

Planning For A Cache Creek River Parkway And Trail System

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Planning a Cache Creek River Parkway and Trail System

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Abstract

The site of this study is the lower stretch of Cache Creek, located in Yolo County California. The creek flows into the Sacramento Valley from its headwaters in the Coast Range. 'Lower Cache Creek' is defined roughly as the creek and its surrounding riparian habitat from the town of Capay to the city of Woodland. The creek provides several natural resources, including aggregates mined in gravel pits, surface water diverted for agricultural irrigation, riparian forests, and recreational use through a system of trails.

Recreational use through a system of trails is under utilized. Currently the majority of the creek is inaccessible to the public. Most of the land surrounding the creek is privately owned and public access is unavailable.

The goal of this study is to show the benefits of a Cache Creek trail system and to illustrate how to link county lands together with a trail system to allow for the development of a river parkway.

In agreements with the county, mining companies will restore and dedicate previously mined areas to publicly owned lands over the next 20 years. This paper lays out the vision and plan for linking the sites through a trail system.

Dedication

This project is dedicated to Kathleen H. Arruda, who always valued education and growth, wanted the best for me, and enjoyed a good walk in the outdoors.



Acknowledgments

I want to thank Kelly who supported me as I passed through the challenges that returning to school can bring. The hours that I spent studying can now be the hours that we spend together . I would like to thank my parents and family for being a force that will always be there to help no matter what happens.

My fellow students who pushed me to do better, and helped me make the transition from typewriter to computer. They were always raising the bar and never settled for mediocre.

Special thanks to Eric Larsen, who helped show me the possibilities of combining landscape design with river restoration, which are two of my main interests in school and in life.

-June 2009



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Preface

Through this project I am creating a vision of the potential that Cache Creek has not just a park system, but also as a source of cultural heritage with a rich history and unique ecosystem. I believe a natural system needs to be understood by the general public as part of the process of creating a nature preserve or park system.

In order to understand the natural system the general public needs to develop an 'ecological conscience'. The development of an 'ecological conscience' is gained through knowledge and understanding of a bigger picture. An ecological conscience helps us determine whether or not it is okay to leave an empty bottle by the stream side, throw a fast food wrapper out the car window, or water our lawns for so long that a small stream forms in front of our house. A more developed ecological conscious will help us decide the difference between using natural riparian forests and wetlands for flood control compared to using concrete and man made levees for flood control.

This paper focuses not only on designing a publicly accessible system of trails and open space along Cache Creek, but also on telling its history, its ecology, the natural resources it provides us, and by pointing out unique features which are not seen elsewhere in California. All these factors together serve the purpose of creating a vision for Cache Creek. My main goal with this paper is to create a desire to "Save Cache Creek".

Why a Trail System on Cache Creek?

A Unique Ecosystem in Our Own Back Yard

In the heart of Yolo County flows Cache Creek. Largely behind the fences of privately owned farms and ranches it is often only glimpsed for a short instant from a car window while crossing a county bridge. But Cache Creek has played a large role in the history of California's Sacramento Valley.

In developing an ecological conscience about Cache Creek we need to know that it is more than just a gravel bed with water flowing down it. We need to know its story. Have other civilizations lived on its banks? How long ago did the first humans begin using its natural resources? How has the creek shaped the way we live today? We need to know the workings of the overall system, where it's water comes from, where it goes, and what the creek's water has the potential to do.

Knowing its history, ecosystems, resident wildlife, flooding cycles, and the natural resources it offers will develop our ecological conscience. A public understanding of this knowledge would create a sense of stewardship and local pride for Cache Creek. By sharing the creek through a system of trails and allowing access by the general public Yolo county will gain a rich resource that will give its people a stronger attachment to the surrounding landscape and sense of place in time and history.



Cache Creek has several features that make it unique from other watersheds in California. It is one of California's few rivers that flow from West to East. With its headwaters in the Mayacamas Mountains Cache Creek does not end in a larger body of water as most rivers do, rather it ends in what is now called the settling basin.

Before modern alterations the settling basin was a seasonal wetland so massive that during the rainy season waterways were interconnected from the headwaters of Cache Creek all the way to San Francisco Bay and the ocean beyond.

Cache Creek also has some of the last remaining riparian forests in the Sacramento Valley. In 1848 it was estimated that there were over 800,000 acres of riparian forest in the Sacramento Valley, today less than 5% of these forests remain (Stevens 1997). Lower Cache Creek has lost much of its original riparian forests but riparian habitat still exists and the creek has the potential for restoration of some of its lost forest. Cache Creek is part of a unique ecosystem that is right in our own back yard.

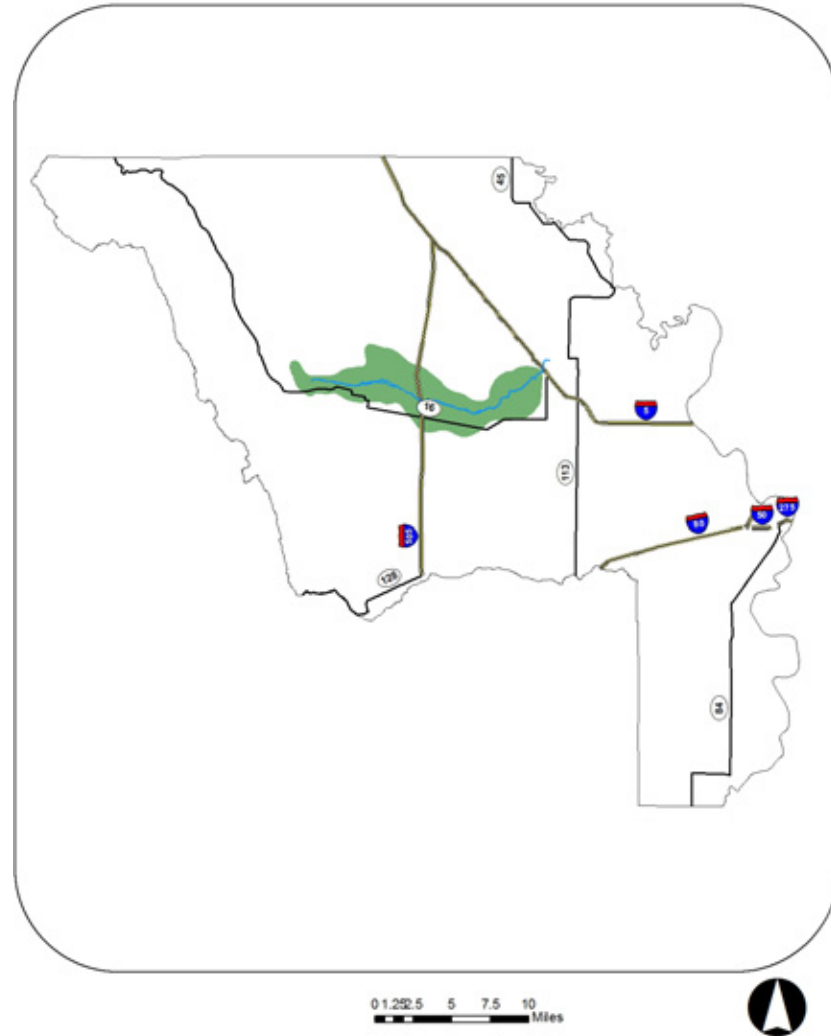


Fig. 1.1 Yolo County with lower Cache Creek in green, lower Cache Creek is an area that stretches from the town of Capay to the city of Woodland,

Human History

A Patwin Village by the Water

The first humans to enter the Sacramento Valley did so over 10,000 years ago. Little is known about these early dwellers of the valley. Our knowledge base starts around 1400 BCE when the ancestors of the Patwin tribe began to leave their archeological record. The name Patwin was given to the local Indians living west of the Sacramento River by an ethnographer in the late 1800s. The name means "the people". Patwin living in the area around Cache Creek were called "yolo-toi", which means "people of the marsh". The Patwin lived in villages on raised ground along waterways, including Cache Creek.



Fig. 1.2 Patwin tule houses



The first European contact with the Cache Creek Patwin was in 1821 by a party led by the Spanish explorer Luis Arguello. He wrote of staying the night in a Patwin village of 900 inhabitants along the banks of Cache Creek (Larkey 1987). Contact with the Europeans greatly changed the Patwin culture and little is known about life before European contact. An account by Isidora Filomena (1784-1874), a Patwin woman alive before Spanish contact, describes the typical style of woman's wear in pre-missionary times.

"The women wore only a collar for the neck, a crown of feathers on the head, a string of beads....wrapped around the body from the breast up as far as the neck. There was a belt of shells around the waist while from the ears hung earrings, made of feathers and beaks of geese and ducks." (Larkey 1987. p13)

The riparian forests along Cache Creek contained valley and blue oaks. These trees were valued as acorns were a staple in the Patwin diet. One mature oak could yield 500 to 1000 pounds of acorns each year. Another staple of the Patwin diet was salmon. The Patwin traveled to the banks of the Sacramento River to fish for salmon during the spring and fall runs. The salmon were dried and ground into a powder for easy transport and storage.

The riparian forests also provided building materials used to make everyday household

items. These plants were sustainably managed in their environment. White root, (*Carex barbabae*) was cultivated in plots of seasonally wet areas. Weeds were removed to encourage long growing rhizomes that were prized for basket making. The rhizomes could be six



Fig. 1.4 Patwin basket

feet long and were pure white and used as a thread in the baskets. Deergress was also a managed crop, areas were burned to encourage new growth and to eliminate weeds. The new growth was then used for weaving baskets. It took over 3,000 stalks to weave one basket! (Sevens 1997).

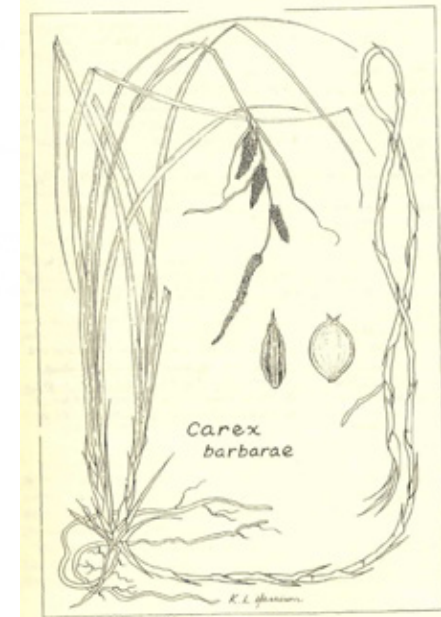


Fig. 1.3 *Carex barbabae*



Fig. 1.5 Patwin basket

Spanish and Mexican Occupation

The next phase in the human history of the Cache Creek area was the arrival of the Spanish. The Patwin Indians along Cache Creek did not have contact with Spanish missionaries until Luis Arguello's expedition of 1821. The Patwin were just far enough north and isolated by the frequent flooding and seasonal wetlands that they avoided contact with early Spanish explorers.



Fig. 1.6 Spanish Mission, 1870

1821 was also the year that Mexico declared its independence from Spain. California became a part of Mexico and the Patwin would soon feel encroachment not only from Mexico, but also from the Americans, Canadians, and Europeans.

During the 1830s the first French Canadian trappers began to trap on Cache Creek. They named



Fig. 1.7 Luis Arguello

the creek "Riviere la Cache" because they had a hiding spot for their traps just east of the present day town of Yolo. Soon the trappers began to encroach on the Patwin's hunting grounds and food sources. But two of the biggest setbacks for the Patwin were a natural malaria outbreak and fighting within their own peoples (Larkey 1987).

In the years of 1832-33 after extensive flooding in the Sacramento Valley a malaria outbreak killed an estimated 75% of the native population. The surviving population moved to the hills to get away from the sickness that filled the valley. As the Cache Creek Patwin began to return to their villages a new hardship would await them. In 1836 Chief Solano, a rival of the Patwin, made an agreement with the Mexican army to join forces and fight against their neighbors along Cache Creek. The remaining population was rounded up and forced to work as agricultural laborers in a territory controlled by Chief Solano (Larkey 1987).



Spanish and Mexican Occupation

In 1843 the first land grants in the area were given out by the Mexican government. The first on Cache Creek was to William Gordon, an American. His Rancho was called "Rancho Rio de Jesus Maria", named for its location on what the Californios called Rio de Jesus Maria, or modern day Cache Creek. These early land grants helped to shape the landscape of Yolo county. Gordon raised stock and hunted game along Cache Creek. He claimed to kill over 50 Grizzly bears in a single year. Gordon was the first to plant grain in the area and on his ranch the first Caucasian girl in Yolo County was born. The large scale ranching of the Mexican land grants would set the tone for agriculture in Yolo County. Gordon's Grant can still be seen on maps today. It is bordered by county roads 94B, 19, 89, and state highway 16.

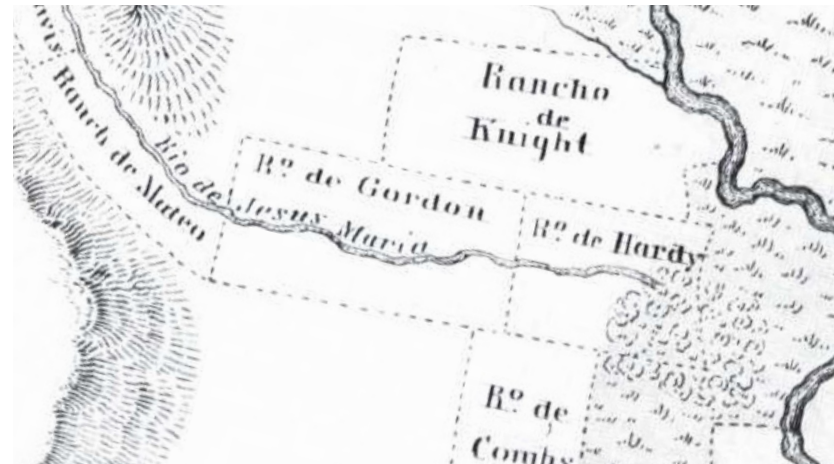


Fig. 1.8 John Bidwell's map of 1844 showing Gordon's Mexican Land Grant on Cache Creek

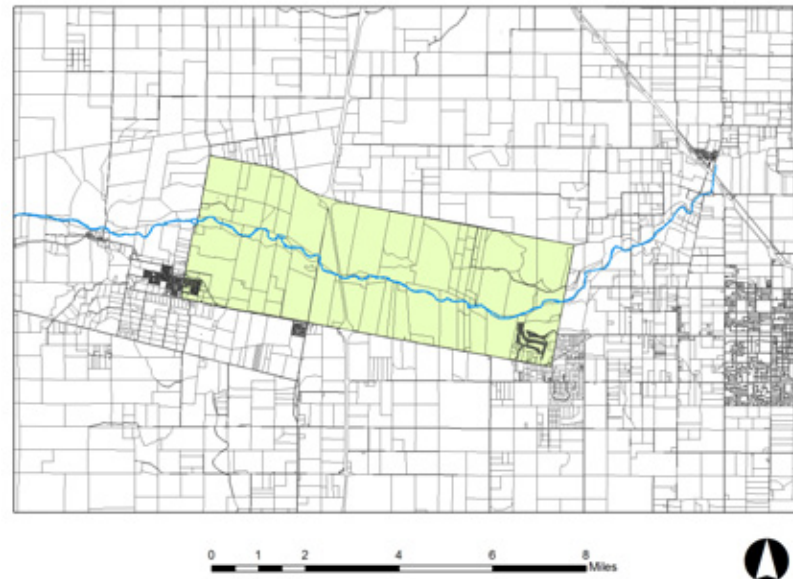


Fig. 1.9 Modern day zoning map shaped by Gordon's Land Grant

The Americans Arrive

In 1848 as a result of the Mexican-American War California became a territory of the United States of America. The Gold rush was to happen this same year, at first depopulating the agricultural workers of the area but soon bringing new settlers and another phase in the growth of the Cache Creek area.

In 1850 California was admitted to the Union as the 31st state. The gold rush was in full swing and squatters were overrunning the Rancho

As the Americans flooded into California there was now a need for food in the form of crops and livestock, and Yolo County was a prime location to supply both the gold rush towns of the Sierras and the growing city of San Francisco.



Fig. 1.10 Family wagon used to come out West in 1852, adapted for farm use in this 1948 photo, Yolo County

During the gold rush agriculture blossomed along Cache Creek. The early focus was on livestock. Free range cattle and pigs were raised throughout the area. Crops had to be fenced in to protect them from roaming bands of pigs. The Western Shore Gazetteer said "the county is overrun by hogs" (Streamway 1995). There was a reason for this; William Gordon reportedly sold hogs for \$1,000 a piece. Hogs were called gold nuggets because they would bring in the same price as a gold nugget. Along Cache Creek the hogs fed off the plentiful acorns from the oaks.



Fig. 1.11 Yolo County Wheat harvest 1870s



The Americans Arrive

In 1856 Moore's Ditch was created to irrigate the land around Cache Creek. It is the earliest water supply development in California specifically for irrigation (Streamway 1995). This opened up 1000 acres to irrigation and shifted dry farmed crops such as wheat to more water intensive crops such as alfalfa. Over 1,100 acres of vineyards were planted and in 1878 the county produced over 200,000 gallons of wine and 4,000 gallons of brandy. During prohibition these vineyards, along with hops and barley, were torn out and replaced with other crops.

It was not until the years after World War II that modern leveling equipment was developed and the landscape was further transformed into its current state of large scale farming.



Fig. 1.12 Capay Saloon, early wine tasting on Highway 16 near Cache Creek

Why is History Important?

Understanding the human changes that have happened along Cache Creek helps us to have a better understanding about what makes the area special. Knowing that a hunter lived along its banks that killed over 50 grizzly bears in a single year helps weave a story about the area that can capture people's imagination. Picturing the Patwin villages nestled amongst the marshes and waterways helps one visualize the changes that have led to a completely different landscape. In 2005 a gravel mining company along the creek uncovered the bones of a mastodon. This takes us back even further in history to when mastodons roamed the gravel beds of the creek. This knowledge helps us to expand our ecological consciousness, the one that tells us whether or not it is okay to litter, or whether or not in the face of industrial progress it is important to preserve natural and historical landscapes.

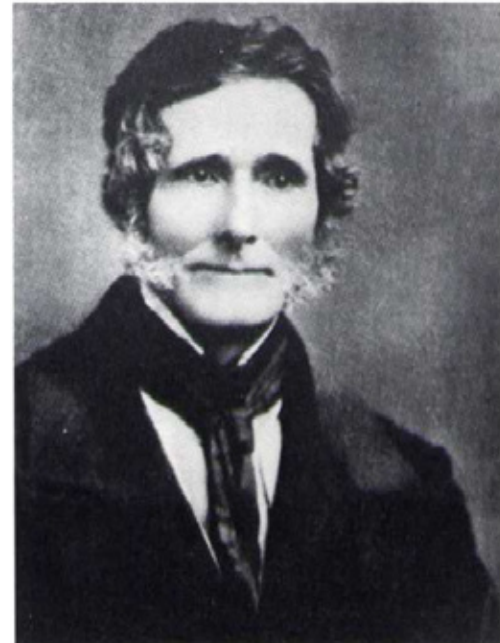


Fig. 1.13 William Gordon



Natural History

With its headwaters at Clear Lake, Cache Creek forms a basin that drains from West to East. Water is drained from the tops of the Mayacamas Mountain range to the modern day settling basin of the Sacramento Valley. This system is unique in several ways. Before the alterations of today the creek flowed into a vast tule marsh. During high water events these tule marshes connected with the Sacramento River and the inland marshes, vernal pools, creeks, and delta became one massive inland sea.

Flooding was a natural part of the system. It helped to create the fertile agricultural lands which are now so valuable to our economy. The cycles of seasonal flooding would replenish nutrients in the surrounding soils and would help to recharge the groundwater. During flood events ocean dwelling fish were able to access small mountain streams because of the interconnecting waterways.

In modern times this system has been greatly altered and flooding with the ecosystem benefits it brings has almost completely disappeared. When the first European settlers began to build homes and cities in the Sacramento Valley the power of the rivers and the natural flooding of the area soon became apparent. The early settlers created miles of levee systems, dammed the streams in the mountains, and drained the tule marshes to make

the landscape usable for large scale agriculture and to make its towns safe from annual flooding. An example of this flooding can be seen in an article in the Western Shore Gazetteer with the account of Joe Buzzy's canoe trip.

"During one of these periodical floods, in March, 1847, Joe Buzzy got into his canoe at the north door of Sutter's Fort and sailed through the tules and up Willow Slough to Gordon's Rancho, on the north side of Cache Creek, meeting no greater obstructions than the strength of the current."
(Streamway 1995)

In modern times the land Joe Buzzy traveled over during his canoe trip is dry 365 days out of the year.

Natural History: Seasonal Flooding

Gordon's Ranch

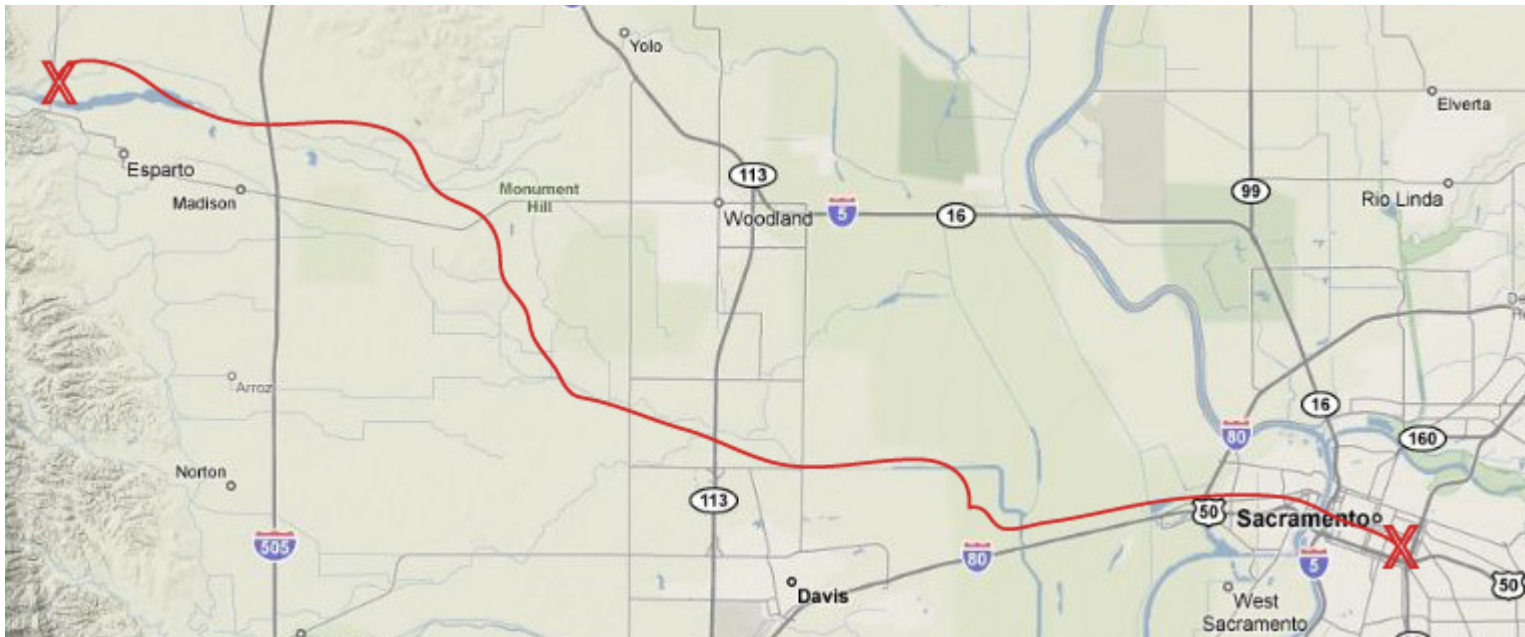


Fig. 1.14 Joe Buzzy's canoe trip

Sutter's Fort



Natural History: Shifting Meander Lines

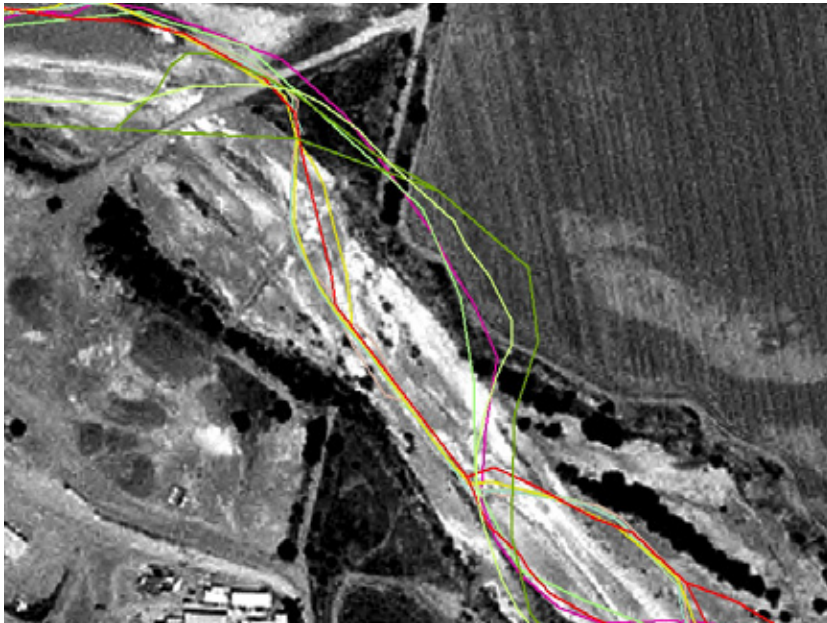


Fig. 1.15 Shifting meander lines between 1997-2005, each colored line represents the creek's main channel for a given year

In its headwaters Cache Creek flows through a rocky gorge where it forms rapids and quickly makes its descent into the Sacramento Valley. Once in the valley the creek slows down as it enters a wide meandering river bed. This part of the creek is rich in gravel, which allows the waters to percolate back into the valley's aquifer. Often the water does not make it the full distance to the settling basin, instead the water is absorbed into the gravel bed. This process is a major source of ground water recharge for Yolo County (Streamway 1995). The County is dependent on ground water for its drinking water supply and the majority of the crops are irrigated with private groundwater wells.

The creek's hydrology is what is known as a "flashy system". As we can see from its past, the creek is prone to flooding. During storm events the water level in the creek can rise extremely fast. It has been known to rise from 500cfs to 50,000cfs in a 24 hour period (Streamway 1995). 50,000 Cubic feet per second (cfs) can be visualized by drawing a transect across the river and imagining 50,000 basketballs (1 basketball=1 cubic foot of water) passing that line every second. This is a rapidly transforming creek!

The result of these flows is the creation of new channels and constant changes in the creek's meander over time. This is a dynamic and exciting system that is undergoing constant change and rebirth.

Natural History: Shifting Meander Lines

The effect of this constantly meandering creek is the creation of riparian forests along its former meander lines. The active channel ranges from 300' to 2,300' (Streamway 1995). Within this channel and adjacent to the channel lie the riparian forests of Cache Creek. The forests are much smaller than in the past because of the encroachment of agricultural lands on the waterway. These remaining forests still provide a valuable ecosystem service. Some of the benefits of the system are creating higher biodiversity, providing refuge for animals that forage in the surrounding agricultural areas, allowing for habitat corridors, and providing surface water for wildlife. The forests once supported herds of elk, antelope and deer.

Current wildlife residents include raccoons, bobcats, coyotes, and mountain lions. In 1990 a black bear was treed by farm workers along the creek. In the water non-native fish dominate the system. Smallmouth and largemouth bass, carp, and native white catfish are game fish in the creek. The riparian habitat is also home to some species of special interest. The swainsons hawk, tricolored blackbirds, and bank swallow are all species that benefit from the riparian habitat of Cache Creek.

Some direct benefits of riparian forests affecting the quality of life for the local population include

recreational uses and low cost flood control for downstream cities. For example, the flood plain of Cache Creek can slow the movement of flood waters and the only cost to maintain this system is to keep the land undeveloped. When the land is not actively helping with flood control it can be used for recreation.



Site Analysis

A Walk Through Cache Creek

As we approach Cache Creek from the uplands we alternate between walking under the cool shade of valley oaks and the warm sun of open grasslands. From the open grasslands we can see views of the Coast Range and if we are lucky on a clear spring day we might glimpse the snow capped sierras across the Sacramento Valley. As we walk closer to the creek we come across ponds surrounded by wetland habitat. These ponds are the remnants of mining operations that have been reclaimed as natural habitat. Here bird watching is a popular activity as these ponds attract species that are not seen in the backyards and parks of our urban areas. As we continue towards the creek we enter into a riparian forest. Here the deciduous trees are tall and the ground cover is dense. The coolness of the shade feels good on a hot day. A narrow path winds through a tule marsh and then back into the shade of cottonwoods and willows; finally opening up to a wide expanse of gravel that is the flood plane of Cache Creek. Walking across this gravel plane we encounter meandering channels making up a braided network which is the creek itself. Here we can stop to relax by the side of the creek and take in the open expanse of this unique river system.

Climate

The climate of Cache Creek is a Mediterranean climate. With most of the rainfall in the winter months the summer months are dry and hot. Day time summer temperatures can rise to over 100 degrees Fahrenheit, while winter temperatures can drop to just below freezing.

- High Temperate ○
- Low Temperate ○
- Precipitation ▮

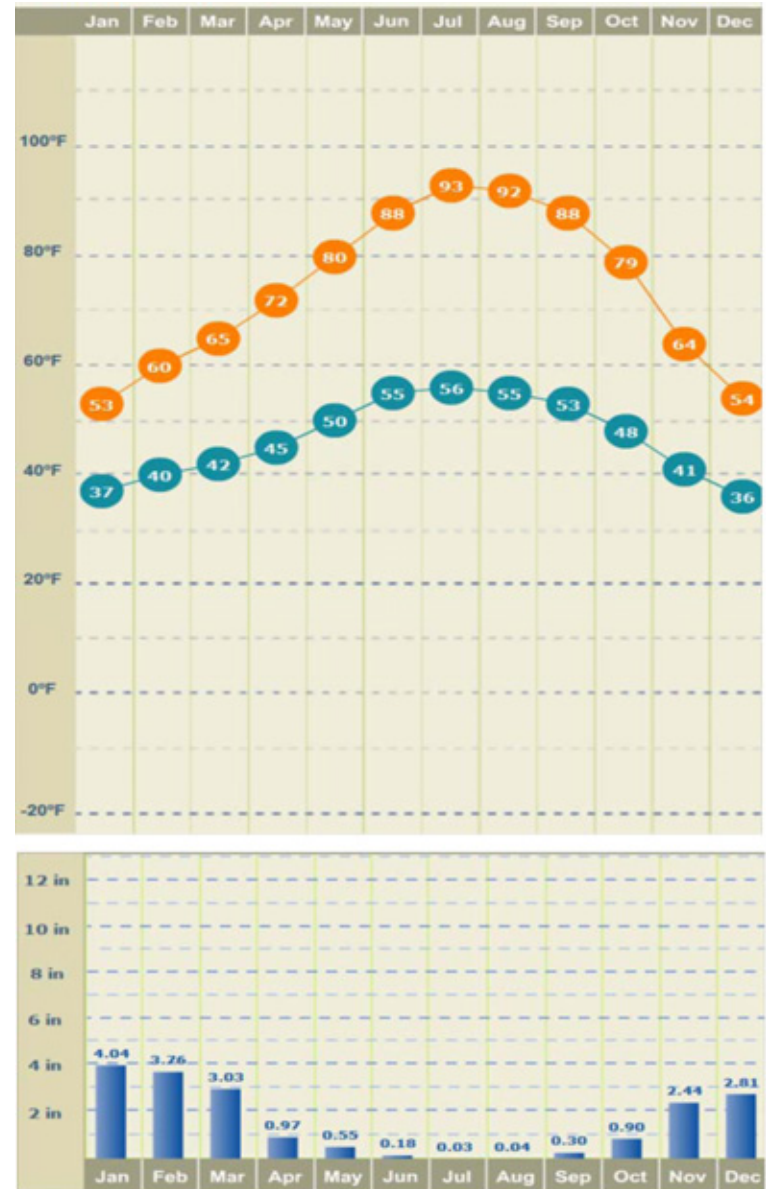


Fig. 2.1 Average monthly highs, lows, and precipitation



Areas of Interest



Fig. 2.2 Lush marshes along the banks of Cache Creek near the Cache Creek Nature Preserve

The lower stretches of Cache Creek offer a diversity of scenery, areas of special interest and unique views. The area around the Cache Creek Nature Preserve offers trails that wind through riparian forests of cottonwoods and oaks. During the summer the water slows and becomes habitat for birds and marshland wildlife.

Areas of Interest: Open Views



Other parts of the creek offer views of wide open expanses of land looking over distant hills and mountains. The Mayacamas Mountains and the Dunnigan Hills can both be seen from natural creek levees near the town of Esparto. In the winter the hills turn from brown to green and the creek can move from a trickle to a roaring river.

Fig. 2.3 A trail through Capay Open Space Park. Capay Open Space is an old mine site that is currently under restoration and the trail you see in the picture will someday be under the shade of a riparian forest.



Areas of Interest: Surrounding Towns

Fig. 2.4 Art along highway 16 in the town of Esparto. Scenic highway 16 runs along Cache Creek and passes through old farming towns such as Esparto, Capay, and Madison. Historic buildings, vineyards, roadside produce stands, artists, and multiuse trails along the creek are all attractions that would help bring people and money to the local economy.



Areas of Interest: Riparian Ecosystems



Fig. 2.5 Flowers along a creek side trail



Fig. 2.6 A blue oak offers shade on a hot summer day. The lands surrounding Cache Creek were once densely populated with blue and valley oaks.



Areas of Interest: Local History

Fig. 2.7 Horse drawn wagon at Cache Creek Nature Preserve



Fig. 2.8 Historic barn at Cache Creek Nature Preserve. The barn is a multi use meeting hall, interpretive center, and park amenity open to the public.

Site Potential

Looking at the lower stretch of Cache Creek we can see two distinct areas beginning to form. The first is the western end of the stretch. This end is closer to the small farming towns of Capay, Esparto, and Madison. Here the creek exits the Capay Valley and offers views of the Coast Range. The

landscape of the creek bed is mainly of gravel with few trees. Wide gravel beds and a meandering Cache Creek characterize this stretch of the creek. There is potential for long term restoration of riparian forests in this area. This would make the area more usable in that trees would provide shelter from the elements.



Fig. 2.9 View from County Road 87, Cache Creek near Esparto is a wide open gravel bed with few shade trees.



Site Potential

The second area of lower Cache Creek that begins to stand out as unique is the Eastern stretch near to the city of Woodland. Here the creek slows to a standstill and begins to form seasonal wetlands in the channel. Riparian forests are already established here and provide shade and habitat for wildlife. There are a series of county owned lands that are concentrated in this area. This concentration of county owned land might offer the opportunity to create a linked trail system. A trail system would link separate county owned parcels of land to create a more dynamic experience for the user. This trail system would also be with in close proximity to Woodland, Highway 5, and Sacramento.



Fig. 2.10 A slough running into Cache Creek near Woodland

Current Use

Gravel Mines

Along the banks of lower Cache Creek we find different uses of the natural resources that the creek provides. The most noticeable of these uses are the gravel mines found throughout the creek. These operations cover hundreds of acres and are regulated by the county. Cache Creek is a good source of construction grade aggregate that can be used to build roads, buildings, and other structures that use concrete. The first signs of gravel extraction in the creek date to 1879 as the railroads were being built. Later we see an increase in aggregate being sent to San Francisco to help rebuild the city after the 1906 earthquake. The first

attempts to regulate mining along the creek were in 1936 (Streamway 1995). But the permit process was only selectively enforced.

In 1996 development agreements were made that moved the gravel mining out of the main channel and set the current regulations that are enforced today. In these agreements with the county each gravel mining company sets out a plan for post mining reclamation. The plans include future land use of mining sites, land ownership, and time lines of when mining operations finish. A significant amount of the mine properties will be restored as natural habitat and turned over to the county to manage and own.

Fig. 2.11 An off channel gravel mine on Cache Creek





Agriculture

Another major land use along the creek is privately owned agriculture. This creates a situation where almost the entire lower stretch of Cache Creek is inaccessible to the public because it is surrounded by private property. Tree and row crops are most commonly planted with farmers often planting crops right to the edge of the creek. This is an area within the natural flood plain, The result being that these crops are often eroded by the meandering of the creek. Throughout the years farmers have tried to protect their banks with everything from concrete rubble to old abandoned cars.



Fig. 2.12 An orchard planted too close to the edge of Cache Creek resulting in erosion of the orchard

Public Use

Public access to Cache Creek is currently through 2 county properties, Capay Open Space and Cache Creek Nature Preserve. Both sites allow hiking through a trail system, bird watching, views across the creek and beyond to the mountains. The sites are accessible by car and are in close proximity to Woodland, a city with a population of over 53,000 people. The sites have parking lots, restrooms, and interpretative signs which help the visitor learn about the specific site they are visiting and also the surrounding area.

Cache Creek Preserve has an interpretive center with examples of plant and animal life that can be found in the area. There are even some bones of a mastodon on display that were dug up at one of the gravel mines along the creek. There are historical structures and farming equipment that help tell a story of the history of farming in the area. One can get a sense of early large scale farming by looking at the "Holt" wheat harvester that was pulled by a team of 20 horses and operated by a crew of men to harvest wheat in the heat of early summer. The harvester is housed in an old barn that gives the visitor a feel for what life was like before the age of motorized equipment and electricity.

Population growth is expected in the area; along with this growth will be increased demand by the public to have access to open space for recreation. SACOG predictions show Sacramento and the surrounding metropolitan area could increase by over 1,000,000 people by the year 2050.

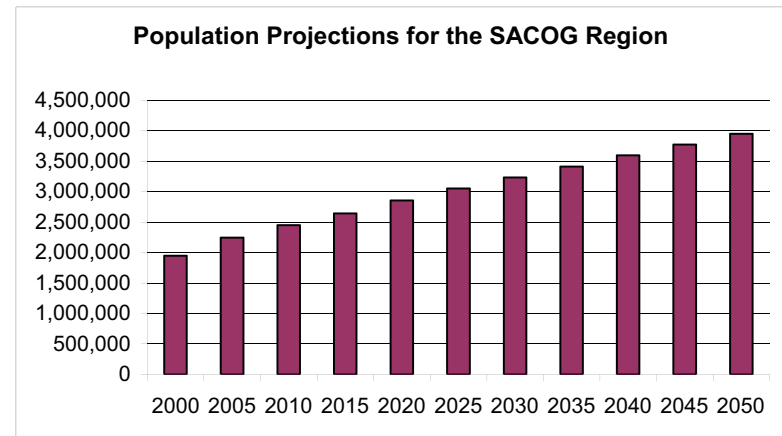


Fig. 2.13 Population is predicted to grow in the metropolitan areas around Cache Creek

This will put pressure on local governments to provide open space for growing urban populations. Open space along water ways is highly desirable because of the activities and diversity in scenery that creeks and rivers offer.



Public Use: General Plan

The Yolo County General Plan, in the Open Space and Recreation Element, under chapter 3, states that as population increases a multiuse trail system should be considered along Cache Creek. The general plan talks about setting up a system of linked county owned sites;

"Sites are located at regular intervals of approximately two miles along Cache Creek, and generally located within the proximity of existing access, in order to function as trailheads or staging areas for a possible future system of bicycle, pedestrian, hiking, and/or equestrian paths. Recreational areas are also sited on lands included for mining, where proposed reclamation is to permanent ponds. This ensures that no additional farmland will be lost, while taking advantage of the amenities associated with the bodies of water to be reclaimed through mining."

-Yolo County General Plan

Problem Use

Some of the uses along the creek are illegal. Off highway vehicles (OHVs) frequently ride up and down the creek bed. They can damage delicate emerging ecosystems and are a concern for private land owners. Private land owners are concerned about trespassing because of a fear of law suits if someone was to get hurt on their land. Illegal hunting is also a concern. Hunters will trespass on private property and hunt pheasants, quail, and other birds. The danger of stray bullets and further liability law suits against land owners is yet another concern for local residents and stakeholders along the creek.

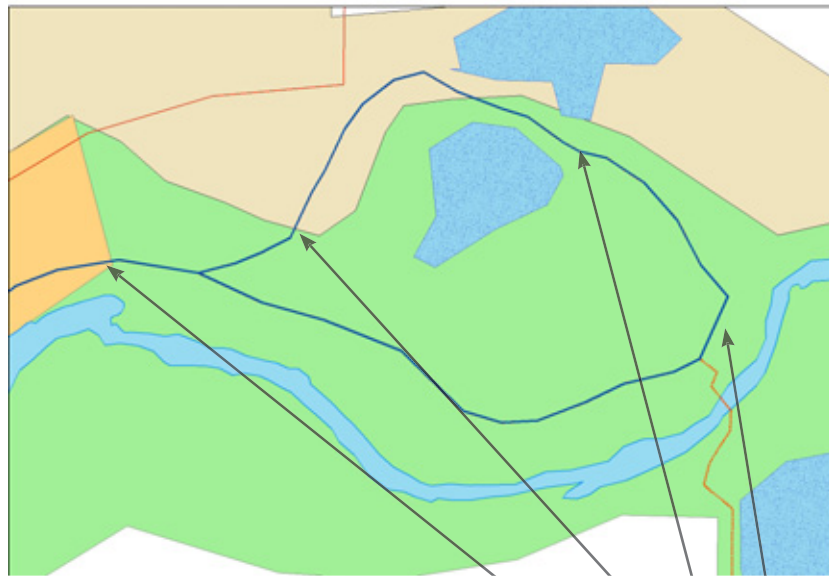


Designing a Linked Trail System

Site Design

River Parkway: A park whose layout is determined by and follows that of a creek or river.

Trail System: A set of interconnected trails that access natural features of interest such as vistas, bodies of water, or other unique features of the landscape.



Trail enters camping area.

Trail Transition between riparian forest and oak upland.

Bird watching along ponds.

Trail side views of Cache Creek.

Designing a trail system on Cache Creek is a long term process that is intertwined with the reclamation of gravel mines and the restoration of Cache Creek itself. Over the last 100 years Cache Creek has been highly altered and the majority of its riparian forests and oak uplands have been destroyed.

With a vision of restoring this ecosystem as public open space to be accessed through a multi use trail system we can begin to plan for the long term. Some of the gravel mines will not be dedicated to the county until the year 2032, but if a vision and a plan are in place we can realize the goal for us and for future generations.

Fig. 3.1 Detail showing trail design considerations

Design Process

Designing a river parkway and trail system on lower Cache Creek is a large scale project that will need to be broken down into manageable tasks. Various factors will have to be considered separately, such as public and private land ownership, accessibility of sites, unique landscape features that can be highlighted in the design, areas of historical significance, and finally, where is the best place to put the trail itself. These considerations can be viewed as layers that build during the design process to create the end result.

The river parkway and trail system is a long term project and at this stage it is more important to create a vision of what could be rather than to solve all the logistical details of a design of this scale.

A site specific design of a portion of the parkway and trail system can be valuable to ground the idea and give it a sense of reality.

In my design of the overall parkway I will show the big picture of a linked system but I will also focus in on a smaller section of trail to give the project a concrete form.

Below are the overall steps in the design process for the trail system.

- Identify public and private land parcels along lower Cache Creek.
- Group parcels into clusters that have the least amount of private land separating the individual parcels.
- Create unique identities for each cluster; focusing on habitat, views, access to water, historical significance, and potential for restoration.
- Out of each clustered group of parcels create a small scale river parkway, averaging 5 to 10 miles in length.
- Use 'Woodland Nature Preserve' as a detailed example of the trail system.

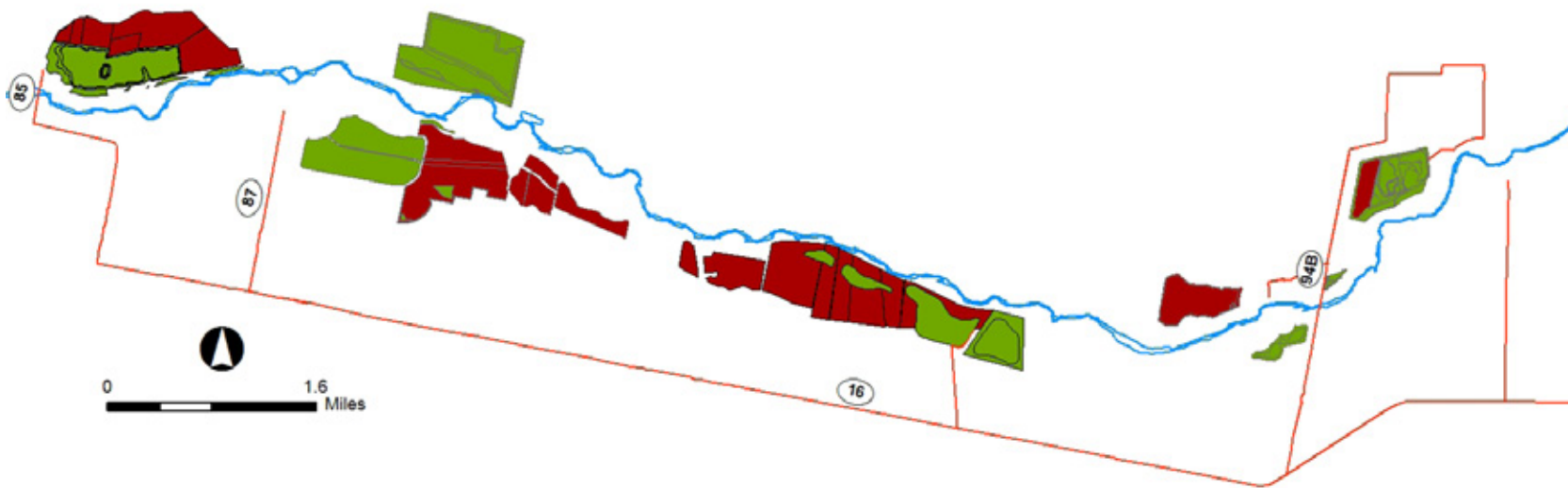


Three Parks

Land Ownership



Fig. 3.2 This map shows active gravel mines and future ownership of reclaimed land, red will be returned to private ownership while green will be returned to public ownership.



Three Parks: Proposed Links

When looking at the patchwork of county owned sites and future sites to be dedicated to the county by the mining companies a pattern of 3 regional parks begins to emerge. The parks would have various levels of amenities and infrastructure. Starting closest to Woodland would be the “Woodland Nature Preserve”, next the “Mid-Creek Nature Preserve” followed by the “Esparto Open Space Park”.

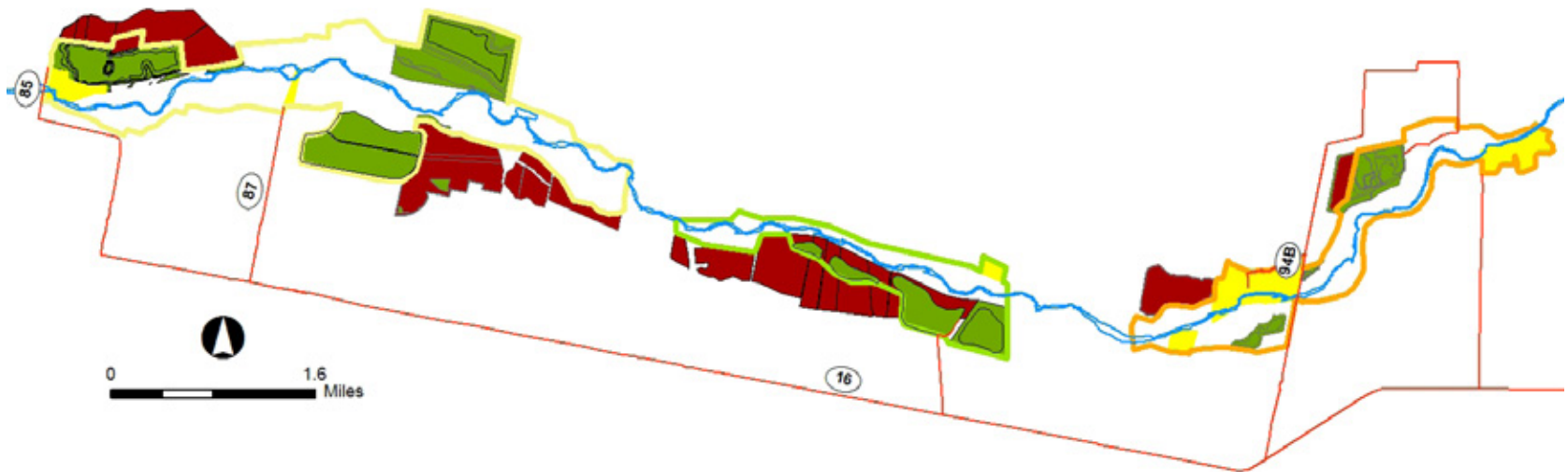


Fig. 3.3 This map shows the potential to link future county lands into a park system.



Esparto Open Space

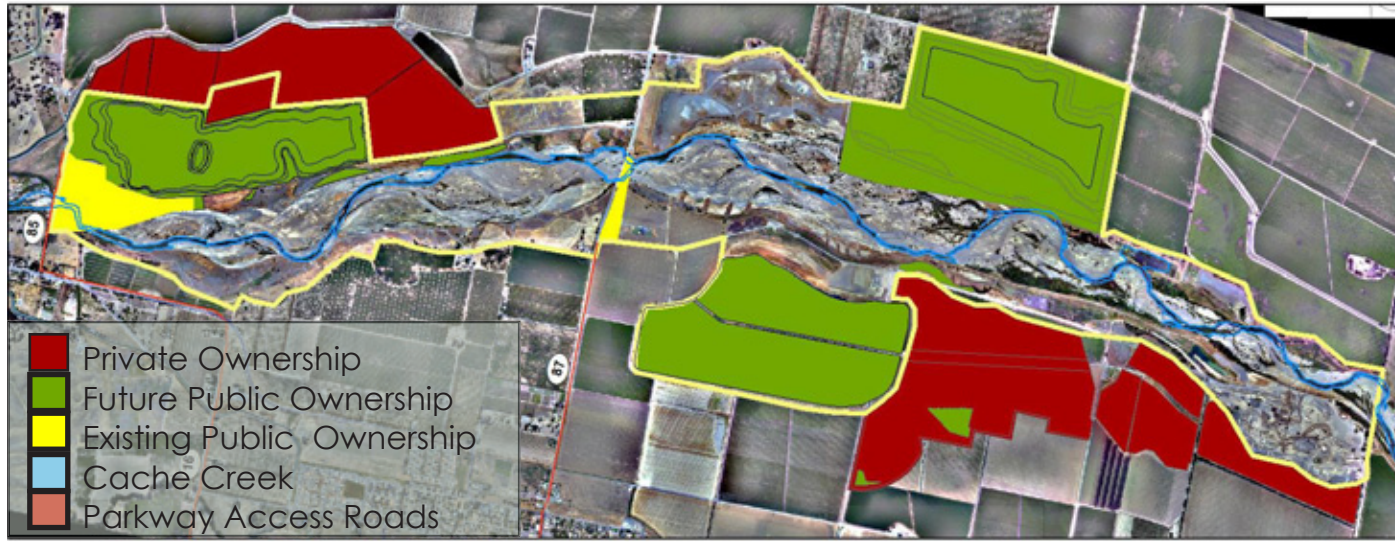


Fig. 3.4 The yellow parcels are county land, green parcels will become county land, and the red private land

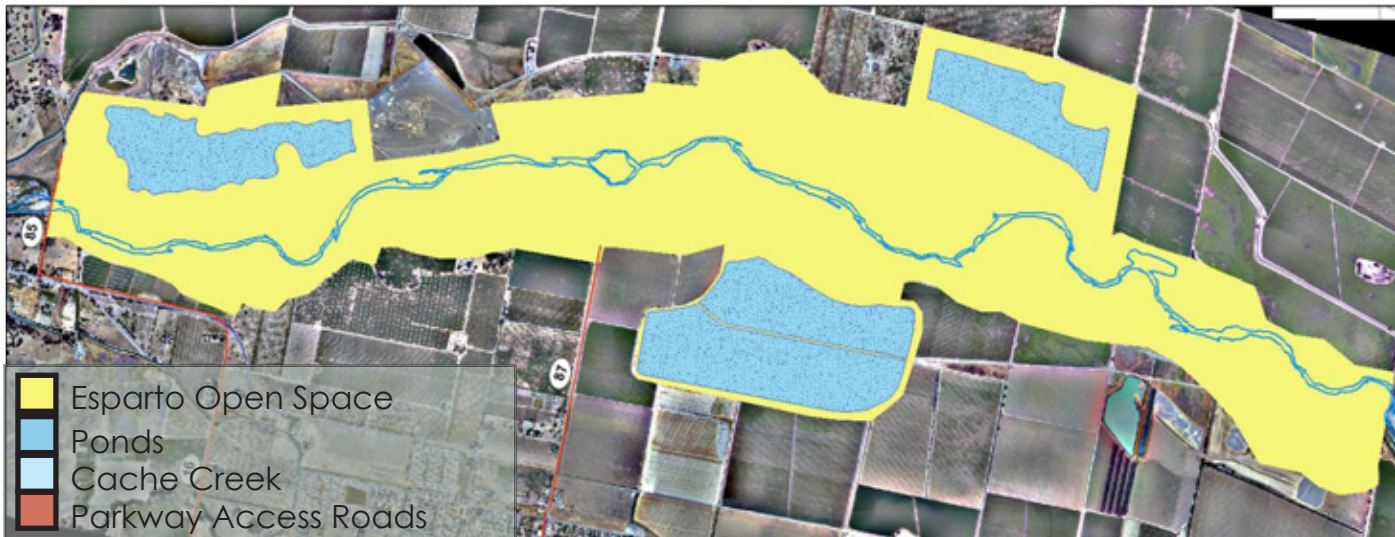


Fig. 3.5 Linking future reclamation sites would result in "Esparto Open Space"

Mid-Creek Nature Preserve



Fig. 3.6 The yellow parcels are county land, green parcels will become county land, and the red private land

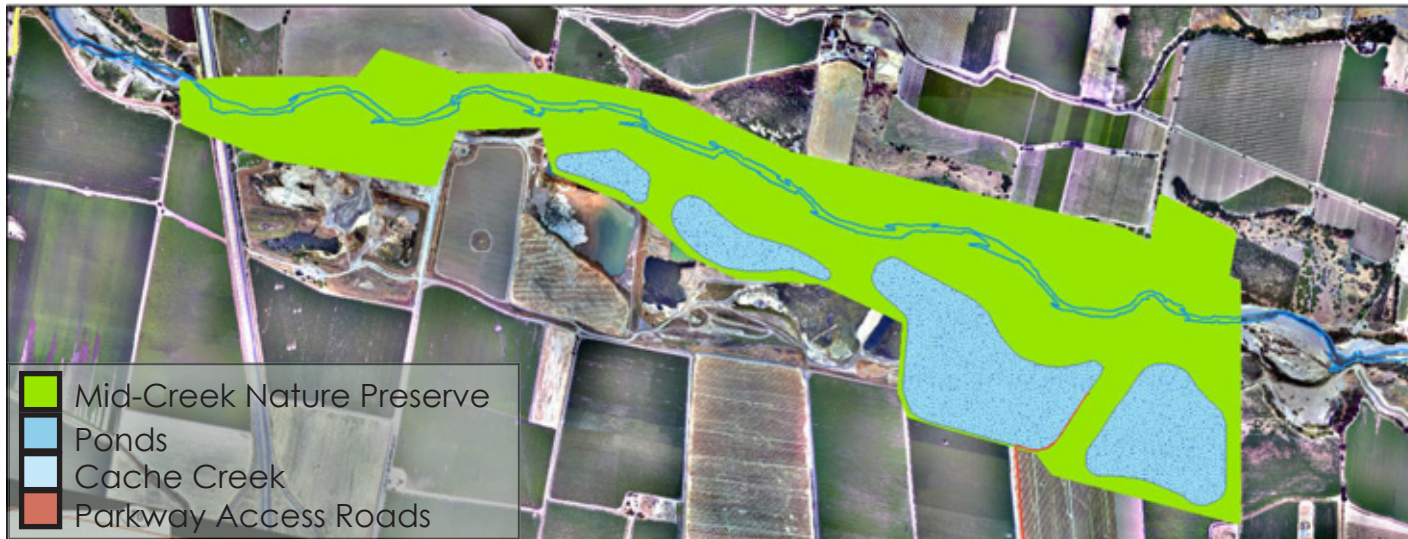


Fig. 3.7 Linking future reclamation sites would result in "Mid-Creek Nature Preserve"

Woodland Nature Preserve

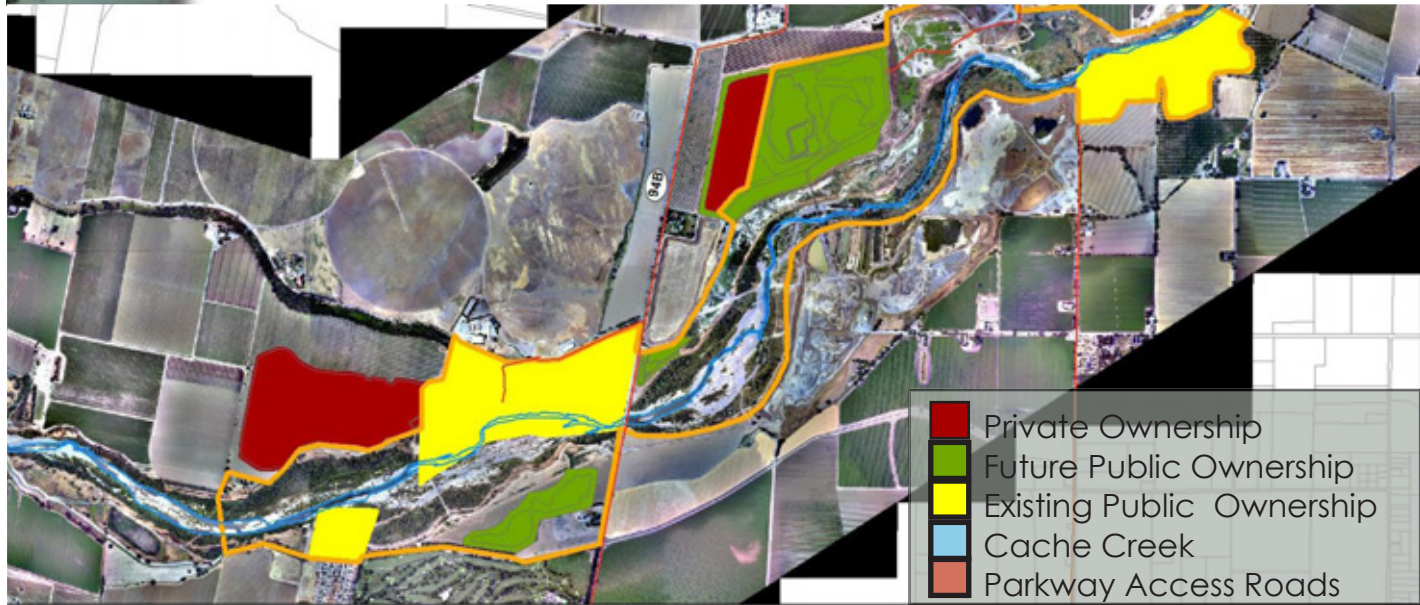


Fig. 3.8 The yellow parcels are county land, green parcels will become county land, and the red private land

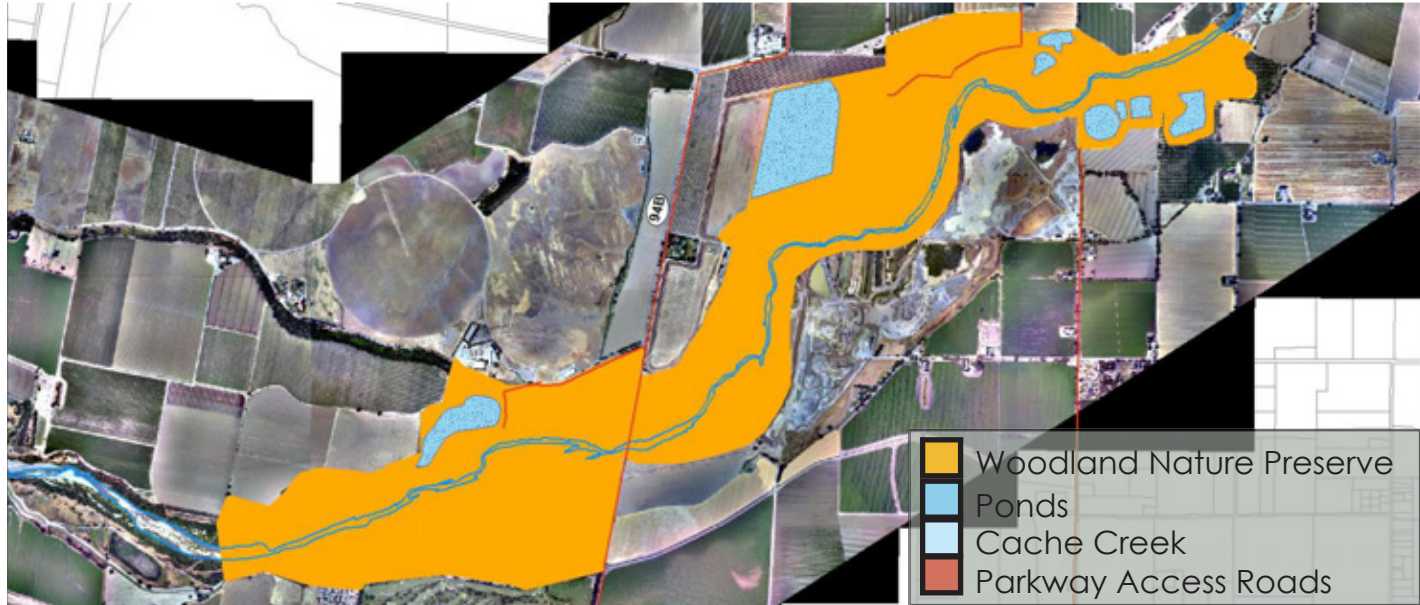


Fig. 3.9 Linking future reclamation sites would result in "Woodland Nature Preserve"



Woodland Nature Preserve

I want to use “Woodland Nature Preserve” as an example to show some trail designs and site amenities that might be included in a park. Woodland Nature Preserve is the closest park of the three to the large population centers of Woodland and Sacramento. There is also a high concentration of county owned land in close proximity that could be linked with a trail system to create a larger park.

Why the Woodland site is an ideal starting place:

- Woodland Nature Preserve would be made up of 6 large county parcels with creek access and with in close proximity to each other.
- The existing interpretive visitor center at the Cache Creek Nature Preserve can be incorporated into the design.
- Existing historical buildings and farming equipment at Cache Creek Nature Preserve are ideal points of interest for a trail system.
- Large expanses of riparian forest and potential to restore areas of riparian and upland habitat will make for diversity of environments on a trail.
- Post reclamation gravel pits are already being converted to ponds and wetlands which would be ideal routes for a trail with rest stops and potential for bird watching.
- The Woodland site is the closest to major metropolitan centers and to interstate highway 5.

Woodland Nature Preserve: Conceptual Plan

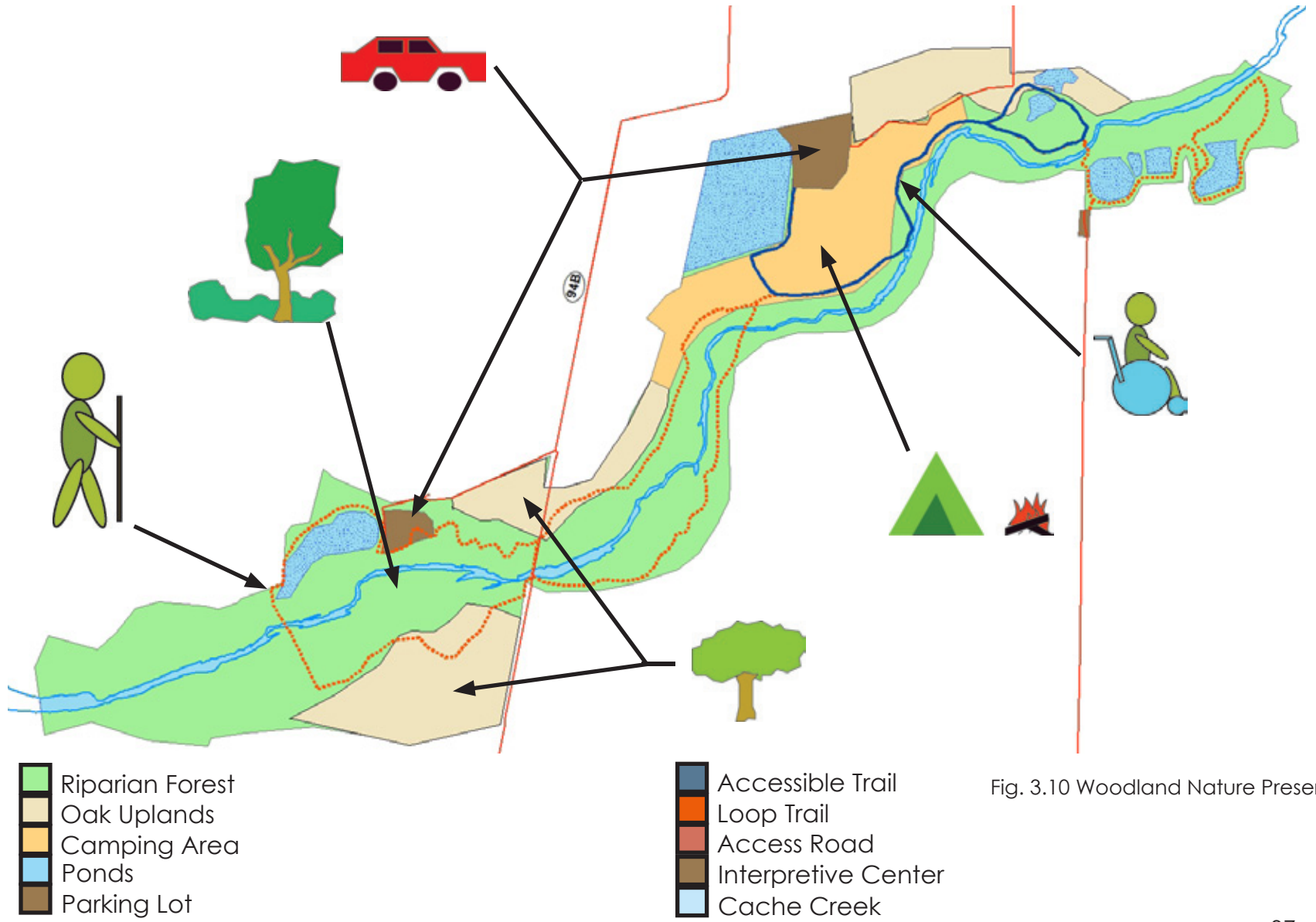


Fig. 3.10 Woodland Nature Preserve



Program Elements

Parkway

- Accessible trail, 2 miles
- Multi use trail, 8-12 miles
- Interpretive center
- Historical structures and farming equipment
- A recreation of William Gordon's log cabin
- A 21 site campground
- 4 camp sites with Patwin tule houses to sleep in
- Restrooms
- Creek side access
- Bird watching stations at ponds
- Two parking lots, one with parking for horse trailers

Trail System

- Ponds
- Historic structures
- Mountain vistas
- Creek bed vistas
- A creek crossing using the abandoned gravel conveyer belt
- Shade trees with benches underneath the canopy
- Restrooms and Campground

Trail Signage

- Miles to Next Destination
- Bird Watching
- Cache Creek Hydrology
- Historical Inhabitants of the Creek
- Native American Uses of Plants
- Visible Mountain Ranges and Peaks

Woodland Nature Preserve:
Program Elements



Access Road

Oak Uplands

Parking Lot

Accessible Trail

Camp Ground

Riparian Forest

Multi-Use Trail

Interpretive Center

Pond

Cache Creek

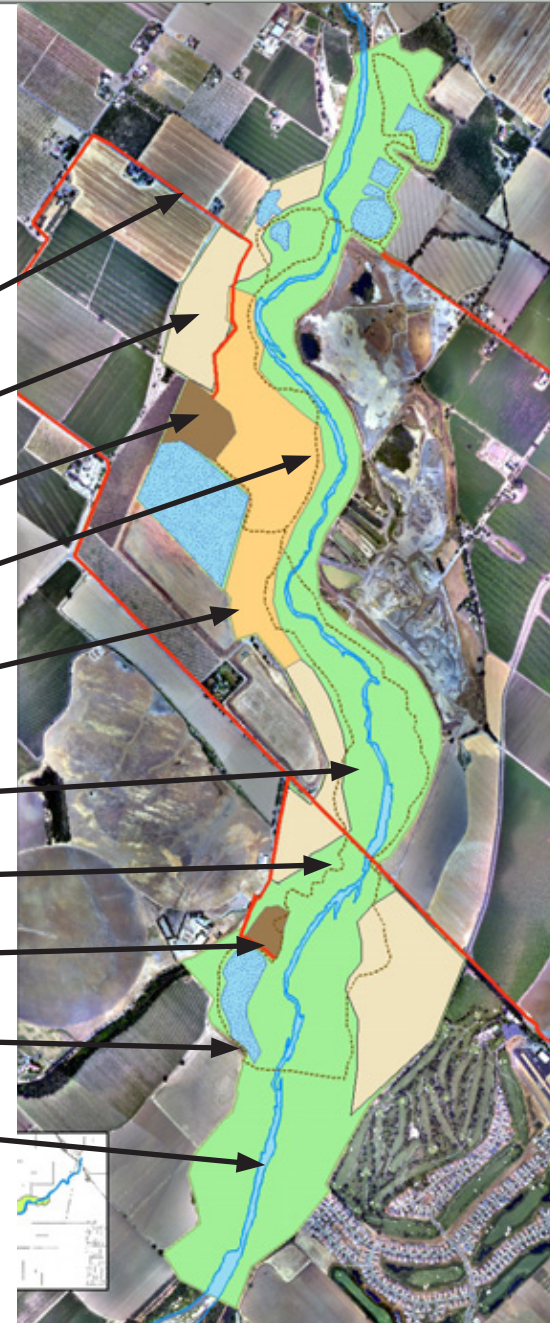


Fig. 3.11 Proposed Woodland Nature Preserve



Trail Design Details of Woodland Nature Preserve

In designing a trail one of the first considerations to steer the design process is deciding the trails purpose. In the case of the Woodland site trails would be multi use, with enough room for light horseback use, mountain biking, and hiking. For a trail with this many uses the width should be at least 8 feet (UofM 2008). The trails would lead through the different ecosystems to provide for wildlife viewing. Bird watching would be highlighted as the ponds and wetlands are excellent sites to view migrating birds. View points are also important considerations in laying out the trail. Careful consideration needs to be put into designing vistas along the trail to keep hikers motivated to reach the next interesting view point.



Fig. 3.12 This wetland was once a gravel mine

Views at the woodland site can consist of:

- Wetlands
- Transitions upon leaving riparian areas and entering upland areas
- Coast Range or the Dunnigan Hills
- From levees looking up or down the creek bed
- Open fields and farmlands

Trail Design: Erosion Control Detail

Woodland Nature Preserve would be 3.75 miles long from east to west and about ½ mile wide from north to south. For a park this size 10 to 15 miles of trails would be ideal (UofM 2008). On the conceptual design there are 8 miles of trails shown including 2 miles of accessible trails. The overall gradient of the site is subtle, moving from east to west the change in grade is rarely over 5%. The only grade changes come when the trail crosses a levee and the average grade change when crossing a levee will be around 20 feet. Some trail design considerations can be used when crossing levees. For example, to control erosion 'dips' can be put in the trails where the trail slopes to concentrate runoff.

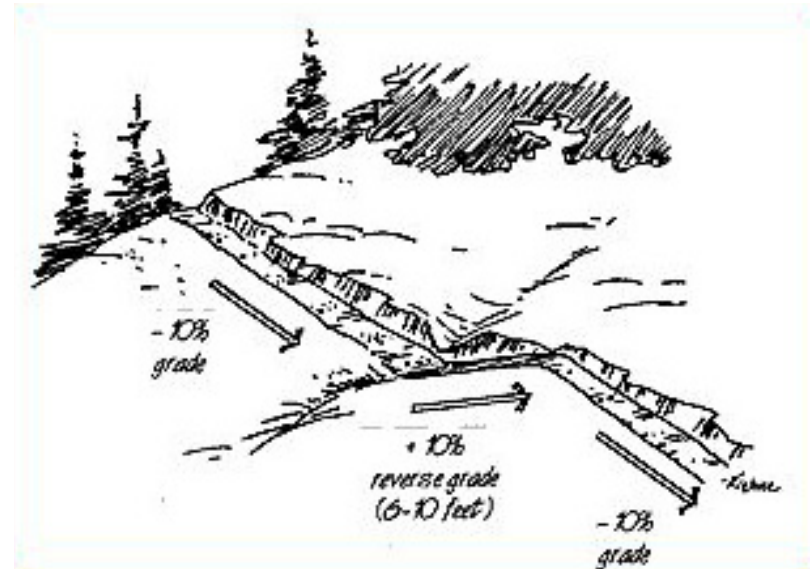


Fig. 3.13 Controlling trail erosion with trail dips



Trail Design: Switchback Detail

Another technique to reduce the slope of the trail going through a gradient is to create switchbacks. Here the trail would wind up the levee to reach the view point on top of the levee.

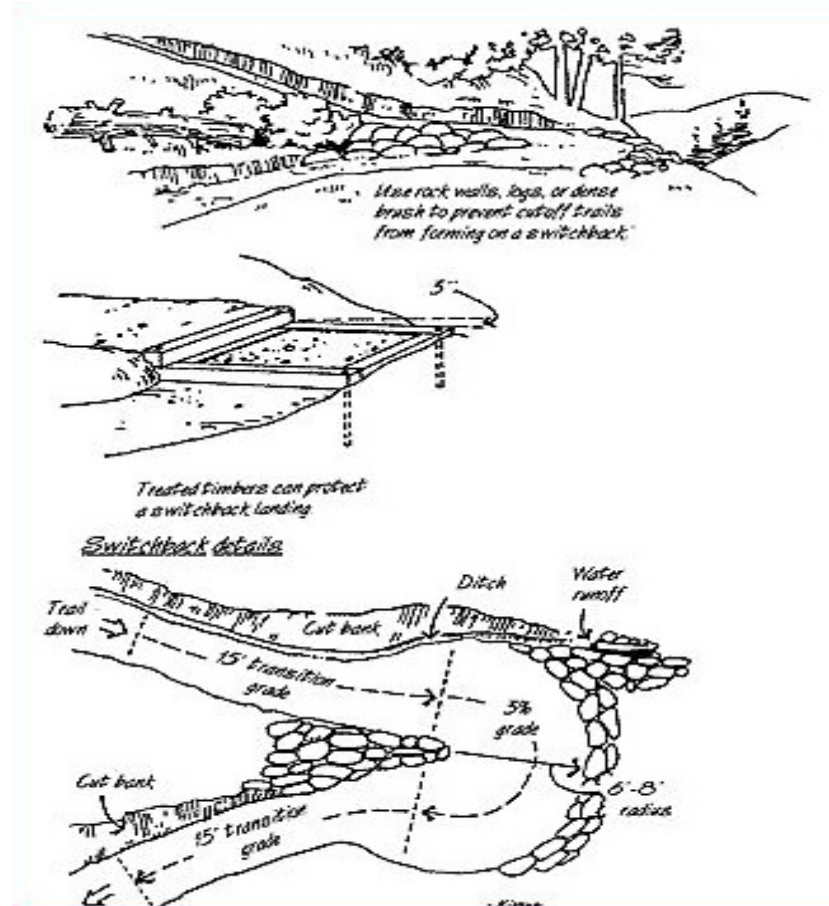


Fig. 3.14 Trail switch backs

Trail Design: Accessible Trail Detail

The park would also include an accessible trail. While the majority of the trails in the park will be built over natural existing surfaces the accessible trail will be built over compressed aggregate. Local aggregate from the gravel mines can be used like decomposed granite to create a trail that fits in with its natural surroundings. The trails materials will be sourced from the same location that the trail is built. The accessible trail will also access the camping area and serve as an interpretive trail with signs telling the story of the unique ecosystem and habitat that exists on Cache Creek.

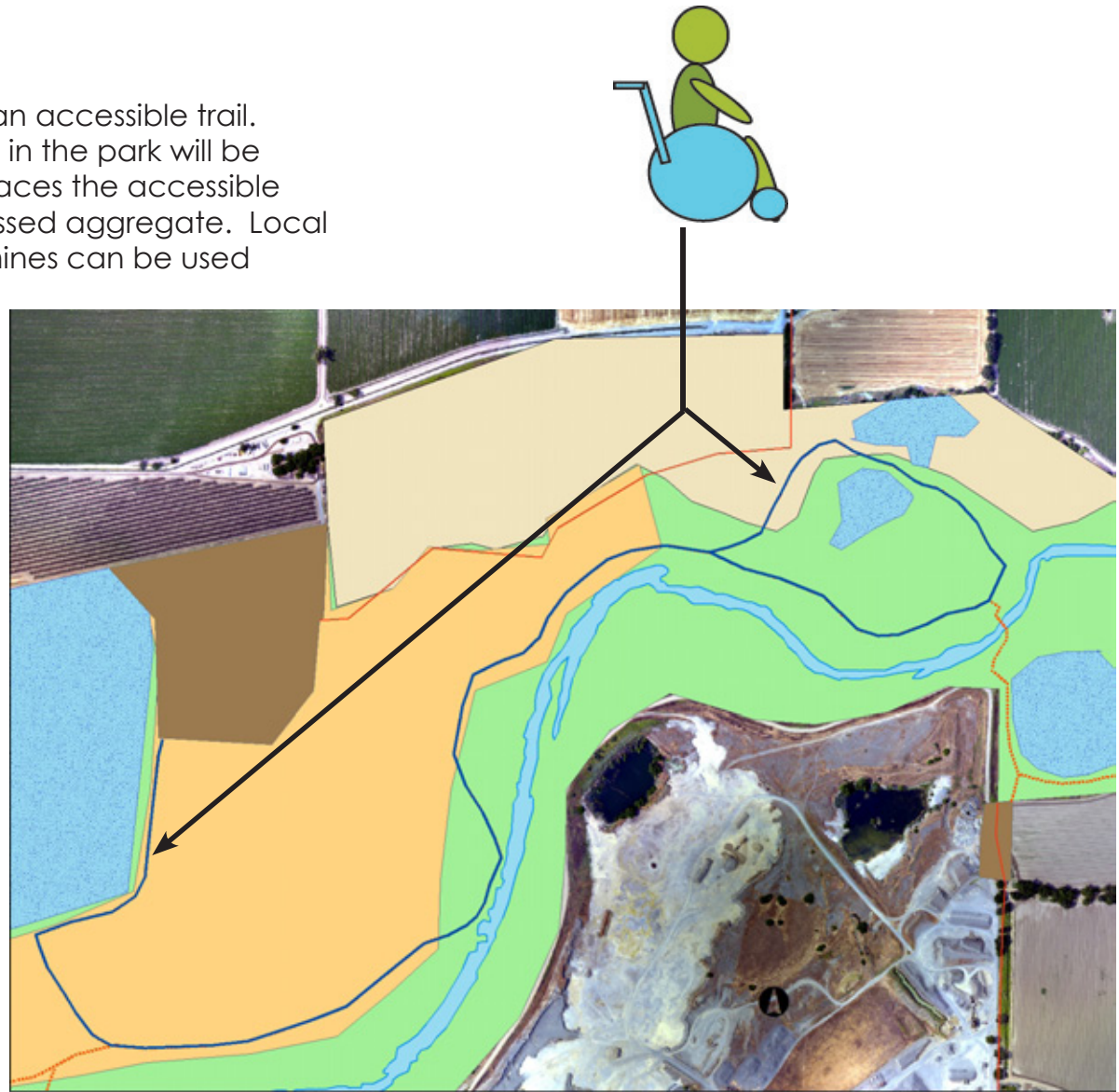


Fig. 3.15 Accessible trail at Woodland Nature Preserve

Conclusion and Discussion

Conclusion

In designing a parkway and trail system on Cache Creek I first wanted to create a vision of a unique landscape. In order to do this I wrote about the human history of the creek and the role the creek has played in the settlement of California. I also talked about the natural history of the creek. I wanted to show that it is an exciting and dynamic system, sometimes moving at a trickle other times at a torrent that rivals the Grand Canyon of the Colorado.

The land use along lower Cache Creek is important in that it influences the potential layout of a parkway. Mining operations that will be dedicated to the county are closely grouped in some areas and sparsely grouped in others. Reclaimed mining operations, county owned lands, easements, and creek bed right of ways can be grouped into three separate parkways. Maps of these parkways can be used to create a vision where future landowners would be interested in designing easements for trails to link these lands together.

A more detailed example of one of these parkways would be "Woodland Nature Preserve". This parkway would contain 8 miles of multiuse trails, including 2 miles of accessible trails. The trails would take advantage of views of the Coast Range, changes between upland oaks and creek side riparian forests, and views from the top of levees looking up and down the creek bed.



The Preserve would incorporate the amenities of an interpretive center and historic structures that already exist at Cache Creek Nature Preserve. The site would also include camping and is within easy access to Woodland and highway 5.

The purpose behind listing program elements and showing a plan view of the Woodland Nature Preserve is to leave a concrete thought in peoples minds about the potential that a trail and parkway system on Cache Creek holds.

Discussion

The importance of land stewardship in long term planning has many benefits. In the case of Cache Creek, preserving natural ecosystem functions will allow for the creation of riparian forests. Riparian forests will increase biodiversity, filter water, slow downstream flood waters, and give future generations a contrasting landscape to the landscape of industrial farming in Yolo County. In sharing the story of Cache Creek's history, its unique ecosystem, and its scenic beauty; an ecological conscience begins to develop in the general public. With this conscience comes a willingness to embrace and share the ecosystem that makes up Cache Creek.

With long term planning and vision a 'Cache Creek River Parkway and Trail System' can be a reality. With a strong ecological conscience of enough local residents a restoration of the creek's natural habitat with public access is a goal that can be obtained.



Fig. 4.1 The author enjoying a walk down a Cache Creek trail

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