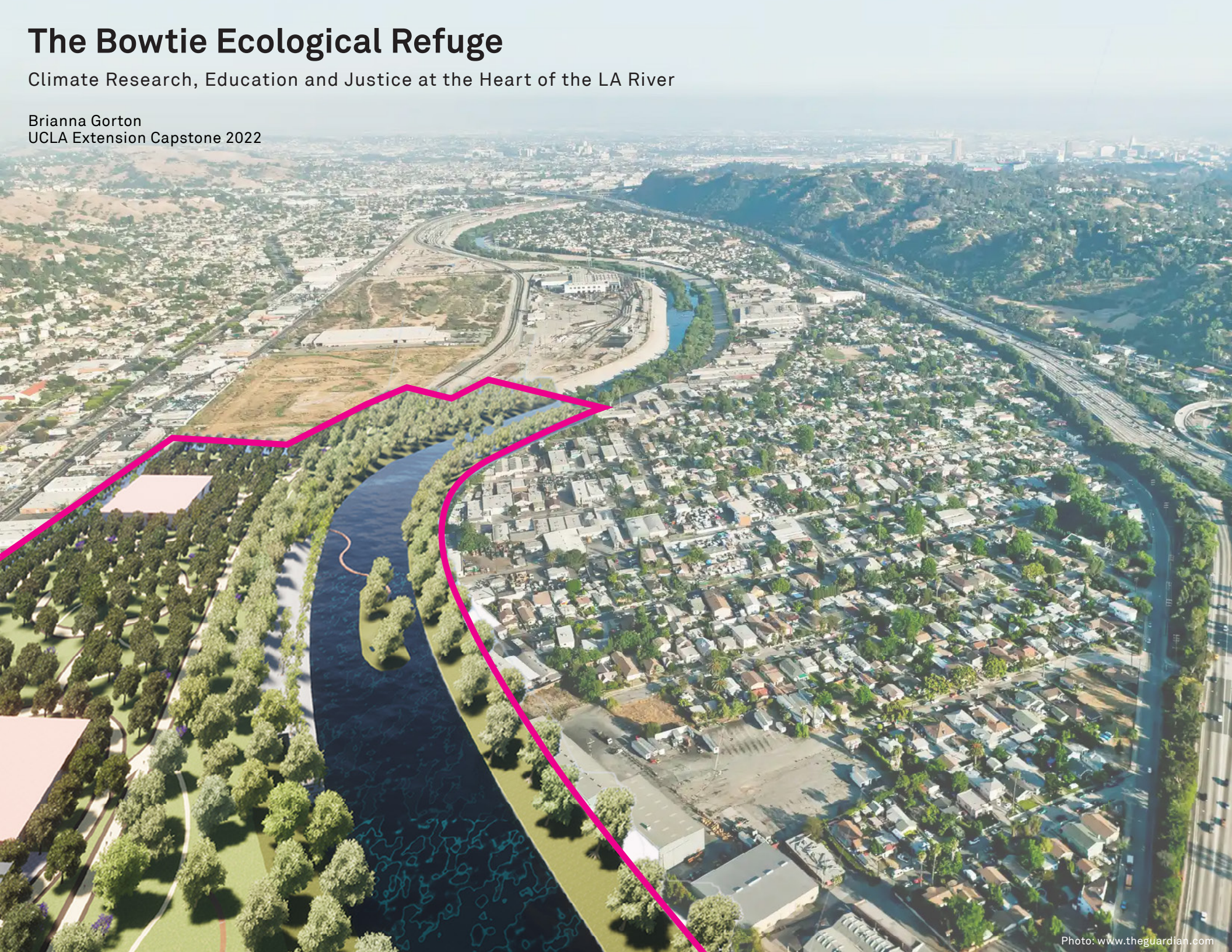
The Bowtie Ecological Refuge

Climate Research, Education and Justice at the Heart of the LA River

Brianna Gorton
UCLA Extension Capstone 2022



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Preface

I became interested in this parcel of land several years ago, because I live right by this stretch of the LA river. You can tell from just being there that there's something special about this area, because it still maintains characteristics of a natural river.

It is in fact a very important site that has received significant federal, state, and city interest and funding, because it has been identified as ARBOR "Area with Restoration Benefits and opportunities for Revitalization."

In order to fully realize its potential, my project proposes to expand upon the 18 acre Bowtie site, to an 80 acre master plan.

The Bowtie Ecological Refuge

This project will transform a toxic, post-industrial parcel of land into an ecological sanctuary. It proposes to re-route a section of the Union Pacific Rail Line, incorporate the Los Angeles Media Tech Center and provide access for the surrounding neighborhood. It is a habitat restoration, hydrology, green space equity and environmental education project in the age of climate change.

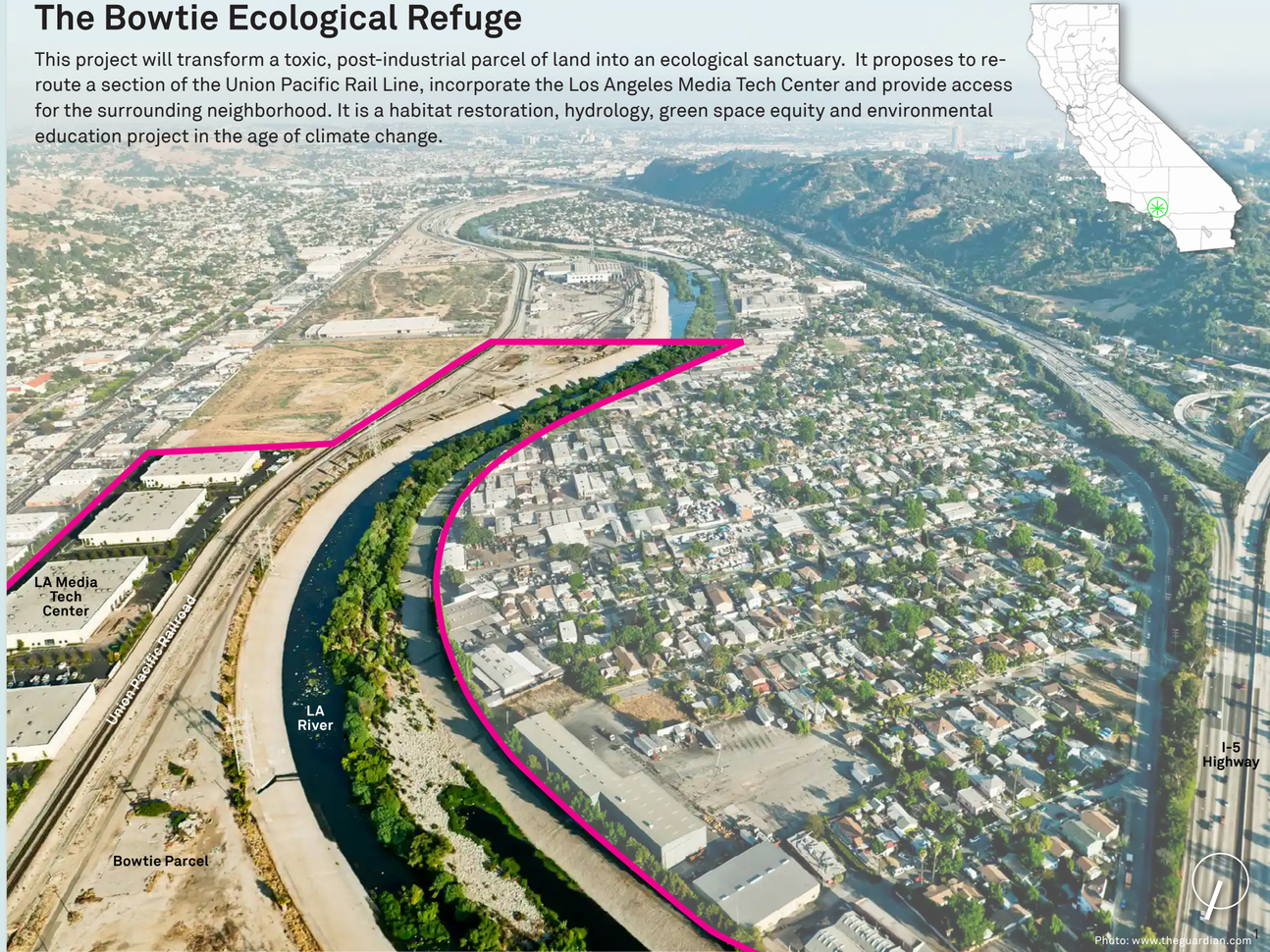
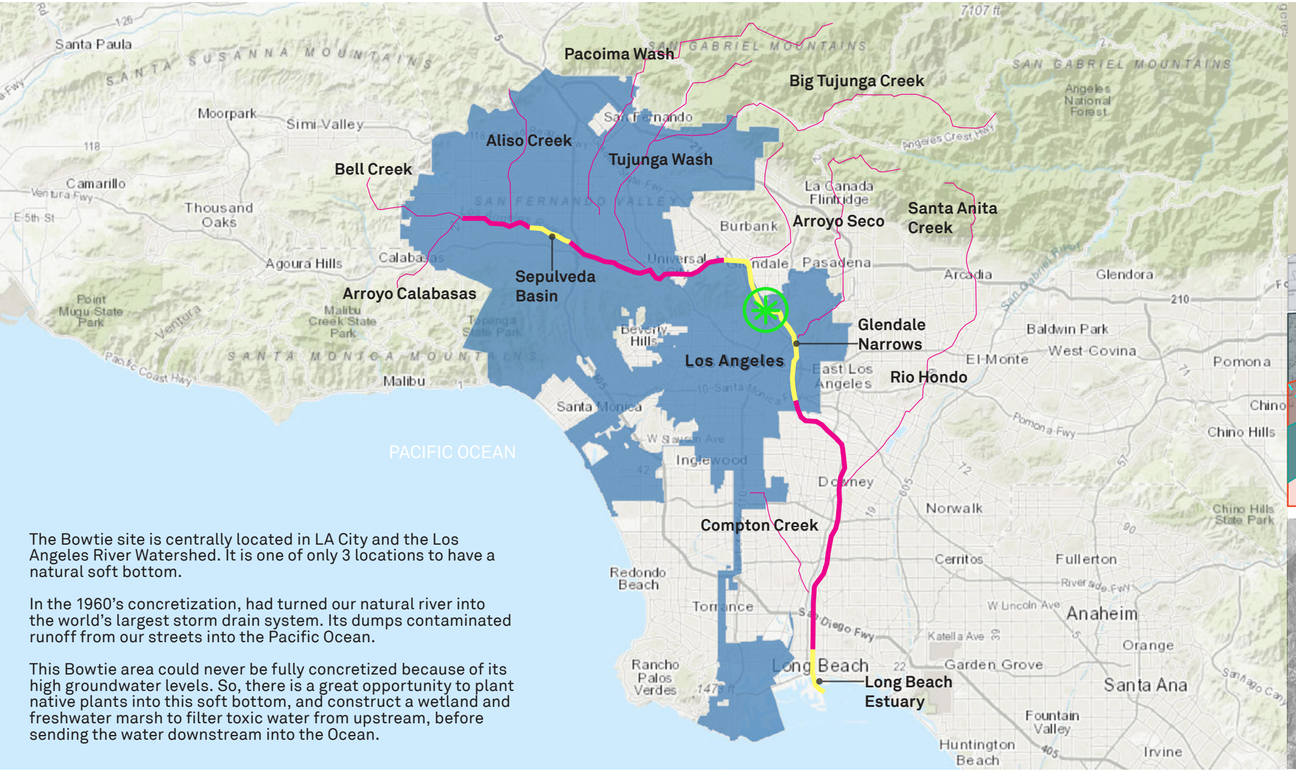


Photo: www.theguardian.com

Site Location

Los Angeles City & Los Angeles River Watershed



The Bowtie site is centrally located in LA City and the Los Angeles River Watershed. It is one of only 3 locations to have a natural soft bottom.

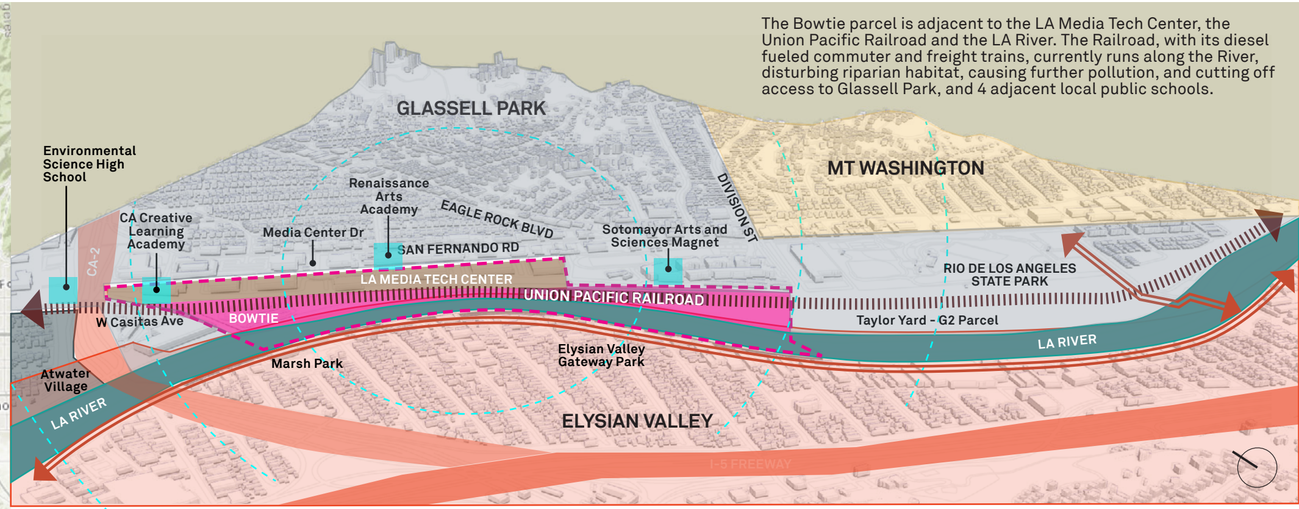
In the 1960's concretization, had turned our natural river into the world's largest storm drain system. Its dumps contaminated runoff from our streets into the Pacific Ocean.

This Bowtie area could never be fully concretized because of its high groundwater levels. So, there is a great opportunity to plant native plants into this soft bottom, and construct a wetland and freshwater marsh to filter toxic water from upstream, before sending the water downstream into the Ocean.

City of Los Angeles | Bowtie, G1 Parcel | LA River Watershed | Soft Bottom Locations | 10 Miles

Local Context

The Bowtie parcel is adjacent to the LA Media Tech Center, the Union Pacific Railroad and the LA River. The Railroad, with its diesel fueled commuter and freight trains, currently runs along the River, disturbing riparian habitat, causing further pollution, and cutting off access to Glassell Park, and 4 adjacent local public schools.



LEGEND

Scope of Work | LA River | Bowtie Parcel | I-5 Freeway | LA Media Tech Center | Union Pacific Railroad | Public School

Mt Washington | Glassell Park | CA-2 Freeway | Elysian Valley | Atwater Village | LA River Bike Path | 1/2 Mile Radius Each (10 Minute Walk)

Project Justification

HABITAT RESTORATION

• Global Hotspot for Biodiversity Loss, Deemed “Green Spine” of Los Angeles & Area with Restoration Benefits and Opportunities (ARBOR)

• 2021 Community Engagement - 80.1% Stakeholders #1 Priority: “Restoration and Enhancement of Natural Habitat”

• Habitat Connectivity to Existing Large Habitat Areas of Importance

HYDROLOGY

• CA Drought – 2022 January and February Driest on Record “Officials are Now Sounding the Alarm for a Third Year of Severe Drought, Shrinking Water Supplies and the Growing Threat of Extreme Wildfire.” (LA Times)

• Army Corps Outlined Prime Location for Constructed Wetland

• Remediate Water Quality at Central Watershed Location - Filter Pollutants from the North Before they Run Downstream and into the Pacific Ocean.

• Special ecological “soft bottom” River Floor - Opportunity for Infiltration and Recharge

NEIGHBORHOOD CONNECTIVITY VIA GREEN INFRASTRUCTURE

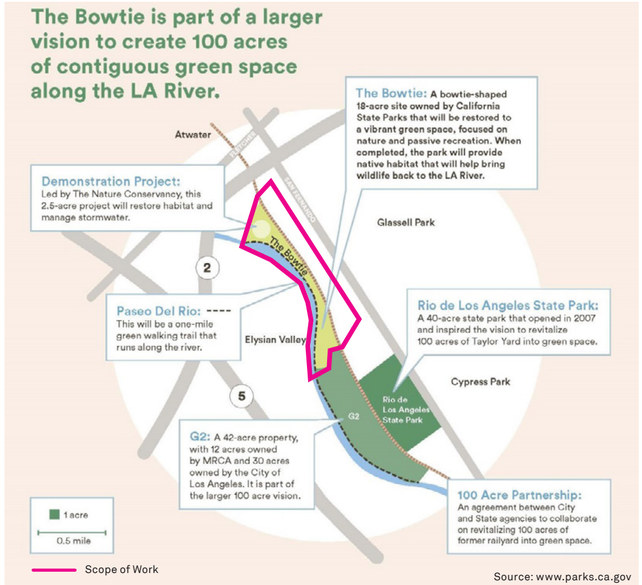
• Los Angeles County Parks and Recreation Needs Assessment - More than Half of Los Angeles County is Considered “Park Poor,” 82% of these Areas Located in Communities of Color

• Park Poor City - Los Angeles Ranking 71th out of 100 large US Cities

• Largest Portion of Community Engagement - 32.9% is from Glassell Park , 49.8% Latino/Latinx

• Including 18 Acre Bowtie Parcel as Green Space, Glassell Park rated Moderate Park Need Category.

• New Electric High Speed Rail Line Downtown LA to Burbank Relocated as Friends of the LA River Proposes.



ENVIRONMENTAL EDUCATION, RESEARCH & JUSTICE HUB

• Green Infrastructure “LA100 plan” for 100% Clean Energy by 2035

• Transportation Accounts for the Majority of Emissions in California - New High-speed Rail is Critical to California’s Sustainable Transportation Network and Achieving Net-Zero Emissions.

• Jane Goodall - Book of Hope - Scientist Calling our time the Sixth Great Extinction, Because We’ve Wiped out 60 percent of All Mammals, Birds, Fish, and Reptiles- 2019 United Nations Study Says A Million Species of Animals and Plants Could Become Extinct in the Next Few Decades as a Result of Human Activity. “We Often Need to Step in and Help in the Restoration.”

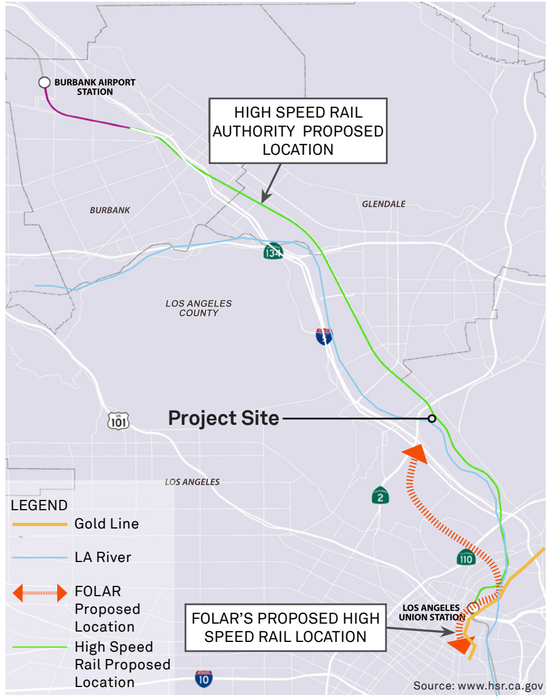
Sustainable & Resilient Infrastructure

2022 New Electric High Speed Rail from Downtown LA to Burbank Environmentally Cleared for Construction.

Source: www.hsrail.org

2022 02 DEC FOLAR TO HIGH SPEED RAIL: "BACK AWAY FROM THE RIVER"

Source: https://hsr.ca.gov



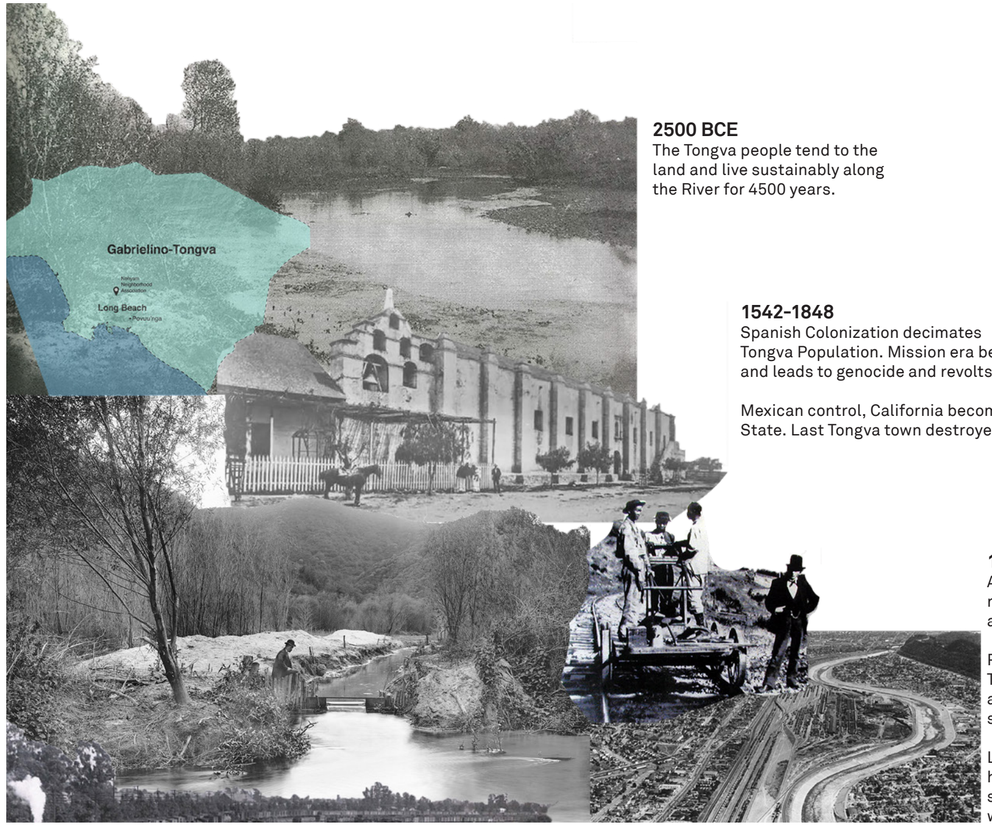
Source: www.hsr.ca.gov

This project sides with Friends of the LA River’s proposal to have 4.5 miles of the new electric High Speed Rail, environmentally cleared for construction from Union Station to Burbank Airport, back away from the river and instead be moved parallel the 5 freeway.

This is an opportunity to reroute this stretch of the existing Union Pacific rail, to run alongside the proposed High speed Rail, bringing profound ecological and community benefits.

Site History & Timeline

A History of Displacement of Native People, Flora and Fauna



2500 BCE
The Tongva people tend to the land and live sustainably along the River for 4500 years.

1542-1848
Spanish Colonization decimates Tongva Population. Mission era begins and leads to genocide and revolts.

Mexican control, California becomes a State. Last Tongva town destroyed.

1876- 1939
Agriculture and dairy farms, rolling hills of coast live oak and willow trees.

Pacific Railroad is Complete. The natural river is channelized and turned into the largest storm drain system is the world.

Land becomes toxic. The steal-head trout, now an endangered species, disappear from these waters.

A Contemporary History of the Bowtie

1999-2003
The California Floristic Province is declared one of the top 25 global hotspots of rapid biodiversity loss.

Federal interest to study the feasibility of solutions for ecosystem degradation on the LA River.

California State Parks buys the Bowtie with intent to restore habitat.

2006
Friends of the LA River (FOLAR) Donates $1 Million for Army Corps to conduct the *LA River Ecosystem Restoration Feasibility Report*.

2007
Army Corps hires Studio-MLA to present designs for transforming 32 miles of the concrete-lined channelized river into public green space.

2013
Army Corps identifies, “Area with Restoration Benefits and Opportunities for Revitalization,” river could be the “green spine” of the city and maintain flood risk management.

2019
Los Angeles City, California State Parks and Mountains Recreation & Conservation Authority (MRCA) form the “100-Acre Partnership,” to transform 11 miles from Griffith Park to downtown into contiguous green space.

2015
LA River Ecosystem Restoration Feasibility Report is released.

2022
FOLAR fight to have new electric high speed rail line, set to begin construction this year, relocated along the I-5 Freeway and “back away from the river.”

SALT/RADAR/Clockshop release conceptual design for Bowtie.

Design Research

Project Goals & Objectives

My project aims to restore California's native habitats, with a constructed wetland and viewing decks that protect the flora and fauna. Approximately 140 federally protected bird species, and over 20 species of mammals, are supported by the LA River. California has already lost over 90% of riparian habitats and 95% of our wetlands. So, it is vital that we play a role in restoring these habitats.

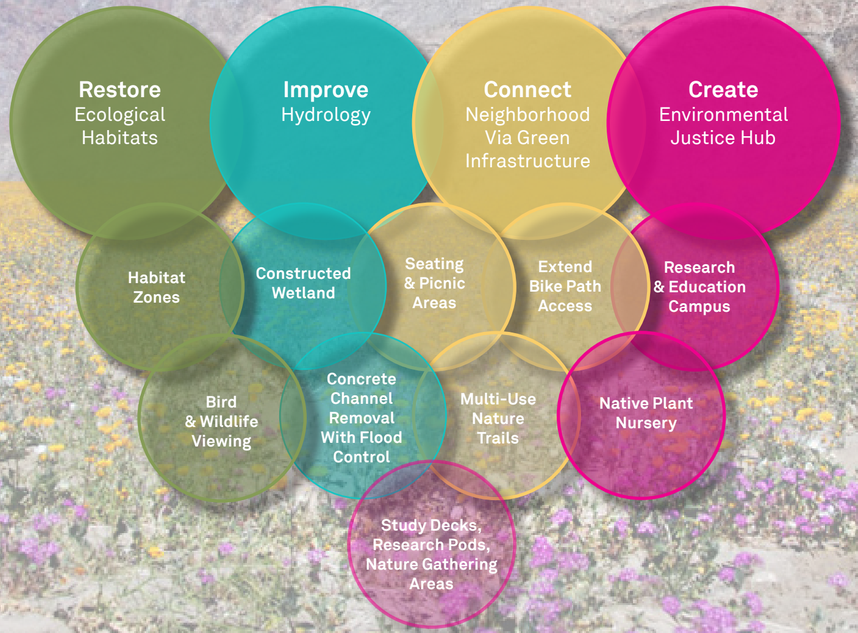


Photo: www.theodorepayne.com

Photo: www.theodorepayne.com

Project Goals

HABITAT VIEWING PATHS

Tel Dor National Park, www.landezine.com

MULTI-USE NATURE PATHS

The Third Train, www.landezine.com

WETLAND VIEWING DECKS

The Grand Voyeux Regional Nature Reserve, www.landezine.com

WETLAND VIEWING DECKS

Farsta Lakefront Boardwalk www.landezine.com

BIRD AND WILDLIFE OVERLOOKS

The Grand Voyeux Regional Nature Reserve, www.landezine.com

NATURE GATHERING AREAS

The Grand Voyeux Regional Nature Reserveww.landezine.com

VIEWING DECKS

Tianjin QiaoyuanReserve www.landezine.com

RESEARCH PODS

The Grand Voyeux Regional Nature Reserveww.landezine.com

Project Stakeholders & Users

A Neighborhood Park for Glassell Park

Community Outreach

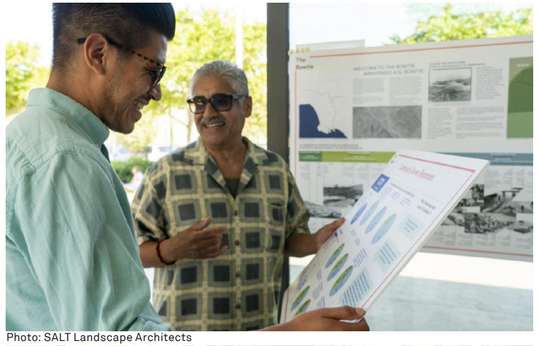


Photo: SALT Landscape Architects

Photo: Brianna Gorton

Throughout 2021 State Parks and the Bowtie design team held community outreach meetings. The majority of responses came from Glassell Park Residents, and they named their top 3 priorities: “Restoration and enhancement of natural habitat” “Opportunities to view birds and wildlife, and “Accessible Trails and Paths”

A majority of LA is considered “park poor,” disproportionately in communities of color, such as Glassell Park. Even w the Bowtie parcel included as a green space, it’s in the Moderate Park Need category.

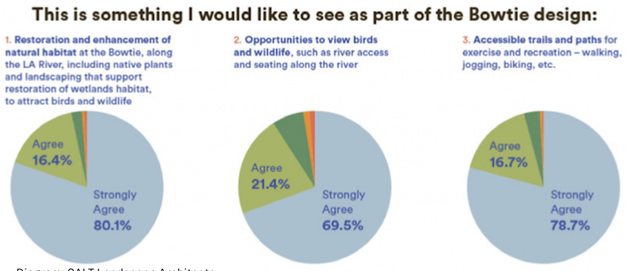
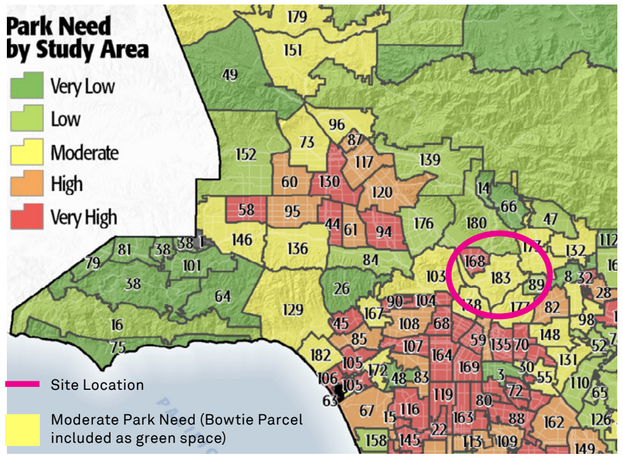


Diagram: SALT Landscape Architects

Green Space Equity



Source: LA County Comprehensive Park and Rec Needs Assessment

Green Jobs & Training

workforce development

Source: 11th St Bridge Park’s Equitable Development Plan.

Habitat Restoration

“THE EARTH IS OUR CLIENT”

- The New Landscape Declaration: A Call to Action for the 21st Century, Grant Jones

My project looks to contemporary landscape architecture, investment without displacement reports, which recommend that high percentages of internships, training and green jobs, in construction and long-term management, go directly to the local community.

I am also proposing an educational center and opportunities to engage directly with local public schools to empower their students.

Public Schools

Sotomayor Arts and Sciences Agriscience Program, Grades 6-12:

Source Info and Photos: Sotomayor School

Non Profit Organizations

FRIENDS OF THE LA RIVER

Project Precedent 1

30 Acre Urban Orchard, South Gate Los Angeles, 2022

Owner
Trust for Public Land
Designer
Studio MLA

Take Aways:
• Constructed wetland cleans water from the LA River to irrigate a 30 acre orchard.
• **"Investment Without Displacement"** plan for ideas regarding local food production jobs, hydrology career training, and education programs for students.

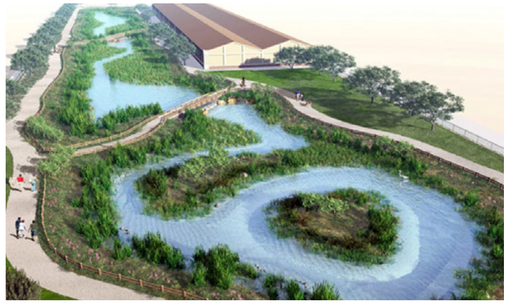
 Diagrams: www.tpl.org

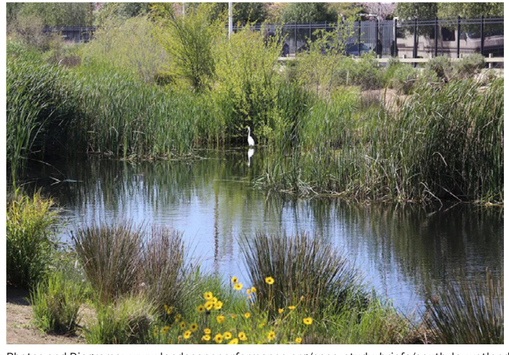
Project Precedent 2

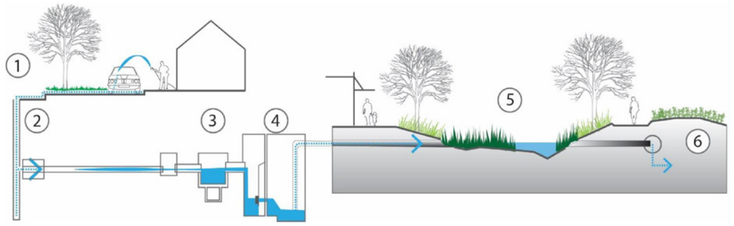
South LA Wetlands, Los Angeles, 2011

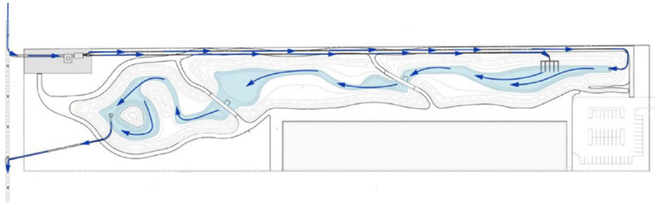
Designer
Psomas, Studio-MLA

Take Aways:
•One Water LA 2040 Plan. Prop O Funding.
• Treats 14,000 gallons of stormwater runoff per day
• Removes an estimated 100% of oil and grease, 75% of bacteria, 96% of total suspended solids, 41% of nitrate, and 34% of phosphorous
• Generates 8,081 kWh of energy annually
• Sequesters 1.82 tons of atmospheric carbon annually in trees
• Runoff from LA streets flows underground into a filtering facility and circulates in the park's pools, stripping oil and dirt.

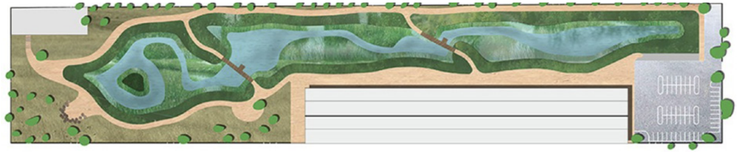








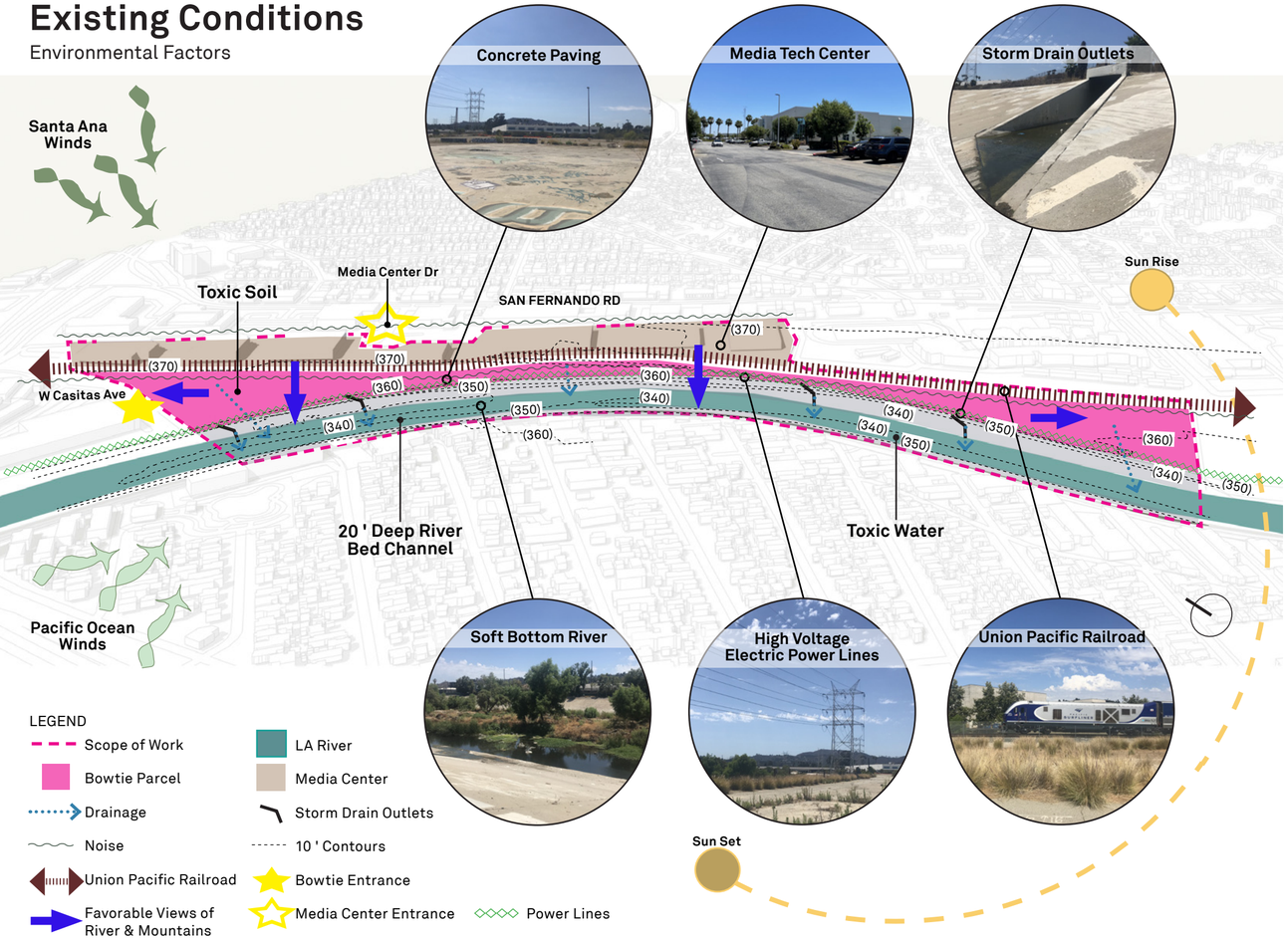
1. Water from the 525-acre watershed enters the underground stormwater system.
2. A diverter intercepts stormwater.
3. The water goes through a separator, which removes oil, grease, and trash.
4. A trash screen removes any remaining litter from the water.
5. Excess water is released back into the stormwater system after cleaning.



Photos and Diagrams: www.landscapeperformance.org/case-study-briefs/south-la-wetland-park

Existing Conditions

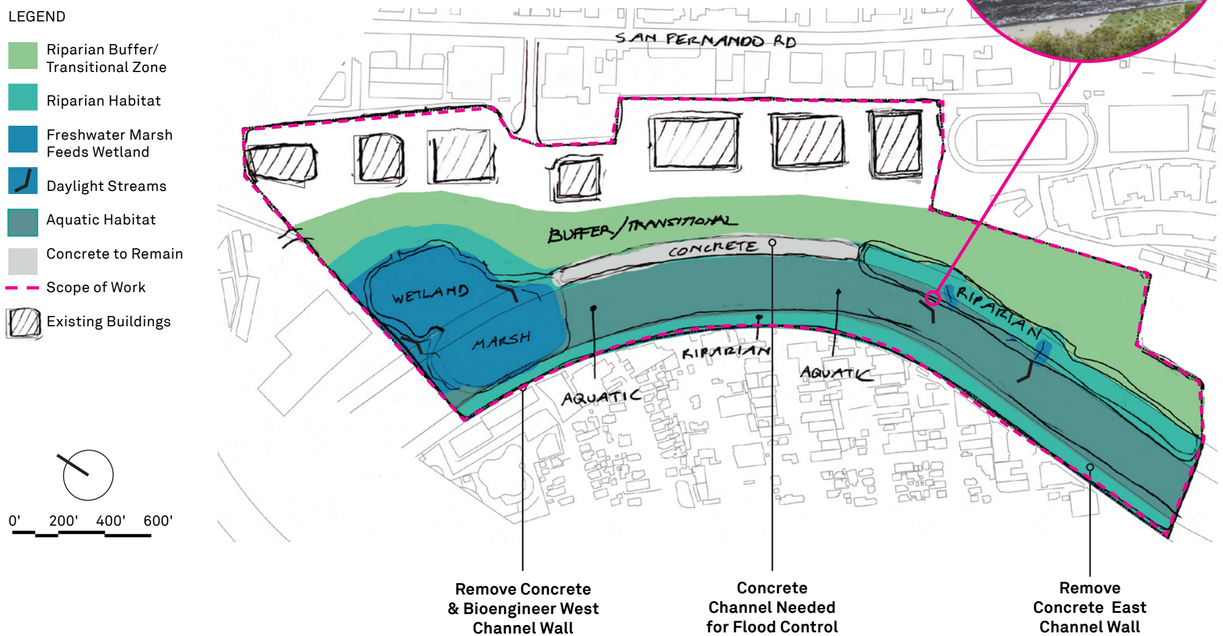
Environmental Factors



Methodology & Site Research Analysis

Los Angeles River Ecosystem Restoration Feasibility Report, 2015
Army Corps of Engineers (ACOE) & LA County Riparian Habitat Restoration & Concrete Removal Recommendations

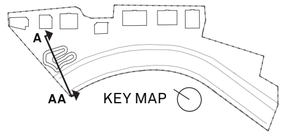
My project proposes to use the Army Corps' recommendations to determine what Ian McHarg refers to as "fitness," for the appropriate placement of ecological zones, a constructed wetland, and where storm drains can be converted to daylit streams.

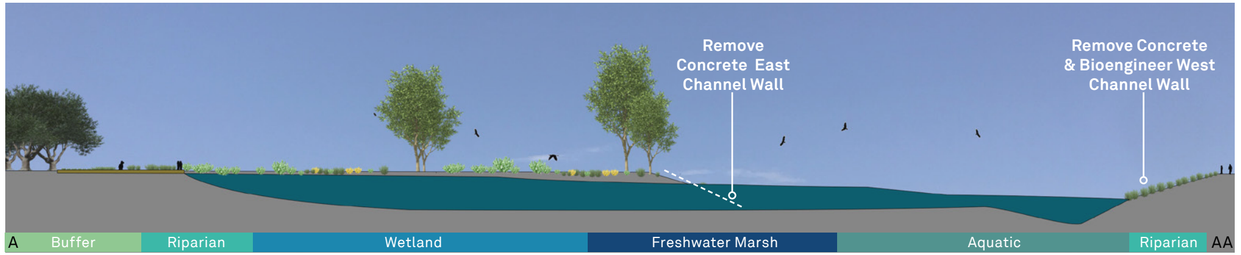


Methodology & Site Research Analysis

Los Angeles River Ecosystem Restoration Feasibility Report (ACOE, 2015)
Riparian Habitat Restoration Native Plant Recommendations

The report recommends concrete channel removal and specific native plant species, specific to my site, that I have used for buffer/transitional, riparian, and wetland plant zones.





Buffer / Transitional


Artemisia californica, California sagebrush


Eriogonum fasciculatum, California buckwheat


Eschscholzia californica,California poppy


Helianthus annuus, Sunflower


Lotus scoparius, Deerweed


Malacothamnus fasciculatus, chaparral mallow


Malosma laurina, laurel sumac


Rhus integrifolia, lemonade berry


Salvia apiana, white sage

Riparian


Ambrosia psilostachya, western ragweed


Artemisia douglasiana, Mugwort


Baccharis salicifolia, Mulefat


Mimulus cardinalus, Scarlet monkeyflower


Platanus racemosa, western sycamore


Populus fremontii, Fremont's cottonwood


Salix laevigata, red willow


Salix lasiolepis Arroyo willow


Leymus condensatus, giant wild rye

Wetland


Carex praegracilis, Clustered Field Sedge

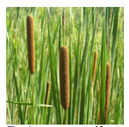

Cyperus odoratus, Fragrant Flat Sedge


Eleocharis parishii, Parish's spikerush


Juncus effusus, Common rush


Mimulus cardinalus, Scarlet monkeyflower


Schoenoplectus californicus, California bulrush


Typhana agustifolia, Narrow leaved cattail

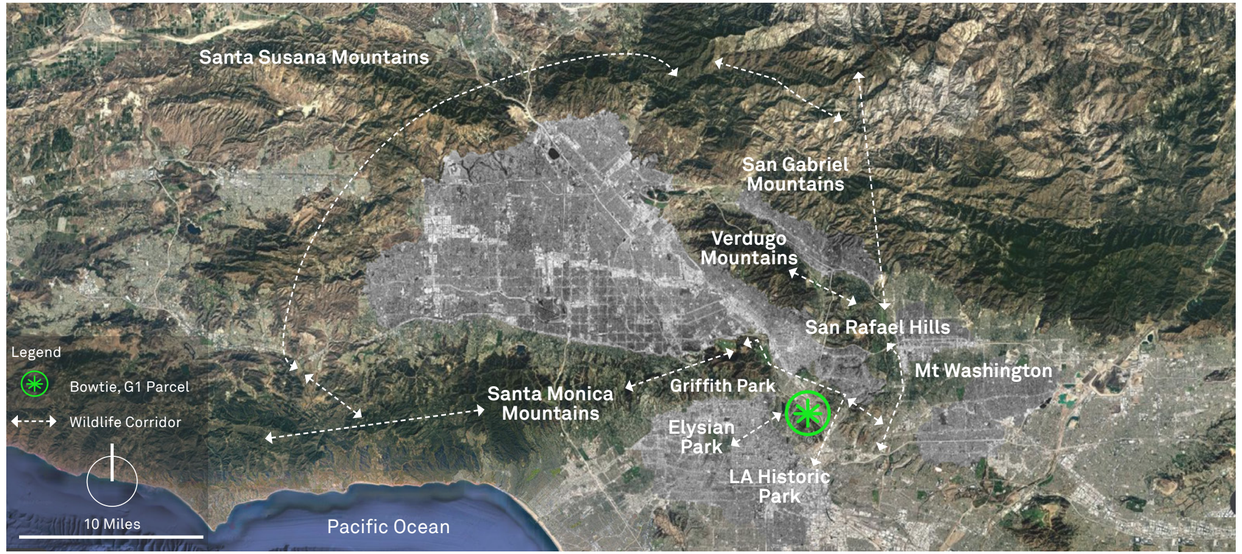

Typhana latifolia, Common cattail

 Photos: calscape.com

Methodology & Site Research Analysis

Los Angeles River Ecosystem Restoration Feasibility Report (ACOE, 2015)
Wildlife Corridor Connectivity to Nearby Existing Large Habitat Areas

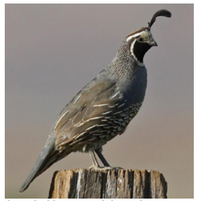
The report points out that “river channels in arid regions... are essential to species survival, providing food, shelter, water, breeding habitats, as well as movement corridors.”




Keystone Species:
Coyote, *Canis latrans*


Grassland Species:
Shrike, *Lanius ludovicianus*


Oak Woodland Species: Acorn Woodpecker, *Melanerpes formicivorus*


Scrub Chaparral Species:
California Quail, *Callipepla californica*


Willow Riparian Species:
Lorquin's Admiral, *Limenitis lorquini*

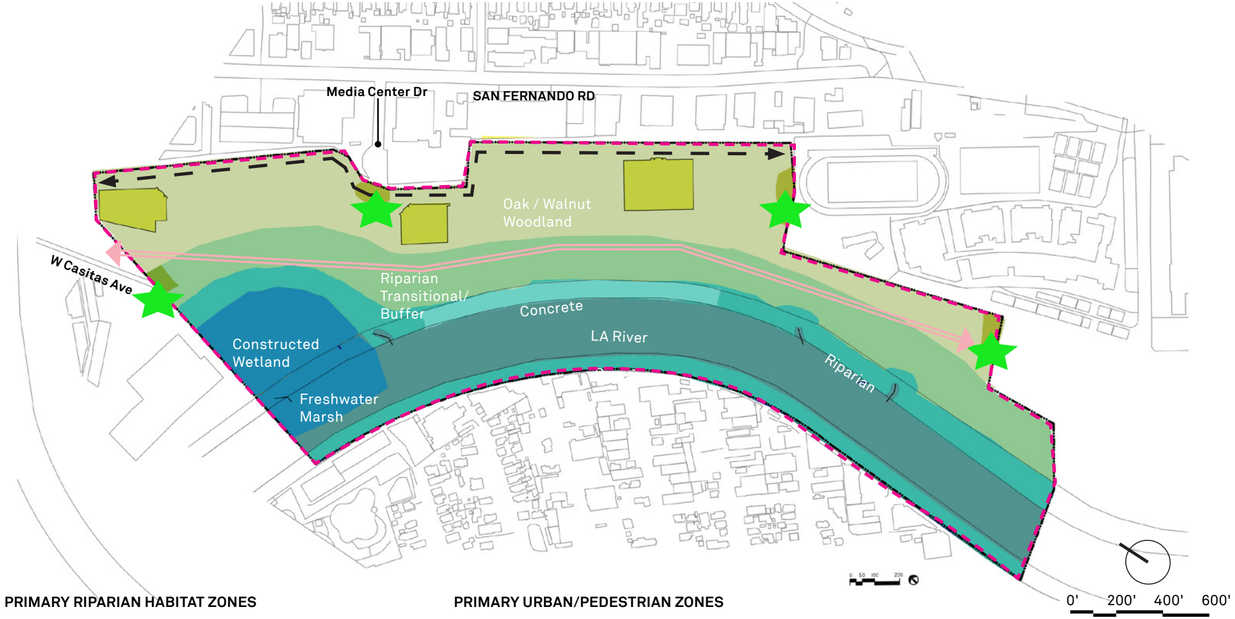

Riparian Species:
California Red-legged Frog, *Rana draytonii*

Photos: www.inaturalist.com

Habitat Restoration & Pedestrian Access Opportunities

Primary Habitat Restoration and Urban/Pedestrian Zones

I have analyzed the Primary Habitat Restoration & Urban/ Pedestrian Suitability Zones, based on protecting habitat.



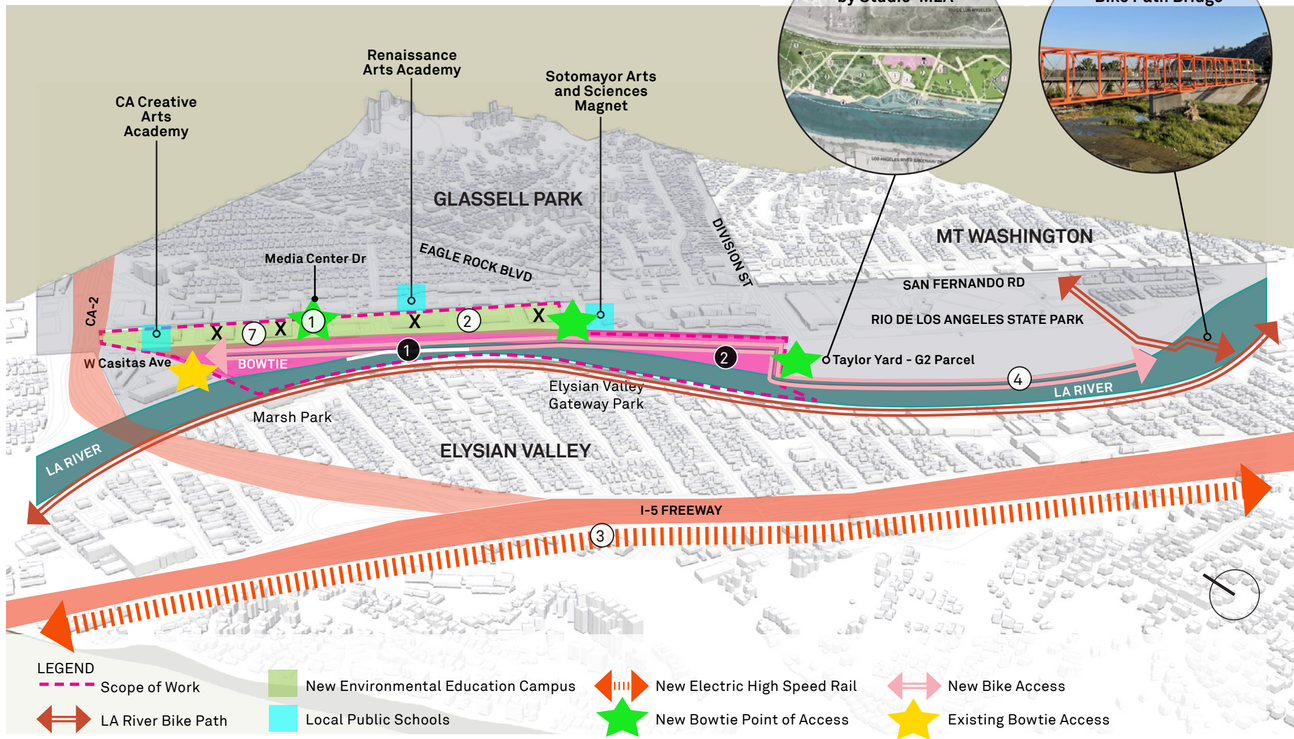
PRIMARY RIPARIAN HABITAT ZONES

- primary restoration zone
- secondary restoration zone
- tertiary restoration zone
- quaternary restoration zone
- quinary restoration zone

PRIMARY URBAN/PEDESTRIAN ZONES

- primary urban & pedestrian suitablility zone
- primary urban & pedestrian access
- primary vehicular access
- primary bike access

Site Opportunities & Constraints



OPPORTUNITIES

1. Add 3 New Access Points to Bowtie
2. Transform Media Tech Center into Environmental Education Campus
3. New Electric High Speed Rail Location
4. Extend Bike Access
5. Add 3 New Access Points
7. Demo 4 Media Center Buildings

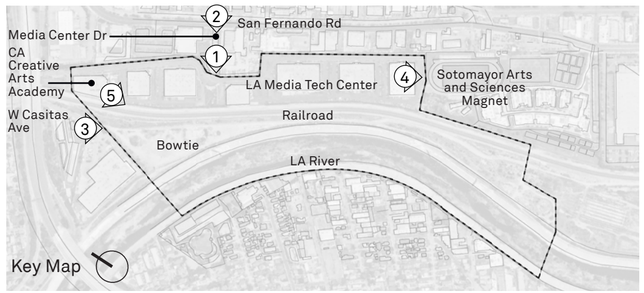
CONSTRAINTS

1. Concrete to Remain for Flood Control
2. Toxic Soil

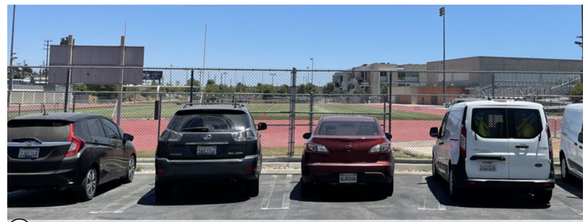
Points of Entry Opportunities

1 Main Entrance from Media Center Dr

2 Media Center Dr from San Fernando Rd



3 Entrance to Bowtie from W Casitas Ave



4 Sotomayor Arts and Science Magnet

5 CA Creative Arts Academy to Railroad and the Bowtie

Design

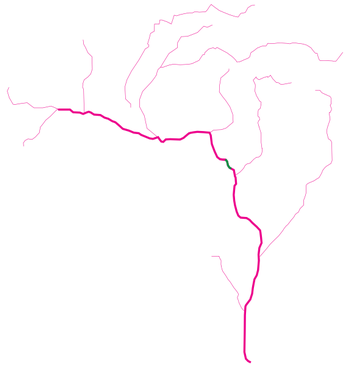
Photo: www.theodorepayne.com

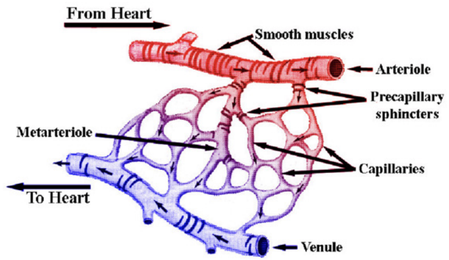
Design Metaphor

Capillary Network of Connectivity

For my design metaphor, I am looking to natural systems of use and reuse: the LA River Watershed as a circulatory system, and Bowtie as the heart.

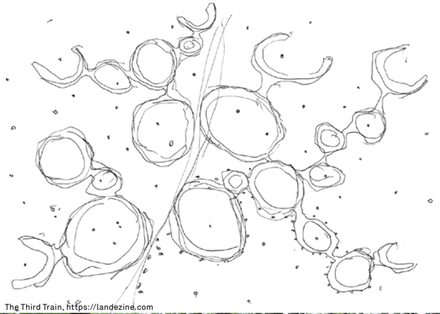
The network can define paths, decking, to-pography and ecological zones.





Inspiration Images

Capillary Network of Connectivity


The Third Train, https://landezine.com


River Forest Island, https://landezine.com


Tianjin Qiaoyuan, https://landezine.com


The Third Train, https://landezine.com


The Third Train, https://landezine.com


WALA Open Air Facilities, https://landezine.com

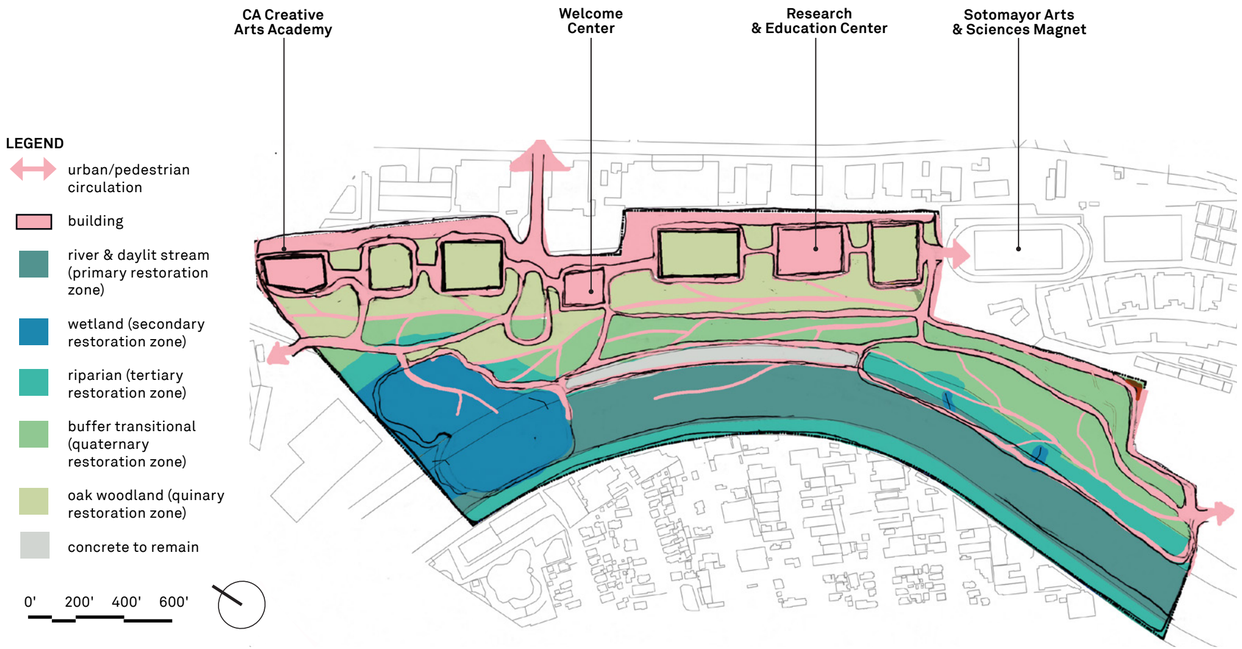

Photos and Diagrams https://landezine.com


Tel Dor National Park, https://landezine.com

Capillary Network of Connectivity

According to Primary Habitat and Urban/Pedestrian Zones

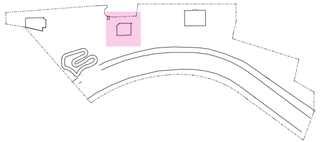
The capillary network provides the least amount of pedestrian access, in the primary habitat zones, and the most, in the primary urban zones.



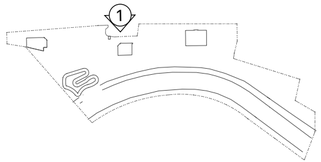
Proposed Topography

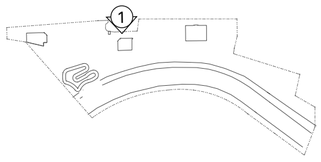
Master Plan

Welcome Center Enlargement

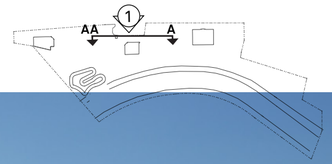


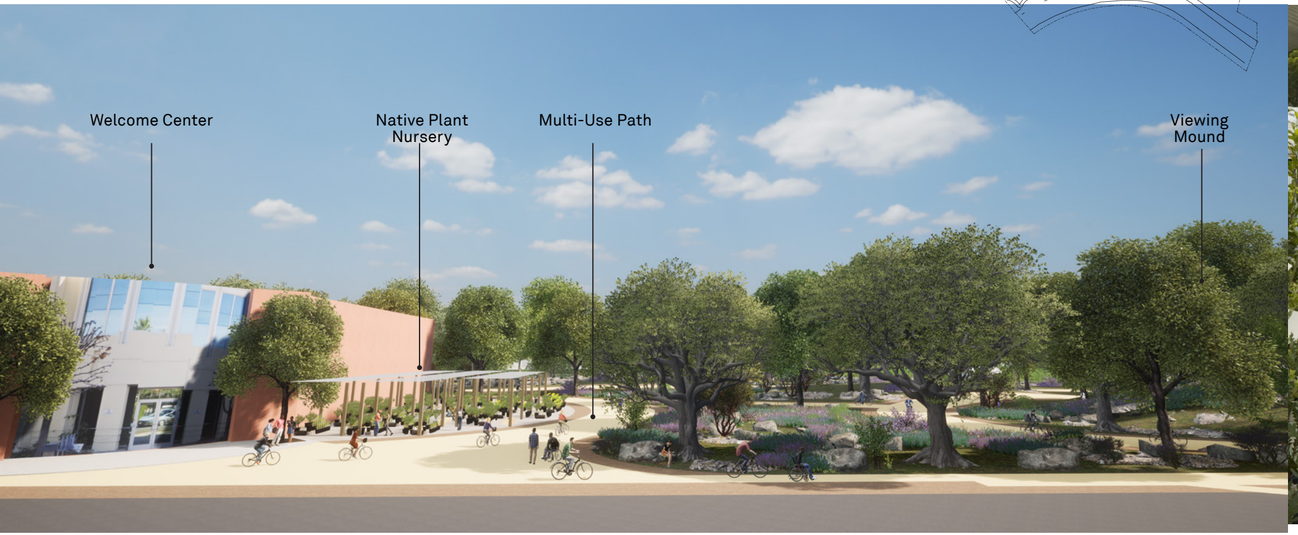
Welcome Center & Main Entrance

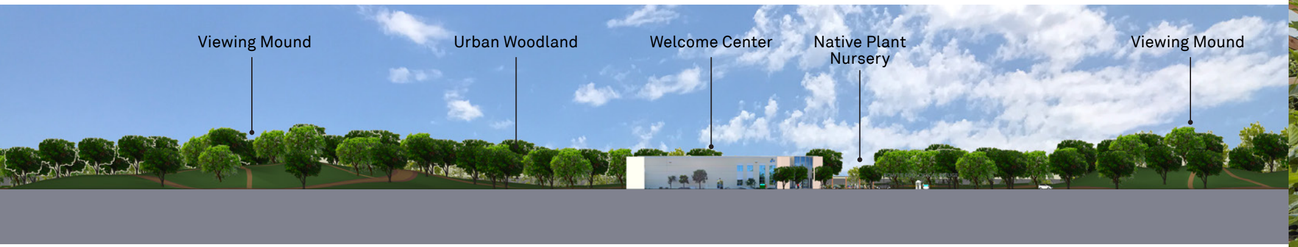




Welcome Center & Native Plant Nursery







A AA

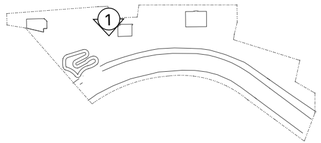
0' 100'

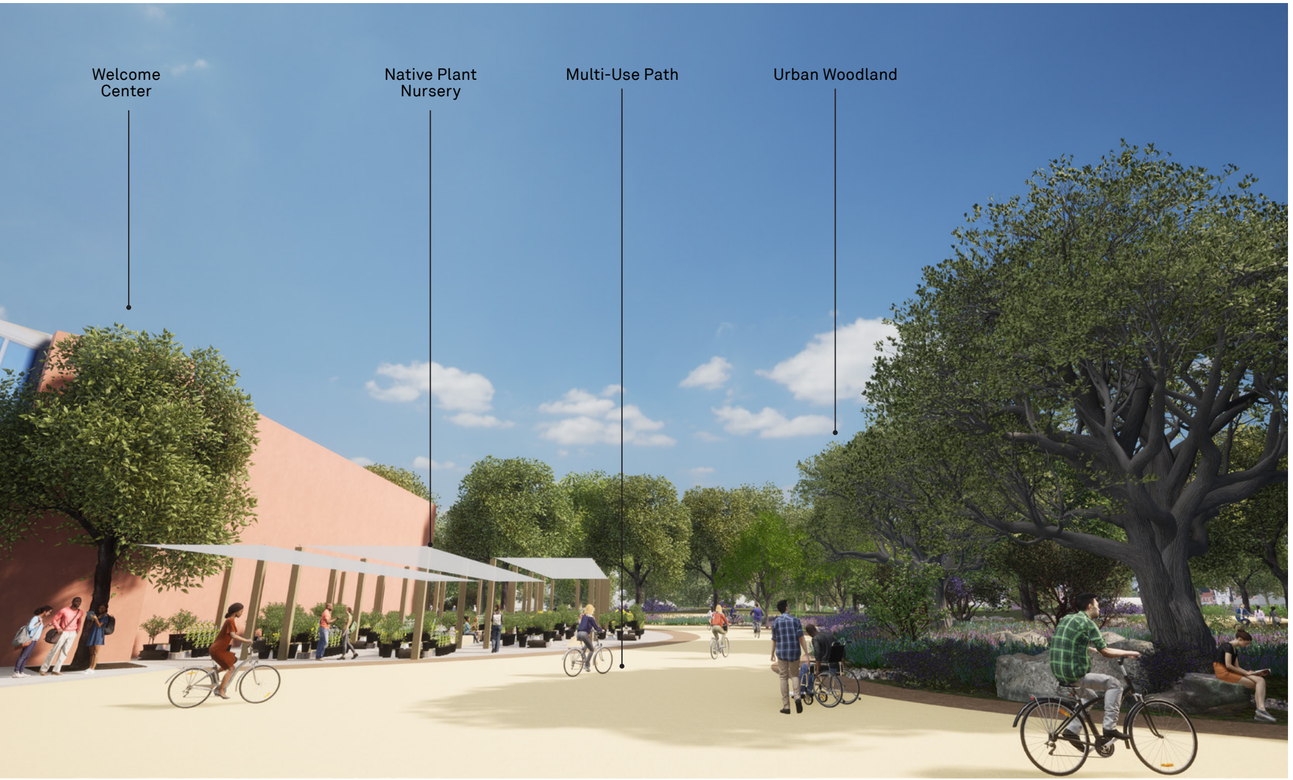
Inspiration Images

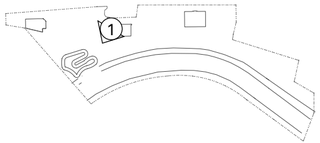
Terremoto's Native Plant Nursery, Plant Material

Photos: terremoto.la/project/plant-material

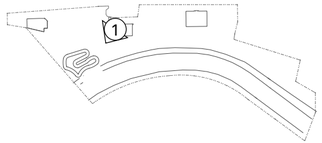
Native Plant Nursery







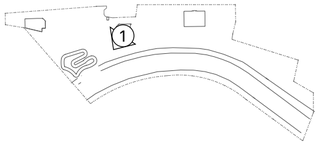
Multi-Use, Nature Paths & Seating Areas



Multi-Use & Pedestrian Paths

Viewing Mound

Nature Gathering Area

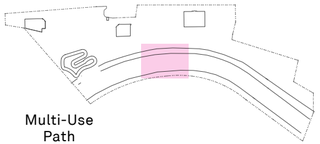


River Steps Inspiration Images

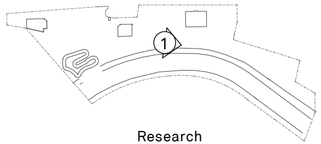
Chicago Riverwalk Steps

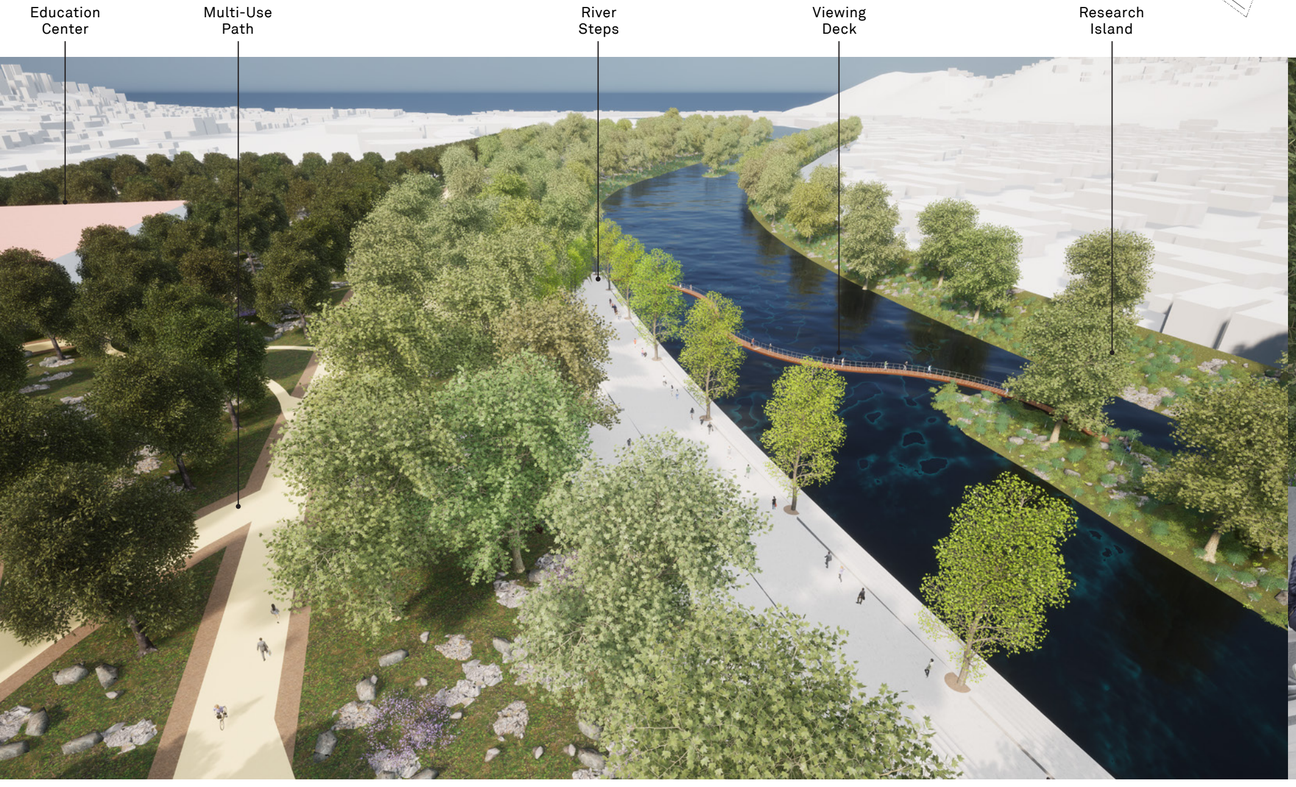
Photos: www.sasaki.com/projects/chicago-riverwalk/

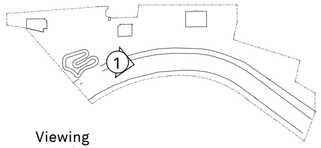
River Steps & Research Island Overview



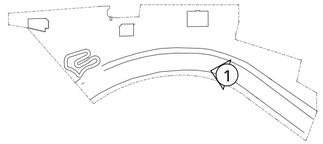
River Steps & Research Island

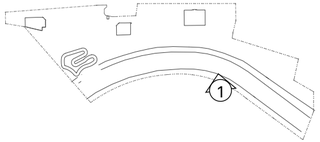




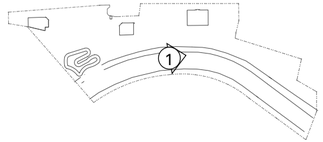


River Steps & Research Island





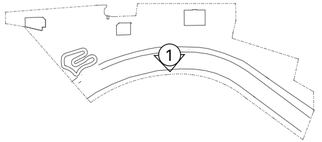
Research Island



Research Island

Viewing Deck

Bioengineered Channel Wall

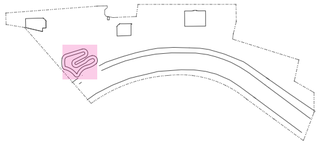


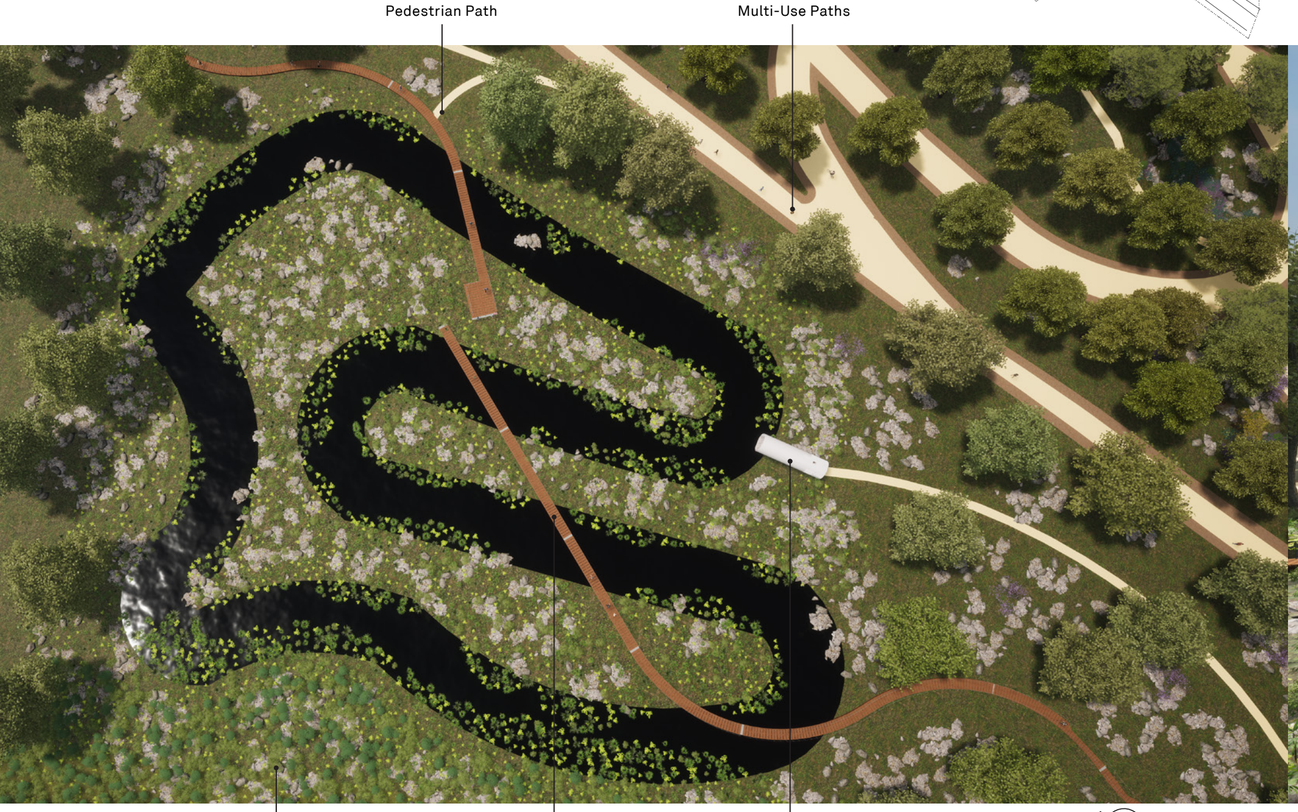
Research Island

Bioengineered Channel Wall

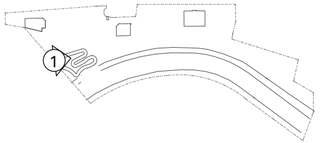
Wetland Enlargement

Continuing the collaboration with The Nature Conservancy & Blue Green Consulting's wetland design for this site, the wetland will be constructed to filter urban runoff and la river water.

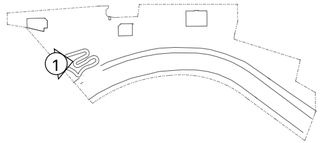


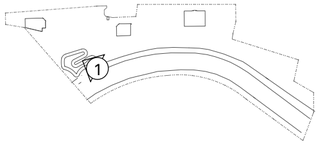


Wetland Viewing Deck & Reseach Pod



Wetland Research Pod & Viewing Deck





Viewing Decks

Research Pod

Research Pod Interior

Conclusion

This research and design process has been so inspiring because of the rich background of the site, and all that has been unfolding and, is continuing to unfold, in real time. For example, the Inflation Reduction Act is now providing funding for updating our transportation infrastructure, including electric high speed rails, hydrology, greenhouse gas reduction, and ecosystem restoration projects like the Bowtie Ecological Refuge.

The capillary network of connectivity Restores habitat, Improves hydrology, Connects the neighborhood via green infrastructure, and Creates an environmental, research, education and justice hub. In permaculture, we say, “The problem is the solution.” Climate change is an emergency, and, plants clean our water, trees sequester carbon, native habitats bring back our pollinators, birds, fish, reptiles and mammals. This project provides solutions for how we can green our city. I continue to be inspired, imagining, The Bowtie Ecological Refuge as the heart of LA city and it’s watershed.

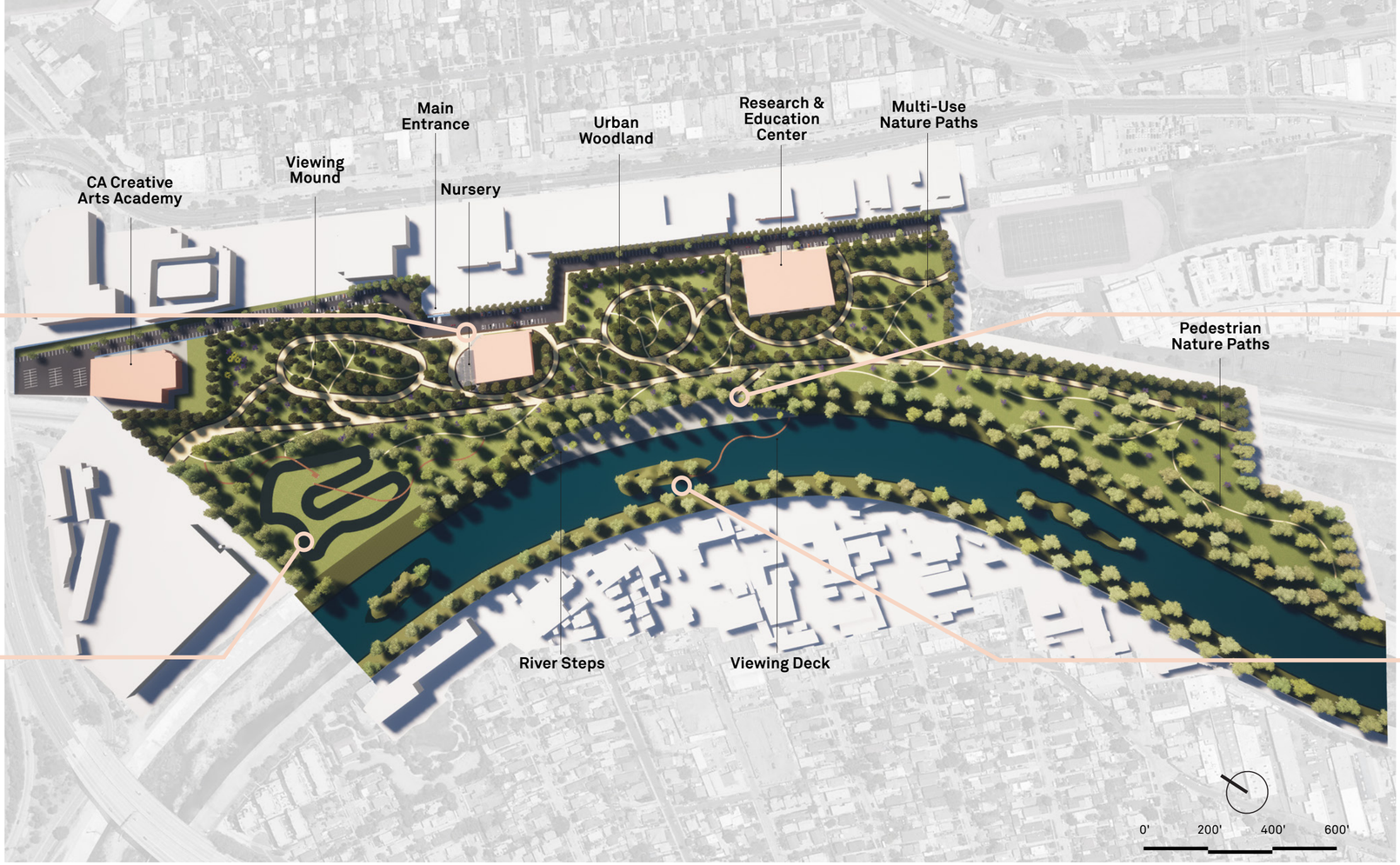
Photo: www.theodorepayne.com

Master Plan

This project will transform a toxic, post-industrial parcel of land into an ecological sanctuary. It proposes to expand upon the Bowtie site by rerouting a section of the Union Pacific Rail Line, incorporating the Los Angeles Media Tech Center and providing access for the surrounding neighborhood. It is a habitat restoration, hydrology, green space equity project in the age of climate change.

Welcome Center

Wetland



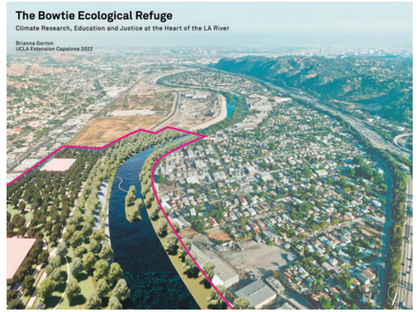
River Steps

Research Island

The Bowtie Ecological Refuge

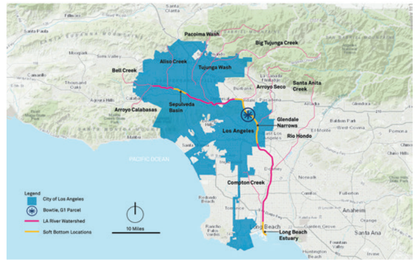
Climate Research, Education and Justice at the Heart of the LA River

Brianna Gorton
UCLA Extension Capstone 2022

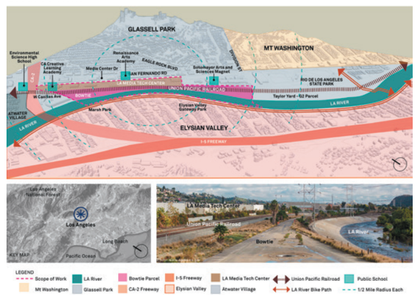


Site Location

Los Angeles City & Los Angeles River Watershed

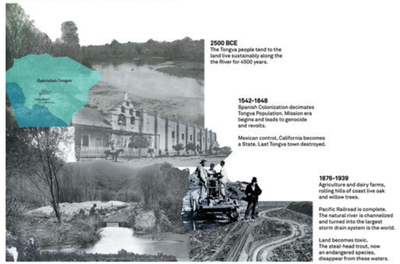


Local Context



Site History & Timeline

A History of Displacement of Native People, Flora and Fauna



2500 BCE
The Tongva people tend to the land live sustainably along the the River for 4200 years.

1542-1848
Spanish Colonization decimates Tongva Population. Mission era begins and leads to genocide and revolts.

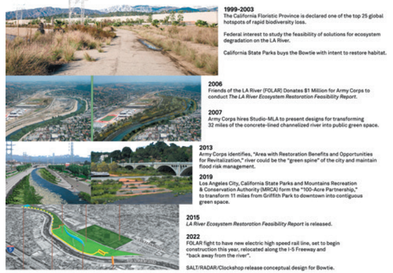
Mexican control, California becomes a State. Last Tongva town destroyed.

1876-1939
Agriculture and dairy farms, raising hills of coast live oak and willow trees.

Pacific Railroad is complete. The natural river is channelized and turned into the largest storm drain system in the world.

Land becomes toxic. The west-head trout, now an endangered species, disappear from these waters.

A Contemporary History of the Bowtie



1999-2003
The California Floristic Province is declared one of the top 25 global hotspots of rapid biodiversity loss.

Federal interest to study the feasibility of solutions for ecosystem degradation on the LA River.

California State Parks buys the Bowtie with intent to restore habitat.

2006
Friends of the LA River (FOLAR) Donates $1 Million for Army Corps to conduct The *LA River Ecosystem Restoration Feasibility Report.*

2007
Army Corps hires Studio-MLA to present designs for transforming 32 miles of the concrete-lined channelized river into public green space.

2013
Army Corps identifies, "Area with Restoration Benefits and Opportunities for Revitalization," river could be the "green spine" of the city and maintain flood risk management.

2019
Los Angeles City, California State Parks and Mountains Recreation & Conservation Authority (MRCA) form the "100-Acre Partnership," to transform 11 miles from Griffith Park to downtown into contiguous green space.

2015
LA River Ecosystem Restoration Feasibility Report is released.

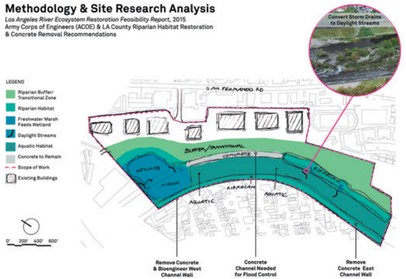
2022
FYI, All fight to have new electric high speed rail line, set to begin construction this year, relocated along the I-5 Freeway and "back away from the river".

SALT/RADAR/Clockshop release conceptual design for Bowtie.

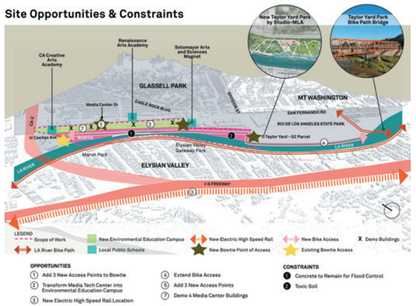
Project Goals & Objectives

Methodology & Site Research Analysis

Los Angeles River Ecosystem Restoration Feasibility Report, 2015
Army Corps of Engineers (ACOE) & LA County Riparian Habitat Restoration & Concrete Removal Recommendations



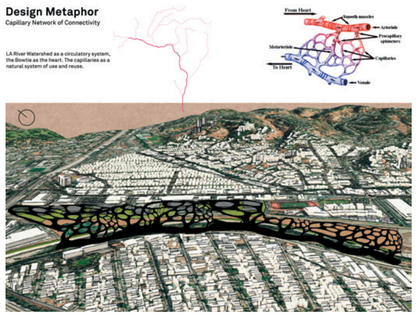
Site Opportunities & Constraints



Design Metaphor

Capillary Network of Connectivity

LA River Watershed as a circulatory system, the Bowtie as the heart. The capillaries as a natural system of use and reuse.



Welcome Center & Native Plant Nursery

Wetland

Nature Trails & Multi-Use Paths

River Steps & Research Island

References

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