



Memorandum

To: Santa Ana Watershed Project Authority

From: CDM Smith

Date: April 8, 2016

Subject: Santa Ana River Bacteria Monitoring Program - First Quarter 2016 Report

This technical memorandum summarizes the monitoring activities that occurred during the first quarter (January 1 through March 31) of 2016. It includes a brief description of monitoring activities from the first quarter, upcoming monitoring activities, and a tabular summary of data resulting from monitoring activities. These monitoring activities were conducted under the existing approved Monitoring Plan and Quality Assurance Project Plan (QAPP) for the Middle Santa Ana River (MSAR) TMDL Monitoring Program¹.

Monitoring Activities

During the first quarter of 2016, monitoring activities were limited to the wet weather event as required by TMDL monitoring requirements. The CWE field team deployed on the morning of Sunday, March 6, 2015 following rain that began late Saturday night. The team collected samples from the five monitoring sites (WW-C3, WW-C7, WW-M5, WW-S1, and WW-S4). The CWE team deployed again on the mornings of March 8, 9, and 10, 2016 to collect the samples 48, 72, and 96 hours, respectively, after the initial sample collection. All samples were delivered to Orange County Public Health Laboratory (OCPHL) for *E.coli*, fecal coliform, and total suspended solids (TSS) analysis.

Water Quality Data

Wet weather event samples were analyzed for *E.coli*, fecal coliform, and TSS by OCPHL (Table 1). Table 2 summarizes the field measurements collected by CWE field staff.

¹ The MSAR TMDL Monitoring Plan and QAPP will be replaced by the Santa Ana River Bacteria Monitoring Program Monitoring Plan and QAPP, which was approved by the Santa Ana Regional Water Quality Control Board on March 11, 2016.

Table 1 - Wet Weather Event Water Quality Data

Sample Date	<i>E.coli</i> (CFU/100 mL)	Fecal Coliform (CFU/100 mL)	TSS (mg/L)
Prado Park Lake (WW-C3)			
03/06/16	9	30	14
03/08/16	120	60	21
03/09/16	90	99	17
03/10/16	40	40	7.7
Chino Creek at Central Avenue (WW-C7)			
03/06/16	3,300	4,200	18
03/08/16	590	1,220	3.5
03/09/16	60	130	6.9
03/10/16	9	40	1.9
Mill Creek at Chino-Corona Rd (WW-M5)			
03/06/16	6,100	6,400	62
03/08/16	460	730	5.0
03/09/16	80	220	5.7
03/10/16	220	3400	2.0
Santa Ana River Reach 3 at MWD Crossing (WW-S1)			
03/06/16	140	110	9.4
03/08/16	2,200	3,200	329
03/09/16	260	240	45
03/10/16	170	340	29
Santa Ana River Reach 3 at Pedley Avenue (WW-S4)			
03/06/16	3,400	3,700	241
03/08/16	3,700	6,000	411
03/09/16	440	720	74
03/10/16	240	440	42

Table 2 – Wet Weather Event Field Measurements

Sample Date	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	pH	Temperature (°C)	Flow (cfs)
Prado Park Lake (WW-C3)						
03/06/16	984	10.3	263	9.3	18.7	27.5
03/08/16	1,039	9.5	3.9	8.9	18.7	6.9
03/09/16	1,024	9.3	2.6	8.8	19.1	9.1
03/10/16	1,035	9.4	1.6	8.8	21.2	7.0
Chino Creek at Central Avenue (WW-C7)						
03/06/16	212	9.6	7.6	8.2	18.0	n/a ¹
03/08/16	952	9.8	0.23	7.8	21.6	36.5
03/09/16	1,030	10.4	0.033	7.8	23.1	101
03/10/16	1,047	11.3	0	7.9	25.0	41.6
Mill Creek at Chino-Corona Rd (WW-M5)						
03/06/16	93	9.9	13.9	8.0	15.1	3557
03/08/16	751	10.1	2.4	8.1	15.0	184
03/09/16	919	10.1	0.47	8.2	17.4	94.2
03/10/16	925	11.9	0.93	8.8	20.6	63.5
Santa Ana River Reach 3 at MWD Crossing (WW-S1)						
03/06/16	1,098	8.8	1.2	8.1	17.4	69.7
03/08/16	703	9.1	181	7.8	12.7	65.7
03/09/16	875	9.2	9.5	8.0	14.8	119
03/10/16	1,068	9.1	4.4	8.0	16.4	200
Santa Ana River Reach 3 at Pedley Avenue (WW-S4)						
03/06/16	387	9.2	76	8.2	16.2	450
03/08/16	595	9.4	318	7.9	12.0	192
03/09/16	1,009	9.3	18.7	8.1	14.5	148
03/10/16	1,059	8.9	9.9	8.1	17.1	172

1 Flow measurements were not collected due to safety concerns

Issues

OCPHL recommended that the sampling personnel report QA/QC samples as “duplicate” and “blank” on chain-of-custody (COC) forms to provide clarity as well as maintain consistency with records from prior Santa Ana River sampling seasons. Additionally, collection location and times of QA/QC samples will be reported on the COC as the same collection location and time as the corresponding grab sample to attain internal quality control requirements. Examples of COCs from prior sampling seasons have been provided to the sampling personnel as reference for future monitoring events. Results from QA/QC samples collected during the wet-weather event were within expected parameters.

Upcoming Activities

Dry weather monitoring will begin on the week of May 8, 2016 during the second quarter of 2016. Priority 1 and 2 sites will be sampled for a 20-week period that will span the upcoming two quarters. Priority 3 sites will also be sampled on a rotational 5-week schedule as described in the monitoring plan. The Orange County Watersheds (OCW) Monitoring Manager will coordinate with OCPHL and Orange County sampling personnel regarding Priority 3 sites located in their jurisdiction. CDM Smith will coordinate with Babcock Laboratories and CWE sampling personnel regarding all Priority 1 and 2 sites. Priority 3 sites located in Riverside and San Bernardino Counties are not scheduled to be sampled until the third quarter.

Samples need to be collected from Priority 4 sites once annually during the summer season between June 21 and September 21. They may be sampled as early as next quarter, however, July may be targeted for sampling Priority 4 sites as the second quarter will have many sampling events already. CDM Smith will work with both CWE and the OCW Monitoring Manager to make sure Priority 4 sites are sampled in accordance with the monitoring plan.



Original Location (per MP/QAPP)

Dike Rd

Polla Dr

Lytle Creek

Applewhite Rd

Meadow Ln

Proposed New Site

Middle Fork Rd

Melody Ln

Lytle Creek Rd

Purcell Rd

Applewhite Rd S

Keenbrook Rd



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Imagery Date: 1/1/2015 lat 34.250705° lon -117.500479° elev 3923 ft eye alt 21621 ft