

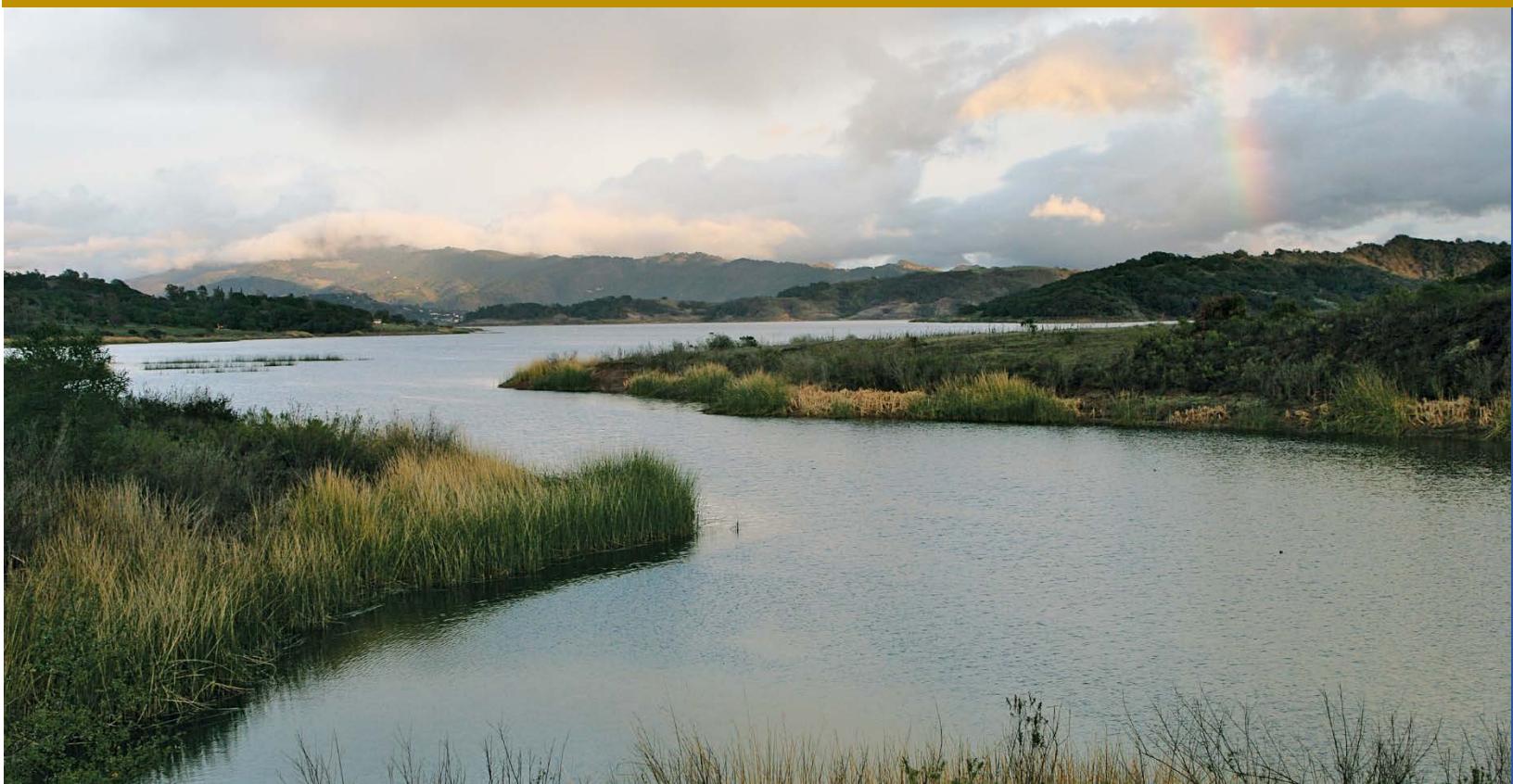


*Ventura Countywide
Stormwater Quality
Management Program*

2017-2018
Permit Year

Ventura Countywide Stormwater Quality
Management Program Annual Report

Attachment E – TMDL Reports



December 14, 2018

Camarillo
County of Ventura
Fillmore
Moorpark
Ojai
Oxnard
Port Hueneme
Santa Paula
Simi Valley
Thousand Oaks
Ventura
Ventura County Watershed Protection District



December 12, 2017

Jenny Newman, TMDL Section Chief
Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Subject: 2017 ANNUAL REPORT FOR SANTA CLARA RIVER ESTUARY AND REACH 3
BACTERIA TOTAL MAXIMUM DAILY LOAD

Dear Ms. Newman,

The attached tables summarize results of weekly monitoring required by the Santa Clara River Estuary and Reach 3 Bacteria Total Maximum Daily Load (TMDL) Final In-stream Compliance Monitoring Plan (CMP). This Annual Report presents weekly monitoring results for sampling events completed between October 4, 2016 and October 31, 2017. As described in the CMP, sampling took place weekly on Tuesdays at Santa Clara River Estuary Reach 005 (SCRE-R005) and Santa Clara River Reach 3 Receiving Water 1 (SCRR3-RW1). Annual weekly sampling results, including daily geometric means are presented in Tables 1 and 2, with actual sample collection dates marked with a diamond symbol (◆). Wet weather (collected 72 hours after a day with >0.1" rainfall) and dry weather daily geometric means were calculated from most recent 30 days of either wet weather or dry weather sampling data. Daily bacteria results were assigned from weekly samples collected at sites.

While sampling was conducted weekly on Tuesdays, four sampling events required alternate dates at SCRE-R005 (October 11, 2016, November 9, 2016, December 14, 2016, and February 22, 2017). Analytical methodology was consistent over the sampling period except for January 24, 2017, February 7, 2017, February 14, 2017, February 21, 2017, and February 28, 2017 at SCRR3-RW1; SM 9221 B,C,E method was used in place of SM 9223 - Colilert Quanti-Tray Method due to high turbidity of surface water matrix.

Samples were collected by the Ventura City's Wastewater Treatment Plant (WWTP) staff at SCRE-R005 and by Rincon Consultants at SCRR3-RW1 for bacteria analysis by the Ventura City's WWTP Laboratory. The report was prepared by Rincon Consultants, Inc.

If you have any questions regarding this CMP, please contact Ewelina Mutkowska at (805) 645-1382.

Sincerely,

Arne Anselm
Deputy Director,
Ventura County Watershed Protection District

CC: Jeff Pratt, Ventura County Public Works Agency
Glenn Shephard, Ventura County Watershed Protection District
Ewelina Mutkowska, Ventura County Public Works Agency
Joe Yahner, City of Ventura
Roxanne Hughes, City of Fillmore
Caesar Hernandez, City of Santa Paula
Badaoui Mouderrès, City of Oxnard

Table 1
Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Time	Date	Rain	Single Sample		Single Sample		Single Sample		Single Sample Enterococcus (MPN/100mL)
				E.coli (MPN/100mL)	Site: SCRR3-RW1 (235 MPN)	Total Coliform (MPN/100mL)	Site: SCRE-R005 (10,000 MPN)	Fecal Coliform (MPN/100mL)	Site: SCRE-R005 (400 MPN)	
Santa Clara River Reach 3										
SCRR3-RW1	1100	10/11/2016	♦	=	488.4	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1015	10/18/2016	♦	=	866.4	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1430	10/25/2016	♦	>	2,419.2	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1400	11/1/2016	♦	>	2,419.2	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1250	11/8/2016	♦	>	2,419.2	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1250	11/15/2016	♦	>	2,419.2	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1300	11/22/2016	♦	>	2,419.2	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1200	11/29/2016	♦	>	2,419.2	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1015	12/6/2016	♦	>	2,419.2	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	0805	12/13/2016	♦	>	273.0	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	0950	12/20/2016	♦	=	613.0	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1215	12/27/2016	♦	=	194.0	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1205	1/3/2017	♦	=	68.3	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1310	1/10/2017	♦	=	126.3	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1300	1/17/2017	♦	=	60.9	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1225	1/24/2017	♦	=	800.0	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1330	1/31/2017	♦	=	18.5	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1400	2/7/2017	♦	=	800.0	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1200	2/14/2017	♦	=	130.0	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1215	2/21/2017	♦	=	300.0	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1015	2/28/2017	♦	=	23.0	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1215	3/7/2017	♦	=	13.0	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	0835	3/14/2017	♦	=	33.0	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1230	3/21/2017	♦	=	770.1	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1350	3/28/2017	♦	=	30.5	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	0900	4/4/2017	♦	=	36.4	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	0810	4/11/2017	♦	=	66.9	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1000	4/18/2017	♦	=	185.0	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1400	4/25/2017	♦	=	41.0	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1045	5/2/2017	♦	=	32.0	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1240	5/9/2017	♦	=	30.1	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1200	5/16/2017	♦	=	32.3	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1000	5/23/2017	♦	=	62.0	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1005	5/31/2017	♦	=	76.6	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	0910	6/6/2017	♦	=	172.2	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	0945	6/13/2017	♦	=	275.5	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1000	6/20/2017	♦	=	126.7	n/a	n/a	n/a	n/a	n/a

Table 1
Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Time	Date	Rain	Single Sample		Single Sample Total Coliform (MPN/100mL)	Single Sample Fecal Coliform (MPN/100mL)	Single Sample Enterococcus (MPN/100mL)
				E.coli (MPN/100mL)	Site: SCRR3-RW1			
					(235 MPN)	(10,000 MPN)	(400 MPN)	(104 MPN)
SCRR3-RW1	1305	6/27/2017	♦		62.0	n/a	n/a	n/a
SCRR3-RW1	0930	7/4/2017	♦		143.0	n/a	n/a	n/a
SCRR3-RW1	1110	7/11/2017	♦		43.5	n/a	n/a	n/a
SCRR3-RW1	1115	7/18/2017	♦		49.0	n/a	n/a	n/a
SCRR3-RW1	1320	7/25/2017	♦		30.2	n/a	n/a	n/a
SCRR3-RW1	1120	8/1/2017	♦		35.8	n/a	n/a	n/a
SCRR3-RW1	1100	8/8/2017	♦		63.3	n/a	n/a	n/a
SCRR3-RW1	1215	8/15/2017	♦		74.9	n/a	n/a	n/a
SCRR3-RW1	1215	8/22/2017	♦		143.9	n/a	n/a	n/a
SCRR3-RW1	0940	8/29/2017	♦		74.3	n/a	n/a	n/a
SCRR3-RW1	1315	9/5/2017	♦		55.6	n/a	n/a	n/a
SCRR3-RW1	1145	9/12/2017	♦		34.5	n/a	n/a	n/a
SCRR3-RW1	1155	9/19/2017	♦		43.5	n/a	n/a	n/a
SCRR3-RW1	1045	9/26/2017	♦		20.9	n/a	n/a	n/a
SCRR3-RW1	1120	10/3/2017	♦		31.8	n/a	n/a	n/a
SCRR3-RW1	1310	10/10/2017	♦		39.7	n/a	n/a	n/a
SCRR3-RW1	0852	10/17/2017	♦		145.5	n/a	n/a	n/a
SCRR3-RW1	1045	10/24/2017	♦		1,986.3	n/a	n/a	n/a
SCRR3-RW1	1115	10/31/2017	♦		547.5	n/a	n/a	n/a
Santa Clara River Estuary								
SCRE-R005	0812	10/4/2016	♦		n/a	3000	800	127
SCRE-R005	0903	10/12/2016	♦		n/a	3000	130	127
SCRE-R005	1105	10/18/2016	♦		n/a	3000	1,300	49
SCRE-R005	0825	10/25/2016	♦		n/a	2,200	23	105
SCRE-R005	0957	11/1/2016	♦		n/a	9,000	500	37
SCRE-R005	0903	11/9/2016	♦		n/a	2,800	300	37
SCRE-R005	0731	11/15/2016	♦		n/a	5,000	500	579
SCRE-R005	0822	11/22/2016	♦		n/a	2,400	350	82
SCRE-R005	0911	11/29/2016	♦		n/a	1,600	110	80
SCRE-R005	0746	12/6/2016	♦		n/a	3,000	800	112
SCRE-R005	0940	12/14/2016	♦		n/a	1,300	300	121
SCRE-R005	0853	12/20/2016	♦		n/a	700	23	6
SCRE-R005	0757	12/27/2016	♦		n/a	16,000	230	35
SCRE-R005	0936	1/3/2017	♦		n/a	3,000	130	49
SCRE-R005	0942	1/10/2017	♦		n/a	1,600	1,600	2,419
SCRE-R005	0901	1/17/2017	♦		n/a	5,000	130	5
SCRE-R005	0853	1/24/2017	♦		n/a	1,600	9,000	3,448
SCRE-R005	0847	1/31/2017	♦		n/a	2,200	30	10

Table 1
Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Time	Date	Rain	Single Sample		Single Sample Total Coliform (MPN/100mL)	Single Sample		Single Sample Fecal Coliform (MPN/100mL)	Single Sample Enterococcus (MPN/100mL)
				E.coli (MPN/100mL)	Site: SCRR3-RW1		Site: SCRE-R005	Site: SCRE-R005		
					(235 MPN)		(10,000 MPN)	(400 MPN)		(104 MPN)
SCRE-R005	0809	2/7/2017	Wet	n/a	16,000	9,000	2,419			
SCRE-R005	0959	2/14/2017	Wet	n/a	5,000	300	132			
SCRE-R005	1107	2/22/2017	Wet	n/a	16,000	800	573			
SCRE-R005	1022	2/28/2017	Wet	n/a	5,000	80	573			
SCRE-R005	0819	3/7/2017	Dry	n/a	1,300	80	35			
SCRE-R005	0945	3/14/2017	Dry	n/a	1,100	30	24			
SCRE-R005	0945	3/21/2017	Dry	n/a	700	30	12			
SCRE-R005	0917	3/28/2017	Dry	n/a	1,700	80	6			
SCRE-R005	0923	4/4/2017	Dry	n/a	900	300	25			
SCRE-R005	0825	4/11/2017	Wet	n/a	1,100	130	57			
SCRE-R005	0910	4/18/2017	Dry	n/a	800	500	2,419			
SCRE-R005	0857	4/25/2017	Dry	n/a	5,000	300	214			
SCRE-R005	0825	5/2/2017	Dry	n/a	1,600	13	276			
SCRE-R005	0829	5/9/2017	Dry	n/a	1,100	30	96			
SCRE-R005	0915	5/16/2017	Dry	n/a	280	2	27			
SCRE-R005	0817	5/23/2017	Dry	n/a	700	2	32			
SCRE-R005	0924	5/31/2017	Dry	n/a	500	7	2,419			
SCRE-R005	0848	6/6/2017	Dry	n/a	500	50	7			
SCRE-R005	0950	6/13/2017	Dry	n/a	1,600	2	2			
SCRE-R005	0923	6/20/2017	Dry	n/a	800	23	40			
SCRE-R005	0935	6/27/2017	Dry	n/a	800	23	12			
SCRE-R005	1016	7/4/2017	Dry	n/a	9,000	2	1			
SCRE-R005	0927	7/11/2017	Dry	n/a	3,500	70	37			
SCRE-R005	0929	7/18/2017	Dry	n/a	16,000	14	44			
SCRE-R005	0843	7/25/2017	Dry	n/a	800	8	19			
SCRE-R005	1009	8/1/2017	Dry	n/a	1,600	1,600	72			
SCRE-R005	1005	8/8/2017	Dry	n/a	300	4	17			
SCRE-R005	0918	8/15/2017	Dry	n/a	500	8	21			
SCRE-R005	1006	8/22/2017	Dry	n/a	300	8	49			
SCRE-R005	0940	8/29/2017	Dry	n/a	130	130	38			
SCRE-R005	0912	9/5/2017	Dry	n/a	2,800	17	52			
SCRE-R005	0928	9/12/2017	Dry	n/a	9,000	170	46			
SCRE-R005	0837	9/19/2017	Dry	n/a	220	8	68			
SCRE-R005	0959	9/26/2017	Dry	n/a	130	4	26			
SCRE-R005	0943	10/3/2017	Dry	n/a	700	4	3			
SCRE-R005	0917	10/10/2017	Dry	n/a	16,000	30	8			
SCRE-R005	0933	10/17/2017	Dry	n/a	16,000	23	27			
SCRE-R005	0759	10/24/2017	Dry	n/a	9,000	50	48			

Table 1
Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Time	Date	Rain	Single Sample		Single Sample		Single Sample		Single Sample	
				E.coli (MPN/100mL)	Site: SCRR3-RW1	Total Coliform (MPN/100mL)	Site: SCRE-R005	Fecal Coliform (MPN/100mL)	Site: SCRE-R005	Enterococcus (MPN/100mL)	Site: SCRE-R005
SCRE-R005	1001	10/31/2017	♦	(235 MPN)		(10,000 MPN)		(400 MPN)		(104 MPN)	
				n/a		1,300		13			11

Notes:

- ♦ Date of Sampling
- MPN - most probably number
- TMDL - Total Maximum Daily Load
- E.coli - Escherichia coli
- > - greater than
- < - less than
- = - equal to

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRRE-R005)

Location	Date	Time	Rain	Single Sample		30-Day Geomean		Single Sample		30-Day Geomean		Single Sample	30-Day Geomean		
				Sample	E.coli (MPN/100mL) Site: SCRR3-RW1 (235 MPN)	Sample	Total Coliform (MPN/100mL) Site: SCRE-R005 (10,000 MPN)	Sample	Fecal Coliform (MPN/100mL) Site: SCRE-R005 (200 MPN)						
Santa Clara River Reach 3															
SCRR3-RW1	10/11/2016	◆	-	Dry	=	488.4	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	10/12/2016		-	Dry	=	488.4	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	10/13/2016		-	Dry	=	488.4	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	10/14/2016		-	Dry	=	488.4	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	10/15/2016		-	Dry	=	488.4	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	10/16/2016		-	Dry	=	488.4	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	10/17/2016		-	Dry	=	488.4	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	10/18/2016	◆	-	Wet	=	866.4	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	10/19/2016		-	Wet	=	866.4	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	10/20/2016		-	Wet	=	866.4	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	10/21/2016		-	Wet	=	866.4	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	10/22/2016		-	Wet	=	866.4	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	10/23/2016		-	Wet	=	866.4	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	10/24/2016		-	Wet	=	866.4	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	10/25/2016	◆	-	Wet	=	866.4	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	10/26/2016		-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	10/27/2016		-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	10/28/2016		-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	10/29/2016		-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	10/30/2016		-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	10/31/2016		-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	11/1/2016	◆	-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	11/2/2016		-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	11/3/2016		-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	11/4/2016		-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	11/5/2016		-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	11/6/2016		-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	11/7/2016		-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	11/8/2016	◆	-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	11/9/2016		-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	11/10/2016		-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	11/11/2016		-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	11/12/2016		-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	11/13/2016		-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	11/14/2016		-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		
SCRR3-RW1	11/15/2016	◆	-	Dry	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a		

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRRE-R005)

Location	Date	Time	Rain	30-Day Geomean		Single Sample Total Coliform (MPN/100mL) Site: SCRR3-RW1 (235 MPN)	30-Day Geomean E.coli (MPN/100mL) Site: SCRR3-RW1 (126 MPN)	Single Sample		30-Day Geomean		Single Sample Enterococcus (MPN/100mL) Site: SCRE-R005 (104 MPN)	30-Day Geomean Enterococcus (MPN/100mL) Site: SCRE-R005 (35 MPN)
				E.coli (MPN/100mL)				Sample Fecal Coliform (MPN/100mL) Site: SCRE-R005 (400 MPN)	Sample Geomean Coliform (MPN/100mL) Site: SCRE-R005 (200 MPN)				
				Sample	Total Coliform (MPN/100mL) Site: SCRE-R005 (10,000 MPN)								
SCRR3-RW1	11/16/2016	-	Dry	>	2,419.2	1665.4	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	11/17/2016	-	Dry	>	2,419.2	1756.7	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	11/18/2016	-	Dry	>	2,419.2	1852.9	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	11/19/2016	-	Dry	>	2,419.2	1954.4	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	11/20/2016	-	Dry	>	2,419.2	2061.5	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	11/21/2016	-	Dry	>	2,419.2	2174.4	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	11/22/2016	◆	Wet	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	11/23/2016	-	Wet	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	11/24/2016	-	Wet	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	11/25/2016	-	Wet	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	11/26/2016	-	Wet	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	11/27/2016	-	Wet	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	11/28/2016	-	Wet	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	11/29/2016	◆	Wet	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	11/30/2016	-	Wet	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/1/2016	-	Wet	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/2/2016	-	Wet	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/3/2016	-	Wet	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/4/2016	-	Wet	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/5/2016	-	Wet	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/6/2016	◆	Wet	>	2,419.2	-	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/7/2016	-	Dry	>	2,419.2	2293.6	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/8/2016	-	Dry	>	2,419.2	2419.2	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/9/2016	-	Dry	>	2,419.2	2419.2	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/10/2016	-	Dry	>	2,419.2	2419.2	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/11/2016	-	Dry	>	2,419.2	2419.2	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/12/2016	-	Dry	>	2,419.2	2419.2	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/13/2016	◆	Dry	>	273.0	2249.5	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/14/2016	-	Dry	=	273.0	2091.7	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/15/2016	-	Dry	=	273.0	1945.0	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/16/2016	-	Dry	=	273.0	1808.6	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/17/2016	-	Dry	=	273.0	1681.7	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/18/2016	-	Dry	=	273.0	1563.8	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/19/2016	-	Dry	=	273.0	1454.1	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/20/2016	◆	Dry	=	613.0	1389.0	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/21/2016	-	Dry	=	613.0	1326.9	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	12/22/2016	-	Dry	=	613.0	1267.6	n/a	n/a	n/a	n/a	n/a	n/a	

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRRE-R005)

Location	Date	Time	Rain	Single Sample		30-Day Geomean		Single Sample		30-Day Geomean		Single Sample		30-Day Geomean	
				(MPN/100mL)	E.coli	(MPN/100mL)	Total Coliform	(MPN/100mL)	Fecal Coliform	(MPN/100mL)	Enterococcus	(MPN/100mL)	Site: SCRRE-R005	(104 MPN)	(35 MPN)
SCRR3-RW1	12/23/2016	-	Dry	=	613.0	1210.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	12/24/2016	-	Dry	=	613.0	1156.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	12/25/2016	-	Dry	=	613.0	1105.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	12/26/2016	-	Dry	=	613.0	1055.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	12/27/2016	♦	Wet	=	194.0	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	12/28/2016	-	Wet	=	194.0	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	12/29/2016	-	Wet	=	194.0	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	12/30/2016	-	Wet	=	194.0	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	12/31/2016	-	Wet	=	194.0	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/1/2017	-	Wet	=	194.0	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/2/2017	-	Wet	=	194.0	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/3/2017	♦	Dry	=	68.3	937.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/4/2017	-	Dry	=	68.3	832.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/5/2017	-	Dry	=	68.3	738.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/6/2017	-	Dry	=	68.3	656.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/7/2017	-	Dry	=	68.3	582.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/8/2017	-	Dry	=	68.3	517.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/9/2017	-	Dry	=	68.3	459.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/10/2017	♦	Wet	=	126.3	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/11/2017	-	Wet	=	126.3	867.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/12/2017	-	Wet	=	126.3	813.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/13/2017	-	Wet	=	126.3	763.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/14/2017	-	Wet	=	126.3	715.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/15/2017	-	Wet	=	126.3	671.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/16/2017	-	Wet	=	126.3	629.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/17/2017	♦	Dry	=	60.9	406.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/18/2017	-	Dry	=	60.9	359.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/19/2017	-	Dry	=	60.9	317.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/20/2017	-	Dry	=	60.9	281.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/21/2017	-	Dry	=	60.9	248.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/22/2017	-	Dry	=	60.9	219.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/23/2017	-	Dry	=	60.9	194.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/24/2017	♦	Wet	=	800.0	627.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/25/2017	-	Wet	=	800.0	626.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/26/2017	-	Wet	=	800.0	603.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/27/2017	-	Wet	=	800.0	581.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/28/2017	-	Wet	=	800.0	560.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRRE-R005)

Location	Date	Time	Rain	Single Sample		30-Day Geomean		Single Sample		30-Day Geomean		Single Sample		30-Day Geomean	
				E.coli (MPN/100mL)	Site: SCRR3-RW1	Total Coliform (MPN/100mL)	Site: SCRRE-R005	Fecal Coliform (MPN/100mL)	Site: SCRRE-R005	Enterococcus (MPN/100mL)	Site: SCRRE-R005	Fecal Coliform (MPN/100mL)	Site: SCRRE-R005	Enterococcus (MPN/100mL)	Site: SCRRE-R005
				(235 MPN)	(126 MPN)	(10,000 MPN)	(1,000 MPN)	(400 MPN)	(200 MPN)	(104 MPN)	(35 MPN)	(400 MPN)	(200 MPN)	(104 MPN)	(35 MPN)
SCRR3-RW1	1/29/2017	-	Wet	= 800.0	540.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/30/2017	-	Wet	= 800.0	520.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	1/31/2017	♦	Dry	= 18.5	165.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/1/2017	-	Dry	= 18.5	140.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/2/2017	-	Dry	= 18.5	128.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/3/2017	-	Dry	= 18.5	117.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/4/2017	-	Dry	= 18.5	107.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/5/2017	-	Dry	= 18.5	98.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/6/2017	-	Dry	= 18.5	89.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/7/2017	♦	Wet	= 800.0	501.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/8/2017	-	Wet	= 800.0	483.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/9/2017	-	Wet	= 800.0	466.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/10/2017	-	Wet	= 800.0	449.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/11/2017	-	Wet	= 800.0	433.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/12/2017	-	Wet	= 800.0	417.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/13/2017	-	Wet	= 800.0	402.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/14/2017	♦	Wet	= 130.0	364.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/15/2017	-	Wet	= 130.0	331.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/16/2017	-	Wet	= 130.0	326.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/17/2017	-	Wet	= 130.0	322.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/18/2017	-	Wet	= 130.0	318.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/19/2017	-	Wet	= 130.0	313.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/20/2017	-	Wet	= 130.0	309.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/21/2017	♦	Wet	= 300.0	314.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/22/2017	-	Wet	= 300.0	318.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/23/2017	-	Wet	= 300.0	328.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/24/2017	-	Wet	= 300.0	337.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/25/2017	-	Wet	= 300.0	347.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/26/2017	-	Wet	= 300.0	357.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/27/2017	-	Wet	= 300.0	368.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	2/28/2017	♦	Wet	= 23.0	347.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/1/2017	-	Wet	= 23.0	328.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/2/2017	-	Wet	= 23.0	292.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/3/2017	-	Wet	= 23.0	259.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/4/2017	-	Wet	= 23.0	230.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/5/2017	-	Wet	= 23.0	204.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/6/2017	-	Wet	= 23.0	181.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRRE-R005)

Location	Date	Time	Rain	Single Sample		30-Day Geomean		Single Sample		30-Day Geomean		Single Sample		30-Day Geomean	
				E.coli (MPN/100mL)	Site: SCRR3-RW1 (235 MPN)	Total Coliform (MPN/100mL)	Site: SCRRE-R005 (10,000 MPN)	Fecal Coliform (MPN/100mL)	Site: SCRRE-R005 (400 MPN)	Enterococcus (MPN/100mL)	Site: SCRRE-R005 (104 MPN)	Fecal Coliform (MPN/100mL)	Site: SCRRE-R005 (200 MPN)	Enterococcus (MPN/100mL)	Site: SCRRE-R005 (35 MPN)
SCRR3-RW1	3/7/2017	♦	-	13.0	81.1	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/8/2017	-	-	13.0	73.2	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/9/2017	-	-	13.0	64.4	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/10/2017	-	-	13.0	56.7	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/11/2017	-	-	13.0	49.8	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/12/2017	-	-	13.0	43.8	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/13/2017	-	-	13.0	38.5	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/14/2017	♦	-	33.0	35.0	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/15/2017	-	-	33.0	31.7	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/16/2017	-	-	33.0	31.0	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/17/2017	-	-	33.0	30.2	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/18/2017	-	-	33.0	29.5	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/19/2017	-	-	33.0	28.8	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/20/2017	-	-	33.0	28.1	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/21/2017	♦	-	770.1	30.5	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/22/2017	-	-	770.1	33.0	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/23/2017	-	-	770.1	35.9	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/24/2017	-	-	770.1	39.1	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/25/2017	-	-	770.1	42.6	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/26/2017	-	-	770.1	46.3	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/27/2017	-	-	770.1	50.4	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/28/2017	♦	-	30.5	49.2	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/29/2017	-	-	30.5	48.1	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/30/2017	-	-	30.5	48.9	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	3/31/2017	-	-	30.5	49.8	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/1/2017	-	-	30.5	50.6	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/2/2017	-	-	30.5	51.4	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/3/2017	-	-	30.5	52.3	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/4/2017	♦	-	36.4	53.5	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/5/2017	-	-	36.4	54.7	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/6/2017	-	-	36.4	56.6	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/7/2017	-	-	36.4	58.6	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/8/2017	-	-	36.4	60.7	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/9/2017	-	-	36.4	62.8	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/10/2017	-	-	36.4	65.0	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/11/2017	♦	-	66.9	167.5	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/12/2017	-	-	66.9	154.2	=	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRRE-R005)

Location	Date	Time	Rain	Single Sample		30-Day Geomean		Single Sample		30-Day Geomean		Single Sample		30-Day Geomean	
				E. coli		Total Coliform		Fecal Coliform		Enterococcus		Total Coliform		Enterococcus	
				(MPN/100mL)	(126 MPN)	(MPN/100mL)	(10,000 MPN)	(MPN/100mL)	(400 MPN)	(MPN/100mL)	(104 MPN)	(MPN/100mL)	(200 MPN)	(MPN/100mL)	(35 MPN)
SCRR3-RW1	4/13/2017	-	Wet	=	66.9	142.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/14/2017	-	Wet	=	66.9	130.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/15/2017	-	Wet	=	66.9	120.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/16/2017	-	Wet	=	66.9	110.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/17/2017	-	Wet	=	66.9	102.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/18/2017	♦	Dry	=	185.0	71.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/19/2017	-	Dry	=	185.0	77.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/20/2017	-	Dry	=	185.0	82.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/21/2017	-	Dry	=	185.0	87.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/22/2017	-	Dry	=	185.0	92.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/23/2017	-	Dry	=	185.0	97.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/24/2017	-	Dry	=	185.0	103.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/25/2017	♦	Dry	=	41.0	104.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/26/2017	-	Dry	=	41.0	104.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/27/2017	-	Dry	=	41.0	95.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/28/2017	-	Dry	=	41.0	86.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/29/2017	-	Dry	=	41.0	78.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	4/30/2017	-	Dry	=	41.0	70.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/1/2017	-	Dry	=	41.0	64.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/2/2017	♦	Dry	=	32.0	57.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/3/2017	-	Dry	=	32.0	52.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/4/2017	-	Dry	=	32.0	52.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/5/2017	-	Dry	=	32.0	52.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/6/2017	-	Dry	=	32.0	52.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/7/2017	-	Dry	=	32.0	52.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/8/2017	-	Dry	=	32.0	52.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/9/2017	♦	Dry	=	30.1	52.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/10/2017	-	Dry	=	30.1	52.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/11/2017	-	Dry	=	30.1	51.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/12/2017	-	Dry	=	30.1	51.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/13/2017	-	Dry	=	30.1	51.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/14/2017	-	Dry	=	30.1	50.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/15/2017	-	Dry	=	30.1	50.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/16/2017	♦	Dry	=	32.3	50.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/17/2017	-	Dry	=	32.3	50.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/18/2017	-	Dry	=	32.3	47.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/19/2017	-	Dry	=	32.3	44.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRRE-R005)

Location	Date	Time	Rain	Single Sample		30-Day Geomean		Single Sample		30-Day Geomean		Single Sample		30-Day Geomean	
				E.coli (MPN/100mL)	Site: SCRR3-RW1 (235 MPN)	Total Coliform (MPN/100mL)	Site: SCRRE-R005 (10,000 MPN)	Fecal Coliform (MPN/100mL)	Site: SCRRE-R005 (400 MPN)	Enterococcus (MPN/100mL)	Site: SCRRE-R005 (104 MPN)	Fecal Coliform (MPN/100mL)	Site: SCRRE-R005 (200 MPN)	Enterococcus (MPN/100mL)	Site: SCRRE-R005 (35 MPN)
SCRR3-RW1	5/20/2017	-	Dry	32.3	=	42.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/21/2017	-	Dry	32.3	=	39.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/22/2017	-	Dry	32.3	=	37.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/23/2017	♦	Dry	62.0	=	36.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/24/2017	-	Dry	62.0	=	35.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/25/2017	-	Dry	62.0	=	35.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/26/2017	-	Dry	62.0	=	36.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/27/2017	-	Dry	62.0	=	36.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/28/2017	-	Dry	62.0	=	37.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/29/2017	-	Dry	62.0	=	37.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/30/2017	♦	Dry	62.0	=	38.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	5/31/2017	-	Dry	76.6	=	38.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/1/2017	-	Dry	76.6	=	40.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/2/2017	-	Dry	76.6	=	41.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/3/2017	-	Dry	76.6	=	42.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/4/2017	-	Dry	76.6	=	43.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/5/2017	-	Dry	76.6	=	44.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/6/2017	♦	Dry	172.2	=	47.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/7/2017	-	Dry	172.2	=	50.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/8/2017	-	Dry	172.2	=	53.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/9/2017	-	Dry	172.2	=	56.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/10/2017	-	Dry	172.2	=	59.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/11/2017	-	Dry	172.2	=	63.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/12/2017	-	Dry	172.2	=	67.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/13/2017	♦	Dry	275.5	=	72.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/14/2017	-	Dry	275.5	=	77.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/15/2017	-	Dry	275.5	=	83.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/16/2017	-	Dry	275.5	=	89.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/17/2017	-	Dry	275.5	=	96.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/18/2017	-	Dry	275.5	=	103.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/19/2017	-	Dry	275.5	=	111.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/20/2017	♦	Dry	126.7	=	116.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/21/2017	-	Dry	126.7	=	121.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/22/2017	-	Dry	126.7	=	124.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/23/2017	-	Dry	126.7	=	127.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/24/2017	-	Dry	126.7	=	131.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/25/2017	-	Dry	126.7	=	134.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRRE-R005)

Location	Date	Time	Rain	Single Sample		30-Day Geomean		Single Sample		30-Day Geomean		Single Sample	30-Day Geomean	Enterococcus (MPN/100mL)
				E.coli (MPN/100mL)		Total Coliform (MPN/100mL)		Fecal Coliform (MPN/100mL)		Enterococcus (MPN/100mL)				
				Site: SCRR3-RW1		Site: SCRR3-RW1		Site: SCRR3-RW1		Site: SCRR3-RW1				
				(235 MPN)	(126 MPN)	(10,000 MPN)	(1,000 MPN)	(400 MPN)	(200 MPN)	(104 MPN)	(35 MPN)			
SCRR3-RW1	6/26/2017	-	Dry	=	126.7	137.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/27/2017	♦	Dry	=	62.0	137.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/28/2017	-	Dry	=	62.0	137.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/29/2017	-	Dry	=	62.0	137.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	6/30/2017	-	Dry	=	62.0	136.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/1/2017	-	Dry	=	62.0	135.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/2/2017	-	Dry	=	62.0	134.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/3/2017	-	Dry	=	62.0	133.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/4/2017	♦	Dry	=	143.0	136.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/5/2017	-	Dry	=	143.0	139.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/6/2017	-	Dry	=	143.0	138.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/7/2017	-	Dry	=	143.0	137.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/8/2017	-	Dry	=	143.0	136.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/9/2017	-	Dry	=	143.0	135.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/10/2017	-	Dry	=	143.0	135.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/11/2017	♦	Dry	=	43.5	128.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/12/2017	-	Dry	=	43.5	123.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/13/2017	-	Dry	=	43.5	115.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/14/2017	-	Dry	=	43.5	108.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/15/2017	-	Dry	=	43.5	102.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/16/2017	-	Dry	=	43.5	96.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/17/2017	-	Dry	=	43.5	90.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/18/2017	♦	Dry	=	49.0	85.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/19/2017	-	Dry	=	49.0	80.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/20/2017	-	Dry	=	49.0	78.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/21/2017	-	Dry	=	49.0	75.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/22/2017	-	Dry	=	49.0	73.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/23/2017	-	Dry	=	49.0	71.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/24/2017	-	Dry	=	49.0	68.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/25/2017	♦	Dry	=	30.2	65.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/26/2017	-	Dry	=	30.2	62.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/27/2017	-	Dry	=	30.2	61.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/28/2017	-	Dry	=	30.2	59.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/29/2017	-	Dry	=	30.2	58.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/30/2017	-	Dry	=	30.2	56.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	7/31/2017	-	Dry	=	30.2	55.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	8/1/2017	♦	Dry	=	35.8	54.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRRE-R005)

Location	Date	Time	Rain	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean	
				E.coli (MPN/100mL)	Site: SCRR3-RW1 (235 MPN)		Total Coliform (MPN/100mL)	Site: SCRE-R005 (10,000 MPN)		Fecal Coliform (MPN/100mL)	Site: SCRE-R005 (400 MPN)		Enterococcus (MPN/100mL)	Site: SCRE-R005 (104 MPN)
SCRR3-RW1	8/2/2017	-	Dry	=	35.8	53.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/3/2017	-	Dry	=	35.8	51.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/4/2017	-	Dry	=	35.8	48.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/5/2017	-	Dry	=	35.8	46.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/6/2017	-	Dry	=	35.8	44.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/7/2017	-	Dry	=	35.8	42.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/8/2017	◆	Dry	=	63.3	41.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/9/2017	-	Dry	=	63.3	40.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/10/2017	-	Dry	=	63.3	40.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/11/2017	-	Dry	=	63.3	41.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/12/2017	-	Dry	=	63.3	41.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/13/2017	-	Dry	=	63.3	42.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/14/2017	-	Dry	=	63.3	42.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/15/2017	◆	Dry	=	74.9	43.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/16/2017	-	Dry	=	74.9	44.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/17/2017	-	Dry	=	74.9	45.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/18/2017	-	Dry	=	74.9	45.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/19/2017	-	Dry	=	74.9	46.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/20/2017	-	Dry	=	74.9	47.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/21/2017	-	Dry	=	74.9	47.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/22/2017	◆	Dry	=	143.9	49.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/23/2017	-	Dry	=	143.9	51.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/24/2017	-	Dry	=	143.9	54.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/25/2017	-	Dry	=	143.9	56.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/26/2017	-	Dry	=	143.9	59.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/27/2017	-	Dry	=	143.9	63.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/28/2017	-	Dry	=	143.9	66.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/29/2017	◆	Dry	=	74.3	68.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/30/2017	-	Dry	=	74.3	70.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	8/31/2017	-	Dry	=	74.3	72.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	9/1/2017	-	Dry	=	74.3	74.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	9/2/2017	-	Dry	=	74.3	75.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	9/3/2017	-	Dry	=	74.3	77.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	9/4/2017	-	Dry	=	74.3	79.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	9/5/2017	◆	Dry	=	55.6	80.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	9/6/2017	-	Dry	=	55.6	82.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SCRR3-RW1	9/7/2017	-	Dry	=	55.6	81.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRRE-R005)

Location	Date	Time	Rain	Single Sample		30-Day Geomean		Single Sample		30-Day Geomean		Single Sample		30-Day Geomean	
				E.coli (MPN/100mL)	Site: SCRR3-RW1 (235 MPN)	Total Coliform (MPN/100mL)	Site: SCRRE-R005 (10,000 MPN)	Fecal Coliform (MPN/100mL)	Site: SCRRE-R005 (400 MPN)	Enterococcus (MPN/100mL)	Site: SCRRE-R005 (104 MPN)	Fecal Coliform (MPN/100mL)	Site: SCRRE-R005 (200 MPN)	Enterococcus (MPN/100mL)	Site: SCRRE-R005 (35 MPN)
SCRR3-RW1	9/8/2017	-	Dry	=	55.6	81.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/9/2017	-	Dry	=	55.6	81.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/10/2017	-	Dry	=	55.6	80.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/11/2017	-	Dry	=	55.6	80.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/12/2017	♦	Dry	=	34.5	78.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/13/2017	-	Dry	=	34.5	77.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/14/2017	-	Dry	=	34.5	75.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/15/2017	-	Dry	=	34.5	73.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/16/2017	-	Dry	=	34.5	71.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/17/2017	-	Dry	=	34.5	69.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/18/2017	-	Dry	=	34.5	67.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/19/2017	♦	Dry	=	43.5	66.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/20/2017	-	Dry	=	43.5	65.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/21/2017	-	Dry	=	43.5	62.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/22/2017	-	Dry	=	43.5	60.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/23/2017	-	Dry	=	43.5	58.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/24/2017	-	Dry	=	43.5	55.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/25/2017	-	Dry	=	43.5	53.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/26/2017	♦	Dry	=	20.9	50.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/27/2017	-	Dry	=	20.9	47.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/28/2017	-	Dry	=	20.9	45.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/29/2017	-	Dry	=	20.9	43.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	9/30/2017	-	Dry	=	20.9	41.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/1/2017	-	Dry	=	20.9	39.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/2/2017	-	Dry	=	20.9	38.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/3/2017	♦	Dry	=	31.8	37.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/4/2017	-	Dry	=	31.8	36.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/5/2017	-	Dry	=	31.8	35.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/6/2017	-	Dry	=	31.8	34.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/7/2017	-	Dry	=	31.8	34.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/8/2017	-	Dry	=	31.8	33.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/9/2017	-	Dry	=	31.8	32.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/10/2017	♦	Dry	=	39.7	32.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/11/2017	-	Dry	=	39.7	32.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/12/2017	-	Dry	=	39.7	32.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/13/2017	-	Dry	=	39.7	32.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/14/2017	-	Dry	=	39.7	32.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRRE-R005)

Location	Date	Time	Rain	Single Sample		30-Day Geomean		Single Sample		30-Day Geomean		Single Sample		30-Day Geomean	
				E.coli (MPN/100mL)		Total Coliform (MPN/100mL)		Fecal Coliform (MPN/100mL)		Enterococcus (MPN/100mL)		Fecal Coliform (MPN/100mL)		Enterococcus (MPN/100mL)	
				Site: SCRR3-RW1 (235 MPN)	Site: SCRR3-RW1 (126 MPN)	Site: SCRR3-RW1 (10,000 MPN)	Site: SCRR3-RW1 (1,000 MPN)	Site: SCRR3-RW1 (400 MPN)	Site: SCRR3-RW1 (200 MPN)	Site: SCRR3-RW1 (104 MPN)	Site: SCRR3-RW1 (35 MPN)	Site: SCRR3-RW1 (400 MPN)	Site: SCRR3-RW1 (200 MPN)	Site: SCRR3-RW1 (104 MPN)	Site: SCRR3-RW1 (35 MPN)
SCRR3-RW1	10/15/2017	-	Dry	=	39.7	32.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/16/2017	-	Dry	=	39.7	32.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/17/2017	♦	Dry	=	145.5	34.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/18/2017	-	Dry	=	145.5	36.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/19/2017	-	Dry	=	145.5	37.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/20/2017	-	Dry	=	145.5	39.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/21/2017	-	Dry	=	145.5	40.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/22/2017	-	Dry	=	145.5	42.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/23/2017	-	Dry	=	145.5	44.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/24/2017	♦	Dry	=	1,986.3	50.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/25/2017	-	Dry	=	1,986.3	57.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/26/2017	-	Dry	=	1,986.3	66.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/27/2017	-	Dry	=	1,986.3	77.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/28/2017	-	Dry	=	1,986.3	89.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/29/2017	-	Dry	=	1,986.3	104.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/30/2017	-	Dry	=	1,986.3	121.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	10/31/2017	♦	Dry	=	547.5	135.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	11/1/2017	-	Dry	=	547.5	151.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	11/2/2017	-	Dry	=	547.5	166.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	11/3/2017	-	Dry	=	547.5	183.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	11/4/2017	-	Dry	=	547.5	201.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	11/5/2017	-	Dry	=	547.5	221.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRR3-RW1	11/6/2017	-	Dry	=	547.5	243.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Santa Clara River Estuary															
SCRRE-R005	10/4/2016	♦	Dry	=	n/a	n/a	=	3,000	=	=	=	800	=	=	=
SCRRE-R005	10/5/2016	-	Dry	=	n/a	n/a	=	3,000	=	=	=	800	=	=	=
SCRRE-R005	10/6/2016	-	Dry	=	n/a	n/a	=	3,000	=	=	=	800	=	=	=
SCRRE-R005	10/7/2016	-	Dry	=	n/a	n/a	=	3,000	=	=	=	800	=	=	=
SCRRE-R005	10/8/2016	-	Dry	=	n/a	n/a	=	3,000	=	=	=	800	=	=	=
SCRRE-R005	10/9/2016	-	Dry	=	n/a	n/a	=	3,000	=	=	=	800	=	=	=
SCRRE-R005	10/10/2016	-	Dry	=	n/a	n/a	=	3,000	=	=	=	800	=	=	=
SCRRE-R005	10/11/2016	-	Dry	=	n/a	n/a	=	3,000	=	=	=	800	=	=	=
SCRRE-R005	10/12/2016	♦	Dry	=	n/a	n/a	=	3,000	=	=	=	130	=	=	=
SCRRE-R005	10/13/2016	-	Dry	=	n/a	n/a	=	3,000	=	=	=	130	=	=	=
SCRRE-R005	10/14/2016	-	Dry	=	n/a	n/a	=	3,000	=	=	=	130	=	=	=
SCRRE-R005	10/15/2016	-	Dry	=	n/a	n/a	=	3,000	=	=	=	130	=	=	=
SCRRE-R005	10/16/2016	-	Dry	=	n/a	n/a	=	3,000	=	=	=	130	=	=	=

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRRE-R005)

Location	Date	Time	Rain	Single Sample		30-Day Geomean		Single Sample		30-Day Geomean		Single Sample		30-Day Geomean	
				E. coli (MPN/100mL)	Total Coliform (MPN/100mL)	Fecal Coliform (MPN/100mL)	Enterococcus (MPN/100mL)	Total Coliform (MPN/100mL)	Fecal Coliform (MPN/100mL)	Enterococcus (MPN/100mL)	Total Coliform (MPN/100mL)	Fecal Coliform (MPN/100mL)	Enterococcus (MPN/100mL)	Total Coliform (MPN/100mL)	Fecal Coliform (MPN/100mL)
				Site: SCRR3-RW1 (235 MPN)	Site: SCRR3-RW1 (1,000 MPN)	Site: SCRR3-RW1 (1,000 MPN)	Site: SCRR3-RW1 (1,000 MPN)	Site: SCRR3-RW1 (1,000 MPN)	Site: SCRR3-RW1 (1,000 MPN)	Site: SCRR3-RW1 (1,000 MPN)	Site: SCRR3-RW1 (1,000 MPN)	Site: SCRR3-RW1 (1,000 MPN)	Site: SCRR3-RW1 (1,000 MPN)	Site: SCRR3-RW1 (1,000 MPN)	Site: SCRR3-RW1 (1,000 MPN)
SCRE-R005	10/17/2016	-	Dry	n/a	n/a	n/a	n/a	3,000	130	127	-	130	127	-	-
SCRE-R005	10/18/2016	♦	Wet	n/a	n/a	n/a	n/a	3,000	1,300	49	-	1,300	49	-	-
SCRE-R005	10/19/2016	-	Wet	n/a	n/a	n/a	n/a	3,000	1,300	49	-	1,300	49	-	-
SCRE-R005	10/20/2016	-	Wet	n/a	n/a	n/a	n/a	3,000	1,300	49	-	1,300	49	-	-
SCRE-R005	10/21/2016	-	Wet	n/a	n/a	n/a	n/a	3,000	1,300	49	-	1,300	49	-	-
SCRE-R005	10/22/2016	-	Wet	n/a	n/a	n/a	n/a	3,000	1,300	49	-	1,300	49	-	-
SCRE-R005	10/23/2016	-	Wet	n/a	n/a	n/a	n/a	3,000	1,300	49	-	1,300	49	-	-
SCRE-R005	10/24/2016	-	Wet	n/a	n/a	n/a	n/a	3,000	1,300	49	-	1,300	49	-	-
SCRE-R005	10/25/2016	♦	Dry	n/a	n/a	n/a	n/a	2,200	23	105	-	23	105	-	-
SCRE-R005	10/26/2016	-	Dry	n/a	n/a	n/a	n/a	2,200	23	105	-	23	105	-	-
SCRE-R005	10/27/2016	-	Dry	n/a	n/a	n/a	n/a	2,200	23	105	-	23	105	-	-
SCRE-R005	10/28/2016	-	Dry	n/a	n/a	n/a	n/a	2,200	23	105	-	23	105	-	-
SCRE-R005	10/29/2016	-	Dry	n/a	n/a	n/a	n/a	2,200	23	105	-	23	105	-	-
SCRE-R005	10/30/2016	-	Dry	n/a	n/a	n/a	n/a	2,200	23	105	-	23	105	-	-
SCRE-R005	10/31/2016	♦	Dry	n/a	n/a	n/a	n/a	9,000	500	37	-	500	37	-	-
SCRE-R005	11/1/2016	-	Dry	n/a	n/a	n/a	n/a	9,000	500	37	-	500	37	-	-
SCRE-R005	11/2/2016	-	Dry	n/a	n/a	n/a	n/a	9,000	500	37	-	500	37	-	-
SCRE-R005	11/3/2016	-	Dry	n/a	n/a	n/a	n/a	9,000	500	37	-	500	37	-	-
SCRE-R005	11/4/2016	-	Dry	n/a	n/a	n/a	n/a	9,000	500	37	-	500	37	-	-
SCRE-R005	11/5/2016	-	Dry	n/a	n/a	n/a	n/a	9,000	500	37	-	500	37	-	-
SCRE-R005	11/6/2016	-	Dry	n/a	n/a	n/a	n/a	9,000	500	37	-	500	37	-	-
SCRE-R005	11/7/2016	-	Dry	n/a	n/a	n/a	n/a	9,000	500	37	-	500	37	-	-
SCRE-R005	11/8/2016	-	Dry	n/a	n/a	n/a	n/a	2,800	500	37	-	500	37	-	-
SCRE-R005	11/9/2016	♦	Dry	n/a	n/a	n/a	n/a	2,800	3,589	83.9	-	300	207.5	-	-
SCRE-R005	11/10/2016	-	Dry	n/a	n/a	n/a	n/a	2,800	3,581	80.5	-	300	200.8	-	-
SCRE-R005	11/11/2016	-	Dry	n/a	n/a	n/a	n/a	2,800	3,573	77.3	-	300	194.3	-	-
SCRE-R005	11/12/2016	-	Dry	n/a	n/a	n/a	n/a	2,800	3,565	74.2	-	300	188.1	-	-
SCRE-R005	11/13/2016	-	Dry	n/a	n/a	n/a	n/a	2,800	3,557	71.2	-	300	182.0	-	-
SCRE-R005	11/14/2016	-	Dry	n/a	n/a	n/a	n/a	2,800	3,548	68.3	-	300	176.2	-	-
SCRE-R005	11/15/2016	♦	Dry	n/a	n/a	n/a	n/a	5,000	3,609	71.9	-	500	173.5	-	-
SCRE-R005	11/16/2016	-	Dry	n/a	n/a	n/a	n/a	5,000	3,671	75.6	-	500	170.8	-	-
SCRE-R005	11/17/2016	-	Dry	n/a	n/a	n/a	n/a	5,000	3,734	79.5	-	500	168.1	-	-
SCRE-R005	11/18/2016	-	Dry	n/a	n/a	n/a	n/a	5,000	3,798	83.6	-	500	175.8	-	-
SCRE-R005	11/19/2016	-	Dry	n/a	n/a	n/a	n/a	5,000	3,864	88.0	-	500	183.9	-	-
SCRE-R005	11/20/2016	-	Dry	n/a	n/a	n/a	n/a	5,000	3,930	92.5	-	500	192.3	-	-
SCRE-R005	11/21/2016	-	Dry	n/a	n/a	n/a	n/a	5,000	3,998	97.3	-	500	201.2	-	-
SCRE-R005	11/22/2016	♦	Wet	n/a	n/a	n/a	n/a	2,400	350	82	-	350	-	-	-

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRRE-R005)

Location	Date	Time	Rain	Single Sample	30-Day Geomean	Single Sample	30-Day Geomean	Single Sample	30-Day Geomean	Single Sample	30-Day Geomean	Single Sample	30-Day Geomean		
				E.coli (MPN/100mL) Site: SCRR3-RW1 (235 MPN)	(126 MPN)		Total Coliform (MPN/100mL) Site: SCRE-R005 (10,000 MPN)		(1,000 MPN)		Fecal Coliform (MPN/100mL) Site: SCRE-R005 (400 MPN)		(200 MPN)	Enterococcus (MPN/100mL) Site: SCRE-R005 (104 MPN)	(35 MPN)
SCRE-R005	11/23/2016	-	Wet	n/a	n/a	=	2,400	-	=	350	-	=	82	-	
SCRE-R005	11/24/2016	-	Wet	n/a	n/a	=	2,400	-	=	350	-	=	82	-	
SCRE-R005	11/25/2016	-	Wet	n/a	n/a	=	2,400	-	=	350	-	=	82	-	
SCRE-R005	11/26/2016	-	Wet	n/a	n/a	=	2,400	-	=	350	-	=	82	-	
SCRE-R005	11/27/2016	-	Wet	n/a	n/a	=	2,400	-	=	350	-	=	82	-	
SCRE-R005	11/28/2016	-	Wet	n/a	n/a	=	2,400	-	=	350	-	=	82	-	
SCRE-R005	11/29/2016	◆	Wet	n/a	n/a	>	1,600	-	=	110	-	=	80	-	
SCRE-R005	11/30/2016	-	Wet	n/a	n/a	>	1,600	-	=	110	-	=	80	-	
SCRE-R005	12/1/2016	-	Wet	n/a	n/a	>	1,600	-	=	110	-	=	80	-	
SCRE-R005	12/2/2016	-	Wet	n/a	n/a	>	1,600	-	=	110	-	=	80	-	
SCRE-R005	12/3/2016	-	Wet	n/a	n/a	>	1,600	-	=	110	-	=	80	-	
SCRE-R005	12/4/2016	-	Wet	n/a	n/a	>	1,600	-	=	110	-	=	80	-	
SCRE-R005	12/5/2016	-	Wet	n/a	n/a	>	1,600	-	=	110	-	=	80	-	
SCRE-R005	12/6/2016	◆	Dry	n/a	n/a	=	3,000	3,998	=	800	213.7	=	112	96.9	
SCRE-R005	12/7/2016	-	Dry	n/a	n/a	=	3,000	3,998	=	800	227.1	=	112	96.5	
SCRE-R005	12/8/2016	-	Dry	n/a	n/a	=	3,000	4,039	=	800	255.6	=	112	96.7	
SCRE-R005	12/9/2016	-	Dry	n/a	n/a	=	3,000	4,081	=	800	287.7	=	112	96.9	
SCRE-R005	12/10/2016	-	Dry	n/a	n/a	=	3,000	4,123	=	800	323.8	=	112	97.2	
SCRE-R005	12/11/2016	-	Dry	n/a	n/a	=	3,000	4,166	=	800	364.5	=	112	97.4	
SCRE-R005	12/12/2016	-	Dry	n/a	n/a	=	3,000	4,210	=	800	410.3	=	112	97.6	
SCRE-R005	12/13/2016	-	Dry	n/a	n/a	=	3,000	4,253	=	800	461.8	=	112	97.8	
SCRE-R005	12/14/2016	◆	Dry	n/a	n/a	=	1,300	4,179	=	300	503.1	=	121	98.3	
SCRE-R005	12/15/2016	-	Dry	n/a	n/a	=	1,300	3,918	=	300	494.6	=	121	102.2	
SCRE-R005	12/16/2016	-	Dry	n/a	n/a	=	1,300	3,674	=	300	486.2	=	121	106.3	
SCRE-R005	12/17/2016	-	Dry	n/a	n/a	=	1,300	3,444	=	300	478.0	=	121	110.6	
SCRE-R005	12/18/2016	-	Dry	n/a	n/a	=	1,300	3,229	=	300	470.0	=	121	115.1	
SCRE-R005	12/19/2016	-	Dry	n/a	n/a	=	1,300	3,027	=	300	462.0	=	121	119.7	
SCRE-R005	12/20/2016	◆	Dry	n/a	n/a	=	700	2,780	=	23	417.0	=	6	112.7	
SCRE-R005	12/21/2016	-	Dry	n/a	n/a	=	700	2,553	=	23	376.3	=	6	106.0	
SCRE-R005	12/22/2016	-	Dry	n/a	n/a	=	700	2,438	=	23	339.6	=	6	99.8	
SCRE-R005	12/23/2016	-	Dry	n/a	n/a	=	700	2,328	=	23	311.7	=	6	93.9	
SCRE-R005	12/24/2016	-	Dry	n/a	n/a	=	700	2,223	=	23	286.1	=	6	88.4	
SCRE-R005	12/25/2016	-	Dry	n/a	n/a	=	700	2,123	=	23	262.7	=	6	83.2	
SCRE-R005	12/26/2016	-	Dry	n/a	n/a	=	700	2,027	=	23	241.1	=	6	78.3	
SCRE-R005	12/27/2016	◆	Wet	n/a	n/a	=	16,000	-	=	230	-	=	35	-	
SCRE-R005	12/28/2016	-	Wet	n/a	n/a	=	16,000	-	=	230	-	=	35	-	
SCRE-R005	12/29/2016	-	Wet	n/a	n/a	=	16,000	-	=	230	-	=	35	-	

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRRE-R005)

Location	Date	Time	Rain	Single Sample		30-Day Geomean		Single Sample		30-Day Geomean		Single Sample		30-Day Geomean	
				Sample	E.coli (MPN/100mL)	Site: SCRR3-RW1 (126 MPN)	Total Coliform (MPN/100mL)	Sample	Fecal Coliform (MPN/100mL)	Site: SCRRE-R005 (200 MPN)	Sample	Enterococcus (MPN/100mL)	Site: SCRRE-R005 (35 MPN)	Sample	Enterococcus (MPN/100mL)
SCRRE-R005	12/30/2016	-	Wet	n/a	n/a	=	16,000	=	230	=	=	35	=	=	-
SCRRE-R005	12/31/2016	-	Wet	n/a	n/a	=	16,000	=	230	=	=	35	=	=	-
SCRRE-R005	1/1/2017	-	Wet	n/a	n/a	=	16,000	=	230	=	=	35	=	=	-
SCRRE-R005	1/2/2017	-	Wet	n/a	n/a	=	16,000	=	230	=	=	35	=	=	-
SCRRE-R005	1/3/2017	◆	Dry	n/a	n/a	=	3,000	=	130	=	234.5	=	49	=	79.0
SCRRE-R005	1/4/2017	-	Dry	n/a	n/a	=	3,000	=	130	=	228.0	=	49	=	79.8
SCRRE-R005	1/5/2017	-	Dry	n/a	n/a	=	3,000	=	130	=	218.0	=	49	=	73.5
SCRRE-R005	1/6/2017	-	Dry	n/a	n/a	=	3,000	=	130	=	208.5	=	49	=	67.7
SCRRE-R005	1/7/2017	-	Dry	n/a	n/a	=	3,000	=	130	=	199.3	=	49	=	62.3
SCRRE-R005	1/8/2017	-	Dry	n/a	n/a	=	3,000	=	130	=	190.5	=	49	=	57.4
SCRRE-R005	1/9/2017	-	Dry	n/a	n/a	=	3,000	=	130	=	182.2	=	49	=	52.9
SCRRE-R005	1/10/2017	◆	Wet	n/a	n/a	>	1,600	>	1,600	>	2,419	>	2,419	>	-
SCRRE-R005	1/11/2017	-	Wet	n/a	n/a	>	1,600	>	1,600	>	364.1	>	2,419	>	74.3
SCRRE-R005	1/12/2017	-	Wet	n/a	n/a	>	1,600	>	1,600	>	366.6	>	2,419	>	84.6
SCRRE-R005	1/13/2017	-	Wet	n/a	n/a	>	1,600	>	1,600	>	369.2	>	2,419	>	96.3
SCRRE-R005	1/14/2017	-	Wet	n/a	n/a	>	1,600	>	1,600	>	371.7	>	2,419	>	109.7
SCRRE-R005	1/15/2017	-	Wet	n/a	n/a	>	1,600	>	1,600	>	374.3	>	2,419	>	124.9
SCRRE-R005	1/16/2017	-	Wet	n/a	n/a	>	1,600	>	1,600	>	376.9	>	2,419	>	142.3
SCRRE-R005	1/17/2017	◆	Dry	n/a	n/a	=	5,000	=	130	=	174.2	=	5	=	45.1
SCRRE-R005	1/18/2017	-	Dry	n/a	n/a	=	5,000	=	130	=	166.5	=	5	=	38.5
SCRRE-R005	1/19/2017	-	Dry	n/a	n/a	=	5,000	=	130	=	156.7	=	5	=	34.7
SCRRE-R005	1/20/2017	-	Dry	n/a	n/a	=	5,000	=	130	=	147.5	=	5	=	31.3
SCRRE-R005	1/21/2017	-	Dry	n/a	n/a	=	5,000	=	130	=	138.9	=	5	=	28.2
SCRRE-R005	1/22/2017	-	Dry	n/a	n/a	=	5,000	=	130	=	130.7	=	5	=	25.4
SCRRE-R005	1/23/2017	-	Dry	n/a	n/a	=	5,000	=	130	=	123.0	=	5	=	22.9
SCRRE-R005	1/24/2017	◆	Wet	n/a	n/a	>	1,600	>	9,000	>	402.0	=	3,448	=	163.9
SCRRE-R005	1/25/2017	-	Wet	n/a	n/a	>	1,600	>	9,000	>	428.8	=	3,448	=	188.9
SCRRE-R005	1/26/2017	-	Wet	n/a	n/a	>	1,600	>	9,000	>	477.8	=	3,448	=	214.0
SCRRE-R005	1/27/2017	-	Wet	n/a	n/a	>	1,600	>	9,000	>	532.4	=	3,448	=	242.4
SCRRE-R005	1/28/2017	-	Wet	n/a	n/a	>	1,600	>	9,000	>	593.3	=	3,448	=	274.6
SCRRE-R005	1/29/2017	-	Wet	n/a	n/a	>	1,600	>	9,000	>	661.1	=	3,448	=	311.0
SCRRE-R005	1/30/2017	-	Wet	n/a	n/a	>	1,600	>	9,000	>	736.7	=	3,448	=	352.3
SCRRE-R005	1/31/2017	◆	Dry	n/a	n/a	=	2,200	=	30	=	110.3	=	10	=	21.2
SCRRE-R005	2/1/2017	-	Dry	n/a	n/a	=	2,200	=	30	=	98.8	=	10	=	19.5
SCRRE-R005	2/2/2017	-	Dry	n/a	n/a	=	2,200	=	30	=	88.6	=	10	=	18.0
SCRRE-R005	2/3/2017	-	Dry	n/a	n/a	=	2,200	=	30	=	82.0	=	10	=	16.6
SCRRE-R005	2/4/2017	-	Dry	n/a	n/a	=	2,200	=	30	=	76.0	=	10	=	15.3

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Date	Time	Rain	Single Sample		30-Day Geomean		Single Sample		30-Day Geomean		Single Sample	30-Day Geomean	
				E.coli (MPN/100mL)		Total Coliform (MPN/100mL)		Fecal Coliform (MPN/100mL)		Enterococcus (MPN/100mL)				
				Site: SCRR3-RW1		Site: SCRE-R005		Site: SCRE-R005		Site: SCRE-R005				
				(235 MPN)	(126 MPN)	(10,000 MPN)	(1,000 MPN)	(400 MPN)	(200 MPN)	(104 MPN)	(35 MPN)			
SCRE-R005	2/5/2017	-	Dry	n/a	n/a	=	2,200	2,080.4	=	30	70.4	=	10	14.0
SCRE-R005	2/6/2017	-	Dry	n/a	n/a	=	2,200	2,117.3	=	30	65.2	=	10	12.9
SCRE-R005	2/7/2017	◆	Wet	n/a	n/a	>	16,000	2,996.8	=	9,000	820.9	>	2,419	394.3
SCRE-R005	2/8/2017	-	Wet	n/a	n/a	>	16,000	3,192.4	=	9,000	914.7	>	2,419	441.4
SCRE-R005	2/9/2017	-	Wet	n/a	n/a	>	16,000	3,447.1	=	9,000	1,059.4	>	2,419	494.6
SCRE-R005	2/10/2017	-	Wet	n/a	n/a	>	16,000	3,722.1	=	9,000	1,226.9	>	2,419	554.1
SCRE-R005	2/11/2017	-	Wet	n/a	n/a	>	16,000	4,019.0	=	9,000	1,421.0	>	2,419	620.7
SCRE-R005	2/12/2017	-	Wet	n/a	n/a	>	16,000	4,339.6	=	9,000	1,645.7	>	2,419	695.5
SCRE-R005	2/13/2017	-	Wet	n/a	n/a	>	16,000	4,685.8	=	9,000	1,905.9	>	2,419	779.1
SCRE-R005	2/14/2017	◆	Wet	n/a	n/a	=	5,000	4,867.2	=	300	1,970.7	=	132	792.3
SCRE-R005	2/15/2017	-	Wet	n/a	n/a	=	5,000	5,055.6	=	300	2,037.8	=	132	805.6
SCRE-R005	2/16/2017	-	Wet	n/a	n/a	=	5,000	4,863.4	=	300	2,055.9	=	132	842.0
SCRE-R005	2/17/2017	-	Wet	n/a	n/a	=	5,000	4,678.4	=	300	2,074.2	=	132	880.1
SCRE-R005	2/18/2017	-	Wet	n/a	n/a	=	5,000	4,500.5	=	300	2,092.6	=	132	920.0
SCRE-R005	2/19/2017	-	Wet	n/a	n/a	=	5,000	4,329.4	=	300	2,111.2	=	132	961.6
SCRE-R005	2/20/2017	-	Wet	n/a	n/a	=	5,000	4,164.7	=	300	2,130.0	=	132	1,005.1
SCRE-R005	2/21/2017	-	Wet	n/a	n/a	=	5,000	4,006.3	=	300	2,149.0	=	132	1,050.6
SCRE-R005	2/22/2017	◆	Wet	n/a	n/a	>	16,000	4,006.3	=	800	2,240.1	=	573	1,153.2
SCRE-R005	2/23/2017	-	Wet	n/a	n/a	>	16,000	4,325.9	=	800	2,189.0	=	573	1,099.1
SCRE-R005	2/24/2017	-	Wet	n/a	n/a	>	16,000	4,671.0	=	800	2,139.0	=	573	1,047.6
SCRE-R005	2/25/2017	-	Wet	n/a	n/a	>	16,000	5,043.7	=	800	2,090.1	=	573	998.5
SCRE-R005	2/26/2017	-	Wet	n/a	n/a	>	16,000	5,446.0	=	800	2,042.4	=	573	951.7
SCRE-R005	2/27/2017	-	Wet	n/a	n/a	>	16,000	5,880.5	=	800	1,995.7	=	573	907.1
SCRE-R005	2/28/2017	◆	Wet	n/a	n/a	=	5,000	6,108.1	=	80	1,806.1	=	573	864.6
SCRE-R005	3/1/2017	-	Wet	n/a	n/a	=	5,000	6,344.6	=	80	1,634.4	=	573	824.0
SCRE-R005	3/2/2017	-	Wet	n/a	n/a	=	5,000	6,590.2	=	80	1,396.4	=	573	776.2
SCRE-R005	3/3/2017	-	Wet	n/a	n/a	=	5,000	6,845.3	=	80	1,193.0	=	573	731.1
SCRE-R005	3/4/2017	-	Wet	n/a	n/a	=	5,000	7,110.3	=	80	1,019.2	=	573	688.7
SCRE-R005	3/5/2017	-	Wet	n/a	n/a	=	5,000	7,385.6	=	80	870.7	=	573	648.7
SCRE-R005	3/6/2017	-	Wet	n/a	n/a	=	5,000	7,671.5	=	80	743.9	=	573	611.0
SCRE-R005	3/7/2017	◆	Dry	n/a	n/a	=	1,300	2,117.3	=	80	62.4	=	35	12.4
SCRE-R005	3/8/2017	-	Dry	n/a	n/a	=	1,300	2,117.3	=	80	59.7	=	35	11.9
SCRE-R005	3/9/2017	-	Dry	n/a	n/a	=	1,300	2,161.4	=	80	62.2	=	35	12.6
SCRE-R005	3/10/2017	-	Dry	n/a	n/a	=	1,300	2,206.5	=	80	64.8	=	35	13.4
SCRE-R005	3/11/2017	-	Dry	n/a	n/a	=	1,300	2,252.5	=	80	67.6	=	35	14.2
SCRE-R005	3/12/2017	-	Dry	n/a	n/a	=	1,300	2,299.4	=	80	70.5	=	35	15.0
SCRE-R005	3/13/2017	-	Dry	n/a	n/a	=	1,300	2,347.4	=	80	73.5	=	35	16.0

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRRE-R005)

Location	Date	Time	Rain	Single Sample		30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Sample Enterococcus (MPN/100mL)		
				Sample	Total Coliform (MPN/100mL)	Sample	Total Coliform (MPN/100mL)		Sample	Fecal Coliform (MPN/100mL)						
												Sample	Total Coliform (MPN/100mL)		Sample	Fecal Coliform (MPN/100mL)
SCRE-R005	3/14/2017	♦														
SCRE-R005	3/15/2017				Dry	n/a	n/a	=	1,100	2,383.0	=	30	74.1	=		
SCRE-R005	3/16/2017				Dry	n/a	n/a	=	1,100	2,419.2	=	30	74.8	=		
SCRE-R005	3/17/2017				Dry	n/a	n/a	=	1,100	2,339.6	=	30	71.2	=		
SCRE-R005	3/18/2017				Dry	n/a	n/a	=	1,100	2,262.7	=	30	67.8	=		
SCRE-R005	3/19/2017				Dry	n/a	n/a	=	1,100	2,188.2	=	30	64.6	=		
SCRE-R005	3/20/2017				Dry	n/a	n/a	=	1,100	2,116.3	=	30	61.5	=		
SCRE-R005	3/21/2017	♦			Dry	n/a	n/a	=	1,100	2,046.7	=	30	58.6	=		
SCRE-R005	3/22/2017				Dry	n/a	n/a	=	700	1,949.7	=	30	55.8	=		
SCRE-R005	3/23/2017				Dry	n/a	n/a	=	700	1,857.4	=	30	53.1	=		
SCRE-R005	3/24/2017				Dry	n/a	n/a	=	700	1,739.6	=	30	50.6	=		
SCRE-R005	3/25/2017				Dry	n/a	n/a	=	700	1,629.2	=	30	48.2	=		
SCRE-R005	3/26/2017				Dry	n/a	n/a	=	700	1,525.9	=	30	45.9	=		
SCRE-R005	3/27/2017				Dry	n/a	n/a	=	700	1,429.1	=	30	43.7	=		
SCRE-R005	3/28/2017	♦			Dry	n/a	n/a	=	700	1,338.4	=	30	41.6	=		
SCRE-R005	3/29/2017				Dry	n/a	n/a	=	1,700	1,291.2	=	80	40.9	=		
SCRE-R005	3/30/2017				Dry	n/a	n/a	=	1,700	1,245.6	=	80	40.3	=		
SCRE-R005	3/31/2017				Dry	n/a	n/a	=	1,700	1,234.9	=	80	41.6	=		
SCRE-R005	4/1/2017				Dry	n/a	n/a	=	1,700	1,224.3	=	80	43.0	=		
SCRE-R005	4/2/2017				Dry	n/a	n/a	=	1,700	1,213.9	=	80	44.4	=		
SCRE-R005	4/3/2017				Dry	n/a	n/a	=	1,700	1,203.5	=	80	45.9	=		
SCRE-R005	4/4/2017	♦			Dry	n/a	n/a	=	1,700	1,193.2	=	80	47.4	=		
SCRE-R005	4/5/2017				Dry	n/a	n/a	=	900	1,158.1	=	300	51.2	=		
SCRE-R005	4/6/2017				Dry	n/a	n/a	=	900	1,124.1	=	300	55.3	=		
SCRE-R005	4/7/2017				Dry	n/a	n/a	=	900	1,110.4	=	300	57.8	=		
SCRE-R005	4/8/2017				Dry	n/a	n/a	=	900	1,096.9	=	300	60.4	=		
SCRE-R005	4/9/2017				Dry	n/a	n/a	=	900	1,083.6	=	300	63.1	=		
SCRE-R005	4/10/2017				Dry	n/a	n/a	=	900	1,070.4	=	300	65.9	=		
SCRE-R005	4/11/2017	♦			Dry	n/a	n/a	=	900	1,057.3	=	300	68.9	=		
SCRE-R005	4/12/2017				Wet	n/a	n/a	=	1,100	7,576.2	=	130	645.9	=		
SCRE-R005	4/13/2017				Wet	n/a	n/a	=	1,100	7,482.2	=	130	560.8	=		
SCRE-R005	4/14/2017				Wet	n/a	n/a	=	1,100	6,843.4	=	130	486.9	=		
SCRE-R005	4/15/2017				Wet	n/a	n/a	=	1,100	6,259.1	=	130	422.8	=		
SCRE-R005	4/16/2017				Wet	n/a	n/a	=	1,100	5,724.8	=	130	367.1	=		
SCRE-R005	4/17/2017				Wet	n/a	n/a	=	1,100	5,236.0	=	130	318.8	=		
SCRE-R005	4/18/2017	♦			Wet	n/a	n/a	=	1,100	4,789.0	=	130	276.8	=		
SCRE-R005	4/19/2017				Dry	n/a	n/a	=	800	1,040.3	=	500	73.2	>		
SCRE-R005	4/19/2017				Dry	n/a	n/a	=	800	1,023.6	=	500	77.9	>		

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Date	Time	Rain	Single Sample		30-Day Geomean		Single Sample		30-Day Geomean		Single Sample		30-Day Geomean	
				Sample	E.coli (MPN/100mL)	Total Coliform (MPN/100mL)	Site: SCRR3-RW1 (126 MPN)	Sample	Fecal Coliform (MPN/100mL)	Total Coliform (MPN/100mL)	Site: SCRE-R005 (400 MPN)	Sample	Enterococcus (MPN/100mL)	Total Coliform (MPN/100mL)	Site: SCRE-R005 (35 MPN)
SCRE-R005	4/20/2017	-	Dry	n/a	n/a	800	1,012.8	800	500	1,012.8	500	2,419	85.5	2,419	23.7
SCRE-R005	4/21/2017	-	Dry	n/a	n/a	800	1,002.1	800	500	1,002.1	500	2,419	93.9	2,419	27.6
SCRE-R005	4/22/2017	-	Dry	n/a	n/a	800	991.6	800	500	991.6	500	2,419	103.2	2,419	32.2
SCRE-R005	4/23/2017	-	Dry	n/a	n/a	800	981.1	800	500	981.1	500	2,419	113.3	2,419	37.5
SCRE-R005	4/24/2017	-	Dry	n/a	n/a	800	970.7	800	500	970.7	500	2,419	124.4	2,419	43.8
SCRE-R005	4/25/2017	♦	Dry	n/a	n/a	5,000	1,021.0	5,000	300	1,021.0	300	214	134.4	214	47.1
SCRE-R005	4/26/2017	-	Dry	n/a	n/a	5,000	1,073.8	5,000	300	1,073.8	300	214	145.1	214	50.6
SCRE-R005	4/27/2017	-	Dry	n/a	n/a	5,000	1,146.6	5,000	300	1,146.6	300	214	156.7	214	55.7
SCRE-R005	4/28/2017	-	Dry	n/a	n/a	5,000	1,224.2	5,000	300	1,224.2	300	214	169.2	214	61.4
SCRE-R005	4/29/2017	-	Dry	n/a	n/a	5,000	1,307.1	5,000	300	1,307.1	300	214	182.6	214	67.5
SCRE-R005	4/30/2017	-	Dry	n/a	n/a	5,000	1,395.7	5,000	300	1,395.7	300	214	197.2	214	74.3
SCRE-R005	5/1/2017	-	Dry	n/a	n/a	5,000	1,490.2	5,000	300	1,490.2	300	214	213.0	214	81.8
SCRE-R005	5/2/2017	♦	Dry	n/a	n/a	1,600	1,531.8	1,600	13	1,531.8	13	276	207.1	276	90.9
SCRE-R005	5/3/2017	-	Dry	n/a	n/a	1,600	1,574.6	1,600	13	1,574.6	13	276	201.4	276	100.9
SCRE-R005	5/4/2017	-	Dry	n/a	n/a	1,600	1,571.5	1,600	13	1,571.5	13	276	189.6	276	114.6
SCRE-R005	5/5/2017	-	Dry	n/a	n/a	1,600	1,568.3	1,600	13	1,568.3	13	276	178.4	276	130.2
SCRE-R005	5/6/2017	-	Dry	n/a	n/a	1,600	1,565.1	1,600	13	1,565.1	13	276	167.9	276	147.9
SCRE-R005	5/7/2017	-	Dry	n/a	n/a	1,600	1,562.0	1,600	13	1,562.0	13	276	158.1	276	168.1
SCRE-R005	5/8/2017	-	Dry	n/a	n/a	1,600	1,558.8	1,600	13	1,558.8	13	276	148.8	276	190.9
SCRE-R005	5/9/2017	♦	Dry	n/a	n/a	1,100	1,536.4	1,100	30	1,536.4	30	96	144.0	96	209.4
SCRE-R005	5/10/2017	-	Dry	n/a	n/a	1,100	1,514.2	1,100	30	1,514.2	30	96	139.4	96	229.7
SCRE-R005	5/11/2017	-	Dry	n/a	n/a	1,100	1,524.4	1,100	30	1,524.4	30	96	129.1	96	240.2
SCRE-R005	5/12/2017	-	Dry	n/a	n/a	1,100	1,534.6	1,100	30	1,534.6	30	96	119.5	96	251.3
SCRE-R005	5/13/2017	-	Dry	n/a	n/a	1,100	1,544.9	1,100	30	1,544.9	30	96	110.7	96	262.8
SCRE-R005	5/14/2017	-	Dry	n/a	n/a	1,100	1,555.3	1,100	30	1,555.3	30	96	102.5	96	274.8
SCRE-R005	5/15/2017	-	Dry	n/a	n/a	1,100	1,565.7	1,100	30	1,565.7	30	96	94.9	96	287.4
SCRE-R005	5/16/2017	♦	Dry	n/a	n/a	280	1,506.0	280	2	1,506.0	2	27	80.3	27	288.2
SCRE-R005	5/17/2017	-	Dry	n/a	n/a	280	1,448.5	280	2	1,448.5	2	27	68.0	27	288.9
SCRE-R005	5/18/2017	-	Dry	n/a	n/a	280	1,398.7	280	2	1,398.7	2	27	56.6	27	248.7
SCRE-R005	5/19/2017	-	Dry	n/a	n/a	280	1,350.6	280	2	1,350.6	2	27	47.0	27	214.1
SCRE-R005	5/20/2017	-	Dry	n/a	n/a	280	1,304.1	280	2	1,304.1	2	27	39.1	27	184.3
SCRE-R005	5/21/2017	-	Dry	n/a	n/a	280	1,259.3	280	2	1,259.3	2	27	32.6	27	158.7
SCRE-R005	5/22/2017	-	Dry	n/a	n/a	280	1,216.0	280	2	1,216.0	2	27	27.1	27	136.6
SCRE-R005	5/23/2017	♦	Dry	n/a	n/a	700	1,210.6	700	2	1,210.6	2	32	22.5	32	118.2
SCRE-R005	5/24/2017	-	Dry	n/a	n/a	700	1,205.2	700	2	1,205.2	2	32	18.7	32	102.4
SCRE-R005	5/25/2017	-	Dry	n/a	n/a	700	1,128.7	700	2	1,128.7	2	32	15.9	32	96.1
SCRE-R005	5/26/2017	-	Dry	n/a	n/a	700	1,057.1	700	2	1,057.1	2	32	13.4	32	90.2

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Date	Time	Rain	Single Sample		30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean				
				Sample	E.coli (MPN/100mL)	Total Coliform (MPN/100mL)	Sample		Fecal Coliform (MPN/100mL)	Sample		Enterococcus (MPN/100mL)							
													Site: SCRR3-RW1 (235 MPN)		Site: SCRE-R005 (10,000 MPN)	Site: SCRR3-RW1 (126 MPN)	Site: SCRE-R005 (1,000 MPN)	Site: SCRR3-RW1 (235 MPN)	Site: SCRE-R005 (104 MPN)
SCRE-R005	5/27/2017	-	Dry	n/a	n/a	=	990.1	=	700	990.1	=	2	11.4	=	32	84.7			
SCRE-R005	5/28/2017	-	Dry	n/a	n/a	=	927.3	=	700	927.3	=	2	9.6	=	32	79.5			
SCRE-R005	5/29/2017	-	Dry	n/a	n/a	=	868.4	=	700	868.4	=	2	8.1	=	32	74.6			
SCRE-R005	5/30/2017	-	Dry	n/a	n/a	=	813.4	=	700	813.4	=	2	6.9	=	32	70.0			
SCRE-R005	5/31/2017	◆	Dry	n/a	n/a	=	753.3	=	500	753.3	=	7	6.1	>	2,419	75.9			
SCRE-R005	6/1/2017	-	Dry	n/a	n/a	=	724.6	=	500	724.6	=	7	5.9	>	2,419	81.6			
SCRE-R005	6/2/2017	-	Dry	n/a	n/a	=	697.1	=	500	697.1	=	7	5.8	>	2,419	87.7			
SCRE-R005	6/3/2017	-	Dry	n/a	n/a	=	670.6	=	500	670.6	=	7	5.7	>	2,419	94.3			
SCRE-R005	6/4/2017	-	Dry	n/a	n/a	=	645.1	=	500	645.1	=	7	5.6	>	2,419	101.4			
SCRE-R005	6/5/2017	-	Dry	n/a	n/a	=	620.5	=	500	620.5	=	7	5.5	>	2,419	109.0			
SCRE-R005	6/6/2017	◆	Dry	n/a	n/a	=	596.9	=	500	596.9	=	50	5.7	=	7	96.4			
SCRE-R005	6/7/2017	-	Dry	n/a	n/a	=	574.2	=	500	574.2	=	50	6.0	=	7	85.3			
SCRE-R005	6/8/2017	-	Dry	n/a	n/a	=	559.3	=	500	559.3	=	50	6.1	=	7	78.2			
SCRE-R005	6/9/2017	-	Dry	n/a	n/a	=	544.8	=	500	544.8	=	50	6.2	=	7	71.6			
SCRE-R005	6/10/2017	-	Dry	n/a	n/a	=	530.7	=	500	530.7	=	50	6.3	=	7	65.7			
SCRE-R005	6/11/2017	-	Dry	n/a	n/a	=	516.9	=	500	516.9	=	50	6.4	=	7	60.2			
SCRE-R005	6/12/2017	-	Dry	n/a	n/a	=	503.5	=	500	503.5	=	50	6.5	=	7	55.1			
SCRE-R005	6/13/2017	◆	Dry	n/a	n/a	=	509.8	=	1,600	509.8	=	2	6.0	=	2	48.5			
SCRE-R005	6/14/2017	-	Dry	n/a	n/a	=	516.2	=	1,600	516.2	=	2	5.4	=	2	42.6			
SCRE-R005	6/15/2017	-	Dry	n/a	n/a	=	547.1	=	1,600	547.1	=	2	5.4	=	2	39.1			
SCRE-R005	6/16/2017	-	Dry	n/a	n/a	=	579.9	=	1,600	579.9	=	2	5.4	=	2	35.8			
SCRE-R005	6/17/2017	-	Dry	n/a	n/a	=	614.5	=	1,600	614.5	=	2	5.4	=	2	32.8			
SCRE-R005	6/18/2017	-	Dry	n/a	n/a	=	651.3	=	1,600	651.3	=	2	5.4	=	2	30.1			
SCRE-R005	6/19/2017	-	Dry	n/a	n/a	=	690.3	=	1,600	690.3	=	2	5.4	=	2	27.6			
SCRE-R005	6/20/2017	◆	Dry	n/a	n/a	=	714.9	=	800	714.9	=	23	5.9	=	40	28.0			
SCRE-R005	6/21/2017	-	Dry	n/a	n/a	=	740.3	=	800	740.3	=	23	6.4	=	40	28.3			
SCRE-R005	6/22/2017	-	Dry	n/a	n/a	=	743.6	=	800	743.6	=	23	7.0	=	40	28.5			
SCRE-R005	6/23/2017	-	Dry	n/a	n/a	=	746.9	=	800	746.9	=	23	7.5	=	40	28.8			
SCRE-R005	6/24/2017	-	Dry	n/a	n/a	=	750.3	=	800	750.3	=	23	8.2	=	40	29.0			
SCRE-R005	6/25/2017	-	Dry	n/a	n/a	=	753.6	=	800	753.6	=	23	8.9	=	40	29.2			
SCRE-R005	6/26/2017	-	Dry	n/a	n/a	=	757.0	=	800	757.0	=	23	9.6	=	40	29.4			
SCRE-R005	6/27/2017	◆	Dry	n/a	n/a	=	760.3	=	800	760.3	=	23	10.4	=	12	28.5			
SCRE-R005	6/28/2017	-	Dry	n/a	n/a	=	763.7	=	800	763.7	=	23	11.3	=	12	27.5			
SCRE-R005	6/29/2017	-	Dry	n/a	n/a	=	767.1	=	800	767.1	=	23	12.3	=	12	26.7			
SCRE-R005	6/30/2017	-	Dry	n/a	n/a	=	779.3	=	800	779.3	=	23	12.8	=	12	22.3			
SCRE-R005	7/1/2017	-	Dry	n/a	n/a	=	791.6	=	800	791.6	=	23	13.3	=	12	18.7			
SCRE-R005	7/2/2017	-	Dry	n/a	n/a	=	804.1	=	800	804.1	=	23	13.8	=	12	15.7			

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Date	Time	Rain	Single Sample		30-Day Geomean		Single Sample		30-Day Geomean		Single Sample	30-Day Geomean	
				Sample	E.coli (MPN/100mL) Site: SCRR3-RW1 (235 MPN)	Total Coliform (MPN/100mL) Site: SCRE-R005 (10,000 MPN)	Fecal Coliform (MPN/100mL) Site: SCRE-R005 (400 MPN)	Enterococcus (MPN/100mL) Site: SCRE-R005 (104 MPN)	Enterococcus (MPN/100mL) Site: SCRE-R005 (35 MPN)					
SCRE-R005	7/3/2017	-	Dry	n/a	n/a	=	800	816.8	=	23	14.4	=	12	13.1
SCRE-R005	7/4/2017	◆	Dry	n/a	n/a	=	9,000	899.4	<	2	13.8	=	1	10.1
SCRE-R005	7/5/2017	-	Dry	n/a	n/a	=	9,000	990.3	<	2	13.2	=	1	7.8
SCRE-R005	7/6/2017	-	Dry	n/a	n/a	=	9,000	1,090.5	<	2	11.9	=	1	7.3
SCRE-R005	7/7/2017	-	Dry	n/a	n/a	=	9,000	1,200.8	<	2	10.7	=	1	6.9
SCRE-R005	7/8/2017	-	Dry	n/a	n/a	=	9,000	1,322.2	<	2	9.6	=	1	6.4
SCRE-R005	7/9/2017	-	Dry	n/a	n/a	=	9,000	1,456.0	<	2	8.6	=	1	6.0
SCRE-R005	7/10/2017	-	Dry	n/a	n/a	=	9,000	1,603.2	<	2	7.7	=	1	5.7
SCRE-R005	7/11/2017	◆	Dry	n/a	n/a	=	3,500	1,710.7	=	70	7.8	=	37	6.0
SCRE-R005	7/12/2017	-	Dry	n/a	n/a	=	3,500	1,825.3	=	70	7.9	=	37	6.3
SCRE-R005	7/13/2017	-	Dry	n/a	n/a	=	3,500	1,873.5	=	70	8.9	=	37	7.0
SCRE-R005	7/14/2017	-	Dry	n/a	n/a	=	3,500	1,923.1	=	70	10.0	=	37	7.7
SCRE-R005	7/15/2017	-	Dry	n/a	n/a	=	3,500	1,973.9	=	70	11.3	=	37	8.5
SCRE-R005	7/16/2017	-	Dry	n/a	n/a	=	3,500	2,026.1	=	70	12.7	=	37	9.3
SCRE-R005	7/17/2017	-	Dry	n/a	n/a	=	3,500	2,079.6	=	70	14.3	=	37	10.3
SCRE-R005	7/18/2017	◆	Dry	n/a	n/a	=	16,000	2,245.5	=	14	15.3	=	44	11.4
SCRE-R005	7/19/2017	-	Dry	n/a	n/a	=	16,000	2,424.7	=	14	16.3	=	44	12.6
SCRE-R005	7/20/2017	-	Dry	n/a	n/a	=	16,000	2,679.3	=	14	16.0	=	44	12.7
SCRE-R005	7/21/2017	-	Dry	n/a	n/a	=	16,000	2,960.7	=	14	15.8	=	44	12.7
SCRE-R005	7/22/2017	-	Dry	n/a	n/a	=	16,000	3,271.6	=	14	15.5	=	44	12.7
SCRE-R005	7/23/2017	-	Dry	n/a	n/a	=	16,000	3,615.2	=	14	15.3	=	44	12.8
SCRE-R005	7/24/2017	-	Dry	n/a	n/a	=	16,000	3,994.8	=	14	15.0	=	44	12.8
SCRE-R005	7/25/2017	◆	Dry	n/a	n/a	=	800	3,994.8	=	8	14.5	=	19	12.5
SCRE-R005	7/26/2017	-	Dry	n/a	n/a	=	800	3,994.8	=	8	14.0	=	19	12.2
SCRE-R005	7/27/2017	-	Dry	n/a	n/a	=	800	3,994.8	=	8	13.5	=	19	12.4
SCRE-R005	7/28/2017	-	Dry	n/a	n/a	=	800	3,994.8	=	8	13.0	=	19	12.6
SCRE-R005	7/29/2017	-	Dry	n/a	n/a	=	800	3,994.8	=	8	12.6	=	19	12.8
SCRE-R005	7/30/2017	-	Dry	n/a	n/a	=	800	3,994.8	=	8	12.2	=	19	13.0
SCRE-R005	7/31/2017	-	Dry	n/a	n/a	=	800	3,994.8	=	8	11.7	=	19	13.2
SCRE-R005	8/1/2017	◆	Dry	n/a	n/a	=	1,600	4,088.2	=	1,600	13.5	=	72	14.0
SCRE-R005	8/2/2017	-	Dry	n/a	n/a	=	1,600	4,183.7	=	1,600	15.6	=	72	14.8
SCRE-R005	8/3/2017	-	Dry	n/a	n/a	=	1,600	3,949.7	=	1,600	19.5	=	72	17.1
SCRE-R005	8/4/2017	-	Dry	n/a	n/a	=	1,600	3,728.7	=	1,600	24.3	=	72	19.7
SCRE-R005	8/5/2017	-	Dry	n/a	n/a	=	1,600	3,520.1	=	1,600	30.4	=	72	22.8
SCRE-R005	8/6/2017	-	Dry	n/a	n/a	=	1,600	3,323.1	=	1,600	38.0	=	72	26.3
SCRE-R005	8/7/2017	-	Dry	n/a	n/a	=	1,600	3,137.2	=	1,600	47.5	=	72	30.3
SCRE-R005	8/8/2017	◆	Dry	n/a	n/a	=	300	2,800.9	=	4	48.6	=	17	33.3

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Date	Time	Rain	Single Sample	30-Day Geomean	Single Sample	30-Day Geomean	Single Sample	30-Day Geomean	Single Sample	30-Day Geomean	Single Sample	30-Day Geomean	
				E.coli (MPN/100mL)		Total Coliform (MPN/100mL)		Fecal Coliform (MPN/100mL)		Enterococcus (MPN/100mL)				
				Site: SCRR3-RW1		Site: SCRE-R005		Site: SCRE-R005		Site: SCRE-R005				
				(235 MPN)	(126 MPN)	(10,000 MPN)	(1,000 MPN)	(400 MPN)	(200 MPN)	(104 MPN)	(35 MPN)			
SCRE-R005	8/9/2017	-	Dry	n/a	n/a	=	300	2,500.7	=	4	49.7	=	17	36.6
SCRE-R005	8/10/2017	-	Dry	n/a	n/a	=	300	2,304.1	=	4	45.2	=	17	35.6
SCRE-R005	8/11/2017	-	Dry	n/a	n/a	=	300	2,122.9	=	4	41.1	=	17	34.7
SCRE-R005	8/12/2017	-	Dry	n/a	n/a	=	300	1,956.0	=	4	37.3	=	17	33.8
SCRE-R005	8/13/2017	-	Dry	n/a	n/a	=	300	1,802.2	=	4	33.9	=	17	33.0
SCRE-R005	8/14/2017	-	Dry	n/a	n/a	=	300	1,660.5	=	4	30.9	=	17	32.1
SCRE-R005	8/15/2017	◆	Dry	n/a	n/a	=	500	1,556.2	=	8	28.7	=	21	31.5
SCRE-R005	8/16/2017	-	Dry	n/a	n/a	=	500	1,458.5	=	8	26.7	=	21	30.9
SCRE-R005	8/17/2017	-	Dry	n/a	n/a	=	500	1,299.4	=	8	26.2	=	21	30.2
SCRE-R005	8/18/2017	-	Dry	n/a	n/a	=	500	1,157.6	=	8	25.7	=	21	29.4
SCRE-R005	8/19/2017	-	Dry	n/a	n/a	=	500	1,031.3	=	8	25.2	=	21	28.7
SCRE-R005	8/20/2017	-	Dry	n/a	n/a	=	500	918.8	=	8	24.8	=	21	28.0
SCRE-R005	8/21/2017	-	Dry	n/a	n/a	=	500	818.5	=	8	24.3	=	21	27.3
SCRE-R005	8/22/2017	◆	Dry	n/a	n/a	=	300	716.9	=	8	23.9	=	49	27.4
SCRE-R005	8/23/2017	-	Dry	n/a	n/a	=	300	627.9	=	8	23.4	=	49	27.5
SCRE-R005	8/24/2017	-	Dry	n/a	n/a	=	300	607.7	=	8	23.4	=	49	28.4
SCRE-R005	8/25/2017	-	Dry	n/a	n/a	=	300	588.2	=	8	23.4	=	49	29.3
SCRE-R005	8/26/2017	-	Dry	n/a	n/a	=	300	569.3	=	8	23.4	=	49	30.3
SCRE-R005	8/27/2017	-	Dry	n/a	n/a	=	300	551.0	=	8	23.4	=	49	31.3
SCRE-R005	8/28/2017	-	Dry	n/a	n/a	=	300	533.2	=	8	23.4	=	49	32.3
SCRE-R005	8/29/2017	◆	Dry	n/a	n/a	=	130	501.9	=	130	25.7	=	38	33.0
SCRE-R005	8/30/2017	-	Dry	n/a	n/a	=	130	472.4	=	130	28.2	=	38	33.8
SCRE-R005	8/31/2017	-	Dry	n/a	n/a	=	130	434.5	=	130	26.0	=	38	33.1
SCRE-R005	9/1/2017	-	Dry	n/a	n/a	=	130	399.6	=	130	23.9	=	38	32.4
SCRE-R005	9/2/2017	-	Dry	n/a	n/a	=	130	367.5	=	130	22.0	=	38	31.7
SCRE-R005	9/3/2017	-	Dry	n/a	n/a	=	130	338.0	=	130	20.2	=	38	31.0
SCRE-R005	9/4/2017	-	Dry	n/a	n/a	=	130	310.9	=	130	18.6	=	38	30.4
SCRE-R005	9/5/2017	◆	Dry	n/a	n/a	=	2,800	316.7	=	17	16.0	=	52	30.0
SCRE-R005	9/6/2017	-	Dry	n/a	n/a	=	2,800	322.7	=	17	13.7	=	52	29.7
SCRE-R005	9/7/2017	-	Dry	n/a	n/a	=	2,800	347.7	=	17	14.4	=	52	30.8
SCRE-R005	9/8/2017	-	Dry	n/a	n/a	=	2,800	374.5	=	17	15.1	=	52	32.0
SCRE-R005	9/9/2017	-	Dry	n/a	n/a	=	2,800	403.5	=	17	15.9	=	52	33.2
SCRE-R005	9/10/2017	-	Dry	n/a	n/a	=	2,800	434.7	=	17	16.6	=	52	34.5
SCRE-R005	9/11/2017	-	Dry	n/a	n/a	=	2,800	468.3	=	17	17.5	=	52	35.8
SCRE-R005	9/12/2017	◆	Dry	n/a	n/a	=	9,000	524.5	=	170	19.8	=	46	37.0
SCRE-R005	9/13/2017	-	Dry	n/a	n/a	=	9,000	587.4	=	170	22.4	=	46	38.3
SCRE-R005	9/14/2017	-	Dry	n/a	n/a	=	9,000	646.8	=	170	24.8	=	46	39.3

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Date	Time	Rain	Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean	
				E.coli (MPN/100mL) Site: SCRR3-RW1	Total Coliform (MPN/100mL) Site: SCRE-R005		Fecal Coliform (MPN/100mL) Site: SCRE-R005	Enterococcus (MPN/100mL) Site: SCRE-R005							
										(235 MPN)	(126 MPN)		(10,000 MPN)	(400 MPN)	
SCRE-R005	9/15/2017	-	Dry	n/a	n/a	=	9,000	712.3	=	170	27.5	=	46	40.3	
SCRE-R005	9/16/2017	-	Dry	n/a	n/a	=	9,000	784.3	=	170	30.4	=	46	41.4	
SCRE-R005	9/17/2017	-	Dry	n/a	n/a	=	9,000	863.6	=	170	33.7	=	46	42.5	
SCRE-R005	9/18/2017	-	Dry	n/a	n/a	=	9,000	951.0	=	170	37.3	=	46	43.6	
SCRE-R005	9/19/2017	◆	Dry	n/a	n/a	=	220	925.3	=	8	37.3	=	68	45.3	
SCRE-R005	9/20/2017	-	Dry	n/a	n/a	=	220	900.3	=	8	37.3	=	68	47.2	

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRRE-R005)

Location	Date	Time	Rain	Single Sample		30-Day Geomean		Single Sample		30-Day Geomean		Single Sample		30-Day Geomean	
				E.coli (MPN/100mL)	Total Coliform (MPN/100mL)	E.coli (MPN/100mL)	Total Coliform (MPN/100mL)	Fecal Coliform (MPN/100mL)	Enterococcus (MPN/100mL)	Fecal Coliform (MPN/100mL)	Enterococcus (MPN/100mL)	Fecal Coliform (MPN/100mL)	Enterococcus (MPN/100mL)	Fecal Coliform (MPN/100mL)	Enterococcus (MPN/100mL)
				Site: SCRR3-RW1 (235 MPN)	Site: SCRR3-RW1 (126 MPN)	Site: SCRR3-RW1 (235 MPN)	Site: SCRR3-RW1 (1,000 MPN)	Site: SCRRE-R005 (400 MPN)	Site: SCRRE-R005 (200 MPN)	Site: SCRRE-R005 (400 MPN)	Site: SCRRE-R005 (200 MPN)	Site: SCRRE-R005 (400 MPN)	Site: SCRRE-R005 (200 MPN)	Site: SCRRE-R005 (400 MPN)	Site: SCRRE-R005 (200 MPN)
SCRRE-R005	9/21/2017	-	Dry	n/a	n/a	n/a	891.1	=	8	8	37.3	=	68	47.7	
SCRRE-R005	9/22/2017	-	Dry	n/a	n/a	n/a	881.9	=	8	8	37.3	=	68	48.2	
SCRRE-R005	9/23/2017	-	Dry	n/a	n/a	n/a	872.8	=	8	8	37.3	=	68	48.7	
SCRRE-R005	9/24/2017	-	Dry	n/a	n/a	n/a	863.9	=	8	8	37.3	=	68	49.3	
SCRRE-R005	9/25/2017	-	Dry	n/a	n/a	n/a	855.0	=	8	8	37.3	=	68	49.8	
SCRRE-R005	9/26/2017	♦	Dry	n/a	n/a	n/a	831.5	=	4	4	36.4	=	26	48.8	
SCRRE-R005	9/27/2017	-	Dry	n/a	n/a	n/a	808.6	=	4	4	35.6	=	26	47.7	
SCRRE-R005	9/28/2017	-	Dry	n/a	n/a	n/a	808.6	=	4	4	31.7	=	26	47.1	
SCRRE-R005	9/29/2017	-	Dry	n/a	n/a	n/a	808.6	=	4	4	28.2	=	26	46.6	
SCRRE-R005	9/30/2017	-	Dry	n/a	n/a	n/a	808.6	=	4	4	25.1	=	26	46.0	
SCRRE-R005	10/1/2017	-	Dry	n/a	n/a	n/a	808.6	=	4	4	22.4	=	26	45.4	
SCRRE-R005	10/2/2017	-	Dry	n/a	n/a	n/a	808.6	=	4	4	19.9	=	26	44.8	
SCRRE-R005	10/3/2017	♦	Dry	n/a	n/a	n/a	855.3	=	4	4	17.8	=	3	41.2	
SCRRE-R005	10/4/2017	-	Dry	n/a	n/a	n/a	904.7	=	4	4	15.8	=	3	37.8	
SCRRE-R005	10/5/2017	-	Dry	n/a	n/a	n/a	863.8	=	4	4	15.1	=	3	34.4	
SCRRE-R005	10/6/2017	-	Dry	n/a	n/a	n/a	824.8	=	4	4	14.4	=	3	31.3	
SCRRE-R005	10/7/2017	-	Dry	n/a	n/a	n/a	787.6	=	4	4	13.7	=	3	28.4	
SCRRE-R005	10/8/2017	-	Dry	n/a	n/a	n/a	752.0	=	4	4	13.0	=	3	25.9	
SCRRE-R005	10/9/2017	-	Dry	n/a	n/a	n/a	718.0	=	5	5	12.5	=	4	23.7	
SCRRE-R005	10/10/2017	♦	Dry	n/a	n/a	n/a	761.0	=	30	30	12.8	=	8	22.3	
SCRRE-R005	10/11/2017	-	Dry	n/a	n/a	n/a	806.5	=	30	30	13.0	=	8	21.0	
SCRRE-R005	10/12/2017	-	Dry	n/a	n/a	n/a	822.1	=	30	30	12.3	=	8	19.8	
SCRRE-R005	10/13/2017	-	Dry	n/a	n/a	n/a	838.0	=	30	30	11.6	=	8	18.7	
SCRRE-R005	10/14/2017	-	Dry	n/a	n/a	n/a	854.3	=	30	30	10.9	=	8	17.6	
SCRRE-R005	10/15/2017	-	Dry	n/a	n/a	n/a	870.8	=	30	30	10.3	=	8	16.6	
SCRRE-R005	10/16/2017	-	Dry	n/a	n/a	n/a	887.7	=	30	30	9.7	=	8	15.7	
SCRRE-R005	10/17/2017	♦	Dry	n/a	n/a	n/a	904.9	=	23	23	9.1	=	27	15.4	
SCRRE-R005	10/18/2017	-	Dry	n/a	n/a	n/a	922.4	=	23	23	8.5	=	27	15.1	
SCRRE-R005	10/19/2017	-	Dry	n/a	n/a	n/a	1,064.1	=	23	23	8.8	=	27	14.7	
SCRRE-R005	10/20/2017	-	Dry	n/a	n/a	n/a	1,227.5	=	23	23	9.1	=	27	14.2	
SCRRE-R005	10/21/2017	-	Dry	n/a	n/a	n/a	1,416.1	=	23	23	9.5	=	27	13.8	
SCRRE-R005	10/22/2017	-	Dry	n/a	n/a	n/a	1,633.6	=	23	23	9.8	=	27	13.4	
SCRRE-R005	10/23/2017	-	Dry	n/a	n/a	n/a	1,884.5	=	23	23	10.2	=	27	13.0	
SCRRE-R005	10/24/2017	♦	Dry	n/a	n/a	n/a	2,132.7	=	50	50	10.8	=	48	12.8	
SCRRE-R005	10/25/2017	-	Dry	n/a	n/a	n/a	2,413.5	=	50	50	11.5	=	48	12.7	
SCRRE-R005	10/26/2017	-	Dry	n/a	n/a	n/a	2,779.7	=	50	50	12.5	=	48	12.9	
SCRRE-R005	10/27/2017	-	Dry	n/a	n/a	n/a	3,201.4	=	50	50	13.6	=	48	13.2	

Table 2

Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Date	Time	Rain	Single Sample		30-Day Geomean		Single Sample		30-Day Geomean		Single Sample		30-Day Geomean	
				E.coli (MPN/100mL)	Total Coliform (MPN/100mL)	Fecal Coliform (MPN/100mL)	Enterococcus (MPN/100mL)	Total Coliform (MPN/100mL)	Fecal Coliform (MPN/100mL)	Enterococcus (MPN/100mL)	Total Coliform (MPN/100mL)	Fecal Coliform (MPN/100mL)	Enterococcus (MPN/100mL)	Total Coliform (MPN/100mL)	Fecal Coliform (MPN/100mL)
SCRE-R005	10/28/2017	-	Dry	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRE-R005	10/29/2017	-	Dry	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRE-R005	10/30/2017	-	Dry	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRE-R005	10/31/2017	◆	Dry	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRE-R005	11/1/2017	-	Dry	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRE-R005	11/2/2017	-	Dry	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRE-R005	11/3/2017	-	Dry	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRE-R005	11/4/2017	-	Dry	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRE-R005	11/5/2017	-	Dry	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SCRE-R005	11/6/2017	-	Dry	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Notes:

◆ Date of Sampling

Weeks with alternating wet weather samples (collected 72 hours after a day with >0.1" rainfall) and dry weather samples, previous 30 days of either wet weather samples or dry weather samples were used to calculate daily geomean.

Daily geomeans unable to be calculated due to lack of previous 30 day data noted by "-"

MPN - most probable number

TMDL - Total Maximum Daily Load

E.coli - Escherichia coli

> - greater than

< - less than

= - equal to

CALLEGUAS CREEK



A COOPERATIVE STRATEGY FOR RESOURCE MANAGEMENT & PROTECTION

January 28, 2018

Renee Purdy
Los Angeles Regional Water Quality Control Board
320 W. 4th St., Suite 200
Los Angeles, CA 90013

Subject: Revolon Slough and Beardsley Wash Trash TMDL 2016-2017 Annual Monitoring Report

Dear Ms. Purdy,

Enclosed for your review and consideration is the Revolon Slough and Beardsley Wash (RSBW) Trash total maximum daily load (TMDL) Annual Monitoring Report (AMR) for 2016-2017. The AMR is being submitted per the requirements of the Revolon Slough and Beardsley Wash Trash TMDL, Los Angeles Regional Water Quality Control Board (Regional Board) Resolution No. R4-2007-007 on behalf of the following responsible parties: City of Camarillo, City of Oxnard, County of Ventura, Ventura County Watershed Protection District, California Department of Transportation (Caltrans), and participants in the Ventura County Agricultural Irrigated Lands Group (VCAILG), which is a subdivision of the Farm Bureau of Ventura County.

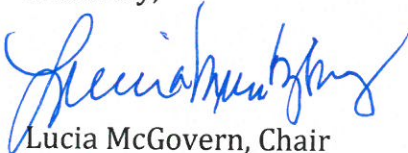
The AMR provides a summary of the monitoring conducted, a summary of the monitoring results, and proposed revisions to the minimum frequency of collection and assessment/best management practice program (MFAC/BMP Program).

The TMDL Responsible Parties would also like to further support the reconsideration of Trash TMDLs to incorporate an approach that would focus point-source trash-control efforts in high-trash generation areas within our jurisdictions in accordance with the Statewide Trash Amendments (Resolution No. 2015-0019). We feel a more targeted point source control approach is supported by information gathered by the responsible parties during TMDL implementation and would

provide beneficial use protection at levels consistent with the existing TMDL. We look forward to working with Regional Board staff to incorporate these changes into the TMDL.

If you have any comments or questions regarding the attached document, please contact Anita Kuhlman via email (akuhlman@cityofcamarillo.org) or by phone at (805) 312-2239.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Lucia McGovern', is written over the printed name.

Lucia McGovern, Chair
Stakeholders Implementing TMDLs in the Calleguas Creek Watershed

cc: Stefanie Hada, Regional Board
Jeff Pratt, Ventura County PWA Director
Peter Sheydayi, Interim Director of VCWPD
Arne Anselm, Deputy Director of VCWPD
Ewelina Mutkowska, Ventura County PWA
Anita Kuhlman City of Camarillo
Jeff Hershman, City of Oxnard
Baylie Hanrahan, City of Oxnard
John Krist, Farm Bureau of Ventura County
Nancy Broschart, Farm Bureau of Ventura County
Maria Agustin, California Department of Transportation
Chen Pei Yu, California Department of Transportation
Ashli Desai, Larry Walker Associates



Revolon Slough/Beardsley Wash Trash TMDL TMRP/MFAC 2016-2017 Annual Report

submitted to

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, LOS ANGELES
REGION

on behalf of the

COUNTY OF VENTURA,
VENTURA COUNTY WATERSHED PROTECTION DISTRICT,
CITY OF CAMARILLO,
CITY OF OXNARD,
PARTICIPANTS IN THE VENTURA COUNTY AGRICULTURAL IRRIGATED
LANDS GROUP,
AND CALIFORNIA DEPARTMENT OF TRANSPORTATION



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Executive Summary

The purpose of this report is to present the results of the eighth-year (2016-2017) monitoring efforts conducted in accordance with the Revolon Slough and Beardsley Wash Trash TMDL (Trash TMDL), which is effective as of March 6, 2008, and the Trash Monitoring and Reporting Plan (TMRP) Minimum Frequency of Assessment and Collection/Best Management Practice (MFAC/BMP) Program. The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) approved Addendum No. 1 to the TMRP in June 2015, which revised the monitoring program from a quantitative program to a visual program. The eighth-year monitoring effort was the second year of monitoring under Addendum No.1 to the TMRP.

The responsible parties are complying with the non-point source requirements of the Trash TMDL through the implementation of a MFAC/BMP Program and complying with the point source requirements through the installation of certified trash full capture devices on all responsible parties' conveyances discharging to Revolon Slough and Beardsley Wash and/or implementing a point source-specific MFAC/BMP Program within the Revolon Slough and Beardsley Wash subwatershed.

During the 2016-2017 monitoring year, higher trash levels were found at Site 1 throughout the reporting period and moderate trash levels were found at Site 5 and Site 10. Overall, the MFAC/BMP Program is effective for addressing trash as none of the five monitoring sites met the criteria for increased BMP implementation (four consecutive months of Category 3 trash conditions). The non-point source-responsible parties are in compliance with the requirements of the Trash TMDL as the MFAC Program resulted in zero trash in-stream immediately following all of the monitoring events. Non-point source-responsible parties will continue to conduct all required MFAC events and implement BMPs at high trash generating areas as well as watershed-wide to reduce the discharge of trash from their jurisdictions to minimize the impact of trash in the watershed per the Regional Board-approved June 2015 Addendum No. 1 to the TMRP.

To address point sources, the responsible parties, where feasible, have, and will continue to install full capture devices on conveyances discharging to Revolon Slough and Beardsley Wash and/or install full capture devices in high trash generating areas and employ a point source-specific MFAC/BMP Program in other areas of their jurisdictions.

Per previous communications with Regional Board staff, the City of Camarillo is currently meeting compliance with the point source requirements of the Trash TMDL through a point source MFAC/BMP Program (see **Section 3.1.1.1.** for information on the City's point source MFAC/BMP Program). Further, the City continues to maintain the 38 trash full capture devices that were installed in City of Camarillo storm drain catch basins in the high trash generating areas within the Revolon Slough and Beardsley Wash subwatershed.

The City of Oxnard employs various BMPs to address trash including catch basin inspection and cleaning, open channel maintenance, street sweeping, education and outreach, stormwater ordinances, and commercial/industrial facilities and construction site inspections. The City of Oxnard has not yet been able to install full capture devices for conveyances discharging to Revolon Slough and Beardsley Wash. The City of Oxnard identified 106 catch basins that require retrofitting. A staff report has been prepared and the project has been assigned to the Capital Improvement Project (CIP) Division. The CIP Division is currently working with the

City of Oxnard's finance department to secure funding to install the full capture devices. While full capture device planning is ongoing, the City is continuing to implement BMPs within their jurisdiction to address point sources of trash and participate in the non-point source MFAC/BMP program. The non-point source MFAC/BMP program results in cleanups of a site within the City of Oxnard to support point source compliance as well.

For point sources, the County completed installing full capture devices in conveyances it is responsible for and is meeting the March 2016 requirement of 100 percent of the conveyances discharging to Revolon Slough and Beardsley Wash addressed by full capture devices.

The California Department of Transportation (Caltrans) has installed two biofiltration swales (BSWs) on Highway 34 and three biofiltration strips (BSTs) on Highway 101 in the Revolon Slough/Beardsley Wash subwatershed. Currently, Caltrans is constructing 14 BSWs, 7 BSTs, and 1 Austin Vault Sand Filter along Highway 101 (these BMPs are scheduled to be completed by July 2018). The BSWs, BSTs, and Austin Vault Sand Filter are being installed to address a suite of constituents including metals and selenium; organochlorine pesticides, PCBs, and siltation; and trash. Caltrans will continue to implement its current suite of BMPs as outlined in the TMRP. In addition, Caltrans has plans to install 6 BSWs on Highway 34, with construction beginning in 2022 as well as 4 BSWs, 1 BST, and 1 Austin Vault Sand Filter on Highway 118, with construction beginning in 2021 - these BMPs are subject to funding availability and the TMDL Reach Prioritization completed under the most recent Caltrans MS4 Permit. The continued implementation of current BMPs and the implementation of future potential BMPs will be directed by results obtained from future monitoring events as part of the adaptive management compliance approach.

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1 Overview

This Annual Report is being submitted to fulfill the compliance requirements of the Amendments to the Water Quality Control Plan – Los Angeles Region for the Revolon Slough and Beardsley Wash Trash TMDL (Trash TMDL), Resolution No. R4-2007-007 (effective March 6, 2008). The purpose of this Annual Report is to present the results of eighth-year (2016-2017) monitoring efforts associated with the Revolon Slough/Beardsley Wash Trash Monitoring and Reporting Plan (TMRP) - Addendum No. 1 and associated Minimum Frequency of Assessment and Collection/Best Management Practice (MFAC/BMP) Program.

The Annual Report includes:

- MFAC/BMP Program Summary and Assessment;
- Compliance strategy; and
- Proposed revisions to MFAC/BMP Program.

This effort is being completed on behalf of the responsible parties to the Trash TMDL as listed in **Table 1**.

Table 1. Responsible Parties Participating in this TMRP and MFAC/BMP Program

Responsible Party	Non-point Source	Point Source
City of Camarillo	X	X ¹
City of Oxnard	X	X ²
Ventura County	X	X ²
Ventura County Watershed Protection District (VCWPD)	X	X
Participants in the VCAILG ^{3, 4}	X	
California Department of Transportation (Caltrans) ⁵		X ²

1. The City of Camarillo is complying with the point source requirements through a point source-specific MFAC/BMP Program.
2. These Responsible Parties are complying with the point source requirements through installation of certified trash full capture devices on all conveyances discharging to Revolon Slough and Beardsley Wash.
3. Ventura County Agricultural Irrigated Lands Group.
4. Not listed as point sources in the Trash TMDL.
5. Caltrans was not given a non-point source Load Allocation (LA) in the TMDL yet is voluntarily participating in the MFAC to meet the TMDL goals.

To complete this effort, the responsible parties hired the California Conservation Corps (CCC) to conduct field monitoring efforts and Larry Walker Associates (LWA) to oversee and conduct monitoring efforts as well as complete reporting requirements. The monitoring efforts during 2016-2017 were conducted according to the TMRP Addendum No. 1, which was submitted to the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) in June 2015. TMRP Addendum No. 1 revised the non-point source MFAC Program from a quantitative assessment-based program to a visual assessment-based program. A TMRP update was necessary to improve the effectiveness of the MFAC Program to more efficiently assess trash levels in Revolon Slough and Beardsley Wash, target actions towards reducing trash quantities, and better utilize available resources. The revised MFAC Program was initiated in July 2015 and this Annual Report provides the results from October 2016 to September 2017.

1.1 ASSESSMENT SITE LOCATIONS

Five visual assessment sites were included in TMRP Addendum No. 1, with four of the sites comprised of assessment sites from the previous MFAC Program (Sites 1, 3a, 5 and 8) and one site comprised of an assessment location in the City of Oxnard (Site 10) that was not included in the original TMRP. The assessment sites listed below are also depicted in **Figure 1** and detailed in **Appendix 1**.

Assessment Sites:

- Site 1: Revolon Slough and its adjacent land areas at Wood Road (the end of the concrete-lined channel). (MFAC-required)
- Site 3a: Drain outlet on the north side of Camarillo Hills Drain between Las Posas Road and Springville Drive. (MFAC-required)
- Site 5: Agriculture Drain – East of Wood Road on Etting Road.
- Site 8: Caltrans Site at the 101 Freeway Bridge over Revolon Slough.
- Site 10: 5th Street Drain in the City of Oxnard. (MFAC-required)

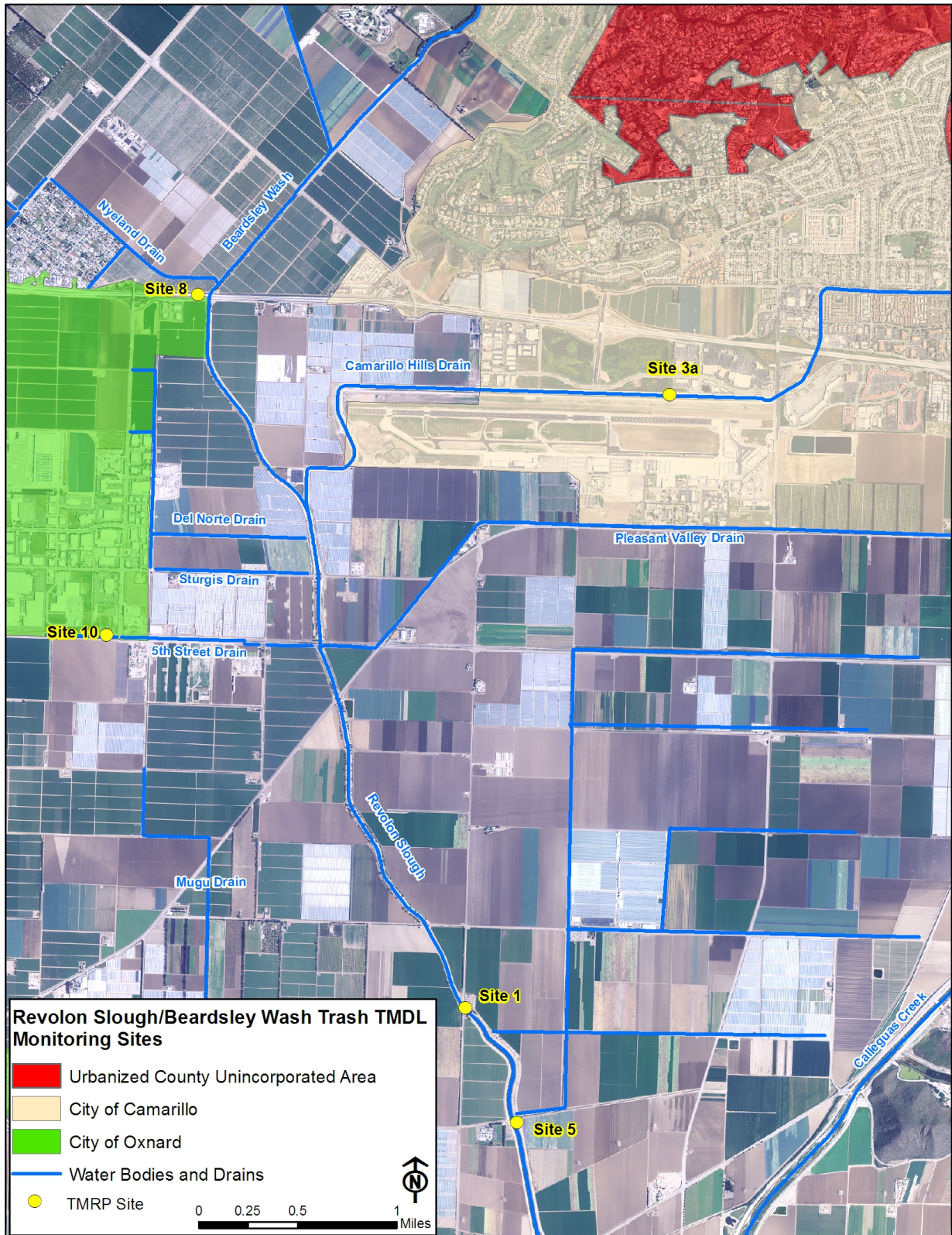


Figure 1. TMRP/MFAC Program Sites

2 Visual MFAC Program

This section provides a summary of the visual monitoring program implemented October 2016 through September 2017.

2.1 MFAC/BMP PROGRAM APPROACH

The goal of the MFAC/BMP program is to address non-point sources of trash in the Revolon Slough and Beardsley Wash watershed. The MFAC/BMP program includes implementing BMPs as outlined in the TMRP and conducting monitoring to assess the effectiveness of BMP implementation.

The revised MFAC/BMP Program includes the following elements:

1. Conduct monthly assessments and trash collection events

MFAC events are conducted monthly at the monitoring sites. The collection aspect of the MFAC utilizes information from the assessments (visual surveys) to determine the locations where trash collection efforts should be focused for the event.

2. Conduct regular cleanups

Although the TMRP outlined quarterly cleanups, the responsible parties have been conducting monthly cleanups to reduce the amount of trash entering the Revolon Slough and Beardsley Wash.

3. Employ additional BMPs

Information gathered during the MFAC events are used to inform the responsible parties as to the level and frequency of BMP implementation, including special trash cleanups, needed to achieve a Category 1 level of trash, as detailed below.

2.2 MONITORING APPROACH

The monitoring approach is a streamlined visual survey of trash levels at select sites within Revolon Slough and Beardsley Wash and sites within conveyances that discharge to Revolon Slough and Beardsley Wash. The visual survey uses a component of the Surface Water Ambient Monitoring Program Rapid Trash Assessment Protocol (SWAMP Protocol) and visual assessment approaches being utilized by the City of Ventura, the Santa Clara Valley Urban Runoff Pollution Prevention Program in the San Francisco Bay Area, and a number of cities and municipalities throughout the country.

The visual surveys utilize a three-point system based on the “Level of Trash” scoring category discussed in the SWAMP Protocol to estimate the presence of litter in a specific area. Individuals performing the visual surveys are trained on how to properly conduct these assessments to ensure consistency when performing such surveys and are trained to score each assessed area by rating the amount of litter observed, using the following categories:

- Category 1 – Represents the SWAMP Category “Optimal”
- Category 2 – Represents the SWAMP Category “Suboptimal”
- Category 3 – Represents the SWAMP Category “Poor”

The definition of Category 1 is:

“On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.”

The definition of Category 2 is:

“On first glance, low to medium levels of trash are evident (10 – 100 pieces). Stream, bank surfaces, and riparian zone contain some litter and debris. Possible evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.”

The definition of Category 3 is:

“Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.”

Visual monitoring is conducted monthly for each designated site (**Table 2**).

2.3 MFAC/BMP PROGRAM ASSESSMENT APPROACH

As stated above, the goal of the MFAC/BMP Program is to address non-point sources of trash in Revolon Slough and Beardsley Wash. Results of the monitoring are used to evaluate the effectiveness of the MFAC/BMP Program and to support any necessary modifications. The MFAC/BMP Program is continuously evaluated and modified using an adaptive management approach consistent with the procedures outlined in the TMRP - Addendum No. 1 and as summarized below:

1. Monitoring sites classified in Category 1 during the visual monitoring event are noted and any trash observed is collected during the visual monitoring event.
2. Monitoring sites classified in Category 2 are evaluated to determine if and what type of additional BMPs are needed to reduce the accumulation of trash between visual monitoring events with intent to move these sites to Category 1.
3. Monitoring sites classified in Category 3 for four (4) consecutive monthly visual monitoring events initiate more frequent additional cleanups in the areas surrounding the sites to address trash. It is anticipated that the additional cleanups will address trash thereby moving the site to Category 2 and then to Category 1.

2.4 COMPLETED MONITORING EVENTS

Eighth-year visual monitoring for the Trash TMDL was conducted from October 2016 to September 2017 at the frequencies detailed in **Table 2**. The completed monitoring events are shown in **Table 3** and **Appendix 2** contains example photos from a typical MFAC Event.

Table 2. TMRP Seventh-Year Visual Assessment Monitoring Event Frequency

Site	Frequency
Site 1 – Revolon Slough At Wood Road	Once Monthly ¹
Site 3a – Storm drain outlet on the north side of Camarillo Hills Drain just downstream of Las Posas Road	Once Monthly ¹
Site 5 – Agricultural Drain East of Etting Road	Once Monthly ²
Site 8 – Caltrans Site on side of US101 just west of Revolon Slough	Once Monthly ²
Site 10 – 5 th Street Drain at Del Norte Boulevard	Once Monthly ¹

1. The Trash TMDL specifically required these sites to be included in the MFAC Program.

2. The Trash TMDL did not require these sites; they were included to better characterize trash in the watershed.

Table 3. Completed Visual Assessment Monitoring Events (October 2016 – September 2017)

Site	Month											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	X	X	X	X	X	X	X	X	NA ¹	X	X	X
3a	X	X	X	X	X	X	X	X	X	X	X	X
5	X	X	X	X	X	X	X	X	X	X	X	X
8	X	X	X	X	X	X	X	X	X	X	X	X
10	X	X	X	X	X	X	X	X	X	X	X	X

X = Visual assessment monitoring event completed per the TMRP - Addendum No. 1.

1. Site 1 was inaccessible during the June 2016 event due to VCWPD channel maintenance activities.

2.5 MFAC/BMP PROGRAM ASSESSMENT

Eighth-year visual monitoring was the second year to exclusively include Visual Assessment Monitoring methods. The visual assessment categories for each site during the monthly MFAC events from October 2016 to September 2017 are presented in **Table 4**. An example of a completed visual assessment form is presented in **Appendix 3**.

During the monitoring events, the main sources and types of trash were identified as originating from agricultural and urban sources. Agricultural trash includes irrigation hose, plastic containers for shipping produce, row crop plastic covering, plant containers, etc. Urban trash includes food wrappers, Styrofoam, cardboard, paper, metal, etc.

Table 4. Visual Assessment Trash Categories by Monitoring Site

Site	Visual Assessment Trash Category ¹											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	1	2	2	2	2	3	3	2	1	2	2	2
3a	1	1	1	1	1	1	1	1	1	1	1	1
5	2	2	2	3	2	2	1	1	1	1	1	1
8	1	1	2	1	1	1	1	1	1	1	1	3
10	2	2	2	2	1	1	1	1	2	1	1	2

1. Number indicates visual assessment trash category.

Site 1 was found to be consistently in the Category 2 and Category 3 range throughout the reporting period, with the exception of the October 2016 and June 2017 Events. Site 1 was not found to be in Category 3 for four consecutive months, and did not warrant additional BMPs such as more frequent cleanups, as outlined in the TMRP - Addendum No. 1. During the 2015-2016 reporting year, the responsible parties decided to expand the areas subject to additional cleanups as a preventative measure to reduce trash discharging to Revolon Slough, and this new protocol was continued into the 2016-2017 reporting year. In addition, Site 1 experienced dumping of dead chickens on a semi-regular basis. During six of the twelve months, field personnel found dead chickens that has been placed inside of plastic bags and dumped into the stream. Due to field personnel safety concerns, the VCWPD Operations and Maintenance staff were contacted after each event, to remove the bags from the channel. Ventura County Animal Services was then contacted to pick up and dispose of the chickens afterwards.

Site 1 was also impacted by high rainfall and subsequent elevated stream levels during January and February 2017. Field personnel were unable to enter certain portions of the stream due to water depth and crew safety concerns. All safely accessible areas were thoroughly cleaned, and inaccessible areas of the site were documented.

Site 3a was consistently found to be in Category 1 for the entire monitoring year indicating that the BMPs implemented to address trash upstream of and along the Camarillo Hills Drain are effective at addressing trash. On January 28, 2017, a construction site upstream of the Camarillo Hills Drain began to discharge approximately 700,000 gallons/day of accumulated precipitation after proper filtration into a storm drain that is connected to the Camarillo Hills Drain upstream of site 3a. The discharge continued for 12 more days and heavily impacted stream depth at all sites downstream of the discharge point. Stream levels returned to normal after the dewatering was completed, and crews were able to resume monitoring activities as normal.

Site 5 was found to be primarily in Categories 1 and 2 during the monitoring year, with the exception of January 2017 where the site was in Category 3. It is likely that the proximity to several agricultural fields contributes to the high trash levels found at Site 5. An agricultural ditch is upstream of the site, which runs between several agricultural fields, where trash may accumulate before the ditch discharges into Revolon Slough. Site 5 also has significant vegetation within the stream and on the banks, which acts as a natural trash capture device. Based on the visual assessment data collected, the responsible parties began conducting targeted outreach to the agricultural areas surrounding Site 5 including contacting the owners/operators of the agricultural areas and installing anti-litter signage at key locations in the agricultural areas.

Site 8 was in Category 1 for ten of the twelve months during the monitoring year. Site 8 was in Category 2 in December 2016 and Category 3 in September 2017; however, there had been a recent vehicle accident near Site 8 that created the majority of the Debris found in September. The BMPs implemented to address trash along the 101 freeway were effective at addressing trash. Site 8 will continue to be monitored in the future to bring it back to a Category 1 level of trash.

Site 10 was in Category 1 six of the twelve months during the monitoring year, and in Category 2 the remaining six months. Site 10 had evidence of a homeless encampment within the storm drain, during the October 2016 event, but has since been removed.

Overall, the MFAC/BMP Program is effective for addressing trash as none of the five monitoring sites met the criteria for increased BMP implementation (four consecutive months of

Category 3 trash conditions). However, as high trash levels were found at Site 1 and Site 5, the responsible parties decided to increase BMP implementation in the areas surrounding these sites to further address trash. The responsible parties are confident these increased BMPs will lead to further trash reduction in these areas.

3 Compliance Strategy

The Trash TMDL requires all annual reports to include proposals to enhance BMPs, revise the MFAC (if needed), and prioritize the installation of full capture devices or other compliance measures, including structural BMPs or trash collection events for high trash generating areas. Additionally, the Trash TMDL requires point source-responsible parties to achieve a 100 percent reduction from the baseline wasteload allocation (WLA) by March 2016. This section describes the proposed compliance strategies to be utilized to meet the non-point source and point source Trash TMDL requirements and to further reduce trash discharges into Revolon Slough and Beardsley Wash.

Non-point source-responsible parties will continue complying with the Trash TMDL through a MFAC/BMP Program that includes a combination of MFAC events and BMPs including structural and non-structural BMPs. The information gathered from the MFAC/BMP Program will guide BMP implementation and selection to ensure efficient and effective compliance with the Trash TMDL. The responsible parties will also utilize adaptive management to allow for flexibility in determining the correct BMPs to implement and the correct locations to implement the BMPs. The proposed adaptive management compliance strategy is as follows:

1. Continue implementation of the approved MFAC Program using the visual assessment method.
2. Continue to implement the current suite of BMPs identified in the TMRP with the additions described in the **Current Best Management Practices Section**;
3. Implement BMPs in the future based on information generated from the MFAC/BMP Program focusing on the high trash generating areas as discussed in the **Future Potential Best Management Practices Section**; and
4. Evaluate the effectiveness and needs for additional BMPs and/or MFAC revisions semi-annually based on the results of the MFAC/BMP Program. The evaluation will consider the results of the visual assessments, on a site-by-site and watershed basis, to prioritize the areas where additional BMP implementation may be most effective in reducing trash levels. Proposed revisions to the MFAC/BMP Program and full capture device or other measure installation/implementation prioritization will be included in each annual report.

To address point sources, the responsible parties, where feasible, have or are installing full capture devices on conveyances discharging to Revolon Slough and Beardsley Wash and/or installing full capture devices in high trash generating areas and/or employing a point source-specific MFAC/BMP Program in other areas of their jurisdictions.

The following sections outline the jurisdictional BMPs currently being implemented, the additional BMPs to be implemented in prioritized areas, other BMPs being considered for implementation throughout the watershed, and a BMP implementation schedule.

3.1 CURRENT BEST MANAGEMENT PRACTICES

TMRP - Addendum No. 1 lists a suite of BMPs that each responsible party is implementing in their respective jurisdictions. One of the primary modifications to the MFAC/BMP Program in response to the monitoring results, is to add additional trash cleanups at the high trash generating sites identified during the monitoring. The responsible parties contracted with the CCC to conduct monthly trash cleanups at all sites during the entire reporting year. LWA supervised the monthly monitoring event activities during the entire reporting year, and beginning in September 2016, LWA also supervised CCC field personnel during additional monthly cleanup events. From October 2016 through September 2017, the total annual amount of trash removed was approximately 5,753 pounds, in 525 33-gallon bags. Beginning in September 2016, the trash cleanup area for Site 1 was expanded, so the entire 2016-2017 reporting year was covered under this new protocol. Example photos taken during these special cleanups are presented in **Appendix 4**.

In addition to the trash cleanups, the responsible parties implemented the following BMPs to address trash:

3.1.1 City of Camarillo Litter Management Program

TMRP Addendum No. 1 BMP list for the City:

1. Catch basin cleaning - all City catch basins outside of the Revolon Slough/Beardsley Wash subwatershed are inspected at least once per year and those in high-trash generating areas are inspected four times per year and all are cleaned when filled with trash to 25 percent or more of the catch basin's capacity. As identified in the City's March 2016 letter to the Regional Board staff, starting with July 2016, the city changed the inspection frequency of all catch basins in the Revolon Slough/Beardsley Wash subwatershed to quarterly and the metric for determining when a catch basin needs to be cleaned to the same metric used for the nonpoint source program. The total pounds of trash removed from all the cleanouts from October 2016 through September 2017 was 2,359 pounds. Example photos from a City full capture device inspection and cleaning event are presented in **Appendix 5**.
2. Open channel maintenance - all City-maintained channels are inspected and cleaned at least once before the wet season and at least once after the wet season.
3. Trash Management at Public Events - All special use permits for events in the public right of way require proper management of trash and litter.

The following are enhancements/revisions made to the non-point source BMPs listed in the TMRP for the City:

1. Trash removal was also performed along City fence lines near city stormwater system structures in the Revolon Slough/Beardsley Wash subwatershed. Approximately 900 pounds of trash was removed during the fence line trash removals this year.
2. The City performs annual debris and trash removal from city-maintained ditches/channels and detention basins. Approximately 68,440 pounds of materials were removed from the structures within the Revolon Slough and Beardsley Wash subwatershed.

3. City arterial streets are swept weekly and residential streets are swept monthly in an attempt to reduce trash accumulating in deleterious amounts on streets within the City. An estimated 816,000 pounds of debris were removed by the street sweepers from streets in the Revolon Slough/Beardsley Wash subwatershed this year.
4. The City requires conditions pertaining to trash to be met for all new development and redevelopment projects within the watershed, including:
 - A. Trash full capture devices and post-construction treatment devices for other pollutants of concern must be installed in drain inlets;
 - B. Trash enclosures and/or recycling areas must be properly installed (e.g., covered and including structures to direct stormwater away from entering the enclosures/areas);
 - C. All property areas must be maintained free of litter/debris;
 - D. Onsite storm drains must be cleaned at least twice per year, including once before the beginning of the wet season; and
 - E. Private roads and parking lots must be swept at a minimum of once per month, with two sweepings occurring in October before the beginning of the wet season.
5. The City requires private owners to provide proof of maintenance of their post construction treatment devices annually.
6. The City hosts household hazardous waste collection events two days per month to provide residents a place to properly dispose of their materials. This reduces the amount of illegal dumping and diverts household hazardous waste from landfills. The City successfully diverted 225,324 pounds of household hazardous waste in 2016-2017 which equals a 99.9 percent diversion rate of items collected during the events.
7. The City adopted Stormwater Ordinance No. 1032 in December 2012 which includes trash specific prohibitions and fines and penalties for violations of the prohibitions.
8. The City continued additional measures to its Water Conservation Ordinance limiting lawn watering to four days per week, no washing of hard surfaces (i.e., driveways, sidewalks), and imposing penalties for runoff. Further, the City of reduced its water usage by 26.6 percent for the six-month period ending July 2017 compared to usage in 2013. These measures will reduce dry weather flows to the storm drain system thereby reducing trash transport.
9. The City engages in several outreach and education campaigns including:
 - A. The City includes a litter prevention message, at least annually, in its quarterly Cityscene Newsletter, which is distributed to all residents.
 - B. The City includes an insert with all utility bills soliciting volunteers to remove trash in the City on Coastal Cleanup Day and which also educates residents on pollution prevention.

- C. The City conducts commercial and industrial facility inspections to ensure proper pollutant prevention BMPs are being applied and to educate the employees on the importance of pollution prevention. The City inspected 307 facilities during 2016-2017.
- D. The City sends out letters to all commercial, industrial, and high-density residential property managers requesting assistance in controlling trash on their property.
- E. The City inspects all construction sites to ensure application of proper pollution prevention BMPs. The City inspected 200 sites in 2016-2017. In addition the city inspected 13 construction sites prior to certificate of occupancy to verify the site design and that source control and treatment control BMPs were installed and maintained properly.
- F. The City mails construction site BMP brochures to contractors and developers annually, during fall, to ensure proper pollutant prevention BMPs are being applied especially before the wet season.
- G. The City participates in the Countywide Stormwater Public Outreach Program that includes litter outreach, which can be reviewed at www.cleanwatershed.org.

The following are enhancements/revisions made to the point source BMPs listed in the TMRP for the City:

- 1. The City installed and is maintaining 82 trash full capture devices in City storm drain catch basins in high trash generating areas throughout the City including 38 devices within the Revolon Slough and Beardsley Wash subwatershed. In addition, the city will be installing approximately 100 additional full capture trash devices by July 2018. The majority of these devices will be within the Revolon Slough and Beardsley Wash subwatershed. As discussed in last year's annual report, the City is currently employing a point source MFAC/BMP Program to meet the point source compliance requirements of the Trash TMDL. The section below provides information on the City's point source MFAC/BMP Program.

3.1.1.1 Point Source MFAC/BMP Program

In May 2015, the City submitted a letter to the Regional Board staff detailing a proposed point source compliance option and requesting Regional Board approval. Subsequently, in July 2015 the City met with Regional Board staff to discuss the City's May 2015 letter. In October 2015, per a Regional Board staff request, the City submitted additional data related to the point source compliance option. On December 14, 2015, the City received a response letter from the Regional Board stating it was unable to approve the City's requested point source strategy. On March 3, 2016, the City submitted another letter to the Regional Board in response to the December 14, 2015 letter detailing a revised, proposed point source compliance strategy (listed below). As of the submittal date of this annual report, the City has not received approval of the proposed point source compliance option.

Until the Regional Board re-considers the Trash TMDL related to the Statewide Trash Policy's priority land use areas, the City will continue to address all land uses (non-priority and priority)

within the Revolon Slough and Beardsley Wash watershed by conducting a point source MFAC/BMP Program, which will consist of implementing the suite of BMPs currently employed by the City, as detailed in TMRP - Addendum No. 1 and Annual Monitoring Reports, as well as inspecting and monitoring catch basins for trash and/or anthropogenic landscaping litter. The City is implementing the following inspection and collection schedule for non-priority land use area catch basins to serve as the assessment collection aspect of the MFAC/BMP Program:

- The City is conducting quarterly visual inspections for all non-priority land use catch basins.
- Inspection frequencies may be modified for particular catch basins based on the amount of trash and/or anthropogenic landscape litter (dumped grass clippings) present during initial quarterly inspections. A minimum inspection frequency interval will be selected that prevents trash and/or leaf litter from accumulating in deleterious amounts between collections.
- Collection events are occurring concurrently with the assessments and the City ensures zero trash and/or leaf litter will remain after the collection event.

Based on this inspection and cleaning schedule, catch basins cleaned one or fewer times (i.e., no trash/anthropogenic landscaping litter found during inspections) over a rolling three-year period are considered equivalent to catch basins with full capture devices installed. This determination is based on trash and/or anthropogenic landscaping litter not accumulating in the catch basins and therefore not being discharged to Revolon Slough and Beardsley Wash. This also indicates the BMPs implemented by the City are addressing trash equivalent to full capture devices. If any catch basin does not maintain its one or fewer cleaning status, the catch basin and/or area surrounding the catch basin will be addressed via trash-control BMPs to return the catch basin to the one or fewer cleaning category and, depending on the results of the full capture systems analyses, may be addressed by a full capture system. If the Regional Board revises the Trash TMDL to only focus on priority land uses, the MFAC/BMP Program will be ceased for the non-priority areas and the inspection and cleaning protocols will revert to the requirements of the Ventura County MS4 Permit.

During the 2016-2017 monitoring year quarterly inspections, 60 catch basins had to be cleaned more than once, which equates to approximately 10 percent of the total 573 catch basins within the Revolon Slough and Beardsley Wash watershed not addressed by full capture systems. The remaining 513 catch basins were cleaned one or fewer times. Of the 60 catch basins cleaned more than once, 8 were found to be Category 2 (10+ pieces of trash) and 52 were found to be in Category 1 (<10 pieces of trash). As this was the first full year of quarterly inspections and cleanings, the City is still assessing what BMPs will most effectively and efficiently address these catch basins.

In order to assess compliance with the 100 percent reduction from the baseline WLA requirement, the City calculated a point source baseline WLA for: (1) all land uses and (2) only the priority land uses, using land use acreage determined through geographic information system (GIS) analyses and trash generation rate (TGR) data obtained through a review of reports that contain trash generation rate data. A baseline WLA of 2,738 gallons per year was calculated for all land uses and a baseline WLA of 1,653 gallons per year was calculated for only the priority land use areas. In essence, if the City's BMPs address at least 2,738 gallons per year of trash,

then they will be in compliance with the 100 percent reduction from the baseline WLA. During the 2016-2017 monitoring year, the City removed 67,953 gallons of trash through the implemented trash control measures, which is much greater than the 2,738 gallons of trash baseline WLA (Table 5).

Based on the catch basin inspections and clean outs as well as the amount of trash removed by the City's trash control measures, trash and debris are not accumulating in deleterious amounts between the inspection and collection events. The City is confident the current trash control measures implemented as well as the point source MFAC/BMP Program are effectively meeting the point source requirements of the Trash TMDL.

Table 5. Materials Removed via Various City Trash-Control Measures Implemented in 2016-2017

BMP	Estimated Amount Removed	Amount of Trash	Amount of Leaf Litter ²	Amount of Sediment
Amount of trash collected in pounds				
Catch Basin Cleaning	47,185	2,359	35,389	9,437
Street Sweeping	816,000	163,200	326,400	163,200
Ditch, Channel, and Detention Basin Cleaning	68,440	3,422	51,330	13,688
Fence Line Trash Removal	900	900	0	0
Total	932,525	169,881	413,119	186,325
Amount of trash collected in gallons¹				
Catch Basin Cleaning	18,874	944	14,156	3,775
Street Sweeping	326,400	65,280	130,560	65,280
Ditch, Channel, and Detention Basin Cleaning	27,376	1,369	20,532	5,475
Fence Line Trash Removal	360	360	0	0
Total	373,010	67,953	165,248	74,530
Baseline Trash WLA (gallons)		2,738		

1. Pounds converted to gallons using 2.5 pounds=1 gallon from: Michael Baker International. Literature Review for Trash Amendment Compliance Strategy. Contract No. 534079, Task Order 52. Prepared for: County of San Diego Department of Public Works. July 2015.

2. Leaf litter is not anthropogenic landscaping litter but literally leaves from adjacent trees. Dumped landscaping litter is considered trash and is accounted for under "trash" category.

3.1.2 City of Oxnard Litter Management Program

1. Catch basin cleaning - all City of Oxnard catch basins are inspected at least once per year and those in high-trash generating areas are inspected four times per year and all are cleaned when filled with trash to 25 percent or more of the catch basin's capacity.
2. Open channel maintenance - all City of Oxnard-maintained channels are inspected and cleaned at least once per year before the wet season and at least once per year after the wet season.
3. City of Oxnard arterial streets are swept weekly and residential streets are swept monthly in an attempt to reduce trash accumulating in deleterious amounts on streets within the City of Oxnard.

4. Trash Management at Public Events - All special use permits for events in the public right of way require proper management of trash and litter.
5. The City of Oxnard requires conditions pertaining to trash to be met for all new development and redevelopment projects within the watershed, including:
 - A. Trash full capture devices and post-construction treatment devices for other pollutants of concern must be installed in drain inlets;
 - B. Trash enclosures and/or recycling areas must be properly installed (e.g., covered and including structures to direct stormwater away from entering the enclosures/areas);
 - C. All property areas must be maintained free of litter/debris;
 - D. Onsite storm drains must be cleaned at least twice per year, including once before the beginning of the wet season; and
 - E. Private roads and parking lots must be swept at a minimum of once per month, with two sweepings occurring in October before the beginning of the wet season.
6. The City of Oxnard requires private owners to provide proof of maintenance of their post construction treatment devices annually.
7. The City of Oxnard accepts household hazardous wastes at the Del Norte Regional Recycling Station Monday - Saturday to provide residents a place to properly dispose of their materials. This reduces the amount of illegal dumping.
8. The City of Oxnard adopted Stormwater Ordinance No. 2876 in November 2013, which includes trash specific prohibitions and fines and penalties for violations of the prohibitions.
9. The City of Oxnard imposed additional measures to its Water Conservation Ordinance in 2014 by prohibiting lawn watering except between 4 PM and 9 AM or 6 PM and 9AM during daylight savings, no washing of hard surfaces (i.e., driveways, sidewalks), and imposing penalties for runoff. These measures will reduce dry weather flows to the storm drain system thereby reducing trash transport.
10. The City catch basins are labeled, “Don’t pollute, Flows to Waterways”.
11. The City of Oxnard engages in several outreach and education campaigns including:
 - A. The City of Oxnard has established the www.oxnardnews.org website which disseminates information regarding pollution prevention, household hazardous waste roundups, Coastal Clean-up day and water conservation.
 - B. The City of Oxnard includes an insert with all utility bills soliciting volunteers to remove trash in the City of Oxnard on Coastal Cleanup Day which also educates residents on pollution prevention.
 - C. The City of Oxnard conducts commercial, industrial, and construction facility/site inspections to ensure proper pollutant prevention BMPs are being applied and to educate the employees on the importance of pollution prevention.

- D. The City of Oxnard sends out letters to all commercial, industrial, and high-density residential property managers requesting assistance in controlling trash on their property.
- E. The City of Oxnard inspects all construction sites to ensure application of proper pollution prevention BMPs.
- F. The City of Oxnard participates in the Countywide Stormwater Public Outreach Program that includes litter outreach, which can be reviewed at www.cleanwatershed.org.

3.1.3 County of Ventura and VCWPD Litter Management Program

The County has a very limited storm drain system within the Trash TMDL responsibility area. In 2014, eight StormTek® connector pipe screen full capture devices were installed. The final inspection of the eight full capture devices was completed in October 2014 towards 100 percent Trash TMDL compliance. However, additional storm drain system analysis indicated the installed devices were insufficient to meet point source compliance requirements. In May 2015, the County issued a contract for a site suitability analysis for installation of additional full capture devices within the Revolon Slough/Beardsley Wash watershed. The results of this study showed that 48 additional full capture devices were required to meet the 100 percent full capture requirement. The County installed the remaining 48 full capture devices and is meeting the 100 percent point source compliance requirement. During the 2016-2017 monitoring year, the County properly maintained all installed full capture devices. For full capture device installation details, refer to “County of Ventura Full Capture Connector Pipe Screen Trash Excluder Certification Report” provided in the 2015-2016 Annual Report.

1. Catch basin cleaning - Catch basins are inspected at least once a year and cleaned when filled to 25 percent or more of the catch basin’s capacity. During storm season, all drainage facilities are inspected and cleaned as necessary.
2. Open channel storm drain maintenance - All VCWPD-owned and -maintained channels are cleared, inspected, and cleaned as required at least once per year. During the annual 2016-2017 channel sediment cleaning of Revolon Slough and Beardsley Wash, approximately 119 tons of trash were removed from Revolon Slough and 73 tons of trash were removed from Beardsley Wash.
3. Trash Management at Public Events - A proper Management of Trash and Litter Plan is required when obtaining a permit for staging public events. This Plan requires adequate facilities for trash collection and disposal.
4. Public areas - Trash receptacles have been placed within high trash generation areas. These devices are cleaned and maintained regularly to prevent trash overflow.
5. The Stormwater Quality Management Ordinance for Unincorporated Areas (Ventura County Ordinance No. 4450) includes litter and trash specific prohibitions for the discharge or deposition of trash that may enter the County storm drain system or receiving waters (Section 6942). The ordinance also includes civil penalties for violations and provisions for issuing administrative fines, recovery of costs and misdemeanor violations.
6. County catch basins are labeled, “Don’t pollute, Flows to Waterways”.

7. Watershed awareness signs have been installed at key locations at major roadway crossings of Revolon Slough and Beardsley Wash, stating “Calleguas Creek Watershed, Keep It Clean!” In addition, in June 2016, the County/VCWPD installed 11 bilingual “No Dumping Allowed” signs at six locations at access points along Revolon Slough and Beardsley Wash, where illegal dumping had occurred, as reported in the 2015-2016 Annual Report.
8. In October 2013, an anti-littering billboard space was leased from ClearChannel with a message posted for a month along Highway 101 (near the Del Norte overcrossing) stating “Our Oceans are Drowning in Plastic”, encouraging proper disposal of waste and recyclable materials. This location was seen by 97,000 people per day (estimated at 64,000 Ventura County residents and 33,000 others travelling through the area) for the entire month of October.
9. On July 31, 2012 the County of Ventura Board of Supervisors received and filed a draft model Single-Use Bag Ordinance referred to the County by the Beach Erosion Authority for Clean Oceans and Nourishment (BEACON). The County endorsed the use of up to \$8,000 as the County’s pro-rata share of a regional Environmental Impact Report (EIR) to be prepared by BEACON, which is required to be completed under the California Environmental Quality Act (CEQA) before the model single-use bag ban can be adopted. This was the first step for the County to move forward with the consideration of adoption of a single-use plastic bag ban.
10. On June 24, 2014 the County of Ventura Board of Supervisors approved a motion directing the County of Ventura Executive Officer to have staff prepare a Single-Use Bag Ordinance modeled on the BEACON Ordinance.
11. The County and VCWPD continue to participate in the Countywide Stormwater Program to provide outreach and education retaining the services of “The Agency”, a professional advertisement group that designs and conducts Countywide, bilingual outreach programs advocating proper trash disposal. The most recent addition to the outreach program is trash prevention and protection of stormwater quality education using Facebook®.
12. The County conducts commercial, industrial, and construction facility/site inspections to ensure proper pollutant prevention BMPs are being applied and to educate the employees on the importance of pollution prevention. The County inspects over 360 businesses at least twice during the Ventura County MS4 Permit Term.
13. The County requires private owners to provide proof of maintenance of their post construction treatment devices annually.
14. On September 16, 2017, County staff captained a Coastal Cleanup Day site in Beardsley Wash. The site was first added to Coastal Cleanup Day in 2016. In 2017, 9 volunteers cleaned two sections of Beardsley Wash and removed 244 pounds of trash that included food and tobacco product wrappers, cigarette butts, as well as glass and plastic bottles. Example photos from this year’s Coastal Cleanup Day are provided in **Appendix 6**.

3.1.4 VCAILG Litter Management Program

During the 2016-2017 monitoring year, the VCAILG provided education and outreach to a diverse group of owners and growers throughout Ventura County. Certain aspects of the education and outreach discuss trash BMPs for agricultural areas and information regarding the Trash TMDL. The VCAILG conducted two education and outreach classes during the 2016-2017 reporting year - July 18, 2017 and September 26, 2017. In addition, the VCAILG has been conducting direct outreach to agricultural areas surrounding Site 1 and Site 5 to address agricultural trash that was found near those sites and VCAILG installed anti-littering signs near the agricultural areas surrounding Site 1 and Site 5.

3.1.5 Caltrans Litter Management Program

Caltrans implements a variety of BMPs in the watershed along the freeways and highways. These BMPs are a suite of programs done to reduce trash as follows.

1. Street Sweeping
2. Trash Collection
3. Adopt-a-Highway Program

Caltrans (District 7, serving Los Angeles and Ventura Counties) uses a variety of methods to educate the public about the importance of managing stormwater. This consists of a variety of written materials, bulletins, and websites. A few venues the District uses to accomplish this are public schools and community sponsored clean up events, Bring Your Child to Work Day, and Earth Day. The written material is designed to appeal to the public while providing technical information on selected Caltrans projects and activities. Caltrans continues to install stenciled warnings prohibiting discharges to drain inlets at park and ride lots, rest areas, vista points and other areas with pedestrian traffic. Caltrans has installed two biofiltration swales (BSWs) on Highway 34 and three biofiltration strips (BSTs) on Highway 101 in the Revolon Slough/Beardsley Wash subwatershed. Currently, Caltrans is constructing 14 BSWs, 7 BSTs, and 1 Austin Vault Sand Filter along Highway 101 (these BMPs are scheduled to be completed by July 2018). The BSWs, BSTs, and Austin Vault Sand Filter are being installed to address a suite of constituents including metals and selenium; organochlorine pesticides, PCBs, and siltation; and trash.

3.2 FUTURE POTENTIAL BEST MANAGEMENT PRACTICES

Future potential BMPs specific to each responsible party are detailed below.

3.2.1 City of Camarillo Litter Management Program

To address non-point sources, the City will focus BMP efforts at the high trash generating areas identified through the MFAC Program and continue watershed-wide BMP activities as a means to further reduce the discharge of trash to Revolon Slough and Beardsley Wash. The City will install approximately 100 more full capture trash devices by July 2018, of which, the majority of the devices will be in the Revolon Slough/ Beardsley Wash subwatershed.

Until the Regional Board re-considers the Trash TMDL related to the Statewide Trash Policy's priority land use areas, the City will continue to address all land uses (non-priority and priority) within the Revolon Slough and Beardsley Wash watershed by conducting a point source

MFAC/BMP Program, which will consist of implementing the suite of BMPs currently employed by the City, as detailed in TMRP - Addendum No. 1 and Annual Monitoring Reports, as well as inspecting and monitoring catch basins for trash and/or anthropogenic landscaping litter.

3.2.2 City of Oxnard Litter Management Program

The City owns and operates the Del Norte Regional Recycling and Transfer Station, which is responsible for accepting, transferring and disposing of approximately 200,000 solid waste tons each year from the City, permitted haulers, and self-haulers throughout the region, as well as materials recovery, which is responsible for diverting material from the waste stream to prevent marketable recyclable material and divertible material from entering the landfill. The City has entered into agreements with organizations such as the Carpet America Recovery Effort (carpetrecovery.org) and Recycle with Paint Care (paintcare.org) for recycling of post consumer products. Green waste is recycled to provide compost soil amendments and other beneficial environmental products. The Del Norte Regional Recycling and Transfer Station includes a buyback center, which is responsible for accepting and dispensing payments to customers that redeem California Redemption Value material such as aluminum cans, plastic beverage containers, and glass. In addition, the Del Norte Regional Recycling and Transfer Station contains the Recyclable Household Hazardous Waste Center, which is responsible for accepting and recycling material from City residents that drop-off antifreeze, batteries, used motor oil, water-based paint and electronic devices. For hazardous wastes that are not accepted at Del Norte Regional Recycling and Transfer Station, the City offers Household Hazardous Waste Collection Events which are held at a separate location and allow residents to transport up to 15 gallons or 125 lbs household hazardous waste to the event. There is also a special program available once per month for Oxnard Conditionally Exempt Small Quantity Generator Businesses (CESQG's). A CESQG generates or stores less than 27 gallons or 200 pounds of Hazardous Waste per month. A CESQG may qualify for a limited amount of free disposal.

The City of Oxnard will continue to promote the City's Green Sustainability Programs with robust outreach focused on pollution prevention and environmental sustainability. The City of Oxnard has started a new "On the Road to Zero Waste" campaign which encourages community participation through a series of workshops designed to educate the public and garner community input. The program has vision of zero waste with a guiding principle to protect the environment and public health.

The City of Oxnard will focus BMP efforts at the high trash generating areas identified through the MFAC Program and continue watershed-wide BMP activities as a means to further reduce the discharge of trash to Revolon Slough and Beardsley Wash.

For point sources, the City of Oxnard has not yet been able to install full capture devices for conveyances discharging to Revolon Slough and Beardsley Wash. The City of Oxnard identified 106 catch basins that require retrofitting. A staff report has been prepared and the project has been assigned to the Capital Improvement Project (CIP) Division. The CIP Division is currently working with the City of Oxnard's finance department to secure funding to install the full capture devices. While full capture device planning is ongoing, the City is continuing to implement BMPs within their jurisdiction to address point sources of trash and participate in the non-point source MFAC/BMP program. The non-point source MFAC/BMP program results in cleanups of a site within the City of Oxnard to support point source compliance as well.

3.2.3 County of Ventura and VCWPD Litter Management Program

The County/VCWPD will continue to participate in the MFAC/BMP Program and regularly maintain the County's full capture devices. BMPs will include monthly trash cleanups at high trash generating areas. Additionally, the County will conduct targeted outreach to schools within the area covered by the Trash TMDL to educate the students, staff, and faculty on the importance of pollution prevention specifically regarding trash. The scale of BMP implementation will depend on the trash data collected during the 2017-2018 monitoring year. For point sources, the County completed installing full capture devices in conveyances they are responsible for and is meeting the March 2016 requirement of 100 percent of the conveyances discharging to Revolon Slough and Beardsley Wash are addressed by full capture devices. The County maintained the installed full capture devices during the 2016-2017 monitoring year to ensure their proper functioning.

3.2.4 VCAILG Litter Management Program

As part of the new Conditional Waiver, VCAILG will provide educational classes focused on improving water quality, including identifying trash as an impairment of water quality. VCAILG will make a concerted effort to make trash management a bigger focus during educational classes. Furthermore, based on 2016-2017 monitoring results, VCAILG will assist its members with the implementation of additional BMPs as necessary by following the adaptive process identified in the WQMP. In addition, VCAILG members will continue to be billed separately for Trash TMDLs to further reinforce the idea, through a fiscal measure, that there are trash problems in the watershed.

3.2.5 Caltrans Litter Management Program

Caltrans will continue to implement its current suite of BMPs as outlined in the TMRP. In addition, Caltrans has plans to install six BSWs on Highway 34, with construction beginning in 2022 as well as four BSWs, one BST, and one Austin Vault Sand Filter on Highway 118, with construction beginning in 2021 - these BMPs are subject to funding availability and the TMDL Reach Prioritization completed under the most recent Caltrans MS4 Permit. The continued implementation of current BMPs and the implementation of future potential BMPs will be directed by results obtained from future monitoring events as part of the adaptive management compliance approach.

3.3 BEST MANAGEMENT PRACTICES IMPLEMENTATION SCHEDULE

Non-point source-responsible parties intend to continue complying with the Trash TMDL through a visual MFAC/BMP Program, which may include the installation or implementation of structural or non-structural BMPs. The MFAC/BMP Program that was included in TMRP - Addendum No. 1 will continue to be implemented. Additional BMP implementation will be scheduled as appropriate to address the identified high trash generating areas.

Point source-responsible parties will continue installing full capture devices on conveyances discharging to Revolon Slough and Beardsley Wash and/or employ a point source-specific MFAC/BMP Program.

4 MFAC Revisions

Overall, the non-point source MFAC/BMP Program is effective for addressing trash as none of the five monitoring sites met the criteria for increased BMP implementation (four consecutive months of Category 3 trash conditions). In addition, the current monthly non-point source MFAC monitoring schedule is appropriate for assessing trash conditions within the Revolon Slough and Beardsley Wash subwatershed. Any necessary revisions identified during the implementation of the 2017-2018 monitoring year will be proposed in the ninth-year monitoring annual report in January 2019.

In addition, the City of Camarillo's point source-specific MFAC/BMP Program is effective at addressing trash and the quarterly inspection and collection frequency is appropriate for assessing trash conditions within the City's portion of the Revolon Slough and Beardsley Wash subwatershed. Any necessary revisions identified during the implementation of the 2017-2018 monitoring year will be proposed in the ninth-year monitoring annual report in January 2019.

Appendix 1. MFAC Program Site Descriptions

Site 1 – Revolon Slough at Wood Road

This site consists of Revolon Slough and its adjacent land areas. It begins at the end of a concrete channel and includes the 100 foot downstream portion of Revolon Slough and the banks on both sides of the water body.

GPS Coordinates:

Lat: 34.169771

Lon: -119.095591

**Site 3a – Camarillo Hills Drain Outlet**

This site begins at the upstream end of a drain outlet and includes the in-stream portions of the Camarillo Hills Drain and the banks on either side of the drain.

GPS Coordinates:

Lat: 34.215486

Lon: -119.076388

**Site 5 – Revolon Slough at Etting Road**

This site begins at the downstream end of an agricultural drain that discharges into Revolon Slough and includes the in-stream portions of Revolon Slough as well as the land areas within the slough and the banks.

GPS Coordinates:

Lat: 34.161731

Lon: -119.091460



Site 8 – Caltrans Site on U.S. 101 Freeway

This site is located on the south side of U.S. 101 Freeway near Revolon Slough. The site begins at the end of the guard rail and ends at the fence surrounding Revolon Slough.

GPS Coordinates:

Lat: 34.221799

Lon: -119.120400

**Site 10 – 5th Street Drain at Del Norte Blvd.**

This site is located within the 5th Street Drain near the intersection of Del Norte Boulevard and 5th Street. This site was added to the MFAC Program in July 2015.

GPS Coordinates:

Lat: 34.191006

Lon: -119.107392



Appendix 2. Example MFAC Event Photos

Site 1 – Revolon Slough at Wood Road



Figure 1: Site 1 before a MFAC Event in June, 2017



Figure 2: Site 1 after a MFAC Event in June, 2017

Site 3a – Camarillo Hills Drain Outlet



Figure 3: Site 3a before a MFAC Event in May 2017



Figure 4: Site 3a after a MFAC Event in May, 2017

Site 5 – Revolon Slough at Etting Road



Figure 5: Site 5 before a MFAC Event in February, 2017



Figure 6: Site 5 after a MFAC Event in February, 2017

Site 8 – Caltrans Site on U.S. 101 Freeway



Figure 7: Site 8 before a MFAC Event in March, 2017

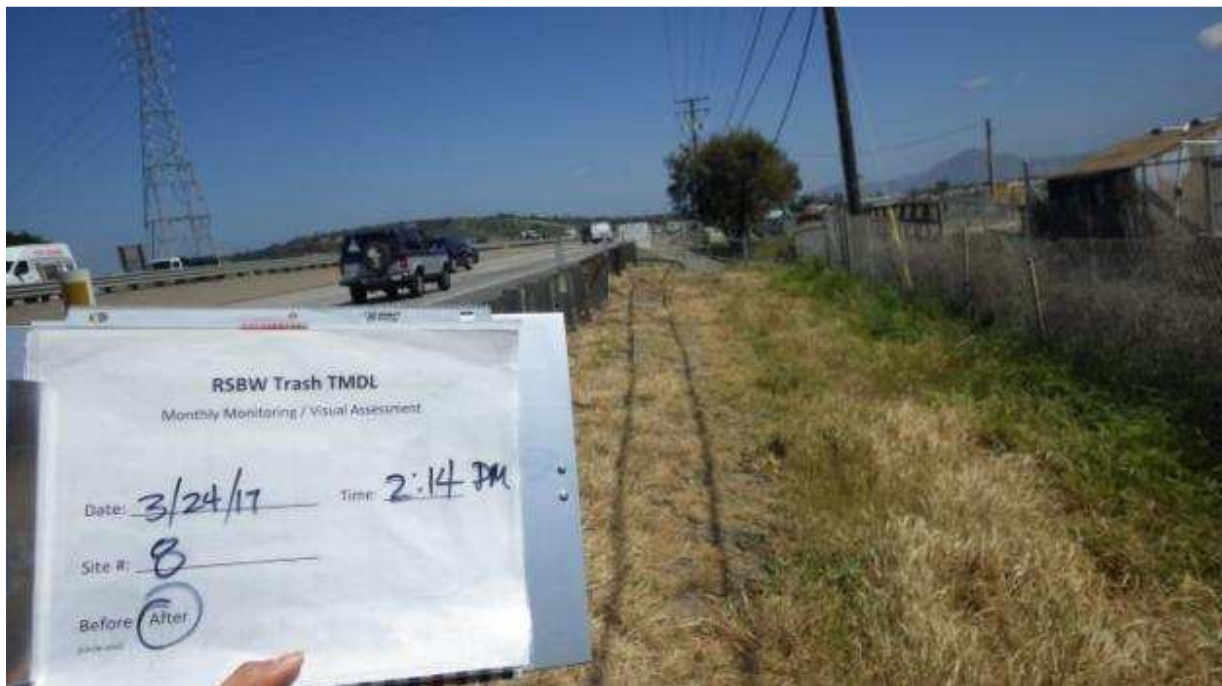


Figure 8: Site 8 after a MFAC Event in March, 2017

Site 10 – Revolon Slough at Del Norte Blvd.



Figure 9. Site 10 before a MFAC Event in January, 2017



Figure 10. Site 10 before a MFAC Event in January, 2017

Appendix 3. Example Completed Visual Assessment Forms

Revolon Slough/Beardsley Wash Trash TMDL

Visual Assessment Worksheet

Event Date: <u>9/28/17</u>	Event Start Time: <u>8:44 AM</u>
Field Technician Names: <u>A. Stovall + CCC</u>	Event End Time: <u>9:11 AM</u>
Current Weather Conditions: <u>Sunny, hot</u>	# of Pictures Taken: <u>2</u>
Antecedent Weather Conditions: <input type="checkbox"/> Wind <input type="checkbox"/> Rain: _____ inches	<u>N/A</u>

Level of Trash Observed:

Refer to Program Monitoring Area Map as necessary. Note any categorical variation in levels of trash observed in different areas of the site. If necessary, categorize these areas individually.

Key: Category 1: (<10 pcs), Category 2 (10-100 pcs), Category 3 (>100 pcs)

<u>Site ID</u>	<u>Category</u>	<u>Reason for Category Rating</u>
<u>3A</u>	<u>1</u>	<u>Minimal debris present</u>

Types of Trash Observed (check all that apply)

- | | | |
|---|--|--|
| <input checked="" type="checkbox"/> Plastic/Styrofoam | <input checked="" type="checkbox"/> Paper Products/Biodegradable | <input type="checkbox"/> Household Items |
| <input type="checkbox"/> Landscape Materials | <input type="checkbox"/> Aluminum/Metal | <input type="checkbox"/> Automotive |
| <input type="checkbox"/> Toxic/Hazardous/Biohazardous Materials | <input checked="" type="checkbox"/> Glass | <input type="checkbox"/> Agricultural Plastics/Trash |
| Notes: | | <input type="checkbox"/> Other: _____ |

Estimated # of Follow-up Clean-up Events Needed:

N/A

Additional Notes:

Site in very good condition, minimal debris present.
Discharge from outfall present, along with algae and sediment.

Revolon Slough/Beardsley Wash Trash TMDL

Visual Assessment Worksheet

Event Date: <u>9/28/17</u>	Event Start Time: <u>9:22 AM</u>
Field Technician Names: <u>A. Stovall + CCC</u>	Event End Time: <u>9:50 AM</u>
Current Weather Conditions: <u>Sunny, hot</u>	# of Pictures Taken: <u>2</u>
Antecedent Weather Conditions: <input type="checkbox"/> Wind <input type="checkbox"/> Rain: _____ inches	<u>N/A</u>

Level of Trash Observed:

Refer to Program Monitoring Area Map as necessary. Note any categorical variation in levels of trash observed in different areas of the site. If necessary, categorize these areas individually.

Key: Category 1: (<10 pcs), Category 2 (10-100 pcs), Category 3 (>100 pcs)

<u>Site ID</u>	<u>Category</u>	<u>Reason for Category Rating</u>
<u>5</u>	<u>1</u>	<u>Minimal debris present</u>

Types of Trash Observed (check all that apply)

- | | | |
|---|---|---|
| <input checked="" type="checkbox"/> Plastic/Styrofoam | <input type="checkbox"/> Paper Products/Biodegradable | <input type="checkbox"/> Household Items |
| <input type="checkbox"/> Landscape Materials | <input checked="" type="checkbox"/> Aluminum/Metal | <input type="checkbox"/> Automotive |
| <input type="checkbox"/> Toxic/Hazardous/Biohazardous Materials | <input checked="" type="checkbox"/> Glass | <input checked="" type="checkbox"/> Agricultural Plastics/Trash |
| Notes: | | <input type="checkbox"/> Other: _____ |

Estimated # of Follow-up Clean-up Events Needed:

N/A

Additional Notes:

Vegetation extremely overgrown, blocking significant portions of the banks, and also blocking the lower portion of the stream.

Revolon Slough/Beardsley Wash Trash TMDL

Visual Assessment Worksheet

Event Date: <u>9/28/17</u>	Event Start Time: <u>9:53 AM</u>
Field Technician Names: <u>A. Stovall + CCC</u>	Event End Time: <u>10:17 AM</u>
Current Weather Conditions: <u>Sunny, hot</u>	# of Pictures Taken: <u>2</u>
Antecedent Weather Conditions: <input type="checkbox"/> Wind <input type="checkbox"/> Rain: <u> </u> inches <u>N/A</u>	

Level of Trash Observed:

Refer to Program Monitoring Area Map as necessary. Note any categorical variation in levels of trash observed in different areas of the site. If necessary, categorize these areas individually.

Key: Category 1: (<10 pcs), Category 2 (10-100 pcs), Category 3 (>100 pcs)

<u>Site ID</u>	<u>Category</u>	<u>Reason for Category Rating</u>
<u>1</u>	<u>2</u>	<u>Moderate levels of debris in stream, minimal on banks</u>

Types of Trash Observed (check all that apply)

- | | | |
|--|---|---|
| <input checked="" type="checkbox"/> Plastic/Styrofoam | <input type="checkbox"/> Paper Products/Biodegradable | <input checked="" type="checkbox"/> Household Items |
| <input type="checkbox"/> Landscape Materials | <input checked="" type="checkbox"/> Aluminum/Metal | <input type="checkbox"/> Automotive |
| <input checked="" type="checkbox"/> Toxic/Hazardous/Biohazardous Materials | <input type="checkbox"/> Glass | <input checked="" type="checkbox"/> Agricultural Plastics/Trash |
| | | <input type="checkbox"/> Other: <u> </u> |

Notes:

Biohazard - chickens (3x)

Estimated # of Follow-up Clean-up Events Needed:

County O+M needs to retrieve chickens.

Additional Notes:

Water was very clear, so visibility was high. Moderate levels of debris in stream, and minimal debris on banks.

Revolon Slough/Beardsley Wash Trash TMDL

Visual Assessment Worksheet

Event Date: <u>9/28/17</u>	Event Start Time: <u>10:33 AM</u>
Field Technician Names: <u>A. Stovall + CCC</u>	Event End Time: <u>11:01 AM</u>
Current Weather Conditions: <u>Sunny, hot</u>	# of Pictures Taken: <u>2</u>
Antecedent Weather Conditions: <input type="checkbox"/> Wind <input type="checkbox"/> Rain: _____ inches	<u>N/A</u>

Level of Trash Observed:

Refer to Program Monitoring Area Map as necessary. Note any categorical variation in levels of trash observed in different areas of the site. If necessary, categorize these areas individually.

Key: Category 1: (<10 pcs), Category 2 (10-100 pcs), Category 3 (>100 pcs)

Site ID	Category	Reason for Category Rating
<u>1D</u>	<u>2</u>	<u>Moderate levels of debris</u>

Types of Trash Observed (check all that apply)

- | | | |
|---|--|---|
| <input checked="" type="checkbox"/> Plastic/Styrofoam | <input checked="" type="checkbox"/> Paper Products/Biodegradable | <input checked="" type="checkbox"/> Household Items |
| <input type="checkbox"/> Landscape Materials | <input checked="" type="checkbox"/> Aluminum/Metal | <input type="checkbox"/> Automotive |
| <input type="checkbox"/> Toxic/Hazardous/Biohazardous Materials | <input checked="" type="checkbox"/> Glass | <input checked="" type="checkbox"/> Agricultural Plastics/Trash |
| Notes: | | <input type="checkbox"/> Other: _____ |

Estimated # of Follow-up Clean-up Events Needed:

N/A

Additional Notes:

Moderate levels of debris in channel and on banks. Many small pieces of ag. plastic caught in vegetation on banks.

Revolon Slough/Beardsley Wash Trash TMDL

Visual Assessment Worksheet

Event Date: 9/28/17	Event Start Time: 11:12 AM
Field Technician Names: A. Stovall + CCC	Event End Time: 11:45 AM
Current Weather Conditions: Sunny, hot	# of Pictures Taken: 2
Antecedent Weather Conditions: <input type="checkbox"/> Wind <input type="checkbox"/> Rain: _____ inches	NA

Level of Trash Observed:

Refer to Program Monitoring Area Map as necessary. Note any categorical variation in levels of trash observed in different areas of the site. If necessary, categorize these areas individually.

Key: Category 1: (<10 pcs), Category 2 (10-100 pcs), Category 3 (>100 pcs)

Site ID	Category	Reason for Category Rating
8	3	Recent car accident - lots of debris

Types of Trash Observed (check all that apply)

- | | | |
|---|---|---|
| <input checked="" type="checkbox"/> Plastic/Styrofoam | <input type="checkbox"/> Paper Products/Biodegradable | <input checked="" type="checkbox"/> Household Items |
| <input type="checkbox"/> Landscape Materials | <input checked="" type="checkbox"/> Aluminum/Metal | <input checked="" type="checkbox"/> Automotive |
| <input type="checkbox"/> Toxic/Hazardous/Biohazardous Materials | <input type="checkbox"/> Glass | <input checked="" type="checkbox"/> Agricultural Plastics/Trash |
| Notes: | | <input type="checkbox"/> Other: _____ |

Estimated # of Follow-up Clean-up Events Needed:

N/A

Additional Notes:

Large amount of debris from recent car accident, including mangled fencing + RSBW sign.

Appendix 4. Example Special Cleanup Event Photos

Site 1 – Revolon Slough at Wood Road



Figure 1: Site 1 before a Special Cleanup Event in February, 2017



Figure 2: Site 1 after a Special Cleanup Event in February, 2017

Site 3a-Camarillo Hills Drain Outlet



Figure 3: Site 3a before a Special Cleanup Event in June, 2017



Figure 4: Site 3a after a Special Cleanup Event in June, 2017

Site 5 – Revolon Slough at Etting Road

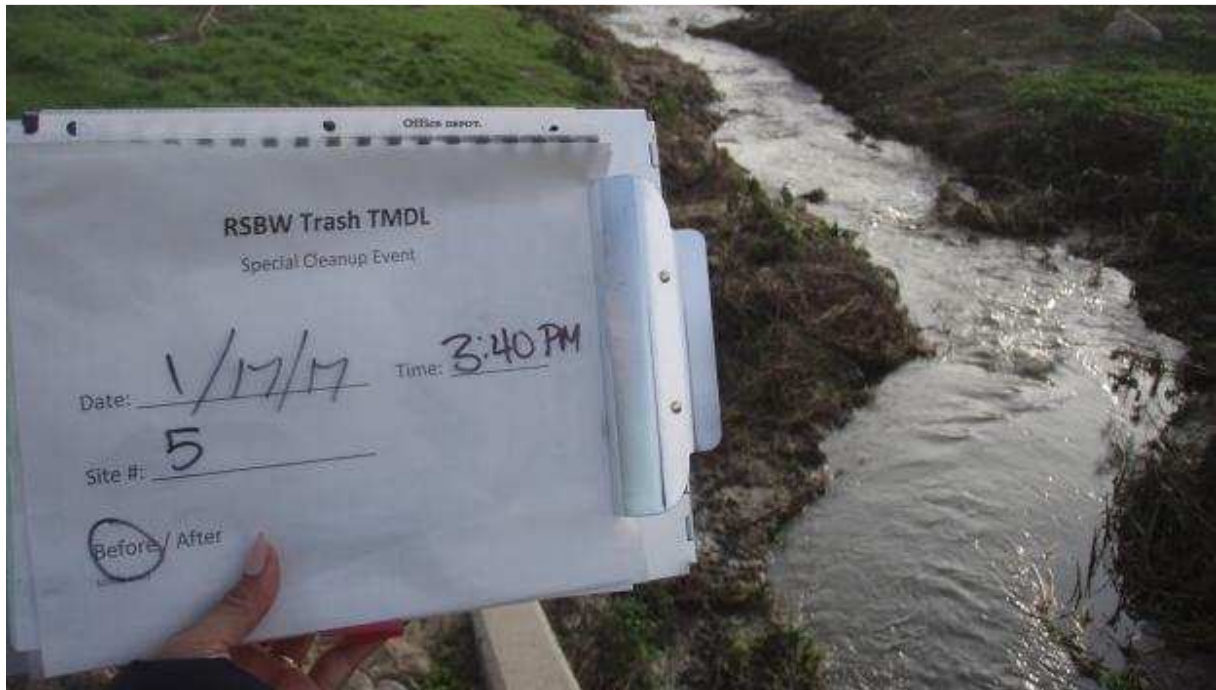


Figure 5: Site 5 before a Special Cleanup Event in January, 2017



Figure 6: Site 5 after a Special Cleanup Event in January, 2017

Site 8 – Caltrans Site on U.S. 101 Freeway



Figure 7: Site 8 before a Special Cleanup Event in June, 2017



Figure 8: Site 8 after a Special Cleanup Event in June, 2017

Site 10 – Revolon Slough at Del Norte Blvd.

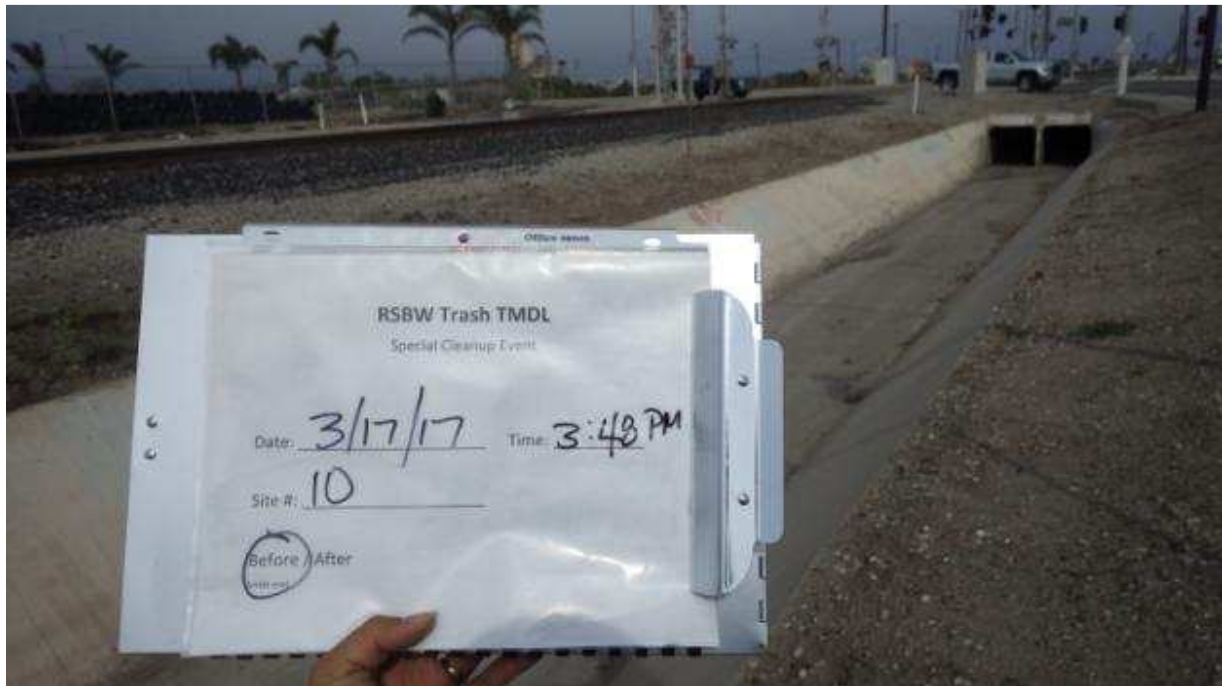


Figure 9. Site 10 before a Special Cleanup Event in March, 2017



Figure 10. Site 10 after a Special Cleanup Event in March, 2017

Appendix 5. City of Camarillo Example Full Capture Device Cleaning Photos



Appendix 6. Example Coastal Cleanup Day Photos







September 11, 2017

Ms. Jenny Newman
TMDL Section Chief
Los Angeles Regional Water Quality Control Board
320 W. 4th St., Suite 200
Los Angeles, California 90013

**SUBJECT: MALIBU CREEK TRASH TMDL ANNUAL REPORT (UPPER MEDEA CREEK
AND UPPER LINDERO CREEK) BASELINE AND ANNUAL REPORT DATED
AUGUST 17, 2017**

Dear Ms. Newman:

Enclosed for your review is the Fifth Malibu Creek Trash TMDL Annual Monitoring Report for monitoring activities conducted between July 1, 2016 and June 30, 2016. This Annual Monitoring Report is being submitted by the County of Ventura (the County), Ventura County Watershed Protection District (the District), and City of Thousand Oaks (the City) as required by the Malibu Creek Trash Total Maximum Daily Load (TMDL), Los Angeles Regional Water Quality Control Board Resolution No. 2008-007. It documents fifth year implementation of the Malibu Creek Watershed Trash Monitoring and Reporting Plan and Minimum Frequency of Assessment and Collection (TMRP/MFAC) program, submitted by the County, the District, and the City on April 30, 2010.

This annual summary report presents the data and analysis of trash loading patterns from the defined assessment areas, an evaluation of the effectiveness of existing Best Management Practices (BMPs), and comparison against the project defined baseline trash Waste Load Allocations.

If you have any comments or questions regarding the attached document, please contact Ewelina Mutkowska at (805) 645-1382 or Paul Jorgensen at (805) 449-2424.

Sincerely,

Glenn Shephard, P.E.
Ventura County Watershed Protection District
Director

Jay T. Spurgin
City of Thousand Oaks
Public Works Director

- c: Renee Purdy, Regional Water Quality Control Board (RWQCB), Regional Programs Chief
Stefanie Hada, RWQCB, Environmental Scientist
Jeff Pratt, Ventura County Public Works Agency (VCPWA), Director
Arne Anselm, Ventura County Watershed Protection District, Deputy Director
Ewelina Mutkowska, VCPWA, Stormwater Program Manager
John Minkel, City of Thousand Oaks, Utilities Superintendent
Paul Jorgensen, City of Thousand Oaks, Environmental Programs Coordinator
Ron Manwill, City of Thousand Oaks, Environmental Programs Analyst

**City of Thousand Oaks
County of Ventura and
Ventura County Watershed Protection District**

**Annual Trash Monitoring and Reporting Plan Report
for the Malibu Creek Watershed**



September 11, 2017

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- A 2016 Volunteer Cleanup Photo
- B 2016 Watershed Friendly Garden Program at Oak Park High School

Introduction

This Annual Report is for the fifth year of Trash Total Maximum Daily Load (TMDL) implementation, July 2015-June 2016. It is submitted by and for the City of Thousand Oaks (the City), the County of Ventura (the County), and the Ventura County Watershed Protection District (the District). This report fulfills requirements specified by the Los Angeles Region Water Quality Control Plan with regard to the Malibu Creek Watershed Trash TMDL, Resolution No. R4-2008-007 (effective July 7, 2009). The trash monitoring results and compliance assessments are reported for point source waste load allocations (WLAs) and non-point source load allocations (LAs). The monitoring efforts that generated these data were conducted according to the Trash Monitoring and Reporting Plan (TMRP) for the Malibu Creek Trash TMDL submitted to Los Angeles Regional Water Quality Control Board (RWQCB) on April 30, 2010.

Additionally, the monitoring data were evaluated to identify trends and factors that may help explain trash loading such as:

- Variation in monthly and yearly trash accumulation data;
- Comparison between monthly collected trash data and records of extreme weather events;
- Possible loading sources; and
- Effectiveness of the Minimum Frequency of Assessment and Collection and Best Management Practice (MFAC/BMP) program.

Based on a review of these factors, recommendations for modifications to improve BMP effectiveness or revisions to the MFAC schedule may be made.

Overview

To monitor and take steps to reduce watershed impairment by trash in Lindero and Medea Creeks, a TMRP was devised with representative locations so that trash accumulation and reduction of the baseline waste load allocations (WLAs) within the TMDL areas could be assessed. The assessment locations were selected at the lowest point of flow in each subwatershed where creek morphology is conducive to the accumulation of trash deposits. These locations were also judged to be accessible and safe for entry.

During this reporting period, critical weather events such as high winds and sufficiently significant rainstorms were tracked and recorded; however due to unsafe conditions no sampling during critical weather events were conducted. The collected monthly trash data were assessed and compared to critical weather dates for assessment of weather impact

to trash accumulation. As specified in the TMRP, a minimum of one collection per month was completed at each site, as summarized in Table 1.

Table 1. Collection Date Summary

Monitoring Date	Lindero Creek Reach 2, LC-1	Medea Creek Reach 2, MC-1
7/10/15	X	X
8/10/15	X	X
9/22/15	X	X
10/30/15	X	X
11/19/15	X	X
12/7/15	X	X
1/21/16	X	X
2/19/16	X	X
3/30/16	X	X
4/24/16	X	X
5/12/16	X	X
6/15/16	X	X

Assessment Area Characteristics

A detailed review of land uses in a drainage area offers suggests potential trash sources and likely activities responsible for inappropriate disposal of trash.

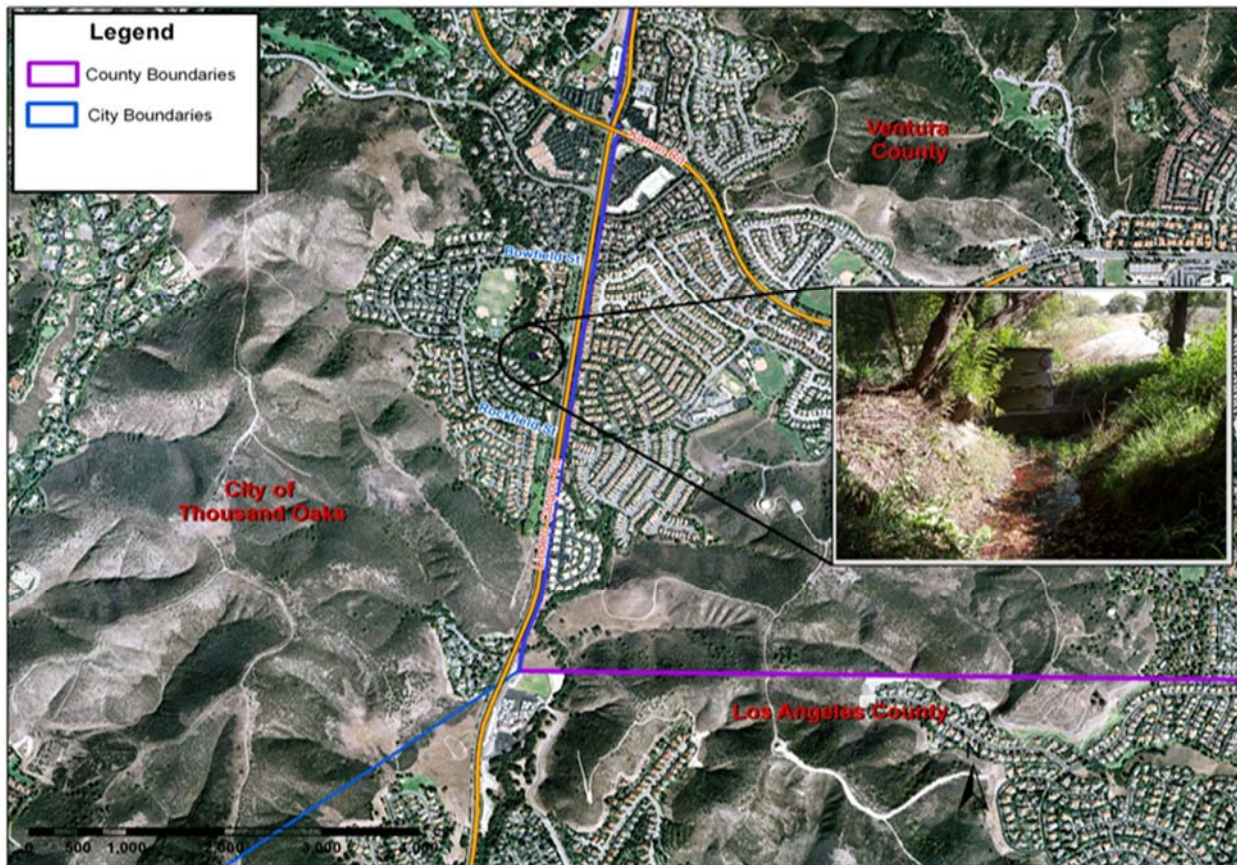
Lindero Creek Subwatershed

The area within the City of Thousand Oaks jurisdiction with drainage to Reach 2 of Lindero Creek is 2.08 square miles. A breakdown of land uses in this area is: 49.0% open space, 44.7% residential; 6.2% public and institutional lands (includes a golf course and parks); and 1.3% commercial. The population is estimated to be 1,970 persons. Areas in unincorporated Ventura County also have drainage to Lindero Creek. This area is 0.9 square miles. The land uses of this area are 9.5% commercial; 49.7% residential; and 40.8% open space. Population data for unincorporated portion of this subwatershed is not available.

The Lindero Creek assessment site is a debris basin with a creek that is typified as a braided flow that converges at a perforated stand pipe for below flood-stage discharges that bypass the overflow structure. Reduced slope at the debris basin, in addition to the standpipe's size restriction, promotes trash and debris accumulation in the flood plain. The location of the Lindero Creek assessment area is shown in Figure 1.

Visual inspections conducted by the City staff have shown that popular recreation areas and areas close to schools have a higher potential for litter generation. Observed trash was dominated by food-related packaging remains.

Figure 1. Lindero Creek Assessment Site Map (LC1)



Medea Creek Subwatershed

The area within County unincorporated community of Oak Park with drainage to Reach 2 of Medea Creek is 3.32 square miles. A breakdown of land uses for this area is: 6.9% commercial and community facilities; 30.1% residential; and 63.0% open space. The population in Oak Park is about 13,800. Oak Park offers several recreational parks, namely Medea Creek Park, Chaparral Park, Mae Boyar Park, and Sunrise Meadows Open Space owned by Rancho Simi Recreation and Park District. Medea Creek Park and Chaparral Park are directly adjacent to Medea Creek. Within Oak Park, there are also three elementary schools, one middle school, three high schools, and one preschool under jurisdiction of Oak Park Unified School District.

Medea Creek follows a single flow path as it moves through the assessment area. When flow levels rise due to a storm event, the stream configuration causes bank overflow and deposition of transported trash and debris onto an existing flood plain that is part of the assessment area. The Medea Creek assessment site is shown in Figure 2.

Figure 2. Medea Creek Assessment Site (MC1) Map



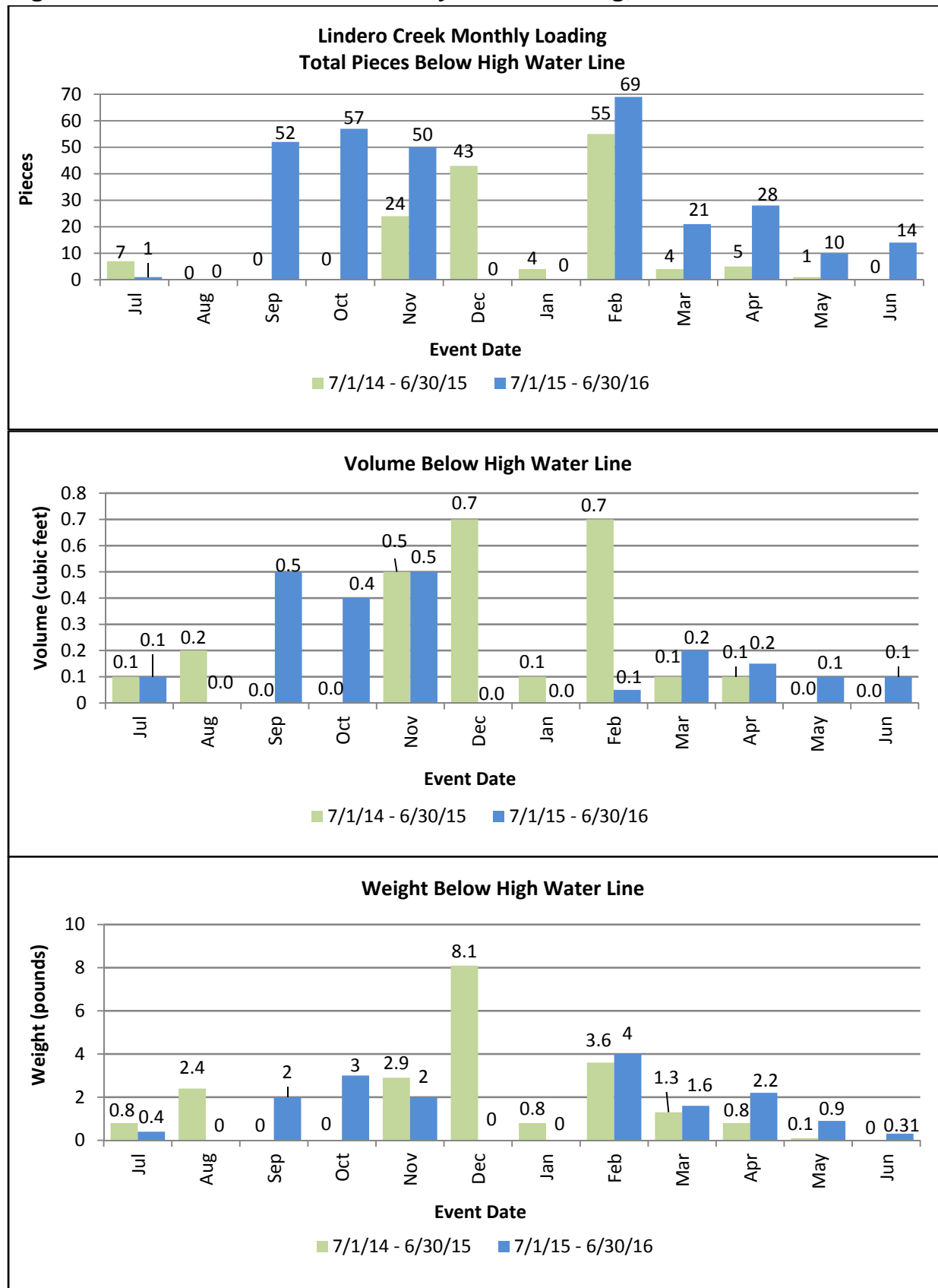
Evaluation of Trash Loading

Comparison of monthly amounts of litter collected at the assessment areas helps identify temporal patterns and impact of weather events on the loading. Using three evaluation matrices (piece, weight, and volume) can reveal something different about the sources and activities causing the loading, as well as the modes of trash transport. Figures 3 and 4 show the monthly amount of collected litter measured and expressed by three different metrics over this reporting period.

Lindero Creek

As presented in Figure 3, July and August were almost devoid of trash at the assessment site for Lindero Creek. Collection events in September, October and November, and February by contrast, had relatively high piece counts. Litter found in the LC1 assessment area was nil for December and January. February had the highest piece-count with March and April having had moderate counts. May and June had relatively low counts. The volume metric of litter shows that September, October, and November had the greatest peaks. March and April had moderate volume peaks. For the weight metric, September, October, November, and April had moderately high, respective peaks. February had the highest peak for the weight metric.

Figure 3. Current & Prior Year Monthly Trash Loading, LC1



Medea Creek

Similar to LC1, July and August had nearly no trash pieces. Peak monthly piece counts at MC1 (Figure 4) occurred in September, October, and January. A moderate levels of trash pieces were determined for all the other months. Volume peaks were seen only in January and February. For the weight metric, the peak loading occurred in October, January, and February; however, November, December and May and June had moderate levels of trash weights.

A comparison of piece counts at the two assessment locations reveals two similar patterns. July and August had nearly no trash pieces at both assessment areas. Secondly, September and October peak levels were common to both assessment areas. The relatively high November peak at LC1 was, however, only a moderate peak at MC1. February's extreme peak at LC1 was also different from the timing of extreme peak at MC1 that occurred in January. Despite these differences, the pattern during the wet and windy months was similar enough to confirm that weather transport is a significant contributor to the trash loading. In general, the reasonably similar pattern of peak levels (pieces) seen at both sites was not simply the result of a random dynamic. There was also enough difference in the pattern of peak levels to support previous observation that trash and litter accumulation was controlled by additional factors, a viewpoint derived in earlier TMRP reports.

Trash Profile: High Frequency Categories

Reviewing the relative contribution of litter by category indicates the types of litter and the relative contribution of each to the annual loading. Figures 5 and 6 depict the relative amounts of annual trash by category for LC1 and MC1, respectively.

Trash Categories at Lindero Creek

As shown in Figure 5, categories of trash that make up the largest portion of the loading at LC1 were Other/Unknown (small fragments), Sporting Goods, Plastic Bags, and Wrappers (usually plastic).

Trash Categories at Medea Creek

As seen in Figure 6, Other/Unknown, Wrappers, and Shattered Glass were the types of litter materials that were most often found at MC1.

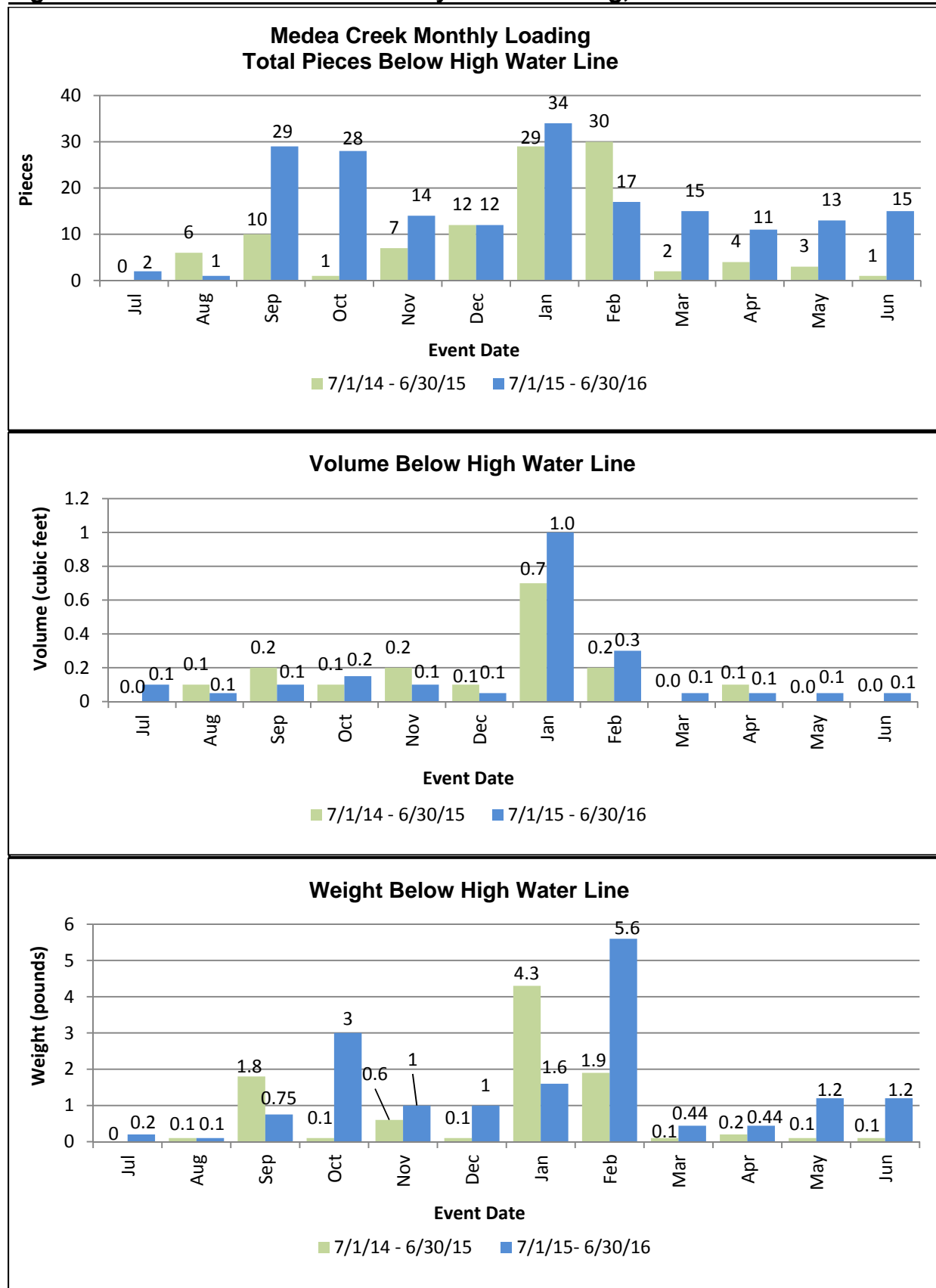
Figure 4. Current & Prior Year Monthly Trash Loading, MC1

Figure 5. Lindero Creek Trash Composition

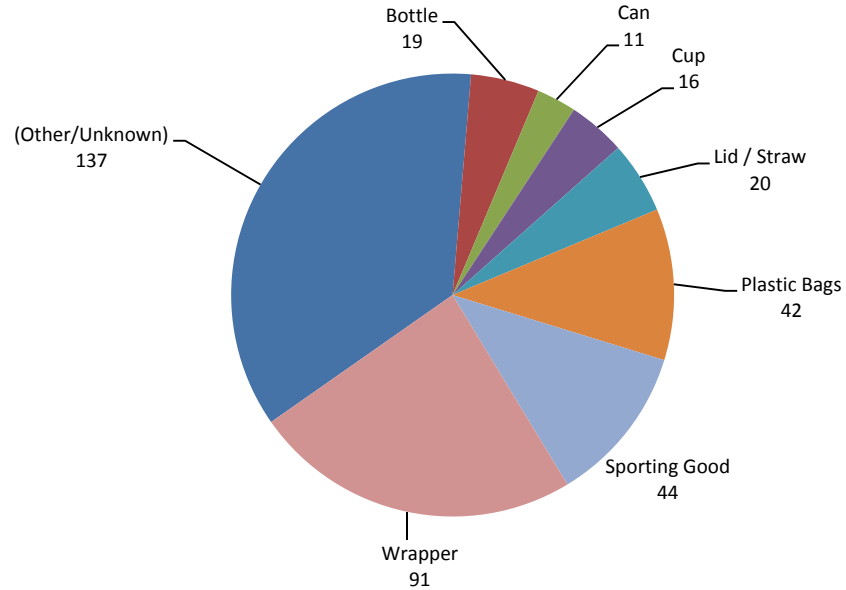
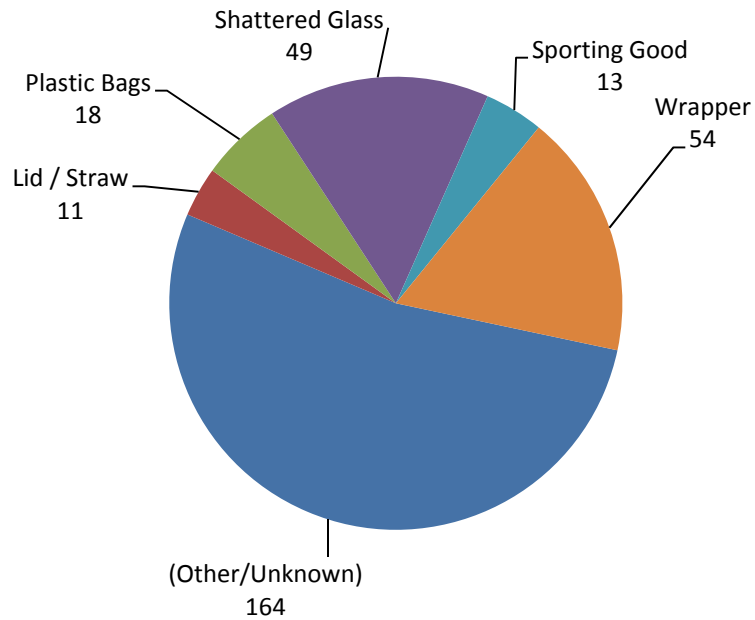


Figure 6. Medea Creek Trash Composition



Critical Weather Events

All critical weather events were tracked so that a comparison could be made with monthly trash loading values to determine if there is any correlation. Note - to obtain adequately sized data sets to determine weather impact on trash loading, the critical event thresholds in the TMRP were modified to the levels shown in Table 2. Because these values are less than the critical weather thresholds in the TMRP, the evaluation is more conservative and no data is lost.

Table 2 shows the high intensity weather events that could have had a bearing on trash and litter transport. An evaluation of the months with the greatest frequency of critical weather events shows that February had the most overall critical weather events including 6 windy days and 1 rain event. April was second with 4 high-wind days and 2 rain storms followed by January and March with 5 critical weather events each.

Unexpectedly, September had a storm event with the largest amount of precipitation occurring over a 24-hour period. It was the first event that swiped trash and litter accumulated during dry months of late spring and summer 2015.

Table 2. Critical Wind and Rain Events

Wind Events*		Rain Events	Wind Events		Rain Events
Date	Speed, > 20 mph	Depth $\geq 0.15"$	Date	Speed, > 20 mph	Depth $\geq 0.15"$
9/14/15		0.87	2/5/16	21	
10/18/15	23		2/6/16	24	
10/30/15	21		2/7/16	29	
11/6/15	24		2/8/16	28	
11/15/15	21		2/16/16		0.24
12/18/15		0.15	3/6/16	24	0.43
12/14/15	21		3/7/16	28	
12/22/15	26		3/10/16		0.37
12/26/15	23		3/11/16	22	
12/31/15	21		3/29/16	25	
1/4/16		0.70	4/6/16	22	
1/5/16		0.59	4/7/16		0.18
1/6/16		0.17	4/15/16	26	
1/30/16		0.64	4/25/16	25	
1/31/16	26		4/27/16	24	
2/4/16	23		5/5/16		0.57

*Weather information was gathered from the California Data Exchange Center, Station ID TOK located in Thousand Oaks.

Figures 7 through 10 show the timing of critical weather events with respect to the dates of the monthly collection events, Figures 7 and 8 present data for Lindero Canyon (LC1) and Figures 9 and 10 for Medea Creek (MC1).

The first significant rain event of the season was followed by high amounts of trash collected in September 2015 at both assessment locations (Figures 7 and 9). Windy conditions in October and November, appear to contribute to elevated trash amounts at both locations as well (Figures 8 and 10).

Combination of wind and rain may have contributed to the highest amount of trash collected at LC1 in February 2016 (Figures 7 and 8) and at MC1 in January (Figures 9 and 10).

Figure 7. Rain Effect Analysis on Loading at LC1

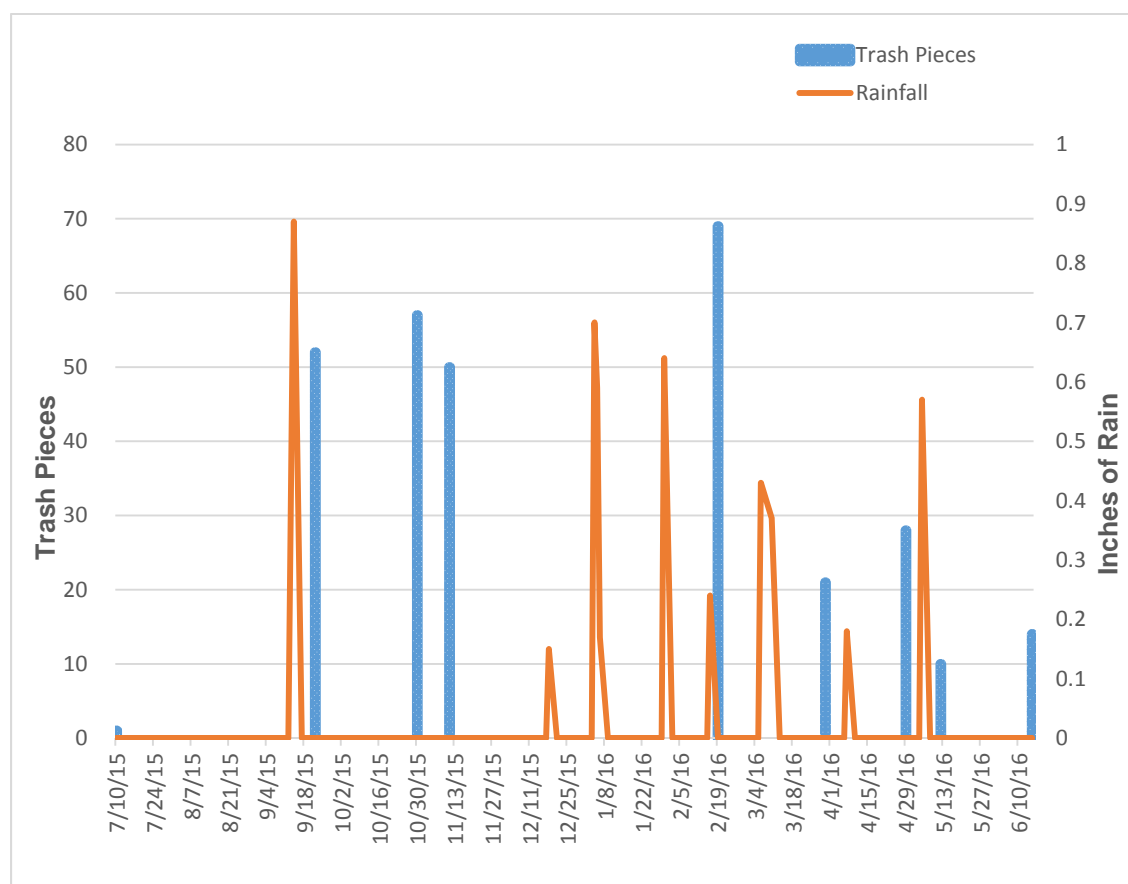


Figure 8. Wind Effect Analysis on Loading at LC1

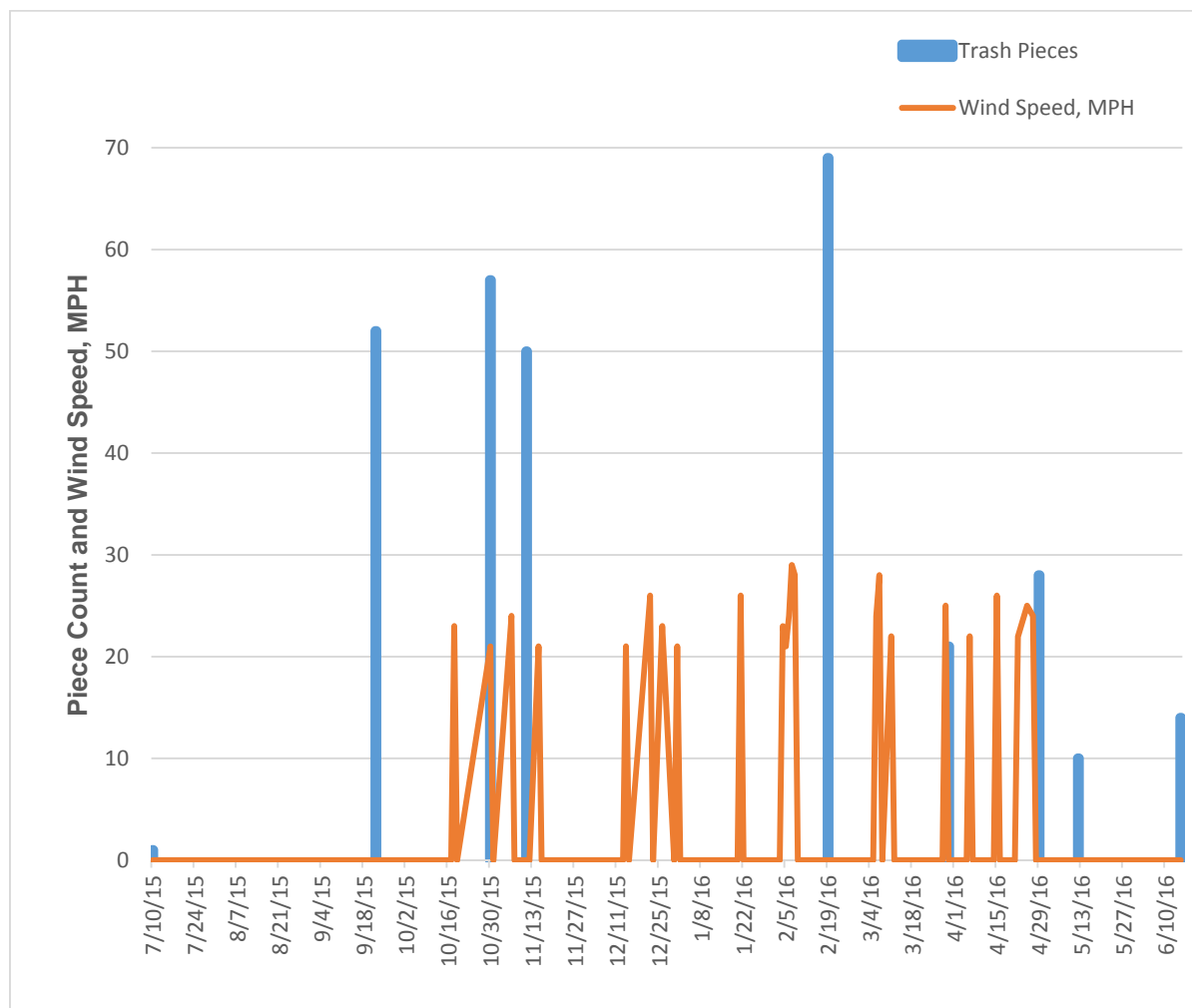


Figure 9. Rain Effect Analysis on Loading at MC1

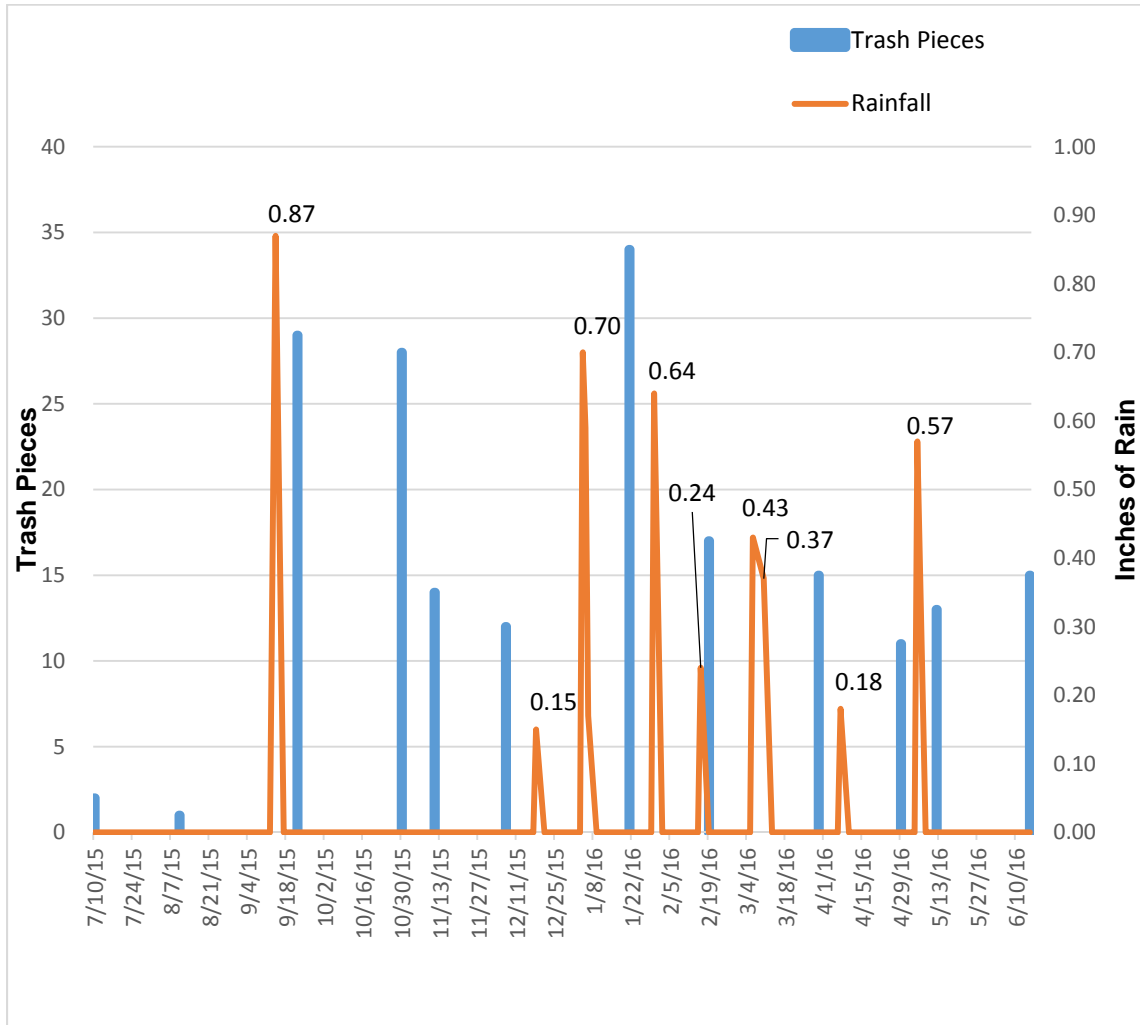
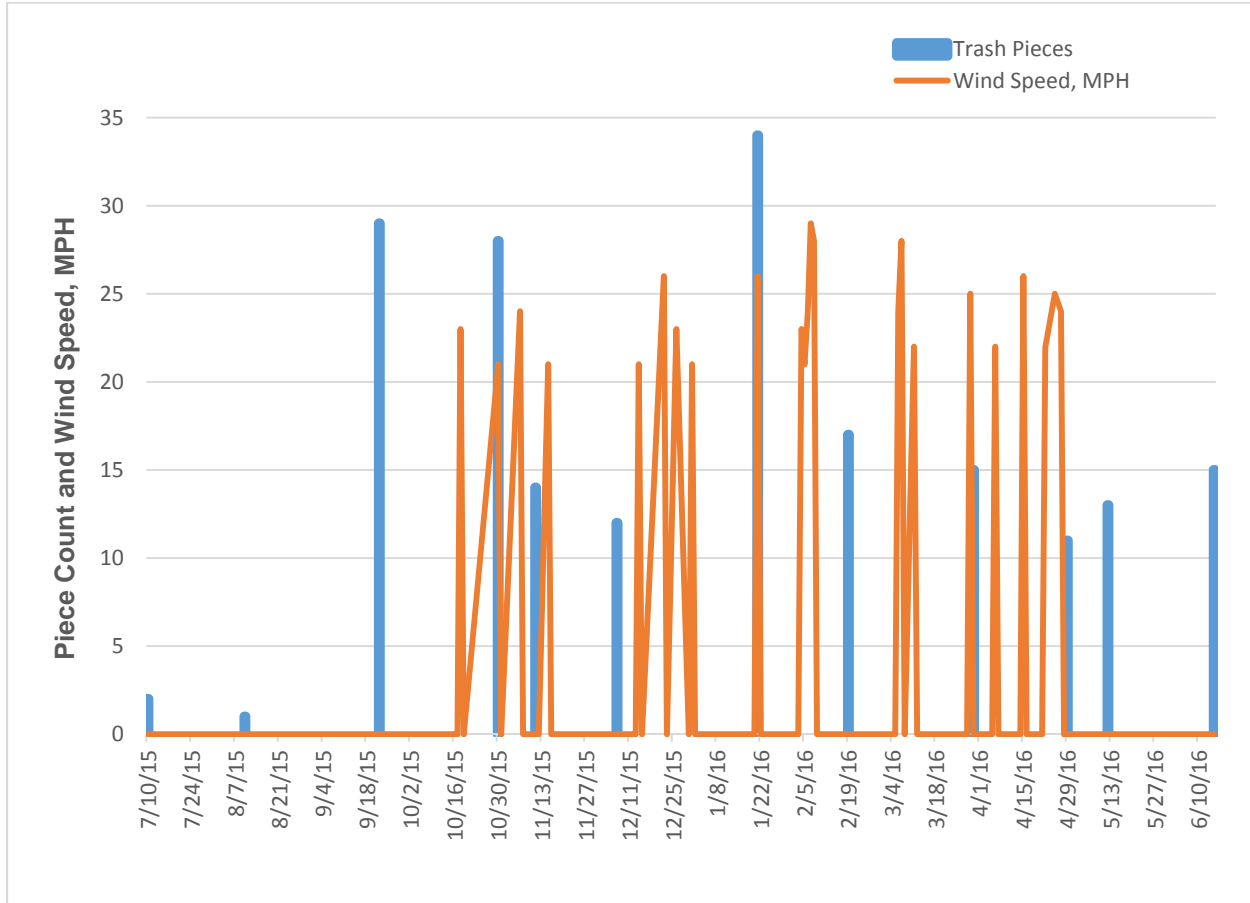


Figure 10. Wind Effect Analysis on Piece Loading at MC1

Volunteer Cleanup Events

Volunteer trash removal was done to control non-point source trash in the subwatersheds draining to Malibu Creek Watershed by preempting its transport to a municipal separate storm sewer system (MS4). Table 3 summarizes trash, litter, and debris cleanup events done during the annual cycle of this report.

Table 3. Volunteer Litter Cleanups

Date	Volunteers	Location	Pounds Removed
8/7/15	5	Lindero Creek headwater areas	Unknown - see photo in Appendix A
10/10/15	47	Upstream MC1 assessment area	148

Annual Trash and Debris Loading

The amount of litter collected at the assessment sites each month is summarized in Table 4. Annual totals were included so that these values can be compared to the point source WLAs in effect for each site.

Table 4. Annual Trash Loading at LC1 and MC1

Date	Site: LC1			Site: MC1		
	Piece Count	Volume, c.f.	Weight lbs.	Piece Count	Volume, c.f.	Weight lbs.
7/10/15	1	0.1	0.4	2	0.05	0.1
8/10/15	0	0	0	1	0.05	0.1
9/22/15	52	0.5	2.0	29	0.1	0.75
10/30/15	57	0.4	3.0	28	0.15	3.0
11/19/15	50	0.5	2.0	14	0.1	1.0
12/7/15	0	0	0	12	0.05	1.0
1/21/16	0	0	0	34	1.0	1.6
2/19/16	69	0.05	4.0	17	0.3	5.6
3/30/16	21	0.2	1.6	15	0.05	0.44
4/24/16	28	0.15	2.2	11	0.05	0.44
5/12/16	10	0.1	0.9	13	0.05	1.2
6/15/16	14	0.1	0.3	15	0.05	1.2
Total	302	2.1	16.4	191	2.0	16.4

Waste Load Allocation Compliance

Values for annual loading at the Lindero and Medea Creek assessments sites were compared with the point source WLAs for each of the three metrics (Table 5).

Table 5. Point Source WLA Compliance

Data Compliance	Lindero Creek			Medea Creek		
	Pieces	Vol., c.f.	Weight, pounds	Pieces	Vol., c.f.	Weight, pounds
Original Baseline	902	13.4	69	970	7.2	16.3
60% Reduction due 7/7/15	361	5.4	27.6	388	2.9	6.5
2015-16 Annual Loading	302	3.4	26.4	191	2.0	16.4
% Reduction 2015-16 Annual Loading from Baseline	67	75	62	80	72	-0.6

Data in Table 5 show that assessment site LC1 meets the point source WLAs for all trash and litter metrics. Data from this table show that MC1 was in compliance for the pieces and volume metrics, but in excess of the WLA for weight (shown in bold type).

BMP Evaluation

Existing BMPs were done over the course of the year and were reasonably effective at preventing an accumulation of trash in most areas. The BMPs currently in use in areas surrounding and including assessment sites LC1 and MC1 include:

City of Thousand Oaks

- Catch basin cleaning - Catch basins are inspected annually. If trash has accumulated to 25% or more of the unit's capacity, it is cleaned by a vector truck.
- Street sweeping - All residential areas (public and private) are swept 19 times per year and commercial areas are swept once per week.
- Open channel storm drain maintenance: All city-maintained channels are inspected and cleaned as required once per year, prior to the wet season.
- Public Event Litter Control - A recycling plan is required when obtaining a permit for staging public events. This plan requires adequate facilities for trash collection and disposal and reclamation of recyclable materials.

- Public areas - Trash receptacles have been placed at public use areas. These devices are monitored and emptied regularly.
- Freeway Ramp and Interchange Collection Program - The City pays for trash and debris collection at freeway on-ramps and exits and from the freeway interchange.
- Free Landfill Day - The City sponsors two days one in April and one in September when residents may take waste and recyclables, including electronics, to the Simi Valley Landfill for free disposal.
- The City-sponsored “Neighborhood Cleanup Program” provides 40-yard dumpsters and free disposal to residential neighborhoods desiring to organize and conduct cleanup events.
- Residents may safely and legally dispose of household hazardous waste at the City’s Hazardous Waste Collection Facility on Fridays and Saturdays. In addition, the City provides household battery collection services at twelve locations.
- Thousand Oaks residents may dispose of up to four “bulky items” per year, such as appliances, mattresses and old furniture, simply by calling their trash company and arranging for free pickup.
- Thousand Oaks Municipal Code Sec.7-8.201 (7) prohibits the disposal and accumulation of trash in public and private areas.
- Catch basins are labeled “Drains to Creek, Do Not Dump” or “Drains to Lake, Do Not Dump.”
- Public outreach/education addressing trash pollution is conducted at multiple public events, through radio and newspapers ads, and on the City’s website.
- Utility bill inserts - Promotional inserts are used to advertise Coastal Clean-up Day, Community Clean-up Day, Free Landfill Day, and other City-sponsored trash reduction/clean-up programs.

County of Ventura and VCWPD

- In July 2017, thirty-five (35) full trash capture devices (connector pipe screens) were installed within high trash areas of County unincorporated areas for the TMDL point-source compliance. More details will be provided in next Annual Report.
- Catch basin cleaning - Catch basins are inspected at least once a year and cleaned when filled to 25% or more of the catch basin’s capacity. During the storm season, all drainage facilities are inspected and cleaned as necessary.

- Ventura County's catch basins are labeled, "Don't Pollute, Flows to Waterways."
- Open channel storm drain maintenance - All channels owned and maintained by VCWPD are cleared, inspected, and cleaned as required, at least once per year.
- "Big Sunday" event took place on May 1, 2016. It was another event under on-going program "Annual Big Sunday Trash Removal and Catch Basin Stenciling" (first Sunday of each May) organized by the Oak Park Unified School District, see Appendix A.
- In Fall 2016, the County sponsored 5-part Watershed Friendly Garden™ program, which was open and free to the general public to increase drought awareness and promote water conserving approaches to landscaping. Hands-on workshops were conducted by experts that assisted participants with how to design and implement such gardens. These landscapes can decrease runoff to lessen the potential of trash transport (Appendix B).
- Trash Management at Public Events - A trash and litter management plan is required when obtaining a permit for staging public events. This plan requires adequate facilities for trash collection and disposal.
- Public areas - Trash receptacles have been placed within high trash generation areas. These devices are cleaned and maintained regularly to prevent trash overflow.
- The amended Ventura County Stormwater Quality Management Ordinance for Unincorporated Areas (Ventura County Ordinance No. 4450) has been in effect since August 2012. It includes litter and trash specific prohibitions (§ 6942) on the discharge or deposition of trash that may enter the County storm drain system or receiving waters. The revised ordinance includes increased civil penalties for violations and provisions for issuing administrative fines, recovery of costs, and misdemeanor violations.
- The County and VCWPD participate in the Ventura Countywide Stormwater Quality Management Program that provides outreach and education facilitated by contracted services from "The Agency," a professional advertisement group that designs and conducts countywide, bilingual outreach programs advocating proper trash disposal. Outreach includes social media messages about litter prevention and the protection of stormwater quality.
- The County conducts commercial, industrial, and construction facility/site inspections to ensure pollution prevention BMPs are adequate and maintained and to educate employees about the importance of pollution prevention.

Recommended/Future BMPs

Ongoing activities by each responsible agency continue to assess and improve litter control in urban and recreational areas.

Lindero Creek

Catch basin loading survey was conducted to evaluate maintenance procedures and currently used BMPs.

Additional BMPs:

- Thousand Oaks is in the process of retrofitting 28 catch basins with full-capture devices at catch basins identified in the loading survey.

Medea Creek

The County successfully secured funding under Proposition 84 Stormwater Grant Program for an Oak Park Green Streets Retrofit project. Ten modular wetlands and two biofilters will be installed in the Oak Park located within Medea Creek subdrainage area. The ten modular wetlands are being installed with completion scheduled for October 30, 2017.

MFAC Program Changes

No changes to the MFAC plan are currently recommended.

Appendix A
2016 Volunteer Cleanup Photos



Lindero Creek Cleanup



2016 Big Sunday Participant Photo

Appendix B
2016 Watershed Friendly Garden Program at Oak Park High School

**WATERSHED FRIENDLY GARDEN
PROGRAM AT
OAK PARK HIGH SCHOOL**

September 10, 2016 through October 22, 2016

Ventura County Public Works Agency's Watershed Protection District
Oak Park Unified School District & Oak Park High School

Surfrider Foundation & Green Gardens Group (G3)

G3 Instructors: Kathy Nolan, ASLA; John Tikotsky, ASLA;
Laura Bauer, Natasha Elliott, and Jan Bird

Dufau Landscaping, Inc.



Funding has been provided in full or in part through an agreement with the State Water Resources Control Board.



**Surfrider
Foundation**



**Watershed Friendly
Garden Program**

1st Seminar: Get the Basics
September 24, 2016

Instructor:
Kathy Nolan, Green Garden Group

47 Participants at Oak Park High School



Watershed Friendly Garden Program

2nd Seminar: Evaluate the Site
October, 1 2016

Instructor:

Jan Bird and Laura Bauer, Green Gardens Group

49 Participants at Oak Park High School



Watershed Friendly Garden Program

3rd Seminar: Landscape Design
October 8, 2016

Instructor:

Kathy Nolan and Natasha Elliott, Green Gardens Group

49 Participants at Oak Park High School



Watershed Friendly Garden Program

4th Seminar: Lawn Be Gone
– Build Soil and Capture Rain
October 29, 2016

Instructor:

John Tikotsky and Jan Bird, Green Garden Group

24 Participants at Oak Park High School



Watershed Friendly Garden Program

5th Seminar: Planting and Irrigation
November 5, 2016

Instructor:

John Tikotsky and Jan Bird, Green Garden Group

23 Participants at Oak Park High School



**Oak Park High School
Watershed Friendly Garden
Completion
November 30, 2016**



**Watershed Friendly Garden at Oak Park High School
September - November 2016**



Watershed Friendly Garden Oak Park High School Photos

Spring 2017



Summer 2017



July 24, 2017

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

JEFF PRATT
Agency Director

Central Services Department
J. Tabin Cosio, Director

Engineering Services Department
Christopher Cooper, Director

Transportation Department
David Fleisch, Director

Water & Sanitation Department
Michaela Brown, Director

Watershed Protection District
Glenn Shephard, Director

**Subject: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE
MONITORING FOR VENTURA COUNTY AND CITY OF THOUSAND OAKS**

Dear Dr. Wang:

The table below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of June 2017. Sites were sampled weekly on Tuesdays (June 6, 13, 20), except for one instance when sites were sampled Monday (June 26) due to staffing conflicts. Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with ♦). Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 20 MPN/100ml or for dry weather when no sample was taken.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,


Arne Anselm

Deputy Director, Watershed Protection District

CC: Glenn Shephard, Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)



Table 1. Weekly sampling results

Location	Time	Date	Rain	Single Sample (as sampled)	
					E. coli (235 MPN)
MCW-8b	1230	6/6/2017 ♦		=	40
MCW-8b	1140	6/13/2017 ♦		<	20
MCW-8b	1255	6/20/2017 ♦		<	20
MCW-8b	1230	6/26/2017 ♦		<	20
MCW-9	-	6/6/2017 ♦			Dry
MCW-9	-	6/13/2017 ♦			Dry
MCW-9	-	6/20/2017 ♦			Dry
MCW-9	-	6/26/2017 ♦			Dry
MCW-12	1130	6/6/2017 ♦		=	80
MCW-12	1100	6/13/2017 ♦		=	300
MCW-12	1200	6/20/2017 ♦		=	110
MCW-12	1125	6/26/2017 ♦		=	330
MCW-14b	1040	6/6/2017 ♦		<	20
MCW-14b	1030	6/13/2017 ♦		=	20
MCW-14b	1115	6/20/2017 ♦		=	110
MCW-14b	1030	6/26/2017 ♦		=	78
MCW-15c	1000	6/6/2017 ♦		<	20
MCW-15c	1000	6/13/2017 ♦		=	500
MCW-15c	1040	6/20/2017 ♦		=	110
MCW-15c	940	6/26/2017 ♦		=	1,300
MCW-17	920	6/6/2017 ♦		=	40
MCW-17	935	6/13/2017 ♦		=	230
MCW-17	-	6/20/2017 ♦			Dry
MCW-17	-	6/26/2017 ♦			Dry
MCW-18	-	6/6/2017 ♦			Dry
MCW-18	-	6/13/2017 ♦			Dry
MCW-18	-	6/20/2017 ♦			Dry
MCW-18	-	6/26/2017 ♦			Dry

Notes:

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.

♦ Date of sampling



Table 2. Computation of daily geomean

Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
					E. coli (235 MPN)	E. coli (126 MPN)
MCW-8b	1240	6/1/2017		=	40	285
MCW-8b	1240	6/2/2017		=	40	292
MCW-8b	1240	6/3/2017		=	40	298
MCW-8b	1240	6/4/2017		=	40	305
MCW-8b	1240	6/5/2017		=	40	313
MCW-8b	1230	6/6/2017 ♦		=	40	320
MCW-8b	1230	6/7/2017		=	40	327
MCW-8b	1230	6/8/2017		=	40	301
MCW-8b	1230	6/9/2017		=	40	277
MCW-8b	1230	6/10/2017		=	40	254
MCW-8b	1230	6/11/2017		=	40	234
MCW-8b	1230	6/12/2017		=	40	215
MCW-8b	1140	6/13/2017 ♦		<	10	189
MCW-8b	1140	6/14/2017		<	10	166
MCW-8b	1140	6/15/2017		<	10	152
MCW-8b	1140	6/16/2017		<	10	139
MCW-8b	1140	6/17/2017		<	10	128
MCW-8b	1140	6/18/2017		<	10	118
MCW-8b	1140	6/19/2017		<	10	108
MCW-8b	1255	6/20/2017 ♦		<	10	99
MCW-8b	1255	6/21/2017		<	10	91
MCW-8b	1255	6/22/2017		<	10	84
MCW-8b	1255	6/23/2017		<	10	65
MCW-8b	1255	6/24/2017		<	10	51
MCW-8b	1255	6/25/2017		<	10	40
MCW-8b	1230	6/26/2017 ♦		<	10	31
MCW-8b	1230	6/27/2017		<	10	24
MCW-8b	1230	6/28/2017		<	10	19
MCW-8b	1230	6/29/2017		<	10	18
MCW-8b	1230	6/30/2017		<	10	17
MCW-9		6/1/2017	Dry	<	10	10
MCW-9	-	6/2/2017	Dry	<	10	10
MCW-9	-	6/3/2017	Dry	<	10	10
MCW-9	-	6/4/2017	Dry	<	10	10
MCW-9	-	6/5/2017	Dry	<	10	10
MCW-9	-	6/6/2017 ♦	Dry	<	10	10
MCW-9	-	6/7/2017	Dry	<	10	10
MCW-9	-	6/8/2017	Dry	<	10	10
MCW-9	-	6/9/2017	Dry	<	10	10
MCW-9	-	6/10/2017	Dry	<	10	10
MCW-9	-	6/11/2017	Dry	<	10	10
MCW-9	-	6/12/2017	Dry	<	10	10
MCW-9	-	6/13/2017 ♦	Dry	<	10	10
MCW-9	-	6/14/2017	Dry	<	10	10



Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
				E. coli		E. coli
				(235 MPN)		(126 MPN)
MCW-9	-	6/15/2017	Dry	<	10	10
MCW-9	-	6/16/2017	Dry	<	10	10
MCW-9	-	6/17/2017	Dry	<	10	10
MCW-9	-	6/18/2017	Dry	<	10	10
MCW-9	-	6/19/2017	Dry	<	10	10
MCW-9	-	6/20/2017 ♦	Dry	<	10	10
MCW-9	-	6/21/2017	Dry	<	10	10
MCW-9	-	6/22/2017	Dry	<	10	10
MCW-9	-	6/23/2017	Dry	<	10	10
MCW-9	-	6/24/2017	Dry	<	10	10
MCW-9	-	6/25/2017	Dry	<	10	10
MCW-9	-	6/26/2017 ♦	Dry	<	10	10
MCW-9	-	6/27/2017	Dry	<	10	10
MCW-9	-	6/28/2017	Dry	<	10	10
MCW-9	-	6/29/2017	Dry	<	10	10
MCW-9	-	6/30/2017	Dry	<	10	10
MCW-12	1000	6/1/2017		=	40	236
MCW-12	1000	6/2/2017		=	40	224
MCW-12	1000	6/3/2017		=	40	214
MCW-12	1000	6/4/2017		=	40	204
MCW-12	1000	6/5/2017		=	40	194
MCW-12	1130	6/6/2017 ♦		=	80	189
MCW-12	1130	6/7/2017		=	80	185
MCW-12	1130	6/8/2017		=	80	177
MCW-12	1130	6/9/2017		=	80	169
MCW-12	1130	6/10/2017		=	80	162
MCW-12	1130	6/11/2017		=	80	155
MCW-12	1130	6/12/2017		=	80	148
MCW-12	1100	6/13/2017 ♦		=	300	148
MCW-12	1100	6/14/2017		=	300	148
MCW-12	1100	6/15/2017		=	300	162
MCW-12	1100	6/16/2017		=	300	177
MCW-12	1100	6/17/2017		=	300	194
MCW-12	1100	6/18/2017		=	300	213
MCW-12	1100	6/19/2017		=	300	233
MCW-12	1200	6/20/2017 ♦		=	110	246
MCW-12	1200	6/21/2017		=	110	261
MCW-12	1200	6/22/2017		=	110	276
MCW-12	1200	6/23/2017		=	110	234
MCW-12	1200	6/24/2017		=	110	198
MCW-12	1200	6/25/2017		=	110	168
MCW-12	1125	6/26/2017 ♦		=	330	147
MCW-12	1125	6/27/2017		=	330	129
MCW-12	1125	6/28/2017		=	330	114



Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
					E. coli (235 MPN)	E. coli (126 MPN)
MCW-12	1125	6/29/2017		=	330	122
MCW-12	1125	6/30/2017		=	330	131
MCW-14b	1040	6/1/2017		=	20	73
MCW-14b	1040	6/2/2017		=	20	71
MCW-14b	1040	6/3/2017		=	20	69
MCW-14b	1040	6/4/2017		=	20	68
MCW-14b	1040	6/5/2017		=	20	66
MCW-14b	1040	6/6/2017 ♦		<	10	63
MCW-14b	1040	6/7/2017		<	10	60
MCW-14b	1040	6/8/2017		<	10	54
MCW-14b	1040	6/9/2017		<	10	48
MCW-14b	1040	6/10/2017		<	10	43
MCW-14b	1040	6/11/2017		<	10	39
MCW-14b	1040	6/12/2017		<	10	35
MCW-14b	1030	6/13/2017 ♦		=	20	33
MCW-14b	1030	6/14/2017		=	20	30
MCW-14b	1030	6/15/2017		=	20	30
MCW-14b	1030	6/16/2017		=	20	30
MCW-14b	1030	6/17/2017		=	20	30
MCW-14b	1030	6/18/2017		=	20	30
MCW-14b	1030	6/19/2017		=	20	30
MCW-14b	1115	6/20/2017 ♦		=	110	32
MCW-14b	1115	6/21/2017		=	110	34
MCW-14b	1115	6/22/2017		=	110	36
MCW-14b	1115	6/23/2017		=	110	34
MCW-14b	1115	6/24/2017		=	110	33
MCW-14b	1115	6/25/2017		=	110	32
MCW-14b	1030	6/26/2017 ♦		=	78	30
MCW-14b	1030	6/27/2017		=	78	29
MCW-14b	1030	6/28/2017		=	78	27
MCW-14b	1030	6/29/2017		=	78	29
MCW-14b	1030	6/30/2017		=	78	30
MCW-15c	1000	6/1/2017		=	40	156
MCW-15c	1000	6/2/2017		=	40	155
MCW-15c	1000	6/3/2017		=	40	155
MCW-15c	1000	6/4/2017		=	40	154
MCW-15c	1000	6/5/2017		=	40	154
MCW-15c	1000	6/6/2017 ♦		<	10	146
MCW-15c	1000	6/7/2017		<	10	139
MCW-15c	1000	6/8/2017		<	10	128
MCW-15c	1000	6/9/2017		<	10	117
MCW-15c	1000	6/10/2017		<	10	108
MCW-15c	1000	6/11/2017		<	10	99
MCW-15c	1000	6/12/2017		<	10	91
MCW-15c	1000	6/13/2017 ♦		=	500	95



Location		Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
				E. coli		E. coli
				(235 MPN)		(126 MPN)
MCW-15c	1000	6/14/2017		=	500	99
MCW-15c	1000	6/15/2017		=	500	102
MCW-15c	1000	6/16/2017		=	500	104
MCW-15c	1000	6/17/2017		=	500	107
MCW-15c	1000	6/18/2017		=	500	110
MCW-15c	1000	6/19/2017		=	500	113
MCW-15c	1040	6/20/2017 ♦		=	110	110
MCW-15c	1040	6/21/2017		=	110	107
MCW-15c	1040	6/22/2017		=	110	105
MCW-15c	1040	6/23/2017		=	110	98
MCW-15c	1040	6/24/2017		=	110	92
MCW-15c	1040	6/25/2017		=	110	86
MCW-15c	940	6/26/2017 ♦		=	1,300	88
MCW-15c	940	6/27/2017		=	1,300	89
MCW-15c	940	6/28/2017		=	1,300	90
MCW-15c	940	6/29/2017		=	1,300	102
MCW-15c	940	6/30/2017		=	1,300	114
MCW-17	920	6/1/2017		=	800	178
MCW-17	920	6/2/2017		=	800	201
MCW-17	920	6/3/2017		=	800	227
MCW-17	920	6/4/2017		=	800	257
MCW-17	920	6/5/2017		=	800	291
MCW-17	920	6/6/2017 ♦		=	40	298
MCW-17	920	6/7/2017		=	40	305
MCW-17	920	6/8/2017		=	40	292
MCW-17	920	6/9/2017		=	40	280
MCW-17	920	6/10/2017		=	40	269
MCW-17	920	6/11/2017		=	40	258
MCW-17	920	6/12/2017		=	40	247
MCW-17	935	6/13/2017 ♦		=	230	251
MCW-17	935	6/14/2017		=	230	256
MCW-17	935	6/15/2017		=	230	256
MCW-17	935	6/16/2017		=	230	256
MCW-17	935	6/17/2017		=	230	256
MCW-17	935	6/18/2017		=	230	256
MCW-17	935	6/19/2017		=	230	256
MCW-17	-	6/20/2017 ♦	Dry	<	10	230
MCW-17	-	6/21/2017	Dry	<	10	207
MCW-17	-	6/22/2017	Dry	<	10	187
MCW-17	-	6/23/2017	Dry	<	10	162
MCW-17	-	6/24/2017	Dry	<	10	141
MCW-17	-	6/25/2017	Dry	<	10	122
MCW-17	-	6/26/2017 ♦	Dry	<	10	106
MCW-17	-	6/27/2017	Dry	<	10	92
MCW-17	-	6/28/2017	Dry	<	10	80
MCW-17	-	6/29/2017	Dry	<	10	69



Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
				<	E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-17	-	6/30/2017	Dry	<	10	60
MCW-18	-	6/1/2017	Dry	<	10	10
MCW-18	-	6/2/2017	Dry	<	10	10
MCW-18	-	6/3/2017	Dry	<	10	10
MCW-18	-	6/4/2017	Dry	<	10	10
MCW-18	-	6/5/2017	Dry	<	10	10
MCW-18	-	6/6/2017 ♦	Dry	<	10	10
MCW-18	-	6/7/2017	Dry	<	10	10
MCW-18	-	6/8/2017	Dry	<	10	10
MCW-18	-	6/9/2017	Dry	<	10	10
MCW-18	-	6/10/2017	Dry	<	10	10
MCW-18	-	6/11/2017	Dry	<	10	10
MCW-18	-	6/12/2017	Dry	<	10	10
MCW-18	-	6/13/2017 ♦	Dry	<	10	10
MCW-18	-	6/14/2017	Dry	<	10	10
MCW-18	-	6/15/2017	Dry	<	10	10
MCW-18	-	6/16/2017	Dry	<	10	10
MCW-18	-	6/17/2017	Dry	<	10	10
MCW-18	-	6/18/2017	Dry	<	10	10
MCW-18	-	6/19/2017	Dry	<	10	10
MCW-18	-	6/20/2017 ♦	Dry	<	10	10
MCW-18	-	6/21/2017	Dry	<	10	10
MCW-18	-	6/22/2017	Dry	<	10	10
MCW-18	-	6/23/2017	Dry	<	10	10
MCW-18	-	6/24/2017	Dry	<	10	10
MCW-18	-	6/25/2017	Dry	<	10	10
MCW-18	-	6/26/2017 ♦	Dry	<	10	10
MCW-18	-	6/27/2017	Dry	<	10	10
MCW-18	-	6/28/2017	Dry	<	10	10
MCW-18	-	6/29/2017	Dry	<	10	10
MCW-18	-	6/30/2017	Dry	<	10	10

Notes:

Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.

Results of <20 are adjusted to use half the MDL (=10) in the calculation of the geomean

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010

♦ Date of sampling



county of ventura



JEFF PRATT
Agency Director

Central Services Department
J. Tabin Cosio, Director

Engineering Services Department
Christopher Cooper, Director

Transportation Department
David Fleisch, Director

Water & Sanitation Department
Michaela Brown, Director

Watershed Protection District
Glenn Shephard, Director

September 25, 2017

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

Subject: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE
MONITORING FOR VENTURA COUNTY AND CITY OF THOUSAND OAKS

Dear Dr. Wang,

The Table 1 below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of August 2017. Sites were sampled weekly on Tuesdays (August 1, 8, 15, 22 and 29). Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with ♦), refer to Table 2. Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 20 MPN/100ml or for dry weather when no sample was taken.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,

Arne Anselm
Deputy Director, Watershed Protection District

CC: Glenn Shephard, Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)



Table 1. Weekly sampling results

Location	Time	Date	Rain	Single Sample (as sampled)	
					E. coli (235 MPN)
MCW-8b	1245	8/1/2017 ♦		=	2,400
MCW-8b	1250	8/8/2017 ♦			Dry
MCW-8b	1200	8/15/2017 ♦			Dry
MCW-8b	1215	8/22/2017 ♦			Dry
MCW-8b	1220	8/29/2017 ♦			Dry
MCW-9	-	8/1/2017 ♦			Dry
MCW-9	-	8/8/2017 ♦			Dry
MCW-9	-	8/15/2017 ♦			Dry
MCW-9	-	8/22/2017 ♦			Dry
MCW-9	-	8/29/2017 ♦			Dry
MCW-12	1130	8/1/2017 ♦		=	2,200
MCW-12	1200	8/8/2017 ♦		=	220
MCW-12	1115	8/15/2017 ♦			Dry
MCW-12	1125	8/22/2017 ♦			Dry
MCW-12	1130	8/29/2017 ♦			Dry
MCW-14b	1030	8/1/2017 ♦		=	800
MCW-14b	1115	8/8/2017 ♦		=	230
MCW-14b	1030	8/15/2017 ♦		=	9,000
MCW-14b	1045	8/22/2017 ♦		=	500
MCW-14b	1045	8/29/2017 ♦		=	170
MCW-15c	945	8/1/2017 ♦		=	9,000
MCW-15c	1035	8/8/2017 ♦		=	5,000
MCW-15c	945	8/15/2017 ♦		=	9,000
MCW-15c	1000	8/22/2017 ♦		=	2,400
MCW-15c	1000	8/29/2017 ♦		=	270
MCW-17	-	8/1/2017 ♦			Dry
MCW-17	-	8/8/2017 ♦			Dry
MCW-17	-	8/15/2017 ♦			Dry
MCW-17	-	8/22/2017 ♦			Dry
MCW-17	-	8/29/2017 ♦			Dry
MCW-18	-	8/1/2017 ♦			Dry
MCW-18	-	8/8/2017 ♦			Dry
MCW-18	-	8/15/2017 ♦			Dry
MCW-18	-	8/22/2017 ♦			Dry
MCW-18	-	8/29/2017 ♦			Dry

Notes:

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.

♦ Date of sampling



Table 2. Computation of daily geomean

Location	Time	Date	Rain		Single Sample (adjusted for rain, dry and NDs)	Geomean
					E. coli (235 MPN)	E. coli (126 MPN)
MCW-8b	1245	8/1/2017 ♦		=	2,400	14
MCW-8b	1245	8/2/2017		=	2,400	17
MCW-8b	1245	8/3/2017		=	2,400	20
MCW-8b	1245	8/4/2017		=	2,400	24
MCW-8b	1245	8/5/2017		=	2,400	29
MCW-8b	1245	8/6/2017		=	2,400	35
MCW-8b	1245	8/7/2017		=	2,400	42
MCW-8b	1250	8/8/2017 ♦	Dry	<	10	42
MCW-8b	1250	8/9/2017	Dry	<	10	42
MCW-8b	1250	8/10/2017	Dry	<	10	41
MCW-8b	1250	8/11/2017	Dry	<	10	40
MCW-8b	1250	8/12/2017	Dry	<	10	39
MCW-8b	1250	8/13/2017	Dry	<	10	39
MCW-8b	1250	8/14/2017	Dry	<	10	38
MCW-8b	1200	8/15/2017 ♦	Dry	<	10	37
MCW-8b	1200	8/16/2017	Dry	<	10	36
MCW-8b	1200	8/17/2017	Dry	<	10	36
MCW-8b	1200	8/18/2017	Dry	<	10	36
MCW-8b	1200	8/19/2017	Dry	<	10	36
MCW-8b	1200	8/20/2017	Dry	<	10	36
MCW-8b	1200	8/21/2017	Dry	<	10	36
MCW-8b	1215	8/22/2017 ♦	Dry	<	10	36
MCW-8b	1215	8/23/2017	Dry	<	10	36
MCW-8b	1215	8/24/2017	Dry	<	10	36
MCW-8b	1215	8/25/2017	Dry	<	10	36
MCW-8b	1215	8/26/2017	Dry	<	10	36
MCW-8b	1215	8/27/2017	Dry	<	10	36
MCW-8b	1215	8/28/2017	Dry	<	10	36
MCW-8b	1220	8/29/2017 ♦	Dry	<	10	36
MCW-8b	1220	8/30/2017	Dry	<	10	36
MCW-8b	1220	8/31/2017	Dry	<	10	30
MCW-9	-	8/1/2017 ♦	Dry	<	10	10
MCW-9	-	8/2/2017	Dry	<	10	10
MCW-9	-	8/3/2017	Dry	<	10	10
MCW-9	-	8/4/2017	Dry	<	10	10
MCW-9	-	8/5/2017	Dry	<	10	10
MCW-9	-	8/6/2017	Dry	<	10	10
MCW-9	-	8/7/2017	Dry	<	10	10
MCW-9	-	8/8/2017 ♦	Dry	<	10	10
MCW-9	-	8/9/2017	Dry	<	10	10
MCW-9	-	8/10/2017	Dry	<	10	10
MCW-9	-	8/11/2017	Dry	<	10	10
MCW-9	-	8/12/2017	Dry	<	10	10
MCW-9	-	8/13/2017	Dry	<	10	10



Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
				E. coli		E. coli
				(235 MPN)		(126 MPN)
MCW-9	-	8/14/2017	Dry	<	10	10
MCW-9	-	8/15/2017 ♦	Dry	<	10	10
MCW-9	-	8/16/2017	Dry	<	10	10
MCW-9	-	8/17/2017	Dry	<	10	10
MCW-9	-	8/18/2017	Dry	<	10	10
MCW-9	-	8/19/2017	Dry	<	10	10
MCW-9	-	8/20/2017	Dry	<	10	10
MCW-9	-	8/21/2017	Dry	<	10	10
MCW-9	-	8/22/2017 ♦	Dry	<	10	10
MCW-9	-	8/23/2017	Dry	<	10	10
MCW-9	-	8/24/2017	Dry	<	10	10
MCW-9	-	8/25/2017	Dry	<	10	10
MCW-9	-	8/26/2017	Dry	<	10	10
MCW-9	-	8/27/2017	Dry	<	10	10
MCW-9	-	8/28/2017	Dry	<	10	10
MCW-9	-	8/29/2017 ♦	Dry	<	10	10
MCW-9	-	8/30/2017	Dry	<	10	10
MCW-9	-	8/31/2017	Dry	<	10	10
MCW-12	1130	8/1/2017 ♦		=	2,200	166
MCW-12	1130	8/2/2017		=	2,200	177
MCW-12	1130	8/3/2017		=	2,200	188
MCW-12	1130	8/4/2017		=	2,200	198
MCW-12	1130	8/5/2017		=	2,200	208
MCW-12	1130	8/6/2017		=	2,200	219
MCW-12	1130	8/7/2017		=	2,200	230
MCW-12	1200	8/8/2017 ♦		=	220	223
MCW-12	1200	8/9/2017		=	220	217
MCW-12	1200	8/10/2017		=	220	230
MCW-12	1200	8/11/2017		=	220	244
MCW-12	1200	8/12/2017		=	220	258
MCW-12	1200	8/13/2017		=	220	273
MCW-12	1200	8/14/2017		=	220	289
MCW-12	1115	8/15/2017 ♦	Dry	<	10	276
MCW-12	1115	8/16/2017	Dry	<	10	263
MCW-12	1115	8/17/2017	Dry	<	10	237
MCW-12	1115	8/18/2017	Dry	<	10	214
MCW-12	1115	8/19/2017	Dry	<	10	192
MCW-12	1115	8/20/2017	Dry	<	10	173
MCW-12	1115	8/21/2017	Dry	<	10	156
MCW-12	1125	8/22/2017 ♦	Dry	<	10	141
MCW-12	1125	8/23/2017	Dry	<	10	127
MCW-12	1125	8/24/2017	Dry	<	10	117
MCW-12	1125	8/25/2017	Dry	<	10	108
MCW-12	1125	8/26/2017	Dry	<	10	100



Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
				<	E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-12	1125	8/27/2017	Dry	<	10	92
MCW-12	1125	8/28/2017	Dry	<	10	85
MCW-12	1130	8/29/2017 ♦	Dry	<	10	78
MCW-12	1130	8/30/2017	Dry	<	10	72
MCW-12	1130	8/31/2017	Dry	<	10	60
MCW-14b	1030	8/1/2017 ♦		=	800	753
MCW-14b	1030	8/2/2017		=	800	814
MCW-14b	1030	8/3/2017		=	800	880
MCW-14b	1030	8/4/2017		=	800	954
MCW-14b	1030	8/5/2017		=	800	1035
MCW-14b	1030	8/6/2017		=	800	1122
MCW-14b	1030	8/7/2017		=	800	1217
MCW-14b	1115	8/8/2017 ♦		=	230	1267
MCW-14b	1115	8/9/2017		=	230	1318
MCW-14b	1115	8/10/2017		=	230	1318
MCW-14b	1115	8/11/2017		=	230	1318
MCW-14b	1115	8/12/2017		=	230	1318
MCW-14b	1115	8/13/2017		=	230	1318
MCW-14b	1115	8/14/2017		=	230	1318
MCW-14b	1030	8/15/2017 ♦		=	9,000	1489
MCW-14b	1030	8/16/2017		=	9,000	1683
MCW-14b	1030	8/17/2017		=	9,000	1683
MCW-14b	1030	8/18/2017		=	9,000	1683
MCW-14b	1030	8/19/2017		=	9,000	1683
MCW-14b	1030	8/20/2017		=	9,000	1683
MCW-14b	1030	8/21/2017		=	9,000	1683
MCW-14b	1045	8/22/2017 ♦		=	500	1528
MCW-14b	1045	8/23/2017		=	500	1388
MCW-14b	1045	8/24/2017		=	500	1307
MCW-14b	1045	8/25/2017		=	500	1232
MCW-14b	1045	8/26/2017		=	500	1160
MCW-14b	1045	8/27/2017		=	500	1093
MCW-14b	1045	8/28/2017		=	500	1030
MCW-14b	1045	8/29/2017 ♦		=	170	936
MCW-14b	1045	8/30/2017		=	170	850
MCW-14b	1045	8/31/2017		=	170	808
MCW-15c	945	8/1/2017 ♦		=	9,000	4285
MCW-15c	945	8/2/2017		=	9,000	4570
MCW-15c	945	8/3/2017		=	9,000	4874
MCW-15c	945	8/4/2017		=	9,000	5056
MCW-15c	945	8/5/2017		=	9,000	5245
MCW-15c	945	8/6/2017		=	9,000	5440
MCW-15c	945	8/7/2017		=	9,000	5643
MCW-15c	1035	8/8/2017 ♦		=	5,000	5740
MCW-15c	1035	8/9/2017		=	5,000	5839



				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location		Date	Rain		E. coli (235 MPN)	E. coli (126 MPN)
MCW-15c	1035	8/10/2017		=	5,000	5839
MCW-15c	1035	8/11/2017		=	5,000	5839
MCW-15c	1035	8/12/2017		=	5,000	5839
MCW-15c	1035	8/13/2017		=	5,000	5839
MCW-15c	1035	8/14/2017		=	5,000	5839
MCW-15c	945	8/15/2017 ♦		=	9,000	5954
MCW-15c	945	8/16/2017		=	9,000	6072
MCW-15c	945	8/17/2017		=	9,000	6299
MCW-15c	945	8/18/2017		=	9,000	6534
MCW-15c	945	8/19/2017		=	9,000	6777
MCW-15c	945	8/20/2017		=	9,000	7030
MCW-15c	945	8/21/2017		=	9,000	7292
MCW-15c	1000	8/22/2017 ♦		=	2,400	7238
MCW-15c	1000	8/23/2017		=	2,400	7185
MCW-15c	1000	8/24/2017		=	2,400	6875
MCW-15c	1000	8/25/2017		=	2,400	6579
MCW-15c	1000	8/26/2017		=	2,400	6295
MCW-15c	1000	8/27/2017		=	2,400	6024
MCW-15c	1000	8/28/2017		=	2,400	5764
MCW-15c	1000	8/29/2017 ♦		=	270	5128
MCW-15c	1000	8/30/2017		=	270	4563
MCW-15c	1000	8/31/2017		=	270	4059
MCW-17	-	8/1/2017 ♦	Dry	<	10	52
MCW-17	-	8/2/2017	Dry	<	10	45
MCW-17	-	8/3/2017	Dry	<	10	38
MCW-17	-	8/4/2017	Dry	<	10	33
MCW-17	-	8/5/2017	Dry	<	10	29
MCW-17	-	8/6/2017	Dry	<	10	27
MCW-17	-	8/7/2017	Dry	<	10	26
MCW-17	-	8/8/2017 ♦	Dry	<	10	25
MCW-17	-	8/9/2017	Dry	<	10	24
MCW-17	-	8/10/2017	Dry	<	10	23
MCW-17	-	8/11/2017	Dry	<	10	22
MCW-17	-	8/12/2017	Dry	<	10	21
MCW-17	-	8/13/2017	Dry	<	10	19
MCW-17	-	8/14/2017	Dry	<	10	17
MCW-17	-	8/15/2017 ♦	Dry	<	10	15
MCW-17	-	8/16/2017	Dry	<	10	14
MCW-17	-	8/17/2017	Dry	<	10	12
MCW-17	-	8/18/2017	Dry	<	10	11
MCW-17	-	8/19/2017	Dry	<	10	10
MCW-17	-	8/20/2017	Dry	<	10	10
MCW-17	-	8/21/2017	Dry	<	10	10
MCW-17	-	8/22/2017 ♦	Dry	<	10	10
MCW-17	-	8/23/2017	Dry	<	10	10
MCW-17	-	8/24/2017	Dry	<	10	10



Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
				<	E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-17	-	8/25/2017	Dry	<	10	10
MCW-17	-	8/26/2017	Dry	<	10	10
MCW-17	-	8/27/2017	Dry	<	10	10
MCW-17	-	8/28/2017	Dry	<	10	10
MCW-17	-	8/29/2017 ♦	Dry	<	10	10
MCW-17	-	8/30/2017	Dry	<	10	10
MCW-17	-	8/31/2017	Dry	<	10	10
MCW-18	-	8/1/2017 ♦	Dry	<	10	10
MCW-18	-	8/2/2017	Dry	<	10	10
MCW-18	-	8/3/2017	Dry	<	10	10
MCW-18	-	8/4/2017	Dry	<	10	10
MCW-18	-	8/5/2017	Dry	<	10	10
MCW-18	-	8/6/2017	Dry	<	10	10
MCW-18	-	8/7/2017	Dry	<	10	10
MCW-18	-	8/8/2017 ♦	Dry	<	10	10
MCW-18	-	8/9/2017	Dry	<	10	10
MCW-18	-	8/10/2017	Dry	<	10	10
MCW-18	-	8/11/2017	Dry	<	10	10
MCW-18	-	8/12/2017	Dry	<	10	10
MCW-18	-	8/13/2017	Dry	<	10	10
MCW-18	-	8/14/2017	Dry	<	10	10
MCW-18	-	8/15/2017 ♦	Dry	<	10	10
MCW-18	-	8/16/2017	Dry	<	10	10
MCW-18	-	8/17/2017	Dry	<	10	10
MCW-18	-	8/18/2017	Dry	<	10	10
MCW-18	-	8/19/2017	Dry	<	10	10
MCW-18	-	8/20/2017	Dry	<	10	10
MCW-18	-	8/21/2017	Dry	<	10	10
MCW-18	-	8/22/2017 ♦	Dry	<	10	10
MCW-18	-	8/23/2017	Dry	<	10	10
MCW-18	-	8/24/2017	Dry	<	10	10
MCW-18	-	8/25/2017	Dry	<	10	10
MCW-18	-	8/26/2017	Dry	<	10	10
MCW-18	-	8/27/2017	Dry	<	10	10
MCW-18	-	8/28/2017	Dry	<	10	10
MCW-18	-	8/29/2017 ♦	Dry	<	10	10
MCW-18	-	8/30/2017	Dry	<	10	10
MCW-18	-	8/31/2017	Dry	<	10	10

Notes:

Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.

Results of <20 are adjusted to use half the MDL (=10) in the calculation of the geomean

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010

♦ Date of sampling



county of ventura



October 26, 2017

JEFF PRATT
Agency Director

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

Central Services Department
J. Tabin Cosio, Director

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Watershed Protection District
Glenn Shephard, Director

**Subject: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE
MONITORING FOR VENTURA COUNTY AND CITY OF THOUSAND
OAKS**

Dear Dr. Wang:

Table 1 below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of September 2017. Sites were sampled weekly on Tuesdays (September 5, 12, 19 and 26). Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with ♦), refer to Table 2. Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 20 MPN/100ml or for dry weather when no sample was taken.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,



Arne Anselm

Deputy Director, Watershed Protection District

CC: Glenn Shephard, Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)



Table 1. Weekly sampling results

Location	Time	Date	Rain	Single Sample (as sampled)	
					E. coli (235 MPN)
MCW-8b		9/5/2017 ♦			Dry
MCW-8b		9/12/2017 ♦			Dry
MCW-8b		9/19/2017 ♦			Dry
MCW-8b		9/26/2017 ♦			Dry
MCW-9	-	9/5/2017 ♦			Dry
MCW-9	-	9/12/2017 ♦			Dry
MCW-9	-	9/19/2017 ♦			Dry
MCW-9	-	9/26/2017 ♦			Dry
MCW-12	-	9/5/2017 ♦			Dry
MCW-12	-	9/12/2017 ♦			Dry
MCW-12	-	9/19/2017 ♦			Dry
MCW-12	-	9/26/2017 ♦			Dry
MCW-14b	1100	9/5/2017 ♦		=	9,000
MCW-14b	1100	9/12/2017 ♦		=	230
MCW-14b	1115	9/19/2017 ♦		=	40
MCW-14b	1115	9/26/2017 ♦		=	300
MCW-15c	1015	9/5/2017 ♦		=	5,000
MCW-15c	1015	9/12/2017 ♦		=	230
MCW-15c	1030	9/19/2017 ♦		=	130
MCW-15c	1015	9/26/2017 ♦		=	240
MCW-17	-	9/5/2017 ♦			Dry
MCW-17	-	9/12/2017 ♦			Dry
MCW-17	-	9/19/2017 ♦			Dry
MCW-17	-	9/26/2017 ♦			Dry
MCW-18	-	9/5/2017 ♦			Dry
MCW-18	-	9/12/2017 ♦			Dry
MCW-18	-	9/19/2017 ♦			Dry
MCW-18	-	9/26/2017 ♦			Dry

Notes:

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.

♦ Date of sampling



Table 2. Computation of daily geomean

Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
				E. coli (235 MPN)		E. coli (126 MPN)
MCW-8b	-	9/1/2017	Dry	<	10	25
MCW-8b	-	9/2/2017	Dry	<	10	21
MCW-8b	-	9/3/2017	Dry	<	10	17
MCW-8b	-	9/4/2017	Dry	<	10	14
MCW-8b	-	9/5/2017 ♦	Dry	<	10	12
MCW-8b	-	9/6/2017	Dry	<	10	10
MCW-8b	-	9/7/2017	Dry	<	10	10
MCW-8b	-	9/8/2017	Dry	<	10	10
MCW-8b	-	9/9/2017	Dry	<	10	10
MCW-8b	-	9/10/2017	Dry	<	10	10
MCW-8b	-	9/11/2017	Dry	<	10	10
MCW-8b	-	9/12/2017 ♦	Dry	<	10	10
MCW-8b	-	9/13/2017	Dry	<	10	10
MCW-8b	-	9/14/2017	Dry	<	10	10
MCW-8b	-	9/15/2017	Dry	<	10	10
MCW-8b	-	9/16/2017	Dry	<	10	10
MCW-8b	-	9/17/2017	Dry	<	10	10
MCW-8b	-	9/18/2017	Dry	<	10	10
MCW-8b	-	9/19/2017 ♦	Dry	<	10	10
MCW-8b	-	9/20/2017	Dry	<	10	10
MCW-8b	-	9/21/2017	Dry	<	10	10
MCW-8b	-	9/22/2017	Dry	<	10	10
MCW-8b	-	9/23/2017	Dry	<	10	10
MCW-8b	-	9/24/2017	Dry	<	10	10
MCW-8b	-	9/25/2017	Dry	<	10	10
MCW-8b	-	9/26/2017 ♦	Dry	<	10	10
MCW-8b	-	9/27/2017	Dry	<	10	10
MCW-8b	-	9/28/2017	Dry	<	10	10
MCW-8b	-	9/29/2017	Dry	<	10	10
MCW-8b	-	9/30/2017	Dry	<	10	10
MCW-9	-	9/1/2017	Dry	<	10	10
MCW-9	-	9/2/2017	Dry	<	10	10
MCW-9	-	9/3/2017	Dry	<	10	10
MCW-9	-	9/4/2017	Dry	<	10	10
MCW-9	-	9/5/2017 ♦	Dry	<	10	10
MCW-9	-	9/6/2017	Dry	<	10	10
MCW-9	-	9/7/2017	Dry	<	10	10
MCW-9	-	9/8/2017	Dry	<	10	10
MCW-9	-	9/9/2017	Dry	<	10	10
MCW-9	-	9/10/2017	Dry	<	10	10
MCW-9	-	9/11/2017	Dry	<	10	10
MCW-9	-	9/12/2017 ♦	Dry	<	10	10
MCW-9	-	9/13/2017	Dry	<	10	10
MCW-9	-	9/14/2017	Dry	<	10	10



Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
				<	E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-9	-	9/15/2017	Dry	<	10	10
MCW-9	-	9/16/2017	Dry	<	10	10
MCW-9	-	9/17/2017	Dry	<	10	10
MCW-9	-	9/18/2017	Dry	<	10	10
MCW-9	-	9/19/2017 ♦	Dry	<	10	10
MCW-9	-	9/20/2017	Dry	<	10	10
MCW-9	-	9/21/2017	Dry	<	10	10
MCW-9	-	9/22/2017	Dry	<	10	10
MCW-9	-	9/23/2017	Dry	<	10	10
MCW-9	-	9/24/2017	Dry	<	10	10
MCW-9	-	9/25/2017	Dry	<	10	10
MCW-9	-	9/26/2017 ♦	Dry	<	10	10
MCW-9	-	9/27/2017	Dry	<	10	10
MCW-9	-	9/28/2017	Dry	<	10	10
MCW-9	-	9/29/2017	Dry	<	10	10
MCW-9	-	9/30/2017	Dry	<	10	10
MCW-12	-	9/1/2017	Dry	<	10	51
MCW-12	-	9/2/2017	Dry	<	10	42
MCW-12	-	9/3/2017	Dry	<	10	35
MCW-12	-	9/4/2017	Dry	<	10	29
MCW-12	-	9/5/2017 ♦	Dry	<	10	25
MCW-12	-	9/6/2017	Dry	<	10	21
MCW-12	-	9/7/2017	Dry	<	10	19
MCW-12	-	9/8/2017	Dry	<	10	17
MCW-12	-	9/9/2017	Dry	<	10	15
MCW-12	-	9/10/2017	Dry	<	10	14
MCW-12	-	9/11/2017	Dry	<	10	12
MCW-12	-	9/12/2017 ♦	Dry	<	10	11
MCW-12	-	9/13/2017	Dry	<	10	10
MCW-12	-	9/14/2017	Dry	<	10	10
MCW-12	-	9/15/2017	Dry	<	10	10
MCW-12	-	9/16/2017	Dry	<	10	10
MCW-12	-	9/17/2017	Dry	<	10	10
MCW-12	-	9/18/2017	Dry	<	10	10
MCW-12	-	9/19/2017 ♦	Dry	<	10	10
MCW-12	-	9/20/2017	Dry	<	10	10
MCW-12	-	9/21/2017	Dry	<	10	10
MCW-12	-	9/22/2017	Dry	<	10	10
MCW-12	-	9/23/2017	Dry	<	10	10
MCW-12	-	9/24/2017	Dry	<	10	10
MCW-12	-	9/25/2017	Dry	<	10	10
MCW-12	-	9/26/2017 ♦	Dry	<	10	10
MCW-12	-	9/27/2017	Dry	<	10	10
MCW-12	-	9/28/2017	Dry	<	10	10



Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
					E. coli (235 MPN)	E. coli (126 MPN)
MCW-12	-	9/29/2017	Dry	<	10	10
MCW-12	-	9/30/2017	Dry	<	10	10
MCW-14b	1045	9/1/2017		=	170	767
MCW-14b	1045	9/2/2017		=	170	728
MCW-14b	1045	9/3/2017		=	170	692
MCW-14b	1045	9/4/2017		=	170	657
MCW-14b	1100	9/5/2017 ♦		=	9,000	712
MCW-14b	1100	9/6/2017		=	9,000	772
MCW-14b	1100	9/7/2017		=	9,000	872
MCW-14b	1100	9/8/2017		=	9,000	986
MCW-14b	1100	9/9/2017		=	9,000	1114
MCW-14b	1100	9/10/2017		=	9,000	1259
MCW-14b	1100	9/11/2017		=	9,000	1422
MCW-14b	1100	9/12/2017 ♦		=	230	1422
MCW-14b	1100	9/13/2017		=	230	1422
MCW-14b	1100	9/14/2017		=	230	1259
MCW-14b	1100	9/15/2017		=	230	1114
MCW-14b	1100	9/16/2017		=	230	986
MCW-14b	1100	9/17/2017		=	230	872
MCW-14b	1100	9/18/2017		=	230	772
MCW-14b	1115	9/19/2017 ♦		=	40	644
MCW-14b	1115	9/20/2017		=	40	538
MCW-14b	1115	9/21/2017		=	40	494
MCW-14b	1115	9/22/2017		=	40	455
MCW-14b	1115	9/23/2017		=	40	418
MCW-14b	1115	9/24/2017		=	40	384
MCW-14b	1115	9/25/2017		=	40	353
MCW-14b	1115	9/26/2017 ♦		=	300	347
MCW-14b	1115	9/27/2017		=	300	341
MCW-14b	1115	9/28/2017		=	300	348
MCW-14b	1115	9/29/2017		=	300	354
MCW-14b	1115	9/30/2017		=	300	361
MCW-15c	1000	9/1/2017		=	270	3612
MCW-15c	1000	9/2/2017		=	270	3213
MCW-15c	1000	9/3/2017		=	270	2859
MCW-15c	1000	9/4/2017		=	270	2543
MCW-15c	1015	9/5/2017 ♦		=	5,000	2494
MCW-15c	1015	9/6/2017		=	5,000	2446
MCW-15c	1015	9/7/2017		=	5,000	2446
MCW-15c	1015	9/8/2017		=	5,000	2446
MCW-15c	1015	9/9/2017		=	5,000	2446
MCW-15c	1015	9/10/2017		=	5,000	2446
MCW-15c	1015	9/11/2017		=	5,000	2446
MCW-15c	1015	9/12/2017 ♦		=	230	2207
MCW-15c	1015	9/13/2017		=	230	1992



Location		Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
				E. coli (235 MPN)		E. coli (126 MPN)
MCW-15c	1015	9/14/2017		=	230	1763
MCW-15c	1015	9/15/2017		=	230	1560
MCW-15c	1015	9/16/2017		=	230	1380
MCW-15c	1015	9/17/2017		=	230	1222
MCW-15c	1015	9/18/2017		=	230	1081
MCW-15c	1030	9/19/2017 ♦		=	130	939
MCW-15c	1030	9/20/2017		=	130	815
MCW-15c	1030	9/21/2017		=	130	739
MCW-15c	1030	9/22/2017		=	130	671
MCW-15c	1030	9/23/2017		=	130	609
MCW-15c	1030	9/24/2017		=	130	552
MCW-15c	1030	9/25/2017		=	130	501
MCW-15c	1015	9/26/2017 ♦		=	240	464
MCW-15c	1015	9/27/2017		=	240	430
MCW-15c	1015	9/28/2017		=	240	428
MCW-15c	1015	9/29/2017		=	240	427
MCW-15c	1015	9/30/2017		=	240	425
MCW-17	-	9/1/2017	Dry	<	10	10
MCW-17	-	9/2/2017	Dry	<	10	10
MCW-17	-	9/3/2017	Dry	<	10	10
MCW-17	-	9/4/2017	Dry	<	10	10
MCW-17	-	9/5/2017 ♦	Dry	<	10	10
MCW-17	-	9/6/2017	Dry	<	10	10
MCW-17	-	9/7/2017	Dry	<	10	10
MCW-17	-	9/8/2017	Dry	<	10	10
MCW-17	-	9/9/2017	Dry	<	10	10
MCW-17	-	9/10/2017	Dry	<	10	10
MCW-17	-	9/11/2017	Dry	<	10	10
MCW-17	-	9/12/2017 ♦	Dry	<	10	10
MCW-17	-	9/13/2017	Dry	<	10	10
MCW-17	-	9/14/2017	Dry	<	10	10
MCW-17	-	9/15/2017	Dry	<	10	10
MCW-17	-	9/16/2017	Dry	<	10	10
MCW-17	-	9/17/2017	Dry	<	10	10
MCW-17	-	9/18/2017	Dry	<	10	10
MCW-17	-	9/19/2017 ♦	Dry	<	10	10
MCW-17	-	9/20/2017	Dry	<	10	10
MCW-17	-	9/21/2017	Dry	<	10	10
MCW-17	-	9/22/2017	Dry	<	10	10
MCW-17	-	9/23/2017	Dry	<	10	10
MCW-17	-	9/24/2017	Dry	<	10	10
MCW-17	-	9/25/2017	Dry	<	10	10
MCW-17	-	9/26/2017 ♦	Dry	<	10	10
MCW-17	-	9/27/2017	Dry	<	10	10
MCW-17	-	9/28/2017	Dry	<	10	10
MCW-17	-	9/29/2017	Dry	<	10	10



Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
					E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-17	-	9/30/2017	Dry	<	10	10
MCW-18	-	9/1/2017	Dry	<	10	10
MCW-18	-	9/2/2017	Dry	<	10	10
MCW-18	-	9/3/2017	Dry	<	10	10
MCW-18	-	9/4/2017	Dry	<	10	10
MCW-18	-	9/5/2017 ♦	Dry	<	10	10
MCW-18	-	9/6/2017	Dry	<	10	10
MCW-18	-	9/7/2017	Dry	<	10	10
MCW-18	-	9/8/2017	Dry	<	10	10
MCW-18	-	9/9/2017	Dry	<	10	10
MCW-18	-	9/10/2017	Dry	<	10	10
MCW-18	-	9/11/2017	Dry	<	10	10
MCW-18	-	9/12/2017 ♦	Dry	<	10	10
MCW-18	-	9/13/2017	Dry	<	10	10
MCW-18	-	9/14/2017	Dry	<	10	10
MCW-18	-	9/15/2017	Dry	<	10	10
MCW-18	-	9/16/2017	Dry	<	10	10
MCW-18	-	9/17/2017	Dry	<	10	10
MCW-18	-	9/18/2017	Dry	<	10	10
MCW-18	-	9/19/2017 ♦	Dry	<	10	10
MCW-18	-	9/20/2017	Dry	<	10	10
MCW-18	-	9/21/2017	Dry	<	10	10
MCW-18	-	9/22/2017	Dry	<	10	10
MCW-18	-	9/23/2017	Dry	<	10	10
MCW-18	-	9/24/2017	Dry	<	10	10
MCW-18	-	9/25/2017	Dry	<	10	10
MCW-18	-	9/26/2017 ♦	Dry	<	10	10
MCW-18	-	9/27/2017	Dry	<	10	10
MCW-18	-	9/28/2017	Dry	<	10	10
MCW-18	-	9/29/2017	Dry	<	10	10
MCW-18	-	9/30/2017	Dry	<	10	10

Notes:

Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.

Results of <20 are adjusted to use half the MDL (=10) in the calculation of the geomean

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010

♦ Date of sampling



JEFF PRATT
Agency Director

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Glenn Shephard, Director

November 29, 2017

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

**Subject: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE
MONITORING FOR COUNTY OF VENTURA, VENTURA COUNTY
WATERSHED PROTECTION DISTRICT, AND CITY OF THOUSAND OAKS**

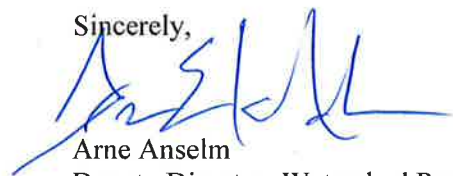
Dear Dr. Wang:

Table 1 below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of October 2017. Sites were sampled weekly on Tuesdays (October 3, 17, 24 and 31), except for one instance when sites were sampled Monday (October 9) due to staffing conflicts. Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with ♦), refer to Table 2. Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 20 MPN/100ml or for dry weather when no sample was taken.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,



Arne Anselm
Deputy Director, Watershed Protection District

CC: Glenn Shephard, Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)



Table 1. Weekly sampling results

Location	Time	Date	Rain	Single Sample (as sampled)	
					E. coli (235 MPN)
MCW-8b		10/3/2017 ♦			Dry
MCW-8b		10/9/2017 ♦			Dry
MCW-8b		10/17/2017 ♦			Dry
MCW-8b		10/24/2017 ♦			Dry
MCW-8b		10/31/2017 ♦			Dry
MCW-9	-	10/3/2017 ♦			Dry
MCW-9	-	10/9/2017 ♦			Dry
MCW-9	-	10/17/2017 ♦			Dry
MCW-9	-	10/24/2017 ♦			Dry
MCW-9	-	10/31/2017 ♦			Dry
MCW-12	-	10/3/2017 ♦			Dry
MCW-12	-	10/9/2017 ♦			Dry
MCW-12	-	10/17/2017 ♦			Dry
MCW-12	-	10/24/2017 ♦			Dry
MCW-12	-	10/31/2017 ♦			Dry
MCW-14b	1110	10/3/2017 ♦		<	20
MCW-14b	1135	10/9/2017 ♦		=	3,000
MCW-14b	1115	10/17/2017 ♦		<	20
MCW-14b	1115	10/24/2017 ♦		=	40
MCW-14b	1130	10/31/2017 ♦		=	20
MCW-15c	1015	10/3/2017 ♦		=	40
MCW-15c	1045	10/9/2017 ♦		=	340
MCW-15c	1040	10/17/2017 ♦		<	20
MCW-15c	1015	10/24/2017 ♦		=	130
MCW-15c	1030	10/31/2017 ♦		=	40
MCW-17	-	10/3/2017 ♦			Dry
MCW-17	-	10/9/2017 ♦			Dry
MCW-17	-	10/17/2017 ♦			Dry
MCW-17	-	10/24/2017 ♦			Dry
MCW-17	-	10/31/2017 ♦			Dry
MCW-18	-	10/3/2017 ♦			Dry
MCW-18	-	10/9/2017 ♦			Dry
MCW-18	-	10/17/2017 ♦			Dry
MCW-18	-	10/24/2017 ♦			Dry
MCW-18	-	10/31/2017 ♦			Dry

Notes:

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.

♦ Date of sampling



Table 2. Computation of daily geomean

Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
					E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-8b	-	10/1/2017	Dry	<	10	25
MCW-8b	-	10/2/2017	Dry	<	10	21
MCW-8b	-	10/3/2017 ♦	Dry	<	10	17
MCW-8b	-	10/4/2017	Dry	<	10	14
MCW-8b	-	10/5/2017	Dry	<	10	12
MCW-8b	-	10/6/2017	Dry	<	10	10
MCW-8b	-	10/7/2017	Dry	<	10	10
MCW-8b	-	10/8/2017	Dry	<	10	10
MCW-8b	-	10/9/2017 ♦	Dry	<	10	10
MCW-8b	-	10/10/2017	Dry	<	10	10
MCW-8b	-	10/11/2017	Dry	<	10	10
MCW-8b	-	10/12/2017	Dry	<	10	10
MCW-8b	-	10/13/2017	Dry	<	10	10
MCW-8b	-	10/14/2017	Dry	<	10	10
MCW-8b	-	10/15/2017	Dry	<	10	10
MCW-8b	-	10/16/2017	Dry	<	10	10
MCW-8b	-	10/17/2017 ♦	Dry	<	10	10
MCW-8b	-	10/18/2017	Dry	<	10	10
MCW-8b	-	10/19/2017	Dry	<	10	10
MCW-8b	-	10/20/2017	Dry	<	10	10
MCW-8b	-	10/21/2017	Dry	<	10	10
MCW-8b	-	10/22/2017	Dry	<	10	10
MCW-8b	-	10/23/2017	Dry	<	10	10
MCW-8b	-	10/24/2017 ♦	Dry	<	10	10
MCW-8b	-	10/25/2017	Dry	<	10	10
MCW-8b	-	10/26/2017	Dry	<	10	10
MCW-8b	-	10/27/2017	Dry	<	10	10
MCW-8b	-	10/28/2017	Dry	<	10	10
MCW-8b	-	10/29/2017	Dry	<	10	10
MCW-8b	-	10/30/2017	Dry	<	10	10
MCW-8b	-	10/31/2017 ♦	Dry	<	10	10
MCW-9	-	10/1/2017	Dry	<	10	10
MCW-9	-	10/2/2017	Dry	<	10	10
MCW-9	-	10/3/2017 ♦	Dry	<	10	10
MCW-9	-	10/4/2017	Dry	<	10	10
MCW-9	-	10/5/2017	Dry	<	10	10
MCW-9	-	10/6/2017	Dry	<	10	10
MCW-9	-	10/7/2017	Dry	<	10	10
MCW-9	-	10/8/2017	Dry	<	10	10
MCW-9	-	10/9/2017 ♦	Dry	<	10	10
MCW-9	-	10/10/2017	Dry	<	10	10
MCW-9	-	10/11/2017	Dry	<	10	10
MCW-9	-	10/12/2017	Dry	<	10	10
MCW-9	-	10/13/2017	Dry	<	10	10



Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
					E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-9	-	10/14/2017	Dry	<	10	10
MCW-9	-	10/15/2017	Dry	<	10	10
MCW-9	-	10/16/2017	Dry	<	10	10
MCW-9	-	10/17/2017 ♦	Dry	<	10	10
MCW-9	-	10/18/2017	Dry	<	10	10
MCW-9	-	10/19/2017	Dry	<	10	10
MCW-9	-	10/20/2017	Dry	<	10	10
MCW-9	-	10/21/2017	Dry	<	10	10
MCW-9	-	10/22/2017	Dry	<	10	10
MCW-9	-	10/23/2017	Dry	<	10	10
MCW-9	-	10/24/2017 ♦	Dry	<	10	10
MCW-9	-	10/25/2017	Dry	<	10	10
MCW-9	-	10/26/2017	Dry	<	10	10
MCW-9	-	10/27/2017	Dry	<	10	10
MCW-9	-	10/28/2017	Dry	<	10	10
MCW-9	-	10/29/2017	Dry	<	10	10
MCW-9	-	10/30/2017	Dry	<	10	51
MCW-9	-	10/31/2017 ♦	Dry	<	10	42
MCW-12	-	10/1/2017	Dry	<	10	35
MCW-12	-	10/2/2017	Dry	<	10	29
MCW-12	-	10/3/2017 ♦	Dry	<	10	25
MCW-12	-	10/4/2017	Dry	<	10	21
MCW-12	-	10/5/2017	Dry	<	10	19
MCW-12	-	10/6/2017	Dry	<	10	17
MCW-12	-	10/7/2017	Dry	<	10	15
MCW-12	-	10/8/2017	Dry	<	10	14
MCW-12	-	10/9/2017 ♦	Dry	<	10	12
MCW-12	-	10/10/2017	Dry	<	10	11
MCW-12	-	10/11/2017	Dry	<	10	10
MCW-12	-	10/12/2017	Dry	<	10	10
MCW-12	-	10/13/2017	Dry	<	10	10
MCW-12	-	10/14/2017	Dry	<	10	10
MCW-12	-	10/15/2017	Dry	<	10	10
MCW-12	-	10/16/2017	Dry	<	10	10
MCW-12	-	10/17/2017 ♦	Dry	<	10	10
MCW-12	-	10/18/2017	Dry	<	10	10
MCW-12	-	10/19/2017	Dry	<	10	10
MCW-12	-	10/20/2017	Dry	<	10	10
MCW-12	-	10/21/2017	Dry	<	10	10
MCW-12	-	10/22/2017	Dry	<	10	10
MCW-12	-	10/23/2017	Dry	<	10	10
MCW-12	-	10/24/2017 ♦	Dry	<	10	10
MCW-12	-	10/25/2017	Dry	<	10	10
MCW-12	-	10/26/2017	Dry	<	10	10



Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
					E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-12	-	10/27/2017	Dry	<	10	10
MCW-12	-	10/28/2017	Dry	<	10	10
MCW-12	-	10/29/2017	Dry	<	10	10
MCW-12	-	10/30/2017	Dry	<	10	10
MCW-12	-	10/31/2017 ♦	Dry	<	10	10
MCW-14b	1115	10/1/2017		=	300	368
MCW-14b	1115	10/2/2017		=	300	375
MCW-14b	1110	10/3/2017 ♦		<	10	341
MCW-14b	1110	10/4/2017		<	10	311
MCW-14b	1110	10/5/2017		<	10	248
MCW-14b	1110	10/6/2017		<	10	197
MCW-14b	1110	10/7/2017		<	10	157
MCW-14b	1110	10/8/2017		<	10	125
MCW-14b	1135	10/9/2017 ♦		=	3,000	121
MCW-14b	1135	10/10/2017		=	3,000	117
MCW-14b	1135	10/11/2017		=	3,000	112
MCW-14b	1135	10/12/2017		=	3,000	122
MCW-14b	1135	10/13/2017		=	3,000	133
MCW-14b	1135	10/14/2017		=	3,000	145
MCW-14b	1135	10/15/2017		=	3,000	158
MCW-14b	1135	10/16/2017		=	3,000	172
MCW-14b	1115	10/17/2017 ♦		<	10	155
MCW-14b	1115	10/18/2017		<	10	140
MCW-14b	1115	10/19/2017		<	10	134
MCW-14b	1115	10/20/2017		<	10	128
MCW-14b	1115	10/21/2017		<	10	122
MCW-14b	1115	10/22/2017		<	10	116
MCW-14b	1115	10/23/2017		<	10	111
MCW-14b	1115	10/24/2017 ♦		=	40	111
MCW-14b	1115	10/25/2017		=	40	111
MCW-14b	1115	10/26/2017		=	40	104
MCW-14b	1115	10/27/2017		=	40	97
MCW-14b	1115	10/28/2017		=	40	91
MCW-14b	1115	10/29/2017		=	40	85
MCW-14b	1115	10/30/2017		=	40	79
MCW-14b	1130	10/31/2017 ♦		=	20	72
MCW-15c	1015	10/1/2017		=	240	423
MCW-15c	1015	10/2/2017		=	240	422
MCW-15c	1015	10/3/2017 ♦		=	240	420
MCW-15c	1015	10/4/2017		=	40	394
MCW-15c	1015	10/5/2017		=	40	335
MCW-15c	1015	10/6/2017		=	40	286
MCW-15c	1015	10/7/2017		=	40	243
MCW-15c	1015	10/8/2017		=	40	207
MCW-15c	1045	10/9/2017 ♦		=	340	189



				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location		Date	Rain		E. coli (235 MPN)	E. coli (126 MPN)
MCW-15c	1045	10/10/2017		=	340	173
MCW-15c	1045	10/11/2017		=	340	158
MCW-15c	1045	10/12/2017		=	340	160
MCW-15c	1045	10/13/2017		=	340	162
MCW-15c	1045	10/14/2017		=	340	165
MCW-15c	1045	10/15/2017		=	340	167
MCW-15c	1045	10/16/2017		=	340	169
MCW-15c	1040	10/17/2017♦		<	10	152
MCW-15c	1040	10/18/2017		<	10	137
MCW-15c	1040	10/19/2017		<	10	126
MCW-15c	1040	10/20/2017		<	10	115
MCW-15c	1040	10/21/2017		<	10	106
MCW-15c	1040	10/22/2017		<	10	97
MCW-15c	1040	10/23/2017		<	10	89
MCW-15c	1015	10/24/2017♦		=	130	89
MCW-15c	1015	10/25/2017		=	130	89
MCW-15c	1015	10/26/2017		=	130	88
MCW-15c	1015	10/27/2017		=	130	86
MCW-15c	1015	10/28/2017		=	130	84
MCW-15c	1015	10/29/2017		=	130	82
MCW-15c	1015	10/30/2017		=	130	81
MCW-15c	1030	10/31/2017♦		=	40	76
MCW-17	-	10/1/2017	Dry	<	10	10
MCW-17	-	10/2/2017	Dry	<	10	10
MCW-17	-	10/3/2017♦	Dry	<	10	10
MCW-17	-	10/4/2017	Dry	<	10	10
MCW-17	-	10/5/2017	Dry	<	10	10
MCW-17	-	10/6/2017	Dry	<	10	10
MCW-17	-	10/7/2017	Dry	<	10	10
MCW-17	-	10/8/2017	Dry	<	10	10
MCW-17	-	10/9/2017♦	Dry	<	10	10
MCW-17	-	10/10/2017	Dry	<	10	10
MCW-17	-	10/11/2017	Dry	<	10	10
MCW-17	-	10/12/2017	Dry	<	10	10
MCW-17	-	10/13/2017	Dry	<	10	10
MCW-17	-	10/14/2017	Dry	<	10	10
MCW-17	-	10/15/2017	Dry	<	10	10
MCW-17	-	10/16/2017	Dry	<	10	10
MCW-17	-	10/17/2017♦	Dry	<	10	10
MCW-17	-	10/18/2017	Dry	<	10	10
MCW-17	-	10/19/2017	Dry	<	10	10
MCW-17	-	10/20/2017	Dry	<	10	10
MCW-17	-	10/21/2017	Dry	<	10	10
MCW-17	-	10/22/2017	Dry	<	10	10
MCW-17	-	10/23/2017	Dry	<	10	10
MCW-17	-	10/24/2017♦	Dry	<	10	10



Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
					E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-17	-	10/25/2017	Dry	<	10	10
MCW-17	-	10/26/2017	Dry	<	10	10
MCW-17	-	10/27/2017	Dry	<	10	10
MCW-17	-	10/28/2017	Dry	<	10	10
MCW-17	-	10/29/2017	Dry	<	10	10
MCW-17	-	10/30/2017	Dry	<	10	10
MCW-17	-	10/31/2017 ♦	Dry	<	10	10
MCW-18	-	10/1/2017	Dry	<	10	10
MCW-18	-	10/2/2017	Dry	<	10	10
MCW-18	-	10/3/2017 ♦	Dry	<	10	10
MCW-18	-	10/4/2017	Dry	<	10	10
MCW-18	-	10/5/2017	Dry	<	10	10
MCW-18	-	10/6/2017	Dry	<	10	10
MCW-18	-	10/7/2017	Dry	<	10	10
MCW-18	-	10/8/2017	Dry	<	10	10
MCW-18	-	10/9/2017 ♦	Dry	<	10	10
MCW-18	-	10/10/2017	Dry	<	10	10
MCW-18	-	10/11/2017	Dry	<	10	10
MCW-18	-	10/12/2017	Dry	<	10	10
MCW-18	-	10/13/2017	Dry	<	10	10
MCW-18	-	10/14/2017	Dry	<	10	10
MCW-18	-	10/15/2017	Dry	<	10	10
MCW-18	-	10/16/2017	Dry	<	10	10
MCW-18	-	10/17/2017 ♦	Dry	<	10	10
MCW-18	-	10/18/2017	Dry	<	10	10
MCW-18	-	10/19/2017	Dry	<	10	10
MCW-18	-	10/20/2017	Dry	<	10	10
MCW-18	-	10/21/2017	Dry	<	10	10
MCW-18	-	10/22/2017	Dry	<	10	10
MCW-18	-	10/23/2017	Dry	<	10	10
MCW-18	-	10/24/2017 ♦	Dry	<	10	10
MCW-18	-	10/25/2017	Dry	<	10	10
MCW-18	-	10/26/2017	Dry	<	10	10
MCW-18	-	10/27/2017	Dry	<	10	10
MCW-18	-	10/28/2017	Dry	<	10	10
MCW-18	-	10/29/2017	Dry	<	10	10
MCW-18	-	10/30/2017	Dry	<	10	10
MCW-18	-	10/31/2017 ♦	Dry	<	10	10

Notes:

Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.

Results of <20 are adjusted to use half the MDL (=10) in the calculation of the geomean

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010

♦ Date of sampling



December 21, 2017

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

JEFF PRATT
Agency Director

Central Services Department
J. Tabin Cosio, Director

Engineering Services Department
Christopher Cooper, Director

Transportation Department
David Fleisch, Director

Water & Sanitation Department
Michaela Brown, Director

Watershed Protection District
Glenn Shephard, Director

**Subject: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE
MONITORING FOR COUNTY OF VENTURA, VENTURA COUNTY
WATERSHED PROTECTION DISTRICT, AND CITY OF THOUSAND OAKS**

Dear Dr. Wang:

Table 1 below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of November 2017. Sites were sampled weekly on Tuesdays (November 7, 14, 21 and 28). Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with ♦), refer to Table 2. Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 18 MPN/100ml or for dry weather when no sample was taken. Coliform tables from SM9221 in standard methods 22nd and 23rd have been adopted thus changing the reporting limit from 2.0 MPN/100 ml to 1.8 MPN/100 ml as of November 7, 2017.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,



Arne Anselm
Deputy Director, Watershed Protection District

CC: Glenn Shephard, Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)



Table 1. Weekly sampling results

Location	Time	Date	Rain	Single Sample (as sampled)	
					E. coli (235 MPN)
MCW-8b		11/7/2017 ♦			Dry
MCW-8b		11/14/2017 ♦			Dry
MCW-8b		11/21/2017 ♦			Dry
MCW-8b		11/28/2017 ♦			Dry
MCW-9	-	11/7/2017 ♦			Dry
MCW-9	-	11/14/2017 ♦			Dry
MCW-9	-	11/21/2017 ♦			Dry
MCW-9	-	11/28/2017 ♦			Dry
MCW-12	-	11/7/2017 ♦			Dry
MCW-12	-	11/14/2017 ♦			Dry
MCW-12	-	11/21/2017 ♦			Dry
MCW-12	-	11/28/2017 ♦			Dry
MCW-14b	1100	11/7/2017 ♦		<	18
MCW-14b	1045	11/14/2017 ♦		=	36
MCW-14b	1000	11/21/2017 ♦		=	20
MCW-14b	1045	11/28/2017 ♦		<	18
MCW-15c	1015	11/7/2017 ♦		<	18
MCW-15c	1000	11/14/2017 ♦		=	45
MCW-15c	930	11/21/2017 ♦		<	18
MCW-15c	1000	11/28/2017 ♦		<	18
MCW-17	-	11/7/2017 ♦			Dry
MCW-17	-	11/14/2017 ♦			Dry
MCW-17	-	11/21/2017 ♦			Dry
MCW-17	-	11/28/2017 ♦			Dry
MCW-18	-	11/7/2017 ♦			Dry
MCW-18	-	11/14/2017 ♦			Dry
MCW-18	-	11/21/2017 ♦			Dry
MCW-18	-	11/28/2017 ♦			Dry

Notes:

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.

♦ Date of sampling

- Reporting limit has been changed from 2.0 MPN/100 ml to 1.8 MPN/100 ml.

Table 2. Computation of daily geomean

Location	Time	Date	Rain		Single Sample (adjusted for rain, dry and NDs)	Geomean
					E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-8b	-	11/1/2017	Dry	<	10	10
MCW-8b	-	11/2/2017	Dry	<	10	10
MCW-8b	-	11/3/2017	Dry	<	10	10
MCW-8b	-	11/4/2017	Dry	<	10	10
MCW-8b	-	11/5/2017	Dry	<	10	10
MCW-8b	-	11/6/2017	Dry	<	10	10
MCW-8b	-	11/7/2017 ♦	Dry	<	9	10
MCW-8b	-	11/8/2017	Dry	<	9	10
MCW-8b	-	11/9/2017	Dry	<	9	10
MCW-8b	-	11/10/2017	Dry	<	9	10
MCW-8b	-	11/11/2017	Dry	<	9	10
MCW-8b	-	11/12/2017	Dry	<	9	10
MCW-8b	-	11/13/2017	Dry	<	9	10
MCW-8b	-	11/14/2017 ♦	Dry	<	9	10
MCW-8b	-	11/15/2017	Dry	<	9	10
MCW-8b	-	11/16/2017	Dry	<	9	10
MCW-8b	-	11/17/2017	Dry	<	9	10
MCW-8b	-	11/18/2017	Dry	<	9	10
MCW-8b	-	11/19/2017	Dry	<	9	10
MCW-8b	-	11/20/2017	Dry	<	9	10
MCW-8b	-	11/21/2017 ♦	Dry	<	9	9
MCW-8b	-	11/22/2017	Dry	<	9	9
MCW-8b	-	11/23/2017	Dry	<	9	9
MCW-8b	-	11/24/2017	Dry	<	9	9
MCW-8b	-	11/25/2017	Dry	<	9	9
MCW-8b	-	11/26/2017	Dry	<	9	9
MCW-8b	-	11/27/2017	Dry	<	9	9
MCW-8b	-	11/28/2017 ♦	Dry	<	9	9
MCW-8b	-	11/29/2017	Dry	<	9	9
MCW-8b	-	11/30/2017	Dry	<	9	9
MCW-9	-	11/1/2017	Dry	<	10	10
MCW-9	-	11/2/2017	Dry	<	10	10
MCW-9	-	11/3/2017	Dry	<	10	10
MCW-9	-	11/4/2017	Dry	<	10	10
MCW-9	-	11/5/2017	Dry	<	10	10
MCW-9	-	11/6/2017	Dry	<	10	10
MCW-9	-	11/7/2017 ♦	Dry	<	9	10
MCW-9	-	11/8/2017	Dry	<	9	10
MCW-9	-	11/9/2017	Dry	<	9	10
MCW-9	-	11/10/2017	Dry	<	9	10
MCW-9	-	11/11/2017	Dry	<	9	10
MCW-9	-	11/12/2017	Dry	<	9	10
MCW-9	-	11/13/2017	Dry	<	9	10
MCW-9	-	11/14/2017 ♦	Dry	<	9	10

Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
				<	E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-9	-	11/15/2017	Dry	<	9	10
MCW-9	-	11/16/2017	Dry	<	9	10
MCW-9	-	11/17/2017	Dry	<	9	10
MCW-9	-	11/18/2017	Dry	<	9	10
MCW-9	-	11/19/2017	Dry	<	9	10
MCW-9	-	11/20/2017	Dry	<	9	10
MCW-9	-	11/21/2017 ♦	Dry	<	9	9
MCW-9	-	11/22/2017	Dry	<	9	9
MCW-9	-	11/23/2017	Dry	<	9	9
MCW-9	-	11/24/2017	Dry	<	9	9
MCW-9	-	11/25/2017	Dry	<	9	9
MCW-9	-	11/26/2017	Dry	<	9	9
MCW-9	-	11/27/2017	Dry	<	9	9
MCW-9	-	11/28/2017 ♦	Dry	<	9	9
MCW-9	-	11/29/2017	Dry	<	9	9
MCW-9	-	11/30/2017	Dry	<	9	9
MCW-12	-	11/1/2017	Dry	<	10	10
MCW-12	-	11/2/2017	Dry	<	10	10
MCW-12	-	11/3/2017	Dry	<	10	10
MCW-12	-	11/4/2017	Dry	<	10	10
MCW-12	-	11/5/2017	Dry	<	10	10
MCW-12	-	11/6/2017	Dry	<	10	10
MCW-12	-	11/7/2017 ♦	Dry	<	9	10
MCW-12	-	11/8/2017	Dry	<	9	10
MCW-12	-	11/9/2017	Dry	<	9	10
MCW-12	-	11/10/2017	Dry	<	9	10
MCW-12	-	11/11/2017	Dry	<	9	10
MCW-12	-	11/12/2017	Dry	<	9	10
MCW-12	-	11/13/2017	Dry	<	9	10
MCW-12	-	11/14/2017 ♦	Dry	<	9	10
MCW-12	-	11/15/2017	Dry	<	9	10
MCW-12	-	11/16/2017	Dry	<	9	10
MCW-12	-	11/17/2017	Dry	<	9	10
MCW-12	-	11/18/2017	Dry	<	9	10
MCW-12	-	11/19/2017	Dry	<	9	10
MCW-12	-	11/20/2017	Dry	<	9	10
MCW-12	-	11/21/2017 ♦	Dry	<	9	9
MCW-12	-	11/22/2017	Dry	<	9	9
MCW-12	-	11/23/2017	Dry	<	9	9
MCW-12	-	11/24/2017	Dry	<	9	9
MCW-12	-	11/25/2017	Dry	<	9	9
MCW-12	-	11/26/2017	Dry	<	9	9
MCW-12	-	11/27/2017	Dry	<	9	9
MCW-12	-	11/28/2017 ♦	Dry	<	9	9

Location	Time	Date	Rain		Single Sample (adjusted for rain, dry and NDs)	Geomean
					E. coli (235 MPN)	E. coli (126 MPN)
MCW-12	-	11/29/2017	Dry	<	9	9
MCW-12	-	11/30/2017	Dry	<	9	9
MCW-14b	1130	11/1/2017		=	20	66
MCW-14b	1130	11/2/2017		=	20	68
MCW-14b	1130	11/3/2017		=	20	69
MCW-14b	1130	11/4/2017		=	20	71
MCW-14b	1130	11/5/2017		=	20	73
MCW-14b	1130	11/6/2017		=	20	74
MCW-14b	1100	11/7/2017 ♦		<	9	74
MCW-14b	1100	11/8/2017		<	9	61
MCW-14b	1100	11/9/2017		<	9	50
MCW-14b	1100	11/10/2017		<	9	41
MCW-14b	1100	11/11/2017		<	9	34
MCW-14b	1100	11/12/2017		<	9	28
MCW-14b	1100	11/13/2017		<	9	23
MCW-14b	1045	11/14/2017 ♦		=	36	20
MCW-14b	1045	11/15/2017		=	36	17
MCW-14b	1045	11/16/2017		=	36	18
MCW-14b	1045	11/17/2017		=	36	19
MCW-14b	1045	11/18/2017		=	36	20
MCW-14b	1045	11/19/2017		=	36	20
MCW-14b	1045	11/20/2017		=	36	21
MCW-14b	1000	11/21/2017 ♦		=	20	22
MCW-14b	1000	11/22/2017		=	20	22
MCW-14b	1000	11/23/2017		=	20	22
MCW-14b	1000	11/24/2017		=	20	21
MCW-14b	1000	11/25/2017		=	20	21
MCW-14b	1000	11/26/2017		=	20	20
MCW-14b	1000	11/27/2017		=	20	20
MCW-14b	1045	11/28/2017 ♦		<	9	19
MCW-14b	1045	11/29/2017		<	9	18
MCW-14b	1045	11/30/2017		<	9	18
MCW-15c	1030	11/1/2017		=	40	72
MCW-15c	1030	11/2/2017		=	40	67
MCW-15c	1030	11/3/2017		=	40	67
MCW-15c	1030	11/4/2017		=	40	67
MCW-15c	1030	11/5/2017		=	40	67
MCW-15c	1030	11/6/2017		=	40	67
MCW-15c	1015	11/7/2017 ♦		<	9	64
MCW-15c	1015	11/8/2017		<	9	57
MCW-15c	1015	11/9/2017		<	9	50
MCW-15c	1015	11/10/2017		<	9	45
MCW-15c	1015	11/11/2017		<	9	40
MCW-15c	1015	11/12/2017		<	9	35
MCW-15c	1015	11/13/2017		<	9	31

Location		Date	Rain		Single Sample (adjusted for rain, dry and NDs)	Geomean
					E. coli (235 MPN)	E. coli (126 MPN)
MCW-15c	1000	11/14/2017 ♦		=	45	29
MCW-15c	1000	11/15/2017		=	45	27
MCW-15c	1000	11/16/2017		=	45	29
MCW-15c	1000	11/17/2017		=	45	30
MCW-15c	1000	11/18/2017		=	45	32
MCW-15c	1000	11/19/2017		=	45	33
MCW-15c	1000	11/20/2017		=	45	35
MCW-15c	930	11/21/2017 ♦		<	9	35
MCW-15c	930	11/22/2017		<	9	35
MCW-15c	930	11/23/2017		<	9	32
MCW-15c	930	11/24/2017		<	9	29
MCW-15c	930	11/25/2017		<	9	26
MCW-15c	930	11/26/2017		<	9	24
MCW-15c	930	11/27/2017		<	9	22
MCW-15c	1000	11/28/2017 ♦		<	9	20
MCW-15c	1000	11/29/2017		<	9	19
MCW-15c	1000	11/30/2017		<	9	18
MCW-17	-	11/1/2017	Dry	<	10	10
MCW-17	-	11/2/2017	Dry	<	10	10
MCW-17	-	11/3/2017	Dry	<	10	10
MCW-17	-	11/4/2017	Dry	<	10	10
MCW-17	-	11/5/2017	Dry	<	10	10
MCW-17	-	11/6/2017	Dry	<	10	10
MCW-17	-	11/7/2017 ♦	Dry	<	9	10
MCW-17	-	11/8/2017	Dry	<	9	10
MCW-17	-	11/9/2017	Dry	<	9	10
MCW-17	-	11/10/2017	Dry	<	9	10
MCW-17	-	11/11/2017	Dry	<	9	10
MCW-17	-	11/12/2017	Dry	<	9	10
MCW-17	-	11/13/2017	Dry	<	9	10
MCW-17	-	11/14/2017 ♦	Dry	<	9	10
MCW-17	-	11/15/2017	Dry	<	9	10
MCW-17	-	11/16/2017	Dry	<	9	10
MCW-17	-	11/17/2017	Dry	<	9	10
MCW-17	-	11/18/2017	Dry	<	9	10
MCW-17	-	11/19/2017	Dry	<	9	10
MCW-17	-	11/20/2017	Dry	<	9	10
MCW-17	-	11/21/2017 ♦	Dry	<	9	9
MCW-17	-	11/22/2017	Dry	<	9	9
MCW-17	-	11/23/2017	Dry	<	9	9
MCW-17	-	11/24/2017	Dry	<	9	9
MCW-17	-	11/25/2017	Dry	<	9	9
MCW-17	-	11/26/2017	Dry	<	9	9
MCW-17	-	11/27/2017	Dry	<	9	9
MCW-17	-	11/28/2017 ♦	Dry	<	9	9
MCW-17	-	11/29/2017	Dry	<	9	9

Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
				E. coli		E. coli
				(235 MPN)		(126 MPN)
MCW-17	-	11/30/2017	Dry	<	9	9
MCW-18	-	11/1/2017	Dry	<	9	10
MCW-18	-	11/2/2017	Dry	<	9	10
MCW-18	-	11/3/2017	Dry	<	9	10
MCW-18	-	11/4/2017	Dry	<	9	10
MCW-18	-	11/5/2017	Dry	<	9	10
MCW-18	-	11/6/2017	Dry	<	9	10
MCW-18	-	11/7/2017 ♦	Dry	<	9	10
MCW-18	-	11/8/2017	Dry	<	9	10
MCW-18	-	11/9/2017	Dry	<	9	10
MCW-18	-	11/10/2017	Dry	<	9	10
MCW-18	-	11/11/2017	Dry	<	9	10
MCW-18	-	11/12/2017	Dry	<	9	10
MCW-18	-	11/13/2017	Dry	<	9	10
MCW-18	-	11/14/2017 ♦	Dry	<	9	10
MCW-18	-	11/15/2017	Dry	<	9	10
MCW-18	-	11/16/2017	Dry	<	9	10
MCW-18	-	11/17/2017	Dry	<	9	10
MCW-18	-	11/18/2017	Dry	<	9	10
MCW-18	-	11/19/2017	Dry	<	9	10
MCW-18	-	11/20/2017	Dry	<	9	10
MCW-18	-	11/21/2017 ♦	Dry	<	9	9
MCW-18	-	11/22/2017	Dry	<	9	9
MCW-18	-	11/23/2017	Dry	<	9	9
MCW-18	-	11/24/2017	Dry	<	9	9
MCW-18	-	11/25/2017	Dry	<	9	9
MCW-18	-	11/26/2017	Dry	<	9	9
MCW-18	-	11/27/2017	Dry	<	9	9
MCW-18	-	11/28/2017 ♦	Dry	<	9	9
MCW-18	-	11/29/2017	Dry	<	9	9
MCW-18	-	11/30/2017	Dry	<	9	9

Notes:

Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.

Results of <18 are adjusted to use half the MDL (=9) in the calculation of the geomean

Reporting limit changed from 2.0 MPN/100 ml to 1.8 MPN/100 ml beginning November 7, 2017.

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010

♦ Date of sampling



December 22, 2017

Jenny Newman, TMDL Section Chief
Regional Water Quality Control Board Los Angeles Region
320 W. 4th St., Suite 200
Los Angeles, CA 90013

Subject: **2017 DRY SEASON DATA SUMMARY FOR THE VENTURA RIVER ALGAE
TMDL (RESOLUTION NO. R12-011)**

Dear Ms. Newman:

Enclosed for your review and consideration is the 2017 Dry Season Data Summary prepared and submitted to document completion of monitoring activities required by the Ventura River and Tributaries Algae, Eutrophic Conditions, and Nutrients Total Maximum Daily Load, Resolution No. R12-011 (Ventura Algae TMDL) and the Ventura Algae TMDL Comprehensive Monitoring Plan for Receiving Water approved by Regional Water Quality Control Board on October 20, 2014.

This document is being submitted on behalf of the Ojai Valley Sanitary District, Ventura County Watershed Protection District, County of Ventura, City of Ojai, City of Ventura, California Department of Transportation, and the Ventura County Agricultural Irrigated Lands Group (represented by the Farm Bureau of Ventura County).

If you have any comments or questions regarding the attached document, please contact Ewelina Mutkowska at (805) 645-1382 or ewelina.mutkowska@ventura.org.

Sincerely,

A handwritten signature in blue ink, appearing to read "Arne Anselm", is written over a horizontal line.

Arne Anselm
Deputy Director,
Ventura County Watershed Protection District

Jenny Newman, TMDL Section Chief

December 22, 2017

Page 2 of 2

cc: Renee Purdy, Regional Water Quality Control Board
Jeff Pratt, County of Ventura Public Works Agency
Glenn Shephard, Ventura County Watershed Protection District
Ewelina Mutkowska, Ventura County Public Works Agency
Greg Grant, City of Ojai
Joe Yahner, City of Ventura
Peter Shellenbarger, City of Ventura
Jeff Palmer, Ojai Valley Sanitary District
Nancy Broschart, Farm Bureau of Ventura County
Chien-Pei M. Yu, California Department of Transportation

DECEMBER 2017

TOTAL MAXIMUM DAILY LOAD FOR ALGAE, EUTROPHIC CONDITIONS, AND NUTRIENTS IN VENTURA RIVER, INCLUDING THE ESTUARY, AND ITS TRIBUTARIES (VR ALGAE TMDL)

2017 DRY SEASON DATA SUMMARY

Submitted to

TMDL Responsible Parties Implementing Receiving Water Monitoring Requirements:

City of Ojai

City of Ventura

County of Ventura

Ojai Valley Sanitary District

California Department of Transportation

Ventura County Agricultural Irrigated Lands Group

Ventura County Watershed Protection District

Prepared by:

Ventura County Watershed Protection District

December 22, 2017



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EXECUTIVE SUMMARY

On behalf of the Total Maximum Daily Load (TMDL) Responsible Parties, the Ventura County Watershed Protection District (District) began sampling in accordance with the Ventura River Algae TMDL Comprehensive Monitoring Plan for Receiving Waters (CMP) on January 14, 2015. As required by the TMDL, the CMP prescribes year-round monthly water quality monitoring for nutrients and other water quality parameters at one site in the Ventura River Estuary (TMDL-Est), one site in each of the Ventura River reaches 1 – 4, and in two main tributaries, Cañada Larga and San Antonio Creek (TMDL-R1, TMDL-R2, TMDL-R3, TMDL-R4, TMDL-CL and TMDL-SA, respectively). Continuous monitoring of dissolved oxygen and pH, (both of which also require temperature monitoring) are required at each site every quarter. Conductivity is also measured during the continuous monitoring. The CMP also requires monthly monitoring of algae during the dry season (May – September). This report covers the dry season monitoring from May 2017 – September 2017, including monthly checks for flow at the observations sites and the continuous data logging conducted in May and September 2017.

While the drought is not yet over for Ventura County, the county did receive above average rainfall in the start of 2017, which was sufficient to get many creeks and rivers flowing again, including some that had been dry in the Ventura River watershed. All observation sites were flowing in April and TMDL-CVR (Ventura River at Casitas Vista Road, referred to as TMDL-CVB in previous reports) flowed through September, however TMDL-H150 (Ventura River at Hwy 150, referred to as TMDL-150 in previous reports) and TMDL-SAB (Ventura River at Santa Ana Blvd) were mostly dry by May and completely dry for the remainder of the dry season. All TMDL sample sites had sampleable flow for nutrients and algae sampling from May – July, however by August, TMDL-CL was completely dry and TMDL-SA was too dry for algae sampling. Flow variations between monitoring sites and events might be due to a combination of factors including geology, weather conditions, inputs, and extractions.

In contrast to previous years, all sampleable sites except the estuary exceeded the seasonal average numeric target for macroalgal cover ($\leq 15\%$ for the estuary and $\leq 30\%$ for the riverine sites). All sites except TMDL-R4 and TMDL-CL exceeded the seasonal average numeric target for algal biomass (estuarine phytoplankton seasonal average chlorophyll *a* target of ≤ 20 $\mu\text{g/L}$, riverine seasonal average chlorophyll *a* target of ≤ 150 mg/m^2). All measurements for pH were within the numeric target limits except for TMDL-Est during the June monthly sampling. Levels of dissolved oxygen below the numeric target were measured during periods of low flow and at the low points of the diurnal patterns at some sites. The measured range for total nitrogen was 0.44 mg/L – 4.7 mg/L and total phosphorus was 0.0068 (DNQ) mg/L – 0.54 mg/L .

Hydrolab HL4 water quality sondes are used for the quarterly two-week continuous monitoring requirement and were first deployed for this project in March 2015. As required by the TMDL, the sondes were deployed in May and September during the 2017 Dry Season. The sondes were calibrated by District staff before each event to ensure calibrations were accurate and field meter measurements were taken near the sondes during sonde retrieval to check for drift/fouling of the sonde sensors during deployment. The estuary sonde is deployed at a depth of approximately ten feet in order to avoid exposure if the estuary breaches and to reduce the risk of potential vandalism. Sondes in areas with known siltation issues were deployed higher in the water column. Sondes were not deployed at TMDL-CL in September due to dry conditions. The deployed sondes logged data for a two week period in the 2nd and 3rd quarters beginning on May 10 and September 5, respectively. All required data was collected in May, however R2 had conductivity errors, and it is likely that flow ceased at SA mid-deployment resulting in changes in the readings. The Estuary sonde was missing (stolen) at the end of the September deployment period. There was insufficient time in September to redesign the placement (to prevent further theft) and redeploy the sonde so the next continuous monitoring for this site will be in the fourth quarter. Three sondes (TMDL-R1, TMDL-R3, and TMDL-SA) had conductivity measurement issues in September, but all required parameters were measured.

Sampling event data, including field data sheets and laboratory reports, will be provided with the 2018 Annual Report.

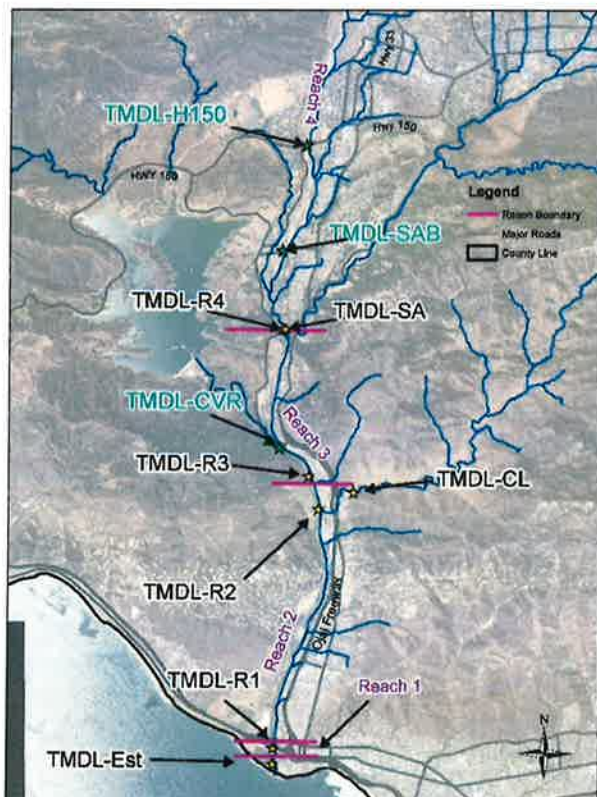
BACKGROUND

The Water Quality Control Plan for the Los Angeles Region was amended on December 6, 2012 to incorporate the Total Maximum Daily Load for Algae, Eutrophic Conditions, and Nutrients in the Ventura River, including the Estuary, and its Tributaries (VR Algae TMDL). The VR Algae TMDL became effective on June 28, 2013 and required the development and implementation of a comprehensive monitoring plan (CMP) for receiving water monitoring to assess numeric attainment and measure in-stream nutrient concentrations. The CMP submitted by the Responsible Parties (Ojai Valley Sanitary District, Ventura County Watershed Protection District, County of Ventura, City of Ojai, City of San Buenaventura (Ventura), California Department of Transportation, and the Ventura County Agricultural Irrigated Lands Group (represented by the Farm Bureau of Ventura County)) was approved by the Los Angeles Regional Water Quality Control Board (Regional Board) on October 20, 2014.

On November 18, 2014, the Ventura County Watershed Protection District (District) was retained by the Responsible Parties to conduct the monitoring in accordance with the CMP for up to 5 years. The CMP required sampling to begin no later than 90 days after the Los Angeles Regional Water Quality Control Board approved the CMP, which equates to January 18, 2015. Monitoring began on January 14, 2015.

As required by the TMDL, the CMP prescribes year-round monthly water quality monitoring for nutrients and other water quality parameters at one site in the Ventura River Estuary, one site in each of the Ventura River reaches 1 – 4, and in two main tributaries, Cañada Larga and San Antonio Creek. Continuous monitoring of dissolved oxygen and pH, (both of which also require temperature monitoring) are required at each site every quarter. Conductivity is also measured during the continuous monitoring. The CMP also requires monthly monitoring of algae (chlorophyll a and percent macroalgal cover) during the dry season (May – September). This report is a summary of dry season monitoring data from May – September 2017, including the continuous data logging conducted in May and September.

FIGURE 1. SAMPLING SITES AND FLOW OBSERVATION LOCATIONS



Note: Yellow site markers (black labels) are sampling locations. Blue site markers (blue labels) are flow observation locations

ACCESS PERMISSION

In 2015, in order to allow for continuity of site locations, five-year easements were sought from the property owners where the sites are located for the fee of \$250 per term. The temporary easements expire five years from the date of approval (early 2020). Two property owners declined the five year easement request but signed a revocable access permit instead. The sites affected by the permits are TMDL-R2 upstream of the site listed in the CMP (downstream permission denied) and TMDL-SA directly above the confluence with the Ventura River.

MONTHLY MONITORING

The 2017 dry season sampling occurred monthly starting in May through September as required. There was no connectivity between the upper and lower watershed during this time, as shown in Table 1. All TMDL sample sites had sampleable flow for nutrients and algae sampling from May – July, however by August, TMDL-CL was completely dry and TMDL-SA was too dry for algae sampling. Dry season sample dates and the collecting agency are shown in Table 2 (sample sites that were dry are noted as such and shaded grey). Monthly field data is summarized in Table 3 and nutrient data in Table 4. The District contracted with Aquatic Bioassay & Consulting Laboratories, Inc. (ABC) for assistance with the monthly monitoring of chlorophyll *a* and percent cover of algae during the dry season, May to September. Algal biomass and percent cover data are summarized in Table 5, Table 6, and Table 7.

TABLE 1. MAY - SEPTEMBER 2017 OBSERVATION SITES

Date	Ventura River at Hwy 150	Ventura River at Santa Ana Blvd	Ventura River at Casitas Vista Road
5/11/2017	Dry at bridge but ponds visible up and downstream	Small flow on west side, ponded upstream on east side, dry ~20m downstream of bridge	Flow on east and west end. East dominant ~ 15 -20 cfs
6/15/2017	DRY	DRY	Flow on east and west end. East dominant ~ 10 cfs
7/13/2017	DRY	DRY	Flow on east and west end. East dominant ~ 5-10 cfs
8/16/2017	DRY	DRY	Flow on east and west end. East dominant ~ 5-10 cfs
9/6/2017	DRY	DRY	~1.5 cfs

There was no connectivity with the upper watershed during the 2017 dry season.

TABLE 2. MAY - SEPTEMBER 2017 WATER QUALITY SAMPLE COLLECTION DATE AGENCY

Site	Collecting Agency	Sampling Date				
		May 2017	June 2017	July 2017	August 2017	September 2017
TMDL-Est	District/ABC	5/10/2017	6/15/2017	7/13/2017	8/16/2017	9/6/2017
TMDL-R1	District/ABC	5/10/2017	6/15/2017	7/13/2017	8/16/2017	9/6/2017
TMDL-R2	District/ABC	5/10/2017	6/15/2017	7/12/2017	8/15/2017	9/6/2017
TMDL-R3	District/ABC	5/9/2017	6/14/2017	7/12/2017	8/15/2017	9/5/2017
TMDL-R4	District/ABC	5/9/2017	6/14/2017	7/12/2017	8/15/2017	9/5/2017
TMDL-CL	District/ABC	5/9/2017	6/15/2017	7/13/2017	(DRY) 8/15/2017	(DRY) 9/5/2017
TMDL-SA	District/ABC	5/9/2017	6/14/2017	7/12/2017	(Mostly Dry) 8/15/2017	(Mostly Dry) 9/5/2017

Mostly Dry sites had water present in at least one location in the reach so could be sampled for regular monthly monitoring parameters, but did not have sufficient water present to meet algae sampling protocols so algae monitoring/collection was not conducted. DRY sites had insufficient water present for any sampling to take place.

TABLE 3. MAY – SEPTEMBER 2017 FIELD DATA

Site	Sample Date	Sample Time	Berm Status	Flow Field Meter (cfs)	pH Field Meter (pH Units) <i>Numeric Target 6.5 - 8.5</i>	DO Field Meter (mg/L) <i>Numeric Target >7 mg/L</i>	SC Field Meter (µS/cm)	Salinity Field Meter (ppt)	Water Temp Field Meter (°C)
TMDL-Est	5/10/2017	12:20	Open-west end	NA	8.41	11.04	6080	3.3	20.2
TMDL-Est	6/15/2017	13:05	Open-west end	NA	8.64	11.37	3437	1.8	25.1
TMDL-Est	7/13/2017	10:00	Open-west end	NA	7.94	6.79	2857	1.5	24.4
TMDL-Est	8/16/2017	11:30	Open-west end	NA	8.08	Invalid	1630	0.8	22.9
TMDL-Est	9/6/2017	11:30	Open-west end	NA	7.98	7.36	1601	0.8	24.7
TMDL-R1	5/10/2017	10:25	NA	13.61	8.46	8.8	1365	0.7	18.9
TMDL-R1	6/15/2017	11:20	NA	7.35	8.17	9.3	1371	0.7	21.2
TMDL-R1	7/13/2017	8:15	NA	6.06	7.95	7.17	1462	0.7	22.4
TMDL-R1	8/16/2017	9:40	NA	4.19	7.97	Invalid	1541	0.8	20.7
TMDL-R1	9/6/2017	10:10	NA	3.11	7.94	7.78	1625	0.8	22.7
TMDL-R2	5/10/2017	8:10	NA	13.84	7.84	8.15	1164	NA	18.3
TMDL-R2	6/15/2017	9:10	NA	8.54	7.97	8.39	1205	NA	20.1
TMDL-R2	7/12/2017	13:10	NA	10.63	8.19	9.65	1226	NA	24.4
TMDL-R2	8/15/2017	12:15	NA	6.66	8.02	Invalid	1220	NA	23.3
TMDL-R2	9/6/2017	8:00	NA	3.96	7.62	6.82	1273	NA	22.8
TMDL-R3	5/9/2017	11:25	NA	8.05	8.08	11.87	1144	NA	18.8
TMDL-R3	6/14/2017	12:10	NA	6.91	8.02	10.46	1080	NA	20.5
TMDL-R3	7/12/2017	11:20	NA	6.13	7.93	8.62	1180	NA	22.1
TMDL-R3	8/15/2017	10:30	NA	4.53	7.92	Invalid	1180	NA	21.2
TMDL-R3	9/5/2017	11:20	NA	3.82	7.97	9.05	906	NA	24.1
TMDL-R4	5/9/2017	8:10	NA	8.53	7.34	6.5	1026	NA	17.6
TMDL-R4	6/14/2017	8:55	NA	6.1	7.4	6.4	921	NA	18.6
TMDL-R4	7/12/2017	8:00	NA	5.99	7.29	7.92	1029	NA	19.5
TMDL-R4	8/15/2017	7:55	NA	4.94	7.23	Invalid	1029	NA	19.6
TMDL-R4	9/5/2017	8:30	NA	2.46	7.12	6.55 ^	998 ^	NA	20.3/17.9 ^
TMDL-SA	5/9/2017	9:50	NA	0.13	7.58	9.71	1634	NA	17.8
TMDL-SA	6/14/2017	10:30	NA	0.07*	7.1	3.92	926	NA	17.7
TMDL-SA	7/12/2017	9:45	NA	0.07*	7.35	2.58	1014	NA	18.7
TMDL-SA	8/15/2017	9:40	NA	0.03*	7.28	Invalid	1018	NA	18.8
TMDL-SA	9/5/2017	10:20	NA	<0.01*	7.08	5.23 ^	997 ^	NA	19.8/16.8 ^
TMDL-CL	5/9/2017	13:10	NA	0.27	8.05	9.02	3121	NA	27.5
TMDL-CL	6/15/2017	7:40	NA	0.17	8.08	8.94	2272	NA	15.7
TMDL-CL	7/13/2017	11:15	NA	0.01*	8.32	11.56	4114	NA	2.2
TMDL-CL	8/15/2017	13:50	NA	DRY	DRY	DRY	DRY	NA	DRY
TMDL-CL	9/5/2017	10:57	NA	DRY	DRY	DRY	DRY	NA	DRY

* The flow during this event was below the threshold for accurate meter measurement. These results are estimated and subject to additional error.

^ R4 and SA were resampled for DO/EC/Temp on 9/26/2017 at 08:40 and 09:28 respectively, as a meter malfunction after they were sampled on 9/5/2017 caused doubt on the accuracy of the original measurements.

Invalid: meter malfunction

NA: Not applicable. Berm status only applies to the estuary site TMDL-Est. Salinity is included for the TMDL-Est and TMDL-R1 sites to indicate the level of ocean influence at these sites.

Surface flow in the River during this period began downstream of the Santa Ana Blvd Bridge, upstream of R4 and continued to the estuary, including through the typically perennial reaches of R3 and below. The flow at R2 is a combination of the flow in the Ventura River downstream of R3 and the discharge from the Ojai Valley Sanitary District's wastewater treatment plant. Flow decreased between R2 and R1. Potential causes for changes in flow include surface/subsurface flow, groundwater interaction, geology and infiltration rates, antecedent moisture, agricultural and urban inputs and extractions, etc. Pondered locations, and those with shallow and/or slow moving water appear to experience greater variation in measured levels of DO and so ponds are avoided where possible, but may not be able to be avoided in all cases.

All measurements for pH were within the numeric target limits with the exception of the TMDL-Est on 6/15/17, which was marginally higher than the upper TMDL numeric target. Low levels of dissolved oxygen tended to occur in pondered areas and during periods of low flow, possibly due to the lack of water movement upstream and/or at the measurement location.

TABLE 4. MAY - SEPTEMBER 2017 NUTRIENT DATA

Site	Sample Date	Sample Time	P Total EPA 365.1 (mg/L)	P Diss EPA 365.1 (mg/L)	TKN Total EPA 351.2 (mg/L)	TKN Diss EPA 351.2 (mg/L)	N Total Calculated (mg/L)	N Diss Calculated (mg/L)	NO3+ NO2-N EPA 353.2 (mg/L)
TMDL-Est	5/10/2017	12:20	0.043	0.0080 (DNQ)	0.65	0.26	1.8	1.4	1.1
TMDL-Est	6/15/2017	13:05	0.03	0.0099 (DNQ)	0.51	0.54	0.51	0.54	<0.041
TMDL-Est	7/13/2017	10:00	0.05	0.014	0.53	0.42	0.53	0.42	<0.041
TMDL-Est	8/16/2017	11:30	0.044	0.015	0.58	0.43	0.58	0.43	<0.083
TMDL-Est	9/6/2017	11:30	0.047	0.014	0.44	0.39	0.44	0.39	<0.083
TMDL-R1	5/10/2017	10:25	0.013	0.0091 (DNQ)	0.24	0.17	2.2	2.1	1.9
TMDL-R1	6/15/2017	11:20	0.038	0.022	0.35	0.27	1.3	1.2	0.91
TMDL-R1	7/13/2017	8:15	0.042	0.03	0.3	0.44	0.91	1.1	0.61
TMDL-R1	8/16/2017	9:40	0.16	0.15	0.36	0.33	1	1	0.67
TMDL-R1	9/6/2017	10:10	0.29	0.26	0.34	0.41	0.91	0.99	0.57
TMDL-R2	5/10/2017	8:10	0.064	0.059	0.078 (DNQ)	<0.05	3.3	3.2	3.2
TMDL-R2	6/15/2017	9:10	0.083	0.07	0.38	0.25	2.5	2.4	2.1
TMDL-R2	7/12/2017	13:10	0.095	0.08	0.36	0.37	2.1	2.1	1.8
TMDL-R2	8/15/2017	12:15	0.47	0.22	0.48	0.38	2.2	2.1	1.7
TMDL-R2	9/6/2017	8:00	0.54	0.54	0.25	0.47	2.1	2.3	1.8
TMDL-R3	5/9/2017	11:25	0.0070 (DNQ)	0.0054 (DNQ)	<0.050	0.068 (DNQ)	3.3	3.4	3.3
TMDL-R3	6/14/2017	12:10	0.011	0.0090 (DNQ)	<0.050	0.066 (DNQ)	2.1	2.2	2.1

Site	Sample Date	Sample Time	P Total EPA 365.1 (mg/L)	P Diss EPA 365.1 (mg/L)	TKN Total EPA 351.2 (mg/L)	TKN Diss EPA 351.2 (mg/L)	N Total Calculated (mg/L)	N Diss Calculated (mg/L)	NO3+ NO2-N EPA 353.2 (mg/L)
TMDL-R3 duplicate	6/14/2017	12:10	0.011	0.0096 (DNQ)	<0.050	<0.050	2.2	2.2	2.2
TMDL-R3	7/12/2017	11:20	0.013	0.011	<0.050	0.079 (DNQ)	1.7	1.8	1.7
TMDL-R3	8/15/2017	10:30	0.015	0.01	0.22	0.13	1.3	1.2	1.1
TMDL-R3	9/5/2017	11:20	0.011	0.015	0.12	0.21	1	1.1	0.88
TMDL-R4	5/9/2017	8:10	0.0078 (DNQ)	0.0062 (DNQ)	<0.050	<0.050	4.7	4.7	4.7
TMDL-R4	6/14/2017	8:55	0.0081 (DNQ)	0.0069 (DNQ)	<0.050	<0.050	2.8	2.8	2.8
TMDL-R4	7/12/2017	8:00	0.0088 (DNQ)	0.0083 (DNQ)	<0.050	<0.050	2.3	2.3	2.3
TMDL-R4	8/15/2017	7:55	0.0091 (DNQ)	0.0066 (DNQ)	0.21	0.073 (DNQ)	2.0	1.8	1.8
TMDL-R4	9/5/2017	8:30	0.01	0.0054 (DNQ)	0.068 (DNQ)	<0.050	1.7	1.6	1.6
TMDL-SA	5/9/2017	9:50	0.054	0.047	0.3	0.27	1.6	1.5	1.3
TMDL-SA	6/14/2017	10:30	0.012	0.0085 (DNQ)	0.070 (DNQ)	<0.050	1	0.93	0.93
TMDL-SA	7/12/2017	9:45	0.023	0.017	0.14	<0.050	1.3	1.1	1.1
TMDL-SA	8/15/2017	9:40	0.016	0.013	0.13	0.072 (DNQ)	0.9	0.84	0.77
TMDL-SA	9/5/2017	10:20	0.037	0.024	0.089 (DNQ)	0.096 (DNQ)	0.7	0.7	0.61
TMDL-CL	5/9/2017	13:10	0.0068 (DNQ)	0.0083 (DNQ)	0.46	0.32	0.51	0.37	0.053 (DNQ)
TMDL-CL	6/15/2017	7:40	0.012	0.0073 (DNQ)	0.49	0.36	0.49	0.36	<0.041
TMDL-CL	7/13/2017	11:15	0.017	0.0085 (DNQ)	0.58	0.61	0.62	0.66	0.047 (DNQ)
TMDL-CL	8/15/2017	13:50	DRY	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-CL	9/5/2017	10:57	DRY	DRY	DRY	DRY	DRY	DRY	DRY

TABLE 5. MAY – SEPTEMBER 2017 MONTHLY ALGAL BIOMASS (CHLOROPHYLL A) AND PERCENT MACROALGAL COVER (RIVER SITES)

Site	Date	Field Replicate	Number of Transects Collected	Chlorophyll <i>a</i>	Chlorophyll <i>a</i> units	Percent Presence Macroalgae (%)
TMDL-R1	5/10/2017	1	11	160	mg/m ²	88.61
TMDL-R1	6/15/2017	1	11	440	mg/m ²	70.59
TMDL-R1	7/13/2017	1	11	280	mg/m ²	8.51
TMDL-R1	8/16/2017	1	11	410	mg/m ²	12.38
TMDL-R1	9/6/2017	1	11	220	mg/m ²	0.00
TMDL-R2	5/10/2017	1	11	350	mg/m ²	94.29
TMDL-R2	6/15/2017	1	11	520	mg/m ²	83.33

Site	Date	Field Replicate	Number of Transects Collected	Chlorophyll <i>a</i>	Chlorophyll <i>a</i> units	Percent Presence Macroalgae (%)
TMDL-R2	7/12/2017	1	11	420	mg/m ²	19.05
TMDL-R2	8/15/2017	1	11	320	mg/m ²	24.04
TMDL-R2	9/6/2017	1	11	220	mg/m ²	2.86
TMDL-R3	5/9/2017	1	11	440	mg/m ²	80.95
TMDL-R3	6/14/2017	1	11	360	mg/m ²	91.43
TMDL-R3	6/14/2017	2	11	220	mg/m ²	NA
TMDL-R3	7/12/2017	1	11	100	mg/m ²	66.35
TMDL-R3	8/15/2017	1	11	200	mg/m ²	41.90
TMDL-R3	9/5/2017	1	11	160	mg/m ²	25.96
TMDL-R4	5/9/2017	1	11	110	mg/m ²	76.92
TMDL-R4	6/14/2017	1	11	240	mg/m ²	83.65
TMDL-R4	7/12/2017	1	11	110	mg/m ²	74.29
TMDL-R4	8/15/2017	1	11	100	mg/m ²	64.76
TMDL-R4	9/5/2017	1	11	170	mg/m ²	60.00
TMDL-SA	5/9/2017	1	11	260	mg/m ²	76.77
TMDL-SA	6/14/2017	1	9	450	mg/m ²	91.76
TMDL-SA	7/12/2017	1	4	190	mg/m ²	75.00
TMDL-SA	8/15/2017	1	Mostly Dry	Mostly Dry	mg/m ²	Mostly Dry
TMDL-SA	9/5/2017	1	Mostly Dry	Mostly Dry	mg/m ²	Mostly Dry
TMDL-CL	5/9/2017	1	11	36	mg/m ²	57.69
TMDL-CL	6/14/2017	1	11	22	mg/m ²	72.38
TMDL-CL	7/13/2017	1	11	110	mg/m ²	56.00
TMDL-CL	8/15/2017	1	DRY	DRY	mg/m ²	DRY
TMDL-CL	9/5/2017	1	DRY	DRY	mg/m ²	DRY

TABLE 6. 2017 DRY SEASON AVERAGE MACROALGAL BIOMASS AND COVER_RIVER SITES

Site	Seasonal Average Biomass (Chlorophyll <i>a</i>) <i>Numeric Target Seasonal Average 150 mg/m² (mg/m²)</i>	Seasonal Average Macroalgal Cover <i>Numeric Target Seasonal Average ≤ 30% (%)</i>
TMDL-R1	302	36.0
TMDL-R2	366	44.7
TMDL-R3	247	61.3
TMDL-R4	146	71.9
TMDL-SA	300	48.7
TMDL-CL	56	37.2

TMDL-R4 and TMDL-CL met the riverine seasonal average numeric target for chlorophyll *a*. The other riverine sites did not. None of the riverine sites met the seasonal average numeric target for macroalgal cover.

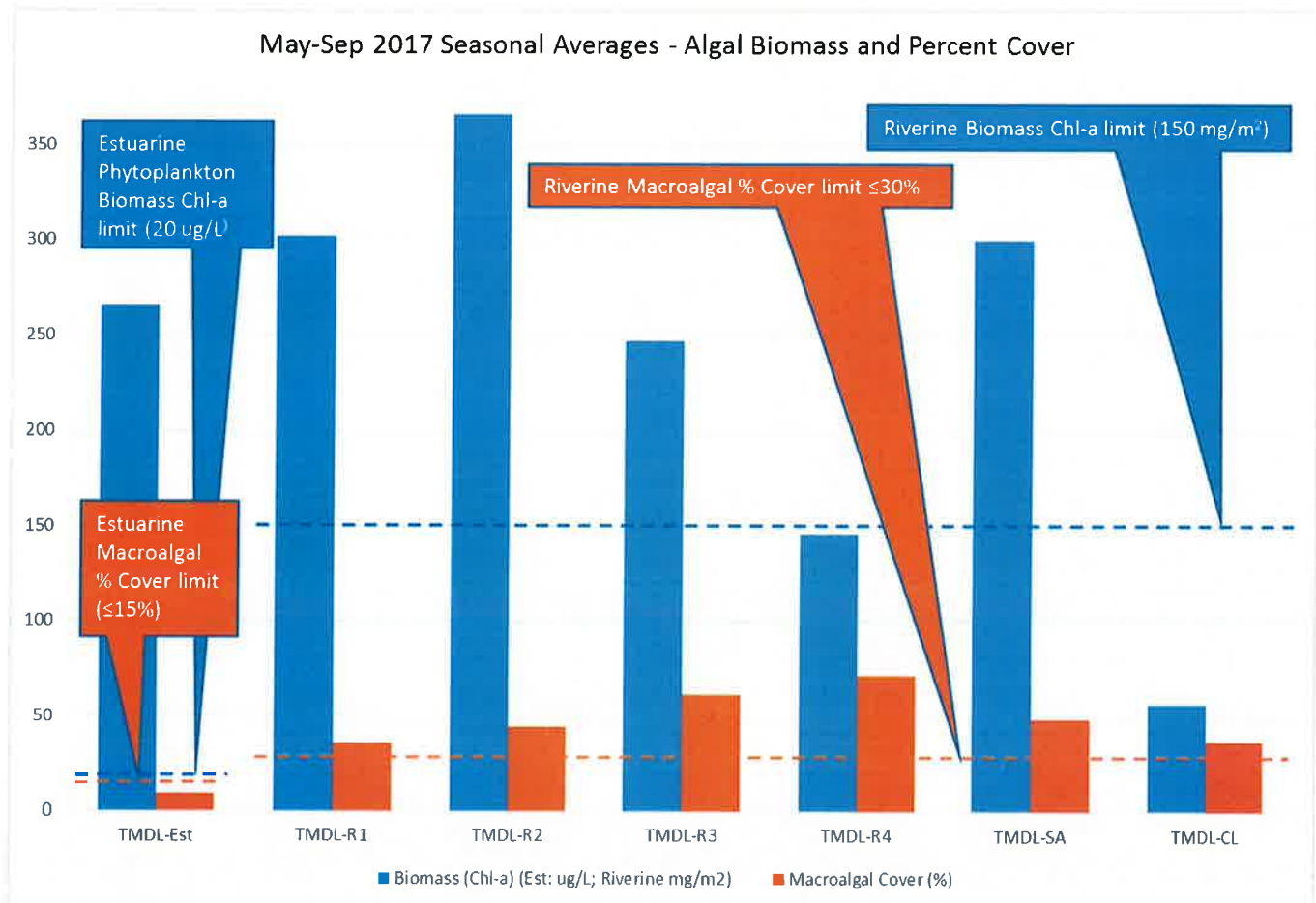
The SWAMP protocol for the riverine sites includes both suspended (floating) and attached (land-based) macroalgae when determining percent cover. The Bight '08 (estuarine) protocol includes measurements of floating algae at a depth of 0.3 meters for four quadrats per transect in addition to measuring algal cover on the shoreline. These variables are included in

Table 7. Site TMDL-Est met the seasonal average numeric target for percent cover in 2017 but exceeded the seasonal average numeric target for phytoplankton biomass (chlorophyll a).

TABLE 7. 2017 DRY SEASON AVERAGE MACROALGAL BIOMASS AND COVER_ESTUARY

Site	Date	Field Replicate	Phytoplankton Biomass Chlorophyll a (µg/L)	Land-Based Macroalgal Cover (%)	Floating Macroalgal Cover (%)
Seasonal Average Numeric Target			20 µg/L	≤ 15%	
TMDL-Est	5/10/2017	1	1,000	6.46	0.68
TMDL-Est	6/15/2017	1	160	7.21	0.17
TMDL-Est	6/15/2017	2	56	NA	NA
TMDL-Est	7/13/2017	1	270	19.12	0.00
TMDL-Est	8/16/2017	1	91	4.35	0.00
TMDL-Est	9/6/2017	1	19	7.89	0.00
TMDL-Est	Seasonal Average		266	9.01	0.17

FIGURE 2. DRY SEASON SEASONAL AVERAGES - CHLOROPHYLL A AND MACROALGAL COVER



Sampling event data, including field data sheets and laboratory reports, will be provided with the 2018 Annual Report.

CONTINUOUS DATA LOGGING

Seven Hydrolab HL4 water quality data sondes (Figure 3) are used for the continuous data monitoring requirement of this program. The HL4 has the ability to accurately measure and log dissolved oxygen, conductivity, pH and temperature within a self-contained package that is 1.75" in diameter and just over two feet in length, which allows it to fit inside a short length protective housing of 2" diameter schedule 40 pipe. The data sonde installations are vulnerable to potential vandalism and theft and so need to be as inconspicuous as possible (i.e. below the water surface among rocks and tree roots). Each sonde is assigned to a particular TMDL site and is labeled with the site name for additional consistency between events. Pre and post calibrations and/or calibration checks are performed for each deployed sonde for each event.

FIGURE 3. HYDROLAB HL4 SONDE



Continuous monitoring for pH, specific conductivity, temperature, and dissolved oxygen was conducted for a two week period at all sites (except those that were dry) in May and September.

In May 2017, seven Hydrolab HL4 water quality data sondes were installed and programmed to log data beginning May 10, 2017 at 19:00. The sondes were programmed to log data for a little over two weeks to allow field staff to get concurrent field meter measurements during sonde retrieval to compare to the sonde data (Figure 4, Figure 5, Figure 6, and Figure 7). The TMDL-R2 conductivity sensor did not hold calibration through the deployment, however conductivity is not a required measurement at this site and the conductivity at this site (known from past measurements and as measured by the field meter check at retrieval) is low enough ($\sim 1,000 \mu\text{S}$) to not affect the other collected data¹, so redeployment was unnecessary. It is likely that flow ceased at TMDL-SA mid-deployment, resulting in lower diurnal variation, dissolved oxygen, and conductivity levels. The field meter check at TMDL-SA measured DO at higher levels than the sonde, likely due to the stirring required to move the ponded water past the field meter's polarographic sensor at the speeds required for accurate measurement (> 1 foot per second). TMDL-SA conductivity readings may be in error for the second week of deployment based on the lower sonde readings than field meter readings at pickup.

In September 2017, sondes were installed at all TMDL monitoring sites for continuous data logging except TMDL-CL, which was dry. The sondes were installed before the logging program began on September 10, 2017 and removed after two weeks of logging, (Figure 5, Figure 6, and Figure 7). Three sondes would not allow conductivity calibrations prior to deployment but were working fine during post deployment checks. The difficulty in calibrating may have been caused by a temperature compensation issue within the sondes since temperatures were high (~ 35 degrees Celsius, 95 degrees Fahrenheit) on the

¹ The conductivity measurement is used by the sonde when calculating dissolved oxygen, however the influence of conductivity on dissolved oxygen measurements for conductivity levels at the TMDL riverine stations is negligible.

date of calibration. The sondes that calibrated for conductivity were used at sites with higher conductivities, to reduce the likelihood of affecting DO measurements, although all conductivities were low enough as measured by the field meter checks for negligible effects on the data. The TMDL-R3 DO sensor became fouled partway through its deployment. The TMDL-Est sonde was unable to be recovered and was likely stolen. The TMDL-Est sonde was deployed just upstream of the Southern Pacific railroad trestle on the west bank of the Ventura River on September 5th, 2017. The sonde was labeled with identifying information including a phone number, and was deployed within a floating housing with a 10 pound anchor that resulted in it being approximately 8 feet below the water surface and out of sight. The river velocity was low (3.11 cfs measured at TMDL-R1 on September 6, 2017). This is the same method that was used successfully for the last two years, even when river velocities were considerably higher. Sonde retrieval with a gaff was unsuccessfully attempted on September 20th. A second unsuccessful attempt was made with a pole and clamp on September 21st. On September 22nd, a diver searched within a 10-foot radius of the area of deployment but nothing was found. There is a large homeless population in the area and there are usually people around during sonde deployments and retrievals, however the actual placement is attempted to be done when nobody is watching. It seems likely that someone saw the deployment and swam out and stole the sonde. By the time the sonde was determined to be gone, it was too late to come up with a new system to secure the sonde and meet the two-week September deployment for the third quarter. The deployment method will be re-evaluated prior to the fourth quarter deployment to try to prevent additional loss of equipment/data. If vandalism or theft at this location continues, then the monitoring plan may need to be modified to reflect the realities of collecting continuous data in public spaces.

TABLE 8. 2017 DRY SEASON TWO-WEEK CONTINUOUS MONITORING PERIODS

Site	2017 Quarter 2 (May*)	2017 Quarter 3 (September*)
TMDL-Est	5/10/2017 – 5/24/2017	9/5/2017 - LOST
TMDL-R1	5/10/2017 – 5/24/2017	9/5/2017 – 9/19/2017 ^a
TMDL-R2	5/10/2017 – 5/24/2017 ^a	9/5/2017 – 9/19/2017
TMDL-R3	5/10/2017 – 5/24/2017	9/5/2017 – 9/19/2017 ^b
TMDL-R4	5/10/2017 – 5/24/2017	9/5/2017 – 9/19/2017
TMDL-SA	5/10/2017 – 5/24/2017	9/5/2017 – 9/19/2017
TMDL-CL	5/10/2017 – 5/24/2017	DRY

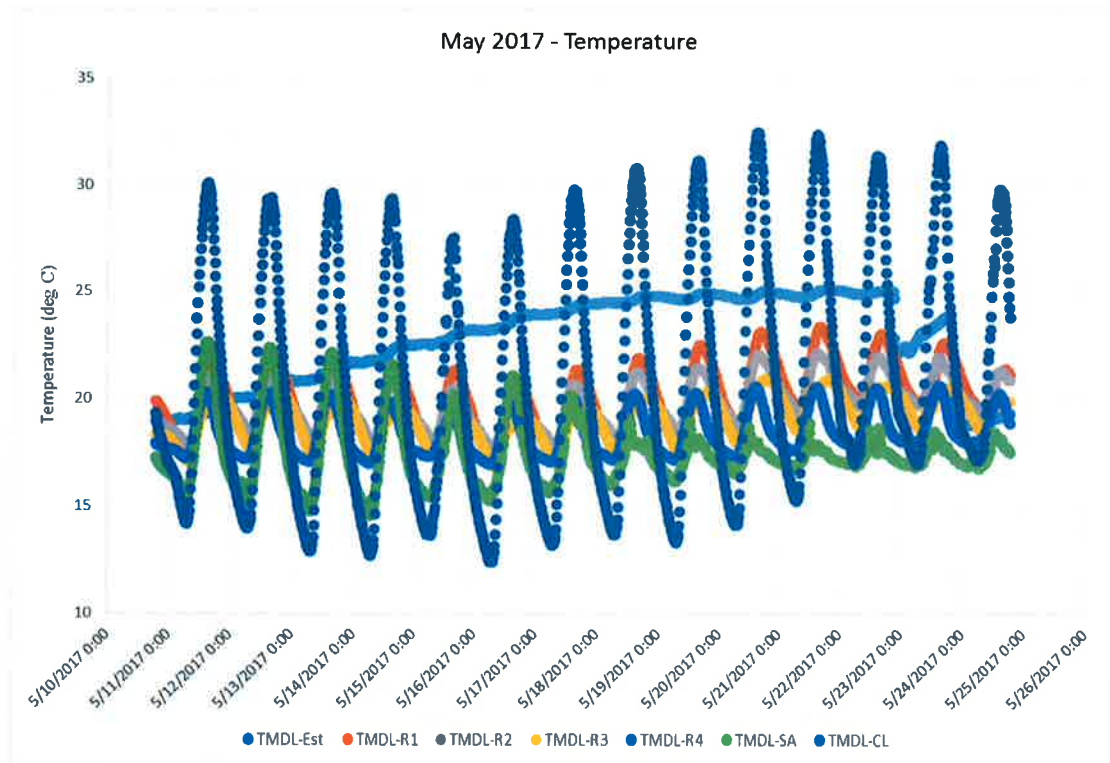
* Month required by TMDL

^a Conductivity in error but not a required parameter so not redeployed.

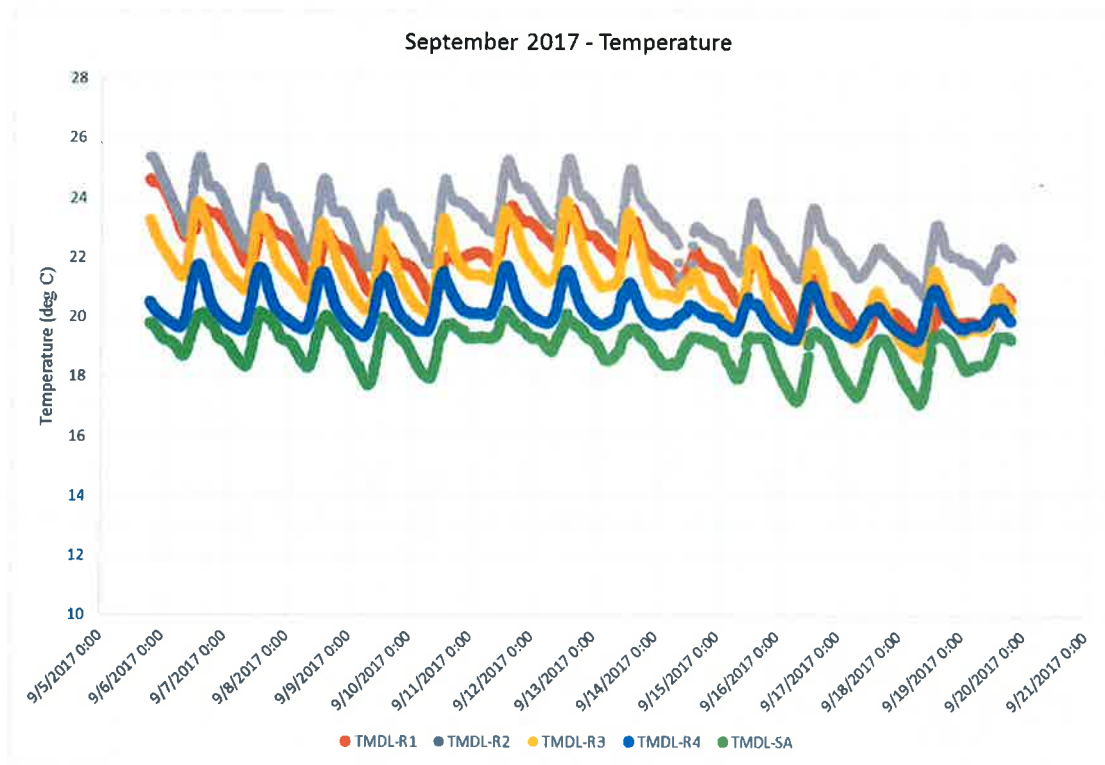
^b Dissolved oxygen sensor became fouled partway through deployment.

Graphical representations of the continuous monitoring data are presented below.

FIGURE 4. DRY SEASON 2017 - TEMPERATURE (CONTINUOUS DATA LOGGER)

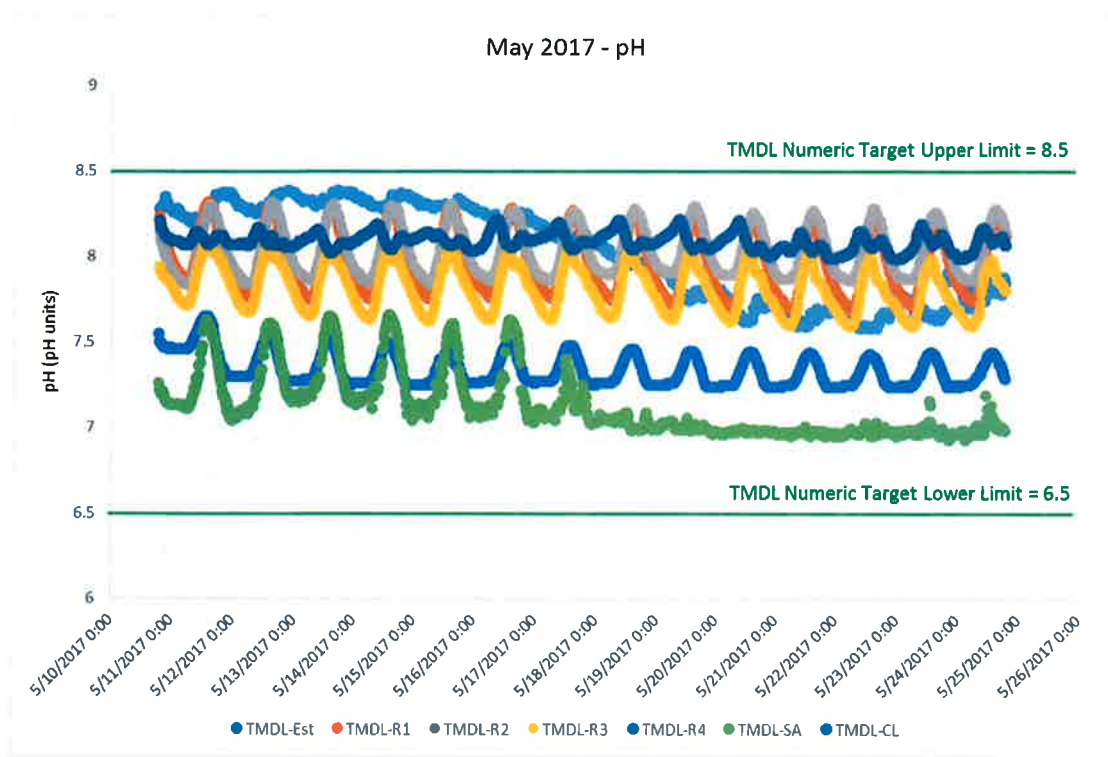


TMDL-SA: It is probable that the flow ceased mid-week, which caused changes in readings.

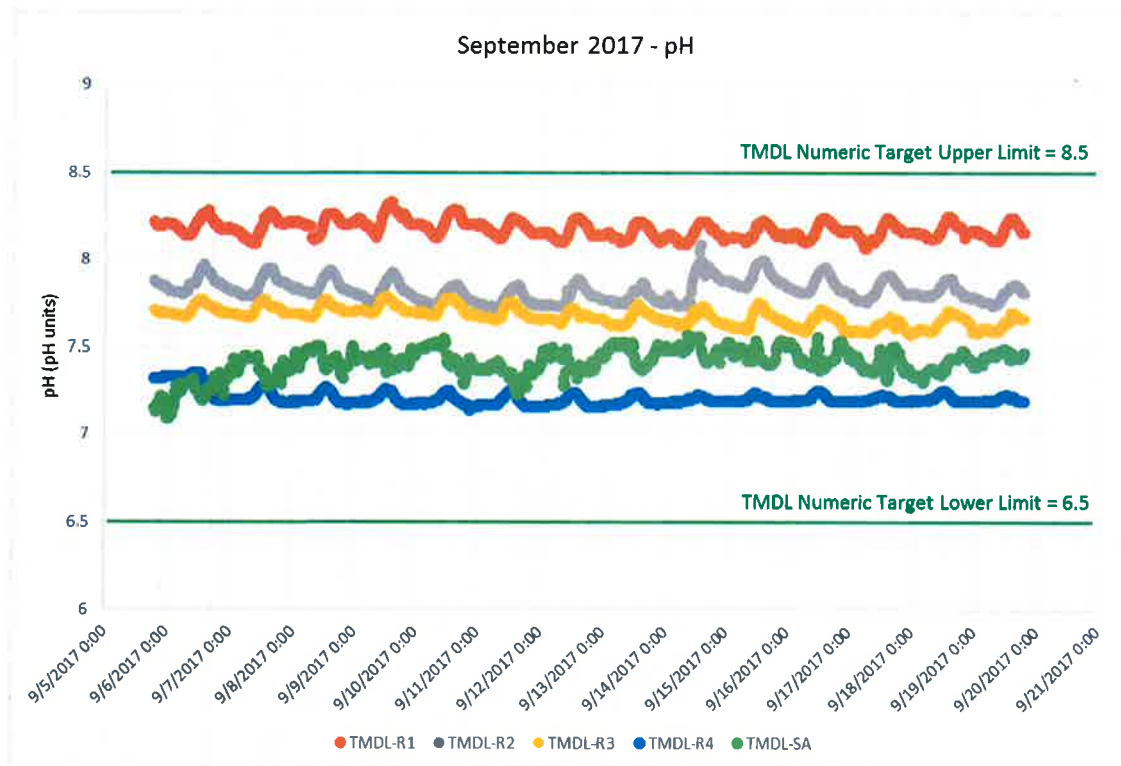


TMDL-Est: Sonde missing, likely stolen.

FIGURE 5. DRY SEASON 2017 - PH (CONTINUOUS DATA LOGGER)

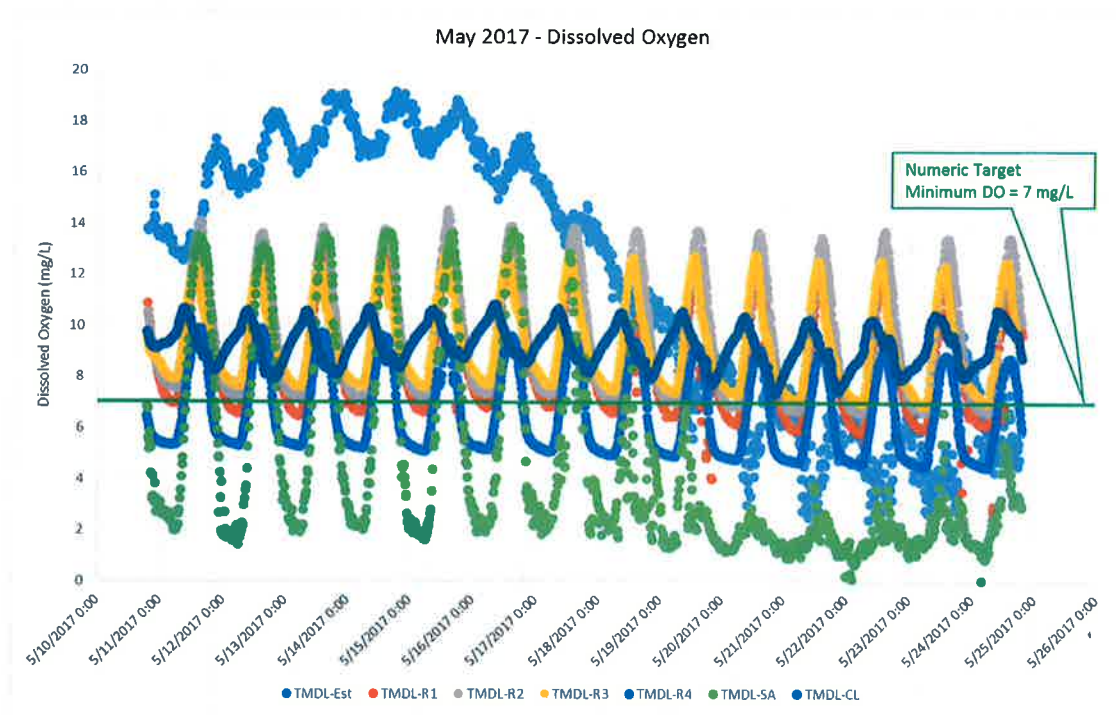


TMDL-SA: It is probable that the flow ceased mid-week, which caused changes in readings.

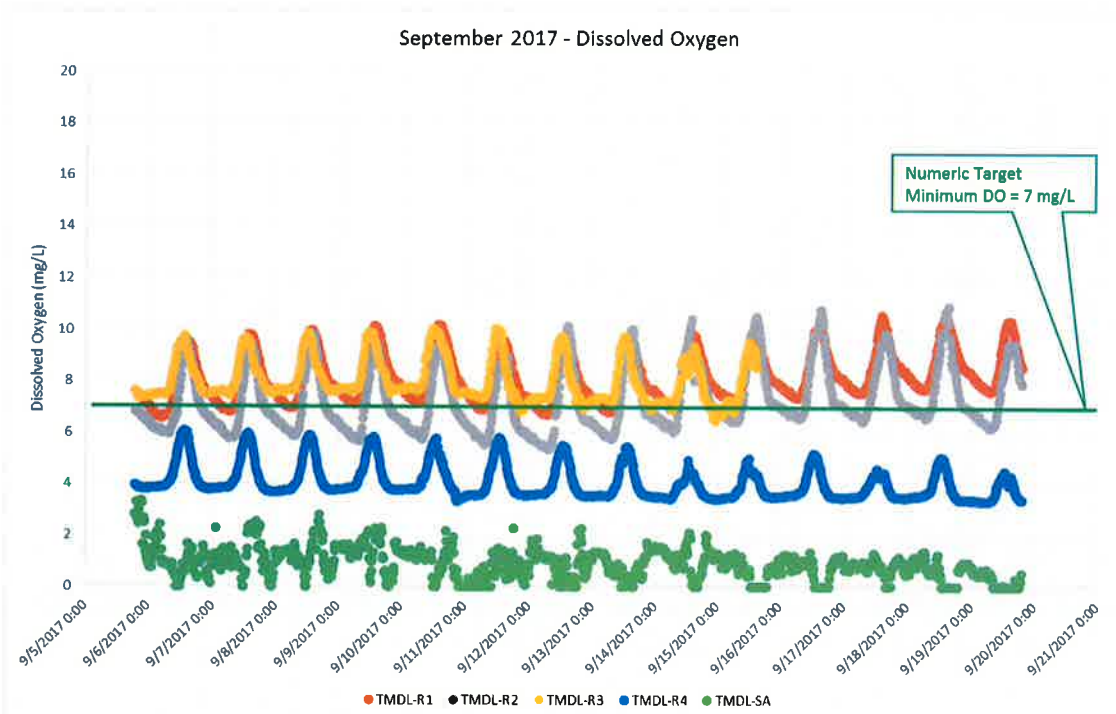


TMDL-Est: Sonde lost, likely stolen

FIGURE 6. DRY SEASON 2017 - DISSOLVED OXYGEN (CONTINUOUS DATA LOGGER)

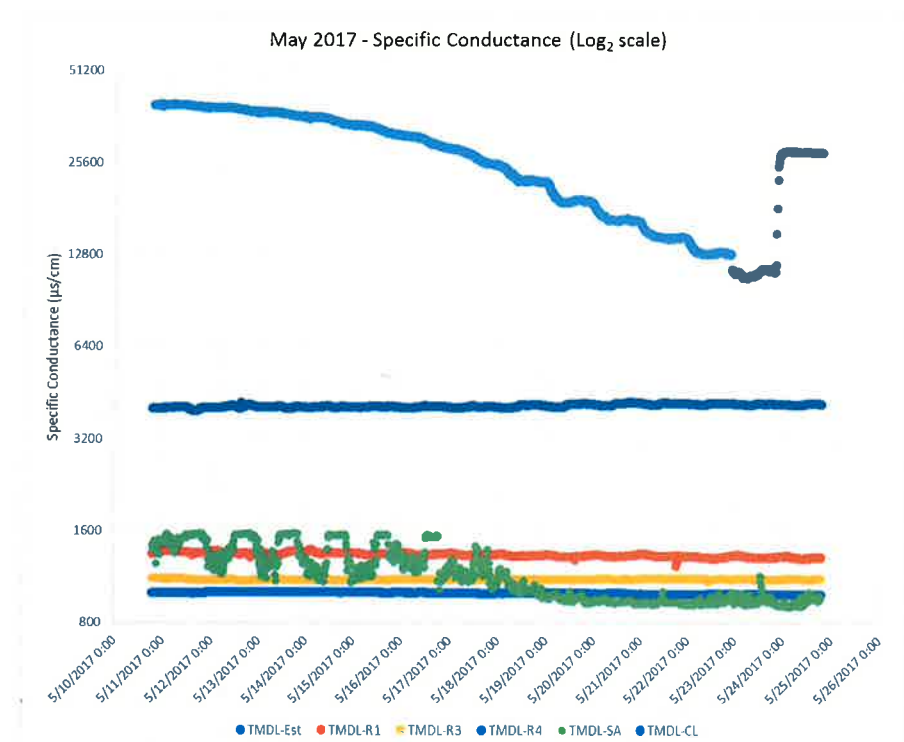


TMDL-SA: It is probable that the flow ceased mid-week, which caused changes in readings.

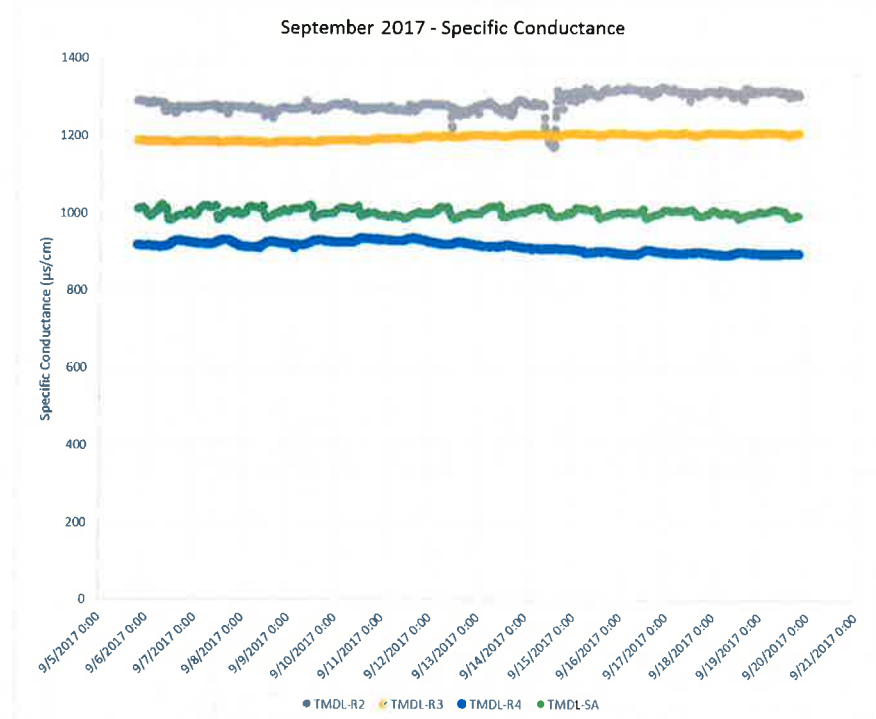


TMDL-Est: Sonde lost, likely stolen. TMDL-R3: Dissolved Oxygen sensor became fouled partway through deployment. TMDL-SA: Pooled, low flow.

FIGURE 7. DRY SEASON 2017 - SPECIFIC CONDUCTANCE (CONTINUOUS DATA LOGGER)



TMDL-R2: Conductivity readings are in error for this deployment but are not required at this site for the TMDL.
TMDL-SA: It is probable that the flow ceased mid-week, which caused changes in readings. Conductivity readings may be in error for the second week of deployment (based on lower sonde readings than field meter readings at pickup).



TMDL-Est: Sonde lost, likely stolen. **TMDL-R1:** Conductivity readings are not stable. Fouled conductivity sensor likely. **TMDL-R3 & TMDL-SA:** Pre-deployment conductivity would not calibrate, therefore calibration date is

expired. However, calibration check post-deployment showed data was within specifications. Suspect that high ambient temperatures on calibration day (95 deg F) caused issues with conductivity calibrations.

OBSERVATIONS AND LESSONS LEARNED

Southern California has been experiencing extreme drought conditions since before this monitoring program began (January 2015). During the drought, the Ventura River and its tributaries were particularly dry, resulting in lost hydrological connectivity between the upper and lower watershed. A series of large storms moved through the area in February 2017 resulting in flows at all observation points and briefly reestablishing hydrologic connectivity between the upper and lower watershed, however by the time the 2017 dry season monitoring began in May, flow on the mainstem Ventura River at the two upper observation points (Santa Ana Bridge and Highway 150) had ceased, resulting in a loss of connectivity with that portion of the upper watershed, as occurred in 2015 and 2016.

Flow variations between monitoring sites and events are likely due to a combination of factors, including geology, temperature, inputs, and extractions. Ponded locations, and those with shallow and/or slow moving water appear to experience greater variation in measured levels of DO and so ponds are avoided where possible, but could not be avoided in all cases. TMDL-Est appears to have experienced a greater ocean influence in May than in September (as seen in 2015 and 2016) according to the field measurements, however the loss of the TMDL-Est sonde in September resulted in only one data point available for conductivity in September.

Siltation can be an issue in slow moving water and sondes are installed higher in the water column in areas where it is likely to occur. All sondes were checked and/or calibrated by monitoring staff before and after deployment, regardless of history, and field meter readings were taken in the vicinity of the sondes immediately prior to sonde removal to check/confirm that the sondes were still reading accurately in situ at the end of the deployment. A replacement sonde for TMDL-Est site will need to be purchased, and a new deployment strategy developed to further reduce the risk of theft.

All monthly grab and continuous monitoring pH measurements were within the numeric target limits of pH 6.5-8.5, with the exception of the June grab sample at TMDL-Est, which was over the upper limit of 8.5. Sites with DO measured below the daily minimum numeric target are shown in Table 9. All sites exhibited diurnal DO, pH, and temperature patterns during the continuous monitoring events, and all sites (except TMDL-CL in May) were below the DO daily minimum numeric target at all troughs of the diurnal variation. Low levels of dissolved oxygen appear to be associated with low flow, possibly due to the ponding of water upstream and/or at the measurement location.

Fewer sites met the seasonal average numeric target for percent macroalgal cover and algal biomass (chlorophyll a) than in previous years. Sites with exceedances are listed in Table 10.

TABLE 9. SITES WITH DO MEASURED BELOW THE DAILY MINIMUM NUMERIC TARGET (7 MG/L)

	May	June	July	August	September
Grab	R4	R4, SA	Est, SA	Meter malfunction	R2, R4, SA
Continuous	Est, R1, R2, R3, R4, SA	Not Applicable	Not Applicable	Not Applicable	R1, R2, R3, R4, SA

Note: No Est sonde data for September (sonde stolen). R4 had low flow in September. SA was ponded and barely flowing June – September. CL was dry in August and September. A meter malfunction in August resulted in invalid DO data for all sampleable sites.

TABLE 10. SITES ABOVE THE SEASONAL AVERAGE MAXIMUM NUMERIC ALGAE TARGETS

Parameter	Above Seasonal Average Numeric Target
Chlorophyll <i>a</i>	Est, R1, R2, R3, SA
Macroalgal Cover	R1, R2, R3, R4, SA, CL

Note: SA was barely flowing May – September, and dry for algae sampling in August and September. CL was dry in August and September.

TABLE 11. EXCEEDANCES BY SITE AND MONTH

	Seasonal Average	May	June	July	August	September
TMDL-Est	Chl <i>a</i>	DO(c)	pH	DO(m)	Meter	No sonde data
TMDL-R1	Chl <i>a</i> / Cover	DO(c)			Meter	DO(c)
TMDL-R2	Chl <i>a</i> / Cover	DO(c)			Meter	DO(m) / DO(c)
TMDL-R3	Chl <i>a</i> / Cover	DO(c)			Meter	DO(c)
TMDL-R4	Cover	DO(m) / DO(c)	DO(m)		Meter	DO(m) / DO(c)
TMDL-SA	Chl <i>a</i> / Cover	DO(c)	DO(m)	DO(m)	Meter *	DO(m) / DO(c)*
TMDL-CL	Cover				DRY	DRY

Notes:

Meter: DO meter malfunction, no DO data.

*: site was too dry to meet protocol requirements for algae collection. Only water grab samples were collected.

DO(m) is the monthly grab sample measurement

Chl *a*: Chlorophyll *a*

DO(c) is the continuously monitored DO.

Cover: Percent macroalgal cover



June 26, 2018

Jenny Newman
Regional Water Quality Control Board
320 W. 4th St., Suite 200
Los Angeles, CA 90013

Subject: **2018 ANNUAL REPORT FOR THE VENTURA RIVER ALGAE TMDL
(RESOLUTION NO. R12-011)**

Dear Ms. Newman:

Enclosed for your review and consideration is the 2018 Annual Report prepared and submitted to document completion of monitoring activities required by the Ventura River and Tributaries Algae, Eutrophic Conditions, and Nutrients Total Maximum Daily Load, Resolution No. R12-011 (Ventura Algae TMDL) and the Ventura Algae TMDL Comprehensive Monitoring Plan for Receiving Water approved by Regional Water Quality Control Board on October 20, 2014.

This document is being submitted on behalf of the Ojai Valley Sanitary District, County of Ventura, Ventura County Watershed Protection District, City of Ojai, City of Ventura, California Department of Transportation, and the Ventura County Agricultural Irrigated Lands Group (represented by the Farm Bureau of Ventura County).

If you have any comments or questions regarding the attached document, please contact Ewelina Mutkowska at (805) 645-1382 or ewelina.mutkowska@ventura.org.

Sincerely,

A handwritten signature in blue ink, appearing to read "Arne Anselm", is written over a horizontal line.

Arne Anselm
Deputy Director,
Ventura County Watershed Protection District

Ms. Jenny Newman,
June 26, 2018
Page 2 of 2

cc: Renee Purdy, Regional Water Quality Control Board
Jeff Pratt, County of Ventura Public Works Agency
Glenn Shephard, Ventura County Watershed Protection District
Ewelina Mutkowska, Ventura County Public Works Agency
Joe Yahner, City of Ventura
Greg Grant, City of Ojai
Jeff Palmer, Ojai Valley Sanitary District
John Krist, Farm Bureau of Ventura County
Chien Pei, California Department of Transportation

TOTAL MAXIMUM DAILY LOAD FOR ALGAE, EUTROPHIC CONDITIONS, AND NUTRIENTS IN VENTURA RIVER, INCLUDING THE ESTUARY, AND ITS TRIBUTARIES (VR ALGAE TMDL)

2018 ANNUAL REPORT

Submitted to
TMDL Responsible Parties Implementing Receiving Water Monitoring Requirements:

City of Ojai
City of Ventura
County of Ventura
Ojai Valley Sanitary District
California Department of Transportation
Ventura County Agricultural Irrigated Lands Group
Ventura County Watershed Protection District

Prepared by:
Ventura County Watershed Protection District
June 1, 2018



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- Appendix A: Field Data Sheets (May 2017 – April 2018)
- Appendix B: Chain of Custodies and Laboratory Reports (May 2017 – April 2018)

EXECUTIVE SUMMARY

On behalf of the Total Maximum Daily Load (TMDL) Responsible Parties, the Ventura County Watershed Protection District (District) began sampling in accordance with the Ventura River Algae TMDL Comprehensive Monitoring Plan for Receiving Waters (CMP) on January 14, 2015. As required by the TMDL, the CMP prescribes year-round monthly water quality monitoring for nutrients and other water quality parameters at one site in the Ventura River Estuary (TMDL-Est), one site in each of the Ventura River reaches 1 – 4, and in two main tributaries, Cañada Larga and San Antonio Creek (TMDL-R1, TMDL-R2, TMDL-R3, TMDL-R4, TMDL-CL and TMDL-SA, respectively). Continuous monitoring of dissolved oxygen and pH, (both of which also require temperature monitoring) are required at each site every quarter. Conductivity is also measured during the continuous monitoring. The CMP also requires monthly monitoring of algae during the dry season (May – September). This report covers the monitoring from May 2017 – April 2018, including monthly checks for flow at the observation sites, field and laboratory results, and the quarterly continuous data logger monitoring results.

The Ventura River Watershed has been subjected to increased environmental stresses in recent years. In addition to the ongoing severe drought, the watershed was heavily impacted by the Thomas Fire, which started on December 4, 2017 and continued through January 9, 2018, becoming the largest recorded fire in California history to date. The fire burned most of the open space and forest lands in the watershed, as well as orchards, homes, and other structures from Fillmore to Santa Barbara. Areas that did not burn (mainly the Ojai Valley), were still subject to heavy ash deposition.

The first storm of the 2017-18 wet season occurred in January 2018, just after the January TMDL sampling event, and the heavy rain on the burned area resulted in higher than typical runoff and sediment loads and was sufficient to result in flow at all TMDL sites except TMDL-SA, which was dry from December 2017 event through February 2018. There was no hydrologic connectivity for this reporting period between the upper and lower watershed on the main stem of the Ventura River until February 2018, as observed at the TMDL-SAB and TMDL-H150 (Ventura River at Hwy 150, referred to as TMDL-150 prior to the June 2017 Annual Report) observation sites. Most of the rain for the 2017/18 wet season fell during March, when a series of large storms moved through the area.

As described in the June 2017 Dry Season Report, all TMDL sample sites had sampleable flow for nutrients and algae sampling from May – July, however by August, TMDL-CL was completely dry and TMDL-SA was too dry for algae sampling. Flow variations between monitoring sites and events might be due to a combination of factors including geology, weather conditions, inputs, and extractions.

Hydrolab HL4 water quality sondes are used for the quarterly two-week continuous monitoring and were first deployed for this project in March 2015. The sondes were calibrated by District staff before each event to ensure calibrations were accurate and field meter measurements were taken near the sondes during sonde retrieval to check for drift/fouling of the sonde sensors during deployment. The estuary sonde deployment configuration aims to avoid exposure of the sonde if/while the estuary is breached and to reduce the risk of potential vandalism, which results in varying depths of deployment. Sondes in areas with known siltation issues were deployed higher in the water column. The sondes were deployed in May and September during the 2017 Dry Season, as required by the TMDL. The wet season sonde deployments occurred in November 2017 and February 2018. The Estuary sonde was missing (presumed stolen) at the end of the September deployment period. There was insufficient time in September to redesign the placement (to prevent further theft) and redeploy the sonde so the next continuous monitoring deployment for TMDL-Est was the fourth quarter, November 2018. Sondes were not deployed at dry sites (CL in September and November 2017, SA in November 2017 and February 2018, and R4 in November 2017). The deployed sondes logged data for two week periods beginning on May 10, September 5, and November 22, 2017, and February 12, 2018. The conductivity sensors malfunctioned at TMDL-R2 in May; at TMDL-R1, TMDL-R3, and TMDL-SA in September; and at TMDL-CL in February. It is likely that flow ceased at TMDL-SA mid-deployment in May, resulting in changes in the readings.

All monthly grab measurements for pH during this reporting period were within the numeric target limits of 6.5-8.5 pH units, with the exception of TMDL-Est in June 2017 and February and April 2018. Similarly, all continuous data logger pH results were within limits with the exception of TMDL-Est in February 2018, which experienced multiple excursions over 8.5, with a maximum of 8.71. Low levels of dissolved oxygen (below the numeric target of 7 mg/L) were observed during the monthly grab monitoring at TMDL-SA and TMDL-CL several times, and once per site at TMDL-Est and TMDL-R2. They appear to be generally associated with low flow, possibly due to the ponding of water upstream and/or at the measurement location. Dissolved oxygen levels below the numeric target were observed during the continuous monitoring at most sites during the May deployment, and again at the September deployment. All sites exhibited diurnal variation in levels. The lower levels during the diurnal cycles resulted in a few dips below the numeric threshold for TMDL-Est and TMDL-R2 in November, however all monitored sites were above the target in February. The measured range for total nitrogen was 0.25 mg/L – 5.9 mg/L and total phosphorus was 0.0081 (DNQ) mg/L– 1.0 mg/L.

Two sites (TMDL-R4 and TMDL-CL) met the riverine seasonal average numeric target for chlorophyll *a* but none of the riverine sites met the seasonal average numeric target for macroalgal cover. TMDL-Est met the estuarine seasonal average numeric target for percent cover in 2017 but exceeded the seasonal average numeric target for phytoplankton biomass (chlorophyll *a*).

Sampling event data, including laboratory reports, chain of custody forms, and field data sheets, are provided as appendices to this report.

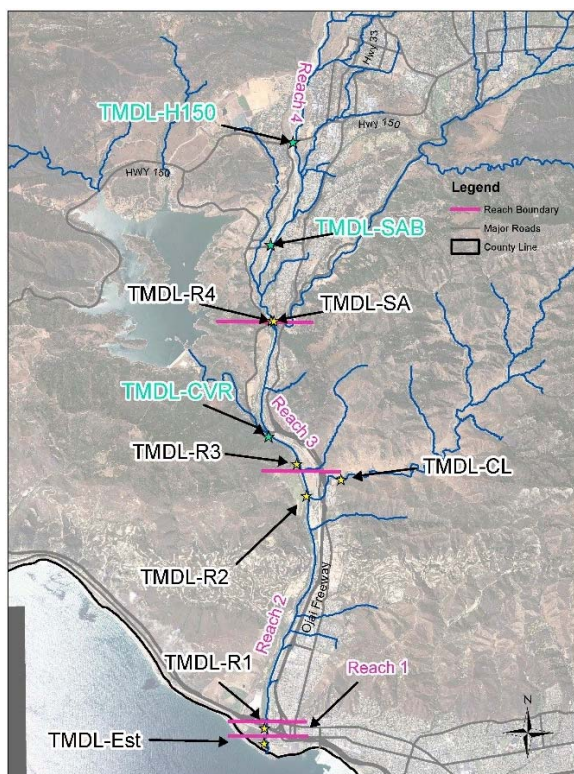
BACKGROUND

The Water Quality Control Plan for the Los Angeles Region was amended on December 6, 2012 to incorporate the Total Maximum Daily Load for Algae, Eutrophic Conditions, and Nutrients in the Ventura River, including the Estuary, and its Tributaries (VR Algae TMDL). The VR Algae TMDL became effective on June 28, 2013 and required the development and implementation a comprehensive monitoring plan (CMP) for receiving water monitoring to assess numeric attainment and measure in-stream nutrient concentrations. The CMP submitted by the Responsible Parties (Ojai Valley Sanitary District, Ventura County Watershed Protection District, County of Ventura, City of Ojai, City of San Buenaventura (Ventura), California Department of Transportation, and the Ventura County Agricultural Irrigated Lands Group (represented by the Farm Bureau of Ventura County)) was approved by the Los Angeles Regional Water Quality Control Board (Regional Board) on October 20, 2014.

On November 18, 2014, the Ventura County Watershed Protection District (District) was retained by the Responsible Parties to conduct the monitoring in accordance with the CMP for up to 5 years. The CMP required sampling to begin no later than 90 days after the Los Angeles Regional Water Quality Control Board approved the CMP, which equates to January 18, 2015. Monitoring began on January 14, 2015.

As required by the TMDL, the CMP prescribes year-round monthly water quality monitoring for nutrients and other water quality parameters at one site in the Ventura River Estuary, one site in each of the Ventura River reaches 1 – 4, and in two main tributaries, Cañada Larga and San Antonio Creek. Continuous monitoring of dissolved oxygen and pH (both of which also require temperature monitoring), are required at each site every quarter. Conductivity is also measured during the continuous monitoring. The CMP also requires monthly monitoring of algae (chlorophyll *a* and percent macroalgal cover) during the dry season (May – September). This report is a summary of the monthly dry season monitoring data from May – September 2017, the monthly wet season monitoring data from October 2017 – April 2018, and the quarterly continuous data logging conducted in May, September, and November 2017, and February 2018.

FIGURE 1. SAMPLING SITES AND FLOW OBSERVATION LOCATIONS



Note: Yellow site markers (black labels) are sampling locations. Blue site markers (blue labels) are flow observation locations.

Ventura River Algae TMDL
Annual Report

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June 2018

ACCESS PERMISSION

In 2015, in order to allow for continuity of site locations, five-year easements were sought from the property owners where the sites are located for the fee of \$250 per term. The temporary easements expire five years from the date of approval (early 2020). Two property owners declined the five year easement request but signed a revocable access permit instead. The sites affected by the permits are TMDL-R2 (which was moved upstream of the site listed in the CMP because the owner of that parcel denied the access request) and TMDL-SA directly above the confluence with the Ventura River. TMDL-R2 was sampled approximately 200 meters upstream of the OVSD site (OVSD-R5) for monthly monitoring and approximately 300 meters upstream for continuous monitoring in order to be entirely on permitted property.

MONTHLY MONITORING

Monitoring occurred monthly as required. There was no connectivity between the upper and lower watershed on the observation dates until February 2018 (after a large storm in early January), as shown in Table 1. Sample dates and collecting agency are shown in Table 2 (sample sites that were dry are noted as such and shaded grey). Monthly field data (including flow) is summarized in Table 3 and nutrient data in Table 4. The District contracted with Aquatic Bioassay & Consulting Laboratories, Inc. (ABC) for assistance with the monthly monitoring of chlorophyll *a* and percent cover of algae during the 2017 Dry Season, May to September (Table 5, Table 6, and Table 7).

TABLE 1. MAY 2017 - APRIL 2018 OBSERVATION SITES

Date	Ventura River at Hwy 150	Ventura River at Santa Ana Blvd	Ventura River at Casitas Road
5/11/2017	Dry at bridge but ponds visible up and downstream	Small flow on west side, ponded upstream on east side, dry ~20m downstream of bridge	Flow on east and west end. East dominant ~ 15 -20 cfs
6/15/2017	DRY	DRY	Flow on east and west end. East dominant ~ 10 cfs
7/13/2017	DRY	DRY	Flow on east and west end. East dominant ~ 5-10 cfs
8/16/2017	DRY	DRY	Flow on east and west end. East dominant ~ 5-10 cfs
9/6/2017	DRY	DRY	~1.5 cfs
10/3/2017	DRY	DRY	Flow on east and west end. East dominant ~ 5 cfs
11/1/2017	DRY	DRY	Flow on east and west end. East dominant ~ 2 cfs
12/12/2017	DRY	DRY	Flow on east end. ~ 1 cfs
1/2/2018	DRY	DRY	~ 0.5 cfs
2/7/2018	Flowing ~5-10 cfs	Flowing mainly west channel ~5-7 cfs	Flowing east end ~3-5 cfs. Large pond west end.
3/28/2018	~ 6 cfs	Split in two flowing channels ~ 6 cfs	Flowing east end ~8 cfs. Large pond west end.
4/24/2018	10 cfs	7 cfs	7 cfs

TABLE 2. MAY 2017 – APRIL 2018 WATER QUALITY SAMPLE COLLECTION DATE AGENCY

Sample Month	Season	Collecting Agency	Sample Date						
			TMDL-Est	TMDL-R1	TMDL-R2	TMDL-R3	TMDL-R4	TMDL-SA	TMDL-CL
MAY 2017	Dry	District/ABC	5/10	5/10	5/10	5/9	5/9	5/9	5/9
JUN 2017	Dry	District/ABC	6/15	6/15	6/15	6/14	6/14	6/14	6/15
JUL 2017	Dry	District/ABC	7/13	7/13	7/12	7/12	7/12	7/12	7/13
AUG 2017	Dry	District/ABC	8/16	8/16	8/15	8/15	8/15	Mostly DRY (8/15)	DRY (8/15)
SEP 2017	Dry	District/ABC	9/6	9/6	9/6	9/5	9/5	Mostly DRY (9/5)	DRY (9/5)
OCT 2017	Wet	District	10/3	10/3	10/3	10/3	10/3	10/3	DRY (10/3)
NOV 2017	Wet	District	11/1	11/1	11/1	11/1	11/1	11/1	DRY (11/1)
DEC 2017	Wet	District	12/20	12/20	12/20	12/20	12/20	DRY (12/20)	DRY (12/12)
JAN 2018	Wet	District	1/3	1/3	1/3	1/3	1/3	DRY (1/3)	DRY (1/2)
FEB 2018	Wet	District	2/7	2/7	2/7	2/7	2/7	DRY (2/7)	2/7
MAR 2018	Wet	District	3/28	3/26	3/26	3/26	3/26	3/26	3/26
APR 2018	Wet	District	4/25	4/25	4/25	4/25	4/25	4/25	4/25

Mostly Dry sites had water present in at least one location in the reach so could be sampled for regular monthly monitoring parameters, but did not have sufficient water present to meet algae sampling protocols so algae monitoring/collection was not conducted. DRY sites had insufficient water present for any sampling to take place. TMDL-CL was dry for much of the reporting period, and TMDL-SA and TMDL-R4 went dry for a shorter duration, with 6, 9, and 10 (out of 12) sampleable monitoring events, respectively.

MONTHLY FIELD DATA

TABLE 3. MAY 2017 – APRIL 2018 FIELD DATA

Site	Sample Date	Sample Time	Berm Status	Flow (cfs)	pH (pH Units)	DO (mg/L)	SC (µS/cm)	Salinity (ppt)	Water Temp (°C)
					Numeric Target 6.5 - 8.5	Numeric Target >7 mg/L			
TMDL-Est	5/10/2017	12:20	Open-west end	NA	8.41	11.04	6080	3.3	20.2
TMDL-Est	6/15/2017	13:05	Open-west end	NA	8.64	11.37	3437	1.8	25.1
TMDL-Est	7/13/2017	10:00	Open-west end	NA	7.94	6.79	2857	1.5	24.4
TMDL-Est	8/16/2017	11:30	Open-west end	NA	8.08	Invalid	1630	0.8	22.9
TMDL-Est	9/6/2017	11:30	Open-west end	NA	7.98	7.36	1601	0.8	24.7
TMDL-Est	10/3/2017	12:15	Open-west end	NA	8.16	11.13	1668	0.8	20.4
TMDL-Est	11/1/2017	12:00	Closed	NA	8.46	10.12	2670	1.4	18.9

Site	Sample Date	Sample Time	Berm Status	Flow (cfs)	pH (pH Units)	DO (mg/L)	SC (µS/cm)	Salinity (ppt)	Water Temp (°C)
					<i>Numeric Target 6.5 - 8.5</i>	<i>Numeric Target >7 mg/L</i>			
TMDL-Est	12/20/2017	11:00	Closed	NA	8.46	12.38	3074	1.6	10.8
TMDL-Est	1/3/2018	11:55	Closed	NA	8.37	14.74	2687	1.4	13.2
TMDL-Est	2/7/2018	13:15	Open-west end	NA	8.51	12.01	3998	2.1	16.6
TMDL-Est	3/28/2018	12:40	Open-west end	NA	7.9	9.35	3315	1.7	21.1
TMDL-Est	4/25/2018	14:10	Open-west end	NA	8.73	12.8	17000	10	22.6
TMDL-R1	5/10/2017	10:25	NA	13.61	8.46	8.8	1365	0.7	18.9
TMDL-R1	6/15/2017	11:20	NA	7.35	8.17	9.3	1371	0.7	21.2
TMDL-R1	7/13/2017	8:15	NA	6.06	7.95	7.17	1462	0.7	22.4
TMDL-R1	8/16/2017	9:40	NA	4.19	7.97	Invalid	1541	0.8	20.7
TMDL-R1	9/6/2017	10:10	NA	3.11	7.94	7.78	1625	0.8	22.7
TMDL-R1	10/3/2017	11:30	NA	1.77	8.27	10.83	1685	0.9	18.6
TMDL-R1	11/1/2017	11:20	NA	0.69	8.25	8.61	1863	1	18
TMDL-R1	12/20/2017	10:20	NA	0.47	8.29	11.18	1969	1	9.4
TMDL-R1	1/3/2018	11:05	NA	0.39	8.18	11.24	1973	1	11.8
TMDL-R1	2/7/2018	12:35	NA	3.97	8.37	11.44	1576	0.8	15.6
TMDL-R1	3/26/2018	16:21	NA	54.38	8.36	9.07	1202	0.6	16.4
TMDL-R1	4/25/2018	13:30	NA	7.06	8.23	10.39	1459	0.7	20.4
TMDL-R2	5/10/2017	8:10	NA	13.84	7.84	8.15	1164	NA	18.3
TMDL-R2	6/15/2017	9:10	NA	8.54	7.97	8.39	1205	NA	20.1
TMDL-R2	7/12/2017	13:10	NA	10.63	8.19	9.65	1226	NA	24.4
TMDL-R2	8/15/2017	12:15	NA	6.66	8.02	Invalid	1220	NA	23.3
TMDL-R2	9/6/2017	8:00	NA	3.96	7.62	6.82	1273	NA	22.8
TMDL-R2	10/3/2017	10:15	NA	3.56	7.92	8.6	1338	NA	19.7
TMDL-R2	11/1/2017	10:20	NA	2.64	7.96	7.75	1402	NA	20.7
TMDL-R2	12/20/2017	9:30	NA	1.71	8.05	8.96	1353	NA	14.1
TMDL-R2	1/3/2018	9:55	NA	1.96	7.92	8.37	1404	NA	16
TMDL-R2	2/7/2018	11:30	NA	3.21	8.12	10.89	1233	NA	17.5
TMDL-R2	3/26/2018	15:06	NA	48**	8.22	9.77	1056	NA	15.4
TMDL-R2	4/25/2018	11:20	NA	5.65	8.16	10.04	1177	NA	20.6
TMDL-R3	5/9/2017	11:25	NA	8.05	8.08	11.87	1144	NA	18.8
TMDL-R3	6/14/2017	12:10	NA	6.91	8.02	10.46	1080	NA	20.5
TMDL-R3	7/12/2017	11:20	NA	6.13	7.93	8.62	1180	NA	22.1
TMDL-R3	8/15/2017	10:30	NA	4.53	7.92	Invalid	1180	NA	21.2
TMDL-R3	9/5/2017	11:20	NA	3.82	7.97	9.05	906	NA	24.1
TMDL-R3	10/3/2017	9:15	NA	1.89	7.95	9.83	1205	NA	18.1
TMDL-R3	11/1/2017	9:25	NA	0.45	7.98	7.97	1268	NA	17.3
TMDL-R3	12/20/2017	8:15	NA	<1*	7.92	9.54	1305	NA	9.7
TMDL-R3	1/3/2018	8:35	NA	0.32	7.72	10.25	1301	NA	11.3

Site	Sample Date	Sample Time	Berm Status	Flow (cfs)	pH (pH Units)	DO (mg/L)	SC (µS/cm)	Salinity (ppt)	Water Temp (°C)
					<i>Numeric Target 6.5 - 8.5</i>	<i>Numeric Target >7 mg/L</i>			
TMDL-R3	2/7/2018	10:15	NA	1.66	8.1	11.47	1145	NA	15.2
TMDL-R3	3/26/2018	13:00	NA	46**	8.3	10.11	1038	NA	14.3
TMDL-R3	4/25/2018	10:05	NA	5.04	8.06	9.93	1104	NA	19.3
TMDL-R4	5/9/2017	8:10	NA	8.53	7.34	6.5	1026	NA	17.6
TMDL-R4	6/14/2017	8:55	NA	6.1	7.4	6.4	921	NA	18.6
TMDL-R4	7/12/2017	8:00	NA	5.99	7.29	7.92	1029	NA	19.5
TMDL-R4	8/15/2017	7:55	NA	4.94	7.23	Invalid	1029	NA	19.6
TMDL-R4	9/5/2017	8:30	NA	2.46	7.12	^	^	^	20.3
	9/26/2017	8:40				6.55	998	NA	17.9
TMDL-R4	10/3/2017	7:45	NA	<1	7.05	5.93	1005	NA	17.6
TMDL-R4	11/1/2017	7:45	NA	<0.2	7.33	3.61	1003	NA	18.1
TMDL-R4	12/20/2017	7:45	NA	DRY	DRY	DRY	DRY	NA	DRY
TMDL-R4	1/3/2018	8:00	NA	DRY	DRY	DRY	DRY	NA	DRY
TMDL-R4	2/7/2018	9:00	NA	1.64	8.32	10.4	1121	NA	11
TMDL-R4	3/26/2018	10:55	NA	33**	8.48	9.97	911	NA	12.2
TMDL-R4	4/25/2018	8:20	NA	2.03	7.48	8.18	1014	NA	17.8
TMDL-SA	5/9/2017	9:50	NA	0.13	7.58	9.71	1634	NA	17.8
TMDL-SA	6/14/2017	10:30	NA	0.07	7.1	3.92	926	NA	17.7
TMDL-SA	7/12/2017	9:45	NA	0.07	7.35	2.58	1014	NA	18.7
TMDL-SA	8/15/2017	9:40	NA	0.03	7.28	Invalid	1018	NA	18.8
TMDL-SA	9/5/2017	10:20	NA	<0.01	7.08	^	^	^	19.8
	9/26/2017	9:28				5.23	997	NA	16.8
TMDL-SA	10/3/2017	8:30	NA	<0.01	7.22	4.2	1000	NA	16.4
TMDL-SA	11/1/2017	8:20	NA	0	7.26	0.87	1017	NA	17.6
TMDL-SA	12/20/2017	7:35	NA	DRY	DRY	DRY	DRY	NA	DRY
TMDL-SA	1/3/2018	8:10	NA	DRY	DRY	DRY	DRY	NA	DRY
TMDL-SA	2/7/2018	8:50	NA	DRY	DRY	DRY	DRY	NA	DRY
TMDL-SA	3/26/2018	11:50	NA	12.45	8.29	9.89	1345	NA	14.3
TMDL-SA	4/25/2018	9:10	NA	0.34	7.96	9.23	1748	0.9	16
TMDL-CL	5/9/2017	13:10	NA	0.27	8.05	9.02	3121	NA	27.5
TMDL-CL	6/15/2017	7:40	NA	0.17	8.08	8.94	2272	NA	15.7
TMDL-CL	7/13/2017	11:15	NA	0.01	8.32	11.56	4114	NA	2.2
TMDL-CL	8/15/2017	13:50	NA	DRY	DRY	DRY	DRY	NA	DRY
TMDL-CL	9/5/2017	10:57	NA	DRY	DRY	DRY	DRY	NA	DRY
TMDL-CL	10/3/2017	7:19	NA	DRY	DRY	DRY	DRY	NA	DRY
TMDL-CL	11/1/2017	7:25	NA	DRY	DRY	DRY	DRY	NA	DRY
TMDL-CL	12/12/2017	13:34	NA	DRY	DRY	DRY	DRY	NA	DRY
TMDL-CL	1/2/2018	14:05	NA	DRY	DRY	DRY	DRY	NA	DRY
TMDL-CL	2/7/2018	7:30	NA	0.05	8.23	11.25	3388	NA	6.5

Site	Sample Date	Sample Time	Berm Status	Flow (cfs)	pH (pH Units)	DO (mg/L)	SC (μS/cm)	Salinity (ppt)	Water Temp (°C)
					<i>Numeric Target 6.5 - 8.5</i>	<i>Numeric Target >7 mg/L</i>			
TMDL-CL	3/26/2018	9:45	NA	0.85	8.27	10.55	4268	NA	12.8
TMDL-CL	4/25/2018	12:20	NA	0.02	8.43	11.08	4164	NA	28.7

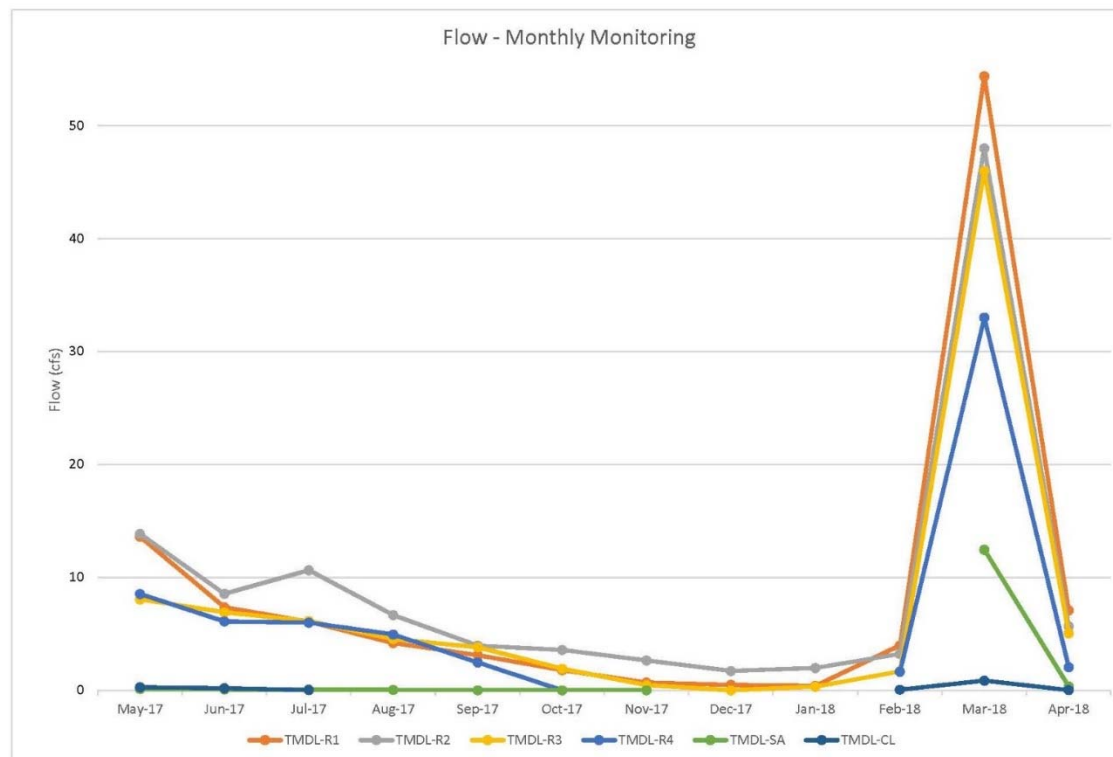
* The flow during this event was below the threshold for accurate meter measurement. These results are estimated.

** Flow too high for safe wadeability at this site. Estimated from nearby gauges/measurements.

^ DO/EC meter results at R4 and SA on 9/6/2017 are suspect due to possible meter malfunction. Re-measured parameters on 9/26/17 with the same meter used for the other TMDL sites in September. See error report in appendices for more details. NA: Not applicable. Berm status only applies to the estuary site TMDL-Est. Salinity is included for the TMDL-Est and TMDL-R1 sites to indicate the level of ocean influence at these sites. There was no ocean influence observed at TMDL-R1 during the reporting period.

Late season storms at the start of 2017 resulted in flow at all sites at the start of the dry season. An unusually dry storm season at the end of 2017 resulted in low flow at all sites, until storms in early 2018 resulted in flow at all sites. Year-round surface flow in the River starts around Foster Park (near the Casitas Vista Bridge observation point) and is typically perennial at TMDL-R3 and below. The flow at TMDL-R2 is a combination of the flow in the Ventura River downstream of TMDL-R3 and the discharge from the Ojai Valley Sanitary District's wastewater treatment plant. Flow measurements taken during this reporting period typically decreased between TMDL-R2 and TMDL-R1 during drier periods, but increased during the wettest periods (March 2018). Potential causes for changes in flow include surface/subsurface flow, groundwater interaction, geology and infiltration rates, antecedent moisture, agricultural and urban inputs and extractions, etc.

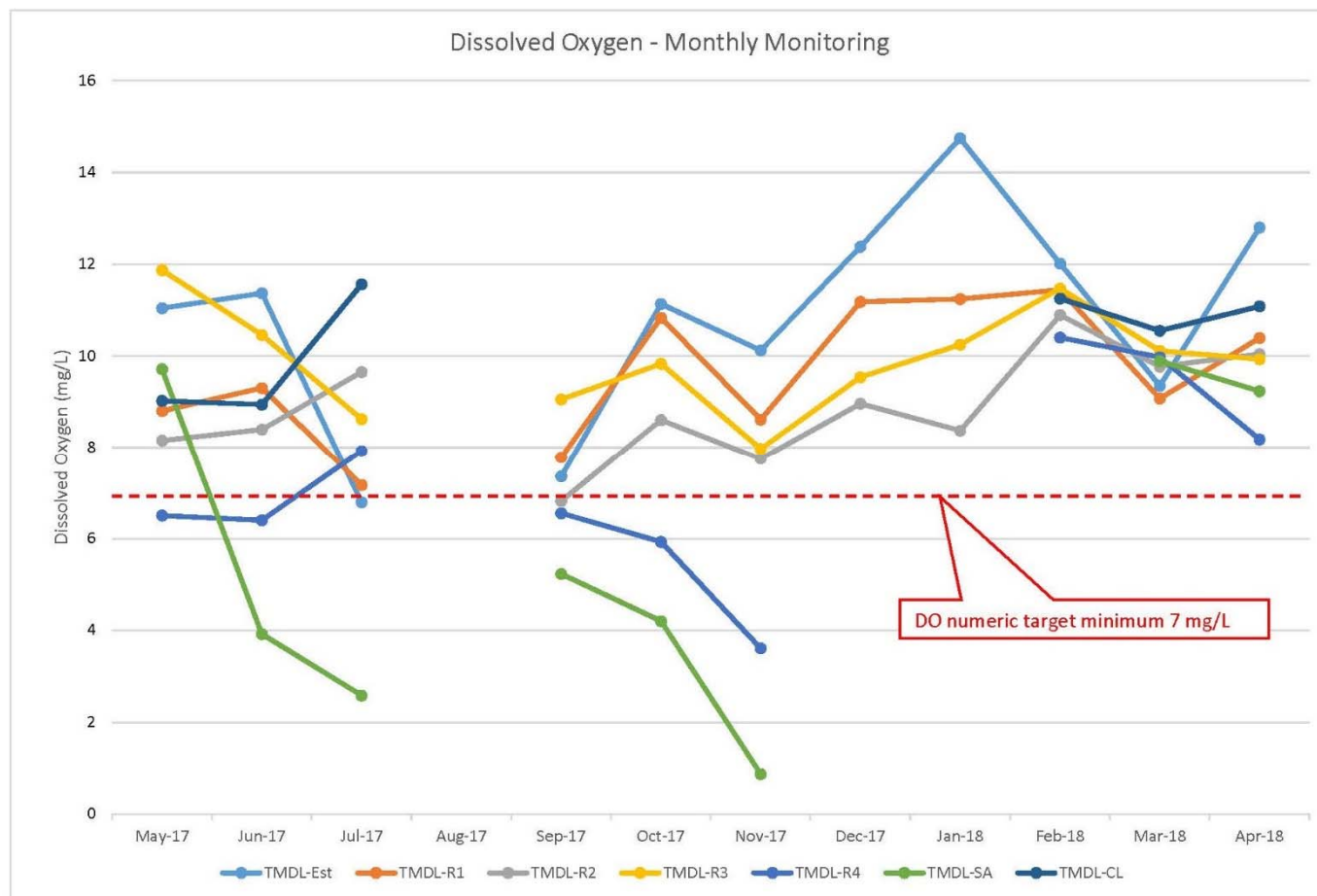
FIGURE 2. 2017 – 2018 MONTHLY MONITORING - FLOW



Absent data points indicate that the measurement could not be taken, i.e. the site was dry.

Low levels of dissolved oxygen tended to occur during periods of low flow, possibly due to the ponding (and potential stagnation) of water observed upstream and/or at the measurement location. Malfunctioning DO meters in August 2017 resulted in invalid DO measurements for all sites for this event. A potentially malfunctioning meter in September 2017 resulted in questionable results for DO, conductivity, and salinity at TMDL-R4 and TMDL-SA, so these parameters were re-measured with a different meter on September 26, 2017 at these sites. These results are used for this report.

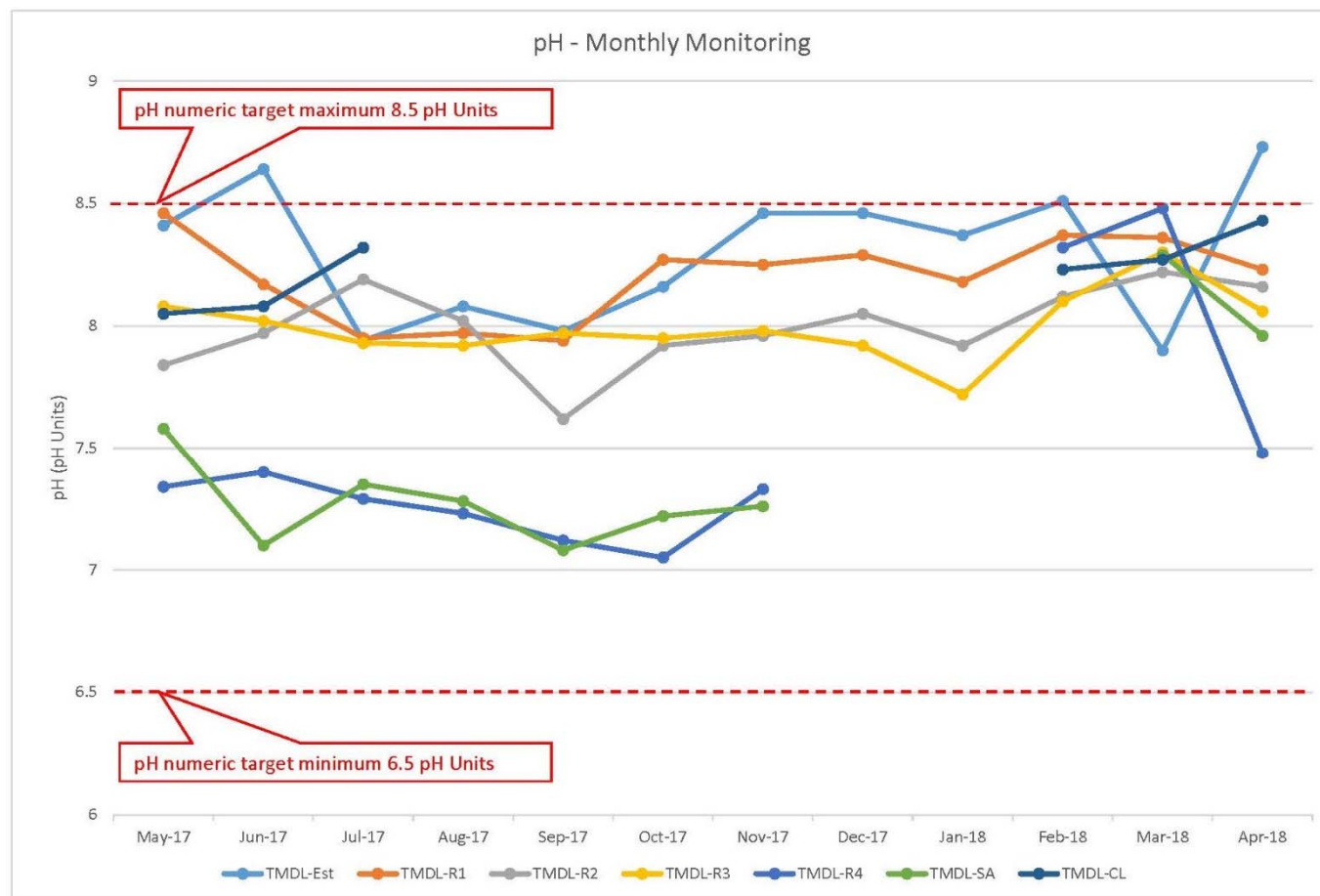
FIGURE 3. 2017 – 2018 MONTHLY MONITORING - DISSOLVED OXYGEN



Absent data points indicate that the measurement could not be taken, i.e. the site was dry, (meter malfunction in August).

All monthly field measurements for pH were within the numeric target limits, with the exception of TMDL-Est in June 2017 and February and April 2018.

FIGURE 4. 2017 – 2018 MONTHLY MONITORING - PH



Absent data points indicate that the measurement could not be taken, i.e. the site was dry.

MONTHLY NUTRIENT DATA

TABLE 4. MAY 2017 – APRIL 2018 NUTRIENT DATA

Site	Sample Date	Sample Time	P Total EPA 365.1 (mg/L)	P Diss EPA 365.1 (mg/L)	TKN Total EPA 351.2 (mg/L)	TKN Diss EPA 351.2 (mg/L)	N Total Calculated (mg/L)	N Diss Calculated (mg/L)	NO3+ NO2-N EPA 353.2 (mg/L)
TMDL-Est	5/10/2017	12:20	0.043	0.0080 (DNQ)	0.65	0.26	1.8	1.4	1.1
TMDL-Est	6/15/2017	13:05	0.03	0.0099 (DNQ)	0.51	0.54	0.51	0.54	<0.041
TMDL-Est	7/13/2017	10:00	0.05	0.014	0.53	0.42	0.53	0.42	<0.041
TMDL-Est	8/16/2017	11:30	0.044	0.015	0.58	0.43	0.58	0.43	<0.083
TMDL-Est	9/6/2017	11:30	0.047	0.014	0.44	0.39	0.44	0.39	<0.083
TMDL-Est	10/3/2017	12:15	0.046	0.020	0.41	0.38	0.41	0.38	<0.083
TMDL-Est	11/1/2017	12:00	0.15	0.026	1.3	0.58	1.3	0.58	<0.083

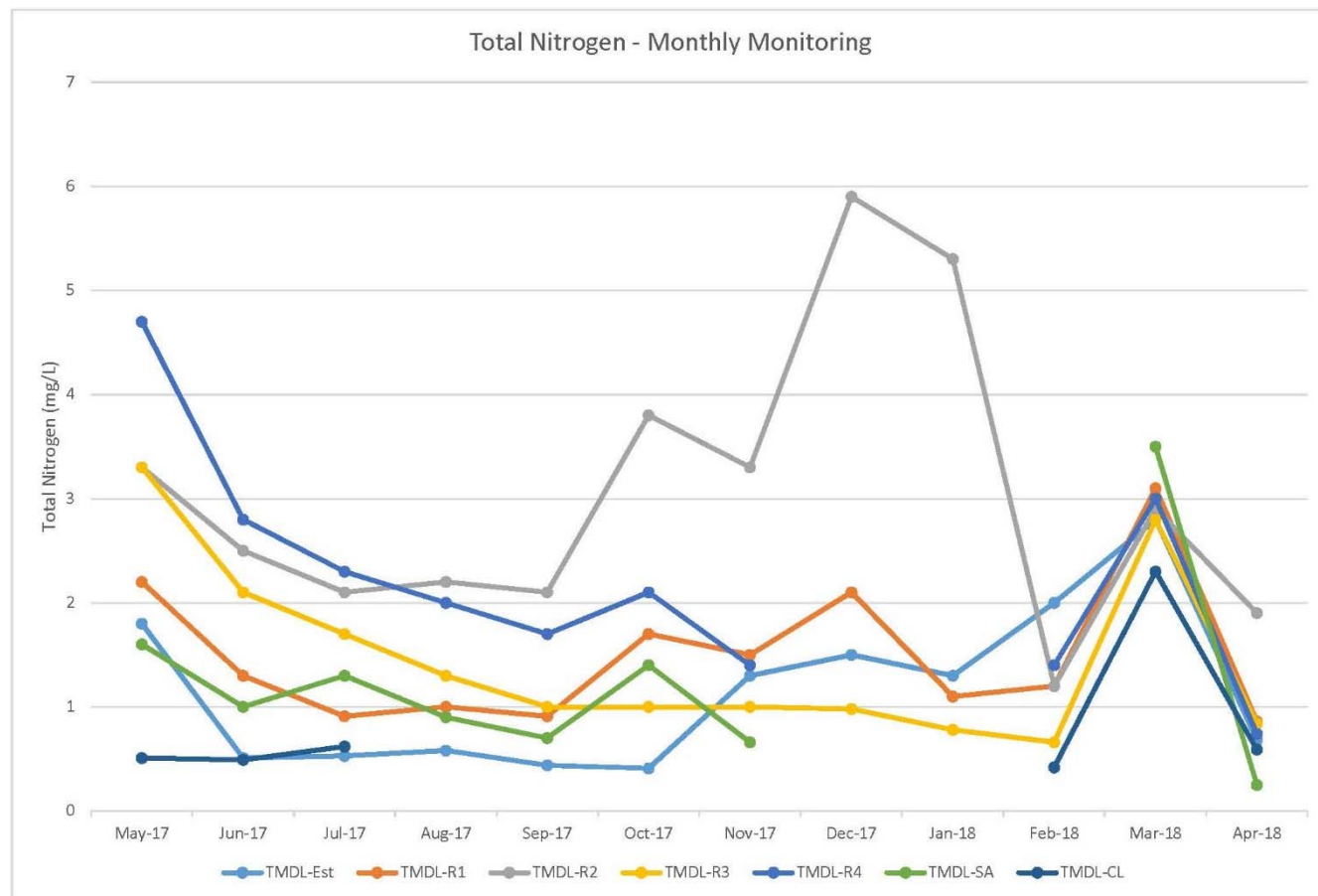
Site	Sample Date	Sample Time	P Total EPA 365.1 (mg/L)	P Diss EPA 365.1 (mg/L)	TKN Total EPA 351.2 (mg/L)	TKN Diss EPA 351.2 (mg/L)	N Total Calculated (mg/L)	N Diss Calculated (mg/L)	NO3+ NO2-N EPA 353.2 (mg/L)
TMDL-Est	12/20/2017	11:00	0.11	0.023	1.4	0.57	1.5	0.7	0.13 (DNQ)
TMDL-Est	1/3/2018	11:55	0.12	0.02	1.3	0.42	1.3	0.42	<0.083
TMDL-Est	2/7/2018	13:15	0.061	0.018	1.2	0.9	2	1.7	0.8
TMDL-Est	3/28/2018	12:40	0.24	0.12	0.84	0.61	2.8	2.6	2
TMDL-Est	4/25/2018	14:10	0.058	0.011	0.68	0.43	0.68	0.43	<0.083
TMDL-R1	5/10/2017	10:25	0.013	0.0091 (DNQ)	0.24	0.17	2.2	2.1	1.9
TMDL-R1	6/15/2017	11:20	0.038	0.022	0.35	0.27	1.3	1.2	0.91
TMDL-R1	7/13/2017	8:15	0.042	0.03	0.3	0.44	0.91	1.1	0.61
TMDL-R1	8/16/2017	9:40	0.16	0.15	0.36	0.33	1	1	0.67
TMDL-R1	9/6/2017	10:10	0.29	0.26	0.34	0.41	0.91	0.99	0.57
TMDL-R1	10/3/2017	11:30	0.24	0.22	0.42	0.39	1.7	1.6	1.2
TMDL-R1	11/1/2017	11:20	0.19	0.17	0.57	0.47	1.5	1.4	0.9
TMDL-R1	12/20/2017	10:20	0.054	0.048	0.61	0.5	2.1	2	1.5
TMDL-R1	1/3/2018	11:05	0.041	0.032	0.64	0.45	1.1	0.95	0.5
TMDL-R1	2/7/2018	12:35	0.059	0.022	1	0.93	1.2	1.1	0.17 (DNQ)
TMDL-R1	3/26/2018	16:21	0.41	0.079	0.89	0.41	3.1	2.6	2.2
TMDL-R1	4/25/2018	13:30	0.054	0.033	0.5	0.38	0.86	0.74	0.36
TMDL-R2	5/10/2017	8:10	0.064	0.059	0.078 (DNQ)	<0.05	3.3	3.2	3.2
TMDL-R2	6/15/2017	9:10	0.083	0.07	0.38	0.25	2.5	2.4	2.1
TMDL-R2	7/12/2017	13:10	0.095	0.08	0.36	0.37	2.1	2.1	1.8
TMDL-R2	8/15/2017	12:15	0.47	0.22	0.48	0.38	2.2	2.1	1.7
TMDL-R2	9/6/2017	8:00	0.54	0.54	0.25	0.47	2.1	2.3	1.8
TMDL-R2	10/3/2017	10:15	1	0.95	0.2	0.4	3.8	4	3.6
TMDL-R2	11/1/2017	10:20	0.36	0.33	0.91	0.86	3.3	3.2	2.4
TMDL-R2	12/20/2017	9:30	0.089	0.062	0.88	0.91	5.9	5.9	5
TMDL-R2	1/3/2018	9:55	0.088	0.063	0.9	0.7	5.3	5.1	4.4
TMDL-R2	2/7/2018	11:30	0.14	0.1	0.98	0.83	1.2	1	0.2
TMDL-R2	3/26/2018	15:06	0.29	0.11	0.74	0.45	2.9	2.6	2.2
TMDL-R2	4/25/2018	11:20	0.059	0.047	0.42	0.24	1.9	1.7	1.5
TMDL-R3	5/9/2017	11:25	0.0070 (DNQ)	0.0054 (DNQ)	<0.050	0.068 (DNQ)	3.3	3.4	3.3
TMDL-R3	6/14/2017	12:10	0.011	0.0090 (DNQ)	<0.050	0.066 (DNQ)	2.1	2.2	2.1
TMDL-R3	7/12/2017	11:20	0.013	0.011	<0.050	0.079 (DNQ)	1.7	1.8	1.7
TMDL-R3	8/15/2017	10:30	0.015	0.01	0.22	0.13	1.3	1.2	1.1
TMDL-R3	9/5/2017	11:20	0.011	0.015	0.12	0.21	1	1.1	0.88
TMDL-R3	10/3/2017	9:15	0.015	0.014	0.27	0.21	1	0.96	0.75
TMDL-R3	11/1/2017	9:25	0.02	0.017	0.3	0.18	1	0.9	0.73

Site	Sample Date	Sample Time	P Total EPA 365.1 (mg/L)	P Diss EPA 365.1 (mg/L)	TKN Total EPA 351.2 (mg/L)	TKN Diss EPA 351.2 (mg/L)	N Total Calculated (mg/L)	N Diss Calculated (mg/L)	NO3+ NO2-N EPA 353.2 (mg/L)
TMDL-R3	12/20/2017	8:15	0.016	0.016	0.17	<0.050	0.98	0.81	0.81
TMDL-R3	1/3/2018	8:35	0.015	0.01	0.12	<0.050	0.78	0.66	0.66
TMDL-R3	2/7/2018	10:15	0.029	0.0089 (DNQ)	0.66	0.6	0.66	0.6	<0.083
TMDL-R3	3/26/2018	13:00	0.39	0.067	0.66	0.44	2.8	2.6	2.1
TMDL-R3	4/25/2018	10:05	0.019	0.01	0.27	0.15	0.84	0.72	0.57
TMDL-R4	5/9/2017	8:10	0.0078 (DNQ)	0.0062 (DNQ)	<0.050	<0.050	4.7	4.7	4.7
TMDL-R4	6/14/2017	8:55	0.0081 (DNQ)	0.0069 (DNQ)	<0.050	<0.050	2.8	2.8	2.8
TMDL-R4	7/12/2017	8:00	0.0088 (DNQ)	0.0083 (DNQ)	<0.050	<0.050	2.3	2.3	2.3
TMDL-R4	8/15/2017	7:55	0.0091 (DNQ)	0.0066 (DNQ)	0.21	0.073 (DNQ)	2.0	1.8	1.8
TMDL-R4	9/5/2017	8:30	0.01	0.0054 (DNQ)	0.068 (DNQ)	<0.050	1.7	1.6	1.6
TMDL-R4	10/3/2017	7:45	0.014	0.011	0.52	<0.050	2.1	1.6	1.6
TMDL-R4	11/1/2017	7:45	0.0075 (DNQ)	<0.0014	0.16	<0.050	1.4	1.3	1.3
TMDL-R4	12/20/2017	7:45	DRY	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-R4	1/3/2018	8:00	DRY	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-R4	2/7/2018	9:00	0.029	0.022	1.4	1.4	1.4	1.4	<0.083
TMDL-R4	3/26/2018	10:55	0.38	0.068	0.97	0.26	3	0.26	2
TMDL-R4	4/25/2018	8:20	0.013	0.0075	0.16	0.11	0.74	0.69	0.58
TMDL-SA	5/9/2017	9:50	0.054	0.047	0.3	0.27	1.6	1.5	1.3
TMDL-SA	6/14/2017	10:30	0.012	0.0085 (DNQ)	0.070 (DNQ)	<0.050	1	0.93	0.93
TMDL-SA	7/12/2017	9:45	0.023	0.017	0.14	<0.050	1.3	1.1	1.1
TMDL-SA	8/15/2017	9:40	0.016	0.013	0.13	0.072 (DNQ)	0.9	0.84	0.77
TMDL-SA	9/5/2017	10:20	0.037	0.024	0.089 (DNQ)	0.096 (DNQ)	0.7	0.7	0.61
TMDL-SA	10/3/2017	8:30	0.018	0.013	0.15	<0.050	1.4	1.3	1.3
TMDL-SA	11/1/2017	8:20	0.042	0.02	0.29	0.16	0.66	0.53	0.37
TMDL-SA	12/20/2017	7:35	DRY	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-SA	1/3/2018	8:10	DRY	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-SA	2/7/2018	8:50	DRY	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-SA	3/26/2018	11:50	0.61	0.093	1.1	0.39	3.5	2.8	2.4
TMDL-SA	4/25/2018	9:10	0.21	0.0094 (DNQ)	0.25	0.24	0.25	0.24	<0.083
TMDL-CL	5/9/2017	13:10	0.0068 (DNQ)	0.0083 (DNQ)	0.46	0.32	0.51	0.37	0.053 (DNQ)
TMDL-CL	6/15/2017	7:40	0.012	0.0073 (DNQ)	0.49	0.36	0.49	0.36	<0.041

Site	Sample Date	Sample Time	P Total EPA 365.1 (mg/L)	P Diss EPA 365.1 (mg/L)	TKN Total EPA 351.2 (mg/L)	TKN Diss EPA 351.2 (mg/L)	N Total Calculated (mg/L)	N Diss Calculated (mg/L)	NO3+ NO2-N EPA 353.2 (mg/L)
TMDL-CL	7/13/2017	11:15	0.017	0.0085 (DNQ)	0.58	0.61	0.62	0.66	0.047 (DNQ)
TMDL-CL	8/15/2017	13:50	DRY	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-CL	9/5/2017	10:57	DRY	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-CL	10/3/2017	7:19	DRY	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-CL	11/1/2017	7:25	DRY	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-CL	12/12/2017	13:34	DRY	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-CL	1/2/2018	14:05	DRY	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-CL	2/7/2018	7:30	0.0084 (DNQ)	0.0060 (DNQ)	0.42	0.45	0.42	0.45	<0.083
TMDL-CL	3/26/2018	9:45	0.71	0.086	1.4	1.1	2.3	2	0.95
TMDL-CL	4/25/2018	12:20	0.021	0.0074 (DNQ)	0.59	0.54	0.59	0.54	<0.083

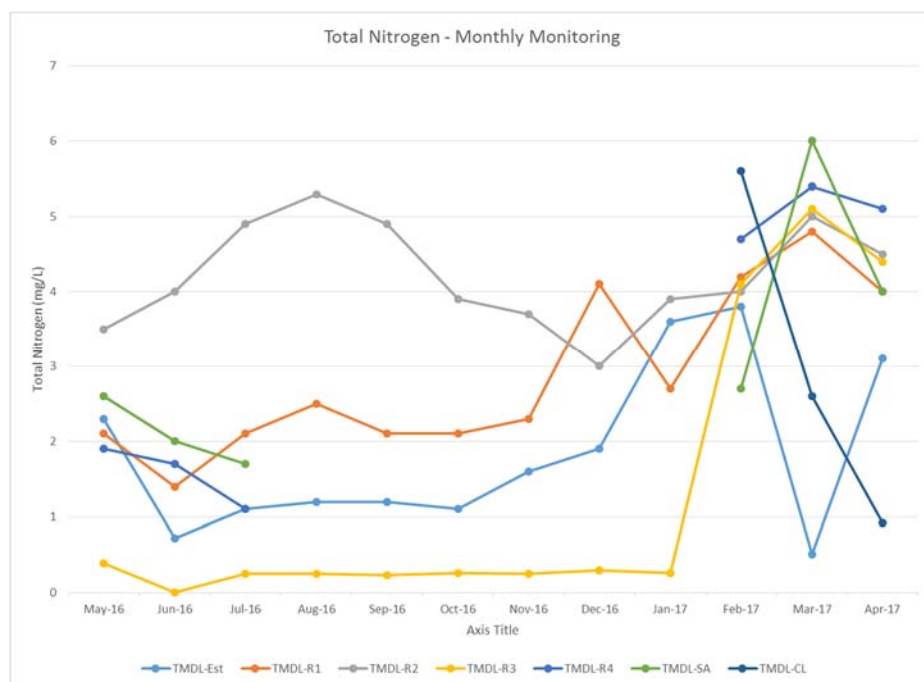
Nutrient levels show variation between sites, seasons, and years. The Thomas Fire in December – January did not produce noticeable changes in the TN or TP results in February, however it should be noted that monitoring was not conducted concurrently with storm sampling. The March event was conducted after a series of large storms when the water was heavily laden with sediment, which could help explain the brief increase in TN and TP during that event, however the TN amounts are similar to those seen in March in the previous year. Charts from the previous year are included below for comparison.

FIGURE 5. 2017 – 2018 MONTHLY MONITORING - TOTAL NITROGEN



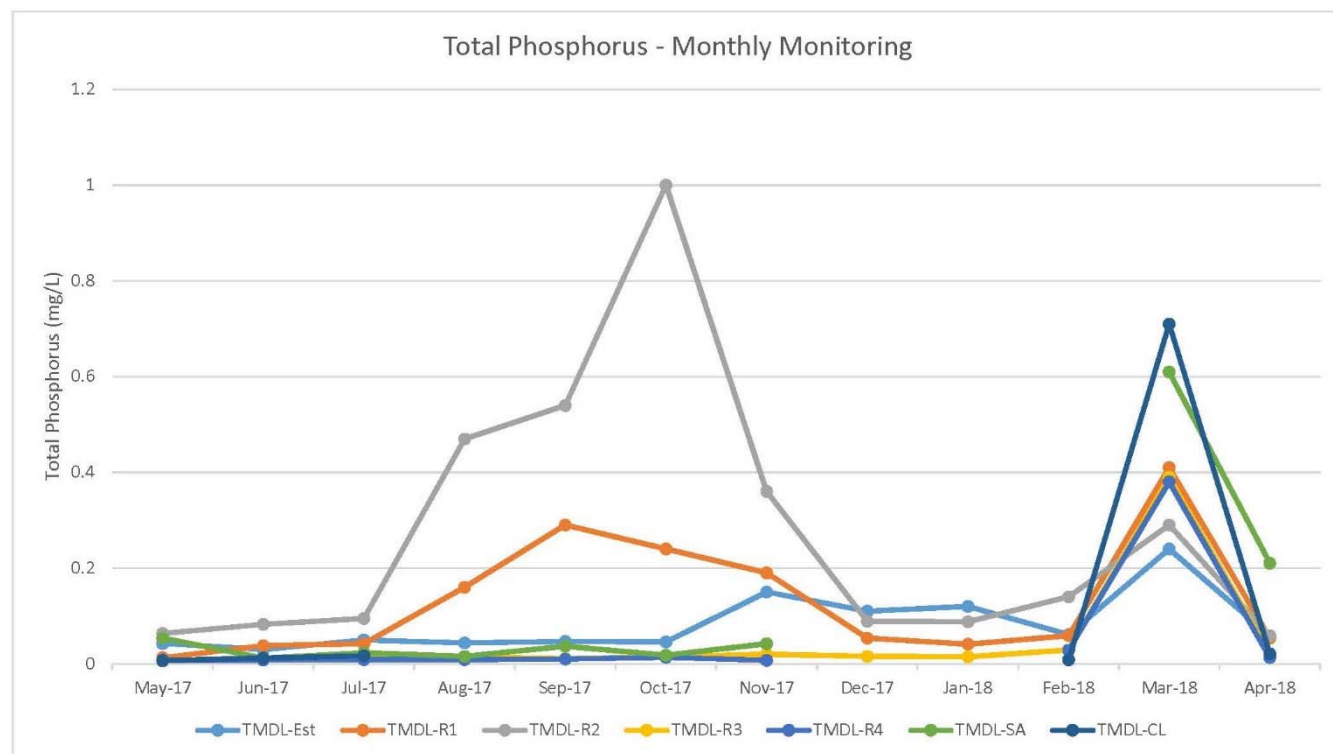
Absent data points indicate that the measurement could not be taken, i.e. the site was dry.

FIGURE 6. 2016 – 2017 MONTHLY MONITORING – TOTAL NITROGEN



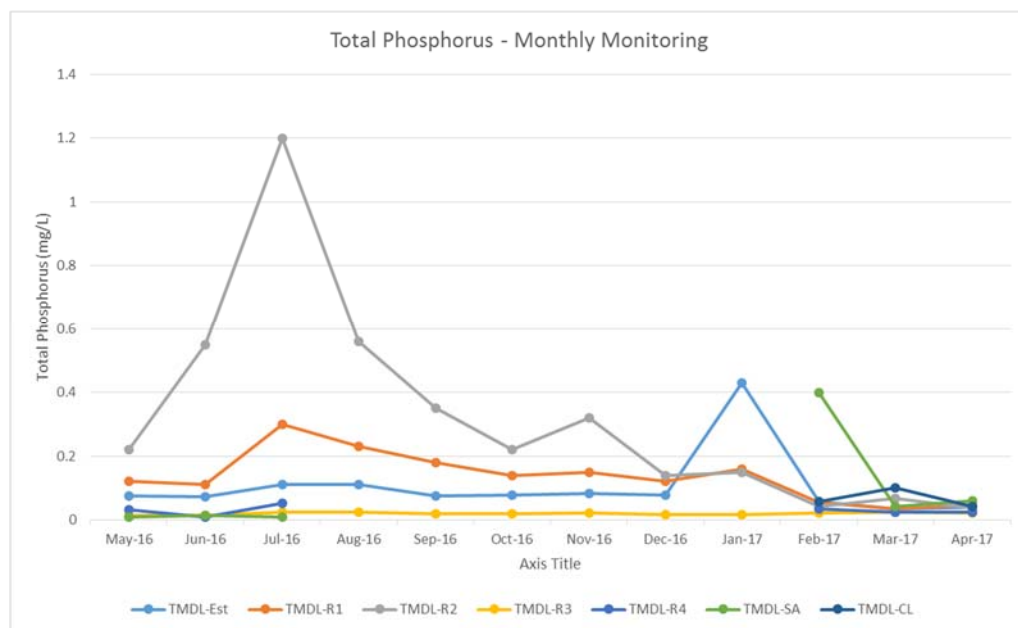
Absent data points indicate that the measurement could not be taken, i.e. the site was dry.

FIGURE 7. 2017 – 2018 MONTHLY MONITORING - TOTAL PHOSPHORUS



Absent data points indicate that the measurement could not be taken, i.e. the site was dry.

FIGURE 8. 2016 – 2017 MONTHLY MONITORING - TOTAL PHOSPHORUS



Absent data points indicate that the measurement could not be taken, i.e. the site was dry.

DRY SEASON MONTHLY ALGAE DATA

The SWAMP protocol for the riverine sites includes both suspended (floating) and attached (land-based) macroalgae for chlorophyll *a*, and only considers alive algae when determining percent cover. The riverine results are shown in Table 5 and

Table 6. TMDL-R4 and TMDL-CL met the riverine seasonal average numeric target for chlorophyll *a*. The other riverine sites did not. None of the riverine sites met the seasonal average numeric target for macroalgal cover.

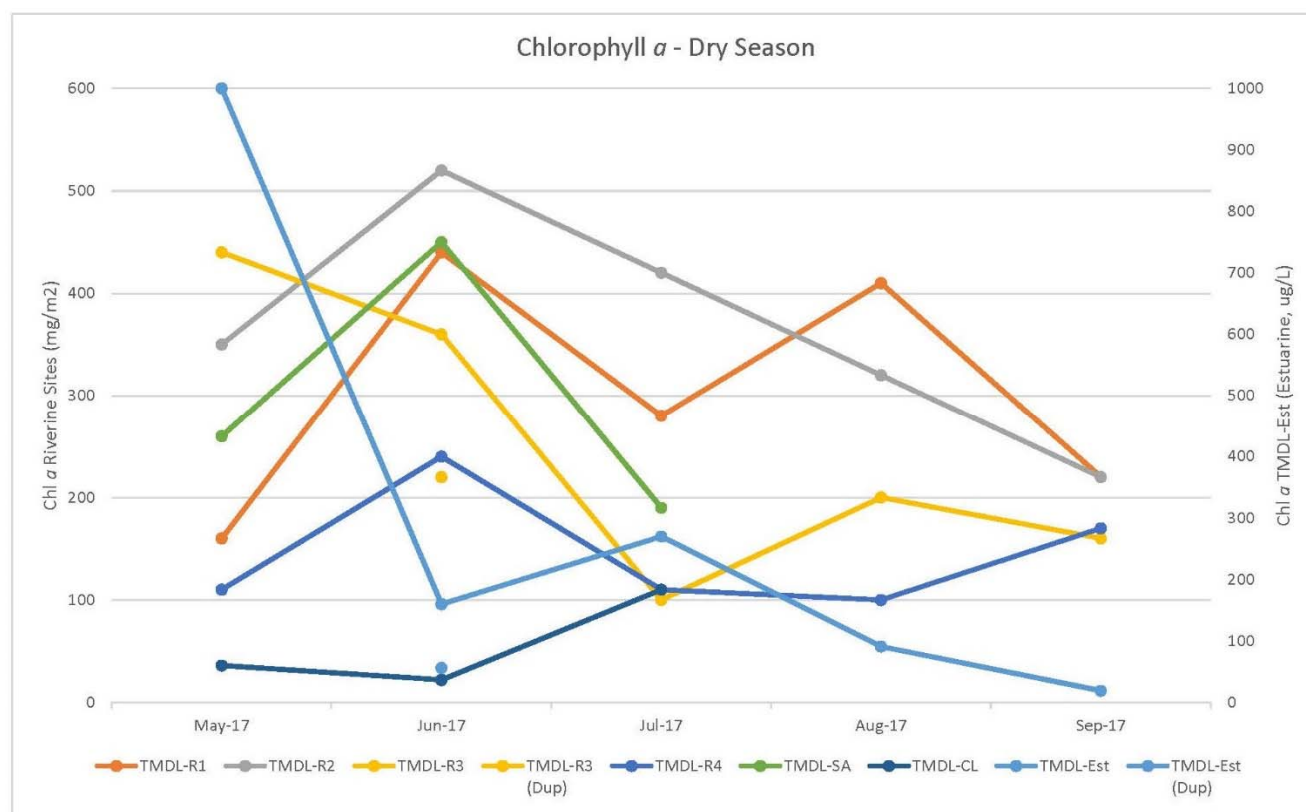
The Bight '08 (estuarine) protocol measures algal cover on the shoreline as well as floating algae at a depth of 0.3 meters, and includes dead, desiccated, fresh, and intermediate algae in the protocol. The estuarine chlorophyll *a* sample is collected from the water column. The estuarine results are in Table 7. Site TMDL-Est met the seasonal average numeric target for percent cover in 2017 but exceeded the seasonal average numeric target for phytoplankton biomass (chlorophyll *a*).

TABLE 5. 2017 DRY SEASON RIVERINE MONTHLY ALGAL BIOMASS (CHLOROPHYLL *a*) AND PERCENT MACROALGAL COVER

Site	Date	Field Replicate	Number of Transects Collected	Chlorophyll <i>a</i>	Chlorophyll <i>a</i> units	Percent Presence Macroalgae (%)
TMDL-R1	5/10/2017	1	11	160	mg/m ²	88.61
TMDL-R1	6/15/2017	1	11	440	mg/m ²	70.59
TMDL-R1	7/13/2017	1	11	280	mg/m ²	8.51
TMDL-R1	8/16/2017	1	11	410	mg/m ²	12.38
TMDL-R1	9/6/2017	1	11	220	mg/m ²	0.00
TMDL-R2	5/10/2017	1	11	350	mg/m ²	94.29
TMDL-R2	6/15/2017	1	11	520	mg/m ²	83.33
TMDL-R2	7/12/2017	1	11	420	mg/m ²	19.05
TMDL-R2	8/15/2017	1	11	320	mg/m ²	24.04
TMDL-R2	9/6/2017	1	11	220	mg/m ²	2.86
TMDL-R3	5/9/2017	1	11	440	mg/m ²	80.95
TMDL-R3	6/14/2017	1	11	360	mg/m ²	91.43
TMDL-R3	6/14/2017	2	11	220	mg/m ²	NA
TMDL-R3	7/12/2017	1	11	100	mg/m ²	66.35
TMDL-R3	8/15/2017	1	11	200	mg/m ²	41.90
TMDL-R3	9/5/2017	1	11	160	mg/m ²	25.96
TMDL-R4	5/9/2017	1	11	110	mg/m ²	76.92
TMDL-R4	6/14/2017	1	11	240	mg/m ²	83.65
TMDL-R4	7/12/2017	1	11	110	mg/m ²	74.29
TMDL-R4	8/15/2017	1	11	100	mg/m ²	64.76
TMDL-R4	9/5/2017	1	11	170	mg/m ²	60.00
TMDL-SA	5/9/2017	1	11	260	mg/m ²	76.77
TMDL-SA	6/14/2017	1	9	450	mg/m ²	91.76
TMDL-SA	7/12/2017	1	4	190	mg/m ²	75.00
TMDL-SA	8/15/2017	1	Mostly Dry	Mostly Dry	mg/m ²	Mostly Dry
TMDL-SA	9/5/2017	1	Mostly Dry	Mostly Dry	mg/m ²	Mostly Dry
TMDL-CL	5/9/2017	1	11	36	mg/m ²	57.69
TMDL-CL	6/14/2017	1	11	22	mg/m ²	72.38

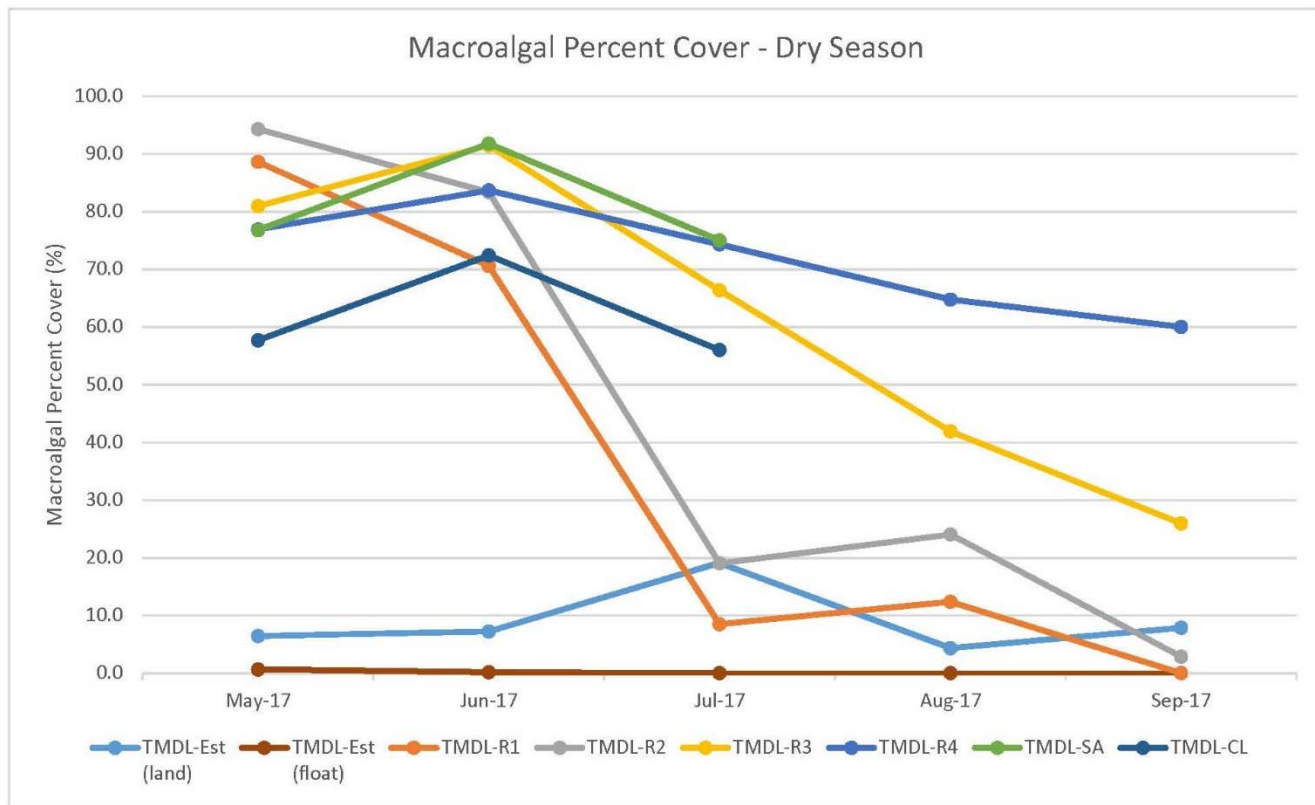
Site	Date	Field Replicate	Number of Transects Collected	Chlorophyll <i>a</i>	Chlorophyll <i>a</i> units	Percent Presence Macroalgae (%)
TMDL-CL	7/13/2017	1	11	110	mg/m ²	56.00
TMDL-CL	8/15/2017	1	DRY	DRY	mg/m ²	DRY
TMDL-CL	9/5/2017	1	DRY	DRY	mg/m ²	DRY

FIGURE 9. 2017 DRY SEASON – CHLOROPHYLL A



Absent data points indicate that the measurement could not be taken, i.e. the site was dry.

FIGURE 10. 2017 DRY SEASON – MACROALGAL PERCENT COVER



Absent data points indicate that the measurement could not be taken, i.e. the site was dry.

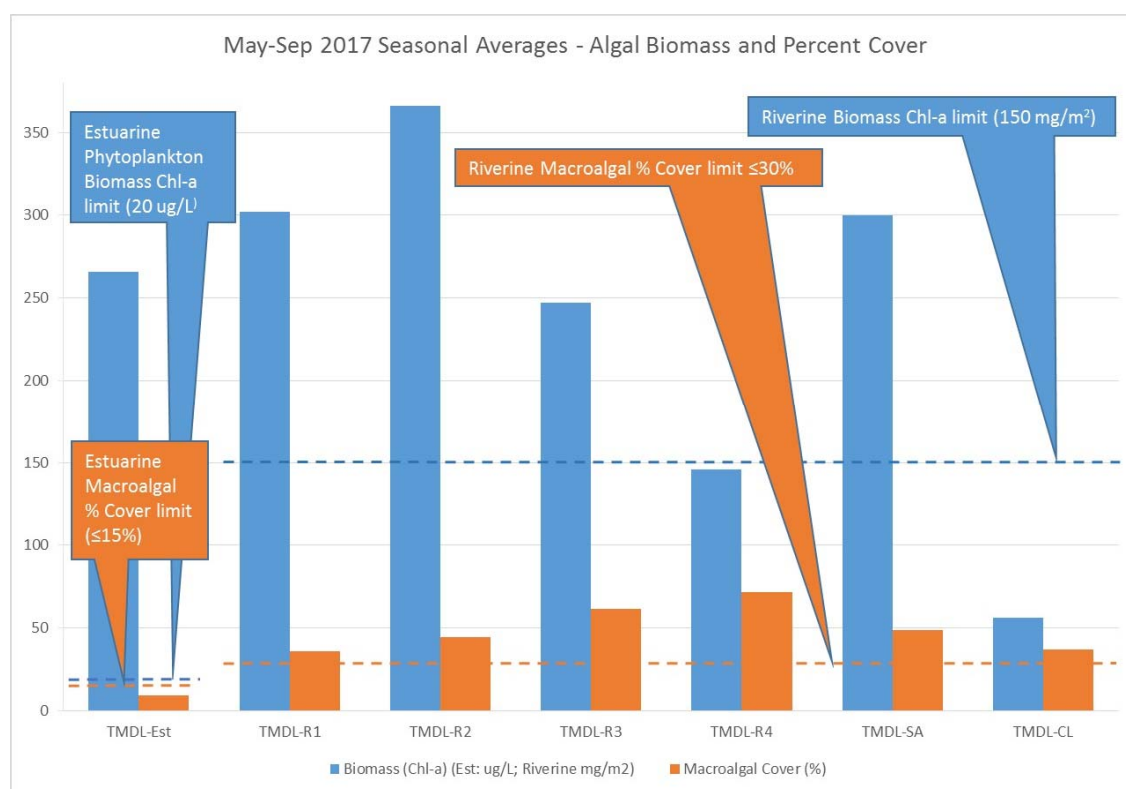
TABLE 6. 2017 DRY SEASON RIVERINE SEASONAL AVERAGES - MACROALGAL BIOMASS AND COVER

Site	Seasonal Average Biomass (Chlorophyll <i>a</i>) <i>Numeric Target Seasonal Average 150 mg/m² (mg/m²)</i>	Seasonal Average Macroalgal Cover <i>Numeric Target Seasonal Average ≤ 30% (%)</i>
TMDL-R1	302	36.0
TMDL-R2	366	44.7
TMDL-R3	247	61.3
TMDL-R4	146	71.9
TMDL-SA	300	48.7
TMDL-CL	56	37.2

TABLE 7. 2017 DRY SEASON ESTUARINE MONTHLY ALGAL BIOMASS (PHYTOPLANKTON CHLOROPHYLL A) AND PERCENT MACROALGAL COVER

Site	Date	Field Replicate	Phytoplankton Biomass Chlorophyll <i>a</i> (µg/L)	Land-Based Macroalgal Cover (%)	Floating Macroalgal Cover (%)
Seasonal Average Numeric Target			20 µg/L	≤ 15%	
TMDL-Est	5/10/2017	1	1,000	6.46	0.68
TMDL-Est	6/15/2017	1	160	7.21	0.17
TMDL-Est	6/15/2017	2	56	NA	NA
TMDL-Est	7/13/2017	1	270	19.12	0.00
TMDL-Est	8/16/2017	1	91	4.35	0.00
TMDL-Est	9/6/2017	1	19	7.89	0.00
TMDL-Est	Seasonal Average		266	9.01	0.17

FIGURE 11. 2017 DRY SEASON SEASONAL AVERAGES - CHLOROPHYLL A AND MACROALGAL COVER



CONTINUOUS DATA LOGGING

Seven Hydrolab HL4 water quality data sondes (Figure 12) are used for this program. The HL4 has the ability to accurately measure and log dissolved oxygen, conductivity, pH and temperature within a self-contained package that is 1.75" in diameter and just over two feet in length, which allows it to fit inside a short length of protective housing of 2" diameter schedule 40 pipe. The data sonde installations are vulnerable to potential vandalism and theft and so need to be as inconspicuous as possible (i.e. below the water surface among rocks and tree roots). Each sonde is assigned to a particular TMDL site and is

labeled with the site name for additional consistency between events. Pre and post calibrations and/or calibration checks are performed for each deployed sonde for each event.

FIGURE 12. HYDROLAB HL4 SONDE



Sondes were installed for continuous monitoring for pH, specific conductivity, temperature, and dissolved oxygen for a two week period at all wet sites in May, September, and November 2017, and February 2018¹. The sondes were programmed to log data for a little over two weeks to allow field staff to get concurrent field meter measurements during sonde retrieval to compare to the sonde data. After the first deployment in March 2015 when the estuary breached and left the estuary sonde exposed to potential vandalism or theft, the placement was redesigned to prevent exposure in the event of future breaches. However, the Estuary sonde is still subject to high flows during winter storms, which could cause the loss of the sonde and its data, therefore the Estuary sonde is removed when storms are forecast that have the potential to generate high flows. The estuary sonde went missing during the September 2017 deployment and is presumed stolen. The estuary sonde deployment was redesigned for the quarter 4 (Q4) deployment. The deployment location for the TMDL-Est site was moved further south of the railroad bridge and was deployed inside a housing attached at one end to a 20 foot, 3/8 inch diameter chain. The housing has floatation foam at the other end so that it floats at approximately a 45 degree angle when weighted down by the chain, while remaining below the surface. The chain is secured to a cinder block that is dropped on the estuary floor to prevent the sonde from migrating too far with any currents. The weight of the chain is sufficient to keep the sonde submerged, although the depth of submersion varies with water depth. This deployment strategy will be used as standard for future deployments (beginning with 2017-Q4). Sonde data for this reporting period are shown in Figure 13, Figure 14, Figure 15, and Figure 16.

2017-Q2 (May) 2017: Sondes were installed and programmed to log data beginning May 10, 2017 at 19:00 at all sites. The TMDL-R2 conductivity sensor did not hold calibration through the deployment, however conductivity is not a required measurement at this site and the conductivity at this site (known from past measurements and as measured by the field meter check at retrieval) is low enough ($\sim 1,000 \mu\text{S}$) to not affect the other collected data², so redeployment was unnecessary. It is likely that flow ceased at TMDL-SA mid-deployment, resulting in lower diurnal variation, dissolved oxygen, and conductivity levels. The field meter check at TMDL-SA measured DO at higher levels than the sonde, likely due to the stirring required to move the ponded water past the field meter's polarographic sensor at the speeds required for accurate measurement (> 1 foot per second). TMDL-SA conductivity readings may be in error for the second week of deployment based on the lower sonde readings than field meter readings at pickup.

2017-Q3 (September) 2017: Sondes were installed at all TMDL monitoring sites for continuous data logging except TMDL-CL, which was dry. The sondes were installed before the logging program began on September 10, 2017 and removed after two

¹ The TMDL requires quarterly monitoring, including the months of May and September. Therefore, Quarter 2 (Q2) monitoring is conducted in May and Quarter 3 (Q3) monitoring is conducted in September. Quarter 1 (Q1) includes one event during January – March and Quarter 4 (Q4) includes one event during October – December.

² The conductivity measurement is used by the sonde when calculating dissolved oxygen, however the influence of conductivity on dissolved oxygen measurements for conductivity levels at the TMDL riverine stations is negligible.

weeks of logging. Three sondes would not allow conductivity calibrations prior to deployment but were working fine during post deployment checks. The difficulty in calibrating may have been caused by a temperature compensation issue within the sondes since temperatures were high (~35 degrees Celsius, 95 degrees Fahrenheit) on the date of calibration. The sondes that calibrated for conductivity were used at sites with higher conductivities, to reduce the likelihood of affecting DO measurements, although all conductivities were low enough as measured by the field meter checks for negligible effects on the data. The TMDL-R3 DO sensor became fouled partway through its deployment. The TMDL-Est sonde was unable to be recovered and was likely stolen. The TMDL-Est sonde was deployed just upstream of the Southern Pacific railroad trestle on the west bank of the Ventura River on September 5th, 2017. The sonde was labeled with identifying information including a phone number, and was deployed within a floating housing with a 10 pound anchor that resulted in it being approximately 8 feet below the water surface and out of sight. The river velocity was low (3.11 cfs measured at TMDL-R1 on September 6, 2017). This is the same method that was used successfully for the last two years, even when river velocities were considerably higher. Sonde retrieval with a gaff was unsuccessfully attempted on September 20th. A second unsuccessful attempt was made with a pole and clamp on September 21st. On September 22nd, a diver searched within a 10-foot radius of the area of deployment but nothing was found. There is a large homeless population in the area and there are usually people around during sonde deployments and retrievals, and while the actual placement is attempted to be done when nobody is watching, it seems likely that someone saw the deployment and swam out and stole the sonde. By the time the sonde was determined to be gone, it was too late to come up with a new system to secure the sonde and meet the two-week September deployment for the third quarter. Another deployment method will be tried for future deployments to try to prevent additional loss of equipment/data. If vandalism or theft at this location continues, then the monitoring plan may need to be modified to reflect the realities of collecting continuous data in public spaces.

2017-Q4 (November) 2017: Sondes were installed at the TMDL-Est, TMDL-R1, TMDL-R2, and TMDL-R3 sites. The deployment location for the TMDL-Est site was moved further south of the railroad bridge and was deployed inside a housing attached at one end to a 20 foot, 3/8 inch diameter chain. The housing has floatation foam at the other end so that it floats at approximately a 45 degree angle when weighted down by the chain, while remaining below the surface. The chain is secured to a cinder block that is dropped on the estuary floor to prevent the sonde from migrating too far with any currents. The weight of the chain is sufficient to keep the sonde submerged, although the depth of submersion varies with water depth. The sondes were programmed to log from November 22, 2017 at 18:00 through December 7, 2017 at 18:00. TMDL-R4, TMDL-SA, and TMDL-CL were dry so sondes were not installed at these locations.

2018-Q1 (February) 2018: Sondes were able to be deployed at all sites during this event except TMDL-SA, which was dry. The sondes began logging data on February 12, 2018 at 18:00 and continued through February 26, 2018. The sondes were pulled a few hours early due to a storm forecast for the area. The conductivity readings for TMDL-CL were high for this deployment in comparison to the field meter measurement taken during sonde retrieval, so are not included in the chart. Conductivity is not a required parameter so the sonde was not redeployed.

TABLE 8. MAY 2017 – APRIL 2018 SONDE DEPLOYMENT DATES

Site	2017 Quarter 2 (May*)	2017 Quarter 3 (September*)	2017 Quarter 4	2018 Quarter 1
TMDL-Est	5/10/2017 – 5/24/2017	9/5/2017 - LOST	11/22/2017 – 12/6/2017	2/12/2018 – 2/26/2018
TMDL-R1	5/10/2017 – 5/24/2017	9/5/2017 – 9/19/2017 ^a	11/22/2017 – 12/6/2017	2/12/2018 – 2/26/2018
TMDL-R2	5/10/2017 – 5/24/2017 ^a	9/5/2017 – 9/19/2017	11/22/2017 – 12/6/2017	2/12/2018 – 2/26/2018
TMDL-R3	5/10/2017 – 5/24/2017	9/5/2017 – 9/19/2017 ^b	11/22/2017 – 12/6/2017	2/12/2018 – 2/26/2018
TMDL-R4	5/10/2017 – 5/24/2017	9/5/2017 – 9/19/2017	DRY	2/12/2018 – 2/26/2018
TMDL-SA	5/10/2017 – 5/24/2017	9/5/2017 – 9/19/2017	DRY	DRY
TMDL-CL	5/10/2017 – 5/24/2017	DRY	DRY	2/12/2018 – 2/26/2018

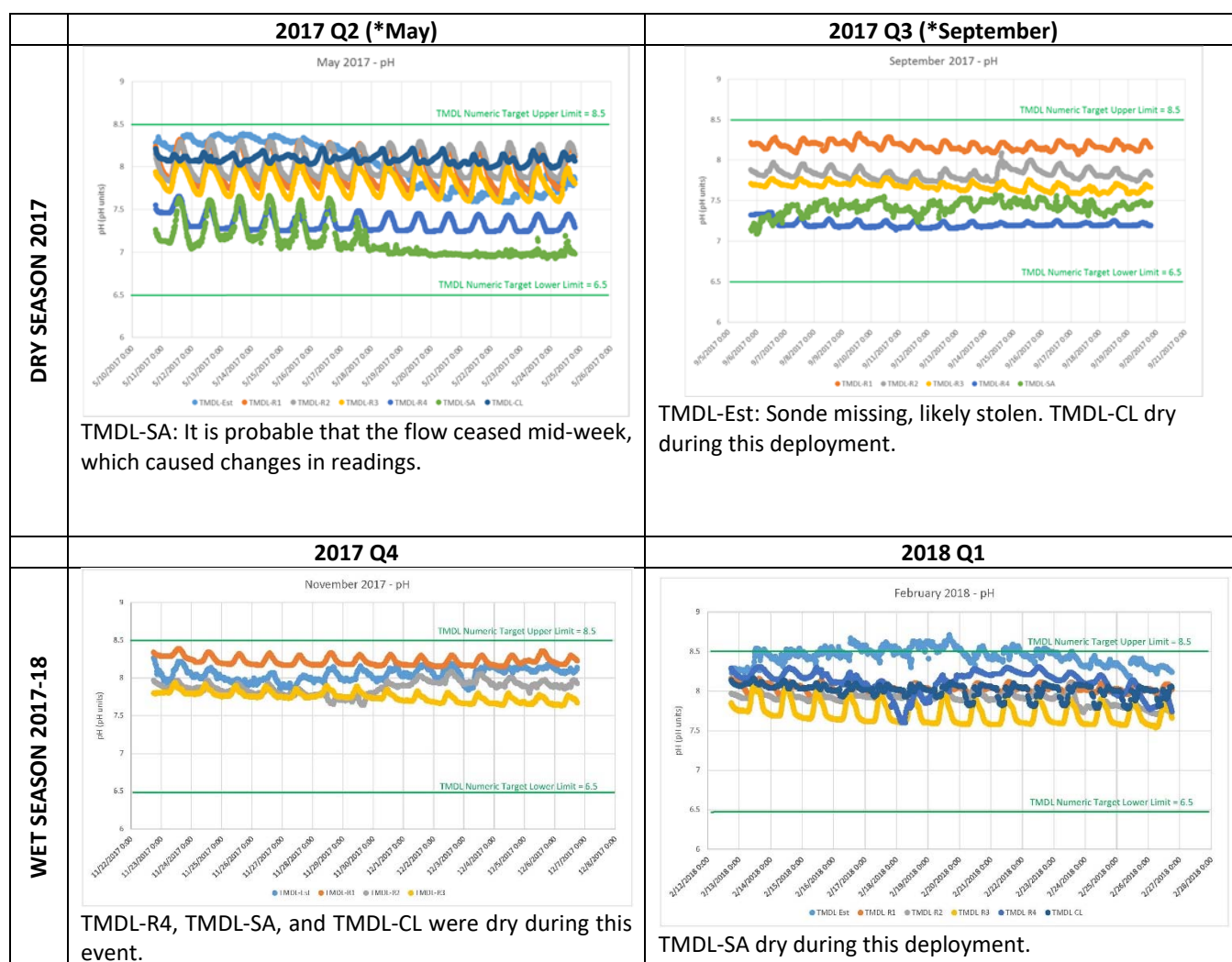
* Month required by TMDL

^a Conductivity in error but not a required parameter so not redeployed.

^b Dissolved oxygen sensor became fouled partway through deployment.

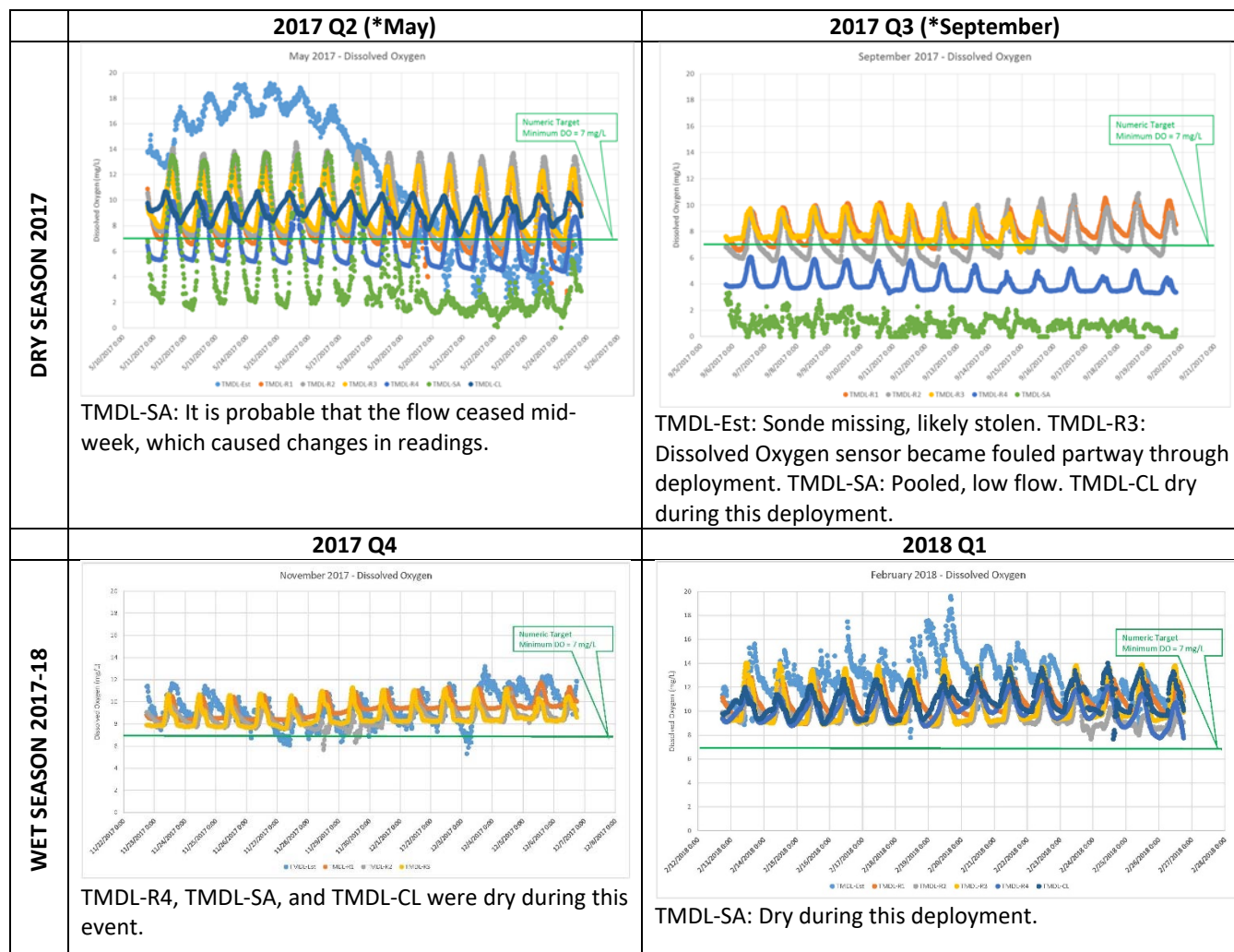
Graphical representations of the continuous monitoring data are presented below.

FIGURE 13. CONTINUOUS DEPLOYMENT SONDE DATA - PH



All continuous pH monitoring data for this reporting period was within the numeric target limits with the exception of TMDL-Est in February 2018, which hovered around the numeric target reached a maximum of 8.71 pH units.

FIGURE 14. CONTINUOUS DEPLOYMENT SONDE DATA - DISSOLVED OXYGEN



Low levels of dissolved oxygen (below the numeric target of 7 mg/L) were observed during the monthly grab monitoring at TMDL-SA and TMDL-CL several times, and once per site at TMDL-Est and TMDL-R2. They appear to be generally associated with low flow, possibly due to the ponding of water upstream and/or at the measurement location. Dissolved oxygen levels below the numeric target were observed during the continuous monitoring at most sites during the May deployment, and again at the September deployment. All sites exhibited diurnal variation in levels. The lower levels during the diurnal cycles resulted in a few dips below the numeric threshold for TMDL-Est and TMDL-R2 in November, however all monitored sites were above the target in February.

FIGURE 15. CONTINUOUS DEPLOYMENT SONDE DATA - TEMPERATURE

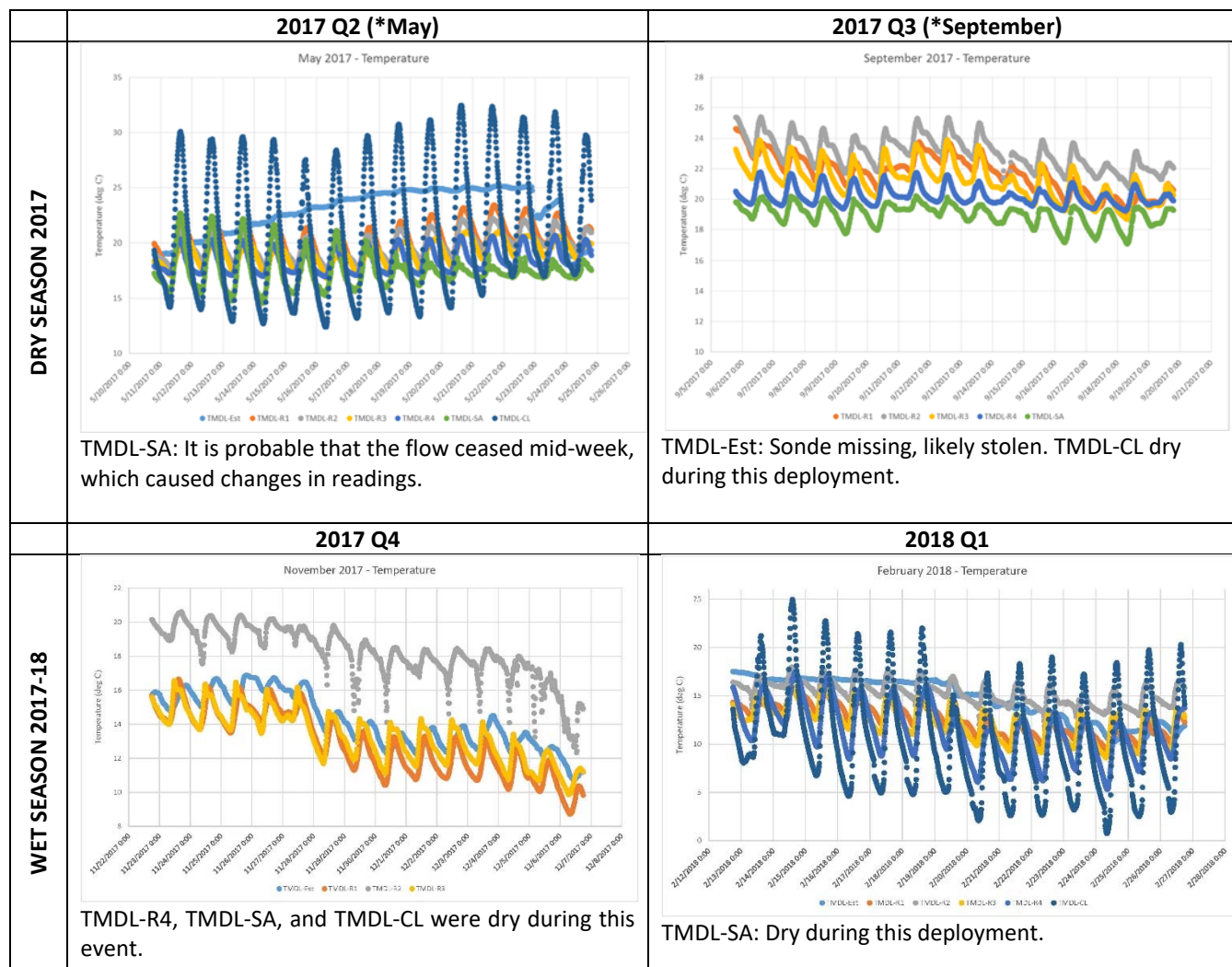
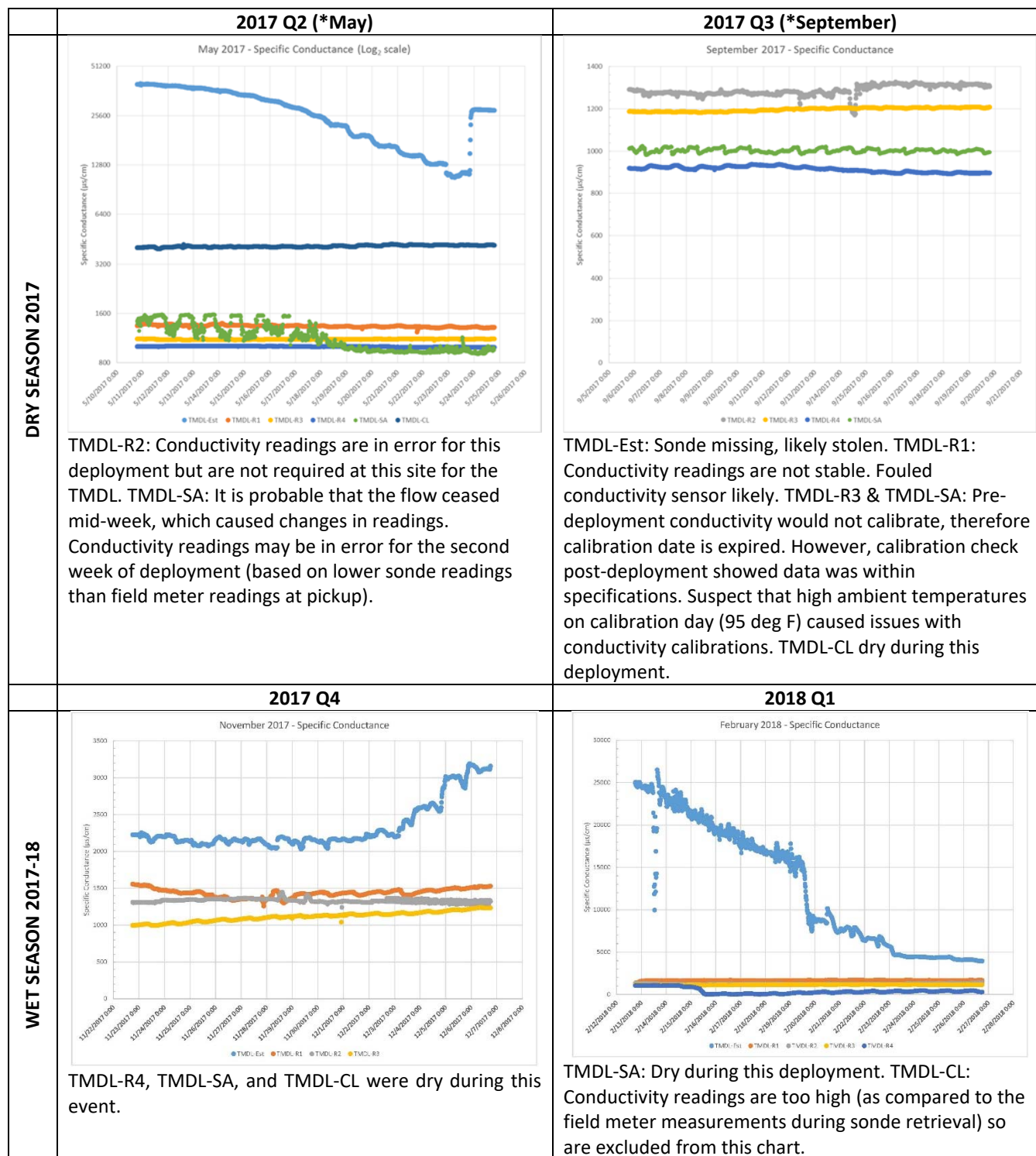


FIGURE 16. CONTINUOUS DEPLOYMENT SONDE DATA - SPECIFIC CONDUCTANCE



OBSERVATIONS AND LESSONS LEARNED

Southern California has been experiencing extreme drought conditions since before this monitoring program began (January 2015). During the drought, the Ventura River and its tributaries have been particularly dry, resulting in lost hydrological connectivity between the upper and lower watershed, as observed in the dry conditions at the Santa Ana Blvd and Highway 150 bridge crossings from May 2017 – January 2018. In addition to the ongoing severe drought, the watershed was heavily impacted by the Thomas Fire, which started on December 4, 2017 and continued through January 9, 2018, becoming the largest recorded fire in California history to date. The fire burned most of the open space and forest lands in the watershed, as well as orchards, homes, and other structures from Fillmore to Santa Barbara. This resulted in greater runoff and sedimentation loads to the watershed in the storms following the fire. Areas that did not burn (mainly the Ojai Valley), were still subject to heavy ash deposition. Connectivity between the upper and lower watershed was reestablished in January, after a large storm passed through the area. Flow is typically perennial downstream of Foster Park and the Casitas Vista Bridge observation point.

Flow variations between monitoring sites and events are likely due to a combination of factors, including geology, temperature, inputs, and extractions. Pondered locations, and those with shallow and/or slow moving water appear to experience greater variation in measured levels of DO and so ponds are avoided where possible, but may not be avoidable in all cases.

Siltation can be an issue in slow moving water and sondes are installed higher in the water column in areas where it is likely to occur. All sondes were checked and/or calibrated by monitoring staff before and after deployment, regardless of history, and field meter readings were taken in the vicinity of the sondes immediately prior to sonde removal to check/confirm that the sondes were still reading accurately in situ at the end of the deployment. Following the disappearance of the TMDL-Est sonde in September 2017, the method and location for deploying this sonde was modified to try to further reduce the potential for vandalism/theft.

All monthly grab measurements for pH during this reporting period were within the numeric target limits of 6.5-8.5 pH units, with the exception of TMDL-Est in June 2017 and February and April 2018. Similarly, all continuous data logger pH results were within limits with the exception of TMDL-Est in February 2018, which experienced multiple excursions over 8.5, with a maximum of 8.71.

Low levels of dissolved oxygen (below the numeric target of 7 mg/L) were observed during the monthly grab monitoring at TMDL-SA and TMDL-CL several times, and once per site at TMDL-Est and TMDL-R2. They appear to be generally associated with low flow, possibly due to the ponding of water upstream and/or at the measurement location. Dissolved oxygen levels below the numeric target were observed during the continuous monitoring at most sites during the May deployment, and again at the September deployment. All sites exhibited diurnal variation in levels. The lower levels during the diurnal cycles resulted in a few dips below the numeric threshold for TMDL-Est and TMDL-R2 in November, however all monitored sites were above the target in February.

Temperature displayed a diurnal pattern at most sites but the pattern was muted at the estuary during some deployments, likely due to the deeper level of deployment.

Specific conductance remained relatively stable at the riverine sites for the deployments during this reporting period. By comparison, TMDL-Est experiences much greater variability in conductivity both within and between deployments, likely due to the interactions with the ocean through tides, diffusion, and berm breaches, however since it is infeasible to monitor the berm status for the entire duration of the sonde deployment, it is unknown when all breaches occur.

TABLE 9. EXCEEDANCES BY SITE AND MONTH

Sample Month	TMDL-Est	TMDL-R1	TMDL-R2	TMDL-R3	TMDL-R4	TMDL-SA	TMDL-CL
MAY 2017	DO (c)	DO (c)	DO (c)	DO (c)	DO (m) * DO (c) *	DO (c)	
JUN 2017	> pH (m)				DO (m)	DO (m) *	
JUL 2017	DO (m)					DO (m) *	
AUG 2017			DO (m)		DO (m)	DO (m) *	DRY
SEP 2017	Sonde lost	DO (c)	DO (c)	DO (c)	DO (m) * DO (c)	DO (m) * DO (c)	DRY
OCT 2017					DO (m) *	DO (m) *	DRY
NOV 2017					DO (m) * DRY Sonde	DO (m) * DRY sonde	DRY
DEC 2017						DRY	DRY
JAN 2018						DRY	DRY
FEB 2018	> pH (m) > pH (c)					DRY	
MAR 2018							
APR 2018	> pH (m)						
Seasonal Average	Chl <i>a</i>	Chl <i>a</i> Macro cover	Chl <i>a</i> Macro cover	Chl <i>a</i> Macro cover	Macro cover	Chl <i>a</i> Macro cover	Macro cover

Notes:

(m) is the monthly grab sample measurement

(c) is the continuously monitored sonde measurement

* low flow conditions may have contributed to exceedance

Chl *a* is chlorophyll *a*, a measurement of algal biomass

Macro cover is macroalgal cover, a measurement of algal presence

APPENDICES TO ANNUAL REPORT

The field data sheets, chain of custodies, and laboratory reports are provided as appendices to this report.

TOTAL MAXIMUM DAILY LOAD FOR ALGAE, EUTROPHIC CONDITIONS, AND NUTRIENTS IN VENTURA RIVER, INCLUDING THE ESTUARY, AND ITS TRIBUTARIES (VR ALGAE TMDL)

2018 ANNUAL REPORT

APPENDIX A: FIELD DATA SHEETS (MAY 2017 - APRIL 2018)

Submitted to
TMDL Responsible Parties Implementing Receiving Water Monitoring Requirements:

City of Ojai
City of Ventura
County of Ventura
Ojai Valley Sanitary District
California Department of Transportation
Ventura County Agricultural Irrigated Lands Group
Ventura County Watershed Protection District

Prepared by:
Ventura County Watershed Protection District
June 1, 2018



Ventura River Algae TMDL Event Details

EVENT DETAILS

Event ID (Month Year): MAY 2017 Date: 5/9/17 + 5/10/17
Crew Members: 5/9/17: KH, SC, WW 5/10/17: LM, SC, WW, JM
Weather (circle): Clear / Partly Cloudy / Overcast / Showers / Rain / Other _____
Event Type (check): ☒ Dry (<0.1" rain per day for the preceding three days)
☐ Wet (days with ≥0.1" rain and the three days following)
Notes: Y5185 # 05E1126
Beckman 410 # 110341139

OBSERVATION SITES (RIVER FLOW)

5/11/17

Ventura River at Highway 150 (Baldwin Road)

Flow Status: Dry / Ponded / Flowing (Estimated Flow: _____ cfs) Photos Taken: Upstream / ☒ Downstream

Notes: Dry at bridge but ponded upstream + downstream ponding visible upstream + downstream.

Ventura River at Santa Ana Blvd

Flow Status: Dry / Ponded / Flowing (Estimated Flow: ~1 cfs) Photos Taken: Upstream / ☒ Downstream

Notes: Flowing upstream - west side. Ponded upstream of bridge east side. All flow infiltrating on downstream side. Dry ~ 20m downstream of bridge.

Ventura River at Casitas Vista Road

Flow Status: Dry / Ponded / Flowing (Estimated Flow: _____ cfs) Photos Taken: Upstream / ☒ Downstream

Notes: Flow on east + west sides of river. East side dominant + faster ponded
15-20 cfs

Additional Observation Site:

Flow Status: Dry / Ponded / Flowing (Estimated Flow: _____ cfs) Photos Taken: Upstream / Downstream

Notes: _____

UNSAMPLED TMDL SITES

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream

Flow Status: Dry / Ponded / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream

Flow Status: Dry / Ponded / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream

Flow Status: Dry / Ponded / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream

Flow Status: Dry / Ponded / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Ventura River Algae TMDL—Estuary Details

Site ID: TMDL-Est
 Event ID (Month Year): May 2017
 Crew Members: Lara M. Spear, Wendy Tim
 Weather (circle one): Clear / Partly Cloudy / Overcast / Rainy / Foggy
 Direction of Tide: Ebb / Flood / Slack / N/A
 Wind Strength: Calm / Slight Breeze / Moderate Breeze / Strong Breeze / Windy / Strong Wind
 Notes (e.g. homeless, wildlife, dogs, swimming/recreation): 6+ dead birds on sand

TRANSECT 1

In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)	
Monthly (Jan - Dec): pH: <u>8.41</u> pH units DO: <u>11.04</u> mg/L DO: <u>124.1</u> %	EC: <u>5.51</u> ^{mS} /cm SC: <u>6.08</u> ^{mS} /cm Salinity: <u>3.3</u> ppt
Water Temp: <u>20.2</u> °C	
Photos: <input type="checkbox"/> Oceanward <input type="checkbox"/> Landward	Start Time: <u>2:11</u> End Time: <u>12:22</u>
Start Latitude: <u>34.27971</u>	Start Longitude: <u>-119.30716</u>
End Latitude: <u>34.27471</u>	End Longitude: <u>-119.30745</u>
PVC Latitude:	PVC Longitude:

Water Samples Collected (check box)

[Collect at Floating Macroalgae Quadrat 1, Transect 1]

Monthly Water (Jan—Dec):

Nitrogen, total and dissolved: ☒

Phosphorus, total and dissolved: ☒

Nitrate + Nitrite as Nitrogen: ☒

Dry Season Algae (May—Sep):

Chlorophyll a (phytoplankton): ☒

Volume filtered per sample: 250

[illegible]

Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 2 of 2

Ventura River Algae TMDL — Estuary Transect Measurements Date: 10/5/17 Crew: Larin, Sean, Wendy, Jim

TRANSECT 2

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward	Start Time: 12:30	End Time: 12:35												
Start Latitude: 34.77467	Start Longitude: -119.30765													
End Latitude: 34.27496	End Longitude: -119.30771													
PVC Latitude:	PVC Longitude:													
	MACROALGAE—LAND BASED										FLOATING MACROALGAE			
Quadrat	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	2.2	3	4.3	6.4	7.3	9.3	17.5	18.6	25.7	27.3	5	5	2	2
Water Depth (must be ≤ 0.3 m)	0.05	0.05	0.05	1	1	1	3	3	3	2	1 Ft	1 Ft	1 Ft	1 Ft
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des (Dd)	(Frsh) Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	(Frsh) Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	(Frsh) Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	1	1	1	2	0	0	1	0	0	0	1	3	0	0
No. Crosshairs with Macroalgae Absent														
Crosshair Total (must equal 49)	48	48	48	49	49	49	48	49	49	49	48	46	49	49

TRANSECT 3

Photos: X Oceanward XLandward	Start Time: 12:38	End Time: 12:45
Start Latitude: 3A, 27517	Start Longitude: -119.30785	
End Latitude: 34, 27538	End Longitude: -119.30804	
PVC Latitude:	PVC Longitude:	

	MACROALGAE—LAND BASED										FLOATING MACROALGAE			
	1	2	3	4	5	6	7	8	9	10	1	2	3	4
	Quadrat	2.2	3	4.3	6.4	7.3	9.3	17.5	18.6	25.5	27.3	3	3	3
Distance (m)	-													
Water Depth (must be ≤ 0.3 m)	0.1	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	1F4	1F4	1F4	1F4
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	(Frsh) Int Des Dd	(Frsh) Int Des Dd	Frsh Int Des Dd	(Frsh) Int Des Dd	(Frsh) Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	(Frsh) Int Des Dd	(Frsh) Int Des Dd	(Frsh) Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	22	2	0	9	16	1	1	2	3	25	0	0	0	0
No. Crosshairs with Macroalgae Absent														
Crosshair Total (must equal 49)														

Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): MAY 2017

Site ID: R-1

Date/Time: 5/10/17 10:25

Crew Members: LM, SC, WW, JM

Latitude/Longitude: 34.28044, -119.30849

Flow (circle one): Flowing Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): homeless, trash

January—December Monthly In Situ Measurements:

pH: 8.40 pH units EC: 1205 $\mu\text{S}/\text{cm}$

DO: 8.80 mg/L SC: 1365 $\mu\text{S}/\text{cm}$

DO: 95.2 % Salinity: 0.7 ppt

Water Temp: 18.9 $^{\circ}\text{C}$

Flow (from discharge measurement): 13.6 cfs

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as

Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae): ☒

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0	0	0
2	0.5	0.5	0.03
3	1.0	0.6	0
4	1.5	0.65	0.76
5	2.0	1.1	0.68
6	2.5	0.9	0.81
7	3.0	1.1	0.83
8	3.5	1.4	0.88
9	4.0	1.5	0.72
10	4.5	1.3	0.78
11	5.0	1.4	0.62
12	5.5	1.4	0.66
13	6.0	1.3	0.07
14	6.5	0	0
15	7.0	0.6	0.31
16	7.5	0	0
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
Distance (ft)	Float 1	Float 2	Float 3
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*
Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): 150

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	9
PVC Delimiter (Area=12.6cm ²)	2
Syringe Scrubber (Area=5.3cm ²)	0
Other (Area=)	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	459
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May-September)

Site: VR1 Date: 5/10/17 Crew: Lara A & Sean C

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	4.0	OA	40P	43P	55P	OP	15	10	10	2	✓
AB	6.0	OP	17P	DA	15P	OA					
B	6.5	OP	42P	50P	30P	OP	0	0	5	0	
BC	6.5	NA	NA	80P	35P	OP					
C	6.0	OP	67P	87P	45P	OP	5	5	10	0	
CD	5.5	OA	66P	72P	54P	OP					
D	6.5	OP	33P	63P	30P	OP	17	10	7	7	
DE	7	OP	37P	33A	34P	OP					
E	5.75	OP	20P	50P	42P	OP	12	2	10	2	
EF	6.0	OP	20P	57P	9P	OA					
F	5.0	OP	45P	75P	15P	OA	15	0	7	7	✓
FG	6.5	OP	72P	20P	2P	NA					
G	~10	OP	15P	NA	6P	OP	17	17	17	17	
GH	4.5-3.5 ~12	OP	45P	NA	16P	3A					
H	11.5	OP	40P	10P	29P	OP	2	7	17	17	
HI	12	OP	23P	67P	95P	OA					
I	11	OP	73P	25P	105P	OA	16	15	17	8	
II											
J					too deep						
JK											
K											

$$105 - (6 + 20)$$

$$\frac{70}{80} = \frac{79}{79}$$

89

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345
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Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): MAY 2017
 Site ID: R2
 Date/Time: 5/10/17
 Crew Members: LM, SC, WW, JM
 Latitude/Longitude: 34.33932, -119.29731
 Flow (circle one): Flowing / Ponded / Dry
 Wind Strength:
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy
 Wind Direction: Blowing (circle one) From / To
 Photos (check): ☒ Upstream ☒ Downstream
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): homeless camp at A

January-December Monthly In Situ Measurements:

pH: 7.84 pH units EC: 1020 $\mu\text{S}/\text{cm}$
 DO: 8.15 mg/L SC: 1104 $\mu\text{S}/\text{cm}$
 DO: 87.5 % Salinity: 0.6 ppt
 Water Temp: 18.5 $^{\circ}\text{C}$
 Flow (from discharge measurement): 13.84 cfs

Samples Collected (check box)

January-December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
 Dissolved Phosphorus and Nitrogen (field filtered): ☒

May-September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae): ☒

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0.4	0.4	0
2	0.8	0.4	2.88
3	1.2	0.4	0.11
4	1.6	0.2	0.60
5	2.2	0.3	0.88
6	2.4	0.9	1.81
7	2.8	0.6	1.43
8	3.2	0.4	0.66
9	3.6	1.0	1.10
10	4.0	1.1	0.06
11	4.4	1.1	-0.1
12	4.8	1.4	0.26
13	5.2	1.4	1.52
14	5.7	0.8	1.44
15	6.1	0.8	0.79
16	6.5	0.7	1.22
17	6.9	0.4	-0.01
18	7.2	0	0
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
Distance (ft)	Float 1	Float 2	Float 3
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May-September: Algae Collection for Chlorophyll *a*
 Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): 150

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	2
PVC Delimiter (Area=12.6cm ²)	9
Syringe Scrubber (Area=5.3cm ²)	0
Other (Area=)	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	444
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May - September)

Site: VR2 Date: _____

Crew: Leah & Sam

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)						Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/ Downstream	
A	7	OP	26P	45P	19A	OP	7	0	0	0	✓	
AB	7	OP	8P	33P	40P	20P						
B	8	OP	15P	30P	34P	14P	12	8	3	7		
BC	7	OP	33P	25P	15P	OP						
C	6.5	OP	18P	35P	36A	OP	17	15	5	12		
CD	8	OP	38P	5P	AP	OP						
D	7.5	OP	60P	53P	5P	OP	17	7	0	2		
DE	8	OP	60P	45P	45P	OP						
E	8	OP	45A	45P	11P	OP	17	0	0	7		
EF	8	OA	54P	56P	42P	19P						
F	8	OP	47P	50P	35A	OP	7	2	0	0	✓	
FG	10	OP	27P	15P	30P	OP						
G	9.5	OP	26P	25P	29P	OP	17	2	0	5		
GH	11	OP	23A	22P	16P	OP						
H	10	OP	56P	40P	7P	19P	10	5	17	5		
HI	8	OP	45P	48P	56P	OP						
I	8	OP	40P	43P	36P	OP	12	0	10	5		
U	7	OP	50P	41P	30P	OP						
J	8	OP	85P	65P	1P	OP	17	0	0	0		
JK	4	OP	27P	40P	17P	OP						
K	6	OP	30P	25P	10P	OP	10	0	0	0	✓	

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Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): May 2017
 Site ID: TMDL-23
 Date/Time: 05/09/17 1125
 Crew Members: WW KH Sean
 Latitude/Longitude: 34.34592, -119.2997
 Flow (circle one): Flowing / Ponded / Dry
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy
 Wind Direction: Blowing (circle one) From / To W
 Photos (check): ☐ Upstream ☐ Downstream
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

January-December Monthly In Situ Measurements:

pH: 8.08 pH units EC: 1008 $\mu\text{S}/\text{cm}$
 DO: 11.87 mg/L SC: 1144 $\mu\text{S}/\text{cm}$
 DO: 128.2 % Salinity: 0.4 ppt
 Water Temp: 18.8 °C
 Flow (from discharge measurement): 8.05 cfs

Samples Collected (check box)

January-December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
 Dissolved Phosphorus and Nitrogen (field filtered): ☒

May-September Dry Season Monthly Algae:

Chlorophyll *a* (filters-algae): ☒

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	11	0	0
2	11.5	0.5	0.34
3	12.5	1.25	0.35
4	13.5	1.1	0.49
5	14.5	1.15	0.50
6	15.5	0.9	0.47
7	16.5	1.4	0.10
8	17.5	0.9	0.84
9	18.5	1.0	1.00
10	19.5	0.65	1.18
11	20.5	1.1	0.95
12	21.5	1.0	1.30
13	22.5	1.0	0.26
14	23.5	0.95	0.19
15	24.5	0.4	0.31
16	25.5	0.5	0.35
17	26.5	0.6	0.06
18	27.5	0.2	0.18
19	28.5	0.5	0.10
20	29.5	0	0

Buoyant Object Method (Use only if velocity area method not possible)				
Distance (ft)	Float 1	Float 2	Float 3	
Float Time (sec)				
Float Reach Cross Section (ft)				
	Upper Section	Middle Section	Lower Section	
Width				
Depth 1				
Depth 2				
Depth 3				
Depth 4				
Depth 5				

May-September: Algae Collection for Chlorophyll *a*
 Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width > 10 m): 150

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	0
PVC Delimiter (Area=12.6cm ²)	11
Syringe Scrubber (Area=5.3cm ²)	0
Other (Area=)	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	370
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	125

Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May-September)

Site: R3 Date: 5/9/17 Crew: KH, SC, WW

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densiometer (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	10.0	OP	20P	40P	35P	OA	5	5	10	8	✓
AB	9.5	OP	OA	30P	37P	OP					
B	9.0	OP	29P	33P	25P	OA	15	7	15	2	
BC	11.0	OP	19P	27P	29P	OA					
C	9.5	OA	30P	43P	50P	OP	7	1	15	0	
CD	10.2	OA	22P	41P	42P	OP					
D	9.0	OP	11P	57P	55P	OP	8	3	14	0	
DE	8.0	OP	15P	53P	63P	OP					
E	9.5	OP	13P	25P	45P	OP	15	15	12	3	
EF	7.0	OP	1P	33A	30P	OA					
F	8.0	OA	1P	17P	15P	OP	0	2	10	5	✓
FG	8.5	OA	6P	15P	17P	OP					
G	8.0	OA	15P	25P	18P	OP	17	5	15	0	
GH	9.0	OA	17P	21P	10P	OP					
H	8.5	OA	5P	15P	4P	OP	5	0	5	2	
HI	6.5	OA	19P	25P	22P	OP					
I	4.8	OP	1P	30P	26P	OP	12	8	16	0	
II	6.0	OP	5P	15P	27P	OP					
J	9.0	OA	20P	15P	5A	OA	17	17	17	17	
JK	6.5	OP	34P	OP	30A	OA					
K	5.8	OP	1P	35P	25P	OA	17	7	15	5	✓

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Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): May 2017
 Site ID: R-4
 Date/Time: 05/09/17 0810
 Crew Members: John, Kelly, Wendy
 Latitude/Longitude: 34.38189 -119.30926
 Flow (circle one): Flowing / Ponded / Dry
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy
 Wind Direction: Blowing (circle one) From / To _____
 Photos (check): ☐ Upstream ☐ Downstream
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): _____

January-December Monthly In Situ Measurements:
 pH: 7.34 pH units EC: 882 $\mu\text{S}/\text{cm}$
 DO: 10.50 mg/L SC: 1026 $\mu\text{S}/\text{cm}$
 DO: 69.2 % Salinity: 0.5 ppt
 Water Temp: 17.6 °C
 Flow (from discharge measurement): 8.53 cfs

Samples Collected (check box)
 January-December Monthly Water:
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
 Dissolved Phosphorus and Nitrogen (field filtered): ☒
 May-September Dry Season Monthly Algae:
 Chlorophyll *a* (filters-algae): ☒

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	6.3	0	0
2	8	0.75	-0.08
3	10	0.6	0.04
4	11	1.3	0
5	13	1.75	0.68
6	15	1.8	0.66
7	17	1.75	0.53
8	19	2.0	0.13
9	21	2.0	0.22
10	23	1.85	0.09
11	25	1.5	0.07
12	28	0	0
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
Distance (ft)	Float 1	Float 2	Float 3
Float Time (sec)			
Float Reach Cross Section (ft)			
Width	Upper Section	Middle Section	Lower Section
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May-September: Algae Collection for Chlorophyll *a*
 Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): 150

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	1
PVC Delimiter (Area=12.6cm ²)	10
Syringe Scrubber (Area=5.3cm ²)	0
Other (Area=)	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	412
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May-September)

Site: 84 Date: 5/9/17 Crew: KH, SC, WW

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	7.4	OP	50P	56P	60P	OA	7	0	2	4	✓
AB	8.0	OP	10P	54P	67P	OA					
B	8.7	OA	23P	41P	66P	OA	3	0	5	1	
BC	8.0	OA	16P	12P	55P	OP					
C	9.0	OP	8P	25P	35P	OA	0	0	3	0	
CD	7.0	OA	7P	34P	55P	OP					
D	8.0	OA	7P	15A	65P	OA	10	15	17	15	
DE	6.5	OP	14P	15P	OA	OP					
E	8.0	OA	23P	13P	5A	OP	14	17	17	17	
EF	10.0	OA	DRY	1P	10P	OP					
F	12.0	OP	10P	30P	17P	OP	0	0	0	0	✓
FG	11.0	OP	28P	30P	20P	OP					
G	8.5	OP	26P	37P	33P	OA	0	0	0	0	
GH	8.0	OP	28P	48P	45P	OA					
H	8.0	OP	30P	43P	457P	OP	0	0	0	0	
HI	7.0	OP	38P	45P	43P	OA					
I	5.5	OP	51P	50P	40P	OP	0	0	0	0	
II	5.3	OA	33P	15A	22P	OA					
J	7.0	OP	20A	50P	455P	OP	0	0	0	0	
JK	8.5	OA	24P	42P	40P	OP					
K	11.5	OP	11A	32P	20P	OA	0	0	0	0	✓

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Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): SA May 2017

Site ID: SA

Date/Time: 05/09/17 0950

Crew Members: Kelly, Sean, Wendy

Latitude/Longitude: 34.38088, -119.30715

Flow (circle one): Flowing Ponded / Dry

Wind Strength:

Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To W

Photos (check): ☐ Upstream ☐ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

January-December Monthly In Situ Measurements:

pH: 7.58 pH units EC: 1409 $\mu\text{S}/\text{cm}$

DO: 9.71 mg/L SC: 1634 $\mu\text{S}/\text{cm}$

DO: 102.2 % Salinity: 0.8 ppt

Water Temp: 17.8 $^{\circ}\text{C}$

Flow (from discharge measurement): 0.13 cfs

Samples Collected (check box)

January-December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May-September Dry Season Monthly Algae:

Chlorophyll a (filters-algae): ☒

Velocity Area Method (preferred)				Buoyant Object Method (Use only if velocity area method not possible)		
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)	Float 1	Float 2	Float 3
1	4.5	0	0			
2	5.5	0.4	-0.03			
3	6	0.5	0.03			
4	6.5	0.6	0.02			
5	7	0.6	0.24			
6	7.5	0.75	0.01			
7	8	0.6	0.05			
8	8.5	0.7	0.07			
9	9	0.75	0			
10	9.5	0.6	-0.01			
11	10	0.5	0.04			
12	11	0.4	-0.01			
13	12	0	0			
14						
15						
16						
17						
18						
19						
20						

Float Reach Cross Section (ft)				Buoyant Object Method (Use only if velocity area method not possible)		
Width	Upper Section	Middle Section	Lower Section	Distance (ft)	Float 1	Float 2 / Float 3
Depth 1						
Depth 2						
Depth 3						
Depth 4						
Depth 5						

May-September: Algae Collection for Chlorophyll a

Reach Length (150 m if wetted width ≤ 10 m; 250 m if wetted width > 10 m): 150

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	0
PVC Delimiter (Area=12.6cm ²)	11
Syringe Scrubber (Area=5.3cm ²)	0
Other (Area=)	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	390
Chlorophyll a Volume (use GF/F filter, 25 mL preferred volume)	25

Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May-September)

Site: SA Date: 5/9/17 Crew: KW, SC, WW

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densiometer (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	5.0	OA	19P	20P	OA	OA	17	17	9	14	✓
AB	6.0	OA	3P	12A	10P	4A					
B	5.0	OP	13P	12P	20P	OA	17	17	17	17	
BC	3.5	OA	8P	22P	12P	OA					
C	4.0	OA	21P	9P	2P	OP	17	17	17	17	
CD	3.3	OP	15A	7P	9P	OP					
D	3.7	OP	1P	1P	6P	OP	16	16	7	12	
DE	6.5	OP	7P	DRY	DRY	OP					
E	8.0	OP	DRY	DRY	19P	OP	17	12	15	12	
EF	7.0	OP	8P	7P	9P	OP					
F	10.0	OP	4P	8P	8P	35P	0	12	3	0	✓
FG	8.0	OA	17P	15P	7P	OA					
G	9.5	OA	37P	5P	DRY	OA	0	0	15	5	
GH	8.0	OP	35P	17P	DRY	OP					
H	7.0	OA	63P	40P	25P	38P	0	7	5	0	
HI	6.6	OA	38P	63P	83P	OP					
I	4.5	OA	15A	25P	53P	OP	1	17	17	10	
J	5.0	OA	25A	35P	41P	OA					
J	4.0	OP	20P	36P	28P	OP	7	17	17	10	
JK	4.5	OP	16P	21P	25P	OA					
K	5.0	OP	1P	10P	17P	OP	0	7	7	7	✓

Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May-September)

Site: CL Date: 5/9/17 Crew: KH, SC, WW

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	3.7	OA	10 5A	10 P	12 P	1 P	2	0	12	2	✓
AB	3.0	OP	18 P	8 P	5 P	OA					
B	3.6	OA	9 P	8 P	7 P	OA	2	0	2	0	
BC	3.8	OP	3 P	4 P	3 A	OA					
C	2.8	OP	6 P	9 P	8 A	OP	0	0	2	0	
CD	1.7	OA	3 P	5 P	12 P	OA					
D	2.5	OA	10 P	4 P	5 P	OA	4	0	0	0	
DE	5.0	OP	7 P	1 P	1 P	OP					
E	4.5 4.5	OA	3 3P	10 OA	12 12P	OA	0	0	0	0	
EF	7.0	OP	OP	5 A	4 P	OP					
F	7.5	OA	3 A	2 A	10 P	OA	5	0	0	0	✓
FG	3.2	OA	4 P	15 P	8 P	OA					
G	4.5 4.5	OA	3 4A	5 P	4 P	OP	2	0	7	2	
GH	3.7	OA	7 A	7 A	5 A	OA					
H	3.1	OA	14 P	7 P	3 A	OA	4	0	0	0	
HI	2.3	OA	10 P	8 P	6 A	OA					
I	1.8	OP	9 P	10 P	6 A	OP	10	0	0	0	
IJ	2.8	OA	7 P	8 P	7 P	OA					
J	2.0	OP	19 P	15 P	15 P	OA	17	17	17	17	
JK	1.0	OA	10 A	17 P	13 P	OA					
K	3.0	OA	10 10A	9 P	10 P	OA	3	5	3	5	✓

44

60/104

Ventura River Algae TMDL Event Details

EVENT DETAILS

Event ID (Month Year): JUNE 2017 Date: 6/14/17 + 6/15/17
Crew Members: 6/14/17 - Kelly Habs, Sean Casey, Jim Mann. 6/15/17 - Kelly Habs
Weather (circle): Clear Partly Cloudy / Overcast / Showers / Rain / Other Sean Casey
Event Type (check): ☒ Dry (<0.1" rain per day for the preceding three days) wendy willis
☐ Wet (days with ≥0.1" rain and the three days following)
Notes: Take field dupes for chl a at Est + R3
" " chemistry at R3
Field notes XSI 85 # ASE1126, Beckman 285 #2554

OBSERVATION SITES (RIVER FLOW) 6/15/17

Ventura River at Highway 150 (Baldwin Road)

Flow Status: Dry / Pondered / Flowing (Estimated Flow: ~10 cfs) Photos Taken: Upstream ☒ / Downstream ☒
Notes: Flow on east + west side of river. East dominant

Ventura River at Santa Ana Blvd

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs) Photos Taken: Upstream ☒ / Downstream ☒
Notes: _____

Ventura River at Casitas Vista Road

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs) Photos Taken: Upstream ☒ / Downstream ☒
Notes: _____

Additional Observation Site: _____

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs) Photos Taken: Upstream / Downstream
Notes: _____

UNSAMPLED TMDL SITES

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)
Reason not sampled (if flowing): _____
Notes: _____

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)
Reason not sampled (if flowing): _____
Notes: _____

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)
Reason not sampled (if flowing): _____
Notes: _____

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)
Reason not sampled (if flowing): _____
Notes: _____

Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 1 of 2

Ventura River Algae TMDL—Estuary Details

Site ID: TMDL-Est

Event ID (Month Year): JUNE 2017 Date: 6/15/17 1305

Crew Members: KH, MW, SC

Weather (circle one): Clear / Partly Cloudy / Overcast / Rainy / Foggy

Direction of Tide: Ebb / Flood / Slack / N/A

Wind Strength: Calm / Slight Breeze / Moderate Breeze / Strong Breeze / Windy / Strong Wind

Notes (e.g. homeless, wildlife, dogs, swimming/recreation): Field dup for chla. Benthic dead w/ 494 sp. 2017

Ocean Inlet (circle one): Open / Restricted / Closed

Time of Low Tide: 0829 Time of High Tide: 1539

Wind Direction: Blowing From / To W

TRANSECT 1

In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)

Monthly (Jan—Dec):

pH: 8.61 pH units 8.66 EC: 3439 $\mu\text{S/cm}$ Water Temp: 25.1 $^{\circ}\text{C}$

DO: 138.6 mg/L SC: 3437 $\mu\text{S/cm}$

DO: 11.37 mg/L Salinity: 1.8 ppt

Photos: ☐ Oceanward ☐ Landward

Start Latitude: 34.27466 Start Longitude: 120.1305 End Time: 13:18

End Latitude: -119.30726 End Longitude: -119.30757

PVC Latitude: PVC Longitude:

Water Samples Collected (check box)

[Collect at Floating Macroalgae Quadrat 1, Transect 1]

Monthly Water (Jan—Dec):

Nitrogen, total and dissolved: ☒

Phosphorus, total and dissolved: ☒

Nitrate + Nitrite as Nitrogen: ☒

Dry Season Algae (May—Sep): ☒

Chlorophyll a (phytoplankton): ☒

Volume filtered per sample: _____

MACROALGAE—LAND BASED										
Quadrat	1	2	3	4	5	6	7	8	9	10
Distance (m)	<u>0.6</u>	<u>3.9</u>	<u>5.6</u>	<u>6.1</u>	<u>9.6</u>	<u>11.7</u>	<u>13.0</u>	<u>22.1</u>	<u>23.7</u>	<u>29.9</u>
Water Depth (must be ≤ 0.3 m)										
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	<u>2</u>	<u>1</u>	<u>10</u>	<u>3</u>	<u>5</u>	<u>2</u>	<u>2</u>	<u>1</u>	<u>35</u>	<u>1</u>
No. Crosshairs with Macroalgae Absent	<u>47</u>	<u>48</u>	<u>39</u>	<u>46</u>	<u>44</u>	<u>47</u>	<u>47</u>	<u>48</u>	<u>14</u>	<u>48</u>
Crosshair Total (must equal 49)	<u>49</u>	<u>49</u>	<u>49</u>	<u>49</u>						
FLOATING MACROALGAE										
	1	2	3	4						
Distance (m)										
Water Depth (must be ≤ 0.3 m)										
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
No. Crosshairs with Macroalgae Absent	<u>49</u>	<u>49</u>	<u>49</u>	<u>49</u>	<u>49</u>	<u>49</u>	<u>49</u>	<u>49</u>	<u>49</u>	<u>49</u>
Crosshair Total (must equal 49)	<u>49</u>	<u>49</u>	<u>49</u>	<u>49</u>						

Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 2 of 2

Ventura River Algae TMDL — Estuary Transect Measurements Date: 6/15/17 Crew: KH, SC, WJ

TRANSECT 2

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward		Start Time: <u>1320</u>		End Time: <u>1329</u>						
Start Latitude: <u>34.27489</u>		Start Longitude: <u>34.27507</u>								
End Latitude: <u>-119.30764</u>		End Longitude: <u>-119.30777</u>								
PVC Latitude:		PVC Longitude:								
MACROALGAE — LAND BASED										
Quadrat	1	2	3	4	5	6	7	8	9	10
Distance (m)	0.6	3.9	5.6	6.1	9.6	11.7	13.0	22.1	23.7	29.9
Water Depth (must be ≤ 0.3 m)										
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	6	1	0	0	1	0	0	0	0	0
No. Crosshairs with Macroalgae Absent	49	48	49	49	48	49	49	49	49	49
Crosshair Total (must equal 49)	49									
MACROALGAE — LAND BASED										
Quadrat	1	2	3	4	5	6	7	8	9	10
Distance (m)	0.6	3.9	5.6	6.1	9.6	11.7	13.0	22.1	23.7	29.9
Water Depth (must be ≤ 0.3 m)										
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	0	1	0	0	1	1	16	14	3	1
No. Crosshairs with Macroalgae Absent	49	48	48	46	47	48	33	35	46	48
Crosshair Total (must equal 49)	49									
FLOATING MACROALGAE										
Quadrat	1	2	3	4						
Distance (m)	0.3									
Water Depth (must be ≤ 0.3 m)										
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd						
No. Crosshairs with Macroalgae Present	0	0	0	1						
No. Crosshairs with Macroalgae Absent	49			48						
Crosshair Total (must equal 49)	49									

TRANSECT 3

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward		Start Time: <u>1333</u>		End Time: <u>1340</u>						
Start Latitude: <u>34.27509</u>		Start Longitude: <u>34.27533</u>								
End Latitude: <u>-119.30780</u>		End Longitude: <u>-119.30796</u>								
PVC Latitude:		PVC Longitude:								
MACROALGAE — LAND BASED										
Quadrat	1	2	3	4	5	6	7	8	9	10
Distance (m)	0.6	3.9	5.6	6.1	9.6	11.7	13.0	22.1	23.7	29.9
Water Depth (must be ≤ 0.3 m)										
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	0	1	0	0	1	1	16	14	3	1
No. Crosshairs with Macroalgae Absent	49	48	48	46	47	48	33	35	46	48
Crosshair Total (must equal 49)	49									
FLOATING MACROALGAE										
Quadrat	1	2	3	4						
Distance (m)	0.3									
Water Depth (must be ≤ 0.3 m)										
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd						
No. Crosshairs with Macroalgae Present	0	0	0	1						
No. Crosshairs with Macroalgae Absent	49			48						
Crosshair Total (must equal 49)	49									

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): JUNE 2017

Site ID: 121

Date/Time: 6/15/17 1120

Crew Members: KH, SC, WW

Latitude/Longitude: 34.28034 -119.30838

Flow (circle one): Flowing / Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To S

Photos (check): ☐ Upstream ☐ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): fully diked downstream of AUV20m

January—December Monthly *In Situ* Measurements:

pH: 8.17 pH units EC: 1270 $\mu\text{S}/\text{cm}$

DO: 9.30 mg/L SC: 1331 $\mu\text{S}/\text{cm}$

DO: 104.3 % Salinity: 0.7 ppt

Water Temp: 21.2 $^{\circ}\text{C}$

Flow (from discharge measurement): 7.35 cfs

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May—September Dry Season Monthly Algae: ☒

Chlorophyll *a* (filters—algae): ☒

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft./sec)
1	3.6	0	0
2	5.0	0.45	0.15
3	7.0	0.70	-0.04
4	9.0	1.15	0.32
5	11.0	1.10	0.33
6	13.0	0.70	0.82
7	15.0	1.2	0.52
8	17.0	0.8	0.86
9	19.0	0.6	0.72
10	21.0	0.7	0.75
11	23.0	0.65	-0.01
12	25.0	0.45	0.15
13	27.5	0	0
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method
(Use only if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			

Float Reach Cross-Section (ft)

	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): _____

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	3
PVC Delimiter (Area=12.6cm ²)	10
Syringe Scrubber (Area=5.3cm ²)	2
Other (Area=)	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	590
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)
 Site: R1 Date: 6/15/17 Crew: KH, SC, WW

		Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots					Photo (✓ when Taken)
Transect	Wetted Width (ft)	Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/Downstream	
A	3.0	OA	25P	36P	30P	OA	3	14	17	15	✓	
AB	2.0	OA	22P	15P	20A	OA						
B	3.7	OA	18A	42P	20P	OP	5	7	17	15		
BC	3.2	OP	40P	35P	29P	OP						
C	5.0	OA	8A	DK	35P	OP	17	17	17	17		
CD	4.8	OP	37A	46P	24P	OP						
D	5.7	OA	INACCESS	71P	46P	OP	17	17	16	17		
DE	6.5	OP	58P	77P	40P	OP						
E	5.0	OA	56A	76A	46P	OP	17	17	17	17		
EF	4.5	OA	55A	43P	30P	OP						
F	5.6	OP	43P	52P	37P	OP	17	5	9	13	✓	
FG	5.1	OP	24A	30P	17P	OP						
G	5.3	OP	10A	25P	31P	OP	11	7	10	5		
GH	4.5	OP	40P	36P	2P	OP						
H	4.0	OA	51A	50P	15P	OP	15	7	6	3		
HI	5.0	OA	39A	8P	17P	OP						
I	4.0	OA	41A	55P	31P	OP	11	5	17	9		
II	3.0	INACCESS	55A	25P	5P	OP						
J	5.5	OA	15A	31P	8P	OP	17	6	10	5		
JK	7.0	OA	14A	39P	3P	OP						
K	10.0	OA	24P	55P	49P	OP	1	10	17	3	✓	

13

13

72

102

7059%

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): June 2017
 Site ID: R2
 Date/Time: 06/19/17 0910
 Crew Members: KU WWS SC
 Latitude/Longitude: 34.33941 -119.29725
 Flow (circle one): Flowing / Ponded / Dry
 Wind Strength:
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy
 Wind Direction: Blowing (circle one) From / To S
 Photos (check): ☐ Upstream ☐ Downstream
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

January—December Monthly *In Situ* Measurements:
 pH: 7.97 pH units EC: 1091 μ S/cm
 DO: 8.39 mg/L SC: 1205 μ S/cm
 DO: 92.7 % Salinity: 0.6 ppt
 Water Temp: 20.1 °C
 Flow (from discharge measurement): 8.54 cfs

Samples Collected (check box)
 January—December Monthly Water:
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
 Dissolved Phosphorus and Nitrogen (field filtered): ☒
 May—September Dry Season Monthly Algae:
 Chlorophyll *a* (filters—algae): ☒

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	3.0	\emptyset	\emptyset
2	5.0	1.25	0.02
3	7.0	1.6	0.10
4	9.0	1.8	0.06
5	11.0	1.5	0.48
6	13.0	1.8	0.23
7	15.0	1.05	0.29
8	17.0	1.3	0.87
9	19.0	1.3	0.78
10	21.0	0.7	0.92
11	22.0	\emptyset	\emptyset
12	22.5	0.6	0.34
13	24.0	\emptyset	\emptyset
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*
 Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width > 10 m): _____

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	4
PVC Delimiter (Area=12.6cm ²)	7
Syringe Scrubber (Area=5.3cm ²)	\emptyset
Other (Area=)	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	528
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May-September)
 Site: 015/1702 Date: 01/15/17 Crew: KH, SC, MW

	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densitometer (0-17) Count covered dots				Photo (✓ when Taken)	
Transect	Wetted Width (ft)	Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/Downstream
A	6.6	OP	34P	25P	23P	OA	10	2	9	5	✓
AB	5.6	OP	11P	35P	26P	OP					
B	5.7	OP	17P	38P	30A	OP	15	1	7	2	
BC	5.0	OP	25P	45P	51P	OP					
C	4.15	OP	DRY	OA	25P	OP	16	6	7	6	
CD	4.6	OA	9P	25P	30P	OP					
D	5.0	OP	30A	20P	15P	OA	17	15	2	15	
DE	6.3	OP	18P	45P	32P	OP					
E	6.4	OP	15A	DRY	23P	OA	17	10	1	15	
EF	6.8	OP	37P	35P	24P	OP					
F	8.0	OP	55A	41P	51P	OP	15	5	4	7	✓
FG	6.3	OP	20P	44P	50P	OP					
G	7.5	20P	7P	58P	26P	OP	13	1	5	5	
GH	8.0	OP	45P	38P	36P	OP					
H	7.8	OP	30A	43P	35P	OP	15	2	2	1	
HI	8.6	OP	30P	OP	17P	OA					
I	5.5	OP	25A	25P	32P	OP	10	2	7	0	
J	8.1	OA	16P	22A	27A	OP					
J	12.0	LINKERS	30A	15P	10P	OP	12	4	7	0	
JK	9.0	OP	50A	17P	5P	OA					
K	7.0	OP	35P	46P	35P	OP	5	17	17	7	✓

85
 102 83.3%

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): JUNE 2017

Site ID: R3

Date/Time: 6/18/17 1210

Crew Members: KH, SC, JM

Latitude/Longitude: 34-34591 -119-29989

Flow (circle one): Flowing / Ponded / Dry

Wind Strength: Calm / (Light Breeze) / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To S

Photos (check): ☐ Upstream ☐ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): chrom + chl a

January—December Monthly In Situ Measurements:

pH: 8.02 pH units EC: 988 $\mu\text{S}/\text{cm}$

DO: 10.46 mg/L SC: 1080 $\mu\text{S}/\text{cm}$

DO: 116.0 % Salinity: 0.50 ppt

Water Temp: 20.5 $^{\circ}\text{C}$

Flow (from discharge measurement): 6.91 cfs

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae): ☒

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	7.5	6.0	0.0
2	8.0	1.00	0.89
3	9.0	0.8	0.85
4	10.0	0.50	0.02
5	11.0	0.85	0.14
6	12.0	1.45	0.53
7	13.0	0.90	0.30
8	14.0	1.10	0.90
9	15.0	0.90	0.92
10	16.0	1.20	0.21
11	17.0	0.55	0.49
12	18.0	0.80	0.27
13	19.0	0.90	0.72
14	20.0	1.10	0.39
15	21.0	1.20	0.65
16	22.0	0.90	0.01
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width > 10 m): _____

Collection Device (sum # transects per Device)	Quantity	
Rubber Delimiter (Area=12.6cm ²)	4	DUP
PVC Delimiter (Area=12.6cm ²)	7	7
Syringe Scrubber (Area=5.3cm ²)	0	0
Other (Area=)		
Number of Transects Sampled (0-11)	11	11
Composite Volume (mL)	370	350
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25	25

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)
 Site: R3 Date: 6/13/17 Crew: KH/SC/JM

		Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots					Photo (✓ when Taken)
Transect	Wetted Width (ft)	Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/Downstream	
A	7.5	OP	29P	20P	26P	OP	9	10	15	0	✓	
AB	11.4	OP	15P	21P	25P	OP						
B	11.0	OP	20P	35P	39P	OP	5	7	17	0		
BC	11.2	OP	16P	29P	25P	OP						
C	9.1	OP	10P	53P	56P	OP	17	10	15	15		
CD	7.1	OP	5P	35P	65P	OP						
D	5.4	OP	4P	33P	26P	OP	7	5	17	5		
DE	8.5	OA	OP	13P	15P	OP						
E	7.8	OA	1P	17P	5P	OP	17	4	16	5		
EF	8.0	OA	20P	15P	16P	OP						
F	8.7	OA	22P	26P	19P	OP	10	7	15	5	✓	
FG	6.2	OP	15P	9P	12P	OP						
G	5.0	OP	1P	29P	20P	OP	9	8	17	17		
GH	6.1	OA	24P	10P	20P	OP						
H	9.0	OP	15A	5P	10A	OA	17	17	17	17		
HI	6.0	OP	24P	23P	10P	OA						
I	11.0	OP	9P	35P	60P	OP	15	5	17	17		
J	7.0	OP	25P	40P	65P	OP						
JK	7.0	OP	15P	47P	45P	OP	17	1	15	5		
K	8.4	OP	OP	27P	25P	OP	1	8	17	10	✓	

96/105 91-43%

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): JUNE 2017

Site ID: R4

Date/Time: 6/14/17 0855

Crew Members: K.H., S.C., J.M.

Latitude/Longitude: 34.38186 -119.30919

Flow (circle one): Flowing / Ponded / Dry

Wind Strength:

☒ Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To

Photos (check): ☒ Upstream ☐ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

January—December Monthly In Situ Measurements:

pH: 7.4 pH units EC: 803 μ S/cm

DO: 6.40 mg/L SC: 921 μ S/cm

DO: 68.9 % Salinity: 0.5 ppt

Water Temp: 18.6 °C

Flow (from discharge measurement): 610 cfs

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae): ☐

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	2.2	0	0.0
2	4.0	1.0	0.0
3	6.0	1.7	0.09
4	8.0	1.8	0.19
5	10.0	1.8	0.33
6	12.0	1.8	0.25
7	14.0	1.7	0.34
8	14.0	1.9	0.35
9	18.0	1.7	0.13
10	20.0	1.2	0.03
11	23.0	0.	0.0
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m):

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	4
PVC Delimiter (Area=12.6cm ²)	10
Syringe Scrubber (Area=5.3cm ²)	10
Other (Area=)	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	292
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)
 Site: R4 Date: 6/21/17 Crew: KH, SC, JM

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	7.8	OP	50P	51P	53P	OA	8	0	0	3	✓
AB	7.0	OP	49P	53P	44P	OP					
B	8.0	OP	2P	50P	63P	OP	2	0	8	0	
BC	8.0	OP	15P	10P	56P	OP					
C	8.0	OA	2P	20P	43P	OA	0	2	5	0	
CD	8.0	OA	20P	42A	57P	OA					
D	4.5	OP	10P	11P	65P	OP	17	17	17	17	
DE	8.8	OA	15A	17P	3P	OP					
E	4.0	OP	10P	46P	35P	OA	17	14	17	17	
EF	12.0	OP	DRY	24P	23P	OP					
F	9.4	OP	20P	27P	31P	OP	0	0	0	0	✓
FG	8.6	OP	30P	35P	32P	OP					
G	7.5	OP	36P	55P	47P	OA	0	0	0	0	
GH	7.5	OP	20P	43P	41P	OP					
H	6.0	OP	44A	33P	36P	OP	0	0	2	0	
HI	5.0	OP	2A	40P	20P	OP					
I	5.5	OP	21P	45P	47P	OP	3	0	5	0	
J	7.8	OP	16A	35P	38P	OP					
J	9.1	OP	10P	23P	20P	OP	3	0	0	0	
JK	6.1	OP	23A	OA	11P	OP					
K	5.0	OP	2P	24A	10P	OA	7	8	17	12	✓

3 5 3 6
 87
 104 8365%

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

Discharge Measurement
1st Measurement = left bank (looking downstream)

Event ID (Month Year): JUNE 2017
 Site ID: SA
 Date/Time: 6/14/17 1030
 Crew Members: KA, SC, TM
 Latitude/Longitude: 34.38083 -119.30734
 Flow (circle one): Flowing / Ponded / Dry
 Wind Strength: Light Breeze / Moderate Breeze / Strong Breeze / Windy
 Wind Direction: Blowing (circle one) From/ To W
 Photos (check): ☒ Upstream ☒ Downstream
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

January—December Monthly In Situ Measurements:
 pH: 7.1 pH units EC: 823 $\mu\text{S}/\text{cm}$
 DO: 3.80 mg/L SC: 926 $\mu\text{S}/\text{cm}$
 DO: 40.0 % O_2 Salinity: 0.5 ppt
 Water Temp: 17.7 $^{\circ}\text{C}$
 Flow (from discharge measurement): 0.07 cfs

Samples Collected (check box)
 January—December Monthly Water:
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
 Dissolved Phosphorus and Nitrogen (field filtered): ☒
 May—September Dry Season Monthly Algae:
 Chlorophyll *a* (filters—algae): ☒

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	4	0.0	0
2	4.1	0.2	0.13
3	4.2	0.2	0.17
4	4.3	0.2	0.29
5	4.4	0	0
6			
7		(+)	
8			
9	2.9	0	0
10	3.0	0.2	0.20
11	3.5	0.2	-0.09
12	4.0	0.2	0.07
13	4.5	0.5	0.51
14	4.9	0.2	-0.03
15	5.0	0	0
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*
 Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m):

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	<u>8</u>
PVC Delimiter (Area=12.6cm ²)	<u>8</u>
Syringe Scrubber (Area=5.3cm ²)	<u>8</u>
Other (Area=)	
Number of Transects Sampled (0-11)	<u>8</u>
Composite Volume (ml)	<u>344</u>
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	<u>25</u>

Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May-September)
 Site: SA Date: 6/8/17 Crew: KA, SC, JM

		Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots					Photo (✓ when Taken)
Transect	Wetted Width (ft)	Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/Downstream	
A	4.9	OP	10P	14P	11P	OP	17	17	17	17	✓	
AB	6.1	OP	9P	17P	7P	OP						
B	4.5	OP	6P	19P	32P	OP	17	17	17	17		
BC	2.75	OP	13P	10P	13P	OP						
C	2.75	OP	OP	1P	1P	OP	17	17	17	17		
CD	3.0	OP	2P	2P	5P	6P						
D	1.1	(OA)	(OA)	OP	(OA)	(OA)	17	17	17	15		
DE			DRX									
E			DRX									
EF			DRX									
F			DRX								✓	
FG	1.5	OP	OP	OP	OP	OP						
G	2.02	OP	OP	1P	OP	OP	15	3	6	8		
GH	3.4	OP	(1A)	8P	3P	OP						
H	6.7	OP	20P	22P	5P	OP	2	12	7	2		
HI	6.3	OP	31P	31P	45P	OP						
I	3.8	OP	27P	13P	20P	OP	7	17	15	15		
J	4.2	OP	7P	8P	15P	OP						
JK	4.0	OP	6P	3P	5P	OP	8	15	16	16		
KL	3.8	OP	1P	OP	(2A)	(OA)						
K	4.5	OP	5P	9P	3P	OP	6	15	17	3	✓	

78 MA/85

91.76%

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

Discharge Measurement
1st Measurement = left bank (looking downstream)

(*) 100 m reach

Event ID (Month Year): JUNE 2017
 Site ID: CL
 Date/Time: 6/13/17 0740
 Crew Members: KH, SC, W
 Latitude/Longitude: 34.34202, -119.28642
 Flow (circle one): (Flowing) / Pondered / Dry
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy
 Wind Direction: Blowing (circle one) From / To _____
 Photos (check): ☐ Upstream ☐ Downstream
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): algae/chara transects.
100 m reach for

January—December Monthly In Situ Measurements:
 pH: 8.08 pH units EC: 1808 $\mu\text{S}/\text{cm}$
 DO: 8.94 mg/L SC: 2232 $\mu\text{S}/\text{cm}$
 DO: 90.6 % Salinity: 1.2 ppt
 Water Temp: 15.7 °C
 Flow (from discharge measurement): 0.17 cfs

Samples Collected (check box)
 January—December Monthly Water:
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
 Dissolved Phosphorus and Nitrogen (field filtered): ☒
 May—September Dry Season Monthly Algae:
 Chlorophyll *a* (filters—algae): ☒

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	4.6	Ø	Ø
2	5.2	-0.2	-0.01
3	6.0	0.2	0.01
4	7.0	0.2	0.37
5	8.0	0.2	0.39
6	8.9	0.15	0.26
7	9.0	Ø	Ø
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method
 (Use only if velocity area method not possible)
 Distance (ft) _____ Float 1 _____ Float 2 _____ Float 3 _____
 Float Time (sec) _____
 Float Reach Cross Section (ft)
 Width _____
 Depth 1 _____
 Depth 2 _____
 Depth 3 _____
 Depth 4 _____
 Depth 5 _____

May—September: Algae Collection for Chlorophyll *a*
 Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width > 10 m): _____
 Collection Device (sum # transects per Device) _____ Quantity _____
 Rubber Delimiter (Area=12.6cm²) 6
 PVC Delimiter (Area=12.6cm²) 5
 Syringe Scrubber (Area=5.3cm²) 0
 Other (Area= _____) _____
 Number of Transects Sampled (0-11) 11
 Composite Volume (mL) 274
 Chlorophyll *a* Volume (use GF/F filter, 25 mL preferred volume) 25

Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May-September)
 Site: CL Date: 6/15/17 Crew: KH, SC, WW

Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)			Densimeter (0-17) Count covered dots					Photo (✓ when Taken)			
Transect	Wetted Width (ft)	Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/Downstream
A	3	OA	8P	5P	2P	OP	2	0	7	2	✓
AB	3.5	OP	4P	7P	OP	OP					
B	3.0	OA	1P	7P	7A	OA	0	0	5	2	
BC	4.0	OP	3P	10P	2P	OP					
C	2.8	OP	5P	7P	5P	OP	2	0	7	0	
CD	2.0	OP	4P	5P	7P	OP					
D	1.8	OP	3P	5P	2P	OP	8	0	4	0	
DE	2.0	OP	4A	2P	4P	6P					
E	3.5	OP	6P	OP	OA	OP	5	0	7	0	
EF	4.2	OP	7A	OP	OA	OP					
F	5.7	OP	7A	1A	OP	OP	3	0	4	0	✓
FG	6.6	OA	1P	2P	OP	OP					
G	5.0	OP	4P	6P	6P	OA	3	2	5	0	
GH	3.3	OA	1P	7P	8P	OP					
H	5.0	OP	2P	6P	3P	OP	2	0	9	5	
HI	3.4	OA	6A	7P	5A	OP					
I	3.0	OA	17A	8A	3P	OP	4	0	5	0	
J	1.8	OA	15P	16P	6A	OP					
J	1.6	OA	3P	10P	5P	OA	3	15	0	0	
JK	2.2	OP	11A	6A	4A	OP					
K	2.2	OA	6P	9A	5P	OA	17	2	0	2	✓

76/105

72.4%

Ventura River Algae TMDL Event Details

EVENT DETAILS

Event ID (Month Year): JULY 2017 Date: 7/12+13/17
Crew Members: K. HAHN, S. CASEY, J. MANN
Weather (circle): Clear / Partly Cloudy / Overcast / Showers / Rain / Other _____
Event Type (check): ☒ Dry (<0.1" rain per day for the preceding three days)
☐ Wet (days with ≥0.1" rain and the three days following)
Notes: meters XS185 # 05E1042
Beckman 255 # 2554

OBSERVATION SITES (RIVER FLOW)

7/13/17

Ventura River at Highway 150 (Baldwin Road)

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Photos Taken: Upstream ☒ / Downstream ☒

Notes: _____

Ventura River at Santa Ana Blvd

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Photos Taken: Upstream ☒ / Downstream ☒

Notes: _____

Ventura River at Casitas Vista Road

Flow Status: Dry / Pondered / Flowing (Estimated Flow: 5-10 cfs)

Photos Taken: Upstream ☒ / Downstream ☒

Notes: East + west sides of river flow dominant on east side

Additional Observation Site:

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Photos Taken: Upstream / Downstream

Notes: _____

UNSAMPLED TMDL SITES

Site ID: _____ Time: _____

Photos Taken: Upstream / Downstream

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: _____ Time: _____

Photos Taken: Upstream / Downstream

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: _____ Time: _____

Photos Taken: Upstream / Downstream

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: _____ Time: _____

Photos Taken: Upstream / Downstream

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Ventura River Algae TMDL—Estuary Details

Site ID: TMDL-Est

Event ID (Month Year): JULY 2017

Date: 7/13/17 10:00

Crew Members: KH, SC, JM

Weather (circle one): Clear / Partly Cloudy / Overcast / Rainy / Foggy

Ocean Inlet (circle one): Open / Restricted / Closed

Direction of Tide: Ebb / Flood / Slack / N/A

Time of Low Tide: 0706 Time of High Tide: 1345

Wind Strength: Calm / Slight Breeze / Moderate Breeze / Strong Breeze / Windy / Strong Wind

Wind Direction: Blowing From / To S

Notes (e.g. homeless, wildlife, dogs, swimming/recreation): Grass @ 34.27454, -119.30707. Rain started west end.

TRANSECT 1

In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)

Monthly (Jan—Dec): 6/formation

pH: 7.94 pH units

EC: 2823 $\mu\text{S}/\text{cm}$

Water Temp: 24-4 $^{\circ}\text{C}$

DO: 6.95 mg/L

SC: 2852 $\mu\text{S}/\text{cm}$

DO: 79.4 % 80.3 Salinity: 1.5 ppt

Photos: ☒ Oceanward ☒ Landward

Start Time: 10:07 End Time: 10:14

Start Latitude: 34.27447

Start Longitude: -119.30698

End Latitude: 34.27448

End Longitude: -119.30727

PVC Latitude:

PVC Longitude:

Water Samples Collected (check box)

☒ Collect at Floating Macroalgae Quadrat 1, Transect 1

Monthly Water (Jan—Dec):

Nitrogen, total and dissolved: ☒

Phosphorus, total and dissolved: ☒

Nitrate + Nitrite as Nitrogen: ☒

Dry Season Algae (May—Sep):

Chlorophyll a (phytoplankton): ☒

Volume filtered per sample: 250 mL

MACROALGAE—LAND BASED											FLOATING MACROALGAE			
Quadrat	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	4.7	8.4	9.8	14.7	16.2	17.6	26.0	27.7	28.7	29.8				
Water Depth (must be ≤ 0.3 m)											0.3			
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	38	43	23	9	14	27	8	10	25	8	0	0	0	0
No. Crosshairs with Macroalgae Absent														
Crosshair Total (must equal 49)														

205/490 0/196

Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 2 of 2

Ventura River Algae TMDL— Estuary Transect Measurements Date: 7/13/17 Crew: KH, SC, JM

TRANSECT 2

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward	Start Time: <u>10:23</u>	End Time: <u>10:28</u>
Start Latitude: <u>34.27450</u>	Start Longitude: <u>-119.30730</u>	
End Latitude: <u>34.27463</u>	End Longitude: <u>-119.30758</u>	
PVC Latitude:	PVC Longitude:	

	MACROALGAE—LAND BASED										FLOATING MACROALGAE			
	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Quadrat														
Distance (m)	4.7	8.4	9.8	14.7	16.2	17.6	26.0	27.7	28.7	29.8				
Water Depth (must be ≤ 0.3 m)											0.3			
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	7	3	3	4	3	8	2	0	0	0	0	0	0	0
No. Crosshairs with Macroalgae Absent														
Crosshair Total (must equal 49)														

TRANSECT 3

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward	Start Time: <u>10:34</u>	End Time: <u>10:37</u>
Start Latitude: <u>34.27461</u>	Start Longitude: <u>-119.30764</u>	
End Latitude: <u>34.27486</u>	End Longitude: <u>-119.30772</u>	
PVC Latitude:	PVC Longitude:	

	MACROALGAE—LAND BASED										FLOATING MACROALGAE			
	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Quadrat														
Distance (m)	4.7	8.4	9.8	14.7	16.2	17.6	26.0	27.7	28.7	29.8				
Water Depth (must be ≤ 0.3 m)											0.3			
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	39	3	0	3	0	0	0	0	0	1	0	0	0	0
No. Crosshairs with Macroalgae Absent														
Crosshair Total (must equal 49)														

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Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): 2017
 Site ID: R1
 Date/Time: 7/13/17 0815
 Crew Members: KH, SC, JM
 Latitude/Longitude: 34.28027 - 119.30840
 Flow (circle one): Flowing Ponded / Dry
 Wind Strength: Calm Light Breeze / Moderate Breeze / Strong Breeze / Windy
 Wind Direction: Blowing (circle one) From / To —
 Photos (check): ☐ Upstream ☐ Downstream
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

January-December Monthly In Situ Measurements:

pH: 7.95 pH units EC: 1389 $\mu\text{S}/\text{cm}$
 DO: 3.17 mg/L SC: 1462 $\mu\text{S}/\text{cm}$
 DO: 82.9 % Salinity: 0.70 ppt
 Water Temp: 22.4 °C
 Flow (from discharge measurement): 6.06 cfs

Samples Collected (check box)

January-December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
 Dissolved Phosphorus and Nitrogen (field filtered): ☒

May-September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae): ☒

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	4.0	0.0	0.0
2	6.0	0.55	0.10
3	8.0	0.90	0.13
4	10.0	1.10	0.20
5	12.0	0.75	0.44
6	14.0	1.10	0.49
7	16.0	0.80	0.86
8	18.0	0.70	0.48
9	20.0	0.70	0.49
10	22.0	0.55	0.74
11	24.0	0.30	-0.02
12	26.3	0.0	0.0
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May-September: Algae Collection for Chlorophyll *a*
 Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): 250 m

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	2
PVC Delimiter (Area=12.6cm ²)	8
Syringe Scrubber (Area=5.3cm ²)	0
Other (Area=)	
Number of Transects Sampled (0-11)	10
Composite Volume (mL)	419
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May-September)

Site: A1 Date: 7/13/17 Crew: KH, SC, JM

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	3-1	OA	42A	55A	45A	OA	3	10	17	17	✓
AB	2-2.5	OA	(21P)	25A	10A	OA					
B	3-2	OA	33A	45A	25A	OA	7	15	17	15	
BC	3-8	OA	(DRY)	23A	37A	OA					
C	4-5	OA	20A	26A	40A	OA	7	15	17	15	
CD	6-2	(OP)	55A	65A	40A	OA					
D	5-8.5	(OP)	69A	77A	40A	OA	10	15	15	5	
DE	4-2	OA	60A	39A	31A	(OP)					
E	6-0	OA	45A	41A	21A	OA	17	17	15	17	
EF	5-5	OA	15A	27A	30A	OA					
F	4-5	(OP)	19A	40A	20A	OA	14	7	9	2	✓
FG	3-5	OA	39A	35A	7A	OA					
G	3-8	(OP)	39A	57A	45A	OA	15	9	7	4	
GH	5-0	OA	39A	21A	7A	OA					
H	4-0	OA	36A	45A	17A	OA	13	15	17	15	
HI	3-0	OA	38A	22A	7A	OA					
I	4-5	OA	17A	55A	27A	(OP)	11	2	15	5	
J	6-5	OA	30A	OA	11A	(OP)					
J	10-5	OA	50A	90A	97A	OA	5	10	13	10	
JK		INACCESSIBLE									
K											

Inaccessible JK + K: Impenetrable vegetation to access JK + K.

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Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): R2 July 2017

Site ID: R2

Date/Time: 7/12/17 1310

Crew Members: KLS, SC, JM

Latitude/Longitude: 34.33948 -119.29721

Flow (circle one): Flowing / Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To Southern

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

January-December Monthly In Situ Measurements:

pH: 8.19 pH units EC: 121 μ S/cm

DO: 9.65 mg/L SC: 1226 μ S/cm

DO: 117.1 % Salinity: 0.6 ppt

Water Temp: 24.4 $^{\circ}$ C

Flow (from discharge measurement): 10.63 cfs

Samples Collected (check box)

January-December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as

Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May-September Dry Season Monthly Algae:

Chlorophyll *a* (filters-algae): ☒

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	9.0	0.0	0.0
2	11.0	0.90	0.10
3	13.0	1.30	0.73
4	15.0	1.60	0.55
5	17.0	1.20	0.85
6	19.0	1.40	1.05
7	21.0	0.70	0.56
8	22.0	1.80	0.42
9	24.0	1.75	0.12
10	26.0	1.30	-0.05
11	28.0	0.75	-0.10
12	30.0	0.50	-0.07
13	31.0	0.0	0.0
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)				
Distance (ft)	Float 1	Float 2	Float 3	
Float Time (sec)				
Float Reach Cross Section (ft)				
	Upper Section	Middle Section	Lower Section	
Width				
Depth 1				
Depth 2				
Depth 3				
Depth 4				
Depth 5				

May-September: Algae Collection for Chlorophyll *a*
Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): 0.150 m

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	8
PVC Delimiter (Area=12.6cm ²)	3
Syringe Scrubber (Area=5.3cm ²)	0
Other (Area=)	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	490
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May-September)

Site: R2

Date: 7/12/17

Crew: KH, SC, JWA

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	6.2	OA	31A	27A	13A	OA	8	2	10	5	✓
AB	5.7	OP	5A	OP	32A	OP					
B	5.5	OA	20A	25A	15A	OP	17	17	17	17	
BC	5.0	OA	15A	32A	20A	OA					
C	6.8	OA	10P	20A	20A	OP	15	10	5	3	
CD	5.0	OA	30A	25A	17A	OP					
D	7.5	OA	40A	29A	20A	OP	17	10	0	5	
DE	7.2	OA	20P	15A	22A	OP					
E	7.0	OA	43A	48A	15A	OA	15	5	8	2	
EF	5.0	OA	55A	5A	48P	OA					
F	8.1	OA	25A	40A	25A	OA	10	2	0	2	✓
FG	7.0	OP	57P	43A	30A	OA					
G	7.0	OP	50A	35A	30A	OP	15	0	2	0	
GH	8.0	OP	32A	23A	25A	OA					
H	7.5	OA	17A	21A	33A	OA	13	7	0	2	
HI	10.0	OA	30A	22A	10A	OA					
I	11.0	OA	45A	21A	15P	OA	7	5	12	2	
J	7.3	OA	50A	41A	37A	OP					
J	6.6	OA	51A	29A	29A	OA	12	13	2	5	
JK	8.3	OA	33A	39A	25A	OA					
K	8.5	OA	47A	40A	21P	OP	17	11	10	4	✓

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Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): JULY 2017

Site ID: R3

Date/Time: 7/12/17 1120

Crew Members: KH, SC, JM

Latitude/Longitude: 34-34585, -119-29968

Flow (circle one): (Flowing) Ponded / Dry

Wind Strength: (Light Breeze) Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) (From) To SOUTH

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

January-December Monthly In Situ Measurements:

pH: 7.93 pH units EC: 1115 $\mu\text{S}/\text{cm}$

DO: 5.62 mg/L SC: 1180 $\mu\text{S}/\text{cm}$

DO: 99.2 % Salinity: 0.60 ppt

Water Temp: 22.1 °C

Flow (from discharge measurement): 6.13 cfs

Samples Collected (check box)

January-December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as

Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May-September Dry Season Monthly Algae:

Chlorophyll *a* (filters-algae): ☒

Buoyant Object Method (Use only if velocity area method not possible)				
Distance (ft)	Float 1	Float 2	Float 3	
Float Time (sec)				
Float Reach Cross Section (ft)				
Width	Upper Section	Middle Section	Lower Section	
Depth 1				
Depth 2				
Depth 3				
Depth 4				
Depth 5				

May-September: Algae Collection for Chlorophyll *a*
Reach Length (150 m if wetted width ≤ 10 m; 250 m if wetted width > 10 m): 150

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	8
PVC Delimiter (Area=12.6cm ²)	3
Syringe Scrubber (Area=5.3cm ²)	0
Other (Area=)	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	502
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	9.2	0.0	0.0
2	9.7	0.80	0.23
3	10.2	0.90	0.24
4	11.0	0.40	0.38
5	12.0	0.50	-0.08
6	13.0	1.10	0.24
7	14.0	1.25	0.73
8	15.0	0.40	0.67
9	16.0	1.00	0.71
10	17.0	1.00	0.67
11	18.0	1.20	0.29
12	19.0	0.30	0.33
13	20.0	0.0	0.0
14	21.0	0.80	0.63
15	22.0	1.30	0.49
16	23.0	0.95	0.49
17	24.0	0.85	0.83
18	25.0	0.70	0.41
19	25.5	0.0	0.0
20			

Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May-September)

Site: R3 Date: 7/12/17 Crew: KH, SC, JM

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	5.9	OA	DRY	26A	37P	OP	2	5	15	10	✓
AB	8.5	OP	22P	22P	22P	OA					
B	9.5	OP	5P	6P	36P	OP	7	1	13	15	
BC	10.5	OP	22A	27P	12P	OP					
C	11.0	OA	14P	27A	24A	OP	13	10	7	2	
CD	10.0	OP	2P	45P	46A	OP					
D	7.9	OP	3P	35P	50A	OP	7	2	13	2	
DE	6.4	OA	2A	18P	25A	OP					
E	6.6	OP	7A	20A	12A	OP	3	7	13	5	
EF	7.5	OA	27P	10P	6P	OP					
F	8.0	OA	18P	15P	10P	OA	17	7	15	2	✓
FG	7.5	OA	15P	25P	20P	OA					
G	8.0	OA	1P	27P	11A	OP	17	7	13	2	
GH	6.0	OA	OP	25P	20P	OA					
H	6.0	OP	2P	15P	22A	OP	7	10	17	13	
HI	8.7	OP	25A	8A	7P	OA					
I	7.0	OP	OP	13A	10P	OA	17	17	17	17	
II	6.5	OP	15P	31P	20P	OA					
J	6.5	OP	11P	11P	55P	OA	13	17	17	17	
JK	8.1	OP	OP	42P	65A	OP					
K	6.0	OP	18A	42P	55P	OA	15	5	17	5	✓

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Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): 24 JULY 2017

Site ID: R4

Date/Time: 7/12/17 0800

Crew Members: KH, SC, JM

Latitude/Longitude: 34.38194, -119.30922

Flow (circle one): Flowing / Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To S

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): stream - non-TMDL

small algae - installed in

stream - non-TMDL

stream - non-TMDL

stream - non-TMDL

stream - non-TMDL

January-December Monthly In Situ Measurements:

pH: 7.29 pH units EC: 921 $\mu\text{S/cm}$

DO: 7.92 mg/L SC: 1029 $\mu\text{S/cm}$

DO: 86.1 % Salinity: 0.50 ppt

Water Temp: 18.5 $^{\circ}\text{C}$

Flow (from discharge measurement): 5.99 cfs

Samples Collected (check box)

January-December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as

Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May-September Dry Season Monthly Algae:

Chlorophyll *a* (filters-algae): ☒

Buoyant Object Method (Use only if velocity area method not possible)				
Distance (ft)	Float 1	Float 2	Float 3	
Float Time (sec)				
Float Reach Cross Section (ft)				
Width	Upper Section	Middle Section	Lower Section	
Depth 1				
Depth 2				
Depth 3				
Depth 4				
Depth 5				

May-September: Algae Collection for Chlorophyll *a*
Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): 150

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	6
PVC Delimiter (Area=12.6cm ²)	5
Syringe Scrubber (Area=5.3cm ²)	0
Other (Area=)	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	348
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	1.5	0.0	0.0
2	2.5	0.60	0.06
3	3.5	1.50	0.26
4	4.5	1.50	0.08
5	5.5	1.55	0.22
6	6.5	1.65	0.44
7	7.5	1.65	0.45
8	8.5	1.75	0.30
9	9.5	1.75	0.21
10	10.5	1.75	0.21
11	12.0	1.70	0.10
12	13.5	1.80	0.18
13	15.0	1.35	0.22
14	16.5	1.30	0.33
15	18.0	1.00	0.14
16	19.5	1.10	0.15
17	20.3	1.00	0.12
18	20.4	0.0	0.0
19			
20			

Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May-September)

Site: 24 Date: 7/12/17 Crew: KH, SC, JM

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	5.0	OP	46P	56P	62P	OP	0	0	5	0	✓
AB	6.0	OA	18P	42P	50P	OP					
B	11.0	OP	3P	10P	30P	OA	0	2	2	0	
BC	7.0	OP	52P	30P	4P	OA					
C	5.0	OP	3P	15A	70P	OA	17	17	17	17	
CD	6.0	OA	18A	11P	15P	OA					
D	4.5	OA	10A	10A	22P	OA	17	17	17	17	
DE	9.1	OP	4P	11P	7P	OP					
E	9.0	OP	20P	15P	17A	OP	0	0	0	0	
EF	8.3	OP	15P	30P	15P	OP					
F	8.0	OP	25P	30P	34P	OP	0	0	0	0	✓
FG	6.5	OP	40P	45P	41P	OA					
G	6.5	OP	35P	35P	40P	OP	0	0	0	0	
GH	5.0	OP	33A	32P	30P	OP					
H	5.5	OP	10A	20A	2A	OP	17	17	17	17	
HI	6.3	OP	17P	41P	48P	OP					
I	7.5	OP	15A	37A	15P	OP	0	0	5	0	
U	8.8	OP	15A	17A	15P	OP					
J	10.1	OP	29A	8P	25P	OP	0	1	5	7	
JK	5.7	OP	4P	20A	15P	OA					
K	15.0	OA	10P	15P	16A	OP	17	10	7	17	✓

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Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): SA JULY 2017

Site ID: SA

Date/Time: 7/12/17 0945

Crew Members: KH, SC, JM

Latitude/Longitude: 34.38077 -119.30734

Flow (circle one): Flowing / Ponded / Dry

Wind Strength: Calm / light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) from / To W

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

January-December Monthly In Situ Measurements:

pH: 7.35 pH units EC: 892 $\mu\text{S/cm}$

DO: 2.56 mg/L SC: 1014 $\mu\text{S/cm}$

DO: 30.5 % Salinity: 0.5 ppt

Water Temp: 18.7 °C

Flow (from discharge measurement): 0.07 cfs

Samples Collected (check box)

January-December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as

Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May-September Dry Season Monthly Algae:

Chlorophyll *a* (filters-algae): ☒

Buoyant Object Method (Use only if velocity area method not possible)				
	Float 1	Float 2	Float 3	
Distance (ft)				
Float Time (sec)				
Float Reach Cross Section (ft)				
	Upper Section	Middle Section	Lower Section	
Width				
Depth 1				
Depth 2				
Depth 3				
Depth 4				
Depth 5				

May-September: Algae Collection for Chlorophyll *a*
Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): 150

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	0
PVC Delimiter (Area=12.6cm ²)	4
Syringe Scrubber (Area=5.3cm ²)	0
Other (Area=)	
Number of Transects Sampled (0-11)	4
Composite Volume (mL)	180
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0	0	0
2	1.0	0.2	0.10
3	1.5	0.2	0.34
4	2.5	0	0
5		(+)	
6	0	0	0
7	0.5	0.2	0.04
8	1	0	0
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May-September)

Site: SA Date: 7/12/17 Crew: KH, SC, JM

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	4.6	OP	10P	13P	15P	OP	17	17	17	14	✓
AB	5.1	OP	OP	(15A)	10P	OP					
B	5.0	OP	5P	2P	8P	OP	17	17	17	17	
BC	2.8	(OA)	25P	15P	5P	OP					
C	2.5	(OA)	(OA)	DRY	8P	OP	17	17	17	17	
CD	1.2	OP	3P	DRY	12P	(1A)					
D				DRY							
DE				"							
E				"							
EF				"							
F				"							✓
FG				"							
G				"							
GH				"							
H	3-2	OP	OP	3P	8P	OP	7	17	15	5	
HI	1.7	OP	OP	OP	OP	OP					
I	1.5	(OA)	(OA)	OP	OP	OP	13	17	17	17	
II				DRY							
J	1.1	(OA)	(OA)	(OA)	(OA)	(OA)	0	12	10	5	
JK				DRY							
K				DRY							✓

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Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): July 2017

Site ID: CL

Date/Time: 7/13/17 11:15

Crew Members: KH, SC, JM

Latitude/Longitude: 34.34201 -119.28635

Flow (circle one): Flowing / Ponded / Dry

Wind Strength:

Calm / light breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To N

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation,

discharge comments, etc.): Low velocity was due

to 140 but flow was starting near end of reach

so decided to come back (station 112) - by

on 7/12 also showed flow water point

January—December Monthly In Situ Measurements:

pH: 8.32 pH units EC: 4460 $\mu\text{S/cm}$

DO: 11.56 mg/L SC: 4114 $\mu\text{S/cm}$

DO: 152.7 % Salinity: 2.20 ppt

Water Temp: 29.4 °C

Flow (from discharge measurement): 0.01 cfs

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as

Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae): ☒

Buoyant Object Method (Use only if velocity area method not possible)				
Distance (ft)	Float 1	Float 2	Float 3	
Float Time (sec)				
Float Reach Cross Section (ft)				
	Upper Section	Middle Section	Lower Section	
Width				
Depth 1				
Depth 2				
Depth 3				
Depth 4				
Depth 5				

May—September: Algae Collection for Chlorophyll *a*
Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width > 10 m): 150

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	8
PVC Delimiter (Area=12.6cm ²)	3
Syringe Scrubber (Area=5.3cm ²)	0
Other (Area=)	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	360
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	3.70	0.0	0.0
2	4.00	0.20	-0.06
3	4.50	0.20	-0.03
4	5.00	0.20	0.10
5	5.50	0.20	0.07
6	6.00	0.20	0.01
7	6.20	0.0	0.0
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May-September)

Site: A CL

Date: 7/13/17

Crew: KH, SC, JM

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	1.2	OA	(5P)	(4P)	1A	OA	0	0	3	0	✓
AB	4.0	OA	(5P)	(OP)	6A	OA					
B	3-35	(OP)	4A	(3P)	(3P)	OA	0	0	7	0	
BC	2.45	(OP)	2A	4A	(1P)	OA					
C	1.35	(OP)	(5P)	(3P)	(1P)	OA	3	0	3	0	
CD	1.45	OA	2A	(2P)	3A	OA					
D	3-1	(OP)	(1P)	DRY (1P)	(1P)	OA	2	0	0	0	
DE	4.3	OA	(OP)	DRY	(4P)	OA					
E	5.3	(OP)	(2P)	(1P)	(3P)	OA	0	0	0	0	
EF	4.5	(OP)	(2P)	5A	(6P)	OA					
F	4.8	(OP)	OA	(3A)	OA	OA	0	0	6	4	✓
FG	2.5	OA	8A	7A	(7P)	OA					
G	1.8	OA	9A	(7P)	6A	OA	0	0	0	0	
GH	1.45	(OP)	(8P)	(8P)	(5P)	OA					
H	1.25	(OP)	(6P)	(7P)	(6P)	OA	15	0	0	3	
HI	0.85	10A	(11P)	DRY	(5P)	(OP)					
I	2.7	OA	(3P)	(5P)	(7P)	OA	3	0	12	0	
II	3.2	(OP)	(5P)	DRY	(1P)	OA					
J	2.5	(OP)	(3P)	(3P)	(5P)	OA	12	2	7	0	
JK	2.3	OA	4A	DRY	1A	OA					
K	2.0	(OP)	(6P)	(5P)	(3P)	(OP)	7	2	0	2	✓

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Ventura River Algae TMDL Event Details

EVENT DETAILS

Event ID (Month Year): AUGUST 2017 Date: 8/15 + 8/16/17
Crew Members: K. HAHS S. CASEY J. MANN
Weather (circle): Clear / Partly Cloudy / Overcast / Showers / Rain / Other _____
Event Type (check): ☒ Dry (<0.1" rain per day for the preceding three days)
☐ Wet (days with ≥0.1" rain and the three days following)
Notes: Bertman 810 255 pH meter S/N 2554
YSI 85 DO/EC meter S/N 05E1042

OBSERVATION SITES (RIVER FLOW)

Ventura River at Highway 150 (Baldwin Road)

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs) Photos Taken: Upstream ☒ / Downstream ☒
Notes: _____

Ventura River at Santa Ana Blvd

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs) Photos Taken: Upstream ☒ / Downstream ☒
Notes: _____

Ventura River at Casitas Vista Road

Flow Status: Dry / Pondered / Flowing (Estimated Flow: 5-10 cfs) Photos Taken: Upstream ☒ / Downstream ☒
Notes: flowing on east + west sides of river. East side dominant

Additional Observation Site:

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs) Photos Taken: Upstream / Downstream
Notes: _____

UNSAMPLED TMDL SITES

Site ID: CL Time: 8/15/17 / 1350 Photos Taken: Upstream ☒ / Downstream ☒
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)
Reason not sampled (if flowing): _____
Notes: _____

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)
Reason not sampled (if flowing): _____
Notes: _____

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)
Reason not sampled (if flowing): _____
Notes: _____

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)
Reason not sampled (if flowing): _____
Notes: _____

Ventura River Algae TMDL—Estuary Details

Site ID: TMDL-EstEvent ID (Month Year): AUGUST 2017Date: 8/16/17 1130Crew Members: KRSC, JMWeather (circle one): Clear / Partly Cloudy / Overcast / Rainy / FoggyDirection of Tide: Ebb / Flood / Slack / N/A

Wind Strength: Calm / Slight Breeze / Moderate Breeze / Strong Breeze / Windy / Strong Wind

Notes (e.g. homeless, wildlife, dogs, swimming/recreation): 051126 Conductivity readings high. Sample collected and to take to the shop34.27456°N 119.30701°W to backOcean Inlet (circle one): Open / Restricted / ClosedTime of Low Tide: 11:09 Time of High Tide: 1739Wind Direction: Blowing From/To open west end, W

TRANSECT 1

In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)

Monthly (Jan—Dec): YS185 05E1042pH: 8.08 pH unitsDO: 7.91 mg/LDO: 9.21 %EC: 1565 $\mu\text{S/cm}$ SC: 1630 $\mu\text{S/cm}$ Salinity: 2.8 pptWater Temp: 22.9 °CYS185 05E1126 clockDO % 87.2DO % 6.78 Temp °C 22.9Photos: ☒ Oceanward ☒ LandwardStart Time: 1130End Time: 1137Start Latitude: 34.27446Start Longitude: -119.30701End Latitude: 34.27451End Longitude: -119.30730

PVC Latitude:

PVC Longitude:

Water Samples Collected (check box)

[Collect at Floating Macroalgae Quadrat 1, Transect 1]

Monthly Water (Jan—Dec):

Nitrogen, total and dissolved:

Phosphorus, total and dissolved:

Nitrate + Nitrite as Nitrogen:

Dry Season Algae (May—Sep):

Chlorophyll a (phytoplankton):

Volume filtered per sample:

MACROALGAE—LAND BASED

FLOATING MACROALGAE

Quadrat	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	5.4	6.9	9.6	12.3	17.3	18.2	20.3	22.4	23.9	28.6				
Water Depth (must be ≤ 0.3 m)														
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	5	4	4	3	1	0	0	2	1	27	0	0	0	0
No. Crosshairs with Macroalgae Absent														
Crosshair Total (must equal 49)	49										49			

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Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 2 of 2

Ventura River Algae TMDL — Estuary Transect Measurements Date: 8/16/17 Crew: KH, SC, JM

TRANSECT 2

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward		Start Time: <u>1140</u>		End Time: <u>1145</u>	
Start Latitude: <u>34.27453</u>		Start Longitude: <u>-119.30736</u>			
End Latitude: <u>34.27462</u>		End Longitude: <u>-119.30766</u>			
PVC Latitude:		PVC Longitude:			

Quadrat	MACROALGAE—LAND BASED										FLOATING MACROALGAE			
	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	5.4	6.9	9.6	12.3	17.3	18.2	20.3	22.4	23.9	28.6				
Water Depth (must be ≤ 0.3 m)											0.3			
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	3	2	0	2	0	0	0	0	0	2	0	0	0	0
No. Crosshairs with Macroalgae Absent											49			
Crosshair Total (must equal 49)	49										49			

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TRANSECT 3

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward		Start Time: <u>1147</u>		End Time: <u>1156</u>	
Start Latitude: <u>34.27464</u>		Start Longitude: <u>-119.30769</u>			
End Latitude: <u>34.27490</u>		End Longitude: <u>-119.30775</u>			
PVC Latitude:		PVC Longitude:			

Quadrat	MACROALGAE—LAND BASED										FLOATING MACROALGAE			
	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	5.4	6.9	9.6	12.3	17.3	18.2	20.3	22.4	23.9	28.6				
Water Depth (must be ≤ 0.3 m)											2.03			
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	34	1	0	1	0	0	0	0	2	0	0	0	0	0
No. Crosshairs with Macroalgae Absent											49			
Crosshair Total (must equal 49)	49										49			

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Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): 405 2017
 Site ID: TMDL R-1
 Date/Time: Aug 16 17 0940
 Crew Members: KH SCJW
 Latitude/Longitude: 34.28032, -119.30835
 Flow (circle one): Flowing / Ponded / Dry
 Wind Strength:
☒ Calm / ☐ Light Breeze / ☐ Moderate Breeze / ☐ Strong Breeze / ☐ Windy
 Wind Direction: Blowing (circle one) From / To _____
 Photos (check): ☐ Upstream ☐ Downstream
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): _____

January—December Monthly In Situ Measurements:
 pH: 7.97 pH units EC: 1413 $\mu\text{S}/\text{cm}$ YSI (DO) 051126
 DO: 7.28 mg/L SC: 1541 $\mu\text{S}/\text{cm}$ 86.17
 DO: 81.8 % Salinity: 0.80 ppt
 Water Temp: 20.7 °C 73.20 °F
 Flow (from discharge measurement): 419 cfs
YS185 05E1042

Samples Collected (check box)
 January—December Monthly Water:
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
 Dissolved Phosphorus and Nitrogen (field filtered): ☒
 May—September Dry Season Monthly Algae:
 Chlorophyll *a* (filters—algae): ☒

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	7.00	0.0	0.0
2	11.00	0.60	0.04
3	13.00	0.65	0.35
4	15.00	0.70	0.46
5	17.00	0.85	0.59
6	19.00	1.10	0.41
7	21.00	0.60	0.44
8	23.00	0.90	0.21
9	25.00	0.95	0.09
10	27.00	0.40	0.01
11	29.00	0.0	0.0
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method
 (Use only if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			

Float Reach Cross Section (ft)

	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*
 Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): _____

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	11
PVC Delimiter (Area=12.6cm ²)	11
Syringe Scrubber (Area=5.3cm ²)	11
Other (Area=)	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	470
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: R1 Date: 8/16/17 Crew: K1, SC, JM

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	5.5	(OP)	49A	52A	45A	OA	3	2	6	3	✓
AB	4.8	OA	51A	(15P)	53A	OA					
B	3.85	OA	51A	(47P)	45A	OA	3	10	3	2	
BC	3.2	34A	(3P)	27A	21A	OA					
C	2.1	OA	(OP)	15A	23A	OA	13	16	15 17	15	
CD	2.6	OA	6A	(5P)	25A	OA					
D	2.8	OA	20A	42A	29A	OA	17	17	17	17	
DE	4.2	OA	23A	11A	30A	OA					
E	5.0	OA	50A	63A	42A	OA	17	17	17	17	
EF	6.0	OA	64A	72A	25A	OA					
F	5.0	OA	66A	65A	23A	OA	17	16	17	13	✓
FG	4.4	OA	50A	50A	40A	OA					
G	5.3	(OP)	36A	40A	35A	OA	17	18 13	15	17	
GH	4.7	(OP)	29A	36A	27A	OA					
H	6.2	(OP)	(18P)	47A	23A	OA	5	7	10	2	
HI	4.5	OA	34A	31A	(15P)	OA					
I	3.2	(OP)	39A	45A	40A	OA	15	10	13	12	
J	2.85	OA	39A	45A	(31P)	OA					
JK	3.4	OA	35A	27A	45A	OA	15	15	15	12	
KL	3.3	OA	40A	13A	2A	OA					
K	2.8	OA	30A	40A	33A	OA	16 17	17	17	17	✓

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Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

Discharge Measurement
1st Measurement = left bank (looking downstream)

Event ID (Month Year): Aug 2017
 Site ID: R2
 Date/Time: 8/15/17 12:15
 Crew Members: K4, SC, TM
 Latitude/longitude: 34.33946, -119.29726
 Flow (circle one): Flowing / Pondered / Dry
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy
 Wind Direction: Blowing (circle one) From / To S
 Photos (check): ☒ Upstream ☒ Downstream
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):
0.402/10.070 12.4.9% 10.51m/s

January—December Monthly In Situ Measurements:
 pH: 8.02 pH units EC: 181 μ S/cm
 DO: 5.45 mg/L SC: 1220 μ S/cm
 DO: 5.1 % Salinity: 0.40 ppt
 Water Temp: 23.3 °C
 Flow (from discharge measurement): 666 cfs

Samples Collected (check box)
 January—December Monthly Water:
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
 Dissolved Phosphorus and Nitrogen (field filtered): ☒
 May—September Dry Season Monthly Algae:
 Chlorophyll *a* (filters—algae): ☒

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	8.6	0.0	0.0
2	12.0	1.00	-0.09
3	15.0	1.50	0.11
4	17.0	1.60	0.34
5	19.0	1.30	0.45
6	21.0	1.70	0.38
7	23.0	1.50	0.54
8	25.0	1.50	0.24
9	27.0	1.20	0.27
10	29.0	0.90	0.0
11	30.5	0.0	0.0
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*
 Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m):

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	11
PVC Delimiter (Area=12.6cm ²)	0
Syringe Scrubber (Area=5.3cm ²)	0
Other (Area=)	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	374
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)
 Site: R2 Date: 8/15/17 Crew: KH, SC, DM

		Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
Transect	Wetted Width (ft)	Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/Downstream
A	6-5	(OP)	(32P)	23A	20A	OA	5	2	7	12	✓
AB	6-5	OA	(OP)	(30P)	25A	OA					
B	5-5	OA	37A	(OP)	35A	OA	15	5	7	2	
BC	4-2	OA	<div>DeV</div> 17A	17A	15A	OA					
C	6-0	OA	10A	30A	(22P)	OA	17	12	5	7	
CD	5-8	OA	18A	17A	26A	OA					
D	6-0	OA	OA	15A	26A	OA	17	17	5	17	
DE	7-8	OA	10A	(7P)	25A	(OP)					
E	5-5	40A	17A	37A	20A	OA	17	12	5	10	
EF	6-6	OA	50A	(25P)	12A	(OP)					
F	7-2	OA	35A	36A	(24P)	(OP)	15	3	7	5	✓
FG	7-5	OA	48A	41A	33A	(OP)					
G	3-7	(OP)	(29P)	(15P)	25A	OA	10	3	2	2	
GH	6-0	OA	47A	(18P)	26A	OA					
H	7-5	OA	20A	(23P)	(16P)	OA	15	2	5	0	
HI	7-2	OA	28A	10A	(OP)	OA					
I	7-5	OA	45A	(5P)	21A	(OP)	17	8	15	8	
U	6-8	OA	45A	50A	40A	(OP)					
J	7-8	OA	43A	47A	45A	(OP)	16	3	15	2	
JK	8-0	OA	26A	30A	32A	OA					
K	5-5	50A 55A	55A	(60P)	50A	OA	17	17	10	17	✓

25
104

Discharge Measurement

Event ID (Month Year): AUG 2017

Date/Time: 8/15/17 1030

Latitude/Longitude: 34.34587 -119.29987

Flow (circle one): Flowing / Ponded / Dry

Wind Strength:

Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy
Wind Direction: Blowing (circle one) From / To S

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.) : _____

January—December Monthly In Situ Measurements:

pH: 7.92 pH units EC: 1096 $\mu\text{S}/\text{cm}$

DO: 5.0 mg/L SC: 1180 $\mu\text{S}/\text{cm}$

DO: 8.15 % Salinity: 2.60 ppt

Water Temp: 21.2 °C

Flow (from discharge measurement): 1.00 cfs

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as

Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae):

Discharge Measurement
ment = left bank (looking

Discharge Measurement
ment = left bank (looking

May—September: Algae Collection for Chlorophyll *a*

Reach Length (150 m if wetted width ≤ 10 m; 250 m if wetted width > 10 m): _____

Discharge Measurement
ment = left bank (looking

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)
 Site: P2 Date: 8/5/17 Crew: KHSC, SM

		Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
Transect	Wetted Width (ft)	Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/Downstream
A	5-5	OA	3OA	25A	35A	OA	7	3	15	10	✓
AB	8-2	OP	15A	16P	21P	OA					
B	8-3	OP	4P	11A	25A	OA	12	2	16	8	
BC	9-3	OP	17P	26A	27A	OP					
C	11-0	OP	13P	28A	17A	OP	17	15	10	11	
CD	6-5	OP	8P	42A	65A	OP					
D	4-9	OP	34P	37A	45A	OP	7	7	14	2	
DE	4-8.5	OA	9A	20A	23A	OA					
E	5-5	OA	6A	6A	10P	OA	0	3	11	5	
EF	7-2	OA	16A	5A	5P	OA					
F	7-1	OA	8A	17P	15P	OA	17	7	10	8	✓
FG	6-8	OA	10A	13P	17P	OA					
G	5-0	OA	2P	24P	12P	OA	13	12	17	7	
GH	4-1.5	OP	16P	27A	14P	OA					
H	7-0	OA	15P	4P	10P	OA	5	13	17	12	
HI	8-3	OP	25A	12A	2A	OA					
I	6-0	OP	5A	30A	21A	OA	15	17	17	17	
J	6-0	OP	20A	OP	43A	OA					
JK	6-3	OP	30A	29A	43A	OA	17	10	17	17	
K	5-6	OP	18P	15P	17P	OP	5	8	15	10	✓

4445
105

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): 24 AUG 2017

Site ID: 24

Date/Time: 8/15/17 0755

Crew Members: KH, SC, JM

Latitude/Longitude: 34.38179 -119.30910

Flow (circle one): Flowing / Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

January—December Monthly In Situ Measurements:

pH: 7.23 pH units EC: 903 $\mu\text{S}/\text{cm}$

DO: 8.87 mg/L SC: 1029 $\mu\text{S}/\text{cm}$

DO: 8.84 % Salinity: 0.50 ppt

Water Temp: 19.6 °C

Flow (from discharge measurement): 4.94 cfs

YS1 05E1042 8/15/17

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae): ☒

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft./sec)
1	3.5	0.0	0.0
2	5.0	0.90	0.10
3	7.0	0.90	0.16
4	9.0	1.00	0.25
5	11.0	1.10	0.28
6	13.0	1.30	0.30
7	15.0	1.40	0.16
8	17.0	1.70	0.05
9	19.0	1.90	0.17
10	21.0	1.80	0.23
11	23.0	1.80	0.08
12	25.0	1.10	0.10
13	27.0	0.0	0.0
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method
(Use only if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			

Float Reach Cross Section (ft)

	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m):

Collection Device (sqm # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	3
PVC Delimiter (Area=12.6cm ²)	8
Syringe Scrubber (Area=5.3cm ²)	0
Other (Area=)	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	320
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

DO check
8/16/17 05E1126
53.3 %
4.47 mg/L
19.2 °C

05E1042
53.8 %
5.76 mg/L
19.2 °C

Fish present actively swimming

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)
 Site: R4 Date: 8/15/17 Crew: KH, SC

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	8.0	OP	43P	51P	62P	OP	10	0	1	2	✓
AB	6.6	OP	45P	54P	60P	OP					
B	8.5	OP	15P	40P	53P	OP	12	2	8	0	
BC	9.0	OP	3P	15P	55P	OP					
C	8.1	OP	OP	17P	53P	OP	5	13	10	0	
CD	6.6	OP	14P	30P	55P	OP					
D	3.2	OP	10A	4A	5A	OP	17	17	17	17	
DE	8.2	OP	15A	1A	5A	OP					
E	3.0	OP	7A	34A	25A	OP	17	17	17	17	
EF	10.1	OP	OP	15P	20A	OP					
F	8.3	OP	16A	6A	7A	OP	0	0	2	0	✓
FG	8.6	OP	24P	18A	23P	OP					
G	7.0	OP	30P	31A	33P	OP	0	0	0	0	
GH	6.3	OP	20P	45P	39P	OP					
H	6.5	OP	31P	33P	31P	OP	0	0	0	0	
HI	4.3	OP	40P	27A	30A	OP					
I	5.7	OP	OP	5P	42P	OP	17	7	8	17	
J	6.8	OP	5P	33A	37P	OP					
JK	7.7	OP	8A	13A	27P	OP	13	17	10	17	
K	11.8	OP	OP	24P	7A	OP					
K	3.7	OP	14P	20P	10A	OP	2	0	0	0	✓

$$\frac{105 - 37}{105} = \frac{68}{105}$$

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): AUG 2017

Site ID: SA

Date/Time: 8/15/17 0940

Crew Members: KH, SC, JM

Latitude/Longitude: 34.38077, -119.30734

Flow (circle one): Flowing / Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): Algae/chl a sample data not collected b/c site did not meet protocol requirements - sites D-K dry (24 Sept 2017) + transects dry

January—December Monthly In Situ Measurements:

pH: 7.28 pH units EC: 878 $\mu\text{S}/\text{cm}$

DO: 2.52 mg/L SC: 1018 $\mu\text{S}/\text{cm}$

DO: 281 % Salinity: 0.5 ppt

Water Temp: 18.8 °C

Flow (from discharge measurement): 20-03 cfs

VSI 05E1042 8/15/17

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae): ☒

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	10	0	0
2	25		
3	0	0	0
4	0.4	0.15	0.03
5	0.8	0.15	0.03
6	1.2	0	0
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method
(Use only if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			

Float Reach Cross Section (ft)

	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m):

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

8/16/17 05E1126 05E1042
0530 DO mg/L 32.8
14.6C Temp °C 3.4
17.8

with 644 aug depth

(+)

with 2 depth 0.1' vel 0.1 fs
1-2'

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)
 Site: SA Date: 8/15/17 Crew: KASCJM

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)						Densimeter (0-17) Count covered dots				Photo (✓ when Taken)	
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/Downstream		
A													✓
AB													
B													
BC													
C													
CD													
D				DRY									
DE													
E				DRY									
EF													
F													✓
FG													
G													
GH													
H													
HI													
I													
IJ													
J													
JK													
K													✓

Ventura River Algae TMDL Event Details

EVENT DETAILS

Event ID (Month Year): SEPTEMBER 2017 Date: 9/5/2017

Crew Members: LM & SC

Weather (circle): Clear / Partly Cloudy / Overcast / Showers / Rain / Other _____

Event Type (check): ☒ Dry (<0.1" rain per day for the preceding three days)
☐ Wet (days with ≥0.1" rain and the three days following)

Notes: Berkman 410 pH 5.12 - 5.1203

9/5 YSI 85 DO/EC 9/5 05E1042, 9/6 03D0379
R4+SA

(stopped working before R3)

R3, R2, R1, Est

OBSERVATION SITES (RIVER FLOW)

Ventura River at Highway 150 (Baldwin Road)

Flow Status: Dry / Pondered / Flowing (Estimated Flow: 1.5 cfs)

Photos Taken: Upstream / Downstream

Notes: _____

Ventura River at Santa Ana Blvd

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Photos Taken: Upstream / Downstream

Notes: _____

Ventura River at Casitas Vista Road

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Photos Taken: Upstream / Downstream

Notes: _____

Additional Observation Site:

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Photos Taken: Upstream / Downstream

Notes: _____

UNSAMPLED TMDL SITES

Site ID: La Canada Time: 10:57 9/5/17

Photos Taken: Upstream / Downstream

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: _____ Time: _____

Photos Taken: Upstream / Downstream

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: _____ Time: _____

Photos Taken: Upstream / Downstream

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: _____ Time: _____

Photos Taken: Upstream / Downstream

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Ventura River Algae TMDL—Estuary Details

Site ID: TMDL-EstEvent ID (Month Year): SEPTEMBER 2017Date: 9/6/2017 1130Crew Members: Lara, Sean, TimWeather (circle one): Clear / Partly Cloudy / Overcast / Rainy / FoggyOcean Inlet (circle one): Open / Restricted / ClosedDirection of Tide: Ebb / Flood / Slack / N/ATime of Low Tide: 1616 Time of High Tide: 1026Wind Strength: Calm / Slight Breeze / Moderate Breeze / Strong Breeze / Windy / Strong WindWind Direction: Blowing From / To from offshoreNotes (e.g. homeless, wildlife, dogs, swimming/recreation): open west end to N.E.

TRANSECT 1

In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)

Monthly (Jan—Dec):

pH: 7.98 pH unitsEC: 1591 $\mu\text{S}/\text{cm}$ Water Temp: 24.7 °CDO: 7.36 mg/LSC: 1601 $\mu\text{S}/\text{cm}$

34.1628, -119.1825

DO: 91.3 %Salinity: 0.8 pptPhotos: ☒ Oceanward ☒ LandwardStart Time: 11:42 End Time: 12:00Start Latitude: 34.1647Start Longitude: -119.1842End Latitude: 34.2744End Longitude: -119.3072

PVC Latitude:

PVC Longitude:

Water Samples Collected (check box)

[Collect at Floating Macroalgae Quadrat 1, Transect 1]

Monthly Water (Jan—Dec):

Nitrogen, total and dissolved:

Phosphorus, total and dissolved:

Nitrate + Nitrite as Nitrogen:

Dry Season Algae (May—Sep):

Chlorophyll a (phytoplankton): ☐

Volume filtered per sample: _____

MACROALGAE—LAND BASED

FLOATING MACROALGAE

Quadrat	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	0.7	7.1	8.9	13.3	17.4	20.7	23.8	26.3	26.7	28.2	7.1	7.1		
Water Depth (must be ≤ 0.3 m)	.1	.2	.1	.1	.2	.2	.1	.1	.1	.1	1.4	1.4		
Condition [F=Fresh, Int=Intermediate, Des=Dessicated, Dd=Déad]	Fresh (Int) Des Dd	Fresh (Int) Des Dd	Fresh Int Des Dd	Fresh (Int) Des Dd	Fresh (Int) Des Dd	Fresh (Int) Des Dd	Fresh Int Des Dd	Fresh Int Des Dd	Fresh Int Des Dd	Fresh (Int) Des Dd	Fresh Int Des Dd	Fresh Int Des Dd	Fresh Int Des Dd	Fresh Int Des Dd
No. Crosshairs with Macroalgae Present	22	20	0	2	2	9	0	0	0	10	0	0	0	0
No. Crosshairs with Macroalgae Absent											49	49		
Crosshair Total (must equal 49)	49										49			

65/490

0/196

Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 2 of 2

Ventura River Algae TMDL — Estuary Transect Measurements Date: 9/6/2017 Crew: LM, SC, JM

TRANSECT 2

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward	Start Time: <u>12:09</u>	End Time: <u>12:18</u>
Start Latitude: <u>34.2746, -119.3074</u>	Start Longitude:	
End Latitude: <u>34.2249, -119.3076</u>	End Longitude:	
PVC Latitude:	PVC Longitude:	

	MACROALGAE—LAND BASED										FLOATING MACROALGAE			
	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Quadrat	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	0.7	7.1	8.9	13.3	17.4	20.7	23.8	25.3	26.7	28.2	5m	5m	4m	4m
Water Depth (must be ≤ 0.3 m)	.1	.1	.1	.1	.1	.1	.1	.1	.2	.2	1m	1m	1m	1m
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	0	0	0	0	6	5	7	9	0	10	0	0	0	0
No. Crosshairs with Macroalgae Absent	49	49	49	49	43	45	47	40	49	39	49	49	49	49
Crosshair Total (must equal 49)	49	49	49	49	49	49	49	49	49	49	49	49	49	49

TRANSECT 3

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward	Start Time: <u>12:09</u>	End Time: <u>12:27</u>
Start Latitude: <u>34.2749</u>	Start Longitude: <u>-119.3077</u>	
End Latitude: <u>34.2251</u>	End Longitude: <u>-119.3079</u>	
PVC Latitude:	PVC Longitude:	

	MACROALGAE—LAND BASED										FLOATING MACROALGAE			
	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Quadrat	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	0.7	7.1	8.9	13.3	17.4	20.7	23.8	25.3	26.7	28.2	5m	5m	2m	2m
Water Depth (must be ≤ 0.3 m)	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	1m	1m	1m	1m
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	12	1	1	0	0	0	0	0	0	0	0	0	0	0
No. Crosshairs with Macroalgae Absent	49	49	49	49	49	49	49	49	49	49	49	49	49	49
Crosshair Total (must equal 49)	49	49	49	49	49	49	49	49	49	49	49	49	49	49

1m/490

0/196

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

Discharge Measurement
1st Measurement = left bank (looking downstream) 9/15 9/16 - DO: 0300379
9/15 - DO: 05E1042
9/15 9/16 - pH: 511203

Event ID (Month Year): September 2017

Site ID: VR1

Date/Time: 9/16/2017 10:40

Crew Members: LM, SC, TM

Latitude/Longitude: 34°33'38", -119°29'23"

Flow (circle one): Flowing Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To To

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): homeless

January—December Monthly *In Situ* Measurements:

pH: 7.94 pH units EC: 1554 $\mu\text{S}/\text{cm}$

DO: 7.78 mg/L SC: 4425 $\mu\text{S}/\text{cm}$

DO: 90.8 % Salinity: 0.80 ppt

Water Temp: 22.7 °C

Flow (from discharge measurement): 3.11 cfs

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae): ☒

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	19.5	0.0	0.0
2	17.0	0.30	0.39
3	15.0	0.50	0.26
4	13.0	0.80	0.17
5	11.0	0.85	0.20
6	9.0	0.90	0.33
7	7.0	1.0	0.36
8	5.0	1.1	0.21
9	3.5	0.85	0.30
10	3.0	0.0	0.0
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method
(Use only if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			

Float Reach Cross Section (ft)

	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*

Reach Length (150 m if wetted width \leq 10 m, 250 m if wetted width $>$ 10 m): _____

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	11
PVC Delimiter (Area=12.6cm ²)	0
Syringe Scrubber (Area=5.3cm ²)	0
Other (Area=)	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	324
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: VRI

Date: 9/6/2017

Crew: LM & SC & Jim

	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)						Densimeter (0-17) Count covered dots					Photo (✓ when Taken)
Transect	Wetted Width (ft)	Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/ Downstream	
A	4.5	0A	45A	45A	45A	0A	3	7	3	2	X	
AB	4.6	0A	33A	57A	0A	46A						
B	3.6	0A	26A	50A	42A	0A	3	0	2	0		
BC	3.0	0A	29A	21A	2A	0A						
C	2.6	0A	16A	25A	36A	0A	17	15	17	14		
CD	2.2	0A	14A	17A	40A	0A						
D	2.5	0A	35A	42A	17A	0A	17	17	17	17		
DE	4.3	0A	25A	29A	15A	0A						
E	5.0	0A	51A	58A	31A	0A	17	17	17	17		
EF	5.3	0A	53A	70A	50A	0A						
F	4.5	0A	55A	50A	34A	0A	17	17	17	17	X	
FG	5.0	0A	30A	35A	22A	0A						
G	4.8	0A	30A	30A	27A	0A	16	3	15	42		
GH	6.0	0A	45A	49A	15A	0A						
H	4.1	0A	35A	29A	25A	0A	16	17	17	15		
HI	2.5	0A	35A	45A	22A	0A						
I	2.5	22A	21A	40A	15A	0A	17	17	17	17		
II	2.3	0A	31A	43A	19A	0A						
J	3.3	0A	30A	41A	10A	0A	15	10	17	12		
JK	2.5	0A	30A	15A	11A	0A						
K	2.0	0A	45A	30A	11A	0A	17	17	11	17	X	

(0/105)

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): September 2017

Site ID: VR2

Date/Time: 9/6/2017 8:00

Crew Members: LEM, SC, Jim

Latitude/Longitude: 34.33935, -119.29726

Flow (circle one): Flowing / Pondered / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To _____

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): _____

January—December Monthly In Situ Measurements:

pH: 7.62 pH units EC: 1219 $\mu\text{S/cm}$

DO: 6.82 mg/L SC: 1273 $\mu\text{S/cm}$

DO: 73.5 % Salinity: 0.60 ppt

Water Temp: 22.8 °C

Flow (from discharge measurement): 3.96 cfs

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May—September Dry Season Monthly Algae: ☒

Chlorophyll *a* (filters—algae): ☒

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	28.5	.20	-0.11
2	27.0	.45	-0.06
3	25.5	.70	-0.09
4	23.00	1.00	-0.05
5	21.0	1.30	0.13
6	19.0	1.70	0.22
7	17.0	0.90	0.44
8	16.0	1.54	0.25
9	13.0	1.70	0.25
10	11.0	1.40	0.21
11	9.0	0.80	0.10
12	7.0	0.30	-0.02
13	6.5	0.0	0.0
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): _____

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	1
PVC Delimiter (Area=12.6cm ²)	0
Syringe Scrubber (Area=5.3cm ²)	0
Other (Area=)	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	320
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

* 6.5 DEY

Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May-September)
 Site: VR2 Date: 9/6/17 Crew: LM SSC & Tim

	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots					Photo (✓ when Taken)
Transect	Wetted Width (ft)	Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/ Downstream
A	7.2	0A	2GA	17A	10A	0A	2	8	12	5	X
AB	6.6	0A	(15A)B	21A	32A	0A					
B	4.5	0A	15A	35A	30A	0A	17	10	15	17	
BC	3.8	0A	20A	45A	25A	0A					
C	6.2	20A	20A	25A	17A	0A	17	10	5	8	
CD	6.3	20A	34A	17A	20A	0A					
D	8.5	0A	36A	30A	10A	0A	17	10	5	15	
DE	5.7	0A	15A	25A	20A	0A					
E	9.5	0A	43A	35A	48A	0A	9	2	0	3	
EF	7.2	0A	19A	33A	41A	0A					
F	6.2	0A	(26P)	44A	19A	0A	15	3	7	5	
FG	8.0	0A	46A	45A	38A	0A					
G	7.0	0A	35A	31A	(30P)	0A	12	12	0	0	
GH	7.8	0A	11A	15A	17A	0A					
H	5.5	0A	10A	25A	30A	0A	6	9	17	12	
HI	5.7	0A	25A	20A	19A	0A					
I	9.2	0A	45A	14A	10A	0A	8	5	7	5	
J	7.9	0A	50A	40A	21A	0A					
J	7.1	0A	14A	52A	45A	0A	14	7	13	6	
JK	10.5	0A	2A	22A	27A	0A					
K	7.0	0A	47A	58A	15A	0A	17	8	4	12	

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Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): Sept 2017
 Site ID: TRD R-3
 Date/Time: 9/5/17 1920
 Crew Members: EC LM JM
 Latitude/Longitude: 34.34577, -119.29977
 Flow (circle one): Flowing / Ponded / Dry
 Wind Strength:
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy
 Wind Direction: Blowing (circle one) From / To
 Photos (check): XUpstream XDownstream
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

January—December Monthly In Situ Measurements:
 pH: 7.91 pH units EC: 288 $\mu\text{S/cm}$ 902 $\mu\text{S/cm}$
 DO: 9.05 mg/L SC: 906 $\mu\text{S/cm}$
 DO: 108.2 % Salinity: 0.4 ppt
 Water Temp: 24.1 °C
 Flow (from discharge measurement): 3.82 cfs

Samples Collected (check box)
 January—December Monthly Water:
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):
 Dissolved Phosphorus and Nitrogen (field filtered):
 May—September Dry Season Monthly Algae:
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	4.5	0.0	0.0
2	7.5	0.40	0.07
3	9.0	0.40	1.56
4	10.0	0.40	0.19
5	12.0	0.0	0.0
6	13.0	0.30	1.09
7	14.0	0.60	0.81
8	15.0	0.60	1.43
9	16.0	0.50	1.06
10	17.0	0.35	1.05
11	18.0	0.30	0.26
12	19.0	0.30	0.10
13	21.0	0.50	0.25
14	23.0	0.50	0.10
15	25.0	0.20	0.11
16	26.5	0.0	0.0
17			
18			
19			
20			

Buoyant Object Method
 (Use only if velocity area method not possible)
 Distance (ft)
 Float Time (sec)
 Float Reach Cross Section (ft)
 Upper Section Middle Section Lower Section
 Width
 Depth 1
 Depth 2
 Depth 3
 Depth 4
 Depth 5

May—September: Algae Collection for Chlorophyll *a*
 Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m):
 Collection Device (sum # transects per Device) Quantity
 Rubber Delimiter (Area=12.6cm²)
 PVC Delimiter (Area=12.6cm²)
 Syringe Scrubber (Area=5.3cm²)
 Other (Area=)
 Number of Transects Sampled (0-11)
 Composite Volume (mL)
 Chlorophyll *a* Volume (use GF/F filter, 25 mL preferred volume)

0249 @ 12 + 24.5

Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May-September)
 Site: VR3 Date: 9/5/2017 Crew: Lane, Sean

Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)						Densimeter (0-17) Count covered dots					Photo (✓ when Taken)
Transect	Wetted Width (ft)	Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/Downstream
A	6.1	0A	10A	(23P)	(5P)	(6P)	0	3	12	5	
AB	6.0	0A	2A	16A	21A	0A					
B	6.0	0A	(22P)	23A	32A	0A	2	5	16	7	
BC	6.2	(0P)	19A	15A	11A	0A					
C	6.9	(0P)	(2P)	17A	25A	0A	5	2	13	15	
CD	8.8	(6P)	25A	20A	22A	(0P)					
D	10.8	0A	17A	24A	17A	0A	17	17	17	15	
DE	7.7	0A	31A	35A	50A	0A					
E	4.4	(0P)	25A	38A	55A	(0P)	3	5	15	5	
EF	3.7	0A	5A	24A	30A	0A					
F	5.2	(0P)	(5P)	5A	15A	0A	2	4	17	5	
FG	5.0	0A	15A	(5P)	10A	0A					
G	7.1	0A	(20P)	(10P)	(2P)	0A	12	5	15	0	
GH	7.1	0A	(15P)	(11P)	(15P)	0A					
H	6.3	0A	(5P)	(15P)	10A	(0P)	7	10	15	2	
HI	5.5	0A	(0P)	23A	10A	0A					
I	5.0	0A	22A	7A	10A	0A	15	16	17	12	
II	6.0	0A	15A	1A	2A	0A					
J	5.4	0A	30A	25A	8A	0A	17	17	17	17	
JK	5.5	(0P)	4A	22A	45A	0A					
K	6.0	(0P)	(15P)	37A	50A	0A	13	7	10	15	

7 8 5 3 4

27/104

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): SEPTEMBER 2017

Site ID: VR4

Date/Time: 9/5/2017 8:30

Crew Members: Lara, Sean, Tim

Latitude/Longitude: 34.26834 -119.20776

Flow (circle one): Flowing / Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To _____

Photos (check): ☐ Upstream ☐ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): _____

January—December Monthly *In Situ* Measurements:

pH: 7.12 pH units EC: 936 $\mu\text{S}/\text{cm}$

DO: 5.85 mg/L SC: 1030 $\mu\text{S}/\text{cm}$

DO: 59.4 % Salinity: 0.53 ppt

Water Temp: 20.3 °C

Flow (from discharge measurement): 2.46 cfs

meters past tide meter post 601 m/s 1000 ft

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae): ☒

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	2.5	0.0	0.0
2	3.0	0.60	-0.05
3	4.0	0.75	-0.04
4	5.0	0.85	-0.01
5	6.0	0.80	-0.05
6	7.0	0.90	0.01
7	9.0	1.00	0.14
8	11.0	1.10	0.15
9	13.0	1.40	0.17
10	15.0	1.50	0.05
11	17.0	1.70	0.07
12	19.0	2.00	0.15
13	21.0	1.50	0.11
14	23.0	1.20	0.08
15	25.0	0.60	0.06
16	25.5	0.0	0.0
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*

Reach Length (150 m if wetted width \leq 10 m, 250 m if wetted width $>$ 10 m): _____

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	5
PVC Delimiter (Area=12.6cm ²)	4
Syringe Scrubber (Area=5.3cm ²)	0
Other (Area=)	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	332
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)
 Site: VR4 Date: 9/5/17 Crew: Lisa & Sean

		Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots					Photo (✓ when Taken)
Transect	Wetted Width (ft)	Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/Downstream	
A	7.2	OP	33P	41P	62P	OP	16	6	0	0	✓	
AB	6.2	OA	42P	51P	60P	OP						
B	8.4	OA	12P	42P	62P	OA	3	0	7	0		
BC	4.7	OP	10P	25P	30P	OA						
C	6.25	OA	25P	30P	43P	20A	12	17	7	15		
CD	5.0	OP	3P	17A	65P	OP						
D	7.9	OA	5A	16A	Dry	OA	17	17	17	17		
DE	10	OA	19A	Dry	Dry	OA						
E	9.5	OA	15A	Dry	Dry	6A	17	17	17	17		
EF	9.0	OP	9P	13A	17P	OA						
F	8.5	OP	5P	15P	23A	OP	0	0	0	0	✓	
FG	8.0	OP	20P	33P	19P	OP						
G	6.0	OP	33P	35P	35P	OA	0	0	0	0		
GH	6.3	OP	35P	31P	33P	6P						
H	4.7	OP	30P	26P	29P	OP	0	0	0	0		
HI	4.3	OA	10A	15A	15A	OA						
I	4.5	OA	3P	26P	29P	OP	0	0	0	0		
J	5.8	OA	7A	17P	20A	OP						
JK	8	OA	12P	8A	10A	OA	6	30	0	3		
K	11.8	OA	8A	5A	8P	OP						
	5.5	OP	15A	7P	22A	OA	17	17	17	17		

100-40
 11 7 6 5
 60/100

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): MA September 2017Site ID: SADate/Time: 9/5/2017 10:20Crew Members: Lea, Sean, TimLatitude/Longitude: 34.38070, -119.30742Flow (circle one): Flowing Ponded / Dry

Wind Strength:

☒ Calm ☐ Light Breeze ☐ Moderate Breeze ☐ Strong Breeze ☐ Windy

Wind Direction: Blowing (circle one) From / To

Photos (check): ☒ Upstream ☒ DownstreamNotes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): Algae delta not collected1/2 of transect is wet
50 doesn't meet protocols

January—December Monthly In Situ Measurements:

pH: 7.08 pH units EC: 901 $\mu\text{S}/\text{cm}$ DO: 4.85 mg/L SC: 1000 $\mu\text{S}/\text{cm}$ DO: 21.2 % Salinity: 0.5 pptWater Temp: 19.8 °CFlow (from discharge measurement): 4001 cfs

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as

Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	1.9	0.1	0.01
2	2.0	0	0
3	0.3	0.2	0.02
4	↑		
5	(out of order)		
6	50m		
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method
(Use only if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*
Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m):

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

Ventura River Algae TMDL Event Details

EVENT DETAILS

Event ID (Month Year): OCTOBER 2017 Date: 10/3/2017
Crew Members: K. HARRIS S. CASEY
Weather (circle): Clear / Partly Cloudy / Overcast / Showers / Rain / Other _____
Event Type (check): ☒ Dry (<0.1" rain per day for the preceding three days)
☐ Wet (days with ≥0.1" rain and the three days following)
Notes: Y51 85 03D0379
Bedman 410 #110341139

OBSERVATION SITES (RIVER FLOW)

Ventura River at Highway 150 (Baldwin Road)

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs) Photos Taken: Upstream ☒ / Downstream ☒
Notes: _____

Ventura River at Santa Ana Blvd

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs) Photos Taken: Upstream ☒ / Downstream ☒
Notes: _____

Ventura River at Casitas Vista Road

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs) Photos Taken: Upstream ☒ / Downstream ☒
Notes: _____

Additional Observation Site:

Flow Status: Dry / Pondered / Flowing (Estimated Flow: 5 cfs) Photos Taken: Upstream ☒ / Downstream ☒
Notes: Flow west side ~1 cfs. Flow east side dominant ~5 cfs

UNSAMPLED TMDL SITES

Site ID: CL Time: 0719 Photos Taken: Upstream / Downstream
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)
Reason not sampled (if flowing): _____
Notes: _____

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)
Reason not sampled (if flowing): _____
Notes: _____

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)
Reason not sampled (if flowing): _____
Notes: _____

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)
Reason not sampled (if flowing): _____
Notes: _____

Ventura River Algae TMDL—Estuary Details

Site ID: TMDL-Est

Event ID (Month Year): OCT 2017 Date/Time: 10/3/17 12:15

Crew Members: KH, SC

Weather (circle one): Clear / Partly Cloudy / Overcast / Rainy / Foggy

Direction of Tide: Ebb / Flood / Slack / N/A

Wind Strength: Calm / Slight Breeze / Moderate Breeze / Strong Breeze / Windy / Strong Wind

Notes (e.g. homeless, wildlife, dogs, swimming/recreation): ~ 80 birds in water (mostly gulls)

Ocean Inlet (circle one): Open / Restricted / Closed

Time of Low Tide: 1449 Time of High Tide: 0851

Wind Direction: Blowing From To S

In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)

Monthly (Jan—Dec):

pH: 8.16 pH units EC: 1522 $\mu\text{S}/\text{cm}$ Water Temp: 20.4 $^{\circ}\text{C}$

DO: 11.13 mg/L SC: 1668 $\mu\text{S}/\text{cm}$

DO: 123.7 % Salinity: 0.8 ppt

Photos: ☒ Oceanward ☒ Landward

Sample Latitude: 34.27477

Sample Longitude: -119.30765

Water Samples Collected (check box)

[Collect at Floating Macroalgae Quadrat 1, Transect 1]

Monthly Water (Jan—Dec):

Nitrogen, total and dissolved: ☒

Phosphorus, total and dissolved: ☒

Nitrate + Nitrite as Nitrogen: ☒

Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 1 of 1

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): 2017

Site ID: 130

Date/Time: 10/3/17

Crew Members: 2017-10-3-2017

Latitude/Longitude: 34° 23' 14" N - 119° 30' 14" W

Flow (circle one): Flowing / Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From N To N

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

January—December Monthly In Situ Measurements:

pH: 8.27 pH units EC: 177 µS/cm

DO: 10.83 mg/L SC: 1005 µS/cm

DO: 10.2 % Salinity: 0.9 ppt

Water Temp: 18.6 °C

Flow (from discharge measurement): 177 cfs

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as

Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May—September Dry Season Monthly Algae:

Chlorophyll a (filters algae): ☐

Buoyant Object Method (Use only if velocity area method not possible)				
Distance (ft)	Float 1	Float 2	Float 3	
Float Time (sec)				
Float Reach Cross Section (ft)				
Width	Upper Section	Middle Section	Lower Section	
Depth 1				
Depth 2				
Depth 3				
Depth 4				
Depth 5				

May—September: Algae Collection for Chlorophyll a
Reach Length (150 m if wetted width ≤ 10 m; 250 m if wetted width > 10 m):

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll a Volume (use GF/F filter, 25 mL preferred volume)	

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	3.0	0	0
2	5.0	0.2	0.03
3	7.0	0.8	0.05
4	9.0	0.75	0.14
5	11.0	0.4	0.39
6	13.0	0.8	0.24
7	15.0	0.45	0.36
8	17.0	0.6	0.15
9	19.0	0.4	0.34
10	21.0	0	0
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Ventura River Algae TMDL: River Site

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): R2 Oct 2017

Site ID: R2

Date/Time: 10/3/17 1015

Crew Members: KH, SC

Latitude/Longitude: 34° 53' 36" - 119° 29' 21"

Flow (circle one): Flowing Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To _____

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): Small fish swimming

Measurements:

pH: 7.92 pH units EC: 1252 $\mu\text{S}/\text{cm}$

DO: 8.60 mg/L SC: 1338 $\mu\text{S}/\text{cm}$

DO: 94.2 % Salinity: 0.7 ppt

Water Temp: 19.7 °C

Flow (from discharge measurement): 3.56 cfs

Samples Collected (check box)

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

Chlorophyll ~~a~~ (filters ~~algae~~): ☐

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	2.0	0	0
2	4.0	0.75	0.18
3	6.0	1.1	0.35
4	8.0	1.45	0.33
5	10.0	0.8	0.31
6	12.0	1.2	0.26
7	14.0	1.2	0.23
8	16.0	1.1	0.06
9	18.0	0.7	-0.10
10	20.0	0.5	-0.10
11	22.0	0	0
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): _____

tion for Chlorophyll

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll α Volume (use GF/F filter, 25 mL preferred volume)	

Ventura River Algae TMDL: River Site

Discharge Measurement
1st Measurement = left bank (looking downstream)

Event ID (Month Year): OCT 2017

Site ID: R3

Date/Time: 10/3/17 0915

Crew Members: RH SC

Latitude/Longitude: 34.34581 -119.29984

Flow (circle one): Flowing / Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

Measurements:

pH: 7.95 pH units EC: 1040 $\mu\text{S}/\text{cm}$

DO: 9.85 mg/L SC: 1205 $\mu\text{S}/\text{cm}$

DO: 104.1 % Salinity: 0.6 ppt

Water Temp: 18.1 °C

Flow (from discharge measurement): 1.89 cfs

Samples Collected (check box)

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as

Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

Chlorophyll ~~a~~ (nitrates=algae): ☐

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	6.0	0	0
2	7.5	0.3	0.25
3	9.0	0.6	0.23
4	10.5	0	0
5	11.0	0.7	0.10
6	12.5	0.5	0.33
7	14.0	0.75	0.30
8	15.5	0.5	0.35
9	15.5	0.50	0.35
10	17.0	0.6	0.29
11	18.5	0.65	0.08
12	20.0	0.4	0.25
13	21.5	0.8	0.15
14	22.5	0	0
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
Distance (ft)	Float 1	Float 2	Float 3
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m)	
Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll a Volume (use GF/F filter, 25 mL preferred volume)	

Ventura River Algae TMDL: River Site

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): Oct 2017
 Site ID: R4
 Date/Time: 10/3/17 0745
 Crew Members: KH, SC
 Latitude/Longitude: 34.38184 -119.30927
 Flow (circle one): Flowing / Ponded / Dry
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy
 Wind Direction: Blowing (circle one) From / To _____
 Photos (check): ☒ Upstream ☒ Downstream
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): Floating algae mat. If flow too slow to measure but end of pond that discernible. Active small fish swimming under algae layer.

Measurements:
 pH: 7.05 pH units EC: 862 $\mu\text{S/cm}$
 DO: 5.93 mg/L SC: 1005 $\mu\text{S/cm}$
 DO: 62.3 % Salinity: 0.5 ppt
 Water Temp: 17.6 °C
 Flow (from discharge measurement): 100 gals per min cfs
 Est: < 0.01

Samples Collected (check box)
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
 Dissolved Phosphorus and Nitrogen (field filtered): ☒
 Chlorophyll *a* (filters - algae): ☐

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	4.0	0	0
2	6.0	1.05	0.03
3	8.0	1.15	0.0
4	10.0	1.25	0.01
5	12.0	1.25	0.01
6	14.0	1.10	0.00
7	16.0	1.10	0.02
8	18.0	1.2	0.02
9	20.0	0.3	0.05
10	22.0	0.4	0.06
11	22.8	0	0
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
Distance (ft)	Float 1	Float 2	Float 3
Float Time (sec)			
Float Reach Cross Section (ft)			
Width	Upper Section	Middle Section	Lower Section
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): _____

Collection Device (sum # transects per Device) Quantity

Rubber Delimiter (Area=12.6cm²)

PVC Delimiter (Area=12.6cm²)

Syringe Scrubber (Area=5.3cm²)

Other (Area=)

Number of Transects Sampled (0-11)

Composite Volume (mL)

Chlorophyll *a* Volume (use GF/F filter, 25 mL preferred volume)

Ventura River Algae TMDL: River Site

Event ID (Month Year): Oct 2017

Site ID: 50

Date/Time: 10/3/17 0830

Crew Members: KH, SC

Latitude/Longitude: 34.38076, -119.30737

Flow (circle one): Flowing Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To Downstream

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): Flow too fast to

Measurements:

pH: 7.22 pH units EC: 830 $\mu\text{S}/\text{cm}$

DO: 4.20 mg/L SC: 1000 $\mu\text{S}/\text{cm}$

DO: 43.2 % Salinity: 0.5 ppt

Water Temp: 16.4 $^{\circ}\text{C}$

Flow (from discharge measurement): 40.0 cfs

Samples Collected (check box)

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

Chlorophyll a (filters ~~algae~~): ☐

Discharge Measurement

1st Measurement = left bank (looking downstream)

Buoyant Object Method
(Use only if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

Reach Length (150 m if wetted width ≤ 10 m; 250 m if wetted width > 10 m): _____

tion for Chlorophyll

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area= _____)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll a Volume (use GF/F filter, 25 mL preferred volume)	

Ventura River Algae TMDL Event Details

EVENT DETAILS

Event ID (Month Year): NOVEMBER 2017 Date: 11/1/17
Crew Members: K. HAYS, S. CASEY
Weather (circle): Clear / Partly Cloudy / Overcast / Showers / Rain / Other _____
Event Type (check): ☒ Dry (<0.1" rain per day for the preceding three days)
☐ Wet (days with ≥0.1" rain and the three days following)
Notes: metes YSI 85 S/N 05E1042 (new cable/sonde/probe)
Beckman 410 # 2554

OBSERVATION SITES (RIVER FLOW)

Ventura River at Highway 150 (Baldwin Road)

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs) Photos Taken: Upstream / ☒ Downstream
Notes: _____

Ventura River at Santa Ana Blvd

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs) Photos Taken: Upstream / ☒ Downstream
Notes: _____

Ventura River at Casitas Vista Road

Flow Status: Dry / Pondered / Flowing (Estimated Flow: 2 cfs) Photos Taken: Upstream / ☒ Downstream
Notes: east side flowing, west side barely flowing

Additional Observation Site:

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs) Photos Taken: Upstream / Downstream
Notes: _____

UNSAMPLED TMDL SITES

Site ID: CL Time: 0725 Photos Taken: Upstream / ☒ Downstream
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)
Reason not sampled (if flowing): _____
Notes: _____

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)
Reason not sampled (if flowing): _____
Notes: _____

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)
Reason not sampled (if flowing): _____
Notes: _____

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)
Reason not sampled (if flowing): _____
Notes: _____

Ventura River Algae TMDL—Estuary Details

Site ID: TMDL-Est
 Event ID (Month Year): NOV 2017 Date/Time: 11/1/17 1200
 Crew Members: KH, SC
 Weather (circle one): Clear / Partly Cloudy / Overcast / Rainy / Foggy
 Direction of Tide: Ebb / Flood / Slack / N/A
 Wind Strength: Calm / Slight Breeze / Moderate Breeze / Strong Breeze / Windy / Strong Wind
 Notes (e.g. homeless, wildlife, dogs, swimming/recreation): shoreline/beach/sunbathers + ~100 gulls + ~60 other shorebirds + ~30 cows on

In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)
 Monthly (Jan—Dec): 32
 pH: 8.46 pH units 8.47 EC: 2361 $\mu S/cm$ Water Temp: 18.9 $^{\circ}C$
 DO: 10.12 mg/L SC: 2670 $\mu S/cm$
 DO: 110.1 % Salinity: 1.4 ppt

Photos: ☒ Oceanward ☒ Landward
 Sample Latitude: 34.27463
 Sample Longitude: -119.30743

Water Samples Collected (check box)
[Collect at Floating Macroalgae Quadrat 1, Transect 1]
 Monthly Water (Jan—Dec):
 Nitrogen, total and dissolved: ☒
 Phosphorus, total and dissolved: ☒
 Nitrate + Nitrite as Nitrogen: ☒

VSI 85 OSE1042
 Beckman 255 #2554

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): Nov 2017

Site ID: R1

Date/Time: 11/11/17 1120

Crew Members: RH SC

Latitude/Longitude: 32-2294-119.3096

Flow (circle one): Flowing / Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To Downstream

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

January—December Monthly *In Situ* Measurements:

pH: 8.25 pH units EC: 1810 $\mu\text{S}/\text{cm}$

DO: 6.61 mg/L SC: 1860 $\mu\text{S}/\text{cm}$

DO: 9.11 % Salinity: 1.0 ppt

Water Temp: 18.0 °C

Flow (from discharge measurement): 0.69 cfs

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae): ☐

Buoyant Object Method
(Use only if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			

Float Reach Cross Section (ft)

	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m):

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	5.0	0.6	0
2	7.0	0.6	0
3	9.0	0.6	0.07
4	11.0	0.7	0.12
5	13.0	0.8	0.22
6	15.0	0.6	-0.07
7	17.0	0.4	0.23
8	19.0	0.2	0.06
9	21.0	0.25	-0.10
10	22.0	0	0
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Ventura River Algae TMDL: River Site

Event ID (Month Year): R2 NOV 2017

Site ID: R2

Date/Time: 11/1/17 1020

Crew Members: KH, SC

Latitude/Longitude: 34.33986 -119.29721

Flow (circle one): Flowing / Ponded / Dry

Wind Strength:

Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

Measurements:

pH: 7.96 pH units EC: 1264 μ S/cm

DO: 7.90 mg/L SC: 1402 μ S/cm

DO: 7.91 % Salinity: 0.7 ppt

Water Temp: 20.7 $^{\circ}$ C

Flow (from discharge measurement): 2.64 cfs

Samples Collected (check box)

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as

Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

Chlorophyll a (filters—algae): ☐

Discharge Measurement

1st Measurement = left bank (looking downstream)

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	2.2	0	0
2	3.0	0.5	0.08
3	4.0	0.7	0.14
4	5.0	0.9	0.25
5	6.0	1.05	0.27
6	7.0	1.20	0.26
7	8.0	1.30	0.26
8	9.0	1.45	0.24
9	10.0	1.4	0.19
10	11.0	0.65	0.26
11	12.0	1.05	0.19
12	13.0	0.9	0.10
13	14.0	1.1	0.13
14	15.0	1.5	0.11
15	16.0	1.4	0.02
16	17.0	1.0	0
17	18.0	0.8	0
18	19.0	0.8	-0.04
19	22.0	0	0
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

tion for Chlorophyll

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width > 10 m):

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll a Volume (use GF/F filter, 25 mL preferred volume)	

Ventura River Algae TMDL: River Site

Discharge Measurement
1st Measurement = left bank (looking downstream)

Event ID (Month Year): NOV 2017
 Site ID: 83
 Date/Time: 11/17 0925
 Crew Members: KU, SC
 Latitude/Longitude: 34.34581 -119.29984
 Flow (circle one): Flowing / Ponded / Dry
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy
 Wind Direction: Blowing (circle one) From / To Downstream
 Photos (check): ☒ Upstream ☒ Downstream
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

Measurements:
 pH: 7.96 pH units EC: 1082 μ S/cm
 DO: 7.97 mg/L SC: 1268 μ S/cm
 DO: 8.13 % Salinity: 0.6 ppt
 Water Temp: 17.3 °C
 Flow (from discharge measurement): 0.45 cfs

Samples Collected (check box)
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
 Dissolved Phosphorus and Nitrogen (field filtered): ☒
 Chlorophyll *a* (filters—algae): ☐

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	9.0	0	0
2	10.0	0.4	0.13
3	11.0	0.5	0.05
4	12.0	0.5	0.21
5	13.0	0.5	0.07
6	14.0	0	0
7	15.0	0.65	0.12
8	16.0	0.70	0.11
9	17.0	0.80	0.03
10	18.0	0.80	0.03
11	19.0	0.70	0.07
12	20.0	0.7	0.01
13	21.0	0.7	0.09
14	22.0	0.6	0.08
15	22.6	0.4	0.07
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): _____
 tion for Chlorophyll

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

Ventura River Algae TMDL: River Site

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): NOV 2017

Site ID: 24

Date/Time: 11/17 0745

Crew Members: KASC

Latitude/Longitude: 34-38079 -119-30765

Flow (circle one): Flowing / Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To _____

Photos (check): ☒ Upstream ☐ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): no discharge to water
reach not flowing/dry

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	7-8	0	0
2	Too low to measure		
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
Distance (ft)	Float 1	Float 2	Float 3
Float Time (sec)			
Float Reach Cross Section (ft)			
Width	Upper Section	Middle Section	Lower Section
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

Measurements:

pH: 7.33 pH units EC: 871 μ S/cm

DO: 3.61 mg/L SC: 1003 μ S/cm

DO: 38.4 % Salinity: 0.5 ppt

Water Temp: 18.1 °C 60.2 °F

Flow (from discharge measurement): 2000 cfs

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): _____

tion for Chlorophyll

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

Samples Collected (check box)

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☐

Dissolved Phosphorus and Nitrogen (field filtered): ☐

Chlorophyll *a* (filters—algae): ☐

Ventura River Algae TMDL: River Site

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): Nov 2017

Site ID: 509

Date/Time: 11/1/17 0820

Crew Members: EA SC

Latitude/Longitude: 34-2088 -119-30726

Flow (circle one): Flowing / Ponded / Dry

Wind Strength:

Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): Large male pond near Ventana
smaller deployment location

Measurements:

pH: 7.26 pH units EC: 275 $\mu\text{S}/\text{cm}$
DO: 0.87 mg/L SC: 1017 $\mu\text{S}/\text{cm}$
DO: 0.1 % Salinity: 0.5 ppt
Water Temp: 17.6 °C
Flow (from discharge measurement): 0 cfs

Samples Collected (check box)

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
Dissolved Phosphorus and Nitrogen (field filtered): ☒

Chlorophyll *a* (filters—algae): ☐

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
Distance (ft)	Float 1	Float 2	Float 3
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m):

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

Ventura River Algae TMDL Event Details

EVENT DETAILS

Event ID (Month Year): DECEMBER 2017 Date: 12/20/17
Crew Members: E. HAAS, S. CASEY
Weather (circle): Clear / Partly Cloudy / Overcast / Showers / Rain / Other _____
Event Type (check): ☒ Dry (<0.1" rain per day for the preceding three days)
☐ Wet (days with ≥0.1" rain and the three days following)
Notes: Y51 85 # 05E1042
Bedman 255 # 2554

OBSERVATION SITES (RIVER FLOW)

12/12/17
Casitas Vista Rd
Ventura River at Highway 150 (Baldwin Road)
Flow Status: Dry / Pondered / Flowing (Estimated Flow: 1 cfs) Photos Taken: Upstream / Downstream
Notes: Est flow on left bank looking downstream

Ventura River at Santa Ana Blvd
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs) Photos Taken: Upstream / Downstream
Notes: _____

Ventura River at Casitas Vista Road Highway 150
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs) Photos Taken: Upstream / Downstream
Notes: _____

Additional Observation Site: _____
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs) Photos Taken: Upstream / Downstream
Notes: _____

UNSAMPLED TMDL SITES

Site ID: R4 Time: 12/20/17 0745 0925 Photos Taken: Upstream / Downstream
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)
Reason not sampled (if flowing): _____
Notes: _____

Site ID: SA Time: 12/20/17 0735 0915 Photos Taken: Upstream / Downstream
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)
Reason not sampled (if flowing): _____
Notes: _____

Site ID: CL Time: 12/12/17 1334 Photos Taken: Upstream / Downstream
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)
Reason not sampled (if flowing): _____
Notes: _____

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream
Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)
Reason not sampled (if flowing): _____
Notes: _____

Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 1 of 1

Ventura River Algae TMDL—Estuary Details

Site ID: TMDL-Est

Event ID (Month Year): DEC 2017

Date/Time: 12/20/17 1100

Crew Members: KH, SC

Weather (circle one): Clear / Partly Cloudy / Overcast / Rainy / Foggy

Ocean Inlet (circle one): Open / Restricted / Closed

Direction of Tide: Ebb / Flood / Slack / N/A

Time of Low Tide: 1704 Time of High Tide: 0936

Wind Strength: Calm / Slight Breeze / Moderate Breeze / Strong Breeze / Windy / Strong Wind

Wind Direction: Blowing From / To —

Notes (e.g. homeless, wildlife, dogs, swimming/recreation): 2 white pelicans ~ 20 cormorants / blackbirds on snags in water

gulls + terns in water + on shoreline ~ 50 crows on shoreline + snags

In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)

Monthly (Jan—Dec):

pH: 8.46 pH units

EC: 2237 $\mu\text{S}/\text{cm}$

Water Temp: 10.8 $^{\circ}\text{C}$

DO: 12.38 mg/L

SC: 3074 $\mu\text{S}/\text{cm}$

DO: 108.3 %

Salinity: 1.6 ppt

Photos: ☒ Oceanward ☒ Landward

Sample Latitude: 38-27467

Sample Longitude: -119-30753

Water Samples Collected (check box)

☒ Collect at Floating Macroalgae Quadrat 1, Transect 1

Monthly Water (Jan—Dec):

Nitrogen, total and dissolved: ☒

Phosphorus, total and dissolved: ☒

Nitrate + Nitrite as Nitrogen: ☒

YSI 85 # 05E1042

Beckman 255 # 2554

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): DECEMBER 2017

Site ID: 21

Date/Time: 12/20/17 10:20

Crew Members: KM, SC

Latitude/Longitude: 34.28194 -119.30906

Flow (circle one): Flowing / Ponded / Dry

Wind Strength:

Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

January—December Monthly In Situ Measurements:

pH: 8.29 pH units EC: 1381 $\mu\text{S/cm}$

DO: 11.18 mg/L SC: 1969 $\mu\text{S/cm}$

DO: 98.6 % Salinity: 1.0 ppt

Water Temp: 9.4 °C

Flow (from discharge measurement): 0.47 cfs

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as

Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae): ☐

Buoyant Object Method (Use only if velocity area method not possible)				
Distance (ft)	Float 1	Float 2	Float 3	
Float Time (sec)				
Float Reach Cross Section (ft)				
	Upper Section	Middle Section	Lower Section	
Width				
Depth 1				
Depth 2				
Depth 3				
Depth 4				
Depth 5				

May—September: Algae Collection for Chlorophyll *a*

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m):

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	7.8	0	0
2	8.0	0.5	0.10
3	9.0	0.5	0.04
4	11.0	0.65	0.05
5	12.0	0.65	0.08
6	16.0	0.6	0.07
7	17.0	0.6	0.10
8	19.0	0.2	0.03
9	21.0	0.55	0.04
10	23.0	0	0
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Ventura River Algae TMDL: River Site

Event ID (Month Year): DEC 2018
 Site ID: R3
 Date/Time: 12/20/17 0815
 Crew Members: KH, SC
 Latitude/Longitude: 34-34590 -119-29982
 Flow (circle one): Flowing / Ponded / Dry
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy
 Wind Direction: Blowing (circle one) From / To
 Photos (check): ☒ Upstream ☒ Downstream
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): Thomson Five buried this area in early-mid Dec. River not buried but over east of river did. Flowmeter malfunction

Measurements:
 pH: 7.92 pH units EC: 921 $\mu\text{S}/\text{cm}$
 DO: 9.54 mg/L SC: 1305 $\mu\text{S}/\text{cm}$
 DO: 84.5 % Salinity: 0.7 ppt
 Water Temp: 9.7 $^{\circ}\text{C}$
 Flow (from discharge measurement): 4112 cfs
Flowmeter malfunction *Calculated 41 cfs*

Samples Collected (check box)
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
 Dissolved Phosphorus and Nitrogen (field filtered): ☒
 Chlorophyll *a* (filters—algae): ☒

Discharge Measurement

1st Measurement = left bank (looking downstream)

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	13.2	0.5	0
2	13.5	0.5	
3	13.9	0.55	
4	14.3	0.55	
5	14.7	0.5	
6	15.1	0.35	
7	15.4	0.1	
8	15.7	0	0
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method			
(Use only if velocity area method not possible)			
Distance (ft)	Float 1	Float 2	Float 3
Float Time (sec)	5.0	2.26	1.6
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

Reach Length (150 m if wetted width ≤ 10 m; 250 m if wetted width > 10 m): _____

tion for Chlorophyll

Collection Device	Quantity
(sum # transects per Device)	
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

2.24 3.56
 1.40
 2.05
 1.29
 1.43
 1.84
 1.49
 2.19 Average
 Avg vel 0.54

Ventura River Algae TMDL: River Site

Discharge Measurement
1st Measurement = left bank (looking downstream)

Event ID (Month Year): DECEMBER 2017

Site ID: 122

Date/Time: 12/26/17 0930

Crew Members: K.A.S.C.

Latitude/Longitude: 34-33936 -119-29721

Flow (circle one): Flowing / Ponded / Dry

Wind Strength:

Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

Measurements:

pH: 8.05 pH units EC: 1073 $\mu\text{S}/\text{cm}$

DO: 8.96 mg/L SC: 1353 $\mu\text{S}/\text{cm}$

DO: 87.5 % Salinity: 0.7 ppt

Water Temp: 14.1 $^{\circ}\text{C}$

Flow (from discharge measurement): 1.71 cfs

Samples Collected (check box)

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as

Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

Chlorophyll *a* (filters—algae): ☒

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	3.0	0	0
2	4.0	0.5	0.09
3	5.0	0.8	0.18
4	7.0	1.05	0.19
5	9.0	1.25	0.26
6	11.0	0.6	0.16
7	13.0	1.0	0.02
8	15.0	1.1	0.06
9	16.0	1.05	0.02
10	22.0	0	0
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
Distance (ft)	Float 1	Float 2	Float 3
Float Time (sec)			
Float Reach Cross Section (ft)			
Width	Upper Section	Middle Section	Lower Section
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

Reach Length (150 m if wetted width ≤ 10 m; 250 m if wetted width > 10 m):

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

Ventura River Algae TMDL Event Details

EVENT DETAILS

Event ID (Month Year): JANUARY 2018 Date: 1/3/18
Crew Members: K. HAHS L. MEEKER
Weather (circle): Clear / Partly Cloudy / Overcast / Showers / Rain / Other _____
Event Type (check): ☒ Dry (<0.1" rain per day for the preceding three days)
☐ Wet (days with ≥0.1" rain and the three days following)
Notes: Monterey Fire burned in area in December
YSI 85 # 05E1126
Between 35 # 2151

OBSERVATION SITES (RIVER FLOW)

Ventura River at Highway 150 (Baldwin Road)

Flow Status: Dry / Ponded / Flowing (Estimated Flow: _____ cfs)

Photos Taken: Upstream / Downstream

Notes: _____

Ventura River at Santa Ana Blvd

Flow Status: Dry / Ponded / Flowing (Estimated Flow: _____ cfs)

Photos Taken: Upstream / Downstream

Notes: _____

Ventura River at Casitas Vista Road

Flow Status: Dry / Ponded / Flowing (Estimated Flow: 0.5 cfs)

Photos Taken: Upstream / Downstream

Notes: _____

Additional Observation Site:

Flow Status: Dry / Ponded / Flowing (Estimated Flow: _____ cfs)

Photos Taken: Upstream / Downstream

Notes: _____

UNSAMPLED TMDL SITES

Site ID: CL Time: 1/2/18 1405

Photos Taken: Upstream / Downstream

Flow Status: Dry / Ponded / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: R4 Time: 1/3/18 0806

Photos Taken: Upstream / Downstream

Flow Status: Dry / Ponded / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: 3A Time: 1/3/18 0810

Photos Taken: Upstream / Downstream

Flow Status: Dry / Ponded / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: _____ Time: _____

Photos Taken: Upstream / Downstream

Flow Status: Dry / Ponded / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 1 of 1

Ventura River Algae TMDL—Estuary Details

Site ID: TMDL-Est

Event ID (Month Year): JAN 2018

Date/Time: 1/3/18 1:55

Crew Members: K. L. L. M.

Weather (circle one): Clear / Partly Cloudy / Overcast / Rainy / Foggy

Direction of Tide: Ebb / Flood / Slack / N/A

Wind Strength: Calm / Slight Breeze / Moderate Breeze / Strong Breeze / Windy / Strong Wind

Notes (e.g. homeless, wildlife, dogs, swimming/recreation): 2100 birds in water, mainly gulls, some grebes. Pelicans on west end of estuary (samples taken on east end)

Ocean Inlet (circle one): Open / Restricted / Closed

Time of Low Tide: 16:53 Time of High Tide: 0935

Wind Direction: Blowing From / To

In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)

Monthly (Jan—Dec):

pH: 8.37 pH units

DO: 14.74 mg/L

DO: 141.8 %

EC: 2082 μ S/cm

SC: 2687 μ S/cm

Salinity: 1.4 ppt

Water Temp: 13.2 °C

Photos: ☐ Oceanward ☐ Landward

Sample Latitude: 34.27465 N

Sample Longitude: 119.30753 W

Water Samples Collected (check box)

☒ Collect at Floating Macroalgae Quadrat 1, Transect 1

Monthly Water (Jan—Dec):

Nitrogen, total and dissolved: ☒

Phosphorus, total and dissolved: ☒

Nitrate + Nitrite as Nitrogen: ☒

YS185 # 05E1126

Bedmon 255 # 2151

Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 1 of 1

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): JAN 2018

Site ID: R1

Date/Time: 1/3/18 1105

Crew Members: KH, LM

Latitude/Longitude: 34.28194 -119.30906

Flow (circle one): Flowing / Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To _____

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): _____

January—December Monthly In Situ Measurements:

pH: 8.18 pH units EC: 1479 $\mu\text{S}/\text{cm}$

DO: 11.24 mg/L SC: 1973 $\mu\text{S}/\text{cm}$

DO: 10.47 % Salinity: 1.0 ppt

Water Temp: 14.8 °C 11.8 °F

Flow (from discharge measurement): 0.39 cfs

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae): ☐

Buoyant Object Method
(Use only if velocity area method not possible)

Distance (ft)	Float 1	Float 2	Float 3
Float Time (sec)			

Float Reach Cross Section (ft)

Width	Upper Section	Middle Section	Lower Section
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*
Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): _____

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area= _____)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	8.4	0.2	0
2	9.5	0.5	0.10
3	11.0	0.5	0.02
4	12.5	0.65	0.11
5	14.0	0.2	0.04
6	15.5	0.5	0.06
7	17.0	0.45	0.13
8	18.5	0.2	0.01
9	20.0	0.45	0.06
10	22.3	0	0
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Ventura River Algae TMDL: River Site

Discharge Measurement
1st Measurement = left bank (looking downstream)

Event ID (Month Year): 12 JAN 2018 0955

Site ID: R2

Date/Time: 1/3/18 0955

Crew Members: KH LM

Latitude/Longitude: 34.33936, -119.29721

Flow (circle one): Flowing / Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To _____

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): _____

Measurements:

pH: 7.92 pH units EC: 1162 $\mu\text{S}/\text{cm}$

DO: 8.37 mg/L SC: 1404 $\mu\text{S}/\text{cm}$

DO: 85.0 % Salinity: 0.7 ppt

Water Temp: 15.7 °C 16.0 °F

Flow (from discharge measurement): 1.96 cfs

Samples Collected (check box)

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

Chlorophyll *a* (filters—algae): ☐

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	3.0	0	0
2	5.0	0.8	0.17
3	7.0	1.0	0.24
4	9.0	1.1	0.19
5	11.0	1.5	0.17
6	13.0	1.6	0.05
7	15.0	0.2	0.04
8	17.0	0.5	0.10
9	19.0	1.1	0.01
10	23.0	0	0
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
Distance (ft)	Float 1	Float 2	Float 3
Float Time (sec)			
Float Reach Cross Section (ft)			
Width	Upper Section	Middle Section	Lower Section
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

Reach Length (150 m if wetted width ≤ 10 m; 250 m if wetted width > 10 m): _____

tion for Chlorophyll

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

Ventura River Algae TMDL: River Site

Discharge Measurement
1st Measurement = left bank (looking downstream)

Event ID (Month Year): JAN 2018
 Site ID: R3
 Date/Time: 1/3/18 10:35
 Crew Members: K.H. L.M.
 Latitude/Longitude: 34.3459, -119.29987
 Flow (circle one): Flowing Ponded / Dry
 Wind Strength: Calm Light Breeze / Moderate Breeze / Strong Breeze / Windy
 Wind Direction: Blowing (circle one) From / To
 Photos (check): ☒ Upstream ☒ Downstream
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): Bayle upstream ~ 60 yds

Measurements:
 pH: 7.72 pH units EC: 952 $\mu\text{S}/\text{cm}$
 DO: 10.25 mg/L SC: 1301 $\mu\text{S}/\text{cm}$
 DO: 43.7 % Salinity: 0.7 ppt
 Water Temp: 10.7 $^{\circ}\text{C}$ 113 $^{\circ}\text{F}$
 Flow (from discharge measurement): 6.32 cfs

Samples Collected (check box)
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
 Dissolved Phosphorus and Nitrogen (field filtered): ☒
 Chlorophyll *a* (filters—algae): ☐

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	4.8	0	0
2	5.1	0.5	0.32
3	5.5	0.5	0.32
4	5.9	0.5	0.48
5	6.3	0.5	0.42
6	6.7	0.2	0.24
7	7.1	0	0
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
Distance (ft)	Float 1	Float 2	Float 3
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): _____
 tion for Chlorophyll
 Collection Device (sum # transects per Device) Quantity
 Rubber Delimiter (Area=12.6cm²)
 PVC Delimiter (Area=12.6cm²)
 Syringe Scrubber (Area=5.3cm²)
 Other (Area=)
 Number of Transects Sampled (0-11)
 Composite Volume (mL)
 Chlorophyll *a* Volume (use GF/F filter, 25 mL preferred volume)

Ventura River Algae TMDL Event Details

EVENT DETAILS

Event ID (Month Year): FEBRUARY 2018 Date: 2/7/18

Crew Members: K. HAAS, A. SPYRKA

Weather (circle): Clear Partly Cloudy / Overcast / Showers / Rain / Other _____

Event Type (check): ☒ Dry (<0.1" rain per day for the preceding three days)
☐ Wet (days with ≥0.1" rain and the three days following)

Notes: Large rain event w/ high flows occurred since January monitoring event (Jan 8-9th s/b on date)
YSI 85 # 05E1042 Beckman 255 # 2554

OBSERVATION SITES (RIVER FLOW)

Ventura River at Highway 150 (Baldwin Road)

Flow Status: Dry / Pondered (Flowing) (Estimated Flow: 5-10 cfs) Photos Taken: Upstream / ☒ Downstream

Notes: _____

Ventura River at Santa Ana Blvd

Flow Status: Dry / Pondered / (Flowing) (Estimated Flow: 5-7 cfs) Photos Taken: Upstream / ☒ Downstream

Notes: Flowing east + west channels. West channel dominant

Ventura River at Casitas Vista Road

Flow Status: Dry / Pondered / (Flowing) (Estimated Flow: 3-5 cfs) Photos Taken: Upstream / ☒ Downstream

Notes: Pondered west side. Flowing east side

Additional Observation Site: _____

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs) Photos Taken: Upstream / Downstream

Notes: _____

UNSAMPLED TMDL SITES

Site ID: SA Time: 0850 Photos Taken: Upstream / ☒ Downstream

Flow Status: (Dry) Pondered / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: _____ Time: _____ Photos Taken: Upstream / Downstream

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____



Ventura River Algae TMDL—Estuary Details

Site ID: <u>TMDL-Est</u>	
Event ID (Month Year): <u>FEB 2018</u>	Date/Time: <u>2/7/18 1315</u>
Crew Members: <u>KHAS</u>	
Weather (circle one): <u>Clean</u> / Partly Cloudy / Overcast / Rainy / Foggy	Ocean Inlet (circle one): <u>Open</u> / Restricted / Closed
Direction of Tide: <u>Ebb</u> / Flood / Slack / N/A	Time of Low Tide: <u>10:18</u> Time of High Tide: <u>1609</u>
Wind Strength: <u>Calm</u> / Slight Breeze / Moderate Breeze / Strong Breeze / Windy	Wind Direction: <u>Blowing From</u> / To <u>W</u>
Notes (e.g. homeless, wildlife, dogs, swimming/recreation): <u>~100 gulls + ~20 other birds</u>	

In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)		
Monthly (Jan—Dec): <u>28.51</u>	EC: <u>3350</u> $\mu\text{S}/\text{cm}$	Water Temp: <u>16.6</u> $^{\circ}\text{C}$
pH: <u>8.51</u> pH units	DO: <u>12.38</u> mg/L	SC: <u>3998</u> $\mu\text{S}/\text{cm}$
DO: <u>12.38</u> %	Salinity: <u>2.1</u> ppt	
Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward		
Sample Latitude: <u>34.27465</u>		
Sample Longitude: <u>-119.30756</u>		

Water Samples Collected (check box)
[Collect at Floating Macroalgae Quadrat 1, Transect 1]
Monthly Water (Jan—Dec):
Nitrogen, total and dissolved: <input checked="" type="checkbox"/>
Phosphorus, total and dissolved: <input checked="" type="checkbox"/>
Nitrate + Nitrite as Nitrogen: <input checked="" type="checkbox"/>

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): FEB 2018

Site ID: R1

Date/Time: 2/7/18 12:35

Crew Members: KH AS

Latitude/Longitude: 34.28194 - 119.30906

Flow (circle one): Flowing / Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To _____

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): _____

January—December Monthly In Situ Measurements:

pH: 8.37 pH units EC: 1295 $\mu\text{S}/\text{cm}$

DO: 11.44 mg/L SC: 1576 $\mu\text{S}/\text{cm}$

DO: 15.8 % Salinity: 0.8 ppt

Water Temp: 15.6 $^{\circ}\text{C}$

Flow (from discharge measurement): 3.97 cfs

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae): ☐

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	4.7	0	0
2	6.0	0.5	0.07
3	8.0	0.95	0.06
4	10.0	0.95	0.32
5	12.0	1.05	0.33
6	14.0	0.75	0.59
7	16.0	0.70	0.45
8	18.0	0.50	0.58
9	20.0	0.30	0.52
10	22.0	0.35	0.14
11	23.5	0	0
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method
(Use only if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			

Float Reach Cross Section (ft)

	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): _____

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

Discharge Measurement
1st Measurement = left bank (looking downstream)

Event ID (Month Year): R2 FEB 2018

Site ID: R2

Date/Time: 2/7/18 / 1130

Crew Members: KH/BA/AS

Latitude/longitude: 34.33936, -119.29721

Flow (circle one): Flowing / Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To _____

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): Bedman 2554

January—December Monthly *In Situ* Measurements:

pH: 8.12 pH units EC: 1057 $\mu\text{S}/\text{cm}$

DO: 10.89 mg/L SC: 1233 $\mu\text{S}/\text{cm}$

DO: 114.5 % Salinity: 0.6 ppt

Water Temp: 17.5 $^{\circ}\text{C}$

Flow (from discharge measurement): 3.21 cfs

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae): ☐

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	4.4	0.9	-0.01
2	6.0	1.4	-0.02
3	8.0	0.6	-0.01
4	10.0	1.3	0.10
5	12.0	1.2	0.45
6	14.0	0.7	1.15
7	16.0	0.8	0.50
8	18.0	0.8	0.18
9	22.0	0	0
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method
(Use only if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			

Float Reach Cross Section (ft)

	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*

Reach length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): _____

Collection Device (sum # transects per Device)	Quantity
Rubber Delimter (Area=12.6cm ²)	
PVC Delimter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (ml)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): FEB 2018

Site ID: R3

Date/Time: 2/7/18 10:15

Crew Members: KH, AS

Latitude/Longitude: 34.3459, -119.29982

Flow (circle one): Flowing / Ponded / Dry

Wind Strength:

Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

January—December Monthly In Situ Measurements:

pH: 8.10 pH units EC: 930 $\mu\text{S}/\text{cm}$
DO: 11.47 mg/L SC: 1145 $\mu\text{S}/\text{cm}$
DO: 14.6 % Salinity: 0.6 ppt
Water Temp: 15.2 °C
Flow (from discharge measurement): 1.66 cfs

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as

Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	13.4	0	0
2	15.0	0.75	0.28
3	16.5	1.05	0.18
4	18.0	1.0	0.22
5	19.5	1.0	0.33
6	21.0	0.6	0.06
7	22.5	0.85	0.10
8	24.0	0.45	0.61
9	25.5	0.30	0.12
10	27.0	0	0
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method

(Use only if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			

Float Reach Cross Section (ft)

	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*
Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m):

Collection Device

(sum # transects per Device)

Quantity

Rubber Delimiter (Area=12.6cm²)

PVC Delimiter (Area=12.6cm²)

Syringe Scrubber (Area=5.3cm²)

Other (Area=)

Number of Transects Sampled (0-11)

Composite Volume (mL)

Chlorophyll *a* Volume

(use GF/F filter, 25 mL preferred volume)

Ventura River Algae TMDL: River Site

Event ID (Month Year): Feb 2018

Site ID: 24

Date/Time: 2/7/18 0900

Crew Members: KH, AS

Latitude/longitude: 34-38183 -119-30920

Flow (circle one): Flowing / Ponded / Dry

Wind Strength:

☒ Calm / ☐ Light Breeze / ☐ Moderate Breeze / ☐ Strong Breeze / ☐ Windy

Wind Direction: Blowing (circle one) From / To

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

Measurements:

pH: 8.32 pH units EC: 821 $\mu\text{S/cm}$

DO: 10.40 mg/L SC: 1121 $\mu\text{S/cm}$

DO: 94.6 % Salinity: 0.6 ppt

Water Temp: 11.0 $^{\circ}\text{C}$

Flow (from discharge measurement): 164 cfs

Samples Collected (check box)

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as

Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

Chlorophyll *a* (filters—algae): ☐

Discharge Measurement

1st Measurement = left bank (looking downstream)

Velocity Area Method (preferred)

No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	<u>5.5</u>	<u>0</u>	<u>0</u>
2	<u>7.0</u>	<u>0.6</u>	<u>0.07</u>
3	<u>9.0</u>	<u>1.15</u>	<u>0.02</u>
4	<u>11.0</u>	<u>1.45</u>	<u>0.05</u>
5	<u>13.0</u>	<u>1.6</u>	<u>0.10</u>
6	<u>15.0</u>	<u>1.4</u>	<u>0.11</u>
7	<u>17.0</u>	<u>1.35</u>	<u>0.09</u>
8	<u>19.0</u>	<u>1.40</u>	<u>0.10</u>
9	<u>21.0</u>	<u>1.20</u>	<u>0.06</u>
10	<u>23.0</u>	<u>0.9</u>	<u>0.04</u>
11	<u>25.5</u>	<u>0</u>	<u>0</u>
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method

(Use only if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

tion for Chlorophyll

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m):

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

Ventura River Algae TMDL: River Site

Discharge Measurement
1st Measurement = left bank (looking downstream)

Event ID (Month Year): Feb 2018
 Site ID: CL
 Date/Time: 2/7/18 / 0730
 Crew Members: KH, AS
 Latitude/Longitude: 34.37205 -119.286464
 Flow (circle one): Flowing / Ponded / Dry
 Wind Strength:
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy
 Wind Direction: Blowing (circle one) From / To _____
 Photos (check): ☒ Upstream ☒ Downstream
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): _____

Measurements:
 pH: 8.03 pH units EC: 2193 $\mu\text{S}/\text{cm}$
 DO: 11.05 mg/L SC: 3386 $\mu\text{S}/\text{cm}$
 DO: 98.3 % Salinity: 1.8 ppt
 Water Temp: 6.5 $^{\circ}\text{C}$ 63.3 $^{\circ}\text{F}$
 Flow (from discharge measurement): 0.1 cfs field estimate
measured

Samples Collected (check box)
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
 Dissolved Phosphorus and Nitrogen (field filtered): ☒
 Chlorophyll *a* (filters—algae): ☐

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)	2	2	2
Float Time (sec)	5.9	6.6	5.0
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width	~3	~3	~3
Depth 1	0.05	0.05	0.05
Depth 2			
Depth 3			
Depth 4			
Depth 5			

Chlorophyll
 Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): _____
 Collection Device (sum # transects per Device) Quantity
 Rubber Delimiter (Area=12.6cm²)
 PVC Delimiter (Area=12.6cm²)
 Syringe Scrubber (Area=5.3cm²)
 Other (Area=)
 Number of Transects Sampled (0-11)
 Composite Volume (mL)
 Chlorophyll *a* Volume (use GF/F filter, 25 mL preferred volume)

Ventura River Algae TMDL Event Details

EVENT DETAILS

Event ID (Month Year): MARCH 2018

Date: 3/28/18

Crew Members: Lara Meeker

Weather (circle): Clear / Partly Cloudy / Overcast / Showers / Rain / Other

Event Type (check): ☒ Dry (<0.1" rain per day for the preceding three days)

- Wet (days with ≥ 0.1 " rain and the three days following)

Notes : _____

OBSERVATION SITES (RIVER FLOW)

Ventura River at Highway 150 (Baldwin Road)

Flow Status: Dry / Ponded / Flowing (Estimated Flow: 8 cfs)

Photos Taken: Upstream / Downstream

Notes: Split in two channels. \rightarrow Right side ponded.

Ventura River at Santa Ana Blvd

Flow Status: Dry / Pondered / Flowing (Estimated Flow: 6 cfs)

Photos Taken: Upstream / Downstream

Notes: Split in two flowing channels.

Ventura River at Casitas Vista Road

Flow Status: Dry / Ponded / Flowing (Estimated Flow: 6 cfs)

Photos Taken: Upstream / Downstream

Notes: _____

Additional Observation Site:

Flow Status : Dry / Ponded / Flowing (Estimated Flow: _____ cfs)

Photos Taken: Upstream / Downstream

Notes: _____

UNSAMPLED TMDL SITES

Site ID: _____ Time: _____

Photos Taken: Upstream / Downstream

Flow Status : Dry / Ponded / Flowing (Estimated Flow: cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: _____ Time: _____

Photos Taken: Upstream / Downstream

Flow Status : Dry / Pondered / Flowing (Estimated Flow: cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: _____ Time: _____

Photos Taken: Upstream / Downstream

Flow Status : Dry / Ponded / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: _____ Time: _____

Photos Taken: Upstream / Downstream

Flow Status : Dry / Ponded / Flowing (Estimated Flow: cfs)

Reason not sampled (if flowing): _____

Notes:

Ventura River Algae TMDL—Estuary Details

Site ID: <u>TMDL-Est</u>	
Event ID (Month Year): <u>March 2018</u>	Date/Time: <u>3/28/18 1240 PDT</u>
Crew Members: <u>Lara Meyer</u>	
Weather (circle one): <u>Clear</u> / Partly Cloudy / Overcast / Rainy / Foggy	Ocean Inlet (circle one): <u>Open</u> / Restricted / Closed
Direction of Tide: <u>Ebb</u> / Flood / Slack / N/A	Time of Low Tide: <u>1441</u> Time of High Tide: <u>0751</u>
Wind Strength: <u>Calm</u> / Slight Breeze / Moderate Breeze / Strong Breeze / Windy / Strong Wind	Wind Direction: <u>Blowing From/To west/east</u>
Notes (e.g. homeless, wildlife, dogs, swimming/recreation): <u>shore birds, kids playing in estuary & shore. Beached westward</u>	

In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)	
Monthly (Jan—Dec):	
pH: <u>7.9</u> pH units	EC: <u>3640</u> µS/cm
DO: <u>9.35</u> mg/L	SC: <u>3315</u> µS/cm
DO: <u>103.5</u> %	Salinity: <u>1.7</u> ppt
Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward	
Sample Latitude: <u>34.27478</u>	
Sample Longitude: <u>-119.30733</u>	

Water Samples Collected (check box)
[Collect at Floating Macroalgae Quadrat 1, Transect 1]
Monthly Water (Jan—Dec):
Nitrogen, total and dissolved: <input checked="" type="checkbox"/>
Phosphorus, total and dissolved: <input checked="" type="checkbox"/>
Nitrate + Nitrite as Nitrogen: <input checked="" type="checkbox"/>

103.5
9.35

Ventura River Algae TMDL: River Site

Discharge Measurement
1st Measurement = left bank (looking downstream)

Event ID (Month Year): March 2018
 Site ID: VK2
 Date/Time: 3/26/18 3:06 pm
 Crew Members: LM AS
 Latitude/longitude: 34.33933, -119.29716
 Flow (circle one): Flowing / Ponded / Dry
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy
 Wind Direction: Blowing (circle one) From / To _____
 Photos (check): ☒ Upstream ☒ Downstream
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):
*Flow too high and swift to read

Measurements:
 pH: 8.22 pH units EC: 861 $\mu\text{S}/\text{cm}$
 DO: 9.77 mg/L SC: 1056 $\mu\text{S}/\text{cm}$
 DO: 97.9 % Salinity: 0.5 ppt
 Water Temp: 15.4 $^{\circ}\text{C}$
 Flow (from discharge measurement): ~48 cfs
post peak
depth

Samples Collected (check box)
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
 Dissolved Phosphorus and Nitrogen (field filtered): ☒
 Chlorophyll *a* (filters—algae): ☐

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	*		
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method
 (Use only if velocity area method not possible)
 Distance (ft) 10 10 10
 Float Time (sec) 5 6 5
 Float Reach Cross Section (ft)
 Upper Section Middle Section Lower Section
 Width
 Depth 1
 Depth 2
 Depth 3
 Depth 4
 Depth 5

tion for Chlorophyll
 Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width > 10 m): _____
 Collection Device (sum # transects per Device) Quantity
 Rubber Delimiter (Area=12.6cm²)
 PVC Delimiter (Area=12.6cm²)
 Syringe Scrubber (Area=5.3cm²)
 Other (Area=)
 Number of Transects Sampled (0-11)
 Composite Volume (mL)
 Chlorophyll *a* Volume (use GF/F filter, 25 mL preferred volume)

Ventura River Algae TMDL: River Site

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): March 2018
 Site ID: VR1
 Date/Time: 3/26/18 1621
 Crew Members: LM, AS
 Latitude/Longitude: 34.28189, -119.30904
 Flow (circle one): Flowing / Ponded / Dry
 Wind Strength: Light Breeze / Moderate Breeze / Strong Breeze / Windy
 Wind Direction: Blowing (circle one) From / To Downstream
 Photos (check): ☒ Upstream ☒ Downstream
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

Measurements:
 pH: 8.36 pH units EC: 1004 $\mu\text{S}/\text{cm}$
 DO: 9.07 mg/L SC: 1202 $\mu\text{S}/\text{cm}$
 DO: 13.0 % Salinity: 0.6 ppt
 Water Temp: 16.4 $^{\circ}\text{C}$
 Flow (from discharge measurement): 54.38 cfs

Samples Collected (check box)
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
 Dissolved Phosphorus and Nitrogen (field filtered): ☒
 Chlorophyll *a* (filters—algae): ☐

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	11.0	2.40	1.89
2	12.5	2.10	2.13
3	14.0	2.20	1.61
4	15.5	1.80	1.25
5	17.0	1.90	1.31
6	18.5	1.80	1.15
7	19.5	2.20	1.55
8	20.5	2.3	1.36
9	21.5	2.2	1.08
10	22.5	1.5	0.97
11	23.5	1.0	0.92
12	2.5	1.10	0.94
13	1.5	0.70	0.77
14	0.5	0.40	0.20
15	0.0	0	0
16			
17	23.5	0	0
18			
19			
20			

Buoyant Object Method
 (Use only if velocity area method not possible)
 Distance (ft)
 Float Time (sec)
 Float 1 Float 2 Float 3
 Float Reach Cross Section (ft)
 Upper Section Middle Section Lower Section
 Width
 Depth 1
 Depth 2
 Depth 3
 Depth 4
 Depth 5

Chlorophyll *a* Volume
 (use GF/F filter, 25 mL preferred volume)
 Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m):
 Collection Device (sum # transects per Device) Quantity
 Rubber Delimiter (Area=12.6cm²)
 PVC Delimiter (Area=12.6cm²)
 Syringe Scrubber (Area=5.3cm²)
 Other (Area=)
 Number of Transects Sampled (0-11)
 Composite Volume (mL)
 Chlorophyll *a* Volume (use GF/F filter, 25 mL preferred volume)

Wetted width (m) = 23.5 ft (bank is undercut)
 approx = 7.35 ft

Ventura River Algae TMDL: River Site

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): March 2018

Site ID: R3

Date/Time: 3/26/18 1300

Crew Members: L.M., AS

Latitude/Longitude: 34.39589, -119.29945

Flow (circle one): Flowing / Ponded / Dry

Wind Strength:

Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To

Photos (check): Setupstream Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

River is split in two channels immediately above pool flow measurement and samples

from 1st channel (minor)

Measurements:

pH: 8.30 pH units EC: 826 $\mu\text{S}/\text{cm}$
DO: 99.3 mg/L SC: 1038 $\mu\text{S}/\text{cm}$
DO: 10.11 % Salinity: 0.5 ppt
Water Temp: 14.3 $^{\circ}\text{C}$
Flow (from discharge measurement): 485 cfs
from 1st channel

Samples Collected (check box)

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
Dissolved Phosphorus and Nitrogen (field filtered): ☒
Chlorophyll a (filters—algae): ☐

Velocity Area Method (preferred)

No.	Distance from left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	3.5	0	0
2	4.5	0.2	0.35
3	5.5	0.6	1.49
4	6.5	1.1	1.37
5	7.5	1.0	1.57
6	8.5	0.9	1.95
7	9.5	0.9	1.99
8	10.5	1.0	1.71
9	11.5	1.0	1.32
10	12.5	0.9	1.24
11	13.5	0.6	1.06
12	14.5	0.6	1.01
13	15.5	0.6	1.32
14	16.5	0.45	0.72
15	17.6	0	0
16			
17	18.5 16.0		14.8
18			
19			
20			

Buoyant Object Method

(Use only if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
Upper Section	Middle Section	Lower Section	
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

tion for Chlorophyll

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m):

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll a Volume (use GF/F filter, 25 mL preferred volume)	

Ventura River Algae TMDL: River Site

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): March 2018

Site ID: San Antonio Creek

Date/Time: 3/26/18 11:50

Crew Members: LM & Andrew S.

Latitude/Longitude: 34.38081, -119.30714

Flow (circle one): Flowing Ponded / Dry

Wind Strength: Calm / light breeze Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To Upstream

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): in area on bank below bridge. bikers, walkers.

Measurements:

pH: 8.29 pH units EC: 1010 $\mu\text{S}/\text{cm}$

DO: 9.89 mg/L SC: 1345 $\mu\text{S}/\text{cm}$

DO: 96.5 % Salinity: 0.7 ppt

Water Temp: 14.3 $^{\circ}\text{C}$

Flow (from discharge measurement): 12.45 cfs

Samples Collected (check box)

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

Chlorophyll a (filters—algae): ☐

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	17.7	0	0
2	17.2	0.6	0.11
3	16.0	1.0	0.49
4	15.0	0.9	1.05
5	14.0	0.9	1.49
6	13.0	1.4	1.36
7	12.0	1.4	1.99
8	11.0	1.0	1.74
9	10.0	1.0	1.16
10	9.0	0.9	1.10
11	8.0	0.8	0.91
12	7.0	0.6	0.46
13	6.0	0.5	0.08
14	5.0	0.3	-0.26
15	4.5	0	0
16			
17			
18			
19			
20			

Buoyant Object Method
(Use only if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			

Float Reach Cross Section (ft)

	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

tion for Chlorophyll

Reach Length (150 m if wetted width \leq 10 m, 250 m if wetted width $>$ 10 m): _____

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area= _____)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll a Volume (use GF/F filter, 25 mL preferred volume)	

Ventura River Algae TMDL: River Site

Discharge Measurement
1st Measurement = left bank (looking downstream)

Event ID (Month Year): March 2018

Site ID: P4

Date/Time: 3/26/18 10:55

Crew Members: L.M., Andrew S.

Latitude/Longitude: 34.38115 -119.30898

Flow (circle one): Flowing / Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To _____

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): Sampled below split in river. On west side.

Measurements:

pH: 8.48 pH units EC: 688 μ S/cm

DO: 9.97 mg/L SC: 911 μ S/cm

DO: 93.2 % Salinity: 0.5 ppt

Water Temp: 12.2 $^{\circ}$ C

Flow (from discharge measurement): 133 cfs

Samples Collected (check box)

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

Chlorophyll *a* (filters—algae): ☐

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	4.9	0	0
2	5.0	0.2	0.56
3	6.0	0.25	0.71
4	7.0	0.6	0.84
5	8.0	0.6	0.69
6	9.0	0.65	0.54
7	10.0	0.7	0.65
8	11.0	0.6	0.40
9	12.0	0.6	0.48
10	13.0	0.3	0.41
11	14.0	0.4	0.49
12	15.0	0.4	0.35
13	16.0	0	0
14	16.4	0.2	0.05
15	16.7	0	0
16		2.95 cfs	
17			
18			
19			
20			

Buoyant Object Method
(Use only if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			

Float Reach Cross Section (ft)

	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): _____

Chlorophyll *a* Volume (use GF/F filter, 25 mL preferred volume)

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	

Ventura River Algae TMDL: River Site

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): March 2018

Site ID: Canada Lagoon

Date/Time: 3/26 9:30 AM

Crew Members: LM, A. Spyrka

Latitude/Longitude: 34.34205, -119.28645

Flow (circle one): Flowing Ponded / Dry

Wind Strength: Calm Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To _____

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): _____

Measurements:

pH: 8.27 pH units EC: 3272 $\mu\text{S}/\text{cm}$

DO: 10.55 mg/L SC: 4268 $\mu\text{S}/\text{cm}$

DO: 100.7 % Salinity: 2.3 ppt

Water Temp: 12.8 $^{\circ}\text{C}$

Flow (from discharge measurement): 0-85 cfs

Samples Collected (check box)

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

Chlorophyll *a* (filters—algae): ☐

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0	0	0
2	2.4	0.15	0.55
3	3.0	0.2	1.02
4	3.5	0.3	1.04
5	4.0	0.3	1.16
6	4.5	0.3	0.98
7	5.0	0.35	0.68
8	5.8	0.0	0.0
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method
(Use only if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			

Float Reach Cross Section (ft)

	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

Chlorophyll

Reach length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): _____

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

Ventura River Algae TMDL Event Details

EVENT DETAILS

Event ID (Month Year): APRIL 2018 Date: 4/25/18
Crew Members: K. HAAS, B. JONES
Weather (circle): Clear / Partly Cloudy / Overcast / Showers / Rain / Other _____
Event Type (check): ☒ Dry (<0.1" rain per day for the preceding three days)
☐ Wet (days with ≥0.1" rain and the three days following)
Notes: Beckman 255 # 2151
YSL 85 # 05E1042

OBSERVATION SITES (RIVER FLOW) 4/24/18

Ventura River at Highway 150 (Baldwin Road)

Flow Status: Dry / Pondered / Flowing (Estimated Flow: 10 cfs)

Photos Taken: Upstream / Downstream ✓ ✓

Notes: _____

Ventura River at Santa Ana Blvd

Flow Status: Dry / Pondered / Flowing (Estimated Flow: 7 cfs)

Photos Taken: Upstream / Downstream ✓ ✓

Notes: _____

Ventura River at Casitas Vista Road

Flow Status: Dry / Pondered / Flowing (Estimated Flow: 7 cfs)

Photos Taken: Upstream / Downstream ✓ ✓

Notes: _____

Additional Observation Site: _____

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Photos Taken: Upstream / Downstream

Notes: _____

UNSAMPLED TMDL SITES

Site ID: _____ Time: _____

Photos Taken: Upstream / Downstream

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: _____ Time: _____

Photos Taken: Upstream / Downstream

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: _____ Time: _____

Photos Taken: Upstream / Downstream

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Site ID: _____ Time: _____

Photos Taken: Upstream / Downstream

Flow Status: Dry / Pondered / Flowing (Estimated Flow: _____ cfs)

Reason not sampled (if flowing): _____

Notes: _____

Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 1 of 1

Ventura River Algae TMDL—Estuary Details

Site ID: TMDL-Est

Event ID (Month Year): APRIL 2018

Date/Time: 4/25/18 / 1410

Crew Members: KH, BS

Weather (circle one): Clear / Partly Cloudy / Overcast / Rainy / Foggy

Ocean Inlet (circle one): Open / Restricted / Closed

Direction of Tide: Ebb / Flood / Slack / N/A

Time of Low Tide: 1409

Time of High Tide: 2025

Wind Strength: Calm / Slight Breeze / Moderate Breeze / Strong Breeze / Windy / Strong Wind

Wind Direction: Blowing From / To W

Notes (e.g. homeless, wildlife, dogs, swimming/recreation): open west end, water level low, ~30 birds in water foraging.

In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)

Monthly (Jan—Dec):

pH: 8.73 pH units 8.74 EC: 16200 μ S/cm Water Temp: 22.6 °C

DO: 12.80 mg/L SC: 16999 μ S/cm 17,000

DO: 157.1 % Salinity: 10.0 ppt

Photos: ☒ Oceanward ☒ Landward

Sample Latitude: 34.27482

Sample Longitude: -119.30731

Water Samples Collected (check box)

[Collect at Floating Macroalgae Quadrat 1, Transect 1]

Monthly Water (Jan—Dec):

Nitrogen, total and dissolved: ☒

Phosphorus, total and dissolved: ☒

Nitrate + Nitrite as Nitrogen: ☒

Ventura River Algae TMDL: River Site

Event ID (Month Year): APRIL 2018

Site ID: TMDL-81

Date/Time: 4/25/18 1330

Crew Members: KH, BS

Latitude/Longitude: 34.281894 -119.30906

Flow (circle one): Flowing Ponded / Dry

Wind Strength:

☒ Calm / ☐ Light Breeze / ☐ Moderate Breeze / ☐ Strong Breeze / ☐ Windy

Wind Direction: Blowing (circle one) From / To

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): 0561092 YSI

Discharge Measurement
1st Measurement = left bank (looking downstream)

Velocity Area Method (preferred)			
No.	Distance from left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	3.0	0	0
2	5.0	0.10	0.19
3	7.0	0.16	0.30
4	9.0	0.16	0.49
5	11.0	1.1	0.53
6	13.0	1.0	0.86
7	15.0	0.8	0.82
8	17.0	0.7	0.61
9	19.0	1.5	0.33
10	21.0	0	0
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

Measurements:

pH: 8.23 pH units EC: 1332 μ S/cm
DO: 10.39 mg/L SC: 1459 μ S/cm
DO: 11.5 % Salinity: 0.7 ppt
Water Temp: 20.4 °C
Flow (from discharge measurement): 7.06 cfs

Samples Collected (check box)

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☐
Dissolved Phosphorus and Nitrogen (field filtered): ☐
Chlorophyll *a* (filters—algae): ☐

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m):

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

Ventura River Algae TMDL: River Site

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): APRIL 2018
 Site ID: 41518 MDC
 Date/Time: 4/25/18 1220
 Crew Members: KH, GS
 Latitude/Longitude: 34° 34'20.5" - 119° 28'45"
 Flow (circle one): Flowing / Ponded / Dry
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy
 Wind Direction: Blowing (circle one) From / To S
 Photos (check): ☐ Upstream ☐ Downstream
 Notes: e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): _____

Measurements:
 pH: 8.43 pH units EC: 4459 $\mu\text{S}/\text{cm}$
 DO: 11.08 mg/L SC: 4164 $\mu\text{S}/\text{cm}$
 DO: 14.5 % Salinity: 2.2 ppt
 Water Temp: 28.7 °C
 Flow (from discharge measurement): 0.67 cfs

Samples Collected (check box)
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
 Dissolved Phosphorus and Nitrogen (field filtered): ☒
 Chlorophyll *a* (filters—algae): ☐

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	2.0	0	0
2	2.5	0.2	0.11
3	2.8	0.25	0.07
4	3.2	0.2	0.11
5	3.5	0	0
6			
7	4.3		
8			
9	4.5		
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method
 (Use only if velocity area method not possible)
 Distance (ft) Float 1 Float 2 Float 3
 Float Time (sec)
 Float Reach Cross Section (ft)
 Width Upper Section Middle Section Lower Section
 Depth 1
 Depth 2
 Depth 3
 Depth 4
 Depth 5

tion for Chlorophyll
 Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): _____
 Collection Device (sum # transects per Device) Quantity
 Rubber Delimiter (Area=12.6cm²)
 PVC Delimiter (Area=12.6cm²)
 Syringe Scrubber (Area=5.3cm²)
 Other (Area=)
 Number of Transects Sampled (0-11)
 Composite Volume (mL)
 Chlorophyll *a* Volume (use GF/F filter, 25 mL preferred volume)

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

Discharge Measurement
1st Measurement = left bank (looking downstream)

Event ID (Month Year): APRIL 2018
 Site ID: E2
 Date/Time: 4/25/18 1120
 Crew Members: KH, BT
 Latitude/Longitude: 34.33936, -119.29721
 Flow (circle one): Flowing / Ponded / Dry
 Wind Strength:
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy
 Wind Direction: Blowing (circle one) From To S
 Photos (check): ☒ Upstream ☒ Downstream
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): 34-33936

January—December Monthly *In Situ* Measurements:
 pH: 8.16 pH units EC: 1078 $\mu\text{S}/\text{cm}$
 DO: 10.04 mg/L SC: 1177 $\mu\text{S}/\text{cm}$
 DO: 11.6 % Salinity: 0.6 ppt
 Water Temp: 20.6 °C
 Flow (from discharge measurement): 5.65 cfs

Samples Collected (check box)
 January—December Monthly Water:
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
 Dissolved Phosphorus and Nitrogen (field filtered): ☒
 May—September Dry Season Monthly Algae:
 Chlorophyll *a* (filters—algae): ☐

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	1.5	1.7	0.04
2	3.5	1.4	-0.03
3	5.5	1.3	0.14
4	7.5	1.4	0.59
5	9.5	1.2	0.90
6	11.5	0.65	0.90
7	13.5	0.75	0.37
8	15.5	0.35	-0.10
9	17.5	0.40	-0.04
10	19.0	0	0
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method
(Use only if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			

Float Reach Cross Section (ft)

	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*
 Reach Length (150 m if wetted width \leq 10 m, 250 m if wetted width > 10 m): _____

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=9.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

Event ID (Month Year): APRIL 2018

Site ID: TMDL - R3

Date/Time: 4/25/18 1005

Crew Members: KU, BS

Latitude/Longitude: 34.3459, -119.24982

Flow (circle one): (Flowing) Ponded / Dry

Wind Strength: (Light Breeze) Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From To S

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): 345

January—December Monthly *In Situ* Measurements:

pH: 8.06 pH units EC: 984 $\mu\text{S}/\text{cm}$
DO: 9.93 mg/L SC: 1104 $\mu\text{S}/\text{cm}$
DO: 107.10 % Salinity: 0.10 ppt
Water Temp: 19.3 °C
Flow (from discharge measurement): 5.04 cfs

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒
Dissolved Phosphorus and Nitrogen (field filtered): ☒

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae): ☐

1.5 Discharge Measurement

1st Measurement = left bank (looking downstream)

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	2.6	0	0
2	4.1	0.2	-0.14
3	5.6	0.3	-0.05
4	7.1	0.55	0.18
5	8.6	0.8	0.11
6	10.1	0.55	0.49
7	11.6	0.5	0.55
8	13.1	0.4	0.37
9	14.6	0.5	0.83
10	16.1	1.3	0.70
11	17.6	0.75	0.26
12	19.1	0.8	0.39
13	20.6	0.10	0.104
14	22.1	0.75	0.46
15	23.6	0	0
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
Width	Upper Section	Middle Section	Lower Section
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*

Reach Length (150 m if wetted width ≤ 10 m; 250 m if wetted width > 10 m): _____

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area= _____)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

Discharge Measurement
1st Measurement = left bank (looking downstream)

Event ID (Month Year): APRIL 2018

Site ID: TMDL-R4

Date/Time: 4/25/18 0820

Crew Members: K.H. B.J.

Latitude/Longitude: 34° 38' 58" -119° 30' 26"

Flow (circle one): Flowing / Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To _____

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): _____

January—December Monthly *In Situ* Measurements: 300

pH: 7.48 pH units EC: 874 $\mu\text{S}/\text{cm}$

DO: 8.18 mg/L SC: 1014 $\mu\text{S}/\text{cm}$

DO: 86.1 % Salinity: 0.5 ppt

Water Temp: 17.8 °C

Flow (from discharge measurement): 2.03 cfs

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae): ☐

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	2.4	0	0
2	4.4	0.5	-0.03
3	6.4	0.7	0.06
4	8.4	1.0	0.10
5	10.4	1.25	0.12
6	12.4	1.6	0.14
7	14.4	1.7	0.10
8	16.4	1.8	0.10
9	18.4	0.8	0.13
10	20.4	1.1	0.06
11	22.4	0.5	-0.01
12	24.2	0	0
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method
(Use only if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			

Float Reach Cross Section (ft)

	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*

Reach Length (150 m if wetted width ≤ 10 m; 250 m if wetted width > 10 m): _____

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): APRIL 2018

Site ID: TMDL-SA

Date/Time: 4/25/18 0910

Crew Members: KH JS

Latitude/Longitude: 34-38081-119-30737

Flow (circle one): Flowing / Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To _____

Photos (check): ☒ Upstream ☒ Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): _____

January—December Monthly *In Situ* Measurements:

pH: 7.96 pH units EC: 1448 $\mu\text{S}/\text{cm}$

DO: 9.33 mg/L SC: 1748 $\mu\text{S}/\text{cm}$

DO: 94.4 % Salinity: 0.9 ppt

Water Temp: 16.0 °C

Flow (from discharge measurement): 0-34 cfs

Samples Collected (check box)

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered): ☒

Dissolved Phosphorus and Nitrogen (field filtered): ☒

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae): ☐

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	2	0	0
2	2.6	0.15	0.15
3	3.2	0.15	0.160
4	3.8	0.20	0.174
5	4.4	0.20	0.166
6	5.0	0.20	0.146
7	5.6	0.25	0.102
8	6.2	0.20	0.167
9	6.8	0.20	0.15
10	8.0	0	0
11	8.0		
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method
(Use only if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			

Float Reach Cross Section (ft)

	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll *a*

Reach Length (150 m if wetted width \leq 10 m; 250 m if wetted width $>$ 10 m): _____

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm ²)	
PVC Delimiter (Area=12.6cm ²)	
Syringe Scrubber (Area=5.3cm ²)	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

TOTAL MAXIMUM DAILY LOAD FOR ALGAE, EUTROPHIC CONDITIONS, AND NUTRIENTS IN VENTURA RIVER, INCLUDING THE ESTUARY, AND ITS TRIBUTARIES (VR ALGAE TMDL)

2018 ANNUAL REPORT

APPENDIX B: CHAIN OF CUSTODIES AND LABORATORY REPORTS (MAY 2017 - APRIL 2018)

Submitted to
TMDL Responsible Parties Implementing Receiving Water Monitoring Requirements:

City of Ojai
City of Ventura
County of Ventura
Ojai Valley Sanitary District
California Department of Transportation
Ventura County Agricultural Irrigated Lands Group
Ventura County Watershed Protection District

Prepared by:

Ventura County Watershed Protection District
June 1, 2018





Ventura River and Tributaries
Algae, Eutrophic Conditions, and Nutrients TMDL
(VR Algae TMDL)

Comprehensive Monitoring Program

7E10095

CHAIN-OF-CUSTODY RECORD

1 OF 1

CLIENT: Ventura County Watershed Protection District (Master Agreement WECKLABORATORY17MA01, Project P6040555)

SAMPLING EVENT: MAY 2017

SAMPLING DATE: 5/9/17 + 5/10/17

SAMPLERS: S. CASEY

GRAB SAMPLES

SAMPLE ID	DATE/TIME	** FIELD FILTERED						NOTES
		Total Nitrogen, Total Phosphorus	Dissolved Nitrogen, Dissolved Phosphorus	Nitrate + Nitrite as Nitrogen				
TMDL-Est	5/10/17 12:20	X	X	X				
TMDL-R1	5/10/17 10:25	X	X	X				
TMDL-R2	5/10/17 8:10	X	X	X				
TMDL-R3	5/9/17 1125	X	X	X				
TMDL-R4	5/9/17 0810	X	X	X				
TMDL-CL	5/9/17 1310	X	X	X				
TMDL-SA	5/9/17 0950	X	X	X				
TMDL-FD		X	X	X				(Note which site)

Signature: Jan Nur	Signature: Jan Nur
Print Name: Lara Meeker	Print Name: Bruce Markovitch
Affiliation: VC WPP	Affiliation: Weck carrier
Date/Time Received: 5/10/17 14:16	Date/Time Received: 5/10/17 14:18
Date/Time Relinquished: 5/10/17 15:55	Date/Time Relinquished: 5/10/17 15:55
Signature: Carlos da Silva	Signature: Agabail H.
Print Name: Carlos da Silva	Print Name: Agabail H.
Affiliation: Weck feds	Affiliation: Weck
Date/Time Received: 5/10/17 9:55	Date/Time Received: 5/10/17 17:05
Date/Time Relinquished: 5/10/17 5:05	Date/Time Relinquished:

Miscellaneous Notes (Hazardous Materials, Quick turn-around time, etc.):

Dissolved samples were field filtered

15C

Work Orders: 7E10095

Report Date: 6/06/2017

Received Date: 5/10/2017

Project: TMDL Study May 2017 P6040555

Turnaround Time: Normal

Phones: (805) 654-3942

Fax: (805) 654-3350

P.O. #: WECKLABORATORYFY1
7MA01

Billing Code:

Attn: Arne Anselm

Client: Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

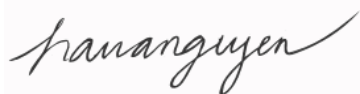
DoD-ELAP #L2457 • ELAP-CA #1132 • EPA-UCMR #CA00211 • HW-DOH # • ISO 17025 #L2457.01 • LACSD #10143 • NELAP-CA
#04229CA • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Arne Anselm,

Enclosed are the results of analyses for samples received 5/10/17 with the Chain-of-Custody document. The samples were received in good condition, at 1.5 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:



Hai Van Nguyen
Senior Project Manager





WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study May 2017 P6040555

Reported:
06/06/2017 17:30

Project Manager: Arne Anselm

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
TMDL-Est	S. Casey	7E10095-01	Water	05/10/17 12:20	
TMDL-R1	S. Casey	7E10095-02	Water	05/10/17 10:25	
TMDL-R2	S. Casey	7E10095-03	Water	05/10/17 08:10	
TMDL-R3	S. Casey	7E10095-04	Water	05/09/17 11:25	
TMDL-R4	S. Casey	7E10095-05	Water	05/09/17 08:10	
TMDL-CL	S. Casey	7E10095-06	Water	05/09/17 13:10	
TMDL-SA	S. Casey	7E10095-07	Water	05/09/17 09:50	



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Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study May 2017 P6040555

Reported:
06/06/2017 17:30

Project Manager: Arne Anselm

Sample Results

Sample: TMDL-Est

Sampled: 05/10/17 12:20 by S. Casey

7E10095-01 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 05/17/17 13:42				Analyst: mnq
Dissolved Nitrogen	1.4		0.20	mg/l	1x1	05/18/17 20:35	
Method: _Various	Batch ID: [CALC]		Prepared: 05/15/17 16:50				Analyst: mnq
Nitrogen, Total	1.8		0.20	mg/l	1x1	05/17/17 15:15	
Method: EPA 351.2	Batch ID: W7E0897		Prepared: 05/15/17 16:50				Analyst: mnq
TKN	0.65	0.050	0.10	mg/l	1x1	05/17/17 15:15	
Method: EPA 351.2	Batch ID: W7E1036		Prepared: 05/17/17 13:42				Analyst: mnq
TKN, Soluble	0.26	0.050	0.10	mg/l	1x1	05/18/17 20:35	
Method: EPA 353.2	Batch ID: W7E0862		Prepared: 05/15/17 12:30				Analyst: AJK
NO2+NO3 as N	1.1	0.041	0.10	mg/l	1x1	05/16/17 11:48	
Method: EPA 365.1	Batch ID: W7E0757		Prepared: 05/12/17 11:01				Analyst: nat
Phosphorus as P, Total	0.043	0.0014	0.010	mg/l	1x1	05/15/17 14:23	
Method: EPA 365.1	Batch ID: W7E0758		Prepared: 05/12/17 11:02				Analyst: nat
Phosphorus, Dissolved	0.0080	0.0014	0.010	mg/l	1x1	05/15/17 14:46	J



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Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study May 2017 P6040555

Reported:
06/06/2017 17:30

Project Manager: Arne Anselm

Sample Results

(Continued)

Sample: TMDL-R1
7E10095-02 (Water) Sampled: 05/10/17 10:25 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 05/17/17 13:42				Analyst: mnq
Dissolved Nitrogen	2.1		0.20	mg/l	1x1	05/18/17 20:35	
Method: _Various	Batch ID: [CALC]		Prepared: 05/15/17 16:50				Analyst: mnq
Nitrogen, Total	2.2		0.20	mg/l	1x1	05/17/17 15:15	
Method: EPA 351.2	Batch ID: W7E0897		Prepared: 05/15/17 16:50				Analyst: mnq
TKN	0.24	0.050	0.10	mg/l	1x1	05/17/17 15:15	
Method: EPA 351.2	Batch ID: W7E1036		Prepared: 05/17/17 13:42				Analyst: mnq
TKN, Soluble	0.17	0.050	0.10	mg/l	1x1	05/18/17 20:35	
Method: EPA 353.2	Batch ID: W7E0862		Prepared: 05/15/17 12:30				Analyst: AJK
NO2+NO3 as N	1.9	0.041	0.10	mg/l	1x1	05/16/17 12:15	
Method: EPA 365.1	Batch ID: W7E0757		Prepared: 05/12/17 11:01				Analyst: nat
Phosphorus as P, Total	0.013	0.0014	0.010	mg/l	1x1	05/15/17 14:27	
Method: EPA 365.1	Batch ID: W7E0758		Prepared: 05/12/17 11:02				Analyst: nat
Phosphorus, Dissolved	0.0091	0.0014	0.010	mg/l	1x1	05/15/17 14:51	J



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study May 2017 P6040555

Reported:
06/06/2017 17:30

Project Manager: Arne Anselm

Sample Results

(Continued)

Sample: TMDL-R2
7E10095-03 (Water) Sampled: 05/10/17 8:10 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 05/17/17 13:42				Analyst: mnq
Dissolved Nitrogen	3.2		0.20	mg/l	1x1	05/18/17 20:35	
Method: _Various	Batch ID: [CALC]		Prepared: 05/16/17 13:27				Analyst: mnq
Nitrogen, Total	3.3		0.20	mg/l	1x1	05/18/17 18:51	
Method: EPA 351.2	Batch ID: W7E0955		Prepared: 05/16/17 13:27				Analyst: mnq
TKN	0.078	0.050	0.10	mg/l	1x1	05/18/17 18:51	J
Method: EPA 351.2	Batch ID: W7E1036		Prepared: 05/17/17 13:42				Analyst: mnq
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	05/18/17 20:35	
Method: EPA 353.2	Batch ID: W7E0862		Prepared: 05/15/17 12:30				Analyst: AJK
NO2+NO3 as N	3.2	0.041	0.10	mg/l	1x1	05/16/17 12:17	
Method: EPA 365.1	Batch ID: W7E0757		Prepared: 05/12/17 11:01				Analyst: nat
Phosphorus as P, Total	0.064	0.0014	0.010	mg/l	1x1	05/15/17 14:29	
Method: EPA 365.1	Batch ID: W7E0758		Prepared: 05/12/17 11:02				Analyst: nat
Phosphorus, Dissolved	0.059	0.0014	0.010	mg/l	1x1	05/15/17 14:52	



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Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study May 2017 P6040555

Reported:
06/06/2017 17:30

Project Manager: Arne Anselm

Sample Results

(Continued)

Sample: TMDL-R3
7E10095-04 (Water) Sampled: 05/09/17 11:25 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 05/17/17 13:42				Analyst: mnq
Dissolved Nitrogen	3.4		0.20	mg/l	1x1	05/18/17 20:35	
Method: _Various	Batch ID: [CALC]		Prepared: 05/16/17 13:27				Analyst: mnq
Nitrogen, Total	3.3		0.20	mg/l	1x1	05/18/17 18:51	
Method: EPA 351.2	Batch ID: W7E0955		Prepared: 05/16/17 13:27				Analyst: mnq
TKN	ND	0.050	0.10	mg/l	1x1	05/18/17 18:51	
Method: EPA 351.2	Batch ID: W7E1036		Prepared: 05/17/17 13:42				Analyst: mnq
TKN, Soluble	0.068	0.050	0.10	mg/l	1x1	05/18/17 20:35	J
Method: EPA 353.2	Batch ID: W7E0862		Prepared: 05/15/17 12:30				Analyst: AJK
NO2+NO3 as N	3.3	0.041	0.10	mg/l	1x1	05/16/17 12:19	
Method: EPA 365.1	Batch ID: W7E0757		Prepared: 05/12/17 11:01				Analyst: nat
Phosphorus as P, Total	0.0070	0.0014	0.010	mg/l	1x1	05/15/17 14:30	J
Method: EPA 365.1	Batch ID: W7E0758		Prepared: 05/12/17 11:02				Analyst: nat
Phosphorus, Dissolved	0.0054	0.0014	0.010	mg/l	1x1	05/15/17 14:53	J



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Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study May 2017 P6040555

Reported:
06/06/2017 17:30

Project Manager: Arne Anselm

Sample Results

(Continued)

Sample: TMDL-R4
7E10095-05 (Water) Sampled: 05/09/17 8:10 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 05/17/17 13:42		Analyst: mnq		
Dissolved Nitrogen	4.7		0.20	mg/l	1x1	05/18/17 20:35	
Method: _Various	Batch ID: [CALC]		Prepared: 05/16/17 13:27		Analyst: mnq		
Nitrogen, Total	4.7		0.20	mg/l	1x1	05/18/17 18:51	
Method: EPA 351.2	Batch ID: W7E0955		Prepared: 05/16/17 13:27		Analyst: mnq		
TKN	ND	0.050	0.10	mg/l	1x1	05/18/17 18:51	
Method: EPA 351.2	Batch ID: W7E1036		Prepared: 05/17/17 13:42		Analyst: mnq		
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	05/18/17 20:35	
Method: EPA 353.2	Batch ID: W7E0862		Prepared: 05/15/17 12:30		Analyst: AJK		
NO2+NO3 as N	4.7	0.041	0.10	mg/l	1x1	05/16/17 12:20	
Method: EPA 365.1	Batch ID: W7E0757		Prepared: 05/12/17 11:01		Analyst: nat		
Phosphorus as P, Total	0.0078	0.0014	0.010	mg/l	1x1	05/15/17 14:33	J
Method: EPA 365.1	Batch ID: W7E0758		Prepared: 05/12/17 11:02		Analyst: nat		
Phosphorus, Dissolved	0.0062	0.0014	0.010	mg/l	1x1	05/15/17 14:55	J



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Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study May 2017 P6040555

Reported:
06/06/2017 17:30

Project Manager: Arne Anselm

Sample Results

(Continued)

Sample: TMDL-CL
7E10095-06 (Water) Sampled: 05/09/17 13:10 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 05/17/17 13:42				Analyst: mnq
Dissolved Nitrogen	0.37		0.20	mg/l	1x1	05/18/17 20:35	
Method: _Various	Batch ID: [CALC]		Prepared: 05/16/17 13:27				Analyst: mnq
Nitrogen, Total	0.51		0.20	mg/l	1x1	05/18/17 18:51	
Method: EPA 351.2	Batch ID: W7E0955		Prepared: 05/16/17 13:27				Analyst: mnq
TKN	0.46	0.050	0.10	mg/l	1x1	05/18/17 18:51	
Method: EPA 351.2	Batch ID: W7E1036		Prepared: 05/17/17 13:42				Analyst: mnq
TKN, Soluble	0.32	0.050	0.10	mg/l	1x1	05/18/17 20:35	
Method: EPA 353.2	Batch ID: W7E0862		Prepared: 05/15/17 12:30				Analyst: AJK
NO2+NO3 as N	0.053	0.041	0.10	mg/l	1x1	05/16/17 12:22	J
Method: EPA 365.1	Batch ID: W7E0757		Prepared: 05/12/17 11:01				Analyst: nat
Phosphorus as P, Total	0.0068	0.0014	0.010	mg/l	1x1	05/15/17 14:35	J
Method: EPA 365.1	Batch ID: W7E0758		Prepared: 05/12/17 11:02				Analyst: nat
Phosphorus, Dissolved	0.0083	0.0014	0.010	mg/l	1x1	05/15/17 15:01	J



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study May 2017 P6040555

Reported:
06/06/2017 17:30

Project Manager: Arne Anselm

Sample Results

(Continued)

Sample: TMDL-SA
7E10095-07 (Water) Sampled: 05/09/17 9:50 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 05/17/17 13:42				Analyst: mnq
Dissolved Nitrogen	1.5		0.20	mg/l	1x1	05/18/17 20:35	
Method: _Various	Batch ID: [CALC]		Prepared: 05/16/17 13:27				Analyst: mnq
Nitrogen, Total	1.6		0.20	mg/l	1x1	05/18/17 18:51	
Method: EPA 351.2	Batch ID: W7E0955		Prepared: 05/16/17 13:27				Analyst: mnq
TKN	0.30	0.050	0.10	mg/l	1x1	05/18/17 18:51	
Method: EPA 351.2	Batch ID: W7E1036		Prepared: 05/17/17 13:42				Analyst: mnq
TKN, Soluble	0.27	0.050	0.10	mg/l	1x1	05/18/17 20:35	
Method: EPA 353.2	Batch ID: W7E0862		Prepared: 05/15/17 12:30				Analyst: AJK
NO2+NO3 as N	1.3	0.041	0.10	mg/l	1x1	05/16/17 12:24	
Method: EPA 365.1	Batch ID: W7E0757		Prepared: 05/12/17 11:01				Analyst: nat
Phosphorus as P, Total	0.054	0.0014	0.010	mg/l	1x1	05/15/17 14:36	
Method: EPA 365.1	Batch ID: W7E0758		Prepared: 05/12/17 11:02				Analyst: nat
Phosphorus, Dissolved	0.047	0.0014	0.010	mg/l	1x1	05/15/17 14:58	



WECK LABORATORIES, INC.

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Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study May 2017 P6040555

Reported:
06/06/2017 17:30

Project Manager: Arne Anselm

Quality Control Results

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Analyte	Result	MDL	Units	Spike Level	Source Result	%REC	Limit	RPD	Limit	Qualifier
Batch: W7E0757 - EPA 365.1										
Blank (W7E0757-BLK1)				Prepared: 05/12/17 Analyzed: 05/15/17						
Phosphorus as P, Total	ND	0.0014	mg/l							
LCS (W7E0757-BS1)				Prepared: 05/12/17 Analyzed: 05/15/17						
Phosphorus as P, Total	0.0485	0.0014	mg/l	0.0500		97	90-110			
Matrix Spike (W7E0757-MS1)				Source: 7E10095-01 Prepared: 05/12/17 Analyzed: 05/15/17						
Phosphorus as P, Total	0.0981	0.0014	mg/l	0.0500	0.0430	110	90-110			
Matrix Spike Dup (W7E0757-MSD1)				Source: 7E10095-01 Prepared: 05/12/17 Analyzed: 05/15/17						
Phosphorus as P, Total	0.0972	0.0014	mg/l	0.0500	0.0430	108	90-110	0.9	20	
Batch: W7E0758 - EPA 365.1										
Blank (W7E0758-BLK1)				Prepared: 05/12/17 Analyzed: 05/15/17						
Phosphorus, Dissolved	ND	0.0014	mg/l							
LCS (W7E0758-BS1)				Prepared: 05/12/17 Analyzed: 05/15/17						
Phosphorus, Dissolved	0.0489	0.0014	mg/l	0.0500		98	90-110			
Matrix Spike (W7E0758-MS1)				Source: 7E10095-01 Prepared: 05/12/17 Analyzed: 05/15/17						
Phosphorus, Dissolved	0.0587	0.0014	mg/l	0.0500	0.00801	101	90-110			
Matrix Spike Dup (W7E0758-MSD1)				Source: 7E10095-01 Prepared: 05/12/17 Analyzed: 05/15/17						
Phosphorus, Dissolved	0.0589	0.0014	mg/l	0.0500	0.00801	102	90-110	0.3	20	
Batch: W7E0862 - EPA 353.2										
Blank (W7E0862-BLK1)				Prepared: 05/15/17 Analyzed: 05/16/17						
NO2+NO3 as N	ND	0.041	mg/l							



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study May 2017 P6040555

Reported:
06/06/2017 17:30

Project Manager: Arne Anselm

Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

Analyte	Result	MDL	Units	Spike Level	Source Result	%REC	Limit	RPD	Limit	Qualifier
Batch: W7E0862 - EPA 353.2 (Continued)										
LCS (W7E0862-BS1)				Prepared: 05/15/17 Analyzed: 05/16/17						
NO2+NO3 as N	1.02	0.041	mg/l	1.00		102	90-110			
Matrix Spike (W7E0862-MS1)				Source: 7E05007-01 Prepared: 05/15/17 Analyzed: 05/16/17						
NO2+NO3 as N	3.50	0.041	mg/l	2.00	1.61	95	90-110			
Matrix Spike (W7E0862-MS2)				Source: 7E10095-01 Prepared: 05/15/17 Analyzed: 05/16/17						
NO2+NO3 as N	2.98	0.041	mg/l	2.00	1.14	92	90-110			
Matrix Spike Dup (W7E0862-MSD1)				Source: 7E05007-01 Prepared: 05/15/17 Analyzed: 05/16/17						
NO2+NO3 as N	3.47	0.041	mg/l	2.00	1.61	93	90-110	0.8	20	
Matrix Spike Dup (W7E0862-MSD2)				Source: 7E10095-01 Prepared: 05/15/17 Analyzed: 05/16/17						
NO2+NO3 as N	3.00	0.041	mg/l	2.00	1.14	93	90-110	0.5	20	
Batch: W7E0897 - EPA 351.2										
Blank (W7E0897-BLK1)				Prepared: 05/15/17 Analyzed: 05/17/17						
TKN	ND	0.050	mg/l							
Blank (W7E0897-BLK2)				Prepared: 05/15/17 Analyzed: 05/17/17						
TKN	ND	0.050	mg/l							
LCS (W7E0897-BS1)				Prepared: 05/15/17 Analyzed: 05/17/17						
TKN	1.02	0.050	mg/l	1.00		102	90-110			
LCS (W7E0897-BS2)				Prepared: 05/15/17 Analyzed: 05/17/17						
TKN	1.03	0.050	mg/l	1.00		103	90-110			



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
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Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study May 2017 P6040555

Reported:
06/06/2017 17:30

Project Manager: Arne Anselm

Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

Analyte	Result	MDL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W7E0897 - EPA 351.2 (Continued)										
Matrix Spike (W7E0897-MS1)	Source: 7E09092-04		Prepared: 05/15/17 Analyzed: 05/17/17							
TKN	1.20	0.050	mg/l	1.00	0.210	99	90-110			
Matrix Spike (W7E0897-MS2)	Source: 7E09092-05		Prepared: 05/15/17 Analyzed: 05/17/17							
TKN	1.28	0.050	mg/l	1.00	0.223	106	90-110			
Matrix Spike Dup (W7E0897-MSD1)	Source: 7E09092-04		Prepared: 05/15/17 Analyzed: 05/17/17							
TKN	1.25	0.050	mg/l	1.00	0.210	104	90-110	4	10	
Matrix Spike Dup (W7E0897-MSD2)	Source: 7E09092-05		Prepared: 05/15/17 Analyzed: 05/17/17							
TKN	1.25	0.050	mg/l	1.00	0.223	102	90-110	3	10	
Batch: W7E0955 - EPA 351.2										
Blank (W7E0955-BLK1)			Prepared: 05/16/17 Analyzed: 05/18/17							
TKN	ND	0.050	mg/l							
Blank (W7E0955-BLK2)			Prepared: 05/16/17 Analyzed: 05/18/17							
TKN	ND	0.050	mg/l							
LCS (W7E0955-BS1)			Prepared: 05/16/17 Analyzed: 05/18/17							
TKN	0.979	0.050	mg/l	1.00		98	90-110			
LCS (W7E0955-BS2)			Prepared: 05/16/17 Analyzed: 05/18/17							
TKN	0.961	0.050	mg/l	1.00		96	90-110			
Matrix Spike (W7E0955-MS1)	Source: 7E12087-05		Prepared: 05/16/17 Analyzed: 05/18/17							
TKN	0.902	0.050	mg/l	1.00	ND	90	90-110			



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study May 2017 P6040555

Reported:
06/06/2017 17:30

Project Manager: Arne Anselm

Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

Analyte	Result	MDL	Units	Spike Level	Source Result	%REC	Limit	RPD	Limit	Qualifier
Batch: W7E0955 - EPA 351.2 (Continued)										
Matrix Spike (W7E0955-MS2)				Source: 7E12087-47		Prepared: 05/16/17 Analyzed: 05/18/17				
TKN	0.925	0.050	mg/l	1.00	ND	92	90-110			
Matrix Spike Dup (W7E0955-MSD1)				Source: 7E12087-05		Prepared: 05/16/17 Analyzed: 05/18/17				
TKN	0.965	0.050	mg/l	1.00	ND	96	90-110	7	10	
Matrix Spike Dup (W7E0955-MSD2)				Source: 7E12087-47		Prepared: 05/16/17 Analyzed: 05/18/17				
TKN	0.920	0.050	mg/l	1.00	ND	92	90-110	0.5	10	
Batch: W7E1036 - EPA 351.2										
Blank (W7E1036-BLK1)				Prepared: 05/17/17 Analyzed: 05/18/17						
TKN, Soluble	ND	0.050	mg/l							
LCS (W7E1036-BS1)				Prepared: 05/17/17 Analyzed: 05/18/17						
TKN, Soluble	0.902	0.050	mg/l	1.00		90	90-110			
Matrix Spike (W7E1036-MS1)				Source: 7E10095-01		Prepared: 05/17/17 Analyzed: 05/18/17				
TKN, Soluble	1.34	0.050	mg/l	1.00	0.260	108	90-110			
Matrix Spike Dup (W7E1036-MSD1)				Source: 7E10095-01		Prepared: 05/17/17 Analyzed: 05/18/17				
TKN, Soluble	1.38	0.050	mg/l	1.00	0.260	112	90-110	3	10	MS-01

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Project Number: TMDL Study May 2017 P6040555

Reported:
06/06/2017 17:30

Project Manager: Arne Anselm

Notes and Definitions

Item	Definition
J	Estimated conc. detected <MRL and >MDL.
MS-01	The spike recovery for this QC sample is outside of established control limits possibly due to sample matrix interference.
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Source	Sample that was matrix spiked or duplicated.
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)
MDA	Minimum Detectable Activity
NR	Not Reportable
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS 002.



July 5th, 2017

Ventura County Watershed Protection District
Kelly Hahs
800 S Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

Aquatic Bioassay & Consulting Laboratories is pleased to provide you with the enclosed chlorophyll-a data report for the Ventura River Algae TMDL. Chlorophyll- a analyses are conducted under guidelines prescribed in *Standard Methods for the Examination of Water and Wastewater* (APHA, 22nd Edition), Section SM 10200 H.

Please contact me with any questions or issues you may have regarding this report.

Sincerely,

Karin Wisenbaker
Senior Biologist
(805) 643-5621 ex.17

Client: Ventura County Watershed Protection District
Project: Ventura River Algae TMDL



Chlorophyll a results from May 9th-10th, 2017



Station	Field Replicate	Number of Transects Collected	Chlorophyll a	Units
TMDL-R1	1	11	16	ug/cm2
TMDL-R2	1	11	35	ug/cm2
TMDL-R3	1	11	44	ug/cm2
TMDL-R4	1	11	11	ug/cm2
TMDL-CL	1	11	3.6	ug/cm2
TMDL-SA	1	11	26.0	ug/cm2
TMDL-Est	1	NA	1000	ug/L

Chain of study

From: Aquatic Bioassay and Consulting Labs. 29 N. Olive St. Ventura, CA 93001	Phone: (805) 643-5621 Fax: (805) 643-2930 Project ID: VCWPD Algae TMDL	To: Company: Aquatic Bioassay and Consulting Labs. 29 N. Olive St. Ventura, CA 93001 Phone:
---	--	--

Sample I.D. No.	Sample Date	Time	Matrix	Composite Volume/ No.	Reps	ANALYSIS									
						Chl-a									
TMDL-R4	05/09/17	0810	FW	412	1	X									
TMDL-SA	05/09/17	0950	FW	390	1	X									
TMDL-R3	05/09/17	1125	FW	370	1	X									
TMDL-CL	05/09/17	1310	FW	310	1	X									

Special Instructions:

RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	DATE:	TIME:	RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	DATE:	TIME:
	05/09/17	1415		5.9.17	1415						

Chain of study

From: Aquatic Bioassay and Consulting Labs. 29 N. Olive St. Ventura, CA 93001	Phone: (805) 643-5621 Fax: (805) 643-2930 Project ID: VCWPD Algae TMDL	To:	Company: Aquatic Bioassay and Consulting Labs. 29 N. Olive St. Address: Ventura, CA 93001 Phone:
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[illegible]



Silver State Labs-Reno
1135 Financial Blvd
Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
www.ssalabs.com

June 20, 2017
Workorder 17060212

Karin
Aquatic Bioassay & Consulting
29 North Olive St.
Ventura, CA 93001

Project: VCWPD

Dear Karin:

It is the policy of Silver State Analytical Laboratory - Reno to strictly adhere to a comprehensive Quality Assurance Plan that ensures the data presented in this report are both accurate and precise. Silver State Analytical Laboratory - Reno maintains accreditation in the State of Nevada (NV-00015) and the State of California (ELAP 2990).

The data presented in this report was obtained from the analysis of samples received under a chain of custody. Unless otherwise noted below, samples were received in good condition, properly preserved and within the hold time for the requested analyses. Any anomalies associated with the analysis of the samples have been flagged with an appropriate explanation in the Analysis Report section of the Laboratory Report.

Sincerely,

Carly Wood
Laboratory Director
1135 Financial Blvd
Reno, NV 89502



Silver State Labs-Reno
1135 Financial Blvd
Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
www.ssalabs.com

Analytical Report

Workorder#: 17060212
Date Reported: 6/20/2017

Client: Aquatic Bioassay & Consulting
Project Name: VCWPD
PO #:

Sampled By: Client

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17060212-01	408M03047	05/30/2017 9:35	6/6/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Ash Free Dry Mass	SM 2540G	50	g/m ²	1	KL	06/16/2017 11:04	
Chlorophyll a	SM 10200 H	180	mg/m ²	1	AM	06/20/2017 13:21	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17060212-02	408M03052	05/30/2017 11:35	6/6/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Ash Free Dry Mass	SM 2540G	95	g/m ²	1	KL	06/16/2017 11:04	
Chlorophyll a	SM 10200 H	280	mg/m ²	1	AM	06/20/2017 13:21	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17060212-03	ME-CC	05/30/2017 7:30	6/6/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Ash Free Dry Mass	SM 2540G	88	g/m ²	1	KL	06/16/2017 11:04	
Chlorophyll a	SM 10200 H	210	mg/m ²	1	AM	06/20/2017 13:21	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17060212-04	403M01538	05/25/2017 7:30	6/6/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Ash Free Dry Mass	SM 2540G	47	g/m ²	1	KL	06/16/2017 11:04	
Chlorophyll a	SM 10200 H	230	mg/m ²	1	AM	06/20/2017 13:21	



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Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
www.ssalabs.com

Analytical Report

Workorder#: 17060212
Date Reported: 6/20/2017

Client: Aquatic Bioassay & Consulting
Project Name: VCWPD
PO #:

Sampled By: Client

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17060212-05	403M01553	05/25/2017 10:05	6/6/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Ash Free Dry Mass	SM 2540G	56	g/m ²	1	KL	06/16/2017 11:04	
Chlorophyll a	SM 10200 H	270	mg/m ²	1	AM	06/20/2017 13:21	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17060212-06	ME-SCR	05/25/2017 13:30	6/6/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Ash Free Dry Mass	SM 2540G	47	g/m ²	1	KL	06/16/2017 11:04	
Chlorophyll a	SM 10200 H	54	mg/m ²	1	AM	06/20/2017 13:21	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17060212-07	TMDL-CL	05/09/2017 13:10	6/6/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	36	mg/m ²	1	AM	06/20/2017 13:21	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17060212-08	TMDL-R4	05/09/2017 8:10	6/6/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	110	mg/m ²	1	AM	06/20/2017 13:21	



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Reno, NV 89502
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Analytical Report

Workorder#: 17060212
Date Reported: 6/20/2017

Client: Aquatic Bioassay & Consulting
Project Name: VCWPD
PO #:

Sampled By: Client

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17060212-09	TMDL-R3	05/09/2017 11:25	6/6/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	440	mg/m ²	1	AM	06/20/2017 13:21	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17060212-10	TMDL-SA	05/09/2017 9:50	6/6/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	260	mg/m ²	1	AM	06/20/2017 13:21	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17060212-11	TMDL-Estuary	05/10/2017 12:00	6/6/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	1000	ug/L	1	AM	06/20/2017 13:21	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17060212-12	TMDL-R1	05/10/2017 10:25	6/6/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	160	mg/m ²	1	AM	06/20/2017 13:21	



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1135 Financial Blvd
Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
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Analytical Report

Workorder#: 17060212
Date Reported: 6/20/2017

Client: Aquatic Bioassay & Consulting
Project Name: VCWPD
PO #:

Sampled By: Client

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17060212-13	TMDL-R2	05/10/2017 8:10	6/6/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	350	mg/m^2	1	AM	06/20/2017 13:21	

Analysis: Chlorophyll-a

Method: SM 10200 H

Batch ID: R7918

Method Blank

RunID: 7918 SeqNo 148096 Units: µg/L

Analysis Date: 6/20/2017 1:21:27 PM Analyst: AM

Analyte	Result	Rep Limit	Rep Qual
Chlorophyll a	< 1	1	

Laboratory Control Sample (LCS)

RunID: 7918 SeqNo 148097 Units: µg/L

Analysis Date: 6/20/2017 1:21:27 PM Analyst: AM

Analyte	LCS Spike Added	LCS Result	LCS % Recovery	LCSD Spike Added	LCSD Result	LCSD % Recovery	RPD	RPD Limit	Low Limit	High Limit	Qual
Chlorophyll a	1.000	1.17	117	1.000	1.17	117	0	20	70	130	

From: Aquatic Bioassay
and Consulting Labs.
29 N. Olive St.
Ventura, CA 93001

Phone: (805) 643-5621
Fax: (805) 643-2930
Project ID: VCWPD

To: Sierra Environmental
Company: 1135 Financial Blvd
Address: Reno, NV 89502
Phone: (775) 857-2400

Page 7 of 8

Definitions:

LCS: Laboratory Control Sample; prepared by adding a known mass of target analytes to a specified amount of de-ionized water and prepared with the batch of samples, used to calculate Accuracy (%REC).

LCSD: LCS Duplicate; used to calculate both Accuracy (%REC) and Precision (%RPD)

MBLK: Method Blank; a sample of similar matrix that is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedure, and in which no target analytes or interferences are present at concentrations that impact the analytical results for sample analyses.

MS: Matrix Spike; prepared by adding a known mass of target analytes to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available, used to calculate Accuracy (%REC)

MSD: Matrix Spike Duplicate; used to calculate both Accuracy (%REC) and Precision (%RPD)

RPD: Relative Percent Difference; comparison between sample and duplicate and/or MS and MSD.

PQL: Practical Quantitation Limit; the limit to which data is quantitated for reporting.

MDL: Method Detection Limit; the limit to which the instrument can reliably detect.

MCL: Maximum Contaminant Level; value set according to EPA guidelines.

Qualifiers:

* - Analyte exceeds Safe Drinking Water Act MCL, does not meet drinking water standards.

B - Analyte found above the PQL in associated method blank.

G - Calibration blank analyte detected above PQL.

H - Sample analyzed beyond holding time for this parameter.

J - Estimated Value; Analyte found between MDL and PQL limits.

L - Sample concentration is at least 5 times greater than spike contribution. Spike recovery criteria do not apply.

R - RPD between sample and duplicate sample outside the RPD acceptance limits.

S - Batch MS and/or MSD were outside acceptance limits, batch LCS was acceptable.

W - Sample temperature when received was out of limit as specified by method.



Ventura River and Tributaries Algae, Eutrophic Conditions, and Nutrients TMDL (VR Algae TMDL)

Comprehensive Monitoring Program

7F16091

CHAIN-OF-CUSTODY RECORD

1 OF 1

CLIENT: Ventura County Watershed Protection District (Master Agreement WECKLABORATORY17MA01, Project P6040555)

SAMPLING EVENT: JUNE 2017

SAMPLING DATE: 6/14/17 + 6/15/17

SAMPLERS: S. CASEY

GRAB SAMPLES

SAMPLE ID	DATE/TIME	** FIELD FILTERED					No. Bottles	NOTES
		Total Nitrogen, Total Phosphorus	Dissolved Nitrogen, Dissolved Phosphorus	Nitrate + Nitrite as Nitrogen				
TMDL-Est	6/15/17 13:05	X	X	X			2	
TMDL-R1	↓ 11:20	X	X	X			2	
TMDL-R2	↓ 09:10	X	X	X			2	
TMDL-R3	6/14/17 12:10	X	X	X			2	
TMDL-R4	↓ 08:55	X	X	X			2	
TMDL-CL	6/15/17 07:40	X	X	X			2	
TMDL-SA	6/14/17 10:30	X	X	X			2	
TMDL-FD	↓ 12:10	X	X	X			2	(Note which site)

Signature: <i>Kelly Haas</i>	Signature: <i>Carlos Navarro</i>
Print Name: KELLY HAAS	Print Name: CARLOS NAVARRO
Affiliation: VCWPD	Affiliation: WECK LABS
Date/Time Received: 6/16/17 / 1135	Date/Time Received: 6/16/17 / 1135
Date/Time Relinquished: 6/16/17 / 1135	Date/Time Relinquished: 6/16/17 / 1135

Signature: <i>Carlos Navarro</i>	Signature: <i>Jaime Gomez</i>
Print Name: Carlos Navarro	Print Name: JAIME GOMEZ
Affiliation: VCWPD	Affiliation: Weck Labs
Date/Time Received: 6/16/17 323	Date/Time Received: 6/16/17 1523
Date/Time Relinquished: 6/16/17 323	Date/Time Relinquished: 6/16/17 1523

Miscellaneous Notes (Hazardous Materials, Quick turn-around time, etc.):

Dissolved samples were field filtered

Work Orders: 7F16091

Project: TMDL Study June 2017 P6040555

Attn: Arne Anselm

Client: Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Report Date: 7/05/2017

Received Date: 6/16/2017

Turnaround Time: Normal

Phones: (805) 654-3942

Fax: (805) 654-3350

P.O. #: WECKLABORATORYFY1
7MA01

Billing Code:

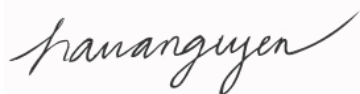
DoD-ELAP #L2457 • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO 17025 #L2457.01 •
LACSD #10143 • NELAP-CA #04229CA • NELAP-OR #4047 • NV-DEP #NAC 445A • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Arne Anselm,

Enclosed are the results of analyses for samples received 6/16/17 with the Chain-of-Custody document. The samples were received in good condition, at 2.1 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:



Hai Van Nguyen
Senior Project Manager





WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study June 2017 P6040555

Reported:
07/05/2017 10:35

Project Manager: Arne Anselm

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
TMDL-Est	S. Casey	7F16091-01	Water	06/15/17 13:05	
TMDL-R1	S. Casey	7F16091-02	Water	06/15/17 11:20	
TMDL-R2	S. Casey	7F16091-03	Water	06/15/17 09:10	
TMDL-R3	S. Casey	7F16091-04	Water	06/14/17 12:10	
TMDL-R4	S. Casey	7F16091-05	Water	06/14/17 08:55	
TMDL-CL	S. Casey	7F16091-06	Water	06/15/17 07:40	
TMDL-SA	S. Casey	7F16091-07	Water	06/14/17 10:30	
TMDL-FD	S. Casey	7F16091-08	Water	06/14/17 12:10	



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07/05/2017 10:35

Project Manager: Arne Anselm

Sample Results

Sample: TMDL-Est

Sampled: 06/15/17 13:05 by S. Casey

7F16091-01 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 06/25/17 08:09				Analyst: mnq
Dissolved Nitrogen	0.54		0.20	mg/l	1x1	06/29/17 13:41	
Method: _Various	Batch ID: [CALC]		Prepared: 06/22/17 13:02				Analyst: mnq
Nitrogen, Total	0.51		0.20	mg/l	1x1	06/26/17 18:23	
Method: EPA 351.2	Batch ID: W7F1327		Prepared: 06/22/17 13:02				Analyst: mnq
TKN	0.51	0.050	0.10	mg/l	1x1	06/26/17 18:23	
Method: EPA 351.2	Batch ID: W7F1468		Prepared: 06/25/17 08:09				Analyst: mnq
TKN, Soluble	0.54	0.050	0.10	mg/l	1x1	06/29/17 13:41	
Method: EPA 353.2	Batch ID: W7F1022		Prepared: 06/19/17 11:52				Analyst: AJK
NO2+NO3 as N	ND	0.041	0.10	mg/l	1x1	06/19/17 13:22	
Method: EPA 365.1	Batch ID: W7F1112		Prepared: 06/20/17 10:53				Analyst: nat
Phosphorus as P, Total	0.030	0.0014	0.010	mg/l	1x1	06/26/17 20:27	
Method: EPA 365.1	Batch ID: W7F1113		Prepared: 06/20/17 10:55				Analyst: nat
Phosphorus, Dissolved	0.0099	0.0014	0.010	mg/l	1x1	06/26/17 20:51	J



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07/05/2017 10:35

Project Manager: Arne Anselm

Sample Results

(Continued)

Sample: TMDL-R1
7F16091-02 (Water) Sampled: 06/15/17 11:20 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 06/25/17 08:09				Analyst: mnq
Dissolved Nitrogen	1.2		0.20	mg/l	1x1	06/29/17 13:41	
Method: _Various	Batch ID: [CALC]		Prepared: 06/22/17 13:02				Analyst: mnq
Nitrogen, Total	1.3		0.20	mg/l	1x1	06/26/17 18:23	
Method: EPA 351.2	Batch ID: W7F1327		Prepared: 06/22/17 13:02				Analyst: mnq
TKN	0.35	0.050	0.10	mg/l	1x1	06/26/17 18:23	
Method: EPA 351.2	Batch ID: W7F1468		Prepared: 06/25/17 08:09				Analyst: mnq
TKN, Soluble	0.27	0.050	0.10	mg/l	1x1	06/29/17 13:41	
Method: EPA 353.2	Batch ID: W7F1022		Prepared: 06/19/17 11:52				Analyst: AJK
NO2+NO3 as N	0.91	0.041	0.10	mg/l	1x1	06/19/17 13:24	
Method: EPA 365.1	Batch ID: W7F1112		Prepared: 06/20/17 10:53				Analyst: nat
Phosphorus as P, Total	0.038	0.0014	0.010	mg/l	1x1	06/26/17 20:34	
Method: EPA 365.1	Batch ID: W7F1113		Prepared: 06/20/17 10:55				Analyst: nat
Phosphorus, Dissolved	0.022	0.0014	0.010	mg/l	1x1	06/26/17 20:59	



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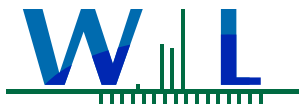
Project Manager: Arne Anselm

Sample Results

(Continued)

Sample: TMDL-R2
7F16091-03 (Water) Sampled: 06/15/17 9:10 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 06/25/17 08:09				Analyst: mnq
Dissolved Nitrogen	2.4		0.20	mg/l	1x1	06/29/17 13:41	
Method: _Various	Batch ID: [CALC]		Prepared: 06/22/17 13:02				Analyst: mnq
Nitrogen, Total	2.5		0.20	mg/l	1x1	06/26/17 18:23	
Method: EPA 351.2	Batch ID: W7F1327		Prepared: 06/22/17 13:02				Analyst: mnq
TKN	0.38	0.050	0.10	mg/l	1x1	06/26/17 18:23	
Method: EPA 351.2	Batch ID: W7F1468		Prepared: 06/25/17 08:09				Analyst: mnq
TKN, Soluble	0.25	0.050	0.10	mg/l	1x1	06/29/17 13:41	
Method: EPA 353.2	Batch ID: W7F1022		Prepared: 06/19/17 11:52				Analyst: AJK
NO2+NO3 as N	2.1	0.041	0.10	mg/l	1x1	06/19/17 13:25	
Method: EPA 365.1	Batch ID: W7F1112		Prepared: 06/20/17 10:53				Analyst: nat
Phosphorus as P, Total	0.083	0.0014	0.010	mg/l	1x1	06/26/17 20:36	
Method: EPA 365.1	Batch ID: W7F1113		Prepared: 06/20/17 10:55				Analyst: nat
Phosphorus, Dissolved	0.070	0.0014	0.010	mg/l	1x1	06/26/17 21:00	



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Project Manager: Arne Anselm

Sample Results

(Continued)

Sample: TMDL-R3
7F16091-04 (Water) Sampled: 06/14/17 12:10 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 06/25/17 08:09				Analyst: mnq
Dissolved Nitrogen	2.2		0.20	mg/l	1x1	06/29/17 13:41	
Method: _Various	Batch ID: [CALC]		Prepared: 06/22/17 13:02				Analyst: mnq
Nitrogen, Total	2.1		0.20	mg/l	1x1	06/26/17 18:23	
Method: EPA 351.2	Batch ID: W7F1327		Prepared: 06/22/17 13:02				Analyst: mnq
TKN	ND	0.050	0.10	mg/l	1x1	06/26/17 18:23	
Method: EPA 351.2	Batch ID: W7F1468		Prepared: 06/25/17 08:09				Analyst: mnq
TKN, Soluble	0.066	0.050	0.10	mg/l	1x1	06/29/17 13:41	J
Method: EPA 353.2	Batch ID: W7F1022		Prepared: 06/19/17 11:52				Analyst: AJK
NO2+NO3 as N	2.1	0.041	0.10	mg/l	1x1	06/19/17 13:27	
Method: EPA 365.1	Batch ID: W7F1112		Prepared: 06/20/17 10:53				Analyst: nat
Phosphorus as P, Total	0.011	0.0014	0.010	mg/l	1x1	06/26/17 20:37	
Method: EPA 365.1	Batch ID: W7F1113		Prepared: 06/20/17 10:55				Analyst: nat
Phosphorus, Dissolved	0.0090	0.0014	0.010	mg/l	1x1	06/26/17 21:02	J



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Project Manager: Arne Anselm

Sample Results

(Continued)

Sample: TMDL-R4
7F16091-05 (Water) Sampled: 06/14/17 8:55 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 06/25/17 08:09				Analyst: mnq
Dissolved Nitrogen	2.8		0.20	mg/l	1x1	06/29/17 13:41	
Method: _Various	Batch ID: [CALC]		Prepared: 06/22/17 13:02				Analyst: mnq
Nitrogen, Total	2.8		0.20	mg/l	1x1	06/26/17 18:23	
Method: EPA 351.2	Batch ID: W7F1327		Prepared: 06/22/17 13:02				Analyst: mnq
TKN	ND	0.050	0.10	mg/l	1x1	06/26/17 18:23	
Method: EPA 351.2	Batch ID: W7F1468		Prepared: 06/25/17 08:09				Analyst: mnq
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	06/29/17 13:41	
Method: EPA 353.2	Batch ID: W7F1022		Prepared: 06/19/17 11:52				Analyst: AJK
NO2+NO3 as N	2.8	0.041	0.10	mg/l	1x1	06/19/17 13:29	
Method: EPA 365.1	Batch ID: W7F1112		Prepared: 06/20/17 10:53				Analyst: nat
Phosphorus as P, Total	0.0081	0.0014	0.010	mg/l	1x1	06/26/17 20:38	J
Method: EPA 365.1	Batch ID: W7F1113		Prepared: 06/20/17 10:55				Analyst: nat
Phosphorus, Dissolved	0.0069	0.0014	0.010	mg/l	1x1	06/26/17 21:03	J



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Project Manager: Arne Anselm

Sample Results

(Continued)

Sample: TMDL-CL
7F16091-06 (Water) Sampled: 06/15/17 7:40 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 06/25/17 08:09				Analyst: mnq
Dissolved Nitrogen	0.36		0.20	mg/l	1x1	06/29/17 13:41	
Method: _Various	Batch ID: [CALC]		Prepared: 06/22/17 13:02				Analyst: mnq
Nitrogen, Total	0.49		0.20	mg/l	1x1	06/26/17 18:23	
Method: EPA 351.2	Batch ID: W7F1327		Prepared: 06/22/17 13:02				Analyst: mnq
TKN	0.49	0.050	0.10	mg/l	1x1	06/26/17 18:23	
Method: EPA 351.2	Batch ID: W7F1468		Prepared: 06/25/17 08:09				Analyst: mnq
TKN, Soluble	0.36	0.050	0.10	mg/l	1x1	06/29/17 13:41	
Method: EPA 353.2	Batch ID: W7F1022		Prepared: 06/19/17 11:52				Analyst: AJK
NO2+NO3 as N	ND	0.041	0.10	mg/l	1x1	06/19/17 13:31	
Method: EPA 365.1	Batch ID: W7F1112		Prepared: 06/20/17 10:53				Analyst: nat
Phosphorus as P, Total	0.012	0.0014	0.010	mg/l	1x1	06/26/17 20:40	
Method: EPA 365.1	Batch ID: W7F1113		Prepared: 06/20/17 10:55				Analyst: nat
Phosphorus, Dissolved	0.0073	0.0014	0.010	mg/l	1x1	06/26/17 21:04	J



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Project Manager: Arne Anselm

Sample Results

(Continued)

Sample: TMDL-SA
7F16091-07 (Water) Sampled: 06/14/17 10:30 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 06/25/17 08:09				Analyst: mnq
Dissolved Nitrogen	0.93		0.20	mg/l	1x1	06/29/17 13:41	
Method: _Various	Batch ID: [CALC]		Prepared: 06/22/17 13:02				Analyst: mnq
Nitrogen, Total	1		0.20	mg/l	1x1	06/26/17 18:23	
Method: EPA 351.2	Batch ID: W7F1327		Prepared: 06/22/17 13:02				Analyst: mnq
TKN	0.070	0.050	0.10	mg/l	1x1	06/26/17 18:23	J
Method: EPA 351.2	Batch ID: W7F1468		Prepared: 06/25/17 08:09				Analyst: mnq
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	06/29/17 13:41	
Method: EPA 353.2	Batch ID: W7F1022		Prepared: 06/19/17 11:52				Analyst: AJK
NO2+NO3 as N	0.93	0.041	0.10	mg/l	1x1	06/19/17 13:33	
Method: EPA 365.1	Batch ID: W7F1112		Prepared: 06/20/17 10:53				Analyst: nat
Phosphorus as P, Total	0.012	0.0014	0.010	mg/l	1x1	06/26/17 20:41	
Method: EPA 365.1	Batch ID: W7F1113		Prepared: 06/20/17 10:55				Analyst: nat
Phosphorus, Dissolved	0.0085	0.0014	0.010	mg/l	1x1	06/26/17 21:06	J



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Project Manager: Arne Anselm

Sample Results

(Continued)

Sample: TMDL-FD
7F16091-08 (Water) Sampled: 06/14/17 12:10 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 06/25/17 08:09				Analyst: mnq
Dissolved Nitrogen	2.2		0.20	mg/l	1x1	06/29/17 13:41	
Method: _Various	Batch ID: [CALC]		Prepared: 06/22/17 13:02				Analyst: mnq
Nitrogen, Total	2.2		0.20	mg/l	1x1	06/26/17 18:23	
Method: EPA 351.2	Batch ID: W7F1327		Prepared: 06/22/17 13:02				Analyst: mnq
TKN	ND	0.050	0.10	mg/l	1x1	06/26/17 18:23	
Method: EPA 351.2	Batch ID: W7F1468		Prepared: 06/25/17 08:09				Analyst: mnq
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	06/29/17 13:41	
Method: EPA 353.2	Batch ID: W7F1022		Prepared: 06/19/17 11:52				Analyst: AJK
NO2+NO3 as N	2.2	0.041	0.10	mg/l	1x1	06/19/17 13:38	
Method: EPA 365.1	Batch ID: W7F1112		Prepared: 06/20/17 10:53				Analyst: nat
Phosphorus as P, Total	0.011	0.0014	0.010	mg/l	1x1	06/26/17 20:47	
Method: EPA 365.1	Batch ID: W7F1113		Prepared: 06/20/17 10:55				Analyst: nat
Phosphorus, Dissolved	0.0096	0.0014	0.010	mg/l	1x1	06/26/17 21:07	J



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Quality Control Results

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Analyte	Result	MDL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W7F1022 - EPA 353.2										
Blank (W7F1022-BLK1)				Prepared & Analyzed: 06/19/17						
NO2+NO3 as N	ND	0.041	mg/l							
LCS (W7F1022-BS1)				Prepared & Analyzed: 06/19/17						
NO2+NO3 as N	0.915	0.041	mg/l	1.00		92	90-110			
Matrix Spike (W7F1022-MS1)				Source: 7F19018-01						
NO2+NO3 as N	9.60	0.041	mg/l	2.00	7.55	102	90-110			
Matrix Spike (W7F1022-MS2)				Source: 7F19021-03						
NO2+NO3 as N	2.16	0.041	mg/l	2.00	0.296	93	90-110			
Matrix Spike Dup (W7F1022-MSD1)				Source: 7F19018-01						
NO2+NO3 as N	9.41	0.041	mg/l	2.00	7.55	93	90-110	2	20	
Matrix Spike Dup (W7F1022-MSD2)				Source: 7F19021-03						
NO2+NO3 as N	2.15	0.041	mg/l	2.00	0.296	93	90-110	0.5	20	
Batch: W7F1112 - EPA 365.1										
Blank (W7F1112-BLK1)				Prepared: 06/20/17 Analyzed: 06/26/17						
Phosphorus as P, Total	ND	0.0014	mg/l							
LCS (W7F1112-BS1)				Prepared: 06/20/17 Analyzed: 06/26/17						
Phosphorus as P, Total	0.0527	0.0014	mg/l	0.0500		105	90-110			
Matrix Spike (W7F1112-MS1)				Source: 7F14103-01						
Phosphorus as P, Total	0.0619	0.0014	mg/l	0.0500	0.0100	104	90-110			



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Project Manager: Arne Anselm

Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

Analyte	Result	MDL	Units	Spike Level	Source Result	%REC	Limit	RPD	Limit	Qualifier
Batch: W7F1112 - EPA 365.1 (Continued)										
Matrix Spike (W7F1112-MS2)	Source: 7F16091-01		Prepared: 06/20/17		Analyzed: 06/26/17					
Phosphorus as P, Total	0.0831	0.0014	mg/l	0.0500	0.0299	106	90-110			
Matrix Spike Dup (W7F1112-MSD1)	Source: 7F14103-01		Prepared: 06/20/17		Analyzed: 06/26/17					
Phosphorus as P, Total	0.0610	0.0014	mg/l	0.0500	0.0100	102	90-110	1	20	
Matrix Spike Dup (W7F1112-MSD2)	Source: 7F16091-01		Prepared: 06/20/17		Analyzed: 06/26/17					
Phosphorus as P, Total	0.0863	0.0014	mg/l	0.0500	0.0299	113	90-110	4	20	MS-01
Batch: W7F1113 - EPA 365.1										
Blank (W7F1113-BLK1)			Prepared: 06/20/17		Analyzed: 06/26/17					
Phosphorus, Dissolved	ND	0.0014	mg/l							
LCS (W7F1113-BS1)			Prepared: 06/20/17		Analyzed: 06/26/17					
Phosphorus, Dissolved	0.0517	0.0014	mg/l	0.0500		103	90-110			
Matrix Spike (W7F1113-MS1)	Source: 7F16091-01		Prepared: 06/20/17		Analyzed: 06/26/17					
Phosphorus, Dissolved	0.0612	0.0014	mg/l	0.0500	0.00994	103	90-110			
Matrix Spike Dup (W7F1113-MSD1)	Source: 7F16091-01		Prepared: 06/20/17		Analyzed: 06/26/17					
Phosphorus, Dissolved	0.0612	0.0014	mg/l	0.0500	0.00994	103	90-110	0	20	
Batch: W7F1327 - EPA 351.2										
Blank (W7F1327-BLK1)			Prepared: 06/22/17		Analyzed: 06/26/17					
TKN	ND	0.050	mg/l							



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Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

Analyte	Result	MDL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W7F1327 - EPA 351.2 (Continued)										
Blank (W7F1327-BLK2)				Prepared: 06/22/17 Analyzed: 06/26/17						
TKN	ND	0.050	mg/l							
LCS (W7F1327-BS1)				Prepared: 06/22/17 Analyzed: 06/26/17						
TKN	0.966	0.050	mg/l	1.00		97	90-110			
LCS (W7F1327-BS2)				Prepared: 06/22/17 Analyzed: 06/26/17						
TKN	0.957	0.050	mg/l	1.00		96	90-110			
Duplicate (W7F1327-DUP1)				Source: 7F20074-05		Prepared: 06/22/17 Analyzed: 06/26/17				
TKN	0.217	0.050	mg/l		0.212			2	10	
Matrix Spike (W7F1327-MS1)				Source: 7F20074-03		Prepared: 06/22/17 Analyzed: 06/26/17				
TKN	1.28	0.050	mg/l	1.00	0.281	99	90-110			
Matrix Spike (W7F1327-MS2)				Source: 7F20074-04		Prepared: 06/22/17 Analyzed: 06/26/17				
TKN	1.27	0.050	mg/l	1.00	0.186	108	90-110			
Matrix Spike Dup (W7F1327-MSD1)				Source: 7F20074-03		Prepared: 06/22/17 Analyzed: 06/26/17				
TKN	1.21	0.050	mg/l	1.00	0.281	93	90-110	5	10	
Matrix Spike Dup (W7F1327-MSD2)				Source: 7F20074-04		Prepared: 06/22/17 Analyzed: 06/26/17				
TKN	1.24	0.050	mg/l	1.00	0.186	106	90-110	2	10	
Batch: W7F1468 - EPA 351.2										
Blank (W7F1468-BLK1)				Prepared: 06/25/17 Analyzed: 06/29/17						
TKN, Soluble	ND	0.050	mg/l							



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study June 2017 P6040555

Reported:
07/05/2017 10:35

Project Manager: Arne Anselm

Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

Analyte	Result	MDL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W7F1468 - EPA 351.2 (Continued)										
Blank (W7F1468-BLK2)				Prepared: 06/25/17 Analyzed: 06/29/17						
TKN, Soluble	ND	0.050	mg/l							
LCS (W7F1468-BS1)				Prepared: 06/25/17 Analyzed: 06/29/17						
TKN, Soluble	0.951	0.050	mg/l	1.00		95	90-110			
LCS (W7F1468-BS2)				Prepared: 06/25/17 Analyzed: 06/29/17						
TKN, Soluble	1.04	0.050	mg/l	1.00		104	90-110			
Matrix Spike (W7F1468-MS1)				Source: 7F16091-01 Prepared: 06/25/17 Analyzed: 06/29/17						
TKN, Soluble	1.47	0.050	mg/l	1.00	0.540	93	90-110			
Matrix Spike (W7F1468-MS2)				Source: 7F16091-01 Prepared: 06/25/17 Analyzed: 06/29/17						
TKN, Soluble	1.55	0.050	mg/l	1.00	0.540	101	90-110			
Matrix Spike Dup (W7F1468-MSD1)				Source: 7F16091-01 Prepared: 06/25/17 Analyzed: 06/29/17						
TKN, Soluble	1.51	0.050	mg/l	1.00	0.540	97	90-110	2	10	
Matrix Spike Dup (W7F1468-MSD2)				Source: 7F16091-01 Prepared: 06/25/17 Analyzed: 06/29/17						
TKN, Soluble	1.51	0.050	mg/l	1.00	0.540	97	90-110	3	10	

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Project Number: TMDL Study June 2017 P6040555

Reported:
07/05/2017 10:35

Project Manager: Arne Anselm

Notes and Definitions

Item	Definition
J	Estimated conc. detected <MRL and >MDL.
MS-01	The spike recovery for this QC sample is outside of established control limits possibly due to sample matrix interference.
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Source	Sample that was matrix spiked or duplicated.
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)
MDA	Minimum Detectable Activity
NR	Not Reportable
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS 002.



Silver State Labs-Reno
1135 Financial Blvd
Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
www.ssalabs.com

July 10, 2017
Workorder **17061086**

Karin
Aquatic Bioassay & Consulting
29 North Olive St.
Ventura, CA 93001

Project: VCWPD

Dear Karin:

It is the policy of Silver State Analytical Laboratory - Reno to strictly adhere to a comprehensive Quality Assurance Plan that ensures the data presented in this report are both accurate and precise. Silver State Analytical Laboratory - Reno maintains accreditation in the State of Nevada (NV-00015) and the State of California (ELAP 2990).

The data presented in this report was obtained from the analysis of samples received under a chain of custody. Unless otherwise noted below, samples were received in good condition, properly preserved and within the hold time for the requested analyses. Any anomalies associated with the analysis of the samples have been flagged with an appropriate explanation in the Analysis Report section of the Laboratory Report.

Sincerely,

Carly Wood
Laboratory Director
1135 Financial Blvd
Reno, NV 89502



Silver State Labs-Reno
1135 Financial Blvd
Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
www.ssalabs.com

Analytical Report

Workorder#: 17061086
Date Reported: 7/10/2017

Client: Aquatic Bioassay & Consulting
Project Name: VCWPD
PO #:

Sampled By: Client

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17061086-01	TMDL-R4	06/14/2017 8:55	6/22/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	240	mg/m ²	1	AM	07/06/2017 20:54	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17061086-02	TMDL-SA	06/14/2017 10:30	6/22/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	450	mg/m ²	1	AM	07/06/2017 20:54	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17061086-03	TMDL-R3	06/14/2017 12:10	6/22/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	360	mg/m ²	1	AM	07/06/2017 20:54	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17061086-04	TMDL-R3 Dup	06/14/2017 12:10	6/22/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	220	mg/m ²	1	AM	07/06/2017 20:54	



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Reno, NV 89502
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www.ssalabs.com

Analytical Report

Workorder#: 17061086
Date Reported: 7/10/2017

Client: Aquatic Bioassay & Consulting
Project Name: VCWPD
PO #:

Sampled By: Client

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17061086-05	TMDL-CL	06/15/2017 7:40	6/22/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	22	mg/m ²	1	AM	07/06/2017 20:54	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17061086-06	TMDL-R2	06/15/2017 9:10	6/22/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	520	mg/m ²	1	AM	07/06/2017 20:54	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17061086-07	TMDL-R1	06/15/2017 11:20	6/22/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	440	mg/m ²	1	AM	07/06/2017 20:54	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17061086-08	TMDL-Est	06/15/2017 12:40	6/22/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	160	µg/L	1	AM	07/06/2017 20:54	



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Reno, NV 89502
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Analytical Report

Workorder#: 17061086
Date Reported: 7/10/2017

Client: Aquatic Bioassay & Consulting
Project Name: VCWPD
PO #:

Sampled By: Client

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17061086-09	TMDL-Est Dup	06/15/2017 12:40	6/22/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	56	µg/L	1	AM	07/06/2017 20:54	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17061086-10	SMC00027	06/13/2017 11:05	6/22/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Ash Free Dry Mass	SM 2540G	25	g/m ²	1	KL	06/29/2017 9:29	
Chlorophyll a	SM 10200 H	11	mg/m ²	1	AM	07/06/2017 20:54	

Analysis: Chlorophyll-a

Method: SM 10200 H

Batch ID: R8453

Method Blank

RunID: 8453 SeqNo 159738 Units: µg/L

Analysis Date: 7/6/2017 8:54:00 PM Analyst: AM

Analyte	Result	Rep Limit	Rep Qual
Chlorophyll a	< 1.0	1.0	

Laboratory Control Sample (LCS)

RunID: 8453 SeqNo 159739 Units: µg/L

Analysis Date: 7/6/2017 8:54:00 PM Analyst: AM

Analyte	LCS Spike Added	LCS Result	LCS % Recovery	LCSD Spike Added	LCSD Result	LCSD % Recovery	RPD	RPD Limit	Low Limit	High Limit	Qual
Chlorophyll a	1.000	1.04	104								

Laboratory Control Sample (LCS)

RunID: 8453 SeqNo 159740 Units: µg/L

Analysis Date: 7/6/2017 8:54:00 PM Analyst: AM

Analyte	LCS Spike Added	LCS Result	LCS % Recovery	LCSD Spike Added	LCSD Result	LCSD % Recovery	RPD	RPD Limit	Low Limit	High Limit	Qual
Chlorophyll a	1.000	1.04	104								

From: Aquatic Bioassay
and Consulting Labs
29 N. Olive St.
Ventura, CA 93001

Phone: (805) 643-5621
Fax: (805) 643-2930
Project ID: VCWPD

To: **Company:** Sierra Environmental
Address: 1135 Financial Blvd
Phone: Reno, NV 89502
(775) 857-2400

[illegible]

*** 2 transects dry- only collected at 9 transects**

No hard copy required

DATE: TIME:

RECEIVED BY:

DATE: TIME:

RELINQUISHED BY:

DATE: TIME:

RECEIVED BY DATE: TIME:

James Hart

06/21/17; 1323

X-Linn 6/22/17 1014

Aquatic Bioassay Consulting Laboratories

T# 175273890167249298

rev. 001 10 02

Definitions:

LCS: Laboratory Control Sample; prepared by adding a known mass of target analytes to a specified amount of de-ionized water and prepared with the batch of samples, used to calculate Accuracy (%REC).

LCSD: LCS Duplicate; used to calculate both Accuracy (%REC) and Precision (%RPD)

MBLK: Method Blank; a sample of similar matrix that is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedure, and in which no target analytes or interferences are present at concentrations that impact the analytical results for sample analyses.

MS: Matrix Spike; prepared by adding a known mass of target analytes to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available, used to calculate Accuracy (%REC)

MSD: Matrix Spike Duplicate; used to calculate both Accuracy (%REC) and Precision (%RPD)

RPD: Relative Percent Difference; comparison between sample and duplicate and/or MS and MSD.

PQL: Practical Quantitation Limit; the limit to which data is quantitated for reporting.

MDL: Method Detection Limit; the limit to which the instrument can reliably detect.

MCL: Maximum Contaminant Level; value set according to EPA guidelines.

Qualifiers:

* - Analyte exceeds Safe Drinking Water Act MCL, does not meet drinking water standards.

B - Analyte found above the PQL in associated method blank.

G - Calibration blank analyte detected above PQL.

H - Sample analyzed beyond holding time for this parameter.

J - Estimated Value; Analyte found between MDL and PQL limits.

L - Sample concentration is at least 5 times greater than spike contribution. Spike recovery criteria do not apply.

R - RPD between sample and duplicate sample outside the RPD acceptance limits.

S - Batch MS and/or MSD were outside acceptance limits, batch LCS was acceptable.

W - Sample temperature when received was out of limit as specified by method.



July 12th, 2017

Ventura County Watershed Protection District
Kelly Hahs
800 S Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

Aquatic Bioassay & Consulting Laboratories is pleased to provide you with the enclosed chlorophyll-a data report for the Ventura River Algae TMDL. Chlorophyll- a analyses are conducted under guidelines prescribed in *Standard Methods for the Examination of Water and Wastewater* (APHA, 22nd Edition), Section SM 10200 H.

Please contact me with any questions or issues you may have regarding this report.

Sincerely,

Karin Wisenbaker
Senior Biologist
(805) 643-5621 ex.17

Client: Ventura County Watershed Protection District
Project: Ventura River Algae TMDL



Chlorophyll a results from June 14th-15th, 2017



Station	Field Replicate	Number of Transects Collected	Chlorophyll a	Units
TMDL-R1	1	11	44	ug/cm2
TMDL-R2	1	11	52	ug/cm2
TMDL-R3	1	11	36	ug/cm2
TMDL-R3	2	11	22	ug/cm2
TMDL-R4	1	11	24	ug/cm2
TMDL-CL	1	11	2.2	ug/cm2
TMDL-SA	1	9	45	ug/cm2
TMDL-Est	1	NA	160	ug/L
TMDL-Est	2	NA	56	ug/L

Chain of study

From: Aquatic Bioassay and Consulting Labs. 29 N. Olive St. Ventura, CA 93001	Phone: (805) 643-5621 Fax: (805) 643-2930 Project ID: VCWPD Algae TMDL	To: Company: Aquatic Bioassay and Consulting Labs. 29 N. Olive St. Ventura, CA 93001 Phone:
---	---	--

Sample I.D. No.	Sample Date	Time	Matrix	Composite Volume/ No.	Reps	ANALYSIS									
						Chl-a									
TMDL-R4	06/14/17	0855	FW	292	1	X									
TMDL-SA	06/14/17	1030	FW	344	1	X									
TMDL-R3	06/14/17	1210	FW	370	1	X									
TMDL-R3	06/14/17	1210	FW	350	2	X									
TMDL-CL	06/15/17	0740	FW	274	1	X									
TMDL-R2	06/15/17	0910	FW	528	1	X									
TMDL-R1	06/15/17	1120	FW	590	1	X									
TMDL-Est	06/15/17	1240	FW	1000	1	X									
TMDL-Est	06/15/17	1240	FW	1000	2	X									

Special Instructions:

RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	DATE:	TIME:	RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	DATE:	TIME:
	06/15/17	1425		6/15/17	1425						



Ventura River and Tributaries Algae, Eutrophic Conditions, and Nutrients TMDL (VR Algae TMDL)

7614069

Comprehensive Monitoring Program

CHAIN-OF-CUSTODY RECORD

1 OF 1

CLIENT: Ventura County Watershed Protection District (Master Agreement WECKLABORATORY18MA01, Project P6040555)

SAMPLING EVENT: JULY 2017

SAMPLING DATE: 7/12/2017 7/13/2017

SAMPLERS: S. CASEY

GRAB SAMPLES

SAMPLE ID	DATE/TIME	FIELD FILTERED						NOTES
		Total Nitrogen, Total Phosphorus	Dissolved Nitrogen, Dissolved Phosphorus **	Nitrate + Nitrite as Nitrogen				
TMDL-Est	7/13/2017 1000	X	X	X				
TMDL-R1	↓ 0815	X	X	X				
TMDL-R2	7/12/2017 1310	X	X	X				
TMDL-R3	↓ 1120	X	X	X				
TMDL-R4	↓ 0800	X	X	X				
TMDL-CL	7/13/2017 1115	X	X	X				
TMDL-SA	7/12/2017 0945	X	X	X				
TMDL-FD		X	X	X				(Note which site)

Signature: Kelly Hays	Signature: Carlos Navarro
Print Name: KELLY HAYS	Print Name: CARLOS NAVARRO
Affiliation: VCWPD	Affiliation: WECK LABS
Date/Time Received: 7/14/17 1135	Date/Time Received: 7/14/17 1135
Date/Time Relinquished: 7/14/17 1135	Date/Time Relinquished: 7/14/17 1135
Signature: Carlos Navarro	Signature: James Gorez
Print Name: Carlos Navarro	Print Name: James Gorez
Affiliation: WECK LABS	Affiliation: Weck Labs
Date/Time Received: 7/14/17 310	Date/Time Received: 7/14/17 1510
Date/Time Relinquished: 7/14/17 310	Date/Time Relinquished: 7/14/17 1510

Miscellaneous Notes (Hazardous Materials, Quick turn-around time, etc.):

Dissolved samples were field filtered

1.7c

Work Orders: 7G14069

Report Date: 8/28/2017

Received Date: 7/14/2017

Project: TMDL Study July 2017 P6040555

Turnaround Time: Normal

Phones: (805) 654-3942

Fax: (805) 654-3350

P.O. #: WECKLABORATORYFY1
8MA01

Billing Code:

Attn: Arne Anselm

Client: Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

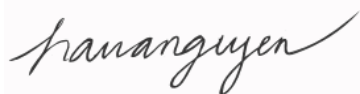
DoD-ELAP #L2457 • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO 17025 #L2457.01 •
LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Arne Anselm,

Enclosed are the results of analyses for samples received 7/14/17 with the Chain-of-Custody document. The samples were received in good condition, at 1.7 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:



Hai Van Nguyen
Senior Project Manager





WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

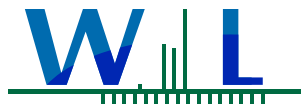
Project Number: TMDL Study July 2017 P6040555

Reported:
08/28/2017 09:42

Project Manager: Arne Anselm

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
TMDL-Est	S. Casey	7G14069-01	Water	07/13/17 10:00	
TMDL-R1	S. Casey	7G14069-02	Water	07/13/17 08:15	
TMDL-R2	S. Casey	7G14069-03	Water	07/12/17 13:10	
TMDL-R3	S. Casey	7G14069-04	Water	07/12/17 11:20	
TMDL-R4	S. Casey	7G14069-05	Water	07/12/17 08:00	
TMDL-CL	S. Casey	7G14069-06	Water	07/13/17 11:15	
TMDL-SA	S. Casey	7G14069-07	Water	07/12/17 09:45	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study July 2017 P6040555

Reported:
08/28/2017 09:42

Project Manager: Arne Anselm

Sample Results

Sample: TMDL-Est
7G14069-01 (Water) Sampled: 07/13/17 10:00 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 0.42		Prepared: 07/24/17 10:16 0.20	mg/l	1x1	07/25/17 17:28	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 0.53		Prepared: 07/24/17 10:16 0.20	mg/l	1x1	07/24/17 15:17	Analyst: mnq
Method: EPA 351.2 TKN	Batch ID: W7G0894 0.53	0.050	Prepared: 07/16/17 09:15 0.10	mg/l	1x1	07/19/17 15:31	Analyst: mnq
Method: EPA 351.2 TKN, Soluble	Batch ID: W7G1332 0.42	0.050	Prepared: 07/23/17 08:21 0.10	mg/l	1x1	07/25/17 17:28	Analyst: mnq
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7G1357 ND	0.041	Prepared: 07/24/17 10:16 0.10	mg/l	1x1	07/24/17 15:17	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7G1021 0.050	0.0014	Prepared: 07/18/17 11:22 0.010	mg/l	1x1	07/22/17 11:57	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7G1022 0.014	0.0014	Prepared: 07/18/17 11:24 0.010	mg/l	1x1	07/22/17 11:32	Analyst: nat

Sample: TMDL-R1
7G14069-02 (Water) Sampled: 07/13/17 8:15 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 1.1		Prepared: 07/24/17 10:16 0.20	mg/l	1x1	07/25/17 17:28	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 0.91		Prepared: 07/24/17 10:16 0.20	mg/l	1x1	07/24/17 15:24	Analyst: mnq
Method: EPA 351.2 TKN	Batch ID: W7G0894 0.30	0.050	Prepared: 07/16/17 09:15 0.10	mg/l	1x1	07/19/17 15:31	Analyst: mnq
Method: EPA 351.2 TKN, Soluble	Batch ID: W7G1332 0.44	0.050	Prepared: 07/23/17 08:21 0.10	mg/l	1x1	07/25/17 17:28	Analyst: mnq
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7G1357 0.61	0.041	Prepared: 07/24/17 10:16 0.10	mg/l	1x1	07/24/17 15:24	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7G1021 0.042	0.0014	Prepared: 07/18/17 11:22 0.010	mg/l	1x1	07/22/17 12:04	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7G1022 0.030	0.0014	Prepared: 07/18/17 11:24 0.010	mg/l	1x1	07/22/17 11:34	Analyst: nat



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study July 2017 P6040555

Reported:
08/28/2017 09:42

Project Manager: Arne Anselm

Sample Results

(Continued)

Sample: TMDL-R2
7G14069-03 (Water) Sampled: 07/12/17 13:10 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 2.1		Prepared: 07/24/17 10:16 0.20	mg/l	1x1	07/25/17 17:28	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 2.1		Prepared: 07/24/17 10:16 0.20	mg/l	1x1	07/24/17 15:37	Analyst: mnq
Method: EPA 351.2 TKN	Batch ID: W7G0894 0.36	0.050	Prepared: 07/16/17 09:15 0.10	mg/l	1x1	07/19/17 15:31	Analyst: mnq
Method: EPA 351.2 TKN, Soluble	Batch ID: W7G1332 0.37	0.050	Prepared: 07/23/17 08:21 0.10	mg/l	1x1	07/25/17 17:28	Analyst: mnq
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7G1357 1.8	0.041	Prepared: 07/24/17 10:16 0.10	mg/l	1x1	07/24/17 15:37	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7G1021 0.095	0.0014	Prepared: 07/18/17 11:22 0.010	mg/l	1x1	07/22/17 12:06	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7G1022 0.080	0.0014	Prepared: 07/18/17 11:24 0.010	mg/l	1x1	07/22/17 11:35	Analyst: nat

Sample: TMDL-R3
7G14069-04 (Water) Sampled: 07/12/17 11:20 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 1.8		Prepared: 07/24/17 10:16 0.20	mg/l	1x1	07/25/17 17:28	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 1.7		Prepared: 07/24/17 10:16 0.20	mg/l	1x1	07/24/17 15:40	Analyst: mnq
Method: EPA 351.2 TKN	Batch ID: W7G0894 ND	0.050	Prepared: 07/16/17 09:15 0.10	mg/l	1x1	07/19/17 15:31	Analyst: mnq
Method: EPA 351.2 TKN, Soluble	Batch ID: W7G1332 0.079	0.050	Prepared: 07/23/17 08:21 0.10	mg/l	1x1	07/25/17 17:28	Analyst: mnq J
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7G1357 1.7	0.041	Prepared: 07/24/17 10:16 0.10	mg/l	1x1	07/24/17 15:40	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7G1021 0.013	0.0014	Prepared: 07/18/17 11:22 0.010	mg/l	1x1	07/22/17 12:07	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7G1022 0.011	0.0014	Prepared: 07/18/17 11:24 0.010	mg/l	1x1	07/22/17 11:37	Analyst: nat



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Ventura County Watershed Protection District
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Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study July 2017 P6040555

Reported:
08/28/2017 09:42

Project Manager: Arne Anselm

Sample Results

(Continued)

Sample: TMDL-R4
7G14069-05 (Water) Sampled: 07/12/17 8:00 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 2.3		Prepared: 07/24/17 10:16 0.20	mg/l	1x1	07/25/17 17:28	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 2.3		Prepared: 07/24/17 10:16 0.20	mg/l	1x1	07/24/17 15:42	Analyst: mnq
Method: EPA 351.2 TKN	Batch ID: W7G0894 ND	0.050	Prepared: 07/16/17 09:15 0.10	mg/l	1x1	07/19/17 15:31	Analyst: mnq
Method: EPA 351.2 TKN, Soluble	Batch ID: W7G1332 ND	0.050	Prepared: 07/23/17 08:21 0.10	mg/l	1x1	07/25/17 17:28	Analyst: mnq
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7G1357 2.3	0.041	Prepared: 07/24/17 10:16 0.10	mg/l	1x1	07/24/17 15:42	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7G1021 0.0088	0.0014	Prepared: 07/18/17 11:22 0.010	mg/l	1x1	07/22/17 12:08	Analyst: nat J
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7G1022 0.0083	0.0014	Prepared: 07/18/17 11:24 0.010	mg/l	1x1	07/22/17 11:38	Analyst: nat J

Sample: TMDL-CL
7G14069-06 (Water) Sampled: 07/13/17 11:15 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 0.66		Prepared: 07/24/17 10:16 0.20	mg/l	1x1	07/25/17 17:28	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 0.62		Prepared: 07/24/17 10:16 0.20	mg/l	1x1	07/24/17 15:44	Analyst: mnq
Method: EPA 351.2 TKN	Batch ID: W7G0894 0.58	0.050	Prepared: 07/16/17 09:15 0.10	mg/l	1x1	07/19/17 15:31	Analyst: mnq
Method: EPA 351.2 TKN, Soluble	Batch ID: W7G1332 0.61	0.050	Prepared: 07/23/17 08:21 0.10	mg/l	1x1	07/25/17 17:28	Analyst: mnq
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7G1357 0.047	0.041	Prepared: 07/24/17 10:16 0.10	mg/l	1x1	07/24/17 15:44	Analyst: AJK J
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7G1021 0.017	0.0014	Prepared: 07/18/17 11:22 0.010	mg/l	1x1	07/22/17 12:10	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7G1022 0.0085	0.0014	Prepared: 07/18/17 11:24 0.010	mg/l	1x1	07/22/17 11:40	Analyst: nat J



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FINAL REPORT

Project Number: TMDL Study July 2017 P6040555

Reported:
08/28/2017 09:42

Project Manager: Arne Anselm

Sample Results

(Continued)

Sample: TMDL-SA
7G14069-07 (Water) Sampled: 07/12/17 9:45 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 07/24/17 10:16				Analyst: mnq
Dissolved Nitrogen	1.1		0.20	mg/l	1x1	07/25/17 17:28	
Method: _Various	Batch ID: [CALC]		Prepared: 07/24/17 10:16				Analyst: mnq
Nitrogen, Total	1.3		0.20	mg/l	1x1	07/24/17 15:47	
Method: EPA 351.2	Batch ID: W7G0894		Prepared: 07/16/17 09:15				Analyst: mnq
TKN	0.14	0.050	0.10	mg/l	1x1	07/19/17 15:31	
Method: EPA 351.2	Batch ID: W7G1332		Prepared: 07/23/17 08:21				Analyst: mnq
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	07/25/17 17:28	
Method: EPA 353.2	Batch ID: W7G1357		Prepared: 07/24/17 10:16				Analyst: AJK
NO2+NO3 as N	1.1	0.041	0.10	mg/l	1x1	07/24/17 15:47	
Method: EPA 365.1	Batch ID: W7G1021		Prepared: 07/18/17 11:22				Analyst: nat
Phosphorus as P, Total	0.023	0.0014	0.010	mg/l	1x1	07/22/17 12:11	
Method: EPA 365.1	Batch ID: W7G1022		Prepared: 07/18/17 11:24				Analyst: nat
Phosphorus, Dissolved	0.017	0.0014	0.010	mg/l	1x1	07/22/17 11:41	



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08/28/2017 09:42

Project Manager: Arne Anselm

Quality Control Results

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Analyte	Result	MDL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W7G0894 - EPA 351.2										
Blank (W7G0894-BLK1)				Prepared: 07/16/17 Analyzed: 07/19/17						
TKN	ND	0.050	mg/l							
Blank (W7G0894-BLK2)				Prepared: 07/16/17 Analyzed: 07/19/17						
TKN	ND	0.050	mg/l							
LCS (W7G0894-BS1)				Prepared: 07/16/17 Analyzed: 07/19/17						
TKN	0.988	0.050	mg/l	1.00		99	90-110			
LCS (W7G0894-BS2)				Prepared: 07/16/17 Analyzed: 07/19/17						
TKN	0.994	0.050	mg/l	1.00		99	90-110			
Matrix Spike (W7G0894-MS1)				Source: 7G14100-03			Prepared: 07/16/17 Analyzed: 07/19/17			
TKN	1.33	0.050	mg/l	1.00	0.271	106	90-110			
Matrix Spike (W7G0894-MS2)				Source: 7G14100-04			Prepared: 07/16/17 Analyzed: 07/19/17			
TKN	1.65	0.050	mg/l	1.00	0.609	104	90-110			
Matrix Spike Dup (W7G0894-MSD1)				Source: 7G14100-03			Prepared: 07/16/17 Analyzed: 07/19/17			
TKN	1.29	0.050	mg/l	1.00	0.271	102	90-110	3	10	
Matrix Spike Dup (W7G0894-MSD2)				Source: 7G14100-04			Prepared: 07/16/17 Analyzed: 07/19/17			
TKN	1.67	0.050	mg/l	1.00	0.609	107	90-110	2	10	
Batch: W7G1021 - EPA 365.1										
Blank (W7G1021-BLK1)				Prepared: 07/18/17 Analyzed: 07/22/17						
Phosphorus as P, Total	ND	0.0014	mg/l							
LCS (W7G1021-BS1)				Prepared: 07/18/17 Analyzed: 07/22/17						
Phosphorus as P, Total	0.0510	0.0014	mg/l	0.0500		102	90-110			
Matrix Spike (W7G1021-MS1)				Source: 7G14069-01			Prepared: 07/18/17 Analyzed: 07/22/17			
Phosphorus as P, Total	0.104	0.0014	mg/l	0.0500	0.0502	108	90-110			
Matrix Spike Dup (W7G1021-MSD1)				Source: 7G14069-01			Prepared: 07/18/17 Analyzed: 07/22/17			
Phosphorus as P, Total	0.104	0.0014	mg/l	0.0500	0.0502	108	90-110	0	20	
Batch: W7G1022 - EPA 365.1										
Blank (W7G1022-BLK1)				Prepared: 07/18/17 Analyzed: 07/22/17						
Phosphorus, Dissolved	0.00206	0.0014	mg/l							J
LCS (W7G1022-BS1)				Prepared: 07/18/17 Analyzed: 07/22/17						
Phosphorus, Dissolved	0.0549	0.0014	mg/l	0.0500		110	90-110			
Matrix Spike (W7G1022-MS1)				Source: 7G14069-01			Prepared: 07/18/17 Analyzed: 07/22/17			
Phosphorus, Dissolved	0.0687	0.0014	mg/l	0.0500	0.0145	108	90-110			
Matrix Spike Dup (W7G1022-MSD1)				Source: 7G14069-01			Prepared: 07/18/17 Analyzed: 07/22/17			
Phosphorus, Dissolved	0.0689	0.0014	mg/l	0.0500	0.0145	109	90-110	0.3	20	
Batch: W7G1332 - EPA 351.2										
Blank (W7G1332-BLK1)				Prepared: 07/23/17 Analyzed: 07/25/17						
TKN, Soluble	ND	0.050	mg/l							

Ventura County Watershed Protection District
800 South Victoria Avenue
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Project Manager: Arne Anselm

Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

Analyte	Result	MDL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W7G1332 - EPA 351.2 (Continued)										
LCS (W7G1332-BS1)				Prepared: 07/23/17 Analyzed: 07/25/17						
TKN, Soluble	1.01	0.050	mg/l	1.00		101	90-110			
Matrix Spike (W7G1332-MS1)				Source: 7G14069-02 Prepared: 07/23/17 Analyzed: 07/25/17						
TKN, Soluble	1.40	0.050	mg/l	1.00	0.442	96	90-110			
Matrix Spike Dup (W7G1332-MSD1)				Source: 7G14069-02 Prepared: 07/23/17 Analyzed: 07/25/17						
TKN, Soluble	1.34	0.050	mg/l	1.00	0.442	90	90-110	4	10	
Batch: W7G1357 - EPA 353.2										
Blank (W7G1357-BLK1)				Prepared & Analyzed: 07/24/17						
NO2+NO3 as N	ND	0.041	mg/l							
LCS (W7G1357-BS1)				Prepared & Analyzed: 07/24/17						
NO2+NO3 as N	1.06	0.041	mg/l	1.00		106	90-110			
Matrix Spike (W7G1357-MS1)				Source: 7G14069-01 Prepared & Analyzed: 07/24/17						
NO2+NO3 as N	2.02	0.041	mg/l	2.00	ND	101	90-110			
Matrix Spike (W7G1357-MS2)				Source: 7G14069-02 Prepared & Analyzed: 07/24/17						
NO2+NO3 as N	2.56	0.041	mg/l	2.00	0.612	97	90-110			
Matrix Spike Dup (W7G1357-MSD1)				Source: 7G14069-01 Prepared & Analyzed: 07/24/17						
NO2+NO3 as N	2.07	0.041	mg/l	2.00	ND	103	90-110	3	20	
Matrix Spike Dup (W7G1357-MSD2)				Source: 7G14069-02 Prepared & Analyzed: 07/24/17						
NO2+NO3 as N	2.57	0.041	mg/l	2.00	0.612	98	90-110	0.6	20	

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Project Number: TMDL Study July 2017 P6040555

Reported:
08/28/2017 09:42

Project Manager: Arne Anselm

Notes and Definitions

Item	Definition
J	Estimated conc. detected <MRL and >MDL.
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Source	Sample that was matrix spiked or duplicated.
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)
MDA	Minimum Detectable Activity
NR	Not Reportable
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.
An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)
All results are expressed on wet weight basis unless otherwise specified.
All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS 002.



Silver State Labs-Reno
1135 Financial Blvd
Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
www.ssalabs.com

August 08, 2017
Workorder 17071101

Karin
Aquatic Bioassay & Consulting
29 North Olive St.
Ventura, CA 93001

Project: VCWPD TMDL

Dear Karin:

It is the policy of Silver State Analytical Laboratory - Reno to strictly adhere to a comprehensive Quality Assurance Plan that ensures the data presented in this report are both accurate and precise. Silver State Analytical Laboratory - Reno maintains accreditation in the State of Nevada (NV-00015) and the State of California (ELAP 2990).

The data presented in this report was obtained from the analysis of samples received under a chain of custody. Unless otherwise noted below, samples were received in good condition, properly preserved and within the hold time for the requested analyses. Any anomalies associated with the analysis of the samples have been flagged with an appropriate explanation in the Analysis Report section of the Laboratory Report.

Sincerely,

Carly Wood
Laboratory Director
1135 Financial Blvd
Reno, NV 89502



Silver State Labs-Reno
1135 Financial Blvd
Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
www.ssalabs.com

Analytical Report

Workorder#: 17071101
Date Reported: 8/8/2017

Client: Aquatic Bioassay & Consulting
Project Name: VCWPD TMDL
PO #:

Sampled By: client

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17071101-01	TMDL-R4	07/12/2017 8:00	7/25/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	110	mg/m ²	1	AM	08/06/2017 16:00	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17071101-02	TMDL-SA	07/12/2017 9:45	7/25/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	190	mg/m ²	1	AM	08/06/2017 16:00	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17071101-03	TMDL-R3	07/12/2017 11:20	7/25/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	100	mg/m ²	1	AM	08/06/2017 16:00	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17071101-04	TMDL-R2	07/12/2017 13:10	7/25/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	420	mg/m ²	1	AM	08/06/2017 16:00	



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Reno, NV 89502
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Analytical Report

Workorder#: 17071101
Date Reported: 8/8/2017

Client: Aquatic Bioassay & Consulting
Project Name: VCWPD TMDL
PO #:

Sampled By: client

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17071101-05	TMDL-R1	07/13/2017 8:15	7/25/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	280	mg/m ²	1	AM	08/06/2017 16:00	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17071101-06	TMDL-Est	07/13/2017 10:00	7/25/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	270	µg/L	1	AM	08/06/2017 16:00	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17071101-07	TMDL-CL	07/13/2017 11:15	7/25/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	110	mg/m ²	1	AM	08/06/2017 16:00	



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Quality Control Report

WO#: 17071101
8/8/2017

Analysis: Chlorophyll-a

Method: SM 10200 H

Batch ID: R9382

Method Blank

RunID: 9382 SeqNo 179761 Units: µg/L

Analysis Date: 8/6/2017 4:00:00 PM Analyst: AM

Analyte	Result	Rep Limit	Rep Qual
Chlorophyll a	< 1	1	

Laboratory Control Sample (LCS)

RunID: 9382 SeqNo 179762 Units: µg/L

Analysis Date: 8/6/2017 4:00:00 PM Analyst: AM

Analyte	LCS Spike Added	LCS Result	LCS % Recovery	LCSD Spike Added	LCSD Result	LCSD % Recovery	RPD	RPD Limit	Low Limit	High Limit	Qual
Chlorophyll a	1.000	1.06	106	1.000	1.1	106	0	20	70	130	

Original

From: Aquatic Bioassay
and Consulting Labs
29 N. Olive St.
Ventura, CA 93001

Phone: (805) 643-5621
Fax: (805) 643-2930
Project ID: VCWPD TMDL

To: Sierra Environmental
Company: 1135 Financial Blvd
Address: Reno, NV 89502
Phone: (775) 857-2400

Aquatic Bioassay Consulting Laboratories



Silver State Labs-Reno
1135 Financial Blvd
Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
www.ssalabs.com

Definitions & Qualifiers

WO#: 17071101
Date: 8/8/2017

Definitions:

LCS: Laboratory Control Sample; prepared by adding a known mass of target analytes to a specified amount of de-ionized water and prepared with the batch of samples, used to calculate Accuracy (%REC).

LCSD: LCS Duplicate; used to calculate both Accuracy (%REC) and Precision (%RPD)

MBLK: Method Blank; a sample of similar matrix that is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedure, and in which no target analytes or interferences are present at concentrations that impact the analytical results for sample analyses.

MS: Matrix Spike; prepared by adding a known mass of target analytes to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available, used to calculate Accuracy (%REC)

MSD: Matrix Spike Duplicate; used to calculate both Accuracy (%REC) and Precision (%RPD)

RPD: Relative Percent Difference; comparison between sample and duplicate and/or MS and MSD.

PQL: Practical Quantitation Limit; the limit to which data is quantitated for reporting.

MDL: Method Detection Limit; the limit to which the instrument can reliably detect.

MCL: Maximum Contaminant Level; value set according to EPA guidelines.

Qualifiers:

* - Analyte exceeds Safe Drinking Water Act MCL, does not meet drinking water standards.

B - Analyte found above the PQL in associated method blank.

G - Calibration blank analyte detected above PQL.

H - Sample analyzed beyond holding time for this parameter.

J - Estimated Value; Analyte found between MDL and PQL limits.

L - Sample concentration is at least 5 times greater than spike contribution. Spike recovery criteria do not apply.

R - RPD between sample and duplicate sample outside the RPD acceptance limits.

S - Batch MS and/or MSD were outside acceptance limits, batch LCS was acceptable.

W - Sample temperature when received was out of limit as specified by method.



August 9th, 2017

Ventura Country Watershed Protection District
Kelly Hahs
800 S Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

Aquatic Bioassay & Consulting Laboratories is pleased to provide you with the enclosed chlorophyll-a data report for the Ventura River Algae TMDL. Chlorophyll- a analyses are conducted under guidelines prescribed in *Standard Methods for the Examination of Water and Wastewater* (APHA, 22nd Edition), Section SM 10200 H.

Please contact me with any questions or issues you may have regarding this report.

Sincerely,

Karin Wisenbaker
Senior Biologist
(805) 643-5621 ex.17

Client: Ventura County Watershed Protection District
Project: Ventura River Algae TMDL



Chlorophyll a results from July 12th-13th, 2017



Station	Field Replicate	Number of Transects Collected	Chlorophyll a	Units
TMDL-R1	1	11	28	ug/cm2
TMDL-R2	1	11	42	ug/cm2
TMDL-R3	1	11	10	ug/cm2
TMDL-R4	1	11	11	ug/cm2
TMDL-CL	1	11	11	ug/cm2
TMDL-SA	1	4	19	ug/cm2
TMDL-Est	1	NA	270	ug/L

Chain c study

From: Aquatic Bioassay and Consulting Labs. 29 N. Olive St. Ventura, CA 93001	Phone: (805) 643-5621 Fax: (805) 643-2930 Project ID: VCWPD Algae TMDL	To: Company: Aquatic Bioassay Address: and Consulting Labs. 29 N. Olive St. Ventura, CA 93001 Phone:
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[illegible]



Special Instructions:

RELINQUISHED BY: 	DATE: TIME: 7-12-17 1515	RECEIVED BY:  7-13-17 1310	RELINQUISHED BY:	DATE: TIME:	RECEIVED BY:	DATE: TIME:
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Chain of custody

From: Aquatic Bioassay and Consulting Labs. 29 N. Olive St. Ventura, CA 93001	Phone: (805) 643-5621 Fax: (805) 643-2930 Project ID: VCWPD Algae TMDL	To: Company: Aquatic Bioassay and Consulting Labs. Address: 29 N. Olive St. Ventura, CA 93001 Phone:
---	---	--

[illegible]**Special Instructions:**

RELINQUISHED BY: 	DATE: TIME: 7-13-17 1310	RECEIVED BY: 	DATE: TIME: 7-13-17 1310	RELINQUISHED BY:	DATE: TIME:	RECEIVED BY:	DATE: TIME:
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Ventura River and Tributaries Algae, Eutrophic Conditions, and Nutrients TMDL (VR Algae TMDL)

Comprehensive Monitoring Program

7H16080

CHAIN-OF-CUSTODY RECORD

1 OF 1

CLIENT: Ventura County Watershed Protection District (Master Agreement WECKLABORATORY18MA01, Project P6040555)

SAMPLING EVENT: AUGUST 2017

SAMPLING DATE: 8/15/17 + 8/16/17

SAMPLERS: S. CASEY

GRAB SAMPLES

SAMPLE ID	DATE/TIME	** FIELD FILTERED **						NOTES
		Total Nitrogen, Total Phosphorus	Dissolved Nitrogen, Dissolved Phosphorus	Nitrate + Nitrite as Nitrogen				
TMDL-Est	8/16/17 11:30	X	X	X				
TMDL-R1	↓ 09:40	X	X	X				
TMDL-R2	8/15/17 12:15	X	X	X				
TMDL-R3	↓ 10:30	X	X	X				
TMDL-R4	↓ 07:55	X	X	X				
TMDL-CL	 	X	X	X				(dry)
TMDL-SA	8/15/17 09:40	X	X	X				
TMDL-FD	 	X	X	X				(Note which site)

Signature: Kelly Haas	Signature: Carlos Navarro
Print Name: KELLY HAAS	Print Name: CARLOS NAVARRO
Affiliation: VCWPD	Affiliation: WECK LABS
Date/Time Received: 8/16/17 1415	Date/Time Received: 8/16/17 /
Date/Time Relinquished: 8/16/17 1415	Date/Time Relinquished: 8/16/17 /

Signature: Carlos Navarro	Signature: Jaime Gomez
Print Name: Carlos Navarro	Print Name: JAIME GOMEZ
Affiliation: Weck Labs	Affiliation: Weck Labs
Date/Time Received: 8/16/17 537	Date/Time Received: 8/16/17 1737
Date/Time Relinquished: 8/16/17 537	Date/Time Relinquished: 8/16/17 1737

Miscellaneous Notes (Hazardous Materials, Quick turn-around time, etc.):

Dissolved samples were field filtered

L80

Work Orders: 7H16080

Project: TMDL Study August 2017 P6040555

Attn: Arne Anselm

Client: Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Report Date: 9/19/2017

Received Date: 8/16/2017

Turnaround Time: Normal

Phones: (805) 654-3942

Fax: (805) 654-3350

P.O. #: WECKLABORATORYFY1
8MA01

Billing Code:

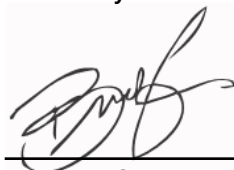
DoD-ELAP #L2457 • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO 17025 #L2457.01 •
LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Arne Anselm,

Enclosed are the results of analyses for samples received 8/16/17 with the Chain-of-Custody document. The samples were received in good condition, at 1.8 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:



Brandon Gee
Operations Manager/Senior PM





WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

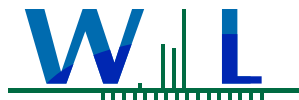
Project Number: TMDL Study August 2017 P6040555

Reported:
09/19/2017 17:01

Project Manager: Arne Anselm

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
TMDL-Est	S. Casey	7H16080-01	Water	08/16/17 11:30	
TMDL-R1	S. Casey	7H16080-02	Water	08/16/17 09:40	
TMDL-R2	S. Casey	7H16080-03	Water	08/15/17 12:15	
TMDL-R3	S. Casey	7H16080-04	Water	08/15/17 10:30	
TMDL-R4	S. Casey	7H16080-05	Water	08/15/17 07:55	
TMDL-SA	S. Casey	7H16080-06	Water	08/15/17 09:40	



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Ventura County Watershed Protection District
800 South Victoria Avenue
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FINAL REPORT

Project Number: TMDL Study August 2017 P6040555

Reported:
09/19/2017 17:01

Project Manager: Arne Anselm

Sample Results

Sample: TMDL-Est
7H16080-01 (Water) Sampled: 08/16/17 11:30 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 0.43		Prepared: 08/24/17 13:17 0.30	mg/l	1x1	08/28/17 13:57	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 0.58		Prepared: 08/22/17 13:06 0.30	mg/l	1x1	08/25/17 15:50	Analyst: mnq
Method: EPA 351.2 TKN	Batch ID: W7H1347 0.58	0.050	Prepared: 08/22/17 13:06 0.10	mg/l	1x1	08/25/17 15:50	Analyst: mnq
Method: EPA 351.2 TKN, Soluble	Batch ID: W7H1517 0.43	0.050	Prepared: 08/24/17 13:17 0.10	mg/l	1x1	08/28/17 13:57	Analyst: mnq
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7H1272 ND	0.083	Prepared: 08/21/17 14:13 0.20	mg/l	1x1	08/21/17 15:16	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7H1149 0.044	0.0014	Prepared: 08/18/17 10:51 0.010	mg/l	1x1	08/24/17 13:05	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7H1265 0.015	0.0014	Prepared: 08/21/17 13:13 0.010	mg/l	1x1	08/24/17 13:57	Analyst: nat

Sample: TMDL-R1
7H16080-02 (Water) Sampled: 08/16/17 9:40 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 1		Prepared: 08/24/17 13:17 0.30	mg/l	1x1	08/28/17 13:57	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 1		Prepared: 08/22/17 13:06 0.30	mg/l	1x1	08/25/17 15:50	Analyst: mnq
Method: EPA 351.2 TKN	Batch ID: W7H1347 0.36	0.050	Prepared: 08/22/17 13:06 0.10	mg/l	1x1	08/25/17 15:50	Analyst: mnq
Method: EPA 351.2 TKN, Soluble	Batch ID: W7H1517 0.33	0.050	Prepared: 08/24/17 13:17 0.10	mg/l	1x1	08/28/17 13:57	Analyst: mnq
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7H1272 0.67	0.083	Prepared: 08/21/17 14:13 0.20	mg/l	1x1	08/21/17 15:23	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7H1149 0.16	0.0014	Prepared: 08/18/17 10:51 0.010	mg/l	1x1	08/24/17 13:06	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7H1265 0.15	0.0014	Prepared: 08/21/17 13:13 0.010	mg/l	1x1	08/24/17 13:58	Analyst: nat



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Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study August 2017 P6040555

Reported:
09/19/2017 17:01

Project Manager: Arne Anselm

Sample Results

(Continued)

Sample: TMDL-R2
7H16080-03 (Water) Sampled: 08/15/17 12:15 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 2.1		Prepared: 08/24/17 13:17 0.30	mg/l	1x1	08/28/17 13:57	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 2.2		Prepared: 08/22/17 13:06 0.30	mg/l	1x1	08/25/17 15:50	Analyst: mnq
Method: EPA 351.2 TKN	Batch ID: W7H1347 0.48	0.050	Prepared: 08/22/17 13:06 0.10	mg/l	1x1	08/25/17 15:50	Analyst: mnq
Method: EPA 351.2 TKN, Soluble	Batch ID: W7H1517 0.38	0.050	Prepared: 08/24/17 13:17 0.10	mg/l	1x1	08/28/17 13:57	Analyst: mnq
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7H1272 1.7	0.083	Prepared: 08/21/17 14:13 0.20	mg/l	1x1	08/21/17 15:43	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7H1149 0.47	0.0056	Prepared: 08/18/17 10:51 0.040	mg/l	2x2	08/24/17 13:18	Analyst: nat M-06
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7H1265 0.22	0.0028	Prepared: 08/21/17 13:13 0.020	mg/l	2x1	08/24/17 13:52	Analyst: nat M-06

Sample: TMDL-R3
7H16080-04 (Water) Sampled: 08/15/17 10:30 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 1.2		Prepared: 08/24/17 13:17 0.30	mg/l	1x1	08/28/17 13:57	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 1.3		Prepared: 08/22/17 13:06 0.30	mg/l	1x1	08/25/17 15:50	Analyst: mnq
Method: EPA 351.2 TKN	Batch ID: W7H1347 0.22	0.050	Prepared: 08/22/17 13:06 0.10	mg/l	1x1	08/25/17 15:50	Analyst: mnq
Method: EPA 351.2 TKN, Soluble	Batch ID: W7H1517 0.13	0.050	Prepared: 08/24/17 13:17 0.10	mg/l	1x1	08/28/17 13:57	Analyst: mnq
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7H1272 1.1	0.083	Prepared: 08/21/17 14:13 0.20	mg/l	1x1	08/21/17 15:46	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7H1149 0.015	0.0014	Prepared: 08/18/17 10:51 0.010	mg/l	1x1	08/24/17 13:15	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7H1265 0.010	0.0014	Prepared: 08/21/17 13:13 0.010	mg/l	1x1	08/24/17 13:44	Analyst: nat



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Project Number: TMDL Study August 2017 P6040555

Reported:
09/19/2017 17:01

Project Manager: Arne Anselm

Sample Results

(Continued)

Sample: TMDL-R4
7H16080-05 (Water) Sampled: 08/15/17 7:55 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 1.8		Prepared: 08/24/17 13:17 0.30	mg/l	1x1	08/28/17 13:57	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 2		Prepared: 08/22/17 13:06 0.30	mg/l	1x1	08/25/17 15:50	Analyst: mnq
Method: EPA 351.2 TKN	Batch ID: W7H1347 0.21	0.050	Prepared: 08/22/17 13:06 0.10	mg/l	1x1	08/25/17 15:50	Analyst: mnq
Method: EPA 351.2 TKN, Soluble	Batch ID: W7H1517 0.073	0.050	Prepared: 08/24/17 13:17 0.10	mg/l	1x1	08/28/17 13:57	Analyst: mnq J
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7H1272 1.8	0.083	Prepared: 08/21/17 14:13 0.20	mg/l	1x1	08/21/17 15:52	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7H1149 0.0091	0.0014	Prepared: 08/18/17 10:51 0.010	mg/l	1x1	08/24/17 13:16	Analyst: nat J
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7H1265 0.0066	0.0014	Prepared: 08/21/17 13:13 0.010	mg/l	1x1	08/24/17 13:54	Analyst: nat J

Sample: TMDL-SA
7H16080-06 (Water) Sampled: 08/15/17 9:40 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 0.84		Prepared: 08/24/17 13:17 0.30	mg/l	1x1	08/28/17 13:57	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 0.9		Prepared: 08/22/17 13:06 0.30	mg/l	1x1	08/25/17 15:50	Analyst: mnq
Method: EPA 351.2 TKN	Batch ID: W7H1347 0.13	0.050	Prepared: 08/22/17 13:06 0.10	mg/l	1x1	08/25/17 15:50	Analyst: mnq
Method: EPA 351.2 TKN, Soluble	Batch ID: W7H1517 0.072	0.050	Prepared: 08/24/17 13:17 0.10	mg/l	1x1	08/28/17 13:57	Analyst: mnq J
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7H1272 0.77	0.083	Prepared: 08/21/17 14:13 0.20	mg/l	1x1	08/21/17 15:55	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7H1534 0.016	0.0014	Prepared: 08/24/17 15:30 0.010	mg/l	1x1	09/01/17 16:40	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7H1541 0.013	0.0014	Prepared: 08/24/17 16:16 0.010	mg/l	1x1	08/26/17 11:20	Analyst: nat



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Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study August 2017 P6040555

Reported:
09/19/2017 17:01

Project Manager: Arne Anselm

Quality Control Results

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Analyte	Result	MDL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W7H1149 - EPA 365.1										
Blank (W7H1149-BLK1)				Prepared: 08/18/17 Analyzed: 08/24/17						
Phosphorus as P, Total	ND	0.0014	mg/l							
LCS (W7H1149-BS1)				Prepared: 08/18/17 Analyzed: 08/24/17						
Phosphorus as P, Total	0.0511	0.0014	mg/l	0.0500		102	90-110			
Matrix Spike (W7H1149-MS1)				Source: 7H15004-02 Prepared: 08/18/17 Analyzed: 08/24/17						
Phosphorus as P, Total	0.0718	0.0014	mg/l	0.0500	0.0180	108	90-110			
Matrix Spike (W7H1149-MS2)				Source: 7H15019-03 Prepared: 08/18/17 Analyzed: 08/24/17						
Phosphorus as P, Total	0.0524	0.0014	mg/l	0.0500	ND	105	90-110			
Matrix Spike Dup (W7H1149-MSD1)				Source: 7H15004-02 Prepared: 08/18/17 Analyzed: 08/24/17						
Phosphorus as P, Total	0.0703	0.0014	mg/l	0.0500	0.0180	105	90-110	2	20	
Matrix Spike Dup (W7H1149-MSD2)				Source: 7H15019-03 Prepared: 08/18/17 Analyzed: 08/24/17						
Phosphorus as P, Total	0.0512	0.0014	mg/l	0.0500	ND	102	90-110	2	20	
Batch: W7H1265 - EPA 365.1										
Blank (W7H1265-BLK1)				Prepared: 08/21/17 Analyzed: 08/24/17						
Phosphorus, Dissolved	ND	0.0014	mg/l							
LCS (W7H1265-BS1)				Prepared: 08/21/17 Analyzed: 08/24/17						
Phosphorus, Dissolved	0.0519	0.0014	mg/l	0.0500		104	90-110			
Matrix Spike (W7H1265-MS1)				Source: 7H16076-03 Prepared: 08/21/17 Analyzed: 08/24/17						
Phosphorus, Dissolved	0.0535	0.0014	mg/l	0.0500	ND	107	90-110			
Matrix Spike Dup (W7H1265-MSD1)				Source: 7H16076-03 Prepared: 08/21/17 Analyzed: 08/24/17						
Phosphorus, Dissolved	0.0533	0.0014	mg/l	0.0500	ND	107	90-110	0.4	20	
Batch: W7H1272 - EPA 353.2										
Blank (W7H1272-BLK1)				Prepared & Analyzed: 08/21/17						
NO2+NO3 as N	ND	0.083	mg/l							
LCS (W7H1272-BS1)				Prepared & Analyzed: 08/21/17						
NO2+NO3 as N	1.03	0.083	mg/l	1.00		103	90-110			
Matrix Spike (W7H1272-MS1)				Source: 7H16080-01 Prepared & Analyzed: 08/21/17						
NO2+NO3 as N	2.02	0.083	mg/l	2.00	ND	101	90-110			
Matrix Spike (W7H1272-MS2)				Source: 7H16080-02 Prepared & Analyzed: 08/21/17						
NO2+NO3 as N	2.47	0.083	mg/l	2.00	0.674	90	90-110			
Matrix Spike Dup (W7H1272-MSD1)				Source: 7H16080-01 Prepared & Analyzed: 08/21/17						
NO2+NO3 as N	2.03	0.083	mg/l	2.00	ND	101	90-110	0.3	20	
Matrix Spike Dup (W7H1272-MSD2)				Source: 7H16080-02 Prepared & Analyzed: 08/21/17						
NO2+NO3 as N	2.50	0.083	mg/l	2.00	0.674	91	90-110	1	20	
Batch: W7H1347 - EPA 351.2										
Blank (W7H1347-BLK1)				Prepared: 08/22/17 Analyzed: 08/25/17						
TKN	ND	0.050	mg/l							



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study August 2017 P6040555

Reported:
09/19/2017 17:01

Project Manager: Arne Anselm

Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

Analyte	Result	MDL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W7H1347 - EPA 351.2 (Continued)										
LCS (W7H1347-BS1)				Prepared: 08/22/17 Analyzed: 08/25/17						
TKN	0.958	0.050	mg/l	1.00		96	90-110			
Matrix Spike (W7H1347-MS1)				Source: 7H17030-01 Prepared: 08/22/17 Analyzed: 08/25/17						
TKN	1.10	0.050	mg/l	1.00	0.142	96	90-110			
Matrix Spike Dup (W7H1347-MSD1)				Source: 7H17030-01 Prepared: 08/22/17 Analyzed: 08/25/17						
TKN	1.11	0.050	mg/l	1.00	0.142	97	90-110	1	10	
Batch: W7H1517 - EPA 351.2										
Blank (W7H1517-BLK1)				Prepared: 08/24/17 Analyzed: 08/28/17						
TKN, Soluble	ND	0.050	mg/l							
LCS (W7H1517-BS1)				Prepared: 08/24/17 Analyzed: 08/28/17						
TKN, Soluble	0.943	0.050	mg/l	1.00		94	90-110			
Matrix Spike (W7H1517-MS1)				Source: 7H16080-01 Prepared: 08/24/17 Analyzed: 08/28/17						
TKN, Soluble	1.44	0.050	mg/l	1.00	0.426	101	90-110			
Matrix Spike Dup (W7H1517-MSD1)				Source: 7H16080-01 Prepared: 08/24/17 Analyzed: 08/28/17						
TKN, Soluble	1.37	0.050	mg/l	1.00	0.426	94	90-110	5	10	
Batch: W7H1534 - EPA 365.1										
Blank (W7H1534-BLK1)				Prepared: 08/24/17 Analyzed: 08/26/17						
Phosphorus as P, Total	ND	0.0014	mg/l							
Blank (W7H1534-BLK2)				Prepared: 08/24/17 Analyzed: 09/01/17						
Phosphorus as P, Total	ND	0.0014	mg/l							
LCS (W7H1534-BS1)				Prepared: 08/24/17 Analyzed: 08/26/17						
Phosphorus as P, Total	0.0503	0.0014	mg/l	0.0500		101	90-110			
LCS (W7H1534-BS2)				Prepared: 08/24/17 Analyzed: 09/01/17						
Phosphorus as P, Total	0.0531	0.0014	mg/l	0.0500		106	90-110			
Matrix Spike (W7H1534-MS1)				Source: 7H22031-11 Prepared: 08/24/17 Analyzed: 08/26/17						
Phosphorus as P, Total	0.0483	0.0014	mg/l	0.0500	ND	97	90-110			
Matrix Spike (W7H1534-MS2)				Source: 7H22031-11 Prepared: 08/24/17 Analyzed: 09/01/17						
Phosphorus as P, Total	0.0498	0.0014	mg/l	0.0500	ND	100	90-110			
Matrix Spike Dup (W7H1534-MSD1)				Source: 7H22031-11 Prepared: 08/24/17 Analyzed: 08/26/17						
Phosphorus as P, Total	0.0492	0.0014	mg/l	0.0500	ND	98	90-110	2	20	
Matrix Spike Dup (W7H1534-MSD2)				Source: 7H22031-11 Prepared: 08/24/17 Analyzed: 09/01/17						
Phosphorus as P, Total	0.0507	0.0014	mg/l	0.0500	ND	101	90-110	2	20	
Batch: W7H1541 - EPA 365.1										
Blank (W7H1541-BLK1)				Prepared: 08/24/17 Analyzed: 08/26/17						
Phosphorus, Dissolved	ND	0.0014	mg/l							
LCS (W7H1541-BS1)				Prepared: 08/24/17 Analyzed: 08/26/17						
Phosphorus, Dissolved	0.0498	0.0014	mg/l	0.0500		100	90-110			
Matrix Spike (W7H1541-MS1)				Source: 7H23092-01 Prepared: 08/24/17 Analyzed: 08/26/17						

7H16080

Page 7 of 9



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study August 2017 P6040555

Reported:
09/19/2017 17:01

Project Manager: Arne Anselm

Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

Analyte	Result	MDL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
---------	--------	-----	-------	-------------	---------------	------	--------	-----	-------	-----------

Batch: W7H1541 - EPA 365.1 (Continued)

Matrix Spike (W7H1541-MS1)

Source: 7H23092-01

Prepared: 08/24/17 Analyzed: 08/26/17

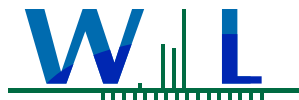
Phosphorus, Dissolved	0.260	0.0028	mg/l	0.0500	0.212	96	90-110			
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Matrix Spike Dup (W7H1541-MSD1)

Source: 7H23092-01

Prepared: 08/24/17 Analyzed: 08/26/17

Phosphorus, Dissolved	0.266	0.0028	mg/l	0.0500	0.212	108	90-110	2	20	
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WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study August 2017 P6040555

Reported:
09/19/2017 17:01

Project Manager: Arne Anselm



Notes and Definitions

Item	Definition
J	Estimated conc. detected <MRL and >MDL.
M-06	Due to the high concentration of analyte inherent in the sample, sample was diluted prior to preparation. The MDL and MRL were raised due to this dilution.
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Source	Sample that was matrix spiked or duplicated.
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)
MDA	Minimum Detectable Activity
NR	Not Reportable
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS 002.



Silver State Labs-Reno
1135 Financial Blvd
Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
www.ssalabs.com

September 06, 2017
Workorder **17081035**

Karin
Aquatic Bioassay & Consulting
29 North Olive St.
Ventura, CA 93001

Project: VCWPD TMDL

Dear Karin:

It is the policy of Silver State Analytical Laboratory - Reno to strictly adhere to a comprehensive Quality Assurance Plan that ensures the data presented in this report are both accurate and precise. Silver State Analytical Laboratory - Reno maintains accreditation in the State of Nevada (NV-00015) and the State of California (ELAP 2990).

The data presented in this report was obtained from the analysis of samples received under a chain of custody. Unless otherwise noted below, samples were received in good condition, properly preserved and within the hold time for the requested analyses. Any anomalies associated with the analysis of the samples have been flagged with an appropriate explanation in the Analysis Report section of the Laboratory Report.

Sincerely,

Carly Wood
Laboratory Director
1135 Financial Blvd
Reno, NV 89502



Silver State Labs-Reno
1135 Financial Blvd
Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
www.ssalabs.com

Analytical Report

Workorder#: 17081035
Date Reported: 9/6/2017

Client: Aquatic Bioassay & Consulting
Project Name: VCWPD TMDL
PO #:

Sampled By: Client.

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17081035-01	TMDL-R4	08/15/2017 7:55	8/22/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	100	mg/m2	1	KL	09/06/2017 11:37	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17081035-02	TMDL-R3	08/15/2017 10:30	8/22/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	200	mg/m2	1	KL	09/06/2017 11:37	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17081035-03	TMDL-R2	08/15/2017 12:15	8/22/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	320	mg/m2	1	KL	09/06/2017 11:37	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17081035-04	TMDL-R1	08/15/2017 9:40	8/22/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	410	mg/m2	1	KL	09/06/2017 11:37	



Silver State Labs-Reno
1135 Financial Blvd
Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
www.ssalabs.com

Analytical Report

Workorder#: 17081035
Date Reported: 9/6/2017

Client: Aquatic Bioassay & Consulting
Project Name: VCWPD TMDL
PO #:

Sampled By: Client.

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17081035-05	TMDL-Est	08/15/2017 11:30	8/22/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	91	µg/L	1	KL	09/06/2017 11:37	

Analysis: Chlorophyll-a

Method: SM 10200 H

Batch ID: R10273

Method Blank

RunID: 10273 SeqNo 197116 Units: µg/L

Analysis Date: 9/6/2017 11:37:00 AM Analyst: KL

Analyte	Result	Rep Limit	Rep Qual
Chlorophyll a	< 1	1	

Laboratory Control Sample (LCS)

RunID: 10273 SeqNo 197117 Units: µg/L

Analysis Date: 9/6/2017 11:37:00 AM Analyst: KL

Analyte	LCS Spike Added	LCS Result	LCS % Recovery	LCSD Spike Added	LCSD Result	LCSD % Recovery	RPD	RPD Limit	Low Limit	High Limit	Qual
Chlorophyll a	1.000	1.04	104	1.000	1.1	106	1.90	20	70	130	

Chain of Custody

To: **Company:** Silver State Analytical Laboratories
Address: 1135 Financial Blvd
Reno, NV 89502
Phone: (775) 857-2400

[illegible]

Definitions:

LCS: Laboratory Control Sample; prepared by adding a known mass of target analytes to a specified amount of de-ionized water and prepared with the batch of samples, used to calculate Accuracy (%REC).

LCSD: LCS Duplicate; used to calculate both Accuracy (%REC) and Precision (%RPD)

MBLK: Method Blank; a sample of similar matrix that is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedure, and in which no target analytes or interferences are present at concentrations that impact the analytical results for sample analyses.

MS: Matrix Spike; prepared by adding a known mass of target analytes to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available, used to calculate Accuracy (%REC)

MSD: Matrix Spike Duplicate; used to calculate both Accuracy (%REC) and Precision (%RPD)

RPD: Relative Percent Difference; comparison between sample and duplicate and/or MS and MSD.

PQL: Practical Quantitation Limit; the limit to which data is quantitated for reporting.

MDL: Method Detection Limit; the limit to which the instrument can reliably detect.

MCL: Maximum Contaminant Level; value set according to EPA guidelines.

Qualifiers:

* - Analyte exceeds Safe Drinking Water Act MCL, does not meet drinking water standards.

B - Analyte found above the PQL in associated method blank.

G - Calibration blank analyte detected above PQL.

H - Sample analyzed beyond holding time for this parameter.

J - Estimated Value; Analyte found between MDL and PQL limits.

L - Sample concentration is at least 5 times greater than spike contribution. Spike recovery criteria do not apply.

R - RPD between sample and duplicate sample outside the RPD acceptance limits.

S - Batch MS and/or MSD were outside acceptance limits, batch LCS was acceptable.

W - Sample temperature when received was out of limit as specified by method.



September 7th, 2017

Ventura Country Watershed Protection District
Kelly Hahs
800 S Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

Aquatic Bioassay & Consulting Laboratories is pleased to provide you with the enclosed chlorophyll-a data report for the Ventura River Algae TMDL. Chlorophyll- a analyses are conducted under guidelines prescribed in *Standard Methods for the Examination of Water and Wastewater* (APHA, 22nd Edition), Section SM 10200 H.

Please contact me with any questions or issues you may have regarding this report.

Sincerely,

Karin Wisenbaker
Senior Biologist
(805) 643-5621 ex.17

Client: Ventura Country Watershed Protection District
Project: Ventura River Algae TMDL



Chlorophyll a results from August 15th-16th, 2017



Station	Field Replicate	Number of Transects Collected	Chlorophyll a	Units
TMDL-R1	1	11	41	ug/cm2
TMDL-R2	1	11	32	ug/cm2
TMDL-R3	1	11	20	ug/cm2
TMDL-R4	1	11	10	ug/cm2
TMDL-CL	1	0	DRY	ug/cm2
TMDL-SA	1	0	DRY	ug/cm2
TMDL-Est	1	NA	91	ug/L

Chain study

From: Aquatic Bioassay and Consulting Labs. 29 N. Olive St. Ventura, CA 93001	Phone: (805) 643-5621 Fax: (805) 643-2930 Project ID: VCWPD Algae TMDL	To: Company: Aquatic Bioassay Address: and Consulting Labs. 29 N. Olive St. Phone: Ventura, CA 93001
---	---	---

[illegible]

Special Instructions:

RELINQUISHED BY: 	DATE: TIME: 8.15.17 1420	RECEIVED BY: 	DATE: TIME: 8.15.17 1420	RELINQUISHED BY:	DATE: TIME:	RECEIVED BY:	DATE: TIME:
--	--------------------------	--	--------------------------	------------------	-------------	--------------	-------------

study

To:	Company:	Aquatic Bioassay
	Address:	and Consulting Labs, 29 N. Olive St.
	Phone:	Ventura, CA 93001

ANALYSIS

[illegible]**Special Instructions:**

RELINQUISHED BY:

DATE: TIME:

RECEIVED BY:

DATE: TIME:

RELINQUISHED BY:

DATE: TIME:

RECEIVED BY:

DATE: TIME:



Ventura River and Tributaries
Algae, Eutrophic Conditions, and Nutrients TMDL
(VR Algae TMDL)

Comprehensive Monitoring Program

7107064

CHAIN-OF-CUSTODY RECORD

1 OF 1

CLIENT: Ventura County Watershed Protection District (Master Agreement WECKLABORATORYFY18MA01, Project P6040555)

SAMPLING EVENT: SEPTEMBER 2017

SAMPLING DATE: 9/5/2017 and 9/6/2017

SAMPLERS: Sean Casey and Lara Meeker

GRAB SAMPLES

SAMPLE ID	DATE/TIME	** FIELD FILTERED					NOTES
		Total Nitrogen, Total Phosphorus	Dissolved Nitrogen, Dissolved Phosphorus **	Nitrate + Nitrite as Nitrogen			
TMDL-Est	9/6/2017 11:30	X	X	X			
TMDL-R1	9/6/2017 10:10	X	X	X			
TMDL-R2	9/6/2017 8:00	X	X	X			
TMDL-R3	9/5/2017 11:20	X	X	X			
TMDL-R4	9/5/2017 8:30	X	X	X			
TMDL-SL		X	X	X			
TMDL-SA	9/5/2017 10:20	X	X	X			
TMDL-ED		X	X	X			(Note: field filtered)

Signature: Jan Mun	Signature: Carlos Navarro
Print Name: Lara Meeker	Print Name: Carlos Navarro
Affiliation: VCWPD	Affiliation: Weck Lab
Date/Time Received:	Date/Time Received: 9/7/17 10:55
Date/Time Relinquished: 9/7/2017 10:55	Date/Time Relinquished: 9/7/17 3:04
Signature:	Signature: Lester Abad
Print Name:	Print Name: Lester Abad
Affiliation:	Affiliation: Weck Lab
Date/Time Received:	Date/Time Received: 9/7/17
Date/Time Relinquished:	Date/Time Relinquished: 9/7/17 15:06 1.7C

Miscellaneous Notes (Hazardous Materials, Quick turn-around time, etc.):

Dissolved samples were field filtered

Work Orders: 7107064

Project: TMDL Study September 2017 P6040555

Attn: Kelly Hahs

Client: Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Report Date: 9/26/2017

Received Date: 9/7/2017

Turnaround Time: Normal

Phones: (805) 658-4375

Fax: (805) 654-3350

P.O. #: WECKLABORATORYFY1
8MA01

Billing Code:

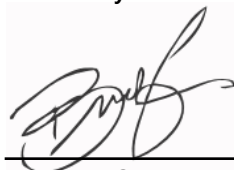
DoD-ELAP #L2457 • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO 17025 #L2457.01 •
LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Kelly Hahs,

Enclosed are the results of analyses for samples received 9/07/17 with the Chain-of-Custody document. The samples were received in good condition, at 1.7 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:



Brandon Gee
Operations Manager/Senior PM





WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study September 2017 P6040555

Reported:
09/26/2017 12:44

Project Manager: Kelly Hahs

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
TMDL-Est	S. Casey	7107064-01	Water	09/06/17 11:30	
TMDL-R1	S. Casey	7107064-02	Water	09/06/17 10:10	
TMDL-R2	S. Casey	7107064-03	Water	09/06/17 08:00	
TMDL-R3	S. Casey	7107064-04	Water	09/05/17 11:20	
TMDL-R4	S. Casey	7107064-05	Water	09/05/17 08:30	
TMDL-SA	S. Casey	7107064-06	Water	09/05/17 10:20	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study September 2017 P6040555

Reported:
09/26/2017 12:44

Project Manager: Kelly Hahs

Sample Results

Sample: TMDL-Est
7107064-01 (Water) Sampled: 09/06/17 11:30 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 09/14/17 10:48				Analyst: mnq
Dissolved Nitrogen	0.39		0.30	mg/l	1x1	09/19/17 13:05	
Method: _Various	Batch ID: [CALC]		Prepared: 09/14/17 10:48				Analyst: ymt
Nitrogen, Total	0.44		0.30	mg/l	1x1	09/14/17 13:27	
Method: EPA 351.2	Batch ID: W710486		Prepared: 09/11/17 10:30				Analyst: ymt
TKN	0.44	0.050	0.10	mg/l	1x1	09/13/17 14:45	
Method: EPA 351.2	Batch ID: W710665		Prepared: 09/13/17 09:23				Analyst: mnq
TKN, Soluble	0.39	0.050	0.10	mg/l	1x1	09/19/17 13:05	
Method: EPA 353.2	Batch ID: W710764		Prepared: 09/14/17 10:48				Analyst: AJK
NO2+NO3 as N	ND	0.083	0.20	mg/l	1x1	09/14/17 13:27	
Method: EPA 365.1	Batch ID: W710519		Prepared: 09/11/17 14:38				Analyst: nat
Phosphorus, Dissolved	0.014	0.0014	0.010	mg/l	1x1	09/15/17 13:07	
Method: EPA 365.1	Batch ID: W710520		Prepared: 09/11/17 14:40				Analyst: nat
Phosphorus as P, Total	0.047	0.0014	0.010	mg/l	1x1	09/15/17 12:15	

Sample: TMDL-R1
7107064-02 (Water) Sampled: 09/06/17 10:10 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 09/14/17 10:48				Analyst: mnq
Dissolved Nitrogen	0.99		0.30	mg/l	1x1	09/19/17 13:05	
Method: _Various	Batch ID: [CALC]		Prepared: 09/14/17 10:48				Analyst: ymt
Nitrogen, Total	0.91		0.30	mg/l	1x1	09/14/17 15:19	
Method: EPA 351.2	Batch ID: W710486		Prepared: 09/11/17 10:30				Analyst: ymt
TKN	0.34	0.050	0.10	mg/l	1x1	09/13/17 14:45	
Method: EPA 351.2	Batch ID: W710665		Prepared: 09/13/17 09:23				Analyst: mnq
TKN, Soluble	0.41	0.050	0.10	mg/l	1x1	09/19/17 13:05	
Method: EPA 353.2	Batch ID: W710764		Prepared: 09/14/17 10:48				Analyst: AJK
NO2+NO3 as N	0.57	0.083	0.20	mg/l	1x1	09/14/17 15:19	
Method: EPA 365.1	Batch ID: W710519		Prepared: 09/11/17 14:38				Analyst: nat
Phosphorus, Dissolved	0.26	0.0028	0.020	mg/l	1x2	09/15/17 13:12	
Method: EPA 365.1	Batch ID: W710520		Prepared: 09/11/17 14:40				Analyst: nat
Phosphorus as P, Total	0.29	0.0028	0.020	mg/l	1x2	09/15/17 12:31	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study September 2017 P6040555

Reported:
09/26/2017 12:44

Project Manager: Kelly Hahs

Sample Results

(Continued)

Sample: TMDL-R2
7107064-03 (Water) Sampled: 09/06/17 8:00 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 2.3		Prepared: 09/14/17 10:48 0.30	mg/l	1x1	09/19/17 13:05	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 2.1		Prepared: 09/14/17 10:48 0.30	mg/l	1x1	09/14/17 14:05	Analyst: ymt
Method: EPA 351.2 TKN	Batch ID: W710486 0.25	0.050	Prepared: 09/11/17 10:30 0.10	mg/l	1x1	09/13/17 14:45	Analyst: ymt
Method: EPA 351.2 TKN, Soluble	Batch ID: W710665 0.47	0.050	Prepared: 09/13/17 09:23 0.10	mg/l	1x1	09/19/17 13:05	Analyst: mnq
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W710764 1.8	0.083	Prepared: 09/14/17 10:48 0.20	mg/l	1x1	09/14/17 14:05	Analyst: AJK
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W710519 0.54	0.0056	Prepared: 09/11/17 14:38 0.040	mg/l	2x2	09/15/17 13:13	Analyst: nat M-06
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W710520 0.54	0.0056	Prepared: 09/11/17 14:40 0.040	mg/l	2x2	09/15/17 12:32	Analyst: nat M-06

Sample: TMDL-R3
7107064-04 (Water) Sampled: 09/05/17 11:20 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 1.1		Prepared: 09/14/17 10:48 0.30	mg/l	1x1	09/19/17 13:05	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 1		Prepared: 09/14/17 10:48 0.30	mg/l	1x1	09/14/17 14:07	Analyst: ymt
Method: EPA 351.2 TKN	Batch ID: W710486 0.12	0.050	Prepared: 09/11/17 10:30 0.10	mg/l	1x1	09/13/17 14:45	Analyst: ymt
Method: EPA 351.2 TKN, Soluble	Batch ID: W710665 0.21	0.050	Prepared: 09/13/17 09:23 0.10	mg/l	1x1	09/19/17 13:05	Analyst: mnq
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W710764 0.88	0.083	Prepared: 09/14/17 10:48 0.20	mg/l	1x1	09/14/17 14:07	Analyst: AJK
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W710519 0.015	0.0014	Prepared: 09/11/17 14:38 0.010	mg/l	1x1	09/15/17 13:09	Analyst: nat
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W710520 0.011	0.0014	Prepared: 09/11/17 14:40 0.010	mg/l	1x1	09/15/17 12:25	Analyst: nat



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study September 2017 P6040555

Reported:
09/26/2017 12:44

Project Manager: Kelly Hahs

Sample Results

(Continued)

Sample: TMDL-R4
7107064-05 (Water) Sampled: 09/05/17 8:30 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 1.6		Prepared: 09/14/17 10:48 0.30	mg/l	1x1	09/19/17 13:05	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 1.7		Prepared: 09/14/17 10:48 0.30	mg/l	1x1	09/14/17 14:09	Analyst: ymt
Method: EPA 351.2 TKN	Batch ID: W710486 0.068	0.050	Prepared: 09/11/17 10:30 0.10	mg/l	1x1	09/13/17 14:45	Analyst: ymt J
Method: EPA 351.2 TKN, Soluble	Batch ID: W710665 ND	0.050	Prepared: 09/13/17 09:23 0.10	mg/l	1x1	09/19/17 13:05	Analyst: mnq
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W710764 1.6	0.083	Prepared: 09/14/17 10:48 0.20	mg/l	1x1	09/14/17 14:09	Analyst: AJK
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W710519 0.0056	0.0014	Prepared: 09/11/17 14:38 0.010	mg/l	1x1	09/15/17 13:10	Analyst: nat J
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W710520 0.010	0.0014	Prepared: 09/11/17 14:40 0.010	mg/l	1x1	09/15/17 12:27	Analyst: nat

Sample: TMDL-SA
7107064-06 (Water) Sampled: 09/05/17 10:20 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 0.7		Prepared: 09/14/17 10:48 0.30	mg/l	1x1	09/19/17 13:05	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 0.7		Prepared: 09/14/17 10:48 0.30	mg/l	1x1	09/14/17 15:24	Analyst: ymt
Method: EPA 351.2 TKN	Batch ID: W710486 0.089	0.050	Prepared: 09/11/17 10:30 0.10	mg/l	1x1	09/13/17 14:45	Analyst: ymt J
Method: EPA 351.2 TKN, Soluble	Batch ID: W710665 0.096	0.050	Prepared: 09/13/17 09:23 0.10	mg/l	1x1	09/19/17 13:05	Analyst: mnq J
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W710764 0.61	0.083	Prepared: 09/14/17 10:48 0.20	mg/l	1x1	09/14/17 15:24	Analyst: AJK
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W710519 0.024	0.0014	Prepared: 09/11/17 14:38 0.010	mg/l	1x1	09/15/17 12:41	Analyst: nat
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W710520 0.037	0.0014	Prepared: 09/11/17 14:40 0.010	mg/l	1x1	09/15/17 12:01	Analyst: nat



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study September 2017 P6040555

Reported:
09/26/2017 12:44

Project Manager: Kelly Hahs

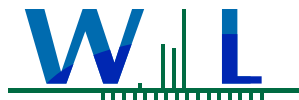
Quality Control Results

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Analyte	Result	MDL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W710486 - EPA 351.2										
Blank (W710486-BLK1)				Prepared: 09/11/17 Analyzed: 09/13/17						
TKN	ND	0.050	mg/l							
Blank (W710486-BLK2)				Prepared: 09/11/17 Analyzed: 09/13/17						
TKN	ND	0.050	mg/l							
LCS (W710486-BS1)				Prepared: 09/11/17 Analyzed: 09/13/17						
TKN	1.03	0.050	mg/l	1.00		103	90-110			
LCS (W710486-BS2)				Prepared: 09/11/17 Analyzed: 09/13/17						
TKN	0.993	0.050	mg/l	1.00		99	90-110			
Matrix Spike (W710486-MS1)				Source: 7108063-01		Prepared: 09/11/17 Analyzed: 09/13/17				
TKN	1.25	0.050	mg/l	1.00	0.266	98	90-110			
Matrix Spike (W710486-MS2)				Source: 7108063-02		Prepared: 09/11/17 Analyzed: 09/13/17				
TKN	1.24	0.050	mg/l	1.00	0.305	93	90-110			
Matrix Spike Dup (W710486-MSD1)				Source: 7108063-01		Prepared: 09/11/17 Analyzed: 09/13/17				
TKN	1.30	0.050	mg/l	1.00	0.266	103	90-110	4	10	
Matrix Spike Dup (W710486-MSD2)				Source: 7108063-02		Prepared: 09/11/17 Analyzed: 09/13/17				
TKN	1.19	0.050	mg/l	1.00	0.305	89	90-110	4	10	MS-01
Batch: W710519 - EPA 365.1										
Blank (W710519-BLK1)				Prepared: 09/11/17 Analyzed: 09/15/17						
Phosphorus, Dissolved	ND	0.0014	mg/l							
LCS (W710519-BS1)				Prepared: 09/11/17 Analyzed: 09/15/17						
Phosphorus, Dissolved	0.0514	0.0014	mg/l	0.0500		103	90-110			
Matrix Spike (W710519-MS1)				Source: 7107064-06		Prepared: 09/11/17 Analyzed: 09/15/17				
Phosphorus, Dissolved	0.0775	0.0014	mg/l	0.0500	0.0235	108	90-110			
Matrix Spike Dup (W710519-MSD1)				Source: 7107064-06		Prepared: 09/11/17 Analyzed: 09/15/17				
Phosphorus, Dissolved	0.0759	0.0014	mg/l	0.0500	0.0235	105	90-110	2	20	
Batch: W710520 - EPA 365.1										
Blank (W710520-BLK1)				Prepared: 09/11/17 Analyzed: 09/15/17						
Phosphorus as P, Total	ND	0.0014	mg/l							
LCS (W710520-BS1)				Prepared: 09/11/17 Analyzed: 09/15/17						
Phosphorus as P, Total	0.0511	0.0014	mg/l	0.0500		102	90-110			
Matrix Spike (W710520-MS1)				Source: 7107044-07		Prepared: 09/11/17 Analyzed: 09/15/17				
Phosphorus as P, Total	0.0541	0.0014	mg/l	0.0500	ND	108	90-110			
Matrix Spike (W710520-MS2)				Source: 7107064-06		Prepared: 09/11/17 Analyzed: 09/15/17				
Phosphorus as P, Total	0.0884	0.0014	mg/l	0.0500	0.0368	103	90-110			
Matrix Spike Dup (W710520-MSD1)				Source: 7107044-07		Prepared: 09/11/17 Analyzed: 09/15/17				
Phosphorus as P, Total	0.0493	0.0014	mg/l	0.0500	ND	99	90-110	9	20	
Matrix Spike Dup (W710520-MSD2)				Source: 7107064-06		Prepared: 09/11/17 Analyzed: 09/15/17				
Phosphorus as P, Total	0.0886	0.0014	mg/l	0.0500	0.0368	104	90-110	0.2	20	

7107064

Page 6 of 8



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study September 2017 P6040555

Reported:
09/26/2017 12:44

Project Manager: Kelly Hahs

Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

Analyte	Result	MDL	Units	Spike Level	Source Result	%REC	Limit	RPD	Limit	Qualifier
Batch: W710665 - EPA 351.2										
Blank (W710665-BLK1)				Prepared: 09/13/17 Analyzed: 09/19/17						
TKN, Soluble	ND	0.050	mg/l							
LCS (W710665-BS1)				Prepared: 09/13/17 Analyzed: 09/19/17						
TKN, Soluble	0.983	0.050	mg/l	1.00		98	90-110			
Matrix Spike (W710665-MS1)				Prepared: 09/13/17 Analyzed: 09/19/17						
TKN, Soluble	1.38	0.050	mg/l	1.00	0.394	99	90-110			
Matrix Spike Dup (W710665-MSD1)				Prepared: 09/13/17 Analyzed: 09/19/17						
TKN, Soluble	1.45	0.050	mg/l	1.00	0.394	106	90-110	5	10	
Batch: W710764 - EPA 353.2										
Blank (W710764-BLK1)				Prepared & Analyzed: 09/14/17						
NO2+NO3 as N	ND	0.083	mg/l							
LCS (W710764-BS1)				Prepared & Analyzed: 09/14/17						
NO2+NO3 as N	1.00	0.083	mg/l	1.00		100	90-110			
Matrix Spike (W710764-MS1)				Prepared & Analyzed: 09/14/17						
NO2+NO3 as N	1.95	0.083	mg/l	2.00	ND	97	90-110			
Matrix Spike (W710764-MS2)				Prepared & Analyzed: 09/14/17						
NO2+NO3 as N	2.37	0.083	mg/l	2.00	0.573	90	90-110			
Matrix Spike Dup (W710764-MSD1)				Prepared & Analyzed: 09/14/17						
NO2+NO3 as N	1.93	0.083	mg/l	2.00	ND	96	90-110	1	20	
Matrix Spike Dup (W710764-MSD2)				Prepared & Analyzed: 09/14/17						
NO2+NO3 as N	2.45	0.083	mg/l	2.00	0.573	94	90-110	3	20	



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800 South Victoria Avenue
Ventura, CA 93009

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Project Number: TMDL Study September 2017 P6040555

Reported:
09/26/2017 12:44

Project Manager: Kelly Hahs



Notes and Definitions

Item	Definition
J	Estimated conc. detected <MRL and >MDL.
M-06	Due to the high concentration of analyte inherent in the sample, sample was diluted prior to preparation. The MDL and MRL were raised due to this dilution.
MS-01	The spike recovery for this QC sample is outside of established control limits possibly due to sample matrix interference.
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Source	Sample that was matrix spiked or duplicated.
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)
MDA	Minimum Detectable Activity
NR	Not Reportable
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS 002.



Silver State Labs-Reno
1135 Financial Blvd
Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
www.ssalabs.com

September 20, 2017
Workorder **17090292**

Karin
Aquatic Bioassay & Consulting
29 North Olive St.
Ventura, CA 93001

Project: VCWPD TMDL

Dear Karin:

It is the policy of Silver State Analytical Laboratory - Reno to strictly adhere to a comprehensive Quality Assurance Plan that ensures the data presented in this report are both accurate and precise. Silver State Analytical Laboratory - Reno maintains accreditation in the State of Nevada (NV-00015) and the State of California (ELAP 2990).

The data presented in this report was obtained from the analysis of samples received under a chain of custody. Unless otherwise noted below, samples were received in good condition, properly preserved and within the hold time for the requested analyses. Any anomalies associated with the analysis of the samples have been flagged with an appropriate explanation in the Analysis Report section of the Laboratory Report.

Sincerely,

Carly Wood
Laboratory Director
1135 Financial Blvd
Reno, NV 89502



Silver State Labs-Reno
1135 Financial Blvd
Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
www.ssalabs.com

Analytical Report

Workorder#: 17090292
Date Reported: 9/20/2017

Client: Aquatic Bioassay & Consulting
Project Name: VCWPD TMDL
PO #:

Sampled By: Client

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17090292-01	TMDL-R4	09/05/2017 8:30	9/7/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	170	mg/m ²	1	RM	09/15/2017 15:21	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17090292-02	TMDL-R3	09/05/2017 11:20	9/7/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	160	mg/m ²	1	RM	09/15/2017 15:21	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17090292-03	TMDL-R2	09/06/2017 8:00	9/7/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	220	mg/m ²	1	RM	09/15/2017 15:21	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17090292-04	TMDL-R1	09/06/2017 10:10	9/7/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	220	mg/m ²	1	RM	09/15/2017 15:21	



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1135 Financial Blvd
Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
www.ssalabs.com

Analytical Report

Workorder#: 17090292
Date Reported: 9/20/2017

Client: Aquatic Bioassay & Consulting
Project Name: VCWPD TMDL
PO #:

Sampled By: Client

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17090292-05	TMDL-Est	09/06/2017 11:50	9/7/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chlorophyll a	SM 10200 H	19	µg/L	1	RM	09/15/2017 15:21	



Silver State Labs-Reno
1135 Financial Blvd
Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
www.ssalabs.com

Quality Control Report

WO#: 17090292
9/20/2017

Analysis: Chlorophyll-a

Method: SM 10200 H

Batch ID: R10581

Method Blank

RunID: 10581 SeqNo 203454 Units: µg/L

Analysis Date: 9/15/2017 3:21:00 PM Analyst: RM

Analyte	Result	Rep Limit	Rep Qual
Chlorophyll a	< 1	1	

Laboratory Control Sample (LCS)

RunID: 10581 SeqNo 203455 Units: µg/L

Analysis Date: 9/15/2017 3:21:00 PM Analyst: RM

Analyte	LCS Spike Added	LCS Result	LCS % Recovery	LCSD Spike Added	LCSD Result	LCSD % Recovery	RPD	RPD Limit	Low Limit	High Limit	Qual
Chlorophyll a	1.000	1.01	101	1.000	1.0	104	2.93	20	70	130	

Original

From: Aquatic Bioassay
and Consulting Labs.
29 N. Olive St.
Ventura, CA 93001

Phone: (805) 643-5621
Fax: (805) 643-2930
Project ID: VCWPD TMDL

Phone: (805) 643-5621
Fax: (805) 643-2930
Project ID: VCWPD TMDL

[illegible]

Definitions:

LCS: Laboratory Control Sample; prepared by adding a known mass of target analytes to a specified amount of de-ionized water and prepared with the batch of samples, used to calculate Accuracy (%REC).

LCSD: LCS Duplicate; used to calculate both Accuracy (%REC) and Precision (%RPD)

MBLK: Method Blank; a sample of similar matrix that is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedure, and in which no target analytes or interferences are present at concentrations that impact the analytical results for sample analyses.

MS: Matrix Spike; prepared by adding a known mass of target analytes to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available, used to calculate Accuracy (%REC)

MSD: Matrix Spike Duplicate; used to calculate both Accuracy (%REC) and Precision (%RPD)

RPD: Relative Percent Difference; comparison between sample and duplicate and/or MS and MSD.

PQL: Practical Quantitation Limit; the limit to which data is quantitated for reporting.

MDL: Method Detection Limit; the limit to which the instrument can reliably detect.

MCL: Maximum Contaminant Level; value set according to EPA guidelines.

Qualifiers:

* - Analyte exceeds Safe Drinking Water Act MCL, does not meet drinking water standards.

B - Analyte found above the PQL in associated method blank.

G - Calibration blank analyte detected above PQL.

H - Sample analyzed beyond holding time for this parameter.

J - Estimated Value; Analyte found between MDL and PQL limits.

L - Sample concentration is at least 5 times greater than spike contribution. Spike recovery criteria do not apply.

R - RPD between sample and duplicate sample outside the RPD acceptance limits.

S - Batch MS and/or MSD were outside acceptance limits, batch LCS was acceptable.

W - Sample temperature when received was out of limit as specified by method.



September 25th, 2017

Ventura County Watershed Protection District
Kelly Hahs
800 S Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

Aquatic Bioassay & Consulting Laboratories is pleased to provide you with the enclosed chlorophyll-a data report for the Ventura River Algae TMDL. Chlorophyll- a analyses are conducted under guidelines prescribed in *Standard Methods for the Examination of Water and Wastewater* (APHA, 22nd Edition), Section SM 10200 H.

Please contact me with any questions or issues you may have regarding this report.

Sincerely,

Scott Johnson
Environmental Programs
(805) 643-5621 ex.11

Client: Ventura County Watershed Protection District
Project: Ventura River Algae TMDL



Chlorophyll a results from September 5th-6th, 2017



Station	Field Replicate	Number of Transects Collected	Chlorophyll a	Units
TMDL-R1	1	11	22	ug/cm2
TMDL-R2	1	11	22	ug/cm2
TMDL-R3	1	11	16	ug/cm2
TMDL-R4	1	11	17	ug/cm2
TMDL-CL	1	0	DRY	ug/cm2
TMDL-SA	1	0	DRY	ug/cm2
TMDL-Est	1	NA	19	ug/L

Chain study

From: Aquatic Bioassay and Consulting Labs. 29 N. Olive St. Ventura, CA 93001	Phone: (805) 643-5621 Fax: (805) 643-2930 Project ID: VCWPD Algae TMDL	To: Company: Aquatic Bioassay Address: and Consulting Labs. 29 N. Olive St. Phone: Ventura, CA 93001
---	--	---

[illegible]

Special Instructions:

RELINQUISHED BY:	DATE: TIME:	RECEIVED BY:	DATE: TIME:	RELINQUISHED BY:	DATE: TIME:	RECEIVED BY:	DATE: TIME:
	9-5-17 1345		9-5-17/1345				



Chain study

From: Aquatic Bioassay and Consulting Labs. 29 N. Olive St. Ventura, CA 93001	Phone: (805) 643-5621 Fax: (805) 643-2930 Project ID: VCWPD Algae TMDL	To: Company: Aquatic Bioassay Address: and Consulting Labs. 29 N. Olive St. Ventura, CA 93001 Phone:
---	---	--

ANALYSIS

[illegible]

Special Instructions:

RELINQUISHED BY:	DATE: TIME:	RECEIVED BY:	DATE: TIME:	RELINQUISHED BY:	DATE: TIME:	RECEIVED BY:	DATE: TIME:
	9.6.17 1320		9.6.17 1320				



Ventura River and Tributaries
Algae, Eutrophic Conditions, and Nutrients TMDL
(VR Algae TMDL)

Comprehensive Monitoring Program

703116

CHAIN-OF-CUSTODY RECORD

1 OF 1

CLIENT: Ventura County Watershed Protection District (Master Agreement WECKLABORATORYFY18MA01, Project P6040555)

SAMPLING EVENT: OCTOBER 2017

SAMPLING DATE: 10/3/2017

SAMPLERS: S. CASEY

GRAB SAMPLES

SAMPLE ID	DATE/TIME	Total Nitrogen, Total Phosphorus		Dissolved Nitrogen, Dissolved Phosphorus **	Nitrate + Nitrite as Nitrogen					** FIELD FILTERED
TMDL-Est	10/3/17 1215	X	X	X						
TMDL-R1	↓ 1130	X	X	X						
TMDL-R2	1015	X	X	X						
TMDL-R3	0915	X	X	X						
TMDL-R4	↓ 0745	X	X	X						
TMDL-CL		X	X	X						
TMDL-SA	10/3/17 0830	X	X	X						
TMDL- FD R3-2	↓ 0915	X	X	X						HALF TO BE FILTERED IN LAB (Note which site)

Signature: <i>Kelly Haas</i>	Signature: <i>Carlos Navarro</i>
Print Name: KELLY HAAS	Print Name: CARLOS NAVARRO
Affiliation: VCWPD	Affiliation: WECK LABS
Date/Time Received: 10/3/17 1400	Date/Time Received: 10/3/17 1400
Date/Time Relinquished: 10/3/17 1400	Date/Time Relinquished: 10/3/17 1400

Signature: <i>Carlos Navarro</i>	Signature: <i>Angela Dominguez</i>
Print Name: Carlos Navarro	Print Name: Angela Dominguez
Affiliation: Weck Labs	Affiliation: Weck
Date/Time Received: 10/3/17 508	Date/Time Received: 10/3/17 18:08
Date/Time Relinquished: 10/3/17 508	Date/Time Relinquished: 10/3/17 18:08

Miscellaneous Notes (Hazardous Materials, Quick turn-around time, etc.):

R3-2 is to be lab filtered

Dissolved samples were field filtered

Work Orders: 7J03116

Project: TMDL Study October 2017 P6040555

Attn: Kelly Hahs

Client: Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Report Date: 10/25/2017

Received Date: 10/3/2017

Turnaround Time: Normal

Phones: (805) 658-4375

Fax: (805) 654-3350

P.O. #: WECKLABORATORYFY1
8MA01

Billing Code:

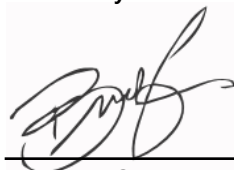
DoD-ELAP #L2457 • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO 17025 #L2457.01 •
LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Kelly Hahs,

Enclosed are the results of analyses for samples received 10/03/17 with the Chain-of-Custody document. The samples were received in good condition, at 2.3 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:



Brandon Gee
Operations Manager/Senior PM





WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study October 2017 P6040555

Reported:
10/25/2017 11:38

Project Manager: Kelly Hahs

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
TMDL-Est	S. Casey	7J03116-01	Water	10/03/17 12:15	
TMDL-R1	S. Casey	7J03116-02	Water	10/03/17 11:30	
TMDL-R2	S. Casey	7J03116-03	Water	10/03/17 10:15	
TMDL-R3	S. Casey	7J03116-04	Water	10/03/17 09:15	
TMDL-R4	S. Casey	7J03116-05	Water	10/03/17 07:45	
TMDL-SA	S. Casey	7J03116-06	Water	10/03/17 08:30	
TMDL-R3-2		7J03116-07	Water	10/03/17 09:15	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study October 2017 P6040555

Reported:
10/25/2017 11:38

Project Manager: Kelly Hahs

Sample Results

Sample: TMDL-Est
7J03116-01 (Water)
Sampled: 10/03/17 12:15 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 0.38		Prepared: 10/12/17 09:36 0.30	mg/l	1x1	10/20/17 11:37	Analyst: ymt
Method: _Various Nitrogen, Total	Batch ID: [CALC] 0.41		Prepared: 10/12/17 09:36 0.30	mg/l	1x1	10/12/17 12:38	Analyst: ymt
Method: EPA 351.2 TKN	Batch ID: W7J0262 0.41	0.050	Prepared: 10/05/17 09:46 0.10	mg/l	1x1	10/10/17 13:11	Analyst: ymt
Method: EPA 351.2 TKN, Soluble	Batch ID: W7J0420 0.38	0.050	Prepared: 10/08/17 09:16 0.10	mg/l	1x1	10/20/17 11:37	Analyst: ymt
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7J0687 ND	0.083	Prepared: 10/12/17 09:36 0.20	mg/l	1x1	10/12/17 12:38	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7J0286 0.046	0.0014	Prepared: 10/05/17 11:54 0.010	mg/l	1x1	10/09/17 15:55	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7J0289 0.020	0.0014	Prepared: 10/05/17 11:55 0.010	mg/l	1x1	10/09/17 16:17	Analyst: nat

Sample: TMDL-R1
7J03116-02 (Water)
Sampled: 10/03/17 11:30 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 1.6		Prepared: 10/12/17 09:36 0.30	mg/l	1x1	10/20/17 11:37	Analyst: ymt
Method: _Various Nitrogen, Total	Batch ID: [CALC] 1.7		Prepared: 10/12/17 09:36 0.30	mg/l	1x1	10/12/17 12:39	Analyst: ymt
Method: EPA 351.2 TKN	Batch ID: W7J0262 0.42	0.050	Prepared: 10/05/17 09:46 0.10	mg/l	1x1	10/10/17 13:11	Analyst: ymt
Method: EPA 351.2 TKN, Soluble	Batch ID: W7J0420 0.39	0.050	Prepared: 10/08/17 09:16 0.10	mg/l	1x1	10/20/17 11:37	Analyst: ymt
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7J0687 1.2	0.083	Prepared: 10/12/17 09:36 0.20	mg/l	1x1	10/12/17 12:39	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7J0286 0.24	0.0028	Prepared: 10/05/17 11:54 0.020	mg/l	1x2	10/09/17 16:09	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7J0289 0.22	0.0028	Prepared: 10/05/17 11:55 0.020	mg/l	1x2	10/09/17 16:31	Analyst: nat



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Ventura County Watershed Protection District
800 South Victoria Avenue
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FINAL REPORT

Project Number: TMDL Study October 2017 P6040555

Reported:
10/25/2017 11:38

Project Manager: Kelly Hahs

Sample Results

(Continued)

Sample: TMDL-R2
7J03116-03 (Water) Sampled: 10/03/17 10:15 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 4		Prepared: 10/12/17 09:36 0.30	mg/l	1x1	10/20/17 11:37	Analyst: ymt
Method: _Various Nitrogen, Total	Batch ID: [CALC] 3.8		Prepared: 10/12/17 09:36 0.30	mg/l	1x1	10/12/17 12:41	Analyst: ymt
Method: EPA 351.2 TKN	Batch ID: W7J0262 0.20	0.050	Prepared: 10/05/17 09:46 0.10	mg/l	1x1	10/10/17 13:11	Analyst: ymt A-01
Method: EPA 351.2 TKN, Soluble	Batch ID: W7J0420 0.40	0.050	Prepared: 10/08/17 09:16 0.10	mg/l	1x1	10/20/17 11:37	Analyst: ymt A-01
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7J0687 3.6	0.083	Prepared: 10/12/17 09:36 0.20	mg/l	1x1	10/12/17 12:41	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7J0286 1.0	0.014	Prepared: 10/05/17 11:54 0.10	mg/l	10x1	10/09/17 16:02	Analyst: nat M-06
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7J0289 0.95	0.014	Prepared: 10/05/17 11:55 0.10	mg/l	10x1	10/09/17 16:22	Analyst: nat M-06

Sample: TMDL-R3
7J03116-04 (Water) Sampled: 10/03/17 9:15 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 0.96		Prepared: 10/12/17 09:36 0.30	mg/l	1x1	10/20/17 11:37	Analyst: ymt
Method: _Various Nitrogen, Total	Batch ID: [CALC] 1		Prepared: 10/12/17 09:36 0.30	mg/l	1x1	10/12/17 13:32	Analyst: ymt
Method: EPA 351.2 TKN	Batch ID: W7J0262 0.27	0.050	Prepared: 10/05/17 09:46 0.10	mg/l	1x1	10/10/17 13:11	Analyst: ymt
Method: EPA 351.2 TKN, Soluble	Batch ID: W7J0420 0.21	0.050	Prepared: 10/08/17 09:16 0.10	mg/l	1x1	10/20/17 11:37	Analyst: ymt
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7J0687 0.75	0.083	Prepared: 10/12/17 09:36 0.20	mg/l	1x1	10/12/17 13:32	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7J0286 0.015	0.0014	Prepared: 10/05/17 11:54 0.010	mg/l	1x1	10/09/17 16:04	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7J0289 0.014	0.0014	Prepared: 10/05/17 11:55 0.010	mg/l	1x1	10/09/17 16:27	Analyst: nat



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FINAL REPORT

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Reported:
10/25/2017 11:38

Project Manager: Kelly Hahs

Sample Results

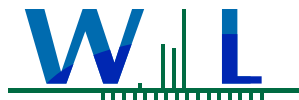
(Continued)

Sample: TMDL-R4
7J03116-05 (Water) Sampled: 10/03/17 7:45 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 1.6		Prepared: 10/12/17 09:36 0.30	mg/l	1x1	10/20/17 11:37	Analyst: ymt
Method: _Various Nitrogen, Total	Batch ID: [CALC] 2.1		Prepared: 10/12/17 09:36 0.30	mg/l	1x1	10/12/17 13:34	Analyst: ymt
Method: EPA 351.2 TKN	Batch ID: W7J0262 0.52	0.050	Prepared: 10/05/17 09:46 0.10	mg/l	1x1	10/10/17 13:11	Analyst: ymt
Method: EPA 351.2 TKN, Soluble	Batch ID: W7J0420 ND	0.050	Prepared: 10/08/17 09:16 0.10	mg/l	1x1	10/20/17 11:37	Analyst: ymt
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7J0687 1.6	0.083	Prepared: 10/12/17 09:36 0.20	mg/l	1x1	10/12/17 13:34	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7J0286 0.014	0.0014	Prepared: 10/05/17 11:54 0.010	mg/l	1x1	10/09/17 16:05	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7J0289 0.011	0.0014	Prepared: 10/05/17 11:55 0.010	mg/l	1x1	10/09/17 16:25	Analyst: nat

Sample: TMDL-SA
7J03116-06 (Water) Sampled: 10/03/17 8:30 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 1.3		Prepared: 10/12/17 09:36 0.30	mg/l	1x1	10/20/17 11:37	Analyst: ymt
Method: _Various Nitrogen, Total	Batch ID: [CALC] 1.4		Prepared: 10/12/17 09:36 0.30	mg/l	1x1	10/12/17 13:36	Analyst: ymt
Method: EPA 351.2 TKN	Batch ID: W7J0262 0.15	0.050	Prepared: 10/05/17 09:46 0.10	mg/l	1x1	10/10/17 13:11	Analyst: ymt
Method: EPA 351.2 TKN, Soluble	Batch ID: W7J0420 ND	0.050	Prepared: 10/08/17 09:16 0.10	mg/l	1x1	10/20/17 11:37	Analyst: ymt
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7J0687 1.3	0.083	Prepared: 10/12/17 09:36 0.20	mg/l	1x1	10/12/17 13:36	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7J0286 0.018	0.0014	Prepared: 10/05/17 11:54 0.010	mg/l	1x1	10/09/17 16:06	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7J0289 0.013	0.0014	Prepared: 10/05/17 11:55 0.010	mg/l	1x1	10/09/17 16:28	Analyst: nat



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FINAL REPORT

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Reported:
10/25/2017 11:38

Project Manager: Kelly Hahs

Sample Results

(Continued)

Sample: TMDL-R3-2
7J03116-07 (Water) Sampled: 10/03/17 9:15 by

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 10/12/17 09:36				Analyst: ymt
Dissolved Nitrogen	0.84		0.30	mg/l	1x1	10/20/17 11:37	
Method: _Various	Batch ID: [CALC]		Prepared: 10/12/17 09:36				Analyst: ymt
Nitrogen, Total	1.2		0.30	mg/l	1x1	10/12/17 13:38	
Method: EPA 351.2	Batch ID: W7J0262		Prepared: 10/05/17 09:46				Analyst: ymt
TKN	0.41	0.050	0.10	mg/l	1x1	10/10/17 13:11	
Method: EPA 351.2	Batch ID: W7J0420		Prepared: 10/08/17 09:16				Analyst: ymt
TKN, Soluble	0.073	0.050	0.10	mg/l	1x1	10/20/17 11:37	J
Method: EPA 353.2	Batch ID: W7J0687		Prepared: 10/12/17 09:36				Analyst: AJK
NO2+NO3 as N	0.77	0.083	0.20	mg/l	1x1	10/12/17 13:38	
Method: EPA 365.1	Batch ID: W7J0286		Prepared: 10/05/17 11:54				Analyst: nat
Phosphorus as P, Total	0.016	0.0014	0.010	mg/l	1x1	10/09/17 16:08	
Method: EPA 365.1	Batch ID: W7J0289		Prepared: 10/05/17 11:55				Analyst: nat
Phosphorus, Dissolved	0.012	0.0014	0.010	mg/l	1x1	10/09/17 16:30	



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Reported:
10/25/2017 11:38

Project Manager: Kelly Hahs

Quality Control Results

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W7J0262 - EPA 351.2											
Blank (W7J0262-BLK1)					Prepared: 10/05/17 Analyzed: 10/10/17						
TKN	ND	0.050	0.10	mg/l							
Blank (W7J0262-BLK2)					Prepared: 10/05/17 Analyzed: 10/10/17						
TKN	ND	0.050	0.10	mg/l							
LCS (W7J0262-BS1)					Prepared: 10/05/17 Analyzed: 10/10/17						
TKN	0.991	0.050	0.10	mg/l	1.00		99	90-110			
LCS (W7J0262-BS2)					Prepared: 10/05/17 Analyzed: 10/10/17						
TKN	0.983	0.050	0.10	mg/l	1.00		98	90-110			
Matrix Spike (W7J0262-MS1)					Source: 7J06078-01		Prepared: 10/05/17 Analyzed: 10/10/17				
TKN	1.25	0.050	0.10	mg/l	1.00	0.233	102	90-110			
Matrix Spike (W7J0262-MS2)					Source: 7J06078-02		Prepared: 10/05/17 Analyzed: 10/10/17				
TKN	1.27	0.050	0.10	mg/l	1.00	0.258	101	90-110			
Matrix Spike Dup (W7J0262-MSD1)					Source: 7J06078-01		Prepared: 10/05/17 Analyzed: 10/10/17				
TKN	1.27	0.050	0.10	mg/l	1.00	0.233	104	90-110	2	10	
Matrix Spike Dup (W7J0262-MSD2)					Source: 7J06078-02		Prepared: 10/05/17 Analyzed: 10/10/17				
TKN	1.24	0.050	0.10	mg/l	1.00	0.258	98	90-110	2	10	
Batch: W7J0286 - EPA 365.1											
Blank (W7J0286-BLK1)					Prepared: 10/05/17 Analyzed: 10/09/17						
Phosphorus as P, Total	ND	0.0014	0.010	mg/l							
LCS (W7J0286-BS1)					Prepared: 10/05/17 Analyzed: 10/09/17						
Phosphorus as P, Total	0.0501	0.0014	0.010	mg/l	0.0500		100	90-110			
Matrix Spike (W7J0286-MS1)					Source: 7J03116-01		Prepared: 10/05/17 Analyzed: 10/09/17				
Phosphorus as P, Total	0.0985	0.0014	0.010	mg/l	0.0500	0.0464	104	90-110			
Matrix Spike Dup (W7J0286-MSD1)					Source: 7J03116-01		Prepared: 10/05/17 Analyzed: 10/09/17				
Phosphorus as P, Total	0.0988	0.0014	0.010	mg/l	0.0500	0.0464	105	90-110	0.3	20	
Batch: W7J0289 - EPA 365.1											
Blank (W7J0289-BLK1)					Prepared: 10/05/17 Analyzed: 10/09/17						
Phosphorus, Dissolved	0.00154	0.0014	0.010	mg/l							J
LCS (W7J0289-BS1)					Prepared: 10/05/17 Analyzed: 10/09/17						
Phosphorus, Dissolved	0.0491	0.0014	0.010	mg/l	0.0500		98	90-110			
Matrix Spike (W7J0289-MS1)					Source: 7J03116-01		Prepared: 10/05/17 Analyzed: 10/09/17				
Phosphorus, Dissolved	0.0728	0.0014	0.010	mg/l	0.0500	0.0204	105	90-110			
Matrix Spike Dup (W7J0289-MSD1)					Source: 7J03116-01		Prepared: 10/05/17 Analyzed: 10/09/17				
Phosphorus, Dissolved	0.0727	0.0014	0.010	mg/l	0.0500	0.0204	105	90-110	0.1	20	
Batch: W7J0420 - EPA 351.2											
Blank (W7J0420-BLK1)					Prepared: 10/08/17 Analyzed: 10/20/17						
TKN, Soluble	ND	0.050	0.10	mg/l							



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800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study October 2017 P6040555

Reported:
10/25/2017 11:38

Project Manager: Kelly Hahs

Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W7J0420 - EPA 351.2 (Continued)											
LCS (W7J0420-BS1)					Prepared: 10/08/17 Analyzed: 10/20/17						
TKN, Soluble	0.902	0.050	0.10	mg/l	1.00		90	90-110			
Matrix Spike (W7J0420-MS1)					Source: 7J03116-01 Prepared: 10/08/17 Analyzed: 10/20/17						
TKN, Soluble	1.43	0.050	0.10	mg/l	1.00	0.381	105	90-110			
Matrix Spike Dup (W7J0420-MSD1)					Source: 7J03116-01 Prepared: 10/08/17 Analyzed: 10/20/17						
TKN, Soluble	1.43	0.050	0.10	mg/l	1.00	0.381	105	90-110	0.1	10	
Batch: W7J0687 - EPA 353.2											
Blank (W7J0687-BLK1)					Prepared & Analyzed: 10/12/17						
NO2+NO3 as N	ND	0.083	0.20	mg/l							
LCS (W7J0687-BS1)					Prepared & Analyzed: 10/12/17						
NO2+NO3 as N	1.06	0.083	0.20	mg/l	1.00		106	90-110			
Matrix Spike (W7J0687-MS1)					Source: 7J03105-01 Prepared & Analyzed: 10/12/17						
NO2+NO3 as N	2.08	0.083	0.20	mg/l	2.00	ND	104	90-110			
Matrix Spike (W7J0687-MS2)					Source: 7J03105-02 Prepared & Analyzed: 10/12/17						
NO2+NO3 as N	1.95	0.083	0.20	mg/l	2.00	ND	98	90-110			
Matrix Spike Dup (W7J0687-MSD1)					Source: 7J03105-01 Prepared & Analyzed: 10/12/17						
NO2+NO3 as N	2.07	0.083	0.20	mg/l	2.00	ND	104	90-110	0.1	20	
Matrix Spike Dup (W7J0687-MSD2)					Source: 7J03105-02 Prepared & Analyzed: 10/12/17						
NO2+NO3 as N	1.97	0.083	0.20	mg/l	2.00	ND	98	90-110	0.7	20	



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10/25/2017 11:38

Project Manager: Kelly Hahs



Notes and Definitions

Item	Definition
A-01	Suspected total result less than dissolve result, it was possibly due to different container.
J	Estimated conc. detected <MRL and >MDL.
M-06	Due to the high concentration of analyte inherent in the sample, sample was diluted prior to preparation. The MDL and MRL were raised due to this dilution.
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Source	Sample that was matrix spiked or duplicated.
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)
MDA	Minimum Detectable Activity
NR	Not Reportable
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS 002.



Ventura River and Tributaries
Algae, Eutrophic Conditions, and Nutrients TMDL
(VR Algae TMDL)
Comprehensive Monitoring Program

71201074

CHAIN-OF-CUSTODY RECORD

1 OF 1

CLIENT: Ventura County Watershed Protection District (Master Agreement WECKLABORATORY18MA01, Project P6040555)

SAMPLING EVENT: NOVEMBER 2017

SAMPLING DATE: 11/1/17

SAMPLERS: S. CASEY

GRAB SAMPLES

** FIELD FILTERED					
SAMPLE ID	DATE/TIME				NOTES
		Total Nitrogen, Total Phosphorus	Dissolved Nitrogen, Dissolved Phosphorus **	Nitrate + Nitrite as Nitrogen	
TMDL-Est	11/1/17 1200	X	X	X	
TMDL-R1	1120	X	X	X	
TMDL-R2	1020	X	X	X	
TMDL-R3	0925	X	X	X	
TMDL-R4	0745	X	X	X	
TMDL-CL		X	X	X	DRY
TMDL-SA	11/1/17 0820	X	X	X	
TMDL-FD		X	X	X	(Note which site)

Signature:	Signature:
Print Name: KELLY WALK	Print Name: CARLOS NAVARRO
Affiliation: WUSD	Affiliation: WACKLARS
Date/Time Received: 11/1/17 1405	Date/Time Received: 11/1/17 1405
Date/Time Relinquished: 11/1/17 1405	Date/Time Relinquished: 1
Signature:	Signature:
Print Name: Carlos Navarro	Print Name: Jaintone
Affiliation: WACKLARS	Affiliation: WACKLARS
Date/Time Received: 11/1/17 1405	Date/Time Received: 11/1/17 1710
Date/Time Relinquished: 11/1/17 1405	Date/Time Relinquished: 11/1/17 1710

Miscellaneous Notes (Hazardous Materials, Quick turn-around time, etc.):

Dissolved samples were field filtered

Work Orders: 7K01074

Project: TMDL Study November 2017 P6040555

Attn: Kelly Hahs

Client: Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Report Date: 11/17/2017

Received Date: 11/1/2017

Turnaround Time: Normal

Phones: (805) 658-4375

Fax: (805) 654-3350

P.O. #: WECKLABORATORYFY1
8MA01

Billing Code:

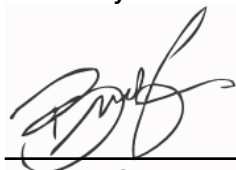
DoD-ELAP #L2457 • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO 17025 #L2457.01 •
LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Kelly Hahs,

Enclosed are the results of analyses for samples received 11/01/17 with the Chain-of-Custody document. The samples were received in good condition, at 2.3 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:



Brandon Gee
Operations Manager/Senior PM





WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study November 2017 P6040555

Reported:
11/17/2017 14:33

Project Manager: Kelly Hahs

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
TMDL-Est	S. Casey	7K01074-01	Water	11/01/17 12:00	
TMDL-R1	S. Casey	7K01074-02	Water	11/01/17 11:20	
TMDL-R2	S. Casey	7K01074-03	Water	11/01/17 10:20	
TMDL-R3	S. Casey	7K01074-04	Water	11/01/17 09:25	
TMDL-R4	S. Casey	7K01074-05	Water	11/01/17 07:45	
TMDL-SA	S. Casey	7K01074-06	Water	11/01/17 08:20	



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FINAL REPORT

Project Number: TMDL Study November 2017 P6040555

Reported:
11/17/2017 14:33

Project Manager: Kelly Hahs

Sample Results

Sample: TMDL-Est
7K01074-01 (Water)
Sampled: 11/01/17 12:00 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 0.58		Prepared: 11/08/17 10:13 0.30	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 1.3		Prepared: 11/09/17 11:05 0.30	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: EPA 351.2 TKN, Soluble	Batch ID: W7K0432 0.58	0.050	Prepared: 11/08/17 10:13 0.10	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: EPA 351.2 TKN	Batch ID: W7K0704 1.3	0.050	Prepared: 11/09/17 11:05 0.10	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7K0092 ND	0.083	Prepared: 11/02/17 09:07 0.20	mg/l	1x1	11/02/17 12:32	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7K0106 0.15	0.0014	Prepared: 11/02/17 10:01 0.010	mg/l	1x1	11/06/17 12:21	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7K0108 0.026	0.0014	Prepared: 11/02/17 10:03 0.010	mg/l	1x1	11/06/17 12:58	Analyst: nat

Sample: TMDL-R1
7K01074-02 (Water)
Sampled: 11/01/17 11:20 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 1.4		Prepared: 11/08/17 10:13 0.30	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 1.5		Prepared: 11/09/17 11:05 0.30	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: EPA 351.2 TKN, Soluble	Batch ID: W7K0432 0.47	0.050	Prepared: 11/08/17 10:13 0.10	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: EPA 351.2 TKN	Batch ID: W7K0704 0.57	0.050	Prepared: 11/09/17 11:05 0.10	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7K0092 0.90	0.083	Prepared: 11/02/17 09:07 0.20	mg/l	1x1	11/02/17 12:34	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7K0106 0.19	0.0014	Prepared: 11/02/17 10:01 0.010	mg/l	1x1	11/06/17 12:19	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7K0108 0.17	0.0014	Prepared: 11/02/17 10:03 0.010	mg/l	1x1	11/06/17 13:03	Analyst: nat



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Ventura County Watershed Protection District
800 South Victoria Avenue
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Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study November 2017 P6040555

Reported:
11/17/2017 14:33

Project Manager: Kelly Hahs

Sample Results

(Continued)

Sample: TMDL-R2
7K01074-03 (Water)
Sampled: 11/01/17 10:20 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 3.2		Prepared: 11/08/17 10:13 0.30	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 3.3		Prepared: 11/09/17 11:05 0.30	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: EPA 351.2 TKN, Soluble	Batch ID: W7K0432 0.86	0.050	Prepared: 11/08/17 10:13 0.10	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: EPA 351.2 TKN	Batch ID: W7K0704 0.91	0.050	Prepared: 11/09/17 11:05 0.10	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7K0092 2.4	0.083	Prepared: 11/02/17 09:07 0.20	mg/l	1x1	11/02/17 12:36	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7K0106 0.36	0.0028	Prepared: 11/02/17 10:01 0.020	mg/l	2x1	11/06/17 12:27	Analyst: nat M-06
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7K0108 0.33	0.0028	Prepared: 11/02/17 10:03 0.020	mg/l	2x1	11/06/17 13:04	Analyst: nat M-06

Sample: TMDL-R3
7K01074-04 (Water)
Sampled: 11/01/17 9:25 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 0.9		Prepared: 11/08/17 10:13 0.30	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 1		Prepared: 11/09/17 11:05 0.30	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: EPA 351.2 TKN, Soluble	Batch ID: W7K0432 0.18	0.050	Prepared: 11/08/17 10:13 0.10	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: EPA 351.2 TKN	Batch ID: W7K0704 0.30	0.050	Prepared: 11/09/17 11:05 0.10	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7K0092 0.73	0.083	Prepared: 11/02/17 09:07 0.20	mg/l	1x1	11/02/17 12:38	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7K0106 0.020	0.0014	Prepared: 11/02/17 10:01 0.010	mg/l	1x1	11/06/17 12:28	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7K0108 0.017	0.0014	Prepared: 11/02/17 10:03 0.010	mg/l	1x1	11/06/17 13:06	Analyst: nat



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FINAL REPORT

Project Number: TMDL Study November 2017 P6040555

Reported:
11/17/2017 14:33

Project Manager: Kelly Hahs

Sample Results

(Continued)

Sample: TMDL-R4
7K01074-05 (Water) Sampled: 11/01/17 7:45 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 1.3		Prepared: 11/08/17 10:13 0.30	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 1.4		Prepared: 11/09/17 11:05 0.30	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: EPA 351.2 TKN, Soluble	Batch ID: W7K0432 ND	0.050	Prepared: 11/08/17 10:13 0.10	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: EPA 351.2 TKN	Batch ID: W7K0704 0.16	0.050	Prepared: 11/09/17 11:05 0.10	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7K0092 1.3	0.083	Prepared: 11/02/17 09:07 0.20	mg/l	1x1	11/02/17 12:40	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7K0106 0.0075	0.0014	Prepared: 11/02/17 10:01 0.010	mg/l	1x1	11/06/17 12:29	Analyst: nat J
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7K0108 ND	0.0014	Prepared: 11/02/17 10:03 0.010	mg/l	1x1	11/06/17 13:07	Analyst: nat

Sample: TMDL-SA
7K01074-06 (Water) Sampled: 11/01/17 8:20 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 0.53		Prepared: 11/08/17 10:13 0.30	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 0.66		Prepared: 11/09/17 11:05 0.30	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: EPA 351.2 TKN, Soluble	Batch ID: W7K0432 0.16	0.050	Prepared: 11/08/17 10:13 0.10	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: EPA 351.2 TKN	Batch ID: W7K0704 0.29	0.050	Prepared: 11/09/17 11:05 0.10	mg/l	1x1	11/10/17 18:19	Analyst: mnq
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7K0092 0.37	0.083	Prepared: 11/02/17 09:07 0.20	mg/l	1x1	11/02/17 12:42	Analyst: AJK
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7K0106 0.042	0.0014	Prepared: 11/02/17 10:01 0.010	mg/l	1x1	11/06/17 12:34	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7K0108 0.020	0.0014	Prepared: 11/02/17 10:03 0.010	mg/l	1x1	11/06/17 13:11	Analyst: nat



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FINAL REPORT

Project Number: TMDL Study November 2017 P6040555

Reported:
11/17/2017 14:33

Project Manager: Kelly Hahs

Quality Control Results

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W7K0092 - EPA 353.2											
Blank (W7K0092-BLK1)					Prepared & Analyzed: 11/02/17						
NO2+NO3 as N	ND	0.083	0.20	mg/l							
LCS (W7K0092-BS1)					Prepared & Analyzed: 11/02/17						
NO2+NO3 as N	0.980	0.083	0.20	mg/l	1.00		98	90-110			
Matrix Spike (W7K0092-MS1)					Source: 7K01036-09 Prepared & Analyzed: 11/02/17						
NO2+NO3 as N	5.42	0.083	0.20	mg/l	2.00	3.45	99	90-110			
Matrix Spike (W7K0092-MS2)					Source: 7J23018-01 Prepared & Analyzed: 11/02/17						
NO2+NO3 as N	8.83	0.083	0.20	mg/l	2.00	6.80	102	90-110			
Matrix Spike Dup (W7K0092-MSD1)					Source: 7K01036-09 Prepared & Analyzed: 11/02/17						
NO2+NO3 as N	5.47	0.083	0.20	mg/l	2.00	3.45	101	90-110	0.9	20	
Matrix Spike Dup (W7K0092-MSD2)					Source: 7J23018-01 Prepared & Analyzed: 11/02/17						
NO2+NO3 as N	8.91	0.083	0.20	mg/l	2.00	6.80	106	90-110	0.9	20	
Batch: W7K0106 - EPA 365.1											
Blank (W7K0106-BLK1)					Prepared: 11/02/17 Analyzed: 11/06/17						
Phosphorus as P, Total	ND	0.0014	0.010	mg/l							
LCS (W7K0106-BS1)					Prepared: 11/02/17 Analyzed: 11/06/17						
Phosphorus as P, Total	0.0500	0.0014	0.010	mg/l	0.0500		100	90-110			
Matrix Spike (W7K0106-MS1)					Source: 7K01074-01 Prepared: 11/02/17 Analyzed: 11/06/17						
Phosphorus as P, Total	0.204	0.0028	0.020	mg/l	0.0500	0.146	116	90-110			MS-02
Matrix Spike Dup (W7K0106-MSD1)					Source: 7K01074-01 Prepared: 11/02/17 Analyzed: 11/06/17						
Phosphorus as P, Total	0.202	0.0028	0.020	mg/l	0.0500	0.146	112	90-110	1	20	MS-02
Batch: W7K0108 - EPA 365.1											
Blank (W7K0108-BLK1)					Prepared: 11/02/17 Analyzed: 11/06/17						
Phosphorus, Dissolved	0.00140	0.0014	0.010	mg/l							J
LCS (W7K0108-BS1)					Prepared: 11/02/17 Analyzed: 11/06/17						
Phosphorus, Dissolved	0.0511	0.0014	0.010	mg/l	0.0500		102	90-110			
Matrix Spike (W7K0108-MS1)					Source: 7K01074-01 Prepared: 11/02/17 Analyzed: 11/06/17						
Phosphorus, Dissolved	0.0785	0.0014	0.010	mg/l	0.0500	0.0261	105	90-110			
Matrix Spike Dup (W7K0108-MSD1)					Source: 7K01074-01 Prepared: 11/02/17 Analyzed: 11/06/17						
Phosphorus, Dissolved	0.0785	0.0014	0.010	mg/l	0.0500	0.0261	105	90-110	0	20	
Batch: W7K0432 - EPA 351.2											
Blank (W7K0432-BLK1)					Prepared: 11/08/17 Analyzed: 11/10/17						
TKN, Soluble	ND	0.050	0.10	mg/l							
LCS (W7K0432-BS1)					Prepared: 11/08/17 Analyzed: 11/10/17						
TKN, Soluble	0.962	0.050	0.10	mg/l	1.00		96	90-110			
Matrix Spike (W7K0432-MS1)					Source: 7K01074-01 Prepared: 11/08/17 Analyzed: 11/10/17						
TKN, Soluble	1.66	0.050	0.10	mg/l	1.00	0.583	108	90-110			



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Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study November 2017 P6040555

Reported:
11/17/2017 14:33

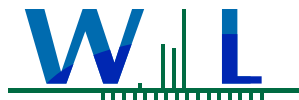
Project Manager: Kelly Hahs

Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W7K0432 - EPA 351.2 (Continued)											
Matrix Spike Dup (W7K0432-MSD1)											
Source: 7K01074-01											
Prepared: 11/08/17 Analyzed: 11/10/17											
TKN, Soluble	1.85	0.050	0.10	mg/l	1.00	0.583	127	90-110	11	10	MS-01
Batch: W7K0704 - EPA 351.2											
Blank (W7K0704-BLK1)											
Prepared: 11/09/17 Analyzed: 11/10/17											
TKN	ND	0.050	0.10	mg/l							
LCS (W7K0704-BS1)											
Prepared: 11/09/17 Analyzed: 11/10/17											
TKN	0.972	0.050	0.10	mg/l	1.00		97	90-110			
Matrix Spike (W7K0704-MS1)											
Source: 7K01074-01											
Prepared: 11/09/17 Analyzed: 11/10/17											
TKN	2.29	0.050	0.10	mg/l	1.00	1.34	95	90-110			
Matrix Spike Dup (W7K0704-MSD1)											
Source: 7K01074-01											
Prepared: 11/09/17 Analyzed: 11/10/17											
TKN	2.34	0.050	0.10	mg/l	1.00	1.34	100	90-110	2	10	



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11/17/2017 14:33

Project Manager: Kelly Hahs



Notes and Definitions

Item	Definition
J	Estimated conc. detected <MRL and >MDL.
M-06	Due to the high concentration of analyte inherent in the sample, sample was diluted prior to preparation. The MDL and MRL were raised due to this dilution.
MS-01	The spike recovery for this QC sample is outside of established control limits possibly due to sample matrix interference.
MS-02	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Source	Sample that was matrix spiked or duplicated.
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)
MDA	Minimum Detectable Activity
NR	Not Reportable
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS 002.



Ventura River and Tributaries
Algae, Eutrophic Conditions, and Nutrients TMDL
(VR Algae TMDL)
Comprehensive Monitoring Program

7/20102

CHAIN-OF-CUSTODY RECORD

1 OF 1

CLIENT: Ventura County Watershed Protection District (Master Agreement WECKLABORATORY18MA01, Project P6040555)

SAMPLING EVENT: DECEMBER 2017

SAMPLING DATE: 12/20/17

SAMPLERS: S. CASEY

GRAB SAMPLES

SAMPLE ID	DATE/TIME				NOTES
		Total Nitrogen, Total Phosphorus	Dissolved Nitrogen, Dissolved Phosphorus **	Nitrate + Nitrite as Nitrogen	
TMDL-Est	12/20/17 1100	X	X	X	
TMDL-R1	1020	X	X	X	
TMDL-R2	0930	X	X	X	
TMDL-R3	0815	X	X	X	
TMDL-R4	DAY	X	X	X	DAY
TMDL-CL	↓	X	X	X	DAY
TMDL-SA	↓	X	X	X	DAY
TMDL-FB		X	X	X	(Note which site)

Signature: Kelly Harts	Signature: Bruce Winkler
Print Name: KELLY HARTS	Print Name: Bruce Winkler
Affiliation: VCDPD	Affiliation: WECKLABS
Date/Time Received: 12/20/17 1400	Date/Time Received: 12/20/17 1400
Date/Time Relinquished:	Date/Time Relinquished:
Signature: Carlos Navarro	Signature: Lester Abad
Print Name: Carlos Navarro	Print Name: Lester Abad
Affiliation: WECKLABS	Affiliation: WECKLABS
Date/Time Received: 12/20/17 430	Date/Time Received: 12/20/17 1810
Date/Time Relinquished: 12/20/17 610	Date/Time Relinquished:

Miscellaneous Notes (Hazardous Materials, Quick turn-around time, etc.):

Dissolved samples were field filtered

1.8c

Work Orders: 7L20102

Project: TMDL Study December 2017 P6040555

Attn: Kelly Hahs

Client: Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Report Date: 1/09/2018

Received Date: 12/20/2017

Turnaround Time: Normal

Phones: (805) 658-4375

Fax: (805) 654-3350

P.O. #: WECKLABORATORYFY1
8MA01

Billing Code:

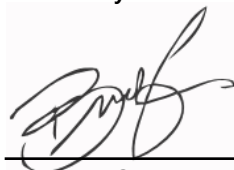
DoD-ELAP #L2457 • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO 17025 #L2457.01 •
LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Kelly Hahs,

Enclosed are the results of analyses for samples received 12/20/17 with the Chain-of-Custody document. The samples were received in good condition, at 1.8 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:



Brandon Gee
Operations Manager/Senior PM





WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study December 2017 P6040555

Reported:
01/09/2018 12:42

Project Manager: Kelly Hahs

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
TMDL-Est	S. Casey	7L20102-01	Water	12/20/17 11:00	
TMDL-R1	S. Casey	7L20102-02	Water	12/20/17 10:20	
TMDL-R2	S. Casey	7L20102-03	Water	12/20/17 09:30	
TMDL-R3	S. Casey	7L20102-04	Water	12/20/17 08:15	



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Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study December 2017 P6040555

Reported:
01/09/2018 12:42

Project Manager: Kelly Hahs

Sample Results

Sample: TMDL-Est

Sampled: 12/20/17 11:00 by S. Casey

7L20102-01 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 12/29/17 09:48				Analyst: mnq
Dissolved Nitrogen	0.7		0.30	mg/l	1x1	12/29/17 13:37	
Method: _Various	Batch ID: [CALC]		Prepared: 12/29/17 09:48				Analyst: ymt
Nitrogen, Total	1.5		0.30	mg/l	1x1	12/29/17 12:50	
Method: EPA 351.2	Batch ID: W7L1259		Prepared: 12/26/17 10:24				Analyst: ymt
TKN	1.4	0.050	0.10	mg/l	1x1	12/28/17 13:28	
Method: EPA 351.2	Batch ID: W7L1332		Prepared: 12/27/17 10:15				Analyst: mnq
TKN, Soluble	0.57		0.10	mg/l	1x1	12/29/17 13:37	
Method: EPA 353.2	Batch ID: W7L1463		Prepared: 12/29/17 09:48				Analyst: ajk
NO2+NO3 as N	0.13	0.083	0.20	mg/l	1x1	12/29/17 12:50	J
Method: EPA 365.1	Batch ID: W7L1265		Prepared: 12/26/17 11:06				Analyst: nat
Phosphorus as P, Total	0.11	0.0014	0.010	mg/l	1x1	12/28/17 11:19	
Method: EPA 365.1	Batch ID: W7L1267		Prepared: 12/26/17 11:07				Analyst: nat
Phosphorus, Dissolved	0.023	0.0014	0.010	mg/l	1x1	12/28/17 12:07	

Sample: TMDL-R1

Sampled: 12/20/17 10:20 by S. Casey

7L20102-02 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]		Prepared: 12/29/17 09:48				Analyst: mnq
Dissolved Nitrogen	2		0.30	mg/l	1x1	12/29/17 13:37	
Method: _Various	Batch ID: [CALC]		Prepared: 12/29/17 09:48				Analyst: ymt
Nitrogen, Total	2.1		0.30	mg/l	1x1	12/29/17 12:50	
Method: EPA 351.2	Batch ID: W7L1259		Prepared: 12/26/17 10:24				Analyst: ymt
TKN	0.61	0.050	0.10	mg/l	1x1	12/28/17 13:28	
Method: EPA 351.2	Batch ID: W7L1332		Prepared: 12/27/17 10:15				Analyst: mnq
TKN, Soluble	0.50		0.10	mg/l	1x1	12/29/17 13:37	
Method: EPA 353.2	Batch ID: W7L1463		Prepared: 12/29/17 09:48				Analyst: ajk
NO2+NO3 as N	1.5	0.083	0.20	mg/l	1x1	12/29/17 12:50	
Method: EPA 365.1	Batch ID: W7L1265		Prepared: 12/26/17 11:06				Analyst: nat
Phosphorus as P, Total	0.054	0.0014	0.010	mg/l	1x1	12/28/17 11:24	
Method: EPA 365.1	Batch ID: W7L1267		Prepared: 12/26/17 11:07				Analyst: nat
Phosphorus, Dissolved	0.048	0.0014	0.010	mg/l	1x1	12/28/17 12:11	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study December 2017 P6040555

Reported:
01/09/2018 12:42

Project Manager: Kelly Hahs

Sample Results

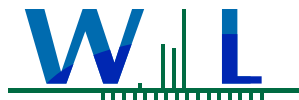
(Continued)

Sample: TMDL-R2
7L20102-03 (Water) Sampled: 12/20/17 9:30 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 5.9		Prepared: 12/29/17 09:48 0.30	mg/l	1x1	12/29/17 13:37	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 5.9		Prepared: 12/29/17 09:48 0.30	mg/l	1x1	12/29/17 12:50	Analyst: ymt
Method: EPA 351.2 TKN	Batch ID: W7L1259 0.88	0.050	Prepared: 12/26/17 10:24 0.10	mg/l	1x1	12/28/17 13:28	Analyst: ymt
Method: EPA 351.2 TKN, Soluble	Batch ID: W7L1332 0.91		Prepared: 12/27/17 10:15 0.10	mg/l	1x1	12/29/17 13:37	Analyst: mnq
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7L1463 5.0	0.083	Prepared: 12/29/17 09:48 0.20	mg/l	1x1	12/29/17 12:50	Analyst: ajk
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7L1265 0.089	0.0014	Prepared: 12/26/17 11:06 0.010	mg/l	1x1	12/28/17 11:25	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7L1267 0.062	0.0014	Prepared: 12/26/17 11:07 0.010	mg/l	1x1	12/28/17 12:13	Analyst: nat

Sample: TMDL-R3
7L20102-04 (Water) Sampled: 12/20/17 8:15 by S. Casey

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 0.81		Prepared: 12/29/17 09:48 0.30	mg/l	1x1	12/29/17 13:37	Analyst: mnq
Method: _Various Nitrogen, Total	Batch ID: [CALC] 0.98		Prepared: 12/29/17 09:48 0.30	mg/l	1x1	12/29/17 12:50	Analyst: ymt
Method: EPA 351.2 TKN	Batch ID: W7L1259 0.17	0.050	Prepared: 12/26/17 10:24 0.10	mg/l	1x1	12/28/17 13:28	Analyst: ymt
Method: EPA 351.2 TKN, Soluble	Batch ID: W7L1332 ND		Prepared: 12/27/17 10:15 0.10	mg/l	1x1	12/29/17 13:37	Analyst: mnq
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W7L1463 0.81	0.083	Prepared: 12/29/17 09:48 0.20	mg/l	1x1	12/29/17 12:50	Analyst: ajk
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W7L1267 0.016	0.0014	Prepared: 12/26/17 11:07 0.010	mg/l	1x1	12/28/17 12:14	Analyst: nat
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W7L1431 0.016	0.0014	Prepared: 12/28/17 13:16 0.010	mg/l	1x1	01/02/18 11:57	Analyst: nat



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Project Manager: Kelly Hahs

Quality Control Results

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W7L1259 - EPA 351.2											
Blank (W7L1259-BLK1)					Prepared: 12/26/17 Analyzed: 12/28/17						
TKN	ND	0.050	0.10	mg/l							
Blank (W7L1259-BLK2)					Prepared: 12/26/17 Analyzed: 12/28/17						
TKN	ND	0.050	0.10	mg/l							
LCS (W7L1259-BS1)					Prepared: 12/26/17 Analyzed: 12/28/17						
TKN	1.02	0.050	0.10	mg/l	1.00		102	90-110			
LCS (W7L1259-BS2)					Prepared: 12/26/17 Analyzed: 12/28/17						
TKN	0.971	0.050	0.10	mg/l	1.00		97	90-110			
Matrix Spike (W7L1259-MS1)					Source: 7L21045-07 Prepared: 12/26/17 Analyzed: 12/28/17						
TKN	1.28	0.050	0.10	mg/l	1.00	0.232	105	90-110			
Matrix Spike (W7L1259-MS2)					Source: 7L21045-08 Prepared: 12/26/17 Analyzed: 12/28/17						
TKN	1.23	0.050	0.10	mg/l	1.00	0.262	97	90-110			
Matrix Spike Dup (W7L1259-MSD1)					Source: 7L21045-07 Prepared: 12/26/17 Analyzed: 12/28/17						
TKN	1.29	0.050	0.10	mg/l	1.00	0.232	106	90-110	0.7	10	
Matrix Spike Dup (W7L1259-MSD2)					Source: 7L21045-08 Prepared: 12/26/17 Analyzed: 12/28/17						
TKN	1.34	0.050	0.10	mg/l	1.00	0.262	108	90-110	9	10	
Batch: W7L1265 - EPA 365.1											
Blank (W7L1265-BLK1)					Prepared: 12/26/17 Analyzed: 12/28/17						
Phosphorus as P, Total	ND	0.0014	0.010	mg/l							
LCS (W7L1265-BS1)					Prepared: 12/26/17 Analyzed: 12/28/17						
Phosphorus as P, Total	0.0515	0.0014	0.010	mg/l	0.0500		103	90-110			
Matrix Spike (W7L1265-MS1)					Source: 7L20102-01 Prepared: 12/26/17 Analyzed: 12/28/17						
Phosphorus as P, Total	0.158	0.0014	0.010	mg/l	0.0500	0.107	102	90-110			
Matrix Spike Dup (W7L1265-MSD1)					Source: 7L20102-01 Prepared: 12/26/17 Analyzed: 12/28/17						
Phosphorus as P, Total	0.156	0.0014	0.010	mg/l	0.0500	0.107	98	90-110	1	20	
Batch: W7L1267 - EPA 365.1											
Blank (W7L1267-BLK1)					Prepared: 12/26/17 Analyzed: 12/28/17						
Phosphorus, Dissolved	ND	0.0014	0.010	mg/l							
LCS (W7L1267-BS1)					Prepared: 12/26/17 Analyzed: 12/28/17						
Phosphorus, Dissolved	0.0528	0.0014	0.010	mg/l	0.0500		106	90-110			
Matrix Spike (W7L1267-MS1)					Source: 7L20102-01 Prepared: 12/26/17 Analyzed: 12/28/17						
Phosphorus, Dissolved	0.0736	0.0014	0.010	mg/l	0.0500	0.0234	100	90-110			
Matrix Spike Dup (W7L1267-MSD1)					Source: 7L20102-01 Prepared: 12/26/17 Analyzed: 12/28/17						
Phosphorus, Dissolved	0.0731	0.0014	0.010	mg/l	0.0500	0.0234	99	90-110	0.7	20	
Batch: W7L1332 - EPA 351.2											
Blank (W7L1332-BLK1)					Prepared: 12/27/17 Analyzed: 12/29/17						
TKN, Soluble	ND		0.10	mg/l							



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01/09/2018 12:42

Project Manager: Kelly Hahs

Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W7L1332 - EPA 351.2 (Continued)										
LCS (W7L1332-BS1)				Prepared: 12/27/17 Analyzed: 12/29/17						
TKN, Soluble	0.964	0.10	mg/l	1.00		96	90-110			
Matrix Spike (W7L1332-MS1)				Source: 7L20102-02 Prepared: 12/27/17 Analyzed: 12/29/17						
TKN, Soluble	1.46	0.10	mg/l	1.00	0.500	96	90-110			
Matrix Spike Dup (W7L1332-MSD1)				Source: 7L20102-02 Prepared: 12/27/17 Analyzed: 12/29/17						
TKN, Soluble	1.49	0.10	mg/l	1.00	0.500	99	90-110	2	10	
Batch: W7L1431 - EPA 365.1										
Blank (W7L1431-BLK1)				Prepared: 12/28/17 Analyzed: 01/02/18						
Phosphorus as P, Total	ND	0.0014	0.010	mg/l						
LCS (W7L1431-BS1)				Prepared: 12/28/17 Analyzed: 01/02/18						
Phosphorus as P, Total	0.0481	0.0014	0.010	mg/l	0.0500	96	90-110			
Matrix Spike (W7L1431-MS1)				Source: 7L20102-04 Prepared: 12/28/17 Analyzed: 01/02/18						
Phosphorus as P, Total	0.0664	0.0014	0.010	mg/l	0.0500	0.0162	100	90-110		
Matrix Spike Dup (W7L1431-MSD1)				Source: 7L20102-04 Prepared: 12/28/17 Analyzed: 01/02/18						
Phosphorus as P, Total	0.0661	0.0014	0.010	mg/l	0.0500	0.0162	100	90-110	0.5	20
Batch: W7L1463 - EPA 353.2										
Blank (W7L1463-BLK1)				Prepared & Analyzed: 12/29/17						
NO2+NO3 as N	ND	0.083	0.20	mg/l						
LCS (W7L1463-BS1)				Prepared & Analyzed: 12/29/17						
NO2+NO3 as N	1.00	0.083	0.20	mg/l	1.00	100	90-110			
Matrix Spike (W7L1463-MS1)				Source: 7L20102-03 Prepared & Analyzed: 12/29/17						
NO2+NO3 as N	7.10	0.083	0.20	mg/l	2.00	5.03	103	90-110		
Matrix Spike (W7L1463-MS2)				Source: 7L20102-04 Prepared & Analyzed: 12/29/17						
NO2+NO3 as N	2.73	0.083	0.20	mg/l	2.00	0.813	96	90-110		
Matrix Spike Dup (W7L1463-MSD1)				Source: 7L20102-03 Prepared & Analyzed: 12/29/17						
NO2+NO3 as N	7.02	0.083	0.20	mg/l	2.00	5.03	99	90-110	1	20
Matrix Spike Dup (W7L1463-MSD2)				Source: 7L20102-04 Prepared & Analyzed: 12/29/17						
NO2+NO3 as N	2.72	0.083	0.20	mg/l	2.00	0.813	95	90-110	0.3	20



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01/09/2018 12:42

Project Manager: Kelly Hahs



Notes and Definitions

Item	Definition
J	Estimated conc. detected <MRL and >MDL.
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Source	Sample that was matrix spiked or duplicated.
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)
MDA	Minimum Detectable Activity
NR	Not Reportable
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS 002.



Ventura River and Tributaries
Algae, Eutrophic Conditions, and Nutrients TMDL
(VR Algae TMDL)
Comprehensive Monitoring Program

8403092

CHAIN-OF-CUSTODY RECORD

1 OF 1

CLIENT: Ventura County Watershed Protection District (Master Agreement WECKLABORATORY18MA01, Project P6040555)

SAMPLING EVENT: JANUARY 2018

SAMPLING DATE: 1/3/18

SAMPLERS: K. HAYS, L. WEEKER

GRAB SAMPLES

SAMPLE ID		DATE/TIME	Total Nitrogen, Total Phosphorus			Dissolved Nitrogen, Dissolved Phosphorus **			Nitrate + Nitrite as Nitrogen			NOTES
TMDL-Est	1/3/18	1155	X	X	X	X	X	X				
TMDL-R1		1105	X	X	X	X	X	X				
TMDL-R2		0955	X	X	X	X	X	X				
TMDL-R3		0835	X	X	X	X	X	X				
TMDL-R4			X	X	X	X	X	X				
TMDL-CL			X	X	X	X	X	X				
TMDL-SA			X	X	X	X	X	X				
TMDL-FB			X	X	X	X	X	X				
(Note which site)												

Signature: <u>K. Hays</u>	Signature: <u>L. Weeker</u>
Print Name: <u>KELLY HAYS</u>	Print Name: <u>L. Weeker</u>
Affiliation: <u>VCWPD</u>	Affiliation: <u>VCWPD</u>
Date/Time Received: <u>1/3/18 1415</u>	Date/Time Received: <u>1/3/18 1415</u>
Date/Time Relinquished: <u>1/3/18 1415</u>	Date/Time Relinquished: <u>1/3/18 1415</u>
Signature: <u>James Hays</u>	Signature: <u>James Hays</u>
Print Name: <u>James Hays</u>	Print Name: <u>James Hays</u>
Affiliation: <u>VCWPD</u>	Affiliation: <u>VCWPD</u>
Date/Time Received: <u>1/3/18 1415</u>	Date/Time Received: <u>1/3/18 1415</u>
Date/Time Relinquished: <u>1/3/18 1415</u>	Date/Time Relinquished: <u>1/3/18 1415</u>

Miscellaneous Notes (Hazardous Materials, Quick turn-around time, etc.):

Dissolved samples were field filtered

1-1

Work Orders: 8A03092

Report Date: 1/22/2018

Received Date: 1/3/2018

Project: TMDL Study January 2018 P6040555

Turnaround Time: Normal

Phones: (805) 658-4375

Fax: (805) 654-3350

Attn: Kelly Hahs

P.O. #: WECKLABORATORYFY1
8MA01

Client: Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Billing Code:

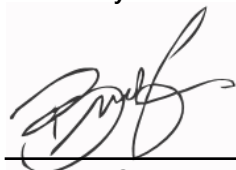
DoD-ELAP #L2457 • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO 17025 #L2457.01 •
LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Kelly Hahs,

Enclosed are the results of analyses for samples received 1/03/18 with the Chain-of-Custody document. The samples were received in good condition, at 1.1 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:



Brandon Gee
Operations Manager/Senior PM





WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study January 2018 P6040555

Reported:
01/22/2018 12:15

Project Manager: Kelly Hahs

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
TMDL-Est	K. Hahs, L. Meeker	8A03092-01	Water	01/03/18 11:55	
TMDL-R1	K. Hahs, L. Meeker	8A03092-02	Water	01/03/18 11:05	
TMDL-R2	K. Hahs, L. Meeker	8A03092-03	Water	01/03/18 09:55	
TMDL-R3	K. Hahs, L. Meeker	8A03092-04	Water	01/03/18 08:35	



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01/22/2018 12:15

Project Manager: Kelly Hahs

Sample Results

Sample: TMDL-Est
8A03092-01 (Water)
Sampled: 01/03/18 11:55 by K. Hahs, L. Meeker

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 0.42		Prepared: 01/15/18 09:31 0.30	mg/l	1x1	01/16/18 15:55	Analyst: ymt
Method: _Various Nitrogen, Total	Batch ID: [CALC] 1.3		Prepared: 01/18/18 20:16 0.30	mg/l	1x1	01/21/18 16:12	Analyst: ymt
Method: EPA 351.2 TKN, Soluble	Batch ID: W8A0809 0.42		Prepared: 01/14/18 09:10 0.10	mg/l	1x1	01/16/18 15:55	Analyst: ymt
Method: EPA 351.2 TKN	Batch ID: W8A1162 1.3	0.050	Prepared: 01/18/18 20:16 0.10	mg/l	1x1	01/21/18 16:12	Analyst: ymt
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W8A0833 ND	0.083	Prepared: 01/15/18 09:31 0.20	mg/l	1x1	01/15/18 11:55	Analyst: ajk
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W8A0270 0.12	0.0014	Prepared: 01/05/18 13:15 0.010	mg/l	1x1	01/08/18 12:07	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W8A0271 0.020	0.0014	Prepared: 01/05/18 13:16 0.010	mg/l	1x1	01/08/18 12:21	Analyst: nat

Sample: TMDL-R1
8A03092-02 (Water)
Sampled: 01/03/18 11:05 by K. Hahs, L. Meeker

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 0.95		Prepared: 01/15/18 09:31 0.30	mg/l	1x1	01/16/18 15:55	Analyst: ymt
Method: _Various Nitrogen, Total	Batch ID: [CALC] 1.1		Prepared: 01/18/18 20:16 0.30	mg/l	1x1	01/21/18 16:12	Analyst: ymt
Method: EPA 351.2 TKN, Soluble	Batch ID: W8A0809 0.45		Prepared: 01/14/18 09:10 0.10	mg/l	1x1	01/16/18 15:55	Analyst: ymt
Method: EPA 351.2 TKN	Batch ID: W8A1162 0.64	0.050	Prepared: 01/18/18 20:16 0.10	mg/l	1x1	01/21/18 16:12	Analyst: ymt
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W8A0833 0.50	0.083	Prepared: 01/15/18 09:31 0.20	mg/l	1x1	01/15/18 12:00	Analyst: ajk
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W8A0270 0.041	0.0014	Prepared: 01/05/18 13:15 0.010	mg/l	1x1	01/08/18 12:11	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W8A0271 0.032	0.0014	Prepared: 01/05/18 13:16 0.010	mg/l	1x1	01/08/18 12:26	Analyst: nat



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FINAL REPORT

Project Number: TMDL Study January 2018 P6040555

Reported:
01/22/2018 12:15

Project Manager: Kelly Hahs

Sample Results

(Continued)

Sample: TMDL-R2
8A03092-03 (Water)
Sampled: 01/03/18 9:55 by K. Hahs, L. Meeker

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 5.1		Prepared: 01/15/18 09:31 0.30	mg/l	1x1	01/16/18 15:55	Analyst: ymt
Method: _Various Nitrogen, Total	Batch ID: [CALC] 5.3		Prepared: 01/18/18 20:16 0.30	mg/l	1x1	01/21/18 16:12	Analyst: ymt
Method: EPA 351.2 TKN, Soluble	Batch ID: W8A0809 0.70		Prepared: 01/14/18 09:10 0.10	mg/l	1x1	01/16/18 15:55	Analyst: ymt
Method: EPA 351.2 TKN	Batch ID: W8A1162 0.90	0.050	Prepared: 01/18/18 20:16 0.10	mg/l	1x1	01/21/18 16:12	Analyst: ymt
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W8A0833 4.4	0.083	Prepared: 01/15/18 09:31 0.20	mg/l	1x1	01/15/18 12:06	Analyst: ajk
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W8A0270 0.088	0.0014	Prepared: 01/05/18 13:15 0.010	mg/l	1x1	01/08/18 12:13	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W8A0271 0.063	0.0014	Prepared: 01/05/18 13:16 0.010	mg/l	1x1	01/08/18 12:27	Analyst: nat

Sample: TMDL-R3
8A03092-04 (Water)
Sampled: 01/03/18 8:35 by K. Hahs, L. Meeker

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD *** Dissolved Nitrogen	Batch ID: [CALC] 0.66		Prepared: 01/15/18 09:31 0.30	mg/l	1x1	01/16/18 15:55	Analyst: ymt
Method: _Various Nitrogen, Total	Batch ID: [CALC] 0.78		Prepared: 01/18/18 20:16 0.30	mg/l	1x1	01/21/18 16:12	Analyst: ymt
Method: EPA 351.2 TKN, Soluble	Batch ID: W8A0809 ND		Prepared: 01/14/18 09:10 0.10	mg/l	1x1	01/16/18 15:55	Analyst: ymt
Method: EPA 351.2 TKN	Batch ID: W8A1162 0.12	0.050	Prepared: 01/18/18 20:16 0.10	mg/l	1x1	01/21/18 16:12	Analyst: ymt
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W8A0833 0.66	0.083	Prepared: 01/15/18 09:31 0.20	mg/l	1x1	01/15/18 12:07	Analyst: ajk
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W8A0270 0.015	0.0014	Prepared: 01/05/18 13:15 0.010	mg/l	1x1	01/08/18 12:14	Analyst: nat
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W8A0271 0.010	0.0014	Prepared: 01/05/18 13:16 0.010	mg/l	1x1	01/08/18 12:29	Analyst: nat



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study January 2018 P6040555

Reported:
01/22/2018 12:15

Project Manager: Kelly Hahs

Quality Control Results

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W8A0270 - EPA 365.1											
Blank (W8A0270-BLK1)					Prepared: 01/05/18 Analyzed: 01/08/18						
Phosphorus as P, Total	ND	0.0014	0.010	mg/l							
LCS (W8A0270-BS1)					Prepared: 01/05/18 Analyzed: 01/08/18						
Phosphorus as P, Total	0.0507	0.0014	0.010	mg/l	0.0500		101	90-110			
Matrix Spike (W8A0270-MS1)					Source: 8A03092-01 Prepared: 01/05/18 Analyzed: 01/08/18						
Phosphorus as P, Total	0.172	0.0014	0.010	mg/l	0.0500	0.125	94	90-110			
Matrix Spike Dup (W8A0270-MSD1)					Source: 8A03092-01 Prepared: 01/05/18 Analyzed: 01/08/18						
Phosphorus as P, Total	0.175	0.0014	0.010	mg/l	0.0500	0.125	100	90-110	2	20	
Batch: W8A0271 - EPA 365.1											
Blank (W8A0271-BLK1)					Prepared: 01/05/18 Analyzed: 01/08/18						
Phosphorus, Dissolved	ND	0.0014	0.010	mg/l							
LCS (W8A0271-BS1)					Prepared: 01/05/18 Analyzed: 01/08/18						
Phosphorus, Dissolved	0.0490	0.0014	0.010	mg/l	0.0500		98	90-110			
Matrix Spike (W8A0271-MS1)					Source: 8A03092-01 Prepared: 01/05/18 Analyzed: 01/08/18						
Phosphorus, Dissolved	0.0701	0.0014	0.010	mg/l	0.0500	0.0195	101	90-110			
Matrix Spike Dup (W8A0271-MSD1)					Source: 8A03092-01 Prepared: 01/05/18 Analyzed: 01/08/18						
Phosphorus, Dissolved	0.0705	0.0014	0.010	mg/l	0.0500	0.0195	102	90-110	0.6	20	
Batch: W8A0809 - EPA 351.2											
Blank (W8A0809-BLK1)					Prepared: 01/14/18 Analyzed: 01/16/18						
TKN, Soluble	ND		0.10	mg/l							
LCS (W8A0809-BS1)					Prepared: 01/14/18 Analyzed: 01/16/18						
TKN, Soluble	1.08		0.10	mg/l	1.00		108	90-110			
Matrix Spike (W8A0809-MS1)					Source: 8A03092-02 Prepared: 01/14/18 Analyzed: 01/16/18						
TKN, Soluble	1.41		0.10	mg/l	1.00	0.452	96	90-110			
Matrix Spike Dup (W8A0809-MSD1)					Source: 8A03092-02 Prepared: 01/14/18 Analyzed: 01/16/18						
TKN, Soluble	1.52		0.10	mg/l	1.00	0.452	106	90-110	7	10	
Batch: W8A0833 - EPA 353.2											
Blank (W8A0833-BLK1)					Prepared & Analyzed: 01/15/18						
NO2+NO3 as N	ND	0.083	0.20	mg/l							
LCS (W8A0833-BS1)					Prepared & Analyzed: 01/15/18						
NO2+NO3 as N	0.978	0.083	0.20	mg/l	1.00		98	90-110			
Matrix Spike (W8A0833-MS1)					Source: 8A03092-01 Prepared & Analyzed: 01/15/18						
NO2+NO3 as N	1.97	0.083	0.20	mg/l	2.00	ND	99	90-110			
Matrix Spike (W8A0833-MS2)					Source: 8A03092-02 Prepared & Analyzed: 01/15/18						
NO2+NO3 as N	2.43	0.083	0.20	mg/l	2.00	0.501	96	90-110			
Matrix Spike Dup (W8A0833-MSD1)					Source: 8A03092-01 Prepared & Analyzed: 01/15/18						
NO2+NO3 as N	2.01	0.083	0.20	mg/l	2.00	ND	100	90-110	2	20	



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FINAL REPORT

Project Number: TMDL Study January 2018 P6040555

Reported:
01/22/2018 12:15

Project Manager: Kelly Hahs

Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W8A0833 - EPA 353.2 (Continued)											
Matrix Spike Dup (W8A0833-MSD2)			Source: 8A03092-02			Prepared & Analyzed: 01/15/18					
NO2+NO3 as N	2.51	0.083	0.20	mg/l	2.00	0.501	101	90-110	3	20	
Batch: W8A1162 - EPA 351.2											
Blank (W8A1162-BLK1)			Prepared: 01/18/18 Analyzed: 01/21/18								
TKN	ND	0.050	0.10	mg/l							
LCS (W8A1162-BS1)			Prepared: 01/18/18 Analyzed: 01/21/18								
TKN	1.06	0.050	0.10	mg/l	1.00		106	90-110			
Matrix Spike (W8A1162-MS1)			Source: 8A05020-01			Prepared: 01/18/18 Analyzed: 01/21/18					
TKN	1.34	0.050	0.10	mg/l	1.00	0.257	109	90-110			
Matrix Spike Dup (W8A1162-MSD1)			Source: 8A05020-01			Prepared: 01/18/18 Analyzed: 01/21/18					
TKN	1.31	0.050	0.10	mg/l	1.00	0.257	105	90-110	3	10	



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01/22/2018 12:15

Project Manager: Kelly Hahs



Notes and Definitions

Item	Definition
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Source	Sample that was matrix spiked or duplicated.
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)
MDA	Minimum Detectable Activity
NR	Not Reportable
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS 002.



Ventura River and Tributaries
Algae, Eutrophic Conditions, and Nutrients TMDL
(VR Algae TMDL)

Comprehensive Monitoring Program

CHAIN-OF-CUSTODY RECORD

1 OF 1

8B04016

CLIENT: Ventura County Watershed Protection District (Master Agreement WECKLABORATORY18MA01, Project P6040555)

SAMPLING EVENT: ~~February~~ FEBRUARY 2018

SAMPLING DATE: 2/7/18

SAMPLERS: A. SPYRKA

GRAB SAMPLES

SAMPLE ID	DATE/TIME	Total Nitrogen, Total Phosphorus			Dissolved Nitrogen, Dissolved Phosphorus **			Nitrate + Nitrite as Nitrogen			NOTES	FIELD FILTERED
TMDL-Est	2/7/18	1315	X	X	X	X	X					
TMDL-R1		1235	X	X	X	X	X					
TMDL-R2		1130	X	X	X	X	X					
TMDL-R3		1015	X	X	X	X	X					
TMDL-R4		0900	X	X	X	X	X					
TMDL-CL		0730	X	X	X	X	X					
TMDL-SA			X	X	X	X	X				DEY	
TMDL-FD			X	X	X	X	X					

Signature: Kelly HANS

Print Name: KELLY HANS

Affiliation: VCSRP

Date/Time Received: 2/9/18 / 1032

Date/Time Relinquished: 2/9/18 / 1032

Signature: Carlos Navarro

Print Name: Carlos Navarro

Affiliation: Weck Labs

Date/Time Received: 2/9/18 230

Date/Time Relinquished: 2/9/18 14:30

Miscellaneous Notes (Hazardous Materials, Quick turn-around time, etc.):

Dissolved samples were field filtered

CA

4.0

Work Orders: 8B09016

Project: TMDL Study February 2018 P6040555

Attn: Kelly Hahs

Client: Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Report Date: 3/06/2018

Received Date: 2/9/2018

Turnaround Time: Normal

Phones: (805) 658-4375

Fax: (805) 654-3350

P.O. #: WECKLABORATORYFY1
8MA01

Billing Code:

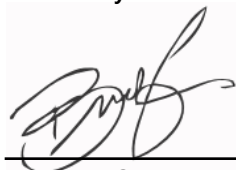
DoD-ELAP #L2457 • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • ISO 17025 #L2457.01 • LACSD #10143 •
NJ-DEP #CA015

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Kelly Hahs,

Enclosed are the results of analyses for samples received 2/09/18 with the Chain-of-Custody document. The samples were received in good condition, at 4.0 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:



Brandon Gee
Operations Manager/Senior PM





WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study February 2018 P6040555

Reported:
03/06/2018 12:02

Project Manager: Kelly Hahs

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
TMDL-Est	A. Spyрка	8B09016-01	Water	02/07/18 13:15	
TMDL-R1	A. Spyрка	8B09016-02	Water	02/07/18 12:35	
TMDL-R2	A. Spyрка	8B09016-03	Water	02/07/18 11:30	
TMDL-R3	A. Spyрка	8B09016-04	Water	02/07/18 10:15	
TMDL-R4	A. Spyрка	8B09016-05	Water	02/07/18 09:00	
TMDL-CL	A. Spyрка	8B09016-06	Water	02/07/18 07:30	



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Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study February 2018 P6040555

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03/06/2018 12:02

Project Manager: Kelly Hahs

Sample Results

Sample: TMDL-Est
8809016-01 (Water)
Sampled: 02/07/18 13:15 by A. Spyрка

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]	Instr: [CALC]	Prepared: 02/13/18 09:13		Analyst: ymt		
Dissolved Nitrogen	1.7		0.30	mg/l	1x1	02/14/18 15:29	
Method: _Various Nitrogen, Total	2		0.20	mg/l	1x1	02/14/18 15:29	
Method: EPA 351.2 TKN	1.2	0.050	0.10	mg/l	1x1	02/14/18 15:29	
Method: EPA 351.2 TKN, Soluble	0.90	0.050	0.10	mg/l	1x1	02/14/18 15:29	
Method: EPA 353.2 NO2+NO3 as N	0.80	0.083	0.20	mg/l	1x1	02/13/18 12:17	
Method: EPA 365.1 Phosphorus as P, Total	0.061	0.0014	0.010	mg/l	1x1	02/20/18 13:30	
Method: EPA 365.1 Phosphorus, Dissolved	0.018	0.0014	0.010	mg/l	1x1	02/20/18 14:56	

Sample: TMDL-R1
8809016-02 (Water)
Sampled: 02/07/18 12:35 by A. Spyрка

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]	Instr: [CALC]	Prepared: 02/13/18 09:13		Analyst: ymt		
Dissolved Nitrogen	1.1		0.30	mg/l	1x1	02/14/18 15:29	
Method: _Various Nitrogen, Total	1.2		0.20	mg/l	1x1	02/14/18 15:29	
Method: EPA 351.2 TKN	1.0	0.050	0.10	mg/l	1x1	02/14/18 15:29	
Method: EPA 351.2 TKN, Soluble	0.93	0.050	0.10	mg/l	1x1	02/14/18 15:29	
Method: EPA 353.2 NO2+NO3 as N	0.17	0.083	0.20	mg/l	1x1	02/13/18 12:19	J
Method: EPA 365.1 Phosphorus as P, Total	0.059	0.0014	0.010	mg/l	1x1	02/20/18 13:34	
Method: EPA 365.1 Phosphorus, Dissolved	0.022	0.0014	0.010	mg/l	1x1	02/20/18 15:00	



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Ventura County Watershed Protection District
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Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study February 2018 P6040555

Reported:
03/06/2018 12:02

Project Manager: Kelly Hahs

Sample Results

(Continued)

Sample: TMDL-R2
8809016-03 (Water) Sampled: 02/07/18 11:30 by A. Spyрка

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC	Batch ID: [CALC]	Instr: [CALC]	Prepared: 02/13/18 09:13		Analyst: ymt		
METHOD ***							
Dissolved Nitrogen	1		0.30	mg/l	1x1	02/14/18 15:29	
Method: _Various	Batch ID: [CALC]	Instr: [CALC]	Prepared: 02/13/18 09:13		Analyst: ymt		
Nitrogen, Total	1.2		0.20	mg/l	1x1	02/14/18 15:29	
Method: EPA 351.2	Batch ID: W8B0549	Instr: AA06	Prepared: 02/12/18 13:40		Analyst: ymt		
TKN	0.98	0.050	0.10	mg/l	1x1	02/14/18 15:29	
Method: EPA 351.2	Batch ID: W8B0550	Instr: AA06	Prepared: 02/12/18 13:42		Analyst: ymt		
TKN, Soluble	0.83	0.050	0.10	mg/l	1x1	02/14/18 15:29	
Method: EPA 353.2	Batch ID: W8B0596	Instr: AA03	Prepared: 02/13/18 09:13		Analyst: YMT		
NO2+NO3 as N	0.20	0.083	0.20	mg/l	1x1	02/13/18 12:20	
Method: EPA 365.1	Batch ID: W8B0757	Instr: AA01	Prepared: 02/14/18 18:24		Analyst: nat		
Phosphorus as P, Total	0.14	0.0014	0.010	mg/l	1x1	02/20/18 13:39	
Method: EPA 365.1	Batch ID: W8B0758	Instr: AA01	Prepared: 02/14/18 18:26		Analyst: nat		
Phosphorus, Dissolved	0.10	0.0014	0.010	mg/l	1x1	02/20/18 15:01	

Sample: TMDL-R3
8809016-04 (Water) Sampled: 02/07/18 10:15 by A. Spyрка

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC	Batch ID: [CALC]	Instr: [CALC]	Prepared: 02/13/18 09:13		Analyst: ymt		
METHOD ***							
Dissolved Nitrogen	0.6		0.30	mg/l	1x1	02/14/18 15:29	
Method: _Various	Batch ID: [CALC]	Instr: [CALC]	Prepared: 02/13/18 09:13		Analyst: ymt		
Nitrogen, Total	0.66		0.20	mg/l	1x1	02/14/18 15:29	
Method: EPA 351.2	Batch ID: W8B0549	Instr: AA06	Prepared: 02/12/18 13:40		Analyst: ymt		
TKN	0.66	0.050	0.10	mg/l	1x1	02/14/18 15:29	
Method: EPA 351.2	Batch ID: W8B0550	Instr: AA06	Prepared: 02/12/18 13:42		Analyst: ymt		
TKN, Soluble	0.60	0.050	0.10	mg/l	1x1	02/14/18 15:29	
Method: EPA 353.2	Batch ID: W8B0596	Instr: AA03	Prepared: 02/13/18 09:13		Analyst: YMT		
NO2+NO3 as N	ND	0.083	0.20	mg/l	1x1	02/13/18 12:22	
Method: EPA 365.1	Batch ID: W8B0757	Instr: AA01	Prepared: 02/14/18 18:24		Analyst: nat		
Phosphorus as P, Total	0.029	0.0014	0.010	mg/l	1x1	02/20/18 13:40	
Method: EPA 365.1	Batch ID: W8B0758	Instr: AA01	Prepared: 02/14/18 18:26		Analyst: nat		
Phosphorus, Dissolved	0.0089	0.0014	0.010	mg/l	1x1	02/20/18 15:03	J



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
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Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study February 2018 P6040555

Reported:
03/06/2018 12:02

Project Manager: Kelly Hahs

Sample Results

(Continued)

Sample: TMDL-R4
8809016-05 (Water) Sampled: 02/07/18 9:00 by A. Spyрка

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC	Batch ID: [CALC]	Instr: [CALC]	Prepared: 02/13/18 09:13		Analyst: ymt		
METHOD ***							
Dissolved Nitrogen	1.4		0.30	mg/l	1x1	02/14/18 15:29	
Method: _Various	Batch ID: [CALC]	Instr: [CALC]	Prepared: 02/13/18 09:13		Analyst: ymt		
Nitrogen, Total	1.4		0.20	mg/l	1x1	02/14/18 15:29	
Method: EPA 351.2	Batch ID: W8B0549	Instr: AA06	Prepared: 02/12/18 13:40		Analyst: ymt		
TKN	1.4	0.050	0.10	mg/l	1x1	02/14/18 15:29	
Method: EPA 351.2	Batch ID: W8B0550	Instr: AA06	Prepared: 02/12/18 13:42		Analyst: ymt		
TKN, Soluble	1.4	0.050	0.10	mg/l	1x1	02/14/18 15:29	
Method: EPA 353.2	Batch ID: W8B0596	Instr: AA03	Prepared: 02/13/18 09:13		Analyst: YMT		
NO2+NO3 as N	ND	0.083	0.20	mg/l	1x1	02/13/18 12:24	
Method: EPA 365.1	Batch ID: W8B0757	Instr: AA01	Prepared: 02/14/18 18:24		Analyst: nat		
Phosphorus as P, Total	0.029	0.0014	0.010	mg/l	1x1	02/20/18 13:42	
Method: EPA 365.1	Batch ID: W8B0758	Instr: AA01	Prepared: 02/14/18 18:26		Analyst: nat		
Phosphorus, Dissolved	0.022	0.0014	0.010	mg/l	1x1	02/20/18 15:04	

Sample: TMDL-CL
8809016-06 (Water) Sampled: 02/07/18 7:30 by A. Spyрка

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC	Batch ID: [CALC]	Instr: [CALC]	Prepared: 02/13/18 09:13		Analyst: ymt		
METHOD ***							
Dissolved Nitrogen	0.45		0.30	mg/l	1x1	02/14/18 15:29	
Method: _Various	Batch ID: [CALC]	Instr: [CALC]	Prepared: 02/13/18 09:13		Analyst: ymt		
Nitrogen, Total	0.42		0.20	mg/l	1x1	02/14/18 15:29	
Method: EPA 351.2	Batch ID: W8B0549	Instr: AA06	Prepared: 02/12/18 13:40		Analyst: ymt		
TKN	0.42	0.050	0.10	mg/l	1x1	02/14/18 15:29	
Method: EPA 351.2	Batch ID: W8B0550	Instr: AA06	Prepared: 02/12/18 13:42		Analyst: ymt		
TKN, Soluble	0.45	0.050	0.10	mg/l	1x1	02/14/18 15:29	
Method: EPA 353.2	Batch ID: W8B0596	Instr: AA03	Prepared: 02/13/18 09:13		Analyst: YMT		
NO2+NO3 as N	ND	0.083	0.20	mg/l	1x1	02/13/18 12:26	
Method: EPA 365.1	Batch ID: W8B0757	Instr: AA01	Prepared: 02/14/18 18:24		Analyst: nat		
Phosphorus as P, Total	0.0084	0.0014	0.010	mg/l	1x1	02/20/18 13:43	J
Method: EPA 365.1	Batch ID: W8B0758	Instr: AA01	Prepared: 02/14/18 18:26		Analyst: nat		
Phosphorus, Dissolved	0.0060	0.0014	0.010	mg/l	1x1	02/20/18 15:06	J



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study February 2018 P6040555

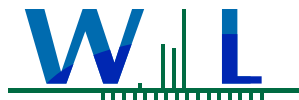
Reported:
03/06/2018 12:02

Project Manager: Kelly Hahs

Quality Control Results

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W8B0549 - EPA 351.2											
Blank (W8B0549-BLK1)					Prepared: 02/12/18 Analyzed: 02/14/18						
TKN	ND	0.050	0.10	mg/l							
LCS (W8B0549-BS1)					Prepared: 02/12/18 Analyzed: 02/14/18						
TKN	1.04	0.050	0.10	mg/l	1.00		104	90-110			
Matrix Spike (W8B0549-MS1)					Source: 8B09016-02 Prepared: 02/12/18 Analyzed: 02/14/18						
TKN	2.01	0.050	0.10	mg/l	1.00	1.04	97	90-110			
Matrix Spike Dup (W8B0549-MSD1)					Source: 8B09016-02 Prepared: 02/12/18 Analyzed: 02/14/18						
TKN	1.99	0.050	0.10	mg/l	1.00	1.04	95	90-110	0.9	10	
Batch: W8B0550 - EPA 351.2											
Blank (W8B0550-BLK1)					Prepared: 02/12/18 Analyzed: 02/14/18						
TKN, Soluble	ND	0.050	0.10	mg/l							
LCS (W8B0550-BS1)					Prepared: 02/12/18 Analyzed: 02/14/18						
TKN, Soluble	0.999	0.050	0.10	mg/l	1.00		100	90-110			
Matrix Spike (W8B0550-MS1)					Source: 8B09016-02 Prepared: 02/12/18 Analyzed: 02/14/18						
TKN, Soluble	1.93	0.050	0.10	mg/l	1.00	0.933	99	90-110			
Matrix Spike Dup (W8B0550-MSD1)					Source: 8B09016-02 Prepared: 02/12/18 Analyzed: 02/14/18						
TKN, Soluble	2.96	0.050	0.10	mg/l	2.00	0.933	101	90-110	42	10	A-01
Batch: W8B0596 - EPA 353.2											
Blank (W8B0596-BLK1)					Prepared & Analyzed: 02/13/18						
NO2+NO3 as N	ND	0.083	0.20	mg/l							
LCS (W8B0596-BS1)					Prepared & Analyzed: 02/13/18						
NO2+NO3 as N	1.03	0.083	0.20	mg/l	1.00		103	90-110			
Matrix Spike (W8B0596-MS1)					Source: 8B12048-01 Prepared: 02/13/18						
NO2+NO3 as N	9.99	0.083	0.20	mg/l	2.00	7.87	106	90-110			
Matrix Spike (W8B0596-MS2)					Source: 8B12112-01 Prepared: 02/13/18						
NO2+NO3 as N	2.68	0.083	0.20	mg/l	2.00	0.822	93	90-110			
Matrix Spike Dup (W8B0596-MSD1)					Source: 8B12048-01 Prepared: 02/13/18						
NO2+NO3 as N	9.82	0.083	0.20	mg/l	2.00	7.87	97	90-110	2	20	
Matrix Spike Dup (W8B0596-MSD2)					Source: 8B12112-01 Prepared: 02/13/18						
NO2+NO3 as N	2.76	0.083	0.20	mg/l	2.00	0.822	97	90-110	3	20	
Batch: W8B0757 - EPA 365.1											
Blank (W8B0757-BLK1)					Prepared: 02/14/18 Analyzed: 02/20/18						
Phosphorus as P, Total	ND	0.0014	0.010	mg/l							
LCS (W8B0757-BS1)					Prepared: 02/14/18 Analyzed: 02/20/18						
Phosphorus as P, Total	0.0475	0.0014	0.010	mg/l	0.0500		95	90-110			
Matrix Spike (W8B0757-MS1)					Source: 8B09016-01 Prepared: 02/14/18 Analyzed: 02/20/18						
Phosphorus as P, Total	0.110	0.0014	0.010	mg/l	0.0500	0.0607	99	90-110			



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study February 2018 P6040555

Reported:
03/06/2018 12:02

Project Manager: Kelly Hahs

Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W8B0757 - EPA 365.1 (Continued)											
Matrix Spike (W8B0757-MS2)			Source: 8B09016-02			Prepared: 02/14/18 Analyzed: 02/20/18					
Phosphorus as P, Total	0.112	0.0014	0.010	mg/l	0.0500	0.0594	105	90-110			
Matrix Spike Dup (W8B0757-MSD1)			Source: 8B09016-01			Prepared: 02/14/18 Analyzed: 02/20/18					
Phosphorus as P, Total	0.110	0.0014	0.010	mg/l	0.0500	0.0607	99	90-110	0	20	
Matrix Spike Dup (W8B0757-MSD2)			Source: 8B09016-02			Prepared: 02/14/18 Analyzed: 02/20/18					
Phosphorus as P, Total	0.112	0.0014	0.010	mg/l	0.0500	0.0594	105	90-110	0	20	
Batch: W8B0758 - EPA 365.1											
Blank (W8B0758-BLK1)						Prepared: 02/14/18 Analyzed: 02/20/18					
Phosphorus, Dissolved	ND	0.0014	0.010	mg/l							
LCS (W8B0758-BS1)						Prepared: 02/14/18 Analyzed: 02/20/18					
Phosphorus, Dissolved	0.0460	0.0014	0.010	mg/l	0.0500		92	90-110			
Matrix Spike (W8B0758-MS1)			Source: 8B09016-01			Prepared: 02/14/18 Analyzed: 02/20/18					
Phosphorus, Dissolved	0.0677	0.0014	0.010	mg/l	0.0500	0.0183	99	90-110			
Matrix Spike Dup (W8B0758-MSD1)			Source: 8B09016-01			Prepared: 02/14/18 Analyzed: 02/20/18					
Phosphorus, Dissolved	0.0691	0.0014	0.010	mg/l	0.0500	0.0183	102	90-110	2	20	



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Reported:
03/06/2018 12:02

Project Manager: Kelly Hahs



Notes and Definitions

Item	Definition
A-01	Unattentionally double spiked the analytes. Therefore, RPD wont apply.
J	Estimated conc. detected <MRL and >MDL.
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Source	Sample that was matrix spiked or duplicated.
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)
MDA	Minimum Detectable Activity
NR	Not Reportable
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS 002.



Ventura River and Tributaries
Algae, Eutrophic Conditions, and Nutrients TMDL
(VR Algae TMDL)
Comprehensive Monitoring Program
8C29031

CHAIN-OF-CUSTODY RECORD

1 OF 1

CLIENT: Ventura County Watershed Protection District (Master Agreement WECKLABORATORY18MA01, Project P6040555)

SAMPLING EVENT: MARCH 2018

SAMPLING DATE: 3/26/18

SAMPLERS: Lisa Walker, Andrew S.

GRAB SAMPLES

SAMPLE ID	DATE/TIME	** FIELD FILTERED			NOTES
		Total Nitrogen, Total Phosphorus	Dissolved Nitrogen, Dissolved Phosphorus **	Nitrate + Nitrite as Nitrogen	
TMDL-Est	3/28/18 1240	X	X	X	LM
TMDL-R1	3/26/18 1621	X	X	X	LM, AS
TMDL-R2	3/26/18 1506	X	X	X	LM, AS
TMDL-R3	3/26/18 1300	X	X	X	LM, AS
TMDL-R4	3/26/18 1055	X	X	X	LM, AS
TMDL-CL	3/26/18 0945	X	X	X	LM, AS
TMDL-SA	3/26/18 1150	X	X	X	LM, AS
TMDL-FB		X	X	X	(Note which site)

Signature: <u>[Signature]</u>	Signature: <u>[Signature]</u>
Print Name: David Leach	Print Name: Andrew S.
Affiliation: VCUPD	Affiliation: Weck Labs
Date/Time Received: <u>3/29/18</u>	Date/Time Received: <u>3/29/18</u>
Date/Time Relinquished: <u>11:35</u>	Date/Time Relinquished: <u>11:35</u>
Signature: <u>[Signature]</u>	Signature: <u>[Signature]</u>
Print Name: Andrew S.	Print Name: Andrew S.
Affiliation: Weck Labs	Affiliation: Weck Labs
Date/Time Received: <u>3/29/18</u>	Date/Time Received: <u>15:24</u>
Date/Time Relinquished: <u>15:24</u>	Date/Time Relinquished: <u>15:24</u>

Miscellaneous Notes (Hazardous Materials, Quick turn-around time, etc.):

Dissolved samples were field filtered

1.2.2

Work Orders: 8C29031

Project: TMDL Study March 2018 P6040555

Attn: Kelly Hahs

Client: Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Report Date: 4/20/2018

Received Date: 3/29/2018

Turnaround Time: Normal

Phones: (805) 658-4375

Fax: (805) 654-3350

P.O. #: WECKLABORATORYFY1
8MA01

Billing Code:

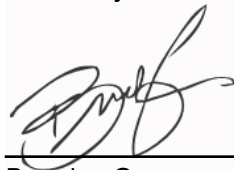
DoD-ELAP #L2457 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • ISO 17025 #L2457.01 • LACSD #10143 • NJ-DEP #CA015

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Kelly Hahs,

Enclosed are the results of analyses for samples received 3/29/18 with the Chain-of-Custody document. The samples were received in good condition, at 1.2 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:



Brandon Gee
Operations Manager/Senior PM





WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study March 2018 P6040555

Reported:
04/20/2018 13:12

Project Manager: Kelly Hahs

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
TMDL-Est	Lara Meeker	8C29031-01	Water	03/28/18 12:40	
TMDL-R1	Iara Meeker, Andrew S.	8C29031-02	Water	03/26/18 16:21	
TMDL-R2	Iara Meeker, Andrew S.	8C29031-03	Water	03/24/18 15:06	
TMDL-R3	Iara Meeker, Andrew S.	8C29031-04	Water	03/26/18 13:00	
TMDL-R4	Iara Meeker, Andrew S.	8C29031-05	Water	03/26/18 10:55	
TMDL-CL	Iara Meeker, Andrew S.	8C29031-06	Water	03/26/18 09:45	
TMDL-SA	Iara Meeker, Andrew S.	8C29031-07	Water	03/26/18 11:50	



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FINAL REPORT

Project Number: TMDL Study March 2018 P6040555

Reported:
04/20/2018 13:12

Project Manager: Kelly Hahs

Sample Results

Sample: TMDL-Est
8C29031-01 (Water) Sampled: 03/28/18 12:40 by Lara Meeker

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC	Batch ID: [CALC]	Instr: [CALC]	Prepared: 04/06/18 08:35		Analyst: ymt		
METHOD ***							
Dissolved Nitrogen	2.6		0.30	mg/l	1x1	04/10/18 14:03	
Method: _Various	Batch ID: [CALC]	Instr: [CALC]	Prepared: 04/06/18 08:33		Analyst: ymt		
Nitrogen, Total	2.8		0.20	mg/l	1x1	04/10/18 14:03	
Method: EPA 351.2	Batch ID: W8D0367	Instr: AA06	Prepared: 04/06/18 08:33		Analyst: ymt		
TKN	0.84	0.050	0.10	mg/l	1x1	04/10/18 14:03	
Method: EPA 351.2	Batch ID: W8D0368	Instr: AA06	Prepared: 04/06/18 08:35		Analyst: ymt		
TKN, Soluble	0.61	0.050	0.10	mg/l	1x1	04/10/18 14:03	
Method: EPA 353.2	Batch ID: W8C1855	Instr: AA01	Prepared: 03/30/18 10:22		Analyst: AJK		
NO2+NO3 as N	2.0	0.083	0.20	mg/l	1x1	03/30/18 16:10	
Method: EPA 365.1	Batch ID: W8C1780	Instr: AA01	Prepared: 03/29/18 08:22		Analyst: AJK		
Phosphorus as P, Total	0.24	0.0028	0.020	mg/l	1x2	04/06/18 12:22	
Method: EPA 365.1	Batch ID: W8C1810	Instr: AA01	Prepared: 03/29/18 14:20		Analyst: AJK		
Phosphorus, Dissolved	0.12	0.0014	0.010	mg/l	1x1	04/09/18 12:23	

Sample: TMDL-R1
8C29031-02 (Water) Sampled: 03/26/18 16:21 by Lara Meeker, Andrew S.

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC	Batch ID: [CALC]	Instr: [CALC]	Prepared: 04/06/18 08:35		Analyst: ymt		
METHOD ***							
Dissolved Nitrogen	2.6		0.30	mg/l	1x1	04/10/18 14:03	
Method: _Various	Batch ID: [CALC]	Instr: [CALC]	Prepared: 04/06/18 08:33		Analyst: ymt		
Nitrogen, Total	3.1		0.20	mg/l	1x1	04/10/18 14:03	
Method: EPA 351.2	Batch ID: W8D0367	Instr: AA06	Prepared: 04/06/18 08:33		Analyst: ymt		
TKN	0.89	0.050	0.10	mg/l	1x1	04/10/18 14:03	
Method: EPA 351.2	Batch ID: W8D0368	Instr: AA06	Prepared: 04/06/18 08:35		Analyst: ymt		
TKN, Soluble	0.41	0.050	0.10	mg/l	1x1	04/10/18 14:03	
Method: EPA 353.2	Batch ID: W8C1855	Instr: AA01	Prepared: 03/30/18 10:22		Analyst: AJK		
NO2+NO3 as N	2.2	0.083	0.20	mg/l	1x1	03/30/18 16:11	
Method: EPA 365.1	Batch ID: W8C1780	Instr: AA01	Prepared: 03/29/18 08:22		Analyst: AJK		
Phosphorus as P, Total	0.41	0.0070	0.050	mg/l	1x5	04/06/18 12:23	
Method: EPA 365.1	Batch ID: W8C1810	Instr: AA01	Prepared: 03/29/18 14:20		Analyst: AJK		
Phosphorus, Dissolved	0.079	0.0014	0.010	mg/l	1x1	04/09/18 12:28	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study March 2018 P6040555

Reported:
04/20/2018 13:12

Project Manager: Kelly Hahs

Sample Results

(Continued)

Sample: TMDL-R2
8C29031-03 (Water)

Sampled: 03/24/18 15:06 by lara Meeker, Andrew S.

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC	Batch ID: [CALC]	Instr: [CALC]	Prepared: 04/06/18 08:35		Analyst: ymt		
METHOD ***							
Dissolved Nitrogen	2.6		0.30	mg/l	1x1	04/10/18 14:03	
Method: _Various	Batch ID: [CALC]	Instr: [CALC]	Prepared: 04/06/18 08:33		Analyst: ymt		
Nitrogen, Total	2.9		0.20	mg/l	1x1	04/10/18 14:03	
Method: EPA 351.2	Batch ID: W8D0367	Instr: AA06	Prepared: 04/06/18 08:33		Analyst: ymt		
TKN	0.74	0.050	0.10	mg/l	1x1	04/10/18 14:03	
Method: EPA 351.2	Batch ID: W8D0368	Instr: AA06	Prepared: 04/06/18 08:35		Analyst: ymt		
TKN, Soluble	0.45	0.050	0.10	mg/l	1x1	04/10/18 14:03	
Method: EPA 353.2	Batch ID: W8C1855	Instr: AA01	Prepared: 03/30/18 10:22		Analyst: AJK		
NO2+NO3 as N	2.2	0.083	0.20	mg/l	1x1	03/30/18 16:12	
Method: EPA 365.1	Batch ID: W8C1780	Instr: AA01	Prepared: 03/29/18 08:22		Analyst: AJK		
Phosphorus as P, Total	0.29	0.0028	0.020	mg/l	2x1	04/06/18 12:04	M-06
Method: EPA 365.1	Batch ID: W8C1810	Instr: AA01	Prepared: 03/29/18 14:20		Analyst: AJK		
Phosphorus, Dissolved	0.11	0.0028	0.020	mg/l	2x1	04/09/18 12:29	

Sample: TMDL-R3
8C29031-04 (Water)

Sampled: 03/26/18 13:00 by lara Meeker, Andrew S.

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC	Batch ID: [CALC]	Instr: [CALC]	Prepared: 04/06/18 08:35		Analyst: ymt		
METHOD ***							
Dissolved Nitrogen	2.6		0.30	mg/l	1x1	04/10/18 14:03	
Method: _Various	Batch ID: [CALC]	Instr: [CALC]	Prepared: 04/06/18 08:33		Analyst: ymt		
Nitrogen, Total	2.8		0.20	mg/l	1x1	04/10/18 14:03	
Method: EPA 351.2	Batch ID: W8D0367	Instr: AA06	Prepared: 04/06/18 08:33		Analyst: ymt		
TKN	0.66	0.050	0.10	mg/l	1x1	04/10/18 14:03	
Method: EPA 351.2	Batch ID: W8D0368	Instr: AA06	Prepared: 04/06/18 08:35		Analyst: ymt		
TKN, Soluble	0.44	0.050	0.10	mg/l	1x1	04/10/18 14:03	
Method: EPA 353.2	Batch ID: W8C1855	Instr: AA01	Prepared: 03/30/18 10:22		Analyst: AJK		
NO2+NO3 as N	2.1	0.083	0.20	mg/l	1x1	03/30/18 16:13	
Method: EPA 365.1	Batch ID: W8C1780	Instr: AA01	Prepared: 03/29/18 08:22		Analyst: AJK		
Phosphorus as P, Total	0.39	0.0070	0.050	mg/l	1x5	04/06/18 12:24	
Method: EPA 365.1	Batch ID: W8C1810	Instr: AA01	Prepared: 03/29/18 14:20		Analyst: AJK		
Phosphorus, Dissolved	0.067	0.0014	0.010	mg/l	1x1	04/09/18 12:30	



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Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study March 2018 P6040555

Reported:
04/20/2018 13:12

Project Manager: Kelly Hahs

Sample Results

(Continued)

Sample: TMDL-R4
8C29031-05 (Water)

Sampled: 03/26/18 10:55 by lara Meeker, Andrew S.

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC METHOD ***	Batch ID: [CALC]	Instr: [CALC]	Prepared: 04/06/18 08:35		Analyst: ymt		
Dissolved Nitrogen	2.3		0.30	mg/l	1x1	04/10/18 14:03	
Method: _Various Nitrogen, Total	Batch ID: [CALC]	Instr: [CALC]	Prepared: 04/06/18 08:33		Analyst: ymt		
	3		0.20	mg/l	1x1	04/10/18 14:03	
Method: EPA 351.2 TKN	Batch ID: W8D0367	Instr: AA06	0.050	Prepared: 04/06/18 08:33		Analyst: ymt	
	0.97			0.10	mg/l	1x1	04/10/18 14:03
Method: EPA 351.2 TKN, Soluble	Batch ID: W8D0368	Instr: AA06	0.050	Prepared: 04/06/18 08:35		Analyst: ymt	
	0.26			0.10	mg/l	1x1	04/10/18 14:03
Method: EPA 353.2 NO2+NO3 as N	Batch ID: W8C1855	Instr: AA01	0.083	Prepared: 03/30/18 10:22		Analyst: AJK	
	2.0			0.20	mg/l	1x1	03/30/18 16:14
Method: EPA 365.1 Phosphorus as P, Total	Batch ID: W8C1780	Instr: AA01	0.0070	Prepared: 03/29/18 08:22		Analyst: AJK	
	0.38			0.050	mg/l	1x5	04/06/18 12:26
Method: EPA 365.1 Phosphorus, Dissolved	Batch ID: W8C1810	Instr: AA01	0.0014	Prepared: 03/29/18 14:20		Analyst: AJK	
	0.068			0.010	mg/l	1x1	04/09/18 12:32

Sample: TMDL-CL
8C29031-06 (Water)

Sampled: 03/26/18 9:45 by lara Meeker, Andrew S.

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC	Batch ID: [CALC]	Instr: [CALC]	Prepared: 04/06/18 08:35		Analyst: ymt		
METHOD ***							
Dissolved Nitrogen	2		0.30	mg/l	1x1	04/10/18 14:03	
Method: _Various	Batch ID: [CALC]	Instr: [CALC]	Prepared: 04/06/18 08:33		Analyst: ymt		
Nitrogen, Total	2.3		0.20	mg/l	1x1	04/10/18 14:03	
Method: EPA 351.2	Batch ID: W8D0367	Instr: AA06	Prepared: 04/06/18 08:33		Analyst: ymt		
TKN	1.4	0.050	0.10	mg/l	1x1	04/10/18 14:03	
Method: EPA 351.2	Batch ID: W8D0368	Instr: AA06	Prepared: 04/06/18 08:35		Analyst: ymt		
TKN, Soluble	1.1	0.050	0.10	mg/l	1x1	04/10/18 14:03	
Method: EPA 353.2	Batch ID: W8C1855	Instr: AA01	Prepared: 03/30/18 10:22		Analyst: AJK		
NO2+NO3 as N	0.95	0.083	0.20	mg/l	1x1	03/30/18 16:15	
Method: EPA 365.1	Batch ID: W8C1780	Instr: AA01	Prepared: 03/29/18 08:22		Analyst: AJK		
Phosphorus as P, Total	0.71	0.014	0.10	mg/l	1x10	04/06/18 12:27	
Method: EPA 365.1	Batch ID: W8C1810	Instr: AA01	Prepared: 03/29/18 14:20		Analyst: AJK		
Phosphorus, Dissolved	0.086	0.0014	0.010	mg/l	1x1	04/09/18 12:33	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study March 2018 P6040555

Reported:
04/20/2018 13:12

Project Manager: Kelly Hahs

Sample Results

(Continued)

Sample: TMDL-SA
8C29031-07 (Water)

Sampled: 03/26/18 11:50 by lara Meeker, Andrew S.

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC	Batch ID: [CALC]	Instr: [CALC]	Prepared: 04/06/18 08:35		Analyst: ymt		
METHOD ***							
Dissolved Nitrogen	2.8		0.30	mg/l	1x1	04/10/18 14:03	
Method: _Various	Batch ID: [CALC]	Instr: [CALC]	Prepared: 04/06/18 08:33		Analyst: ymt		
Nitrogen, Total	3.5		0.20	mg/l	1x1	04/10/18 14:03	
Method: EPA 351.2	Batch ID: W8D0367	Instr: AA06	Prepared: 04/06/18 08:33		Analyst: ymt		
TKN	1.1	0.050	0.10	mg/l	1x1	04/10/18 14:03	
Method: EPA 351.2	Batch ID: W8D0368	Instr: AA06	Prepared: 04/06/18 08:35		Analyst: ymt		
TKN, Soluble	0.39	0.050	0.10	mg/l	1x1	04/10/18 14:03	
Method: EPA 353.2	Batch ID: W8C1855	Instr: AA01	Prepared: 03/30/18 10:22		Analyst: AJK		
NO2+NO3 as N	2.4	0.083	0.20	mg/l	1x1	03/30/18 16:17	
Method: EPA 365.1	Batch ID: W8C1780	Instr: AA01	Prepared: 03/29/18 08:22		Analyst: AJK		
Phosphorus as P, Total	0.61	0.014	0.10	mg/l	1x10	04/06/18 12:29	
Method: EPA 365.1	Batch ID: W8C1810	Instr: AA01	Prepared: 03/29/18 14:20		Analyst: AJK		
Phosphorus, Dissolved	0.093	0.0014	0.010	mg/l	1x1	04/09/18 12:35	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study March 2018 P6040555

Reported:
04/20/2018 13:12

Project Manager: Kelly Hahs

Quality Control Results

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W8C1780 - EPA 365.1											
Blank (W8C1780-BLK1)					Prepared: 03/29/18 Analyzed: 04/06/18						
Phosphorus as P, Total	ND	0.0014	0.010	mg/l							
LCS (W8C1780-BS1)					Prepared: 03/29/18 Analyzed: 04/06/18						
Phosphorus as P, Total	0.0496	0.0014	0.010	mg/l	0.0500		99	90-110			
Matrix Spike (W8C1780-MS1)					Source: 8C23017-01 Prepared: 03/29/18 Analyzed: 04/06/18						
Phosphorus as P, Total	0.656	0.0056	0.040	mg/l	0.200	0.395	130	90-110			MS-02
Matrix Spike Dup (W8C1780-MSD1)					Source: 8C23017-01 Prepared: 03/29/18 Analyzed: 04/06/18						
Phosphorus as P, Total	0.672	0.0056	0.040	mg/l	0.200	0.395	138	90-110	2	20	MS-02
Batch: W8C1810 - EPA 365.1											
Blank (W8C1810-BLK1)					Prepared: 03/29/18 Analyzed: 04/09/18						
Phosphorus, Dissolved	ND	0.0014	0.010	mg/l							
LCS (W8C1810-BS1)					Prepared: 03/29/18 Analyzed: 04/09/18						
Phosphorus, Dissolved	0.0503	0.0014	0.010	mg/l	0.0500		101	90-110			
Matrix Spike (W8C1810-MS1)					Source: 8C29031-01 Prepared: 03/29/18 Analyzed: 04/09/18						
Phosphorus, Dissolved	0.164	0.0014	0.010	mg/l	0.0500	0.121	86	90-110			MS-02
Matrix Spike Dup (W8C1810-MSD1)					Source: 8C29031-01 Prepared: 03/29/18 Analyzed: 04/09/18						
Phosphorus, Dissolved	0.165	0.0014	0.010	mg/l	0.0500	0.121	88	90-110	0.6	20	MS-02
Batch: W8C1855 - EPA 353.2											
Blank (W8C1855-BLK1)					Prepared & Analyzed: 03/30/18						
NO2+NO3 as N	ND	0.083	0.20	mg/l							
LCS (W8C1855-BS1)					Prepared & Analyzed: 03/30/18						
NO2+NO3 as N	1.04	0.083	0.20	mg/l	1.00		104	90-110			
Matrix Spike (W8C1855-MS1)					Source: 8C29060-01 Prepared & Analyzed: 03/30/18						
NO2+NO3 as N	5.30	0.083	0.20	mg/l	2.00	3.24	103	90-110			
Matrix Spike (W8C1855-MS2)					Source: 8C29063-01 Prepared & Analyzed: 03/30/18						
NO2+NO3 as N	5.19	0.083	0.20	mg/l	2.00	3.22	98	90-110			
Matrix Spike Dup (W8C1855-MSD1)					Source: 8C29060-01 Prepared & Analyzed: 03/30/18						
NO2+NO3 as N	5.29	0.083	0.20	mg/l	2.00	3.24	102	90-110	0.2	20	
Matrix Spike Dup (W8C1855-MSD2)					Source: 8C29063-01 Prepared & Analyzed: 03/30/18						
NO2+NO3 as N	5.20	0.083	0.20	mg/l	2.00	3.22	99	90-110	0.2	20	
Batch: W8D0367 - EPA 351.2											
Blank (W8D0367-BLK1)					Prepared: 04/06/18 Analyzed: 04/10/18						
TKN	ND	0.050	0.10	mg/l							
LCS (W8D0367-BS1)					Prepared: 04/06/18 Analyzed: 04/10/18						
TKN	1.02	0.050	0.10	mg/l	1.00		102	90-110			
Matrix Spike (W8D0367-MS1)					Source: 8C29031-01 Prepared: 04/06/18 Analyzed: 04/10/18						
TKN	1.85	0.050	0.10	mg/l	1.00	0.835	102	90-110			



WECK LABORATORIES, INC.

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Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study March 2018 P6040555

Reported:
04/20/2018 13:12

Project Manager: Kelly Hahs

Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W8D0367 - EPA 351.2 (Continued)											
Matrix Spike Dup (W8D0367-MSD1)											
Source: 8C29031-01				Prepared: 04/06/18		Analyzed: 04/10/18					
TKN	1.80	0.050	0.10	mg/l	1.00	0.835	96	90-110	3	10	
Batch: W8D0368 - EPA 351.2											
Blank (W8D0368-BLK1)											
Source: 8C29031-01				Prepared: 04/06/18		Analyzed: 04/10/18					
TKN, Soluble	ND	0.050	0.10	mg/l							
LCS (W8D0368-BS1)											
Source: 8C29031-01				Prepared: 04/06/18		Analyzed: 04/10/18					
TKN, Soluble	1.01	0.050	0.10	mg/l	1.00		101	90-110			
Matrix Spike (W8D0368-MS1)											
Source: 8C29031-01				Prepared: 04/06/18		Analyzed: 04/10/18					
TKN, Soluble	1.56	0.050	0.10	mg/l	1.00	0.615	95	90-110			
Matrix Spike Dup (W8D0368-MSD1)											
Source: 8C29031-01				Prepared: 04/06/18		Analyzed: 04/10/18					
TKN, Soluble	1.68	0.050	0.10	mg/l	1.00	0.615	107	90-110	8	10	



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04/20/2018 13:12

Project Manager: Kelly Hahs



Notes and Definitions

Item	Definition
M-06	Due to the high concentration of analyte inherent in the sample, sample was diluted prior to preparation. The MDL and MRL were raised due to this dilution.
MS-02	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Source	Sample that was matrix spiked or duplicated.
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)
MDA	Minimum Detectable Activity
NR	Not Reportable
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS 002.



Ventura River and Tributaries
Algae, Eutrophic Conditions, and Nutrients TMDL
(VR Algae TMDL)

8d26094

Comprehensive Monitoring Program

CHAIN-OF-CUSTODY RECORD

1 OF 1

CLIENT: Ventura County Watershed Protection District (Master Agreement WECKLABORATORY18MA01, Project P6040555)

SAMPLING EVENT: APRIL 2018

SAMPLING DATE: 4/25/18

SAMPLERS: K. HAYS, B. JONES

GRAB SAMPLES

SAMPLE ID	DATE/TIME	** FIELD FILTERED						NOTES
		Total Nitrogen, Total Phosphorus	Dissolved Nitrogen, Dissolved Phosphorus **	Nitrate + Nitrite as Nitrogen				
TMDL-Est	4/25/18 1410	X	X	X				
TMDL-R1	1330	X	X	X				
TMDL-R2	1120	X	X	X				
TMDL-R3	1005	X	X	X				
TMDL-R4	0820	X	X	X				
TMDL-CL	1220	X	X	X				
TMDL-SA	0910	X	X	X				
TMDL-ED		X	X	X				(Note which site)

Signature: <i>Kelly Hays</i>	Signature: <i>Carlos Navarro</i>
Print Name: KELLY HAYS	Print Name: Carlos Navarro
Affiliation: VCWPD	Affiliation: Weck Labs
Date/Time Received: 4/26/18 / 1100	Date/Time Received: 4/26/18
Date/Time Relinquished: 4/26/18 / 1100	Date/Time Relinquished:

Signature: <i>Angela Dominguez</i>	Signature: <i>Angela Dominguez</i>
Print Name: Carlos Navarro	Print Name: Angela Dominguez
Affiliation: Weck Labs	Affiliation: Weck Labs
Date/Time Received: 4/26/18 730	Date/Time Received: 4/26/18
Date/Time Relinquished:	Date/Time Relinquished: 15:30

Miscellaneous Notes (Hazardous Materials, Quick turn-around time, etc.):

Dissolved samples were field filtered

14C

Work Orders: 8D26094

Project: TMDL Study April 2018 P6040555

Attn: Kelly Hahs

Client: Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Report Date: 5/23/2018

Received Date: 4/26/2018

Turnaround Time: Normal

Phones: (805) 658-4375

Fax: (805) 654-3350

P.O. #: WECKLABORATORYFY1
8MA01

Billing Code:

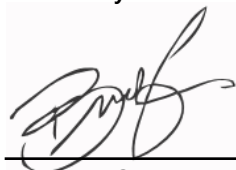
DoD-ELAP #L2457 • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO 17025 #L2457.01 •
LACSD #10143 • NELAP-CA #04229CA • NELAP-OR #4047 • NJ-DEP #CA015

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Kelly Hahs,

Enclosed are the results of analyses for samples received 4/26/18 with the Chain-of-Custody document. The samples were received in good condition, at 1.4 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:



Brandon Gee
Operations Manager/Senior PM





WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study April 2018 P6040555

Reported:
05/23/2018 15:34

Project Manager: Kelly Hahs

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
TMDL-Est	K. Hahs/ B. Jones	8D26094-01	Water	04/25/18 14:10	
TMDL-R1	K. Hahs/ B. Jones	8D26094-02	Water	04/26/18 13:30	
TMDL-R2	K. Hahs/ B. Jones	8D26094-03	Water	04/25/18 11:20	
TMDL-R3	K. Hahs/ B. Jones	8D26094-04	Water	04/25/18 10:05	
TMDL-R4	K. Hahs/ B. Jones	8D26094-05	Water	04/25/18 08:20	
TMDL-CL	K. Hahs/ B. Jones	8D26094-06	Water	04/25/18 12:20	
TMDL-SA	K. Hahs/ B. Jones	8D26094-07	Water	04/25/18 09:10	



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Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study April 2018 P6040555

Reported:
05/23/2018 15:34

Project Manager: Kelly Hahs

Sample Results

Sample: TMDL-Est
8D26094-01 (Water)
Sampled: 04/25/18 14:10 by K. Hahs/ B. Jones

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC	Batch ID: [CALC]	Instr: [CALC]	Prepared: 05/02/18 08:44		Analyst: ymt		
METHOD ***							
Dissolved Nitrogen	0.43		0.30	mg/l	1x1	05/03/18 14:40	
Method: _Various	Batch ID: [CALC]	Instr: [CALC]	Prepared: 05/02/18 08:44		Analyst: ymt		
Nitrogen, Total	0.68		0.20	mg/l	1x1	05/03/18 14:40	
Method: EPA 351.2	Batch ID: W8E0031	Instr: AA06	Prepared: 05/01/18 10:18		Analyst: ymt		
TKN	0.68	0.050	0.10	mg/l	1x1	05/03/18 14:40	
Method: EPA 351.2	Batch ID: W8E0032	Instr: AA06	Prepared: 05/01/18 10:25		Analyst: ymt		
TKN, Soluble	0.43	0.050	0.10	mg/l	1x1	05/03/18 14:40	
Method: EPA 353.2	Batch ID: W8E0101	Instr: AA01	Prepared: 05/02/18 08:44		Analyst: AJK		
NO2+NO3 as N	ND	0.083	0.20	mg/l	1x1	05/02/18 16:27	
Method: EPA 365.1	Batch ID: W8E0092	Instr: AA01	Prepared: 05/01/18 18:04		Analyst: BDM		
Phosphorus as P, Total	0.058	0.0014	0.010	mg/l	1x1	05/07/18 14:13	
Method: EPA 365.1	Batch ID: W8E0240	Instr: AA01	Prepared: 05/21/18 18:04		Analyst: AJK		
Phosphorus, Dissolved	0.011	0.0014	0.010	mg/l	1x1	05/23/18 11:48	

Sample: TMDL-R1
8D26094-02 (Water)
Sampled: 04/26/18 13:30 by K. Hahs/ B. Jones

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC	Batch ID: [CALC]	Instr: [CALC]	Prepared: 05/02/18 08:44		Analyst: ymt		
METHOD ***							
Dissolved Nitrogen	0.74		0.30	mg/l	1x1	05/03/18 14:40	
Method: _Various	Batch ID: [CALC]	Instr: [CALC]	Prepared: 05/02/18 08:44		Analyst: ymt		
Nitrogen, Total	0.86		0.20	mg/l	1x1	05/03/18 14:40	
Method: EPA 351.2	Batch ID: W8E0031	Instr: AA06	Prepared: 05/01/18 10:18		Analyst: ymt		
TKN	0.50	0.050	0.10	mg/l	1x1	05/03/18 14:40	
Method: EPA 351.2	Batch ID: W8E0032	Instr: AA06	Prepared: 05/01/18 10:25		Analyst: ymt		
TKN, Soluble	0.38	0.050	0.10	mg/l	1x1	05/03/18 14:40	
Method: EPA 353.2	Batch ID: W8E0101	Instr: AA01	Prepared: 05/02/18 08:44		Analyst: AJK		
NO2+NO3 as N	0.36	0.083	0.20	mg/l	1x1	05/02/18 16:28	
Method: EPA 365.1	Batch ID: W8E0092	Instr: AA01	Prepared: 05/01/18 18:04		Analyst: BDM		
Phosphorus as P, Total	0.054	0.0014	0.010	mg/l	1x1	05/07/18 14:17	
Method: EPA 365.1	Batch ID: W8E0240	Instr: AA01	Prepared: 05/21/18 18:04		Analyst: AJK		
Phosphorus, Dissolved	0.033	0.0014	0.010	mg/l	1x1	05/23/18 11:49	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study April 2018 P6040555

Reported:
05/23/2018 15:34

Project Manager: Kelly Hahs

Sample Results

(Continued)

Sample: TMDL-R2
8D26094-03 (Water) Sampled: 04/25/18 11:20 by K. Hahs/ B. Jones

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC	Batch ID: [CALC]	Instr: [CALC]	Prepared: 05/02/18 08:44		Analyst: ymt		
METHOD ***							
Dissolved Nitrogen	1.7		0.30	mg/l	1x1	05/03/18 14:40	
Method: _Various	Batch ID: [CALC]	Instr: [CALC]	Prepared: 05/02/18 08:44		Analyst: ymt		
Nitrogen, Total	1.9		0.20	mg/l	1x1	05/03/18 14:40	
Method: EPA 351.2	Batch ID: W8E0031	Instr: AA06	Prepared: 05/01/18 10:18		Analyst: ymt		
TKN	0.42	0.050	0.10	mg/l	1x1	05/03/18 14:40	
Method: EPA 351.2	Batch ID: W8E0032	Instr: AA06	Prepared: 05/01/18 10:25		Analyst: ymt		
TKN, Soluble	0.24	0.050	0.10	mg/l	1x1	05/03/18 14:40	
Method: EPA 353.2	Batch ID: W8E0101	Instr: AA01	Prepared: 05/02/18 08:44		Analyst: AJK		
NO2+NO3 as N	1.5	0.083	0.20	mg/l	1x1	05/02/18 16:29	
Method: EPA 365.1	Batch ID: W8E0092	Instr: AA01	Prepared: 05/01/18 18:04		Analyst: BDM		
Phosphorus as P, Total	0.059	0.0014	0.010	mg/l	1x1	05/07/18 14:18	
Method: EPA 365.1	Batch ID: W8E0240	Instr: AA01	Prepared: 05/21/18 18:04		Analyst: AJK		
Phosphorus, Dissolved	0.047	0.0014	0.010	mg/l	1x1	05/23/18 11:43	

Sample: TMDL-R3
8D26094-04 (Water) Sampled: 04/25/18 10:05 by K. Hahs/ B. Jones

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC	Batch ID: [CALC]	Instr: [CALC]	Prepared: 05/02/18 08:44		Analyst: ymt		
METHOD ***							
Dissolved Nitrogen	0.72		0.30	mg/l	1x1	05/03/18 14:40	
Method: _Various	Batch ID: [CALC]	Instr: [CALC]	Prepared: 05/02/18 08:44		Analyst: ymt		
Nitrogen, Total	0.84		0.20	mg/l	1x1	05/03/18 14:40	
Method: EPA 351.2	Batch ID: W8E0031	Instr: AA06	Prepared: 05/01/18 10:18		Analyst: ymt		
TKN	0.27	0.050	0.10	mg/l	1x1	05/03/18 14:40	
Method: EPA 351.2	Batch ID: W8E0032	Instr: AA06	Prepared: 05/01/18 10:25		Analyst: ymt		
TKN, Soluble	0.15	0.050	0.10	mg/l	1x1	05/03/18 14:40	
Method: EPA 353.2	Batch ID: W8E0101	Instr: AA01	Prepared: 05/02/18 08:44		Analyst: AJK		
NO2+NO3 as N	0.57	0.083	0.20	mg/l	1x1	05/02/18 16:30	
Method: EPA 365.1	Batch ID: W8E0092	Instr: AA01	Prepared: 05/01/18 18:04		Analyst: BDM		
Phosphorus as P, Total	0.019	0.0014	0.010	mg/l	1x1	05/07/18 14:20	
Method: EPA 365.1	Batch ID: W8E0240	Instr: AA01	Prepared: 05/21/18 18:04		Analyst: AJK		
Phosphorus, Dissolved	0.010	0.0014	0.010	mg/l	1x1	05/23/18 11:56	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Certificate of Analysis

FINAL REPORT

Project Number: TMDL Study April 2018 P6040555

Reported:
05/23/2018 15:34

Project Manager: Kelly Hahs

Sample Results

(Continued)

Sample: TMDL-R4
8D26094-05 (Water)

Sampled: 04/25/18 8:20 by K. Hahs/ B. Jones

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC	Batch ID: [CALC]	Instr: [CALC]	Prepared: 05/02/18 08:44		Analyst: ymt		
METHOD ***							
Dissolved Nitrogen	0.69		0.30	mg/l	1x1	05/03/18 14:40	
Method: _Various	Batch ID: [CALC]	Instr: [CALC]	Prepared: 05/02/18 08:44		Analyst: ymt		
Nitrogen, Total	0.74		0.20	mg/l	1x1	05/03/18 14:40	
Method: EPA 351.2	Batch ID: W8E0031	Instr: AA06	Prepared: 05/01/18 10:18		Analyst: ymt		
TKN	0.16	0.050	0.10	mg/l	1x1	05/03/18 14:40	
Method: EPA 351.2	Batch ID: W8E0032	Instr: AA06	Prepared: 05/01/18 10:25		Analyst: ymt		
TKN, Soluble	0.11	0.050	0.10	mg/l	1x1	05/03/18 14:40	
Method: EPA 353.2	Batch ID: W8E0101	Instr: AA01	Prepared: 05/02/18 08:44		Analyst: AJK		
NO2+NO3 as N	0.58	0.083	0.20	mg/l	1x1	05/02/18 16:31	
Method: EPA 365.1	Batch ID: W8E0092	Instr: AA01	Prepared: 05/01/18 18:04		Analyst: BDM		
Phosphorus as P, Total	0.013	0.0014	0.010	mg/l	1x1	05/07/18 14:21	
Method: EPA 365.1	Batch ID: W8E0240	Instr: AA01	Prepared: 05/21/18 18:04		Analyst: AJK		
Phosphorus, Dissolved	0.0075	0.0014	0.010	mg/l	1x1	05/23/18 11:52	J

Sample: TMDL-CL
8D26094-06 (Water)

Sampled: 04/25/18 12:20 by K. Hahs/ B. Jones

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC	Batch ID: [CALC]	Instr: [CALC]	Prepared: 05/02/18 08:44		Analyst: ymt		
METHOD ***							
Dissolved Nitrogen	0.54		0.30	mg/l	1x1	05/03/18 14:40	
Method: _Various	Batch ID: [CALC]	Instr: [CALC]	Prepared: 05/02/18 08:44		Analyst: ymt		
Nitrogen, Total	0.59		0.20	mg/l	1x1	05/03/18 14:40	
Method: EPA 351.2	Batch ID: W8E0031	Instr: AA06	Prepared: 05/01/18 10:18		Analyst: ymt		
TKN	0.59	0.050	0.10	mg/l	1x1	05/03/18 14:40	
Method: EPA 351.2	Batch ID: W8E0032	Instr: AA06	Prepared: 05/01/18 10:25		Analyst: ymt		
TKN, Soluble	0.54	0.050	0.10	mg/l	1x1	05/03/18 14:40	
Method: EPA 353.2	Batch ID: W8E0101	Instr: AA01	Prepared: 05/02/18 08:44		Analyst: AJK		
NO2+NO3 as N	ND	0.083	0.20	mg/l	1x1	05/02/18 16:33	
Method: EPA 365.1	Batch ID: W8E0092	Instr: AA01	Prepared: 05/01/18 18:04		Analyst: BDM		
Phosphorus as P, Total	0.021	0.0014	0.010	mg/l	1x1	05/07/18 14:23	
Method: EPA 365.1	Batch ID: W8E0240	Instr: AA01	Prepared: 05/21/18 18:04		Analyst: AJK		
Phosphorus, Dissolved	0.0074	0.0014	0.010	mg/l	1x1	05/23/18 11:53	J



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Ventura County Watershed Protection District
800 South Victoria Avenue
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Certificate of Analysis

FINAL REPORT

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Reported:
05/23/2018 15:34

Project Manager: Kelly Hahs

Sample Results

(Continued)

Sample: TMDL-SA
8D26094-07 (Water)

Sampled: 04/25/18 9:10 by K. Hahs/ B. Jones

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods							
Method: *** DEFAULT SPECIFIC	Batch ID: [CALC]	Instr: [CALC]	Prepared: 05/02/18 08:44		Analyst: ymt		
METHOD ***							
Dissolved Nitrogen	ND		0.30	mg/l	1x1	05/03/18 14:40	
Method: _Various	Batch ID: [CALC]	Instr: [CALC]	Prepared: 05/02/18 08:44		Analyst: ymt		
Nitrogen, Total	0.25		0.20	mg/l	1x1	05/03/18 14:40	
Method: EPA 351.2	Batch ID: W8E0031	Instr: AA06	Prepared: 05/01/18 10:18		Analyst: ymt		
TKN	0.25	0.050	0.10	mg/l	1x1	05/03/18 14:40	
Method: EPA 351.2	Batch ID: W8E0032	Instr: AA06	Prepared: 05/01/18 10:25		Analyst: ymt		
TKN, Soluble	0.24	0.050	0.10	mg/l	1x1	05/03/18 14:40	
Method: EPA 353.2	Batch ID: W8E0101	Instr: AA01	Prepared: 05/02/18 08:44		Analyst: AJK		
NO2+NO3 as N	ND	0.083	0.20	mg/l	1x1	05/02/18 16:34	
Method: EPA 365.1	Batch ID: W8E0092	Instr: AA01	Prepared: 05/01/18 18:04		Analyst: BDM		
Phosphorus as P, Total	0.021	0.0014	0.010	mg/l	1x1	05/07/18 14:24	
Method: EPA 365.1	Batch ID: W8E0240	Instr: AA01	Prepared: 05/21/18 18:04		Analyst: AJK		
Phosphorus, Dissolved	0.0094	0.0014	0.010	mg/l	1x1	05/23/18 11:55	J



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05/23/2018 15:34

Project Manager: Kelly Hahs

Quality Control Results

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W8E0031 - EPA 351.2											
Blank (W8E0031-BLK1)					Prepared: 05/01/18 Analyzed: 05/03/18						
TKN	ND	0.050	0.10	mg/l							
LCS (W8E0031-BS1)					Prepared: 05/01/18 Analyzed: 05/03/18						
TKN	0.962	0.050	0.10	mg/l	1.00		96	90-110			
Matrix Spike (W8E0031-MS1)					Source: 8D25038-01 Prepared: 05/01/18 Analyzed: 05/03/18						
TKN	0.992	0.050	0.10	mg/l	1.00	ND	99	90-110			
Matrix Spike Dup (W8E0031-MSD1)					Source: 8D25038-01 Prepared: 05/01/18 Analyzed: 05/03/18						
TKN	0.994	0.050	0.10	mg/l	1.00	ND	99	90-110	0.2	10	
Batch: W8E0032 - EPA 351.2											
Blank (W8E0032-BLK1)					Prepared: 05/01/18 Analyzed: 05/03/18						
TKN, Soluble	ND	0.050	0.10	mg/l							
LCS (W8E0032-BS1)					Prepared: 05/01/18 Analyzed: 05/03/18						
TKN, Soluble	0.950	0.050	0.10	mg/l	1.00		95	90-110			
Matrix Spike (W8E0032-MS1)					Source: 8D26094-01 Prepared: 05/01/18 Analyzed: 05/03/18						
TKN, Soluble	1.42	0.050	0.10	mg/l	1.00	0.425	100	90-110			
Matrix Spike Dup (W8E0032-MSD1)					Source: 8D26094-01 Prepared: 05/01/18 Analyzed: 05/03/18						
TKN, Soluble	1.37	0.050	0.10	mg/l	1.00	0.425	95	90-110	3	10	
Batch: W8E0092 - EPA 365.1											
Blank (W8E0092-BLK1)					Prepared: 05/01/18 Analyzed: 05/07/18						
Phosphorus as P, Total	ND	0.0014	0.010	mg/l							
LCS (W8E0092-BS1)					Prepared: 05/01/18 Analyzed: 05/07/18						
Phosphorus as P, Total	0.0532	0.0014	0.010	mg/l	0.0500		106	90-110			
Matrix Spike (W8E0092-MS1)					Source: 8D26094-01 Prepared: 05/01/18 Analyzed: 05/07/18						
Phosphorus as P, Total	0.112	0.0014	0.010	mg/l	0.0500	0.0581	108	90-110			
Matrix Spike Dup (W8E0092-MSD1)					Source: 8D26094-01 Prepared: 05/01/18 Analyzed: 05/07/18						
Phosphorus as P, Total	0.110	0.0014	0.010	mg/l	0.0500	0.0581	104	90-110	2	20	
Batch: W8E0101 - EPA 353.2											
Blank (W8E0101-BLK1)					Prepared & Analyzed: 05/02/18						
NO2+NO3 as N	ND	0.083	0.20	mg/l							
LCS (W8E0101-BS1)					Prepared & Analyzed: 05/02/18						
NO2+NO3 as N	1.02	0.083	0.20	mg/l	1.00		102	90-110			
Matrix Spike (W8E0101-MS1)					Source: 8E01048-19 Prepared & Analyzed: 05/02/18						
NO2+NO3 as N	9.24	0.083	0.20	mg/l	2.00	7.39	92	90-110			
Matrix Spike (W8E0101-MS2)					Source: 8E01085-01 Prepared & Analyzed: 05/02/18						
NO2+NO3 as N	6.97	0.083	0.20	mg/l	2.00	5.04	96	90-110			
Matrix Spike Dup (W8E0101-MSD1)					Source: 8E01048-19 Prepared & Analyzed: 05/02/18						
NO2+NO3 as N	9.23	0.083	0.20	mg/l	2.00	7.39	92	90-110	0.1	20	



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05/23/2018 15:34

Project Manager: Kelly Hahs

Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W8E0101 - EPA 353.2 (Continued)											
Matrix Spike Dup (W8E0101-MSD2)			Source: 8E01085-01			Prepared & Analyzed: 05/02/18					
NO2+NO3 as N	6.99	0.083	0.20	mg/l	2.00	5.04	97	90-110	0.3	20	
Batch: W8E0240 - EPA 365.1											
Blank (W8E0240-BLK1)			Prepared: 05/21/18 Analyzed: 05/23/18								
Phosphorus, Dissolved	0.00176	0.0014	0.010	mg/l							J
LCS (W8E0240-BS1)			Prepared: 05/21/18 Analyzed: 05/23/18								
Phosphorus, Dissolved	0.0514	0.0014	0.010	mg/l	0.0500		103	90-110			
Matrix Spike (W8E0240-MS1)			Source: 8D26094-03			Prepared: 05/21/18 Analyzed: 05/23/18					
Phosphorus, Dissolved	0.102	0.0014	0.010	mg/l	0.0500	0.0472	110	90-110			
Matrix Spike Dup (W8E0240-MSD1)			Source: 8D26094-03			Prepared: 05/21/18 Analyzed: 05/23/18					
Phosphorus, Dissolved	0.105	0.0014	0.010	mg/l	0.0500	0.0472	116	90-110	3	20	MS-01



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Notes and Definitions

Item	Definition
J	Estimated conc. detected <MRL and >MDL.
MS-01	The spike recovery for this QC sample is outside of established control limits possibly due to sample matrix interference.
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Source	Sample that was matrix spiked or duplicated.
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)
MDA	Minimum Detectable Activity
NR	Not Reportable
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS 002.

county of ventura



January 24, 2018

JEFF PRATT
Agency Director

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

Central Services Department
J. Tabin Cosio, Director

Engineering Services Department
Christopher Cooper, Director

Transportation Department
David Fleisch, Director

Water & Sanitation Department
Michaela Brown, Director

Watershed Protection District
Glenn Shephard, Director

**Subject: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE
MONITORING FOR COUNTY OF VENTURA, VENTURA COUNTY
WATERSHED PROTECTION DISTRICT, AND CITY OF THOUSAND OAKS**

Dear Dr. Wang:

Table 1 below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of December 2017. Sites were sampled weekly on Tuesdays (December 5, 12, 19 and 26). Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with ♦), refer to Table 2. Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 18 MPN/100ml or for dry weather when no sample was taken. Coliform tables from SM9221 in standard methods 22nd and 23rd have been adopted thus changing the reporting limit from 2.0 MPN/100 ml to 1.8 MPN/100 ml as of November 7, 2017.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,

Arne Anselm

Deputy Director, Watershed Protection District

CC: Glenn Shephard, Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)



Table 1. Weekly sampling results

Location	Time	Date	Rain	Single Sample (as sampled)	
					E. coli (235 MPN)
MCW-8b		12/5/2017 ♦			Dry
MCW-8b		12/12/2017 ♦			Dry
MCW-8b		12/19/2017 ♦			Dry
MCW-8b		12/26/2017 ♦			Dry
MCW-9	-	12/5/2017 ♦			Dry
MCW-9	-	12/12/2017 ♦			Dry
MCW-9	-	12/19/2017 ♦			Dry
MCW-9	-	12/26/2017 ♦			Dry
MCW-12	-	12/5/2017 ♦			Dry
MCW-12	-	12/12/2017 ♦			Dry
MCW-12	-	12/19/2017 ♦			Dry
MCW-12	1115	12/26/2017 ♦		=	93
MCW-14b	1040	12/5/2017 ♦		<	18
MCW-14b	1050	12/12/2017 ♦		=	20
MCW-14b	1045	12/19/2017 ♦		<	18
MCW-14b	1040	12/26/2017 ♦		<	18
MCW-15c	955	12/5/2017 ♦		<	18
MCW-15c	1000	12/12/2017 ♦		=	130
MCW-15c	1120	12/19/2017 ♦		<	18
MCW-15c	1000	12/26/2017 ♦		=	20
MCW-17	-	12/5/2017 ♦			Dry
MCW-17	-	12/12/2017 ♦			Dry
MCW-17	-	12/19/2017 ♦			Dry
MCW-17	-	12/26/2017 ♦			Dry
MCW-18	-	12/5/2017 ♦			Dry
MCW-18	-	12/12/2017 ♦			Dry
MCW-18	-	12/19/2017 ♦			Dry
MCW-18	-	12/26/2017 ♦			Dry

Notes:

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.

♦ Date of sampling

- Reporting limit has been changed from 2.0 MPN/100 ml to 1.8 MPN/100 ml.



Table 2. Computation of daily geomean

Location	Time	Date	Rain		Single Sample (adjusted for rain, dry and NDs)	Geomean
					E. coli (235 MPN)	E. coli (126 MPN)
MCW-8b	-	12/1/17	Dry	<	9	9
MCW-8b	-	12/2/17	Dry	<	9	9
MCW-8b	-	12/3/17	Dry	<	9	9
MCW-8b	-	12/4/17	Dry	<	9	9
MCW-8b	-	12/5/2017◆	Dry	<	9	9
MCW-8b	-	12/6/17	Dry	<	9	9
MCW-8b	-	12/7/17	Dry	<	9	9
MCW-8b	-	12/8/17	Dry	<	9	9
MCW-8b	-	12/9/17	Dry	<	9	9
MCW-8b	-	12/10/17	Dry	<	9	9
MCW-8b	-	12/11/17	Dry	<	9	9
MCW-8b	-	12/12/2017◆	Dry	<	9	9
MCW-8b	-	12/13/17	Dry	<	9	9
MCW-8b	-	12/14/17	Dry	<	9	9
MCW-8b	-	12/15/17	Dry	<	9	9
MCW-8b	-	12/16/17	Dry	<	9	9
MCW-8b	-	12/17/17	Dry	<	9	9
MCW-8b	-	12/18/17	Dry	<	9	9
MCW-8b	-	12/19/2017◆	Dry	<	9	9
MCW-8b	-	12/20/17	Dry	<	9	9
MCW-8b	-	12/21/17	Dry	<	9	9
MCW-8b	-	12/22/17	Dry	<	9	9
MCW-8b	-	12/23/17	Dry	<	9	9
MCW-8b	-	12/24/17	Dry	<	9	9
MCW-8b	-	12/25/17	Dry	<	9	9
MCW-8b	-	12/26/2017◆	Dry	<	9	9
MCW-8b	-	12/27/17	Dry	<	9	9
MCW-8b	-	12/28/17	Dry	<	9	9
MCW-8b	-	12/29/17	Dry	<	9	9
MCW-8b	-	12/30/17	Dry	<	9	9
MCW-9	-	12/1/17	Dry	<	9	9
MCW-9	-	12/2/17	Dry	<	9	9
MCW-9	-	12/3/17	Dry	<	9	9
MCW-9	-	12/4/17	Dry	<	9	9
MCW-9	-	12/5/2017◆	Dry	<	9	9
MCW-9	-	12/6/17	Dry	<	9	9
MCW-9	-	12/7/17	Dry	<	9	9
MCW-9	-	12/8/17	Dry	<	9	9
MCW-9	-	12/9/17	Dry	<	9	9
MCW-9	-	12/10/17	Dry	<	9	9
MCW-9	-	12/11/17	Dry	<	9	9
MCW-9	-	12/12/2017◆	Dry	<	9	9
MCW-9	-	12/13/17	Dry	<	9	9
MCW-9	-	12/14/17	Dry	<	9	9



Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomcan
					E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-9	-	12/15/17	Dry	<	9	9
MCW-9	-	12/16/17	Dry	<	9	9
MCW-9	-	12/17/17	Dry	<	9	9
MCW-9	-	12/18/17	Dry	<	9	9
MCW-9	-	12/19/2017◆	Dry	<	9	9
MCW-9	-	12/20/17	Dry	<	9	9
MCW-9	-	12/21/17	Dry	<	9	9
MCW-9	-	12/22/17	Dry	<	9	9
MCW-9	-	12/23/17	Dry	<	9	9
MCW-9	-	12/24/17	Dry	<	9	9
MCW-9	-	12/25/17	Dry	<	9	9
MCW-9	-	12/26/2017◆	Dry	<	9	9
MCW-9	-	12/27/17	Dry	<	9	9
MCW-9	-	12/28/17	Dry	<	9	9
MCW-9	-	12/29/17	Dry	<	9	9
MCW-9	-	12/30/17	Dry	<	9	9
MCW-9	-	12/31/17	Dry	<	9	9
MCW-12	-	12/1/17	Dry	<	9	9
MCW-12	-	12/2/17	Dry	<	9	9
MCW-12	-	12/3/17	Dry	<	9	9
MCW-12	-	12/4/17	Dry	<	9	9
MCW-12	-	12/5/2017◆	Dry	<	9	9
MCW-12	-	12/6/17	Dry	<	9	9
MCW-12	-	12/7/17	Dry	<	9	9
MCW-12	-	12/8/17	Dry	<	9	9
MCW-12	-	12/9/17	Dry	<	9	9
MCW-12	-	12/10/17	Dry	<	9	9
MCW-12	-	12/11/17	Dry	<	9	9
MCW-12	-	12/12/2017◆	Dry	<	9	9
MCW-12	-	12/13/17	Dry	<	9	9
MCW-12	-	12/14/17	Dry	<	9	9
MCW-12	-	12/15/17	Dry	<	9	9
MCW-12	-	12/16/17	Dry	<	9	9
MCW-12	-	12/17/17	Dry	<	9	9
MCW-12	-	12/18/17	Dry	<	9	9
MCW-12	-	12/19/2017◆	Dry	<	9	9
MCW-12	-	12/20/17	Dry	<	9	9
MCW-12	-	12/21/17	Dry	<	9	9
MCW-12	-	12/22/17	Dry	<	9	9
MCW-12	-	12/23/17	Dry	<	9	9
MCW-12	-	12/24/17	Dry	<	9	9
MCW-12	-	12/25/17	Dry	<	9	9
MCW-12	1115	12/26/2017◆		=	93	10
MCW-12	1115	12/27/17		=	93	11



Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
					E. coli (235 MPN)	E. coli (126 MPN)
MCW-12	1115	12/28/17		=	93	11
MCW-12	1115	12/29/17		=	93	12
MCW-12	1115	12/30/17		=	93	13
MCW-12	1115	12/31/17		=	93	14
MCW-14b	1045	12/1/17		<	9	17
MCW-14b	1045	12/2/17		<	9	17
MCW-14b	1045	12/3/17		<	9	16
MCW-14b	1045	12/4/17		<	9	16
MCW-14b	1040	12/5/2017♦		<	9	15
MCW-14b	1040	12/6/17		<	9	15
MCW-14b	1040	12/7/17		<	9	15
MCW-14b	1040	12/8/17		<	9	15
MCW-14b	1040	12/9/17		<	9	15
MCW-14b	1040	12/10/17		<	9	15
MCW-14b	1040	12/11/17		<	9	15
MCW-14b	1050	12/12/2017♦		=	20	15
MCW-14b	1050	12/13/17		=	20	16
MCW-14b	1050	12/14/17		=	20	15
MCW-14b	1050	12/15/17		=	20	15
MCW-14b	1050	12/16/17		=	20	15
MCW-14b	1050	12/17/17		=	20	15
MCW-14b	1050	12/18/17		=	20	14
MCW-14b	1045	12/19/2017♦		<	9	14
MCW-14b	1045	12/20/17		<	9	13
MCW-14b	1045	12/21/17		<	9	13
MCW-14b	1045	12/22/17		<	9	12
MCW-14b	1045	12/23/17		<	9	12
MCW-14b	1045	12/24/17		<	9	12
MCW-14b	1045	12/25/17		<	9	11
MCW-14b	1040	12/26/2017♦		<	9	11
MCW-14b	1040	12/27/17		<	9	11
MCW-14b	1040	12/28/17		<	9	11
MCW-14b	1040	12/29/17		<	9	11
MCW-14b	1040	12/30/17		<	9	11
MCW-14b	1040	12/31/17		<	9	11
MCW-15c	1000	12/1/17		<	9	17
MCW-15c	1000	12/2/17		<	9	16
MCW-15c	1000	12/3/17		<	9	15
MCW-15c	1000	12/4/17		<	9	14
MCW-15c	955	12/5/2017♦		<	9	14
MCW-15c	955	12/6/17		<	9	13
MCW-15c	955	12/7/17		<	9	13
MCW-15c	955	12/8/17		<	9	13
MCW-15c	955	12/9/17		<	9	13



Location		Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
					E. coli (235 MPN)	E. coli (126 MPN)
MCW-15c	955	12/10/17		<	9	13
MCW-15c	955	12/11/17		<	9	13
MCW-15c	1000	12/12/2017 ♦		=	130	14
MCW-15c	1000	12/13/17		=	130	16
MCW-15c	1000	12/14/17		=	130	16
MCW-15c	1000	12/15/17		=	130	17
MCW-15c	1000	12/16/17		=	130	17
MCW-15c	1000	12/17/17		=	130	18
MCW-15c	1000	12/18/17		=	130	19
MCW-15c	1120	12/19/2017 ♦		<	9	18
MCW-15c	1120	12/20/17		<	9	17
MCW-15c	1120	12/21/17		<	9	17
MCW-15c	1120	12/22/17		<	9	17
MCW-15c	1120	12/23/17		<	9	17
MCW-15c	1120	12/24/17		<	9	17
MCW-15c	1120	12/25/17		<	9	17
MCW-15c	1000	12/26/2017 ♦		=	20	17
MCW-15c	1000	12/27/17		=	20	18
MCW-15c	1000	12/28/17		=	20	18
MCW-15c	1000	12/29/17		=	20	19
MCW-15c	1000	12/30/17		=	20	19
MCW-15c	1000	12/31/17		=	20	20
MCW-17	-	12/1/17	Dry	<	9	9
MCW-17	-	12/2/17	Dry	<	9	9
MCW-17	-	12/3/17	Dry	<	9	9
MCW-17	-	12/4/17	Dry	<	9	9
MCW-17	-	12/5/2017 ♦	Dry	<	9	9
MCW-17	-	12/6/17	Dry	<	9	9
MCW-17	-	12/7/17	Dry	<	9	9
MCW-17	-	12/8/17	Dry	<	9	9
MCW-17	-	12/9/17	Dry	<	9	9
MCW-17	-	12/10/17	Dry	<	9	9
MCW-17	-	12/11/17	Dry	<	9	9
MCW-17	-	12/12/2017 ♦	Dry	<	9	9
MCW-17	-	12/13/17	Dry	<	9	9
MCW-17	-	12/14/17	Dry	<	9	9
MCW-17	-	12/15/17	Dry	<	9	9
MCW-17	-	12/16/17	Dry	<	9	9
MCW-17	-	12/17/17	Dry	<	9	9
MCW-17	-	12/18/17	Dry	<	9	9
MCW-17	-	12/19/2017 ♦	Dry	<	9	9
MCW-17	-	12/20/17	Dry	<	9	9
MCW-17	-	12/21/17	Dry	<	9	9
MCW-17	-	12/22/17	Dry	<	9	9
MCW-17	-	12/23/17	Dry	<	9	9
MCW-17	-	12/24/17	Dry	<	9	9



Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
					E. coli (235 MPN)	E. coli (126 MPN)
MCW-17	-	12/25/17	Dry	<	9	9
MCW-17	-	12/26/2017♦	Dry	<	9	9
MCW-17	-	12/27/17	Dry	<	9	9
MCW-17	-	12/28/17	Dry	<	9	9
MCW-17	-	12/29/17	Dry	<	9	9
MCW-17	-	12/30/17	Dry	<	9	9
MCW-17	-	12/31/17	Dry	<	9	9
MCW-18	-	12/1/17	Dry	<	9	9
MCW-18	-	12/2/17	Dry	<	9	9
MCW-18	-	12/3/17	Dry	<	9	9
MCW-18	-	12/4/17	Dry	<	9	9
MCW-18	-	12/5/2017♦	Dry	<	9	9
MCW-18	-	12/6/17	Dry	<	9	9
MCW-18	-	12/7/17	Dry	<	9	9
MCW-18	-	12/8/17	Dry	<	9	9
MCW-18	-	12/9/17	Dry	<	9	9
MCW-18	-	12/10/17	Dry	<	9	9
MCW-18	-	12/11/17	Dry	<	9	9
MCW-18	-	12/12/2017♦	Dry	<	9	9
MCW-18	-	12/13/17	Dry	<	9	9
MCW-18	-	12/14/17	Dry	<	9	9
MCW-18	-	12/15/17	Dry	<	9	9
MCW-18	-	12/16/17	Dry	<	9	9
MCW-18	-	12/17/17	Dry	<	9	9
MCW-18	-	12/18/17	Dry	<	9	9
MCW-18	-	12/19/2017♦	Dry	<	9	9
MCW-18	-	12/20/17	Dry	<	9	9
MCW-18	-	12/21/17	Dry	<	9	9
MCW-18	-	12/22/17	Dry	<	9	9
MCW-18	-	12/23/17	Dry	<	9	9
MCW-18	-	12/24/17	Dry	<	9	9
MCW-18	-	12/25/17	Dry	<	9	9
MCW-18	-	12/26/2017♦	Dry	<	9	9
MCW-18	-	12/27/17	Dry	<	9	9
MCW-18	-	12/28/17	Dry	<	9	9
MCW-18	-	12/29/17	Dry	<	9	9
MCW-18	-	12/30/17	Dry	<	9	9
MCW-18	-	12/31/17	Dry	<	9	9

Notes:

Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.

Results of <18 are adjusted to use half the MDL (=9) in the calculation of the geomean

Reporting limit changed from 2.0 MPN/100 ml to 1.8 MPN/100 ml beginning November 7, 2017.

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010

♦Date of sampling



county of ventura



February 22, 2018

JEFF PRATT
Agency Director

Central Services Department
J. Tabin Cosio, Director

Engineering Services Department
Christopher Cooper, Director

Transportation Department
David Fleisch, Director

Water & Sanitation Department
Michaela Brown, Director

Watershed Protection District
Glenn Shephard, Director

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

**Subject: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE
MONITORING FOR COUNTY OF VENTURA, VENTURA COUNTY
WATERSHED PROTECTION DISTRICT, AND CITY OF THOUSAND OAKS**

Dear Dr. Wang:

Table 1 below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of January 2018. Sites were sampled weekly on Tuesdays (January 2, 9, 16, 23 and 30). Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with ♦), refer to Table 2. Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 18 MPN/100ml or for dry weather when no sample was taken. Coliform tables from SM9221 in standard methods 22nd and 23rd have been adopted thus changing the reporting limit from 2.0 MPN/100 ml to 1.8 MPN/100 ml as of November 7, 2017.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,

Arne Anselm
Deputy Director, Watershed Protection District

CC: Glenn Shephard, Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)



Table 1. Weekly sampling results

Location	Time	Date	Rain	Single Sample (as sampled)	
					E. coli (235 MPN)
MCW-8b		1/2/2018 ♦			Dry
MCW-8b		1/9/2018 ♦	Rain	=	68
MCW-8b		1/16/2018 ♦			Dry
MCW-8b		1/23/2018 ♦			Dry
MCW-8b		1/30/2018 ♦			Dry
MCW-9	-	1/2/2018 ♦			Dry
MCW-9	-	1/9/2018 ♦	Rain		Dry
MCW-9	-	1/16/2018 ♦			Dry
MCW-9	-	1/23/2018 ♦			Dry
MCW-9	-	1/30/2018 ♦			Dry
MCW-12	1130	1/2/2018 ♦		<	18
MCW-12	1215	1/9/2018 ♦	Rain	=	120
MCW-12	1115	1/16/2018 ♦		=	20
MCW-12	1115	1/23/2018 ♦		<	18
MCW-12	1115	1/30/2018 ♦		<	18
MCW-14b	1045	1/2/2018 ♦		<	18
MCW-14b	1115	1/9/2018 ♦	Rain	=	220
MCW-14b	1040	1/16/2018 ♦		=	40
MCW-14b	1035	1/23/2018 ♦		=	20
MCW-14b	1045	1/30/2018 ♦		<	18
MCW-15c	1015	1/2/2018 ♦		<	18
MCW-15c	1030	1/9/2018 ♦	Rain	=	220
MCW-15c	1015	1/16/2018 ♦		<	18
MCW-15c	1000	1/23/2018 ♦		<	18
MCW-15c	1000	1/30/2018 ♦		<	18
MCW-17	-	1/2/2018 ♦			Dry
MCW-17	-	1/9/2018 ♦	Rain	=	240
MCW-17	-	1/16/2018 ♦			Dry
MCW-17	-	1/23/2018 ♦			Dry
MCW-17	-	1/30/2018 ♦			Dry
MCW-18	-	1/2/2018 ♦			Dry
MCW-18	-	1/9/2018 ♦	Rain		Dry
MCW-18	-	1/16/2018 ♦			Dry
MCW-18	-	1/23/2018 ♦			Dry
MCW-18	-	1/30/2018 ♦			Dry

Notes:

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.

♦ Date of sampling

- Reporting limit has been changed from 2.0 MPN/100 ml to 1.8 MPN/100 ml.



Table 2. Computation of daily geomean

Location	Time	Date	Rain		Single Sample (adjusted for rain, dry and NDs)	Geomean
					E. coli (235 MPN)	E. coli (126 MPN)
MCW-8b	-	1/1/18	Dry	<	9	9
MCW-8b	-	1/2/2018♦	Dry	<	9	9
MCW-8b	-	1/3/18	Dry	<	9	9
MCW-8b	-	1/4/18	Dry	<	9	9
MCW-8b	-	1/5/18	Dry	<	9	9
MCW-8b	-	1/6/18	Dry	<	9	9
MCW-8b	-	1/7/18	Dry	<	9	9
MCW-8b	-	1/8/18	Dry	<	9	9
MCW-8b	-	1/9/2018♦			**Rain**	**Rain**
MCW-8b	-	1/10/18			**Rain**	**Rain**
MCW-8b	-	1/11/18			**Rain**	**Rain**
MCW-8b	-	1/12/18			**Rain**	**Rain**
MCW-8b	-	1/13/18			**Rain**	**Rain**
MCW-8b	-	1/14/18			**Rain**	**Rain**
MCW-8b	-	1/15/18			**Rain**	**Rain**
MCW-8b	-	1/16/2018♦	Dry	<	9	9
MCW-8b	-	1/17/18	Dry	<	9	9
MCW-8b	-	1/18/18	Dry	<	9	9
MCW-8b	-	1/19/18	Dry	<	9	9
MCW-8b	-	1/20/18	Dry	<	9	9
MCW-8b	-	1/21/18	Dry	<	9	9
MCW-8b	-	1/22/18	Dry	<	9	9
MCW-8b	-	1/23/2018♦	Dry	<	9	9
MCW-8b	-	1/24/18	Dry	<	9	9
MCW-8b	-	1/25/18	Dry	<	9	9
MCW-8b	-	1/26/18	Dry	<	9	9
MCW-8b	-	1/27/18	Dry	<	9	9
MCW-8b	-	1/28/18	Dry	<	9	9
MCW-8b	-	1/29/18	Dry	<	9	9
MCW-8b	-	1/30/2018♦	Dry	<	9	9
MCW-8b	-	1/31/18	Dry	<	9	9
MCW-9	-	1/1/18	Dry	<	9	9
MCW-9	-	1/2/2018♦	Dry	<	9	9
MCW-9	-	1/3/18	Dry	<	9	9
MCW-9	-	1/4/18	Dry	<	9	9
MCW-9	-	1/5/18	Dry	<	9	9
MCW-9	-	1/6/18	Dry	<	9	9
MCW-9	-	1/7/18	Dry	<	9	9
MCW-9	-	1/8/18	Dry	<	9	9
MCW-9	-	1/9/2018♦	Dry	<	9	9
MCW-9	-	1/10/18	Dry	<	9	9
MCW-9	-	1/11/18	Dry	<	9	9
MCW-9	-	1/12/18	Dry	<	9	9
MCW-9	-	1/13/18	Dry	<	9	9



Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
				E. coli		E. coli
				(235 MPN)		(126 MPN)
MCW-9	-	1/14/18	Dry	<	9	9
MCW-9	-	1/15/18	Dry	<	9	9
MCW-9	-	1/16/2018♦	Dry	<	9	9
MCW-9	-	1/17/18	Dry	<	9	9
MCW-9	-	1/18/18	Dry	<	9	9
MCW-9	-	1/19/18	Dry	<	9	9
MCW-9	-	1/20/18	Dry	<	9	9
MCW-9	-	1/21/18	Dry	<	9	9
MCW-9	-	1/22/18	Dry	<	9	9
MCW-9	-	1/23/2018♦	Dry	<	9	9
MCW-9	-	1/24/18	Dry	<	9	9
MCW-9	-	1/25/18	Dry	<	9	9
MCW-9	-	1/26/18	Dry	<	9	9
MCW-9	-	1/27/18	Dry	<	9	9
MCW-9	-	1/28/18	Dry	<	9	9
MCW-9	-	1/29/18	Dry	<	9	9
MCW-9	-	1/30/2018♦	Dry	<	9	9
MCW-9	-	1/31/18	Dry	<	9	9
MCW-12	1115	1/1/18		=	93	16
MCW-12	1130	1/2/2018♦		<	9	16
MCW-12	1130	1/3/18		<	9	16
MCW-12	1130	1/4/18		<	9	16
MCW-12	1130	1/5/18		<	9	16
MCW-12	1130	1/6/18		<	9	16
MCW-12	1130	1/7/18		<	9	16
MCW-12	1130	1/8/18		<	9	16
MCW-12	1215	1/9/2018♦			**Rain**	**Rain**
MCW-12	1215	1/10/18			**Rain**	**Rain**
MCW-12	1215	1/11/18			**Rain**	**Rain**
MCW-12	1215	1/12/18			**Rain**	**Rain**
MCW-12	1215	1/13/18			**Rain**	**Rain**
MCW-12	1215	1/14/18			**Rain**	**Rain**
MCW-12	1215	1/15/18			**Rain**	**Rain**
MCW-12	1115	1/16/2018♦		=	20	16
MCW-12	1115	1/17/18		=	20	16
MCW-12	1115	1/18/18		=	20	17
MCW-12	1115	1/19/18		=	20	17
MCW-12	1115	1/20/18		=	20	18
MCW-12	1115	1/21/18		=	20	18
MCW-12	1115	1/22/18		=	20	19
MCW-12	1115	1/23/2018♦		<	9	19
MCW-12	1115	1/24/18		<	9	19
MCW-12	1115	1/25/18		<	9	19
MCW-12	1115	1/26/18		<	9	19



Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
				E. coli		E. coli
				(235 MPN)		(126 MPN)
MCW-12	1115	1/27/18		<	9	19
MCW-12	1115	1/28/18		<	9	19
MCW-12	1115	1/29/18		<	9	19
MCW-12	1115	1/30/2018◆		<	9	19
MCW-12	1115	1/31/18		<	9	19
MCW-14b	1040	1/1/18		<	9	11
MCW-14b	1045	1/2/2018◆		<	9	11
MCW-14b	1045	1/3/18		<	9	11
MCW-14b	1045	1/4/18		<	9	11
MCW-14b	1045	1/5/18		<	9	11
MCW-14b	1045	1/6/18		<	9	11
MCW-14b	1045	1/7/18		<	9	11
MCW-14b	1045	1/8/18		<	9	11
MCW-14b	1115	1/9/2018◆			**Rain**	**Rain**
MCW-14b	1115	1/10/18			**Rain**	**Rain**
MCW-14b	1115	1/11/18			**Rain**	**Rain**
MCW-14b	1115	1/12/18			**Rain**	**Rain**
MCW-14b	1115	1/13/18			**Rain**	**Rain**
MCW-14b	1115	1/14/18			**Rain**	**Rain**
MCW-14b	1115	1/15/18			**Rain**	**Rain**
MCW-14b	1040	1/16/2018◆		=	40	11
MCW-14b	1040	1/17/18		=	40	12
MCW-14b	1040	1/18/18		=	40	12
MCW-14b	1040	1/19/18		=	40	13
MCW-14b	1040	1/20/18		=	40	13
MCW-14b	1040	1/21/18		=	40	13
MCW-14b	1040	1/22/18		=	40	13
MCW-14b	1035	1/23/2018◆		=	20	13
MCW-14b	1035	1/24/18		=	20	13
MCW-14b	1035	1/25/18		=	20	14
MCW-14b	1035	1/26/18		=	20	14
MCW-14b	1035	1/27/18		=	20	15
MCW-14b	1035	1/28/18		=	20	15
MCW-14b	1035	1/29/18		=	20	15
MCW-14b	1040	1/30/2018◆		<	9	15
MCW-14b	1040	1/31/18		<	9	15
MCW-15c	1000	1/1/18		=	20	20
MCW-15c	1015	1/2/2018◆		<	9	20
MCW-15c	1015	1/3/18		<	9	20
MCW-15c	1015	1/4/18		<	9	20
MCW-15c	1015	1/5/18		<	9	20
MCW-15c	1015	1/6/18		<	9	20
MCW-15c	1015	1/7/18		<	9	20
MCW-15c	1015	1/8/18		<	9	20
MCW-15c	1030	1/9/2018◆			**Rain**	**Rain**



Location		Date	Rain		Single Sample (adjusted for rain, dry and NDs)	Geomean
					E. coli (235 MPN)	E. coli (126 MPN)
MCW-15c	1030	1/10/18			**Rain**	**Rain**
MCW-15c	1030	1/11/18			**Rain**	**Rain**
MCW-15c	1030	1/12/18			**Rain**	**Rain**
MCW-15c	1030	1/13/18			**Rain**	**Rain**
MCW-15c	1030	1/14/18			**Rain**	**Rain**
MCW-15c	1030	1/15/18			**Rain**	**Rain**
MCW-15c	1015	1/16/2018 ♦		<	9	20
MCW-15c	1015	1/17/18		<	9	20
MCW-15c	1015	1/18/18		<	9	18
MCW-15c	1015	1/19/18		<	9	17
MCW-15c	1015	1/20/18		<	9	15
MCW-15c	1015	1/21/18		<	9	14
MCW-15c	1015	1/22/18		<	9	13
MCW-15c	1000	1/23/2018 ♦		<	9	12
MCW-15c	1000	1/24/18		<	9	11
MCW-15c	1000	1/25/18		<	9	11
MCW-15c	1000	1/26/18		<	9	11
MCW-15c	1000	1/27/18		<	9	11
MCW-15c	1000	1/28/18		<	9	11
MCW-15c	1000	1/29/18		<	9	11
MCW-15c	1000	1/30/2018 ♦		<	9	11
MCW-15c	1000	1/31/18		<	9	11
MCW-17	-	1/1/18	Dry	<	9	9
MCW-17	-	1/2/2018 ♦	Dry	<	9	9
MCW-17	-	1/3/18	Dry	<	9	9
MCW-17	-	1/4/18	Dry	<	9	9
MCW-17	-	1/5/18	Dry	<	9	9
MCW-17	-	1/6/18	Dry	<	9	9
MCW-17	-	1/7/18	Dry	<	9	9
MCW-17	-	1/8/18	Dry	<	9	9
MCW-17	-	1/9/2018 ♦			**Rain**	**Rain**
MCW-17	-	1/10/18			**Rain**	**Rain**
MCW-17	-	1/11/18			**Rain**	**Rain**
MCW-17	-	1/12/18			**Rain**	**Rain**
MCW-17	-	1/13/18			**Rain**	**Rain**
MCW-17	-	1/14/18			**Rain**	**Rain**
MCW-17	-	1/15/18			**Rain**	**Rain**
MCW-17	-	1/16/2018 ♦	Dry	<	9	9
MCW-17	-	1/17/18	Dry	<	9	9
MCW-17	-	1/18/18	Dry	<	9	9
MCW-17	-	1/19/18	Dry	<	9	9
MCW-17	-	1/20/18	Dry	<	9	9
MCW-17	-	1/21/18	Dry	<	9	9
MCW-17	-	1/22/18	Dry	<	9	9
MCW-17	-	1/23/2018 ♦	Dry	<	9	9
MCW-17	-	1/24/18	Dry	<	9	9



Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
				<	E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-17	-	1/25/18	Dry	<	9	9
MCW-17	-	1/26/18	Dry	<	9	9
MCW-17	-	1/27/18	Dry	<	9	9
MCW-17	-	1/28/18	Dry	<	9	9
MCW-17	-	1/29/18	Dry	<	9	9
MCW-17	-	1/30/2018 ♦	Dry	<	9	9
MCW-17	-	1/31/18	Dry	<	9	9
MCW-18	-	1/1/18	Dry	<	9	9
MCW-18	-	1/2/2018 ♦	Dry	<	9	9
MCW-18	-	1/3/18	Dry	<	9	9
MCW-18	-	1/4/18	Dry	<	9	9
MCW-18	-	1/5/18	Dry	<	9	9
MCW-18	-	1/6/18	Dry	<	9	9
MCW-18	-	1/7/18	Dry	<	9	9
MCW-18	-	1/8/18	Dry	<	9	9
MCW-18	-	1/9/2018 ♦	Dry	<	9	9
MCW-18	-	1/10/18	Dry	<	9	9
MCW-18	-	1/11/18	Dry	<	9	9
MCW-18	-	1/12/18	Dry	<	9	9
MCW-18	-	1/13/18	Dry	<	9	9
MCW-18	-	1/14/18	Dry	<	9	9
MCW-18	-	1/15/18	Dry	<	9	9
MCW-18	-	1/16/2018 ♦	Dry	<	9	9
MCW-18	-	1/17/18	Dry	<	9	9
MCW-18	-	1/18/18	Dry	<	9	9
MCW-18	-	1/19/18	Dry	<	9	9
MCW-18	-	1/20/18	Dry	<	9	9
MCW-18	-	1/21/18	Dry	<	9	9
MCW-18	-	1/22/18	Dry	<	9	9
MCW-18	-	1/23/2018 ♦	Dry	<	9	9
MCW-18	-	1/24/18	Dry	<	9	9
MCW-18	-	1/25/18	Dry	<	9	9
MCW-18	-	1/26/18	Dry	<	9	9
MCW-18	-	1/27/18	Dry	<	9	9
MCW-18	-	1/28/18	Dry	<	9	9
MCW-18	-	1/29/18	Dry	<	9	9
MCW-18	-	1/30/2018 ♦	Dry	<	9	9
MCW-18	-	1/31/18	Dry	<	9	9

Notes:

Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.

Results of <18 are adjusted to use half the MDL (=9) in the calculation of the geomean

Reporting limit changed from 2.0 MPN/100 ml to 1.8 MPN/100 ml beginning November 7, 2017.

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010

♦ Date of sampling



April 30, 2018

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

Subject: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE
MONITORING FOR COUNTY OF VENTURA, VENTURA COUNTY
WATERSHED PROTECTION DISTRICT, AND CITY OF THOUSAND
OAKS

JEFF PRATT
Agency Director

Central Services Department
J. Tabin Cosio, Director

Engineering Services Department
Christopher Cooper, Director

Transportation Department
David Fleisch, Director

Water & Sanitation Department
Michaela Brown, Director

Watershed Protection District
Glenn Shephard, Director

Dear Dr. Wang,

Table 1 below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of February 2018. Sites were sampled weekly on Tuesdays (February 6, 13 and 20) except for one instance when sites were sampled Wednesday (February 28) due to staffing conflicts. Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with ♦), refer to Table 2. Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 18 MPN/100ml or for dry weather when no sample was taken. Coliform tables from SM9221 in standard methods 22nd and 23rd have been adopted thus changing the reporting limit from 2.0 MPN/100 ml to 1.8 MPN/100 ml as of November 7, 2017.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,



Arne Anselm

Deputy Director, Watershed Protection District

CC: Glenn Shephard, Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)



Table 1. Weekly sampling results

Location	Time	Date	Rain	Single Sample (as sampled)	
					E. coli (235 MPN)
MCW-8b	-	2/6/2018 ♦			Dry
MCW-8b	-	2/13/2018 ♦			Dry
MCW-8b	-	2/20/2018 ♦			Dry
MCW-8b	-	2/28/2018 ♦			Dry
MCW-9	-	2/6/2018 ♦			Dry
MCW-9	-	2/13/2018 ♦			Dry
MCW-9	-	2/20/2018 ♦			Dry
MCW-9	-	2/28/2018 ♦			Dry
MCW-12	1115	2/6/2018 ♦		<	18
MCW-12	1120	2/13/2018 ♦		=	45
MCW-12	1100	2/20/2018 ♦		<	18
MCW-12	1120	2/28/2018 ♦		<	18
MCW-14b	1040	2/6/2018 ♦		<	18
MCW-14b	1045	2/13/2018 ♦		=	490
MCW-14b	1025	2/20/2018 ♦		<	18
MCW-14b	1045	2/28/2018 ♦		<	18
MCW-15c	1000	2/6/2018 ♦		<	18
MCW-15c	1000	2/13/2018 ♦		=	3,500
MCW-15c	945	2/20/2018 ♦		<	18
MCW-15c	100	2/28/2018 ♦		<	18
MCW-17	-	2/6/2018 ♦			Dry
MCW-17	-	2/13/2018 ♦			Dry
MCW-17	-	2/20/2018 ♦			Dry
MCW-17	-	2/28/2018 ♦			Dry
MCW-18	-	2/6/2018 ♦			Dry
MCW-18	-	2/13/2018 ♦			Dry
MCW-18	-	2/20/2018 ♦			Dry
MCW-18	-	2/28/2018 ♦			Dry

Notes:

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.

♦ Date of sampling

- Reporting limit has been changed from 2.0 MPN/100 ml to 1.8 MPN/100 ml.



Table 2. Computation of daily geomean

Location	Time	Date	Rain		Single Sample (adjusted for rain, dry and NDs)	Geomean
					E. coli (235 MPN)	E. coli (126 MPN)
MCW-8b	-	2/1/18	Dry	<	9	9
MCW-8b	-	2/2/18	Dry	<	9	9
MCW-8b	-	2/3/18	Dry	<	9	9
MCW-8b	-	2/4/18	Dry	<	9	9
MCW-8b	-	2/5/18	Dry	<	9	9
MCW-8b	-	2/6/2018♦	Dry	<	9	9
MCW-8b	-	2/7/18	Dry	<	9	9
MCW-8b	-	2/8/18	Dry	<	9	9
MCW-8b	-	2/9/18	Dry	<	9	9
MCW-8b	-	2/10/18	Dry	<	9	9
MCW-8b	-	2/11/18	Dry	<	9	9
MCW-8b	-	2/12/18	Dry	<	9	9
MCW-8b	-	2/13/2018♦	Dry	<	9	9
MCW-8b	-	2/14/18	Dry	<	9	9
MCW-8b	-	2/15/18	Dry	<	9	9
MCW-8b	-	2/16/18	Dry	<	9	9
MCW-8b	-	2/17/18	Dry	<	9	9
MCW-8b	-	2/18/18	Dry	<	9	9
MCW-8b	-	2/19/18	Dry	<	9	9
MCW-8b	-	2/20/2018♦	Dry	<	9	9
MCW-8b	-	2/21/18	Dry	<	9	9
MCW-8b	-	2/22/18	Dry	<	9	9
MCW-8b	-	2/23/18	Dry	<	9	9
MCW-8b	-	2/24/18	Dry	<	9	9
MCW-8b	-	2/25/18	Dry	<	9	9
MCW-8b	-	2/26/18	Dry	<	9	9
MCW-8b	-	2/27/18	Dry	<	9	9
MCW-8b	-	2/28/2018♦	Dry	<	9	9
MCW-9	-	2/1/18	Dry	<	9	9
MCW-9	-	2/2/18	Dry	<	9	9
MCW-9	-	2/3/18	Dry	<	9	9
MCW-9	-	2/4/18	Dry	<	9	9
MCW-9	-	2/5/18	Dry	<	9	9
MCW-9	-	2/6/2018♦	Dry	<	9	9
MCW-9	-	2/7/18	Dry	<	9	9
MCW-9	-	2/8/18	Dry	<	9	9
MCW-9	-	2/9/18	Dry	<	9	9
MCW-9	-	2/10/18	Dry	<	9	9
MCW-9	-	2/11/18	Dry	<	9	9
MCW-9	-	2/12/18	Dry	<	9	9
MCW-9	-	2/13/2018♦	Dry	<	9	9
MCW-9	-	2/14/18	Dry	<	9	9
MCW-9	-	2/15/18	Dry	<	9	9
MCW-9	-	2/16/18	Dry	<	9	9



Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
					E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-9	-	2/17/18	Dry	<	9	9
MCW-9	-	2/18/18	Dry	<	9	9
MCW-9	-	2/19/18	Dry	<	9	9
MCW-9	-	2/20/2018◆	Dry	<	9	9
MCW-9	-	2/21/18	Dry	<	9	9
MCW-9	-	2/22/18	Dry	<	9	9
MCW-9	-	2/23/18	Dry	<	9	9
MCW-9	-	2/24/18	Dry	<	9	9
MCW-9	-	2/25/18	Dry	<	9	9
MCW-9	-	2/26/18	Dry	<	9	9
MCW-9	-	2/27/18	Dry	<	9	9
MCW-9	-	2/28/2018◆	Dry	<	9	9
MCW-12	1115	2/1/18		<	9	17
MCW-12	1115	2/2/18		<	9	16
MCW-12	1115	2/3/18		<	9	15
MCW-12	1115	2/4/18		<	9	14
MCW-12	1115	2/5/18		<	9	13
MCW-12	1115	2/6/2018◆		<	9	12
MCW-12	1115	2/7/18		<	9	11
MCW-12	1115	2/8/18		<	9	11
MCW-12	1115	2/9/18		<	9	11
MCW-12	1115	2/10/18		<	9	11
MCW-12	1115	2/11/18		<	9	11
MCW-12	1115	2/12/18		<	9	11
MCW-12	1120	2/13/2018◆		=	490	11
MCW-12	1120	2/14/18		=	490	12
MCW-12	1120	2/15/18		=	490	12
MCW-12	1120	2/16/18		=	490	13
MCW-12	1120	2/17/18		=	490	13
MCW-12	1120	2/18/18		=	490	13
MCW-12	1120	2/19/18		=	490	14
MCW-12	1100	2/20/2018◆		<	9	13
MCW-12	1100	2/21/18		<	9	13
MCW-12	1100	2/22/18		<	9	13
MCW-12	1100	2/23/18		<	9	13
MCW-12	1100	2/24/18		<	9	13
MCW-12	1100	2/25/18		<	9	13
MCW-12	1100	2/26/18		<	9	13
MCW-12	1100	2/27/18		<	9	13
MCW-12	1120	2/28/2018◆		<	9	13
MCW-14b	1040	2/1/18		<	9	15
MCW-14b	1040	2/2/18		<	9	15
MCW-14b	1040	2/3/18		<	9	15
MCW-14b	1040	2/4/18		<	9	15



Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
					E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-14b	1040	2/5/18		<	9	15
MCW-14b	1040	2/6/2018♦		<	9	15
MCW-14b	1040	2/7/18		<	9	15
MCW-14b	1040	2/8/18		<	9	15
MCW-14b	1040	2/9/18		<	9	15
MCW-14b	1040	2/10/18		<	9	15
MCW-14b	1040	2/11/18		<	9	15
MCW-14b	1040	2/12/18		<	9	15
MCW-14b	1045	2/13/2018♦		=	490	18
MCW-14b	1045	2/14/18		=	490	20
MCW-14b	1045	2/15/18		=	490	22
MCW-14b	1045	2/16/18		=	490	24
MCW-14b	1045	2/17/18		=	490	26
MCW-14b	1045	2/18/18		=	490	28
MCW-14b	1045	2/19/18		=	490	30
MCW-14b	1025	2/20/2018♦		<	9	29
MCW-14b	1025	2/21/18		<	9	28
MCW-14b	1025	2/22/18		<	9	27
MCW-14b	1025	2/23/18		<	9	26
MCW-14b	1025	2/24/18		<	9	25
MCW-14b	1025	2/25/18		<	9	25
MCW-14b	1025	2/26/18		<	9	24
MCW-14b	1025	2/27/18		<	9	23
MCW-14b	1045	2/28/2018♦		<	9	23
MCW-15c	1000	2/1/18		<	9	11
MCW-15c	1000	2/2/18		<	9	10
MCW-15c	1000	2/3/18		<	9	10
MCW-15c	1000	2/4/18		<	9	10
MCW-15c	1000	2/5/18		<	9	9
MCW-15c	1000	2/6/2018♦		<	9	9
MCW-15c	1000	2/7/18		<	9	9
MCW-15c	1000	2/8/18		<	9	9
MCW-15c	1000	2/9/18		<	9	9
MCW-15c	1000	2/10/18		<	9	9
MCW-15c	1000	2/11/18		<	9	9
MCW-15c	1000	2/12/18		<	9	9
MCW-15c	1000	2/13/2018♦		=	3,500	11
MCW-15c	1000	2/14/18		=	3,500	13
MCW-15c	1000	2/15/18		=	3,500	16
MCW-15c	1000	2/16/18		=	3,500	20
MCW-15c	1000	2/17/18		=	3,500	24
MCW-15c	1000	2/18/18		=	3,500	30
MCW-15c	1000	2/19/18		=	3,500	36
MCW-15c	945	2/20/2018♦		<	9	36
MCW-15c	945	2/21/18		<	9	36



					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location		Date	Rain		E. coli (235 MPN)	E. coli (126 MPN)
MCW-15c	945	2/22/18		<	9	36
MCW-15c	945	2/23/18		<	9	36
MCW-15c	945	2/24/18		<	9	36
MCW-15c	945	2/25/18		<	9	36
MCW-15c	945	2/26/18		<	9	36
MCW-15c	945	2/27/18		<	9	36
MCW-15c	1000	2/28/2018◆		<	9	36
MCW-17	-	2/1/18	Dry	<	9	9
MCW-17	-	2/2/18	Dry	<	9	9
MCW-17	-	2/3/18	Dry	<	9	9
MCW-17	-	2/4/18	Dry	<	9	9
MCW-17	-	2/5/18	Dry	<	9	9
MCW-17	-	2/6/2018◆	Dry	<	9	9
MCW-17	-	2/7/18	Dry	<	9	9
MCW-17	-	2/8/18	Dry	<	9	9
MCW-17	-	2/9/18	Dry	<	9	9
MCW-17	-	2/10/18	Dry	<	9	9
MCW-17	-	2/11/18	Dry	<	9	9
MCW-17	-	2/12/18	Dry	<	9	9
MCW-17	-	2/13/2018◆	Dry	<	9	9
MCW-17	-	2/14/18	Dry	<	9	9
MCW-17	-	2/15/18	Dry	<	9	9
MCW-17	-	2/16/18	Dry	<	9	9
MCW-17	-	2/17/18	Dry	<	9	9
MCW-17	-	2/18/18	Dry	<	9	9
MCW-17	-	2/19/18	Dry	<	9	9
MCW-17	-	2/20/2018◆	Dry	<	9	9
MCW-17	-	2/21/18	Dry	<	9	9
MCW-17	-	2/22/18	Dry	<	9	9
MCW-17	-	2/23/18	Dry	<	9	9
MCW-17	-	2/24/18	Dry	<	9	9
MCW-17	-	2/25/18	Dry	<	9	9
MCW-17	-	2/26/18	Dry	<	9	9
MCW-17	-	2/27/18	Dry	<	9	9
MCW-17	-	2/28/2018◆	Dry	<	9	9
MCW-18	-	2/1/18	Dry	<	9	9
MCW-18	-	2/2/18	Dry	<	9	9
MCW-18	-	2/3/18	Dry	<	9	9
MCW-18	-	2/4/18	Dry	<	9	9
MCW-18	-	2/5/18	Dry	<	9	9
MCW-18	-	2/6/2018◆	Dry	<	9	9
MCW-18	-	2/7/18	Dry	<	9	9
MCW-18	-	2/8/18	Dry	<	9	9
MCW-18	-	2/9/18	Dry	<	9	9
MCW-18	-	2/10/18	Dry	<	9	9
MCW-18	-	2/11/18	Dry	<	9	9



[illegible]

Results of <18 are adjusted to use half the MDL (=9) in the calculation of the geometric mean

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010



county of ventura



April 30, 2018

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

Subject: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE
MONITORING FOR COUNTY OF VENTURA, VENTURA COUNTY WATERSHED
PROTECTION DISTRICT, AND CITY OF THOUSAND OAKS

JEFF PRATT
Agency Director

Central Services Department
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Engineering Services Department
Christopher Cooper, Director

Transportation Department
David Fleisch, Director

Water & Sanitation Department
Michaela Brown, Director

Watershed Protection District
Glenn Shephard, Director

Dear Dr. Wang,

Please find attached the revised report for the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of March 2018. This revised report corrects the geomean calculations, which previously utilized an incorrect result from February 28, 2018. Sites were sampled weekly on Tuesdays (March 6, 13, 20 and 27). Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with ♦), refer to Table 2. Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 18 MPN/100ml or for dry weather when no sample was taken. Coliform tables from SM9221 in standard methods 22nd and 23rd have been adopted thus changing the reporting limit from 2.0 MPN/100 ml to 1.8 MPN/100 ml as of November 7, 2017.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,

Arne Anselm

Deputy Director, Watershed Protection District

CC: Glenn Shephard, Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)



Table 1. Weekly sampling results

Location	Time	Date	Rain	Single Sample (as sampled)	
					E. coli (235 MPN)
MCW-8b	-	3/6/2018 ♦			Dry
MCW-8b	1245	3/13/2018 ♦	Rain	<	18
MCW-8b	1230	3/20/2018 ♦		<	18
MCW-8b	1210	3/27/2018 ♦		<	18
MCW-9	-	3/6/2018 ♦			Dry
MCW-9	-	3/13/2018 ♦	Rain		Dry
MCW-9	-	3/20/2018 ♦			Dry
MCW-9	-	3/27/2018 ♦			Dry
MCW-12	1120	3/6/2018 ♦		=	20
MCW-12	1150	3/13/2018 ♦	Rain	=	40
MCW-12	1140	3/20/2018 ♦		=	110
MCW-12	1135	3/27/2018 ♦		<	18
MCW-14b	1040	3/6/2018 ♦		=	40
MCW-14b	1115	3/13/2018 ♦	Rain	=	20
MCW-14b	1100	3/20/2018 ♦		=	40
MCW-14b	1050	3/27/2018 ♦		<	18
MCW-15c	955	3/6/2018 ♦		=	20
MCW-15c	1035	3/13/2018 ♦	Rain	=	92
MCW-15c	1015	3/20/2018 ♦		=	490
MCW-15c	1000	3/27/2018 ♦		<	18
MCW-17	-	3/6/2018 ♦			Dry
MCW-17	-	3/13/2018 ♦	Rain		Dry
MCW-17	-	3/20/2018 ♦			Dry
MCW-17	-	3/27/2018 ♦			Dry
MCW-18	-	3/6/2018 ♦			Dry
MCW-18	-	3/13/2018 ♦	Rain		Dry
MCW-18	-	3/20/2018 ♦			Dry
MCW-18	-	3/27/2018 ♦			Dry

Notes:

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.

♦ Date of sampling

- Reporting limit has been changed from 2.0 MPN/100 ml to 1.8 MPN/100 ml.



Table 2. Computation of daily geomean

Location	Time	Date	Rain		Single Sample (adjusted for rain, dry and NDs)	Geomean
					E. coli (235 MPN)	E. coli (126 MPN)
MCW-8b	-	3/1/18	Dry	<	9	9
MCW-8b	-	3/2/18	Dry	<	9	9
MCW-8b	-	3/3/18	Dry	<	9	9
MCW-8b	-	3/4/18	Dry	<	9	9
MCW-8b	-	3/5/18	Dry	<	9	9
MCW-8b	-	3/6/2018♦	Dry	<	9	9
MCW-8b	-	3/7/18	Dry	<	9	9
MCW-8b	-	3/8/18	Dry	<	9	9
MCW-8b	-	3/9/18	Dry	<	9	9
MCW-8b	-	3/10/18	Dry	<	9	9
MCW-8b	-	3/11/18	Dry	<	9	9
MCW-8b	-	3/12/18	Dry	<	9	9
MCW-8b	1245	3/13/2018♦			**Rain**	**Rain**
MCW-8b	1245	3/14/18			**Rain**	**Rain**
MCW-8b	1245	3/15/18			**Rain**	**Rain**
MCW-8b	1245	3/16/18			**Rain**	**Rain**
MCW-8b	1245	3/17/18			**Rain**	**Rain**
MCW-8b	1245	3/18/18			**Rain**	**Rain**
MCW-8b	1245	3/19/18			**Rain**	**Rain**
MCW-8b	1230	3/20/2018♦		<	9	9
MCW-8b	1230	3/21/18		<	9	9
MCW-8b	1230	3/22/18		<	9	9
MCW-8b	1230	3/23/18		<	9	9
MCW-8b	1230	3/24/18		<	9	9
MCW-8b	1230	3/25/18		<	9	9
MCW-8b	1230	3/26/18		<	9	9
MCW-8b	1210	3/27/2018♦		<	9	9
MCW-8b	1210	3/28/18		<	9	9
MCW-8b	1210	3/29/18		<	9	9
MCW-8b	1210	3/30/18		<	9	9
MCW-8b	1210	3/31/18		<	9	9
MCW-9	-	3/1/18	Dry	<	9	9
MCW-9	-	3/2/18	Dry	<	9	9
MCW-9	-	3/3/18	Dry	<	9	9
MCW-9	-	3/4/18	Dry	<	9	9
MCW-9	-	3/5/18	Dry	<	9	9
MCW-9	-	3/6/2018♦	Dry	<	9	9
MCW-9	-	3/7/18	Dry	<	9	9
MCW-9	-	3/8/18	Dry	<	9	9
MCW-9	-	3/9/18	Dry	<	9	9
MCW-9	-	3/10/18	Dry	<	9	9
MCW-9	-	3/11/18	Dry	<	9	9
MCW-9	-	3/12/18	Dry	<	9	9
MCW-9	-	3/13/2018♦	Dry		**Rain**	**Rain**



Location	Time	Date	Rain		Single Sample (adjusted for rain, dry and NDs)	Geomean
					E. coli (235 MPN)	E. coli (126 MPN)
MCW-9	-	3/14/18	Dry		**Rain**	**Rain**
MCW-9	-	3/15/18	Dry		**Rain**	**Rain**
MCW-9	-	3/16/18	Dry		**Rain**	**Rain**
MCW-9	-	3/17/18	Dry		**Rain**	**Rain**
MCW-9	-	3/18/18	Dry		**Rain**	**Rain**
MCW-9	-	3/19/18	Dry		**Rain**	**Rain**
MCW-9	-	3/20/2018 ♦	Dry	<	9	9
MCW-9	-	3/21/18	Dry	<	9	9
MCW-9	-	3/22/18	Dry	<	9	9
MCW-9	-	3/23/18	Dry	<	9	9
MCW-9	-	3/24/18	Dry	<	9	9
MCW-9	-	3/25/18	Dry	<	9	9
MCW-9	-	3/26/18	Dry	<	9	9
MCW-9	-	3/27/2018 ♦	Dry	<	9	9
MCW-9	-	3/28/18	Dry	<	9	9
MCW-9	-	3/29/18	Dry	<	9	9
MCW-9	-	3/30/18	Dry	<	9	9
MCW-9	-	3/31/18	Dry	<	9	9
MCW-12	1120	3/1/18		<	9	13
MCW-12	1120	3/2/18		<	9	13
MCW-12	1120	3/3/18		<	9	13
MCW-12	1120	3/4/18		<	9	13
MCW-12	1120	3/5/18		<	9	13
MCW-12	1120	3/6/2018 ♦		=	20	13
MCW-12	1120	3/7/18		=	20	14
MCW-12	1120	3/8/18		=	20	14
MCW-12	1120	3/9/18		=	20	15
MCW-12	1120	3/10/18		=	20	15
MCW-12	1120	3/11/18		=	20	15
MCW-12	1120	3/12/18		=	20	16
MCW-12	1150	3/13/2018 ♦	Rain		**Rain**	**Rain**
MCW-12	1150	3/14/18	Rain		**Rain**	**Rain**
MCW-12	1150	3/15/18	Rain		**Rain**	**Rain**
MCW-12	1150	3/16/18	Rain		**Rain**	**Rain**
MCW-12	1150	3/17/18	Rain		**Rain**	**Rain**
MCW-12	1150	3/18/18	Rain		**Rain**	**Rain**
MCW-12	1150	3/19/18	Rain		**Rain**	**Rain**
MCW-12	1140	3/20/2018 ♦		=	110	17
MCW-12	1140	3/21/18		=	110	19
MCW-12	1140	3/22/18		=	110	19
MCW-12	1140	3/23/18		=	110	20
MCW-12	1140	3/24/18		=	110	20
MCW-12	1140	3/25/18		=	110	21
MCW-12	1140	3/26/18		=	110	22



Location	Time	Date	Rain		Single Sample (adjusted for rain, dry and NDs)	Geomean
					E. coli (235 MPN)	E. coli (126 MPN)
MCW-12	1135	3/27/18♦		<	9	21
MCW-12	1135	3/28/18		<	9	19
MCW-12	1135	3/29/18		<	9	19
MCW-12	1135	3/30/18		<	9	19
MCW-12	1135	3/31/18		<	9	19
MCW-14b	1045	3/1/18		<	9	23
MCW-14b	1045	3/2/18		<	9	23
MCW-14b	1045	3/3/18		<	9	23
MCW-14b	1045	3/4/18		<	9	23
MCW-14b	1045	3/5/18		<	9	23
MCW-14b	1040	3/6/2018♦		=	40	24
MCW-14b	1040	3/7/18		=	40	25
MCW-14b	1040	3/8/18		=	40	27
MCW-14b	1040	3/9/18		=	40	28
MCW-14b	1040	3/10/18		=	40	29
MCW-14b	1040	3/11/18		=	40	31
MCW-14b	1040	3/12/18		=	40	32
MCW-14b	1115	3/13/2018♦	Rain		**Rain**	**Rain**
MCW-14b	1115	3/14/18	Rain		**Rain**	**Rain**
MCW-14b	1115	3/15/18	Rain		**Rain**	**Rain**
MCW-14b	1115	3/16/18	Rain		**Rain**	**Rain**
MCW-14b	1115	3/17/18	Rain		**Rain**	**Rain**
MCW-14b	1115	3/18/18	Rain		**Rain**	**Rain**
MCW-14b	1115	3/19/18	Rain		**Rain**	**Rain**
MCW-14b	1100	3/20/2018♦		=	40	34
MCW-14b	1100	3/21/18		=	40	36
MCW-14b	1100	3/22/18		=	40	33
MCW-14b	1100	3/23/18		=	40	30
MCW-14b	1100	3/24/18		=	40	28
MCW-14b	1100	3/25/18		=	40	26
MCW-14b	1100	3/26/18		=	40	24
MCW-14b	1050	3/27/2018♦		<	9	21
MCW-14b	1050	3/28/18		<	9	18
MCW-14b	1050	3/29/18		<	9	18
MCW-14b	1050	3/30/18		<	9	18
MCW-14b	1050	3/31/18		<	9	18
MCW-15c	1000	3/1/18		<	9	36
MCW-15c	1000	3/2/18		<	9	36
MCW-15c	1000	3/3/18		<	9	36
MCW-15c	1000	3/4/18		<	9	36
MCW-15c	1000	3/5/18		<	9	36
MCW-15c	955	3/6/2018♦		=	20	37
MCW-15c	955	3/7/18		=	20	38
MCW-15c	955	3/8/18		=	20	39



MCW-15c	955	3/9/18		=	20	40
					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location		Date	Rain		E. coli (235 MPN)	E. coli (126 MPN)
MCW-15c	955	3/10/18		=	20	41
MCW-15c	955	3/11/18		=	20	42
MCW-15c	955	3/12/18		=	20	44
MCW-15c	1035	3/13/2018 ♦	Rain		**Rain**	**Rain**
MCW-15c	1035	3/14/18	Rain		**Rain**	**Rain**
MCW-15c	1035	3/15/18	Rain		**Rain**	**Rain**
MCW-15c	1035	3/16/18	Rain		**Rain**	**Rain**
MCW-15c	1035	3/17/18	Rain		**Rain**	**Rain**
MCW-15c	1035	3/18/18	Rain		**Rain**	**Rain**
MCW-15c	1035	3/19/18	Rain		**Rain**	**Rain**
MCW-15c	1015	3/20/2018 ♦		=	490	50
MCW-15c	1015	3/21/18		=	490	57
MCW-15c	1015	3/22/18		=	490	53
MCW-15c	1015	3/23/18		=	490	50
MCW-15c	1015	3/24/18		=	490	47
MCW-15c	1015	3/25/18		=	490	44
MCW-15c	1015	3/26/18		=	490	41
MCW-15c	1000	3/27/2018 ♦		<	9	34
MCW-15c	1000	3/28/18		<	9	28
MCW-15c	1000	3/29/18		<	9	28
MCW-15c	1000	3/30/18		<	9	28
MCW-15c	1000	3/31/18		<	9	28
MCW-17	-	3/1/18	Dry	<	9	9
MCW-17	-	3/2/18	Dry	<	9	9
MCW-17	-	3/3/18	Dry	<	9	9
MCW-17	-	3/4/18	Dry	<	9	9
MCW-17	-	3/5/18	Dry	<	9	9
MCW-17	-	3/6/2018 ♦	Dry	<	9	9
MCW-17	-	3/7/18	Dry	<	9	9
MCW-17	-	3/8/18	Dry	<	9	9
MCW-17	-	3/9/18	Dry	<	9	9
MCW-17	-	3/10/18	Dry	<	9	9
MCW-17	-	3/11/18	Dry	<	9	9
MCW-17	-	3/12/18	Dry	<	9	9
MCW-17	-	3/13/2018 ♦	Dry	<	9	9
MCW-17	-	3/14/18	Dry	<	9	9
MCW-17	-	3/15/18	Dry	<	9	9
MCW-17	-	3/16/18	Dry	<	9	9
MCW-17	-	3/17/18	Dry	<	9	9
MCW-17	-	3/18/18	Dry	<	9	9
MCW-17	-	3/19/18	Dry	<	9	9
MCW-17	-	3/20/2018 ♦	Dry	<	9	9
MCW-17	-	3/21/18	Dry	<	9	9
MCW-17	-	3/22/18	Dry	<	9	9
MCW-17	-	3/23/18	Dry	<	9	9



MCW-17	-	3/24/18	Dry	<	9	9
				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli (235 MPN)	E. coli (126 MPN)
MCW-17	-	3/25/18	Dry	<	9	9
MCW-17	-	3/26/18	Dry	<	9	9
MCW-17	-	3/27/2018◆	Dry	<	9	9
MCW-17	-	3/28/18	Dry	<	9	9
MCW-17	-	3/29/18	Dry	<	9	9
MCW-17	-	3/30/18	Dry	<	9	9
MCW-17	-	3/31/18	Dry	<	9	9
MCW-18	-	3/1/18	Dry	<	9	9
MCW-18	-	3/2/18	Dry	<	9	9
MCW-18	-	3/3/18	Dry	<	9	9
MCW-18	-	3/4/18	Dry	<	9	9
MCW-18	-	3/5/18	Dry	<	9	9
MCW-18	-	3/6/2018◆	Dry	<	9	9
MCW-18	-	3/7/18	Dry	<	9	9
MCW-18	-	3/8/18	Dry	<	9	9
MCW-18	-	3/9/18	Dry	<	9	9
MCW-18	-	3/10/18	Dry	<	9	9
MCW-18	-	3/11/18	Dry	<	9	9
MCW-18	-	3/12/18	Dry	<	9	9
MCW-18	-	3/13/2018◆	Dry	<	9	9
MCW-18	-	3/14/18	Dry	<	9	9
MCW-18	-	3/15/18	Dry	<	9	9
MCW-18	-	3/16/18	Dry	<	9	9
MCW-18	-	3/17/18	Dry	<	9	9
MCW-18	-	3/18/18	Dry	<	9	9
MCW-18	-	3/19/18	Dry	<	9	9
MCW-18	-	3/20/2018◆	Dry	<	9	9
MCW-18	-	3/21/18	Dry	<	9	9
MCW-18	-	3/22/18	Dry	<	9	9
MCW-18	-	3/23/18	Dry	<	9	9
MCW-18	-	3/24/18	Dry	<	9	9
MCW-18	-	3/25/18	Dry	<	9	9
MCW-18	-	3/26/18	Dry	<	9	9
MCW-18	-	3/27/2018◆	Dry	<	9	9
MCW-18	-	3/28/18	Dry	<	9	9
MCW-18	-	3/29/18	Dry	<	9	9
MCW-18	-	3/30/18	Dry	<	9	9
MCW-18	-	3/31/18	Dry	<	9	9

Notes:

Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.

Results of <18 are adjusted to use half the MDL (=9) in the calculation of the geomean

Reporting limit changed from 2.0 MPN/100 ml to 1.8 MPN/100 ml beginning November 7, 2017.

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010

◆ Date of sampling



county of ventura



May 21, 2018

JEFF PRATT
Agency Director

Central Services Department
J. Tabin Cosio, Director

Engineering Services Department
Christopher Cooper, Director

Transportation Department
David Fleisch, Director

Water & Sanitation Department
Michaela Brown, Director

Watershed Protection District
Glenn Shephard, Director

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

Subject: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE
MONITORING FOR COUNTY OF VENTURA, VENTURA COUNTY
WATERSHED PROTECTION DISTRICT, AND CITY OF THOUSAND
OAKS

Dear Dr. Wang,

Please find attached the report for the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of April 2018. Sites were sampled weekly on Tuesday (April 3) and on Mondays (April 9, 16, 23 and 30) due to schedule conflicts. Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with*), refer to Table 2. Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 18 MPN/100ml or for dry weather when no sample was taken. Coliform tables from SM9221 in standard methods 22nd and 23rd have been adopted thus changing the reporting limit from 2.0 MPN/100 ml to 1.8 MPN/100 ml as of November 7, 2017.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,

Arne Anselm
Deputy Director, Watershed Protection District

CC: Glenn Shephard, Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)



Table 1. Weekly sampling results

Location	Time	Date	Rain	Single Sample (as sampled)	
					E. coli (235 MPN)
MCW-8b	1145	4/3/2018 ♦		<	18
MCW-8b	1210	4/9/2018 ♦		=	18
MCW-8b	1215	4/16/2018 ♦		<	18
MCW-8b	-	4/23/2018 ♦			Dry
MCW-8b	-	4/30/2018 ♦			Dry
MCW-9	-	4/3/2018 ♦			Dry
MCW-9	-	4/9/2018 ♦			Dry
MCW-9	-	4/16/2018 ♦			Dry
MCW-9	-	4/23/2018 ♦			Dry
MCW-9	-	4/30/2018 ♦			Dry
MCW-12	1040	4/3/2018 ♦		<	18
MCW-12	1130	4/9/2018 ♦		<	18
MCW-12	1120	4/16/2018 ♦		<	18
MCW-12	1130	4/23/2018 ♦		=	130
MCW-12	1130	4/30/2018 ♦		=	40
MCW-14b	1000	4/3/2018 ♦		=	20
MCW-14b	1040	4/9/2018 ♦		<	18
MCW-14b	1040	4/16/2018 ♦		=	78
MCW-14b	1045	4/23/2018 ♦		=	78
MCW-14b	1100	4/30/2018 ♦		=	490
MCW-15c	930	4/3/2018 ♦		=	40
MCW-15c	1000	4/9/2018 ♦		<	18
MCW-15c	1000	4/16/2018 ♦		=	40
MCW-15c	1015	4/23/2018 ♦		=	130
MCW-15c	1020	4/30/2018 ♦		=	330
MCW-17	-	4/3/2018 ♦			Dry
MCW-17	-	4/9/2018 ♦			Dry
MCW-17	-	4/16/2018 ♦			Dry
MCW-17	-	4/23/2018 ♦			Dry
MCW-17	-	4/30/2018 ♦			Dry
MCW-18	-	4/3/2018 ♦			Dry
MCW-18	-	4/9/2018 ♦			Dry
MCW-18	-	4/16/2018 ♦			Dry
MCW-18	-	4/23/2018 ♦			Dry
MCW-18	-	4/30/2018 ♦			Dry

Notes:

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.

♦ Date of sampling

- Reporting limit has been changed from 2.0 MPN/100 ml to 1.8 MPN/100 ml.

Table 2. Computation of daily geomean

Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
					E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-8b	1210	4/1/18		<	9	9
MCW-8b	1210	4/2/18		<	9	9
MCW-8b	1145	4/3/2018◆		<	9	9
MCW-8b	1145	4/4/18		<	9	9
MCW-8b	1145	4/5/18		<	9	9
MCW-8b	1145	4/6/18		<	9	9
MCW-8b	1145	4/7/18		<	9	9
MCW-8b	1145	4/8/18		<	9	9
MCW-8b	1210	4/9/2018◆		=	18	9
MCW-8b	1210	4/10/18		=	18	9
MCW-8b	1210	4/11/18		=	18	10
MCW-8b	1210	4/12/18		=	18	10
MCW-8b	1210	4/13/18		=	18	10
MCW-8b	1210	4/14/18		=	18	10
MCW-8b	1210	4/15/18		=	18	11
MCW-8b	1215	4/16/2018◆		<	9	11
MCW-8b	1215	4/17/18		<	9	11
MCW-8b	1215	4/18/18		<	9	11
MCW-8b	1215	4/19/18		<	9	11
MCW-8b	1215	4/20/18		<	9	11
MCW-8b	1215	4/21/18		<	9	11
MCW-8b	1215	4/22/18		<	9	11
MCW-8b	-	4/23/2018◆	Dry	<	9	11
MCW-8b	-	4/24/18	Dry	<	9	11
MCW-8b	-	4/25/18	Dry	<	9	11
MCW-8b	-	4/26/18	Dry	<	9	11
MCW-8b	-	4/27/18	Dry	<	9	11
MCW-8b	-	4/28/18	Dry	<	9	11
MCW-8b	-	4/29/18	Dry	<	9	11
MCW-8b	-	4/30/2018◆	Dry	<	9	11
MCW-9	-	4/1/18	Dry	<	9	9
MCW-9	-	4/2/18	Dry	<	9	9
MCW-9	-	4/3/2018◆	Dry	<	9	9
MCW-9	-	4/4/18	Dry	<	9	9
MCW-9	-	4/5/18	Dry	<	9	9
MCW-9	-	4/6/18	Dry	<	9	9
MCW-9	-	4/7/18	Dry	<	9	9
MCW-9	-	4/8/18	Dry	<	9	9
MCW-9	-	4/9/2018◆	Dry	<	9	9
MCW-9	-	4/10/18	Dry	<	9	9
MCW-9	-	4/11/18	Dry	<	9	9
MCW-9	-	4/12/18	Dry	<	9	9
MCW-9	-	4/13/18	Dry	<	9	9
MCW-9	-	4/14/18	Dry	<	9	9

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Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
				<	E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-9	-	4/15/18	Dry	<	9	9
MCW-9	-	4/16/2018◆	Dry	<	9	9
MCW-9	-	4/17/18	Dry	<	9	9
MCW-9	-	4/18/18	Dry	<	9	9
MCW-9	-	4/19/18	Dry	<	9	9
MCW-9	-	4/20/18	Dry	<	9	9
MCW-9	-	4/21/18	Dry	<	9	9
MCW-9	-	4/22/18	Dry	<	9	9
MCW-9	-	4/23/2018◆	Dry	<	9	9
MCW-9	-	4/24/18	Dry	<	9	9
MCW-9	-	4/25/18	Dry	<	9	9
MCW-9	-	4/26/18	Dry	<	9	9
MCW-9	-	4/27/18	Dry	<	9	9
MCW-9	-	4/28/18	Dry	<	9	9
MCW-9	-	4/29/18	Dry	<	9	9
MCW-9	-	4/30/2018◆	Dry	<	9	9
MCW-12	1135	4/1/18	Dry	<	9	19
MCW-12	1135	4/2/18	Dry	<	9	19
MCW-12	1040	4/3/2018◆		<	9	19
MCW-12	1040	4/4/18		<	9	19
MCW-12	1040	4/5/18		<	9	19
MCW-12	1040	4/6/18		<	9	19
MCW-12	1040	4/7/18		<	9	19
MCW-12	1040	4/8/18		<	9	19
MCW-12	1130	4/9/2018◆		<	9	19
MCW-12	1130	4/10/18		<	9	19
MCW-12	1130	4/11/18		<	9	19
MCW-12	1130	4/12/18		<	9	19
MCW-12	1130	4/13/18		<	9	18
MCW-12	1130	4/14/18		<	9	18
MCW-12	1130	4/15/18		<	9	17
MCW-12	1120	4/16/2018◆		<	9	17
MCW-12	1120	4/17/18		<	9	17
MCW-12	1120	4/18/18		<	9	16
MCW-12	1120	4/19/18		<	9	15
MCW-12	1120	4/20/18		<	9	14
MCW-12	1120	4/21/18		<	9	13
MCW-12	1120	4/22/18		<	9	12
MCW-12	1130	4/23/2018◆		=	130	12
MCW-12	1130	4/24/18		=	130	12
MCW-12	1130	4/25/18		=	130	12
MCW-12	1130	4/26/18		=	130	13
MCW-12	1130	4/27/18		=	130	14
MCW-12	1130	4/28/18		=	130	15

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Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
					E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-12	1130	4/29/18		=	130	17
MCW-12	1130	4/30/2018◆		=	40	18
MCW-14b	1050	4/1/18		<	9	18
MCW-14b	1050	4/2/18		<	9	18
MCW-14b	1000	4/3/2018◆		=	20	19
MCW-14b	1000	4/4/18		=	20	19
MCW-14b	1000	4/5/18		=	20	20
MCW-14b	1000	4/6/18		=	20	20
MCW-14b	1000	4/7/18		=	20	21
MCW-14b	1000	4/8/18		=	20	21
MCW-14b	1040	4/9/2018◆		<	9	21
MCW-14b	1040	4/10/18		<	9	21
MCW-14b	1040	4/11/18		<	9	21
MCW-14b	1040	4/12/18		<	9	20
MCW-14b	1040	4/13/18		<	9	19
MCW-14b	1040	4/14/18		<	9	18
MCW-14b	1040	4/15/18		<	9	17
MCW-14b	1040	4/16/2018◆		=	78	18
MCW-14b	1040	4/17/18		=	78	18
MCW-14b	1040	4/18/18		=	78	19
MCW-14b	1040	4/19/18		=	78	19
MCW-14b	1040	4/20/18		=	78	19
MCW-14b	1040	4/21/18		=	78	20
MCW-14b	1040	4/22/18		=	78	20
MCW-14b	1045	4/23/2018◆		=	78	21
MCW-14b	1045	4/24/18		=	78	21
MCW-14b	1045	4/25/18		=	78	22
MCW-14b	1045	4/26/18		=	78	23
MCW-14b	1045	4/27/18		=	78	25
MCW-14b	1045	4/28/18		=	78	27
MCW-14b	1045	4/29/18		=	78	29
MCW-14b	1100	4/30/2018◆		=	490	33
MCW-15c	1000	4/1/18		<	9	28
MCW-15c	1000	4/2/18		<	9	28
MCW-15c	930	4/3/2018◆		=	40	29
MCW-15c	930	4/4/18		=	40	30
MCW-15c	930	4/5/18		=	40	32
MCW-15c	930	4/6/18		=	40	34
MCW-15c	930	4/7/18		=	40	35
MCW-15c	930	4/8/18		=	40	37
MCW-15c	1000	4/9/2018◆		<	9	37
MCW-15c	1000	4/10/18		<	9	37
MCW-15c	1000	4/11/18		<	9	37
MCW-15c	1000	4/12/18		<	9	36
MCW-15c	1000	4/13/18		<	9	35

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Location		Date	Rain		Single Sample (adjusted for rain, dry and NDs)	Geomean
					E. coli (235 MPN)	E. coli (126 MPN)
MCW-15c	1000	4/14/18		<	9	34
MCW-15c	1000	4/15/18		<	9	33
MCW-15c	1000	4/16/2018◆		=	40	34
MCW-15c	1000	4/17/18		=	40	35
MCW-15c	1000	4/18/18		=	40	36
MCW-15c	1000	4/19/18		=	40	33
MCW-15c	1000	4/20/18		=	40	30
MCW-15c	1000	4/21/18		=	40	28
MCW-15c	1000	4/22/18		=	40	26
MCW-15c	1015	4/23/2018◆		=	130	25
MCW-15c	1015	4/24/18		=	130	23
MCW-15c	1015	4/25/18		=	130	22
MCW-15c	1015	4/26/18		=	130	25
MCW-15c	1015	4/27/18		=	130	27
MCW-15c	1015	4/28/18		=	130	29
MCW-15c	1015	4/29/18		=	130	32
MCW-15c	1020	4/30/2018◆		=	330	36
MCW-17	-	4/1/18	Dry	<	9	9
MCW-17	-	4/2/18	Dry	<	9	9
MCW-17	-	4/3/2018◆	Dry	<	9	9
MCW-17	-	4/4/18	Dry	<	9	9
MCW-17	-	4/5/18	Dry	<	9	9
MCW-17	-	4/6/18	Dry	<	9	9
MCW-17	-	4/7/18	Dry	<	9	9
MCW-17	-	4/8/18	Dry	<	9	9
MCW-17	-	4/9/2018◆	Dry	<	9	9
MCW-17	-	4/10/18	Dry	<	9	9
MCW-17	-	4/11/18	Dry	<	9	9
MCW-17	-	4/12/18	Dry	<	9	9
MCW-17	-	4/13/18	Dry	<	9	9
MCW-17	-	4/14/18	Dry	<	9	9
MCW-17	-	4/15/18	Dry	<	9	9
MCW-17	-	4/16/2018◆	Dry	<	9	9
MCW-17	-	4/17/18	Dry	<	9	9
MCW-17	-	4/18/18	Dry	<	9	9
MCW-17	-	4/19/18	Dry	<	9	9
MCW-17	-	4/20/18	Dry	<	9	9
MCW-17	-	4/21/18	Dry	<	9	9
MCW-17	-	4/22/18	Dry	<	9	9
MCW-17	-	4/23/2018◆	Dry	<	9	9
MCW-17	-	4/24/18	Dry	<	9	9
MCW-17	-	4/25/18	Dry	<	9	9
MCW-17	-	4/26/18	Dry	<	9	9
MCW-17	-	4/27/18	Dry	<	9	9
MCW-17	-	4/28/18	Dry	<	9	9
MCW-17	-	4/29/18	Dry	<	9	9

Location	Time	Date	Rain		Single Sample (adjusted for rain, dry and NDs)	Geomean
					E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-17	-	4/30/2018◆	Dry	<	9	9
MCW-18	-	4/1/18	Dry	<	9	9
MCW-18	-	4/2/18	Dry	<	9	9
MCW-18	-	4/3/2018◆	Dry	<	9	9
MCW-18	-	4/4/18	Dry	<	9	9
MCW-18	-	4/5/18	Dry	<	9	9
MCW-18	-	4/6/18	Dry	<	9	9
MCW-18	-	4/7/18	Dry	<	9	9
MCW-18	-	4/8/18	Dry	<	9	9
MCW-18	-	4/9/2018◆	Dry	<	9	9
MCW-18	-	4/10/18	Dry	<	9	9
MCW-18	-	4/11/18	Dry	<	9	9
MCW-18	-	4/12/18	Dry	<	9	9
MCW-18	-	4/13/18	Dry	<	9	9
MCW-18	-	4/14/18	Dry	<	9	9
MCW-18	-	4/15/18	Dry	<	9	9
MCW-18	-	4/16/2018◆	Dry	<	9	9
MCW-18	-	4/17/18	Dry	<	9	9
MCW-18	-	4/18/18	Dry	<	9	9
MCW-18	-	4/19/18	Dry	<	9	9
MCW-18	-	4/20/18	Dry	<	9	9
MCW-18	-	4/21/18	Dry	<	9	9
MCW-18	-	4/22/18	Dry	<	9	9
MCW-18	-	4/23/2018◆	Dry	<	9	9
MCW-18	-	4/24/18	Dry	<	9	9
MCW-18	-	4/25/18	Dry	<	9	9
MCW-18	-	4/26/18	Dry	<	9	9
MCW-18	-	4/27/18	Dry	<	9	9
MCW-18	-	4/28/18	Dry	<	9	9
MCW-18	-	4/29/18	Dry	<	9	9
MCW-18	-	4/30/2018◆	Dry	<	9	9

Notes:

Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.

Results of <18 are adjusted to use half the MDL (=9) in the calculation of the geomean

Reporting limit changed from 2.0 MPN/100 ml to 1.8 MPN/100 ml beginning November 7, 2017.

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010

◆Date of sampling

county of ventura



June 25, 2018

JEFF PRATT
Agency Director

Central Services Department
J. Tabin Cosio, Director

Engineering Services Department
Christopher Cooper, Director

Transportation Department
David Fleisch, Director

Water & Sanitation Department
Michaela Brown, Director

Watershed Protection District
Glenn Shephard, Director

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

**Subject: Malibu Creek and Lagoon Bacteria TMDL Compliance monitoring for
County Of Ventura, Ventura County Watershed Protection District, and
City of Thousand Oaks**

Dear Dr. Wang,

Please find attached the report for the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of May 2018. Sites were sampled weekly on Tuesday (May 8, 15, 22 and 29). Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with ♦), refer to Table 2. Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 18 MPN/100ml or for dry weather when no sample was taken. Coliform tables from SM9221 in standard methods 22nd and 23rd have been adopted thus changing the reporting limit from 2.0 MPN/100 ml to 1.8 MPN/100 ml as of November 7, 2017.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,



Arne Anselm

Deputy Director, Watershed Protection District

CC: Glenn Shephard, Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)



Table 1. Weekly sampling results

Location	Time	Date	Rain	Single Sample (as sampled)	
					E. coli (235 MPN)
MCW-8b	-	5/8/2018 ♦			Dry
MCW-8b	-	5/15/2018 ♦			Dry
MCW-8b	-	5/22/2018 ♦			Dry
MCW-8b	-	5/29/2018 ♦			Dry
MCW-9	-	5/8/2018 ♦			Dry
MCW-9	-	5/15/2018 ♦			Dry
MCW-9	-	5/22/2018 ♦			Dry
MCW-9	-	5/29/2018 ♦			Dry
MCW-12	1140	5/8/2018 ♦		=	68
MCW-12	1130	5/15/2018 ♦		=	20
MCW-12	1130	5/22/2018 ♦		=	78
MCW-12	1115	5/29/2018 ♦		=	20
MCW-14b	1100	5/8/2018 ♦		=	78
MCW-14b	1045	5/15/2018 ♦		<	18
MCW-14b	1100	5/22/2018 ♦		<	18
MCW-14b	1030	5/29/2018 ♦		<	18
MCW-15c	1030	5/8/2018 ♦		=	330
MCW-15c	1000	5/15/2018 ♦		=	40
MCW-15c	1015	5/22/2018 ♦		<	18
MCW-15c	1000	5/29/2018 ♦		=	230
MCW-17	-	5/8/2018 ♦			Dry
MCW-17	-	5/15/2018 ♦			Dry
MCW-17	-	5/22/2018 ♦			Dry
MCW-17	-	5/29/2018 ♦			Dry
MCW-18	-	5/8/2018 ♦			Dry
MCW-18	-	5/15/2018 ♦			Dry
MCW-18	-	5/22/2018 ♦			Dry
MCW-18	-	5/29/2018 ♦			Dry

Notes:

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.

♦ Date of sampling

- Reporting limit has been changed from 2.0 MPN/100 ml to 1.8 MPN/100 ml.

Table 2. Computation of daily geomean

Location	Time	Date	Rain		Single Sample (adjusted for rain, dry and NDs)	Geomean
					E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-8b	-	5/1/18	Dry	<	9	11
MCW-8b	-	5/2/18	Dry	<	9	11
MCW-8b	-	5/3/18	Dry	<	9	11
MCW-8b	-	5/4/18	Dry	<	9	11
MCW-8b	-	5/5/18	Dry	<	9	11
MCW-8b	-	5/6/18	Dry	<	9	11
MCW-8b	-	5/7/18	Dry	<	9	11
MCW-8b	-	5/8/2018◆	Dry	<	9	11
MCW-8b	-	5/9/18	Dry	<	9	10
MCW-8b	-	5/10/18	Dry	<	9	10
MCW-8b	-	5/11/18	Dry	<	9	10
MCW-8b	-	5/12/18	Dry	<	9	10
MCW-8b	-	5/13/18	Dry	<	9	9
MCW-8b	-	5/14/18	Dry	<	9	9
MCW-8b	-	5/15/2018◆	Dry	<	9	9
MCW-8b	-	5/16/18	Dry	<	9	9
MCW-8b	-	5/17/18	Dry	<	9	9
MCW-8b	-	5/18/18	Dry	<	9	9
MCW-8b	-	5/19/18	Dry	<	9	9
MCW-8b	-	5/20/18	Dry	<	9	9
MCW-8b	-	5/21/18	Dry	<	9	9
MCW-8b	-	5/22/2018◆	Dry	<	9	9
MCW-8b	-	5/23/18	Dry	<	9	9
MCW-8b	-	5/24/18	Dry	<	9	9
MCW-8b	-	5/25/18	Dry	<	9	9
MCW-8b	-	5/26/18	Dry	<	9	9
MCW-8b	-	5/27/18	Dry	<	9	9
MCW-8b	-	5/28/18	Dry	<	9	9
MCW-8b	-	5/29/2018◆	Dry	<	9	9
MCW-8b	-	5/30/18	Dry	<	9	9
MCW-8b	-	5/31/18	Dry	<	9	9
MCW-9	-	5/1/18	Dry	<	9	9
MCW-9	-	5/2/18	Dry	<	9	9
MCW-9	-	5/3/18	Dry	<	9	9
MCW-9	-	5/4/18	Dry	<	9	9
MCW-9	-	5/5/18	Dry	<	9	9
MCW-9	-	5/6/18	Dry	<	9	9
MCW-9	-	5/7/18	Dry	<	9	9
MCW-9	-	5/8/2018◆	Dry	<	9	9
MCW-9	-	5/9/18	Dry	<	9	9
MCW-9	-	5/10/18	Dry	<	9	9
MCW-9	-	5/11/18	Dry	<	9	9
MCW-9	-	5/12/18	Dry	<	9	9
MCW-9	-	5/13/18	Dry	<	9	9

Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
					E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-9	-	5/14/18	Dry	<	9	9
MCW-9	-	5/15/2018◆	Dry	<	9	9
MCW-9	-	5/16/18	Dry	<	9	9
MCW-9	-	5/17/18	Dry	<	9	9
MCW-9	-	5/18/18	Dry	<	9	9
MCW-9	-	5/19/18	Dry	<	9	9
MCW-9	-	5/20/18	Dry	<	9	9
MCW-9	-	5/21/18	Dry	<	9	9
MCW-9	-	5/22/2018◆	Dry	<	9	9
MCW-9	-	5/23/18	Dry	<	9	9
MCW-9	-	5/24/18	Dry	<	9	9
MCW-9	-	5/25/18	Dry	<	9	9
MCW-9	-	5/26/18	Dry	<	9	9
MCW-9	-	5/27/18	Dry	<	9	9
MCW-9	-	5/28/18	Dry	<	9	9
MCW-9	-	5/29/2018◆	Dry	<	9	9
MCW-9	-	5/30/18	Dry	<	9	9
MCW-9	-	5/31/18	Dry	<	9	9
MCW-12	1130	5/1/18		=	40	19
MCW-12	1130	5/2/18		=	40	19
MCW-12	1130	5/3/18		=	40	20
MCW-12	1130	5/4/18		=	40	22
MCW-12	1130	5/5/18		=	40	23
MCW-12	1130	5/6/18		=	40	24
MCW-12	1130	5/7/18		=	40	25
MCW-12	1140	5/8/2018◆		=	68	27
MCW-12	1140	5/9/18		=	68	29
MCW-12	1140	5/10/18		=	68	31
MCW-12	1140	5/11/18		=	68	33
MCW-12	1140	5/12/18		=	68	35
MCW-12	1140	5/13/18		=	68	37
MCW-12	1140	5/14/18		=	68	40
MCW-12	1130	5/15/2018◆		=	20	41
MCW-12	1130	5/16/18		=	20	42
MCW-12	1130	5/17/18		=	20	43
MCW-12	1130	5/18/18		=	20	45
MCW-12	1130	5/19/18		=	20	46
MCW-12	1130	5/20/18		=	20	47
MCW-12	1130	5/21/18		=	20	48
MCW-12	1130	5/22/2018◆		=	78	52
MCW-12	1130	5/23/18		=	78	51
MCW-12	1130	5/24/18		=	78	50
MCW-12	1130	5/25/18		=	78	49
MCW-12	1130	5/26/18		=	78	48

Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomcan
					E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-12	1130	5/27/18		=	78	48
MCW-12	1130	5/28/18		=	78	47
MCW-12	1050	5/29/2018◆		=	20	44
MCW-12	1115	5/30/18		=	20	43
MCW-12	1115	5/31/18		=	20	42
MCW-14b	1100	5/1/18		=	490	38
MCW-14b	1100	5/2/18		=	490	43
MCW-14b	1100	5/3/18		=	490	48
MCW-14b	1100	5/4/18		=	490	53
MCW-14b	1100	5/5/18		=	490	59
MCW-14b	1100	5/6/18		=	490	66
MCW-14b	1100	5/7/18		=	490	74
MCW-14b	1100	5/8/2018◆		=	78	77
MCW-14b	1100	5/9/18		=	78	83
MCW-14b	1100	5/10/18		=	78	89
MCW-14b	1100	5/11/18		=	78	95
MCW-14b	1100	5/12/18		=	78	103
MCW-14b	1100	5/13/18		=	78	110
MCW-14b	1100	5/14/18		=	78	118
MCW-14b	1045	5/15/2018◆		<	9	118
MCW-14b	1045	5/16/18		<	9	110
MCW-14b	1045	5/17/18		<	9	103
MCW-14b	1045	5/18/18		<	9	95
MCW-14b	1045	5/19/18		<	9	89
MCW-14b	1045	5/20/18		<	9	83
MCW-14b	1045	5/21/18		<	9	77
MCW-14b	1100	5/22/2018◆		<	9	72
MCW-14b	1100	5/23/18		<	9	67
MCW-14b	1100	5/24/18		<	9	62
MCW-14b	1100	5/25/18		<	9	58
MCW-14b	1100	5/26/18		<	9	54
MCW-14b	1100	5/27/18		<	9	50
MCW-14b	1100	5/28/18		<	9	46
MCW-14b	1030	5/29/2018◆		<	9	43
MCW-14b	1030	5/30/18		<	9	38
MCW-14b	1030	5/31/18		<	9	33
MCW-15c	1020	5/1/18		=	330	41
MCW-15c	1020	5/2/18		=	330	46
MCW-15c	1020	5/3/18		=	330	49
MCW-15c	1020	5/4/18		=	330	53
MCW-15c	1020	5/5/18		=	330	57
MCW-15c	1020	5/6/18		=	330	61
MCW-15c	1020	5/7/18		=	330	65
MCW-15c	1030	5/8/2018◆		=	330	70
MCW-15c	1030	5/9/18		=	330	79

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location		Date	Rain		E. coli (235 MPN)	E. coli (126 MPN)
MCW-15c	1030	5/10/18		=	330	89
MCW-15c	1030	5/11/18		=	330	100
MCW-15c	1030	5/12/18		=	330	113
MCW-15c	1030	5/13/18		=	330	128
MCW-15c	1030	5/14/18		=	330	144
MCW-15c	1000	5/15/2018◆		=	40	151
MCW-15c	1000	5/16/18		=	40	151
MCW-15c	1000	5/17/18		=	40	151
MCW-15c	1000	5/18/18		=	40	151
MCW-15c	1000	5/19/18		=	40	151
MCW-15c	1000	5/20/18		=	40	151
MCW-15c	1000	5/21/18		=	40	151
MCW-15c	1015	5/22/2018◆		<	9	144
MCW-15c	1015	5/23/18		<	9	132
MCW-15c	1015	5/24/18		<	9	120
MCW-15c	1015	5/25/18		<	9	110
MCW-15c	1015	5/26/18		<	9	101
MCW-15c	1015	5/27/18		<	9	92
MCW-15c	1015	5/28/18		<	9	84
MCW-15c	1000	5/29/2018◆		=	230	86
MCW-15c	1000	5/30/18		=	230	85
MCW-15c	1000	5/31/18		=	230	84
MCW-17	-	5/1/18	Dry	<	9	9
MCW-17	-	5/2/18	Dry	<	9	9
MCW-17	-	5/3/18	Dry	<	9	9
MCW-17	-	5/4/18	Dry	<	9	9
MCW-17	-	5/5/18	Dry	<	9	9
MCW-17	-	5/6/18	Dry	<	9	9
MCW-17	-	5/7/18	Dry	<	9	9
MCW-17	-	5/8/2018◆	Dry	<	9	9
MCW-17	-	5/9/18	Dry	<	9	9
MCW-17	-	5/10/18	Dry	<	9	9
MCW-17	-	5/11/18	Dry	<	9	9
MCW-17	-	5/12/18	Dry	<	9	9
MCW-17	-	5/13/18	Dry	<	9	9
MCW-17	-	5/14/18	Dry	<	9	9
MCW-17	-	5/15/2018◆	Dry	<	9	9
MCW-17	-	5/16/18	Dry	<	9	9
MCW-17	-	5/17/18	Dry	<	9	9
MCW-17	-	5/18/18	Dry	<	9	9
MCW-17	-	5/19/18	Dry	<	9	9
MCW-17	-	5/20/18	Dry	<	9	9
MCW-17	-	5/21/18	Dry	<	9	9
MCW-17	-	5/22/2018◆	Dry	<	9	9
MCW-17	-	5/23/18	Dry	<	9	9
MCW-17	-	5/24/18	Dry	<	9	9

Location	Time	Date	Rain		Single Sample (adjusted for rain, dry and NDs)	Geomean
					E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-17	-	5/25/18	Dry	<	9	9
MCW-17	-	5/26/18	Dry	<	9	9
MCW-17	-	5/27/18	Dry	<	9	9
MCW-17	-	5/28/18	Dry	<	9	9
MCW-17	-	5/29/2018◆	Dry	<	9	9
MCW-17	-	5/30/18	Dry	<	9	9
MCW-17	-	5/31/18	Dry	<	9	9
MCW-18	-	5/1/18	Dry	<	9	9
MCW-18	-	5/2/18	Dry	<	9	9
MCW-18	-	5/3/18	Dry	<	9	9
MCW-18	-	5/4/18	Dry	<	9	9
MCW-18	-	5/5/18	Dry	<	9	9
MCW-18	-	5/6/18	Dry	<	9	9
MCW-18	-	5/7/18	Dry	<	9	9
MCW-18	-	5/8/2018◆	Dry	<	9	9
MCW-18	-	5/9/18	Dry	<	9	9
MCW-18	-	5/10/18	Dry	<	9	9
MCW-18	-	5/11/18	Dry	<	9	9
MCW-18	-	5/12/18	Dry	<	9	9
MCW-18	-	5/13/18	Dry	<	9	9
MCW-18	-	5/14/18	Dry	<	9	9
MCW-18	-	5/15/2018◆	Dry	<	9	9
MCW-18	-	5/16/18	Dry	<	9	9
MCW-18	-	5/17/18	Dry	<	9	9
MCW-18	-	5/18/18	Dry	<	9	9
MCW-18	-	5/19/18	Dry	<	9	9
MCW-18	-	5/20/18	Dry	<	9	9
MCW-18	-	5/21/18	Dry	<	9	9
MCW-18	-	5/22/2018◆	Dry	<	9	9
MCW-18	-	5/23/18	Dry	<	9	9
MCW-18	-	5/24/18	Dry	<	9	9
MCW-18	-	5/25/18	Dry	<	9	9
MCW-18	-	5/26/18	Dry	<	9	9
MCW-18	-	5/27/18	Dry	<	9	9
MCW-18	-	5/28/18	Dry	<	9	9
MCW-18	-	5/29/2018◆	Dry	<	9	9
MCW-18	-	5/30/18	Dry	<	9	9
MCW-18	-	5/31/18	Dry	<	9	9

Notes:

Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.

Results of <18 are adjusted to use half the MDL (=9) in the calculation of the geomean

Reporting limit changed from 2.0 MPN/100 ml to 1.8 MPN/100 ml beginning November 7, 2017.

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010

◆ Date of sampling



June 15, 2018

Jenny Newman, TMDL Section Chief
Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Subject: 2018 SEMI-ANNUAL MONITORING REPORT FOR SANTA CLARA RIVER ESTUARY
AND REACH 3 BACTERIA TOTAL MAXIMUM DAILY LOAD

Dear Ms. Newman,

The attached tables summarize results of weekly monitoring required by the Santa Clara River Estuary and Reach 3 Bacteria Total Maximum Daily Load (TMDL) Final In-stream Compliance Monitoring Plan (CMP). This Semi-Annual Report presents weekly monitoring results for sampling events completed between November 7, 2017 and May 15, 2018. As described in the CMP, sampling took place weekly on Tuesdays at Santa Clara River Estuary Reach 005 (SCRE-R005) and Santa Clara River Reach 3 Receiving Water 1 (SCRR3-RW1). Semi-Annual weekly sampling results, including daily geometric means are presented in Tables 1 and 2, with actual sample collection dates marked with a diamond symbol (◆). Wet weather (collected 72 hours after a day with >0.1" rainfall) and dry weather daily geometric means were calculated from most recent 30 days of either wet weather or dry weather sampling data. Daily bacteria results were assigned from weekly samples collected at the TMDL monitoring locations.

While sampling was conducted weekly on Tuesdays, nine sampling events required alternate dates at SCRE-R005 (November 8, 2017, November 13, 2017, December 27, 2017, January 3, 2018, January 17, 2018, February 7, 2018, February 14, 2018, March 14, 2018, and April 19, 2018). Analytical methodology was consistent over the sampling period.

Samples were collected by the Ventura City's Wastewater Treatment Plant (WWTP) staff at SCRE-R005 and by Rincon Consultants at SCRR3-RW1 for bacteria analysis by the Ventura City's WWTP Laboratory. The report was prepared by Rincon Consultants, Inc.

If you have any questions regarding this CMP, please contact Ewelina Mutkowska at (805) 645-1382.

Sincerely,

Arne Anselm
Deputy Director,
Ventura County Watershed Protection District

CC: Jeff Pratt, Ventura County Public Works Agency
Glenn Shephard, Ventura County Watershed Protection District
Ewelina Mutkowska, Ventura County Public Works Agency
Joe Yahner, City of Ventura
Peter Shellenbarger, City of Ventura
Roxanne Hughes, City of Fillmore
Caesar Hernandez, City of Santa Paula
Badaoui Mouderrres, City of Oxnard

Table 1.
Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW3) and Estuary (SCRE-R005)

Location	Time	Date		Rain		Single Sample		Single Sample		Single Sample		Single Sample
						E.coli (MPN/100mL)		Total Coliform (MPN/100mL)		Fecal Coliform (MPN/100mL)		Enterococcus (MPN/100mL)
						Site: SCRR3-RW1		Site: SCRE-R005		Site: SCRE-R005		Site: SCRE-R005
						(235 MPN)		(10,000 MPN)		(400 MPN)		(104 MPN)
Santa Clara River Reach 3												
SCRR3-RW1	10:00	11/7/2017	◆	Dry	=	125.9		n/a		n/a		n/a
SCRR3-RW1	11:55	11/14/2017	◆	Dry	=	123.6		n/a		n/a		n/a
SCRR3-RW1	10:10	11/21/2017	◆	Dry	=	209.8		n/a		n/a		n/a
SCRR3-RW1	10:50	11/28/2017	◆	Dry	=	325.5		n/a		n/a		n/a
SCRR3-RW1	10:40	12/5/2017	◆	Dry	=	517.2		n/a		n/a		n/a
SCRR3-RW1	13:00	12/12/2017	◆	Dry	=	68.3		n/a		n/a		n/a
SCRR3-RW1	10:52	12/19/2017	◆	Dry	=	24.0		n/a		n/a		n/a
SCRR3-RW1	11:15	12/26/2017	◆	Dry	=	77.6		n/a		n/a		n/a
SCRR3-RW1	11:30	1/2/2018	◆	Dry	=	260.2		n/a		n/a		n/a
SCRR3-RW1	13:40	1/9/2018	◆	Wet	>	2,419.2		n/a		n/a		n/a
SCRR3-RW1	11:50	1/16/2018	◆	Dry	=	235.9		n/a		n/a		n/a
SCRR3-RW1	11:40	1/23/2018	◆	Dry	=	77.1		n/a		n/a		n/a
SCRR3-RW1	10:49	1/30/2018	◆	Dry	=	75.4		n/a		n/a		n/a
SCRR3-RW1	11:40	2/6/2018	◆	Dry	=	50.4		n/a		n/a		n/a
SCRR3-RW1	11:15	2/13/2018	◆	Dry	=	39.9		n/a		n/a		n/a
SCRR3-RW1	11:25	2/20/2018	◆	Dry	=	48.7		n/a		n/a		n/a
SCRR3-RW1	9:08	2/27/2018	◆	Dry	=	47.2		n/a		n/a		n/a
SCRR3-RW1	12:15	3/6/2018	◆	Wet	=	178.5		n/a		n/a		n/a
SCRR3-RW1	11:42	3/13/2018	◆	Wet	=	228.2		n/a		n/a		n/a
SCRR3-RW1	10:15	3/21/2018	◆	Wet	=	95.9		n/a		n/a		n/a
SCRR3-RW1	11:16	3/27/2018	◆	Dry	=	38.8		n/a		n/a		n/a
SCRR3-RW1	11:15	4/3/2018	◆	Dry	=	29.2		n/a		n/a		n/a
SCRR3-RW1	10:50	4/10/2018	◆	Dry	=	29.8		n/a		n/a		n/a
SCRR3-RW1	11:15	4/17/2018	◆	Dry	=	101.4		n/a		n/a		n/a
SCRR3-RW1	12:50	4/24/2018	◆	Dry	=	101.4		n/a		n/a		n/a
SCRR3-RW1	10:00	5/1/2018	◆	Dry	=	146.7		n/a		n/a		n/a
SCRR3-RW1	10:15	5/8/2018	◆	Dry	=	95.9		n/a		n/a		n/a
SCRR3-RW1	12:30	5/15/2018	◆	Dry	=	93.3		n/a		n/a		n/a
Santa Clara River Estuary												
SCRE-R005	9:48	11/8/2017	◆	Dry		n/a	=	5,000	=	40	=	14.5
SCRE-R005	9:40	11/14/2017	◆	Dry		n/a	=	340	=	11	=	16.8
SCRE-R005	8:45	11/21/2017	◆	Dry		n/a	=	260	=	21	=	30.5
SCRE-R005	10:16	11/28/2017	◆	Dry		n/a	=	2,200	=	130	=	15.8
SCRE-R005	9:17	12/5/2017	◆	Dry		n/a	=	2,400	=	170	=	72.3
SCRE-R005	9:24	12/12/2017	◆	Dry		n/a	=	900	=	11	=	21.1
SCRE-R005	9:55	12/19/2017	◆	Dry		n/a	=	500	=	14	=	6.3
SCRE-R005	10:01	12/27/2017	◆	Dry		n/a	=	500	=	14	=	3.0
SCRE-R005	9:00*	1/3/2018	◆	Dry		n/a	=	300	=	80	=	27.0

Table 1.
Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW3) and Estuary (SCRE-R005)

Location	Time	Date		Rain		Single Sample		Single Sample		Single Sample		Single Sample
						E.coli		Total Coliform		Fecal Coliform		Enterococcus
						(MPN/100mL)		(MPN/100mL)		(MPN/100mL)		(MPN/100mL)
						Site: SCRR3-RW1		Site: SCRE-R005		Site: SCRE-R005		Site: SCRE-R005
						(235 MPN)		(10,000 MPN)		(400 MPN)		(104 MPN)
SCRE-R005	9:00*	1/9/2018	◆	Wet		n/a	=	1,300	=	220	=	114.0
SCRE-R005	9:00*	1/17/2018	◆	Dry		n/a	=	9,000	=	300	=	63.0
SCRE-R005	9:00*	1/23/2018	◆	Dry		n/a	=	9,000	=	5,000	=	72.0
SCRE-R005	9:00*	1/30/2018	◆	Dry		n/a	=	1,600	=	500	=	436.0
SCRE-R005	9:00*	2/7/2018	◆	Dry		n/a	=	1,100	=	130	=	57.0
SCRE-R005	9:00*	2/13/2018	◆	Dry		n/a	=	16,000	=	220	=	46.0
SCRE-R005	9:00*	2/20/2018	◆	Dry		n/a	=	1,300	=	80	=	21.0
SCRE-R005	9:00*	2/27/2018	◆	Dry		n/a	=	110	=	50	=	21.0
SCRE-R005	9:00*	3/6/2018	◆	Wet		n/a	=	9,000	=	220	=	151.0
SCRE-R005	9:00*	3/13/2018	◆	Wet		n/a	=	9,000	=	800	=	60.0
SCRE-R005	9:00*	3/20/2018	◆	Dry		n/a	=	900	=	80	=	19.0
SCRE-R005	9:00*	3/27/2018	◆	Dry		n/a	=	16,000	=	500	=	45.0
SCRE-R005	9:00*	4/3/2018	◆	Dry		n/a	=	1,100	=	230	=	14.0
SCRE-R005	9:00*	4/10/2018	◆	Dry		n/a	=	800	=	130	=	10.0
SCRE-R005	9:00*	4/17/2018	◆	Dry		n/a	=	1,700	=	22	=	14.0

Notes:
◆ Date of Sampling
*Sample collection time for SCRE-R005 was not available at time of reporting. A placeholder of 9:00 has been used for this report.
MPN - most probably number > - greater than
TMDL - Total Maximum Daily Load < - less than
E.coli - Escherichia coli = - equal to

Table 2.
Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Date		Time	Rain		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean
						E.coli (MPN/100mL)			Total Coliform (MPN/100mL)			Fecal Coliform (MPN/100mL)			Enterococcus (MPN/100mL)	
						Site: SCRR3-RW1			Site: SCRE-R005			Site: SCRE-R005			Site: SCRE-R005	
						(235 MPN)	(126 MPN)		(10,000 MPN)	(1,000 MPN)		(400 MPN)	(200 MPN)		(104 MPN)	(35 MPN)
Santa Clara River Reach 3																
SCRR3-RW1	11/7/2017	◆	10:00	Dry	=	125.9	254.9		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/8/2017		-	Dry	=	125.9	266.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/9/2017		-	Dry	=	125.9	277.3		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/10/2017		-	Dry	=	125.9	288.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/11/2017		-	Dry	=	125.9	299.5		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/12/2017		-	Dry	=	125.9	311.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/13/2017		-	Dry	=	125.9	323.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/14/2017	◆	11:55	Dry	=	123.6	335.9		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/15/2017		-	Dry	=	123.6	348.9		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/16/2017		-	Dry	=	123.6	347.0		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/17/2017		-	Dry	=	123.6	345.1		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/18/2017		-	Dry	=	123.6	343.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/19/2017		-	Dry	=	123.6	341.3		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/20/2017		-	Dry	=	123.6	339.5		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/21/2017	◆	10:10	Dry	=	209.8	343.7		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/22/2017		-	Dry	=	209.8	347.9		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/23/2017		-	Dry	=	209.8	322.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/24/2017		-	Dry	=	209.8	299.5		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/25/2017		-	Dry	=	209.8	277.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/26/2017		-	Dry	=	209.8	257.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/27/2017		-	Dry	=	209.8	239.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/28/2017	◆	10:50	Dry	=	325.5	225.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/29/2017		-	Dry	=	325.5	212.0		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	11/30/2017		-	Dry	=	325.5	208.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/1/2017		-	Dry	=	325.5	204.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/2/2017		-	Dry	=	325.5	201.3		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/3/2017		-	Dry	=	325.5	197.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/4/2017		-	Dry	=	325.5	194.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/5/2017	◆	10:40	Dry	=	517.2	194.0		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/6/2017		-	Dry	=	517.2	193.7		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/7/2017		-	Dry	=	517.2	203.0		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/8/2017		-	Dry	=	517.2	212.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/9/2017		-	Dry	=	517.2	223.1		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/10/2017		-	Dry	=	517.2	233.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/11/2017		-	Dry	=	517.2	245.1		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/12/2017	◆	13:00	Dry	=	68.3	240.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/13/2017		-	Dry	=	68.3	235.3		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/14/2017		-	Dry	=	68.3	230.7		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/15/2017		-	Dry	=	68.3	226.2		n/a	n/a		n/a	n/a		n/a	n/a

Table 2.
Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Date		Time	Rain		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean
						E.coli (MPN/100mL)			Total Coliform (MPN/100mL)			Fecal Coliform (MPN/100mL)			Enterococcus (MPN/100mL)	
						Site: SCRR3-RW1			Site: SCRE-R005			Site: SCRE-R005			Site: SCRE-R005	
						(235 MPN)	(126 MPN)		(10,000 MPN)	(1,000 MPN)		(400 MPN)	(200 MPN)		(104 MPN)	(35 MPN)
SCRR3-RW1	12/16/2017		-	Dry	=	68.3	221.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/17/2017		-	Dry	=	68.3	217.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/18/2017		-	Dry	=	68.3	213.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/19/2017	◆	10:52	Dry	=	24.0	201.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/20/2017		-	Dry	=	24.0	191.1		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/21/2017		-	Dry	=	24.0	177.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/22/2017		-	Dry	=	24.0	165.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/23/2017		-	Dry	=	24.0	153.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/24/2017		-	Dry	=	24.0	143.1		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/25/2017		-	Dry	=	24.0	133.1		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/26/2017	◆	11:15	Dry	=	77.6	128.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/27/2017		-	Dry	=	77.6	124.6		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/28/2017		-	Dry	=	77.6	118.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/29/2017		-	Dry	=	77.6	113.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/30/2017		-	Dry	=	77.6	108.0		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	12/31/2017		-	Dry	=	77.6	102.9		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/1/2018		-	Dry	=	77.6	98.1		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/2/2018	◆	11:30	Dry	=	260.2	97.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/3/2018		-	Dry	=	260.2	96.7		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/4/2018		-	Dry	=	260.2	94.5		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/5/2018		-	Dry	=	260.2	92.3		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/6/2018		-	Dry	=	260.2	90.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/7/2018		-	Dry	=	260.2	88.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/8/2018		-	Dry	=	260.2	86.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/9/2018	◆	13:40	Wet	>	2,419.2	105.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/10/2018		-	Wet	>	2,419.2	109.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/11/2018		-	Wet	>	2,419.2	121.0		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/12/2018		-	Wet	>	2,419.2	133.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/13/2018		-	Wet	>	2,419.2	147.1		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/14/2018		-	Wet	>	2,419.2	162.1		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/15/2018		-	Wet	>	2,419.2	178.7		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/16/2018	◆	11:50	Dry	=	235.9	84.0		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/17/2018		-	Dry	=	235.9	81.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/18/2018		-	Dry	=	235.9	85.3		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/19/2018		-	Dry	=	235.9	88.9		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/20/2018		-	Dry	=	235.9	92.6		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/21/2018		-	Dry	=	235.9	96.5		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/22/2018		-	Dry	=	235.9	100.6		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/23/2018	◆	11:40	Dry	=	77.1	101.0		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/24/2018		-	Dry	=	77.1	101.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/25/2018		-	Dry	=	77.1	105.4		n/a	n/a		n/a	n/a		n/a	n/a

Table 2.
Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Date		Time	Rain		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean
						E.coli (MPN/100mL)			Total Coliform (MPN/100mL)			Fecal Coliform (MPN/100mL)			Enterococcus (MPN/100mL)	
						Site: SCRR3-RW1			Site: SCRE-R005			Site: SCRE-R005			Site: SCRE-R005	
						(235 MPN)	(126 MPN)		(10,000 MPN)	(1,000 MPN)		(400 MPN)	(200 MPN)		(104 MPN)	(35 MPN)
SCRR3-RW1	1/26/2018		-	Dry	=	77.1	109.6		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/27/2018		-	Dry	=	77.1	113.9		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/28/2018		-	Dry	=	77.1	118.5		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/29/2018		-	Dry	=	77.1	123.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/30/2018	◆	10:49	Dry	=	75.4	128.0		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	1/31/2018		-	Dry	=	75.4	132.9		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/1/2018		-	Dry	=	75.4	132.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/2/2018		-	Dry	=	75.4	132.7		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/3/2018		-	Dry	=	75.4	132.6		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/4/2018		-	Dry	=	75.4	132.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/5/2018		-	Dry	=	75.4	132.3		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/6/2018	◆	11:40	Dry	=	50.4	130.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/7/2018		-	Dry	=	50.4	128.5		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/8/2018		-	Dry	=	50.4	121.7		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/9/2018		-	Dry	=	50.4	115.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/10/2018		-	Dry	=	50.4	109.1		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/11/2018		-	Dry	=	50.4	103.3		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/12/2018		-	Dry	=	50.4	97.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/13/2018	◆	11:15	Dry	=	39.9	91.9		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/14/2018		-	Dry	=	39.9	86.3		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/15/2018		-	Dry	=	39.9	81.3		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/16/2018		-	Dry	=	39.9	76.7		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/17/2018		-	Dry	=	39.9	72.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/18/2018		-	Dry	=	39.9	68.1		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/19/2018		-	Dry	=	39.9	64.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/20/2018	◆	11:25	Dry	=	48.7	60.9		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/21/2018		-	Dry	=	48.7	57.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/22/2018		-	Dry	=	48.7	56.9		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/23/2018		-	Dry	=	48.7	56.0		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/24/2018		-	Dry	=	48.7	55.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/25/2018		-	Dry	=	48.7	54.3		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/26/2018		-	Dry	=	48.7	53.5		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/27/2018	◆	9:08	Dry	=	47.2	52.6		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	2/28/2018		-	Dry	=	47.2	51.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/1/2018		-	Dry	=	47.2	51.0		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/2/2018		-	Dry	=	47.2	50.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/3/2018		-	Dry	=	47.2	49.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/4/2018		-	Dry	=	47.2	48.6		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/5/2018		-	Dry	=	47.2	47.9		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/6/2018	◆	12:15	Wet	=	178.5	180.6		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/7/2018		-	Wet	=	178.5	182.5		n/a	n/a		n/a	n/a		n/a	n/a

Table 2.
Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Date		Time	Rain		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean
						E.coli (MPN/100mL)			Total Coliform (MPN/100mL)			Fecal Coliform (MPN/100mL)			Enterococcus (MPN/100mL)	
						Site: SCRR3-RW1			Site: SCRE-R005			Site: SCRE-R005			Site: SCRE-R005	
						(235 MPN)	(126 MPN)		(10,000 MPN)	(1,000 MPN)		(400 MPN)	(200 MPN)		(104 MPN)	(35 MPN)
SCRR3-RW1	3/8/2018		-	Wet	=	178.5	179.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/9/2018		-	Wet	=	178.5	176.3		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/10/2018		-	Wet	=	178.5	173.3		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/11/2018		-	Wet	=	178.5	170.3		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/12/2018		-	Wet	=	178.5	167.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/13/2018	◆	11:42	Wet	=	228.2	165.9		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/14/2018		-	Wet	=	228.2	164.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/15/2018		-	Wet	=	228.2	177.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/16/2018		-	Wet	=	228.2	191.5		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/17/2018		-	Wet	=	228.2	206.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/18/2018		-	Wet	=	228.2	223.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/19/2018		-	Wet	=	228.2	240.9		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/20/2018		-	Wet	=	228.2	260.1		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/21/2018	◆	10:15	Wet	=	95.9	272.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/22/2018		-	Wet	=	95.9	276.1		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/23/2018		-	Wet	=	95.9	279.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/24/2018		-	Wet	=	95.9	282.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/25/2018		-	Wet	=	95.9	286.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/26/2018		-	Wet	=	95.9	289.6		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/27/2018	◆	11:16	Dry	=	38.8	46.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/28/2018		-	Dry	=	38.8	45.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/29/2018		-	Dry	=	38.8	45.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/30/2018		-	Dry	=	38.8	45.0		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	3/31/2018		-	Dry	=	38.8	44.6		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/1/2018		-	Dry	=	38.8	44.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/2/2018		-	Dry	=	38.8	43.9		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/3/2018	◆	11:15	Dry	=	29.2	43.1		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/4/2018		-	Dry	=	29.2	42.3		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/5/2018		-	Dry	=	29.2	41.9		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/6/2018		-	Dry	=	29.2	41.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/7/2018		-	Dry	=	29.2	41.0		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/8/2018		-	Dry	=	29.2	40.6		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/9/2018		-	Dry	=	29.2	40.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/10/2018	◆	10:50	Dry	=	29.8	39.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/11/2018		-	Dry	=	29.8	39.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/12/2018		-	Dry	=	29.8	38.7		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/13/2018		-	Dry	=	29.8	38.1		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/14/2018		-	Dry	=	29.8	37.5		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/15/2018		-	Dry	=	29.8	36.9		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/16/2018		-	Dry	=	29.8	36.3		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/17/2018	◆	11:15	Dry	=	101.4	37.2		n/a	n/a		n/a	n/a		n/a	n/a

Table 2.
Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Date		Time	Rain		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean
						E.coli (MPN/100mL)			Total Coliform (MPN/100mL)			Fecal Coliform (MPN/100mL)			Enterococcus (MPN/100mL)	
						Site: SCRR3-RW1			Site: SCRE-R005			Site: SCRE-R005			Site: SCRE-R005	
						(235 MPN)	(126 MPN)		(10,000 MPN)	(1,000 MPN)		(400 MPN)	(200 MPN)		(104 MPN)	(35 MPN)
SCRR3-RW1	4/18/2018		-	Dry	=	101.4	38.1		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/19/2018		-	Dry	=	101.4	39.1		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/20/2018		-	Dry	=	101.4	40.1		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/21/2018		-	Dry	=	101.4	41.1		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/22/2018		-	Dry	=	101.4	42.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/23/2018		-	Dry	=	101.4	43.3		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/24/2018	◆	12:50	Dry	=	101.4	44.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/25/2018		-	Dry	=	101.4	45.5		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/26/2018		-	Dry	=	101.4	47.0		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/27/2018		-	Dry	=	101.4	48.6		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/28/2018		-	Dry	=	101.4	50.1		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/29/2018		-	Dry	=	101.4	51.8		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	4/30/2018		-	Dry	=	101.4	53.5		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/1/2018	◆	10:00	Dry	=	146.7	55.9		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/2/2018		-	Dry	=	146.7	58.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/3/2018		-	Dry	=	146.7	61.6		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/4/2018		-	Dry	=	146.7	65.0		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/5/2018		-	Dry	=	146.7	68.6		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/6/2018		-	Dry	=	146.7	72.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/7/2018		-	Dry	=	146.7	76.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/8/2018	◆	10:15	Dry	=	95.9	79.5		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/9/2018		-	Dry	=	95.9	82.7		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/10/2018		-	Dry	=	95.9	86.0		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/11/2018		-	Dry	=	95.9	89.5		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/12/2018		-	Dry	=	95.9	93.0		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/13/2018		-	Dry	=	95.9	96.7		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/14/2018		-	Dry	=	95.9	100.5		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/15/2018	◆	12:30	Dry	=	93.3	104.4		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/16/2018		-	Dry	=	93.3	108.5		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/17/2018		-	Dry	=	93.3	108.2		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/18/2018		-	Dry	=	93.3	107.9		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/19/2018		-	Dry	=	93.3	107.6		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/20/2018		-	Dry	=	93.3	107.3		n/a	n/a		n/a	n/a		n/a	n/a
SCRR3-RW1	5/21/2018		-	Dry	=	93.3	107.0		n/a	n/a		n/a	n/a		n/a	n/a

Table 2.
Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Date		Time	Rain		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean
						E.coli (MPN/100mL)			Total Coliform (MPN/100mL)			Fecal Coliform (MPN/100mL)			Enterococcus (MPN/100mL)	
						Site: SCRR3-RW1			Site: SCRE-R005			Site: SCRE-R005			Site: SCRE-R005	
						(235 MPN)	(126 MPN)		(10,000 MPN)	(1,000 MPN)		(400 MPN)	(200 MPN)		(104 MPN)	(35 MPN)
Santa Clara River Estuary																
SCRE-R005	11/7/2017		-	Dry		n/a	n/a	=	1,300	6,454	=	13	24	=	11.0	17
SCRE-R005	11/8/2017	◆	9:48	Dry		n/a	n/a	=	5,000	6,891	=	40	26	=	14.5	18
SCRE-R005	11/9/2017		-	Dry		n/a	n/a	=	5,000	6,629	=	40	25.9	=	14.5	18.3
SCRE-R005	11/10/2017		-	Dry		n/a	n/a	=	5,000	6,377	=	40	26.2	=	14.5	18.6
SCRE-R005	11/11/2017		-	Dry		n/a	n/a	=	5,000	6,134	=	40	26.4	=	14.5	19.0
SCRE-R005	11/12/2017		-	Dry		n/a	n/a	=	5,000	5,901	=	40	26.7	=	14.5	19.4
SCRE-R005	11/13/2017		-	Dry		n/a	n/a	=	5,000	5,676	=	40	26.9	=	14.5	19.8
SCRE-R005	11/14/2017	◆	9:40	Dry		n/a	n/a	=	340	4,992	=	11	26.0	=	16.8	20.3
SCRE-R005	11/15/2017		-	Dry		n/a	n/a	=	340	4,391	=	11	25.2	=	16.8	20.8
SCRE-R005	11/16/2017		-	Dry		n/a	n/a	=	340	3,862	=	11	24.6	=	16.8	20.5
SCRE-R005	11/17/2017		-	Dry		n/a	n/a	=	340	3,397	=	11	24.0	=	16.8	20.1
SCRE-R005	11/18/2017		-	Dry		n/a	n/a	=	340	2,987	=	11	23.4	=	16.8	19.8
SCRE-R005	11/19/2017		-	Dry		n/a	n/a	=	340	2,628	=	11	22.8	=	16.8	19.5
SCRE-R005	11/20/2017		-	Dry		n/a	n/a	=	340	2,311	=	11	22.3	=	16.8	19.2
SCRE-R005	11/21/2017	◆	8:45	Dry		n/a	n/a	=	260	2,014	=	21	22.2	=	30.5	19.3
SCRE-R005	11/22/2017		-	Dry		n/a	n/a	=	260	1,756	=	21	22	=	30.5	19
SCRE-R005	11/23/2017		-	Dry		n/a	n/a	=	260	1,560	=	21	22	=	30.5	19
SCRE-R005	11/24/2017		-	Dry		n/a	n/a	=	260	1,386	=	21	21	=	30.5	19
SCRE-R005	11/25/2017		-	Dry		n/a	n/a	=	260	1,232	=	21	20	=	30.5	19
SCRE-R005	11/26/2017		-	Dry		n/a	n/a	=	260	1,095	=	21	20	=	30.5	18
SCRE-R005	11/27/2017		-	Dry		n/a	n/a	=	260	973	=	21	19	=	30.5	18
SCRE-R005	11/28/2017	◆	10:16	Dry		n/a	n/a	=	2,200	928	=	130	20	=	15.8	17
SCRE-R005	11/29/2017		-	Dry		n/a	n/a	=	2,200	885	=	130	20	=	15.8	17
SCRE-R005	11/30/2017		-	Dry		n/a	n/a	=	2,200	901	=	130	22	=	15.8	17
SCRE-R005	12/1/2017		-	Dry		n/a	n/a	=	2,200	917	=	130	24	=	15.8	17
SCRE-R005	12/2/2017		-	Dry		n/a	n/a	=	2,200	933	=	130	26	=	15.8	17
SCRE-R005	12/3/2017		-	Dry		n/a	n/a	=	2,200	950	=	130	28	=	15.8	18
SCRE-R005	12/4/2017		-	Dry		n/a	n/a	=	2,200	967	=	130	30	=	15.8	18
SCRE-R005	12/5/2017	◆	9:17	Dry		n/a	n/a	=	2,400	987	=	170	33	=	72.3	19
SCRE-R005	12/6/2017		-	Dry		n/a	n/a	=	2,400	1,007	=	170	35.6	=	72.3	20.1
SCRE-R005	12/7/2017		-	Dry		n/a	n/a	=	2,400	1,028	=	170	38.7	=	72.3	21.4
SCRE-R005	12/8/2017		-	Dry		n/a	n/a	=	2,400	1,003	=	170	40.7	=	72.3	22.6
SCRE-R005	12/9/2017		-	Dry		n/a	n/a	=	2,400	979	=	170	42.7	=	72.3	23.8
SCRE-R005	12/10/2017		-	Dry		n/a	n/a	=	2,400	955	=	170	44.8	=	72.3	25.1
SCRE-R005	12/11/2017		-	Dry		n/a	n/a	=	2,400	932	=	170	47.0	=	72.3	26.5
SCRE-R005	12/12/2017	◆	9:24	Dry		n/a	n/a	=	900	880	=	11	45.0	=	21.1	26.8
SCRE-R005	12/13/2017		-	Dry		n/a	n/a	=	900	831	=	11	43.1	=	21.1	27.2
SCRE-R005	12/14/2017		-	Dry		n/a	n/a	=	900	859	=	11	43.1	=	21.1	27.4
SCRE-R005	12/15/2017		-	Dry		n/a	n/a	=	900	887	=	11	43.1	=	21.1	27.6
SCRE-R005	12/16/2017		-	Dry		n/a	n/a	=	900	916	=	11	43.1	=	21.1	27.8

Table 2.
Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Date		Time	Rain		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean
						E.coli (MPN/100mL)			Total Coliform (MPN/100mL)			Fecal Coliform (MPN/100mL)			Enterococcus (MPN/100mL)	
						Site: SCRR3-RW1			Site: SCRE-R005			Site: SCRE-R005			Site: SCRE-R005	
						(235 MPN)	(126 MPN)		(10,000 MPN)	(1,000 MPN)		(400 MPN)	(200 MPN)		(104 MPN)	(35 MPN)
SCRE-R005	12/17/2017		-	Dry		n/a	n/a	=	900	946	=	11	43.1	=	21.1	28.0
SCRE-R005	12/18/2017		-	Dry		n/a	n/a	=	900	978	=	11	43.1	=	21.1	28.2
SCRE-R005	12/19/2017	◆	9:55	Dry		n/a	n/a	=	500	990	=	14	43.5	=	6.3	27.3
SCRE-R005	12/20/2017		-	Dry		n/a	n/a	=	500	1,003	=	14	43.8	=	6.3	26.4
SCRE-R005	12/21/2017		-	Dry		n/a	n/a	=	500	1,025	=	14	43.2	=	6.3	25.1
SCRE-R005	12/22/2017		-	Dry		n/a	n/a	=	500	1,048	=	14	42.6	=	6.3	23.8
SCRE-R005	12/23/2017		-	Dry		n/a	n/a	=	500	1,071	=	14	42.1	=	6.3	22.6
SCRE-R005	12/24/2017		-	Dry		n/a	n/a	=	500	1,095	=	14	41.5	=	6.3	21.4
SCRE-R005	12/25/2017		-	Dry		n/a	n/a	=	500	1,119	=	14	41.0	=	6.3	20.3
SCRE-R005	12/26/2017		-	Dry		n/a	n/a	=	500	1,143	=	14	40.4	=	6.3	19.3
SCRE-R005	12/27/2017	◆	10:01	Dry		n/a	n/a	=	500	1,169	=	14	39.9	=	3.0	17.8
SCRE-R005	12/28/2017		-	Dry		n/a	n/a	=	500	1,112	=	14	37.0	=	3.0	16.9
SCRE-R005	12/29/2017		-	Dry		n/a	n/a	=	500	1,059	=	14	34.4	=	3.0	16.0
SCRE-R005	12/30/2017		-	Dry		n/a	n/a	=	500	1,008	=	14	31.9	=	3.0	15.1
SCRE-R005	12/31/2017		-	Dry		n/a	n/a	=	500	959	=	14	29.6	=	3.0	14.3
SCRE-R005	1/1/2018		-	Dry		n/a	n/a	=	500	913	=	14	27.5	=	3.0	13.5
SCRE-R005	1/2/2018		-	Dry		n/a	n/a	=	500	869	=	14	25.5	=	3.0	12.8
SCRE-R005	1/3/2018	◆	9:00*	Dry		n/a	n/a	=	300	813.0	=	80	25.1	=	27.0	13.0
SCRE-R005	1/4/2018		-	Dry		n/a	n/a	=	300	758.6	=	80	24.5	=	27.0	12.6
SCRE-R005	1/5/2018		-	Dry		n/a	n/a	=	300	707.8	=	80	23.9	=	27.0	12.2
SCRE-R005	1/6/2018		-	Dry		n/a	n/a	=	300	660.4	=	80	23.3	=	27.0	11.8
SCRE-R005	1/7/2018		-	Dry		n/a	n/a	=	300	616.1	=	80	22.7	=	27.0	11.4
SCRE-R005	1/8/2018		-	Dry		n/a	n/a	=	300	574.9	=	80	22.1	=	27.0	11.1
SCRE-R005	1/9/2018	◆	9:00*	Wet		n/a	n/a	=	1,300	4,404.6	=	220	244.6	=	114.0	224.8
SCRE-R005	1/10/2018		-	Wet		n/a	n/a	=	1,300	4,051	=	220	216.1	=	114.0	203.0
SCRE-R005	1/11/2018		-	Wet		n/a	n/a	=	1,300	3,873.1	=	220	213.9	=	114.0	202.0
SCRE-R005	1/12/2018		-	Wet		n/a	n/a	=	1,300	3,703.1	=	220	211.7	=	114.0	201.0
SCRE-R005	1/13/2018		-	Wet		n/a	n/a	=	1,300	3,540.5	=	220	209.5	=	114.0	200.1
SCRE-R005	1/14/2018		-	Wet		n/a	n/a	=	1,300	3,385.0	=	220	207.3	=	114.0	199.1
SCRE-R005	1/15/2018		-	Wet		n/a	n/a	=	1,300	3,236.4	=	220	205.2	=	114.0	198.1
SCRE-R005	1/16/2018		-	Wet		n/a	n/a	=	1,300	3,094.3	=	220	203.1	=	114.0	197.1
SCRE-R005	1/17/2018	◆	9:00*	Dry		n/a	n/a	=	9,000	572.8	=	300	21.1	=	63.0	10.3
SCRE-R005	1/18/2018		-	Dry		n/a	n/a	=	9,000	620.1	=	300	23.6	=	63.0	10.7
SCRE-R005	1/19/2018		-	Dry		n/a	n/a	=	9,000	671.3	=	300	26.4	=	63.0	11.1
SCRE-R005	1/20/2018		-	Dry		n/a	n/a	=	9,000	726.8	=	300	29.6	=	63.0	11.6
SCRE-R005	1/21/2018		-	Dry		n/a	n/a	=	9,000	786.9	=	300	33.2	=	63.0	12.0
SCRE-R005	1/22/2018		-	Dry		n/a	n/a	=	9,000	851.9	=	300	37.2	=	63.0	12.5
SCRE-R005	1/23/2018	◆	9:00*	Dry		n/a	n/a	=	9,000	922.3	=	5,000	46.0	=	72.0	13.0
SCRE-R005	1/24/2018		-	Dry		n/a	n/a	=	9,000	998.5	=	5,000	56.8	=	72.0	13.6
SCRE-R005	1/25/2018		-	Dry		n/a	n/a	=	9,000	1,103.2	=	5,000	69.5	=	72.0	14.7
SCRE-R005	1/26/2018		-	Dry		n/a	n/a	=	9,000	1,218.8	=	5,000	85.2	=	72.0	16.0

Table 2.
Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Date		Time	Rain		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean
						E.coli (MPN/100mL)			Total Coliform (MPN/100mL)			Fecal Coliform (MPN/100mL)			Enterococcus (MPN/100mL)	
						Site: SCRR3-RW1			Site: SCRE-R005			Site: SCRE-R005			Site: SCRE-R005	
						(235 MPN)	(126 MPN)		(10,000 MPN)	(1,000 MPN)		(400 MPN)	(200 MPN)		(104 MPN)	(35 MPN)
SCRE-R005	1/27/2018		-	Dry		n/a	n/a	=	9,000	1,346.5	=	5,000	104.3	=	72.0	17.4
SCRE-R005	1/28/2018		-	Dry		n/a	n/a	=	9,000	1,487.6	=	5,000	127.7	=	72.0	19.0
SCRE-R005	1/29/2018		-	Dry		n/a	n/a	=	9,000	1,643.5	=	5,000	156.4	=	72.0	20.6
SCRE-R005	1/30/2018	◆	9:00*	Dry		n/a	n/a	=	1,600	1,710.8	=	500	177.0	=	436.0	23.9
SCRE-R005	1/31/2018		-	Dry		n/a	n/a	=	1,600	1,780.8	=	500	200.2	=	436.0	27.6
SCRE-R005	2/1/2018		-	Dry		n/a	n/a	=	1,600	1,853.7	=	500	226.4	=	436.0	32.0
SCRE-R005	2/2/2018		-	Dry		n/a	n/a	=	1,600	1,929.5	=	500	256.2	=	436.0	38.0
SCRE-R005	2/3/2018		-	Dry		n/a	n/a	=	1,600	2,008.5	=	500	289.8	=	436.0	45.1
SCRE-R005	2/4/2018		-	Dry		n/a	n/a	=	1,600	2,090.7	=	500	327.8	=	436.0	53.5
SCRE-R005	2/5/2018		-	Dry		n/a	n/a	=	1,600	2,176.3	=	500	370.8	=	436.0	63.6
SCRE-R005	2/6/2018		-	Dry		n/a	n/a	=	1,600	2,265.3	=	500	419.5	=	436.0	75.5
SCRE-R005	2/7/2018	◆	9:00*	Dry		n/a	n/a	=	1,100	2,327.8	=	130	453.0	=	57.0	83.5
SCRE-R005	2/8/2018		-	Dry		n/a	n/a	=	1,100	2,391.9	=	130	489.1	=	57.0	92.5
SCRE-R005	2/9/2018		-	Dry		n/a	n/a	=	1,100	2,501.5	=	130	497.4	=	57.0	94.9
SCRE-R005	2/10/2018		-	Dry		n/a	n/a	=	1,100	2,616.1	=	130	505.8	=	57.0	97.4
SCRE-R005	2/11/2018		-	Dry		n/a	n/a	=	1,100	2,736.0	=	130	514.3	=	57.0	99.9
SCRE-R005	2/12/2018		-	Dry		n/a	n/a	=	1,100	2,861.4	=	130	523.0	=	57.0	102.5
SCRE-R005	2/13/2018	◆	9:00*	Dry		n/a	n/a	=	16,000	3,281.9	=	220	541.6	=	46.0	104.4
SCRE-R005	2/14/2018		-	Dry		n/a	n/a	=	16,000	3,764.3	=	220	560.8	=	46.0	106.3
SCRE-R005	2/15/2018		-	Dry		n/a	n/a	=	16,000	3,950.3	=	220	543.6	=	46.0	103.4
SCRE-R005	2/16/2018		-	Dry		n/a	n/a	=	16,000	4,026.8	=	220	538.0	=	46.0	102.3
SCRE-R005	2/17/2018		-	Dry		n/a	n/a	=	16,000	4,104.7	=	220	532.5	=	46.0	101.3
SCRE-R005	2/18/2018		-	Dry		n/a	n/a	=	16,000	4,184.2	=	220	527.0	=	46.0	100.2
SCRE-R005	2/19/2018		-	Dry		n/a	n/a	=	16,000	4,265.3	=	220	521.6	=	46.0	99.2
SCRE-R005	2/20/2018	◆	9:00*	Dry		n/a	n/a	=	1,300	3,998.8	=	80	499.1	=	21.0	95.6
SCRE-R005	2/21/2018		-	Dry		n/a	n/a	=	1,300	3,749.1	=	80	477.6	=	21.0	92.2
SCRE-R005	2/22/2018		-	Dry		n/a	n/a	=	1,300	3,514.9	=	80	416.1	=	21.0	88.5
SCRE-R005	2/23/2018		-	Dry		n/a	n/a	=	1,300	3,295.4	=	80	362.5	=	21.0	84.9
SCRE-R005	2/24/2018		-	Dry		n/a	n/a	=	1,300	3,089.5	=	80	315.8	=	21.0	81.5
SCRE-R005	2/25/2018		-	Dry		n/a	n/a	=	1,300	2,896.6	=	80	275.2	=	21.0	78.2
SCRE-R005	2/26/2018		-	Dry		n/a	n/a	=	1,300	2,715.7	=	80	239.7	=	21.0	75.1
SCRE-R005	2/27/2018	◆	9:00*	Dry		n/a	n/a	=	110	2,344.8	=	50	205.6	=	21.0	72.0
SCRE-R005	2/28/2018		-	Dry		n/a	n/a	=	110	2,024.7	=	50	176.4	=	21.0	69.1
SCRE-R005	3/1/2018		-	Dry		n/a	n/a	=	110	1,851.8	=	50	163.3	=	21.0	62.5
SCRE-R005	3/2/2018		-	Dry		n/a	n/a	=	110	1,693.7	=	50	151.3	=	21.0	56.5
SCRE-R005	3/3/2018		-	Dry		n/a	n/a	=	110	1,549.1	=	50	140.1	=	21.0	51.0
SCRE-R005	3/4/2018		-	Dry		n/a	n/a	=	110	1,416.8	=	50	129.7	=	21.0	46.1
SCRE-R005	3/5/2018		-	Dry		n/a	n/a	=	110	1,295.9	=	50	120.2	=	21.0	41.7
SCRE-R005	3/6/2018	◆	9:00*	Wet		n/a	n/a	=	9,000	3,155.5	=	220	201.0	=	151.0	198.0
SCRE-R005	3/7/2018		-	Wet		n/a	n/a	=	9,000	3,217.9	=	220	198.9	=	151.0	198.9
SCRE-R005	3/8/2018		-	Wet		n/a	n/a	=	9,000	3,156.8	=	220	190.6	=	151.0	190.3

Table 2.
Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Date		Time	Rain		Single Sample	30-Day Geomean	=	Single Sample	30-Day Geomean	=	Single Sample	30-Day Geomean	=	Single Sample	30-Day Geomean
						E.coli (MPN/100mL)			Total Coliform (MPN/100mL)			Fecal Coliform (MPN/100mL)			Enterococcus (MPN/100mL)	
						Site: SCRR3-RW1			Site: SCRE-R005			Site: SCRE-R005			Site: SCRE-R005	
						(235 MPN)	(126 MPN)		(10,000 MPN)	(1,000 MPN)		(400 MPN)	(200 MPN)		(104 MPN)	(35 MPN)
SCRE-R005	3/9/2018		-	Wet		n/a	n/a	=	9,000	3,096.8	=	220	182.5	=	151.0	182.0
SCRE-R005	3/10/2018		-	Wet		n/a	n/a	=	9,000	3,038.0	=	220	174.9	=	151.0	174.1
SCRE-R005	3/11/2018		-	Wet		n/a	n/a	=	9,000	2,980.3	=	220	167.5	=	151.0	166.5
SCRE-R005	3/12/2018		-	Wet		n/a	n/a	=	9,000	2,923.7	=	220	160.4	=	151.0	159.3
SCRE-R005	3/13/2018	◆	9:00*	Wet		n/a	n/a	=	9,000	2,868.1	=	800	160.4	=	60.0	147.7
SCRE-R005	3/14/2018		-	Wet		n/a	n/a	=	9,000	2,924.9	=	800	173.2	=	60.0	137.0
SCRE-R005	3/15/2018		-	Wet		n/a	n/a	=	9,000	2,982.8	=	800	187.0	=	60.0	127.1
SCRE-R005	3/16/2018		-	Wet		n/a	n/a	=	9,000	3,041.8	=	800	202.0	=	60.0	117.9
SCRE-R005	3/17/2018		-	Wet		n/a	n/a	=	9,000	3,102.0	=	800	218.1	=	60.0	109.3
SCRE-R005	3/18/2018		-	Wet		n/a	n/a	=	9,000	3,163.3	=	800	235.5	=	60.0	101.4
SCRE-R005	3/19/2018		-	Wet		n/a	n/a	=	9,000	3,225.9	=	800	254.3	=	60.0	94.1
SCRE-R005	3/20/2018	◆	9:00*	Dry		n/a	n/a	=	900	1,271.3	=	80	113.0	=	19.0	37.6
SCRE-R005	3/21/2018		-	Dry		n/a	n/a	=	900	1,247.1	=	80	106.3	=	19.0	33.8
SCRE-R005	3/22/2018		-	Dry		n/a	n/a	=	900	1,223.4	=	80	100.0	=	19.0	30.5
SCRE-R005	3/23/2018		-	Dry		n/a	n/a	=	900	1,215.3	=	80	98.4	=	19.0	29.4
SCRE-R005	3/24/2018		-	Dry		n/a	n/a	=	900	1,207.2	=	80	96.8	=	19.0	28.3
SCRE-R005	3/25/2018		-	Dry		n/a	n/a	=	900	1,199.1	=	80	95.3	=	19.0	27.3
SCRE-R005	3/26/2018		-	Dry		n/a	n/a	=	900	1,191.1	=	80	93.8	=	19.0	26.3
SCRE-R005	3/27/2018	◆	9:00*	Dry		n/a	n/a	=	16,000	1,302.3	=	500	98.1	=	45.0	26.1
SCRE-R005	3/28/2018		-	Dry		n/a	n/a	=	16,000	1,423.9	=	500	102.6	=	45.0	25.9
SCRE-R005	3/29/2018		-	Dry		n/a	n/a	=	16,000	1,423.9	=	500	105.4	=	45.0	25.9
SCRE-R005	3/30/2018		-	Dry		n/a	n/a	=	16,000	1,423.9	=	500	108.3	=	45.0	25.9
SCRE-R005	3/31/2018		-	Dry		n/a	n/a	=	16,000	1,423.9	=	500	111.3	=	45.0	25.9
SCRE-R005	4/1/2018		-	Dry		n/a	n/a	=	16,000	1,423.9	=	500	114.4	=	45.0	25.8
SCRE-R005	4/2/2018		-	Dry		n/a	n/a	=	16,000	1,423.9	=	500	117.6	=	45.0	25.8
SCRE-R005	4/3/2018	◆	9:00*	Dry		n/a	n/a	=	1,100	1,302.3	=	230	117.8	=	14.0	24.8
SCRE-R005	4/4/2018		-	Dry		n/a	n/a	=	1,100	1,191.1	=	230	118.0	=	14.0	23.9
SCRE-R005	4/5/2018		-	Dry		n/a	n/a	=	1,100	1,184.5	=	230	122.2	=	14.0	23.5
SCRE-R005	4/6/2018		-	Dry		n/a	n/a	=	1,100	1,177.9	=	230	126.6	=	14.0	23.2
SCRE-R005	4/7/2018		-	Dry		n/a	n/a	=	1,100	1,171.4	=	230	131.1	=	14.0	22.9
SCRE-R005	4/8/2018		-	Dry		n/a	n/a	=	1,100	1,164.9	=	230	135.8	=	14.0	22.6
SCRE-R005	4/9/2018		-	Dry		n/a	n/a	=	1,100	1,158.4	=	230	140.7	=	14.0	22.3
SCRE-R005	4/10/2018	◆	9:00*	Dry		n/a	n/a	=	800	1,139.8	=	130	143.0	=	10.0	21.8
SCRE-R005	4/11/2018		-	Dry		n/a	n/a	=	800	1,121.5	=	130	145.3	=	10.0	21.2
SCRE-R005	4/12/2018		-	Dry		n/a	n/a	=	800	1,198.2	=	130	150.0	=	10.0	20.7
SCRE-R005	4/13/2018		-	Dry		n/a	n/a	=	800	1,280.1	=	130	154.8	=	10.0	20.2
SCRE-R005	4/14/2018		-	Dry		n/a	n/a	=	800	1,367.7	=	130	159.9	=	10.0	19.7
SCRE-R005	4/15/2018		-	Dry		n/a	n/a	=	800	1,461.2	=	130	165.0	=	10.0	19.2
SCRE-R005	4/16/2018		-	Dry		n/a	n/a	=	800	1,561.1	=	130	170.4	=	10.0	18.8
SCRE-R005	4/17/2018	◆	9:00*	Dry		n/a	n/a	=	1,700	1,710.2	=	22	165.8	=	14.0	18.5
SCRE-R005	4/18/2018		-	Dry		n/a	n/a	=	1,700	1,873.7	=	22	161.3	=	14.0	18.3

Table 2.
Geomean Data for Weekly Sampling Results for Santa Clara River Reach 3 (SCRR3-RW1) and Estuary (SCRE-R005)

Location	Date		Time	Rain		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean		Single Sample	30-Day Geomean
						E.coli (MPN/100mL)			Total Coliform (MPN/100mL)			Fecal Coliform (MPN/100mL)			Enterococcus (MPN/100mL)	
						Site: SCRR3-RW1			Site: SCRE-R005			Site: SCRE-R005			Site: SCRE-R005	
						(235 MPN)	(126 MPN)		(10,000 MPN)	(1,000 MPN)		(400 MPN)	(200 MPN)		(104 MPN)	(35 MPN)
SCRE-R005	4/19/2018		-	Dry		n/a	n/a	=	1,700	1,913.8	=	22	154.5	=	14.0	18.1
SCRE-R005	4/20/2018		-	Dry		n/a	n/a	=	1,700	1,954.8	=	22	148.0	=	14.0	17.9
SCRE-R005	4/21/2018		-	Dry		n/a	n/a	=	1,700	1,996.7	=	22	141.8	=	14.0	17.7
SCRE-R005	4/22/2018		-	Dry		n/a	n/a	=	1,700	2,039.5	=	22	135.8	=	14.0	17.5
SCRE-R005	4/23/2018		-	Dry		n/a	n/a	=	1,700	2,083.2	=	22	130.1	=	14.0	17.3

Notes:

◆ Date of Sampling

Weeks with alternating wet weather samples (collected 72 hours after a day with >0.1” rainfall) and dry weather samples, previous 30 days of either wet weather samples or dry weather samples were used to calculate daily geomean.

*Sample collection time for SCRE-R005 was not available at time of reporting. A placeholder of 9:00 has been used for this report.

MPN - most probably number > - greater than

TMDL - Total Maximum Daily Load < - less than

E.coli - Escherichia coli = - equal to

Appendix 2. VLT Assessment and Collection Worksheets

Appendix A – Trash Visual Survey Worksheet

Trash Visual Survey Worksheet

Parcel No.: 1, 2, 3 Survey Date: 10/10/16
 Inspector: J. Nikolai, Bruce Hunter Survey Start/ End Time: 10:00 / 11:30
 Current Weather Condition: Sunny, partly cloudy
 Antecedent Weather Condition: Sunny, partly cloudy

Level of Trash Observed:

Refer to Program Monitoring Area Map as necessary. Note any categorical variation in levels of trash observed in different areas of the parcel. If necessary, categorize these areas individually.

KEY: Category 1 (<10 pcs), Category 2 (10-100 pcs), Category 3 (>100 pcs)

Notes/ Parcel Area:	Category:	Reason(s) for Category Rating:
① VHC-3	2	Possible camp - luggage, clothing
② VHC-3	3	Active camp
③ 101	3	Wooden hut
④ City-1	2	Old tent/belongings
⑤ City-1	2	Sleeping bag, belongings
⑥ City-1	2	Trash, clothing
⑦ Train bridge	2	Trash, clothing
⑧ State Parks-2	2	Trash pile, cooler
⑨ State Parks-2	2	Trash
⑩ State Parks-2	3	Trash
⑪ State Parks-2	2	Trash!
⑫ State Parks-2	3	Many trash piles, old camps

Types of Trash Observed (check all that apply):

Plastic/ Styrofoam ☒
 Landscape Materials ☒
 Toxic/ Hazardous Materials ☒
 Personal Effects ☒

Paper Products/Biodegradable ☒
 Aluminum/ Metal ☒
 Glass ☒
 Sports Equipment ☒

Household Items ☒
 Automotive ☒
 Biohazardous ☒
 Other ☐

Notes: Multiple trash sites throughout patrol report.

Est. No. of Follow-up Cleanup Events Needed (describe why): 2-3; State Park property needs most help. VHC to remove camps at next cleanup or Willoughby property. Scattered trash along patrol route.

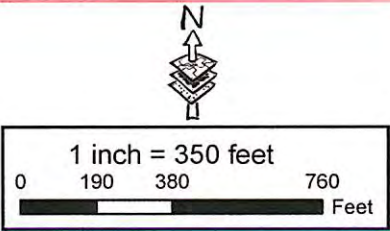
Additional Notes: Person sleeping in sleeping bag at ⑤ during patrol.

- | | | |
|----------------|---|---------------------------------|
| ⑬ State Park-2 | 3 | Active camp - bikes, belongings |
| ⑭ 101 | 2 | old camp |
| ⑮ VHC-3 | 1 | "Tagged" tree |



Legend

- Parcels
- Ventura River Trash TMDL Subwatershed
- TMDL Defined Estuary
- Adjacent Properties



Ventura River Trash TMDL Estuary Subwatershed Area (as defined by TMDL)

DISCLAIMER:
The information combined hereon was created by the County of Ventura Geographic Information System (GIS) data which is operated for the convenience of the County. The County of Watershed Protection District makes no representation or warranty of this map, based on County GIS data, is accurate and that it contains no errors or omissions and accepts that no economic or physical

10/10/16

Appendix A – Trash Visual Survey Worksheet

Trash Visual Survey Worksheet

Parcel No.: 1, 2, 3 Survey Date: 11/21/16
 Inspector: J. Nikolai, B. Hunter Survey Start/ End Time: 11:30 / 1:00
 Current Weather Condition: Sunny
 Antecedent Weather Condition: Sunny

Level of Trash Observed:

Refer to Program Monitoring Area Map as necessary. Note any categorical variation in levels of trash observed in different areas of the parcel. If necessary, categorize these areas individually.

KEY: Category 1 (<10 pcs), Category 2 (10-100 pcs), Category 3 (>100 pcs)

Notes/ Parcel Area:	Category:	Reason(s) for Category Rating:
① Main St. bridge	3	Large tent + personal effects
② Main St. bridge	2	Medium tent
③ Main St. bridge	3	Many items in a pile, covered w/ blanket
④ Main St. bridge	2	Scattered trash under various spots
⑤ VHC-2	2	Trash pile - bottles of urine + other
⑥ 101 freeway	1	Car bumper
⑦ 101 freeway	2	Scattered trash under various spots
⑧ State Parks-2	1	Mattress
⑨ State Parks-2	2	Blankets + personal effects
⑩ City-1	2	Small camp
⑪ State Parks-2	2	Scattered trash
⑫ State Parks-2	3	Scattered trash along trail

Types of Trash Observed (check all that apply):

Plastic/ Styrofoam ☒
 Landscape Materials ☐
 Toxic/ Hazardous Materials ☐
 Personal Effects ☒

Paper Products/Biodegradable ☒
 Aluminum/ Metal ☒
 Glass ☒
 Sports Equipment ☒

Household Items ☒
 Automotive ☒
 Biohazardous ☐
 Other ☐

Notes: _____

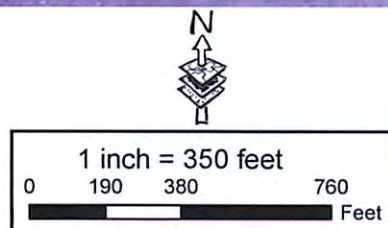
Est. No. of Follow-up Cleanup Events Needed (describe why): 2-3; Camps need to be dismantled.

Additional Notes: Site ③ appears to be items that individual moved off of VHC property week prior. Site ⑤ was location of sleeping man, also from week prior.

⑬ State Parks-2	3	Small camp
⑭ 101 Freeway	2	Scattered trash
⑮ VHC-2	2	Scattered trash
⑯ VHC-2	1	Bicycle



Legend	
	Parcels
	Ventura River Trash TMDL Subwatershed
	TMDL Defined Estuary
	Adjacent Properties



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11/21/16

Ventura River Trash TMDL Estuary Subwatershed Area (as defined by TMDL)

Appendix A – Trash Visual Survey Worksheet

Trash Visual Survey Worksheet

Parcel No.: 1, 2, 3, 4 Survey Date: 12/1/16
 Inspector: J. Nikolaj, Russell Richardson Survey Start/ End Time: 2pm / 3:30pm
 Current Weather Condition: Sunny - rained day before
 Antecedent Weather Condition: Sunny

Level of Trash Observed:

Refer to Program Monitoring Area Map as necessary. Note any categorical variation in levels of trash observed in different areas of the parcel. If necessary, categorize these areas individually.

KEY: Category 1 (<10 pcs), Category 2 (10-100 pcs), Category 3 (>100 pcs)

Notes/ Parcel Area:	Category:	Reason(s) for Category Rating:
① County - 4	1	Plastic bags / trash
② County - 4	1	Blanket
③ Main Street bridge	3	Tent + personal effects
④ Vite - 3	1	Trash - cardboard & plastic
⑤ 101 Freeway	2	Leftover trash from wooden fort
⑥ 101 Freeway	1	Car bumper
⑦ State Park - 2	1	Mattress
⑧ State Park - 2	1	Hanging clothing - man placing things out to dry
⑨ City - 1	2	Man sleeping + personal effects
⑩ State Park - 2	2	Woman + tent under fallen trees
⑪ City - 1	2	Old campfire pit + trash
⑫ State Park - 2	3	Uncovered homeless trash

Types of Trash Observed (check all that apply):

Plastic/ Styrofoam ☒
 Landscape Materials ☒
 Toxic/ Hazardous Materials ☒
 Personal Effects ☒

Paper Products/Biodegradable ☒
 Aluminum/ Metal ☒
 Glass ☒
 Sports Equipment ☒

Household Items ☒
 Automotive ☒
 Biohazardous ☒
 Other ☐

Notes: _____

Est. No. of Follow-up Cleanup Events Needed (describe why): 1-2; not looking too bad, other than current campsites that will need attention.

Additional Notes: Ran into a (fortunately) friendly pitbull on the Emma Wood Trail, all by herself. Camps to be reported.

⑬ State Park - 2

2

Camp + trash

⑭ 101 Freeway

2

Cardboard, plastics, misc. trash

⑮ VHC - 3

1

Some misc. trash



Legend

- Parcels
- Ventura River Trash TMDL Subwatershed
- TMDL Defined Estuary
- Adjacent Properties

N

1 inch = 350 feet

0 190 380 760 Feet

Ventura River Trash TMDL Estuary Subwatershed Area (as defined by TMDL)

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12/1/16

Appendix A – Trash Visual Survey Worksheet

Trash Visual Survey Worksheet

Parcel No.: 1, 2, 3 Survey Date: 1/25/17
 Inspector: J. Nikolaj, J. Foreman, J. Harrison Survey Start/ End Time: 12pm / 1pm
 Current Weather Condition: Sunny
 Antecedent Weather Condition: Sunny

Level of Trash Observed:

Refer to Program Monitoring Area Map as necessary. Note any categorical variation in levels of trash observed in different areas of the parcel. If necessary, categorize these areas individually.

KEY: Category 1 (<10 pcs), Category 2 (10-100 pcs), Category 3 (>100 pcs)

Notes/ Parcel Area:	Category:	Reason(s) for Category Rating:
① Main Street bridge	2	Active camp
② State Park - 2	2	Active camp
③ State Park - 2	3	Active camp
④ VHL - 3	1	Plastic trash
⑤ 101	2	Old camp? Trash pile
⑥ State Park - 2	1	Active camp? Pillow, sleeping bag
⑦ State Park - 2	3	Trash pile

Types of Trash Observed (check all that apply):

Plastic/ Styrofoam ☒ Paper Products/Biodegradable ☒ Household Items
 Landscape Materials ☐ Aluminum/ Metal ☐ Automotive
 Toxic/ Hazardous Materials ☐ Glass ☒ Biohazardous
 Personal Effects ☒ Sports Equipment ☒ Other

Notes: _____

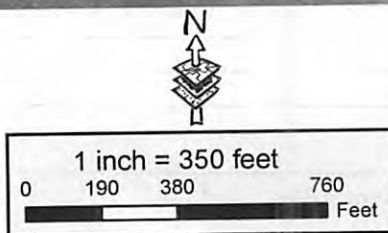
Est. No. of Follow-up Cleanup Events Needed (describe why): 2-3 needed.

Additional Notes: finally able to access near ⑥ & ⑦ now
that water is receding - areas appear to have burned
semi recently.



Legend

- Parcels
- Ventura River Trash TMDL Subwatershed
- TMDL Defined Estuary
- Adjacent Properties



Ventura River Trash TMDL Estuary Subwatershed Area (as defined by TMDL)

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1/25

Appendix A – Trash Visual Survey Worksheet

Trash Visual Survey Worksheet

Parcel No.: 1, 2, 3 Survey Date: 2/28/17
 Inspector: S. Nikolai, B. Hunter Survey Start/ End Time: 11:30 12:30
 Current Weather Condition: Sunny
 Antecedent Weather Condition: Sunny

Level of Trash Observed:

Refer to Program Monitoring Area Map as necessary. Note any categorical variation in levels of trash observed in different areas of the parcel. If necessary, categorize these areas individually.

KEY: Category 1 (<10 pcs), Category 2 (10-100 pcs), Category 3 (>100 pcs)

Notes/ Parcel Area:	Category:	Reason(s) for Category Rating:
① 101 Freeway	2	Clothing, trash
② VHC-3	1	Spray cans, paint brush
③ State Park-2	3	Large camp
④ State Park-2	2	Few small piles of trash
⑤ City-1	1	Few small piles of trash

Types of Trash Observed (check all that apply):

Plastic/ Styrofoam ☒

Landscape Materials

Toxic/ Hazardous Materials

Personal Effects ☒

Paper Products/Biodegradable ☒

Aluminum/ Metal

Glass

Sports Equipment ☒

Household Items ☒

Automotive

Biohazardous ☒

Other

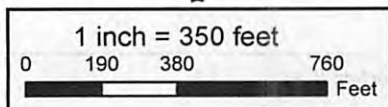
Notes:

Est. No. of Follow-up Cleanup Events Needed (describe why): 1-2; not looking to bad, trash-wise; large camp needs to be removed.

Additional Notes: law enforcement to be notified.



Legend	
	Parcels
	Ventura River Trash TMDL Subwatershed
	TMDL Defined Estuary
	Adjacent Properties



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2/28/17

Ventura River Trash TMDL Estuary Subwatershed Area (as defined by TMDL)

Appendix A – Trash Visual Survey Worksheet

Trash Visual Survey Worksheet

Parcel No.: 1, 2, 3, 4 Survey Date: 3/21/17
 Inspector: J. Nikolais, T. Sullivan Survey Start/ End Time: 11am 11:30pm
 Current Weather Condition: Sunny
 Antecedent Weather Condition: Sunny

Level of Trash Observed:

Refer to Program Monitoring Area Map as necessary. Note any categorical variation in levels of trash observed in different areas of the parcel. If necessary, categorize these areas individually.

KEY: Category 1 (<10 pcs), Category 2 (10-100 pcs), Category 3 (>100 pcs)

Notes/ Parcel Area:	Category:	Reason(s) for Category Rating:
① Wood - Clatsop	2	Paper bag w/ plastic bottles
② Wood - Clatsop / Cornfield	3	Camp - active?
③ Wood - Clatsop	1	Washed down blanket/clothing
④ Main St. bridge	2	Active camp
⑤ 101 Freeway	1	Clothing / Kayak
⑥ State Parks - 2	3	Active camp
⑦ State Parks - 2	3	Active camp
⑧ State Parks - 2	1	Camp remains from cleanup

Types of Trash Observed (check all that apply):

Plastic/ Styrofoam ☒

Landscape Materials

Toxic/ Hazardous Materials

Personal Effects ☒

Paper Products/Biodegradable ☒

Aluminum/ Metal

Glass

Sports Equipment ☒

Household Items ☒

Automotive

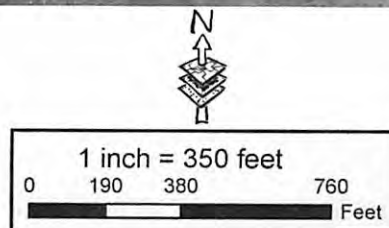
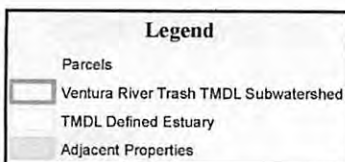
Biohazardous ☒

Other

Notes: _____

Est. No. of Follow-up Cleanup Events Needed (describe why): ⑥ - remains of 3/18 cleanup (spoke with man who lives there). ⑧ - "canoe-like" structure still needs to be dismantled.

Additional Notes: Road work was in progress on the maintenance road during patrol (post storm damage).



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Ventura River Trash TMDL Estuary Subwatershed Area (as defined by TMDL)

3/21/17

Appendix A – Trash Visual Survey Worksheet

Trash Visual Survey Worksheet

Parcel No.: 1, 2, 3, 4 Survey Date: 4/26/17
 Inspector: J. Mikolaj, T. Sullivan Survey Start/ End Time: 11:30 / 1:30
 Current Weather Condition: Sunny
 Antecedent Weather Condition: Sunny

Level of Trash Observed:

Refer to Program Monitoring Area Map as necessary. Note any categorical variation in levels of trash observed in different areas of the parcel. If necessary, categorize these areas individually.

KEY: Category 1 (<10 pcs), Category 2 (10-100 pcs), Category 3 (>100 pcs)

Notes/ Parcel Area:	Category:	Reason(s) for Category Rating:
① County-4	2	Old clothing/trash pile
② County-4	3	Old camp w/ lots of clothing
③ Main Street bridge	2	Active camp
④ VHC-3	2	Clothing pile + hangers
⑤ VHC-3	2	Active camp - fewer items present
⑥ State Parks-2	2	trash pile + graffitied trees
⑦ State Parks-2	1	trash + graffitied tree
⑧ State Parks-2	3	large clothing pile
⑨ State Parks-2	1	Plastic bag + clothing
⑩ State Parks-2	2	Active camp - in old camp spot
⑪ State Parks-2	2	Active camp - red tent
⑫ City-1	1	Box of popped popcorn...

Types of Trash Observed (check all that apply):

Plastic/ Styrofoam ☒

Landscape Materials

Toxic/ Hazardous Materials

Personal Effects ☒

Paper Products/Biodegradable ☒

Aluminum/ Metal

Glass ☒

Sports Equipment ☒

Household Items ☒

Automotive

Biohazardous ☒

Other

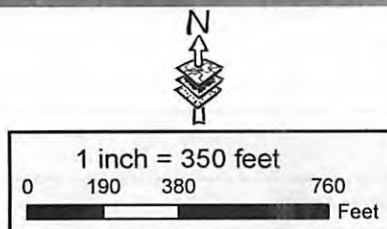
Notes: Mostly clothing and misc. trash. Site ③ seems less active, though still active...

Est. No. of Follow-up Cleanup Events Needed (describe why): 2-3; active camps need to be posted (will alert law enforcement).

Additional Notes: Dead lions on the beach (domestic acid!).



Legend	
	Parcels
	Ventura River Trash TMDL Subwatershed
	TMDL Defined Estuary
	Adjacent Properties



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Ventura River Trash TMDL Estuary Subwatershed Area (as defined by TMDL)

Appendix A – Trash Visual Survey Worksheet

Trash Visual Survey Worksheet

Parcel No.: 1, 2, 3 Survey Date: 5/2/17
 Inspector: J. Nikolic, J. Forner Survey Start/ End Time: 9:00 / 16:00
 Current Weather Condition: Sunny
 Antecedent Weather Condition: Sunny

Level of Trash Observed:

Refer to Program Monitoring Area Map as necessary. Note any categorical variation in levels of trash observed in different areas of the parcel. If necessary, categorize these areas individually.

KEY: Category 1 (<10 pcs), Category 2 (10-100 pcs), Category 3 (>100 pcs)

Notes/ Parcel Area:	Category:	Reason(s) for Category Rating:
① Main Street bridge	2	Active Camp
② 101 Freeway	1	Mattress
③ State Parks -2	2	Bags of trash, open graffiti
④ State Parks -2	3	Large trash/ clothing pile

Types of Trash Observed (check all that apply):

Plastic/ Styrofoam ☒

Landscape Materials

Toxic/ Hazardous Materials

Personal Effects ☒

Paper Products/Biodegradable ☒

Aluminum/ Metal

Glass

Sports Equipment ☒

Household Items ☒

Automotive

Biohazardous ☒

Other

Notes: Plastics, clothing, paper trash

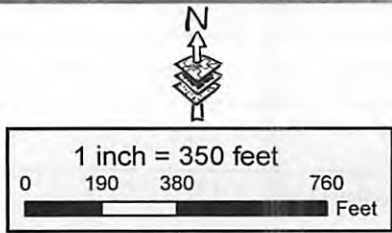
Est. No. of Follow-up Cleanup Events Needed (describe why): 2-3; large trash piles + active camps (as well as some old that will need to be cleaned up).

Additional Notes: Active camp near 101 freeway seems to be gone, except for mattress that has some shavings!



Legend

- Parcels
- Ventura River Trash TMDL Subwatershed
- TMDL Defined Estuary
- Adjacent Properties



Ventura River Trash TMDL Estuary Subwatershed Area (as defined by TMDL)

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Appendix A – Trash Visual Survey Worksheet

Trash Visual Survey Worksheet

Parcel No.: 1, 2, 3, 4

Survey Date: 6/12/17

Inspector: J. Nikolic, R. Richardson

Survey Start/ End Time: 1:30pm / 3:30pm

Current Weather Condition: Sunny

Antecedent Weather Condition: Sunny

Level of Trash Observed:

Refer to Program Monitoring Area Map as necessary. Note any categorical variation in levels of trash observed in different areas of the parcel. If necessary, categorize these areas individually.

KEY: Category 1 (<10 pcs), Category 2 (10-100 pcs), Category 3 (>100 pcs)

Notes/ Parcel Area:	Category:	Reason(s) for Category Rating:
① Main Street bridge	3	Active camp
② Main Street bridge	2	Active camp - one tent
③ VHC-3	1	Plastic bag
④ VHC-3	1	Plastic tops? for crates?
⑤ VHC-3	1	Plastic trash, handle bars
⑥ VHC-3	1	Clothing
⑦ 101 freeway	2	Active camp
⑧ VHC-3	1	Clothing
⑨ 101 Freeway	1	Blanket, spray cans
⑩ State Park-2	1	Clothing
⑪ City-1	1	Pizza box, blanket, plastic trash
⑫ City-1	2	Man sleeping w/ many personal effects

Types of Trash Observed (check all that apply):

Plastic/ Styrofoam ☒

Paper Products/Biodegradable ☒

Household Items ☒

Landscape Materials

Aluminum/ Metal

Automotive

Toxic/ Hazardous Materials

Glass

Biohazardous

Personal Effects ☒

Sports Equipment ☒

Other

Notes: Mostly clothing and plastic trash.

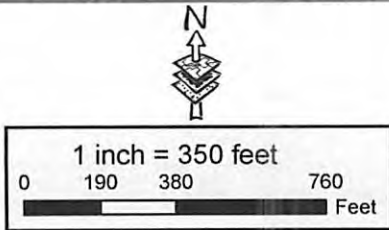
Est. No. of Follow-up Cleanup Events Needed (describe why): 1-2; active camps need to be dismantled.

Additional Notes: To patrol area w/ law enforcement soon.



Legend

- Parcels
- Ventura River Trash TMDL Subwatershed
- TMDL Defined Estuary
- Adjacent Properties



Ventura River Trash TMDL Estuary Subwatershed Area (as defined by TMDL)

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Appendix A – Trash Visual Survey Worksheet

Trash Visual Survey Worksheet

Parcel No: 1, 2, 3, 4 Survey Date: 7/24/17
 Inspector: Joseph J. Forman, K. Furlong Survey Start/End Time: 9:30 / 11:30
 Current Weather Condition: Sunny
 Antecedent Weather Condition: Sunny

Level of Trash Observed:

Refer to Program Monitoring Area Map as necessary. Note any categorical variation in levels of trash observed in different areas of the parcel. If necessary, categorize these areas individually.

KEY: Category 1 (<10 pcs), Category 2 (10-100 pcs), Category 3 (>100 pcs)

Notes/ Parcel Area:	Category:	Reason(s) for Category Rating:
① County - 4	2	Active camp
② VHE - 3	1	Beer bottles
③ 101 Freeway	1	Spray cans
④ State Parks - 2	1	Wheat kernels
⑤ City - 1	1	Colled-up tarp

Types of Trash Observed (check all that apply):

Plastic/ Styrofoam ✓	Paper Products/Biodegradable ✓	Household Items ✓
Landscape Materials	Aluminum/ Metal	Automotive
Toxic/ Hazardous Materials	Glass ✓	Biohazardous ✓
Personal Effects ✓	Sports Equipment ✓	Other

Notes: Camp at ① had tent, bicycle, and various trash.

Est. No. of Follow-up Cleanup Events Needed (describe why): One cleanup after the illegal campers have left. VPD to be notified.

Additional Notes: No camping signs posted at ① and at ⑤. Portion of city property was recently burned (7/22) near railroad bridge after affondo had been cut near old camp. Heard a man yell "hey!" at Site ① but could not see where he was.

Appendix A – Trash Visual Survey Worksheet

Trash Visual Survey Worksheet

Parcel No.: 1, 2, 3, & 4 Survey Date: 8.23.17
 Inspector: K. Furlong, J. Blanchard Survey Start/ End Time: 10:30 / 12:23
 Current Weather Condition: Overcast
 Antecedent Weather Condition: overcast

Level of Trash Observed:

Refer to Program Monitoring Area Map as necessary. Note any categorical variation in levels of trash observed in different areas of the parcel. If necessary, categorize these areas individually.

KEY: Category 1 (<10 pcs), Category 2 (10-100 pcs), Category 3 (>100 pcs)

Notes/ Parcel Area:	Category:	Reason(s) for Category Rating:
1 County - 4	1	two trash bags
2 3/4 under bridge	2	spray cans & plastic
3 VHC - 3	1	Styrofoam boxes
4 VHC - 3 near crossing	2	clothes, beer box, balloons
5 state park - 2	1	full trash bag
6 state park - 2	1	Bike w/trailer
7 city beach - 1	3	beach camping in driftwood teepees
8 state park - 2	2	plastic, cans, boxes
9 state park - 2	2	plastic, cans, boxes
10 culture / 3 / RV park	3	clothes, personal effects (rock holding [bath spot])
11 VHC - 3	1	clothing used for bedding

Types of Trash Observed (check all that apply):

Plastic/ Styrofoam ☒ Paper Products/Biodegradable ☒ Household Items ☒
 Landscape Materials ☐ Aluminum/ Metal ☒ Automotive ☐
 Toxic/ Hazardous Materials ☒ Glass ☒ Biohazardous ☒
 Personal Effects ☒ Sports Equipment ☒ Other ☐

Notes: Structure built from rocks, tarps, plant materials,
& tie downs (Jessie's spot)

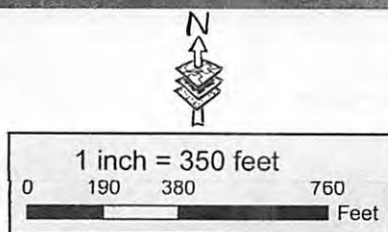
Est. No. of Follow-up Cleanup Events Needed (describe why):

VPD & State Parks still need to address
beach teepee camping issue

Additional Notes:



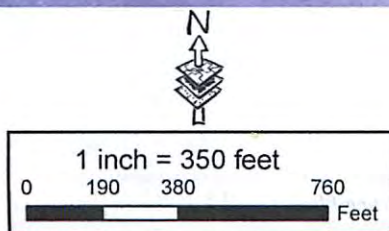
Legend	
	Parcels
	Ventura River Trash TMDL Subwatershed
	TMDL Defined Estuary
	Adjacent Properties



Ventura River Trash TMDL Estuary Subwatershed Area



Legend	
	Parcels
	Ventura River Trash TMDL Subwatershed
	TMDL Defined Estuary
	Adjacent Properties



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Ventura River Trash TMDL Estuary Subwatershed Area (as defined by TMDL)

Appendix A – Trash Visual Survey Worksheet

Trash Visual Survey Worksheet

Parcel No.: 1, 2, & 3 Survey Date: 9/20/17
 Inspector: K. Furlong & E. Dortschi Survey Start/ End Time: 1
 Current Weather Condition: Sunny
 Antecedent Weather Condition: Sunny

Level of Trash Observed:

Refer to Program Monitoring Area Map as necessary. Note any categorical variation in levels of trash observed in different areas of the parcel. If necessary, categorize these areas individually.

KEY: Category 1 (<10 pcs), Category 2 (10-100 pcs), Category 3 (>100 pcs)

Notes/ Parcel Area:	Category:	Reason(s) for Category Rating:
① Willoughby - 3	1	clothing, food container, paper
② RV Park/VHAT - 3	3	large abandoned camp [MFAC]
③ Caltrans -	2	spray cans & candy wrappers
④ State Park - 2	1	bottles & plastic bags
⑤ State Park - 2	2	clothes & personal effects
⑥ City - 1	1	bike seat, bottle

Types of Trash Observed (check all that apply):

Plastic/ Styrofoam ✓	Paper Products/Biodegradable ✓	Household Items ✓
Landscape Materials	Aluminum/ Metal ✓	Automotive
Toxic/ Hazardous Materials ✓	Glass ✓	Biohazardous ✓
Personal Effects ✓	Sports Equipment ✓	Other

Notes: _____

Est. No. of Follow-up Cleanup Events Needed (describe why): none
cleaned up the large camp after patrol.

Additional Notes: _____

Appendix B – MFAC Event Worksheet

MFAC Event Worksheet

Parcel No.: 3 Event Date: 10/15/16
 Specific Cleanup Location: Willoughby Preserve Event Start/ End Time: 9:00 / 12:00
 Field Technician name(s): D. Dunkell
 Current Weather Condition: Sunny
 Antecedent Weather Condition: Sunny

Types of Trash Observed (check all that apply):

Plastic/ Styrofoam <input checked="" type="checkbox"/>	Paper Products/ Biodegradable <input checked="" type="checkbox"/>	Household Items <input checked="" type="checkbox"/>
Landscape Materials <input type="checkbox"/>	Aluminum/ Metal <input checked="" type="checkbox"/>	Automotive <input type="checkbox"/>
Toxic/ Hazardous Materials <input type="checkbox"/>	Glass <input checked="" type="checkbox"/>	Biohazardous <input checked="" type="checkbox"/>
Personal Effects <input checked="" type="checkbox"/>	Sports Equipment <input checked="" type="checkbox"/>	Other <input type="checkbox"/>

Notes: Bicycles, luggage, clothing, tent, tarps, sleeping bags,
cooler, plastic / paper trash.

Potential Source(s) of Trash Collected: Homeless encampments.

Hazardous/ Legacy Trash Requiring Follow-up: N/A at this location.

MFAC Event Actions for Follow-up: No camp signs to be posted.

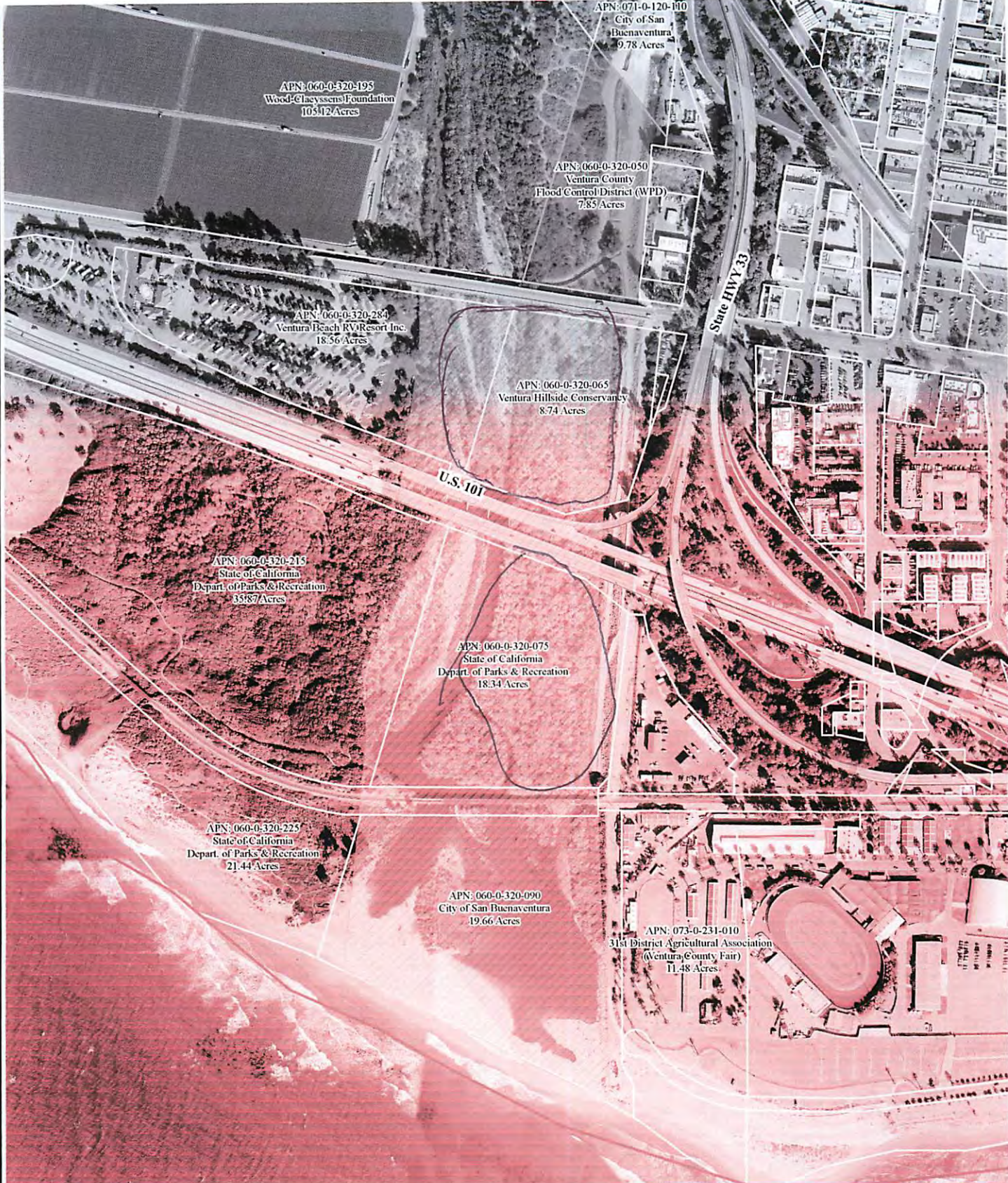
Additional Notes: Trash removed via CA State Parks truck and
Paul Mechan's cart.

Trash Collected: No. of Trash Bags Filled: 25 Dumpster % Fill: 15% Dumpster Size (cubic yds): 40

Lead Field Technician Certification (sign/print):

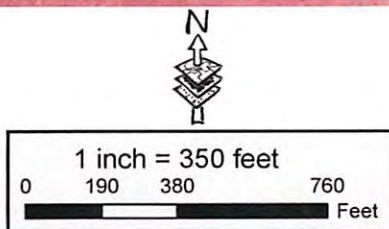
"Cleaned area is free of all visible trash." -

Jessica Wholai



Legend

- Parcels
- Ventura River Trash TMDL Subwatershed
- TMDL Defined Estuary
- Adjacent Properties



Ventura River Trash TMDL Estuary Subwatershed Area (as defined by TMDL)

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10/15/16

Appendix B – MFAC Event Worksheet

MFAC Event Worksheet

Parcel No.: 2,3 Event Date: 3/18/17
 Specific Cleanup Location: CA State Park/VHC Event Start/ End Time: 9am / 12pm
 Field Technician name(s): J. Nikolai, D. Dunkell, T. Sullivan (intern)
 Current Weather Condition: cloudy
 Antecedent Weather Condition: cloudy to partly cloudy

Types of Trash Observed (check all that apply):

Plastic/ Styrofoam <input checked="" type="checkbox"/>	Paper Products/ Biodegradable <input checked="" type="checkbox"/>	Household Items <input checked="" type="checkbox"/>
Landscape Materials <input checked="" type="checkbox"/>	Aluminum/ Metal <input checked="" type="checkbox"/>	Automotive <input checked="" type="checkbox"/>
Toxic/ Hazardous Materials <input checked="" type="checkbox"/>	Glass <input checked="" type="checkbox"/>	Biohazardous <input checked="" type="checkbox"/>
Personal Effects <input checked="" type="checkbox"/>	Sports Equipment <input checked="" type="checkbox"/>	Other <input type="checkbox"/>

Notes: Old mattresses, pillows, rugs, clothing, electronics, old food,
Fecal matter, urine filled jugs, personal effects, bikes,
tarp, tents, plastic bags/trash, books, broken bottles,
pieces of metal, door knobs, blankets/towels

Potential Source(s) of Trash Collected: Homeless activity, irresponsible
day users, and storm run off (trash in shrubs/trees from
recent flooding).

Hazardous/ Legacy Trash Requiring Follow-up: "Cave-like" structure w/
around roof needs further dismantling, some trash/items
remaining on State Park property.

MFAC Event Actions for Follow-up: Follow-up cleanups required.

Additional Notes: CA State Parks assisted in trash hauling.
California Conservation Corps also participated greatly
in this cleanup. Two camps dismantled on State Park
property for this event.

Trash Collected: No. of Trash Bags Filled: ~70 Dumpster % Fill: 50% Dumpster Size (cubic yds): 40

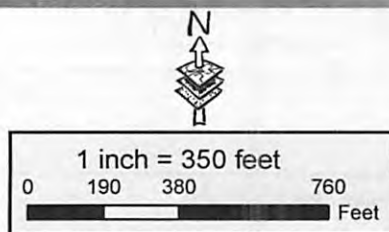
Lead Field Technician Certification (sign/ print):

"Cleaned area is free of all visible trash." - Jessica Nikolai



Legend

- Parcels
- Ventura River Trash TMDL Subwatershed
- TMDL Defined Estuary
- Adjacent Properties



Ventura River Trash TMDL Estuary Subwatershed Area (as defined by TMDL)

DISCLAIMER:
The information combined hereon was created by the County of Ventura Geographic Information System (GIS) data which is operated for the convenience of the County. The County of Watershed Protection District makes no representation or warranty of this map, based on County GIS data, is accurate and that it contains no errors or omissions, and accepts that no responsibility is assumed.

Appendix B – MFAC Event Worksheet

MFAC Event Worksheet

Parcel No.: Main St. bridge Event Date: 6/30/17
 Specific Cleanup Location: Main St. bridge - 1st Event Start/ End Time: 10am / 11:30am
 Field Technician name(s): J. West, J. Harrison, D. Dunkell
 Current Weather Condition: cloudy
 Antecedent Weather Condition: cloudy

Types of Trash Observed (check all that apply):

Plastic/ Styrofoam <input checked="" type="checkbox"/>	Paper Products/ Biodegradable <input checked="" type="checkbox"/>	Household Items <input checked="" type="checkbox"/>
Landscape Materials <input checked="" type="checkbox"/>	Aluminum/ Metal <input checked="" type="checkbox"/>	Automotive <input checked="" type="checkbox"/>
Toxic/ Hazardous Materials <input checked="" type="checkbox"/>	Glass <input checked="" type="checkbox"/>	Biohazardous <input checked="" type="checkbox"/>
Personal Effects <input checked="" type="checkbox"/>	Sports Equipment <input checked="" type="checkbox"/>	Other <input type="checkbox"/>

Notes: Toys, clothing, old food, trash and laundry bins, jugs
w/ urine, cardboard, bicycle parts, books/ papers, misc.
plastic, paper, and metal trash.

Potential Source(s) of Trash Collected: Homeless encampment.

Hazardous/ Legacy Trash Requiring Follow-up: Many piles of trash are
remaining - could only take one load in D. Dunkell's personal
vehicle of garbage.

MFAC Event Actions for Follow-up: 1-2 more cleanups - much trash
remains, depends on how trash will be transported.

Additional Notes: To be cleaned at a later point further -
hoping the city can assist in cleanup efforts due to how
much trash is present and location under bridge.

Trash Collected:
 No. of Trash Bags Filled: ~15 Dumpster % Fill: 20% Dumpster Size (cubic yds): 40

Lead Field Technician Certification (sign/ print):

"Cleaned area is free of all visible trash." - (not yet cleaned entirely) Jenda West

Appendix B – MFAC Event Worksheet

MFAC Event Worksheet

Parcel No.: Main St. bridge Event Date: 7/11/17
 Specific Cleanup Location: 1st basket Event Start/ End Time: 10 am - 11:30 am
 Field Technician name(s): J. West, J. Harrison, D. Dunkell
 Current Weather Condition: Sunny
 Antecedent Weather Condition: Sunny

Types of Trash Observed (check all that apply):

Plastic/ Styrofoam <input checked="" type="checkbox"/>	Paper Products/ Biodegradable <input checked="" type="checkbox"/>	Household Items <input checked="" type="checkbox"/>
Landscape Materials <input checked="" type="checkbox"/>	Aluminum/ Metal <input checked="" type="checkbox"/>	Automotive <input checked="" type="checkbox"/>
Toxic/ Hazardous Materials <input checked="" type="checkbox"/>	Glass <input checked="" type="checkbox"/>	Biohazardous <input checked="" type="checkbox"/>
Personal Effects <input checked="" type="checkbox"/>	Sports Equipment <input checked="" type="checkbox"/>	Other <input checked="" type="checkbox"/>

Notes: Clothing trash, books, blankets, needles, bottles/buckets
w/ excrement, BBQ grill, cardboard, bins, toys, so many
misc. items... remnants of fire and drug use.

Potential Source(s) of Trash Collected: Homeless camp.

Hazardous/ Legacy Trash Requiring Follow-up: 2nd attempt at cleaning
under the bridge; some trash still remains and will need
to be removed. Many small pieces of trash - will need
a rake to collect to avoid picking up sharps.

MFAC Event Actions for Follow-up: One more cleanup should finish
it.

Additional Notes: VPD will need to patrol area, VHC will
also monitor - suspected individual living under bridge
was observing us remove the rubbish.

Trash Collected: 15 Dumpster % Fill: 20% Dumpster Size (cubic yds): 40

Lead Field Technician Certification (sign/print):

"Cleaned area is free of all visible trash." - Jessica West (mostly cleaned)

Appendix B – MFAC Event Worksheet

MFAC Event Worksheet

Parcel No.: 1,3 Event Date: 7/19/17
 Specific Cleanup Location: Near railroad bridge along VHC Trails Event Start/End Time: 10 am / 12 pm
 Field Technician name(s): J. West, D. Paulthoff, J. Harrison, K. Furlong
 Current Weather Condition: Sunny
 Antecedent Weather Condition: Sunny

Types of Trash Observed (check all that apply):

Plastic/ Styrofoam <input checked="" type="checkbox"/>	Paper Products/ Biodegradable <input checked="" type="checkbox"/>	Household Items
Landscape Materials	Aluminum/ Metal <input checked="" type="checkbox"/>	Automotive
Toxic/ Hazardous Materials	Glass <input checked="" type="checkbox"/>	Biohazardous <input checked="" type="checkbox"/>
Personal Effects <input checked="" type="checkbox"/>	Sports Equipment <input checked="" type="checkbox"/>	Other

Notes: Bike parts, clothing, baby stroller, paper/plastic trash, urine/fecal matter in containers, CD rack, cardboard boxes, trash, ropes, hand bin from Rite-Aid, backpacks, blankets

Potential Source(s) of Trash Collected: Homeless encampments.

Hazardous/ Legacy Trash Requiring Follow-up: None.

MFAC Event Actions for Follow-up: None.

Additional Notes: Camps were previously posted and were abandoned upon cleanup date.

Trash Collected: ~8 No. of Trash Bags Filled: 50% Dumpster % Fill: 8 Dumpster Size (cubic yds): 8

Lead Field Technician Certification (sign/ print):

"Cleaned area is free of all visible trash." - Jessie West

Appendix B – MFAC Event Worksheet

MFAC Event Worksheet

Parcel No.: 3 Event Date: 9/20/17
Specific Cleanup Location: near river crossing Event Start/ End Time: 10:30/12:50
Field Technician name(s): K. Furlong, E. Durtschi
Current Weather Condition: Sunny
Antecedent Weather Condition: Sunny

Types of Trash Observed (check all that apply):

Plastic/ Styrofoam <input checked="" type="checkbox"/>	Paper Products/ Biodegradable <input checked="" type="checkbox"/>	Household Items <input checked="" type="checkbox"/>
Landscape Materials	Aluminum/ Metal	Automotive
Toxic/ Hazardous Materials <input checked="" type="checkbox"/>	Glass <input checked="" type="checkbox"/>	Biohazardous <input checked="" type="checkbox"/>
Personal Effects <input checked="" type="checkbox"/>	Sports Equipment	Other

Notes: Clothing was blocking waterway, lots of broken glass and personal effects. Resident was actively using river as laundry site

Potential Source(s) of Trash Collected: Homeless encampment

Hazardous/ Legacy Trash Requiring Follow-up: none.

MFAC Event Actions for Follow-up: none.

Additional Notes: Camp was notified of removal, resident was removed by Ventura Police.

Trash Collected:
No. of Trash Bags Filled: 3 Dumpster % Fill: 33% Dumpster Size (cubic yds): 8

Lead Field Technician Certification (sign/print):

"Cleaned area is free of all visible trash." -

Kate Furlong Kate Furlong

Appendix 3. VLT Clean-Up Photos

Cleanup Photos

10/15/16: Collecting the refuse on Ventura Hillsides Conservancy property.



10/15/16: Many bikes and lots of trash from the cleanup on Ventura Hillsides Conservancy property!



1/19/17 Volunteer John Harrison clearing trash from State Park property.



2/16/17: John Harrison back at it again, adding some humor to City Property cleanup



3/18/17: Excavating trash from the “cave” on State Park property.



3/18/17: Volunteer John Harrison enters the “cave”.



6/30/17: A large camp under the first trestle of the Main Street bridge that primarily consisted of trash.



6/30/17: Clothing that was spilling out from the camp under the Main Street bridge onto the levee on County property.



**6/30/17: The bridge after having been cleaned of most of the trash- pictured above.
The remaining trash was removed the next day.**



6/30/17: The levee after removing the discarded clothing- pictured above.



7/19/17: Abandoned camp on City property removed with help from volunteer John Harrison



9/20/17: Clothing in the river, part of an abandoned camp on Willoughby Preserve removed with help from VLT intern.



Appendix 4. Countywide Outreach Materials

GARBAGE IN GARBAGE OUT

Storm drains empty straight into
our rivers, lakes and beaches.

Unfiltered. Untreated.

Act responsibly with
your household trash,
pesticides, fertilizers,
grass clippings,
pet waste and
driveway fluids.



The watershed should
only shed water.
cleanwatershed.org

SI HECHAS BASURA SALE BASURA

Los sistemas de drenaje se vacían directamente a nuestros ríos, lagos y playas.

Sin filtración. Sin tratamiento.

Actúe responsablemente

con los deshechos de su hogar, como pesticidas, fertilizantes, recortes de pasto, residuos de mascota y flúidos de carro.



La cuenca hidrográfica sólo debería transportar agua.

cleanwatershed.org

**THE WATERSHED
SHOULD ONLY
SHED WATER...**

NOT TRASH.



COMMUNITY FOR A
CLEAN WATERSHED



cleanwatershed.org

La Cuenca Hidrográfica Solamente Debería Transportar Agua...

No Basura.



COMMUNITY FOR A
CLEAN WATERSHED



cleanwatershed.org



RECOGELO ANTES DE QUE HAGA
EL VIAJE HACIA EL OCEANO.

**Nuestra Cuenca Hidrográfica Solo
Debe Transportar Agua**

COMMUNITY FOR A
CLEAN WATERSHED



www.cleanwatershed.org



January 23, 2018

Renee Purdy
Los Angeles Regional Water Quality Control Board
320 W. 4th St., Suite 200
Los Angeles, CA 90013

Subject: 2016-2017 Annual Monitoring Report for Ventura River Estuary Trash TMDL (Resolution No. R4-2007-008)

Dear Ms. Purdy,

Enclosed for your review and consideration is the Ventura River Estuary Trash TMDL Annual Monitoring Report for 2016-2017 monitoring year. This Annual Monitoring Report is being submitted per the requirements of the Ventura River Estuary Trash TMDL, Los Angeles Regional Water Quality Control Board Resolution No. R4-2007-008.

This document is being submitted on behalf of the following responsible parties: City of Ventura, County of Ventura, Ventura County Watershed Protection District, Ventura County Fairgrounds, California Department of Transportation, California Department of Parks and Recreation-Channel Coast District, and participants in the Ventura County Agricultural Irrigated Lands Group, which is a subdivision of the Farm Bureau of Ventura County.

During the 2013-2014 monitoring year, the responsible parties developed a revised Trash Monitoring and Reporting Plan (TMRP–Addendum No. 1) to include a new MFAC/BMP Program that utilizes visual trash assessments and targeted clean ups of the parcels located within the Estuary, coupled with BMPs implemented in the Estuary and on the land areas adjacent to the Estuary. The Addendum 1 dated October 22, 2014 was submitted by our consultant Larry Walker & Associates on November 11, 2014 reflective of the input received from Regional Board staff during the June 17, 2014 meeting between the Responsible Parties and Regional Board staff. The responsible parties are still waiting for approval of the Addendum No. 1; however, Regional Board staff indicated the responsible parties should implement the revised TMRP program while awaiting approval.

This Annual Monitoring Report summarizes the results of the fourth year of the revised TMRP and MFAC/BMP Program (October 2016 through September 2017).

If you have any comments or questions regarding the attached document, please contact Ewelina Mutkowska at (805) 645-1382 or Ewelina.Mutkowska@ventura.org.

Sincerely,



Arne Anselm
Ventura County Watershed Protection District
Deputy Director

cc: Jenny Newman, Los Angeles Regional Water Quality Control Board
Stefanie Hada, Los Angeles Regional Water Quality Control Board
Jeff Pratt, Ventura County Public Works Agency
Glenn Shepard, Ventura County Watershed Protection District
Ewelina Mutkowska, Ventura County Public Works Agency
Joe Yahner, City of Ventura
Peter Shellenbarger, City of Ventura
Nat Cox, California Department of Parks and Recreation
Rich Rozelle, California Department of Parks and Recreation
John Krist, Farm Bureau of Ventura County
Nancy Broschart, Farm Bureau of Ventura County
Chien Pei Yu, California Department of Transportation
Ron Murphy, Ventura County Fairgrounds
Derek Poultney, Ventura Land Trust
Dashiell Dunkell, Ventura Land Trust



J A N U A R Y 2 0 1 8

Ventura River Estuary Trash TMDL 2016-2017 TMRP Annual Report

prepared by

VENTURA LAND TRUST (FORMERLY VENTURA HILLSIDE CONSERVANCY)

submitted to

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD,
LOS ANGELES REGION

submitted by

CITY OF VENTURA, COUNTY OF VENTURA, VENTURA COUNTY
WATERSHED PROTECTION DISTRICT, PARTICIPANTS IN THE VENTURA
COUNTY AGRICULTURAL IRRIGATED LANDS GROUP, CALIFORNIA
DEPARTMENT OF FOOD AND AGRICULTURE, CALIFORNIA DEPARTMENT
OF STATE PARKS, AND CALIFORNIA DEPARTMENT OF TRANSPORTATION



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Introduction

This Annual Report is being submitted to fulfill the compliance requirements of the Amendments to the Water Quality Control Plan – Los Angeles Region for the Ventura River Estuary Trash Total Maximum Daily Load (Trash TMDL), Resolution No. R4-2007-008 (effective March 6, 2008). The purpose of this report is to present the results of the monitoring efforts conducted in accordance with the Trash Monitoring Reporting Plan (TMRP) and Minimum Frequency Assessment Collection/Best Management Practice (MFAC/BMP) Program developed to meet the requirements of the Trash TMDL.

The initial TMRP, which was approved in 2009 by the California Regional Water Quality Control Board, Los Angeles Region (Regional Board), was revised in 2014 to more effectively target the disbandment of homeless encampments in the Ventura River Estuary (Estuary), which have been determined to be the primary source of trash in the TMDL compliance area. An Addendum No. 1 to the TMRP was submitted on April 30, 2014 and a revised Addendum was submitted on October 22, 2014 addressing comments from Regional Board staff. The TMRP and MFAC/BMP Program are designed to prioritize the use of resources to implement actions effective in reducing trash in the Estuary, while still providing a monitoring approach that will allow for an evaluation of the effectiveness of the MFAC/BMP Program and support identification of any needed adjustments to the MFAC/BMP Program. The responsible parties are still waiting for approval of the Addendum No. 1; however, Regional Board staff indicated the responsible parties should implement the revised TMRP program while awaiting approval.

In the responsible parties' TMRP revision request letter, dated October 9, 2013, the responsible parties stated additional time was needed to develop the details of the monitoring approach, particularly the most effective locations to implement the patrols and visual assessments. As such, the responsible parties proposed implementing an interim MFAC/BMP Program to begin in October 2014 while the responsible parties developed the revised MFAC/BMP Program and Regional Board staff reviewed and approved the revised MFAC/BMP Program. An interim MFAC/BMP Program was necessary to support development of some aspects of the monitoring approach, facilitate transition to a more effective clean-up and trash prevention program, and avoid the necessity of continuing to count pieces of trash while the responsible parties developed the detailed TMRP. The interim MFAC/BMP Program implemented by the responsible parties was as follows:

1. Conducted clean-up of all Estuary parcels within the TMDL compliance area by mid-November 2013 as the initial quarterly event.
2. Began initial patrols to determine the route(s) that will be used for visual assessments and identified the preferred routes by January 2014.
3. Formalized Memorandum of Agreement with Ventura Hillside Conservancy to organize and manage volunteer cleanup events and conduct trash monitoring activities.
4. Conducted regularly scheduled clean-up events in the Estuary beginning in March 2014, which were additional to the required collection events for the MFAC/BMP Program.

In addition, the responsible parties conducted several initial assessments in May and June 2014 and an initial collection event in May 2014 to test the applicability of the revised MFAC/BMP Program. The revised MFAC/BMP Program began in July 2014.

This Annual Report includes the following information from fourth-year monitoring conducted under the revised TMRP and MFAC/BMP Program:

- Monitoring Summary
- MFAC Events/BMP Implementation Summary
- MFAC/BMP Program Evaluation and Revision Recommendations

The efforts to implement the Trash TMDL are being completed on behalf of the responsible parties to the Trash TMDL as listed in **Table 1**. The efforts to implement the Trash TMDL requirements for nonpoint sources are focused within the Estuary and the parcels adjacent to the Estuary. **Table 2** presents the names of the parcels within the Estuary, which were grouped into four MFAC areas identified for the MFAC/BMP Program implementation. **Figure 1** shows the locations of the parcels within the Estuary. Per 2014 revised MFAC/BMP Program, the cleanup and monitoring efforts included the whole TMDL compliance area including areas that are not part of the eight parcels listed in **Table 2** and shown in **Figure 1** including the area under the Main Street Bridge, the area under the US 101 Bridge, and the area under the railroad bridge between MFAC Area 1 and MFAC Area 2. In addition, both County of Ventura and City of Ventura installed required full trash capture devices within their respective jurisdictions draining to the MS4 within the Trash TMDL Staff Report-defined Estuary Sub-watershed area.

Table 1. Responsible Parties Participating in the TMRP and MFAC/BMP Program

Responsible Party	Nonpoint Source (NPS)	Point Source (PS)
City of Ventura (City)	X	X
Ventura County (County)	X	X
Ventura County Watershed Protection District (VCWPD)	X	X
California Department of Food & Agriculture (Ventura Fairgrounds)	X	X
California Department of Transportation (Caltrans)	X ¹	X
California Department of Parks and Recreation	X	--
Participants in the VCAILG ²	X	--

1. Caltrans was not assigned a Load Allocation, yet it is participating in the MFAC/BMP Program to meet the Trash TMDL goals.

2. Ventura County Agricultural Irrigated Lands Group.

Table 2. Estuary Parcels by MFAC Area

	MFAC Area 1	MFAC Area 2	MFAC Area 3	MFAC Area 4
Parcel Owner	State of California Department of Parks and Recreation	State of California Department of Parks and Recreation	Ventura Beach RV Resort, Inc.	Wood-Claeyssens Foundation
	City of San Buenaventura	State of California Department of Parks and Recreation	Ventura Land Trust (formerly Ventura Hillside Conservancy)	Ventura County Watershed Protection District



Figure 1. MFAC/BMP Program Monitoring Area and Assessment/Patrol Route

After 2015-2016 Ventura River Estuary Trash TMDL Annual Monitoring Report was submitted in January 2017, it was realized that percent of MFAC area by assessment category data was incorrectly estimated only within subarea where trash was present instead of within the whole MFAC Area. **Appendix 1** contains the revised Table 4 dated November 2017 represents correct data prepared to meet requirements of the Ventura River Estuary Trash TMDL, Los Angeles Regional Water Quality Control Board Resolution No. R4-2007-008.

This submittal is on behalf of the following responsible parties: City of Ventura, County of Ventura, Ventura County Watershed Protection District, Ventura County Fairgrounds, California Department of Transportation, California Department of Parks and Recreation-Channel Coast District, and participants in the Ventura County Agricultural Irrigated Lands Group, which is a subdivision of the Farm Bureau of Ventura County.

Monitoring Summary

ASSESSMENTS AND COLLECTION EVENTS

The responsible parties implemented the revised MFAC/BMP Program (as of July 2014) from the October 2016 to September 2017 reporting period. Upon implementation of the revised MFAC/BMP Program, the responsible parties conducted regular visual trash assessment surveys along a pre-defined route in the Estuary on a rotating schedule each month to ensure the entire Estuary, as defined in the Trash TMDL, was covered on a quarterly basis. The assessment route was designed to include historic in-Estuary TMRP monitoring locations in addition to other areas on all parcels of the Estuary to reflect the new MFAC/BMP Program. The assessment route is shown in **Figure 1**. The visual trash assessment surveys were conducted in accordance with the revised TMRP. However, the responsible parties conducted significantly more assessments than required in the revised TMRP, which is one assessment per quarter. This is due to this monitoring year being a transition year between the previous MFAC/BMP Program and the revised MFAC/BMP Program. Additional cleanups have been determined to be necessary to address legacy trash that has accumulated in the Estuary. After the legacy trash has been removed, the revised TMRP frequency will be implemented.

The responsible parties also conducted trash collection events utilizing information from the monitoring program and from the assessments to determine the locations to focus trash collection efforts.

In addition, the responsible parties conducted regularly scheduled patrols along the assessment route as shown in **Figure 1**. The patrols were conducted to eliminate existing homeless encampments, prevent the establishment of new homeless encampments, and to assess trash levels, as homeless individuals and homeless encampments are the main nonpoint sources of trash for the Estuary. The responsible parties averaged up to two patrols per week in areas exhibiting large homeless populations and averaged up to two patrols per month in areas exhibiting small homeless populations. The responsible parties conducted 96 patrols from October 2016 to December 2017.

A summary of the assessment dates, the collection event dates, and the patrol dates is presented in **Table 3**. **Appendix 2** contains the Trash Visual Survey Worksheets and the Collection Event Worksheets for all MFAC Events conducted during October 2016 to September 2017.

Table 3. Assessment, Collection, and Patrol Dates for October 2016-September 2017

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Q1			Q2			Q3			Q4		
Assessment Dates												
MFAC Area 1	10/10/16	11/21/16	12/1/16	1/25/17	2/28/17	3/21/17	4/26/17	5/2/17	6/12/17	7/24/17	8/23/17	9/20/17
MFAC Area 2	10/10/16	11/21/16	12/1/16	1/25/17	2/28/17	3/21/17	4/26/17	5/2/17	6/12/17	7/24/17	8/23/17	9/20/17
MFAC Area 3	10/10/16	11/21/16	12/1/16	1/25/17	2/28/17	3/21/17	4/26/17	5/2/17	6/12/17	7/24/17	8/23/17	9/20/17
MFAC Area 4			12/1/16			3/21/17	4/26/17				8/23/17	
Collection Dates												
MFAC Area 1										7/19/17		
MFAC Area 2						3/18/17						
MFAC Area 3	10/15/16					3/18/17			6/30/17	7/11/17, 7/19/17		9/20/17
MFAC Area 4												
Patrol Dates												
10/4/16	11/14/16	12/27/16	2/8/17	3/29/17	6/12/17	7/28/17	9/5/17					
10/10/16	11/18/16	12/30/16	2/16/17	4/7/17	6/16/17	8/1/17	9/8/17					
10/17/16	11/21/16	1/5/17	2/22/17	4/11/17	6/22/17	8/7/17	9/12/17					
10/20/16	11/29/16	1/9/17	2/28/17	4/19/17	7/3/17	8/11/17	9/15/17					
10/21/16	12/1/16	1/18/17	3/4/17	4/26/17	7/11/17	8/16/17	9/19/17					
10/24/16	12/6/16	1/23/17	3/8/17	5/2/17	7/14/17	8/18/17	9/20/17					
11/1/16	12/7/16	1/25/17	3/9/17	5/15/17	7/17/17	8/23/17	9/25/17					
11/4/16	12/14/16	1/30/17	3/15/17	5/22/17	7/19/17	8/30/17	9/27/17					
11/7/16	12/21/16	2/2/17	3/21/17	6/2/17	7/24/17	9/1/17						

ASSESSMENT FINDINGS

The goal of the MFAC/BMP Program is to ensure the parcels in the Estuary are at a Category 1 level of trash based on the information collected during Estuary visual assessments.

The three Trash Assessment Categories of the MFAC/BMP Program are:

- Category 1 – Represents the SWAMP Category “Optimal”
- Category 2 – Represents the SWAMP Category “Suboptimal”
- Category 3 – Represents the SWAMP Category “Poor”

The definition of Category 1 is:

- “On first glance, no trash is visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.”

The definition of Category 2 is:

- “On first glance, low to medium levels of trash are evident (10 – 50 pieces). Stream, bank surfaces, and riparian zone contain some litter and debris. Possible evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing.”

The definition of Category 3 is:

- “On first glance, medium to high levels of trash (51-100 pieces) are visible at stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris. Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, or clothing.”

There were multiple locations on the parcels within the four MFAC Areas that were assessed during the MFAC Events. These areas were located along the assessment route and in other areas of the Estuary identified through the patrols. Based on the trash conditions at the multiple assessed locations, the Ventura Land Trust determined the overall percentage of the MFAC Areas that were in each of the Trash Assessment Categories. **Table 4** presents a summary of the Trash Assessment Categories for MFAC Areas resulting from the assessments conducted during 2016-2017. These percentages were determined after estimating the amount of trash per quarter, within in each MFAC area, after visually evaluating and averaging the category and amount of trash observed per each Trash Visual Survey conducted. **Appendix 2** contains the Trash Visual Survey Worksheets and MFAC Events Worksheets conducted during 2016-2017.

Table 4. Percent of MFAC Area by Assessment Category

Quarter 1*				
Assessment Area	Category 1	Category 2	Category 3	Notes
MFAC Area 1	96%	4%	0%	No trash observed in MFAC area 1 during quarter 1 was category 3
MFAC Area 2	90%	6%	4%	
MFAC Area 3	95%	4%	1%	
MFAC Area 4	98%	2%	0%	No trash observed in MFAC area 4 during quarter 1 was category 3
*October visual trash assessments were not included in Quarter 1 (not clear as to which MFAC areas were being referenced in assessment reports due to insufficient notes during a change in staff)				
Quarter 2				
Assessment Area	Category 1	Category 2	Category 3	Notes
MFAC Area 1	98%	2%	0%	No trash observed in MFAC area 1 during quarter 2 was category 3
MFAC Area 2	90%	4%	6%	
MFAC Area 3	96%	4%	0%	No trash observed in MFAC area 3 during quarter 2 was category 3
MFAC Area 4	99%	0.5%	0.5%	
Quarter 3				
Assessment Area	Category 1	Category 2	Category 3	Notes
MFAC Area 1	98%	2%	0%	No trash observed in MFAC area 1 during quarter 3 was category 3
MFAC Area 2	90%	7%	3%	
MFAC Area 3	93%	5%	2%	
MFAC Area 4	98%	1%	1%	
Quarter 4				
Assessment Area	Category 1	Category 2	Category 3	Notes
MFAC Area 1	94%	2%	4%	
MFAC Area 2	93%	5%	2%	
MFAC Area 3	94%	4%	2%	
MFAC Area 4	99%	1%	0%	No trash observed in MFAC area 4 during quarter 4 was category 3

MFAC Events/BMP Implementation Summary

To ensure the parcels within each MFAC Area are all within Category 1, the MFAC/BMP Program is continuously evaluated and modified using the following adaptive management approach:

1. MFAC Areas assessed as Category 1 during the monitoring event conducted prior to a scheduled MFAC Event are noted and any trash observed is collected during the visual survey. If no potential high trash generating areas are identified through the patrol of the parcel, the MFAC Event is not conducted. If potential high trash generating areas are identified by the patrols, then the MFAC Event focuses on those areas of the parcel that require clean-up.
2. MFAC Areas assessed as Category 2 are evaluated to determine if additional BMPs are needed to reduce the accumulation of trash between monitoring events (i.e., visual surveys). The types of trash, likely sources, and observed trends in trash amounts are considered in determining if modifications to the MFAC/BMP Program are necessary to move these sites to Category 1.
3. MFAC Areas assessed with Category 3 levels of trash for two consecutive quarters are targeted for more frequent patrols and/or more frequent clean-ups (depending on the identified primary source of trash) until the parcels reach Category 1 levels of trash for two consecutive visual surveys.

This following section provides the results of the collection events and the results of the BMPs implemented related to reducing trash within the Estuary and from adjacent land areas.

MFAC COLLECTION EVENTS AND ADDITIONAL CLEAN-UP EVENTS

One facet of the MFAC/BMP Program is to clean up any trash found through assessments. This is done to ensure zero pieces of trash are found after each assessment. **Table 5** presents the trash collected during all collection events between October 2016 and September 2017. **Appendix 2** contains the Collection Event Worksheets for MFAC Events conducted during this reporting period, dates with corresponding worksheets indicated with “*” in **Table 5**. Third Saturday of the month volunteer clean up events and several mid-week clean ups have MFAC Event Worksheets; all other clean up events listed in Table 5 were smaller scale, hour to two hour long events by VLT volunteers who chose to pick up trash on their own time outside of monthly volunteer events. Another facet of the MFAC/BMP Program is to conduct additional clean-ups in the Estuary if it is found that trash is accumulating in deleterious amounts between assessments. The Ventura Land Trust and volunteers conducted 187 clean-ups in the Estuary to address high trash accumulation areas. Parcels 1, 2, and 3 were known to have legacy trash issues, and therefore were targeted for additional clean-ups starting in October 2016 (**Table 5**). Clean-up documentation provided in **Appendix 3** includes photos of the types of trash removed during collection events and additional clean-up events.

Table 5. Summary of Trash Collected during the MFAC Collection and Additional Clean-up Events

Date	MFAC Area 1	MFAC Area 2	MFAC Area 3	MFAC Area 4
10/7/16	3/ 75 lbs			
10/9/16	2/ 50 lbs			
10/13/16		3/ 75 lbs		
*10/15/16			25/ 625 lbs	
10/24/16	1/ 25 lbs			
10/27/16	2/ 50 lbs			
11/2/16		1/ 25 lbs		
11/3/16		1/ 25 lbs		
11/4/16		1/ 25 lbs		
11/5/16	2/ 50 lbs			
11/8/16		1/ 25 lbs		
11/10/16		2/ 50 lbs		
11/12/16		1/ 25 lbs		
11/13/16		1/ 25 lbs		
11/15/16	1/ 25 lbs	2/ 50 lbs		
11/16/16		2/ 50 lbs		
11/17/16		1/ 25 lbs	4/ 100 lbs	
11/18/16	1/ 25 lbs	2/ 50 lbs		
11/19/16		2/ 50 lbs		
11/20/16		1/ 25 lbs		
11/21/16		1/ 25 lbs		
11/22/16		2/ 50 lbs	1/ 25 lbs	
11/23/16	1/ 25 lbs			
11/30/16		1/ 25 lbs		
12/1/16		2/ 50 lbs		
12/2/16	1/ 25 lbs			
12/3/16	1/ 25 lbs			
12/4/16	1/ 25 lbs			
12/5/16	1/ 25 lbs			
12/6/16	1/ 25 lbs	2/ 50 lbs		
12/7/16	1/ 25 lbs			
12/8/16		2/ 50 lbs		
12/9/16		1/ 25 lbs		
12/12/16		2/ 50 lbs		
12/13/16		2/ 50 lbs		
12/14/16		4/ 100 lbs		
12/16/16			2/ 50 lbs	
lbs=pounds (1 bag roughly equal to 25 lbs) * worksheet in Appendix 2				

Table 6. Summary of Trash Collected during the MFAC Collection and Additional Clean-up Events (continued)

Date	MFAC Area 1	MFAC Area 2	MFAC Area 3	MFAC Area 4
12/17/16		2/ 50 lbs	1/ 25 lbs	
12/18/16	1/ 25 lbs			
12/19/16	1/ 25 lbs			
12/20/16		1/ 25 lbs		
12/21/16			1/ 25 lbs	
12/22/16	1/ 25 lbs			
12/25/16			1/ 25 lbs	
12/26/16			1/ 25 lbs	
12/27/16			1/ 25 lbs	
12/30/16			1/ 25 lbs	
12/31/16			3/ 75 lbs	
1/1/17			1/ 25 lbs	
1/2/17			1/ 25 lbs	
1/3/17			3/75 lbs	
1/6/17		1/ 25 lbs		
1/7/17		1/ 25 lbs		
1/8/17		1/ 25 lbs		
1/9/17	1/ 25 lbs			
1/10/17	1/ 25 lbs	1/ 25 lbs	1/ 25 lbs	
1/11/17		2/ 50 lbs		
1/13/17		2/ 50 lbs		
1/14/17		1/ 25 lbs		
1/16/17		1/ 25 lbs		
1/17/17		1/ 25 lbs		
1/18/17		1/ 25 lbs		
1/19/17		2/ 50 lbs		
1/20/17		1/ 25 lbs	1/ 25 lbs	
1/21/17	1/ 25 lbs			
1/23/17	1/ 25 lbs			
1/24/17		1/ 25 lbs		
1/25/17	3/ 75 lbs	3/ 75 lbs	1/ 25 lbs	
1/28/17		3/ 75 lbs		
1/30/17		1/ 25 lbs		
1/31/17	2/ 50 lbs			
2/2/17	1/ 25 lbs			
2/3/17	1/ 25 lbs			
2/4/17	5/ 125 lbs			
lbs=pounds (1 bag roughly equal to 25 lbs)				

Table 7. Summary of Trash Collected during the MFAC Collection and Additional Clean-up Events (continued)

Date	MFAC Area 1	MFAC Area 2	MFAC Area 3	MFAC Area 4
2/5/17	1/ 25 lbs			
2/6/17	1/ 25 lbs		2/ 50 lbs	
2/7/17	1/ 25 lbs			
2/9/17	1/ 25 lbs			
2/11/17	1/ 25 lbs			
2/13/17	1/ 25 lbs			
2/14/17		1/ 25 lbs		
2/15/17	6/ 150 lbs			
2/16/17		12/ 300 lbs		
2/18/17			1/ 25 lbs	
2/21/17	1/ 25 lbs			
2/24/17	1/ 25 lbs			
2/25/17	1/ 25 lbs			
2/26/17	1/ 25 lbs			
2/27/17	1/ 25 lbs			
3/2/17	2/ 50 lbs			
3/3/17		1/ 25 lbs		
3/4/17		1/ 25 lbs		
3/10/17		1/ 25 lbs		
3/11/17	1/ 25 lbs			
3/13/17	3/ 75 lbs			
*3/18/17	32/ 800 lbs	44/ 1,100 lbs		
3/25/17	1/ 25 lbs			
3/27/17		2/ 50 lbs		
3/29/17		1/ 25 lbs		
3/31/17		1/ 25 lbs		
4/3/17	2/ 50 lbs	2/ 50 lbs		
4/4/17	1/ 25 lbs			
4/5/17	1/ 25 lbs	2/ 50 lbs		
4/6/17			1/ 25 lbs	
4/7/17	1/ 25 lbs			
4/10/17			1/ 25 lbs	
4/14/17		1/ 25 lbs		
4/19/17	1/ 25 lbs	2/ 50 lbs		
4/24/17			1/ 25 lbs	
4/25/17	1/ 25 lbs			
4/26/17			1/ 25 lbs	
4/27/17			4/ 100 lbs	
lbs=pounds (1 bag roughly equal to 25 lbs) *worksheet in Appendix				

Table 8. Summary of Trash Collected during the MFAC Collection and Additional Clean-up Events (continued)

Date	MFAC Area 1	MFAC Area 2	MFAC Area 3	MFAC Area 4
4/28/17			3/ 75 lbs	
4/29/17	2/ 50 lbs			
5/8/17		1/ 25 lbs		
5/9/17		1/ 25 lbs		
5/11/17		1/ 25 lbs		
5/12/17		1/ 25 lbs		
5/14/17		1/ 25 lbs		
5/15/17		1/ 25 lbs		
5/16/17		1/ 25 lbs		
5/17/17		2/ 50 lbs		
5/18/17	1/ 25 lbs			
5/20/17			1/ 25 lbs	
5/25/17		2/ 50 lbs		
5/27/17			1/ 25 lbs	
5/30/17			1/ 25 lbs	
5/31/17			1/ 25 lbs	
6/1/17		1/ 25 lbs		
6/6/17	1/ 25 lbs			
6/18/17			1/ 25 lbs	
6/19/17		2/ 50 lbs		
6/22/17		5/ 125 lbs		
6/23/17			1/ 25 lbs	
6/24/17		1/ 25 lbs		
6/28/17		1/ 25 lbs		
*6/30/17			16/ 400 lbs	
7/4/17		1/ 25 lbs		
7/6/17	1/ 25 lbs			
7/9/17	1/ 25 lbs			
*7/11/17	1/ 25 lbs		15/ 375 lbs	
7/13/17			2/ 50 lbs	
7/14/17			1/ 25 lbs	
7/18/17		1/ 25 lbs		
*7/19/17	9/ 225 lbs	2/ 50 lbs	1/ 25 lbs	
7/23/17	2/ 50 lbs			
7/25/17	1/ 25 lbs			
7/26/17		1/ 25 lbs		
7/28/17		1/ 25 lbs		
lbs=pounds; 1/ 25 lbs (1 bag roughly equal to 25 lbs) *worksheet in Appendix 2				

Table 9. Summary of Trash Collected during the MFAC Collection and Additional Clean-up Events (continued)

Date	MFAC Area 1	MFAC Area 2	MFAC Area 3	MFAC Area 4
7/31/17			1/ 25 lbs	
8/1/17		1/ 25 lbs		
8/2/17		2/ 50 lbs		
8/4/17	1/ 25 lbs			
8/5/17		1/ 25 lbs		
8/7/17		1/ 25 lbs		
8/8/17	1/ 25 lbs			
8/10/17		1/ 25 lbs		
8/12/17		1/ 25 lbs		
8/14/17		1/ 25 lbs		
8/16/17			1/ 25 lbs	
8/22/17	1/ 25 lbs			
8/23/17		1/ 25 lbs		
8/25/17		1/ 25 lbs		
8/26/17		1/ 25 lbs		
8/28/17		1/ 25 lbs		
8/30/17			1/ 25 lbs	
8/31/17		1/ 25 lbs		
9/1/17		1/ 25 lbs		
9/2/17		1/ 25 lbs		
9/3/17	1/ 25 lbs			
9/4/17			1/ 25 lbs	
9/5/17	1/ 25 lbs			
9/7/17		1/ 25 lbs		
9/8/17		1/ 25 lbs		
9/9/17		1/ 25 lbs		
9/13/17	2/ 50 lbs			
9/14/17	2 /50 lbs			
9/15/17	1/ 25 lbs	1/ 25 lbs	1/ 25 lbs	
9/16/17		2/ 50 lbs		
9/18/17	1/ 25 lbs	1/ 25 lbs		
*9/20/17			3/ 75 lbs	
9/22/17	1/ 25 lbs	1/ 25 lbs		
9/23/17	1/ 25 lbs	1/ 25 lbs		
9/25/17	1/ 25 lbs	1/ 25 lbs		
9/26/17		1/ 25 lbs		
9/27/17		1/ 25 lbs		
9/30/17	1/ 25 lbs			
lbs=pounds (1 bag roughly equal to 25 lbs) *worksheet in Appendix 2				

BMP IMPLEMENTATION

This section describes the BMPs implemented by the responsible parties within the Estuary and on land areas adjacent to the Estuary.

City of Ventura Litter Management Program BMPs

- Installation of required Full Capture Catch Basin Trash Excluders completed in October 2014 to achieve 100% point-source compliance.
 - Installation of certified Stormtek Full Capture Catch Basin Trash Excluder Devices (CPS Devices) to achieve 100% reduction of trash from Baseline WLA, for all of the MS4 areas within the City of Ventura that drain to the Ventura River estuary.
- Street Sweeping
 - Residential Streets swept at least once a month.
 - Commercial Streets swept two to four times per month.
 - Information encouraging residents/businesses to move parked cars for sweeping.
- Catch Basin Inlet-Cleaning and Placarding
 - City-maintained catch basin inlets are inspected and cleaned of trash and debris one to three times per year depending on the priority categorization of the catch basin.
 - Information encouraging residents/businesses to report trash filled inlets.
 - “Don’t Dump – Drains to Oceans – Only Rain Down the Drain” stencils or placards placed on storm drain inlets.
- Trash Collection in Public Areas
 - The City installed 3 new ‘bear proof’ trash containers in April 2016 along the bike path directly adjacent to the river to promote the proper disposal of refuse and prevent the spread of litter by providing locked, secure containers.
 - Trash and recycling containers are installed at all transit shelters and maintained at least once per week to remove litter and to verify that containers are functioning properly.
 - Special event permit language requires additional trash and recycling containers to be set out during street fairs and art walks, along with litter clean-up following events.
 - Collection of trash from 18 public trash receptacles located within the watershed two or three times per week depending on the locations of the receptacles.
- Cigarette Butt Collection Receptacle Installation
 - The City, in collaboration with Surfrider Ventura County Chapter, began installing cigarette butt collection receptacles in high generating cigarette butt areas.
 - Over 60 cigarette butt collection receptacles have been installed.
 - Surfrider Ventura County Chapter reported over 125,000 cigarette butts collected and recycled since December 2016.

- Trash Collection and Bulky Item Pickup
 - Residents and businesses are provided with trash and recycling collection services.
 - Residential customers are allowed to set out two “bulky items” for free collection once per year as part of their regular trash collection service.
- Inspection, Planning and Enforcement Support
 - The City identifies and requires corrective measures for litter or litter sources found during commercial, industrial, and construction site inspections.
 - New development and redevelopment projects are required to install trash enclosures with doors and covers to reduce litter.
 - The Ventura Police Department conducts periodic “enforcement sweeps” through the portion of the Estuary that is adjacent to the City limits.
 - Litter laws that prohibit the accumulation of trash on private property are enforced by the City Code Enforcement and County Environmental Health Department. Private properties are required to remove all trash from their premises at least once every seven days.
- Outreach
 - Litter prevention outreach is included in classroom presentations and stormwater pollution prevention advertisements/announcements.
 - Several half-hour TV programs produced by the City encourage residents to prevent litter.
- Partners in Progress
 - Citywide volunteer program with a mission to preserve Ventura’s natural environment by minimizing litter in water bodies and coastal areas.
- City-Initiated Clean-Up Events
 - The City will initiate clean-up events, as necessary, in response to observed elevated trash levels.
- City-Sponsored Clean-Up Events
 - The City sponsors various clean-up events throughout the City that may include one or more of the following events during any given year: Martin Luther King Day; Earth Day Beach Clean-Up; Coastal Clean-Up Day; Backyard Collective; and Ventura Charter School Trash-a-thon.
 - The City sponsored 3 Westside Clean-Ups (September 24, 2016; January 28, 2017; and October 21, 2017) provided free disposal of solid waste from any west side (adjacent to the Ventura River) Ventura residents. Residents brought solid waste to a centralized location where it was sorted for recycling or disposal.
- Work Plan to Eliminate Homeless Encampments (Safe and Clean Program)
 - The Ventura City Council initiated the development of a work plan in September 2012 to eliminate encampments in the Estuary and to implement an on-going enforcement program. The work plan includes organizing stakeholder partners, conducting civil engagement, developing an action plan and corresponding

follow-up steps, posting camps, conducting camp removal, and launching post-camp removal strategies.

County of Ventura and VCWPD Litter Management Program BMPs

- 100% Point-Source Compliance. Installation of required full trash capture devices in County's MS4 catch basins completed in October 2014. Installation of certified Stormtek Connector Pipe Screen (CPS) devices to achieve 100% reduction of trash from Baseline WLA, for all Ventura County Unincorporated areas draining to the County's MS4 within the Ventura River Estuary subwatershed. The County's Certification Report with installation details was provided in the 2013-2014 Annual Report.
- Development and Implementation of Full Trash Capture Operation and Maintenance Plan (O&M Plan) – Developed an O&M Plan including schedule for regular maintenance and reporting of debris/trash removed for the 15 installed CPS devices. Training provided to maintenance staff in both the classroom and field to ensure proper cleanout and reporting methods and procedures.
- Regular Maintenance and Reporting for 15 CPS Devices – Per the Full Trash Capture O&M Plan, County staff inspect and perform necessary maintenance of each catch basin with CPS devices installed a minimum of three times per fiscal year: (1) One inspection before wet season, (2) one inspection during the wet season and (3) one inspection after the wet season. Debris depth is recorded and all debris is removed. Volume and type of debris is recorded and documented.
- Catch Basin Cleaning – Catch basins are inspected at least once per year and cleaned when filled to 25% or more of the catch basin's capacity. During storm season, all drainage facilities are inspected and cleaned as necessary.
- Catch Basin Labeling – All County catch basins are labeled with "Don't Pollute, Flows to Waterways."
- Open Channel Storm Drain Maintenance – All VCWPD owned and maintained channels are cleared, inspected, and cleaned as required at least once per year.
- Trash Management at Public Events – A plan for the proper management of trash and litter is required when obtaining a permit for staging public events. This plan requires adequate facilities for trash collection and disposal.
- Trash Collection in Public Areas – Trash receptacles have been placed within high trash generation areas. These devices are cleaned and maintained regularly to prevent trash overflow.
- Ventura County Ordinance No. 4142 – County ordinance (Section 6923 "Litter" and Section 6955 "Watercourse Protection") prohibit the disposal and accumulation of trash in public areas, private driveways, parking areas, streets, alleys, sidewalks, or components of the storm drain or any watercourse.
- Inspections – The County conducts commercial, industrial, and construction facility/site inspections to ensure proper pollution prevention BMPs are being applied and to educate employees on the importance of pollution prevention.

- Anti-Littering Signage – The County has installed anti-dumping and anti-littering signage at key locations including high trash generating areas, as well as at known illegal dumping locations.
- Foster Park Trash Management – The County manages Foster Park, which is situated along the Ventura River upstream of the Estuary, to ensure that trash originating from the park does not enter the river and deposit in the Estuary. Management actions include:
 - Park host and rangers removing trash and enforcing litter ordinance
 - Increased enforcement and collection during high trash generating events (holidays)
 - Covered trash containers and frequent trash pick-up and removal
 - Continued evaluation of trash management practices to determine whether current practices are sufficient
 - Continued evaluation of existing litter-related signage to determine whether current signage is adequate
- Happy Valley Bioswale was designed and constructed in spring of 2016 to capture runoff from 40% or 37 acres of urban area of County unincorporated Meiners Oaks community for removal of trash, debris, and other stormwater pollutants. This project treats estimated 1.6M cubic feet of the average annual runoff discharging into Happy Valley Drain, a tributary to Ventura River. This project was funded in parts by the Proposition 84 Storm Water Implementation Grant, Round 2. Project photos were provided in the 2017 Annual Report.
- Watershed Friendly Gardens – In Fall 2016, the County sponsored a series of five, free, open to the public, Watershed Friendly Garden Hands-On-Workshops in Meiners Oaks focusing on how to construct your own Watershed Friendly Garden, designed to help prevent stormwater pollutants, including trash, from entering the storm drains, creeks and rivers. The class culminated with construction of a Watershed Friendly Garden at Meiners Oaks Elementary School. Project photos were provided in the 2017 Annual Report.
- Countywide Outreach – The County and VCWPD continue to participate in the Countywide Outreach Program retaining the services of The Agency, a professional advertisement group that designs and conducts countywide, bilingual outreach programs advocating proper trash disposal. The most recent addition to the outreach program is trash prevention and protection of storm water quality education using Facebook®, Twitter® and other forms of social media. Examples of outreach materials are provided in Appendix 4.
- Targeted Outreach – The County conducts targeted outreach to schools within the area covered by the Trash TMDL to educate students, staff, and faculty on the importance of pollution prevention specifically regarding trash.

Caltrans Litter Management Program BMPs

- Ventura River Estuary – State Highway 33, between Post Mile 0.0 and 5.55, has litter removed approximately twice per month and is mechanically swept approximately once

per month, as needed. This highway is also open to 'Adopt-A-Highway' groups and there are groups who currently have adoptions and perform litter removal twice per month.

Additional Trash Management Plans/BMPs in place for Caltrans:

- Caltrans currently uses a variety of methods to educate the public about the importance of managing stormwater. These are intended to change public behavior regarding the release of potential pollutants (e.g., litter, spilled loads, and oil leaks).
- The outreach program consists of a variety of written materials, monthly and quarterly bulletins, websites, workshops, and Caltrans's Adopt-a-Highway Program, as described below.
- Caltrans installs "No Dumping" and "Litter Fine" signs at selected locations on highways and freeways. Stenciled warnings prohibiting discharges to drain inlets at state-owned park-and-ride lots, rest areas, vista points, and other areas with pedestrian traffic are also used to increase public awareness.
- Litter and debris removal activities include sweeping of shoulders, paved medians, etc., and litter removal along the roadsides.
- Caltrans uses venues such as public schools, community-sponsored clean-up events, Bring Your Child to Work Day, and Earth Day to educate the public about the importance of excluding pollutants from stormwater.
- Caltrans's Adopt-A-Highway program is an opportunity for volunteers to make a tangible contribution to community and roadside aesthetics, and acts as a way to inform the public about the stormwater problems related to illegal dumping of litter and debris. As part of this program, signs are posted along roadways acknowledging groups that have volunteered to plant wildflowers, trees and/or shrubs, collect litter, or remove graffiti from structures.
- In the metropolitan portions of Los Angeles, San Diego, Orange, and Ventura Counties, storm drain inlets are inspected and cleaned annually prior to the rainy season. Those storm drain inlets that contain 12 inches or more of accumulated material will be cleaned.
- Litter and debris are periodically collected from Caltrans's rights-of-way and removed from drainage grates, trash racks, and ditch lines. Maintenance supervisors inspect highways in their assigned sections for the accumulation of litter. Signs may be installed where litter accumulation is a concern.
- "Protect Every Drop" is a statewide Caltrans education and outreach pollution reduction public program that has been conducted since March 2016. The program uses public service announcements through various media such as television and radio broadcasts, billboards, newspapers, public outreach events, banners, posters, tip cards etc., and focuses on behavior changes. The program encourages the public to learn more about sources and pathways of stormwater pollution and teaches motorists what to do to reduce pollutants like trash. For more information, please refer to website www.protecteverydrop.com.
- Caltrans has in construction seven (7) Gross Solids Removal Devices – Inclined Screen Box in Route 33 which will be estimated to be completed on March 19, 2018. Four (4)

Bioswales were planned on Route 33 and Route 101 which were proposed to begin construction on September 30, 2018.

In addition to local anti-litter ordinances, Caltrans relies on Sections 23112, 23113, 23114, and 23115 of the Vehicle Code as legal authority to prevent spills, dumping or disposal of materials on the highways and freeways under its jurisdiction, as enforced by the California Highway Patrol.

- Section 23112 states:

No person shall throw or deposit, nor shall the registered owner or the driver, if such owner is not then present in the vehicle, aid or abet in the throwing or depositing upon any highway any bottle, can, garbage, glass, nail, offal, paper, wire, any substance likely to injure or damage traffic using the highway, or any noisome, nauseous, or offensive matter of any kind.

No person shall place, deposit, or dump, or cause to be placed, deposited, or dumped, any rocks, refuse, garbage, or dirt in or upon any highway, including any portion of the right-of-way thereof, without the consent of the state or local agency having jurisdiction over the highway.

- Section 23113 states:

Any person who drops, dumps, deposits, places or throws, or causes or permits to be dropped, dumped, deposited, placed or thrown, upon any highway or street any material described in Section 23112 or in subdivision (d) of Section 23114 shall immediately remove the material or cause the material to be removed.

If the person fails to comply with subdivision (a), the governmental agency responsible for the maintenance of the street or highway on which the material has been deposited may remove the material and collect, by civil action, if necessary, the actual cost of the removal operation in addition to any other damages authorized by law from the person made responsible under subdivision (a).

- Section 23114 states (in pertinent part):

No vehicle shall be driven or moved on any highway unless the vehicle is so constructed, covered, or loaded as to prevent any of its contents or load other than clear water or feathers from live birds from dropping, sifting, leaking, blowing, spilling, or otherwise escaping from the vehicle.

- Section 23115 of the Vehicle Code states (in pertinent part):

No vehicle loaded with garbage, swill, cans, bottles, waste papers, ashes, refuse, trash, or rubbish, or any other noisome, nauseous, or offensive matter, or anything being transported to a dump site for disposal shall be driven or moved upon any highway unless the load is totally covered in a manner which will prevent the load or any part of the load from spilling or falling from the vehicle.

Ventura County Fairgrounds Litter Management BMPs

Ventura County Fair's BP for Litter Maintenance Non-Fair Time

Description of Action	Daily	Weekly	Monthly	Annually	Before Event	During Event	After Event	As Needed
Litter pickup Main Parking Lot	X					X	X	X
Litter pickup Beach Lot		X			X	X	X	X
Overflow Lot		X				X	X	X
Area Around Event		X			X	X	X	X
Trash Cans emptied	X					X	X	X
Recycle bins emptied		X						X
40 Yard dens emptied		X						X
Straw and Hay Removal								X
Power Sweep			X					X
Storm Drain Maintenance				October				X
Wash Rack Maintenance				June & Aug				X

Ventura County Fair's BP for Litter Maintenance Fair Time

Description of Action	Daily	Weekly	Monthly	Annually	Before Event	During Event	After Event	As Needed
Litter pickup Main Parking Lot	X				X	X	X	X
Litter pickup Beach Lot	X				X	X	X	X
Overflow Lot	X				X	X	X	X
Area Around Event (Harbor to Calif., Promenade and Beach, Garden St. to Main St. and surrounding area).	X				X	X	X	X
Trash Cans emptied	X				X	X	X	X
Recycle bins emptied	X				X	X	X	X
40 Yard dens emptied	X				X	X	X	X
Straw and Hay Removal	X				X	X	X	X
Power Sweep	X				X	X	X	X
Storm Drain Maintenance				Storm Drain Diverted to Sewer during Fair July- August				
Wash Rack Maintenance				June & Aug.				

California Department of Parks and Recreation (State Parks) BMPs

- Designated Public Use Areas
 - Increased trail maintenance and fall vegetation reduction improves access for patrol and trash removal. Small motorized vehicles are able to access the trail and haul out larger volumes of trash. Increase in trail use by park personnel and the public discourages illegal camping near the trail.
 - Trash containers are installed at all visitor activity areas. Containers are kept in good working order and are emptied as needed.
 - State Parks keeps one mixed use 40 yard roll-off container onsite to collect and dispose of approximately 20,000 lbs. of trash annually.
 - Park personnel and camp hosts routinely collect loose trash within developed park areas as a part of their daily duties. In addition, park personnel conduct weekly sweeps to identify, and remove trash accumulation in vegetated areas along the established trail system east of the campground.
- Undeveloped Areas
 - Litter and debris is periodically collected from park backcountry lands, water courses, and roadways. Maintenance supervisors inspect park roads in their assigned sections for the accumulation of litter.
 - Signs may be installed where litter concentration is repetitive and at known illegal dumping locations.
 - Catch basins are inspected and cleaned at least once per year. During storm season, drainage facilities are inspected before significant storm events.
- Volunteer Events and Public Outreach
 - State Parks sponsors various Earth Day and Coastal Cleanup events throughout the district and participates in special cleanup events to address observed elevated trash levels.
 - Routine and random river bottom patrols are conducted by law enforcement at a minimum of once per week to discourage establishment of illegal camp sites.
 - Camper outreach and education is implemented year-round in an effort to limit trash dispersal by wind and wildlife.
- Construction Projects and Special Events
 - All special events permits issued on State Park property require a plan for the proper management of trash. This plan requires adequate facilities and patrols for trash collection and disposal.
 - All contractors that work on State property are required to implement BMPs to keep job site clean and litter free.

VCAILG Litter Management Program BMPs

- Conditional Waiver – The *Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands within the Los Angeles Region* (“Conditional Waiver,” Order No. R4-2016-0143) requires VCAILG to provide educational classes focused on improving water quality, including identifying trash as an impairment of water quality.
- VCAILG members are required to maintain trash control BMPs for agricultural areas. In its role, VCAILG will continue to assist members with implementation of additional BMPs for trash control, as necessary, following the adaptive process identified in the group’s Water Quality Management Plan (WQMP).
- Outreach – During VCAILG outreach activities, the Trash TMDL is highlighted and a connection made for the need to control trash in order to meet the requirements of the Trash TMDL. In 2017, five workshops were conducted, one held in the Ojai Valley targeting the Ventura River watershed, which reminded members that trash control and management is important to protect water quality.
- Ventura River Trash TMDL Fee – VCAILG members are assessed a fee, based on acreage farmed, to further reinforce through a fiscal measure that trash in the watershed needs addressing.
- Plastics Recycling – Local farmers will recycle agricultural plastic used to cover strawberry beds and used in some vegetable fields during the growing season. Collection and recycling of plastic is an effective method for reducing plastic trash from entering the Ventura River and the Estuary.
- Taylor Ranch (Wood-Claeyssens Foundation), a VCAILG member with property beginning immediately upstream of the Ventura River Main Street bridge, is an active participant in the Trash TMDL program by regularly cleaning and patrolling their property. Through the efforts of the Wood-Claeyssens Foundation, it is estimated that approximately 55 tons of trash were removed from the Taylor Ranch Ventura River bottom from transient/homeless camps through March 2012. Since that time, 5 to 10 tons of trash has been collected annually. Taylor Ranch continues to be successful in maintaining the cleanliness of the property and protecting water quality by employing the following practices:
 - Regular monitoring and patrolling of the area adjacent to the river was increased to an average of every two weeks in 2016 to intercept homeless camps more quickly and prevent the cycle of trash accumulation.
 - As camps are discovered, clean-up is initiated as soon as possible in order to convey the message that the area is being actively monitored. Law enforcement assistance is requested, as needed.
 - Both the Ventura Police Department and the Ventura County Sheriff’s Department have responded in the past with Rangers from the California State Parks systems also helping with this effort.

MFAC/BMP Program Evaluation and Revision Recommendations

The TMRP states the responsible parties will: “Evaluate effectiveness of BMPs and recommended changes to TMRP Addendum No. 1 and MFAC/BMP Program, as necessary.” Under the previous MFAC/BMP Program and TMRP, the following steps were used to assess MFAC/ BMP Program effectiveness:

1. A review of BMP implementation, including identification of BMPs, location of BMPs, and time frame (*e.g.*, when an activity was implemented or installed); and
2. A comparison of monitoring results between monitoring locations and between events before and after BMP implementation.
3. Comprehensive review and assessment of MFAC/BMP Program

Given the broad nature of most of the BMPs implemented (*e.g.*, education programs, ordinances, street sweeping), the highly variable amounts of trash collected, and the relatively short time frame that full capture devices were installed, the responsible parties could not identify trends in the monitoring data that could be used to determine effectiveness of individual BMPs implemented. Based on the results of the previous evaluation and the structure of the new MFAC/BMP Program, the responsible parties utilized an approach based on the visual assessments.

The responsible parties utilized parcel rankings by Category as a means to assess effectiveness of the MFAC/BMP Program. That is, if there was an overall trend of parcels starting out and remaining in Category 1, or parcels moving from Category 2 or Category 3 to Category 1, then no modifications to the MFAC/BMP Program are needed. Conversely, if there was an overall trend of parcels moving from Category 1 to Category 2 or Category 3 over the course of the implementation year, then modifications to the MFAC/BMP Program would be considered.

2013-14 was the first year of the revised TMRP and modified MFAC/BMP Program implementation. A large amount of legacy trash existed in the Ventura River Estuary and the bulk of the effort (including many additional clean-up events) during this monitoring year has gone towards cleaning up the legacy trash. While most of the parcels have been cleaned and legacy trash removed, the State Parks Parcel (MFAC Area 2) still contains legacy trash. This is due to a population of homeless individuals that are not receptive to relocating from the area, even after multiple citations from local law enforcement. Once the legacy trash is removed, the revised TMRP and MFAC/BMP Program will begin to be implemented at the frequency outlined in the TMRP (without the additional clean-ups).

As a result, the responsible parties are not conducting an assessment of the program or proposing any revisions to the MFAC/BMP Program during this annual report. The focus on removing remaining legacy trash in the Estuary during the monitoring year does not allow for development of an assessment of the baseline MFAC/BMP Program this year. Once the legacy trash is removed and the MFAC/BMP Program has been implemented without the legacy trash, the responsible parties will have a clearer understanding of the effectiveness of the baseline MFAC/BMP Program. However, through the initial implementation of the revised MFAC/BMP Program, it is clear that the revised MFAC/BMP Program is a better use of resources and much more effective at removing trash from the Estuary compared to the previous MFAC/BMP

Program. The responsible parties will provide any revisions that were made or will be made to the MFAC/BMP Program, in the fifth-year Annual Report, which will be submitted in January 2019.

**Appendix 1. 2015-2016 Annual Report Supplement – Corrected
Table 4 “Percent of MFAC Area by Assessment
Category” Revised in November 2017**

Table 4. Percent of MFAC Area by Assessment Category

Quarter 1*				
Assessment Area	Category 1	Category 2	Category 3	Notes
MFAC Area 1	100%	-	-	No trash was observed in MFAC area 1 during quarter 1
MFAC Area 2	90%	6%	4%	
MFAC Area 3	96%	4%	0%	No trash was observed in MFAC area 3 during quarter 1
MFAC Area 4	98%	2%	-	No trash observed in MFAC area 4 during quarter 1 was category 3
*October visual trash assessments were not included in Quarter 1 (not clear as to which MFAC areas were being referenced in assessment reports due to insufficient notes during a change in staff)				
Quarter 2				
Assessment Area	Category 1	Category 2	Category 3	Notes
MFAC Area 1	92%	5%	3%	
MFAC Area 2	89%	6%	5%	
MFAC Area 3	93%	4%	3%	
MFAC Area 4	100%	-	-	No trash was observed in MFAC area 4 during quarter 2
Quarter 3				
Assessment Area	Category 1	Category 2	Category 3	Notes
MFAC Area 1	90%	6%	4%	
MFAC Area 2	91%	5%	4%	
MFAC Area 3	93%	5%	2%	
MFAC Area 4	99%	1%	-	No trash observed in MFAC area 4 during quarter 3 was category 3
Quarter 4				
Assessment Area	Category 1	Category 2	Category 3	Notes
MFAC Area 1	94%	4%	2%	
MFAC Area 2	93%	4%	3%	
MFAC Area 3	96%	4%	-	No trash observed in MFAC area 3 during quarter 4 was category 3
MFAC Area 4	99%	0.5%	0.5%	

MFAC Events/BMP Implementation Summary

To ensure the parcels are all within Category 1, the MFAC/BMP Program is continuously evaluated and modified using the following adaptive management approach:

1. Estuary parcels in Category 1 for the monitoring event conducted prior to a scheduled MFAC Event are noted and any trash observed is collected during the visual survey. If no potential high trash generating areas are identified through the patrol of the parcel, the MFAC Event is not conducted. If potential high trash generating areas are identified by the patrols, then the MFAC Event focusing on those areas of the parcel that require clean-up.
2. Monitoring sites in Category 2 are evaluated to determine if additional BMPs are needed to reduce the accumulation of trash between monitoring events (i.e., visual surveys). The



A COOPERATIVE STRATEGY FOR RESOURCE MANAGEMENT & PROTECTION

December 15, 2017

California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013
Attn: Renee Purdy

**Subject: Calleguas Creek Watershed TMDL Compliance Monitoring
Program 9th Year Annual Monitoring Report Submittal**

Dear Ms. Purdy:

Please find, for your review and consideration, the enclosed Calleguas Creek Watershed TMDL Compliance Monitoring Program (CCWTMP) 9th Year Annual Monitoring Report and Appendices. The CCWTMP Annual Report is being submitted in coordination with the submittal of the "Ventura Countywide Stormwater Quality Management Program Annual Report" and the Ventura County Agricultural Irrigated Lands Group's "2016-2017 Annual Monitoring Report". This is being done to coordinate the data reporting submittals between these programs.

The CCWTMP Annual Report is intended to fulfill the monitoring requirements for only those parties which are part of the Stakeholder group, which includes:

- POTWs – Camrosa Water District, Camarillo Sanitary District, Ventura County Waterworks District No. 1, and the Cities of Simi Valley and Thousand Oaks;
- Urban Dischargers – Cities of Simi Valley, Thousand Oaks, Camarillo, Moorpark, and Oxnard, Ventura County Watershed Protection District, and the County of Ventura Public Works Agency;
- Agricultural Dischargers consisting of the entities represented by the Ventura County Agricultural Irrigated Lands Group (VCAILG) within the

Calleguas Creek Watershed, a subdivision of the Farm Bureau of Ventura County; and

- Other dischargers consisting of U.S. Department of Navy and Caltrans.

This report covers all monitoring and reporting requirements for the Nitrogen TMDL, OCs TMDL, Toxicity TMDL, Metals TMDL, and Salts TMDL. The Revolon Slough/Beardsley Wash Trash TMDL reporting requirements are included in a separate report submitted by the appropriate responsible parties. The report summarizes required monitoring efforts from July 2016 to June 2017. The following information is included in this submittal:

- Introduction and Program Background
- Monitoring Program Structure
- Monitoring Data Summary
- Exceedance Evaluation and Discussion
- Revisions and Recommendations

The corresponding text document appendices include the following:

- Appendix A. Monitoring Event Summaries
- Appendix B. Calibration Event Summary for Salts TMDL
- Appendix C. Salts Rating Curves and Surrogate Relationships
- Appendix D. Toxicity Testing and TIE Summary
- Appendix E. Laboratory QA/QC Results and Discussion

The following attachments are provided as electronic documents:

- Attachment 1. Toxicity Data
- Attachment 2. Monitoring Data
- Attachment 3. Salts Mean Daily Flows: July 2016-June 2017
- Attachment 4. Chain-of-Custody Forms

All information listed above is included in this submittal. Due to the sheer size of the report, appendices, and attachments, the CCWTMP Annual Report and accompanying files are being submitted on Compact Disk.

Please contact Amy Storm (Larry Walker Associates) at 805-585-1835, if you have any comments or questions regarding the information provided in this report submittal.

Sincerely,

A handwritten signature in blue ink, reading "Lucie McGovern".

Lucie McGovern, Chair
Stakeholders Implementing TMDLs in the Calleguas Creek Watershed

DECEMBER 15, 2017

Calleguas Creek Watershed TMDL Compliance Monitoring Program

Ninth Year Annual Monitoring Report – July 2016 to June 2017

Monitoring and Reporting Program for the Nitrogen
and Related Effects; Organochlorine Pesticides,
Polychlorinated Biphenyls and Siltation; Toxicity;
Salts; and Metals and Selenium Total Maximum
Daily Loads

submitted to:

LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

prepared by:

LARRY WALKER ASSOCIATES

on behalf of the:

STAKEHOLDERS IMPLEMENTING TMDLS IN THE CALLEGUAS
CREEK WATERSHED



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- Appendix A. Monitoring Event Summaries for Toxicity, OC Pesticides, Nutrients, Metals, and Salts TMDLs
- Appendix B. Calibration Event Summary for Salts TMDL
- Appendix C. Salts Rating Curves and Surrogate Relationships
- Appendix D. Toxicity Testing and Toxicity Identification Evaluations Summary
- Appendix E. Laboratory QA/QC Results and Discussion

Attachments – Electronic Documents

- Attachment 1. Toxicity Data
- Attachment 2. Monitoring Data
- Attachment 3. Salts Mean Daily Flows: July 2016-June 2017
- Attachment 4. Chain-of-Custody Forms

Acronyms

Ag Waiver	Conditional Waiver for Irrigated Agricultural Lands
AMR	Annual Monitoring Report
AWQMP	Agriculture Water Quality Management Plan
BPAs	Basin Plan Amendments
BMP	Best Management Practice
Caltrans	California Department of Transportation
CCW	Calleguas Creek Watershed
CCWTMP	Calleguas Creek Watershed TMDL Compliance Monitoring Program
DNQ	Detected Not Quantified
EC	Electrical Conductivity
EST	Estimated
GSQC	General Sediment Quality Constituents
GWQC	General Water Quality Constituents
LA	Load Allocation
MOA	Memorandum of Agreement
MDL	Method Detection Limit
NA	Not Applicable
ND	Not Detected
NR	Not Required
NS	Not Sampled
OC	Organochlorine
OP	Organophosphorus
PCBs	Polychlorinated Biphenyls
POTWs	Publically-Owned Treatment Works
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RL	Reporting Limit
SOPs	Standard Operating Procedures
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TSS	Total Suspended Solids
VCAILG	Ventura County Agricultural Irrigated Lands Group
WLA	Wasteload Allocation

Executive Summary

The purpose of this annual report is to document the ninth-year monitoring (July 2016 to June 2017) efforts and results of the Calleguas Creek Watershed (CCW) Total Maximum Daily Load (TMDL) Compliance Monitoring Program (CCWTMP) for the five TMDLs covered by the Quality Assurance Project Plan (QAPP). This annual report includes summaries of the sampling events, data summaries, and a compliance comparison.

TOTAL MAXIMUM DAILY LOADS

There are six TMDLs currently effective and being implemented in the Calleguas Creek Watershed. They include:

- Nitrogen Compounds and Related Effects in Calleguas Creek (Nitrogen or Nutrients TMDL)
- Organochlorine (OC) Pesticides, Polychlorinated Biphenyls (PCBs) and Siltation in Calleguas Creek, its Tributaries, and Mugu Lagoon (OC Pesticides TMDL)
- Toxicity, Chlorpyrifos, and Diazinon in the Calleguas Creek, its Tributaries and Mugu Lagoon (Toxicity TMDL)
- Metals and Selenium in Calleguas Creek, its Tributaries, and Mugu Lagoon (Metals TMDL)
- Revolon Slough and Beardsley Wash Trash TMDL (Trash TMDL)¹
- Boron, Chloride, Sulfate and TDS (Salts) in the Calleguas Creek, its Tributaries and Mugu Lagoon (Salts TMDL)

To address the monitoring requirements of the TMDLs, the CCWTMP was established and a QAPP developed and approved by the Los Angeles Regional Water Quality Control Board (Regional Water Board) Executive Officer. Over time the original QAPP has been revised to incorporate newly adopted TMDLs, reflect changing field conditions, and include changes recommended in previous annual monitoring reports. The QAPP currently addresses monitoring requirements for the Nitrogen, OC Pesticides, Toxicity, Metals, and Salts TMDLs. The Trash TMDL is addressed through a separate monitoring plan and annual monitoring report.

PROJECT ORGANIZATION

The CCWTMP is a coordinated effort with the various responsible parties that make up the Stakeholders Implementing TMDLs in the Calleguas Creek Watershed (Stakeholders). Stakeholders identified in the TMDLs have developed a Memorandum of Agreement (MOA) that outlines an agreement to implement the CCWTMP.

The stakeholders to the MOA, for which this report fulfills the TMDL monitoring requirements, are as follows:

¹ Information related to the Revolon Slough and Beardsley Wash Trash TMDL is not part of this report. The Trash TMDL annual report is also submitted to the Regional Water Board by January 28th, annually.

- **POTWs:** consisting of Camrosa Water District, Camarillo Sanitary District, Ventura County Waterworks District No. 1, and the Cities of Simi Valley and Thousand Oaks;
- **Urban Dischargers:** consisting of the Cities of Simi Valley, Thousand Oaks, Camarillo, Moorpark and Oxnard, Ventura County Watershed Protection District, and the County of Ventura Public Works Agency;
- **Agricultural Dischargers:** consisting of the entities represented by the Ventura County Agricultural Irrigated Lands Group (VCAILG) within the Calleguas Creek Watershed, a subdivision of the Farm Bureau of Ventura County; and
- **Other Dischargers:** consisting of the U.S. Department of Navy and Caltrans.

MONITORING EVENT SUMMARIES

Sampling events required by the Nitrogen, OC Pesticides, Toxicity, Metals, and Salts TMDLs during the ninth year of TMDL monitoring included four dry-weather events (Events 56, 57, 60, 61) and two wet weather events (Events 58 and 59). Grab samples for salts were obtained during these events, but were not used directly to determine compliance at receiving water sites.² A summary of Events 56 through 61 is included in Table ES-1.

Table ES - 1. Summary of Year 9 Monitoring Events

Event	Type	Date	Mugu Lagoon			Freshwater Sites		
			Water Quality	Sediment Quality & Toxicity ¹	Tissue ¹	Water Quality & Toxicity	Sediment Quality & Toxicity	Tissue
56	Dry	Aug 2016	X			X	X	
57	Dry	Nov 2016	X			X		
58	Wet	Dec 2016	X			X		
59	Wet	Jan 2017	X			X		
60	Dry	Feb 2017	X			X		
61	Dry	May 2017	X			X		X ²

1. Mugu Lagoon sediment quality, sediment toxicity, and tissue samples are collected every three years. Year 10 is the next time these types of samples will be collected.
2. Fish tissue collected in May 2017 as part of Event 61.

SUMMARY OF COMPARISON TO TMDL ALLOCATIONS AND TARGETS

This report provides a comparison of water quality monitoring results to applicable TMDL allocations and targets, but does not reflect an assessment of compliance with individual permit or conditional waiver TMDL requirements for the responsible parties. For the most part, the CCW is meeting the applicable interim or final waste load allocations (WLAs) and load allocations (LAs) currently in effect for the Nutrients, OC Pesticides, Toxicity, Metals, and Salts TMDLs. The following observations summarize the comparison of monitoring results with applicable TMDL allocations:

² Grab samples for salts at receiving water compliance sites are used to develop statistical relationships between specific conductivity (EC) and salt constituents, which are in turn used to convert high-density EC data from continuous monitors in the field to time series of salt concentrations.

1. No exceedances of the interim wasteload allocations or load allocations for OCs or PCBs were observed at any location in the watershed. No exceedance of final wasteload allocations were observed at any POTW.
2. Exceedances of numeric targets for Nitrate-N and Nitrate-N + Nitrite-N were observed in Mugu Lagoon, Revolon Slough, Beardsley Wash, and Calleguas Creek. Most of the exceedances occurred during dry events, but there were eight wet weather exceedances in Mugu Lagoon, Calleguas Creek, and Beardsley Wash. No exceedances of final nutrient wasteload allocations were measured at any POTW compliance site.
3. There were 12 exceedances of the final MS4 chlorpyrifos wasteload allocation during wet weather, but no exceedances during dry weather. In addition, there were no instances where the diazinon final MS4 wasteload allocation was exceeded during wet weather or dry weather. These exceedances were considered in concert with MS4 outfall monitoring data and MS4 outfalls exceeded the final allocations during four of these monitoring events. There were no exceedances of the final wasteload allocations for chlorpyrifos or diazinon at any POTW.
4. There were four exceedances of the interim load allocation and interim wasteload allocation for total selenium measured during the dry weather sampling events at the 04_WOOD site. As discussed in the TMDL, a primary source of selenium in Revolon Slough is considered to be rising groundwater levels and the interim allocations were to be considered in this context. There were no exceedances of interim wasteload allocations of metals at any POTW. The metals final wasteload allocations became effective March 26, 2017. Event 61 was the first event to take place following the final wasteload allocations going into effect; mercury results from this event from Hill Canyon Wastewater Treatment Plant exceeded the final wasteload allocation.
5. Although no statistically significant reductions in survival were overserved during this monitoring year, a TIE targeted for organics was performed due to the observation of greater than 50 percent mortality in the 100 percent concentration of the ambient water sample at site 10_GATE. As a result, the Stakeholders are in compliance with the toxicity wasteload allocations and load allocations per the requirements of the TMDL.
6. In general, receiving water sites were in compliance with interim load allocations and wasteload allocations established by the Salts TMDL; the only exception being exceedances in TDS, sulfate, and boron measured at 04_WOOD in the Revolon Slough watershed, and six chloride exceedances at 03_UNIV and four chloride exceedances at 9A_HOWAR. POTW exceedances of interim salts wasteload allocations are as follows: Camarillo Water Reclamation Plant (WRP) exceedances of chloride, sulfate, and TDS as well as exceedances of sulfate and TDS in February 2017 at Simi Valley Water Quality Control Plant (WQCP). The exceedances of interim salts wasteload allocations for the Camarillo WRP have resulted from increased influent salt concentrations due to water conservation and a shift in the composition of the water supplied within the service area. Because the process for addressing salts is a watershed effort involving significant capital investments, the Camarillo WRP received an amended Time Schedule Order in December 2015 (R4-2011-0126-A03) to adjust the interim limits for TDS, sulfate and chloride (TSO limits: 1242 mg/L TDS, 359 mg/L sulfate, 351 mg/L chloride). As a

result, the interim limits in the TMDL are not the currently applicable interim limits for the Camarillo WRP discharge and the TSO limits were met the entire monitoring year.

MONITORING PROGRAM CHANGES

The QAPP specifies that upon the completion of each CCWTMP annual report, revisions to standard procedures will be made, including: site relocation, ceasing monitoring efforts and/or deleting certain constituents from sample collection. An updated QAPP was submitted in December 2014 that incorporated the proposed revisions and recommendations included in the previous six CCWTMP annual reports. Additional modifications that reflect the most current lab methods and procedures for the field conditions were also part of the QAPP update process. Monitoring for the 2016-2017 monitoring year was conducted per the revised QAPP.

In addition to the updates identified in the 2014 Revised QAPP, during Year 8, access to 06_SOMIS was revoked by the private landowner whom had previously given permission for monitoring. Due to this change, 06_SOMIS could only be visited during the first two monitoring events of the 2015-2016 monitoring year. In Year 9, monitoring took place at the 06_UPLAND monitoring site, which is still within Reach 6, but approximately one mile downstream. Access to the site is via County property, so there should not be any further access issues.

It is the intention of the Stakeholders to begin submitting the TMDL receiving water monitoring data to the California Environmental Data Exchange Network (CEDEN) format. Data will be submitted going back to the beginning of the TMDL monitoring program in 2008.

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Introduction and Program Background

INTRODUCTION

In the Calleguas Creek Watershed (CCW), the following six total maximum daily loads (TMDLs) are currently effective and include monitoring requirements in the implementation plans:

- Nitrogen Compounds and Related Effects in Calleguas Creek (Nitrogen or Nutrients TMDL)
- Organochlorine (OC) Pesticides, Polychlorinated Biphenyls (PCBs) and Siltation in Calleguas Creek, its Tributaries, and Mugu Lagoon (OC Pesticides TMDL)
- Toxicity, Chlorpyrifos, and Diazinon in the Calleguas Creek, its Tributaries and Mugu Lagoon (Toxicity TMDL)
- Metals and Selenium in Calleguas Creek, Its Tributaries, and Mugu Lagoon (Metals TMDL)
- Revolon Slough and Beardsley Wash Trash TMDL (Trash TMDL) ¹
- Boron, Chloride, Sulfate and TDS (Salts) in the Calleguas Creek, its Tributaries and Mugu Lagoon (Salts TMDL)

To address the monitoring requirements of the TMDLs, the responsible parties that make up the Stakeholders Implementing TMDLs in the CCW (Stakeholders) established a CCW TMDL Compliance Monitoring Program (CCWTMP) and developed a Quality Assurance Project Plan (QAPP) for approval by the Los Angeles Regional Water Quality Control Board (Regional Water Board) Executive Officer. The original QAPP covered monitoring for only the Nitrogen, OC Pesticides, Toxicity, and Metals TMDLs. A monitoring approach (Salts Plan) for the Salts TMDL was submitted by the Stakeholders to the Regional Water Board in June 2009, which was conditionally approved in September 2011. Compliance monitoring for the Salts TMDL was required starting September 9, 2012.

Over time, the original QAPP has been revised to incorporate newly adopted TMDLs, reflect changing field conditions, and include changes recommended in previous annual monitoring reports. The QAPP currently addresses monitoring requirements for the Nitrogen, OC Pesticides, Toxicity, Metals, and Salts TMDLs. The Trash TMDL is addressed through a separate monitoring plan and annual monitoring report.

The primary purpose of this report is to document the ninth year monitoring efforts (July 2016 to June 2017) and results of the CCWTMP for the five TMDLs included in the QAPP. The report includes summaries of the sampling events, data summaries, and a comparison to applicable TMDL allocations and targets. The report is divided into the following sections:

- Introduction and Program Background
- Monitoring Program Structure

¹ Information related to the Revolon Slough and Beardsley Wash Trash TMDL is not part of this report. The Trash TMDL annual report is submitted to the Regional Water Board annually by January 28th.

- Monitoring Data Summary
- Exceedance Evaluation and Discussion
- Revisions and Recommendations

In addition, there are several appendices included with this report and several attachments (electronic data files) associated with this report, including:

- Appendices (text documents)
 - Appendix A: Monitoring Event Summaries for Toxicity, OC Pesticides, Nutrients, Metals, and Salts TMDLs
 - Appendix B: Calibration Event Summary for Salts TMDL
 - Appendix C: Salts Rating Curves and Surrogate Relationships
 - Appendix D: Toxicity Testing and Toxicity Identification Evaluations Summary
 - Appendix E: Laboratory Quality Assurance/Quality Control Results and Discussion
- Attachments (electronic data files)
 - Attachment 1: Toxicity Data
 - Attachment 2: Monitoring Data
 - Attachment 3: Salts Mean Daily Flows: July 2016 to June 2017
 - Attachment 4: Chain-of-Custody Forms

PROJECT ORGANIZATION

The CCWTMP is a coordinated effort where the various responsible parties identified in the TMDLs have developed a Memorandum of Agreement (MOA) that outlines an agreement to implement the CCWTMP. The responsible parties identified in the organizational structure have formally joined together to fulfill their monitoring requirements as outlined in the Basin Plan Amendments (BPAs) for the five TMDLs included in the QAPP.

The CCWTMP is intended to fulfill the monitoring requirements for only those stakeholders that are part of the MOA and/or identified by the participants of the MOA. The stakeholders to the MOA for which this report fulfills the TMDL monitoring requirements are as follows:

- **POTWs:** consisting of Camrosa Water District, Camarillo Sanitary District, Ventura County Waterworks District No. 1, and the Cities of Simi Valley and Thousand Oaks;
- **Urban Dischargers:** consisting of the Cities of Simi Valley, Thousand Oaks, Camarillo, Moorpark and Oxnard, Ventura County Watershed Protection District, and the County of Ventura Public Works Agency;
- **Agricultural Dischargers:** consisting of the entities represented by the Ventura County Agricultural Irrigated Lands Group (VCAILG) within the Calleguas Creek Watershed, a subdivision of the Farm Bureau of Ventura County; and
- **Other Dischargers:** consisting of the U.S. Department of the Navy and the California Department of Transportation (Caltrans).

Per the MOA, a Management Committee, consisting of one representative each from the POTWs, Urban Dischargers and Other Dischargers groups, and two representatives from the Agricultural Dischargers group, oversees the CCWTMP and makes decisions to assure the CCWTMP is carried out in a timely, accountable fashion.

The Stakeholders contracted implementation of the CCWTMP with the following contractors to perform the ninth year monitoring effort:

- **General Project Management** - Larry Walker Associates, Inc. (LWA)
- **Field Monitoring Activities**
 - **Freshwater Water Quality/Sediment Sampling** - Kinnetic Laboratories, Inc. (KLI), Fugro West, Inc. (Fugro), LWA
 - **Freshwater Fish Tissue** – ICF Jones and Stokes, Inc.
- **Water, Sediment, and Tissue Chemistry Analysis** - Physis Environmental Laboratories, Inc. (Physis)
- **Salts Chemistry Analysis** - Fruit Growers Laboratory, Inc. (FGL) and Physis
- **Toxicity Analysis** - Pacific Eco Risk Laboratories (PacEco)

The aforementioned contractors performed all the management activities and sampling efforts covered by this annual report. This list of contractors will be amended in each report to reflect contractors used for the work performed.

WATERSHED BACKGROUND

Calleguas Creek drains an area of approximately 343 square miles from the Santa Susana Pass in the east to Mugu Lagoon in the southwest. The main surface water system drains from the mountains in the northeast part of the watershed toward the southwest where it flows through the Oxnard Plain before emptying into the Pacific Ocean through Mugu Lagoon. The watershed, which is elongated along an east-west axis, is approximately thirty miles long and fourteen miles wide. The Santa Susana Mountains, South Mountain, and Oak Ridge form the northern boundary of the watershed; the southern boundary is formed by the Simi Hills and Santa Monica Mountains. Figure 1 depicts the CCW and Table 1 presents the reaches of the CCW as identified in the TMDLs covered by the CCWTMP.

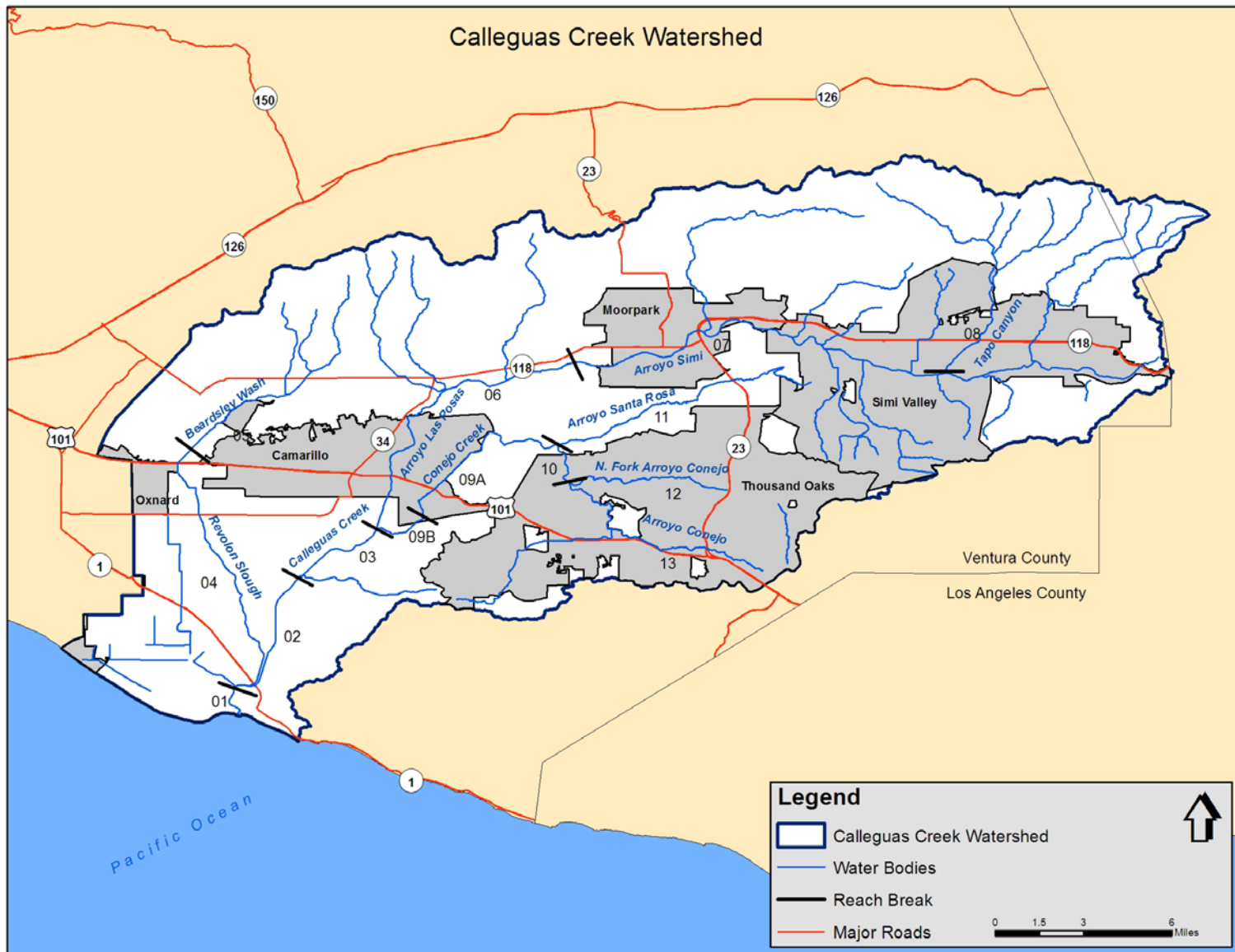


Figure 1. Calleguas Creek Watershed

Table 1. Description of Calleguas Creek Watershed Reaches

Reach No.	Reach Name	Subwatershed	Geographic Description
1	Mugu Lagoon	Mugu	Lagoon fed by Calleguas Creek
2	Calleguas Creek (Estuary to Potrero Rd.)	Calleguas	Downstream (south) of Potrero Rd
3	Calleguas Creek (Potrero Rd. to Conejo Creek)	Calleguas	Potrero Rd. upstream to confluence with Conejo Creek
4	Revolon Slough	Revolon	Revolon Slough from confluence with Calleguas Creek to Central Ave
5	Beardsley Channel	Revolon	Revolon Slough upstream of Central Ave.
6	Arroyo Las Posas	Las Posas	Confluence with Calleguas Creek to Hitch Road
7	Arroyo Simi	Arroyo Simi	End of Arroyo Las Posas (Hitch Rd) to headwaters in Simi Valley.
8	Tapo Canyon Creek	Arroyo Simi	Confluence w/ Arroyo Simi up Tapo Canyon to headwaters
9B ¹	Conejo Creek (Camrosa Diversion to Arroyo Santa Rosa)	Conejo	Extends from the confluence with Arroyo Santa Rosa downstream to the Conejo Creek Diversion.
9A ¹	Conejo Creek (Calleguas Creek to Camrosa Diversion)	Conejo	Extends from Conejo Creek Diversion to confluence with Calleguas Creek.
10	Hill Canyon reach of Conejo Creek	Conejo	Confluence with Arroyo Santa Rosa to confluence with N. Fork; and N. Fork to just above Hill Canyon WTP
11	Arroyo Santa Rosa	Conejo	Confluence with Conejo Creek to headwaters
12	North Fork Conejo Creek	Conejo	Confluence with Conejo Creek to headwaters
13	Arroyo Conejo (South Fork Conejo Creek)	Conejo	Confluence with N. Fork to headwaters —two channels

1. In the 2012 updates to the Los Angeles Region Basin Plan, the reach designations for 9A and 9B were switched.

MONITORING QUESTIONS

The purpose of the CCWTMP is to direct the monitoring activities conducted to meet the requirements of the TMDLs effective for the CCW, excluding the Trash TMDL. The goals of the CCWTMP include:

- To determine compliance with numeric targets, waste load and load allocations, and interim load reduction milestones.
- To test for sediment toxicity at sediment monitoring stations.
- To identify causes of unknown toxicity.
- To generate additional land use runoff data to better understand pollutant sources and proportional contributions from various land use types.

- To monitor the effect of implementation actions by urban, POTW, and agricultural dischargers on in-stream water, sediment, fish tissue quality, and watershed balances (salts).
- To implement the program consistent with other regulatory actions within the CCW.

In addition, the CCWTMP is intended to answer the following monitoring questions to meet the goals of the program:

- Are numeric targets and allocations met at the locations indicated in the TMDLs?
- Are conditions improving?
- What is the contribution of constituents of concern from various land use types?

MONITORING PROGRAM DESCRIPTION

The CCWTMP was developed to address all necessary TMDL monitoring requirements and answer the monitoring questions mentioned previously using the following monitoring elements.

Required Monitoring Elements

The following environmental monitoring elements are required by the TMDLs' BPAs and are included in the CCWTMP:

- General water and sediment quality constituents;
- Water column and sediment toxicity;
- Metals and selenium in water, sediment, fish tissue, and bird eggs;
- Organic compounds in water, sediment, and fish tissue; and,
- Nitrogen and phosphorus compounds in water.
- Salt compounds in water and continuous flow in dry weather (the latter only at Salts TMDL receiving water compliance sites)

Table 2 lists the constituents for which analyses are conducted. Table 2 also provides a summary of sampled constituent groups and sampling frequency. The QAPP outlines, in detail, the justification of the process design, specific methodologies (both field and analytical), and quality assurance/quality control (QA/QC) procedures.

Table 2. Constituents and Monitoring Frequency for CCWTMP (varies by site)

Constituent	Frequency
<i>Chronic Aquatic Toxicity</i>	Quarterly + Two wet events
<i>General Water Quality Constituents (GWQC)</i>	
Flow, pH, Temperature, Dissolved Oxygen, Conductivity, Total Suspended Solids (TSS), Hardness (at freshwater sites where metals samples are collected), and Dissolved Organic Carbon (at saltwater sites where metals samples are collected)	Quarterly based on location + Two wet events
<i>Nutrients</i>	
Ammonia Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Organic Nitrogen, Total Kjeldahl Nitrogen (TKN), Total Phosphorus, Orthophosphate-P	Quarterly + Two wet events
<i>Organic Constituents In Water</i>	
OC Pesticides ¹ and PCBs ² , OP ³ , Triazine ⁴ , and Pyrethroid ⁵ Pesticides	Quarterly + Two wet events
<i>Metals and Selenium In Water</i> ⁶	
Copper, Mercury, Nickel, Zinc, and Selenium ⁸	Quarterly + Two wet events ⁷
<i>Salts</i>	
Electrical Conductivity (EC) and Discharge	Receiving water: Continuous (via in-situ sensors for EC and depth) plus monthly grabs for EC and discharge for sensor calibration
Total Dissolved Solids (TDS), Sulfate, Chloride, Boron	Receiving water: Continuous (derived from EC/salt relationships) Other sites: Quarterly + Two wet events
<i>Chronic Sediment Toxicity</i>	Annually (Every three years in Lagoon)
<i>General Sediment Quality Constituents (GSQC)</i>	
Total Ammonia, Percent Moisture, Grain Size Analysis, Total Organic Carbon (TOC)	Annually (Every three years in Lagoon)
<i>Organic Constituents In Sediment</i>	
OC Pesticides ¹ and PCBs ² , OP Pesticides ³ , and Pyrethroids ⁵	Annually (Every three years in Lagoon)

Table 2. Constituents and Monitoring Frequency for CCWTMP (varies by site) - continued

Additional Constituents For Mugu Lagoon Sediment	
Metals ⁹	Every three years
Tissue	Annually (Every three years in Lagoon)
Percent Lipids, OC Pesticides ¹ and PCBs ¹⁰ , OP Pesticides ³ , and Metals ¹¹	
<ol style="list-style-type: none"> 1. OC Pesticides considered: aldrin, alpha-BHC, beta-BHC, gamma-BHC (lindane), delta-BHC, chlordane-alpha, chlordane-gamma, 2,4'-DDD, 2,4'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, dieldrin, endosulfan I and II, endosulfan sulfate, endrin, endrin aldehyde, endrin ketone, and toxaphene 2. PCBs in water and sediment considered: Aroclors identified in the CTR (1016, 1221, 1232, 1242, 1248, 1254, and 1260). 3. OP Pesticides considered: chlorpyrifos, diazinon, and malathion. Chlorpyrifos is the only OP pesticide that will be measured in tissue, as it is the only OP listed in tissue. 4. Triazine Pesticides considered: atrazine, prometryn, and simazine. Analysis of triazines ceased during year 3 following the recommendation being included in the Revisions and Recommendations section of both the year 1 and year 2 annual reports. 5. Pyrethroid Pesticides considered: bifenthrin, cyfluthrin, cypermethrin, deltamethrin, and permethrin 6. Copper, mercury, nickel, selenium and zinc will be measured as dissolved and total recoverable. 7. Per the Metals TMDL BPA requires that "In-stream water column samples will be collected monthly for analysis of general water quality constituents (GWQC) and, copper, mercury, nickel, selenium, and zinc for the first year. After the first year, the Executive Officer will review the monitoring report and revise the monitoring frequency as appropriate." Monthly monitoring will be suspended until such time as the Executive Officer has reviewed the monitoring report and considered revisions to the monitoring frequency. Until the Executive Officer has considered the frequency, metals will be collected quarterly in conjunction with the other TMDLs. 8. Monitoring at sites in Mugu Lagoon other than at the Ronald Reagan Street Bridge Site (01_RR_BR) for metals is an optional element. 9. Includes arsenic, cadmium, copper, lead, mercury, nickel, selenium and zinc. Arsenic, lead, and cadmium are included in addition to constituents required in the Metals TMDL as they have been found in previous sediment studies conducted in Mugu Lagoon to exceed guideline values used to interpret the relationship between sediment chemistry and biological impacts. 10. PCBs in tissue considered: individual congeners. 11. Total mercury and selenium will be measured in bird eggs and methyl mercury and total selenium will be measured in fish tissue. 	

Optional Monitoring Elements

The QAPP outlines the optional monitoring efforts, all of which are considered above and beyond what is necessary to meet the requirements of the BPAs and answer the monitoring questions.

Table 3 lists the constituents and analyses that are considered optional for the CCWTMP. Monitoring for the constituents and conducting the analyses are not BPA requirements but can provide supplemental data to meet general program goals and in answering program questions. Table 3 also provides a general sampling frequency for each constituent group.

Table 3. Optional Constituents and Monitoring Frequency for CCWTMP (varies by site)

Constituent	Frequency ⁵
<i>Organic Constituents in Water – Grain Size Fractions</i>¹	One wet event annually
OC Pesticides and PCBs, OP, and Pyrethroid Pesticides	
<i>Organic Constituents in Sediment – Grain Size Fractions</i>¹	Annually (Every three years in Mugu Lagoon)
OC Pesticides and PCBs, OP, and Pyrethroid Pesticides	
<i>Additional Constituents for Mugu Lagoon Sediment</i>	Every three years ²
Macrobenthic community assessment	
Sediment Toxicity – <i>Eohaustorius estuaries</i> and <i>Mytilus galloprovincialis</i>	
PCBs ³ and PAHs ⁴	

1. Please see Table 2 for a list of individual constituents in each suite.
2. Mugu Lagoon assessments were conducted during the first, fourth, and seventh monitoring years.
3. PCBs considered: 2,4'-Dichlorobiphenyl, 2,2',5-Trichlorobiphenyl, 2,4,4'-Trichlorobiphenyl, 2,2',3,5'-Tetrachlorobiphenyl, 2,2',5,5'-Tetrachlorobiphenyl, 2,3',4,4'-Tetrachlorobiphenyl, 2,2',4,5,5'-Pentachlorobiphenyl, 2,3,3',4,4'-Pentachlorobiphenyl, 2,3',4,4',5-Pentachlorobiphenyl, 2,2',3,3',4,4'-Hexachlorobiphenyl, 2,2',3,4,4',5'-Hexachlorobiphenyl, 2,2',4,4',5,5'-Hexachlorobiphenyl, 2,2',3,3',4,4',5-Heptachlorobiphenyl, 2,2',3,4,4',5,5'-Heptachlorobiphenyl, 2,2',3,4',5,5',6-Heptachlorobiphenyl, 2,2',3,3',4,4',5,6-Octachlorobiphenyl, 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl, Decachlorobiphenyl
4. PAHs considered: 1-Methylnaphthalene, 1-Methylphenanthrene, 2,6-Dimethylnaphthalene, 2-Methylnaphthalene, Acenaphthene, Anthracene, Biphenyl, Fluorene, Naphthalene, Phenanthrene, Benz(a)anthracene, Benzo(a)pyrene, Benzo(e)pyrene, Chrysene, Dibenz(a,h)anthracene, Fluoranthene, Perylene, Pyrene.
5. Optional monitoring was not performed during the 9th monitoring year.

Special Studies

The Nitrogen, Toxicity, OC Pesticides, Salts, and Metals TMDL Implementation Plans identify required and optional special studies to investigate a range of issues. No specific special studies results are incorporated into this annual report summary at this time as the results of all special studies conducted to date have been submitted as separate reports. Data gathered during special study specific sampling may also be utilized to further answer not only the special studies questions, but also be applied to the overall CCWTMP goals and questions identified previously in this report.

Monitoring Program Structure

As outlined previously, the CCWTMP covers a broad range of TMDL monitoring requirements, including both required and optional efforts. The overall structure of these requirements per each event can be broken down into two categories: (1) compliance monitoring and (2) investigation monitoring. Compliance monitoring sites are typically located in receiving water bodies where 303(d) listings occur, and are considered points of compliance measurements. The investigational sites are located throughout the watershed, and include monitoring of drain outfalls. The purpose of these sites is not to measure compliance, but to assist with evaluating land use-specific contributions of various constituents to the watershed.

The CCWTMP effort is also divided into two monitoring efforts: (1) dry weather monitoring and (2) wet weather storm water monitoring. The following sections describe, in detail, the basis for each monitoring effort, starting with the definitions of the compliance monitoring sites and investigation monitoring sites. Specific monitoring efforts associated with each sample site are included, including the frequency of sampling by site for both dry weather and wet weather events. The sampling frequency and the constituents analyzed at the sites covered by the CCWTMP vary. A more detailed description of each topic covered can be found in the appropriate element of the QAPP, including standard operating procedures (SOPs) for field collection and sample handling techniques, and analytical procedures and protocols including minimum detection limit (MDL) and reporting limit (RL) requirements.

COMPLIANCE MONITORING

Compliance Monitoring for Toxicity, OC Pesticides, Metals, Nitrogen, and Salts TMDLs

For compliance monitoring to address the Toxicity, OC Pesticides, Metals and Nitrogen TMDLs, dry weather in-stream water column samples were collected quarterly for water column toxicity, general water quality constituents (GWQC), target organic constituents, metals, and nutrients. The specific target constituents for each of the previously mentioned TMDLs are listed as footnotes in Table 2.

In-stream water column samples to measure compliance for the Toxicity, OC Pesticides, and Metals TMDLs are generally collected at the base of each of the subwatersheds used to assign waste load and load allocations, per the BPAs. In-stream water column samples to measure compliance for the Nitrogen TMDL are generally collected at the base of each listed reach. Toxicity Identification Evaluations (TIEs) are conducted on toxic samples as outlined in the Toxicity Testing and TIE section of the QAPP and results of these are discussed in the Toxicity Testing and TIE Evaluations Summary section of this report and Appendix D.

In-stream water column grab samples for salts were also collected quarterly during dry weather and twice during wet weather at the base of each of the subwatersheds specified in the Salts TMDL. The grab sample results are used to develop statistical relationships between salt constituents and EC. These relationships are used to convert high frequency EC-sensor data to time-series of salt concentrations. Compliance with interim dry weather salt allocations is determined using monthly mean salt concentrations for dry weather developed from the time-series of data.

Additionally, POTW effluent was monitored for compliance with the effluent limits presented in the Toxicity, OC Pesticides, Metals, and Salts TMDL BPAs. Currently, POTWs collect data required by each of their individual permits. For additional TMDL constituents not currently sampled by the plants, CCWTMP crews perform sampling as necessary (efforts vary by plant and constituent group). All CCWTMP-required data for POTWs are compiled in this report.

All efforts are made to include two wet weather water sampling events for compliance monitoring for the OC Pesticides, Toxicity, Metals, and Salts TMDLs during targeted storm events between October and April. Two wet weather events were completed in year nine, the first storm sampled in November 2016 and the second in January 2017.

Streambed sediment samples, collected annually in the freshwater portion of the watershed, were collected during the first event of this monitoring year and analyzed for sediment toxicity, general sediment quality constituents (GSQC), and target organics. Sediment samples in Mugu Lagoon are collected every three years per the approved QAPP, and were not collected during year nine.

Similar to the sediment sampling frequency, fish tissue samples were only collected in the freshwater portions of the watershed during year nine in May 2017, and will continue to be collected annually for the CCWTMP. As tissue samples are collected every three years in Mugu Lagoon, samples will be collected again in year ten.

INVESTIGATION MONITORING

Investigation monitoring focuses on identifying the contribution of constituents of concern from various land uses in the watershed and areas where toxicity has been observed to occur in the past that are not addressed by compliance monitoring. These sites are meant to compliment compliance monitoring efforts, fill data gaps where identified, and assist in identification of sources of constituents that may be leading to non-compliant conditions. The following describes the various types of investigation sites sampled during this reporting period.

Land Use Discharge Investigation

Land use discharge samples are generally collected concurrently (on the same day when possible) with compliance monitoring at representative agricultural and urban discharge sites generally located in each of the subwatersheds and analyzed for selected GWQC, metals, and target organic constituents (constituents monitored per site varies based upon sub-watershed).

Toxicity Investigation

As significant mortality had not occurred at the two sediment toxicity investigation sites during the first three years of the CCWTMP, ceasing investigation monitoring was recommended in the third year annual report. Toxicity testing at the investigation sites ceased until Event 38, when it was resumed to support delisting of the identified reaches. The normal annual sampling frequency for this investigation is provided in Table 6.

Sediment toxicity investigation monitoring for delisting occurred during Event 50. Water column toxicity sampling occurred during all events. As part of the optional toxicity investigation, samples are also tested for those constituents specified in Table 2 for the OC Pesticides TMDL and the Toxicity TMDL, as well as the general water quality parameters.

SAMPLING SITES

The QAPP details the justification and rationale for each of the sites sampled via the CCWTMP. Information on compliance monitoring sites and land use sites sample collection frequency is presented in Table 4 and Table 5, respectively. The general locations of the receiving water compliance monitoring sites (excluding Mugu Lagoon) for water, sediment, and fish tissue are presented in Figure 2 through Figure 4. The POTW effluent discharge sites are presented in Figure 5. The sampling sites in each figure are designated by sampled constituent group. The compliance monitoring sampling zones for sediment sampling and tissue sampling in Mugu Lagoon are shown in Figure 6 and Figure 7, respectively.

The non-Mugu Lagoon water and sediment toxicity investigation sampling sites coincide with current and previous sampling programs in the CCW. Water and sediment toxicity investigation sampling sites and sampling frequency are presented in Table 6, while the general locations of the water and sediment toxicity investigation sampling sites in the CCW are presented in Figure 8. Land use monitoring sites are shown in Figure 9.

The salt monitoring sites correspond with compliance sites or land use sites used for monitoring related to other TMDLs (Figure 2) with two exceptions:

1. One of the salt compliance points is only used for salt monitoring (Conejo Creek at Baron Brothers Nursery).
2. The continuous monitoring equipment (and the location of monthly salt grab samples) for the Simi subwatershed was installed just downstream of the Tierra Rejada bridge, and is referred to as "07_TIERRA".

The CCWTMP efforts summarized in the annual report correspond to the sites and locations listed below. As this program progresses, the number and location of sites may be revised if existing sites become inaccessible, if it is determined that alternative locations are needed, or if the number of land use stations needed to appropriately characterize discharges needs modification.

Table 4. CCWTMP Compliance Monitoring and Nutrient Investigation Sites Annual Sampling Frequency

Sub-Wat.	Site Id	Reach	Site Location	GPS Coordinates		Water ^{1, 2}						Sediment			Tissue ³	
				Lat	Long	Tox	Pests/PCBs	Nut	Metal	Salts	GWQC	Tox	Pests/PCBs	Metal	Pests/PCBs	Metal ⁴
Mugu Lagoon	01_RR_BR	1	Ronald Reagan St Bridge	34.1090	-119.0916	6	6	6	6	NA	6	NA	NA	NA	NA	NA
	01_BPT_3	1	Located In Eastern Arm	General site locations are provided as each site represents a generalized sample collection zone in which a sample will be collected.		NA	NA	NA	NA	NA	NA	Once Every Three Years				
	01_BPT_6	1	Located In Eastern Part Of Western Arm			NA	NA	NA	NA	NA	NA					
	01_BPT_14	1	Located In The Central Part Of The Western Arm			NA	NA	NA	NA	NA	NA					
	01_BPT_15	1	Located Between Estuary and Mouth of Lagoon			NA	NA	NA	NA	NA	NA					
	01_SG_74	1	Located In Western Part of Central Lagoon			NA	NA	NA	NA	NA	NA					
	Central Lagoon	1	Sampled In Central Lagoon			NA	NA	NA	NA	NA	NA				Once Every Three Years	
	Western Arm	1	Sampled In Western Arm Of The Lagoon			NA	NA	NA	NA	NA	NA					
Revolon Slough	04_WOOD ⁵	4	Revolon Slough East Side Of Wood Road	34.1698	-119.0958	6	6	6	6	6	6	1	1	NA	1	1
	05_CENTR	5	Beardsley Wash at Central Avenue	34.2300	-119.1128	NA	NA	6	NA	NA	6	NA	NA	NA	NA	NA
Calleguas	02_PCH	2	Calleguas Creek NE Side of Hwy 1 Bridge	34.1119	-119.0818	NA	NA	4	NA	NA	4	NA	NA	NA	NA	NA
	03_UNIV	3	Calleguas Creek At Camarillo Street	34.1795	-119.0399	6	6	6	6	6	6	1	1	NA	1	NA
	03D_CAMR ⁶	3	Camrosa Water Reclamation Plant	34.1679	-119.0530	4	4	4	4	4	4	NA	NA	NA	NA	NA
	9A_HOWAR ⁷	9B ⁷	Conejo Creek At Howard Road Bridge	34.1931	-119.0025	NA	NA	6	NA	6	NA	NA	NA	NA	NA	NA
	9AD_CAMA ⁷	9B ⁷	Camarillo Water Reclamation Plant	34.1938	-119.0017	4	4	4	4	4	4	NA	NA	NA	NA	NA
Conejo	9B_ADOLF ⁷	9A ⁷	Conejo Creek At Adolfo Road	34.2137	-118.9894	6	6	6	NA	NA	6	NA	1	NA	1	NA
Conejo	10_GATE	10	Conejo Creek Hill Canyon Below N Fork	34.2178	-118.9281	NA	NA	6	NA	NA	6	NA	NA	NA	NA	NA

Sub-Wat.	Site Id	Reach	Site Location	GPS Coordinates				Water ^{1, 2}				Sediment				Tissue ³	
				Lat	Long	Tox	Pests/ PCBs	Nut	Metal	Salts	GWQC	Tox	Pests/ PCBs	Metal	Pests/ PCBs	Metal ⁴	
	10D_HILL	10	Hill Canyon Wastewater Treatment Plant	34.2113	-118.9218	4	4	4	4	4	4	NA	NA	NA	NA	NA	
	12_PARK	12	Conejo Creek North Fork above Hill Canyon	34.2144	-118.915	NA	NA	4	NA	NA	4	NA	NA	NA	NA	NA	
	13_BELT	13	Conejo Creek S Fork Behind Belt Press Building	34.2078	-118.9194	NA	NA	4	NA	NA	4	NA	NA	NA	NA	NA	
	9B_BARON ⁷	9A ⁷	Conejo Creek at Baron Brothers Nursery	34.2365	-118.9643	NA	NA	NA	NA	6	NA	NA	NA	NA	NA	NA	
	Las Posas	06_UPLAND ⁸	6	Arroyo Las Posas upstream of Upland Road	34.2449	-118.0051	6	6	6	NA	NA	6	NA	1	NA	1	NA
06D_MOOR ⁶		6	Ventura County Wastewater Treatment Plant	34.2697	-118.9357	4	4	4	4	4	4	NA	NA	NA	NA	NA	
Arroyo Simi	07_HITCH	7	Arroyo Simi East Of Hitch Boulevard	34.2716	-118.9234	6	6	6	NA	NA	6	NA	1	NA	1	NA	
	07_TIERRA	7	Arroyo Simi downstream from Tierra Rejada Blvd.	34.2701	-118.9058	NA	NA	NA	NA	6	NA	NA	NA	NA	NA	NA	
	07_MADER	7	Arroyo Simi at Madera Ave.	34.2778	-118.7958	NA	NA	6	NA	NA	6	NA	NA	NA	NA	NA	
	07D_SIMI	7	Simi Valley Water Quality Control Plant	34.2848	-118.8128	4	4	4	4	4	4	NA	NA	NA	NA	NA	

NA – Not Analyzed

Tox – Samples will be analyzed for toxicity and OP and pyrethroid pesticides as listed in Table 2. Toxicity in water will not be analyzed at 01_RR_BR or at the POTWs.

Pests/PCBs – Samples will be analyzed for OC pesticides and PCBs as listed in Table 2. Chlorpyrifos will be analyzed in tissue at 04_WOOD as it is on the 303(d) list for this reach.

Nut – Samples will be analyzed for Nutrients as listed in Table 2.

Metal – Samples will be analyzed for Metals as listed in Table 2.

GWQC – Samples will be analyzed for General Water Quality Constituents as listed in Table 2.

1. Sites listed for 6 sampling events per monitoring year refers to 4 quarterly dry events and the attempt to sample 2 additional wet events.
2. Grab samples for salts at compliance sites are not directly used to determine compliance with salts WQOs, but are used to develop statistical relationships between EC and salt constituents (Appendix C).
3. Tissue samples will be collected in the same location as water and sediment samples. Samples may be collected elsewhere if no fish are found at pre-established sample stations.
4. Bird egg samples will be collected and analyzed for mercury and selenium in the Mugu Lagoon subwatershed.
5. TIEs will not be performed at 04_WOOD.
6. The Camrosa Water Reclamation Plant and the Ventura County Wastewater Treatment Plant are not currently discharging. However, these sites are included in case they must be sampled at a later date.
7. In the 2012 updates to the Los Angeles Region Basin Plan, the reach designations for 9A and 9B were switched. For consistency with the TMDLs and historic site naming conventions, the site names in the annual monitoring reports maintain the original reach designations.
8. In Year 8, sampling crews were not able to access the 06_SOMIS site for the majority of the year. The 06_UPLAND site, which is approximately one mile downstream, was chosen as an alternative site to replace the 06_SOMIS site.

Table 5. CCWTMP Land Use Monitoring Sites and Sample Frequency

Sub-Wat.	Site ID	Reach	Site Type ¹	Site Location	GPS Coordinates		Pests/PCBs	Nutrients	Metal	Salts	GWQC
					Lat	Long					
Mugu Lagoon	01T_ODD2_DCH	1	Ag	Duck Pond/Mugu/Oxnard Drain #2 S. of Hueneme Rd	34.1395	-119.1185	6	6	6	NA	6
	04D_WOOD	4	Ag	Agricultural Drain on E. Side of Wood Rd N. of Revolon	34.1708	-119.0963	6	6	6	6	6
Revolon Slough	05D_SANT_VCWPD	5	Ag	Santa Clara Drain at VCWPD Gage 781 prior to confluence with Beardsley Channel	34.2426	-119.1137	6	6	6	NA	6
	04D_VENTURA	4	Urban	Camarillo Hills Drain at Ventura Blvd and Las Posas Rd at VCWPD Gage 835	34.2162	-119.0685	6	NA	6	6	6
Calleguas	02D_BROOM	2	Ag	Discharge to Calleguas Creek at Broome Ranch Rd.	34.1433	-119.0713	6	6	6	NA	6
	9BD_GERRY ²	9A ²	Ag	Drainage ditch crossing Santa Rosa Rd at Gerry Rd	34.2358	-118.9446	6	6	6	6	6
Conejo	9BD_ADOLF ²	9A ²	Urban	Urban storm drain passing under N. side of Adolfo Rd approximately 300 meters from Reach 9B	34.2148	-118.9951	6	NA	6	6	6
	13_SB_HILL	13	Urban	South Branch Arroyo Conejo on S. Side of W Hillcrest	34.1849	-118.9075	6	NA	NA	6	6
Las Posas	06T_FC_BR	6	Ag	Fox Canyon at Bradley Rd - just north of Hwy 118	34.2646	-119.0111	6	6	NA	NA	6
Arroyo Simi	07D_HITCH_LEVEE_2	7	Ag	2 nd corrugated pipe discharging on north side of Arroyo Simi flood control levee off of Hitch Blvd just beyond 1 st power pole.	34.2716	-118.9219	6	6	NA	6	6
	07D_MPK ³	7	Urban	Gabbert Canyon Drain, N. side of 118	34.2790	-118.9056	6	NA	NA	6	6
	07D_SIM_BUS ⁴	7	Urban	Bus Canyon Dr N. of 5 th St and LA Ave intersection	34.2719	-118.7837	6	NA	NA	NA	6

Ag = Agricultural Land Use Site Urban = Urban Land Use Site NA – Not Analyzed

1. Specific constituents analyzed under each category are listed in Table 2.

2. In the 2012 updates to the Los Angeles Region Basin Plan, the reach designations for 9A and 9B were switched. For consistency with the TMDLs and historic site naming conventions, the site names in the annual monitoring reports maintain the original reach designations.

3. Site 07D_MPK replaced 07D_CTP to correspond with the Moorpark MS4 outfall sampling location.

4. Site 07D_SIM_BUS replaced 07T_DC_H to correspond with the Simi Valley MS4 outfall sampling location.

Table 6. Toxicity Investigation Monitoring Sites and Sampling Frequency

				GPS Coordinates				
Subwatershed	Site ID	Reach	Site Location	Lat	Long	Tox	Pests/PCBs	GWQC
<i>Sediment Toxicity Investigation</i>¹								
Calleguas	02_PCH	2	Calleguas Creek Northeast Side Of Highway 1 Bridge	34.1119	-119.0818	1	1	1
	9A_HOWAR ²	9B ²	Conejo Creek At Howard Road Bridge	34.1931	-119.0025	1	1	1
<i>Water Toxicity Investigation</i>^{1, 3}								
Conejo	10_GATE	10	Conejo Creek Hill Canyon Below North Fork Of Conejo Creek	34.2178	-118.9281	6	6	6
	13_BELT	13	Conejo Creek South Fork Behind Hill Canyon Belt Press Building	34.2078	-118.9194	6	6	6

Tox – Samples will be analyzed for toxicity, OP, and pyrethroid pesticides in water and toxicity, OP, and pyrethroid pesticides in sediment as listed in Table 2.

Pests/PCBs – Samples will be analyzed for OC pesticides and PCBs as listed in Table 2.

GWQC – Samples will be analyzed for General Water Quality Constituents as listed in Table 2.

1. This table depicts the normal toxicity investigation sampling frequency. During year 5, this investigation was put on hold and then re-started as described in text.

2. In the 2012 updates to the Los Angeles Region Basin Plan, the reach designations for 9A and 9B were switched. For consistency with the TMDLs and historic site naming conventions, the site names in the annual monitoring reports maintain the original reach designations.

3. Includes two wet events per site; except during years when there is insufficient rainfall to trigger sampling.

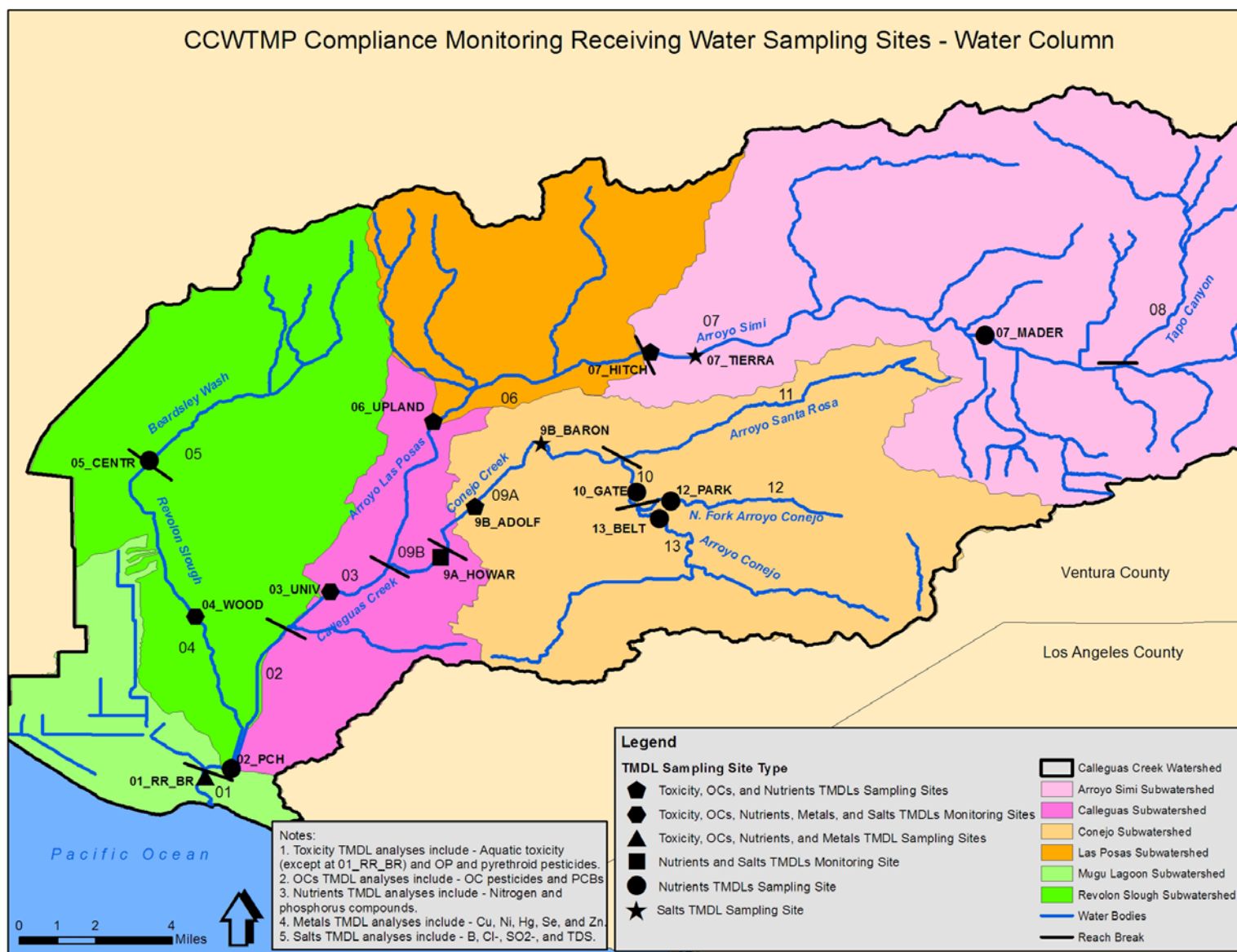


Figure 2. CCWTMP Compliance Monitoring Sampling Sites – Receiving Water

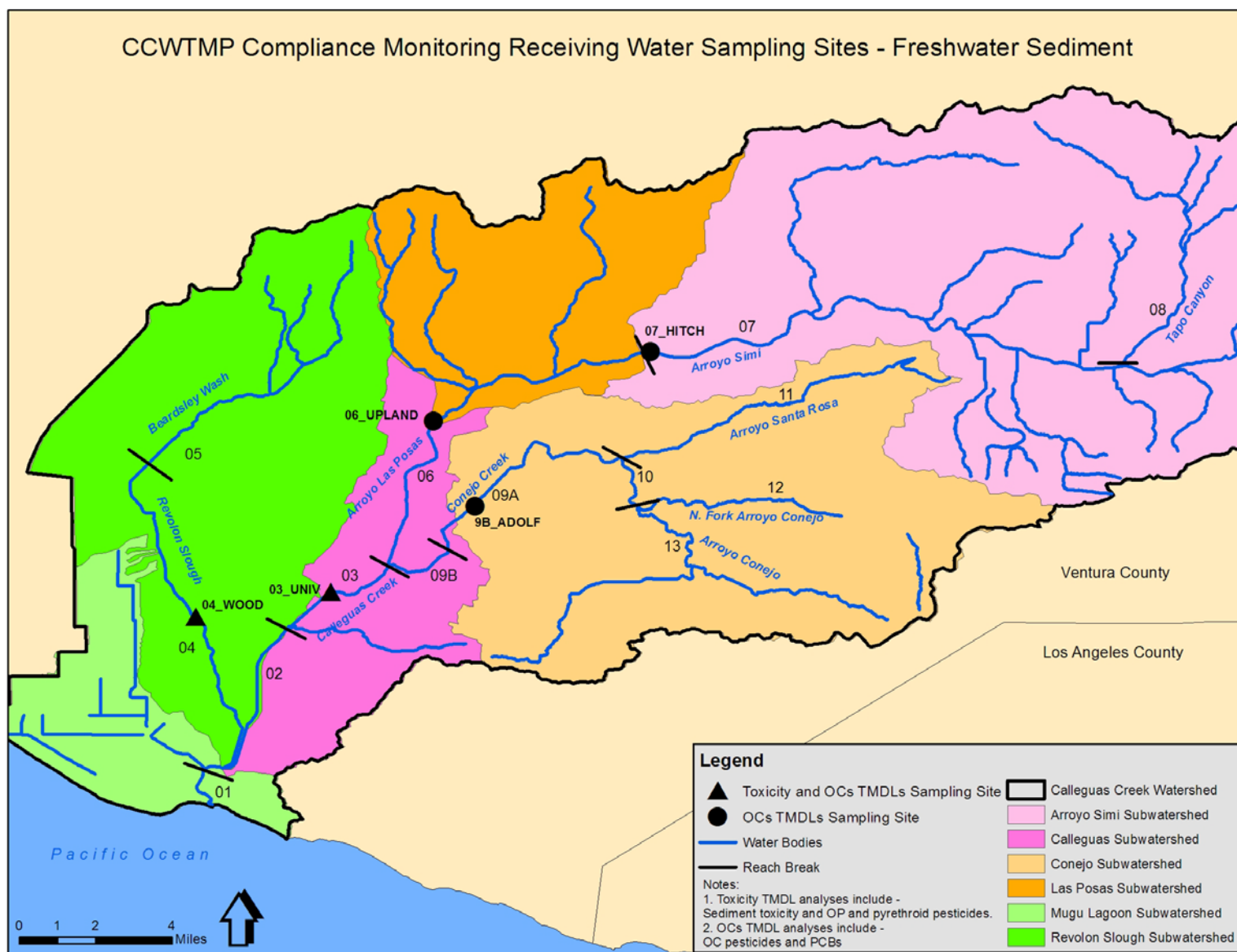


Figure 3. CCWTMP Compliance Monitoring Receiving Water Sampling Sites – Freshwater Sediment

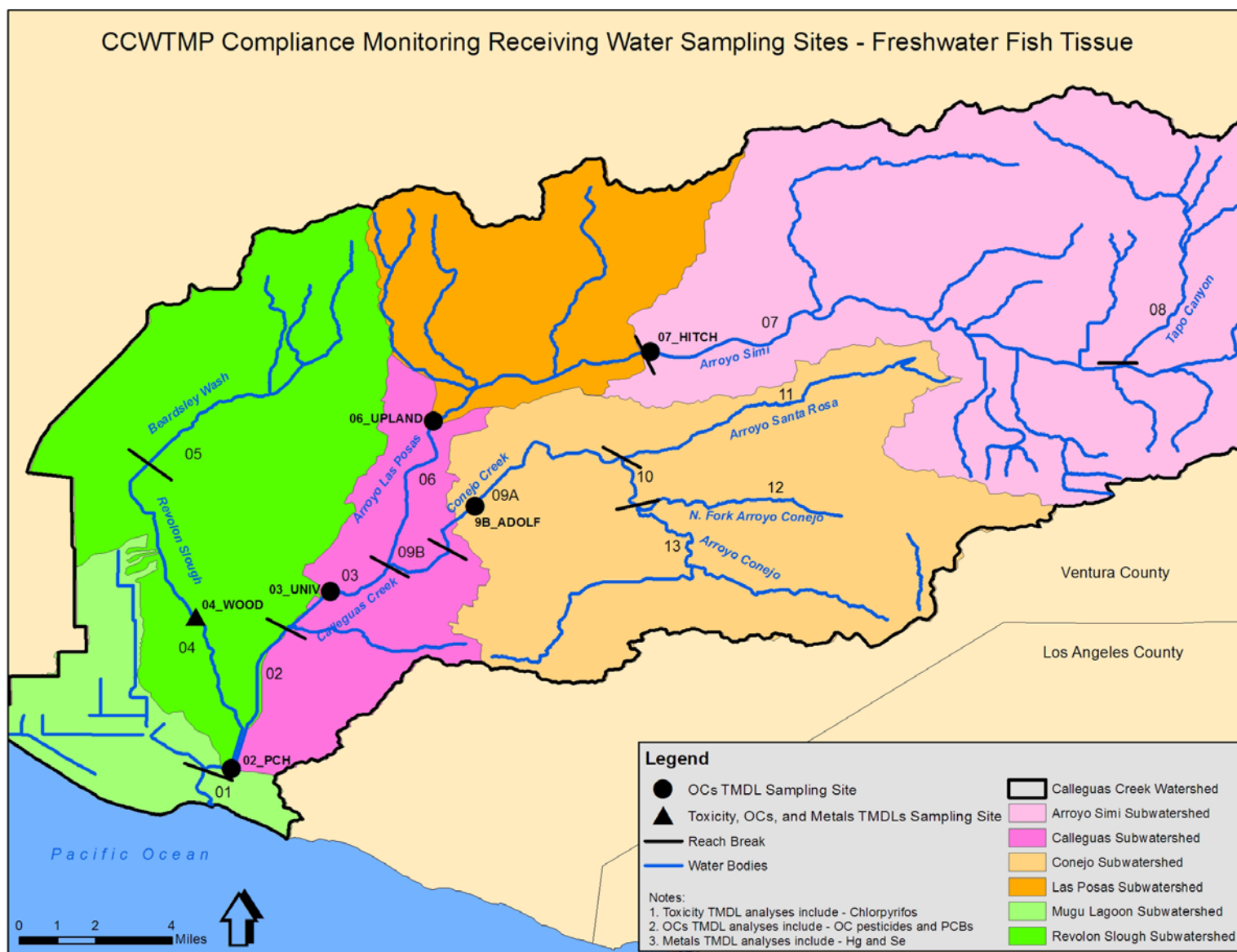


Figure 4. CCWTMP Compliance Monitoring Sampling Sites – Freshwater Fish Tissue

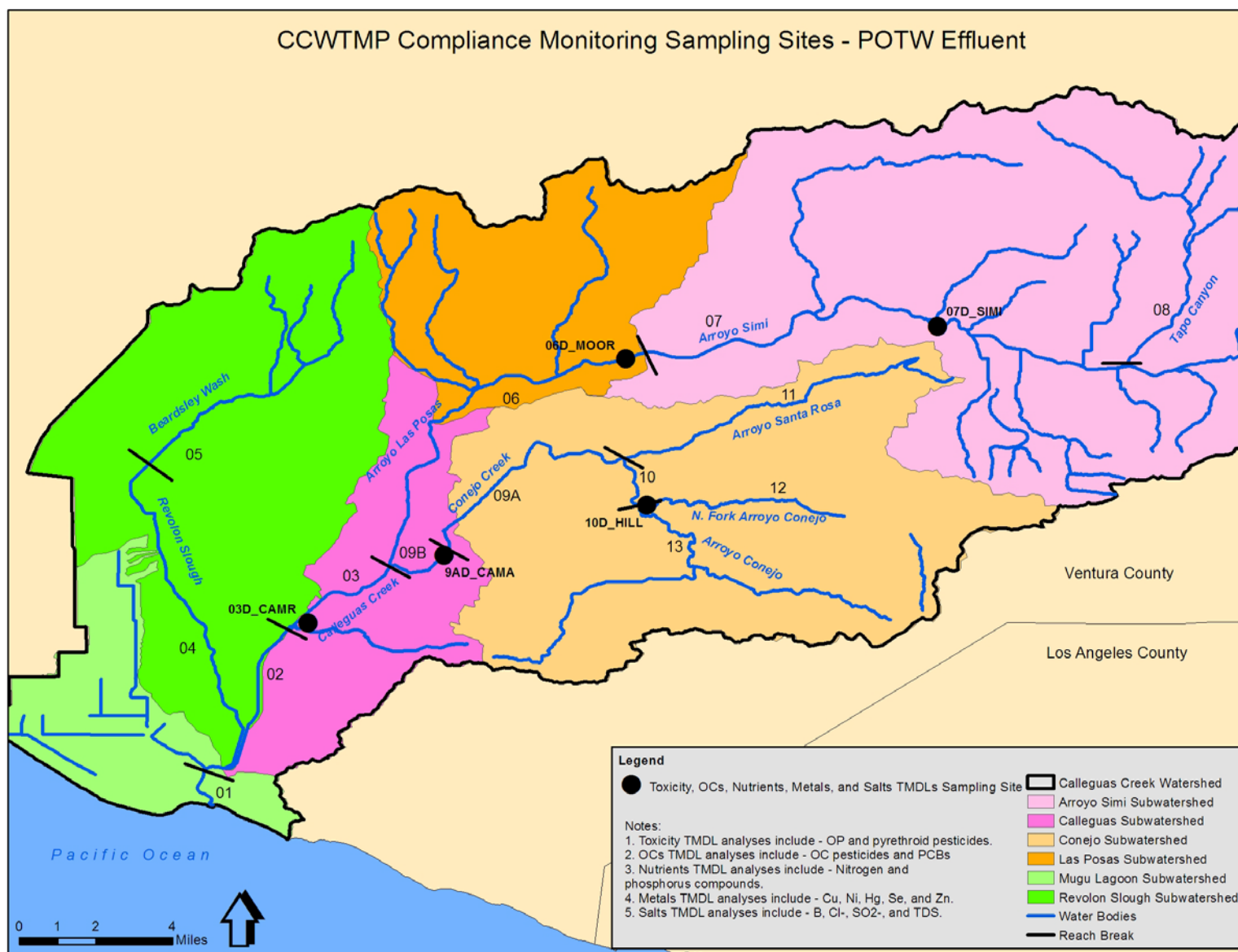


Figure 5. CCWTMP Compliance Monitoring Sampling Sites – POTW Effluent

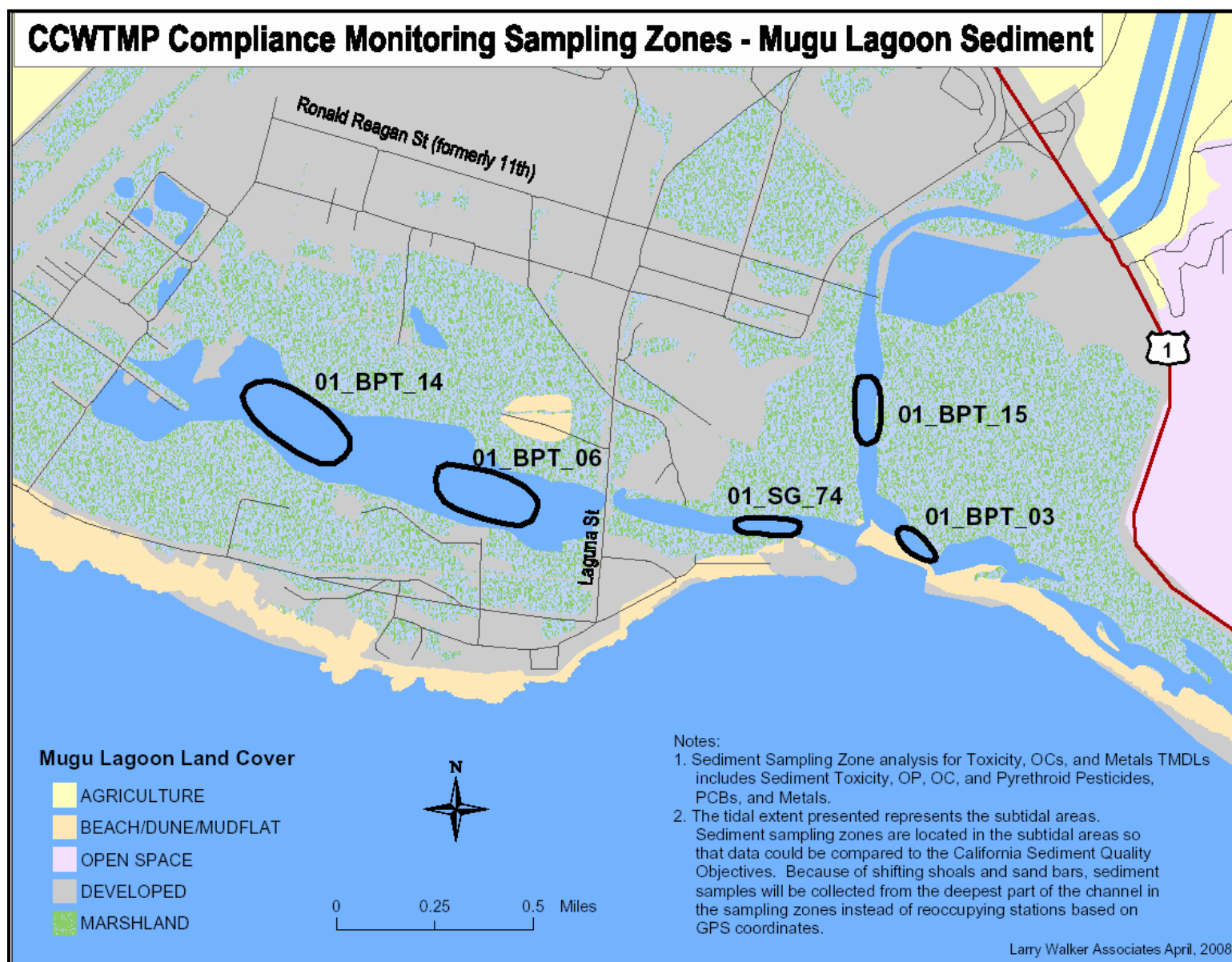


Figure 6. CCWTMP Compliance Monitoring Sampling Zones – Mugu Lagoon Sediment

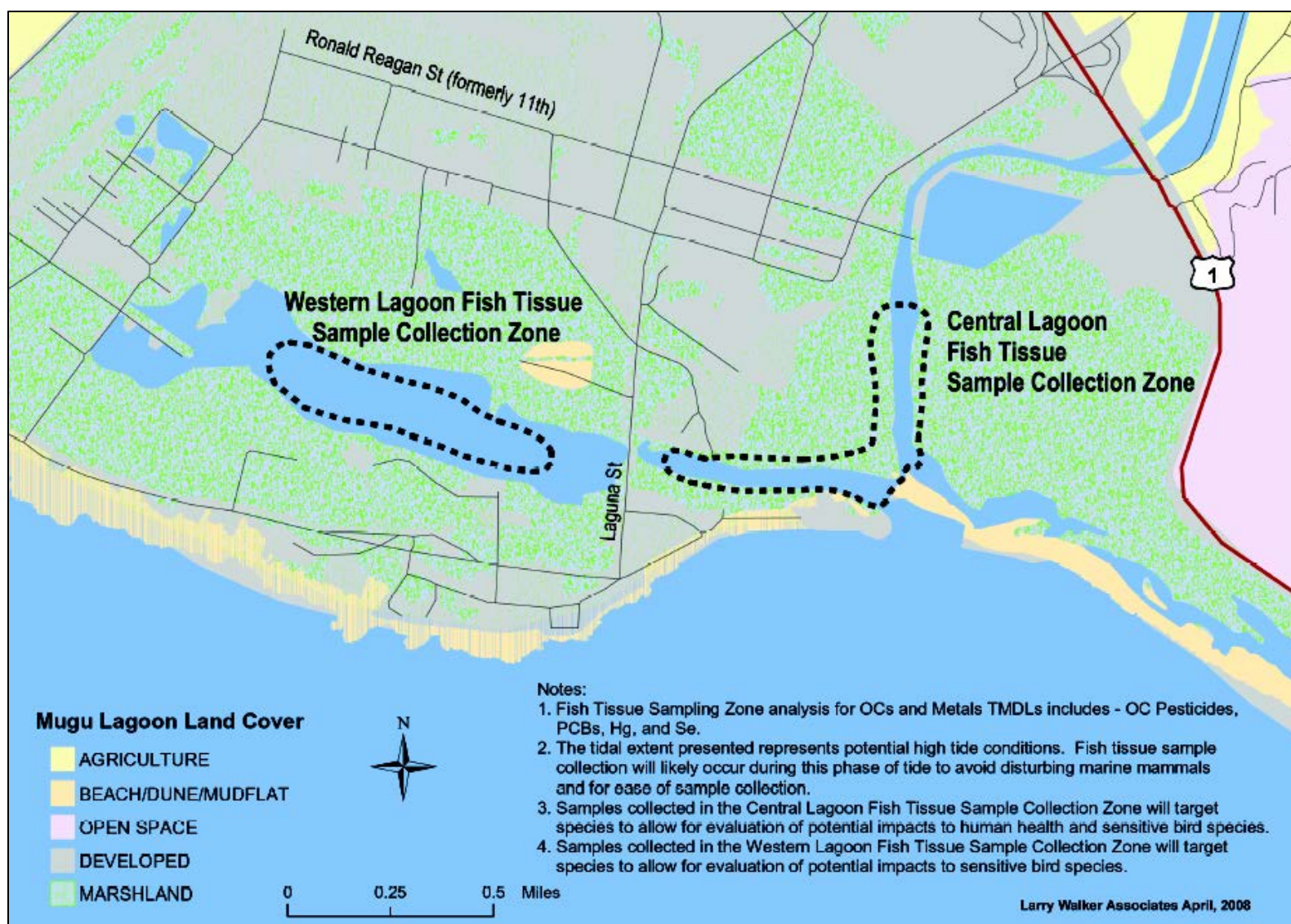


Figure 7. CCWTMP Compliance Monitoring Sampling Zones – Mugu Lagoon Tissue

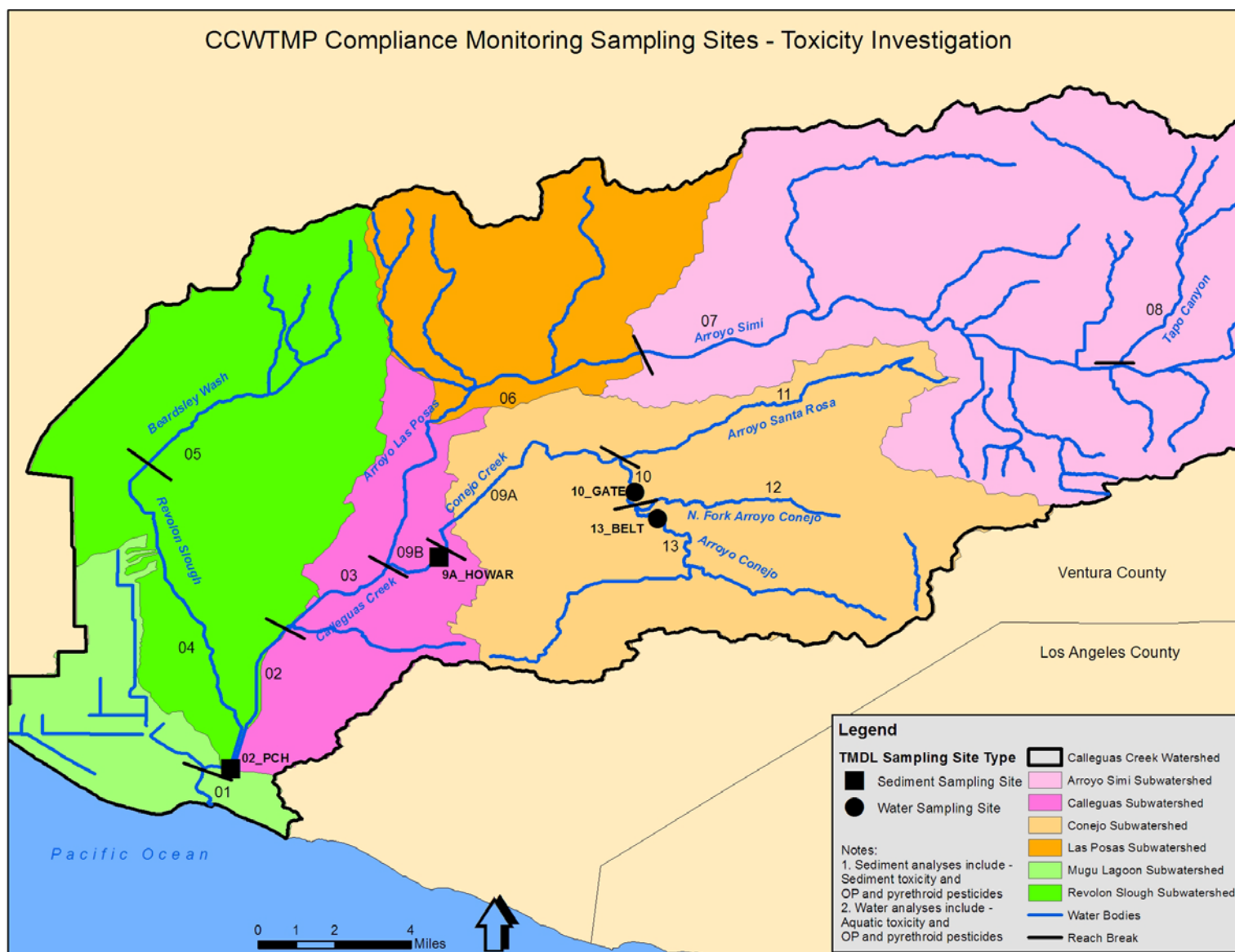


Figure 8. CCWTMP Toxicity Investigation Receiving Water Sampling Sites – Water and Sediment

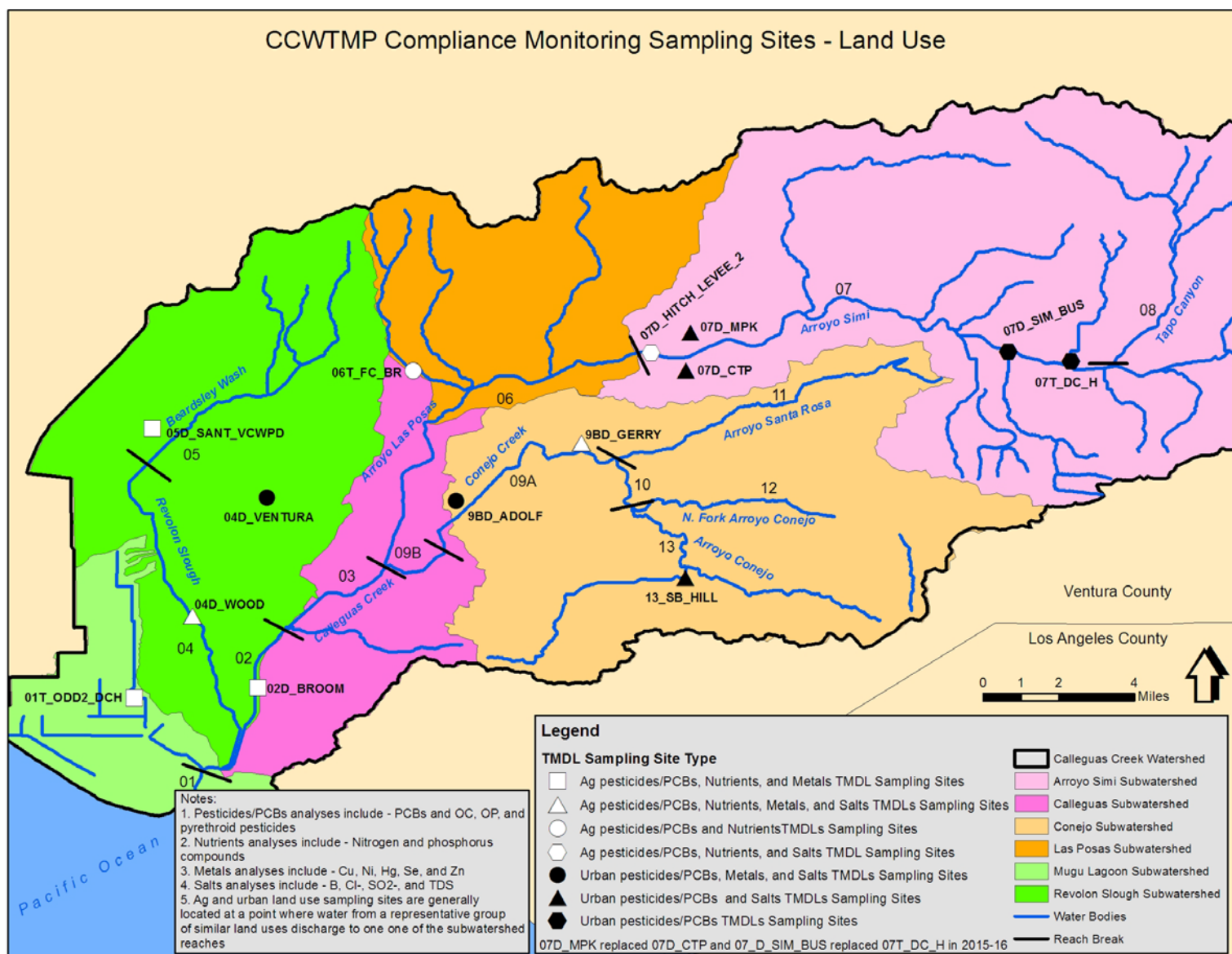


Figure 9. CCWTMP Land Use Sampling Sites

Monitoring Data Summary

To summarize the CCW TMDL monitoring data, box plots have been created for site and constituent combinations representing the data gathered over the entire monitoring program. The data presented includes all constituents with TMDL limits for water or sediment at the sites where the constituents were analyzed. Where TMDL limits are effective, those thresholds have been identified for the sites where they apply. As appropriate, data for constituents with specific dry or wet weather limits are presented separately. Data collected during year nine, which is the reporting period for this document, have been overlain on the box plots as circles. The box plots include all of the data collected during this program (2008-2017). This was done to allow for easy comparison between recent data and what have been collected overall. The ninth year data are presented in tabular form below each box plot. Each figure of box plots presents data from either receiving water sites or land use sites. The receiving water sites are color coded by subwatershed as shown in Table 7. Land use and POTW sites are displayed together and grouped by type as presented in Table 8.

Fish tissue data are not displayed as box plots. Fish tissue data are presented in tables due to the variable number of samples per site each monitoring year and to preserve the species information associated with each sample.

Toxicity data and TIE results are summarized in Appendix D. Summaries for each of the 2016-2017 monitoring events are included as Appendix A.

Some TMDL constituents were never, or are rarely detected and therefore, did not warrant a data summary. The constituents, which were never detected, include:

In Water:

- Endosulfan II
- Endrin

In Sediment:

- Endrin
- BHC, gamma

Rarely detected constituents in water are as follows:

- Aldrin (four detects, none this year)
- Dieldrin (eight detects, none this year)
- Endosulfan I (three detects, none this year)
- BHC, gamma (three detects, none this year)
- Total PCBs (five detects, none this year)

Rarely detected constituents in sediment are as follows:

- Dieldrin (one detect, none this year)

Table 7. Receiving Water Sites Color Coded by Subwatershed

Subwatershed	Reach	Site ID
Mugu Lagoon	Reach 1	01_BPT_14
		01_BPT_15
		01_BPT_3
		01_BPT_6
		01_RR_BR
		01_SG_74
Calleguas	Reach 2	02_PCH
	Reach 3	03_UNIV
	Reach 9B ¹	9A_HOWAR
Revolon Slough	Reach 4	04_WOOD
	Reach 5	05_CENTR
Las Posas	Reach 6 ²	06_UPLAND
Arroyo Simi	Reach 7	07_HITCH
		07_MADER
		07_TIERRA
Conejo	Reach 9A ¹	9B_ADOLF
	Reach 9A ¹	9B_BARON
	Reach 10	10_GATE
	Reach 12	12_PARK
	Reach 13	13_BELT

1. In the 2012 updates to the Los Angeles Region Basin Plan, the reach designations for 9A and 9B were switched. For consistency with the TMDLs and historic site naming conventions, the site names in the annual monitoring reports maintain the original reach designations.
2. In Year 8, sampling crews were denied access to the 06_SOMIS site for four out of six sampling events. The site has been moved approximately one mile downstream to the 06_UPLAND site where crews can access the receiving water without needing private landowner permissions.

Table 8. Land Use and POTW Sites Color Coded by Type

Urban Land Use (MS4) Sites:	
Reach 4	04D_VENTURA
Reach 7 ¹	07D_MPK ¹
Reach 7 ¹	07D_SIM_BUS ¹
Reach 9A ²	9BD_ADOLF ²
Reach 13	13_SB_HILL
Ag Land Use Sites:	
Reach 1	01T_ODD2_DCH
Reach 2	02D_BROOM
Reach 4	04D_WOOD
Reach 5	05D_SANT_VCWPD
Reach 6	06T_FC_BR
Reach 7	07D_HITCH_LEVEE_2
Reach 9A ²	9BD_GERRY ²
POTW Sites:	
Reach 7	07D_SIMI
Reach 9B ²	9AD_CAMA ²
Reach 10	10D_HILL

1. In the 2014 updates to the QAPP, the 07D_MPK replaced the 07D_CTP site to be consistent with the Moorpark MS4 monitoring site and the 07D_SIM_BUS site replaced the 07T_DC_H site to be consistent with the Simi Valley MS4 monitoring site. Past data from the original sites can be found in previous Annual Monitoring Reports, only current site data is provided in the following plots.
2. In the 2012 updates to the Los Angeles Region Basin Plan, the reach designations for 9A and 9B were switched. For consistency with the TMDLs and historic site naming conventions, the site names in the annual monitoring reports maintain the original reach designations.

OC PESTICIDES TMDL DATA SUMMARY

The following figures present OC pesticides data in both water and sediment. Presently, only the POTWs have effective final limits in water, but data for all sites is provided since the TMDL specifies final targets for OC pesticides in water. Effective interim allocations for agriculture and waste load allocations for urban dischargers are provided in the appropriate OC pesticides in sediment figures. Data collected during year nine, which is the reporting period for this document, have been overlain on the box plots as circles. The box plots include all of the data collected during this program (2008-2017). This was done to allow for easy comparison between recent data and what have been collected overall. The ninth year data are presented in tabular form below each box plot. Bolded values in the tables within each figure indicate the concentration was above the applicable limits for that constituent; italicized values in the tables within each figure indicate the concentration was detected but not quantifiable (DNQ); values in the tables within each figure with a “<” preceding it, indicate the constituent was not detected

(ND) at MDL for that constituent; values identified as “--” in the tables indicate no samples were collected at those sites for those events.

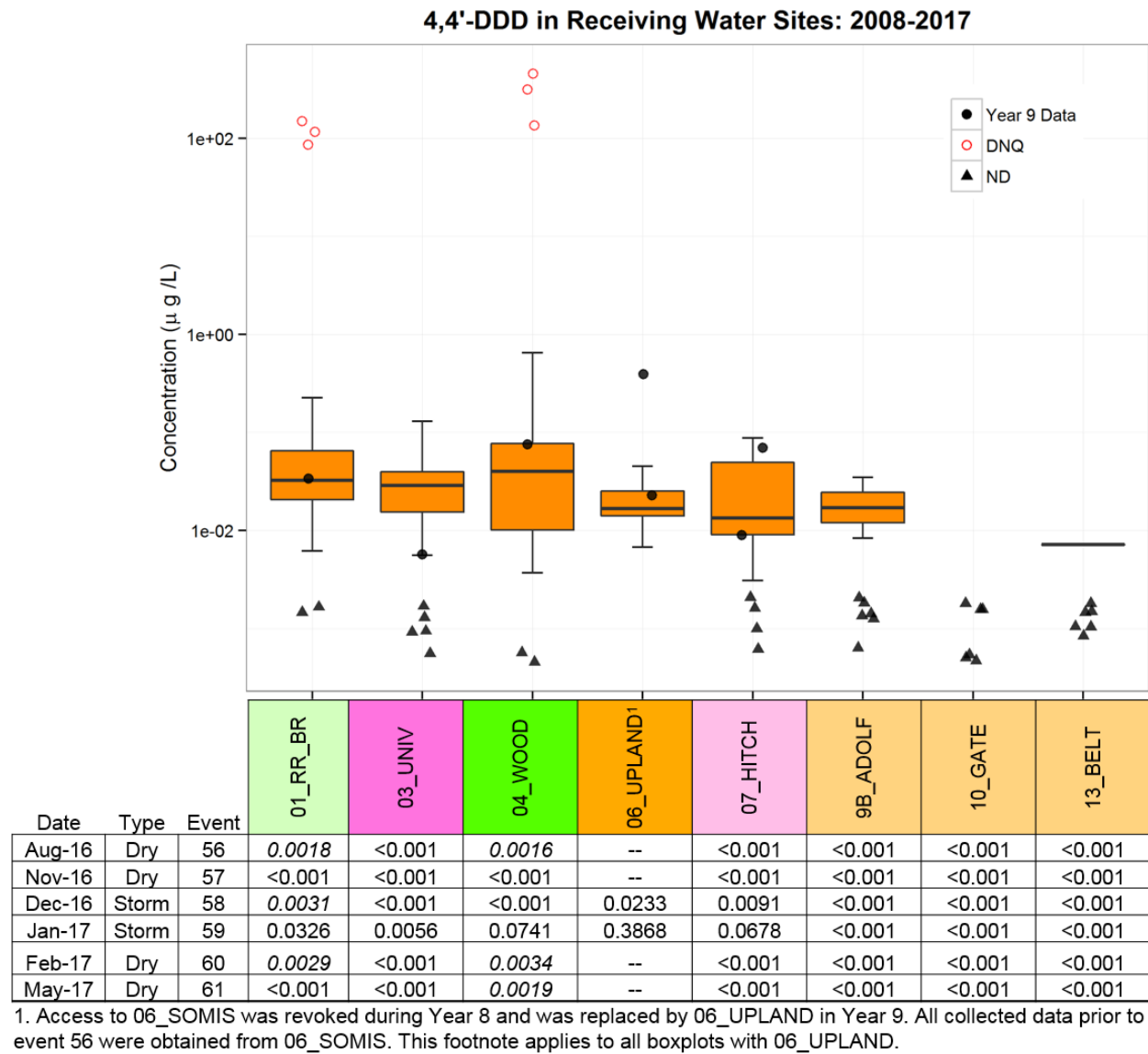


Figure 10. 4,4'-DDD Water Column Concentrations in Receiving Water Sites: 2008-2017

4,4'-DDD in Water from Urban, Ag, & POTW Sites: 2008-2017

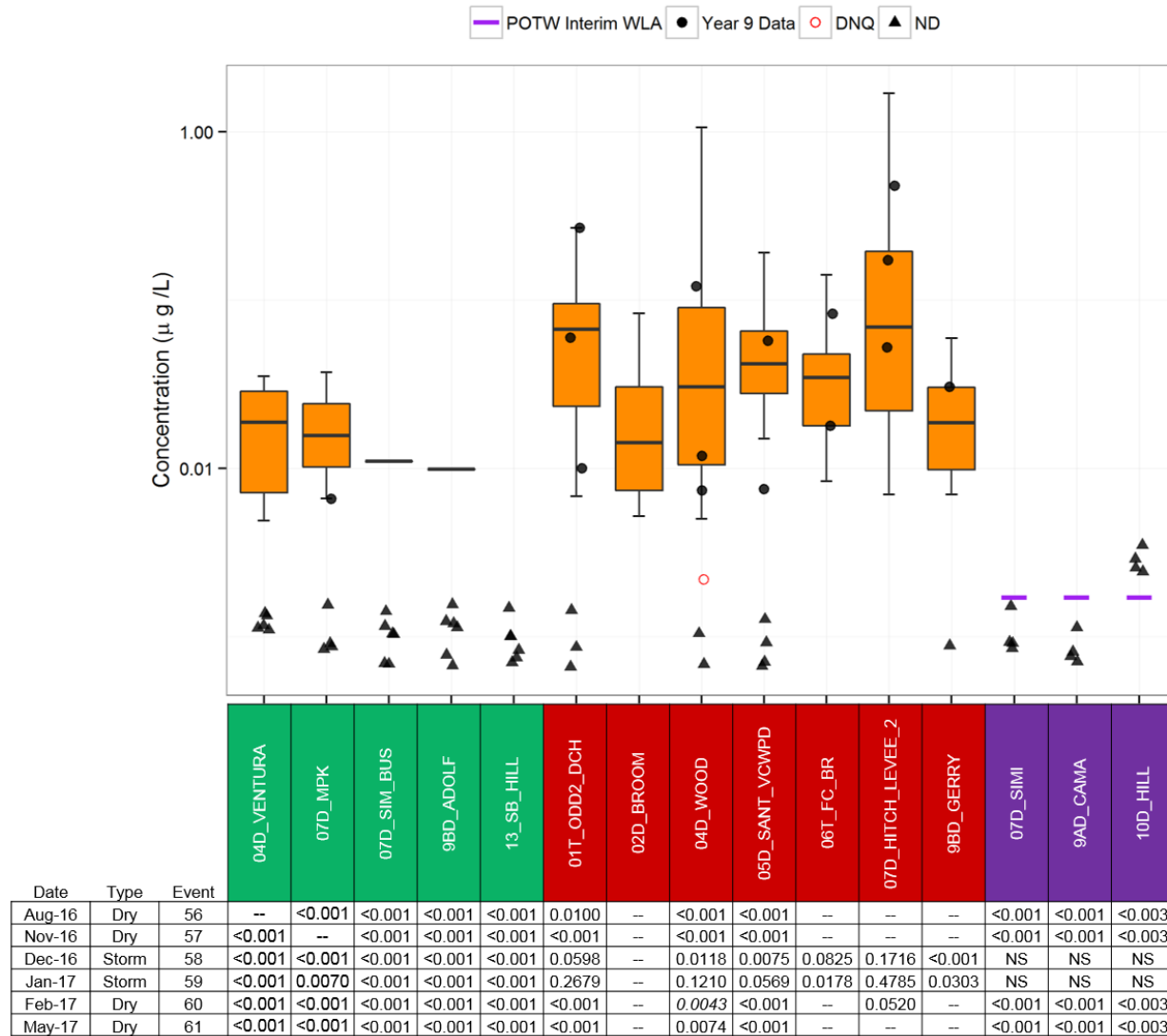


Figure 11. 4,4'-DDD Water Column Concentrations in Urban, Ag, and POTW Sites: 2008-2017

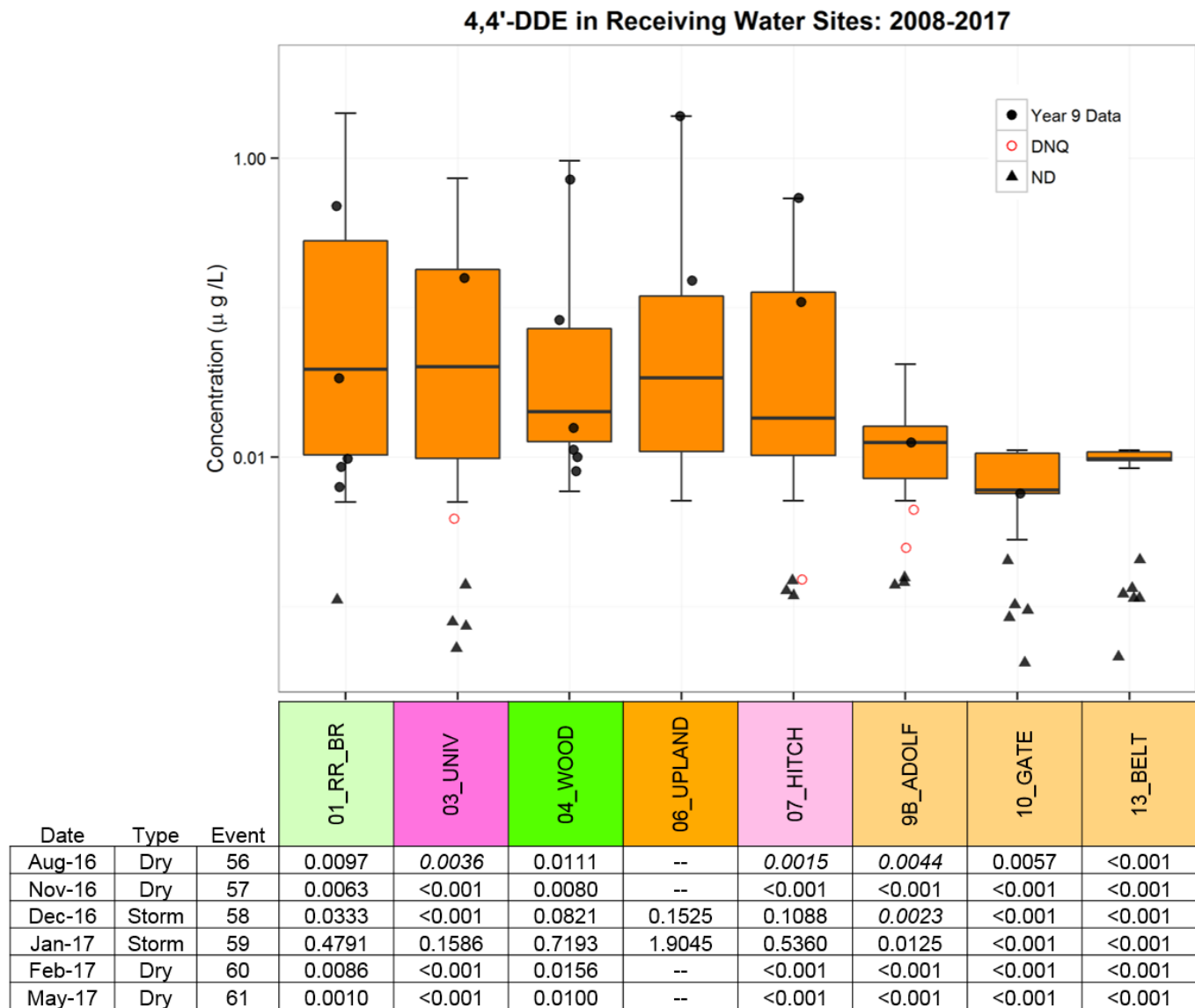


Figure 12. 4,4'-DDE Water Column Concentrations in Receiving Water Sites: 2008-2017

4,4'-DDE in Water from Urban, Ag, & POTW Sites: 2008-2017

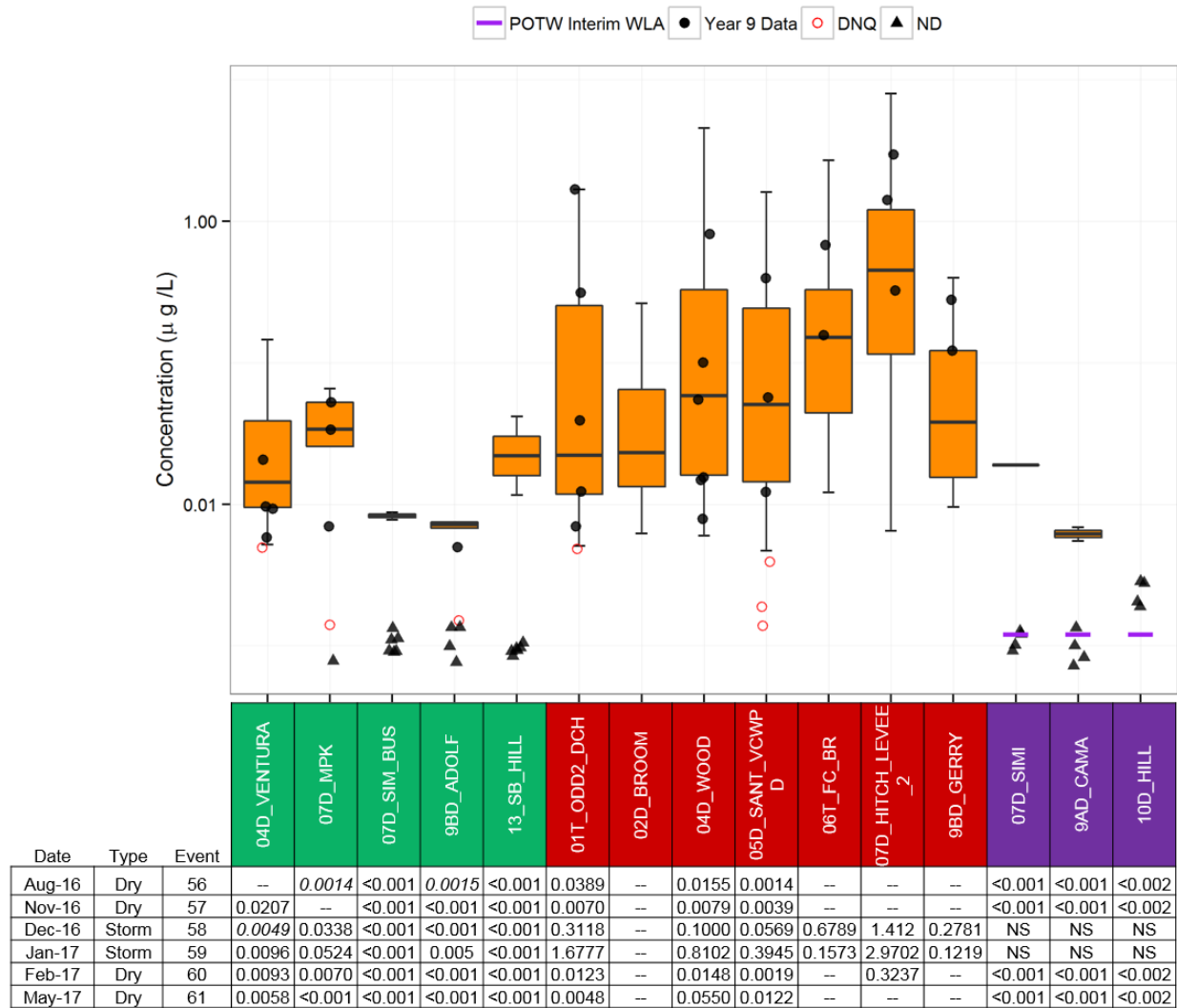


Figure 13. 4,4'-DDE Water Column Concentrations in Urban, Ag, and POTW Sites: 2008-2017

4,4'-DDT in Receiving Water Sites: 2008-2017

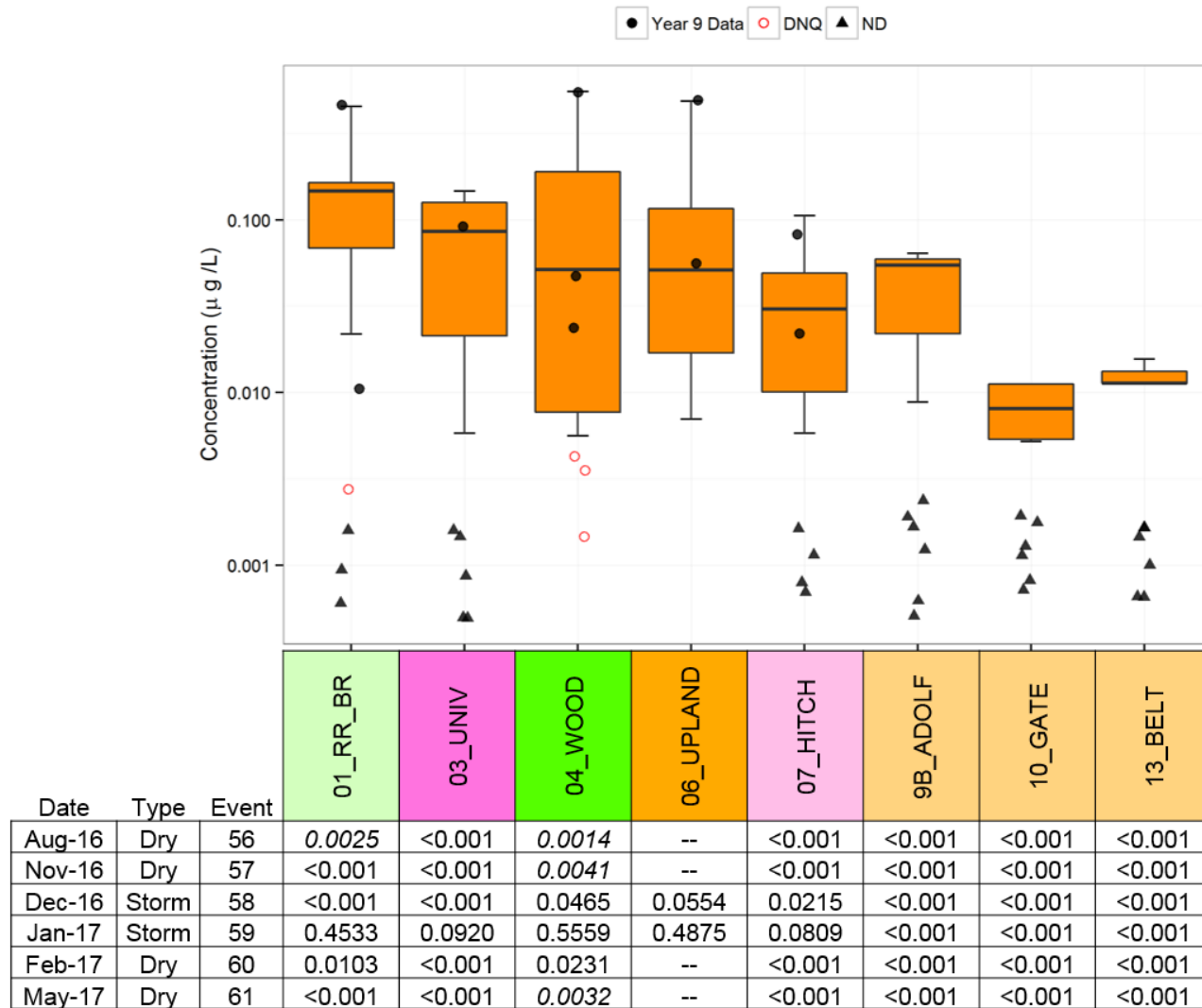


Figure 14. 4,4'-DDT Water Column Concentrations in Receiving Water Sites: 2008-2017

4,4'-DDT in Water from Urban, Ag, & POTW Sites: 2008-2017

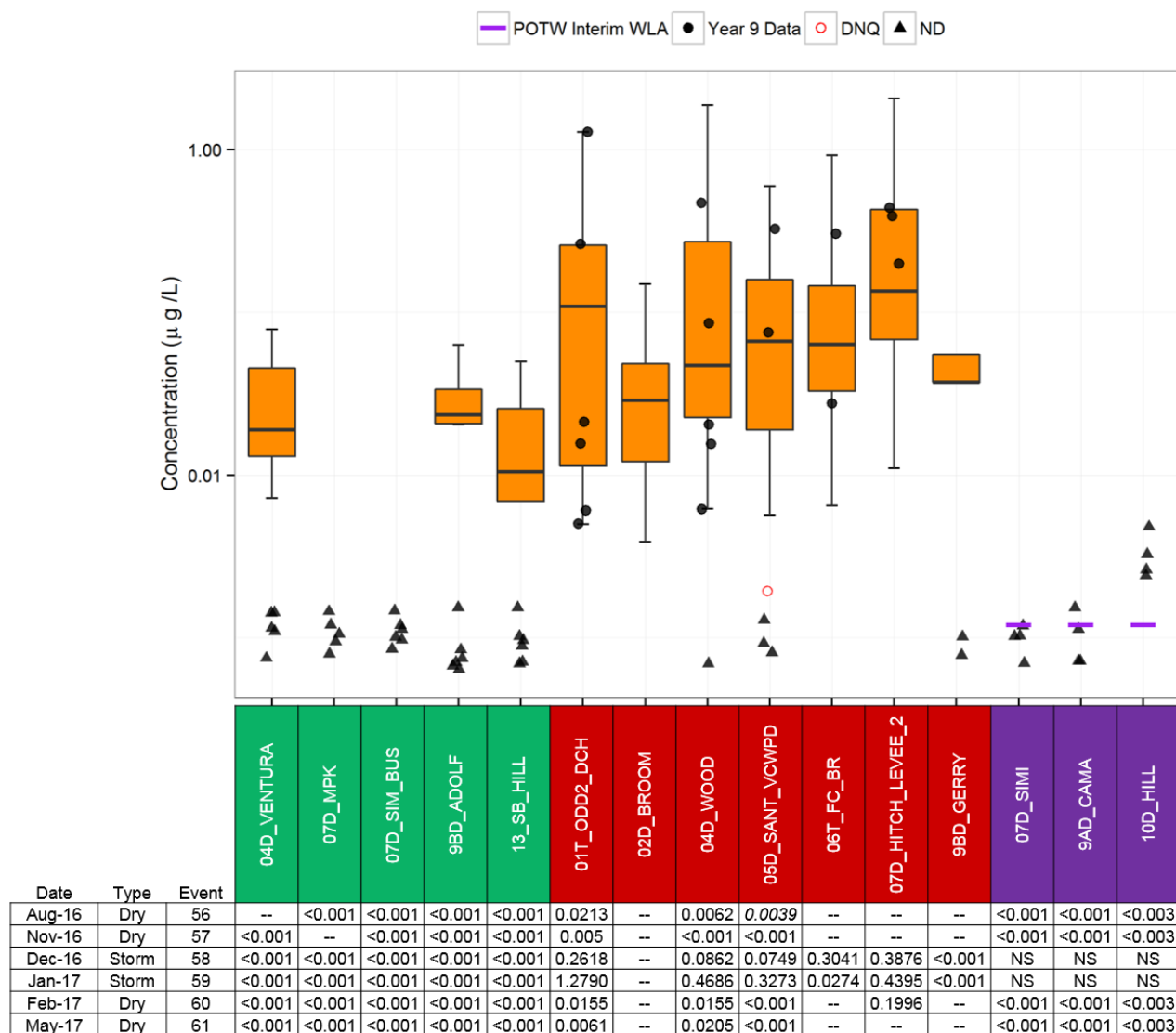


Figure 15. 4,4'-DDT Water Column Concentrations in Urban, Ag, and POTW Sites: 2008-2017

Total Chlordane in Receiving Water Sites: 2008-2017

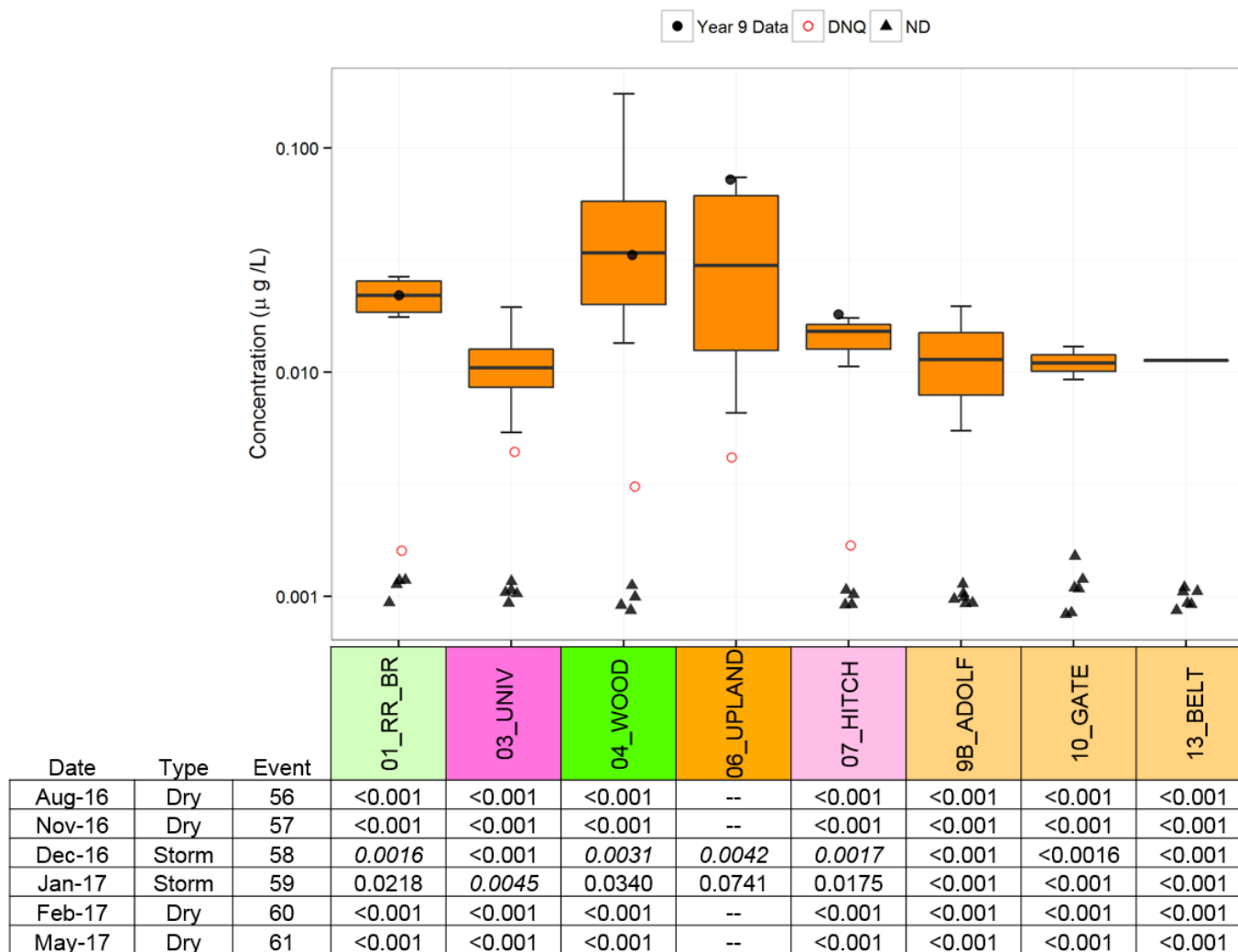


Figure 16. Total Chlordane Water Column Concentrations in Receiving Water Sites: 2008-2017

Total Chlordane in Water from Urban, Ag, & POTW Sites: 2008-2017

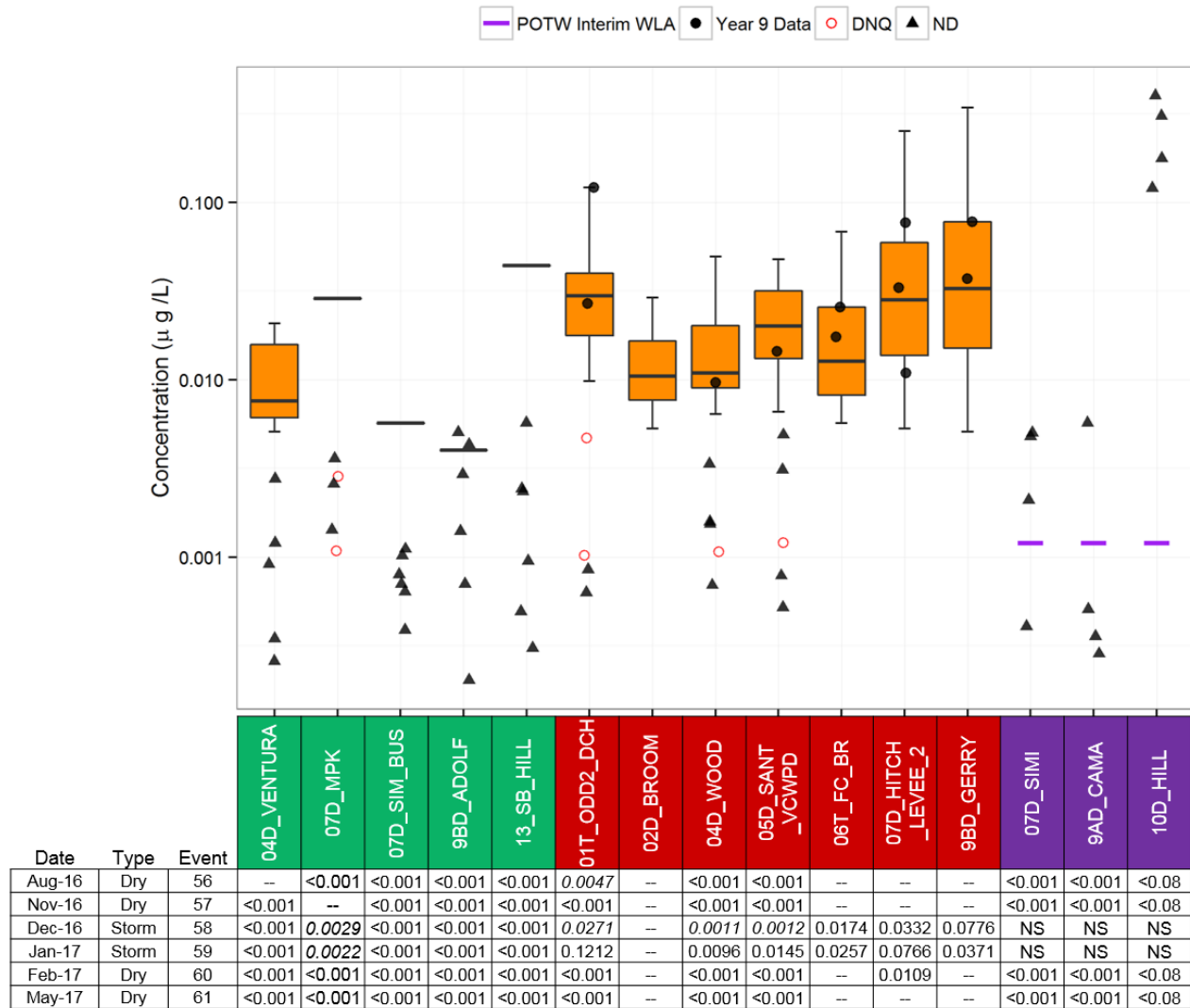


Figure 17. Total Chlordane Water Column Concentrations in Urban, Ag, and POTW Sites: 2008-2017

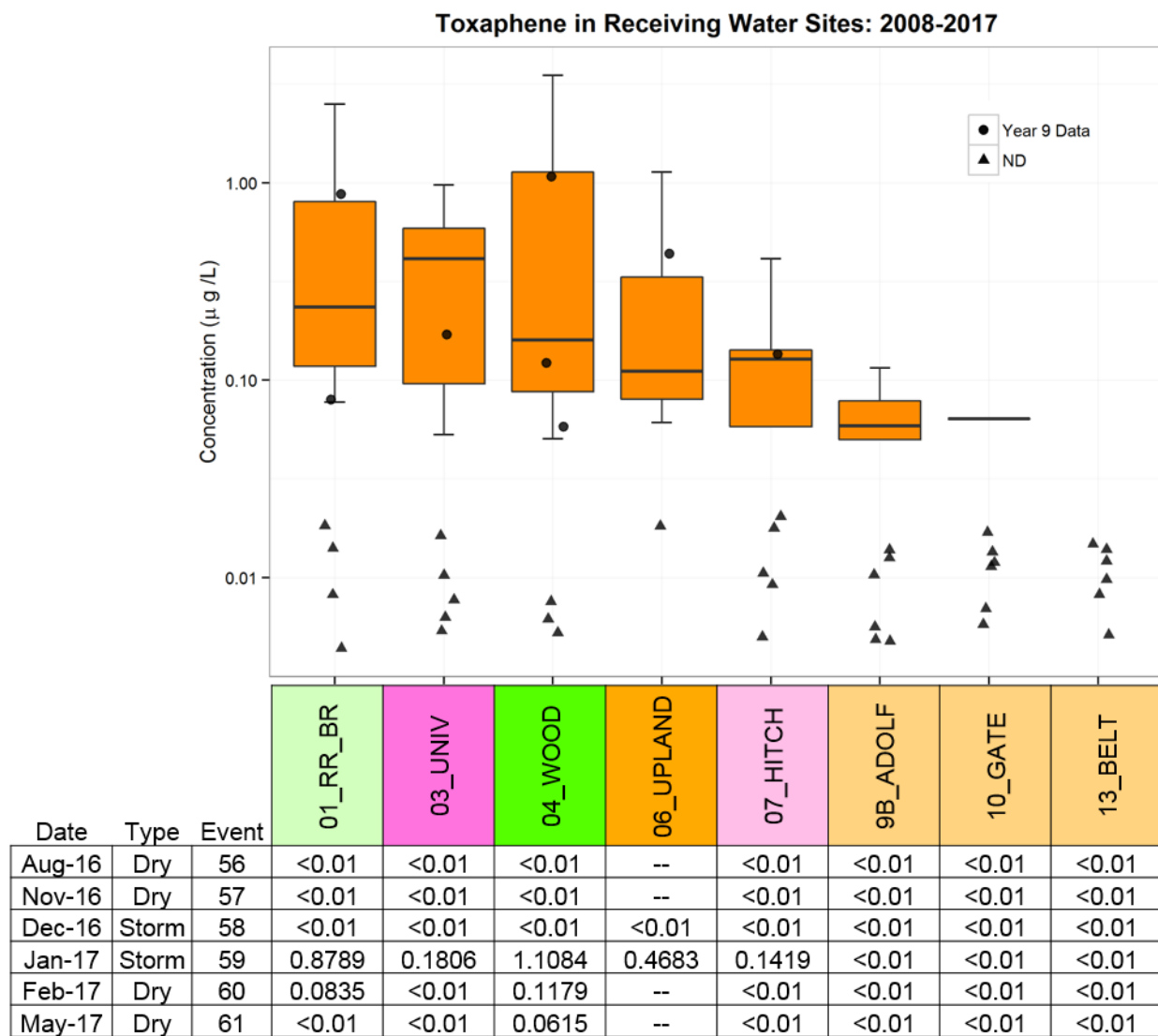


Figure 18. Toxaphene Water Column Concentrations in Receiving Water Sites: 2008-2017

Toxaphene in Water from Urban, Ag, & POTW Sites: 2008-2017

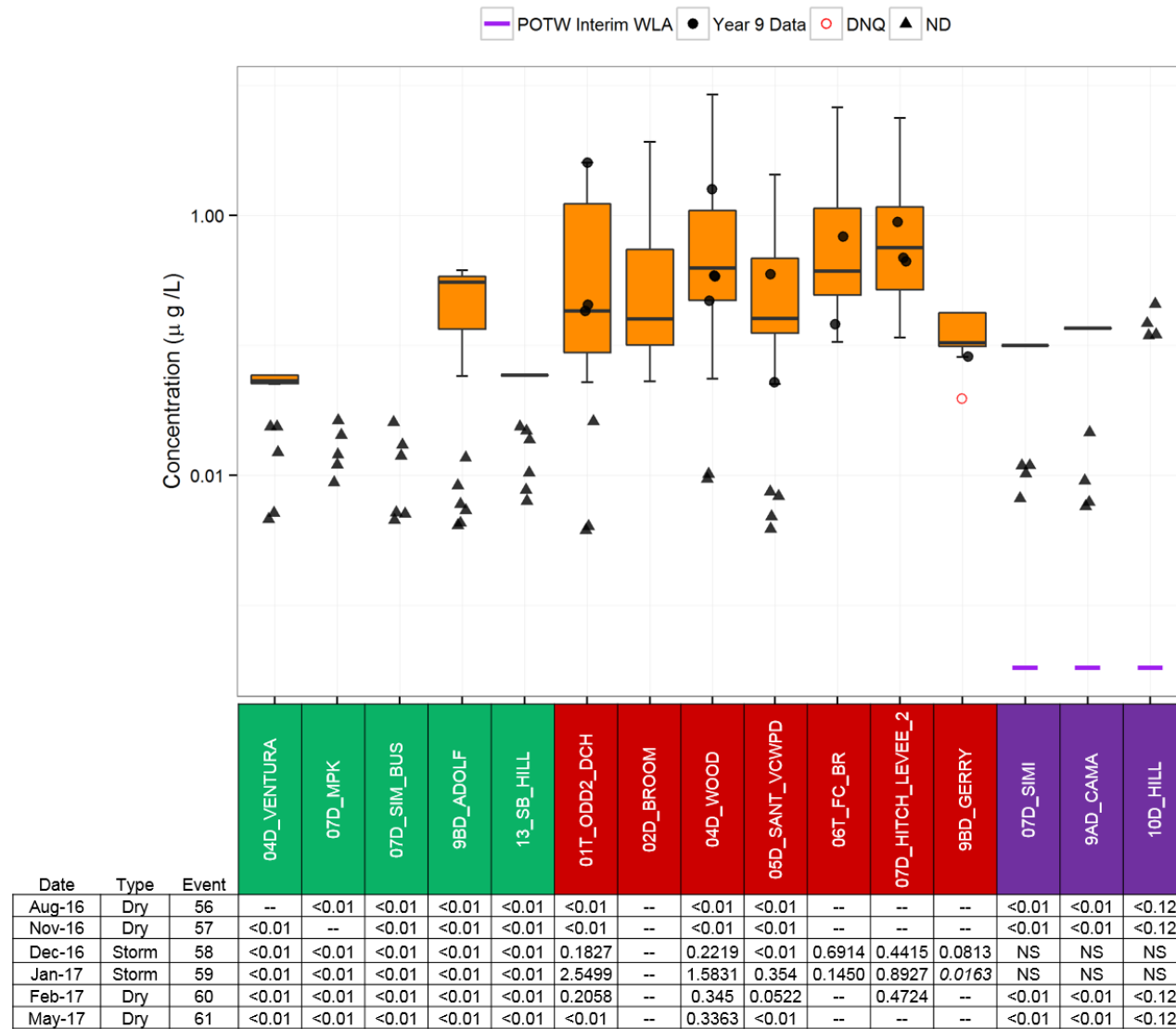


Figure 19. Toxaphene Water Column Concentrations in Urban, Ag, and POTW Sites: 2008-2017

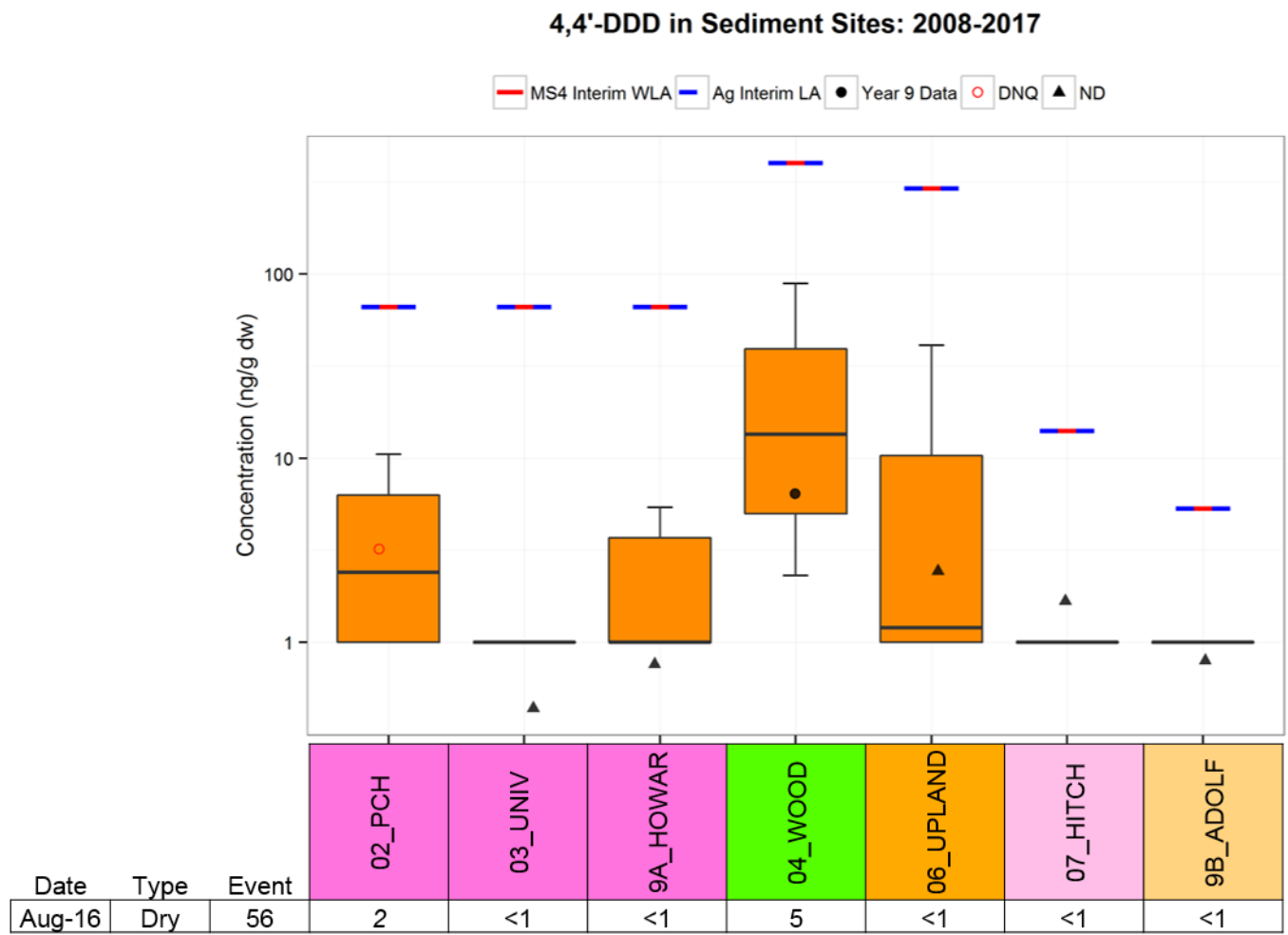


Figure 20. 4,4'-DDD Sediment Concentrations in Receiving Water Sites: 2008-2017

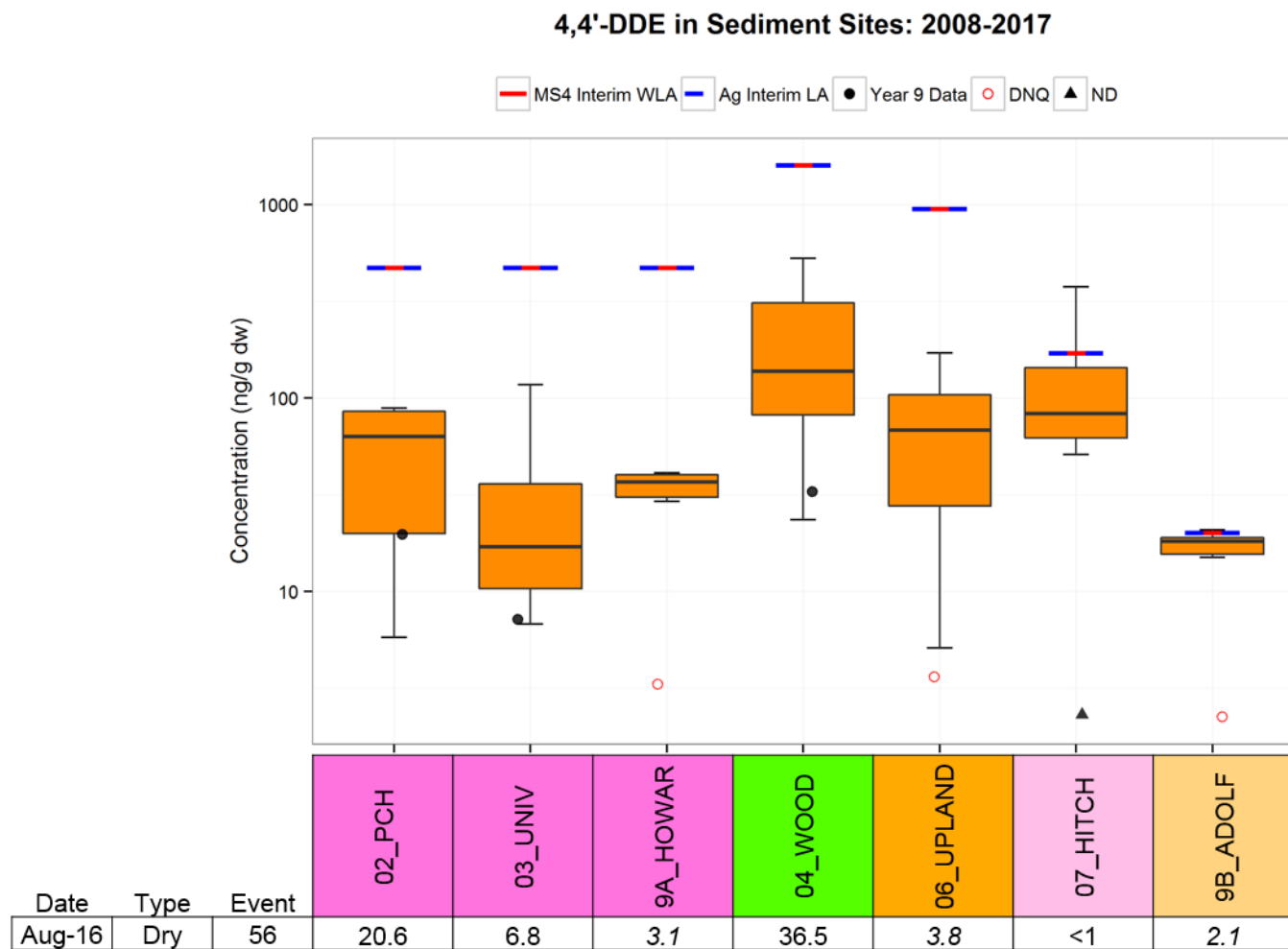


Figure 21. 4,4'-DDE Sediment Concentrations in Receiving Water Sites: 2008-2017

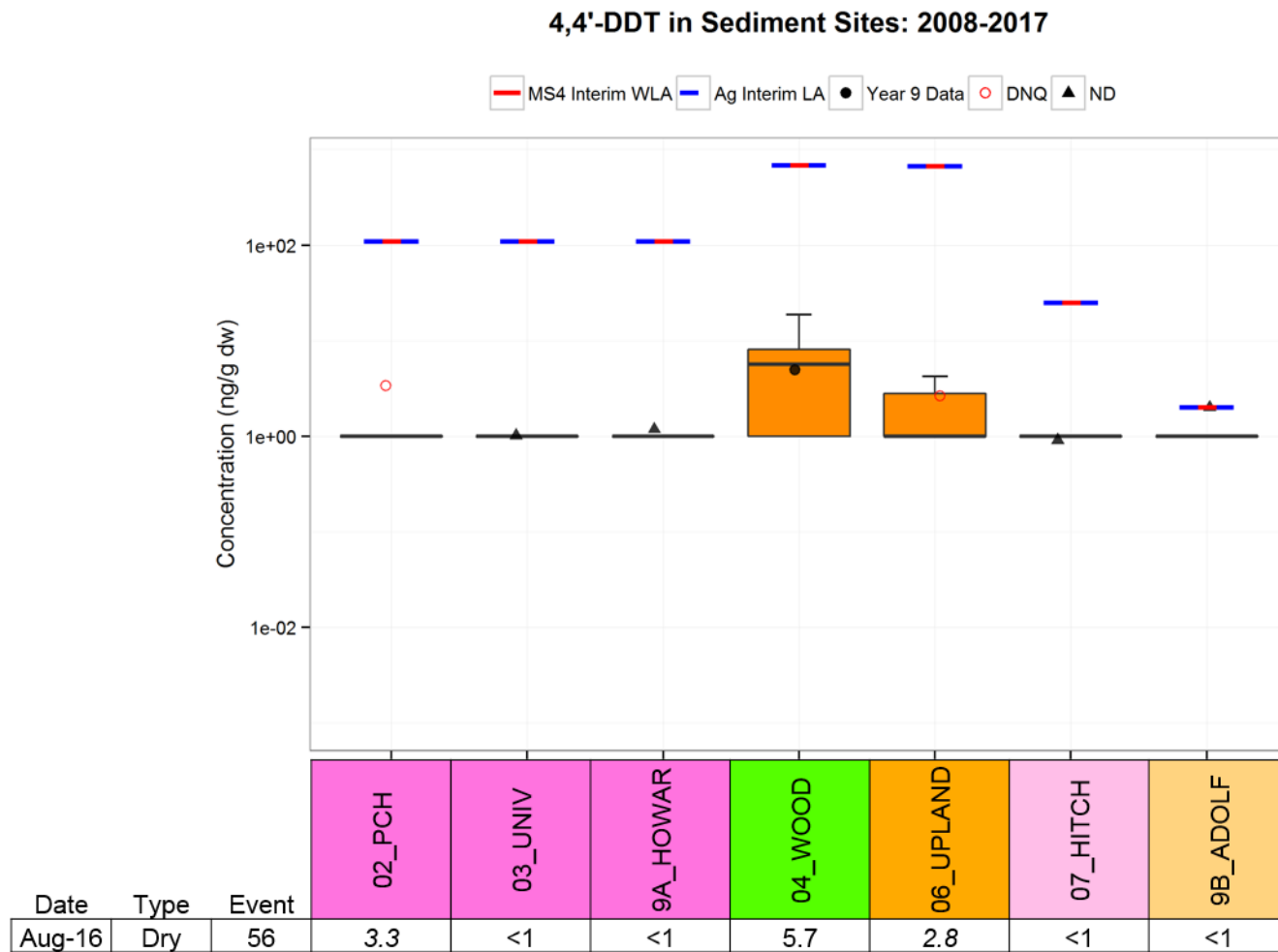


Figure 22. 4,4'-DDT Sediment Concentrations in Receiving Water Sites: 2008-2017

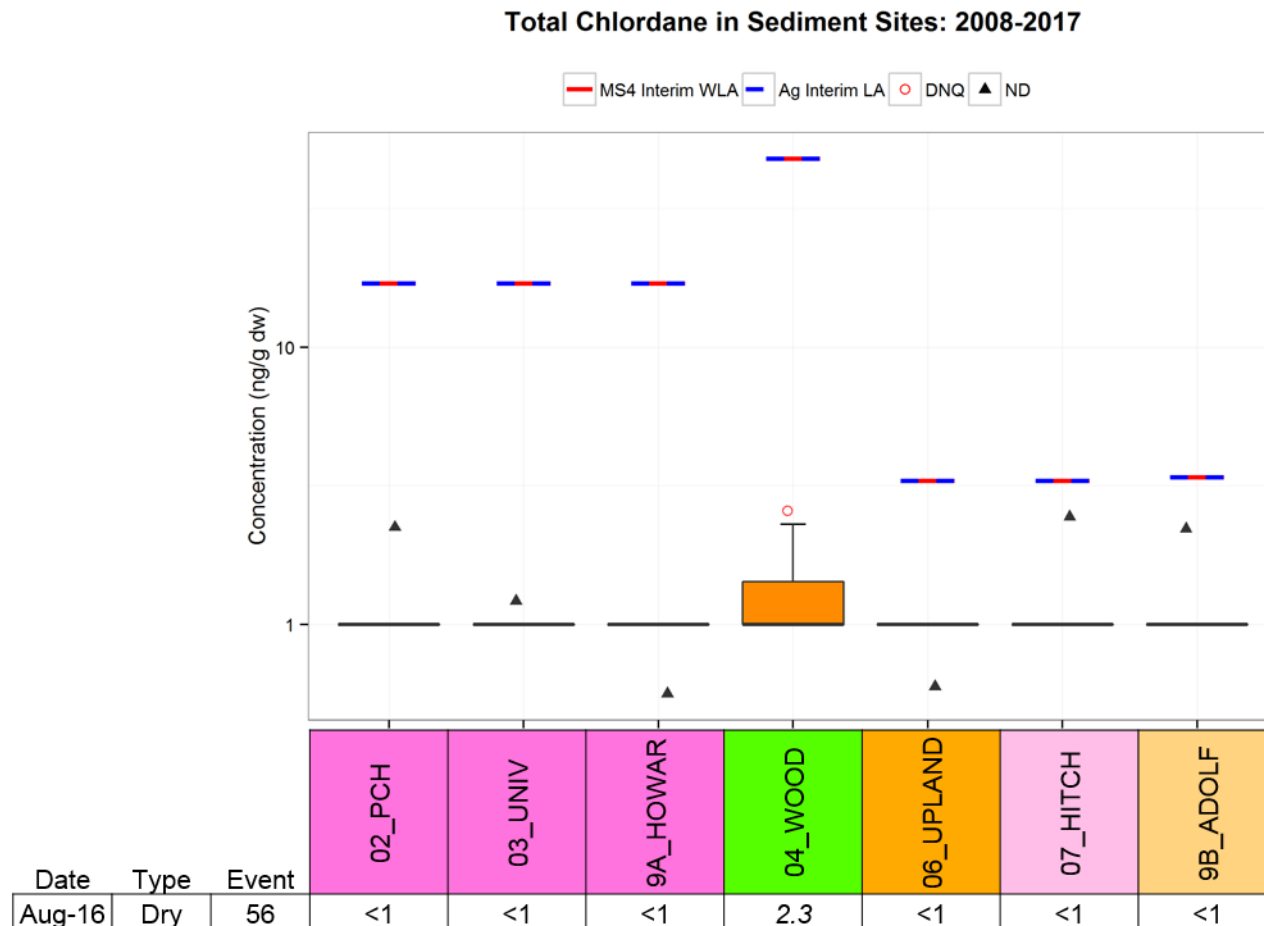


Figure 23. Total Chlordane Sediment Concentrations in Receiving Water Sites: 2008-2017

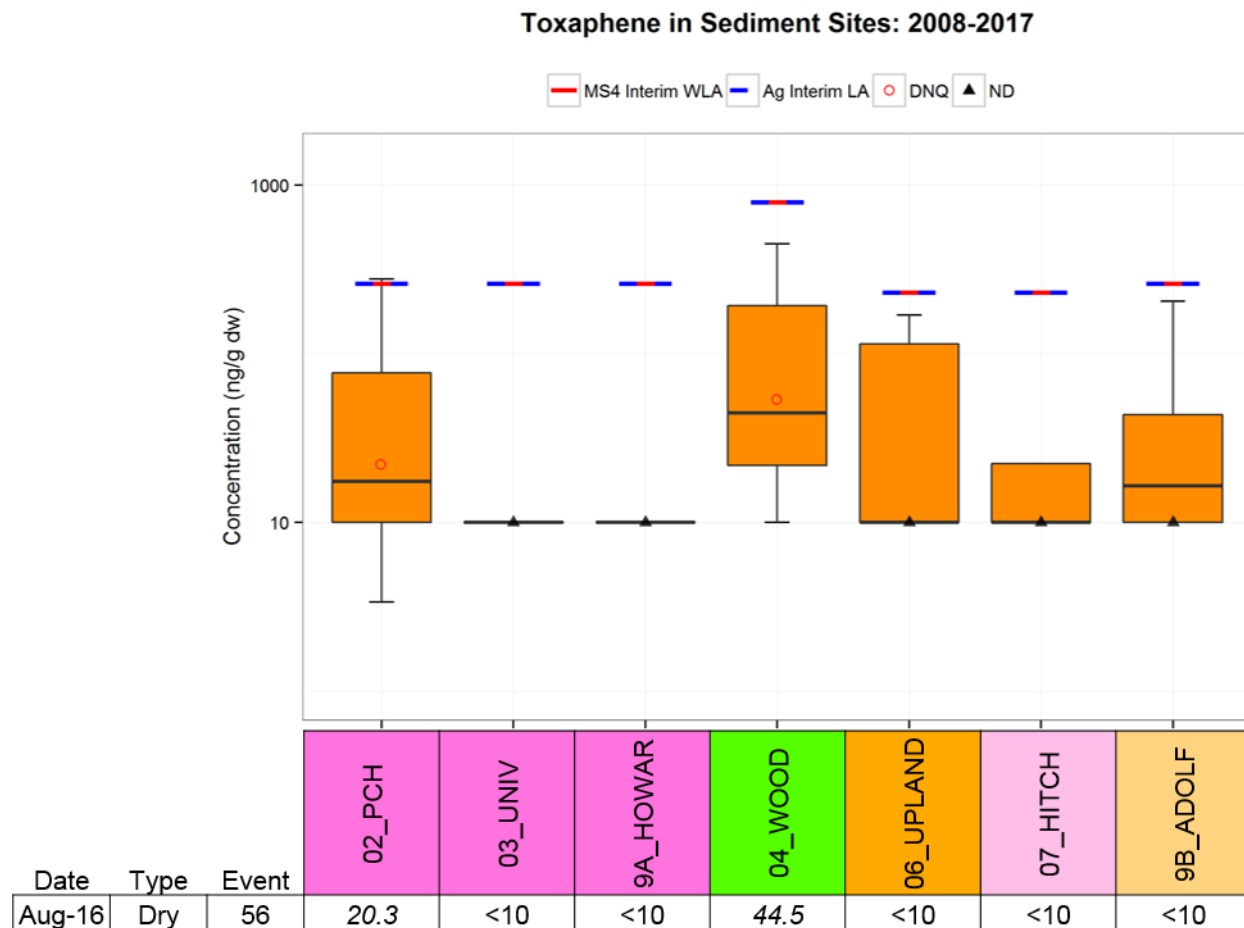


Figure 24. Toxaphene Sediment Concentrations in Receiving Water Sites: 2008-2017

METALS TMDL DATA SUMMARY

The following figures present metals water quality data from receiving water, agricultural, urban, and POTW monitoring sites. Effective total metals interim load allocations and waste load allocations differ for wet and dry weather, therefore the data for each of these conditions is provided separately. Interim POTW waste load allocations for total mercury are in load form and are therefore calculated and presented in the exceedance evaluation section of the report. The Metals TMDL specifies final targets for both dissolved copper and zinc. Dissolved concentrations for these two metals have been plotted for reference. Data collected during year nine, which is the reporting period for this document, have been overlain on the box plots as circles. The box plots include all of the data collected during this program (2008-2017). This was done to allow for easy comparison between recent data and what have been collected overall. The ninth year data are presented in tabular form below each box plot. Bolded values in the tables within each figure indicate the concentration was above the applicable limits for that constituent. Italicized values in the tables within each figure indicate the concentration was DNQ. Values in the tables within each figure with a “<” preceding them, indicate the constituent was ND at the MDL for that constituent. Values identified as “--” in the tables indicate no samples were collected at those sites for those events.

Total Copper in Receiving Water Sites: 2008-2017 Dry Weather

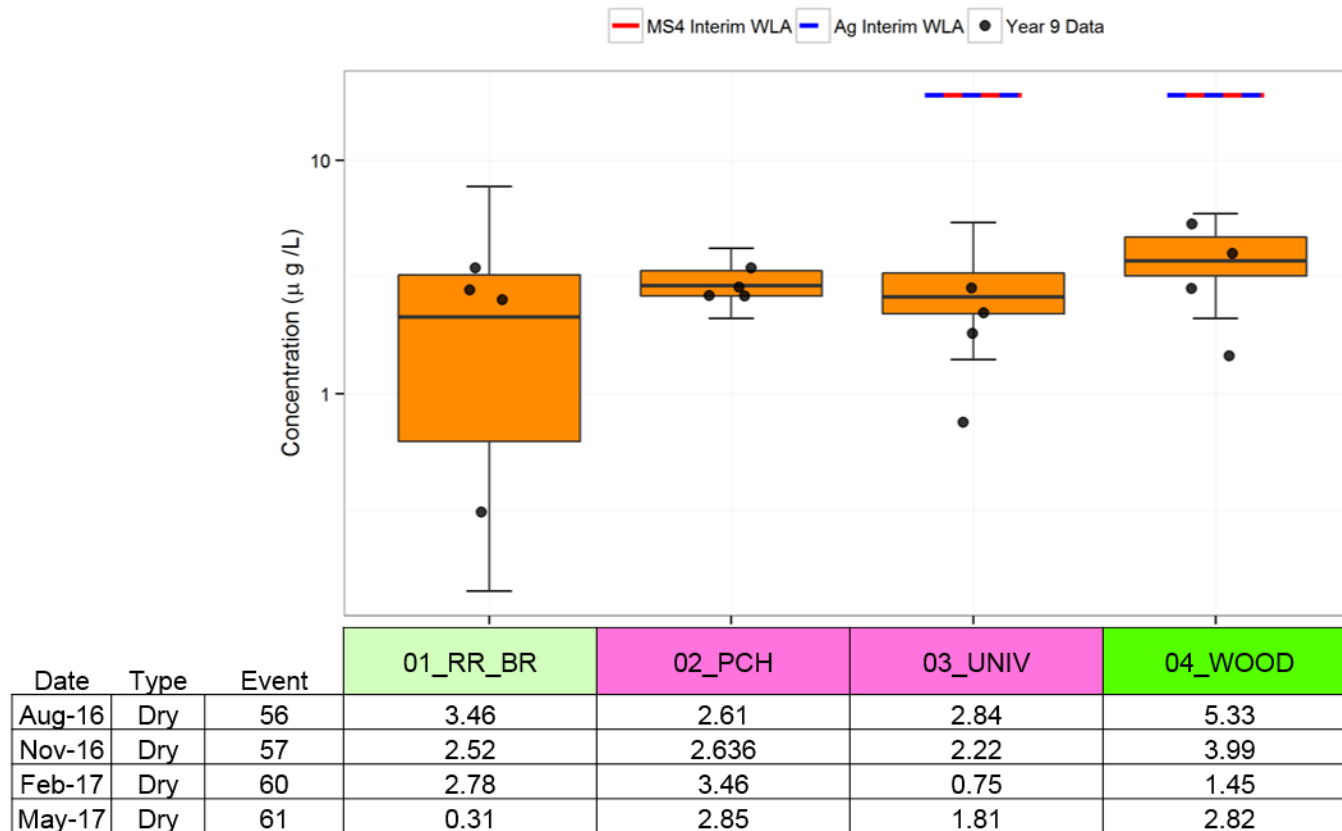


Figure 25. Total Copper Dry Weather Concentrations in Receiving Water Sites: 2008-2017

Total Copper in Receiving Water Sites: 2008-2017 Stormwater

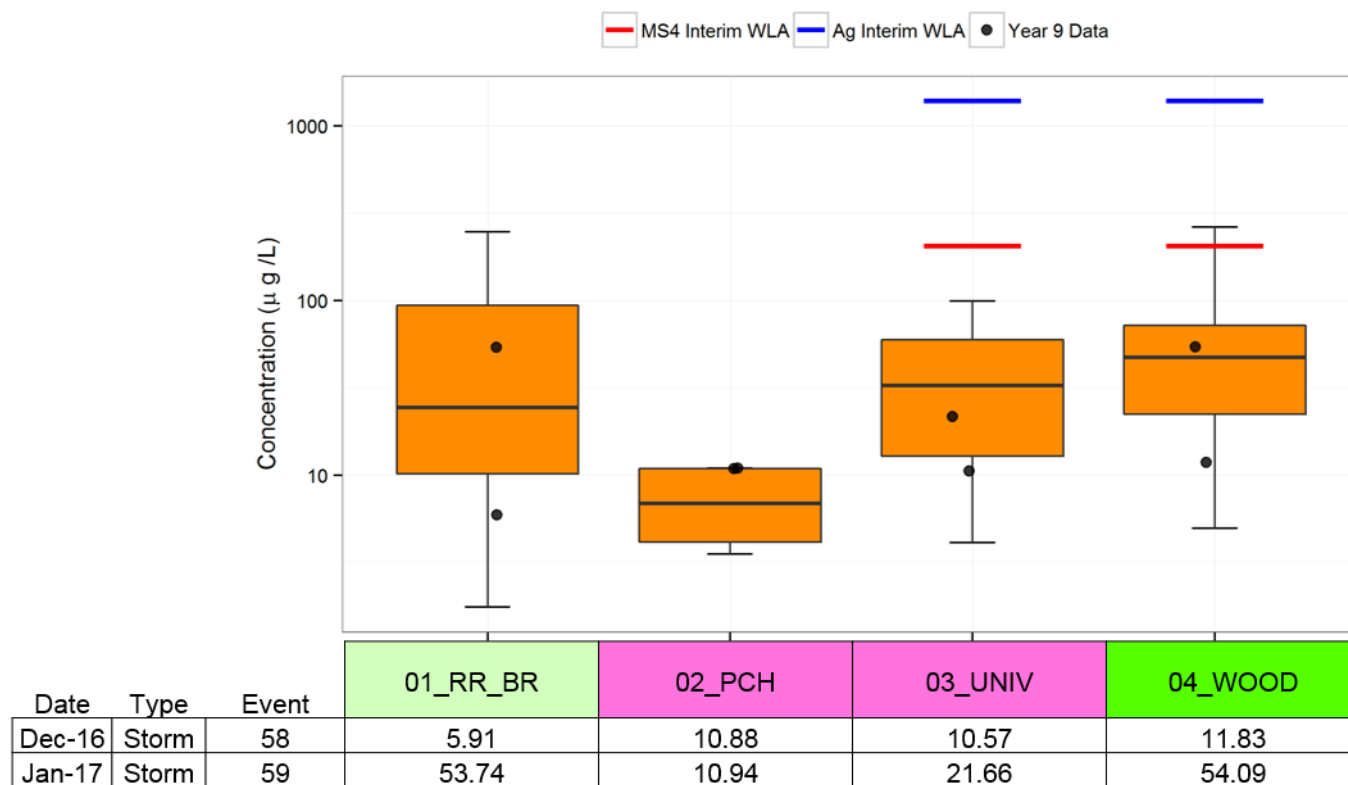


Figure 26. Total Copper Stormwater Concentrations in Receiving Water Sites: 2008-2017

Total Copper in Water from Urban, Ag, & POTW Sites: 2008-2017 Dry Weather

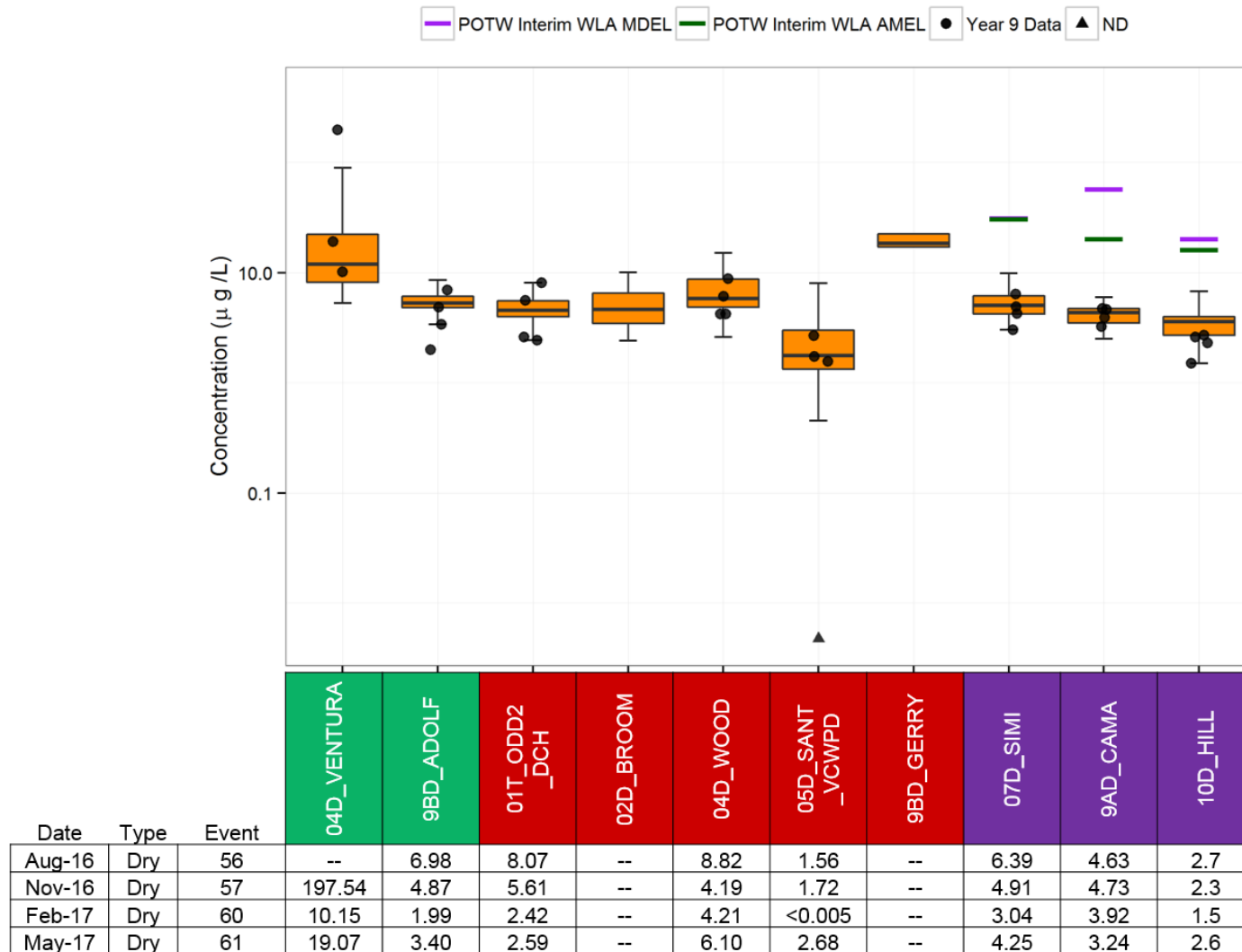


Figure 27. Total Copper Dry Weather Concentrations in Urban, Ag, and POTW Sites: 2008-2017

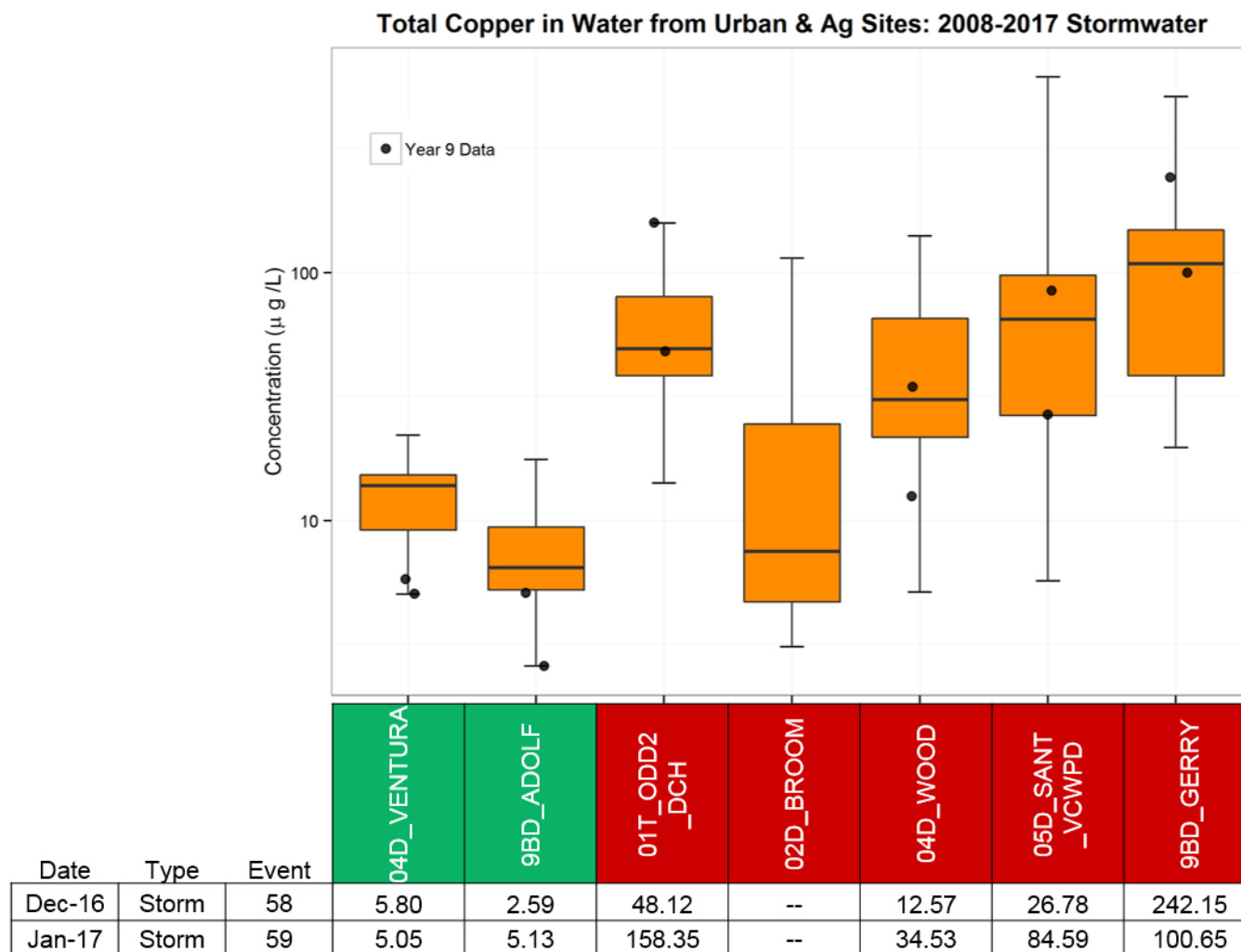


Figure 28. Total Copper Wet Weather Concentrations in Urban and Ag Sites: 2008-2017

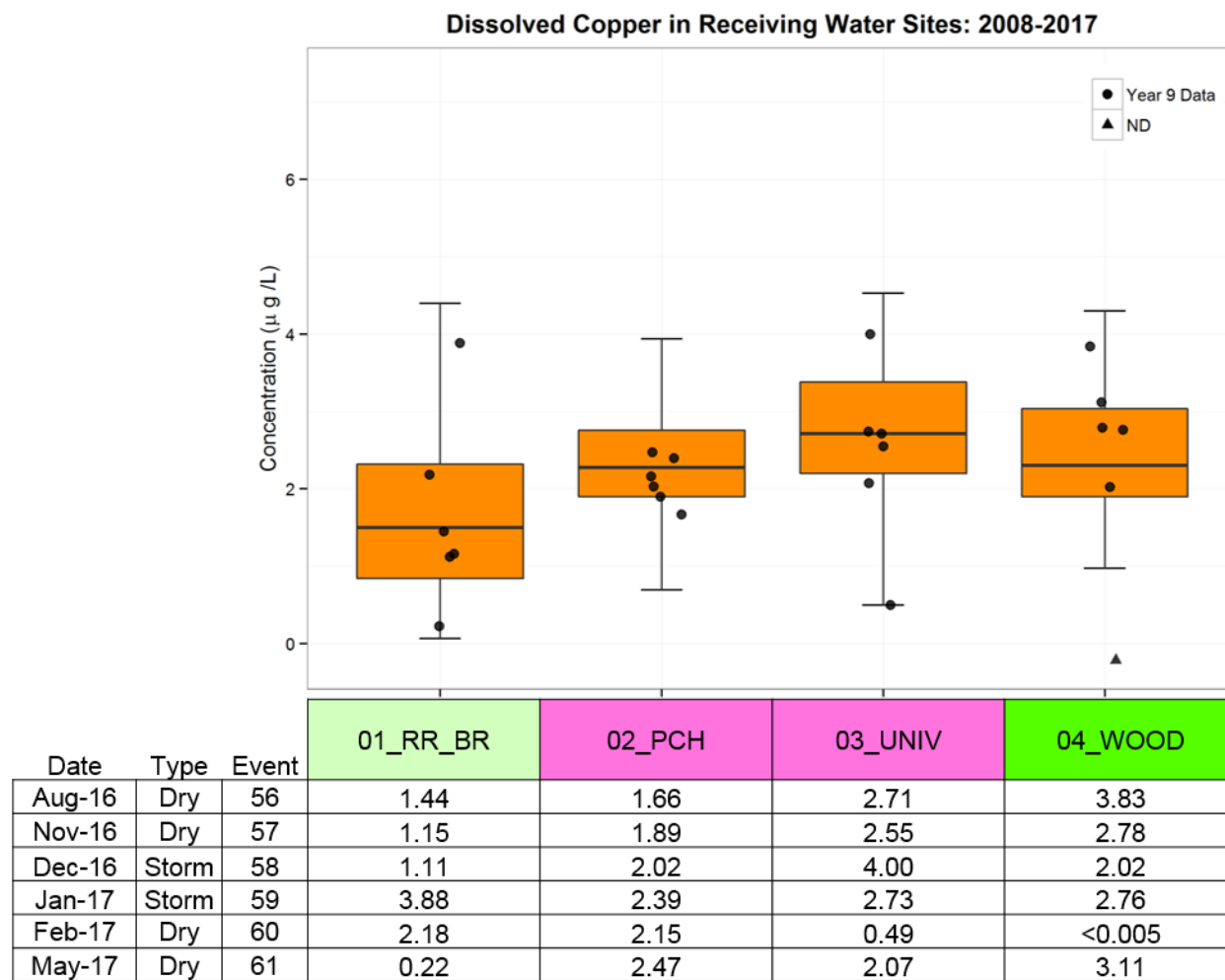


Figure 29. Dissolved Copper Concentrations in Receiving Water Sites: 2008-2017

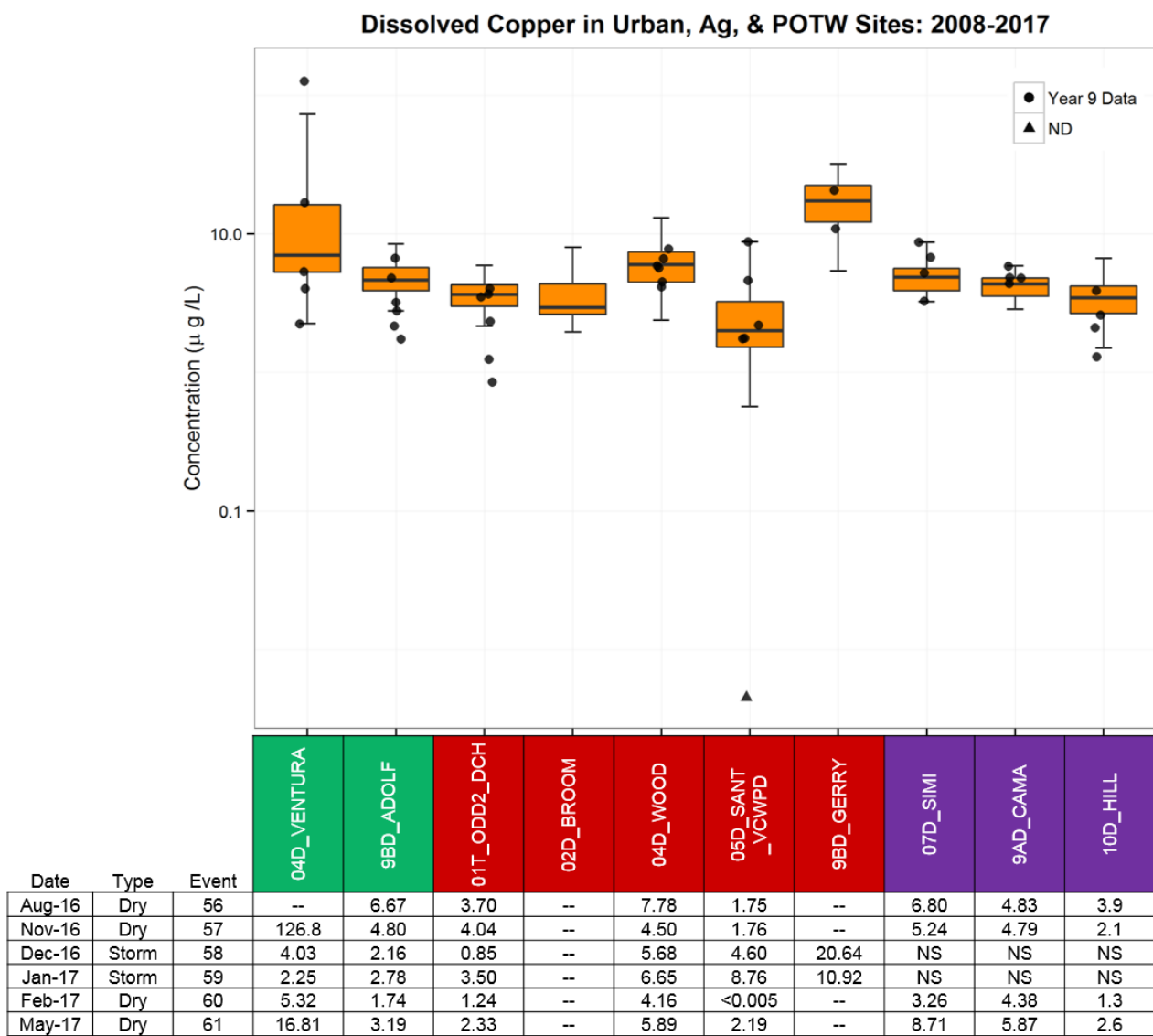


Figure 30. Dissolved Copper Concentrations in Urban, Ag, and POTW Sites: 2008-2017

Total Mercury in Receiving Water Sites: 2008-2017

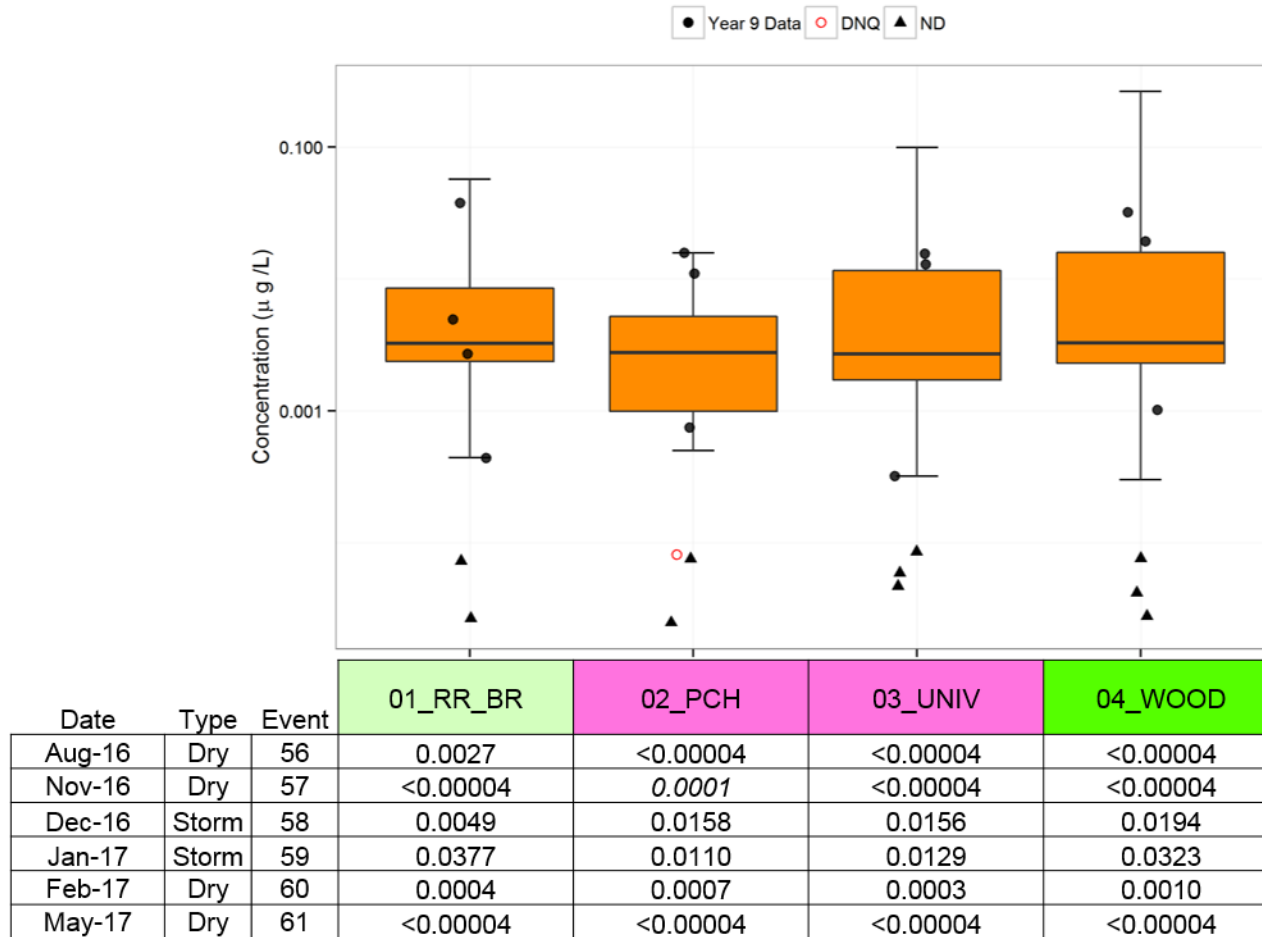


Figure 31. Total Mercury Concentrations in Receiving Water Sites: 2008-2017

Total Mercury in Urban, Ag, & POTW Sites: 2008-2017

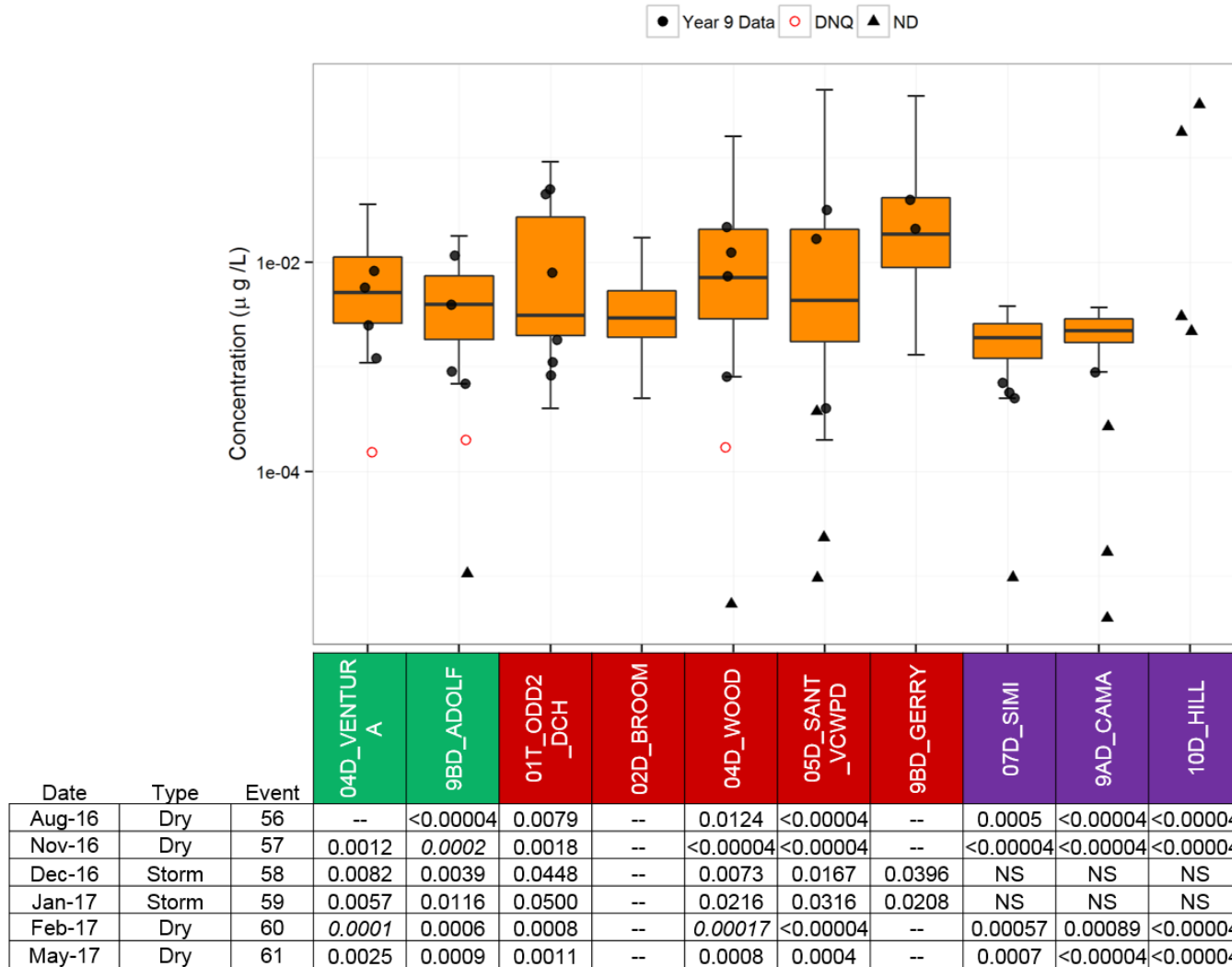


Figure 32. Total Mercury Concentrations in Urban and Ag Sites: 2008-2017

Total Nickel in Receiving Water Sites: 2008-2017 Dry Weather

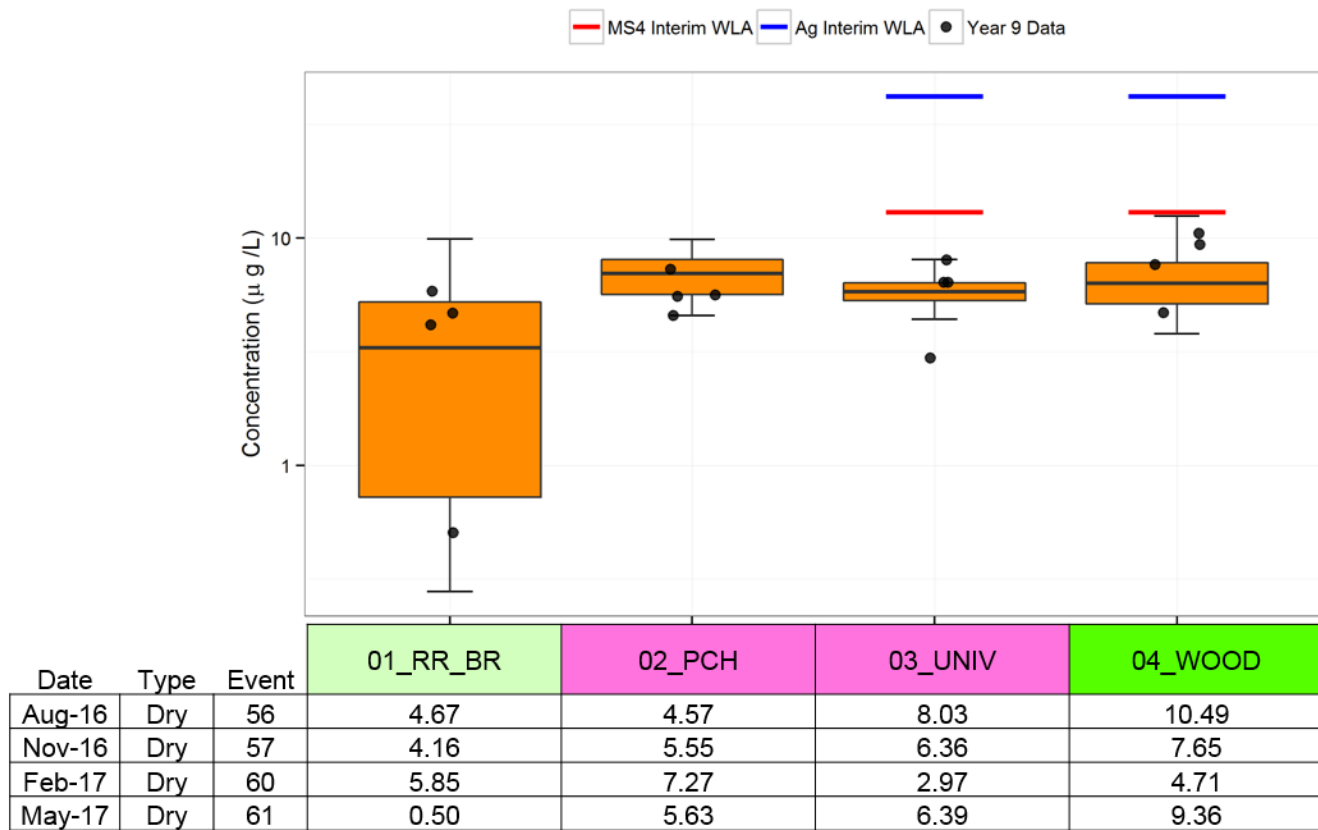


Figure 33. Total Nickel Dry Weather Concentrations in Receiving Water Sites: 2008-2017

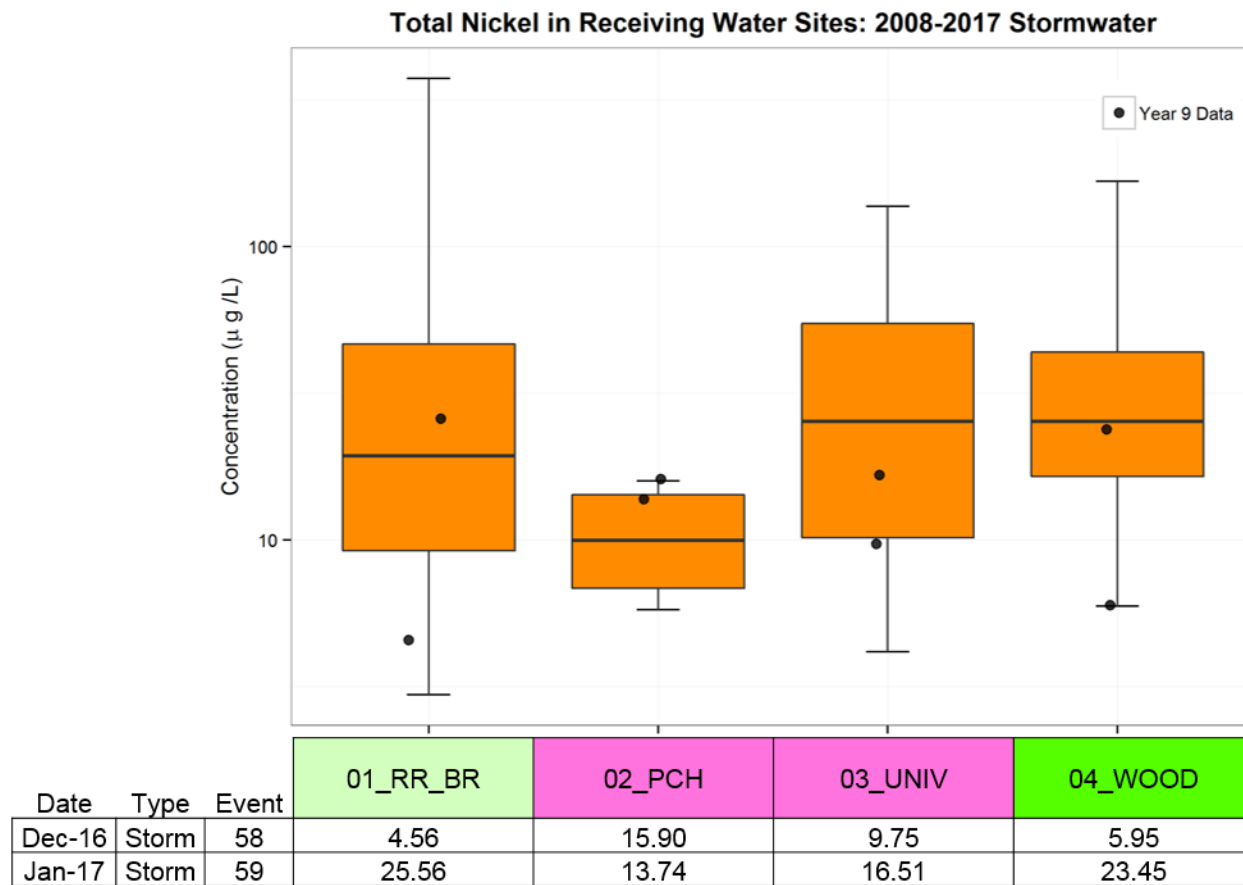


Figure 34. Total Nickel Stormwater Concentrations in Receiving Water Sites: 2008-2017

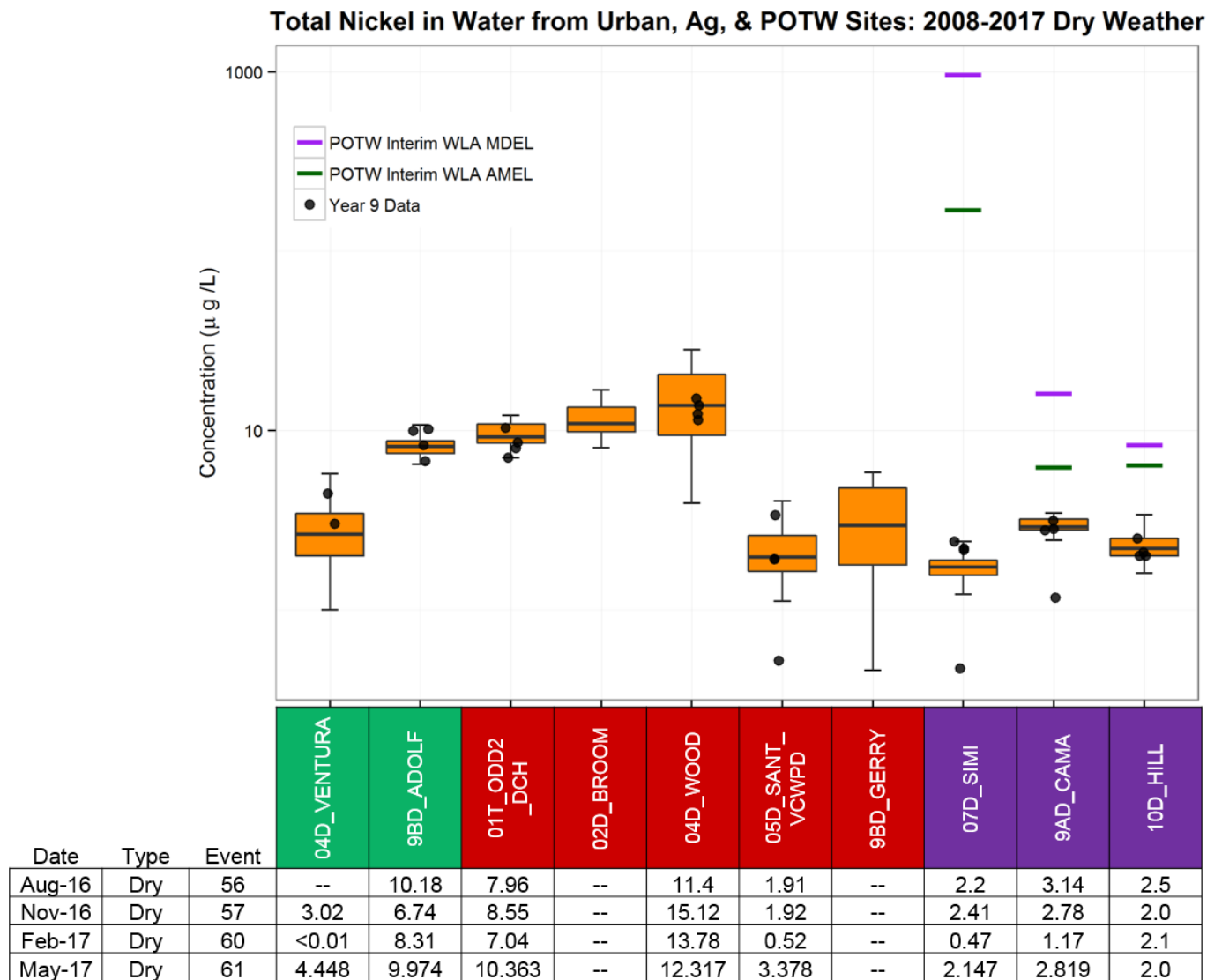


Figure 35. Total Nickel Dry Weather Concentrations in Urban, Ag, and POTW Sites: 2008-2017

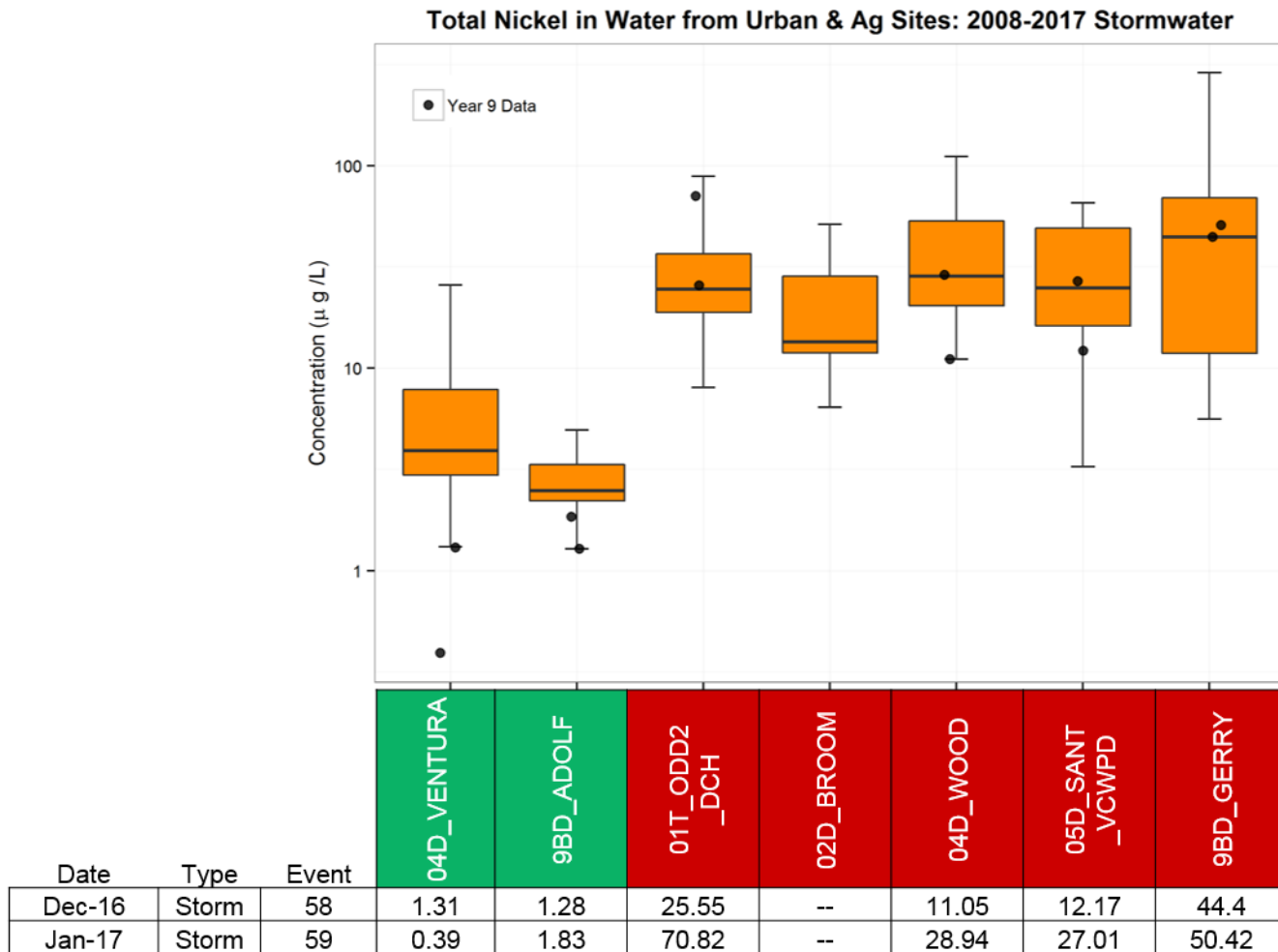


Figure 36. Total Nickel Stormwater Concentrations in Urban and Ag Sites: 2008-2017

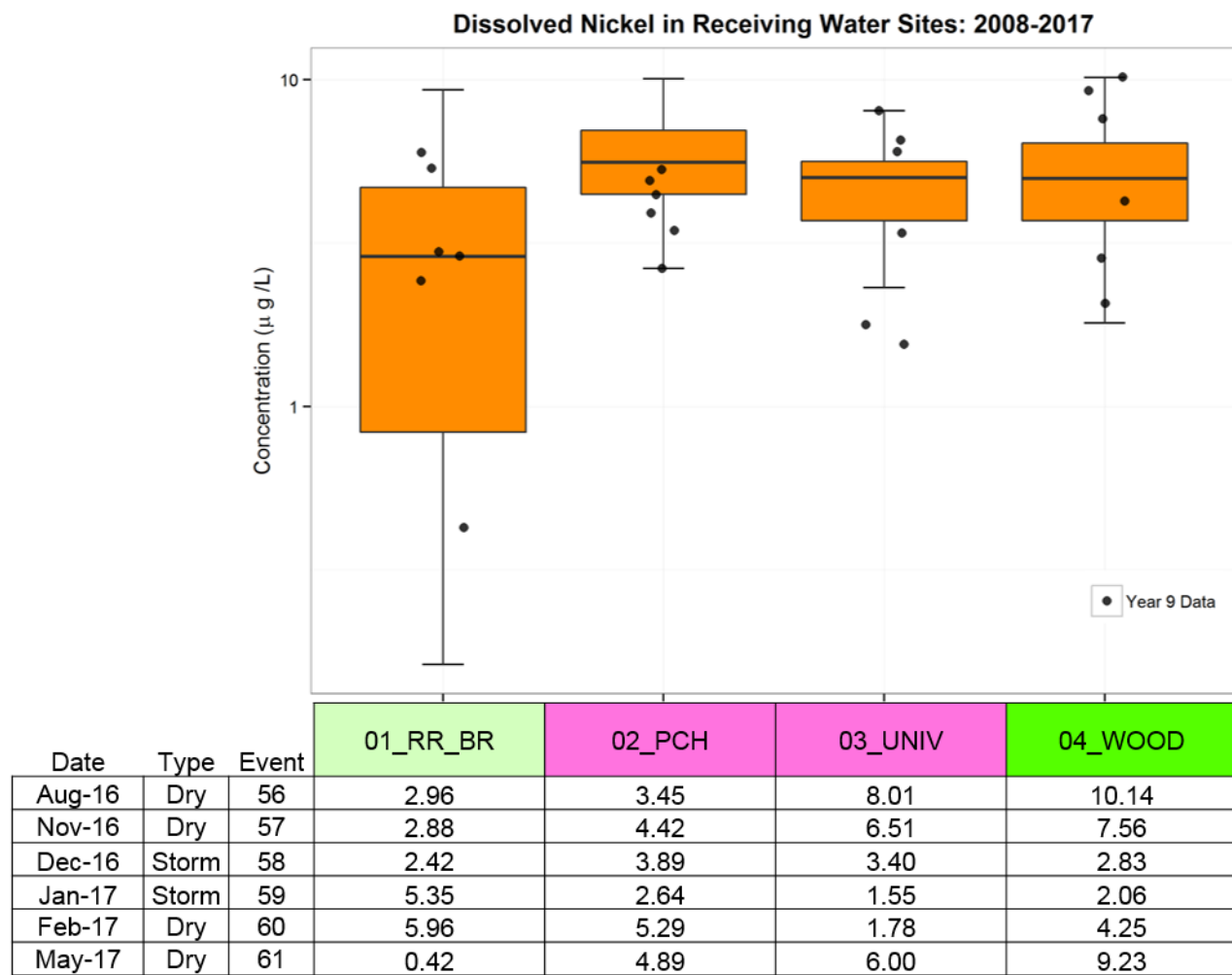


Figure 37. Dissolved Nickel Concentrations in Receiving Water Sites: 2008-2017

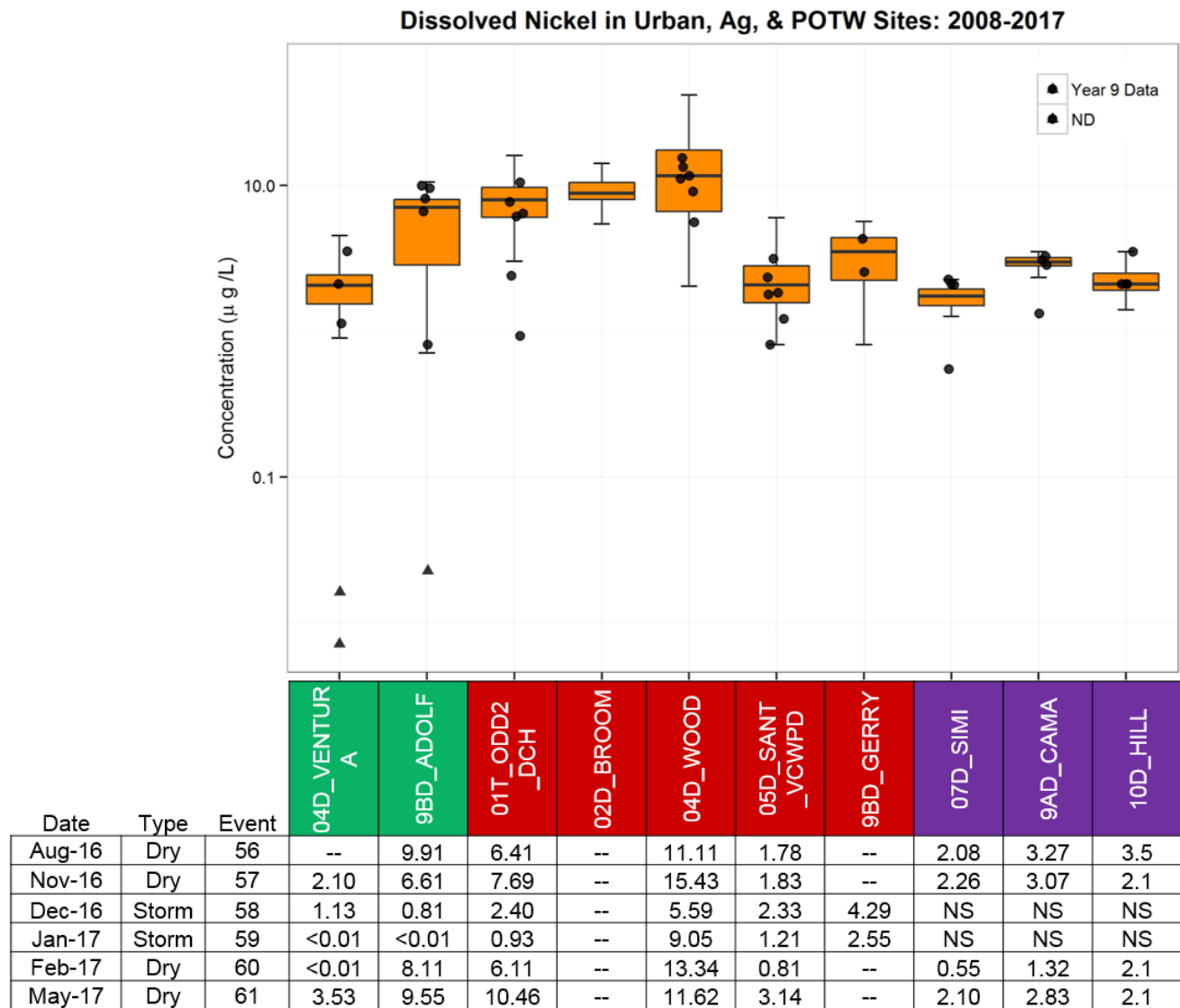


Figure 38. Dissolved Nickel Concentrations in Urban, Ag, and POTW Sites: 2008-2017

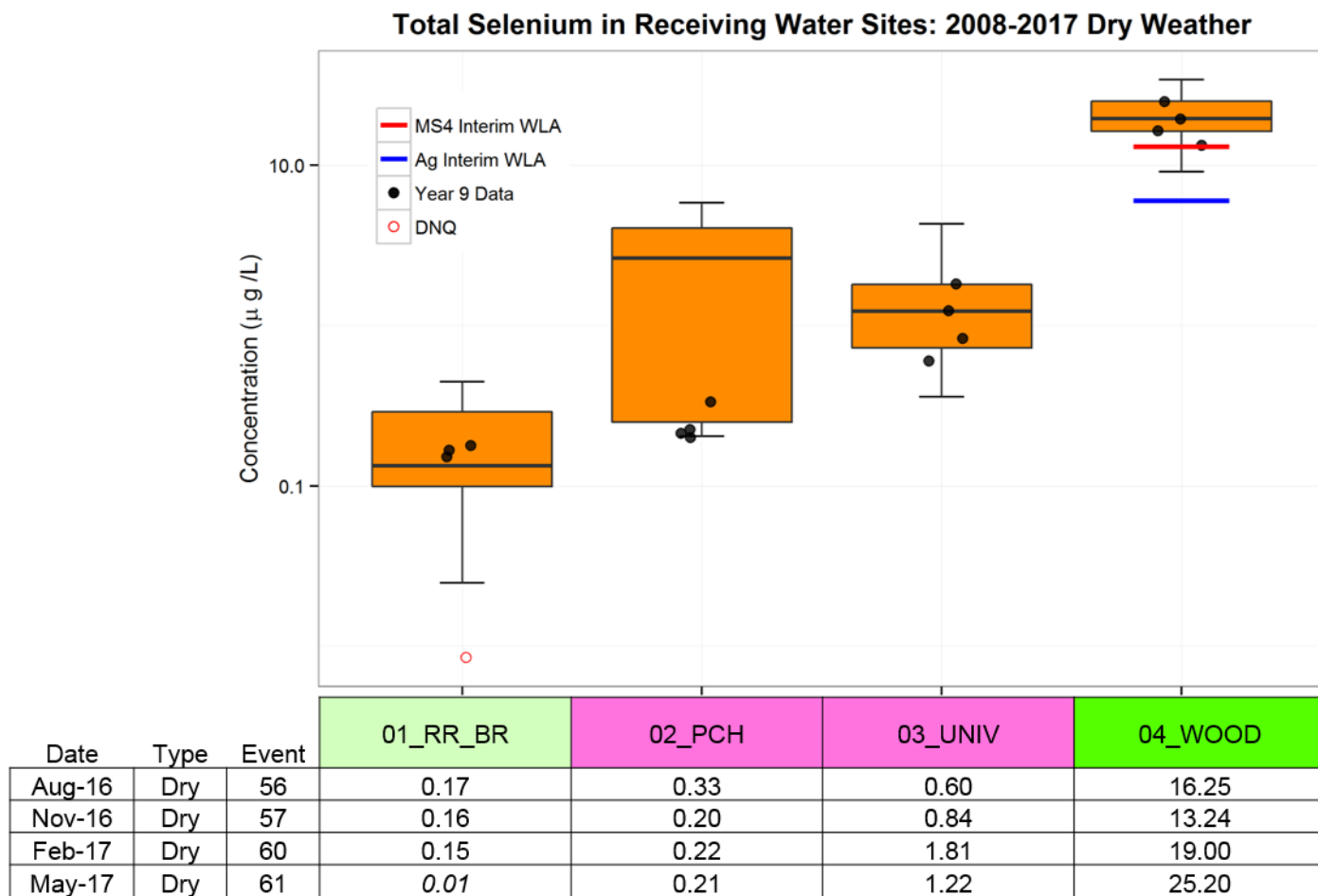


Figure 39. Total Selenium Dry Weather Concentrations in Receiving Water Sites: 2008-2017

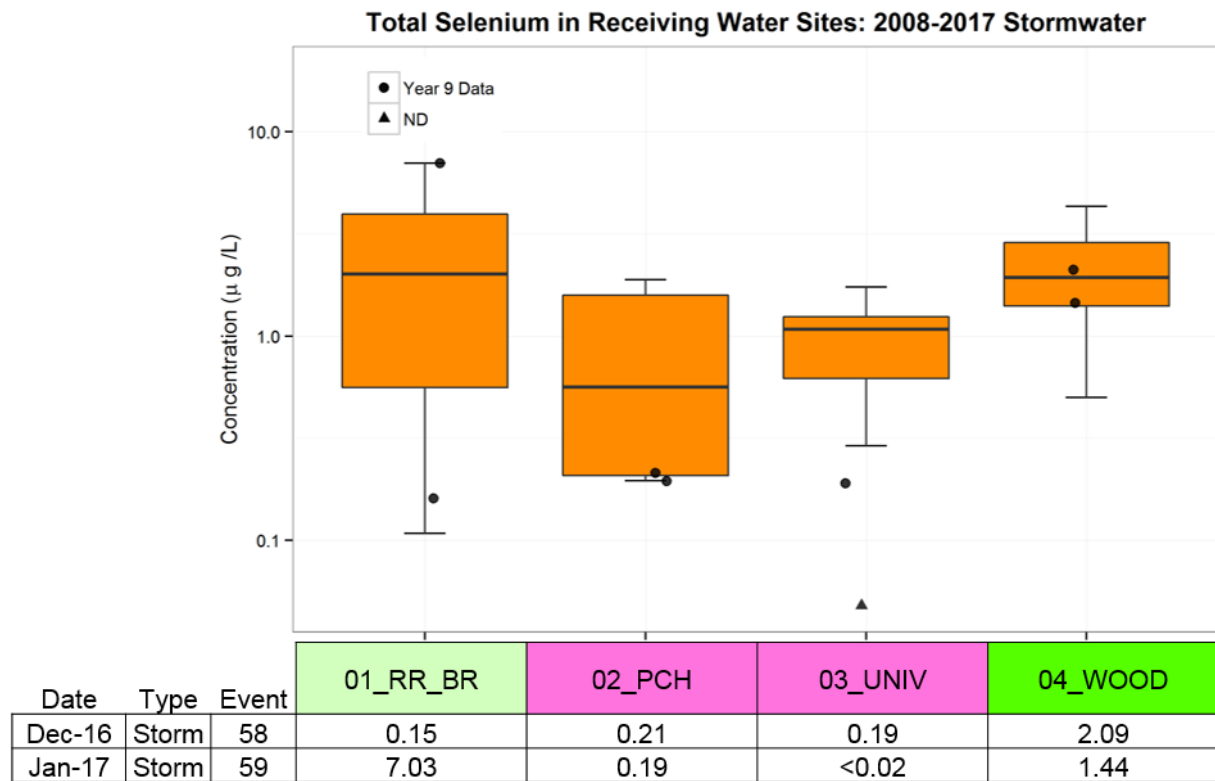


Figure 40. Total Selenium Stormwater Concentration in Receiving Water Sites: 2008-2017

Total Selenium in Water from Urban, Ag, & POTW Sites: 2008-2017 Dry Weather

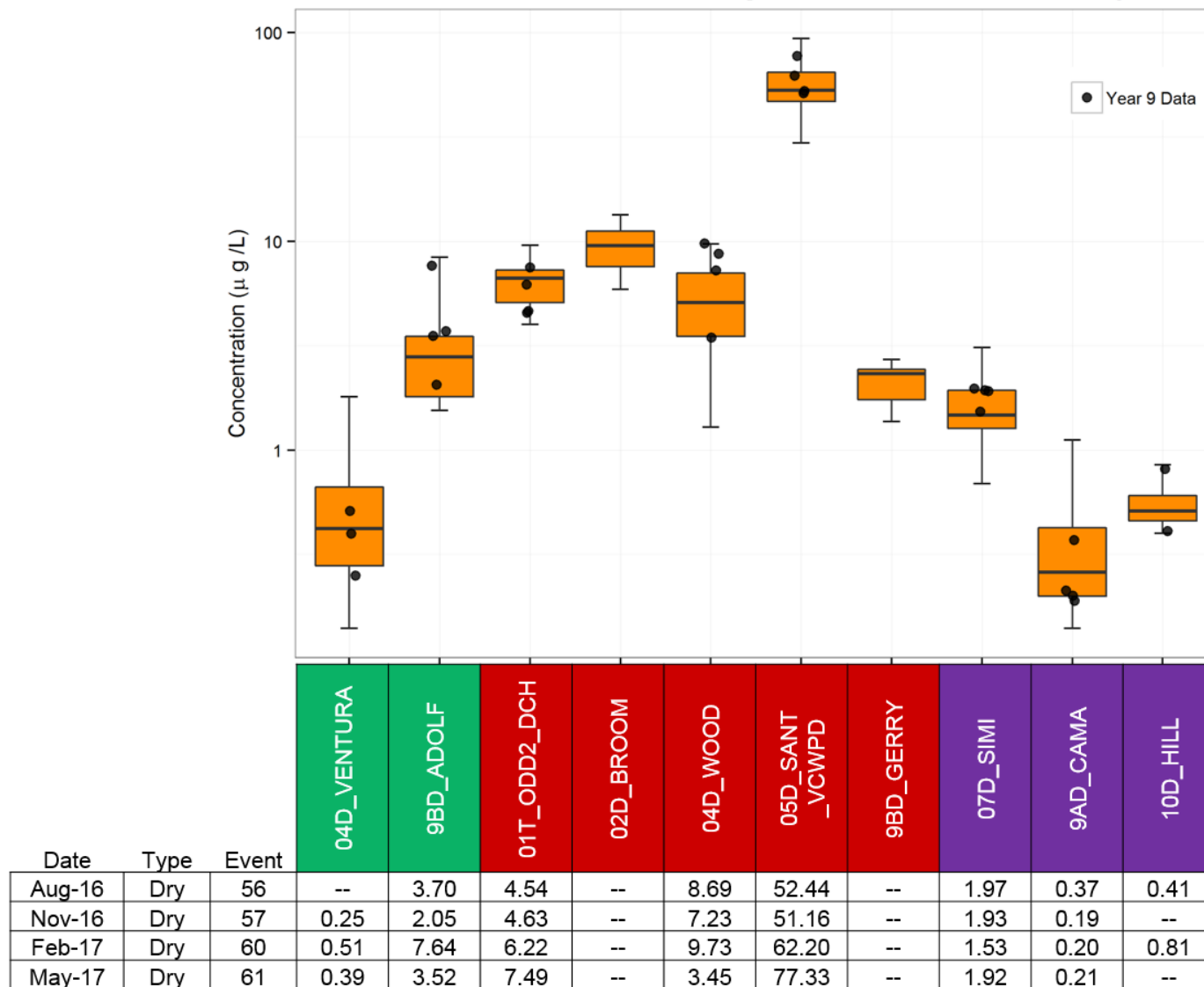


Figure 41. Total Selenium Dry Weather Concentrations in Urban, Ag, and POTW Sites: 2008-2017

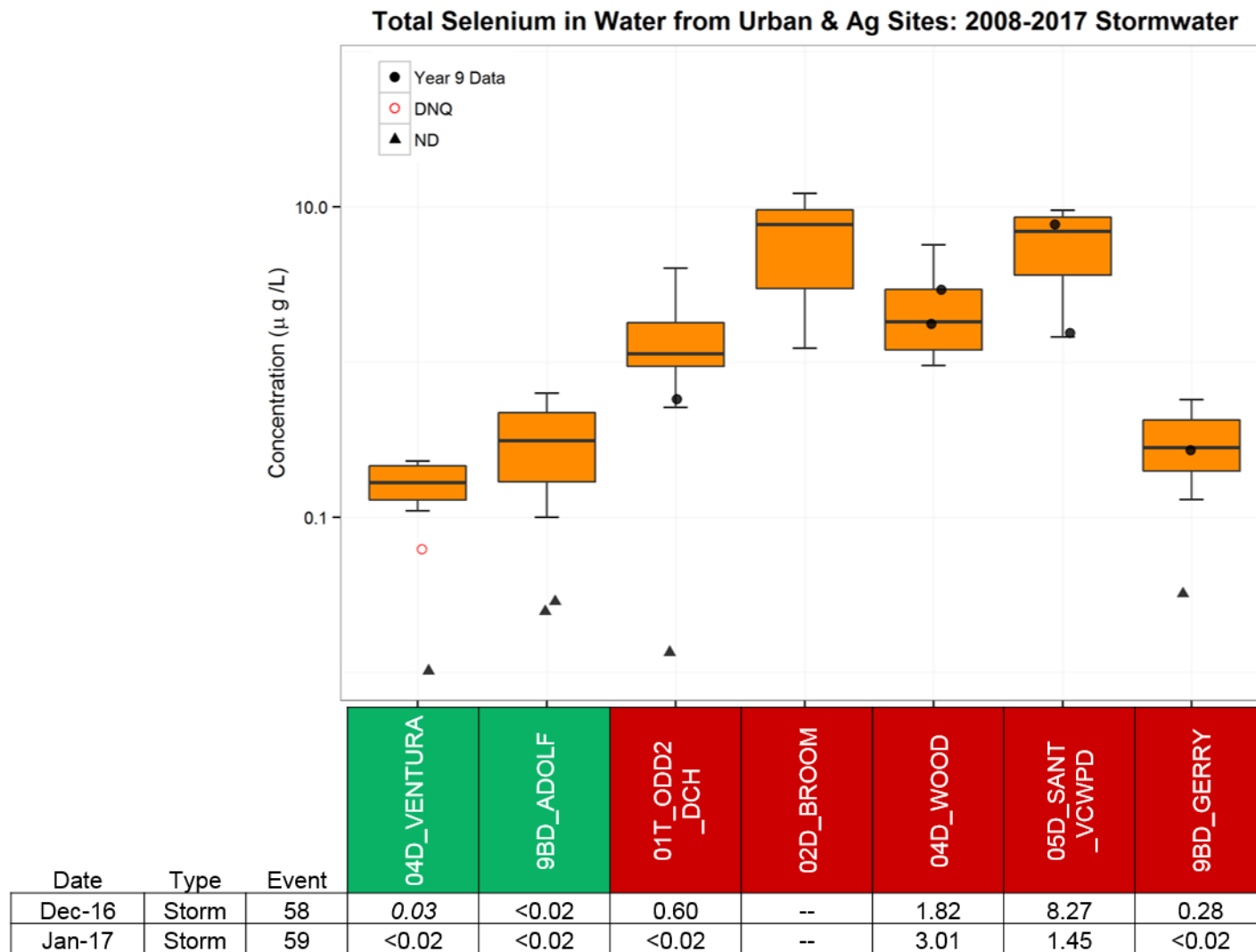


Figure 42. Total Selenium Stormwater Concentrations in Urban and Ag Sites: 2008-2017

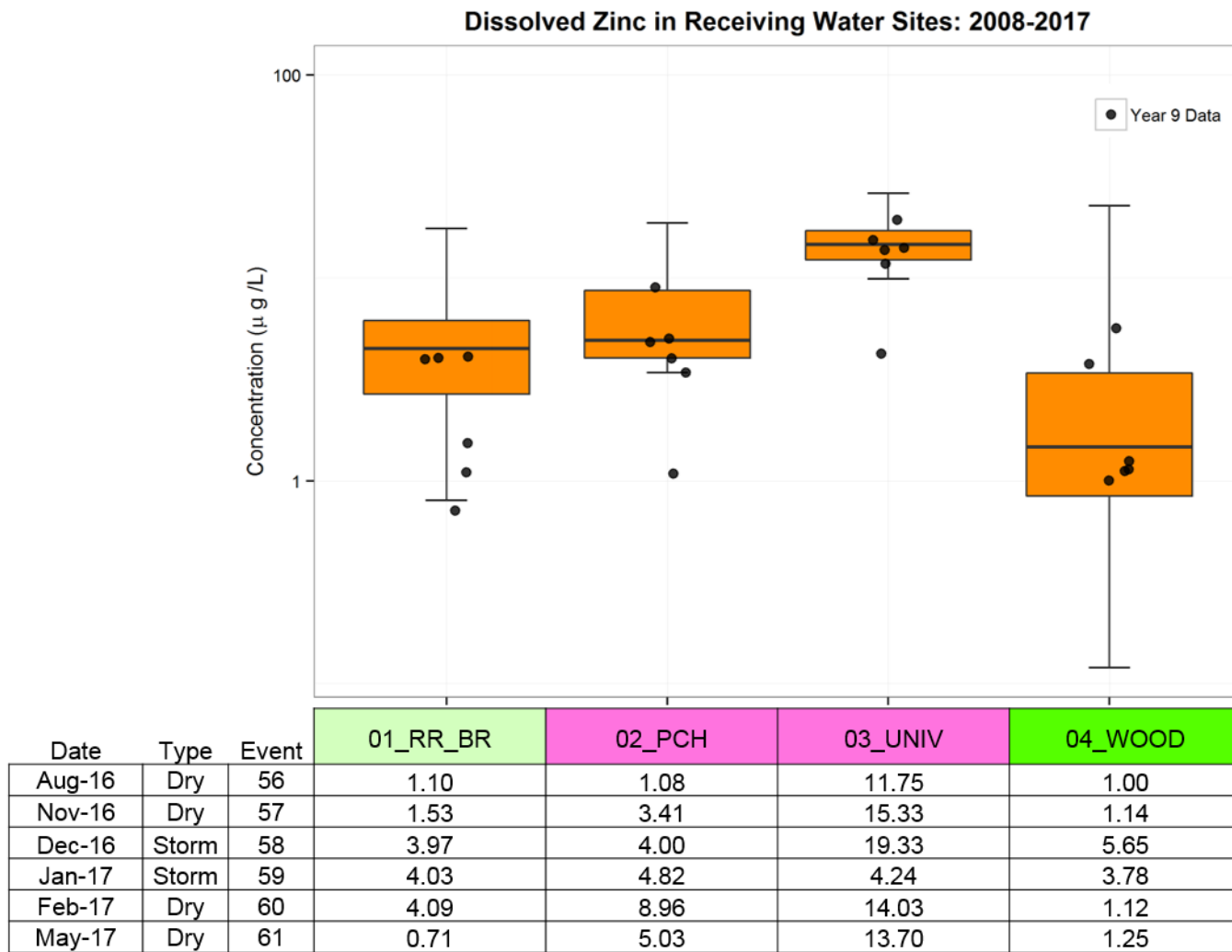


Figure 43. Dissolved Zinc Concentrations in Receiving Water Sites: 2008-2017

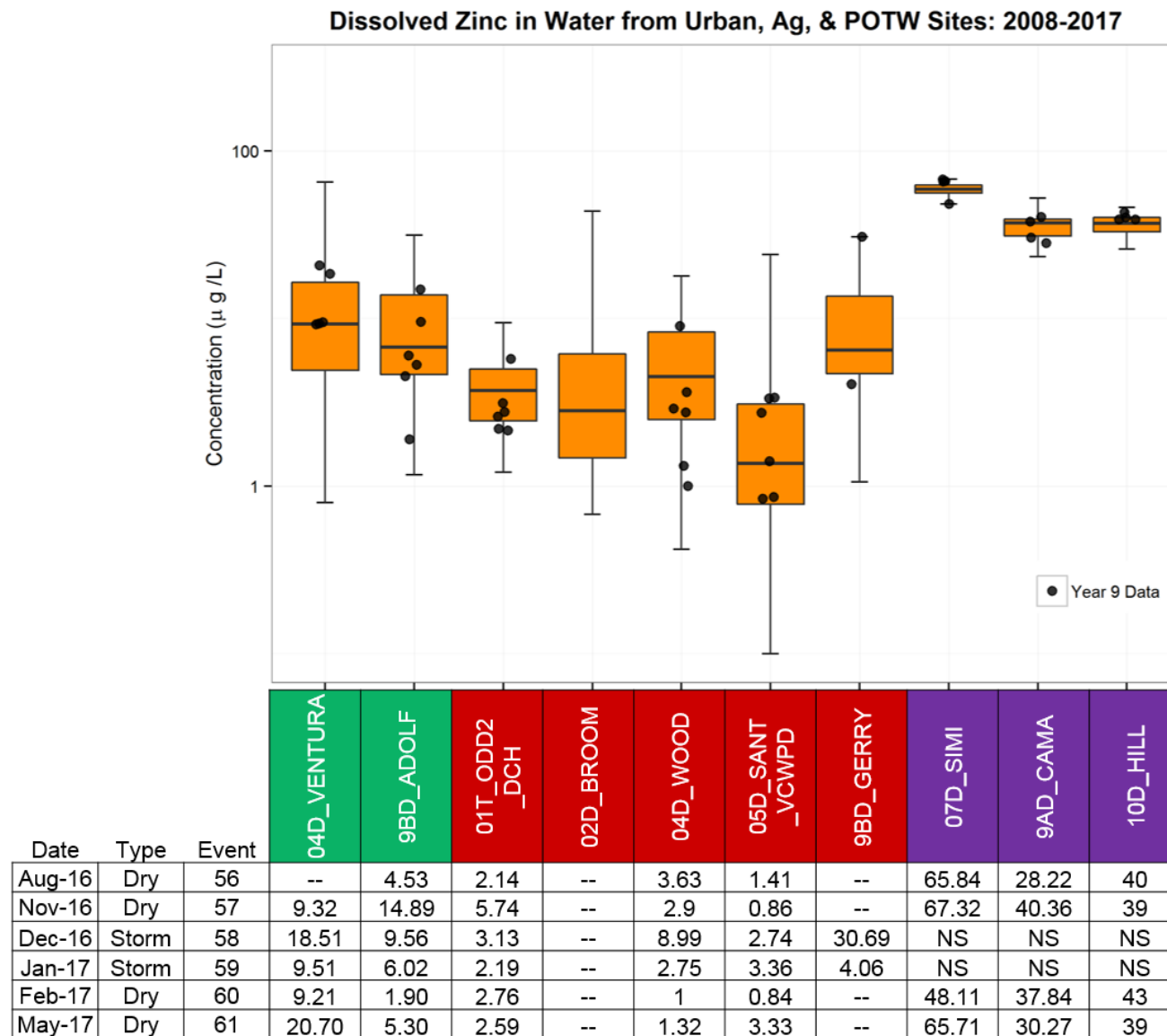
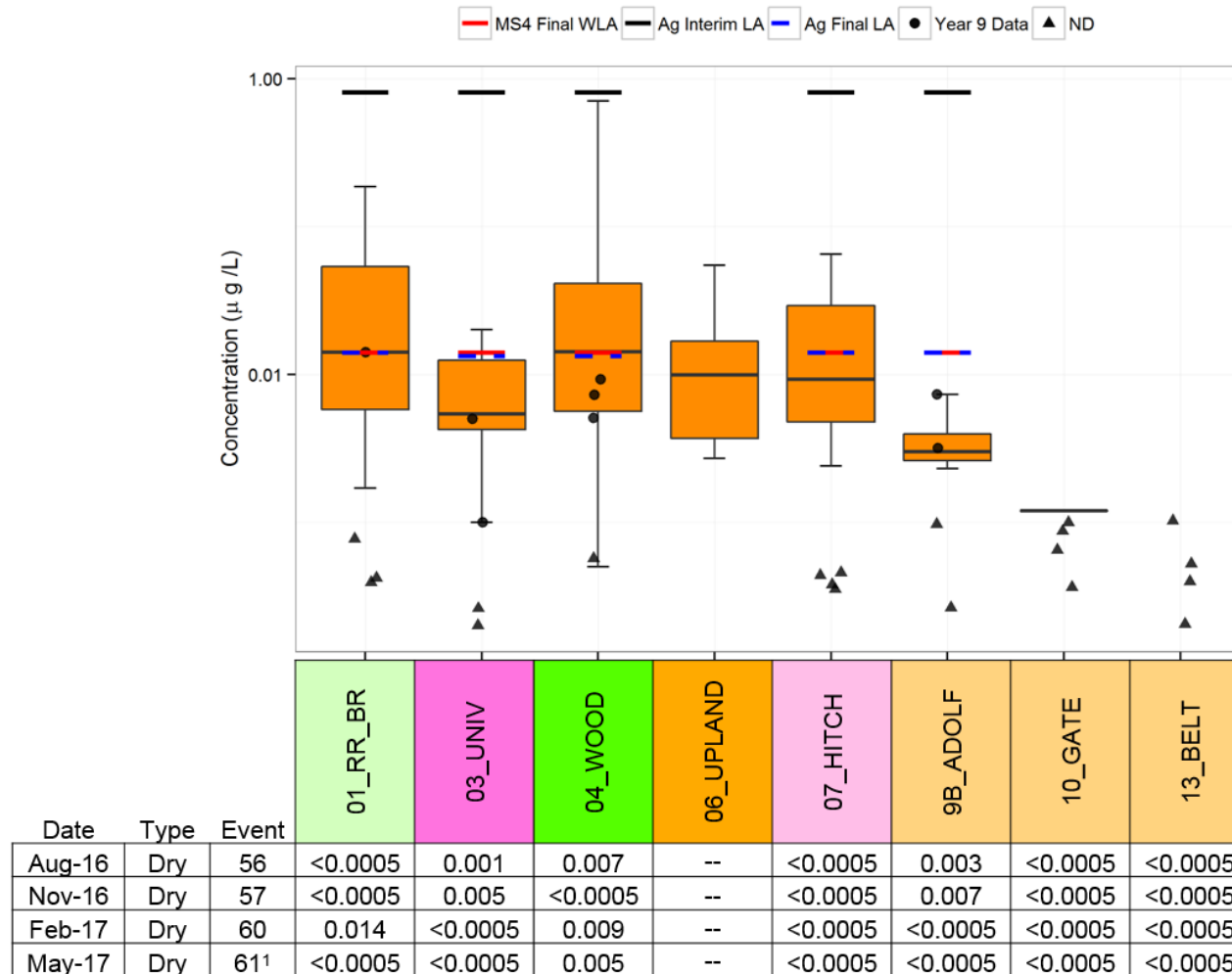


Figure 44. Dissolved Zinc Concentrations in Urban, Ag, and POTW Sites: 2008-2017

TOXICITY TMDL

For the Toxicity TMDL, urban dischargers' and POTWs' final wasteload allocations are effective. For agricultural dischargers, interim load allocations were in effect until March 24, 2017, at which point final allocations became effective. The compliance points for these allocations are in the receiving waters at the base of the subwatersheds and are shown on the box plots for the appropriate site locations. Data for chlorpyrifos and diazinon have been separated into dry weather and stormwater since the allocations differ for the two conditions. Data collected during year nine, which is the reporting period for this document, have been overlain on the box plots as circles. The box plots include all of the data collected during this program (2008-2017). This was done to allow for easy comparison between recent data and what have been collected overall. The ninth year data are presented in tabular form below each box plot. Bolded values in the tables within each figure indicate the concentration was above the applicable limits for that constituent. Italicized values in the tables within each figure indicate the concentration was DNQ. Values in the tables within each figure with a "<" preceding them, indicate the constituent was ND at the MDL for that constituent. Values identified as "--" in the tables indicate no samples were collected at those sites for those events.

Chlorpyrifos in Receiving Water Sites: 2008-2017 Dry Weather



1. Final allocations for agricultural dischargers became effective after March 24, 2016. This note applies to all Toxicity TMDL boxplots with Final LAs for agricultural dischargers.

Figure 45. Chlorpyrifos Dry Weather Concentrations in Receiving Water Sites: 2008-2017

Chlorpyrifos in Receiving Water Sites: 2008-2017 Stormwater

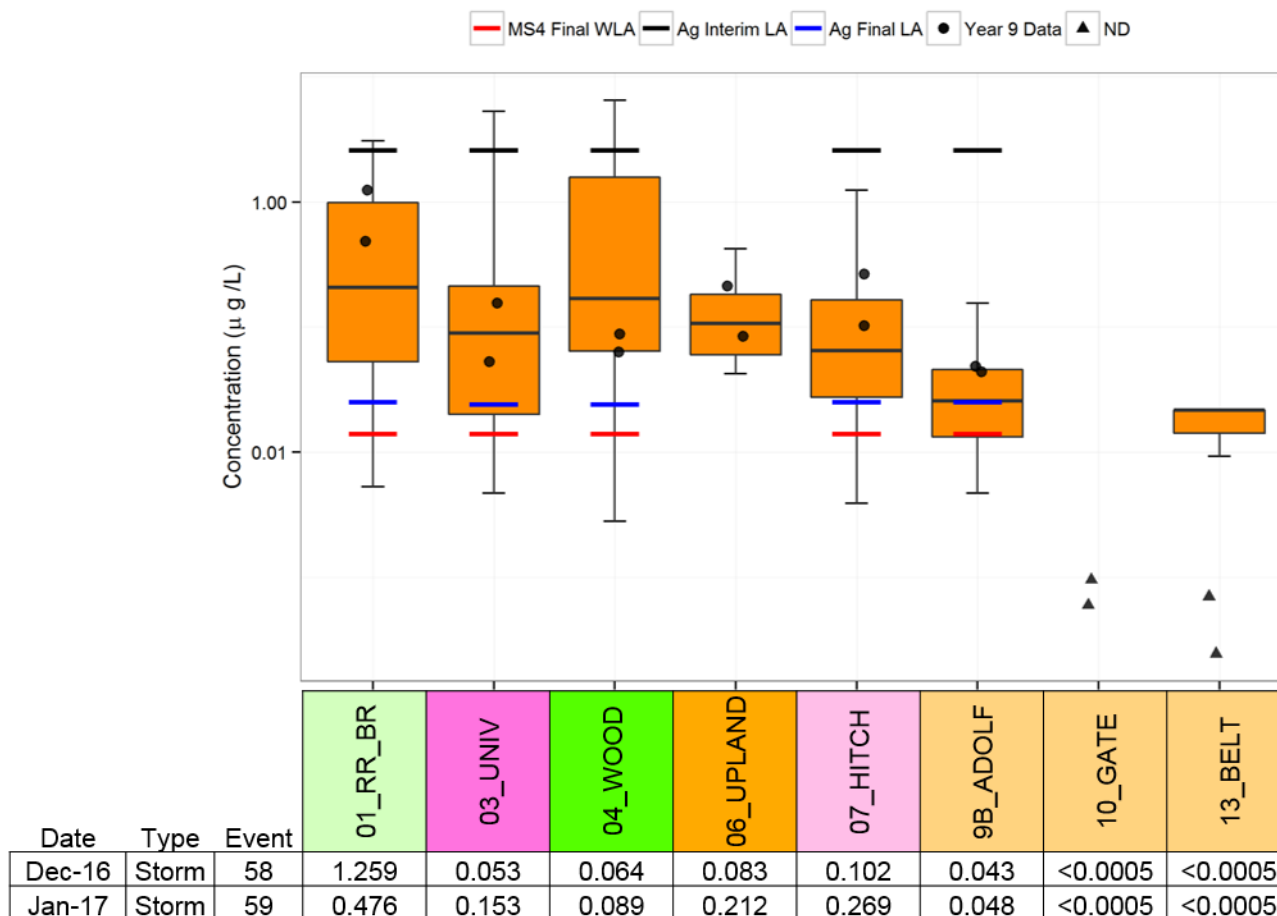


Figure 46. Chlorpyrifos Stormwater Concentrations in Receiving Water Sites: 2008-2017

Chlorpyrifos in Water from Urban, Ag, & POTW Sites: 2008-2017 Dry Weather

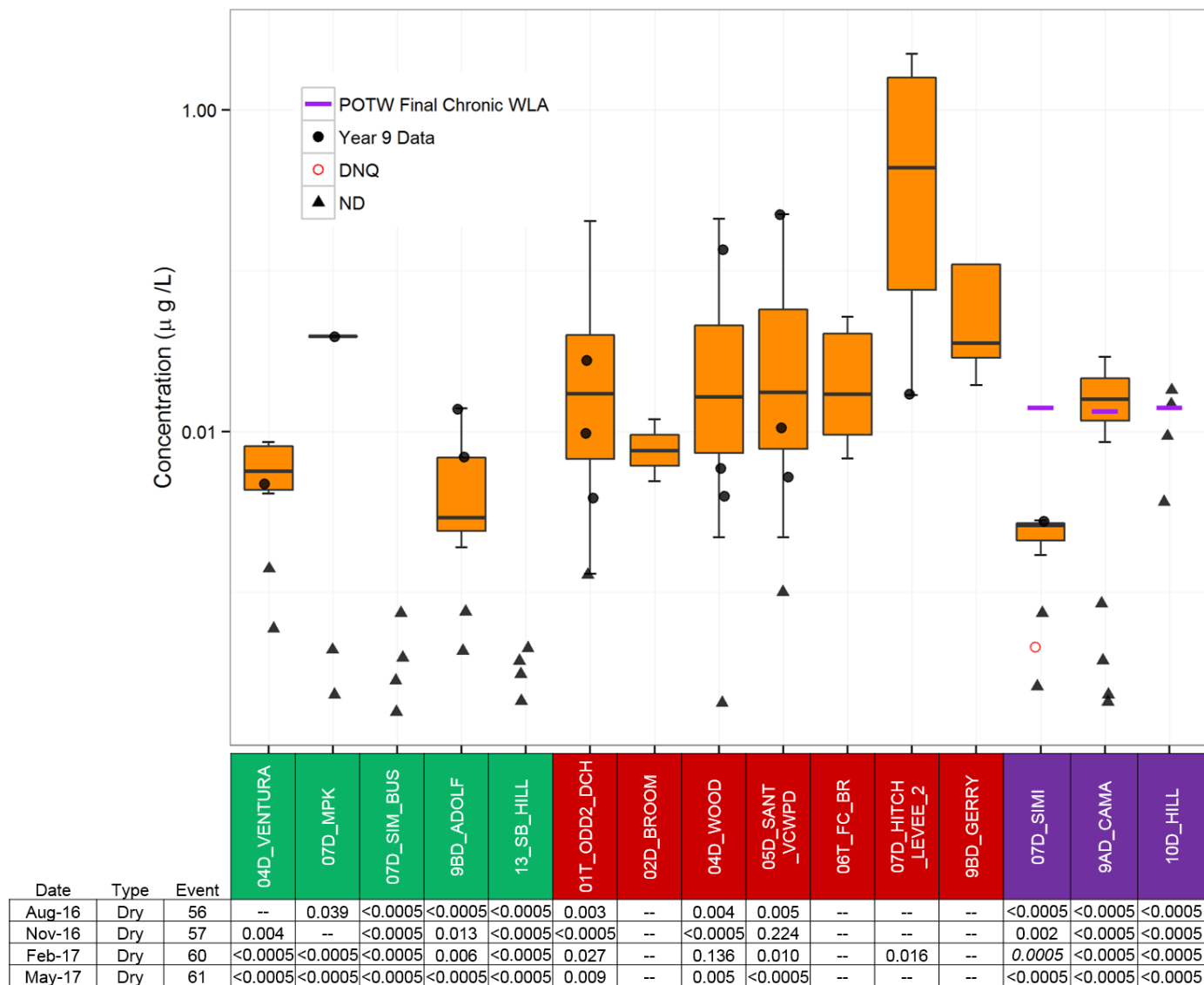


Figure 47. Chlorpyrifos Dry Weather Concentrations in Urban, Ag, and POTW Sites: 2008-2017

Chlorpyrifos in Water from Urban and Ag Sites: 2008-2017 Stormwater

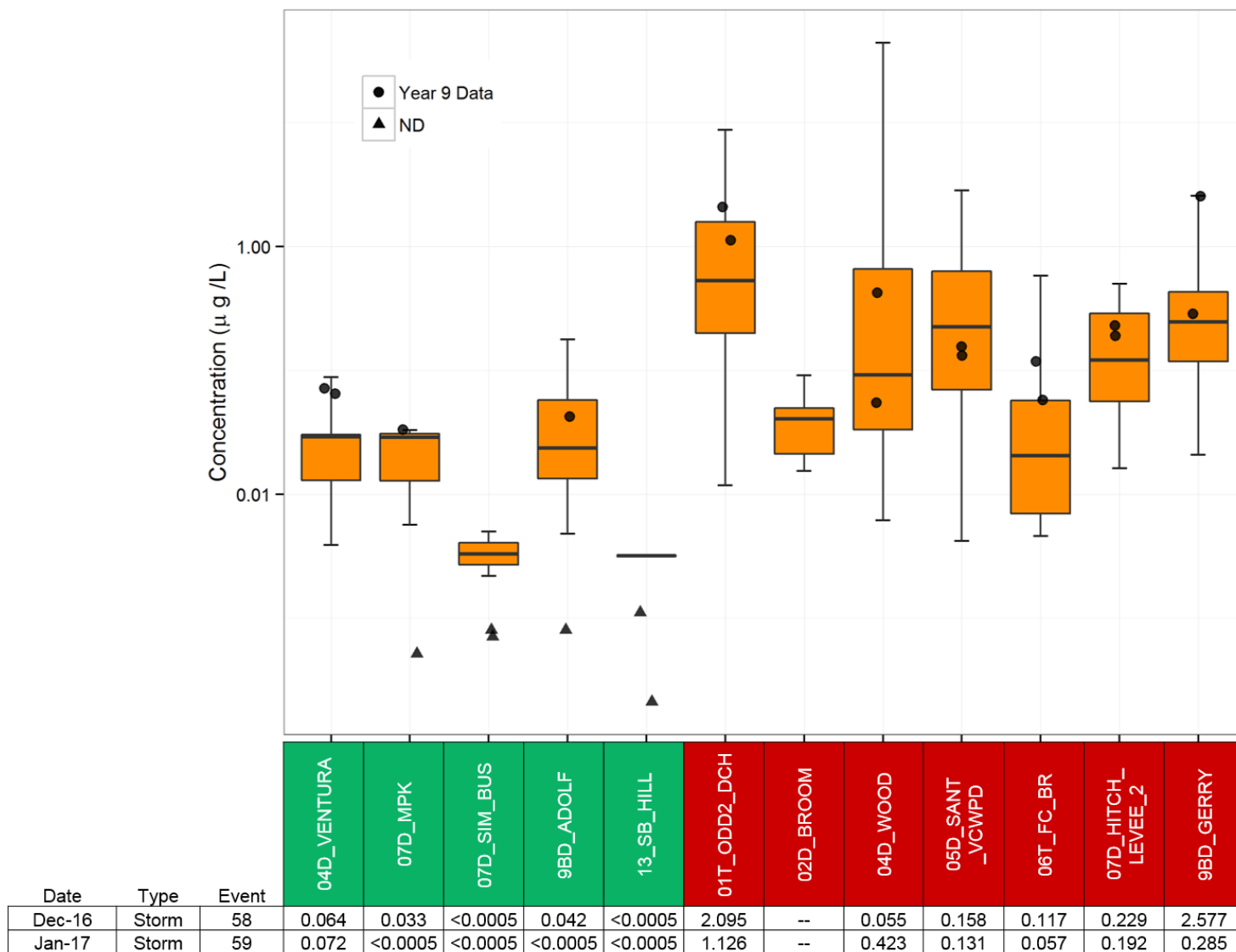


Figure 48. Chlorpyrifos Stormwater Concentrations in Urban and Ag Sites: 2008-2017

Diazinon in Receiving Water Sites: 2008-2017 Dry Weather

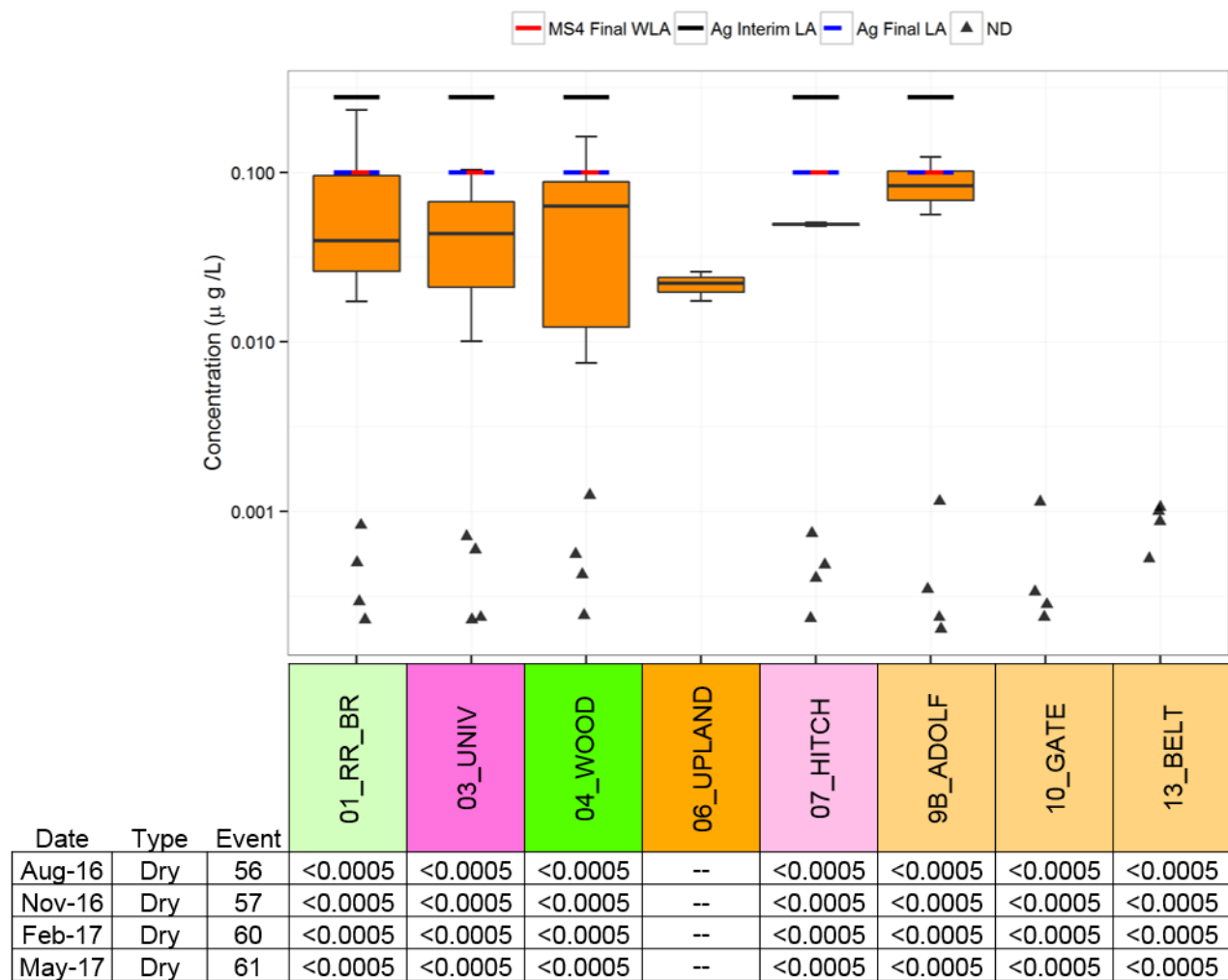


Figure 49. Diazinon Dry Weather Concentrations in Receiving Water Sites: 2008-2017

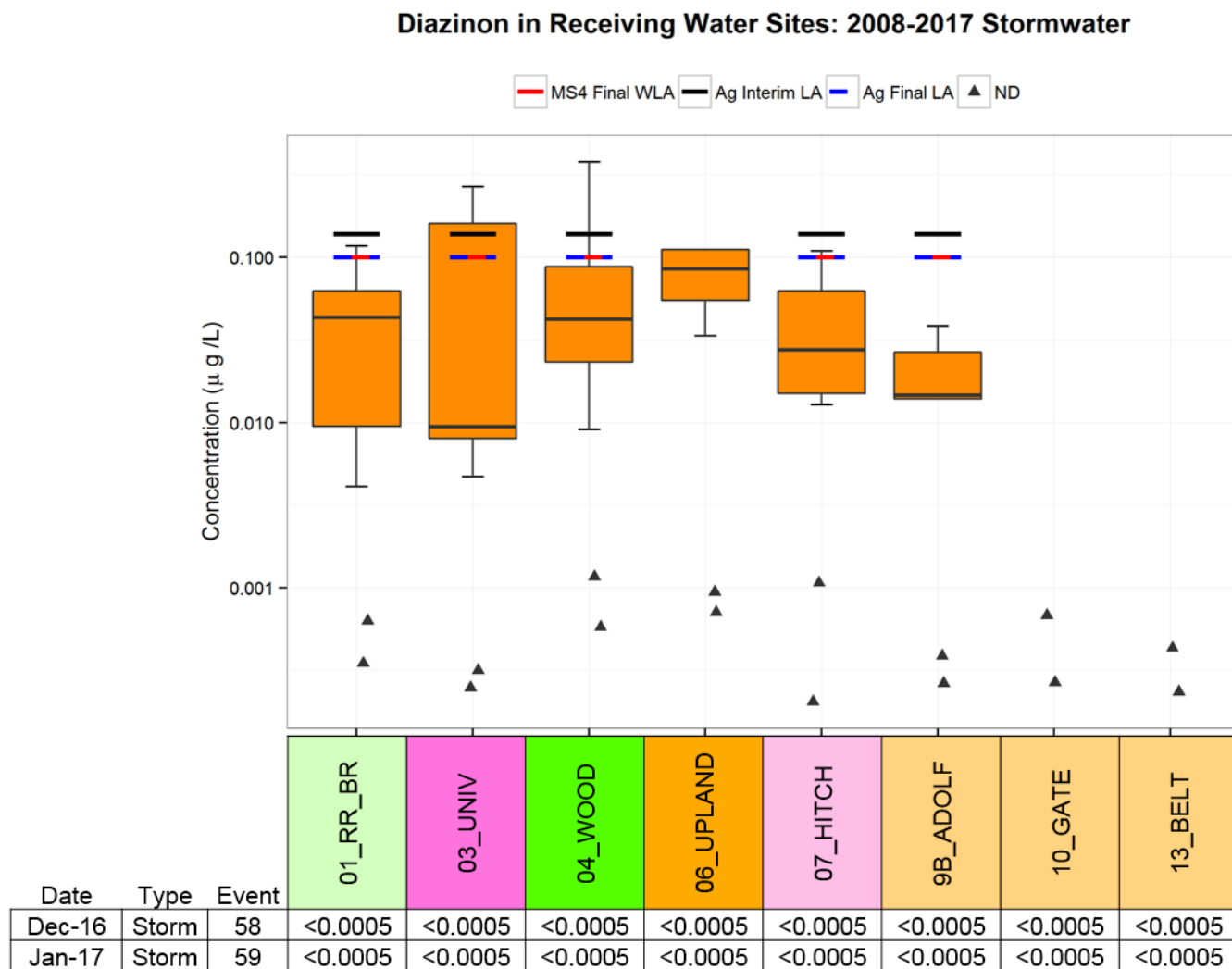


Figure 50. Diazinon Stormwater Concentrations in Receiving Water Sites: 2008-2017

Diazinon in Water from Urban, Ag, & POTW Sites: 2008-2017 Dry Weather

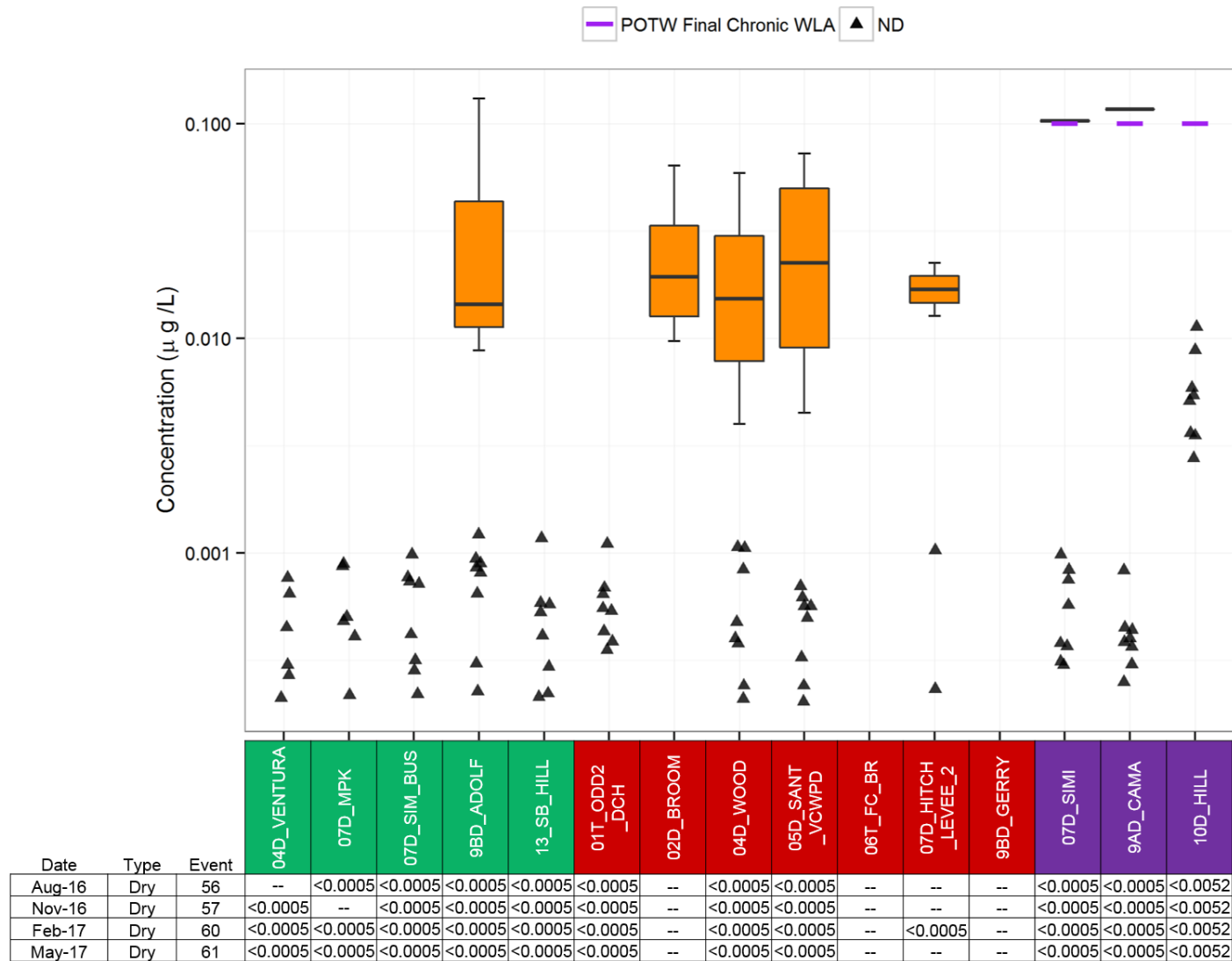


Figure 51. Diazinon Dry Weather Concentrations in Urban, Ag, and POTW Sites: 2008-2017

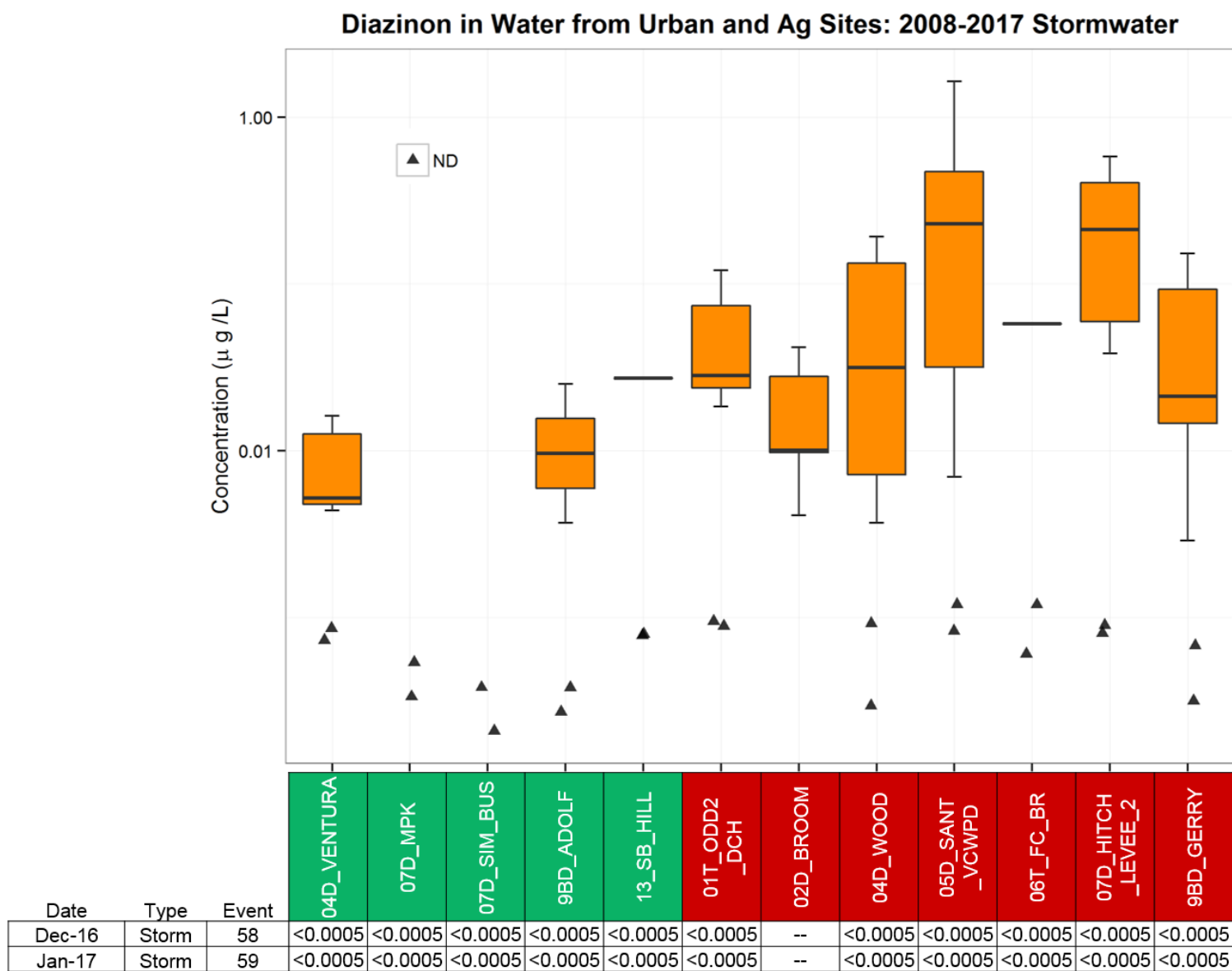


Figure 52. Diazinon Stormwater Concentrations in Urban and Ag Sites: 2008-2017

NUTRIENTS TMDL

Final targets and allocations are effective for the Nutrients TMDL. The applicable targets for each monitoring site are presented in the figures below. Data collected during year nine, which is the reporting period for this document, have been overlain on the box plots as circles. The box plots include all of the data collected during this program (2008-2017). This was done to allow for easy comparison between recent data and what have been collected overall. The ninth year data are presented in tabular form below each box plot. Bolded values in the tables within each figure indicate the concentration was above the applicable limits for that constituent. Italicized values in the tables within each figure indicate the concentration was DNQ. Values in the tables within each figure with a “<” preceding them, indicate the constituent was ND at the MDL for that constituent. Values identified as “--” in the tables indicate no samples were collected at those sites for those events.

Ammonia-N in Receiving Water Sites: 2008-2017

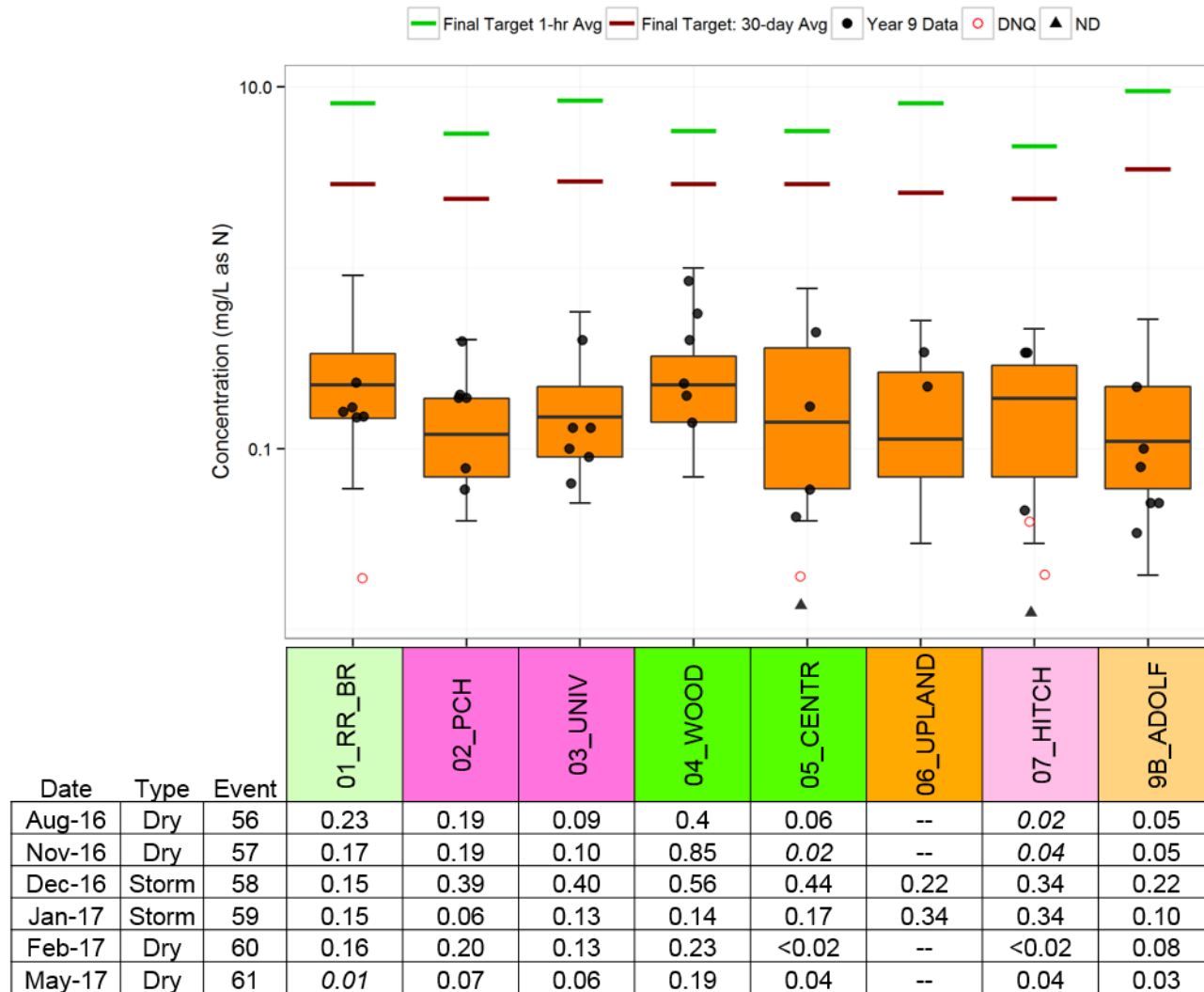


Figure 53. Ammonia-N Concentrations in Receiving Water Sites: 2008-2017

Ammonia-N in Water from Ag & POTW Sites: 2008-2017

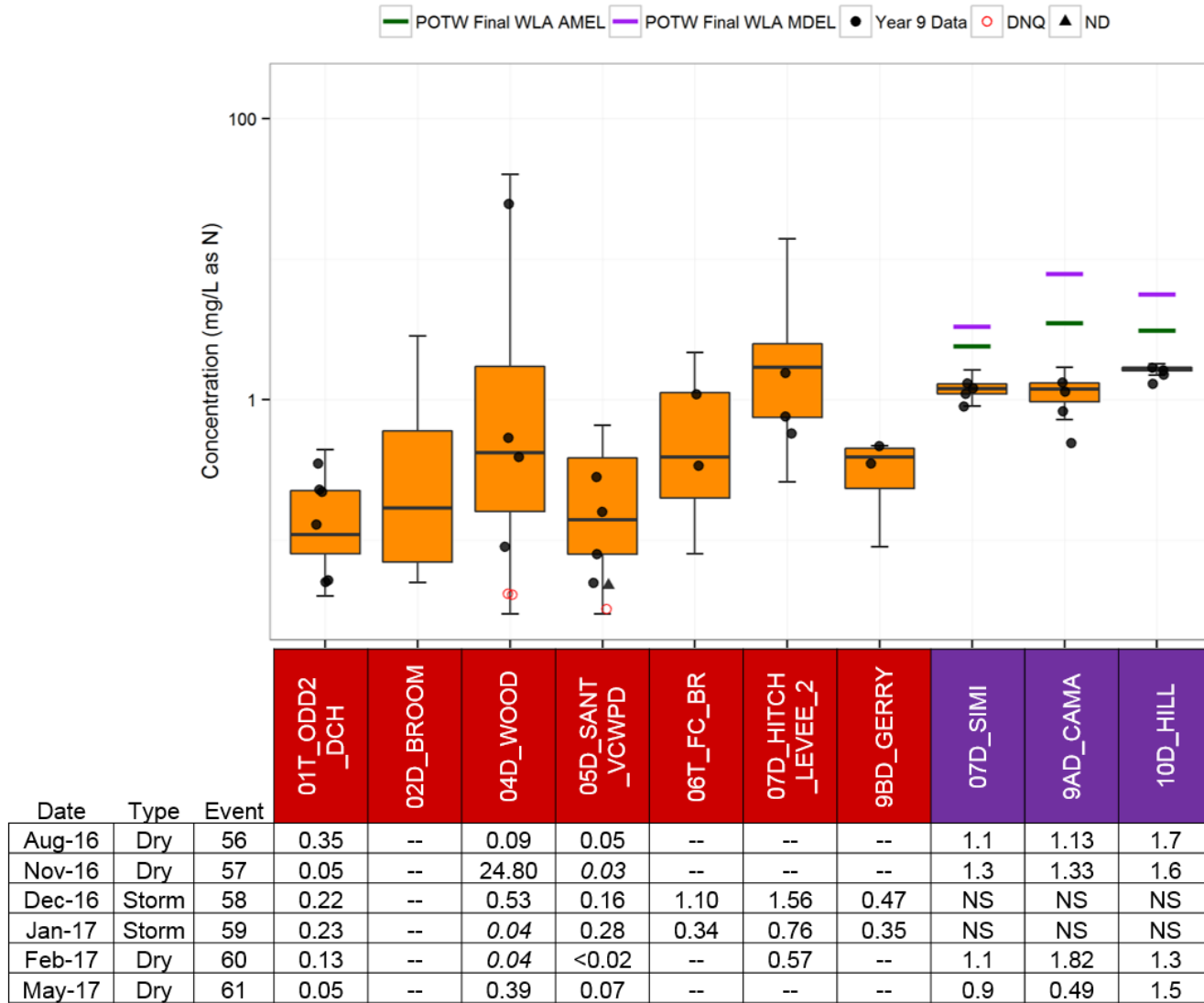


Figure 54. Ammonia-N Concentrations in Ag and POTW Sites: 2008-2017

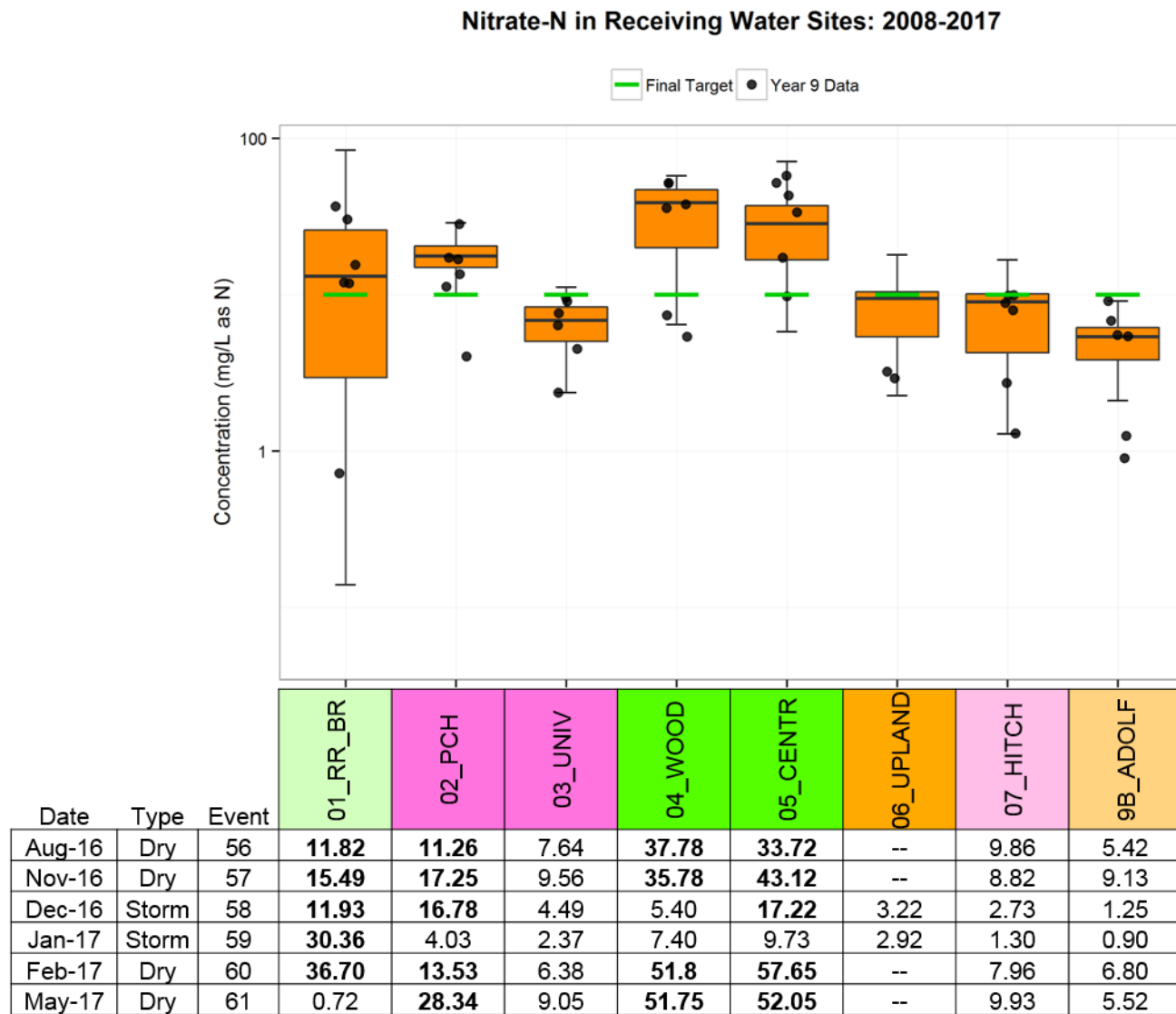


Figure 55. Nitrate-N Concentrations in Receiving Water Sites: 2008-2017

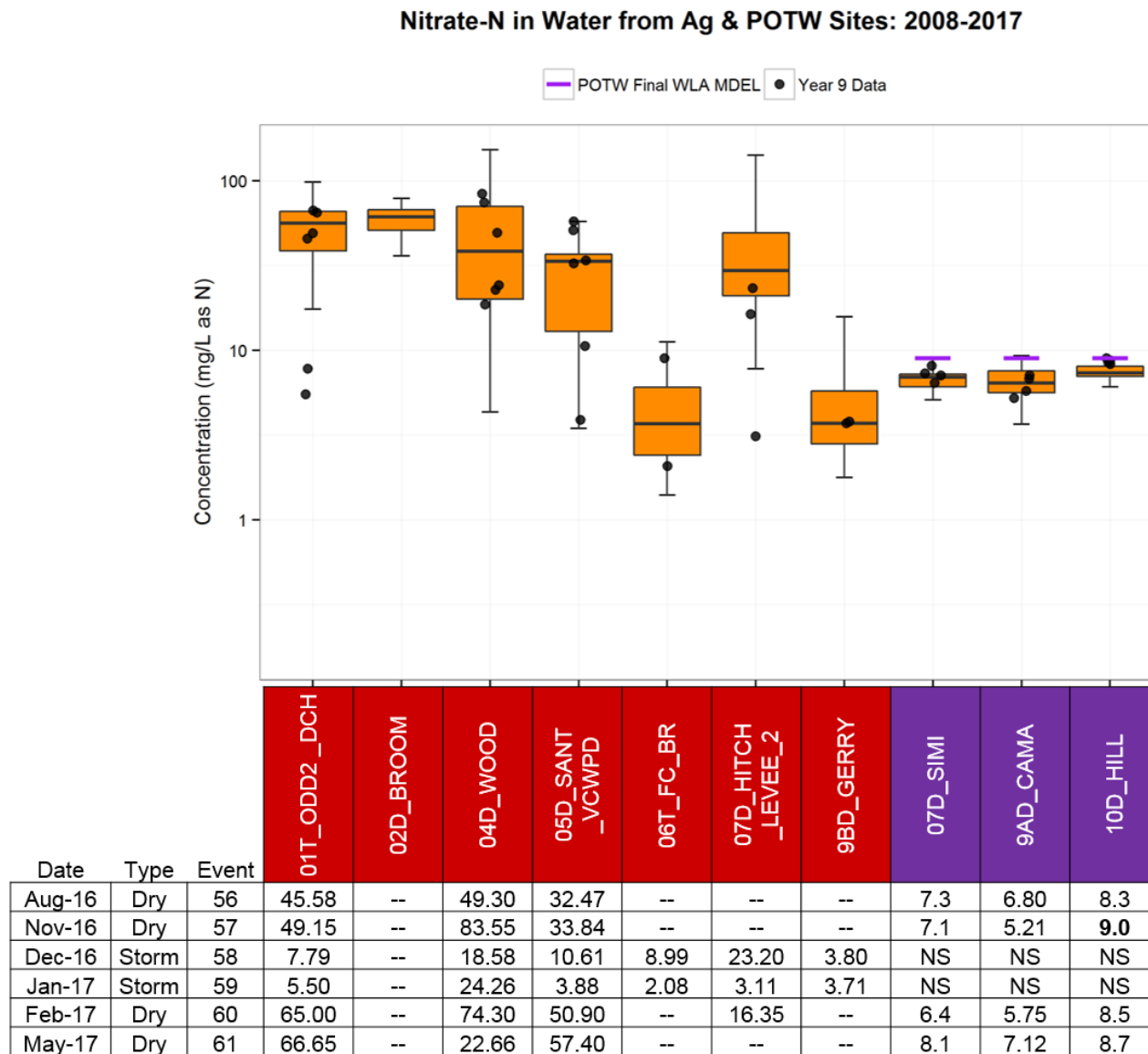


Figure 56. Nitrate-N Concentrations in Ag and POTW Sites: 2008-2017

Nitrite-N in Receiving Water Sites: 2008-2017

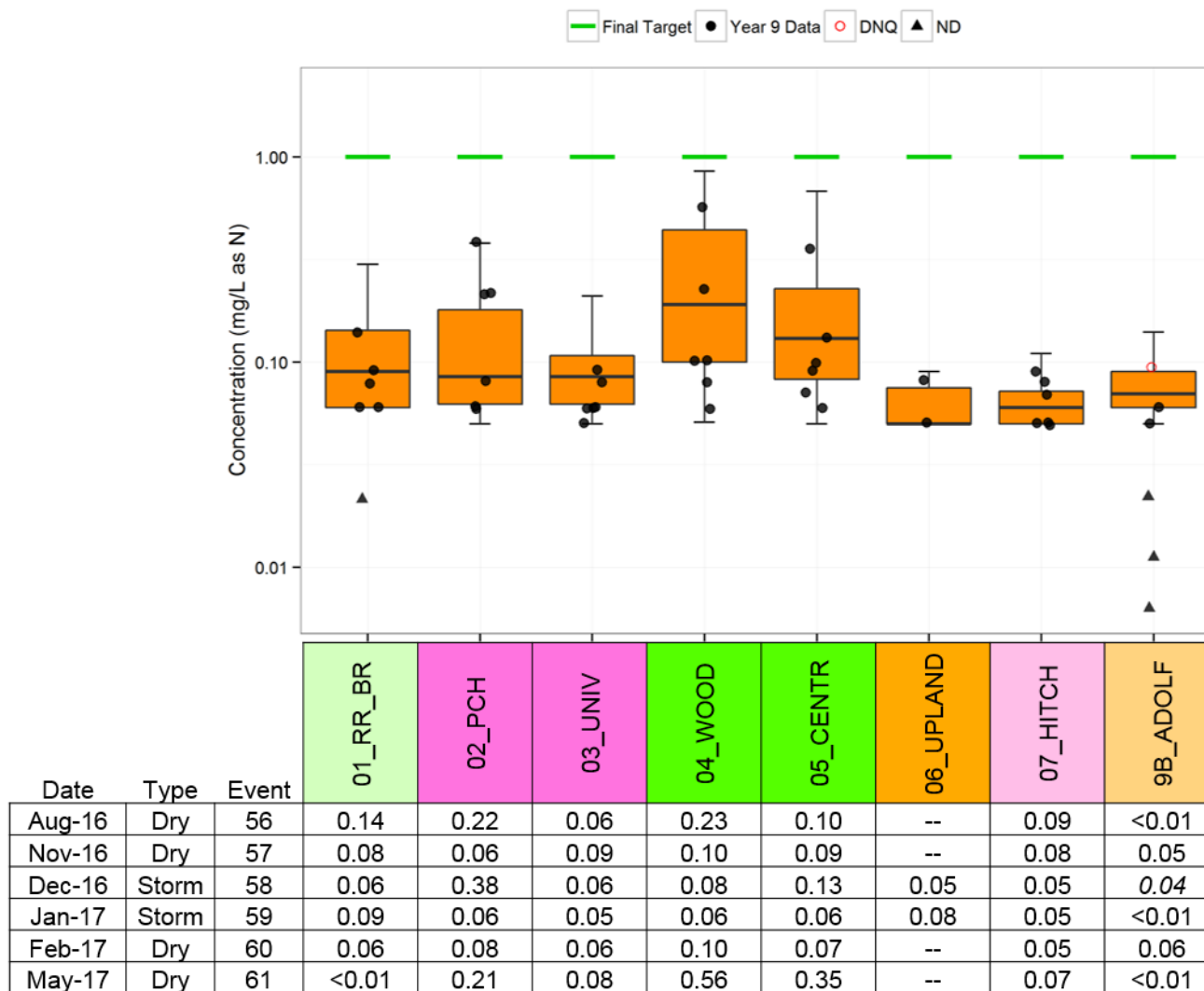


Figure 57. Nitrite-N Concentrations in Receiving Water Sites: 2008-2017

Nitrite-N in Water from Ag & POTW Sites: 2008-2017

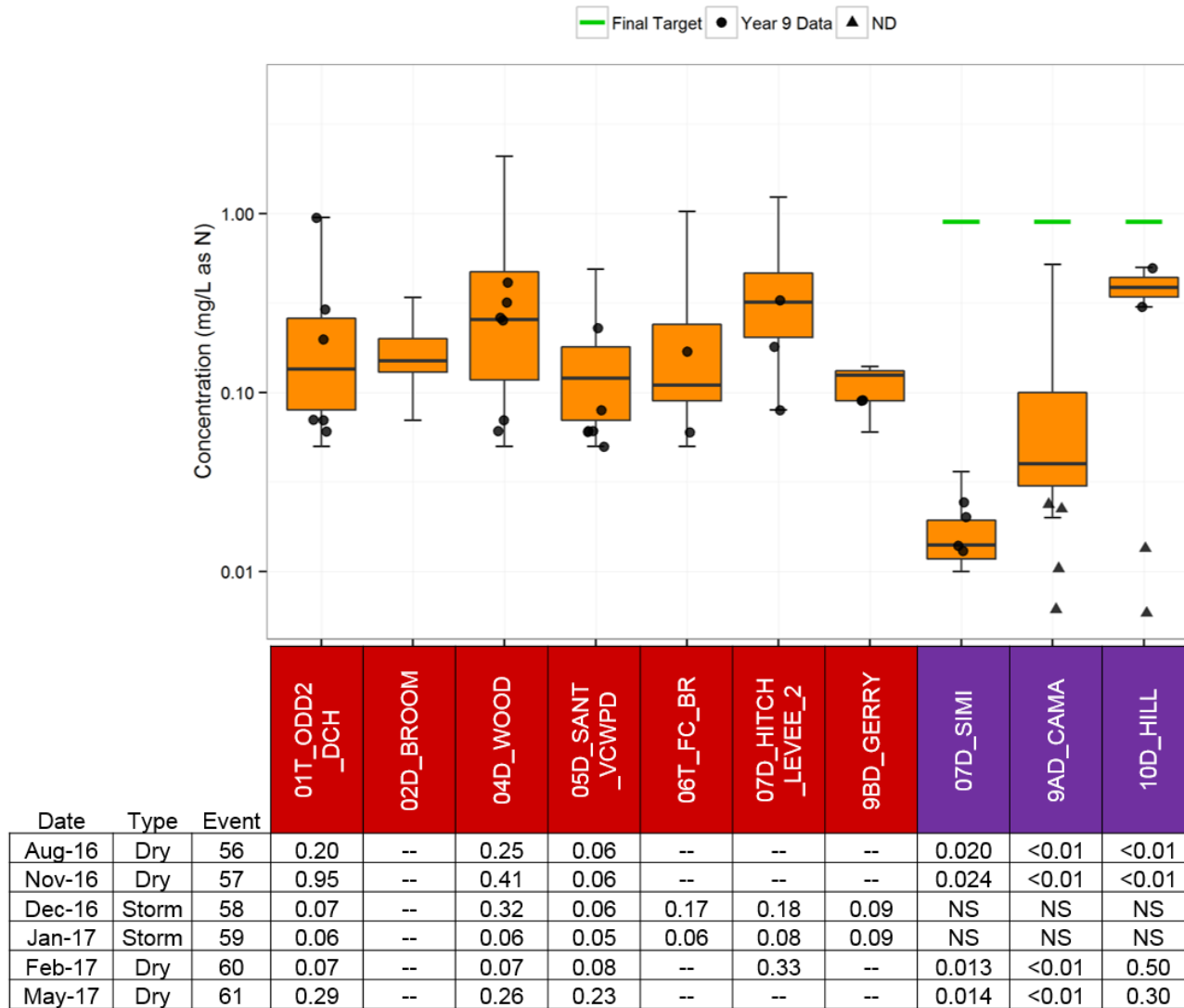


Figure 58. Nitrite-N Concentrations in Ag and POTW Sites: 2008-2017

Nitrate-N + Nitrite-N in Receiving Water Sites: 2008-2017

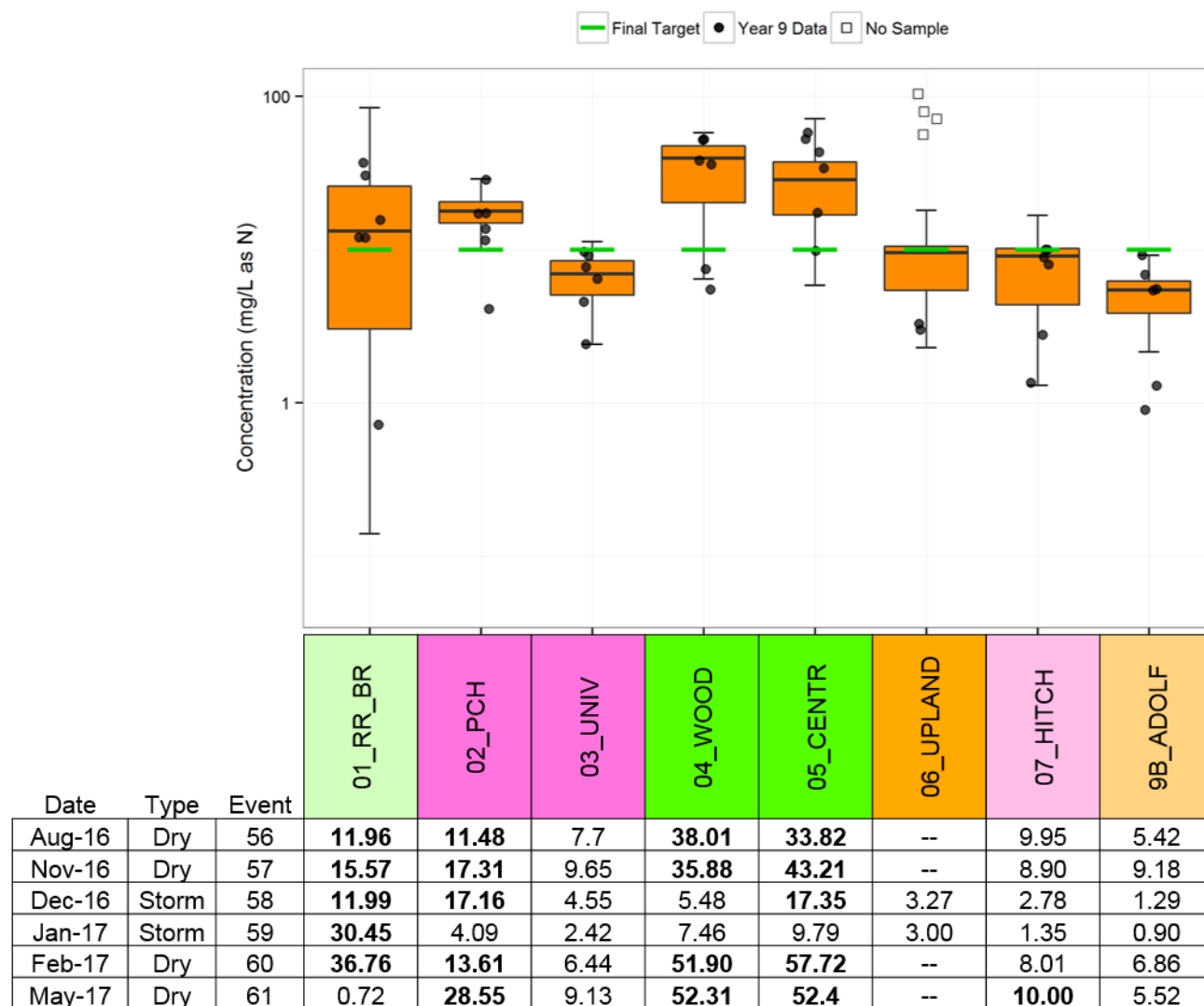


Figure 59. Nitrate-N + Nitrite-N Concentrations in Receiving Water Sites: 2008-2017

Nitrate-N + Nitrite-N in Water from Ag & POTW Sites: 2008-2017

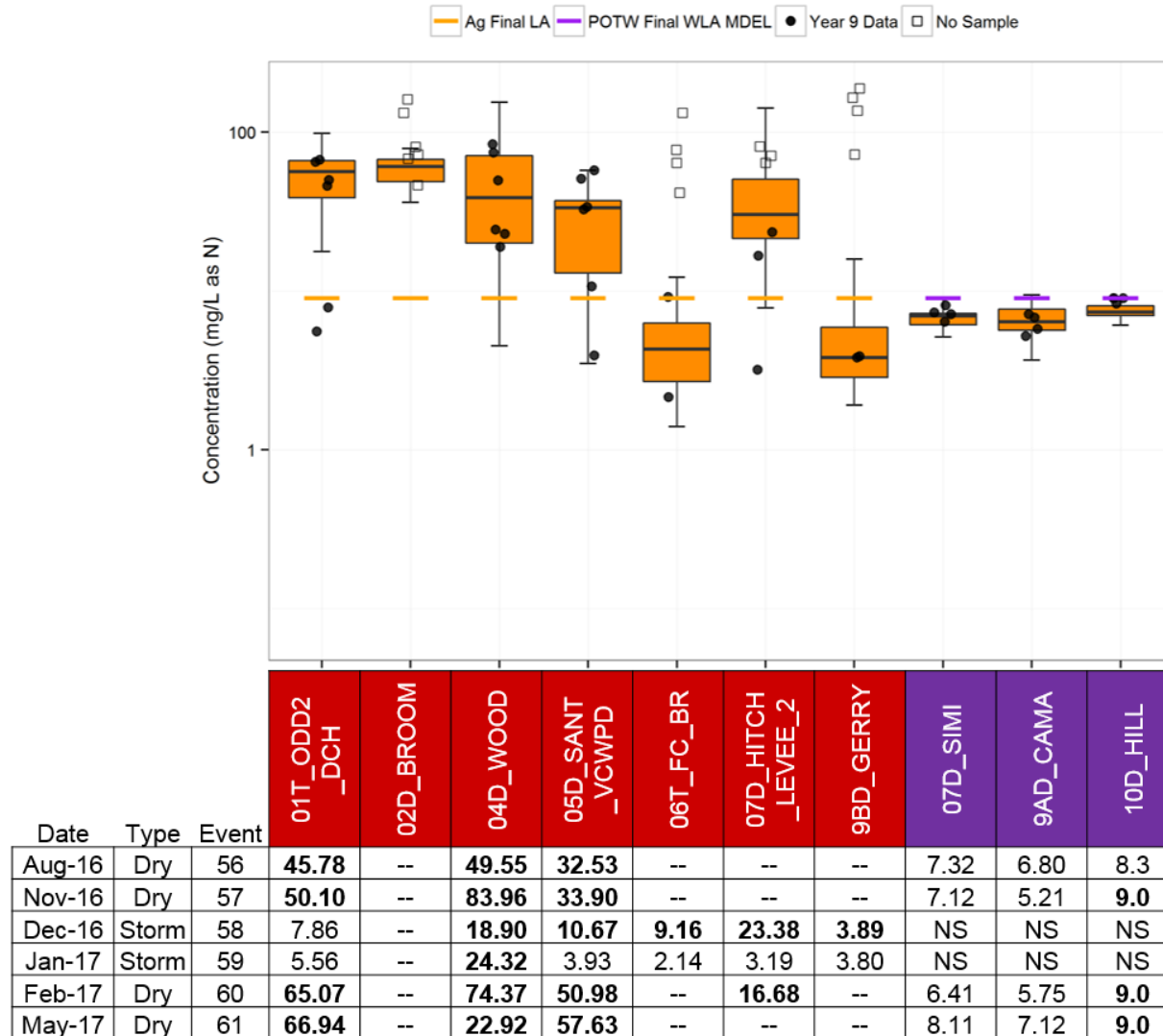


Figure 60. Nitrate-N + Nitrite-N Concentrations in Ag and POTW Sites: 2008-2017

SALTS TMDL

For the Salts TMDL, compliance with interim dry weather salt allocations is determined using monthly mean salt concentrations for dry weather developed from the time-series of data collected at receiving water sites. Bolded values in the tables within each figure indicate the concentration was above the interim MS4 wasteload allocation and the interim load allocation for that constituent. Italicized values in the tables within each figure indicate the concentration was above the interim MS4 wasteload allocation for that constituent.

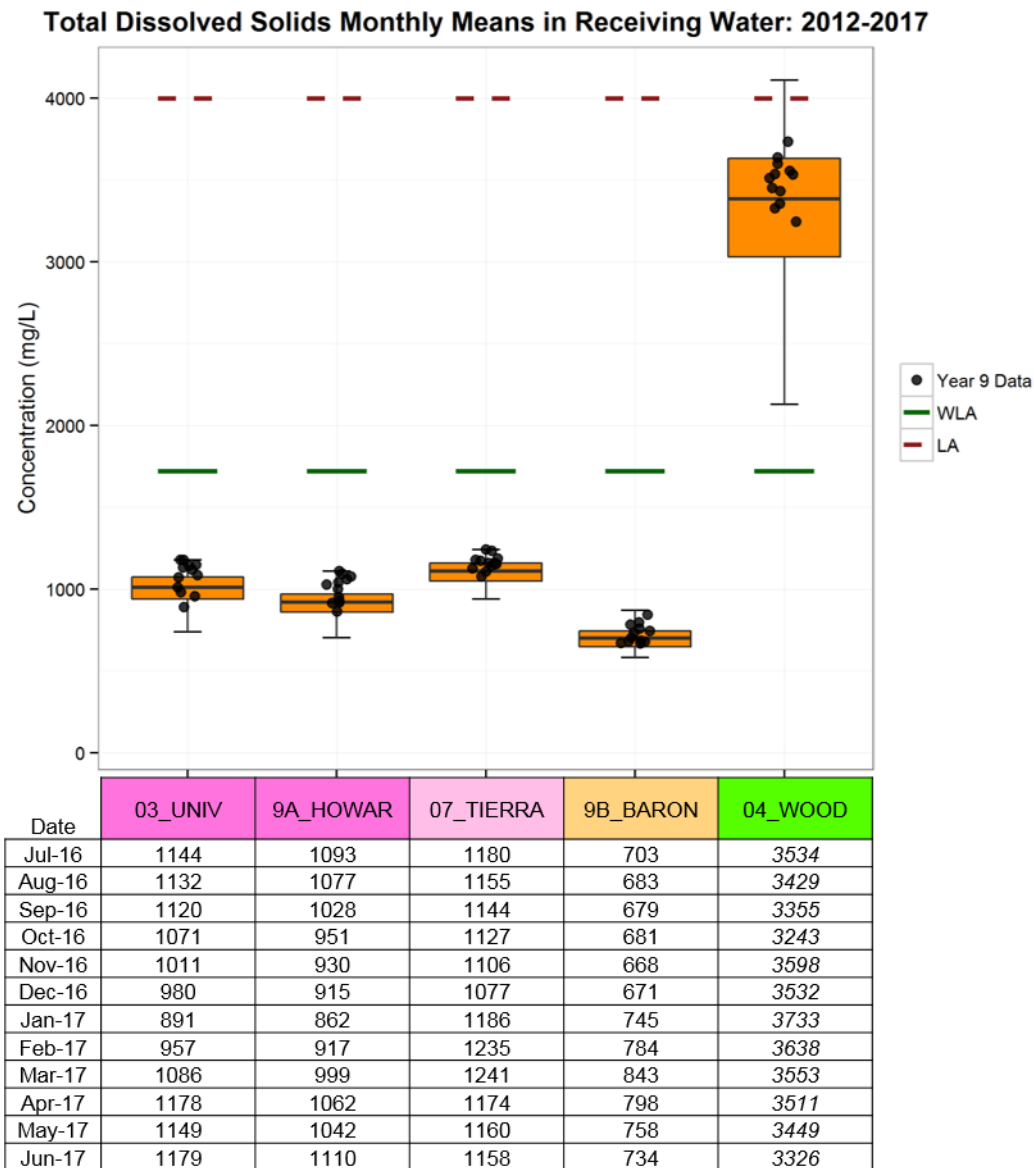


Figure 61. TDS Monthly Means for Receiving Water Sites Collected During Dry Weather

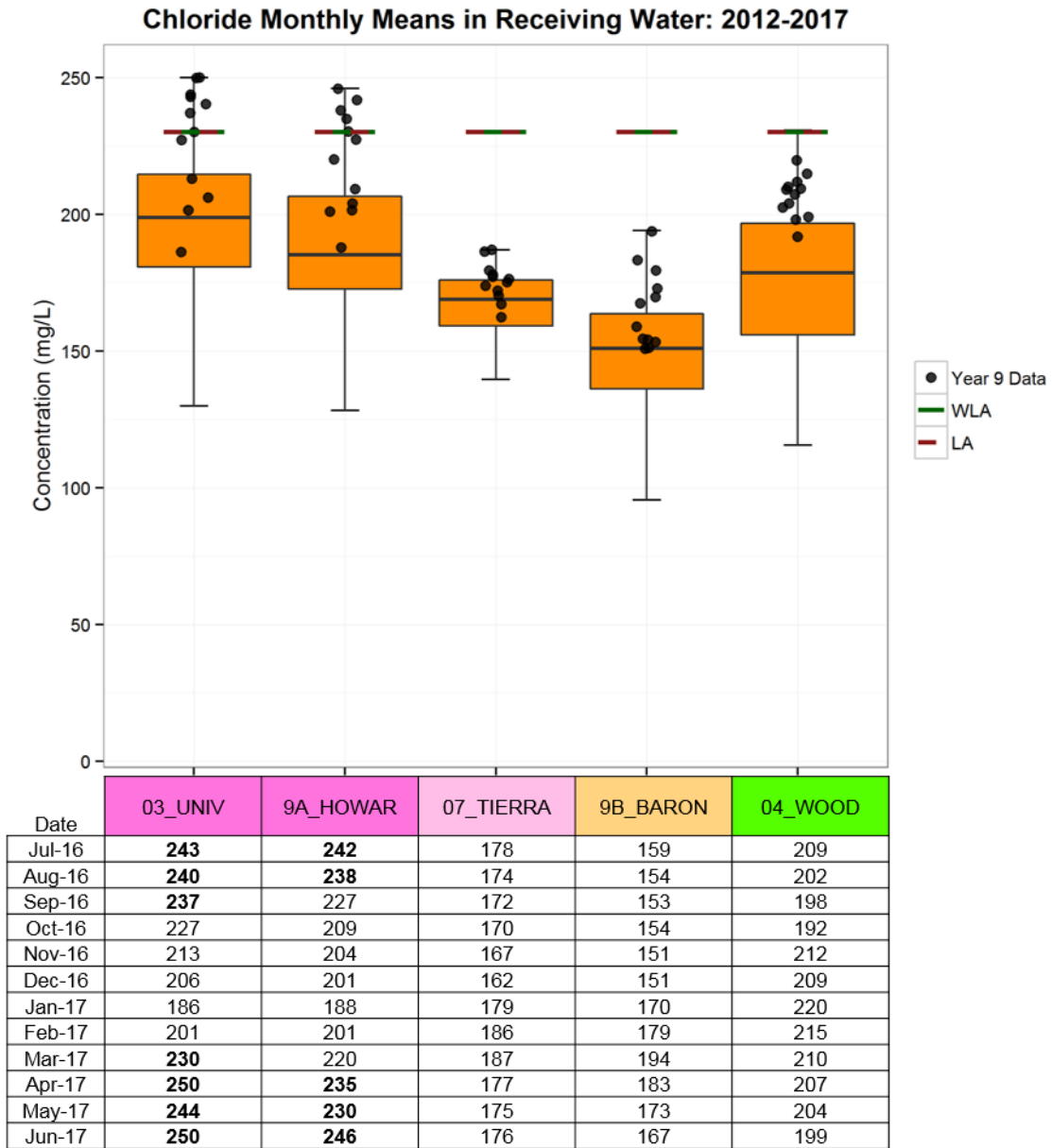


Figure 62. Chloride Monthly Means for Receiving Water Sites Collected During Dry Weather

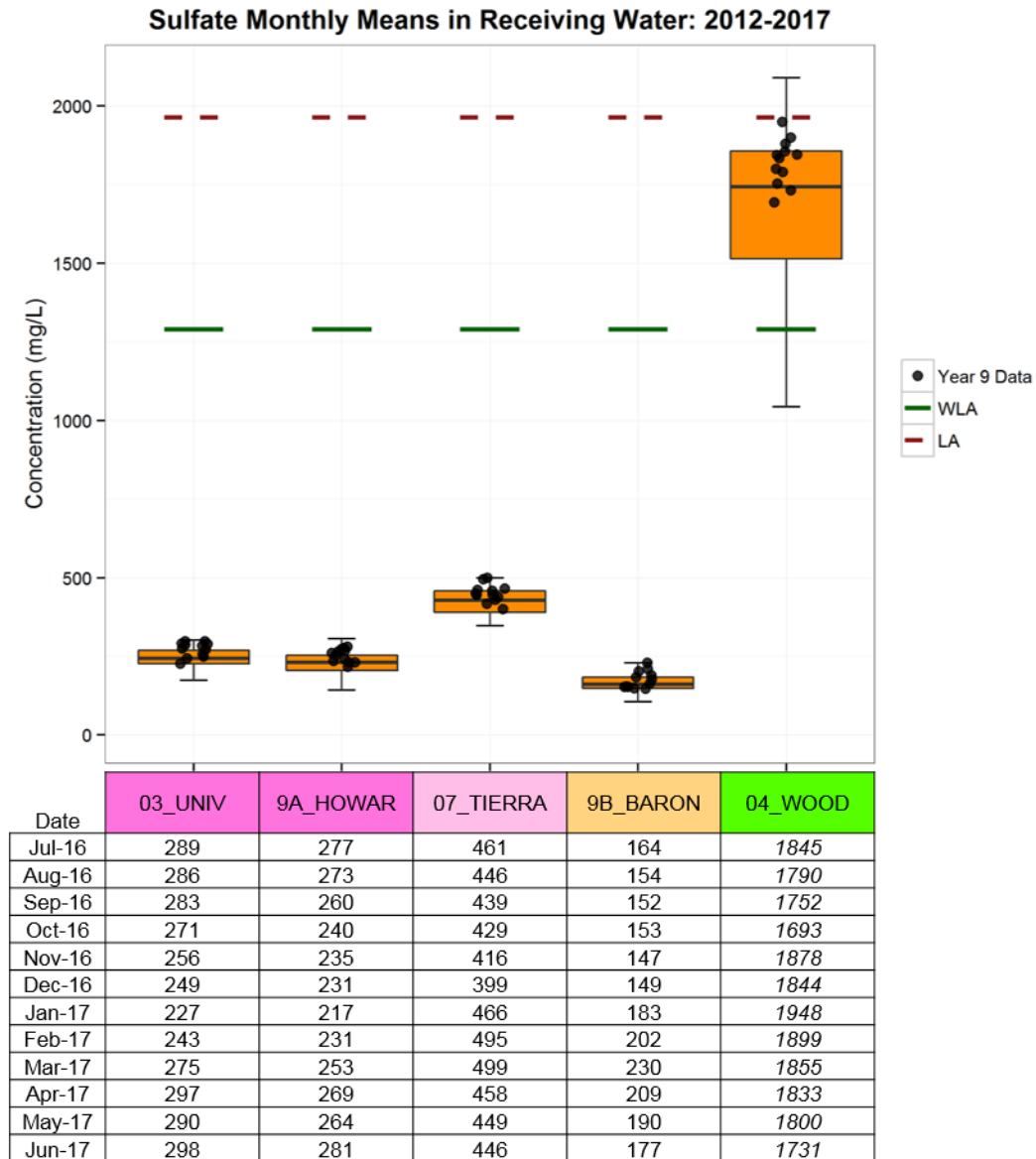


Figure 63. Sulfate Monthly Means for Receiving Water Sites Collected During Dry Weather

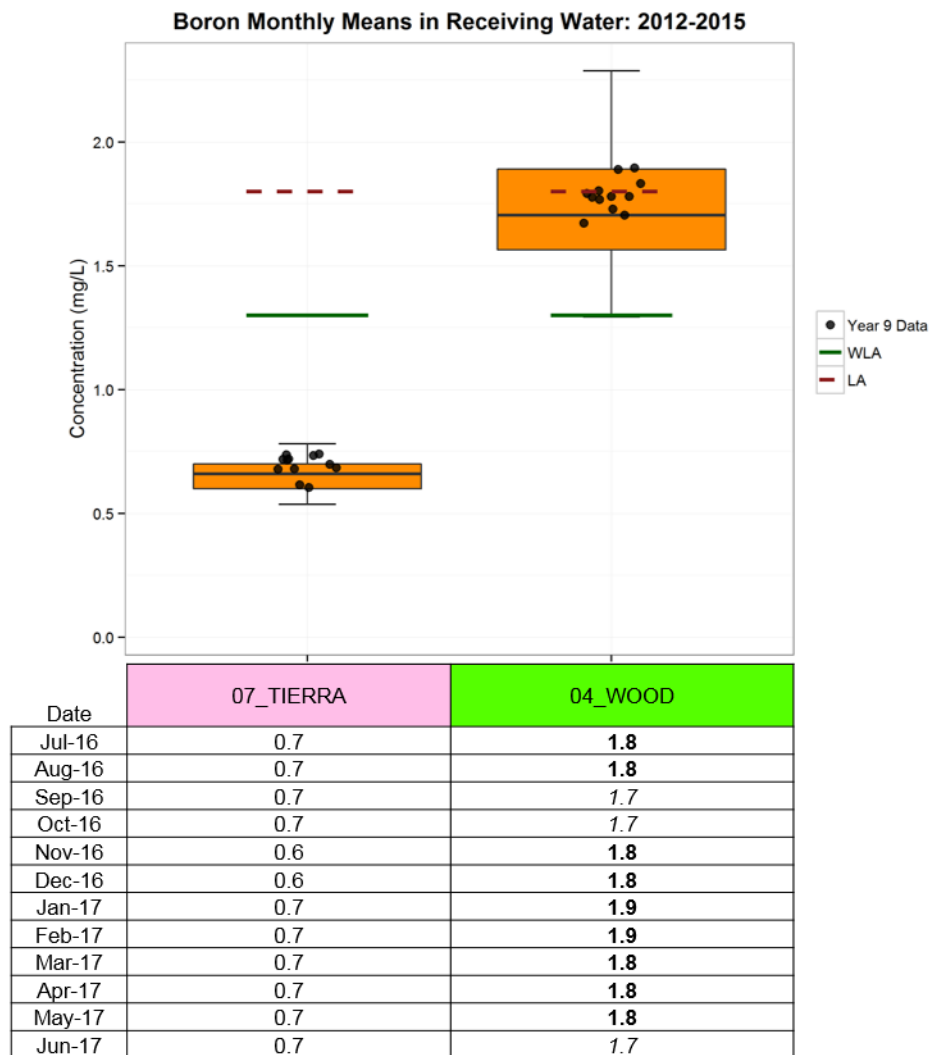


Figure 64. Boron Monthly Means for Receiving Water Sites Collected During Dry Weather

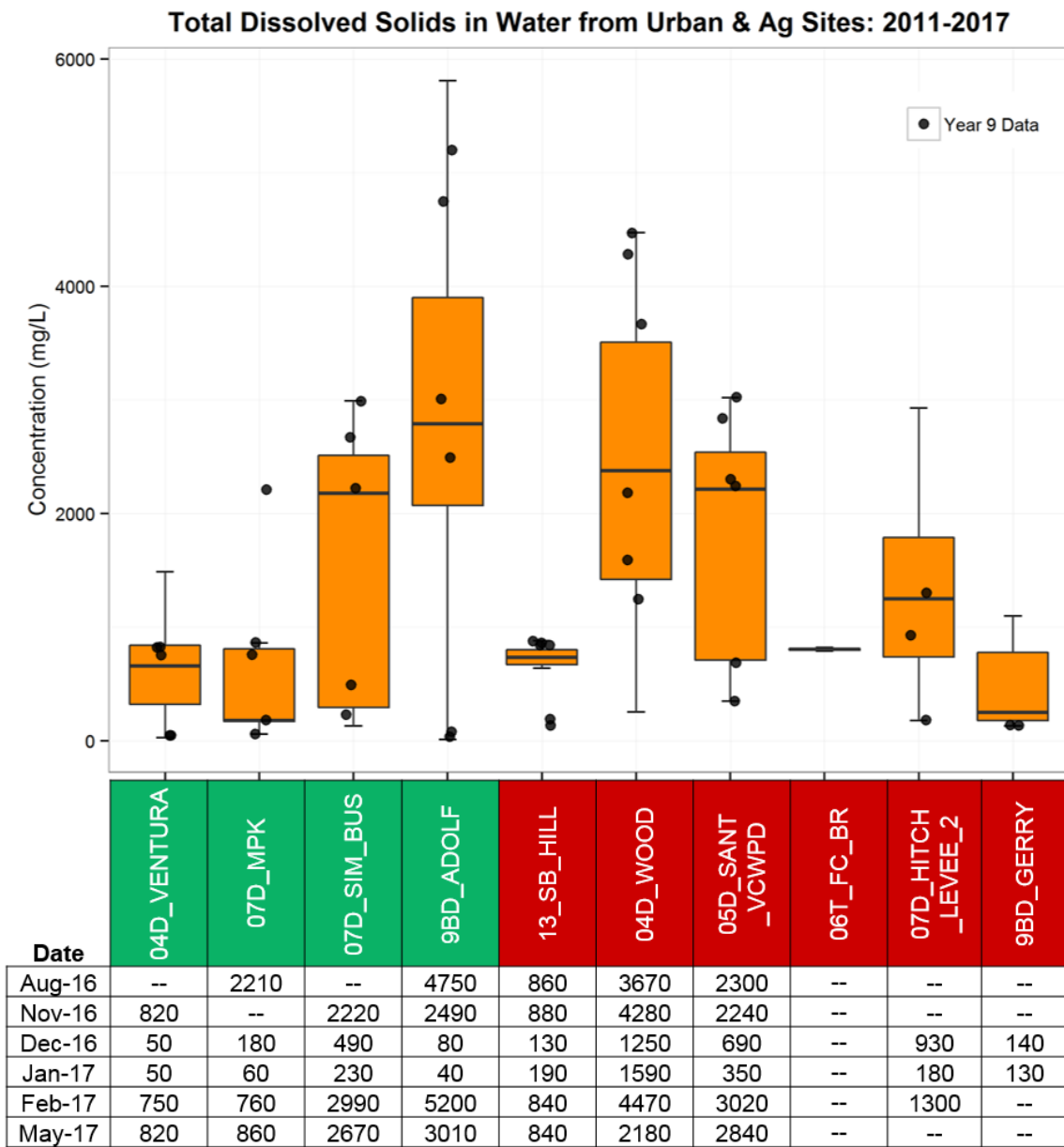


Figure 65. Total Dissolved Solids in Water from Urban and Ag Sites: 2011-2017

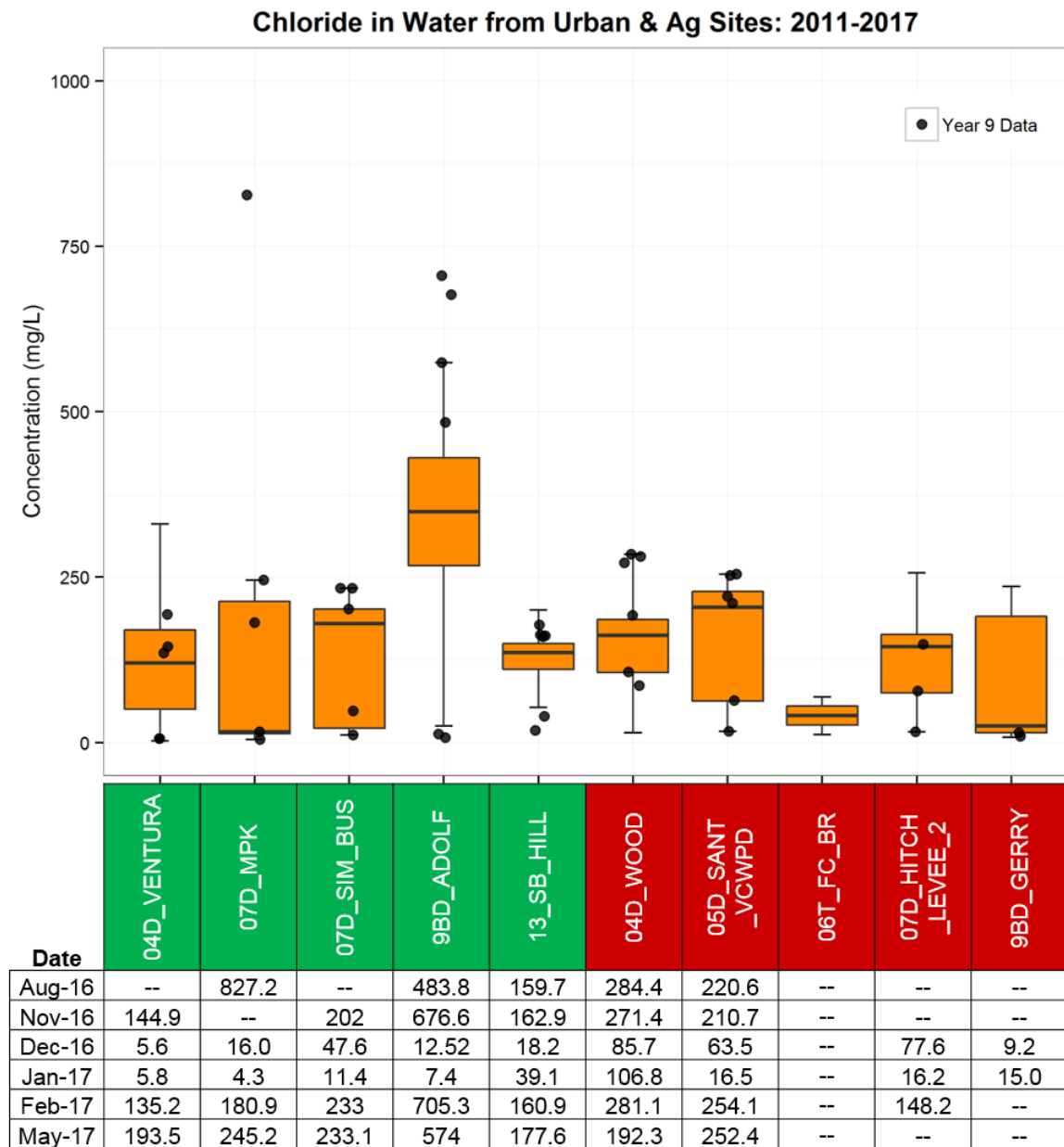


Figure 66. Chloride in Water from Urban & Ag Sites: 2011-2017

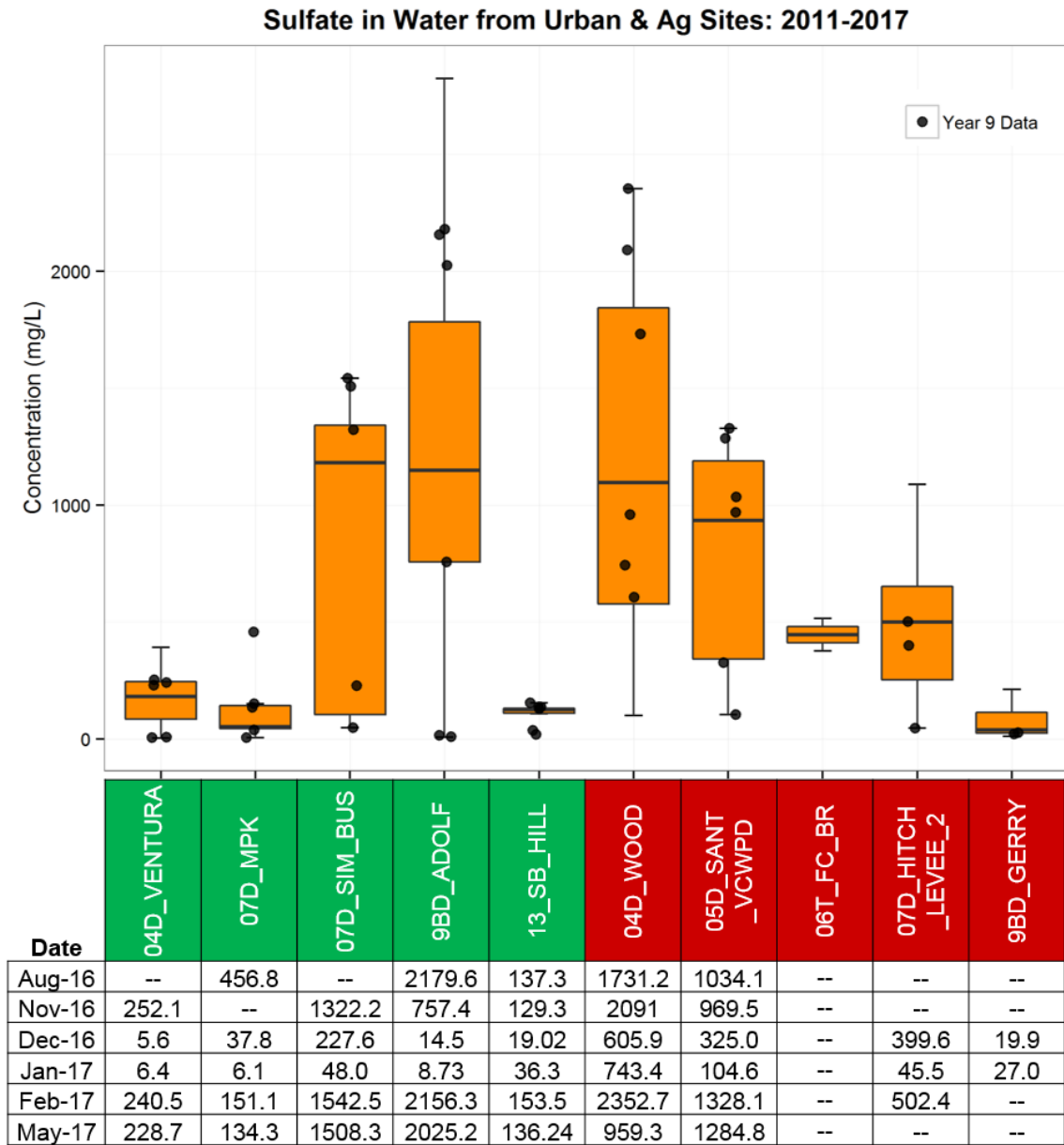


Figure 67. Sulfate in Water from Urban & Ag Sites: 2011-2017

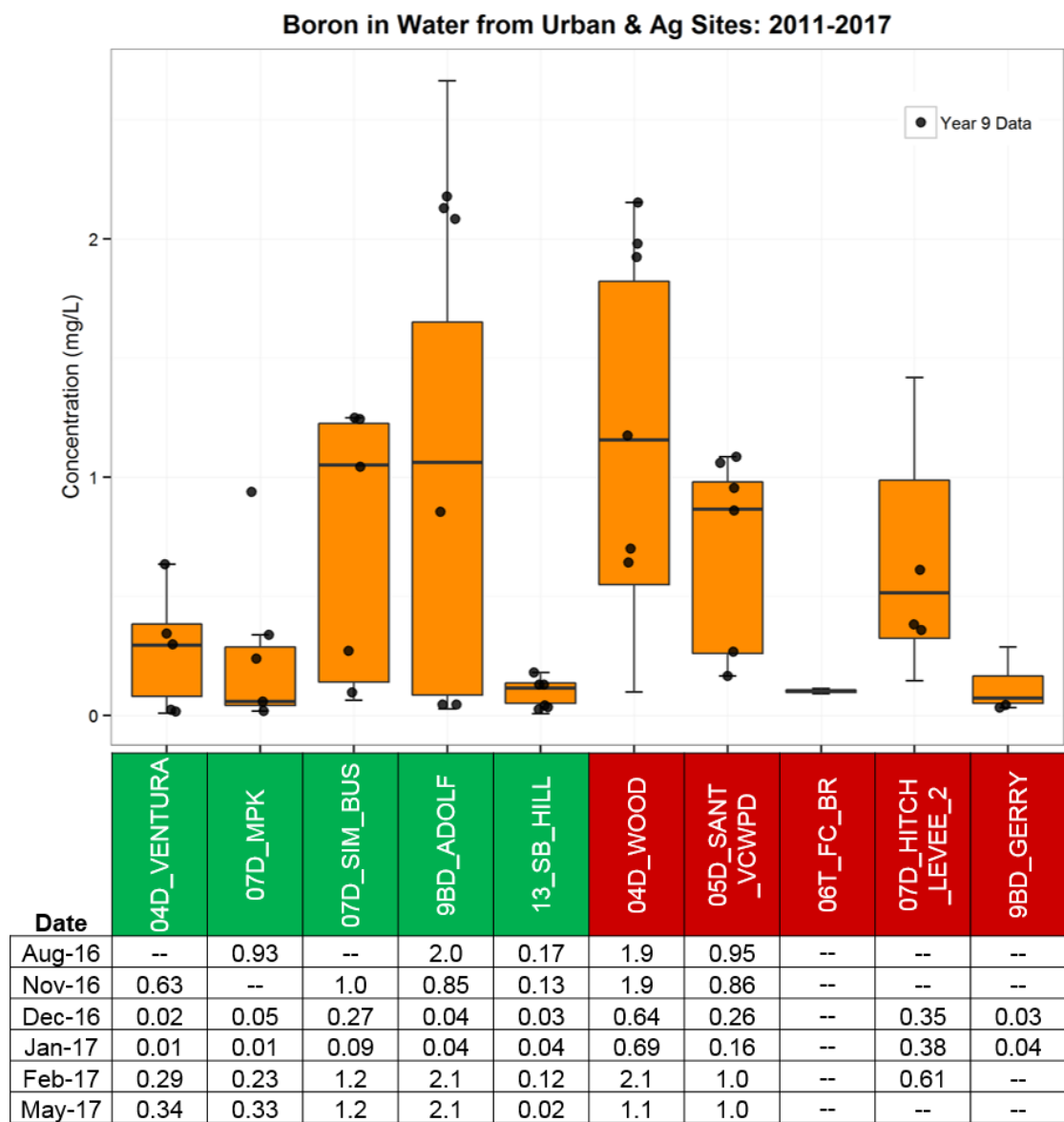


Figure 68. Boron in Water from Urban & Ag Sites: 2011-2017

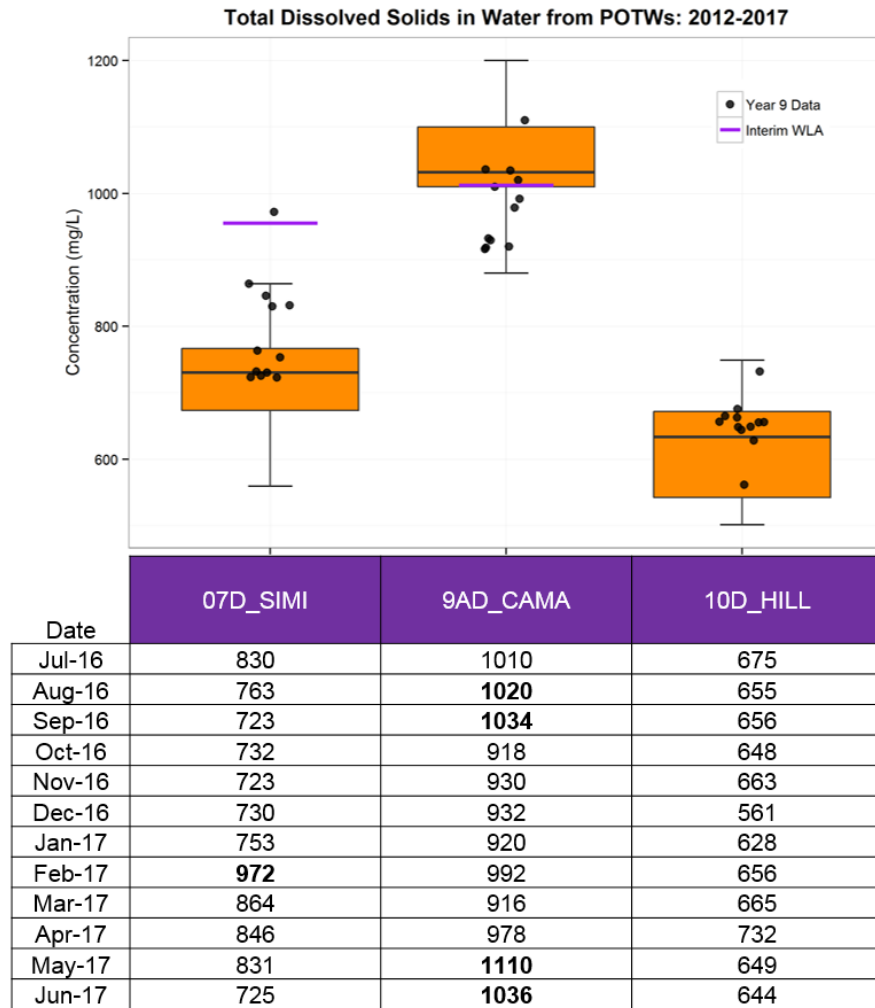


Figure 69. Total Dissolved Solids in Water from POTW Sites: 2012-2017

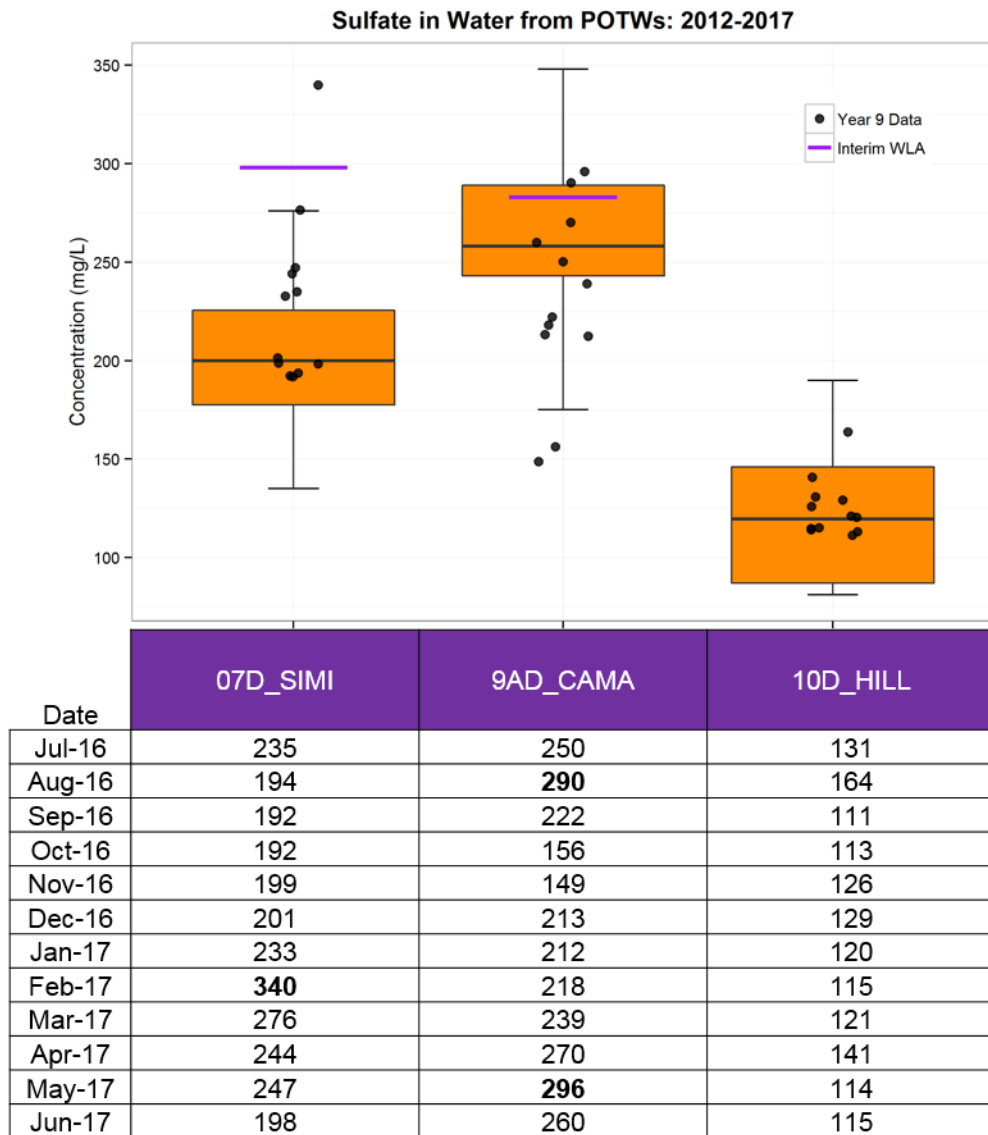


Figure 70. Sulfate in Water from POTW Sites: 2012-2017

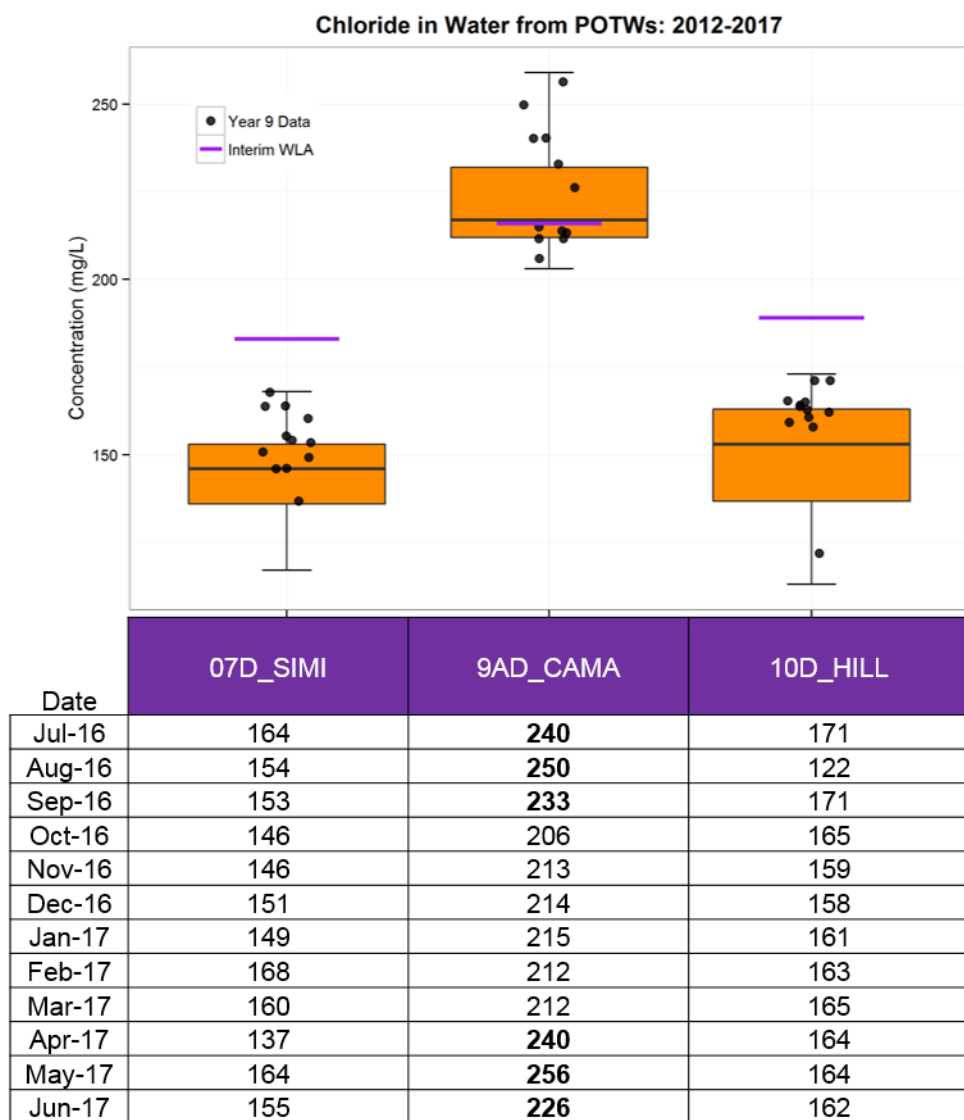


Figure 71. Chloride in Water from POTW Sites: 2012-2017

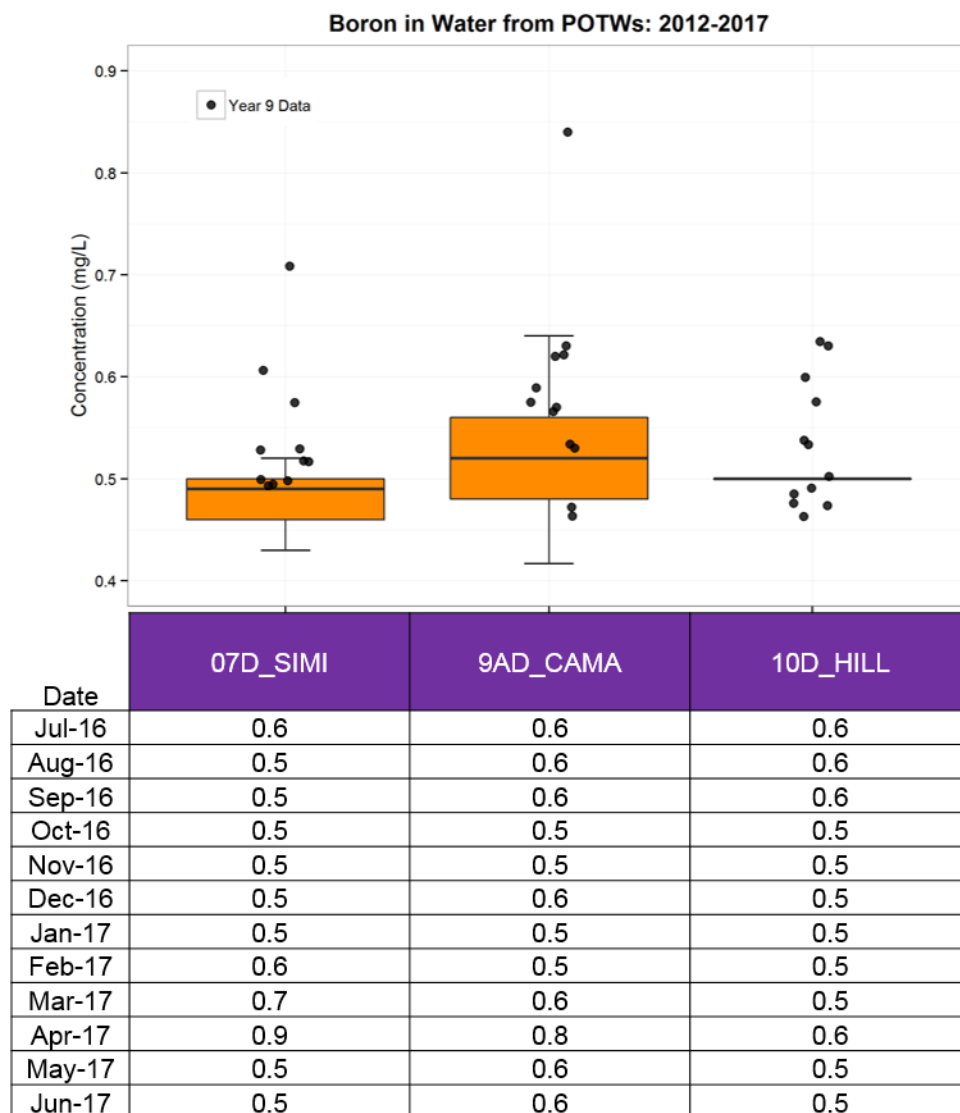


Figure 72. Boron in Water from POTW Sites: 2012-2017

TISSUE DATA

Tissue data is provided in the following tables for freshwater monitoring locations. Tissue samples are only collected in Mugu Lagoon every three years. The last tissue collection in the lagoon took place in Year 7 and the associated data can be found in that annual monitoring report. For all tables, only those constituents that have been detected in at least one sample are included.

Freshwater Tissue Data

Table 9. Calleguas Creek – Camarillo Street CSUCI (03_UNIV) Fish Tissue Data Years 1-9 ^{1, 2}

Date	Fish		Lipids	OC Pesticides									PCBs
			Percent Lipids %	Chlordane -alpha ng/g	Chlordane -gamma ng/g	2,4'- DDD ng/g	2,4'- DDE ng/g	2,4'- DDT ng/g	4,4'- DDD ng/g	4,4'- DDE ng/g	4,4'- DDT ng/g	Toxaphene ng/g	Total PCBs ng/g
8/6/08	Arroyo Chub	Whole Fish	4.7	DNQ	ND	ND	6.6	ND	ND	373	ND	ND	ND
9/3/09		Comp. #1	4.2	25	11	24	38	97	127	2422	13	6397	98
9/3/09		Comp. #2	5.7	20	13	28	38	102	116	2782	20	5675	55
9/3/09		Comp. #3	6	32	15	31	45	117	175	2951	18	4300	56
9/3/09	Black Bullhead	Carcass	2.5	43	22	22	13	ND	184	6980	469	6469	55
9/3/09		Fillet w/ Skin	1.3	29	13	12	ND	ND	90	3603	233	3283	32
9/3/09	Common Carp	Carcass #1	4	32	15	25	17	29	100	2209	240	4805	ND
9/3/09		Carcass #2	4.3	37	19	24	DNQ	16	112	2492	328	8510	21
9/3/09		Carcass #3	4.7	47	25	26	22	31	119	2744	466	ND	ND
9/3/09		Fillet w/ Skin #1	1.5	5.5	ND	DNQ	ND	10	21	413	46	ND	ND
9/3/09		Fillet w/ Skin #2	1.6	12	DNQ	13	ND	21	25	708	115	ND	ND
9/3/09		Fillet w/ Skin #3	1.9	7.5	DNQ	18	ND	33	45	772	140	ND	ND
9/3/10	Arroyo Chub	0-85 mm	4.3	DNQ	DNQ	ND	DNQ	DNQ	DNQ	167	16	ND	ND
9/3/10		86-112 mm	7	DNQ	DNQ	DNQ	12	30	44	1300	20	646	DNQ
9/3/10		Common Carp	4.3	DNQ	DNQ	DNQ	ND	DNQ	21	247	32	403	ND

Date	Fish		Lipids	OC Pesticides									PCBs
			Percent Lipids %	Chlordane -alpha ng/g	Chlordane -gamma ng/g	2,4'-DDD ng/g	2,4'-DDE ng/g	2,4'-DDT ng/g	4,4'-DDD ng/g	4,4'-DDE ng/g	4,4'-DDT ng/g	Toxaphene ng/g	Total PCBs ng/g
8/25/11	Common Carp		1.9	DNQ	ND	DNQ	ND	8.5	ND	125	ND	DNQ	ND
8/30/12	Common Carp		1.5	ND	ND	ND	ND	ND	ND	175	ND	ND	ND
8/27/13	Whole Fish Composite Fathead Minnow Green Sunfish Common Carp		3	ND	ND	ND	ND	ND	ND	200.5	ND	ND	ND
6/17/15	Common Carp	Whole Fish	5.1	12.5	3.2	6.5	6.9	35.0	77.1	2404.7	9.0	211.3	171.3
		Filet w/o skin #1	2.4	ND	ND	DNQ	DNQ	1.7	4.3	248.0	ND	35.4	DNQ
		Filet w/o skin #2	1.3	ND	ND	ND	ND	DNQ	DNQ	92.9	ND	26.2	ND
8/11/15	Fathead Minnow	Composite #1	12.6	20.0	7.6	ND	14.3	38.7	108.9	1959.1	ND	ND	35.4
		Composite #2	10.0	13.7	ND	ND	7.3	13.3	55.4	1009.4	ND	ND	23.4
		Composite #3	8.3	11.2	ND	ND	5.9	12.5	39.6	663.4	ND	ND	44.9
		Composite #4	10.9	36.1	9.0	13.0	18.4	21.3	56.0	1306.9	ND	156.8	29.7
5/25/17	Fathead Minnow	Composite #1	3.1	DNQ	DNQ	DNQ	ND	ND	10.0	129.0	ND	184.2	ND
		Composite #2	2.8	DNQ	DNQ	DNQ	ND	ND	10.0	127.0	ND	70.6	ND
		Composite #3	2.7	DNQ	DNQ	DNQ	ND	ND	10.0	137.0	ND	117.4	ND
		Composite #4	2.7	DNQ	DNQ	ND	ND	ND	ND	118.4	ND	115.6	ND

1. Only constituents with detected values are included in the table.
2. No fish were caught at this site during the two days of fish collection in summer 2016.

Table 10. Conejo Creek – Adolfo Road (9B_ADOLF) Fish Tissue Data Years 1 – 9 ^{1, 2}

Date	Fish		Lipids	OC Pesticides									PCBs
			Percent Lipids	Chlordane -alpha	Chlordane -gamma	2,4'-DDD	2,4'-DDE	2,4'-DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT	Toxaphene	Total PCBs
			%	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g
8/6/08	Common Carp		3.5	ND	ND	ND	ND	ND	ND	111	54	ND	ND
9/3/09	Arroyo chub	Comp. #1	8.6	19	8.2	10	22	54	47	694	14	3611	ND
9/3/09		Comp. #2	9.5	18	5.2	15	15	40	37	646	21	3213	56
9/3/09		Comp. #3	8.4	18	6.8	16	21	43	61	629	ND	2766	67
9/3/09	Common Carp	Carcass #1	2.5	21	6.0	15	ND	ND	27	754	ND	ND	54
9/3/09		Fillet w/ Skin #1	0.8	ND	ND	ND	ND	ND	10	190	ND	ND	ND
9/3/09		Carcass #2	4.8	49	24	18	ND	ND	170	3643	99	3566	93
9/3/09		Fillet w/ Skin #2	1.6	10	5.4	8.6	ND	ND	43	1019	30	ND	26
9/3/09		Carcass Comp. #3	4	27	15	19	12	131	58	1019	190	2544	70
9/3/09		Fillet Comp. w/ Skin #3	1.8	DNQ	ND	25	ND	57	37	274	86	ND	ND
9/3/10	Arroyo chub	0-85 mm	4.9	DNQ	ND	DNQ	DNQ	11	21	626	17	487	ND
9/3/10		86-112 mm	6.6	DNQ	DNQ	ND	DNQ	DNQ	DNQ	137	14	ND	ND
8/25/11	Common carp		2.4	DNQ	DNQ	ND	ND	DNQ	ND	49	ND	DNQ	ND
8/27/13	Largemouth Bass		1.3	ND	ND	ND	ND	ND	ND	85.7	ND	ND	ND
6/17/15	Common Carp	Whole Fish	13.4	8.9	3.9	4.5	ND	5.9	10.1	193.9	DNQ	99.4	30.6
		Fillet w/o skin #1	9.8	7.4	3.5	4.0	3.3	2.4	11.3	112.9	3.4	145.8	18.8
		Fillet w/o skin #2	4.8	2.1	DNQ	DNQ	DNQ	1.3	3.1	164.0	ND	48.0	25.7

Date	Fish	Lipids	OC Pesticides										PCBs
		Percent Lipids %	Chlordane -alpha ng/g	Chlordane -gamma ng/g	2,4'-DDD ng/g	2,4'-DDE ng/g	2,4'-DDT ng/g	4,4'-DDD ng/g	4,4'-DDE ng/g	4,4'-DDT ng/g	Toxaphene ng/g	Total PCBs ng/g	
5/18/16	Common Carp	#1	5.68	7.7	DNQ	61.1	7.1	31.0	ND	226.4	DNQ	ND	46.8
		#2	3.88	9.8	DNQ	31.2	11.3	7.8	12.8	316.6	ND	DNQ	57.3
		#3	0.96	DNQ	ND	8.6	DNQ	DNQ	ND	79.9	ND	ND	31.0
5/25/17	Common Carp	Whole Fish #1	7.94	17.6	7.9	ND	ND	ND	ND	324.2	ND	142.3	31.9
		Whole Fish #2	3.56	DNQ	DNQ	DNQ	ND	ND	5.9	44.4	ND	DNQ	ND
		Whole Fish #3	6.11	6.3	DNQ	ND	ND	ND	ND	89.8	ND	DNQ	ND
	GRN Sunfish	Filet w/o skin #1	0.62	ND	ND	ND	ND	ND	ND	8.1	ND	DNQ	ND
		Filet w/o skin #2	0.81	ND	ND	ND	ND	ND	ND	DNQ	ND	DNQ	ND

1. Only constituents with detected values are included in the table.
2. No fish were caught at this site during year five.

Table 11. Arroyo Simi – Hitch Boulevard (07_HITCH) Fish Tissue Data Years 1 – 9 ^{1,2}

Date	Fish		Lipids	OC Pesticides								PCBs
			Percent Lipids	Chlordane -alpha	Chlordane -gamma	2,4'-DDD	2,4'-DDE	2,4'-DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT	Total PCBs
			%	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g
8/6/08	Arroyo Chub	Composite	8.3	ND	ND	ND	DNQ	ND	ND	521	ND	ND
9/3/09	Arroyo Chub	Composite #1 43-60mm	9.5	DNQ	ND	20	ND	52	233	955	ND	ND
9/3/09		Composite #1 65-90mm	10.6	ND	ND	5.3	DNQ	12	15.8	365	ND	ND
9/3/09		Composite #2 43-60mm	9.7	DNQ	ND	33	ND	749	437	1183	ND	ND
9/3/09		Composite #2 65-90mm	10.5	DNQ	ND	32	14.6	74	195	1648	26	28
9/3/09		Composite #3 43-60mm	8.3	DNQ	ND	26	ND	45	343	967	ND	ND
9/3/09		Composite #3 65-90mm	11.3	6.6	ND	27	ND	57	110	1275	38	ND
9/3/10		Arroyo Chub	7.8	ND	ND	DNQ	DNQ	19	19.2	673	DNQ	ND
8/28/13	Whole Fish Composite Largemouth Bass Goldfish		11.9	ND	ND	ND	ND	ND	ND	ND	ND	ND
6/17/15	Largemouth Bass	Whole fish #1	14.5	5.4	DNQ	ND	ND	ND	ND	84.4	ND	23.0
		Whole fish #2	11.8	ND	ND	ND	ND	ND	ND	58.5	ND	5.1
		Whole fish #3	14.9	DNQ	ND	ND	ND	1.8	4.1	197.5	7.1	11.6
		Whole fish #4	7.8	DNQ	ND	ND	ND	ND	ND	78.9	ND	12.7
		Whole fish #5	14.7	1.8	ND	ND	ND	1.4	2.5	100.1	4.0	18.0
8/11/15	Goldfish	Composite	5.6	ND	ND	ND	ND	ND	ND	112.8	ND	ND
		Grab #1	4.2	ND	ND	ND	ND	ND	ND	184.1	ND	ND
		Grab #2	7.1	6.7	5.0	5.7	ND	ND	ND	101.3	ND	DNQ
		Grab #3	8.6	DNQ	DNQ	ND	ND	ND	ND	109.2	10.6	ND

Date	Fish	Lipids	OC Pesticides								PCBs
		Percent Lipids	Chlordane -alpha	Chlordane -gamma	2,4'-DDD	2,4'-DDE	2,4'-DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT	Total PCBs
		%	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g
8/11/15	Composite #1	17.2	6.6	DNQ	ND	ND	15.9	ND	360.8	8.1	ND
	Composite #2	14.2	5.5	DNQ	DNQ	ND	17.4	15.2	247.5	ND	ND
	Composite #3	11.0	DNQ	DNQ	ND	ND	15.7	22.8	323.5	ND	ND
	Composite #4	8.4	ND	ND	ND	ND	15.7	ND	191.7	ND	ND
	Composite #5	20.6	6.4	DNQ	ND	ND	30.5	ND	323.8	ND	DNQ
5/18/16	#1	4.08	ND	ND	8.6	ND	6.1	ND	203	DNQ	33.1
	#2	4.51	ND	ND	16.4	ND	15.9	ND	365.6	12.9	54.3
	#3	4.49	ND	ND	15.5	ND	8.4	ND	548.7	16.9	50.4
	#4	4.4	DNQ	ND	26.4	ND	18.1	ND	442.8	15.5	67.5
	#5	4.37	ND	ND	19.4	ND	16.4	ND	542.9	DNQ	59.6
6/22/16 ⁴	Filet with Skin #1	8.9	DNQ	DNQ	ND	ND	ND	ND	68.5	ND	ND
	Filet with Skin #2	8.5	DNQ	DNQ	ND	ND	ND	ND	44.6	ND	ND
	Filet with Skin #3	4.4	DNQ	DNQ	ND	ND	ND	ND	41.0	ND	ND
	Filet with Skin #4	21.7	DNQ	DNQ	ND	ND	ND	ND	44.4	ND	ND

Date	Fish	Lipids	OC Pesticides								PCBs
		Percent Lipids %	Chlordane -alpha ng/g	Chlordane -gamma ng/g	2,4'-DDD ng/g	2,4'-DDE ng/g	2,4'-DDT ng/g	4,4'-DDD ng/g	4,4'-DDE ng/g	4,4'-DDT ng/g	Total PCBs ng/g
5/25/17 ⁴	Composite #1	4.69	ND	ND	ND	ND	ND	ND	10.3	ND	ND
	Composite #2	4.48	DNQ	ND	ND	ND	ND	ND	10.3	ND	ND
	Composite #3	5.07	ND	ND	ND	ND	ND	ND	8.3	ND	ND
	Fathead Minnow Composite #4	4.52	DNQ	ND	ND	ND	ND	ND	12.1	ND	ND
	Composite #5	4.63	ND	ND	ND	ND	ND	ND	11.5	ND	ND
	Composite #6	4.77	DNQ	ND	ND	ND	ND	ND	10.1	ND	ND
	Composite #7	4.00	DNQ	ND	DNQ	ND	ND	ND	10.0	ND	ND
	Whole Fish #1	2.81	DNQ	ND	ND	ND	ND	ND	12.6	ND	ND
	Whole Fish #2	3.85	ND	ND	ND	ND	ND	ND	7.8	ND	ND
	L.M. Bass Whole Fish #3	3.47	ND	ND	ND	ND	ND	ND	10.4	ND	ND
	Whole Fish #4	3.08	ND	ND	ND	ND	ND	ND	9.9	ND	ND
	Whole Fish #5	3.05	ND	ND	ND	ND	ND	ND	11.7	ND	ND

1. Only constituents with detected values are included in the table.
2. No fish were caught at this site during years 4 or 5.
3. June 22, 2016 and May 25, 2017 samples were collected closer to the 07_TIERRA salts monitoring site and are labeled as such in the data files. However, the data is included here with the 07_HITCH data as the nearest fish tissue monitoring location.

Table 12. Arroyo Las Posas – Somis Road (06_SOMIS) and Upland Road (06_UPLAND) Fish Tissue Data Years 1 – 9 ^{1, 2}

Date	Fish		Lipids	OC Pesticides ³								PCBs ⁴
			Percent Lipids %	Chlordane -alpha ng/g	Chlordane -gamma ng/g	2,4'-DDD ng/g	2,4'-DDE ng/g	2,4'-DDT ng/g	4,4'-DDD ng/g	4,4'-DDE ng/g	Toxaphene ng/g	Total PCBs ng/g
8/6/08	Arroyo Chub	Composite	2.7	ND	ND	ND	ND	ND	ND	492	ND	ND
9/3/09	Arroyo Chub	Composite #1 29-51mm	6.7	11	DNQ	37	ND	ND	646	1918	ND	34
9/3/09		Composite #1 53-97mm	4.6	DNQ	ND	62	ND	ND	535	1967	2821	36
9/3/09		Composite #2 29-51mm	6.8	9.0	DNQ	55	ND	ND	1158	2203	ND	31
9/3/09		Composite #2 53-97mm	6.2	12	5.9	28	16	43	128	2313	3054	44
9/3/09		Composite #3 29-51mm	5.7	10	DNQ	30	11	122	157	2124	ND	56
9/3/09		Composite #3 53-97mm	5.3	10	DNQ	12	ND	36	258	2258	2103	32

1. Only constituents with detected values are included in the table.
2. No fish were caught at this site during Years 3, 4, 5, 6, 7, 8, or 9.
3. Access to 06_SOMIS was revoked during year eight. 06_UPLAND replaces 06_SOMIS. No fish were caught at 06_UPLAND during year nine.
4. Units are wet weight.

Table 13. Revolon Slough – Wood Road (04_WOOD) Fish Tissue Data Years 1 – 9 ^{1,2}

Date	Fish		Lipids	OC Pesticides									PCBs
			Percent Lipids %	Chlordane -alpha ng/g	Chlordane -gamma ng/g	2,4'-DDD ng/g	2,4'-DDE ng/g	2,4'-DDT ng/g	4,4'-DDD ng/g	4,4'-DDE ng/g	4,4'-DDT ng/g	Toxaphene ng/g	Total PCBs ng/g
8/7/08	Common Carp	Comp. Fillet, no skin	3	ND	ND	27	ND	14	85	1194	21	349	ND
8/7/08		Comp. Fillet w/ skin	2.1	5.3	ND	18	7.4	DNQ	40	615	13	259	ND
9/3/09	Common Carp	Carcass	12.1	91	62	129	25	ND	1210	11100	904	25800	28
9/3/09		Fillet w/ Skin #1	2.8	35	21	55	17	ND	262	4210	328	6630	ND
9/3/09		Carcass	9.6	102	60	205	76	ND	1070	9590	367	17000	51
9/3/09		Fillet w/ Skin #2	3.3	47	31	110	31	ND	371	4790	168	5930	DNQ
9/3/09		Carcass	9	117	66	185	64	ND	1100	7750	411	14300	54
9/3/09		Fillet w/ Skin #3	2.7	54	33	77	39	50	378	4000	239	5480	20
9/3/09	Arroyo Chub	Comp. #1	8.7	41	27	133	77	191	878	6320	57	14700	24
9/3/09		Comp. #1	9	38	24	82	73	222	689	5630	36	19900	DNQ
9/3/09		Comp. #2	6.9	33	16	88	65	168	568	5580	52	17900	ND
8/25/11	Common carp		2.6	9.3	5.5	15	DNQ	67	ND	819	8.5	206	ND
8/30/12	Common carp		5.6	ND	ND	ND	ND	116	ND	1750	ND	ND	ND
8/27/13	Whole Fish Composite Common carp Fathead Minnow		6.3	ND	ND	ND	ND	ND	84.3	1984.1	ND	1611.1	ND

Date	Fish	Lipids	OC Pesticides									PCBs	
		Percent Lipids %	Chlordane -alpha ng/g	Chlordane -gamma ng/g	2,4'-DDD ng/g	2,4'-DDE ng/g	2,4'-DDT ng/g	4,4'-DDD ng/g	4,4'-DDE ng/g	4,4'-DDT ng/g	Toxaphene ng/g	Total PCBs ng/g	
6/17/15	Common Carp	Whole Fish #1	13.6	10.6	5.1	16.2	7.4	13.0	58.7	948.6	62.4	749.3	12.2
		Whole Fish #2	15.6	30.7	15.0	31.3	9.2	20.6	136.8	2363.0	126.1	1057.4	26.8
		Whole Fish #3	16.9	21.7	10.2	13.9	ND	16.2	128.8	2080.8	76.3	999.6	17.5
		Fillet w/o skin #1	11.5	16.2	8.3	20.0	7.0	11.1	46.0	936.0	58.3	835.3	5.5
		Filet w/o skin #2	3.2	DNQ	DNQ	2.0	ND	3.6	9.8	166.4	10.8	191.5	ND
		Filet w/o skin #3	3.1	DNQ	DNQ	DNQ	ND	3.0	6.7	159.4	8.8	112.4	ND
		Filet w/o skin #4	2.6	DNQ	DNQ	2.4	1.7	3.6	7.5	184.0	4.7	120.1	ND
	Bullhead	Whole Fish	12.4	12.7	6.1	10.2	ND	18.2	61.0	877.1	81.5	1032.2	9.7
		Filet w/o skin #1	2.8	ND	ND	ND	ND	3.2	7.0	142.7	7.2	129.6	ND
		Filet w/o skin #2	6.2	ND	ND	ND	ND	4.1	7.3	134.9	5.5	114.5	ND
8/11/15	Fathead Minnow	Comp. #1	23.3	50.0	22.3	71.1	42.2	114.4	238.6	3816.7	22.9	1546.3	56.6
		Comp. #2	18.8	52.5	22.0	57.3	43.7	71.6	305.2	4110.5	40.5	1157.2	55.4
		Comp. #3	14.8	48.4	22.1	34.2	46.3	50.2	375.7	3921.3	19.8	852.5	58.8
		Comp. #4	28.5	85.9	47.6	109.8	78.3	113.1	466.5	5563.2	61.1	1094.6	48.7

Date	Fish	Lipids	OC Pesticides									PCBs	
		Percent Lipids %	Chlordane -alpha ng/g	Chlordane -gamma ng/g	2,4'-DDD ng/g	2,4'-DDE ng/g	2,4'-DDT ng/g	4,4'-DDD ng/g	4,4'-DDE ng/g	4,4'-DDT ng/g	Toxaphene ng/g	Total PCBs ng/g	
5/18/16	Common Carp	#1	3.86	41	13.1	29.4	22.6	ND	346.1	4589.7	108.7	738.3	202.6
		#2	8.86	77	30.5	16.4	43.2	ND	617.5	7027.5	414.9	1871.6	120.7
		#3	1.11	19.3	9.1	DNQ	6.2	ND	174.1	1721.2	55.5	450.6	48.4
		#4	10.98	38.7	18.9	DNQ	ND	ND	157.4	2229.8	151.7	1602.9	31.2
		#5	3.93	33.3	11.3	17.3	21.2	ND	320.1	7042.7	91.4	537.1	111.6
		#6	6.36	57.2	17.1	24.2	11.3	ND	553.4	6460	110.1	1193.4	264.1
		#7	2.22	26.3	13.6	11.5	22.8	ND	275	3541.7	73	621.5	132.6
		#8	2.71	19.1	7.1	DNQ	DNQ	ND	198.7	3388.9	28.8	511.6	130.5
	Fathead Minnow	#1	3.89	25.5	9.9	12.6	37.6	ND	229.3	3058.8	ND	342.6	40.6
		#2	1.69	DNQ	DNQ	ND	7.8	ND	100	1508.3	ND	130.5	87.1
		#3	2.43	5.5	DNQ	ND	8.1	ND	66.7	1129.6	ND	ND	43.2
		#4	5.94	29.5	12	23.6	12.3	ND	132.6	1963.2	ND	775.3	88.1
		#5	2.02	11.9	8.7	33.7	13	15	105.5	1010.5	18.3	ND	62.9
		#6	1.41	7.1	DNQ	12	10.2	ND	46.9	516.3	ND	118.3	32
		#7	1.52	9.7	DNQ	10	10	ND	36.3	658.1	8	274.7	36.4
	Goldfish ³	Filet w/ Skin #1	NA ⁴	DNQ	DNQ	ND	ND	ND	18.4	258.4	11.3	ND	61.7
		Filet w/ Skin #2	NA ⁴	DNQ	DNQ	DNQ	ND	ND	18.1	227.6	8.9	56	37.4
		Filet w/ Skin #3	NA ⁴	DNQ	DNQ	ND	DNQ	ND	16.2	269.7	6.8	DNQ	33.0
		Filet w/ Skin #4	NA ⁴	DNQ	DNQ	ND	DNQ	ND	14.7	242.2	5.4	DNQ	46.5

Date	Fish	Lipids	OC Pesticides									PCBs	
		Percent Lipids %	Chlordane -alpha ng/g	Chlordane -gamma ng/g	2,4'-DDD ng/g	2,4'-DDE ng/g	2,4'-DDT ng/g	4,4'-DDD ng/g	4,4'-DDE ng/g	4,4'-DDT ng/g	Toxaphene ng/g	Total PCBs ng/g	
5/25/17	Common Carp	Whole Fish #1	2.34	6.30	DNQ	8.7	DNQ	ND	45.80	602.6	24.6	292.4	ND
		Whole Fish #2	2.21	DNQ	DNQ	10.9	DNQ	ND	34.0	483.4	20.2	225.9	ND
		Whole Fish #3	2.30	DNQ	DNQ	7.8	ND	ND	37.3	496.6	21.3	233.9	ND
		Whole Fish #4	1.10	DNQ	DNQ	ND	ND	ND	15.4	310.1	7.0	DNQ	ND
		Whole Fish #5	3.66	32.30	15.90	49.2	16.1	ND	271.4	3,143.4	57.6	973.6	27.0
		Skinless Filet #1	4.0	38.9	17.8	25.2	6.0	ND	160.4	3,072.6	71.0	1,420.0	38.1
	Fathead Minnow	Whole Comp. #1	7.28	10.1	DNQ	22.8	8.8	ND	63.7	895.5	17.1	670.5	ND
		Whole Comp. #2	7.35	8.0	DNQ	23.9	8.3	ND	58.1	839.3	14.1	561.2	ND
		Whole Comp. #3	6.85	7.5	DNQ	20.8	7.4	ND	95.3	842.6	18.2	563.5	ND
		Whole Comp. #4	5.08	8.2	DNQ	25.2	7.6	ND	78.4	869.7	10.4	459.8	ND
Whole Comp. #5		6.26	11.0	5.0	28.2	9.6	ND	105.7	1,028.3	18.3	631.9	ND	

1. Only constituents with detected values are included in the table.
2. No fish were caught at this site during year 3.
3. Percent lipid data not available due to small fish size.

Table 14. Revolon Slough – Wood Road (04_WOOD) Metals Fish Tissue Data Years 1 – 9 ^{1, 2}

Date	Fish	Lipids	Metals		
		Percent Lipids %	Total Mercury µg/g	Total Selenium µg/g	
8/7/08	Common Carp	Comp. Fillet, no skin	3	DNQ	1.3
8/7/08		Comp. Fillet w/ skin	2.1	DNQ	2.3
9/3/09	Common Carp	Carcass #1	12.1	DNQ	1.5
9/3/09		Fillet w/ Skin #1	2.8	DNQ	1.6
9/3/09		Carcass #2	9.6	DNQ	1.9
9/3/09		Fillet w/ Skin #2	3.3	DNQ	2.1
9/3/09		Carcass #3	9	DNQ	1.4
9/3/09		Fillet w/ Skin #3	2.7	0.02	1.7
9/3/09	Arroyo Chub	Comp. #1	8.7	0.02	1.6
9/3/09		Comp. #1	9	0.02	1.8
9/3/09		Comp. #2	6.9	0.02	1.4
8/25/11	Common carp		2.6	0.004	2.7
9/4/12	Common carp		5.6	0.011	1.9
8/27/13	Whole Fish Composite Common carp Fathead Minnow		6.3	0.01	1.9
6/17/15	Common Carp	Whole Fish #1	13.6	0.01	1.4
		Whole Fish #2	15.6	0.01	1.2
		Whole Fish #3	16.9	0.02	1.2
		Fillet w/o skin #1	11.5	0.03	1.3
		Filet w/o skin #2	3.2	0.02	1.4
		Filet w/o skin #3	3.1	0.02	1.4
		Filet w/o skin #4	2.6	0.02	1.4

Date	Fish	Lipids	Metals	
		Percent Lipids %	Total Mercury µg/g	Total Selenium µg/g
6/17/15	Bullhead	Whole Fish	12.4	0.02
		Filet w/o skin #1	2.8	0.02
		Filet w/o skin #2	6.2	0.03
8/11/15	Fathead Minnow	Comp. #1	23.3	0.1
		Comp. #2	18.8	0.1
		Comp. #3	14.8	0.7
		Comp. #4	28.5	0.7
5/18/16 ³	Common Carp	#1	3.86	0.03
		#2	8.86	0.04
		#3	1.11	0.02
		#4	10.98	0.02
		#5	3.93	0.03
		#6	6.36	0.03
		#7	2.22	0.02
		#8	2.71	0.02
	Fathead Minnow	#1	3.89	0.02
		#2	1.69	0.03
		#3	2.43	0.03
		#4	5.94	0.03
		#5	2.02	0.01
		#6	1.41	0.03
		#7	1.52	0.03
5/25/17	Common Carp	Whole Fish #1	2.34	ND
		Whole Fish #2	2.21	DNQ
		Whole Fish #3	2.30	ND
		Whole Fish #4	1.10	DNQ
		Whole Fish #5	3.66	0.019
		Skinless Filet #1	4.0	0.037

Date	Fish	Lipids	Metals	
		Percent Lipids %	Total Mercury $\mu\text{g/g}$	Total Selenium $\mu\text{g/g}$
5/25/17	Fathead Minnow	Whole Comp. #1	7.28	0.008
		Whole Comp. #2	7.35	DNQ
		Whole Comp. #3	6.85	0.006
		Whole Comp. #4	5.08	0.006
		Whole Comp. #5	6.26	DNQ

1. Only constituents with detected values are included in the table.
2. No fish were caught at this site during Year 3.
3. Goldfish tissue amounts collected on this date were insufficient to provide OC pesticides, PCBs, and metals analyses. It was determined that OC pesticides and PCBs results were most valuable to the monitoring program to support the long-term data evaluation related to natural attenuation of these constituents.

TOXICITY DATA

The following is a summary of the toxicity results to date for water column and sediment at the freshwater and estuarine sampling sites. Table 15 displays significant water column mortality test results for nine years of CCWTMP events, including both dry and storm (bolded text) events. Significant mortality found in freshwater sediments is shown in Table 16.

Toxicity was frequently identified during the first two monitoring years in water column samples, but the occurrence of toxicity has generally been decreasing over the course of monitoring. For dry weather water column sampling, toxicity has been identified historically at all sampled sites except 13_BELT. For wet weather water column sampling, toxicity has been identified at all sites, except for 10_GATE and 13_BELT. Freshwater sediment toxicity is consistently found at the 04_WOOD site and occasionally at two of the three other freshwater toxicity monitoring sites: 02_PCH and 03_UNIV.

Water column TIEs were initiated as prescribed in the QAPP, and outcomes of these efforts had limited success in identifying the true cause of toxicity. While not identifying the specific constituents causing toxicity, the TIEs have identified:

- Organic compounds are likely contributors to ambient water toxicity.
- Compounds similar to organophosphorus (OP) pesticides are continually being identified as possible contributors to the observed toxicity.

Based on the toxicity found 04_WOOD during the first two years of monitoring and the results of the TIE studies, the Stakeholders chose to invest resources into source control efforts to address sources potentially contributing to the toxicity issue, rather than invest resources in continuing TIE studies at this monitoring site. This is being accomplished through the implementation of the Agricultural Water Quality Management Plan (AWQMP) developed by the Ventura County Agricultural Irrigated Lands Group (VCAILG) as part of the Conditional Waiver for Irrigated Agricultural Lands (Ag Waiver).

During the ninth year of monitoring, no sites had significant survival toxicity in the water column. Though survival was not statistically significant in relation to the control, the Event 61 water toxicity sample from 10_GATE exceeded the 50 percent mortality threshold triggering a TIE, which was performed to target organics as a potential cause of the observed toxicity. There was no reduction in survival or reproduction in the Baseline TIE treatment (= untreated sample) for the 10_GATE site water, indicating that the toxicity that had been observed in the initial test of this sample was not persistent. A reduction in toxicity can result from the toxicant undergoing natural degradation processes as the ambient water sample ages. Toxicity reduction can also result from reduced bioavailability of the toxicant due to increasing sorption of contaminant(s) to the sample container material and/or to particulates present in the sample as the sample ages. If the reduction in toxicity was, in fact, due to a contaminant whose toxicity is being reduced due to degradation processes or sorption of contaminant(s) to the sample container material and/or to particulates present in the sample as the sample ages, this would suggest an organic compound, as metals would be expected to be “conserved”.

Freshwater sediment toxicity was found at the 04_WOOD site at the 02_PCH site. No TIEs were initiated for these samples.

The results of future CCWTMP toxicity testing will continue to assist in the identification of when and where conditions are toxic in the Calleguas Creek watershed, and help the Stakeholders better target areas in the watershed that show continual toxicity and focus limited resources to address the problems.

Table 15. Water Column Toxicity for All Monitoring Events and Sites

(Significant mortality denoted by "X", bolded events are wet weather events)

CCWMTP Year	Event	Site ID						
		04_WOOD	9B_ADOLF	03_UNIV	10_GATE	06_SOMIS/ UPLAND	13_BELT	07_HITCH
Year 1	1	X						
	2	X						
	3	X	X	X				X
	4	X						
	5	X						X
	6							
Year 2	9							
	12	X						
	14	X		X		X		
	16	X		X				X
	17							
	20			X				
Year 3	22							
	23							
	24	X						
	25							
	26	X						X
	27							
Year 4	28					X		
	29		X		X			
	30	X						
	31							
	32			X				
	33							
Year 5 ¹	34							
	35							
	36	X ²						
	37			X ³				
	38							
Year 6	39	X ²						
	40				4			
	41		6	6	6	6	5	6
	42							
	43							
Year 7	44	X ²		7		8		
	45	X ²					9	
	46	X ²		X ¹⁰		X ¹¹		X ¹⁰
	47	X ²						

CCWMTP Year	Event	Site ID						
		04_WOOD	9B_ADOLF	03_UNIV	10_GATE	06_SOMIS/ UPLAND	13_BELT	07_HITCH
	48							
	49	X ²				12	12	
Year 8 ¹³	50							
	51							
	52	X ²						
	53	X ²						
	54							
	55							
Year 9	56							
	57							
	58							
	59							
	60							
	61				14			

- 10_GATE and 13_BELT are also toxicity investigation monitoring sites. During year 5 these sites were only sampled during Event 38.
- A TIE was not initiated at this site. TIEs conducted during previous monitoring years identified organic compounds such as pesticides as the likely cause of the toxicity. TIEs have been suspended while efforts are taken to reduce the source of the toxicity.
- A Phase I TIE was conducted for this site. While the TIE did not conclusively identify a source of toxicity, the results were indicative of organic compounds. The corresponding water quality sample detected the OP pesticide chlorpyrifos at a concentration of 0.083 µg/L. This level is above the wasteload allocation for stormwater discharges but below the agricultural discharger's interim load allocation and above the final numeric target.
- Toxicity testing was not performed at the 10_GATE site for Event 40.
- Toxicity testing was not performed at the 10_BELT site for Event 41.
- Successful toxicity testing for sites with conductivity less than 3000 µS/cm could not be completed for Event 41 due to a decline in the *C. dubia* laboratory culture. Sites include: 9B_ADOLF, 03_UNIV, 10_GATE, 06_SOMIS, and 07_HITCH.
- An initial and a follow-up Phase I TIE was conducted for this site. Though the acute and chronic results of the toxicity test was not significantly different than that of the laboratory, the testing of this site did result in a greater than 50% mortality, triggering the initial and follow-up Phase I TIE. The initial TIE did not conclusively determine the source of toxicity, but did suggest that multiple co-occurring contaminants may have been responsible for the toxicity. The follow-up TIE demonstrated that no additional reductions in survival or reproduction occurred after the initial Baseline treatment, suggesting that the toxicity observed in the initial test was not persistent. This result suggests that the toxicant may have undergone natural degradation processes as the sample water aged.
- Toxicity testing was not performed at the 06_SOMIS site for Event 44.
- Toxicity testing was not performed at the 13_BELT site for Event 45.
- A Phase I TIE was initiated at this site. While the TIE did not conclusively identify a source of toxicity, the results suggest that compounds that are activated by the Cytochrome-P450 system (e.g. OP pesticides) are contributing to sample toxicity.
- A Phase I TIE was initiated at this site. While the TIE did not conclusively identify a source of toxicity, the results suggest that non-polar organic compound(s) are contributing to the ambient toxicity.
- Toxicity testing was not performed at the 06_SOMIS or 13_BELT sites for Event 49.
- During year 8, toxicity testing was only performed at the 06_SOMIS site for Event 52.
- There were no statistically significant reductions in survival in this sample as compared to the control. However, based on the observation of greater than 50 percent mortality in the 100 percent concentration of the 10_GATE ambient water sample, a TIE targeted for organics was performed on the sample.

Table 16. Sediment Toxicity for All CCWTMP Freshwater Monitoring Events and Sites
(Significant mortality denoted by “X”)

CCWMTP Year	Event	Site ID			
		04_WOOD	02_PCH ¹	03_UNIV	9A_HOWAR ¹
Year 1	1	X			
Year 2	9	X			
Year 3	22	X			
Year 4	28	X	X	X	
Year 5	34	X		X	
Year 6	39	X		X ²	
Year 7	44	X		X	
Year 8	50	X			
Year 9	56	X	X		

1. 02_PCH and 9A_HOWAR are toxicity investigation monitoring sites.

2. A TIE targeted for organics was performed for the 03_UNIV site due to a greater than 50 percent reduction in *H. azteca* survival.

Exceedance Evaluation and Discussion

As outlined in the QAPP, data applicable to targets or allocations were reviewed for this report. The collected data were compared to the applicable targets or allocations and it is this comparison that the various agencies will use to determine necessary actions in accordance with their permit or conditional waiver. The comparison does not provide a determination of compliance with any TMDL provision of an individual permit or conditional waiver, as some permit/waiver conditions may vary from the comparisons provided in this section. For the comparison, various procedures were used depending on whether or not the final compliance dates for the TMDL were applicable during the monitoring year.

For TMDLs where final allocations or targets are not currently effective (OC Pesticides, Metals, and Salts TMDLs), the following compliance comparisons were conducted:

1. Applicable receiving water data at the compliance locations (base of each subwatershed) were compared to the interim load allocations and waste load allocations.
2. If an exceedance of an interim load allocation and/or waste load allocation was observed, the contributing land use data were reviewed to evaluate the potential cause of the exceedance.
3. POTW effluent data were compared to the relevant interim waste load allocations.

For the Nitrogen TMDL the following comparisons were conducted:

1. For POTWs, the final waste load allocations are currently effective. As a result, effluent monitoring results were compared to the final allocations for the analysis.
2. For agricultural dischargers and other non-point sources, final load allocations are currently effective. Since agricultural dischargers are the only entities with allocations other than POTWs, compliance is evaluated by comparing receiving water results against TMDL numeric targets.

For the Toxicity TMDL, the following comparisons were conducted:

1. For POTWs, the final waste load allocations are currently effective. As a result, effluent monitoring results were compared to the final allocations for the comparison.
2. For MS4 dischargers, the final waste load allocations are currently effective. As a result, applicable receiving water data at the compliance locations (base of each subwatershed) were compared to the final waste load allocations. If an exceedance of the final waste load allocation was found, the contributing urban land use data were reviewed to evaluate whether the MS4 was potentially causing the exceedance.
3. For agricultural dischargers, the final load allocations became effective in March 2016. As a result, applicable receiving water data at the compliance locations (base of each subwatershed) were compared to the final load allocation. If an exceedance of the applicable load allocation for a particular event was observed, the contributing agricultural land use data were reviewed to evaluate whether agricultural discharges were potentially causing the exceedance.
4. In cases where the applicable final load allocations or final waste load allocations have different values for acute (1-hour) toxicity and chronic (4-day) toxicity, the acute toxicity

allocations were used for comparing wet weather data and the chronic toxicity allocations were used for comparing dry-weather data.

The following tables compare the applicable allocations based on the procedure outlined above for each of the TMDLs. Some constituents sampled under the CCWTMP do not have applicable allocations and/or targets and are not included in the comparison.

RECEIVING WATER SITE COMPARISON

Table 17. OC Pesticides, PCBs, & Siltation in Sediment

Site & Constituent	Units	Interim WLA & LA ¹	Event 56 Aug-2016
<i>Calleguas Creek – Hwy 1 Bridge (02_PCH)</i>			
Total Chlordane ²	ng/g dw	17	ND
4,4'-DDD	ng/g dw	66	DNQ
4,4'-DDE	ng/g dw	470	20.60
4,4'-DDT	ng/g dw	110	DNQ
Dieldrin	ng/g dw	3	ND
PCBs ³	ng/g dw	3800	ND
Toxaphene	ng/g dw	260	DNQ
<i>Revolon Slough – Wood Road (04_WOOD)</i>			
Total Chlordane ²	ng/g dw	48	DNQ
4,4'-DDD	ng/g dw	400	5.00
4,4'-DDE	ng/g dw	1600	36.50
4,4'-DDT	ng/g dw	690	5.70
Dieldrin	ng/g dw	5.7	ND
PCBs ³	ng/g dw	7600	ND
Toxaphene	ng/g dw	790	DNQ
<i>Calleguas Creek – Camarillo Street CSUCI (03_UNIV)</i>			
Total Chlordane ²	ng/g dw	17	ND
4,4'-DDD	ng/g dw	66	ND
4,4'-DDE	ng/g dw	470	6.80
4,4'-DDT	ng/g dw	110	ND
Dieldrin	ng/g dw	3	ND
PCBs ³	ng/g dw	3800	ND
Toxaphene	ng/g dw	260	ND

Site & Constituent	Units	Interim WLA & LA ¹	Event 56 Aug-2016
<i>Conejo Creek – Adolfo Road (9B_ADOLF)</i>			
Total Chlordane ²	ng/g dw	3.4	ND
4,4'-DDD	ng/g dw	5.3	ND
4,4'-DDE	ng/g dw	20	DNQ
4,4'-DDT	ng/g dw	2	ND
Dieldrin	ng/g dw	3	ND
PCBs ³	ng/g dw	3800	ND
Toxaphene	ng/g dw	260	ND
<i>Arroyo Las Posas – Upland Road (06_UPLAND) ⁴</i>			
Total Chlordane ²	ng/g dw	3.3	ND
4,4'-DDD	ng/g dw	290	ND
4,4'-DDE	ng/g dw	950	DNQ
4,4'-DDT	ng/g dw	670	DNQ
Dieldrin	ng/g dw	1.1	ND
PCBs ³	ng/g dw	25,700	ND
Toxaphene	ng/g dw	230	ND
<i>Arroyo Simi – Hitch Boulevard (07_HITCH)</i>			
Total Chlordane ²	ng/g dw	3.3	ND
4,4'-DDD	ng/g dw	14	ND
4,4'-DDE	ng/g dw	170	ND
4,4'-DDT	ng/g dw	25	ND
Dieldrin	ng/g dw	1.1	ND
PCBs ³	ng/g dw	25,700	ND
Toxaphene	ng/g dw	230	ND

ND=not detected; DNQ=detected not quantifiable

1. Interim waste load allocation for stormwater permittees and interim load allocations for agricultural dischargers; effective until March 24, 2026 (R4-2005-010).

2. Total chlordane is the sum of alpha and gamma-chlordane.

3. PCBs concentrations are the sum of the seven aroclors identified in CTR (1016, 1221, 1232, 1242, 1248, 1254, and 1260).

4. 06_UPLAND replaced 06_SOMIS beginning with Event 56 as access to 06_SOMIS is no longer available.

Results in **green type** are below the applicable allocations.

Table 18. Nitrogen Compounds in Water

Site & Constituent	Units	Target ¹	Event 56 Dry Aug-16	Event 57 Dry Nov-16	Event 58 Wet Dec-16	Event 59 Wet Jan-17	Event 60 Dry Feb-17	Event 61 Dry May-17
<i>Mugu Lagoon - Ronald Reagan Bridge (01_RR_BR)</i>								
Ammonia-N	mg/L	8.1	0.23	0.17	0.15	0.15	0.16	DNQ
Nitrate-N	mg/L	10	11.82	15.49	11.93	30.36	36.70	0.72
Nitrite-N	mg/L	1	0.14	0.08	0.06	0.09	0.06	ND
Nitrate-N + Nitrite-N	mg/L	10	11.96	15.57	11.99	30.45	36.76	0.72
<i>Calleguas Creek – Hwy 1 Bridge (02_PCH)</i>								
Ammonia-N	mg/L	5.5	0.19	0.19	0.39	0.06	0.20	0.08
Nitrate-N	mg/L	10	11.26	17.25	16.78	4.03	13.53	28.34
Nitrite-N	mg/L	1	0.22	0.06	0.38	0.06	0.08	0.21
Nitrate-N + Nitrite-N	mg/L	10	11.48	17.31	17.16	4.09	13.61	28.55
<i>Calleguas Creek – Camarillo Street CSUCI (03_UNIV)</i>								
Ammonia-N	mg/L	8.4	0.09	0.10	0.40	0.13	0.13	0.06
Nitrate-N	mg/L	10	7.64	9.56	4.49	2.37	6.38	9.05
Nitrite-N	mg/L	1	0.06	0.09	0.06	0.05	0.06	0.08
Nitrate-N + Nitrite-N	mg/L	10	7.70	9.65	4.55	2.42	6.44	9.13
<i>Revolon Slough – Wood Road (04_WOOD)</i>								
Ammonia-N	mg/L	5.7	0.40	0.85	0.56	0.14	0.23	0.20
Nitrate-N	mg/L	10	37.78	35.78	5.40	7.40	51.80	51.75
Nitrite-N	mg/L	1	0.23	0.10	0.08	0.06	0.10	0.56
Nitrate-N + Nitrite-N	mg/L	10	38.01	35.88	5.48	7.46	51.90	52.31
<i>Beardsley Wash – Central Avenue (05_CENTR)</i>								
Ammonia-N	mg/L	5.7	0.06	DNQ	0.44	0.17	ND	0.04
Nitrate-N	mg/L	10	33.72	43.12	17.22	9.73	57.65	52.05
Nitrite-N	mg/L	1	0.10	0.09	0.13	0.06	0.07	0.35
Nitrate-N + Nitrite-N	mg/L	10	33.82	43.21	17.35	9.79	57.72	52.40
<i>Arroyo Las Posas – Upland Road (06_UPLAND)³</i>								
Ammonia-N	mg/L	8.1	NS	NS	0.22	0.34	NS	NS
Nitrate-N	mg/L	10	NS	NS	3.22	2.92	NS	NS
Nitrite-N	mg/L	1	NS	NS	0.05	0.08	NS	NS
Nitrate-N + Nitrite-N	mg/L	10	NS	NS	3.27	3.00	NS	NS

Site & Constituent	Units	Target ¹	Event 56 Dry Aug-16	Event 57 Dry Nov-16	Event 58 Wet Dec-16	Event 59 Wet Jan-17	Event 60 Dry Feb-17	Event 61 Dry May-17
Arroyo Simi – Hitch Boulevard (07_HITCH)								
Ammonia-N	mg/L	4.7	DNQ	DNQ	0.34	0.34	ND	0.05
Nitrate-N	mg/L	10	9.86	8.82	2.73	1.30	7.96	9.93
Nitrite-N	mg/L	1	0.09	0.08	0.05	0.05	0.05	0.07
Nitrate-N + Nitrite-N	mg/L	10	9.95	8.90	2.78	1.35	8.01	10.00
Conejo Creek – Adolfo Road (9B_ADOLF)								
Ammonia-N	mg/L	9.5	0.05	0.05	0.22	0.10	0.08	0.03
Nitrate-N	mg/L	10	5.42	9.13	1.25	0.90	6.80	5.52
Nitrite-N	mg/L	1	ND	0.05	DNQ	ND	0.06	ND
Nitrate-N + Nitrite-N	mg/L	10	5.42	9.18	1.25	0.90	6.86	5.52

NS=no sample, dry; NR=not required; ND=not detected; DNQ=detected not quantifiable; J=estimated DNQ values for Nitrite-N, shown for the purpose of calculating the Nitrite-N + Nitrate-N sum and comparing it against the Nitrate-N + Nitrite-N target.

1. Load allocations for Nitrate-N + Nitrite-N are in effect for agricultural and other non-point sources. For the comparison, monitoring results at receiving water compliance sites were compared against TMDL numeric targets (R4-2008-009).

2. One-hour average.

3. 06_UPLAND replaces 06_SOMIS beginning with Event 56. Access to 06_SOMIS no longer available.

Results in **bold red type** exceed numeric TMDL target.

Results in **green type** are below the applicable allocations.

Table 19. Toxicity, Diazinon, and Chlorpyrifos in Water

Site & Constituent	Units	Dry WLA ¹	Dry LA ²	Event 56 Dry Aug-16	Event 57 Dry Nov-16	Event 60 Dry Feb-17	Event 61 Dry May-17	Wet WLA ¹	Wet LA ²	Event 58 Wet Dec-16	Event 59 Wet Jan-17
<i>Mugu Lagoon – Ronald Reagan Bridge (01_RR_BR)</i>											
Chlorpyrifos	ug/L	0.014	0.014	ND	ND	0.014	ND	0.014	0.025	1.259	0.476
Diazinon	ug/L	0.1	0.1	ND	ND	ND	ND	0.1	0.1	ND	ND
<i>Calleguas Creek – Camarillo Street CSUCI (03_UNIV)</i>											
Chlorpyrifos	ug/L	0.014	0.0133	0.001	0.005	ND	ND	0.014	0.024	0.053	0.154
Diazinon	ug/L	0.1	0.1	ND	ND	ND	ND	0.1	0.1	ND	ND
<i>Revolon Slough – Wood Road (04_WOOD)</i>											
Chlorpyrifos	ug/L	0.014	0.0133	0.007	ND	0.009	0.005	0.014	0.024	0.064	0.089
Diazinon	ug/L	0.1	0.1	ND	ND	ND	ND	0.1	0.1	ND	ND
<i>Arroyo Las Posas – Upland Road (06_UPLAND)³</i>											
Chlorpyrifos	ug/L	0.014	0.014	NS	NS	NS	NS	0.014	0.025	0.084	0.213
Diazinon	ug/L	0.1	0.1	NS	NS	NS	NS	0.1	0.1	ND	ND
<i>Arroyo Simi – Hitch Boulevard (07_HITCH)</i>											
Chlorpyrifos	ug/L	0.014	0.014	ND	ND	ND	ND	0.014	0.025	0.102	0.269
Diazinon	ug/L	0.1	0.1	ND	ND	ND	ND	0.1	0.1	ND	ND
<i>Conejo Creek – Adolfo Road (9B_ADOLF)</i>											
Chlorpyrifos	ug/L	0.014	0.014	0.003	0.007	ND	ND	0.014	0.025	0.043	0.049
Diazinon	ug/L	0.1	0.1	ND	ND	ND	ND	0.1	0.1	ND	ND
<i>Conejo Creek – Hill Canyon Below N Fork (10_GATE)</i>											
Chlorpyrifos	ug/L	0.014	0.014	ND	ND	ND	ND	0.014	0.025	ND	ND
Diazinon	ug/L	0.1	0.1	ND	ND	ND	ND	0.1	0.1	ND	ND
<i>Conejo Creek – S Fork Behind Belt Press Build (13_BELT)</i>											
Chlorpyrifos	ug/L	0.014	0.014	ND	ND	ND	ND	0.014	0.025	ND	ND
Diazinon	ug/L	0.1	0.1	ND	ND	ND	ND	0.1	0.1	ND	ND

ND=not detected; NS=no sample collected due to site being dry.

1. Final Dry and Wet Weather wasteload allocations for Stormwater Dischargers effective as of March 24, 2008 (R4-2005-009).

2. Final Dry and Wet Weather load allocations for Irrigated Agriculture; effective as of March 24, 2016 (R4-2005-009).

3. 06_UPLAND replaces 06_SOMIS beginning with Event 56. Access to 06_SOMIS no longer available.

Results in **bold red type** exceed applicable final wasteload allocation and load allocation.

Results in **green type** are below the applicable allocations.

Table 20. Metals and Selenium in Water

Constituent	Units	Dry Interim WLA ¹	Dry Interim LA ²	Event 56 Dry Aug-2016	Event 57 Dry Nov-2016	Event 60 Dry Feb-2017	Event 61 Dry May-2017	Wet Interim WLA ¹	Wet Interim LA ²	Event 58 Wet Dec-2016	Event 59 Wet Jan-2017	Annual Average ³
Revolon Slough – Wood Road (04_WOOD)												
Total Copper	µg/L	19	19	5.34	4.00	1.46	2.82	204	1390	11.84	54.10	0.27
Total Nickel	µg/L	13	42	10.49	7.65	4.71	9.37	74 ⁴	74 ⁴	6.00	23.45	
Total Selenium	µg/L	13	6	16.25	13.24	19.00	25.20	290 ⁴	290 ⁴	2.09	1.44	
Total Mercury ⁵	lbs/yr	1.7	2					--	--			
Calleguas Creek – Camarillo Street CSUCI (03_UNIV)												
Total Copper	µg/L	19	19	2.84	2.23	0.75	1.82	204	1390	10.57	21.66	0.48
Total Nickel	µg/L	13	42	8.03	6.36	2.97	6.39	74 ⁴	74 ⁴	9.75	16.51	
Total Selenium	µg/L	--	--	0.60	0.84	1.81	1.23	--	--	0.19	ND	
Total Mercury ⁵	lbs/yr	3.3	3.9					--	--			

1. Interim wasteload allocations for Stormwater Dischargers; effective until March 2022 (R4-2006-0012)

2. Interim load allocations for Irrigated Agriculture; effective until March 2022 (R4-2006-0012)

3. Mercury allocation is assessed as an annual load in suspended sediment. The water column mercury concentrations were used in calculating the loads, conservatively assuming that all mercury is on suspended sediment rather than being dissolved. The loads at each site are based on estimated annual concentrations (average of all monitored events at each site) and total annual flow calculated from preliminary streamflow data received from real time data loggers.

4. No wet weather exceedances of these constituents were observed in the TMDL analysis so no interim limits were assigned for the TMDL. For comparison purposes the wet weather targets are included in the table.

5. Interim wasteload allocations and load allocations are expressed as annual loads. Total annual flow for 07/01/16 to 06/30/17 into Mugu Lagoon from Calleguas Creek is calculated as 11,866 Mgal/yr. Total annual flow for 07/01/16 to 06/30/17 into Mugu Lagoon from Revolon Slough is calculated as 3,657 Mgal/yr. As such, the interim wasteload allocation and load allocation shown for both Calleguas Creek and Revolon Slough correspond to the flow range of 0 to 15,000 to Mgal/yr, per R4-2006-0012.

Results in **bold red type** exceed applicable interim wasteload allocation and load allocation.

Results in **green type** are below the applicable allocations.

Table 21. Monthly Mean Salts Concentrations

	Units	Interim Limit WLA LA	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17
Revolon Slough – Wood Road (04_WOOD)														
TDS	mg/L	1720 3995	3534	3429	3355	3243	3598	3532	3733	3638	3553	3511	3449	3326
Chloride	mg/L	230 230	209	202	198	192	212	209	220	215	210	207	204	199
Sulfate	mg/L	1289 1962	1845	1790	1752	1693	1878	1844	1948	1899	1855	1833	1800	1731
Boron	mg/L	1.3 1.8	1.8	1.8	1.7	1.7	1.8	1.8	1.9	1.9	1.8	1.8	1.8	1.7
Calleguas Creek – University Drive CSUCI (03_UNIV)														
TDS	mg/L	1720 3995	1144	1132	1120	1071	1011	980	891	957	1086	1178	1149	1179
Chloride	mg/L	230 230	243	240	237	227	213	206	186	201	230	250	244	250
Sulfate	mg/L	1289 1962	289	286	283	271	256	249	227	243	275	297	290	298
Conejo Creek – Howard Road Bridge (9A_HOWAR)														
TDS	mg/L	1720 3995	1093	1077	1028	951	930	915	862	917	999	1062	1042	1110
Chloride	mg/L	230 230	242	238	227	209	204	201	188	201	220	235	230	246
Sulfate	mg/L	1289 1962	277	273	260	240	235	231	217	231	253	269	264	281
Conejo Creek – Baron Brothers Nursery (9B_BARON)														
TDS	mg/L	1720 3995	703	683	679	681	668	671	745	784	843	798	758	734
Chloride	mg/L	230 230	159	154	153	154	151	151	170	179	194	183	173	167
Sulfate	mg/L	1289 1962	164	154	152	153	147	149	183	202	230	209	190	177
Arroyo Simi – Tierra Rejada Road (07_TIERRA)														
TDS	mg/L	1720 3995	1180	1155	1144	1127	1106	1077	1186	1235	1241	1174	1160	1158
Chloride	mg/L	230 230	178	174	172	170	167	162	179	186	187	177	175	176
Sulfate	mg/L	1289 1962	461	446	439	429	416	399	466	495	499	458	449	446
Boron	mg/L	1.3 1.8	0.7	0.7	0.7	0.7	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7

Notes:

- a. Monthly dry weather mean salt concentrations were generated using mean daily salt concentrations (from 5-min data) for days that met the definition of dry weather in the Salts TMDL (i.e., discharge < 86th percentile flow and no measureable rain in preceding 24 hrs). The 86th percentile of mean daily discharge at 03_Univ (generated using 5-min discharge data for the period July 1, 2016-June 30, 2017) was used as the flow-related threshold for distinguishing wet and dry days for all five compliance sites. Daily precipitation records for 24 gages in the CCW watershed (accessed via the VCWPD Hydrologic Data Server) were used to determine days with “measureable precipitation”. Days were considered as having measureable precipitation if two or more rain gages in the watershed received 0.1 inch or more of precipitation.

Results in **bold red type** exceed both the applicable interim wasteload allocation and load allocation. Results in **bold purple type** exceed the interim wasteload allocation, but not the interim load allocation. Results in **green type** are below the applicable allocations.

POTW DATA COMPARISON

Table 22. Nitrogen Compounds – POTWs

Site & Constituent	Units	Final WLA ¹	Event 56 Dry Aug-16	Event 57 Dry Nov-16	Event 60 Dry Feb-17	Event 61 Dry May-17
<i>Simi Valley Water Quality Control Plant (07D_SIMI)</i>						
Ammonia-N	mg/L	3.5 ² , 7.8 ³	1.20	1.30	1.10	0.90
Nitrate-N	mg/L	9	7.30	7.10	6.40	8.10
Nitrite-N	mg/L	0.9	0.02	0.02	0.01	0.01
Nitrate-N + Nitrite-N	mg/L	9	7.32	7.12	6.41	8.11
<i>Camarillo Water Reclamation Plan (9AD_CAMA)</i>						
Ammonia-N	mg/L	3.1 ² , 5.6 ³	1.13	1.33	0.82	0.49
Nitrate-N	mg/L	9	6.80	5.21	5.75	7.12
Nitrite-N	mg/L	0.9	ND	ND	ND	ND
Nitrate-N + Nitrite-N	mg/L	9	6.80	5.21	5.75	7.12
<i>Hill Canyon Wastewater Treatment Plant (10D_HILL)</i>						
Ammonia-N	mg/L	2.4 ² , 3.3 ³	1.70	1.60	1.30	1.50
Nitrate-N	mg/L	9	8.30	9.00	8.50	8.70
Nitrite-N	mg/L	0.9	ND	ND	0.50	0.30
Nitrate-N + Nitrite-N	mg/L	9	8.30	9.00	9.00	9.00

ND=constituent not detected at the MDL.

1. The effective date for these wasteload allocations was July 16, 2007 (R4-2008-009)

2. Wasteload allocations as Average Monthly Effluent Limit

3. Wasteload allocations as Maximum Daily Effluent Limit

Results in green type are below the applicable allocations.

Table 23. OC Pesticides, PCBs, and Siltation - POTWs

POTW & Constituent	Units	Final WLA ¹	Event 56 Dry Aug-2016	Event 57 Dry Nov-2016	Event 60 Dry Feb-2017	Event 61 Dry May-2017
<i>Camarillo Water Reclamation Plant (9AD_CAMA)</i>						
Total Chlordane ²	ng/L	1.2	ND	ND	ND	ND
4,4'-DDD	ng/L	1.7	ND	ND	ND	ND
4,4'-DDE	ng/L	1.2	ND	ND	ND	ND
4,4'-DDT	ng/L	1.2	ND	ND	ND	ND
Dieldrin	ng/L	0.28	ND	ND	ND	ND
PCBs ³	ng/L	0.34	ND	ND	ND	ND
Toxaphene	ng/L	0.33	ND	ND	ND	ND
<i>Hill Canyon Wastewater Treatment Plant (10D_HILL)</i>						
Total Chlordane ²	ng/L	1.2	ND	ND	ND	ND
4,4'-DDD	ng/L	1.7	ND	ND	ND	ND
4,4'-DDE	ng/L	1.2	ND	ND	ND	ND
4,4'-DDT	ng/L	1.2	ND	ND	ND	ND
Dieldrin	ng/L	0.28	ND	ND	ND	ND
PCBs ³	ng/L	0.34	ND	ND	ND	ND
Toxaphene	ng/L	0.33	ND	ND	ND	ND
<i>Simi Valley Water Quality Control Plant (07D_SIMI)</i>						
Total Chlordane ²	ng/L	1.2	ND	ND	ND	ND
4,4'-DDD	ng/L	1.7	ND	ND	ND	ND
4,4'-DDE	ng/L	1.2	ND	ND	ND	ND
4,4'-DDT	ng/L	1.2	ND	ND	ND	ND
Dieldrin	ng/L	0.28	ND	ND	ND	ND
PCBs ³	ng/L	0.34	ND	ND	ND	ND
Toxaphene	ng/L	0.33	ND	ND	ND	ND

ND=constituent not detected at the MDL.

1. Final wasteload allocations were added to each of the POTWs' permits in 2015.

2. Total chlordane is the sum of alpha and gamma-chlordane.

3. PCBs concentrations are the sum of the seven aroclors identified in CTR (1016, 1221, 1232, 1242, 1248, 1254, and 1260).

Results in green type are below the applicable allocations.

Table 24. Toxicity, Chlorpyrifos, and Diazinon - POTWs

POTW & Constituent	Units	Final WLA	Event 56 Dry Aug-2016	Event 57 Dry Nov-2016	Event 60 Dry Feb-2017	Event 61 Dry May-2017
<i>Camarillo Water Reclamation Plant (9AD_CAMA)</i>						
Chlorpyrifos	µg/L	0.0133	ND	ND	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
<i>Hill Canyon Wastewater Treatment Plant (10D_HILL)</i>						
Chlorpyrifos	µg/L	0.014	ND	ND	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
<i>Simi Valley Water Quality Control Plant (07D_SIMI)</i>						
Chlorpyrifos	µg/L	0.014	ND	0.003	DNQ	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND

ND=constituent not detected at MDL.

Results in green type are below the applicable allocations.

Table 25. Metals - POTWs: Camarillo Water Reclamation Plant and Hill Canyon Wastewater Treatment Plant

POTW & Constituent	Units	Interim Daily Max WLA ¹	Interim Monthly Avg WLA ¹	Interim WLA ¹	Event 56 Dry Aug-2016	Event 57 Dry Nov-2016	Event 60 Dry Feb-2017	Final Monthly Avg WLA ²	Final WLA ²	Event 61 Dry May-2017
<i>Camarillo Water Reclamation Plant (9AD_CAMA)</i>										
Total Copper	µg/L	57.0	20.0	--	4.63	4.73	3.93	9.0	--	3.24
	lbs/day ³	--	--	--	--	--	--	--	0.54	0.097
Total Nickel	µg/L	16.0	6.2	--	3.14	2.78	1.17	--	--	--
	lbs/day ³	--	--	--	--	--	--	--	0.2	0.085
Total Mercury ⁴	lbs/month ⁵	--	--	0.03	0.000017	0.000018	0.000782	--	0.015	0.000018
<i>Hill Canyon Wastewater Treatment Plant (10D_HILL)</i>										
Total Copper	µg/L	20.0	16.0	--	2.70	2.30	1.50	6.0	--	2.60
	lbs/day ³	--	--	--	--	--	--	--	0.70	0.17
Total Nickel	µg/L	8.3	6.4	--	2.50	2.00	2.10	--	--	--
	lbs/day ³	--	--	--	--	--	--	--	0.3	0.13
Total Mercury ⁴	lbs/month ⁵	--	--	0.23	0.025	0.024	0.030	--	0.022	0.027

1. Interim wasteload allocation; effective until March 26, 2017 (R4-2006-012) ; applicable for Events 56, 57, and 60

2. Final wasteload allocation; effective date was March 26, 2017 (R16-007); mass-based WLAs added for total copper and total nickel; applicable only to Event 61

3. During load calculation, the daily mean flow on the date of sampling was multiplied by the concentration of total copper or total nickel to yield the daily total copper or total nickel in pounds.

4. For total mercury concentrations reported as not detected (ND); one half of the method detection limit was used to calculate the monthly loads

5. During load calculation, the average monthly flow for each POTW was multiplied by the number of days in the month corresponding to when the sample was collected to get a total monthly flow. The total monthly flow was multiplied by the concentration of total mercury to yield the monthly total mercury load in pounds.

Results in **green type** are below the applicable allocations.

Results in **bold red type** exceed applicable wasteload allocation.

Table 26. Metals - POTW: Simi Valley Water Quality Control Plant

POTW & Constituent	Units	Final				Event 56	Event 57	Event 60	Event 61
		Final Daily Max WLA ¹	Monthly Avg WLA ¹	Interim WLA ²	Final WLA ³	Dry Aug-2016	Dry Nov-2016	Dry Feb-2017	Dry May-2017
Total Copper	µg/L	31.0	30.5	--	--	6.40	4.91	3.04	4.25
Total Nickel	µg/L	960	169	--	--	2.20	2.41	0.47	2.15
Total Mercury ⁴	lbs/month ⁵	--	--	0.18	--	0.00097	0.00004	0.00117	--
		--	--	--	0.031	--	--	--	0.0014

1. Final wasteload allocation; effective date was March 26, 2007 (R4-2006-012)

2. Interim wasteload allocation; effective until March 26, 2017 (R4-2006-012); applicable for Events 56, 57, and 60

3. Final wasteload allocation; effective date was March 26, 2017 (R16-007); applicable only for Event 61

4. For total mercury concentrations reported as not detected (ND); one half of the method detection limit was used to calculate the monthly loads

5. During load calculation, the average monthly flow for each POTW was multiplied by the number of days in the month corresponding to when the sample was collected to get a total monthly flow. The total monthly flow was multiplied by the concentration of total mercury to yield the monthly total mercury load in pounds.

Results in green type are below the applicable allocations.

Table 27. Salts - POTWs

POTW & Constituent	Units	Monthly Avg Interim WLA	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17
<i>Camarillo Water Reclamation Plant (9AD_CAMA) ¹</i>														
Boron	mg/L	N/A	0.6	0.6	0.6	0.5	0.5	0.6	0.5	0.5	0.6	0.8	0.6	0.6
Chloride	mg/L	216	240	250	233	206	213	214	215	212	212	240	256	226
Sulfate	mg/L	283	250	290	222	156	149	213	212	218	239	270	296	260
Total Dissolved Solids	mg/L	1012	1010	1020	1034	918	930	932	920	992	916	978	1110	1036
<i>Hill Canyon Wastewater Treatment Plant (10D_HILL)</i>														
Boron	mg/L	N/A	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5
Chloride	mg/L	189	171	122	171	165	159	158	161	163	165	164	164	162
Sulfate	mg/L	N/A	131	164	111	113	126	129	120	115	121	141	114	115
Total Dissolved Solids	mg/L	N/A	675	655	656	648	663	561	628	656	665	732	649	644
<i>Simi Valley Water Quality Control Plant (07D_SIMI)</i>														
Boron	mg/L	N/A	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.9	0.5	0.5
Chloride	mg/L	183	164	154	153	146	146	151	149	168	160	137	164	155
Sulfate	mg/L	298	235	194	192	192	199	201	233	340	276	244	247	198
Total Dissolved Solids	mg/L	955	830	763	723	732	723	730	753	972	864	846	831	725

N/A: "The 95th percentile concentration is below the Basin Plan objective so interim limits are not necessary."

Results in **bold red type** exceed applicable interim wasteload allocation.

Results in **green type** are below the applicable allocations.

1. Due to water conservation and alterations in the composition of the water supply available in the POTW service area, effluent salt concentrations have increased since the adoption of the TMDL. The increased salts concentrations are being addressed through a Time Schedule Order that provides for higher TDS and sulfate interim limits and a stay of interim limits for chloride (SWRCB WQO 2003-0019). TSO limits are as follows: TDS 1242 mg/L, sulfate 359 mg/L, and chloride 351 mg/L, all of which were met during the entire monitoring year.

EXCEEDANCE EVALUATION DISCUSSION

OC Pesticides, Toxicity, Metals, Nutrients, and Salts

The data comparisons shown in Table 17 through Table 27 above demonstrate that for the most part, the CCW is meeting the applicable interim or final wasteload allocations and load allocations currently in effect for the Nutrients, OC Pesticides, Toxicity, Salts, and Metals TMDLs. The following observations summarize the comparison:

1. No exceedances of the interim wasteload allocations or load allocations for OCs or PCBs were observed at any location in the watershed. No exceedance of final wasteload allocations were observed at any POTW.
2. Exceedances of numeric targets for Nitrate-N and Nitrate-N + Nitrite-N were observed in Mugu Lagoon, Revolon Slough, Beardsley Wash, and Calleguas Creek. Most of the exceedances occurred during dry events, but there were eight wet weather exceedances in Mugu Lagoon, Calleguas Creek, and Beardsley Wash. No exceedances of final nutrient wasteload allocations were measured at any POTW compliance site.
3. There were 12 exceedances of the final MS4 chlorpyrifos wasteload allocation during wet weather, but no exceedances during dry weather. In addition, there were no instances where the diazinon final MS4 wasteload allocation was exceeded during wet weather or dry weather. These exceedances were considered in concert with MS4 outfall monitoring data and MS4 outfalls exceeded the final allocations during four of these monitoring events. There were no exceedances of the final wasteload allocations for chlorpyrifos or diazinon at any POTW.
4. There were four exceedances of the interim load allocation and interim wasteload allocation for total selenium measured during the dry weather sampling events at the 04_WOOD site. As discussed in the TMDL, a primary source of selenium in Revolon Slough is considered to be rising groundwater levels and the interim allocations were to be considered in this context. There were no exceedances of interim wasteload allocations of metals at any POTW. The metals final wasteload allocations became effective March 26, 2017. Event 61 was the first event to take place following the final wasteload allocations going into effect; mercury results from this event from Hill Canyon Wastewater Treatment Plant exceeded the final wasteload allocation.
5. Although no toxicity was observed in the watershed, a TIE targeted for organics was performed due to the observation of greater than 50 percent mortality in the 100 percent concentration of the ambient water sample at 10_GATE. As a result, the Stakeholders are in compliance with the toxicity wasteload allocations and load allocations per the requirements of the TMDL.
6. In general, receiving water sites were in compliance with interim load allocations and MS4 wasteload allocations established by the Salts TMDL; the only exception being exceedances in TDS, sulfate, and boron measured at 04_WOOD in the Revolon Slough watershed, and six chloride exceedances at 03_UNIV and four chloride exceedances at 9A_HOWAR. POTWs are meeting interim salts wasteload allocations, with the exception of Camarillo Water Reclamation Plant (WRP), which experienced exceedances of chloride, sulfate, and TDS as well as the Simi Valley Water Quality Control Plant

(WQCP), which experienced exceedances of sulfate and TDS. The exceedances of interim salts wasteload allocations for the Camarillo WRP have resulted from increased influent salt concentrations due to water conservation and a shift in the composition of the water supplied within the service area. Because the process for addressing salts is a watershed effort involving significant capital investments, the Camarillo WRP received an amended Time Schedule Order in December 2015 (R4-2011-0126-A03) to adjust the interim limits for TDS, sulfate and chloride (TSO limits: 1242 mg/L TDS, 359 mg/L sulfate, 351 mg/L chloride). As a result, the interim limits in the TMDL are not the currently applicable interim limits for the Camarillo WRP discharge.

Nutrients

Exceedances of numeric targets for Nitrate-N and Nitrate-N + Nitrite-N were observed at sites in Mugu Lagoon, Calleguas Creek, Revolon Slough, and Beardsley Wash. Nitrate-N exceedances are summarized in Table 28 below. The table focuses on Nitrate-N results since Nitrate-N + Nitrite-N exceedances were caused by high Nitrate-N values. Nitrite-N was below the 1 mg/L target at all sites for every event.

Table 28. Exceedances of Nitrate-N Numeric TMDL Target of 10 mg/L

Nitrogen TMDL Compliance Sites	Event 56 Dry Aug-16	Event 57 Dry Nov-16	Event 58 Wet Dec-16	Event 59 Wet Jan-17	Event 60 Dry Feb-17	Event 61 Dry May-17
01_RR_BR	Yes	Yes	Yes	Yes	Yes	No
02_PCH	Yes	Yes	Yes	No	Yes	Yes
03_UNIV	No	No	No	No	No	No
04_WOOD	Yes	Yes	No	No	Yes	Yes
05_CENTR	Yes	Yes	Yes	No	Yes	Yes
06_UPLAND ¹	NS	NS	No	No	NS	NS
07_HITCH	No	No	No	No	No	No
9B_ADOLF	No	No	No	No	No	No

NR=not required, NS=no sample, dry

No signifies that monitoring results were below the Nitrate-N target during the monitoring event.

Yes signifies that monitoring results were above the Nitrate-N target during the monitoring event.

1. 06_UPLAND replaces 06_SOMIS beginning with Event 56.

Nitrogen exceedances occurred primarily in areas of the watershed with agricultural inputs. Reaches downstream of POTW discharges are generally in compliance with the TMDL requirements and urban discharges were determined to be negligible during the TMDL analysis and therefore do not have TMDL allocations. The final nitrogen load allocations for agriculture became effective in July 2010. Under the 2016 Conditional Waiver (Order No. R4-2016-0143), agricultural dischargers have until October 14, 2025 to comply with the nitrogen load allocations. The Water Quality Management Plans developed by VCAILG for compliance with the Conditional Waiver will specify steps and milestones that work towards achieving these load allocations through the implementation of management practices.

Chlorpyrifos

Further examination of the chlorpyrifos exceedances at receiving water sites was needed to determine whether urban dischargers were contributing. The final wasteload allocations for urban dischargers are in effect and per the TMDL compliance is to be assessed in the receiving waters.

Monitoring data at urban land use sites from each subwatershed for which an exceedance was observed in the receiving water was compared to the wasteload allocation to determine if MS4 discharges significantly contributed to the exceedance. If the urban land use data were below the wasteload allocation, the MS4 dischargers were considered to be meeting allocations. If the urban land use data were above the wasteload allocation, the MS4 could be contributing to the exceedance in the receiving water.

As shown in Table 19, there were twelve exceedances of chlorpyrifos targets at the receiving water sites. In two cases, urban land use data for the same event were less than the final MS4 wasteload allocation for chlorpyrifos (Table 29). In four cases, the urban land use data for the same event exceeded the final wasteload allocation, indicating that urban discharge may be a contributor to the exceedance in the receiving water.

In addition, further examination of the chlorpyrifos exceedances at receiving water sites was needed to determine whether agricultural dischargers were contributing. The final load allocations for urban dischargers are in effect and per the TMDL, compliance is to be assessed in the receiving waters. However, the final compliance deadline for agriculture is not until 2022.

Monitoring data at agricultural land use sites from each subwatershed for which an exceedance was observed in the receiving water was compared to the wasteload allocation to determine if agricultural discharges significantly contributed to the exceedance. If the agricultural land use data were below the load allocation, the agricultural dischargers were considered to be meeting allocations. If the agricultural land use data were above the load allocation, the agricultural dischargers could be contributing to the exceedance in the receiving water.

As shown in Table 29, there were twelve exceedances of chlorpyrifos targets at the receiving water sites. In ten cases, the agricultural land use data for the same event exceeded the final load allocation (Table 30), indicating that agricultural discharges may be a contributor to the exceedance in the receiving water.

The final wasteload and load allocations for diazinon were not exceeded during this reporting period.

Table 29. Compliance and Land Use Sites Comparison to Determine MS4 Chlorpyrifos WLA Compliance

Sites Exceeding WLAs	Constituent	Event 56 Dry Aug-16	Event 57 Dry Nov-16	Event 58 Wet Dec-16	Event 59 Wet Jan-17	Event 60 Dry Feb-17	Event 61 Dry May-17
01_RR_BR	Chlorpyrifos			NA ¹	NA ¹		
03_UNIV	Chlorpyrifos			NA ¹	NA ¹		
04_WOOD	Chlorpyrifos			Yes	Yes		
06_UPLAND ²	Chlorpyrifos			NA ¹	NA ¹		
07_HITCH	Chlorpyrifos			Yes	No		
9B_ADOLF	Chlorpyrifos			Yes	No		

No= none of the MS4 land use site for the subwatershed exceeded the MS4 wasteload allocation during the monitoring event.

Yes=the MS4 land use site for the subwatershed exceeded the MS4 wasteload allocation during the monitoring event.

1. There are no urban land use monitoring sites in these reaches.

2. 06_UPLAND replaced 06_SOMIS beginning with Event 56 as access to 06_SOMIS no longer available.

Blank cells indicate that a wasteload allocation exceedance did not occur at the compliance monitoring site during a particular event.

Table 30. Compliance and Land Use Sites Comparison to Determine Ag Chlorpyrifos LA Compliance

Sites Exceeding WLAs	Constituent	Event 56 Dry Aug-16	Event 57 Dry Nov-16	Event 58 Wet Dec-16	Event 59 Wet Jan-17	Event 60 Dry Feb-17	Event 61 Dry May-17
01_RR_BR	Chlorpyrifos			Yes	Yes		
03_UNIV	Chlorpyrifos			NA ¹	NA ¹		
04_WOOD	Chlorpyrifos			Yes	Yes		
06_UPLAND ²	Chlorpyrifos			Yes	Yes		
07_HITCH	Chlorpyrifos			Yes	Yes		
9B_ADOLF	Chlorpyrifos			Yes	Yes		

Yes=the Ag land use site for the subwatershed exceeded the Ag load allocation during the monitoring event.

1. There are no urban land use monitoring sites in these reaches.

2. 06_UPLAND replaced 06_SOMIS beginning with Event 56 as access to 06_SOMIS is no longer available.

Blank cells indicate that a load allocation exceedance did not occur at the compliance monitoring site during a particular event.

Selenium

Selenium concentrations in Revolon Slough at 04_WOOD exceeded the urban dischargers interim wasteload allocation and the agricultural dischargers interim LA during all four dry weather monitoring events. A summary of monitoring results for total selenium at sites in the Revolon Slough subwatershed is shown in Table 31 below.

Table 31. Selenium Monitoring Data (ug/L) in the Revolon Slough Subwatershed

Site ID	Use	Dry Weather Events					
		Interim		56	57	60	61
		WLA ¹	LA ¹	Aug-16	Nov-16	Feb-17	May-17
04_WOOD	RW	13	6	16.25	13.4	19.00	25.20
04D_WOOD	Ag		6	8.69	7.23	9.73	3.45
05D_SANT_VCWPD	Ag		6	52.44	51.16	62.20	77.33
04D_VENTURA	Urban	13		NS	0.25	0.51	0.40

1. Interim WLAs for stormwater permittees and interim LAs for agricultural dischargers are effective until March 2022 (R4-2006-012).

2. No wet weather exceedances were observed in the TMDL analysis so no interim limits were assigned for the TMDL. For comparison purposes, the wet weather targets were included in this table.

RW – Receiving water compliance site; Ag – Agricultural; Urban – Urban

NS – Not sampled, dry

Results in **bold red type** exceed applicable interim WLA or interim LA.

Results in **green type** are below the applicable allocations.

As noted in the table above, high levels of selenium were also observed at 05D_SANT_VCWPD and 04D_WOOD, both agricultural land use sites in the Revolon Slough subwatershed. As discussed in the TMDL, a primary source of selenium in this area is considered to be rising groundwater levels and the interim allocations were to be considered in this context.

Salts

A summary of monitoring results for total dissolved solids, sulfate, and boron at sites in the Revolon Slough subwatershed are shown in Table 32 through Table 34 and chloride in the Conejo Creek watershed in Table 35 below.

Mean monthly dry weather TDS, sulfate, and boron concentrations in Revolon Slough at 04_WOOD exceeded their respective interim MS4 WLAs during all twelve months of the monitoring period. However, mean monthly dry weather TDS, chloride, boron, and sulfate concentrations in Revolon Slough at 04_WOOD did not exceed their respective LAs during the monitoring period. Site 04D_WOOD represents agricultural discharge water quality in the Revolon Slough subwatershed. At this site, exceedances of the interim LA occurred twice for both total dissolved solids and sulfate (in November 2016 and February 2017). Boron exceeded its interim LA at this site three times: August 2016, November 2016, and February 2017. Concentrations of salts at 04D_VENTURA, which is an urban land use site in the upper Revolon Slough watershed, were consistently below the interim MS4 WLAs for TDS, sulfate, and boron. No flow was present at the 04D_VENTURA site during the August 2016 sampling event.

Mean monthly dry weather chloride concentrations in Conejo Creek at 9A_HOWAR exceeded the interim LA and interim MS4 WLA during four months of the monitoring period. However, mean monthly dry weather TDS and sulfate concentrations in Conejo Creek at 9A_HOWAR did not exceed their respective LAs or WLAs during the monitoring period. Site 9BD_ADOLF

represents urban discharge water quality in the Conejo Creek subwatershed. At this site, exceedances of the interim LA occurred three times for chloride (in August 2016, November 2016, and May 2017). Concentrations of chloride collected at 9BD_GERRY, which is an agricultural land use site in the Conejo Creek subwatershed, were below the interim MS4 WLAs. Samples were not taken at 9BD_GERRY during August 2016, November 2016, and May 2017 sampling events due to no flow being present.

Mean monthly dry weather chloride concentrations in Calleguas Creek at 03_UNIV exceeded the interim LA and interim MS4 WLA during six months of the monitoring period. However, there are no land use monitoring sites located in Reach 3 of Calleguas Creek to compare land use water quality data to receiving water quality data.

Table 32. Total Dissolved Solids Monitoring Data (mg/L) in Revolon Slough

Site ID	Use	Interim Limits		Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17
		WLA	LA												
04_WOOD ¹	RW	1720	3995	3534	3429	3355	3243	3598	3532	3733	3638	3553	3511	3449	3326
04D_WOOD ²	Ag		3995		3670			4280			4470			2180	
04D_VENTURA ²	Urban	1720			NS			820			750			820	

NS=no sample, dry

1. Data presented are monthly means

2. Data presented are quarterly dry weather grabs

Results in **bold type** exceed applicable interim wasteload allocation or interim load allocation.

Table 33. Sulfate Monitoring Data (mg/L) in Revolon Slough

Site ID	Use	Interim Limits		Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17
		WLA	LA												
04_WOOD ¹	RW	1289	1962	1845	1790	1752	1693	1878	1844	1948	1899	1855	1833	1800	1731
04D_WOOD ²	Ag		1962		1731			2091			743			959	
04D_VENTURA ²	Urban	1289			NS			252			6.45			229	

NS=no sample, dry

1. Data presented are monthly means

2. Data presented are quarterly dry weather grabs

Results in **bold type** exceed applicable interim wasteload allocation or interim load allocation.

Table 34. Boron Monitoring Data (mg/L) in Revolon Slough

Site ID	Use	Interim Limits		Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17
		WLA	LA												
04_WOOD ¹	RW	1.3	1.8	1.8	1.8	1.7	1.7	1.8	1.8	1.9	1.9	1.8	1.8	1.8	1.7
04D_WOOD ²	Ag		1.8		1.9			1.9			2.1			1.2	
04D_VENTURA ²	Urban	1.3			NS			0.6			0.3			0.3	

NS=no sample, dry

1. Data presented are monthly means

2. Data presented are quarterly dry weather grabs

Results in **bold type** exceed the applicable interim wasteload allocation or interim load allocation

Table 35. Chloride Monitoring Data (mg/L) in Conejo Creek

Site ID	Use	Interim Limits		Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17
		WLA	LA												
9A_HOWAR ¹	RW	230		242	238	227	209	204	201	188	201	220	235	230	246
9BD_GERRY ²	Ag	230			NS			NS			15			NS	
9BD_ADOLF ²	Urban		230		484			677			7.5			574	

NS=no sample, dry

1. Data presented are monthly means

2. Data presented are quarterly dry weather grabs

Results in **bold type** exceed applicable interim wasteload allocation or interim load allocation.

Revisions and Recommendations

The QAPP specifies that upon the completion of each CCWTMP annual report, revisions to standard procedures will be made, including: site relocation, ceasing monitoring efforts and/or deleting certain constituents from sample collection. An updated QAPP was submitted in December 2014 that incorporated the proposed revisions and recommendations included in the previous six CCWTMP annual reports. Additional modifications that reflect the most current lab methods and procedures for the field conditions were also part of the QAPP update process. Monitoring for the 2016-2017 monitoring year was conducted per the revised QAPP.

In addition to the updates identified in the 2014 Revised QAPP, during Year 8, access to 06_SOMIS was revoked by the private landowner whom had previously given permission for monitoring. Due to this change, 06_SOMIS could only be visited during the first two monitoring events of the 2015-2016 monitoring year. In Year 9, monitoring took place at the 06_UPLAND monitoring site, which is still within Reach 6, but approximately one mile downstream. Access to the site is via County property, so there should not be any further access issues.

The Stakeholders will be submitting TMDL receiving water data to the California Environmental Data Exchange Network (CEDEN) going back to the beginning of the monitoring program in 2008. TMDL receiving water monitoring data will continue to be uploaded for future monitoring events, as well.

Appendix A:
Monitoring Event Summaries for Toxicity, OC
Pesticides, Nutrients, Metals, and Salts

Event 56 – Water & Sediment

Calleguas Creek Watershed TMDL Monitoring Program

Post Event Summary

Event 56: Quarterly Water Sampling and Sediment

Sampling Crews: Kinnetic Laboratories, Inc. (KLI), Fugro
Crew #1: Greg Cotten (KLI), Amy Howk (KLI)
Crew #2: Nick Simon (Fugro), David Thornhill (Fugro)

Sampling Dates: **Sediment sites (toxicity and chemistry):** August 23rd and 24th, 2016
Receiving water and land use sites: August 23rd and 24th, 2016

Sampling Type: Quarterly water Chemistry, Toxicity, and Salts

SITES SAMPLED

Site ID	Sample Date	Constituents					
		General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
01_RR_BR	8/24/16	X		X	X	X	
02_PCH	8/23/16	X		X	X		
03_UNIV	8/24/16	X	X	X	X	X	
9B_ADOLF	8/24/16	X	X		X	X	
9BD_ADOLF	8/24/16	X		X		X	X
05D_SANT_VCWPD	8/24/16	X		X	X	X	X
05_CENTR	8/24/16	X			X		
04D_WOOD	8/24/16	X		X	X	X	X
04_WOOD	8/24/16	X	X	X	X	X	
01T_ODD2_DCH	8/24/16	X		X	X	X	
07_HITCH	8/24/16	X	X		X	X	
07D_MPK	8/23/16	X				X	X
07D_SIM_BUS	8/23/16	X				X	
13_SB_HILL	8/24/16	X				X	X
10_GATE	8/24/16	X	X			X	
13_BELT	8/24/16	X	X			X	

SITES NOT SAMPLED

Site ID	Reason for Omission
02D_BROOM	Site was dry.
04D_VENTURA	Site was dry.
06T_FC_BR	Site was dry.
06_UPLAND	Site was dry.
07D_HITCH_LEVEE2	Site was dry.
9BD_GERRY	Site was dry.

SEDIMENT SITES

Site ID	Sample Notes
02_PCH	Tox and chemistry sampled 8-23-16 at 10:00
04_WOOD	Tox and chemistry sampled 8-23-16 at 12:00
03_UNIV	Tox and chemistry sampled 8-23-16 at 16:30
9B_ADOLF	Chemistry only sampled 8-24-16 at 16:40
06_UPLAND	Sampling was overlooked due to dry conditions. Will sample in November.
07_HITCH	Chemistry only sampled 8-24-16 at 10:00
9A_HOWAR	Tox and chemistry sampled 8-23-16 at 18:30

DEVIATIONS FROM QAPP

Site ID	Deviation
01_RR_BR	Flow was not measured due to tidal influence. Site was sampled near low tide to minimize ocean water chemistry influence.
02_PCH	Flow was not measured due to tidal influence. Site was sampled near low tide to minimize ocean water chemistry influence.
04_WOOD	<p>The conductivity at the site was greater than the accepted range for the designated test species (<i>Ceriodaphnia dubia</i>). The QAPP requires the use of <i>Americamysis bahia</i>. However, <i>Hylella azteca</i> is identified by SWAMP as an appropriate water test species when conductivity is greater than 3,000 us/cm and is currently utilized by the Ventura County Irrigated Lands Group which conducts monitoring in the watershed.</p> <p>To maintain consistency with an existing watershed program, the toxicity testing lab (Pacific EcoRisk) utilized <i>Hylella azteca</i> in place of <i>Americamysis bahia</i>.</p>
05 CENTR	Intermediate container (Ziploc bag) used to fill sample bottles.
05D_SANT_VCWPD	Intermediate container (Ziploc bag) used to fill sample bottles.
07D_MPK	Intermediate container (Ziploc bag) used to fill sample bottles.
9BD_ADOLF	Intermediate container (Ziploc bag) used to fill sample bottles.

FOLLOW UP ACTIONS

06_UPLAND Sediment chemistry will be sampled at the next quarterly event regardless of flow conditions.

ADDITIONAL COMMENTS

All probes, for both water quality meters, had 'valid' calibrations and post event checks.

Sediment chemistry and sediment tox samples were collected during this sampling event. Care was taken to sample water up stream of where sediment tox was collected and the water samples were collected the day after sediment tox. Due to tidal ebb and flow conditions at 02_PCH, water chemistry was collected before sediment tox was collected. This insured water chemistry was not influenced by sediment disturbances. At sites that had smaller sediment chemistry grabs the sediment was collected on the same day as the water chemistry but after the water was collected.

Prepared by: Greg Cotten, KLI

Date: September 28, 2016

Reviewed by: Amy Howk, KLI

Date: September 28, 2016

Approved by: Michael Marson, LWA

Date: November 17, 2016

Event 57

Calleguas Creek Watershed TMDL Monitoring Program

Post Event Summary

Event 57: Quarterly Water Sampling

Sampling Crews: Kinnetic Laboratories, Inc. (KLI), Fugro
Crew #1: Greg Cotten (KLI), Aidas Worthington (KLI)
Crew #2: Justin Martos (Fugro), David Thornhill (Fugro)

Sampling Dates: Receiving water and land use sites on November 3rd and 4th, 2016

Sampling Type: Quarterly Water Chemistry, Toxicity, and Salts

SITES SAMPLED

Site ID	Sample Date	Constituents					
		General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
01_RR_BR	11-3-16	X		X	X	X	
02_PCH	11-3-16	X		X	X		
03_UNIV	11-3-16	X	X	X	X	X	X
9A_HOWAR	11-3-16	X					X
9B_ADOLF	11-3-16	X	X		X	X	
9BD_ADOLF	11-3-16	X		X		X	X
05D_SANT_VCWPD	11-4-16	X		X	X	X	X
05_CENTR	11-4-16	X			X		
04D_VENTURA	11-4-16	X		X		X	X
04D_WOOD	11-4-16	X		X	X	X	X
04_WOOD	11-3-16	X	X	X	X	X	X
01T_ODD2_DCH	11-4-16	X		X	X	X	
07_HITCH	11-3-16	X	X		X	X	
07_TIERRA	11-3-16	X					X
07D_SIM_BUS	11-4-16	X				X	X
13_SB_HILL	11-4-16	X				X	X
9B_BARON	11-3-16	X					X

Site ID	Sample Date	Constituents					
		General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
10_GATE	11-3-16	X	X			X	
13_BELT	11-3-16	X	X			X	

SITES NOT SAMPLED

Site ID	Reason for Omission
02D_BROOM	Site was dry.
06_UPLAND	Site was dry.
06T_FC_BR	Site was dry.
07D_HITCH_LEVEE_2	Site was dry.
07D_MPK	Site was dry.
9BD_GERRY	Site was dry.

DEVIATIONS FROM QAPP

Site ID	Deviation
01_RR_BR	No photo was taken due to rule against photography on base. Flow was not measured due to tidal influence. Site was sampled near low tide to maximize watershed water.
02_PCH	Flow was not measured due to tidal influence.
04_WOOD	<p>The conductivity at the site was greater than the accepted range for the designated test species (<i>Ceriodaphnia dubia</i>). The QAPP requires the use of <i>Americamysis bahia</i>. However, <i>Hylella azteca</i> is identified by SWAMP as an appropriate water test species when conductivity is greater than 3,000 us/cm and is currently utilized by the Ventura County Irrigated Lands Group which conducts monitoring in the watershed.</p> <p>To maintain consistency with an existing watershed program, the toxicity testing lab (Pacific EcoRisk) utilized <i>Hylella azteca</i> in place of <i>Americamysis bahia</i>.</p>
04D_WOOD	Total Mercury bottle used to collect dissolved metals and mercury.
04D_VENTURA	Intermediate container (Ziploc bag) used to fill sample bottles.
05D_SANT_VCWPD	Total Mercury bottle used to collect dissolved metals and mercury.
05 CENTR	Intermediate container 103 and 104 used to fill sample bottles.
9BD_ADOLF	Intermediate container (Ziploc bag) used to fill sample bottles.

FOLLOW UP ACTIONS

None

ADDITIONAL COMMENTS

Field meter calibrations passed pre and post event calibrations except Team 2 (meter 3760) Dissolved Oxygen sensor membrane was gone at the time of post event calibration check. All other parameters passed.

06_UPLAND sediment sample was collected during this event. There was no flow at this site during this sampling event either. Sediment sample log sheet is scanned next to water sampling page in associated .PDF document.

Prepared by: Greg Cotten, KLI

Date: Dec 06, 2016

Reviewed by: Aidas Worthington

Date: Dec 08, 2016

Approved by: Michael Marson, LWA

Date: March 6, 2017

Event 58 – Storm 1

Calleguas Creek Watershed TMDL Monitoring Program

Post Event Summary

Event 58: Wet Weather Sampling

Sampling Crews: Kinnetic Laboratories, Inc. (KLI), Fugro

Crew #1: Greg Cotten (KLI), Kagen Holland (KLI)

Crew #2: Amy Howk (KLI), Tristen Geghart(Fugro)

Crew #3: Spencer Johnson (KLI), Jeff Polis (Fugro)

Crew #4: David Thornhill (Fugro), Dustin Snider (Fugro)

Sampling Dates: Receiving water and land use sites on December 15th and 16th, 2016

Sampling Type: Wet weather water chemistry, toxicity, and salts

SITES SAMPLED

Site ID	Sample Date	Constituents					
		General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
01_RR_BR	12/16/16	X		X	X	X	
02_PCH	12/16/16	X		X	X		
03_UNIV	12/15/16	X	X	X	X	X	X
9A_HOWAR	12/16/16	X					X
9B_ADOLF	12/16/16	X	X		X	X	
9BD_ADOLF	12/16/16	X		X		X	X
05D_SANT_VCWPD	12/16/16	X		X	X	X	X
05_CENTR	12/16/16	X			X		
04D_VENTURA	12/15/16	X		X		X	X
04D_WOOD	12/16/16	X		X	X	X	X
04_WOOD	12/15/16	X	X	X	X	X	X
01T_ODD2_DCH	12/16/16	X		X	X	X	
06T_FC_BR	12/16/16	X			X	X	
06_UPLAND	12/16/16	X	X		X	X	
07_HITCH	12/16/16	X	X		X	X	
07D_HITCH_LEVEE_2	12/16/16	X			X	X	X

Site ID	Sample Date	Constituents					
		General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
07_TIERRA	12/16/16	X					X
07D_MPK	12/15/16	X				X	X
07D_SIM_BUS	12/15/16	X				X	X
13_SB_HILL	12/15/16	X				X	X
9B_BARON	12/16/16	X					X
9BD_GERRY	12/16/16	X		X	X	X	X
10_GATE	12/15/16	X	X			X	
13_BELT	12/15/16	X	X			X	

SITES NOT SAMPLED

Site ID	Reason for Omission
02D_BROOM	Site was dry.

DEVIATIONS FROM QAPP

Site ID	Deviation
01_RR_BR	No photo was taken due to rule against photography on base. Flow was not measured due to tidal influence.
02_PCH	Flow was not measured due to tidal influence.
9BD_GERRY	Intermediate container (Pesticides 1L AG #202) used to fill TKN (#203) only.
13_BELT	Intermediate container (TSS 1L HDPE #211) used to fill Toxicity (#210) only.

FOLLOW UP ACTIONS

None

ADDITIONAL COMMENTS

Field meter calibration notes:

Team 1 (13_SB_HILL, 07D_SIM_BUS, 07D_MPK, 07_HITCH, 07D_HITCH_LEVEE_2 and 07_TIERRA) field meter initial calibration was valid and passed post calibration except for Dissolved Oxygen.

ADDITIONAL COMMENTS - CONTINUED

Team 2 (9B_ADOLF, 9BD_ADOLF, 9BD_GERRY, 10_GATE, 13_BELT and 9B_BARON) field meter initial calibration was valid except for turbidity and passed all others in post calibration. Turbidity was collected as grab samples and analysed with Team 3 meter within 14 hours of collection.

Team 3 (06T_FC_BR, 05D_SANT_VCWPD, 05_CENTR, 04D_VENTURA, 06_UPLAND, 9A_HOWAR and 03_UNIV) field meter passed both the initial and post calibration.

Team 4 (04_WOOD, 04D_WOOD, 02D_BROOM, 01T_ODD2_DCH, 02_PCH and 01_RR_BR) field meter passed both the initial and post calibration.

Meter exceedences:

Sites where turbidity exceeded 1000 NTU (field meter maximum) Turbidity was added to the site COC for laboratory analysis. These sites were: 06T_FC_BR and 06_UPLAND.

Flow:

Due to dangerous flow conditions, flow was estimated at all sites except 07D_SIM_BUS, 07D_MPK, 07D_HITCH_LEVEE, 9BD_GERRY, 05D_SANT_VCWPD, 06_UPLAND and 04D_WOOD where flow was measured using preferred methods. There was no flow out of the pipe at 02D_BROOM.

Metals Sampling:

To decrease the sediment load on the filters, field crews used a 1L amber glass jar that was cleaned for metals analysis to allow the stormwater to settle prior to pouring it into the filter. This was done at: 9BD_ADOLF, 9BD_GERRY, 05D_SANT_VCWPD, 04D_VENTURA, 03_UNIV and 01_RR_BR.

Photos:

Photos were taken at all sites, however as most sites were sampled at night most photos are too dark to see anything clearly. Photos at 04D_VENTURA were not taken while sampling but were taken the following morning. No photos were taken at 01_RR_BR as photos are not allowed to be taken on the base.

Prepared by:	Amy Howk, KLI	Date:	January 12, 2017
Reviewed by:	Greg Cotten, KLI	Date:	January 30, 2017
Approved by:	Micahel Marson, LWA	Date:	March 6, 2017

Event 59 – Storm 2

Calleguas Creek Watershed TMDL Monitoring Program

Post Event Summary

Event 59: Wet Weather Sampling

Sampling Crews: Kinnetic Laboratories, Inc. (KLI), Fugro

Crew #1: Greg Cotten (KLI), Kagen Holland (KLI)

Crew #2: Amy Howk (KLI), Spencer Johnson (KLI)

Crew #3: Jeff Polis (Fugro), Tristen Geghart (Fugro)

Crew #4: Nick Simon (Fugro), Dustin Snider (Fugro)

Sampling Dates: Receiving water and land use sites on January 20th, 2017

Sampling Type: Wet weather water chemistry, toxicity, and salts

SITES SAMPLED

Site ID	Sample Date	Constituents					
		General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
01_RR_BR	1/20/17	X		X	X	X	
02_PCH	1/20/17	X		X	X		
03_UNIV	1/20/17	X	X	X	X	X	X
9A_HOWAR	1/20/17	X					X
9B_ADOLF	1/20/17	X	X		X	X	
9BD_ADOLF	1/20/17	X		X		X	X
05D_SANT_VCWPD	1/20/17	X		X	X	X	X
05_CENTR	1/20/17	X			X		
04D_VENTURA	1/20/17	X		X		X	X
04D_WOOD	1/20/17	X		X	X	X	X
04_WOOD	1/20/17	X	X	X	X	X	X
01T_ODD2_DCH	1/20/17	X		X	X	X	
06T_FC_BR	1/20/17	X			X	X	
06_UPLAND	1/20/17	X	X		X	X	
07_HITCH	1/20/17	X	X		X	X	
07D_HITCH_LEVEE_2	1/20/17	X			X	X	X

Site ID	Sample Date	Constituents					
		General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
07_TIERRA	1/20/17	X					X
07D_MPK	1/20/17	X				X	X
07D_SIM_BUS	1/20/17	X				X	X
13_SB_HILL	1/20/17	X				X	X
9B_BARON	1/20/17	X					X
9BD_GERRY	1/20/17	X		X	X	X	X
10_GATE	1/20/17	X	X			X	
13_BELT	1/20/17	X	X			X	

SITES NOT SAMPLED

Site ID	Reason for Omission
02D_BROOM	Site was dry.

DEVIATIONS FROM QAPP

Site ID	Deviation
01_RR_BR	No photo was taken due to rule against photography on base. Flow was not measured due to tidal influence. Bottle -009 for pesticides was used as a settling bottle for particulates prior to pouring into metals filter.
02_PCH	Flow was not measured due to tidal influence.
05_CENTR	Clean glass bottle used on a sampling pole to fill all sample containers.
9BD_GERRY	Intermediate container (Pesticides 1L AG #202) used to fill TKN (#203) only.

FOLLOW UP ACTIONS

None

ADDITIONAL COMMENTS

Field meter calibration notes:

Team 1 (13_SB_HILL, 07D_SIM_BUS, 07D_MPK, 07_HITCH, 07D_HITCH_LEVEE_2 and 07_TIERRA) field meter passed both the initial and post calibration.

Team 2 (9B_ADOLF, 9BD_ADOLF, 9BD_GERRY, 10_GATE, 13_BELT and 9B_BARON) field meter initial calibration was valid except for turbidity and passed all others in post calibration. Turbidity was collected as grab samples and analysed with Team 3 meter within 8 hours of collection.

Team 3 (06T_FC_BR , 05D_SANT_VCWPD, 05_CENTR, 04D_VENTURA, 06_UPLAND, 9A_HOWAR and 03_UNIV) field meter passed both the initial and post calibration.

Team 4 (04_WOOD, 04D_WOOD, 02D_BROOM, 01T_ODD2_DCH, 02_PCH and 01_RR) field meter passed both the initial and post calibration for everything except conductivity which failed both the initial and post calibration.

Meter exceedences:

Sites where turbidity exceeded 1000 NTU (field meter maximum) Turbidity was added to the site COC for laboratory analysis. These sites were: 07D_HITCH_LEVEE_2 , 9BD_GERRY , 05D_SANT_VCWPD, 05_CENTR, 06T_FC_BR and 01T_ODD2_DCH.

Flow:

Due to dangerous flow conditions, flow was estimated at all sites except 9BD_GERRY, 05D_SANT_VCWPD, 06T_FC_BR, 04D_WOOD, 07D_HITCH_LEVEE_2 where flow was measured using preferred methods. 02D_BROOM outfall was 'dry'.

Metals Sampling:

To decrease the sediment load on the filters, field crews used a 1L amber glass jar that was cleaned for metals analysis and bagged to allow the stormwater to settle prior to filtering it. This was done at: 9BD_ADOLF, 9BD_GERRY, 04_WOOD, 04D_WOOD, 01T_ODD2_DCH, 02_PCH and 01_RR_BR.

Prepared by:	Amy Howk, KLI	Date:	02/14/2017
Reviewed by:	Greg Cotten, KLI	Date:	03/07/2017
Approved by:	Michael Marson, LWA	Date:	06/15/2017

Event 60

Calleguas Creek Watershed TMDL Monitoring Program

Post Event Summary

Event 60: Quarterly Water Sampling

Sampling Crews: Kinnetic Laboratories, Inc. (KLI), Fugro
Crew #1: Greg Cotten (KLI), Aidas Worthington (KLI)
Crew #2: Nick Simon (Fugro), Dustin Snider (Fugro)*
Crew #3: Nick Simon (Fugro), Tristan Geghart (Fugro)

*Sites 01_RR_BR and 02_PCH only

Sampling Dates: Receiving water and land use sites on February 14th and 15th, 2017

Sampling Type: Quarterly Water Chemistry, Toxicity, and Salts

SITES SAMPLED

Site ID	Sample Date	Constituents					
		General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
01_RR_BR*	2-14-17	X		X	X	X	
02_PCH*	2-14-17	X		X	X		
03_UNIV	2-14-17	X	X	X	X	X	X
9A_HOWAR	2-15-17	X					X
9B_ADOLF	2-14-17	X	X		X	X	
9BD_ADOLF	2-14-17	X		X		X	X
05D_SANT_VCWPD	2-15-17	X		X	X	X	X
05_CENTR	2-15-17	X			X		
04D_VENTRA	2-15-17	X		X		X	X
04D_WOOD	2-14-17	X		X	X	X	X
04_WOOD	2-14-17	X	X	X	X	X	X
01T_ODD2_DCH	2-14-17	X		X	X	X	
07_HITCH	2-14-17	X	X		X	X	
07D_HITCH_LEVEE_2	2-15-17	X			X	X	X
07_TIERRA	2-14-17	X					X
07D_MPK	2-15-17	X				X	X

Site ID	Sample Date	Constituents					
		General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
07D_SIM_BUS	2-15-17	X				X	X
13_SB_HILL	2-15-17	X				X	X
9B_BARON	2-14-17	X					X
10_GATE	2-14-17	X	X			X	
13_BELT	2-14-17	X	X			X	

SITES NOT SAMPLED

Site ID	Reason for Omission
02D_BROOM	Site was dry.
06_UPLAND	Site was dry.
06T_FC_BR	Site was dry.
9BD_GERRY	Site was dry.

DEVIATIONS FROM QAPP

Site ID	Deviation
01_RR_BR	No photo was taken due to rule against photography on base. Flow was not measured due to tidal influence.
02_PCH	Flow was not measured due to tidal influence.
04_WOOD	<p>The conductivity at the site was greater than the accepted range for the designated test species (<i>Ceriodaphnia dubia</i>). The QAPP requires the use of <i>Americamysis bahia</i>. However, <i>Hylella azteca</i> is identified by SWAMP as an appropriate water test species when conductivity is greater than 3,000 us/cm and is currently utilized by the Ventura County Irrigated Lands Group which conducts monitoring in the watershed.</p> <p>To maintain consistency with an existing watershed program, the toxicity testing lab (Pacific EcoRisk) utilized <i>Hylella azteca</i> in place of <i>Americamysis bahia</i>.</p>
07D_HITCH_LEVEE	Intermediate container (Ziploc bag) used to fill sample bottles.
04D_VENTRA	Intermediate container (Ziploc bag) used to fill sample bottles.
05D_SANT_VCWPD	Intermediate container (Ziploc bag) used to fill sample bottles.
05_CENTR	Bottle #75 filled with bottle #74
9BD_ADOLF	Intermediate container (Ziploc bag) used to fill sample bottles.
07D_MPK	Intermediate container (Ziploc bag) used to fill sample bottles.

FOLLOW UP ACTIONS

None

ADDITIONAL COMMENTS

Field meters passed pre and post event calibrations.

Prepared by: Aidas Worthington , KLI

Date: Mar 21, 2017

Reviewed by: Greg Cotten, KLI

Date: Mar 23, 2017

Approved by: Michael Marson, LWA

Date: April 5, 2017

Event 61 – Water & Tissue

Calleguas Creek Watershed TMDL Monitoring Program

Post Event Summary

Event 61: Quarterly Water Sampling

Sampling Crews: Kinnetic Laboratories, Inc. (KLI), Fugro
Crew #1: Greg Cotten (KLI), Aidas Worthington (KLI)
Crew #2: Nick Simon (Fugro), Tristan Geghart (Fugro), David Thornhill (Fugro)

Sampling Dates: Receiving water and land use sites on May 9th and 10th, 2017

Sampling Type: Quarterly Water Chemistry, Toxicity, and Salts

SITES SAMPLED

Site ID	Sample Date	Constituents					
		General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
01_RR_BR	5-9-17	X		X	X	X	
02_PCH	5-9-17	X		X	X		
03_UNIV	5-9-17	X	X	X	X	X	X
9A_HOWAR	5-10-17	X					X
9B_ADOLF	5-9-17	X	X		X	X	
9BD_ADOLF	5-9-17	X		X		X	X
05D_SANT_VCWPD	5-9-17	X		X	X	X	X
05_CENTR	5-9-17	X			X		
04D_VENTURA	5-9-17	X		X		X	X
04D_WOOD	5-9-17	X		X	X	X	X
04_WOOD	5-9-17	X	X	X	X	X	X
01T_ODD2_DCH	5-10-17	X		X	X	X	
07_HITCH	5-9-17	X	X		X	X	
07_TIERRA	5-9-17	X					X
07D_MPK	5-9-17	X				X	X
07D_SIM_BUS	5-10-17	X				X	X
13_SB_HILL	5-10-17	X				X	X

Site ID	Sample Date	Constituents					
		General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
9B_BARON	5-10-17	X					X
10_GATE	5-9-17	X	X			X	
13_BELT	5-9-17	X	X			X	

SITES NOT SAMPLED

Site ID	Reason for Omission
02D_BROOM	Site was dry.
06_UPLAND	Site was dry.
07D_HITCH_LEVEE_2	Site was dry.
06T_FC_BR	Site was dry.
9BD_GERRY	Site was dry.

DEVIATIONS FROM QAPP

Site ID	Deviation
01_RR_BR	No photo was taken due to rule against photography on base. Flow was not measured due to tidal influence.
02_PCH	Flow was not measured due to tidal influence.
04_WOOD	<p>The conductivity at the site was greater than the accepted range for the designated test species (<i>Ceriodaphnia dubia</i>). The QAPP requires the use of <i>Americamysis bahia</i>. However, <i>Hylella azteca</i> is identified by SWAMP as an appropriate water test species when conductivity is greater than 3,000 us/cm and is currently utilized by the Ventura County Irrigated Lands Group which conducts monitoring in the watershed.</p> <p>To maintain consistency with an existing watershed program, the toxicity testing lab (Pacific EcoRisk) utilized <i>Hylella azteca</i> in place of <i>Americamysis bahia</i>.</p>
04D_VENTURA	Intermediate container (Ziploc bag) used to fill sample bottles.
05D_SANT_VCWPD	Intermediate container bottle #70 (Nitrate) used for bottle 75 (PCB) used to fill sample bottles.
9BD_ADOLF	Intermediate container (Ziploc bag) used to fill sample bottles.
07_HITCH	PCB bottle 156 used to top off tox containers. No others needed intermediate container.
07D_MPK	Intermediate container (Ziploc bag) used to fill sample bottles.

FOLLOW UP ACTIONS

None

ADDITIONAL COMMENTS

Dissolved mercury sample CCWTMP-61-D_ADOLF-056 was not shipped to lab on 5-9-17 with the others. The sample was overlooked in a cooler and it's possible this sample was not on ice as handling protocol dictates. It was determined by LWA/ Physis that resampling/ filtering wasn't needed as Physis will run a split analysis 'at no charge' using the Dissolved metals sample which had no handling issues.

Total Dissolved Solids (TDS) sample CCWTMP-61-D_ADOLF-063 was accidentally sent to Physis. Physis overnighted it to FGL for analysis the next day.

Both multiparameter field meters passed pre and post event calibrations.

Prepared by: Aidas Worthington , KLI

Date: May 17, 2017

Reviewed by: Greg Cotten, KLI

Date: May 26, 2017

Approved by: Michael Marson, LWA

Date: June 27, 2017

Calleguas Creek Watershed TMDL Monitoring Program

Post Event Summary

Event 61: Tissue Sampling

Sampling Crews: ICF International (ICF)
Crew: Joel Mulder (ICF), S Horvath (ICF)

Sampling Dates: Receiving water sites on May 25th, 2017

Sampling Type: Yearly Fish Tissue Chemistry

SITES SAMPLED

Site ID	Sample Date	Constituents			
		General Parameters (Lipids, % solids)	Metals (Methyl Mercury, Selenium)	OP Pesticides (Chlorpyrifos)	PCBs and OC Pesticides
03_UNIV	05-25-17	X			X
9B_ADOLF	05-25-17	X			X
04_WOOD	05-25-17	X	X	X	X
07_HITCH					
07_TIERRA	05-25-17	X			X
9B_BARON					

SITES NOT SAMPLED

Site ID	Reason for Omission
07_HITCH	Enough fish were caught at other sites.
9B_BARON	Enough fish were caught at other sites.

DEVIATIONS FROM QAPP

Site ID	Deviation

FOLLOW UP ACTIONS

None

ADDITIONAL COMMENTS

Enough fish were caught for all the analysis to be performed. No other day is needed to collect fish.

Prepared by: Michael Marson, LWA

Date: August 31, 2017

Appendix B:

Calibration Event Summary for Salts TMDL

The following section provides a summary of the monitoring events not covered by the quarterly or wet weather monitoring events completed during the ninth year of monitoring. The continuous sensor sites (03_UNIV, 04_WOOD, 9A_HOWAR, 9B_BARON, and 07_TIERRA) were visited monthly for calibration checks and flow measurements.

SUMMARY OF MONTHLY EVENTS

Monthly sampling events included measuring electrical conductivity (EC), temperature, and chloride (no grab samples were required during these visits). EC and temperature were measured using a Hach SensION5 meter and chloride was measured with Hach Quantab titration strips. The following table provides the date and constituents measured for each salt sensor monthly monitoring event.

Table 1. Monthly Salt Sensor Site Visits

Month	Site ID	Date Visited	EC	Chloride	Flow
August 2016	07_TIERRA	08/01/2016	X	X	X
	04_WOOD	08/25/2016	X	X	X
	03_UNIV	08/25/2016	X	X	X
	07_TIERRA	08/25/2016	X	X	X
	9A_HOWAR	08/25/2016	X	X	X
	9B_BARON	08/25/2016	X	X	X
September 2016	04_WOOD	09/22/2016	X	X	X
	03_UNIV	09/22/2016	X	X	X
	07_TIERRA	09/22/2016	X	X	X
	9A_HOWAR	09/22/2016	X	X	X
	9B_BARON	09/22/2016	X	X	X
October 2016	04_WOOD	10/26/2016	X	X	X
	03_UNIV	10/26/2016	X	X	X
	07_TIERRA	10/26/2016	X	X	X
	9A_HOWAR	10/26/2016	X	X	X
	9B_BARON	10/26/2016	X	X	X
November 2016	04_WOOD	11/10/2016	X	X	X
	04_WOOD	11/30/2016	X	X	X
	03_UNIV	11/30/2016	X	X	X
	07_TIERRA	11/30/2016	X	X	X
	9A_HOWAR	11/30/2016	X	X	X
	9B_BARON	11/30/2016	X	X	X
December 2016	04_WOOD	12/29/2016	X	X	X
	03_UNIV	12/29/2016	X	X	X
	07_TIERRA	12/29/2016	X	X	X
	9A_HOWAR	12/29/2016	X	X	X
	9B_BARON	12/29/2016	X	X	X
January 2017	04_WOOD	01/17/2017	X	X	X
	04_WOOD	01/31/2017	X	X	
	03_UNIV	01/31/2017	X	X	X
	07_TIERRA	01/27/2017		X	X
	9A_HOWAR	01/31/2017	X	X	X
	9B_BARON	01/31/2017	X	X	X

Month	Site ID	Date Visited	EC	Chloride	Flow
February 2017	04_WOOD	02/09/2017	X	X	X
	04_WOOD	02/27/2017	X	X	X
	03_UNIV	02/27/2017	X	X	X
	07_TIERRA	02/27/2017	X	X	X
	9A_HOWAR	02/27/2017	X	X	X
	9B_BARON	02/27/2017	X	X	X
March 2017	04_WOOD	03/07/2017	X	X	X
	04_WOOD	03/15/2017	X	X	X
	03_UNIV	03/15/2017	X	X	X
	07_TIERRA	03/15/2017	X	X	X
	9A_HOWAR	03/15/2017	X	X	X
	9B_BARON	03/15/2017	X	X	X
April 2017	04_WOOD	04/12/2017	X	X	X
	03_UNIV	04/12/2017	X	X	X
	07_TIERRA	04/12/2017	X	X	X
	9A_HOWAR	04/12/2017	X	X	X
	9B_BARON	04/12/2017	X	X	X
May 2017	04_WOOD	05/10/2017	X	X	X
	03_UNIV	05/10/2017	X	X	X
	07_TIERRA	05/10/2017	X	X	X
	9A_HOWAR	05/10/2017	X	X	X
	9B_BARON	05/10/2017	X	X	X
	04_WOOD	05/30/2017			X
June 2017	04_WOOD	06/06/2017	X	X	X
	03_UNIV	06/06/2017	X	X	X
	07_TIERRA	06/06/2017	X	X	X
	9A_HOWAR	06/06/2017	X	X	X
	9B_BARON	06/06/2017	X	X	X
	04_WOOD	06/28/2017	X	X	X
	03_UNIV	06/28/2017	X	X	X
	07_TIERRA	06/28/2017	X	X	X
	9A_HOWAR	06/28/2017	X	X	X
	9B_BARON	06/28/2017	X	X	X
July 2017	04_WOOD	07/12/2017	X	X	X
	03_UNIV	07/12/2017	X	X	X
	07_TIERRA	07/12/2017	X	X	X
	9A_HOWAR	07/12/2017	X	X	X
	9B_BARON	07/12/2017	X	X	X

Appendix C. Rating Curves and EC/Salt Relationships for Salts TMDL Compliance Sites for the July 2016-June 2017 Monitoring Year

RATING CURVES

Continuous water level time series data (5-min intervals) were converted to time series of flow estimates (cfs) using the USGS shift-adjusted rating curve method. The method establishes a base rating for a given date range. Over the date range that shares a base rating, this rating is then shifted, as necessary, for subsets of the data to account for small changes in the geometry of natural channels often caused by deposition, scouring, and vegetation. Rating curves for all sites took the form $Q = c * (Lvl + a + S)^b$ where,

Q = discharge (cfs)

Lvl = water level or “stage”, referenced to depth sensor elevation (cm)

c = scaling coefficient

a = coefficient accounting for the vertical difference between depth sensor elevation (stage = 0) and stage at zero discharge (cm)

b = coefficient accounting for channel shape, natural channels fall between endpoints $b=1.5$ (square channel), and $b=2.5$ (triangular channel).

S = stage shift, typically varies over time for natural channels (cm).

Monthly manual measurements of discharge are performed at all sites and are used to establish base ratings and to determine the required “shifts” (“ S ” in the equation above) over time for a monitoring year. Base rating curve equations used for the July 2016-June 2017 monitoring year are provided in Table 1.

Table 1. Rating Curves for Salts TMDL Compliance Sites for Monitoring Year July 2016-June 2017

Site	Rating Curve
03_UNIV	$Q = 0.195 * (Lvl - 28.2 + S)^{2.1}$
04_WOOD	$Q = 0.0080 * (Lvl - 16.0 + S)^{2.0}$
07_TIERRA [a]	$Q = 0.013 * (Lvl - 19 + S)^{2.0} + 0.015 * (Lvl - 40 + S)^{2.3}$
9A_HOWAR	$Q = 0.0075 * (Lvl - 1.0 + S)^{2.2}$
9B_BARON	$Q = 0.0102 * (Lvl - 4 + S)^{2.10}$

[a] A compound rating was developed for 07_TIERRA for 2016/2017 with a second term that applies to stage heights above $Lvl=40$ cm to account for details in the shape of the channel control (a metal drop structure) that affect the wetted width of the cross section where the gage is located.

EC/SALT RELATIONSHIPS

Site-specific, linear relationships between specific conductivity (EC) and salt constituents were used to convert continuous EC sensor data to estimate salt concentrations. Surrogate relationships were derived from field data for EC and salts (grab samples for TDS, sulfate, chloride, or boron from quarterly-dry and up to two wet events per year) using linear regression, in the following form:

$[Ion] = A * EC + B$, where

[Ion] = concentration of TDS, sulfate, chloride, or boron (mg/L)

A = slope

EC = specific conductivity ($\mu S/cm$)

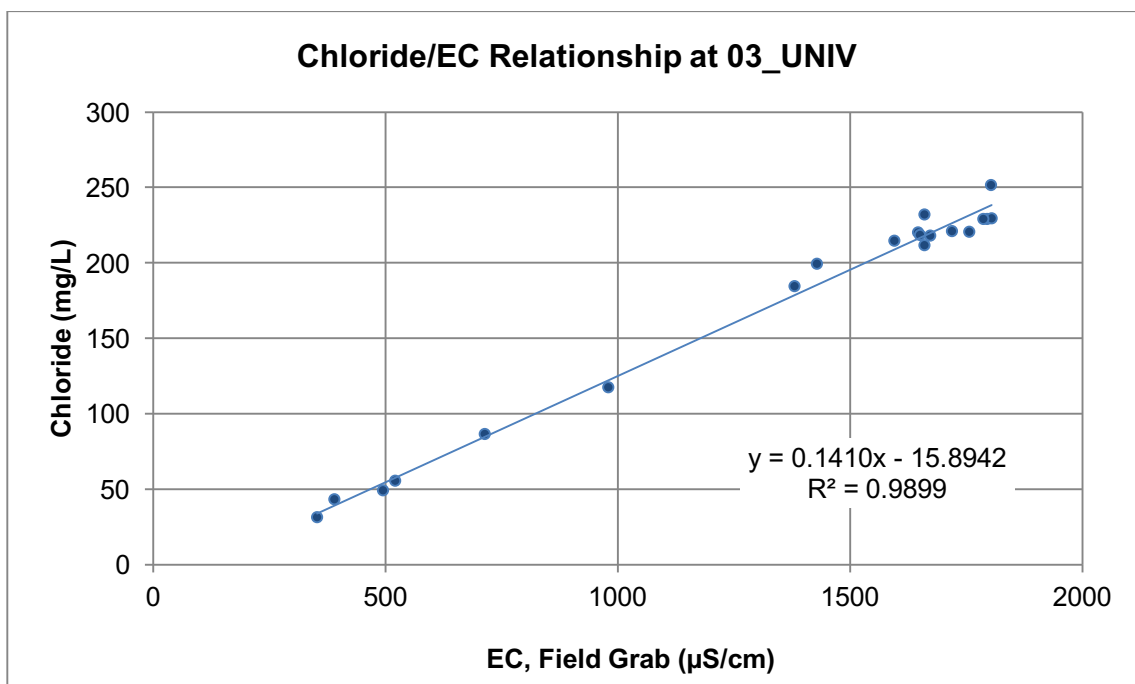
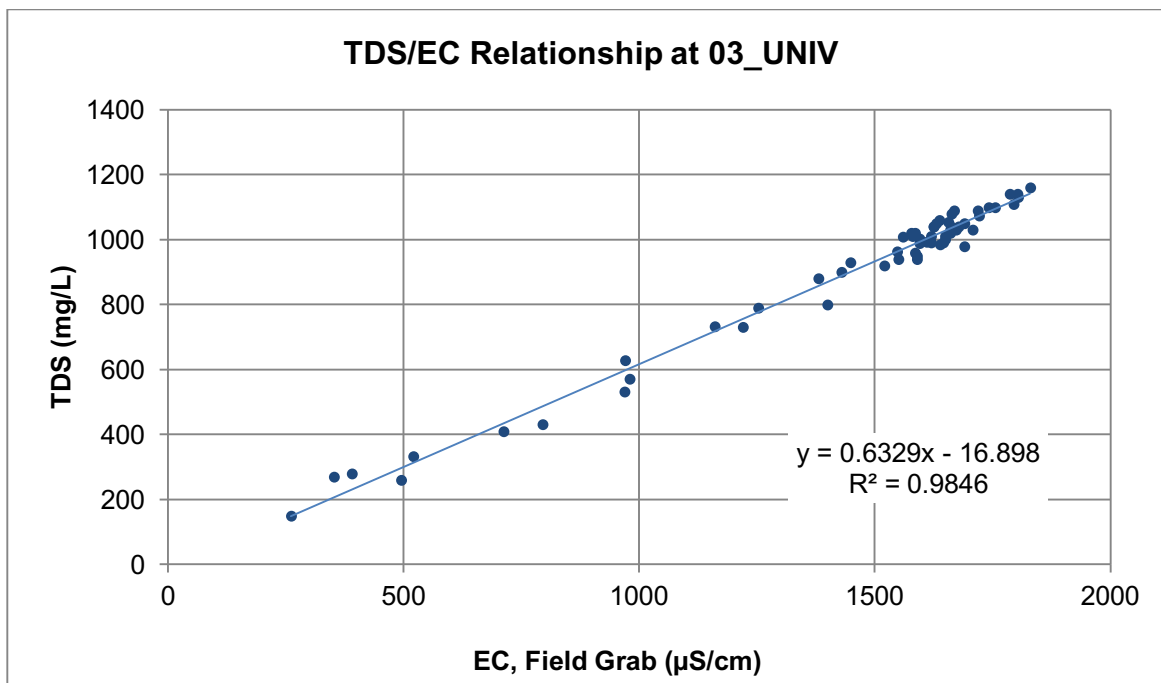
B = y intercept

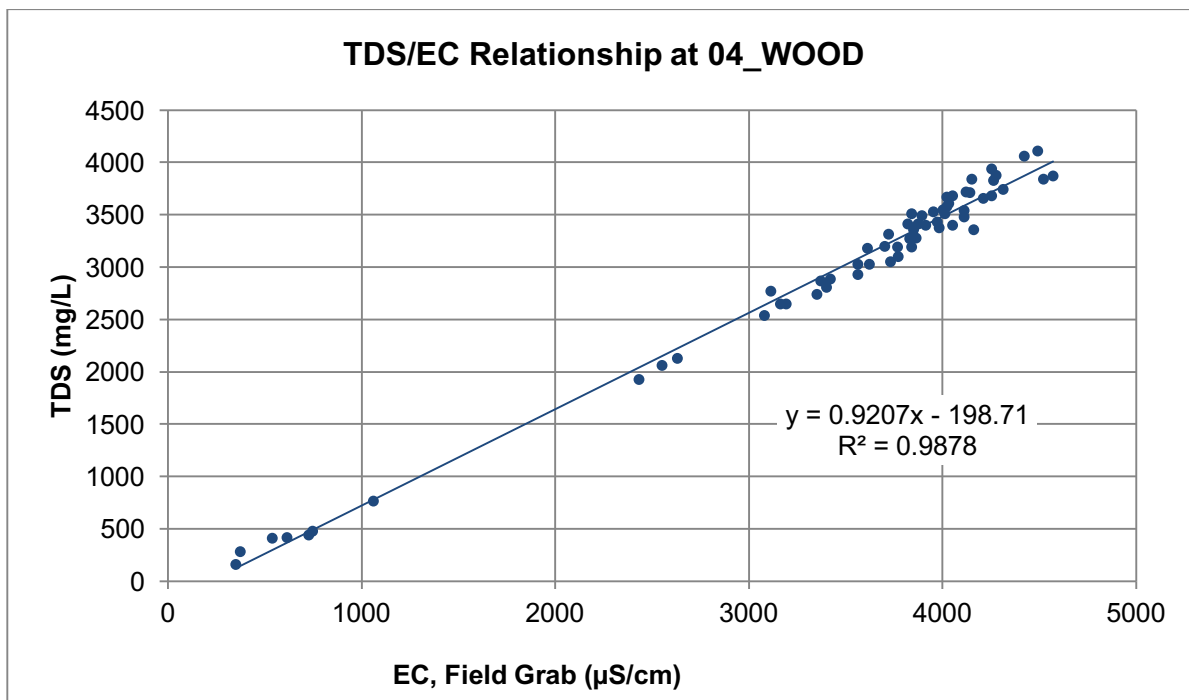
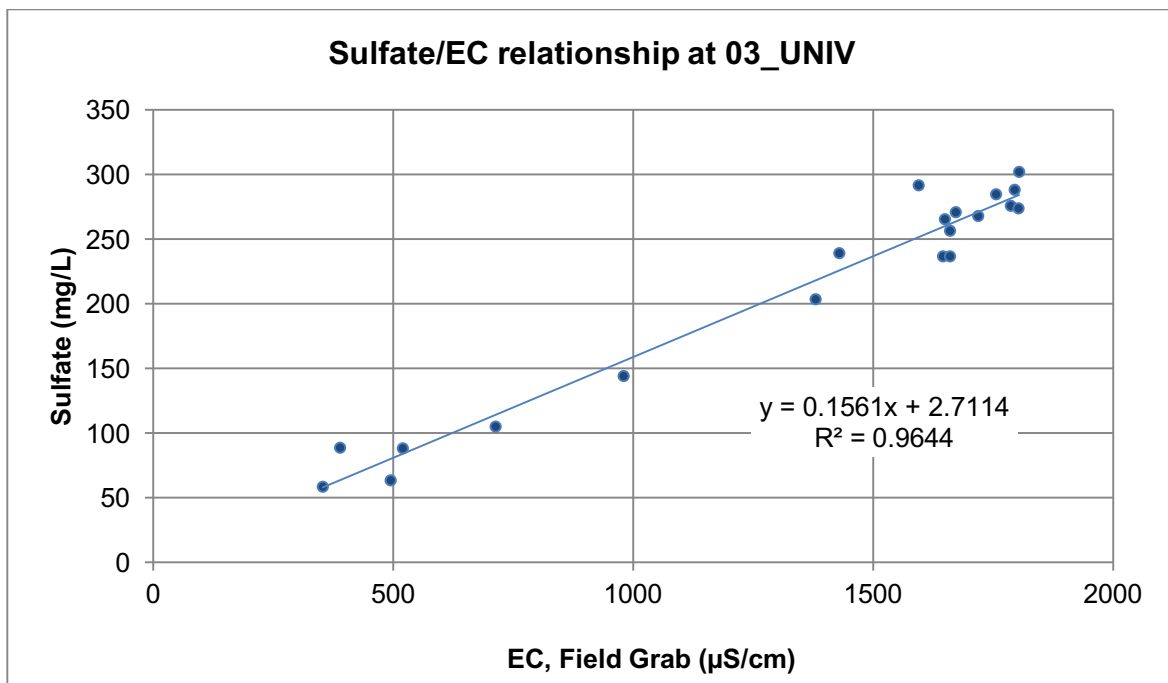
At the conclusion of the 2016/2017 monitoring year, surrogate relationships were updated using linear regression. As is done each year, ANCOVA analysis was performed to detect evidence of statistically significant temporal shifts in surrogate relationships that might signal a change in watershed conditions and justify adjustments in the date ranges of the field data used to construct the relationships. For example, analysis conducted after the 2014/2015 monitoring year showed that changes in date ranges were appropriate for some surrogate relationships related to a shift in the blend of imported water entering the watershed (i.e., a shift to a combination of San Joaquin/Sacramento Delta and Colorado River water imported by Calleguas Municipal Water District starting in Spring 2014).

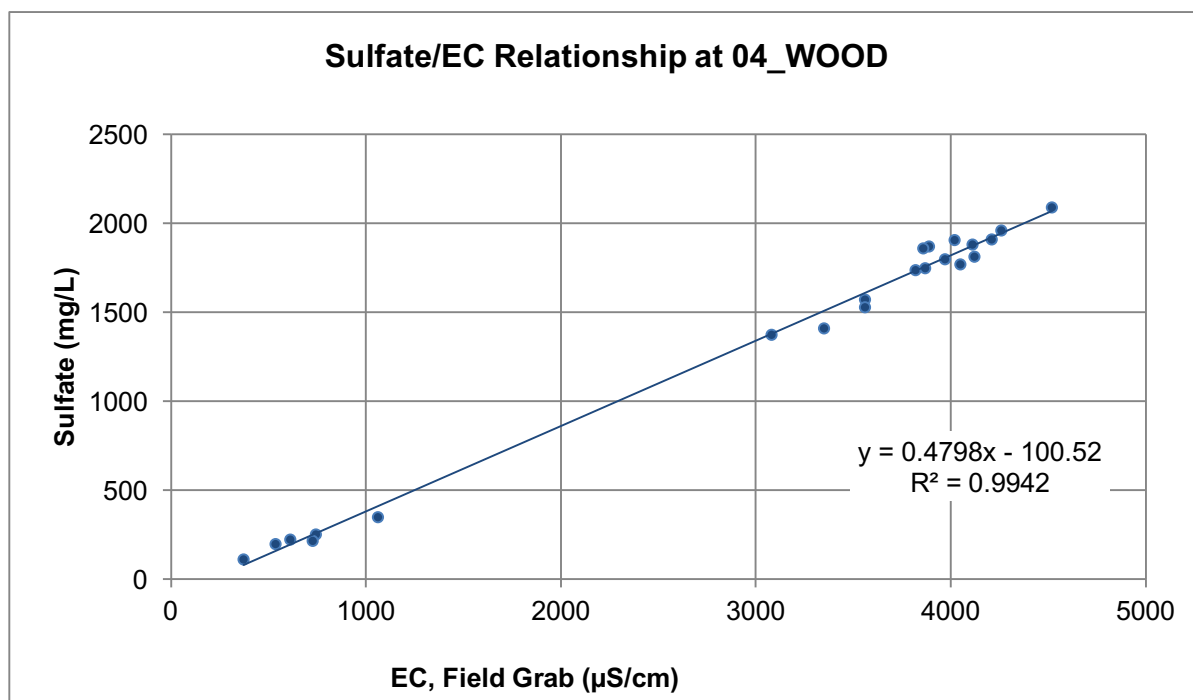
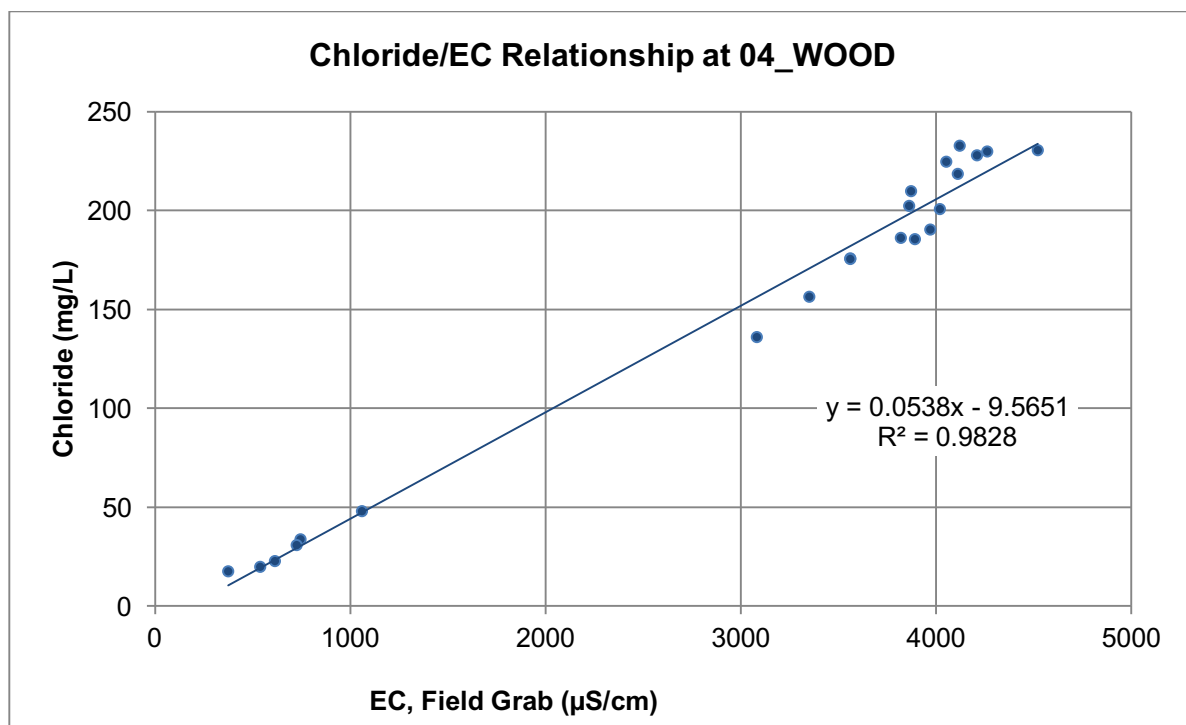
Changes in the 2016/2017 relationship parameters that resulted from the current year's update were minor. In the most recent prior monitoring year (2015/2016) ANCOVA analysis supported a shift in the time frame for the data underlying the Sulfate/EC relationship at 9A_HOWAR from one starting in January 2011 to one starting in February 2014. ANCOVA analysis for the current monitoring year did not support continued use of the February 2014 starting point and the surrogate relationship for 2016/2017 was based on data from January 2011-June 2017. Analysis of the 2011-2017 datasets for sulfate at 07_TIERRA and 9B_BARON revealed that it remained appropriate to apply different surrogate relationships for EC-vs-sulfate to higher conductivity (drier weather) and lower conductivity (wetter weather) conditions. Different regression equations were derived for high- and low-EC conditions for both sites, and site-specific EC cutoffs were selected without difficulty to separate the 5-min EC sensor records. Surrogate relationships used to process the 2016/2017 EC sensor data are reported in **Table 2** and illustrated in figures following the table.

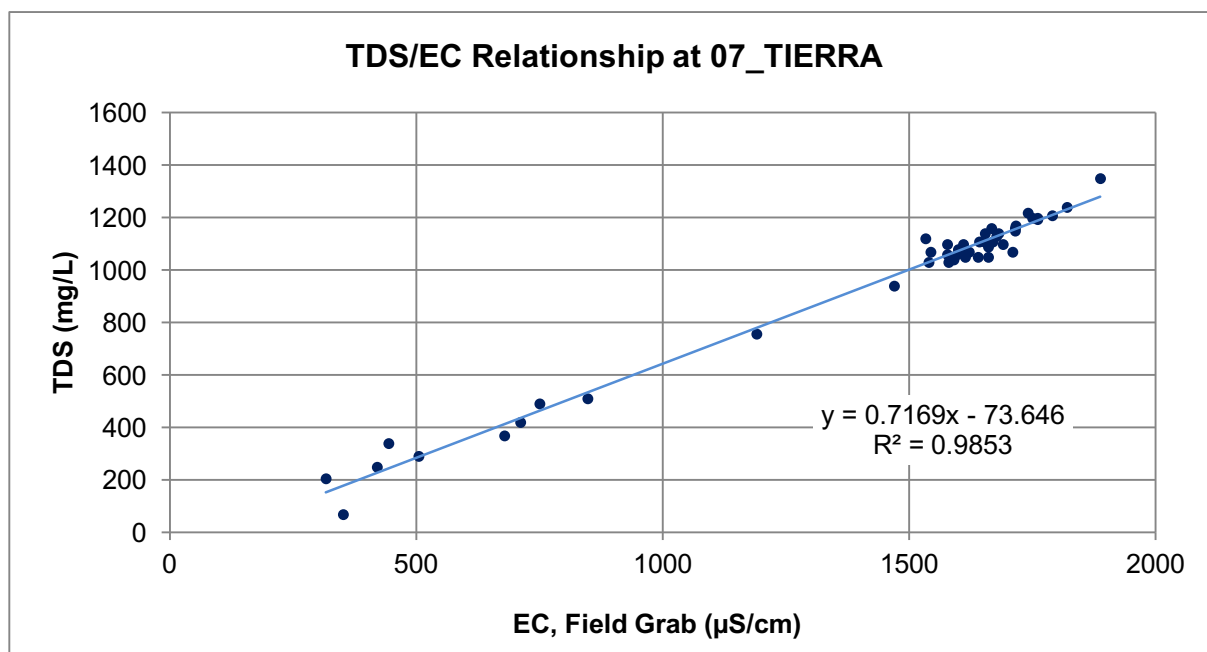
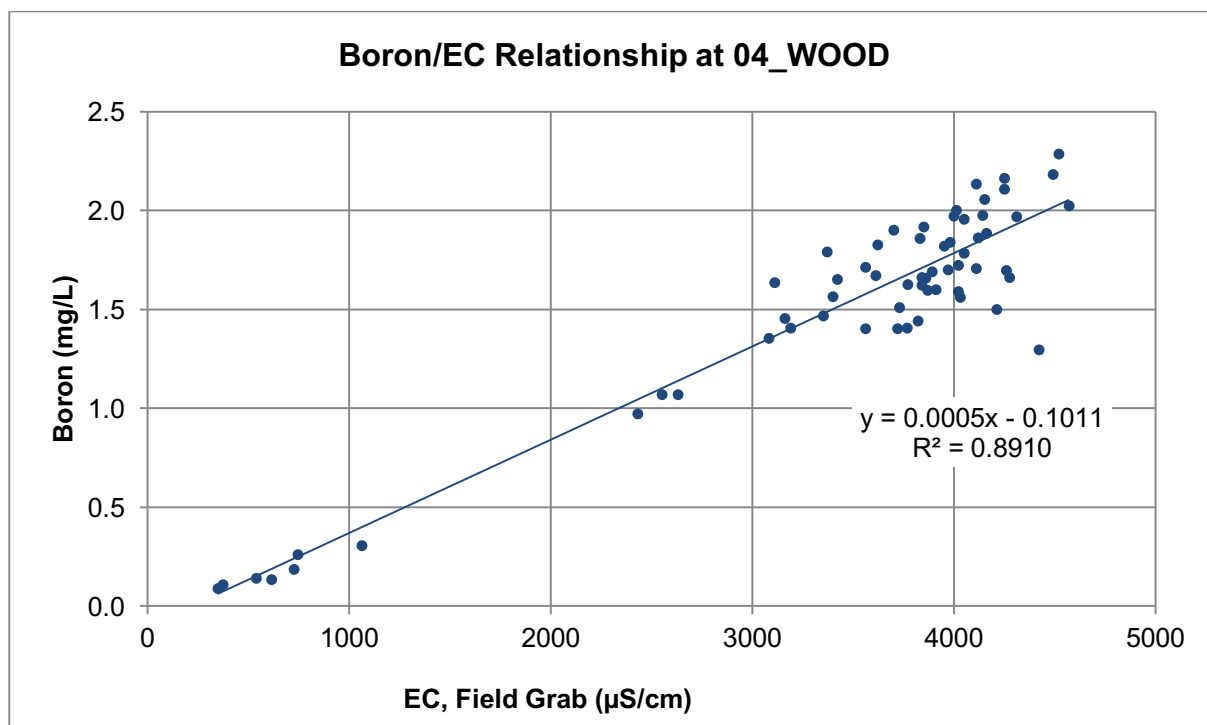
Table 2. Surrogate Relationships Used to Convert EC to Salt Concentrations for the 2016/2017 Monitoring Year

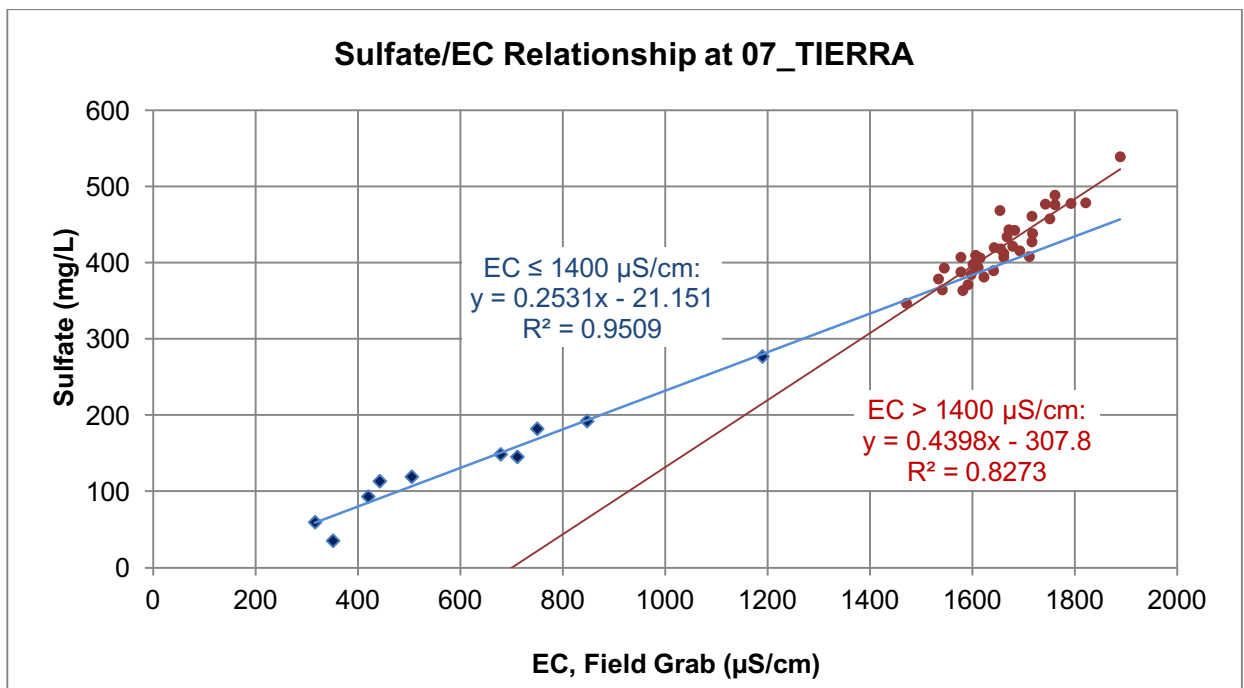
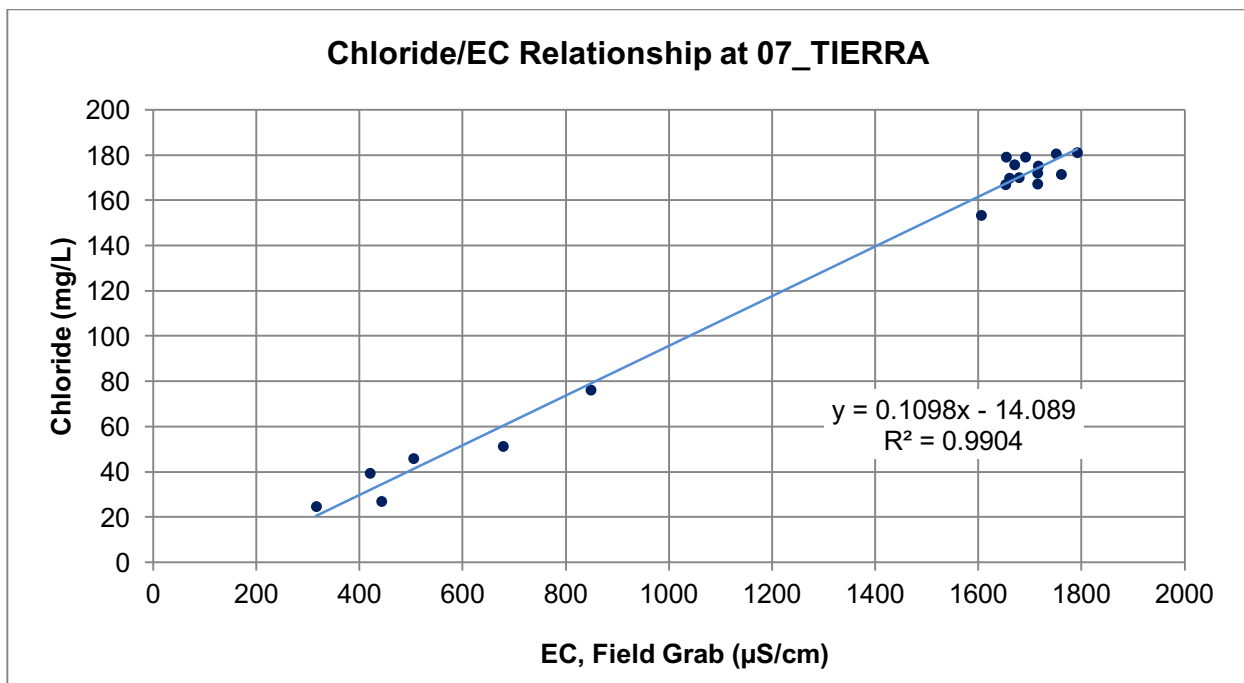
Site	Proxy Relationship	r ²	Underlying Field Data	
			Sample Size	Date Range
03_UNIV	TDS = (0.6329 * EC) – 16.8985	0.9846	60	1/31/2011 – 5/9/2017
	Cl = (0.1410 * EC) – 15.8942	0.9899	20	2/28/2014 - 5/9/2017
	SO4 = (0.1561 * EC) + 2.7114	0.9644	20	2/28/2014 - 5/9/2017
04_WOOD	TDS = (0.9207 * EC) – 198.7076	0.9878	62	1/31/2011 – 5/9/2017
	Cl = (0.05382 * EC) – 9.5651	0.9828	22	2/28/2014 - 5/9/2017
	SO4 = (0.4798 * EC) – 100.5218	0.9942	22	2/28/2014 - 5/9/2017
	B = (0.0005 * EC) - 0.1011	0.8910	62	1/31/2011 – 5/9/2017
07_TIERRA	TDS = (0.7169 * EC) – 73.6457	0.9853	48	1/31/2011 – 5/9/2017
	Cl = (0.1098 * EC) – 14.0892	0.9904	19	2/28/2014 - 5/9/2017
	High Conductivity (>1400 µS/cm): SO4 = (0.4398 * EC) – 307.8040	0.8273	38	1/31/2011 – 5/9/2017
	Low Conductivity (≤1400 µS/cm): SO4 = (0.2531 * EC) – 21.1507	0.9509	10	1/31/2011 – 5/9/2017
	B = (0.0004 * EC) - 0.0641	0.9554	27	8/22/12 - 5/9/2017
9A_HOWAR	TDS = (0.6217 * EC) - 14.4807	0.9862	49	1/31/2011 – 5/9/2017
	Cl = (0.1447 * EC) – 15.7521	0.9694	19	2/28/2014 - 5/9/2017
	SO4 = (0.1618 * EC) - 11.2419	0.9471	48	1/31/2011 - 5/9/2017
9B_BARON	TDS = (0.6076 * EC) – 13.1443	0.9768	49	1/31/2011 – 5/9/2017
	Cl = (0.1508 * EC) – 18.5335	0.9756	27	8/29/2012 - 5/9/2017
	High Conductivity (>1000 µS/cm): SO4 = (0.2883 * EC) -176.4034	0.8086	37	3/20/2011 - 5/9/2017
	Low Conductivity (≤1000 µS/cm): SO4 = (0.1366 * EC) - 2.5166	0.9768	8	3/20/2011 - 5/9/2017

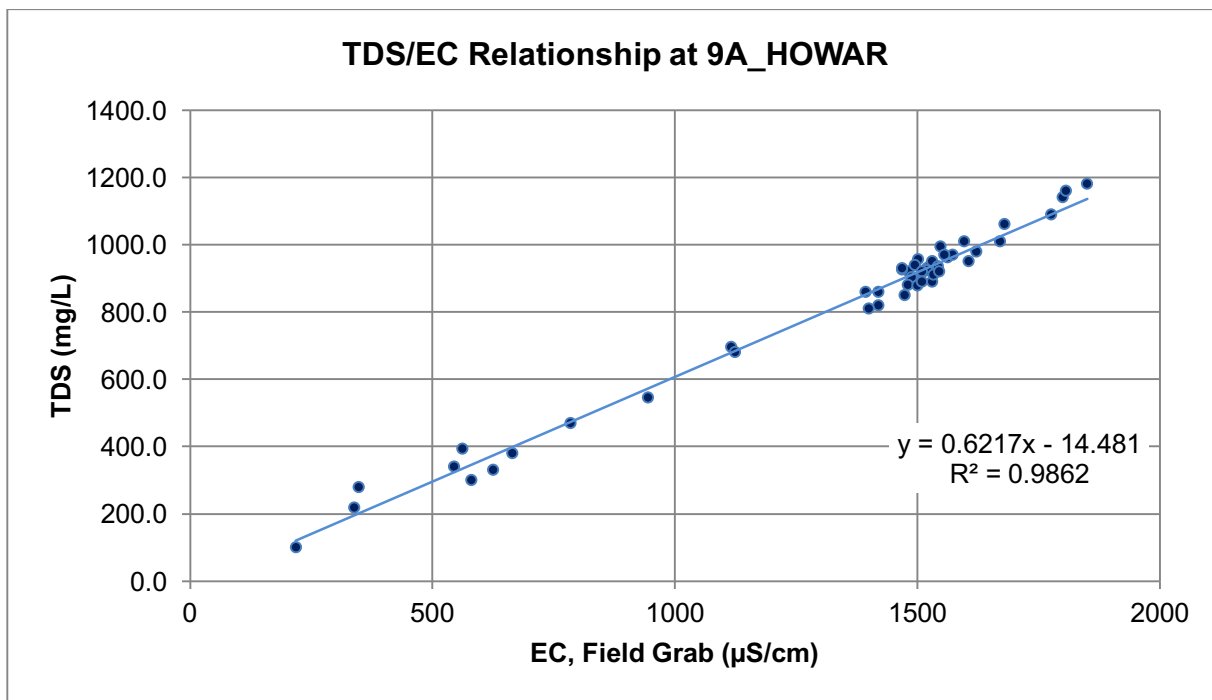
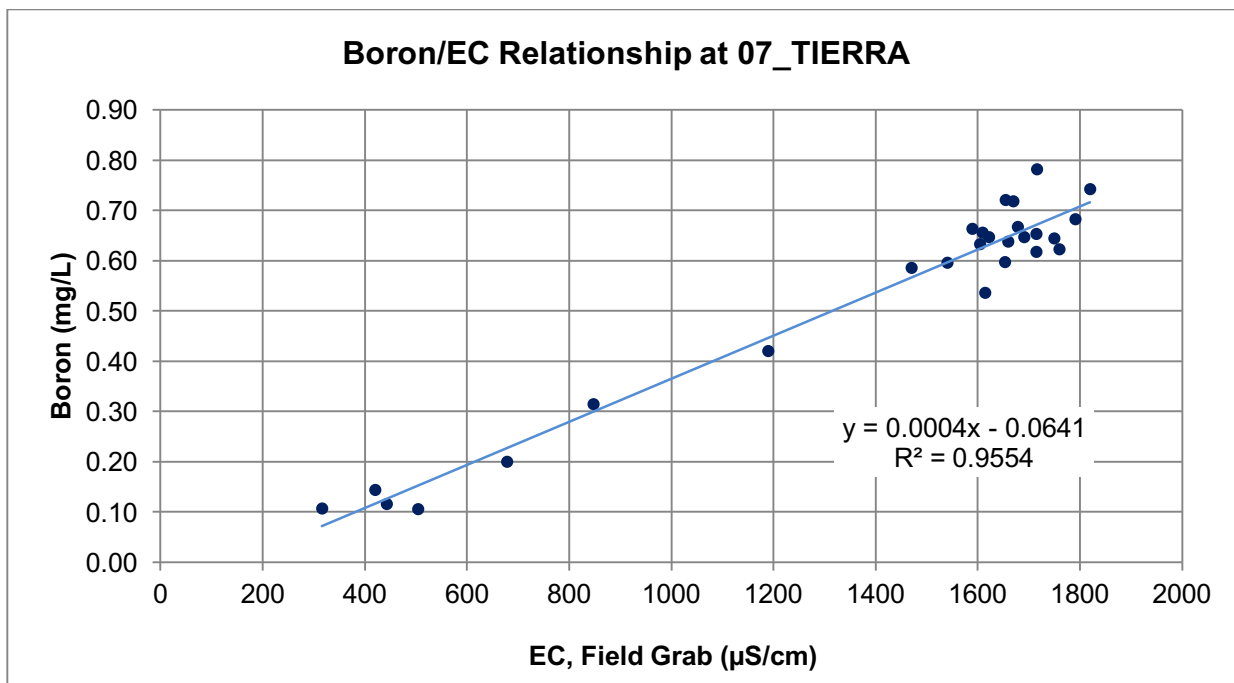


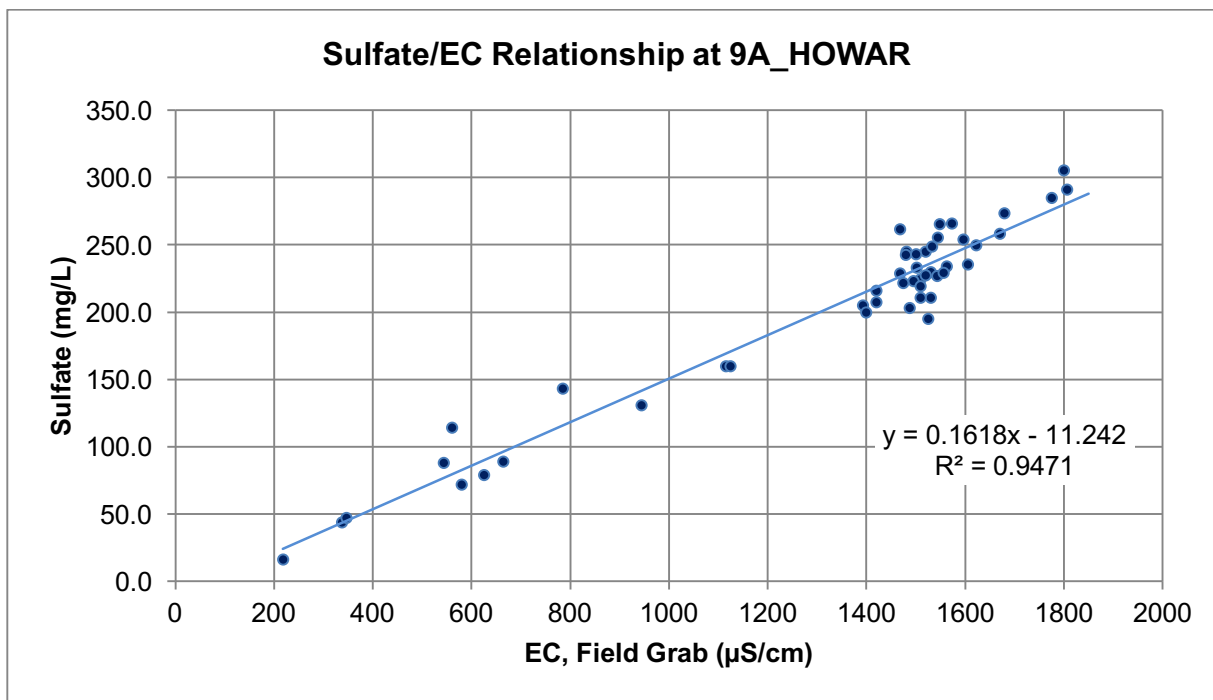
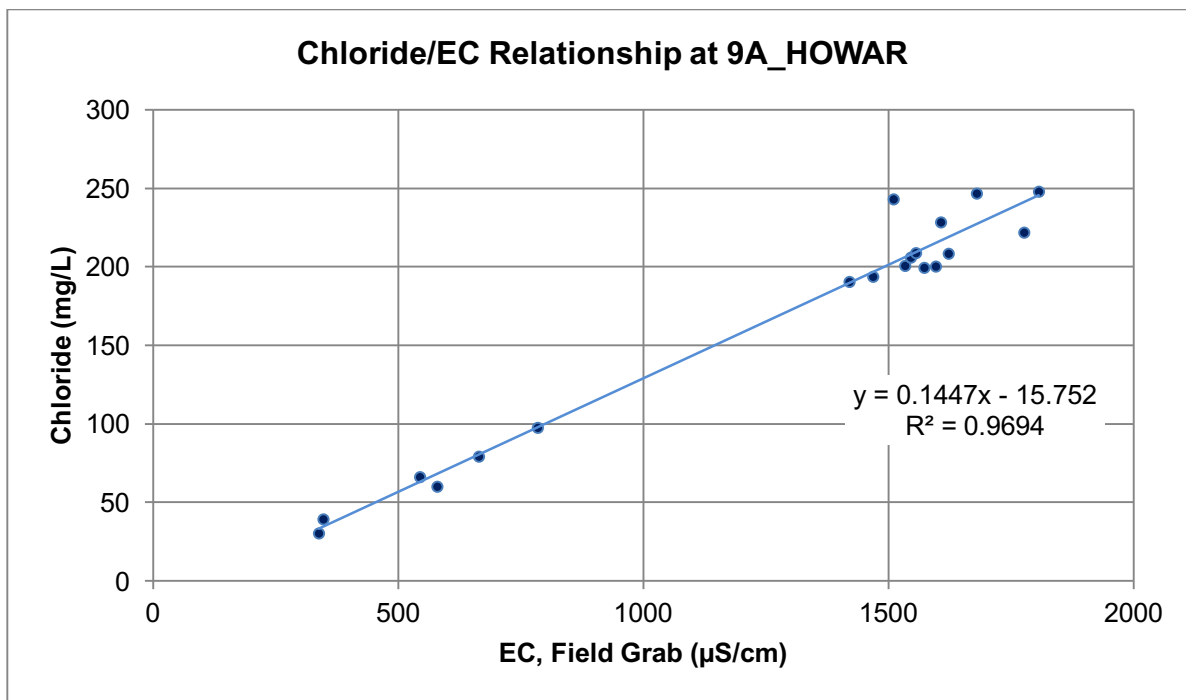


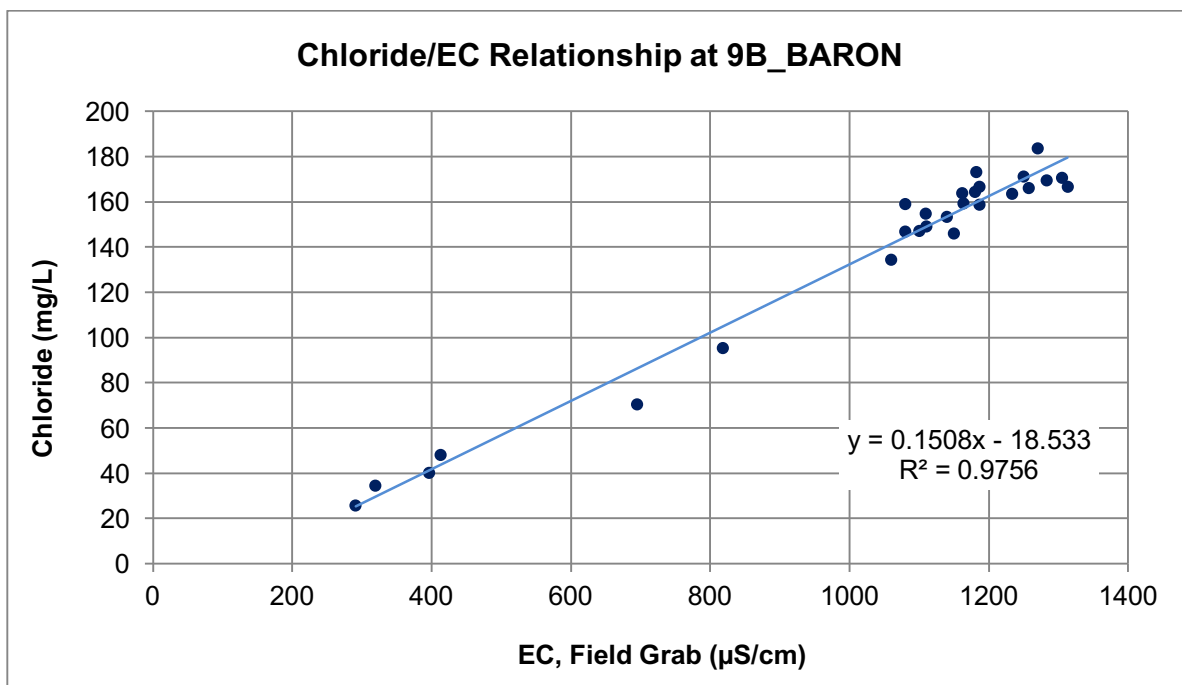
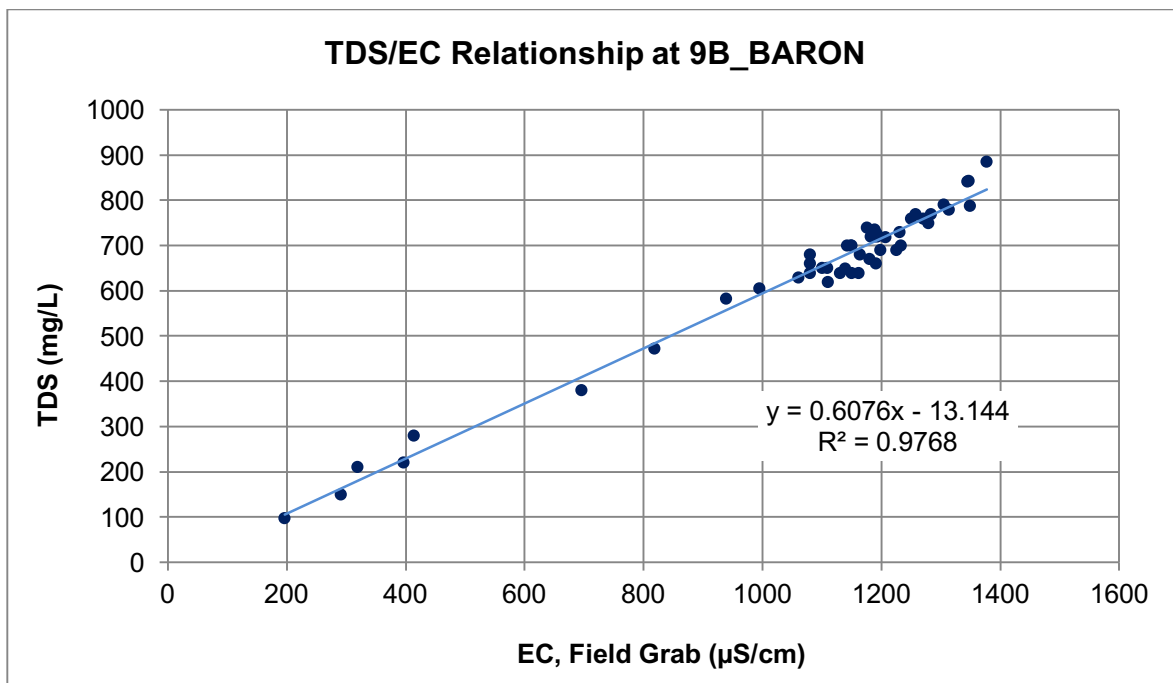


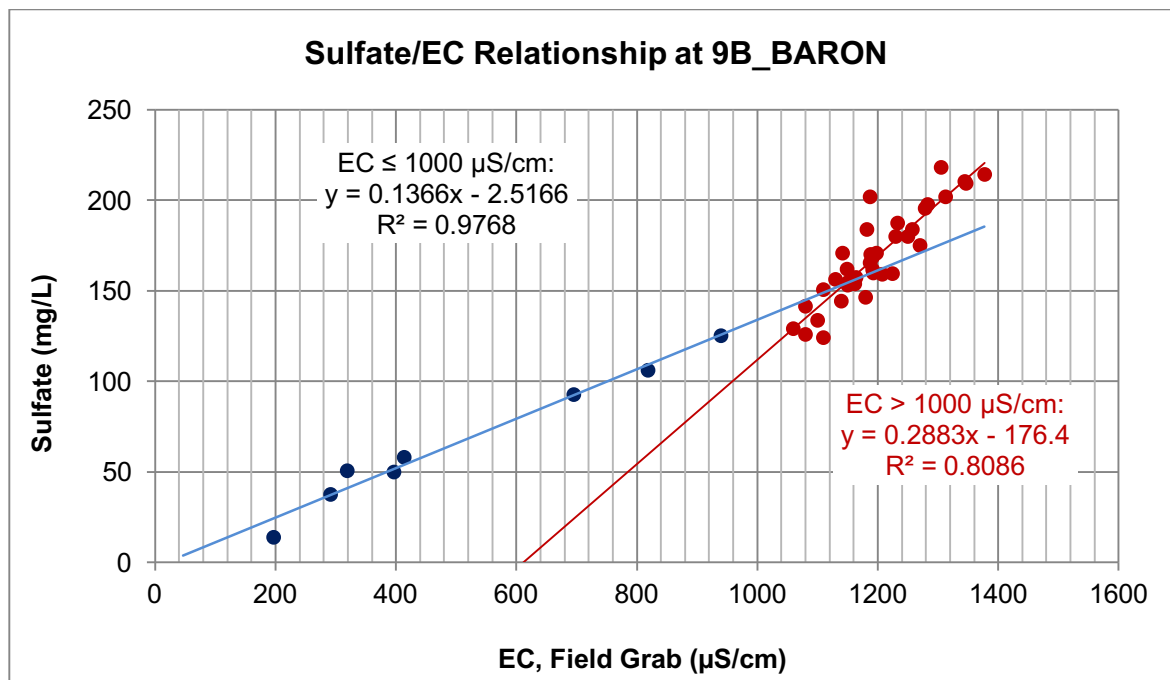












Appendix D:

Toxicity Testing and Toxicity Identification Evaluations (TIE) Summary

TOXICITY TESTING PROCEDURES

For the Calleguas Creek Watershed Total Maximum Daily Load (TMDL) Compliance Monitoring Program (CCWTMP), toxicity testing at various locations is conducted to meet TMDL requirements. The following is a brief summary of the procedures for the analytical methods used by the CCWTMP. Specific details concerning the standard operating procedures (SOPs) followed by field crews collecting applicable samples and laboratory analyses can be found in the Quality Assurance Project Plan (QAPP).

For the CCWTMP toxicity measures, standard test species were utilized for toxicity testing. *Ceriodaphnia dubia* was used for fresh water aquatic toxicity testing and *Hyalella azteca* for the saline water aquatic toxicity testing and bulk sediment and porewater toxicity testing. *Hyalella azteca* was used to conduct aquatic toxicity testing if sample salinity exceeded 1.5 part per thousand (PPT) but was less than 15 PPT. All test species are standard United States Environmental Protection Agency (USEPA) test species and considered the most applicable for the various types of pollutants impacting the watershed, and all analytical testing procedures were conducted using standard USEPA methods.

The results of each toxicity test are used to trigger further investigations to determine the cause of observed laboratory toxicity if necessary per the QAPP. If testing indicates the presence of significant toxicity in the sample, toxicity identification evaluations (TIEs) procedures are initiated to investigate the cause of toxicity. For the purpose of triggering TIE procedures, significant toxicity is defined as at least 50 percent mortality. The 50 percent mortality threshold is consistent with the approach recommended in guidance published by USEPA for conducting TIEs (USEPA, 1996), which recommends a minimum threshold of 50 percent mortality because the probability of completing a successful TIE decreases rapidly for samples with less than this level of toxicity.¹ A component of the compliance requirement when significant toxicity is found is to initiate a targeted Phase 1 TIE and test to determine the general class of constituent (*i.e.*, non-polar organics) causing toxicity. The targeted TIE focuses on classes of constituents anticipated to be observed in drainages dominated by urban and agricultural discharges and those previously observed to cause toxicity. Phase 2 TIEs may also be utilized to identify specific constituents causing toxicity if warranted. TIE methods will generally adhere to USEPA procedures documented in conducting TIEs.^{2,3,4,5} For samples exhibiting toxic effects consistent

¹ United States Environmental Protection Agency (USEPA). 1996. Marine Toxicity Identification Evaluation. Phase I Guidance Document EPA/600/R-96/054. USEPA, Office of Research and Development, Washington, D.C.

² United States Environmental Protection Agency (USEPA). 1991. Methods for Aquatic Toxicity Identification Evaluations: Phase 1 Toxicity Characterization Procedures (Second Edition). EPA-600/6-91/003. USEPA, Environmental Research Laboratory, Duluth, MN.

³ United States Environmental Protection Agency (USEPA). 1992. Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents Phase 1. EPA/600/6-91/005. USEPA, Office of Research and Development, Washington, D.C.

with carbofuran, diazinon, or chlorpyrifos, TIE procedures follow those documented in Bailey *et al.*⁶

The decision to initiate TIE procedures on any sample, including samples exceeding the mortality threshold, as well as the focus and scope of TIE procedures, is determined by the Project Manager and toxicity laboratory staff. When deciding whether to initiate TIE procedures for a specific site and monitoring event, a number of factors are considered, including the level of toxicity, the magnitude of sample mortality and/or reburial levels as compared to lab control results, history of toxicity at the site, the species and endpoints exhibiting toxic effects, as well as the primary technical basis for triggering TIEs described above. A summary of the toxicity results and subsequent TIE actions, including the rationale for initiating TIE procedures for a specific sample are described below.

TOXICITY RESULTS SUMMARY

Freshwater sediment toxicity samples are collected annually during the first event of each monitoring year. Water column toxicity samples are collected at freshwater sites during each of the quarterly and wet weather events. Sediment toxicity samples are collected every three years in Mugu Lagoon. As such, lagoon sediment toxicity samples were not collected during this monitoring year. Monitored sites include the following:

- **Freshwater Sediment Toxicity Sites**
 - 02_PCH
 - 03_UNIV
 - 04_WOOD
 - 9A_HOWAR
- **Freshwater Water Column Toxicity Sites**
 - 04_WOOD
 - 03_UNIV
 - 9B_ADOLF
 - 06_UPLAND
 - 07_HITCH
 - 10_GATE (Toxicity Investigation site)

⁴ United States Environmental Protection Agency (USEPA). 1993a. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fourth Edition. EPA/600/4-90/027F. USEPA, Office of Research and Development, Washington, D.C.

⁵ United States Environmental Protection Agency (USEPA). 1993b. Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity. EPA/600/R-02/080. USEPA, Office of Research and Development, Washington, D.C.

⁶ Bailey, H.C., DiGiorgio, C., Kroll, K., Miller, J.L., Hinton, D.E., Starrett, G. 1996. Development of Procedures for Identifying Pesticide Toxicity in Ambient Waters: Carbofuran, Diazinon, Chlorpyrifos. Environ. Tox. and Chem. V15, No. 6, 837-845.

- 13_BELT (Toxicity Investigation site)

Sediment toxicity samples were collected during dry weather event 56. Water column toxicity testing was conducted during all four dry weather events (Events 56, 57, 60, and 61), and the wet weather events (Events 58 and 59). The following section describes the toxicity samples collected at each site for each event, the results of the tests, and a summary of applicable TIEs initiated per the requirements in the QAPP.

Event 56 Sediment Toxicity

Table 1. Freshwater Sediment Toxicity Event 56 - *Hyaella azteca*

Site ID	<i>Hyaella azteca</i>		
	Survival	Growth	TIE?
02_PCH	Yes	Yes	No ¹
03_UNIV	No	Yes	No
04_WOOD	Yes	Yes	No ¹
9A_HOWAR	No	No	No

1. TIE not initiated due to mortality < 50 percent.

Event 56 Water Column Toxicity

Table 2. Freshwater Water Column Toxicity Event 56 - *Ceriodaphnia dubia* and *Hyaella azteca*

Site ID	<i>Ceriodaphnia dubia</i>			<i>Hyaella azteca</i>	
	Survival	Reproduction	TIE?	Survival	TIE?
03_UNIV	No	No	No		
04_WOOD				No	No
07_HITCH	No	No	No		
9B_ADOLF	No	Yes	No		
10_GATE	No	No	No		
13_BELT	No	No	No		

Event 56 Toxicity and TIE Summary

- Freshwater sediment sites exhibited reduced survival at the 02_PCH and 04_WOOD sites. Though statistically significant in comparison to the control, survival at these two sites were still quite high, 92.5% mean survival at 02_PCH and 90% at 04_WOOD.
- There were no significant reductions in survival or reproduction of *Ceriodaphnia dubia* in any of the Calleguas Creek ambient waters.
- There were no significant reductions in survival of *Hyaella Azteca* in any of the Calleguas Creek ambient waters.
- No TIEs were performed on samples collected for this sampling event.

Event 57 Water Quality Toxicity

Table 3. Water Quality Toxicity Event 57 - *Ceriodaphnia dubia* and *Hyalella azteca*

Site ID	<i>Ceriodaphnia dubia</i>			<i>Hyalella azteca</i>	
	Survival	Reproduction	TIE?	Survival	TIE?
03_UNIV	No	No	No		
04_WOOD				No	No
07_HITCH	No	Yes	No		
9B_ADOLF	No	No	No		
13_BELT	No	No	No		
10_GATE	No	No	No		

Event 57 Toxicity and TIE Summary

- No significant reductions in survival were observed for *Ceriodaphnia dubia* at the six freshwater sample sites during the sampling event.
- Significant reductions in reproduction were observed for *Ceriodaphnia dubia* at 07_HITCH.
- No significant reduction in survival was observed for *Hyalella azteca* at the 04_WOOD site.
- No TIEs were performed on samples collected for this sampling event.

Event 58 Water Quality Toxicity

Table 4. Water Quality Toxicity Event 58 - *Ceriodaphnia dubia*

Site ID	<i>Ceriodaphnia dubia</i>		
	Survival	Reproduction	TIE?
03_UNIV	No	Yes	No
04_WOOD	No	No	No
07_HITCH	No	No	No
9B_ADOLF	No	No	No
06_UPLAND	No	Yes	No
10_GATE	No	No	No
13_BELT	No	Yes	No

Event 58 Toxicity and TIE Summary

- No significant reductions in survival were observed for *Ceriodaphnia dubia* at the seven freshwater sample sites during the sampling event.
- There were significant reductions in reproduction observed for *Ceriodaphnia dubia* at 03_UNIV, 06_UPLAND, and 13_BELT.
- No TIEs were performed on samples collected for this sampling event.

Event 59 Water Quality Toxicity

Table 5. Water Quality Toxicity Event 59 - *Ceriodaphnia dubia*

Site ID	<i>Ceriodaphnia dubia</i>		
	Survival	Reproduction	TIE?
03_UNIV	No	No	No
04_WOOD	No	Yes	No
07_HITCH	No	Yes	No
9B_ADOLF	No	No	No
06_UPLAND	No	Yes	No
10_GATE	No	No	No
13_BELT	No	No	No

Event 59 Toxicity and TIE Summary

- No significant reductions in survival were observed for *Ceriodaphnia dubia* at the seven freshwater sample sites during the sampling event.
- There were significant reductions in reproduction observed for *Ceriodaphnia dubia* at 04_WOOD, 06_UPLAND, and 07_HITCH.
- No TIEs were performed on samples collected for this sampling event.

Event 60 Water Quality Toxicity

Table 6. Water Quality Toxicity Event 60 - *Ceriodaphnia dubia* and *Hyalella azteca*

Site ID	<i>Ceriodaphnia dubia</i>			<i>Hyalella azteca</i>	
	Survival	Reproduction	TIE?	Survival	TIE?
03_UNIV	No	No	No		
04_WOOD				No	No
07_HITCH	No	Yes	No		
9B_ADOLF	No	No	No		
10_GATE	No	No	No		
13_BELT	No	No	No		

Event 60 Toxicity and TIE Summary

- No significant reductions in survival were observed for *Ceriodaphnia dubia* or *Hyalella azteca* for all sites.
- Significant reproduction toxicity for *Ceriodaphnia dubia* was observed at 07_HITCH.
- No TIEs were performed on samples collected for this sampling event.

Event 61 Water Quality Toxicity

Table 7. Water Quality Toxicity Event 61 - *Ceriodaphnia dubia* and *Hyalella azteca*

Site ID	<i>Ceriodaphnia dubia</i>			<i>Hyalella azteca</i>	
	Survival	Reproduction	TIE?	Survival	TIE?
03_UNIV	No	Yes	No		
04_WOOD				No	No
07_HITCH	No	Yes	No		
9B_ADOLF	No	No	No		
10_GATE	No	Yes	Yes		
13_BELT	No	Yes	No		

Event 61 Toxicity and TIE Summary

- No significant reductions in survival were observed for *Ceriodaphnia dubia* or *Hyalella azteca*.
- Significant reproduction toxicity for *Ceriodaphnia dubia* was observed at all sites except for 9B_ADOLF.
- Based on the observation of greater than 50 percent mortality in the 100 percent concentration of the 10_GATE ambient water sample during Event 61, a TIE targeted for organics was performed on the sample. There was no reduction in survival or reproduction in the Baseline TIE treatment (= untreated sample) for the 10_GATE site water, indicating that the toxicity that had been observed in the initial test of this sample was not persistent.

Appendix E:

Laboratory QA/QC Results and Discussion

QUALITY ASSURANCE/QUALITY CONTROL

Quality assurance and quality control (QA/QC) measures are built into the Calleguas Creek Watershed Total Maximum Daily Load (TMDL) Compliance Monitoring Program (CCWTMP) to assure that collected data are credible. Two types of quality controls were conducted. Field quality controls (to test for field contamination and precision) were conducted by the field crews and include: equipment blanks, field blanks, and field duplicates. Laboratory quality controls (to test for laboratory contamination and precision) were conducted by the laboratories and include: method blanks, blank spikes, blank spike duplicates, lab duplicates, matrix spikes, matrix spike duplicates, laboratory control samples, and surrogates (organics only). Equipment blanks only apply to the shovels used in sediment sample collection. All field protocols for the collection of clean samples were followed according to the Quality Assurance Project Plan (QAPP). The following section lists the quality control failures that occurred during the 2016-2017 monitoring year and any associated qualifiers and comments.

Blank Contamination

Blank samples are used to identify the presents of and potential sources of sample contamination. During the ninth year of monitoring, there were three types of blank samples conducted.

- **Field blanks** are conducted by field crews and are looking for possible contamination in the collection process and transportation of samples.
- **Equipment blanks** are done by the field crews and are look for contamination with the sampling equipment (shovels for sediment).
- **Laboratory blanks** are conducted by the analyzing laboratory and look for contamination in the lab.

Blank sample constituent detections were well below one percent considering all blank samples for the monitoring year. Most detections in blank samples were laboratory blanks. All field blank detections occurred in Total Kjeldahl Nitrogen (TKN) samples. There was one equipment blank failure with total organic carbon (TOC). It was detected above the method detection limit (MDL), but below the reporting limit (RL). Of the 19 laboratory blank failures, approximately half were for general water quality parameters and the remainder occurred in metals and pyrethroids samples. Even though the detections were above the MDL value, most were low compared to the environmental sample, so very few qualifications were needed. Details of all the blank sample detections are reported in **Table 1** below. The following lists a basic summary of the blank contamination results:

- Field Blanks – 1852 analyzed – 5 detections above the MDL (0.27%) (does not include lab duplicates or surrogates)
- Equipment Blanks – 128 analyzed – 1 detections above MDL (0.78%) (does not include lab duplicates or surrogates)
- Laboratory Blanks – 4027 analyzed – 19 detections above MDL (0.47%) (does not include surrogates)

Precision

Precision (reproducibility) of sample collection, preparation, and analytical methods is demonstrated by analyzing duplicate samples and calculating the relative percent difference (RPD) between the original sample and its duplicate. The RPD is reported for field duplicates, lab duplicates, blank spike duplicates, laboratory control spike (LCS) duplicates, and matrix spike duplicates. An RPD is computed as:

$$RPD = 2 * |O_i - D_i| / (O_i + D_i) * 100$$

Where:

RPD = Relative Percent Difference

O_i = value of compound i in original sample

D_i = value of compound i in duplicate sample

QA failures for precision are noted when the RPD between a sample and its duplicate are greater than the acceptance value. Details of all the RPD failures are reported in **Table 2** below. The following list summarizes the precision analysis results:

- Field Duplicates – 2011 analyzed – 53 failed RPD (2.63%) (does not include surrogates)
- Laboratory Duplicates – 1433 analyzed – 30 failed RPD (2.09%) (includes surrogates)
- Blank Spike/LCS Duplicates – 3729 analyzed – 8 failed RPD (0.21%) (includes surrogates)
- Matrix Spike Duplicates – 995 analyzed – 27 failed RPD (2.71%) (includes surrogates)

Accuracy

Accuracy is defined as the degree of agreement of a measurement to an accepted reference or true value. Accuracy is measured as the percent recovery (%R) of a spiked compound and calculated as:

$$\%R = 100 * [(C_s - C) / S]$$

Where:

%R = Percent Recovery

C_s = analyzed spiked concentration

C = analyzed concentration of sample matrix

S = known spiked concentration

Percent recoveries of blank spike samples, LCS samples, and matrix spike samples check the accuracy of lab reported sample concentrations. For the blank spike samples and LCS samples that fell outside the acceptable range, eight of the twelve were from water samples and the other four were from the LCS of fish tissue. Almost all of these samples that failed the accuracy check were for pesticide analyses. There was one blank spike for Total Phosphorus that just fell outside the acceptable range. Of the matrix spike samples that fell outside the acceptable range, they were from all three matrixes; 36 from water, 29 from sediment, and 14 from tissue.

Table 3 summarizes the QA/QC sample results for accuracy that did not meet percent recovery objectives. The following lists the results of the accuracy analysis results:

- Blank Spike/LCS Samples – 7453 Analyzed – 12 fell outside the range (0.16%) (does not include surrogates)
- Matrix Spike Samples – 1920 Analyzed – 79 fell outside the range (4.11%) (does not include surrogates)

Table 1. Blank Contamination Observed

Constituent	Matrix	Event	Lab Batch	Equip Blank	Field Blank	Lab Blank	Program Qualifier	Comments
General Water Quality								
Electrical Conductivity (umhos/cm)	Water	56	2P1610259-B			0.07	DNQ	
Electrical Conductivity (umhos/cm)	Water	56	2P1610259-C			0.09	DNQ	
Electrical Conductivity (umhos/cm)	Water	57	2P1613409-B			0.07	DNQ	
Electrical Conductivity (umhos/cm)	Water	58	2P1615091-B			0.06	DNQ	
Electrical Conductivity (umhos/cm)	Water	58	2P1615091-C			0.07	DNQ	
Electrical Conductivity (umhos/cm)	Water	59	2P1700894-B			0.07	DNQ	
Electrical Conductivity (umhos/cm)	Water	60	2P1701936-A			0.09	DNQ	
Electrical Conductivity (umhos/cm)	Water	60	2P1701936-B			0.07	DNQ	
Electrical Conductivity (umhos/cm)	Water	61	2P1705567-B			0.05	DNQ	
Total Dissolved Solids (mg/L)	Water	56	2P1610433-A			8.4444	DNQ	
Total Dissolved Solids (mg/L)	Water	57	2P1613365-B			16.471	DNQ	
Total Dissolved Solids (mg/L)	Water	61	2P1705725-B			12.157	DNQ	
Total Organic Carbon (mg/L)	Water	56	G0830TOC_W_	0.1			DNQ	
Nutrients								
Total Kjeldahl Nitrogen (mg/L)	Water	56	G0903TKN_W_		0.42		DNQ	

Constituent	Matrix	Event	Lab Batch	Equip Blank	Field Blank	Lab Blank	Program Qualifier	Comments
Total Kjeldahl Nitrogen (mg/L)	Water	57	16-11-0493_W_TKN		0.35		DNQ	
Total Kjeldahl Nitrogen (mg/L)	Water	57	16-11-0493_W_TKN		0.42		DNQ	
Total Kjeldahl Nitrogen (mg/L)	Water	58	G1228TKNL1_W_TKN		0.49		DNQ	
Total Kjeldahl Nitrogen (mg/L)	Water	59	H0130TKNL1_W_TKN		0.42		DNQ	
Metals & Selenium								
Mercury, Dissolved (ug/l)	Water	56	W6H0807			0.015	DNQ	
Mercury, Dissolved (ug/l)	Water	57	W6K1038			0.018	DNQ	
Nickel, Dissolved (ug/l)	Water	56	W6H0460			0.0869		
OC Pesticides								
None								
OP Pesticides								
None								
PCBs								
None								
Pyrethroid Pesticides								
Bifenthrin (ng/l)	Water	56	W6H0406			1.04	DNQ	
Bifenthrin (ng/l)	Water	61	W7E1769			1.13	DNQ	
Fensulfothion (ng/l)	Water	61	W7E1157			4.16	DNQ	
Sumithrin (Phenothrin) (ng/l)	Water	60	W7C0106			2.54	DNQ	

Table 2. Precision QA/QC Issues

Constituent	Matrix	Event	Lab Batch	Site	BS/ BSD RPD	Field Dup RPD	Lab Dup RPD	MS/ MSD RPD	Program Qualifier	Comments
General Water Quality										
Clay (%)	Sediment	56	Physis_GC- 04-033_W_GS	04_WOOD		33	4		FD RPD	FieldDup RPD Failed
Total Dissolved Solids (mg/L)	Water	61	2P1705725-A	9A_HOWAR		1	10.5			
Total Suspended Solids (mg/L)	Water	60	Physis C- 29115 W	13_SB_HILL		59			FD RPD	FieldDup RPD Failed
Nutrients										
Ammonia as N (mg/L)	Water	56	Physis C- 18153 W	03_UNIV	12	57	0			
Nitrite as N (mg/L)	Water	56	Physis C- 26146 W	03_UNIV	2	15	55	0		
Nitrite as N (mg/L)	Water	57	Physis C- 28138 W	02_PCH	0		0	67	EST MS/MSD	Estimate due to MS/MSD RPD failed
OrthoPhosphate as P (mg/L)	Water	58	Physis C- 31030 W	04_WOOD	2	36	5	2	FD RPD	FieldDup RPD Failed
Total Kjeldahl Nitrogen (mg/L)	Water	57	16-11- 0493_W_TKN	01T_ODD2_DCH	1	146			U, FD RPD	Estimate due to a hit in the blank and environmental was < 10 times the detected, FieldDup RPD Failed
Total Kjeldahl Nitrogen (mg/L)	Water	57	16-11- 0493_W_TKN	07_HITCH	1	74			U, FD RPD	Estimate due to a hit in the blank and environmental was < 10 times the detected, FieldDup RPD Failed
Total Kjeldahl Nitrogen (mg/L)	Water	59	H0130TKNL1_ W_TKN	03_UNIV	8	60	3		U, FD RPD	Estimate due to a hit in the blank and environmental was < 10 times the detected, FieldDup RPD Failed
Total Kjeldahl Nitrogen (mg/L)	Water	60	H0222TKNL2_ W_TKN	04_WOOD	4	67	10			
Total Kjeldahl Nitrogen (mg/L)	Water	61	QC1178613_ W_TKN	01T_ODD2_DCH	11	87		7		

Constituent	Matrix	Event	Lab Batch	Site	BS/ BSD RPD	Field Dup RPD	Lab Dup RPD	MS/ MSD RPD	Program Qualifier	Comments
OC Pesticides										
Chlordane, alpha- (µg/L)	Water	59	Physis O- 12036 W	03_UNIV	1	34				
Chlordane, gamma- (µg/L)	Water	58	Physis O- 11112 W	10_GATE	4	46				
Chlordane, gamma- (ng/wet g)	Tissue	61	Physis O- 14004 W	04_WOOD	1		8	33	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
DDD(o,p') (µg/L)	Water	59	Physis O- 12036 W	03_UNIV	1	118				
DDD(o,p') (ng/dry g)	Sediment	56	Physis O- 11010 W	04_WOOD	2	46	0	1		
DDD(p,p') (µg/L)	Water	59	Physis O- 12036 W	03_UNIV	2	47				
DDD(p,p') (µg/L)	Water	60	Physis O- 12068 W	04_WOOD	4	109				
DDD(p,p') (ng/dry g)	Sediment	56	Physis O- 11010 W	02_PCH	1	11	35	0		
DDE(o,p') (µg/L)	Water	58	Physis O- 11110 W	04_WOOD	0	92				
DDE(p,p') (µg/L)	Water	57	Physis O- 11084 W	07_HITCH	4	33				
DDE(p,p') (µg/L)	Water	58	Physis O- 11110 W	04_WOOD	4	46			FD RPD	FieldDup RPD Failed
DDE(p,p') (ng/wet g)	Tissue	61	Physis O- 14004 W	04_WOOD	0		6	118	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
DDT(o,p') (µg/L)	Water	60	Physis O- 12068 W	04_WOOD	4	37				
DDT(p,p') (µg/L)	Water	57	Physis O- 11084 W	01T_ODD2_DCH	4	33				
DDT(p,p') (µg/L)	Water	58	Physis O- 11110 W	04_WOOD	1	73			FD RPD	FieldDup RPD Failed
DDT(p,p') (µg/L)	Water	61	Physis O- 12126 W	01T_ODD2_DCH	6	37				

Constituent	Matrix	Event	Lab Batch	Site	BS/ BSD RPD	Field Dup RPD	Lab Dup RPD	MS/ MSD RPD	Program Qualifier	Comments
DDT(p,p') (ng/dry g)	Sediment	56	Physis O-11010 W	04_WOOD	2	38	13	5		
Endosulfan I (ng/dry g)	Sediment	56	Physis O-11010 W	02_PCH	49	0	0	41	EST BS/BSD, EST MS/MSD	Estimate due to BS/BSD RPD failed, Estimate due to MS/MSD RPD failed
Endosulfan I (ng/wet g)	Tissue	61	Physis O-14002 W	9B_ADOLF	26		0	38		
Endosulfan II (ng/dry g)	Water	56	Physis O-11010 W	LABQA	7					
Endosulfan II (ng/dry g)	Sediment	56	Physis O-11010 W	02_PCH	7	0	0	32	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Endosulfan II (ng/wet g)	Tissue	61	Physis O-14002 W	LABQA	40		0	18	BS <LL, Est BS/BSD	BS failed lower limit, Estimate due to BS/BSD RPD failed
HCH, alpha (ng/wet g)	Tissue	61	Physis O-14004 W	04_WOOD	1		0	31	EST MS/MSD	Estimate due to MS/MSD RPD failed
Nonachlor, trans (µg/L)	Water	59	Physis O-12036 W	03_UNIV	0	46				
Tetrachloro-m-xylene-2,4,5,6 (Surrogate) (%)	Tissue	61	Physis O-14004 W	04_WOOD	0		10	44		
Toxaphene (ng/dry g)	Sediment	56	Physis O-11010 W	04_WOOD	0	38	17	21		
Toxaphene (ng/wet g)	Tissue	61	Physis O-14002 W	9B_ADOLF	4		37	6		
PCBs										
PCB 030 (Surrogate) (%)	Tissue	61	Physis O-14004 W	04_WOOD	0		7	31		
OP Pesticides										
Demeton-o (ng/l)	Water	60	W7B1396	10D_HILL				35		
Dimethoate (ng/l)	Water	57	W6K0941	10D_HILL				42		
Dimethoate (ng/l)	Water	60	W7B1396	10D_HILL				36		

Constituent	Matrix	Event	Lab Batch	Site	BS/ BSD RPD	Field Dup RPD	Lab Dup RPD	MS/ MSD RPD	Program Qualifier	Comments
Ethyl parathion (ng/l)	Water	57	W6K0941	10D_HILL				37		
Ethyl parathion (ng/l)	Water	60	W7B1396	10D_HILL				46		
Fensulfothion (ng/l)	Water	57	W6K0941	10D_HILL				32		
Fensulfothion (ng/l)	Water	60	W7B1396	10D_HILL				32		
Malathion (µg/L)	Water	58	Physis O-11110 W	04_WOOD	1	31			FD RPD	FieldDup RPD Failed
Methyl parathion (ng/l)	Water	60	W7B1396	10D_HILL				32		
Methyl parathion (ng/dry g)	Water	56	Physis O-11010 W	LABQA	34	0	0	9	EST BS/BSD	Estimate due to BS/BSD RPD failed
Mevinphos (ng/l)	Water	56	W6H0492	10D_HILL				39		
Mevinphos (ng/l)	Water	57	W6K0941	10D_HILL				41		
PAHs										
None										
Pyrethroid Pesticides										
Bifenthrin (µg/L)	Water	58	Physis O-11110 W	04_WOOD	1	54			FD RPD	FieldDup RPD Failed
Cyfluthrin, total (µg/L)	Water	59	Physis O-12038 W	13_BELT	2	59			FD RPD	FieldDup RPD Failed
Cyfluthrin, total (µg/L)	Water	60	Physis O-12068 W	04_WOOD	10	33			H	Hold time exceeded
Cypermethrin, total (ng/dry g)	Sediment	56	Physis O-11010 W	02_PCH	4	0	0	36	EST MS/MSD	Estimate due to MS/MSD RPD failed
Danitol (µg/L)	Water	59	Physis O-12038 W	13_BELT	0	46				
Deltamethrin (ng/dry g)	Sediment	56	Physis O-11010 W	02_PCH	2			107		
Esfenvalerate (µg/L)	Water	59	Physis O-12036 W	03_UNIV	1	40				

Constituent	Matrix	Event	Lab Batch	Site	BS/ BSD RPD	Field Dup RPD	Lab Dup RPD	MS/ MSD RPD	Program Qualifier	Comments
Esfenvalerate (ng/dry g)	Water	56	Physis O- 11010 W	LABQA	2					
Esfenvalerate (ng/dry g)	Sediment	56	Physis O- 11010 W	02_PCH	2	0	0	46	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Fenvalerate (µg/L)	Water	59	Physis O- 12036 W	03_UNIV	1	40				
Fluvalinate (ng/dry g)	Water	56	Physis O- 11010 W	LABQA	2					
Fluvalinate (ng/dry g)	Sediment	56	Physis O- 11010 W	02_PCH	2	0	0	49	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Permethrin, cis- (µg/L)	Water	56	Physis O- 10132 W	LABQA	33					
Permethrin, trans- (µg/L)	Water	56	Physis O- 10132 W	LABQA	35					
Permethrin, trans- (ng/dry g)	Sediment	56	Physis O- 11010 W	02_PCH	12	0	0	56	EST MS/MSD	Estimate due to MS/MSD RPD failed
Prallethrin (ng/dry g)	Sediment	56	Physis O- 11010 W	02_PCH	4	0	0	197	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Prallethrin (ng/l)	Water	56	W6H0406	10D_HILL	32					
Metals and Selenium										
Aluminum, Dissolved (µg/L)	Water	58	Physis E- 11068 W	04_WOOD		83	2	0		
Aluminum, Total (µg/L)	Water	56	Physis E- 11017 W	9AD_CAMA	1		39			
Antimony, Total (µg/L)	Water	59	Physis E- 11085 W	03_UNIV	0	96	56		LD RPD, FD RPD	LabDuplicate RPD Failed, FieldDuplicate RPD Failed
Arsenic, Dissolved (µg/L)	Water	60	Physis E- 11103 W	05D_SANT_VCW PD		22	34		LD RPD	LabDuplicate RPD Failed
Arsenic, Total (µg/L)	Water	59	Physis E- 11085 W	01_RR_BR	0	9	54		LD RPD	LabDuplicate RPD Failed
Arsenic, Total (µg/L)	Water	60	Physis E- 11103 W	05D_SANT_VCW PD	1	1	32		LD RPD	LabDuplicate RPD Failed

Constituent	Matrix	Event	Lab Batch	Site	BS/ BSD RPD	Field Dup RPD	Lab Dup RPD	MS/ MSD RPD	Program Qualifier	Comments
Beryllium, Total (µg/L)	Water	58	Physis E-11068 W	04_WOOD	1	46				
Cadmium, Dissolved (µg/L)	Water	57	Physis E-11054 W	9AD_CAMA		4	43	2	LD RPD	LabDuplicate RPD Failed
Cadmium, Total (µg/L)	Water	59	Physis E-11085 W	03_UNIV	3	46	32		LD RPD, FD RPD	LabDuplicate RPD Failed, FieldDuplicate RPD Failed
Cadmium, Total (µg/L)	Water	61	Physis E-11134 W	9AD_CAMA	0	1	39			
Chromium, Dissolved (µg/L)	Water	58	Physis E-11068 W	04_WOOD		111	6	1	FD RPD	FieldDup RPD Failed
Chromium, Total (µg/L)	Water	56	Physis E-11024 W	03_UNIV	0	120	1		FD RPD	FieldDup RPD Failed
Cobalt, Dissolved (µg/L)	Water	57	Physis E-11054 W	07D_SIMI		4	33	1		
Copper, Dissolved (µg/L)	Water	58	Physis E-11068 W	04_WOOD		59	3	2	FD RPD	FieldDup RPD Failed
Lead, Dissolved (µg/L)	Water	57	Physis E-11054 W	01T_ODD2_DCH		56	20	1	LD RPD, FD RPD	LabDuplicate RPD Failed, FieldDuplicate RPD Failed
Lead, Dissolved (µg/L)	Water	57	Physis E-11054 W	04D_VENTURA			149	1	LD RPD, FD RPD	LabDuplicate RPD Failed, FieldDuplicate RPD Failed
Lead, Dissolved (µg/L)	Water	58	Physis E-11068 W	04_WOOD		173	8	1	FD RPD	FieldDup RPD Failed
Lead, Dissolved (µg/L)	Water	60	Physis E-11085 W	9AD_CAMA		23	41	2	LD RPD	LabDuplicate RPD Failed
Lead, Total (µg/L)	Water	56	Physis E-11017 W	9AD_CAMA			32	2	LD RPD	LabDuplicate RPD Failed
Lead, Total (µg/L)	Water	61	Physis E-11134 W	01T_ODD2_DCH	2	49	24		FD RPD	FieldDup RPD Failed
Manganese, Dissolved (µg/L)	Water	58	Physis E-11068 W	04_WOOD		57	2	1	FD RPD	FieldDup RPD Failed
Mercury, Dissolved (µg/L)	Water	61	Physis E-12054 W	01T_ODD2_DCH		67	9	5		
Mercury, Total (µg/L)	Water	57	Physis E-12018 W	01T_ODD2_DCH	1	40	0		FD RPD	FieldDup RPD Failed
Nickel, Total (µg/L)	Water	60	Physis E-11103 W	05D_SANT_VCW PD	2	6	39		LD RPD	LabDuplicate RPD Failed

Constituent	Matrix	Event	Lab Batch	Site	BS/ BSD RPD	Field Dup RPD	Lab Dup RPD	MS/ MSD RPD	Program Qualifier	Comments
Selenium, Dissolved (µg/L)	Water	57	Physis E- 11054 W	04D_VENTURA		9	84	3	LD RPD	LabDuplicate RPD Failed
Selenium, Dissolved (µg/L)	Water	58	Physis E- 11068 W	04_WOOD		77	7	1	FD RPD	FieldDup RPD Failed
Selenium, Dissolved (µg/L)	Water	59	Physis E- 11085 W	03_UNIV		55	9	10	FD RPD	FieldDup RPD Failed
Selenium, Dissolved (µg/L)	Water	60	Physis E- 11085 W	9AD_CAMA			49		LD RPD	LabDuplicate RPD Failed
Selenium, Total (µg/L)	Water	59	Physis E- 11085 W	03_UNIV	3	189	19		FD RPD	FieldDup RPD Failed
Selenium, Total (µg/L)	Water	61	Physis E- 11132 W	01_RR_BR	0		33			
Silver, Total (µg/L)	Water	56	Physis E- 11025 W	01_RR_BR	7		67			
Silver, Total (µg/L)	Water	56	Physis E- 11025 W	02_PCH	7		67			
Silver, Total (µg/L)	Water	59	Physis E- 11085 W	01_RR_BR	18		120		LD RPD	LabDuplicate RPD Failed
Silver, Total (µg/L)	Water	59	Physis E- 11085 W	03_UNIV	18	133			LD RPD, FD RPD	LabDuplicate RPD Failed, FieldDuplicate RPD Failed
Silver, Total (µg/L)	Water	60	Physis E- 11101 W	01_RR_BR	0		67			
Silver, Total (µg/L)	Water	61	Physis E- 11132 W	01_RR_BR	1		40			
Strontium, Dissolved (µg/L)	Water	59	Physis E- 11085 W	01_RR_BR		1	2	39	MS >UL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Thallium, Dissolved (µg/L)	Water	57	Physis E- 11054 W	07D_SIMI			67	1		
Thallium, Dissolved (µg/L)	Water	57	Physis E- 11054 W	9AD_CAMA			67	1		
Thallium, Dissolved (µg/L)	Water	59	Physis E- 11085 W	01_RR_BR		0	67	1		
Tin, Total (µg/L)	Water	57	Physis E- 11053 W	01_RR_BR	3		57			

Constituent	Matrix	Event	Lab Batch	Site	BS/ BSD RPD	Field Dup RPD	Lab Dup RPD	MS/ MSD RPD	Program Qualifier	Comments
Tin, Total (µg/L)	Water	59	Physis E- 11085 W	03_UNIV	1	50	0			
Zinc, Dissolved (µg/L)	Water	58	Physis E- 11068 W	04_WOOD		48	1	2	FD RPD	FieldDup RPD Failed
Zinc, Total (µg/L)	Water	60	Physis E- 11103 W	05D_SANT_VCW PD	0	4	31		LD RPD	LabDuplicate RPD Failed

EST BS/BSD = Estimated due to Blank Spike/Blank Spike Duplicate RPD failure.

EST MS/MSD = Estimated due to Matrix Spike/Matrix Spike Duplicate RPD failure

FD RPD = Field Duplicate Relative Percent Difference failure

LD RPD = Lab Duplicate Relative Percent Difference failure

MS <LL = Matrix spike recovery was below the Lower Limit of the acceptance range

MS >UL = Matrix spike recovery was above the Upper Limit of the acceptance range

Table 3. Accuracy QA/QC Issues

Constituent	Matrix	Event	Lab Batch	LCL	UCL	LCS %Rec	LCSD %Rec	MS %Rec	MSD %Rec	Comments
General Water Quality										
Dissolved Organic Carbon (mg/L)	Water	61	QC1178484_W_D OC	80	120	100		122	116	MS failed upper limit
Nutrients										
Nitrite as N (mg/L)	Water	57	Physis C-28138 W	70	130	100	100	100	50	MS failed lower limit
Phosphorus, Total (mg/L)	Water	56	Physis C-28107 W	78	108	107	112	103	105	BS failed upper limit
OC Pesticides										
Chlordane, gamma- (ng/wet g)	Tissue	61	Physis O-14004 W	70	135	77	76	25	35	MS failed lower limit
DDD(o,p') (ng/wet g)	Tissue	61	Physis O-14002 W	46	177	555		126	123	BS failed upper limit
DDD(o,p') (ng/wet g)	Tissue	61	Physis O-14004 W	46	177	382		103	92	BS failed upper limit
DDE(p,p') (ng/wet g)	Tissue	61	Physis O-14004 W	44	148	94		-106	-411	MS failed lower limit
DDT(p,p') (ng/dry g)	Sediment	56	Physis O-11080 W	29	167	139	149	171	194	MS failed upper limit
Endosulfan I (ng/wet g)	Tissue	61	Physis O-14002 W	0	162	27	35	1508	2213	MS failed upper limit
Endosulfan II (ng/dry g)	Sediment	56	Physis O-11010 W	47	117	56	60	39	54	MS failed lower limit
Endosulfan II (ng/wet g)	Water	61	Physis O-14002 W	22	111	20	30	60	50	BS failed lower limit
HCH, alpha (ng/wet g)	Tissue	61	Physis O-14002 W	60	134	655		125	121	BS failed upper limit
HCH, alpha (ng/wet g)	Tissue	61	Physis O-14004 W	80	120	173		119	87	BS failed upper limit
HCH, delta (ng/dry g)	Sediment	56	Physis O-11010 W	65	126	123	125	130	129	MS failed upper limit
Methoxychlor (ng/dry g)	Sediment	56	Physis O-11010 W	42	205	173	178	220	188	MS failed upper limit
Methoxychlor (ng/dry g)	Sediment	56	Physis O-11080 W	42	205	163	188	211	242	MS failed upper limit

Constituent	Matrix	Event	Lab Batch	LCL	UCL	LCS %Rec	LCSD %Rec	MS %Rec	MSD %Rec	Comments
PCB 030 (Surrogate) (%)	Tissue	61	Physis O-14004 W	51	137	117		145	106	MS failed upper limit
Perthane (ng/dry g)	Sediment	56	Physis O-11010 W	63	136	81	82	172	170	MS failed upper limit
Perthane (ng/dry g)	Sediment	56	Physis O-11080 W	63	136	134	133	152	160	MS failed upper limit
Tetrachloro-m- xylene-2,4,5,6 (Surrogate) (%)	Tissue	61	Physis O-14004 W	50	144	122		169	108	MS failed upper limit
PCBs										
PCB 037 (ng/wet g)	Tissue	61	Physis O-14004 W	57	137	95	91	262	237	MS failed upper limit
PCB 037 (ng/wet g)	Tissue	61	Physis O-14002 W	57	137	102	101	448	410	MS failed upper limit
PCB 066 (ng/wet g)	Tissue	61	Physis O-14004 W	52	141	115		180	174	MS failed upper limit
PCB 070 (ng/dry g)	Water	56	Physis O-11010 W	76	117	118	116	91	110	BS failed upper limit
PCB 180 (ng/dry g)	Sediment	56	Physis O-11010 W	75	128	131	123	124	130	MS failed upper limit
OP Pesticides										
Azinphos methyl (Guthion) (ng/l)	Water	56	W6H0492	0.1	154	137		139	164	MS failed upper limit
Azinphos methyl (Guthion) (ng/l)	Water	60	W7B1396	0.1	154	108		122	158	MS failed upper limit
Coumaphos (ng/l)	Water	60	W7B1396	0.1	203	131		158	214	MS failed upper limit
Demeton-s (ng/dry g)	Sediment	56	Physis O-11010 W	25	125	99	115	137	142	MS failed upper limit
Dichlorvos (ng/l)	Water	60	W7B1396	42	137	93		145	161	MS failed upper limit
Dimethoate (ng/l)	Water	56	W6H0492	4	222	93		226	295	MS failed upper limit
Ethyl parathion (ng/l)	Water	60	W7B1396	5	229	182		185	296	MS failed upper limit
Fensulfothion (ng/dry g)	Sediment	56	Physis O-11010 W	50	150	146	149	230	263	MS failed upper limit
Malathion (ng/l)	Water	56	W6H0492	6	184	127		187	203	MS failed upper limit
Malathion (ng/l)	Water	60	W7B1396	6	184	148		182	225	MS failed upper limit
Malathion (ng/dry g)	Sediment	56	Physis O-11010 W	50	150	118	140	184	187	MS failed upper limit

Constituent	Matrix	Event	Lab Batch	LCL	UCL	LCS %Rec	LCSD %Rec	MS %Rec	MSD %Rec	Comments
Methidathion (ng/dry g)	Sediment	56	Physis O-11010 W	50	150	107	127	194	199	MS failed upper limit
Methyl parathion (ng/l)	Water	60	W7B1396	0.1	249	190		212	293	MS failed upper limit
Methyl Parathion (ng/dry g)	Sediment	56	Physis O-11010 W	50	150	85	120	150	164	MS failed upper limit
Mevinphos (ng/l)	Water	56	W6H0492	25	189	110		137	204	MS failed upper limit
Stirophos (ng/l)	Water	56	W6H0492	0.1	167	130		232	233	MS failed upper limit
Stirophos (ng/l)	Water	60	W7B1396	0.1	167	156		172	220	MS failed upper limit
Tokuthion (µg/L)	Water	56	Physis O-10132 W	74	136	141	135			BS failed upper limit
Tokuthion (µg/L)	Water	56	Physis O-10132 W	74	136	141	135			BS failed upper limit
Tokuthion (µg/L)	Water	60	Physis O-12040 W	74	136	73	74			BS failed lower limit
Tokuthion (µg/L)	Water	60	Physis O-12040 W	74	136	73	74			BS failed lower limit
Trichloronate (ng/l)	Water	57	W6K0941	40	150	148		130	168	MS failed upper limit
Trichloronate (ng/l)	Water	60	W7B1396	40	150	135		134	159	MS failed upper limit
PAHs										
None										
Pyrethroid Pesticides										
Allethrin (ng/dry g)	Sediment	56	Physis O-11010 W	50	150			155	189	MS failed upper limit
Deltamethrin (ng/dry g)	Sediment	56	Physis O-11010 W	50	150	93	91	56	17	MS failed lower limit
Esfenvalerate (ng/dry g)	Sediment	56	Physis O-11010 W	50	150	91	89	62	39	MS failed lower limit
Fluvalinate (ng/dry g)	Sediment	56	Physis O-11010 W	50	150	94	92	61	37	MS failed lower limit
Prallethrin (ng/l)	Water	57	W6K1020	28	143	158				BS failed upper limit
Prallethrin (ng/dry g)	Sediment	56	Physis O-11010 W	50	150	97	93	1	146	MS failed lower limit
Metals and Selenium										
Iron, Dissolved (µg/L)	Water	61	Physis E-11134 W	65	134			140	147	MS failed upper limit

Constituent	Matrix	Event	Lab Batch	LCL	UCL	LCS %Rec	LCSD %Rec	MS %Rec	MSD %Rec	Comments
Silver, Dissolved (µg/L)	Water	58	Physis E-11068 W	52	115			40	40	MS failed lower limit
Strontium, Dissolved (µg/L)	Water	56	Physis E-11024 W	75	125			80	74	MS failed lower limit
Strontium, Dissolved (µg/L)	Water	57	Physis E-11054 W	75	125			158	184	MS failed upper limit
Strontium, Dissolved (µg/L)	Water	59	Physis E-11085 W	75	125			304	204	MS failed upper limit
Strontium, Dissolved (µg/L)	Water	61	Physis E-11134 W	75	125			134	128	MS failed upper limit
Strontium, Dissolved (µg/L)	Water	61	Physis E-11134 W	75	125			132	133	MS failed upper limit
Strontium, Dissolved (µg/L)	Water	61	Physis E-11134 W	75	125			337	306	MS failed upper limit

LCL = Lower Control Limit

UCL = Upper Control Limit

MS = Matrix Spike

MSD = Matrix Spike Duplicate

LCS = Laboratory Control Spike

LCSD = Laboratory Control Spike Duplicate

%Rec = Percent Recovery