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# **CLEAN WATER ACT SECTION 303(D) LISTING FOR BACTERIA IN THE VENTURA KEYS: DATA REVIEW AND PROBLEM IDENTIFICATION**

PREPARED BY

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## **1. Introduction**

This report presents an evaluation of the bacteria data collected by the City of Ventura from January 2003 to August 2007, which were used to support continued listing of the Ventura Harbor (Ventura Keys) on the 1996-2016 Clean Water Act (CWA) section 303(d) lists of impaired waters, as well as an evaluation of data acquired through a special study conducted from May 2008 to April 2009.

In 2013, the United States Environmental Protection Agency (U.S. EPA) adopted the “Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program” (Vision). The Vision required each regional board, by 2016, to prioritize and report priority waters on the 303(d) list for total maximum daily load (TMDL) development by 2022. The Los Angeles Regional Water Quality Control Board (Los Angeles Water Board) identified 303(d) listings for indicator bacteria in coastal areas, including the Ventura Harbor (Ventura Keys), as Vision priorities. Therefore, in accordance with the Vision, Los Angeles Water Board staff initiated the first steps of TMDL development – a review of all available data to confirm the bacteria impairment in the Ventura Harbor (Ventura Keys), which is referred to as the “problem identification” element of a TMDL.

## **2. Regulatory Background**

The California Water Quality Control Plan, Los Angeles Region (Basin Plan) sets water quality standards for the Los Angeles Region and specifically (1) designates beneficial uses of surface and ground water, (2) sets numeric and narrative water quality objectives (WQOs) necessary to support beneficial uses and achieve the state’s antidegradation policy, and (3) describes implementation programs to protect all waters in the region. The Basin Plan is the mechanism through which the Los Angeles Water Board implements the Porter-Cologne Water Quality Control Act within the Los Angeles Region and it serves as the State Water Quality Control Plan applicable to regulating bacteria in the Ventura Harbor and Ventura Keys as required by the CWA.

Section 303(d)(1)(A) of the CWA requires each state to conduct a biennial assessment of its waters, and identify those waters that are not achieving water quality standards. The resulting list is referred to as the 303(d) list. The CWA also requires states to establish a priority ranking for waters on the 303(d) list of impaired waters and to develop and implement TMDLs for these waters.

As part of its 1996 and 1998 regional water quality assessments, the Los Angeles Water Board identified over 700 waterbody-pollutant combinations in the Los Angeles Region where TMDLs would be required (LARWQCB 1996; LARWQCB 1998). A 13-year schedule for development of TMDLs in the Los Angeles Region was established in a consent decree and approved on March 22, 1999 (Heal the Bay Inc., et al. v. Browner, et al., 1999). The decree combined the over 700 waterbody-pollutant combinations into 92 TMDL analytical units; Analytical Unit 24 addresses the impairment of Ventura Harbor (Ventura Keys) due to elevated levels of the fecal indicator bacteria, coliform.

The consent decree also prescribed schedules for certain TMDLs, and according to this schedule a bacteria TMDL for Ventura Harbor (Ventura Keys) was to be adopted by the Los

Angeles Water Board within thirteen years of the effective date of the consent decree. However, on September 2, 2010, the consent decree was amended, modifying the list of waters and pollutants it addressed and the schedule for specific waterbodies. The modified consent decree removed Analytical Unit 24 from the list of TMDLs that needed to be developed within thirteen years of the effective date of the consent decree (Heal the Bay Inc., *et al.* v. Jackson, *et al.*, 2010); however, the waterbody impairments in Analytical Unit 24 remain on the 303(d) list as needing to be addressed by a TMDL.

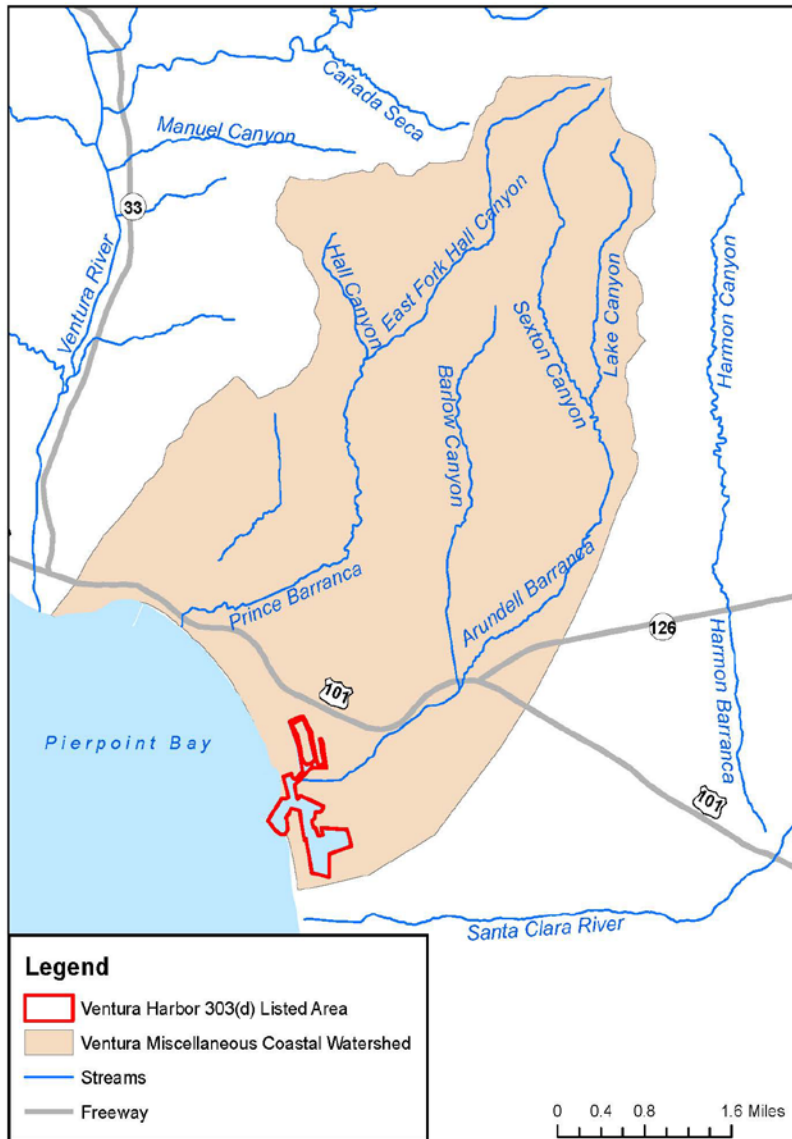
A TMDL specifies the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and allocates the pollutant loadings to point and nonpoint sources. U.S. EPA has oversight authority for the 303(d) program and is required to review and either approve or disapprove the state's 303(d) list and each TMDL developed by the state. If the state fails to develop a TMDL in a timely manner or if the U.S. EPA disapproves a TMDL submitted by a state, U.S. EPA is required to establish a TMDL for that waterbody (40 C.F.R. §130.7(d)(2)).

There are seven elements of a TMDL: the problem identification, numeric targets, source assessment, linkage analysis, pollutant allocations, implementation, and monitoring. This report addresses the first element, the problem identification.

### **3. Environmental Setting**

Ventura Harbor is located off U.S. Route 101 approximately 30 miles south of Santa Barbara and 60 miles north of Los Angeles. The harbor is bordered by the City of Ventura on three sides and the Pacific Ocean on the west. Ventura Harbor is a small harbor located within the Ventura Miscellaneous Coastal Watershed Management Area, between the mouths of the Ventura and Santa Clara rivers (Figure 1). Ventura Harbor is protected by a breakwater perpendicular to the main entrance of the harbor as well as three jetties -- one is north of the opening and two are south of the opening. Harbor Cove Beach (Peninsula Beach) is located at the mouth of Ventura Harbor near the south jetty and the breakwater.

**Figure 1: Ventura Harbor**



Ventura Harbor is divided into two areas: the Ventura Harbor Marina (Ventura Marina) area and the Ventura Keys Marina (Ventura Keys) area (Figure 2). The Ventura Marina is approximately 274 acres (152 land acres and 122 water acres). Other than a 2.74-acre site owned by the U.S. Department of Interior, National Park Service and used as the headquarters and visitor center for the Channel Islands National Park, all of the area in the Ventura Marina is owned by the Ventura Port District (Ventura Local Agency Formation Commission, November 21, 2007). The Ventura Marina is home to the Ventura Marina Mobile Home Park, restaurants, boutiques, and four marinas: Ventura Harbor Village Marina, Ventura Harbor Marina & Yacht Yard, Ventura Isle Marina, and Ventura West Marina (Ventura Port District, 2017). The Ventura Keys is a small 40-acre residential marina adjoining the Ventura Marina, which is managed by the City of Ventura. The Ventura Keys consists of three separate channels and an access channel. The access channel hydraulically connects the three channels and empties into the Ventura Marina. Arundell Barranca enters the Ventura Keys access channel near the Ventura Harbor Marina boundary.

**Figure 2: Ventura Marina and Ventura Keys Area**



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#### **4. Problem Identification**

In this section, we present the water quality standards applicable to the Ventura Marina and Ventura Keys and provide some background on these standards. We then review the historical data used to place the Ventura Harbor (Ventura Keys) on the 303(d) list as well as water quality data from a special study conducted in 2008-09. Available water quality data are compared against WQOs and information such as the number and severity of exceedances is summarized.

##### **4.1 Water Quality Standards**

Water quality standards generally consist of beneficial uses, the WQOs set to protect beneficial uses, and an antidegradation policy. (40 C.F.R §131.6(a), (c), and (d); 40 C.F.R. § 131.12.)

#### 4.1.1 Beneficial Uses

The Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) identifies the beneficial uses of the Ventura Marina and the Ventura Keys (Table 1). Elevated levels of bacteria result in impairments of beneficial uses associated with Water Contact (REC-1) and Non-contact (REC-2) Recreation.

The REC-1 beneficial use is defined in the Basin Plan as “[U]ses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.”

The REC-2 beneficial use is defined as “[U]ses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to picnicking, sunbathing, hiking, beachcombing, camping, boating, tide-pool and marine life study, hunting, sightseeing, or aesthetics enjoyment in conjunction with the above activities.”

**Table 1: Beneficial Uses Identified in the Basin Plan**

Waterbody	IND	NAV	COMM	WARM	MAR	WILD	SHELL	REC-1	REC-2
<b>Ventura Keys</b>		E	E	E	E	E		E	E
<b>Ventura Marina</b>	E	E	E	E	E	E	E	E	E

IND: Industrial Service Supply

NAV: Navigation

COMM: Commercial and Sport Fishing

WARM: Warm Freshwater Habitat

MAR: Marine Habitat

WILD: Wildlife Habitat

SHELL: Shellfish Harvesting

REC-1: Water Contact Recreation

REC-2: Non-contact Recreation

#### 4.1.2 Water Quality Objectives

The Basin Plan contains bacteria WQOs to protect REC-1 and REC-2 uses. In 2001, the Los Angeles Water Board updated the bacteria objectives for waters designated as REC-1 based on U.S. EPA’s recommended criteria (published in “Ambient Water Quality Criteria for Bacteria – 1986”) as well as the results of local epidemiological data by adding enterococcus criteria in addition to total and fecal coliform criteria for marine waters (Table 2) (LARWQCB, October 25, 2001).

**Table 2: Bacteria Water Quality Objectives for Marine Waters**

Indicator Bacteria	Geometric Mean	Single Sample
<b>Total coliform*</b>	1,000/100 ml	10,000/100 ml
<b>Fecal coliform</b>	200/100 ml	400/100 ml
<b>Enterococcus</b>	35/100 ml	104/100 ml

\*Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1

In 2012, U.S. EPA released its final recreational water quality criteria recommendations to protect the primary contact recreation use (U.S. EPA, 2012). The criteria were developed based on more recent scientific information from the National Epidemiological and

Environmental Assessment of Recreational Water (NEEAR) data (Wade *et al.*, 2009). The U.S. EPA water quality criteria recommendations were intended as guidance to states and tribes in establishing new or revised water quality standards.

On November 2, 2017 the State Water Resources Control Board (State Water Board) released for public comment the Proposed Part 3 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays and Estuaries of California—Bacteria Provisions and a Water Quality Standards Variance Policy, and an amendment to the Water Quality Control Plan for Ocean Waters of California—Bacteria Provisions and a Water Quality Standards Variance Policy (Proposed Bacteria Provisions). The Proposed Bacteria Provisions are based on U.S. EPA's 2012 recreational water quality criteria recommendations. The Proposed Bacteria Provisions include updated WQOs and implementation provisions for *E. coli* and enterococcus to protect the REC-1 beneficial use in fresh, estuarine, and marine waters. The Proposed Bacteria Provisions are based on U.S. EPA's recommended illness rate of 32 per 1,000 primary contact recreators to protect public health. The Proposed Bacteria Provisions also include elements related to implementation of the objectives including: reference beach and natural sources exclusion approaches, options for a high flow suspension and/or seasonal suspension, and a definition for a Limited REC-1 beneficial use and a policy for its implementation. The Proposed Bacteria Provisions will supersede existing numeric bacteria WQOs for protection of the REC-1 beneficial use that are included in a regional water board's Basin Plan prior to the effective date of the Proposed Bacteria Provisions, except for site-specific numeric WQOs for bacteria. The Proposed Bacteria Provisions will not supersede narrative bacteria objectives nor any objectives for the protection of the REC-2 or Shellfish Harvesting (SHELL) beneficial uses in a regional water board's Basin Plan.

The State Water Board has not yet approved the Proposed Bacteria Provisions, but it will likely approve them in 2018. Therefore, we have used the WQOs set forth in the Proposed Bacteria Provisions in the analysis of water quality data in Ventura Marina and Ventura Keys. For marine waters, the Proposed Bacteria Provisions establish enterococcus as the sole fecal indicator. The State Water Board may revise the Proposed Bacteria Provisions based on comments received regarding the inclusion of WQOs for fecal coliform based on recent epidemiological studies that were not included in U.S. EPA's 2012 recommendations. However, the State Water Board has not released any revisions to the Proposed Bacteria Provisions as of the date of this staff report. Therefore, the report focuses on the proposed WQOs for enterococcus, although it does contain an assessment of fecal coliform data as compared to the existing fecal coliform WQOs in the Basin Plan, as shown in Table 4 in Section 4.3. The applicable WQOs for enterococcus in marine waters, defined as where salinity is greater than one part per thousand more than 5 percent of the time, are shown in Table 3. The geometric mean is calculated over a six-week rolling period, calculated weekly. The statistical threshold value (STV) shall not exceed more than 10 percent of the time, calculated monthly. According to the Proposed Bacteria Provisions, for 303(d) listing purposes, data should be assessed using the geometric mean objective where there are a statistically sufficient number of samples, which is generally not less than five samples equally distributed over a six-week period. If a statistically sufficient number of samples is not available to calculate sample geometric means, then attainment of the water quality objective is to be determined based on comparison to the STV.

**Table 3: Proposed REC-1 Bacteria Water Quality Objectives (for waters with salinity greater than 1 ppt more than 5 percent of the time)**

<b>Indicator</b>	<b>Geometric Mean* (cfu/100ml)</b>	<b>Statistical Threshold Value (STV)** (cfu/100ml)</b>
<b>Enterococcus</b>	30/100ml	110/100ml
cfu = colony forming units * Six-week rolling geometric mean, calculated weekly **STV shall not exceeded more than 10 percent of the time, calculated monthly		

## 4.2 Water Quality Impairments

During the 1996 water quality assessment conducted pursuant to CWA section 305(b), the Los Angeles Water Board evaluated total and fecal coliform monitoring data for beaches and fecal coliform data for inland surface waterbodies. During this assessment, 40 acres in Ventura Harbor (Ventura Keys) at Arundell Barranca were identified as impaired due to exceedances of the Basin Plan objective for total coliform. The total coliform listing was carried over to the 2002 303(d) list, but the area affected was increased from 40 acres to 179 acres to better reflect the representation of the waterbody on the 303(d) base maps. In addition, the description of the impairment location changed from “Ventura Harbor: Ventura Keys at Arundell Barranca” to “Ventura Harbor: Ventura Keys.” This description of the listing as 179 acres impaired for total coliform in the Ventura Harbor: Ventura Keys waterbody continues through the current 2016 303(d) list. In addition, State Board added a new, separate listing for “indicator bacteria” on the 2016 303(d) list based on more recent data. The new “indicator bacteria” listing was based on total coliform data, as described in section 4.3.1, but it was included as a new listing on the 2016 303(d) list, separate from the existing “total coliform” listing.

## 4.3 Data Review

### 4.3.1 Data Used in 2016 303(d) List

From January 14, 2010 to August 30, 2010 the State Water Board solicited data and information regarding water quality conditions in surface waters of California for the development of the 2012 California Integrated Report. The current 2016 303 (d) listing is based on data submitted for the 2012 California Integrated Report. On July 12, 2010, the City of Ventura submitted data for fecal coliform, total coliform, and enterococcus from Ventura Marina, Ventura Keys, and Arundell Barranca. Samples were collected approximately weekly from January 2003 to August 2007 from three Ventura Keys sites (sites K1-K3) and one Ventura Marina site (M2). Sampling locations are shown in Figure 3.



Figure 3: City of Ventura Sampling Sites



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The State Water Board compared the data to the Basin Plan's WQOs for bacteria in marine waters. For total coliform, the analysis showed that 64 out of 648 samples (9.9%) exceeded the single sample objective of 10,000/100 ml and 196 out of 464 samples (42.2%) exceeded the geometric mean objective of 1,000/100 ml. These results exceed the minimum number of exceedances required for listing per the State Water Board's Listing Policy. The minimum number of exceedances required to list varies with sample size and is based on the binomial distribution. The exceedances for enterococcus, fecal coliform, and the fecal/total coliform ratio did not exceed the minimum number required for listing. The State Water Board's analysis and the number of exceedances required to add a water segment to the 303(d) list is presented in Table 4.

**Table 4: City of Ventura Data (Jan. 2003 – Aug. 2007) Compared to the Basin Plan WQOs**

<b>Indicator Bacteria</b>	<b>Objective</b>	<b># Exceedances</b>	<b># Samples</b>	<b>% Exceedance</b>	<b># Exceedances to list</b>
<b>Total coliform</b>	Geometric Mean	196	464	42.2%	77
	Single Sample	64	648	9.9%	108
<b>Fecal coliform</b>	Geometric Mean	3	464	0.6%	77
	Single Sample <sup>1</sup>	24	648	3.7%	108
<b>Enterococcus</b>	Geometric Mean	41	432	9.5%	72
	Single Sample	48	595	8.1%	99
<b>Fecal coliform/ Total coliform</b>	Ratio	14	648	2.2%	108

As noted earlier, Los Angeles Water Board staff analyzed the 2016 303(d) listing data according to the Proposed Bacteria Provisions, focusing on a comparison of the dataset to the six-week geometric mean objective for enterococcus. The analysis showed that 54 of 420 samples (12.8%) exceeded the 30 cfu per 100 ml objective for enterococcus. Although the Proposed Bacteria Provisions do not factor in seasonality, staff conducted a seasonality assessment for this dataset to determine if exceedances occurred more frequently during summer or winter. Samples were classified as summer when the geometric mean calculation date fell within a summer month (April-October), and classified as winter when the geometric mean calculation date fell within a winter month (November-March). The seasonality assessment showed that 46 of 393 samples (11.7%) exceeded the geometric mean objective during the summer and 8 of 27 samples (29.6%) exceeded the geometric mean objective during the winter.

#### 4.3.2 Analysis of Data Collected by University of California, Los Angeles (UCLA)

In 2008, the Los Angeles Water Board contracted with UCLA to provide bacterial contamination source tracking in Ventura Marina, Ventura Keys and Arundell Barranca. UCLA collected samples approximately monthly from May 2008 to April 2009 from nine Ventura Keys sites and one Ventura Marina site and analyzed the samples for enterococcus and *Bacteroides*. Sampling locations are shown in Figure 4.

<sup>1</sup> The State Water Board’s listing decision indicated 38 exceedances out of 809; however, this analysis was incorrect. Per personal communication with State Water Board staff, the table presents the corrected analysis.

Figure 4: UCLA Sampling Sites



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User

Staff compared the UCLA dataset for the Ventura Keys and Ventura Marina to the Proposed Bacteria Provisions. Because the dataset did not contain sufficient samples to calculate sample geometric means, the STV objective was used for comparison. For the Ventura Keys, the analysis showed that 19 of 78 samples (24.4%) exceeded the 110 cfu per 100 ml STV objective. For the Ventura Marina, the analysis showed that one of 14 samples (7.1%) exceeded the 110 cfu per 100 ml STV objective.

A seasonality analysis was also conducted on the UCLA dataset. Within the Ventura Keys area, 18 of 41 samples (43.9%) exceeded the STV objective during the winter and one of 37 samples (2.7%) exceeded the STV objective during the summer. The dataset was further separated into summer dry weather and summer wet weather, and winter dry weather and winter wet weather. Samples were classified as wet weather if the sample was taken during a rain event and classified as dry weather if no rain event occurred. A rain event is defined as 0.1 inch of rain or more plus the three days following the rain event. There were seven

rain events from May 2008 to April 2009. For the Ventura Keys, the results showed that one of 37 samples (2.7%) exceeded the STV objective during summer dry weather, 6 of 18 samples (33.3%) exceeded the STV objective during winter dry weather, while 12 of 23 samples (52.2%) exceeded the STV objective during winter wet weather. No samples were taken during summer wet weather.

Within the Ventura Marina area, one of 7 samples (14.3%) exceeded the STV objective during the winter and zero of 7 samples (0%) exceeded during the summer. The one exceedance occurred during winter dry weather. The monitoring results for the City of Ventura dataset and the UCLA dataset as compared to the Proposed Bacteria Provisions are summarized in Tables 5-7.

**Table 5: City of Ventura Data (Jan. 2003 - Aug. 2007) in the Ventura Keys Area Compared to the Enterococcus Geometric Mean WQO in the Proposed Bacteria Provisions**

Six-week Geometric Mean (30/100 ml)	Total	Summer*	Winter**
# Exceedances	54	46	8
# Samples	420	393	27
% Exceedance	12.8	11.7	29.6
# Exceedances to list***	70	66	5

\*Summer: calculation date fell in April-October

\*\*Winter: calculation date fell in November-March

\*\*\* State Water Board's Listing Policy Table 3.2

**Table 6: UCLA Data (May 2008 - Apr. 2009) in the Ventura Keys Area Compared to the Enterococcus STV WQO in the Proposed Bacteria Provisions**

STV Objective (110/100 ml)	Total	Summer*	Winter**	Summer Dry weather	Summer Wet weather***	Winter Dry weather	Winter Wet weather***
# Exceedances	19	1	18	1	0	6	12
# Samples	78	37	41	37	0	18	23
% Exceedance	24.4	2.7	43.9	2.7	0	33.3	52.2
# Exceedances to list****	13	7	7	7		5	5

\*Summer: calculation date fell in April-October

\*\*Winter: calculation date fell in November-March

\*\*\*Wet-weather is defined as days of 0.1 inch of rain or more plus three days following the rain event

\*\*\*\* State Water Board's Listing Policy Table 3.2

**Table 7: UCLA Data (May 2008 - Apr. 2009) in the Ventura Marina Area Compared to the Enterococcus STV WQO in the Proposed Bacteria Provisions**

STV Objective (110/100 ml)	Total	Summer*	Winter**	Summer Dry weather	Summer Wet weather***	Winter Dry weather	Winter Wet weather***
# Exceedances	1	0	1	0	0	1	0
# Samples	14	7	7	7	0	3	4
% Exceedance	7.1	0	14.3	0	0	33.3	0
# Exceedances to list****	5	5	5	5		n/a	n/a

\*Summer: calculation date fell in April-October

\*\*Winter: calculation date fell in November-March

\*\*\*Wet-weather is defined as days of 0.1 inch of rain or more plus three days following the rain event

\*\*\*\* State Water Board's Listing Policy Table 3.2

n/a = Insufficient data to evaluate per the State Water Board's Listing Policy

In addition to enterococcus, the UCLA study analyzed samples for *Bacteroides* 16S rRNA HF183 marker (HF183) as an indicator of the presence of human fecal pollution (Mika *et al.*, 2014). *Bacteroides* is a genus of gram-negative, anaerobic, non-spore-forming, rod-shaped bacteria that are more numerous than fecal indicator bacteria. The study analyzed for HF183 using a DNA detection and quantification methodology known as quantitative polymerase chain reaction (qPCR). HF183 was detected in 22 of 152 samples (14%) and was quantifiable in 7 of 22 samples (4.6%). The Ventura Marina sampling location had both the highest frequency of detection (7 out of 13 samples) and concentration of HF183. Looking at weather conditions, HF183 was detected more frequently during wet weather (in 19% of samples, or 10 out of 52) than dry weather (in 12% of samples, or 12 out of 100). The concentrations of enterococcus were markedly higher in samples with HF183 and HF183 was detected more frequently in samples that exceeded the enterococcus WQO (Mika *et al.*, 2014).

#### 4.3.3 Data Review Conclusions

Comparing the City of Ventura dataset used in the 2016 listing to the enterococcus geometric mean objective in the Proposed Bacteria Provisions does not indicate an impairment for enterococcus within the Ventura Keys area of the Ventura Harbor waterbody. However, comparing the UCLA dataset to the STV objective for enterococcus in the Proposed Bacteria Provisions does indicate an impairment for enterococcus within the Ventura Keys area of the Ventura Harbor waterbody.

Looking at seasonality, both datasets showed a higher rate of exceedance during the winter. The UCLA dataset for the Ventura Keys showed a higher rate of exceedance during winter wet weather (63%) than winter dry weather (33%). The UCLA dataset also indicated the presence of human fecal pollution.

## 5. Recommendations

The City of Ventura dataset and the UCLA dataset are approximately a decade old or more. The City of Ventura's bacteria data collection within the Ventura Keys was voluntary and was discontinued in 2007 due to economic considerations (Letter from the City of Ventura, 2008). The UCLA data was part of a special study funded by a limited-term Los Angeles Water Board contract. Moreover, an evaluation of the two datasets leads to inconsistent conclusions regarding impairment status. In addition, there were limitations associated with the UCLA dataset. Therefore, Los Angeles Water Board staff recommends additional, more frequent monitoring in the Ventura Keys and Ventura Marina areas before considering adoption of a TMDL to address the 303(d) listing for bacteria in the Ventura Harbor (Ventura Keys) waterbody. Staff recommends that the City of Ventura and the Ventura Harbor Port District conduct a bacteria monitoring program within the Ventura Harbor for a minimum of two years. Until the Proposed Bacteria Provisions are adopted, the monitoring program should include sampling for the current WQOs, i.e., fecal coliform, total coliform, and enterococcus. To fully assess the Ventura Harbor conditions, we recommend a minimum of five sampling locations within the Ventura Keys and the Ventura Marina areas at a frequency adequate to determine compliance with the current Basin Plan WQOs and the enterococcus objectives in the Proposed Bacteria Provisions. Data collected from the bacteria monitoring program will be assessed to determine the impairment status of the waterbodies, and a TMDL will be developed if needed.

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