Regional Bacteria Monitoring Program Data Update

Presenters:

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CDM Smith

Outline

- Regional Monitoring Program
  - Data Summary
  - Santa Ana River Reach 4
  - Cucamonga Creek anti-deg target
- MSAR TMDL
  - Wet weather retrospective for MSAR waters
  - Special study of channel bottom releases in MSAR

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RMP Implementation

Sample Locations

Sample Collection

- Increased frequency of sampling at Cucamonga Creek at Hellman (P4-SBC1) and Santa Ana River Reach 4 (P3-SBC1)

- 2019-2020 RMP sampling inventory

| Priority	Planned/Collected	Dry Weather	Wet Weather
Priority 1	Planned	200	0
	Collected	200	0
Priority 2	Planned	125	20
	Collected	125	20
Priority 3	Planned	80	0
	Collected	71	0
Priority 4	Planned	16	0
	Collected	19	0

Priority 1 Waters

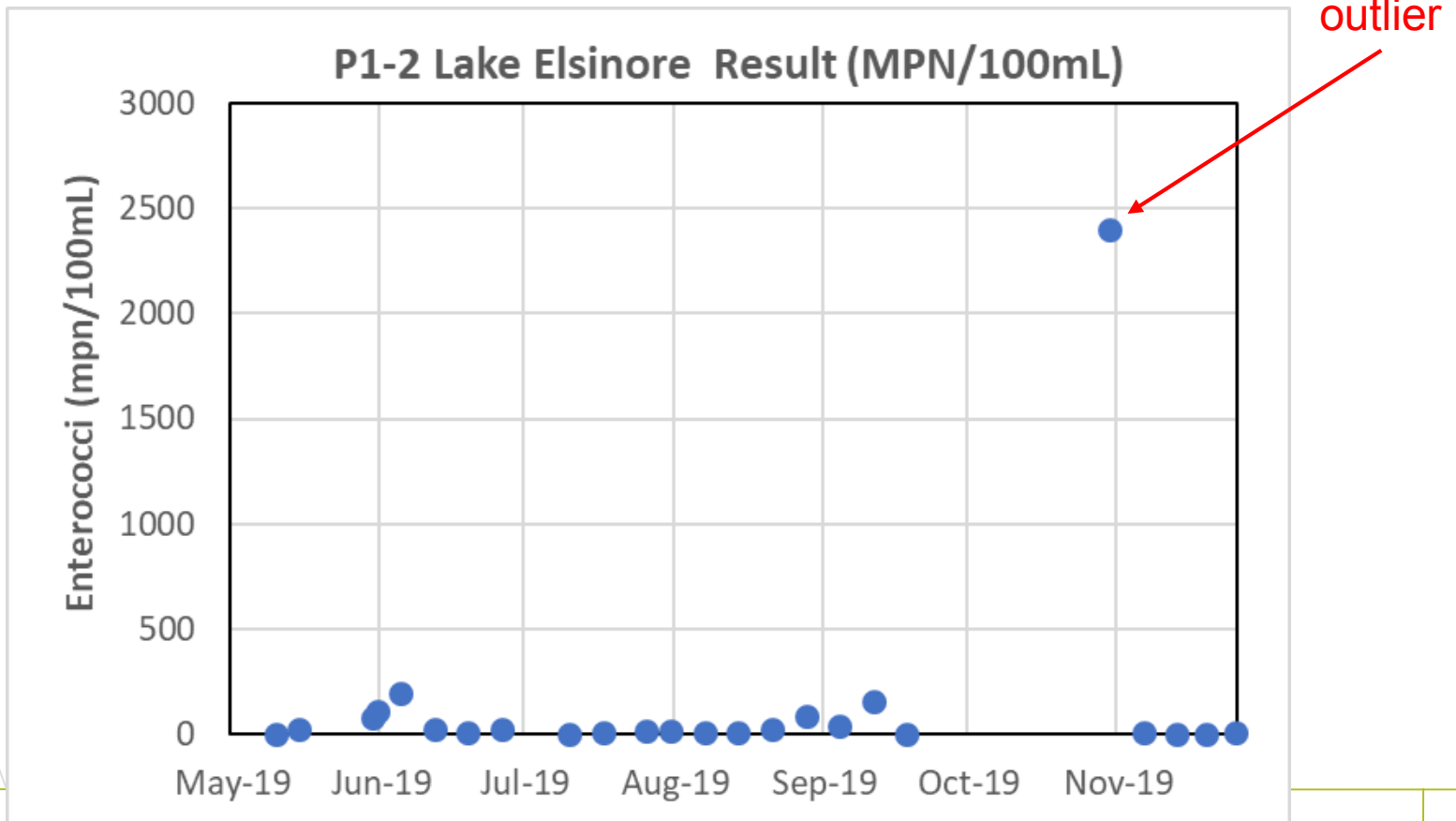# Priority 1 Sites – Frequent recreational use
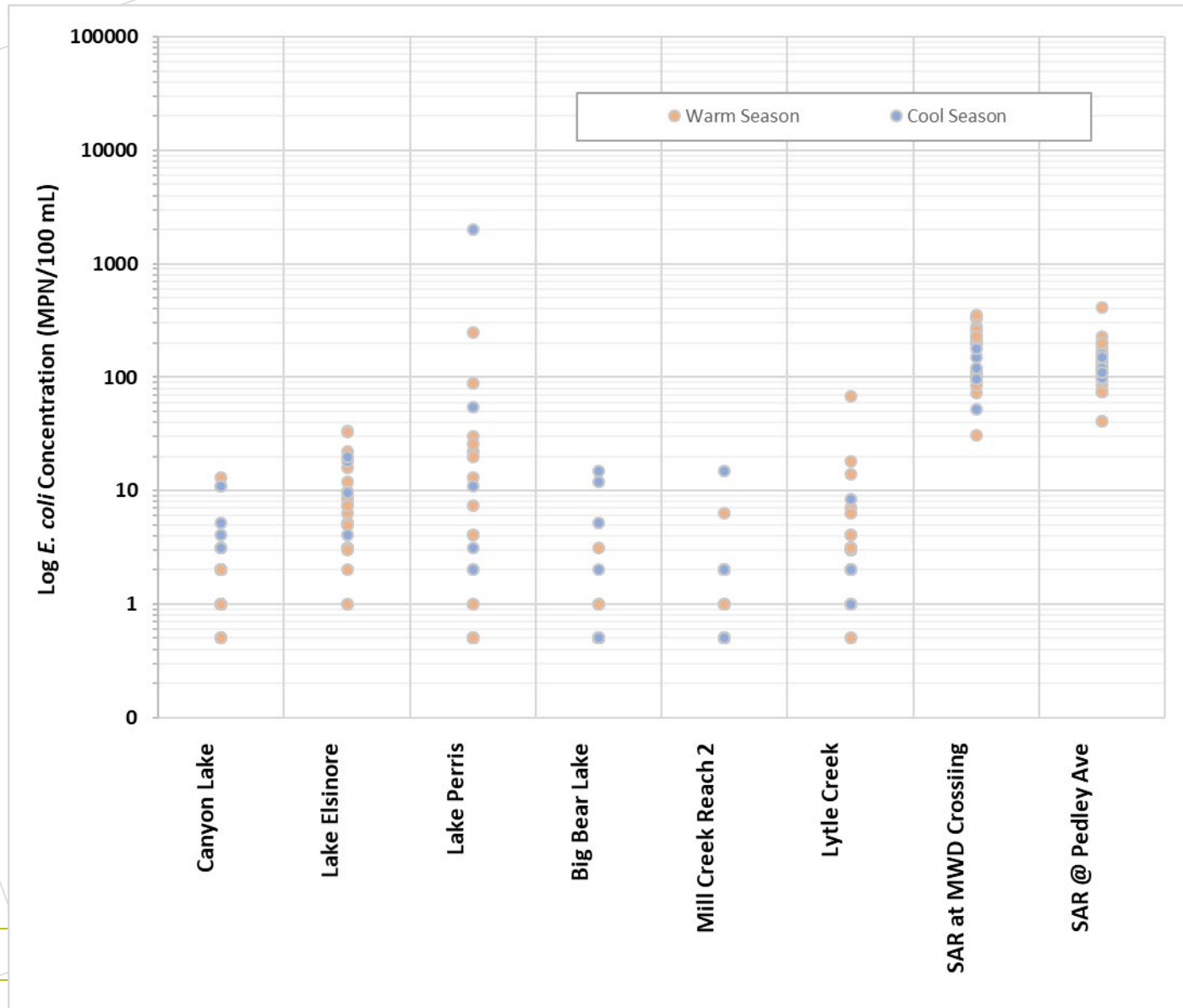
Priority 1

- 2,000 mpn/100mL *E. coli* at Lake Perris
- Very high TSS in Lake Perris sample

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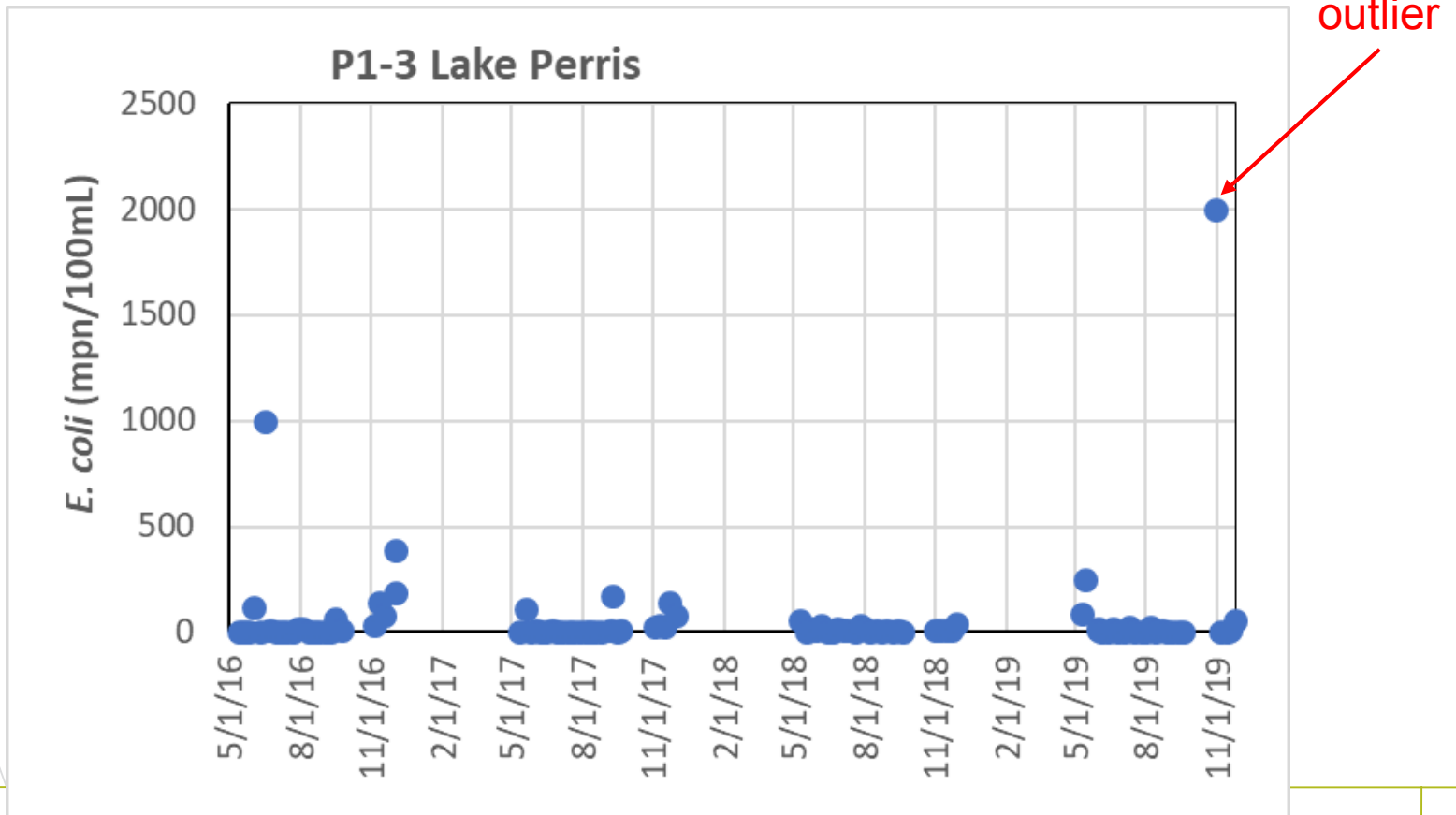
Priority 1

- 2,400 Enterococci mpn/100mL at Lake Elsinore
- Very low *E. coli* in same sampling event for Lake Elsinore

Priority 3 Waters - Impaired no existing TMDL

Priority 3 – Impaired no existing TMDL

- Summary of *E. coli* geomean concentrations (2016-2019)

| Site ID	Site	2016 (MPN/100 mL)	2017 (MPN/100 mL)	2018 (MPN/100 mL)	2019 (MPN/100 mL)
P3-OC1	Bolsa Chica Channel	51	534	31	46
P3-OC2	Borrego Creek	Dry	Dry	NA (dry)	NA (dry)
P3-OC3	Buck Gully Creek	74	89	130	242
P3-OC5	Los Trancos Creek	457	658	NA (mostly dry)	NA (mostly dry)
P3-OC6	Morning Canyon Creek	633	212	1414	190
P3-OC7	Peters Canyon Wash	206	183	562	518
P3-OC8	San Diego Creek Reach 1	349	116	176	188
P3-OC9	San Diego Creek Reach 2	208	373	155	18
P3-OC11	Serrano Creek	121	1080	221	496
P3-RC1	Goldenstar Creek	242	417	118	360
P3-SBC1	Santa Ana River Reach 4	48	70	74	39

Priority 3 – Impaired no existing TMDL

- Comparison to Historical Dataset

Waterbody	25th and 75th Quartile *E. coli* Concentration (MPN/100 mL)	
	Basis for Listing (2002-04)	**Regional Monitoring Program (2016-19)**
Bolsa Chica Channel	310 – 1750	20 – 168
Borrego Creek	518 – 3755	Dry
Buck Gully Creek	100 – 335	30 – 134
Morning Canyon Creek	100 – 300	240 – 1461
Peters Canyon Wash	100 – 1100	179 – 428
San Diego Creek Reach 1	100 – 520	135 – 350
San Diego Creek Reach 2	100 – 1455	75 – 270
Serrano Creek	100 – 1460	161 – 1582
Goldenstar Creek	100 – 200	110 – 515

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Santa Ana River Reach 4

- Increased frequency of sampling in 2019 to achieve sufficient dataset for delisting decision

- 28 six week geomeans with one exceedance of geometric mean WQO

- Exceedence related to wet weather

Six week rolling geomean of *E. coli* concentration
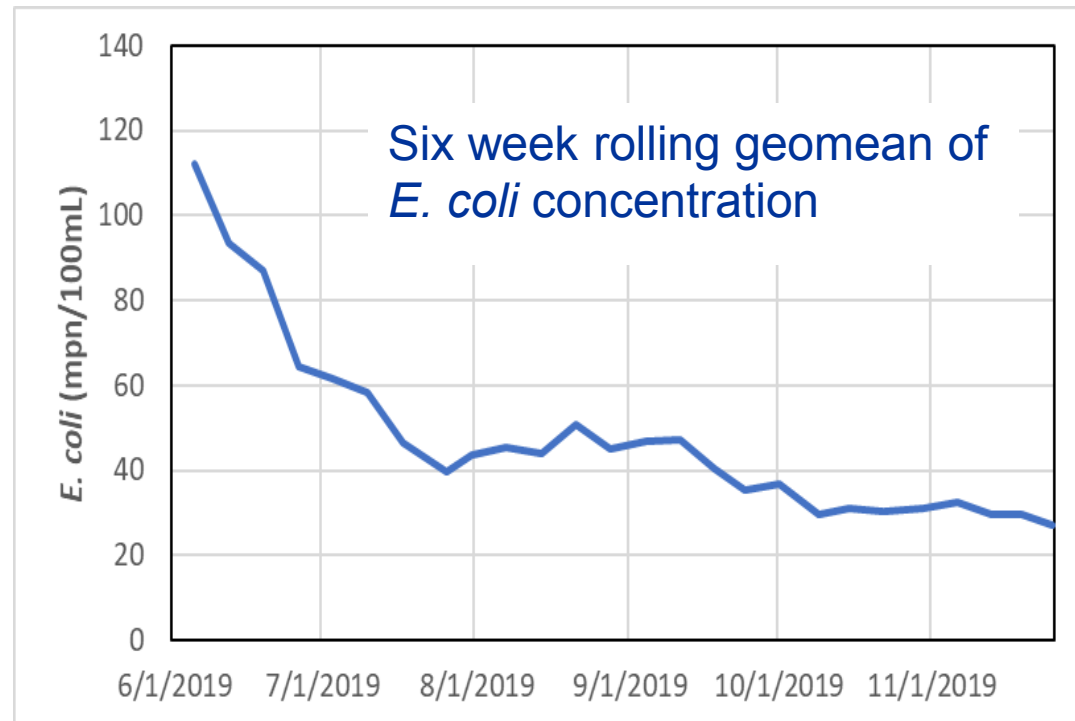
Priority 3 – Next Steps

- Data collected over five years 2016-2020

- Waterbody specific planning for 2020-21

- Collaboration with entire Task Force on each waterbody

  – Delisting

  – Non-TMDL action plans

  – Source investigation, IDDE, controls through downstream TMDL implementation

  – Continued monitoring

  – TMDL

  – Others

Priority 4 – REC2 Only Update

Santa Ana Delhi Channel

- 2019 – exceedance of 464mpn/100mL Enterococci target (75th percentile)

- Follow-up monitoring triggered

- Results indicating compliance with statistical threshold anti-deg target
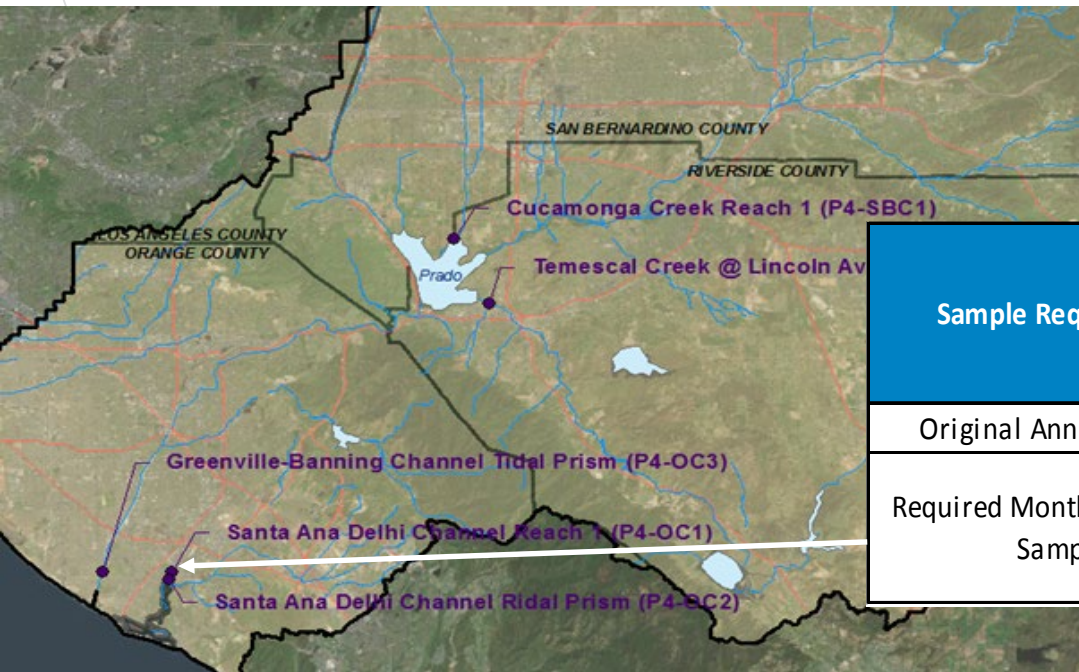
Sample Requirement	Sample Date	Enteroccci Concentration (MPN/100mL)
Original Annual Sample	9/23/2019	988
Required Monthly Follow-up Samples	10/21/2019	31
	11/18/2019	10
	12/15/2019	185

Cucamonga Creek Reach 1

- Monthly monitoring at Cucamonga Creek at Hellman Ave to develop dataset for new anti-deg target determination
- Statistical analysis to be completed in fall 2020

E. Coli concentrations at Hellman Avenue (2016-2019)
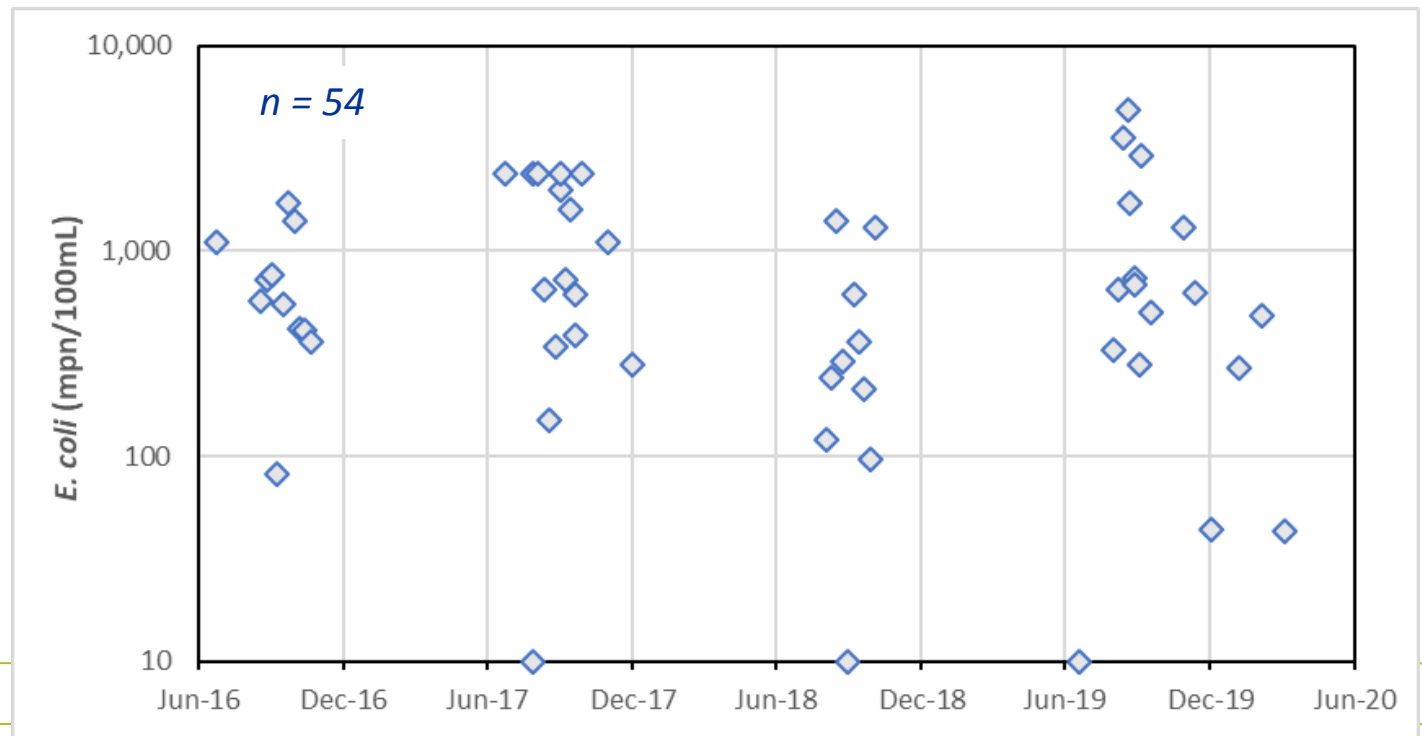
Priority 2 MSAR TMDL Waters

Prado Park Lake
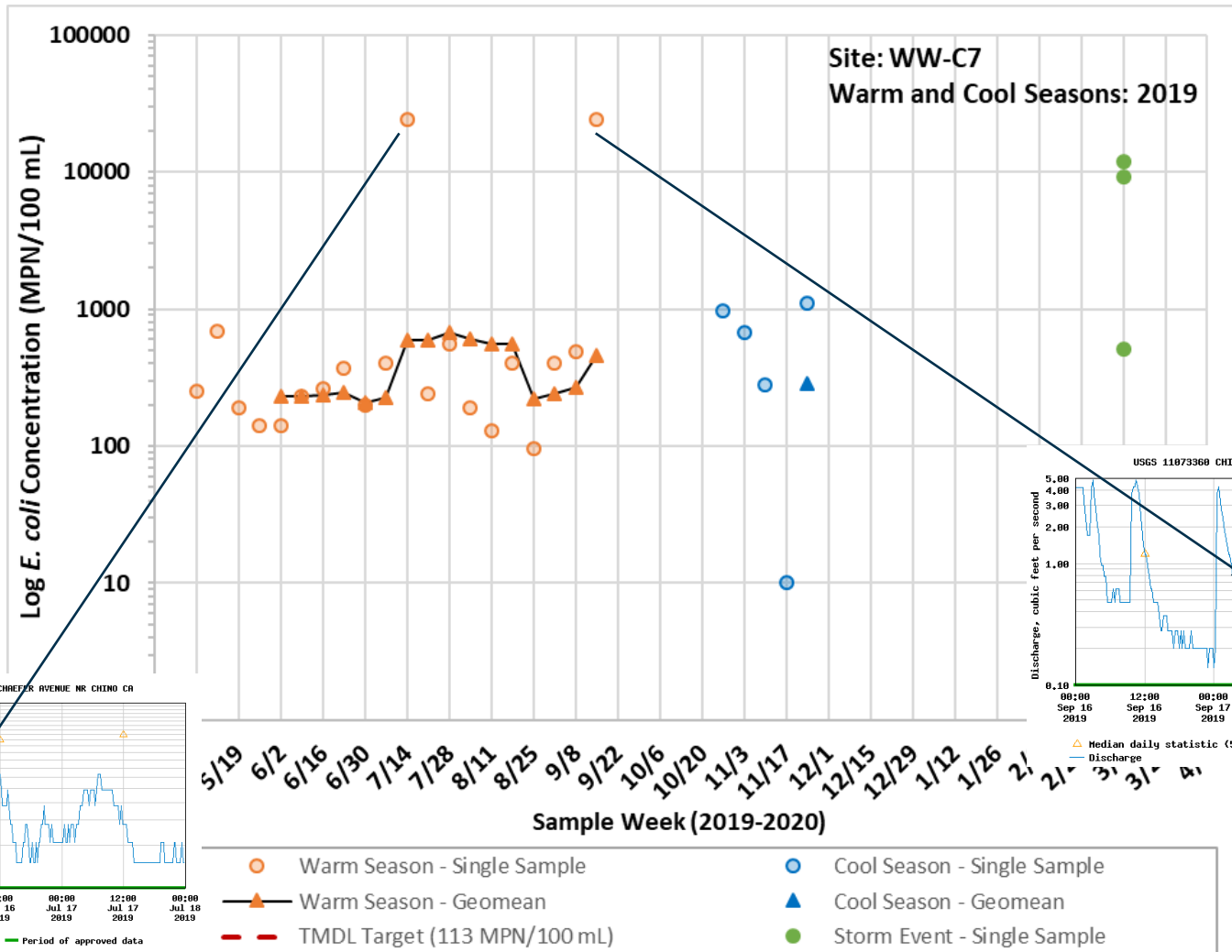
- *E. coli* concentrations and 6-week rolling geomeans
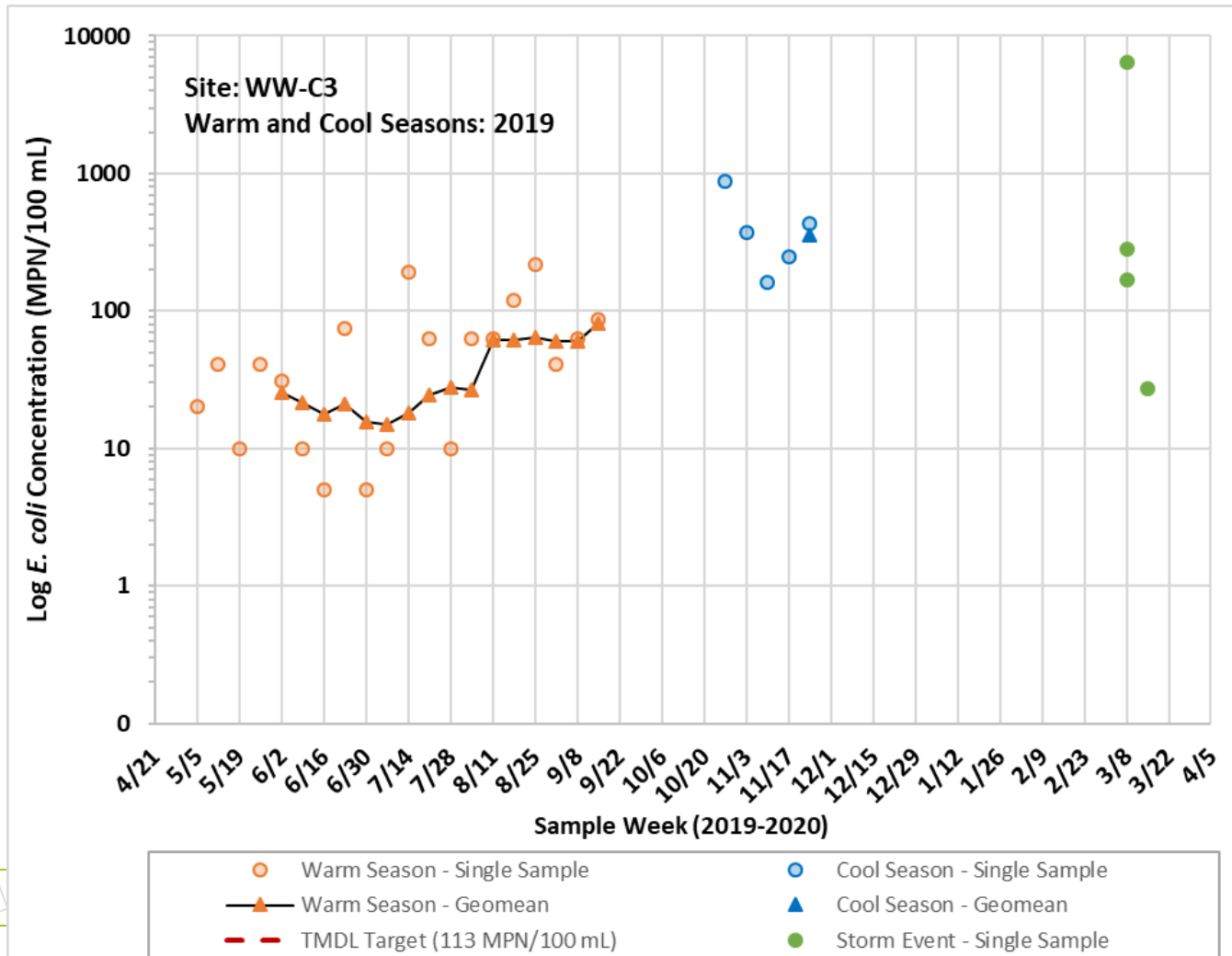
Prado Park Lake

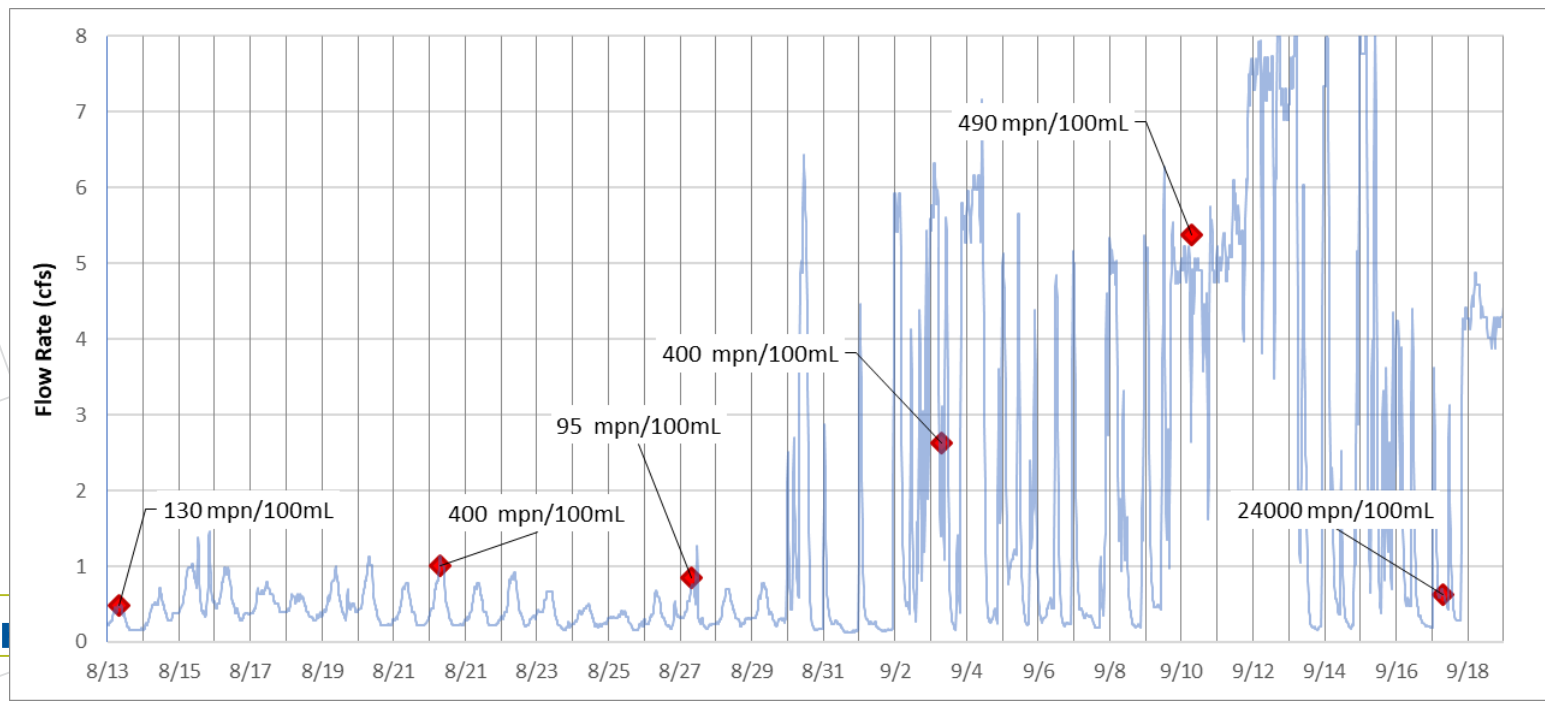- Historical *E. coli* concentrations and geomeans
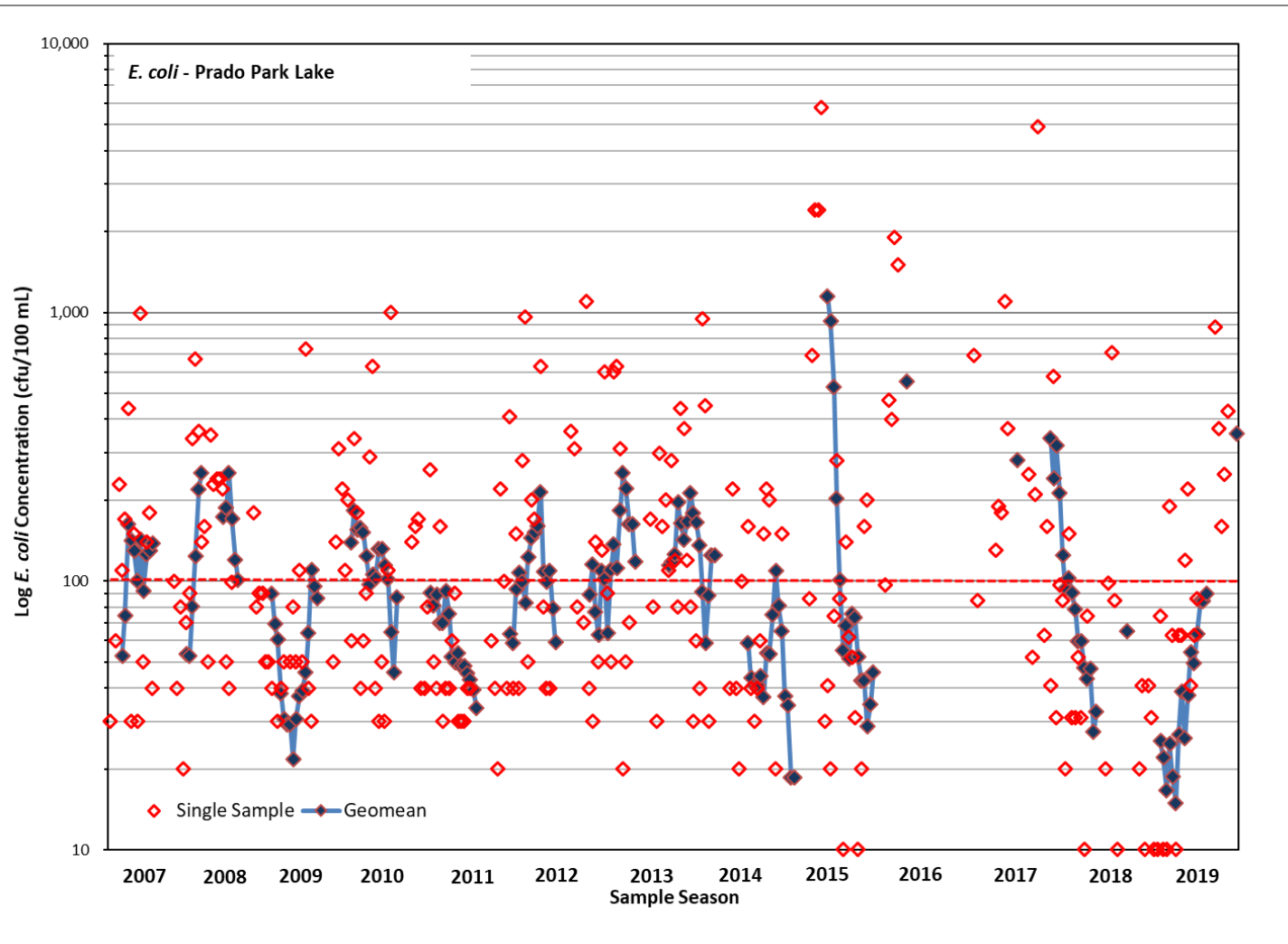
Chino Creek

- *E. coli* concentrations and 6-week rolling geomeans

Chino Creek

- Snippet of 2019 dry season showing dry weather flow in Chino Creek at Schaeffer and downstream *E. coli* samples
- MS4 flowrates in Chino Creek follow predictable diurnal pattern with average ~ 0.4 cfs
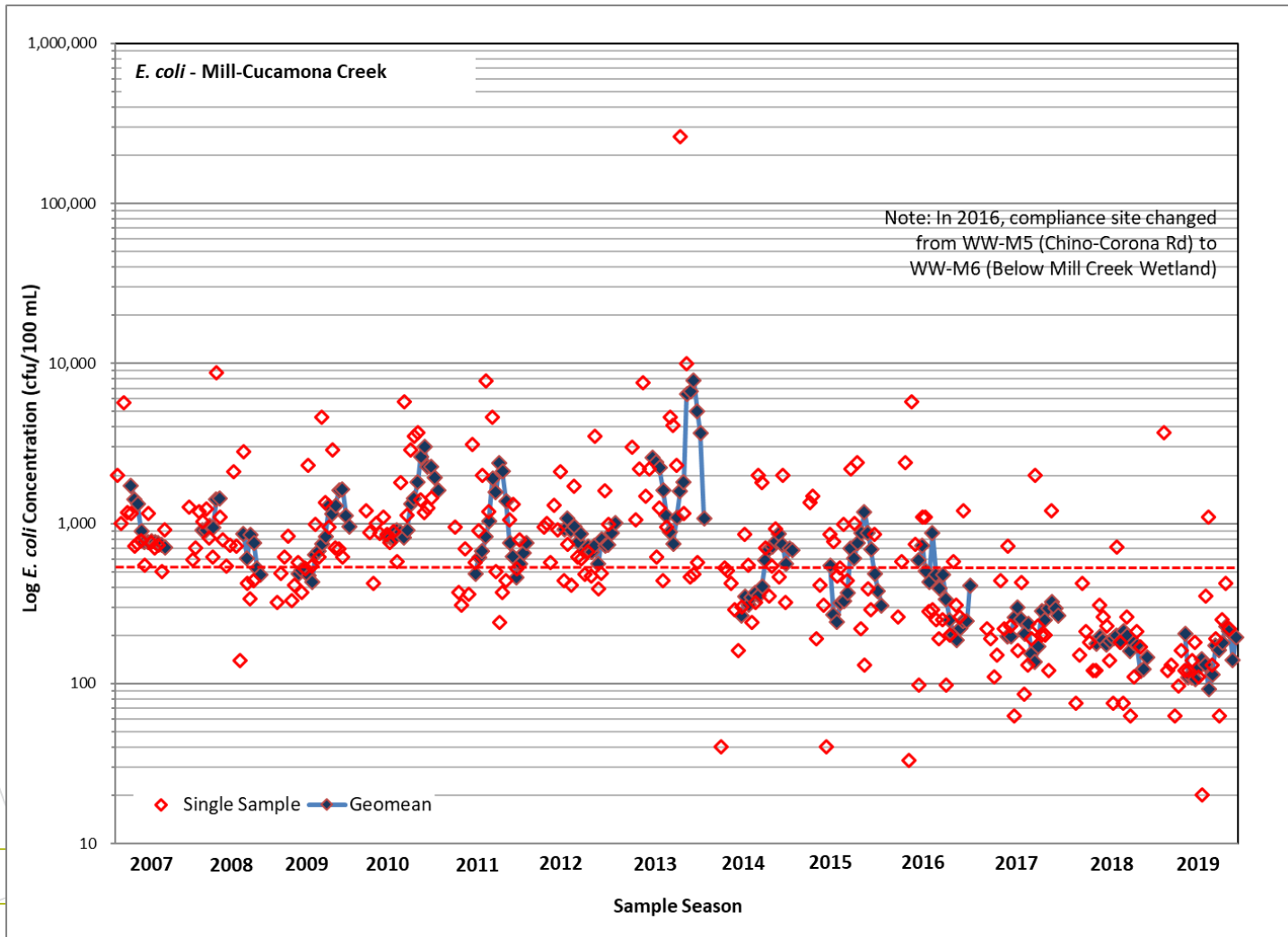- Increase DWF from other water releases (e.g. recycled water)

Mill-Cucamonga Creek

- *E. coli* concentrations and 6-week rolling geomeans
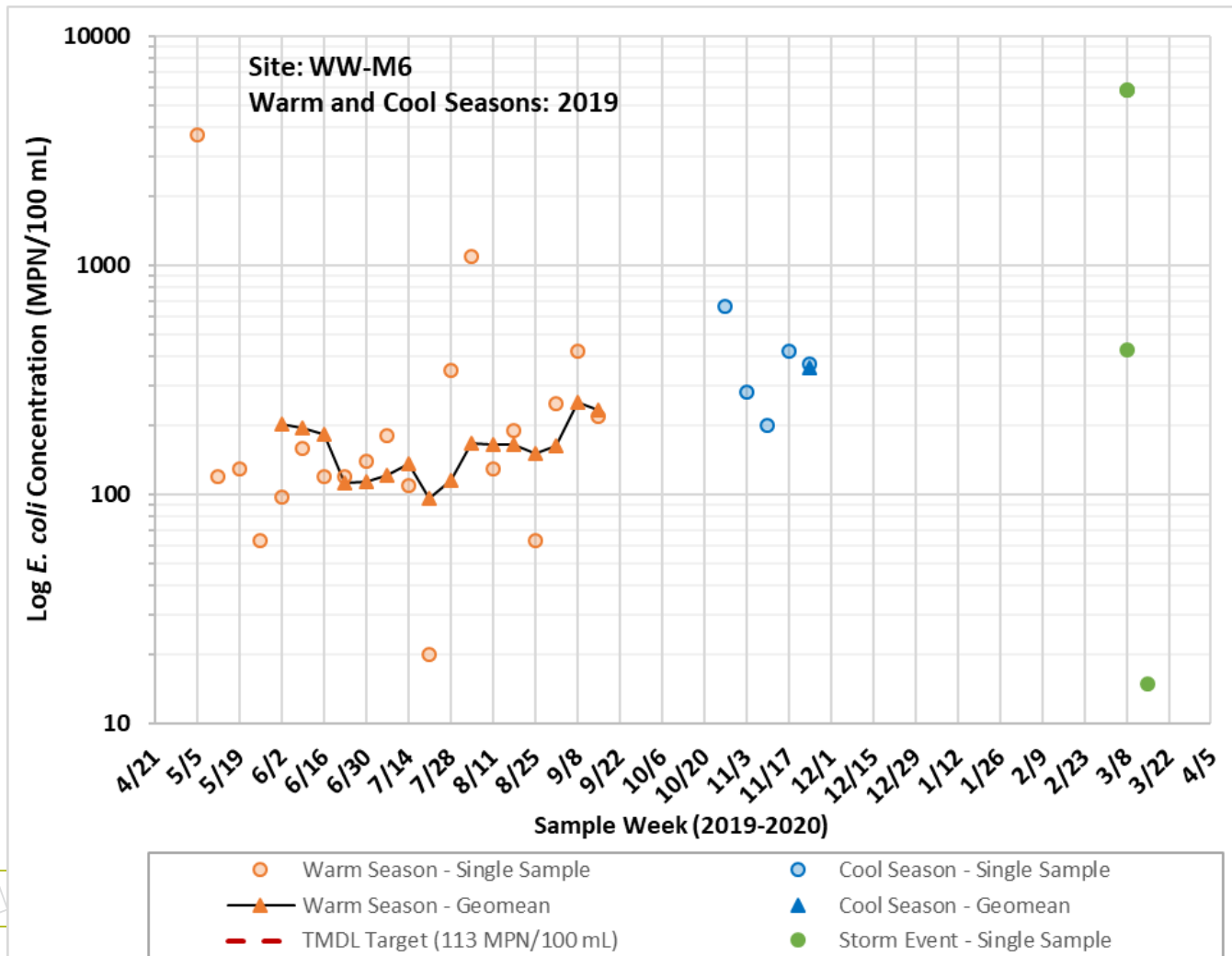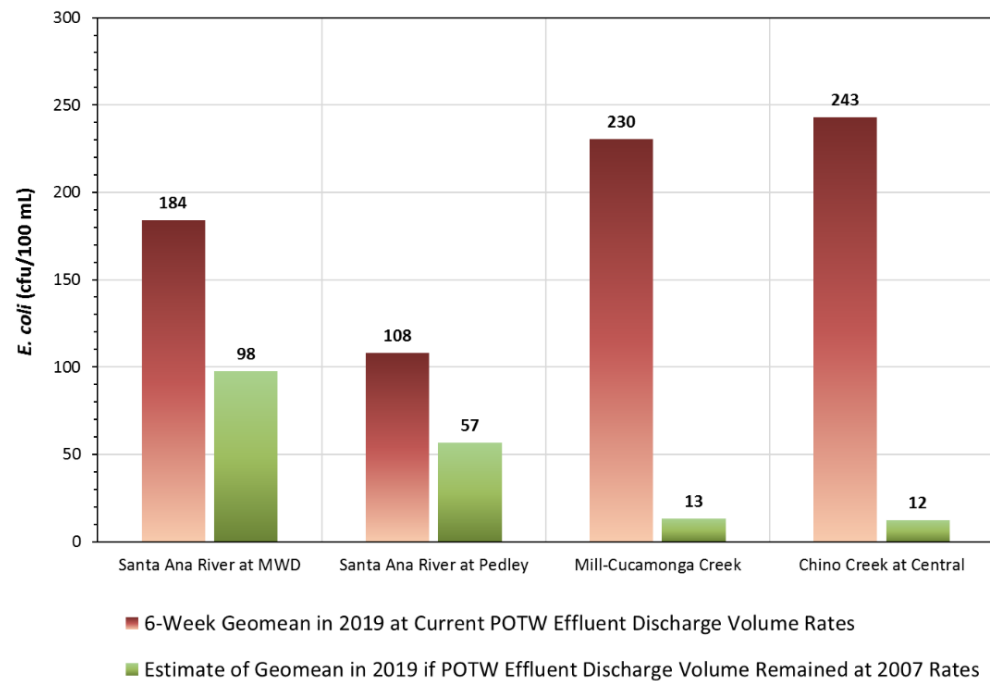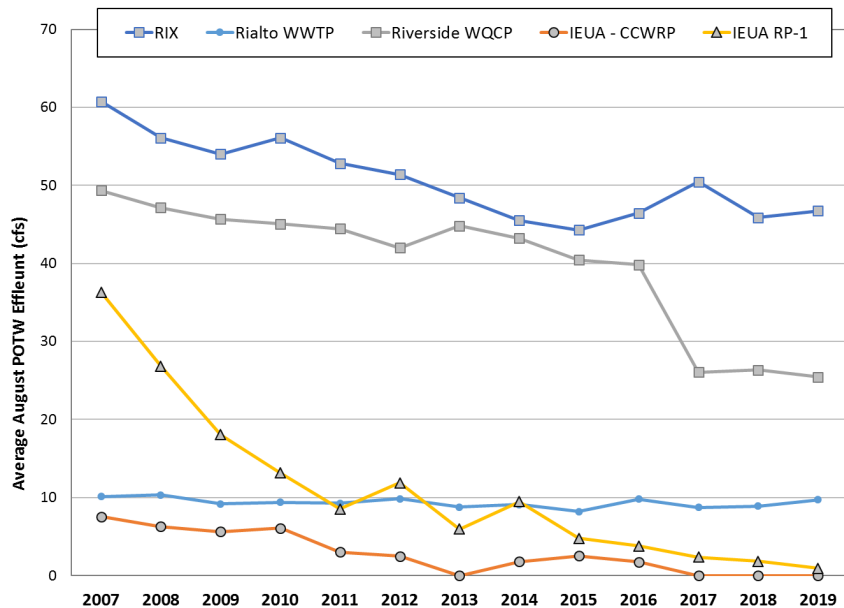
Mill-Cucamonga Creek
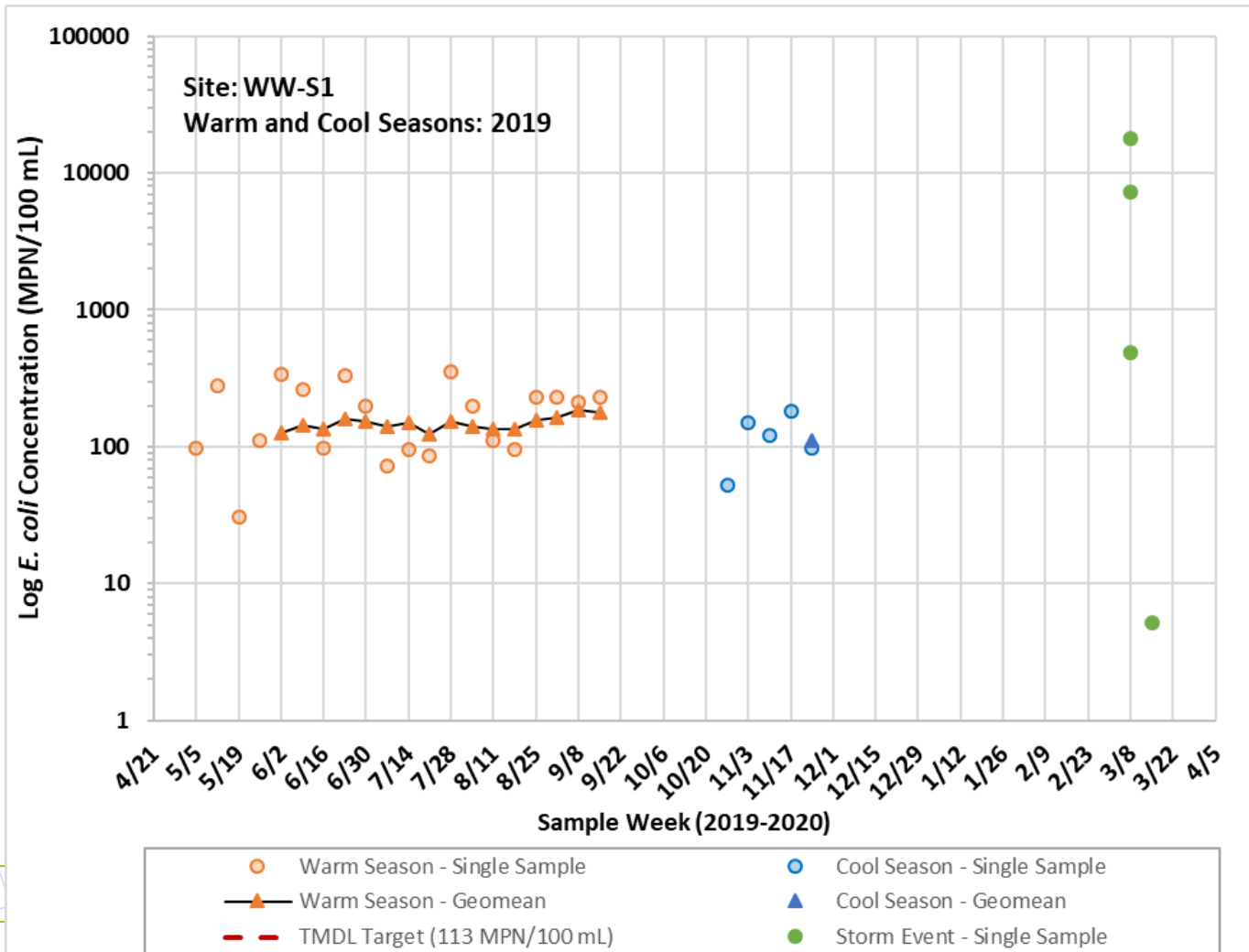
- Historical *E.coli* concentrations and geomeans

Reduction in POTW effluent

- For same inflow load measured in 2019 dry season, very different blended concentrations would be expected with 2019 (red) versus 2007 (green) POTW effluent rates
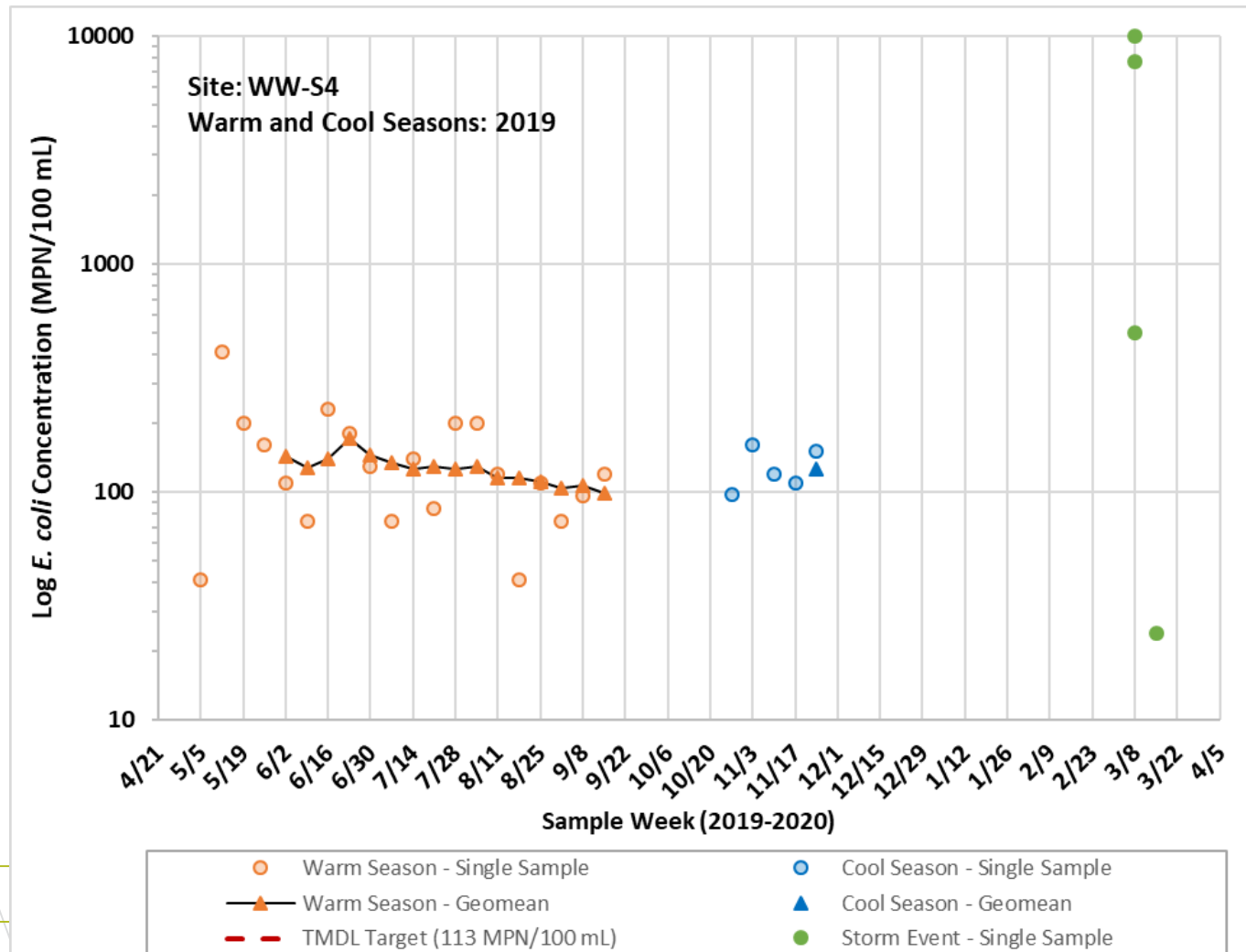
Santa Ana River

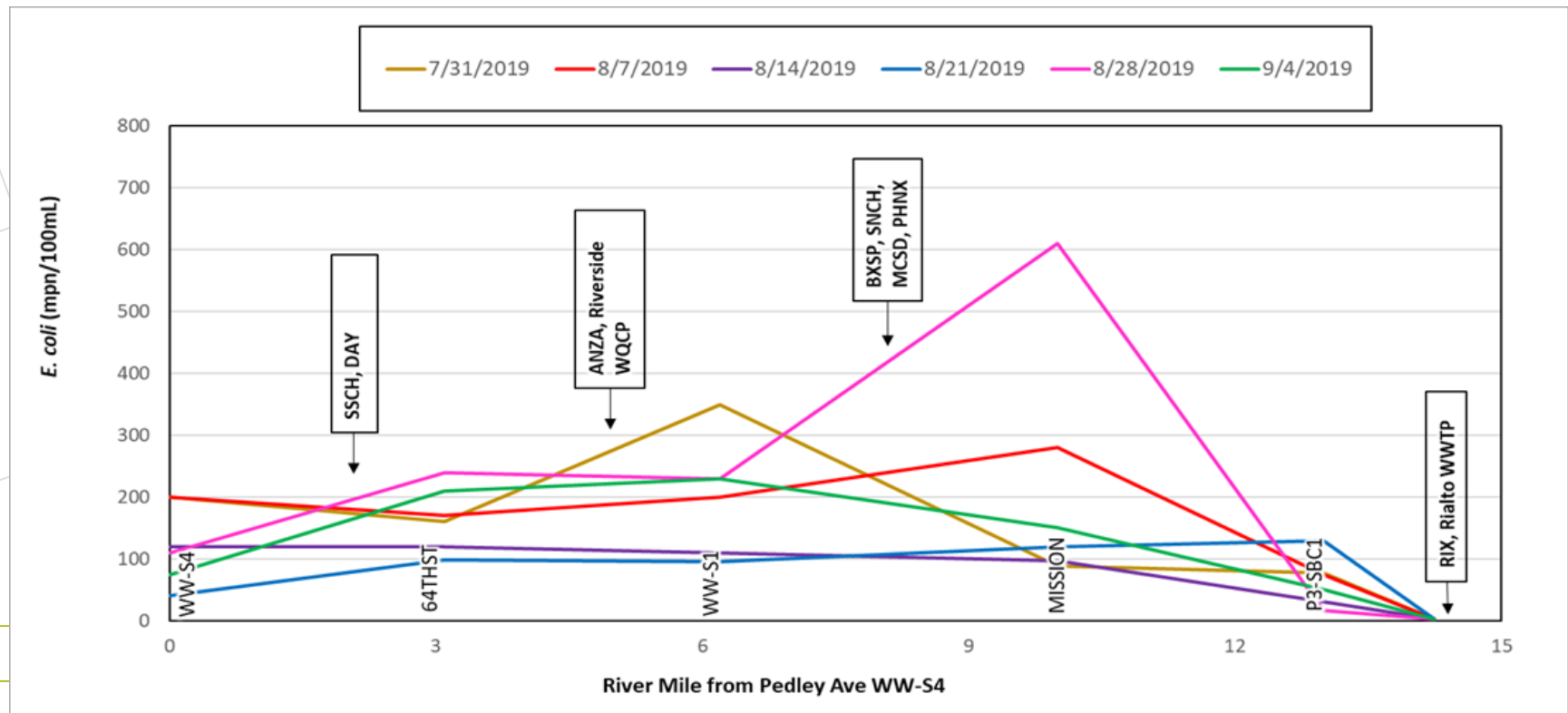- *E. coli* concentrations and 6-week rolling geomeans

Santa Ana River

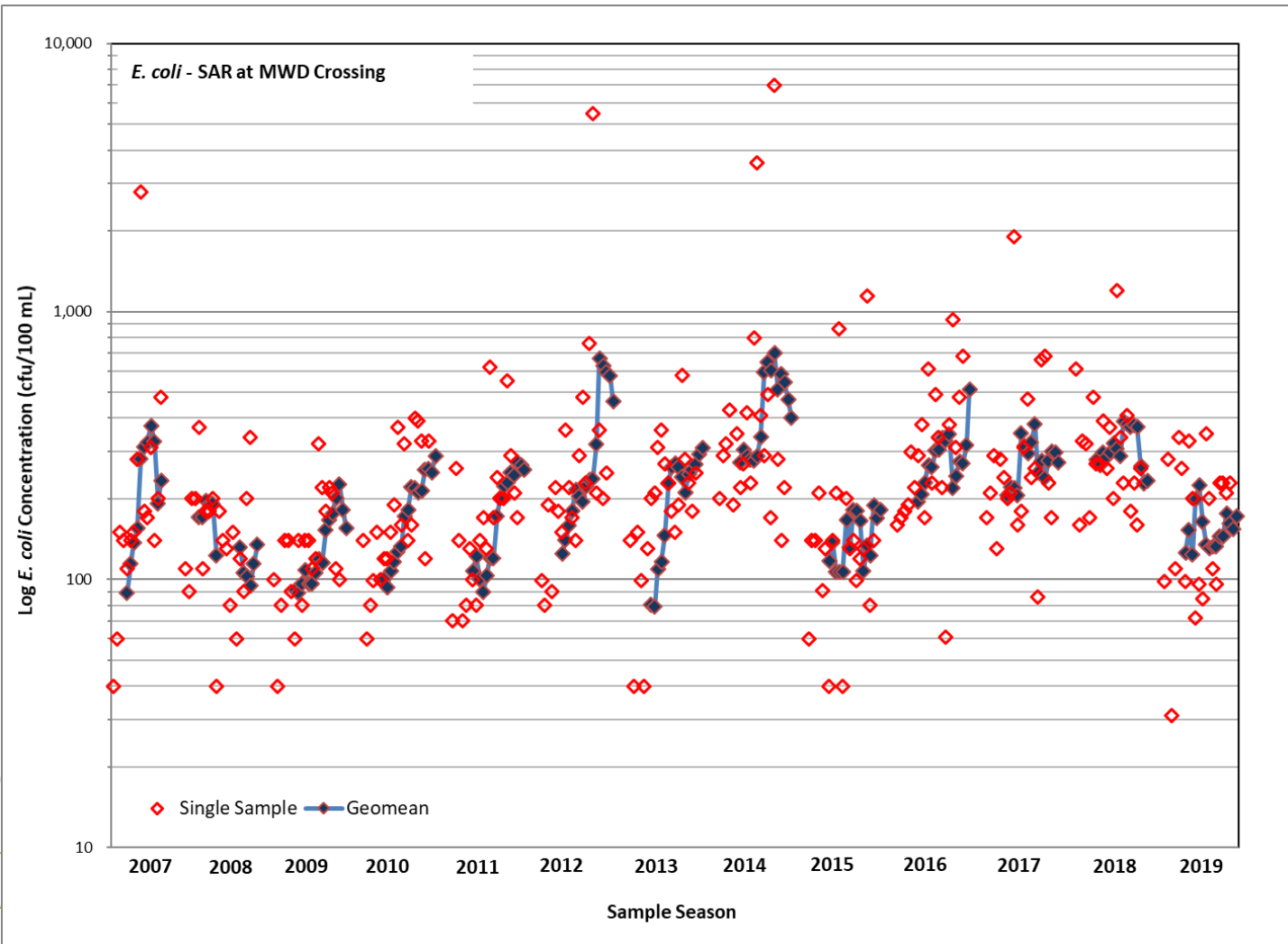- *E. coli* concentrations and 6-week rolling geomeans

Santa Ana River

- *E. coli* load from non-MS4, non-POTW contribute about 300 billion MPN/day, which is enough to consume nearly 100% of the total allowable load for *E. coli* in the Santa Ana River
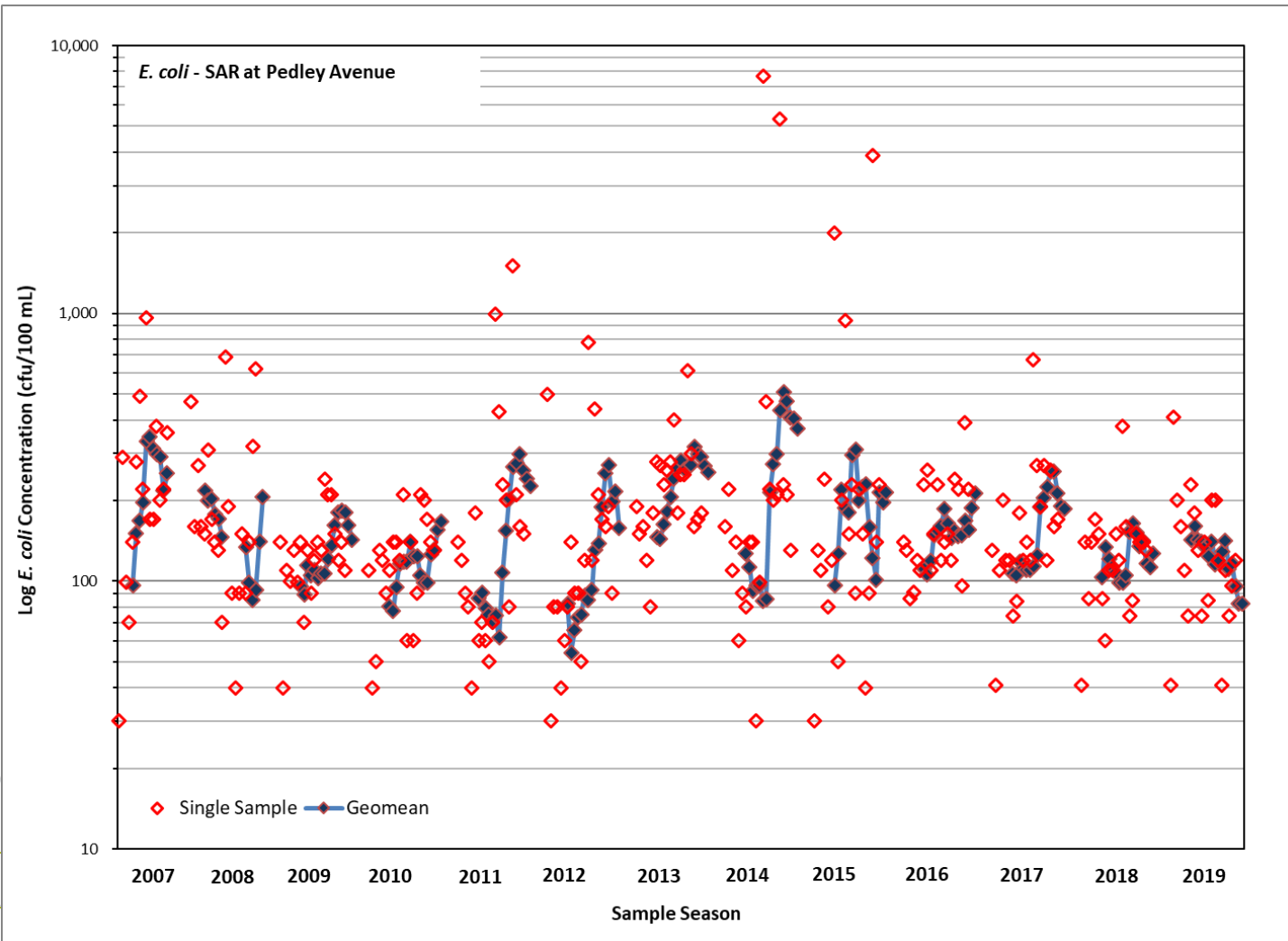
Santa Ana River

- Historical *E. coli* concentrations and geomeans

Santa Ana River

- Historical *E. coli* concentrations and geomeans

Wet Weather Retrospective

- One wet event sampled per year – one sample during storm, then 'post-storm' samples at 48, 72, 96 hours

- Post-storm samples represent wet weather in cases involving longer duration events

- Runoff records evaluated to parse samples into 1) during wet weather and 2) post-storm baseflow

Geometric Mean of Samples During versus Post Wet Weather
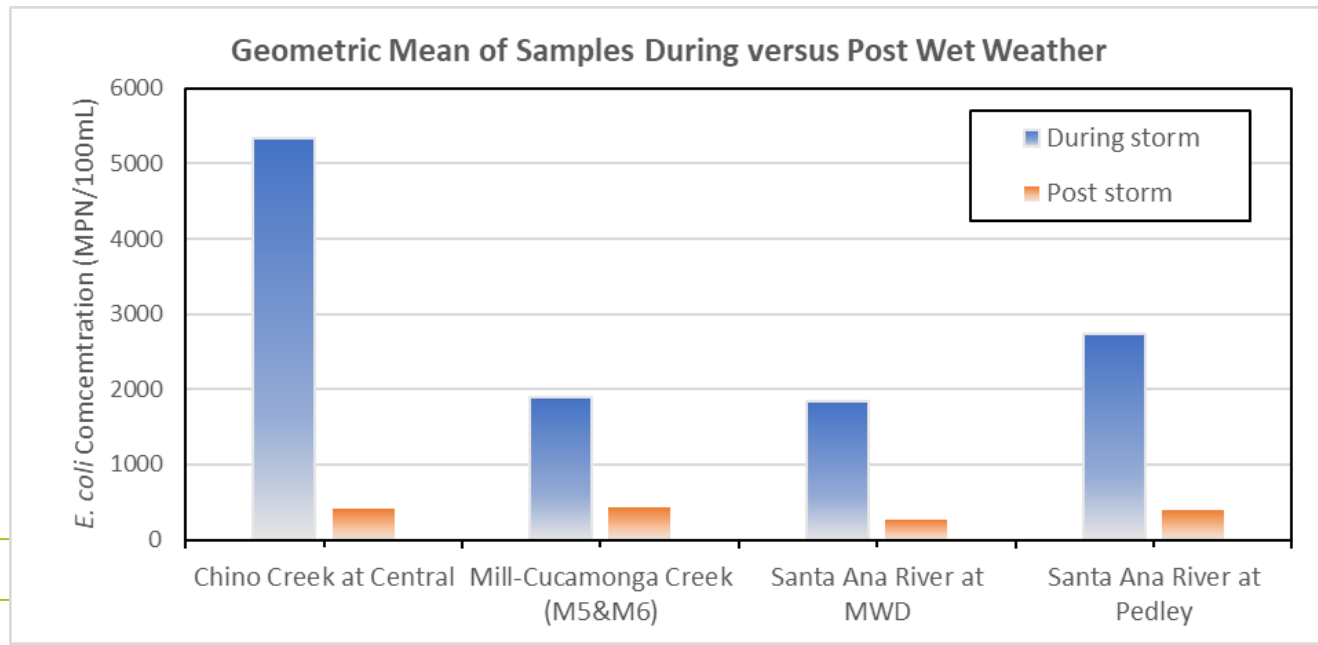
Wet Weather Retrospective

- Post-storm samples evaluated to estimate time since return to pre-event flows

- *E.coli* concentration reduced to typical dry weather levels after 12-24 hours in MSAR waters

E. coli Concentration in Post Wet Weather Samples
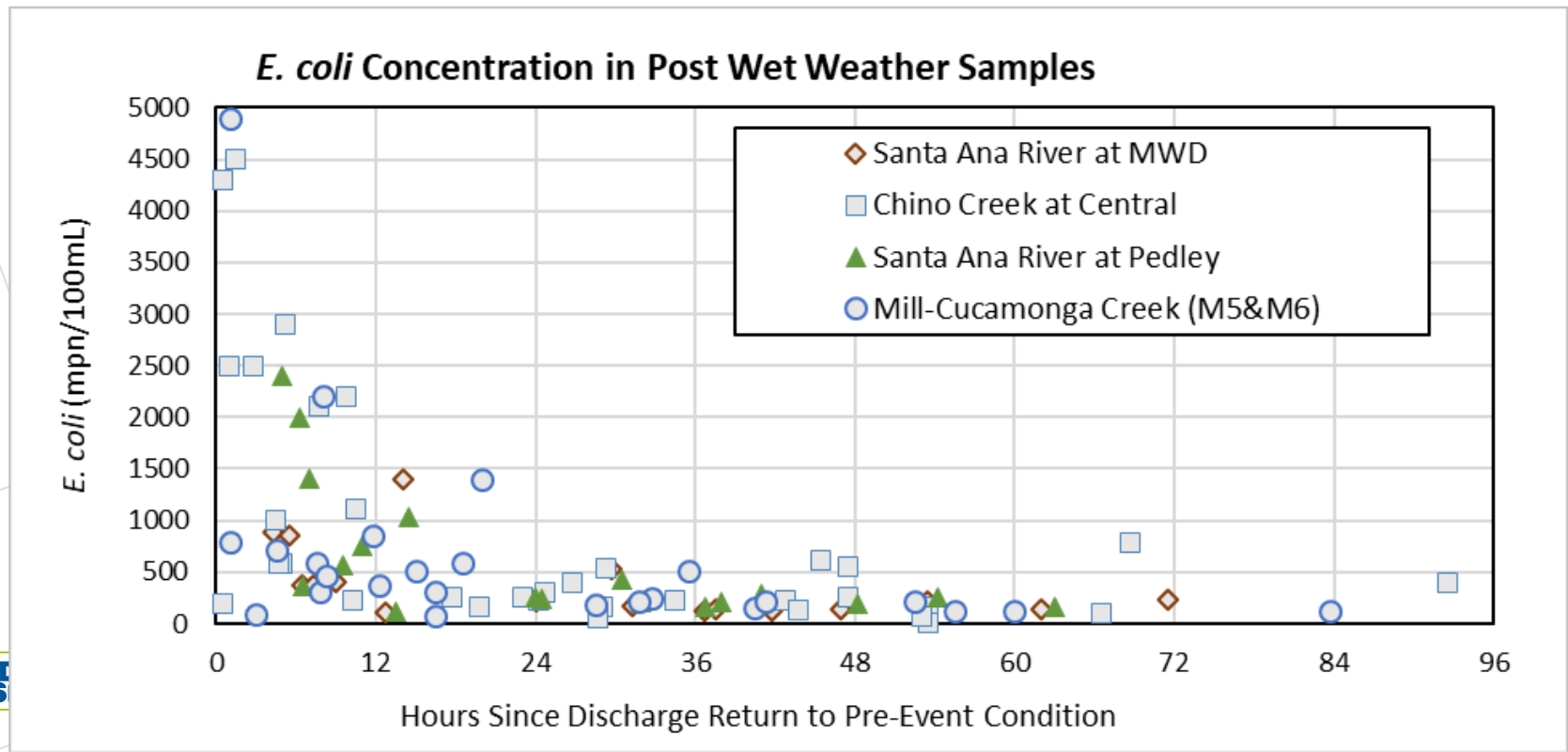
Next Steps

Santa Ana River at MISSION

- Site in the Synoptic Study – showed that 77 percent of *E. coli* load in Santa Ana River comes from non-human sources upstream of MS4 inflows

- Recommend inclusion of this site in Priority 2 routine sampling to capture record of non-MS4 upstream boundary during dry weather

- RMP to coordinate with a special study to evaluate potential role of *E. coli* releases from naturalized colonies in bottom sediment

Coming Next Reporting Year

- Recommendations for course of action in each Priority 3 waterbody

- Cucamonga Creek anti-degradation target update

- Special study and other scientific analysis to support a TMDL revision tailored for the MSAR waters