

# Safe, Clean Water Program

Fiscal Year 2021-2022

## WASC Review Sheet



<b>Project Name</b>	
<b>Project Lead</b>	
<b>Total SCW Funding Requested</b>	
<b>Phases for which SCW Funding is being requested</b>	

Question	Yes/No	Notes
Does this project assist in achieving compliance with MS4 permit? If Yes, explain how.		
Does the project provide DAC benefits (refer to the ordinance for definition)? If Yes, explain how.		
Does the project provide benefits to the municipality? If Yes, explain how.		
Does the project prioritize nature-based solutions? If Yes, explain how.		
Does this meet the goals of the program stated in the ordinance (refer to Section 18.04)		
Does the project/scientific study have a nexus to stormwater and urban runoff capture and pollution reduction? If yes, explain how.		

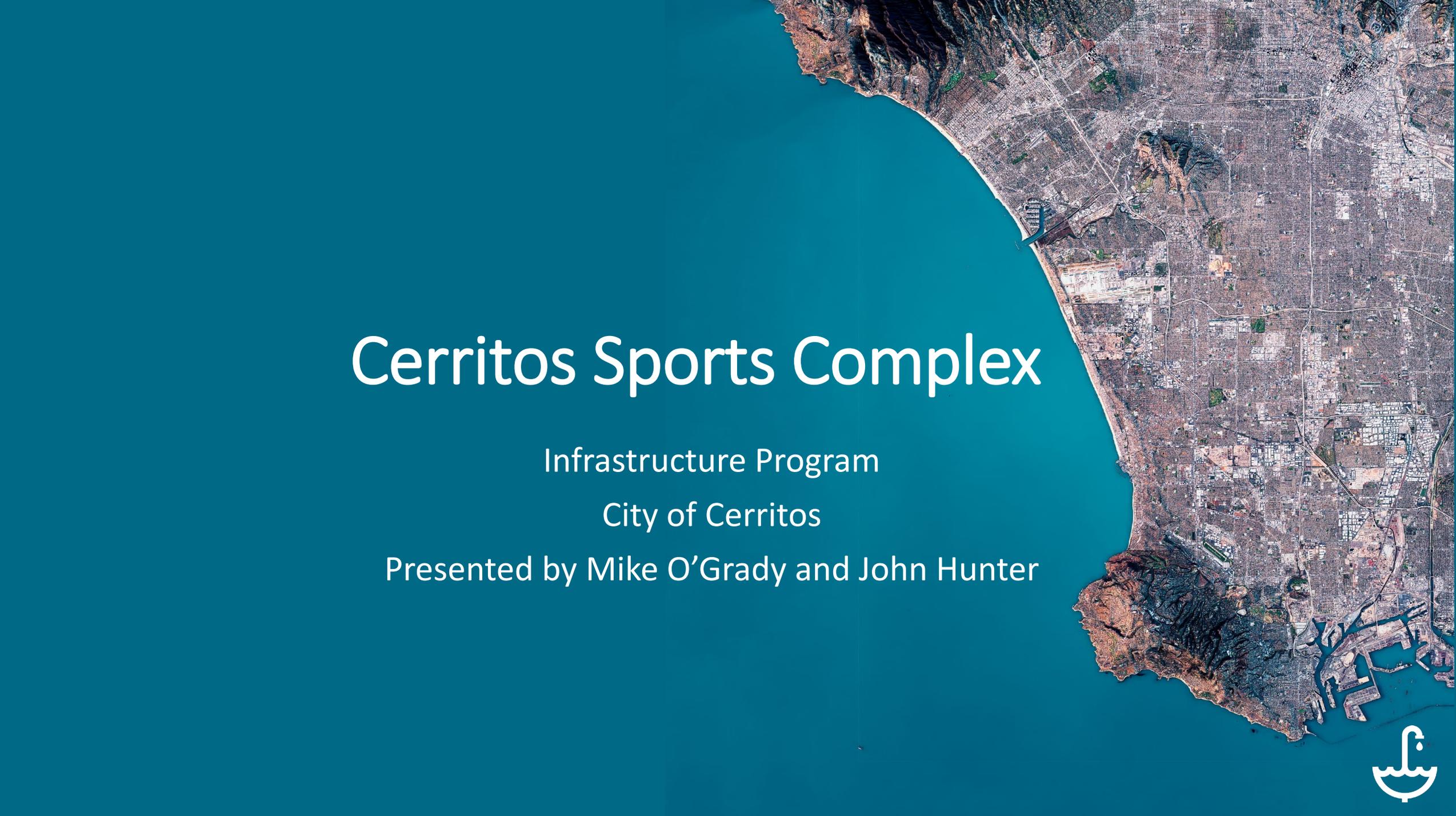
# Safe, Clean Water Program

Fiscal Year 2021-2022

## WASC Review Sheet



Question	Yes/No	Notes
What is the plan for community engagement and what efforts have been made to date?		
What is the anticipated CEQA and permitting needs and how is this incorporated in the cost and schedule?		
Why is this the best location for this type of project?		
Were other alternatives considered? Why is this the best solution?		
How was the Project developed? (ie IRWMP/EWMP process, community engagement, etc...)		
If awarded partial funding by the WASCs, could the project fulfill their stated scope and benefits? If not funded, would the WASC lose the opportunity to fund this project at future rounds?		
General Notes (and follow up questions regarding any topic in the feasibility study/project submittal)		
Public Comments		



# Cerritos Sports Complex

Infrastructure Program

City of Cerritos

Presented by Mike O'Grady and John Hunter



# Project Overview

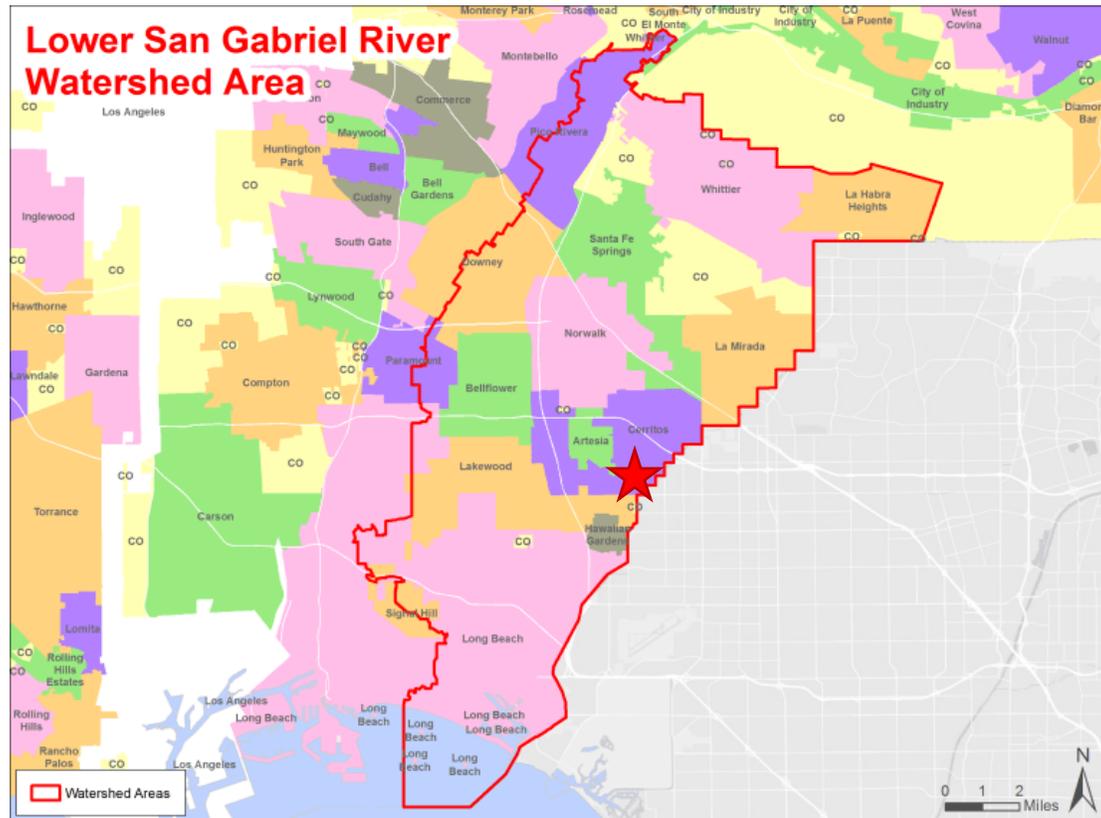
Design development for a regional stormwater system including capture, directed infiltration, and a reuse treatment facility

- Primary and Secondary Objectives:
  - Improve water quality and supply within Coyote Creek and the downstream San Gabriel River Watershed
  - Offset irrigation water demand at the park
  - Improve the park's public play space and other facilities
  - Install a new bio-filtration natural area along the bike path
  - Educate the public on local water supply and demands
  - Benefit nearby disadvantaged communities
- Project Status: Design only
- Total Funding Requested: \$2,408,000 (\$1,940,800 in Year One)



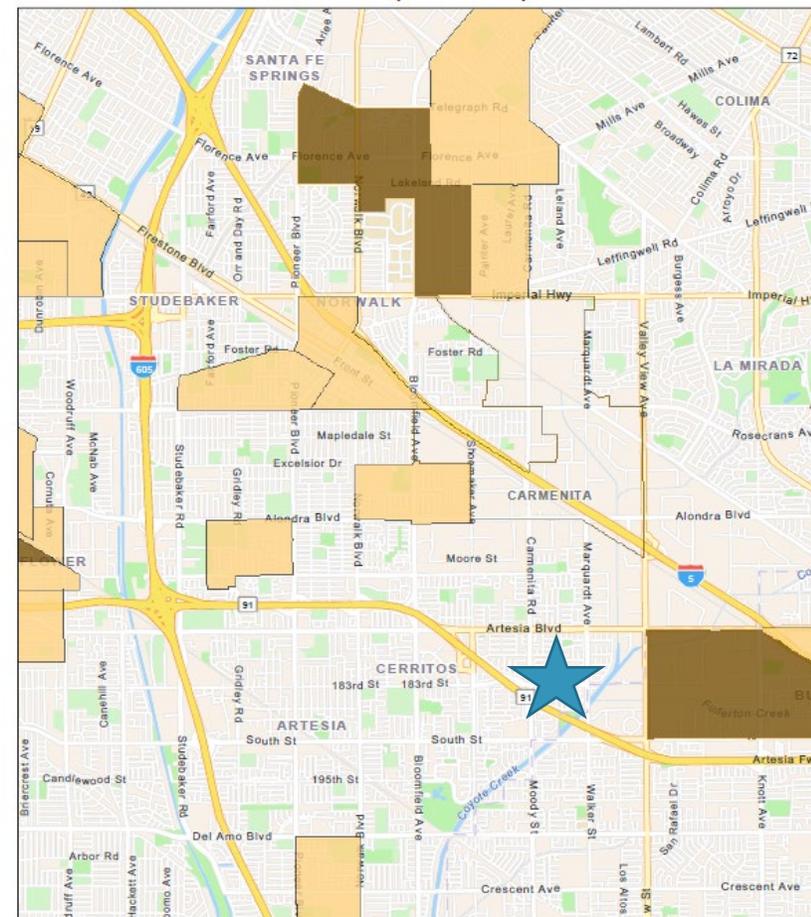


# Location



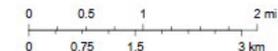
The project is located in the City of Cerritos, within the Lower San Gabriel River Watershed Area

## Cerritos Sports Complex



Disadvantaged Communities - Tract 2016

- Data Not Available
- Severely Disadvantaged Communities (MHI < \$38,270)
- Disadvantaged Communities (\$38,270 > MHI < \$51,026)



Cerritos Sports Complex

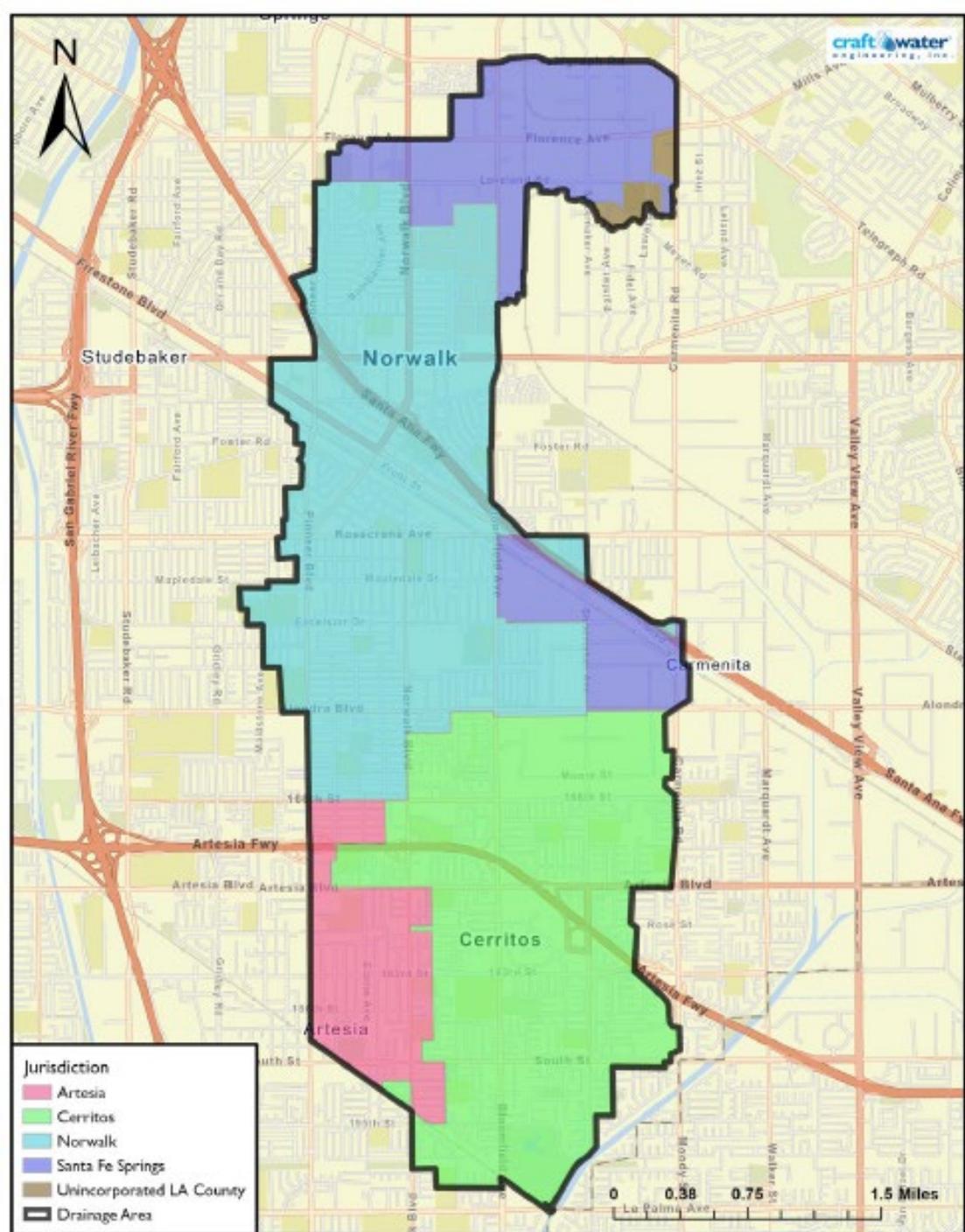
DACs nearby will benefit directly from park facility improvements, and downstream DACs will benefit from improved water quality



# Drainage Area

- The Cerritos Sports Complex Project has an extensive drainage area of 4403 acres, encompassing portions of:
  - City of Artesia (572.39 acres)
  - City of Cerritos (836.57 acres)
  - City of Norwalk (2113.44 acres)
  - City of Santa Fe Springs (792.54 acres)
  - Unincorporated LA County (88.06 acres)
- The drainage area encompasses an array of land uses, including the following breakdown of impervious acreage:

Land Use Type	Percent Impervious	Acre
Single Family Residential	31%	874.20
Commercial	9%	253.80
Industrial	13%	366.60
Institutional	12%	338.40
Multi Family Residential	7%	197.40
Secondary Roads and Alleys	24%	676.80
Urban Open Space	4%	112.80





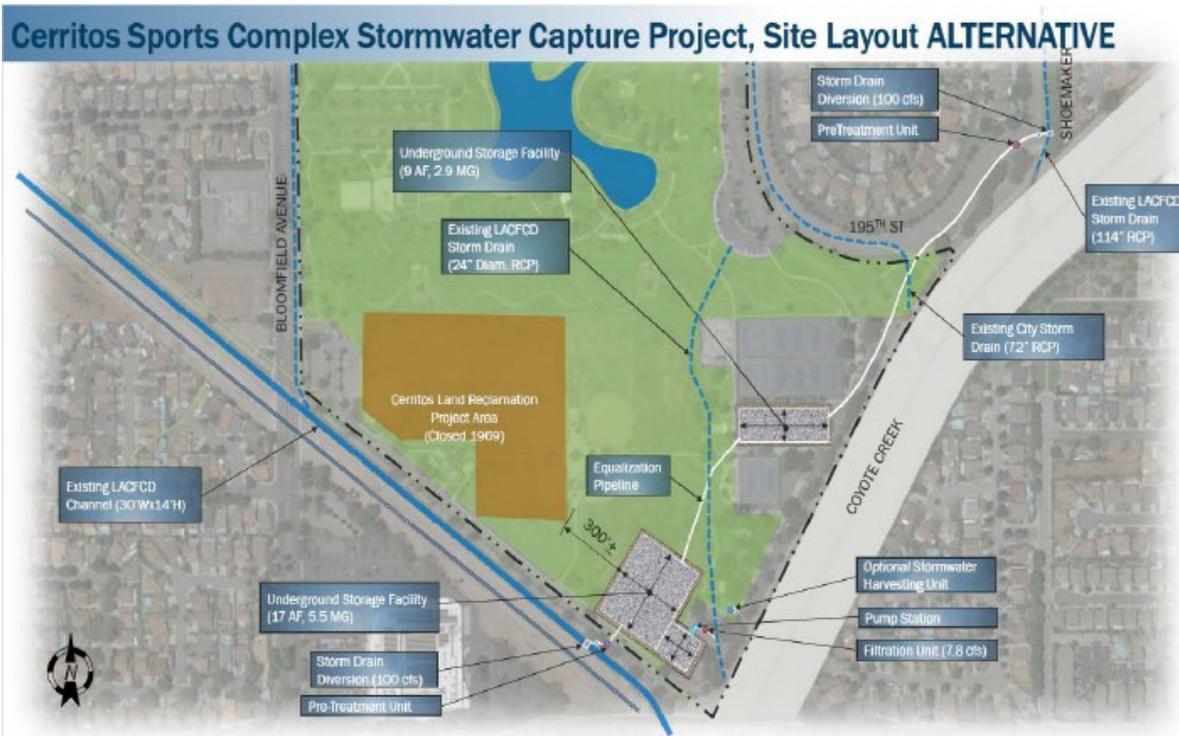
# Background and Site Conditions



- The site was identified in the LSGR WMP to help achieve compliance with the MS4 Permit and TMDL milestones
- The LSGR Watershed Management Group funded percolation testing and the development of a Feasibility Study (including 10% design plans) in early 2019
- The project was initially submitted to the WASC for consideration in 2019, but was ultimately not included in the SIP; since then, the project configuration has been amended and only design funds are being requested
- Site transitioned from farmland to a landfill in the 1960s, with the eastern portion unaffected by the landfill
- Site was converted to a park in 1976 with 5 baseball fields, 6 soccer fields, a sports office, a concessions stand, and a playground area
- Infiltration data and borehole logs indicate that the perimeter of the site to the east and south is suitable for low levels of infiltration while the larger area of the proposed site is more suited for storage for irrigation and filtration



# Details



Since the initial 10% design, the project has been relocated 300 feet southeast of the landfill

The northern diversion from Shoemaker is conceptual only

- The long-term plans (upon construction funding) call for this project to be divided into two phases:
  - Phase 1 will divert flow from a 30-foot wide channel to a regional stormwater capture and filtration facility located beneath the play surface of the existing park
    - The water quality and water objectives will be accomplished through runoff/pollutant capture, and filtration, reuse, and release
  - Phase 2 will divert from a 10-foot storm drain, but this will require agreements from County Parks and Rec and is referenced for background information (not as part of this application)
- Preliminary hydrological analyses and a utility review have been conducted
- Stormwater capture optimization methods were used when considering project alternatives



# Cost & Schedule

Phase Costs			
Phase	Description	Cost	Completion Date
Design	This proposal is for a 2-year design and permitting	\$ 1,940,800.00	06/2022
Design	second year of a two year design phase includes permitting	\$ 467,200.00	06/2023
Construction	Mobilization, Site Preparation, Initial Construction of Storage Gallery, SWPPP Implementation	\$ 4,558,500.00	06/2024
Construction	Continued Construction of Storage Gallery, Channel Diversion, Begin Electrical and Controls, Wet Well and Conveyance, Water Reclaim Unit	\$ 11,451,750.00	06/2025
Construction	Complete Gallery, Piping and Diversion, Complete Electrical, Landscape and Irrigation, Amenities, Startup and Testing	\$ 3,789,750.00	06/2026
Construction	Construction phase contingency (20% of Years 3-5 total)	\$ 3,960,000.00	06/2026
<b>Total Funding:</b>		<b>\$ 26,168,000.00</b>	

Annual Cost Breakdown	
Annual Maintenance Cost:	\$ 30,000.00
Annual Operation Cost:	\$ 5,600.00
Annual Monitoring Cost:	\$ 18,000.00
Project Life Span:	50 years



# Funding Request

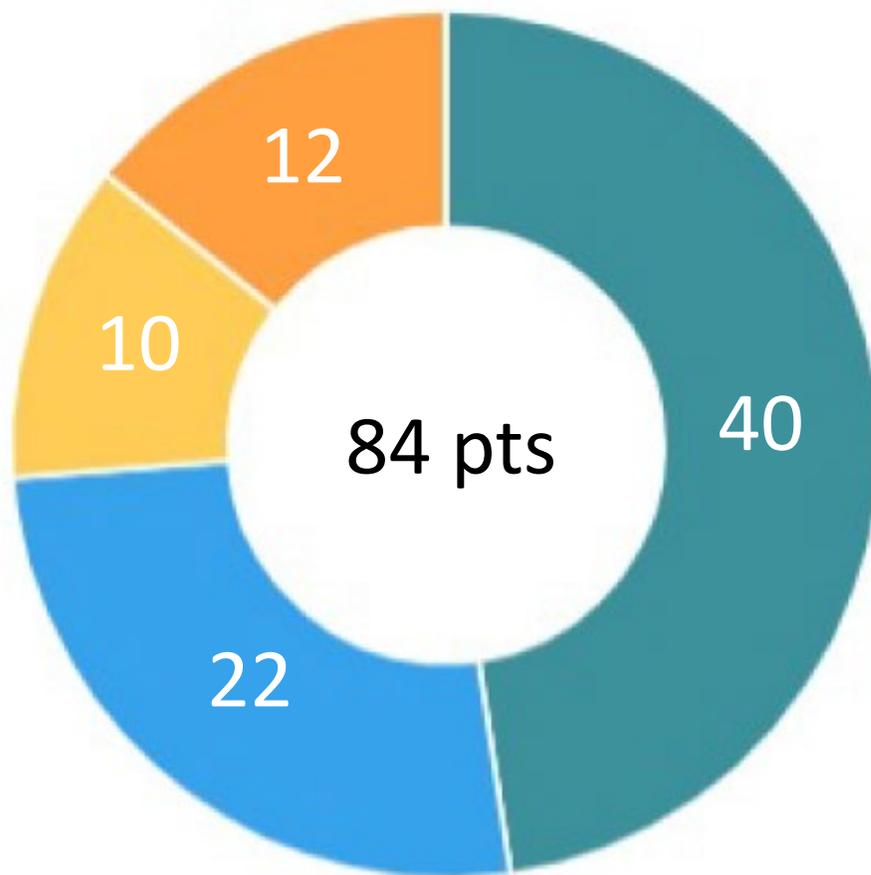
Funding Requested by Year & Phase			
Year	SCW Funding Requested	Phase	Efforts during Phase and Year
Year 1	\$ 1,940,800.00	Design	Pre-design, Design and public and community outreach,
Total Year 1	\$ 1,940,800.00		
Year 2	\$ 467,200.00	Planning	Environmental Planning and Permitting Public and Community Outreach
Total Year 2	\$ 467,200.00		
Total Funding:	\$ 2,408,000.00		

- Upon completion of design, a future SCWP funding request may be submitted for construction, operations and maintenance, and monitoring



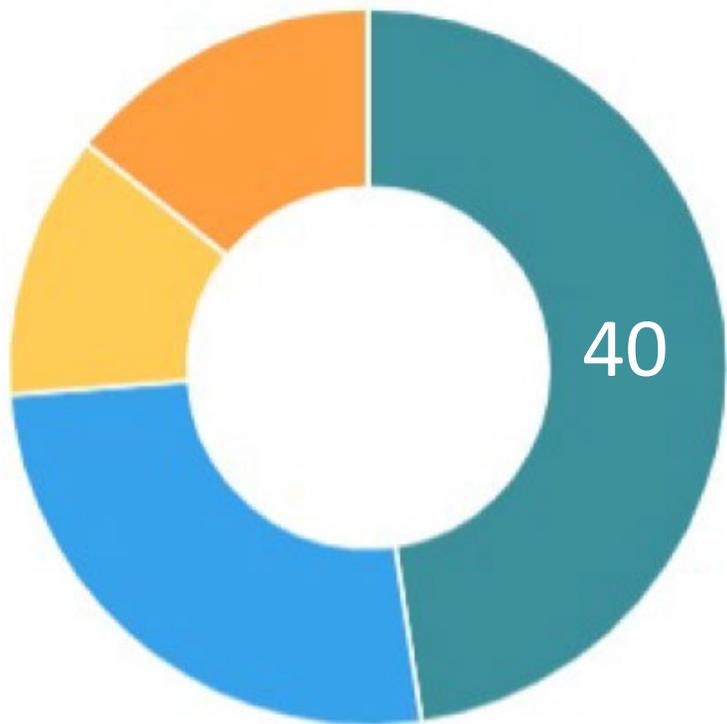
# Preliminary Score

Water Quality   Water Supply   Community Investment   Nature-Based Solutions  
Funds & Community





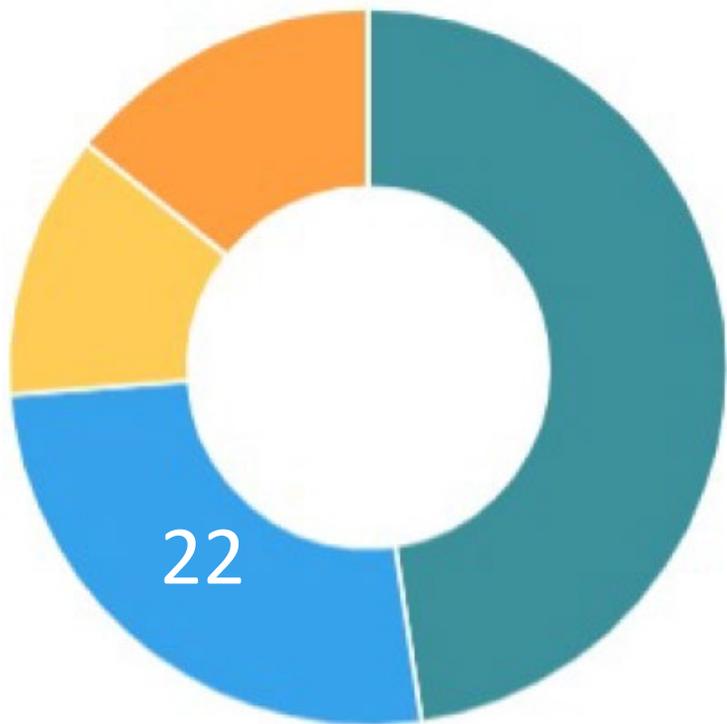
# Water Quality Benefits



- The project will achieve its water quality objectives through runoff/pollutant capture, filtration, reuse and release
- With the reduction in scope from the previous application, the project will capture all dry weather from the 30x14 foot channel; the proposed storage reservoir has a capacity of 17 acre-feet
- The project will capture runoff from a 4403 acres drainage area that includes portions of the City of Cerritos, City of Artesia, City of Norwalk, City of Santa Fe Springs, and Unincorporated LA County
- The project will address zinc and bacteria (the primary and secondary limiting pollutants identified in the LSGR WMP, respectively) in addition to other pollutants
- This project is part of the Artesia drain corridor, which includes projects at Artesia Park (proposed) and Hermosillo Park (SCWP funding approved)



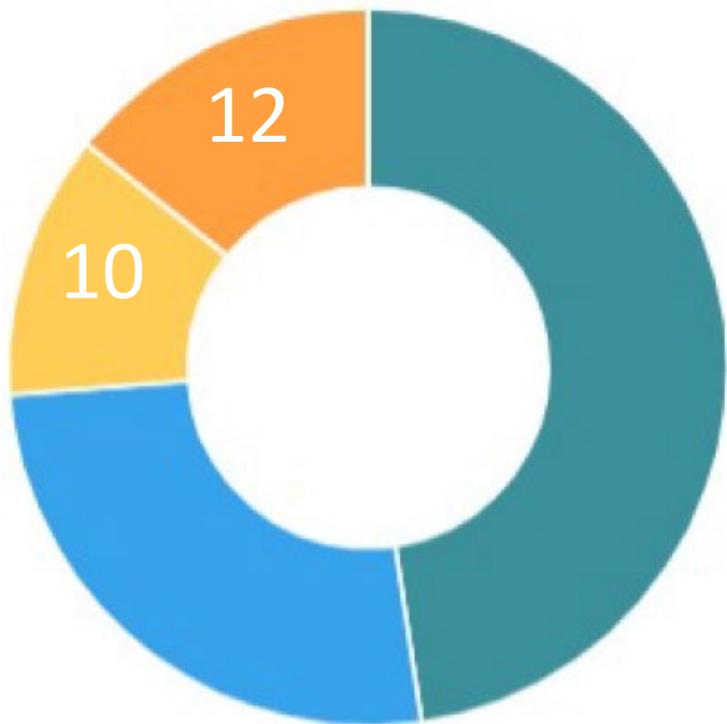
# Water Supply Benefits



- There is significant opportunity for this project to provide multiple benefits at the nexus of water supply and stormwater:
- Onsite Irrigation Use: the project will utilize dry flows to provide high quality water to blend with the existing irrigation sources and potentially offset most of the park's irrigation needs
  - Dry weather flows are estimated to be 0.4 cfs with an average annual inflow of 3110.806 ac-ft
  - Pumping and filtration will sanitize and redirect captured stormwater to the irrigation system; cleaned overflow will be discharged back into Coyote Creek.
- Water Recycling: further capacity study would be required to determine if discharges to nearby sanitary sewer lines are feasible
  - The modeled total potential discharge to the sanitary sewer for augmented water supply is 130 acre-feet per year



# Community Investment Benefits and Nature-Based Solutions



- Flood Management:
  - The project's detention capabilities can contribute towards enhanced flood retention capabilities of the storm drain system
- Enhanced Park Spaces and New Recreational Opportunities:
  - The underground structure will be installed east of 4 baseball fields; surrounding facilities will be improved
  - A bioswale area will be installed with native vegetation
- Improved Public Access to Waterways:
  - A natural area and bioswale will be installed on the city property along the existing Coyote Creek bike path
  - The bioswale is sized to convey flow from the parking lot and roadways within the Sports Complex
- Reduced Heat Island Effect:
  - Native trees, shrubs, and grasses are to be installed at select spots impacted by construction throughout the park



# Leveraging Funds & Community Support

- The LSGR Watershed Management Group funded the Cerritos Sports Complex Project Feasibility Study and 10% Design Plans in early 2019
- The funding request includes \$100,000 for public outreach, including community development meetings, informational signage, and/or social media outreach
- The City plans to conduct outreach to potential project partners, including community organizations



# Questions?

An aerial photograph of a coastal city, likely Los Angeles, showing a dense urban grid and a coastline. The left side of the image is overlaid with a solid blue color, which serves as a background for the text.

# Stormwater Treatment and Reuse System (STAR System) Hacienda Park

Funding Program (IP/TRP)

Project Lead: City of La Habra Heights

Presenter: Christopher Rochfort (STAR Water USA LLC)



# Project Overview

The project aims to capture, infiltrate or treat and store stormwater runoff from Hacienda Park and nearby catchment for beneficial reuse.

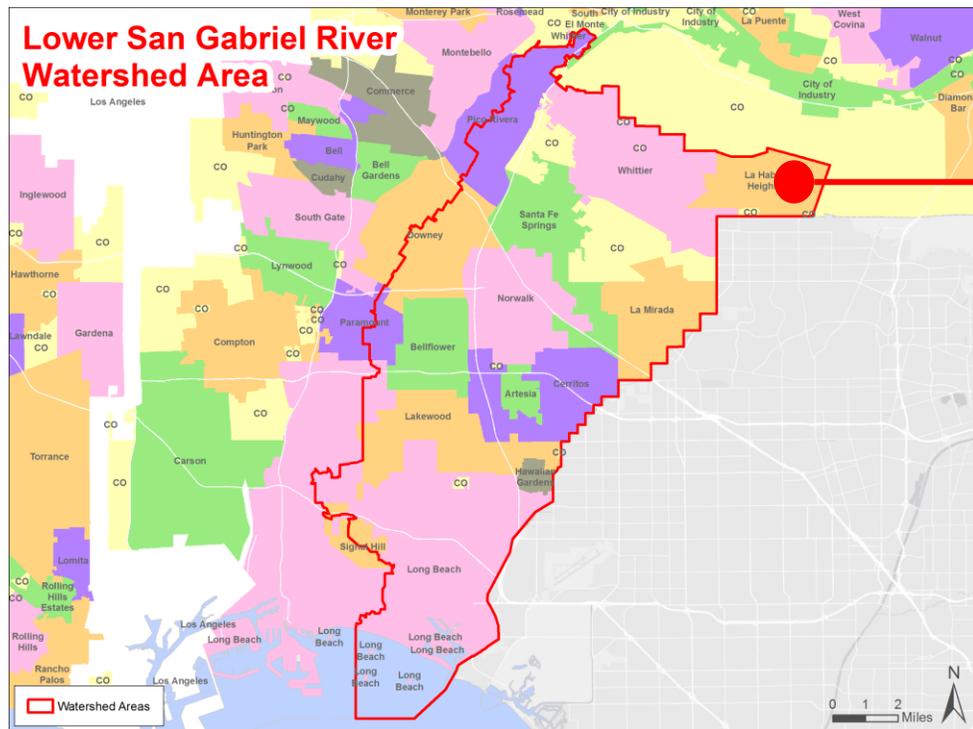
Primary Objective	Secondary Objectives
1. Protect waterways & habitats from contaminated run-off	1. Reduce impervious surface ratio in The Park
2. Capture, infiltrate, collect to reuse treated stormwater	2. Reduce heat island effect in the parking lots
3. Use Nature-Based systems and technologies as BMP	3. Enhance the natural amenity in The Park

<b>Total SCW Funding Requested</b>		<b>\$859,000</b>	
√ Planning	√ Design	√ Construction	√ O & M





# Project Location



Disadvantaged Communities (DAC): N/A

## The Park (Hecienda Park)

1885 Hacienda Rd, La Habra Heights

Capture Area: Hacienda Rd, Encanada Dr, Parking lots, Roofs, Horse track



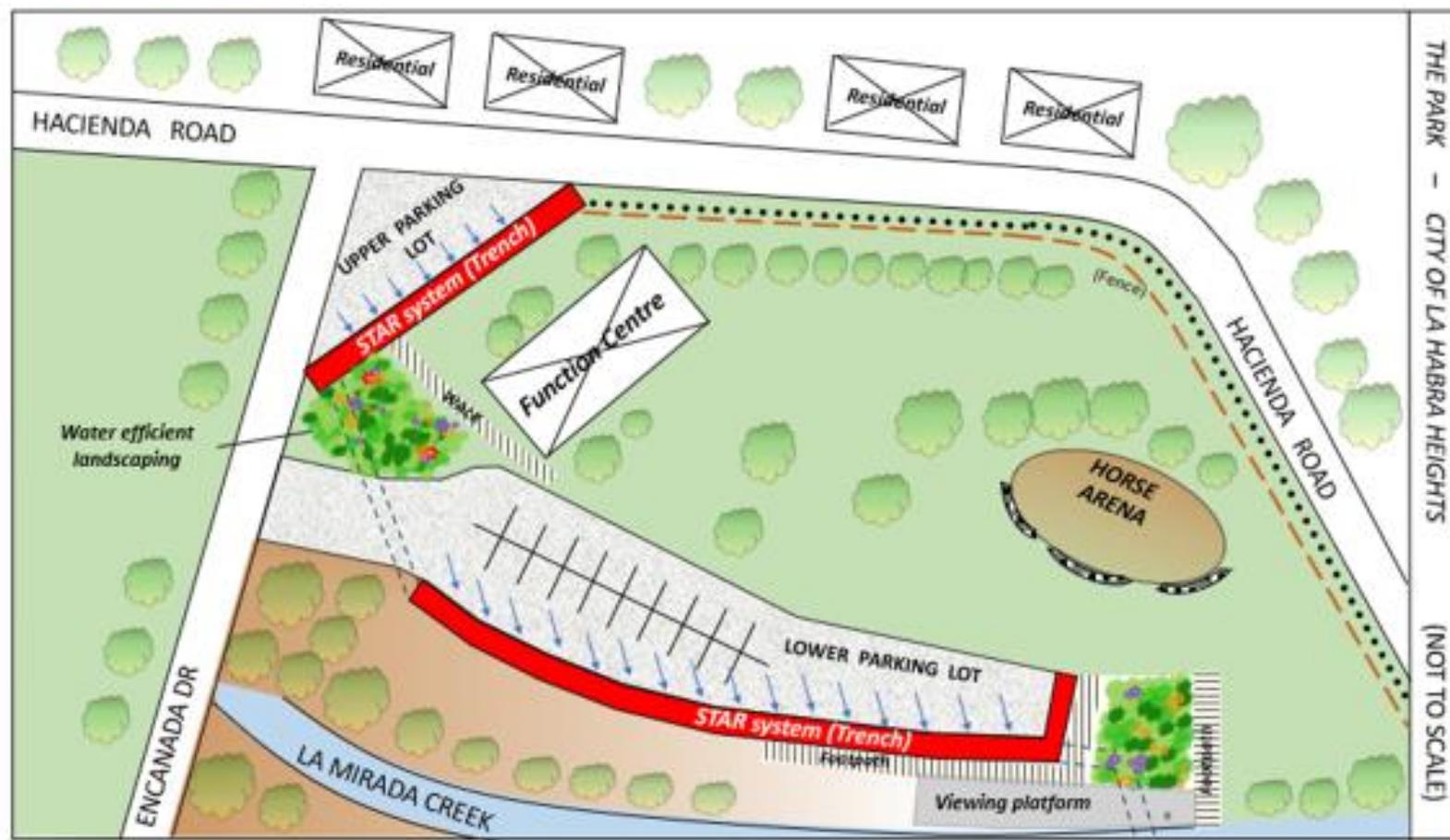
# Project Background

WHY	HOW
The City of La Habra Heights assesses its water quality and quantity needs and measures to protect water sensitive areas.	STAR System replaces existing dish drain, which captures, treats, conveys and stores stormwater for reuse.
The Park is one of the City's key community assets, identified as priority area for stormwater treatment and reuse systems.	Water-efficient landscaping (gardens) grows trees and drought-enduring plants, provide tree shading and reduce the heat island effect.
Impermeable surface of Parking lots and nearby roads discharges contaminated runoff to the La Mirada Creek.	Reactive Filter Amendment on the grass area increases the infiltration rate and water holding capacity.
	ABF cartridges around the horse riding track removes bacteria and nutrients.

- Effectively treats contaminated runoff from the site and protects nearby creek
- Provide reusable water for onsite irrigation of the Park
- Encourage the use of recycled products in stormwater management
- Increase green space area and reduce heat island effect from the site
- Improve permeability/infiltration rate/water retention of the Park



# Project Details



- Grassy Area
- Horse arena
- Parking Lot
- Viewing Platform
- Water Efficient Landscaping
- STAR Trench System
- Roof Surface
- Footpath
- Fence
- Underground Pipe (overflow discharge)
- Cartridge system (runoff treatment for horse track)
- Reactive Filter Amendment for grassy land

Catchment Area	Road (Hacienda Rd & Encanada Dr)	Roof (Function Center & Residential)	Parking Lot	Grassy Area of The Park	Total
Impermeable	2.061 ac (8,340m <sup>2</sup> )	0.760 ac (3,076m <sup>2</sup> )	1.384 ac (5,600m <sup>2</sup> )	-	4.205 ac (17,016m <sup>2</sup> )
Permeable	-	-	-	2.471ac (10,000m <sup>2</sup> )	2.471ac (10,000m <sup>2</sup> )



# Project Details





# Cost & Schedule

Phase	Description	Cost	Completion Date
Design	Project engineering design	\$ 90,000.00	07/2021
Planning	Detailed Project planning	\$ 35,000.00	09/2021
Construction	Project Construction stage	\$ 708,000.00	04/2022
Construction	Initial assessment of system performance	\$ 16,500.00	09/2022
<b>TOTAL</b>		<b>\$ 849,500.00</b>	

Annual monitoring activities	Reused water quantity	Reused water quality		Vegetation
	Inflow	Miscellaneous	pH, TSS, EC	Establishment
	Outflow for reuse (irrigation onsite)	Nutrients	TN, TP	Attrition
		Heavy metals	Cu, Zn, Pb, Al, Fe	Plant life span
	Outflow to discharge	Others	hydrocarbon, Micro-plastic, E.Coli	Resilience
<b>Annual cost</b>	\$1500			

Project Life Span: up to 60 years

Life-Cycle Cost for Project: \$ 856,296.62 (5 years)



# Funding Request

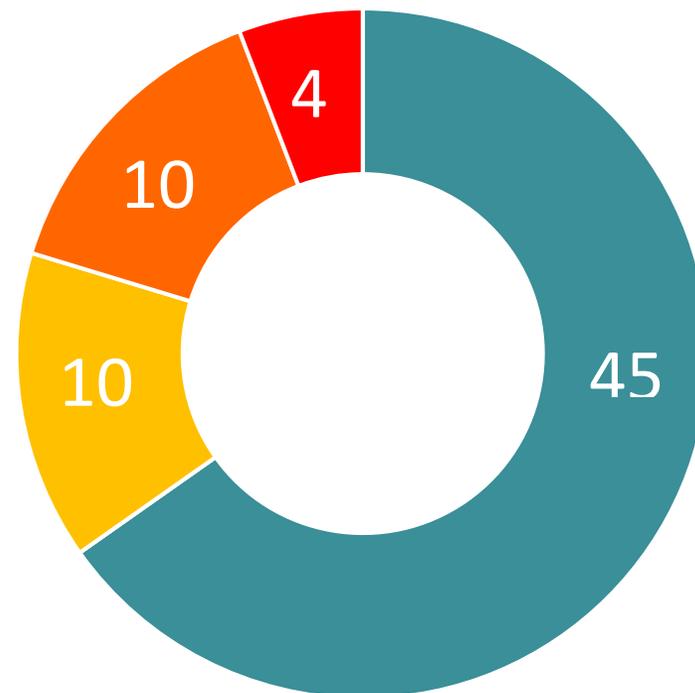
Year	SCW Funding Requested	Phase	Efforts during Phase and Year
1	\$ 585,000.00	Planning Design Construction	Project Planning, Project engineering Design, Earth work for the trenches and water-efficient landscape
2	\$ 269,500.00	Construction O & M	Purchase products, construction for trench system, water efficient rain gardens and features Initial monitoring for system performance
3	\$ 1,500.00	Monitoring	Annual monitoring and testing
4	\$ 1,500.00	Monitoring	Annual monitoring and testing
5	\$ 1,500.00	Monitoring	Annual monitoring and testing
<b>TOTAL</b>	<b>\$ 859,000.00</b>		

- Future potential SCW funding requested for continuing monitoring, cartridges and media replacement for every 10 – 15 years.



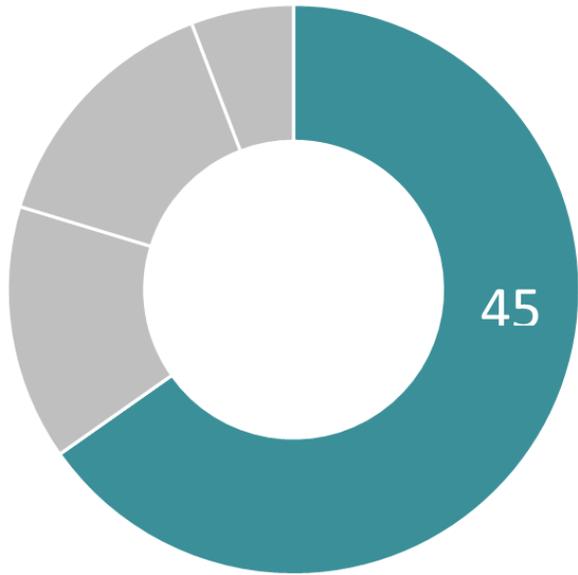
# Preliminary Score

- Water quality
- Water supply
- Community Investment Benefits
- Nature Based Solutions
- Leveraged Funds and Community Support





# Water Quality & Water Supply Benefits



■ Water quality

## Primary mechanisms (Wet Condition)

- Storm Treatment and Reuse (STAR) system captures polluted runoff and treated by the Advanced Biofiltration Filter cartridges placed beneath the trench grates.
- The Advanced Biofiltration Filter Cartridges, contains Reactive Filter Media, can remove multi contaminants from the runoff by the natural treatment processes (physical, chemical & biological).
- The treated runoff can be either stored in the modular channel underdrain installed under the cartridges or safe discharge to nearby La Mirada Creek.
- Coring with Reactive Filter Amendment to the grass area increases the infiltration rate.
- Water efficient landscaping (gardens) provides more tree shades and reduces heat island effect from the parking lot



# Water Quality & Water Supply Benefits

## Catchment Features

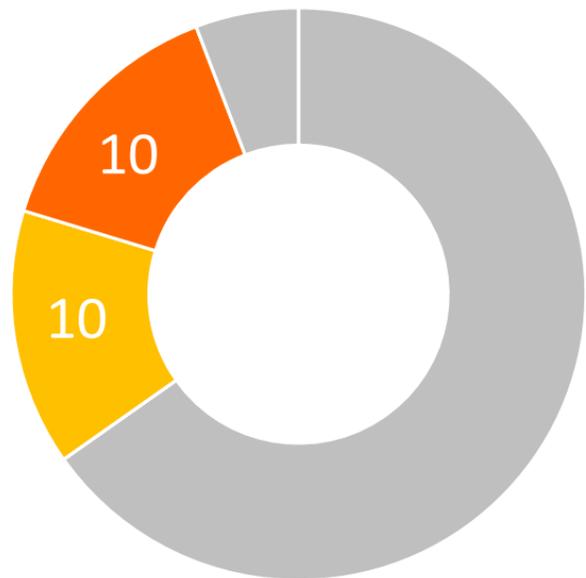
Total catchment area	24-hr Capacity:	Annual Treated runoff		Water Quality Cost Effectiveness:
3.85 acre	1.3157 ac-ft	1.61 ac-ft		>1 (24-hour BMP Capacity) / (Construction Cost in \$Millions) = 1.5)
		reused for irrigation	Safe discharge to La Miranda Creek	
		0.84 ac-ft,	0.77 ac-ft	

## Pollutants removal

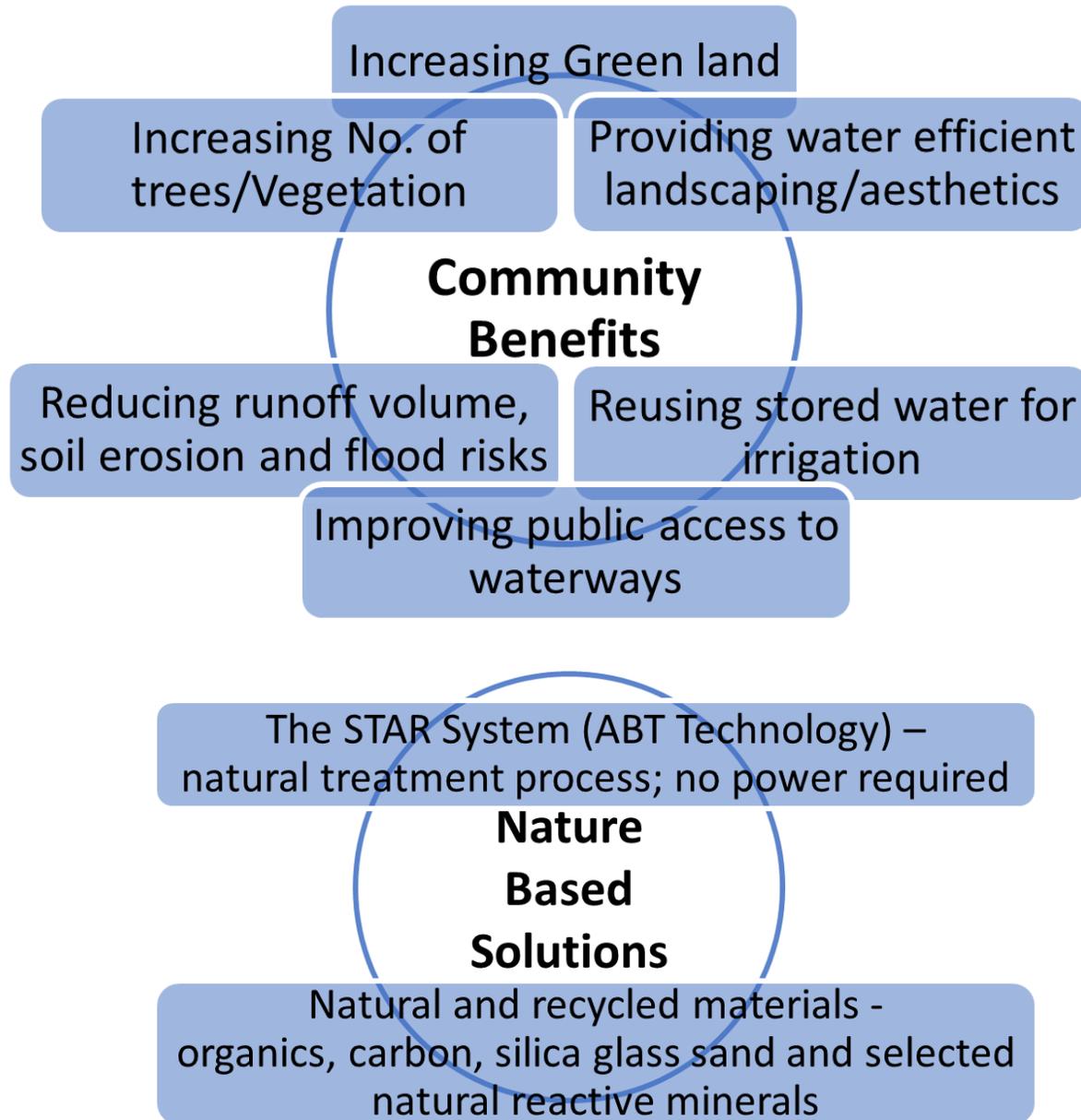
Group	Pollutant	Removal (own value)	Removal (Module generated)
Primary Pollutants	Hydrocarbons, Cu, Pb, Zn, Fe, Al, TSS	90%	100%
Secondary Pollutants	TN	63.5	100%



# Community Investment Benefits and Nature Based Solutions

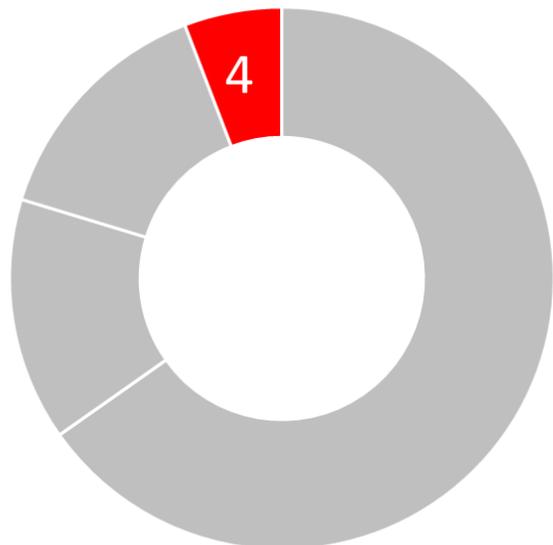


- Community Investment Benefits
- Nature Based Solutions





# Leveraging Funds and Community Support

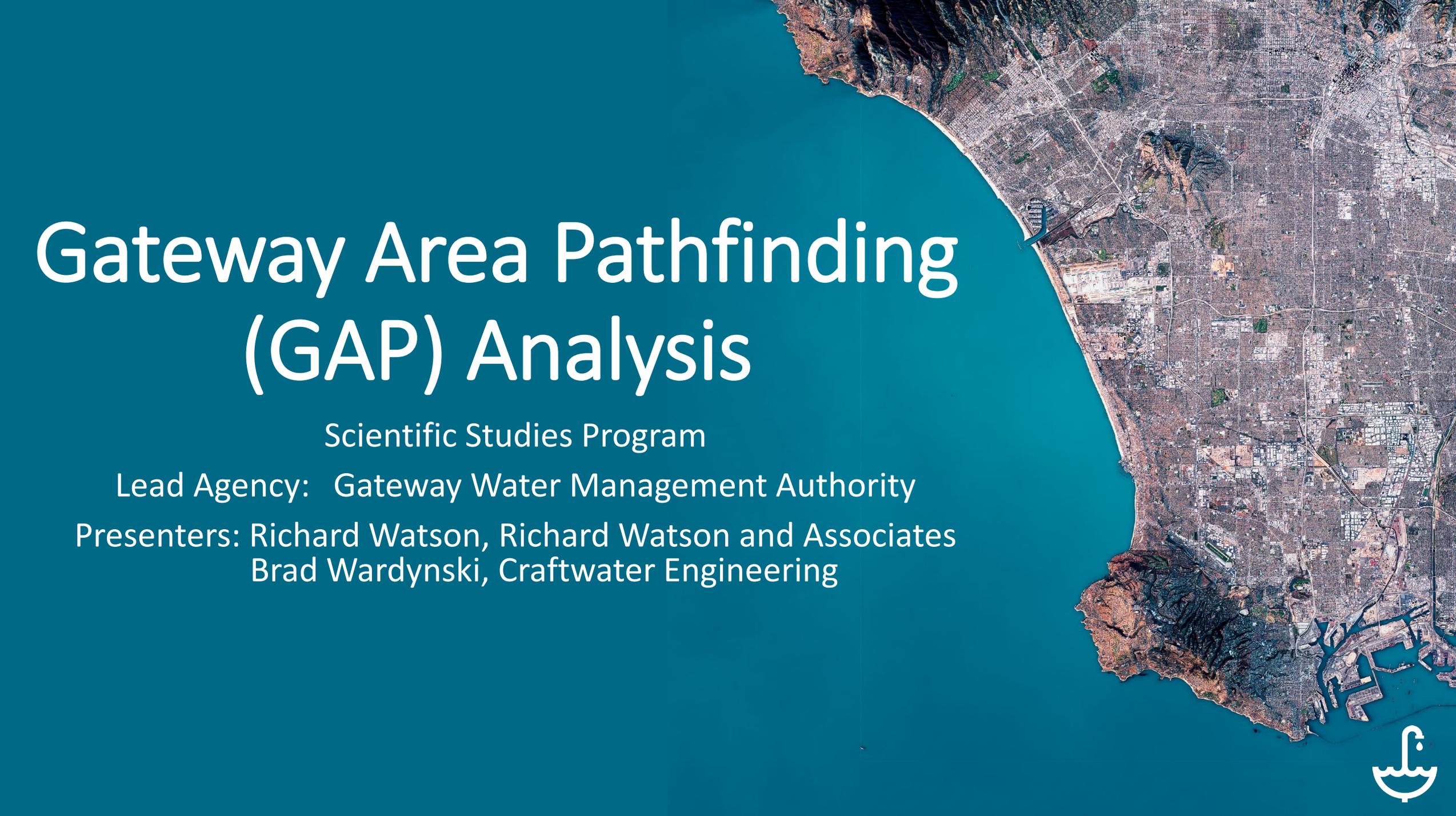


■ Leveraged Funds and Community Support

- Leveraging Funds: N.A.
- Community Support
  - Local community representative expresses strong support for the alternative water supply and protection of the waterways by using innovative solutions in the area of climate uncertainty.
- Community outreach and engagement
  - Meetings with community representatives
  - Develop a Community and Stakeholder Engagement Strategy, identify key opportunities for engagement, potential risks and mitigation strategies
  - Drive awareness of the project's benefits and provide updates via regular communications
  - Act as the liaison between community members and the project team, responding to any issues or concerns in a timely and effective manner



**Questions?**

An aerial photograph of a coastal city, likely San Francisco, with a blue overlay on the left side. The city's grid pattern and buildings are visible, along with the coastline and some greenery. The blue overlay is a solid color that covers the left portion of the image.

# Gateway Area Pathfinding (GAP) Analysis

Scientific Studies Program

Lead Agency: Gateway Water Management Authority

Presenters: Richard Watson, Richard Watson and Associates  
Brad Wardynski, Craftwater Engineering



# Study Overview

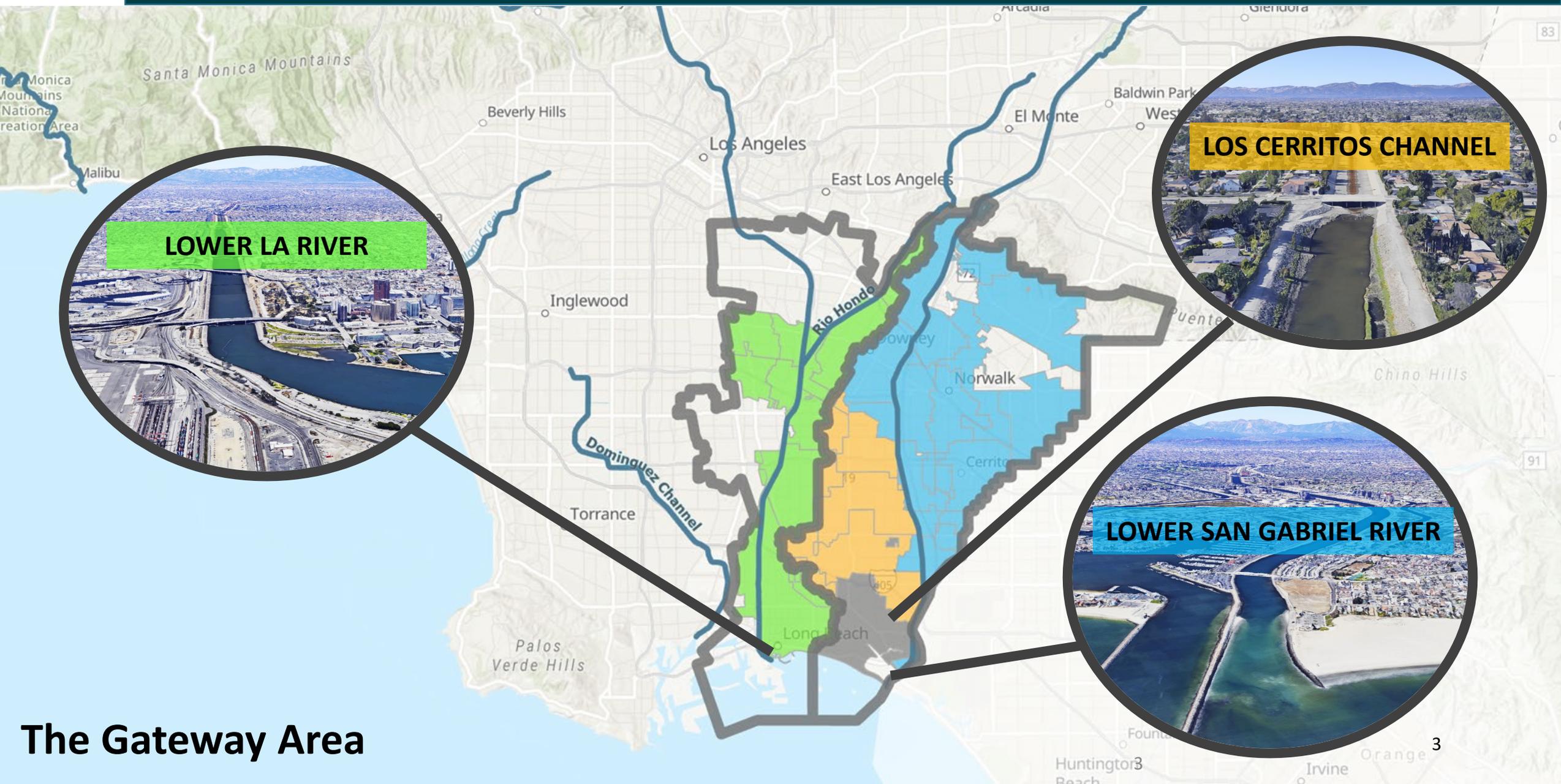
**Initiates a locally driven, scientific approach to find and analyze new projects in a watershed context and plot a project-by-project pathway to safe, clean water**

Nexus: This study will support the Gateway Groups and other stakeholders in the LLAR and LSGR Watershed Areas by enhancing watershed plans with new, implementation-oriented project recommendations for water quality improvement, water supply augmentation, and community investments





# Study Location



**LOWER LA RIVER**

**LOS CERRITOS CHANNEL**

**LOWER SAN GABRIEL RIVER**

**The Gateway Area**



## • Problem Statement

- Groups have made excellent progress implementing Watershed Management Programs (WMPs)
- Now they need more project-by-project details (what to build, where, and in what order)
- As more projects go into the ground, need to understand how overall *system* works together
  - e.g., What if a project is proposed upstream from another? How does that impact performance and SCWP benefits?
- Need to leverage watershed science to better align WMPs and SCWP goals

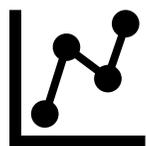


# Study Details

- **Objectives, Outcomes, & Methodology**



**Identify** new, high-impact, multi-benefit projects



**Explore** how projects interact as a system at the watershed scale



**Articulate** project-specific roadmap to stormwater quality compliance



**Translate** findings into Stormwater Investment Plan recommendations



# Study Details

## • Regional Examples and Collaboration

### RIO HONDO/SAN GABRIEL RIVER REVISED WMP

1<sup>st</sup>

watershed plan to articulate a project-by-project pathway to clean water

- Focused approach improved compliance certainty and stretched stormwater investments
- Upstream from LSGR and LLAR groups

### UPPER LA RIVER PRESIP STUDY

73%

potential boost in efficiency, freeing up funding for other watershed and community investments

- Recently funded and initiated
- Closely coordinating with study leads
- Upstream from LLAR group

### BUILDING CONSENSUS FOR BALANCED WATERSHED PROJECTS

\$350k

matching funds to analyze cost-effective pathways to achieve multiple SCW goals

- Explores how to balance compliance, nature-based solutions, and community investments
- Closely coordinating with study leads
- Proposed in LLAR and LSGR



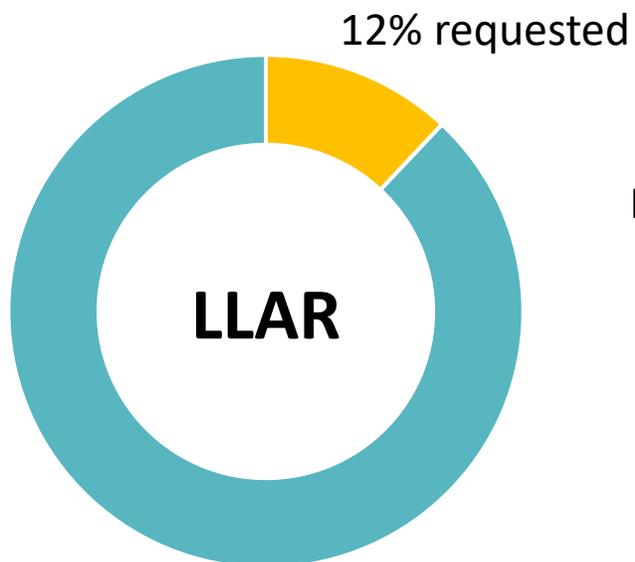
# Cost & Schedule

Phase	Description	Cost	Completion Date
1	<b>Identify and Reconcile Watershed-Wide Opportunities</b>	\$63k	Funding Transfer + 6 months (February 2022)
2	<b>Model Watershed-Scale Project Interactions and SCWP Scoring</b>	\$49k	Funding Transfer + 8 months (May 2022)
3	<b>Cross-Reference Projects with Recipes for Compliance and Plot Initial Path to Clean Water</b>	\$24k	Funding Transfer + 10 months (July 2022)
4	<b>Stormwater Investment Plan Recommendations</b>	\$14k	Funding Transfer + 12 months (September 2022)
<b>TOTAL</b>		<b>\$150k</b>	



# Funding Request

WASC	Year 1	Year 2	Year 3	Year 4	Year 4
LLAR	\$75k	<i>Although future phases are expected, the study applicants are not asking the WASC to earmark additional funds at this time</i>			
LSGR	\$75k				
<b>TOTAL</b>	<b>\$150k</b>				



**Requested Funding Compared to Available Annual Scientific Study Funding (5% of Regional Program)**





# Summary of Benefits

The GAP Analysis will bolster certainty that SCWP investments (i.e., taxpayer dollars) will yield defensible, meaningful, measurable, and achievable improvements to the **environment**, and subsequently, to **local communities and local water supply**.



**Questions?**



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# Overview of Pathogen Reduction Study

Presented by Richard Watson, Richard Watson & Associates, Inc. (RWA)

Project Lead: Gateway Water Management Authority

Presentation to the Lower San Gabriel River WASC

09 March 2021

# Summary of Study

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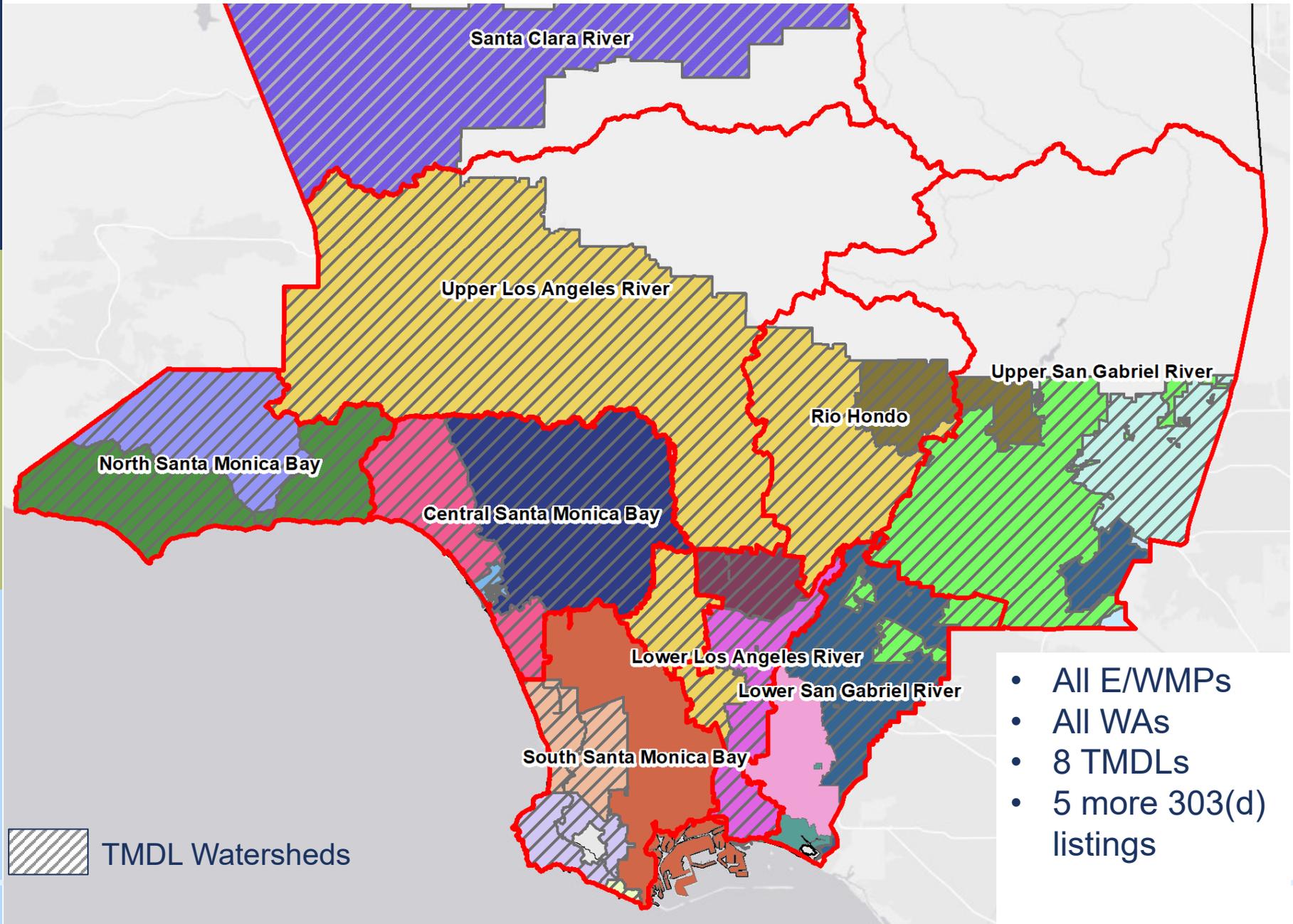
- This Study aims to use the latest available science to measure water-borne pathogens across watersheds. It will help identify key sources of human health risk, and develop cost-effective protective strategies
- USEPA and academia agree not all sources of bacteria are equally risky, but we do not have the information we need to focus limited resources on the riskiest sources first.
- Objectives of Study
  - Leverage recent USEPA, academic, and stakeholder driven research
  - Produce strategies for incorporation into Program Plans
  - Support informed decisions that help us protect more people sooner

# Study Overview

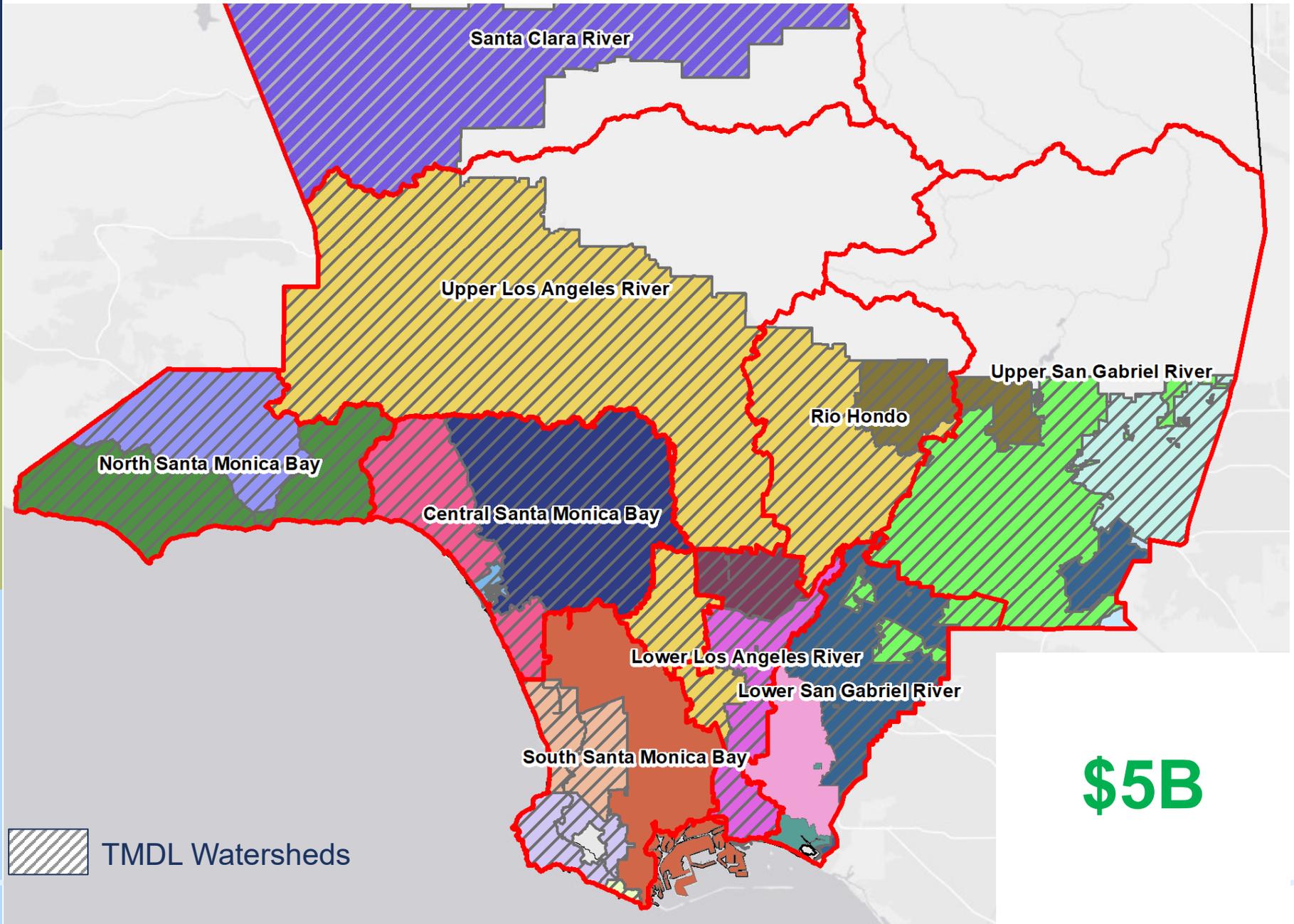
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- Nexus to Stormwater and Urban Runoff Capture and Pollution Reduction
  - Study will facilitate improved targeting of pathogen sources and water to capture and/or treat
  - Study could reduce need to capture stormwater for bacteria compliance purposes while improving the protection of human health
  - Study may lead to partnering with various parties, such as wastewater agencies and homeless services agencies, to address human sources of pathogens.

# Study Location



# Study Location



# Scientific Study Details

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## *Problem Statement:*

- Waterborne pathogens represent the most significant potential threat to the health of people recreating in and around the ocean and inland waters of Los Angeles County.
- Current standards are based on FIB (fecal indicator bacteria), which are used as proxies for pathogens.
  - FIB are ubiquitous; a vast network of structural control measures would need to be implemented to provide adequate control – projected cost over \$5 billion.
  - USEPA and academia agree that human sources of pathogens pose the greatest risk
  - Unless high-risk sources are targeted, water capture projects may receive large FIB loads, but miss the highest risk human sources.

(Continued)

# Scientific Study Details (Continued)

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## *Expected Outcomes*

- Completion of a needed regional study in LA County to identify the sources of pathogens and the most effective BMPs to address them. Studies have been completed elsewhere identifying human sources of pathogens as the highest driver of risk to human health.
- The latest science will be used to support the reduction of human pathogens and protect human health.
- Combined with scientific advancements, the results will provide an opportunity to improve the current bacteria strategy using source-specific indicators, improved viral detection methods, and risk modeling frameworks.
- The study results will facilitate meaningful, appropriate, productive actions by Permittees that will effectively reduce human health risks.

# Scientific Study Details (Continued)

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## *Methodology:*

- Study work plan will be developed through a stakeholder-led process with the input of technical experts, including academics.
  - Stakeholder engagement is at the forefront of the study to ensure that diverse viewpoints are incorporated.
  
- Study will collect samples from beaches and waterbodies. Samples will be analyzed for traditional bacterial indicators, viruses, and human markers during wet and dry weather.
  - Identify areas with highest risk to support a focus on those areas
  - Identify the sources causing the highest risk to focus on those sources
  
- Study will assess control measure effectiveness and efficiency
  - Identify the best BMPs to address the sources
  - Support planning, applying municipal funds, requests for SCWP funding, and actions by other parties

# Scientific Study Details (Continued)

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- *Regional collaboration efforts:*
  - Small Group Initiated Discussions and built a scope for a Safe, Clean Water Regional Program project
  - Presented Approach to E/WMP Groups
  - Discussed with proponents of watershed-specific studies
  - Discussed with Regional Board staff
  
- Revised study to address concerns
  - Clearly focused on human pathogens
  - Clarified that study is a component of overall strategy to protect human health
  - Clarified that implementation continues during the study
  - Recognized that we do not need to wait until the end of the study to take action
  - Reduced first year cost of study

# Cost & Schedule

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Phase	Description	Cost	Schedule
Task 1	Stakeholder Process	\$484,000	7/21 – 6/26
Task 2	Health Risk Assessment	\$5,816,208	7/21 – 9/25
Task 3	Risk Management	\$1,702,100	4/22 – 3/26
Task 4	Application of Study Findings	\$484,000	1/25 – 6/26
<b>TOTAL</b>		<b>\$8,486,308</b>	

# Funding Request

WASC	Year 1	Year 2	Year 3	Year 4	Year 5
CSMB	\$45,659	\$333,041	\$322,298	\$319,612	\$53,716
LLAR	\$32,801	\$239,256	\$231,539	\$229,609	\$38,590
LSGR	\$42,810	\$312,259	\$302,186	\$299,668	\$50,364
NSMB	NA	NA	NA	NA	NA
RH	\$29,477	\$215,011	\$208,075	\$206,341	\$34,679
SCR	\$15,378	\$112,168	\$108,550	\$107,645	\$18,092
SSMB	\$47,156	\$343,964	\$332,869	\$330,095	\$55,478
ULAR	\$98,952	\$721,766	\$698,483	\$692,663	\$116,414
USGR	\$48,435	\$353,290	\$341,893	\$339,044	\$56,982
<b>TOTAL</b>	<b>\$360,668</b>	<b>\$2,630,755</b>	<b>\$2,545,893</b>	<b>\$2,524,677</b>	<b>\$424,315</b>

# Summary of Benefits

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- By developing a better understanding of pathogens present in the region's watersheds, the relative risk to human health they pose, and the effectiveness of various control measures, new or adapted BMPs can be established that improve water quality and reduce human health risks at our beaches and inland waterbodies.
- Short-term: results could be used to protect people from health risks that aren't currently known.
- Long-term: results will enable the targeted placement of BMPs in locations where they can maximize the prevention or treatment of key sources of human pathogens.

# Questions and Thank You

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