Discussion of compliance pathways for SHEL

- Current regulatory requirements
  - Basin Plan, TMDL, and MS4 permit requirements
  - California Shellfish Law
- Potential changes in regulatory requirements
- Questions regarding alternative requirements

Compliance pathways for SHEL in Newport Bay

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What regulatory requirements currently apply?

Basin Plan Requirements (SHEL)

Beneficial use

Shellfish Harvesting (**SHEL**) waters support habitats necessary for shellfish (*e.g.*, clams, oysters, limpets, abalone, shrimp, crab, lobster, sea urchins and mussels) collected for human consumption, commercial or sport purposes.

+

Water quality objectives

SHEL Fecal coliform: median concentration not more than 14 MPN (most probable number)/100 mL and not more than 10% of samples exceed 43 mpn /100 mL.

+

Anti-degradation requirements

requires the continued maintenance of existing high quality waters unless there is a demonstration that: (1) allowing some degradation is consistent with the maximum benefit to the people of the state; and (2) that such degradation would not unreasonably affect existing or potential beneficial use.

Newport Bay TMDL Requirements

Attachment to Resolution No. 99-10

Amendment to the Santa Ana Region Basin Plan

Chapter 5 - Implementation Plan, Discussion of Newport Bay Watershed (page 5-39 et seq.)

Table 5-9f: Total Maximum Daily Load, Waste Load Allocations, and Load Allocations for Fecal Coliform in Newport Bay

Total Maximum Daily Load for Fecal Coliform In Newport Bay	Waste Load Allocations for Fecal Coliform in Urban Runoff, including stormwater, Discharges to Newport Bay	Load Allocations for Fecal Coliform in Agricultural Runoff, including stormwater, Discharges to Newport Bay	Load Allocations for Fecal Coliform from Natural Sources in all Discharges to Newport Bay	Waste Load Allocations for Vessel Waste
As soon as possible but no later than December 30, 2013			**In Effect**	**In Effect**
5-Sample/30-days Geometric Mean less than 200 organisms/100 mL, and not more than 10% of the samples exceed 400 organisms/ 100 mL for any 30-day period.	5-Sample/30-days Geometric Mean less than 200 organisms/100 mL, and not more than 10% of the samples exceed 400 organisms/ 100 mL for any 30-day period.	5-Sample/30-days Geometric Mean less than 200 organisms/ 100 mL, and not more than 10% of the samples exceed 400 organisms/ 100 mL for any 30-day	5-Sample/30-days Geometric Mean less than 200 organisms/100 mL, and not more than 10% of the samples	0 MPN/100 mL No discharge.
As soon as possible but no later than December 30, 2019				**In Effect**
Monthly Median less than 14 MPN/100 mL, and not more than 10% of the samples exceed 43 MPN/100 mL.	Monthly Median less than 14 MPN/100 mL, and not more than 10% of the samples exceed 43 MPN/100 mL.	Monthly Median less than 14 MPN/100 mL, and not more than 10% of the samples exceed 43 MPN/100 mL.	Monthly Median less than 14 MPN/100 mL, and not more than 10% of the samples exceed 43 MPN/100 mL.	0 MPN/100 mL No discharge.

Extension to December 2022 expected

Newport Bay TMDL Monitoring (Weekly)

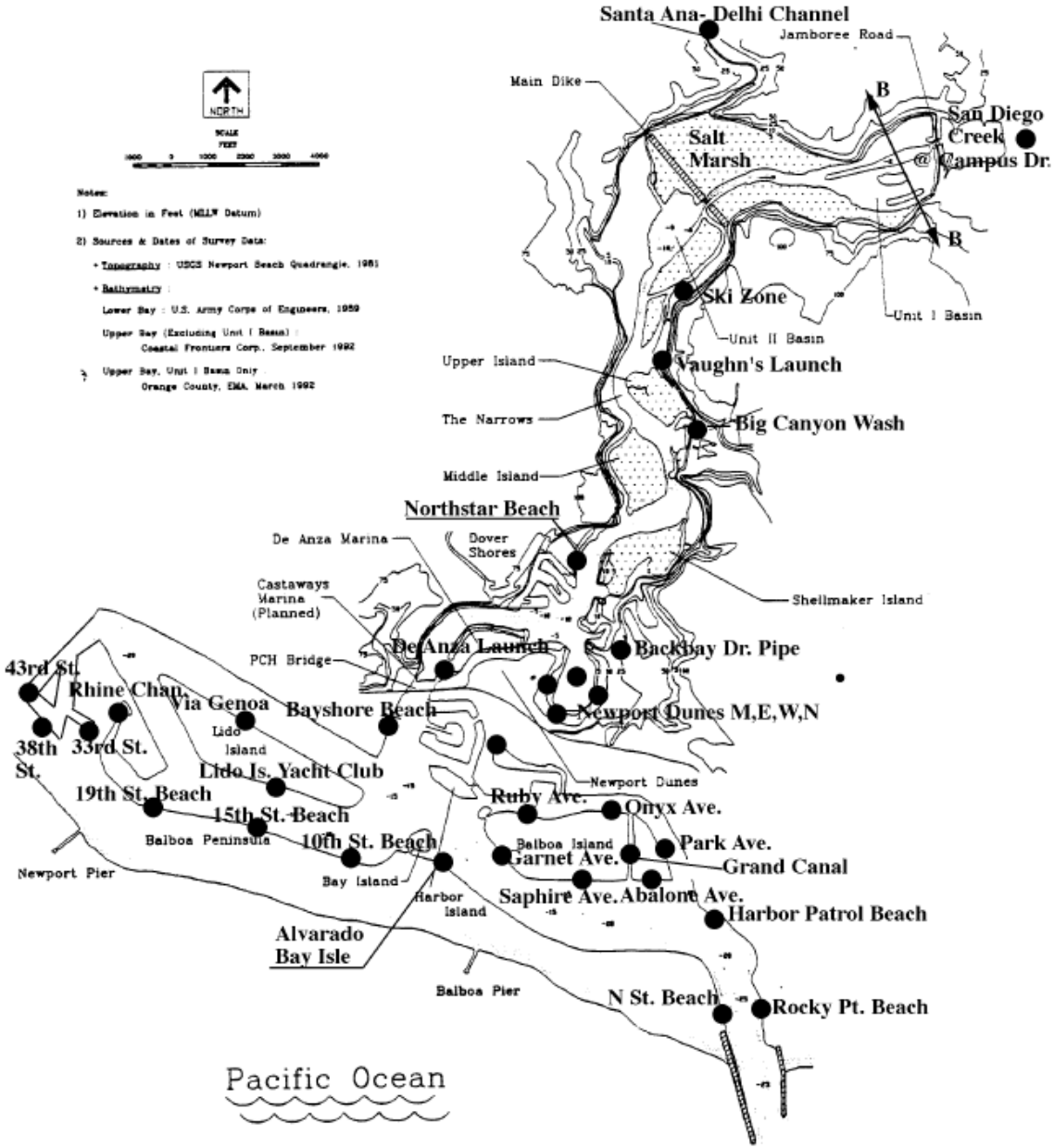


Figure 5-1: Newport Bay Bacterial Quality Monitoring Stations

2009 MS4 Permit

Table 8B – Fecal Coliform TMDL and Allocations for Newport Bay

Before December 30, 2019

Urban Runoff Waste Load Allocation for Fecal Coliform	As soon as possible, but no later than December 30, 2019	Monthly Median less than 14 MPN/100 mL, and not more than 10% of the samples exceed 43 MPN/100 mL.
Total Maximum Daily Load for Fecal Coliform		Monthly Median less than 14 MPN/100 mL, and not more than 10% of the samples exceed 43 MPN/100 mL.
Load Allocations for Fecal Coliform in Agricultural Runoff, including stormwater, Discharges		Monthly Median less than 14 MPN/100 mL, and not more than 10% of the samples exceed 43 MPN/100 mL.
Load Allocations for Fecal Coliform from Natural Sources in all Discharges		Monthly Median less than 14 MPN/100 mL, and not more than 10% of the samples exceed 43 MPN/100 mL.
Allocations for Vessel Waste	In effect	0 MPN/100 mL - No discharge.

Extension to December 2022 expected

The permittees shall comply with the wasteload allocations for urban runoff in Tables 8A and 8B in accordance with the deadlines in Tables 8A and 8B. Compliance determination for fecal coliform shall be based on monitoring conducted at representative sampling locations within San Diego Creek and Newport Bay. (The permittees may use the current sampling locations for compliance determination.)

In other regions…

- TMDLs implementing SHEL generally:
  - Recognize multiple sources (e.g., agriculture)
  - Do not have final compliance dates
  - Are not implemented via NELs in permits
  - Rely primarily upon BMPs for implementation

California Shellfish Law

California Shellfish Law

CALIFORNIA SHELLFISH LAW

Health and Safety Code Sections 112150-112280

§112150.
The Legislature finds and declares that the public health interest requires that the people of this state be protected from adulterated shellfish grown and harvested in state waters for sale to the public and for introduction into interstate commerce. This protection is a matter of statewide concern and the purpose of this chapter is to establish uniform sanitation standards for the growing waters, harvesting, shucking, packing, repacking, and handling of shellfish and shellstock intended for human consumption.

California Shellfish Law

(c) The regulations shall conform, so far as possible, to the standards or procedures established in the guidelines adopted by the National Shellfish Sanitation Program that pertain to the evaluation of shellfish-growing areas and handling facilities, but shall provide for regulating other wastes or contaminants not covered by the guidelines adopted by the National Shellfish Sanitation Program that would render shellfish unsafe or unfit for human consumption. If the department adopts standards or procedures that exceed standards or procedures established in the guidelines adopted by the National Shellfish Sanitation Program, the department shall provide a written finding describing the public health need for those standards and procedures in the rulemaking process.

California Shellfish Law

(c) "Growing area" means any offshore ocean, coastal estuarine, or freshwater area that may be classified by the department for natural shellfish growth or artificial shellfish propagation and includes open seawater systems.

(d) "Approved area" means a shellfish-growing area not adversely affected by sewage or other wastes.

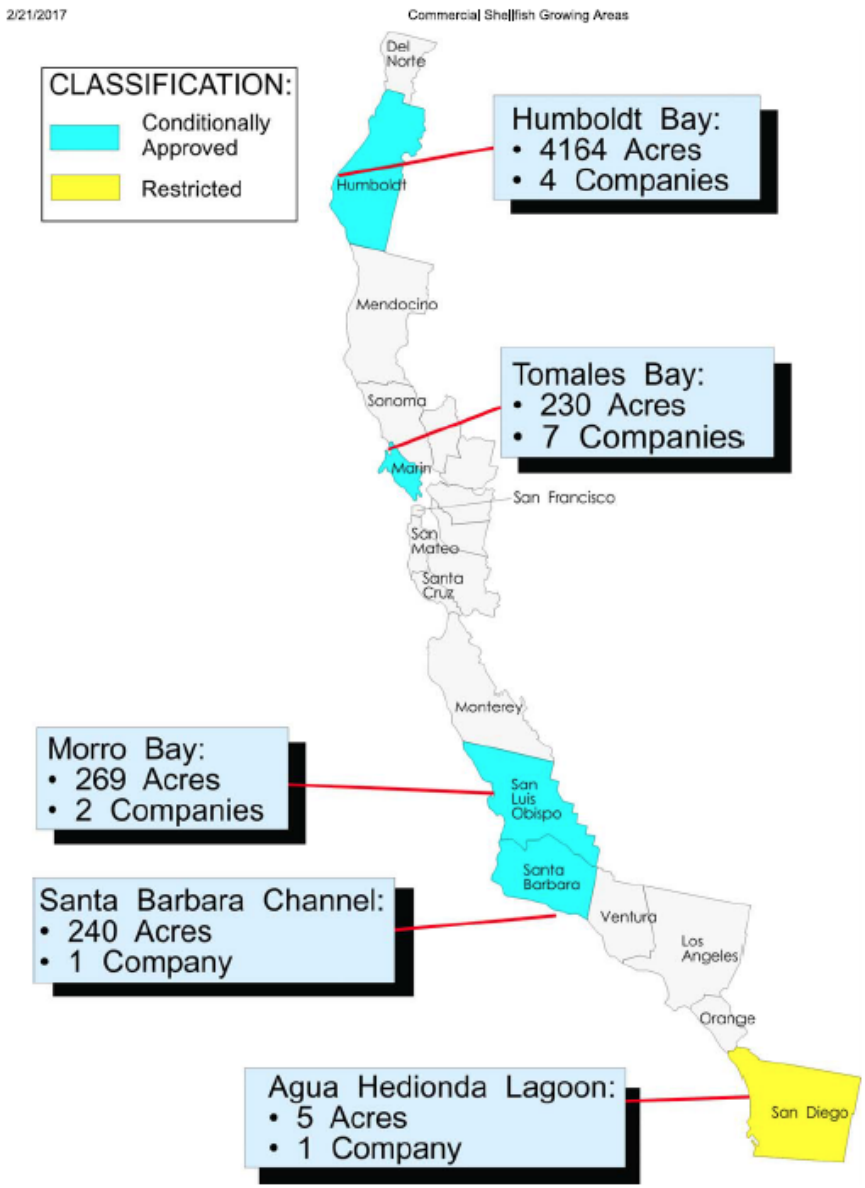
(e) "Conditionally approved area" means a shellfish-growing area that may be occasionally affected by sewage or other wastes.

(f) "Prohibited area" means a shellfish-growing area not certified because of its proximity to a waste discharge or because the area is influenced by other detrimental environmental factors.

(g) "Restricted area" means a shellfish-growing area subjected to a limited degree of pollution which makes it unsafe to harvest shellfish for direct marketing but where harvesting for relaying or depuration may be permitted.

(h) "Other wastes" means wastes, such as, but not limited to, animal, industrial, radiological, and agricultural wastes which would render shellfish unsafe or unfit for human consumption.

Commercial Shellfish Growing Areas (2017)



https://www.cdph.ca.gov/HealthInfo/environhealth/water/Pages/CommercialShellfishGrowingAreas.aspx

What if NSSP shifts to coliphage (MSC) or another indicator?

How do MSC compare to FIB?

Process	MSC
Source specificity	Greater than FIB, but not human-specific. "Human-associated."[1]
Removal by water treatment	Less than FIB
Loss through die off in the water column	Less than FIB in most environments, not susceptible to environmental growth
Uptake by shellfish	Greater than FIB
Release by shellfish	Slower than FIB

- The result of these comparisons is that, for a given source, proportionally more coliphages are expected to be detectable in the water and in shellfish, for a longer period of time
- Because many of the pathogens of concern are also viruses, this makes the MSC a potentially more accurate and conservative indicator of human fecal sources

[1]Harwood et al. 2014

Considerations in choosing the appropriate water quality indicator

- The ratio of FIB to MSC is not expected to be constant—will be unable to "translate" between old (FIB) and new data
  - This is unlike correlations between EC and enterococci and FC
- Uptake (and loss) of viruses by shellfish is not proportional to the uptake and loss of bacteria, adding another source of variability between the data sets
- If an equivalent MSC cannot be determined from FIB epidemiology, do we need new epi data to relate MSC to illness?
  - The EPA (2015) has reviewed studies comparing MSC concentrations to illness from recreational water use. Are there enough data to do a similar comparison for shellfish consumption?
  - The FDA (via the NSSP) has coliphage criteria for shellfish consumption, but these are based on organism concentrations, not water concentrations. Because uptake is an active process, can one be predicted from another?
- Is the measurement of MSC in weekly water samples logistically reasonable?
  - Individual sample volumes may be >1L

Technical questions

- Should SHEL water quality objectives be different for different uses?
  - Commercial sale of shellfish?
  - Recreational harvesting?
  - Use for bait?
- Are current SHEL objectives technically appropriate?
  - Where should they be measured?
- Does source of indicator bacteria matter (human v. non-human)?
- Can SHEL objectives (FC or MSC or other indicator) be modified to recognize “controllable water quality factors”?
  - Is this technically appropriate?
  - And how would this be evaluated?
- Do water quality objectives for SHEL need to conform with NSSP?
  - With State Shellfish Law?
  - Can they be changed via Basin Plan amendment?

Implementation and compliance questions

- Can SHEL objectives be modified via Basin Plan amendment, or is more required?
- Is coordination with other programs advisable or required?
- How should TMDLs for SHEL be written?
- How should SHEL objectives/TMDLs be implemented in permits?
- How should compliance with permits be determined?
- How should attainment in receiving waters be assessed?