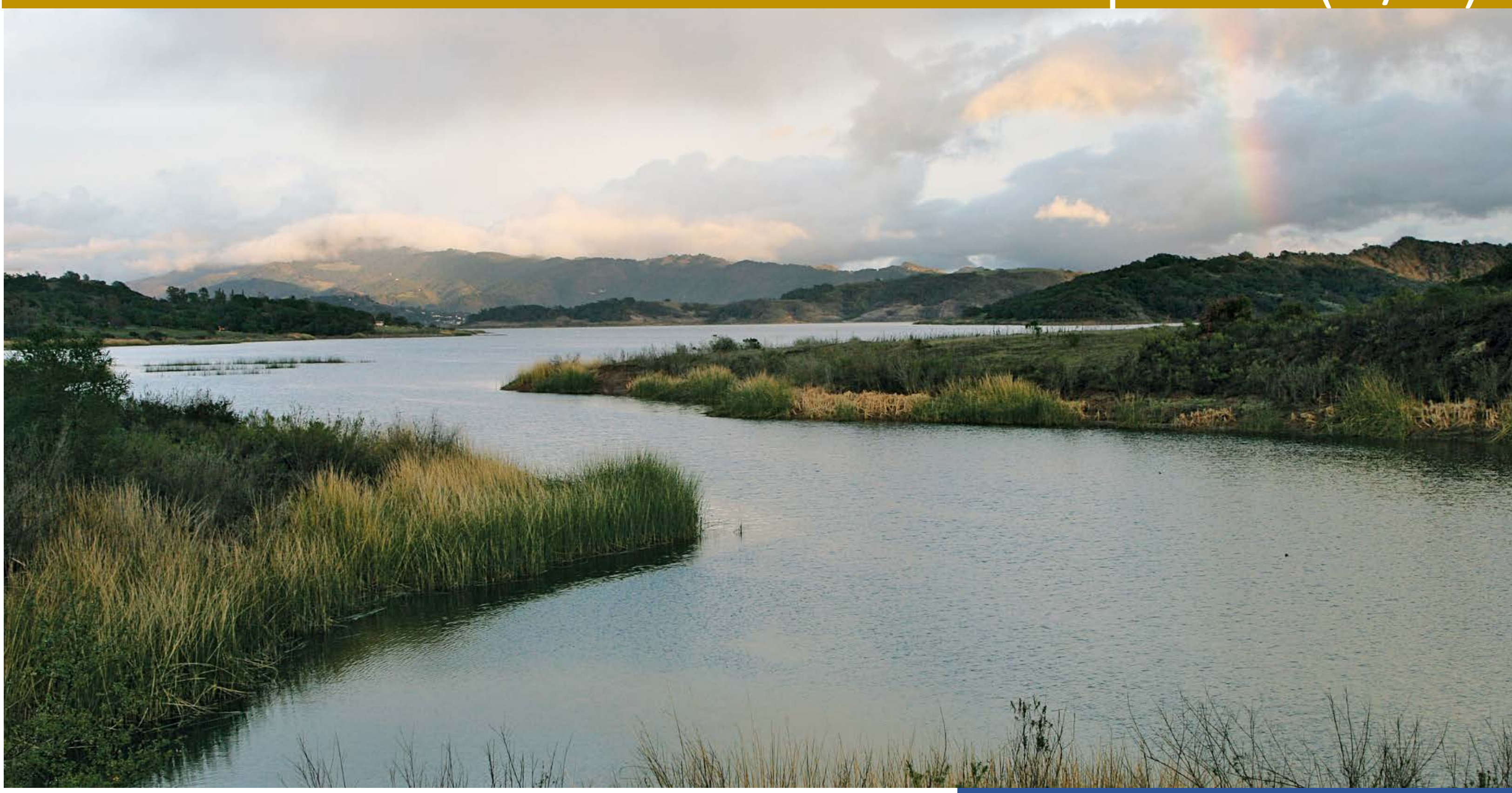
Ventura Countywide Stormwater Quality Management Program

2017-2018 Permit Year

Ventura Countywide Stormwater Quality Management Program Annual Report

Attachment E – TMDL Reports (3/3)



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

December 14, 2018

January 24, 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
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(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 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

				Single Sample (as sampled)	
Location	**Time**	**Date**	**Rain**		**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

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location	**Time**	**Date**	**Rain**		**E. coli**	**E. coli**
					(235 MPN)	**(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

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		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

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(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) E. coli (235 MPN)	Geomean 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

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(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

February 22, 2018

JEFF PRATT
Agency Director

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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

				Single Sample (as sampled)	
Location	Time	Date	Rain		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

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(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) E. coli (235 MPN)	Geomean E. coli (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

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		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**

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location		Date	Rain		E. coli	E. coli
					(235 MPN)	(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

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		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

JEFF PRATT
Agency Director

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Engineering Services Department
Christopher Cooper, Director

Transportation Department
David Fleisch, Director

Water & Sanitation Department
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California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
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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 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

				Single Sample (as sampled)	
Location	**Time**	**Date**	**Rain**		**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

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(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

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location	Time	Date	Rain		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

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		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	E. coli
					(235 MPN)	(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

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-18	-	2/12/18	Dry	<	9	9
MCW-18	-	2/13/2018♦	Dry	<	9	9
MCW-18	-	2/14/18	Dry	<	9	9
MCW-18	-	2/15/18	Dry	<	9	9
MCW-18	-	2/16/18	Dry	<	9	9
MCW-18	-	2/17/18	Dry	<	9	9
MCW-18	-	2/18/18	Dry	<	9	9
MCW-18	-	2/19/18	Dry	<	9	9
MCW-18	-	2/20/2018♦	Dry	<	9	9
MCW-18	-	2/21/18	Dry	<	9	9
MCW-18	-	2/22/18	Dry	<	9	9
MCW-18	-	2/23/18	Dry	<	9	9
MCW-18	-	2/24/18	Dry	<	9	9
MCW-18	-	2/25/18	Dry	<	9	9
MCW-18	-	2/26/18	Dry	<	9	9
MCW-18	-	2/27/18	Dry	<	9	9
MCW-18	-	2/28/2018♦	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

April 30, 2018

JEFF PRATT
Agency Director

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Engineering Services Department
Christopher Cooper, Director

Transportation Department
David Fleisch, Director

Water & Sanitation Department
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Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
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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 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

				Single Sample (as sampled)	
Location	**Time**	**Date**	**Rain**		**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

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(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**

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location	**Time**	**Date**	**Rain**		**E. coli**	**E. coli**
					(235 MPN)	**(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

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(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

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location		**Date**	**Rain**		**E. coli**	**E. coli**
					(235 MPN)	**(126 MPN)**
MCW-15c	955	3/9/18		=	20	40
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

Location	Time	Date	Rain		Single Sample (adjusted for rain, dry and NDs) E. coli (235 MPN)	Geomean E. coli (126 MPN)
MCW-17	-	3/24/18	Dry	<	9	9
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

PUBLIC
VENTURA COUNTY
WORKS

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

				Single Sample (as sampled)	
Location	**Time**	**Date**	**Rain**		**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

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		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

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		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

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location	Time	Date	Rain		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

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location		Date	Rain		E. coli	E. coli
					(235 MPN)	(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

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		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

PUBLIC
VENTURA COUNTY
WORKS

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Agency Director

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Christopher Cooper, Director

Transportation Department
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Water & Sanitation Department
Michaela Brown, Director

Watershed Protection District
Glenn Shephard, Director

June 25, 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

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

				Single Sample (as sampled)	
Location	Time	Date	Rain		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

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		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

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	**Time**	**Date**	**Rain**		**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	E. coli
					(235 MPN)	(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) E. coli (235 MPN)	Geomean E. coli (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 take 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 Mouderres, 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 E.coli (MPN/100mL)		Single Sample Total Coliform (MPN/100mL)		Single Sample Fecal Coliform (MPN/100mL)		Single Sample 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 E.coli (MPN/100mL) Site: SCRR3-RW1		Single Sample Total Coliform (MPN/100mL) Site: SCRE-R005		Single Sample Fecal Coliform (MPN/100mL) Site: SCRE-R005		Single Sample Enterococcus (MPN/100mL) 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		E.coli (MPN/100mL) Site: SCRR3-RW1 Single Sample (235 MPN)	E.coli (MPN/100mL) Site: SCRR3-RW1 30-Day Geomean (126 MPN)		Total Coliform (MPN/100mL) Site: SCRE-R005 Single Sample (10,000 MPN)	Total Coliform (MPN/100mL) Site: SCRE-R005 30-Day Geomean (1,000 MPN)		Fecal Coliform (MPN/100mL) Site: SCRE-R005 Single Sample (400 MPN)	Fecal Coliform (MPN/100mL) Site: SCRE-R005 30-Day Geomean (200 MPN)		Enterococcus (MPN/100mL) Site: SCRE-R005 Single Sample (104 MPN)	Enterococcus (MPN/100mL) Site: SCRE-R005 30-Day Geomean (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

N

1 inch = 350 feet

0 190 380 760 Feet

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 asserts 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 wine + 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

N

1 inch = 350 feet

0 190 380 760 Feet

Ventura River Trash TMDL Estuary Subwatershed Area (as defined by TMDL)

11/21/16

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Appendix A – Trash Visual Survey Worksheet

Trash Visual Survey Worksheet

Parcel No.: 1,2,3,4 Survey Date: 12/1/16

Inspector: J. Nikolai, 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 VHC - 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. Nikolai, 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 ✓
- 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 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

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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1/25

Appendix A – Trash Visual Survey Worksheet

Trash Visual Survey Worksheet

Parcel No.: 1, 2, 3
Survey Date: 2/28/17
Inspector: J. 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

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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2/28/17

Appendix A – Trash Visual Survey Worksheet

Trash Visual Survey Worksheet

Parcel No.: 1,2,3,4 Survey Date: 3/21/17

Inspector: J. Nikolai, 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 - Claessen	2	Paper bag w/ plastic bottles
2 wood - Claessen/Comm Ft-1	3	Camp - active?
3 wood - Claessen	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) - "cave-like" structure still needs to be dismantled.

Additional Notes: Road work was in progress on the maintenance road during patrol (post storm damage).

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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3/21/17

Created By S. Greer
December 13, 2013

Appendix A – Trash Visual Survey Worksheet

Trash Visual Survey Worksheet

Parcel No.: 1,2,3,4 Survey Date: 4/26/17

Inspector: J. Nikolai, 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 + graffited trees
(7) State Parks - 2	1	trash + graffited tree
(8) State Parks - 2	3	large clothing pile
(9) State Parks - 2	1	Plastic bag of 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 loons on the beach (domoic acid!).

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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Appendix A – Trash Visual Survey Worksheet

Trash Visual Survey Worksheet

Parcel No.: 1,2,3 Survey Date: 5/2/17
Inspector: J. Nikolai, J. Forman Survey Start/ End Time: 9:00 / 10:00
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 since shown up!

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)

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 asserts that no economic or physical

Appendix A – Trash Visual Survey Worksheet

Trash Visual Survey Worksheet

Parcel No.: 1, 2, 3, 4
Survey Date: 6/12/17
Inspector: J. Nikolai, 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, candle 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 ✓
- Landscape Materials
- Toxic/ Hazardous Materials
- Personal Effects ✓
- Paper Products/Biodegradable ✓
- Aluminum/ Metal
- Glass
- Sports Equipment ✓
- Household Items ✓
- Automotive
- Biohazardous
- 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

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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Appendix A – Trash Visual Survey Worksheet

Trash Visual Survey Worksheet

Parcel No.: 1,2,3,4 Survey Date: 7/24/17
Inspector: J. Vest, 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) VHC-3	1	Beer bottles
(3) 101 Freeway	1	Spray cans
(4) State Parks-2	1	Wheelbarrow
(5) City-1	1	Rolled-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(s) 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 arundo had been cut near old camp. Heard a man yell "Hey!" at Site (1) but could not see where he was.

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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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 river crossing	2	clothes, beer box, balloons
5 state park - 2	1	full trash bag
6 state park - 2	1	Bike w/trailor
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 caltrans / 3 / RV park	3	clothes, personal effects (rock building) [bath spot]
11 VHC - 3	1	clothing used for bedding

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: 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

N

1 inch = 350 feet

0 190 380 760 Feet

Ventura River Trash TMDL Estuary Subwatershed Area

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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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: /
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/~~VRE~~ - 3	3	large abandoned camp [MFAC]
3 Caltrans -	2	spray cans & candy wrappers
4 State Park - 2	1	bottles & plastic bag.
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 ✓
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): 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 ✓	Paper Products/ Biodegradable ✓	Household Items ✓
Landscape Materials	Aluminum/ Metal ✓	Automotive
Toxic/ Hazardous Materials	Glass ✓	Biohazardous ✓
Personal Effects ✓	Sports Equipment ✓	Other

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 camping signs to be posted.

Additional Notes: Trash removed via CA State Parks truck and Paul Meehan'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 Nikolai

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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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 ✓
- Landscape Materials ✓
- Toxic/ Hazardous Materials ✓
- Personal Effects ✓
- Paper Products/ Biodegradable ✓
- Aluminum/ Metal ✓
- Glass ✓
- Sports Equipment ✓
- Household Items ✓
- Automotive
- Biohazardous ✓
- Other

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/ arundo 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 Corp's 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

1 inch = 350 feet

0 190 380 760 Feet

DISCLAIMER:
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Ventura River Trash TMDL Estuary Subwatershed Area (as defined by TMDL)

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 trestle
Event Start/ End Time: 10 am / 11:30 am
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 ✓	Paper Products/ Biodegradable ✓	Household Items ✓
Landscape Materials	Aluminum/ Metal ✓	Automotive
Toxic/ Hazardous Materials ✓	Glass ✓	Biohazardous ✓
Personal Effects ✓	Sports Equipment ✓	Other

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) Jenna West

Appendix B – MFAC Event Worksheet

MFAC Event Worksheet

Parcel No.: Main St. bridge Event Date: 7/11/17
Specific Cleanup Location: 1st trestle 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 ✓	Paper Products/ Biodegradable ✓	Household Items ✓
Landscape Materials ✓	Aluminum/ Metal ✓	Automotive ✓
Toxic/ Hazardous Materials ✓	Glass ✓	Biohazardous ✓
Personal Effects ✓	Sports Equipment ✓	Other ✓

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 clearing 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:
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." - Jessica West (mostly cleared)

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: 10am / 12pm

Field Technician name(s): J. West, D. Poultney, J. Harrison, K. Furlong

Current Weather Condition: Sunny

Antecedent Weather Condition: Sunny

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: Bike parts, clothing, baby stroller, paper/plastic trash, urine/fecal matter in containers, CD rack, cardboard boxes w/ trash, rope, hand bin from Rite-Aid, backpack, 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 abanonded upon cleanup date.

Trash Collected:
No. of Trash Bags Filled: ~8 Dumpster % Fill: 50% Dumpster Size (cubic yds): 8

Lead Field Technician Certification (sign/ print):
"Cleaned area is free of all visible trash." - Jessica 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 ✓	Paper Products/ Biodegradable ✓	Household Items ✓
Landscape Materials	Aluminum/ Metal	Automotive
Toxic/ Hazardous Materials ✓	Glass ✓	Biohazardous ✓
Personal Effects ✓	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):

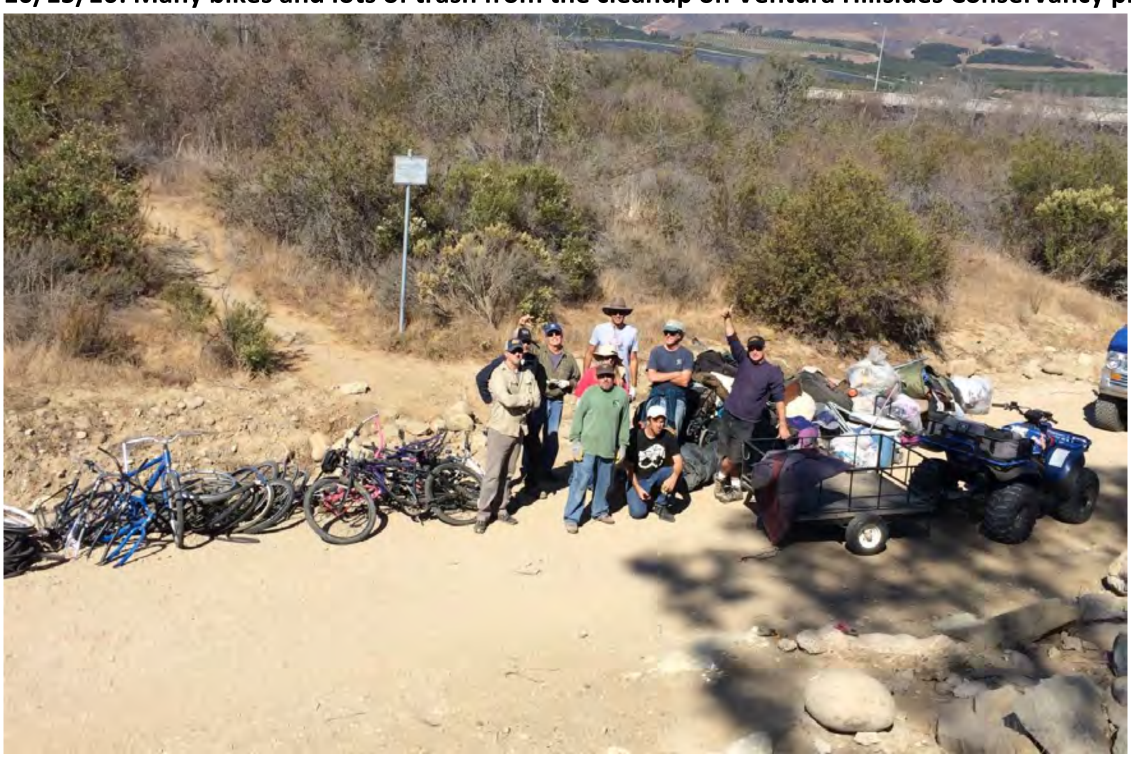
"Cleaned area is free of all visible trash." - [signature] Kate Furlong

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

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 fluídos 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...

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

CITY OF VENTURA

Caltrans

VENTURA COUNTY
Agricultural Irrigated Lands Group

cdfa

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

JANUARY 2018

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 Hillsides Conservancy)	Ventura County Watershed Protection District

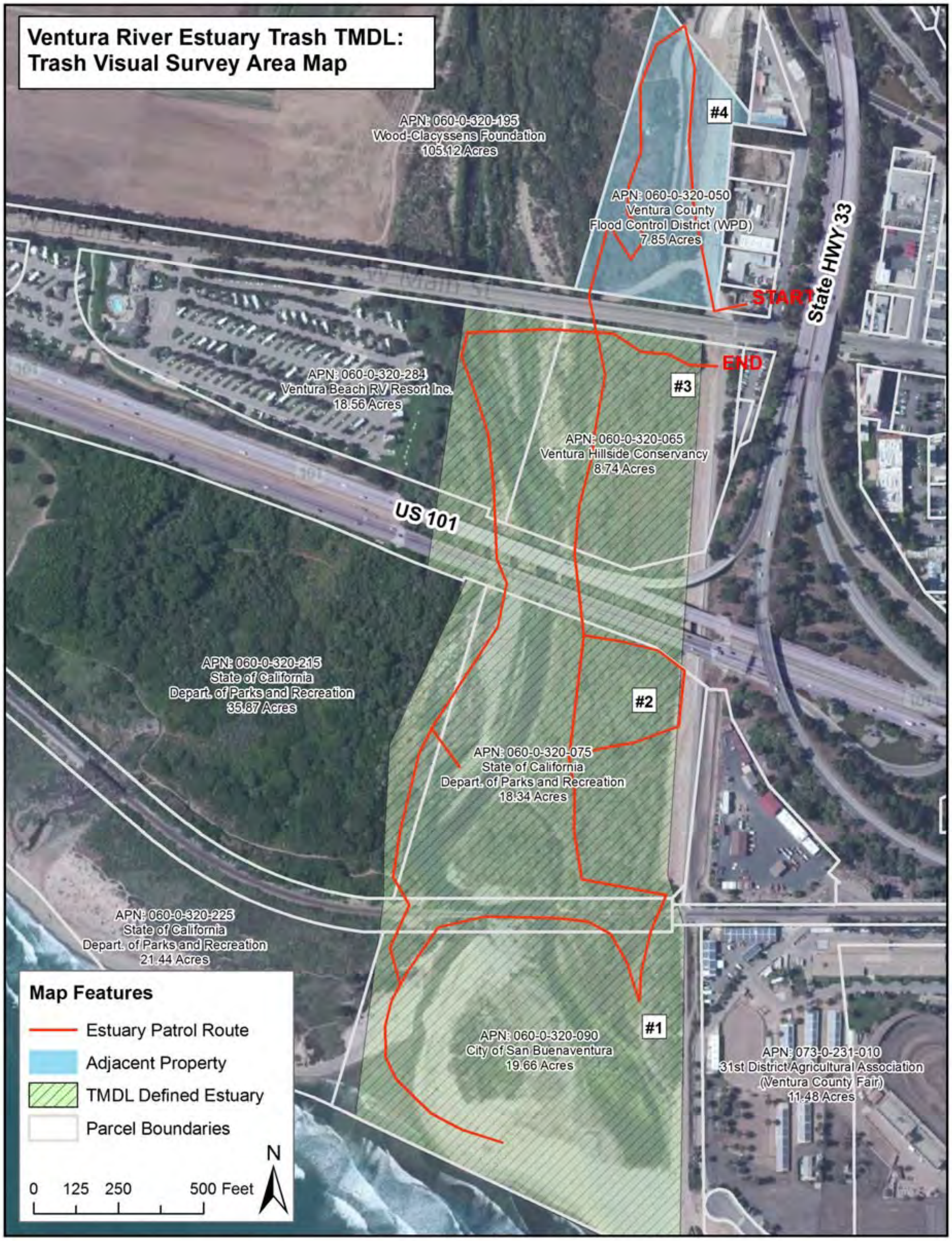

Figure 1. MFAC/BMP Program Monitoring Area and Assessment/Patrol Route

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	6/22/26	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	1/18/19	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	
5/25/27		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 binds emptied		X						X
40 Yard dens emptied		X						X
Straw and Hay Removal								X
Power Sweep			X					X
Storm Dain 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 binds 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 Dain 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 BPMs 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

CALLEGUAS CREEK

Watershed Management Plan

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,

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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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 Kjehdahl 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.

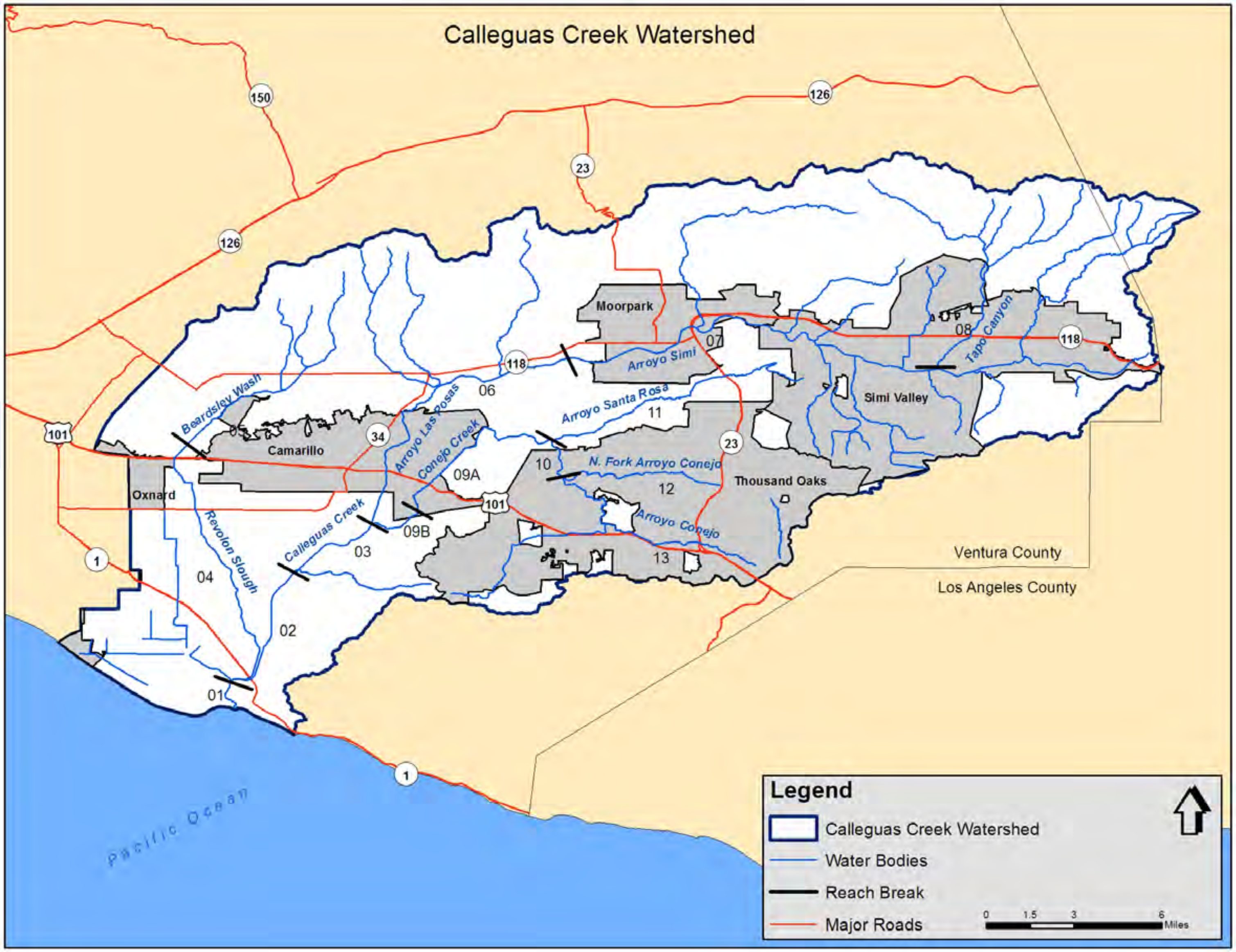


Figure 1. Calleguas Creek Watershed

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
Chronic Aquatic Toxicity	Quarterly + Two wet events
General Water Quality Constituents (GWQC)	Quarterly based on location + Two wet events
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)	
Nutrients	Quarterly + Two wet events
Ammonia Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Organic Nitrogen, Total Kjehdahl Nitrogen (TKN), Total Phosphorus, Orthophosphate-P	
Organic Constituents In Water	Quarterly + Two wet events
OC Pesticides [1] and PCBs [2], OP [3], Triazine [4], and Pyrethroid [5] Pesticides	
Metals and Selenium In Water [6]	Quarterly + Two wet events [7]
Copper, Mercury, Nickel, Zinc, and Selenium [8]	
Salts	
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
Chronic Sediment Toxicity	Annually (Every three years in Lagoon)
General Sediment Quality Constituents (GSQC)	Annually (Every three years in Lagoon)
Total Ammonia, Percent Moisture, Grain Size Analysis, Total Organic Carbon (TOC)	
Organic Constituents In Sediment	Annually (Every three years in Lagoon)
OC Pesticides[1] and PCBs[2], OP Pesticides[3], and Pyrethroids[5]	

Table 2. Constituents and Monitoring Frequency for CCWTMP (varies by site) - continued

Additional Constituents For Mugu Lagoon Sediment	Every three years
Metals[9]	
Tissue	Annually (Every three years in Lagoon)
Percent Lipids, OC Pesticides[1] and PCBs[10], OP Pesticides[3], and Metals[11]	

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 congers.
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]
Organic Constituents in Water – Grain Size Fractions [1]	One wet event annually
OC Pesticides and PCBs, OP, and Pyrethroid Pesticides	
Organic Constituents in Sediment – Grain Size Fractions [1]	Annually (Every three years in Mugu Lagoon)
OC Pesticides and PCBs, OP, and Pyrethroid Pesticides	
Additional Constituents for Mugu Lagoon Sediment	Every three years [2]
Macrobenthic community assessment	
Sediment Toxicity – *Eohaustorius estuaries and Mytilus galloprovincialis*	
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 handing 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 Lat	GPS Coordinates Long	Pests/ PCBs	Nutrients	Metal	Salts	GWQC
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
Revolon Slough	04D_WOOD	4	Ag	Agricultural Drain on E. Side of Wood Rd N. of Revolon	34.1708	-119.0963	6	6	6	6	6
	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	Camarilo 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
Conejo	9BD_GERRY [2]	9A [2]	Ag	Drainage ditch crossing Santa Rosa Rd at Gerry Rd	34.2358	-118.9446	6	6	6	6	6
	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	2nd corrugated pipe discharging on north side of Arroyo Simi flood control levee off of Hitch Blvd just beyond 1st 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 5th 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

Subwatershed	Site ID	Reach	Site Location	GPS Coordinates Lat	GPS Coordinates Long	Tox	Pests/PCBs	GWQC
Sediment Toxicity Investigation [1]								
Calleguas	02_PCH	2	Calleguas Creek Northeast Side Of Highway 1 Bridge	34.1119	-119.0818	1	1	1
Calleguas	9A_HOWAR [2]	9B [2]	Conejo Creek At Howard Road Bridge	34.1931	-119.0025	1	1	1
Water Toxicity Investigation [1, 3]								
Conejo	10_GATE	10	Conejo Creek Hill Canyon Below North Fork Of Conejo Creek	34.2178	-118.9281	6	6	6
Conejo	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.

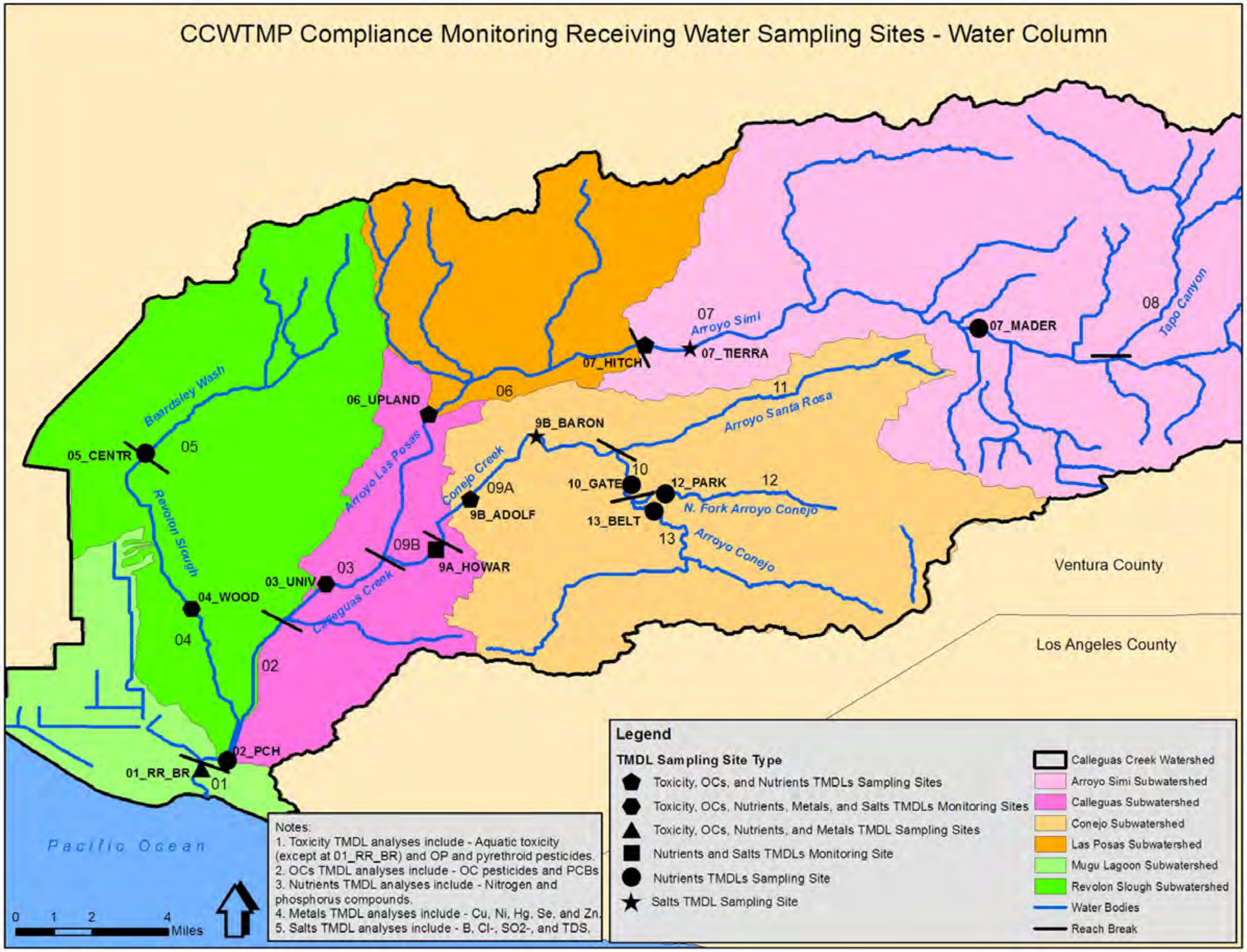


Figure 2. CCWTMP Compliance Monitoring Sampling Sites – Receiving Water

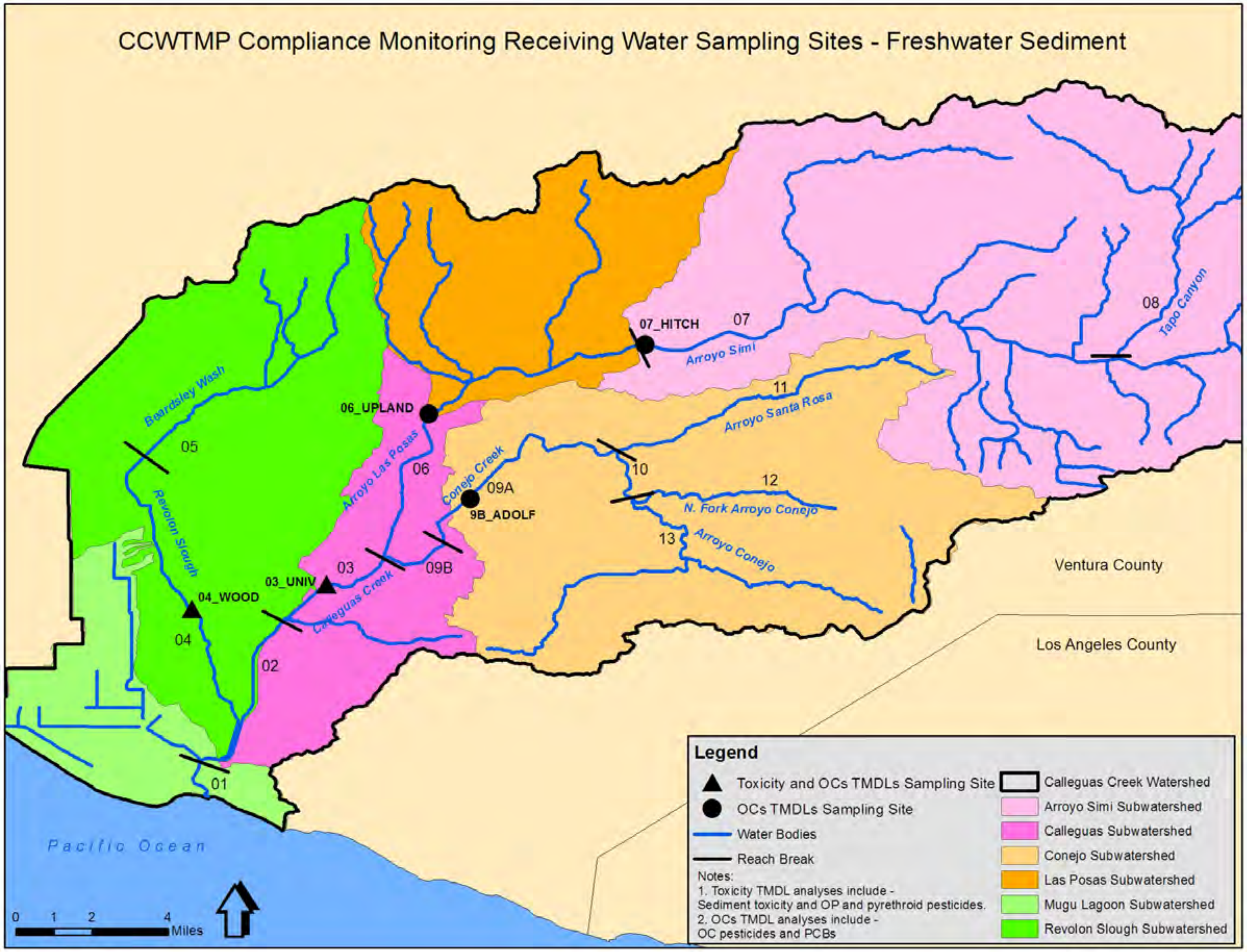


Figure 3. CCWMTP Compliance Monitoring Receiving Water Sampling Sites – Freshwater Sediment

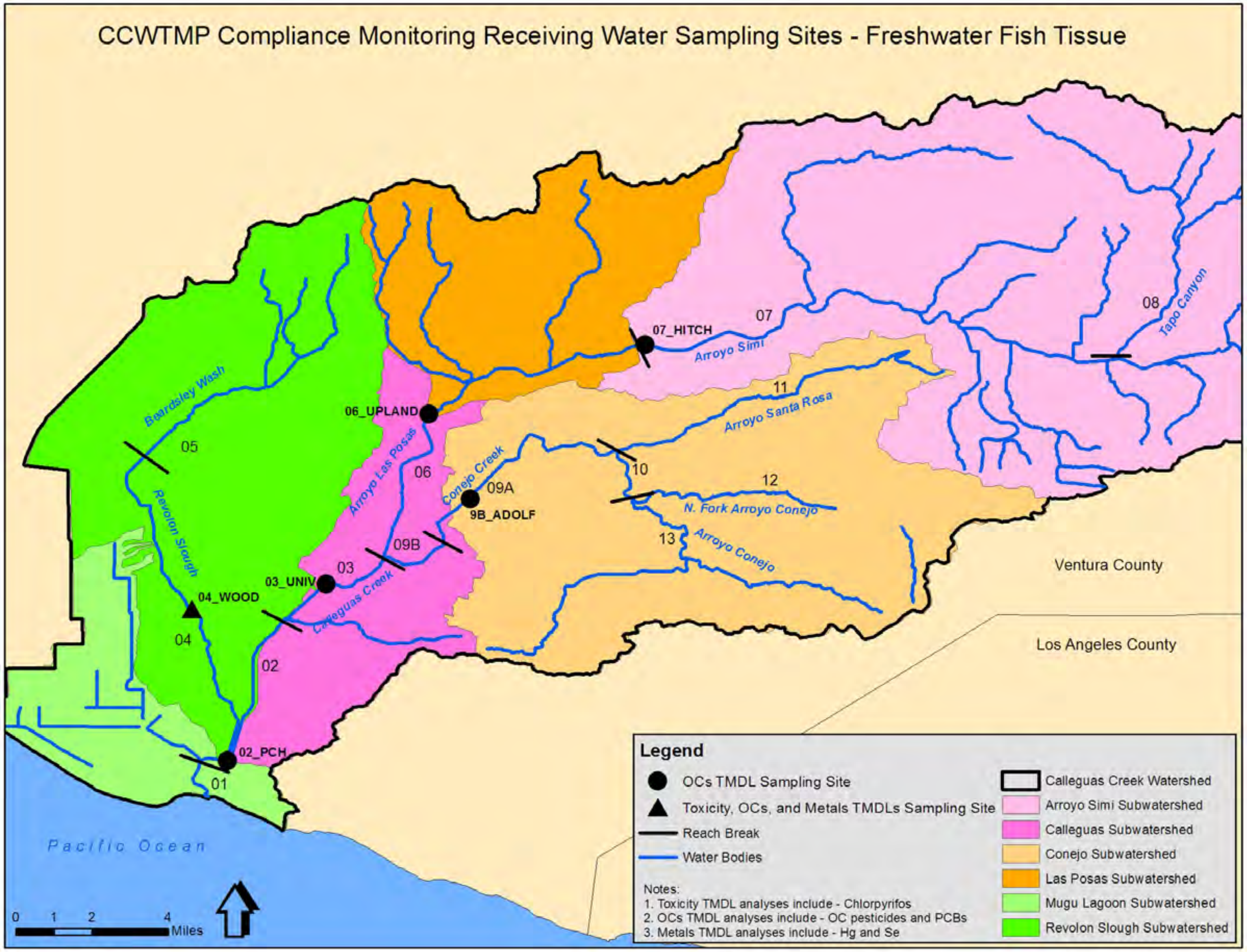


Figure 4. CCWMTP Compliance Monitoring Sampling Sites – Freshwater Fish Tissue

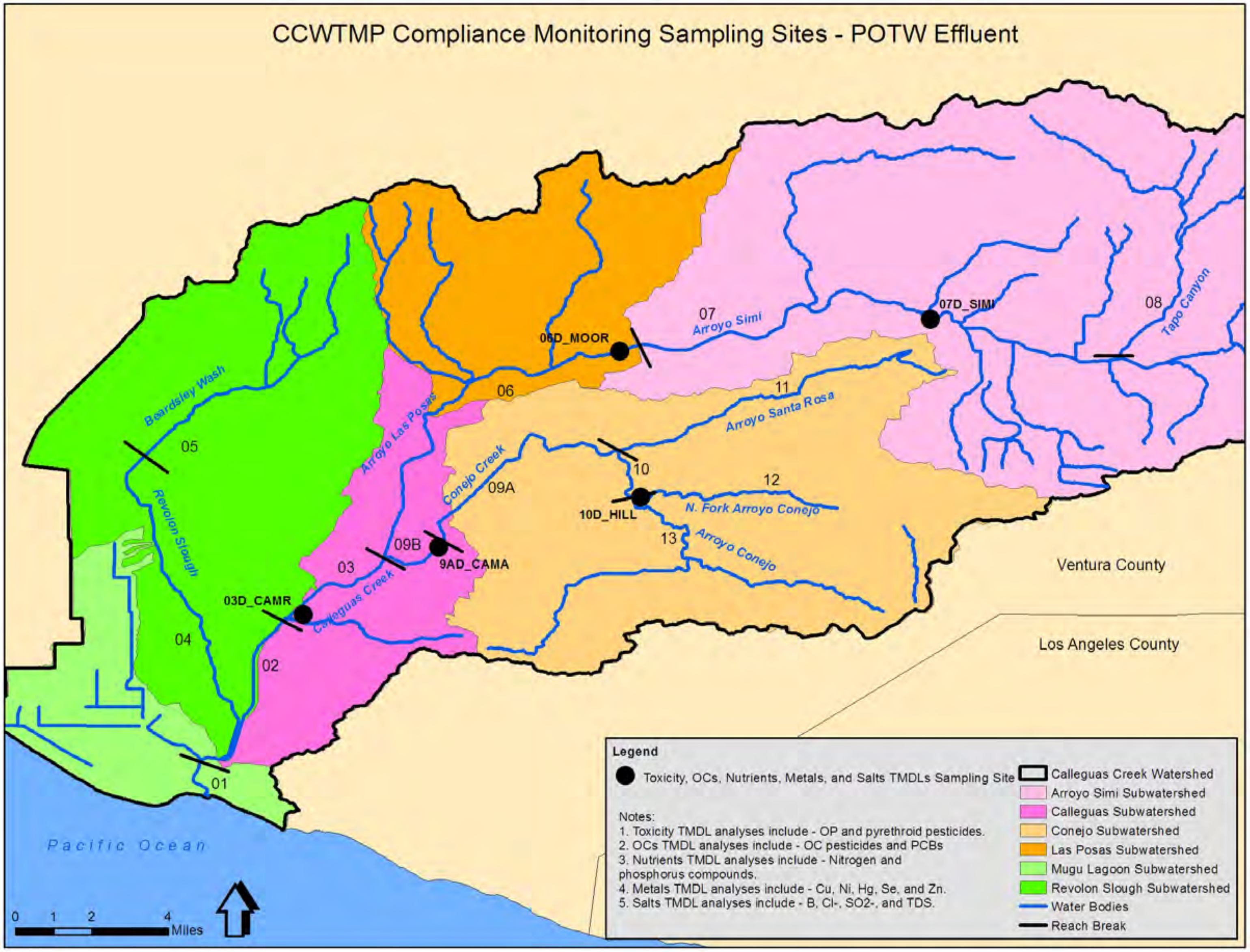


Figure 5. CCWMTP Compliance Monitoring Sampling Sites – POTW Effluent

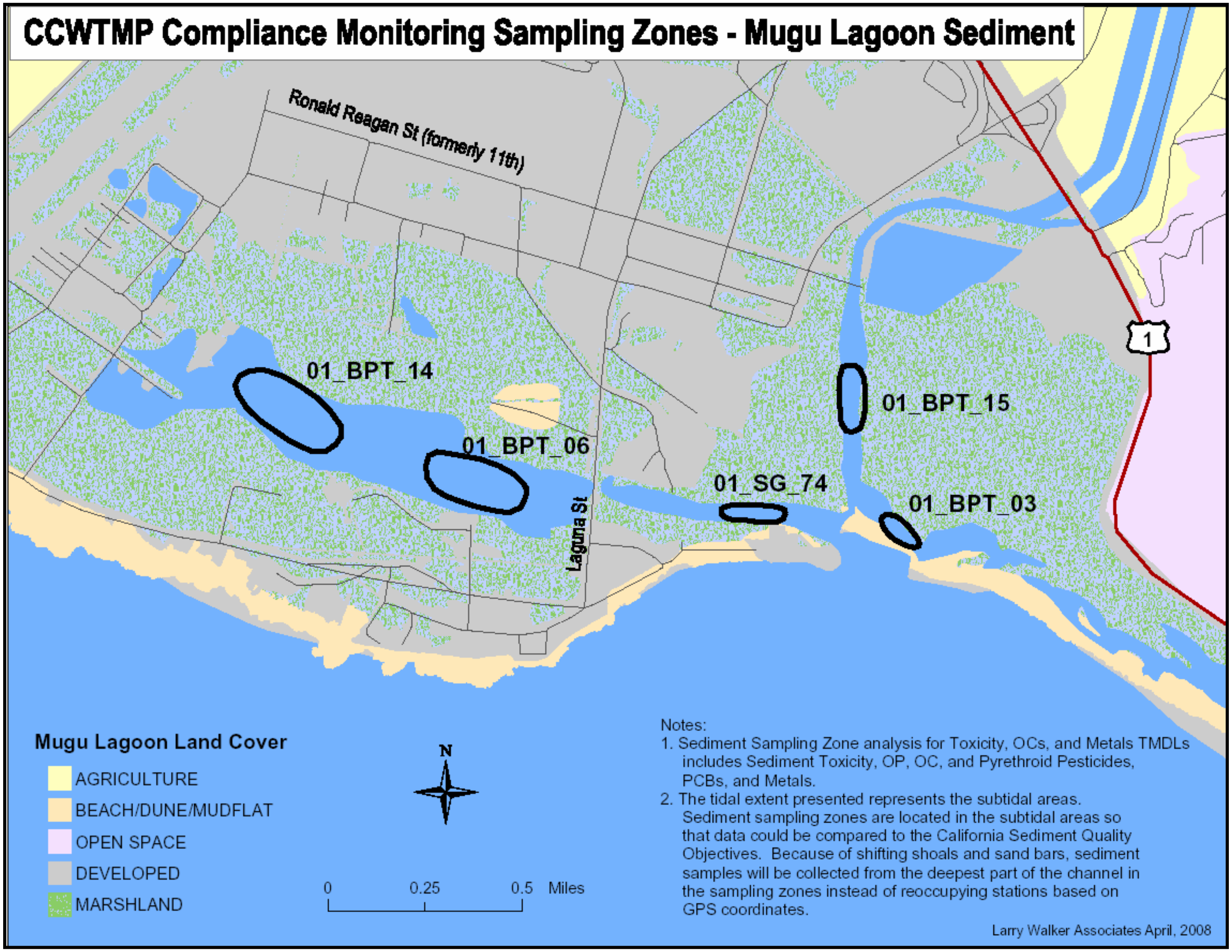


Figure 6. CCWMTP Compliance Monitoring Sampling Zones – Mugu Lagoon Sediment

Figure 7. CCWTMP Compliance Monitoring Sampling Zones – Mugu Lagoon Tissue

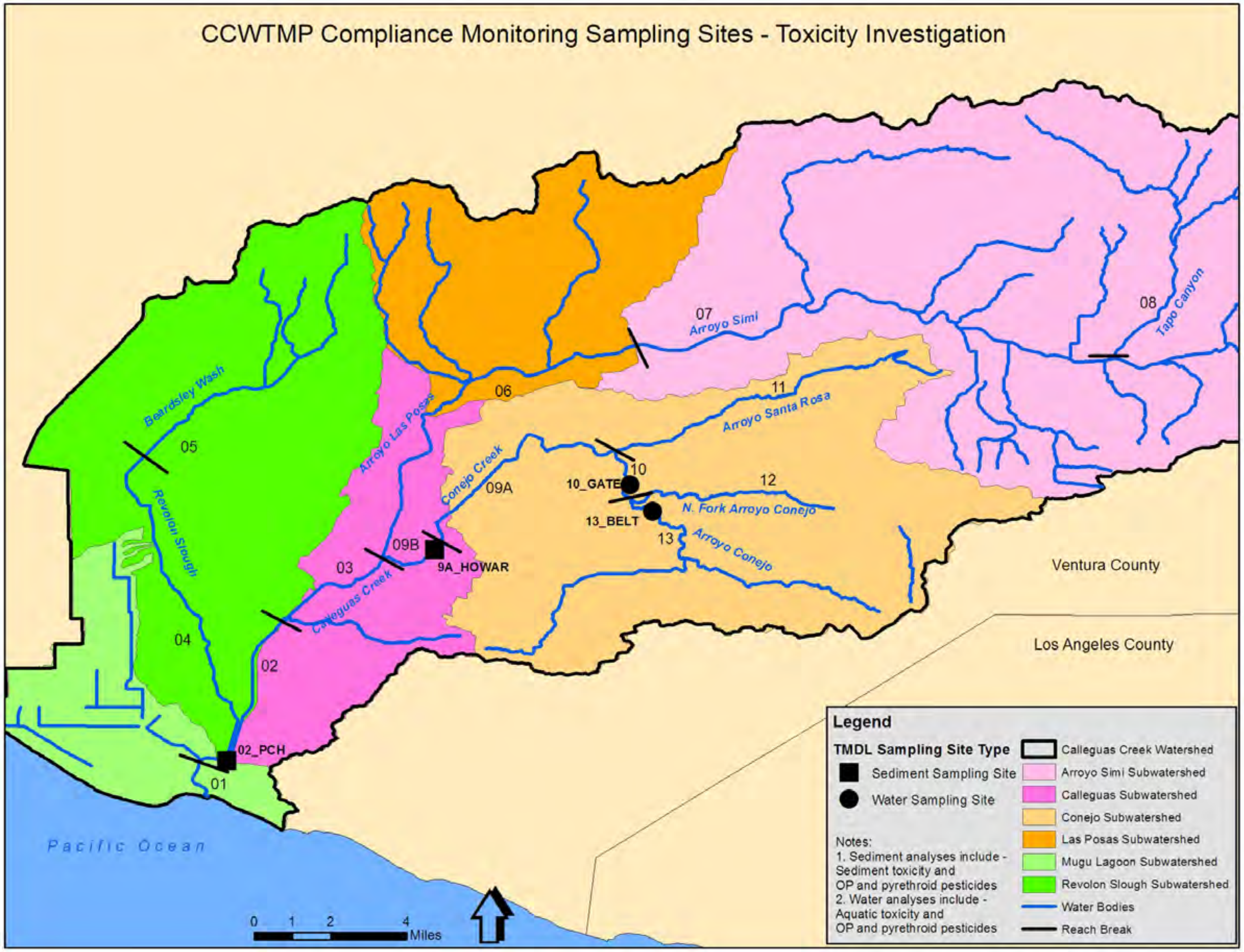


Figure 8. CCWTMP Toxicity Investigation Receiving Water Sampling Sites – Water and Sediment

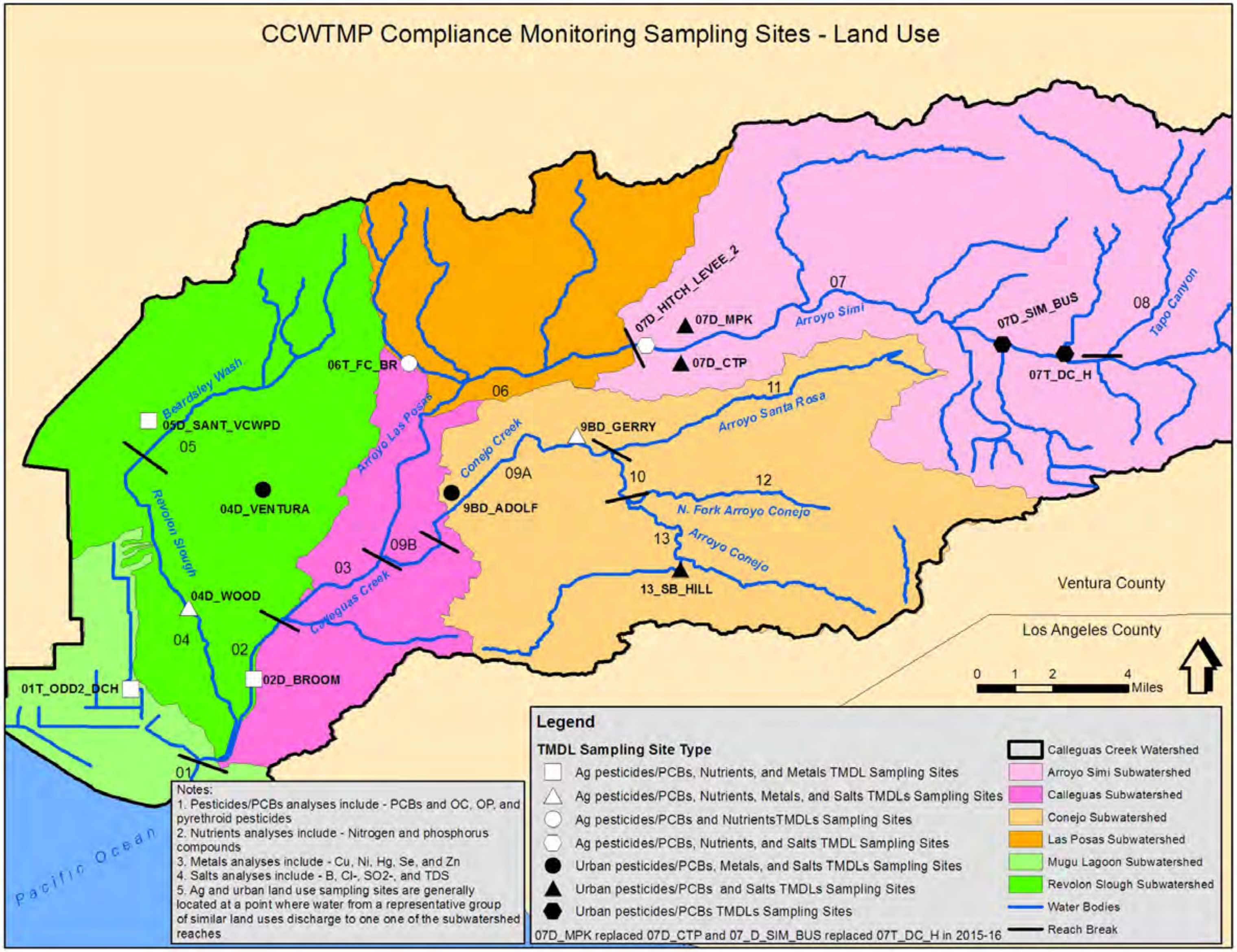


Figure 9. CCWTMP Land Use Sampling Sites

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

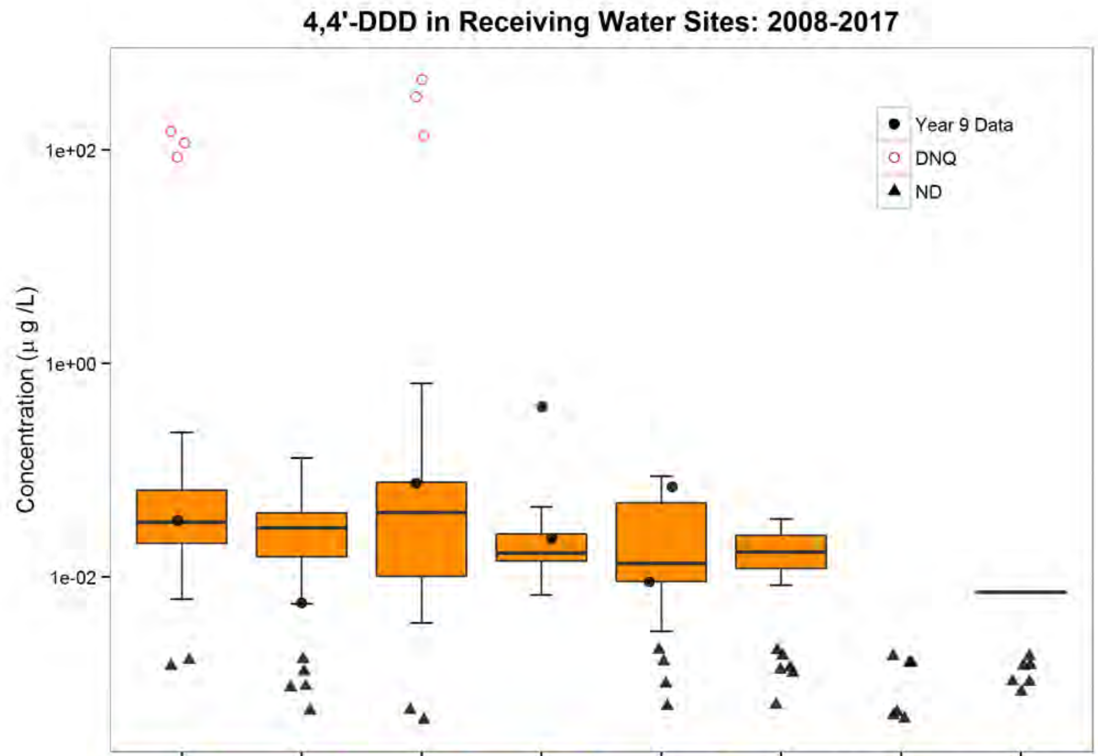
Urban Land Use (MS4) Sites:	
Reach 4	04D_VENTURA
Reach 7[1]	07D_MPK[1]
Reach 7[1]	07D_SIM_BUS[1]
Reach 9A [2]	9BD_ADOLF [2]
Reach 13	13_SB_HILL
Ag Land Use Sites:	
Reach 1	01T_ODD2_DCH
Reach 2	02D_BROOM
Reach 4	04D_WOOD
Reach 5	05D_SANT_VCWPD
Reach 6	06T_FC_BR
Reach 7	07D_HITCH_LEVEE_2
Reach 9A [2]	9BD_GERRY [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

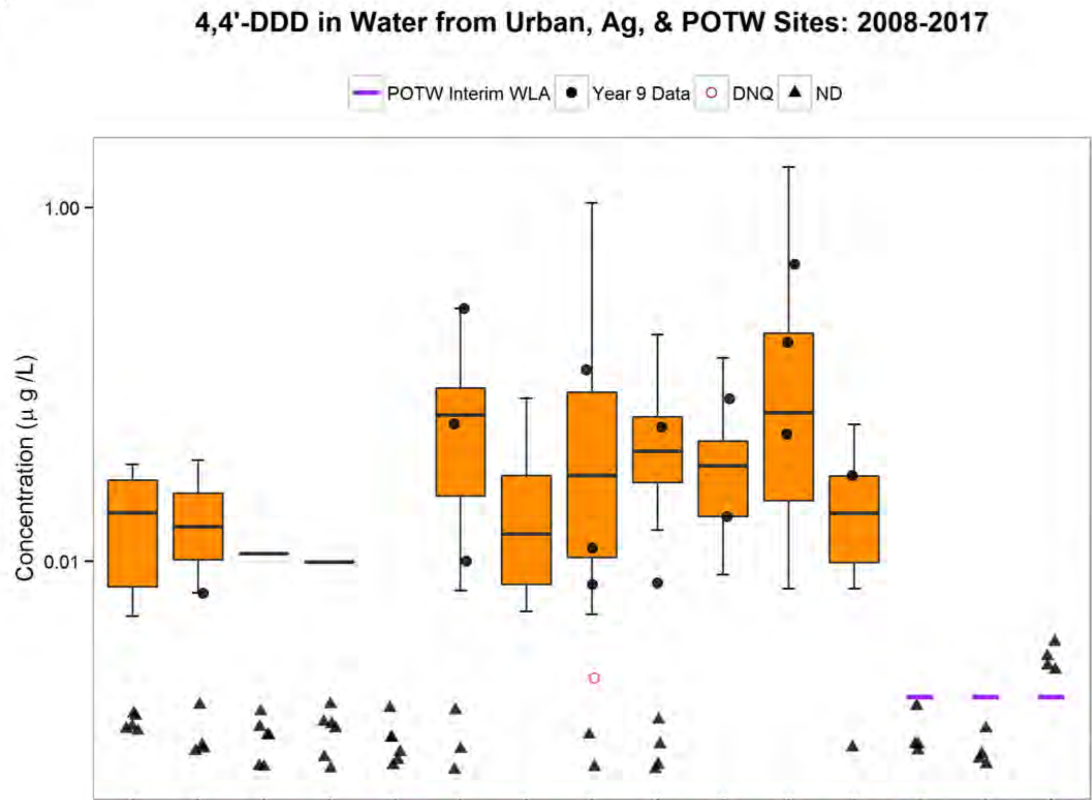
(ND) at MDL for that constituent; values identified as "--" in the tables indicate no samples were collected at those sites for those events.



Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_UPLAND[1]	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Aug-16	Dry	56	*0.0018*	<0.001	*0.0016*	--	<0.001	<0.001	<0.001	<0.001
Nov-16	Dry	57	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001
Dec-16	Storm	58	*0.0031*	<0.001	<0.001	0.0233	0.0091	<0.001	<0.001	<0.001
Jan-17	Storm	59	0.0326	0.0056	0.0741	0.3868	0.0678	<0.001	<0.001	<0.001
Feb-17	Dry	60	*0.0029*	<0.001	*0.0034*	--	<0.001	<0.001	<0.001	<0.001
May-17	Dry	61	<0.001	<0.001	*0.0019*	--	<0.001	<0.001	<0.001	<0.001

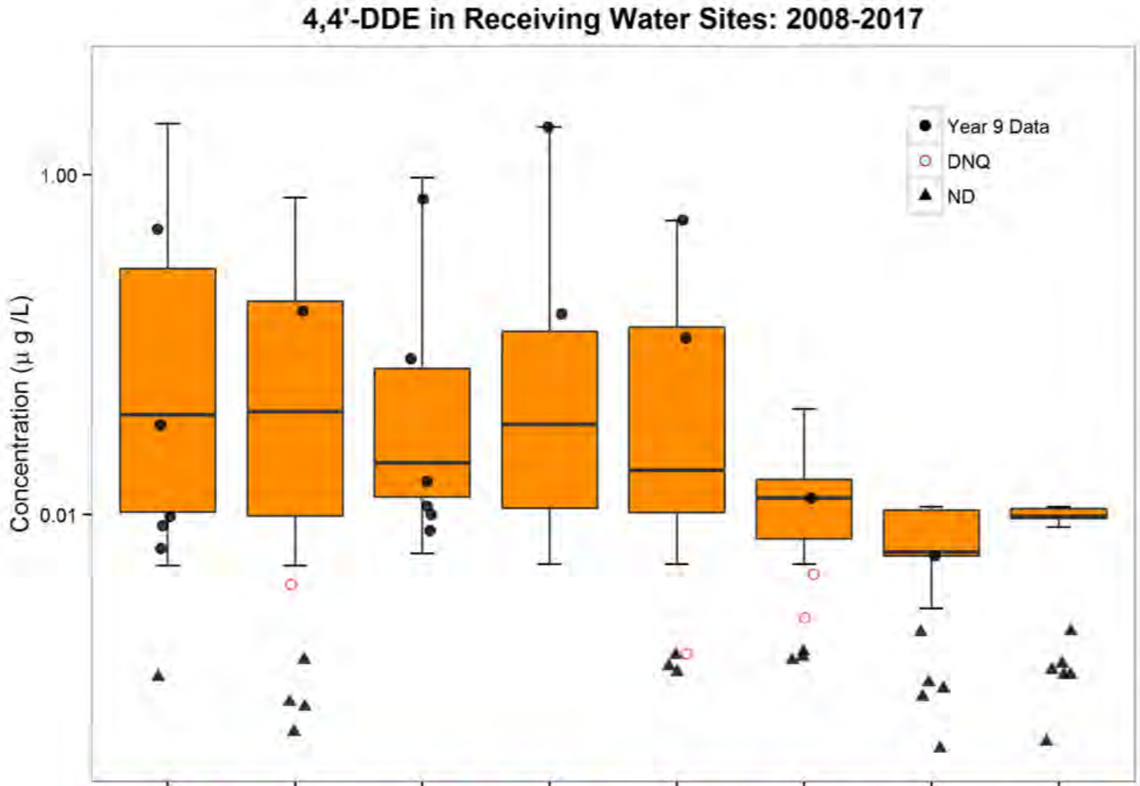
1. Access to 06_SOMIS was revoked during Year 8 and was replaced by 06_UPLAND in Year 9. All collected data prior to event 56 were obtained from 06_SOMIS. This footnote applies to all boxplots with 06_UPLAND.

Figure 10. 4,4'-DDD Water Column Concentrations in Receiving Water Sites: 2008-2017



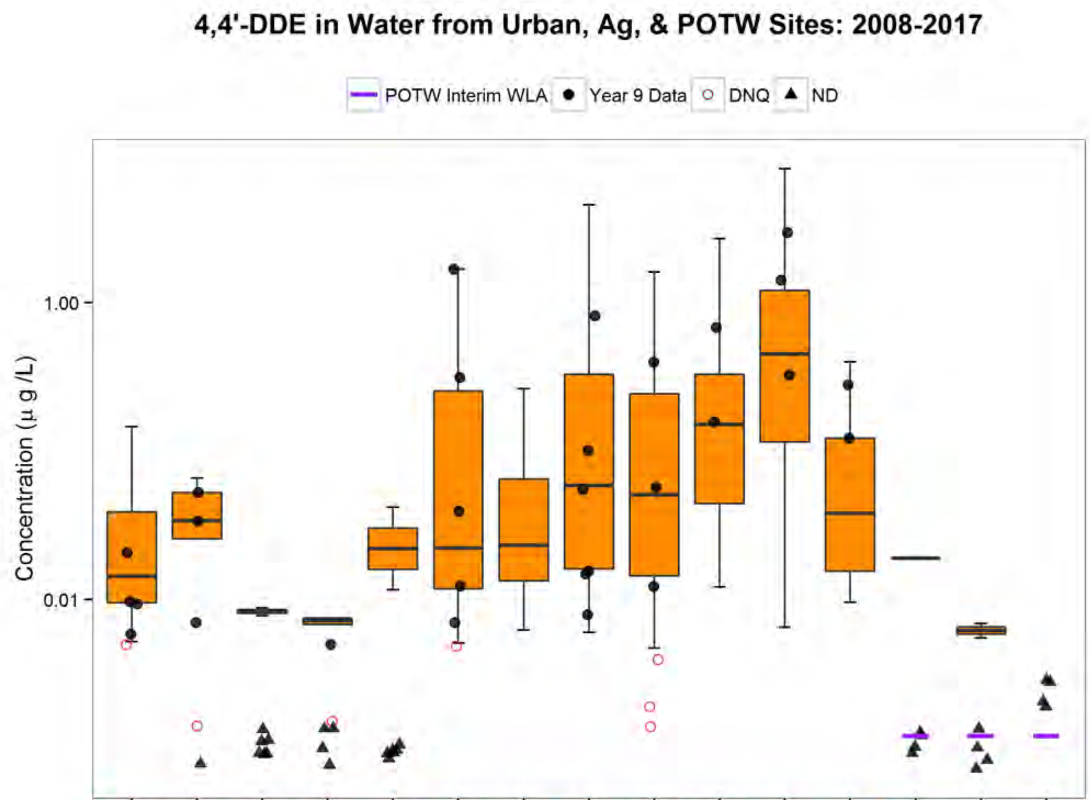
Date	Type	Event	04D_VENTURA	07D_MPK	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-16	Dry	56	--	<0.001	<0.001	<0.001	<0.001	0.0100	--	<0.001	<0.001	--	--	--	<0.001	<0.001	<0.003
Nov-16	Dry	57	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	--	--	--	<0.001	<0.001	<0.003
Dec-16	Storm	58	<0.001	<0.001	<0.001	<0.001	<0.001	0.0598	--	0.0118	0.0075	0.0825	0.1716	<0.001	NS	NS	NS
Jan-17	Storm	59	<0.001	0.0070	<0.001	<0.001	<0.001	0.2679	--	0.1210	0.0569	0.0178	0.4785	0.0303	NS	NS	NS
Feb-17	Dry	60	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	*0.0043*	<0.001	--	0.0520	--	<0.001	<0.001	<0.003
May-17	Dry	61	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	0.0074	<0.001	--	--	--	<0.001	<0.001	<0.003

Figure 11. 4,4'-DDD Water Column Concentrations in Urban, Ag, and POTW Sites: 2008-2017



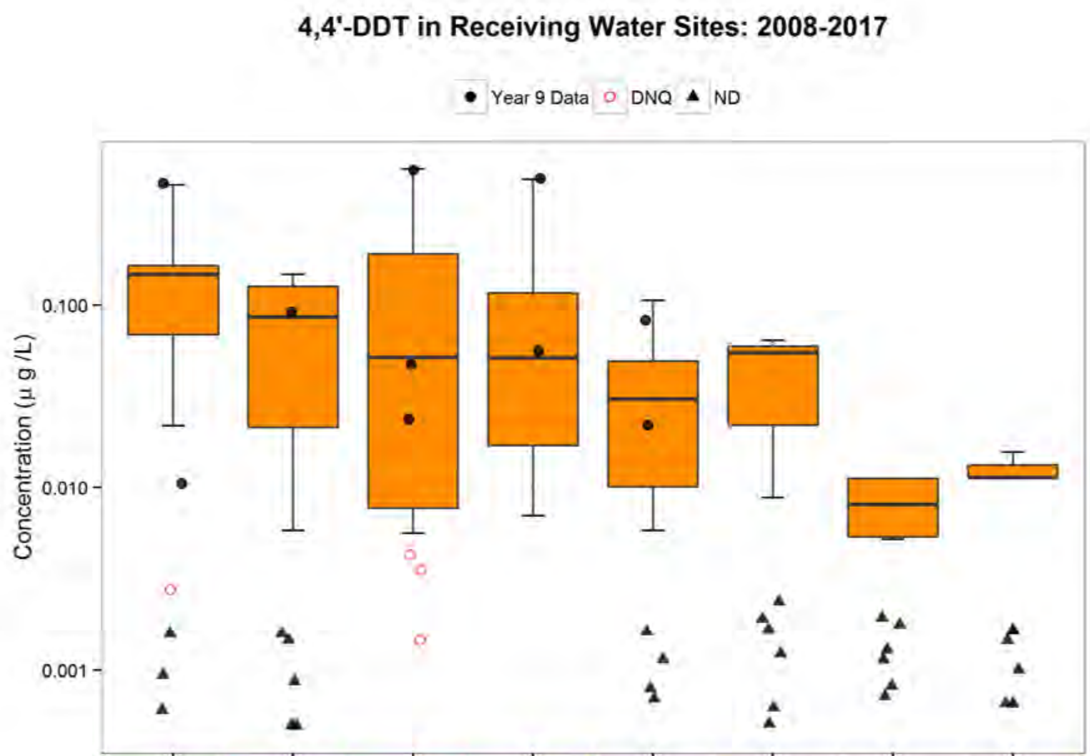
Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_UPLAND	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Aug-16	Dry	56	0.0097	*0.0036*	0.0111	--	*0.0015*	*0.0044*	0.0057	<0.001
Nov-16	Dry	57	0.0063	<0.001	0.0080	--	<0.001	<0.001	<0.001	<0.001
Dec-16	Storm	58	0.0333	<0.001	0.0821	0.1525	0.1088	*0.0023*	<0.001	<0.001
Jan-17	Storm	59	0.4791	0.1586	0.7193	1.9045	0.5360	0.0125	<0.001	<0.001
Feb-17	Dry	60	0.0086	<0.001	0.0156	--	<0.001	<0.001	<0.001	<0.001
May-17	Dry	61	0.0010	<0.001	0.0100	--	<0.001	<0.001	<0.001	<0.001

Figure 12. 4,4'-DDE Water Column Concentrations in Receiving Water Sites: 2008-2017



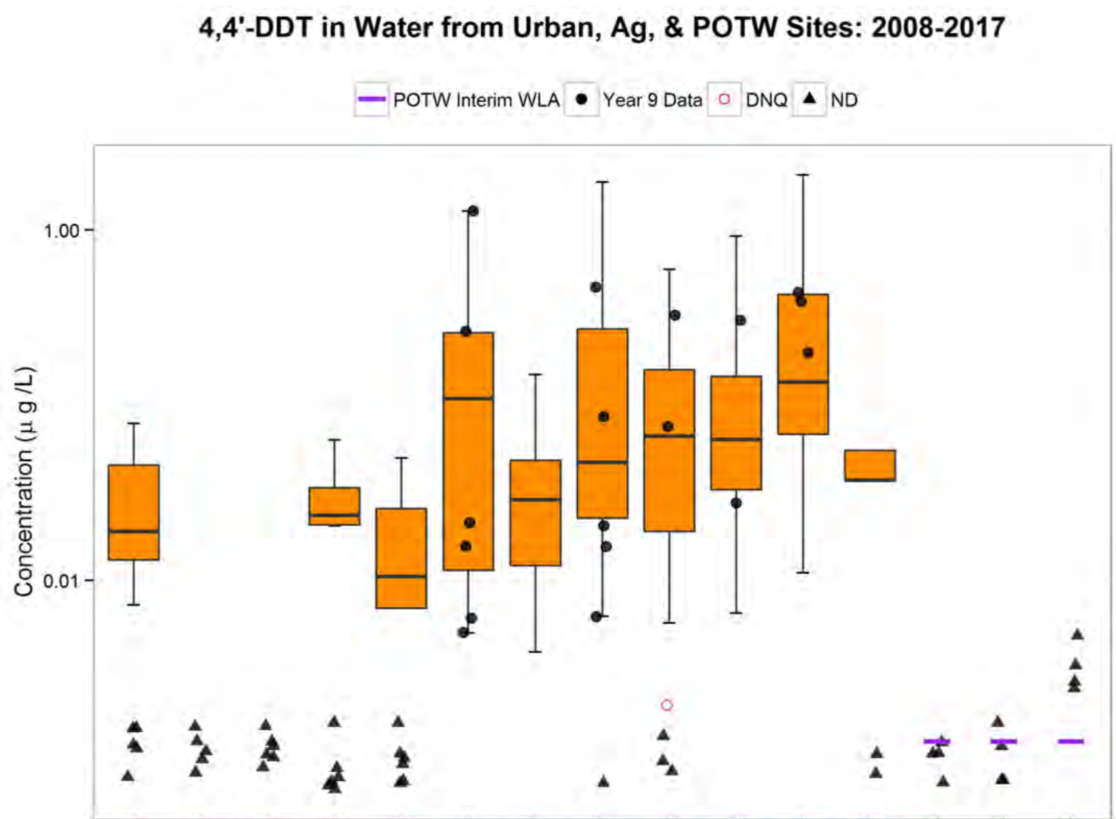
Date	Type	Event	04D_VENTURA	07D_MPK	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWP D	06T_FC_BR	07D_HITCH_LEVEE _2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-16	Dry	56	–	*0.0014*	<0.001	*0.0015*	<0.001	0.0389	--	0.0155	0.0014	–	–	–	<0.001	<0.001	<0.002
Nov-16	Dry	57	0.0207	–	<0.001	<0.001	<0.001	0.0070	--	0.0079	0.0039	–	–	–	<0.001	<0.001	<0.002
Dec-16	Storm	58	*0.0049*	0.0338	<0.001	<0.001	<0.001	0.3118	--	0.1000	0.0569	0.6789	1.412	0.2781	NS	NS	NS
Jan-17	Storm	59	0.0096	0.0524	<0.001	0.005	<0.001	1.6777	--	0.8102	0.3945	0.1573	2.9702	0.1219	NS	NS	NS
Feb-17	Dry	60	0.0093	0.0070	<0.001	<0.001	<0.001	0.0123	--	0.0148	0.0019	–	0.3237	–	<0.001	<0.001	<0.002
May-17	Dry	61	0.0058	<0.001	<0.001	<0.001	<0.001	0.0048	--	0.0550	0.0122	–	–	–	<0.001	<0.001	<0.002

Figure 13. 4,4'-DDE Water Column Concentrations in Urban, Ag, and POTW Sites: 2008-2017



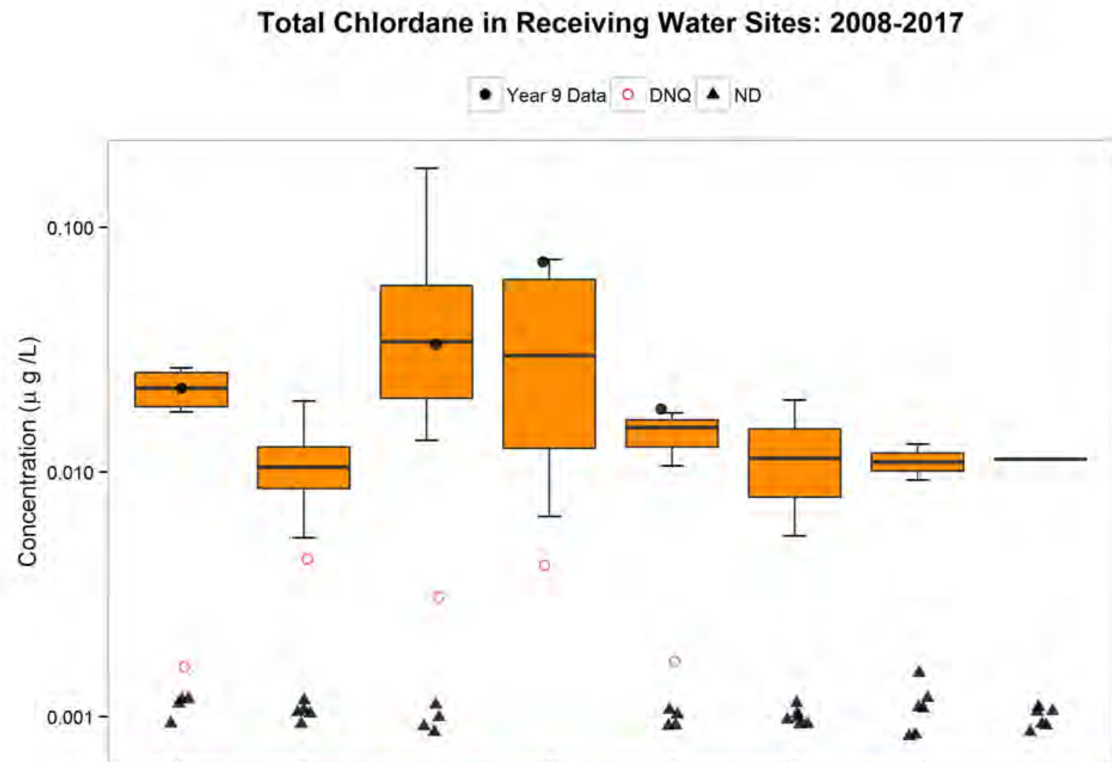
Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_UPLAND	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Aug-16	Dry	56	*0.0025*	<0.001	*0.0014*	--	<0.001	<0.001	<0.001	<0.001
Nov-16	Dry	57	<0.001	<0.001	*0.0041*	--	<0.001	<0.001	<0.001	<0.001
Dec-16	Storm	58	<0.001	<0.001	0.0465	0.0554	0.0215	<0.001	<0.001	<0.001
Jan-17	Storm	59	0.4533	0.0920	0.5559	0.4875	0.0809	<0.001	<0.001	<0.001
Feb-17	Dry	60	0.0103	<0.001	0.0231	--	<0.001	<0.001	<0.001	<0.001
May-17	Dry	61	<0.001	<0.001	*0.0032*	--	<0.001	<0.001	<0.001	<0.001

Figure 14. 4,4'-DDT Water Column Concentrations in Receiving Water Sites: 2008-2017



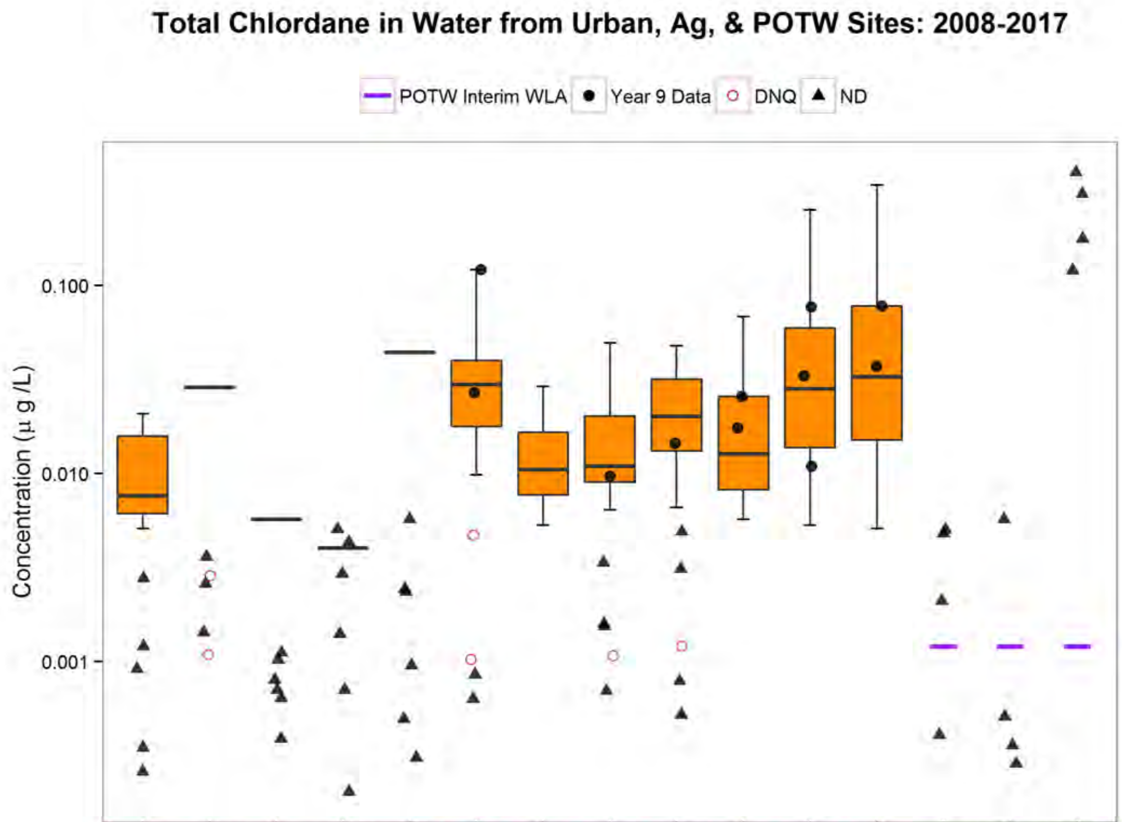
Date	Type	Event	04D_VENTURA	07D_MPK	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-16	Dry	56	--	<0.001	<0.001	<0.001	<0.001	0.0213	--	0.0062	*0.0039*	--	--	--	<0.001	<0.001	<0.003
Nov-16	Dry	57	<0.001	--	<0.001	<0.001	<0.001	0.005	--	<0.001	<0.001	--	--	--	<0.001	<0.001	<0.003
Dec-16	Storm	58	<0.001	<0.001	<0.001	<0.001	<0.001	0.2618	--	0.0862	0.0749	0.3041	0.3876	<0.001	NS	NS	NS
Jan-17	Storm	59	<0.001	<0.001	<0.001	<0.001	<0.001	1.2790	--	0.4686	0.3273	0.0274	0.4395	<0.001	NS	NS	NS
Feb-17	Dry	60	<0.001	<0.001	<0.001	<0.001	<0.001	0.0155	--	0.0155	<0.001	--	0.1996	--	<0.001	<0.001	<0.003
May-17	Dry	61	<0.001	<0.001	<0.001	<0.001	<0.001	0.0061	--	0.0205	<0.001	--	--	--	<0.001	<0.001	<0.003

Figure 15. 4,4'-DDT Water Column Concentrations in Urban, Ag, and POTW Sites: 2008-2017



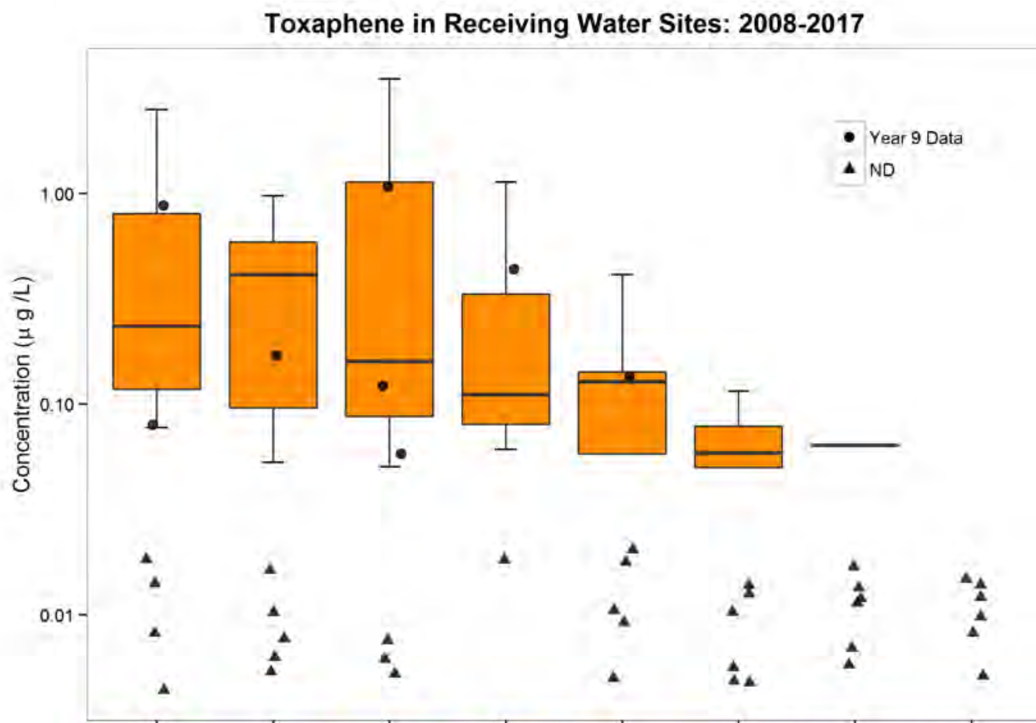
Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_UPLAND	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Aug-16	Dry	56	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001
Nov-16	Dry	57	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001
Dec-16	Storm	58	*0.0016*	<0.001	*0.0031*	*0.0042*	*0.0017*	<0.001	<0.0016	<0.001
Jan-17	Storm	59	0.0218	*0.0045*	0.0340	0.0741	0.0175	<0.001	<0.001	<0.001
Feb-17	Dry	60	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001
May-17	Dry	61	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001

Figure 16. Total Chlordane Water Column Concentrations in Receiving Water Sites: 2008-2017



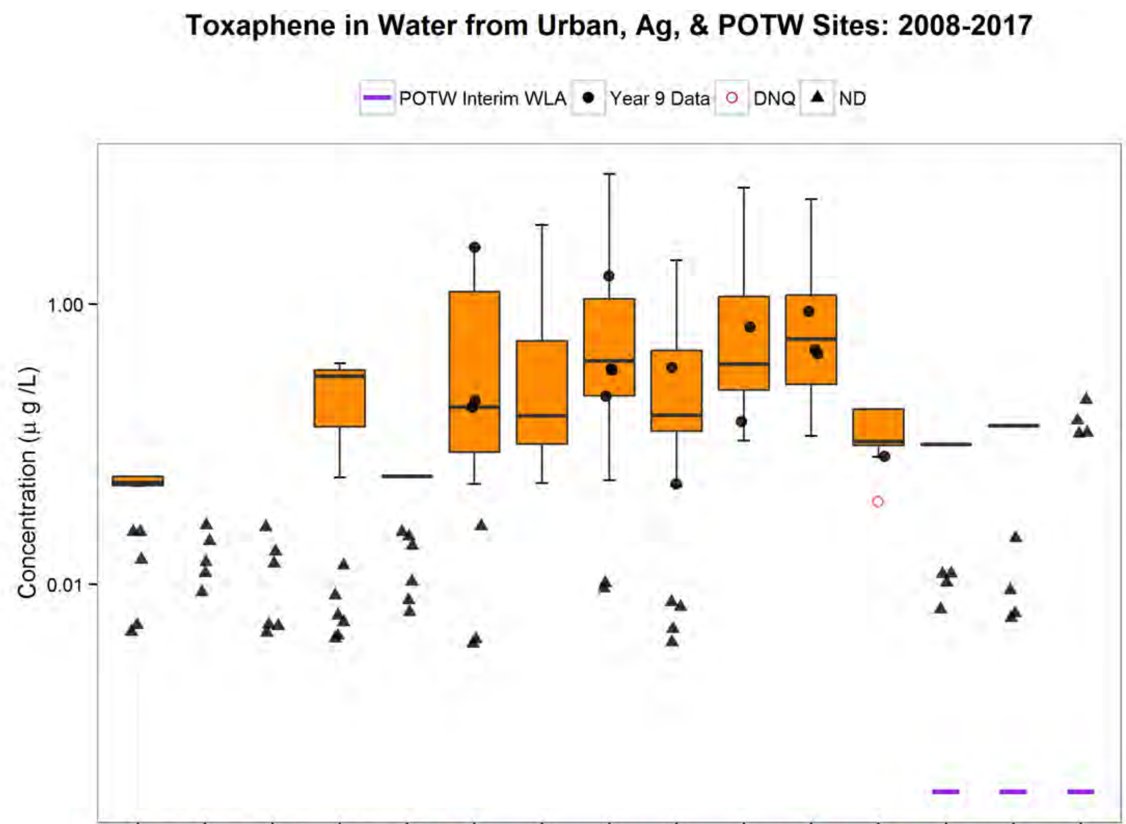
Date	Type	Event	04D_VENTURA	07D_MPK	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT _VCWPD	06T_FC_BR	07D_HITCH _LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-16	Dry	56	--	<0.001	<0.001	<0.001	<0.001	*0.0047*	--	<0.001	<0.001	--	--	--	<0.001	<0.001	<0.08
Nov-16	Dry	57	<0.001	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	--	--	--	<0.001	<0.001	<0.08
Dec-16	Storm	58	<0.001	*0.0029*	<0.001	<0.001	<0.001	*0.0271*	--	*0.0011*	*0.0012*	0.0174	0.0332	0.0776	NS	NS	NS
Jan-17	Storm	59	<0.001	*0.0022*	<0.001	<0.001	<0.001	0.1212	--	0.0096	0.0145	0.0257	0.0766	0.0371	NS	NS	NS
Feb-17	Dry	60	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	--	0.0109	--	<0.001	<0.001	<0.08
May-17	Dry	61	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	--	--	--	<0.001	<0.001	<0.08

Figure 17. Total Chlordane Water Column Concentrations in Urban, Ag, and POTW Sites: 2008-2017



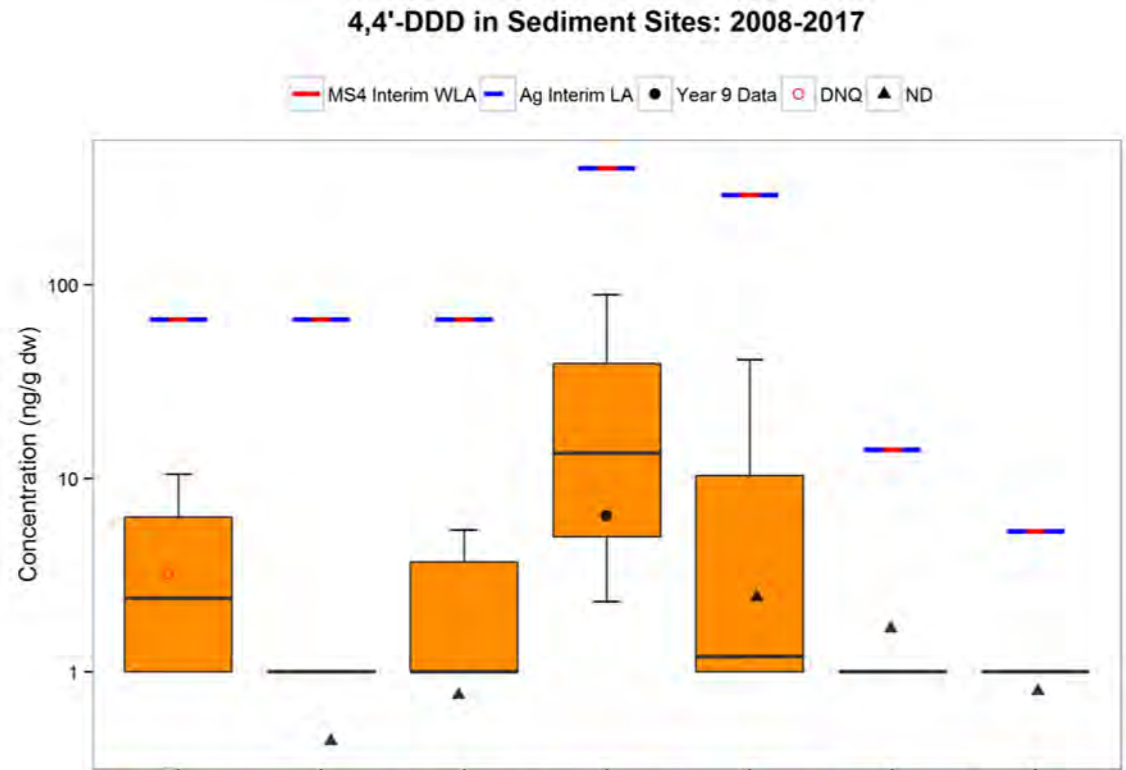
Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_UPLAND	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Aug-16	Dry	56	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01
Nov-16	Dry	57	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01
Dec-16	Storm	58	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Jan-17	Storm	59	0.8789	0.1806	1.1084	0.4683	0.1419	<0.01	<0.01	<0.01
Feb-17	Dry	60	0.0835	<0.01	0.1179	--	<0.01	<0.01	<0.01	<0.01
May-17	Dry	61	<0.01	<0.01	0.0615	--	<0.01	<0.01	<0.01	<0.01

Figure 18. Toxaphene Water Column Concentrations in Receiving Water Sites: 2008-2017



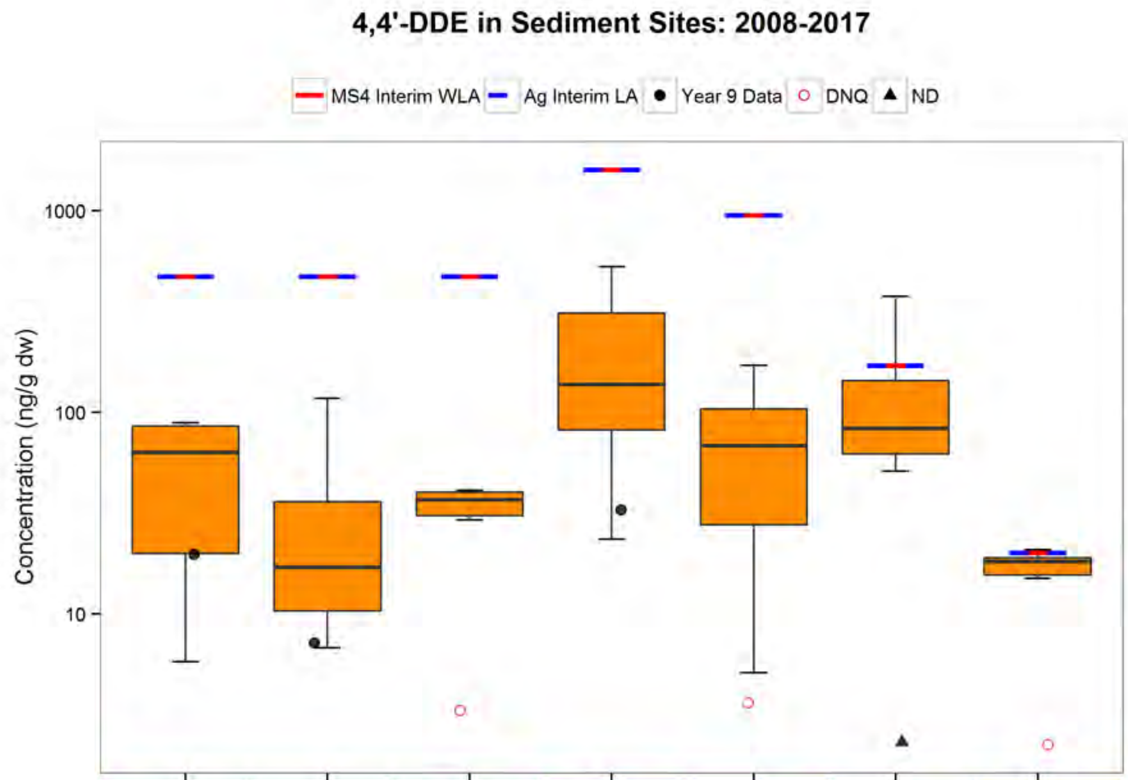
Date	Type	Event	04D_VENTURA	07D_MPK	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-16	Dry	56	--	<0.01	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01	--	--	--	<0.01	<0.01	<0.12
Nov-16	Dry	57	<0.01	--	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01	--	--	--	<0.01	<0.01	<0.12
Dec-16	Storm	58	<0.01	<0.01	<0.01	<0.01	<0.01	0.1827	--	0.2219	<0.01	0.6914	0.4415	0.0813	NS	NS	NS
Jan-17	Storm	59	<0.01	<0.01	<0.01	<0.01	<0.01	2.5499	--	1.5831	0.354	0.1450	0.8927	*0.0163*	NS	NS	NS
Feb-17	Dry	60	<0.01	<0.01	<0.01	<0.01	<0.01	0.2058	--	0.345	0.0522	--	0.4724	--	<0.01	<0.01	<0.12
May-17	Dry	61	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--	0.3363	<0.01	--	--	--	<0.01	<0.01	<0.12

Figure 19. Toxaphene Water Column Concentrations in Urban, Ag, and POTW Sites: 2008-2017



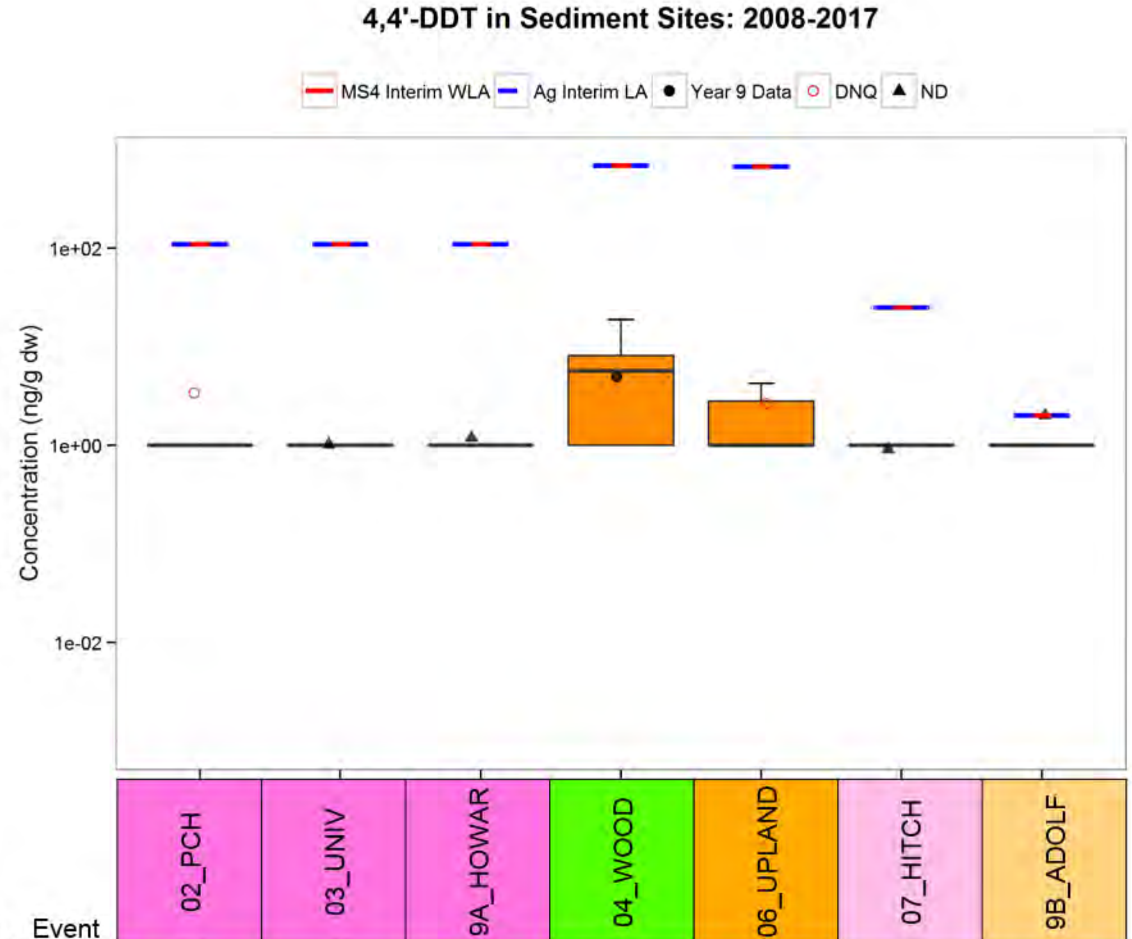
Date	Type	Event	02_PCH	03_UNIV	9A_HOWAR	04_WOOD	06_UPLAND	07_HITCH	9B_ADOLF
Aug-16	Dry	56	2	<1	<1	5	<1	<1	<1

Figure 20. 4,4’-DDD Sediment Concentrations in Receiving Water Sites: 2008-2017



Date	Type	Event	02_PCH	03_UNIV	9A_HOWAR	04_WOOD	06_UPLAND	07_HITCH	9B_ADOLF
Aug-16	Dry	56	20.6	6.8	*3.1*	36.5	*3.8*	<1	*2.1*

Figure 21. 4,4'-DDE Sediment Concentrations in Receiving Water Sites: 2008-2017



Date	Type	Event	02_PCH	03_UNIV	9A_HOWAR	04_WOOD	06_UPLAND	07_HITCH	9B_ADOLF
Aug-16	Dry	56	*3.3*	<1	<1	5.7	*2.8*	<1	<1

Figure 22. 4,4'-DDT Sediment Concentrations in Receiving Water Sites: 2008-2017

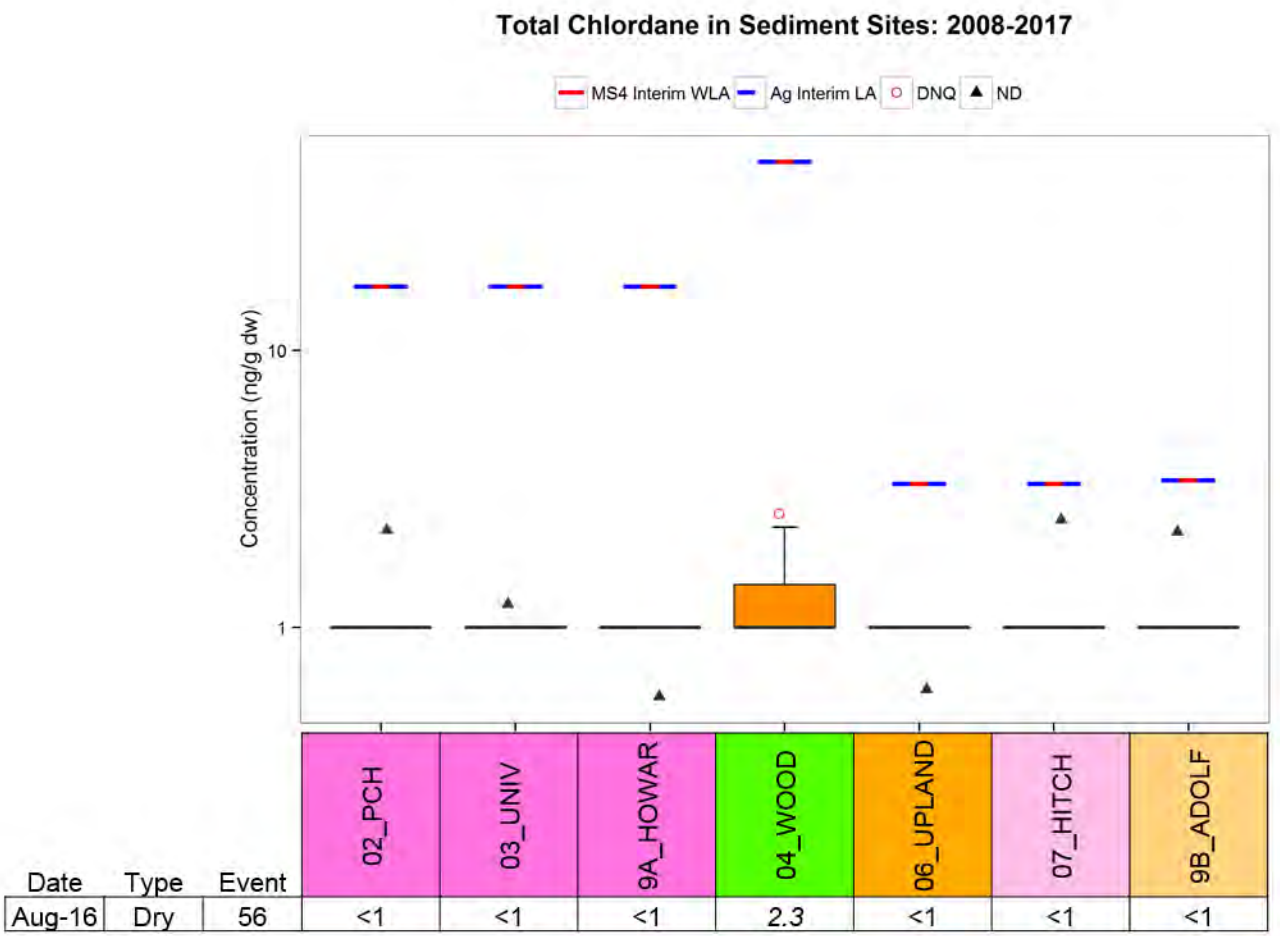


Figure 23. Total Chlordane Sediment Concentrations in Receiving Water Sites: 2008-20172017

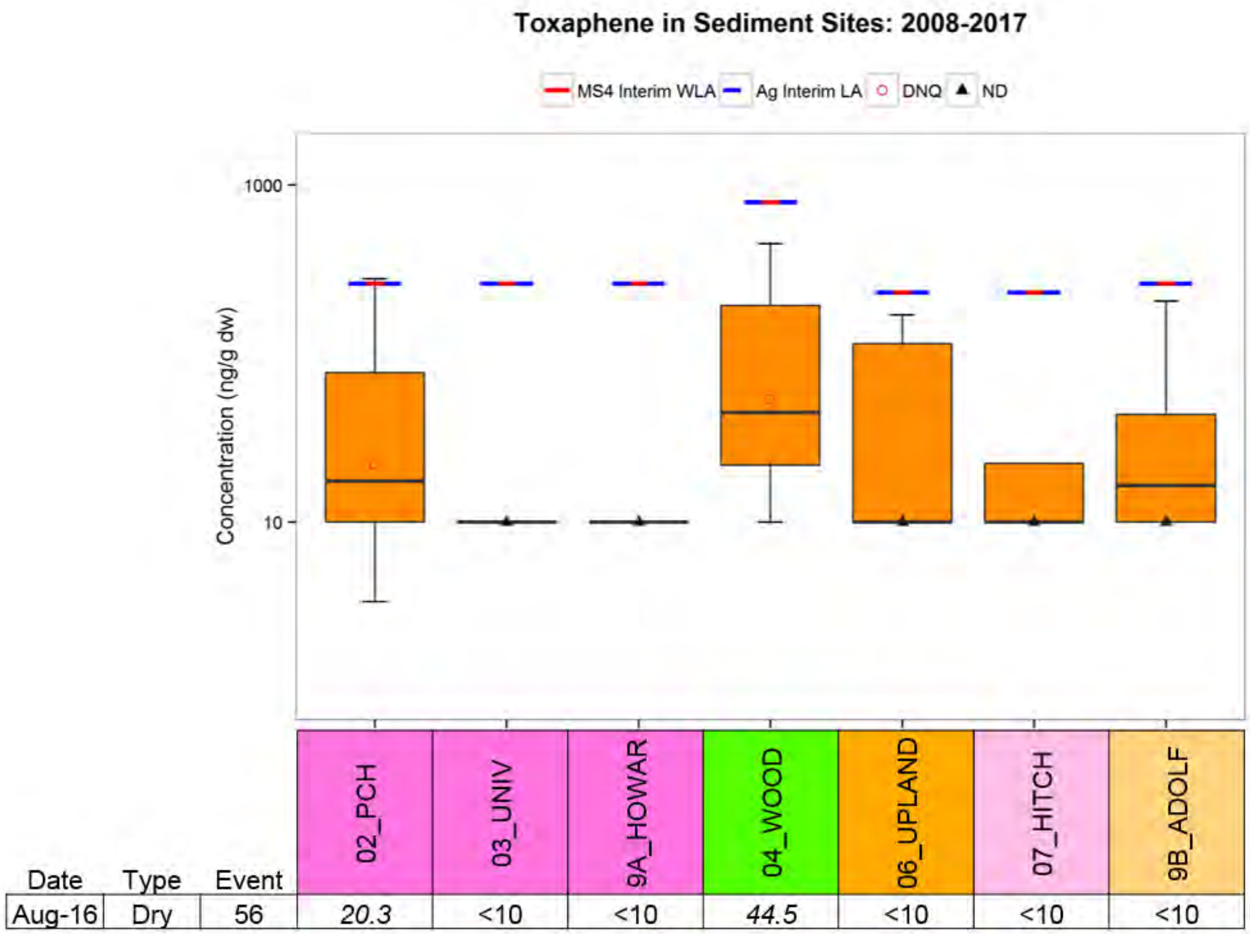
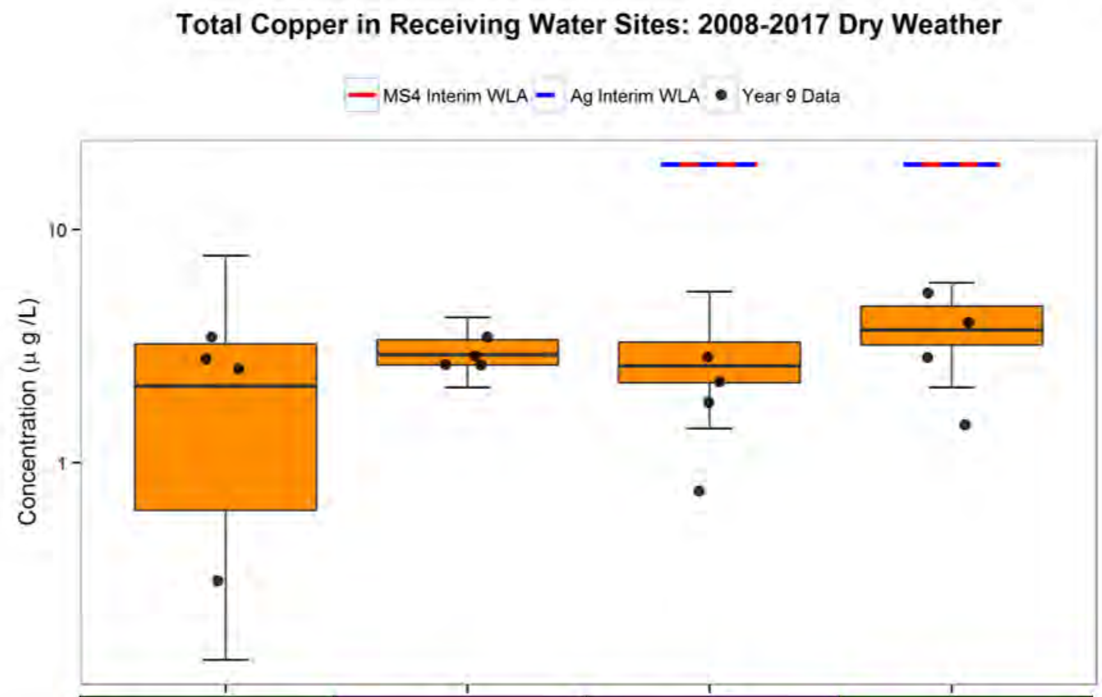


Figure 24. Toxaphene Sediment Concentrations in Receiving Water Sites: 2008-2017

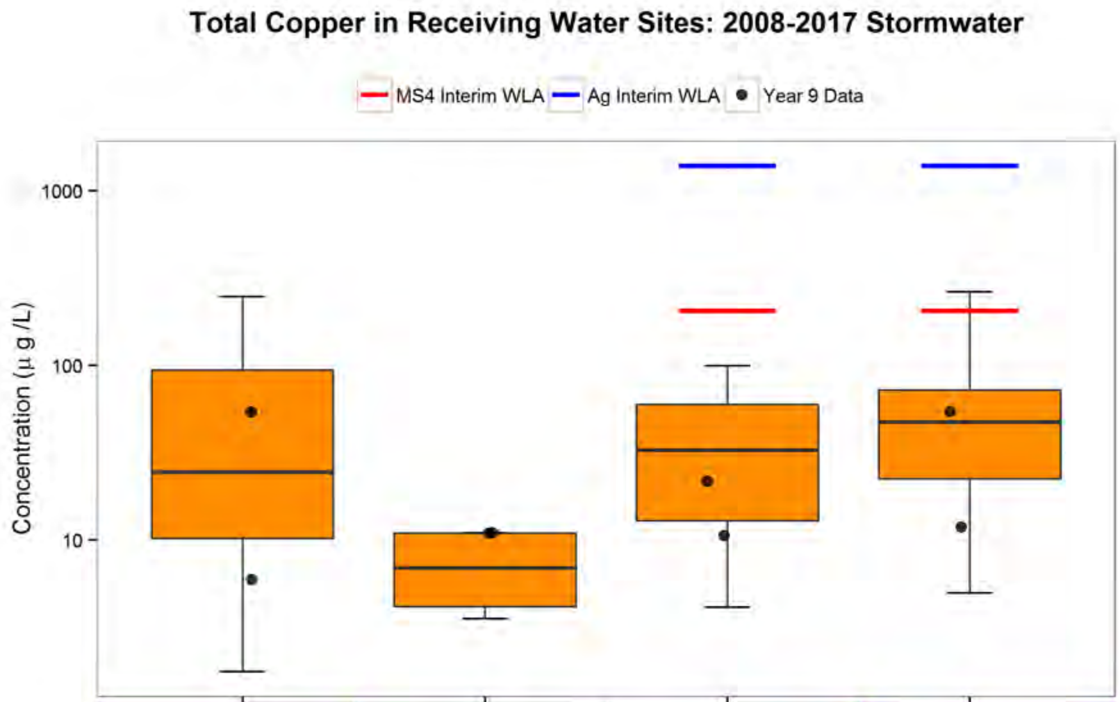
METALS TMDL DATA SUMMARY

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.



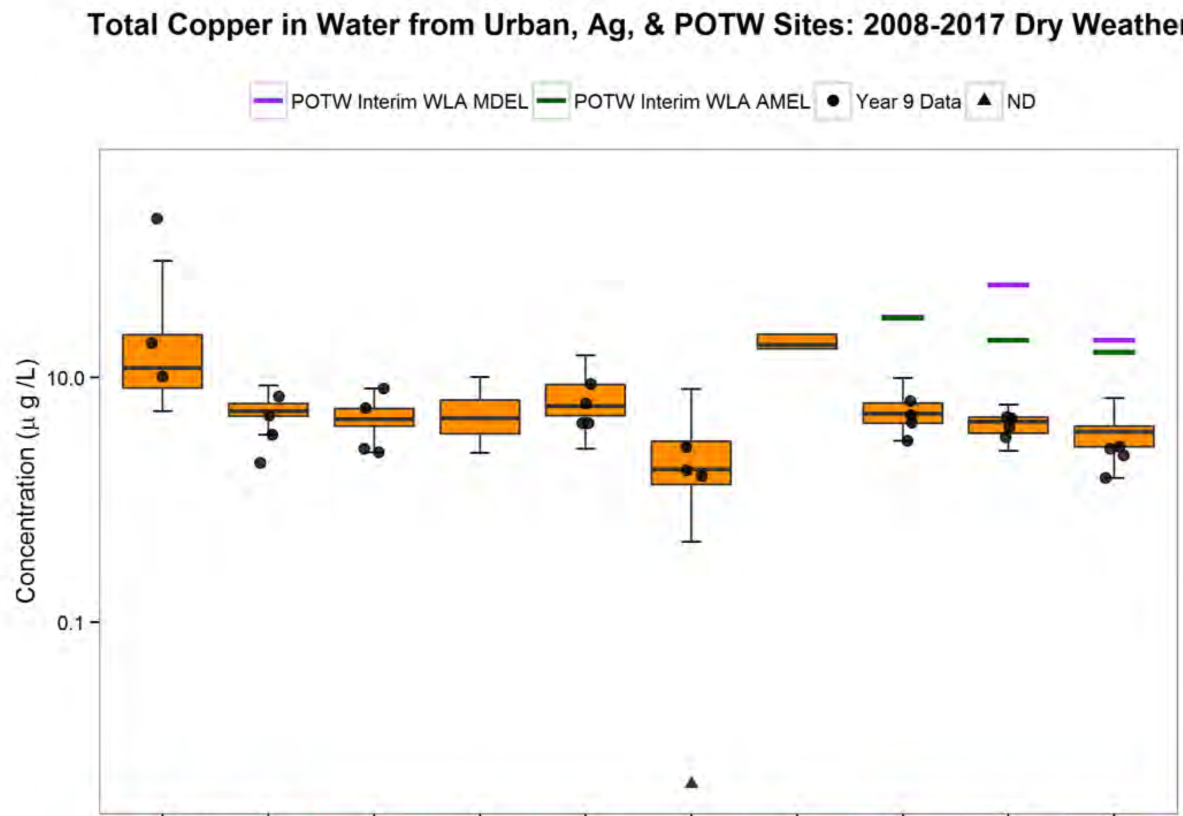
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD
Aug-16	Dry	56	3.46	2.61	2.84	5.33
Nov-16	Dry	57	2.52	2.636	2.22	3.99
Feb-17	Dry	60	2.78	3.46	0.75	1.45
May-17	Dry	61	0.31	2.85	1.81	2.82

Figure 25. Total Copper Dry Weather Concentrations in Receiving Water Sites: 2008-2017



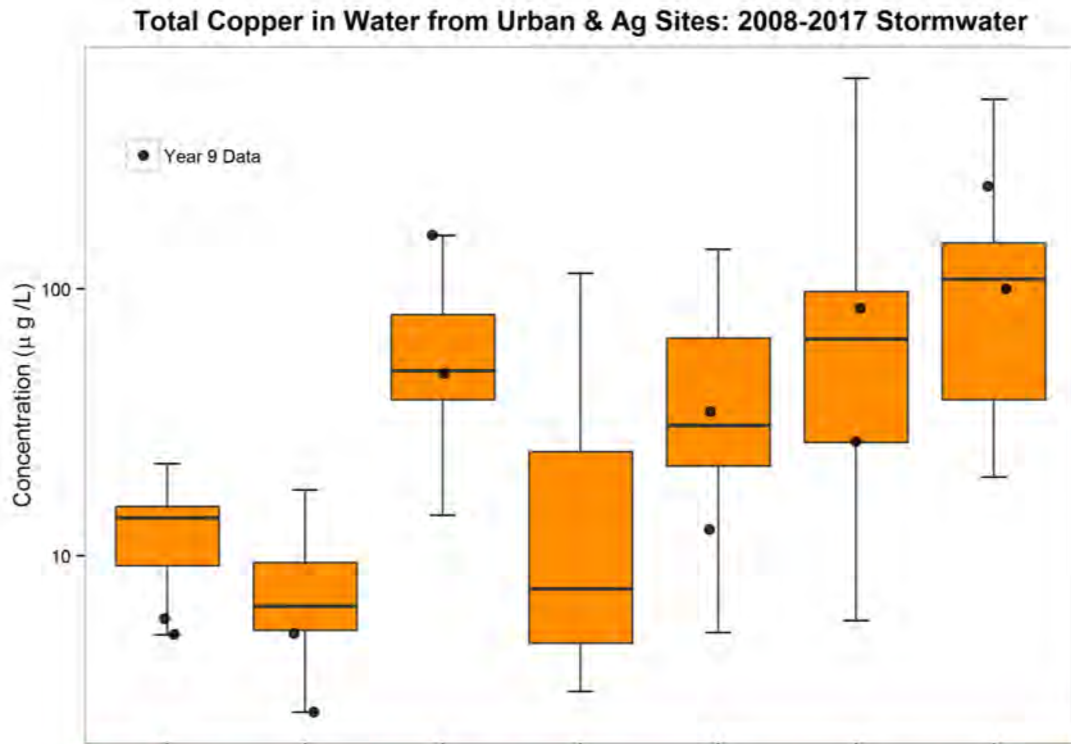
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD
Dec-16	Storm	58	5.91	10.88	10.57	11.83
Jan-17	Storm	59	53.74	10.94	21.66	54.09

Figure 26. Total Copper Stormwater Concentrations in Receiving Water Sites: 2008-2017



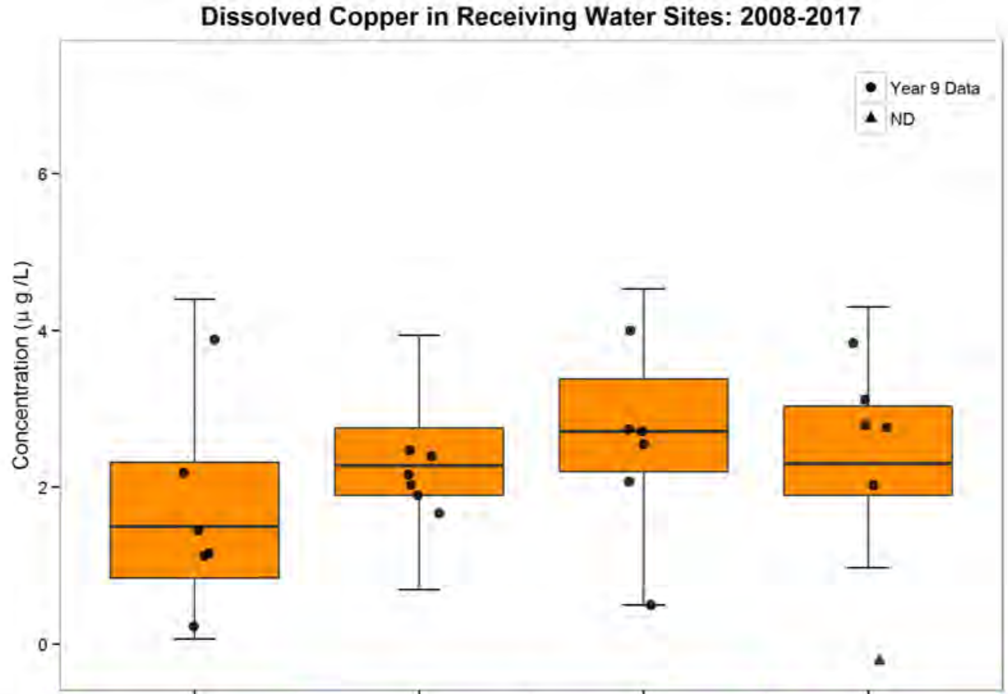
Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-16	Dry	56	--	6.98	8.07	--	8.82	1.56	--	6.39	4.63	2.7
Nov-16	Dry	57	197.54	4.87	5.61	--	4.19	1.72	--	4.91	4.73	2.3
Feb-17	Dry	60	10.15	1.99	2.42	--	4.21	<0.005	--	3.04	3.92	1.5
May-17	Dry	61	19.07	3.40	2.59	--	6.10	2.68	--	4.25	3.24	2.6

Figure 27. Total Copper Dry Weather Concentrations in Urban, Ag, and POTW Sites: 2008-2017



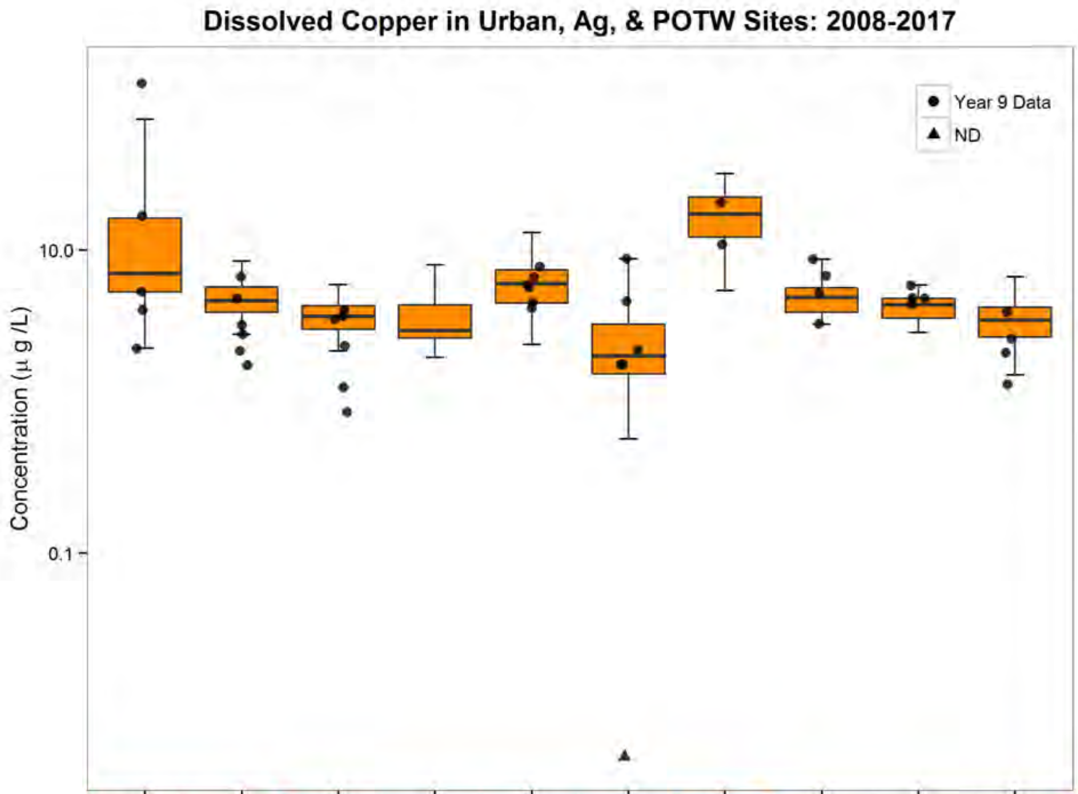
Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY
Dec-16	Storm	58	5.80	2.59	48.12	--	12.57	26.78	242.15
Jan-17	Storm	59	5.05	5.13	158.35	--	34.53	84.59	100.65

Figure 28. Total Copper Wet Weather Concentrations in Urban and Ag Sites: 2008-2017



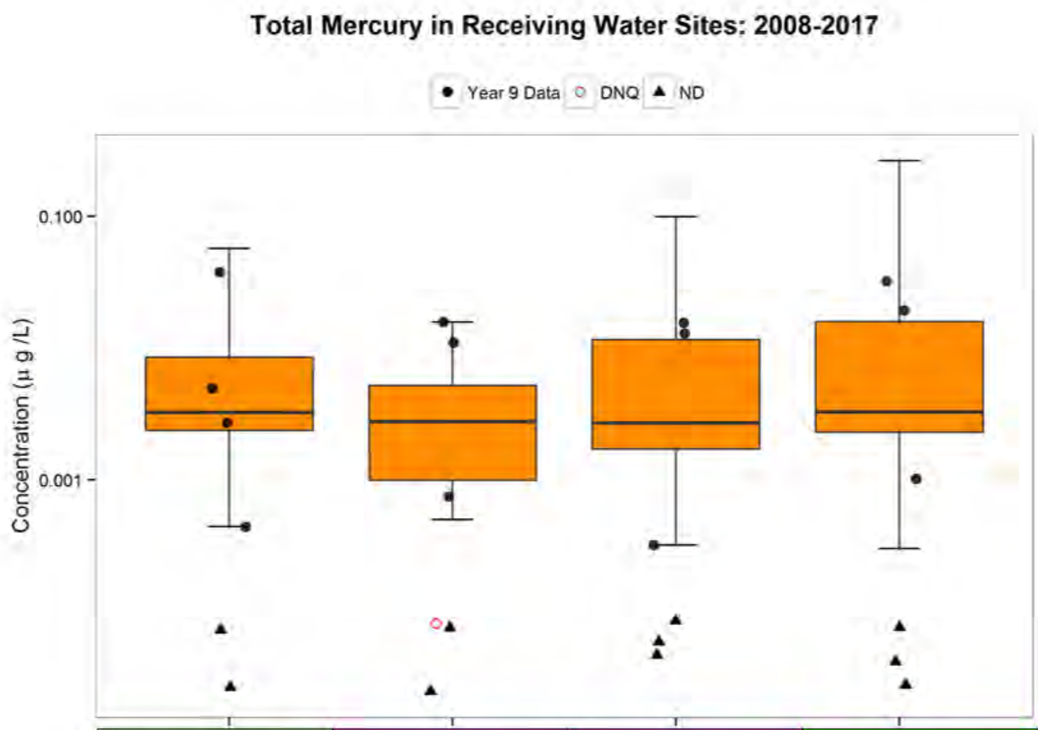
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD
Aug-16	Dry	56	1.44	1.66	2.71	3.83
Nov-16	Dry	57	1.15	1.89	2.55	2.78
Dec-16	Storm	58	1.11	2.02	4.00	2.02
Jan-17	Storm	59	3.88	2.39	2.73	2.76
Feb-17	Dry	60	2.18	2.15	0.49	<0.005
May-17	Dry	61	0.22	2.47	2.07	3.11

Figure 29. Dissolved Copper Concentrations in Receiving Water Sites: 2008-2017



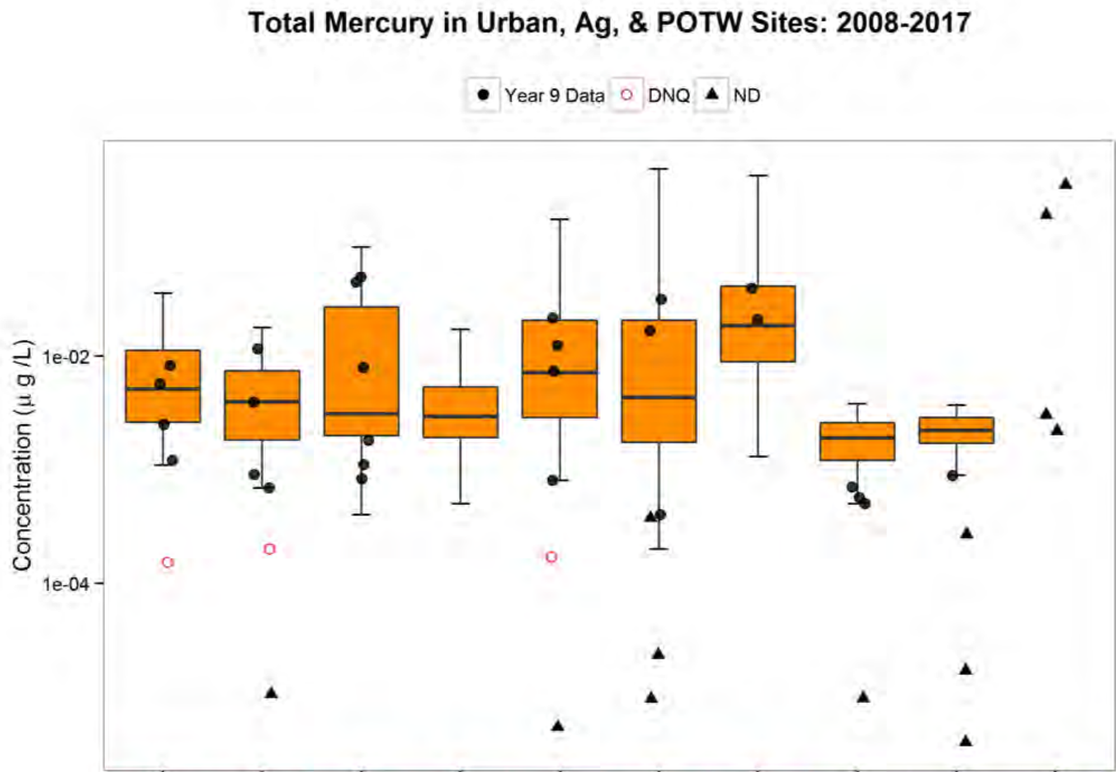
Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-16	Dry	56	--	6.67	3.70	--	7.78	1.75	--	6.80	4.83	3.9
Nov-16	Dry	57	126.8	4.80	4.04	--	4.50	1.76	--	5.24	4.79	2.1
Dec-16	Storm	58	4.03	2.16	0.85	--	5.68	4.60	20.64	NS	NS	NS
Jan-17	Storm	59	2.25	2.78	3.50	--	6.65	8.76	10.92	NS	NS	NS
Feb-17	Dry	60	5.32	1.74	1.24	--	4.16	<0.005	--	3.26	4.38	1.3
May-17	Dry	61	16.81	3.19	2.33	--	5.89	2.19	--	8.71	5.87	2.6

Figure 30. Dissolved Copper Concentrations in Urban, Ag, and POTW Sites: 2008-2017



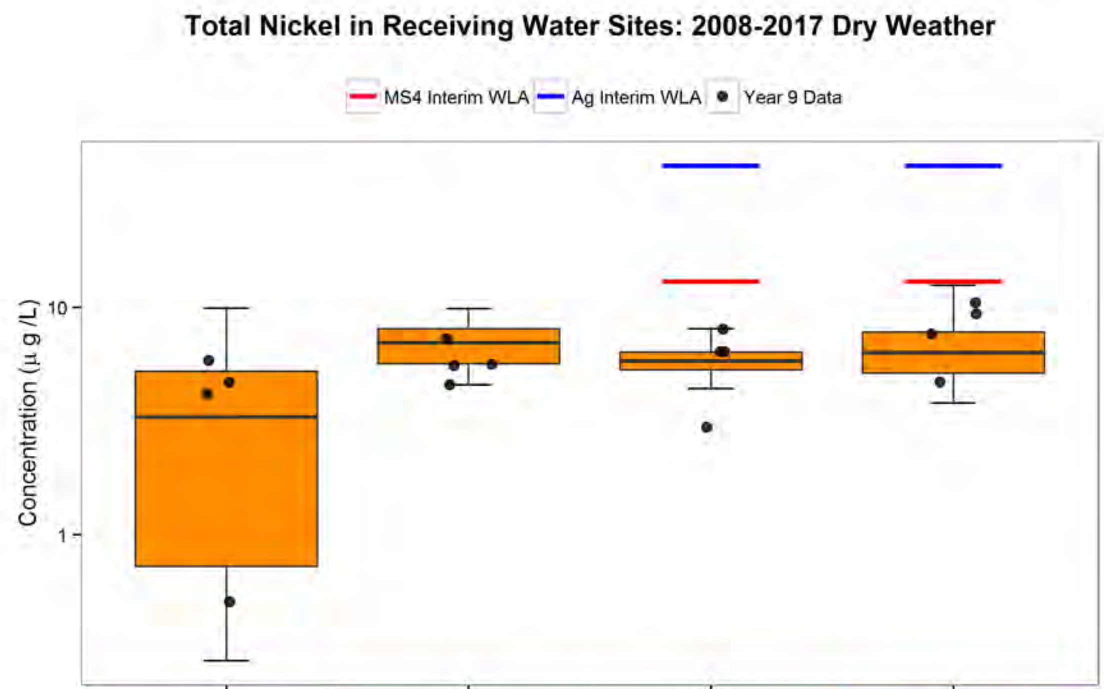
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD
Aug-16	Dry	56	0.0027	<0.00004	<0.00004	<0.00004
Nov-16	Dry	57	<0.00004	*0.0001*	<0.00004	<0.00004
Dec-16	Storm	58	0.0049	0.0158	0.0156	0.0194
Jan-17	Storm	59	0.0377	0.0110	0.0129	0.0323
Feb-17	Dry	60	0.0004	0.0007	0.0003	0.0010
May-17	Dry	61	<0.00004	<0.00004	<0.00004	<0.00004

Figure 31. Total Mercury Concentrations in Receiving Water Sites: 2008-2017



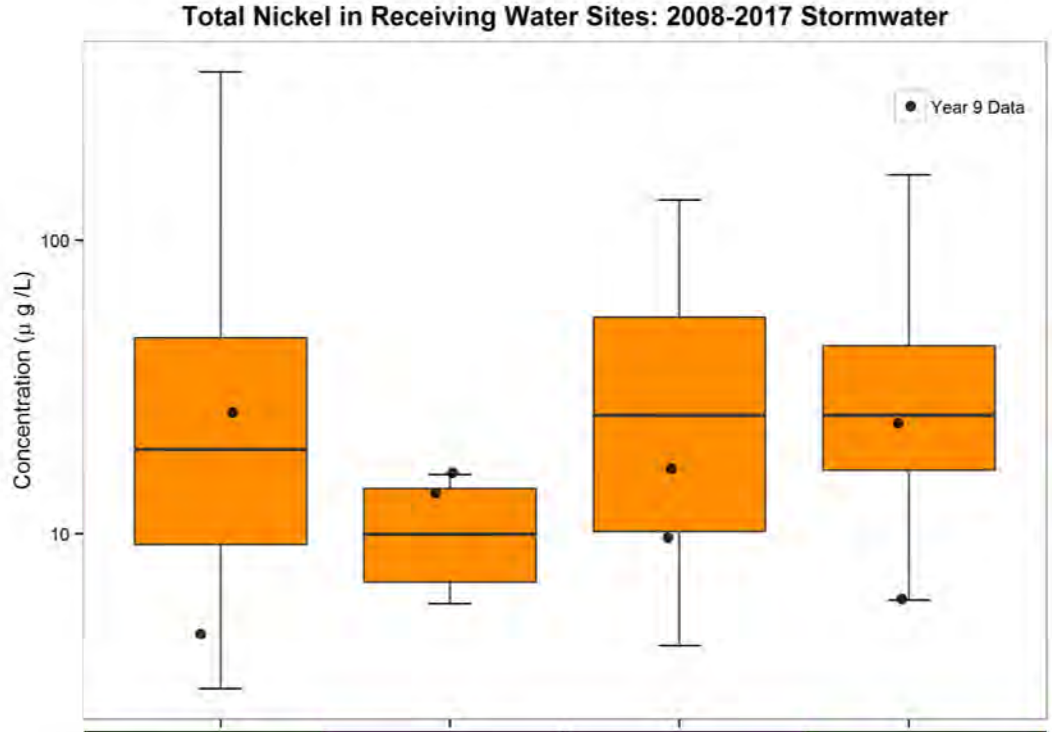
Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-16	Dry	56	--	<0.00004	0.0079	--	0.0124	<0.00004	--	0.0005	<0.00004	<0.00004
Nov-16	Dry	57	0.0012	*0.0002*	0.0018	--	<0.00004	<0.00004	--	<0.00004	<0.00004	<0.00004
Dec-16	Storm	58	0.0082	0.0039	0.0448	--	0.0073	0.0167	0.0396	NS	NS	NS
Jan-17	Storm	59	0.0057	0.0116	0.0500	--	0.0216	0.0316	0.0208	NS	NS	NS
Feb-17	Dry	60	*0.0001*	0.0006	0.0008	--	*0.00017*	<0.00004	--	0.00057	0.00089	<0.00004
May-17	Dry	61	0.0025	0.0009	0.0011	--	0.0008	0.0004	--	0.0007	<0.00004	<0.00004

Figure 32. Total Mercury Concentrations in Urban and Ag Sites: 2008-2017



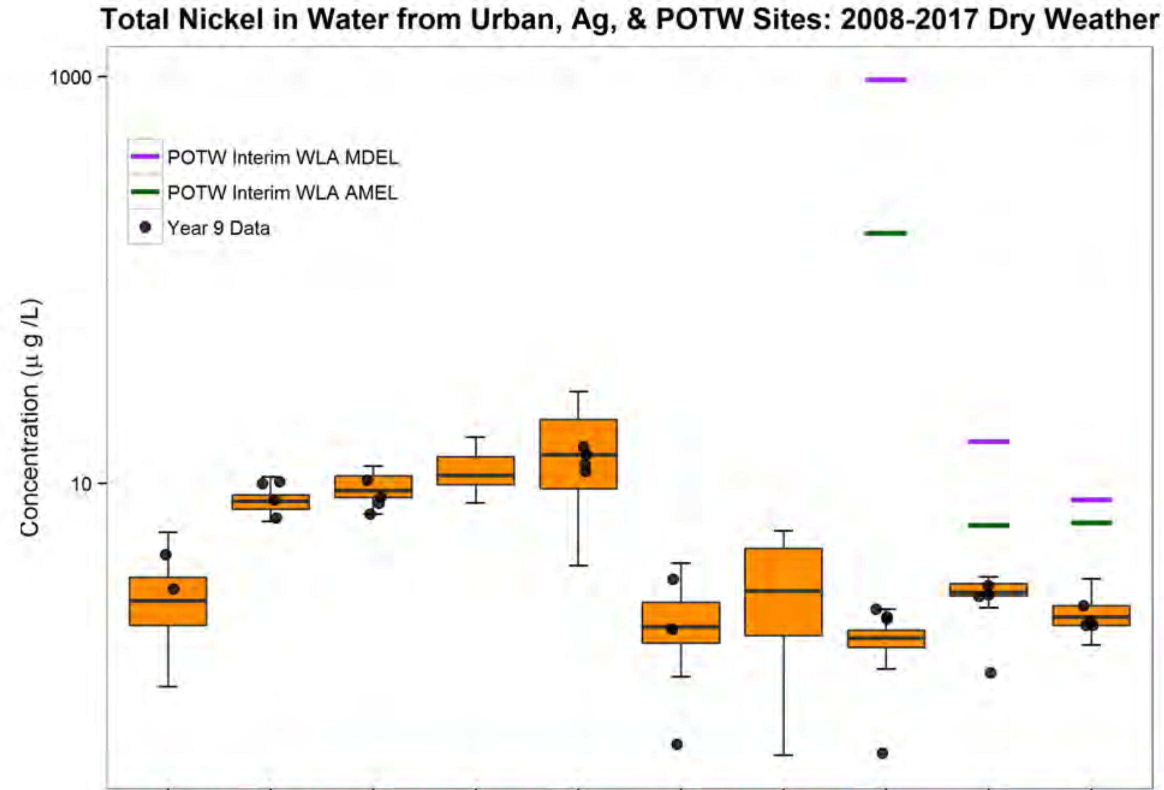
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD
Aug-16	Dry	56	4.67	4.57	8.03	10.49
Nov-16	Dry	57	4.16	5.55	6.36	7.65
Feb-17	Dry	60	5.85	7.27	2.97	4.71
May-17	Dry	61	0.50	5.63	6.39	9.36

Figure 33. Total Nickel Dry Weather Concentrations in Receiving Water Sites: 2008-2017



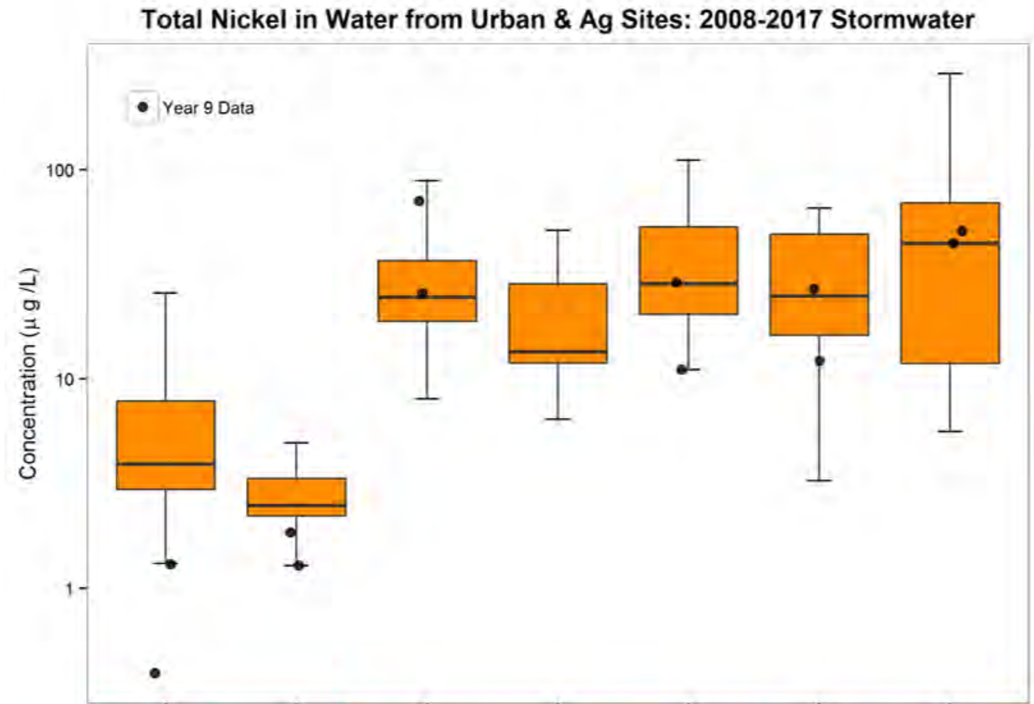
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD
Dec-16	Storm	58	4.56	15.90	9.75	5.95
Jan-17	Storm	59	25.56	13.74	16.51	23.45

Figure 34. Total Nickel Stormwater Concentrations in Receiving Water Sites: 2008-2017



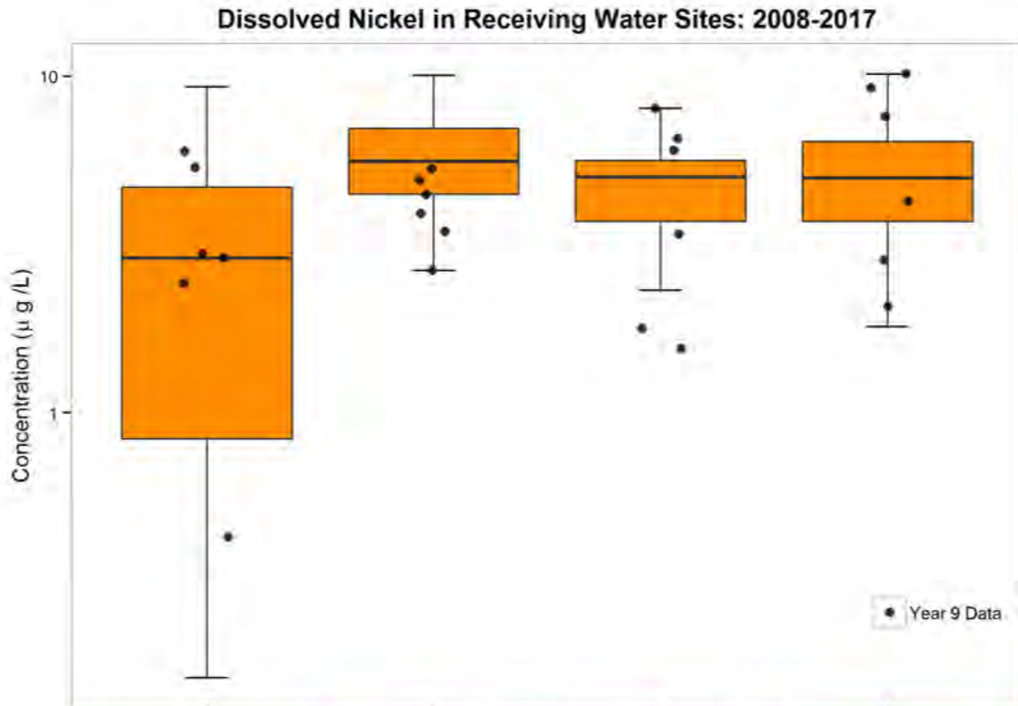
Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-16	Dry	56	--	10.18	7.96	--	11.4	1.91	--	2.2	3.14	2.5
Nov-16	Dry	57	3.02	6.74	8.55	--	15.12	1.92	--	2.41	2.78	2.0
Feb-17	Dry	60	<0.01	8.31	7.04	--	13.78	0.52	--	0.47	1.17	2.1
May-17	Dry	61	4.448	9.974	10.363	--	12.317	3.378	--	2.147	2.819	2.0

Figure 35. Total Nickel Dry Weather Concentrations in Urban, Ag, and POTW Sites: 2008-2017



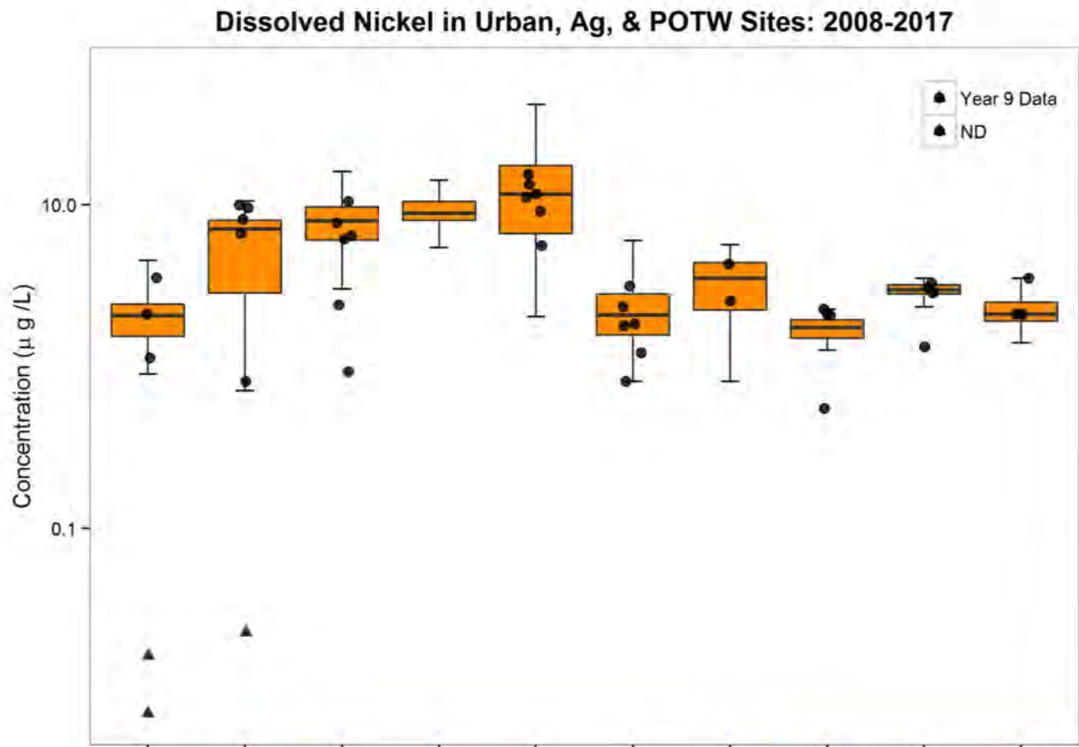
Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY
Dec-16	Storm	58	1.31	1.28	25.55	--	11.05	12.17	44.4
Jan-17	Storm	59	0.39	1.83	70.82	--	28.94	27.01	50.42

Figure 36. Total Nickel Stormwater Concentrations in Urban and Ag Sites: 2008-2017



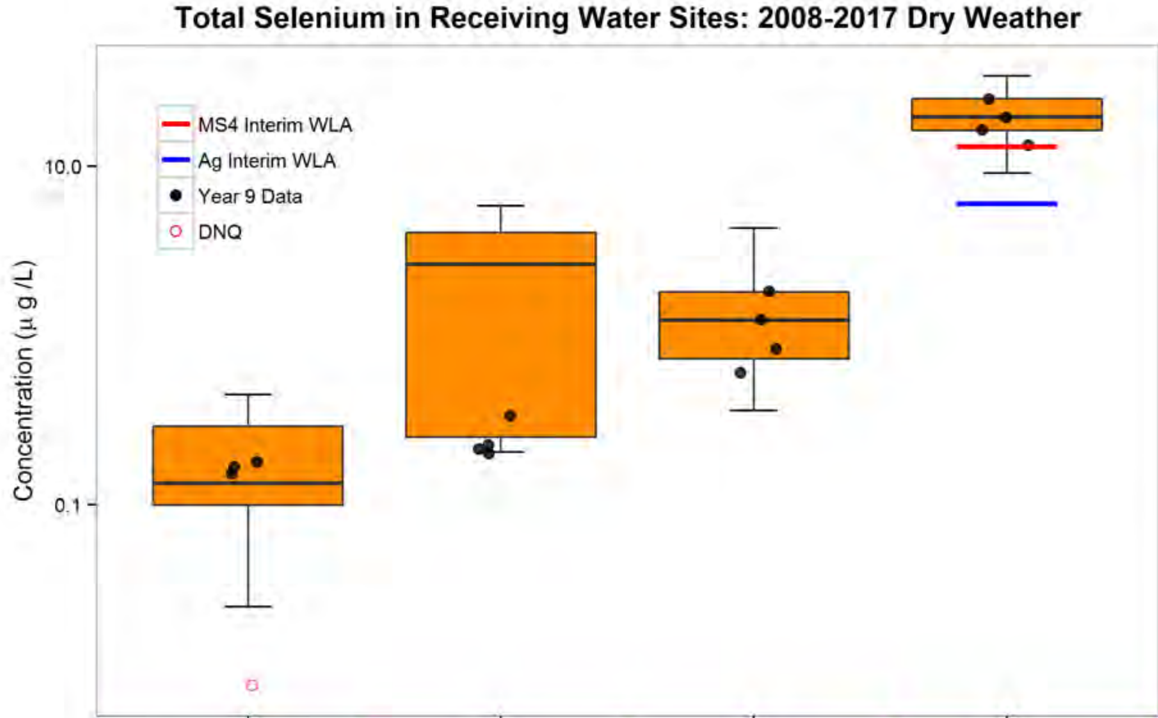
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD
Aug-16	Dry	56	2.96	3.45	8.01	10.14
Nov-16	Dry	57	2.88	4.42	6.51	7.56
Dec-16	Storm	58	2.42	3.89	3.40	2.83
Jan-17	Storm	59	5.35	2.64	1.55	2.06
Feb-17	Dry	60	5.96	5.29	1.78	4.25
May-17	Dry	61	0.42	4.89	6.00	9.23

Figure 37. Dissolved Nickel Concentrations in Receiving Water Sites: 2008-2017



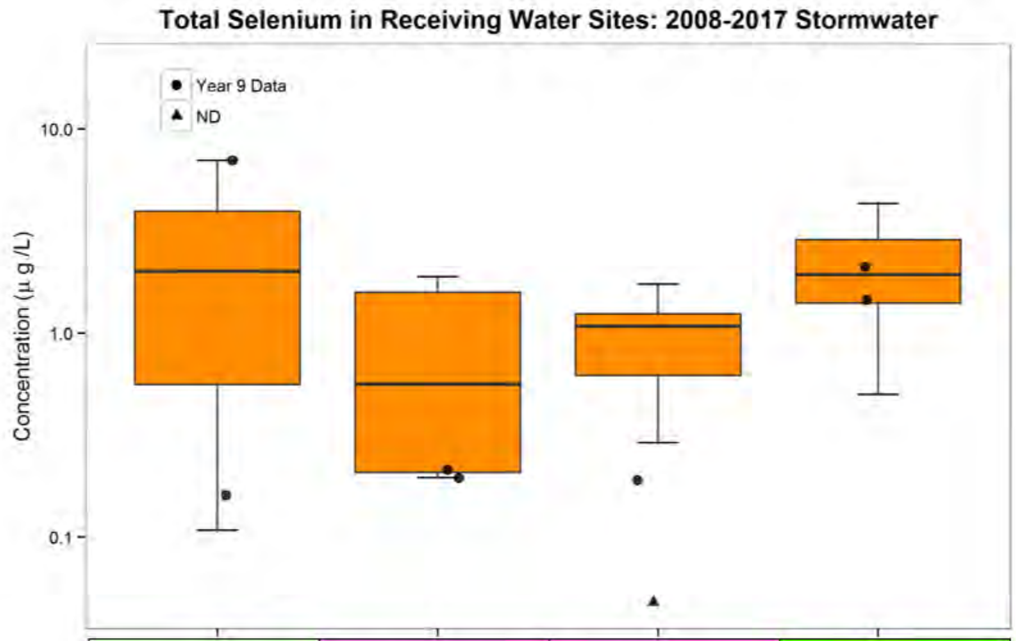
Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-16	Dry	56	--	9.91	6.41	--	11.11	1.78	--	2.08	3.27	3.5
Nov-16	Dry	57	2.10	6.61	7.69	--	15.43	1.83	--	2.26	3.07	2.1
Dec-16	Storm	58	1.13	0.81	2.40	--	5.59	2.33	4.29	NS	NS	NS
Jan-17	Storm	59	<0.01	<0.01	0.93	--	9.05	1.21	2.55	NS	NS	NS
Feb-17	Dry	60	<0.01	8.11	6.11	--	13.34	0.81	--	0.55	1.32	2.1
May-17	Dry	61	3.53	9.55	10.46	--	11.62	3.14	--	2.10	2.83	2.1

Figure 38. Dissolved Nickel Concentrations in Urban, Ag, and POTW Sites: 2008-2017



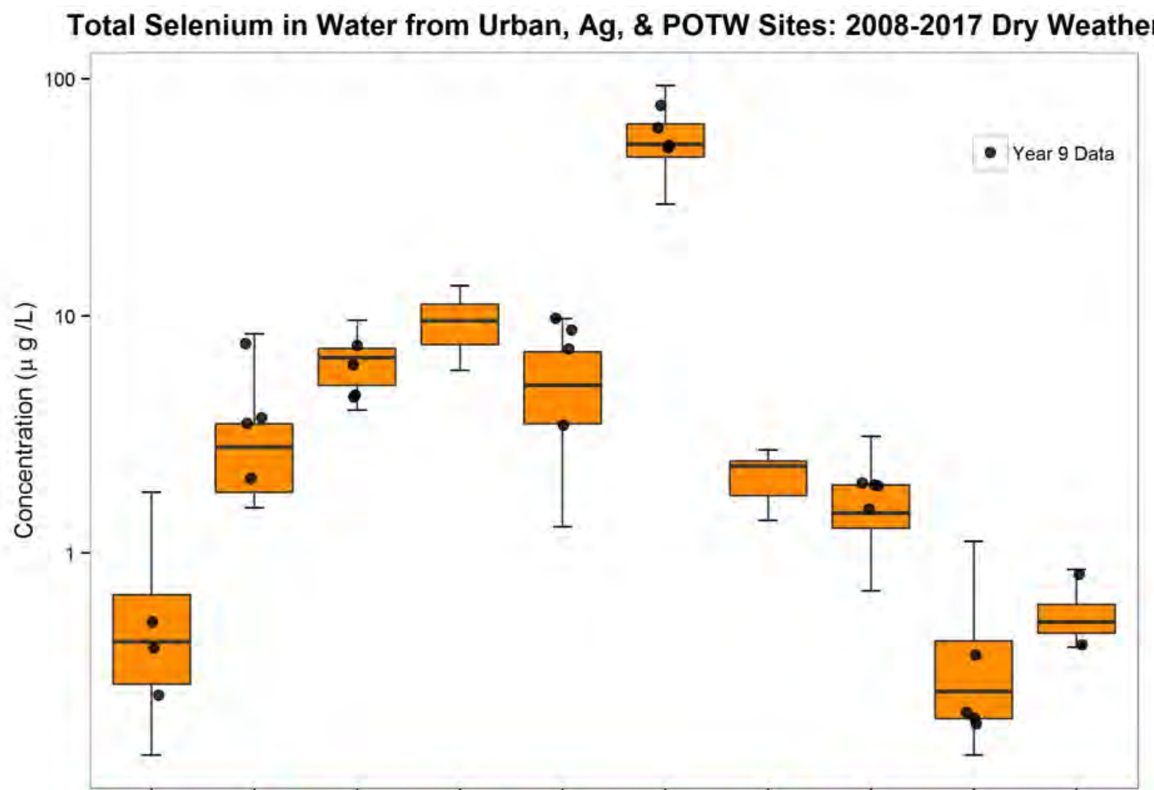
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD
Aug-16	Dry	56	0.17	0.33	0.60	16.25
Nov-16	Dry	57	0.16	0.20	0.84	13.24
Feb-17	Dry	60	0.15	0.22	1.81	19.00
May-17	Dry	61	*0.01*	0.21	1.22	25.20

Figure 39. Total Selenium Dry Weather Concentrations in Receiving Water Sites: 2008-2017



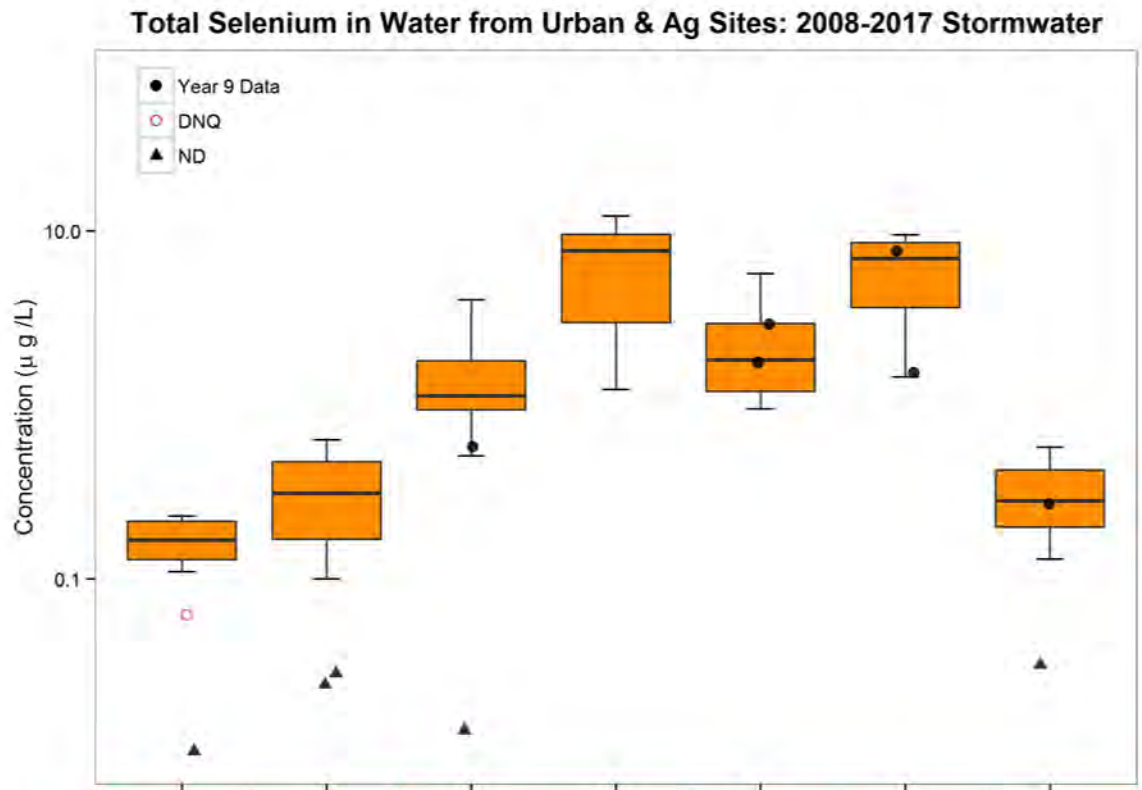
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD
Dec-16	Storm	58	0.15	0.21	0.19	2.09
Jan-17	Storm	59	7.03	0.19	<0.02	1.44

Figure 40. Total Selenium Stormwater Concentration in Receiving Water Sites: 2008-2017



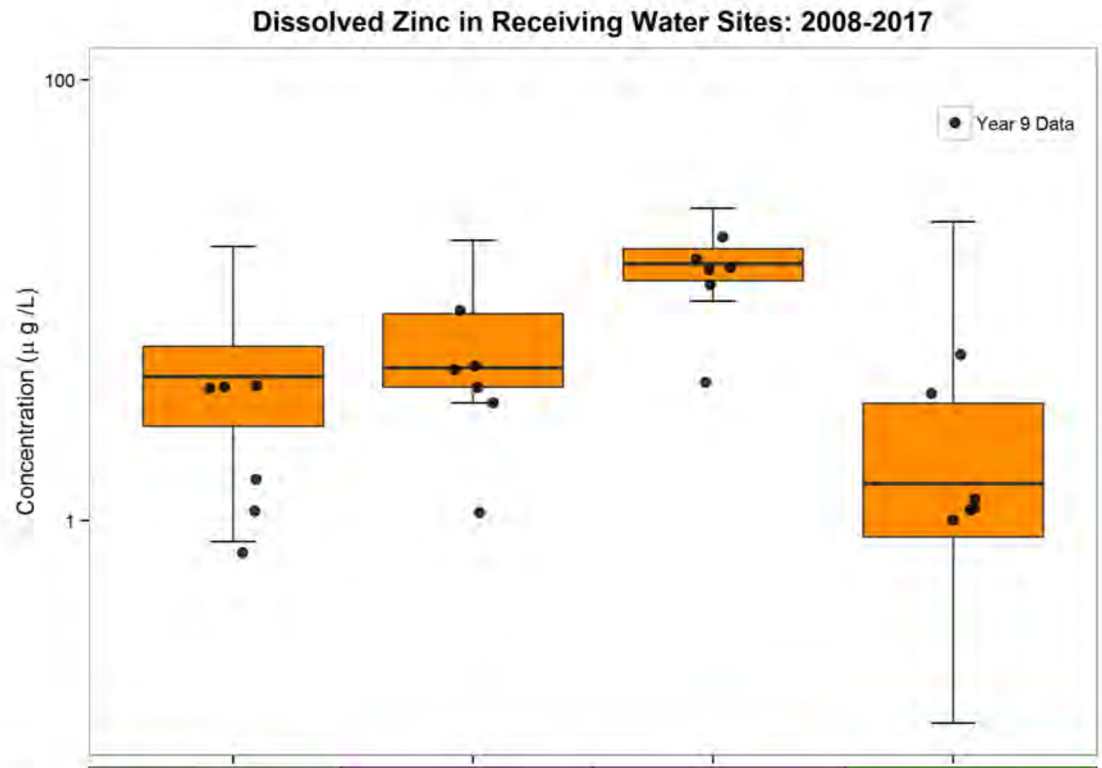
Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-16	Dry	56	--	3.70	4.54	--	8.69	52.44	--	1.97	0.37	0.41
Nov-16	Dry	57	0.25	2.05	4.63	--	7.23	51.16	--	1.93	0.19	--
Feb-17	Dry	60	0.51	7.64	6.22	--	9.73	62.20	--	1.53	0.20	0.81
May-17	Dry	61	0.39	3.52	7.49	--	3.45	77.33	--	1.92	0.21	--

Figure 41. Total Selenium Dry Weather Concentrations in Urban, Ag, and POTW Sites: 2008-2017



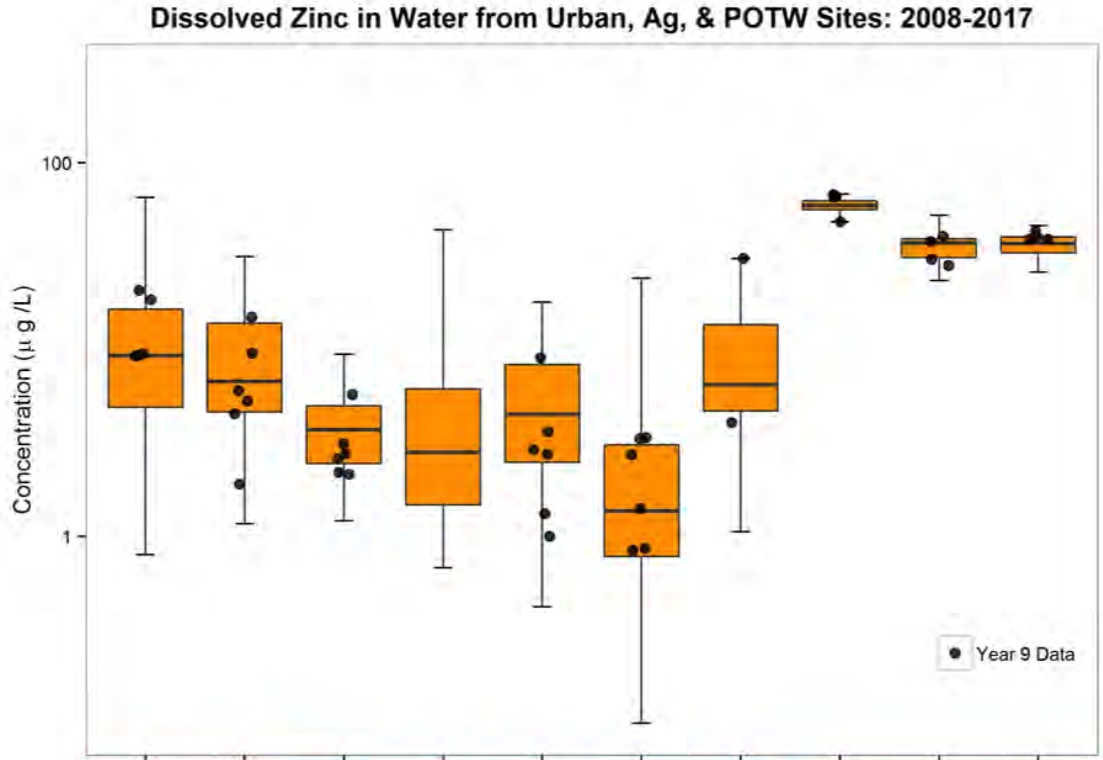
Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY
Dec-16	Storm	58	*0.03*	<0.02	0.60	--	1.82	8.27	0.28
Jan-17	Storm	59	<0.02	<0.02	<0.02	--	3.01	1.45	<0.02

Figure 42. Total Selenium Stormwater Concentrations in Urban and Ag Sites: 2008-2017



Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD
Aug-16	Dry	56	1.10	1.08	11.75	1.00
Nov-16	Dry	57	1.53	3.41	15.33	1.14
Dec-16	Storm	58	3.97	4.00	19.33	5.65
Jan-17	Storm	59	4.03	4.82	4.24	3.78
Feb-17	Dry	60	4.09	8.96	14.03	1.12
May-17	Dry	61	0.71	5.03	13.70	1.25

Figure 43. Dissolved Zinc Concentrations in Receiving Water Sites: 2008-2017

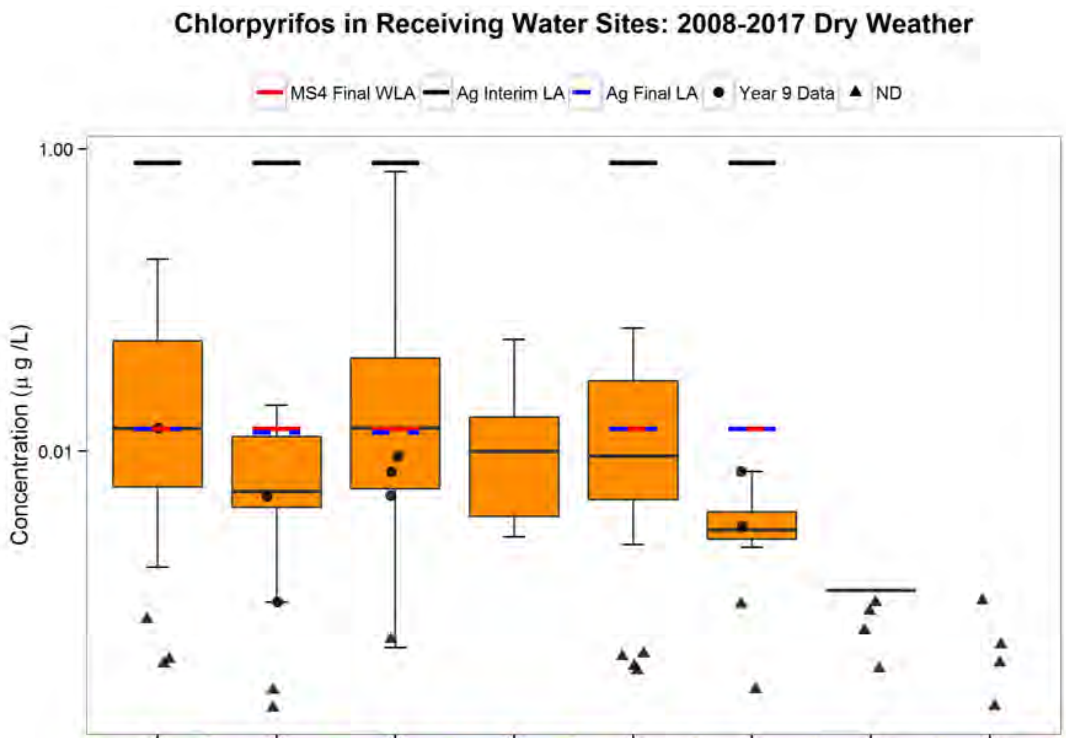


Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-16	Dry	56	--	4.53	2.14	--	3.63	1.41	--	65.84	28.22	40
Nov-16	Dry	57	9.32	14.89	5.74	--	2.9	0.86	--	67.32	40.36	39
Dec-16	Storm	58	18.51	9.56	3.13	--	8.99	2.74	30.69	NS	NS	NS
Jan-17	Storm	59	9.51	6.02	2.19	--	2.75	3.36	4.06	NS	NS	NS
Feb-17	Dry	60	9.21	1.90	2.76	--	1	0.84	--	48.11	37.84	43
May-17	Dry	61	20.70	5.30	2.59	--	1.32	3.33	--	65.71	30.27	39

Figure 44. Dissolved Zinc Concentrations in Urban, Ag, and POTW Sites: 2008-2017

TOXICITY TMDL

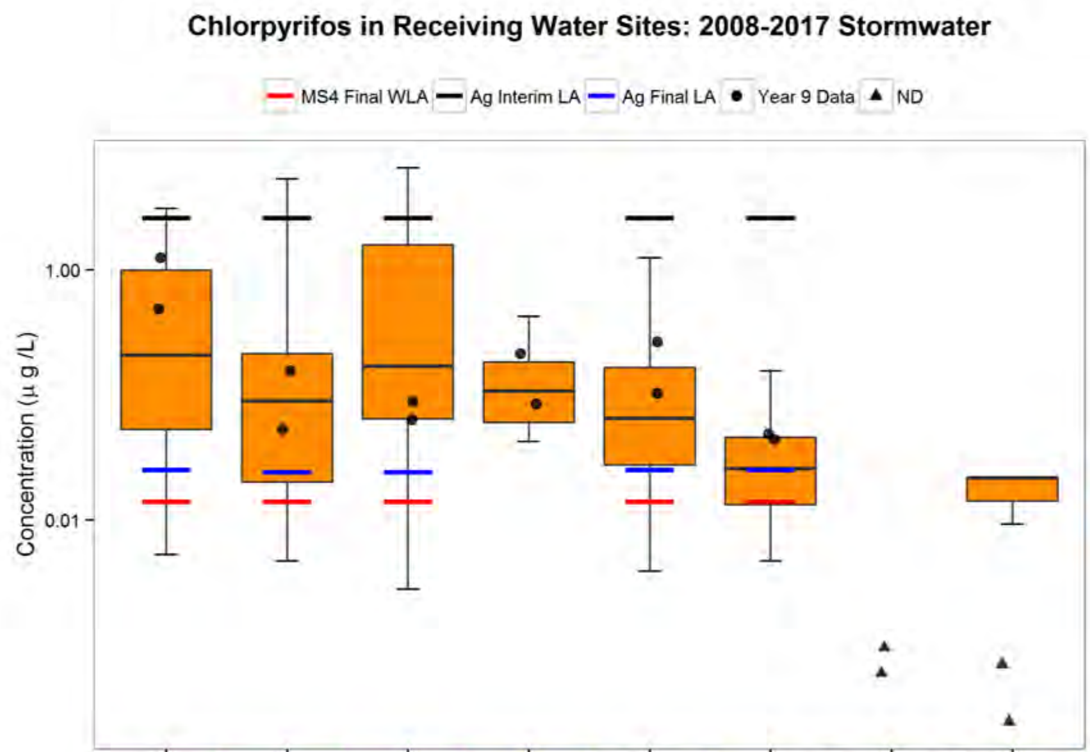
For the Toxicity TMDL, urban dischargers’ and POTWs’ final wasteload allocations are effective. For agricultural dischargers, interim load allocations were in effect until March 24, 2017, at which point final allocations became effective. The compliance points for these allocations are in the receiving 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.



Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_UPLAND	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Aug-16	Dry	56	<0.0005	0.001	0.007	--	<0.0005	0.003	<0.0005	<0.0005
Nov-16	Dry	57	<0.0005	0.005	<0.0005	--	<0.0005	0.007	<0.0005	<0.0005
Feb-17	Dry	60	0.014	<0.0005	0.009	--	<0.0005	<0.0005	<0.0005	<0.0005
May-17	Dry	61[1]	<0.0005	<0.0005	0.005	--	<0.0005	<0.0005	<0.0005	<0.0005

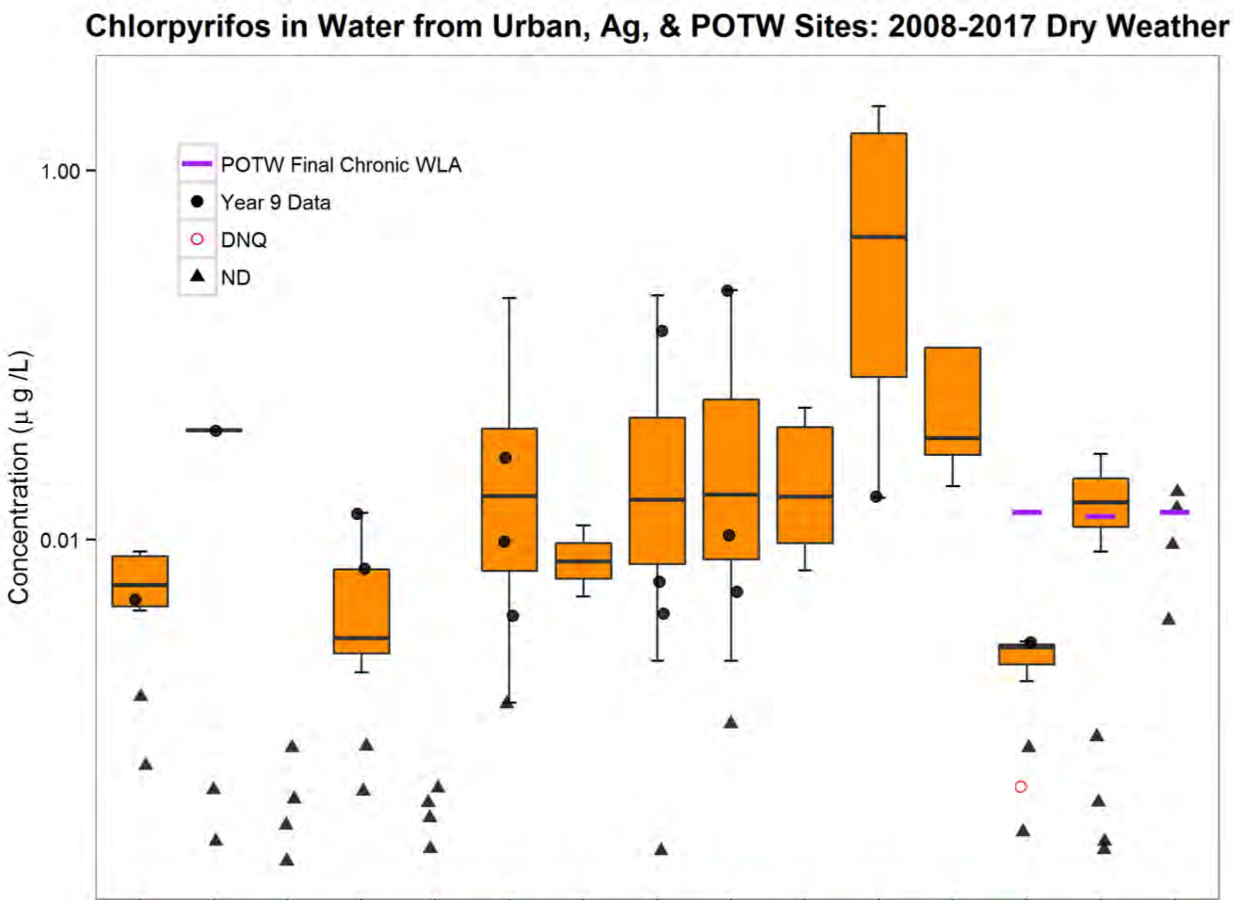
1. Final allocations for agricultural dischargers became effective after March 24, 2016. This note applies to all Toxicity TMDL boxplots with Final LAs for agricultural dischargers.

Figure 45. Chlorpyrifos Dry Weather Concentrations in Receiving Water Sites: 2008-2017



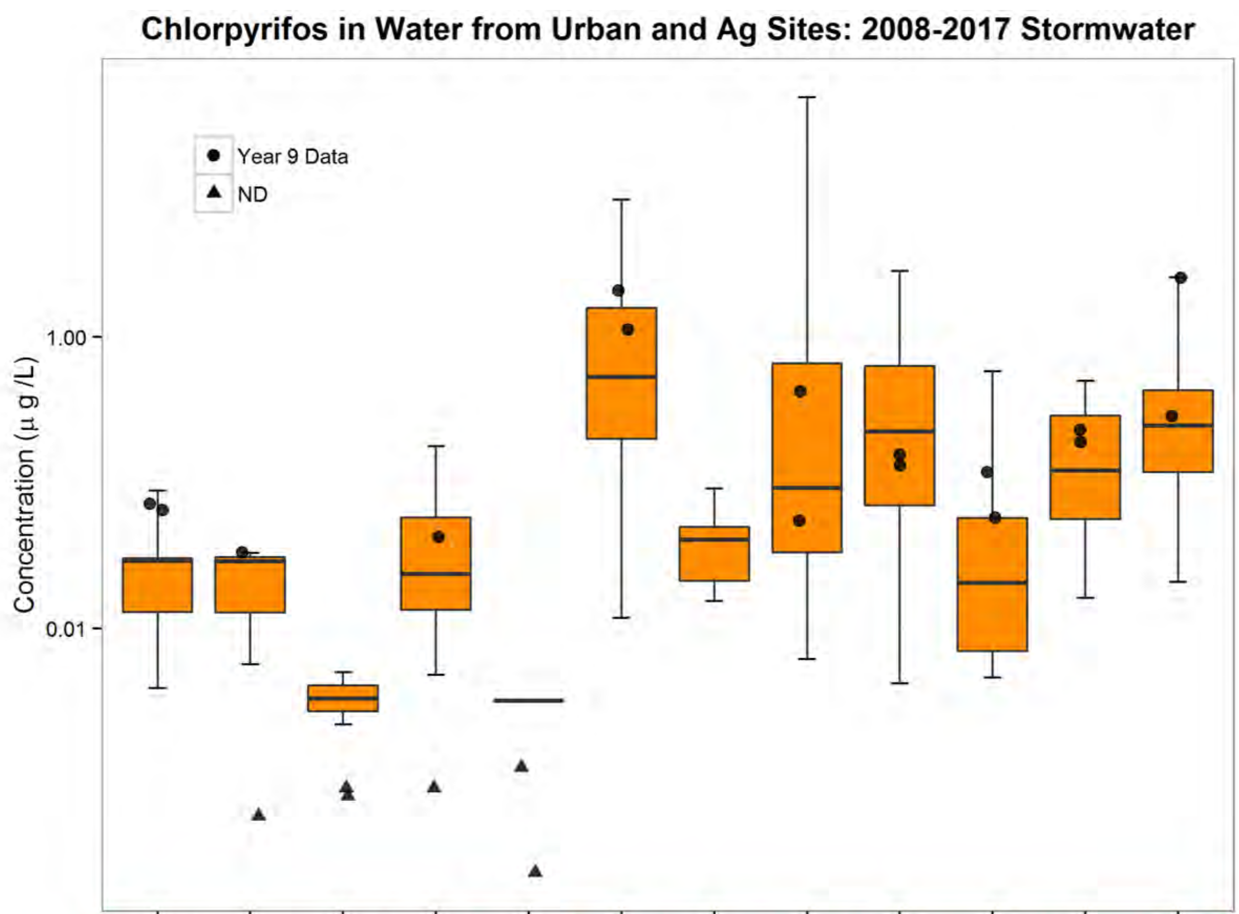
Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_UPLAND	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Dec-16	Storm	58	1.259	0.053	0.064	0.083	0.102	0.043	<0.0005	<0.0005
Jan-17	Storm	59	0.476	0.153	0.089	0.212	0.269	0.048	<0.0005	<0.0005

Figure 46. Chlorpyrifos Stormwater Concentrations in Receiving Water Sites: 2008-2017



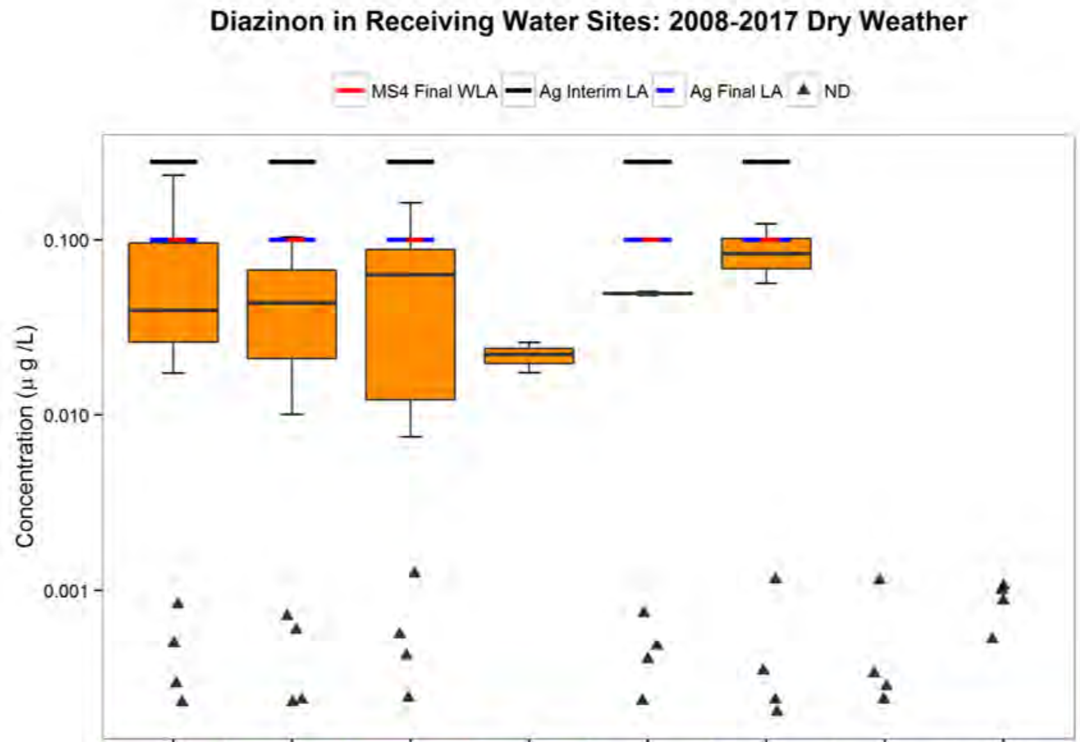
Date	Type	Event	04D_VENTURA	07D_MPK	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-16	Dry	56	--	0.039	<0.0005	<0.0005	<0.0005	0.003	--	0.004	0.005	--	--	--	<0.0005	<0.0005	<0.0005
Nov-16	Dry	57	0.004	--	<0.0005	0.013	<0.0005	<0.0005	--	<0.0005	0.224	--	--	--	0.002	<0.0005	<0.0005
Feb-17	Dry	60	<0.0005	<0.0005	<0.0005	0.006	<0.0005	0.027	--	0.136	0.010	--	0.016	--	*0.0005*	<0.0005	<0.0005
May-17	Dry	61	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.009	--	0.005	<0.0005	--	--	--	<0.0005	<0.0005	<0.0005

Figure 47. Chlorpyrifos Dry Weather Concentrations in Urban, Ag, and POTW Sites: 2008-2017



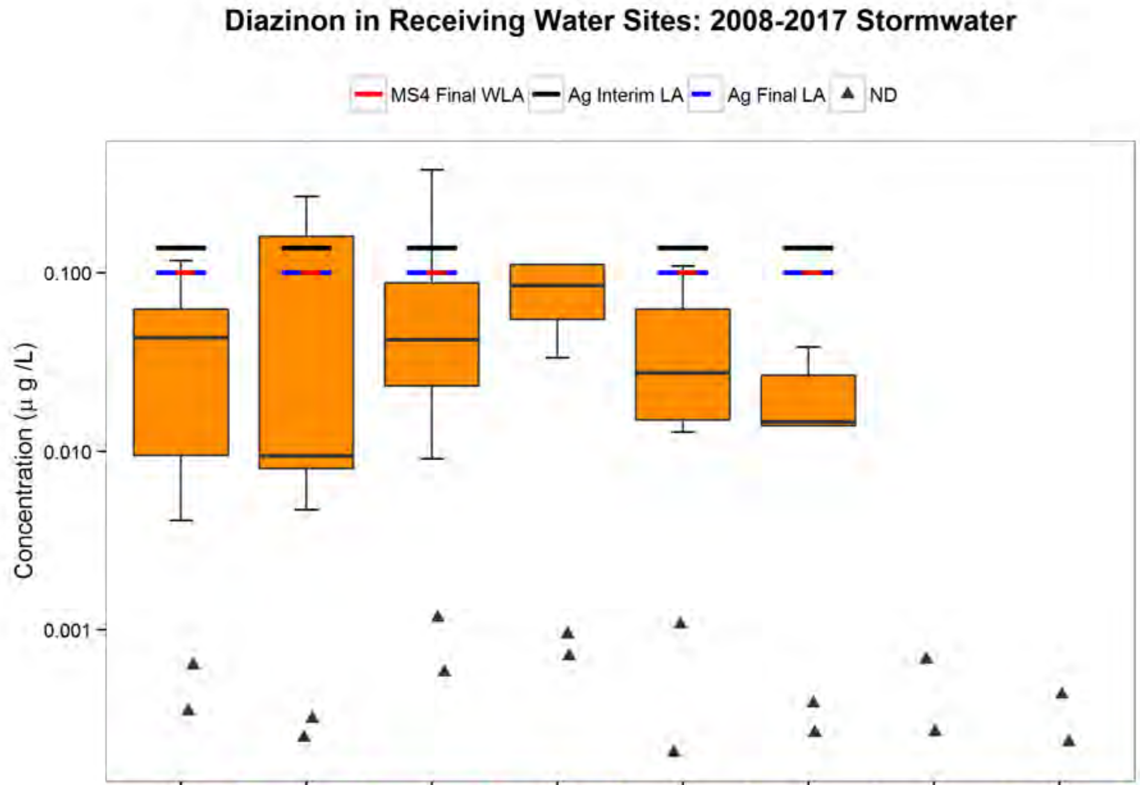
Date	Type	Event	04D_VENTURA	07D_MPK	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY
Dec-16	Storm	58	0.064	0.033	<0.0005	0.042	<0.0005	2.095	--	0.055	0.158	0.117	0.229	2.577
Jan-17	Storm	59	0.072	<0.0005	<0.0005	<0.0005	<0.0005	1.126	--	0.423	0.131	0.057	0.192	0.285

Figure 48. Chlorpyrifos Stormwater Concentrations in Urban and Ag Sites: 2008-2017



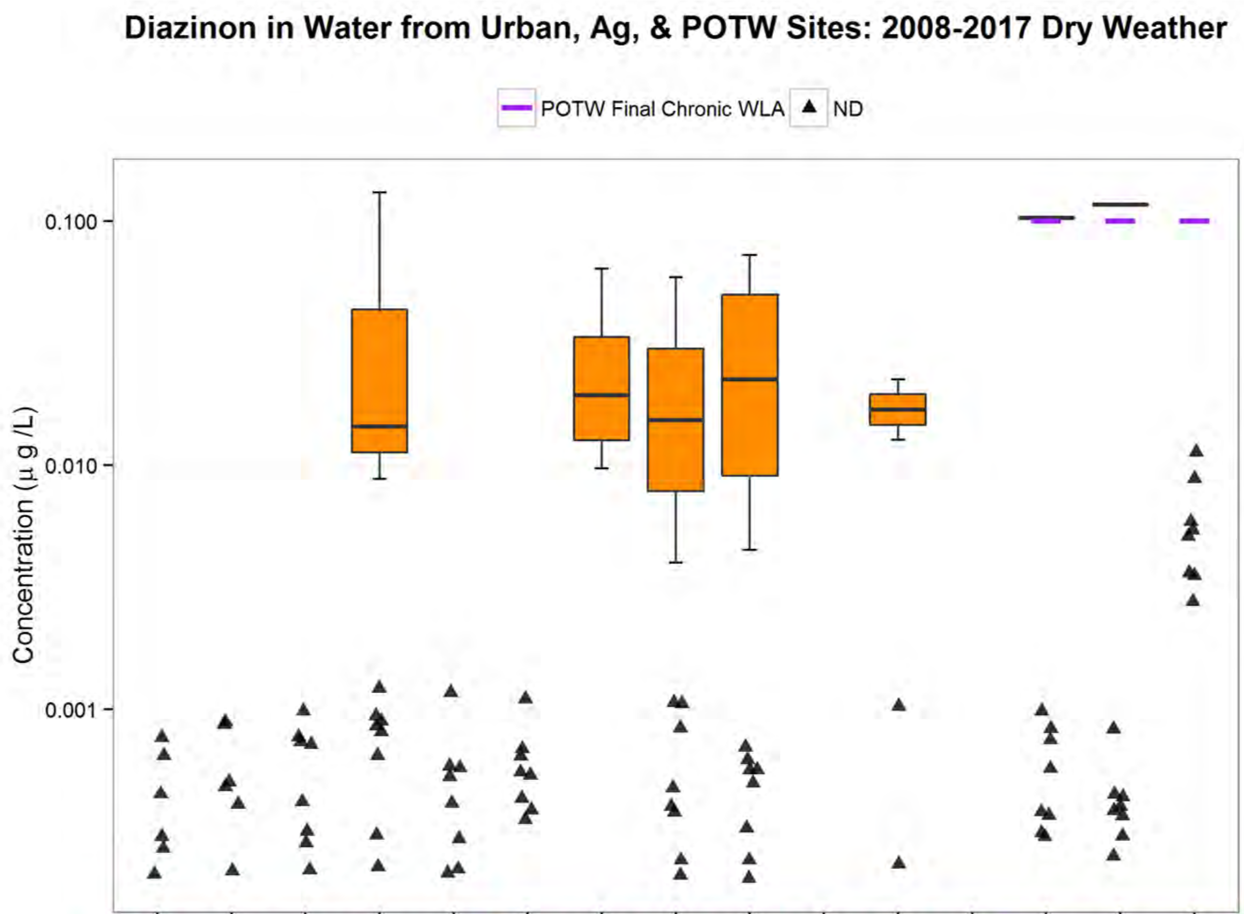
Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_UPLAND	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Aug-16	Dry	56	<0.0005	<0.0005	<0.0005	--	<0.0005	<0.0005	<0.0005	<0.0005
Nov-16	Dry	57	<0.0005	<0.0005	<0.0005	--	<0.0005	<0.0005	<0.0005	<0.0005
Feb-17	Dry	60	<0.0005	<0.0005	<0.0005	--	<0.0005	<0.0005	<0.0005	<0.0005
May-17	Dry	61	<0.0005	<0.0005	<0.0005	--	<0.0005	<0.0005	<0.0005	<0.0005

Figure 49. Diazinon Dry Weather Concentrations in Receiving Water Sites: 2008-2017



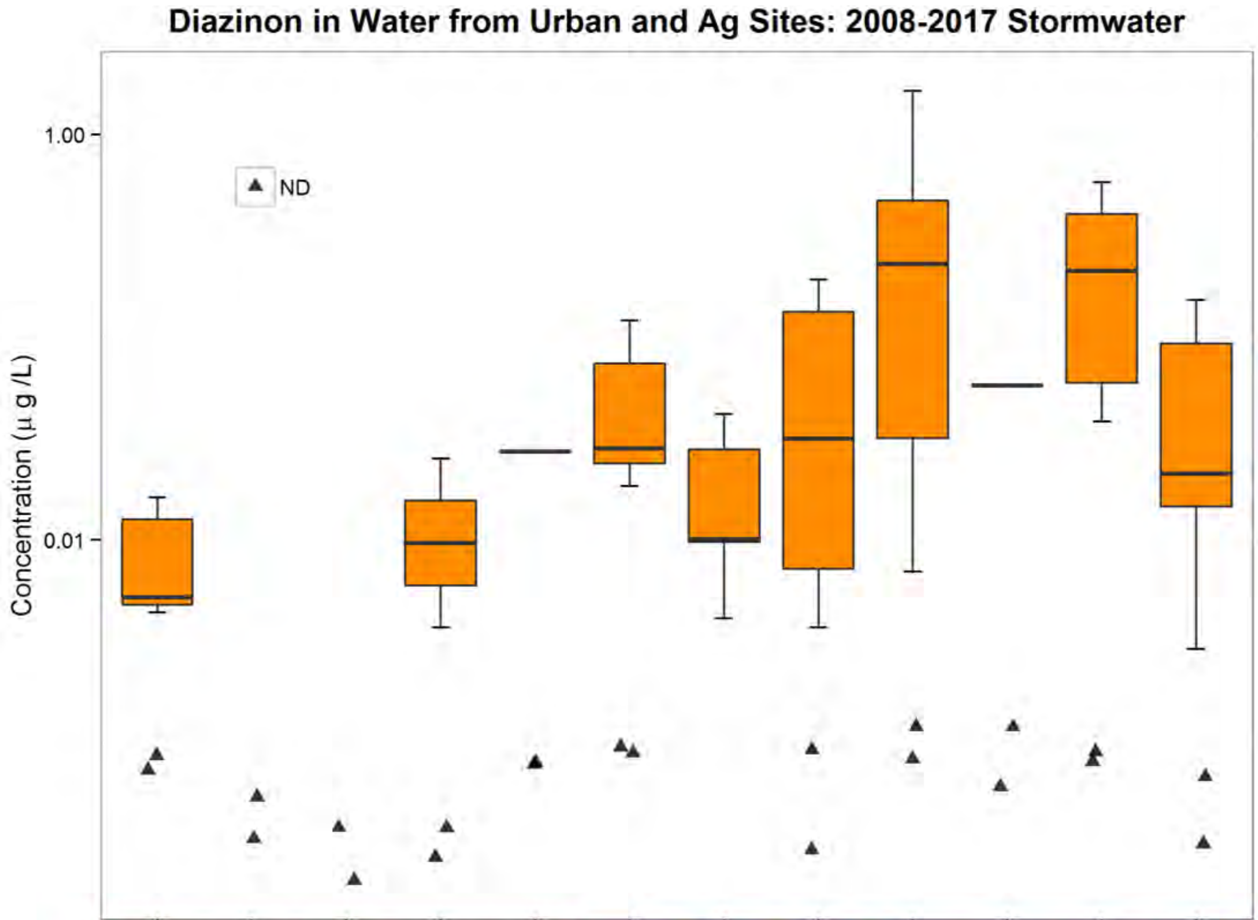
Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_UPLAND	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Dec-16	Storm	58	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Jan-17	Storm	59	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Figure 50. Diazinon Stormwater Concentrations in Receiving Water Sites: 2008-2017



Date	Type	Event	04D_VENTURA	07D_MPK	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-16	Dry	56	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	--	<0.0005	<0.0005	--	--	--	<0.0005	<0.0005	<0.0052
Nov-16	Dry	57	<0.0005	--	<0.0005	<0.0005	<0.0005	<0.0005	--	<0.0005	<0.0005	--	--	--	<0.0005	<0.0005	<0.0052
Feb-17	Dry	60	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	--	<0.0005	<0.0005	--	<0.0005	--	<0.0005	<0.0005	<0.0052
May-17	Dry	61	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	--	<0.0005	<0.0005	--	--	--	<0.0005	<0.0005	<0.0052

Figure 51. Diazinon Dry Weather Concentrations in Urban, Ag, and POTW Sites: 2008-2017

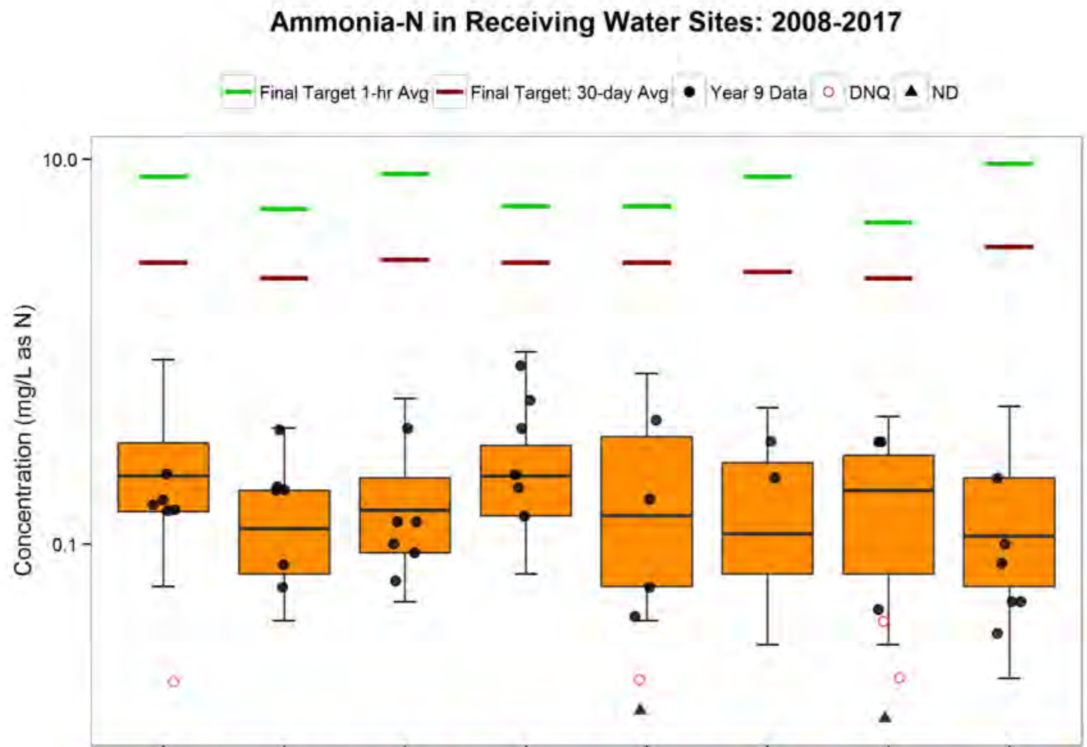


Date	Type	Event	04D_VENTURA	07D_MPK	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY
Dec-16	Storm	58	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Jan-17	Storm	59	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Figure 52. Diazinon Stormwater Concentrations in Urban and Ag Sites: 2008-2017

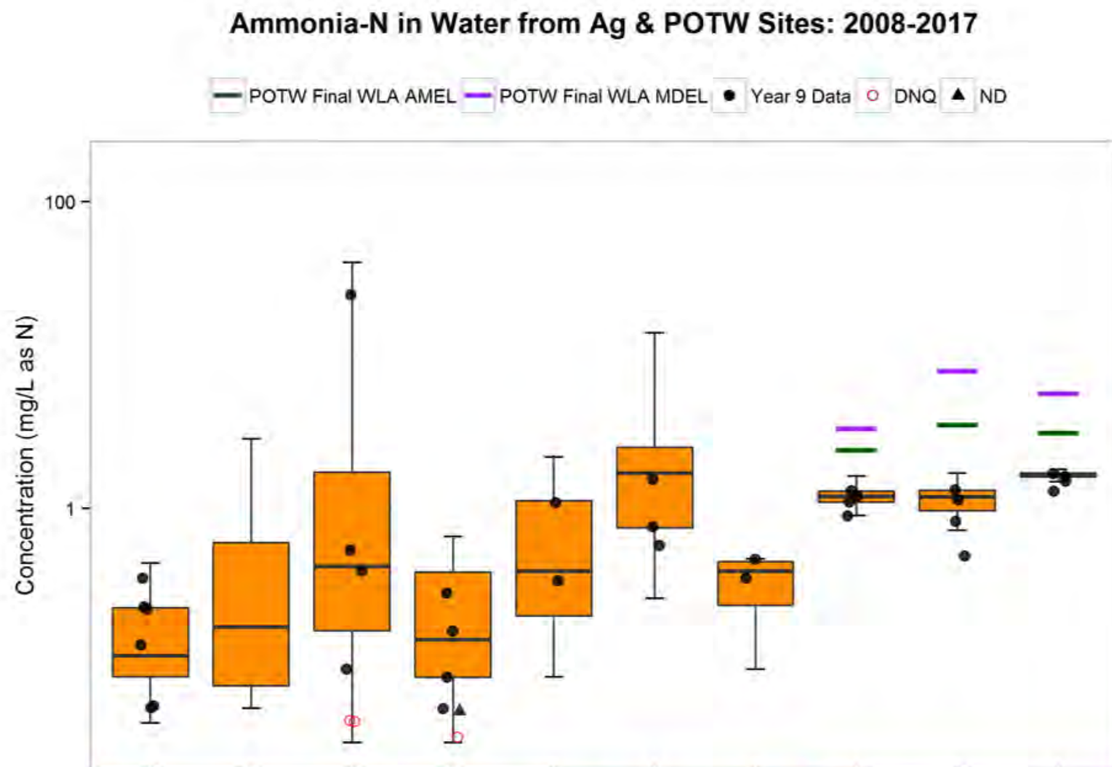
NUTRIENTS TMDL

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.



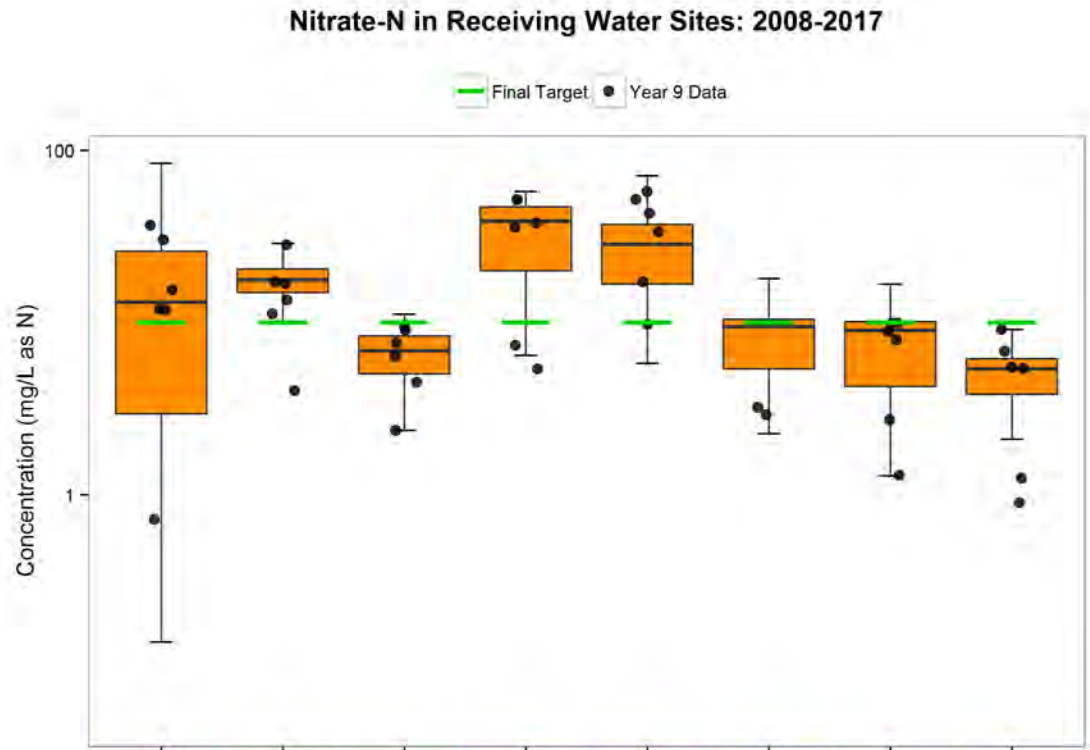
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD	05_CENTR	06_UPLAND	07_HITCH	9B_ADOLF
Aug-16	Dry	56	0.23	0.19	0.09	0.4	0.06	--	*0.02*	0.05
Nov-16	Dry	57	0.17	0.19	0.10	0.85	*0.02*	--	*0.04*	0.05
Dec-16	Storm	58	0.15	0.39	0.40	0.56	0.44	0.22	0.34	0.22
Jan-17	Storm	59	0.15	0.06	0.13	0.14	0.17	0.34	0.34	0.10
Feb-17	Dry	60	0.16	0.20	0.13	0.23	<0.02	--	<0.02	0.08
May-17	Dry	61	*0.01*	0.07	0.06	0.19	0.04	--	0.04	0.03

Figure 53. Ammonia-N Concentrations in Receiving Water Sites: 2008-2017



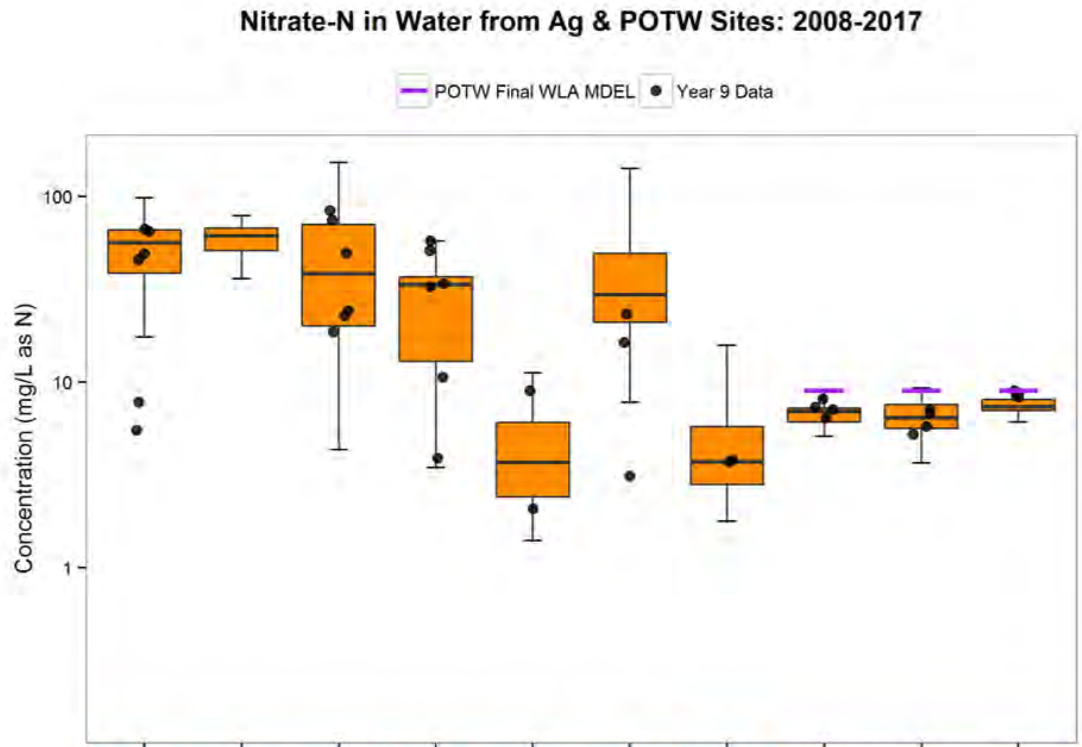
Date	Type	Event	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-16	Dry	56	0.35	--	0.09	0.05	--	--	--	1.1	1.13	1.7
Nov-16	Dry	57	0.05	--	24.80	*0.03*	--	--	--	1.3	1.33	1.6
Dec-16	Storm	58	0.22	--	0.53	0.16	1.10	1.56	0.47	NS	NS	NS
Jan-17	Storm	59	0.23	--	*0.04*	0.28	0.34	0.76	0.35	NS	NS	NS
Feb-17	Dry	60	0.13	--	*0.04*	<0.02	--	0.57	--	1.1	1.82	1.3
May-17	Dry	61	0.05	--	0.39	0.07	--	--	--	0.9	0.49	1.5

Figure 54. Ammonia-N Concentrations in Ag and POTW Sites: 2008-2017



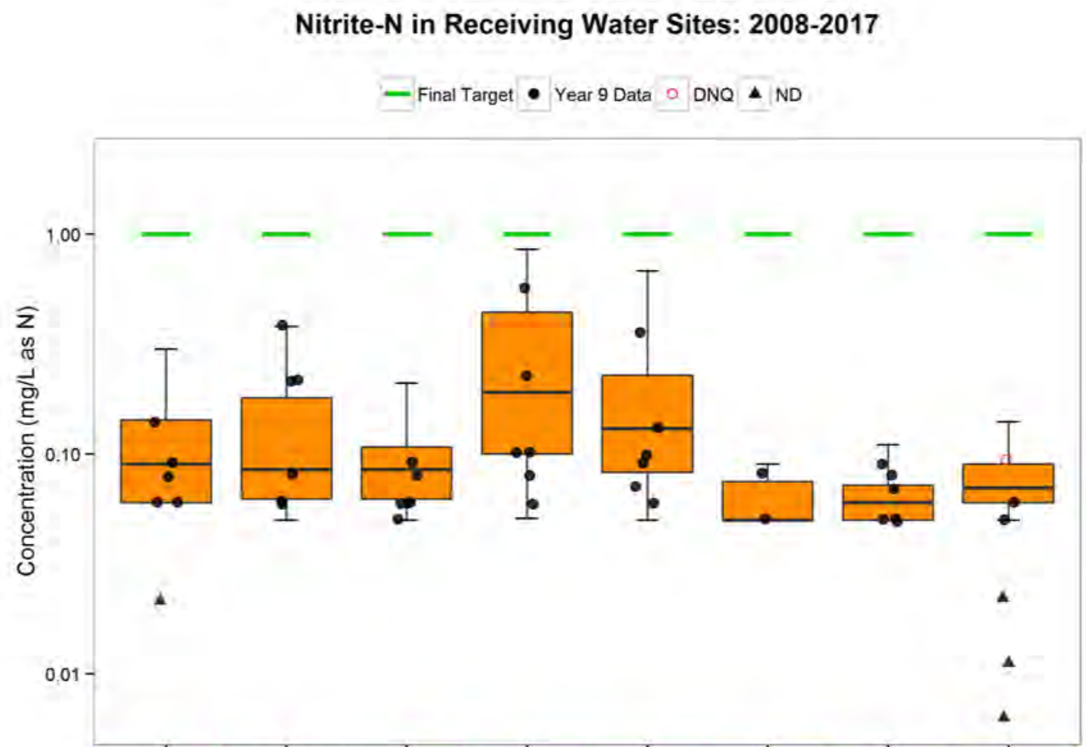
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD	05_CENTR	06_UPLAND	07_HITCH	9B_ADOLF
Aug-16	Dry	56	**11.82**	**11.26**	7.64	**37.78**	**33.72**	--	9.86	5.42
Nov-16	Dry	57	**15.49**	**17.25**	9.56	**35.78**	**43.12**	--	8.82	9.13
Dec-16	Storm	58	**11.93**	**16.78**	4.49	5.40	**17.22**	3.22	2.73	1.25
Jan-17	Storm	59	**30.36**	4.03	2.37	7.40	9.73	2.92	1.30	0.90
Feb-17	Dry	60	**36.70**	**13.53**	6.38	**51.8**	**57.65**	--	7.96	6.80
May-17	Dry	61	0.72	**28.34**	9.05	**51.75**	**52.05**	--	9.93	5.52

Figure 55. Nitrate-N Concentrations in Receiving Water Sites: 2008-2017



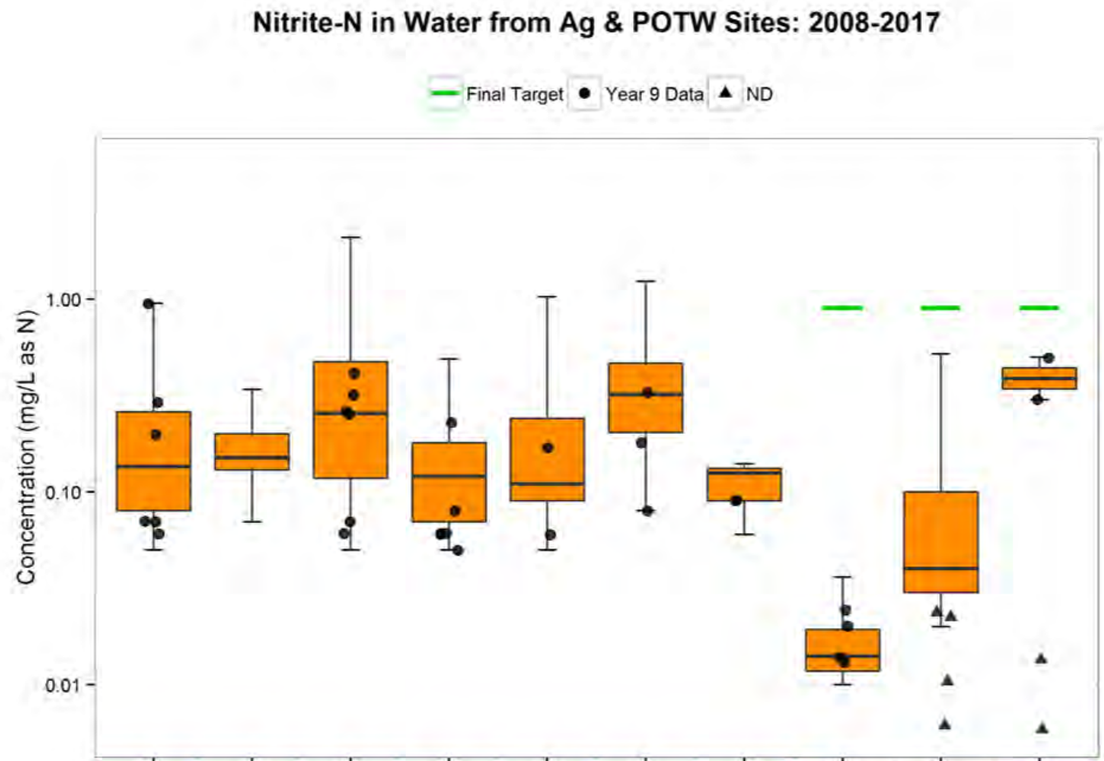
Date	Type	Event	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-16	Dry	56	45.58	--	49.30	32.47	--	--	--	7.3	6.80	8.3
Nov-16	Dry	57	49.15	--	83.55	33.84	--	--	--	7.1	5.21	**9.0**
Dec-16	Storm	58	7.79	--	18.58	10.61	8.99	23.20	3.80	NS	NS	NS
Jan-17	Storm	59	5.50	--	24.26	3.88	2.08	3.11	3.71	NS	NS	NS
Feb-17	Dry	60	65.00	--	74.30	50.90	--	16.35	--	6.4	5.75	8.5
May-17	Dry	61	66.65	--	22.66	57.40	--	--	--	8.1	7.12	8.7

Figure 56. Nitrate-N Concentrations in Ag and POTW Sites: 2008-2017



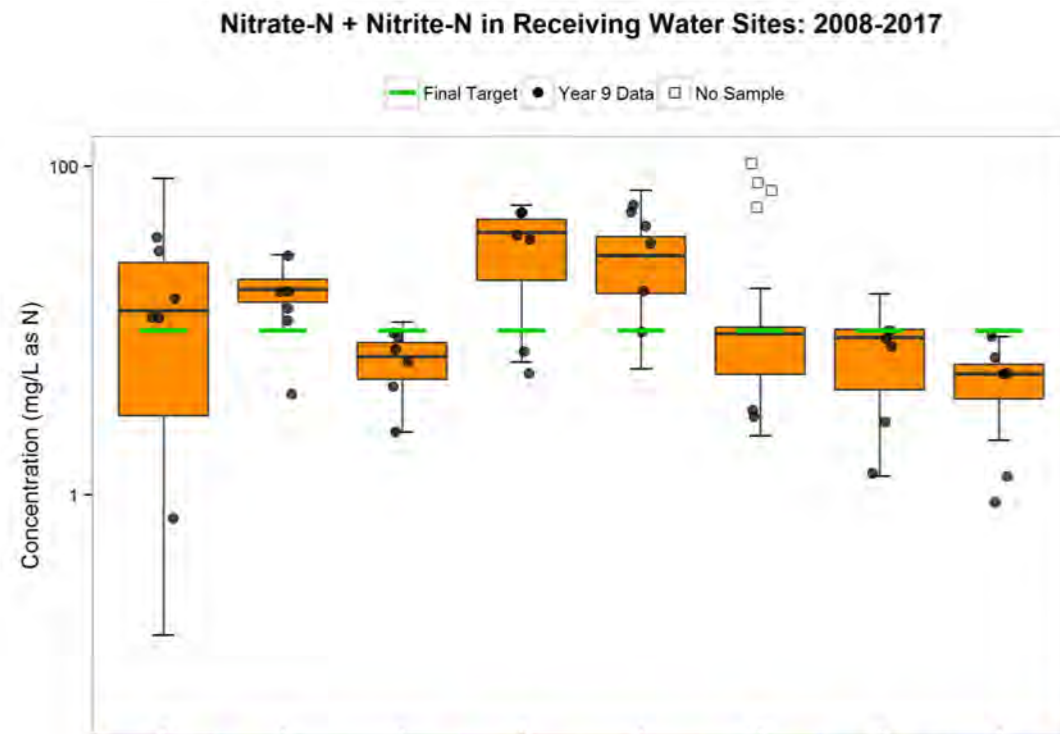
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD	05_CENTR	06_UPLAND	07_HITCH	9B_ADOLF
Aug-16	Dry	56	0.14	0.22	0.06	0.23	0.10	--	0.09	<0.01
Nov-16	Dry	57	0.08	0.06	0.09	0.10	0.09	--	0.08	0.05
Dec-16	Storm	58	0.06	0.38	0.06	0.08	0.13	0.05	0.05	*0.04*
Jan-17	Storm	59	0.09	0.06	0.05	0.06	0.06	0.08	0.05	<0.01
Feb-17	Dry	60	0.06	0.08	0.06	0.10	0.07	--	0.05	0.06
May-17	Dry	61	<0.01	0.21	0.08	0.56	0.35	--	0.07	<0.01

Figure 57. Nitrite-N Concentrations in Receiving Water Sites: 2008-2017



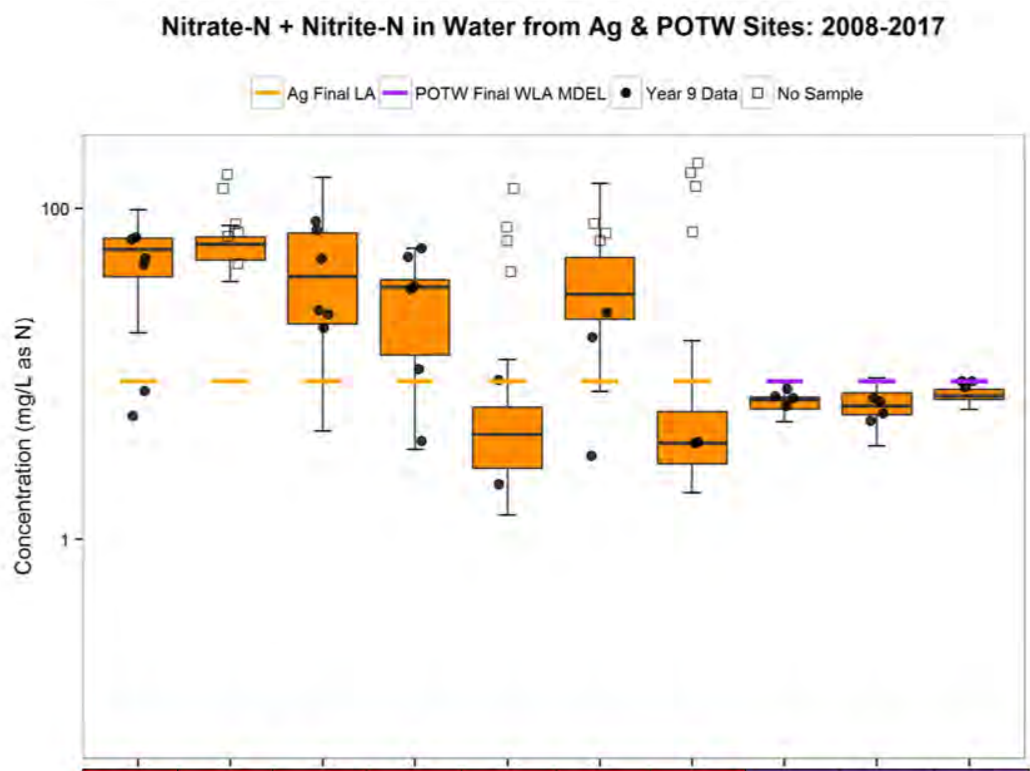
Date	Type	Event	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-16	Dry	56	0.20	--	0.25	0.06	--	--	--	0.020	<0.01	<0.01
Nov-16	Dry	57	0.95	--	0.41	0.06	--	--	--	0.024	<0.01	<0.01
Dec-16	Storm	58	0.07	--	0.32	0.06	0.17	0.18	0.09	NS	NS	NS
Jan-17	Storm	59	0.06	--	0.06	0.05	0.06	0.08	0.09	NS	NS	NS
Feb-17	Dry	60	0.07	--	0.07	0.08	--	0.33	--	0.013	<0.01	0.50
May-17	Dry	61	0.29	--	0.26	0.23	--	--	--	0.014	<0.01	0.30

Figure 58. Nitrite-N Concentrations in Ag and POTW Sites: 2008-2017



Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD	05_CENTR	06_UPLAND	07_HITCH	9B_ADOLF
Aug-16	Dry	56	**11.96**	**11.48**	7.7	**38.01**	**33.82**	--	9.95	5.42
Nov-16	Dry	57	**15.57**	**17.31**	9.65	**35.88**	**43.21**	--	8.90	9.18
Dec-16	Storm	58	**11.99**	**17.16**	4.55	5.48	**17.35**	3.27	2.78	1.29
Jan-17	Storm	59	**30.45**	4.09	2.42	7.46	9.79	3.00	1.35	0.90
Feb-17	Dry	60	**36.76**	**13.61**	6.44	**51.90**	**57.72**	--	8.01	6.86
May-17	Dry	61	0.72	**28.55**	9.13	**52.31**	**52.4**	--	**10.00**	5.52

Figure 59. Nitrate-N + Nitrite-N Concentrations in Receiving Water Sites: 2008-2017

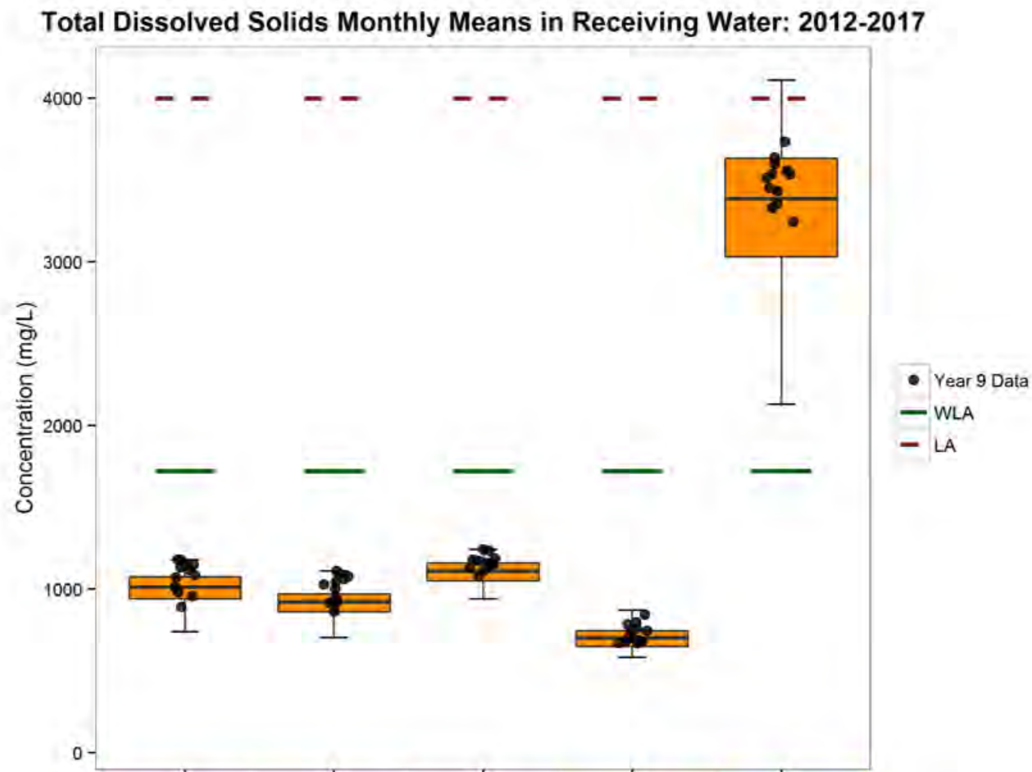


Date	Type	Event	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-16	Dry	56	**45.78**	--	**49.55**	**32.53**	--	--	--	7.32	6.80	8.3
Nov-16	Dry	57	**50.10**	--	**83.96**	**33.90**	--	--	--	7.12	5.21	**9.0**
Dec-16	Storm	58	7.86	--	**18.90**	**10.67**	**9.16**	**23.38**	**3.89**	NS	NS	NS
Jan-17	Storm	59	5.56	--	**24.32**	3.93	2.14	3.19	3.80	NS	NS	NS
Feb-17	Dry	60	**65.07**	--	**74.37**	**50.98**	--	**16.68**	--	6.41	5.75	**9.0**
May-17	Dry	61	**66.94**	--	**22.92**	**57.63**	--	--	--	8.11	7.12	**9.0**

Figure 60. Nitrate-N + Nitrite-N Concentrations in Ag and POTW Sites: 2008-2017

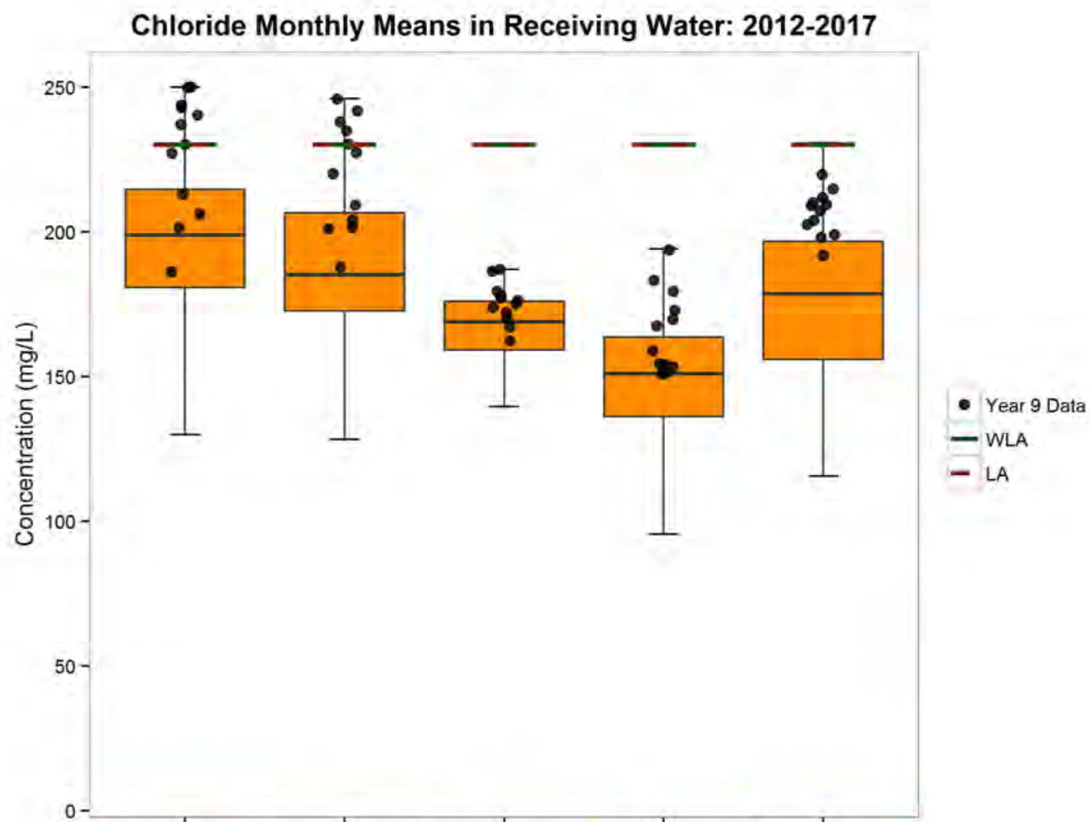
SALTS TMDL

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.



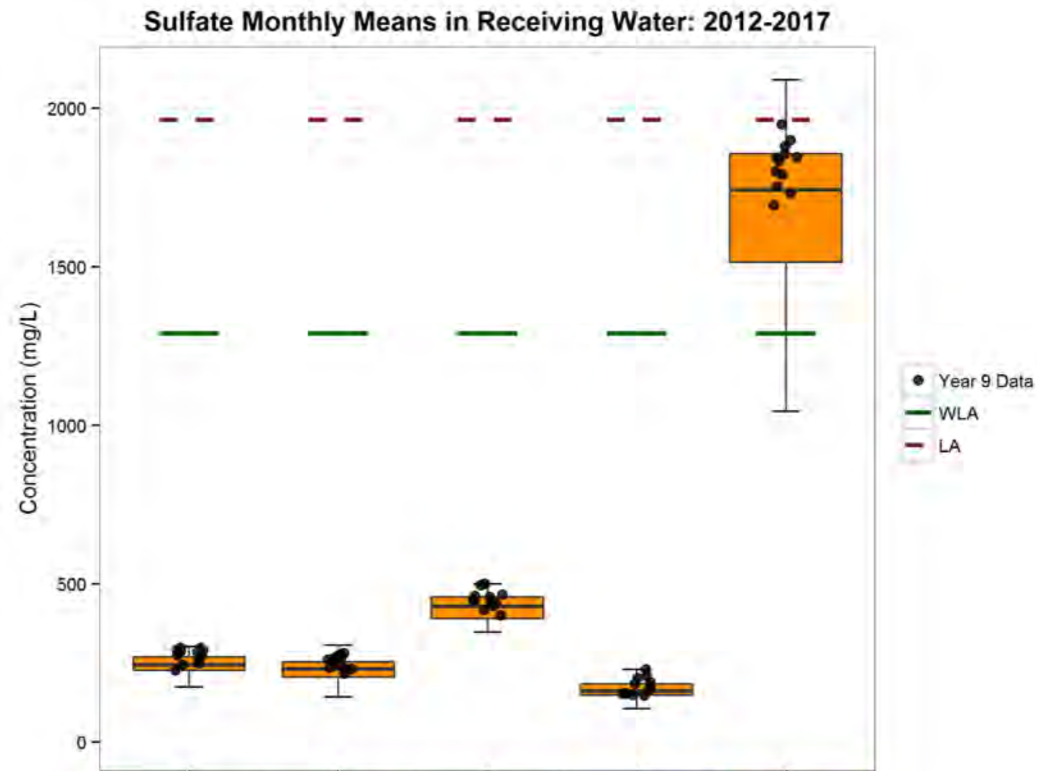
Date	03_UNIV	9A_HOWAR	07_TIERRA	9B_BARON	04_WOOD
Jul-16	1144	1093	1180	703	*3534*
Aug-16	1132	1077	1155	683	*3429*
Sep-16	1120	1028	1144	679	*3355*
Oct-16	1071	951	1127	681	*3243*
Nov-16	1011	930	1106	668	*3598*
Dec-16	980	915	1077	671	*3532*
Jan-17	891	862	1186	745	*3733*
Feb-17	957	917	1235	784	*3638*
Mar-17	1086	999	1241	843	*3553*
Apr-17	1178	1062	1174	798	*3511*
May-17	1149	1042	1160	758	*3449*
Jun-17	1179	1110	1158	734	*3326*

Figure 61. TDS Monthly Means for Receiving Water Sites Collected During Dry Weather



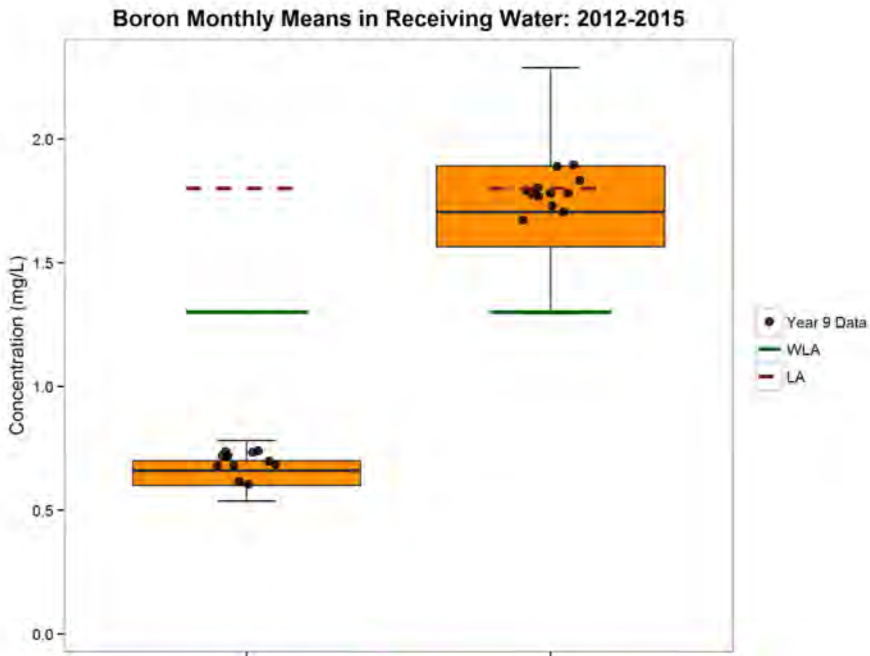
Date	03_UNIV	9A_HOWAR	07_TIERRA	9B_BARON	04_WOOD
Jul-16	**243**	**242**	178	159	209
Aug-16	**240**	**238**	174	154	202
Sep-16	**237**	227	172	153	198
Oct-16	227	209	170	154	192
Nov-16	213	204	167	151	212
Dec-16	206	201	162	151	209
Jan-17	186	188	179	170	220
Feb-17	201	201	186	179	215
Mar-17	**230**	220	187	194	210
Apr-17	**250**	**235**	177	183	207
May-17	**244**	**230**	175	173	204
Jun-17	**250**	**246**	176	167	199

Figure 62. Chloride Monthly Means for Receiving Water Sites Collected During Dry Weather



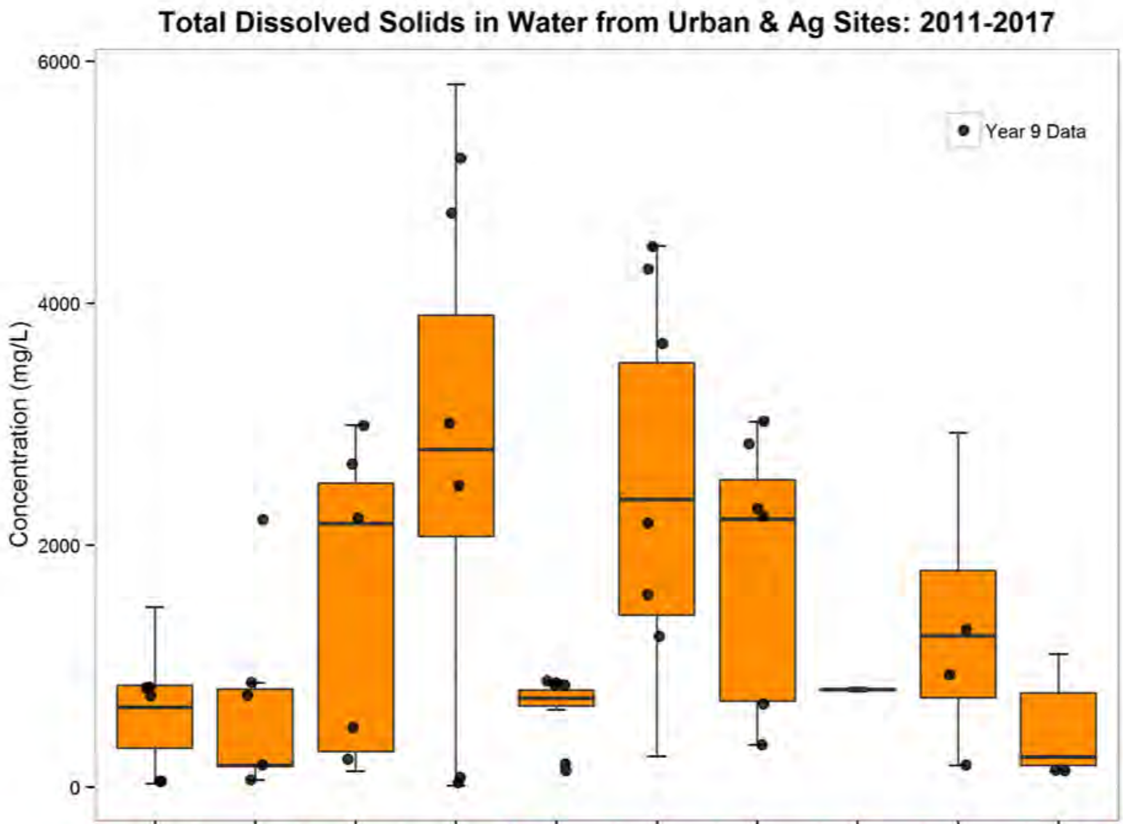
Date	03_UNIV	9A_HOWAR	07_TIERRA	9B_BARON	04_WOOD
Jul-16	289	277	461	164	*1845*
Aug-16	286	273	446	154	*1790*
Sep-16	283	260	439	152	*1752*
Oct-16	271	240	429	153	*1693*
Nov-16	256	235	416	147	*1878*
Dec-16	249	231	399	149	*1844*
Jan-17	227	217	466	183	*1948*
Feb-17	243	231	495	202	*1899*
Mar-17	275	253	499	230	*1855*
Apr-17	297	269	458	209	*1833*
May-17	290	264	449	190	*1800*
Jun-17	298	281	446	177	*1731*

Figure 63. Sulfate Monthly Means for Receiving Water Sites Collected During Dry Weather



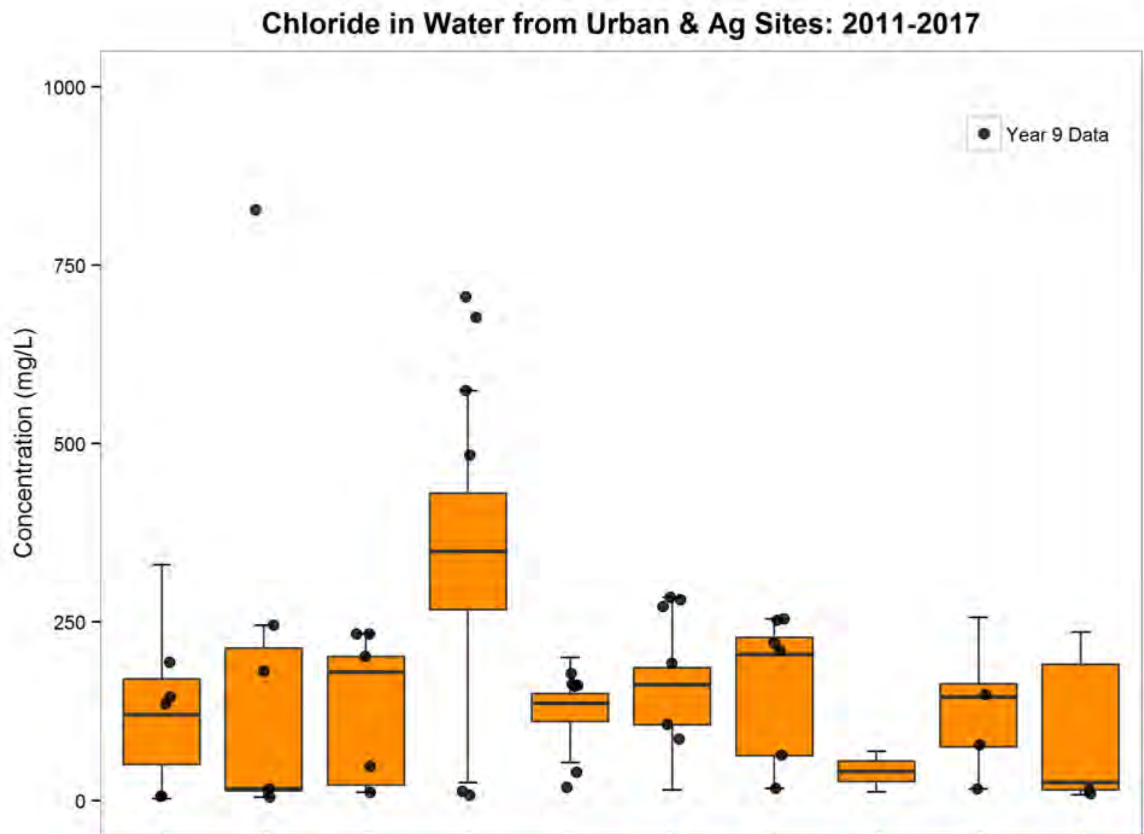
Date	07_TIERRA	04_WOOD
Jul-16	0.7	**1.8**
Aug-16	0.7	**1.8**
Sep-16	0.7	*1.7*
Oct-16	0.7	*1.7*
Nov-16	0.6	**1.8**
Dec-16	0.6	**1.8**
Jan-17	0.7	**1.9**
Feb-17	0.7	**1.9**
Mar-17	0.7	**1.8**
Apr-17	0.7	**1.8**
May-17	0.7	**1.8**
Jun-17	0.7	*1.7*

Figure 64. Boron Monthly Means for Receiving Water Sites Collected During Dry Weather



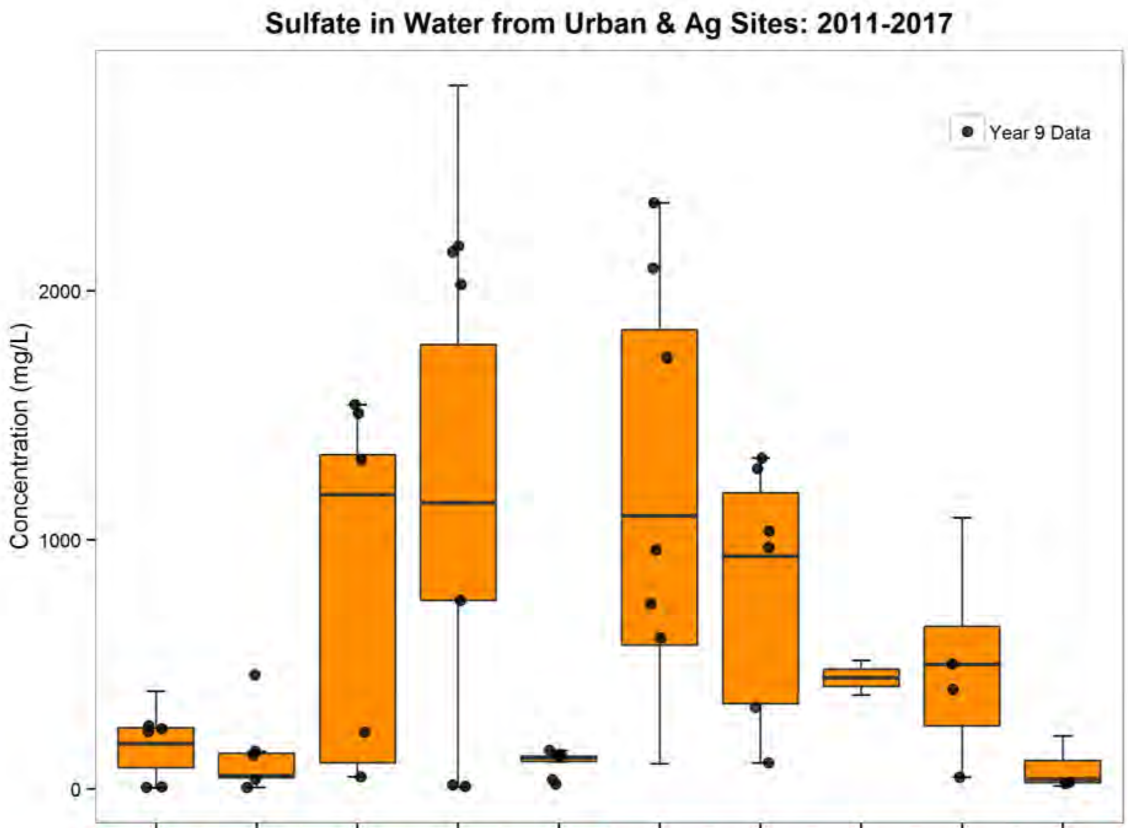
Date	04D_VENTURA	07D_MPK	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	04D_WOOD	05D_SANT _VCWPD	06T_FC_BR	07D_HITCH _LEVEE_2	9BD_GERRY
Aug-16	--	2210	--	4750	860	3670	2300	--	--	--
Nov-16	820	--	2220	2490	880	4280	2240	--	--	--
Dec-16	50	180	490	80	130	1250	690	--	930	140
Jan-17	50	60	230	40	190	1590	350	--	180	130
Feb-17	750	760	2990	5200	840	4470	3020	--	1300	--
May-17	820	860	2670	3010	840	2180	2840	--	--	--

Figure 65. Total Dissolved Solids in Water from Urban and Ag Sites: 2011-2017



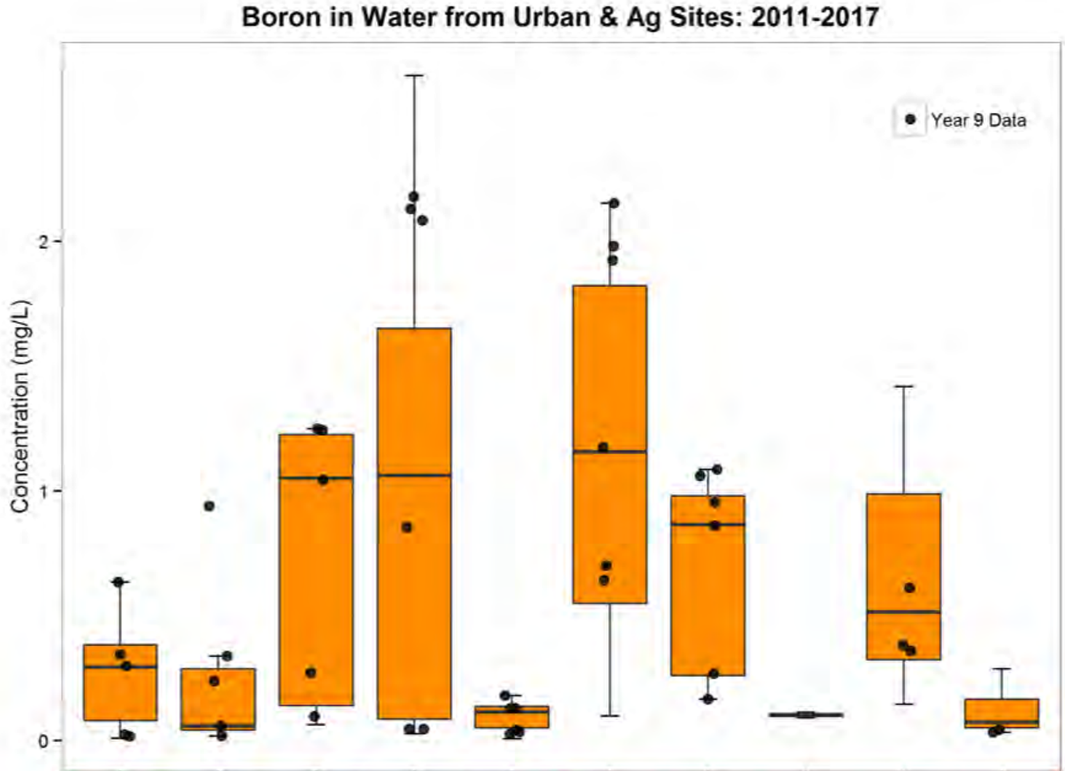
Date	04D_VENTURA	07D_MPK	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	04D_WOOD	05D_SANT _VCWPD	06T_FC_BR	07D_HITCH _LEVEE_2	9BD_GERRY
Aug-16	--	827.2	--	483.8	159.7	284.4	220.6	--	--	--
Nov-16	144.9	--	202	676.6	162.9	271.4	210.7	--	--	--
Dec-16	5.6	16.0	47.6	12.52	18.2	85.7	63.5	--	77.6	9.2
Jan-17	5.8	4.3	11.4	7.4	39.1	106.8	16.5	--	16.2	15.0
Feb-17	135.2	180.9	233	705.3	160.9	281.1	254.1	--	148.2	--
May-17	193.5	245.2	233.1	574	177.6	192.3	252.4	--	--	--

Figure 66. Chloride in Water from Urban & Ag Sites: 2011-2017



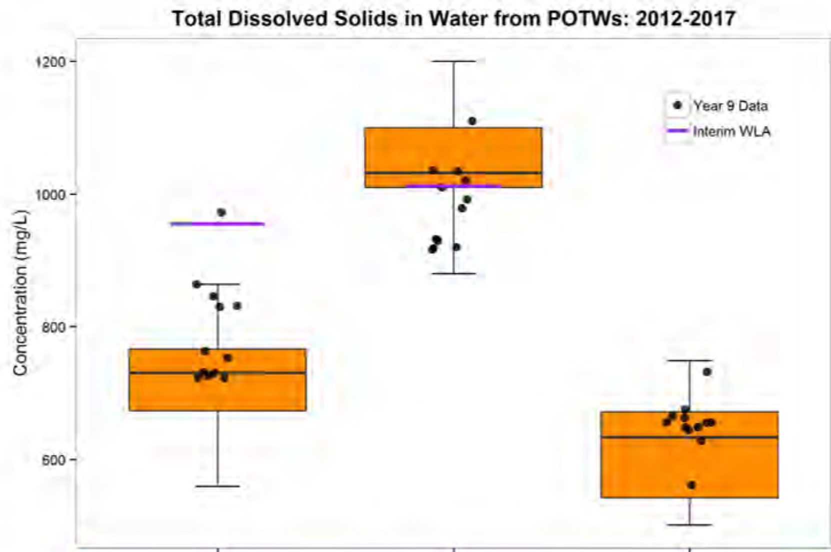
Date	04D_VENTURA	07D_MPK	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY
Aug-16	--	456.8	--	2179.6	137.3	1731.2	1034.1	--	--	--
Nov-16	252.1	--	1322.2	757.4	129.3	2091	969.5	--	--	--
Dec-16	5.6	37.8	227.6	14.5	19.02	605.9	325.0	--	399.6	19.9
Jan-17	6.4	6.1	48.0	8.73	36.3	743.4	104.6	--	45.5	27.0
Feb-17	240.5	151.1	1542.5	2156.3	153.5	2352.7	1328.1	--	502.4	--
May-17	228.7	134.3	1508.3	2025.2	136.24	959.3	1284.8	--	--	--

Figure 67. Sulfate in Water from Urban & Ag Sites: 2011-2017



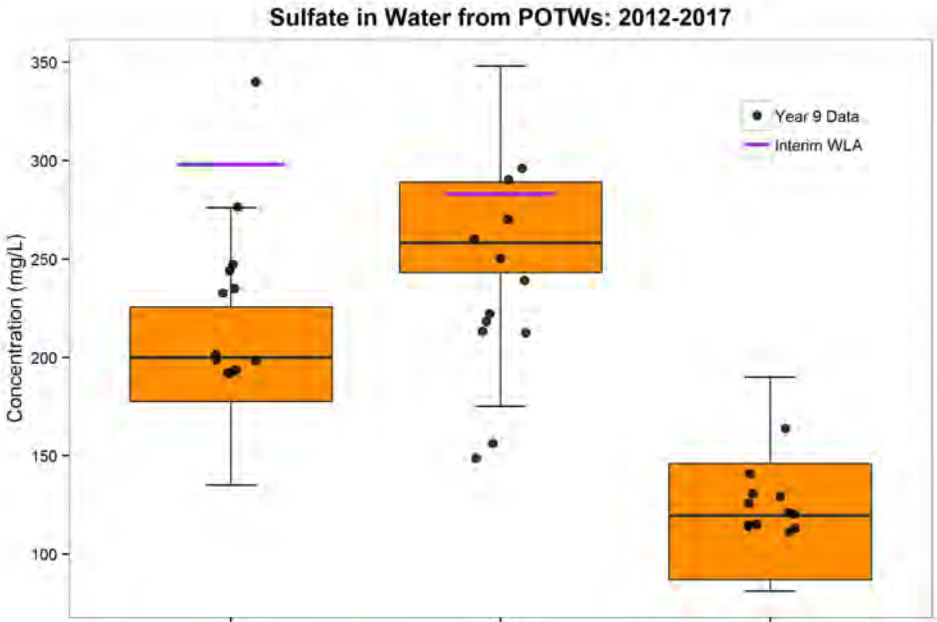
Date	04D_VENTURA	07D_MPK	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY
Aug-16	--	0.93	--	2.0	0.17	1.9	0.95	--	--	--
Nov-16	0.63	--	1.0	0.85	0.13	1.9	0.86	--	--	--
Dec-16	0.02	0.05	0.27	0.04	0.03	0.64	0.26	--	0.35	0.03
Jan-17	0.01	0.01	0.09	0.04	0.04	0.69	0.16	--	0.38	0.04
Feb-17	0.29	0.23	1.2	2.1	0.12	2.1	1.0	--	0.61	--
May-17	0.34	0.33	1.2	2.1	0.02	1.1	1.0	--	--	--

Figure 68. Boron in Water from Urban & Ag Sites: 2011-2017



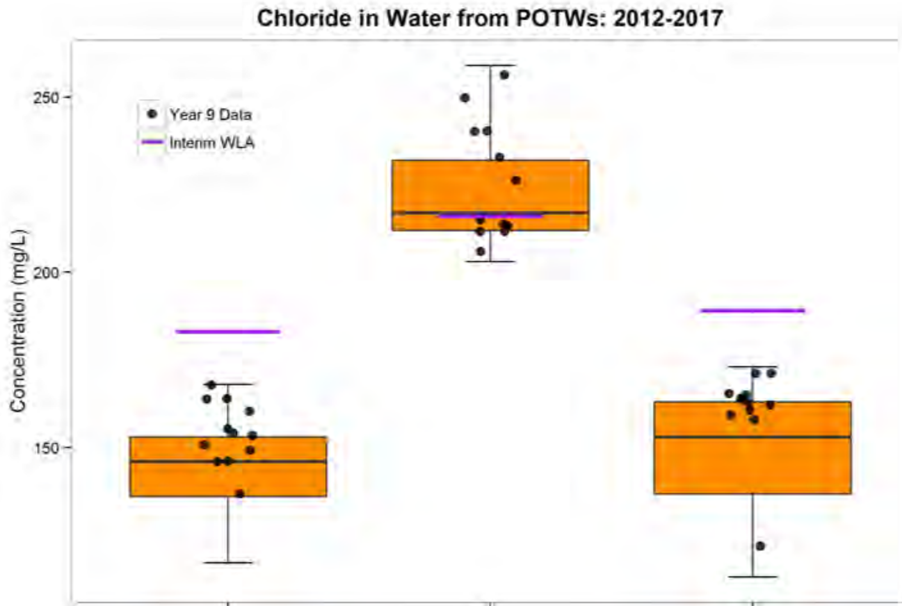
Date	07D_SIMI	9AD_CAMA	10D_HILL
Jul-16	830	1010	675
Aug-16	763	**1020**	655
Sep-16	723	**1034**	656
Oct-16	732	918	648
Nov-16	723	930	663
Dec-16	730	932	561
Jan-17	753	920	628
Feb-17	**972**	992	656
Mar-17	864	916	665
Apr-17	846	978	732
May-17	831	**1110**	649
Jun-17	725	**1036**	644

Figure 69. Total Dissolved Solids in Water from POTW Sites: 2012-2017



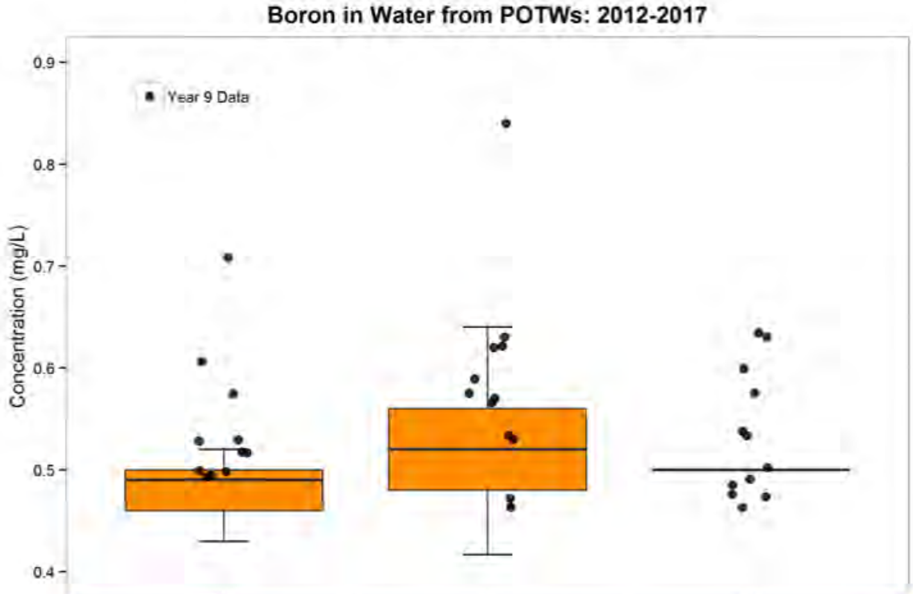
Date	07D_SIMI	9AD_CAMA	10D_HILL
Jul-16	235	250	131
Aug-16	194	**290**	164
Sep-16	192	222	111
Oct-16	192	156	113
Nov-16	199	149	126
Dec-16	201	213	129
Jan-17	233	212	120
Feb-17	**340**	218	115
Mar-17	276	239	121
Apr-17	244	270	141
May-17	247	**296**	114
Jun-17	198	260	115

Figure 70. Sulfate in Water from POTW Sites: 2012-2017



Date	07D_SIMI	9AD_CAMA	10D_HILL
Jul-16	164	**240**	171
Aug-16	154	**250**	122
Sep-16	153	**233**	171
Oct-16	146	206	165
Nov-16	146	213	159
Dec-16	151	214	158
Jan-17	149	215	161
Feb-17	168	212	163
Mar-17	160	212	165
Apr-17	137	**240**	164
May-17	164	**256**	164
Jun-17	155	**226**	162

Figure 71. Chloride in Water from POTW Sites: 2012-2017



Date	07D_SIMI	9AD_CAMA	10D_HILL
Jul-16	0.6	0.6	0.6
Aug-16	0.5	0.6	0.6
Sep-16	0.5	0.6	0.6
Oct-16	0.5	0.5	0.5
Nov-16	0.5	0.5	0.5
Dec-16	0.5	0.6	0.5
Jan-17	0.5	0.5	0.5
Feb-17	0.6	0.5	0.5
Mar-17	0.7	0.6	0.5
Apr-17	0.9	0.8	0.6
May-17	0.5	0.6	0.5
Jun-17	0.5	0.6	0.5

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	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	Arroyo Chub	Whole Fish	4.7	DNQ	ND	ND	6.6	ND	ND	373	ND	ND	ND
9/3/09	Arroyo Chub	Comp. #1	4.2	25	11	24	38	97	127	2422	13	6397	98
9/3/09	Arroyo Chub	Comp. #2	5.7	20	13	28	38	102	116	2782	20	5675	55
9/3/09	Arroyo Chub	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	Black Bullhead	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	Common Carp	Carcass #2	4.3	37	19	24	DNQ	16	112	2492	328	8510	21
9/3/09	Common Carp	Carcass #3	4.7	47	25	26	22	31	119	2744	466	ND	ND
9/3/09	Common Carp	Fillet w/ Skin #1	1.5	5.5	ND	DNQ	ND	10	21	413	46	ND	ND
9/3/09	Common Carp	Fillet w/ Skin #2	1.6	12	DNQ	13	ND	21	25	708	115	ND	ND
9/3/09	Common Carp	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	Arroyo Chub	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	Arroyo chub	Comp. #2	9.5	18	5.2	15	15	40	37	646	21	3213	56
9/3/09	Arroyo chub	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	Common Carp	Fillet w/ Skin #1	0.8	ND	ND	ND	ND	ND	10	190	ND	ND	ND
9/3/09	Common Carp	Carcass #2	4.8	49	24	18	ND	ND	170	3643	99	3566	93
9/3/09	Common Carp	Fillet w/ Skin #2	1.6	10	5.4	8.6	ND	ND	43	1019	30	ND	26
9/3/09	Common Carp	Carcass Comp. #3	4	27	15	19	12	131	58	1019	190	2544	70
9/3/09	Common Carp	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	Arroyo chub	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
6/17/15	Common Carp	Filet 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
6/17/15	Common Carp	Filet 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	Arroyo Chub	Composite #1	65-90mm	10.6	ND	ND	5.3	DNQ	12	15.8	365	ND	ND
9/3/09	Arroyo Chub	Composite #2	43-60mm	9.7	DNQ	ND	33	ND	749	437	1183	ND	ND
9/3/09	Arroyo Chub	Composite #2	65-90mm	10.5	DNQ	ND	32	14.6	74	195	1648	26	28
9/3/09	Arroyo Chub	Composite #3	43-60mm	8.3	DNQ	ND	26	ND	45	343	967	ND	ND
9/3/09	Arroyo Chub	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
6/17/15	Largemouth Bass	Whole fish #2		11.8	ND	ND	ND	ND	ND	ND	58.5	ND	5.1
6/17/15	Largemouth Bass	Whole fish #3		14.9	DNQ	ND	ND	ND	1.8	4.1	197.5	7.1	11.6
6/17/15	Largemouth Bass	Whole fish #4		7.8	DNQ	ND	ND	ND	ND	ND	78.9	ND	12.7
6/17/15	Largemouth Bass	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
8/11/15	Goldfish	Grab #1		4.2	ND	ND	ND	ND	ND	ND	184.1	ND	ND
8/11/15	Goldfish	Grab #2		7.1	6.7	5.0	5.7	ND	ND	ND	101.3	ND	DNQ
8/11/15	Goldfish	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	Fathead Minnow	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	Fathead Minnow	#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]	Goldfish	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]	Fathead Minnow	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
		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
	L.M. Bass	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
		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	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
8/7/08	Common Carp	Comp. Fillet, no skin	3	ND	ND	27	ND	14	85	1194	21	349	ND
8/7/08	Common Carp	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	Common Carp	Fillet w/ Skin #1	2.8	35	21	55	17	ND	262	4210	328	6630	ND
9/3/09	Common Carp	Carcass	9.6	102	60	205	76	ND	1070	9590	367	17000	51
9/3/09	Common Carp	Fillet w/ Skin #2	3.3	47	31	110	31	ND	371	4790	168	5930	DNQ
9/3/09	Common Carp	Carcass	9	117	66	185	64	ND	1100	7750	411	14300	54
9/3/09	Common Carp	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	Arroyo Chub	Comp. #1	9	38	24	82	73	222	689	5630	36	19900	DNQ
9/3/09	Arroyo Chub	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	1.8
		Filet w/o skin #1	2.8	0.02	1.1
		Filet w/o skin #2	6.2	0.03	0.9
8/11/15	Fathead Minnow	Comp. #1	23.3	0.1	9.6
		Comp. #2	18.8	0.1	11.2
		Comp. #3	14.8	0.7	10.0
		Comp. #4	28.5	0.7	10.5
5/18/16[3]	Common Carp	#1	3.86	0.03	1.3
		#2	8.86	0.04	1.6
		#3	1.11	0.02	1.4
		#4	10.98	0.02	1.6
		#5	3.93	0.03	1.6
		#6	6.36	0.03	1.9
		#7	2.22	0.02	1.1
		#8	2.71	0.02	1.0
	Fathead Minnow	#1	3.89	0.02	1.8
		#2	1.69	0.03	1.9
		#3	2.43	0.03	1.7
		#4	5.94	0.03	2.2
		#5	2.02	0.01	1.3
		#6	1.41	0.03	2.5
		#7	1.52	0.03	2.2
5/25/17	Common Carp	Whole Fish #1	2.34	ND	1.15
		Whole Fish #2	2.21	DNQ	1.16
		Whole Fish #3	2.30	ND	1.13
		Whole Fish #4	1.10	DNQ	1.19
		Whole Fish #5	3.66	0.019	0.98
		Skinless Filet #1	4.0	0.037	1.58

Date	Fish		Lipids	Metals	
			Percent Lipids %	Total Mercury μg/g	Total Selenium μg/g
5/25/17	Fathead Minnow	Whole Comp. #1	7.28	0.008	2.36
		Whole Comp. #2	7.35	DNQ	2.26
		Whole Comp. #3	6.85	0.006	2.44
		Whole Comp. #4	5.08	0.006	2.57
		Whole Comp. #5	6.26	DNQ	2.34

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]			

1. 10_GATE and 13_BELT are also toxicity investigation monitoring sites. During year 5 these sites were only sampled during Event 38.
2. 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.
3. 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.
4. Toxicity testing was not performed at the 10_GATE site for Event 40.
5. Toxicity testing was not performed at the 10_BELT site for Event 41.
6. 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.
7. 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.
8. Toxicity testing was not performed at the 06_SOMIS site for Event 44.
9. Toxicity testing was not performed at the 13_BELT site for Event 45.
10. 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.
11. 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.
12. Toxicity testing was not performed at the 06_SOMIS or 13_BELT sites for Event 49.
13. During year 8, toxicity testing was only performed at the 06_SOMIS site for Event 52.
14. 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
Calleguas Creek – Hwy 1 Bridge (02_PCH)			
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
Revolon Slough – Wood Road (04_WOOD)			
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
Calleguas Creek – Camarillo Street CSUCI (03_UNIV)			
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
Conejo Creek – Adolfo Road (9B_ADOLF)			
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
Arroyo Las Posas – Upland Road (06_UPLAND) [4]			
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
Arroyo Simi – Hitch Boulevard (07_HITCH)			
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
Mugu Lagoon - Ronald Reagan Bridge (01_RR_BR)								
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
Calleguas Creek – Hwy 1 Bridge (02_PCH)								
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**
Calleguas Creek – Camarillo Street CSUCI (03_UNIV)								
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
Revolon Slough – Wood Road (04_WOOD)								
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**
Beardsley Wash – Central Avenue (05_CENTR)								
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**
Arroyo Las Posas – Upland Road (06_UPLAND)[3]								
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
Mugu Lagoon – Ronald Reagan Bridge (01_RR_BR)											
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
Calleguas Creek – Camarillo Street CSUCI (03_UNIV)											
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
Revolon Slough – Wood Road (04_WOOD)											
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
Arroyo Las Posas – Upland Road (06_UPLAND) [3]											
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
Arroyo Simi – Hitch Boulevard (07_HITCH)											
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
Conejo Creek – Adolfo Road (9B_ADOLF)											
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
Conejo Creek – Hill Canyon Below N Fork (10_GATE)											
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
Conejo Creek – S Fork Behind Belt Press Build (13_BELT)											
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	
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					--	--			0.27
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	
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					--	--			0.48

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	Interim Limit 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
Simi Valley Water Quality Control Plant (07D_SIMI)						
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
Camarillo Water Reclamation Plan (9AD_CAMA)						
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
Hill Canyon Wastewater Treatment Plant (10D_HILL)						
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
Camarillo Water Reclamation Plant (9AD_CAMA)						
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
Hill Canyon Wastewater Treatment Plant (10D_HILL)						
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
Simi Valley Water Quality Control Plant (07D_SIMI)						
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
Camarillo Water Reclamation Plant (9AD_CAMA)						
Chlorpyrifos	µg/L	0.0133	ND	ND	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
Hill Canyon Wastewater Treatment Plant (10D_HILL)						
Chlorpyrifos	µg/L	0.014	ND	ND	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
Simi Valley Water Quality Control Plant (07D_SIMI)						
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
Camarillo Water Reclamation Plant (9AD_CAMA)										
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
Hill Canyon Wastewater Treatment Plant (10D_HILL)										
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 Daily Max WLA [1]	Final Monthly Avg WLA [1]	Interim WLA [2]	Final WLA [3]	Event 56 Dry Aug-2016	Event 57 Dry Nov-2016	Event 60 Dry Feb-2017	Event 61 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 data 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
Camarillo Water Reclamation Plant (9AD_CAMA) [1]														
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**
Hill Canyon Wastewater Treatment Plant (10D_HILL)														
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
Simi Valley Water Quality Control Plant (07D_SIMI)														
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	Interim WLA [1]	Interim LA [1]	Dry Weather Events 56 Aug-16	57 Nov-16	60 Feb-17	61 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 WLA	Interim Limits 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
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 WLA	Interim Limits 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
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 WLA	Interim Limits 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
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

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		Constituents					
	Sample Date	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	The conductivity at the site was greater than the accepted range for the designated test species (*Ceriodaphnia dubia*). The QAPP requires the use of *Americamysis bahia*. However, *Hylella azteca* 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. To maintain consistency with an existing watershed program, the toxicity testing lab (Pacific EcoRisk) utilized *Hylella azteca* in place of *Americamysis bahia*.
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

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		Constituents					
	Sample Date	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		Constituents					
	Sample Date	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	The conductivity at the site was greater than the accepted range for the designated test species (*Ceriodaphnia dubia*). The QAPP requires the use of *Americamysis bahia*. However, *Hylella azteca* 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. To maintain consistency with an existing watershed program, the toxicity testing lab (Pacific EcoRisk) utilized *Hylella azteca* in place of *Americamysis bahia*.
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

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		Constituents					
	Sample Date	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 tubidity 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

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		Constituents					
	Sample Date	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		Constituents					
	Sample Date	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 tubidity 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

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 14^{th} and 15^{th}, 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		Constituents					
	Sample Date	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	The conductivity at the site was greater than the accepted range for the designated test species (*Ceriodaphnia dubia*). The QAPP requires the use of *Americamysis bahia*. However, *Hylella azteca* 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. To maintain consistency with an existing watershed program, the toxicity testing lab (Pacific EcoRisk) utilized *Hylella azteca* in place of *Americamysis bahia*.
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

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		Constituents					
	Sample Date	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	The conductivity at the site was greater than the accepted range for the designated test species (*Ceriodaphnia dubia*). The QAPP requires the use of *Americamysis bahia*. However, *Hylella azteca* 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. To maintain consistency with an existing watershed program, the toxicity testing lab (Pacific EcoRisk) utilized *Hylella azteca* in place of *Americamysis bahia*.
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		Constituents			
	Sample Date	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 (µS/cm)

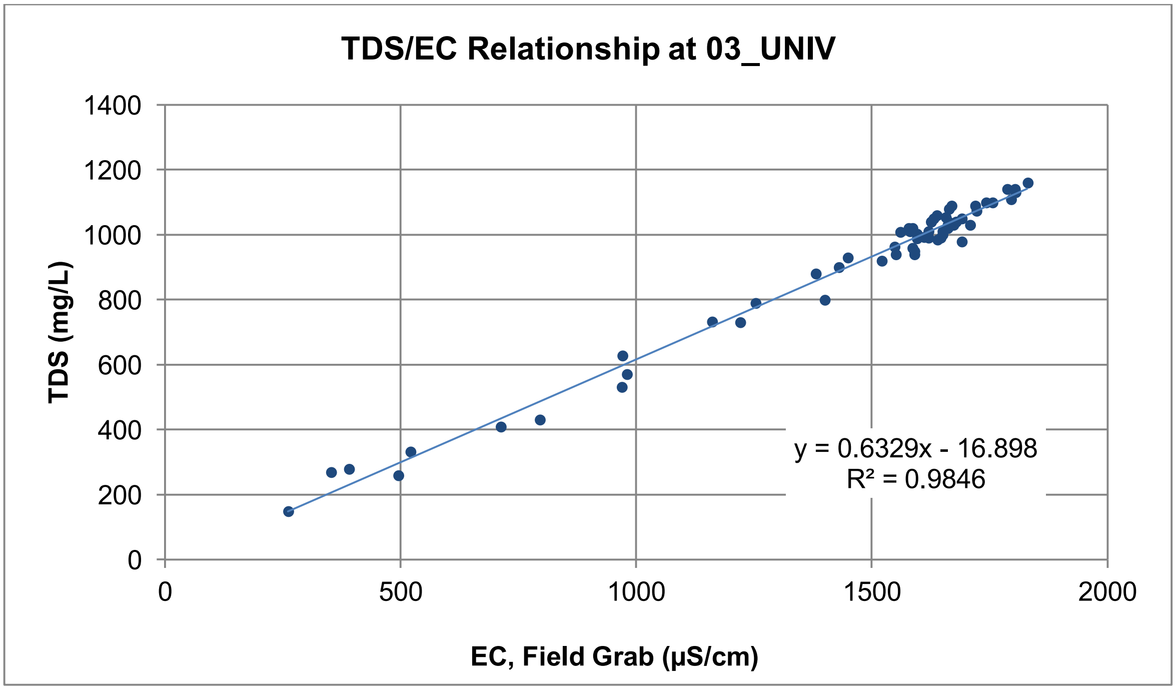
B = y intercept

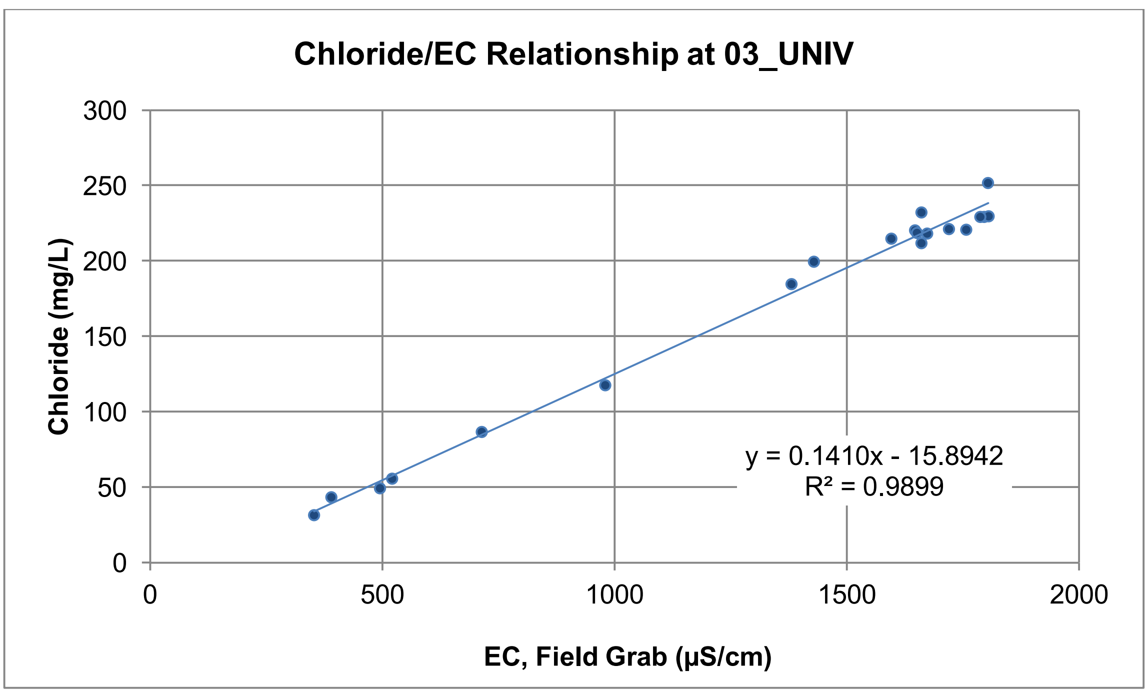
At the conclusion of the 2016/2017 monitoring year, surrogate relationships were updated using linear regression. As is done each year, ANCOVA analysis was performed to detect evidence of statistically significant temporal shifts in surrogate relationships that might signal a change in watershed conditions 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).

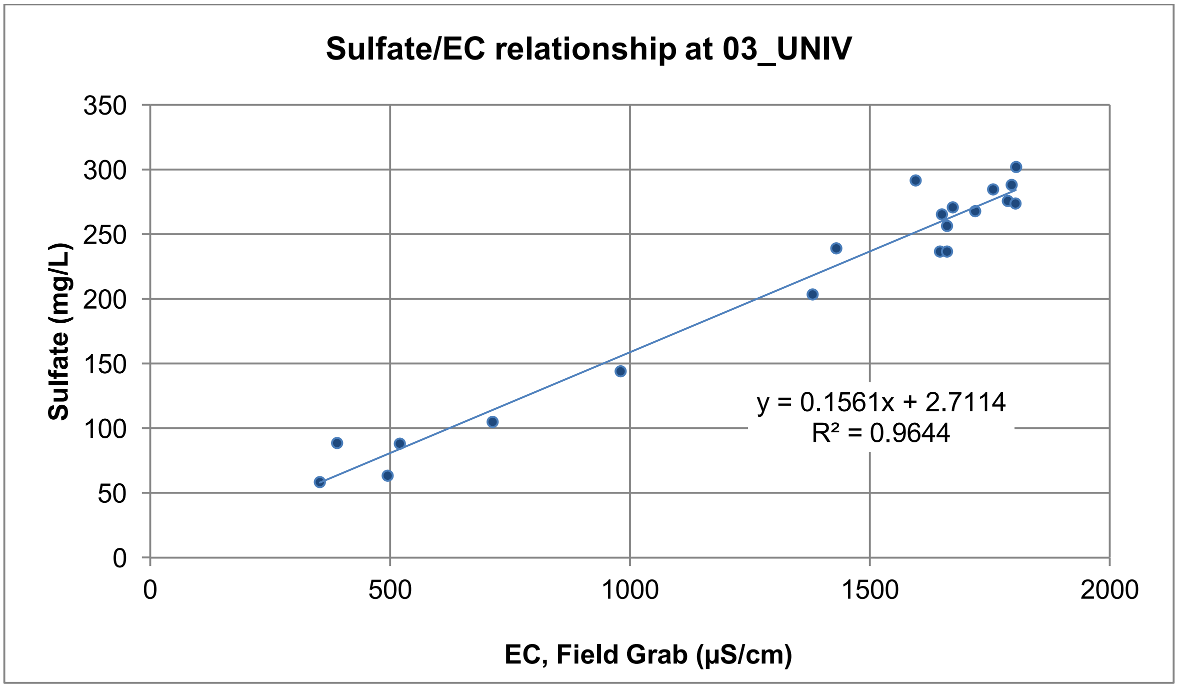
Changes in the 2016/2017 relationship parameters that resulted from the current year's update were minor. In the most recent prior monitoring year (2015/2016) ANCOVA analysis supported a shift in the time frame for the data underlying the Sulfate/EC relationship at 9A_HOWAR from one starting in January 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.

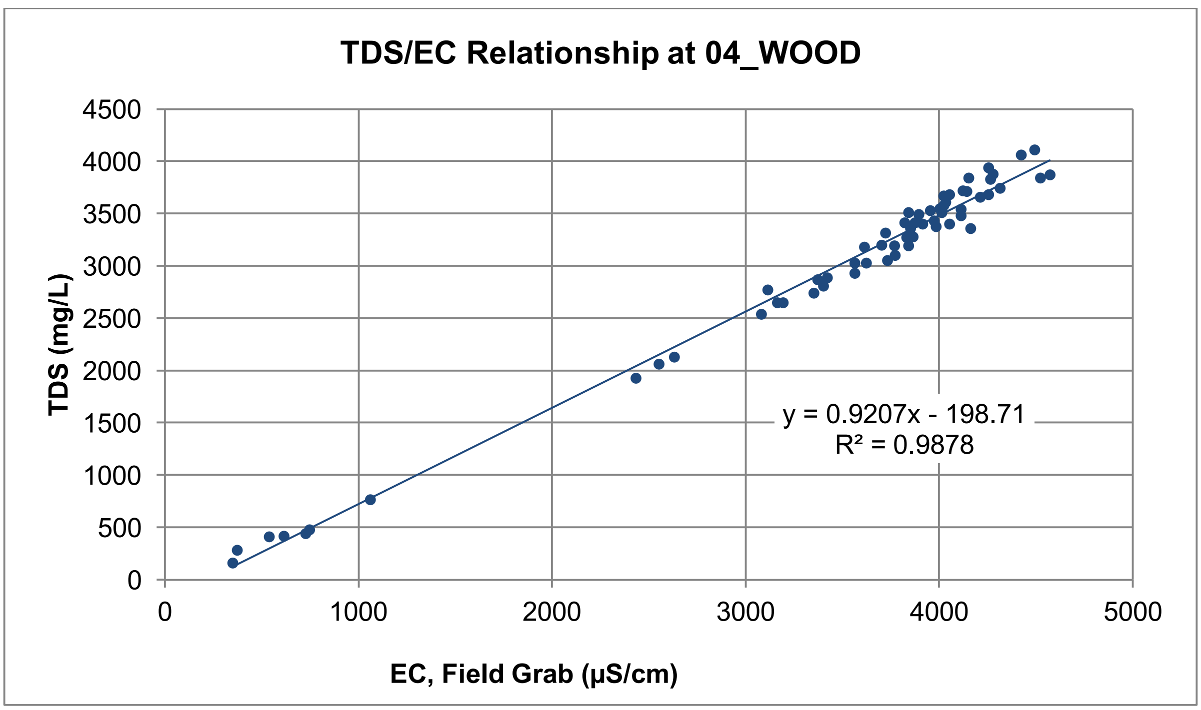
Table 2. Surrogate Relationships Used to Convert EC to Salt Concentrations for the 2016/2017 Monitoring Year

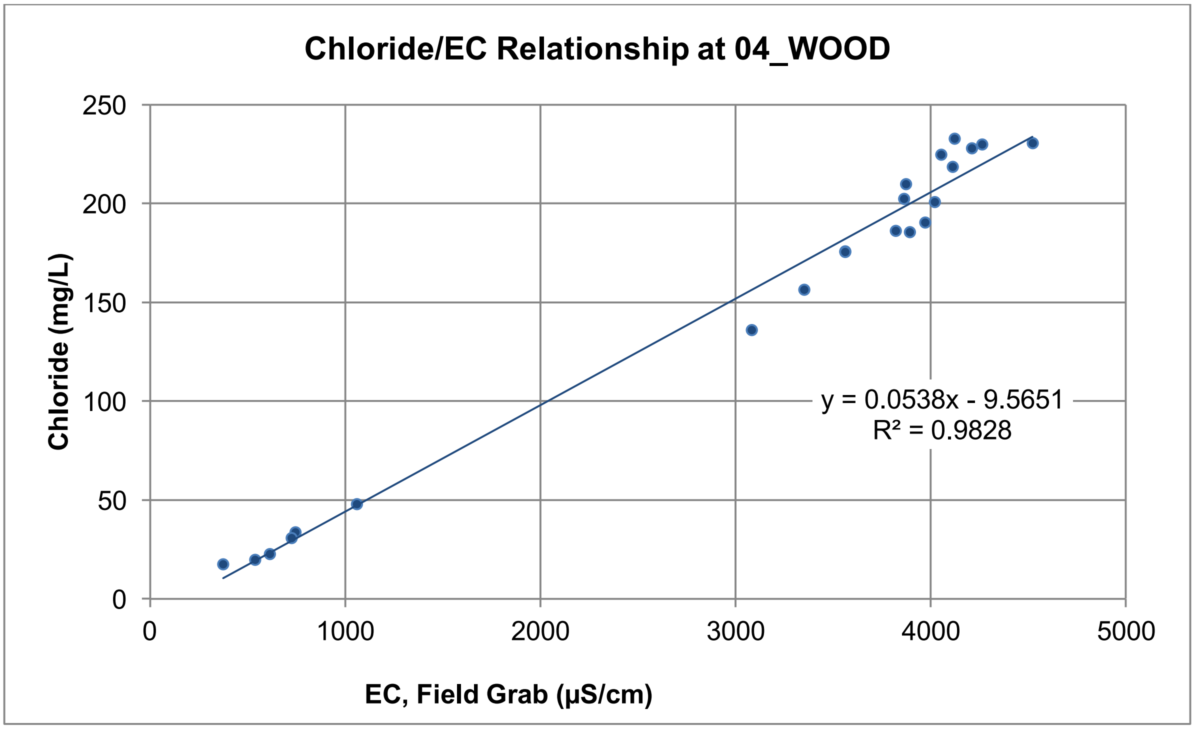
Site	Proxy Relationship	r^2	Underlying Field Data	
			Sample Size	Date Range
03_UNIV	TDS = (0.6329 * EC) – 16.8985	0.9846	60	1/31/2011 – 5/9/2017
	Cl = (0.1410 * EC) – 15.8942	0.9899	20	2/28/2014 - 5/9/2017
	SO4 = (0.1561 * EC) + 2.7114	0.9644	20	2/28/2014 - 5/9/2017
04_WOOD	TDS = (0.9207 * EC) – 198.7076	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

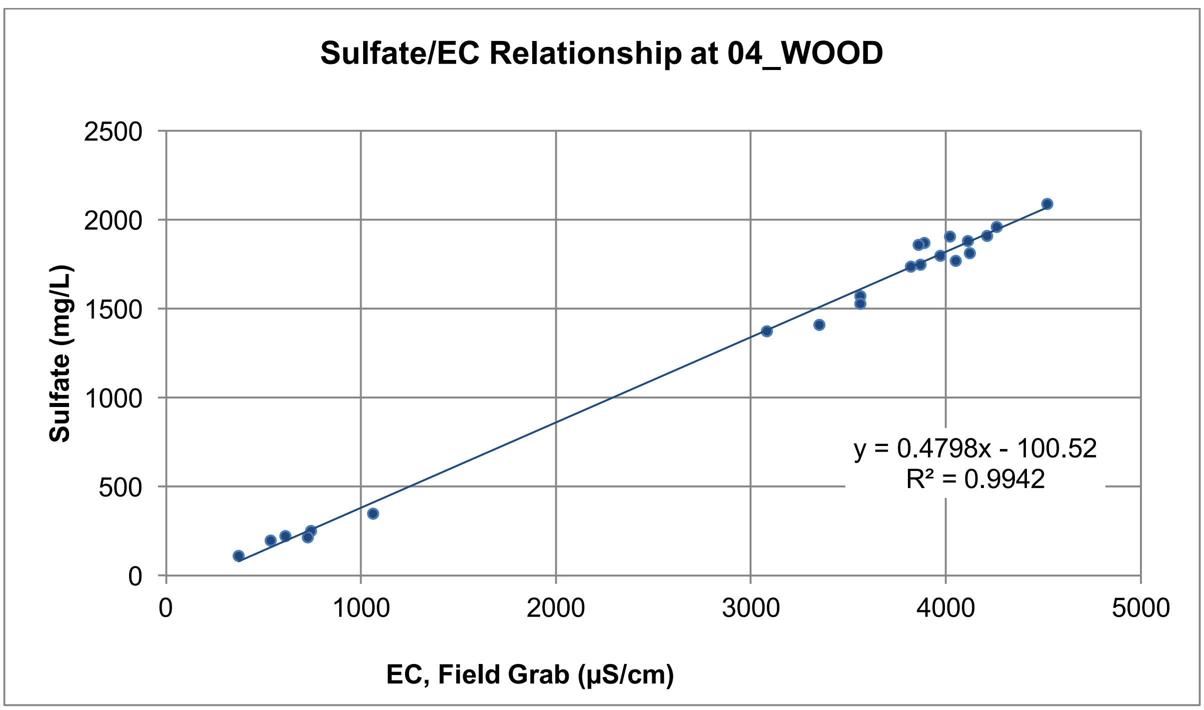

TDS/EC Relationship at 03_UNIV
TDS (mg/L)
1400
1200
1000
800
600
400
200
0
0
500
1000
1500
2000
EC, Field Grab (µS/cm)
y = 0.6329x - 16.898
R² = 0.9846

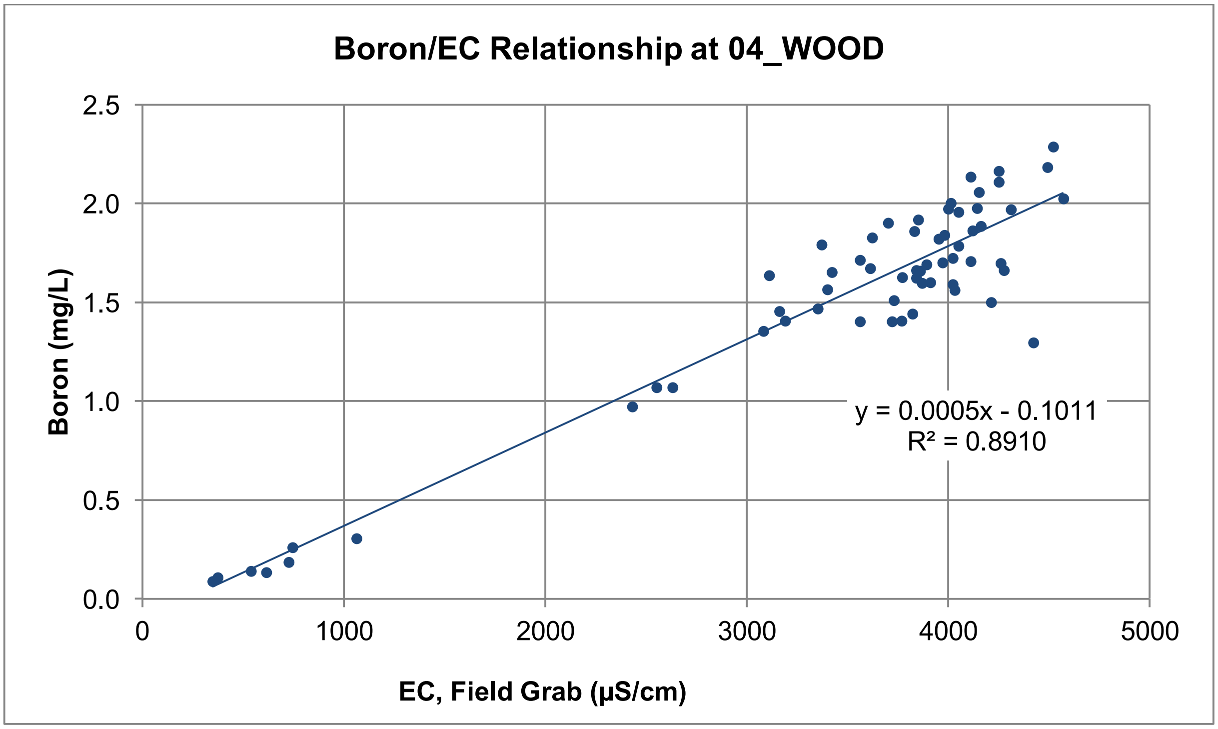

Chloride/EC Relationship at 03_UNIV
Chloride (mg/L)
300
250
200
150
100
50
0
0
500
1000
1500
2000
EC, Field Grab (µS/cm)
y = 0.1410x - 15.8942
R² = 0.9899

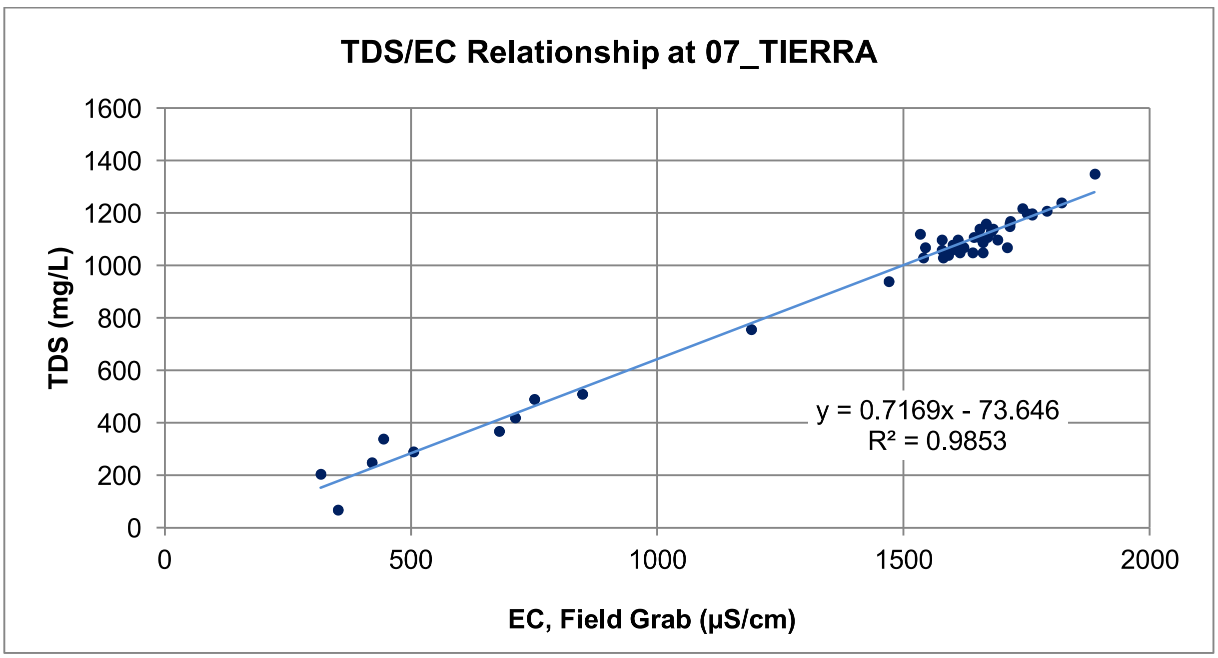

Sulfate/EC relationship at 03_UNIV
Sulfate (mg/L)
EC, Field Grab (µS/cm)
y = 0.1561x + 2.7114
R² = 0.9644
0
50
100
150
200
250
300
350
0
500
1000
1500
2000

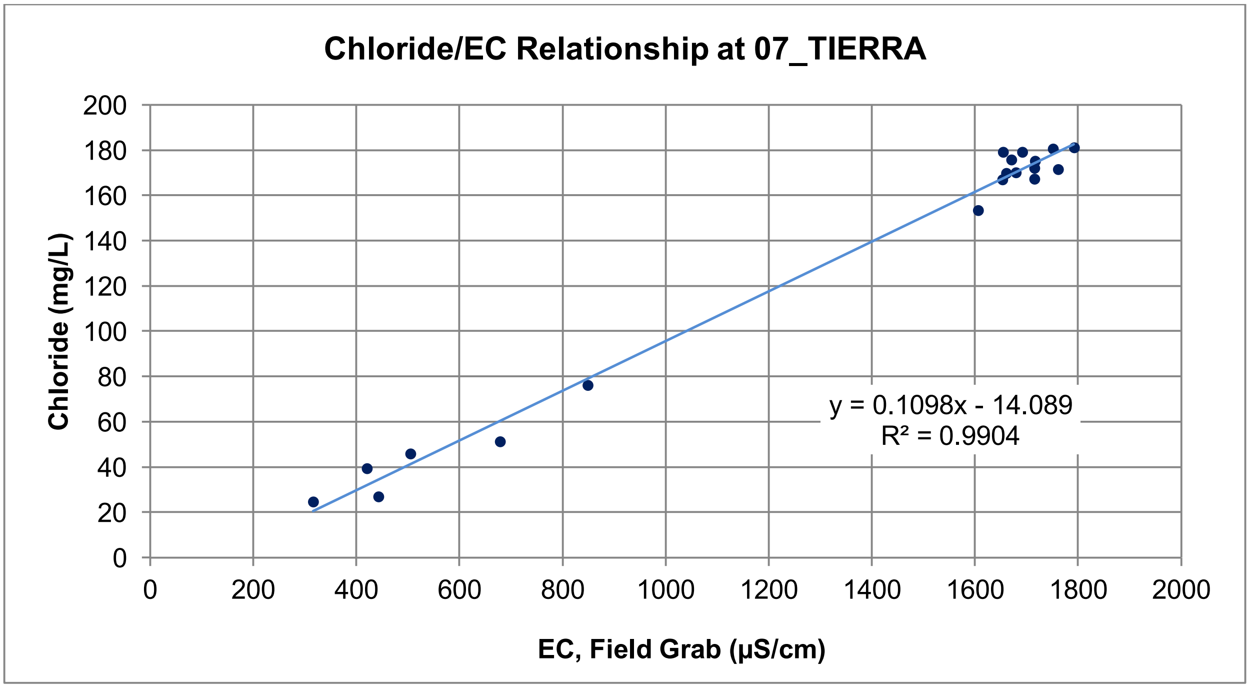

TDS/EC Relationship at 04_WOOD
TDS (mg/L)
EC, Field Grab (µS/cm)
y = 0.9207x - 198.71
R² = 0.9878
0
500
1000
1500
2000
2500
3000
3500
4000
4500
0
1000
2000
3000
4000
5000

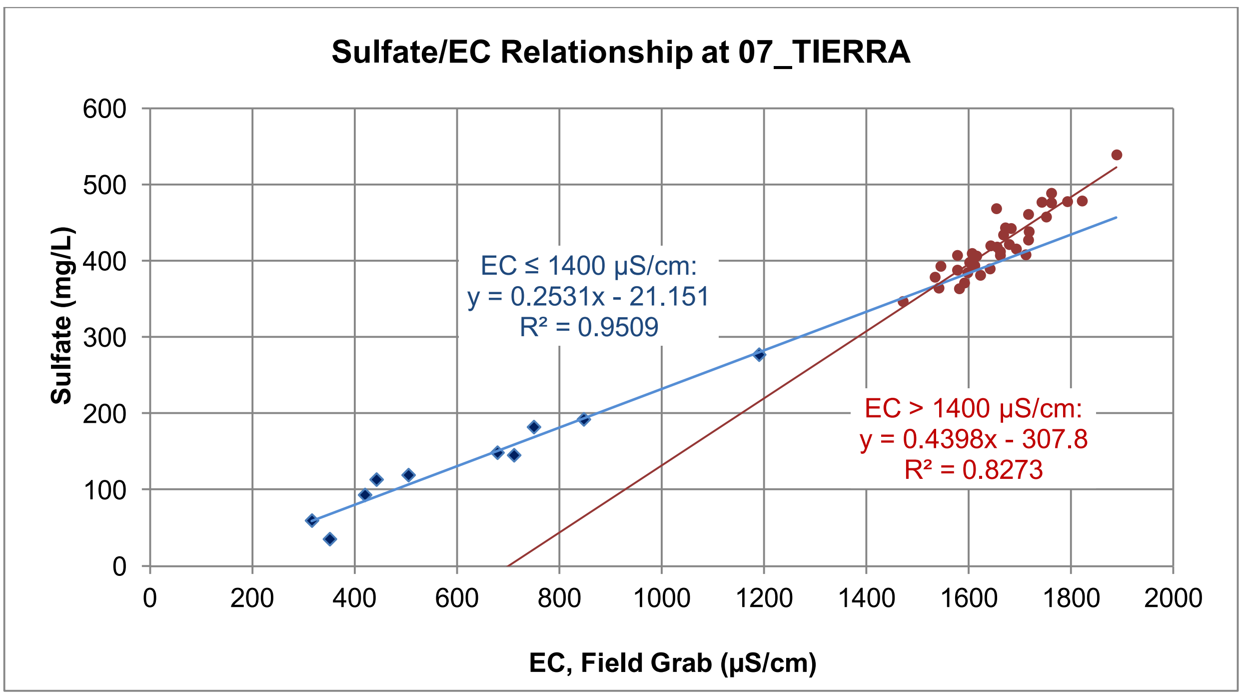

Chloride/EC Relationship at 04_WOOD
Chloride (mg/L)
250
200
150
100
50
0
0
1000
2000
3000
4000
5000
EC, Field Grab (µS/cm)
y = 0.0538x - 9.5651
R² = 0.9828

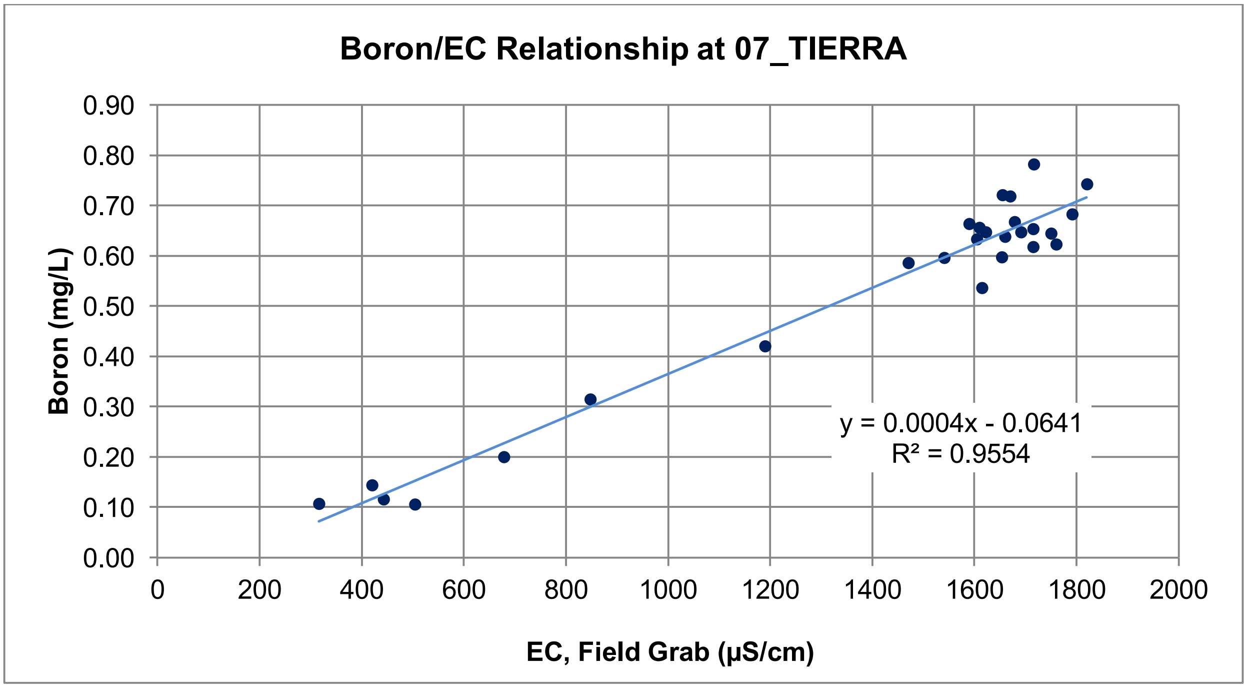

Sulfate/EC Relationship at 04_WOOD
Sulfate (mg/L)
2500
2000
1500
1000
500
0
0
1000
2000
3000
4000
5000
EC, Field Grab (µS/cm)
y = 0.4798x - 100.52
R² = 0.9942


Boron/EC Relationship at 04_WOOD
2.5
2.0
1.5
1.0
0.5
0.0
Boron (mg/L)
0
1000
2000
3000
4000
5000
EC, Field Grab (μS/cm)
y = 0.0005x - 0.1011
R² = 0.8910

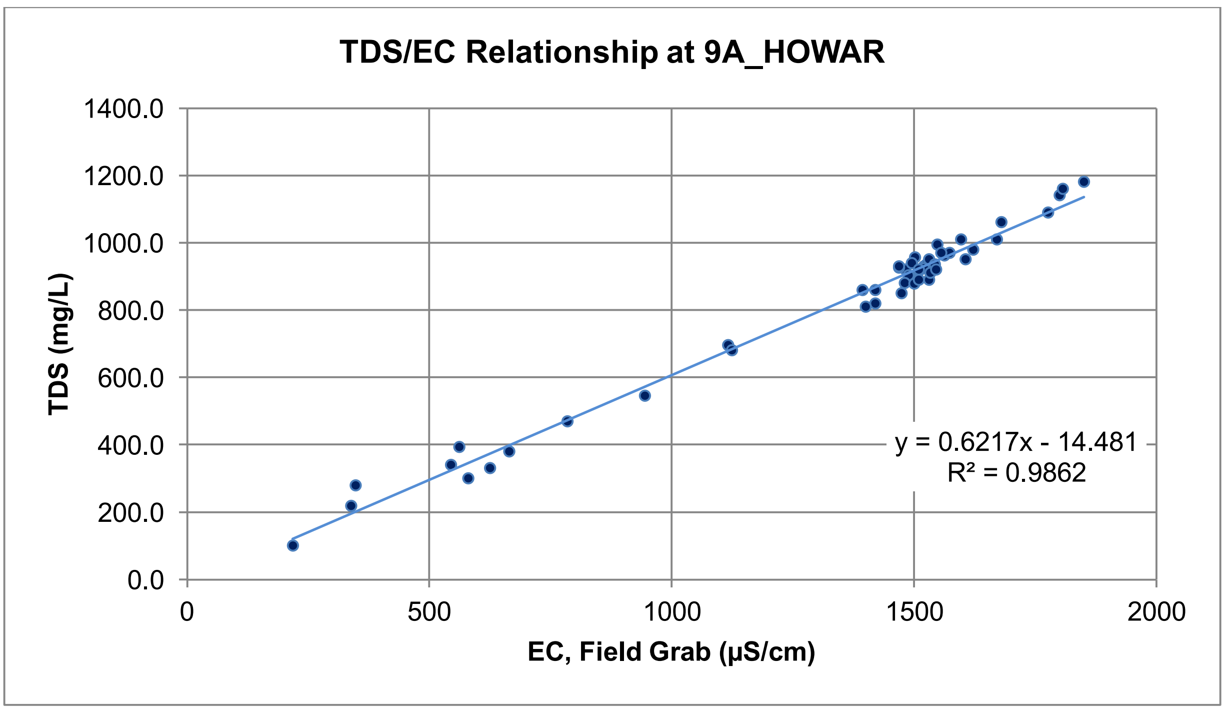

TDS/EC Relationship at 07_TIERRA
1600
1400
1200
1000
800
600
400
200
0
TDS (mg/L)
0
500
1000
1500
2000
EC, Field Grab (μS/cm)
y = 0.7169x - 73.646
R² = 0.9853


Chloride/EC Relationship at 07_TIERRA
Chloride (mg/L)
EC, Field Grab (µS/cm)
y = 0.1098x - 14.089
R² = 0.9904
0
20
40
60
80
100
120
140
160
180
200
0
200
400
600
800
1000
1200
1400
1600
1800
2000

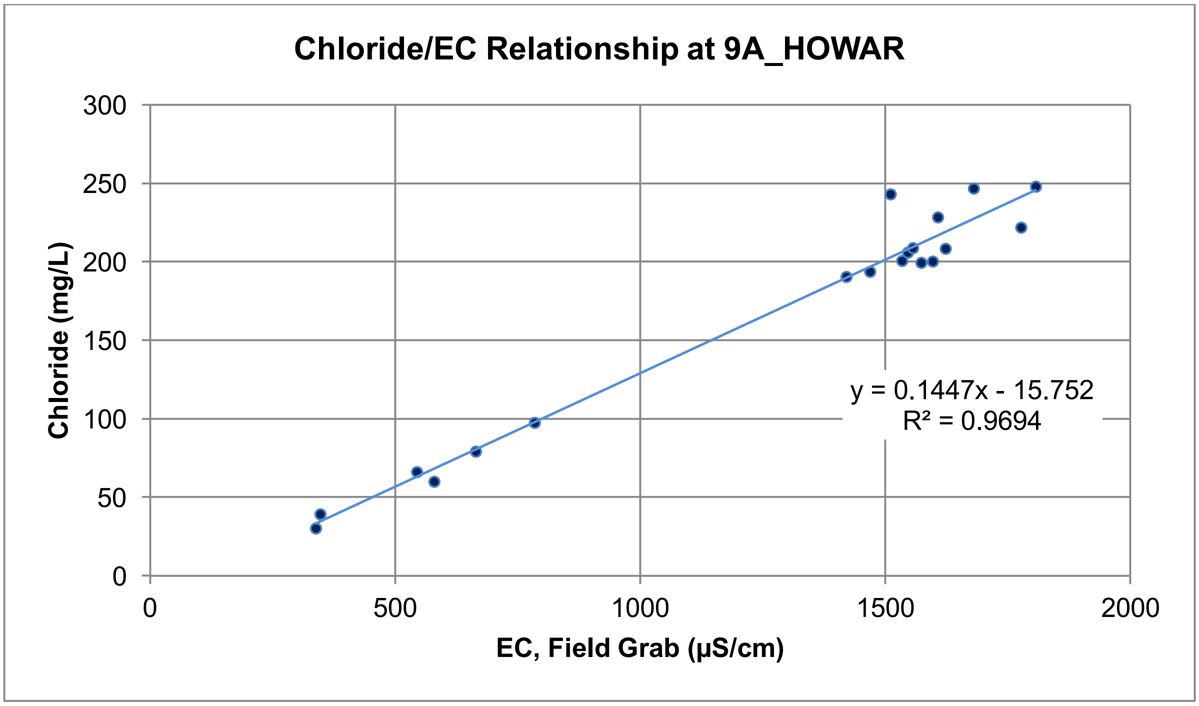

Sulfate/EC Relationship at 07_TIERRA
Sulfate (mg/L)
EC, Field Grab (µS/cm)
EC ≤ 1400 µS/cm:
y = 0.2531x - 21.151
R² = 0.9509
EC > 1400 µS/cm:
y = 0.4398x - 307.8
R² = 0.8273
0
100
200
300
400
500
600
0
200
400
600
800
1000
1200
1400
1600
1800
2000

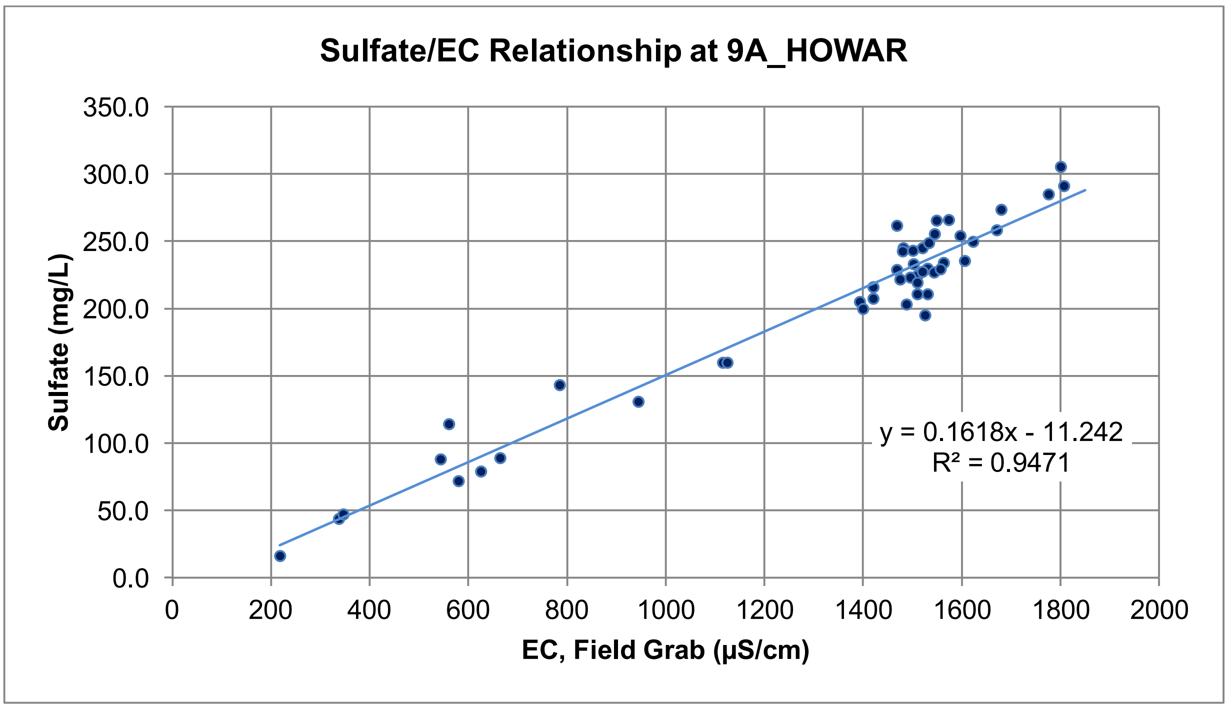


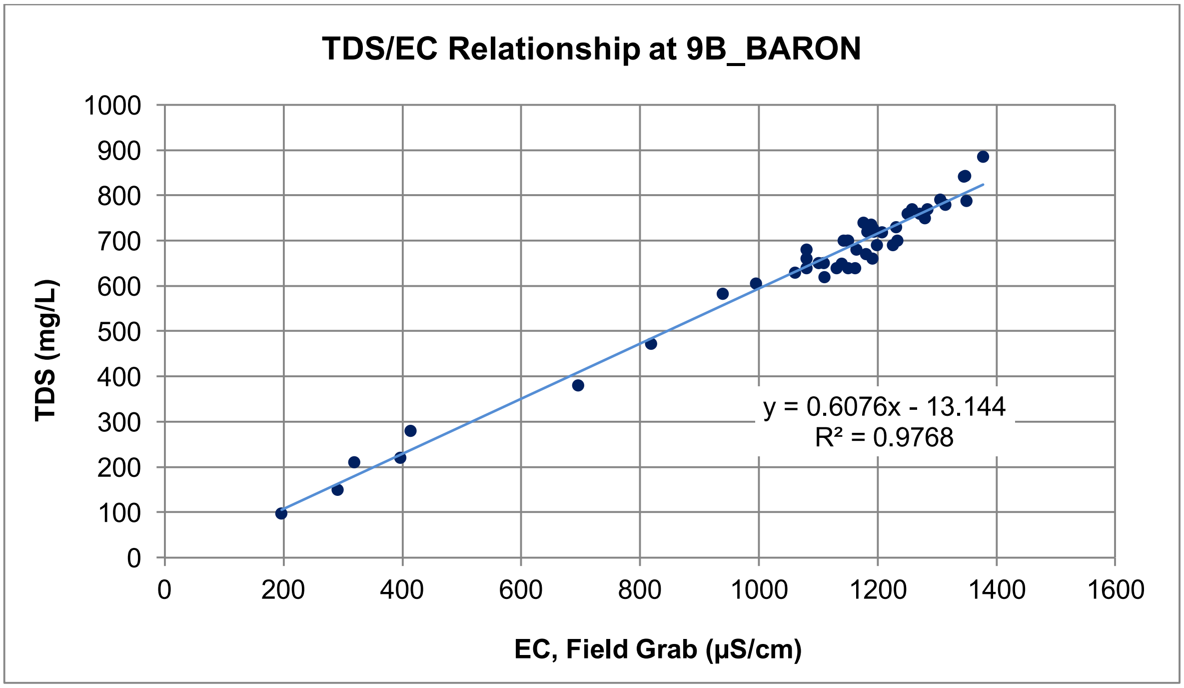
Boron/EC Relationship at 07_TIERRA
Boron (mg/L)
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0
200
400
600
800
1000
1200
1400
1600
1800
2000
EC, Field Grab (µS/cm)
y = 0.0004x - 0.0641
R² = 0.9554

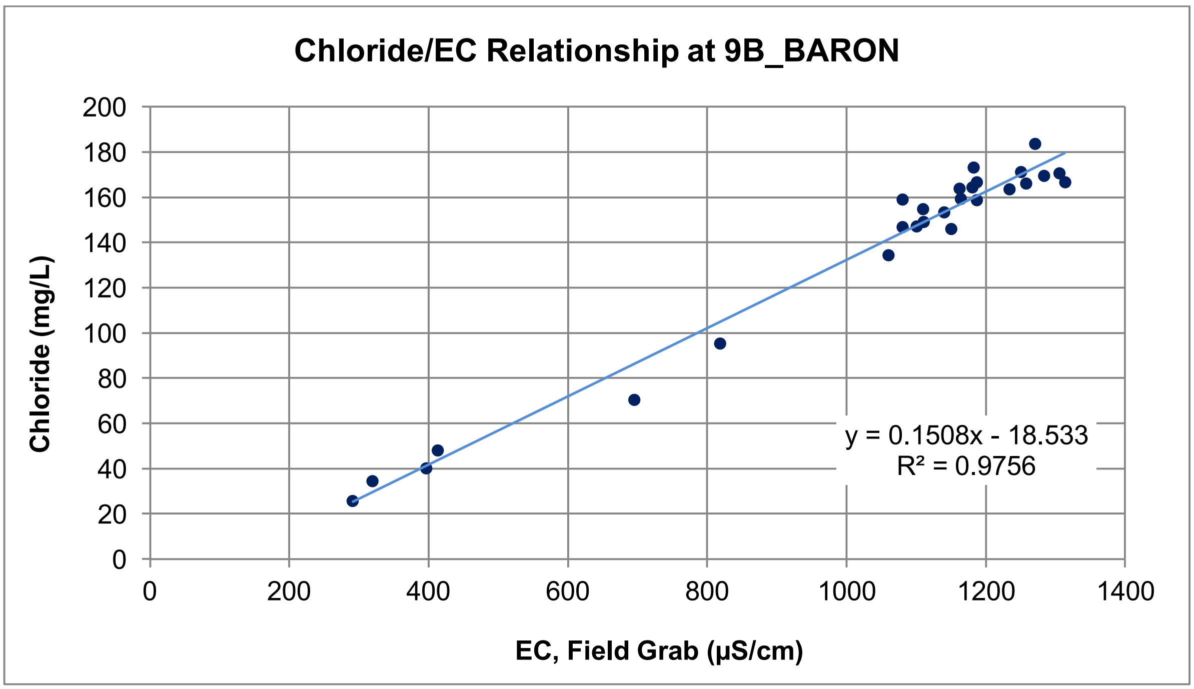


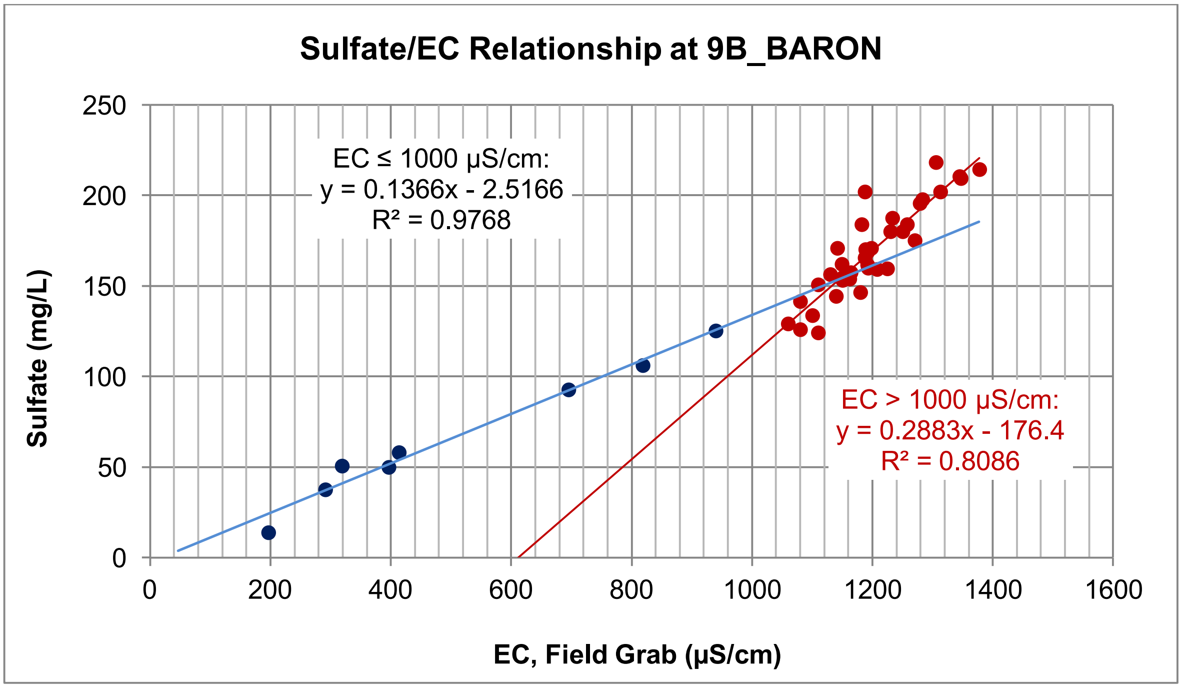
TDS/EC Relationship at 9A_HOWAR
TDS (mg/L)
1400.0
1200.0
1000.0
800.0
600.0
400.0
200.0
0.0
0
500
1000
1500
2000
EC, Field Grab (µS/cm)
y = 0.6217x - 14.481
R² = 0.9862


Chloride/EC Relationship at 9A_HOWAR
300
250
200
150
100
50
0
Chloride (mg/L)
y = 0.1447x - 15.752
R² = 0.9694
0
500
1000
1500
2000
EC, Field Grab (µS/cm)


Sulfate/EC Relationship at 9A_HOWAR
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
Sulfate (mg/L)
y = 0.1618x - 11.242
R² = 0.9471
0
200
400
600
800
1000
1200
1400
1600
1800
2000
EC, Field Grab (µS/cm)


TDS/EC Relationship at 9B_BARON
TDS (mg/L)
EC, Field Grab (µS/cm)
y = 0.6076x - 13.144
R² = 0.9768
0
100
200
300
400
500
600
700
800
900
1000
0
200
400
600
800
1000
1200
1400
1600


Chloride/EC Relationship at 9B_BARON
Chloride (mg/L)
EC, Field Grab (µS/cm)
y = 0.1508x - 18.533
R² = 0.9756
0
20
40
60
80
100
120
140
160
180
200
0
200
400
600
800
1000
1200
1400


Sulfate/EC Relationship at 9B_BARON
EC ≤ 1000 µS/cm:
y = 0.1366x - 2.5166
R² = 0.9768
EC > 1000 µS/cm:
y = 0.2883x - 176.4
R² = 0.8086
Sulfate (mg/L)
EC, Field Grab (µS/cm)
0
50
100
150
200
250
0
200
400
600
800
1000
1200
1400
1600

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)

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[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 - *Hyalella azteca*

Site ID	*Hyalella azteca*		
	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 Hyalella azteca*

Site ID	*Ceriodaphnia dubia*			*Hyalella azteca*	
	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 *Hyalella 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	*Ceriodaphnia dubia*			*Hyalella azteca*	
	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	*Ceriodaphnia dubia*		
	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	*Ceriodaphnia dubia*		
	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	*Ceriodaphnia dubia*			*Hyalella azteca*	
	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	*Ceriodaphnia dubia*			*Hyalella azteca*	
	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_VCWPD	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_VCWPD	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_DOC	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