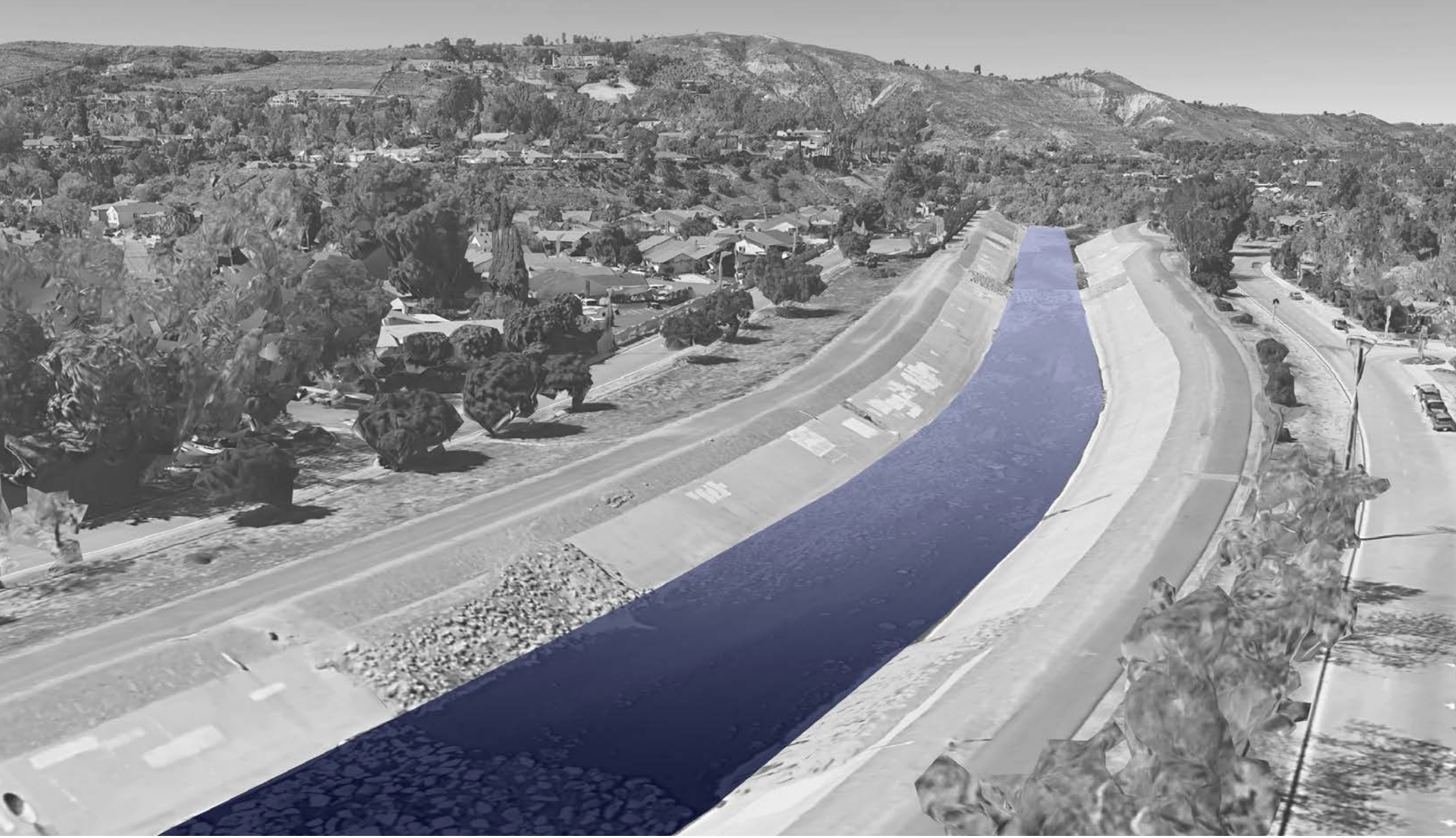


Reclaiming Trabuco Creek: Linking Communities

UCLA Extension Landscape Architecture
Capstone | Summer 2020
Instructors: Meg Coffee & Jim Pickel
Janice Wondolleck

Urbanized waterways replaced natural streams with engineered concrete channels. The removal of vegetation and natural channel banks reduces the value of the ecosystem and does not provide suitable habitat for wildlife. Additionally, communities are deprived of natural landscapes in urban environments. **Trabuco Creek** is an example of a concrete channel that exhibits the degrading effects of urbanization. The restoration of **Trabuco Creek** can benefit the community and ecosystem by increasing habitat value, connecting neighborhoods, and providing access to open park space in an urban city as well as financial implications to the city.

Waterways are a network of linkages weaving through landscapes and connecting communities. **Trabuco Creek** is a 22-mile waterway stretching from the Santa Ana Mountains near the border of Orange-Riverside Counties that travels through three cities and countless neighborhoods. **Trabuco Creek** is a continuous waterway and central feature that brings together the surrounding elements and creates connections that benefit the environment, community, and city.

The project is located between the end of the natural creek and the beginning of the developed concrete channel. Extending the naturalized creek revitalizes the community by reclaiming the spaces as a continuous riparian corridor and open space park. While maintaining function, the channel becomes the center of life and recaptures a sense of place in the City.

1 U.S. Army Corps of Engineers. 2002. San Juan Creek Watershed Management Study, Orange County, California. Feasibility Phase. F-S Report. August 2002.

“People have a fundamental yearning for great bodies of water. But the very movement of people toward the water can also destroy the water.”

A Pattern Language Guideline, Page 136

Project Introduction

Trabuco Creek exhibits the common characteristics of an underutilized urbanized waterway: **extensive concrete hardscape, unsuitable habitat,** and **disconnects communities**. By designing a space to engage and educate the community about ecological diversity, the **Trabuco Creek** waterway could **provide community connections to nature, neighborhoods,** and **the City center.**

Restoration of **Trabuco Creek** incorporates a design that responds to the **needs of the watershed** as well as the **community**. The **design** proposes to reclaim **Trabuco Creek** as an **accessible waterway** and **green space** that belongs to the community. What was once a concrete divide is now the **common linkage that pulls the community into a natural environment** experience.

Natural Trabuco Creek

Concrete Trabuco Creek

1 https://commons.wikimedia.org/wiki/File:Trabuco_Creek_in_Cleveland_National_Forest_(41635962652).jpg

SAN JUAN CREEK WATERSHED

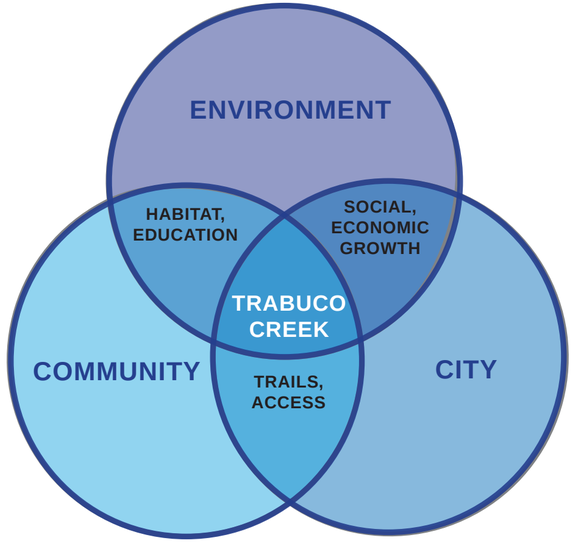
The project site is located along **Trabuco Creek** in the City of San Juan Capistrano, Orange County, California. The project site has local and regional significance as part of the San Juan Creek Watershed.

1 Google Earth. 2020. Imagery

TRABUCO CREEK:

The common linkage between the:

- **Environment**
- **Community**
- **City**



The Big Idea is that **Trabuco Creek** is the central feature that bring together the surrounding elements and creates connections that benefit the environment, community, and City.

Population and economic growth resulted in **urbanization** and the development of *man-made structures* that **replaced existing habitat** and **natural systems**.

Trabuco Creek currently *does not* provide **suitable habitat** and **divides the community and City**.

Restoring **Trabuco Creek** can:

IMPROVE

- Water Quality
- Flood Control
- Natural Vegetation
- Wildlife Habitat
- Amenities for Residents

BENEFIT

- Community
- Region
- Environment
- Society
- Economy
- Politics

Divides the Community

Separates the City

Lacks Habitat

To Nature

To Neighborhoods

To City Center

Creek Restoration
Nature, Open Space, Wildlife, Tranquility, Scenic

Community Interests
Trails, Historic District, Los Rios Park

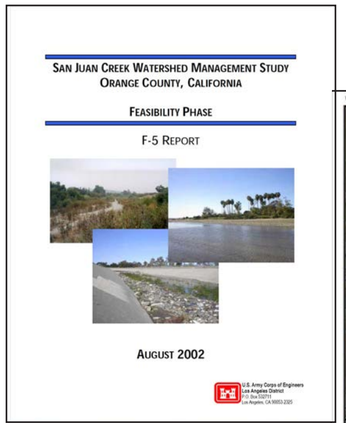
Attractions
Unused Space Opportunities

1 https://boe.lacity.org/lariverrmp/CommunityOutreach/pdf/LARRMP_Final_05_03_07.pdf

Trabuco Creek was channelized with 4-inch thick unreinforced **concrete panels** by Orange County without U.S. Army Corps of Engineer's involvement in the 1960's.

Storm events in 1998, 2005, and 2010 resulted in uplift of concrete panels and *loss of concrete lining*. **Flooding** caused infrastructure damage and significant erosion.

Emergency reconstruction in 2005 involved placement of **large rip rap** to contain storm flow. During the emergency reconstruction, ***5 surrounding neighborhoods were evacuated*** due to flooding.

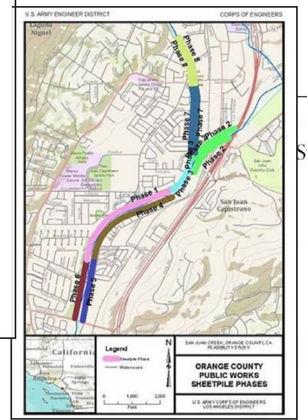

SAN JUAN CREEK WATERSHED MANAGEMENT STUDY
ORANGE COUNTY, CALIFORNIA

FEASIBILITY PHASE

F-5 REPORT

AUGUST 2002

U.S. Army Corps of Engineers
Los Angeles District
P.O. Box 532711
Los Angeles, CA 90053-2325




Los Angeles Times

Storm Kills Six, Inflicts Severe Damage in State

By STEPHANIE SIMON, KATE FOLMAR AND DAVID REYES
FEB. 25, 1998 | 12 AM
TIMES STAFF WRITERS

The latest storm to ram California killed at least six people, including two police officers and two college students, and swiped savagely at hillsides, highways and rail tracks, scattering despair and destruction before blowing out of the state Tuesday.

At least one other person died and another was missing across the border in Tijuana in the 49th storm to hit that city this winter. The intense rainfall forced 550 people from their homes.

Another terrifying evacuation took place in Laguna Beach, when a wall of mud roared down hillsides, killing one man and driving dozens of his neighbors to the only dry ground they could find. Nine others were injured. Also, crews continued to search for a man reported missing in Laguna Beach.

Cleanup and search-and-rescue operations were hampered by at least two gas leaks near what is known locally as the Big Bend section of Laguna Canyon Road, near the Art Institute of Southern California. That stretch of road has repeatedly been closed to traffic this winter because of flooding and the threats of slides.

1 U.S. Army Corps of Engineers. 2002. San Juan Creek Watershed Management Study, Orange County, California. Feasibility Phase. F-5 Report. August 2002.
2 www.ocflood.com/gov/pw/flood/nfc/projects/sjc/background.asp

3 www.ocflood.com/nfc/sjc
4 https://www.latimes.com/archives/la-xpm-1998-feb-25-mn-22803-story.html
5 https://patch.com/california/sanjuancapistrano/county-to-shore-up-trabuco-creek-bed

In August 2002, the **U.S. Army Corps of Engineers** prepared a **San Juan Creek Watershed Study** that identified the lower portion of the **Trabuco Creek** as a

- ***flood risk,***
- ***the most unstable reach in the watershed drainage system,*** and
- ***poor riparian habitat***.

Using input from **stakeholders** and the **public**, the **Watershed Study** identified the following *most severe problems* in the watershed:

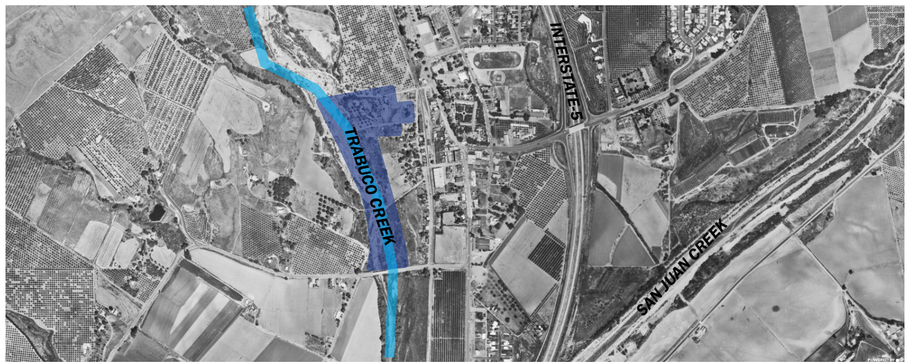
(1) General ecosystem degradation, including channel and floodplain instability;
(2) Poor water equality, both in surface waters and the ocean nearshore zone;
(3) Loss of habitat and associated wildlife loss; and
(4) Flooding and erosion damages.

1 https://www.latimes.com/archives/la-xpm-1998-feb-25-mn-22803-story.html
2 https://patch.com/california/sanjuancapistrano/county-to-shore-up-trabuco-creek-bed

CONVERSION OF AGRICULTURE

1929

- Agricultural Land Surrounding Trabuco Creek and San Juan Creek
- Natural Creeks



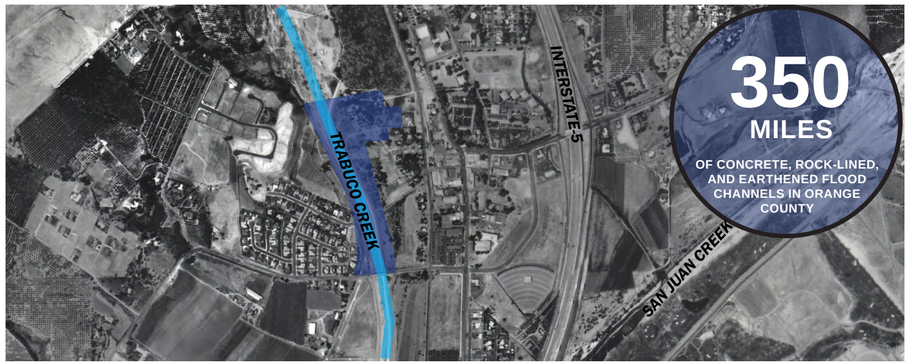
1960

- Construction of Interstate-5, Bisecting the City
- Channelized San Juan Creek
- Natural Trabuco Creek

N.T.S.

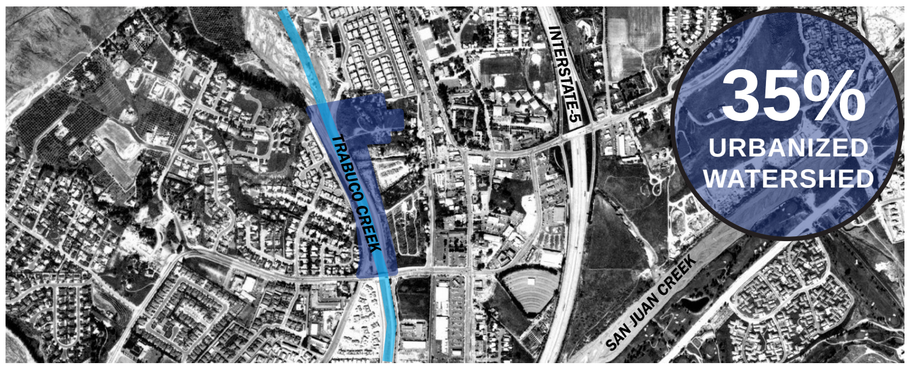
1 www.ocgis.com/ocpw/historicalimagery/index/html

URBANIZATION EXPANSION



1970

- Beginning of Residential Community Development
- Channelized Trabuco Creek



1980

- Expansion of Residential and Commercial Developments
- Channelized Trabuco Creek

PROJECT SITE

N.T.S.

1 www.ocgis.com/ocpw/historicalimagery/index/html
2 U.S. Army Corps of Engineers. 2002. San Juan Creek Watershed Management Study, Orange County, California. Feasibility Phase, F-5 Report. August 2002.

GREEN FLOOD CONTROL

- **Restore** concrete channel into former natural waterway
- **Provide** flood control by increasing flow capacity and slowing velocity
- **Improve** water quality

RECLAIM HABITAT

- **Reduce** hardscape and increase vegetated habitat
- **Design** natural space for community to explore and students to learn
- **Provide** habitat and increase biodiversity

CONNECT COMMUNITIES

- **Create** access from residences to creek, trails, and parks
- **Provide** access to trails for all users, including seating, shaded paths, and opportunities for access to water
- **Design** spaces for community use, including passive space

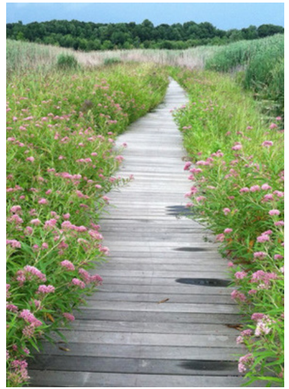
OUTDOOR EDUCATION

- **Create** outdoor environmental learning opportunities for young student population
- **Provide** access to water and habitat for learning opportunities
- **Connect** the students, community, and City

1 https://www.wired.com/2016/08/7-cities-transforming-rivers-blights-beauties/
2 https://www.nps.gov/grca/learn/nature/southwestern-willow-flycatcher.htm
3 https://www.ocregister.com/2013/03/13/school-news-in-and-around-san-juan-capistrano/
4 https://www.southern.edu/graduatestudies/master-of-science-in-education-outdoor-ed.html

WATER QUALITY

ECOLOGICAL RESTORATION



COMMUNITY ENGAGEMENT

ENVIRONMENTAL CURRICULUM

Trabuco Creek lost connection to the environment, community, and City. Restoring the creek would create a well-balance ecosystem: water quality would improve from filtered surface runoff; added habitat supports wildlife and aesthetic pedestrian trails; opportunities for community involvement would increase; and students would have opportunity to learn about the environment in an urban setting. By prioritizing a naturalized creek, the project aims to connect communities with public open space. While maintaining function, the channel becomes the center of life and recaptures a sense of place in the City.

1 https://www.gsilonlinquirer.com/features/health/42308/aid-available-for-farmers-to-help-improve-water-quality
2 https://www.gcbl.org/blog/2016/08/back-to-nature-10-best-examples-of-ecological-restoration-in-neo
3 http://blog.csba.org/ccee_initiative/
4 https://study.com/articles/Maryland_Schools_Add_Environmental_Education_to_Their_Curriculum.html

“The problem can be solved only if it is understood that people will build places near the water because it is entirely natural; but that the land immediately along the water’s edge must be preserved for common use.”

A Pattern Language Guideline, Page 136

Design Methodology

EPA WETLAND DEFINITION GUIDELINES

The manipulation of the physical, chemical, or biological characteristic of a site:

1 Restoration - With the goal of returning natural/historic functions to former or degraded wetland

- ***Re-establishment***: With the goal of returning natural/historical functions to a **former** wetland
  Rehabilitation: With the goal of repairing natural/historical functions of a **degraded** wetland.

2 Establishment - To develop a wetland that **did not** previously exist on an upland or deepwater site.

3 Enhancement - To heighten, intensify, or improve specific function(s) or for a purpose such as water quality **improvement**, flood water retention or wildlife habitat

4 Protection/Maintenance - To remove the threat to wetland conditions by an action in or near a wetland such as structure protections

Calabasas, CA

1 https://www.epa.gov/wetlands/wetlands-restoration-definitions-and-distinctions
2 http://www.cityofcalabasas.com/pdf/documents/environmental-services/Healing-a-Stream.pdf

WETLAND RESTORATION

USACE Bioengineering Techniques

Bioengineering is the combination of biological, mechanical, and ecological concepts to **control erosion** and **stabilize soil** through the use of ***vegetation*** or a combination of it and construction materials

Pigeon River, MI

1 U.S. Army Corps of Engineers. 1997. Bioengineering for Streambank Erosion Control. Report 1 Guidelines. Environmental Impact Research Program. By Hollis H. Allen and James R. Leech
2 U.S. Army Corps of Engineers. 2001. Hydraulic Design of Stream Restoration Projects. Coastal and Hydraulics Laboratory. By Ronald R. Copeland, Dinah N. McComas, Colin R. Thorne, Phillip J. Solar, Meg M. Jonas, and Jon B. Fripp. September 2001.

OPEN SPACE PARK

A Pattern Language Guidelines

Access to Water

- Promenade
- Countryside (Stewardship)
- Parallel Roads
- Small Parking Lots
- Public Space

Kingston, NY

3 Alexander, C., S. Ishikawa, M. Silverstein, M. Jacobson, I. Fiksdahl-King, and S. Angel. 1977. A Pattern Language. Oxford University Press: New York. Center for Environmental Structure: Berkeley, California.
4 https://www.dailyfreeman.com/news/local-news/scenic-hudson-seeks-kingston-waterfront-trail-where-promenade-was-once-planned/article_d0844479a-1865-11ea-a5b0-5fc53240d975.html
5 https://upnorthlive.com/news/local/dnr-award-125-million-in-grants-for-aquatic-habitat-grant-program

BENEFITS OF A NATURALIZED CHANNEL

BENEFIT	MEASURABLE BY	ACHIEVED BY
• **Improve Water Quality**	- Toxins in water - Phytoremedation by plants - Clarity of water	- Adding vegetation to the channel and banks - Designing runoff input locations - Designing a flow of water and limit stagnant ponding
• **Reduce Flood Risk**	- Velocity flow - Capacity of channel	- Design of channel slopes - Vegetated banks to slow flow velocity - Evaluate capacity of the channel
• **Ecological Success**	- Count and diversity of species	- Increasing vegetation and diversity of plants and suitable habitat
• **Social Collaboration**	- Number of users - Diversity of uses and users	- Public input surveys
• **Economic Growth**	- Revenue	- Providing revenue opportunities


Los Angeles, CA


Los Angeles, CA

1 https://scc.ca.gov/files/2018/06/SARPOSP_Plan_FINAL.pdf
2 https://www.wilderutopia.com/sustainability/land/los-angeles-river-revitalization-city-rediscovers-flow/
3 http://studio-mla.com/design/los-angeles-river-revitalization-master-plan/

PARKS & RECREATIONAL ELEMENT

- **Parks & Recreational Facilities**
  - *Parks & Recreation Goal 1:* Provide, develop, and maintain ample park and recreational facilities that provide a diversity of recreational activities.
- **Trails Network**
  - *Parks & Recreation Goal 2*: Develop and expand the existing bicycle, hiking, and equestrian trail system and facilities.

FLOODPLAIN MANAGEMENT ELEMENT

- **Floodplain Hazards**
  - *Floodplain Management Goal 1*: Protect life and property from floodwaters.
- **Floodplain Preservation and Enhancement**
  - *Floodplain Management Goal 2*: Preserve and enhance the natural character of the creeks and their floodplains.
- **Recreational Opportunities**
  - *Floodplain Management Goal 3*: Preserve and enhance recreational opportunities and amenities provided by the creeks and their floodplains.


Anaheim, CA


Linda, CA

1 http://sanjuancapistrano.org/Departments/Development-Services/Planning-Zoning/General-Plan
2 https://www.ocregister.com/2020/05/18/more-access-to-orange-countys-great-outdoors-just-keep-distanced/
3 https://newsroom.ucla.edu/releases/california-extreme-climate-future-ucla-study

STORMWATER PROTECTION GOALS

Huntington Beach, CA

- **Structures:**
  - 100-year protection for residents and other non-floodproof structures

Buena Park, CA

- **Local Streets:**
  - Storm waters will not exceed top of curb in a 10-year storm

1 http://www.ocflood.com/civicax/filebank/blobdload.aspx?BlobID=26296
2 https://www.army.mil/article/231286/corps_orange_county_partner_to_complete_flood_channel_before_storm_season
3 https://www.ocregister.com/2012/11/03/oc-flooding-what-could-happen-here/

WETLAND RESTORATION & STORMWATER MANAGEMENT

Stamford, CT

By restoring the concrete channel, the naturalized creek would improve water quality, create habitat, and provide flood control.

PARKS & RECREATION

Anaheim, CA

The restored creek provides recreational opportunities and the park introduces a destination and an accessible venue to gather and learn about the environment.

1 https://www.asla.org/waterandstormwater.aspx
2 https://www.ocregister.com/2020/05/18/more-access-to-orange-countys-great-outdoors-just-keep-distanced/

Precedents

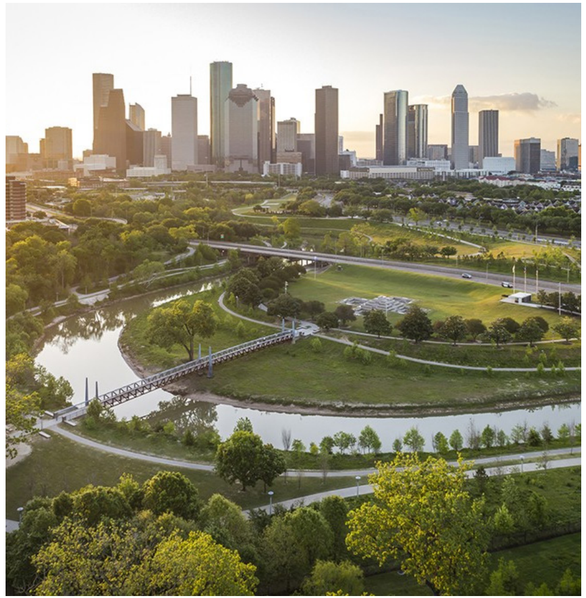
“But the need that people have for water is vital and profound.”

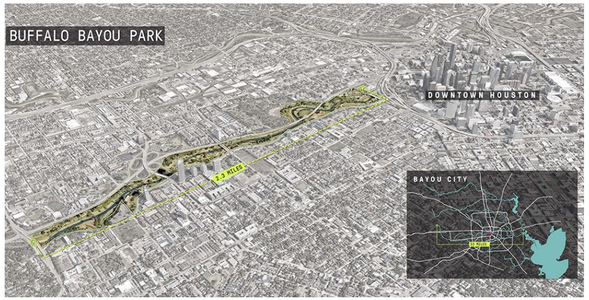
A Pattern Language Guideline, Page 136

STORMWATER MANAGEMENT & OPEN SPACE PARK

Buffalo Bayou Park
Houston, Texas

- ✓ *Parks and Recreation Element*
- ✓ *Floodplain Management Element*





1 https://www.landscapeperformance.org/case-study-briefs/buffalo-bayou-park

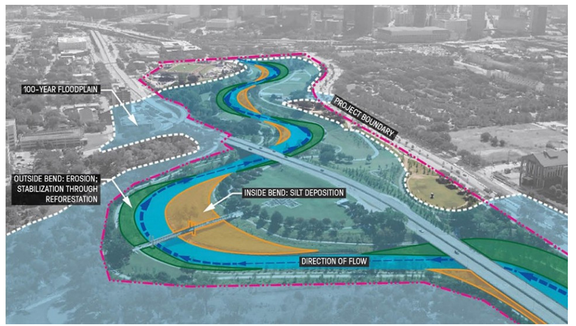
STORMWATER MANAGEMENT & OPEN SPACE PARK

BUFFALO BAYOU PARK
Houston, Texas

Design: Reconstructed a turf drainage corridor into a resilient landscape, restored channel, native vegetation, and increased recreational paths and opportunities

Benefits of a Naturalized Channel:

Improve Water Quality	-	Intercepts stormwater runoff
Reduce Flood Risk	-	Withstands significant flooding
Ecological Success	-	Increased habitat quality by providing fruit and seed, nectar, and habitat sources
Social Collaboration	-	Attracts 12,000 daily visitors
Economic Growth	-	Avoids flood repair costs

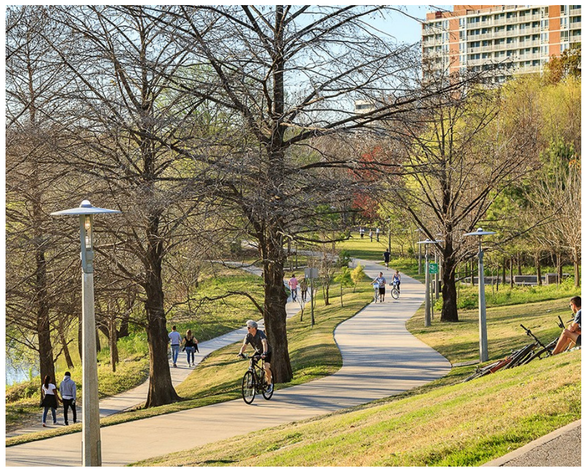


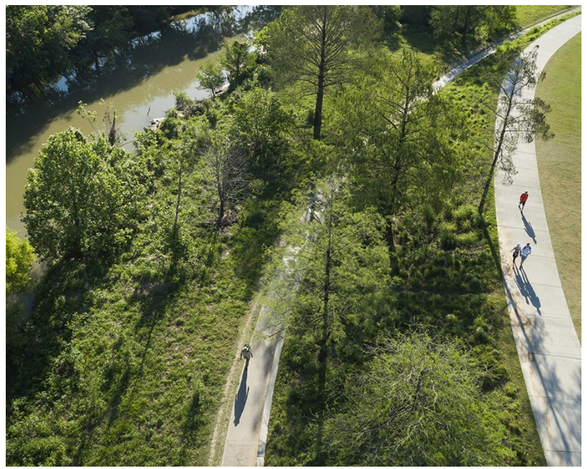
1 https://www.landscapeperformance.org/case-study-briefs/buffalo-bayou-park

BUFFALO BAYOU PARK
Houston, Texas

Access to Water:

- *Promenade:* 15 miles of pedestrian and bike paths
- *Countryside (Stewardship):* Created reforested areas and reestablished native meadows; opportunities to explore restored ecology
- *Parallel Roads:* Memorial Dr and Allen Pkwy parallel to Bayou
- *Small Parking Lots:* Many parking lots, small and scattered
- *Public Space:* Promotes healthy activities and connectivity for surrounding neighborhoods



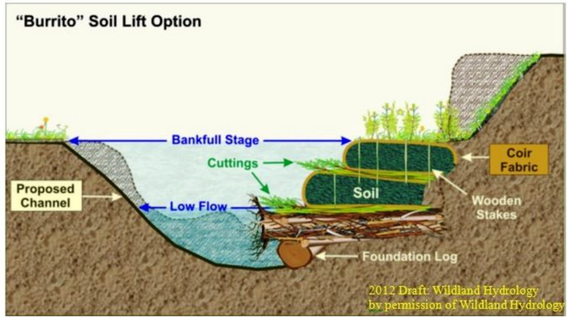


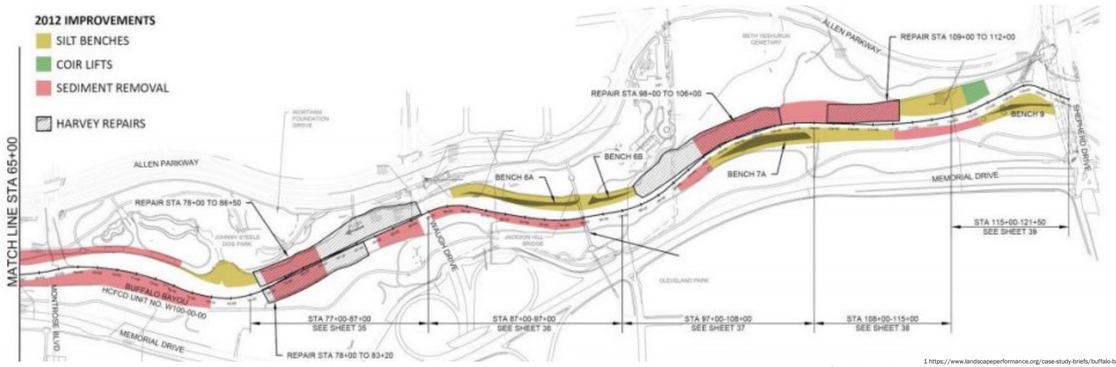
1 https://www.landscapeperformance.org/case-study-briefs/buffalo-bayou-park

STORMWATER MANAGEMENT & OPEN SPACE PARK

BUFFALO BAYOU PARK
Houston, Texas

Design Methods: Avoid flood repair costs through installation of riparian bank stabilization techniques





1 https://www.landscapeperformance.org/case-study-briefs/buffalo-bayou-park
2 https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/water/manage/restoration/?cid=stelprdb1247762
3 https://rolanka.com/biod-block/block-lifts/

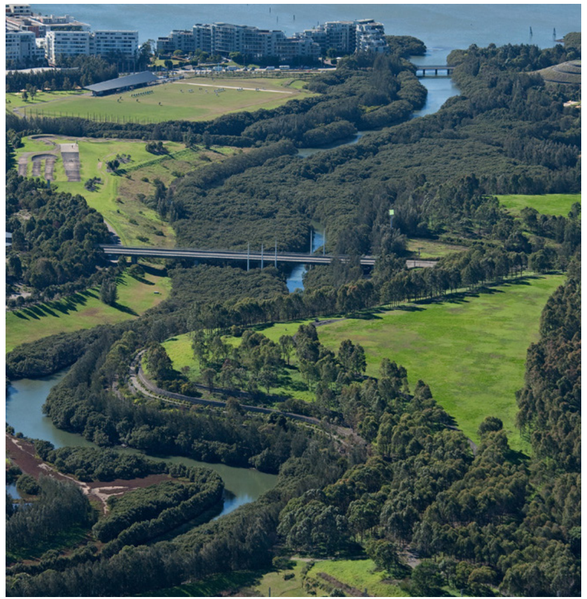
HABITAT & EDUCATION

HABITAT & EDUCATION

Sydney Olympic Millennium Parklands
New South Wales, Australia

✓ *Parks and Recreation Element*

Floodplain Management Element



1https://www.landscapeperformance.org/case-study-briefs/sydney-olympic-millennium-parklands
2 http://www.pwpla.com/projects/millennium-parklands

HABITAT & EDUCATION

SYDNEY OLYMPIC MILLENNIUM PARKLANDS

New South Wales, Australia

Design: Restoring contaminated land with highly technical water recycling systems and native plants to reconnect residents from suburbs to major waterways

Benefits of a Naturalized Channel:

Improve Water Quality	-	Bioremediation ponds treat contaminated soils
Ecological Success	-	Provides habitat for more than 180 native bird species
Social Collaboration	-	Venues of recreation and leisure for 2.5 million people annually; visitation increased to 2.3 million; provides educational opportunities for 20,000 students
Economic Growth	-	Increased property value

1 https://www.landscapeperformance.org/case-study-briefs/sydney-olympic-millennium-parklands
2 http://www.pwpla.com/projects/millennium-parklands#

SYDNEY OLYMPIC MILLENNIUM PARKLANDS

New South Wales, Australia

Access to Water:

- *Promenade:* Walking, bicycling, and jogging paths along full length of river
- *Countryside (Stewardship):* Created forested areas, mangrove swamps, and naturalistic streambed; Ring Walk elevated circular walkway to allow visitors to view sensitive frogs in restored habitat
- *Parallel Roads:* Parallel roads with forested buffers
- *Small Parking Lots:* One parking lot in the center of the park
- *Public Space:* Reconnects residents in suburbs to major waterways; provides recreational and educational opportunities

1 https://www.landscapeperformance.org/case-study-briefs/sydney-olympic-millennium-parklands
2 http://www.pwpla.com/projects/millennium-parklands#

HABITAT & EDUCATION

SYDNEY OLYMPIC MILLENNIUM PARKLANDS

New South Wales, Australia

Design Methods:

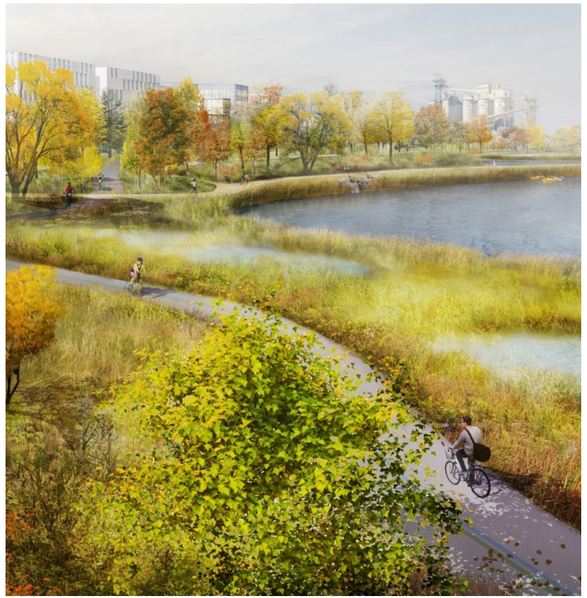
- Restored 15 miles of continuous waterfront
- Provides educational opportunities for nearly 20,000 students annually, with 18,600 students participating in curriculum-based environmental education programs

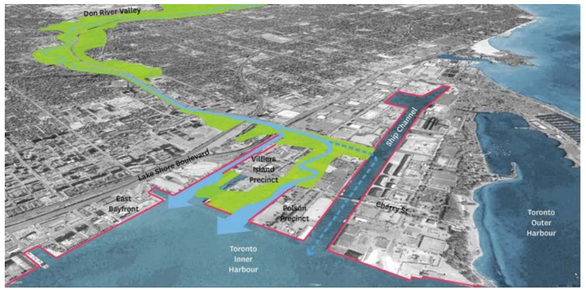
1 https://www.landscapeperformance.org/case-study-briefs/sydney-olympic-millennium-parklands
2 https://australia2022.com/location/
3 https://landscapeaustralia.com/articles/millennium-parklands-1/

RESTORATION & FLOOD PROTECTION

Don Mouth Naturalization and Port Lands Flood Protection Project
Toronto, Canada

- ✓ *Parks and Recreation Element*
- ✓ *Floodplain Management Element*





1 https://trca.ca/conservation/green-infrastructure/don-mouth-naturalization-port-lands-flood-protection-project/
2 https://portlandsto.ca/wp-content/uploads/2018.07.18_PLFPEI_Public-Consultation-Presentation-2.pdf

RESTORATION & FLOOD PROTECTION

DON MOUTH NATURALIZATION AND PORT LANDS FLOOD PROTECTION PROJECT

Toronto, Canada

Design: Establishing forms and functions of a natural river mouth within the context of a revitalized city environment, while providing flood protection

Benefits of a Naturalized Channel:

Improve Water Quality	-	Intercepts stormwater runoff
Reduce Flood Risk	-	Three tier-system to achieve flood protection
Ecological Success	-	Continuous riparian corridor
Social Collaboration	-	Attracts daily visitors; programming includes trails, boating, bird watching, fishing, eco education/interpretation
Economic Growth	-	Avoids flood repair costs

1 https://trca.ca/conservation/green-infrastructure/don-mouth-naturalization-port-lands-flood-protection-project/
2 https://portlandsto.ca/wp-content/uploads/2018.07.18_PLFPEI_Public-Consultation-Presentation-2.pdf

DON MOUTH NATURALIZATION AND PORT LANDS FLOOD PROTECTION PROJECT

Toronto, Canada

Access to Water:

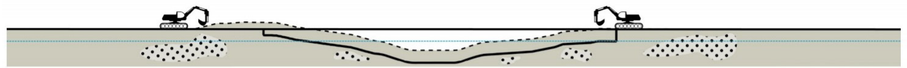
- *Promenade:* Walking, bicycling, and jogging paths along length of river
- *Countryside (Stewardship):* Created diverse habitats and naturalistic river mouth
- *Parallel Roads:* Parallel roads with forested buffers
- *Small Parking Lots:* Parking lots are not part of the program
- *Public Space:* Revitalizes the city environment and contributes to the development of recreation, cultural and heritage opportunities, and improves accessibility for the public and persons with disabilities

1 https://trca.ca/conservation/green-infrastructure/don-mouth-naturalization-port-lands-flood-protection-project/
2 https://portlandsto.ca/wp-content/uploads/2018.07.18_PLFPEI_Public-Consultation-Presentation-2.pdf

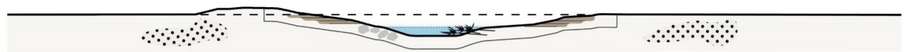
DON MOUTH NATURALIZATION AND PORT LANDS FLOOD PROTECTION PROJECT

Toronto, Canada

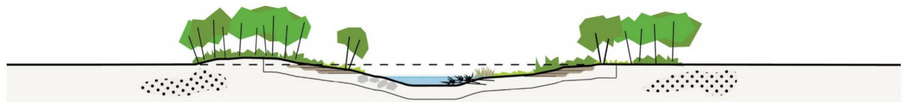
Design Methods: Constructing an Urban River Park



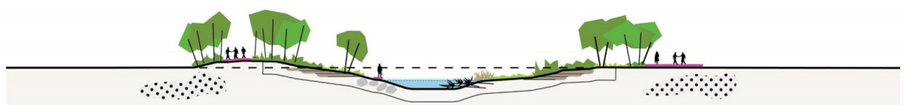
1. Soil Cleaning + Earthworks



2. Shaping + Stabilizing the River



3. River Ecologies + Habitat



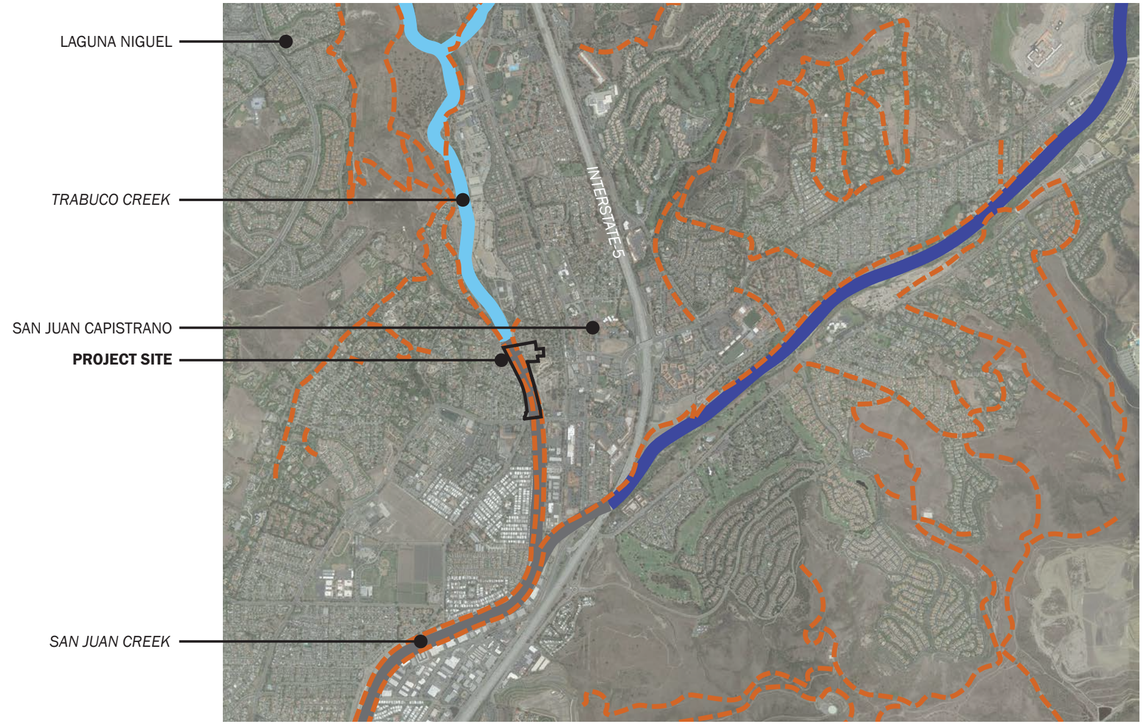
4. Park + River Programming

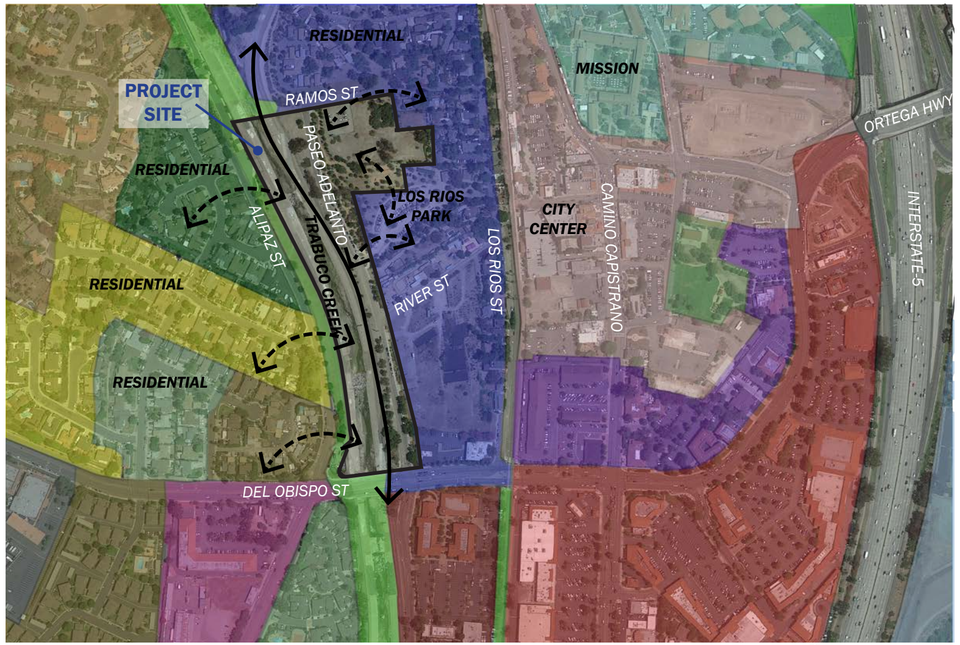
1 https://portlandsto.ca/wp-content/uploads/2018.07.18_PLFPEI_Public-Consultation-Presentation-2.pdf

“When natural bodies of water occur near human settlements, treat them with great respect. Always preserve a belt of common land, immediately beside the water.”

A Pattern Language Guideline, Page 137

Site Location





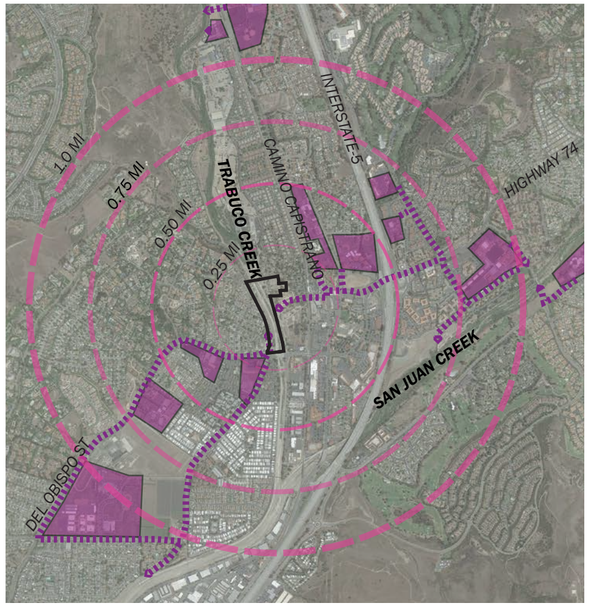
Map of zoning. The project site is surrounded by residential zoning as well as the City's Specific Plan/Precise Plan District and Town Center District.

ZONING LEGEND

- COMMERCIAL MANUFACTURING DISTRICT
- GENERAL COMMERCIAL DISTRICT
- NEIGHBORHOOD COMMERCIAL DISTRICT
- TOWN CENTER DISTRICT
- SINGLE-FAMILY-20,000 DISTRICT
- SINGLE-FAMILY-7,000 DISTRICT
- COMMUNITY PARK
- **GENERAL OPEN SPACE**
- RESIDENTIAL GARDEN DISTRICT
- PUBLIC AND INSTITUTIONAL DISTRICT
- PLANNED COMMUNITY DISTRICT
- **SPECIFIC PLAN/PRECISE PLAN DISTRICT**
- TOWN CENTER EDGE DISTRICT
- MULTIPLE-FAMILY DISTRICT
- HILLSIDE RESIDENTIAL DISTRICT

1 http://sanjuancap.maps.arcgis.com/apps/webappviewer/index.html?id=aa7d86db88f4454cac7587f28b809c2b1

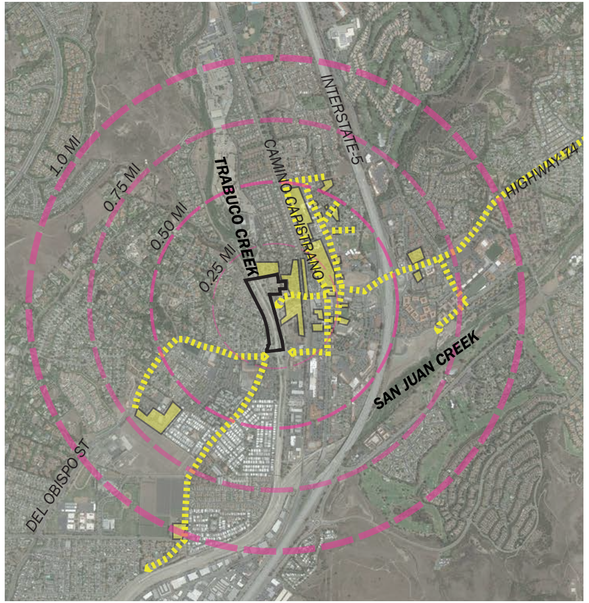
SCHOOLS



SCHOOLS

CONNECTIONS

HISTORICAL SITES



HISTORICAL SITES

CONNECTIONS

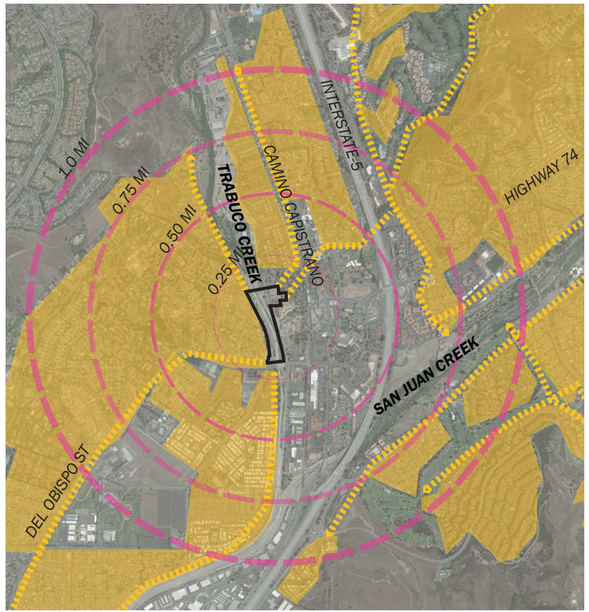
0.25 MILE INCREMENTS

0.5 mi

1 http://sanjuancap.maps.arcgis.com/apps/webappviewer/index.html?id=aa7d86db88f4454cac758f28b809c2b1

Map of surrounding schools and historical sites within 0.25 mile (5 minute walk) increments of Project Site location.

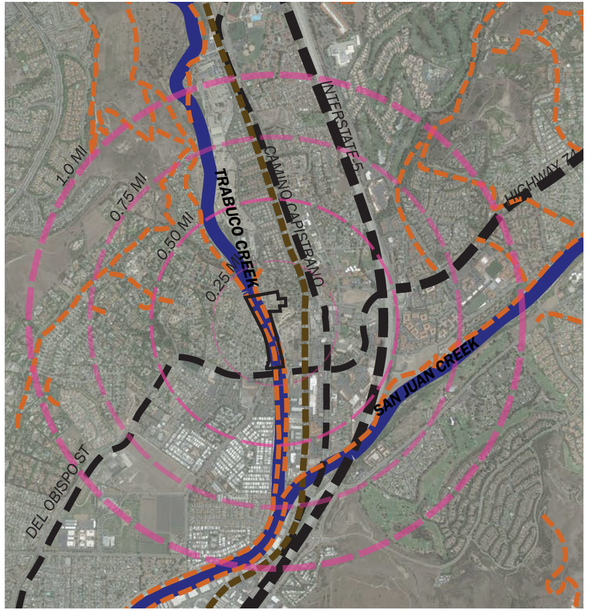
RESIDENTIAL



RESIDENTIAL ZONING

CONNECTIONS

CIRCULATION



CREEKS

TRAIN

ROADS

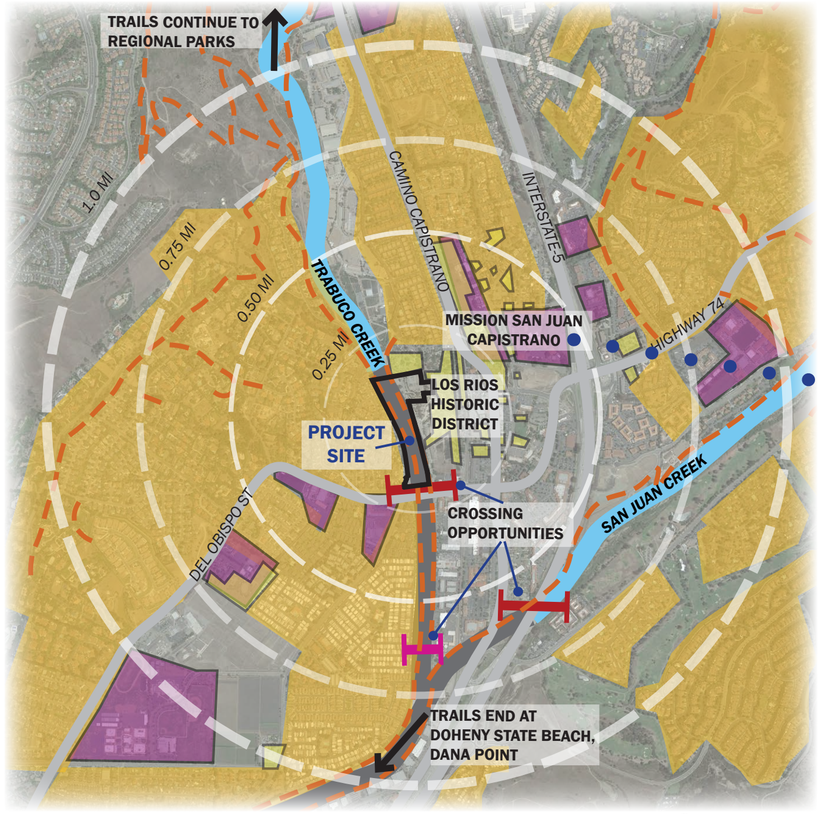
TRAILS

0.25 MILE INCREMENTS

0.5 mi

1 http://sanjuancap.maps.arcgis.com/apps/webappviewer/index.html?id=aa7d86db88f4454cac758f28b809c2b1

Map of surrounding residential zoning and circulation via roads, train, and trails within 0.25 mile (5 minute walk) increments of Project Site location.



Map of surrounding context within 0.25 mile (5 minute walk) increments of Project Site location.

0.30 mi

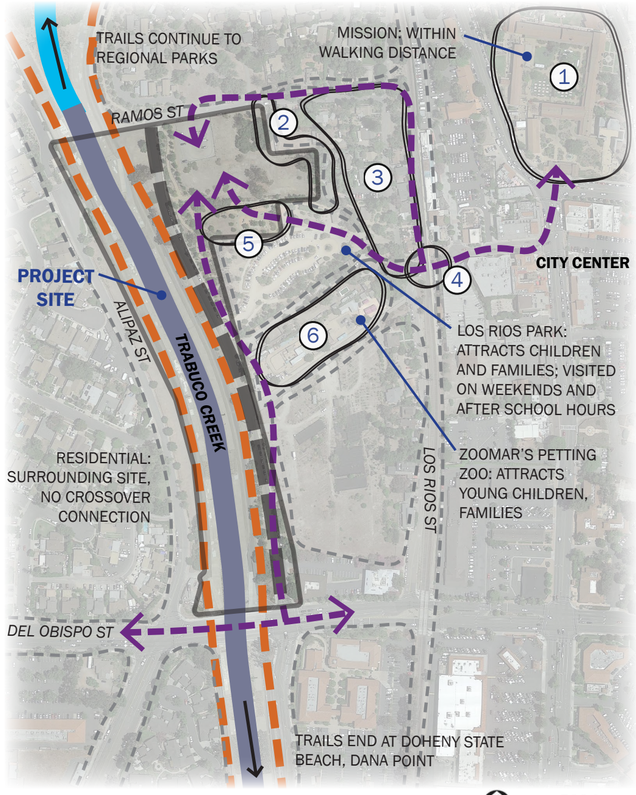
Currently the city is **divided** by the concrete channel.

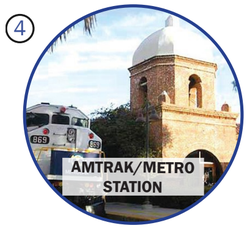
The **Project Site** is surrounded by ***Residential***, ***Schools***, and ***Historical Sites***, and has connections to regional network of ***Trails***.

Trabuco Creek is the *common connection* between surrounding elements.

- RESIDENTIAL ZONING
- SCHOOLS
- HISTORICAL SITES
- 0.25 MILE INCREMENTS
- CONCRETE CHANNEL
- NATURAL CHANNEL
- TRAILS
- EX. VEHICULAR/TRAIN CROSSING
- EX. PEDESTRIAN CROSSING

1 https://www.missionsjc.com/about/





- CONCRETE CHANNEL
- NATURAL CHANNEL
- TRAILS
- ROAD
- CIRCULATION/CONNECTIONS

500 ft

1 Google Earth Aerial
2 https://floodforhunters.blogspot.com/2012/03/day-in-orange-county-san-juan.html
3 https://www.californiabeaches.com/attraction/mission-san-juan-capistrano/
4 https://patch.com/california/sanjuancapistrano/calendar/event/20180603/352798/gillie-wheek-end-zoomars-petting-zoo-san-juan-capistrano
5 https://metrolinktrains.com/rider-info/general-info/stations/san-juan-capistrano/

CONCRETE CHANNEL
- Length: 0.3 mile
- Width: 120 feet
- Ownership: Orange County Flood Control District
- Users: None
- Requirements: Flood capacity

BIKE TRAIL, ROAD, AND PARK PATHS
- Length: 0.3 mile
- Bike Path Width: 10 feet
- Ownership: City of San Juan Capistrano
- Users: Public, Community, Commute to School/Work/City
- Requirements: Accessible

VACANT PARCEL
- Size: 3.4 acres
- Ownership: City of San Juan Capistrano
- Adjacencies: Los Rios Historic District, Los Rios Park
- Users: Public Parking
- Requirements: Accessible, Parking Lot

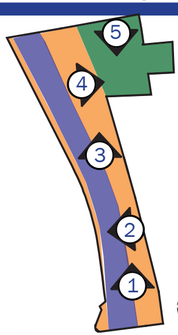

Concrete Trabuco Creek facing south

CONCRETE CHANNEL
NATURAL CHANNEL
TRAILS
ROAD


1 **Trabuco Creek** concrete channel and bike path facing north. No vegetation or suitable habitat.

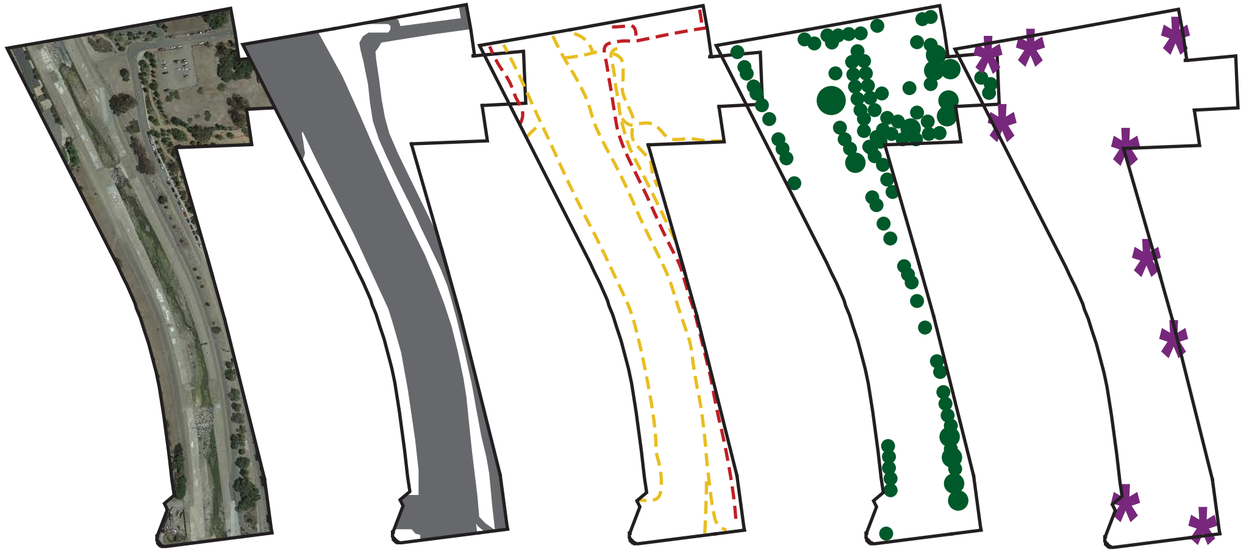

2 **Trabuco Creek** facing west. Potential to naturalize steep banks and create access to creek.


3 Buffer between **Trabuco Creek** bike path and Paseo Adelanto facing north. Potential to widen channel and provide suitable habitat.



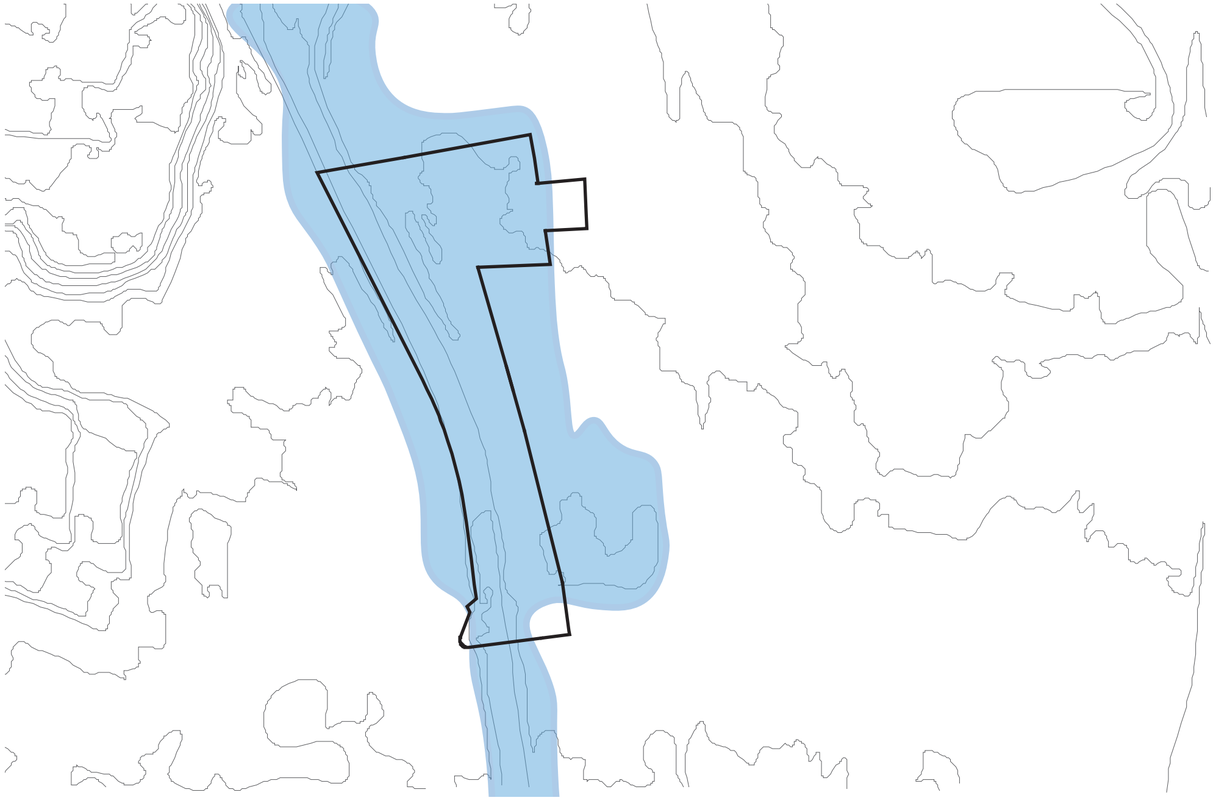

4 Vacant Parcel facing east. Flat, open area.


5 Vacant Parcel including existing dirt parking lot facing south. Potential to design spaces for the community.



AERIAL HARDSCAPE CIRCULATION CANOPY INGRESS/EGRESS

360 ft



TOPOGRAPHY & FLOODING

360 ft

RECREATIONAL TRAIL USERS

Extensive network of multi-user (hike/bike/walk/horse) throughout San Juan Capistrano

36,006
RESIDENTS

STUDENTS

Capistrano Unified School District operates 64 schools/programs for 47,000 students

43%
FAMILIES
WITH KIDS UNDER 18

TOURISTS

Mission San Juan Capistrano receives 300,000 visitors each year

42.2
MEDIAN AGE

1 https://capousd-ca.schoolloop.com/pf4/cms2/view_page?d=x&group_id=1219972013237&vdid=l01bu1qopu1f3
2 https://www.missionsjc.com/about/
3 http://sanjuancapistrano.org/Portals/0/SJC%20Trails%20Map_%202017_1.pdf
4 https://www.latimes.com/local/orangecounty/tn-wknd-et-san-juan-capistrano-hotel-dispute-20190411-story.html
5 https://www.ocregister.com/2011/04/29/historic-san-juan-school-buries-time-capsule/
6 https://www.ocregister.com/2017/08/08/south-county-bicyclists-pedestrians-will-face-long-detours-on-trail-to-the-coast/

PUBLIC SURVEY

Nearly 500 individuals participated in a **Public Survey** in 2019 for the use of a *Potential Open Space* in the City of San Juan Capistrano. The results of the **Top and Least Selected Interests** are:

65%
WALKING AND/OR NATURE TRAILS

64%
NATURAL OPEN SPACE

9%
ATHLETIC FIELDS

CITY DEMOGRAPHICS

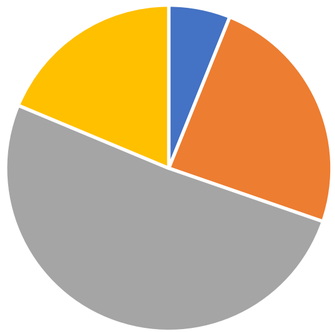
POPULATION DENSITY (SQ MI)
2,495

Los Angeles: 7,544
San Diego: 4,003
Santa Barbara: 2,100

SPEAK ENGLISH / SPANISH
64% / 33%

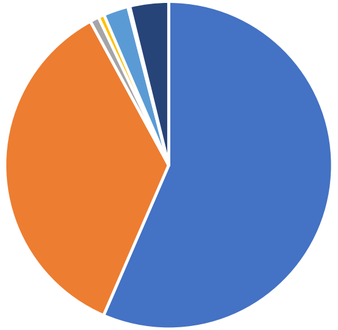
NUMBER OF PARKS
25

AGES



6%	UNDER 5 YRS
51%	BETWEEN 18-65 YRS
24%	UNDER 18 YRS
19%	65 YRS AND OLDER

RACE AND ETHNICITY



57%	WHITE
2%	ASIAN
36%	HISPANIC OR LATINO
1%	BLACK OR AFRICAN AMERICAN
4%	TWO OR MORE RACES
<1%	AMERICAN INDIAN AND ALASKA NATIVE
<1%	NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER

1 https://www.thecapistranodispatch.com/citys-survey-reveals-strong-support-community-leave-open-space/
2 https://www.census.gov/quickfacts/fact/table/sanjuancapistranocitycalifornia/PST045219
3 https://www.areavibes.com/san+juan+capistrano-ca/demographics/
4 https://worldpopulationreview.com/us-cities/los-angeles-population/
5 https://worldpopulationreview.com/us-cities/san-diego-population/
6 https://worldpopulationreview.com/us-cities/santa-barbara-population/

“The problem can be solved only if it is understood that people will build places near the water because it is entirely natural; but that the land immediately along the water’s edge must be preserved for common use.”

A Pattern Language Guideline, Page 136

Site Analysis & Programming

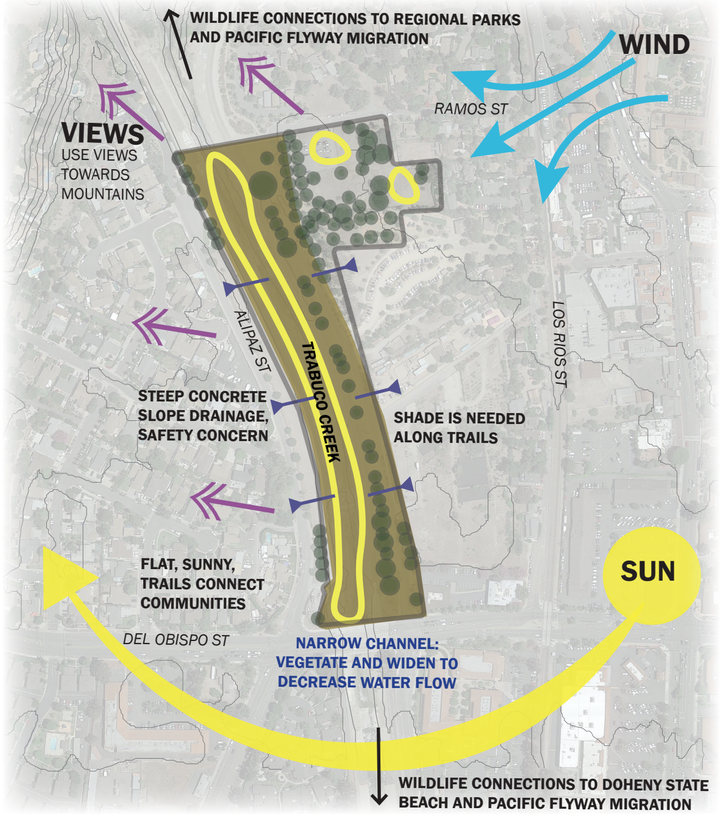
GREEN FLOOD CONTROL & HABITAT

Green Flood Control: Primarily Hardscape

- Reduce hardscape in channel; provide flood control with bioengineering techniques:
  - vegetate banks
  - widen channel
  - increase flow capacity
  - slow flow velocity
- Opportunity to create a multi-functional waterway

Habitat: Lacks Suitable Habitat for Riparian Species

- Wildlife connectivity corridor for birds
- No suitable nesting or migrating opportunities
- Primary stop-over location for migrating birds: water, shelter, food source, protection from predators
- Opportunity to re-establish riparian habitat along channel and vacant parcel



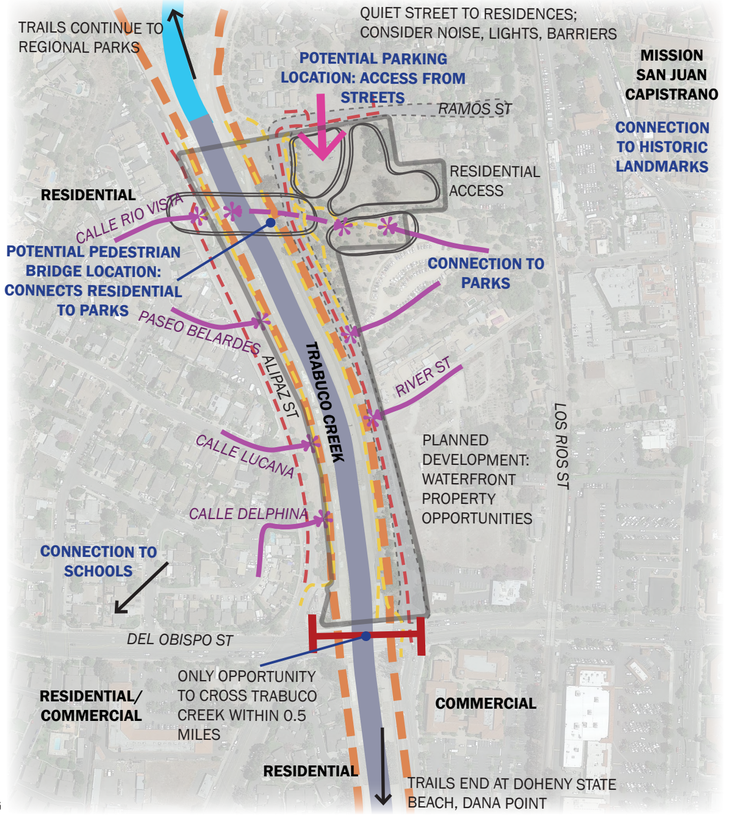
COMMUNITY CONNECTIONS & OUTDOOR EDUCATION

Connect Communities: Linear Circulation, No Accessible Crossover Connection

- Surrounding residential communities divided by channel
- Adjacent amenities accommodate children and families; elderly population need is present
- Opportunity to create accessible connection from residential to amenities

Outdoor Education: In Close Proximity to Schools, No Outdoor Classroom Available

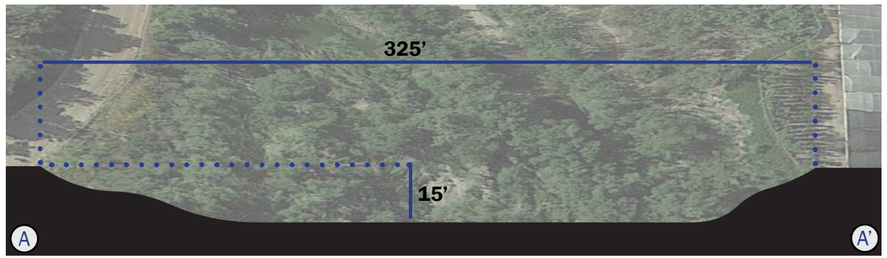
- Opportunity for schools to gather and study environmental programs
- Educational gathering space needed for tour groups visiting historical sites; no organized tour gathering space located in urban area
- Vacant parcel is accessible for school and tour groups to gather



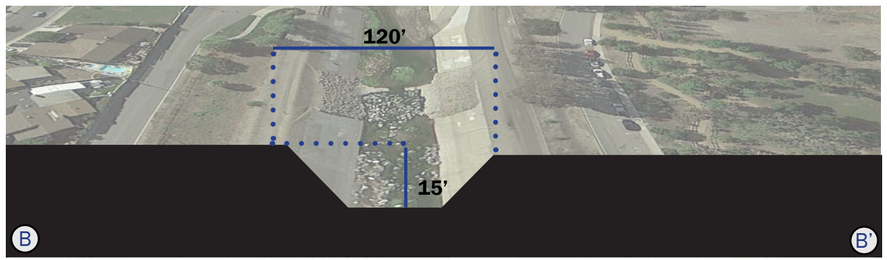
Comparison of **natural creek** and **concrete channelization** of **Trabuco Creek**:

- Natural creek is ***wide***, allows ***slower*** flow due to friction with stream bed
- Concrete channel is ***narrow***, flat, and has ***higher*** velocity of flowing water

Vegetated banks slow water velocity, but decrease capacity, and therefore **widening** creek *increases capacity*, *slows velocity*, and creates *less steep* banks as a safety considerations for visitors.



Upstream **Trabuco Creek** natural creek section.



Trapezoidal **concrete channel** section within project.

25 ft

Benefits of Restoring Trabuco Creek to a Natural Channel:

- Water quality improved from phytoremediation via plants added to creek
- Withstands flooding and maintains capacity of channel
- Increased habitat quality by providing fruit, seed, nectar and nesting sources; create protected and accessible habitat
- Attracts daily visitors, weekdays and weekends
- Avoids flood repair costs, connected to waterfront real estate for new planned development

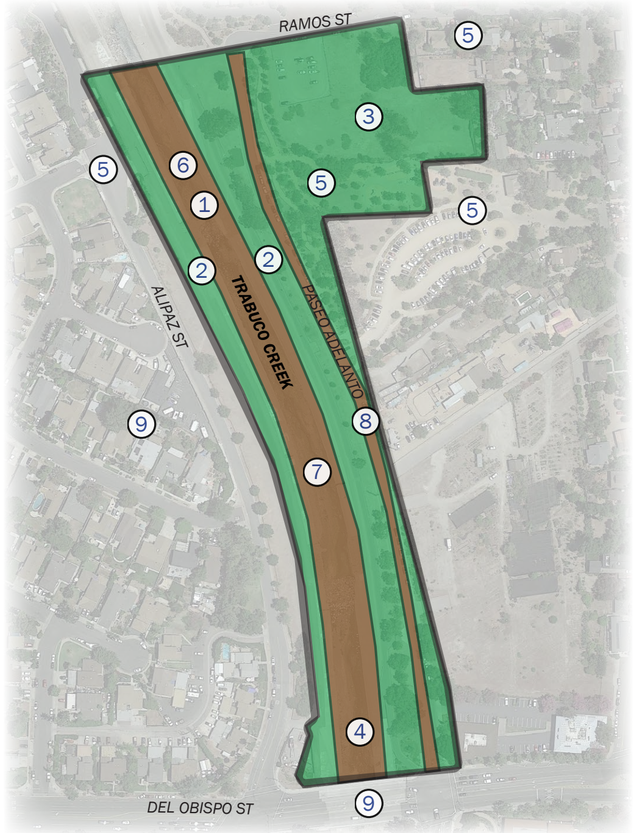
Yonkers, NY

Christchurch, New Zealand

1 https://rootstockcharette.wordpress.com/2012/03/02/daylighting-the-waterways-urban-river-restoration/
2 https://www.archdaily.com/592872/the-building-centre-presents-rethinking-the-urban-landscape/54ce9d22e58ece99010002a6-avon-river-precinct

OPPORTUNITIES

1. Re-establish Riparian Habitat
2. Naturalize Trails
3. Repurpose Vacant Lot
4. Create Multi-Functional Waterway & Provide Green Flood Control
5. Gathering/Community Network/Connections/Passive Space



CONSTRAINTS

6. Perennial Creek Water Flow
7. Steep Edges and Banks
8. One Access Road Route
9. Hardscape is Dominant/ Urban Views

EXISTING CONDITIONS

- Concrete Channel Not Supporting Habitat
- Bike Trail Closed by Fence Only Accessible At Openings
- No Connection to Waterway
- Lack of Safe Connection between Residences and Parks
- Existing Parks Attract Young Children and Families; Additional Population Attractions are Missing
- Surrounding Area Attracts Tourists and Students; No Gathering Space Available for Large Groups
- Site is Accessed by Few Roads; Site is Hidden and Easily Forgotten

PROGRAM OBJECTIVES

- Restore Concrete Channel into Former Natural Waterway
- Reduce Hardscape and Increase Vegetated Habitat
- Provide Access to Trails for All Users, including Seating, Shaded Paths, Opportunities for Access to Water
- Create Access from Residences to Creek and Parks
- Design Spaces for Community Use, including Passive Space
- Create Outdoor Environmental Learning Opportunities for All Ages
- Include Parking Opportunities for Access to Site and Connections to Train Station and other Surrounding Areas
- Economic Growth from Avoiding Flood Repair Costs and Revenue Opportunities


Trabuco Creek


Christchurch, New Zealand

1 http://www.bdp.com/en/projects/a-e/avon-river-precinct-framework/

Riparian Creek
- Length: 0.3 mi
- Width: 120 ft
- Creek Restoration; Vegetated Banks
- Wildlife Habitat
- Access to Water via Outlooks and Trails

Recreational Trails
- Length: 0.3 mi
- Width: 10 ft
- Continuous Tree Canopy
- Seating and Outlooks

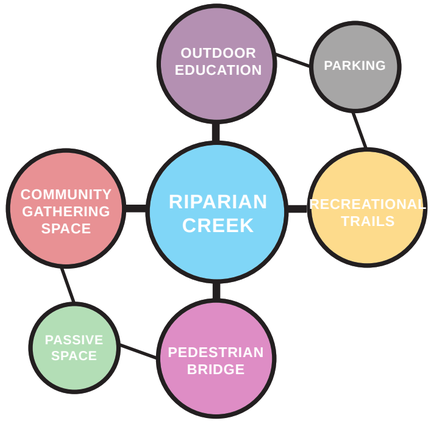
Pedestrian Bridge
- Length: 150 ft
- Width: 10 ft
- Connection Between Residential, Parks, and City Center
- Safe Access; Access to Water

Community Gathering Space
- Size: 95 ft x 130 ft
- Community Connections
- For Students, Tourists, and Community

Parking Lot
- Size: 168 ft x 217 ft
- 112 Total Parking Spaces
- City's Response to Need for Parking
- School Bus Drop Off Zone

Outdoor Education
- Size: 95 ft x 130 ft
- Space for Student Tours to Gather
- Community Event space

Passive Space: Turf, Trails, & Habitat Zone Exhibit
- Size: 115 ft x 200 ft; 70 ft x 200 ft
- Walking Trails, Seating Area



*Relationships of **Program Elements** connected at the project site.*

COMMUNITY GATHERING SPACE

Cornell University Bailey Plaza, NY

OUTDOOR EDUCATION

Parkview School, MN

PASSIVE SPACE

Highland Park, IL

1 https://www.mvvainc.com/project.php?id=25
2 https://www.pdhp.org/hpoc2nature/
3 https://www.isd623.org/news/archive/201810/new-school-forest-amphitheater

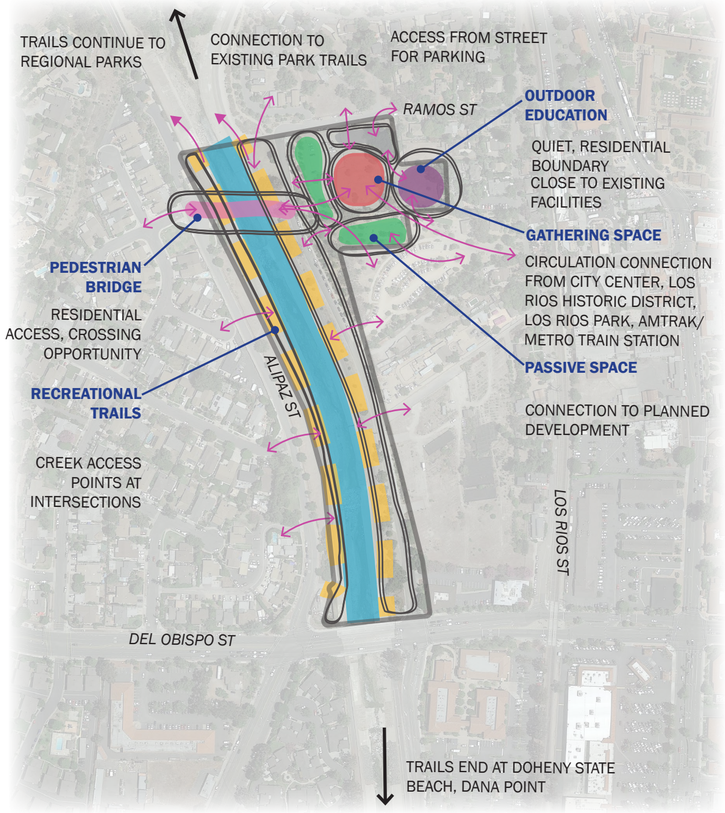
Green Flood Control:
- Increase vegetation, naturalize channel

Habitat:
- Re-establish riparian habitat

Connect Communities:
- Create crossover connections

Outdoor Education:
- Provide gathering space

RIPARIAN CREEK
COMMUNITY GATHERING SPACE
RECREATIONAL TRAILS
PARKING LOT
PEDESTRIAN BRIDGE
OUTDOOR EDUCATION
CONNECTIONS
PASSIVE SPACE



Janice Wondolleck | Capstone

RIPARIAN CREEK

Restored vegetation zones to increase habitat and improve water quality

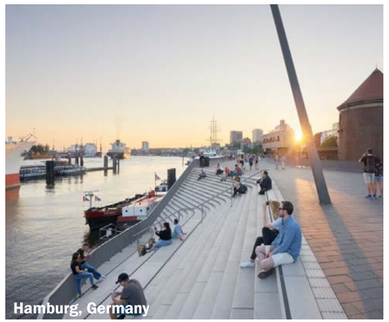
RECREATIONAL TRAILS

Multimodal with connections between cities and communities, and provide waterfront access

ACCESS TO WATER

Preserve a belt of common land; allow access at infrequent intervals

Promenade: a place where you can go to see people, and to be seen; links activity nodes (A Pattern Language)

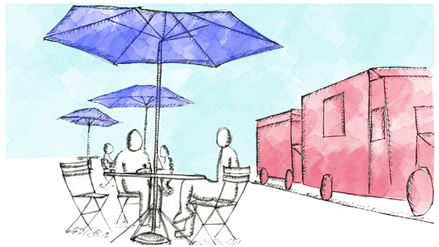


1 http://boe.lacity.org/lariverrmp/CommunityOutreach/pdf/LARRMP_Final_05_03_07.pdf
2 https://www.designer.com/news/29005

3 https://inhabitat.com/zaha-hadid-architects-undulating-riverside-promenade-doubles-as-a-flood-barrier-in-hamburg/photographs-by-piet-niemann-image-given-to-zaha-hadid-architects-ask-piet-niemann-for-permission-before-use-unallowed-usage-will-be-prosecuted-without-warning-11/

COMMUNITY GATHERING SPACE

Central, multi-use, flexible space open for City events (i.e., farmers markets, food truck events, art fairs, festivals)



PASSIVE SPACE: TURF, TRAILS, & HABITAT ZONE EXHIBIT

Walking trails, seating, and softscape for flexible use (i.e., outdoor exercise classes, yoga, picnics)

EVENTS

SOFTSCAPE

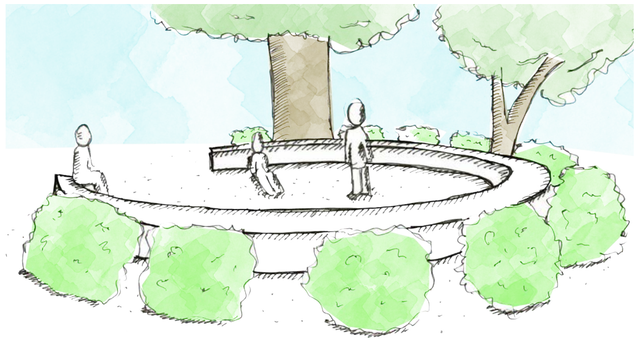
1 https://trulyexperiences.com/blog/best-new-york-parks-romantic-picnic/
2 https://www.plazaarttfair.com/photo-gallery

OUTDOOR EDUCATION

EXPLORATION

AMPHITHEATER

GROUP SEATING



Provide opportunities for learning, create outdoor space for classrooms, and connect students with the City

1 https://thelaurelofasheville.com/outdoors/riverlink-offers-hands-on-approach-to-environmental-education/
2 http://a4le.org.au/awards/2012-awards/2012-victorian-chapter-award-winners/macartans-ps-outdoor-learning-environment
3 http://lepamphlet.com/2015/09/01/jardin-de-bioretention-a-lecole-primaire-de-manassas-park-en-virginie-etats-unis/

RESTORATION & PUBLIC SPACE

Riverfront parks provide benefits to the public: opportunities for social gatherings, recreation, shopping, and dining; combines nature in an urban setting; and improves human health and well-being. Restoring **Trabuco Creek** would reduce risk of flooding, provide habitat for wildlife, create opportunities for communities to connect and gather, and introduce educational opportunities to learn about ecology and stormwater. Programming elements are designed to meet the needs of the community and City by using the recreational and educational attractions of the creek and provide spaces for classes, tour groups, residents, and City events.

1 http://rivertronfw.org/visit/

Design Metaphor

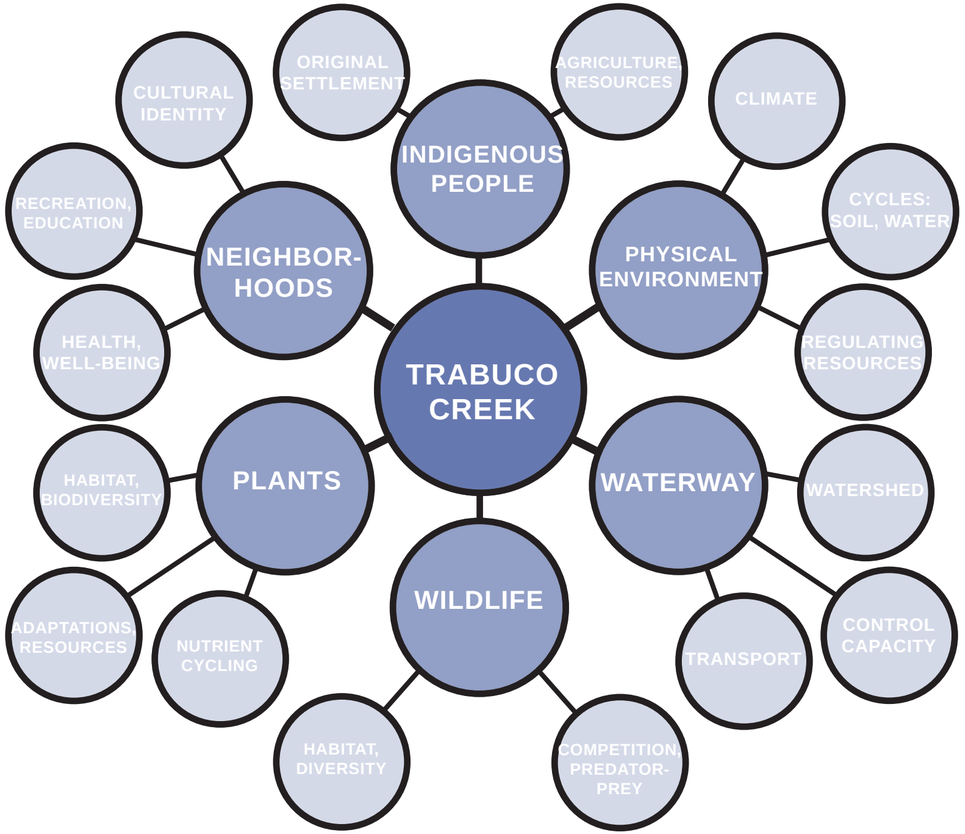
“Life forms around the water’s edge.”

A Pattern Language Guideline, Page 137

Trabuco Creek is the *common connection* between surrounding elements.

The *current degraded* **Trabuco Creek** is the ***missing link*** to the **balance and well-being of a successful ecosystem**.

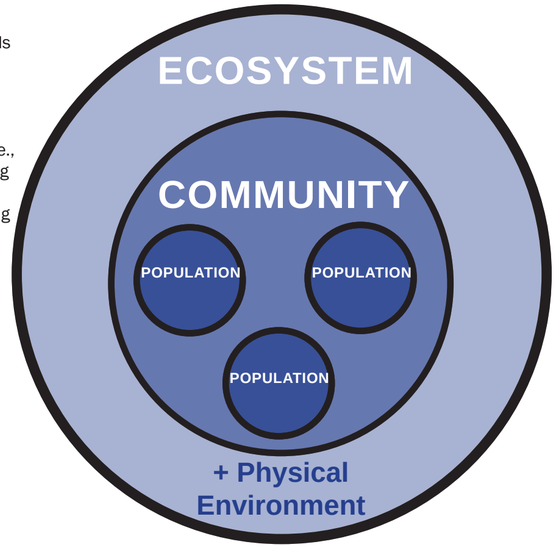
An **Ecosystem** can be re-established to ***restore*** the space.



LEVELS OF ORGANIZATION:

An **Ecosystem** is an interconnected system of a biological community of interacting organisms + physical environment, consisting of

- **Populations -** Group of individuals of one type that live in the same area (i.e., humans, plants, or wildlife as individual groups)
- **Communities -** Populations that live together in a defined area (i.e., humans, plants, and wildlife living together in a defined area)
- **Physical Environment -** Non-living system (i.e., **Trabuco Creek**)



Trabuco Creek as the *non-living system* ***connecting*** and ***interacting*** with **Communities**.

POPULATIONS

Group of individuals of one type that live in the same area

COMMUNITY

Populations that live together in a defined area

1http://www.physicalgeography.net/fundamentals/9d.html

CURRENT ECOSYSTEM

Ecosystem: interconnected system of a biological community of interacting organisms + physical environment, consisting of

- **Populations**
  - Humans
  - Plants
  - Wildlife
- **Communities**
- **Physical Environment**
  - **Trabuco Creek** (sun, air, water, soil, climate, wind)

RESTORED ECOSYSTEM

The restored ecosystem connects each population to build a community along the restored **Trabuco Creek**.

SERVICES TO ECOSYSTEMS

HUMANS

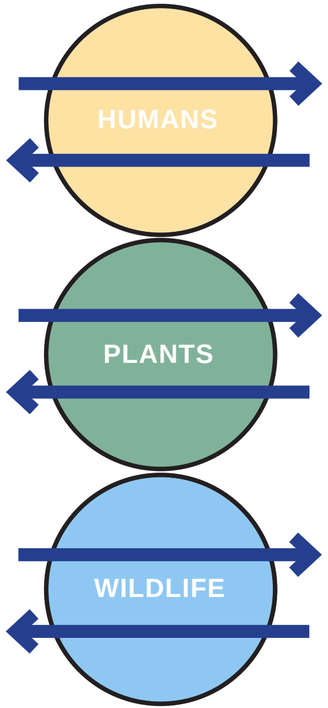
- Cultivation and nutrient recycling
- Habitat protection
- Cultural harvesting and identity

PLANTS

- Habitat and biodiversity
- Competition, adaptations, and growth
- Nutrient cycling

WILDLIFE

- Diversity, predation, and prey
- Ecological balance and stability
- Nutrient cycling



ECOSYSTEM SERVICES

- Provisioning services: food, water, resources
- Regulating services: climate, purification, pollination
- Cultural services: recreation, education, heritage

- Provisioning services: sun, water, soil, nutrients
- Regulating services: climate, purification, pollination
- Cultural services: recreation, education, heritage

- Provisioning services: shelter, water, nutrients
- Regulating services: climate, purification, pollination
- Cultural services: recreation, education, heritage

1 https://www.sciencedirect.com/science/article/pii/S0959378015300145

LINKING COMMUNITIES


Minneapolis, MN

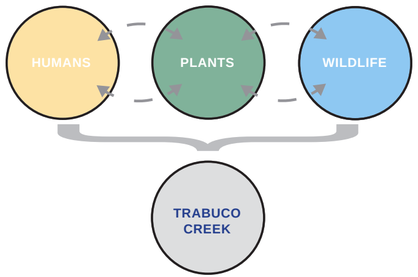
Ecosystems are interconnected systems that, when in balance, provide supportive and mutually beneficial services. The current conditions of **Trabuco Creek** show a disconnected relationship between humans, plants, and wildlife: humans cannot cultivate the land, cultural heritage is forgotten, and the quality of water, air, and climate is deteriorated; plants are unable to flourish, regulate the climate, or provide nutrients or promote pollination; and wildlife do not have opportunity to inhabit the area due to lack of shelter, water, and food sources. Restoring **Trabuco Creek** would re-link the communities into a connected, balanced ecosystem.

1 https://www.architecturecaribbean.com/arch-prof-projects.php?id=50

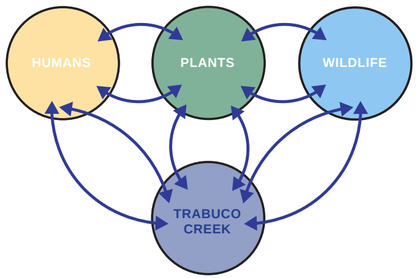
Confluence of Streams: occurs where two or more flowing bodies of water join together to form a single channel

Confluence of Communities: communities joining together to form a single ecosystem

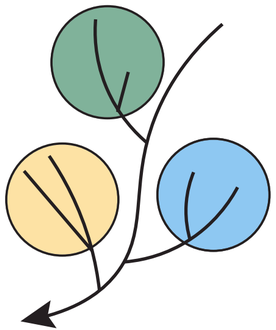
Representing a **collaborative relationship** with the environment that connects to create a ***balanced ecosystem***.



Disconnected relationship without restoring **Trabuco Creek**



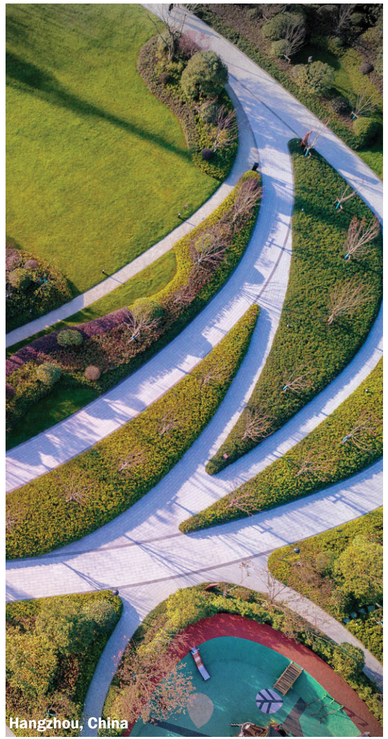
Trabuco Creek as the missing link to **connect** communities

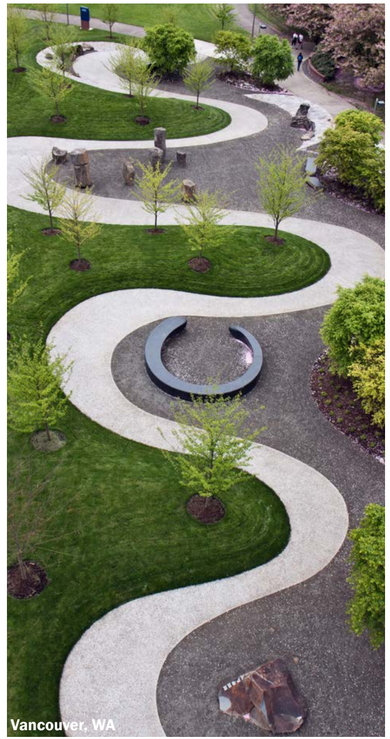


Confluence of Communities

1 https://en.wikipedia.org/wiki/Confluence
2 https://holykrampus.tumblr.com/post/20535472002/proofmathisbeautiful-infinity-imagine

Joining pathways, ***stream patterns***, ***ecosystems***, and ***terrain*** that connect spaces and the community to the environment in **Physical Form**.


Hangzhou, China


Vancouver, WA


Wuhan, China


Seoul, South Korea

1 https://www.flickr.com/photos/clark_college/7176990924/
2 https://inhabitat.com/how-the-cheonggyecheon-river-urban-design-restored-the-green-heart-of-seoul/cheonggyecheon-river-25/

3 https://www.archdaily.com/776474/penda-designs-river-inspired-landscape-pavilion-for-chinas-garden-expo/5638b2e2e5be-ce6e640000e7-penda-designs-river-inspired-landscape-pavilion-for-chinas-garden-expo-photo
4 http://landezine.com/index.php/2020/04/pengbu-central-commons-by-plat-studio/

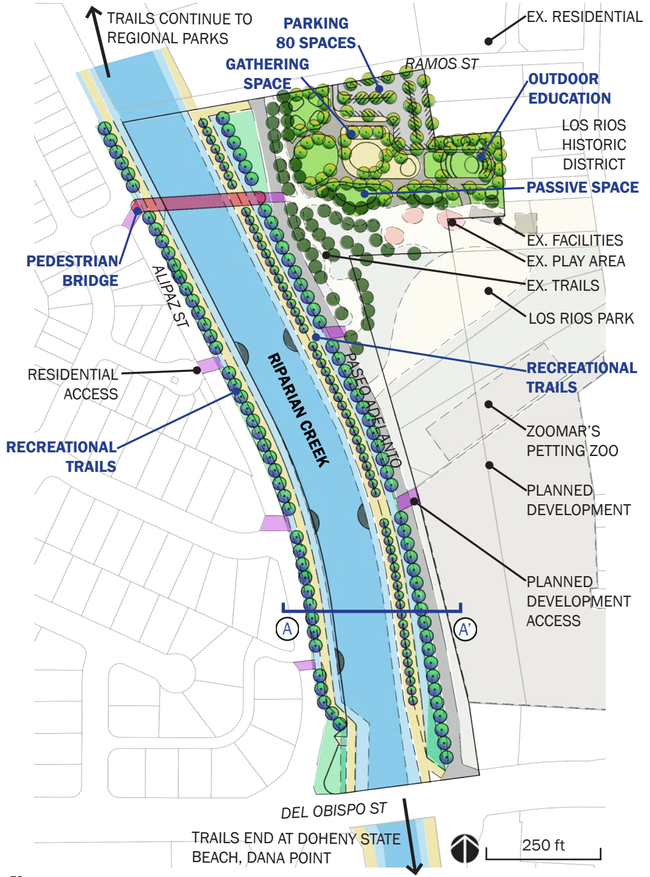
Green Flood Control:
- Maintains Existing Flood Capacity:
  - Widen channel, 2 stormwater control measures
- Slows Flow Velocity:
  - Vegetated banks, larger flood base

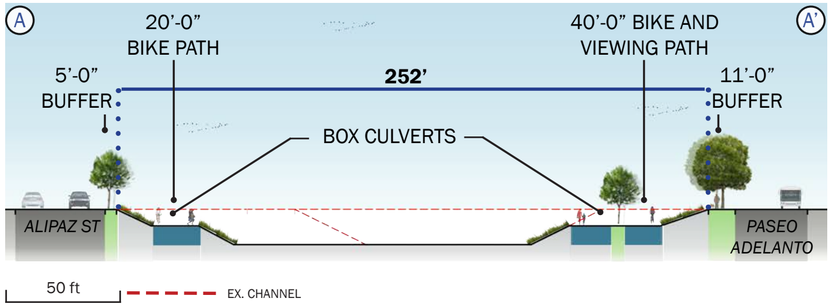
Habitat: 23% more green channel (61 LF)

Connect Communities: Provided residential and development access; widened viewing path for connection to channel

Outdoor Education: Designated space near facilities

Confluence of Stream-Like Pathways





As seen in Section A, the concept diagram widened the creek's edges to increase the channel's flood capacity. The bike paths were lowered off of the road for safety, closer access to the creek, as well as creating a larger flood capacity volume within the channel. However, the trails would not be accessible in the event of a 100-year flood. A secondary stormwater control measure added to the design includes box culverts stored under the bike paths in order to accommodate additional flooding if needed. The creek banks were vegetated to increase habitat, reduce hardscape, and provide slope stabilization.

In addition, the east bike path was widened to accommodate additional users and provides seating and closer access to the creek. The paths are shaded with tree canopy, including a planted median between the bike and viewing path.

The new park is spatially organized into different program areas, however the stream-like pathways connect the several different areas. The gathering space is located in the center of the new park where visitors entering from all edges of the park have equal access to a new gathering plaza. The outdoor education area is located in a quiet area close to residential and the existing facilities within Los Rios Park. The passive space elements are located in a closed, shaded area for small group gatherings. And the parking is arranged to allow for a drop-off loop and has multiple entrances along Ramos St.

In addition, the design has connections to the existing adjacent features, including multiple entrances to the Los Rios Park and Los Rios Historic District, multiple access points between the recreational trails and residences located where streets end perpendicular to the creek's edge, and the new planned development space has new waterfront property and has primary access to the trails that increases opportunities for users to visit the new planned development using the new bike path.

“Water is always precious... we single out the ocean beaches, lakes and river banks, because they are irreplaceable.”

Master Plan

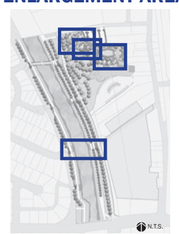
A Pattern Language Guideline, Page 136

250 ft

Master Plan Notes:

1. Trail Continues to Regional Parks
2. California Habitat Trails
3. Parking
4. Drop-Off & Food Truck Parking
5. Gathering Plaza
6. Pedestrian Bridge
7. Confluence of Trails
8. Passive Turf Space
9. Educational Amphitheater & Seating
10. Educational Nature Center
11. Relocated Existing Play Structures
12. Existing Facilities
13. Existing Parking
14. Existing Petting Zoo
15. Recreational Trail
16. Widened, Vegetated Channel
17. Viewing Path & Recreational Trail
18. Access to Water Stairs
19. Pedestrian Access
20. New Planned Development
21. Trails End at Doheny State Beach

4 ENLARGEMENT AREAS



Key Map

RIPARIAN CREEK

GREEN FLOOD CONTROL

The first enlargement addresses the first project goal: Green Flood Control. The concrete channel edges were removed and widen from 120' to 252' wide. The concrete was replaced with vegetated banks to stabilize the slope, withstand flooding, and provide habitat for wildlife. The widened creek increases flood capacity, and vegetated slopes slows water velocity. The vegetated banks filter stormwater runoff and improves the water quality. The recreational trails were widened, are accessible to more users, and provide closer access to the creek.

CALIFORNIA HABITAT TRAILS

RECLAIM HABITAT

The second enlargement highlights the second project goal: Reclaim Habitat. Located in the northwestern corner of the new park, the California Habitat Trails is a series of mounded paths along 6 different California vegetation communities zones. This designed natural space reduced hardscape and increased vegetated habitat to increase biodiversity for the community to explore and students to learn.

COMMUNITY GATHERING SPACES

CONNECT COMMUNITIES

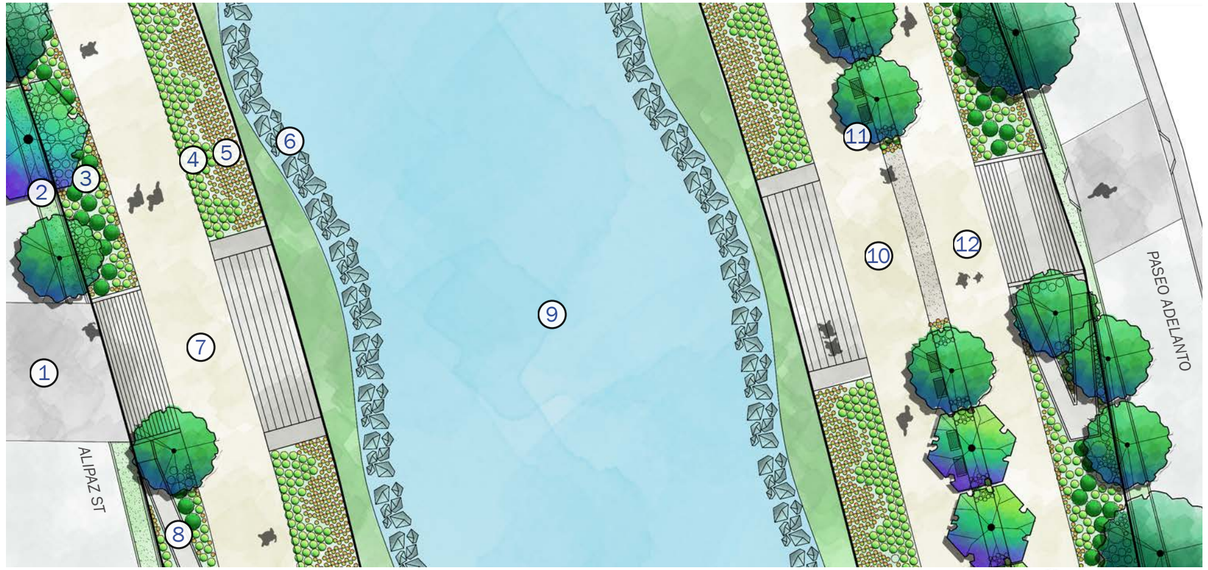
The third enlargement features the third project goal: Connect Communities. The new park provides Community Gathering Spaces to meet the needs of the community and attract visitors of diverse uses. The new park includes a Plaza, Food Truck & Seating, and Passive Turf Space. The open, flexible use space provides opportunities for the community. In addition to the new park, the enhanced multi-modal network of trails creates new access points from residences and allows for more user groups to connect to the trails, inlcuding ramp access, widened paths, and new seating opportunities.

EDUCATIONAL SPACES

OUTDOOR EDUCATION

The fourth enlargment shows the final project goal: Outdoor Education. The southeastern corner of the new park is dedicated to educational spaces, including an amphitheater, extended lawn viewing area, and individual outdoor classroom seating areas. The new park provides spaces for class groups to gather with seating and stages, and has connections to the restored riparian creek and California Habitat Trails for hands-on learning. The shaded seating areas provide comfortable and convenient classrooms for local schools to use.

1 https://www.wired.com/2016/08/7-cities-transforming-rivers-blights-beauties/
2 https://www.nps.gov/grca/learn/nature/southwestern-willow-flycatcher.htm
3 https://www.ocregister.com/2013/03/13/school-news-in-and-around-san-juan-capistrano/
4 https://www.southern.edu/graduatestudies/master-of-science-in-education-outdoor-ed.html

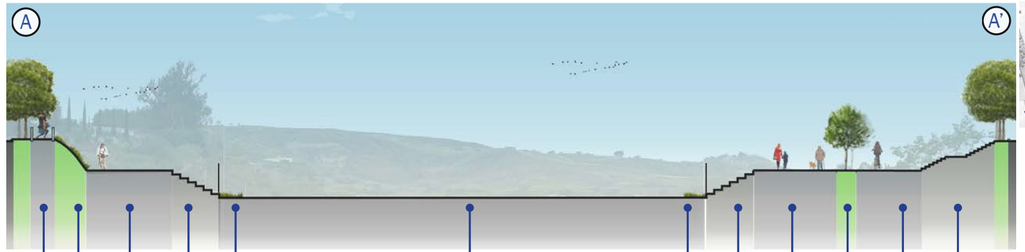


Enlargement 1

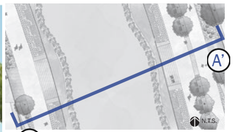
30 ft

1. Pedestrian Crosswalk
2. Riparian Zone 3: Woodland
3. Riparian Zone 3: Herbs, shrubs, grasses
4. Riparian Zone 2: Herbs, woody plants
5. Riparian Zone 1: Herbs emergent aquatic plants
6. Rip Rap Stabilization
7. Recreational Trail
8. Pedestrian Access Ramp
9. Widened, Vegetated Channel
10. Viewing Path
11. Seating
12. Recreational Trail

Key Map

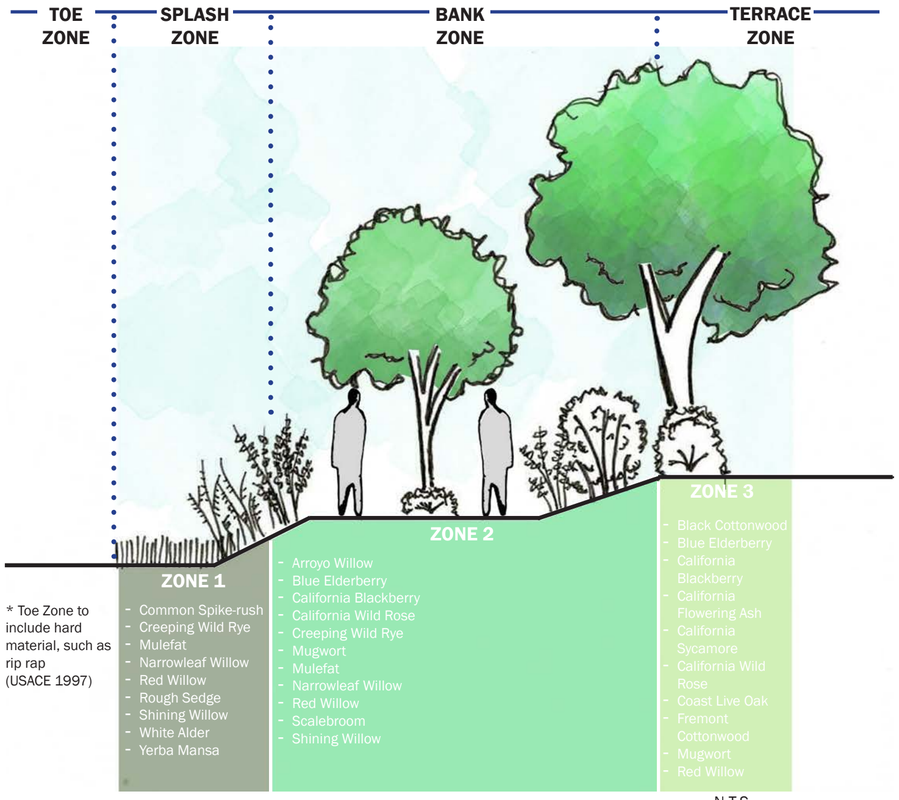


Section A



Key Map

The Riparian Creek enlargement illustrates the new access points, widened path, and vegetated banks. Visitors can access the recreational trails via the new crosswalks added where existing streets ended perpendicular to the creek's edge. There is both stair and ramp access to the recreational trails from the street level. The trails were widened, shade was increased, and benches were designed to accommodate more visitors and uses. The creek banks are vegetated in a striation from the water's edge in a series of planting zones. The riparian planting zones are based on elevation from the creek and the plant's ability to tolerate frequencies and durations of flooding, with plants that can tolerate high stress at the bottom. Plants in the Terrace Zone at the top include trees with deep roots that can hold the bank together and withstand overbank flooding. Vegetating the creek banks slows the water velocity and reduces risk of flooding. The planting extends along the creek's bottom in a natural flowing pattern to naturalize the creek. The bottom of the slope is stabilized with riprap, in accordance with the USACE bioengineering guidelines. The additional stairs from the trails leading to the creek bottom have a longer rise and run for convenient seating for enjoyment along the creek's edge.

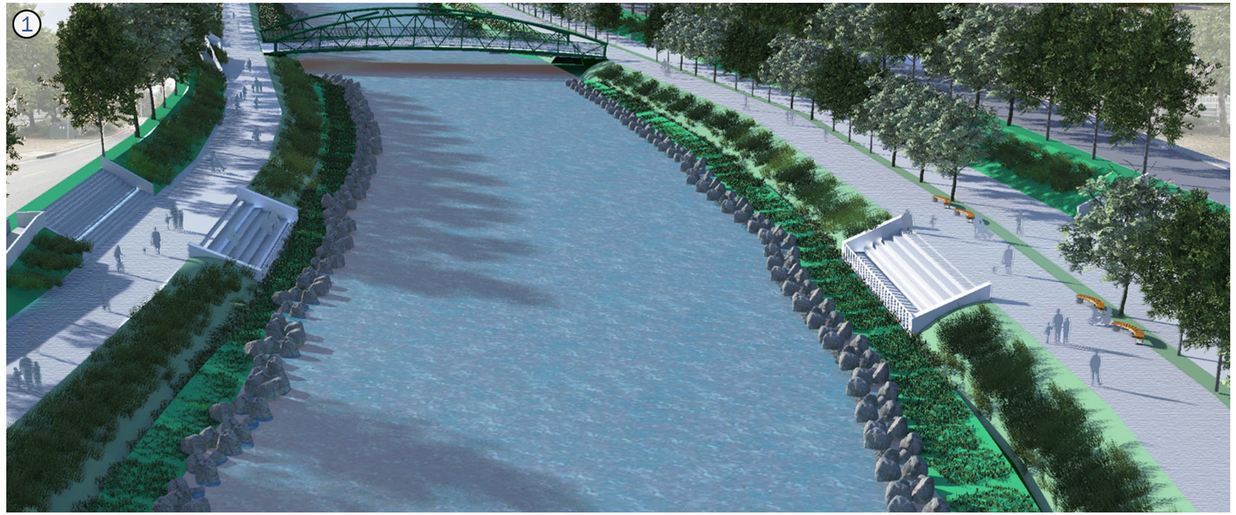


* Toe Zone to include hard material, such as rip rap (USACE 1997)

Riparian Zones Section

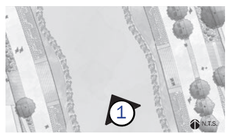
WILDLIFE

1 U.S. Army Corps of Engineers. 1997. Bioengineering for Streambank Erosion Control. Report 1 Guidelines, Environmental Impact Research Program. By Hollis H. Allen and James R. Leech
2 https://www.cramwetlands.org/sites/default/files/VCPD2006_RipPrintGde.pdf
3 https://www.clipart.email/clipart/silhouette-drawings-of-people-113938.html
4 https://ebird.org/species/belvir
5 https://www.universityofcalifornia.edu/news/monarchs-wings-yield-clues-their-birthplaces
6 https://www.nwf.org/Educational-Resources/Wildlife-Guide/Amphibians/California-Red-Legged-Frog



Perspective 1

The riparian creek increases diversity of plants, provides habitat for wildlife, and allows for more community uses than the concrete flood channel provided. The vegetated trails reduce the original hardscape and improve water quality by intercepting runoff. The tree canopy creates a shaded, climate-cooling path. Visitors are able to enjoy the scenic, natural environment in an urban setting.



Key Map

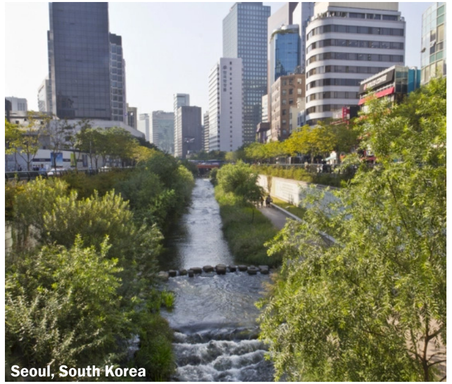
The naturalized channel enhances the surroundings: the clarity of water is improved; the flood risk is lowered; the diversity of plants and wildlife increased; the diversity of uses and users multiplied; the economy in the surrounding vicinity would increase from the numerous new visitors.

The restored channel increases the potential uses for the community, including educational, recreational, and aesthetic. The naturalized channel provides a natural experience in an urban setting, where surrounding residences, City businesses, and traveling visitors can enjoy and partake in a healthy lifestyle.

The design met the City's General Plan Parks & Recreational and Floodplain Management Goals: expand on existing trail system; protect life and property from floodwaters; preserve and enhance the natural character of the creek; and preserve and enhance recreational opportunities provided by the creek.

Restoration of **Trabuco Creek** transformed a concrete flood channel into the formally natural waterway and reclaimed the space for the environment, community, and City.

NATURALIZED CHANNEL



Seoul, South Korea

PROMENADE

Houston, TX

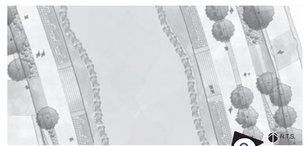
1 https://freshwaterblog.net/2014/07/08/daylighting-urban-rivers/
2 https://buffalobayou.org/trail-closures/

RIPARIAN CREEK

Perspective 2

Objectives:

- **Restore** into former natural waterway
- **Provide** flood control by increasing flow capacity and slowing velocity
- **Improve** water quality
- **Reduce** hardscape and increase vegetated habitat
- **Design** natural spaces for community to explore and students to learn



Key Map

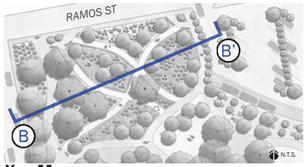
Enlargement 2

30 ft

1. Existing Trail
2. Desert Riparian Woodland Community
3. Coastal Sage Scrub Community
4. Desert Community
5. Passive Trails
6. Mediterranean Community
7. Grassland Community
8. Chaparral Community
9. Passive Turf Space
10. Gathering Plaza
11. Picnic Table Seating
12. Drop-Off & Food Truck Parking
13. Parking Lot

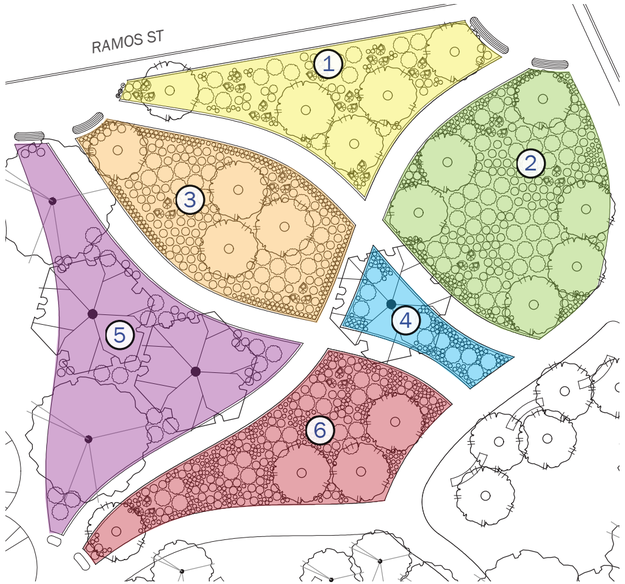
Key Map

Section B



Key Map

The California Habitat Trails enlargement illustrates 6 different California vegetation communities with mounded terrain and trails. The habitat zones demonstrate the diverse landscapes in California. The trails allow for individual or group exploration, or quiet, shaded stroll through the park. The diversity of communities can be used as an educational opportunity to show the different plant types and arrangements in each community. The trails are lined with retaining wall to support the mounded terrain, and also is used as a seating wall for close interaction with each zone. The zones also provide habitat and protection for wildlife. Additionally, informational and interpretive signs would be located in this area as part of the educational component.



California Habitat Trails Zones

CALIFORNIA COMMUNITIES

1 Desert

Chalk Dudleya, Chaparral Yucca, Coast Prickly Pear Opuntia

2 Chaparral

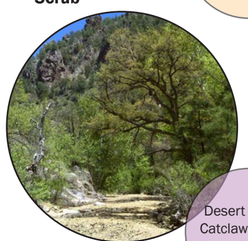
Mediterranean Olive, English Lavender, Mediterranean Spurge

3 Coastal Sage Scrub

California Sagebrush, California Buckwheat, White Sage

4 Grassland

Stipa, Poa, Artistida, Coast Live Oak



5 Desert Riparian Woodland

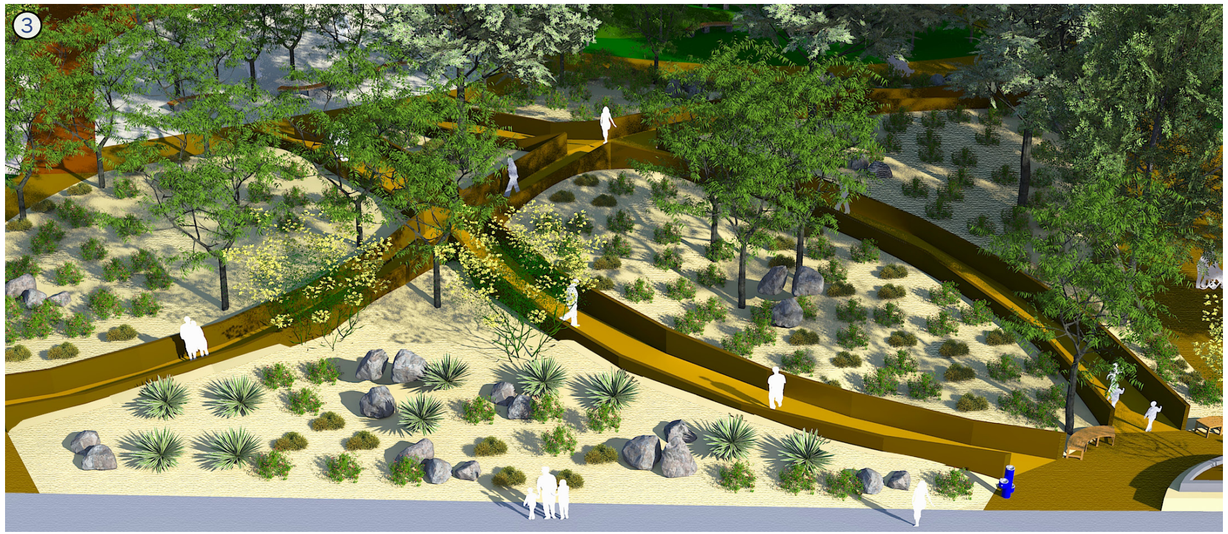
Desert Willow, Catclaw Acacia, Honey Mesquite

6 Mediterranean

Chamise, California Lilac, Bigberry Manzanita

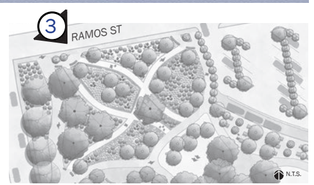
1 Desert. https://www.gardendesign.com/succulents/huntington-botanical.html
2 Sagebrush. https://ca.audubon.org/news/rare-coastal-sage-scrub-habitat-provides-home-threatened-gnatcatcher-and-many-other-species
3 Chaparral https://www.pacifichorticulture.org/articles/a-year-in-a-pacific-northwest-chaparral-garden/
4 Mediterranean https://www.pacifichorticulture.org/articles/woods/
5 grassland https://www.sierraforestlegacy.org/FC_FireForestEcology/TH_OakWoodlands.php
6 Woodland https://www.sitkarescape.org/galiuro/ecosystem-description/rocky-mountain-montane-riparian

7 http://www.calflora.net/botanicalnames/plantcommunities.html
8 https://calscape.org/loc-33.5019,-117.6628%20(Sea%20Quarry%20capistrano,%20California)/cat-Succulents/ord-popular?srchcr=sc5f2b49cef52ac1
9 https://inlandvalleygardenplanner.org/garden-styles/classic-mediterranean/



Perspective 3

The 6 different vegetation communities represent the diversity of California plant communities, and creates an educational opportunity, by increasing biodiversity and potential wildlife occurrences. Additionally, the pathways provide a shaded walking path for exploration and reflection. The plant palette for each habitat zone shows the uniqueness of each California community.



Key Map

The California Habitat Trails allows the user to go through a mounded series of pathways and explore different communities. The design incorporates habitat, trails, naturalizing, recreation, and education, to engage the community to explore the natural environment in an urban setting.

The zones create a series of rooms that separates spaces for their individuality, and also connects the zones with a network of stream-like pathways. These trails are accessible and meet the needs of the users in the community.

Trabuco Creek has a historical significance as a water source for the early settlers in the City. Creating habitat along the creek and naturalizing the creek restores the area to its former natural waterway, and allows the community to experience the history of the space.

OPEN PATHWAYS

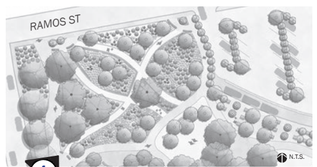
NATURAL LANDSCAPE

1 http://moderni.co/category/landscape-design-plaza/
2 https://www.discover-central-california.com/california-oak-woodlands.html

Perspective 4

Objectives:

- **Provide** access to trails for all users
- **Design** spaces for community use, including passive space
- **Provide** habitat and increase biodiversity
- **Create** outdoor environmental learning opportunities
- **Connect** students, community, and City

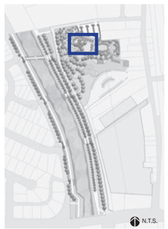


Key Map

Enlargement 3

30 ft

1. California Habitat Trails
2. Food Truck & Picnic Table Seating
3. Parking Lot
4. Mounded Lawn
5. Primary Pathway
6. Passive Turf Space
7. Temporary Tent Fair Exhibit
8. Central Planter Seating Area
9. Gathering Plaza
10. Amphitheater Expanded Viewing Area



Key Map

GATHERING PLAZA

The Gathering Plaza is located at the center of the new park, and links the several programming elements within the project site. The stream-like pathways flow into the plaza, with the widest, primary circulation pathway connecting the northeast corner in the parking lot to the southwest corner that directs visitors to the pedestrian bridge over the creek. The plaza serves as a community gathering space for open, flexible use. Possible uses include temporary tent fair exhibits, such as for art fairs or farmers markets.

FOOD TRUCKS

North of the plaza is the food truck and picnic table seating area. There is a drop-off and food truck parking lane connected to the parking lot that allows a one way flow of traffic with a gravel median for trucks to drive over when necessary. The picnic tables allow for flexible community use, such as chess in the park, or rental opportunities. The area is shaded with trees and allows for flexible use.

EXERCISE GROUPS

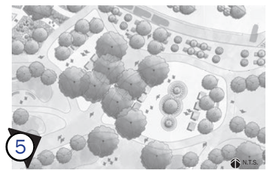
South of the plaza are turf areas for passive use, such as picnicking or outdoor exercise group gatherings. The softscape allows for open, socially-distant groups to gather in fresh air. The community can organize park events to take place in this space as well as families can take advantage of the shaded area for quiet day spent in the park. The turf area is enclosed by groupings of trees and mounded terrain for quiet spaces in the park.

1 https://news.unm.edu/news/smith-plaza-design-team-wins-award
2 https://www.knoxfoodpark.com/
3 https://growthgal.com/reviews/i-heart-yoga/

Perspective 5

Objectives:

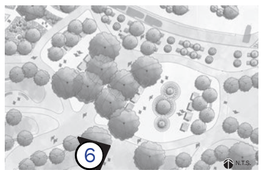
- **Design** spaces for community use, including passive space
- **Connect** students, community, and City



Key Map

Perspective 6

The Community Gathering Spaces provide open, flexible uses for the community to gather and use for various activities or events. The plaza serves as a central space for groups to gather when visiting the Los Rios Park or Los Rios Historic District, as well as a meeting place for visitors traveling along the bike trails. These spaces provide a destination to an area that was previously not maintained, well-organized, nor welcoming.

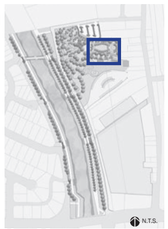


Key Map

30 ft

Enlargement 4

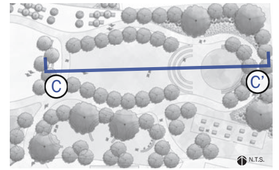
1. Entry Seating
2. Passive Turf Space
3. Gathering Plaza
4. Picnic Table Seating
5. Mounded Lawn
6. Amphitheater
7. Outdoor Classrooms
8. Nature Center
9. Shaded Picnic Tables
10. Existing Shaded Picnic Tables
11. Existing Residential



Key Map

Section C

The Educational Spaces are located in the southeast corner of the new park. Large groups have the opportunity to use the amphitheater and extended viewing mounded lawn. Trees are the natural backdrop to the stage as well as defining the space on the perimeter, creating a visual and noise barrier. Smaller groups can take advantage of the individual outdoor classroom seating areas for hands-on and social-distant learning. The small classrooms are shaded, and in close proximity to existing facilities and can work in collaboration with the new Nature Center Building for school field trips. Additionally, educational interpretive signs would be located within these spaces as part of the educational component.



Key Map

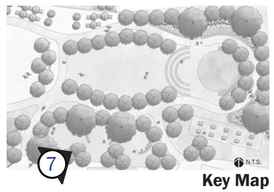
AMPHITHEATER

OUTDOOR CLASSROOM

1 https://www.como.gov/parksandrec/facilities/stephens-lake-park-amphitheater/
2 http://www.millercreekwatershedstewards.org/Dixie-Outdoor-classroom.html

Perspective 7

The Educational Spaces provide areas for flexible use for groups, including school groups as well as for tour groups visiting nearby historical landmarks. The spaces also can host City festivals, events, or productions using the stage and open lawn area. The location allows students to gather in a quiet space, and is in short walking distance to the restored creek and California Habitat Trails zones that provide educational opportunities for students to learn about biodiversity, ecology, among other sciences. In addition, the classrooms are close to existing play structures within Los Rios Park and lawn for recreational opportunities. The Educational Spaces meet the needs of the community and City, and promote environmental outdoor education.

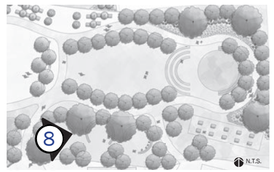


Key Map

Perspective 8

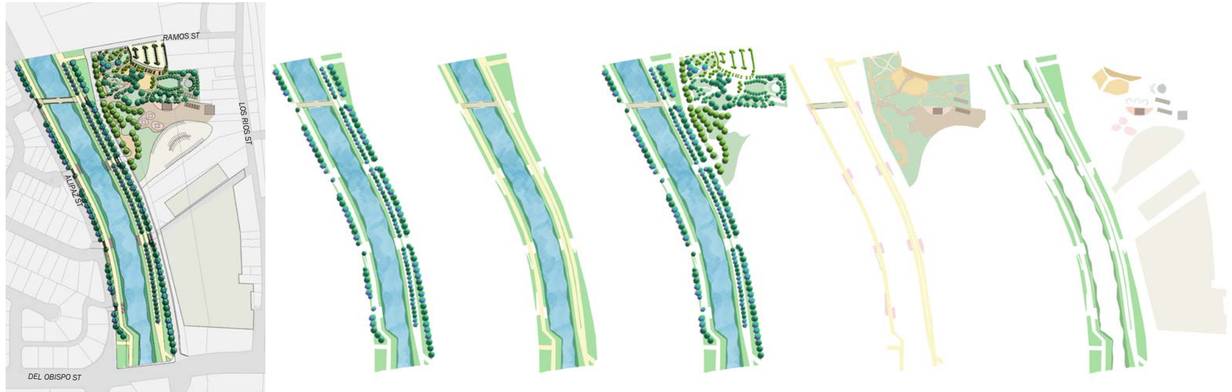
Objectives:

- **Connect** students, community, and City
- **Design** spaces for community use, including passive space
- **Design** natural space for community to explore and students to learn
- **Create** outdoor environmental learning opportunities



Key Map

CONCEPT PERFORMANCE



Benefits of a Naturalized Channel:

Improve Water Quality	Reduce Flood Risk	Ecological Success	Social Collaboration	Economic Growth
- Intercepts stormwater runoff - Adds vegetation to the channel and banks to promote phytoremedation by plants	- Withstands significant flooding; achieves flood protection - Vegetated banks and widen channel slow flow velocity	- Increased habitat quality by providing fruit and seed, nectar, and habitat sources - Increased vegetation and diversity of plants and suitable habitat	- Attracts variety of daily visitors - Increased attractions to increase user groups	- Revenue; surrounding businesses benefit - Avoids flood repair costs, increases property value, and introduces revenue opportunities for food trucks, farmers markets, and event space rentals

*Of the total 9.4-acre concrete channel project area, the **design restores 4.0 acres (42%)** as a naturalized channel.*

N.T.S.

*The **design** meets the **needs of the watershed** as well as the **community** by designing a space to engage and educate the community. **Restoring Trabuco Creek** reclaims the waterway by providing **community connections to nature, neighborhoods,** and **the City center.** What was once a concrete divide is now the **common linkage that pulls the community into a natural environment** experience.*

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- Melissa McDonald, Program Manager

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- Jim Pickel, Capstone Instructor

- And all other program instructors

Thank you for your time and guidance.

- Capstone Cohort
- Additional Landscape Architecture Classmates

Thank you for your dedication and camaraderie.

- Family and Friends

Thank you for your support, patience, and encouragement.

Common Name (Scientific Name)

Arroyo Willow (*Salix lasiolepis*)
Artistida (three-awn)
Bigberry Manzanita (*Arctostaphylos glauca*)
Black Cottonwood (*Populus trichocarpa*)
Blue Elderberry (*Sambucus nigra* ssp. *caerulea*)
California Blackberry (*Rubus ursinus*)
California Buckwheat (*Eriogonum fasciculatum*)
California Flowering Ash (*Fraxinus dipetala*)
California Lilac (*Ceanothus*)
California Sagebrush (*Artemisia californica*)
California Sycamore (*Platanus racemosa*)
California Wild Rose (*Rosa californica*)
Catclaw Acacia (*Acacia greggii*)
Chalk Dudleya (*Dudleya pulverulenta*)
Chamise (*Adenostema fasciculatum*)
Chaparral Yucca (*Hesperoyucca whipplei*)
Coast Live Oak (*Quercus agrifolia*)
Coast Prickly Pear Opuntia (*Opuntia littoralis*)
Common Spike-rush (*Eleocharis palustris*)
Creeping Wild Rye (*Elymus triticoides*)
Desert Willow (*Chilopsis linearis*)
English Lavender (*Lavandula angustifolia* ‘Hidcote’)
Fremont Cottonwood (*Populus fremontii*)
Honey Mesquite (*Prosopsis glandulosa*)
Mediterranean Olive (*Olea europaea*)
Mediterranean Spurge (*Euphorbia characias* ssp. *wulfenii*)
Mugwort (*Artemisia douglasiana*)
Mulefat (*Baccharis salicifolia*)
Narrowleaf Willow (*Salix exigua*)
Poa (bunchgrass)
Red Willow (*Salix laevigata*)
Rough Sedge (*Carex scabrata*)
Scalebroom (*Lepidospartum squamatum*)
Shining Willow (*Salix lasiandra*)
Stipa (needle-grass)
White Alder (*Alnus rhombifolia*)
White Sage (*Salvia apiana*)
Yerba Mansa (*Anemopsis californica*)

Reclaiming Trabuco Creek: Linking Communities

Master Plan

San Juan Capistrano, California

PROJECT STATEMENT

Trabuco Creek exhibits the common characteristics of an underutilized urbanized waterway: **extensive concrete hardscape, unsuitable habitat,** and **disconnects communities**. By designing a space to engage and educate the community about ecological diversity, the **Trabuco Creek** waterway **provides community connections to nature, neighborhoods,** and **the City center.**

Restoration of **Trabuco Creek** incorporates a design that responds to the **needs of the watershed** as well as the **community**. The **design** proposes to reclaiming **Trabuco Creek** as an **accessible waterway** and **green space** that belongs to the community. What was once a concrete divide is now the **common linkage that pulls the community into a natural environment** experience.

PROJECT GOALS & OBJECTIVES

Green Flood Control
- **Restore** concrete channel into former natural waterway
- **Provide** flood control by increasing flow capacity and slowing velocity
- **Improve** water quality

Reclaim Habitat
- **Reduce** hardscape and increase vegetated habitat
- **Design** natural space for community to explore and students to learn
- **Provide** habitat and increase biodiversity

Connect Neighborhoods
- **Create** access from residences to creek, trails, and parks
- **Provide** access to trails for all users, including seating, shaded paths, and opportunities for access to water
- **Design** spaces for community use, including passive space

Outdoor Education
- **Create** outdoor environmental learning opportunities for young student population
- **Provide** access to water and habitat for learning opportunities
- **Connect** students, community, and City

BIG IDEA

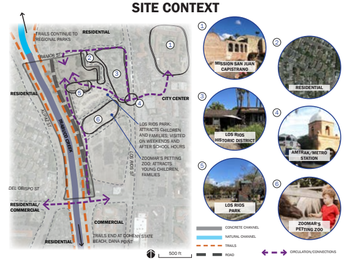
TRABUCO CREEK:

The common linkage between the:
- **Environment**
- **Community**
- **City**

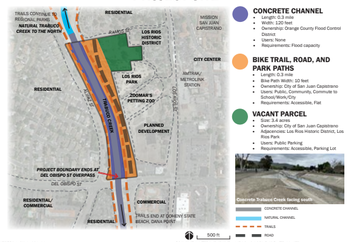
In August 2002, the **U.S. Army Corps of Engineers** prepared a **San Juan Creek Watershed Study** that identified the lower portion of the **Trabuco Creek** as a
- ***flood risk,***
- ***the most unstable reach in the watershed drainage system,*** and
- ***poor riparian habitat.***

SAN JUAN CREEK WATERSHED

SITE CONTEXT



PROJECT SITE



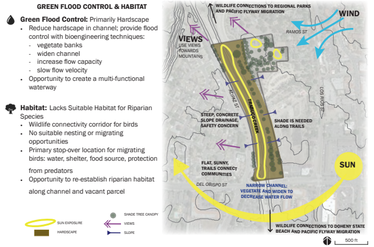
CONCRETE CHANNEL
- Length: 0.3 mile
- Width: 40 feet
- Ownership: Orange County Flood Control District
- Users: None
- Requirements: Flood capacity

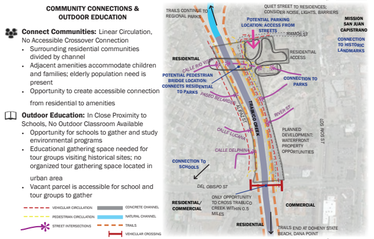
BIKE TRAIL, ROAD, AND PARK PATHS
- Length: 0.3 mile
- Bike Path Width: 10 feet
- Ownership: City of San Juan Capistrano
- Users: Pedestrians, Community, Commute to School/Work/City
- Requirements: Accessible, Flat

VACANT PARCEL
- Size: 3.4 acres
- Ownership: City of San Juan Capistrano
- Adjacencies: Los Rios Historic District, Los Rios Park
- Users: Public Parking
- Requirements: Accessible, Parking Lot

CONCRETE CHANNEL
NATURAL CHANNEL
TRAILS
ROAD

SITE ANALYSIS





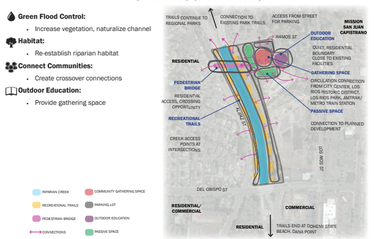
SITE PROGRAMMING

Green Flood Control:
- Increase vegetation, naturalize channel

Habitat:
- Re-establish riparian habitat

Connect Communities:
- Create crossover connections

Outdoor Education:
- Provide gathering space



Master Plan

MASTER PLAN NOTES:

1. Trail Continues to Regional Parks
2. California HabitatTrails
3. Parking
4. Drop-Off & Food Truck Parking
5. Gathering Plaza
6. Pedestrian Bridge
7. Confluence of trails
8. Passive Turf Space
9. Educational Amphitheater & Seating
10. Educational Nature Center
11. Relocated Existing Play Structures
12. Existing Facilities
13. Existing Parking
14. Existing Petting Zoo
15. Recreational Trail
16. Widened, Vegetated Channel
17. Viewing Path & Recreational Trail
18. Access to Water Stairs
19. Pedestrian Access
20. New Planned Development
21. Trails End at Doheny State Beach

4 ENLARGEMENT AREAS

As seen in the Concept Section, the Master Plan widened the creek's edges to increase the channel's flood capacity. The bike paths were lowered off of the road for safety, closer access to the creek, as well as creating a larger flood capacity volume within the channel. However, the trails would not be accessible in the event of a 100-year flood. A secondary stormwater control measure added to the design includes box culverts stored under the bike paths in order to accommodate additional flooding if needed. The creek banks were vegetated to increase habitat, reduce hardscape, and provide slope stabilization.

In addition, the east bike path was widened to accommodate additional users and provides seating and closer access to the creek. The paths are shaded with tree canopy, including a planted median between the bike and viewing path.

The new park is spatially organized into different program areas, however the stream-like pathways connect the several different areas. The gathering space is located in the center of the new park where visitors entering from all edges of the park have equal access to a new gathering plaza. The outdoor education area is located in a quiet area close to residential and the existing facilities within Los Rios Park. The passive space elements are located in a closed, shaded area for small group gatherings. And the parking is arranged to allow for a drop-off loop and has multiple entrances along Ramos St.

In addition, the design has connections to the existing adjacent features, including multiple entrances to the Los Rios Park and Los Rios Historic District, multiple access points between the recreational trails and residences located where streets end perpendicular to the creek's edge, and the new planned development space has new waterfront property and has primary access to the trails that increases opportunities for users to visit the new planned development using the new bike path.

EXISTING SITE

2 **Trabuco Creek** concrete channel and bike path facing north. No vegetation or suitable habitat.

4 **Trabuco Creek** facing west. Potential to naturalize steep banks and create access to creek.

5 Buffer between **Trabuco Creek** bike path and Paseo Adelanto facing north. Potential to widen channel and provide suitable habitat.

Concept Section

Overview Perspective

METHODS

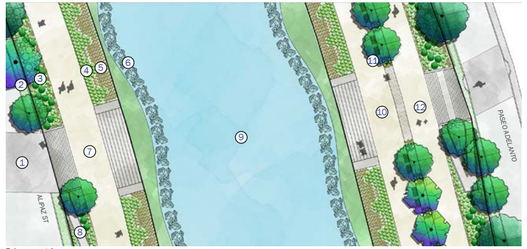
WETLAND RESTORATION | USACE Bioengineering Techniques

Bioengineering is the combination of biological, mechanical, and ecological concepts to **control erosion** and **stabilize soil** through the use of ***vegetation*** or a combination of it and construction materials

OPEN SPACE PARK | A PATTERN LANGUAGE GUIDELINES

Access to Water
- Promenade
- Countryside (Stewardship)
- Parallel Roads
- Small Parking Lots
- Public Space

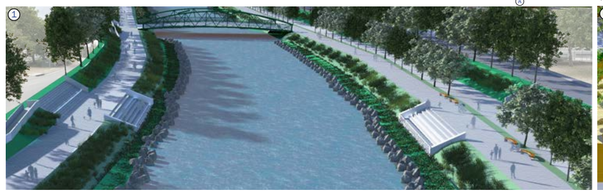
Riparian Creek

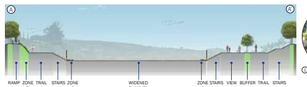


Enlargement 1

1. Pedestrian Crosswalk
2. Riparian Zone 3: Woodland
3. Riparian Zone 3: Herbs, shrubs, grasses
4. Riparian Zone 2: Herbs, woody plants
5. Riparian Zone 1: Herbs emergent aquatic plants
6. Rip Rap Stabilization
7. Recreational Trail
8. Pedestrian Access Ramp
9. Widened, Vegetated Channel
10. Viewing Path
11. Seating
12. Recreational Trail

The riparian creek increases diversity of plants, provides habitat for wildlife, and allows for more community uses than the concrete flood channel provided. The vegetated trails reduce the original hardscape and improve water quality by intercepting runoff. The tree canopy creates a shaded, climate-cooling path. Visitors are able to enjoy the scenic, natural environment in an urban setting.





Section A

The Riparian Creek enlargement illustrates the new access points, widened path, and vegetated banks. Visitors can access the recreational trails via the new crosswalks added where existing streets ended perpendicular to the creek's edge. There is both stair and ramp access to the recreational trails from the street level. The trails were widened, shade was increased, and benches were designed to accommodate more visitors and uses.

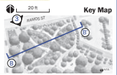
The creek banks are vegetated in a striation from the water's edge in a series of planting zones. The riparian planting zones are based on elevation from the creek and the plant's ability to tolerate frequencies and durations of flooding, with plants that can tolerate high stress at the bottom. Plants in the Terrace Zone at the top include trees with deep roots that can hold the bank together and withstand overbank flooding. Vegetating the creek banks slows the water velocity and reduces risk of flooding. The planting extends along the creek's bottom in a natural flowing pattern to naturalize the creek. The bottom of the slope is stabilized with riprap, in accordance with the USACE bioengineering guidelines. The additional stairs from the trails leading to the creek bottom have a longer rise and run for convenient seating for enjoyment along the creek's edge.

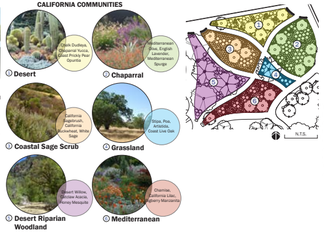
California Habitat Trails

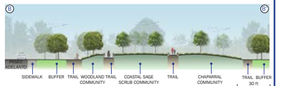
Enlargement 2

1. Existing Trail
2. Desert Riparian Woodland Community
3. Coastal Sage Scrub Community
4. Desert Community
5. Passive Trails
6. Mediterranean Community
7. Grassland Community
8. Chaparral Community
9. Passive Turf Space
10. Gathering Plaza
11. Picnic Table Seating
12. Drop-Off & Food Truck Parking
13. Parking Lot

The 6 different vegetation communities represent the diversity of California plant communities, and creates an educational opportunity, by increasing biodiversity and potential wildlife occurrences. Additionally, the pathways provide a shaded walking path for exploration and reflection. The plant palette for each habitat zone shows the uniqueness of each California community.







Section B

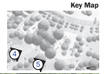
The California Habitat Trails enlargement illustrates 6 different California vegetation communities with mounded terrain and trails. The habitat zones demonstrate the diverse landscapes in California. The trails allow for individual or group exploration, or quiet, shaded stroll through the park. The diversity of communities can be used as an educational opportunity to show the different plant types and arrangements in each community. The trails are lined with retaining wall to support the mounded terrain, and also is used as a seating wall for close interaction with each zone. The zones also provide habitat and protection for wildlife. Additionally, informational and interpretive signs would be located in this area as part of the educational component.

Community Gathering Spaces

Enlargement 3

1. California Habitat Trails
2. Food Truck & Picnic Table Seating
3. Parking Lot
4. Mounded Lawn
5. Primary Pathway
6. Passive Turf Space
7. Temporary Tent Fair Exhibit
8. Central Planter Seating Area
9. Gathering Plaza
10. Amphitheater Expanded Viewing Area

The Community Gathering Spaces provide open, flexible uses for the community to gather and use for various activities or events. The plaza serves as a central space for groups to gather when visiting the Los Rios Park or Los Rios Historic District, as well as a meeting place for visitors traveling along the bike trails. These spaces provide a destination to an area that was previously not maintained, well-organized, nor welcoming.



The Gathering Plaza is located at the center of the new park, and links the several programming elements within the project site. The stream-like pathways flow into the plaza, with the widest, primary circulation pathway connecting the northeast corner in the parking lot to the southwest corner that directs visitors to the pedestrian bridge over the creek. The plaza serves as a community gathering space for open, flexible use. Possible uses include temporary tent fair exhibits, such as for art fairs or farmers markets.

North of the plaza is the food truck and picnic table seating area. There is a drop-off and food truck parking lane connected to the parking lot that allows a one way flow of traffic with a gravel median for trucks to drive over when necessary. The picnic tables allow for flexible community use, such as chess in the park, or rental opportunities. The area is shaded with trees and allows for flexible use.

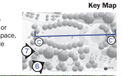
South of the plaza are turf areas for passive use, such as picnicking or outdoor exercise group gatherings. The softscape allows for open, socially-distant groups to gather in fresh air. The community can organize park events to take place in this space as well as families can take advantage of the shaded area for quiet day spent in the park. The turf area is enclosed by groupings of trees and mounded terrain for quiet spaces in the park.

Educational Spaces

Enlargement 4

1. Entry Seating
2. Passive Turf Space
3. Gathering Plaza
4. Picnic Table Seating
5. Mounded Lawn
6. Amphitheater
7. Outdoor Classrooms
8. Nature Center
9. Shaded Picnic Tables
10. Existing Shaded Picnic Tables
11. Existing Residential

The Educational Spaces provide areas for flexible use for groups, including school groups as well as for tour groups visiting nearby historical landmarks. The spaces also can host City festivals, events, or productions using the stage and open lawn area. The location allows students to gather in a quiet space, and is in short walking distance to the restored creek and California Habitat Trails zones that provide educational opportunities for students to learn about biodiversity, ecology, among other sciences. In addition, the classrooms are close to existing play structures within Los Rios Park and lawn for recreational opportunities.



Section C

The Educational Spaces are located in the southeast corner of the new park. Large groups have the opportunity to use the amphitheater and extended viewing mounded lawn. Trees are the natural backdrop to the stage as well as defining the space on the perimeter, creating a visual and noise barrier. Smaller groups can take advantage of the individual outdoor classroom seating areas for hands-on and social-distant learning. The small classrooms are shaded, and in close proximity to existing facilities and can work in collaboration with the new Nature Center Building for school field trips. Additionally, educational interpretive signs would be located within these spaces as part of the educational component.