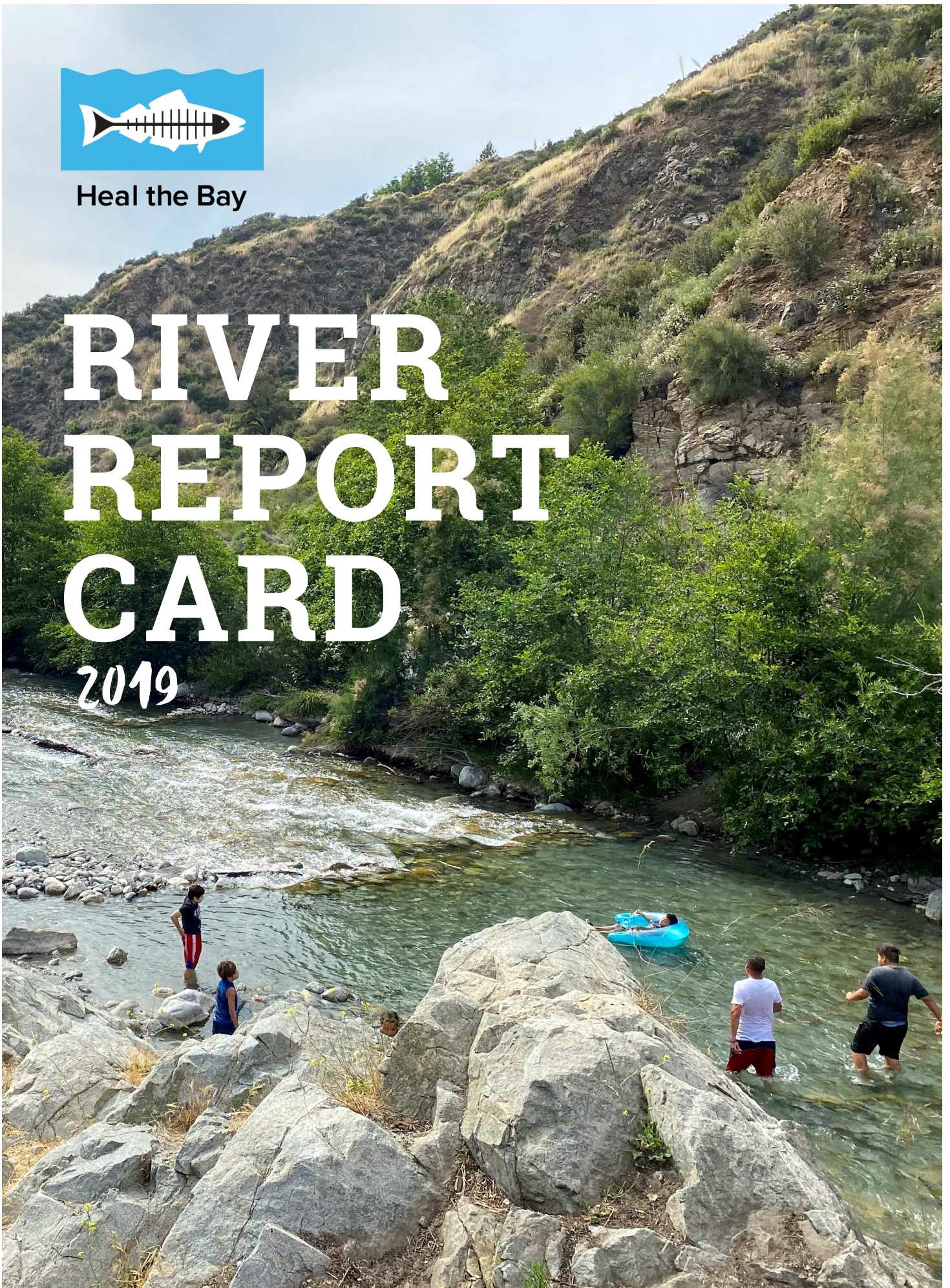
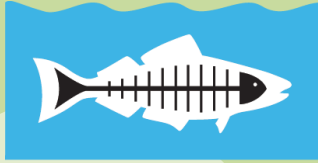


Heal the Bay

# RIVER REPORT CARD 2019







**Heal the Bay**

# **RIVER REPORT CARD**

## **2019**

**Heal the Bay believes people have a right to know about the quality of the water where they swim and play. We are pleased to provide our community with this science-based, easy-to-use report card. This annual report can be used to make decisions about where to get in the water, as well as policies to protect public health and the environment.**

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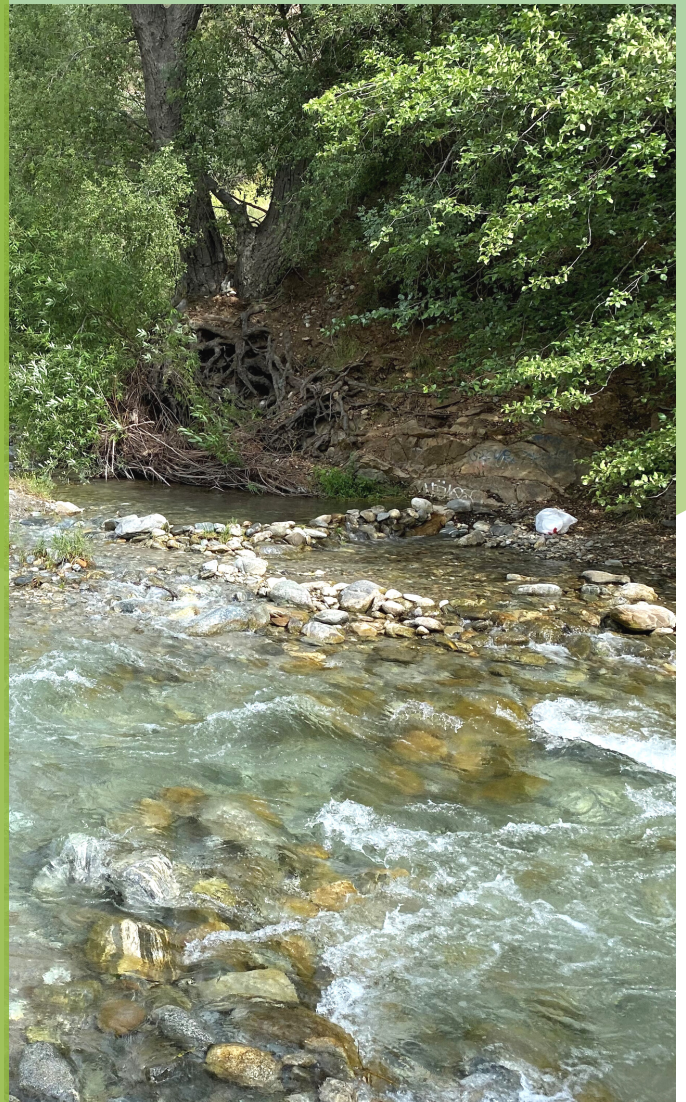
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FRESHWATER FAILS  
-10-

HONOR ROLL  
-11-

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-22-

RECOMMENDATIONS FOR  
STAYING SAFE  
-26-



East Fork at Graveyard Canyon



# Executive Summary

This is the second annual River Report Card. Heal the Bay developed the River Report Card program to provide easy-to-understand water quality information to people recreating in L.A. County's beautiful freshwater recreation areas. Freshwater recreation sites often lack standardized data, and the information that is available to the public is minimal and difficult to interpret. So Heal the Bay has stepped in to help let people make safe decisions on where and when it's safe to get in the water.

- Across all 28 River Report Card sites in 2019, 66% of grades were Green, 23% were Yellow, and 11% were Red.
- Across all of L.A. County, the proportion of Green grades assigned from 2018 to 2019 increased by nine percentage points, and all watersheds saw a decrease in Red grades issued.
- Seven swimming holes in L.A. County received 100% green grades including Hansen Dam Lake, which is a new addition to the River Report Card.
- The L.A. River Recreation Zones and San Gabriel River Watershed saw large increases in the number of Green grades issued in 2019.
- Only six recreation sites qualified for our Freshwater Fails list this year. This is an improvement from last year when there were 10.
- Hansen Dam at Tujunga Wash topped the Freshwater Fails list for the second consecutive year, but fortunately, it had fewer Red grades than it did in 2018.
- The Sepulveda Basin Recreation Zone of the L.A. River had three Freshwater Fails in 2019: Lake Balboa Boat Ramp, Bull Creek, and the Sepulveda Basin Middle site.
- Rattlesnake Park and Frogspot in the Elysian Valley of the L.A. River had another bad year of water quality coming in at numbers three and six on the Freshwater Fails list respectively.

Areas with urban development tended to have lower grades than natural areas, and most sites on the Freshwater Fails list are in urban landscapes. The sites in the L.A. River Watershed Recreation Zones are primarily surrounded by development and tended to have lower grades than the other sites in this report. This pattern is also supported by the results from our storm drain outfall monitoring in the L.A. River Watershed Elysian Valley Recreation Zone. We found that many storm drains were flowing consistently in dry



weather and had high levels of bacteria, acting as sources of contamination to the L.A. River Watershed Recreation Zones. Sites in the San Gabriel River Watershed and Upper L.A. River Watershed are in less developed areas and are likely not impacted by urban runoff. Unsurprisingly, the Honor Roll mainly consists of sites in these areas.

As the COVID-19 pandemic continues, many government agencies have had to reassess their allocation of resources. Unfortunately, some agencies have decided to put a hold on water quality monitoring during summer 2020. We think this is the wrong direction to go in the midst of a public health emergency. It is well established that water-borne illness is a serious public health issue that regularly sends people to their doctors and hospitals. We urge governments to continue monitoring so people know when it's safe to go in the water. Otherwise, we risk overburdening our already immensely strained healthcare system.

We expect people to increasingly turn to L.A. County's freshwater swimming holes to cool off and be active as cooling centers around the county are shuttered and summer travel plans are put on hold. More people might also be driven to L.A. County's rivers and streams because the pandemic created unequal access to coastal areas. At many ocean beaches, parking lots remain closed, limiting visits by people who do not live near the coast. This pandemic is a reminder of why it is so important to protect water quality and access everywhere.

## Introduction

Each year, multitudes of people swim, fish, kayak, run, bike, and nature-watch in and around Los Angeles (L.A.) County's rivers, streams, and lakes. These popular recreation areas are vital to many peoples' quality of life. Unfortunately, many freshwater recreation sites in L.A. County suffer from fecal indicator bacteria (FIB) pollution, which indicate the presence of pathogens that can cause infections, skin irritation, respiratory illness, and gastrointestinal illness. FIB pollution sources are typically from urban runoff, leaks or spills from wastewater collection systems, illicit or illegal discharges, and failing septic systems. Across the United States, millions of people contract these waterborne illnesses after recreating in freshwater, resulting in billions of health care costs<sup>1,2</sup>.

Unlike ocean beaches, there is little oversight, standardization, or funding for FIB monitoring and public notification of freshwater swimming and recreation areas. Many freshwater sites are monitored for regulatory purposes, such as stormwater and

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<sup>1</sup> DeFlorio-Barker, S., C. Wing, R.M. Jones, S. Dorevitch. 2018. Estimate of incidence and cost of recreational waterborne illness on United States surface waters. *Environmental Health* 17:3

<sup>2</sup>[https://www.cdc.gov/mmwr/volumes/69/wr/mm6925a3.htm?s\\_cid=mm6925a3\\_w&deliveryName=USCDC\\_415-D\\_M30273](https://www.cdc.gov/mmwr/volumes/69/wr/mm6925a3.htm?s_cid=mm6925a3_w&deliveryName=USCDC_415-D_M30273)



non-point source pollution. But, the datasets are neither compiled in one location, nor shared with the public in a timely manner. Furthermore, if the monitoring is specifically for stormwater regulation and not recreation, the sampling may not be in the most appropriate location or at a frequency that is protective of public health. Even the little recreational FIB monitoring that is done is not adequate. Water in recreation areas is generally not tested year-round, and there are many sites that go unmonitored. On top of that, data for monitored recreation zones are often difficult to access and interpret, leaving the public uninformed of potential dangers.



*Heal the Bay's Stream Team is trained to collect bacteria samples and other water quality assessments.*

To help alleviate this issue, Heal the Bay collects samples and analyzes water quality at six recreation sites in L.A. County, compiles water quality monitoring data at an additional 22 locations, and transforms the data into easily understood, color-coded grades of Red, Yellow, and Green. The River Report Card is accessible, free of charge, online to ensure that the information is widely available. Heal the Bay informs the public, public health authorities, regulatory agencies, and policy-makers of potential health risks; advocates for recreation-targeted education; encourages enhanced monitoring; and recommends ways to improve water quality.



As human-induced climate change continues to take hold, water quality issues will be exacerbated. In the coming decades, many of Southern California's ocean beaches will disappear as sea level rises<sup>3</sup>, and city dwellers will be subject to hotter air temperatures<sup>4</sup>. It is likely that people will increasingly turn to freshwater recreation sites to keep active and cool. Therefore, it is extremely important that our oceans, rivers, lakes, and streams are clean and safe. We urge government officials to take immediate action on freshwater monitoring and climate change.

## Methodology

### Sampling, Locations, and Dates

Heal the Bay collects water samples weekly during summer months at six recreational sites in L.A. County. Two sites are located in the Malibu Creek Watershed and four sites are located in the Los Angeles (L.A.) River Watershed. Heal the Bay uses the Defined Substrate Technology (DST) method to quantify fecal indicator bacteria (total coliform, *E. coli*, and *Enterococcus*) utilizing Colilert™ and Enterolert™ (IDEXX, Westbrook, ME). Any samples collected within three days of 0.1 inches or more of rain were not included in this analysis because of the negative impact rain has on water quality. We advise the public to avoid contact with the water for at least three days after a rain event of 0.1 inches or more. Rainfall poses a flood/swift water risk and washes harmful contaminants into waterways.

Heal the Bay also compiles water quality data from monitoring programs and government agencies that oversee some of the same locations that Heal the Bay monitors as well as 22 other locations. Typically, agencies collect samples on a weekly basis and quantify levels of *E. coli* only. For the L.A. River Watershed, data is collected and shared by the Los Angeles River Watershed Monitoring Program (LARWMP)<sup>5</sup> and City of L.A. Bureau of Sanitation and the Environment (LASAN). The locations in the San Gabriel River Watershed are monitored by the San Gabriel River Regional Monitoring Program (SGRRMP).<sup>6</sup> Data have been collected by these groups for many years and were made public in 2017 in the L.A. River Watershed and in 2018 in the San Gabriel River Watershed. Site locations, monitoring groups, and date ranges are detailed in Appendix A.

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<sup>3</sup> <https://www.usgs.gov/news/disappearing-beaches-modeling-shoreline-change-southern-california>

<sup>4</sup> Sun, F., D.B. Walton, and A. Hall. 2015. A hybrid dynamical–statistical downscaling technique, part II: End-of-century warming projections predict a new climate state in the Los Angeles region. *Journal of Climate* 28 (12): 4618–4636.

<sup>5</sup> <https://www.watershedhealth.org/larwmp>

<sup>6</sup> <http://sgrrmp.org/>



Heal the Bay began monitoring storm drain outfalls in 2017 in the Elysian Valley Recreation Zone of the L.A. River. Water samples were collected from flowing storm drain outfalls in the recreation zone and upstream of the recreation zone to Glendale Blvd. The right side of the River (facing downstream) was assessed from Oros St. at the downstream end to Glendale Blvd at the upstream end; the left side of the River was assessed for a shorter distance due to limited accessibility, from Glendale Blvd to the Bowtie Parcel. A full list of outfall locations is in Appendix B.

Complete field and laboratory protocols are available in Heal the Bay's Quality Assurance Project Plans (QAPP), which were approved by the U.S. EPA, reviewers from the California State Water Resource Control Board, and the City of L.A. Bureau of Sanitation and Environment, Environmental Monitoring Division.

## Grading

Heal the Bay developed its own grading methodology to transform technical information into an easy-to-understand format. Grades are presented as Red, Yellow, or Green based on up to four parameters: single sample *E. coli* level, geometric mean *E. coli* level, single sample *Enterococcus* level, and geometric mean *Enterococcus* level.

- **Green:** Zero parameters exceeded; low risk of illness when there is water contact.
- **Yellow:** One to half of the parameters exceeded; moderate risk of illness when there is water contact.
- **Red:** More than half of the parameters exceeded; high risk of illness when there is water contact.

A single sample reflects the water quality at the time of sampling while a geometric mean gives an indication of water quality over the last 30-days; it is a type of average that is not as heavily affected by very high or very low values. For each parameter, the value was determined to be under (not exceeding) or at/over (exceeding) the regulatory or health limit (Table 1).

	State Water Board Basin Plan Water Quality Objectives <sup>a</sup>		U.S. EPA 2012 Recreational Water Quality Criteria <sup>b</sup>	
			<i>For illness rate of 32 per 1000</i>	
Fecal Indicator Bacteria	Single Sample	Geometric Mean	Statistical threshold value (STV)	Geometric Mean
<i>Enterococcus</i>	N/A	N/A	<b>110 cfu/100ml</b>	<b>30 cfu/100ml</b>
<i>E. coli</i>	<b>235/100ml</b>	<b>126/100ml</b>	320 cfu/100ml	100 cfu/100ml

**Table 1.** Limits for freshwater fecal indicator bacteria. Heal the Bay uses the bold limits in the River Report Card.

<sup>a</sup> State Water Resource Control Board Basin Plan for Coastal Watersheds of Los Angeles & Ventura Counties. Available at: [https://www.waterboards.ca.gov/losangeles/water\\_issues/programs/basin\\_plan/basin\\_plan\\_documentation.html](https://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/basin_plan_documentation.html)

<sup>b</sup> U.S. EPA. 2012. Recreational Water Quality Criteria. Available at:

<http://water.epa.gov/scitech/swguidance/standards/criteria/health/recreation/upload/RWQC2012.pdf>

We used the geometric mean and single sample *E. coli* objectives for freshwater designated for water contact recreation (REC-1) from the State Water Board's Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties.<sup>7</sup> The State Water Board updated their bacteria objectives for *E. coli* in freshwater in August, 2018<sup>8</sup>. In our report, we used the standards that were in place during monitoring and will reassess the use of these standards in our upcoming methodology update. For *Enterococcus*, we used thresholds established in the U.S. EPA's 2012 Recreational Water Quality Criteria.<sup>9</sup>

Grades were issued approximately weekly (depending on sampling frequency) during summer months and were determined by the number of bacteria health limits that were exceeded. Sites were graded on the information that was available and the number of parameters varied from one to four, depending on whether both *E. coli* and *Enterococcus* were being measured and whether there were enough samples to calculate a geometric mean. Geometric means were calculated when there were a minimum of four samples within a 30-day period.

<sup>7</sup> [https://www.waterboards.ca.gov/losangeles/water\\_issues/programs/basin\\_plan/basin\\_plan\\_documentation.html](https://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/basin_plan_documentation.html)

<sup>8</sup> <https://www.waterboards.ca.gov/bacterialobjectives/>

<sup>9</sup> <https://www.epa.gov/wqc/2012-recreational-water-quality-criteria-documents>





*Heal the Bay's Stream Team about to take a water sample at the Rock Pool in Malibu Creek State Park.*

## Results

For our analysis, sites were grouped by watershed except the L.A. River Watershed was further split into sites within the official recreation zones and popular recreation sites outside of those recreation zones. Each site was compared to grades across all sites in L.A. County and across all sites in that watershed or zone. Grades were also compared to previous years of monitoring (shown in Appendices C & D) to analyze water quality improvement.

Additional detailed results are available in Appendices E-I, including sample sizes, single sample exceedance numbers and rates, bacteria ranges, and geometric means for each monitoring site and year.



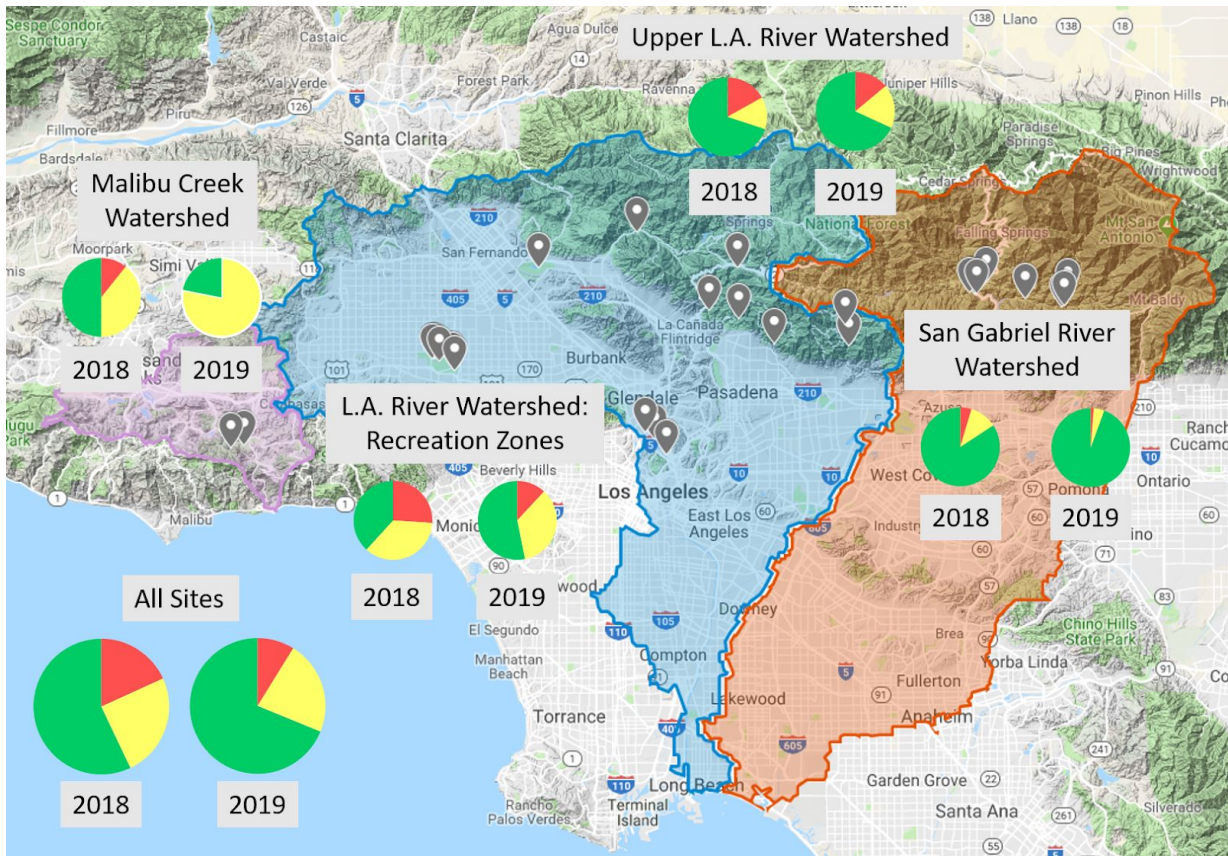
# LOS ANGELES COUNTY



Los Angeles River



## Los Angeles County Overview



**Figure 1:** 2018 and 2019 water quality grade percentages for monitoring sites in L.A. County, Malibu Creek Watershed, L.A. River Watershed Recreation Zones, Upper L.A. River Watershed, and San Gabriel River Watershed. Percentages of Green, Yellow, and Red grades are shown for each area and season.

Across all 28 sites in 2019, 66% of grades were Green, 23% were Yellow, and 11% were Red (Figure 1). Sites in the L.A. River Watershed Recreation Zones received 54% Green, 30% Yellow, and 16% Red grades. The San Gabriel River Watershed had 94% Green, 4% Yellow, and 1% Red grades; the Upper L.A. River Watershed Sites had 68% Green, 18% Yellow, and 14% Red grades. Malibu Creek Watershed sites received 22% Green, 78% Yellow, and 0% Red grades in 2018 (Figure 1).

Of the 28 sites included in this report, 14 showed an increase in the percentage of Green grades issued from 2018 to 2019, and two others had 100% green grades in 2018 and 2019. This indicates an overall improvement in grades; however, there are some sites that saw a decrease in water quality (Appendices C & D).

The San Gabriel River Watershed had the highest number of sites that improved at five, in addition to two sites that had 100% Green grades in 2018 and 2019. Eight sampling sites in this report showed a decrease in percentage of Green grades from 2018 to 2019, and decreases occurred at sites in all watersheds (Appendices C & D). There were two sites monitored in the Upper L.A. River Watershed not sampled in 2019 so improvement

could not be analyzed. Another three sites in the Upper Watershed were newly sampled in 2019.

Malibu Creek Watershed showed an overall decrease in Green grades by 28 percentage points from 2018. This watershed saw the most dramatic decrease in water quality; however, none of the recreation sites in this watershed received a Red grade in 2019. Malibu Creek Watershed had the smallest proportion of Green grades in 2019 with 22%. This is considerably lower than the L.A. River Watershed Recreation Zones which had the second lowest proportion of green grades with 54%.

While the L.A. River Watershed Recreation Zone sites occupied Three of the six spots on the Freshwater Fails list, water quality in these zones increased compared to last year. The proportion of Green grades issued in 2019 was 15 percentage points higher than in 2018.

Water Quality in the Upper L.A. River Watershed decreased slightly from 2018 to 2019 with a two percentage point decrease in Green grades issued. This watershed also had three sites on the Honor Roll and three sites on the Freshwater Fails list.

The San Gabriel River Watershed showed a 10 percentage point increase in the proportion of Green grades issued from 2018 to 2019, and 7 of the Honor Roll sites were in this watershed.



# Freshwater Fails

## Top 10 Freshwater Sites With High Risk

The Freshwater Fails list is comprised of the recreation sites that received the highest percentages of Red grades during the 2019 recreation season (Table 2). Red grades must comprise at least 10% of the grades issued over the summer to make it on the list. All 2019 Freshwater Fails are located in the L.A. River Watershed. The percentages of Red grades that landed these sites on the Fails list are generally lower than in 2018 when Hansen Dam at Tujunga Wash, the number one Fail, had 80% Red grades for example.

Rank	Site	Watershed	% Red
1	Hansen Dam at Tujunga Wash*	Upper L.A. River Watershed	44
2	Lake Balboa Boat Ramp*	Upper L.A. River Watershed	43
3	Rattlesnake Park	L.A. River Watershed: Recreation Zones	41
4	Bull Creek*	Upper L.A. River Watershed	22
5	Sepulveda Basin Middle*	L.A. River Watershed: Recreation Zones	16
6	Frogspot	L.A. River Watershed: Recreation Zones	15

**Table 2:** Freshwater recreation sites across L.A. County that received the highest percentages of Red grades from Heal the Bay during the 2019 recreation season. Sites marked with \* were graded using only *E. coli* data.

# Honor Roll

## Top 10 Freshwater Sites With Low Risk

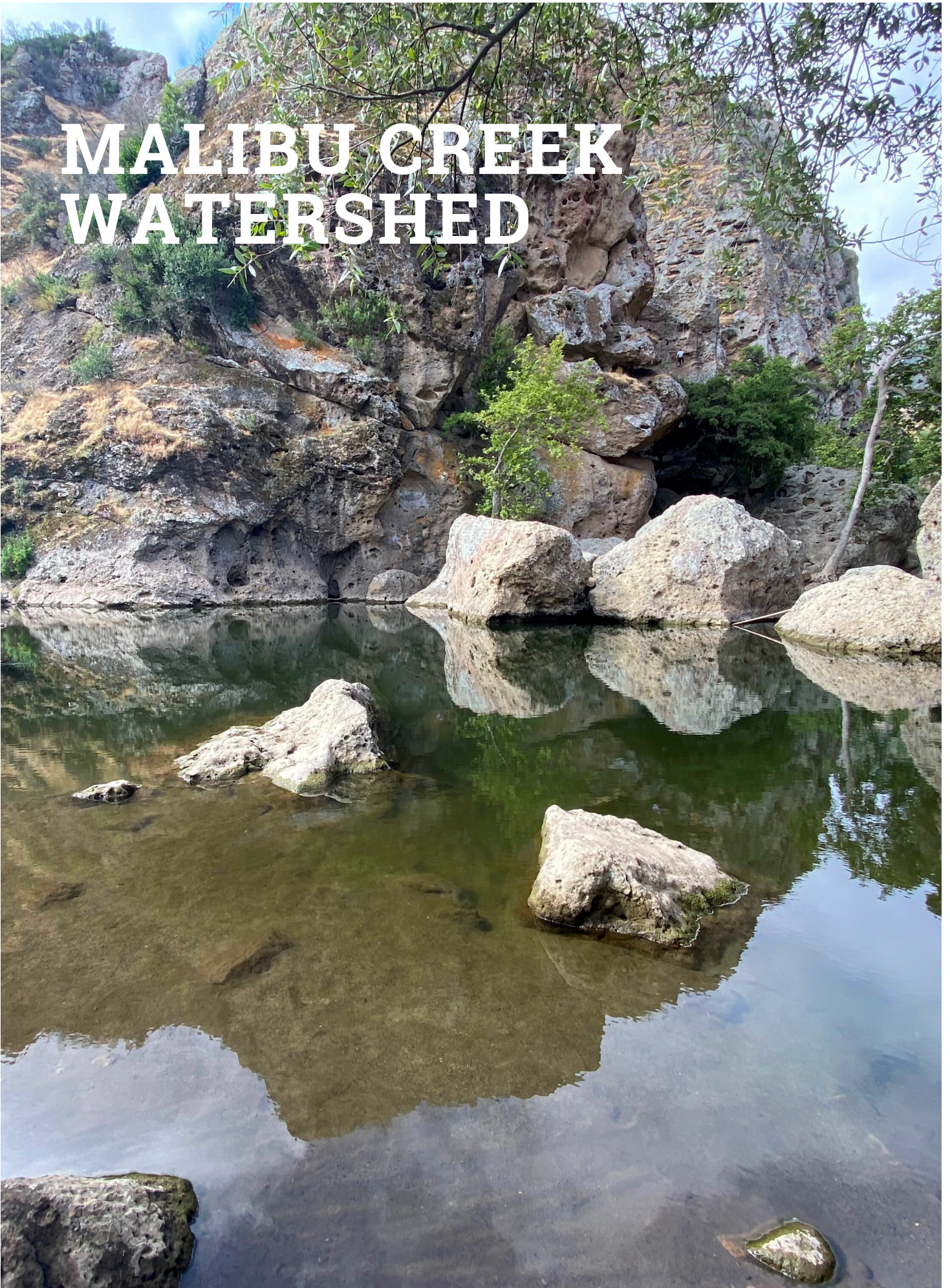
The Honor Roll is comprised of freshwater recreation sites with the highest percentages of Green grades issued during the 2019 recreation season. Seven of the ten sites on this list are in the San Gabriel River Watershed, and three sites are in the Upper L.A. River Watershed. Seven of the sites received 100% Green grades during the 2019 recreation season.

Rank	Site Name	Watershed	% Green
1-7	East Fork at Graveyard Canyon*	San Gabriel River Watershed	100
1-7	Gould Mesa*	Upper L.A. River Watershed	100
1-7	Lower West Fork*	San Gabriel River Watershed	100
1-7	Upper Cattle Canyon*	San Gabriel River Watershed	100
1-7	Upper East Fork*	San Gabriel River Watershed	100
1-7	Upper West Fork*	San Gabriel River Watershed	100
1-7	Hansen Dam Lake*	Upper L.A. River Watershed	100
8-10	Lower North Fork*	San Gabriel River Watershed	94
8-10	Switzer Falls*	Upper L.A. River Watershed	94
8-10	Upper North Fork*	San Gabriel River Watershed	94

**Table 3:** Freshwater recreation sites across L.A. County that received the highest percentages of Green grades from Heal the Bay during the 2019 recreation season. Sites marked with \* were graded using only *E. coli* data.



# MALIBU CREEK WATERSHED



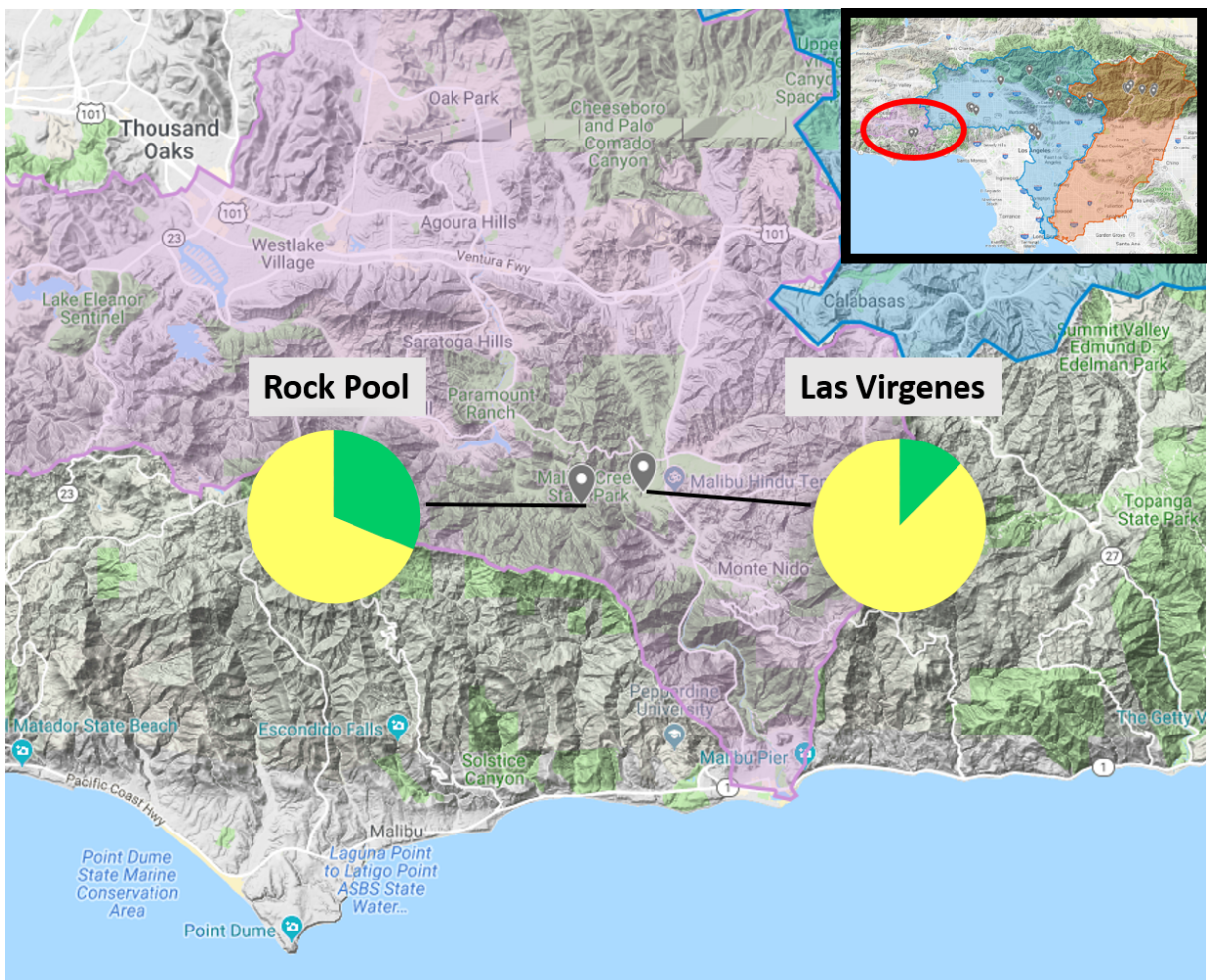
Rock Pool in Malibu Creek State Park



## Malibu Creek Watershed Overview

Heal the Bay has monitored two recreation sites in the Malibu Creek Watershed since 2014: Malibu Creek at the Rock Pool and Las Virgenes Creek at Craggs Road bridge. The sites are swimming holes in Malibu Creek State Park, making them easy to access and popular for recreation.

Both sites are listed as impaired for bacteria by the State Water Board and U.S. EPA. The sites' grades are based on two FIB, *E. coli* and *Enterococcus*.



**Figure 2:** Malibu Creek Watershed grade percentages for the 2019 monitoring season. Water quality grades were calculated using *E. coli* and *Enterococcus* data.

The Rock Pool had 31% Green, 69% Yellow and zero Red grades in 2019 (Figure 2). This site has a below average percentage of Green grades compared to all sites in the County (66%). Unfortunately, 2019 saw a drastic 47 percentage point decrease in Green grades

from 2018. One positive is that Rock Pool has not been issued a red grade in three years (Appendices C & D).

Las Virgenes had 13% Green, 88% Yellow and zero Red grades in 2019 (Figure 2). This site had a proportion of Green grades far below the average of L.A. County (66%). Summer 2019 was the first time since 2014 that Red grades were not issued for this site. However, the proportion of Green grades decreased by nine percentage points from 2018 (Appendices C & D).



*Heal the Bay's Stream Team taking water quality samples in the L.A. River.*



# SAN GABRIEL RIVER WATERSHED

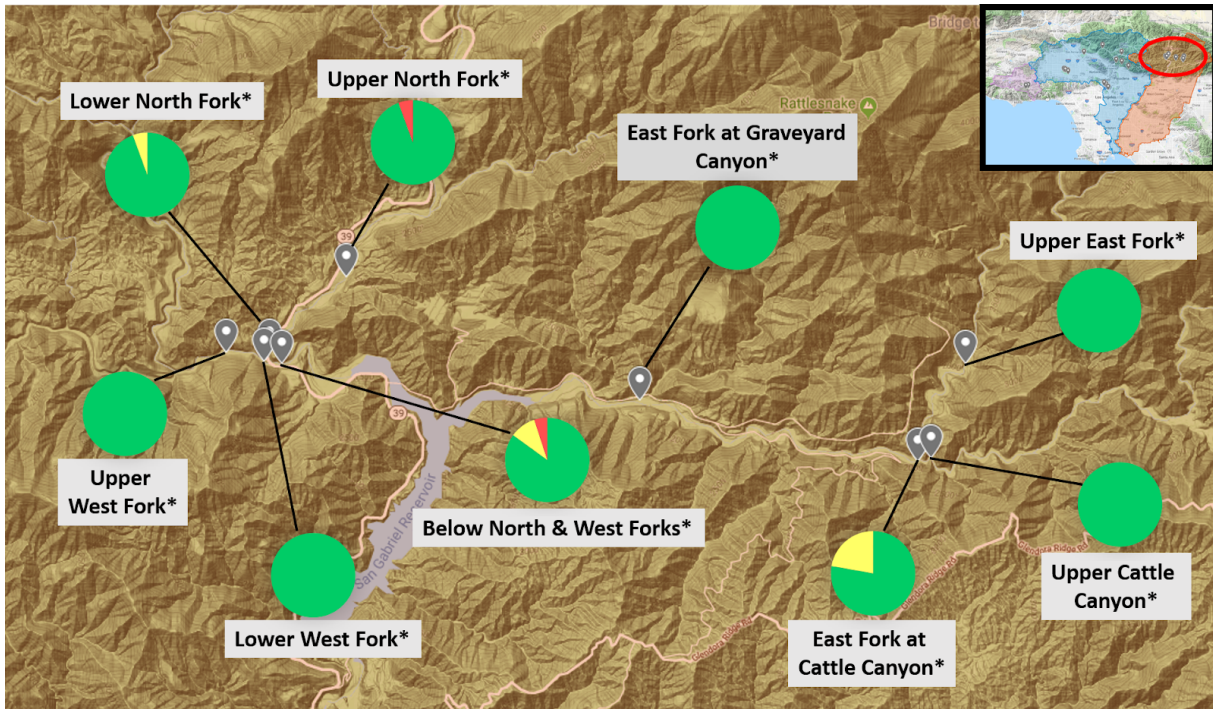


Oak Canyon



## San Gabriel River Watershed Overview

The San Gabriel River Watershed contains nine sites that are commonly used for recreation within the Angeles National Forest. Water quality monitoring is conducted by SGRRMP, and includes testing for *E. coli* only. While there are many human visitors to these sites, the National Forest has little urban development upstream.



**Figure 3:** San Gabriel River Watershed grade percentages for the 2019 monitoring season. Sites marked with \* were graded using only *E. coli* data.

Upper East Fork and Upper Cattle Canyon sites had 100% Green grades for a second straight year (Figure 3; Appendices C & D). East Fork at Graveyard Canyon, Lower West Fork, and Upper West Fork also received 100% Green grades in 2019 (Figure 3). East Fork at Graveyard, and Upper West Fork both received 94% Green Grades in 2018, and Lower West Fork had a major improvement in water quality since 2018 when it was issued 41% Green grades (Appendices C & D). All five of these sites had higher than average percentages of Green grades compared to the San Gabriel River Watershed (94%) and all sites in L.A. County (66%).

The Upper North Fork was issued Green grades on 94% of the sampling days and Red for 6% in 2019 (Figure 3). This site had Green grades on 100% of the sampling days in 2018 so there was a decrease in water quality this past year (Appendices C & D). Despite the decrease in water quality and having the average proportion of Green grades for its watershed (94%), this site was still issued a higher than average number of Green grades compared to all sites in L.A. County (66%).

The Lower North Fork received 94% Green grades and 6% Yellow grades in 2019 (Figure 3). This is a large improvement in water quality from 2018 when it received Green grades on 47% of sampling days (Appendices C & D). This improvement gives this site average water quality for the San Gabriel Watershed (94%) and a higher than average number of Green grades compared to all sites in L.A. County (66%).

The San Gabriel River, below the North and West Forks site, received 83% Green, 11% Yellow and 6% Red grades in 2019 (Figure 3). The percentage of Green grades issued is slightly higher than in 2018 (81%), and the number of Red grades is slightly lower than 2018 (Appendices C & D). The percentage of green grades is below the average of the San Gabriel Watershed (94%) but above the average for all sites in L.A. County (66%).

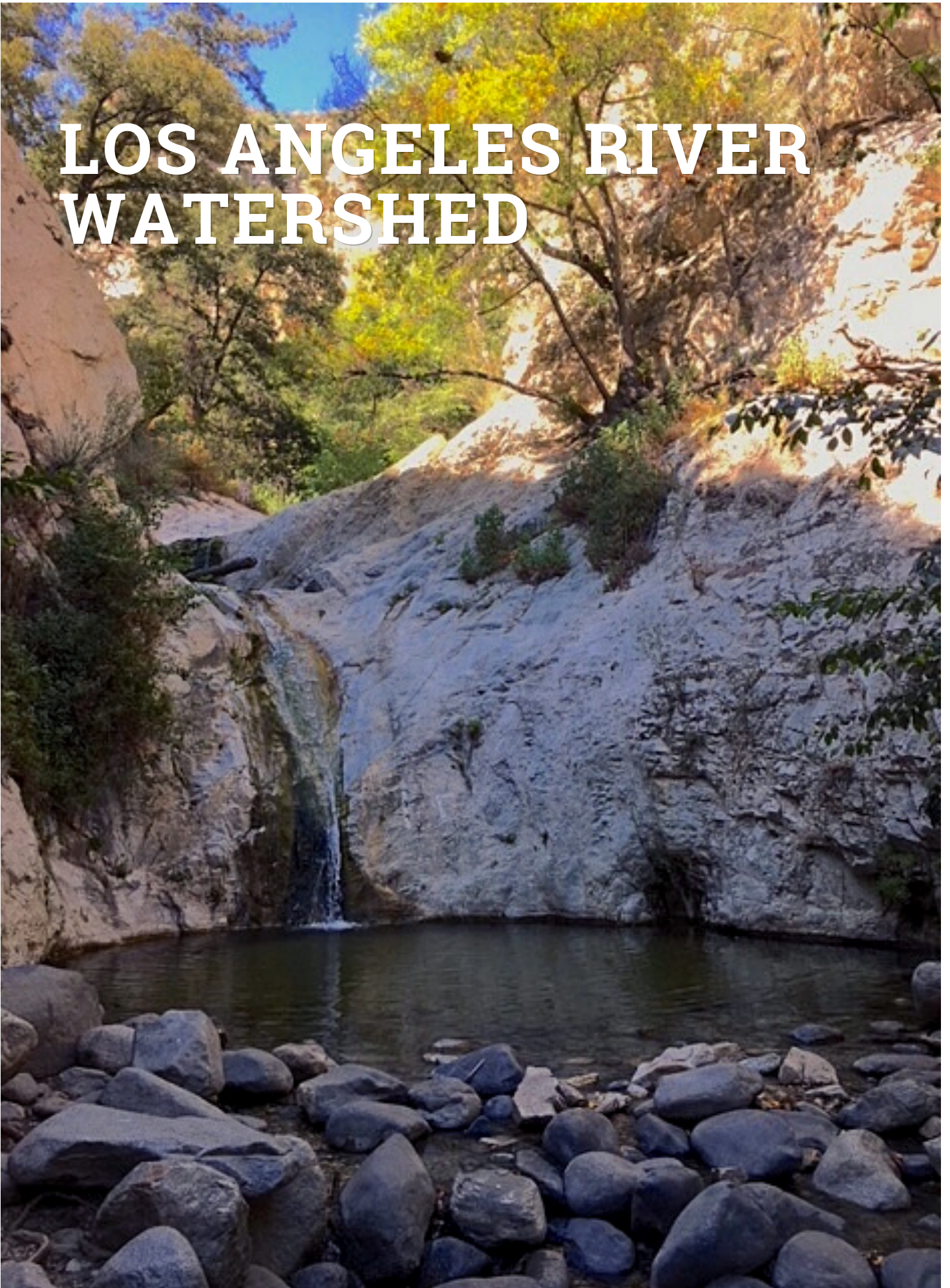
East Fork at Cattle Canyon was issued Green grades on 78% of the days sampled in 2019 and 22% Yellow grades (Figure 3). This is a drop in water quality from 2018 when it received 100% Green grades (Appendices C & D). This site had water quality below the average of the San Gabriel Watershed (94%) but above the average for all L.A. County sites (66%).



*Lower North Fork in the San Gabriel River Watershed*



# LOS ANGELES RIVER WATERSHED

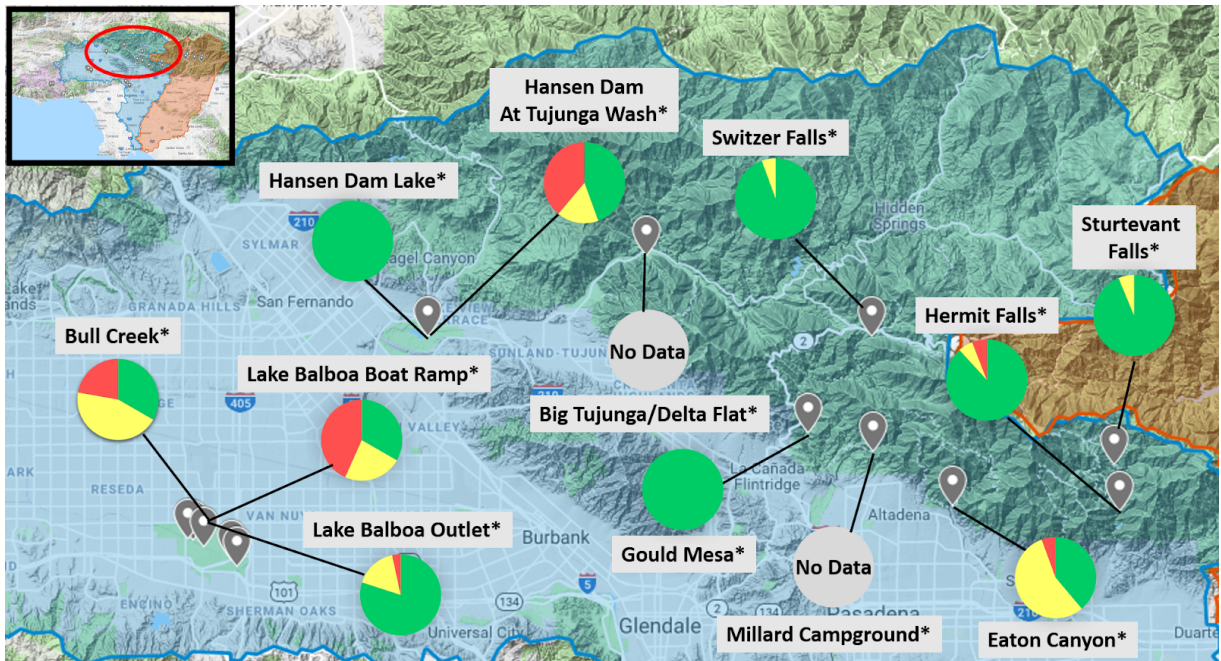


Switzer Falls



## Upper Los Angeles River Watershed Overview

Eight swimming sites in the L.A. River Watershed were monitored by LARWMP. These sites are in tributaries of the L.A. River Main Channel, and many of them are within the Angeles National Forest. Grades for these sites are based only on *E. coli*. Hansen Dam Lake was added to the monitoring program in Summer 2019, and LASAN expanded their monitoring in the upper watershed to two more sites: Lake Balboa Outlet, and Lake Balboa Boat Ramp. Millard Campground, and the Big Tujunga/Delta Flat site were not monitored in 2019 so the overall number of monitored locations increased by one. However, we urge LARWMP to monitor Millard Campground and Big Tujunga/Delta Flat in 2020 as they are still popular recreation areas.



**Figure 4:** L.A. River Upper Watershed grade percentages for the 2019 monitoring season. Sites marked with \* were graded using only *E. coli* data.

Gould Mesa and Hansen Dam Lake both received Green grades on 100% of sampling days in 2019 (Figure 4). This is a big improvement for Gould Mesa which received only 56% Green grades and 19% Red grades in 2018 (Appendices C & D). Hansen Dam Lake is a newly monitored site and we hope it continues to have excellent water quality. Both of these sites had higher than average Green grades compared to the Upper L.A. River Watershed (68%) and all sites in L.A. County (66%).

Switzer Falls received 94% Green, 6% Yellow, and zero Red grades in 2019 (Figure 4), which is a higher percentage of Green grades on average than all sites in the Upper L.A. River Watershed (68%) and L.A. County (66%). The grade composition for this site was similar in 2018 (Appendices C & D).

Sturtevant Falls received 94% Green grades and 6% Yellow grades during Summer 2019 (Figure 4). This was an increase from 2018 when it received 86% Green grades and 7% Red grades (Appendices C & D). This site had a higher than average number of Green grades issued compared to all sites in the Upper L.A. River Watershed (68%) and L.A. County (66%).

Hermit Falls earned 88% Green grades, 6% Yellow grades, and 6% Red grades in 2019 (Figure 4). Unfortunately, this was a decrease from 2018 when it received 100% Green grades (Appendices C & D). Despite the decrease in water quality, this site still earned a higher percentage of Green grades compared to the Upper L.A. River Watershed (68%) and all sites in L.A. County (66%).

During the Summer 2019 season 39% of the Grades at Eaton Canyon were Green, 56% were Yellow, and 6% were Red (Figure 4). This is an improvement over 2018 when this site only received 27% Green grades and appeared on the Freshwater Fails list (Appendices C & D). This site had a below average proportion of Green grades compared to the Upper L.A. River Watershed (68%) and L.A. County (66%).

Hansen Dam at Tujunga Wash was issued 39% Green grades, 17% Yellow grades, and 44% Red grades in 2019 (Figure 4). Water quality at this site was significantly lower in 2018 when only 5% of the grades calculated were green (Appendices C & D). Despite the improved water quality, the site still had a below average percentage of Green grades compared to the Upper L.A. River Watershed (68%) and L.A. County as a whole (66%). This is the second year in a row this site is the number one Freshwater Fail.

The grades for Bull Creek in Summer 2019 were 33% Green, 44% Yellow, and 22% Red (Figure 4). Water quality at this site substantially decreased from 2018 when 55% of the grades issued were Green (Appendices C & D), and this decrease was so big that it landed this site on our Freshwater Fails list. The water quality at this site was below average, having a proportion of Green grades lower than the Upper L.A. River Watershed (68%) and all sites in L.A. County as a whole (66%).

There were two newly monitored sites in the Sepulveda Basin area in 2019: Lake Balboa Lake Outlet and Lake Balboa Boat Ramp. Although these sites are close to the L.A. River main channel, they are technically upstream so they fall in the Upper Watershed. Boating and fishing are the two main activities allowed on Lake Balboa.



The Lake Balboa Lake Outlet received 80% Green grades, 17% Yellow grades, and 3% Red grades throughout the summer (Figure 4; Appendices C & D). While there is still much room for improvement in water quality, the lake outlet site still had a higher proportion of green grades compared to all sites in the Upper L.A. River Watershed (68%) and L.A. County (66%).

The Lake Balboa Boat Ramp regrettably had to make its River Report Card debut on the Freshwater Fails list. We calculated 33% Green grades, 23% Yellow grades, and 43% Red grades which was the second highest percentage of Red grades in 2019 (Figure 4; Appendices C & D). This site had a lower percentage of Green grades compared to all sites in the Upper L.A. River Watershed (68%) and L.A. County (66%).

## Los Angeles River Watershed Recreation Zones Overview

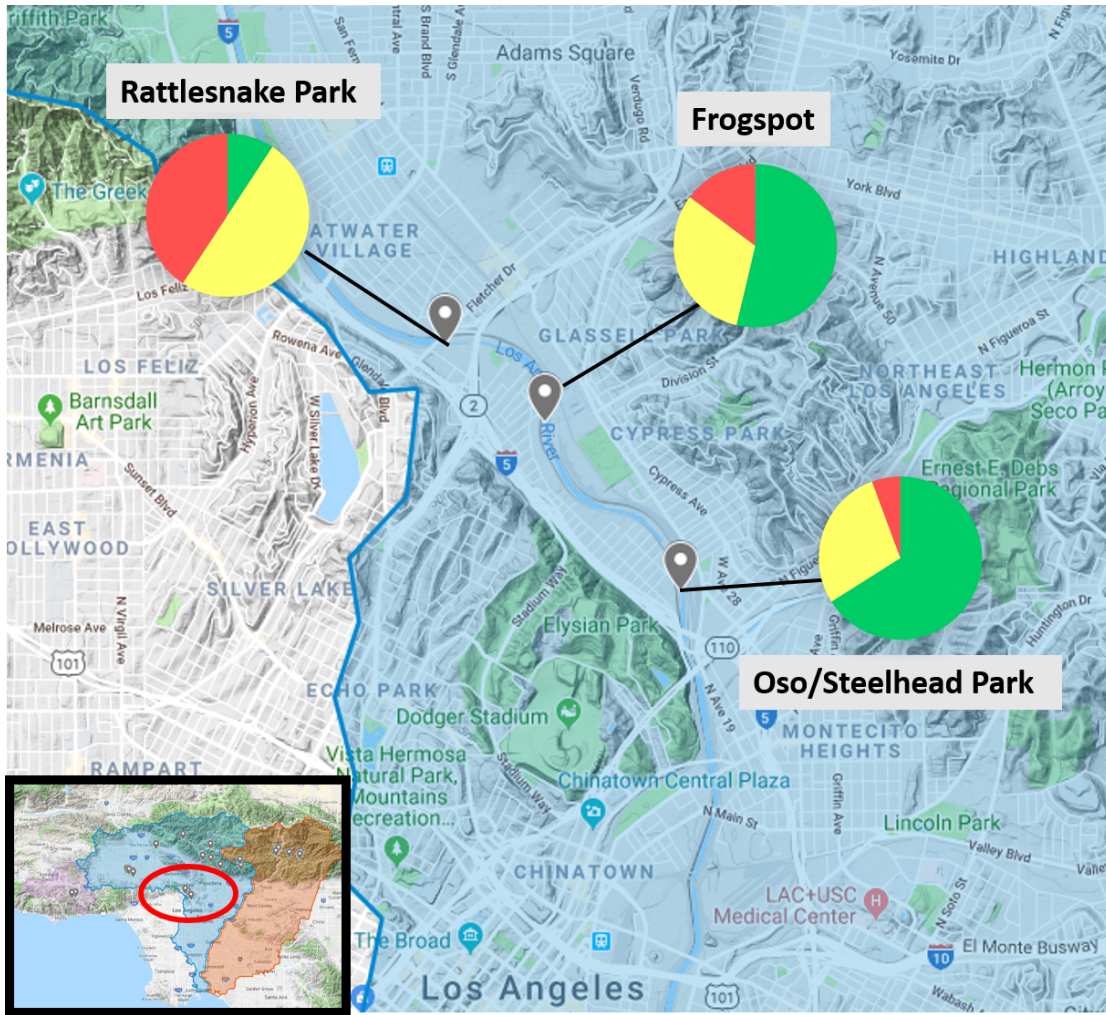


*A group gets set to kayak on the LA River near Burbank Blvd.*

Heal the Bay monitored four sites in the Los Angeles River Watershed Recreation Zones; one site is in the Sepulveda Basin recreation zone and three sites are in the Elysian Valley recreation zone. These sites are kayak entry and exit locations, and were selected as locations where people were most likely to come into contact with the water.

The three Elysian Valley sites were also monitored by LASAN beginning in 2017. An additional three sites were monitored by LASAN in the Sepulveda Basin Recreation Zone in the San Fernando Valley as part of their monitoring for the Tillman Water Reclamation

Facility. The grades for sites monitored by Heal the Bay are based on *E. coli* and *Enterococcus*, while the grades for the sites that are only monitored by LASAN are based solely on *E. coli*. For the sites that are monitored by Heal the Bay and LASAN, grades are based on both fecal indicator bacteria, however, samples collected by LASAN were tested only for *E. coli*.



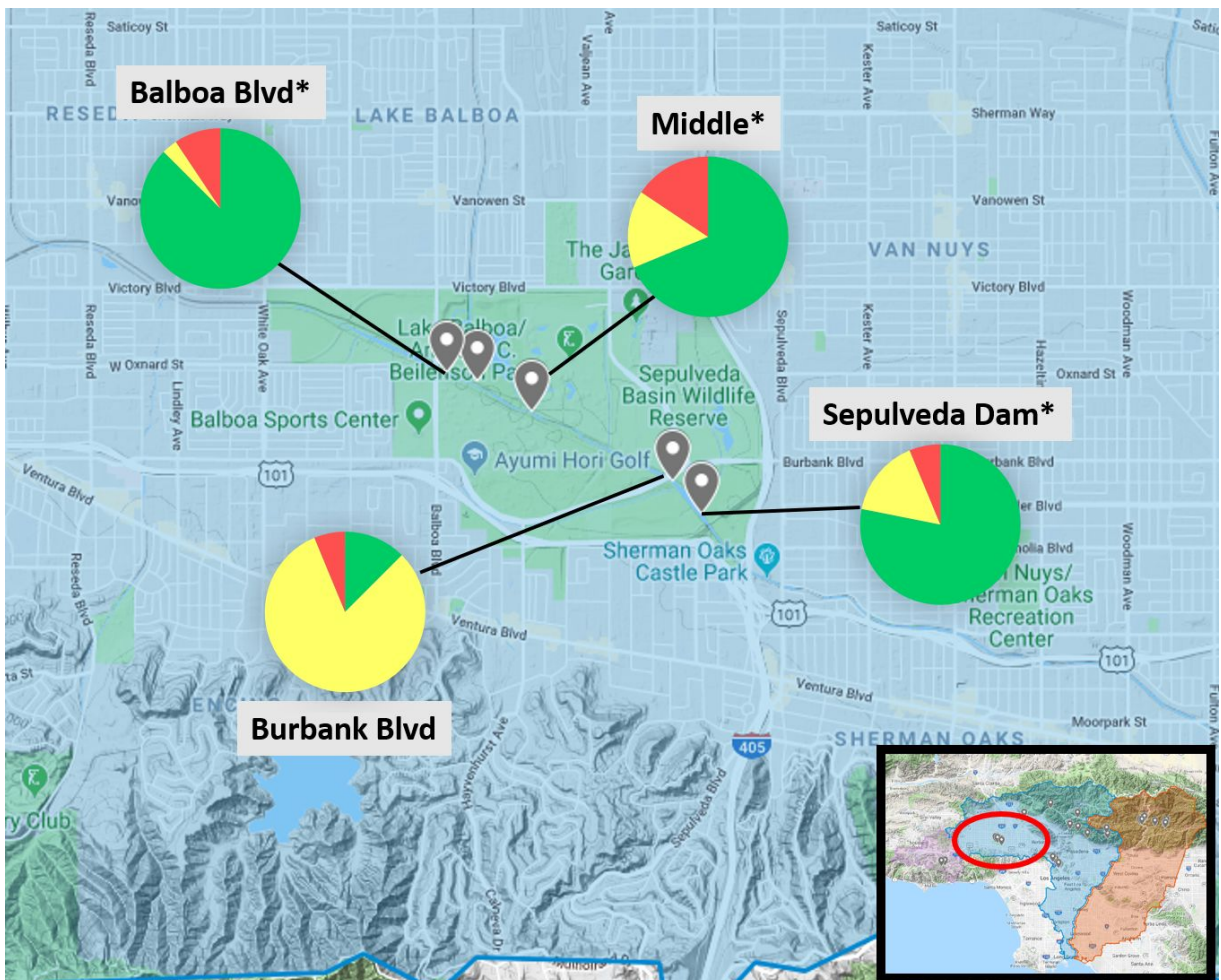
**Figure 5:** L.A. River Watershed Elysian Valley Recreation Zone grade percentages for the 2019 monitoring season. Water quality grades were calculated using *E. coli* and *Enterococcus* data.

During Summer 2019, Rattlesnake Park in the Elysian Valley was issued 9% Green grades, 50% Yellow grades, and 41% Red grades (Figure 5). The percentage of Green grades issued is an improvement from 2018 when no Green grades were calculated for this site (Appendices C & D). Even with improved water quality, the proportion of Green grades at Rattlesnake Park is still below the percentage for all L.A. River Watershed Recreation Zone sites (54%) and L.A. County sites (66%). Rattlesnake Park returned to the Freshwater Fails list in 2019 for the second straight year.



Frogspot (the middle location in the Elysian Valley) received 54% Green, 32% Yellow and 15% Red grades in 2019 (Figure 5). Overall, the proportion of Green grades at Frogspot is equal to the percentage for all L.A. River Watershed Recreation Zone areas (54%) and L.A. County sites (66%). Water quality at Frogspot actually improved from 2018 when 45% of the grades issued were Green (Appendices C & D). Unfortunately, it's high percentage of poor marks still made it one of the Freshwater Fails this year.

In 2019, Steelhead Park (the most downstream location and kayak exit spot in the Elysian Valley) received 66% Green, 28% Yellow, and 6% Red grades (Figure 5). Water quality improved from 2018 when Green grades were issued 23% of the days sampled, and it appeared on the Freshwater Fails list (Appendices C & D). The proportion of Green grades issued in 2019 is above the number issued for all L.A. River Watershed Recreation Zone sites (54%), but on par with all L.A. County sites (66%).



**Figure 6:** L.A. River Watershed Sepulveda Basin Recreation Zone grade percentages for the 2019 monitoring season. Sites marked with \* were graded using only *E. coli* data.

The Sepulveda Basin site at Balboa Blvd. received 88% Green, 3% Yellow and 9% Red grades during the 2019 monitoring season (Figure 6). This is better than the average

percentage of Green grades for all sites in the L.A. River Watershed Recreation Zones (54%) and L.A. County (66%). In 2018, the same percentage of Green grades was issued to this site, but there were zero Red grades so there was a decrease in water quality in 2019 (Appendices C & D).

In Summer 2019, The Middle site at Sepulveda Basin was issued 69% Green grades, 16% Yellow grades, and 16% Red grades (Figure 6). This is above the percentage of Green grades issued in the L.A. River Watershed Recreation Zones (54%) and slightly higher than the proportion of Green grades across all L.A. County recreation sites (66%). Water quality at this site vastly improved from 2018 when 15% of the grades were Green and it was a Freshwater Fail (Appendices C & D).

At the Sepulveda Basin Burbank Blvd. site we calculated 13% Green, 81% Yellow, and 6% Red grades in 2019 (Figure 6), giving it a lower percentage of Green grades compared to all sites in the L.A. River Watershed Recreation Zones (54%) and L.A. County (66%). The grades issued for this site were worse in 2018 with only 11% Green grades, and an appearance on the Freshwater Fails list (Appendices C & D).

The Sepulveda Dam site received 78% Green, 16% Yellow and 6% Red grades in 2019 (Figure 6). This is a decrease in water quality from 2018 when 95% of the Grades issued were Green and zero were Red (Appendices C & D). Despite the drop in water quality, Sepulveda Dam had a better than average proportion of Green grades for all L.A. River Watershed Recreation Zone sites (54%) and L.A. County sites (66%).



*The Sepulveda Basin Recreation Zone of the L.A. River.*



## Los Angeles River Watershed Storm Drain Outfalls Overview

Beginning in 2017, Heal the Bay investigated sources of bacterial pollution impacting the recreation zones in the L.A. River by monitoring storm drain outfalls in the Elysian Valley Recreation Zone (Appendix B). We monitored storm drains for a total of 16 weeks in 2019 from June to October. Storm drain flows can be unpredictable in dry weather because the water originates from acute events that are impossible to predict. Therefore, we were not able to sample every storm drain each week, and there were many storm drains that had no flow at all. In total, we collected at least one sample from 12 storm drains in the Elysian Valley in 2019. We compared bacteria levels to the single sample thresholds in Table 1 even though these values are typically only used for ambient water quality and not outfalls. Although, it should be noted that ocean outfalls are monitored in California, and those must adhere to the state bacteria standards.

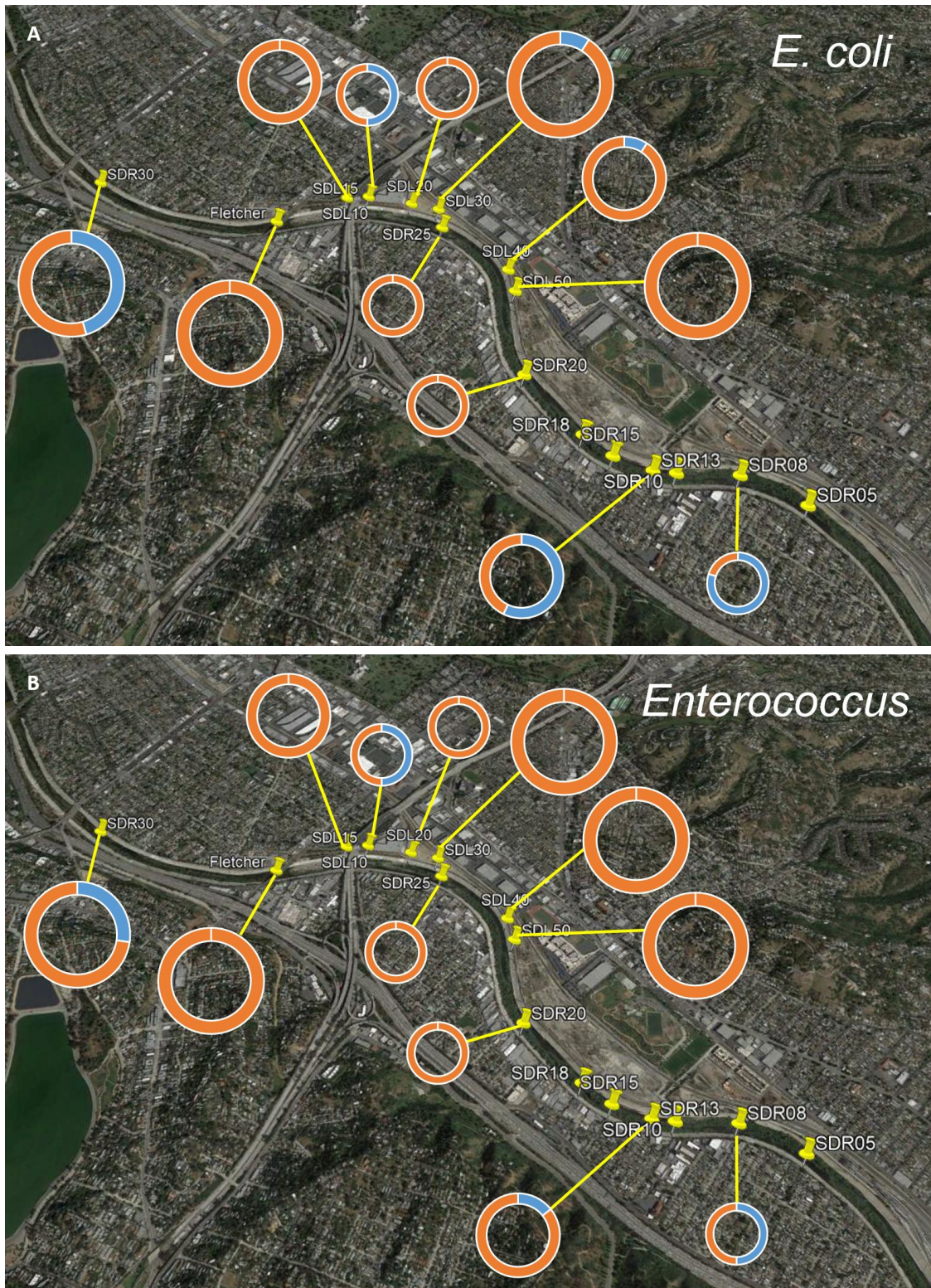
We found that many storm drains were consistently flowing throughout the summer despite little rainfall, and many of these storm drains had high levels of *E. coli* and *Enterococcus* (Figure 7 and Appendices B and I). Six of the storm drains had a 100% *E. coli* exceedance rate, and the other six storm drains had an *E. coli* exceedance rate of 43% or more. In eight of the storm drains, we found a 100% exceedance rate for *Enterococcus* (Appendix I). Of the other four storm drains (SDR08, SDR10, SDR30, SDL15) the lowest *Enterococcus* exceedance rate was 50%.

Storm drains SDR20, SDR30, SDL10, SDL30, SDL40, and SDL50 are larger storm drains (diameter or length is approximately 7 ft. or larger). Storm drains that had the highest average flows included: Fletcher, SDR30, SDL30, SDL40, and SDL50 (Appendix B).



Los Angeles Trade Technical College students taking storm drain water quality samples in the L.A. River.





**Figure 7:** Rates of fecal indicator bacteria exceedances at storm drain outfalls in the Elysian Valley Recreation Zone of the L.A. River. Samples were collected in Summer 2019. The pie charts show the percentage of samples that exceeded single sample thresholds in orange and the percentages of samples that did not exceed single sample thresholds in blue. The sizes of the pie charts correspond to the number of samples taken; small=1 to five samples taken, medium=6 to 10, large=11 to 16. Exceedance rates are shown for A) *E. coli* and B) *Enterococcus*.



# Conclusions

## **Most water quality grades are Green in natural environments and Yellow or Red in developed areas.**

Bacteria levels were generally below the regulatory standards on any given dry-weather day and there is a low risk of illness when coming into contact with the water. However, there is still a significant risk of getting sick from water contact 33% of the time during dry weather, which is high. To protect public health in these valuable recreational areas, government agencies must increase water quality monitoring and public notification while improving water quality at these sites.

Areas with urban development tended to have lower grades than natural areas, and most sites on the Freshwater Fails list are in urban landscapes (Table 2). The sites in the L.A. River Watershed Recreation Zones are primarily surrounded by development and tended to have lower grades than the other sites in this report. This pattern is also supported by the results from our storm drain outfall monitoring in the L.A. River Watershed Elysian Valley Recreation Zone. We found that many storm drains were flowing consistently in dry weather and had high levels of bacteria, acting as inputs of contamination to the L.A. River Watershed Recreation Zones. Fecal pollution originates from leaky and impaired sewage infrastructure in residential and commercially developed areas. Developed areas also have a large population of people who are effectively denied access to clean water and sanitation so these people have no choice but to carry out their vital bodily functions outside<sup>10</sup>.

Sites in the San Gabriel River Watershed and Upper L.A. River Watershed are in less developed areas and are likely not impacted by urban runoff. Unsurprisingly, the Honor Roll mainly consists of sites in these areas. We do not have any data on the number of visitors to these freshwater recreation sites; however, our evidence suggests that surrounding land use is the bigger driver of water quality. The San Gabriel River Watershed and Upper L.A. River Watershed are anecdotally popular during the summer months, yet water quality in those undeveloped areas remains high.

In the future, there should be more sites on the Honor Roll that are located in urban landscapes, and there should be more than seven sites in L.A. County that receive 100% Green grades. The percentages of Red grades for sites on the Freshwater Fails list should decrease as well. For comparison, most ocean beaches in California do not experience any bacteria exceedances in the summer. County and municipality officials must continue to work on mitigating the impacts that runoff has on water quality.

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<sup>10</sup> <https://www.innercitylaw.org/wp-content/uploads/2017/07/No-Place-To-Go-final.pdf>

## **Water quality improved from 2018 but there is room for further improvement.**

Two of the four watersheds included in this study had increases in the proportion of Green grades issued from 2018 to 2019, and all watersheds had a decrease in Red grades issued. Across the whole County, the proportion of Green grades assigned from 2018 to 2019 increased by 9 percentage points. Also, the percentage of Red grades issued to this year's top Freshwater Fail (44%) is considerably lower than the number one Fail from last year (80%). Three of the 2019 Freshwater Fails actually showed an increase in Green grades from 2018, which is a trend we hope continues.

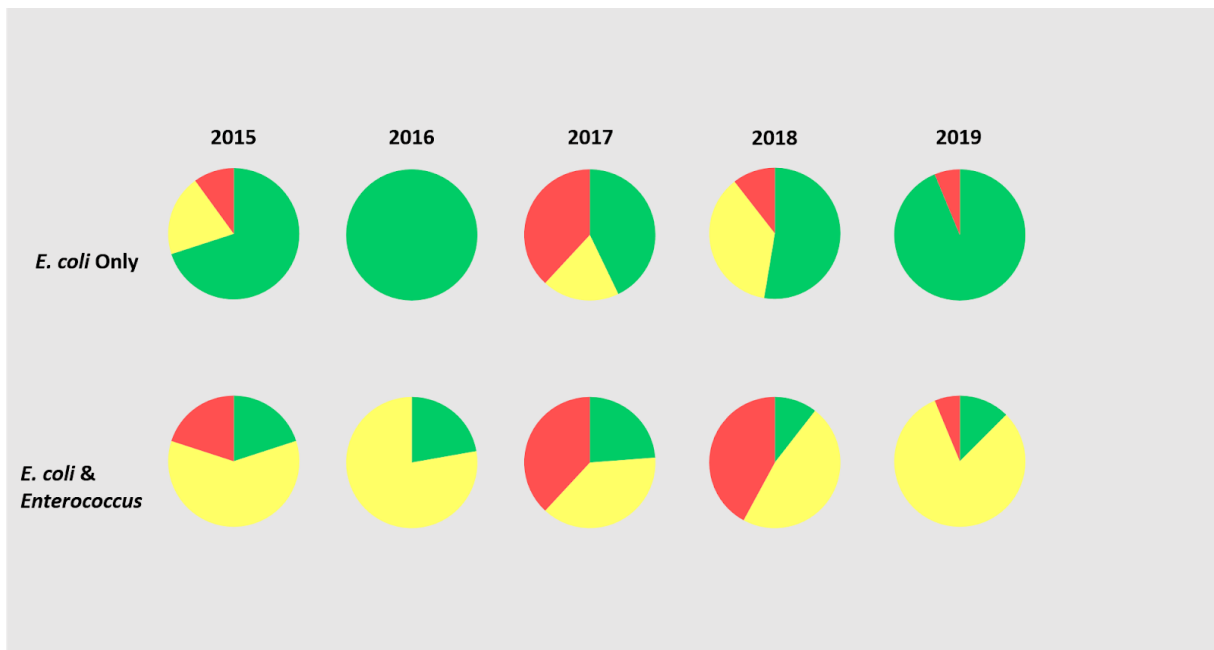
Despite the overall increase in water quality, there is still much room for improvement. There were 8 sites that showed an overall decrease in the proportion of Green grades from 2018. There were slightly more sites (14) that showed an overall increase or had 100% Green grades in 2018 and 2019. Therefore, nearly a third of the sites we grade actually had poorer water quality in 2019 compared to 2018. In addition, the Malibu Creek Watershed had an overall decrease in the proportion of Green grades issued to its sites. While the overall statistics are promising, we cannot ignore the fact that many recreation sites were more polluted than the year prior.

Several of the monitoring sites received very few Green grades throughout the summer. Sepulveda Basin at Burbank Blvd. and Las Virgenes received only two Green grades in 2019, indicating that bacteria levels exceeded the limit every day it was monitored except two. Rock Pool saw its percentage of green grades drop 47 percentage points from 2018. Frogspot experienced a 26 percentage point decrease, and Bull Creek experienced a 25 percentage point decrease from 2018.

## **There are differences between *E. coli* and *Enterococcus*.**

Grades that included *Enterococcus* as an indicator were generally lower than grades with only *E. coli*, and caution should be used when directly comparing grades for sites using different fecal indicator bacteria. For sites where we had both *Enterococcus* and *E. coli* data, we graded both indicators and found that grades worsened with both indicators compared to when we graded with *E. coli* only (Figure 8).





**Figure 8:** Differences in grade composition between *E. coli* only data and *E. coli* & *Enterococcus* combined data for the Sepulveda Basin site at Burbank Blvd. across all monitoring years.

This is likely due to the high exceedance rates of *Enterococcus* for both single samples and the geometric mean. Despite this, four of the six sites on our Freshwater Fails list (including the number one and number two Freshwater Fails sites) are only monitored for *E. coli*. Therefore, including *Enterococcus* in our grades is not the driver of poor water quality. This is also backed up by the strong trend we observed in land use and water quality.

There were very few *E. coli* exceedances independent of an *Enterococcus* exceedance (3), but there were many *Enterococcus* exceedances that were not coupled with *E. coli* exceedances (33). We draw two conclusions from this: 1) *Enterococcus* is a good indicator because *Enterococcus* exceedances capture nearly all of the *E. coli* exceedances; 2) *E. coli* is a less protective indicator because there can be high levels of *Enterococcus* on days where *E. coli* measurements are low. Solely monitoring for *E. coli* might be putting the public at unnecessary risk.

# River News

## COVID-19

As the COVID-19 pandemic continues, many government agencies have had to reassess their allocation of resources. Unfortunately, some agencies have decided to put a hold on water quality monitoring during summer 2020. We think this is the completely wrong direction to go in the midst of a public health emergency. It is well established that water-borne illness is a serious public health issue that regularly sends people to their doctors and hospitals. We call on governments to continue monitoring so people know where and when it is safe to go in the water. Otherwise, we risk overburdening our already strained healthcare system.

We expect people to increasingly turn to L.A. County's freshwater swimming holes to cool off and be active as cooling centers around the county are shuttered and summer travel plans are put on hold. More people might also be driven to L.A. County's rivers and streams because the pandemic created unequal access to coastal areas. At many ocean beaches, parking lots remain closed, limiting visits by people who do not live near the coast. This pandemic is a reminder of why it is so important to protect water quality and access everywhere.

Many of L.A. County's waterways and riparian corridors are used for shelter and basic needs of washing by people experiencing homelessness. Without access to clean water, sanitation, and health care this community can be disproportionately affected by poor water quality as well as COVID-19. Basic services such as shelter, health care, clean water, and restrooms must be provided to our unhoused neighbors to keep them safe.

## L.A. River Revitalization

As the climate changes, we can no longer afford to have a concretized river system that solely provides flood control. We need a river system that will help cool communities as temperatures rise, provide habitat for Los Angeles' unparalleled biodiversity, and serve as a greenspace where communities can recreate and connect with nature. Government agencies have identified this need, and have produced five major plans that will bring changes the L.A. River system:

- **L.A. River Master Plan (LARMP):** The LARMP is a plan created by L.A. County with the goal of transforming the L.A. River. The original Master Plan was drafted in 1996, and its main goal was to beautify the river while maintaining its functionality as a stormwater conveyance system. The 2020 update of the Master Plan was set



into motion to ensure the L.A. River has spaces that provide more benefits in addition to flood abatement and beautification. As stated in the plan, projects will reduce flood risk; improve parks and open space; improve river access; support the ecosystem; provide cultural and educational opportunities; address housing affordability and homelessness; improve local water resilience; and promote water quality. A draft plan is expected to be released to the public in summer 2020, with final adoption by the L.A. County Board of Supervisors to be determined (this process may be delayed due to COVID-19). Development of all projects under this plan is expected to happen by 2050. More information can be found at: <http://larivermasterplan.org/>.

- **Upper L.A. River and Tributaries Plan (ULART):** The ULART Working Group (formed by Assembly Bill 466 & Senate Bill 1126) developed this plan so disadvantaged communities in the L.A. River Watershed have the opportunity to implement projects along the river. As stated by the ULART Plan, the goals are to enhance the ecosystem; maintain and enhance flood management; increase opportunities for culture, arts, and recreation; and increase connectivity and green space along the river system. This plan has identified areas along the L.A. River and its tributaries where projects such as parks and bike paths can be designed and implemented. And, community members are encouraged to collaboratively develop project ideas and get them constructed. The plan was finalized and adopted in April 2020 and can be found at: <https://www.upperlariver.org/>.
- **Lower L.A. River Revitalization Plan:** The creation of this plan was set forth in Assembly Bill 530, and unlike the other plans discussed, has been in the implementation phase since 2018. The goals of this plan are to improve ecosystem function using nature-based solutions; create equitable access to the river; increase community connectivity; and create economic opportunities for local businesses without displacing residents. The Plan can be found at: <https://lowerlariver.org/>.
- **L.A. River Flows Project:** In light of the recent long-term drought in California and the ever present threat of climate change, wastewater managers in L.A. have begun to rethink the practice of discharging wastewater into the L.A. River which eventually flows into the ocean. That wastewater can be recycled which would result in improved water resilience during droughts. However, the reduction of wastewater discharges into the river poses a potential problem for the river ecosystem that has come to rely on that wastewater. A change in flows to the L.A. River also has implications for recreation along and in the River as well as water quality. The State Water Board and other stakeholders have created the Los Angeles River Flows Project ([https://www.waterboards.ca.gov/water\\_issues/programs/larflows.html](https://www.waterboards.ca.gov/water_issues/programs/larflows.html)) to evaluate

the environmental and recreational impacts of reducing wastewater discharge into the L.A. River. The goal is to identify a water flow regime that will support a healthy river ecosystem, allow for recreation opportunities, and recycle enough water to be drought resilient.

- **City of Los Angeles Green New Deal:** Unlike the other plans, this one is not solely focused on the L.A. River, though, there are many aspects of the plan that will impact the river. This plan (<http://plan.lamayor.org/>) has goals of increasing stormwater capture and water recycling which will have an impact on the L.A. River flows and pollution. The plan will also increase park space, habitat, trails, and bike paths along the river. The ARBOR (Area with Restoration Benefits and Opportunities for Revitalization) Plan will also be implemented under the Green New Deal, which will transform a section of the Elysian Valley into a multibenefit area with recreation opportunities and increased habitat.

**What's with all the plans and what is Heal the Bay doing?** Revitalizing the L.A. River is a monumental task so it makes sense to break the revitalization effort into different pieces. However, the main reason for this patchwork of plans is that they all have a different origin and have different funding sources. LARMP is a plan created by L.A. County. ULART and the Lower L.A. River Revitalization Plan were created by legislation at the state level. The Flow Plan was mandated by the SWRCB. And, the Green New Deal was created by the City of Los Angeles. Each plan states that it will work in conjunction with all the other plans; however, it is unclear what that will look like.

Heal the Bay has been involved in these plans on various levels; as a Steering Committee Member for the LARMP update and the Lower L.A. River Master Plan, as a member of the technical advisory committee (TAC) and stakeholder group for the Flows Project, and as a member of the public for the ULART and the current Implementation Advisory Group (IAG) for the Lower L.A. River Master Plan. Through our involvement, Heal the Bay advocates for improvements to the ecological health of the L.A. River, improvements to water quality and public health, and equitable access to open space along the River with an emphasis on natural ecosystems. Heal the Bay has concerns that some of the plans continue to take a limited perspective, focused primarily on flood control and beautification, with little attention to critical ecosystem restoration. Further, the interest in the River has resulted in real concerns over gentrification and displacement, issues which must be addressed as changes happen along the River.



## River Report Card grading methodology update

Our current method relies on binary assessments of water quality data where each parameter either exceeds or does not exceed an objective. A sample that is slightly higher than the objective is treated the same as a sample that is much higher than the objective. Since a higher concentration of bacteria equates to poorer water quality, we plan on revising our methods so our grades more accurately convey the range of illness risks. We also plan to consider weighting the different parameters and utilize letter grades, similar to our Beach Report Card. We will form a technical advisory committee that will provide guidance on how to develop the new methodology. The new methodology will be in use by Summer 2021 or 2022.

## Staying Safe

There is very little oversight of water quality in freshwater swimming and recreation areas statewide and federally, even though there are water quality standards in place. Few freshwater recreation areas are monitored by government agencies in California, and there is little consistency between agencies when it comes to public notification.

It's important to note the relationship between COVID-19 and water quality. COVID-19 has been detected in sewage, meaning fecal matter from infected individuals contains pieces of the virus. And unfortunately, raw sewage makes its way into our waterways through spills and infrastructure failures. We do not know how long the virus survives in sewage or in rivers and streams, and we do not know if someone can contract COVID-19 from coming into contact with contaminated water. Experts have stated that the transmission risk in water is likely very low because the virus mainly spreads through person-to-person contact and there are no reported cases of COVID-19 transmission through water recreation<sup>11</sup>. Since COVID-19 and FIB both enter our waterways through sewage, measuring FIB concentrations can help keep people safe from both. To stay safe, Heal the Bay has the following recommendations for the public.

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<sup>11</sup>[https://www.cdc.gov/coronavirus/2019-ncov/faq.html?CDC\\_AA\\_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fphp%2Fwater.html#COVID-19-and-Water](https://www.cdc.gov/coronavirus/2019-ncov/faq.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fphp%2Fwater.html#COVID-19-and-Water)

1. Wear a mask when not in the water, and remain at least 6 feet away from people not from your household at all times. Follow all local pandemic-related regulations.
2. Check Heal the Bay's River Report Card before visiting your favorite recreation area. Please be advised that not all recreation areas are monitored for water quality. If you don't see a grade for your location on our website, check the local health authority's website, Swim Guide<sup>12</sup> or the Blue Water Task Force<sup>13</sup>. If you still can't find water quality information, ensure you avoid swimming near any storm drains.
3. If the water quality is shown to be poor or unknown, consider choosing a different site showing good water quality.
4. If poor water quality is unavoidable, limit contact with the water, refrain from submerging your head, avoid hand-to-face water contact, and wash off after contact using soap and water.
5. Avoid entering the water after significant rainfall in the last 72 hours as it poses a flood risk and significantly lowers water quality to harmful levels.
6. People who are immunocompromised or anyone with an open wound should avoid entering the water.
7. Follow all posted signage at recreation sites. Please note that swimming is prohibited in the L.A. River main channel.

## Recommendations for Policymakers

It is our goal to have consistent and comprehensive water quality information for people recreating in lakes, rivers, and streams state-wide. For ocean beaches, the Beach Water Quality Act, Assembly Bill 411, passed in 1998 and created statewide standards for beach water quality, established a public notification and closure system, and mandated beach water quality monitoring. Similar legislation is needed for freshwater recreation areas, to provide standardized monitoring, notification, and closure procedures with clear direction on responsible agencies and funding sources. Until such a bill is enacted, we recommend that policymakers do the following:

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<sup>12</sup> <https://www.theswimguide.org/>

<sup>13</sup> <https://bwtf.surfrider.org/>



## **All recreation areas should be monitored.**

We are pleased that a large number of swimming and recreational sites are currently being monitored for water quality during summer months in L.A. County. Continuous assessment is needed to identify areas that are being used by the public, but are not being monitored. For instance, sites in the L.A. River Recreation Zones were selected based on kayak entry and exit spots. There are additional locations that are popular with anglers, which could be good locations for monitoring. We are also glad that LASAN/LARWMP added two monitoring sites in Lake Balboa, but it unfortunately came at the cost of Big Tujunga/Delta Flat and Millard Campground, which were not monitored in 2019. We urge LASAN/LARWMP to sample those sites in addition to the Lake Balboa sites.

Outside of L.A. County there are many more recreation sites that are not monitored on a regular basis. We urge county health agencies across the state to identify and begin monitoring freshwater recreation areas. The data should be made available to the public promptly.

## **Monitoring should be standardized and should be more protective of public health.**

Messaging about water quality by LASAN, LARWMP and SGRRMP is not adequately protective of public health. These agencies monitor recreation sites throughout L.A. County and provide data and advisories for those sites on their websites<sup>14,15</sup>. Currently, these monitoring programs do not calculate or display a geometric mean, as required by the State. The bacterial objectives for the State require advisories to be based on geometric means as well as single samples. The geometric mean is needed to indicate long-term trends in FIB counts, and single samples are needed to account for the infrequent spikes or drops in bacteria levels. The best way to protect public health is to follow the required standards for geometric means as well as single samples.

The Limited REC-1 standard used by LASAN is not appropriate in the L.A. River. The L.A. River is designated with the beneficial use of REC-1 in the Basin Plan<sup>16</sup> and this is the

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<sup>14</sup>[https://www.lacitysan.org/san/faces/home/portal/s-lsh-wwd/s-lsh-wwd-wp/s-lsh-wwd-wp-ewmp/s-lsh-wwd-wp-ewmp-wq/s-lsh-wwd-wp-ewmp-wq-larq?\\_afLoop=4185502393798245&\\_afWindowMode=0&\\_afWindowId=null&\\_adf.ctrl-state=10azldfn1z\\_74#!%40%40%3F\\_afWindowId%3Dnull%26\\_afLoop%3D4185502393798245%26\\_afWindowMode%3D0%26\\_adf.ctrl-state%3D10azldfn1z\\_78](https://www.lacitysan.org/san/faces/home/portal/s-lsh-wwd/s-lsh-wwd-wp/s-lsh-wwd-wp-ewmp/s-lsh-wwd-wp-ewmp-wq/s-lsh-wwd-wp-ewmp-wq-larq?_afLoop=4185502393798245&_afWindowMode=0&_afWindowId=null&_adf.ctrl-state=10azldfn1z_74#!%40%40%3F_afWindowId%3Dnull%26_afLoop%3D4185502393798245%26_afWindowMode%3D0%26_adf.ctrl-state%3D10azldfn1z_78)

<sup>15</sup> <http://67.225.164.157/googleapplication/ecogmap.aspx?gappid=13>

<sup>16</sup> [https://www.waterboards.ca.gov/losangeles/water\\_issues/programs/basin\\_plan/](https://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/)

standard that should be consistently applied. On the City of L.A.'s public notification website, sites that exceed the single sample REC-1 limit for *E. coli* (235 MPN/100ml) are colored yellow with a gray background, and sites that exceed the Limited REC-1 standard (576 MPN/100ml) are colored red. While kayaking may be less likely to result in full water contact compared to swimming, it still fits within the REC-1 definition of "activities involving body contact with water, where ingestion of water is reasonably possible". REC-1 includes "swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, and use of natural hot springs"<sup>17</sup>. There should be more rigorous and protective grading methodologies when sites exceed the single sample or geometric mean REC-1 standard for any FIB.

Current monitoring across L.A. County is not standardized, and the monitoring by LASAN, LARWMP, and SGRRMP only includes *E. coli*, which is in accordance with the State of California bacterial objectives for freshwater recreation. However, the U.S. EPA does have criteria for *Enterococcus* for freshwater recreation<sup>18</sup>. Studies have shown that *E. coli* and *Enterococcus* behave similarly in freshwater, so it is premature to discount *Enterococcus* and only monitor *E. coli*<sup>19,20</sup>. Additionally, there have been no current epidemiological studies conducted that support dropping *Enterococcus* as an FIB in freshwater. These lines of evidence, along with our results on the differences in grades between *E. coli* and *Enterococcus*, indicate that solely monitoring for *E. coli* may not adequately protect public health. New FIB objectives should be developed as long as they are supported by epidemiological studies that show a strong correlation between illness and the presence of FIB. Until more research is done, *Enterococcus* should be used as a FIB in addition to *E. coli* for freshwater recreation. Measuring two indicators requires little extra effort and resources and could provide extra protection to the public.

Agencies should also monitor at all storm drain outfalls located in or upstream of recreation areas. We have shown that these storm drains carry heavy concentrations of FIB and pose a risk to public health. All outfalls at ocean beaches in California have been monitored since 2015.

Monitoring agencies across the state must follow the regulations set by the State, and should participate in the SWRCB's Inland Beach Water Quality Workgroup or Safe to Swim Workgroup<sup>21</sup>. These workgroups bring stakeholders together to solve problems regularly encountered by monitoring agencies. Active participation in the workgroups will

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<sup>17</sup>[https://www.waterboards.ca.gov/losangeles/water\\_issues/programs/basin\\_plan/electronics\\_documents/Chapter2Text.pdf](https://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/electronics_documents/Chapter2Text.pdf)

<sup>18</sup> <https://www.epa.gov/wqc/2012-recreational-water-quality-criteria-documents>

<sup>19</sup> Odonkor, S. T., J. K. Ampofo. *Escherichia coli* as an indicator of bacteriological quality of water: an overview. 2013. Mibiology Research volume 4:e2

<sup>20</sup> Byappanahalli, M. N., M. B. Nevers, A. Korajkic, Z. R. Staley, V. J. Harwood. Enterococci in the Environment. 2012. Microbiology and Molecular Biology Reviews volume 76: 685-706.

<sup>21</sup> [https://www.mywaterquality.ca.gov/monitoring\\_council/swim\\_workgroup/](https://www.mywaterquality.ca.gov/monitoring_council/swim_workgroup/)



lead to increased standardization across the state and will lessen the burden on agencies because problems are solved collaboratively.

### **Water quality information should be readily available to the public.**

Outreach and education about water quality in freshwater recreation areas needs to be improved, especially with communities and groups that live near and use these areas. The public has a right to know about water quality in order to make informed decisions about how they enjoy rivers and swimming holes.

At a minimum, all sites should have permanent signs in English and Spanish that incorporate universal symbols and provide web links to additional resources and information. Further, freshwater recreational sites should be “posted”, similarly to beaches. This means that a sign is posted when a single sample or geometric mean has been exceeded for any indicator bacteria. Posting would entail signs being put up and taken down throughout the summer season depending on water quality. Heal the Bay will continue to make water quality data and color grades available on our River Report Card website at [healthebay.org/riverreportcard](http://healthebay.org/riverreportcard) and promote the website through public events, talks, social media, and partners.

The City of L.A. has posted informational signs in the recreation zones of the L.A. River Watershed, developed monitoring and notification protocols for the L.A. River, and launched a website<sup>22</sup> that provides water quality data and information about river closures in the Recreation Zones. These are positive steps and should be carried out for other freshwater recreation areas as well. LASAN is also piloting a water quality light beacon that will hopefully inform people about the water quality in the river.

Unfortunately, the freshwater recreation areas in the Upper L.A. River, the San Gabriel River, and the Malibu Creek Watersheds do not have signs in place to inform the public of water quality conditions or how to obtain information. Landowners such as California State Parks and the U.S. Forest Service must work with L.A. County Department of Public Health and other stakeholders to design and post signs.

Sewage spills happen frequently in L.A. County and can create dangerous conditions for people coming in contact with waterbodies downstream from spills. Public agencies and municipalities must refine and update their sewage spill notification protocols to prioritize coordination and public notification. The public should be notified immediately on agency websites and with signs posted at the recreation sites if there has been a sewage spill. The sewage spill protocol should also apply to areas outside of recreation zones

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<sup>22</sup>[https://www.lacitysan.org/san/faces/home/portal/s-lsh-wwd/s-lsh-wwd-wp/s-lsh-wwd-wp-ewmp/s-lsh-wwd-wp-ewmp-wq/s-lsh-wwd-wp-ewmp-wq-larq?\\_afLoop=4185502393798245&\\_afWindowMode=0&\\_afWindowId=null&\\_adf.ctrl-state=10azldfn1z\\_74](https://www.lacitysan.org/san/faces/home/portal/s-lsh-wwd/s-lsh-wwd-wp/s-lsh-wwd-wp-ewmp/s-lsh-wwd-wp-ewmp-wq/s-lsh-wwd-wp-ewmp-wq-larq?_afLoop=4185502393798245&_afWindowMode=0&_afWindowId=null&_adf.ctrl-state=10azldfn1z_74)

including beaches as sewage will travel downstream. Further, because waterbodies such as the L.A. River pass through many cities, coordination is needed among municipalities on reporting sewage spills and ensuring that information is shared with the public.

## **Abatement of pollution**



*Heal the Bay Volunteers remove trash during an LA River cleanup.*

Heal the Bay supports projects that improve watershed health and water quality, such as projects that address stormwater runoff and expand and improve greenspace. Storm drains flowing into rivers, lakes, and streams should have their flows diverted to treatment plants. And, that captured water should be reused for recharging groundwater, irrigating parks and habitat, and for toilets and industrial uses. Alternatively, best management practices (BMP) such as bioswales or rain gardens could be installed to treat storm drain flows before they enter rivers or the storm drain system. BMPs can also include providing services that result in reduced pollution. For instance, many of the swim sites in the Upper L.A. River, San Gabriel River, and Malibu Creek Watersheds are lacking restrooms and trash cans. Sites are heavily visited in the summer months and without these basic services, there could be an impact on water quality. We encourage



landowners like the U.S. Forest Service and California State Parks to provide additional services to visitors to improve water quality as well as the overall visitor experience.

In November 2018, Los Angeles County voters approved the Safe, Clean Water Program (Measure W), increasing available funding for stormwater capture projects by approximately \$280 million per year. The first round of funding will be allocated as early as August 2020 to implement projects that are ready to go through the Infrastructure Program, and help to build new project proposals for the future through the Technical Resources Program. Measure W funds can be further leveraged with other sources, including Measure A (Los Angeles County Safe, Clean Neighborhood Parks and Beaches Protection), Measure M (Los Angeles County Traffic Improvement Plan), Proposition 1 (California State Stormwater Grant Program), and Proposition 68 (California State Parks, Environment, and Water Bond). Effective projects funded through these various sources have the potential to significantly improve water quality throughout Los Angeles County, protecting both public and environmental health, while also providing multiple additional benefits to Los Angeles communities such as new open space, air quality improvements, and climate resiliency.

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## 2019 Annual River Report Card

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## Appendices

Dig deeper into the River Report Card by accessing our appendices. Available at: [healthebay.org/river-report-card-appendices-2019](https://healthebay.org/river-report-card-appendices-2019)