

# Middle Santa Ana River (MSAR) Watershed TMDL Task Force

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Project Authority*

*March 12, 2021*



# MSAR WATERSHED TMDL TASK FORCE

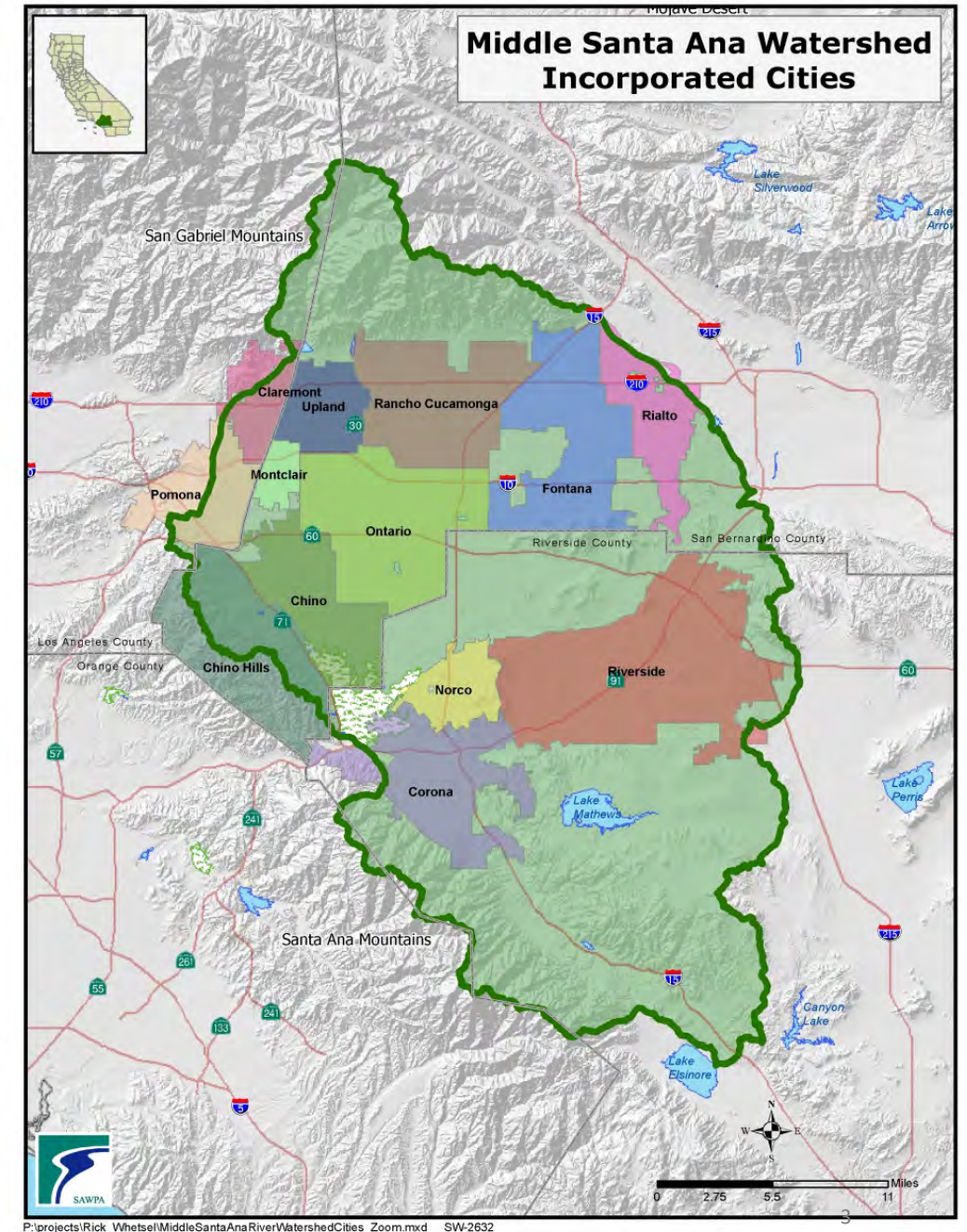
- Addresses pathogen water quality impairment to Santa Ana River and its tributaries in the Chino Basin area known as the Middle Santa Ana River watershed
- Benefits
  - Healthier river and tributaries as a result of collaborative efforts
  - Measurable surface water quality improvement, particularly for dry weather flows
  - Efficient and cost effective TMDL standards compliance for regulators and regulated community





# MSAR WATERSHED TMDL TASK FORCE STAKEHOLDERS

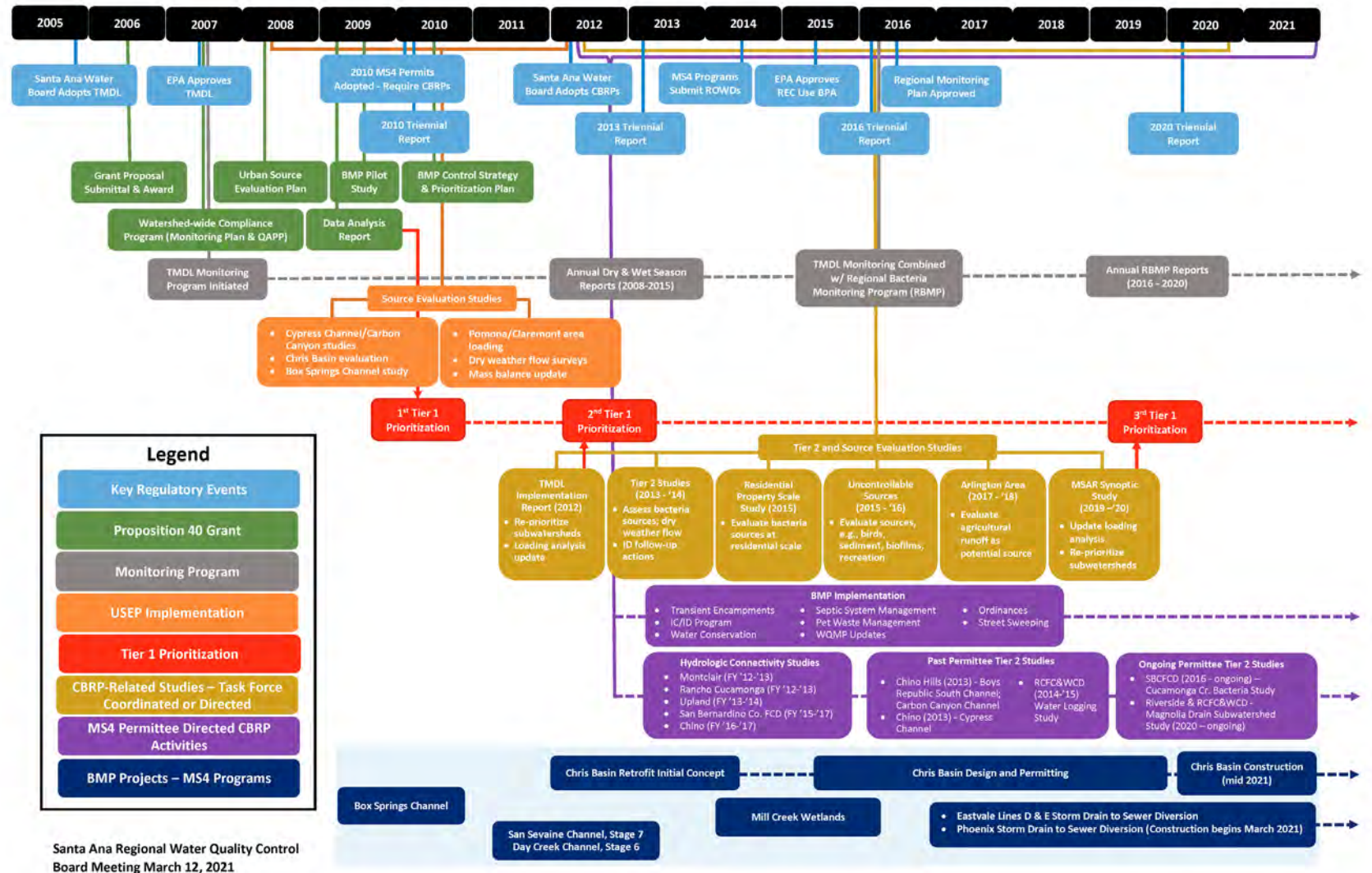
- Riverside County Flood Control & Water Conservation District
- San Bernardino County Flood Control District
- Counties of Riverside and San Bernardino
- Cities of Chino, Chino Hills, Claremont, Corona, Eastvale, Fontana, Jurupa Valley, Montclair, Norco, Ontario, Pomona, Rancho Cucamonga, Rialto, Riverside, and Upland
- Agricultural Operators represented by Chino Basin Watermaster Agricultural Pool and Milk Producers Council
- University of California Riverside
- Santa Ana Regional Water Quality Control Board



# MSAR WATERSHED TMDL TASK FORCE

- Task Force members have worked collaboratively since 2005 to implement the MSAR Watershed Bacterial Indicator TMDL

## Handout





# KEY IMPLEMENTATION MECHANISMS FOR ACHIEVING TMDLS

- MS4 Permittees
  - MS4 Permits
  - Comprehensive Bacterial Reduction Plan(s)
  - Santa Ana River Bacteria Monitoring Program
- CAFOs (Dairies & Heifer/Calf Facilities)
  - CAFO Permit
  - Bacterial Indicator Agricultural Source Management Plan
  - Santa Ana River Bacteria Monitoring Program
- Irrigated Agriculture
  - Chino Basin Watermaster
  - Bacterial Indicator Agricultural Source Management Plan
  - Santa Ana River Bacteria Monitoring Program



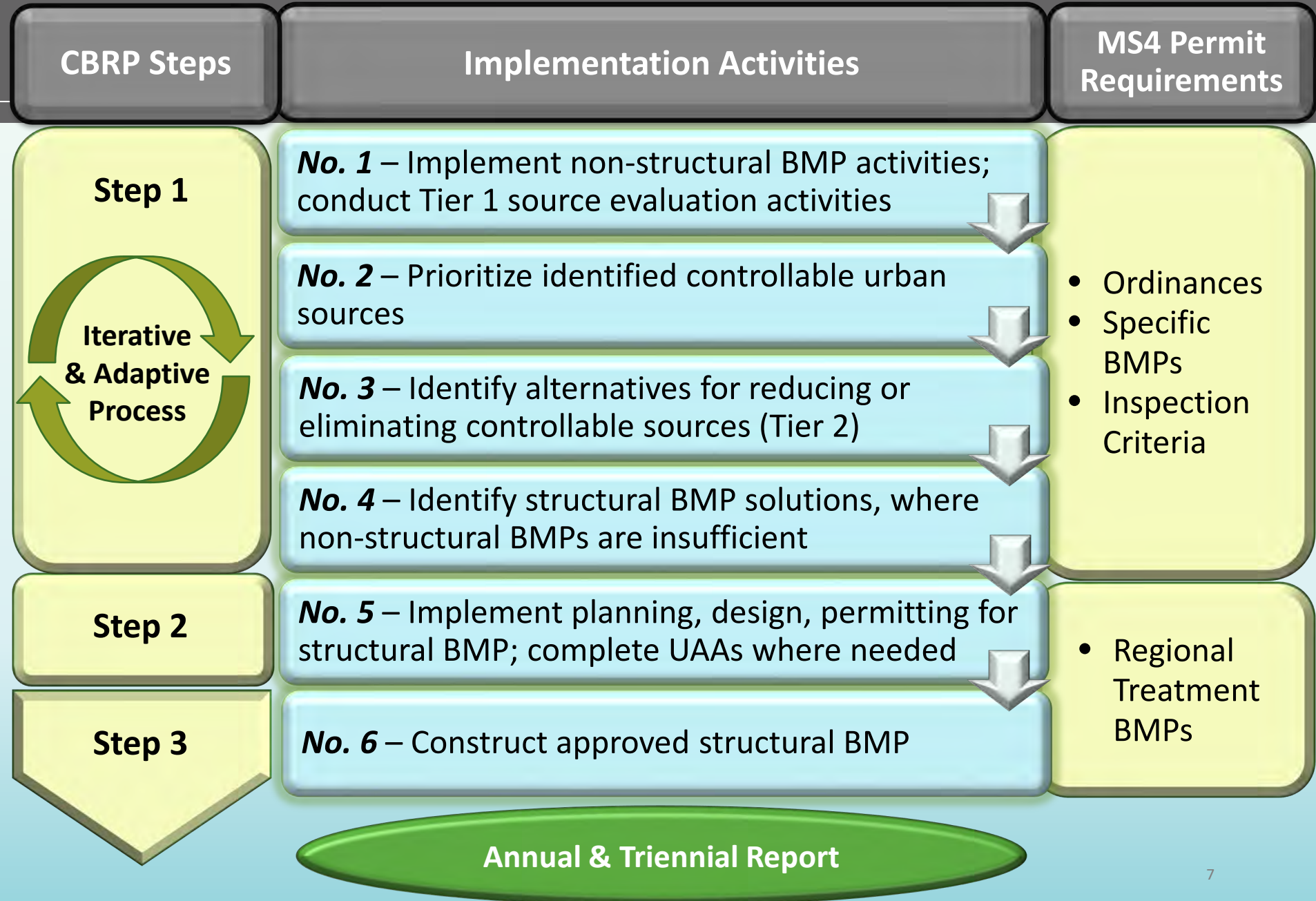
# MS4 COMPREHENSIVE BACTERIA REDUCTION PLAN (CBRP)

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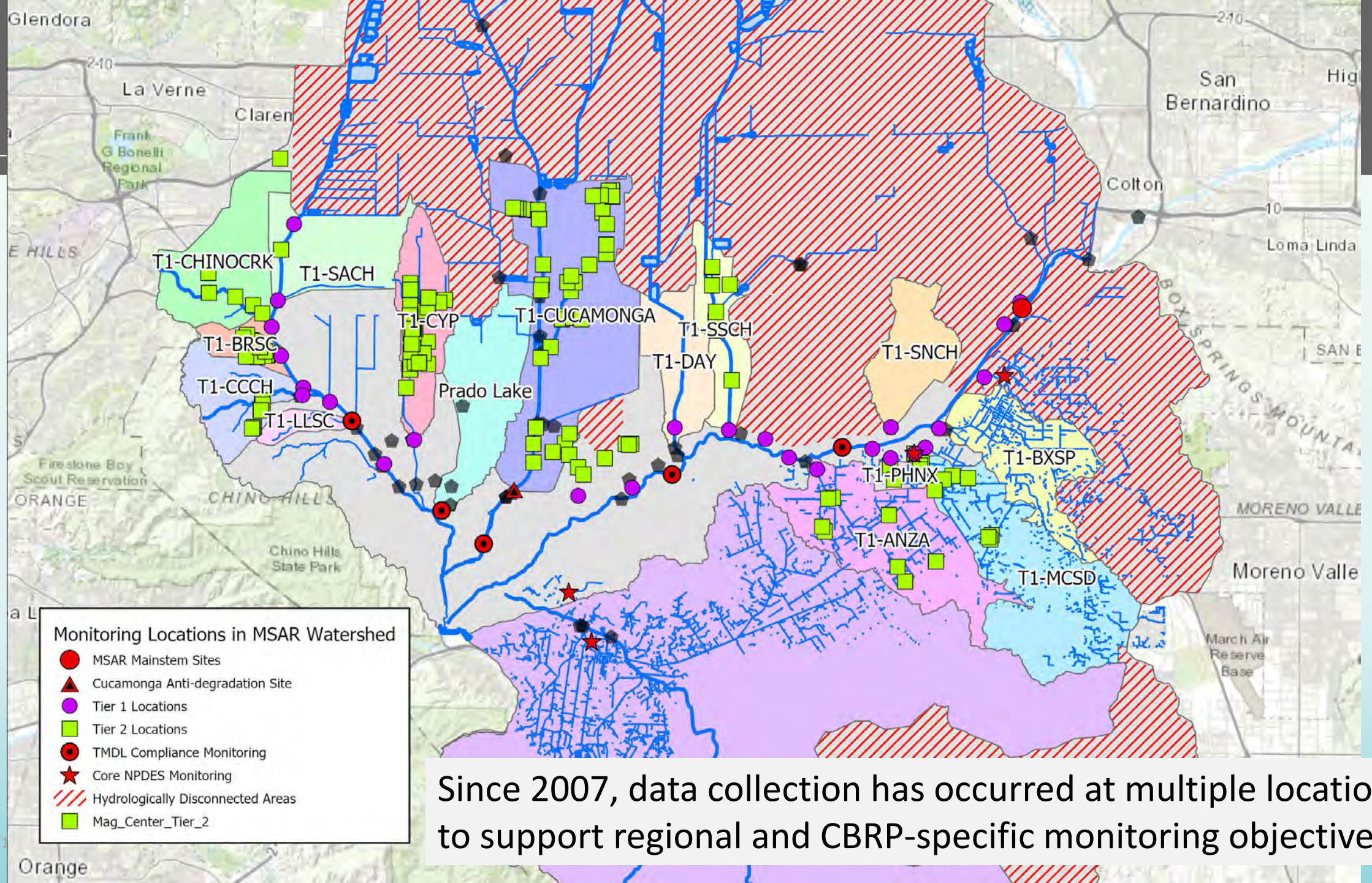


# CBRP FRAMEWORK

- Santa Ana Water Board approved CBRPs in the watershed in February 2012 and September 2013
- CBRP addresses dry weather conditions
- Framework consists of three steps with six key activities to meet MS4 Permit requirements







Since 2007, data collection has occurred at multiple locations to support regional and CBRP-specific monitoring objectives

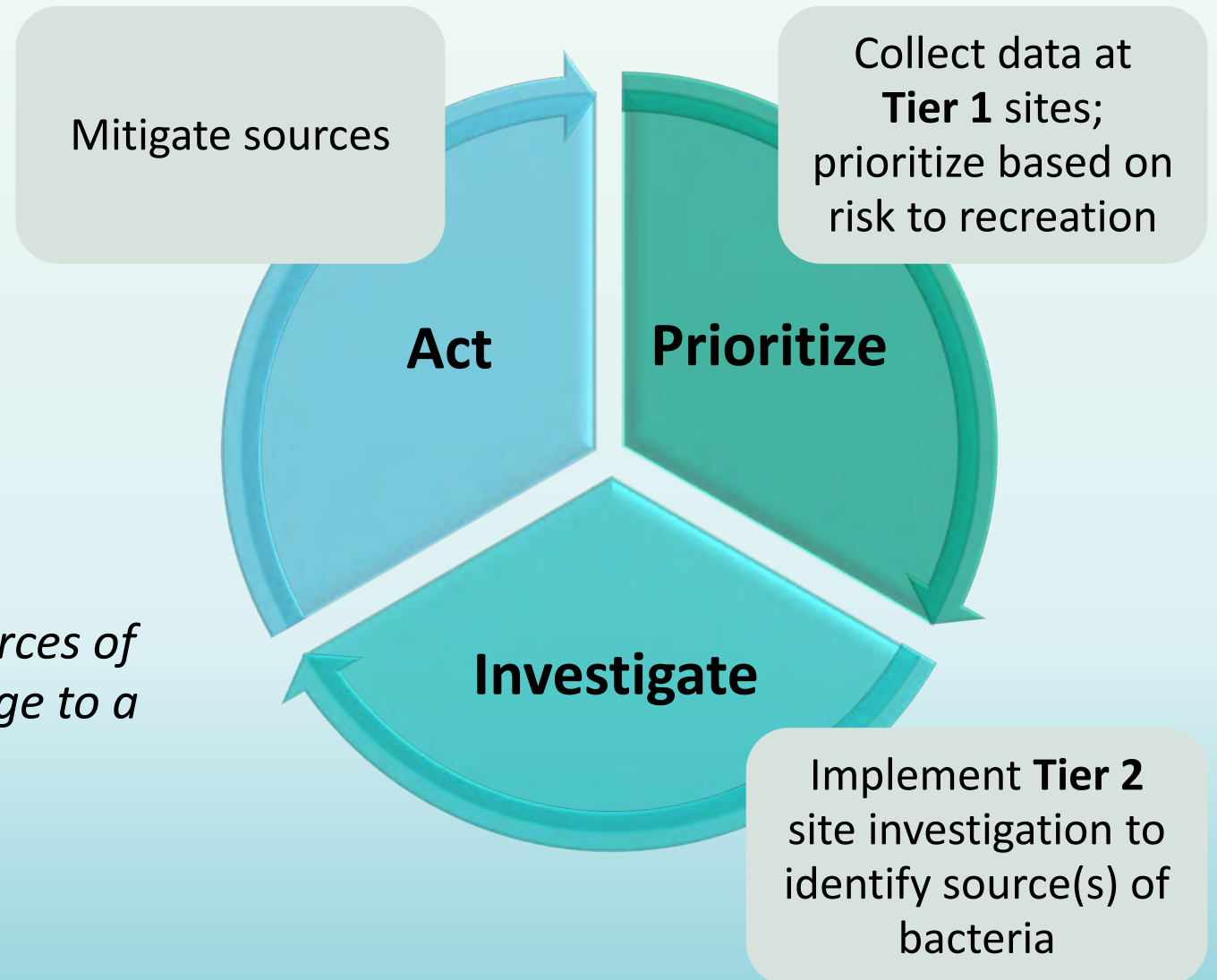


# CBRP IMPLEMENTATION – IDENTIFYING & MITIGATING PRIORITIES IS AN ITERATIVE PROCESS

Task Force recently completed its third iteration of the prioritization process

1. Informed CBRP development
2. 2013 TMDL Triennial Report
3. 2020 TMDL Triennial and Synoptic Study Report

- **Tier 1 Site** - Location where urban sources of dry weather flow may directly discharge to a downstream impaired water;
- **Tier 2 Site** – Sample locations that are tributary to a downstream Tier 1 site



# PRIORITIES CHANGE OVER TIME

Prioritization		Data Source	Highest Priorities	Examples of Resulting Actions
1	<ul style="list-style-type: none"> <li>Completed in 2009</li> <li>Basis for CBRP</li> </ul>	<ul style="list-style-type: none"> <li>2007-2008 data collection</li> </ul>	<ul style="list-style-type: none"> <li>Box Springs Channel</li> <li>Chris Basin</li> <li>County Line Channel</li> </ul>	<ul style="list-style-type: none"> <li>Box Springs Channel - Cross-Connection Repaired (2008)</li> <li>Mill Creek Wetlands (2014)</li> <li>Chris Basin Modification Project initiated in 2010 – Retrofit begins in Spring 2021</li> </ul>
2	<ul style="list-style-type: none"> <li>Findings in 2013 TMDL Triennial Report</li> </ul>	<ul style="list-style-type: none"> <li>Based on 2012 data collection</li> </ul>	<ul style="list-style-type: none"> <li>Eastvale Lines D &amp; E</li> <li>Anza Drain</li> <li>San Sevaine Channel</li> <li>Boys Republic South Channel (BRSC)</li> <li>Upper Chino Creek</li> <li>Chris Basin</li> <li>Eastvale Lines A &amp; B</li> </ul>	<ul style="list-style-type: none"> <li>Storm Drain to Sewer Diversion Projects (2015 – Ongoing) <ul style="list-style-type: none"> <li><i>Eastvale Lines D &amp; E</i></li> <li><i>Phoenix Storm Drain</i></li> </ul> </li> <li>Anza Drain Homeless Encampment Cleanup (2019)</li> </ul>
3	<ul style="list-style-type: none"> <li>Findings in 2020 TMDL Triennial Report</li> </ul>	<ul style="list-style-type: none"> <li>Based on 2019 MSAR Bacteria Synoptic Study</li> </ul>	<ul style="list-style-type: none"> <li>Magnolia Street Drain</li> <li>Sunnyslope Channel</li> <li>Anza Drain</li> </ul>	<ul style="list-style-type: none"> <li>Magnolia Street Drain Tier 2 Study initiated in 2020</li> </ul>



# BOX SPRINGS CHANNEL – CROSS-CONNECTION

- 2007 - Frequent and persistent detection of human source bacteria; high bacterial indicator concentrations
- 2008 - Local investigation identified and corrected a sanitary/storm sewer cross connection
- Follow-up monitoring observed no human source bacteria; reduced bacterial indicator concentrations





# CHRIS BASIN RETROFIT PROJECT

- Retrofit Chris Basin from straight-line to meandering flow:
  - *Force dry weather flow to traverse the basin floor in a back-and-forth manner, slowing flow to allow for degradation of bacteria*
- Conceptual planning began in 2010
- Lengthy permit process completed Fall 2020
  - Army Corps of Engineers (404 – Nationwide Permits 3, 31): September 26, 2019
  - Regional Board (401 Certification): February 28, 2020
  - California Department of Fish & Wildlife (1600 Permit): September 24, 2020
- Pre-retrofit baseline bacteria monitoring completed in Summer 2020
- Construction to begin by mid-2021





# CUCAMONGA CREEK WATERSHED - MILL CREEK WETLANDS

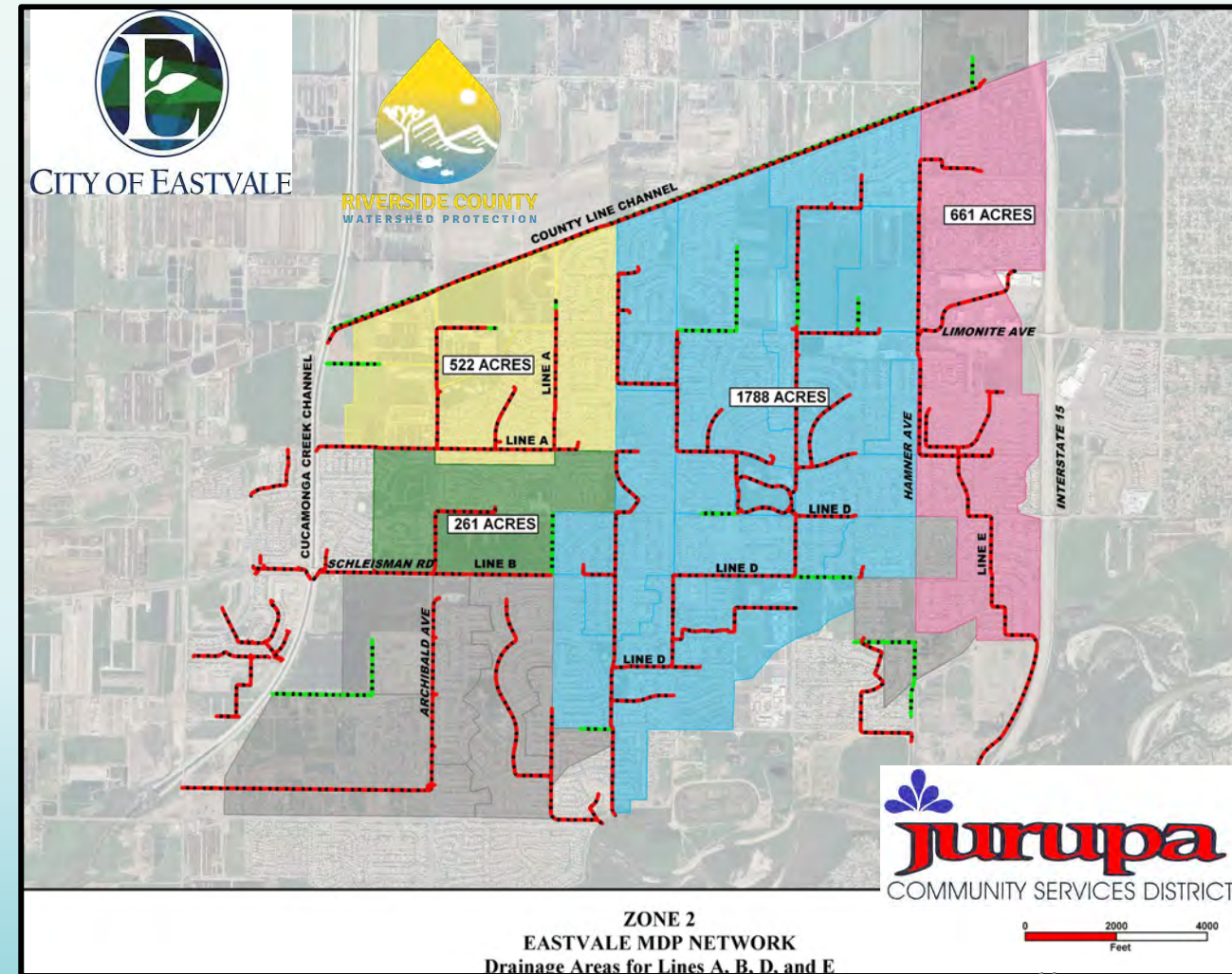
- 52-acre facility
- Reduces pollutant loads (treats up to 15 cfs of dry and wet-weather flows)
- Provides treatment capacity for regional urban development
- Multi-benefit – creates habitat, supports recreation





# EASTVALE LINE D AND E STORM DRAIN TO SEWER DIVERSION PROJECT

- Partnership with City of Eastvale and Jurupa Community Services District (JCSD)
- Performed additional water quality & flow monitoring to assess feasibility
- Dry weather diversion structures work best with low flows
- Desire to address wet weather objectives and reduce costs
- JCSD's Recycle Water District needs to be constructed first
- Both projects and JCSD Recycled Water projects are in District's 5-year CIP Budget



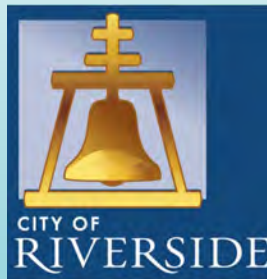


# PHOENIX AVENUE STORM DRAIN TO SEWER DIVERSION PROJECT

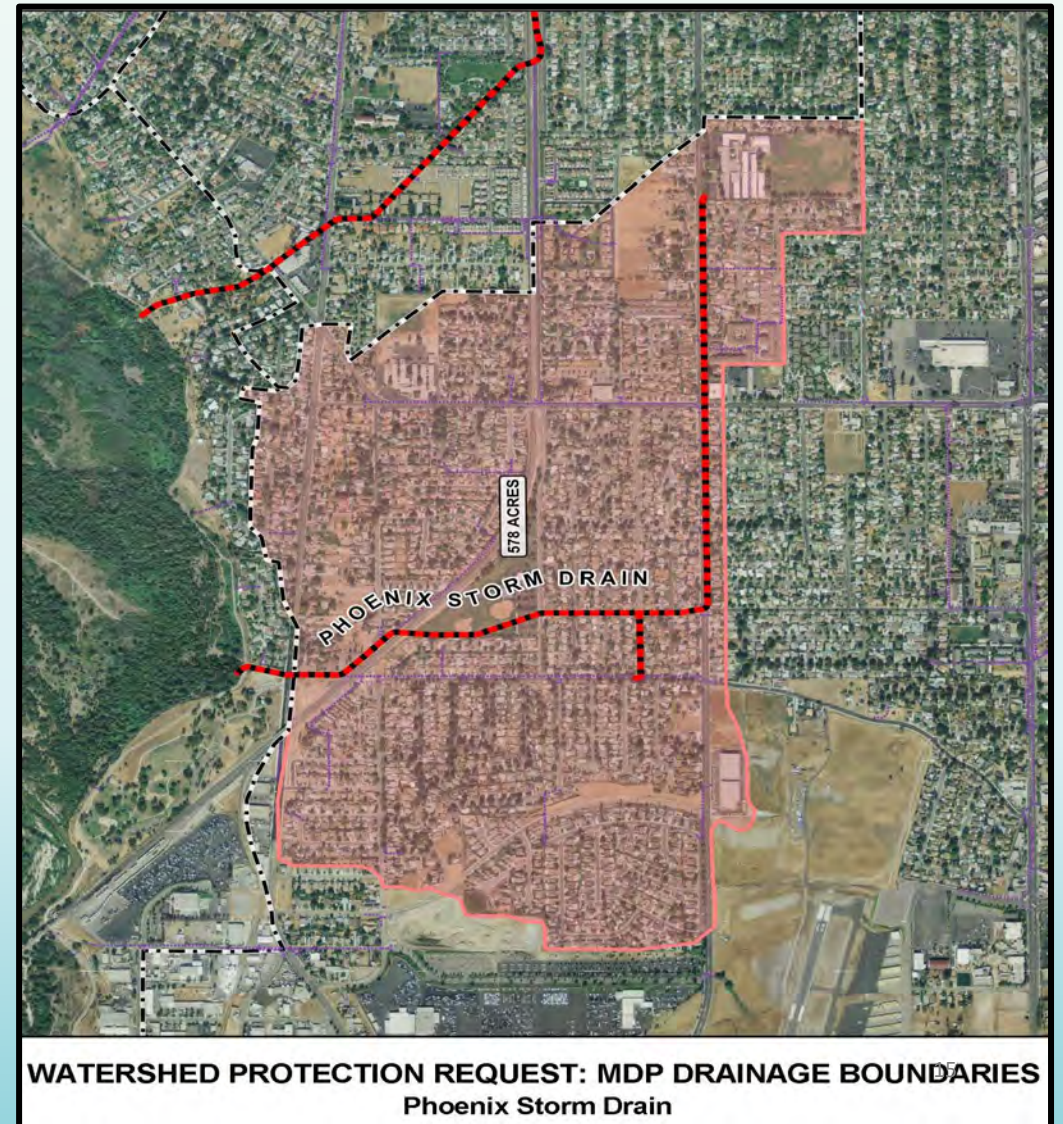
- 1<sup>st</sup> sewer diversion project in Riverside County
- Address bacteria loads to Middle Santa Ana River
- Partnership with City of Riverside
  - District funded design & construction
  - City to operate and maintain
- Construction to commence early March 2021



**RIVERSIDE COUNTY**  
WATERSHED PROTECTION



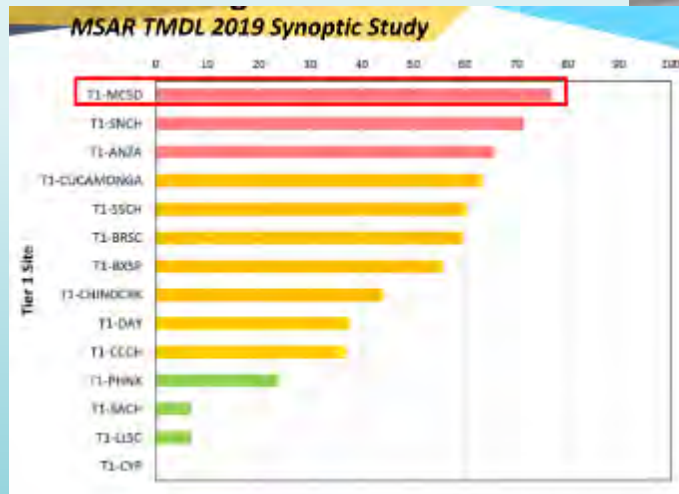
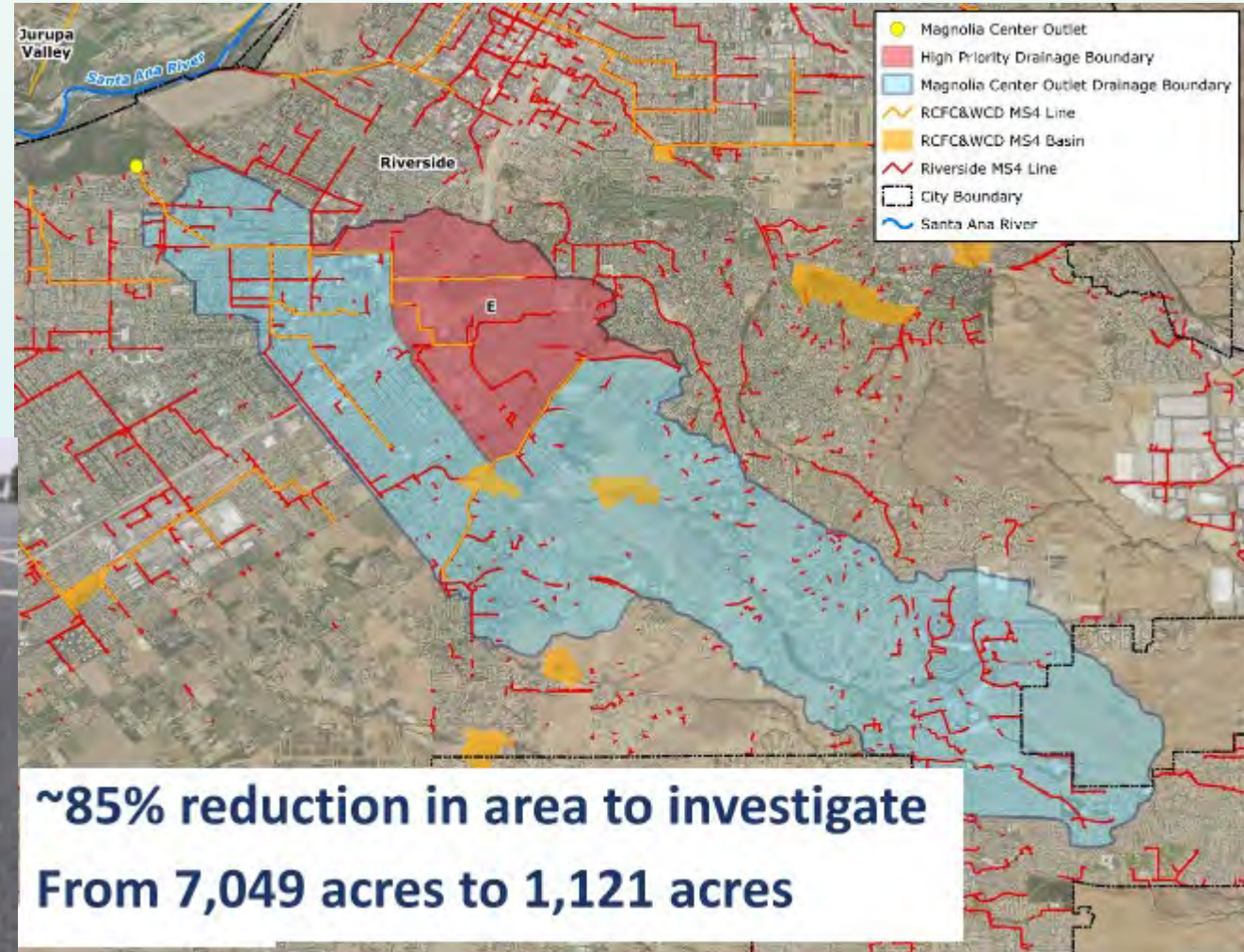
**CITY OF**  
**RIVERSIDE**





# MAGNOLIA CENTER STORM DRAIN 2020 TIER 2 STUDY

- Identified as high priority by 2019 Bacteria Synoptic Study
- Tier 2 Study implemented in 2020 to track bacteria sources in MS4
- Successfully identified subcatchment to focus future efforts





# HOMELESS ENCAMPMENT CLEAN-UPS IN MS4 CHANNELS

- Established procedures to mitigate homeless encampments in the MS4
- Effort requires collaborative effort with multiple agencies
- Complicating factors include:
  - Land ownership
  - Societal concerns (safety, physical & mental, health, child protection, animal control, etc.)
  - Storage of confiscated property
  - Hazardous waste disposal

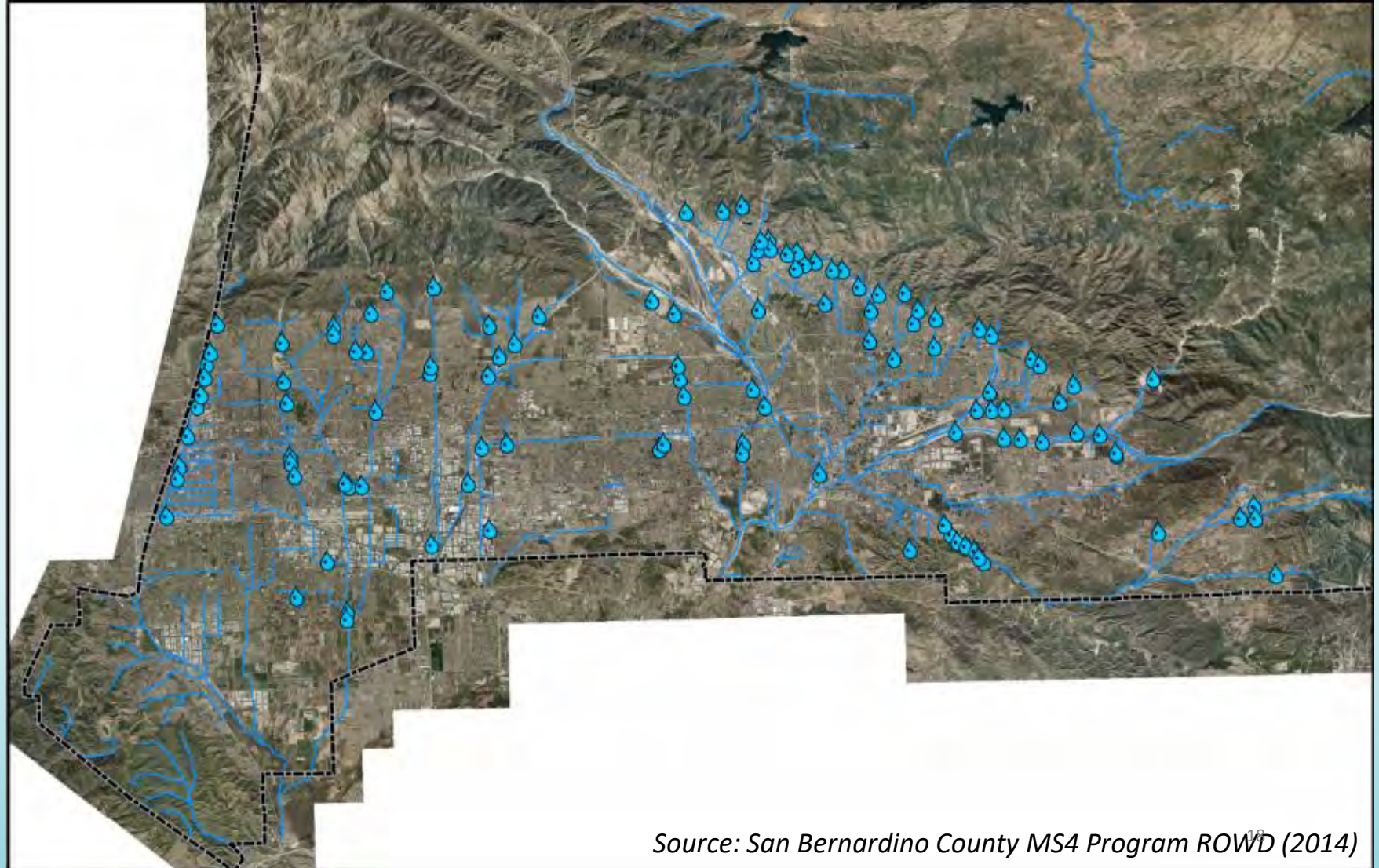




# REGIONAL FLOW DIVERSION PROJECTS - SAN BERNARDINO COUNTY

- 118 recharge basins constructed in San Bernardino County
- Basins limit amount of dry and wet weather flows reaching MSAR compliance sites
- Documentation developed by several permittees to show hydrologic disconnection
- SBCFCD continues to collaborate with water providers on other recharge opportunities

3/17/2021



Source: San Bernardino County MS4 Program ROWD (2014)



# MSAR WATERSHED

Watershed Has Changed Since TMDL Adoption



# SIGNIFICANT CHANGE IN LAND USE

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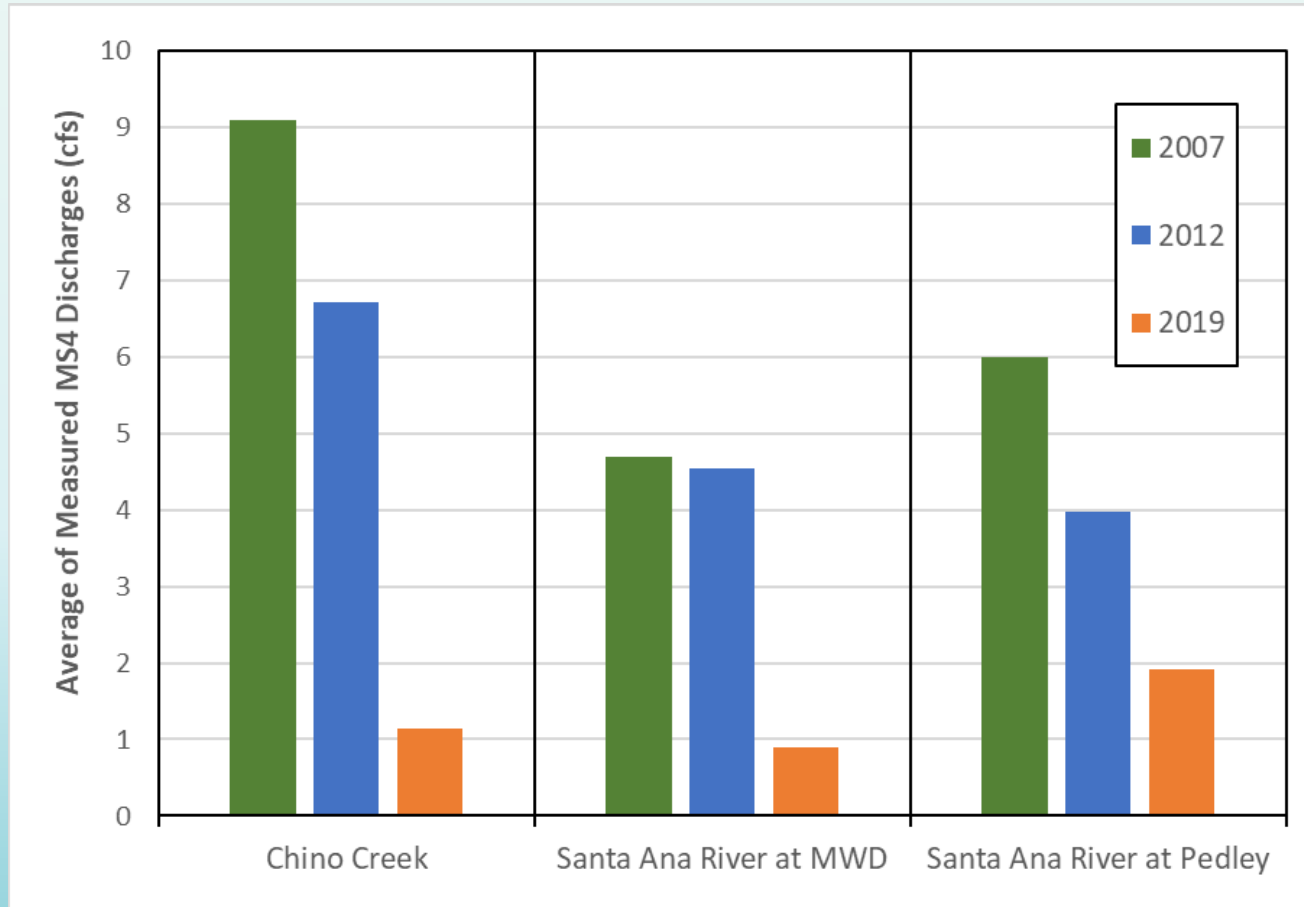


- Dairies
  - 2005 – 164 Dairy/Heifer Facilities (215,000 cows)
  - 2020 – 68 Dairy/Heifer Facilities (67,946 cows)
- Agriculture
  - Declines in irrigated acreage



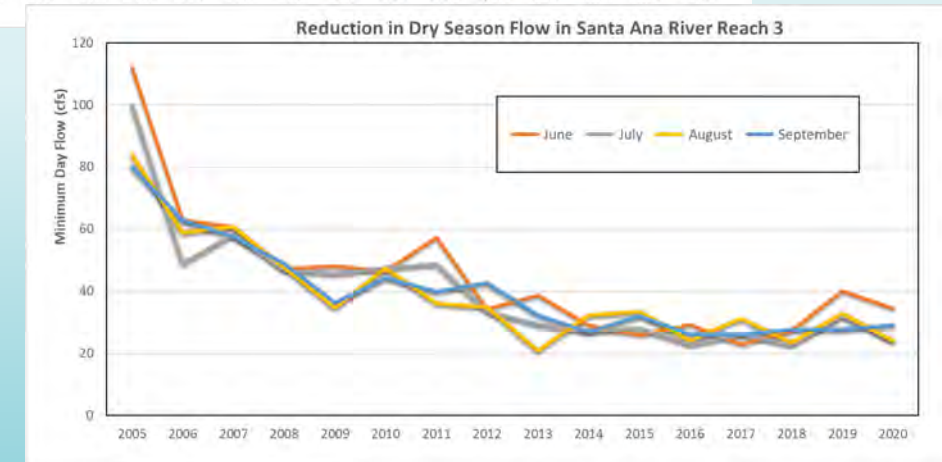
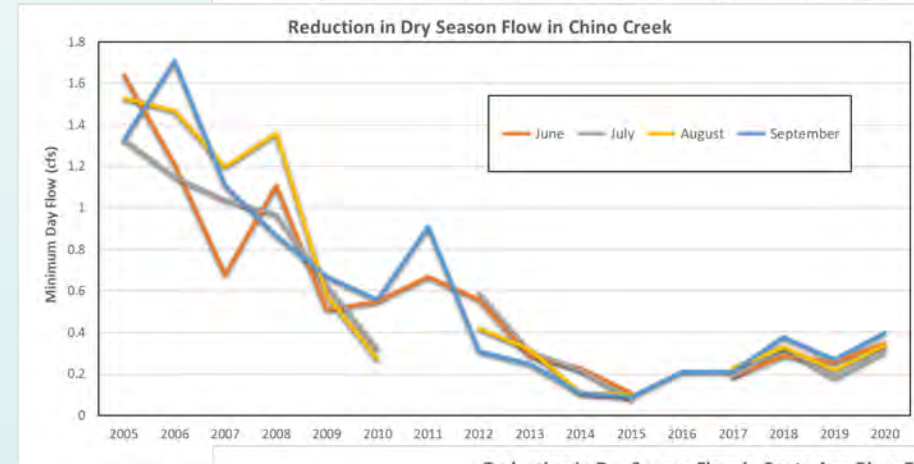
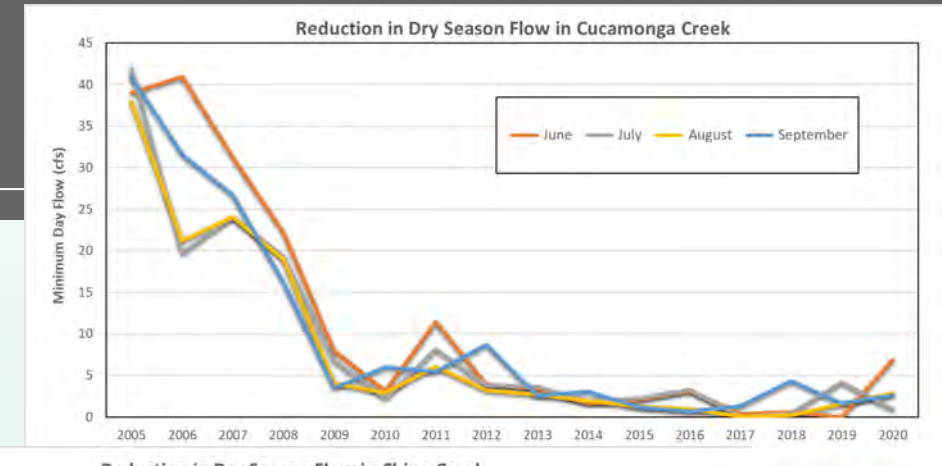
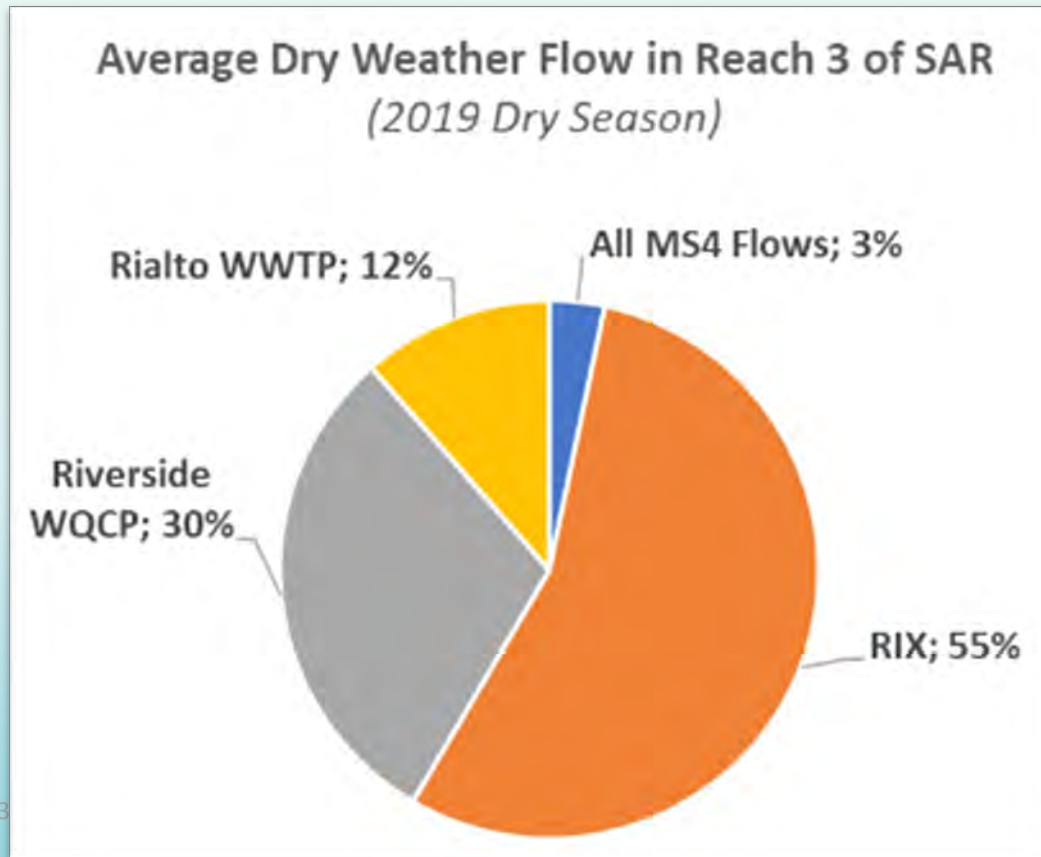
# EVIDENCE OF REDUCTIONS IN DRY WEATHER FLOW

- Declining dry weather flow rates measured at Tier 1 MS4 outfalls upstream of TMDL compliance monitoring locations



# REDUCED POTW EFFLUENT CONTRIBUTIONS TO BASEFLOW

- USGS gauges show declining instream dry season flow since TMDL adoption (2005)
- Reach 3 is 97% effluent dominated





# MEASURED SOURCE LOADS OF FECAL BACTERIA

- Investigations included multiple MS4s and agricultural sources



- Synoptic Study shows ~ 75% of dry weather bacteria load from within river sources

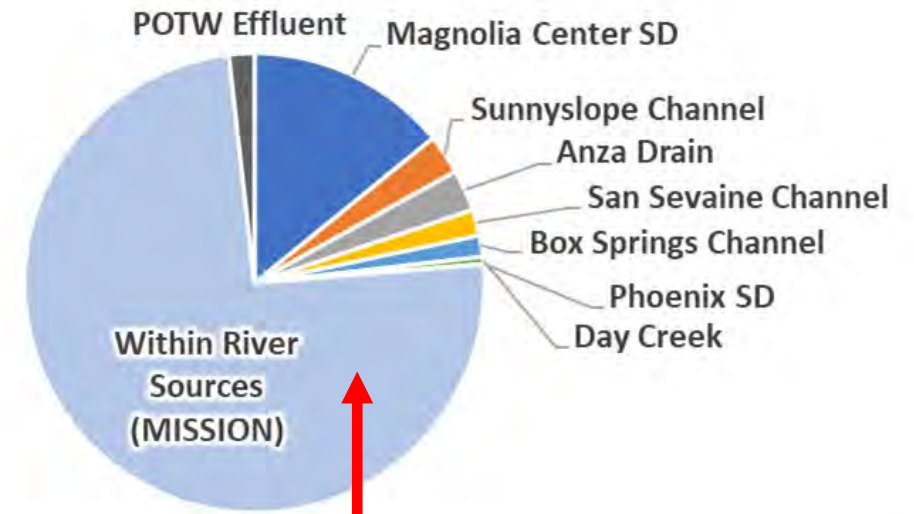


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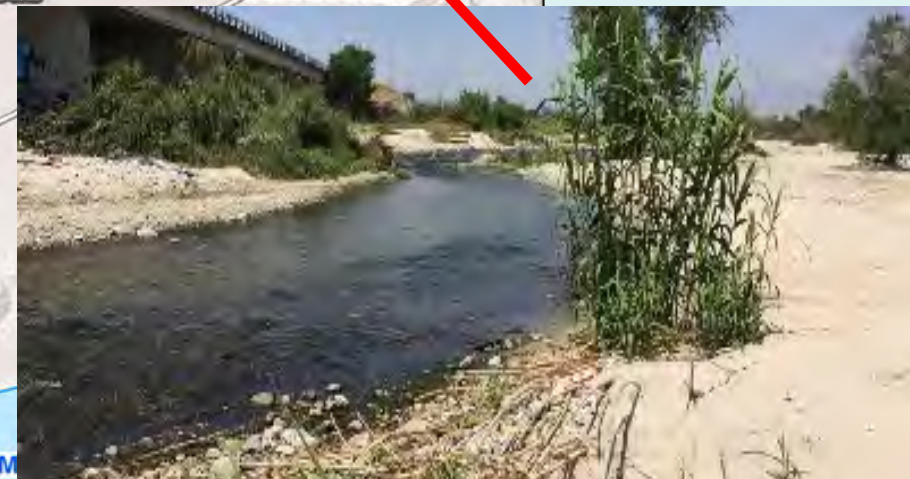
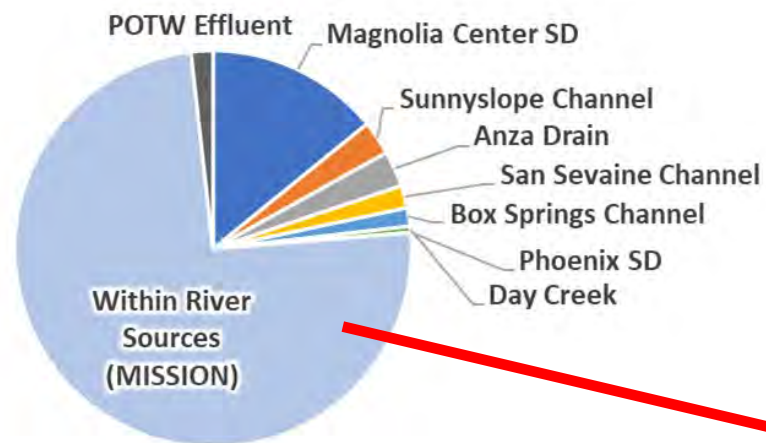


Courtesy of Tad Garrety, City of Chino Hills & South Channel Investigation

Median Dry Weather Fecal Bacteria Load (2019)  
Dry Season, n=6)



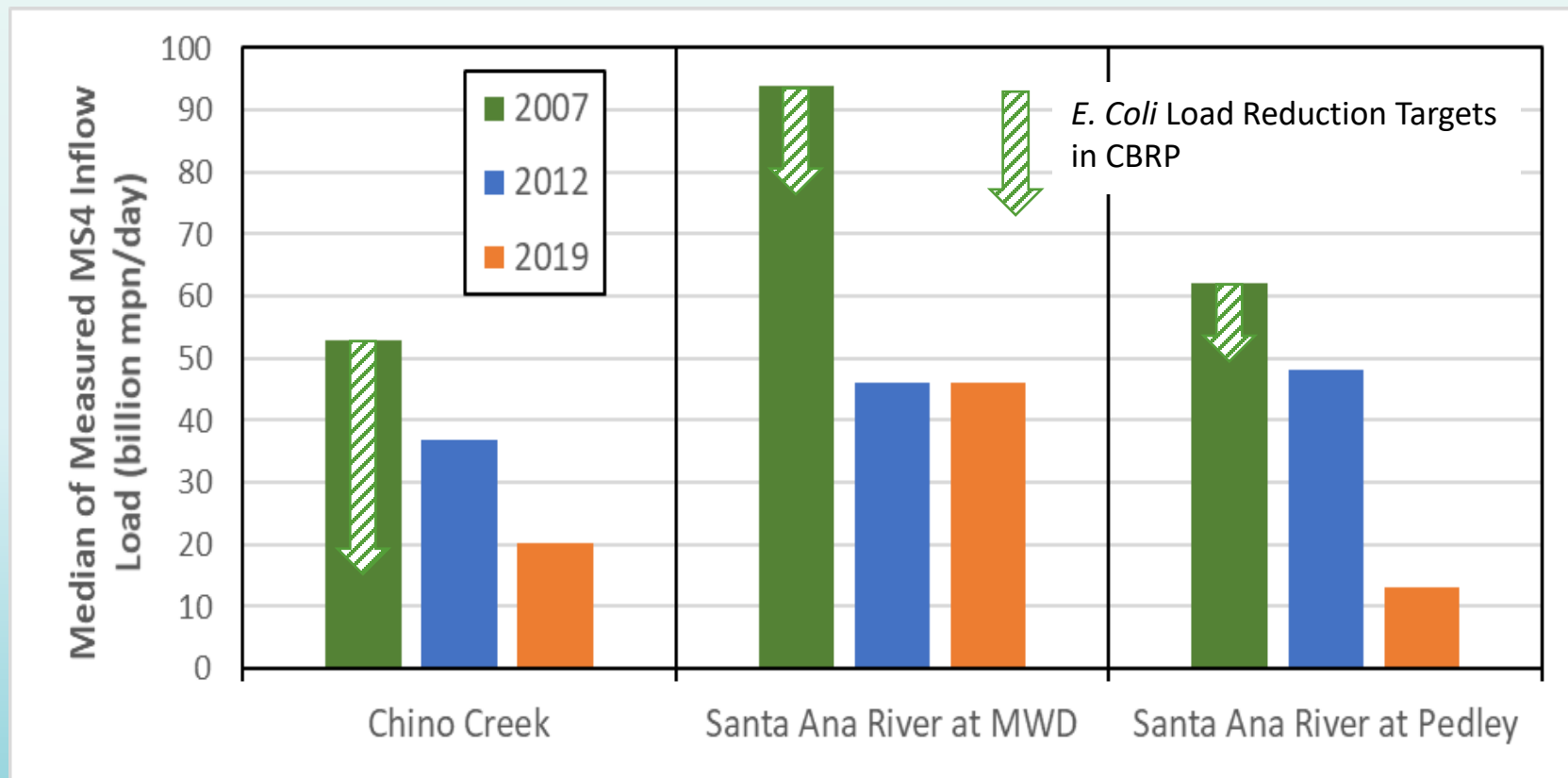






# EVIDENCE OF SIGNIFICANT REDUCTIONS IN BACTERIA LOADS TO IMPAIRED WATERS

- Total bacteria load from all Tier 1 outfalls measured in 2007, 2012, and 2019
- CBRP estimated load reductions needed to comply with dry weather TMDL WLAs
- Recent measurements show significant progress towards meeting load reduction targets



# WHAT'S NEXT?

- Task Force coordinating with watershed stakeholders to better understand homeless encampment impacts
- SAWPA completed Upper Santa Ana River Watershed Homeless Encampment Assessment in 2020
- Phased monitoring program to further evaluate impacts from homeless encampments on water quality and habitat under consideration



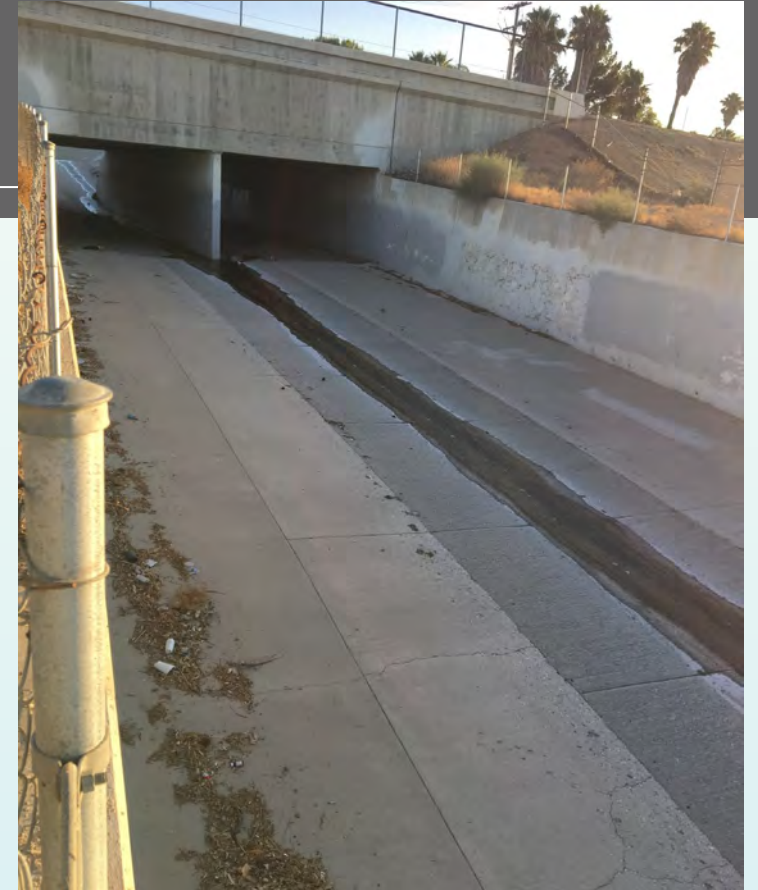
Santa Ana River  
Reach 3, Upstream  
of Van Buren  
Bridge 2019



# WHAT'S NEXT?

- Compliance with Wet Weather TMDL WLAs by December 31, 2025
- Revision of the MSAR Bacterial Indicator TMDL to incorporate changes in regulations and knowledge gained from 15+ years of Task Force work
- Santa Ana Water Board's 2018 CBRP audits found that the MS4 Programs are in compliance with the existing CBRPs. Key audit finding:

*There appears to be general agreement among the interviewed Permittees that there is a benefit to updating the CBRP. But all interviewed Permittees with whom the subject was discussed expressed a preference that any updates occur after the Bacterial Indicator TMDLs have been updated. Regional Board staff concurs and has determined that dedicating the MSAR Permittees' or Regional Board staff resources to updating the CBRP ahead of expected revisions of the Bacterial Indicator TMDL is not worthwhile when a further update would just be needed after the TMDL revision is adopted.*





# Questions & Discussion



*Press-Enterprise,  
August 12, 2017;  
updated September  
19, 2017*