
Commercial Shellfish Growing Areas

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Preharvest Shellfish and Marine Biotoxin Monitoring Program

Outline

- Background
- Standards for commercial shellfish
 - sanitary survey
 - water quality indicators
- Shellfish harvesting closures
- How thresholds are changed

Bivalve molluscan shellfish

Oysters, Mussels, Clams, Scallops



Filter feeders with high illness risk

- Concentrate microbiological organisms and toxins
- Can be eaten raw

What We Do

Preharvest Shellfish Program

Commercial Shellfish Growing Area Oversight

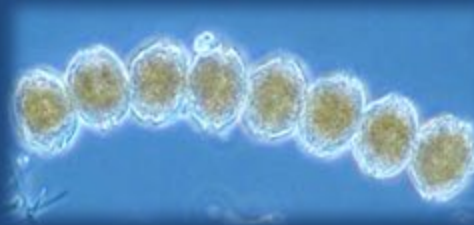
Issue SGA Certificates (location specific)

- Allow harvest of shellfish for sale for human consumption. (Title 17, §7706)

Assess sanitary quality and monitor.

Marine Biotoxin Monitoring

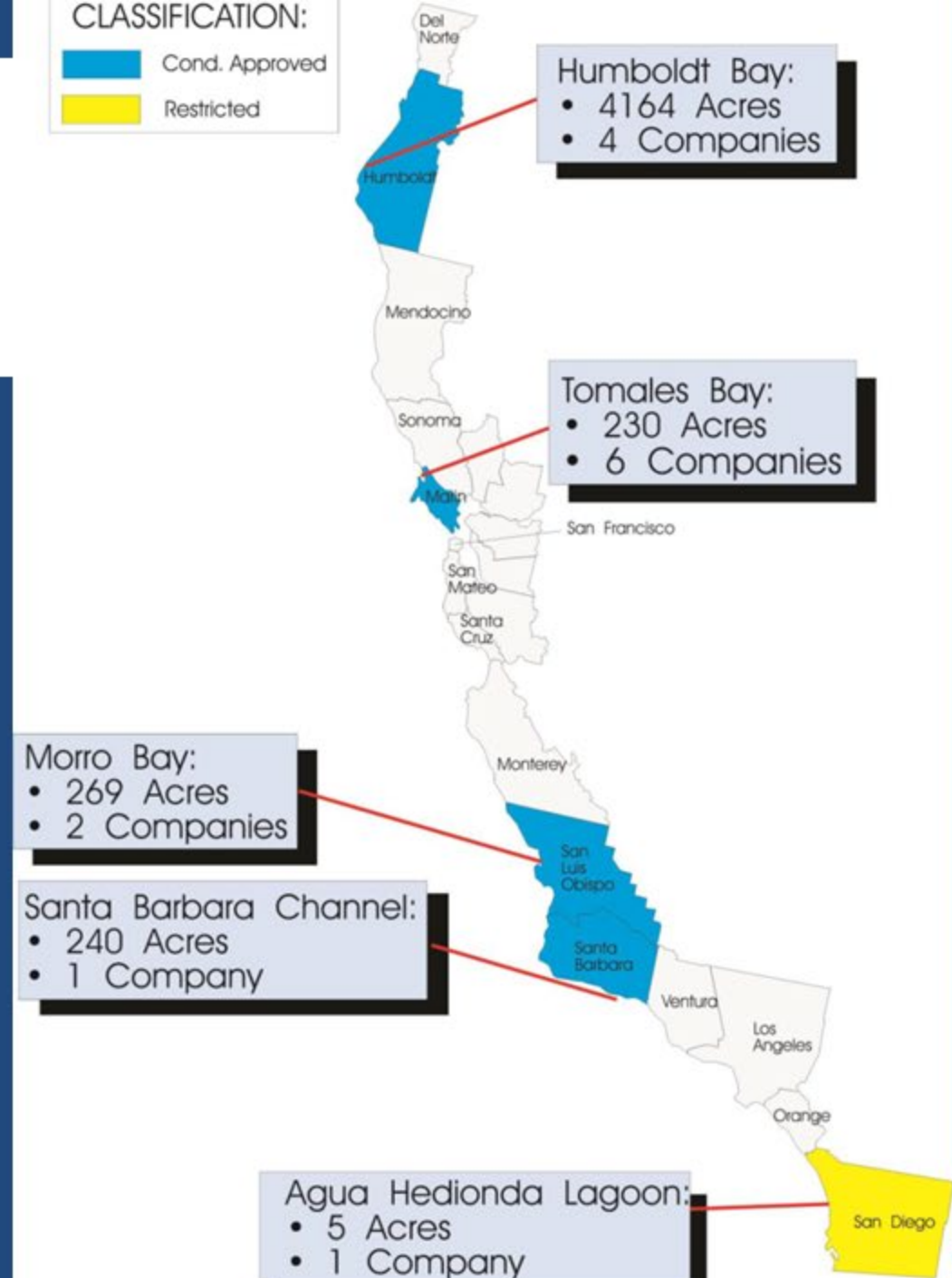
For commercial and recreational shellfish.





Commercial Growing Areas

CLASSIFICATION:
Cond. Approved
Restricted

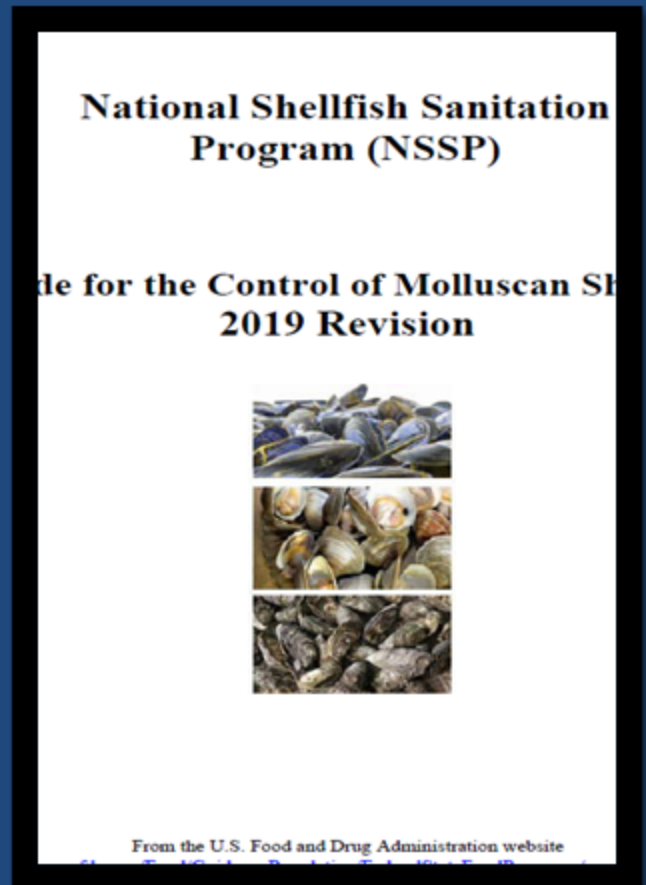


Shellfish Standards

National Shellfish Sanitation Program Model Ordinance

- Sanitary standards for shellfish moving into interstate commerce.

State and federal cooperative program with industry participation



Growing Area Assessment

Sanitary Survey

Determines if the area is able to be classified for harvest for human consumption.

Continuous process

- Annual update reports
- Full sanitary survey report every 12 years



Sanitary Survey

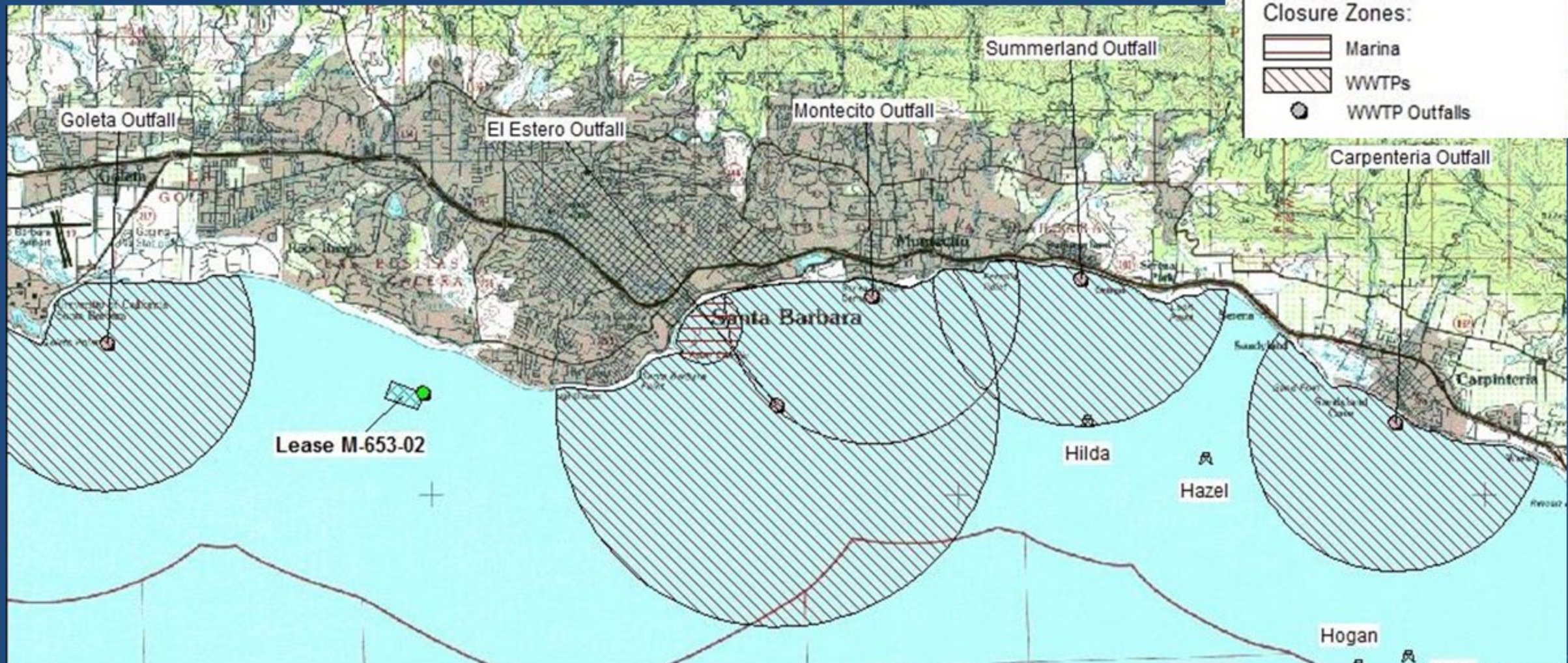
Pollution Source Survey

- Identify and evaluate actual and potential pollution sources
 - Agricultural waste
 - WWTP, domestic waste
 - Marinas
 - Wildlife areas
 - Industrial waste
 - Storm water
- Shoreline Survey
- Establish Prohibited areas around waste water treatment plant (WWTP) Outfalls and marinas



Prohibited Areas Example

Santa Barbara Channel



Sanitary Survey

- Hydrographic and Meteorological Characteristics
 - Tides and currents
 - Rainfall
 - Wind
 - River discharge
- Water Quality Study
 - Sample sites must be adequate to assess pollution
 - Follow NSSP sampling strategies
- Determination of growing area classification
 - Approved, Conditionally Approved, Restricted, Conditionally Restricted, Prohibited



NSSP Water Quality Bacteriological Indicators

Total & fecal coliform method options in NSSP

Fecal coliform in seawater

- Multiple tube fermentation
 - 5 tube, 3 dilution
- Result: Most Probable Number (MPN)/100 mL

Laboratory needs to be evaluated by federal Food and Drug Administration for NSSP shellfish methods.



NSSP Fecal coliform Water Quality Criteria

For 5 tube, 3 dilution method.

Required: Minimum of 30 samples for analysis. Minimum 5-6 per year.

Approved Classification (direct to market)	Threshold	Sampling Strategy
Geometric Mean	14 MPN	Both
Percent Samples \geq 43 MPN	10 %	Adverse Pollution
Estimated 90th Percentile	43 MPN	Systematic Random

Restricted Classification (relay or dehydrate)	Threshold
Geometric Mean	88 MPN
Estimated 90th Percentile	260 MPN

NSSP Bacteriological Standards

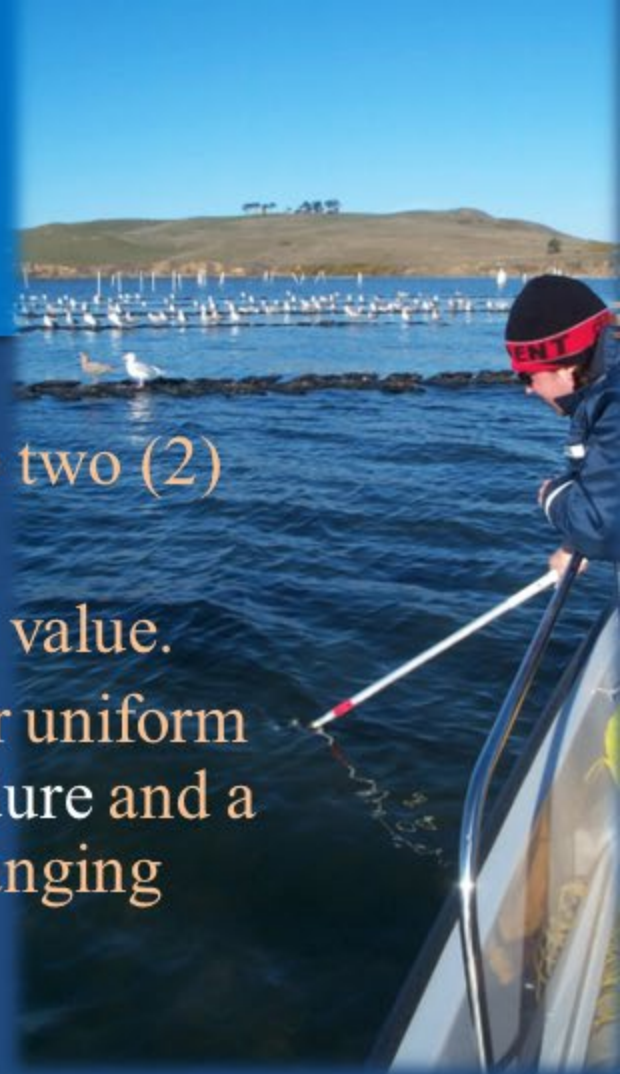
NSSP water quality standards for growing area classification have two (2) components.

The first component establishes a median (geometric mean) MPN value.

The second component, intended for use with data collected under uniform conditions, represents the variability inherent in the testing procedure and a small allowance for some additional variability peculiar to the changing conditions in the water being sampled.

(NSSP, 2019)

Estimated 90th percentile is based on method 95% confidence interval.



Shellfish Meat Bacteriological Data

Not used for basic growing area classification.
Specific applications like: relay, depuration, cleansing studies, WWTP evaluation

Meat indicators (not interchangeable, specific applications):

- total coliform
- fecal coliform
- male specific coliphage (viral indicator)



Conditional Classifications

Option when predictable conditions exist when WQ does not meet standards. Can create closures around those conditions.

Conditional Area Management Plan defines procedures:

- Closures due to predictable pollution events
 - Rainfall amount, duration
- Seasonal closures
 - Months when WQ does not meet criteria

Rainfall Closure Example

TABLE 3. Rainfall Closure Rules for Agua Hedionda Lagoon.

Rainfall Management Area	24-Hour Cumulative Rainfall Total	Start Closure	Closure Length = End of Storm Plus Below:
Agua Hedionda Lagoon Lease Area	>0.40 Inch	When the approved rain gauge exceeds threshold limit.	72-hrs (3-days)

Note: Start of Closure and Closure Length is reinitiated and recalculated each time 24-hour cumulative rainfall threshold is exceeded (including during periods in which closure is already in effect).

CDPH tracks rainfall every day and issues closure and reopening notices.

Changing Standards

NSSP Model Ordinance can be changed through the cooperative process of the Interstate Shellfish Sanitation Conference.

ISSC holds biennial meetings where change proposals are deliberated and voted on.





Thank you!

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