CAPAY VALLEY STATE PARK

Ribbs Ranch ~ City of Guinda, California

Restoration
Preservation
Education

Created by the Landscape Architecture Students from the University of California, Davis - Winter, 2009
Instructed by Professor Jeff Loux, Ph.D.
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Edited and Revised by Sommer St. Michel
MISSION

Our mission is to create this 220-acre property into a state park for the Capay Valley. With this space, we wish to celebrate the history of the Capay Valley while highlighting the natural beauty of the area. We will strive to create a unique space for visitors to learn about agriculture, alternative energy, and protection of the natural environment.

GOALS

- To conserve, restore, and preserve the local ecosystems, natural resources and biodiversity.
  - Repair riparian corridor
  - Remove invasive species
  - Re-vegetate with native plants

- To celebrate and educate visitors of the unique natural and cultural history of the Capay Valley
  - Visitor and education center with small
  - Retail with locally produced vegetables, fruits, flowers, and other crafts

- To allow the public to access and enjoy the waterfront space.
  - Beach access for swimming, picnicking, non motorized boating, fishing, hiking, and playing

- To maintain and preserve the agricultural lands that are iconic to the area.
  - Small demonstration of organic farm
  - Large Scale Composting system

- To maintain land compatibility between the proposed park, private property owners, and surrounding neighbors.

- To provide a regional connection and destination for surrounding public and community user groups

- To provide a unique space with minimal road access and parking.

- To provide a living estate for the current owners of the property
  - Part of a land trust agreement

- To create demonstration areas
  - Alternative Energies
  - Native Plants
  - Rain Gardens
  - Water Catchment
  - Grey Water Reuse

- To create low impact camping with minimal impact on the site.
  - Tent campsites
  - RV sites
  - Restrooms
Hunting party with buck
The Cache Creek Watershed is in the Central Valley Regional Watershed and is under the jurisdiction of the Central Valley Regional Water Quality Control Board (CVWB). Cache Creek winds through publicly and privately managed wildlands and farmlands in Lake, Yolo, and Colusa Counties in the Coast Ranges of N. California. It drains approximately 1,300 square miles and trends in a southeast direction.

Major tributaries that flow into Cache Creek are Clear Lake, North Fork Cache Creek, and Bear Creek, with numerous minor tributaries. The mainstem flows from the outlet of Clear Lake and is controlled by the Cache Creek Dam. It eventually flows to the Cache Creek Settling Basin with an outlet to the Yolo Bypass of the Sacramento River.

The Capay Valley reach includes the area from the Blue Ridge of the Coast Ranges in the west (federal government Bureau of Land Management lands) to the ridgeline of the Capay Hills in the east, and from Capay Dam in the south upstream to Camp Haswell, just north of Rumsey. The region comprises the following unincorporated communities: Madison, Esparto, Capay, Brooks, the Rumsey Rancheria, Guinda, and Rumsey. All communities are situated along State Highway 16.

Agricultural development in the region was fueled in no small part by water development projects such as the Rumsey Ditch Association’s eight-mile irrigation canal from Cache Creek above Rumsey to north of Guinda, the Yolo Water and Power Company’s dam across the outlet of Clear Lake in 1914, and the Indian Valley Dam in 1975. According to the county Agricultural Commissioner, organic agriculture began in the valley in the 1980’s and brought in more than $3 million in revenues in 2001. Cattle and sheep ranching in common in the surrounding foothills and mountainous areas.
REGIONAL CONTEXT
REGIONAL CONTEXT

PARTICIPATING AGENCIES:

1.) USDA Natural Resources Conservation Service
   221 W. Court St., Suite 1
   Woodland, CA 95695
   (530) 662-2037 ext. 3

2.) State of California Department of Conservation
   http://www.conservation.ca.gov

3.) California Dept. of Water Resources
   http://cdec.water.ca.gov/

4.) State Water Quality Board
    and Regional Water Board

5.) Yolo County Department of Planning and Public Works
    http://www.yolocounty.org

6.) Yolo County Resource Conservation District
    221 W. Court St., Suite 1
    Woodland, CA 95695
    (530) 662-2037 ext. 5
    www.yolorcd.org

7.) Yolo County Flood Control and Water Conservation District (YCFCWCD)
    34274 State Highway 16
    Woodland, CA 95695-9371
    Tel: (530) 662-0265
    http://www.yfcwcd.org

8.) Cache Creek Conservancy
    34199 Co. Rd. 20
    Woodland, CA 95695
    (530) 661-1070
    www.cacheconserv.org

9.) Cache Creek Watershed Stakeholders Group

10.) Audubon CA Farm and Rangeland Stewardship Program
    5265 Putah Creek Rd.
    Winters, CA 95694
    (530) 795-2921
    www.audubon.org/willow_slough/
Located on the western border of Yolo County, the Capay Valley sits between the Coast Ranges with Cache Creek running through it. Currently the main attraction to the valley is the Cache Creek Casino in the town of Brooks. The Cache Creek watershed was home for Native American tribes for centuries although little evidence has been left behind. In the 19th century the Mexican government granted lands of the Capay Valley to the Berryessa brothers, thus beginning settlement in the area. Much of the Capay Valley is agriculture and all of western Yolo County’s surface irrigation water supply passes through Cache Creek in the Capay Valley.

Currently the Central Valley region is inadequately served by the State Parks Service. There are a couple of State Parks within about 30 miles of the Capay Valley, but they are west of the steep Coast Ranges and not easily accessible. The closest State Park, located in the Valley is 130 miles away (Caswell Memorial).
Permitting can be a very complicated and expensive inter-agency affair. To deal with these processes more effectively, the Yolo County Resource Conservation District and the Sustainable Conservation Partners have adapted The Yolo County Permit Coordination Program, a plan to simplify the complicated permitting process, where the landowner obtains permits directly through the NRCS (YCRCD) and they serve as agents between the landowner and the multiple other agencies involved. (Figure: 1)

The Cache Creek Conservancy has a Resource Management Plan and Memorandum of Understanding with the County that exempts them from needing multiple permits for everything they do. These “blanket permits” are given with extensive pre-analysis.

The Yolo County Resource Conservation District also has blanket permits for invasive weed controls, so if they are hired for restoration work the landowner can prevent paying the expensive price of the many permits required for any action taken on a site.

Under the Sacramento River Watershed Program, the Cache Creek Watershed Stakeholders offer an extensive online Permit Guide organized under “Project Action Type” and “Permit Type”, as follows. (Figure: 2)

**PROJECT ACTION TYPE:**

- Streambank Stabilization
- Habitat Restoration
- Invasive Plant Removal
- Stream River Restoration
- Permanent Stream Crossing
- Temporary Stream Crossing

**PERMIT TYPE’S:**

1.) USACE Sect. 404 (of the Clean Water Act)
2.) USACE Sect. 10 (of the Clean Water Act)
3.) RWQCB Sect. 401 (of the Clean Water Act)
4.) DFG Sect. 1602 (of the Fish and Game Code)
5.) USFWS/NMFS ESA (Endangered Species Act) Consultation
6.) DFG CESA (California Endangered Species Act) Consultation
7.) CA State Rec. Board Encroachment Permit
8.) RWQCB NPDES (National Pollutant Discharge Elimination System) Permit
9.) Sect. 402 of the Clean Water Act deals with construction site drainage and wastewater treatment plants
Figure 2: Permitting Agencies/
Multi-Agency Authority

- Banks
- Ordinary High Water Mark
- Channel
- Bed
- Navigable Waters
- Floodplain

UPLAND | RIPARIAN | WATER CORRIDOR | ADJACENT WETLAND | RIPARIAN | UPLAND

- RWQCB: Below high water mark & adjacent wetlands
- USACE: Below high water mark & adjacent wetlands
- DFG: Bed, bank and channel of rivers, lakes and streams to landward edge of riparian vegetation
- Rec Board: Designated floodways and areas between levees
All proposed actions to be taken on the site must abide by the Yolo County General Plan (new draft of 2009) and the water uses specified by the IRWMP.

NAME: Van Hook Retreat (Old Henry Ribbs Ranch)
ADDRESS: 5961 ALMAN Lane, Caypay Valley – Yolo County

- William Gordon Subdivision - Sec. 5.P.N.; T12N, R3 W MDM
- Assessors Parcel #: 060-200-01
- County Zoning Code: Agricultural Preserve, Title 8
- Under Williamson Act Contract (Contract #71-597) for subdivision parcel sizes – may apply to minimum acreage for leasing out parcels.

PERMITS, ORDINANCES, RIGHTS:

1.) Building permits/Construction permits: issuance requires approval by the Planning Division of setbacks, facilities, infrastructure and health and safety issues.
   - No height regulations.
   - Setbacks:
     1.) Front yard = 90’ as measured from right-of-way center line of street.
     2.) Side yard = 10’ from property line.
     3.) Rear yard = 50’ from property line.

- Riparian setbacks: U.S. EPA recommends a minimum of 100’ for protecting water quality, and 300’ if a habitat corridor is needed. No local ordinances, generally recommend between 50-100’.

- All building should be built above the local High Water Mark (14’ according to a CDWR Station Search for Rumsey Bridge), and the Flood-Recurrence-Intervals suggested by FEMA.

- Privately owned water retention basins are allowed if provide flood control, fire suppression, water supply, wildlife habitat improvement, groundwater recharge or tailwater enhancement.

- Conditional uses – require minor use permits:
  1.) Animals (requires permit from DFG)
  2.) Museums
  3.) Wastewater treatment ponds

- Septic tanks and Leach fields:
  1.) Obtain permits from the County for the construction of wells and septic systems.
  2.) Regulations regarding the placement of septic systems near wells.
  3.) Yolo County General Plan for 2030 has a revised county code that prohibits the location of septic systems and leach fields <100’ from natural waterways.

- Grading ordinance: in process with the Public Works Dept., none in place currently.

- Tree preservation ordinance: none in place currently.
  Parks and Resources department has an Oaks Woodland Conservation and Management Plan, a voluntary program that may be a source for conservation funding.

- Riparian water rights to Cache Creek: not exercised, need permit.

- Appropriative water rights to Old Rumsey Ditch irrigation canal: have not been in use.

(Please Note* - State Parks are not subject to County regulations and authority.)
Capay Valley:
The Mexican government granted large areas of land in the Capay Valley to: William Gordon (1842), Thomas Hardy (1842) and the three Berryessa brothers (1846), beginning the period of settlement.

In 1858, parts of the Berryessa grant were sold and subdivided into parcels of 200 to 3800 acres. On this land the county’s first winery opened in 1860. In 1887 the Capay Valley Land Company was organized. This company and others divided up areas of the valley into parcels to sell to potential fruit farmers. Agriculture in the Capay Valley was dominated first with fruit orchards which declined because the climate did not yield dependable fruit production. Farmers then planted almond orchards. Over the years these were converted to walnut orchards. In 1915 the first Almond festival was held. Livestock production and grazing also became a main economic staple.

Rumsey Band of Wintun Indians:
The Cache Creek watershed of the Capay Valley was home to Native American tribes for centuries before the 1800’s. With the intrusion of European and American explores in the 1830’s however, several tribes nearly perished due to diseases, massacres, and forced labor. The few Wintun Indians that survived the epidemics were forced onto a federally created Rancheria in Rumsey.

By 1972 only three Wintun Rancherias were still in existence, including the Rumsey Rancheria. It was at this dark moment however “that the tide began to turn” for the Wintun Indians. Land was returned to the Tribe that had been held in trust by the government, and the Wintun’s returned to Cache Creek. Today the Rumsey Band of Wintun Indians is completely independent of U.S. government aid. The tribal rights belonging to the Wintun’s allowed them to expand their business opportunities, resulting in a world class casino and hotel that opened in 2003.

Cache Creek Casino Resort:
The Wintun tribe, realizing the importance of the natural environment of the Capay Valley, “has established environmental conservancy as a cornerstone of its tribal legacy” to honor the land their ancestors inhabited long ago. The Cache Creek Casino Resort has a 250-kilowatt solar power plant, and three fuel cells that provide the casino with enough power to fuel 20% of the resort’s electricity needs. The Tribe also practices a water management program throughout the resort, using reclaimed water for portions of plumbing and landscaping, including irrigation of the 18 hole golf course. The Tribe’s focus on protection, conservation, and preservation today is their way of planning and providing for future generations.
The Summit:

Black ranchers moved in from Northern California and the Bay Area, and raised cattle and experimented with orchards and other agricultural products in the Guinda hills. This settlement was known as The Summit. For $1 an acre, most of the homesteaders bought plots of about 160 acres. Settlement by Black’s could not have occurred earlier, since California’s previous homestead laws had required a homesteader to be a White citizen. Since the area was remote and relatively inaccessible, The Summit residents helped each other on their farms, teaming up to build homes, cut wood, plant orchards, dig wells and build a school (Summit School) for their kids. (http://www.nps.gov/history)

Green Berry Logan, who is buried in a small cemetery on The Summit, was the first and most prominent black homesteader to arrive. He brought his family from Dunnigan. As families left the hill, the Summit School closed down in 1912.

“Owl Rock,” is a sandstone bolder that over the years residents have etched their names on.

Ribbs Ranch:

The 220 acre ranch was originally purchased by William Gordon in the mid 1880’s. In the 1980’s it was passed on to R.F Laugenour, who then sold it to Maude Ruggles around 1902. Between 1950 and 1960 the ranch was passed among several different owners until it was purchased by Henry and Nora Ribbs in 1960. After owning the ranch for the next forty years, the Ribbs finally sold the property to the current owners Mr. Clarence W. Van Hook and Mrs. Jeffrie M. Van Hook on August 8, 2000.

Prior owner of the ranch, Henry Ribbs, migrated from the deep-south during intense racial segregation to settle in San Jose and raise his family. Henry, along with one of his two sons, was an avid motorcycle and G sports racers in the 1950’s and 1960’s. Henry’s grandson Will T. Ribbs however would become the most famous and successful racer of the family.
Willy T was the first African American driver to ever race the Indy 500, compete in Nascar’s Nextel Cup Series, and compete in the Indy Car Championship in partnership with entertainer Bill Cosby. Willy T’s first job at the age of 9 was working on his grandfather’s ranch milking cows, raising pigs, and picking almonds. In the evenings he would drive cars from one end of the ranch to the other.

Current owners Clarence W. Van Hook and wife Jeffrie M. Van Hook have maintained all of the old buildings located on the property, including a barn which is said to be the 2nd oldest in the valley. The Van Hook family is interested in preserving the land as a historic site, “to recognize the many ethnic pioneer groups” of the area, establish a series of model sustainable farming plots, and provide a gathering place for friends, family, and the public.

Addie Mae Logan Molson:
Addie Mae Logan Molson was the first African American to teach in the North Sacramento School District. Graduating from the University of California, Berkeley with a degree in Spanish, Molson loved to work with kids. Mrs. Molson was a very active community member as well, participating in organizations such as the Yolo County Historical Society, Town and Country Club, the Esparto High School Alumni Association in addition to other groups.

Vacaville Branch and Vacaville Branch abandoned between Elmira and Vacaville.” (Wikipedia)
The varieties of soils in the Capay Valley Region make it an optimal environment to grow a wide range of crops.

Major crops produced in Capay Valley include: walnuts, almonds, wheat, oat/hay, tomatoes, alfalfa and organic produce.

Capay Valley is comprised mostly of small scale farmers that sell their products to the local community.

Capay Valley Grown, established in 2004, is comprised of twenty-three farm and ranch partnerships working together to increase awareness of Capay Valley agriculture.

Capay Valley Grown farmers and ranchers are certified organic producers that are focused on providing their customers with the freshest products.

State Highway 16 may pose a threat to agricultural land if traffic continues to increase.

http://www.capayvalleyvision.org/capayvalley.html
http://www.nps.gov/history/history/online_books/5views/5views2d.htm
http://www.rumseyrancheria.org/history
The Van Hook property spans between the two hill ranges of the Capay Valley and because of its diverse topography, also yields very diverse soil types, varying from poor eroded soils to rich agricultural ones. The property is generally flat with the exceptions of the steep hillsides. Within the Van Hook property there are approximately 11 types of soil, with the majority of it (almost 50%) being a Corning gravelly loam, which is of poor quality for agricultural use and sits mostly on the western side of highway 16. On the eastern side of the freeway, next to the main residence, there are more farm rich soils suitable for agricultural use, like the Yolo loam and Brentwood series. Most of the soils are well drained on the upper levels with a restrictive layer a few feet below. Soils show limited capability in terms of the ability to distribute waste water via irrigation or leach fields meaning that on site detention of waste water will be expensive and or difficult to mitigate.

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<th>Map Unit Name</th>
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<th>Percent of AOI</th>
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Map and table courtesy of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture.
Fires
This region is subjected to lighting from time to time. This phenomenon can sometimes trigger wild fires in the undeveloped lands. Mixed chaparral plant communities are the most fire prone of the undeveloped lands because they tend to have more volatile oils and are also found growing in the steep terrains that firefighters cannot easily access. Before European settlement, the Native Americans that lived in the area also used a regular fire regime to manage and manipulate the grasslands for better food production. By the early 1900s this was changed and fires were suppressed whenever they occurred. Consequently, when fires occur in the wild lands now, they are more intense due to the greater amount of fuel that has been allowed to build up. In the developed rural areas, grasslands could also be potential fire zones mostly from proximity to roads (sparks from errant cigarette butts, cars, and agricultural machinery).

Floods
Because Cache Creek and Poppy Creek run through the Van Hook parcel, there is high likelihood of periodic flooding on lower lying parts of the site. Please see hydrology map for 100-year flood zones.

Earthquakes
The Capay Valley does occasionally experience earthquakes. This is due to active faults in and surrounding this area. The faults known in this region include: the Rumsey Fault, the Sweitzer Fault, the Coast Range fault, the Stony Creek fault, the Bartlett Springs fault, and the Green Valley fault. The last two faults are part of the San Andreas Fault system.

Geology
Geological evidence in the form of salt seeps on the Blue Cliffs south of Rumsey is a sign that the Capay Valley was once an ancient sea. This sea was eventually filled with sediment and alluvial deposits from the shifting of faults, other geological activities, weathering and climate. Cache Creek and its tributaries provided the valley floor with a deep layer of alluvial soils. On the west side of the valley, the slopes are composed of Cretaceous rocks of the Great Valley Group. The slopes on the east side of Capay Valley are made up of Pleistocene Tehama rocks (on the lower slopes) and Cretaceous rocks of the Great Valley Group (on the upper slopes). The continual geological activities and shifting of the faults have also thrust the various layers of rocks and sediments on the northwest side of the creek upward and have made the southeast side lower, creating a tilt to the valley. This tilting has over geological time, slowly moved the limits of the banks of Cache Creek to the eastern part of the valley.
VEGETATION & WILDLIFE - RIPARIAN

The site includes an extensive area of riparian corridor, which is important to many ecosystems. Poppy Creek is one of Cache Creek’s tributaries, and is dry over the summer months, but catches rain during wet months and sustains habitats for plant and animal species. There is also an issue of invasive plant species in the area.

Plant Species:
California Sycamore Platanus racemosa
Toyon Heteromeles arbutifolia
Western Redbud Cercis occidentalis
Tamarisk Tamarix spp.
Giant Reed Arundo donax

Animal Species:
California red-legged frog Rana aurora draytoni
Foothill yellow-legged frog Rana boylii
Western pond turtle Clemmys marmorata
California Quail Callipepla californica
Northern Flicker Colaptes auratus
Nuttall’s Woodpecker Picoides nuttallii
Black Phoebe Sayornis nigricans
Cliff Swallow Petrochelidon pyrrhonota
Common Yellowthroat Geothlypis trichas
Western Tanager Piranga ludoviciana
Song sparrow Melospiza melodia
Bald Eagle Haliaeetus leucocephalus
Peregrine Falcon Falco peregrinus
Bank Swallow Riparia riparia
Further away from Cache Creek, at higher elevations reaching 450 feet, is the woodland region of the site. A majority of the area are oaks and alders. An extensive number of bird species are also found in this area.

**Plant Species:**
- Grey Pine Pinus sabiniana
- Blue Oak Quercus douglasii
- Valley Oak Quercus lobata

**Animal Species:**
- American Badger Taxidea taxus
- Ringtail Bassariscus astutus
- Western Screech Owl Otus kennicottii
- Great Horned Owl Bubo virginianus
- Anna’s Hummingbird Calypte ‘anna’
- Acorn Woodpecker Melanerpes formicivorus
- Oak Titmouse Baeolophus inornatus
- Bushtit Psaltriparus minimus
- Tree swallow Tachycineta bicolor
- White-breasted Nuthatch Sitta carolinensis
- Western Bluebird Sialia mexicana
- Hutton’s vireo Vireo huttoni
- Lesser Goldfinch Carduelis psaltria
- Western Scrub-Jay Aphelocoma californica
- Elderberry longhorn beetle Desmocerus californicus dimorphus
VEGETATION & WILDLIFE - GRASSLAND

The West side of the site is covered with a large area of flat grassland, formally used for grazing. There are some signs of disturbance to the area from agricultural uses but also signs of wildlife. The grassland supports animals such as the California ground squirrel and wild pig.

Plant Species:
Valley Oak Quercus lobata

Animal Species:
Blacktail Jackrabbit Lepus californicus
Audubon’s Cottontail Sylvilagus audubonii
California Ground Squirrel Spermophilus beecheyi
Western Gray Squirrel Sciurus griseus
Botta’s Pocket Gopher Thomomys bottae
California Vole Microtus californicus
Muskrat Ondatra zibethica
Wild Pig Sus scrofa
Coyote Canis latrans
American Kestrel Falco sparverius
Lark sparrow Chondestes grammacus
Western Meadowlark Sturnella neglecta
In small areas of the site, and also large areas of the adjacent properties, are farmland that grow different kinds of crops. Some of these include lettuces and fruits.
Cache Creek is a major water source in the Capay Valley. It supports some rare and endangered species of fish, as well as common natives. Many species of aquatic animals like the River Otter and migratory birds are also linked to the aquatic habitat.

Animal Species:
River Otter Lutra canadensis
Threadfin shad Dorosoma petenense
Goldfish Carassius auratus
Common Carp Cyprinus carpio
White catfish Ameirus catus
Brown bullhead Ameirus nebolosus
Channel catfish Ictalurus catus
Inland silverside Menidia beryllina
Red shiner Cyprinella lutrensis
Fathead minnow Pimephales promelas

Species linked to the aquatic habitat:
Western mosquitofish Gambusia affinis
Striped Bass Morone saxatilis
Bluegill Lepomis macrochirus
Green sunfish Lepomis cyanellus
Largemouth bass Micropterus salmoides
Spotted bass Micropterus punctulatus
Great Blue Heron Ardea herodias
Green Heron Butorides virescens
Common Merganser Mergus merganser
Belted Kingfisher Ceryle alcyon
Chinook Salmon Oncorhynchus tshawytscha
Rainbow trout Oncorhynchus mykiss
Cache Creek

Location:
Cache Creek is located in Lake, Yolo, and Colusa counties in the Coast Ranges of northern California. It drains approximately 1,300 square miles and trends in a southeast direction.

Tributaries:
The Major tributaries to Cache Creek are Clear Lake, North Fork Cache Creek, and Bear Creek (Shown in Regional Hydrology Map). There are also numerous minor tributaries that join Cache Creek as it flows to the Cache Creek Settling Basin with its outlet to the Yolo Bypass of the Sacramento River. The main stem flows from the outlet of Clear Lake and is controlled by the Cache Creek Dam. The lake traps virtually all sediment from the upstream tributary watersheds. On the other hand, the North Fork Cache Creek begins in an alluvial valley and sediments produced in that area are trapped by Indian Valley Reservoir. Bear Creek flows approximately 12 miles through the steep canyons to meet the main stem of Cache Creek.

The Capay Valley reach of Cache Creek is located in northwestern Yolo County, approximately 7 miles downstream of the confluence of Bear and Cache Creeks. The Creek terminus is at the Cache Creek Settling Basin, which is designed to capture sediment including mercury and also enhance ground water recharge before it releases into the Yolo Bypass of the Sacramento River.

Water Quality and temperature:
The Cache and Bear Creek drainages were characterized by slightly alkaline water chemistry as pH ranged from 8.18 in the lower reaches of Cache Creek. Dissolved oxygen of Cache Creek at Guinda Bridge, Capay Dam, and North Fork Cache Creek is about 9.46mg/L to 11.35 mg/L. Water temperature in lower Cache Creek, the north fork of Cache Creek, and the lower Bear Creek are similar and ranged from 11.5 EC to 12.9 EC.
GROUNDWATER AT CAPAY VALLEY

Location:
The Capay Valley Groundwater Sub-basin is 1 of the 24 Sacramento groundwater subbasins underlying the Sacramento River Hydrologic Region. It is managed by the Yolo County Flood Control and water Conservation district. It is located at the southwestern portion of the Sacramento groundwater basin and has an area of 39 square miles. The north end is bounded by the Yolo County Boundary and the south end is bounded by the confluence of Salt Creek and Cache Creek. The recharge for this groundwater basin is mainly by Cache Creek, but also influenced by Bear Creek and rainwater. The groundwater level is about 10 to 40 feet below the ground surface.

Quality:
The quality of the groundwater from this sub-basin has moderate to high levels of boron in area surrounding Cache Creek, but in other areas are mostly dominated by Calcium, sodium bicarbonate. High concentration of Boron can be toxic to some sensitive plants and crops. The boron level usually decreases during summer releases and winter flood events. The Capay Valley ground water sub-basin has the widest range of boron concentrations and it ranges from 392 to 9,490 ug/L. Boron concentrations that is greater than 1mg/L may be toxic to certain plants and in Yolo, boron tolerant crops are grown in some areas.

Uses:
Yolo County, groundwater is used to meet most urban water demands while surface water is mostly used for agriculture. 25% of agricultural demands is met by groundwater and 80% of urban area demand is met by groundwater.

Groundwater storage:
The capacity is approximately 99,800 acre feet. Groundwater quantity are pretty stable, no problems of overdraft of land subsidence is reported. Groundwater levels are monitored by extensive network of wells in Yolo County.

Wells:
There are 6 indicator wells selected in the Capay Valley Sub-basin to illustrate groundwater level trends by zone and sub-basin. The wells are completed in the shallow zone. Elevations of these wells range from 260 ft to 410 ft. under ground surface. These wells display records of the groundwater level from 1953 to present. 4 of these wells are located near cache creek and the other two are located near the boundary of the sub-basin. The levels recorded from these wells over the years are pretty stable.
Flooding Area:

Based on the hydrologic history of Cache Creek, many serious floods have occurred in 1958, 1983, 1986 and 1997. During winter and spring, floods in the Cache Creek Basin are principally caused by runoff of high intensity rainstorms. When stream reaches are short and channel gradients steep, peak floods flows usually pass completely through the basin within several hours in a day. The map is showing the subject of flooding characteristics during 100 and 500 years storm events.

Poppy Creek:

The Poppy Creek, under-crossing the Highway 16, performs another channeled area on the west side of the creek which is subject to high winter water. During raining season or spring, the sunken area located along the channeled area will be filled with raining water. This channel certainly delivers water through installed water facilities in order to provide drinking water for animals in the barn. The channeled area is continuously running to the east side of the Highway 16 to join Cache Creek.

Depression Pond & Depression Basin:

A depression pond and a depression basin locate both side of the Highway 16. During raining periods of time in a year, the depression pond and the basin will be filled up with rainwater as storm drainage. The pond efficiently captures runoff from surrounding area to provide water for animals drinking. This wetland certainly becomes a “home” to support both aquatic and terrestrial species. The depression basin which is just right next to the original railroad track is holding water for irrigating the crop lands. In addition to increase irrigation water, pipes are designed to extend to east side for pumping water to irrigate farmlands.

Culvert:

A culvert was built under the Highway 16 which combines the water channel system on both side of the freeway. Having slightly different function with the depression pond and the basin, the culvert performs an important role to keep water in both side is flowing fluently and to maintain a balanced water system in site. Because the major water source is from Cache Creek on the east side, this culvert drives water from Cache Creek to follow its channel to west side. This geographic design additionally offers another water usage opportunity for local use.
Climate in the Capay Valley is similar to much of Northern California's. It is characterized by cold wet winters and hot dry summers, with temperatures that range from just below freezing during most winters to over 100 degrees Fahrenheit during the summer months (capayvalleyvision.org). The following graphs depict average temperatures, wind speed, and precipitation gathered over several decades for the Capay Valley compared to United States averages.

Hard freezes rarely occur, but can damage sensitive vegetation. Occasional heat waves also occur, especially in July and August. Data from The California Department of Water Resources describe average temperature and Precipitation readings over several decades (capayvalleyvision.org)

YEARS OF RECORD

<table>
<thead>
<tr>
<th>Month</th>
<th>Av. Temperature (F)</th>
<th>Av. Temperature (In)</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>44.8</td>
<td>4.06</td>
</tr>
<tr>
<td>February</td>
<td>48.5</td>
<td>4.10</td>
</tr>
<tr>
<td>March</td>
<td>52.9</td>
<td>2.63</td>
</tr>
<tr>
<td>April</td>
<td>58.2</td>
<td>1.31</td>
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<tr>
<td>May</td>
<td>65.3</td>
<td>0.60</td>
</tr>
<tr>
<td>June</td>
<td>72.4</td>
<td>0.20</td>
</tr>
<tr>
<td>July</td>
<td>78.4</td>
<td>0.01</td>
</tr>
<tr>
<td>August</td>
<td>75.8</td>
<td>0.02</td>
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<tr>
<td>September</td>
<td>72.1</td>
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<tr>
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<tr>
<td>November</td>
<td>52.6</td>
<td>1.75</td>
</tr>
<tr>
<td>December</td>
<td>46.0</td>
<td>4.17</td>
</tr>
</tbody>
</table>

Wind Speed (mph) and Precipitation graphs are shown in the image.
The following graph depicts historical rainfall totals (in inches) from the year 1890 to the year 2000 for the Capay Region.

Historic Drought Periods (Categorized as 2 successive years of less than 15 inches, or several years of substandard precipitation).

- 1898-1899
- 1912-1913
- 1917-1920
- 1933-1934
- 1947-1950
- 1959-1962
- 1976-1977
- 1989-1994

(California Department of Water Resources)

The data below show flood events as measured at Cache Creek near Capay from 1950 to 1970 (when the station was discontinued) and flood events as measured at Cache Creek at and above Rumsey from 1965 to 2000.

<table>
<thead>
<tr>
<th>Cache Creek near Capay</th>
<th>Cache Creek at/above Rumsey</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 1958</td>
<td>January 1965</td>
</tr>
<tr>
<td>December 1964</td>
<td>January 1970</td>
</tr>
<tr>
<td>January 1965</td>
<td>January 1983</td>
</tr>
<tr>
<td>January 1970</td>
<td>January &amp; March 1995</td>
</tr>
<tr>
<td>1995</td>
<td>January 1998</td>
</tr>
</tbody>
</table>
Transportation

Road
Highway 16 is the primary road that connects the Van Hook property to its neighboring city attractions such as the Cache Creek casino (9 miles) and Full Belly Farm (less than a mile). Furthermore, this road directly connects the site to major freeways such as I-505 and Highway 113 which essentially leads to Freeway 5. Special attention is given to this road because this is the only road that can transport people from Capay Valley to other cities such as Woodland.

The road is newly renovated with new asphalt and widened shoulders. In the past, the lane and the road shoulder was a lot narrower, but due to the high traffic brought upon by the casino, the road was improved. Currently the road is a two-way traffic with the width of 12 feet each direction and 8 feet shoulder constructed with gravel. On Van Hook’s property, the road marking is double solid yellow line with a speed limit of 55 mph. Bike lanes and pedestrian crossings are absent on this road. There is a culvert that bridges the road over the “poppy creek” and the road atop this culvert is lined with a standard 3 feet high metal and wood road rail. Overall, the road condition is good, but it imposes challenges when it comes to bridging the two sides of Van Hook’s property through this high speed road.

Traffic
The current traffic flow of Highway 16 consists mainly of low density residential travel along with agricultural and industrial trucks. Some of these trucks use this route to transport products from private farms or transporting some sort of wood products such as lumber and wood chips to neighboring counties like Sacramento. However, some of these trucks do not follow the speed limit imposed by law which raises concern for the residents along the highway. According to the Capay Valley General plan, the estimated peak hour traffic volume is roughly 2,000 cars.

Current Site Infrastructure Condition

Culverts
There are two culverts present at the site. One culvert serviced the railroad traffic that used to exist and the other currently services the vehicular traffic along Highway 16. The railway culvert is no longer in use, but was left behind in the property. This culvert has a 9 feet high opening and the arch shape used for the culvert is the perfect height and shape for possible pedestrian traffic. On the other hand, the highway 16 culvert only has a 4 feet opening which is not high enough for pedestrian. This culvert serves mainly the transportation of water between the west and east side of the property. The railroad culvert is topped with bare soil unlike the highway 16 culvert which has asphalt complete with road rails on the edges.

Note: Culverts in private properties are the responsibility of the property owners.

Buildings:
There is an old barn with the size of about 50 feet by 90 feet with the height of 50 feet. This is constructed with wooden walls with tin roofs. However, the overall condition of the barn is not in good condition due to its rusty roofs and possibly rotten wood walls.
The Van Hook residential house is a one story building made of concrete and red bricks, paved with concrete all around. The neighboring houses are low profile with the exception of the bale house in full belly farm property. In addition, the only buildings that have high vertical profile are the barns and sheds both in the property and its neighbor, full bell farm. One open shed is present near the house which is possibly used for storing tractors and other farming vehicles. This shed is located near the lined pond next to the house.

Fencing
The two main fencing materials used in the property are chicken wire and barb wire supported by wood posts of various sizes. Some of these fencing are rusty and should be removed prior to public use. In addition, there are random fences throughout the property and some of the fences that separate the different land parcels are no longer in tact.

Existing Water Supply
Groundwater is vital to the property’s domestic water supply. Recharge of groundwater basins comes from deep penetration of rainwater and excess surface irrigation water, seepage from canals and ditches, percolation from streams, and subsurface inflow. Even though the property owner does not pump water directly from Cache Creek, the creek is important in replenishing the groundwater supplies. Unfortunately, groundwater quantities are decreasing due to increasing water requirements as a result of expanding irrigation practices.

The owner has riparian rights from the Yolo County Flood Control & Water Conservation District to access water from Cache Creek when he purchased the property; however, he has not used any of its water for almost eight years since the land has not been irrigated for many years. Instead, the property’s water supply source currently consists of one active well for domestic use. The well is located near the main house and the guest house. It has not been tested for chemical contaminants for some time. The water quality and quantity specifically from the well are unknown.

The Yolo County Planning & Planning Works reports groundwater quality in the Yolo basin is good for agricultural and municipal uses, though it is hard to very hard overall. Two of the concerns are the boron concentrations and salinity. In 2007, tests for boron concentrations in active wells showed boron contents ranging from 0.6 mg/L to 1.7 mg/L. Wells with boron concentrations over 2 mg/L generally have been abandoned. The intrusion of saline water into fresh water could occur in Yolo County. Increase of groundwater use from deeper wells could lower the groundwater basin which then allows saline water to contaminate the water supply.

Proposed Water Supply
Additional water would be provided by additional wells and recycled water. Recycled water from an on-site natural wastewater treatment system can be used for toilet flushing. Groundwater from wells can be treated to remove dissolved solids and hardness to provide potable water.

Existing Wastewater Treatment and Disposal
There is no public wastewater system available, thus the property relies on septic systems and leach fields. Septic tanks and leach fields are a feasible wastewater management
system if properly designed, constructed, and maintained. Maintenance of the septic system primarily requires inspecting and removing the accumulated sludge on a periodic basis.

Proposed Wastewater Treatment and Disposal

Option 1 – Recycled wastewater could be used for toilet flushing and irrigation. The excess wastewater could be disposed of through the development of additional leach fields. The new leach fields could be constructed on the property beneath hard surfaced areas such as parking lots. The approximate acres of land required to meet wastewater disposal demands is unknown.

Option 2- Recycled wastewater could be used for toilet flushing and irrigation. The excess wastewater could be disposed into septic tanks and pumped out to prevent leach field failure and groundwater contamination.

The Yolo County Public Health Department is responsible for the location and inspection of domestic water wells and the placement of septic tank systems in relation to stream courses or existing wells and water bodies.

Existing Energy Resources

Electricity is provided by Pacific Gas and Electric Company (PG&E) through power lines along County Road 16. The property also uses propane gas from PG&E.

Proposed Energy Resources

To meet the demand of electricity, fuel cells can increase the site’s electricity supply. Fuel cells convert fuel to electricity through an electrochemical process rather than a combustion process. The process only has carbon dioxide and water as byproducts so the emissions are much cleaner. Natural gas can be purchased from PG&E to power the fuel cells, as well as for heating. Although extraction of natural gas or propane could produce negative environmental impacts because of their limited supplies, other sustainable sources of gas to run fuel cells would be considered, such as extracting hydrogen from water using wind or solar energy.
Capay Valley sits on the Central Valley and lacks parks. As seen in these diagrams, there is only one park (Vernon Nicholas Community Park) which shows the need for another park on the site.

Other areas of interest includes Cache Creek Casino which sits in tribal land and Full Belly Farm. These attractions can bring human traffic to the proposed site which can act as another stop in what seems like a valley that lacks interest.
INFRASTRUCTURE

The infrastructure on the site includes the different farm buildings such as shed and the barn as well as Van Hook’s resident house. These infrastructure can be opportunities for the site such as the barn as a possible visitor center.
VISUAL CHARACTERISTICS

-The existing barn near the entrance of the property is the first object that can be seen from the road. This would be a perfect location for a visitors center, and the existing barn provides an authentic Capay Valley aesthetic.

-Cache Creek runs through the east portion of the property, creating beautiful visual appeal as well as potential recreation for the site. The creek does create a physical barrier from the hills in the far east of the property, so a bridge may be needed to provide complete access to the site.
- The image below is the potential location for an artificial lake for recreation purposes. The area can be seen from the road, adding additional interest to the site for those individuals driving by.

The image below is a field that has been heavily grazed on the west side of the property. This area is largely flat, and is easily visible from the road, with a sparse smattering of oak trees.
These are the various views from the road, driving North onto the site. The image to the left will be the first view of the site, with the barn/visitors center as a point of interest. The view in the bottom left photo is what visitors would see as they are driving up to the property. The bottom right photo is a closer view driving up to the location of the existing main driveway onto the site.
1. Located away from other parks, good for people in that area
2. Create an educational experience with visitor center/museum, agricultural and livestock demonstration areas, green technologies, informative signage, internship possibilities
3. Preserve beauty of Capay Valley, prevent urban sprawl
4. Potential for restoration and reuse of barn, other structures
5. Site currently with limited electricity, water, sewage for a state park
6. Integrate the rich history of the Capay Valley
7. Restore riparian, grassland, oak woodlands
8. Recreation along Cache Creek, Poppy Creek
9. Opportunity to capture visitors from Full Belly Farms, Cache Creek Casino, Clear Lake, Cache Creek users
10. Far away, provides sense of solitude
11. Encourages active lifestyle and interaction with nature through hiking trails, water sports, fishing, camping
12. Opportunities to showcase/utilize sustainable technologies and ideas (bioswales, rain gardens, retention ponds, grey water reuse, wetlands)
13. Opportunities to collaborate with neighbors for restoration, agriculture demonstration, livestock demonstration
14. Livestock and agriculture demonstration potential
15. Possible future connection to other federal or state parks and wilderness areas
16. Opportunities for restaurant and/or concessions
17. Potential rodeo venue on site
18. Event possibilities - meetings, retreats, reunions, picnics, barbecues, summer camp, local festivals
19. Potential for better connectivity with bridge(s)
20. Potential for life estate for current owners
21. Open space opportunities
22. Opportunities for animals to be brought to the site
23. Opportunity to lease some land for grazing
24. Use existing culverts to cross under highway
25. Views of the Capay Valley and/or Coast Ranges

SCENIC OAK WOODLAND W/ SLOPES 20-27%

BANK FULL CHANNEL
COMBINED SITE ANALYSIS - CONSTRAINTS

- Areas with good agricultural soil
- Riparian areas
- Low flow channel
- State Highway 16
- Grazing areas with slopes 2.2%
1. Not along a common road, won't find it unless you're looking
2. 200 acre property, with some issues
3. Bring people to the area and may disturb neighbors
4. Seasonality issues, not interesting in the off-season
5. Property ends before it really gets interesting
6. The site would have to create interest, because currently it is not a destination
7. Far to get medical assistance
8. Bringing people could alter the natural habitat
9. In low water times, further stress will be added to the environment
10. Fallen and dead plant material, debris and extra equipment needs to be removed
11. Can only be reached by car, need public transit system to diminish onsite parking
12. Need to bring electricity, water and sewage solution to the west side of site
13. Need vehicle entry on west side of site
14. Will need parking
15. Occasional flooding along creeks
16. Highway 18 runs through the center of the property, could be dangerous to cross, also adds noise
17. Cache Creek and Poppy Creek runs through property, will need bridges
18. Invasive species along riparian area on Cache Creek and near residential buildings
19. West side of the property is highly grazed
20. Steep slopes on the east side
21. Cut banks along Poppy Creek and Cache Creek
22. Loss of vegetation to fire along poppy Creek
23. Endangered species in Cache Creek
24. Existing buildings on site, some will need renovation to be usable
25. Earth dam and lined pond
26. Poor soils on western side of property
The goals for circulation are to successfully manage the movement of vehicles and to link together all the activity areas in the park.

The circulation design includes one primary road and three secondary roads. The main entry road, east from Highway 16, terminates at the Visitor Center which will be the central point of pedestrian and vehicular traffic. Three secondary roads will lead visitors to separate activities such as the equestrian corral, group camping, and family camping.

The main road will be paved with asphalt to accommodate heavy traffic. County Road 43 will be treated with decomposed granite whereas the extended new road west of Highway 16 and the road off of Road 43 will remain dirt roads.

The width of the roads ranges from 22 to 26 feet and the main road will have shoulder space of eight feet per side.
The areas for group camp and family camp are located adjacent to one another, separated by Poppy Creek. Access to the family camp site is limited due to steep topography and Poppy Creek. Instead of constructing a separate entry road for the family camp site which would require either regrading a steep slope or building a bridge, visitors can drive across the creek. Allowing visitors to drive through the creek during the dry season is effective because the road would require little grading with low construction and maintenance costs and the camp would be linked to other park activities.

A small area of the creek bank would be graded and layered with gravel to protect the soil and provide a designated path for vehicles. When water flows through Poppy Creek, the regraded area would delay the flow before the water empties into Cache Creek. During the rainy season, warning signs would prohibit visitors from driving through the creek.
The road intersection will be designed to allow safe street crossing for pedestrians by turning the center into an elevated speed table and using textures and colors to compel drivers to slow down.

Another way to reduce the speed of oncoming traffic from Highway 16 will be to lower the speed limit to 40MPH which would also allow drivers to become more aware of their surroundings.

Additionally, there will be a narrow speed table (as seen above) on the north (near County Road 43) and south sides of Highway 16 as vehicles near the site to enforce a lower speed.

The elevated intersection serves as a four-way crosswalk for pedestrians. The material is red brick placed in a herringbone pattern to give it an aesthetic look.
Drainage within the site will be designed using bioswales; a Low Impact Development technique.

Low Impact Development (LID): Site design strategy that uses natural and engineered infiltration and storage techniques to control storm water.

An overview of bioswales:

“Bioswale” is the term given to any vegetated swale or depression that conveys stormwater. Native plants work better in bioswales because they are well adapted to the environment and the region’s climate conditions.

They are designed to address two-year and ten-year storm events. Bioswales can guide stormwater to a water retention facility or they can retain it so that it slowly infiltrates the soil for groundwater recharge.

Vegetation removes a large portion of pollutants found in stormwater runoff such as: pesticides, herbicides, heavy metals, oil and grease.

Bioswales are important because they:
- increase wildlife habitat
- protect water quality by reducing sediment and nutrient loads
- reduce land clearing and grading costs
- reduce infrastructure costs (streets, curbs, gutters, sidewalks)

A bioswale will be running along each paved road (graded at a two percent slope) to receive runoff.
TOP LEFT: Site map indicating locations of parking

BELOW: Pond and picnic area parking- gravel surface, undesignated parking space for 10 vehicles

BELOW: Group camp parking - gravel surface, undesignated parking space for 20 vehicles
The Capay Valley State Park’s 7.5 mile trail system (excluding the individual feature path) is a multi-use trail network that extends through 220 acres of natural areas from west to east. It crosses Poppy Creek and Cache Creek, links the Equestrian Corral, Oak Savannah, Ground Picnic Area, Agriculture Field, Fishing Pond, Visitor Center, Riverwalk, Native Garden, Camp Ground, and Uphill Hiking areas together, and connects three major parking lots. Our goal is to provide a path that will allow users to enjoy the beautiful and peaceful views of Capay Valley.
In order to let everyone enjoy the programs of the state park, such as camping, picnicking, fishing, enjoy the scene of the Capay Valley, out of the 7.5 miles of hiking and biking trail, 1 mile 10 feet wide asphalt path is designed for ADA accessibility. It is located in the center of the park, allows everyone access to the major features such as Central Picnic Ground, Riverwalk, Native garden, Camp Ground and the North Bridge. East of the site is not designed for ADA accessibility, due to rocky upward slope.

Numerous benches are set along the path, gives enough friendly seating. Naturalized areas of wildflowers, shrubs, and trees are the important site view of the trail.

This 8 foot wide decomposed granite path is open to hikers, dog-walkers, and cyclists. While walking or bike riding, visitors can access to the Cache Creek water’s edge. Through the path, they can also get close to the farm land, and experience the scene of Cache Creek Bridges and Capay Valley Uphill.
Path along the Equestrian Corral is a 6’ wide dirt trail, allowing group and family and individual watch and get close to the horses. It will also be open to equestrians sometimes.

The trail will cross Poppy Creek and Cache Creek, naturalized bridges can bring another pleasure and peace scene to the site.
- As a part of the pedestrian circulation in the park, there will be two foot bridges that will span across Cache Creek to give users access to the hiking trails on the eastern slopes. The bridges will also provide equal-access by complying with the American Disabilities Act building codes.

- The height of both bridges will allow ample clearance for summer rafters to pass underneath and also not disturbing the increased water flow from fall and winter rainy seasons.

The up and down meandering of the bridges provide the necessary clearance for rafters while the aesthetics give users a sense of surrounding by mimicking the natural curves of the creek.
The Cultural Landscape Planning & Stewardship Program is an effort on the part of California’s State Parks and the National Park Service to develop management and treatment plans for parks nominated for National Historic Landmark status throughout California. Parks such as, Big Basin, Jack London, and Bodie State Historic Parks are examples of what the proposed Capay Valley State Park could be.

The U.S. Department of the Interior, Interior Secretary of State, National Park Service and the National Register of Historic Places have developed a set of criteria for determining if a building such as the existing barn at the study site is eligible for nomination for historic preservation status. While it was beyond the scope of this work to determine the property’s historical significance (and the barn in particular), it is certainly worth noting some of the characteristics of this structure and to consider the potential for adaptive re-use.

According to a recent report done for Cal Trans by graduate students in the UC Davis Landscape Architecture program, under the supervision of Professor S. McNiel, on the Visual Characteristics of California’s Agricultural Landscapes, the barn at this site is a classic example of the California Transverse Crib Barn, a style very popular throughout California over the past 100-150 years.

The four main treatment approaches for structures of potentially historic significance are: preservation, rehabilitation, restoration and reconstruction (detailed descriptions are available on the National Park Service website). Rehabilitation seems to allow the most latitude for replacements due to deterioration, and may include applications for adaptive re-use of the site to meet current uses.
Through analysis of aerial photographs and field measurements the footprint and height of the building were determined. We recognized the importance of protecting the adjacent Poppy Creek from excessive trampling and subsequent erosion by excessive foot traffic, and concluded that the renovated barn would best be moved forward (South) ~80’ and to the left (West) ~20’. This adjustment would maintain the existing angle of the barn and its relationship to the surroundings, including the view that one gets of it when approaching from the highway. The viewshed aspect of the structures visual character is of historical significance.

A case-study of a nearby barn which has been renovated (without applying for historical status), at Taber Ranch down the road, was conducted and became a helpful tool for envisioning what the barn at our park could be like. While the original footprint, size, shape, layout and arrangement of the Taber Ranch barn were preserved in the renovation process, as well as most of the original materials, certain modifications were made to provide more light, access, and overall comfort to the building.

Methods for documenting historic landmarks are varied and many hours of work by architects, landscape architects, archaeologists and historians often go into this processes. Many beautiful pencil sketches are available online for free public viewing, including this fantastic drawing below by Steve Eccher and Christian Overby for the Wilder Ranch Horse Barn in Santa Cruz, CA.
ABOVE: 3-dimensional computer model of the CVSP Visitor Center and historic barn.
While it is recommended that museum collections should pay tribute to the unique ecology and cultural history of the Capay Valley, it might also serve as a showcase for sustainable technologies such as, rainwater catchment and solar panels on an adjacent “water tower” like structure nearby. Fresh local produce would be made available for picnic lunches and special event dinners, as well as the sale of local arts and crafts, literature and educational toys for children.
To the left of the visitor center I am proposing an interactive river simulation walk that will mimic Cache Creek. The idea of the river walk is to attract visitors to this life size model of Cache Creek. The path will be an exciting outdoor exhibit that educates and familiarizes the public with Cache Creek.

Easily accessible and noticeable from highway 16, the river walk is designed to accommodate anyone and everyone. Its close proximity to the visitor center allows day users and people passing by the site a quick opportunity to get to know Cache Creek. It is handicap accessible and winds its way through the site for approximately 250 meters.

Throughout the walk there are different models of prominent features connected to Cache Creek. For example, there would be a small replica of the Capay Diversion Dam, as well as models of the three main tributaries (Bear Creek, Indian Valley Reservoir, and Clear Lake) that make up Cache Creek. This will make the walk more interactive and fun to play around for kids.

This windy path that grows narrow and wide in various areas will be made of a reflective glass material to better enhance the feeling of going down a river. It will be bordered on both sides at various places by river rocks and sand. The rest of the area will consist of native plants and wildflowers that are commonly found on Cache Creek.

As visitors come to the end of the river walk they will be directed to follow a trail system across Poppy Creek, or they can continue on through the Native Gardens located behind the visitor center, which is connected to a trail system that will lead down to the actual Cache Creek.
DESIGN INSPIRATION:
THE RIVER SIMULATION WALK OF CACHE CREEK WILL BE MADE OF A REFLECTIVE GLASS MATERIAL.

EXAMPLE:
SUN DIAL BRIDGE REDDING, CA.
Cache Creek River Simulation Axonometric
NATIVE GARDEN

Visitor Center
Main Entrance
Outdoor Cafe
Pervious Paving
Mini Maze
Gazebo
Picnic Table
Symmetrical Path
Cafe
Poppy Creek
River Simulation
Parking Lot
Picnic Table
Gazebo
Symmetrical Path
Visitor Center
Parking Lot
Main Entrance
Parking Lot
Venus Yuan (Xiao-yun)
Design Concept:
A Native Garden is designed behind the Visitor Center, southern of Poppy Creek, where a water view is given and it is convenient to access from Visitor Center, Cafe, parking lots and bike trial. Within the Native Garden, picnic table, gazebo, beautiful landscape ground, outdoor cafe and maze are provided for outdoor entertainments. Bioswale is designed to capture water running from higher slope to lower slope towards the Poppy Creek. At the time, rainwater is running toward the Poppy Creek with a 2% slope, that could irrigate the plants along the swale and prevent water overflowing in the garden.

Six plant species are selected for the Native Garden, most of them are native and drought tolerant in order to save irrigation water.
AGRICULTURE

Erik Gellerman

Key Agricultural Elements

1. Allow for part of the operation to be viewed by the public, to learn about sustainable agricultural practices
2. Utilization of crop rotation, land fallowing and cover crops
3. Utilizing hedgerows to protect crops from the wind and to limit the spread of weeds from neighboring areas
4. Polycultural operation
5. Provide pollinator habitat
6. Have a seasonal pumpkin patch to engage the community in the fall

Agricultural Plant List

Hedgerows
- Arctostaphylos sp. - Manzanita
- Ceanothus sp.
- Elymus glaucus - Blue Wildrye
- Muhlenbergia rigens - Deer grass
- Nassella pulchra - Purple needle grass
- Melica californica - Hair grass
- Prunus ilicifolia - Holly leaf Cherry (pollinator species seen below)

Pollinator Plants
- Arctostaphylos sp. - Manzanita
- Carissa occidentalis - Redbud
- Lupinus sp. - Lupine
- Heteromeles arbutifolia - Toyon
- Rhamnus californica - Coffeeberry
- Erigonum - Buckwheat
- Baccharis pilularis - Coyote bush
- Calycadenia - Rosinweed
- Mentzelia - Blazing star

Crops
- Artichoke
- Beans
- Broccoli
- Carrots
- Onions
- Spinach
- Melons
- Pumpkins
- Tomatoes

Orchard
- Citrus
- Pomegranate
- Olive
- Plums
- Peaches
- Walnuts
- Pigs

LDA 181P Erik Gellerman
March 11, 2009
Fish Species:
- Catfish
- Gambusia (mosquito fish)
- Large Mouth Bass
- Sunfish (Redear sunfish, Green sunfish, Bluegill sunfish)

Gambusia is beneficial to the pond because it prevents mosquito from forming in the water. These fish feeds on mosquito larvae preventing them from maturing. The large mouth bass and the catfish will have size requirement to encourage the fish to grow before getting fished out. Sunfish on the other hand will be more abundant in the pond. These fish will be good fish for recreation.
Section:
This section shows the informal open space that reside on the site. It also shows the picnic tables close to the pond where people are free to enjoy both the pond and open spaces all within the tree enclosed area. The section also shows the water fountain that is implemented in the pond to circulate oxygen in the water, preventing fish kills from lack of oxygen.

The site is ideal for the fish pond because a depression on the ground already exist. Excavation is only needed for our proposed pond size and the clay lining that the pond will require; but this is an opportunity as well because the soil taken from this pond can be used to bury the water cistern that the water group is proposing. Furthermore, the site is ideal because it is near the main road and the main park entrance. Trees surrounding the site can provide shade for the pond preventing evaporation as well as privacy for people who are fishing. This proposal can add another recreation to the site as well as provide a more accessible picnic area for the east side of the park.

Fly fishing can be by all age group. In this sense, the fishing pond area will be able to accommodate people of all skill levels for fishing. The pond offers fly fishing casting area to the north as well as pole fishing on the south part of the pond. The fishing pond is not the only attraction to this site, however, because picnic area and informal open spaces are included in this site. In addition, the trail leads to various park attractions such as the agriculture and the interpretive river walk.
FISHING POND

FISHING POND MASTER PLAN

- Informal Open Space
- Fly Fishing Casting Area
- Fishing Pond (~Quarter Acre)
- Regular Fising
- Informal Parking Spaces
- Picnic Tables
- Viewing Dock with Railing
- Water Fountain for Oxygen Circulation
Capay Valley State Park is a showcase for the unique qualities of the Capay Valley. Camping at Capay Valley State Park is suitable for a wide range of visitors and age groups. There are accommodations for RVs, large groups, families, and outdoor adventurers. In order to get the most out of the park we encourage you to stay over night in one of our campgrounds.

Please stay and enjoy Cache Creek, the hiking and biking trails, the organic farm, native gardens, river walk simulation, fish pond, equestrian area, café and visitor’s center or any of the other adventures Capay Valley State Park has to offer!
Camping Master Plan

- Restroom
- Picnic Space
- RV
- Camp Site
- Poppy Creek Crossing
- Parking
- Group Campsite
- Lawn Area
- Amphitheatre
- Campsite Parking
- Family Camp Site
CAMPING

RV Camp

Our RV campground is the perfect road trip rest area! The campground is located next to Poppy Creek and is just a short walk from the visitor’s center and park café. We have bathrooms with flush toilets, drinking water, and picnic areas. Each spot has a picnic table, fire pit and even space to set up a tent.

Family Camp

Our family campsites are grouped into three different campgrounds. Each campground is equipped with flush toilet bathrooms and drinking water. These campgrounds are made up of semi-secluded cleared areas called family sites. Upon entering the park signs will direct you towards the family campgrounds. You just drive up to your campsite park and unload! These sites will accommodate about 8 people (3-4 tents). Each family site has a fire pit, picnic table and space to park your vehicle. These sites are the perfect way to spend time quality time with your family without having to worry about neighbors.
Our group campsites are perfect for large family reunions, company retreats or any other large group gathering. We have two large group campgrounds; each can be reserved, and accommodate a party of 30 people. These sites have clean drinking water, bathrooms with flush toilets, cleared campsites, picnic tables, and fire pits. There are covered and open picnic areas located in a large grassy area providing opportunities for informal recreation. There is also an amphitheatre which can be used for speeches, presentations, instructional meetings and even small performances!
The Oak Savannah restoration area is located on the west side of the property, which takes up about 75 acres of the site. The site is currently occupied by about less than 15 Valley oak trees. The rest of the site is predominately grassland. The goal of the oak savannah restoration is to increase tree canopies in order to allow recreation activities to happen and also to create more wildlife habitats and increase the biodiversity of the site. The oak savannah area will be mostly dominated by various oak species such as Coast live oak, valley oak, blue oak etc. with a mix of other trees such as California black walnut tree, Coulteri pine etc. The Oaks will be widely spaced and he understory plants will be dominated by California native grasses such as Deer grass, Grama grass etc. The oak savannah trail system, which will go through the whole site and also connect up with the picnic area near poppy creek and the equestrian trail, will allow visitors to observe wildlife and experience the natural California landscape. A total of 10 resting/picnic spots along the trail will be provided for our visitors.

Plant Species

Oak trees:
Quercus lobata: Valley Oak
Quercus agrifolio: Coast Live Oak
Quercus chrysolepis: Canyon Live Oak
Quercus douglasii: Blue Oak

Native grasses:
Nassella pulchra: Purple Needle Grass
Muhlenbergia regens: Deer Grass
Bouteloua cartipendula: Grama Grass
The Equestrian Center is located along the western boundary of the property. This 26-acre informal open space is designed for horse riding activities. The area is connected with the new road that connects to highway 16. The staging area can accommodate about 5 to 8 horses. Hedgerow will be planted around the area to serve as a border and also creates habitats for birds and pollinator species. The area will be surrounded by wooden fence to ensure safety for both horse riders and the pedestrian from the equestrian trail, which will be a trail that surrounds the equestrian area. The trail will be a dirt road and it will directly connects with the oak savannah trail. The trail will allow future expansion to the hiking trail on the foothills. The equestrian center will provide another experience for our visitors.

The Vineyard will be located along highway 16 and it serves as a transition between the agricultural field on the east side and the oak savannah on the west side. The vineyard will provide an aesthetic view from drivers along highway 16 and also the group picnic area.
CREEK RESTORATION FOR CAPAY VALLEY STATE PARK

Main Goals:
• Preserve and restore native riparian plants and physical structure of creeks to create a healthy riparian corridor.
• Promote land management practices that support sustainability and preserve watershed and riparian integrity.
• Promote appreciation and enjoyment of creeks through public outreach, education, and recreation.

Cache Creek Restoration Plan
Existing Conditions:
1. Invaded by arundo, star thistle, and tamarisk.
2. Existing native willows, valley oaks, alders, cottonwoods, sycamores, toyon, redbuds.

Objective:
1. Promote appreciation of Cache Creek.
2. Conserve biodiversity of Cache Creek.
3. Improve connectivity of Cache Creek with the uplands through Poppy Creek.
4. Public outreach, education, recreation.
5. Promote land management practices that support sustainability and preserve watershed integrity.

Tasks:
1. Remove arundo and tamarisk (roots included), spray with foliar herbicide or systemic herbicide as re-sprouting occurs.
2. Create/join local partnerships in removal of invasive plant species.
3. Reintroduce native riparian vegetation to shade out invasives.
4. Establish hedgerow and vegetated swale between field and riparian area to promote infiltration of water from ag field.
5. Use more sustainable irrigation methods in ag field.

Poppy Creek Restoration Plan
Existing Conditions:
1. Sediment clogging up road culvert.
2. Overgrazing of uplands contributing to soil loss to creek.
3. Bank erosion as fast current of creek cuts into them.
4. Minimal meander of creek bed in upper reaches.
5. Unnatural creek profile, with no terracing in some locations, very narrow channel in some locations.
7. Minimal plantings along creek on upper reaches (beyond barn).
8. Invasive species (Arundo, Tamarisk, Starthistle, etc.) in lower reaches.
9. Debris in creek bed (truck, woody debris).
11. Fire damage to trees on south bank next to ag field.
12. Wooden bridge by barn needs replacement.
13. Sharp escarpments in some locations (especially by barn).

Objective:
1. Promote creek appreciation through public outreach, recreation and education.
2. Restore riparian habitat for wildlife.
3. Improve connectivity of Cache Creek with the uplands.
4. Promote land management practices that support sustainability and preserve watershed integrity.
5. Create/join local partnerships in removal of invasive plant species.

Tasks:
1. Create a more natural creek bank with terracing on locations w/ erosion problems and room for channel recountouring.
2. Utilize bioretaining walls and willow planting where less room available for channel recountouring of bank slopes.
3. Remove debris in creekbed and banks.
4. Plant to promote shading out of invasive species.
5. Reintroduce native vegetation along stream bed and banks to promote bank stability and wildlife corridor.
6. Collaborate with upstream landowners and native plants along creek on upper reaches.
7. Re-establish upland grassland to promote infiltration and slow sheeting action of water.
8. Create bioswales, rain gardens to capture and treat water running off roads and parking lots.
9. Establish hedgerow and vegetated swale between field and riparian area to promote infiltration of water from ag field.
10. Install new bridges to cross creek. Make a small section of creek passable by vehicles. Make an integral part of site amenities and services.
11. Install seasonal hiking trails in terraces.
12. Install educational signage along trails.

Long term tasks:
1. Install path to allow for safer pedestrian and wildlife crossing beneath Highway 16 through culverts (will require road and/or creek augmentation).
2. Collaborate with upstream landowners to reintroduce meander and native plants along upper reaches of Poppy Creek.
CREEK RESTORATION- NATIVE PLANT LIST

Lower (Hydrologic) Floodplain
Grasses, Sedges, Rushes
Baltic rush
Bent grass
Clustered field sedge
Creeping wildrye
Deergrass
Flat-bladed rush
Meadow barley
Molate fescue
Salt grass
Santa Barbara sedge
Tufted Hairgrass
Yolo slender wheatgrass

Forbs
Goldenrod
Mugwort

Shrubs
Brown dogwood
California blackberry
California hibiscus
Mulefat
Snowberry

Trees
Black willow
Buttonwillow
California sycamore
Fremont cottonwood
Oregon ash
Red willow
Shining willow

Valley oak
White alder

Vines
California grape
Dutchman’s pipevine
Western clematis

From Capay Valley Conservation Manual, Yolo County RCD
Upper (Topographic) Floodplain

Grasses
Blue wildrye
California barley
California brome
California oniongrass
Creeping wildrye
Deergrass
Idaho fescue
Meadow barley
Nodding needlegrass
Pine bluegrass
Purple needlegrass
Salt grass
Yolo slender wheatgrass

Forbs
Mugwort

Shrubs
Blue blossom
Buckbrush
California blackberry
California wild rose
Coyote brush
Elderberry
Redbud
Toyon

Trees
Box elder
California black walnut
California buckeye
California sycamore

Coast live oak
Fremont cottonwood
Interior live oak
Valley oak

Vines
California grape
Dutchman’s pipevine
CREEK RESTORATION- PLAN VIEW

Restoration Techniques Applied
1. Recontouring and revegetation
2. Vegetated rock rip rap
3. Vegetated gabions
4. Live fascines
5. Revegetation
6. Rock weirs

Restore both branches of Poppy Creek

Bridge

Culvert crossing

River walk trails
Restoration Techniques Applied
Different techniques are applied, depending on the problem. Most of the problems are erosion related, but the locations or severity dictated the technique used. The restoration techniques chosen for this site mainly include planting native vegetation along with some technical bank protection. Vegetation is an important component of stream bank stability and riparian habitat. In these techniques, the plants growing in them provide shade, slow velocity of water and trap sediments suspended in the water. These techniques combine the structural integrity of technical bank protection with the positive biological aspects of vegetative cover. It also improves the aesthetics of the restoration by making the work done look more natural. The following are some of the techniques used in the design:

1. Recontouring and revegetation
Regrade the stream bank to a more natural slope, cover with geotextile filter fabric and then vegetate with native trees, shrubs, forbs and grasses. Live staking is can be used to secure the fabric. See figure 1.

figure 1
Recontouring using heavy equipment and hand tools. Some of the other materials in foreground.
2. Vegetated rock rip rap
Rocks placed on bank, live stakes are pushed into the soil below the rip rap and geotextile filter fabric at an angle perpendicular to the slope and angled slightly downstream. See figure 2.

3. Vegetated gabions
Gabions are metal cages filled with layers of rock and soil. They are placed next to the bank needing protection in a stable layer and tied together. A layer of soil is then placed on top, followed by a geotextile filter fabric. Live cuttings are then tamped into the gabions. See figure 3.
4. Live fascines
These are bundles of live pole cuttings that are placed in shallow trenches in the bank sides. They are held down with live stakes and covered with soil. The fascines reduce the erosive force of water coming down the bank from the adjoining land. There is plenty of material that can be gathered on site, so this is a good cost saving method to use. See figure 4.

![Live fascines detail](image)

5. Revegetation
Some areas need to be revegetated. The native plants that grow in the local area is best suited to be used because it is adapted to the local conditions and have the benefit of creating good habitat for native wildlife. Vegetation is also useful for shading out of invasives, so is integral in the management of the riparian corridors. See Capay Valley plant list.
6. Rock weirs

Due to the lack of meandering, the upper reaches of Poppy Creek releases water at high velocity. Rocks placed in the bed itself slows the high velocity flows by dissipating some of the energy when it encounters the rock weirs. See figures 5 and 6.

figure 5
Rocks dissipates energy in the high velocity waters.

figure 6
Smaller scale weirs in succession can also slow high velocity waters.
Vegetated rip rap:
- Rock and soil. Place soil over rocks, cover with geotextile fabric. Secure with live staking and pole plantings.

Existing bank

New bank profile

Rocks

Revegetate bank:
- Plant natives to secure bank.
Recontouring and revegetation: Grading back banks and revegetating with native riparian plants to stabilize banks.

Revegetate with native riparian plants to stabilize banks.
Vegetated Gabions:
Wire boxes filled with rock and soil. Place soil over top of gabions, cover with geotextile fabric. Secure with live staking and pole plantings.
VEGETATION MANAGEMENT & HABITAT ENHANCEMENT

Carly Brennan

VEGETATION MANAGEMENT & RESTORATION
The site we are focusing on is located in Guinda, CA, which is located in the Capay Valley. Cache Creek runs north-south, through the eastern side of the site. The immediate areas east and west of Cache Creek are riparian areas that have invasive species such as Arundo (Giant Reed) and Tamarix present. These species need special management. In addition, the restoration of native plant species is needed. The following is information about invasives, natives, and the implementation of native plant restoration as well as creek bed erosion control.

My goals are to control invasive plants, restore native plant species, and maintain and restore natural habitats for native wildlife.

It is important to control Invasives on the east side of Highway 16. The two main invasives are Tamarix and Arundo. Tamarix has indirectly changed the hydrograph and channel morphology of Cache Creek and directly impacted the vegetation in the riparian zone. In riparian systems, species such as giant reed (Arundo donax) clog stream channels, increasing the severity of flood-erosion events. This species is also highly flammable. There are a few removal types: bulldozers to eliminate above ground and below ground level biomasses (roots, stumps, plants, etc.), control burns, cut-stump pruning. It is also important to restore native plant species such as Valley Oak, Blue Oak, Gray Pine, California Sycamore, Toyon, and Western Redbud to name a few. The area consists of mixed chaparral natives, for example Scrub Oak, Chaparral Oak, and several species of Ceanothus and Manzanita. Commonly associated shrubs include: Chamise, Birchleaf Mountain Mahogany, Silk-Tassel, Toyon, Yerba-
santa, California Buckeye, Sumac, California Buckthorn, Hollyleaf Cherry, Montana Chaparral-pea, and California Fremontia.

It is also important to restore vegetation on the west side of Highway 16. Our class decided on implementing an Oak Savannah and native grasses. There are 11 native grasses to the area are pine bluegrass, squirrel tail, meadow barley, blue wildrye, purple needlegrass, California melic, creeping wildrye, saltgrass, and three native annuals, low barley small fescue, and annual hairgrass. These native grasses are interspersed among the wildflowers, forbs and European annual grasses. Native grasses account for about 2% of the cover, non-native grasses account for about 20%, and the rest is wildflowers and native forbs. In order to maintain the native grasses, a grazing regime is necessary, such as rotating goats and sheep.

Restoration guidelines consist of site assessment, revegetation plan preparation, plant selection, plant procurement, site preparation, plant installation techniques, maintenance, and monitoring. Management actions must be repeated with enough frequency to prevent re-establishment of invasive species. Three to four treatments are required annually during the first three years of management with annual to bi-annual maintenance needed thereafter. Bank stabilization consists of erosion control, revegetation with native species, as well as weed management. Thick mulch, landscape fabric, straw wattle, and/or cover crops such as local native grasses implemented following the removal of aboveground biomass. Irrigation and dead plant replacement should occur for the first three years. Plantings should be kept free of weeds and pruned regularly as needed.
VEGETATION MANAGEMENT & HABITAT ENHANCEMENT

Use of vegetative visual screens is also suggested in order to:
- Block the view of the caretaker’s house
- Block views of water tanks and other utility features
- Block views from neighbors
- Block negative views from road
- Keep camping areas more private and secluded feeling

With the implementation of vegetation management and restoration techniques described in this section, the Van Hook will be ready to become a state park.

MAP OF LAND USES, VEGETATION AND HABITATS
VEGETATION MANAGEMENT & HABITAT ENHANCEMENT

HABITAT ENHANCEMENT & RESTORATION
Many different species of wild animals live in the Capay Valley. Drastically changing the Van Hook-Ribbs Ranch site has positive and negative effects on the existing environment and wildlife. The positive effects are that natural, non-invasive species will be restored. The negative effects are that the existing hydrology, habitats, and environment will be changed. In order to cater to the needs of existing wildlife, habitat enhancement is needed. The following are the wildlife present in the area as well as the habitat types they need to survive and thrive.

Examples of wildlife present in the Capay Valley are Tule Elk, Blacktail Deer, Mountain Lion, Black Bear, Coyote, Gray Fox, Bobcat, Badger, Raccoon, Beaver (or River Otter). Some birds that live in the area are Bald Eagle, Heron, Ducks, Geese, Nighthawk, Owl, Pigeons, Woodpeckers, Finches, Blackbirds, and more. You can see more bird species here: http://www.blm.gov/ca/st/en/fo/ukiah/ccbird.html

Different vegetation habitats that some of the native wildlife are attracted to are native open grasslands (for Tule Elk), Willows, Cottonwood, and other vegetation bordering creeks. The site consists of chaparral brushlands, which includes three brushland types with varied species composition.

Once the habitats of the native wildlife to the area are enhanced and restored, more wildlife will live on the property. This is key to attracting visitors to the state park because among other reasons, people like to experience nature and see wildlife when they visit parks and outdoor areas.
VEGETATION MANAGEMENT & HABITAT ENHANCEMENT

PHOTOS OF THE SITE
VEGETATION MANAGEMENT & HABITAT ENHANCEMENT

BEFORE RESTORATION

Sources:
U.S. Department of the Interior: Bureau of Land Management

Vegetation Restoration Guidelines
VEGETATION MANAGEMENT & HABITAT ENHANCEMENT

AFTER RESTORATION

WEST

AGGREGATE RESTORED

ERSOSION CONTROL

CACHE CREEK

INVASIVES CLEARED; NATIVES RESTORED

EAST

INVASIVES CLEARED; NATIVES RESTORED
VEGETATION MANAGEMENT & HABITAT ENHANCEMENT

DESIGN IDEAS

1. Invasives Childrens Play Garden
   A. Made of maintained and managed Arundo, dirt, sand, and shallow water.
   B. Area allows children to play freely while teaching them about invasives.
   C. Children can crawl and run through maintained and enclosed areas.
   D. Safe and educational; encourages creativity through free-play.

2. Native Wildlife Viewing Tours
   A. Guided tours of the natural wildlife on-site, such as nests, habitats, and more.
   B. Would be incorporated into trail systems.

FREE-PLAY
FREE-PLAY IN THE SAND
PLAYING WITH ITEMS FOUND IN NATURE
ENJOYING THE WATER
CHILDREN EMERGING FROM THE TUNNEL
CHILDREN PLAYING IN MAINTAINED AREAS

ARUNDO DONAX (GIANT REED)
The Invasives Childrens Playground will be made mostly of natural Arundo, or Giant Reed. The entrance and exit to the playground are the same. Part of the area will consist of maintained, naturally growing Arundo as seen in the photo on the right. Other aspects of the playground will consist of man-made tunnels (as seen to the right) and educational signs. In addition, at the end there is a large open dirt and shallow water area where children can play in the dirt and sand and play freely with whatever they find. It allows children to use their imagination to the fullest. Children can learn about the negative effects of invasive species on the environment and their negative effects on natural hydrology through the educational signs throughout the playground loop. It will be a safe, completely enclosed area that makes a loop so that parents can be assured that their children are safe from getting lost or wandering off.
WHAT ARE THE OPTIONS AVAILABLE?

- Groundwater
- Cache Creek
- Poppy Creek
- Rainwater
- Treated Wastewater

GROUNDWATER

- Half of the United States uses groundwater.

- Groundwater is usually clean, but may become polluted due to fertilizers, landfills, and gasoline slowly seeping into the water aquifer.

- Currently, there is a well on site.

CACHE CREEK

- Cache Creek has water flow year-round.

- Can pump out water to store for dry season.

- Far from main buildings on site.

- No current connections to Cache Creek on site.

POPPY CREEK

- Small seasonal creek only running during wet times.

- Limited amount of water & dry during summer.

- Can pump out water to store for dry season.

- No current connections to Poppy Creek on site.
WATER RESOURCE OPTIONS

RAINWATER

- Only available during wet seasons.
- Able to catch off of rooftops, solar panels, & parking lots.
- Can store for later use.
- Does not need to be filtered for use in non-edible gardens.

TREATED WASTEWATER

- Greywater & blackwater can be filtered & reused as treated wastewater.
- Treated wastewater can be used for toilets, washing machines, & plants.
- Can filter wastewater through multiple managements.

WATER RESOURCE PLANS

- Groundwater for visitors center, caretaker’s house, campsite & agriculture.
- Store water from Poppy Creek in a cistern during wet season for use in the oak savannah, stables, & picnic area.
- Use water from Poppy Creek to pump water to fish pond & keep water level with groundwater.
- Catch rainwater from rooftops, solar panels, and parking lots in basin & pump to water cistern for use in toilets, washing machines, & watering of gardens.
- Treated wastewater for use in toilets, washing machines, & watering of gardens.
Clivus Multrum

Clivus Multrum works by reusing the solids from human waste and converting the waste into compost.

“Composting is the breakdown of organic matter in the presence of aerobic organisms. This is the same process that happens wherever organic matter is exposed to oxygen and moisture: in forests; garden compost piles; lawns; etc. The composting toilet system allows human waste to break down into simple, stable compounds that have value as plant nutrients (i.e., fertilizer).” (Worrel Technologies)

Once the process is completed, the compost could be taken out and used onsite for agriculture and native gardens.

Bottom Left: diagram of foam flush toilet
Bottom Right: actual foam flush toilet
Clivus Multrum has two different technologies that can be integrated onsite. The foam flush toilet can be used in the Visitor Center and cafe. The waste will flow directly into a chamber that is preferably installed in the basement or the lowest level possible in order to utilize the force of gravity.

At the picnic areas, the M54 Trailhead would be installed since it is used less frequently. The Trailhead requires little maintenance other than taking out the compost when necessary.

Above: Perspective of the M54 Trail Head
The Living Machine

The Living Machine is an alternative strategy to handle the wastewater. “Living Machine® systems are decentralized wastewater treatment systems that mimic processes found in wetland environments.” (Technologies)

The wastewater goes through a series of filtration cells that allow the plants to absorb toxic chemicals and filter the water.

The process provides treated water to be reused for toilets, irrigation and washers.

The Living Machine could be demonstrated through educational tours to introduce the public to this unfamiliar method for treating waste water.

Below: Sketch of an educational sign in the green house
The Living Machine would be located on the northeast side of the agricultural field and across from the Visitor Center.

The Living Machine can be placed either indoors of a greenhouse or outdoors. It is possible to have both since it has separate series of cells. A greenhouse can be designed so that it could serve as a landmark on the site.

Below is the hybrid wetland system that would be ideal for the site.

The Best Possible Solution
The best alternative would be to use the Living Machine together with Clivus Multrum. The Living Machine would be used to treat the liquid wastewater while Clivus Multrum would be used to treat the solid waste.

Right: Table comparing the Living Machine to other possible alternatives for wastewater treatment
ENERGY

THE PROBLEM:

Today’s power generation emits large quantities of greenhouse gases and relies heavily on carbon-based fuels, which cause one-third of America’s global warming pollution. The current energy system is unsustainable, both economically and environmentally. Scientists urgently warn such pollution must be sharply reduced to avert the most serious consequences of climate change.

THE SOLUTION:

Viable, non-polluting generation alternatives exist to deliver reliable, cost-effective power to meet America’s needs. Renewable energy generation technologies like photovoltaic, wind, passive heating and cooling, and biofuels have been adding clean, reliable power to the grid for more than a decade.

THE BENEFITS:

Existing renewable energy technologies rely on fuels that are free and limitless, they emit no carbon dioxide to the environment, and they eliminate the uncertainty of volatile fossil fuels.

GREEN ENERGY AND STATE PARKS

The Van Hook State Park has the ability to showcase various types of green energy sources on a relatively small property. The site will include four specific types of green energy production:

-Solar Energy
-Passive Heating and Cooling
-Wind Energy
-Biofuel Technology

These demonstrations of green energy will teach the visitors of the importance of green technology, and encourage them to install similar technologies in their own home.
Solar Energy

Solar energy is captured from the sun’s rays and harnessed as a usable power source. Solar energy is divided into two categories: active and passive energy. Active energy requires the use of photovoltaic panels or pumps to collect rays from the sun. Passive solar energy is the method of acquiring energy through the orientation of structures or using materials that have favorable thermal properties.

Photovoltaic Power

Photovoltaic panels, or PV panels, are composed primarily out of very thin layers of silicon which are encapsulated by tempered glass on the front side. In the back, the photovoltaic panels are weatherproofed so that wet weather conditions can’t damage the panels. Each panel is made up of columns of modules, and these modules are made up of small cells. When the sunlight penetrates through the glass, the photons are absorbed by each of the silicon cells. The amount of cells activated by the sunlight is so large that it generates energy which can be harnessed for later use. Connected to the back of the module is a junction box which controls the power for the panel.

Benefits (Taken from Solar Direct)

- Using solar energy lowers utility bills.
- Installing a solar system increases property value.
- Purchase of a solar power system allows you to take advantage of available tax and financial incentives.
- PV systems are more reliable than utilities, particularly when the weather gets nasty.
**SOLAR ENERGY**

**SOLAR SHARED PARKING**

Manufactured by SunPower
*Solar shaded parking will be provided in the parking lot closest to the visitor’s center.

**SOLAR SLATE ROOF TILES**

Manufactured by PV Systems and Heritage Solar Slate
*Roof tiles will be placed on the restaurant on site.
The Davis Energy Group has manufactured an efficient heating and cooling system that helps regulate temperatures inside buildings. This product is designed to combine heating, cooling, ventilation cooling and fresh air cooling to the building. The NightBreeze technology is designed to capture night air and disperse it during the daytime when the temperatures rise. The system also works to heat the building during cold nights using the water heater or gas furnace system. Nightbreeze works to filter outside air as it enters the building, creating better air quality without pollutants or allergens.
WIND ENERGY

HOW IT WORKS

Like old fashioned windmills, today's wind machines use blades to collect the wind's kinetic energy. Windmills work because they slow down the speed of the wind. The wind flows over the airfoil shaped blades causing lift, like the effect on airplane wings, causing them to turn. The blades are connected to a drive shaft that turns an electric generator to produce electricity.

WHAT IS PRODUCED

Homes use approximately 9,400 kilowatt-hours (kWh) of electricity per year (about 780 kWh per month). Depending upon the average wind speed in the area, a wind turbine rated in the range of 5 to 15 kilowatts would be required to make a significant contribution to meet this demand.

Wind turbines produce no pollution and by using wind power it will offset pollution that would have been generated by the utility company. Over its life, a small residential wind turbine can offset approximately 1.2 tons of air pollutants and 200 tons of greenhouse gases. The wind system will usually recoup its investment through utility savings within 6 to 15 years and after that the electricity it produces will be virtually free.
**What is Biodiesel?**

Biodiesel is a completely natural, renewable fuel applicable in most any situation where conventional petroleum diesel is used. Even though "diesel" is part of its name, there are no petroleum or other fossil fuels in biodiesel. Biodiesel is 100% vegetable oil based.

One of the major advantages is that it can be used in existing engines and fuel injection equipment (no modification required) without negative impacts to operating performance. Biodiesel receives virtually the same M.P.G. rating as traditional diesel, and is the only alternative fuel for heavyweight vehicles that requires no special dispensing or storage equipment.

Used filtered vegetable oil is shown to the left. This oil has been treated and is ready to be used in any traditional diesel engine.

**How is Biodiesel Created?**

To ensure that the fuel injectors atomize the fuel in the correct pattern for efficient combustion, vegetable oil fuel must be heated to reduce its viscosity to that of diesel, either by electric coils or heat exchanger. This is done by using machines similar to the one shown below.

**Environmental Benefits**

Biodiesel is the only renewable alternative diesel fuel that actually reduces major greenhouse gas in the atmosphere. The use of biodiesel can also reduce the following emissions:

* Carbon monoxide
* Ozone-forming-hydrocarbons
* Hazardous diesel particulate
* Acid rain-causing sulfur dioxide
* Life cycle carbon dioxide
Trees and other plants help cool the environment, making vegetation a simple and effective way to reduce the temperature of buildings. Trees and vegetation lower surface and air temperatures by providing shade and through evapotranspiration. Shaded surfaces, for example, may be 20–45°F (11–25°C) cooler than the peak temperatures of unshaded materials. Evapotranspiration, alone or in combination with shading, can help reduce peak summer temperatures by 2–9°F (1–5°C).

Trees and vegetation are most useful as a mitigation strategy when planted in strategic locations around buildings or to shade pavement in parking lots and on streets. Researchers have found that planting deciduous trees or vines to the south and west is typically most effective for cooling a building, especially if they shade windows and part of the building’s roof.

Using natural light to eliminate buildings can drastically reduce energy inputs for the space. Scientifically, “Daylighting” is the use of direct, diffused or reflected sunlight to provide lighting for building interiors. Allowing more daylight into buildings is a proven renewable energy technology that saves money, increases worker health and productivity – and it improves the quality of the space. By adding a Daylighting System to buildings, it can introduce natural, bright light to the area while significantly reducing power use. Incorporating Daylighting reduces traditional lighting and other costs resulting in a potential payback of two to three years.
The Capay Valley State Park will have a variety of interpretive programs for both adults and children.

The map shows where some of the signs will be placed:

These programs allow visitors to interact with the environment, and learn about the ecology, natural and cultural history, sustainable agriculture and other systems. Signage in the Park will direct visitors and provide a welcoming atmosphere.

Legend:
- Entrance / Main Signs
- Interpretive Signs / Kiosks
- Trail Signs
- Wayfinders for Vehicles
- Wayfinders for Pedestrians
Main entrance sign is placed at the side of road 16 to guide visitors towards the visitor center. Other main signs direct visitors or service vehicles towards group camping parking lot and agriculture fields.

Color-coded trail signs tell visitors their location and how many miles of the trail they have travelled. These are found every 3 miles of each trail and at intersections.

Information Kiosks are found at areas where a lot of visitors are expected such as the main parking and the visitor center. They provide information about the Park and where the different activities are located.

Some of the stations will include Podcasts that allows visitors to listen to the information while venturing around the area. Audio devices are available for rent at the visitor center for people who may not have access to an ipod.

An interpretive program located at the foot bridge across Cache Creek educates visitors about the ecology of the river and the surrounding areas. Children can touch paw prints and learn about animals in the Capay Valley.

Signs provide information about the natural and cultural history of the Guinda Hills and Capay Valley. Visitors can use the stationary binocular to marvel at the natural landscape.
The interpretive program for agriculture educates visitors about organic farming practices. They can go on mini guided tours through the demonstration fields and gardens south of the visitor center. They will learn about the benefits of native pollinators, energy conservation and more. Children can learn the difference between agriculture and river soils through interactive play.

Interpretive programs and signage are also available for visitors who want to learn about sustainable practices in the Capay Valley State Park. They will have the opportunity to learn about wastewater systems and the use of alternative energy in the park.

Information about the restoration of Poppy Creek is located along parts of the creek where visitors can learn about the importance and function of riparian corridors. People can also learn about the impact of invasive species on the native ecosystem.
SITE ANALYSIS

GENERAL GOALS
1. Conservation, Restoration and Preservation of local ecosystems, natural resources and biodiversity.
2. For People to Celebrate and become Educated about the unique Natural and Cultural History of the Capay Valley.
3. To Allow Public Access for the enjoyment of waterfront lands, while maintaining preservation of Agricultural land-use status.
4. To Provide regional connections and destinations between surrounding public parks and preserves for community user groups.
5. To Maintain land compatibility between the proposed park, private property owners and surrounding neighbors.

SPECIFIC PROGRAM
1. Beach Access for swimming, picnicking, non-motorized boating, fishing, hiking and playing (w/ minimal road access and parking).
2. Low Impact Camping facilities within the riparian corridor (w/ minimal road access and parking).
3. Riparian Restoration, Removal of Invasive plant species, re-vegetation with Native plant groups, bank stabilization and Habitat Restoration.
4. Low Impact trail system for bicycles, hiking, wheelchair access and circulation.
5. Visitor/Education Center with some retail of locally produced vegetables, fruits, flowers and other crafts (w/ road access and parking).
6. Small café with simple menu from local agricultural business’ (w/ road access and parking).
8. Native Plant Demonstration Gardens and Meadows with picnic tables. Pollinator gardens, as well as gardens designed to provide food and cover for native song birds.
10. A medium-sized home for the current owners of the property (called a “life-estate”) to care-take and enjoy as a part of the land-trust agreement (w/ minimal road access and parking).
POSSIBLE ACTIVITIES IN DIFFERENT ZONES

ZONE 1
Good:
- Hiking/Biking
- Local Cafe/Visitor Center
- Picnicking
- Native Garden
- Play Field
- Roads
- Animals
- Organic Farm
- Wildlife/Riparian Restoration
- Green Space/Open Space

Medium:
- Local Cafe/Visitor Center
- Native Garden
- Play Field
- Roads
- Animals
- Organic Farm
- Wildlife/Riparian Restoration
- Green Space/Open Space

Bad:
- Fishing
- Local Cafe/Visitor Center
- Native Garden
- Parking
- Play Field
- House
- Organic Farm
- Wildlife/Riparian Restoration
- Animals

ZONE 2
Good:
- Hiking/Biking
- Local Cafe/Visitor Center
- Picnicking
- Native Garden
- Play Field
- Roads
- Animals
- Organic Farm
- Wildlife/Riparian Restoration
- Green Space/Open Space

Medium:
- Local Cafe/Visitor Center
- Native Garden
- Play Field
- Roads
- Animals
- Organic Farm
- Wildlife/Riparian Restoration
- Green Space/Open Space

Bad:
- Fishing
- Local Cafe/Visitor Center
- Native Garden
- Parking
- Play Field
- House
- Organic Farm
- Wildlife/Riparian Restoration
- Animals

ZONE 3
Good:
- Fishing
- Local Cafe/Visitor Center
- Native Garden
- Play Field
- Roads
- Animals
- Organic Farm
- Wildlife/Riparian Restoration
- Green Space/Open Space

Medium:
- Local Cafe/Visitor Center
- Native Garden
- Play Field
- Roads
- Animals
- Organic Farm
- Wildlife/Riparian Restoration
- Green Space/Open Space

Bad:
- Fishing
- Local Cafe/Visitor Center
- Native Garden
- Parking
- Play Field
- House
- Organic Farm
- Wildlife/Riparian Restoration
- Animals

ZONE 4
Good:
- Fishing
- Local Cafe/Visitor Center
- Native Garden
- Play Field
- Roads
- Animals
- Organic Farm
- Wildlife/Riparian Restoration
- Green Space/Open Space

Medium:
- Local Cafe/Visitor Center
- Native Garden
- Play Field
- Roads
- Animals
- Organic Farm
- Wildlife/Riparian Restoration
- Green Space/Open Space

Bad:
- Fishing
- Local Cafe/Visitor Center
- Native Garden
- Parking
- Play Field
- House
- Organic Farm
- Wildlife/Riparian Restoration
- Animals

ZONE 5
Good:
- Hiking/Biking
- Local Cafe/Visitor Center
- Picnicking
- Native Garden
- Play Field
- Roads
- Animals
- Organic Farm
- Wildlife/Riparian Restoration
- Green Space/Open Space

Medium:
- Local Cafe/Visitor Center
- Native Garden
- Play Field
- Roads
- Animals
- Organic Farm
- Wildlife/Riparian Restoration
- Green Space/Open Space

Bad:
- Fishing
- Local Cafe/Visitor Center
- Native Garden
- Parking
- Play Field
- House
- Organic Farm
- Wildlife/Riparian Restoration
- Animals

ZONE 6
Good:
- Local Cafe/Visitor Center
- Play Field
- Roads
- Animals
- Organic Farm
- Wildlife/Riparian Restoration
- Green Space/Open Space

Medium:
- Play Field
- Roads
- Animals
- Organic Farm
- Wildlife/Riparian Restoration
- Green Space/Open Space

Bad:
- Local Cafe/Visitor Center
- Play Field
- Roads
- Animals
- Organic Farm
- Wildlife/Riparian Restoration
- Green Space/Open Space

ZONE 7
Good:
- Local Cafe/Visitor Center
- Play Field
- Roads
- Animals
- Organic Farm
- Wildlife/Riparian Restoration
- Green Space/Open Space

Medium:
- Play Field
- Roads
- Animals
- Organic Farm
- Wildlife/Riparian Restoration
- Green Space/Open Space

Bad:
- Local Cafe/Visitor Center
- Play Field
- Roads
- Animals
- Organic Farm
- Wildlife/Riparian Restoration
- Green Space/Open Space
BUBBLE DIAGRAM/ MASTER PLAN:

- Organic Farm
- Parking
- Visitor Center
- Museum
- Greywater Storage
- Parking
- Native Garden
- Recreation Area
- Camp Ground
- Riparian Restoration Area
- Fishery
- Open Field
- Rodeo
- RD 16
- Cache Creek
MANAGEMENT STRATEGIES:

1. **Riparian Buffer Zone**: to Protect Water Quality, Minimize Erosion and Prevent Pollutants from discharging into the waterway.
   - Setbacks for low order streams = Minimum 25'
   - Setbacks for major streams = 150-300'
   - Bank Stabilization
   - Invasive Species Removal
   - Re-vegetation with Native species
   - Restoration of Habitat Corridor

2. **Constructed Wetlands**: to process Stormwater and utilize on-site Greywater and Rainwater Catchment for Outdoor Irrigation Purposes
   - Create Habitat, Educational, Recreational and Aesthetic Value
   - Bioremediation, Settlement of Suspended Sediments, Natural Filtration
   - Conjunctive Use Groundwater Recharge

3. **Chemical-free Zone**: to Protect Water Quality and Health, and Promote Integrated Pest Management Practices.
   - No synthetic pesticides, fertilizers, or herbicides

4. **Permeable Surfaces and Road Buffer Strips**: to Decrease Volume and Flow-rates of Runoff, and Prevent Pollutants from reaching streams.
   - No heavy metals (lead, chromium, copper)
   - No hydrocarbons (gasoline & motor oil)

5. **Water Conservation Measures**
   - Low-flow plumbing
   - Drought-tolerant Landscaping

6. **Low-Impact Development**
   - Enhance and Protect Natural Ecosystems
   - Minimize footprint of built environment
   - Utilize recycled materials & sustainable technologies
SITE ALTERNATIVE

Proposed Van Hook House

Organic Agriculture

Grazing Land

Bridge over Cache Creek
Carly Brennan, Sommer St. Michel, Carly Smith, and Kimberly Yeo

Proposed Van Hook House
Organic Agriculture
Grazing Land
Bridge over Cache Creek
Visitors Center
Gazebo
Canvas Tent Camping
Picnic Area
<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Located away from other parks, good for people in that area</td>
<td>1. Not along a common road; won't find it unless you're looking</td>
</tr>
<tr>
<td>2. Create an educational experience</td>
<td>2. Large property, with lots of problems</td>
</tr>
<tr>
<td>3. Preserve beauty of Capay Valley, prevent urban sprawl</td>
<td>3. Bring people to the area and may disturb neighbors</td>
</tr>
<tr>
<td>4. Restore areas of invasive species</td>
<td>4. Seasonality issues, not interesting in the off season</td>
</tr>
<tr>
<td>5. Integrate the rich history of the Capay Valley</td>
<td>5. Property ends before it really gets interesting</td>
</tr>
<tr>
<td>6. Create a communication between the site and Full Belly Farms, as well as with the Casino</td>
<td>6. The site would have to create interest, because currently it is not a destination</td>
</tr>
<tr>
<td>7. Recreation along Cache Creek</td>
<td>7. Far from civilization in case something goes wrong</td>
</tr>
<tr>
<td>8. Far away to get a sense of being alone</td>
<td>8. Bringing people could alter the natural habitat</td>
</tr>
<tr>
<td>9. Encourages active lifestyle</td>
<td>9. In low water times, further stress will be added to the environment</td>
</tr>
<tr>
<td>10. The casino brings people to the area</td>
<td>10. Something needs to be done with waste</td>
</tr>
<tr>
<td>11. With full belly next door, it would be easy to allow them to expand onto the site, or to have a partnership with them</td>
<td>11. Currently need to drive to get to the site—could a bus system be provided to diminish onsite parking</td>
</tr>
<tr>
<td>12. Potential for summer camps</td>
<td>12. Need to bring electricity to the site</td>
</tr>
<tr>
<td>15. Could have a restaurant</td>
<td>15. Only 200 acres</td>
</tr>
<tr>
<td>16. Internship possibilities</td>
<td>16. Highway runs through the center of the property</td>
</tr>
<tr>
<td>17. Event possibilities—meeting grounds, retreat space</td>
<td>17. Invasive species all along riparian area</td>
</tr>
<tr>
<td>18. Potential grassland area</td>
<td>18. West side of the property is highly grazed</td>
</tr>
<tr>
<td>19. Potential for Bioswales</td>
<td>19. Steep slopes on the east side</td>
</tr>
<tr>
<td>20. Potential for rain gardens</td>
<td>20. Cut banks along poppy creek</td>
</tr>
<tr>
<td>22. Opportunities for animals to be brought to the site</td>
<td>22. Existing buildings on site</td>
</tr>
<tr>
<td>23. Opportunity to lease land for grazing</td>
<td>23. Earthen Dam and lined pond</td>
</tr>
<tr>
<td>24. Use existing culvert to cross highway</td>
<td></td>
</tr>
<tr>
<td>25. Views of the Valley and Coast ranges</td>
<td></td>
</tr>
</tbody>
</table>
1. Pasture And Grazing Area: An Area for farm animals to graze in the open. This area will serve as an open area for families, schools, and other visitors to come visit and learn.

2. Orchard: Used for growing different types of food that will ultimately be harvested and served at the state park restaurant.

3. Existing open space: This existing space will remain open and untouched see what the site looked like before it was transformed into a state park.

4. Campgrounds: The campgrounds have plenty of parking and space as well as restrooms so that visitors can stay comfortably overnight. The campgrounds are unaltered natural plots of land.

5. Large green space: This space will be left wild with the exception of the introduction of a learning trail system and picnic areas. Clarence’s home will be located away from public trails.

6. Agriculture: A large portion of the park will be dedicated to agriculture fields where various crops will be planted. Visitors can learn from the these crops. The restaurant will serve food grown on site.

7. Nature walk: The nature walk simulates a river and is a safe walk for visitors to take as an introduction to the park.

8. Visitors center and restaurant: The visitor’s center will be the main hub where visitors will pay their state park dues, pick up information and maps, and learn about the park. The restaurant will serve healthy, organic meals made of food grown in the park.

9. Clarence’s house: The new house will be up on the hill so the Van Hooks can enjoy overlooking the new state park.
ALTERNATIVE MASTER PLAN
CAPAY VALLEY STATE PARK

ALTERNATE MASTER PLAN

Alternative Master Plan:
This plan focuses on the whole site as a place of destination. However, we also wanted to emphasize the importance of having small private places where people can enjoy themselves or their small group. We set up camp sites that can be rented if group camping for private purpose is needed such as a company outing. These private camp sites dominate the west side of the property where the site in itself is a constraint because of its location and size.
East side of the property is where most opportunities such as better soil and the creek reside. These guided us to putting the visitor center, agriculture land, native garden and informal camping on the east side of the property. The soil near highway 16 is ideal for agriculture and becomes the main focus of our site. We also emphasized on the creek by restoring the vegetation and wild life along the riparian corridor and at the same time putting a camp site for entertainment.
CAPAY VALLEY STATE PARK

PROGRAMS:
- Visitor center with informal shop for food, gifts, maps and information
- Museum on culture and agriculture of Capay Valley
- Water activities- kayaking, canoeing, rafting
- Farming demonstration
- Natural water treatment
- Native garden
- Wildlife restoration
- Tent camping
- Private camping
- RV parking
- Biking/ hiking/ walking trails
- Horseback riding (separate from walking/ biking)
- Informal green space for picnics and informal recreation
OPPORTUNITIES

THE ROADS ARE ALREADY COMPACTED AND SERVE AS A PATHWAY

EXISTING ROADS

HIGHWAY 16 HELPS ATTRACT BYPASSERS AND ANOUNCES

POSSIBLE LOCATION FOR RESTAURANTS AND SMALL SHOPS NEXT TO HIGHWAY

POSSIBLE SELF ESTATE LOCATION

OPPORTUNITY TO LEASE LAND FOR GRAZING OR TRAILS

LEVEL AND OPEN SPACE IS A GOOD AREA FOR PARKING AND/OR POSSIBLE PLACE FOR WASTE WATER MANAGEMENT FACILITY

EXISTING CULVERT THAT WORKS AS A TRAIL CROSSING
**OPPORTUNITIES**

- **Poppy Creek, Opportunity for Restoration**
- **Current Property with Amenities (Water, Electricity, Plumbing)** Opportunity for Civilian Centers or Restrooms
- **Prime Farm Land, (Yolo Loam) with Desirable Soil. Good for Educational Agriculture Opportunities**
- **Riparian Corridor** Is Great for Trails, Camping, Picnicking, Educational Opportunities, and Habitat Restoration
- **River Allows for Aquatic Activities such as Fishing, Rafting, and Swimming**
Constrains:

- Highway: Noise problem and divides the property in two.

Existing Roads:

Over grazed land that is made up of Corning Gravelly Loam, which is very poor agriculture soil.
CONCEPTS

**Flooding Zone of Poppy Creek**
- Disturbed area with level ground and a plastic lined pond

**Flooding Zone/Riparian Corridor**
- Includes habitat for 5 endangered animal species and includes 2 invasive plant species

**Johnson Canyon**
- Existing elevation only allows passage about halfway up the hills and need to cross Cache Creek to access this area

**Distributed/Tilled Agriculture Land**

**Existing Buildings that need to be Renovated**

**Cache Creek**
- Has two endangered fish species