

Update on the Bacteria Provisions

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State Water Resources Control Board

Division of Water Quality

July 12, 2018 - Beach Water Quality Workgroup Webinar

Project Timeline

July 2014	January and February 2015	January 23, 2017	June 30, 2017	July 10, 2017	August 1, 2017	August 16, 2017	January 18, 2018	July 6, 2018	August 7, 2018
Focus Group Outreach	CEQA Scoping	Scoping meeting on Water Quality Standards Variance	Public Comment period began	Staff workshop	State Water Board Public Hearing	Public Comment period ended	Release of the Proposed Final Provisions, Staff Report, and Comment Summary and Responses	Release of the Second Proposed Final Provisions, Staff Report, and Comment Summary and Responses	State Water Board Meeting - proposed adoption

Adoption Meeting

Tuesday, **August 7**, 2018, 9:30 a.m.

Joe Serna Jr. – CalEPA Headquarters Bldg. Coastal Hearing Room
1001 I Street, Second Floor Sacramento, CA 95814

“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”

Part 3 of the ISWEBE

&

“Amendment to the Water Quality Control Plan for Ocean Waters of California—Bacteria Provisions and a Water Quality Standards Variance Policy”

Ocean Plan Amendment

Part 3 of the ISWEBE and the Ocean Plan Amendment are collectively referred to as the

Bacteria Provisions

Outline

- 1) Purpose of the Bacteria Provisions
- 2) Illness Rate
- 3) Bacteria Objectives
- 4) Effects on Basin Plans
- 5) Limited Water Contact Recreation (L-REC 1) Beneficial Use
- 6) Implementation Provisions
- 7) Water Quality Standard Variance
- 8) Impacts on Other Programs and Regulations

Purpose of the Bacteria Provisions

- Protection of Human Health/Beneficial Uses
- Statewide Consistency
- Avoid the Need for Individual Basin Plan Amendments
- Align State Objectives with the U.S. EPA Criteria



Components of the Bacteria Provisions

- Illness Rate & Definition
- Water Quality Objectives
- Beneficial Use Definition: Limited Water Contact Recreation (LREC-1)
- Identifies Implementation Elements
- Identifies Water Quality Standards Variance Policy

Proposed Illness Rate

32/1,000 primary contact
recreators

U.S. EPA's 2012 Recreational Water Quality Criteria

Criteria Elements	Recommendation 1 Estimated Illness Rate (NGI): 36 per 1,000 primary contact recreators			Recommendation 2 Estimated Illness Rate (NGI): 32 per 1,000 primary contact recreators	
	Magnitude			Magnitude	
Indicator	GM (cfu/100 mL) ^a	STV (cfu/100 mL) ^a	OR	GM (cfu/100 mL) ^a	STV (cfu/100 mL) ^a
Enterococci (marine and fresh)	35	130		30	110
OR					
<i>E. coli</i> – (fresh)	126	410		100	320

Current Bacteria Objectives

Ocean

Indicator	30-Day Geometric Mean
Total Coliform	1,000/100mL
Fecal Coliform	200/100mL
Enterococcus	35/100mL

Indicator	Single Sample Maximum
Total Coliform	10,000/100mL
Fecal Coliform	400/100mL
Enterococcus	104/100mL
Total Coliform/Fecal Coliform	Total coliform density shall not exceed 1,000/mL when the fecal/total ratio exceeds 0.1

Freshwater & Estuarine Waters

Numeric Water Quality Objectives for Bacteria: Fresh Waters Designated REC-1

Regional Water Board	Indicator Organism	Geometric Mean ^a	Maximum	
North Coast (1)	Fecal coliform	50/100 mL ^b	400/100 mL ^c	
San Francisco Bay (2)	Fecal coliform	200/100 mL	400/100 mL ^d	
	Total coliform	240/100 mL ^b	10,000/100 mL	
	Enterococci	35/100 mL	104/100 mL	
	<i>E. coli</i> ^e	126/100 mL	235 – 576/100 mL ^f	
	Enterococci ^e	33/100 mL	61 – 151/100 mL ^f	
Central Coast (3)	Fecal coliform	200/100 mL	400/100 mL ^c	
Los Angeles (4)	<i>E. coli</i>	126/100 mL	235/100 mL	
Central Valley (5)	Sacramento and San Joaquin Basins	Fecal coliform	200/100 mL	400/100 mL ^c
		Fecal coliform	100/100 mL	200/100 mL ^c
	Folsom Lake	Fecal coliform	200/100 mL	400/100 mL ^c
		Tulare Lake Basin	Fecal coliform	200/100 mL
Lahontan (6) ^{g,h} - Susanville Hydrologic Unit	Fecal coliform	20/100 mL ⁱ	40/100 mL ^c	
	Fecal coliform	20/100 mL ⁱ	75/100 mL ^c	
Colorado River (7) ^j	<i>E. coli</i>	126/100 mL	400/100 mL	
	Enterococci	33/100 mL	100/100 mL	
	Fecal coliform	200/100 mL	400/100 mL ^c	
Santa Ana (8)	Fecal coliform	200/100 mL		
	<i>E. coli</i>	126/100 mL	147 – 374/100 mL ^k	
San Diego (9)	Fecal coliform	200/100 mL	400/100 mL ^c	
	<i>E. coli</i> ^e	126/100 mL	235 – 576/100 mL ^f	
	Enterococci ^e	33/100 mL	61 – 151/100 mL ^f	

Previous Proposal for Bacteria Objectives: Ocean and ISWEBE

(January 18, 2018)

Applicable Waters	Objective Elements	Estimated Illness Rate (NGI): 32/1,000	
		Magnitude	
	Indicator	6-week GM	STV
All waters where the salinity is equal to or less than 1 ppt 95 percent or more of the time	<i>E. coli</i>	100cfu/100mL	320cfu/100mL
All waters where the salinity is greater than 1 ppt more than 5 percent of the time	Enterococci	30cfu/100mL	110cfu/100mL

Inland Surface Waters, Enclosed Bays, and Estuaries (ISWEBE) Bacteria Provisions

- Geometric Mean (GM)
 - Calculated every six-weeks
 - Rolling
- Statistical Threshold Value (STV)
 - Calculated every calendar month
 - Static
 - Shall not be exceeded by more than 10 percent of samples collected
- Colony Forming Units (CFU)
- National Epidemiological and Environmental Assessment of Recreational Water Gastrointestinal Illness (NGI) Illness Rate
 - 32/1,000 Recreators

Current Proposal

Applicable Waters	Objective Elements	Estimated Illness Rate (NGI): 32/1,000	
		Magnitude	
	Indicator	6-week GM	STV
All waters where the salinity is equal to or less than 1 ppt 95 percent or more of the time	<i>E. coli</i>	100cfu/100mL	320cfu/100mL
All waters where the salinity is greater than 1 ppt more than 5 percent of the time	Enterococci	30cfu/100mL	110cfu/100mL

Ocean Waters Bacteria Provisions

Current Proposal

Enterococci

Indicator	Estimated Illness Rate (NGI): 32/1,000	
	Magnitude	
	6-week GM	STV
Enterococci	30cfu/100mL	110cfu/100mL

Geometric Mean (GM)

- Calculated every six-weeks
- Rolling

Statistical Threshold Value (STV)

- Calculated every calendar month
- Static
- Shall not be exceeded by more than 10 percent of samples collected

Colony Forming Units (CFU)

NGI: 32/1,000 Recreators

Fecal Coliform

Indicator	Magnitude	
	30-day GM	SSM
Fecal Coliform	200/100mL	400/100mL

Geometric Mean

- Calculated every 30-days

Single Sample Maximum

- The maximum value not to be exceeded in any single sample

Justification for Retaining Fecal Coliform

- 1) California-specific studies provides data that **fecal coliform is a better indicator of gastrointestinal illness (GI) during certain water exposures and environmental conditions**
 - Arnold et al. 2017 (San Diego Surfers)
 - Yau et al. 2015 (Avalon Beach)
 - Colford et al. 2012 (Doheny Beach)
- 2) U.S. EPA 2012 Criteria does not include fecal coliform
 - National not California focus

California-specific Studies

Arnold et al. 2017 (San Diego Surfers): *Acute illness among surfers after exposure to seawater in dry-and wet-weather conditions*

- **Environmental Condition: Wet Weather Events**

Yau et al. 2015 (Avalon Beach): *Effect of submarine groundwater discharge on bacterial indicators and swimmer health at Avalon Beach, CA, USA*

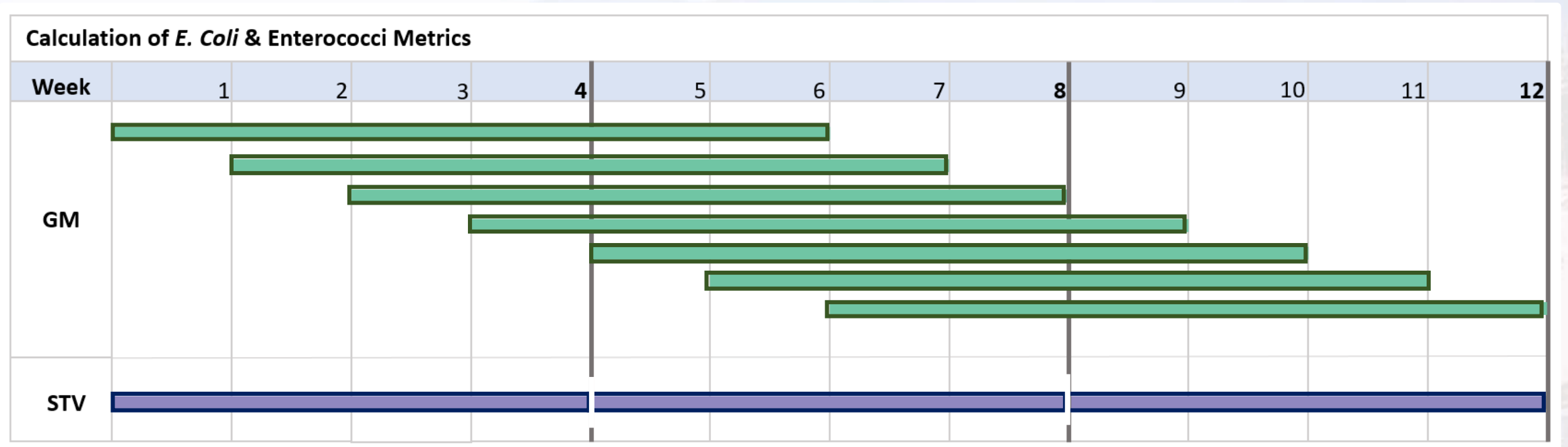
- **Environmental Condition: High Submarine Groundwater Discharge**
- **Exposure: Body Contact**

Colford et al. 2012 (Doheny Beach): *Using rapid indicators for Enterococcus to assess the risk of illness after exposure to urban runoff contaminated marine water*

- **Exposure: Body Immersion**

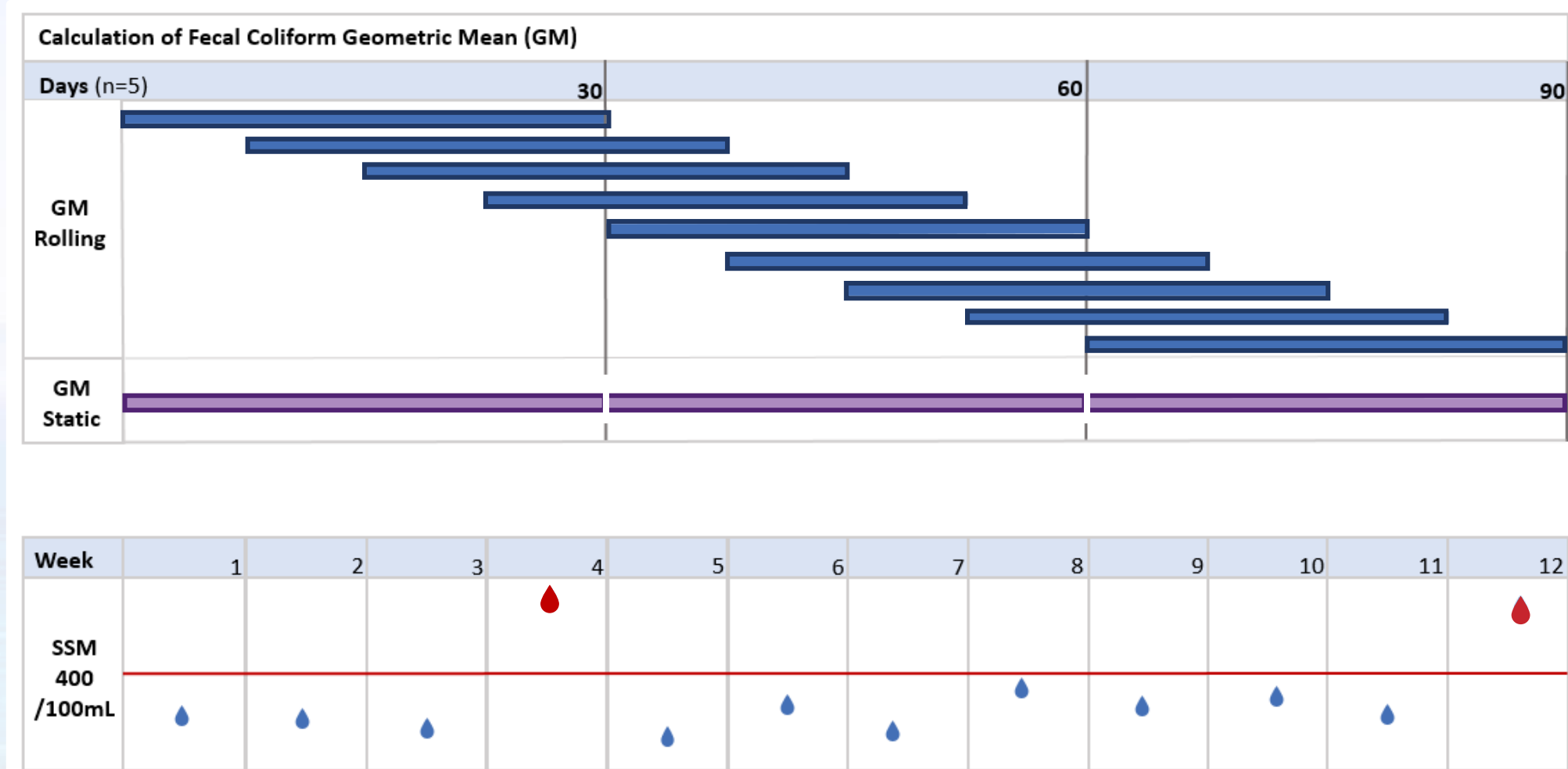
E. coli & Enterococci Calculation

- **Rolling** 6-week Geometric Mean (GM)
- **Static** Calendar Month Statistical Threshold Value (STV)



Fecal Coliform Calculation

- **Static or rolling** Geometric Mean (GM)
- Single Sample Maximum



Effects on Basin Plans

- Except for site-specific objectives, the proposed Provisions...
 - Supersedes **numeric** water quality objectives
 - Does not supersede **narrative** water quality objectives



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Limited Water Contact Recreation (LREC-1) Beneficial Use (ISWEBE)

*“Uses of water that support limited recreational activities involving body contact with water, where activities are predominantly **limited by physical conditions** and, as a result, **body contact with water and ingestion of water is infrequent or insignificant**”*



Optional Implementation Provisions

- Reference system/antidegradation approach
- Natural sources exclusion approach
- High flow suspension of REC-1 (ISWEBE)
- Seasonal Suspension of REC-1 (ISWEBE)
- Not requirements

Water Quality Standard (WQS) Variance

- Identifies the federal regulatory framework that authorizes States to establish a WQS Variance (for any pollutant)
- Describes some requirements of the federal rule
 - Discharger-specific variance
 - Waterbody-specific variance
 - Does not add to or limit the rule
 - Subject to federal public participation requirements (notice and hearing)
 - Not effective until approved by U.S. EPA
- Explains the process available under existing state law

Impacts on Title 17 / AB 411 Beach Notification Levels

No change

- Department of Public Health regulations
- Agencies regulated under Title 17 will continue to sample and report on total coliform, fecal coliform, and enterococcus
- Data collected will continue to be used to support 303(d) listings

Impacts on 303(d) listed waters & TMDLs

303(d) Listed Waters

- Subject to re-evaluation
- No significant change in listings/de-listings predicted

TMDLs

- Proposed bacteria objectives will not supersede an existing TMDL
- Regional Boards may evaluate the effectiveness of the TMDL in attaining the beneficial use

Public Process & Next Steps

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Contact & Questions

Document Availability

www.waterboards.ca.gov/bacterialobjectives/

Contact Information

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