



California Marine Sanctuary Foundation
in partnership with
Monterey Bay National Marine Sanctuary



2021 MRSWMP Dry Run & First Flush Monitoring Report

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Monterey Stormwater Education Alliance



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Introduction

The Monterey Stormwater Education Alliance (Monterey SEA) water quality monitoring program is modeled after Monterey Bay National Marine Sanctuary's (MBNMS) Dry Run-First Flush monitoring program. MBNMS' Dry Run and First Flush volunteers collect water samples from storm drain outfalls prior to the first major rainstorm of the year (Dry Run) and during the first major rainstorm of the winter season (First Flush). Samples are analyzed for common urban pollutants such as detergents, bacteria, metals, sediment, and nutrients.

Samples collected during dry weather prior to the first major rainstorm provide information about dry weather flows such as pollutant concentrations, amount of groundwater base flow, or contributions from urban sources such as car washing, pressure washing, irrigation or illicit discharges. Dry weather flows are an important component of water quality monitoring since contaminants are more concentrated which causes them to be more easily detected and traced to their source. While water samples collected during the first major rainstorm of the winter season provide information on the concentration of contaminants in storm water after months of dry weather accumulation of pollutants on land in urban areas. All runoff from the Monterey region eventually flows into MBNMS except in areas where diversions have been installed that capture some dry and wet weather storm drain system flows and divert it to the sanitary sewer. The cities of Pacific Grove, Salinas, and Carmel-by-the-Sea have constructed diversions which facilitate reuse of runoff while minimizing the amount of contaminants flowing to MBNMS. It is hoped that this data collected for MRSWMP's water quality monitoring program provides local cities with information on where to implement best management practices focused on improving water quality.

The MRSWMP water quality monitoring program promotes volunteer participation, stewardship and environmental education while providing important data regarding the quality of water flowing into MBNMS. This monitoring program is designed to meet E.8.ii requirements under the Phase II Storm Water Permit, satisfying public involvement and participation elements of the permit. This monitoring program does not fulfill the E.13 requirements pertaining to ASBS Monitoring, TMDL Monitoring, 303(d) Monitoring or Receiving Water Monitoring which are completed by permittees individually or through regional programs.

Methods

The same protocols and laboratory analyses are used for both of the MRSWMP water quality monitoring events. New Dry Run and First Flush volunteers attend an online training that covers why samples are collected and how. During non-COVID years, after training the volunteers then participate in hands-on practice during the Dry Run: a half day event where volunteers demonstrate their skills, visit outfall sites, and collect water samples if flowing water is found. In 2021, due to COVID, training was conducted online and the Dry Run was conducted by CMSF and MBNMS staff.

During the Dry Run, field measurements (water temperature, pH, electrical conductivity, and transparency) and water samples are collected for lab analysis of nutrients (nitrate, orthophosphate, ammonia, and urea), bacteria (*Escherichia coli* and enterococcus), metals (copper, lead, and zinc), total

suspended solids, color, Methylene Blue Active Substances (MBAS) detergents, hardness (as CaCO₃), potassium, and turbidity.

Once the Dry Run has been completed, the wait for the first major rainstorm begins. Waiting for a storm big enough to conduct First Flush sampling can take weeks or sometimes months. Volunteers are mobilized for the First Flush when at least 0.10 inches of rain has fallen, there is sheeting water on roadways, and storm water conductivity is at or below 1000 μ S. Just as for the Dry Run, during the First Flush, volunteers take field measurements (water temperature, pH, electrical conductivity, and transparency) and collect water samples for lab analysis of nutrients (nitrate, orthophosphate, ammonia, and urea), bacteria (*Escherichia coli* and enterococcus), metals (copper, lead, and zinc), total suspended solids, color, Methylene Blue Active Substances (MBAS) detergents, hardness (as CaCO₃), potassium, and turbidity. Samples and field equipment are delivered immediately to the monitoring coordinator once sample collection is complete. Once all of the samples are received, the monitoring coordinator delivers the samples to a certified lab.

Dry Run monitoring entails collecting a single grab sample from each site with flowing water. During the First Flush, two sets of grab samples are collected 30 minutes apart for two time series samples. In this report, First Flush results reported by *analyte* are averaged between the two time series, and First Flush results reported by *jurisdiction* have individual time series results listed. Samples for urea are only collected during the first time series and are therefore not an average but a single sample result for each event.

The Cities of Carmel and Pacific Grove operate dry weather storm drain diversions for dry and some wet weather flows in the storm drain system. Two sites in Carmel, 4th Avenue and Ocean Avenue, are within the city's diversion system boundaries, where dry weather storm drain flows are retained and diverted into infiltration trenches. The City of Carmel's diversion is never on during the First Flush. The 4th Avenue (Carmel) site is monitored above the connection point with the diversion system for the Dry Run and First Flush due to access issues at the outfall. Ocean Avenue is sampled at the outfall for both the Dry Run and First Flush events as outfall access is available year-round.

The City of Pacific Grove's diversion collects dry and wet weather storm drain flows and pumps them into the sanitary sewer. Sites monitored in 2021 within the City of Pacific Grove's diversion system boundaries are: 8th Street, Greenwood Park, and Lovers. During dry weather, 8th Street and Lovers are sampled at the outfall, which may or may not have flow as any flow is diverted unless the system is blocked by debris and some water is allowed to bypass the diversion. Greenwood Park is always monitored above the diversion system in both dry and wet weather due to safety and access issues at the outfall. If the City of Pacific Grove's diversion remains on during the First Flush, as it was this year, sites are still monitored as follows: Greenwood Park and Lovers are monitored above the diversion system; 8th Street is monitored at the outfall if flow is present, as it was this year. Water quality data from sites monitored above any dry or wet weather diversions are still valuable as contaminants identified in the runoff may not flow to the ocean.

Most results (lab and field) in this study are compared to receiving water standards established for beneficial uses in a stream, lake, or the ocean (see Table 1). These receiving water quality standards are not meant for end of pipe monitoring, such as for this MRSWMP water quality monitoring program, except for the analytes that refer to the MS4 General Permit. However, lacking standards

for most end-of-pipe monitoring, receiving water standards are used for comparison. MBAS detergents and metal results are compared to the Water Quality Control Plan for the Central Coast Basin (Basin Plan) Water Quality Objectives (WQO) set by the Regional Water Quality Control Board (RWQCB) for the protection of marine or aquatic life. Because there are no numerical water quality objectives in the Basin Plan for *E. coli*, enterococcus, nitrate, orthophosphate, and total suspended solids (TSS), those results are compared with the U.S. Environmental Protection Agency (U.S. EPA) WQOs or Central Coast Ambient Monitoring Program's (CCAMP) Action Levels. The U.S. EPA objectives are for the protection of human health while CCAMP's Action Levels are benchmarks that are set for receiving water concentrations at which pollutants may impact cold-water fish. Action Levels typically represent existing regulatory standards; levels derived from the literature or other agency references; or from data that shows levels are elevated relative to the data distribution for that parameter on the Central Coast. It is important to reiterate that both RWQCB Basin Plan Water Quality Objectives and CCAMP Action Levels are established for receiving waters and not for end of pipe discharges such as is collected for the MRSWMP monitoring. There are no end-of-pipe objectives for most of the monitored analytes of the MRSWMP monitoring program, however, the State Water Resources Control Board's (SWRCB) National Pollution Discharge and Elimination System (NPDES) MS4 General Permit does provide end-of-pipe water quality Action Levels for: ammonia, color, hardness, potassium, and turbidity. For turbidity, the SWRCB NPDES MS4 Action Levels have been supplanted by CCAMP Action Levels that are more protective of water quality.

Grab sample results are reported as concentration, consistent with how the water quality objectives are defined. However, this does not give an indication of the load of pollutants being discharged. To facilitate calculation of instantaneous load, instantaneous flow was measured by filling a container of known volume (a bucket), timing how fast the container filled, and estimating how much of the flow was captured while filling the container. Dry Run instantaneous flow calculations are from a single sample, while the First Flush instantaneous flow calculations are an average of two time series samples. We provide this information to give an indication of the amount of flow at the time of sampling.



Figure 1. First Flush sampling on October 24th and 25th at Greenwood Park in Pacific Grove. Photo: J. Wooten.



Figure 2. First Flush sampling at Boronda (Monterey County) can be very dirty business. Photo: B. Hoover



Figure 3. First Flush sampling at Pico (Pacific Grove) where the water gushed straight out from the end of pipe. Photo: K. Terry

Table 1: Receiving Water Quality Objectives

<u>Parameter (reporting units)</u>	<u>Water Quality Objectives</u>	<u>Source of Objective</u>
Ammonia (mg/L)	Not to exceed 50	SWRCB NPDES MS4 General Permit
Color (color units)	Not to exceed 500	SWRCB NPDES MS4 General Permit
Copper (µg/L)	Not to exceed 30 ¹	Water Quality Control Plan for the Central Coast- RWQCB
<i>E. coli</i> (MPN/100ml)	Not to exceed 235 ²	National Recommended Water Quality Criteria
Enterococcus (MPN/100ml)	Not to exceed 104	National Recommended Water Quality Criteria
Hardness as CaCO ₃ (mg/L)	Not less than or = to 10 or greater than or = to 2,000	SWRCB NPDES MS4 General Permit
Lead (µg/L)	Not to exceed 30 ¹	Water Quality Control Plan for the Central Coast- RWQCB
MBAS Detergents (mg/L)	Not to exceed 0.2	Water Quality Control Plan for the Central Coast- RWQCB
Nitrate as N (mg/L)	Not to exceed 2.25 ³	Central Coast Ambient Monitoring Program (CCAMP)
Orthophosphate as P (mg/L)	Not to exceed 0.12 ⁴	Central Coast Ambient Monitoring Program (CCAMP)
pH (pH units)	Not < 6.5 or > 8.5	Water Quality Control Plan for the Central Coast- RWQCB
Potassium (mg/L)	Not to exceed 20	SWRCB NPDES MS4 General Permit
Total Suspended Solids (TSS) (mg/L)	Not to exceed 500 ⁵	Central Coast Ambient Monitoring Program (CCAMP)
Transparency (cm)	Not less than 25 ⁶	Central Coast Ambient Monitoring Program (CCAMP)
Turbidity (NTU)	Not to exceed 25	Central Coast Ambient Monitoring Program (CCAMP)
Zinc (µg/L)	Not to exceed 200 ¹	Water Quality Control Plan for the Central Coast- RWQCB

Note: Urea is not listed because it does not have a Water Quality Objective or Action Level.

¹ Water Quality Control Plan for Central Coast Cold Water objective for hard water

² Environmental Protection Agency, Updated WQO.

³ Central Coast Ambient Monitoring Program, Pajaro River Watershed Characterization Report 1998, rev 2003.

⁴ Williamson, The Establishment of Nutrient Objectives, Sources, Impacts and Best Management Practices for the Pajaro River and Llagas Creek, 1994.

⁵ Central Coast Ambient Monitoring Program, Salinas River Watershed Characterization Report 1999, rev. 2000.

⁶ Based upon equivalent guideline value used for 303(d) Listing Guideline Value (Sigler et al., 1985)

Results

Two main monitoring events took place during the 2021 MRSWMP permit year:

- The Dry Run was conducted on Wednesday October 6th at ten sites, and on Thursday October 7th at three sites. Only four of the thirteen sites had enough flowing water to be sampled for the Dry Run in 2021. Due to COVID restrictions, no volunteers participated in this monitoring, Bridget Hoover from Monterey Bay National Marine Sanctuary assisted with sample collection.
- The First Flush was conducted on October 24th and 25th, 2021 at all thirteen sites with the help of twenty-four volunteers that donated over 60 hours to collect and deliver storm drain samples. Volunteers were mobilized at 9:45 pm on when the atmospheric river that had been drenching areas north of Monterey County for the greater part of a day, finally dropped over the Monterey Peninsula and dropped almost 2 inches inches of rain over three hours.

Flow was measured by volunteers at the time of sampling except at sites where low flow during the Dry Run prohibited accurate flow measurements or during the First Flush when an ISCO pump was used to pull sample water from a collection area. ISCOs were used during the First Flush at Las Palmas (Monterey County), Bay Street (Seaside-Sand City), and Lovers (Pacific Grove). All other instantaneous flow estimates are listed in Table 2.

Table 2: Instantaneous flow estimates in **liters per minute (lpm)** per site. NA= data not available due to accessibility to end of pipe because of safety concerns or low flow; NR= Not recorded; NF= No flow; * Flow estimates based upon just one measurement instead of two.

		Site Description	Site ID	Dry Run	First Flush
Sites by jurisdiction	Carmel	4 th Avenue	307-CASD-01	NF	NR
		Ocean Avenue	307-CASD-02	NF	NR
	Monterey	Twins	309-MSD-03	10.5	1029
		San Carlos Beach	309-MSD-04	NF	1600
		Steinbeck	309-MSD-05	NF	NR
	Monterey County	Boronda	309-SASD-01	NF	94
		Las Palmas	309-SASD-02	NF	NA
	Pacific Grove	8 th Street	309-PGSD-01	NF	1071*
		Greenwood Park	309-CENTR-31	1.9	1322
		Lover's	309-PGSD-03	NF	NA
		Sea Palm	309-PGSD-15	3.2	2000
		Pico	309-PGSD-04	3.2	2400
	Seaside/ Sand City	Bay Street	309-SSD-02	NF	NA

Analyte descriptions below are listed alphabetically and include box and whisker graphs that show the data divided into dry weather (DR) and wet weather (FF) results by site. Dry weather monitoring events include Dry Runs and any previous Spring Run and Summer Run events. Wet weather monitoring is inclusive of First Flush and any previous Second Flush events. Box and whisker graphs show a distribution of the dataset in a convenient format for making comparisons between sites and the range of concentrations over the years. The box represents the range of 50% of the data above and below the median. The lines above and below the boxes are upper and lower whiskers that represent the remaining upper and lower 25% of the data. The end point of each whisker represents the maximum and minimum average result for that analyte at that location and provides an indication of the best- and worst-case results at that site. A few analytes have graphs that are split along the y-axis to encompass the entire dataset.

Each analyte description includes a reporting of the Minimum Detection Limit (MDL), the lowest concentration that lab equipment can reliably detect an analyte. MDL is a statistical analysis of the confidence of results. Results below the MDL are reported as non-detect since lab equipment cannot reliably determine where the results lay between zero and the MDL.

Ammonia as N

Ammonia, in conjunction with other analytes can assist in identifying a discharge of sewage as well as industrial or commercial liquid wastes. The SWRCB NPDES MS4 General Permit Action Level for ammonia as N is 50 mg/L; the MDL was 0.05 mg/L for the Dry Run and First Flush. Figure 4 represents all MRSWMP ammonia as N data since 2013. All outfall results are listed in Appendix 2.

- **Dry Run and First Flush** results: None of the outfall sites exceeded the Action Level in 2021.

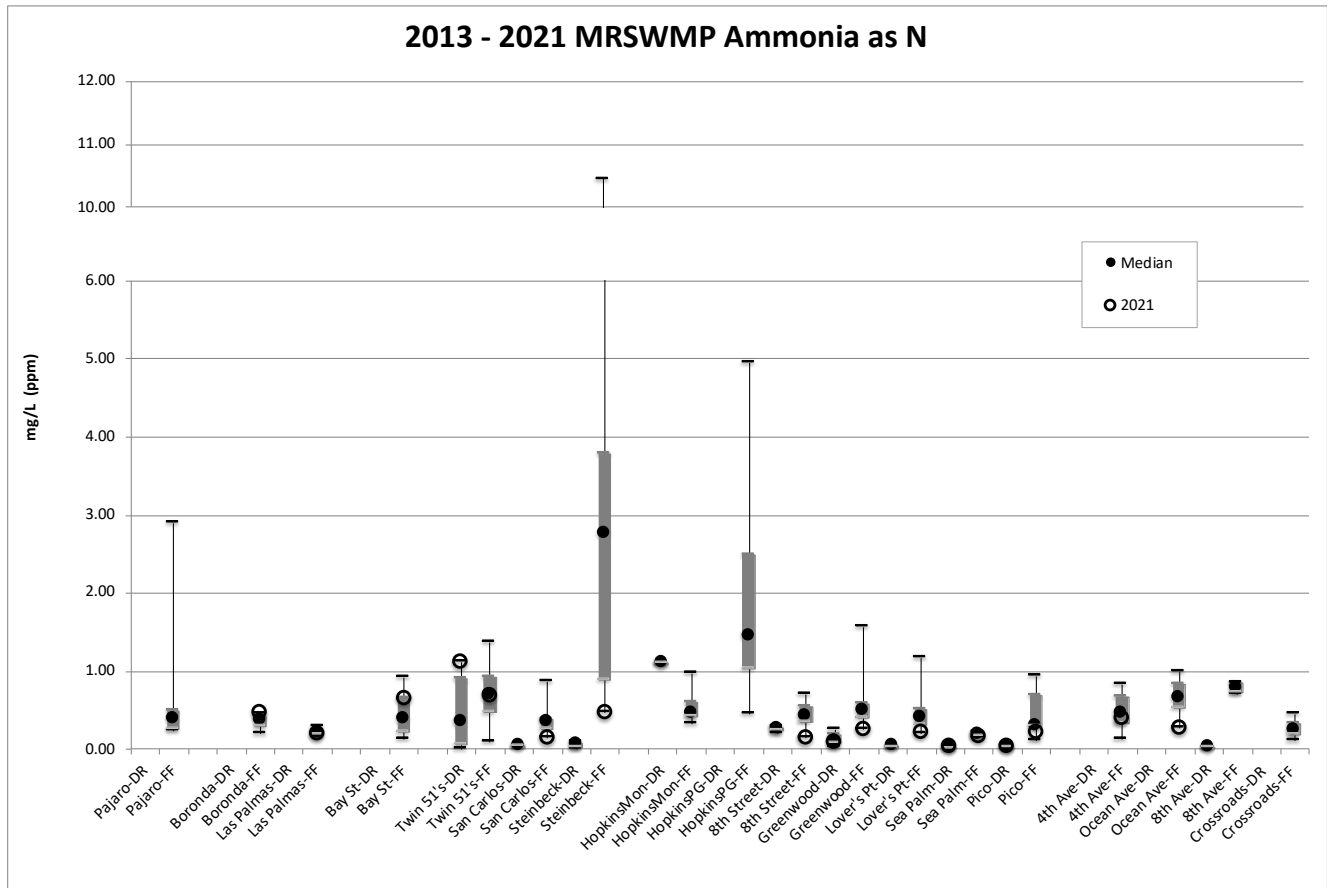


Figure 4. 2013- 2021 MRSWMP ammonia as N results. To better illustrate results, the scale on the graph is split between 6 and 10 mg/L. As a result, First Flush 2014 results from Steinbeck (Monterey) of 10.46 mg/L are in the upper portion of the graph. Non-detects were given the value of half the Minimum Detection Limit (MDL) but their true value lies between the zero and the MDL. Sites are listed north to south.

Color

Color, in conjunction with other analytes, can assist in identifying a discharge of sewage, wash water, as well as industrial or commercial liquid wastes. The SWRCB NPDES MS4 General Permit Action Level for color is 500 color units; the MDL for color was 3 color units for the Dry Run and 6 color units for the First Flush. Figure 5 represents all MRSWMP color data since 2013. All outfall results are listed in Appendix 2.

- **Dry Run and First Flush** results: None of the outfall sites exceeded the Action Level in 2021.

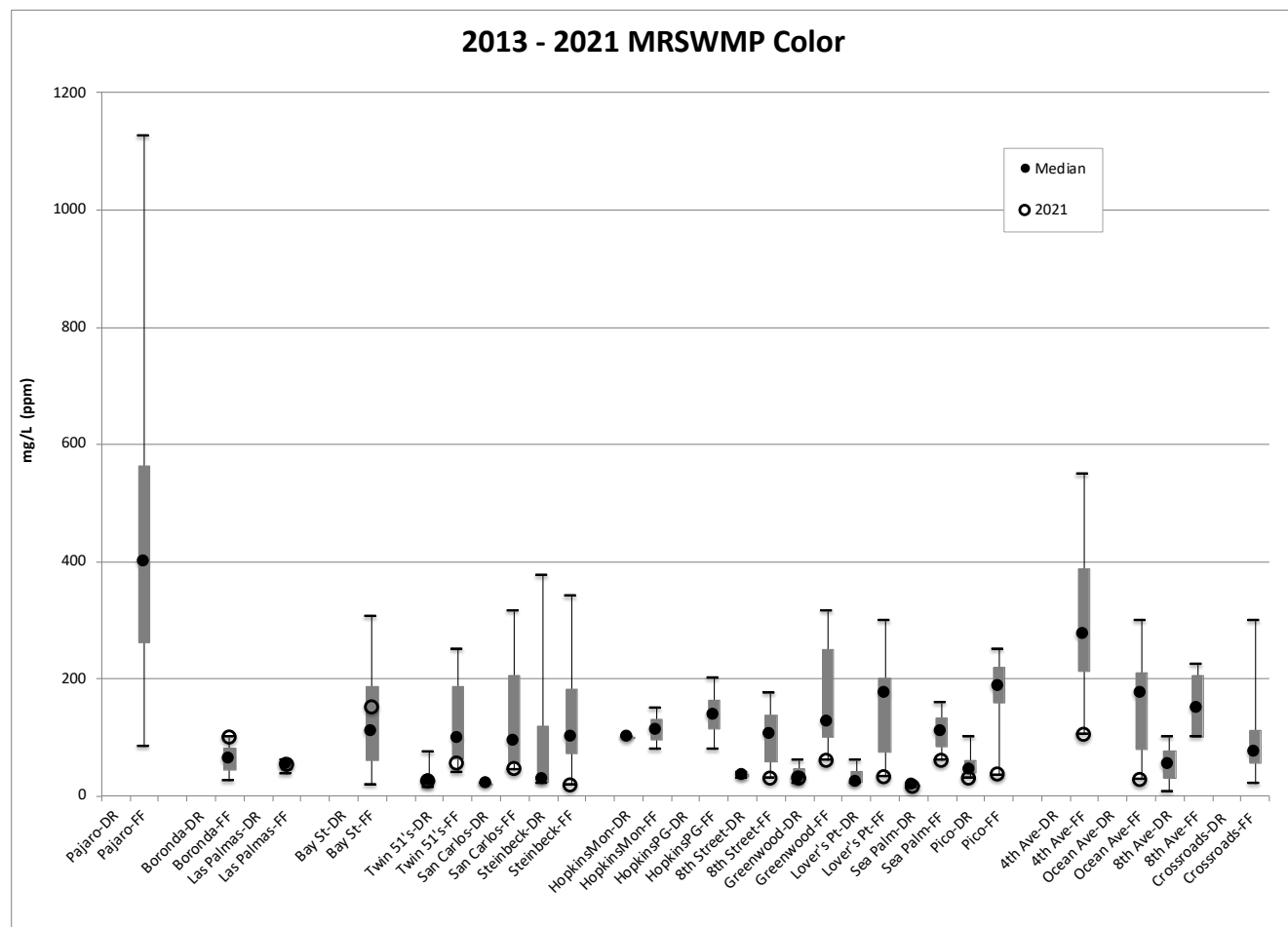


Figure 5. 2013 - 2021 MRSWMP color results. Non-detects were given the value of half the Minimum Detection Limit (MDL) but their true value lies between the zero and the MDL. Sites are listed north to south.

Copper

Copper is toxic to marine organisms and can cause reduced reproduction, developmental deformities, reduced photosynthesis and mortality. Copper and other heavy metal toxicity can be mitigated by the presence of sediment, hardness or other binding compounds that may reduce the metal's bioavailability. Copper is present in some brake pads, pesticides, wood preservatives, roofing materials, and architectural structures such as gutters and downspouts.

The Basin Plan WQO established for total copper is 30 µg/L; the MDL for copper was 7 µg/L for the Dry Run and First Flush. Figure 6 represents all MRSWMP copper data since 2006. All outfall results are listed in Appendix 2.

- **Dry Run** results: For 2021 no sites exceeded the WQO.
- **First Flush** results: Average results from three of the thirteen outfall sites monitored (23%) exceeded the WQO in 2021. The highest average result of 74 µg/L was from 4th Avenue (Carmel).

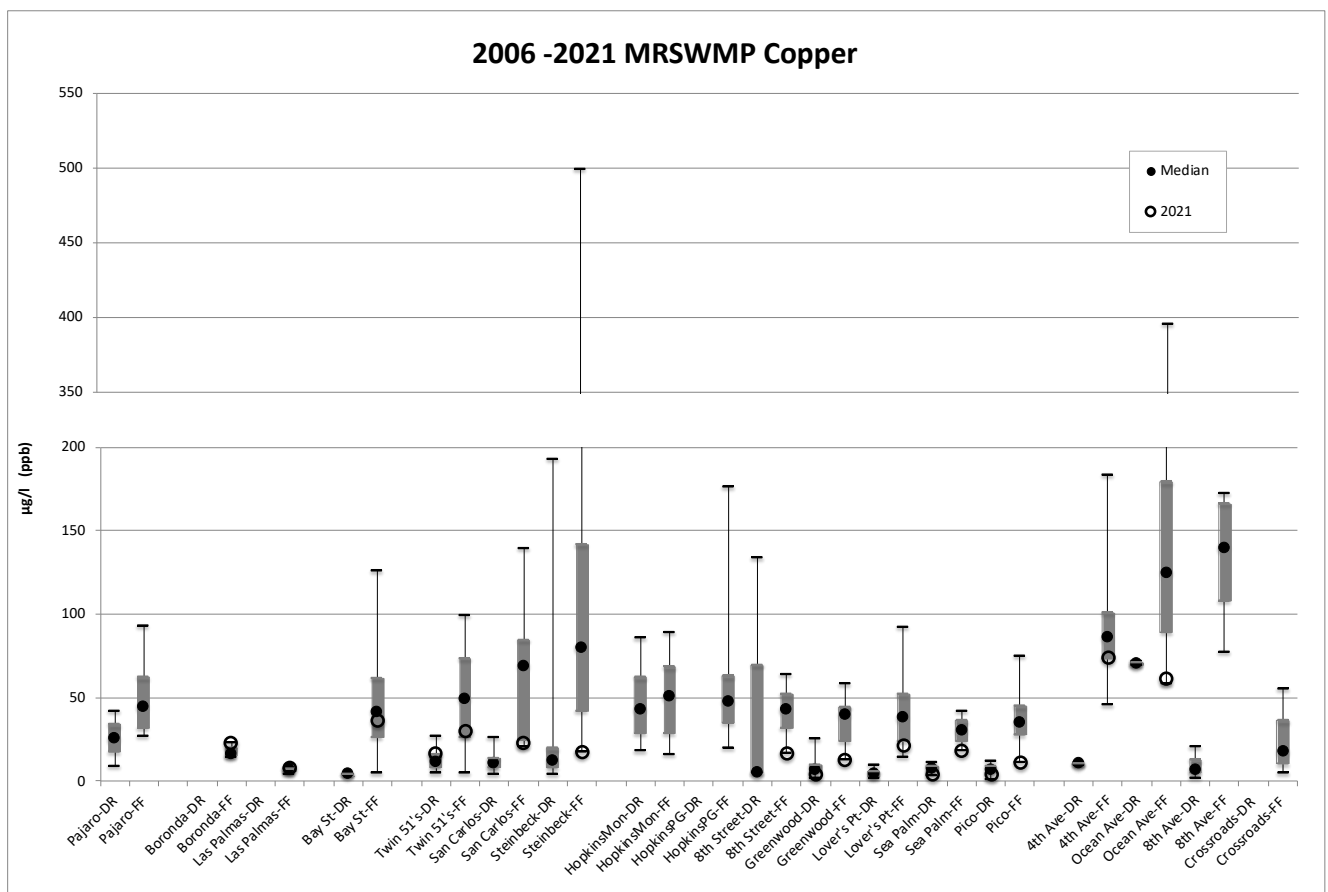


Figure 6. 2006-2021 MRSWMP total copper results. To better illustrate results, the scale on the graph is split between 200 and 350 µg/L. As a result, First Flush 2017 results from Steinbeck (Monterey) of 499 µg/L, and First Flush 2010 results from Ocean Avenue (Carmel) of 395 µg/L are in the upper portion of the graph. Non-detects were given the value of half the Minimum Detection Limit (MDL) but their true value lies between zero and the MDL. Sites are listed north to south.

Escherichia coli (E. coli)

Escherichia coli (*E. coli*) is a type of indicator bacteria found in warm-blooded animals. While *E. coli* does not cause disease in humans, it is a pollutant of concern because its presence indicates the potential presence of pathogens that do cause disease in humans and wildlife.

The National Recommended Water Quality Criteria for *E. coli* is 235 MPN/100 ml. The MDL for *E. coli* was 10 MPN/ 100 ml for the Dry Run and 100 MPN/100 ml for the First Flush. Figure 7 represents all MRSWMP *E. coli* data since 2006. All outfall results are listed in Appendix 2.

- **Dry Run** results: three of the four (75%) outfall sites exceeded the WQO for *E. coli* in 2021. The highest *E. coli* result of 19,860 MPN/100 ml was from Greenwood Park (Pacific Grove). This site is diverted to the sanitary sewer.
- **First Flush** results: All of the outfall sites exceeded the WQO in 2021. The highest average result of 257,602 MPN/100 ml was from Bay Street (Seaside/Sand City).

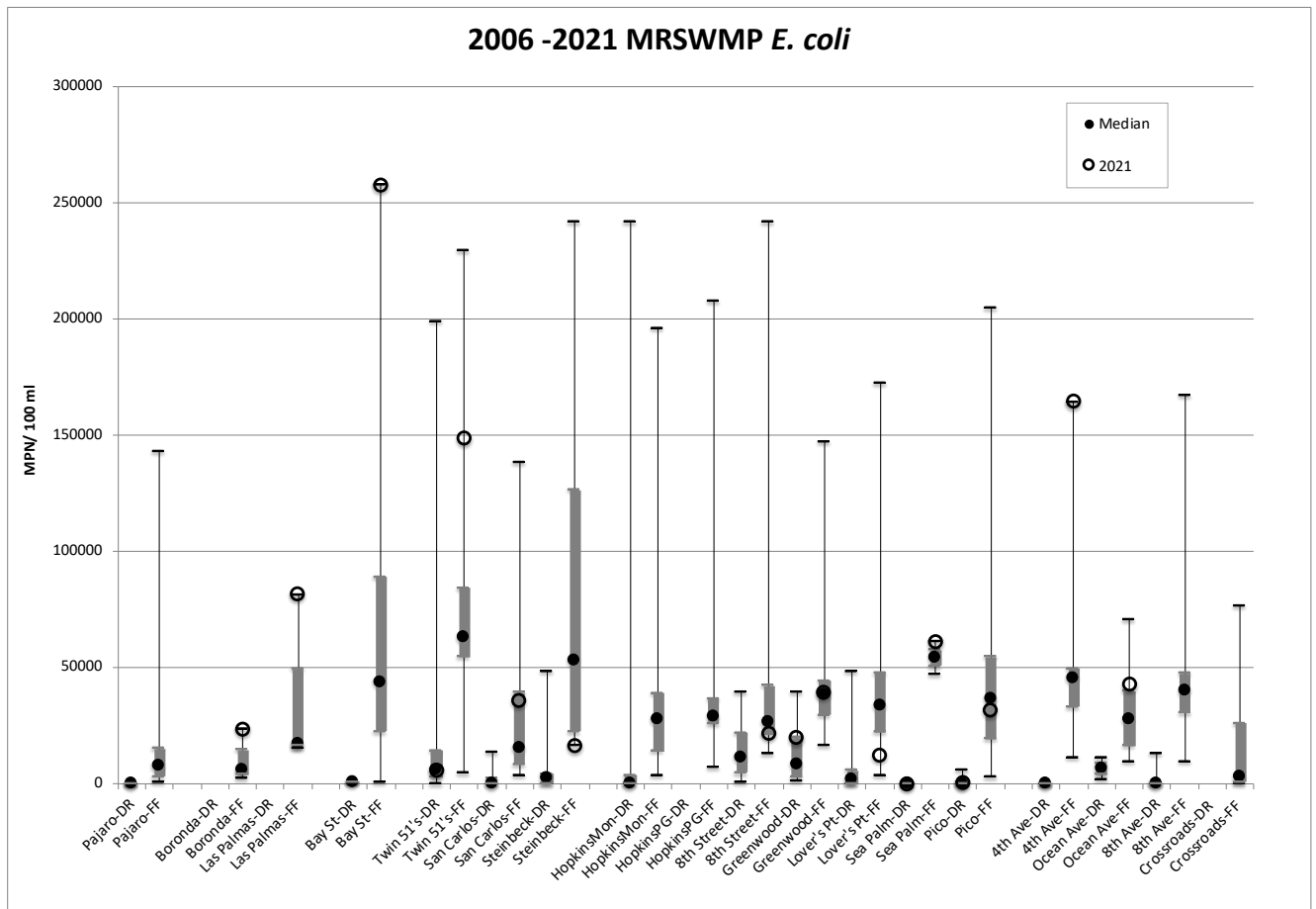


Figure 7. 2006-2021 MRSWMP *E. coli* results. Non-detects were given the value of half the Minimum Detection Limit (MDL) but their true value lies between the zero and the MDL. Sites are listed north to south.

Enterococcus

Enterococcus is another type of indicator bacteria found in warm blooded animals. As described above, it does not cause disease in humans but it is a pollutant of concern because its presence indicates the potential presence of pathogens that do cause disease in humans and wildlife.

The National Recommended Water Quality Criteria for enterococcus is 104 MPN/100 ml. The MDL for enterococcus was 10 MPN/ 100ml for the Dry Run and 100 MPN/100ml for the First Flush. Figure 8 represents all MRSWMP enterococcus data since 2006. All outfall results are listed in Appendix 2.

- Dry Run** results: three of the four (75%) outfall sites monitored exceeded the WQO for enterococcus in 2021. The highest enterococcus result of 12,910 MPN/ 100 ml was from Greenwood Park (Pacific Grove), this site is diverted to the sanitary sewer downstream of the collection site.
- First Flush** results: All outfall sites monitored exceeded the WQO in 2021. The highest average result of 198,635 MPN/100 ml was from Twins (Monterey).

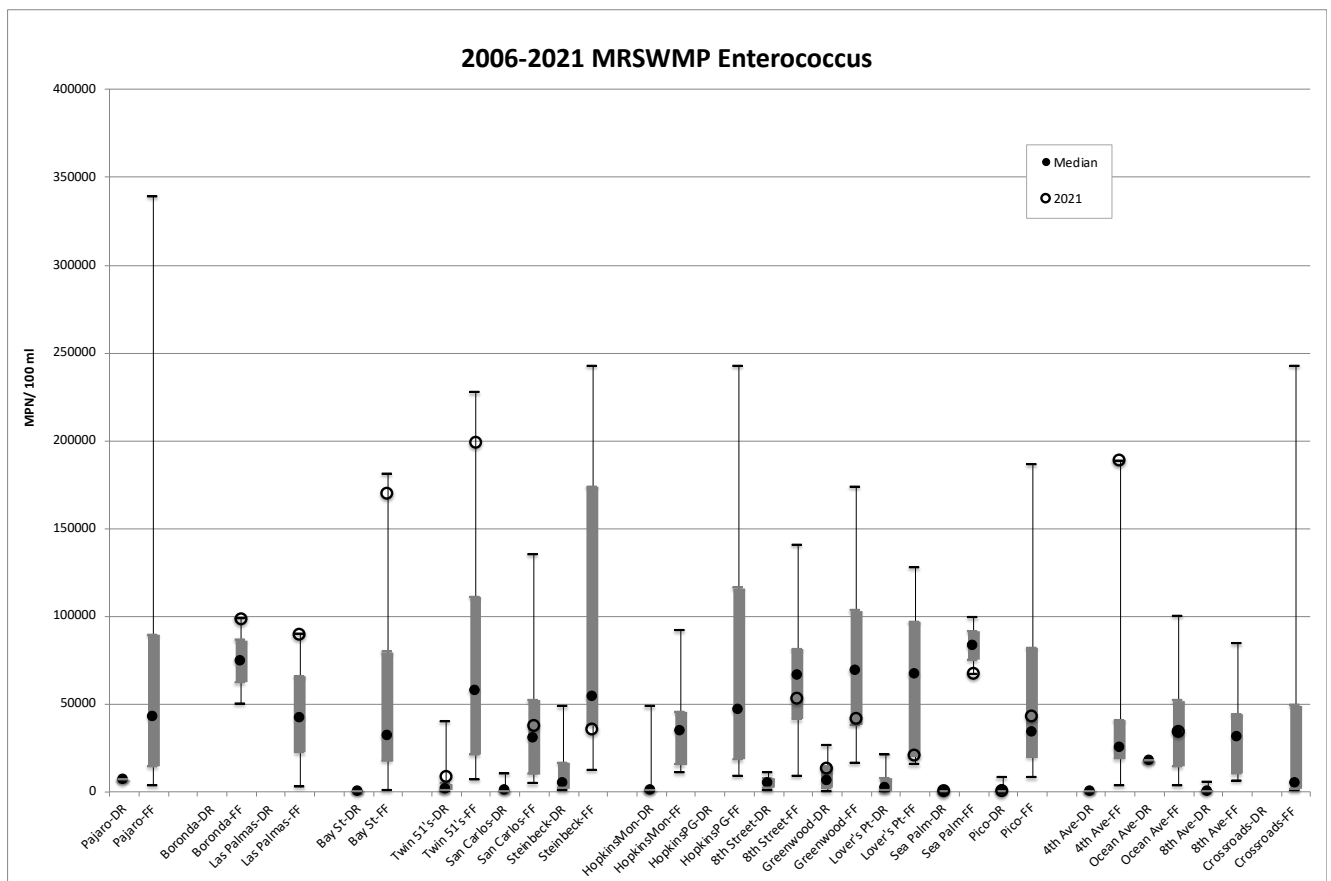


Figure 8. 2006-2021 MRSWMP enterococcus results. Non-detects were given the value of half the Minimum Detection Limit (MDL) but their true value lies between the zero and the MDL. Sites are listed north to south.

Hardness (as CaCO₃)

Hardness (as CaCO₃) in conjunction with other analytes, can assist in identifying a discharge of sewage, wash water, tap water as well as industrial or commercial liquid wastes. Additionally, when hardness increases, the amount of dissolved metals biologically available to aquatic and marine life decreases resulting in a decrease in the toxicity of the metal.

The SWRCB NPDES MS4 General Permit Action Level for hardness is not less than or equal to 10 mg/L or greater than or equal to 2,000 mg/L; the MDL for hardness (as CaCO₃) was 1 mg/L for the Dry Run and First Flush. Figure 9 represents all MRSWMP hardness data since 2013. All outfall results are listed in Appendix 2.

- **Dry Run and First Flush** results: None of the outfall results exceeded the acceptable range in 2021.

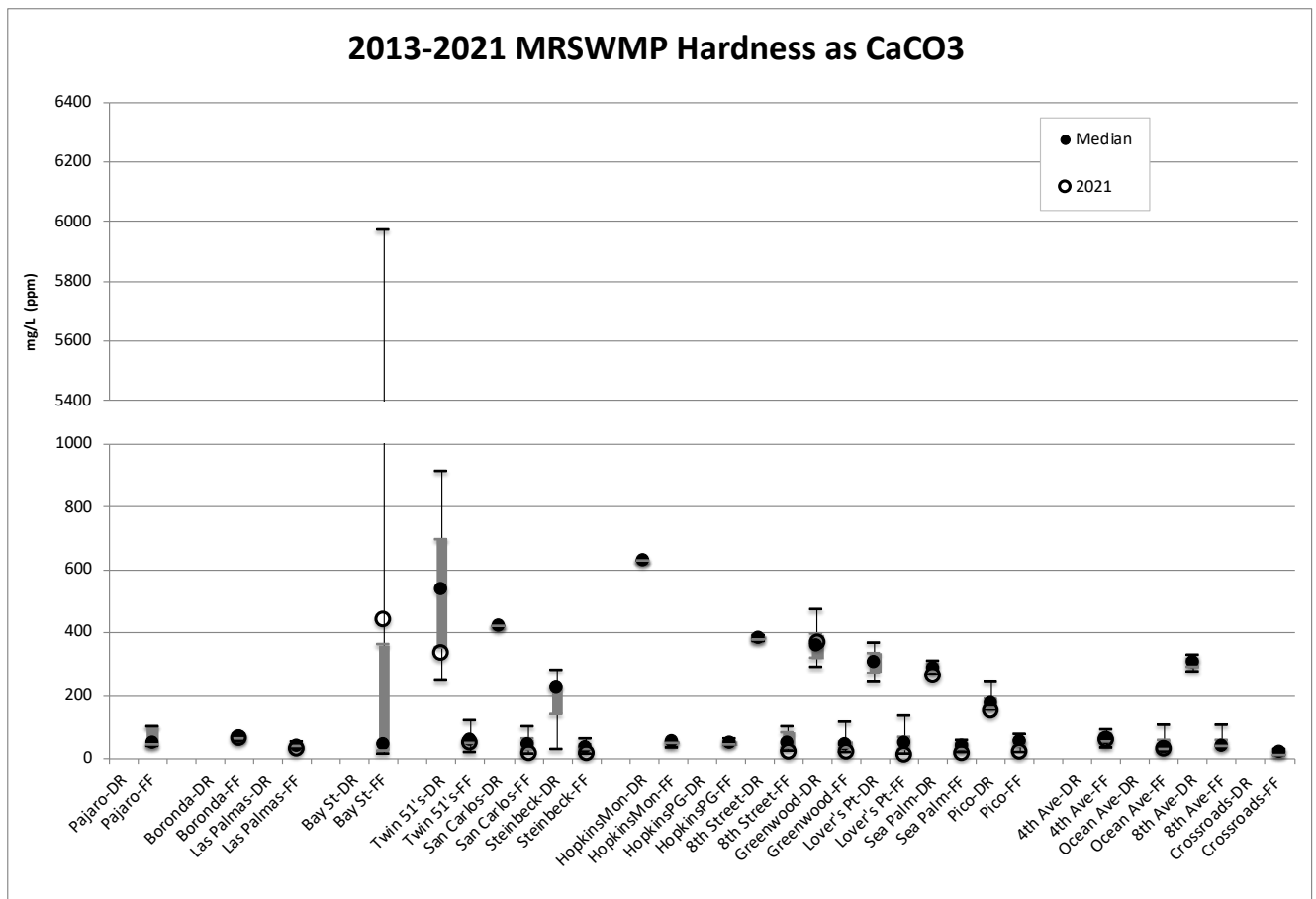


Figure 9. 2013 - 2021 MRSWMP hardness (as CaCO₃) results. To better illustrate results, the scale on the graph is split between 1000 and 4000 mg/L. As a result, First Flush 2018 results from Bay Street (Seaside and Sand City) of 5970 mg/L, 8th Street (Pacific Grove) Non-detects were given the value of half the Minimum Detection Limit (MDL) but their true value lies between the zero and the MDL. Sites are listed north to south.

Lead

Lead is toxic to marine organisms causing reduced reproduction, developmental deformities, reduced photosynthesis and mortality. Lead and other heavy metal toxicity can be mitigated by the presence of sediment, hardness or other binding compounds that may reduce the metal's bioavailability. Lead is present in some types of paint, water distribution systems, auto emissions and can be passed through the food web via uptake by plants that are grown in lead contaminated soils.

The Basin Plan WQO established for total lead is 30 µg/L; the MDL for lead was 0.1 µg/L for both the Dry Run and First Flush. Figure 10 represents all MRSWMP lead data since 2006. All outfall results are listed in Appendix 2.

- **Dry Run** results: None of the outfall sites exceeded the WQO in 2021. Two non-detects were reported at Sea Palm (Pacific Grove) and Pico (Pacific Grove) outfall sites.
- **First Flush** results: Just one of the thirteen (8%) outfall sites exceeded the WQO in 2021 with an average result of 45.6 µg/L from 4th Avenue (Carmel).

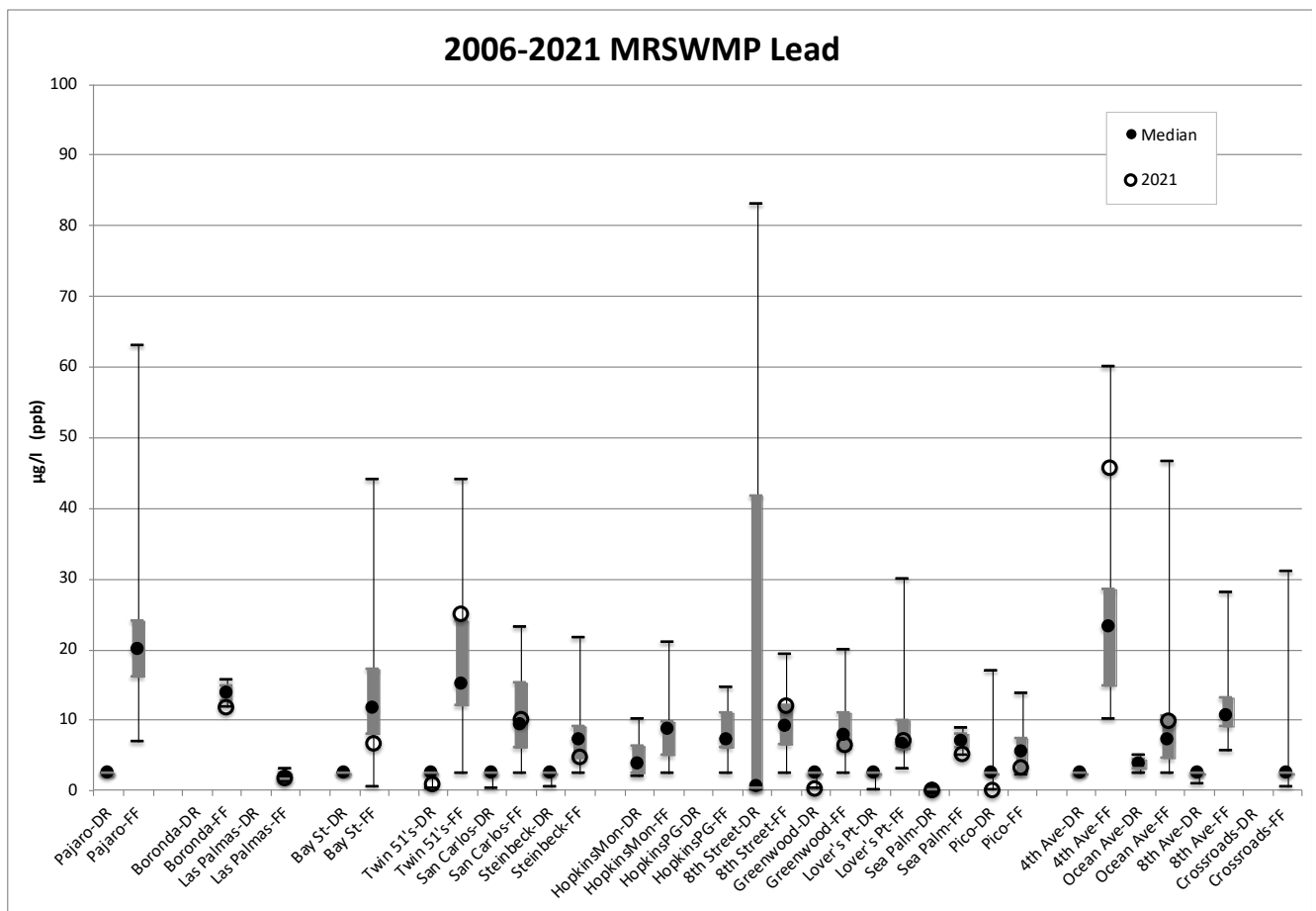


Figure 10. 2006-2021 MRSWMP lead results. Non-detects were given the value of half the Minimum Detection Limit (MDL) but their true value lies between the zero and the MDL. Sites are listed north to south.

MBAS Detergents

MBAS detergents in sample water can indicate a discharge from sewage or wash water, and in conjunction with other analytes, can assist in identifying a discharge of industrial or commercial liquid wastes.

The Basin Plan's WQO established for MBAS detergents is 0.2 mg/L; the MDL for MBAS detergents was 0.02 mg/L for the Dry Run and between 0.4 mg/L to 0.08 mg/L for the First Flush. Figure 11 represents all MRSWMP MBAS detergent data since 2013. All outfall results are listed in Appendix 2.

- **Dry Run** results: none of the four sites was above the WQO for MBAS concentrations in 2021.
- **First Flush** results: Average results from eleven of the thirteen sites (85%) were above the WQO in 2021. The highest average result of 1.12 mg/L was from Bay Street (Seaside/Sand City).

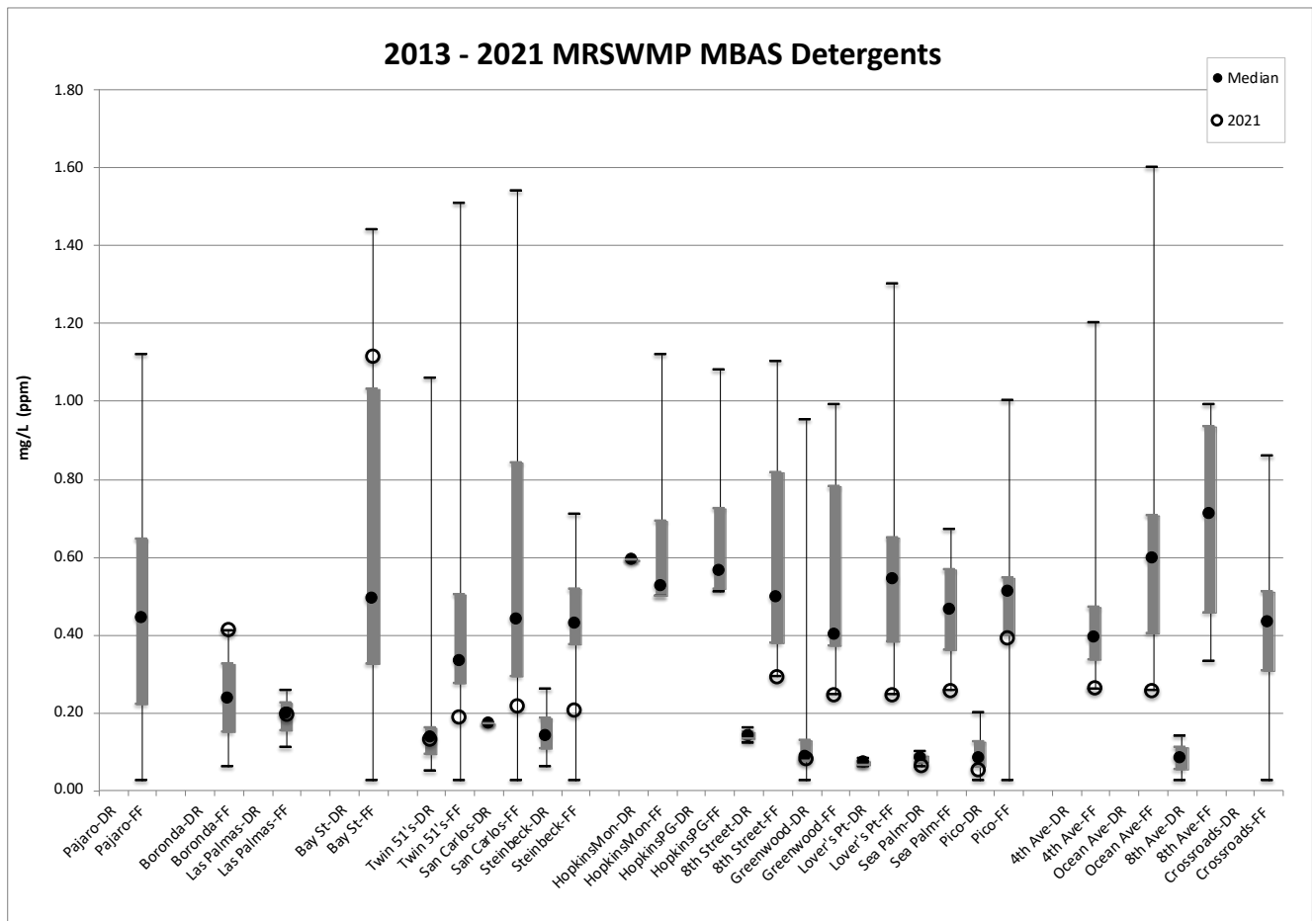


Figure 11. 2013 - 2021 MRSWMP MBAS detergent results. Non-detects were given the value of half the Minimum Detection Limit (MDL) but their true value lies between the zero and the MDL. Sites are listed north to south.

Nitrate as N

Nitrogen is an element needed for plant growth. Primary sources of nitrate in runoff include overwatering of fertilized lawns, agricultural and pasture lands, construction sites, and septic or sewer system leachate. Nitrate in runoff can lead to excessive nitrate in groundwater or increased growth of algal blooms that degrade water quality as algae die off and consume oxygen in their decomposition.

The CCAMP Action Level for nitrate as N ($\text{NO}_3\text{-N}$) is 2.25 mg-N/L. The MDL was 0.01 mg-N/L for the Dry Run and 0.04 mg-N/L for the First Flush. Figure 12 represents all MRSWMP nitrate as N data since 2006. All outfall results are listed in Appendix 2.

- **Dry Run** and First Flush results: None of the monitored sites had results that exceeded the Action Level in 2021.

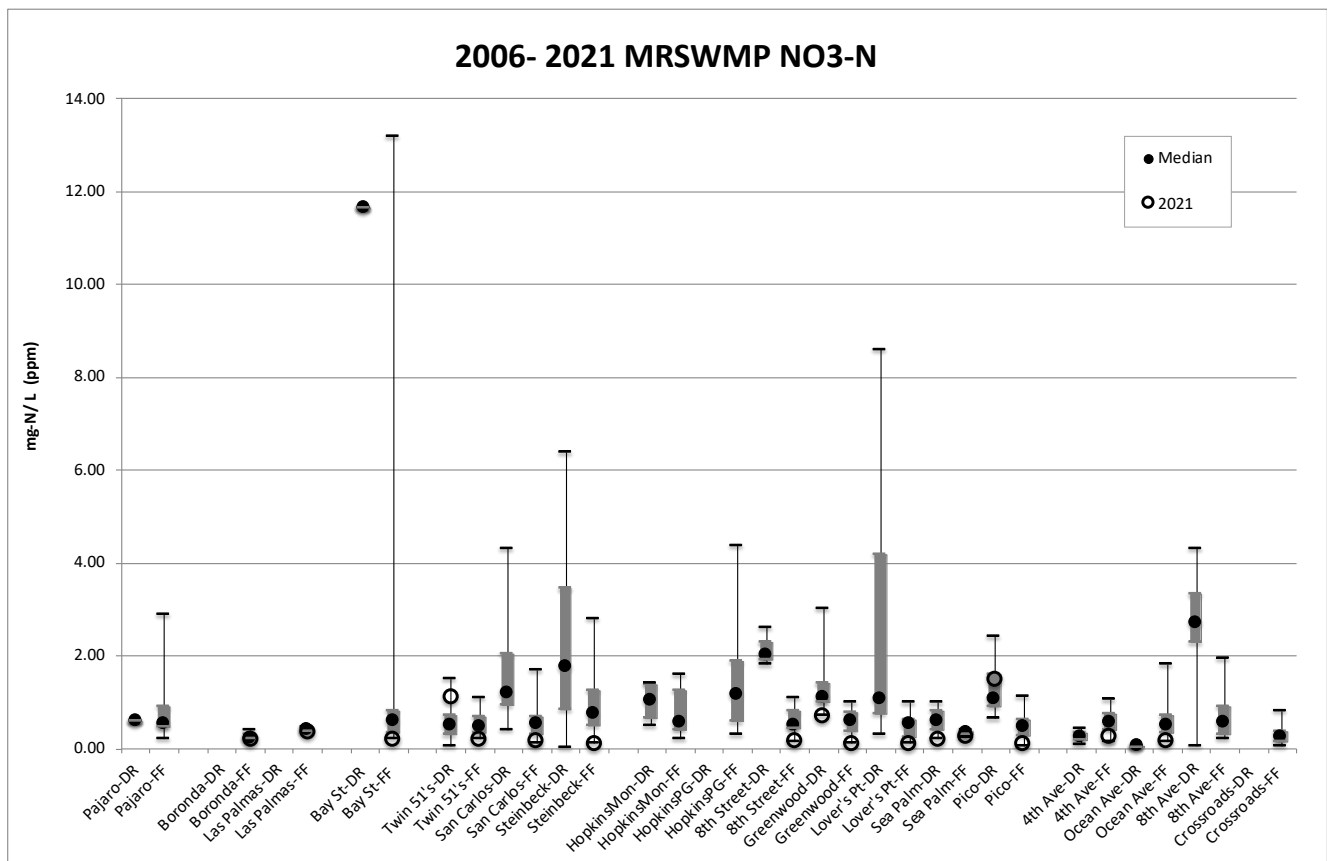


Figure 12. 2006-2021 MRSWMP nitrate as N ($\text{NO}_3\text{-N}$) results. Non-detects were given the value of half the Minimum Detection Limit (MDL) but their true value lies between the zero and the MDL. Sites are listed north to south.

Orthophosphate as P

Phosphorus is an essential element for plant growth. Orthophosphate is a form of phosphorus commonly found bound to soil particles, in sewage, fertilizers, and in detergents that contain phosphates. In aquatic systems, orthophosphate is rapidly taken up by algae and aquatic plants. When excessive amounts are present, large algal blooms can occur which can lead to degraded water quality conditions toxic to marine or aquatic life.

The CCAMP Action Level for orthophosphate as P (PO₄-P) is 0.12 mg-P/L. The MDL was 0.02 mg-P/L for the Dry Run and 0.08 mg-P/L for the First Flush. Figure 13 represents all MRSWMP orthophosphate as P data since 2006. All outfall results are listed in Appendix 2.

- **Dry Run** results: In 2021 one of the four outfall sites (25%) had results that exceeded the Action Level. The highest result of 0.30 was from Twins (Monterey).
- **First Flush** results: All results exceeded the Action Level in 2021. The highest average result of 0.75 mg-P/ L was from 4th Avenue (Carmel).

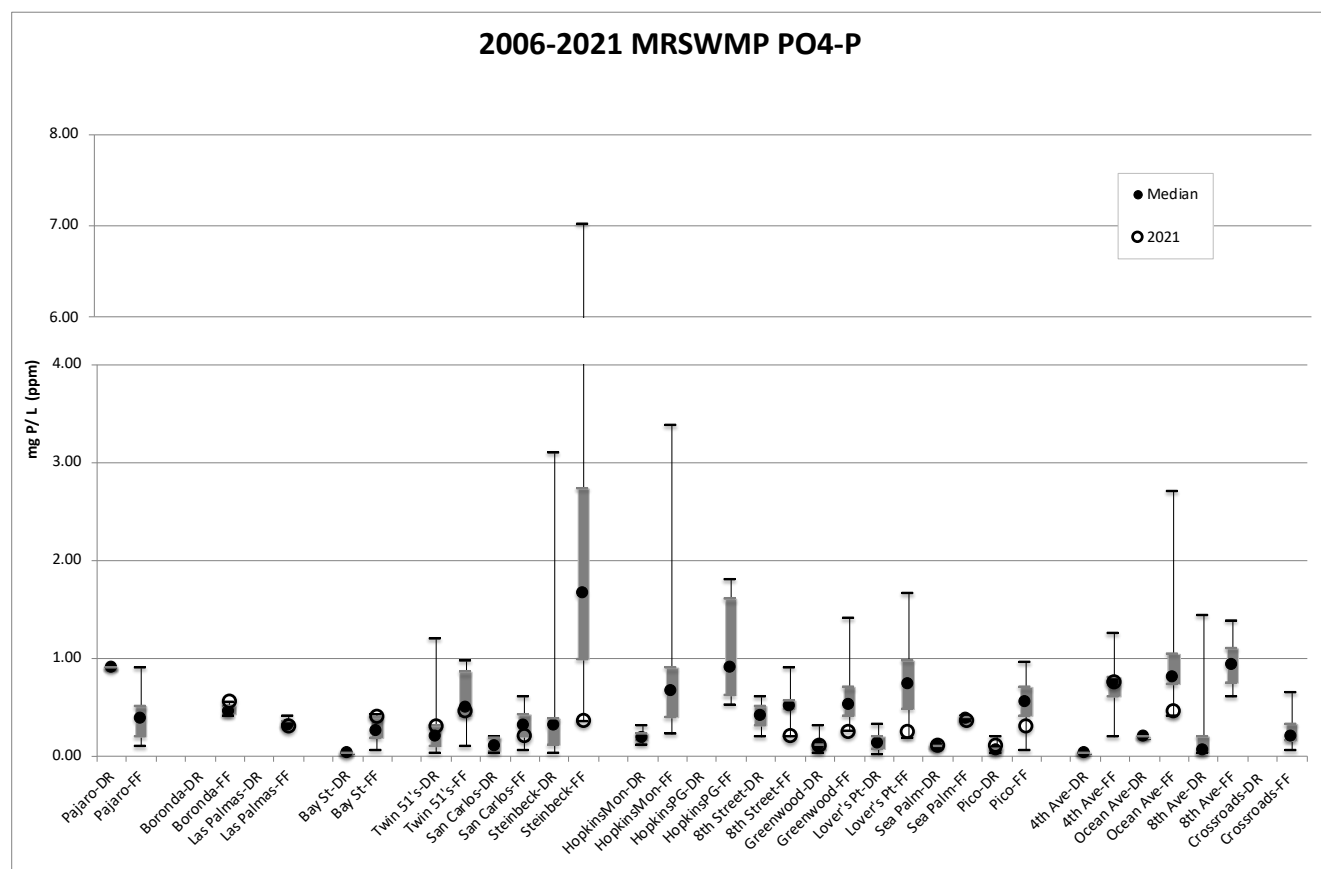


Figure 13. 2006-2021 MRSWMP orthophosphate as P (PO₄-P) results. To better illustrate results, the scale on the graph is split between 4.00 and 6.00 mg-P/L. As a result, the First Flush 2010 result of 7.01 mg/L from Steinbeck (Monterey) is in the upper portion of the chart. Non-detects were given the value of half the Minimum Detection Limit (MDL) but their true value lies between the zero and the MDL. Sites are listed north to south.

Potassium

Potassium, in conjunction with other analytes, can assist in identifying a discharge of sewage, industrial, or commercial liquid wastes.

The SWRCB NPDES MS4 General Permit Action Level for potassium is 20 mg/L; the MDL was 0.3 mg/L for both the Dry Run and First Flush. Figure 14 represents all MRSWMP potassium data since 2013. All outfall results are listed in Appendix 2.

- **Dry Run** results: No sites exceeded the Action Level in 2021.
- **First Flush** results: One site of the thirteen sites (8%) exceeded the Action Level in 2021. The highest average result of 30.0 mg/L was from Bay Street (Seaside/Sand City).

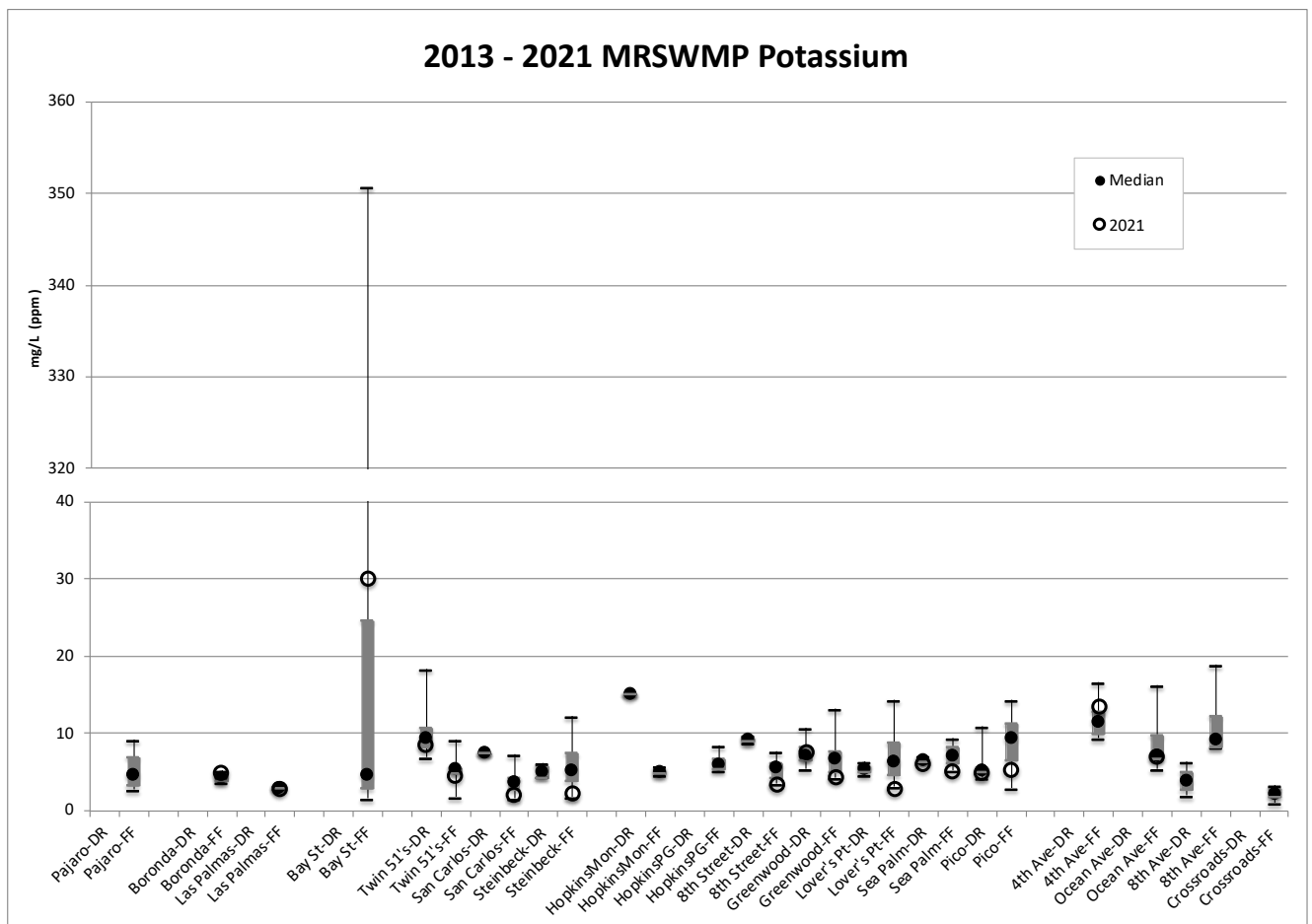


Figure 14. 2013 - 2021 MRSWMP potassium results. To better illustrate results, the scale on the graph is split between 30 and 300 mg/L. As a result, First Flush 2018 result from Bay Street (Seaside and Sand City) of 351 mg/L is in the top portion of the graph. Non-detects were given the value of half the Minimum Detection Limit (MDL) but their true value lies between the zero and the MDL. Sites are listed north to south.

Total Suspended Solids

Total suspended solids (TSS) are measured because high amounts of sediment can destroy habitat, suffocate eggs in fresh water systems, limit the food supply, clog gills or impair an organism’s vision when feeding. While TSS measures the weight of the solids in the water that contribute to less water clarity, turbidity measures the transparency of water. Both are useful measurements for water clarity but have different methodologies for analysis.

The CCAMP Action Level for TSS is 500 mg/L; the MDL was 2 mg/L for both the Dry Run and First Flush. Figure 15 represents all MRSWMP TSS data since 2006. All outfall results are listed in Appendix 2.

- **Dry Run and First Flush** results: No sites exceeded the Action Level in 2021.

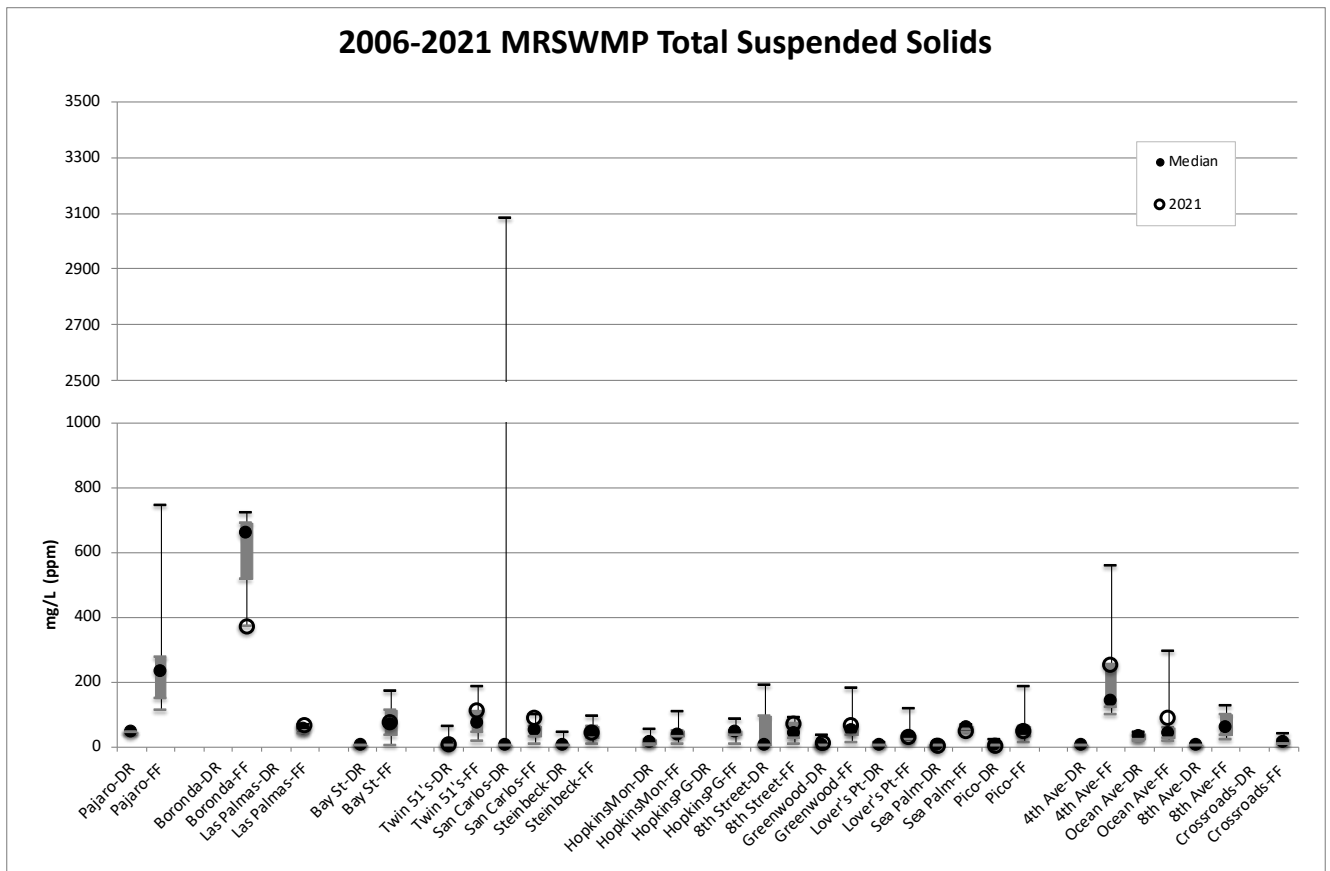


Figure 15. 2006-2021 MRSWMP TSS results. To better illustrate results, the scale on the graph is split between 1000 and 2500 mg/L. As a result, the Dry Run 2007 result of 3080 mg/L from San Carlos (Monterey) is in the top portion of the graph. Non-detects were given the value of half the Minimum Detection Limit (MDL) but their true value lies between the zero and the MDL. Sites are listed north to south.

Turbidity

Turbidity measures the transparency of water while TSS measures the weight of the solids in the water that contribute to less transparency. Both are useful measurements for water clarity but have different methodologies for analysis.

The Action Level for turbidity provided by the State Board in the General Permit is not greater than 1000 NTU. As a comparison CCAMP lists turbidity to be not greater than 25 NTU; the CCAMP Action Level will be used for this set of data as it is more protective of water quality. The MDL was either 0.1 or 0.2 NTU for the Dry Run and between 0.1 and 0.5 NTU for the First Flush. Figure 16 represents all MRSWMP turbidity data since 2013. All outfall results are listed in Appendix 2.

- **Dry Run** results: No sites exceeded the Action Level in 2021.
- **First Flush** results: Eight of the thirteen monitored sites (62%) exceeded the Action Level in 2021. The highest average result of 260 NTU was from Boronda (Monterey County).

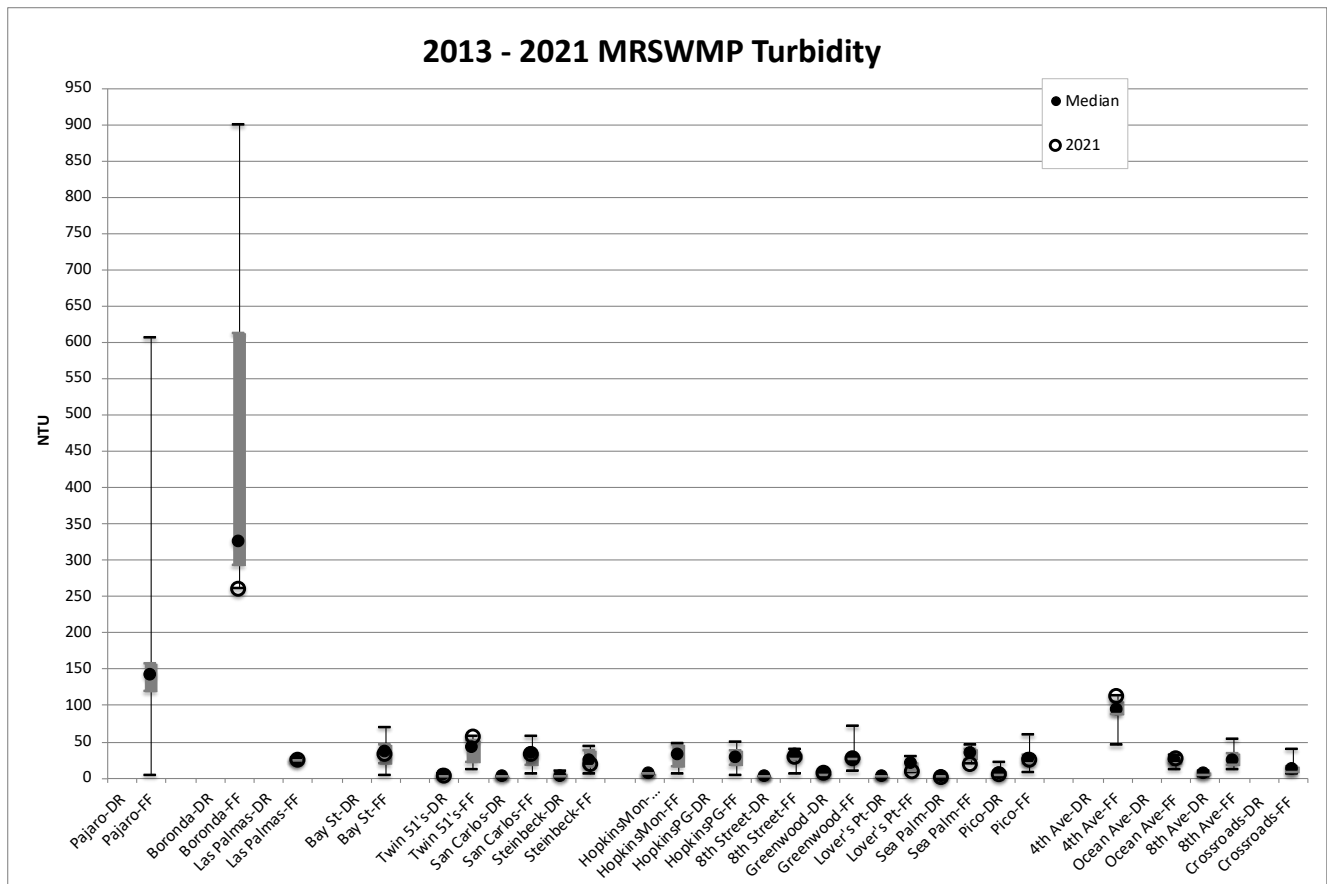


Figure 16. 2013- 2021 MRSWMP turbidity results. Non-detects were given the value of half the Minimum Detection Limit (MDL) but their true value lies between the zero and the MDL. Sites are listed north to south.

Urea

Urea is an organic compound that is often used in agricultural and urban fertilizers. While there is not an established Action Level or WQO, urea concentrations are compared between sites. The MDL for urea was 8 µg/L for the Dry Run and First Flush. Figure 17 represents all MRSWMP urea data since 2006. During the First Flush urea was collected during the first time series only; results shown in Figure 17 are not averaged. All outfall results are listed in Appendix 2.

- **Dry Run** results: In 2021 the highest urea result of 422 µg/L was from Twins (Monterey).
- **First Flush** results: In 2021 the highest result of 703 µg/L was from Steinbeck (Monterey).

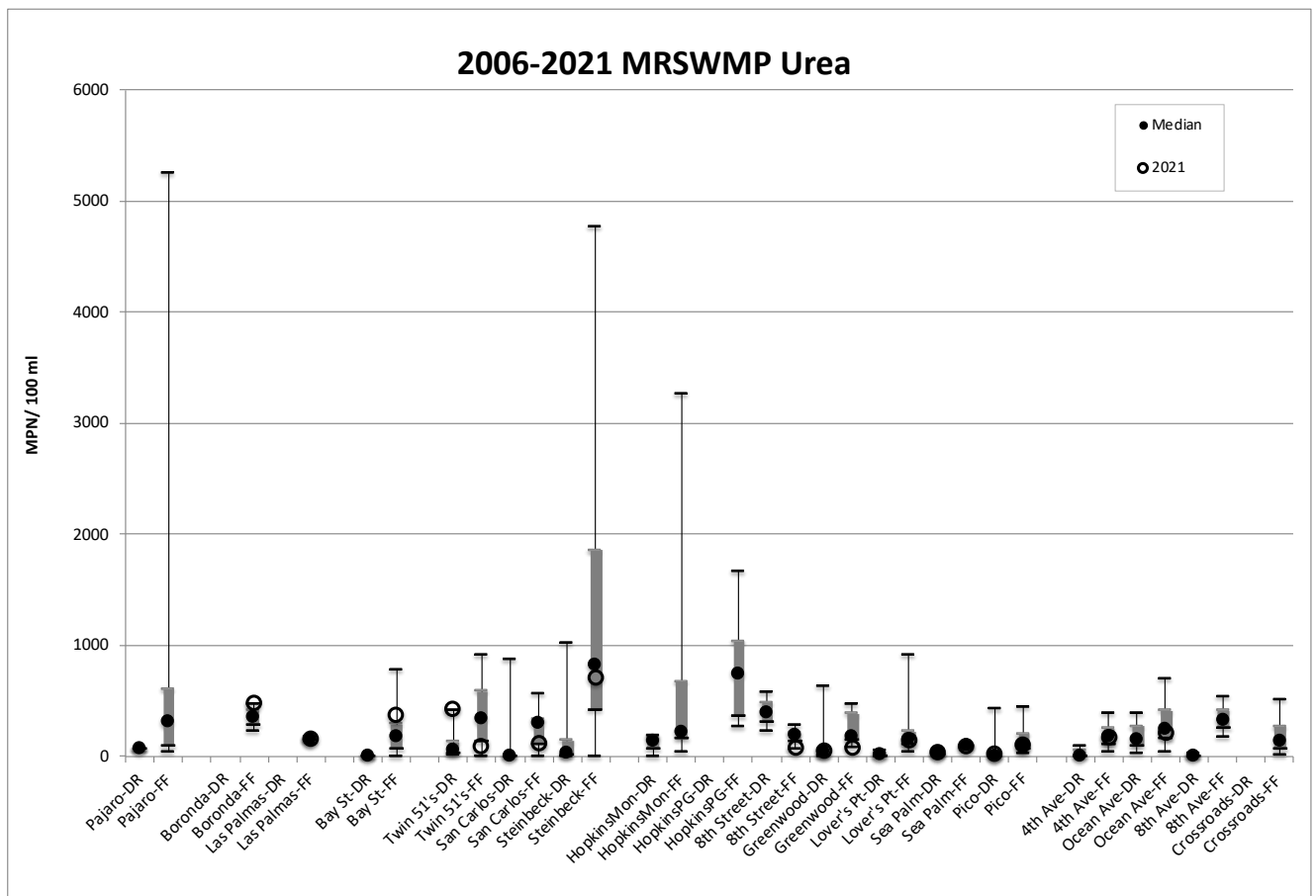


Figure 17. 2006–2021 MRSWMP urea results. Non-detects were given the value of half the Minimum Detection Limit (MDL) but their true value lies between the zero and the MDL. Sites are listed north to south.

Zinc

Zinc is toxic to marine organisms causing reduced reproduction, developmental deformities and mortality. Zinc and other heavy metal toxicity can be mitigated by the presence of sediment or other binding compounds that may reduce the metal's bioavailability. Zinc sources in urban runoff include tires, paint, and outdoor zinc surfaces such as galvanized surfaces.

The Basin Plan WQO for total zinc is 200 µg/L. The zinc MDL was 10 µg/L for the Dry Run and First Flush. Figure 18 represents all MRSWMP zinc data since 2006. All outfall results are listed in Appendix 2.

- **Dry Run** results: One site of the four (25%) monitored exceeded the WQO in 2021. The highest result of 526 µg/L was from Twins (Monterey).
- **First Flush** results: No sites exceeded the WQO in 2021.

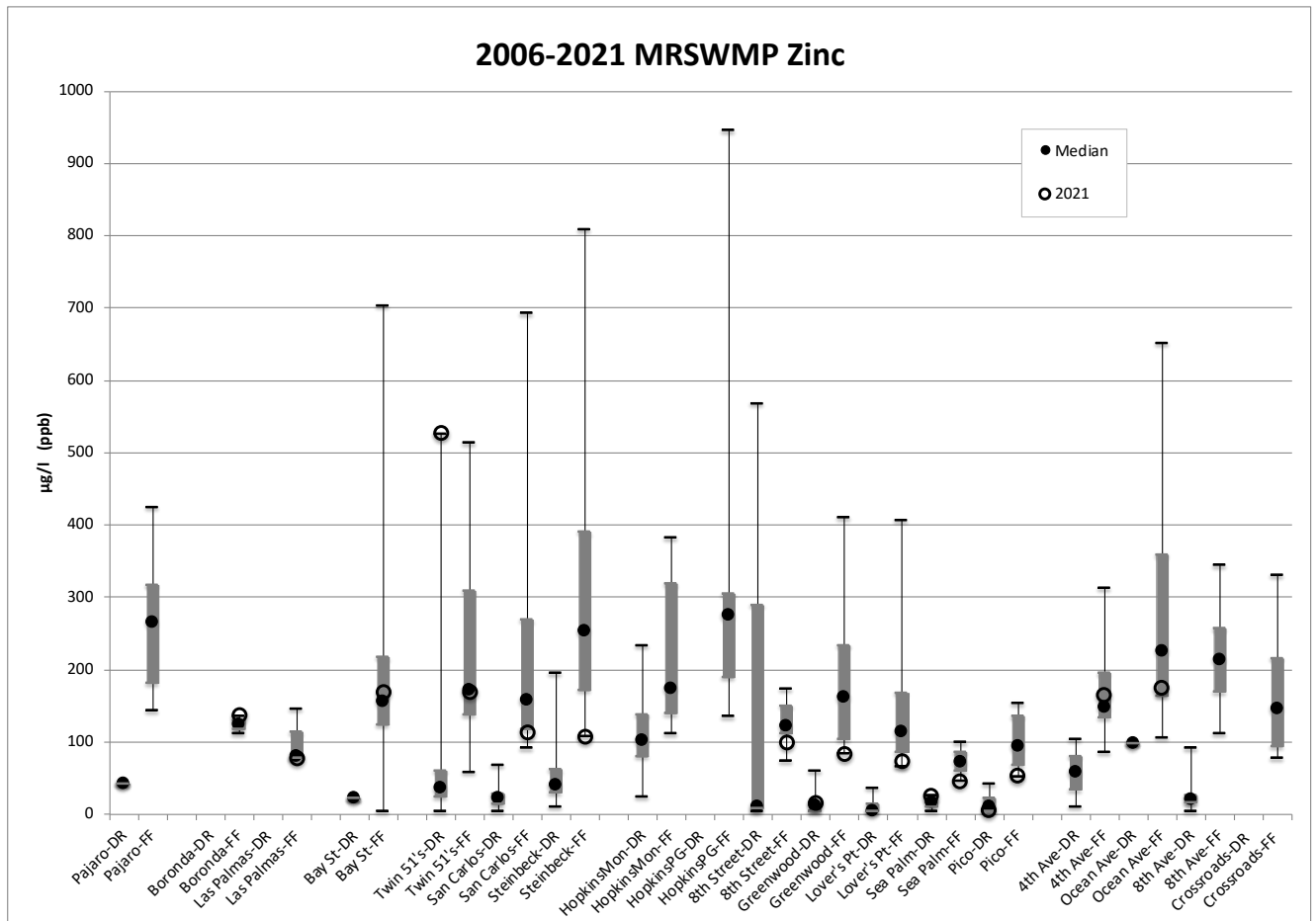


Figure 18. 2006-2021 MRSWMP zinc results. Non-detects were given the value of half the Minimum Detection Limit (MDL) but their true value lies between the zero and the MDL. Sites are listed north to south.

Results by Jurisdiction

The following section is broken out by city or county for this permit year. All 2021 outfall results can be found in Appendix 2 and by jurisdiction in Appendix 3.

Carmel

For the 2021-2022 permit year, two sites were monitored in Carmel: 4th Avenue and Ocean Avenue. There was no flow at either of the sites for the Dry Run.

For the First Flush:

- Copper exceeded the Basin Plan WQO in all samples at both sites. The highest single sample copper result from all 2021 MRSWMP sampled sites of 93 µg/L was from 4th Avenue during the first time-series sample. The overall highest average of all MRSWMP sites was 4th Avenue with an average of 74 µg/L. Samples from Ocean Avenue also exceeded the WQO for copper with the first sample result of 92 µg/L, and the second highest average of 62 µg/L.
- *E. coli* and enterococcus results exceeded the U.S. EPA WQO in all samples at both sites.
- Lead exceeded the WQO in both samples from 4th Avenue with the highest single sample lead result of 59.5 µg/L and the highest overall average of 45.6 µg/L.
- MBAS surfactant results exceeded the Basin Plan WQO in all samples at 4th Avenue and just the first time series sample at Ocean Avenue.
- Orthophosphate as P results exceeded the CCAMP Action Level in all samples at both sites.
- Turbidity results exceeded the CCAMP Action Level in all samples from 4th Avenue and just the first sample at Ocean Avenue.
- Ammonia, color, hardness, nitrate as N, potassium, total suspended solids, and zinc results were all below WQOs and Action Levels for both time series samples at both sites.

Monterey

For the 2021-2022 permit year, three sites were monitored: Twins, San Carlos, and Steinbeck. Only Twins had flowing water during the Dry Run.

For the Dry Run:

- *E. coli* and enterococcus results exceeded the U.S. EPA WQOs.
- Nitrate as N results exceeded the CCAMP Action Level at just one site, San Carlos, with a result of 4.3 mg-N/L.
- Orthophosphate as P results exceeded the CCAMP Action Level and was the highest of all Dry Run sites with a result of 0.30 mg-P/L.
- Zinc exceeded the WQO and was the highest of any site monitored for the Dry Run with a result of 526 µg/L.
- Ammonia, color, copper, hardness, lead, MBAS detergents, potassium, total suspended solids, and turbidity results were below WQOs or Action Levels during the Dry Run.

During the First Flush:

- Copper exceeded the Basin Plan WQO in only the first sample from Twins.
- *E. coli* and enterococcus exceeded the U.S. EPA WQO in all samples at all Monterey sites.

- MBAS detergents exceeded the Basin Plan WQO in one of the two time series samples at each Monterey site. Averaged results exceeded the WQO at San Carlos and Steinbeck.
- Orthophosphate exceeded the CCAMP Action Level in all samples at all Monterey sites.
- Turbidity exceeded the CCAMP Action Level in all samples from San Carlos and Twins, but none of the samples from Steinbeck.
- Ammonia, color, hardness, lead, nitrate as N, potassium, total suspended solids and zinc were all below WQOs and Action Levels for both time series samples at all sites.

Monterey County

For the 2021-2022 permit year, two sites were monitored: Boronda and Las Palmas. There was no flow at either site during the Dry Run.

During the First Flush:

- *E. coli* and enterococcus results exceeded the U.S. EPA WQO in all samples at both Monterey County sites.
- MBAS detergents exceeded the Basin Plan WQO in all samples from Boronda and the second time series sample from Las Palmas.
- Orthophosphate results exceeded the CCAMP Action Level in all samples at both Monterey County sites.
- Total suspended solids exceeded the CCAMP Action Level in both samples at Boronda and was the highest of all single samples with a result of 768 mg/L in the first time series sample.
- Turbidity results exceeded the CCAMP Action Level in both samples from Boronda which had the highest single sample result of all 2021-2022 MRSWMP samples with a result of 280 mg/L in the first time series sample. Las Palmas also exceeded the CCAMP Action Level, but just in the first time series sample.
- Ammonia, color, copper, hardness, lead, nitrate as N, potassium, total suspended solids, and zinc results did not exceed WQOs or Action Levels for any samples during the First Flush.

Pacific Grove

For the 2021-2022 permit year, five sites were monitored: 8th Street, Greenwood Park, Lovers, Sea Palm, and Pico. Again in 2021 due to COVID, Hopkins Marine Station was closed to the public including First Flush volunteers so two sites on campus historically monitored were not sampled and the site at Sea Palm was sampled instead. The 8th Street, Greenwood Park, and Lovers watersheds have dry weather urban runoff within the storm drain system diverted to Monterey One Water for treatment from April to October. In recent years, this dry-weather diversion has been left on throughout the winter season which impacts storm drain flows into the ocean within the diversion area. For the 2021 Dry Run and First Flush the diversion remained in operation. Dry Run samples were collected at the following sites: Greenwood Park (upstream of the diversion), Sea Palm (outside of the diversion area), and Pico (outside of the diversion area). For First Flush, all sites were sampled: 8th Street (downstream of diversion), Greenwood Park (upstream of the diversion), Lovers (upstream of the diversion), Sea Palm (outside of the diversion area), and Pico (outside of the diversion area).

For the Dry Run:

- *E. coli* was above the U.S. EPA WQO at Greenwood Park and Pico. The highest *E. coli* result

for all 2021 MRSWMP sites of 19,860 MPN/100 ml was from Greenwood Park.

- Enterococcus was above the U.S. EPA WQO at all sites. The highest result for all 2021 MRSWMP sites of 12,910 MPN/100 ml was from Greenwood Park.
- Ammonia, color, copper, hardness, lead, MBAS detergents, nitrate as N, orthophosphate as P, potassium, total suspended solids, turbidity, and zinc were all below WQOs and Action Levels at all sites.

During the First Flush:

- *E. coli* results exceeded the U.S. EPA WQO in all samples at all sites.
- Enterococcus results exceeded the U.S. EPA WQO in all samples at all sites.
- Hardness exceeded the SWRCB NPDES MS4 General Permit Action Level of not less than or equal to 10 mg/L or greater than or equal to 2,000 mg/L with a result of 9 mg/L in the second time series sample at Lovers.
- MBAS surfactants results exceeded the RWQCB Basin Plan WQO for all samples at all sites.
- Orthophosphate results exceeded the CCAMP Action Level in all samples at all sites.
- Turbidity results exceeded the CCAMP Action Level only for the second time series samples at Greenwood Park, 8th Street, and Pico.
- Ammonia, color, copper, lead, nitrate as N, potassium, total suspended solids, and zinc were all below WQOs and Action Levels for both time series samples at all sites.

Seaside and Sand City

For the 2021-2022 permit year, Bay Street was the only site monitored, and as in past years, this site had no flow for the Dry Run monitoring event.

During the First Flush:

- Copper exceeded the Basin Plan WQO in only the first time series sample.
- *E. coli* exceeded the U.S. EPA WQO in both samples. The highest single sample result for the 2021-2022 MRSWMP monitoring of 410,580 MPN/ 100ml occurred in the first time series sample.
- Enterococcus exceeded the U.S. EPA WQO for both samples.
- MBAS surfactant results exceeded the RWQCB Basin Plan WQO in both samples. The highest single sample result for the 2021-2022 MRSWMP monitoring of 1.61 mg/L occurred in the first time series sample.
- Orthophosphate exceeded the CCAMP Action Level in both samples.
- Potassium exceeded the SWRCB NPDES MS4 General Permit Action Level in the first time series sample. This result of 57.6 mg/L was the highest of any 2021-2022 MRSWMP samples.
- Turbidity results exceeded the CCAMP Action Level in both samples.
- Ammonia, color, hardness, lead, nitrate as N, total suspended solids, and zinc results did not exceed any WQOs or Action Levels for any samples.

All 2021 outfall results can be found in Appendix 2 and by jurisdiction in Appendix 3.

Conclusion

Since 2006, the MRSWMP program has utilized MBNMS' Dry Run and First Flush protocols to ascertain what concentrations of pollutants are found in both dry and wet weather storm drain flows that discharge into surface waters or the ocean. The outfall sites monitored as part of the MRSWMP program were selected as sites representative of water quality throughout a jurisdiction. For the 2021- 2022 permit year, thirteen outfall sites were monitored for the Dry Run and First Flush in six jurisdictions: Monterey County, Seaside-Sand City, Monterey, Pacific Grove, and Carmel-by-the-Sea.

Outfall monitoring results provide city representatives and residents with information on the concentration and fate of pollutants from their own streets and neighborhoods. Cities can use this information not only to satisfy permit requirements but also engage and inform residents on practical solutions to storm drain pollution. While First Flush results do indicate worst-case scenarios of water quality, results can provide insight into sub-watersheds within each jurisdiction that warrant further attention and investigation into pollutant sources. Source tracking within sub-watersheds is an important and useful tool for local jurisdictions to track down sources of pollutants before they reach receiving water and Monterey Bay National Marine Sanctuary. Sub-watersheds with elevated copper or MBAS are high on the list for watersheds needing further investigation into sources and possible mitigation through public education campaigns.

First Flush data is also useful for cities to track major storms and total rainfall impacted by climate change. Prior to 2016, First Flushes generally occurred during the second half of October to the first half of November. Starting in 2017, each year was successively later for the First Flush, with 2020's First Flush occurring mid-December. While this year's First Flush is more in line with expectations as far as timing it was an unusual storm in terms of amount of rainfall. In the climate uncertain future, storms are predicted to become less frequent but stronger with heavier rainfall which may impact First Flush results as watersheds get a greater dousing that create more flow through the storm drain system. Resident engagement will become essential in preparing for First Flush by removing outside oil or paint cans, trash, pet waste or other debris that can get picked up by strong rainwater flows and enter the storm drain system and Monterey Bay National Marine Sanctuary.

Through coordinated and collaborative efforts, water quality within the MRSWMP region can improve for the benefit of residents on the land and in the ocean.

Appendix 1: MRSWMP Monitoring sites

MRSWMP Monitoring sites- listed from north to south

Jurisdiction	Site ID	Site Name	Drainage Area (acres)	Primary Land Use	MRSWMP Outfall #	Pipe ID (Inches)
Monterey County	SASD-01	Boronda	86	39% Residential 23% Cultivated 19% Industrial	MC-013	24"
Monterey County	SASD-02	Las Palmas	158	3% Commercial 31% Residential 60% Open space	MSP-025	Box culvert
Seaside & Sand City	SSD-02	Bay Street	1200	80% Residential 10% Commercial 10% Public/Other	SC-1	90
Monterey	MSD-03	Twin 51's	291	63% Residential 15% Commercial 22% Public/Other	M-15	51" (x2)
Monterey	MSD-04	San Carlos	22	12% Commercial 38% Residential 50% Public/Other	M-7	24"
Monterey	MSD-05	Steinbeck	37	66% Commercial 12% Residential 22% Public/Other	M-3	36"
Pacific Grove	PGSD-01	8 th Street	35	100% Residential	PG-32	24"
Pacific Grove	CENTR-31	Greenwood Park	238.3	71% Residential 5% Commercial 25% Public/Other	PG-28	36"
Pacific Grove	PGSD-03	Lover's Point	240	54% Residential 1% Commercial 20% Other	PG-22	54"
Pacific Grove	PGSD-15	Sea Palm	32.2		PG-15	18"
Pacific Grove	PGSD-04	Pico	17.56	60% Residential 40% Public	PG-03	40"
Carmel	CASD-01	4 th Avenue	128.0	86% residential 7% Comm/Res 7% Public/Other	C-1	36"x60" Box culvert
Carmel	CASD-02	Ocean Avenue	115.2	22% Commercial 71% Residential 7% Comm/Res	C-2	24"

Appendix 2: Results by Analyte (listed alphabetically)

Ammonia as N

Comparison of ammonia results for MRSWMP monitoring and reported in mg/L. Shaded boxes indicate that the General Permit Action Level of 50 mg/L was exceeded; NA= Not Analyzed; ND= Non-detect; NF= No Flow; NS= Not Sampled; -- = Not included in MRSWMP monitoring for this analyte. Dry weather sampling includes Dry Runs (DR) and the 2014 Summer Run (SuR). Wet weather sampling includes the First Flushes (FF) and the 2014 Second Flush (SF). The table is broken into sections to facilitate printing.

		Site Name	FF 2021	DR 2021	FF 2020	DR 2020	FF 2019	DR 2019	FF 2018	DR 2018	FF 2017	DR 2017
Sites by Jurisdiction	Carmel	4 th Avenue	0.40	NF	0.27	NF	0.80	NF	0.45	NF	0.13	NF
		Ocean	0.27	NF	0.47	NF	0.95	NF	1.00	NF	0.65	NF
		8 th Avenue	NS	NS	NS	NS	NS	NS	NS	0.85	NF	0.71
	Monterey	Twin 51's	0.68	1.12	1.38	ND	0.48	0.90	0.95	ND	0.92	0.9
		San Carlos	0.15	NF	0.38	0.04	0.34	NF	0.25	NF	0.47	NF
		Steinbeck	0.47	NF	1.52	ND	0.89	ND	3.30	NF	4.63	NF
	Monterey County	Boronda	0.46	NF	0.20	NF	0.37*	NF	--	--	--	--
		Las Palmas	0.20	NF	0.17	NF	0.30	NF	--	--	--	--
		Pajaro	NS	NS	NS	NS	NS	NS	0.25	NF	0.51	NF
		Crossroads	NS	NS	NS	NS	NS	NS	0.35	NF	0.29	NF
	Pacific Grove	HopkinsMon	NS	NS	NS	NS	0.47	NF	0.45	NF	0.98	1.1
		HopkinsPG	NS	NS	NS	NS	1.22	NF	4.95	NF	0.45	NF
		8 th Street	0.15	NF	0.57	0.21	0.44	NF	0.70	0.30	0.41	NF
		Greenwood	0.26	0.08	0.52	0.19	0.52	0.10	0.45	0.10	0.41	ND
		Lover's	0.21	NF	0.27	0.04	0.55	ND	0.40	NF	0.39	NF
		Sea Palm	0.15	ND	0.22	ND						
		Pico	0.21	ND	0.29	ND	0.70	ND	0.40	ND	0.29	ND
Seaside/ Sand City	Bay St	0.65	NF	0.22	NF	0.71	NF	0.15	NF	0.93	NF	

*Data provided by Monterey County from sampling that occurred one day after First Flush.

Ammonia as N continued

		Site Name	FF 2016	DR 2016	FF 2015	DR 2015	FF 2014	DR 2014	SuR 2014	SF 2014	FF 2013	DR 2013
Sites by Jurisdiction	Carmel	4 th Avenue	0.84	NF	0.53	NF	--	--	NF	NS	NS	NF
		Ocean	0.73	NF	0.59	NF	--	--	NF	NS	NA	NF
		8 th Avenue	0.84	NF	0.73	NF	--	--	NF	NS	NS	NA
	Monterey	Twin 51's	0.32	0.44	0.69	0.34	0.72	0.07	0.06	0.10	NA	NA
		San Carlos	0.26	NF	0.35	NF	0.86	NF	NF	0.14	NA	NF
		Steinbeck	2.76	NF	3.79	NF	10.46	0.09	0.08	0.61	NA	NF
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--	--	--
		Pajaro	2.90	NF	0.31	NF	0.44	NF	NF	0.23	NA	NF
		Crossroads	0.18	NF	0.18	NF	0.46	NF	NF	0.12	NA	NF
	Pacific Grove	HopkinsMon	0.33	NF	--	--	--	--	--	--	--	--
		HopkinsPG	1.66	NF	--	--	--	--	--	--	--	--
		8 th Street	0.32	NF	--	--	--	--	--	--	--	--
		Greenwood	0.36	0.26	0.78	ND	1.57	0.21	0.11	NS	NA	NA
		Lover's	0.33	NF	0.49	NF	1.18	NF	NF	NS	NA	NF
		Sea Palm										
		Pico	0.29	ND	0.68	ND	0.94	ND	ND	0.11	NA	NA
Seaside/ Sand City	Bay St	0.39	NF	0.53	NF	0.37	NF	NF	0.13	NA	NF	

Color

Comparison of color results for MRSWMP monitoring, reported in Color Units. Shaded boxes indicate that the General Permit action level of 500 color units was exceeded. NA= Not Analyzed; ND= Non-detect; NF= No Flow; NS= Not Sampled; -- = Not included in MRSWMP monitoring of this analyte. Dry weather sampling includes Dry Runs (DR) and the 2014 Summer Run (SuR). Wet weather sampling includes the First Flushes (FF) and the 2014 Second Flush (SF). The table is broken into sections to facilitate printing.

		Site Name	FF 2021	DR 2021	FF 2020	DR 2020	FF 2019	DR 2019	FF 2018	DR 2018	FF 2017	DR 2017
Sites by Jurisdiction	Carmel	4 th Avenue	105	NF	214	NF	550	NF	275	NF	375	NF
		Ocean	28	NF	196	NF	175	NF	175	NF	250	NF
		8 th Avenue	NS	NS	NS	NS	NS	NS	200	NF	225	14
	Monterey	Twin 51's	55	25	96	22	188	75	100	20	250	19
		San Carlos	45	NF	87	22	150	NF	98	NF	250	NF
		Steinbeck	18	NF	93	24	125	375	110	NF	200	NF
	Monterey County	Boronda	100	NF	25	NF	NA	NA	--	--	--	--
		Las Palmas	53	NF	38	NF	60	NF	--	--	--	--
		Pajaro	NS	NS	NS	NS	NS	NS	85	NF	1125	NF
		Crossroads	NS	NS	NS	NS	NS	NS	125	NF	300	NF
	Pacific Grove	HopkinsMon	NS	NS	NS	NS	100	NF	125	NF	150	32
		HopkinsPG	NS	NS	NS	NS	150	NF	125	NF	200	NF
		8 th Street	30	NF	143	30	85	NF	125	40	175	NF
		Greenwood	60	30	140	26	125	50	125	50	250	10
		Lover's	33	NF	180	21	175	24	200	NF	175	NF
		Sea Palm	60	15	159	20	--	--	--	--	--	--
		Pico	35	30	157	84	200	100	200	40	225	8
	Seaside/ Sand City	Bay St	150	NS	38	NF	150	NF	18	NF	200	NF

Color continued

		Site Name	FF 2016	DR 2016	FF 2015	DR 2015	FF 2014	DR 2014	SuR 2014	SF 2014	FF 2013	DR 2013
Sites by Jurisdiction	Carmel	4 th Avenue	213	NF	400	NF	--	--	NF	NS	NS	NF
		Ocean	80	NF	73	NF	--	--	NF	NS	300	NF
		8 th Avenue	100	NF	100	NF	--	--	NF	NS	NS	7
	Monterey	Twin 51's	40	24	85	30	185	25	30	50	225	24
		San Carlos	44	NF	50	NF	315	NF	NF	70	225	NF
		Steinbeck	75	NF	63	NF	340	22	33	70	225	NF
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--	--	--
		Pajaro	255	NF	400	NF	300	NF	NF	500	625	NF
		Crossroads	40	NF	20	NF	100	NF	NF	70	75	NF
	Pacific Grove	HopkinsMon	80	NF	--	--	--	--	--	--	--	--
		HopkinsPG	80	NF	--	--	--	--	--	--	--	--
		8 th Street	50	NF	--	--	--	--	--	--	--	--
		Greenwood	60	30	100	25	315	20	20	NS	250	60
		Lover's	42	NF	75	NF	250	NF	NF	NS	300	NF
		Sea Palm	--	--	--	--	--	--	--	--	--	--
		Pico	70	60	175	50	225	30	40	167	250	44
Seaside/ Sand City	Bay St	60	NF	65	NF	305	NF	NF	70	250	NF	

Copper

Comparison of total copper results for MRSWMP monitoring reported in $\mu\text{g/L}$. Shaded boxes indicate that the Basin Plan Objective of $30 \mu\text{g/L}$ was exceeded; ND= Non-detect; NF= No Flow; NS= Not Sampled; -- = Not included in MRSWMP monitoring.

Dry weather sampling includes Dry Runs (DR) and the 2010-2014 Summer Runs (SuR). Wet weather sampling includes First Flushes (FF), the 2013-2014 Second Flushes (SF), and the 2010-2012 Spring Runs (SpR). The table is broken into sections to facilitate printing.

		Site Name	FF 2021	DR 2021	FF 2020	DR 2020	FF 2019	DR 2019	FF 2018	DR 2018	FF 2017	DR 2017	FF 2016	DR 2016	FF 2015	DR 2015
Sites by Jurisdiction	Carmel	4 th Avenue	74	NF	96	NF	71	NF	163	NF	46	NF	86	NF	73	NF
		Ocean	62	NF	95	NF	84	NF	138	NF	111	NF	95	NF	58	NF
		8 th Avenue	NS	NS	NS	NS	NS	NS	139	NF	77	14	108	NF	86	NF
	Monterey	Twin 51's	30	16	36	26	26	23	24	ND	65	19	22	13	27	27
		San Carlos	23	NF	48	ND	22	NF	58	NF	72	NF	21	NF	25	NF
		Steinbeck	18	NF	53	58	37	193	59	NF	499	NF	52	NF	39	NF
	Monterey County	Boronda	23	NF	14	NF	16*	NF	--	--	--	--	--	--	--	--
		Las Palmas	8	NF	7	NF	4	NF	--	--	--	--	--	--	--	--
		Pajaro	NS	NS	NS	NS	NS	NS	30	NF	79	NF	62	NF	27	NF
		Crossroads	NS	NS	NS	NS	NS	NS	30	NF	15	NF	17	NF	10	NF
	Pacific Grove	HopkinsMon	NS	NS	NS	NS	16	NF	34	NF	52	32	27	NF	--	--
		HopkinsPG	NS	NS	NS	NS	20	NF	40	NF	52	NF	32	NF	--	--
		8 th Street	17	NF	37	ND	24	NF	39	ND	43	NF	26	NF	--	--
		Greenwood	13	ND	35	ND	13	6	32	ND	41	10	16	4	22	8
		Lover's	21	NF	28	ND	24	ND	36	NF	47	NF	19	NF	24	NF
		Sea Palm	18	ND	42	11	--	--	--	--	--	--	--	--	--	--
		Pico	11	ND	44	7	22	7	55	ND	27	8	29	5	30	ND
	Seaside/ Sand City	Bay St	36	NF	17	NF	40	NF	ND	NF	81	NF	28	NF	26	NF

*Data provided by Monterey County from sampling that occurred one day after First Flush.

Copper continued

		Site Name	FF 2014	DR 2014	SuR 2014	SF 2014	FF 2013	DR 2013	SuR 2013	SF 2013	FF 2012	DR 2012	SuR 2012	SpR 2012	FF 2011	DR 2011	
Sites by Jurisdiction	Carmel	4 th Avenue	--	--	NF	NS	NS	NF	NF	NS	86	NF	NF	NF	96	11	
		Ocean	--	--	NF	NS	248	NF	NF	NS	87	NF	72	NF	165	NF	
		8 th Avenue	--	--	NF	NS	NS	6	14	NS	NS	NF	7	21	114	6	
	Monterey	Twin 51's	76	11	ND	ND	75	16	13	16	46	10	16	8	52	9	
		San Carlos	121	NF	NF	24	86	NF	12	--	--	NF	14	13	65	8	
		Steinbeck	248	4	ND	21	113	NF	12	37	147	6	31	20	77	9	
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pajaro	32	NF	NF	42	51	NF	NF	32	44	NF	NF	NF	28	NF	
		Crossroads	35	NF	NF	ND	18	NF	NF	7	40	NF	NF	NF	11	NF	
	Pacific Grove	HopkinsMon	--	--	--	--	--	--	25	NS	NS	NS	22	NS	27	NF	
		HopkinsPG	--	--	--	--	--	--	NF	NS	NS	NS	NF	NS	35	NF	
		8 th Street	--	--	--	--	--	--	NF	NS	NS	NF	NF	11	NF	NF	
		Greenwood	58	ND	ND	NS	52	6	ND	NS	24	ND	8	12	38	10	
		Lover's	68	NF	NF	NS	92	NF	NF	NS	36	NF	NF	9	40	NF	
		Sea Palm			--	--	--	--	--	--	--	--	--	--	--	--	
		Pico	61	ND	ND	28	75	6	7	26	28	ND	10	11	43	6	
Seaside/ Sand City	Bay St	106	NF	NF	21	88	NF	NF	48	28	NF	NF	NF	52	NF		

Copper continued

		Site Name	SuR 2011	SpR 2011	FF 2010	DR 2010	SuR 2010	SpR 2010	FF 2009	DR 2009	FF 2008	DR 2008	FF 2007	DR 2007	FF 2006	DR 2006	
Sites by Jurisdiction	Carmel	Ocean	NF	10	101	NF	69	NF	184	NF	148	NF	212	NF	--	--	
		8 th Avenue	NF	NF	395	NF	7	5	166	ND	170	6	148	14	--	--	
		4 th Avenue	4	8	172	5	NF	NF	183	NF	53	NF	152	NF	--	--	
	Monterey	Twin 51's	5	11	99	12	20	6	78	11	69	7	60	5	92	ND	
		San Carlos	4	8	124	26	10	7	77	16	84	18	73	11	139	ND	
		Steinbeck	8	18	352	15	12	10	148	6	126	185	83	17	125	ND	
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pajaro	NF	NF	73	NF	NF	NF	44	9	93	NF	--	--	--	--	
		Crossroads	NF	NF	55	NF	NF	NF	44	NF	--	--	--	--	--	--	
	Pacific Grove	HopkinsMon	9	16	72	18	24	25	79	86	49	54	57	NF	89	NF	
		HopkinsPG	NF	NF	176	NF	NF	NF	77	NF	63	NF	47	NF	--	--	
		8 th Street	17	13	64	134	NF	NF	59	NF	49	NF	55	NF	49	NF	
		Greenwood	17	13	56	5	9	25	44	6	44	17	46	3	41	ND	
		Lover's	4	10	14	5	5	7	54	ND	51	4	48	ND	57	NF	
		Sea Palm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pico	ND	10	62	7	11	9	45	5	37	12	44	ND	33	ND	
	Seaside/ Sand City	Bay St	NF	4	65	NF	NF	NF	126	NF	42	NF	50	NF	ND	NF	

E. coli

Comparison of *E. coli* results for MRSWMP monitoring reported in MPN/ 100 ml. Shaded boxes indicate that the National Recommended Water Quality Criteria of 235 MPN/ 100 ml was exceeded; NA= Not Analyzed; ND= Non-detect; NF= No Flow; NS= Not Sampled; -- = Not included in MRSWMP monitoring. Dry weather sampling includes Dry Runs (DR) and the 2010-2014 Summer Runs (SuR). Wet weather sampling includes First Flushes (FF), the 2013-2014 Second Flushes (SF), and the 2010-2012 Spring Runs (SpR). The table is broken into sections to facilitate printing.

		Site Name	FF 2021	DR 2021	FF 2020	DR 2020	FF 2019	DR 2019	FF 2018	DR 2018	FF 2017	DR 2017	FF 2016	DR 2016	FF 2015	DR 2015
Sites by Jurisdiction	Carmel	4 th Avenue	164301	NF	23350	NF	33200	NF	40029	NF	49134	NF	38799	NF	46181	NF
		Ocean	42692	NF	16100	NF	16700	NF	70778	NF	27508	NF	23084	NF	32817	NF
		8 th Avenue	NS	NS	NS	NS	NS	NS	41370	NF	9462	13200	15252	NF	43788	NF
	Monterey	Twin 51's	148334	5480	84400	4106	59850	8164	56879	1223	9267	1610	42755	141361	53713	198629
		San Carlos	35510	NF	81850	2602	5630	NF	39043	NF	10148	NF	8044	NF	13973	NF
		Steinbeck	16383	NF	33900	2187	17700	3578	17915	NF	20999	NF	27860	NF	25024	NF
	Monterey County	Boronda	23541	NF	2250	NF	5730	NF	--	--	--	--	--	--	--	--
		Las Palmas	81461	NF	15450	NF	17300	NF	--	--	--	--	--	--	--	--
		Pajaro	NS	NS	NS	NS	NS	NS	142739	NF	15112	NF	20660	NF	4693	NF
		Crossroads	NS	NS	NS	NS	NS	NS	26180	NF	743	NF	2020	NF	14265	NF
	Pacific Grove	HopkinsMon	NS	NS	NS	NS	12300	NF	36806	NF	25589	242000	12246	NF	--	--
		HopkinsPG	NS	NS	NS	NS	7305	NF	24422	NF	29093	NF	36606	NF	--	--
		8 th Street	21586	NF	242000	15531	32600	NF	26491	>24196	33673	NF	12885	NF	--	--
		Greenwood	39463	19860	41300	24196	23400	8664	45590	24196	146841	2920	19105	1153	41922	28272
		Lover's	12205	NF	47600	2098	32750	17407	42692	NF	8712	NF	14634	NF	28761	NF
		Sea Palm	61059	ND	47200	ND	--	--	--	--	--	--	--	--	--	--
		Pico	31333	280	79650	158	42400	900	191660	52	7121	880	35076	30	25572	<20
Seaside/ Sand City	Bay St	257602	NF	159450	NF	26950	NF	20679	NF	72839	NF	21026	NF	38969	NF	

*Data provided by Monterey County from sampling that occurred one day after First Flush.

E. coli continued

		Site Name	FF 2014	DR 2014	SuR 2014	SF 2014	FF 2013	DR 2013	SuR 2013	SF 2013	FF 2012	DR 2012	SuR 2012	SpR 2012	FF 2011	DR 2011
Sites by Jurisdiction	Carmel	4 th Avenue	--	--	NF	NS	NS	NF	NF	NS	45645	NF	NF	NF	105013	<20
		Ocean	--	--	NF	NS	16250	NF	NF	NS	28322	NF	1918	NF	41525	NF
		8 th Avenue	--	--	NF	NS	NS	<20	82	NS	NS	NF	<20	20	167021	12263
	Monterey	Twin 51's	60200	6152	3106	9208	67265	4978	2878	4962	72294	296	2289	17329	65081	7746
		San Carlos	138000	NF	NF	4106	3475	NF	5206	NS	NS	NF	20	20	41525	20
		Steinbeck	65300	3836	196	21870	88662	NF	34658	241960	130847	2500	653	218	241960	6511
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pajaro	7617	NF	NF	860	3163	NF	NF	618	8766	NF	NF	NF	16075	NF
		Crossroads	94500	NF	NF	703	1095	NF	NF	296	76395	NF	NF	NF	44059	NF
	Pacific Grove	HopkinsMon	--	--	--	--	--	--	3316	NS	NS	NS	169	NS	39726	NF
		HopkinsPG	--	--	--	--	--	--	NF	NS	NS	NS	NF	NS	207625	NF
		8 th Street	--	--	--	--	--	--	NF	NS	NS	NF	NF	456	NF	NF
		Greenwood	36590	6152	5510	NS	19585	39726	1980	NS	35076	31062	6511	1253	116644	6896
		Lover's	60200	NF	NF	NS	30745	NF	NF	NS	42288	NF	NF	5510	48391	NF
		Sea Palm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pico	42603	402	2092	4884	58030	244	40	3214	37769	1720	20	40	32860	2802
	Seaside/ Sand City	Bay St	94500	NF	NF	6488	148335	NF	NF	241960	43518	NF	NF	NF	44059	NF

E. coli continued

		Site Name	SuR 2011	SpR 2011	FF 2010	DR 2010	SuR 2009	SpR 2009	FF 2009	DR 2009	FF 2008	DR 2008	FF 2007	DR 2007	FF 2006	DR 2006	
Sites by Jurisdiction	Carmel	4 th Avenue	NF	126	22400	NF	NF	NF	73916	NF	11413	NF	49590	NF	--	--	
		Ocean	NF	NF	9950	NF	10950	NF	34658	NF	9214	NF	43374	NF	--	--	
		8 th Avenue	104	20	38450	520	20	20	NA	80	36119	126	59067	82	--	--	
	Monterey	Twin 51's	6152	19608	61300	13340	48384	12263	229170	296	83819	6150	165301	25993	185536	50	
		San Carlos	40	20	40400	13734	244	149	8770	8212	17484	40	16304	218	14749	798	
		Steinbeck	194	126	145400	1974	398	220	90824	4494	112738	48400	40925	9768	158848	2602	
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pajaro	NF	NF	2050	NF	NF	NF	4681	40	15186	NF	--	--	--	--	
		Crossroads	NF	NF	25950	NF	NF	NF	NA	NF	--	--	--	--	--	--	
	Pacific Grove	HopkinsMon	20	3912	29650	104	20	3912	19735	48392	3741	312	82782	NF	196179	NF	
		HopkinsPG	NF	NF	40300	NF	NF	NF	25994	NF	27742	NF	27742	NF	--	--	
		8 th Street	NF	456	20976	39726	4283	6511	77979	NF	26485	NF	14636	NF	50978	--	
		Greenwood	12976	10950	32700	1814	8212	2966	44059	1976	31528	13000	16767	11588	73322	20529	
		Lover's	6152	220	3807	82	82	3870	34659	170	24916	1390	60214	48384	172534	NF	
		Sea Palm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pico	80	61	15050	410	40	148	17063	104	204626	3840	155639	5818	43926	606	
	Seaside/ Sand City	Bay St	NF	672	64900	NF	NF	NF	34162	NF	20277	NF	46464	NF	856	NF	

Enterococcus

Comparison of enterococcus results for MRSWMP monitoring reported in MPN/ 100 ml. Shaded boxes indicate that the National Recommended Water Quality Criteria of 104 MPN/ 100 ml was exceeded; NA= Not Analyzed; ND= Non-detect; NF= No Flow; NS= Not Sampled; -- = Not included in MRSWMP monitoring. Dry weather sampling includes Dry Runs (DR) and the 2010-2014 Summer Runs (SuR). Wet weather sampling includes First Flushes (FF), the 2013-2014 Second Flushes (SF), and the 2010-2012 Spring Runs (SpR). The table is broken into sections to facilitate printing.

		Site Name	FF 2021	DR 2021	FF 2020	DR 2020	FF 2019	DR 2019	FF 2018	DR 2018	FF 2017	DR 2017	FF 2016	DR 2016
Sites by Jurisdiction	Carmel	4 th Avenue	188380	NF	67744	NF	18745	NF	27521	NF	24825	NF	7039	NF
		Ocean	33650	NF	19284	NF	15895	NF	55079	NF	13744	NF	11051	NF
		8 th Avenue	NS	NS	NS	NS	NS	NS	44622	NF	11072	5480	7607	NF
	Monterey	Twin 51's	198635	8164	119086	3255	56880	723	20948	697	13590	74	14298	1470
		San Carlos	37138	NF	27777	420	10120	NF	8786	NF	10884	NF	7921	NF
		Steinbeck	35534	NF	51729	9208	15655	2320	54175	NF	43561	NF	13667	NF
	Monterey County	Boronda	98354	NF	50050	NF	NS	NF	--	--	--	--	--	--
		Las Palmas	89364	NF	41600	NF	2845	NF	--	--	--	--	--	--
		Pajaro	NS	NS	NS	NS	NS	NS	33127	NF	55711	NF	25545	NF
		Crossroads	NS	NS	NS	NS	NS	NS	37762	NF	4892	NF	2607	NF
	Pacific Grove	HopkinsMon	NS	NS	NS	NS	10460	NF	37138	NF	14088	300	19241	NF
		HopkinsPG	NS	NS	NS	NS	8560	NF	46308	NF	21426	NF	18168	NF
		8th St	52970	NF	140135	6131	18215	NF	54750	2755	76523	NF	8704	NF
		Greenwood	41326	12910	105803	17329	17035	5172	109490	15531	102024	11200	16001	40
		Lover's	20694	NF	87525	2143	15340	20925	46662	NF	17090	NF	18572	NF
		Sea Palm	66775	20	99316	10	--	--	--	--	--	--	--	--
		Pico	42932	450	185959	75	19245	928	169995	31	7980	328	13415	416
Seaside/ Sand City	Bay St	169995	NF	120300	NF	20050	NF	39564	NF	70697	NF	18458	NF	

Enterococcus continued

		Site Name	FF 2015	DR 2015	FF 2014	DR 2014	SuR 2014	SF 2014	FF 2013	DR 2013	SuR 2013	SF 2013	FF 2012	DR 2012	SuR 2012	SpR 2012	
Sites by Jurisdiction	Carmel	4 th Avenue	22801	NF	--	--	NF	NS	NS	NF	NF	NS	14554	NF	NF	NF	
		Ocean	14901	NF	--	--	NF	NS	9665	NF	NF	NS	55607	NF	17329	NF	
		8 th Avenue	25451	NF	--	--	NF	NS	NS	104	974	NS	NS	NF	20	20	
	Monterey	Twin 51's	25867	7746	37150	1417	1760	8164	21000	22398	942	6896	79326	492	431	1587	
		San Carlos	18471	NF	79650	NF	NF	8164	4825	NF	374	NS	NS	NF	20	313	
		Steinbeck	56518	NF	54200	4962	270	34480	88662	NF	48392	43517	241957	1587	16328	4494	
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pajaro	12311	NF	20013	NF	NF	7541	3163	NF	NF	6260	92342	NF	NF	NF	
		Crossroads	8083	NF	1530	NF	NF	1434	1095	NF	NF	559	241960	NF	NF	NF	
	Pacific Grove	HopkinsMon	--	--	--	--	--	--	--	--	--	12976	NS	NS	NS	242	NS
		HopkinsPG	--	--	--	--	--	--	--	--	--	NF	NS	NS	NS	NF	NS
		8th St	--	--	--	--	--	--	--	--	--	NF	NS	NS	NF	NF	218
		Greenwood	40794	20925	41950	4374	2290	NS	20880	8704	1226	NS	81461	14540	25993	1024	
		Lover's	119844	NF	20768	NF	NF	NS	127750	NF	NF	NS	95634	NF	NF	1352	
		Sea Palm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pico	29926	<20	23118	83	3978	15650	9005	322	746	7308	70697	583	40	61	
Seaside/ Sand City	Bay St	17265	NF	126500	NF	NF	17329	23415	NF	NF	12229	82392	NF	NF	NF		

Enterococcus continued

		Site Name	FF 2011	DR 2011	SuR 2011	SpR 2011	FF 2010	DR 2010	SuR 2010	SpR 2010	FF 2009	DR 2009	FF 2008	DR 2008	FF 2007	DR 2007	FF 2006	DR 2006	
Sites by Jurisdiction	Carmel	4 th Avenue	176971	20	NF	20	21650	NF	NF	NF	40438	NF	25567	NF	3328	NF	--	--	
		Ocean	41125	NF	NF	NF	33900	NF	81640	NF	48392	NF	100120	NF	3381	NF	--	--	
		8 th Avenue	84547	4564	82	187	43700	100	40	40	NA	220	36000	942	6168	436	--	--	
	Monterey	Twin 51's	67477	346	5819	2306	108150	970	498	2669	111501	125	139002	8700	57609	39726	227516	--	
		San Carlos	48391	346	40	146	34450	4196	9768	1918	38751	531	67560	62	25993	20	63487	--	
		Steinbeck	241957	16328	2184	393	12100	3232	976	1249	241960	16328	193983	48400	112902	14540	241960	--	
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pajaro	80189	NF	NF	NF	339000	NF	NF	NF	51797	6339	100612	NF	--	--	--	--	
		Crossroads	116723	NF	NF	NF	60200	NF	NF	NF	NA	NF	--	--	--	--	--	--	
	Pacific Grove	HopkinsMon	63725	NF	747	700	38000	148	172	917	47619	48291	31828	292	91787	NF	--	--	
		HopkinsPG	241957	NF	NF	NF	116000	NF	NF	NF	157330	NF	84778	NF	16523	NF	--	--	
		8th St	NF	NF	12976	242	85350	10950	NF	NF	95062	NF	75211	NF	29202	NF	66298	--	
		Greenwood	173291	8703	13733	1625	75150	1918	2792	1188	111501	3571	76803	5820	29372	17382	62567	--	
		Lover's	116644	NF	3571	521	15372	82	104	10950	88435	104	87231	4130	39739	18416	99442	--	
		Sea Palm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pico	101332	126	20	20	33550	1210	512	220	33310	583	155638	8210	81652	1760	43965	--	
	Seaside/ Sand City	Bay St	47396	NF	NF	20	70700	NF	NF	NF	90327	NF	13650	NF	13435	NF	341	--	

Hardness

Comparison of hardness results for MRSWMP monitoring reported in mg/L. Shaded boxes indicate that the General Permit Action Level of less than or equal to 10 mg/L or greater than or equal to 2000 mg/L was exceeded; ND= Non-detect; NF= No Flow; NS= Not Sampled; -- = Not included in MRSWMP monitoring. Dry weather sampling includes Dry Runs (DR) and the 2014 Summer Run (SuR). Wet weather sampling includes the First Flushes (FF) and the 2014 Second Flush (SF). The table is broken into sections to facilitate printing.

		Site Name	FF 2021	DR 2021	FF 2020	DR 2020	FF 2019	DR 2019	FF 2018	DR 2018	FF 2017	DR 2017
Sites by Jurisdiction	Carmel	4 th Avenue	61	NF	67	NF	83	NF	90	NF	36	NF
		Ocean	30	NF	55	NF	32	NF	68	NF	36	NF
		8 th Avenue	NS	NS	NS	NS	NS	NS	106	NF	38	326
	Monterey	Twin 51's	49	335	64	639	63	347	57	699	55	429
		San Carlos	17	NF	70	418	27	NF	53	NF	64	NF
		Steinbeck	15	NF	40	227	29	142	39	NF	64	NF
	Monterey County	Boronda	66	NF	60	NF	76*	NF	--	--	--	--
		Las Palmas	34	NF	51	NF	40	NF	--	--	--	--
		Pajaro	NS	NS	NS	NS	NS	NS	40	NF	103	NF
		Crossroads	NS	NS	NS	NS	NS	NS	29	NF	14	NF
	Pacific Grove	HopkinsMon	NS	NS	NS	NS	35	NF	53	NF	54	626
		HopkinsPG	NS	NS	NS	NS	51	NF	63	NF	43	NF
		8 th Street	22	NF	92	392	36	NF	57	373	102	NF
		Greenwood	20	369	55	475	36	330	55	400	46	456
		Lover's	12	NF	79	239	49	365	66	NF	57	NF
		Sea Palm	19	265	60	308	--	--	--	--	--	--
		Pico	21	153	57	240	54	172	51	179	39	223
Seaside/ Sand City	Bay St	441	NF	24	NF	35	NF	5970	NF	922	NF	

*Data provided by Monterey County from sampling that occurred one day after First Flush.

Hardness continued

		Site Name	FF 2016	DR 2016	FF 2015	DR 2015	FF 2014	DR 2014	SuR 2014	SF 2014	FF 2013	DR 2013
Sites by Jurisdiction	Carmel	4 th Avenue	58	NF	44	NF	--	--	NF	NS	NS	NF
		Ocean	25	NF	25	NF	--	--	NF	NS	105	NF
		8 th Avenue	40	NF	40	NF	--	--	NF	NS	NS	277
	Monterey	Twin 51's	39	905	53	248	93	910	682	19	119	360
		San Carlos	32	NF	34	NF	57	NF	NF	23	100	NF
		Steinbeck	33	NF	29	NF	47	224	281	17	52	NF
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--	--	--
		Pajaro	101	NF	41	NF	45	NF	NF	50	102	NF
		Crossroads	20	NF	9	NF	18	NF	NF	9	28	NF
	Pacific Grove	HopkinsMon	51	NF	--	--	--	--	--	--	--	--
		HopkinsPG	42	NF	--	--	--	--	--	--	--	--
		8 th Street	31	NF	--	--	--	--	--	--	--	--
		Greenwood	23	376	35	298	45	314	289	NS	114	341
		Lover's	31	NF	20	NF	48	NF	NF	NS	135	NF
		Sea Palm	--	--	--	--	--	--	--	--	--	--
		Pico	36	179	62	161	60	161	192	18	75	163
Seaside/ Sand City	Bay St	23	NF	28	NF	48	NF	NF	21	120	NF	

Lead

Comparison of total lead results for MRSWMP monitoring reported in $\mu\text{g/L}$. Shaded boxes indicate that the Basin Plan Objective of $30 \mu\text{g/L}$ was exceeded; NA= Not Analyzed; ND= Non-detect; NF= No Flow; NS= Not Sampled; -- = Not included in MRSWMP. Dry weather sampling includes Dry Runs (DR) and the 2010-2014 Summer Runs (SuR). Wet weather sampling includes First Flushes (FF), the 2013-2014 Second Flushes (SF), and the 2010-2012 Spring Runs (SpR). The table is broken into sections to facilitate printing. The table below is broken into sections to facilitate printing.

		Site Name	FF 2021	DR 2021	FF 2020	DR 2020	FF 2019	DR 2019	FF 2018	DR 2018	FF 2017	DR 2017	FF 2016	DR 2016
Sites by Jurisdiction	Carmel	4 th Avenue	45.6	NF	10.7	NF	28	NF	15	NF	10	NF	24	NF
		Ocean	9.9	NF	4.1	NF	5	NF	5	NF	6	NF	ND	NF
		8 th Avenue	NS	NS	NS	NS	NS	NS	11	NF	9	1	9	NF
	Monterey	Twin 51's	25.0	0.9	18.5	0.3	24	1	12	0.3	15	ND	15	ND
		San Carlos	10.0	NF	4.8	0.2	14	NF	8	NF	8	NF	ND	NF
		Steinbeck	4.6	NF	4.6	0.4	20	2	9	NF	5	NF	ND	NF
	Monterey County	Boronda	11.8	NF	15.7	NF	NS	NF	--	--	--	--	--	--
		Las Palmas	1.7	NF	1.3	NF	3	NF	--	--	--	--	--	--
		Pajaro	NS	NS	NS	NS	NS	NS	7	NF	32	NF	14	NF
		Crossroads	NS	NS	NS	NS	NS	NS	ND	NF	1	NF	ND	NF
	Pacific Grove	HopkinsMon	NS	NS	NS	NS	6	NF	5	NF	8	2	ND	NF
		HopkinsPG	NS	NS	NS	NS	10	NF	3	NF	6	NF	ND	NF
		8th St	12.0	NF	8.7	0.1	19	NF	5	0.5	9	NF	ND	NF
		Greenwood	6.4	0.2	5.0	0.9	8	1	7	ND	15	ND	ND	ND
		Lover's	7.1	NF	5.7	0.4	11	ND	4	NF	6	NF	4	NF
		Sea Palm	5.0	ND	8.8	ND	--	--	--	--	--	--	--	--
		Pico	3.1	ND	7.3	0.4	14	1	2	0.2	6	ND	ND	ND
Seaside/ Sand City	Bay St	6.7	NF	12.0	NF	18	NF	ND	NF	11	NF	8	NF	

Lead continued

		Site Name	FF 2015	DR 2015	FF 2014	DR 2014	SuR 2014	SF 2014	FF 2013	DR 2013	SuR 2013	SF 2013	FF 2012	DR 2012	SuR 2012	SpR 2012
Sites by Jurisdiction	Carmel	4 th Avenue	32	NF	--	--	NF	NS	NS	NF	NF	NS	23	NF	NF	NF
		Ocean	11	NF	--	--	NF	NS	9	NF	NF	NS	11	NF	ND	NF
		8 th Avenue	28	NF	--	--	NF	NS	NS	ND	ND	NS	NS	NF	ND	ND
	Monterey	Twin 51's	15	ND	12	ND	ND	ND	31	ND	ND	ND	23	ND	ND	ND
		San Carlos	5	NF	23	NF	NF	10	8	NF	ND	NS	NS	NF	ND	ND
		Steinbeck	ND	NF	15	ND	ND	8	ND	NF	ND	ND	7	ND	ND	ND
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pajaro	16	NF	14	NF	NF	24	16	NF	NF	22	20	NF	NF	NF
		Crossroads	ND	NF	ND	NF	NF	31	ND	NF	NF	ND	ND	NF	NF	NF
	Pacific Grove	HopkinsMon	--	--	--	--	--	--	--	--	ND	NS	NS	NA	ND	NS
		HopkinsPG	--	--	--	--	--	--	--	--	NF	NS	NS	NF	NF	NS
		8th St	--	--	--	--	--	--	--	--	NF	NS	NS	NF	NF	ND
		Greenwood	9	ND	11	ND	ND	NS	8	ND	ND	NS	4	ND	ND	ND
		Lover's	6	NF	11	NF	NF	NS	6	NF	NF	NS	6	NF	NF	ND
		Sea Palm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pico	5	ND	ND	ND	17	8	6	ND	ND	ND	ND	ND	ND	ND
Seaside/ Sand City	Bay St	7	NF	44	NF	NF	10	20	NF	NF	9	8	NF	NF	NF	

Lead continued

		Site Name	FF 2011	DR 2011	SuR 2011	SpR 2011	FF 2010	DR 2010	SuR 2010	SpR 2010	FF 2009	DR 2009	FF 2008	DR 2008	FF 2007	DR 2007	FF 2006	DR 2006	
Sites by Jurisdiction	Carmel	4 th Avenue	60	ND	NF	ND	22	NF	NF	NF	25	NF	15	NF	18	NF	--	--	
		Ocean	26	NF	NF	NF	8	NF	5	NF	ND	NF	6	NF	47	NF	--	--	
		8 th Avenue	19	ND	ND	ND	11	ND	ND	ND	9	ND	6	5	13	5	--	--	
	Monterey	Twin 51's	ND	ND	ND	ND	44	ND	ND	ND	8	ND	17	5	36	5	13	ND	
		San Carlos	22	ND	ND	ND	22	1	ND	ND	6	ND	6	5	18	5	11	ND	
		Steinbeck	13	ND	ND	ND	9	1	ND	ND	7	ND	6	5	22	5	7	ND	
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pajaro	17	NF	NF	NF	34	NF	NF	NF	24	ND	63	NF	--	--	--	--	
		Crossroads	ND	NF	NF	NF	ND	NF	NF	NF	ND	--	--	--	--	--	--	--	
	Pacific Grove	HopkinsMon	14	NF	ND	ND	9	ND	ND	ND	21	10	7	5	9	NF	10	NF	
		HopkinsPG	13	NF	NF	NF	11	NF	NF	NF	7	NF	ND	NF	15	NF	--	--	
		8th St	NF	NF	6	ND	8	83	NF	NF	14	NF	ND	NF	12	NF	12	NF	
		Greenwood	20	ND	ND	ND	11	ND	ND	ND	6	ND	6	5	18	5	8	ND	
		Lover's	30	NF	ND	ND	3	ND	ND	ND	10	ND	7	5	16	5	9	NF	
		Sea Palm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Seaside/Sand City	Bay St	16	NF	NF	ND	28	NF	NF	NF	33	NF	14	NF	15	NF	ND	NF	

MBAS Detergents

Comparison of MBAS surfactant results for MRSWMP monitoring reported in mg/L. Shaded boxes indicate that the Basin Plan Water Quality Objective of 0.2 mg/L was exceeded; ND= Non-detect; NF= No Flow; NS= Not Sampled; -- = Not included in MRSWMP monitoring. Dry weather sampling includes Dry Runs (DR) and the 2014 Summer Run (SuR). Wet weather sampling includes the First Flushes (FF) and the 2014 Second Flush (SF). The table is broken into sections to facilitate printing.

		Site Name	FF 2021	DR 2021	FF 2020	DR 2020	FF 2019	DR 2019	FF 2018	DR 2018	FF 2017	DR 2017	FF 2016	DR 2016
Sites by Jurisdiction	Carmel	4 th Avenue	0.26	NF	0.39	NF	0.46	NF	0.48	NF	1.20	NF	0.37	NF
		Ocean	0.26	NF	0.61	NF	0.58	NF	0.68	NF	0.80	NF	0.45	NF
		8 th Avenue	NS	NS	NS	NS	NS	NS	0.92	NF	0.99	0.14	0.50	NF
	Monterey	Twin 51's	0.19	0.13	0.53	0.09	0.26	0.21	0.42	0.16	1.51	0.16	0.33	0.14
		San Carlos	0.22	NF	0.55	0.17	0.29	NF	0.55	NF	1.54	NF	0.33	NF
		Steinbeck	0.21	NF	0.63	0.12	0.43	0.26	0.48	NF	0.71	NF	0.43	NF
	Monterey County	Boronda	0.41	NF	0.06	NF	NS	NF	--	--	--	--	--	--
		Las Palmas	0.20	NF	0.11	NF	0.26	NF	--	--	--	--	--	--
		Pajaro	NS	NS	NS	NS	NS	NS	0.23	NF	0.44	NF	0.77	NF
		Crossroads	NS	NS	NS	NS	NS	NS	0.86	NF	0.47	NF	0.55	NF
	Pacific Grove	HopkinsMon	NS	NS	NS	NS	0.50	NF	0.55	NF	1.12	0.59	0.50	NF
		HopkinsPG	NS	NS	NS	NS	0.52	NF	0.61	NF	1.08	NF	0.51	NF
		8 th Street	0.29	NF	0.90	0.12	0.36	NF	0.56	0.16	1.10	NF	0.43	NF
		Greenwood	0.25	0.08	0.78	0.07	0.37	0.14	0.40	0.09	0.99	0.09	0.38	0.08
		Lover's	0.25	NF	0.68	0.08	0.54	0.06	0.46	NF	0.60	NF	0.38	NF
		Sea Palm	0.26	0.06	0.67	0.10	--	--	--	--	--	--	--	--
		Pico	0.39	0.05	0.70	0.20	0.53	0.15	0.39	0.08	0.51	0.08	0.43	0.08
Seaside/ Sand City	Bay St	1.12	NF	0.40	NF	0.47	NF	0.17	NF	1.13	NF	0.51	NF	

MBAS continued

		Site Name	FF 2015	DR 2015	FF 2014	DR 2014	SuR 2014	SF 2014	FF 2013	DR 2013
Sites by Jurisdiction	Carmel	4 th Avenue	0.30	NF	--	--	NF	NS	NS	NF
		Ocean	0.26	NF	--	--	NF	NS	1.6	NF
		8 th Avenue	0.33	NF	--	--	NF	NS	NS	ND
	Monterey	Twin 51's	0.33	1.06	0.55	0.08	0.1	ND	0.31	0.05
		San Carlos	0.29	NF	0.94	NF	NF	ND	1.04	NF
		Steinbeck	0.36	NF	0.53	0.16	0.06	ND	0.42	NF
	Monterey County	Boronda	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--
		Pajaro	0.21	NF	0.52	NF	NF	ND	1.12	NF
		Crossroads	0.22	NF	0.39	NF	NF	ND	0.43	NF
	Pacific Grove	HopkinsMon	--	--	--	--	--	--	--	--
		HopkinsPG	--	--	--	--	--	--	--	--
		8 th Street	--	--	--	--	--	--	--	--
		Greenwood	0.32	0.95	0.84	0.27	ND	NS	0.52	ND
		Lover's	0.25	NF	1.30	NF	NF	NS	0.65	NF
Sea Palm		--	--	--	--	--	--	--	--	
Pico		0.51	0.14	1.00	ND	0.06	ND	0.55	0.06	
Seaside/ Sand City	Bay St	0.30	NF	0.77	NF	NF	ND	1.44	NF	

Nitrate as N

Comparison of nitrate as N (NO₃-N) results for 2006-2014 MRSWMP monitoring reported in mg-N/ L. Shaded boxes indicate that the CCAMP Action Level of 2.25 mg-N/ L was exceeded; ND= Non-detect; NF= No Flow; NS= Not Sampled; -- = Not included in MRSWMP monitoring. Dry weather sampling includes Dry Runs (DR) and the 2010-2014 Summer Runs (SuR). Wet weather sampling includes First Flushes (FF), the 2013-2014 Second Flushes (SF), and the 2010-2012 Spring Runs (SpR). The table below is broken into sections to facilitate printing.

		Site Name	FF 2021	DR 2021	FF 2020	DR 2020	FF 2019	DR 2019	FF 2018	DR 2018	FF 2017	DR 2017	FF 2016	DR 2016	FF 2015	DR 2015
Sites by Jurisdiction	Carmel	4 th Avenue	0.25	NF	0.4	NF	1.05	NF	0.55	NF	0.15	NF	0.5	NF	0.60	NF
		Ocean	0.15	NF	0.5	NF	0.50	NF	0.65	NF	0.66	NF	0.3	NF	0.45	NF
		8 th Avenue	NS	NS	NS	NS	NS	NS	0.55	NF	0.72	ND	0.3	NF	0.55	NF
	Monterey	Twin 51's	0.20	1.1	0.5	0.6	0.60	0.60	0.30	0.5	0.66	0.5	0.3	0.40	0.45	1.5
		San Carlos	0.15	NF	0.6	4.3	0.50	NF	0.50	NF	0.53	NF	0.3	NF	0.30	NF
		Steinbeck	0.10	NF	0.9	1.8	0.45	6.40	0.50	NF	2.78	NF	0.5	1.10	0.55	NF
	Monterey County	Boronda	0.20	NF	0.4	NF	0.2*	NF	--	--	--	--	--	--	--	--
		Las Palmas	0.35	NF	0.4	NF	0.45	NF	--	--	--	--	--	--	--	--
		Pajaro	NS	NS	NS	NS	NS	NS	0.45	NF	0.53	NF	0.9	NF	0.35	NF
		Crossroads	NS	NS	NS	NS	NS	NS	0.15	NF	0.30	NF	0.2	NF	0.20	NF
	Pacific Grove	HopkinsMon	NS	NS	NS	NS	0.40	NF	0.35	NF	0.59	0.5	0.4	NF	--	--
		HopkinsPG	NS	NS	NS	NS	1.15	NF	1.45	NF	0.53	NF	0.9	NF	--	--
		8th St	0.15	NF	0.5	1.8	0.45	NF	0.45	2.6	0.41	NF	0.4	NF	--	--
		Greenwood	0.10	0.7	0.4	0.8	0.60	0.70	0.35	1.0	0.37	1.1	0.2	NF	0.45	1.4
		Lover's	0.10	NF	0.5	8.6	0.55	0.60	0.40	NF	0.47	NF	0.2	NF	0.25	NF
		Sea Palm	0.25	0.2	0.4	1.0	--	--	--	--	--	--	--	--	--	--
		Pico	0.10	1.5	0.3	1.3	0.55	0.80	0.25	1.0	0.39	0.9	0.2	0.90	0.35	0.9
	Seaside/ Sand City	Bay St	0.2	NF	0.2	NF	0.60	NF	1.15	NF	0.83	NF	0.3	NF	0.45	NF

*Data provided by Monterey County from sampling that occurred one day after First Flush.

Nitrate as N continued

		Site Name	FF 2014	DR 2014	SuR 2014	SF 2014	FF 2013	DR 2013	SuR 2013	SF 2013	FF 2012	DR 2012	SuR 2012	SpR 2012	FF 2011	DR 2011	
Sites by Jurisdiction	Carmel	4 th Avenue	--	--	NF	NS	NS	NF	NF	NS	0.43	NF	NF	NF	0.33	0.08	
		Ocean	--	--	NF	NS	1.8	NF	NF	NS	0.51	NF	ND	NF	0.20	NF	
		8 th Avenue	--	--	NF	NS	NS	2.2	2.5	NS	NS	NF	4.31	3.36	0.31	3.19	
	Monterey	Twin 51's	0.7	0.3	0.3	0.2	0.7	0.8	ND	0.2	0.44	0.73	0.39	0.1	0.46	0.7	
		San Carlos	0.6	NF	NF	0.2	0.9	NF	1.6	NS	NS	NF	0.8	1.43	0.12	0.83	
		Steinbeck	1.1	0.4	1.7	0.2	1.3	NF	3.6	0.6	2.67	0.78	2.45	2.97	0.28	ND	
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Las Palmas	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Pajaro	0.5	NF	NF	0.2	1.2	NF	NF	0.6	0.47	NF	NF	NF	0.39	NF	
		Crossroads	0.3	NF	NF	ND	0.5	NF	NF	0.05	0.59	NF	NF	NF	0.11	NF	
	Pacific Grove	HopkinsMon	--	--	--	--	--	--	1.2	NS	NS	NS	NS	1.29	NS	0.20	NF
		HopkinsPG	--	--	--	--	--	--	NF	NS	NS	NF	NF	NS	0.31	NF	
		8th St	--	--	--	--	--	--	NF	NS	NS	NF	NF	0.95	NF	NF	
		Greenwood	0.7	0.9	0.8	NS	1.0	1.0	1.4	NS	0.79	2.09	1.01	1.07	0.13	1.54	
		Lover's	0.7	NF	NF	NS	1.0	NF	NF	NS	0.59	NF	NF	1.06	0.12	NF	
		Sea Palm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Pico	0.7	2.4	1.9	ND	0.6	2.2	1.7	0.3	1.13	1.91	1.55	1.09	0.1	1.12	
Seaside/ Sand City	Bay St	0.4	NF	NF	0.2	1.4	NF	NF	1.0	0.74	NF	NF	NF	0.22	NF		

Nitrate as N continued

		Site Name	SuR 2011	SpR 2011	FF 2010	DR 2010	SuR 2010	SpR 2010	FF 2009	DR 2009	FF 2008	DR 2008	FF 2007	DR 2007	FF 2006	DR 2006
Sites by Jurisdiction	Carmel	4 th Avenue	NF	0.43	1.07	NF	NF	NF	0.60	NF	0.77	NF	0.73	NF	--	--
		Ocean	NF	NF	1.58	NF	0.03	NF	0.20	NF	1.07	NF	0.71	NF	--	--
		8 th Avenue	2.73	2.64	1.94	2.92	3.60	3.63	0.20	2.60	1.40	0.10	0.91	2.17	--	--
	Monterey	Twin 51's	0.47	0.39	1.1	0.98	1.30	0.20	0.40	0.40	0.90	0.60	0.99	0.32	0.45	0.16
		San Carlos	0.41	1.18	0.81	2.84	1.20	0.64	0.50	1.20	0.87	1.20	0.64	2.17	1.69	3.92
		Steinbeck	2.92	4.81	1.96	1.39	1.20	5.15	0.70	ND	1.10	0.10	0.79	1.07	1.72	4.71
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pajaro	NF	NF	1.12	NF	NF	NF	0.60	0.60	2.90	NF	--	--	--	--
		Crossroads	NF	NF	0.81	NF	NF	NF	0.30	NF	--	--	--	--	--	--
	Pacific Grove	HopkinsMon	1.25	1.76	1.5	1.35	1.30	1.80	0.50	1.40	0.87	0.70	1.59	NF	1.39	NF
		HopkinsPG	NF	NF	4.38	NF	NF	NF	2.70	NF	1.87	NF	0.60	NF	--	--
		8th St	1.83	1.05	0.87	1.99	NF	NF	0.80	NF	1.10	NF	0.48	NF	0.79	NF
		Greenwood	1.05	0.93	0.9	1.47	1.30	1.35	0.60	1.10	0.97	1.90	0.66	3.00	0.78	2.17
		Lover's	0.31	0.73	0.12	3.54	2.30	0.74	0.60	4.80	0.87	4.80	0.56	0.86	0.68	NF
		Sea Palm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pico	0.65	0.92	0.81	0.82	0.90	0.76	0.60	1.00	0.83	1.50	0.54	2.04	0.61	1.03
	Seaside/ Sand City	Bay St	NF	11.64	0.7	NF	NF	NF	0.40	NF	0.60	NF	0.69	NF	13.2 0	NF

Orthophosphate as P

Comparison of orthophosphate as P results for MRSWMP monitoring reported as mg-P/ L. Shaded boxes indicate that the CCAMP Action Level of 0.12 mg-P/ L was exceeded; ND= Non-detect; NF= No Flow; NS= Not Sampled; -- = Not included in MRSWMP monitoring. Dry weather sampling includes Dry Runs (DR) and the 2010-2014 Summer Runs (SuR). Wet weather sampling includes First Flushes (FF), the 2013-2014 Second Flushes (SF), and the 2010-2012 Spring Runs (SpR). The table is broken into sections to facilitate printing.

		Site Name	FF 2021	DR 2021	FF 2020	DR 2020	FF 2019	DR 2019	FF 2018	DR 2018	FF 2017	DR 2017	FF 2016	DR 2016	FF 2015	DR 2015
Sites by Jurisdiction	Carmel	4 th Avenue	0.75	NF	0.8	NF	1.00	NF	0.80	NF	0.60	NF	1.0	NF	0.6	NF
		Ocean	0.45	NF	0.8	NF	0.87	NF	0.80	NF	1.15	NF	0.7	NF	0.4	NF
		8 th Avenue	NS	NS	NS	NS	NS	NS	0.90	NF	1.23	0.20	1.1	NF	0.6	NF
	Monterey	Twin 51's	0.45	0.3	0.9	0.2	0.48	0.71	0.40	0.10	0.90	0.32	0.4	0.3	0.4	1.2
		San Carlos	0.20	NF	0.5	0.2	0.32	NF	0.30	NF	0.49	NF	0.3	NF	0.2	NF
		Steinbeck	0.35	NF	1.0	0.7	0.71	0.68	1.50	NF	2.54	NF	1.2	NF	1.4	NF
	Monterey County	Boronda	0.55	NF	0.4	NF	0.45*	NF	--	--	--	--	--	--	--	--
		Las Palmas	0.30	NF	0.4	NF	0.30	NF	--	--	--	--	--	--	--	--
		Pajaro	NS	NS	NS	NS	NS	NS	0.15	NF	0.62	NF	0.9	NF	0.2	NF
		Crossroads	NS	NS	NS	NS	NS	NS	0.20	NF	0.38	NF	0.2	NF	0.1	NF
	Pacific Grove	HopkinsMon	NS	NS	NS	NS	0.56	NF	0.95	NF	0.74	0.16	0.3	NF	--	--
		HopkinsPG	NS	NS	NS	NS	0.75	NF	1.15	NF	0.61	NF	0.9	NF	--	--
		8th St	0.20	NF	0.6	0.4	0.50	NF	0.50	0.20	0.55	NF	0.4	NF	--	--
		Greenwood	0.25	0.1	0.7	0.1	0.52	0.14	0.40	0.10	0.48	ND	0.4	ND	0.7	ND
		Lover's	0.25	NF	0.8	0.1	0.64	ND	0.75	NF	1.66	NF	0.5	NF	0.3	NF
		Sea Palm	0.35	0.1	0.4	0.1	--	--	--	--	--	--	--	--	--	--
		Pico	0.30	0.1	0.6	0.1	0.77	0.06	0.40	ND	0.64	ND	0.5	ND	0.7	ND
Seaside/ Sand City	Bay St	0.40	NF	0.2	NF	0.43	NF	0.15	NF	0.27	NF	0.4	NF	0.2	NF	

*Data provided by Monterey County from sampling that occurred one day after First Flush.

Orthophosphate as P continued

		Site Name	FF 2014	DR 2014	SuR 2014	SF 2014	FF 2013	DR 2013	SuR 2013	SF 2013	FF 2012	DR 2012	SuR 2012	SpR 2012	FF 2011	DR 2011	
Sites by Jurisdiction	Carmel	4 th Avenue	--	--	NF	NS	NS	NF	NF	NS	0.19	NF	NF	NF	0.32	ND	
		Ocean	--	--	NF	NS	2.00	NF	NF	NS	0.67	NF	0.19	NF	0.77	NF	
		8 th Avenue	--	--	NF	NS	NS	ND	ND	NS	NS	NF	ND	0.10	0.65	ND	
	Monterey	Twin 51's	0.5	ND	ND	0.20	0.40	ND	0.20	0.10	0.31	0.11	0.13	0.11	0.52	0.09	
		San Carlos	0.3	NF	NF	ND	0.40	NF	ND	NS	NS	NF	ND	0.10	0.19	ND	
		Steinbeck	2.8	0.2	0.10	0.50	4.20	NF	0.40	0.50	1.82	0.14	0.31	0.15	0.98	ND	
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Las Palmas	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Pajaro	0.4	NF	NF	0.20	0.70	NF	NF	0.10	0.46	NF	NF	NF	0.17	NF	
		Crossroads	0.3	NF	NF	ND	0.20	NF	NF	ND	0.37	NF	NF	NF	0.16	NF	
	Pacific Grove	HopkinsMon	--	--	--	--	--	--	ND	NS	NS	NS	NS	ND	NS	0.22	NF
		HopkinsPG	--	--	--	--	--	--	NF	NS	NS	NS	NS	NF	NS	0.54	NF
		8th St	--	--	--	--	--	--	NF	NS	NS	NF	NF	0.21	NF	NF	
		Greenwood	0.8	ND	ND	NS	0.70	ND	0.30	NS	0.37	0.13	ND	0.10	0.35	ND	
		Lover's	0.8	NF	NF	NS	1.10	NF	NF	NS	0.63	NF	NF	0.13	0.41	NF	
		Sea Palm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Pico	1.0	ND	ND	0.10	0.90	ND	ND	ND	0.41	ND	ND	0.10	0.37	ND	
Seaside/ Sand City	Bay St	0.2	NF	NF	0.10	0.40	NF	NF	ND	0.23	NF	NF	NF	0.17	NF		

Orthophosphate as P continued

		Site Name	SuR 2011	SpR 2011	FF 2010	DR 2010	SuR 2010	SpR 2010	FF 2009	DR 2009	FF 2008	DR 2008	FF 2007	DR 2007	FF 2006	DR 2006
Sites by Jurisdiction	Carmel	4 th Avenue	NF	ND	0.54	NF	NF	NF	0.78	NF	0.70	NF	1.24	NF	--	--
		Ocean	NF	NF	1.18	NF	2.70	NF	0.81	NF	0.93	NF	0.77	NF	--	--
		8 th Avenue	1.44	ND	0.92	ND	ND	0.24	0.75	0.20	1.37	0.20	0.99	ND	--	--
	Monterey	Twin 51's	NF	0.11	0.94	ND	0.20	0.25	0.92	0.30	0.97	0.20	0.72	ND	0.56	0.35
		San Carlos	ND	0.15	0.33	0.17	0.10	0.19	0.18	0.20	0.60	0.20	0.38	ND	0.46	ND
		Steinbeck	ND	0.10	7.01	0.32	0.30	0.35	2.48	0.30	3.77	3.10	2.69	0.09	3.01	0.38
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pajaro	NF	NF	0.38	NF	NF	NF	0.31	0.90	0.50	NF	--	--	--	--
		Crossroads	NF	NF	0.64	NF	NF	NF	0.31	NF	--	--	--	--	--	--
	Pacific Grove	HopkinsMon	ND	ND	0.60	0.11	0.10	0.18	0.34	0.30	0.73	0.20	3.38	NF	2.37	NF
		HopkinsPG	NF	NF	1.79	NF	NF	NF	1.60	NF	1.80	NF	0.51	NF	--	--
		8th St	ND	0.12	0.46	0.60	NF	NF	0.56	NF	0.90	NF	0.52	NF	0.49	NF
		Greenwood	ND	0.10	0.68	0.08	0.20	0.18	0.51	0.10	1.40	0.20	0.65	0.07	0.53	ND
		Lover's	ND	0.18	0.18	0.12	0.20	0.32	0.70	0.10	1.30	0.20	0.93	ND	1.38	NF
		Sea Palm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pico	ND	ND	0.58	ND	0.05	0.13	0.40	0.10	0.70	0.20	0.73	ND	0.44	ND
Seaside/ Sand City	Bay St	NF	ND	0.34	NF	NF	NF	0.31	NF	0.40	NF	0.09	NF	0.32	NF	

Potassium

Comparison of potassium results for MRSWMP monitoring reported as mg/L. Shaded boxes indicate that the General Permit Action Level of 20 mg/L was exceeded; ND= Non-detect; NF= No Flow; NS= Not Sampled; -- = Not included in MRSWMP monitoring. Dry weather sampling includes Dry Runs (DR) and the 2014 Summer Run (SuR). Wet weather sampling includes the First Flushes (FF) and the 2014 Second Flush (SF). The table is broken into sections to facilitate printing.

		Site Name	FF 2021	DR 2021	FF 2020	DR 2020	FF 2019	DR 2019	FF 2018	DR 2018	FF 2017	DR 2017	FF 2016	DR 2016
Sites by Jurisdiction	Carmel	4th Ave.	13.4	NF	9.1	NF	10.4	NF	16.4	NF	12.0	NF	11.3	NF
		Ocean Ave.	6.9	NF	8.7	NF	6.8	NF	12.6	NF	7.0	NF	6.3	NF
		8th Ave	NS	NS	NS	NS	NS	NS	18.6	NF	8.0	6	10.0	NF
	Monterey	Twin 51's	4.5	8.5	6.1	10.8	5.5	10.2	5.3	6.7	5.0	10	3.5	8.3
		San Carlos	2.0	NF	4.3	7.3	2.9	NF	4.1	NF	4.0	NF	2.5	NF
		Steinbeck	2.2	NF	5.0	5.5	3.7	5.9	5.1	NF	8.0	NF	4.1	NF
	Monterey County	Boronda	4.9	NF	3.4	NF	NS	NS	--	--	--	--	--	--
		Las Palmas	2.7	NF	3.0	NF	2.9	NF	--	--	--	--	--	--
		Pajaro	NS	NS	NS	NS	NS	NS	2.60	NF	5.0	NF	8.5	NF
		Crossroads	NS	NS	NS	NS	NS	NS	3.00	NF	2.0	NF	1.9	NF
	Pacific Grove	HopkinsMon	NS	NS	NS	NS	4.7	NF	5.40	NF	5.0	15	4.4	NF
		HopkinsPG	NS	NS	NS	NS	6.2	NF	8.10	NF	5.0	NF	5.4	NF
		8 th Street	3.3	NF	7.4	9.5	5.0	NF	5.90	8.6	6.0	NF	3.8	NF
		Greenwood	4.2	7.4	7.1	10.4	5.7	6.5	7.75	8.4	5.0	10	4.0	7.3
		Lover's	2.8	NF	9.4	4.4	6.2	6.1	8.75	NF	6.0	NF	4.5	NF
		Sea Palm	5.0	6.0	9.1	6.9	--	--	--	--	--	--	--	--
		Pico	5.1	4.9	9.1	10.6	11.5	4.9	9.40	5.1	6.0	6	7.4	4.6
Seaside/ Sand City	Bay St	30.0	NF	2.7	NF	5.2	NF	350.5	NF	55.0	NF	2.8	NF	

Potassium continued

		Site Name	FF 2015	DR 2015	FF 2014	DR 2014	SuR 2014	SF 2014	FF 2013	DR 2013
Sites by Jurisdiction	Carmel	4th Ave.	9.5	NF	--	--	NF	NS	NS	NF
		Ocean Ave.	5.1	NF	--	--	NF	NS	16	NF
		8th Ave	8.2	NF	--	--	NF	NS	NS	1.6
	Monterey	Twin 51's	5.2	8	5.4	18.0	11	1.5	9	6.9
		San Carlos	3.0	NF	5.2	NF	NF	1.3	7	NF
		Steinbeck	5.5	NF	8.9	4.2	4.1	1.4	12	NF
	Monterey County	Boronda	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--
		Pajaro	3.8	NF	4.6	NF	NF	2.5	9	NF
		Crossroads	1.5	NF	2.5	NF	NF	0.8	3	NF
	Pacific Grove	HopkinsMon	--	--	--	--	--	--	--	--
		HopkinsPG	--	--	--	--	--	--	--	--
		8 th Street	--	--	--	--	--	--	--	--
		Greenwood	7.5	5.1	6.6	6.7	5.6	NS	13	6.4
		Lover's	4.2	NF	6.2	NF	NF	NS	14	NF
		Sea Palm	--	--	--	--	--	--	--	--
		Pico	14.0	5.2	10.5	5.9	5.5	2.6	12	5.1
Seaside/ Sand City	Bay St	4.0	NF	3.0	NF	NF	1.3	8	NF	

Total Suspended Solids (TSS)

Comparison of Total Suspended Solids (TSS) results for MRSWMP monitoring reported in mg/L. Shaded boxes indicate that the CCAMP Action Level of 500 mg/L was exceeded; NA= Not Analyzed; ND= Non-detect; NF= No Flow; NS= Not Sampled; -- = Not included in MRSWMP monitoring. Dry weather sampling includes Dry Runs (DR) and the 2010-2014 Summer Runs (SuR). Wet weather sampling includes First Flushes (FF), the 2013-2014 Second Flushes (SF), and the 2010-2012 Spring Runs (SpR). The table is broken into sections to facilitate printing.

		Site Name	FF 2021	DR 2021	FF 2020	DR 2020	FF 2019	DR 2019	FF 2018	DR 2018	FF 2017	DR 2017	FF 2016	DR 2016	FF 2015	DR 2015
Sites by Jurisdiction	Carmel	4th Ave.	251	NF	124	NF	260	NF	162	NF	129	NF	96	NF	312	NF
		Ocean Ave.	86	NF	33	NF	24	NF	45	NF	22	NF	18	NF	62	NF
		8th Ave	NS	NS	NS	NS	NS	NS	127	NF	26	4	36	NF	101	NF
	Monterey	Twin 51's	109	3	108	ND	168	2	47	2	96	4	28	2	59	3
		San Carlos	86	NF	31	ND	62	NF	48	NF	54	NF	6	NF	25	NF
		Steinbeck	41	NF	32	44	92	6	42	NF	38	NF	7	NF	24	NF
	Monterey County	Boronda	370	NF	660	NF	724*	NF	--	--	--	--	--	--	--	--
		Las Palmas	66	NF	37	NF	55	NF	--	--	--	--	--	--	--	--
		Pajaro	NS	NS	NS	NS	NS	NS	150	NF	652	NF	111	NF	191	NF
		Crossroads	NS	NS	NS	NS	NS	NS	41	NF	6	NF	6	NF	20	NF
	Pacific Grove	HopkinsMon	NS	NS	NS	NS	36	NF	48	NF	46	10	7	NF	--	--
		HopkinsPG	NS	NS	NS	NS	33	NF	37	NF	48	NF	9	NF	--	--
		8th St	67	NF	62	ND	89	NF	29	3	71	NF	7	NF	--	--
		Greenwood	63	7	46	3	47	2	37	7	178	2	12	2	50	6
		Lover's	29	NF	34	ND	63	ND	24	NF	29	NF	20	NF	20	NF
		Sea Palm	46	ND	64	ND	--	--	--	--	--	--	--	--	--	--
		Pico	44	ND	112	19	183	ND	47	ND	41	ND	14	ND	61	ND
	Seaside/Sand City	Bay St	74	NF	128	NF	129	NF	23	NF	82	NF	32	NF	35	NF

*Data provided by Monterey County from sampling that occurred one day after First Flush.

Total Suspended Solids (TSS) continued

		Site Name	FF 2014	DR 2014	SuR 2014	SF 2014	FF 2013	DR 2013	SuR 2013	SF 2013	FF 2012	DR 2012	SuR 2012	SpR 2012	FF 2011	DR 2011	SuR 2011	SpR 2011	
Sites by Jurisdiction	Carmel	4th Ave.	--	--	NF	NS	NS	NF	NF	NS	139	NF	NF	NF	557	ND	NF	ND	
		Ocean Ave.	--	--	NF	NS	20	NF	NF	NS	57	NF	14	NF	292	NF	NF	NF	
		8th Ave	--	--	NF	NS	NS	ND	ND	NS	NS	NF	ND	ND	99	ND	ND	ND	
	Monterey	Twin 51's	73	ND	ND	14	69	3	6	19	74	ND	ND	ND	15	ND	ND	ND	
		San Carlos	91	NF	NF	44	13	NF	3	NS	NS	NF	ND	ND	100	ND	ND	ND	
		Steinbeck	84	ND	ND	34	21	NF	4	8	30	7	18	2	88	ND	ND	ND	
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pajaro	152	NF	NF	244	132	NF	NF	276	140	NF	NF	NF	230	NF	NF	NF	
		Crossroads	12	NF	NF	20	7	NF	NF	5	11	NF	NF	NF	11	NF	NF	NF	
	Pacific Grove	HopkinsMon	--	--	--	--	--	--	35	NS	NS	NS	NS	NS	57	NF	8	ND	
		HopkinsPG	--	--	--	--	--	--	NF	NS	NS	NS	NF	NS	75	NF	NF	NF	
		8th St	--	--	--	--	--	--	NF	NS	NS	NF	NF	2	NF	NF	20	ND	
		Greenwood	59	3	8	NS	36	4	3	NS	17	2	ND	4	174	ND	ND	7	
		Lover's	33	NF	NF	NS	11	NF	NF	NS	21	NF	NF	ND	118	NF	9	12	
		Sea Palm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pico	27	ND	ND	68	32	ND	2	12	10	ND	ND	ND	57	ND	ND	ND	
	Seaside/ Sand City	Bay St	173	NF	NF	33	66	NF	NF	63	33	NF	NF	NF	59	NF	NF	ND	

Total Suspended Solids (TSS) continued

		Site Name	FF 2010	DR 2010	SuR 2010	SpR 2010	FF 2009	DR 2009	FF 2008	DR 2008	FF 2007	DR 2007	FF 2006	DR 2006	
Sites by Jurisdiction	Carmel	4th Ave.	212	NF	NF	NF	121	NF	116	NF	103	NF	--	--	
		Ocean Ave.	42	NF	45	NF	28	NF	34	NF	59	NF	--	--	
		8th Ave	36	3	ND	ND	57	ND	20	5	89	4	--	--	
	Monterey	Twin 51's	183	61	5	ND	44	6	74	5	137	3	41	2	
		San Carlos	69	3	ND	ND	22	ND	32	5	47	3080	46	ND	
		Steinbeck	56	6	ND	ND	68	8	49	8	66	4	14	12	
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pajaro	348	NF	NF	NF	270	42	743	NF	--	--	--	--	
		Crossroads	15	NF	NF	NF	21	NF	--	--	--	--	--	--	
	Pacific Grove	HopkinsMon	30	ND	8	7	106	51	34	12	36	NF	29	NF	
		HopkinsPG	82	NF	NF	NF	45	NF	25	NF	43	NF	--	--	
		8th St	26	188	NF	NF	31	NF	15	NF	75	NF	39		
		Greenwood	50	5	6	0	60	0	19	14	71	3	23	33	
		Lover's	20	3	ND	ND	52	ND	25	1.9	35	5	24	NF	
		Sea Palm	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pico	36	ND	6	ND	20	ND	45	ND	86	5	40	ND	
Seaside/ Sand City	Bay St	173	NF	NF	NF	123	NF	66	NF	38	NF	3	NF		

Turbidity

Comparison of turbidity results for MRSWMP monitoring reported in NTU. Shaded boxes indicate that the CCRWQCB Action Level of 25 NTU was exceeded; NA= Not Analyzed; ND= Non-detect; NF= No Flow; NS= Not Sampled; -- = Not included in MRSWMP monitoring. Dry weather sampling includes Dry Runs (DR) and the 2014 Summer Run (SuR). Wet weather sampling includes the First Flushes (FF) and the 2014 Second Flush (SF). The table is broken into sections to facilitate printing.

		Site Name	FF 2021	DR 2021	FF 2020	DR 2020	FF 2019	DR 2019	FF 2018	DR 2018	FF 2017	DR 2017	FF 2016	DR 2016
Sites by Jurisdiction	Carmel	4th Ave.	112.0	NF	93	NF	105.0	NF	85	NF	91	NF	44.5	NF
		Ocean Ave.	25.5	NF	32	NF	10.5	NF	25	NF	20	NF	21.5	NF
		8th Ave	NS	NS	NS	NS	NS	NS	54	NF	19	10.0	11.0	NF
	Monterey	Twin 51's	56.5	2.2	55	1.6	51.5	2.9	23	1.4	52	3.8	16.5	6.1
		San Carlos	31.5	NF	33	0.5	33.0	NF	38	NF	57	NF	5.2	NF
		Steinbeck	18.0	NF	28	2.5	41.5	10.0	43	NF	39	NF	5.0	NF
	Monterey County	Boronda	260.0	NF	325	NF	900*	NF	--	--	--	--	--	--
		Las Palmas	24.0	NF	23	NF	28.0	NF	--	--	--	--	--	--
		Pajaro	NS	NS	NS	NS	NS	NS	118	NF	606	NF	2.3	NF
		Crossroads	NS	NS	NS	NS	NS	NS	40	NF	19	NF	4.7	NF
	Pacific Grove	HopkinsMon	NS	NS	NS	NS	20.0	NF	48	NF	44	5.3	4.4	NF
		HopkinsPG	NS	NS	NS	NS	21.5	NF	32	NF	50	NF	3.9	NF
		8th St	29.0	NF	32	1.1	33.0	NF	25	2.1	40	NF	4.6	NF
		Greenwood	25.5	6.4	30	5.8	35.5	5.1	27	6.3	71	4.7	10.1	4.5
		Lover's	8.5	NF	22	2.0	23.5	0.7	19	NF	30	NF	12.3	NF
		Sea Palm	18.5	0.5	46	0.4	--	--	--	--	--	--	--	--
		Pico	24.0	3.4	56	21.0	60.0	15.0	25	4.2	28	6.7	7.9	10.0
Seaside/ Sand City	Bay St	32.0	NF	58	NF	45.5	NF	4	NF	69	NF	12.3	NF	

*Data provided by Monterey County from sampling that occurred one day after First Flush.

Turbidity continued

		Site Name	FF 2015	DR 2015	FF 2014	DR 2014	SuR 2014	SF 2014	FF 2013	DR 2013
Sites by Jurisdiction	Carmel	4th Ave.	103.0	NF	--	--	NF	NS	NS	NF
		Ocean Ave.	14.0	NF	--	--	NF	NS	24.0	NF
		8th Ave	26.0	NF	--	--	NF	NS	NS	1.1
	Monterey	Twin 51's	33.0	3.4	21.0	2.0	1.6	12.0	50.0	3.8
		San Carlos	14.0	NF	37.0	NF	NF	16.0	17.3	NF
		Steinbeck	14.0	NF	32.0	0.7	0.7	16.0	13.0	NF
	Monterey County	Boronda	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--
		Pajaro	140.0	NF	140.0	NF	NF	120.0	175.0	NF
		Crossroads	9.0	NF	12.0	NF	NF	13.0	7.0	NF
	Pacific Grove	HopkinsMon	--	--	--	--	--	--	--	--
		HopkinsPG	--	--	--	--	--	--	--	--
		8th St	--	--	--	--	--	--	--	--
		Greenwood	25.0	5.0	25.0	4.0	2.1	NS	24.0	1.5
		Lover's	10.0	NF	20.0	NF	NF	NS	7.1	NF
		Sea Palm	--	--	--	--	--	--	--	--
Pico		32.0	3.3	21.0	7.2	2.1	18.0	18.0	3.0	
Seaside/ Sand City	Bay St	19.0	NF	41.0	NF	NF	20.0	40.0	NF	

Urea

Comparison of urea results for MRSWMP monitoring reported in µg/L. There is no water quality objective and First Flush results are from a single sample during the first time series; NA= Not Analyzed; ND= Non-detect; NF= No Flow; NS= Not Sampled; -- = Not included in MRSWMP monitoring. Dry weather sampling includes Dry Runs (DR) and the 2010-2014 Summer Runs (SuR). Wet weather sampling includes First Flushes (FF), the 2013-2014 Second Flushes (SF), and the 2010-2012 Spring Runs (SpR). The table below is broken into sections to facilitate printing.

		Site Name	FF 2021	DR 2021	FF 2020	DR 2020	FF 2019	DR 2019	FF 2018	DR 2018	FF 2017	DR 2017	FF 2016	DR 2016	FF 2015	DR 2015
Sites by Jurisdiction	Carmel	4th Ave.	173		104	NF	307	NF	94	NF	109	NF	239	NF	122	NF
		Ocean Ave.	208		154	NF	481	NF	169	NF	436	NF	289	NF	187	NF
		8th Ave			NS	NS	NS	NS	258	NF	269	32	212	NF	173	NF
	Monterey	Twin 51's	95	422	590	31	421	197	117	49	ND	139	186	102	266	254
		San Carlos	114		329	28	277	NF	247	NF	ND	NF	145	NF	118	NF
		Steinbeck	703		745	30	156	172	1120	NF	ND	NF	1120	NF	914	NF
	Monterey County	Boronda	478		230	NF	NS	NF	--	--	--	--	--	--	--	--
		Las Palmas	156		172	NF	149	NF	--	--	--	--	--	--	--	--
		Pajaro			NS	NS	NS	NS	140	NF	434	NF	5260	NF	827	NF
		Crossroads			NS	NS	NS	NS	149	NF	150	NF	129	NF	80	NF
	Pacific Grove	HopkinsMon			NS	NS	186	NF	249	NF	754	95	168	NF	--	--
		HopkinsPG			NS	NS	372	NF	1040	NF	278	NF	740	NF	--	--
		8th St	72		215	234	197	NF	207	587	280	NF	102	NF	--	--
		Greenwood	84	48	137	51	155	47	154	37	177	124	143	92	180	ND
		Lover's	150		137	25	221	25	206	NF	249	NF	135	NF	150	NF
		Sea Palm	90	36	111	16	--	--	--	--	--	--	--	--	--	--
		Pico	101	19	85	27	224	47	83	ND	140	15	89	ND	451	ND
Seaside/ Sand City	Bay St	378		230	NF	144	NF	26	NF	ND	NF	205	NF	304	NF	

Urea continued

		Site Name	FF 2014	DR 2014	SuR 2014	SF 2014	FF 2013	DR 2013	SuR 2013	SF 2013	FF 2012	DR 2012	SuR 2012	SpR 2012	FF 2011	DR 2011	
Sites by Jurisdiction	Carmel	4th Ave.	--	--	NF	NS	NS	NF	NF	NS	293	NF	NF	NF	46	ND	
		Ocean Ave.	--	--	NF	NS	699	NF	NF	NS	156	NF	31	NF	47	NF	
		8th Ave	--	--	NF	NS	NS	ND	ND	NS	NS	NF	ND	5	547	ND	
	Monterey	Twin 51's	598	45	22	45	595	131	93	55	193	32	87	61	179	35	
		San Carlos	434	NF	NF	68	572	NF	ND	NS	NS	NF	ND	5	73	ND	
		Steinbeck	4490	24	27	228	2075	NF	938	405	478	29	127	5	393	30	
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pajaro	313	NF	NF	49	838	NF	NF	98	312	NF	NF	NF	NF	44	NF
		Crossroads	271	NF	NF	56	114	NF	NF	20	289	NF	NF	NF	NF	52	NF
	Pacific Grove	HopkinsMon	--	--	--	--	--	--	ND	NS	NS	NS	ND	NS	55	NF	
		HopkinsPG	--	--	--	--	--	--	NF	NS	NS	NS	NF	NS	378	NF	
		8th St	--	--	--	--	--	--	NF	NS	NS	NF	NF	1861	NF	NF	
		Greenwood	378	43	17	NS	446	11	56	NS	423	11	11	5	168	12	
		Lover's	914	NF	NF	NS	450	NF	NF	NS	98	NF	NF	57	97	NF	
		Sea Palm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pico	292	10	435	34	225	ND	42	63	63	ND	ND	5	25	ND	
Seaside/ Sand City	Bay St	298	NF	NF	57	787	NF	NF	349	158	NF	NF	NF	143	NF		

Urea continued

		Site Name	SuR 2011	SpR 2011	FF 2010	DR 2010	SuR 2010	SpR 2010	FF 2009	DR 2009	FF 2008	DR 2008	FF 2007	DR 2007	FF 2006	DR 2006	
Sites by Jurisdiction	Carmel	4th Ave.	NF	ND	225	NF		NF	393	NF	84	NF	195	NF	--	--	
		Ocean Ave.	NF	NF	417	NF	400	NF	105	NF	250	NF	280	NF	--	--	
		8th Ave	10	ND	426	ND	ND	ND	419	ND	331	10	345	10	--	--	
	Monterey	Twin 51's	53	16	520	21	16	258	920	250	753	45	560	116	724	53	
		San Carlos	10	ND	326	878	15	10	331	ND	336	15	440	35	370	13	
		Steinbeck	42	ND	2234	11	10	213	1547	11	740	1	1965	1028	4777	152	
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pajaro	NF	NF	609	NF	NF	NF	241	74	98	NF	--	--	--	--	
		Crossroads	NF	NF	519	NF	NF	NF	321	NF	--	--	--	--	--	--	
	Pacific Grove	HopkinsMon	30	ND	160	ND	ND	36	456	193	38	173	2495	NF	3263	NF	
		HopkinsPG	NF	NF	1628	NF	NF	NF	1671	NF	840	NF	275	NF	--	--	
		8th St	83	ND	192	389	NF	NF	141	NF	267	NF	210	NF	139	NF	
		Greenwood	44	70	280	5	636	31	120	14	470	71	455	428	348	485	
		Lover's	12	ND	54	5	ND	13	118	20	41	57	320	23	217	NF	
		Sea Palm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pico	10	20	96	5	24	13	35	15	104	69	240	10	150	ND	
Seaside/ Sand City	Bay St	NF	ND	284	NF	NF	NF	62	NF	108	NF	205	NF	60	NF		

Zinc

Comparison of total zinc results for MRSWMP monitoring reported in µg/L. Shaded boxes indicate that the Basin Plan Objective of 200 µg/L was exceeded; NA= Not Analyzed; ND= Non-detect; NF= No Flow; NS= Not Sampled; -- = Not included in MRSWMP monitoring. Dry weather sampling includes Dry Runs (DR) and the 2010-2014 Summer Runs (SuR). Wet weather sampling includes First Flushes (FF), the 2013-2014 Second Flushes (SF), and the 2010-2012 Spring Runs (SpR). The table below is broken into sections to facilitate printing.

		Site Name	FF 2021	DR 2021	FF 2020	DR 2020	FF 2019	DR 2019	FF 2018	DR 2018	FF 2017	DR 2017	FF 2016	DR 2016
Sites by Jurisdiction	Carmel	4 th Avenue	164	NF	85	NF	131	NF	141	NF	198	NF	133	NF
		Ocean	175	NF	127	NF	152	NF	238	NF	194	NF	144	NF
		8 th Avenue	NS	NS	NS	NS	NS	NS	201	NF	111	71	125	NF
	Monterey	Twin 51's	169	526	173	32	136	95	99	74	220	17	93	56
		San Carlos	113	NF	109	12	139	NF	150	NF	157	NF	92	NF
		Steinbeck	108	NF	178	39	233	119	222	NF	249	NF	149	NF
	Monterey County	Boronda	136	NF	111	NF	NS	NF	--	--	--	--	--	--
		Las Palmas	77	NF	80	NF	146	NF	--	--	--	--	--	--
		Pajaro	NS	NS	NS	NS	NS	NS	143	NF	424	NF	317	NF
		Crossroads	NS	NS	NS	NS	NS	NS	156	NF	130	NF	134	NF
	Pacific Grove	HopkinsMon	NS	NS	NS	NS	119	NF	152	NF	142	106	112	NF
		HopkinsPG	NS	NS	NS	NS	286	NF	275	NF	136	NF	189	NF
		8th St	99	NF	125	11	122	NF	101	ND	121	NF	74	NF
		Greenwood	84	NF	94	ND	106	13	135	ND	180	13	93	ND
		Lover's Pt	73	NF	85	ND	105	ND	112	NF	107	NF	80	NF
		Sea Palm	46	26	100	ND								
		Pico	53	ND	103	25	113	41	68	ND	92	ND	68	23
	Seaside/ Sand City	Bay St	169	NF	123	NF	210	NF	ND	NF	136	NF	138	NF

Zinc continued

		Site Name	FF 2015	DR 2015	FF 2014	DR 2014	SuR 2014	SF 2014	FF 2013	DR 2013	SuR 2013	SF 2013	FF 2012	DR 2012	SuR 2012	SpR 2012	FF 2011	DR 2011	
Sites by Jurisdiction	Carmel	4 th Avenue	148	NF	--	--	NF	NS	NS	NF	NF	NS	145	NF	NF	NF	312	11	
		Ocean	106	NF	--	--	NF	NS	395	NF	NF	NS	203	NF	98	NF	354	NF	
		8 th Avenue	169	NF	--	--	NF	NS	NS	24	92	NS	NS	NF	ND	26	214	20	
	Monterey	Twin 51's	167	114	513	313	48	58	504	93	46	70	147	28	ND	40	142	20	
		San Carlos	118	NF	692	NF	NF	96	269	NF	36	NS	NS	NF	ND	43	264	17	
		Steinbeck	170	NF	764	53	25	112	293	NF	43	158	392	38	21	60	258	19	
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pajaro	167	NF	231	NF	NF	264	297	NF	NF	182	198	NF	NF	NF	NF	170	NF
		Crossroads	78	NF	229	NF	NF	81	185	NF	NF	79	211	NF	NF	NF	NF	97	NF
	Pacific Grove	HopkinsMon	--	--	--	--	--	--	--	--	60	NS	NS	NS	NS	ND	NS	138	NF
		HopkinsPG	--	--	--	--	--	--	--	--	NF	NS	NS	NS	NS	NF	NS	166	NF
		8th St	--	--	--	--	--	--	--	--	NF	NS	NS	NF	NF	22	NF	NF	
		Greenwood	129	ND	410	60	48	NS	263	20	14	NS	102	ND	ND	21	300	ND	
		Lover's Pt	87	NF	406	NF	NF	NS	204	NF	NF	NS	114	NF	NF	14	182	NF	
		Sea Palm					--	--	--	--	--	--	--	--	--	--	--	--	--
		Pico	150	ND	144	39	ND	63	129	37	ND	70	58	21	ND	12	86	ND	
Seaside/ Sand City	Bay St	141	NF	703	NF	NF	119	402	NF	NF	187	94	NF	NF	NF	219	NF		

Zinc continued

		Site Name	SuR 2011	SpR 2011	FF 2010	DR 2010	SuR 2010	SpR 2010	FF 2009	DR 2009	FF 2008	DR 2008	FF 2007	DR 2007	FF 2006	DR 2006
Sites by Jurisdiction	Carmel	4 th Avenue	NF	104	195	NF	NF	NF	226	NF	116	NF	170	NF	--	--
		Ocean	NF	NF	650	NF	439	NF	288	NF	225	NF	361	NF	--	--
		8 th Avenue	19	ND	344	15	14	17	256	19	237	20	303	61	--	--
	Monterey	Twin 51's	25	25	385	46	52	20	313	29	273	28	330	25	295	ND
		San Carlos	29	67	351	28	28	25	213	19	157	18	269	10	342	ND
		Steinbeck	31	62	808	31	29	40	400	196	347	110	384	130	411	ND
	Monterey County	Boronda	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Las Palmas	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pajaro	NF	NF	351	NF	NF	NF	273	41	368	NF	--	--	--	--
		Crossroads	NF	NF	330	NF	NF	NF	303	NF	--	--	--	--	--	--
	Pacific Grove	HopkinsMon	36	24	322	24	22	35	341	234	194	99	382	NF	307	NF
		HopkinsPG	NF	NF	945	NF	NF	NF	477	NF	305	NF	231	NF	--	--
		8th St	88	15	156	567	NF	NF	147	NF	121	NF	173	NF	153	--
		Greenwood	16	12	232	5	ND	14	167	ND	156	35	236	11	180	27
		Lover's Pt	16	36	65	5	ND	14	166	ND	123	10	175	13	158	NF
		Sea Palm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Pico	11	34	139	17	16	11	87	ND	96	12	154	10	142	ND
Seaside/ Sand City	Bay St	NF	22	272	NF	NF	NF	345	NF	124	NF	185	NF	33	NF	

Appendix 3: Results by Jurisdiction (listed alphabetically)

Carmel 2021 MRSWMP Monitoring Results

Table results include the Dry Run (DR), First Flush time series (FF-A and FF-B) and FF results averaged for the two time series (FF-Avg). Shaded boxes indicate that a Water Quality Objective (WQO) or Action Level was exceeded. ND= Non-detect; NF= No Flow; -- = Not included in MRSWMP.

Analytes	WQO or Action Level	4 th Avenue				Ocean Avenue			
		DR	FF- A	FF - B	FF Avg	DR	FF- A	FF - B	FF Avg
Ammonia (mg/L)	50 mg/L	NF	0.36	0.43	0.40	NF	0.11	0.43	0.27
Color (Color Units)	500 color units	NF	60	150	105	NF	25	30	28
Copper (ug/L)	30 ug/L	NF	93	54	74	NF	92	31	62
<i>E. coli</i> (MPN/ 100 ml)	235 MPN/ 100 ml	NF	173289	155312	164301	NF	36540	48844	42692
Enterococcus (MPN/ 100 ml)	104 MPN/ 100 ml	NF	325540	51220	188380	NF	30759	36540	33650
Hardness mg/L	<10 and >2000 mg/L	NF	71	50	61	NF	40	20	30
Lead (ug/L)	30 ug/L	NF	31.7	59.5	45.6	NF	13.8	5.9	9.9
MBAS Surfactants	0.2 mg/L	NF	0.26	0.26	0.26	NF	0.33	0.18	0.26
NO3-N (mg-N/ L)	2.25 mg-N/ L	NF	0.2	0.3	0.3	NF	0.2	0.1	0.2
PO4-P (mg-P/ L)	0.12 mg-P/ L	NF	0.9	0.6	0.8	NF	0.5	0.4	0.5
Potassium (mg/L)	20 mg/ L	NF	15.7	11.0	13.4	NF	8.2	5.5	6.9
TSS (mg/L)	500 mg/L	NF	223	278	251	NF	92	80	86
Turbidity (NTU)	25 NTU	NF	54	170	112	NF	31	20	26
Urea (ug/L)	None currently	NF	173	--	--	NF	208	--	--
Zinc (ug/L)	200 ug/L	NF	175	153	164	NF	266	84	175

Monterey 2021 MRSWMP Monitoring Results.

Table results include the Dry Run (DR), First Flush time series (FF-A and FF-B) and FF results averaged for the two time series (FF-Avg). Shaded boxes indicate that a Water Quality Objective (WQO) or Action Level was exceeded. ND= Non-detect; NF= No Flow; -- = Not included in MRSWMP monitoring.

Analytes	WQO or Action Level	Twins				San Carlos				Steinbeck			
		DR	FF- A	FF - B	FF Avg	DR	FF- A	FF - B	FF Avg	DR	FF- A	FF - B	FF Avg
Ammonia (mg/L)	50 mg/L	1.12	0.66	0.70	0.68	NF	0.18	0.11	0.15	NF	0.32	0.61	0.47
Color (Color Units)	500 color units	25	60	50	55	NF	40	50	45	NF	25	10	18
Copper (ug/L)	30 ug/L	16	35	24	30	NF	24	21	23	NF	17	18	18
<i>E. coli</i> (MPN/100 ml)	235 MPN/ 100 ml	5480	198629	98039	148334	NF	34480	36540	35510	NF	16695	16071	16383
Enterococcus (MPN/100 ml)	104 MPN/ 100 ml	8164	241957	155312	198635	NF	30759	43517	37138	NF	27551	43517	35534
Hardness mg/L	<10 and >2000 mg/L	335	50	47	49	NF	17	16	17	NF	13	16	15
Lead (ug/L)	30 ug/L	0.9	28.8	21.2	25.0	NF	8.6	11.3	10.0	NF	5.4	3.7	4.6
MBAS Surfactants	0.2 mg/L	0.13	0.12	0.25	0.19	NF	0.27	0.16	0.22	NF	0.14	0.27	0.21
NO3-N (mg-N/ L)	2.25 mg-N/ L	1.1	0.2	0.2	0.2	NF	0.1	0.2	0.2	NF	0.1	0.1	0.1
PO4-P (mg-P/ L)	0.12 mg-P/ L	0.3	0.5	0.4	0.5	NF	0.2	0.2	0.2	NF	0.3	0.4	0.4
Potassium (mg/L)	20 mg/ L	8.5	4.8	4.2	4.5	NF	2.2	1.7	2.0	NF	1.9	2.5	2.2
TSS (mg/L)	500 mg/L	3	128	89	109	NF	68	104	86	NF	46	36	41
Turbidity (NTU)	25 NTU	2.2	66	47	57	NF	29	34	32	NF	19	17	18
Urea (ug/L)	None currently	422	95	--	--	NF	114	--	--	NF	703	--	--
Zinc (ug/L)	200 ug/L	526	191	147	169	NF	116	110	113	NF	103	112	108

Monterey County 2021 MRSWMP Monitoring Results

Table results include the Dry Run (DR), First Flush time series (FF-A and FF-B) and FF results averaged for the two time series (FF-Avg). Shaded boxes indicate that a Water Quality Objective (WQO) or Action Level was exceeded. ND= Non-detect; NF= No Flow, -- = Not included in MRSWMP monitoring; *Data provided by Monterey County from sampling that occurred one day after First Flush.

Analytes	WQO or Action Level	Boronda				Las Palmas			
		DR	FF- A	FF- B	FF-Avg	DR	FF- A	FF- B	FF-Avg
Ammonia (mg/L)	50 mg/L	NF	0.54	0.38	0.46	NF	0.19	0.20	0.20
Color (Color Units)	500 color units	NF	100	100	100	NF	75	30	53
Copper (ug/L)	30 ug/L	NF	26	20	23	NF	8	7	8
<i>E. coli</i> (MPN/ 100 ml)	235 MPN/ 100 ml	NF	29866	17216	23541	NF	64882	98039	81461
Enterococcus (MPN/ 100 ml)	104 MPN/ 100 ml	NF	104624	92084	98354	NF	86644	92084	89364
Hardness mg/L	<10 and >2000 mg/L	NF	71	60	66	NF	29	38	34
Lead (ug/L)	30 ug/L	NF	12.1	11.4	11.8	NF	2.4	1.0	1.7
MBAS Surfactants (mg/L)	0.2 mg/L	NF	0.48	0.34	0.41	NF	0.18	0.21	0.20
NO3-N (mg-N/ L)	2.25 mg-N/ L	NF	0.2	0.2	0.2	NF	0.3	0.4	0.4
PO4-P (mg-P/ L)	0.12 mg-P/ L	NF	0.6	0.5	0.6	NF	0.3	0.3	0.3
Potassium (mg/L)	20 mg/ L	NF	5.2	4.5	4.9	NF	2.6	2.7	2.7
TSS (mg/L)	500 mg/L	NF	422	318	370	NF	100	31	66
Turbidity (NTU)	25 NTU	NF	280	240	260	NF	32	16	24
Urea (ug/L)	None currently	NF	478	--	--	NF	156	--	--
Zinc (ug/L)	200 ug/L	NF	151	121	136	NF	84	70	77

Pacific Grove 2021 MRSWMP Monitoring Results.

Table results include the Dry Run (DR), First Flush time series (FF-A and FF-B) and FF results averaged for the two time series (FF-Avg). Shaded boxes indicate that a Water Quality Objective (WQO) or Action Level was exceeded. ND= Non-detect; NF= No Flow; -- = Not included in MRSWMP monitoring.

Analytes	WQO or Action Level	8 th Street				Greenwood Park				Lovers			
		DR	FF- A	FF - B	FF Ave	DR	FF- A	FF - B	FF Ave	DR	FF- A	FF - B	FF Ave
Ammonia (mg/L)	50 mg/L	NF	0.16	0.13	0.15	0.08	0.28	0.23	0.26	NF	0.23	0.19	0.21
Color (Color Units)	500 color units	NF	30	30	30	30	60	60	60	NF	40	25	33
Copper (ug/L)	30 ug/L	NF	19	14	17	ND	14	11	13	NF	20	22	21
<i>E. coli</i> (MPN/100 ml)	235 MPN/ 100 ml	NF	22537	20635	21586	19860	46111	32815	39463	NF	18501	5908	12205
Enterococcus (MPN/100 ml)	104 MPN/ 100 ml	NF	41058	64882	52970	129110	46111	36540	41326	NF	22468	18919	20694
Hardness mg/L	<10 and >2000 mg/L	NF	26	18	22	369	22	17	20	NF	14	9	12
Lead (ug/L)	30 ug/L	NF	13.6	10.3	12.0	0.2	6.4	6.3	6.4	NF	6.0	8.1	7.1
MBAS Surfactants	0.20 mg/L	NF	0.29	0.29	0.29	0.08	0.25	0.24	0.25	NF	0.27	0.22	0.25
NO3-N (mg-N/ L)	2.25 mg-N/ L	NF	0.2	0.1	0.2	0.7	0.1	0.1	0.1	NF	0.1	0.1	0.1
PO4-P (mg-P/ L)	0.12 mg-P/ L	NF	0.2	0.2	0.2	0.1	0.3	0.2	0.3	NF	0.3	0.2	0.3
Potassium (mg/L)	20 mg/ L	NF	3.7	2.8	3.3	7.4	4.6	3.7	4.2	NF	3.4	2.1	2.8
TSS (mg/L)	500 mg/L	NF	57	76	67	7	63	62	63	NF	32	26	29
Turbidity (NTU)	25 NTU	NF	24	34	29	6.4	25	26	26	NF	9.5	7.4	8.5
Urea (ug/L)	None currently	NF	72	--	--	48	84	--	--	NF	150	--	--
Zinc (ug/L)	200 ug/L	NF	109	89	99	15	93	74	84	NF	71	75	73

Pacific Grove 2021 MRSWMP Monitoring Results continued

Analytes	WQO or Action Level	Sea Palm				Pico			
		DR	FF- A	FF - B	FF Ave	DR	FF- A	FF - B	FF Ave
Ammonia (mg/L)	50 mg/L	ND	0.23	0.19	0.21	ND	0.18	0.12	0.15
Color (Color Units)	500 color units	15	60	60	60	30	20	50	35
Copper (ug/L)	30 ug/L	ND	20	15	18	ND	12	9	11
<i>E. coli</i> (MPN/100 ml)	235 MPN/ 100 ml	ND	17853	104264	61059	280	36540	26125	31333
Enterococcus (MPN/100 ml)	104 MPN/ 100 ml	20	64881	68667	66775	450	64882	20982	42932
Hardness mg/L	<10 and >2000 mg/L	265	22	15	19	153	25	16	21
Lead (ug/L)	30 ug/L	ND	4.2	5.8	5.0	ND	2.2	4.0	3.1
MBAS Surfactants	0.20 mg/L	0.06	0.25	0.26	0.26	0.05	0.51	0.27	0.39
NO3-N (mg-N/ L)	2.25 mg-N/ L	0.2	0.3	0.2	0.3	1.5	0.1	0.1	0.1
PO4-P (mg-P/ L)	0.12 mg-P/ L	0.1	0.4	0.3	0.4	0.1	0.3	0.3	0.3
Potassium (mg/L)	20 mg/ L	6.0	6.1	3.8	5.0	4.9	6.2	4.0	5.1
TSS (mg/L)	500 mg/L	ND	46	45	46	ND	36	51	44
Turbidity (NTU)	25 NTU	0.5	17	20	19	3.4	19	29	24
Urea (ug/L)	None currently	36	90	--	--	19	101	--	--
Zinc (ug/L)	200 ug/L	26	49	42	46	ND	53	52	53

Seaside and Sand City 2021 MRSWMP Monitoring Results

Table results include the Dry Run (DR), First Flush time series (FF-A and FF-B) and FF results averaged for the two time series. Shaded boxes indicate that a Water Quality Objective (WQO) or Action Level was exceeded. ND= Non-detect; NF= No Flow; -- = Not included in MRSWMP monitoring.

Analytes	WQO or Action Level	Bay Street			
		Dry Run	First Flush-A	First Flush-B	FF Average
Ammonia (mg/L)	50 mg/L	NF	0.99	0.30	0.65
Color (Color Units)	500 color units	NF	150	150	150
Copper (ug/L)	30 ug/L	NF	46	26	36
<i>E. coli</i> (MPN/ 100 ml)	235 MPN/ 100 ml	NF	410580	104624	257602
Enterococcus (MPN/ 100 ml)	104 MPN/ 100 ml	NF	141361	198629	169995
Hardness mg/L	<10 and >2000 mg/L	NF	858	24	441
Lead (ug/L)	30 ug/L	NF	5.0	8.3	6.7
MBAS Surfactants (mg/L)	0.2 mg/L	NF	1.61	0.62	1.12
NO3-N (mg-N/ L)	2.25 mg-N/ L	NF	0.2	0.2	0.2
PO4-P (mg-P/ L)	0.12 mg-P/ L	NF	0.6	0.2	0.4
Potassium (mg/L)	20 mg/ L	NF	57.6	2.4	30.0
TSS (mg/L)	500 mg/L	NF	87	60	74
Turbidity (NTU)	25 NTU	NF	38	26	32
Urea (ug/L)	None currently	NF	378	--	--
Zinc (ug/L)	200 ug/L	NF	188	150	169