An aerial photograph of the Los Cerritos Channel and the surrounding urban area of Los Angeles. The channel is a prominent blue feature winding through the city. The surrounding area is densely packed with buildings and streets, with some green spaces and hills visible in the background. The image is used as a background for the title slide.

# Targeted Human Waste Source Reduction Strategy to Address Bacteria-Related Compliance Objectives for the Los Cerritos Channel

Scientific Studies Program

Fiscal Year 2023-2024

Lower San Gabriel River

Project Lead: Gateway Water Management Authority

Presenter: Brianna Datti, Craftwater Engineering



# Study Overview

Data-driven framework to guide and prioritize source ID and abatement efforts, focusing on reducing sources of human waste, for bacteria

- Bacteria one of most challenging pollutants for stormwater management
- Focus resources where urban runoff poses greatest threat to public health
- Target abating sources in the urban watershed

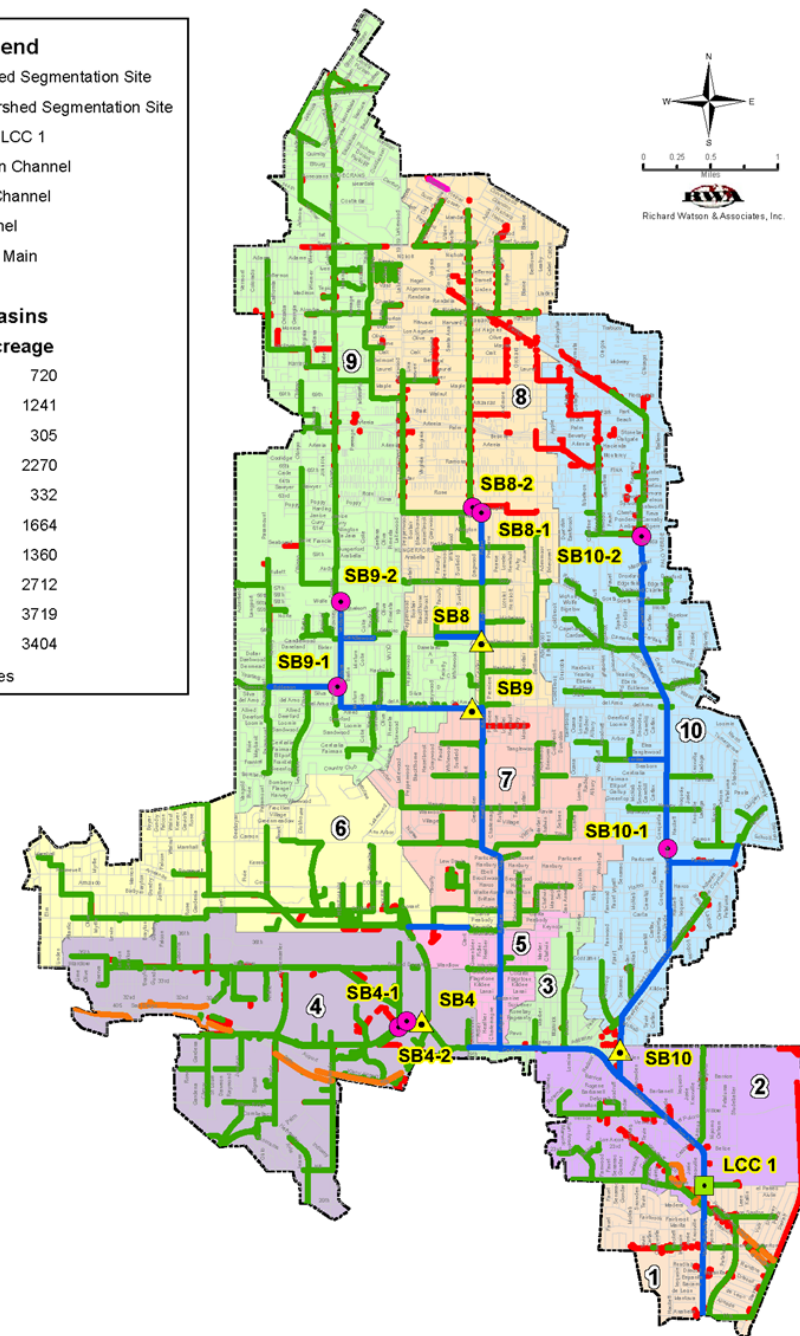
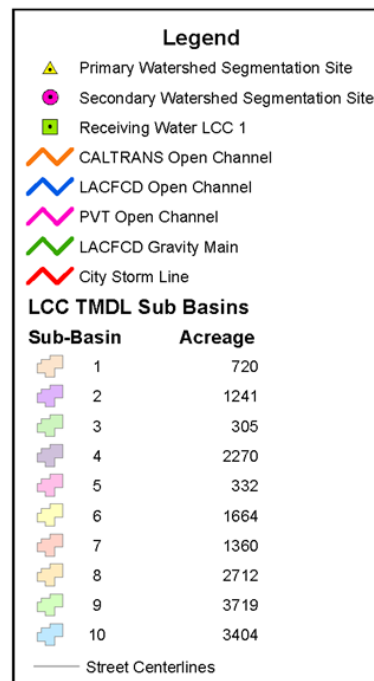




# Study Location

- Focused on Los Cerritos Channel Watershed Management Area
- Leverage and expand on existing monitoring (LCC1, SB4, SB8, SB9, and SB10) to target priority areas and conduct effective human waste source investigations and abatement

## Los Cerritos Channel Wet-Weather Watershed Segmentation and Source Tracking Monitoring Sites





# Study Team

## Applicant:

- Gateway Water Management Authority on behalf of the Los Cerritos Channel Watershed Management Group



LOS CERRITOS CHANNEL  
WATERSHED GROUP

## Technical Team:

- Lead: Craftwater Engineering, Inc.



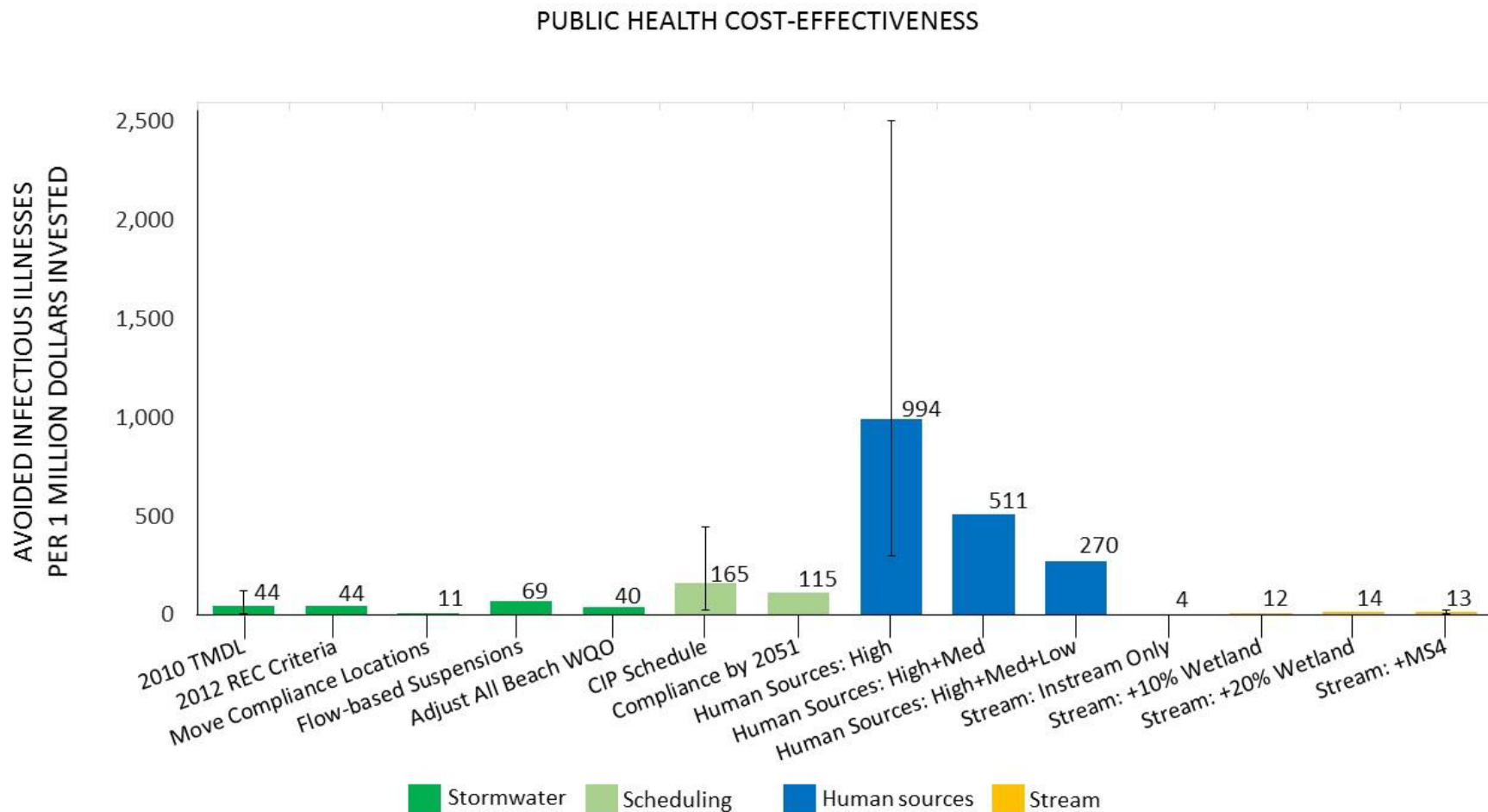
- Monitoring: Kinnetic Environmental, Inc.





# Advances in Scientific Understanding and Tools

- Addressing human waste sources more cost-effective approach to public health protection





# Study Objectives



***Risk-based framework*** to expeditiously reduce public health risks and demonstrate compliance with bacteria objectives



Characterize ***highest priority areas*** to invest resources



Prioritize identification and ***abatement of human sources*** of waste, utilizing human markers and other diagnostic tools



***Educate and outreach*** to stakeholders on bacteria issues

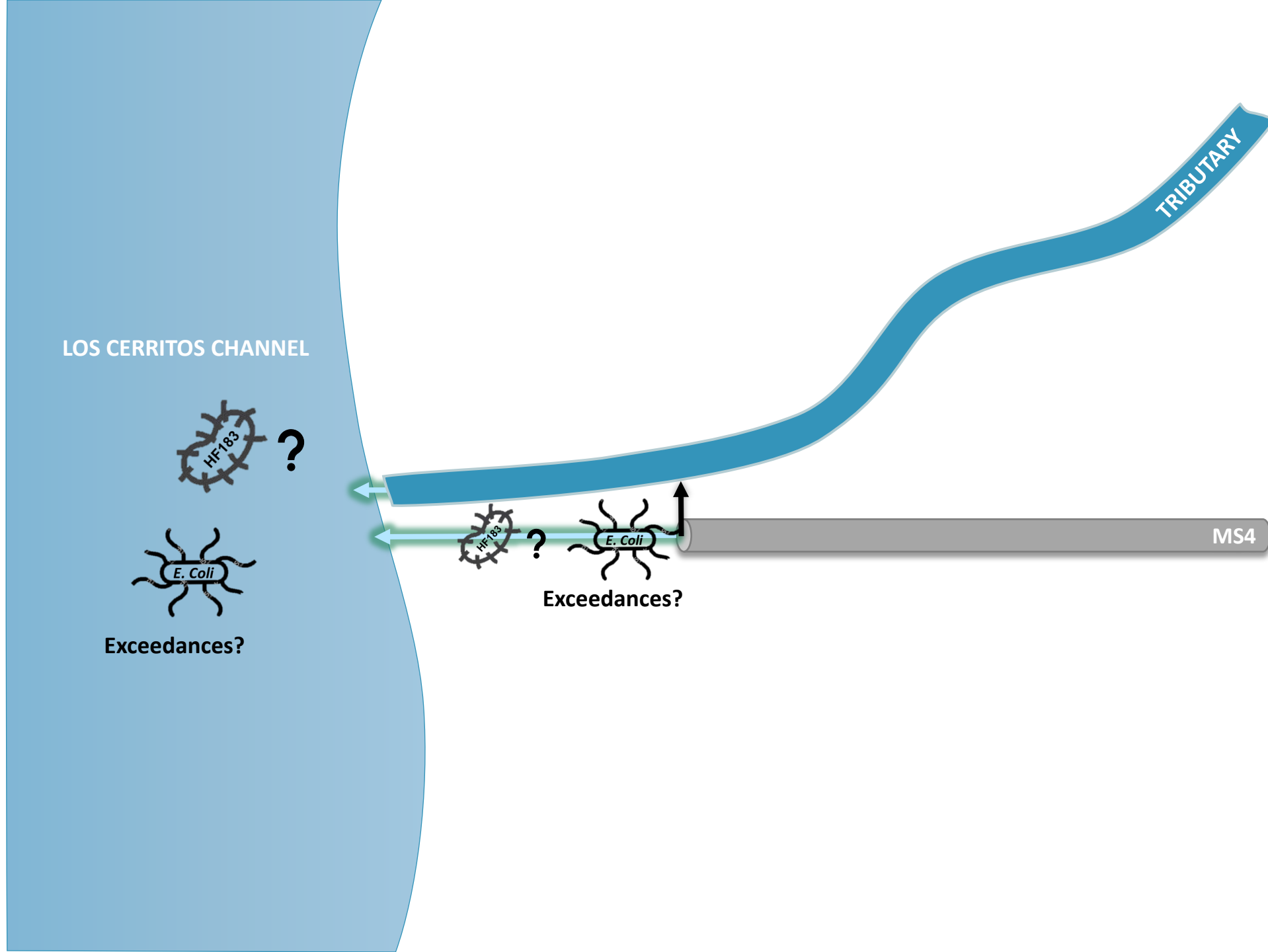


***Provide technical resources*** to inform and be leveraged by similar efforts in the region.



# Approach

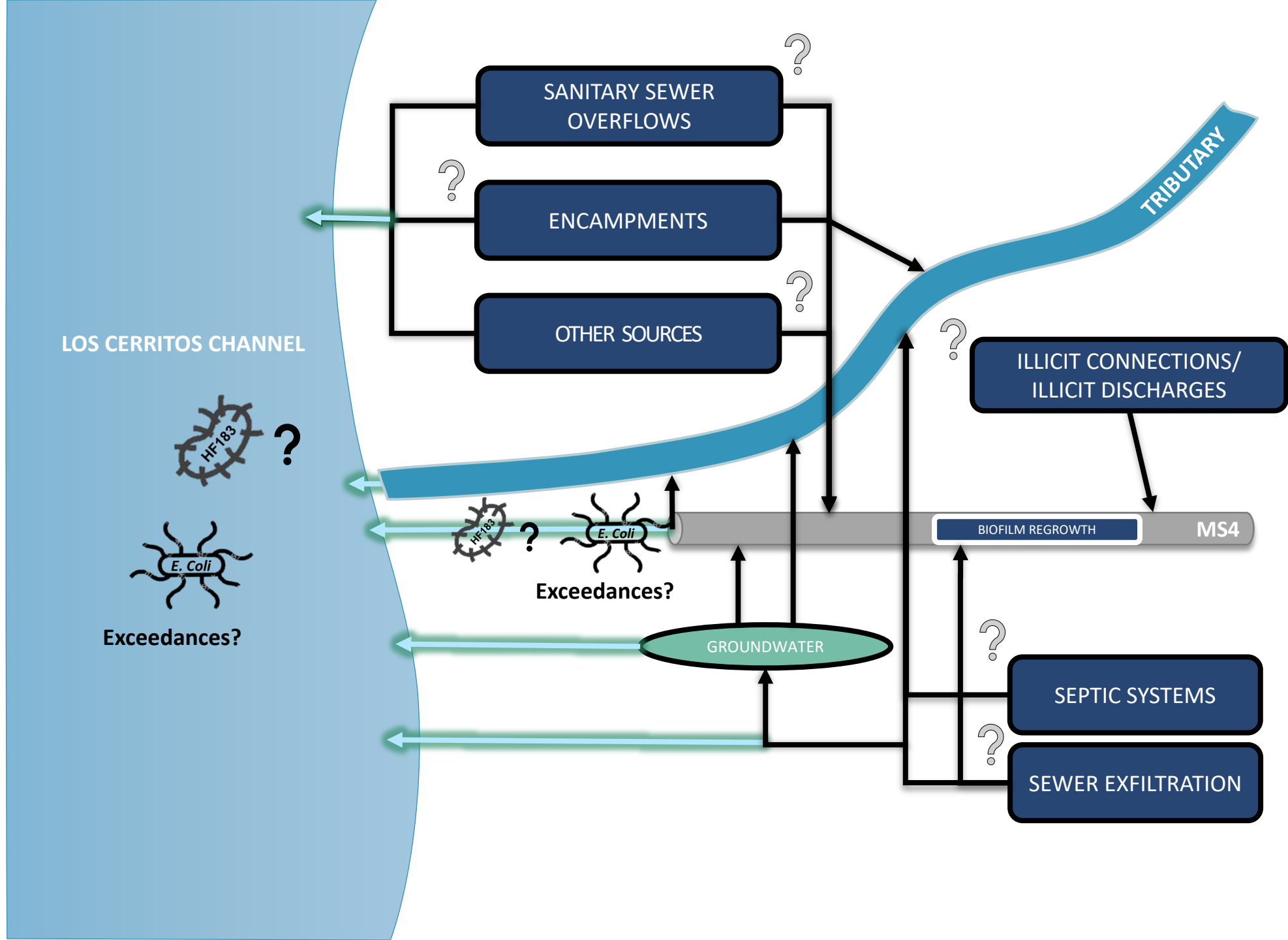
- (1) Assess Receiving Water Quality Conditions
- (2) Assess Outfall Water Quality Conditions





# Approach

- (1) Assess Receiving Water Quality Conditions
- (2) Assess Outfall Water Quality Conditions
- (3) Prioritize Catchment Areas

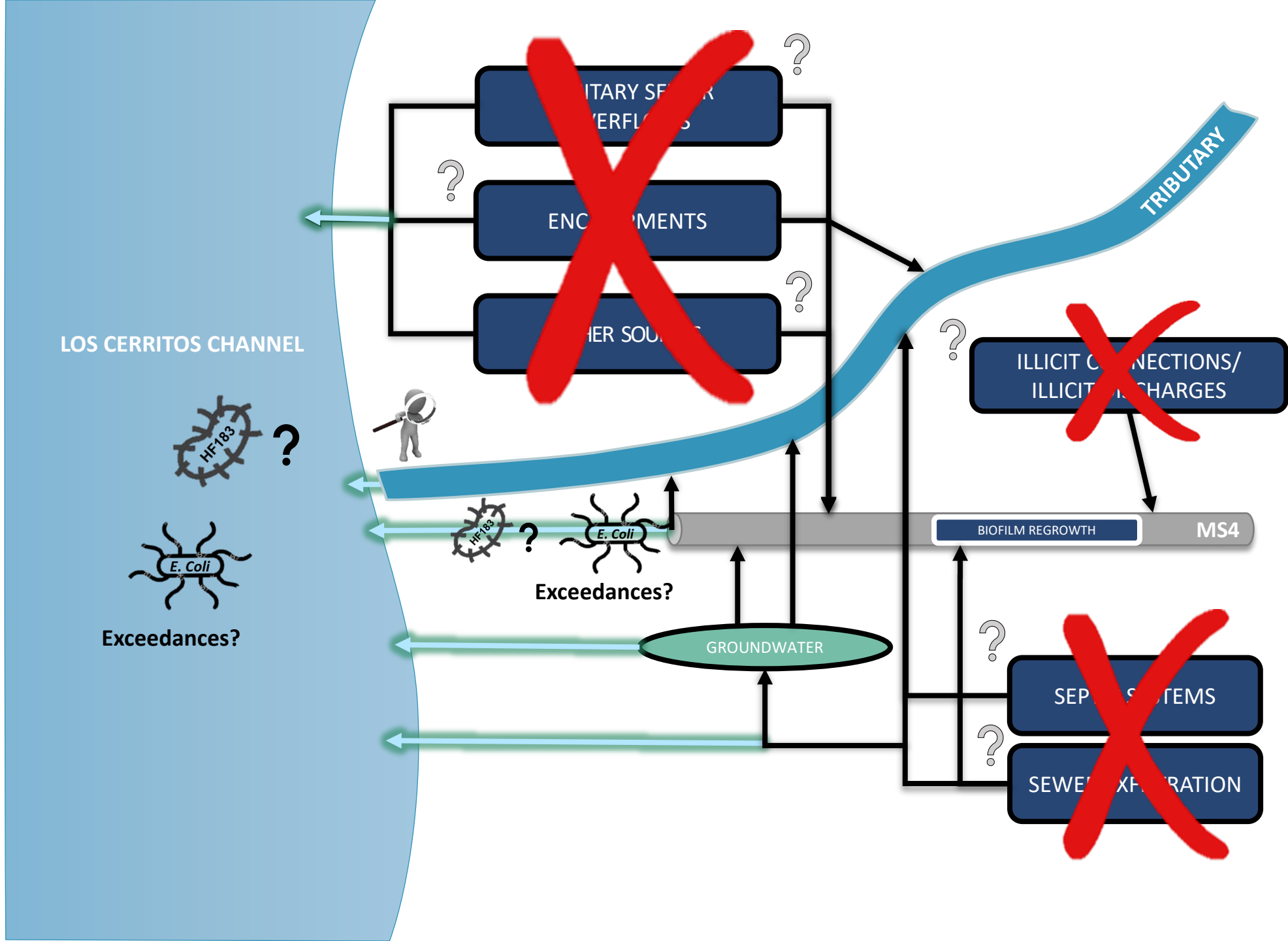






# Approach

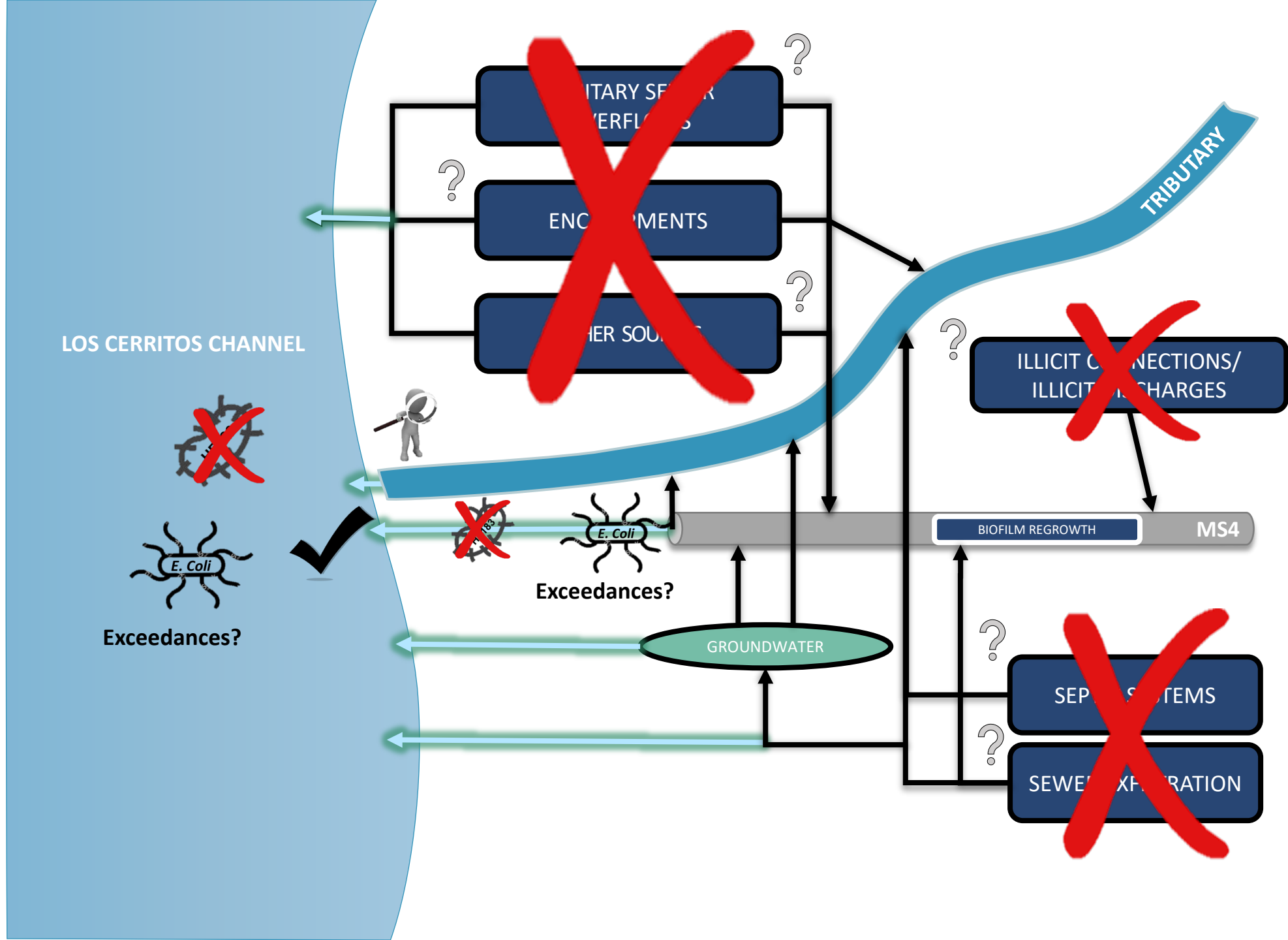
- (1) Assess Receiving Water Quality Conditions
- (2) Assess Outfall Water Quality Conditions
- (3) Prioritize Catchment Areas
- (4) Source Identification Monitoring
- (5) Source Abatement





# Approach

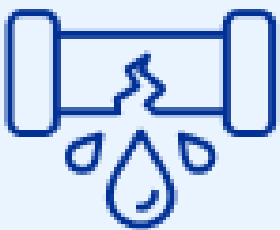
- (1) Assess Receiving Water Quality Conditions
- (2) Assess Outfall Water Quality Conditions
- (3) Prioritize Catchment Areas
- (4) Source Identification Monitoring
- (5) Source Abatement
- (6) Performance Monitoring



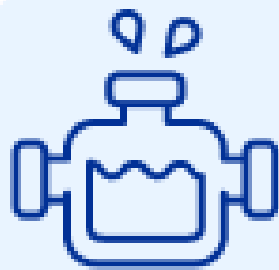


# Targeted Human Waste Sources

Leaking Sewer Pipes & SSOs



Leaking/Failing Septic System



Illegal Dumping



Illicit Connections/Discharges



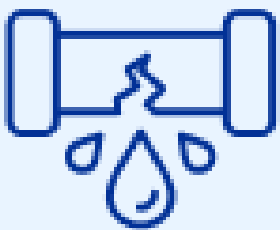
Homeless Encampments





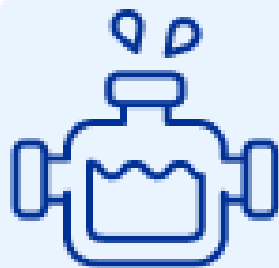
# Targeted Human Waste Sources

Leaking Sewer Pipes & SSOs



Maintain, repair or replace infrastructure

Leaking/Failing Septic System



Illegal Dumping



Educate, issue notice of violation, and clean up impacted area

Illicit Connections/Discharges



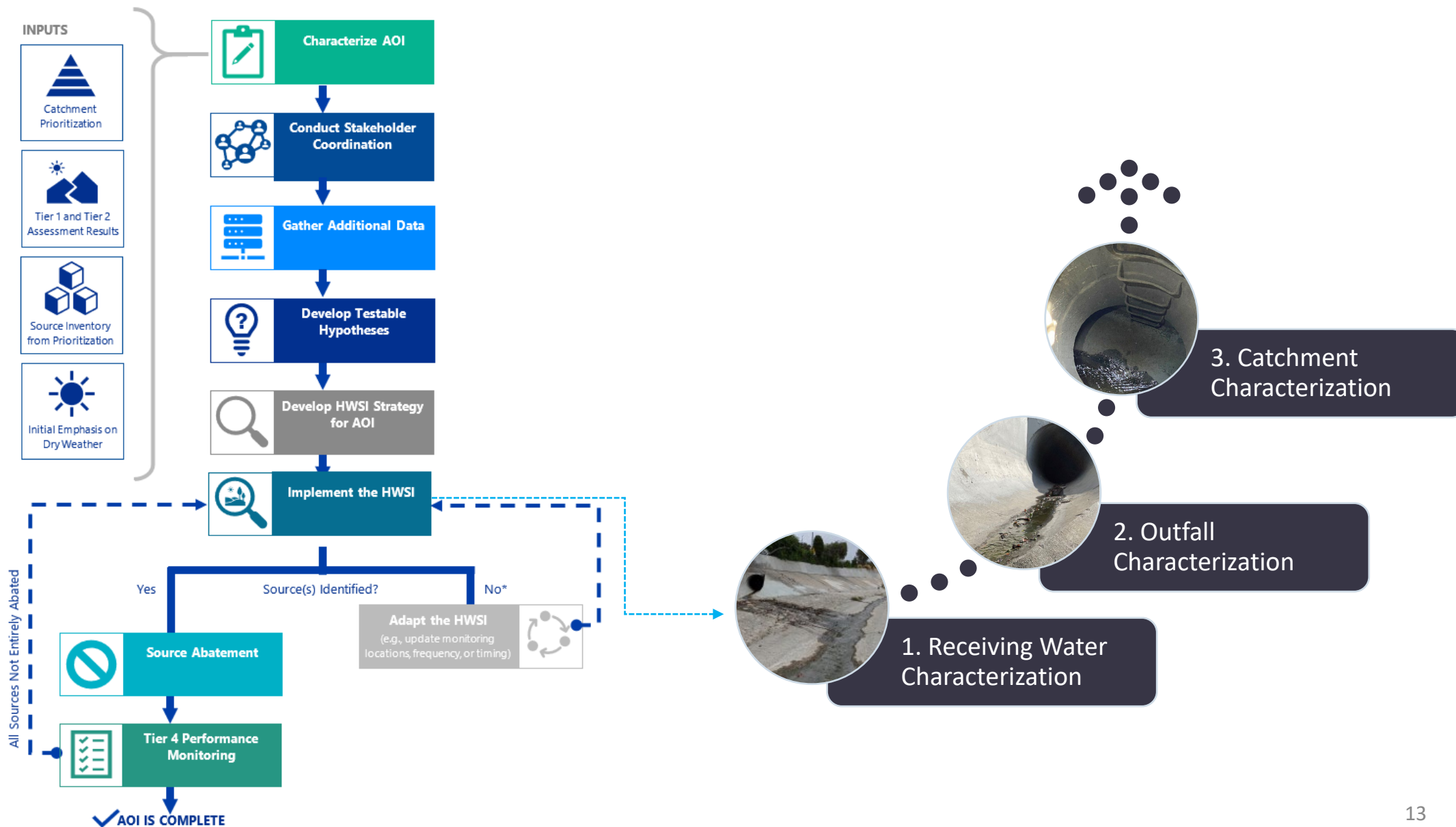
Homeless Encampments



Coordinate with City departments and latest policy



# Source Investigation Framework



\*Reasons to adapt an HWSI can be driven by other factors (e.g., additional stakeholder input, additional data, new scientific techn



# Monitoring Techniques

## Human Waste Source Tracking Toolbox

### Traditional Indicators

- **E. coli**
- Ammonia
- Smoke & Dye Testing

### Non-Traditional Indicators

- **Human specific genetic markers (e.g., HF183)**
- Human Viruses (norovirus, adenovirus)
- Human virus analogs (Coliphage, Crassphage)
- Single chemical markers (caffeine, pharma, optical brighteners, etc)

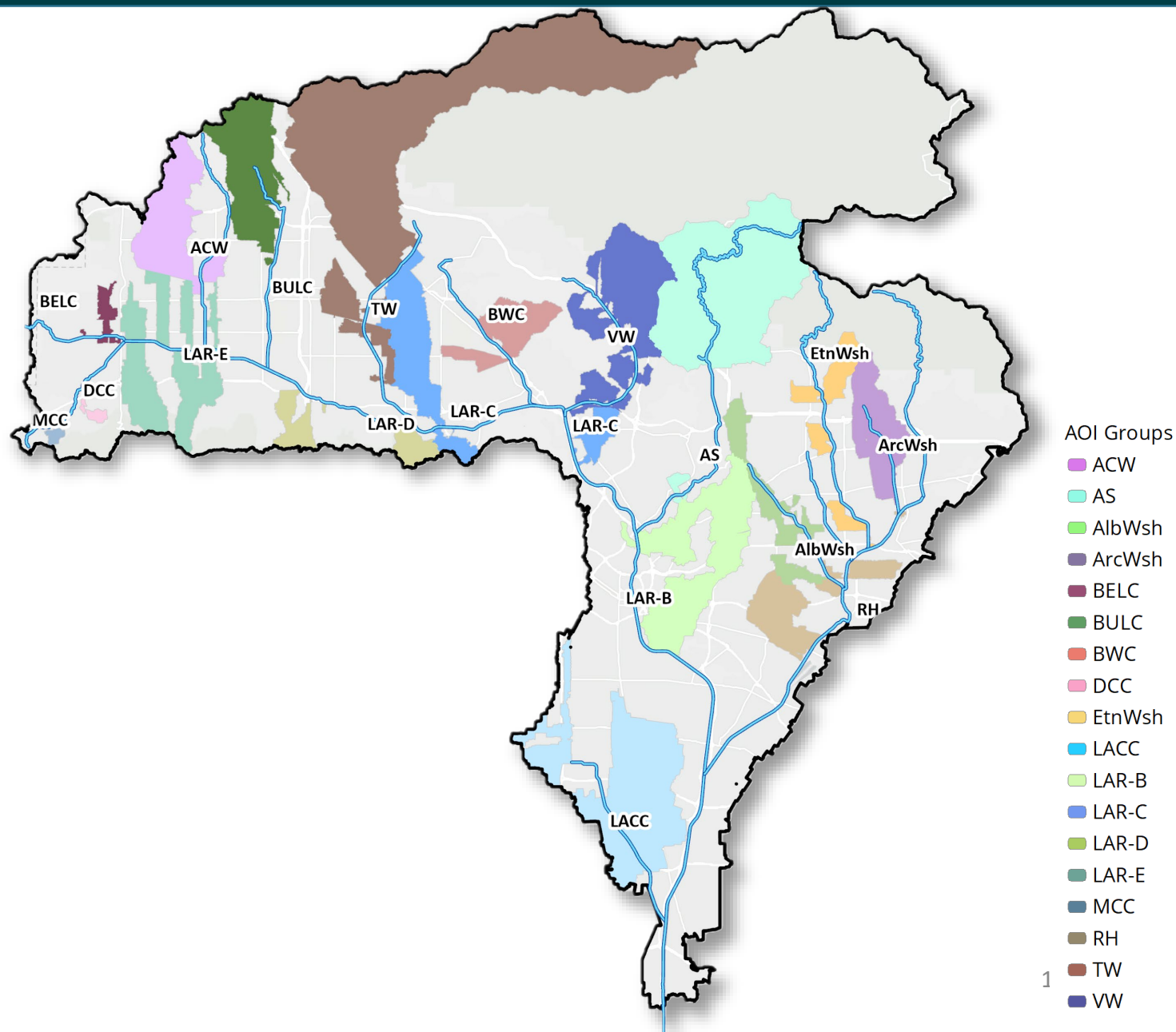
### New Research Indicators

- Microbial community profiling
- Non-targeted chemical analysis



# Upper LA River WMA Example

- 43 Areas of Investigation Identified
- 166 Outfall Catchments
- Conducting Human Waste Source Investigations





# Cost & Schedule

Phase	Description	Cost	Completion Date
Project Management	PM coordination and reporting	\$45,000	Ongoing
Catchment Prioritization	Data-driven prioritization for areas of investigation	\$90,000	3/29/2023
Targeted Human Waste Source Reduction Strategy	Implementation strategy that incorporates prioritization and source investigation framework	\$75,000	6/28/2024
Source Identification & Abatement	Conduct human waste source investigations and abatement of identified sources	\$225,000	6/30/2025
Outreach & Engagement	Coordination with key stakeholders	\$40,000	6/30/2025
<b>TOTAL</b>		<b>\$475,000</b>	





# Funding Request

<b>WASC</b>	<b>Year 1</b>	<b>Year 2</b>
<b>LSGR</b>	<b>\$175,000</b>	<b>\$300,000</b>
<b>TOTAL</b>	<b>\$175,000</b>	<b>\$300,000</b>



# Summary of Benefits

- Align implementation actions to successfully *reduce potential health risks* to recreators
- *Emphasize source control* for expedited pathway for improving water quality conditions

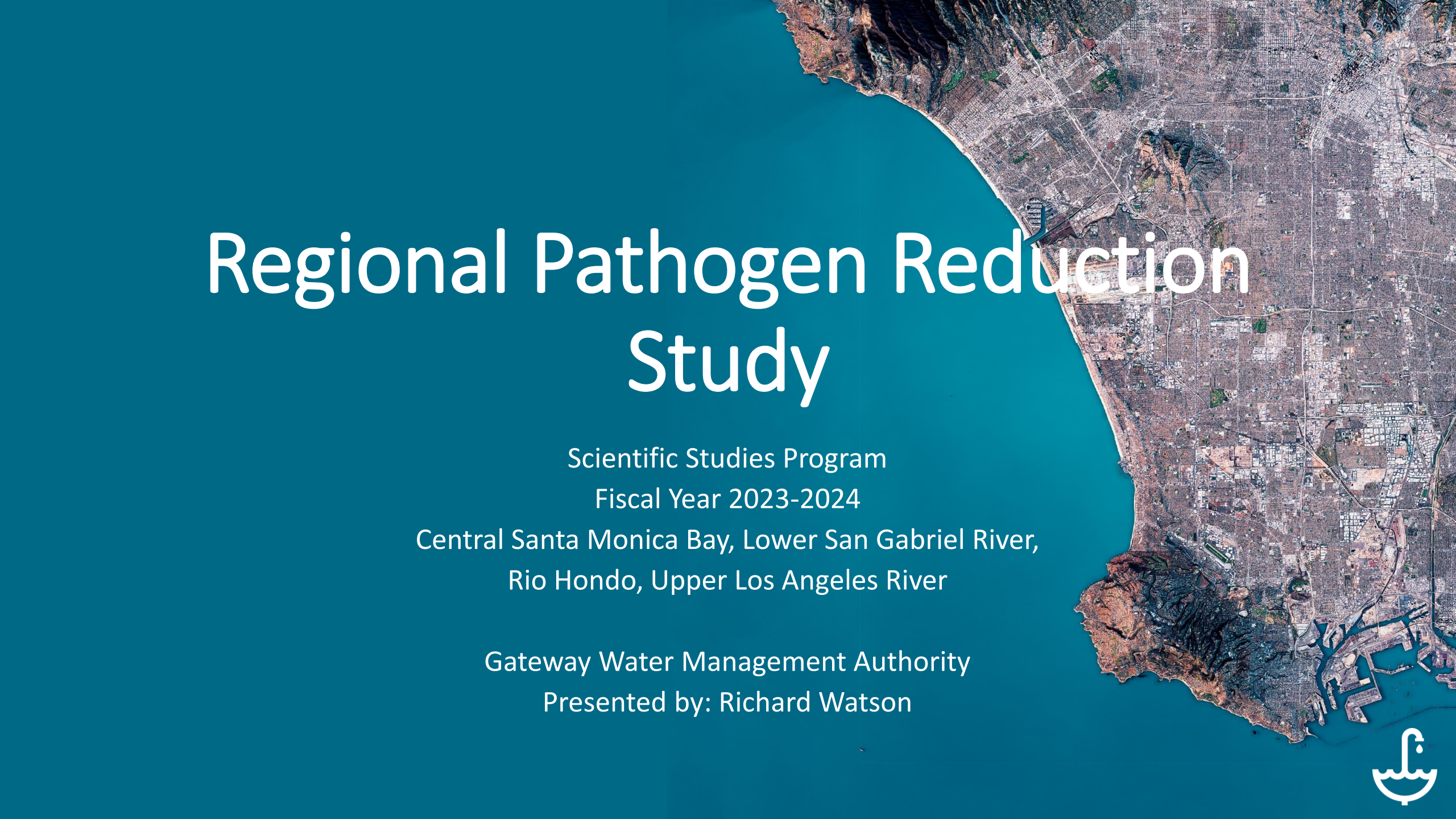




# Questions?

**Brianna Datti,**  
Craftwater Engineering

**Grace Kast,**  
Gateway Water  
Management Authority



# Regional Pathogen Reduction Study

Scientific Studies Program

Fiscal Year 2023-2024

Central Santa Monica Bay, Lower San Gabriel River,  
Rio Hondo, Upper Los Angeles River

Gateway Water Management Authority

Presented by: Richard Watson



# Study Overview

The Study will collect samples from waterbodies within urbanized areas of participating WAs and analyze them for bacterial indicators, viruses, and human markers.

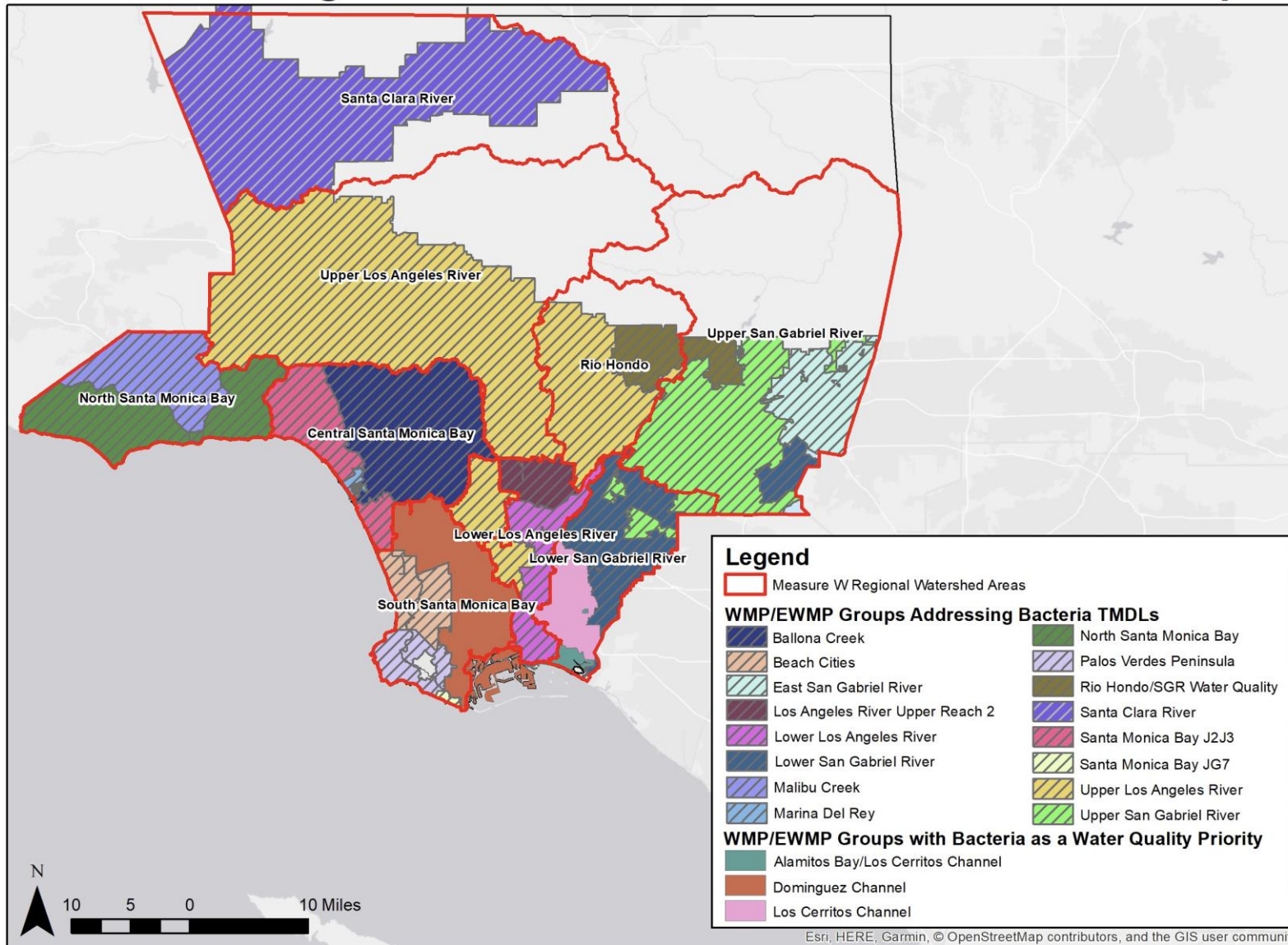
- Describe nexus to Stormwater and Urban Runoff capture and pollution reduction.
  - Study will facilitate improved targeting of pathogen sources and water to capture and/or treat
  - Study may reduce level of stormwater capture for bacteria compliance purposes through the identification of non-MS4 sources of risk thereby improving the protection of human health
  - Study will likely lead to partnering with various parties, such as wastewater agencies and homeless services agencies, to address human sources of pathogens.





# Study Location

## Measure W Regional Watershed Areas and WMP/EWMP Groups



\$5 B



# Study Team

- Gateway Water Management Authority will manage the project and select the Study Team, which is expected to consist of a team of local and national experts and academia.
- The study team will be selected based on qualifications to address the Work Plan developed by stakeholders, including study sponsors, interested stakeholders, an independent Technical Advisory Committee, and regulators.
- Members of the Study Team are expected to include engineers, scientists, and statisticians with experience in similar studies, such as the San Diego Surfer Health Study.



# Study Details

## *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 academics 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)





## Study Details (Continued)

### *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

(Continued)



## Study Details (Continued)

### *Regional collaboration efforts:*

- Initiated small group 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 three times 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
- Reduced first year cost of study



# Cost & Schedule

Phase	Description	Cost	Completion Date
Task 1	Stakeholder Process	\$490,000	7/22 – 6/27
Task 2	Health Risk Assessment	\$5,880,000	7/22 – 9/26
Task 3	Risk Management	\$1,734,600	4/23– 3/27
Task 4	Application of Study Findings	\$490,000	1/26 – 6/27
<b>TOTAL</b>		<b>\$8,594,600</b>	



# Funding Request

WASC	Year 1	Year 2	Year 3	Year 4	Year 4
CSMB	\$47,109.15	\$329,764.06	\$282,654.91	\$307,364.38	\$107,432.50
LLAR	\$33,843.21	\$236,902.50	\$203,059.29	\$220,810.57	\$77,179.51
LSGR	\$44,169.54	\$309,186.78	\$265,017.24	\$288,184.85	\$100,728.71
NSMB	\$4,748.60	\$33,240.22	\$28,491.61	\$30,982.33	\$10,829.20
RH	\$30,413.67	\$212,895.68	\$182,482.01	\$198,434.45	\$69,358.42
SCR	\$15,866.36	\$111,064.53	\$95,198.17	\$103,520.32	\$36,183.27
SSMB	\$48,654.33	\$340,580.32	\$291,925.99	\$317,445.93	\$110,956.29
ULAR	\$102,094.95	\$714,664.67	\$612,569.72	\$666,120.09	\$232,827.71
USGR	\$49,973.39	\$349,813.71	\$299,840.33	\$326,052.14	\$113,964.40
<b>TOTAL</b>	<b>\$376,873.21</b>	<b>\$2,638,112.47</b>	<b>\$2,261,239.26</b>	<b>\$2,458,915.06</b>	<b>\$859,460.00</b>



## Summary of Benefits

- 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?**