

ORANGE COUNTY ZOO

General Development Plan

April 16, 2013





On March 31, 2012, Modjeska and Santiago, a sibling pair of nine-month-old orphaned mountain lion cubs made their debut as new residents at the OC Zoo.

ORANGE COUNTY ZOO

General Development Plan

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per Minute Order dated April 16, 2013

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ORANGE COUNTY ZOO

General Development Plan

April 16, 2013

Prepared for



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**TORRE DESIGN
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FOREWORD



Coyotes are very adaptable and are found in almost any habitat. They are common in our OC Parks and in urban-suburban areas.

Foreword

The OC Zoo General Development Plan will be the guiding document for the improvements that OC Parks will be making at the zoo in the future.

As one of the featured attractions at Irvine Regional Park – the oldest Regional Park in California – the OC Zoo began with a small collection of animals in the 1920s. It was established at its present location in the 1960s and was redeveloped, along with the park, in the early 1980s. The zoo is a haven for rescued wildlife and currently features a bald eagle, mountain lions, black bears, and other animals native to Orange County and the American Southwest. The OC Zoo is an increasingly popular destination; its attendance growing from 104,000 in 2006 to 226,000 in 2012.

The mission of the OC Zoo is to: ***Provide an attractive zoo with high-quality programs that entertain and educate visitors about the current and past animals known to inhabit Orange County.***

To carry out that mission in an orderly manner, the General Development Plan offers a phased approach that ensures: 1) important infrastructure and ‘behind-the-scenes’ improvements are made at the zoo; 2) essential amenities are provided for zoo visitors; and 3) exhibit areas are systematically upgraded and new exhibits are added.

The General Development Plan process utilized a consultant team led by RJM Design Group and Torre Design Consortium Ltd. The planning and design process involved zoo stakeholders to produce a number of concepts that were refined into the General Development Plan described in this document.

The plan includes four implementing phases. The initial phases of work focus on infrastructure, visitor amenities and exhibit upgrades and a large new exhibit area; the later phases of work offer dramatic possibilities for redeveloping the zoo entrance and the children’s area at the zoo.

- Phase I: General Zoo Improvements (near-term), Drainage
- Phase II: Restroom Facility, Interim Entry Plaza, Interim Gift Shop
- Phase III: Oak Woodlands Exhibit, Walkways and Connectors
- Phase IV: Entry Complex, Orientation Plaza, Discovery Complex, General Zoo Improvements (long-term)

OC Parks and our talented and dedicated OC Zoo staff are excited to begin implementation of the General Development Plan. It will guarantee a bright future for the OC Zoo.



Mark Denny
Director, OC Parks



Left to right: Kevin Breen, Education Animal Keeper, OC Zoo; Lauren Serrano, Education Animal Keeper, OC Zoo; Mark Denny, Director, OC Parks; Donald Zeigler, Manager, OC Zoo; and Marcy Crede-Booth, Educational Coordinator, OC Zoo (June 2012).



INTRODUCTION 1



The ocelot is native to the southwestern United States; however, their range and population has been greatly reduced due to habitat destruction. In Central and South America, where the ocelot is also found, populations are doing well.

1.1 Purpose of the General Development Plan

The purpose of the General Development Plan (GDP) is to develop a mission based long-range improvement plan to guide the direction of future improvements to the Orange County Zoo (OC Zoo) through the next 10 to 15 years.

1.2 Background

The OC Zoo is located in California's oldest county park, Irvine Regional Park. It has exhibited live animals since the 1920s. The OC Zoo was established in its present location in the 1960s and renovated to its current configuration in the early 1980s. OC Zoo operations and improvements in the subsequent decades have been guided by the very limited 1987 Master Plan.

The OC Zoo GDP represents a summation of studies conducted over a year-long planning and design process that was undertaken to prepare guidelines for the development of improvements for the zoo. The GDP was developed through four specific planning activities: evaluation of the existing conditions of the OC Zoo, alternative development concepts, Preferred Plan, and General Development Plan. The descriptions and illustrations within the GDP relay the results of each of the planning activities. The final section of this document includes proposed guidelines for improvements to the OC Zoo, including the proposed architectural style, character, and atmosphere for the zoo. Additional detailed reports, including a market and financial analysis developed through the process, are available in the Appendix.

1.3 OC Zoo Mission and Context

As part of the GDP planning process, the OC Zoo Mission has been defined as:

Provide an attractive zoo with high-quality programs that entertain and educate visitors about the current and past animals known to inhabit Orange County.

The mission of the OC Zoo describes the main purpose of the zoo and the role it plays to achieve the OC Parks Vision for the Future: "Preserve Orange County's Parks in perpetuity for the recreation, education, and inspiration of all visitors. It represents OC Parks core values for stewardship, integrity, quality, pride of ownership, community service, cooperation, education, and teamwork." The mission represents the interest of OC Parks to ensure that the OC Zoo complements and enhances the Park experience of all visitors. Additionally, OC Parks recognizes that the zoo is not competing with other zoos in southern California. While the OC Zoo is an attraction by itself, it must function within the larger context of Irvine Regional Park and its many other attractions as well as within the overall OC Parks system and its operational and capital project funding constraints.

1.4 Location and Description

The OC Zoo is situated in north Orange County in Irvine Regional Park (Park) and is situated along Santiago Creek in the foothills of the Santa Ana Mountains. Access to the Park is via local arterial roads: Chapman Avenue, Newport Boulevard, Jamboree, and Santiago Canyon Road. See Figure 1.4-1.

The OC Zoo is centrally located within the Park, along the southern edge of Santiago Creek; it's adjacent a large tree covered turf area along with the Training Center, Nature Center, and existing concession building. Mammals, birds, reptiles, and native vegetation representing Orange County and the greater American Southwest are currently displayed at the OC Zoo. In all, there are 17 large exhibits, a Children's Zoo, and numerous smaller reptile and bird exhibits. The exhibit spaces are located on 1.8-acres, with the remaining 2.7-acres of the site left undeveloped or allocated for maintenance, storage, planting, and administrative offices. See Figure 2.2-1.

Figure 1.4-1: OC Zoo Location Map



1.5 History

The OC Zoo, like many other zoos, traces its origins to the simple donation of animals; in 1920, the zoo began with a pair of pet mule deer. By 1935, a formal zoo began taking shape and exhibits featuring alligators, bears, and ostriches were built. The OC Zoo was established in the 1960s in its current location. It was extensively redeveloped in the early 1980s as part of the redevelopment of Irvine Regional Park. The OC Zoo officially reopened in 1985.

1.6 Relationship to Other Plans

To gain an understanding of the decisions made through the evolution of the OC Zoo over the past several decades, the Design and Planning Team reviewed the following previously prepared reports for the OC Zoo and Irvine Regional Park:

1978 Irvine Regional Park GDP - The GDP was an extensive report detailing the existing conditions of the Park and proposed improvements in a phased development plan. Among those improvements were recommendations specific to the OC Zoo including: rehabilitation of buildings, remodeling of animal viewing areas, rearrangement of walks and security fences, introduction of benches and elevated decks, oak protection, drainage provisions, and landscaping. While many of these improvements have been addressed with previous development, they are all still relevant in today's planning discussions. Additional elements include architectural theme, tree preservation, and flood protection.

1983 National Register of Historic Places - On April 7, 1983, Irvine Regional Park was placed on the National Register of Historic Places. The nomination document identified the original appearance of the Park, the ownership, and the plans for restoration and preservation of its pre-World War II historic character as contributing factors to the Park's historical significance. Among the restorations outlined in the application were new structures and amenities for the OC Zoo to be constructed in a similar architectural style as the other structures in the Park, such as the Nature Center. The emphasis of the OC Zoo was described as being focused on animals indigenous to the local habitat.



Irvine Regional Park Nature Center

1987 Irvine Regional Park Zoo Master Plan (Appendix A.11) - This Master Plan identifies several programmatic, policy, and facility guidelines. The Master Plan also began to describe the kinds of animals that would be desirable for the OC Zoo given its regional location, size, and the proximity to major zoos. Matching the animals to the OC Zoo mission and goals was a primary determining factor in animal selection. The mission statement from the 1987 OC Zoo Master Plan is as follows:

To exhibit wildlife of the American Southwest for the purposes of conservation, education, and visitor enjoyment. To encourage an awareness, respect, and appreciation for the animals and plants that live in a shared environment. To inspire visitors with aesthetically pleasing and educational exhibits that are homes to clean, contented, and healthy animals. To offer activities and educational programs that lead to greater understanding of wildlife and to augment understanding through effective signs and graphics throughout the zoo.

The mission clearly defined the regional animal selection as American Southwest; and speaks to preserving the heritage of Orange County through selection and exhibition of plant and animals species native to the Orange County area.

Preserving plants and animals indigenous to Orange County through the development of a Native Animal Zoo was identified as a significant benefit to the community due to species loss from expansion of urbanized areas and accessibility of wilderness areas. The report mentioned that a fully developed zoo would also be a valuable tool for the promotion of Orange County recreation facilities.

At the time of the report, the OC Zoo was identified as having two distinct exhibit areas, a Native Animal Zoo and a Children's Zoo. The Native Animal Zoo exhibits indigenous southwestern wildlife in simulated natural environments. The Children's Zoo exhibits animals, including farm animals, where children are able to experience hands-on interaction with the animals. The Master Plan proposed to maintain the current fence line boundary.

Financial self-sufficiency was another aspect reviewed by the 1987 Master Plan. The report identified a recently formed Zoological Society of Orange County with 501c3 status. This nonprofit was identified as organizing fundraising campaigns, promotional events, and the ability to undertake certain capital improvements in the zoo. Additional policy and procedural data was described in the report and is available in the Appendix. The Zoological Society at the OC Zoo disbanded in 2008.

2006-2007 Orange County Grand Jury Report: Orange County Zoos (Appendix A.10) - A Grand Jury report on the Santa Ana Zoo and the OC Zoo was developed to provide the public with information regarding the operation and management of public zoos, the safety of visitors, and the welfare of animals. The findings of the report indicated that the visitors, especially children, are not well served due to the lack of drinking fountains and public restrooms within the zoo fence line. The report noted that the Grand Jury had difficulty locating the entrance to the OC Zoo; the report also speculated that the zoo's declining attendance would result in the need for additional taxpayer funding or could lead to the closure of the facility. Based on the findings, the Grand Jury recommended to:

- Make the OC Zoo user friendly by providing a public restroom and drinking fountain inside the zoo.
- Develop ways to increase OC Zoo patronage by providing clear wayfinding signs and maps and by promoting the OC Zoo as an attraction within the Park.

2006-2007 Grand Jury Report: Orange County Zoos: Responses to Findings and Recommendations

(Appendix A.09) - This report addresses the findings and recommendations of the Grand Jury. This GDP responds to the recommendation regarding the lack of rest room facilities within the zoo and noted declining visitor attendance.

2007 Orange County Parks Strategic Plan - The Strategic Plan was developed to address key issues concerning the core business of OC Parks, the stewardship of open space, and the funding of regional parks. In this report the existing conditions and opportunities across Orange County were assessed. Among these opportunities, the OC Zoo was listed as an overlooked facility. The report noted that, "the Orange County Zoo was described by some as a marvelous educational tool that was under-funded and needed to be more efficiently promoted" (p. 45).

2007 Report on the Orange County Zoo (Appendix A.08) - This report was prepared to determine if attendance trends accessed during the study period were a true reflection of the community needs and desires for the programs offered by the OC Zoo. Following are the key findings of the report:

- The OC Zoo and Santa Ana Zoo serve different populations and education segments. The Santa Ana Zoo features wildlife of South and Central America. The OC Zoo features flora and fauna of the American Southwest and supports the education and interpretive elements identified in the OC Parks Mission and Strategic Plan performance goals.
- The OC Zoo supports a partnership with Orange County Department of Education, Inside the Outdoors, a field science program. Children in grades four and five regularly come to the OC Zoo to directly experience the beauty and diversity of southern California wildlife.
- Over 25,000 children and adults participated in staff or volunteer-provided educational programs in 2007. The visitors' direct contact with OC Zoo staff creates a positive perception of the County as a committed service provider to the community.
- The OC Zoo contributes to the recreational experience of the Irvine Regional Park visitor. The Irvine Regional Railroad concessionaire at the Park incorporates the OC Zoo in their marketing promotions, selling larger group recreation packages that include OC Zoo admission.
- Over the period from 1997-2007, the OC Zoo experienced decreasing attendance. In 2001, attendance was over 195,000 visitors but dropped to approximately 104,000 by 2006. However, in 2008, attendance rose and approached 125,000 visitors.
- According to the report, revenues were variable for the OC Zoo but generally rose between 2002 and 2007. In the 2002-2003 financial year revenues were \$136,929; in 2003-2004, \$123,447; in 2004-2005, \$189,707; in 2005-2006, \$163,902; and, in 2006-2007, \$191,298.

It should be noted, however, that OC Zoo attendance has been increasing consistently since this study, as discussed in Section 3.

The review of the previously prepared reports revealed that the OC Zoo is a valuable educational and recreational resource not to be lost. The findings showed that the OC Zoo is positioned to provide a unique experience for visitors to gain a greater appreciation of Orange County's history and its natural environment. The findings were also instrumental in shaping the goals set for the OC Zoo GDP to create a high-quality OC Zoo of enduring value; a place where visitors can feel safe and have fun while learning about the environment around them.



EXISTING CONDITIONS 2



The OC Zoo's heaviest resident is a black bear, a species native to southern California.

2.1 GDP Development Process

The OC Zoo has been the subject of several previous studies, including historical analyses, a regional considerations study, a visitor satisfaction survey, tree and vegetation mapping, historical building research, and detailed geological and hydrological evaluations. The Project Team reviewed all pertinent information related to the OC Zoo and conducted additional analysis in an effort to develop an up-to-date snapshot of the existing conditions and characteristics of the OC Zoo. The GDP planning process incorporated a series of integrated multi-disciplinary tasks in order to achieve one goal: the creation of a plan that illustrates the future direction of the OC Zoo. This information is outlined in the Existing Conditions Report (Appendix A.05). The initial GDP efforts focused on understanding existing conditions and influences related to the OC Zoo, resulting in the following documents:

Visitor Survey (Appendix A.07) - An analysis of responses to a survey of OC Zoo visitor's experience and opinions of the zoo.

Site Awareness Tour and Workbook Summaries (Appendix A.06) - A design workshop which included a site awareness tour and design charrette exercise to solicit stakeholder input.

Existing Conditions Report (Appendix A.05) - A comprehensive review of the existing OC Zoo facilities, site conditions, and opportunities and constraints.

Market/Economic Analysis (Appendix A.04) - An analysis of market trends, population assessment, and comparison of similar attractions within the surrounding area.

Hydrology and Hydraulics Report (Appendix A.03) - An engineering analysis of drainage problems that significantly impact the OC Zoo.

Alternative Concepts Report (Appendix A.02) - A summation of the design planning process and stakeholder participation.

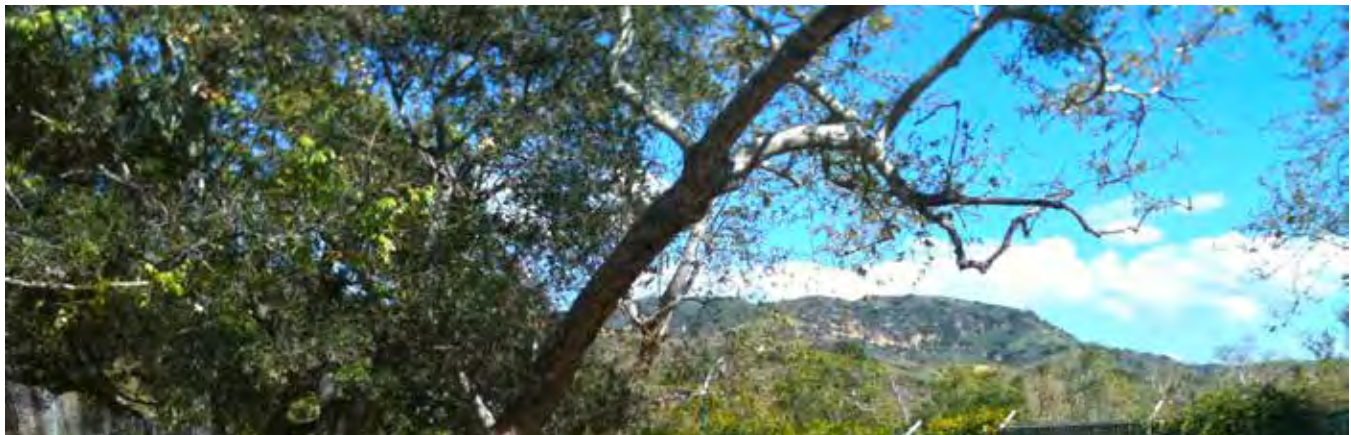
Arborist Report (Appendix A.01) - An assessment and recommendation measures for tree preservation regarding the overall health condition and aesthetic value of the existing trees. The report includes best practices for the protection of the oaks during construction.

Preferred Plan (Figure 3.6-1) - A realistic plan to serve as the basis for development of the OC Zoo in terms of cost and consistency with the new OC Zoo mission. On October 6, 2011, the OC Parks Commission recommended the Preferred Plan be further developed as the OC Zoo GDP.

2.2 Regional Setting and Site Description

The OC Zoo and Irvine Regional Park are located between mountainous open space and expanding urbanization. To the northeast, the Santa Ana Mountain range contains a large expanse of open space visible from the Park and the OC Zoo, including the Irvine Ranch Open Space and Cleveland National Forest. The southwestern border of the Park lies adjacent to expanding urbanized areas of Orange County. State highways, local arterials, and trails provide convenient access to the Park from all areas of the County. Santiago Oaks Regional Park, the Irvine Ranch Open Space, Peters Canyon Regional Park, and Irvine Lake are significant regional recreational amenities close to the zoo.

The 4.5 acre OC Zoo is located in the historic section (160 acre) of the 477 acre Irvine Regional Park. Currently, the OC Zoo is home to a collection of mammals, birds, reptiles, and native vegetation representing the American Southwest. In all, there are 17 exhibits, the Children’s Zoo, and several small animal enclosed exhibits totaling 1.8 acres. Of the remaining site, 2.7 acres include open land areas used for maintenance, storage, planting, and administrative offices (Figure 2.2-1).



A view from the OC Zoo of the Irvine Ranch Open Space.

Figure 2.2-1 Existing OC Zoo Plan (4.5 acres)

LEGEND

- Public Areas - 1.8 acres
(Animal exhibits, offices, learning and activity room)
- Non-Public Areas - 2.1 acres
(Back area of zoo: mature oaks, storage, animal medical care facility, staff trailer, service road)
- Perimeter Area - 0.6 acres
(Landscape)

- | | | |
|------------------|-----------------|-----------------------------|
| ① Ocelot | ⑨ Raccoon | ⑰ Reptiles |
| ② Coyote | ⑩ Beaver | ⑱ Hawk |
| ③ Bobcat | ⑪ Burro | ⑲ Owl |
| ④ Children’s Zoo | ⑫ Black Bear | ⑳ Weasel |
| ⑤ Bald Eagle | ⑬ Vulture | ㉑ Sulcata Tortoises |
| ⑥ Golden Eagle | ⑭ Island Fox | ㉒ Porcupine |
| ⑦ Deer | ⑮ Peccary | ㉓ Animal Edible Garden |
| ⑧ Coati | ⑯ Mountain Lion | ㉔ Education Program Animals |



2.3 Documentation and Description

Trees and Vegetation

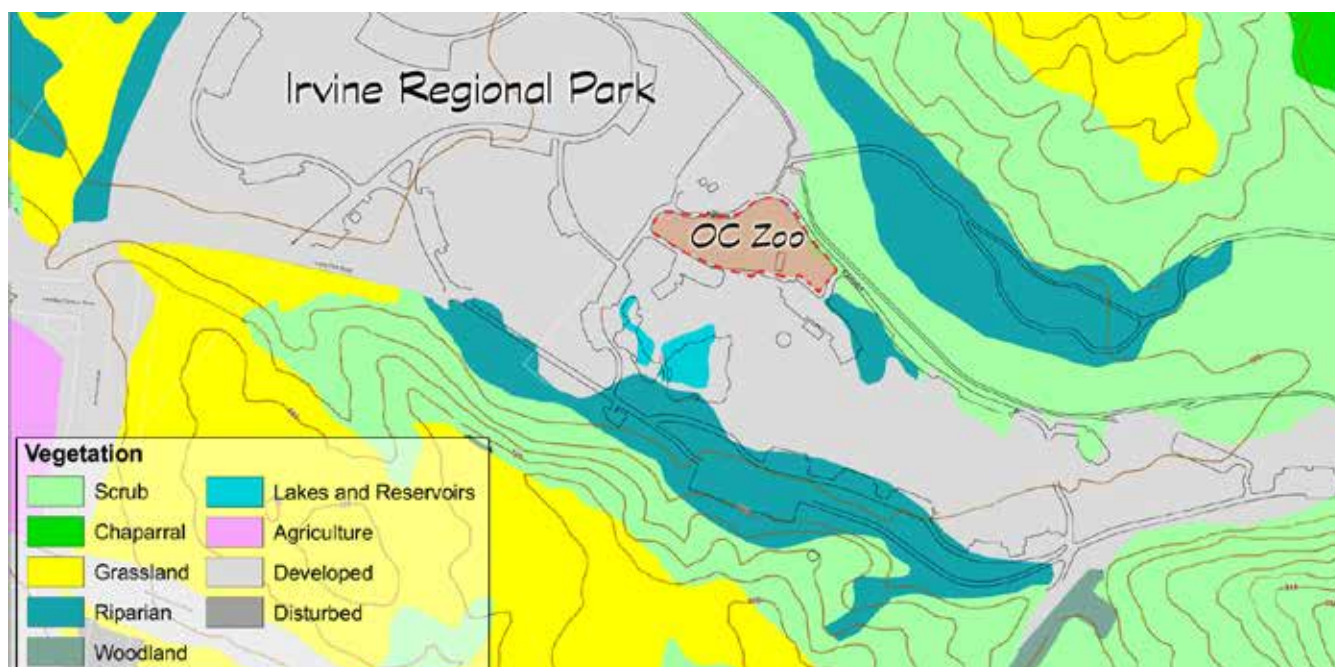
Although the OC Zoo is identified in the 1978 Irvine Regional Park GDP as being in an urbanized and developed area, this designation does not depict the actual environmental setting of the shady woodland area in which the OC Zoo is located. The native plant communities surrounding the OC Zoo and Irvine Regional Park include: sage scrub, chaparral, oak woodlands, grasslands, valley, foothill, and riparian communities. See Figure 2.3-1.

Irvine Regional Park offers 477 acres of expansive alluvial flat lands containing native species including coast live oak (*Quercus agrifolia*) and California sycamore (*Platanus racemosa*). Some of the specimen oak trees are reportedly over 700 years old. The OC Zoo has several large specimen coast live oaks that create a very unique tree canopy that provides a sense of scale and offers shade during the hot summer months. Additionally, the OC Zoo offers a variety of plant life native to southern California.



A mature stand of coast live oak trees create a wonderful natural shade canopy in the back area of the OC Zoo.

Figure 2.3-1 Vegetation Map



Geology and Hydrology

The OC Zoo is located adjacent to the Santiago Creek in a flat alluvial plain within the foothills of the Santa Ana Mountain range. Geospatial analysis revealed that the OC Zoo currently sits in a seismic liquefaction zone (National Atlas) and wildland fire prone area (CAL FIRE - FRAP). The area is also susceptible to extreme flood events (FEMA). Currently, the OC Zoo and Irvine Regional Park sit within a 100-year flood zone and a dam inundation area.

The nearby Santiago Dam at Irvine Lake controls the flow of water downstream through Santiago Creek. In 1969 much of the Park was destroyed, including large specimen trees, and the OC Zoo exhibit cages. In a preventative measure, a levee with side outlet structures was constructed to shore up the Santiago Creek preventing up to a 100-year flood from further damaging the Park. Due to regular seasonal flooding at the OC Zoo, a detailed topographic survey and a hydrology and hydraulics study were prepared as part of the OC Zoo GDP planning effort (Appendix A.03). According to the study, the levee, while preventing Santiago Creek from flooding the Park, creates a sump condition at the back of the levee in the OC Zoo. The OC Zoo watershed was surveyed and an analysis of the topography revealed the low point for the watershed to be located inside the OC Zoo boundary near the deer exhibit. This analysis was proven accurate during the December 2010 storm, which flooded the OC Zoo.

The Irvine Regional Park Hydrology and Hydraulics Study categorizes areas upstream of and tributary to the OC Zoo into three main hydraulic areas (A, B, C). Each has outlet facilities into Santiago Creek and those outlet facilities have a high potential of becoming overtaxed and have an overtopping issue where a percentage of overflow is expected to spill into adjacent, lower (downstream) subareas. If Area A overtops its outlet facility and spills into Area B, it then overtops its outlet facility and spills into hydraulic Area C. The OC Zoo is located in Area C and is a sump condition. See Figures 2.3-2 and 2.3-3.

Figure 2.3-2 Hydraulic Areas of the Santiago Creek Watershed

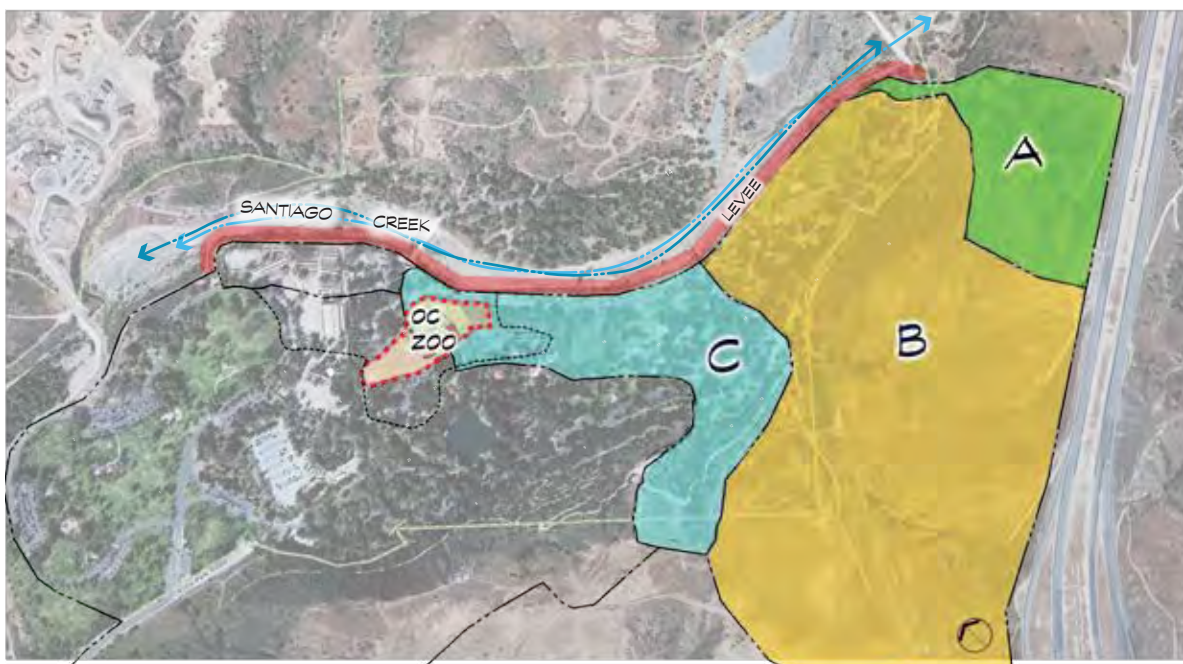
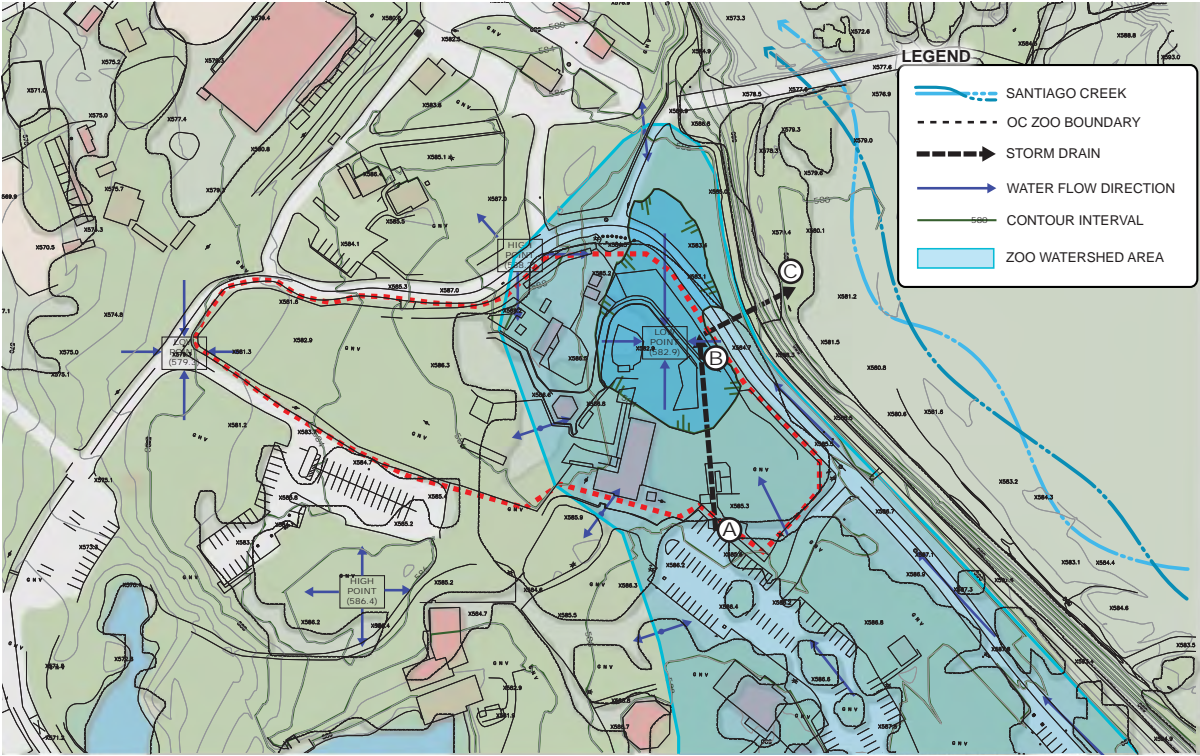


Figure 2.3-3: Drainage Map



A Drainage Inlet



B Drainage Outlet



C Flap gate Drainage Outlet at Santiago Creek



Concrete/Grouted Rock Drainage Swale (spans A-B)

Buildings and Infrastructure

The main OC Zoo building contains administrative offices, reptile and bird exhibits, and a small classroom (learning and activities room). The building is at its maximum capacity. The OC Zoo also has an animal medical care facility, a series of holding/shift pens for animal transfers and an old portable trailer that has been repurposed as a break room and locker area for staff and docents. The animal medical care facility was toured and found to be in good condition and well supplied. The holding/shift pens were reportedly substandard compared to today's design standards for animal and keeper safety.

The OC Zoo has evolved through the development of small additions and modifications without any clearly defined comprehensive plan. Infrastructure systems have been updated, but do not meet current demands and require a complete overhaul. There are demand-capacity issues with the storm drainage system and the sanitary sewer connections required for the exhibit cleaning purposes. The OC Zoo does not have a public restroom or a convenient hand washing facility. The current hand washing facilities are not a suitable height for children and are poorly located along the main walkway impeding the traffic flow into and out of the zoo.

To complete the existing conditions analysis of the OC Zoo, existing utility information was reviewed and mapped, a summary diagram was prepared identifying the site characteristics, and the project site photographed. A graphic was also prepared identifying site specific elements including: The Irvine Park Railroad proximity to the OC Zoo, the service access points, public entrance/exits, pedestrian circulation, ADA parking stalls, parking lot locations, building locations, proximity to Santiago Creek, tree canopy, and restroom facilities. See Appendix A.05.



Tree covered turf area adjacent to OC Zoo Entry/Exit Gate



OC Zoo Entrance and Exit



OC Zoo Drop-off, Entrance, and Main Building



OC Zoo Animal Medical Care Facility



OC Zoo Staff Trailer



OC Zoo Overhead Electrical Utility



OC Zoo Drainage Facility



OC Zoo Perimeter Service Road

Animals and Exhibits

The OC Zoo has focused the animal exhibits to animals native to the American Southwest. The current inventory of animals at the time of this report consists of the following:

Mammals

- Beaver (2)
- Bobcat (2)
- Burro (2)
- Collared Peccary (3)
- Coyote (2)
- Goat (15)
- Hedgehog (2)
- Island Grey Fox (1)
- Long Tailed Weasel (1)
- Mountain Lion (3)
- Mountain Coati (1)
- Mule Deer (3)
- North American Black Bear (2)
- North American Porcupine (2)
- Ocelot (1)
- Raccoon (2)
- Sheep (6)
- Virginia Opossum (3)
- White-nosed Coati (1)

Birds

- American Golden Eagle (1)
- American Kestrel (1)
- Bald Eagle (1)
- Burrowing Owl (1)
- Common Barn Owl (2)
- Common Crow (1)
- Domestic Chicken (7)
- Golden Pheasant (1)
- Green-cheeked Parrot (1)
- Great Horned Owl (2)
- Red-tailed Hawk (3)
- Ringed Turtle Dove (5)
- Screech Owl (1)
- Swainson Hawk (1)
- Turkey (2)
- Turkey Vulture (3)

Amphibians

- Axolotl (2)

Reptiles

- Chuckwalla (2)
- Coastal Rosy Boa (10)
- Common Kingsnake (3)
- Desert Iguana (2)
- Desert Tortoise (2)
- Gila Monster (1)
- Gopher Snake (2)
- Great Basin Gopher Snake (2)
- Mountain Kingsnake (1)
- Salcata Tortoise (2)
- San Bernardino Mountain Kingsnake (1)



The mountain lion's scientific name, Felis concolor, is a reference to the single tawny color of its coat.



Both male and female red-tailed hawks help raise their young.



OC Zoo Mountain Lion Exhibit



OC Zoo Bear Exhibit



OC Zoo Bald Eagle Exhibit



OC Zoo Coyote Exhibit



OC Zoo Plant Exhibit



OC Zoo Children's Area

Zoo Programs

In addition to animal exhibits, the OC Zoo offers a number of different types of programs and activities to enhance the visitor experience. Programs include:

Tours - Include pre-arranged one and half hour tours to both the general public and school groups, feature hands-on interaction with animals in the Children's Zoo and visit to the Irvine Regional Park Nature Center. Tour discussion includes topics such as habitats, adaptations, feeding habits, and general information about animals native to the American Southwest. Specialized talks can also be requested and can include topics such as native plants, mammals, birds, and wildlife careers. Tours are generally given by OC Zoo staff and docents.

Programs and Classes - Provide education through hands-on materials, fun crafts, and up-close meetings with zoo animals; each class is geared toward a specific age group and is approximately one hour in length.

Animal Presentations - Include formal talk by educational animal keepers on microphone; usually during training or feeding session for viewing by the public.

Story Time Programs - Feature short stories about animals and may include props and visual aids. Programs are conducted outdoors for groups of 10 - 40 children and parents.

Discovery Carts - Provide visitors an opportunity to handle feathers, skulls, pelts, and other materials; ask questions. Docents operate the carts and provide information.

Environmental Outdoor Education - Provides an opportunity for elementary school students to learn about native plants and animals. The Orange County Board of Education operates Inside the Outdoors, an educational program that includes a visit to the OC Zoo.

Animal Keeper Chats - Provide a relaxed and intimate environment for OC Zoo visitors to speak and ask questions about the animals and their care.

Off-site Programs - Involve OC Zoo staff assisting at other OC Parks events, booths at fairs, festivals, and special events, and may include information about the OC Zoo, animal artifacts, and live animals.

Cell Phone Audio Tour - Offers cell phone users the opportunity to take an audio tour. Visitors can learn a great deal of information about the animals from the people that take care of them, including the OC Zoo's animal keepers, veterinarian, education coordinator, curator, and manager.



Programs include hands-on interaction with the animals.

2.4 Opportunities and Constraints

Taking into consideration the existing conditions of the OC Zoo and the land surrounding it, there are several opportunities to consider to enhance the zoo and visitor experience. The following list summarizes the opportunities identified from the review of previous studies, interviews with staff and visitors, and site observations:

Opportunities

- The configuration of the OC Zoo offers possible expansion into the under-utilized back area of the zoo.
- The existing oak canopy provides a dramatic experience for visitors to become immersed in a natural setting and protected from the sun.
- The large open area adjacent to the OC Zoo entrance allows for possible group staging and gathering.
- The proximity of the Irvine Regional Park Nature Center allows visitors to further discover the connection between animals featured at the OC Zoo and the natural and cultural environments of Orange County.
- The nearby concessions in the Park offer OC Zoo visitors access to food which is not available within the zoo.
- The proximity of the Irvine Park Railroad offers a possible exploration for connecting the OC Zoo with this Park attraction and its parking.
- The possible expansion of adjacent parking lots 19 and 21 offers convenience for OC Zoo visitors.
- The nearby Park stage offers opportunities for OC Zoo group presentations.
- The creation of an OC Parks Foundation and/or OC Zoo support group offer the opportunity to market the OC Zoo for donor sponsorship.

The existing stand of coast live oak, associated woodlands, and open area will become the new Oak Woodlands exhibit.



A review of the existing constraints identified several deficiencies that need to be addressed related to future development. The following list summarizes the deficiencies identified from the review of previous studies, interviews with staff and visitors, and site observations:

Deficiencies

- The topography and drainage conditions prevent adequate flood protection for the OC Zoo. During heavy rainfall the northernmost portion of the zoo is prone to severe flooding.
- The OC Zoo entrance is also the exit; this walkway is too narrow for both ingress/egress traffic flow.
- There is no public restroom facility inside the OC Zoo. The nearest park restroom is too far for visitor comfort and convenience.
- The food concession stands are outside the OC Zoo; neither food nor drinks are available within the zoo.
- The OC Zoo facility lights do not provide for extended hours of operation.
- The OC Zoo building, classroom, and staff facilities are not large enough to support existing demand.
- The visitor experience is limited by dead end walks and exhibit fencing.
- No foundation or support group exists to market the OC Zoo for donor sponsorship.



The December 2010 rainstorm caused severe flooding throughout the OC Zoo as shown in photograph at the mule deer exhibit.



PLANNING PROCESS 3



In lightly populated areas, the red-tailed hawk often can live in harmony with humans; their expert skills in rodent control makes them desirable neighbors.

3.1 Introduction

The goal set by OC Parks for the OC Zoo GDP is to better align the mission of the OC Zoo with the mission and vision of OC Parks. To accomplish this, OC Parks established a new refined OC Zoo mission to guide the planning and direction for the future development of the OC Zoo. The new OC Zoo mission set forth by this GDP is:

Provide an attractive zoo with high-quality programs that entertain and educate visitors about the current and past animals known to inhabit Orange County.

The new OC Zoo will create a central hub where visitors can experience the cultural and ecological history of Orange County. The OC Zoo will serve as a microcosm of the plant and animal life of the surrounding park system, a link to the animals of the past and present of Orange County, a connection to the current cultural and historical environment of Orange County, and a gateway to the Irvine Ranch Open Space. Once in the OC Zoo, expansive views of the Orange County wilderness will provide a visual and physical connection between the park, animals, and the surrounding open space. The experience will bridge the gap between past and present and give visitors an appreciation of the natural value and beauty of Orange County.

The GDP planning process began with research and fact finding. A comprehensive database was compiled through a review and analysis of available existing pertinent information provided by OC Parks. Over a period of five months, the Project Team conducted several outreach efforts to stakeholders: OC Zoo visitors; OC Zoo staff, docents, and volunteers; OC Parks staff; Irvine Park Railroad (lessee); Inside the Outdoors (environmental educational program, OC Department of Education); and, the Irvine Ranch Conservancy (non-profit organization which helps manage the wildlands on the historic Irvine Ranch). The Project Team also visited other comparable zoo and nature education centers and interviewed staff from those facilities.

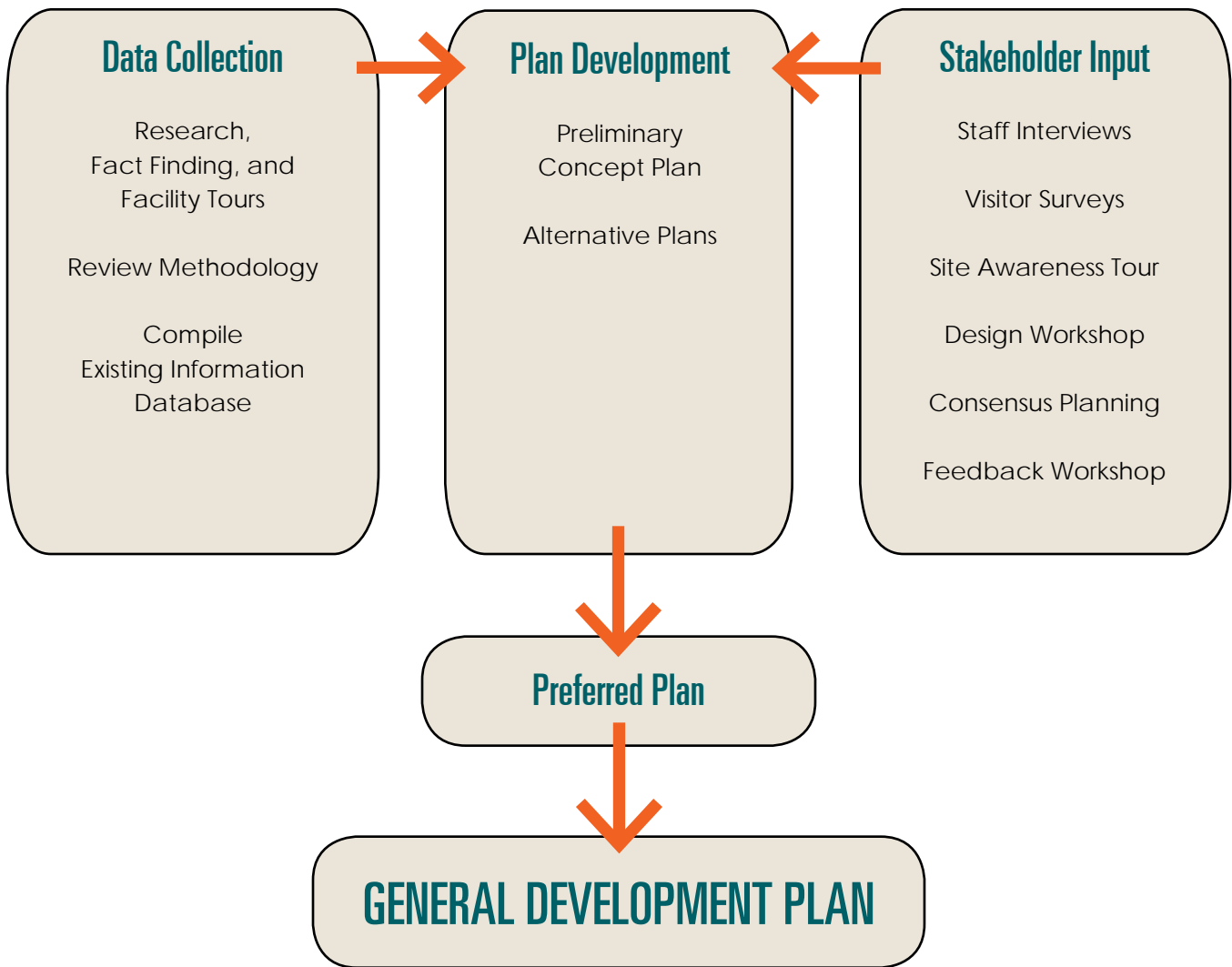
Following the initial data collection review, site analysis, and visitor surveys, a site awareness tour and design workshop was conducted on February 22, 2011. The objective of the workshop was to meet with key stakeholders to discuss the planning process, share site analysis information, and solicit input. Through an individual project questionnaire, individual and group discussion, and a 'hands-on' design charrette exercise, the participants expressed their goals, visions and ideas regarding the future development of the OC Zoo.

To verify accuracy and solicit feedback on the development of the Preliminary Conceptual Plan elements, multiple meetings were held with OC Parks staff and a feedback workshop was conducted where all the participants and stakeholders were shown the results of the planning effort. After positive feedback and continued support for the Preliminary Conceptual Plan, the Project Team began preparations for finalizing the development of the conceptual design.

The Design and Planning Team refined the Preliminary Conceptual Plan to include comments from workshop participants and OC Parks staff, as well as conducting additional studies (included in the Appendix) to prepare alternative plans with graduated levels of improvement. These alternative plans were based on the program design principals, design recommendations, zoo visitor and staff surveys, stakeholder workshops, and the new redefined OC Zoo mission provided by OC Parks. Each alternative

plan was designed to complement the others in an efficient and economical method, allowing for complete flexibility in response to available funding. Each alternative is broken down into incremental phases and components with associated costs. Costs and phased development approaches were prepared to support the planning purpose of providing guidance for the development of the OC Zoo for the next ten to fifteen years. This incremental method (phased implementation improvement plan) allows for development of the OC Zoo GDP to proceed without inhibiting future zoo projects. From this exercise, the Preferred Plan was developed and subsequently refined into the General Development Plan. Figure 3.1-1 shows a diagram of the planning process.

Figure 3.1-1: Planning Process Flow Diagram



3.2 Market Study

A market study was performed as part of the overall planning effort in the development of the GDP for the OC Zoo. The following section highlights some of the key background information from the market study. The entire study is included as Appendix A.04.

Market Evaluation

A review of the demographic trends in neighboring jurisdictions in Orange County shows ample market opportunity for expanding the long-term market support for the zoo. At the same time, this plan recognizes that there are strict limitations on the size of the zoo's potential visitor area, as well as limits to support facilities such as parking which can be dedicated solely to zoo visitors. As a result, the market potential for the zoo is limited by constraints in site area, attraction content, and supporting visitor infrastructure, rather than by the size of the available marketplace in Orange County. The superior demographic quality of the region shows long-term promise for increasing admission prices and per capita expenditures at the facility over the long term.

To increase attendance, zoos need to have some confluence of specific population demographics (age, household composition, population trends, education, tourism inflows, etc). The OC Zoo area population is relatively stable, with a projected growth rate of only 1.8 percent by 2015. However, while Orange County enjoys a high rate of tourism, those visitors are not likely to come to the OC Zoo.

The potential for increasing per capita expenditures at the zoo with the GDP implementation is promising. The zoo's primary market area enjoys a substantially higher annual average income than the nation as a whole. Also, not only does the area around the OC Zoo have a significant proportion of children under 14 (a prime market for the zoo's offerings), but it also has a lower median age than either the United States or Orange County as a whole. These market factors make zoo-going and expenditures at a zoo more likely.

Population Dynamics

The ultimate attendance and revenue performance potential for any public attraction is a function of the scale and quality of its available markets. The primary market for the OC Zoo lies within a 20 minute drive time from the facility; Figures 3.2-1 and 3.2-2 shows the extent of this market area. Reflecting the primary OC Zoo mission to provide recreational and educational experiences for Orange County, this area is considered the basis for the large majority of potential visitors to the zoo under the GDP program.

Local Comparable and Competitive Facilities

Given the ample resident and tourist markets, as well as the excellent demographic profile of the available market segments, the qualities and quantity of the available markets are very positive indicators for long-term market support of an improved OC Zoo. To understand the likely market response and performance potential for the zoo under this planning program, consultants reviewed the current competitive environment in central Orange County as the zoo's active local market place. The key characteristics of both comparable and competitive facilities in the local area follows.

Figure 3.2-1: Primary Market Detail (20-minute travel time)
 (Source: ESRI Business Analyst and AECOM)



Figure 3.2-2: Population by Drive Time from OC Zoo, 2010
 (Source: ESRI Business Analyst and AECOM)

Driving Time	Population
0-10 minutes	131,776
0-20 minutes (Primary Market)	1,699,770
0-30 minutes	4,158,090

The Local Market

The OC Zoo sits in the heart of one of the nation’s biggest tourism regions. With southern California as a mecca of major U.S. theme parks, cultural attractions, and nature destinations, the resident and visitor market is spoiled for choice. Other regional attraction include Disneyland, California Adventure, Sea World, Legoland, Knott’s Berry Farm, the Getty Center, Huntington Library and Gardens, the San Diego Zoo, the Los Angeles Zoo, the beaches, the desert, and Hollywood.

On a more local level, the OC Zoo has stiff competition. The zoo shares its primary market with the larger Santa Ana Zoo and with local cultural and nature attractions such as the Discovery Science Center and the Bowers Museum. Figure 3.2-3 presents a summary of some of the key local attractions with their admission fees and attendance showing the breadth of the market and potential for entrance fee development at the OC Zoo.

Comparable National Facilities

To develop an operations profile, the Design and Planning Team reviewed facilities elsewhere in the nation that are comparable in one or more respects to the OC Zoo. The comparative facilities represented include specialized facilities as well as facilities with full-scale comprehensive zoos that exhibit animals from many parts of the world. Most of the comparative facilities present animals that are characteristic of the local habitat. One or two of the comparable facilities include exotic species, but are limited to animals of a specific type, such as reptiles and amphibians.

Figure 3.2-3 Summary of Local Cultural and Natural Attractions
 (Source: Individual facilities and AECOM)

Facility	Type	Admission	Attendance
Discovery Science Center	Museum	\$12.95	440,000
Santa Ana Zoo	Zoo	\$8.00	270,000
Bowers Museum	Museum	\$18.00 (ave.)	132,000
Fullerton Arboretum	Arboretum	Donations	120,000
Muth Interpretive Center	Nature Center	None at this time	100,000
Children’s Museum at La Habra	Museum	\$7.00	100,000
OC Zoo	Zoo	\$2.00 + Vehicle Entry Fee (+\$3/\$5)	190,000

OC Zoo Current Operations Profile

OC Zoo has, at present, roughly 1.8 developed acres of attraction area making it relatively small among the region’s zoos from a visitor standpoint. The OC Zoo mission to exhibit animals native to Orange County parklands, natural open spaces, and wildlands, brings an eclectic blend of animals to zoo visitors, including black bear, mountain lion, ocelot, mule deer, raccoon, turkey vulture, bald eagle, red-tailed hawk, doves, porcupine, coati, burro, and goats.

A key indicator of zoo visitor attraction is the depth of ‘charismatic’ or ‘marquee’ species, especially large mammals. Research indicates that visitors are more interested in viewing these feature species. These typically include:

- Large animals, primarily mammals (especially rare and exotic species);
- Active, moving animals, rather than passive (resting/sleeping) animals;
- Animals that are readily visible (i.e., the closer the better);
- Baby animals;
- Animals that visitors perceive to be dangerous; and,
- Animals that visitors find attractive.

The species that support the mission of the OC Zoo while also serving to draw the public include mountain lions, black bears, rattle snakes, hawks, and the bald eagle. Reflecting the zoo’s mission to educate visitors about the species which are indigenous to Orange County and animals that may be encountered in the parks and wild areas of the County, the Preferred Plan provides an interesting array of species, habitats, and stories to create a compelling visitor experience.

Visitation

In 2011, the OC Zoo reported 193,390 visitors. Over the past 5 years the zoo has reported annual visitation growth of approximately 14 % per year. Based on the most recent full year of attendance figures (2011), the monthly attendance breakdown of visitors to the OC Zoo shows that the peak visitation takes place in July with the month of December having the fewest visitors at the zoo, bringing only 8,600 visitors. On average the OC Zoo draws 15,500 people each month.

By standards of the zoo/nature center industry, OC Zoo shows typical seasonal patterns for peak visitation in the spring and summer months. This reflects school field trip and vacation patterns. Although this pattern may seem to show potential for expanding visitation in the fall and winter months, in practice, it has proven difficult to alter this basic seasonal pattern, which is the broad experience of similar attractions (Figure 3.2-4).

Visitor Origin

OC Zoo traditionally does not keep visitor origin statistics, but the OC Parks statistics on visitor origin for Irvine Regional Park assumes that the large majority of the park visitors reside within Orange County. In 2010, the vast majority of visitors were classed as 'adult admissions' or non-special tour/promotion/group visitors 3 years old and up. Even with the visitor numbers for Inside the Outdoors program, tours, and promotional groups as well as the children under three years old considered as one unit, the adult admission figures still provide the overwhelming bulk of visitation to the OC Zoo (Figure 3.2-5).

Figure 3.2-4: OC Zoo Attendance by Category and Month, 2010
(Source: OC Zoo and AECOM)

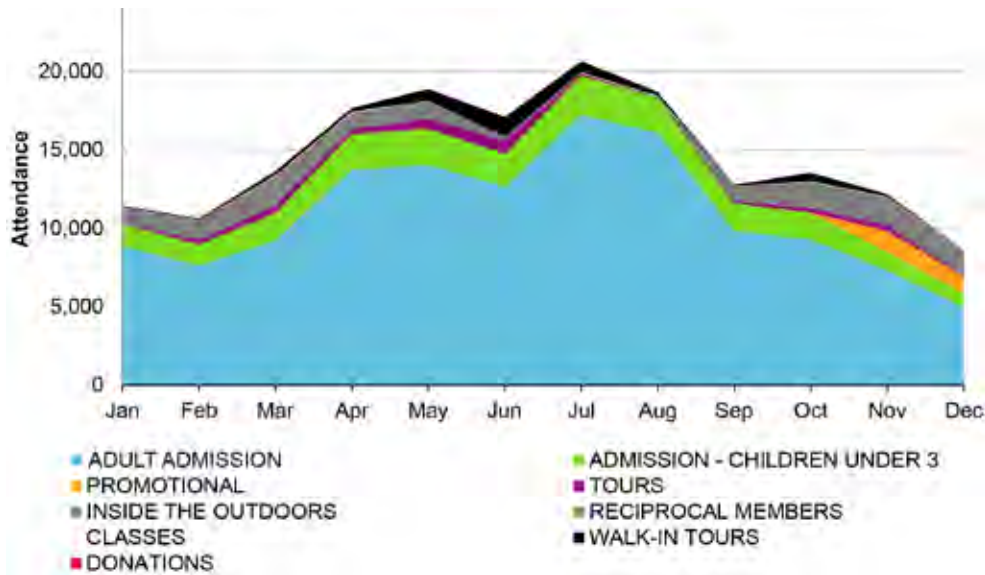
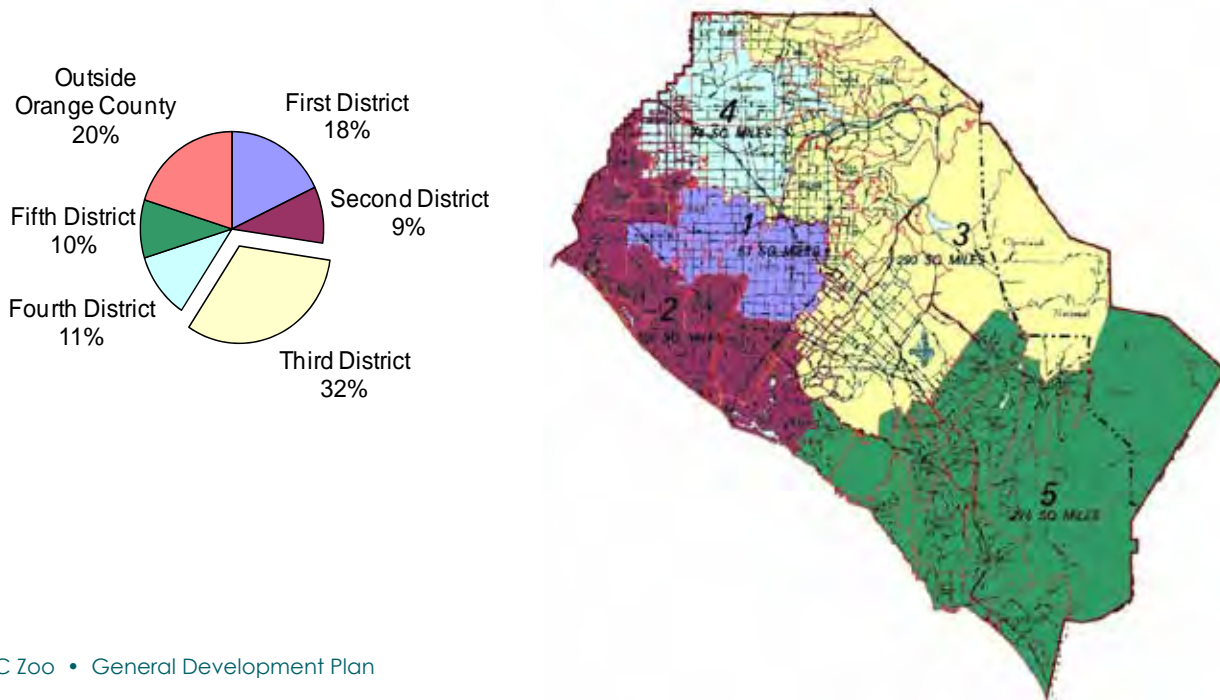


Figure 3.2-5: Irvine Regional Park Visitation by Supervisorial District, 2009-2010
(Source: OC Zoo and AECOM)



3.3 Visitor Survey

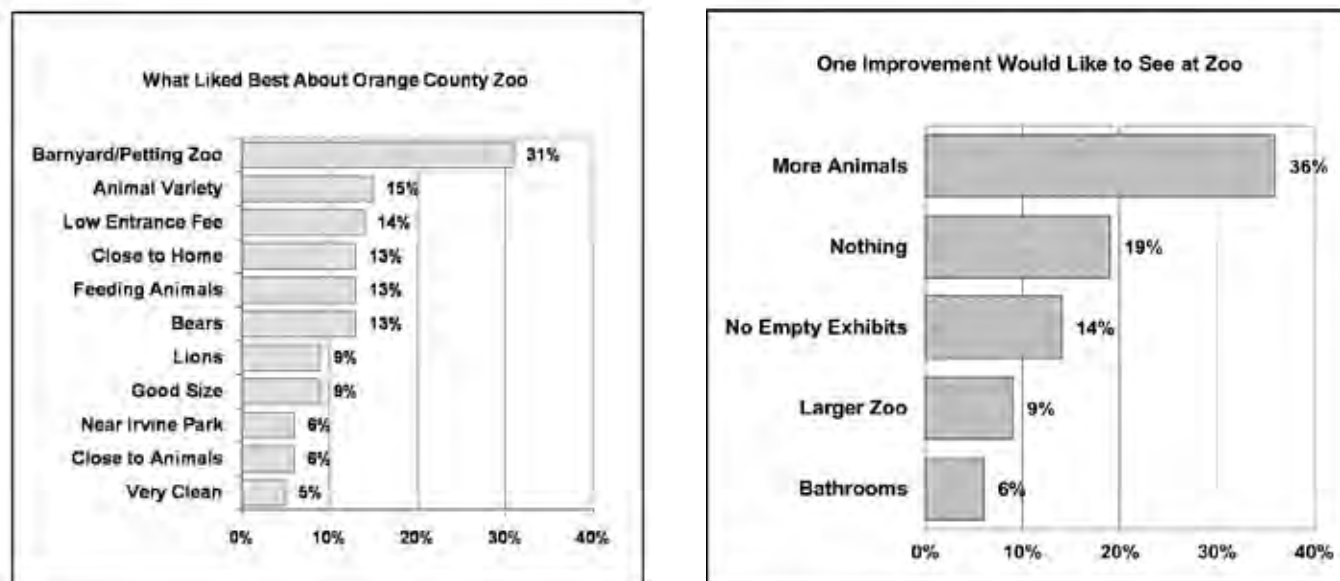
OC Zoo exit surveys were conducted to better assess the visitor experience and opinions regarding the OC Zoo. A total of 127 visitors were asked a series of questions regarding their satisfaction with the OC Zoo and soliciting suggestion for improvements. A complete transcript of the survey data and report is available in Appendix A.07.

When evaluating what visitors would like to see at the OC Zoo, specific questions were asked relating to their favorite activity and program at the zoo, as well as what they would like to see improved. The following is a summary of the responses collected.

When asked what visitors liked best about the OC Zoo (without being provided a list of responses), results indicated that 31% of respondents liked the barnyard/petting zoo area (Children’s Zoo) best. Figure 3.3-1 shows the response categories ‘variety of animals’, ‘inexpensive entrance fee’, ‘close to home’, ‘feeding the animals’, and ‘bears’ were reported by 13% to 15% of respondents as the best OC Zoo feature. This independent response from the visitors places a high value on the Children’s Zoo within the OC Zoo.

When asked what one improvement they would like to see at the OC Zoo, more than one-third (36%) of respondents stated they would like to see more animals. Nearly one of every five visitors (19%) stated they could suggest no improvement to the OC Zoo. The response category, ‘no empty exhibits’ was volunteered by 14% of the visitors polled while an additional 9% stated they would like to see a larger zoo. Overall, almost half (45%) the visitors responded that they would like to see the OC Zoo expanded (‘more animals’, ‘larger zoo’).

Figure 3.3-1: Visitor Responses



The Barnyard/Petting Zoo title above is referencing the Children’s Zoo

3.4 Staff Interviews

Seven, individual, OC Zoo staff interviews were conducted to gain insight into the day-to-day operations at the OC Zoo and solicit recommendations from staff based on their knowledge regarding operations, maintenance, and their individual interaction with the public. The interview responses, along with a list of current OC Zoo projects provided by the zoo manager, were considered and included in the development of the Preferred Plan (Figure 3.6-1). The following is a summary of the interview responses:

OC Zoo Operations

- Children's Zoo is a high traffic area, it requires a constant attendant and maintenance personnel.
- The entry area is very tight.
- Strings and animal care facilities behind exhibits are well organized.
- Shift cage improvements are needed.

OC Zoo Maintenance

- Exhibit drains are in poor condition, often clogged, and add to regular maintenance workloads.
- Exhibit access via shift cages and off-exhibit back areas improvements are needed.

Public Interaction

- Public interaction is a benefit for both keepers and visitors.
- Visitors are able to ask keepers questions and learn about the animals.
- Customer service is highly valued.

Recommended OC Zoo Improvements

- Bigger Children's Zoo area.
- Restrooms with staff lockers and showers.
- Educational facilities.
- Larger walkways.
- Children's activities expanded.

3.5 Design Workshop

As part of the planning process, stakeholders were invited to take part in a design workshop, which included a site awareness tour of Irvine Regional Park and the OC Zoo, and participation in a design charrette exercise. The workshop was attended by 32 stakeholders from 13 different organizations. A complete transcript of the activities and data is available in Appendix A.06.

Site Awareness Tour

The tour began with a presentation on the background data collected on the zoo, including: site analysis, hydrologic analysis, history, programs, location maps, and visitor survey responses. Participants were each given a workbook and instructed to individually respond to the questions. The workbooks were collected, individual responses recorded, and the main points summarized in a consensus response format. The following is an example of some of the workbook questions and responses:

Tour Stop Location	Question	Consensus Response
Park Entrance and Circulation	What are your impressions of the existing zoo identification signage?	Confusing, unclear, hard to see, not distinguishing, freeway sign
	Do you see the need for any additional wayfinding features or monumentation at this location?	Yes, unique zoo logo/zoo themed
Zoo Entry	How do you characterize the area just in front of the zoo entry?	Uninviting, lacks sequence of arrival, unimpressive
	Can you think of any potential benefits of this area for zoo use?	Should be a dynamic portal to invite people into the zoo; upgrade the entry
Mountain Lion Exhibit	What do you think about the overhead netting?	Too low, too visible, not attractive, too distracting, hate it
	What is the interpretive message?	What do you do if you see/encounter a mountain lion in the area
Service Yard	How would you characterize this area?	Beautiful trees, great opportunity

Design Charrette Exercise

After completing the site awareness tour, the workshop participants divided in to three mixed groups to review the project program and develop a list of concerns that might influence planning and development. Both individually and within each group, participants answered questions related to the site, and collectively indicated their major concerns and design ideas related to the OC Zoo, including: likes, dislikes, kind of zoo desired, the kind of story the zoo should tell, and how to tell that story. The following is a brief summary of the consensus responses developed from the workshop exercise:

What do you like best about the OC Zoo?

- Natural setting and oak trees.
- Engaging, friendly, and knowledgeable staff.
- Good size allows short but valuable visit.

What do you dislike about the site?

- Lack of restroom.
- Lack of way finding signage.
- Lacks a sense of arrival.
- Small entry.

What kind of zoo do you want?

- High quality, regionally respected gem.
- Mass appeal, destination attraction.
- Natural exhibits/native plants and wildlife.
- Educational opportunities.
- Interactive exhibits.

What kind of story should the OC Zoo tell?

- Discoveries of wildlife in nature.
- OC Zoo as portal to the OC Parks.
- Educational opportunity for visitors on the interconnectedness and ecological balance of nature.

How do you tell the story?

- Exhibit wildlife in natural habitat.
- Use interactive exhibits.
- Provide quality staff/experts in the field.
- Outreach to the community through current events and social media.



Stakeholders note observations during site awareness tour.



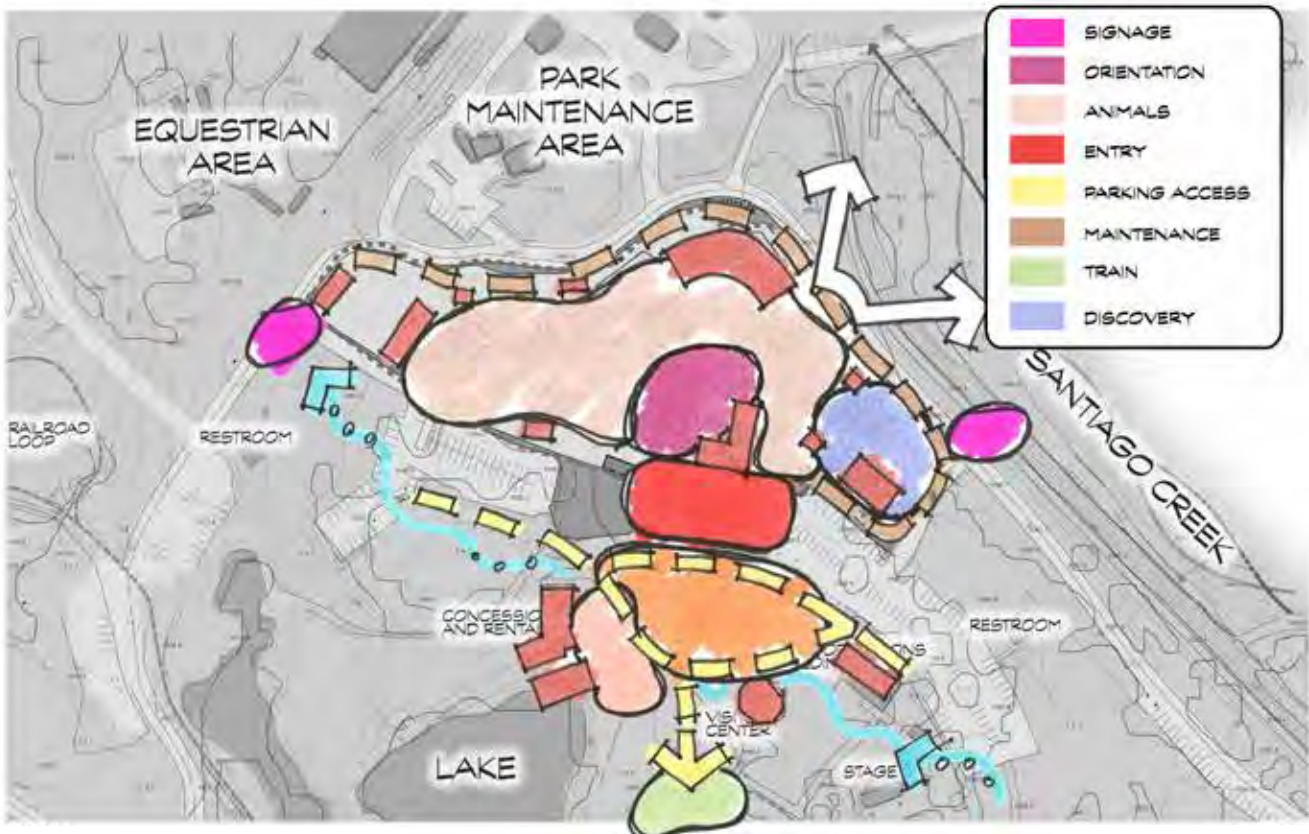
Stakeholders collaborate during workshop exercise.



Conceptual Plan

Workshop participants were asked to take the consensus ideas from each of the topic questions and utilize their creative energy to develop a concept plan for the site. Three separate plans were prepared by the groups indicating proposed improvements for the OC Zoo design. At the conclusion of the design exercise, each group presented their respective plan. After the workshop, the plans were evaluated for consensus items and a composite plan was developed. A composite plan representing all the plan ideas was prepared and analyzed, and developed as the Consensus Plan (Figure 3.5-1).

Figure 3.5-1: Consensus Plan



Additional Studies

During the development of the Preliminary Conceptual Plan (Figure 3.5-2) several factors outside the OC Zoo boundary were considered and evaluated. Pedestrian and vehicular circulation were studied and redesigned to allow safer pedestrian access. Design concepts were considered to increase the parking capacity of parking lots 19 and 21, which are directly adjacent to the OC Zoo. This concept was rejected because the expansion of the lots would have a negative impact on the surrounding mature trees and picnic area, and could not be justified because the additional parking spaces could not be dedicated solely to the OC Zoo as all parking at Irvine Regional Park is on a first come, first served basis. The Alternative Concepts Report (Appendix A.02) includes all plans developed through the design workshop and provides information on the additional parking and road alignment alternatives considered.



Stakeholder's site meeting to review design concepts.

Figure 3.5-2: Preliminary Conceptual Plan



3.6 Preferred Plan

After the development of design concept alternatives, a final Preferred Plan was prepared. The Preferred Plan represents the summation of all the design elements selected by OC Parks and recommended by the OC Parks Commission. The Preferred Plan illustrates the proposed site plan of improvements showing new layouts for animal exhibits, buildings, landscape, and operations and maintenance areas (Figure 3.6.1).

Consideration has been given to sustainable design elements, construction sequencing and scheduling, economic analysis of construction, user safety, maintenance requirements, and energy conservation. The Preferred Plan is the graphic analysis of what the GDP will explore in detail to guide the future development of the OC Zoo over the next 10 to 15 years.

Figure 3.6-1: Preferred Plan





GENERAL DEVELOPMENT PLAN 4



The bobcat ranges from southern Canada to northern Mexico. They are adaptable predators that inhabit wooded areas, as well as semi-desert, urban edge, forest edges, and swamp land environments.

4.1 Introduction

This GDP provides guidelines for updating and improving the OC Zoo infrastructure, animal exhibits, relational and aesthetic aspects within Irvine Regional Park, and visitor experience. The OC Zoo will continue as a recreational, educational, and entertainment resource for Orange County. The OC Zoo GDP is guided by the mission:

Provide an attractive zoo with high-quality programs that entertain and educate visitors about the current and past animals known to inhabit Orange County.

This mission describes the main purpose of the OC Zoo and the role it plays to achieve the OC Parks vision for the future. The GDP reflects essential improvements that enhance zoo operations while increasing safety and services to visitors. The general improvements bring the zoo infrastructure into compliance with current health, safety, and welfare codes, and provides enhancements to the existing exhibits and programs. The four major improvements recommended by the GDP are the new Restroom Facility, Oak Woodlands exhibit, Entry Complex, and Discovery Complex.

The new restroom will be the first public restroom built within the designated zoo grounds, bringing added comfort and convenience to visitors. The primary enhancement for the zoo exhibits will be the new Oak Woodlands exhibit; it develops the under-utilized back area of the zoo into an exhibit space nearly doubling the acres of visitor attractions at the OC Zoo. The existing oaks in this area will be protected by an elevated boardwalk that will weave its way through the beautiful woodlands. The vertical height of the boardwalk and a ha-ha restraint system provide a truly immersive visitor experience with seemingly unobstructed views of the animals and plants within the exhibit space. Distinguished entrance for the facility with open the new Entry Complex provides improved ticketing operations, offices, meeting space, exhibit space, multi-use space for exhibits, education and group events, amphitheater, and gift shop. The existing Children’s Zoo will be redeveloped into a new Discovery Complex with new engaging elements that inspire children and capture their imagination. Improvements include a new 6,000 square foot barn with exhibit, interactive learning and activities space; contact yards; hand washing station; sculptures; and other facilities. Figure 4.1-3 shows an illustrative plan of the GDP.

The GDP improvements are estimated at \$20.4 million, and zoo development will occur in four phases as funding allows. See Figure 4.1-1 and Figure 4.3-1.

Figure 4.1-1: Estimate of Probable Construction Costs in 2012 Dollars

PHASE I - Component 1 -- General Zoo Improvements (Near-Term)	\$ 1,235,000
PHASE I - Component 2 -- Drainage Improvements	\$ 980,000
PHASE II - Component 3 -- Restroom Facility	\$ 475,000
PHASE II - Component 4 -- Interim Entry Plaza and Fencing	\$ 400,000
PHASE II - Component 5 -- Interim Gift Shop	\$ 80,000
PHASE III - Component 6 -- Oak Woodlands Exhibit	\$ 1,702,500
PHASE III - Component 7 -- Walkways and Connectors	\$ 180,000
PHASE IV-A - Component 8 -- Entry Complex	\$ 3,870,000
PHASE IV-A - Component 9 -- Orientation Plaza Improvements	\$ 250,000
PHASE IV-A - Component 10 -- General Zoo Improvements (Long-Term)	\$ 1,800,000
PHASE IV-B - Component 11 -- Discovery Complex	\$ 2,600,000
All Components SUBTOTAL =	\$ 13,572,500
Contingency 20% =	\$ 2,714,500
All Components with contingency SUBTOTAL =	\$ 16,287,000
A&E design fees, testing, and administrative construction costs 25% =	\$ 4,071,750
GRAND TOTAL =	\$ 20,358,750

4.1-2: Logical Sequence and Implementation of Improvements

	Component	Description of Improvements
PHASE I	1 General Zoo Improvements (Near-Term)	<ul style="list-style-type: none"> • Electrical upgrades throughout the zoo • New staff facility (lockers/showers and break room) • Existing staff trailer and concrete pad removed • New quarantine facility in service area • Fencing in front of raccoon and coati exhibits replaced • Kitchen and food prep area upgrades • Reptile exhibits added in existing building when owls are relocated outdoors • New small exhibit constructed adjacent to bear exhibit • Temporary bird cages placed throughout zoo
	2 Drainage Improvements	<ul style="list-style-type: none"> • Outlet improvements (replace flap gates with pinch valves) • Area 'A' and Area 'B' detention improvements • Drainage by-pass improvements (includes perimeter bioswale and landscape treatments) • Underground drainage in lieu of open swale; remove swale and related small bridge to Children's Zoo
PHASE II	3 Restroom Facility	<ul style="list-style-type: none"> • New restroom building • New drinking fountain • Landscape, site furnishings, and amenities
	4 Interim Entry Plaza and Fencing	<ul style="list-style-type: none"> • Interim entrance ticket booth • Walkway improvements • Temporary fencing • Landscape, site furnishings, and amenities
	5 Interim Gift Shop	<ul style="list-style-type: none"> • Existing learning room remodeled to serve as interim gift shop
PHASE III	6 Oak Woodlands Exhibit	<ul style="list-style-type: none"> • Boardwalk and pathways (800 LF) • Fencing (includes ha-ha restraint) • Animal night house/shift cages (2) • Large mammal exhibit (in location of old trailer) • Wayfinding and interpretive signage • Landscape and oak protection
	7 Walkways and Connectors	<ul style="list-style-type: none"> • New upgraded walkways (1,800 LF) • Wayfinding and interpretive signage • Drop-off area and parking modifications • Landscape, site furnishings, and amenities (includes pathway lighting)
PHASE IV-A	8 Entry Complex	<ul style="list-style-type: none"> • Entry building (12,000 SQFT includes offices, multi-use education rooms, scenic outlook, and permanent gift shop) • Outdoor amphitheater • Entrance and exit gates and ticket operations • Interpretive art exhibits (includes donor recognition element/exhibit) • Landscape, site furnishings, and amenities
	9 Orientation Plaza Improvements	<ul style="list-style-type: none"> • Existing building modified (remove section with offices and interim gift shop) • New or refurbished kiosk with live feed and interactive video • Wayfinding and interpretive signage • Interpretive art exhibits (includes donor recognition element/exhibit) • Landscape, site furnishings, and amenities
	10 General Zoo Improvements (Long-Term)	<ul style="list-style-type: none"> • New animal medical care facility in service area • Existing animal medical building remodeled to serve as night house/shift cage and food prep for new large mammal exhibit (Component 6) • Beaver exhibit converted to large mammal exhibit • Various exhibits converted for multi-animal functionality • Wire netting to increase height on bobcat, ocelot, raccoon, coati, red-tailed hawk, and mountain lion exhibits • Glass viewing and upgrades at bear and mountain lion exhibits (includes rock work)
PHASE IV-B	11 Discovery Complex	<ul style="list-style-type: none"> • Barn (6,000 SQFT includes first floor animal exhibits and second floor exhibits with interactive education and activities space) • Contact yards • Hand washing station (water tower or trough) • Interpretive art and sculptures • Interpretive signage • Landscape, site furnishings, and amenities

Figure 4.1-3: General Development Plan



LEGEND	
① General Zoo Improvements (Near-Term)	⑦ Walkways and Connectors
② Drainage Improvements	⑧ Entry Complex
③ Restroom Facility	⑨ Orientation Plaza Improvements
④ Interim Entry Plaza and Fencing	⑩ General Zoo Improvements (Long-Term)
⑤ Interim Gift Shop	⑪ Discovery Complex
⑥ Oak Woodlands Exhibit	

4.2 Proposed Components

PHASE I

Component 1: General Zoo Improvements (near-term)

General, interim zoo improvements will take place while the long-term, major GDP improvements, Components 2-11, are being constructed. The general improvements are to maintain safe zoo operations and provide enhancements to the visitor experience. This work includes: electrical upgrades to support GDP improvements, new staff facility that includes lockers, showers, and a break room; removal of the existing staff trailer and concrete pad; new quarantine facility in service area (building and cages with concrete and decomposed granite floors); replacement of fencing in front of raccoon and coati exhibits; upgrades to the kitchen and food prep area; relocation of owls outdoors; additional reptile exhibits in main building (once owls are moved out); new small exhibit area adjacent to the bear exhibit; and temporary bird cages placed throughout the OC Zoo.

Figure 4.2-1: Component 1 Improvements (Plan View)



General Zoo Improvements (near-term) Include:

- Electrical upgrades
- Staff locker room, showers, and break room
- Staff trailer and concrete pad removed
- New quarantine facility in service area
- New exhibit fencing for raccoon and coati exhibits
- Kitchen and food prep upgrades
- Owls relocated outside
- Additional reptile exhibits in main building
- New small exhibit constructed adjacent to bear exhibit
- Temporary bird cages throughout zoo

Estimated Cost: \$1,235,000

Component 2: Drainage Improvements

The OC Zoo is subject to severe flooding due to its low-lying location and the existing deficient drainage facilities in the Park. In order to solve the drainage problems of the zoo, several infrastructure improvements need to be implemented throughout the Park. A comprehensive drainage improvement plan will be implemented to address the problem; see Figure 4.2-3 and Appendix A.03.

Based on the Irvine Regional Park Hydrology and Hydraulics report, the outlying Park drainage improvements include: new pinch valves to replace antiquated flap gates, vegetated earthen berms and swales, raised roads installed to channel stormwater and park runoff flows away from the zoo and sump drains. Improvements at the zoo itself consist of diverting the current drainage around the zoo into a vegetated bioswale (Figure 4.2-4); removing the existing telephone pole bollards; undergrounding drainage through the zoo in pipes; improving the sump drains and outlets, removal of the large concrete/grouted rock drainage swale and associated small pedestrian bridge that crosses the swale to access the Children's Zoo; and installation of plantings.

Figure 4.2-2: Component 2 Improvements (Plan View)



Drainage Improvements Include:

- Existing outlets at Santiago Creek upgrades (replace flap gates with pinch valves)
- Detention at Area 'A' and Area 'B' (raise road sections and berms)
- Diversion swale to by-pass the zoo (may include a combination of low perimeter wall fence, non-grouted cobble swale, perimeter bioswale, and removal of existing telephone bollards)
- Underground drainage within zoo (underground pipes to replace concrete/rock swale)
- Diversion swale at area 'C' (sump drain, underground pipe or box system, and bioswale)
- Small bridge to Children's Zoo removed
- Landscape

Estimated Cost: \$980,000

Figure 4.2-3: Drainage Improvement Plan

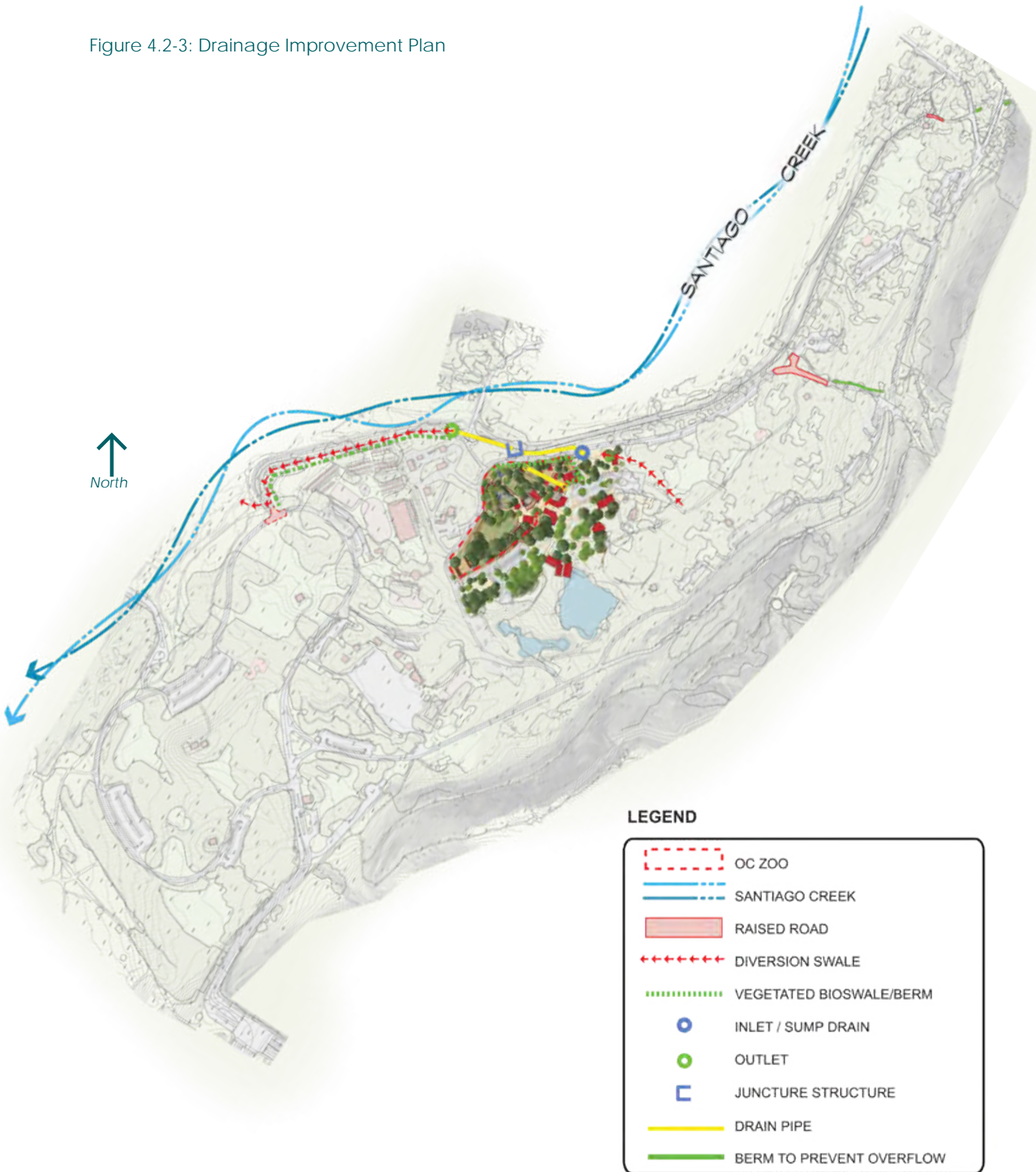
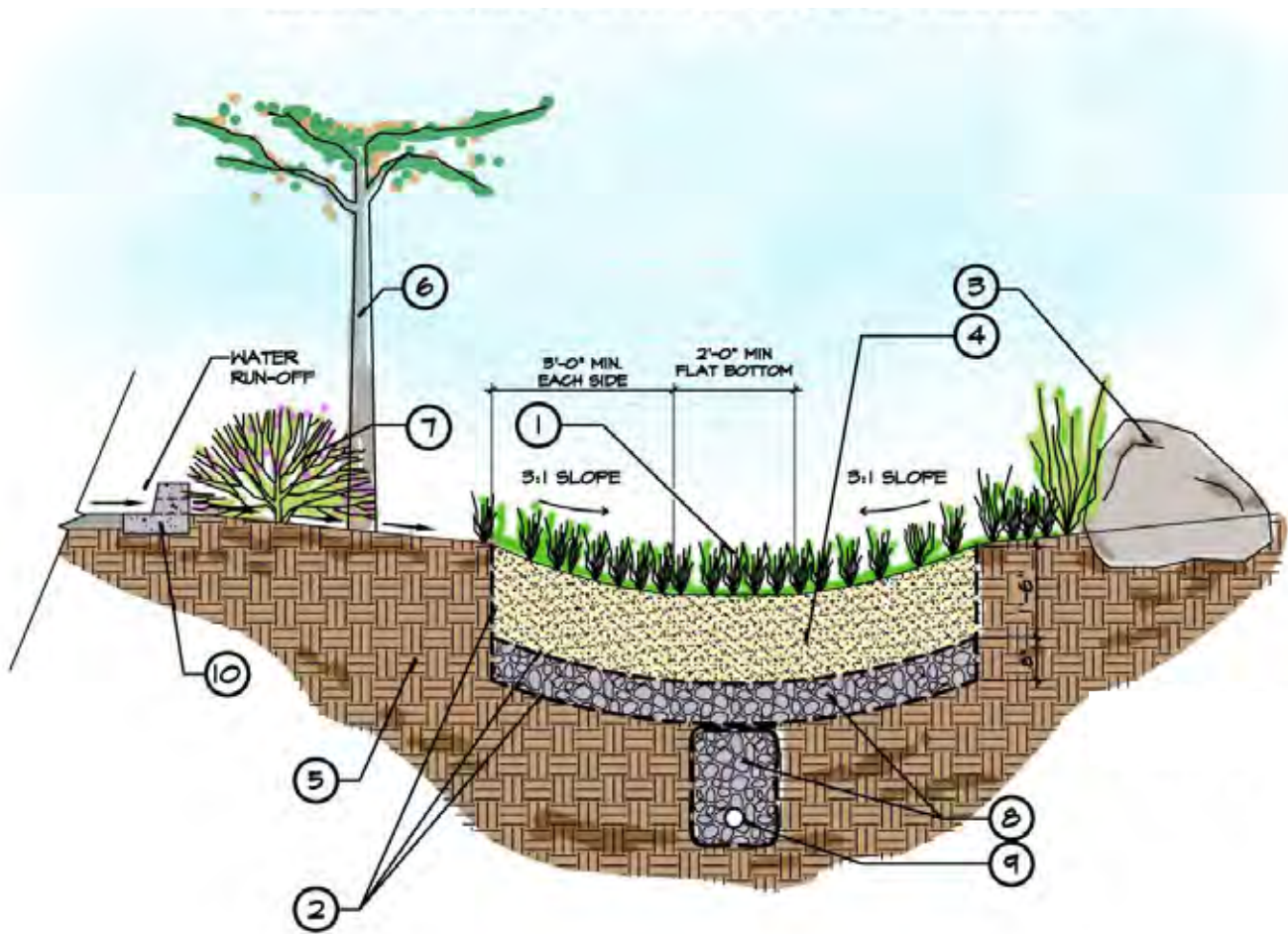


Figure 4.2-4: Vegetated Bioswale Cross Section (Example)



LEGEND	
① Vegetation suited for wet conditions	⑥ Tree planting outside edge of swale
② Permeable filter fabric	⑦ Shrub planting outside of swale
③ Boulders and/or low wall	⑧ Coarse aggregate
④ Mixed growing medium	⑨ Perforated wrapped drain pipe
⑤ Native soil	⑩ Curb with openings

NOTE:
As a pollution prevention measure, the existing telephone pole bollards should be removed as part of the Vegetated Bioswale improvements.

PHASE II

Component 3: Restroom Facility

A restroom will be constructed inside the zoo near the entry; offering facilities for men, women, and a family changing station. The design style architecture will be consistent with the existing architectural character of the Park structures. A drinking fountain and landscape improvements are also included.

Figure 4.2-5: Component 3 Improvements (Plan View)



Restroom Facility Improvements Include:

- Restroom building
- Drinking fountain
- Landscape, site furnishings, and amenities

Estimated Cost: \$475,000

Figure 4.2-6: Restroom Facility Floor Plan

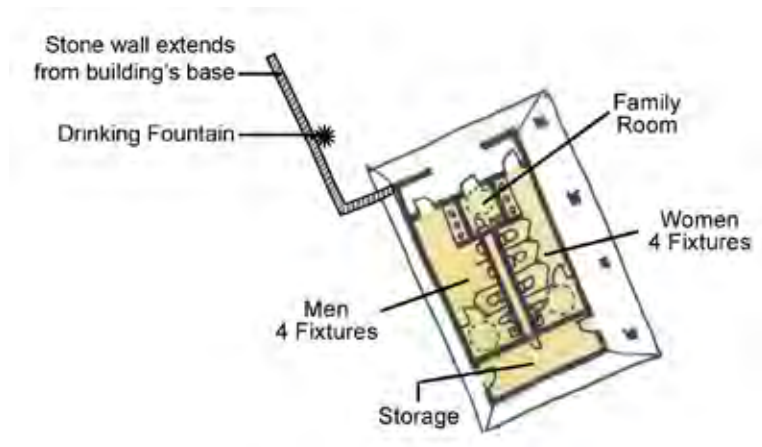
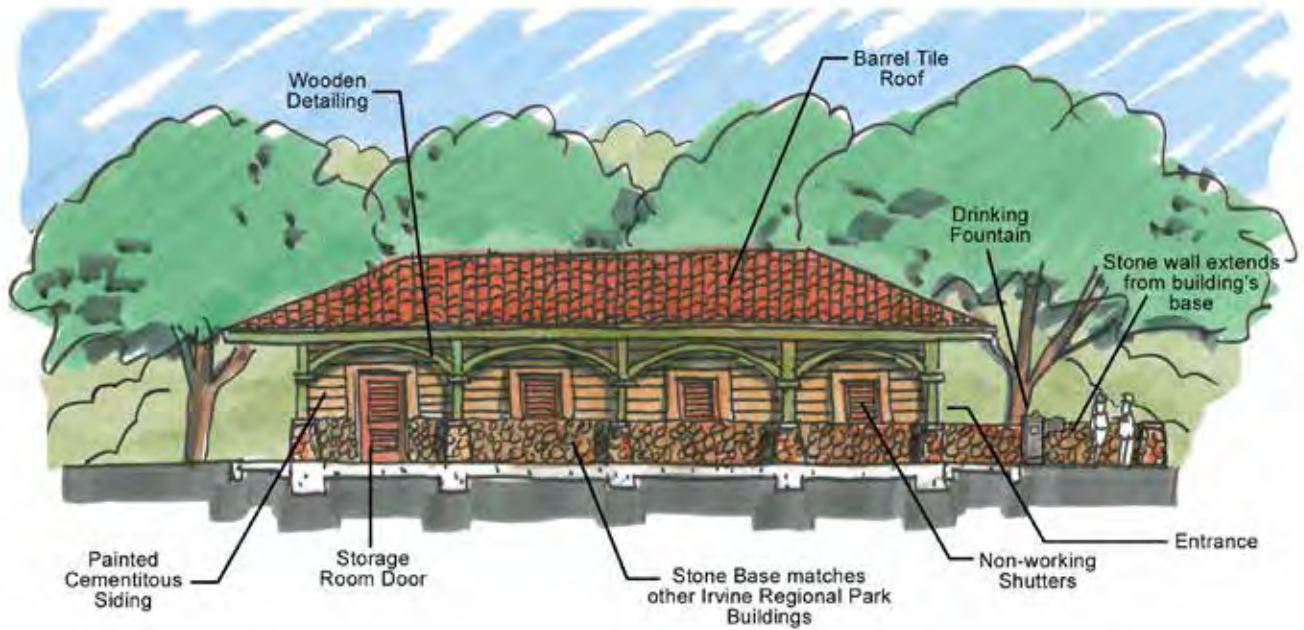


Figure 4.2-7: Restroom Facility Illustrative Elevation



The Craftsman style of the new restroom will complement the architectural style of the existing Park structures. The building materials will blend with the surrounding environment and the mature stand of trees provides a beautiful natural backdrop for the new structure.



Component 4: Interim Entry Plaza and Fencing

The current entry plaza will be remodeled to provide better visibility and functionality. The temporary entry is designed to take into consideration the existing resources and layout of the zoo as well as the ultimate development of the zoo when the new entry complex is built (Component 8). To resolve the ingress-egress bottleneck circulation problems that currently exist at the zoo gate, the new fencing will be located further away from the existing zoo building; and by implementing a two-gate system: one, well designed wider interim entry gate for ingress and a separate gate to serve as an interim exit only gate. This provides a looping pathway around the building to create better circulation through the zoo. See interim ingress/egress circulation diagram, Figure 4.2-10. To accommodate the new fencing alignment, minor modification of the existing walkways on the outside perimeter of the zoo will be reconfigured. The walkways will be constructed in a similar manner to match the existing character of the surrounding Park walkways. The interim entry area will feature the new restroom, improvements to the existing kiosk, and the interim gift shop (Component 5). Furnishings will be selected to match the architectural character of the Park. The new fence and upgraded kiosk are ideal locations to advertise and inform Park and Zoo visitors about the upcoming improvements to spur interest and attract new patrons and sponsors.

Figure 4.2-8: Component 4 Improvements (Plan View)



Interim Entry Plaza and Fencing Improvements Include:

- Interim ticket booth
- Walkway
- Temporary fencing
- Existing kiosk upgrades
- Landscape, site furnishings and amenities

Estimated Cost: \$400,000

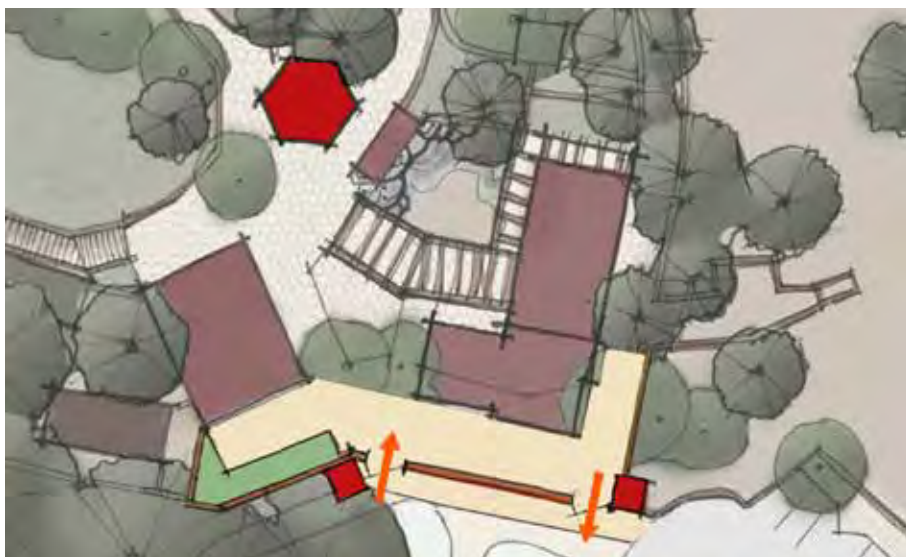
Figure 4.2-9: Interim Entry Plaza Illustrative



The interim entry plaza features better circulation and new vistas of the kiosk and mountain lion exhibits, new restroom (left), and the interim gift shop (right).



Figure 4.2-10: Interim Ingress/Egress Circulation Diagram



Component 5: Interim Gift Shop

Until the Entry Complex (Component 8) is constructed, the existing office building will be retrofitted to include a small, interim gift shop. The administration offices would remain in the existing building until the new offices are available in the new Entry Complex building.

The existing learning and crafts activity room will be renovated as the interim gift shop. In the interim, classroom activities will be conducted at various locations. The zoo souvenirs, snacks, and beverages offered at the interim gift shop will enhance the visitor experience and supply supplemental revenue to the zoo; its location will be immediately adjacent to the entry/exit to allow maximum exposure to visitors. County codes and operating agreements will be reviewed at the time of implementation to provide appropriate staffing either by zoo volunteers, docents, and/or a zoo support group with 501 c3 status.

Figure 4.2-11: Component 5 Improvements (Plan View)



Interim Gift Shop Improvements Include:

- Learning and activities room in existing building remodeled to serve as interim gift shop

Estimated Cost: \$80,000

PHASE III

Component 6: Oak Woodlands Exhibit

The two-acre back area of zoo will be developed to create the new Oak Woodlands exhibit which represents the indigenous flora and fauna of Orange County. Currently, the area has a stand of mature oaks with a large clearing in the center. The clearing is ideal for a new large animal exhibit and the tree canopy and resulting shade are ideal for the visitor boardwalk loop pathway. The boardwalk is approximately 800-feet in length; it is designed to protect the existing trees by preventing soil compaction. The Oak Woodlands exhibit provides a new zoo experience for visitors to enjoy a relaxed shade-covered stroll along the boardwalk or rest at a bench to view animals in an open, unrestricted natural setting.

The new Oak Woodlands exhibit will provide renewed interest and engage visitors through exhibit expansion into the undeveloped and underutilized areas of the site. The new exhibit will encourage visitors to return to the zoo as improvements are made. Development of the new exhibit ensures the preservation of the existing stand of oaks but requires some sycamore removal.

The new Oak Woodlands exhibit is designed so that animals are not viewed in small cages, but rather in simulated natural habitat. This design concept strives to meet industry standards for contemporary zoo exhibits which articulate the space in such a way that animal holding areas are concealed, restraint systems are shielded from view, and spaces appear larger or smaller in response to the geographic setting of the exhibit. The goal is to immerse the visitor in a series of zoological and botanical microcosms where animals live in a situation conducive to good health, and if desired, reproduction within capacity.

Figure 4.2-12: Component 6 Improvements (Plan View)

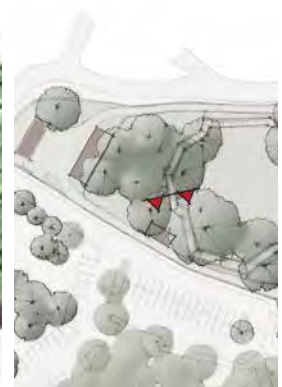
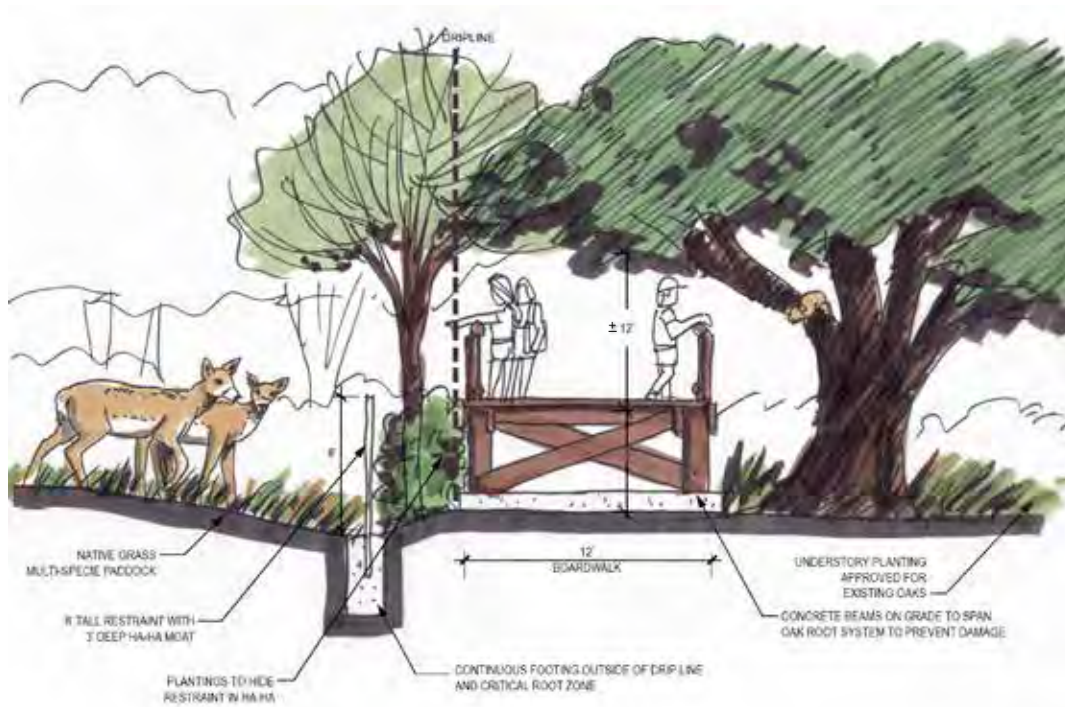


Oak Woodlands Exhibit Improvements Include:

- Boardwalk and pathways (800 LF)
- Fencing (includes ha-ha restraint)
- Animal night houses/shift cages (2)
- Flexible large mammal exhibit in location of old staff trailer
- Way-finding and interpretive signage
- Landscape, site furnishings, and amenities

Estimated Cost: \$1,702,500

Figure 4.2-13: Oak Woodlands Exhibit Sectional Elevation Illustrative



The Oak Woodlands exhibit features an elevated boardwalk for visitors and a ha-ha fence enclosure/restraint.

Figure 4.2-14: Oak Woodlands Exhibit Illustrative Sketch



The Oak Woodlands exhibit will provide visitors the opportunity to view animals in their natural habitat.

Component 7: Walkways and Connectors

A formal Entry Complex will provide vital connections with pathways between the OC Zoo and the adjacent Park buildings including the Training Center, Nature Center, boathouse, food concessions, and train station. The layout of the new walkways with interpretive exhibits and art create excitement for visitors as they approach the OC Zoo entrance. The walkways within the OC Zoo will be properly sized to allow visitors to flow easily to explore three distinct areas of the zoo in continuous looping routes; this design is critical to handling crowds on a peak attendance day. These walkways will be 12-feet in width and trail lengths will increase from 1,000 linear feet to 2,800 linear feet. Additionally, zoo walkways will include thematic lighting for exhibit areas and all architectural elements to allow the possibility for special evening programs and events. Improvements also include upgrades to related landscape and site furnishings to match the historic nature of the Park.

Figure 4.2-15: Component 7 Improvements (Plan View)



Walkway and Connectors Improvements Include:

- Walkways (1,800 LF)
- Way-finding and interpretive signage
- Interpretive art and exhibits
- Landscape, site furnishings, and amenities

Estimated Cost: \$180,000

PHASE IV-A

Component 8: Entry Complex

The OC Zoo, at present, is hard to find. The entry is unimpressive and offers no visitor amenities. The interim entry plaza and fencing, Component 4, is intended to be a step toward the ultimate realization of what will become the new OC Zoo Entry Complex; creating an exciting new image for both the OC Zoo and Irvine Regional Park. The new Entry Complex establishes a formal, functional entry space with improved amenities for visitors creating a portal for the OC Zoo.

Nestled by the large tree canopies that dominate the site, the new two-story entry building will not appear obtrusive: appropriately positioned, the new building fits into the matrix of the Park. The shape of the building creates an open and inviting entry space for group staging, establishing a link to the Irvine Regional Park Nature Center ($\pm 28'$ HT clerestory building) and other Park buildings that adjoin the tree covered turf area in front of the zoo. A creative philosophical link is also created between the new entry building and the Nature Center (Figure 4.2-17). To complement the architectural character of the existing Park buildings and follow the guidelines set forth in the National Register listing for the Park, the Craftsman architectural design style featuring a rustic stone base, cedar shake siding, and barrel tile roof is selected for the new entry building.

In addition to the larger space created for better circulation and gathering at the OC Zoo portal, the visitor experience is further enhanced through new exhibits, better education/training and craft rooms, an outdoor amphitheater, and a permanent gift shop. To allow for better pedestrian circulation within the zoo, the Entry Complex improvements also include moving the administration offices to the new entry building: the section of the existing building where the administration offices and the interim gift shop will be located will be removed after the New Entry Complex is constructed.

The new Entry Complex building provides an ideal venue to educate visitors and promote a better understanding and awareness of the issues of animal conservation and protection. The new building provides adequate space and amenities for community outreach programs and zoo cultural events to raise public awareness of ecological issues which not only affect animal life, but our own quality of life. All members of the community, children, teenagers, and adults can have fun learning, volunteering, and interacting with animals at the zoo. Academic outreach is achieved by partnering with schools and universities and provides many benefits, both from a conservation and research standpoint as well as general visitation acknowledgement of facility value and resource. The OC Zoo has historically reached out to the local school districts, through programs such as Inside the Outdoors and the Irvine Ranch Outdoor Education Center. Continuation of this outreach and the commencement of new collaboration with groups such as the California State University, Fullerton, promote long-term community support for the OC Zoo and its mission.

The building is composed of two floors (6,000 square feet each) with the first floor containing a gift shop (west) and multi-use education complex (east). The education complex will flow out into an adjacent outdoor amphitheater for demonstrations, programs, and indoor/outdoor learning exercises. The second floor will provide space for administrative and development offices, meetings, presentations, and a multi-use indoor/outdoor learning and gathering space with sliding glass walls (NanaWalls) that open to an oak canopy and second floor deck that overlooks the zoo's new outdoor amphitheater below and takes advantage of the views of the Irvine Ranch Open Space and Santa Ana Mountain Range beyond. As the new Entry Complex is developed, the section of the existing building with the interim gift shop and administration offices will be removed in Component 9 (Orientation Plaza Improvements) to allow for an expanded entry/orientation plaza space inside the zoo gates.

The east wing, first floor will utilize composite beams for the gift shop/zoo offices; a bearing wall will separate the gift shop from the storage area, thereby reducing the span of the beams. The education wing on the first floor will utilize steel beams so as to avoid columns in the flexible multi-use classroom space. This facility also includes restrooms and a small kitchen prep area for events, parties, and conferences.

If resources are limited, when the Entry Complex project is initiated, the entry building may be designed to accommodate the second floor build-out at a later date. The design for the future build-out option allows for the second floor to be constructed as an unfinished shell with fire exit stairs and elevator installed, and the future of the building sections designed for individual HVAC systems, and utilities stubbed as necessary.

Figure 4.2-16: Component 8 Improvements (Plan View)



Entry Complex Improvements Include:

- Entry building (12,000 SQFT: offices, multi-use education rooms, overlook, and permanent gift shop)
- Outdoor amphitheater
- Ticketing alcove with entrance and exit gates
- Interpretive art and exhibits
- Walkways, drop-off area, and parking modifications
- Landscape, site furnishings, and amenities

Estimated Cost: \$3,870,000

4.2-17: Building Relationship - Diagrammatic Sketch

(Diagram showing the relationship of the new entry building with the existing Irvine Regional Park Nature Center)

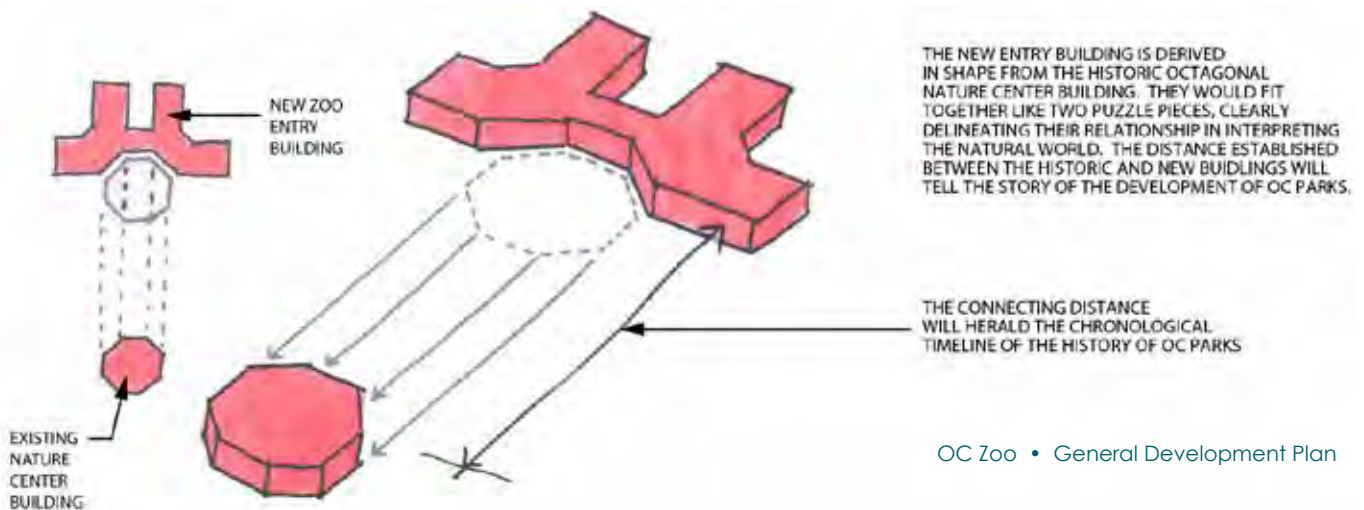
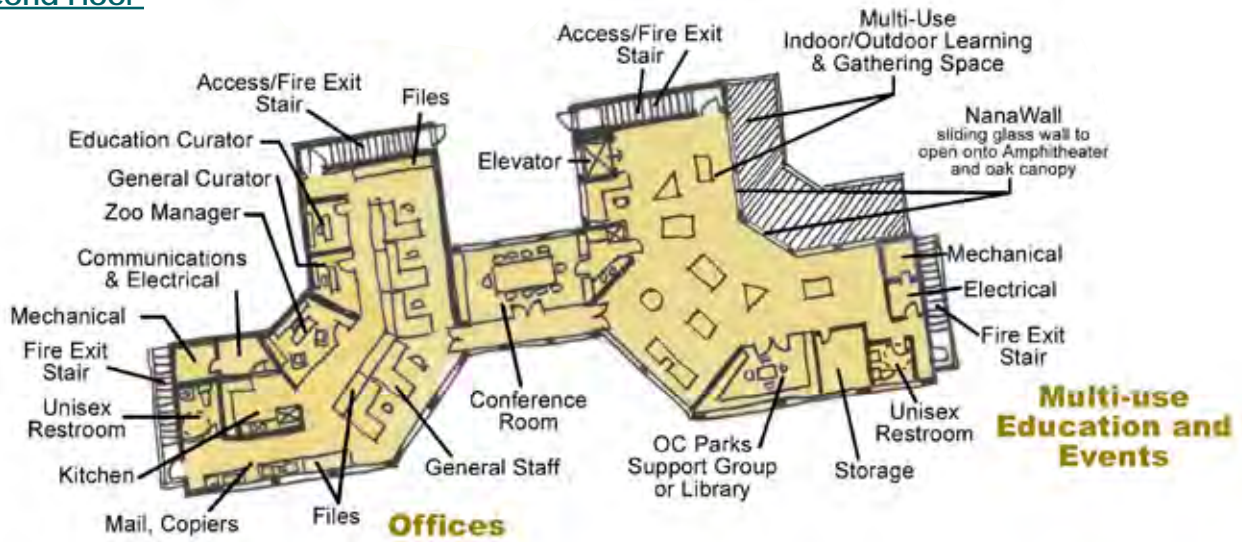


Figure 4.2-18: Entry Complex Building Floor Plan

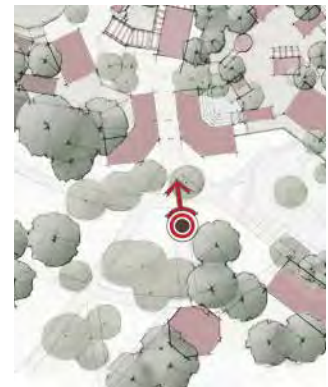
Second Floor



First Floor

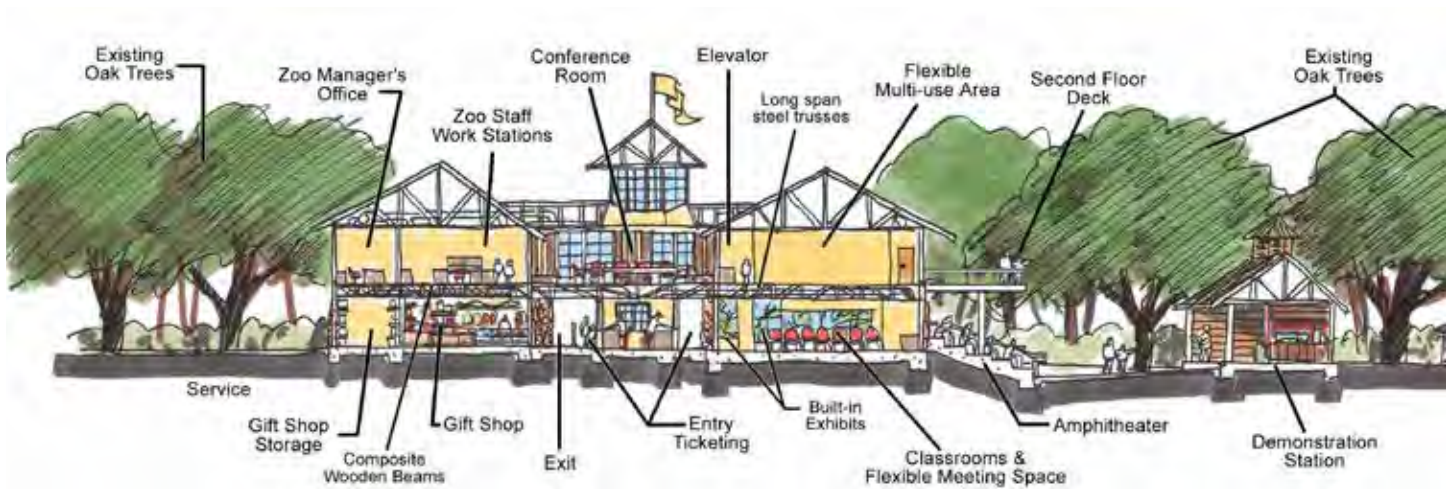


Figure 4.2-19: Entry Building Illustrative

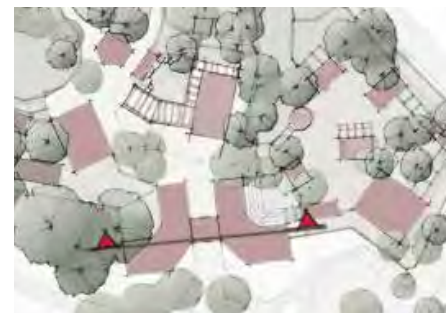


The Craftsman architectural style of the new entry building reflects the architecture style of the Park buildings. The walkway that connects the Nature Center to the new OC Zoo entry building will become an artistic interpretive exhibit that heralds the chronological time line of the history of OC Parks.

Figure 4.2-20: Entry Building/Discovery Complex Cross Sectional Elevation Illustrative



The relationship between the Entry Complex building and the Discovery Complex offers diverse and interactive learning opportunities.



Component 9: Orientation Plaza Improvements

As the OC Zoo visitor effortlessly moves through the new entry and ticketing alcove (Component 8) they will enter into the new Orientation Plaza where the existing administration and interim gift shop building once stood. The remaining exhibit portion of the existing zoo administration building will be renovated (Component 10) to create a more detailed, modern exhibit facility. In the Orientation Plaza, visitors will obtain information about the zoo and amenities being offered based on current programs and plan their visit based on up to date animal information. The new, improved kiosk will show videos and interactive graphics and form a focal point in the improved Orientation Plaza. An artistic element will be featured to recognize donors for their contributions to the OC Zoo.

Figure 4.2-21: Component 9 Improvements (Plan View)



Orientation Plaza Improvements Include:

- Existing building modified (remove section with offices and interim gift shop)
- New kiosk with live feed and interactive video
- Way-finding and interpretive signage
- Interpretive art exhibits and donor recognition element
- Landscape, site furnishings, and amenities

Estimated Cost: \$250,000

Figure 4.2-22: Orientation Plaza Sectional Elevation Illustrative



A ha-ha fence encloses the new Oak Woodlands exhibit adjacent to the Orientation Plaza.

Figure 4.2-23: Orientation Plaza Illustrative



A new information kiosk that shows interactive graphics will be the focal point in the improved Orientation Plaza.

Component 10: General Zoo Improvements (long-term)

The long-term general improvements are essential to improving the existing zoo operations. A new animal medical care facility will be constructed in the service area on the west side of the new Oak Woodlands exhibit; this location provides opportunities to include the animal care building into the educational tours and programs. The existing animal exhibits will be improved to reflect those of a modern zoo. The mountain lion exhibit will be improved to have new taller mesh top and glass viewing panels, an interpretive arbor to provide shade and alleviate the caged atmosphere, and open views to the re-sculpted exhibit; the bear exhibit will also receive glass viewing panels, re-sculpted rock, and other upgrades; the beaver exhibit will be converted to a flexible large mammal exhibit; various exhibits will be converted to multi-animal functionality and upgraded. All the exhibits will receive new handrails and path and circulation improvements. After the Orientation Plaza improvements are implemented, the remaining exhibit building will receive improvements to allow visitors to better view the exhibits. Shade awnings will be added on each side to allow ample viewing without glare and provide shade for zoo visitors. The exhibits would be back serviced from the existing interior keeper area. Secondary glass could be added on the exterior to prevent the potential of zoo visitors from tapping on the glass and disturbing the animals in the exhibits. This would allow the removal of the existing chain link fence that holds zoo visitors back from the viewing glass to the exhibits.

Figure 4.2-24: Component 10 Improvements (Plan View)



General Zoo Improvements (long-term) Include:

- New animal medical care facility in service area
- Existing animal medical building remodeled to serve as night house and food prep for new large mammal exhibit at Oak Woodlands exhibit
- Beaver exhibit converted to large mammal exhibit
- Various exhibits converted to allow multi-animal functionality
- Various exhibits receive fence replacement
- Bobcat, ocelot, raccoon, coati, red-tailed hawk, and mountain lion exhibits receive new heightened wire netting
- Glass viewing and other upgrades to bear and mountain lion exhibits (includes rock work)
- Exhibit upgrades in remaining sections of existing exhibits building

Estimated Cost: \$1,800,000

PHASE IV-B

Component 11: Discovery Complex

The Discovery Complex will occupy the same space that the Children’s Zoo currently does, but will have new engaging elements added that inspire children and capture their imagination. Discovery Complex improvements include a new 6,000 square foot barn with exhibits on the first floor and an option for a second floor for exhibits and an interactive learning and activities space; themed hand washing station (water tower or trough); demonstration station; special feature exhibit as well as other facilities (animal paddocks, holding area, and night houses). The improvements to the Discovery Complex will offer greater animal interaction, education, and activities that expand the already existing zoo programs that have a proven track record of success. Visitors will be able to learn about and enjoy the animals that have been historically present in the development of southern California farms and ranches. A rotational visiting special feature animal exhibit space will be provided for small animals that may not be native to the region. The special feature animal provides an opportunity to educate visitors about wildlife across the globe, creates new and exciting exhibits for repeat visitors to the OC Zoo, and provides various learning opportunities, such as comparing and contrasting native and non-native small mammals. The outdoor amphitheater included in the Entry Complex improvements is strategically located between the education wing of the new entry building and the Discovery Complex; making it convenient to both facilities for staging groups and educational programs. Improvements also include upgrades to landscape, site furnishings and amenities to match the historic nature of the Park.

The new barn provides hands-on interaction and interpretation with animals and exhibits on the 4,000 square foot first floor. The 2,000 square foot second floor will be filled with smaller living exhibits as well as interactive exhibits. There will be a central station where zoo staff and docents can direct exploration and manage the ‘discovery boxes’ containing many detailed elements ranging from shells and skeletons to skins and puzzles.

If funding resources are limited when the Discovery Complex project is initiated, the design plans for the barn may be prepared to allow the second floor interior improvements to be built-out at a later date. The initial construction (Phase 1) includes the access to the second floor (stairway and scissor lift/ elevator) as well as stubbing-out all utilities necessary for ultimate second floor build-out (Phase 2). The floor beams would be adequately sized in Phase 1 to accommodate the small assembly load requirements of the second floor in Phase 2.

Figure 4.2-25: Component 11 Improvements (Plan View)



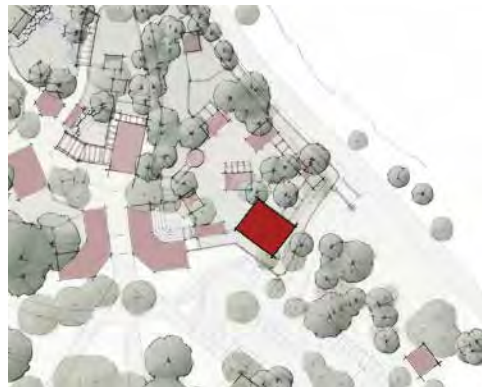
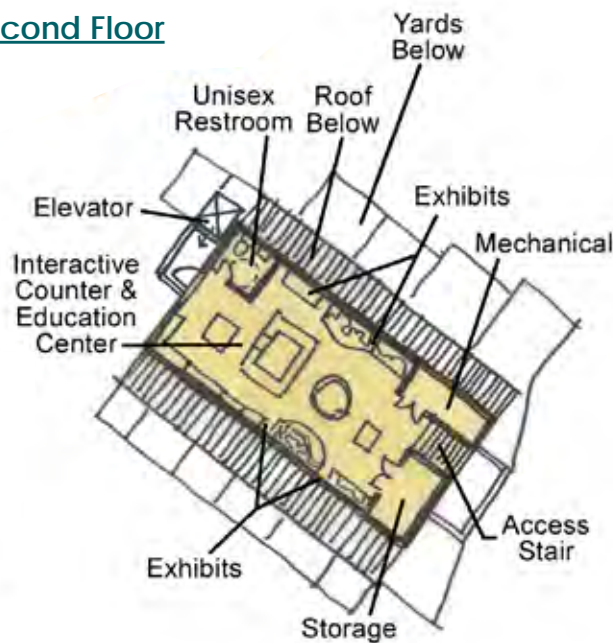
Discovery Complex Improvements Include:

- Barn (6,000 SQFT: exhibits and learning and activities space)
- Contact yards with themed hand washing station (water tower or trough)
- Demonstration station
- Interpretive signage
- Landscape, site furnishings, and amenities (includes interpretive art and sculptures)

Estimated Cost: \$2,600,000

Figure 4.2-26: Barn Floor Plan

Second Floor



First Floor

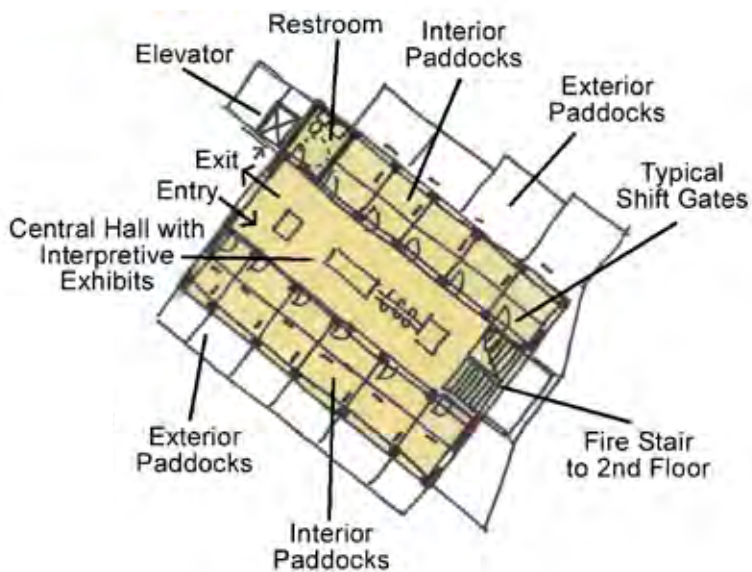
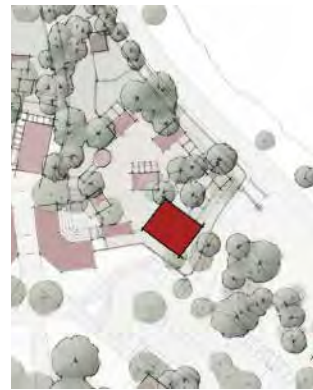


Figure 4.2-27: Discovery Complex Barn Second Floor Option Illustrative



The barn design allows for future second floor build-out for exhibits and interactive learning and activities.

Figure 4.2-28: Discovery Complex Illustrative



The Discovery Complex improvements include a new 6,000 square foot barn with exhibits on the first floor and option for future second floor exhibits and learning activities space.

4.3 Costs

Figure 4.3-1: Estimate of Probable Construction Costs in 2012 Dollars - Breakdown

Phase 1 - Component 1 -- General Zoo Improvements (immediate/near-term)	
Zoo electrical upgrades	\$ 250,000
Modular staff facility in service area (locker/shower and break room); existing staff trailer and concrete pad removed	\$ 365,000
New quarantine facility in service area (building and cages with concrete and decomposed granite surfaces)	\$ 200,000
Exhibit fencing - Replace fencing in front of raccoon and coati exhibits	\$ 70,000
Kitchen and food prep area upgrade	\$ 100,000
Owls relocated to outside	\$ 100,000
Additional reptile exhibits in main building when owls are moved out	\$ 100,000
New small exhibit constructed adjacent to bear exhibit	\$ 30,000
Temporary bird cages placed at strategic locations throughout Zoo	\$ 20,000
Subtotal =	\$ 1,235,000
Phase 1 - Component 2 -- Drainage Improvements	
Existing outlet upgrades (replace flap gates with pinch valves)	\$ 40,000
Area 'A' Detention Improvements	\$ 15,000
Area 'B' Detention Improvements	\$ 75,000
Drainage BY-PASS Improvements (includes perimeter bioswale and landscape treatments)	\$ 750,000
Underground drainage and small bridge to Children's Zoo removed	\$ 100,000
Subtotal =	\$ 980,000
Phase 2 - Component 3 -- Restroom Facility	
New restroom building and drinking fountain	\$ 450,000
Landscape (includes plantings, site furnishings and amenities)	\$ 25,000
Subtotal =	\$ 475,000
Phase 2 - Component 4 -- Interim Entry Plaza and Fencing	
Interim entrance ticket booth	\$ 40,000
Walkway and existing kiosk upgrades	\$ 100,000
Temporary fencing	\$ 30,000
Landscape (includes plantings, walkway lighting, site furnishings and amenities)	\$ 230,000
Subtotal =	\$ 400,000
Phase 2 - Component 5 -- Interim Gift shop	
Training room in existing building remodeled to serve as interim gift shop	\$ 80,000
Subtotal =	\$ 80,000
Phase 3 - Component 6 -- Oak Woodlands Exhibit	
Boardwalk and pathways (800 LF)	\$ 680,000
Fencing (includes ha-ha restraint)	\$ 22,500
Animal night houses/shift cages (2)	\$ 400,000
Large mammal exhibit (in location of old staff trailer)	\$ 300,000
Landscape (includes plantings, oak protection, site furnishings and amenities)	\$ 150,000
Signage (way-finding and interpretive)	\$ 50,000
Other miscellaneous	\$ 100,000
Subtotal =	\$ 1,702,500
Phase 3 - Component 7 -- Walkways and Connectors	
New upgraded walkways (1,800 LF)	\$ 80,000
Signage (way-finding and interpretive)	\$ 20,000
Landscape (includes plantings, site furnishings and amenities)	\$ 80,000
Subtotal =	\$ 180,000

Phase 4.A - Component 8 -- Entry Complex	
Site preparation (6%)	\$ 200,000
Foundation and utilities (30%)	\$ 1,080,000
HVAC and communications (8%)	\$ 300,000
Architectural Items, glazing, and finishes (48%)	\$ 1,720,000
Barrel tile roof (8%)	\$ 300,000
Amphitheater	\$ 100,000
Parking modifications (includes drop-off area)	\$ 70,000
Landscape (includes plantings, site furnishings and amenities, and interpretive sculptures)	\$ 100,000
Subtotal =	3,870,000
Phase 4.A - Component 9 -- Orientation Plaza Improvements	
Existing building modified (remove section with offices and interim gift shop)	\$ 30,000
New kiosk with live and interactive video feed	\$ 60,000
Signage (way-finding and interpretive)	\$ 30,000
Interpretive sculptures	\$ 30,000
Landscape (includes plantings, thematic paving, site furnishings and amenities)	\$ 100,000
Subtotal =	250,000
Phase 4.A - Component 10 -- General Zoo Improvements (long-term)	
Beaver exhibit to large mammal exhibit conversion (needed for animal logistics during construction)	\$ 200,000
Various exhibit conversions for multi-animal functionality	\$ 100,000
Fencing replacement	\$ 100,000
Wire netting to increase height on bobcat, ocelot, raccoon, coati, Red-tailed hawk, and mountain lion exhibits	\$ 200,000
Glass viewing and rock work at bear exhibit	\$ 300,000
Glass viewing and upgrades to mountain lion exhibit	\$ 300,000
New animal medical care facility in service area	\$ 450,000
Remodel existing animal medical building to serve as night house/shift cage and food prep for new large mammal exhibit	\$ 150,000
Subtotal =	\$ 1,800,000
Phase 4.B - Component 11 -- Discovery Complex	
Site preparation	\$ 85,000
Barn (6,000 SQFT includes first floor animal exhibit space and allows for future second floor interactive learning room)	\$ 2,000,000
Demonstration station	\$ 150,000
Animal shelters and other facilities in contact yards	\$ 100,000
Special feature animal exhibit	\$ 100,000
Hand washing station (water tower or trough feature)	\$ 15,000
Interpretive sculptures	\$ 30,000
Interpretive signage	\$ 20,000
Landscape, site furnishings and amenities	\$ 100,000
Subtotal =	\$ 2,600,000
All Components SUBTOTAL =	\$ 13,572,500.00
Contingency 20%	\$ 2,714,500.00
All Components with contingency SUBTOTAL =	\$ 16,287,000.00
A&E design fees, testing, and administrative construction costs 25%	\$ 4,071,750.00
GRAND TOTAL	\$ 20,358,750.00

4.4 Landscape

The OC Zoo GDP is structured so that multiple improvements can happen in a progressive approach to reach ultimate realization of the new OC Zoo GDP design. The new components will contain detailed design standards that are not specific to any one component, but rather span across multiple components creating a uniform design theme. Detail standards for landscape plantings, furniture selection, code compliance, signage, utility planning, and parking will provide a comprehensive design character to unify all elements of the OC Zoo. More specific details for each of the new components will be further developed in a construction document phase outside the scope of this GDP. The following are the guidelines that further refine the development of the zoo components:

To best represent the natural wildlands and open spaces of Orange County, a native plant palette will be utilized for the new animal exhibits and natural landscape areas within and around the zoo. Plant selection and arrangement should be designed to blend seamlessly with the surrounding regional park landscape. Landscape guidelines for the OC Zoo are categorized by three basic scenarios: plant palette, vegetated bioswales, and tree/oak protection.

Plant Palette

Native plants commonly found in southern oak woodland plant communities and other various species found in the alluvial areas around Irvine Regional Park will be utilized as a base for all new landscaping areas in and around the zoo. In addition to these native plants, demonstration plantings may be developed in the Discovery Complex to illustrate plants utilized for crops in early Orange County settlements. The Discovery Complex demonstration plantings should be done in an isolated area contained in above-ground planter boxes. The preliminary plant palette (Figure 4.4-1) was developed to reflect the types of plantings suitable for utilization within the different landscape areas within and around the zoo. Figure 4.4-2 shows photographic images of the recommended plants.

Perimeter Landscape Treatments

A vegetated swale (bioswale) is part of the drainage improvements that will occur along the perimeter of the zoo. In conformance with modern sustainable practices, the runoff collected along the zoo from the roads and parking lots will be treated in the bioswale before the water is released into the Santiago Creek. The bioswale design will include natural systems as well as typical drainage infrastructure to handle peak flows. As part of the bioswale improvements, all existing telephone pole bollards will be removed from the perimeter roads and parking areas surrounding the zoo. Removal of the telephone bollards will help eliminate any contaminants from the bollards being discharged into the Santiago Creek. A less cluttered and more attractive open and natural setting will also be achieved through the removal of the telephone pole bollards; see Figure 4.2-4: Vegetated Bioswale. As part of the bioswale, a new perimeter wall may be constructed around the zoo to mitigate any flows beyond the capacity of the bioswale. The perimeter wall should match or complement the character of the old stone wall in the Park. The wall may be designed to replace the existing chain link fence (low wall with fence on top) surrounding the zoo thus serving a dual function as security and flood protection.

Oak Tree Protection

The mature stands of oaks and sycamores that border the Santiago Creek are typical of the natural southern California landscape. Over time it has been observed that human influence has caused damage to oak root zones impacting the health of the trees significantly. The new Oak Woodlands exhibit, identified in Component 6, is intended to preserve the oaks in a natural setting by restricting human impact on the ground. Construction measures identified in the arborist report will be implemented to protect the oaks and their sensitive root system from compaction (Appendix A.01). Tree protection will be a priority; the exhibit designs, walkways, boardwalks, and maintenance areas will be designed to minimize any impact to the existing trees. The following protection guidelines will be observed to minimize impact to the trees:

- Restrict heavy vehicle traffic under oak canopies. Where traffic is absolutely necessary for construction, traffic should be light and implement use of AlturnaMATS (or similar product) to prevent damage to root zones around trees.
- Grading of the surface under oak and sycamore canopies should be avoided.
- In areas under oaks with pedestrian traffic, implementation of raised boardwalks will be used to prevent root damage. Footings and support infrastructure should be used sparingly with maximum beam spans to limit the impact to the soil conditions around existing trees.
- Watering of oaks should be prevented during summer to avoid root problems. Irrigation near oaks should be designed and monitored to prevent surface ponding within canopy driplines.
- Deep watering practices for oak and sycamores will be implemented; the irrigation system design for the trees will be separate from the shrubs and grasses.
- A certified arborist will be consulted before, during, and after construction activities to monitor and recommend further protection/nutrition implementation strategies.



AlturnaMATS prevent damage to root zones around trees.

Figure 4.4-1: Preliminary Plant Palette

Botanical Name	Common Name
<i>Achillea millefolium</i>	Common Yarrow
<i>Acmispon glaber</i> [<i>Lotus scoparius</i>]	Deer Weed
<i>Anemopsis californica</i>	Yerba Mansa
<i>Arctostaphylos</i> sp.	Manzanita
<i>Artemisia douglasiana</i>	Mugwort
<i>Baccharis pilularis</i>	Chaparral Broom; Coyote Brush
<i>Baccharis salicifolia</i>	Mule Fat; Seep Willow
<i>Bebbia juncea</i>	Sweetbush
<i>Ceanothus griseus</i> v. <i>horizontalis</i>	Yankee Point Ceanothus
<i>Cercis occidentalis</i>	Western Redbud
<i>Cistus carbariensis</i>	White Rockrose
<i>Encelia californica</i>	Coast Sunflower
<i>Epilobium canum</i>	California Fuchsia
<i>Eriodictyon crassifolium</i>	Thick-leaved Yerba Santa
<i>Eriogonum fasciculatum</i>	California Buckwheat
<i>Eriogonum parvifolium</i>	Coastal Buckwheat
<i>Heteromeles arbutifolia</i>	Toyon; California Holly
<i>Isocoma veneta</i>	Coastal Isocoma
<i>Isomeris arborea</i>	Bladderpod
<i>Juncus acutus</i>	Spiny Rush
<i>Juncus effusus</i>	Common Rush
<i>Malacothamnus fasciculatus</i>	Bushmallow
<i>Malosma laurina</i>	Laurel Sumac
<i>Mimulus aurantiacus</i>	Orange Monkeyflower
<i>Platanus racemosa</i>	California Sycamore
<i>Pluchea odorata</i>	Marsh Fleabane
<i>Prunus ilicifolia</i>	Hollyleaf Cherry
<i>Quercus agrifolia</i>	Coast Live Oak
<i>Rhamnus californica</i>	California Coffeeberry
<i>Rhamnus ilicifolia</i>	Holly-Leaf Redberry
<i>Rhus integrifolia</i>	Lemonade Berry
<i>Rhus trilobata</i>	Squaw Bush Sumac
<i>Ribes aurea</i> v. <i>gracillium</i>	Golden Currant
<i>Ribes speciosum</i>	Fuchsia-flowering Gooseberry
<i>Romneya coulteri</i>	Matilija Poppy
<i>Salix gooddingii</i>	Black Willow
<i>Salix lasiolepis</i>	Arroyo Willow
<i>Salvia apiana</i>	White Sage
<i>Salvia mellifera</i>	Black Sage
<i>Salvia spathacea</i>	Hummingbird Sage
<i>Sambucus mexicana</i>	Blue Elderberry
<i>Typha latifolia</i>	Cattails

Figure 4.4-2: Preliminary Plant Palette - Photographs

Oak Woodland Planting Palette



Achillea millefolium
Common Yarrow



Baccharis pilularis
Chaparral Broom; Coyote Brush



Epilobium canum ssp. *Canum*
California Fuchsia



Eriogonum fasciculatum
California Buckwheat



Heteromeles arbutifolia
Toyon; California Holly



Malosma laurina
Laurel Sumac



Platanus racemosa
California Sycamore



Quercus agrifolia
Coast Live Oak



Rhamnus ilicifolia
Holly-Leaf Redberry



Rhus integrifolia
Lemonade Berry



Rhus trilobata
Squaw Bush Sumac



Ribes aureum V. *gracillium*
Golden Currant

Figure 4.4-2: Preliminary Plant Palette - Photographs (continued)

Vegetated Bioswale Planting Palette



Anemopsis californica
Yerba Mansa



Artemisia douglasiana
Mugwort



Baccharis salicifolia
Mule Fat; Seep Willow



Bebbia juncea
Sweetbush



Isocoma veneta
Coastal Isocoma



Juncus acutus
Spiny Rush



Juncus effusus
Common Rush



Pluchea odorata
Marsh Fleabane



Salix gooddingii
Black Willow



Salix lasiolepis
Arroyo Willow



Sambucus mexicana
Blue Elderberry



Typha latifolia
Common Cattail

Figure 4.4-2: Preliminary Plant Palette - Photographs (continued)

Native Plants for General Planting Areas



Acmispon glaber [*Lotus scoparius*]: Deer Weed



Arctostaphylos sp.
Manzanita



Ceanothus griseus v. *horizontalis*
'Yankee Point': NCN



Cercis occidentalis
Western Redbud



Cistus corbariensis
White Rockrose



Encelia californica
Coast Sunflower



Eriodictyon crassifolium
Thick-leaved Yerba Santa



Eriogonum parvifolium
Coastal Buckwheat



Isomeris arborea
Bladderpod



Malacothamnus fasciculatus
Bushmallow



Mimulus aurantiacus
Orange Monkeyflower



Prunus ilicifolia
Hollyleaf Cherry

Figure 4.4-2: Preliminary Plant Palette - Photographs (continued)

Native Plants for General Planting Areas



Rhamnus californica
California Coffeeberry



Ribes speciosum
Fuchsia-flowering Gooseberry



Romneya coulteri
Matilija Poppy



Salvia apiana
White Sage



Salvia mellifera
Black Sage



Salvia spathacea
Hummingbird Sage

Site Furnishings and Amenities

The following are guidelines and recommendations intended to provide a commonality of fixtures and furniture to create a more unified design within the zoo. Any existing furnishings and amenities that do not conform or complement the design style or theme should be removed from the zoo and replaced as each new component is constructed. To help the new zoo represent itself as a model in green and sustainable practices and principles, all new furniture, fixtures, and equipment will be selected for proper aesthetics, green and sustainable fabrication processes, low VOC (Volatile Organic Components), LED lighting, high efficiency operating characteristics and passive and active solar apparatus (light tubes to photovoltaic panels). Figure 4.4-3 shows an example of a site furnishing 'collection' appropriate for the OC Zoo.

Figure 4.4-3: Site Furniture Collection (Example)



Benches, Chairs, and Tables

Furniture selection should be based on durability and similar design styles which complement the Craftsman architectural style of the buildings and/or the theme of the special area (Oak Woodlands and Discovery Complex). Benches, chairs, and tables should be made with sustainable materials. Painted material should be applied with a finish that resists rusting, chipping, peeling, and fading. Any existing furniture not in conformance with the GDP theme will be replaced as each new component is constructed.

Trash and Recycling Receptacles

Waste and recycling receptacles will be provided in designated areas throughout the zoo. Materials and colors should match or be part of the same family of proposed benches, chairs, and tables.

Drinking Fountain

The design of the new drinking fountain will complement the new architectural style of the buildings.

Above-Ground Planters

Areas that may contain above-ground planter boxes for demonstration plantings should have lined boxes and be constructed with recycled or repurposed materials and be free from toxins to prevent any contaminants from being introduced to the site.

Donor Walls

Donor walls or structures with donor plaques should be designed in concert with the approved architectural design style and guidelines matching the character of the new OC Zoo and Park. Any existing donor plaques and furnishings that do not conform or complement the new architectural design style or theme should be removed from the zoo and replaced as each new component is constructed.

Hand Washing Station

A new hand washing station will be located in the Discovery Complex; for visitor's use after interaction with the animals. The style of the hand washing station will match the barnyard theme, e.g. water tower or trough. The capacity will be sized for use by four to five people at a time.

Gates and Fencing

All gates and fencing should be constructed in a similar fashion. Fencing and gates for non-animal exhibitory should consist of tubular steel with a finish that resists rusting, chipping, peeling, and fading.

Bollards

The existing telephone pole bollards are unattractive, cause visual clutter that detracts from the beauty of the park's natural setting and views, and represents a potential threat for soil and watershed contamination due to their chemical treatment. To prevent any possible pollutants from continuing to runoff into Santiago Creek, the bollards in and around the zoo should be removed as new components are constructed. Suitable landscape features to be used in lieu of the telephone pole bollards to restrict vehicular access and enhance the park aesthetic at the perimeter of the zoo (roads, parking, and walks) may include one or more of the following: stone, asphaltic concrete or concrete curb; rock groupings set in an earthen berm; low stone wall; bollards; fencing; sculpture; and plantings. At strategic locations where limited access is needed removable bollards that complement the new architectural design style of the zoo may be used.

Lighting

Craftsman-style light fixtures utilizing energy-efficient technology and appropriate luminaire cutoffs will be installed throughout the zoo. Any existing luminaire fixtures that do not meet the criteria described by the GDP will be removed as new components are constructed.

Signage and Way-Finding Graphics

A new hierarchy of signage ranging from directional signs starting at the Park entry to interpretive to way-finding signs will be implemented throughout the Park and the zoo. Pedestrian and vehicular signs will be developed to guide visitors to the OC Zoo. The intent of the signage is to both direct zoo visitors to its location, and inform other Park visitors about the existence of the OC Zoo within the Park.

Pedestrian

The way-finding signs are pedestrian scale signs that direct movement from both the adjacent parking lots and the railroad parking lot to the new zoo Entry Complex. The graphic styling for the way-finding signs should follow a more playful and interpretive zoo theme.

Vehicular

New exterior roadway signage will lead visitors from the Park entry to the parking lots on either side of the zoo (#21 and #19). This signage will be in accordance with current OC Parks sign design standards.

Interpretive Graphics

All new interpretative graphics developed for the OC Zoo will comply with current OC Parks branding. Understanding that the OC Zoo has a character unique to itself among OC Parks facilities, additional signage elements/designs will be necessary to exhibit information on specific animals. In addition to the existing interpretive signage with three-dimensional animal anatomy, the new interpretive program at the OC Zoo will include electronic monitors with interpretive images and storylines. The electronic monitors offer great flexibility to revise storylines and change out exhibits at a much lower cost than the static interpretive signs. The monitors have the ability to be truly weather proof and dependable. The same electronic means of creating new exciting interpretive graphics also allows integration with mobile phone applications. This allows messaging to be more abbreviated in the exhibit graphics and more detailed in the phone application; allowing visitors to probe as deep as they desire into the zoo's messaging and education program.

Exhibitory graphics should be designed as an extension of the videos that are currently shown at the existing kiosk in the zoo. This kiosk is a focal point in the new Orientation Plaza that provides visitors with an overview of current zoo animals, programs, and events. The information content will be more general at the orientation plaza and more in depth at the exhibits themselves.



Sign graphics can contain codes that link mobile devices to information on the internet e.g.: QR codes.



The low-relief sculptural panels provide a tactile quality for the interpretive and way-finding program.

4.5 Utilities and Infrastructure

Utility Master Plan

A comprehensive utility master plan that supports the GDP improvements will be prepared in the initial plans for the OC Zoo. The plan will evaluate the capacity of the existing utilities and identify proposed alignments and sizes needed for new utilities to serve the existing and proposed buildings, exhibits, and site amenities. As the zoo develops with each new component, all overhead electrical wires around the service corridor will be phased underground, if feasible. Water systems will be run in effective loops to facilitate adequate and equal pressure throughout the zoo.

Drainage

Properly designed, constructed, and maintained drainage facilities will substantially mitigate flooding that occurs at the OC Zoo during heavy rainfall, resolve drainage issues, and enhance water quality. A comprehensive drainage improvement plan based on Alternative 3 (Preferred Plan) of the Irvine Regional Park Hydrology and Hydraulic Report (Appendix A.03) will be implemented prior to the construction of the major GDP improvements. The drainage solution includes a combination of several different types of drainage improvements, located both within the outlying Park areas and within the zoo boundary. Figure 4.2-3 Drainage Improvement Plan illustrates the extent of the drainage improvements within the Park.

The larger Park drainage improvements are outlined in Component 2 and detailed in the Appendix. Upon completion of the new storm water drainage improvements (Component 2) the zoo will only need to be designed to handle local water runoff. Improvements will be made within each exhibit to efficiently feed into the main drainage system.

Parking

Parking is the foundational requirement of establishing a healthy annual attendance of a zoo and other related attractions. The parking lot to the west (#21) has 57 spaces and the east lot (#19) includes 84 spaces for a total of 141 spaces directly adjacent to the new proposed entry complex of the improved and fully-developed five acre zoo. Since there are ample available spaces within a 1,000 linear-foot radius (nearly 700 spaces), parking is not a limiting factor. All of the parking spaces, however, are shared venue spaces with other attractions at the Park: picnicking, walking, biking, train ride and village, boathouse and boating, and group tours. All parking is on a first-come, first-served basis.

Installation of a well-designed walkway between the Irvine Park Railroad (train ride) parking lot and parking lot #21 makes for a more manageable distance-of-travel to the zoo from the train parking lot. Improved zoo wayfinding signage in the Park is another important strategy to attract more park visitors to the zoo, which would increase zoo attendance without expanding parking or increasing vehicle trip generation. These improvements will allow all Park facilities to coexist with available parking on all but the most heavily used holidays (Easter, Memorial Day, Fourth of July, etc).

Walkways and Service Roads

New improvements to walkways and connectors around the zoo should be developed in concert with current Park standards. Where feasible, within the zoo confines, permeable paving strategies should be implemented through the use of modular pavers and decomposed granite paths and service roads.

4.6 Code Compliance

All new facilities will be built in compliance with current building codes, requirements of Title 24 Essential Services Buildings, CALGreen Code Requirements, and ADA (Americans with Disabilities Act); where feasible LEED® (Leadership in Energy and Environmental Design) standards, will be utilized. All exhibits, animal management systems and protocols, and containment dimensions will follow USDA, state, and federal regulations. Guidelines published by the Zoological Association of America (ZAA) and the Association of Zoos and Aquariums (AZA) will also be considered. The OC Zoo will apply policies and procedures which ensure that operations meet all regulations and standards of the highest quality for animal health and welfare.

4.7 Logistics During Construction

The logistics of moving animals during construction is a challenge that all zoos face. This challenge will be relatively easy for the OC Zoo as all of the new exhibits are being constructed where no exhibits currently exist. During the construction for renovations to the existing exhibits, simple logistical planning measures and methods will be utilized to keep the OC Zoo fully operational during the construction.

When the new Oak Woodlands exhibit construction is completed, the deer will be moved out of their current exhibit to permanently reside at the Oak Woodlands exhibit, thus making the current deer exhibit available as temporary exhibit space for some of the animals in the Children's Zoo during the construction of the Discovery Complex; the service area at the west end of the zoo may also be utilized as a temporary exhibit space during construction. Temporary exhibit enclosures may be purchased, but most exhibits can be accomplished with chain link mesh enclosures for the relatively short period of time during construction (up to a year); the chain link fencing can be utilized again later for other holding facilities in the zoo.

Initially, the two large mammal exhibits (the new one within the Oak Woodlands exhibit area and the one created through the conversion of the beaver exhibit) may be left empty to be utilized for temporary exhibit space for the mountain lions and bears during renovations to their exhibits.

If the construction schedule is aggressive and more than one component is constructed at a time, the exhibit schedules may be alternated, some animals may need to be off-exhibit for a short period of time.

4.8 Staffing

Although the zoo will expand from two acres to five acres and 1,000-linear feet of visitor experience will expand to 2,800-linear feet, the only new exhibits created in this GDP include the new Oak Woodlands exhibit; one, large mammal exhibit; one, small mammal exhibit; one, small special feature exhibit; and a few new reptile exhibits. It is anticipated that staffing levels will remain relatively constant. The new gift shop could be operated by a concessionaire or support group in lieu of County staff. The new Discovery Complex will require additional staffing or support group resources if more school and special interest groups book more classroom activities, meetings, events, and other programs that have not previously occurred at the zoo. Volunteer resources may be utilized to manage the reservations should interest increase. As zoo programming and visitor attendance increases over time, staffing needs will be evaluated and adjusted as resources allow.

OC Zoo/ OC Parks Staff

The OC Zoo has ten full-time staff positions and six part-time, extra help positions. Positions include: one, full-time Zoo Manager; one, Curator of Operations; one, Curator of Education; and six, animal keepers. The part-time extra help positions include: two, animal keepers and four, park attendants.

Docents, Volunteers, and Support Groups

All zoos rely on docent programs for manpower to realize programs, events, and activities. Philanthropic entities, individuals, and zoological societies are critical to the capital campaign and operations through their efforts. Typically, these groups are known to contribute up to 50% of the costs of zoo redevelopment and improvements. They might also act as the concessionaire that operates the Gift Shop, returning 100% of the profits to zoo operation and development, rather than the typical 30% of net profits that most zoos receive from their concessionaires. The zoo society also typically serves as a resource for organization and maintenance of the zoo docent program, whose outreach volunteers allow zoos to serve the visitor with services and programs that they could not otherwise afford. A new zoological society could be formed and become an integral player in the future development of the OC Zoo.

4.9 Administration, Maintenance, and Operations

OC Parks will build on this GDP to establish administrative policies and procedures and prepare an Operations and Maintenance Manual to ensure effective implementation of the GDP.

The administrative policies and procedures will focus on elements such as design review, staffing, certification, volunteer and support groups, relationship with the Orange County Parks Foundation, educational programs, academic outreach, marketing, funding, and donations.

The Operations and Maintenance Manual will be developed to include topics such as animal care; attrition of animals; acquisition of animals, plants, equipment and furnishings; animal inventory; and other aspects of zoo operation and maintenance.



OC Zoo Staff; left to right: Donald Zeigler, Manager; Lauren Serrano, Education Animal Keeper; Kevin Breen, Education Animal Keeper; and Marcy Crede-Booth, Educational Coordinator (June 2012).

ORANGE COUNTY ZOO

General Development Plan

Provide an attractive zoo with high quality programs that entertain and educate visitors about the current and past animals known to inhabit Orange County.