

Esparto Middle School

“Budding”
Educational
Garden

Steven Roper
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Esparto Middle School "Budding" Educational Garden

A Senior Project Presented to the Landscape Architecture Program at the
University of California, Davis in Fulfillment of the Requirement for the
Degree of Bachelor's of Science in Landscape Architecture

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Abstract

The Yolo County Resource Conservation District (Yolo RCD) commits to protect, improve, and sustain the natural resources of Yolo County.

Resource Conservation Districts originally focused on soil and water issues, but their mission has broadened to include fish and wildlife habitat restoration, farmland preservation, and control of invasive plant and animal species. The Yolo RCD provides technical guidance, education, and on-site expertise for private landowners and growers, cities, schools, agencies, businesses, and research institutions.

The purpose of my senior project is to create a conceptual design for the Esparto Middle School in Esparto, CA. My project will emphasize the importance, and the positive effects school gardens can have on our children. My goal is not only to develop a conceptual design but also create a tool that can work simultaneously with the grant writing efforts of Yolo RCD to gain funding for projects like this in the future.

Acknowledgments

THANK YOU

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to my wife for showing me such love and support over these last few years, I would have never come this far without you.

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to the LDA crew, I have had an amazing experience and would not change it for the world.

to my mates, for your advice and friendly reassurance, but mostly for making me laugh everyday.

Dedication

To my Nana Daphne and my Grandad Bill. You taught me to appreciate the garden.

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Introduction.

Esparto is a small town located in Yolo County, California and is widely considered to be the gateway to the Capay Valley. The valley contains some of the richest agricultural soil in the area, and many of the organic farmers within the region have chosen the area as the home for their natural produce. The Capay Valley lies in the lower portion of the Cache Creek watershed. This area is not only ripe with historical significance, but it is also home to many of California's unique wildlife and plant communities.

Although geographically Esparto lies at the entrance to the Capay Valley, it is often not associated with this beautiful region of Northern California. Esparto is the population center of the valley region and is considered a low socio-economic area, with a large portion of the population earning a living from the agricultural industry.

So why would Esparto Middle School need an educational garden when it is surrounded by such natural beauty and agricultural richness?

Currently the Esparto Middle School campus consists of a landscape shared by so many of our public schools, a large grass area and asphalt with a sprinkle of trees. It is obvious that black tops and grass areas play an important role on a school campus, but this setting seems to be the default landscape when the school districts become void of ideas, motivation and of course money! With the schools throughout the state suffering major cutbacks, it is even more evident that the outdoor environment that surrounds our schools is steadily falling down the list of importance.

When I heard that the Yolo County Resource Conservation District wanted to collaborate with UC Davis Landscape Architecture program to develop an educational garden for the Esparto Middle School, I thought this would be a great opportunity to explore for my senior project. With such an important partner involved, I already knew that this could be the start of something that could potentially become a reality.

What is a School Garden ?

Many schools in this country could be typified by the term "School Grounds" rather than "School Garden". Fortunately in the mid 1980's, a campaign to improve the quality of school grounds was initiated in Britain under the Learning Through Landscapes program. This remarkably successful initiative soon grew into an international movement and during the past two decades, thousands of schools within the United States began to take a different approach to their school grounds and realized the potential for transforming the default landscape into a stimulating natural space for learning, playing and socializing. This, paired with the recent importance placed on healthy eating habits of the nation's children and the movement towards fresh organic produce has given rise to an increase in edible gardens, and the development of the school farm. School Gardens can incorporate anything from an insect garden to a perennial flower garden and can adapt to almost any subject within the school's curriculum. The scope of the transformation of school grounds is limited only by the imagination.

History of Garden Based Learning

The idea of integrating nature as an important part of a child's education is not a new idea. The thinking behind garden-based learning is actually a union of philosophies behind experimental education, ecological literacy and environmental awareness. (Subramaniam, A, 2002). It comprises of teaching children in a natural setting, encouraging personal discovery, learning environmental values as well as developing a sense of connection with the land.

As far back as the sixteenth century, philosopher John Amos Comenius believed that "A school garden should be connected to every school to allow children the opportunity to gaze upon trees, flowers and herbs". (Subramaniam, A, 2002). Over 100 years later the same educational beliefs were reiterated by Jean-Jacques Rousseau, who strongly believed that there was a deficit in teaching a child "about" something, rather than the things themselves. Rousseau also emphasized the importance of nature in learning, stating that "nature was the child's greatest teacher and that his knowledge of the natural world serves as a foundation for their later learning (Subramaniam, A, 2002).

Some of the first recognized school gardens were in Europe as early as 1525 and by 1891 the first official school garden was founded at George Putnam School of Roxbury, Massachusetts. Initially school gardens were implemented for aesthetics rather than as an educational tool, however their popularity grew and by 1918 every single state had a least one school garden. Youth gardening became a national movement and during the First World War, over a million students contributed to the production of food. Following



Fig 1.1

World War I the educational value of the school garden faded rapidly.

There was brief revival during World War II with the growing of victory gardens, but interest in this was lost after 1944. Garden plots were being replaced with athletic fields and playgrounds and schools were becoming more dedicated to technology. Between 1964 and 1975, with the environmental movement gaining momentum, school gardens were back on the agenda. There was a sense of public concern for the environment, which elevated the school garden to new heights. The school garden was now being looked upon as a radical and engaging way for children to understand their environment. Regardless of all the positive praise being heaped upon school gardens, the conservatism of the 1980's prevented them from becoming a staple of the school curriculum. In 1993, following a conference on youth gardening held by the American Horticultural Society, the spread of school gardens really started to take root. This built the foundation that led to the development of school gardens that have been witnessed over the last 2 decades.



Fig 1.2

Historic Timeline

1525

First Botanical Garden
Padua University, Italy

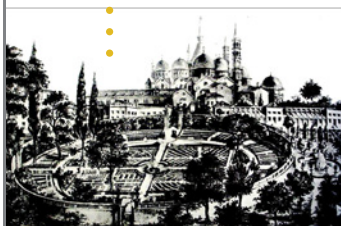


Fig 1.3

17th Century

Austrian mandate that all schools
must have school garden, spreads
throughout Europe.



Fig 1.5

1939 - 1945

Victory gardens increased food
production during the war.

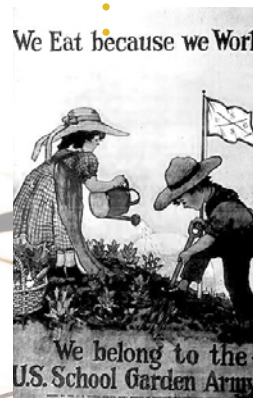


Fig 1.7

2006

California Legislature passed The
California School Instructional
Garden Act



Fig 1.9



Fig 1.4

16th Century

John Amos Comenius "A school garden should
be connected to every school to allow children
the opportunity to gaze upon trees, flowers and
herbs"



Fig 1.6

1918

Youth gardening became a
national movement & every state
in the US had a least one school
garden.



Fig 1.8

1993

A.H.S held first symposium based
on youth gardening.
"Children, Plants & Gardens -
Educational Opportunities".

(Subramaniam, A 2002)

The Benefits of School Gardens

Over the past two decades there has been increase in research-based literature that supports the use of school gardens as a positive teaching tool. In addition to subjective evidence, the research has found that involvement in school garden programs can have the following impacts on students.

Improve self-esteem and attitude toward school.

Improve social skills and behavior.

Improve environmental attitudes.

Improve interpersonal relationships.

Significantly increase science achievement scores.

Increase self esteem & help develop a sense of ownership & responsibility.

Increase interest and improve attitude toward eating fruit and vegetables.

Improve life skills, including working with groups and self-understanding

Improve group cohesion.

(Blair, D. 2009)

The research supporting garden-based Learning and school gardening opportunities is broadly categorized into the following areas:



ACADEMIC ACHIEVEMENT



ENVIRONMENTAL STEWARDSHIP



HEALTHY LIFESTYLE



COMMUNITY & SOCIAL DEVELOPMENT

(Blair, D. 2009)

Academic Achievement



Academic achievement is fundamentally what our education system is based upon. The aim of the education system is to ensure that students perform to a level that is defined by local, state and national academic standards. All lessons and activities must meet certain criteria to ensure the best use of valuable class time.

A school garden is a wonderful opportunity to offer children a hands-on-learning experience, regardless of the academic subject. When we think about using the garden as a learning tool, science seems to be the first subject that comes to mind. Many schools use their gardens as a living laboratory, introducing students to scientific methods through plant-related experiments. (Blair, D. 2009). The garden also presents students with a place to study insects, soil, climate and many other environmental themes. As well as science, the school garden offers the opportunity to teach many other subjects including; Mathematics, Art, English Language & Literature, History, Social-Science, and Languages. The school garden is a unique learning environment that provides a setting where ideas that seem abstract in the classroom come alive with practical, visual and hands-on education. The report, Closing the Achievement Gap: Using the Environment as an Integrated Context for Learning (E.I.C, Lieberman & Hoody, 1998). identified 40 programs that shared basic educational strategies, including: hands-on-learning, problem-solving, team teaching, individualized design and an emphasis on gaining knowledge and appreciation for the environment. The impacts of the program were:

- Better performance on standardized tests of reading, writing, math, social studies & science.
- Reduced classroom management & discipline problems.
- Increased attention & enthusiasm for learning.
- Greater pride & ownership of accomplishments.

Environmental Stewardship



A school garden is a powerful environmental educational tool (Blair, D. 2009). Through spending time and cultivating the school garden, students take on the role of caretaker giving them a sense of responsibility. The school garden allows them to be involved in small-scale agricultural and cultivation activities. By encouraging this interaction between students and the living components of the garden gives them a better understanding of the natural world they live in.

This is also a great opportunity for students to learn the importance of caring for our natural resources. Incorporating native or drought tolerant plants can highlight the significance of water conservation. This will emphasize that choosing the right plants can create a beautiful landscape that is also sensitive to our environment.

The school garden not only teaches students the aesthetic benefits that a garden can bring, but also draws attention to why specific plants have been chosen for certain areas. Native plants and plant communities represent the natural morphology of the land and can give students a look into how these plants once dominated the natural landscape. Students who learn these valuable garden practices can more readily consider the conservation issues we are likely to face in the future. According to the 2005 publication Children's active and passive interactions with plants influence their attitudes toward trees and gardening adults by V.I Lohr and C.H. Pearson-Mims, Childhood experiences with nature are strongly linked to adult attitudes towards plants. Participation in gardening during childhood is the most important influence on adult environmental attitude and actions. Gardening programs for children can provide a strong enough connection to instill application and respect for nature in adulthood.

Healthy Lifestyle



The school garden is not only a great platform for academic learning, but can also teach children much broader life lessons. For the last several years California has been experiencing a major health crisis as the number of overweight and unfit youth grows at an epidemic rate (Blair, D. 2009). The school garden is a great place to teach children the importance of nutrition and how to maintain a healthy lifestyle, by making healthier food choices.

Approximately over 30% of children in California are overweight, and almost 40% are considered unfit. (Childhood Obesity Action Network). These frightening statistics have led to an increase in the number of weight related diseases such as diabetes. This is not only a problem in California, but is also of great concern throughout the United States, and the need for prevention education is vital.

School garden programs offer the opportunity for students to learn about healthy lifestyles, including proper nutrition and positive physical activity. School gardens will inevitably increase the amount of produce available and through this exciting, hands-on experience students will also learn healthy eating habits. Research shows the children who plant and harvest their own fruit and vegetables are more willing to taste and like them (Morris, Briggs & Zidenberg-Cherr, 2000).

Eating healthy food is just a part of a healthy lifestyle. Students also need to embrace good exercise habits. The school garden can provide a variety of physical activities through lifting, digging, planting and weeding. Students that are performing these garden activities are often so enthralled, that they do not even realize they are exercising. Unlike other school activities children participate in, gardening is a hobby that can continue for the rest of their lives. Providing the students with these opportunities, will also allow them to take their positive experiences home to share with friends and family.

Community & Social Development



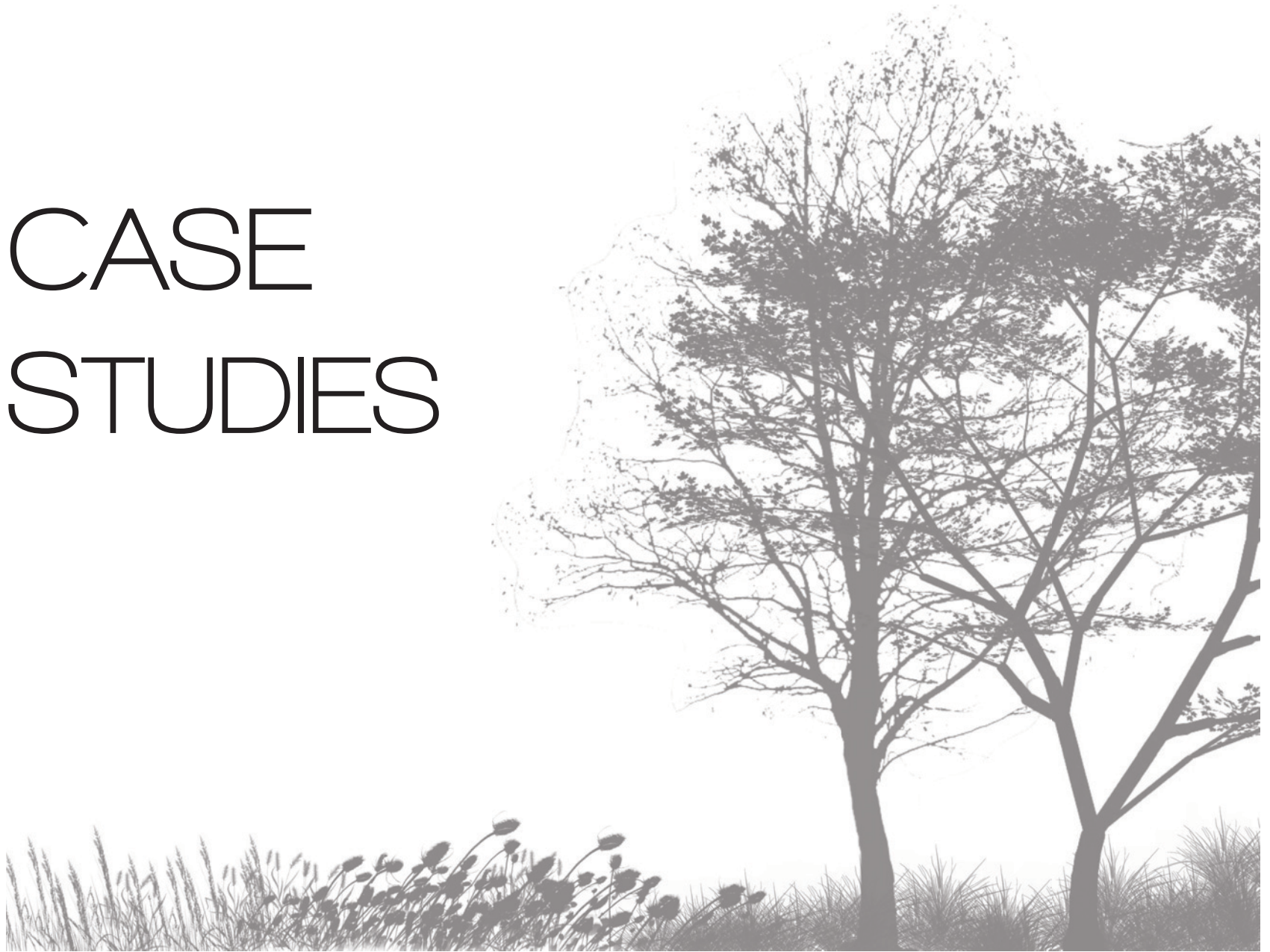
Then importance of community and social development in education does not generate the awareness that academic awareness does, but is considered as crucial as reading and writing. (Blair, D. 2009). It is important for children to learn how to take responsibility for their environment and develop a strong sense of community.

School gardens allow students to work together and help develop a sense of responsibility. Plants can provide positive reinforcement into proper care by growing and producing fruits and vegetables. On a personal level, gardening builds confidence, self esteem, and pride as students watch their efforts turn into a beautiful and productive landscape. (Skelly & Zajicek, 1998).

Gardening provides children with the opportunity for social interaction with teachers, parents and other community members. These interactions allow the students to share ideas and work with people who share a common goal.

The Evergreen Elementary School in West Sacramento, California offered small garden plots to families who were non-English speaking immigrants, primarily from Hmong and Mien cultures, who rarely participated in their children's activities. A demonstration garden grew vegetables and other plants familiar to the Hmong and Mien participants, thus encouraging participation by the parents. This project raised the self-esteem of the children as well as the non-English speaking parents, who were then valued as teachers. (Subramaniam, A 2002)

CASE STUDIES



Emerson / Da Vinci Junior High School, Davis, CA

I first discovered the shared campus of Emerson Junior High (EJH) and Da Vinci Junior High School (DVJH) whilst working on a previous project. Once I decided that I would be designing a school garden for my senior thesis, I knew the EJH/DVJHS garden would be a great case study. I visited the campus and met with the lead teacher at DVJH, Troy Reeves and she kindly gave me a tour of the campus. The garden covers an area of around 9000 sq. feet and is tucked away on the south end of the campus. I feel that without having had the benefit of a guided tour I would maybe not have even seen the garden.

My first impressions of the sight were that it was small for the size of the campus, but it wasn't until I entered the garden I really saw it's depth and complexity. I instantly had the feeling of being amongst nature; the garden is bursting with a wide range of plants ranging from grain crops, vegetables, herbs, annuals and perennials. I felt I had stepped out of the realm of a school campus and into some thing new. The south entrance of the garden is framed with a simple wooden arbor and the garden is wrapped in an old landscape timber fence. As I entered further I could feel the maturity of the garden, with the plants enclosing the narrow walk way and growing over and through the timber fence.

The initial section of the garden does not seem to have any apparent order, but the mixture of mature planting leaves slender pathways that lead to the rest of the garden. There are several mature redwoods and pines that frame the areas of the garden and give it a unique woodland feel for such a small space. Once into the main area of the garden suddenly got the sense that I was in a school garden, there was areas that had clearly been defined into plots for certain purposes. I also noticed that all the design features such as seating, fences and trellises were all made with reclaimed materials. I thought these features worked really well with the entire feel of the garden. I feel that the use of these materials in this natural style of garden is indicative of a community led garden.

The garden was started in 2000, and was expanded in 2005, with the original idea for the garden being developed by a small group of science students, a few passionate teachers and committed parents. Although the garden is relatively small it boasts hundreds of plants species and attracts a wide variety of insects. Over several years the program has evolved and the school now

uses the garden to teach curriculum in social studies, math's, Spanish, industrial arts and special education studies.

The garden initially was established because some of the science students felt the need for an outdoor laboratory. There is still a strong scientific component to the garden today, especially with a focus on biology. The students use the garden to study diversity and the life cycles of the plants and animals. Plants are also used for dissection and experiments, with a strong emphasis on the biological concepts of composting. I was surprised and impressed with how many subjects that the school has tied into the garden. Students have had the opportunity to use the produce from the garden to study origins of crops and how trade has helped these crops travel throughout the world. They have also had other valuable history lessons, by studying the foods and plants that were brought to the US with the slaves and the Europeans settlers.

Recently a section of the garden was completely landscaped, by the students from DVJH. There was no



New Landscape DVJH, Davis

Fig 2.1



Great use of reclaimed materials

Fig 2.2

particular focus on turning this area into something that could tie into the curriculum, but with a focus on bringing the students and teachers together to beautify the area. All the materials and plants were either reclaimed or donated and in one day the area was transformed. Reeves said "I was pleasantly surprised with the number of students that turned up to help and how enthusiastic they were about the project".

FINAL THOUGHTS

- Opened my eyes to the number of class subjects that can be incorporated in a school garden setting
- Using reclaimed materials to define areas is a great way to recycle and give the garden a unique natural feel.
- A school garden is a long-term project that takes time to set up and get established.
- Impressed with what can be achieved with a relatively small space.
- Location of the garden plays a key role in creating awareness.



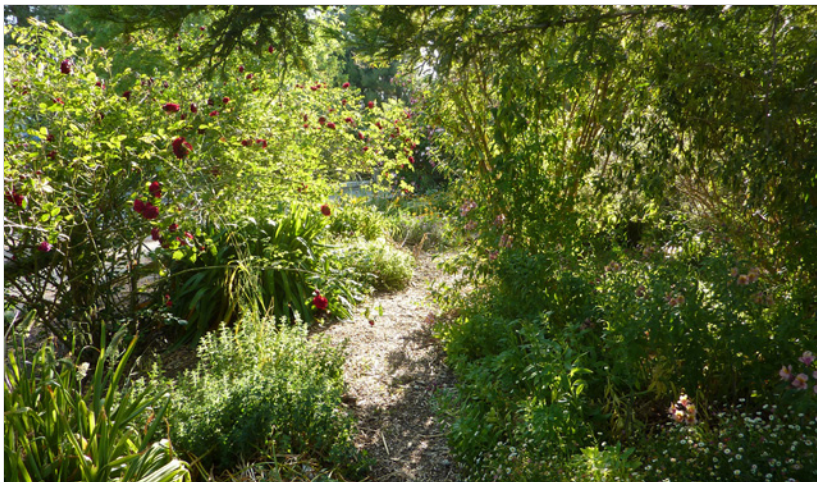
Composting at EJHS, Davis

Fig 2.3



Wooden Arbor Entry Way

Fig 2.4



Mature Planting Leaves Slender Pathways

Fig 2.5



Interesting Seating Structure

Fig 2.6

Cache Creek Nature Preserve, Woodland CA

After having several meetings with Diane Crumley from the Yolo County Resource Conservation District and discussing the project at length she encouraged me to go and visit the Cache Creek Nature Preserve. This seemed to be a perfect fit for my project at the Esparto Middle School. The Cache Creek Nature Preserve (CCNP) is a 130-acre property in the lower Cache Creek corridor, to the north west of Davis, CA. This area land is extremely rich in ecological, historical and cultural diversity was donated to Yolo county in 1999. The preserve open to the public the following year and is a wonderful example of considerate restoration, following human impact. Originally the was used for agriculture and aggregate mining.

I organized to take a trip to the reserve, and meet one of the interns, and good friend of mine Omar Sadik for an in depth tour. We started are tour by following the Cottonwood trail. The trail takes you through the riparian growth of the Cache Creek down on to a gravel bar within the creek. Sadik explained that this is where students who visit the preserve get the opportunity to use nets to catch and identify water creatures that are indicators of the water quality. Also, this is an area that is under restoration as there is a constant battle to suppress non-native invasive plants. Although the area is rife with non-native invaders, such as Arudo and Tamarisk this does provide the opportunity to learn about the destructive nature of these non-native plants.

One of the most striking areas of the preserve is the man-made wetland. The 28-acre wetland was created from a former gravel mine. The wetland is managed to maximize the wildlife habitat. Just like the natural wetlands this wetlands at provides habitat for many birds, mammals, native plants and aquatic organisms.. Not only does the wetland teach students about the various species of wildlife, but it is also an excellent tool for teaching the importance of water pollution and purification.

The eastern area of the preserve consists of oak woodlands and grassland, home to diverse wildlife and offering great viewing opportunities.

The preserve is also home to the Jan T. Lowery Memorial Grove and the Tendering and Gathering Garden. The Memorial Grove is a one-acre site consisting of a variety of native pants, shaded walkways and an amphitheater for educational programs.

The Tendering and Gathering Garden is a unique garden that is the result of a partnership between the native American community and the Cache Creek Preserve. The garden is used to demonstrate the traditional land and plant management practices of California's native people.



Cache Creek Waterway

Fig 2.7



Admiring the Wildlife

Fig 2.8



Panorama - Constructed Wetland

Fig 2.9

A stunning historic redwood barn dominates the center of the preserve. The barn was built in the late 1800's and highlights the historic agricultural use of the land, as well as emphasizing the importance that agriculture still plays in the surrounding areas.

FINAL THOUGHTS

- Great example of highlighting the biodiversity of the area.
- Offers comprehensive environmental education with a hands-on approach.
- Great use of signage to educate the user about the different elements on the site.
- Lots of different seating areas that allow for outdoor teaching opportunities.
- The Tendering and Gathering Garden is truly a unique and inspiring feature.



Historic Redwood Barn

Fig 2.10



Native American Gathering Garden

Fig 2.11



Memorial Garden

Fig 2.12



Outdoor Education Opportunities

Fig 2.13

UC Davis Ecological Garden, Davis CA

For my final case study I decided to visit the UC Davis Ecological Garden. The Ecological garden is located in the west side of the campus at the UC Davis Plant Science Teaching Center. The program started more than 20 years ago by a small group of students and since then has developed into thriving environmental education resource popular with students and teachers.

I visited the site on several different occasions, spending time observing how the site was used and looking carefully at the different elements within the site. My initial observations were that the site had similar feel to the garden at Emerson Junior High School. A well-established garden consisting of California natives, fruit trees, vegetables, culinary and medicinal herbs. Although there was clear passage through the garden, it felt like the paths were determined and controlled by the plants. The garden is clearly carefully managed, but it doesn't ever feel like that. Just like the garden at Emerson, it has the appearance and feel of a community led garden. All the other elements of the garden, i.e. the trellises, the raised planters, composting bins and the irrigation was all very simplistic, emphasizing the practicality of each element, rather than appearance. The garden also offered some great vertical elements: The Kiwi and Grape arbor, the Fig Tree and the fruit orchards all provide inviting areas of shade and evoke a feeling of relaxation. The site is scattered with movable benches and there is currently a temporary classroom created from hay bails that frames a seating area underneath the shade of a Hackberry tree.

The ecological garden comes to life during the spring quarter, March through June, by offering garden and farm tours to schoolchildren. I felt that this would be a great opportunity to see how the landscape is used for educational purposes. I contacted one of the programs garden guides, Susie Holden and asked if I could join one of the tours. The tour consisted of 25 2nd graders, with a few teachers and parent chaperones. The children were split up into smaller groups and went to different stations. The theme of this particular tour was sun and it's importance and influence in the garden, but each week the tours take on a different theme. The first station was to teach the children about green house has gas emissions. The children were told about the different gases that make up the atmosphere and where these gases come from. The children then performed a simple experiment

to empathize the negatives of green house gases and how it causes the earth to warm up. The other stations involved the children making finger salads, herb bouquets and taking part in a nutritional scavenger hunt. There was a focus on all the different types of plants that can be eaten in the garden and what vitamins they provide. The tour wrapped up with the children being taken over to



Crop Rows

Fig 2.14



Unique Trellis

Fig 2.15



The Historic Fig Tree

Fig 2.16

the market garden so they could see the comparison in a small and large ecological garden and a trip to the greenhouse to see the seedlings. Other activities that are also offered during the tour include: Food Meditation, Compost Systems, Plant care , Soils, Insects and Critters.

This was such a good experience to be able to see the garden being used in such a creative way. The children were so enthusiastic about all the different activities. I was surprised about their willingness to try all the fruits, vegetables and even the edible flowers, which they were particularly excited about.

FINAL THOUGHTS

- The creativity that an educational garden can induce.
- Great use of simple signage to educate visitors
- Excellent use of movable seating and creating temporary spaces to fit the needs of the garden.
- Very simplistic layout.
- Good choice of native plants.
- Lack of year round use.



Vine Trellis

Fig 2.17



Storage Bins

Fig 2.18



Simple Compost Structure

Fig 2.19



Temporary Outdoor Classroom

Fig 2.20

SITE CONTEXT



Location



Hydrology in the Cache Creek Watershed

Fig 3.1

The Esparto Middle School is located in Esparto, CA. Esparto is a small town located in Yolo County and is situated in the Capay Valley. The Valley boasts some of the richest agricultural soils in the area. These rich agricultural soils are a result of the valleys location within the Cache Creek watershed.



Historic Timeline

The Cache Creek watershed was home for Native American tribes for centuries before the Capay Valley entered modern history



Fig 3.2

1850

The area's proximity to markets in San Francisco and the gold country turned central Yolo County into a major grain-producing region during the California wheat boom



Fig 3.4

Early 19th Century

Agriculture emerged as the primary industry in Yolo County. The county was one of the original counties established when California became a state, and still remains an rural agricultural area today.



Fig 3.6



Fig 3.3

1846

The government of Mexico granted lands in the Capay Valley to three Berryessa brothers, beginning the period of settlement.

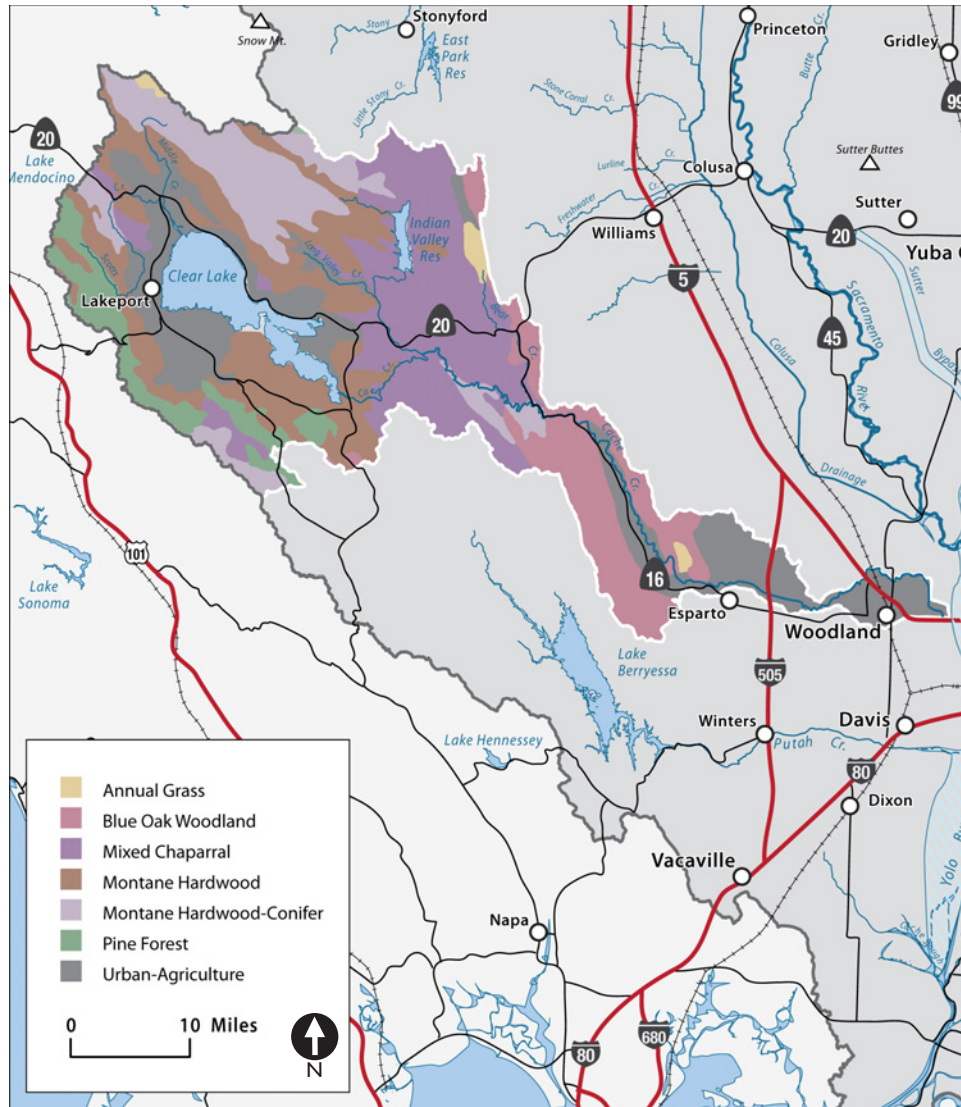


Fig 3.5

1888

Northern Railway opens 23.65 miles of track between Madison and Rumsey via Esparto.

Vegetation and Wildlife



Vegetation in the Cache Creek Watershed

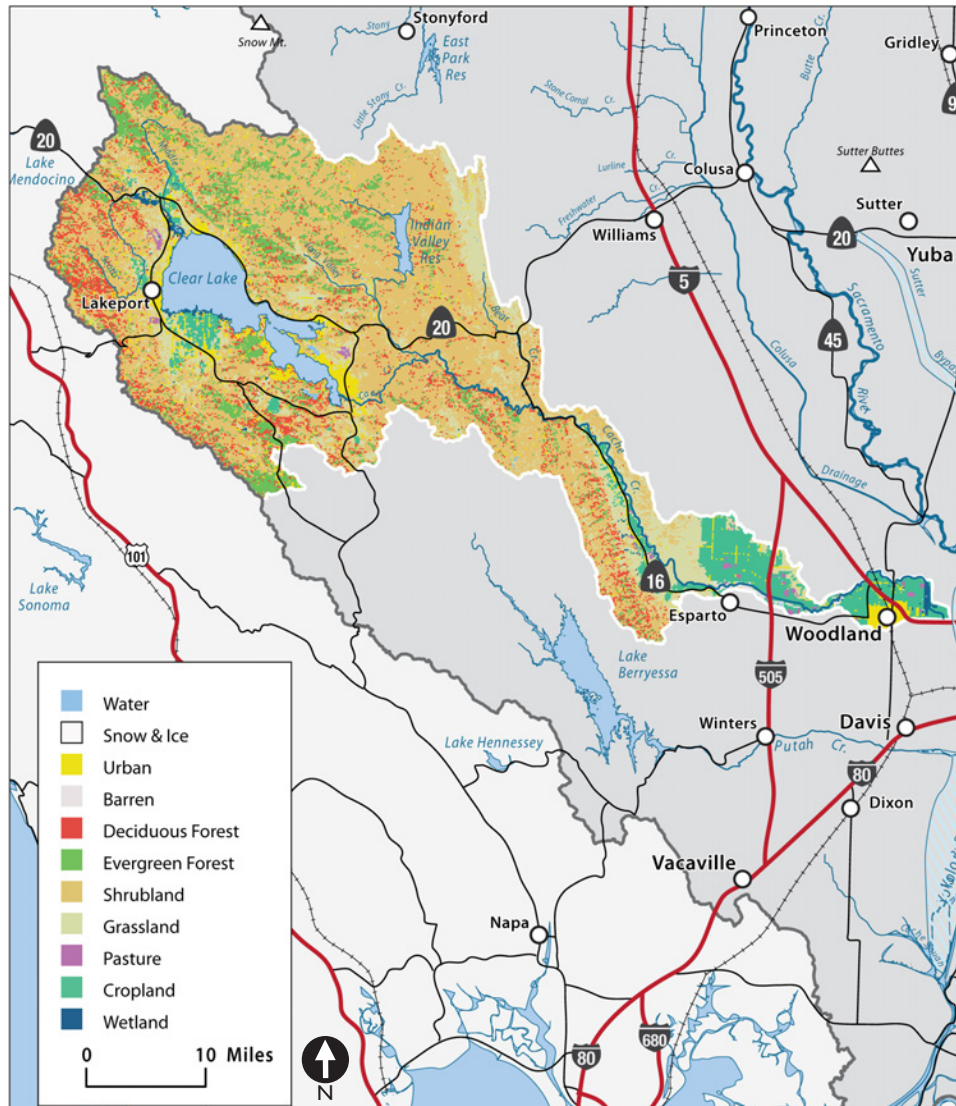
Fig 3.7

Cache Creek originates from and is the sole outlet of Clear Lake, the largest natural freshwater lake located entirely in California and among the world's oldest lakes and has served as one of the state's oldest gravity-based water supply channels

As the creek flows into the Capay Valley, the vegetation transitions from mixed Chaparral and Riparian to oak woodland. Although some parts of the native vegetation remain intact, large areas have been altered to accommodate agricultural and development needs.

Wildlife resources in the Cache Creek Watershed include the second largest wintering population of bald eagles in California and the golden eagle, osprey, red-tailed hawk, kestrel, prairie falcon, northern harrier, and several species of owls. Other non-game species commonly spotted include mountain lion, coyote, gray fox, bobcat, badger, raccoon, beaver, and river otter.

Land Use



Land use in the Cache Creek Watershed

Fig 3.8

Much of the upper reach of Cache Creek passes through a steep, inaccessible canyon. The creek becomes more accessible once it reaches Highway 16 and flows through Capay Valley (population ~4,000), which includes the communities of Rumsey, Guinda, Brooks, Capay, Esparto, and Madison. The creek then flows north of Woodland, the largest town in the watershed (population 53,690). In October 2005, Cache Creek was added to California's Wild and Scenic Rivers System, which protects 31 miles of the river from construction of new dams and diversions.

Capay Valley supports a wide variety of agriculture, including almonds, walnuts, pistachios, oranges, mandarins, and many varieties of organic produce. Recently, Capay Valley growers have formed a strong coalition to successfully promote their locally grown produce.

Major Crops of the Capay Valley

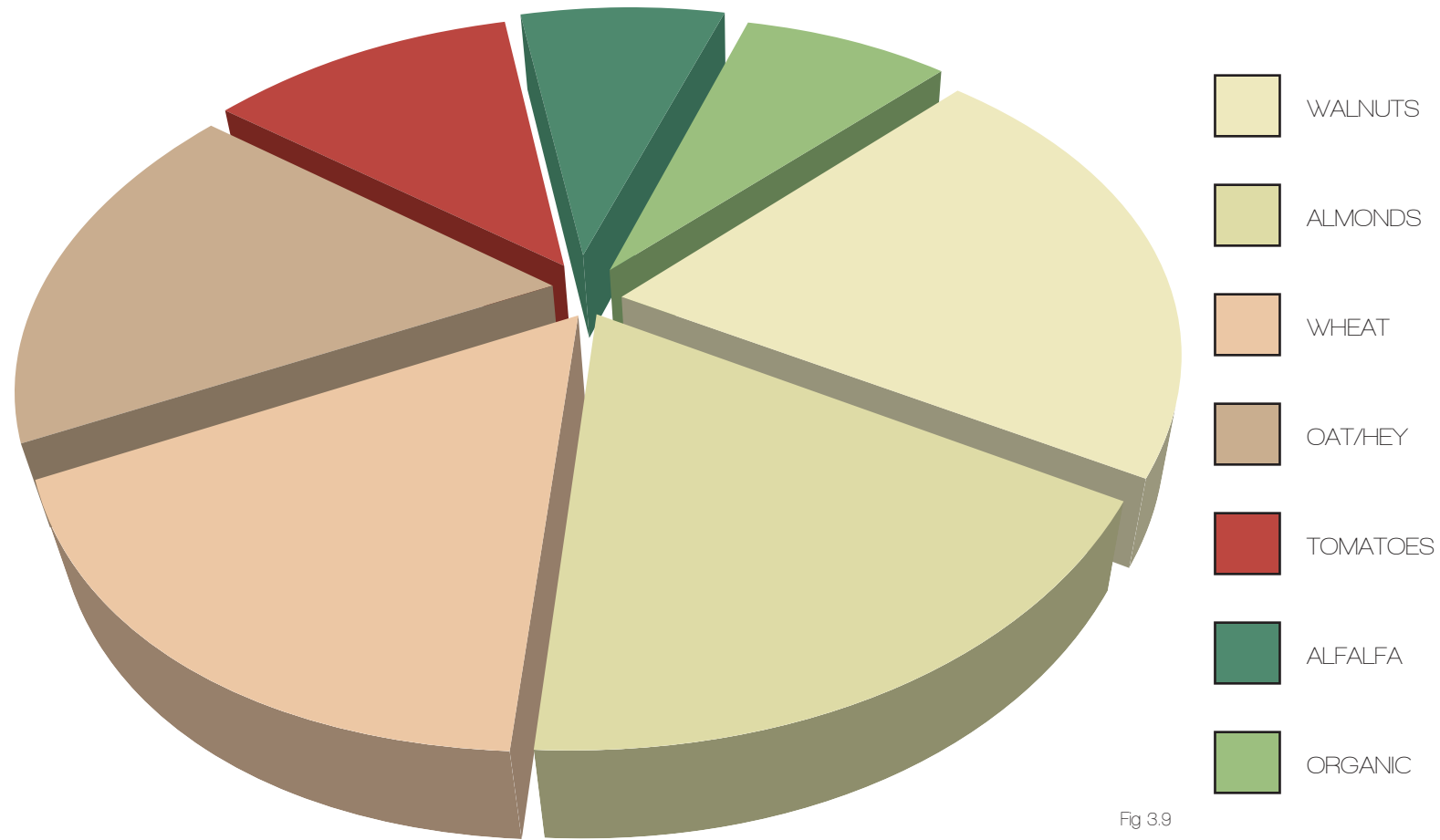


Fig 3.9

Other commercially produced commodities include: Livestock, Citrus, Grapes, Sunflowers and Nursery Products.

SITE ANALYSIS



Esparto, CA

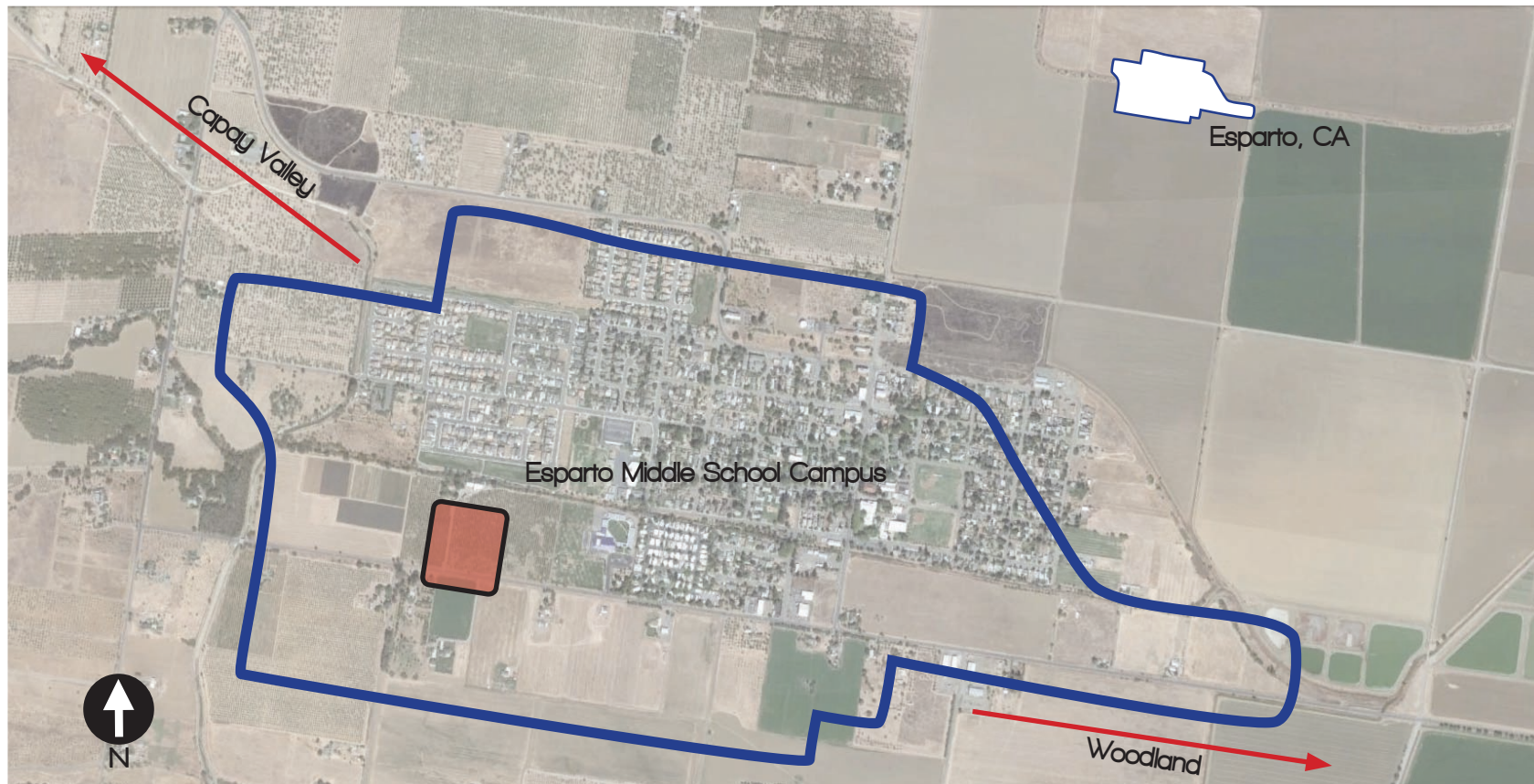


Fig 4.0

Esparto is the population center of the Capay Valley region and has a population of approximately 3,000 people. The middle school has an enrollment of 234 students (CA Dept Education). The school services children throughout the Capay Valley, all way to Rumsey which is over 20 miles away.

The School



Fig 4.1

The area for the conceptual design is located at the heart of the middle school. Initially the area designated for the design was to be the north of the soccer fields. The previous site posed a number of problems. There was limited access to this area during school hours, and was very close proximity to the soccer field. After considering the issues of this site and following several discussions with Diane Crumley from the Yolo RCD, the decision was taken to move the conceptual design site to the large quad area of the middle school.

Existing Conditions

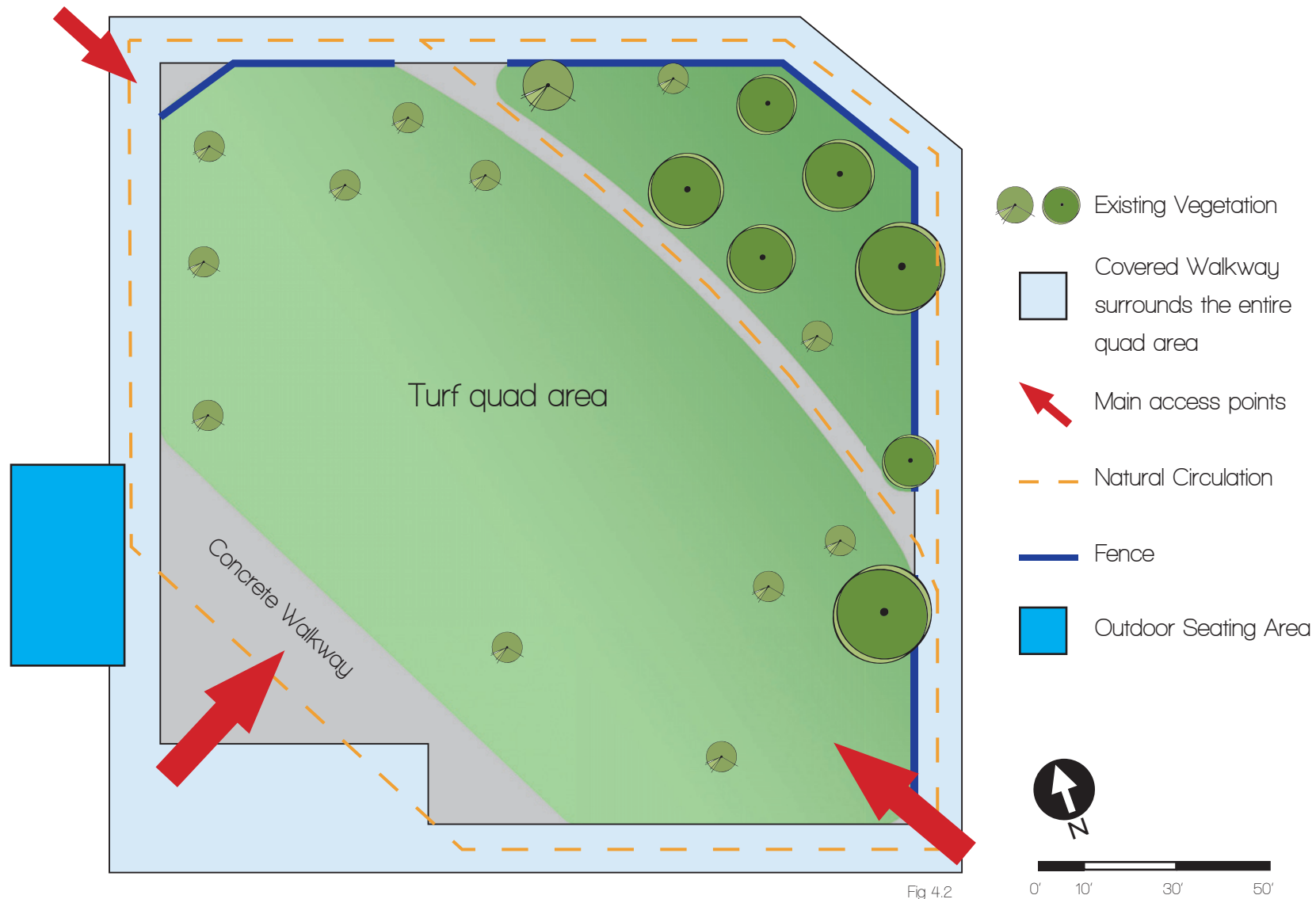


Fig 4.2



All the classrooms open up onto the large quad area.

Fig 4.3



The only outdoor seating is under the large overhang.

Fig 4.4

Goals for the Project

GOALS

- Collaborate with Diane Crumley, from the Yolo County Resource Conservation District to create our shared vision.
- Meet the needs identified by the Staff and Students.
- Create an interactive landscape that will be an enriching educational experience.
- Highlight the importance of the local Cache Creek watershed and Capay Valley.
- Provide a garden that can bring the school community together.

Identifying Needs

To help me develop my design ideas i needed to talk to the students and faculty to find out their views and opinions. On my many visits to the site I had the opportunity to sit and chat informally with the students and some of the teachers. The following are some of the major issues and responses that were identified during these conversations.

TEACHERS

- No outdoor seating
- More plants, flowers & trees
- Fruit and Vegetable Garden
- More pathways
- Use less water / Low maintenance
- Outdoor teaching environment
- Not enough shaded areas

STUDENTS

- Nowhere to sit
- Grass is boring
- Would like to have class outside sometimes
- Very hot in the summer
- Rarely go onto the grass area.

Observing

The input from the students and teachers was invaluable, but I also got to spend some time on the campus to observe some of the students and teachers behavior.

I noticed that during lunch period an over whelming amount of the students sat under the large overhang to eat their lunch. It was clear that they really didn't have much of an option. I was fortunate enough to visit the school during varying weather patterns. Although the weather was different, I really didn't notice too much difference in behavior. During the sunny day there were a couple of students playing Frisbee on the quad and also noticed two students both sitting beneath one of the few existing trees eating lunch. Apart from this small group, most of the students hang out under the large overhang or just our outside the classrooms under the covered walkway. Even when the sun was shining the students didn't feel compelled to venture out onto the quad. I soon realized why the area just outside the classrooms was a popular spot. Not only is this area covered, but on the east side of the quad there is a metal fence which students use to sit on and lean up against.

On my final trip to the school I visited the school towards the end of the school day. It was close to the end of the school year so there was a barbecue and other activities going on all over the campus. Most of the activity was again focused around the large overhang and the only reason most students when onto the quad area were to bounce around to the different classrooms. I was very surprised with my observations as when I first saw the space I imagined it would be a hive of activity during break & lunch time.

In summary I feel that my observations were maybe even more constructive than the conversations I had. It is clear that the campus has distinct lack of outdoor seating, as the only outdoor seating is when most students congregate. Another key observation was the appeal of the overhangs. The site does not offer any shaded areas, apart from the overhangs so the users really to not have any other options.

Working with the Yolo County Resource Conservation District

I was both an honor and a privilege to work with Diane, from the Yolo RCD. This project was her creation and I was lucky enough to get involved. From the outset Diane had a pretty clear vision of creating a conceptual design for a school garden to complement her grant writing endeavors. Diane has a wealth of experience in education and outreach and her knowledge and guidance has been invaluable.

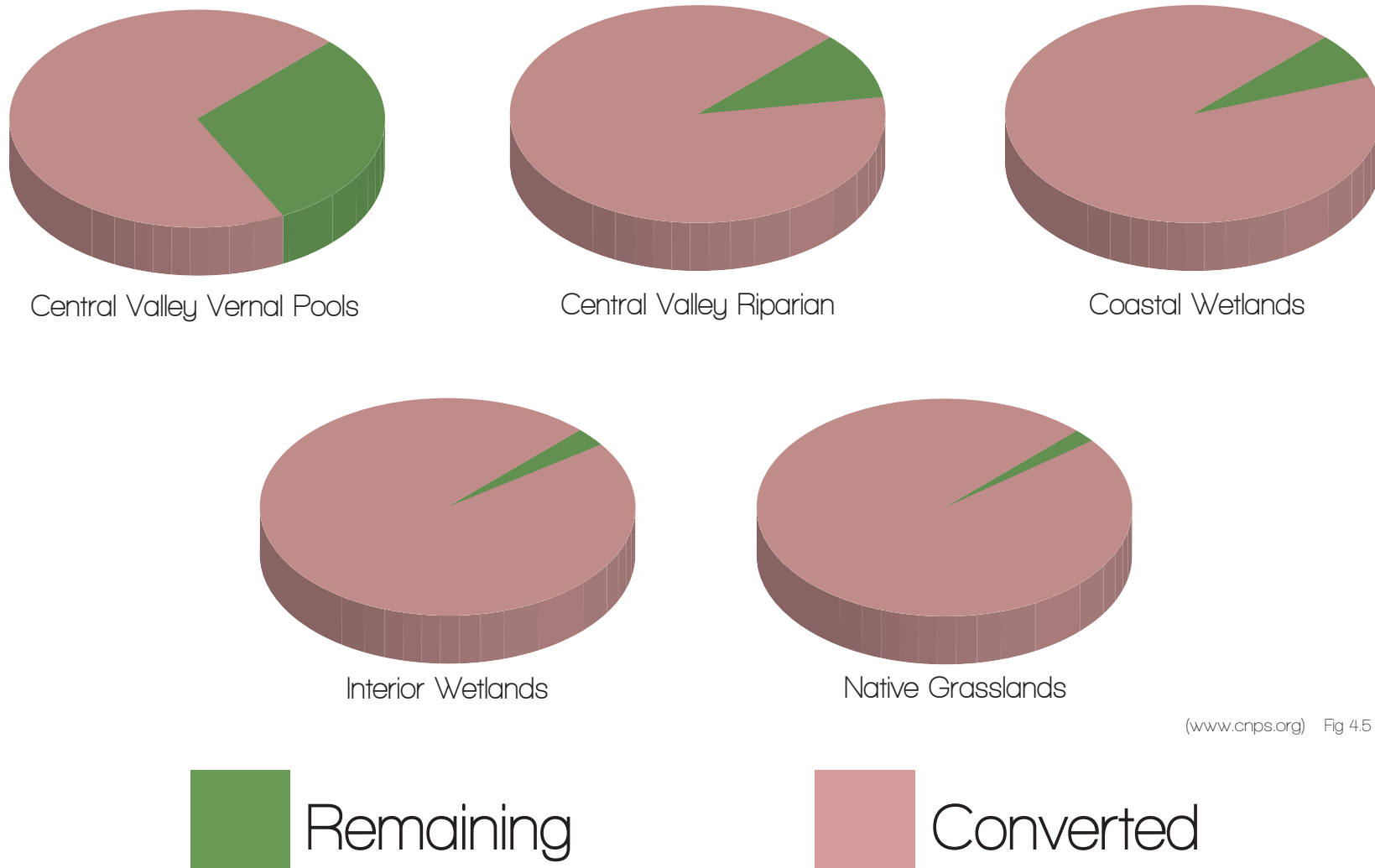
Through my research and dialog with Diane, it was clear that the region that the Esparto Middle School is in, is something special. Every bit of research I did on the town of Esparto led me back to the Capay Valley and the Cache Creek Waterway. These natural features are what brought people to this area thousands of years ago and still makes this one of the most beautiful and unique areas in the region.

Partnered with my project this quarter I decided to take a plant biology class: Survey of Plant Communities of California. The course analyzed a selection of plant communities throughout California and examined their structure and their relationship within the environment. The class really emphasized the importance of these plant communities and really stressed the declining numbers and the pressure that our natural land is under.

THREAT TO CALIFORNIA'S ECOSYSTEMS

- Habit Loss & Fragmentation due to Urbanization, and Agriculture Conversion.
- Habitat Degradation, due to Altered water ways, Grazing, Altered Fire Regime and Invasive Species.
- Climate Change.

California's Most Threatened Ecosystems.



(www.cnps.org) Fig 4.5

DESIGN CONCEPT



Generating Ideas

In order to fully develop a concept, it is necessary for me to capture and highlight some of the critical elements that I have learned from my research and case studies.

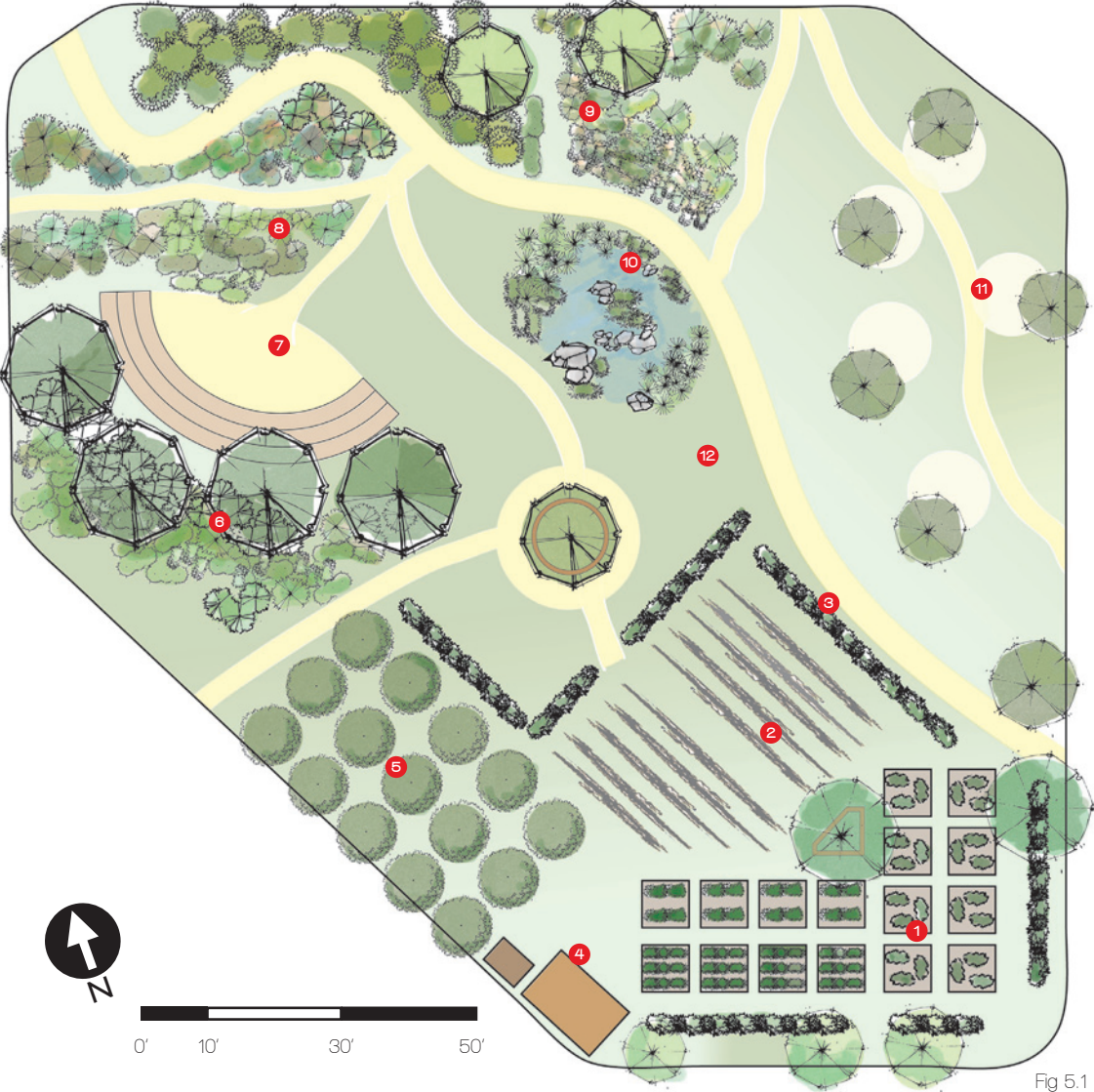
When developing the design concept I had originally developed the idea to mimic the shapes of landscape by moving from the formal agricultural area in the more natural heart of the valley. After the mid review I sat down with Diane and we talked in-depth about the project and developed on the original idea. We decided to look at the landscape in more of a literal way. Instead of mimicking the shapes of the land, why not actually bring some of the unique plant communities into the garden. We identified some of the plant communities that lie within the Cache Creek watershed and which ones would work on the site. To tie all the areas of the garden together would be a main path that would represent the Cache Creek and its journey through the valley.

It was important not just to show the natural part of the area, but also celebrate the deep roots within agriculture. I wanted the garden to provide an area where students could grow a large range of fruit vegetables and other useful crops. This would serve as a great introduction to agriculture, and help prepare them for some of the great agriculture programs that the Esparto High School Offers.

Other important features that the garden needed to include were; lots more seating, places to escape the sun; outdoor teaching environment, more pathways, and more plants and flowers. The different plant communities within the design would offer so many educational options, and allow faculty to use this as inspiration to bring the learning outdoors. The garden would represent a constant learning experience. Formal curriculum teaching could be connected, but the garden would also highlight of the history of the area, from the Native Americans through to introduction of agricultural. Most importantly the garden provide the students a faculty with a enjoyable place to spend time and be pleasantly reminded of the beautiful region they live in.



Master Plan



Design Elements

- 1 Vegetable Garden
- 2 Crop Area
- 3 Native Pollinator Hedgerows
- 4 Shed, Compost & Plant Propagation Station
- 5 Orchard
- 6 Oak Woodland
- 7 Outdoor Amphitheater
- 8 Chaparral
- 9 Riparian
- 10 Constructed Wetland
- 11 Valley Grassland
- 12 Native Meadow

Fig 5.1

Additional Elements



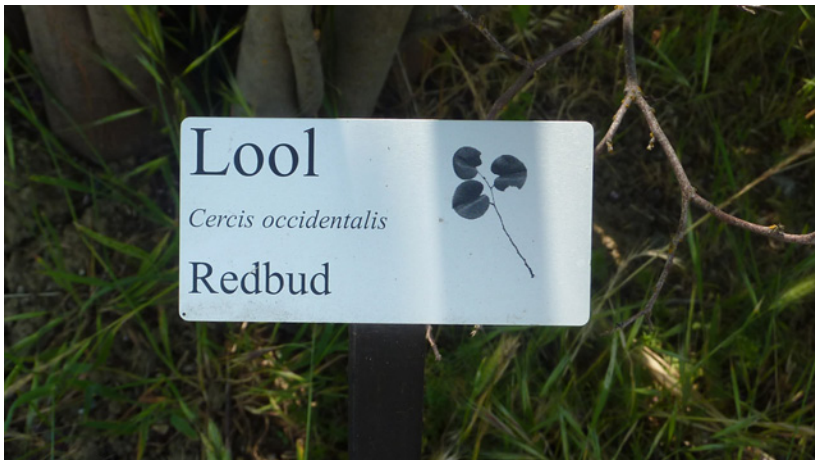
Moveable seating throughout the site

Fig 5.2



Providing homes for wildlife

Fig 5.3



Educational signage for every element

Fig 5.4



FROM THIS

Fig 5.5



TO THIS

Fig 5.6

Plant Suggestions

Here are a few key players from each plant community within the garden.

RIPARIAN

California Buckeye	<i>Aesculus californicus</i>
Coyote Brush	<i>Baccharis pilularis</i>
Western Redbud	<i>Cercis occidentalis</i>
American dogwood	<i>Cornus sericea</i>
Toyon	<i>Heteromeles arbutifolia</i>
Pipevine	<i>Aristolochia californica</i>
California wild grape	<i>Vitis californica</i>
Sedge	<i>Carex</i> sp.

VALLEY GRASSLAND

Yarrow <i>Achillea</i>	<i>Millefolium</i>
Blowwives	<i>Achyrochaena mollis</i>
Blue dicks	<i>Dichelostemma capitatum</i>
Purple needlegrass	<i>Nasella pulchra</i>
Golden violet	<i>Viola pedunculata</i>
<i>Collinsia heterophylla</i>	Chinese Houses
<i>Eschscholzia californica</i>	California Poppy

NATIVE MEADOW

<i>Eriogonum confertiflorum</i>	Golden Yarrow
Lupine	<i>Lupinus</i> sp.
<i>Aquilegia formosa</i>	Western Columbine
Aster <i>Chilensis</i>	Coast Aster
<i>Mimulus</i> sp.	Monkey Flower

CHAPARRAL

Chamise	<i>Adenostoma fasciculatum</i>
White-leaved Manzanita	<i>Arctostaphylos viscida</i>
Jim Brush	<i>Ceanothus oliganthus</i>
Wedge-leaf <i>ceanothus</i>	<i>Ceanothus cuneatus</i>
Silk Tassel	<i>Garrya congdonii</i>
Leather Oak	<i>Quercus durata</i>
Chaparral Pea	<i>Pickeringia montana</i>

WETLAND

<i>Typha latifolia</i>	Typhaceae
<i>Schoenoplectus californicus</i>	California Bullrush
<i>Schoenoplectus acutus</i>	Common Tule
<i>Juncus balticus</i>	Baltic rush

OAK WOODLAND

Manzanita	<i>Arctostaphylos manzanita</i>
Interior live oak	<i>Quercus wislizenii</i>
Valley oak	<i>Quercus lobata</i>
Blue wildrye	<i>Elymus glaucus</i>
Lupine	<i>Lupinus</i> sp.
Slender Tarweed	<i>Madia subspicata</i>
Purple Needlegrass	<i>Nasella pulchra</i>
Buttercup	<i>Ranunculus californicus</i>
Sanicle	<i>Sanicula Crassicaulis</i>

NATIVE POLLINATOR HEDGEROW

California redbud	<i>Cercis occidentalis</i>
Sunflower	<i>Helianthus annuus</i>
Toyon	<i>Heteromeles arbutifolia</i>
Western dogwood	<i>Cornus sericia</i>
Western rosinweed	<i>Calycadenia truncata</i>
White-leaved Manzanita	<i>Arctostaphylos viscida</i>
Wild rose	<i>Rosa californica</i>

CROPS - Vegetables

Asparagus
Beets
Broccoli
Cabbage
Carrots
Cauliflower
Celery
Celery Root
Greens, Broccoli Raab
Greens, Chard
Greens, Kale
Greens, Lambsquarter
Greens, Mustard
Onions, Torpedo
Potatoes
Pumpkins
Radishes
Tomatillos
Tomatoes, Cherry
Tomatoes, Early Girl
Tomatoes, Heirloom
Tomatoes, Red Roma

CROPS - Herbs

Cilantro
Chives
Dill
Lavendar
Lemon Verbena

CROPS - Fruit

Lemons
Oranges, Navel
Oranges, Valencia

CROPS - Field & Row

Alfalfa
Cotton
Hay
Sunflowers
Wheat

Spending Time in the Garden

Amphitheater Section



Fig 5.7





The outdoor amphitheater shrouded in shade by the Oak Woodland.

Fig 5.8

Wetland Section

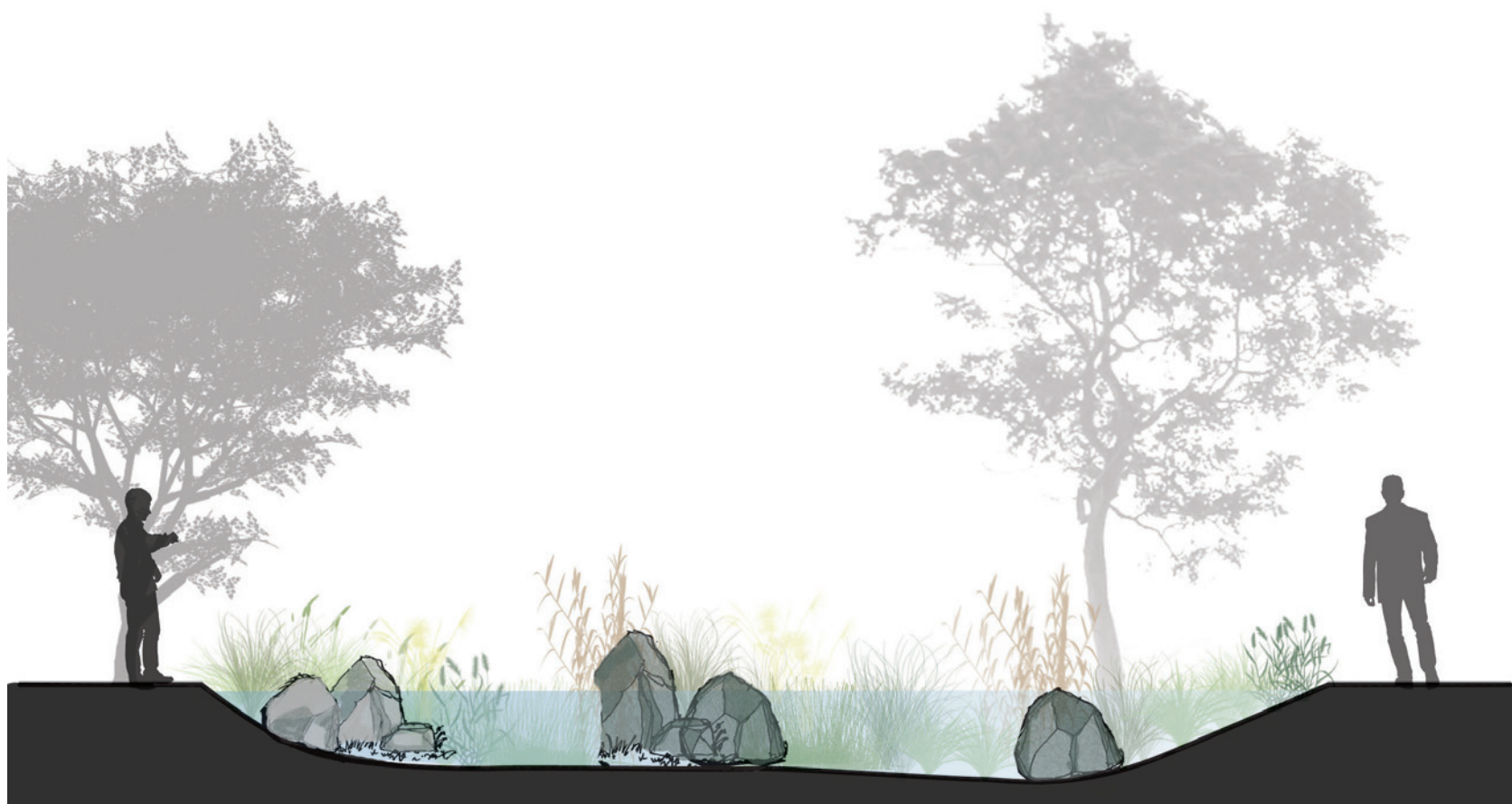


Fig 5.9





The Constructed Wetland

Fig 5.10



Plucking the first Tomato from the Vegetable Garden

Fig 5.11

Conclusion

It was a great experience for me to work with Diane from the Yolo County RCD and the Esparto Middle School. The entire project was a really challenging experience and it is difficult to put into words how much I have learned during this process. I believe that whilst working through any project you will be faced with challenges which require you to be adaptable. This project slowly evolved over time and was a very different experience to what I had imagined from the start.

My vision was to work closer with the students from the school, but time and general interest in the project, required me to reconsider my approach. Although I did get some feedback from the school, I realized that I needed to focus my attention on the needs of Diane. I feel that with this change of tactic, the project would have not reached the stage it did. Diane's passion for the subject matter was just the inspiration I needed to focus on the bigger picture and create a conceptual design that attempted to imagine the endless possibilities that an educational garden has to offer.

My initial question was "why would Esparto Middle School need an educational garden when it is surrounded by such natural beauty and agricultural richness?" I feel that it doesn't matter where you are, there is natural beauty all around, it's just a matter of educating people to open their eyes to see it and appreciate it.

Landscape architecture is not just about beautifying our surrounding environment, but using that surrounding environment to help form and educate our decisions. The world we live in was here long before us and will always be our greatest education tool.

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500 years from now, history will judge this generation (uniquely) less by the wars we fought or by the social ills we redressed, than by your success or failure in saving the planet and its biodiversity.

You are the decisive generation.

Truman Young

