the lives of the original residents of each building, the small village comes to life. BLM's Atwell Island Project currently has a one-mile birdwatching and hiking trail along a canal that is a destination for Audubon Society birding trips in the spring and fall, as well as the environmental studies class at the local High School. A system of seasonal marshes and wetlands in the Ton Tache Lake basin are also planned by BLM with the assistance of TBWP and NRCS; initial progress is expected by July 2008 for this key wetland feature of the

Atwell Island Project. Wildlife observation platforms and blinds will be constructed as part of a system of walking trails at this site.

Flood control protecting flood-prone areas and wetland habitat for wildlife can go hand in hand along the Deer Creek Corridor. There is potential to obtain grants to purchase floodplain and wetland easements which could provide both flood protection to the nearby towns and farmland at the same time that they provide wetland habitat for waterfowl and riparian habitat for neotropical migrant birds. In many areas this would consist of setting levees back 100 to 200 feet, while in other areas, large pond areas could be created with setbacks of up to one half mile. These ponds could provide wetland habitat while being managed conjunctively to help recharge groundwater resources in the area, especially during years with above average precipitation. The groundwater along the Deer Creek Corridor is severely depleted. In the Alpaugh area, where there were artesian wells in the early 1900s, wells are now drilled to a depth of 1,300 feet (390 m) with ground water standing at a depth of 350 feet early in the year and as deep as 500 feet late in the irrigation season.

Kings River

Description – Kings River is located in Fresno, Tulare, and Kings counties. It begins at the highest points in the Sierra Nevada and flows west from the mountains through Kings Canyon (in Kings Canyon National Park) and Sierra and Sequoia National Forests into Pine Flat Reservoir. The Kings Canyon is one of the deepest canyons on the North American continent. After leaving Pine Flat Reservoir, the River flows southwest through the towns of Piedra, Minkler, Reedley, Kingsburg, and Laton before flowing (historically) into Tulare Lake near Stratford. Today, the river only flows into the Tulare Lake basin at extremely high flood flows. Much of the flood water is now diverted into the San Joaquin basin via the Fresno Slough. The river has a total length of approximately 130 miles (208 km), with half above and half below Pine Flat Dam. The highest point in the watershed is on North Palisade at 14,242 feet (4,342 m) in eastern Fresno County. The watershed above Pine Flat Dam is approximately 1.1 million acres (449,000 ha) in extent and includes the North Fork, Middle Fork, and South Fork of the Kings River as well as Big Creek, Dinky Creek, Bubbs Creek, Roaring River, Mill Creek, and many other smaller tributaries. This, along with the San Joaquin River and the Kern River are the major rivers in the Southern Sierra Nevada.

The Kings River watershed contains 81 of the 82 habitat types found in Tulare County (Sawyer & Keeler-Wolf 1995). The River's headwaters are in the Alpine Zone at the crest of the Sierra Nevada and flows through numerous high elevation habitats including Lodgepole Pine, Western White Pine, Red Fir, White Fir, Mixed Conifer, Black Oak, Canyon Live Oak, and Interior Live Oak. Seventeen Giant Sequoia groves occur in the watershed including two of the largest groves (Converse and Evans groves).

In the middle to low elevations, the watershed is characterized by Blue Oak Woodland, California Buckeye, and several shrub-dominated habitats. At lower elevations, west of Pine Flat Reservoir, the broad floodplain with multiple braided stream channels was originally dominated by Valley Oak Forest, of which there are examples remaining at the following Fresno County Parks: Choinumni Park, Winton Park, Avocado Lake Park, Kings River Green Belt Park,

Kings River Access Park, and Laton-Kingston Park. There are also remaining stands of other riparian woodland types including Fremont Cottonwood, Black Willow, and Red Willow. Summit Lake, of which only an alkaline remnant remains today, was originally the terminal freshwater lake where waters exited the Tulare Lake Basin on their way north to join the San Joaquin River. Summit Lake, as well as numerous marshes and seasonal wetlands like Boggs Slough and Mussel Slough were found along the lower stretches of the Kings River. Remnants of nearly all the lowland habitat types still occur along the lower Kings River corridor.

Only a small portion of the Kings River is in Tulare County. The area that we are examining in this plan is seven miles in length, from just downstream from Reedley (Fresno Co.) to the Kings County line just downstream from the Highway 99 Bridge.

Attributes – The Kings River Corridor was the third highest rated corridor in the study, with a score of 19. A large portion of the riparian habitat remaining in the Tulare Basin is found along the Kings River downstream from Pine Flat Dam. A total of 731 acres of riparian habitat is located along the Tulare County portion of the Kings River. During our field visit, it was clear that much of this floodplain habitat is heavily grazed, invaded by non-native trees, and is encroached upon by urban and suburban development. Despite these issues, this is a very valuable biological, historical, and recreational asset.

This section of the Kings River is crossed by three roads, Ave 416, Ave. 400, and Highway 99. We examined 2,330 acres of land along the river, of which nearly a quarter (506 acres) is owned by government agencies (State Lands Commission – 246 acres; City of Kingsburg – 171 acres; and Tulare County – 85 acres). Much of this public land supports riparian habitat (State Lands Commission – 246 acres; City of Kingsburg – 64 acres; and Tulare County 85 acres) and 54% of the riparian habitat along this stretch of the Kings River is owned by these public agencies.

Public access to the public lands along the river is limited and could be improved. Canoeing and boating are popular activities along the river and are the primary means to access the State Lands. The Tulare County lands are grazed heavily enough that understory vegetation is very limited and recruitment of tree species is adversely affected, as well as the value of the habitat for wildlife. It is not known what, if any, plans have been made for the management of these public lands, but elsewhere in California (e.g. Sacramento River, American River, Feather River, Stanislaus River, San Joaquin River, and Kern River), restored riparian habitats have become very popular recreational areas (hiking, and horseback riding, bicycling, jogging, canoeing, kayaking, swimming, and nature study, including photography and sightseeing, etc.), as well as important areas for environmental education. It is important to establish a management framework for these important lands that regulates grazing management and impacts from other uses to protect natural resources and aesthetic values.

Opportunities – Recreation and education as well as conservation opportunities are great along the Kings River. Restoration and enhancement of the riparian habitats could become an important and popular community project. The San Joaquin Parkway and Conservation Trust's successful volunteer and environmental education programs could be used as models for the Kings River. This area could become an important project area for the Natural Resource Management program at nearby Reedley College and an important destination for eco-tourists.

The recreation potential in the riparian zone is great as the riverside habitat is cooler in the summer and can be a very nice place to take a walk on a hot summer day when the uplands are inhospitable. The public lands along the river could become locations for nature study areas. Environmental education programs, like the one BLM is developing in the Alpaugh Schools, could involve the local community. Nature trails could be developed to interpret the riverine habitats.

Conservation easements or fee title purchase should be considered to protect the remaining 46% (336 acres) of private lands that currently support riparian habitat. In addition, there are several privately owned parcels totaling several hundred acres where riparian habitat could be restored. By broadening the floodplain forest, this restoration would make the existing habitat even more valuable to both wildlife and the visiting public. This land could be a mix of areas that offer public access and areas with more restricted access that can be managed for habitat mitigation for riparian habitat that is adversely impacted by development projects elsewhere in the county.

Grazing on the public lands in the riparian zone is currently very heavy and is damaging the existing habitat, as well as retarding natural regeneration. Best management practices should be developed for these areas that would provide better wildlife habitat and help maintain a healthy riparian system.

Oaks to Tules Corridor (Kaweah Lake to Creighton Ranch via Elk Bayou)

Description – The Oaks to Tules Corridor is located entirely within Tulare County, with its headwaters at the crest of the western slope of the Great Western Divide in Sequoia National Park. The highest point in the Kaweah River watershed is on Triple Divide Peak at 12,634 feet (3,887 m). The 78 mile (125 km) long watershed of approximately 730,000 acres (300,000 ha) includes the Lower Tule River, Elk Bayou, Dry Creek, North, Marble, Middle, East and South Forks of the Kaweah River, Cliff Creek and Horse Creek. The Kaweah River flows west from the mountains through Sequoia National Park, the towns of Kaweah and Three Rivers and into Kaweah Reservoir. Downstream from Terminus Dam, the river flows between Lemon Cove and Woodlake. The Corridor then branches at McKay Point and continues to subdivide west and south into various creeks including Deep Creek and Outside Creek which traverse Sequoia Riverlands Trust's Kaweah Oaks Preserve. Outside Creek continues south between Farmersville and Exeter. This corridor then continues southwest where Outside Creek changes to Elk Bayou, crossing Highway 99 just south of Tulare. A few miles west of Highway 99 Elk Bayou merges with the Tule River and travels west through the Creighton Ranch and on to the Kings County line just west of Highway 43 and a few miles south of Corcoran. Thirty-three miles (53 km) of this corridor descend steeply from the headwaters of the Kaweah River to Terminus Dam, more than half the length of this corridor (45 miles, 72 km) is on the Valley floor from Kaweah Reservoir to the Kings County line.

The Oaks to Tules Corridor contains all 82 of the habitat types found in Tulare County (Sawyer & Keeler-Wolf 1995). The river's headwaters are at the highest elevations on the Great Western Divide in the in the Alpine Zone and it flows through numerous higher elevation habitats including Lodgepole Pine, Western White Pine, Red Fir, White Fir, Mixed Conifer, Black Oak,

Canyon Live Oak, and Interior Live Oak. Twenty-one Giant Sequoia groves occur in the Kaweah watershed including some of the largest groves (Atwell-East Fork, Garfield-Dillonwood, Giant Forest, and Redwood Mountain groves). All of the groves in the Kaweah watershed are within Sequoia National Park, with the exception of Case Mountain Grove which is managed by BLM.

The middle and lower elevations of the watershed are characterized by Blue Oak Woodland, California Buckeye, and several shrub-dominated habitats. At lower elevations, west of Kaweah Reservoir (Terminus Dam), the broad, braided floodplain was originally dominated by Valley Oak Forest, of which there are examples remaining, including the Kaweah Oaks Preserve. There are also remaining stands of other riparian woodland types including Fremont Cottonwood, Black Willow, and Red Willow. At Creighton Ranch (formerly a Nature Conservancy Preserve) there are numerous riparian and wetland habitats including the only Mesquite Woodland in Tulare County. All of the lowland habitat types occur along the lower corridor. Prime examples of Northern Claypan Vernal Pools are at Sequoia Riverlands Trust's James K. Herbert Wetland Prairie Preserve, near the corridor along Highway 137 between Tulare and Lindsay.

Attributes – The Oaks to Tules Corridor is a combination of three high-ranked corridors; Elk Bayou (18), Kaweah Delta (19), and Tule River (12). The combination would rank as high as the Cottonwood Creek or the Kings River corridors and possibly as high as Deer Creek. The Upper Kaweah watershed is primarily managed by the National Park Service, with smaller areas managed by USFS (Giant Sequoia National Monument) and BLM. The riparian habitat owned and managed by the US Army Corps of Engineers (USACE) immediately below Terminus Dam is of very high quality and is very valuable for wildlife. For several miles below the Dam, this corridor travels through one of the largest undeveloped areas on the valley floor in Tulare County.

Of the 27,000 acres of the lower watershed analyzed in this report, approximately 38% (10,200 acres) is native habitat, a relatively high proportion considering the proximity to major urban centers like Visalia and Tulare. The majority of the area along the corridor is farmed (56%) and the remainder is in wetlands (371 acres; 1%), aggregate quarry ponds (357 acres; 1%), recharge basins (103 acres; <1%), and developed (217 acres; 1%).

There are approximately 3,120 acres of riparian habitat along the lower Oaks to Tules corridor. The Sequoia Riverlands Trust manages the Kaweah Oaks Preserve (324 acres of riparian) and the USACE has 72 acres of riparian habitat. These two sites, the only two local examples of protected riparian habitat, account for 10% of the riparian forest total along the lower corridor. Public water agencies manage an additional 609 acres of riparian habitat, 20% of the total. The remaining 2,200 acres (70%) of riparian habitat is privately owned. The largest of these, the former Nature Conservancy Creighton Ranch Preserve, is 3,280 acres in extent with over 700 acres of riparian habitat (22.4% of the total) as well as several hundred acres of wetlands and over 1,000 acres of native upland habitat.

One of the major attributes of the Oaks to Tules Corridor is that the riparian vegetation is nearly contiguous along the entire corridor from Lake Kaweah to the Kings County line, far out into the Tulare Basin. Another major attribute is that there are already several nodes of protected land

along the corridor. These include the Kaweah Oaks Preserve, the James K. Herbert Wetland Prairie Preserve, and the Westside 300 all managed by the Sequoia Riverlands Trust; the USACE lands near Terminus Dam; and several units of the Pixley NWR just south of Creighton Ranch near Corcoran.

Opportunities – The opportunities are similar for this corridor as they are for the Deer Creek Corridor. Recreation and open space potential on the Oaks to Tules Corridor is high. This corridor is a potential location for a hiking, bicycling, and equestrian trail from Kaweah Reservoir to the wetlands of the Tulare Basin (TCAG 2007). There are currently managed recreation sites and campgrounds at Kaweah Reservoir and hiking trails at Kaweah Oaks Preserve. Ultimately, several more small camping areas could be established for long-distance hikers. This project would require obtaining easements for the trails and land for access and parking areas. The Oaks to Tules Corridor would provide a scenic and rural experience close to urban areas.

Ecotourism and historical tourism are already important in the area. Pixley NWR just south of this corridor is an important destination for bird watchers and nature enthusiasts who primarily visit September through March to observe the large (5,000 to 8,000) flock of wintering Sandhill Cranes. The evening fly-in of thousands of these large birds against the setting sun is a magnificent sight that is not soon forgotten. Kaweah Oaks Preserve provides the public with hiking trails and docent-led tours.

Flood control and wetlands can go hand in hand along the Oaks to Tules Corridor. There is a potential to obtain grants to purchase floodplain and wetland easements which could provide both flood protection to the nearby towns and farmland at the same time that they provide habitat for waterfowl and riparian neotropical birds. In many areas this would consist of setting levees back 100 to 200 feet, while in other areas, large pond areas could be created. These ponds could provide wetland habitats while being managed conjunctively to help recharge groundwater resources in the area.

Lewis Creek East of Lindsay

Description – Lewis Creek is located entirely within Tulare County with its headwaters in the upper foothills of the Sierra Nevada. The highest elevation in the watershed is 2,700 feet (830 m). The 15 mile (24 km) long watershed of approximately 32,500 acres (13,000 ha) includes one named tributary, Oat Creek. Lewis Creek flows west out of the Sierra Nevada foothills through Lindsay, travels north, and then west before merging with Outside Creek halfway between Tulare and Lindsay.

The Lewis Creek watershed contains 25 of the 83 habitat types found in Tulare County (Sawyer & Keeler-Wolf 1995). The creek originates in the Interior Live Oak, California Buckeye, and Blue Oak habitat zones. The lower elevations are in California Annual Grasslands. The main area of interest is at the lower elevations where there are well-developed mixed stands of Fremont Cottonwood, Mulefat, Red Willow, and Black Willow.

The region of this corridor that is analyzed in-depth is from the headwaters to the eastern outskirts of Lindsay. The lower 4 miles just east of Lindsay are of the most interest in this study.

Attributes – The Lewis Creek Corridor was rated rather low at 14, but was chosen for detailed study because of the presence of high quality riparian habitat. The upper and middle watersheds of Lewis Creek are almost entirely native land with very little suburban development. This upper area is primarily open grassland used for grazing with some limited firewood production in the wooded areas. The lower watershed contains some of the highest quality stand of Fremont Cottonwood-Willow habitat in Tulare County and is bordered primarily by citrus orchards, pasture, and hobby farms. This lower elevation riparian area is approximately three miles long and 200 acres in extent. It has a very high percentage of native vegetation, an extensive riparian understory, and a low proportion of invasive weed species. To demonstrate the quality of the habitat, this is the last documented area where the Endangered Yellow-billed Cuckoo (*Coccyzus americanus*) was seen in Tulare County.

The dynamics of the hydrology of this well-developed riparian zone are not entirely clear. It may be that there is an underlying rock formation that maintains groundwater near the surface, or it may be because of anthropogenic influences (e.g. release of tailwater from the local irrigation systems) may support these lush riparian groves. Whatever the reason, it is very important to gain an understanding of how this system works and to maintain its integrity. About a quarter of the riparian zone (51 acres) is owned by the Lindsay-Strathmore Irrigation District and they are the largest single landowner along this three-mile long corridor. It will be important to partner with this district to ensure that the valuable habitat is conserved.

Opportunities – This important, high quality riparian area has great potential for recreation, education, and wildlife. The close proximity to the town of Lindsay would guarantee use of parkland in this area. Walking and biking trails could be established, as well as dispersed picnic sites. Riparian areas in other parts of California have been protected and restored, benefiting local communities by increasing property values and the quality of life.

The public lands along the river could be locations for nature study areas and environmental study programs, like the one BLM is developing in the Alpaugh Schools, could involve the local community. Nature trails could be developed to interpret the creek-side habitats.

Conservation easements or fee title purchase should be considered to protect the remaining 75% (150 acres) of private lands that currently have riparian habitat. This land could be a mix of areas that offer public access and areas that can be managed for habitat mitigation for riparian habitat that is lost to development projects elsewhere in the county.

Cottonwood Creek

Description – Cottonwood Creek is located almost entirely within Tulare County with its headwaters in Fresno County near Pinehurst. The highest elevation in the watershed is in the foothills of the Sierra Nevada at an elevation of 3,150 feet (970 m). The 42 mile (67 km) watershed of approximately 145,000 acres (58,800 ha) includes Morgan Canyon, Antelope Creek, Collier Creek, Wilcox Creek, and Murray Creek. The Creek flows south through Elderwood to

Woodlake then flows west north of Visalia until it joins the St. Johns River just east of Highway 99 between Goshen and Traver.

The Cottonwood Creek Watershed contains 32 of the 83 habitat types found in Tulare County (Sawyer & Keeler-Wolf 1995). The creek's headwaters are in the Interior Live Oak, California Buckeye, and Blue Oak habitat zones. The middle elevations are in California Annual Grasslands. The main area of biological interest is on the valley floor west of Woodlake. This area has the only remaining native upland habitat in northwestern Tulare County. Habitat types here include California Annual Grasslands, Saltgrass Grasslands, Alkali Sacaton Grasslands, Bush Seepweed, Northern Claypan Vernal Pools, and Northern Hardpan Vernal Pools.

The region of this corridor that is analyzed in this Plan is from just west of the town of Woodlake to where Cottonweed Creek merges with the St. Johns River, just east of Highway 99. This complex of grassland, vernal pool, and riparian habitat continues as an important wildlife corridor further west and south into Kings County, where it is called Cross Creek. The portion of Cross Creek in Tulare County is included in this document, while the Cross Creek corridor in Kings County will be examined in a separate document.

Attributes – The Cottonwood Creek Corridor was the second highest rated corridor in the study, with a score of 20. In the upper watershed, the Cottonwood Creek Corridor is primarily privately owned and is managed as grazing land. The lower watershed, west of Woodlake has some of the last remaining native land in northern Tulare County. This land is important because of the complex of vernal pools, grassland, and alkali sink habitats and related species.

The lower watershed of 12,809 acres is primarily farmed, but a sizable proportion of the area is in native habitat (5,020 acres, 39%). There is also a small recharge basin (46 acres, <1%) and several canals (54 acres, <1%). The eastern half of the corridor is primarily a channelized waterway with low quality riparian and wetland vegetation. The corridor widens out as one moves westward, especially west of the junction with the St Johns River where the unfarmed areas extends up to 1.25 miles in width. This area is primarily grazed with cattle and provides winter and spring pasture. This area has numerous vernal pools and waterways where several of the dominant grasses are native species. This corridor is primarily a wildlife corridor, but is of historic value as it is one of the few places where the extent of uncultivated rangeland can still give one the feel of what this part of the valley was like prior to intensive settlement and cultivation.

Opportunities – The primary opportunity for this corridor is to protect the last remaining open space northwest of Visalia. As the only remaining uncultivated area in the northern part of the County this is the place where an opportunity is available to maintain a portion of the landscape as it looked prior to large-scale agricultural conversion in Tulare County. This is also an area where there are opportunities to bank grassland and vernal pool lands as mitigation for development elsewhere in the county. California Department of Fish and Game (CDF&G) has already acquired 667 acres of habitat in this area for vernal pool and upland species. Tulare County also owns 877 acres (County correctional facilities), a portion of which might be

appropriate for developing a mitigation bank and a portion of which could be restored as wildlife habitat, while maintaining current uses.

Corridors not selected for detailed study in this plan:

St. Johns River – The St. Johns River is part of the Kaweah River Delta complex. This is a major floodway with levees that protect the northern part of Visalia. It may be possible to move the levees back on the north side of the River to widen the floodplain. This could allow for planting more riparian and oak woodland along the river while improving flood control. The Saint Johns River Parkway trail has already been built from the vicinity of Cutler Park to just west of Golden West High School. This parkway enhances the quality of life in Visalia by providing a well-used recreational amenity, as well as improving existing wildlife habitat and could be extended to both the east and west.

Porter Slough – Porter Slough is a distributary of the Tule River that passes through the north side of Porterville. It is part of the braided delta formed by the Tule River where it flattens out upon entering the valley. There are several parks along the slough that enhance the quality of life in Porterville, but most of the slough is severely constricted and channelized as it passes through the City. Many cities in northern California are restoring their urban streams and such an effort, by groups like Tule River Parkway, could enhance wildlife habitat and recreational opportunities in a way that would change Porter Slough from an afterthought to a civic amenity. The cost, likely to be relatively modest, could help convert a blighted flood flow channel into a meaningful wildlife corridor and an urban greenway.

Sand Creek – Sand Creek is a low elevation stream with its headwaters on Corn Jack Peak at 2,369 feet. The watershed is approximately 25,000 acres (10,200 ha) in extent. There is some excellent grassland/vernal pool habitat at the valley edge (where Wildlands, Inc. has established a grassland/vernal pool mitigation bank), but once the stream corridor reaches the east edge of the citrus belt, there is little riparian or upland habitat.

White River – The White River flows from its headwaters in the Greenhorn Mountains west into the Ton Tache Basin near Allensworth State Historic Park. The watershed is approximately 60 miles in length and 190,000 acres (75,000 ha) in extent. The watershed east of Highway 65 is in excellent condition with extensive Sycamore Woodlands at the middle elevations. West of Highway 65 the channel is highly modified with only scattered remnants of riparian vegetation. Most of this lower channel is suitable for neither recreation nor a functioning wildlife corridor. At present there is a water spreading structure between Highway 99 and Highway 43 which contributes to flooding of Endangered Species habitat on the Allensworth Ecological Area. Whenever flood water does reach this location, urban impacts to local communities can be minimized by encouraging these flows to reach and spread out on the bed of the Ton Tache Basin – one part of a beneficial water supply that can be used to help restore this historic lake bed.

Tule River above Elk Bayou – The Tule River is a major waterway that drains from the Sierra Nevada into the Tulare Basin. It has one of the larger upper watersheds (280,000 acres; 111,000

ha) that drains into the Basin. The 29 mile upper watershed has 13 Giant Sequoia groves including one of the largest groves (Mountain Home Grove). The lower watershed of the Tule River from Lake Success to the confluence with Elk Bayou (30 miles) is a highly modified stream that received the lowest ranking (12) of any potential corridor. The best remaining riparian vegetation along the Tule River below Success Reservoir is located in the 7.3-mile stretch between Success Dam and Highway 65. At the USACE nature trail just below the dam, a singing male Bell's vireo was seen in willow scrub habitat during spring 2006. Bartlett County Regional Park, a recreational park with scattered oaks and sycamores is located just across the Tule River from this property. The City of Porterville's headgate property, where a Valley Elderberry Longhorn Beetle (VELB) was photographed, is operated as VELB mitigation habitat. A Southwestern Pond Turtle population is known to occur from Success Dam to the headgate property since year-around flowing water is present here in most years. Further downstream, DFG manages the Yaudanchi Ecological Reserve on the south side of Highway 190. This area supports a heron and egret rookery in a grove of sycamores; an example of Elderberry Savannah is present here as well. The portion of Tule River downstream from the junction of Elk Bayou is addressed in the section on the Oaks to Tules corridor.

Kaweah River Forks – Portions of this area are covered in the Oaks to Tules Corridor and the Cottonwood Creek Corridor. The remaining stream corridors travel primarily through urban and suburban areas. These urban streams include Packwood Creek, Mill Creek, Cameron Creek and Elbow Creek. These streams with their predominant Valley Oak overstory provide much needed relief from the surrounding flat, urban uplands. They add to the character of Visalia as "Tree City USA". These streams are perfect locations for urban biking and walking trails, such as the Mill Creek trail in the vicinity of Redwood High School and Packwood Creek east of Lovers Lane and west of County Center Drive. Kaweah Delta Water Conservation District is preparing a Habitat Conservation Plan (HCP) which is designed to address impacts to habitat and special status species due to its routine operations and maintenance. Because this portion of the Kaweah River watershed and the creeks named in this paragraph are part of 200 miles of riparian corridors being evaluated as part of the HCP within the District boundaries, the Kaweah River Forks area was not analyzed to the same level of detail as the of other corridors in this Study.

North-South Foothill Wildlife Corridor – Much of the foothill zone between 500 and 1,000 feet (154 and 308 m) elevation is undeveloped and unfarmed. It is used primarily for grazing land, a use that is highly compatible with wildlife movement corridors. This particular corridor may be especially useful for neotropical migrant birds, deer and other upland associated species. Since grazing is the third most important agricultural practice in Tulare County, conserving foothill rangeland protects habitats and species as well as economic activities (Kunkel 2006).

North-South Creighton Ranch to Allensworth Wildlife Corridor – This very important north-south wildlife corridor is addressed in the San Ridge-Tulare Lake Conservation Plan. That plan calls for the maintenance of a corridor of natural habitat between Allensworth Ecological Reserve and Creighton Ranch. Though nearly intact, this habitat corridor link is incomplete in several locations. These corridor "breaks" will ultimately need to be restored to native habitat in order for species to be able to move between the existing, high-quality patches of habitat. This corridor would link Creighton Ranch on the north through various units of Pixley National

Wildlife Refuge to Allensworth Ecological Reserve and Allensworth State Historic Park on the south.

Biota

Conserving wildlife corridors in Tulare County will be most effective by applying a watershed-level or basin-wide approach. In order for populations of special status species to persist, there must be enough suitable habitat for species to breed and disperse. Populations, especially rare or dispersal-limited species, are more viable if they are linked by corridors. Corridors also serve a role which can buffer habitat impacts due to climate change. Australia's Great Eastern Ranges corridor, for example, will be established along almost the entire east coast of Australia, allowing plants and animals to move as climate changes.

We searched the California Natural Diversity Data Base (CNDDB) for all corridors to lay the basis for a first analysis of the special status species occurring along and adjacent to the corridors. Tulare County is home to 168 special status species that are tracked by the CNDDB. Approximately 66 of these species are found in the planning area addressed in this corridor study (Appendix 3). These special status species include Vernal Pool Fairy Shrimp, Valley Elderberry Longhorn Beetle, Blunt-nosed Leopard Lizard, Swainson's Hawk, Burrowing Owl, Tricolored Blackbird, Tipton Kangaroo Rat, and San Joaquin Kit Fox, among other rare species. Using CNDDB information and additions from our own field observations we determined that the Kings River has 10, Sand Creek has 11, Cottonwood Creek has 23, the Kaweah River has 27, the Tule River has 32, Deer Creek has 47, White River has 36, Elk Bayou has 18, Lewis Creek has 11, and Yokohl Creek has 9 special status species. It is noteworthy that Deer Creek (Valley floor portion only) has 11 species more than White River which has the second highest number of sensitive species. It also has 4 to 5 times more sensitive species records than several of the corridors. In terms of conservation value, this statistic underscores the importance of a matrix of upland and wetland habitats as are present along the Deer Creek watershed.

The following are recommendations to address special status species along corridors:

> (1) Establish a mitigation banking reserve system to pre-mitigate impacts as a result of road improvement projects and urban expansion.
>
> (2) Each road improvement project requires a project-level Environmental Impact Report to identify specific impacts at the project level. The current analysis can only provide a general idea of the species that occur in a general area (USGS 7.5 minute quadrangles are the maximum resolution for this study) and more information is identified from the EIR process.
>
> (3) Incorporate the current recommendations into county-wide mitigation, conjunctive use and project specific planning efforts to guide project-level analysis and promote conjunctive use for the greatest benefit. This report provides general, County-wide information on all impacts to important corridors. Wildlands Inc. produced a report (Wildlands Inc. 2004) which projected the impacts of urban expansion specifically,

recommended mitigation service areas, and prescribed mitigation needs and mitigation locations (Wildlands Inc. 2004).

(4) Evaluate projects based on the number species, including rare and common species, which would benefit and focus conservation activities on the corridor where the most benefit can be gained.

Open space needs in Tulare County, TC Blueprint

The regional San Joaquin Valley Blueprint sets a vision for the eight county San Joaquin Valley region and establishes goals and policy objectives relative to open space in Tulare County. The vision for Tulare County is: "Protecting scarce and finite resources (from adopted values in the Blueprint)". The goal is to "preserve natural areas, farmland, grazing land and open space and encourage efficient, concentrated use of existing urban infrastructure". Conservation of wildlife corridors will help achieve the vision and goal of the Blueprint process.

Potential partners

For land conservation projects to have the greatest value for mitigation purposes and for public benefit, efforts must focus on local areas to ensure enough habitat remains to sustain local native flora and fauna and regionally to ensure that remaining habitat areas will be connected via corridors. There will be a need to work with a variety of partners to ensure the maximum local and regional benefit. Some of the potential partners include:

(1) California Department of Fish and Game - The California Department of Fish and Game (DFG) can be a partner by providing support for conservation activities along corridors and in areas that are valuable for wildlife. They currently own and manage land in the Allensworth, Porterville, Lake Success, Blue Ridge and Yettem areas of Tulare County, all areas within or near studied corridors. The DFG utilizes Conceptual Area Protection Plans to focus financial resources on specific areas for the benefit of wildlife. The Wildlife Conservation Board (WCB) is the DFG's land protection and restoration funding arm. The WCB has already funded important conservation efforts in Tulare County, such as grassland and riparian restoration and management on the Sequoia Riverlands Trust's James K. Herbert Wetland Prairie Preserve.

(2) US Fish & Wildlife Service - The US Fish and Wildlife Service (USFWS) is a landowner in several of the watersheds. The USFWS may be an important partner not only in establishing mitigation banks, but also for technical expertise, and for financial partnerships with landowners through the Partners for Fish and Wildlife program. In some cases, they may also manage mitigation banks after all the mitigation credits have been sold.

(3) Large landowners - Large landowners are vital to the health and conservation of not only corridors in Tulare County, but entire watersheds. It will be important to partner

with large landowners for recreation access, and conjunctive use projects. Irrigation districts are large or important landowners along many of the corridors. These and other landowners might support integrated regional planning and partner for easements, preserves, recreation areas or restoration opportunities.

(4) Wildlands, Inc. - Wildlands, Inc. provided TCAG with information about mitigation banking and feasibility in another study (Wildlands Inc. 2004). Wildlands Inc. is a potential partner in private sector mitigation banking and is active in establishing mitigation banks in Tulare County. Wildlands Inc.'s lands are also important areas for wildlife along corridors in Tulare County.

(5) Sequoia Riverlands Trust - Sequoia Riverlands Trust is a major landowner along several of the corridors. SRT also undertakes and executes restoration projects, owns conservation land, holds conservation easements and allows recreation and educational access to local preserves.

(6) Westervelt Ecological Services - Westervelt Ecological Services (WES) provided information about mitigation banking during Tulare County Association of Government's Environmental Advisory Committee meetings during 2007. WES is an potential partner in private sector mitigation banking and is active in establishing mitigation banks in Tulare County.

(7) Center for Natural Lands Management (CNLM) - The Center for Natural Lands Management is also an active conservation land manager in Tulare County and could be a partner in establishing and managing mitigation banks.

(8) Recreation interests (such as Porterville's Tule River Parkway and Visalia's Waterway Advisory Committee and Environmental Committee) - Recreation interests may be an important group of partners, especially to generate a vision of and garner public support in the communities for particular corridor projects in the County.

Measure R impacts and mitigation needs

Measure R Projects

There are a number of projects proposed for Measure R transportation improvements including road widening, intersection widening and traffic light installation. Many projects may require mitigation under the federal Endangered Species Act (FESA), California Endangered Species Act (CESA), or the California Environmental Quality Act (CEQA).

(1) The Highway 65 transportation corridor improvement project will impact Kit Fox foraging habitat and potentially impact den sites. Mitigation will be needed to compensate for these impacts, although the total acreage may be small.

(2) The Road 80 widening and improvement project will impact, at a minimum: Kit Fox foraging habitat, vernal pool-wetlands, both Vernal Pool Tadpole Shrimp and Vernal Pool Fairy Shrimp, riparian habitat, Tricolored Blackbird, and annual *Atriplex* species.

(3) Dinuba and Ave 416 projects are likely to have little effect, further study is needed.

(4) The Kings River bridge project is likely to have impacts on riparian habitat and Swainson's Hawk, though other species may be affected. Further study is needed.

(5) The Visalia area projects may affect Kit Fox foraging habitat, VELB habitat, and riparian habitat along the existing stream channels.

(6) Tulare area projects may affect Kit Fox habitat.

(7) The Exeter-Visalia Road, Road 204 projects will impact Outside Creek crossings and thus riparian habitat, Valley Elderberry Longhorn Beetle, Swainson's Hawk, and Kit Fox foraging habitat with potential den sites. Further study is needed.

Regional planning

The lands within the Tulare County corridors are critical for the implementation of several existing management plans, habitat conservation plans, and recovery plans. There are a number of existing conservation plans that supplement the current study.

US Fish & Wildlife Service Upland Species Recovery Plan - The USFWS Upland Species Recovery Plan (USFWS 1998) calls for the following recovery tasks:

(1) Preserve Pixley NWR/Allensworth Natural Area (NA) Core Area (Priority 1). This assemblage of private and public lands includes the best and only large remnants (in addition to the dune community on the Sand Ridge) of Relictual Interior Dune Grassland, variations of Chenopod Scrub, and *Isocoma* Shrubland in the Tulare Basin. Acquire title or easements for appropriate parcels from willing sellers; restore habitat for Tipton Kangaroo Rat.

(2) Create and maintain linkage between Kern NWR, Pixley-Allensworth NA, and Semitropic Ridge NA using acquisition of marginal farmlands and restoration of natural habitat, easements, and other methods (Priority 2). (When implemented, the SR-TLCP will meet this recovery goal).

(3) Create and maintain linkage between private farmland located between Creighton Ranch and Pixley-Allensworth Natural Area using acquisition of marginal farmlands and restoration of natural habitat, easements, and other methods (Priority 3).

Pacific Gas & Electric Habitat Conservation Plan – The PG&E HCP identifies impacts to a variety of special status species and prescribes measures to mitigate impacts. It is a model of pre-mitigation and the utilization of biological data for multi-species benefit (PG&E 2006).

Wildlands, Inc. Study – The Wildlands Inc. mitigation feasibility study projects impacts to special status species as a result of urban expansion. It recommends establishing mitigation bank for all the sensitive species that will be affected by expansion. It recommends species-specific service areas and planning to pre-mitigate impacts to sensitive species (Wildlands, Inc. 2004). This is an important document and should be referred to when considering the impacts of urban expansion.

Kaweah Delta Water Conservation District (KDWCD) Habitat Conservation Plan (HCP) – KDWCD is pursuing a programmatic HCP which is designed to address impacts to habitat and 53 special status species due to routine operations and maintenance (O&M) on a 20-year horizon. The biological work for this HCP process is still underway and is designed to address impacts along 200 miles of riparian corridors and at groundwater recharge basins within their 335,000–acre district.

Sand Ridge – Tulare Lake Conservation Plan - This plan develops a conservation and management strategy for southwestern Tulare County. Some of the goals of the plan include:

(1) Management of the Ton Tache Lake Basin. This area is located between BLM's Atwell Island Project and Allensworth SHP and presents an opportunity for effective collaboration between State Parks and BLM. This historic wetland was described historically as a vast tule marsh but is now fallow farmland. The southern and eastern edges of the Ton Tache Basin still have important Endangered Species habitat and archeological sites.

(2) Complete the Allensworth ER and Pixley NWR and restore corridors between them. There is still high quality unprotected habitat in the vicinity of these areas. Protection of these native unprotected lands is of highest priority. Restoration of disturbed lands to form corridors between these reserves is also needed.

(3) Protect the remaining native habitats within the SR-TLPA between Pixley NWR and Creighton Ranch. Restore lands needed to connect what are now isolated native habitat areas. Lands already protected in this corridor are managed by DFG, CNLM, BLM, Sequoia Riverlands Trust, and other government agencies.

(4) Protect the remaining private wetlands in the SR-TLPA. Private wetlands in the SR-TLPA need to be maintained. The wetland easements that will be part of the Kern NWR Tulare Basin Wildlife Management Area expansion plan will go a long way toward meeting this objective. In addition, management agreements need to be worked out with water districts to manage wetlands in perpetuity.

(5) Establish additional private wetlands in the SR-TLPA. NRCS's Wetland Reserve Program can be used to purchase wetland easements and restore wetlands if a source of water can be found. Management agreements need to be worked out with water management agencies (Alpaugh Irrigation District, Angiola Water District, Semitropic Water Storage District, and others) to manage these wetlands in perpetuity.

(6) Establish farming easements that will maintain farming areas that serve as foraging habitat for waterfowl, Sandhill Cranes, Swainson's Hawks, Mountain Plovers, Tricolored Blackbirds, and other wildlife. These easements will maintain farmland in wildlife friendly crops such as small grains, safflower, alfalfa, or pasture. They will be located near areas that are managed for wetlands such as Pixley NWR.

San Joaquin Valley Blueprint - The regional San Joaquin Valley Blueprint sets a vision for the eight county San Joaquin Valley region and establishes goals and policy objectives relative to open space in Tulare County. The vision for Tulare County is: "Protecting scarce and finite resources (from adopted values in the Blueprint)". The goal is to "preserve natural areas, farmland, grazing land and open space and encourage efficient, concentrated use of existing urban infrastructure.

Blueprint Policy Objectives include:

(1) Preserve and maintain natural systems (including natural processes), biological communities and species native to the region;

(2) Encourage the use of agricultural lands as natural areas and promote wildlife-friendly farming practices;

(3) Promote fire management techniques that conserve biological resources, reduce hazards to humans and their property and enhance wildlife habitat;

(4) Expand the resource base for Tulare county's Mitigation/Conservation Banking Program;

(5) Utilize storm water retention ponds for multiple uses including wildlife and for either passive or active recreation; designate some areas as accessible to the public;

(6) Using a variety of land protection tools, develop linear parks and biking/walking trails;

(7) Establish an interconnected network of open space and natural areas, such as greenways, wetlands, parks, forest preserves and native plant vegetation that naturally manages storm water, reduces flooding risk, and improves air and water quality; and

(8) Develop tertiary treatment wetlands for wildlife.

Bike Path Plan - The Tulare County Bike Plan (TCAG 2007) recommends establishing a network of bike paths to facilitate alternative modes of transportation, transportation efficiency, and physical fitness of the public, among other things. Bike paths are planned for the following corridors: (1) the Kaweah Delta, (2) Deer Creek, (3) Yokohl Valley, and (4) Tule River.

Literature Cited

Kunkel, G. 2006. Tulare County Annual Crop and Livestock Report. Tulare County Agricultural Commissioner/Sealer. 4437 S. Laspina St. Ste A, Tulare California 93274.

Pacific Gas and Electric. 2006. Draft Pacific Gas and Electric Operation and Maintenance Habitat Conservation Plan. Available at: http://www.pge-oandm-hcp.net/

Tulare Basin Wildlife Partners. 2006. Tulare Lake – Sand Ridge Conservation Plan. Unpublished report produced for the United States Department of the Interior, Bureau of Reclamation.

Tulare Basin Wildlife Partners. 2007. Mitigation Recommendations. Unpublished report produced for the Tulare County Environmental Advisory Committee and the Tulare County Association of Governments.

Tulare County Association of Governments. 2007. San Joaquin Valley Blueprint Process.

Tulare County Association of Governments. 2007. Bike Path Plan. Unpublished Document.

US Fish and Wildlife Service.1998. Recovery Plan for Upland Species in the San Joaquin Valley.

Wildlands Incorporated. 2004. Tulare County Mitigation and Conservation Bank Feasibility Study. Unpublished report produced for the Tulare County Association of Governments.

Appendices

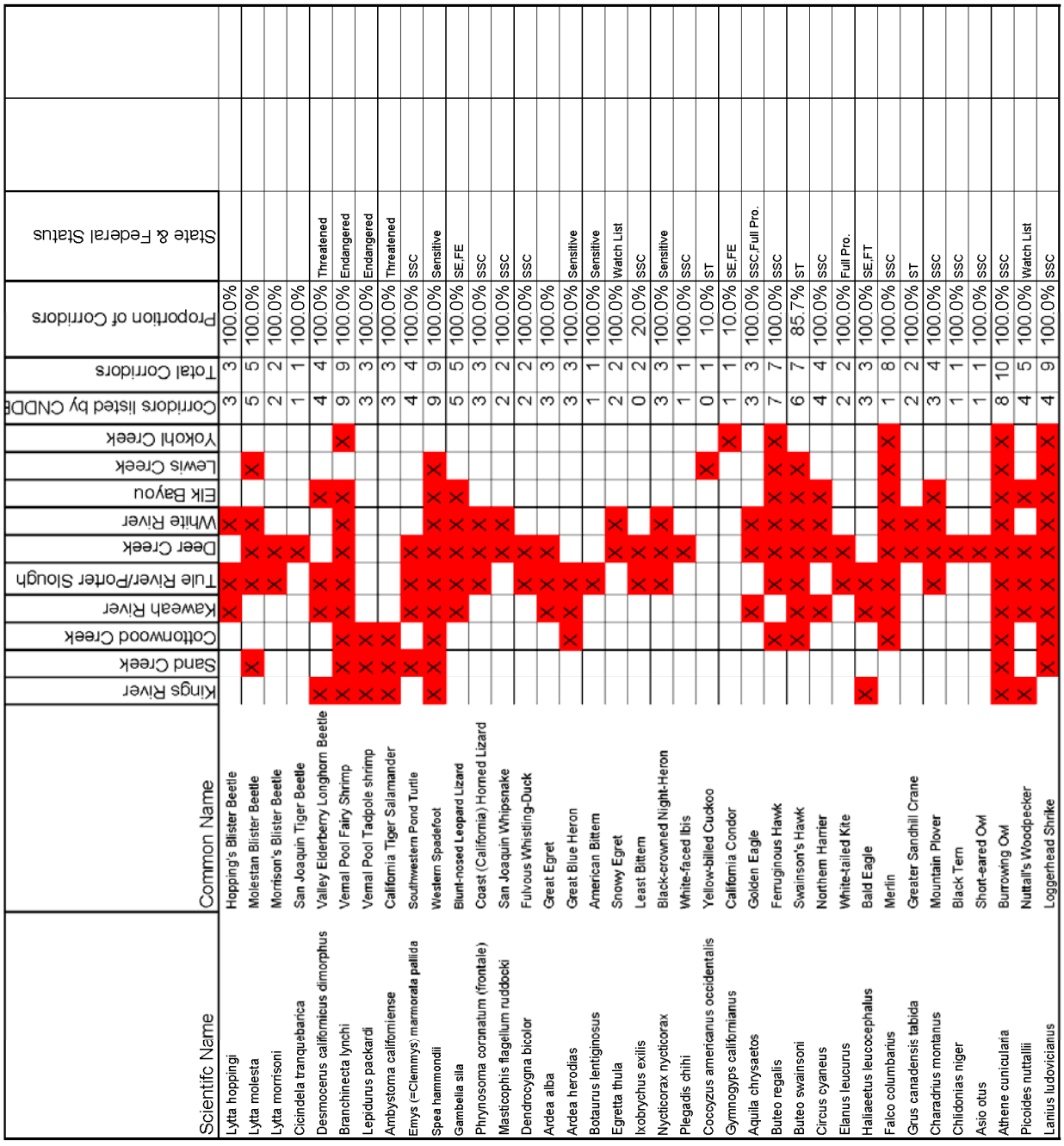
Appendix 1. Riparian and Wildlife Corridor Rankings. Scale: 0 (low value) to 3 (high value).

Criteria	Lewis Creek	Tule River: Success Dam to Elk Bayou, includes Porter Slough	Deer Creek	White River	Kings River	Sand Creek	Elk Bayou	Cottonwood	Kaweah
Extent of urban development	2 (some impact, but generally good condition)	1 (very compro-mised)	3	3 (though it flows just south of Earlimart)	2 (some impact, but generally good condition)	3	2 (impacts from dairies, etc)	3	2
Channel hydrology & morphology; flood risk	2 (no dam, but has aggregate mining sites and channelizing)	1 (pretty highly modified, dammed)	2 (no dam, narrower than ideally at lower end)	1 (no dam, but highly modified)	2 (dam, good overall morphology)	2 (rudimentary impoundment in foothills)	2	2	2
Condition of adjacent uplands	1	1	3 (Pixley NWR, Allensworth State Park)	2 (good, in places)	2 (mostly farmed)	3 (some concerns about grazing impacts)	1 (mostly farmed)	3 (big corridor)	2
Riparian habitat quality & continuity	3 (best quality riparian habitat in County)	1 (fragments)	3	1 (only where it emerges from the foothills)	3 (good quality)	1 (mostly non-existent)	3 (wood-land)	1	2
Presence/ possibility of special status species	2 (Yellow-billed Cuckoo, VELB)	2 (SW Pond Turtle, Calico Monkeyflower, Swainson's hawk)	3 (Swainson's Hawk, Tipton Kangaroo Rat, San Joaquin Kit Fox, Blunt-nosed Leopard Lizard)	3 (San Joaquin Kit Fox, Blunt-nosed Leopard Lizard, Tipton Kangaroo Rat)	2	2 (vernal pool species)	1	3	2

Criteria	Lewis Creek	Tule River: Success Dam to Elk Bayou, includes Porter Slough	Deer Creek	White River	Kings River	Sand Creek	Elk Bayou	Cottonwood	Kaweah
Opportunities for conjunctive use	2	2 (urban Tule River Parkway, Woodville)	2 (groundwater somewhat over-drafted at lower end; some recreation with lots of potential)	1	2	2	3	3	3
Importance to Basin wetlands	1 (undammed, brings some water)	2	3 (due to its beneficial effects)	2	3	1	3	2	3
Community, social & agency considerations	1	2	3 (State Parks, BLM, NW Refuge, CA DF&G)	2 (issues about where it goes, what's done to water)	3	3 (flooding)	3	3	3
TOTAL	14	12	22	15	19	17	18	20	19

Appendix 2. Tulare County Corridor Map with Special Status Species and Measure R Projects.

Appendix 3. Sensitive Species Data for each Corridor in the Tulare County planning area from California Natural Diversity Data Base Rarefind with additional species documented by TBWP.



Scientific Name	Common Name	Kings River	Sand Creek	Cottonwood Creek	Kaweah River	Tule River/Porter Slough	Deer Creek	White River	Elk Bayou	Lewis Creek	Yokohl Creek	Corridors listed by CNDDB	Total Corridors	Proportion of Corridors	State & Federal Status			
												3	3	100.0%				
Lytta hoppingi	Hopping's Blister Beetle				X	X		X										
Lytta molesta	Molestan Blister Beetle		X			X	X	X		X		5	5	100.0%				
Lytta morrisoni	Morrison's Blister Beetle					X	X					2	2	100.0%				
Cicindela tranquebarica	San Joaquin Tiger Beetle						X					1	1	100.0%				
Desmocerus californicus dimorphus	Valley Elderberry Longhorn Beetle	X			X	X			X			4	4	100.0%	Threatened			
Branchinecta lynchi	Vernal Pool Fairy Shrimp	X	X	X	X	X	X				X	9	9	100.0%	Endangered			
Lepidurus packardi	Vernal Pool Tadpole shrimp	X	X	X			X					3	3	100.0%	Endangered			
Ambystoma californiense	California Tiger Salamander	X	X	X								3	3	100.0%	Threatened			
Emys (=Clemmys) marmorata pallida	Southwestern Pond Turtle		X		X	X	X					4	4	100.0%	SSC			
Spea hammondii	Western Spadefoot	X	X	X	X	X	X	X	X	X		9	9	100.0%	Sensitive			
Gambelia sila	Blunt-nosed Leopard Lizard				X	X	X	X	X			5	5	100.0%	SE,FE			
Phrynosoma coronatum (frontale)	Coast (California) Horned Lizard					X	X	X				3	3	100.0%	SSC			
Masticophis flagellum ruddocki	San Joaquin Whipsnake						X	X				2	2	100.0%	SSC			
Dendrocygna bicolor	Fulvous Whistling-Duck					X	X					2	2	100.0%	SSC			
Ardea alba	Great Egret				X	X	X					3	3	100.0%				
Ardea herodias	Great Blue Heron			X	X	X						3	3	100.0%	Sensitive			
Botaurus lentiginosus	American Bittern					X						1	1	100.0%	Sensitive			
Egretta thula	Snowy Egret						X	X				2	2	100.0%	Watch List			
Ixobrychus exilis	Least Bittern					X	X					0	2	20.0%	SSC			
Nycticorax nycticorax	Black-crowned Night-Heron					X	X	X				3	3	100.0%	Sensitive			
Plegadis chihi	White-faced Ibis						X					1	1	100.0%	SSC			
Coccyzus americanus occidentalis	Yellow-billed Cuckoo									X		0	1	10.0%	ST			
Gymnogyps californianus	California Condor										X	1	1	10.0%	SE,FE			
Aquila chrysaetos	Golden Eagle				X		X	X				3	3	100.0%	SSC,Full Pro.			
Buteo regalis	Ferruginous Hawk			X		X	X	X	X	X	X	7	7	100.0%	SSC			
Buteo swainsoni	Swainson's Hawk			X	X	X	X	X	X	X		6	7	85.7%	ST			
Circus cyaneus	Northern Harrier				X		X	X	X			4	4	100.0%	SSC			
Elanus leucurus	White-tailed Kite					X	X	X				2	2	100.0%	Full Pro.			
Haliaeetus leucocephalus	Bald Eagle				X	X						3	3	100.0%	SE,FT			
Falco columbarius	Merlin			X	X	X	X	X	X	X	X	1	8	100.0%	SSC			
Grus canadensis tabida	Greater Sandhill Crane						X	X				2	2	100.0%	ST			
Charadrius montanus	Mountain Plover					X	X	X	X			3	4	100.0%	SSC			
Chlidonias niger	Black Tern						X					1	1	100.0%	SSC			
Asio otus	Short-eared Owl						X					1	1	100.0%	SSC			
Athene cunicularia	Burrowing Owl	X	X	X	X	X	X	X	X	X	X	8	10	100.0%	SSC			
Picoides nuttallii	Nuttall's Woodpecker	X			X	X	X		X			4	5	100.0%	Watch List			
Lanius ludovicianus	Loggerhead Shrike		X	X	X	X	X	X	X	X	X	4	9	100.0%	SSC			

Scientifc Name	Common Name	Kings River	Sand Creek	Cottonwood Creek	Kaweah River	Tule River/Porter Slough	Deer Creek	White River	Elk Bayou	Lewis Creek	Yokohl Creek	Corridors listed by CNDDB	Total Corridors	Proportion of Corridors	State & Federal Status			
Eremophila alpestris actia	California Horned Lark		X	X	X	X	X	X	X	X	X	6	9	100.0%	SSC			
Dendroica petechia brewsteri	Yellow Warbler	X										0	1	100.0%	SSC			
Icteria virens	Yellow-breasted Chat				X							1	1	100.0%	SSC			
Agelaius tricolor	Tricolored Blackbird			X	X	X	X		X			5	5	100.0%	SSC			
Xanthocephalus xanthocephalus	Yellow-headed Blackbird				X		X	X				3	3	100.0%	SSC			
Sorex ornatus relictus	Buena Vista Lake Shrew						X					1	1	100.0%	FE			
Ammospermophilus nelsoni	San Joaquin Antelope Squirrel							X				1	1	100.0%	ST			
Dipodomys nitratoides nitratoides	Tipton Kangaroo Rat				X	X	X	X	X			5	5	100.0%	SE,FE			
Perognathus inornatus inornatus	San Joaquin Pocket Mouse						X	X				2	2	100.0%	BLM-Sen.			
Onychomys torridus tularensis	Tulare Grasshopper Mouse						X					1	1	100.0%	SSC			
Vulpes macrotis mutica	San Joaquin Kit Fox	X	X	X	X	X	X	X	X	X		9	9	100.0%	ST,FE			
Taxidea taxus	American Badger				X	X	X	X	X			5	5	100.0%	SSC			
Atriplex cordulata	Heartscale			X			X	X				3	3	100.0%	CNPS 1B			
Atriplex depressa	Brittlescale							X				1	1	100.0%	CNPS 1B			
Atriplex erecticaulis	Earlimart Orache			X			X	X				3	3	100.0%	CNPS 1B			
Atriplex persistens	Vernal Pool Smallscale			X			X	X				3	3	100.0%	CNPS 1B			
Atriplex subtilis	Subtle Orache			X	X	X	X	X				5	5	100.0%	CNPS 1B			
Atriplex vallicola	Lost Hills Crownscale							X				1	1	100.0%	CNPS 1B			
Atriplex minuscula	Lesser Saltscale			X		X	X	X				4	4	100.0%	CNPS 1B			
Orcuttia inaequalis	San Joaquin Valley Orcutt Grass			X								1	1	100.0%	Threatened	Endangered	1B.1	
Tuctoria greenei	Greene's Tuctoria			X								1	1	100.0%	Endangered	Rare	1B.1	
Chamaesyce hooveri	Hoover's Spurge			X								1	1	100.0%	CNPS 1B			
Calochortus striatus	Alkali Mariposa Lily							X				1	1	100.0%	CNPS 1B			
Caulanthus californicus	California Jewel-flower				X		X	X	X			4	4	100.0%	SE,FE			
Eryngium spinosepalum	Spiny-sepaled Button-celery		X	X	X		X				X	4	4	100.0%	CNPS 1B			
Delphinium recurvatum	Recurved Larkspur			X	X	X	X	X		X	X	7	7	100.0%	CNPS 1B			
Lasthenia ferrisiae	Alkali Goldfields						X	X				2	2	100.0%	CNPS 4			
Lasthenia glabrata ssp. coulteri	Coulter's Goldfields						X					1	1	100.0%				
Monolopia congdonii	San Joaquin Woolythreads						X					1	1	100.0%	FE			
	Total by Corridor	**10**	**11**	**23**	**27**	**32**	**47**	**36**	**18**	**11**	**9**							
	Total Number of Sensitive Species: 66																	