An Introduction to Water Contact Sanitary Surveys

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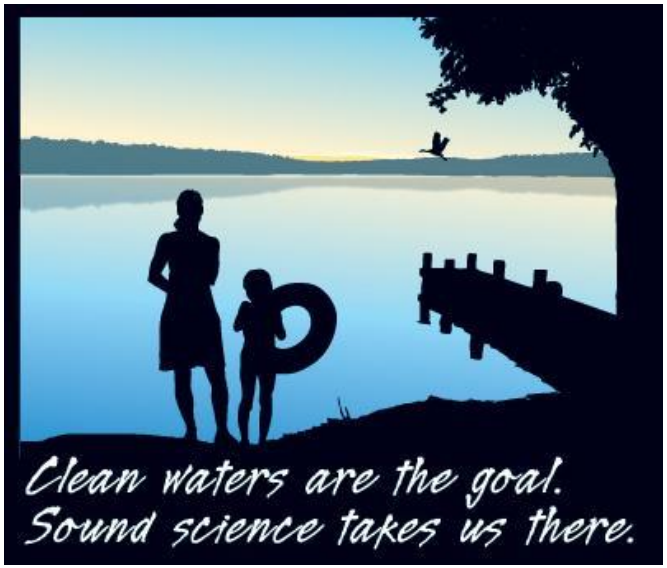
SWRCB-OIMA-Clean Water Team

www.waterboards.ca.gov/water_issues/programs/swamp/cwt_volunteer.shtml

2016 Recreational Waters Conference
April 12 – 15, 2016
New Orleans, Louisiana



The EPA's Office of Science and Technology hosted a Recreational Waters Conference on:

- Beach monitoring,
- Beach notification, and
- Implementation tools for the 2012 Recreational Water Quality Criteria

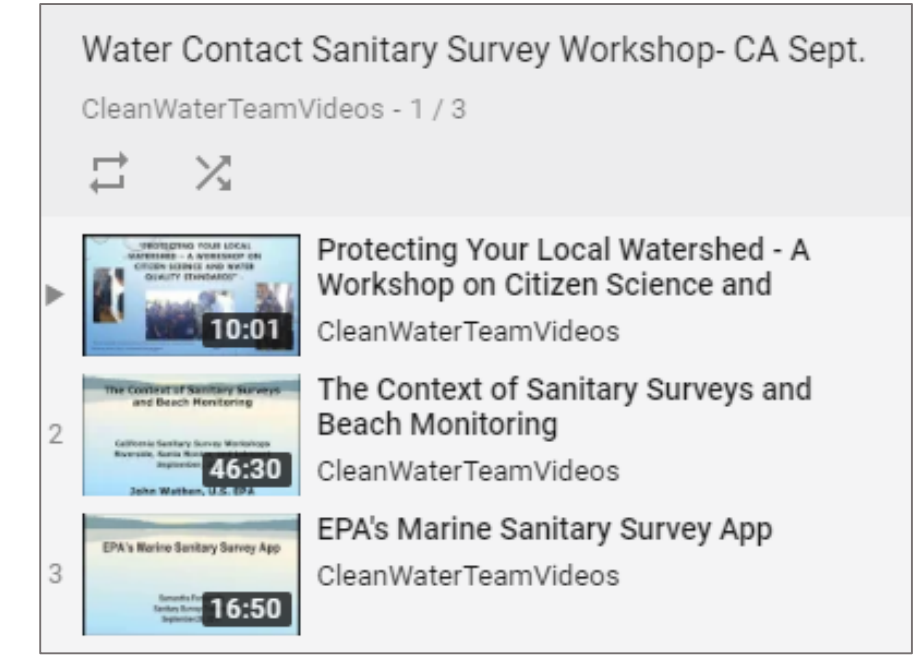
www.epa.gov/beach-tech/2016-recreational-waters-conference

Water Contact Sanitary Survey Workshops
Sept. 2017

Water Contact Sanitary Survey Workshops Sept. 2017

Workshop Presentations can be viewed here:

www.youtube.com/watch?v=w57F_nSV0a4&list=PLMSa5d-iIl6OsjuwK3Fh0tH6D4BOmFneV



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

CALIFORNIA Water Boards

CLEAN WATER TEAM

Inland Empire WATERKEEPER

Heal the Bay

BIG VALLEY RANCHERIA

Sanitary Surveys

Drinking Water Vs Water Contact

A Public Water Systems Sanitary Survey….

Sanitary surveys provide an opportunity for the primacy agency to visit the water system and educate the operator about proper monitoring and sampling procedures and to provide technical assistance. Sanitary surveys are a proactive public health measure and an important component of the SDWA public water system supervision program. Sanitary survey requirements are described in the Code of Federal Register (CFR).

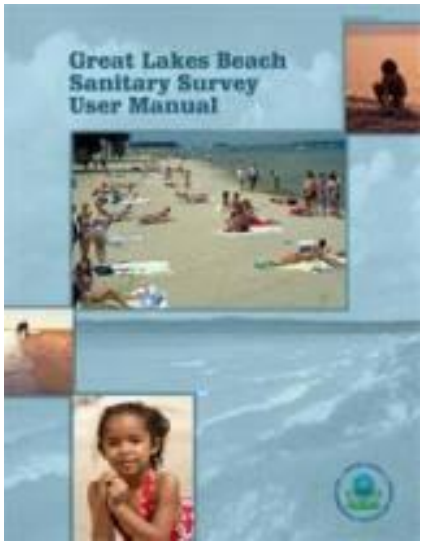
> 40 CFR DEFINITION: "Sanitary survey means an onsite review of the water source, facilities, equipment, operation and maintenance of a public water system for the purpose of evaluating the adequacy of such source, facilities, equipment, operation and maintenance for producing and distributing safe drinking water."

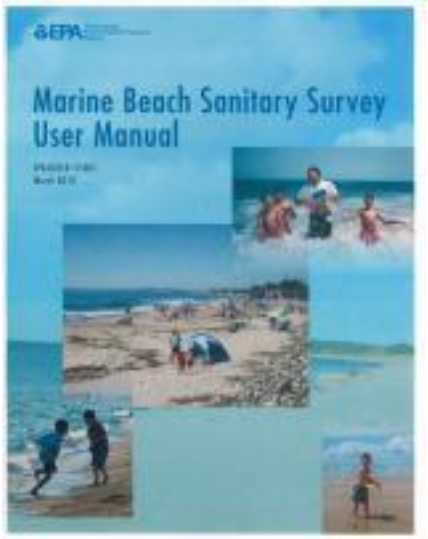
Eight areas of a sanitary survey

Area	Description
Source	Reviews a raw water source's features for the purposes of preventing potential contamination or water quality degradation.
Treatment	Identifies existing or potential sanitary risks by evaluating the design, operation, maintenance and management of water treatment plants.
Distribution System	Reviews the design, operation, maintenance and management of distribution systems to prevent contamination of the drinking water as it is delivered to customers.
Finished Water Storage	Reviews the design and major components of finished water storage facilities in order to prevent water quality problems from arising during storage.
Pumps	Reviews the design and use of water supply pumping facilities in order to determine overall reliability and identify potential sanitary risks.
Monitoring & Reporting	Determines water system conformance with regulatory requirements through the review of water quality monitoring plans and system records; verifies data reported to the regulatory agency are consistent with system records.
Management & Operation	Evaluates water system performance in terms of management and operation, including its long-term viability in meeting water quality goals.
Operator Compliance	Ensures water systems have qualified professionals that meet all applicable operator certification requirements.

Frequency Requirements

- Community Water System (CWS) - Every 3 Years
- Non-Community Water System (NCWS) - Every 5 Years
- CWS with outstanding performance based on prior sanitary surveys - Every 5 Year





Marine Beach Sanitary Surveys and the Great Lakes Sanitary Survey were developed by USEPA to help beach managers in coastal states identify and synthesize beach and watershed information—including water quality data, pollutant source data, and land use data—so they can improve water quality for swimming.

The goal is to give watershed managers where there is water contact activities a technically sound and consistent approach for identifying pollution sources and sharing information.

National Beach Guidance and Required Performance Criteria for Grants

The Guidance includes requirements for grants

- Requires tiered monitoring plans based on the level of beach use and risk or FIB threshold exceedances from pollution sources
- Stresses a toolbox approach to beach management that includes focused monitoring, qPCR, predictive models, and **SANITARY SURVEYS**

BEACH Act Grant Program, as described in the National Beach Guidance and Required Performance Criteria for Grants (Coastal and Great Lake Beaches

Beneficial Uses Of Water

State policy for water quality control in California is directed toward achieving the highest water quality consistent with maximum benefit to the people of the state. Aquatic ecosystems and underground aquifers provide many different benefits to the people of the state. The beneficial uses described in detail in this chapter define the resources, services, and qualities of these aquatic systems that are the ultimate goals of protecting and achieving high water quality. The Water Board is charged with protecting all these uses from pollution and nuisance that may occur as a result of waste discharges in the region. Beneficial uses of surface waters, groundwaters, marshes, and wetlands presented here serve as a basis for establishing water quality objectives and discharge prohibitions to attain these goals.

Beneficial use designations for any given water body do not rule out the possibility that other beneficial uses exist or have the potential to exist. Existing beneficial uses that have not been formally designated in this Basin Plan are protected whether or not they are identified. While the tables in this Chapter list a large, representative portion of the water bodies in our region, it is not practical to list each and every water body.

www.waterboards.ca.gov/plans_policies/

www.waterboards.ca.gov/academy/courses/wqstandards/materials/mod3/cabenuses.pdf

www.waterboards.ca.gov/water_issues/programs/water_quality_goals/

Beach Goer/ Bather = Anyone involved in REC1, REC2

REC1: Water Contact Recreation (swimming, surfing, wading…)

REC2: Noncontact Water Recreation (boating, fishing…)

Additional Beneficial Uses Involving Water Contact

Tribal Traditional & Cultural

- Uses of water that support the cultural, spiritual, ceremonial, traditional rights and/or lifeways of California Native American Tribes, including, but not limited to: *navigational activities, and fishing, gathering, and/or consumption of natural aquatic resources, including fish, shellfish, vegetation, and materials, as supported by California Native American Tribe(s).*

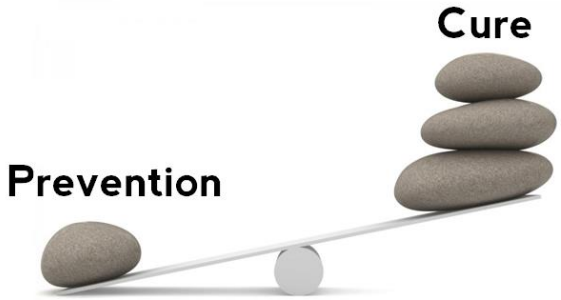
Tribal Subsistence Fishing

- Uses of water that support the catching or gathering of natural aquatic resources, including fish and shellfish, by California Native Americans, for consumption by individuals, households, and/or communities to meet fundamental needs for sustenance.

Subsistence Fishing

- Uses of water that support the non-commercial catching or gathering of natural aquatic resources, including fish and shellfish, by individuals for consumption by individuals, their households, or communities, to meet fundamental needs for sustenance due to cultural tradition, lack of personal economic resources, or both.

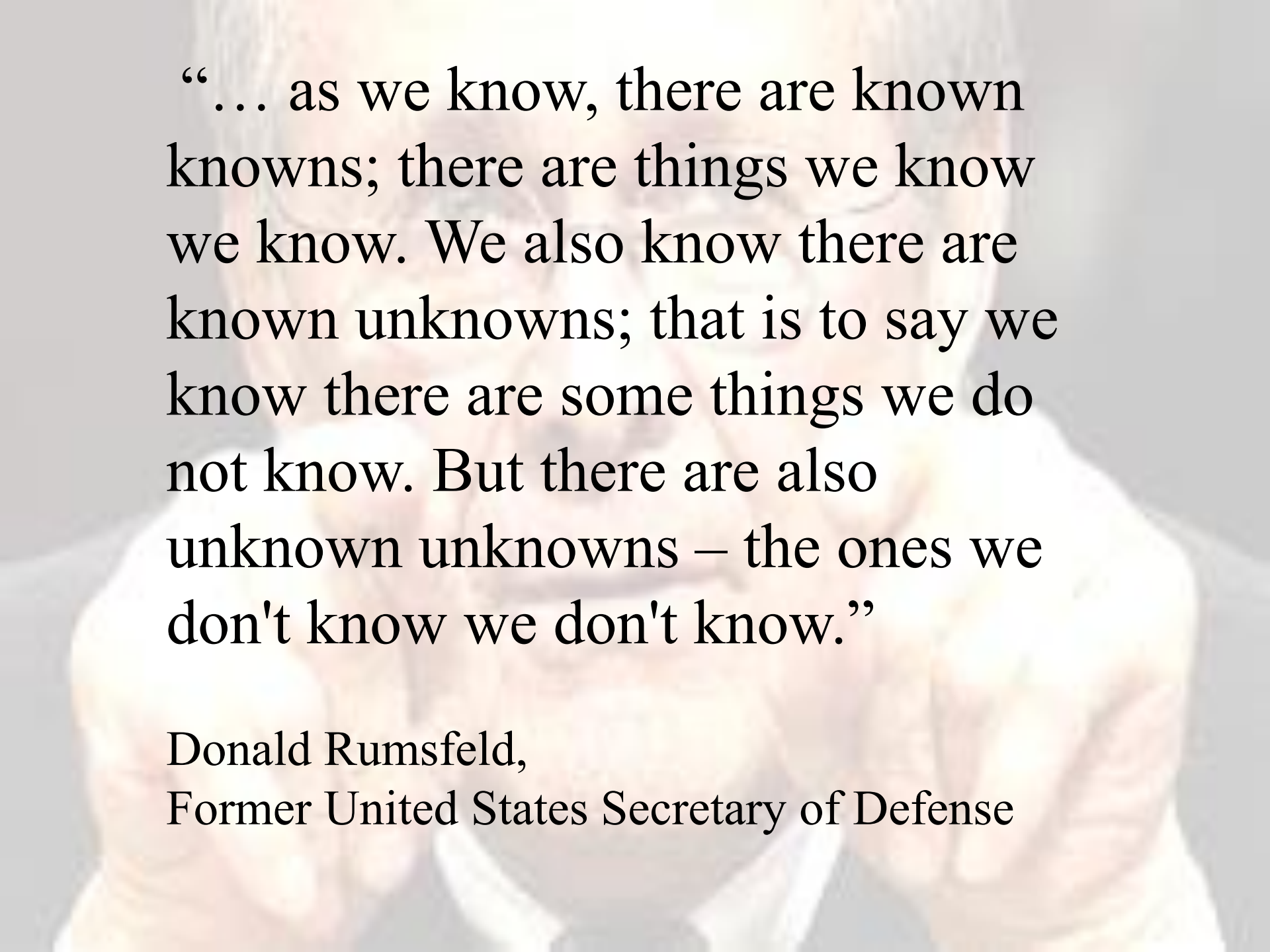
www.waterboards.ca.gov/about_us/public_participation/tribal_affairs/docs/bu_outreach.pdf



"An ounce of prevention is worth a pond of cure" and this national clean water tool will help beach managers be pollution detectives upstream to prevent beach closure downstream.

Walter Grumbles USEPA Assistant Administrator

- Who — Beach managers, public health official, stormwater managers, POTWs, research's, watershed groups, EJ organizations…
- What — Monitor water quality and conduct sanitary investigations to protect those involved in water contact activities.
- When — Annually once a year and routinely when collecting water quality samples.
- Where — At sites of water contact activities and their contributing watershed.
- Why — Protect the public, support economies…



"… as we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns – the ones we don't know we don't know."

Donald Rumsfeld,
Former United States Secretary of Defense

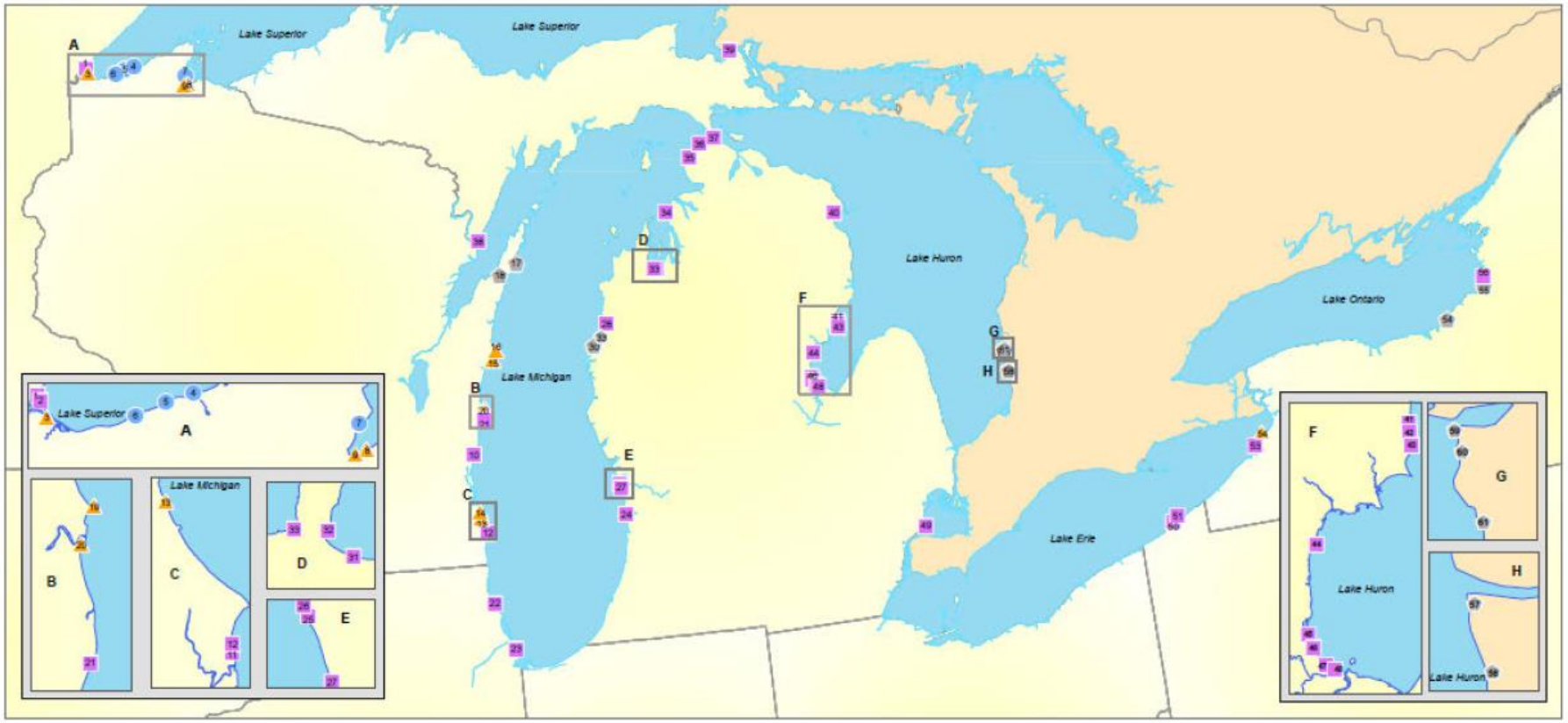
What can Beach Monitoring/Sanitary Surveys do?

The intent of conducting sanitary surveys is to give beach managers a technically sound and consistent approach to identify pollution sources and to share information.

The beach sanitary survey tool provides valuable information that can be used to support a variety of beach management purposes, including the following:

- ✓ Identify pollution sources
- ✓ Characterize risk and prioritize beaches
- ✓ Identify appropriate mediation
- ✓ Facilitate beach and watershed planning
- ✓ Develop best management practices
- ✓ Develop predictive models
- ✓ Develop site specific criteria where appropriate
- ✓ Support other research

GREAT LAKES BEACH SANITARY SURVEY LOCATIONS



Lake Superior

Minnesota
1 LAKEWALK
2 NEW DULUTH BOAT CLUB/14TH STREET

Wisconsin
3 BARKER'S ISLAND INNER BEACH
4 BRULE RIVER STATE FOREST BEACH #1
5 BRULE RIVER STATE FOREST BEACH #2
6 BRULE RIVER STATE FOREST BEACH #3
7 THOMPSON WEST END PARK BEACH
8 KREHER PARK BEACH
9 MASLOWSKI BEACHES

Lake Michigan

Wisconsin
10 UPPER LAKE PARK BEACH
11 NORTH BEACH
12 ZOO BEACH
13 BENDER BEACH
14 GRANT PARK BEACH
15 NESHOTAH BEACH
16 POINT BEACH STATE PARK - CONCESSION STAND BEACH
17 WHITEFISH DUNES BEACH
18 SUNSET PARK BEACH STURGEON BAY
19 DELAND PARK BEACH
20 GENERAL KING PARK BEACH
21 KOHLER ANDRAE STATE PARK NORTH BEACH

Illinois
22 HIGHLAND PARK ROSEWOOD BEACH
23 JACKSON PARK BEACH

Michigan
24 TUNNEL PARK
25 GRAND HAVEN CITY BEACH
26 GRAND HAVEN STATE PARK
27 ROSY MOUND RECREATION AREA
28 ONEKAMA
29 SUNDLING PARK
30 MAGOON CREEK
31 TRAVERSE CITY STATE PARK BEACH
32 EAST BAY PARK BEACH
33 BRYANT PARK BEACH
34 NORWOOD PARK
35 CROSS VILLAGE BEACH
36 WILDERNESS STATE PRAK
37 MACKINAW CITY LIGHTHOUSE PARK
38 HENES PARK

Lake Huron

Michigan
40 STARLITE BEACH
41 DYER RD. BEACH
42 SINGING BRIDGE BEACH
43 TWINING RD. BEACH
44 WHITES BEACH
45 SOUTH LINWOOD BEACH TOWNSHIP PARK
46 BRISSETTE BEACH TOWNSHIP PARK
47 BAY CITY STATE RECREATION AREA
48 WENONA BEACH

Canada
57 BAYFIELD MAIN BEACH
58 BAYFIELD SOUTH BEACH
59 GODERICH MAIN BEACH
60 GODERICH ST. CHRISTOPHERS BEACH
61 GODERICH ROTARY COVE BEACH

Lake Erie

Pennsylvania
50 BEACH 2
51 BEACH 10 (BUONY BEACH)

New York
52 EVANS TOWN PARK
53 LAKE ERIE BEACH

Lake Ontario

New York
54 FAIR HAVEN BEACH STATE PARK
55 SELKIRK SHORES STATE PARK
56 SANDY ISLAND BEACH STATE PARK

Other

Michigan
39 ST. MARYS RIVER-SUGAR ISLAND TOWNSHIP PARK
49 PIER PARK

Map by: Mari Nord 3/13/08

www.epadatadump.com/pdf-files-2014/marinepart2.pdf

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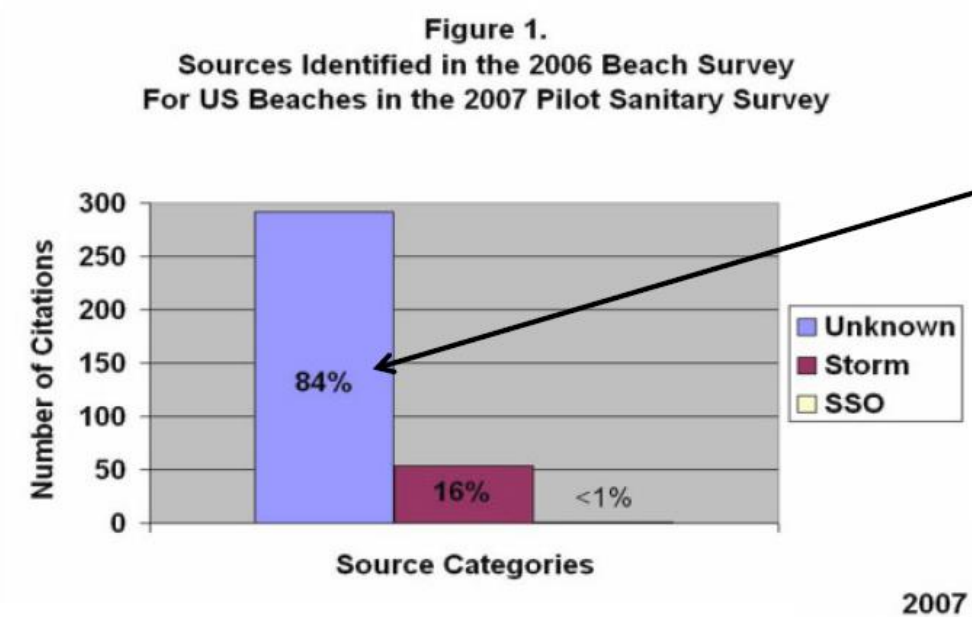
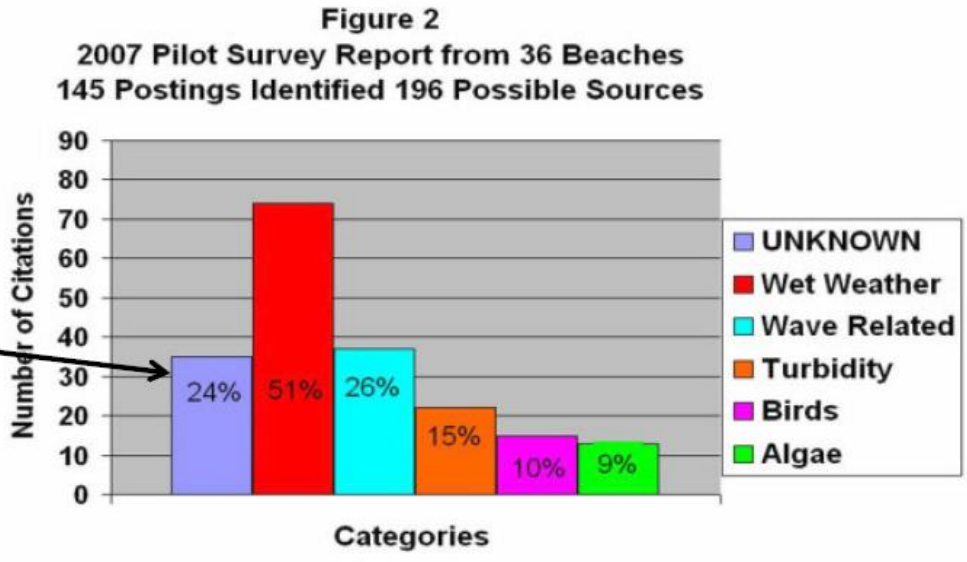
Why is your beach closed?



Before Sanitary Surveys
84% Unknown Sources

After Sanitary Surveys
24% Unknown Sources



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Impact of Sanitary Surveys

Before 2007

84% to 90% unknown sources

After 2007

24% unknown sources

Now

< 20% unknown sources at 488 beaches

69 beaches mitigation measures

133 beaches with predictive modeling

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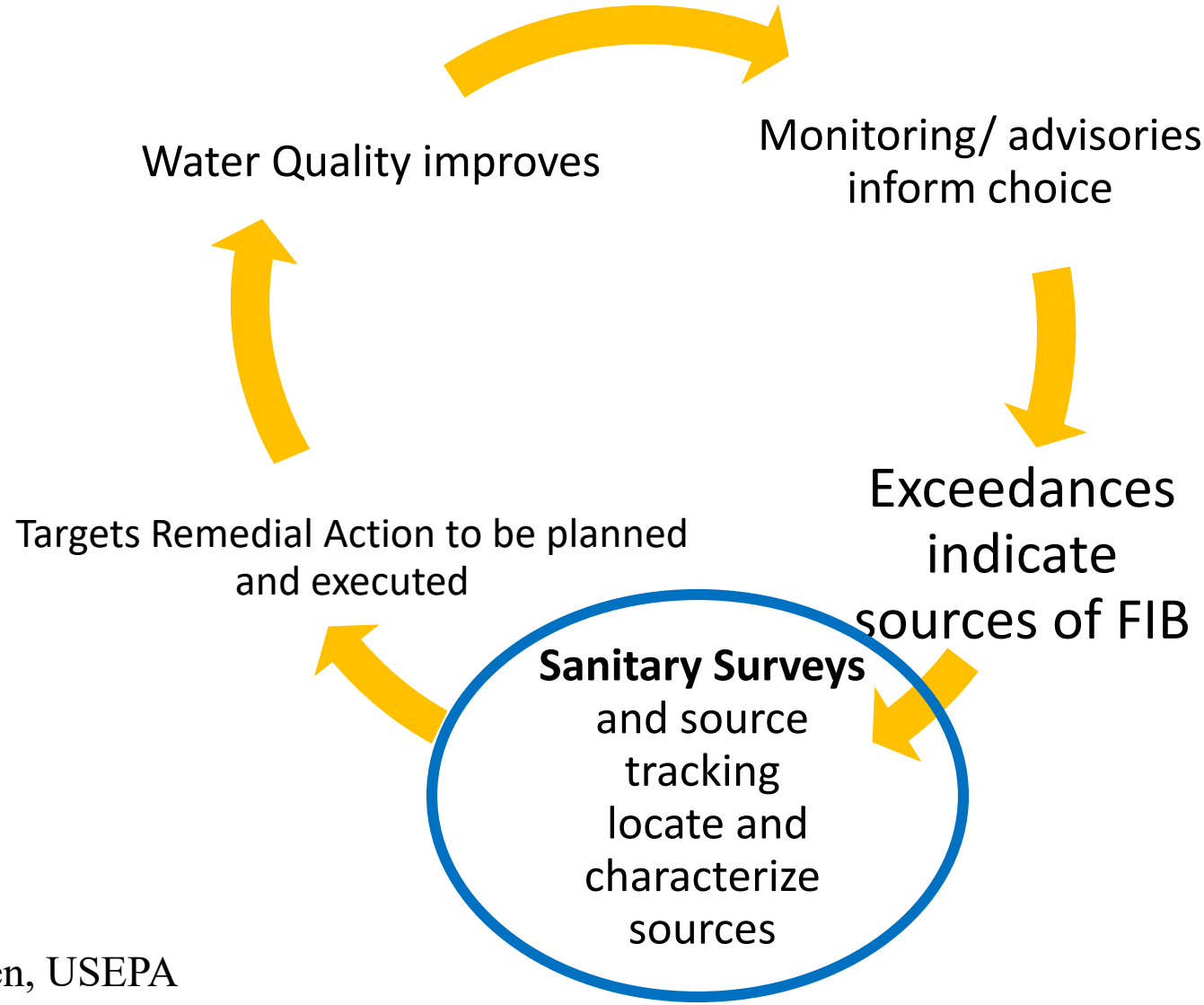
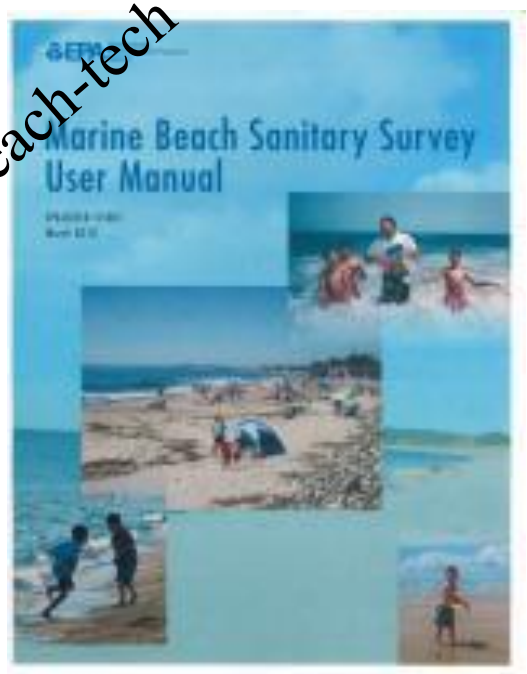
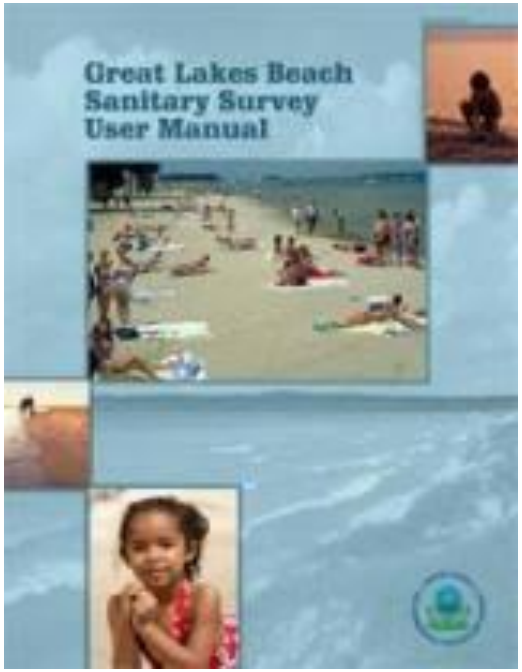
Sanitary Surveys as part of a process



John Wathen, USEPA

www.epa.gov/beach-tech





www.epa.gov/beach-tech/beach-sanitary-surveys

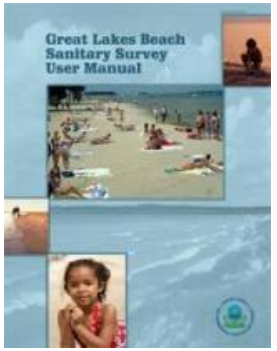
Available on the iPhone
App Store

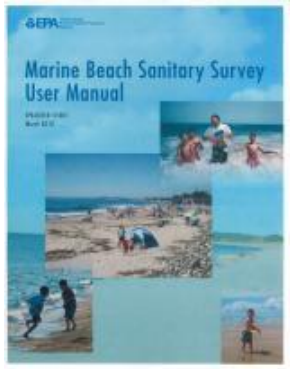
Available on the Android
App Store

Marine Beach
Sanitary Survey

EPA United States Environmental Protection Agency

Resources & Supplemental Materials:





USEPA

Marine Beach Sanitary Survey App

- Apple - The app is in iTunes... Get App
- Android – The app is on Google Play…Get App

Beach Sanitary Surveys

- Marine Beach Sanitary Survey
- Marine Sanitary Survey Webinar
- Great Lakes Sanitary Survey
- Other Sanitary Survey Information

Beaches: Coastal recreation waters as the Great Lakes and marine coastal waters

Microbial (Pathogen)/Recreational Water Quality Criteria

State Water Resources Control Board

Water Contact

- State Water Boards Bacterial Objectives
- Clean Beaches & Ocean Standards (Ocean)
- California Beach Water Quality Information Page (Ocean)

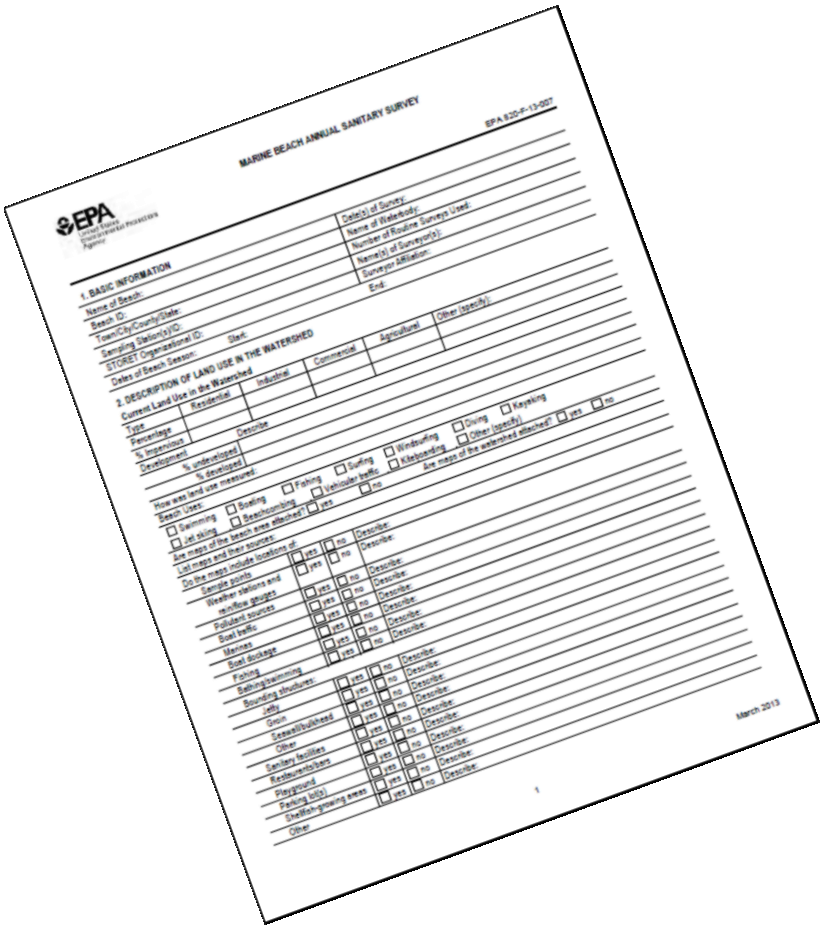
Citizen Science

- Clean Water Team (CWT) – Citizen Monitoring
- GUIDANCE COMPENDIUM FOR WATERSHED MONITORING AND ASSESSMENT
  Section 3.0 "Grab Samples" - Measurements Taken at One Point in a Water Body or in a Container (including Water Quality Fact Sheets)
  3.4 Bacteria (Pathogen Indicators)
- Safe to Swim - Fecal Indicator Bacteria (FIB's) <YouTube Playlist>

California Water Quality Monitoring Council

- Water Quality Portal - Is it safe to swim in our waters?
- California Safe-to-Swim Workgroups

What Information is Collected in a Sanitary Survey?


MARINE BEACH ANNUAL SANITARY SURVEY

EPA 820-R-13-007

EPA

1. BASIC INFORMATION

Name of Beach:

Beach ID:

Town/City/County/State:

Sampling Station(s) ID:

STORET Organizational ID:

Dates of Beach Season:

Start:

End:

Date(s) of Survey:

Name of Waterbody:

Number of Routine Surveys Used:

Name(s) of Surveyor(s):

Surveyor Affiliation:

2. DESCRIPTION OF LAND USE IN THE WATERSHED

Current Land Use in the Watershed

Type	Residential	Industrial	Commercial	Agricultural	Other (specify)
Percentage					

% Impervious

Development

% undeveloped

% developed

How are land use measured

Beach Uses

☐ Swimming ☐ Boating ☐ Fishing ☐ Surfing ☐ Windsurfing ☐ Diving ☐ Kayaking

☐ Jet skiing ☐ Beachcombing Other (specify)

Are maps of the beach area attached? ☐ yes ☐ no

Are maps of the watershed attached? ☐ yes ☐ no

List maps and their sources

Do the maps include locations of:

Sample points	☐ yes	☐ no	Describe
Weather stations and rain/flow gauges	☐ yes	☐ no	Describe
Pollutant sources	☐ yes	☐ no	Describe
Boat traffic	☐ yes	☐ no	Describe
Marinas	☐ yes	☐ no	Describe
Boat dockage	☐ yes	☐ no	Describe
Fishing	☐ yes	☐ no	Describe
Bathing/swimming	☐ yes	☐ no	Describe
Bounding structures	☐ yes	☐ no	Describe
Jetty	☐ yes	☐ no	Describe
Groin	☐ yes	☐ no	Describe
Seawall/bulkhead	☐ yes	☐ no	Describe
Other	☐ yes	☐ no	Describe
Sanitary facilities	☐ yes	☐ no	Describe
Restaurants/bars	☐ yes	☐ no	Describe
Playground	☐ yes	☐ no	Describe
Parking lot(s)	☐ yes	☐ no	Describe
Shellfish-growing areas	☐ yes	☐ no	Describe
Other			

March 2013

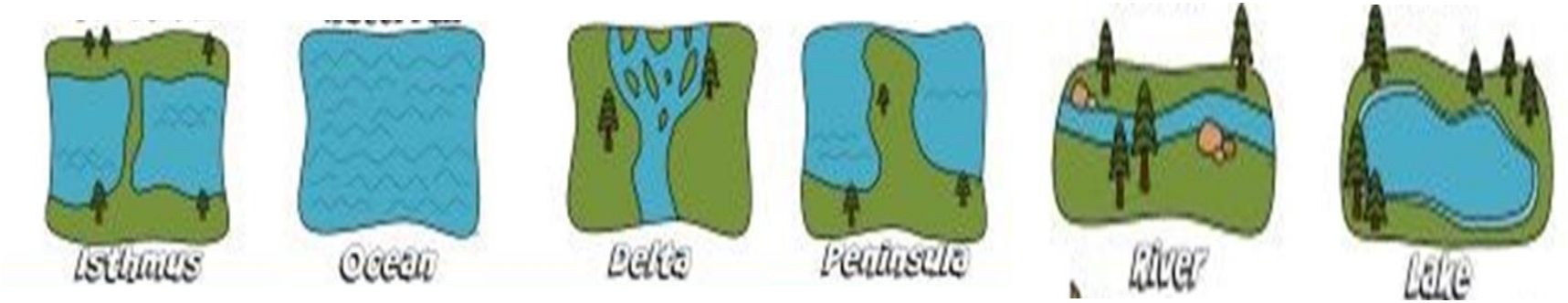
1

Performing a sanitary survey involves collecting information at the “beach”, as well as in the surrounding watershed.

What Information is Collected in a Sanitary Survey?

It is ok to modify sanitary survey forms so that information useful for managing your watershed and beach are collected.

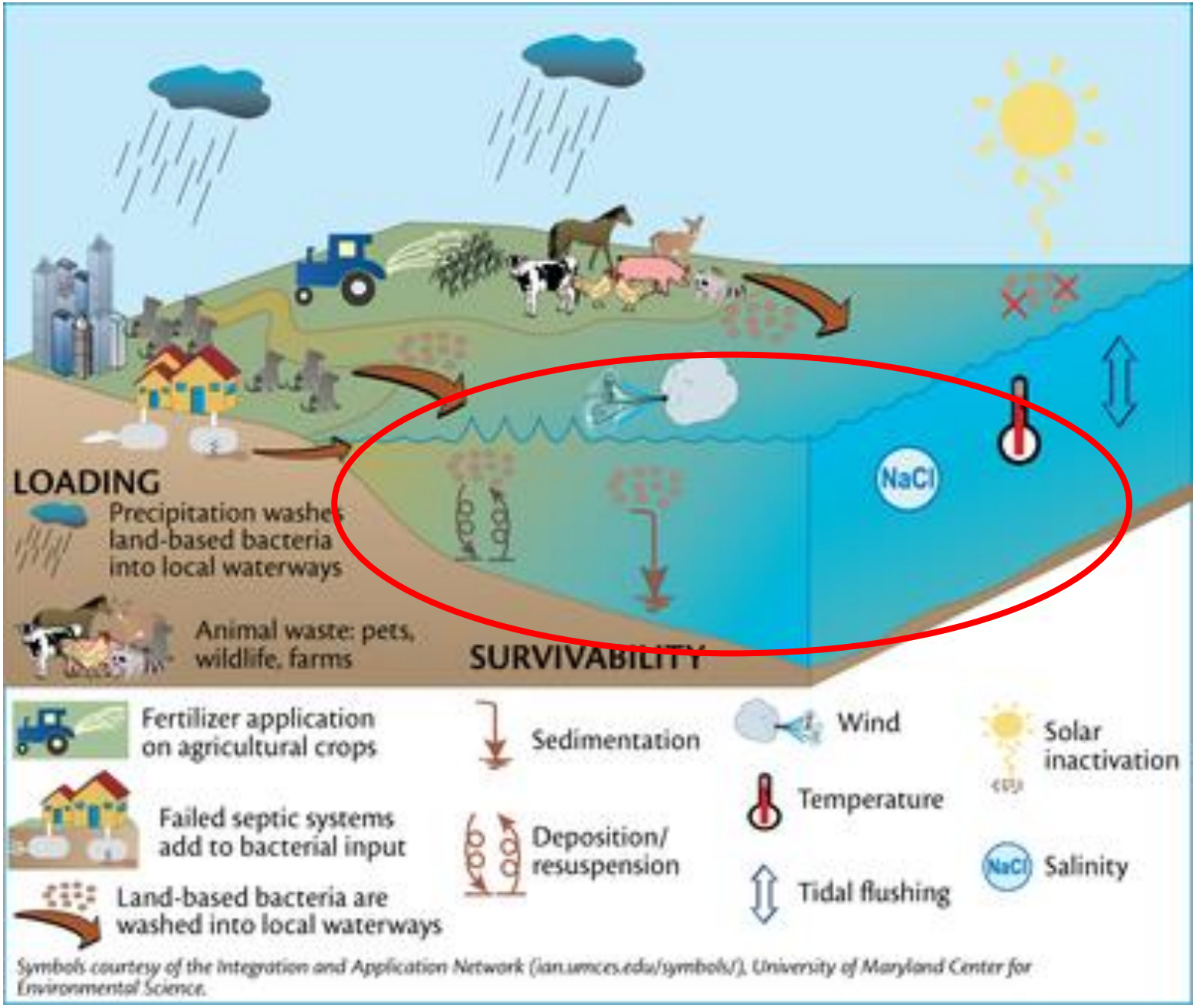
- Watersheds are not all the same
- Infrastructure can fail in differing ways

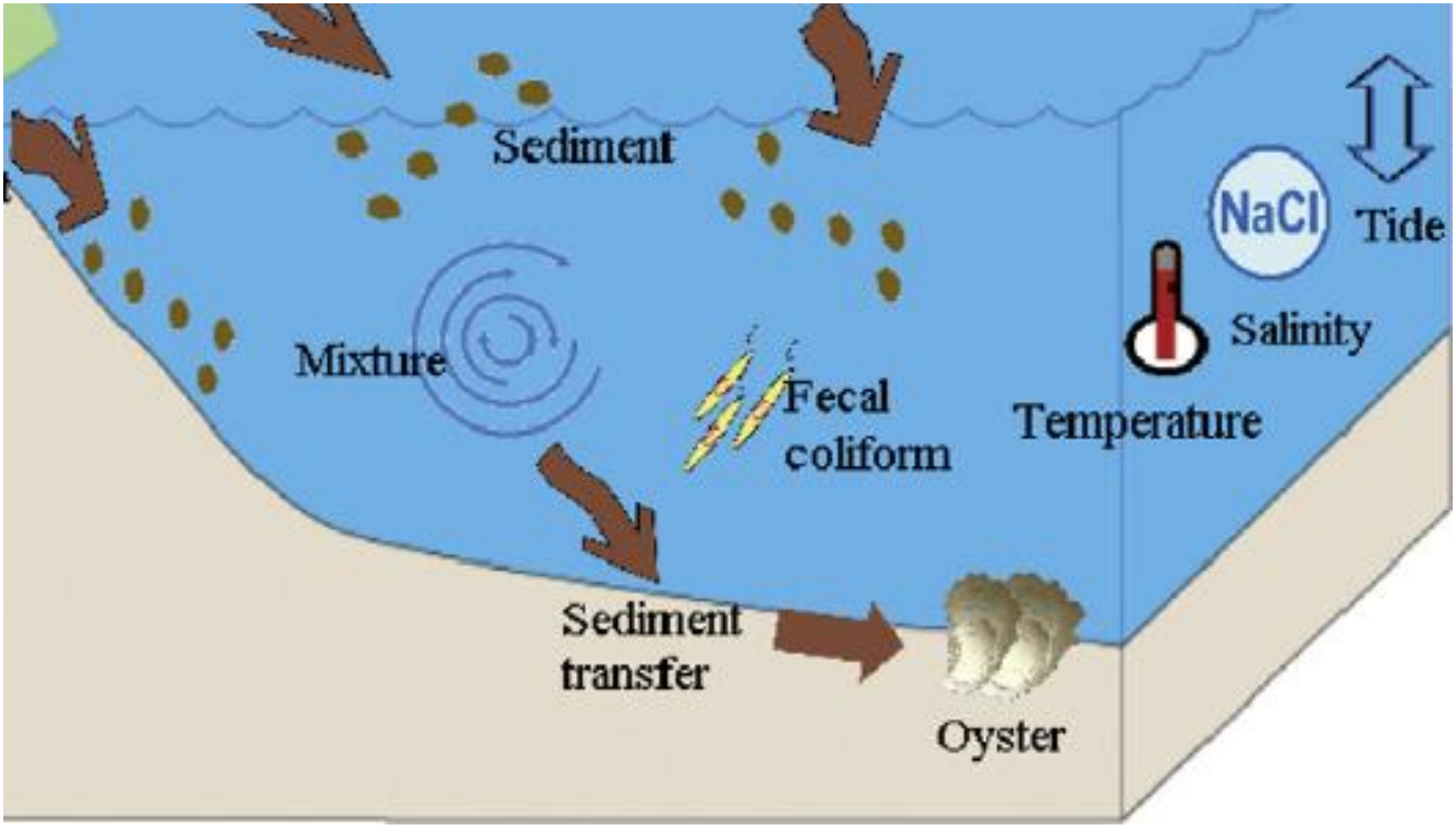


Sanitary Surveys can be conducted on any waterbody type.

- Coastal Beaches
- Estuaries
- Lake shores
- River and creek swimming areas


Identify Sources of Fecal Contamination
Pet feces
Failing septic systems
Livestock feces
Wildlife feces
Wastewater Treatment Plant
Seagull and goose droppings
Runoff from impervious surfaces
Combined sewer overflows
Vessel sewage discharges
Swimmers

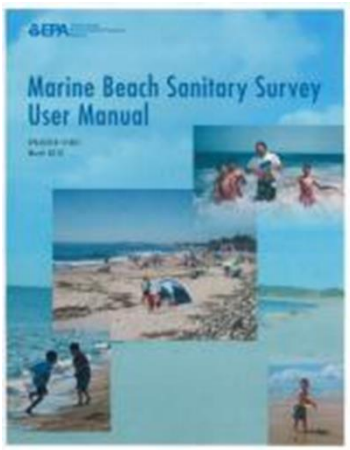

LOADING
Precipitation washes land-based bacteria into local waterways
Animal waste: pets, wildlife, farms
SURVIVABILITY
NaCl
Fertilizer application on agricultural crops
Failed septic systems add to bacterial input
Land-based bacteria are washed into local waterways
Sedimentation
Deposition/ resuspension
Wind
Temperature
Tidal flushing
Solar inactivation
Salinity
Symbols courtesy of the Integration and Application Network (ian.umces.edu/symbols/), University of Maryland Center for Environmental Science.

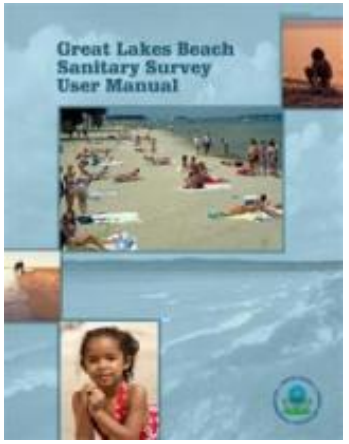

Sediment
NaCl
Tide
Salinity
Mixture
Fecal
coliform
Temperature
Sediment
transfer
Oyster

Marine Beach vs Great Lakes Beach Surveys

Marine Sanitary Surveys

Detailed questions on winds, tides, and other characteristics that affect marine beaches (rip currents, circulation control, tides), tide pools, other studies (MST…), TMDLs and other specific marine data elements (shellfish growing areas…).





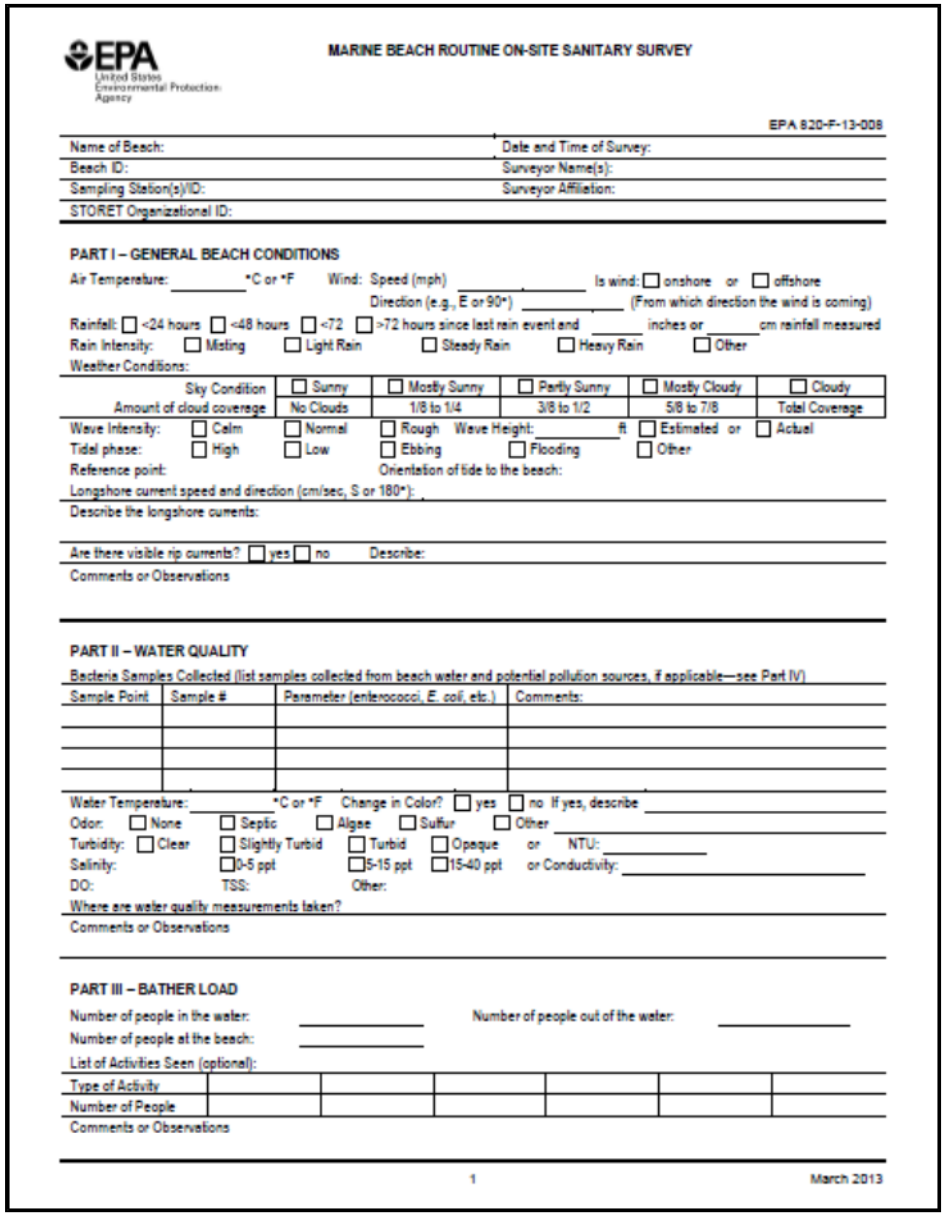
Routine Surveys vs Annual Surveys

The **routine on-site sanitary survey** is designed to be filled out each time water quality samples are taken. The information for this form is collected by observation and measurement at or near the beach, for use in short-term beach assessments

The **annual sanitary survey** records more comprehensive information about factors in the surrounding watershed that might affect water quality at the beach. It was designed for use in long-term beach assessments. This form includes, for example, information on septic tanks in the contributing watershed or land use information, depending on the beach being surveyed.

Data Elements: Routine Surveys

- General Conditions
- Water Quality
- Bather Load
- Potential Pollution Sources



EPA United States Environmental Protection Agency

MARINE BEACH ROUTINE ON-SITE SANITARY SURVEY

EPA 820-F-13-008

Name of Beach: | Date and Time of Survey:
Beach ID: | Surveyor Name(s):
Sampling Station(s)/ID: | Surveyor Affiliation:
STORET Organizational ID:

PART I – GENERAL BEACH CONDITIONS

Air Temperature: _____ °C or °F Wind: Speed (mph) _____ Is wind: ☐ onshore or ☐ offshore
Direction (e.g., E or 90°) _____ (From which direction the wind is coming)
Rainfall: ☐ <24 hours ☐ <48 hours ☐ <72 ☐ >72 hours since last rain event and _____ inches or _____ cm rainfall measured
Rain Intensity: ☐ Misting ☐ Light Rain ☐ Steady Rain ☐ Heavy Rain ☐ Other
Weather Conditions:

Sky Condition	☐ Sunny	☐ Mostly Sunny	☐ Partly Sunny	☐ Mostly Cloudy	☐ Cloudy
Amount of cloud coverage	No Clouds	1/8 to 1/4	3/8 to 1/2	5/8 to 7/8	Total Coverage

Wave Intensity: ☐ Calm ☐ Normal ☐ Rough Wave Height: _____ ft ☐ Estimated or ☐ Actual
Tidal phase: ☐ High ☐ Low ☐ Ebbing ☐ Flooding ☐ Other
Reference point: Orientation of tide to the beach:
Longshore current speed and direction (cm/sec, S or 180°):
Describe the longshore currents:
Are there visible rip currents? ☐ yes ☐ no Describe:
Comments or Observations

PART II – WATER QUALITY

Bacteria Samples Collected (list samples collected from beach water and potential pollution sources, if applicable—see Part IV)

Sample Point	Sample #	Parameter (enterococci, *E. coli*, etc.)	Comments:

Water Temperature: _____ °C or °F Change in Color? ☐ yes ☐ no If yes, describe _____
Odor: ☐ None ☐ Septic ☐ Algae ☐ Sulfur ☐ Other _____
Turbidity: ☐ Clear ☐ Slightly Turbid ☐ Turbid ☐ Opaque or NTU: _____
Salinity: ☐ 0-5 ppt ☐ 5-15 ppt ☐ 15-40 ppt or Conductivity: _____
DO: TSS: Other:
Where are water quality measurements taken?
Comments or Observations

PART III – BATHER LOAD

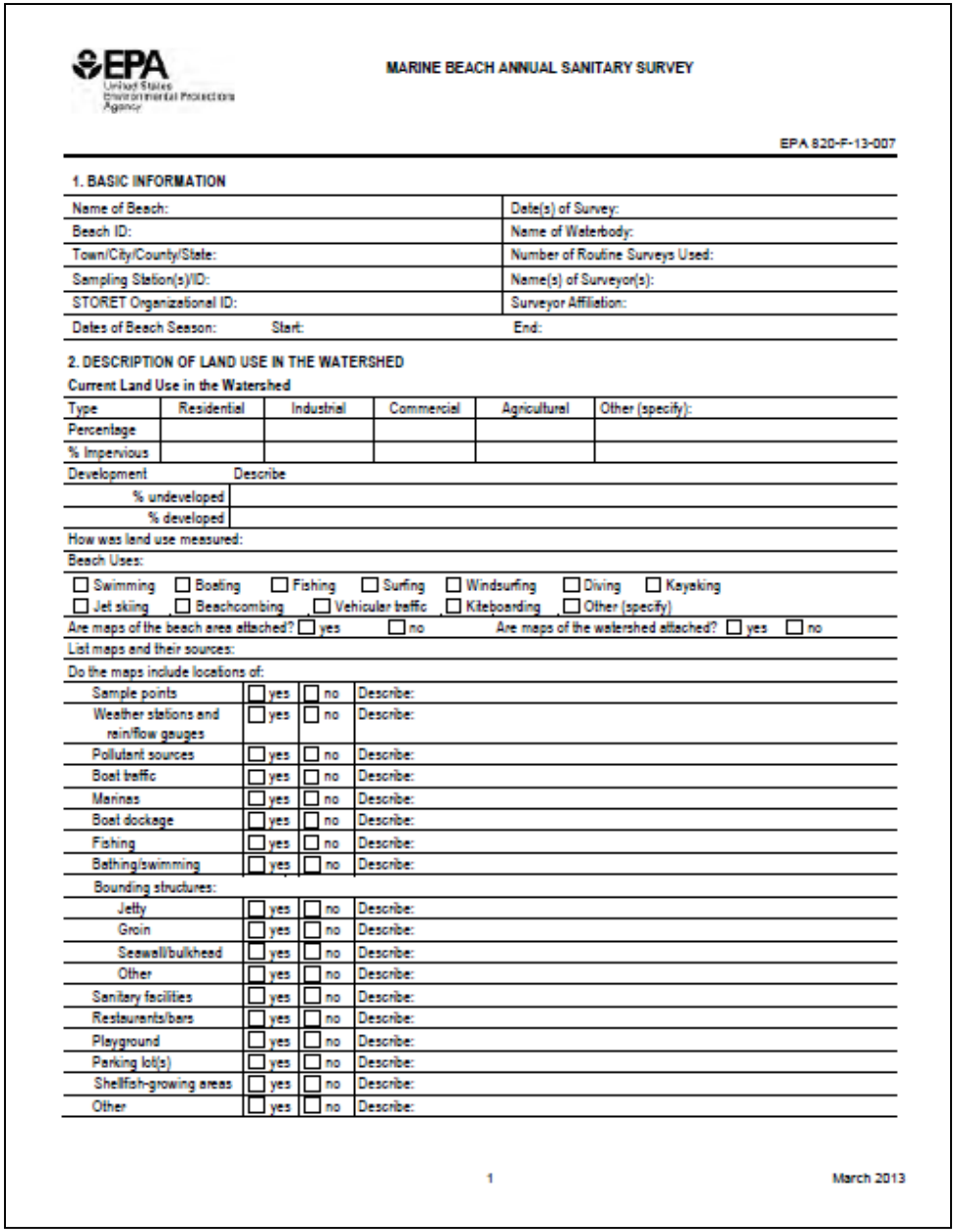
Number of people in the water: _____ Number of people out of the water: _____
Number of people at the beach: _____
List of Activities Seen (optional):

Type of Activity						
Number of People						

Comments or Observations

Data Elements: Annual Surveys

- Basic Information
- Describe Watershed's Land Use
- Weather
- Physical Beach Conditions
- Bather Load
- Beach Maintenance
- Information on Sampling Location
- Water Sampling
- Potential Pollution Sources
- Sanitary Facilities



EPA
United States Environmental Protection Agency

MARINE BEACH ANNUAL SANITARY SURVEY

EPA 820-F-13-007

1. BASIC INFORMATION

Name of Beach:	Date(s) of Survey:
Beach ID:	Name of Waterbody:
Town/City/County/State:	Number of Routine Surveys Used:
Sampling Station(s)/ID:	Name(s) of Surveyor(s):
STORET Organizational ID:	Surveyor Affiliation:
Dates of Beach Season: Start:	End:

2. DESCRIPTION OF LAND USE IN THE WATERSHED

Current Land Use in the Watershed

Type	Residential	Industrial	Commercial	Agricultural	Other (specify):
Percentage					
% Impervious					

Development	Describe
% undeveloped	
% developed	

How was land use measured:

Beach Uses:

☐ Swimming ☐ Boating ☐ Fishing ☐ Surfing ☐ Windsurfing ☐ Diving ☐ Kayaking
☐ Jet skiing ☐ Beachcombing ☐ Vehicular traffic ☐ Kiteboarding ☐ Other (specify)

Are maps of the beach area attached? ☐ yes ☐ no Are maps of the watershed attached? ☐ yes ☐ no

List maps and their sources:

Do the maps include locations of:

Sample points	☐ yes	☐ no	Describe:
Weather stations and rain/flow gauges	☐ yes	☐ no	Describe:
Pollutant sources	☐ yes	☐ no	Describe:
Boat traffic	☐ yes	☐ no	Describe:
Marinas	☐ yes	☐ no	Describe:
Boat dockage	☐ yes	☐ no	Describe:
Fishing	☐ yes	☐ no	Describe:
Bathing/swimming	☐ yes	☐ no	Describe:
Bounding structures:			
Jetty	☐ yes	☐ no	Describe:
Groin	☐ yes	☐ no	Describe:
Seawall/bulkhead	☐ yes	☐ no	Describe:
Other	☐ yes	☐ no	Describe:
Sanitary facilities	☐ yes	☐ no	Describe:
Restaurants/bars	☐ yes	☐ no	Describe:
Playground	☐ yes	☐ no	Describe:
Parking lot(s)	☐ yes	☐ no	Describe:
Shellfish-growing areas	☐ yes	☐ no	Describe:
Other	☐ yes	☐ no	Describe:

Annual Survey *Elements*	Routine Survey *Elements*
1. Basic Info Name, location, dates, etc.	**I. General beach conditions**
2. Description of Land Use Beach and nearby watershed Land use type, beach uses, maps, circulation control structures, sediments, shellfish growing areas and photos	
3. Weather Conditions and Physical Characteristics Rain, air temperature, water, wave height, longshore currents, winds, tides, tidal pools, longshore and nearshore currents	
4. Beach Dimensions Length, width and slopes	

Annual Survey *Elements*	Routine Survey *Elements*
5. Bather Load (number of bathers)	**III. Bather load**
6. Beach Cleaning Debris, litter and other	
7. Sampling Location Information	
8. Water Quality Sampling Lab, algae observations, wildlife and domestic animals, samples, and water quality	**II. Water Quality**
9. Modeling and Other Studies Models, stormwater, discharges and microbial source tracking (MST)	
10. Advisories and Closings	
11. Potential Pollution Sources Numerous source types	**IV. Potential Pollutant Sources**
12.Sanitary Facilities	
13. Other Facilities	

Three Basic Survey Approaches

Beaches *with or without monitoring data*

Annual Sanitary Survey to determine if monitoring is needed

- Use maps
- Visit the water contact area (beach, swimming hole…)
- Look at the contributing watershed

Identify Beach

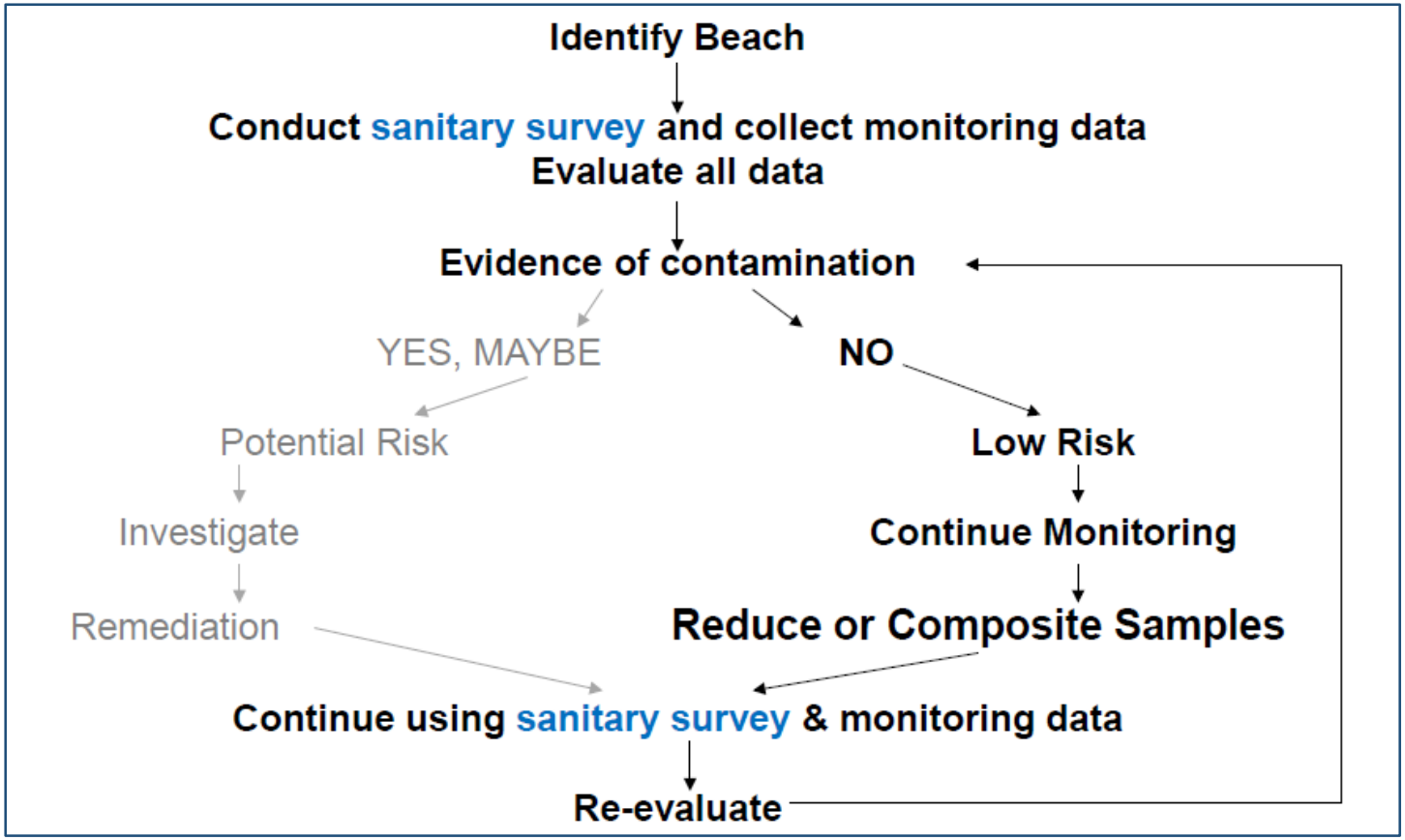
⬇

Conduct Survey

Beaches with monitoring data that *consistently meet water quality objectives (WQOs)*

Routine Sanitary Survey to put fecal bacteria (FIB) data into context

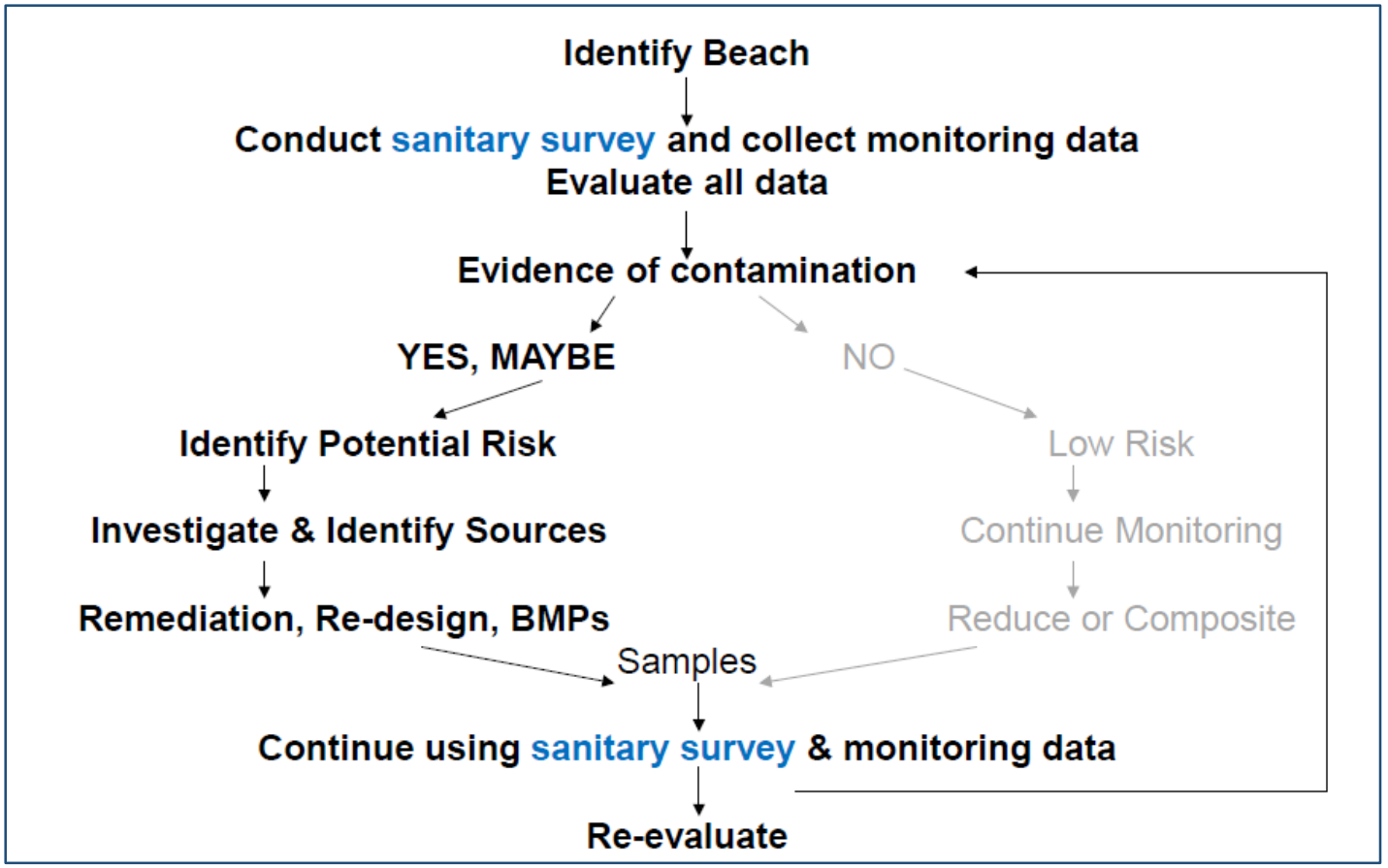
- Look at potential sources that have an impact
- Look for strengths of the beach that help water quality



Beaches with monitoring data that *do not consistently meet water quality objectives (WQOs)*

Routine Sanitary Survey to put fecal bacteria (FIB) data into context

- Why is the beach closed?
- What and where is the source of contamination?
    - Focus first on potential human sources.



Steps

- Recruiting Professional Assistance
- Initial “Beach” Assessment
- Initial “Contributing Watershed” Assessment
- Identify Survey Purpose & Appropriate Forms
- Health & Safety
- Used Trained Staff/Citizen Scientists
- Collect Data
- Document Observations & Data Sources
- Record Data
- Data Management and Sharing

Recruiting Professional Assistance

- Consult public health officials and or local agencies that are responsible for overseeing aspects of maintaining “beaches” and healthy watersheds.

- Citizen Scientists and others (lifeguards…) can be trained to perform sanitary surveys.

Initial “Beach” Assessment

Make an initial assessment of all beaches to identify the beaches at which a sanitary survey should be conducted. During this assessment, compile known data on beaches with past problems and beaches that have and have not been sampled for microbial analysis.

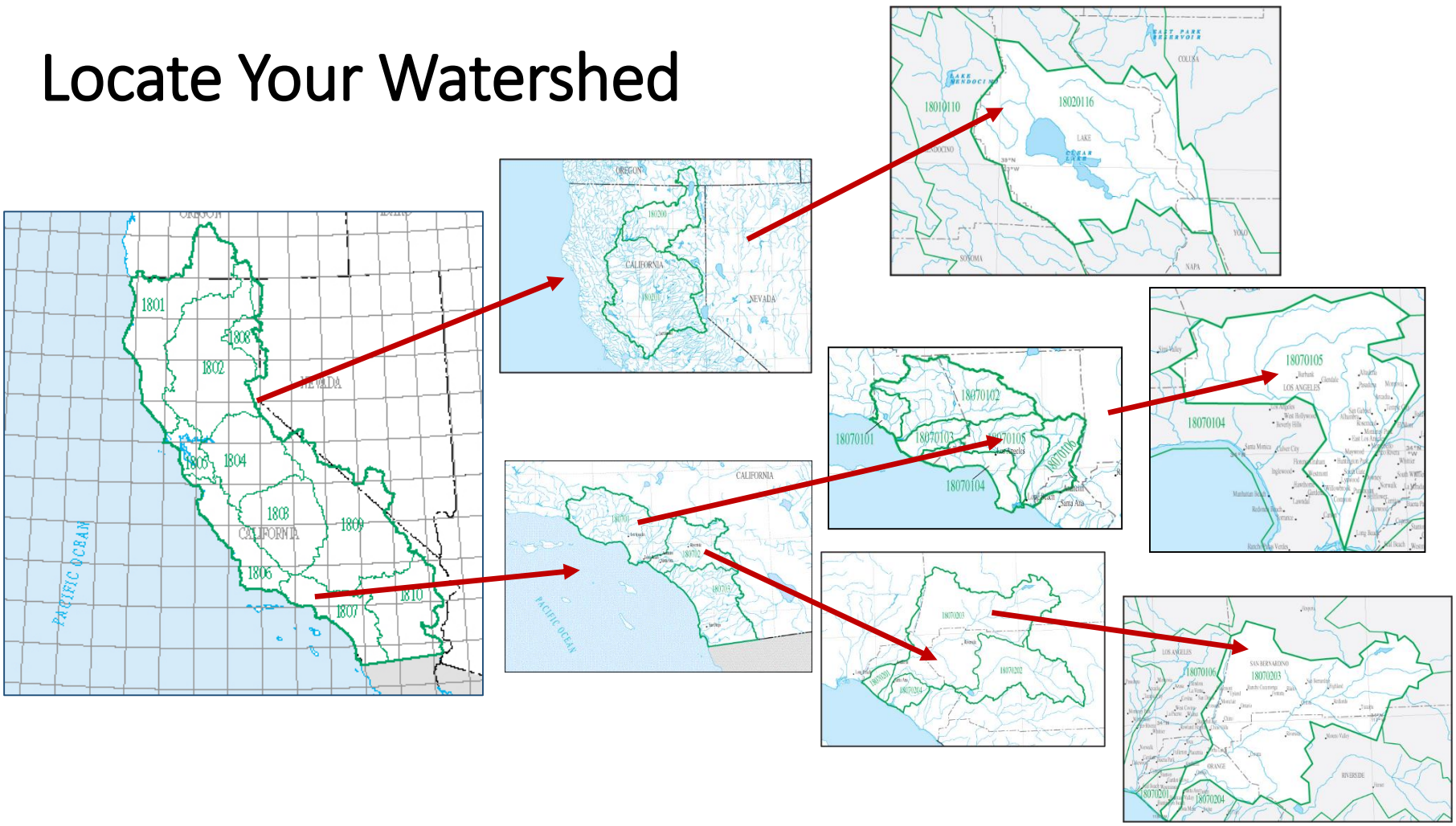
Initial Contributing Watershed Assessment

The watershed, basin, or land area contributing runoff to a beach can vary widely depending on the beach. For some beaches, the contributing area could be simply the area from the dunes down to the shoreline. Some beaches might have a stream, river, or storm drain nearby that is contributing drainage from a large land area. Some beaches might receive poorer quality water from a different location through longshore or nearshore currents; in such cases, you might want to investigate the direction from which water entering the system is coming. During the initial assessment, you might not be sure about whether an area is a contributing area. The sanitary survey process can be used to investigate further and rule something out or confirm that it is contributing drainage to the beach.

Resources for initial descriptions

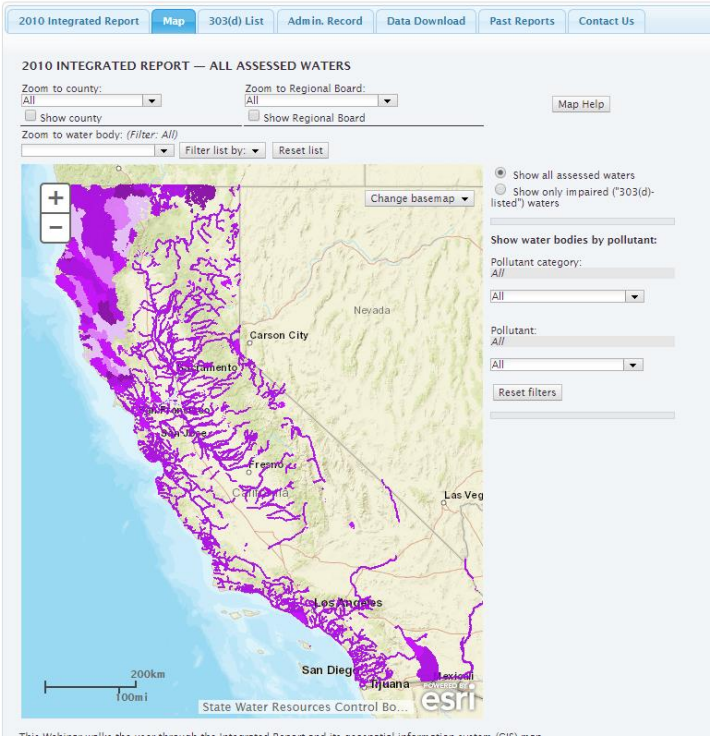
- Contributing Watershed
- Beach conditions
- Visitor use/ water contact activities

Locate Your Watershed



https://water.usgs.gov/wsc/reg/18.html

2010 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report) — Statewide



http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

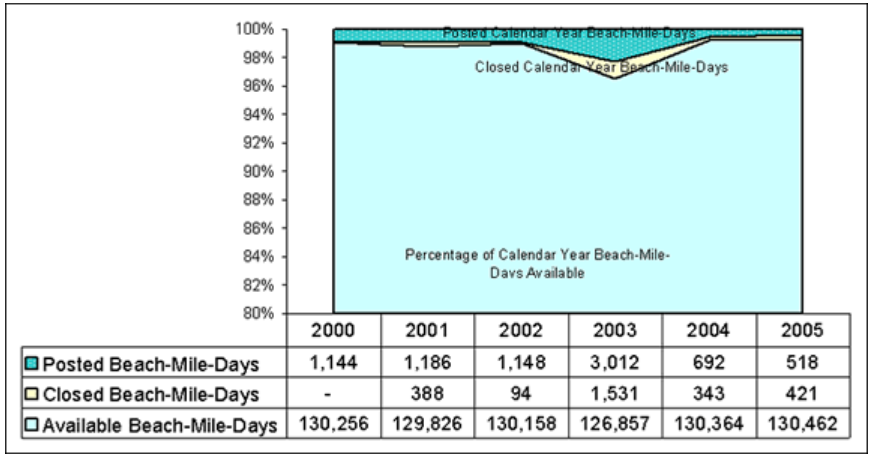
Advisories/Closings

Collect information and List any advisories and closings

- Start and ending dates
- Length of advisory closings
- Did FIBs exceed Geometric Mean or Single Sample Measurement
- Reason for advisory or closing
  - Rainstorm, sewage spill…

Clean Beaches & Ocean Standards

Total Available Beach Mile Days vs Total Posted/Closed BMD for the Historical Dataset - Calendar Year



	2000	2001	2002	2003	2004	2005
Posted Beach-Mile-Days	1,144	1,186	1,148	3,012	692	518
Closed Beach-Mile-Days	-	388	94	1,531	343	421
Available Beach-Mile-Days	130,256	129,826	130,158	126,857	130,364	130,462

www.waterboards.ca.gov/water_issues/programs/beaches/

BEACON 2.0
Beach Advisory and Closing On-line Notification

My Water Quality

Is it safe to swim in our waters?

SAFE-TO-SWIM WORKGROUPS OF THE CALIFORNIA WATER QUALITY MONITORING COUNCIL

Search

Portals | About Us | Work Groups | Swim Links

Swimming Safety Information

Show County Info: -- Select County --

Beach water quality monitoring and strong pollution prevention measures are critical for protecting beach goers from waterborne diseases. Monitoring is performed by city and county health agencies, publicly owned sewage treatment plants, other dischargers, environmental groups and numerous citizen-monitoring groups.

View Monitoring and Assessment Information

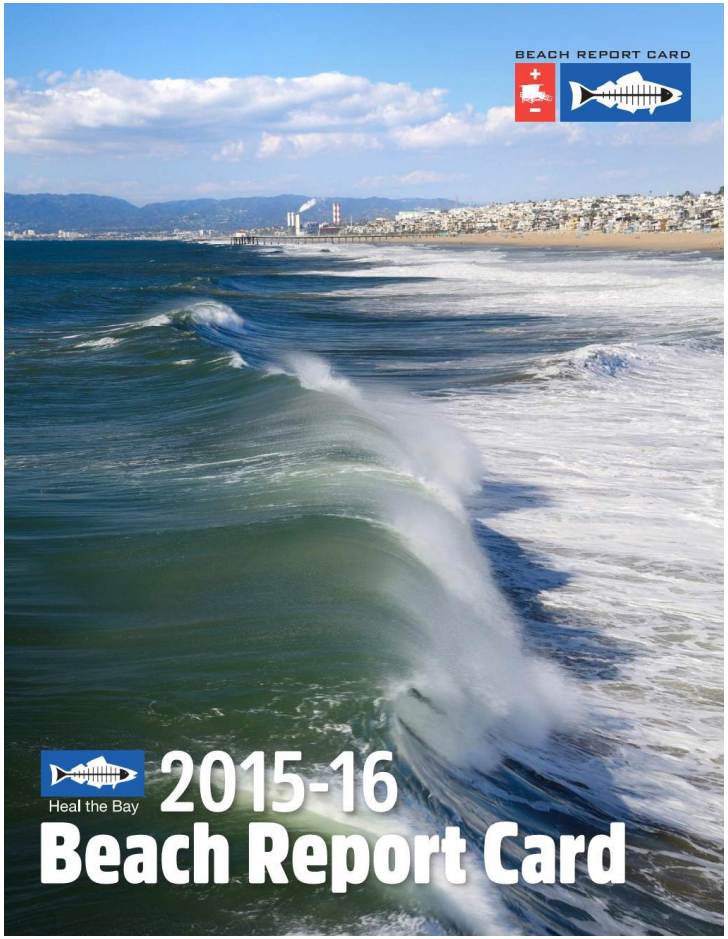
- Click on a **county** or;
- Select from the **Show County** info menu.

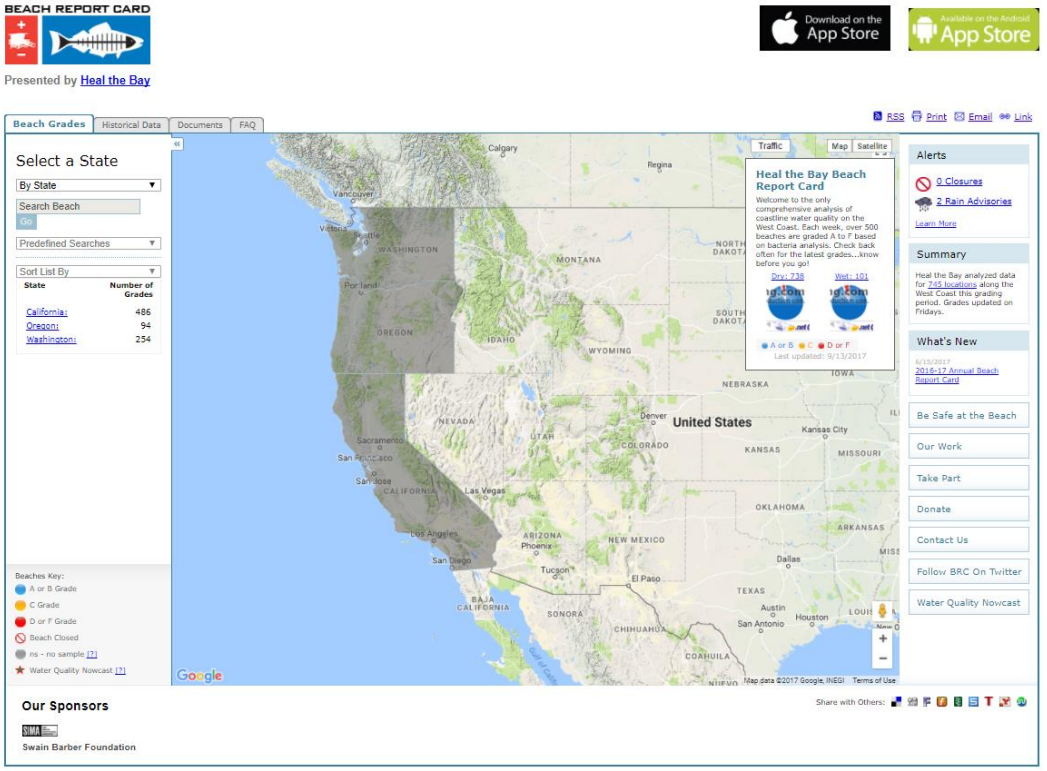
Questions Answered

- Can I swim at my coastal beach?
- What are the current swimming advisories for my coastal beach?
- How do harmful algal blooms affect swimming safety?
- What are the long-term trends of bacteria at my coastal beach?
- Which beaches, lakes, and streams are listed by the State as impaired for swimming?
- How are we improving swimming safety?

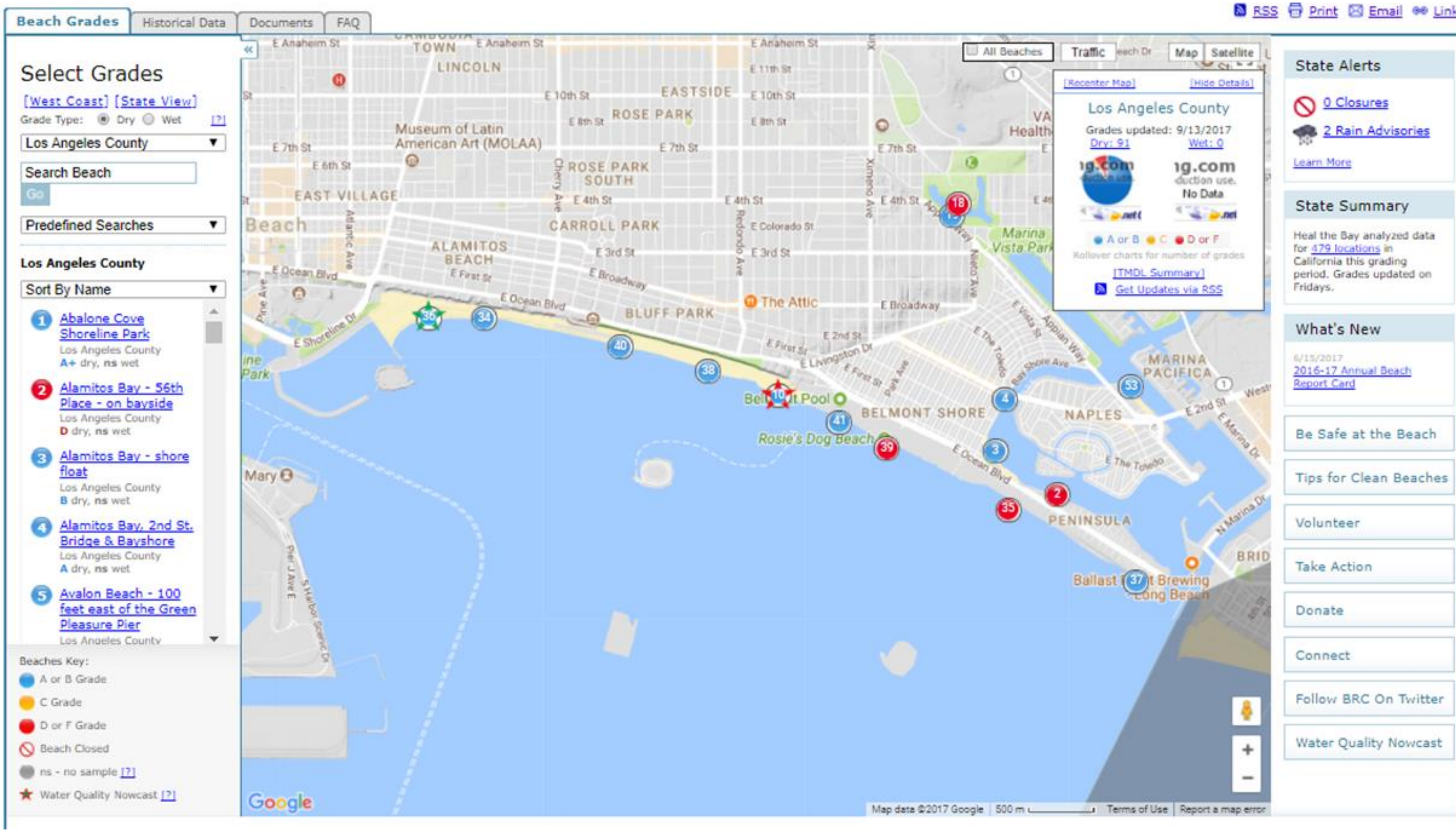
www.mywaterquality.ca.gov/safe_to_swim/index.html

Heal the Bay's Beach Report Card





http://beachreportcard.org/

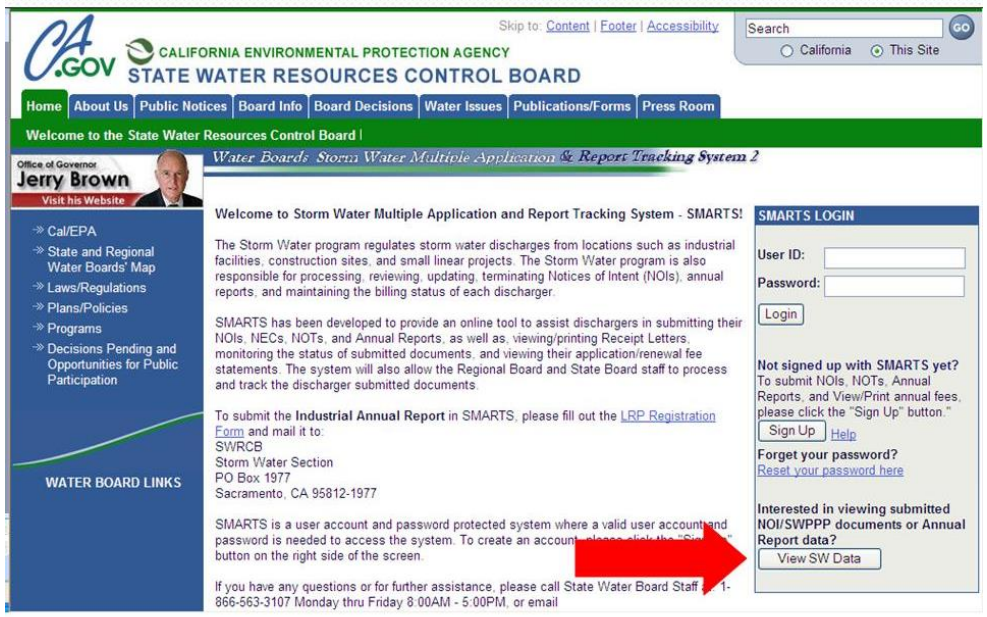


Beach Grades
Historical Data
Documents
FAQ
RSS
Print
Email
Link
Select Grades
[West Coast] [State View]
Grade Type: Dry Wet [?]
Los Angeles County
Search Beach
Go
Predefined Searches
Los Angeles County
Sort By Name
Abalone Cove Shoreline Park
Los Angeles County
A+ dry, ns wet
Alamitos Bay - 56th Place - on bayside
Los Angeles County
D dry, ns wet
Alamitos Bay - shore float
Los Angeles County
B dry, ns wet
Alamitos Bay, 2nd St. Bridge & Bayshore
Los Angeles County
A dry, ns wet
Avalon Beach - 100 feet east of the Green Pleasure Pier
Los Angeles County
Beaches Key:
A or B Grade
C Grade
D or F Grade
Beach Closed
ns - no sample [?]
Water Quality Nowcast [?]
All Beaches
Traffic
Map
Satellite
[Recenter Map]
[Hide Details]
Los Angeles County
Grades updated: 9/13/2017
Dry: 91
Wet: 0
No Data
A or B
C
D or F
Rollover charts for number of grades
[TMDL Summary]
Get Updates via RSS
State Alerts
0 Closures
2 Rain Advisories
Learn More
State Summary
Heal the Bay analyzed data for 479 locations in California this grading period. Grades updated on Fridays.
What's New
6/15/2017
2016-17 Annual Beach Report Card
Be Safe at the Beach
Tips for Clean Beaches
Volunteer
Take Action
Donate
Connect
Follow BRC On Twitter
Water Quality Nowcast
LINCOLN
EASTSIDE
ROSE PARK
ROSE PARK SOUTH
EAST VILLAGE
CARROLL PARK
ALAMITOS BEACH
BLUFF PARK
BELMONT SHORE
NAPLES
MARINA PACIFICA
PENINSULA
Museum of Latin American Art (MOLAA)
The Attic
Rosie's Dog Beach
Marina Vista Park
Ballast Point Brewing Long Beach
Map data ©2017 Google
500 m
Terms of Use
Report a map error

Storm Water

- Storm Water Multiple Application and Report Tracking System (SMARTS)

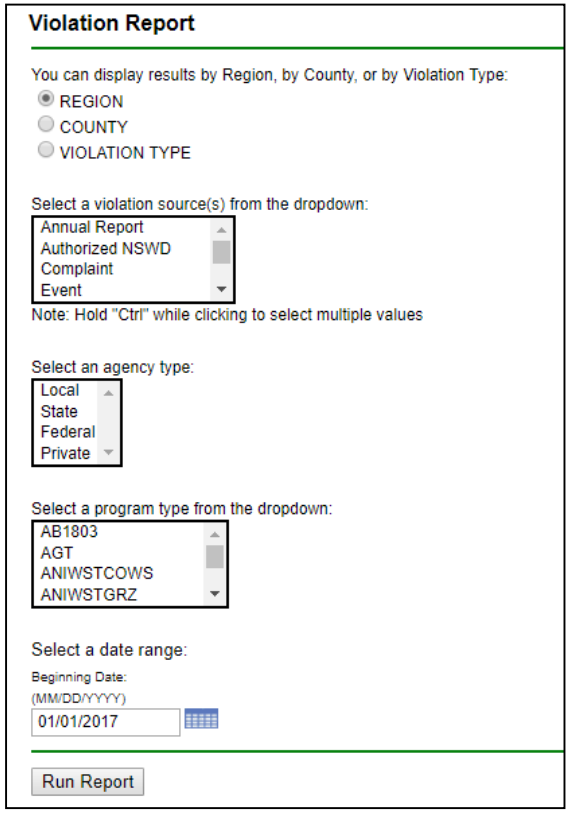
- SMARTS was developed as an online database for dischargers to electronically file their storm water permit documents. The system allows the Region and State Board staff, as well as the public, to access storm water data through submitted documents.



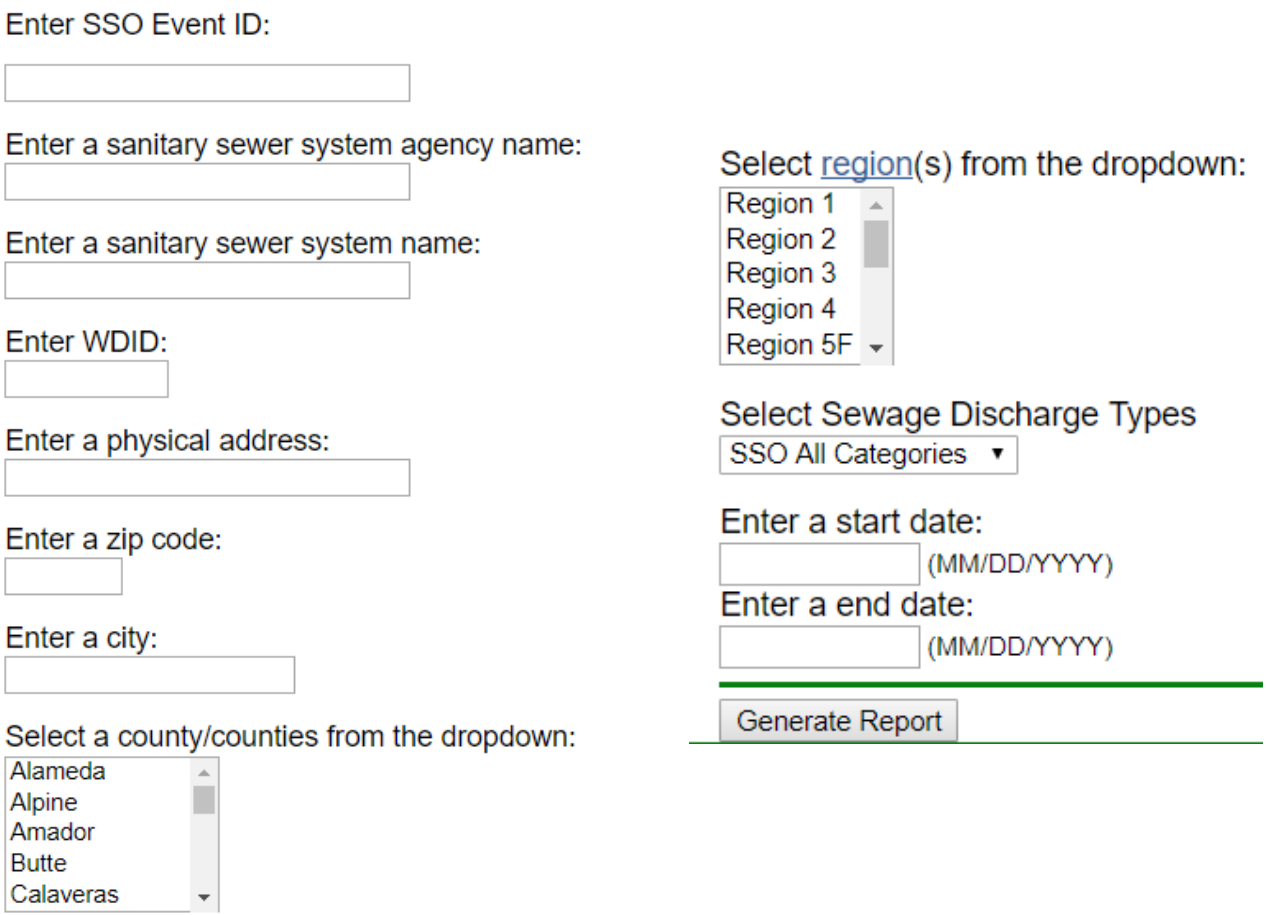
California Integrated Water Quality System Project (CIWQS)

- PUBLIC REPORTS
  - Violation Reports
  - Data from Electronic Self-Monitoring Reports
  - Enforcement
  - Facilities
  - Sanitary Sewer Overflows (SSOs)
  - Storm Water

http://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=reset&reportName=PublicVioSummaryReport

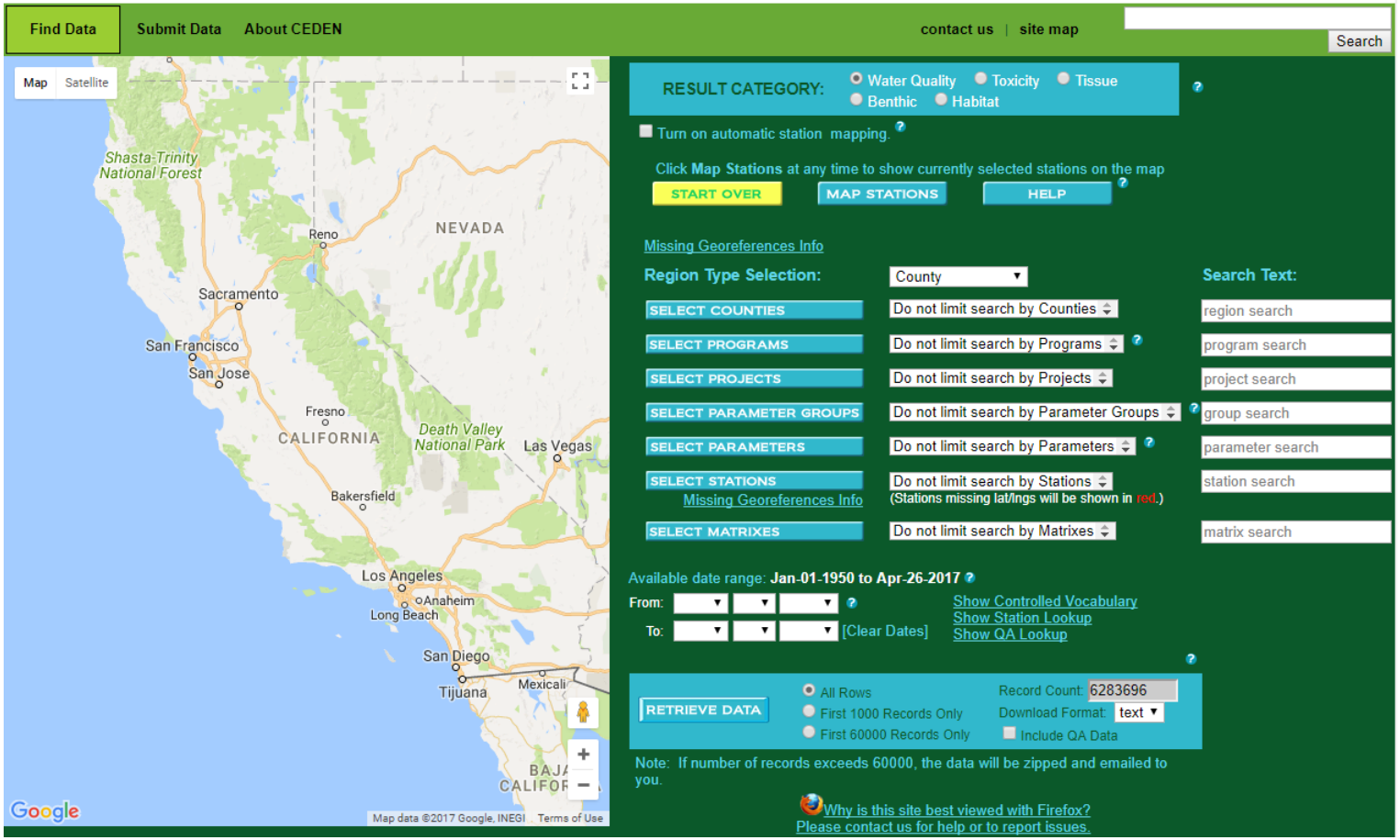


Sanitary Sewer Overflows (SSOs) Reports

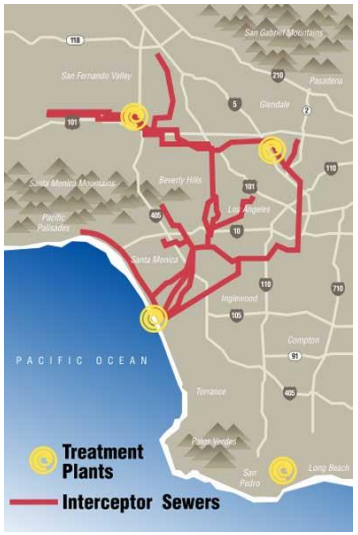


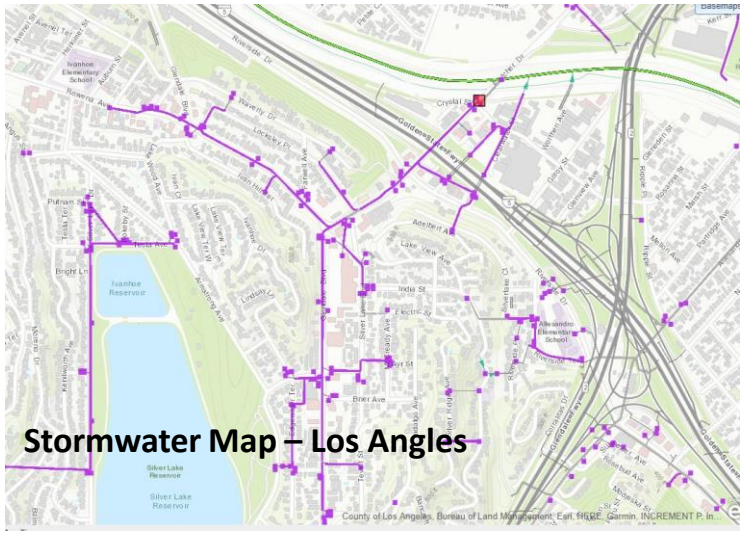
https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/PublicReportSSOServlet?reportAction=criteria&reportId=sso_main

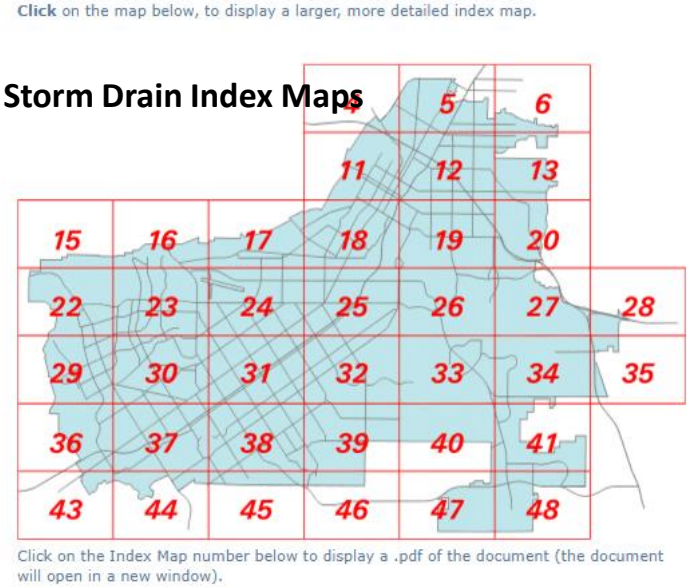
California Environmental Data Exchange Network (CEDEN)



Collect information on waste water and storm water management.



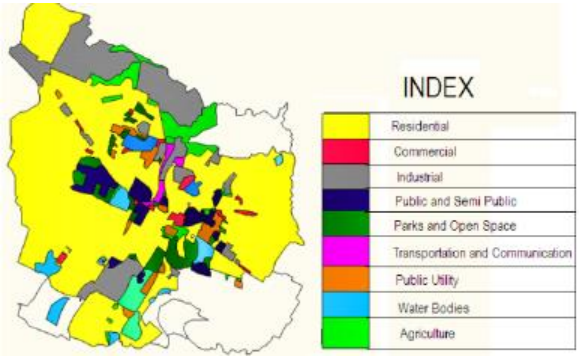




Lake County, CA GIS Portal

Collect Land Use Information

Collect Information on the land use within the contributing watershed.



Describe the Type
- Residential
- Industrial
- Commercial
- Agricultural
- Undeveloped
- Other

Estimate % of the Contributing watershed occupied by each Type

Create a Map

Highlight storm drains, sewer lines, POTWs, hydro-modification structures, harbors, land uses adjacent to sampling area (restaurants, bars, housing, parking lots…), sanitary facilities, playgrounds, schools, camps, areas of erosion/accretion…

Provide detailed physical information about you sample site. Type of sediment, flows (averages, range), tides…

Identify Survey Purpose & Appropriate Forms

Once the beaches have been assessed and identified for a sanitary survey, determine the purpose of the survey and develop a plan.

- Characterize risk and prioritize beaches
- Support beach and watershed planning
- Develop predictive models
- Remediation

Used Trained Staff/Citizen Scientists

The staff members who perform the sanitary surveys should be adequately trained in sampling procedures, equipment use, completing forms, and health and safety precautions before they begin.

The quality of information produced by the sanitary surveys depends on the quality of the work that the field staff and others involved in the beach program perform. Follow-up or continuing training should be held as needed for as long as the sanitary surveys are performed.



Collect Data

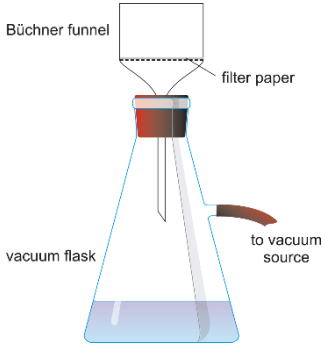
Gather maps and use tools like global positioning system (GPS) units to identify the locations of beach sampling stations, pollutant sources, and watershed uses.

Sources of maps and other geographic data include the U.S. Geological Survey (USGS), county/state offices, online companies (e.g., GoogleEarth), and others.

Collect water quality data and other parameter data at a beach to complete the Routine On-site Survey and meet the data needs you identified for the Annual Sanitary Survey.

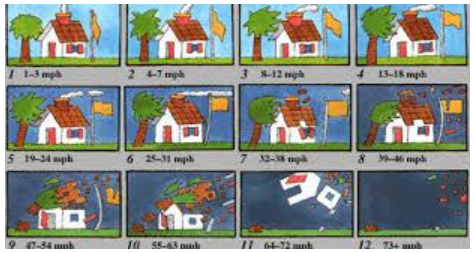
Water Quality

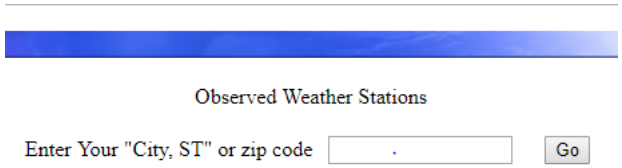
- Water Temperature
- Odor (Sulfur, sewage, diatomaceous earth, septic system leachate
- Salinity/Conductivity
- Turbidity
- Dissolved Oxygen
- Total Suspended Solids
- FIB



General “Beach” Conditions

- Air Temperature (Use a Thermometer, NOAA weather….)
- Rainfall (Use a raingauge, NOAA, CoCoRAHS…)
- Wind (Beaufort scale, weather station..)
- Sky Conditions



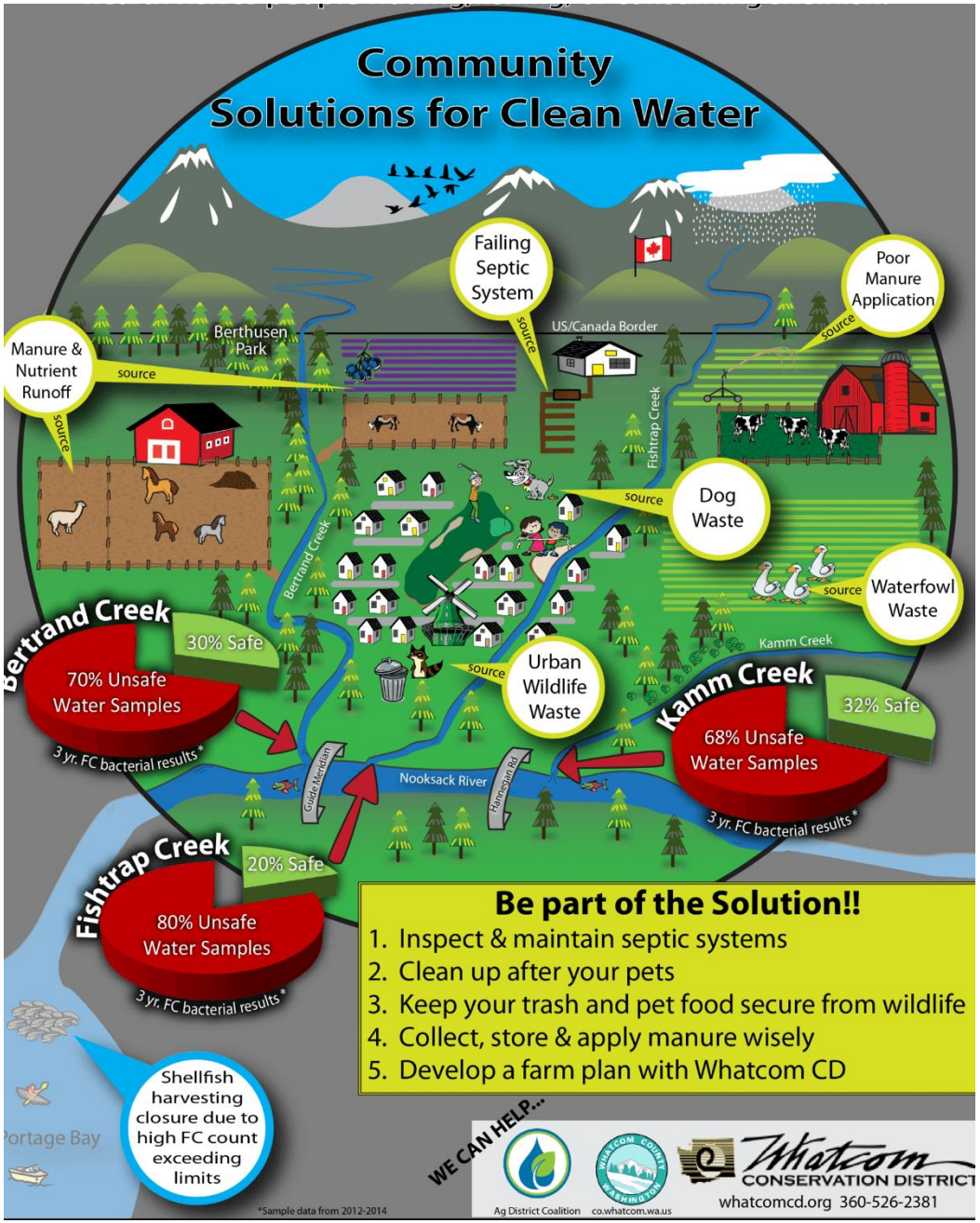


http://forecast.weather.gov/stations.php?foo=0

Sky Condition	Cloud Coverage
Cloudy	9/10 to 10/10
Mostly Cloudy, or Considerable Cloudiness	7/10 to 8/10
Partly Cloudy, or Partly Sunny	3/10 to 6/10
Mostly Clear, or Mostly Sunny	1/10 to 3/10
Clear, or Sunny	1/10 or less
Fair (used mostly for nighttime periods)	Less than 4/10 opaque clouds, no precipitation, no extremes of visibility, temperature or winds. Describes generally pleasant weather conditions.

“Bather Load”

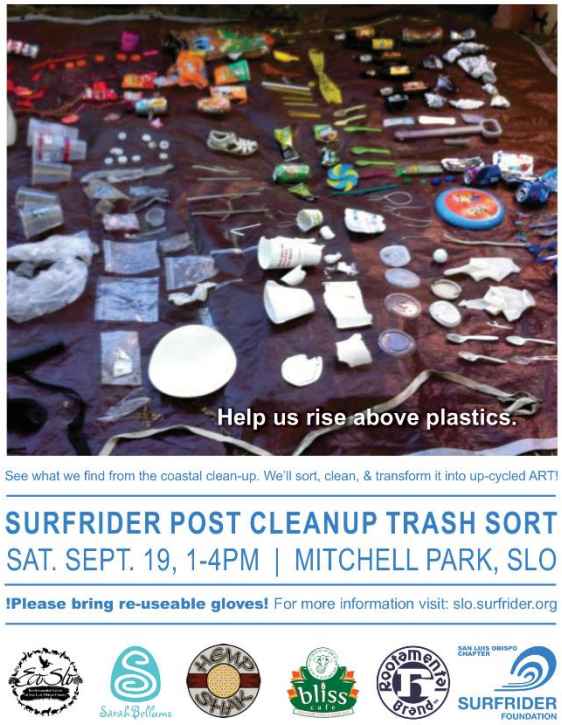
- Count the number of people in contact with water.
  - Direct count, lifeguard counts
- Estimate the number of people in contact with water.
  - Count the total number of people in a portion of the “beach” and estimate the number of people in the water as a percentage of the total number of people at the beach.
  - Take photos and count the people in them.
  - Areal counts: plane, helicopter counts
  - Parking lot surveys
  - Trail Cameras/Camera traps
- Record the number of people in the water and also those adjacent to water



ID Potential Pollution Sources

- Contaminated streams
- Contaminated groundwater
- Stormdrains
- Sewer Lines
- Septic tanks, leachfields
- Feedlots, dairy lagoons
- Homeless camps
- Pet waste
- Wildlife
- Illegal discharges
- Other….

Trash



Type

- Floatables
- Diapers
- Other debris

Amounts

- Sort/Count/Weight
- Estimate (none, low, moderate, high)

Natural Debris

Type

- Wrack (algae/seaweed)
- Upland vegetation (leaves, driftwood, arundo…)

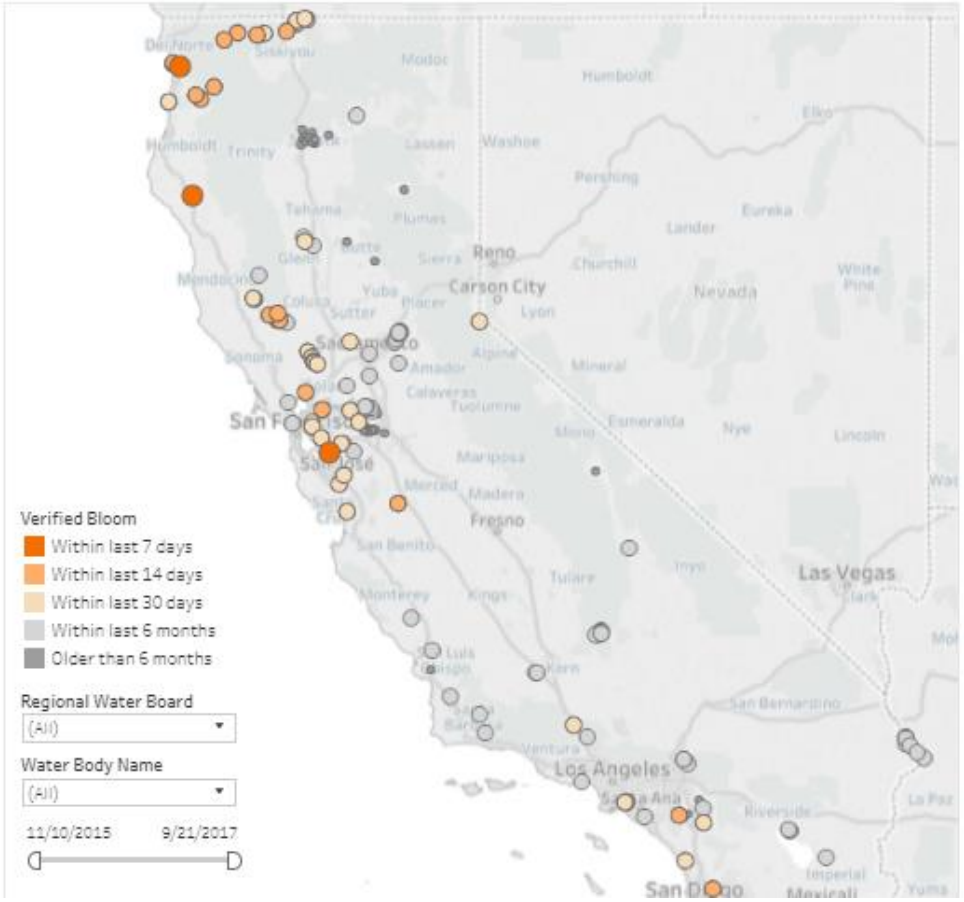
Presence of HABS

- Present (yes/no)
  - Scums present

California Harmful Algal Blooms (HABs)

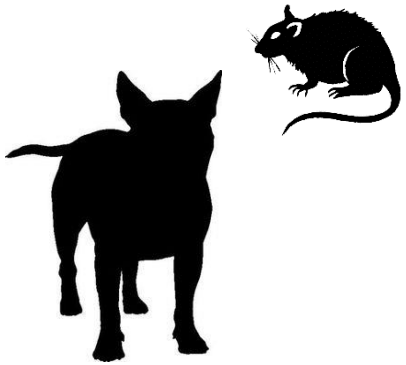
HAB events represented below are voluntarily reported to the State Water Board's Surface Water Ambient Monitoring Program. Data provided are for general information purposes only and may contain errors. The exact location, extent and toxicity of the reported bloom may not be accurate and may not be affecting the entire waterbody. The data are subject to change as new information is received. Please check back for updates.

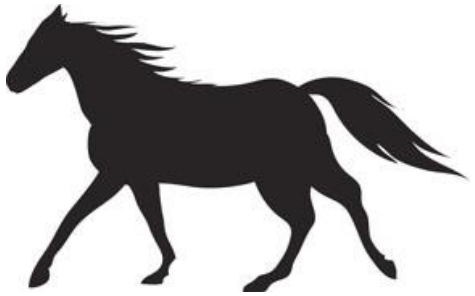
- More detailed information on freshwater HAB events



Presence of Wildlife

The presence of wildlife and domestic animals at bathing beaches affects water quality. Waste from these animals, whether entering the water directly from waterfowl droppings or indirectly from runoff carrying waste from dogs and other animals, can cause bacteria concentrations to rise to the point where recreational standards are exceeded, resulting in beach closure.





Dead Wildlife & Fish Kills

Hydromodification

Marine

- Seawalls
- Groins
- Breakwaters
- Beach nourishment
- Harbors
- Jetties
- Other

Riverine

- Concrete channel
- Gabions
- Rock Riprap
- Geogrids
- Tree reventments
- Other

Sanitary Facilities

Bathouses/restrooms/beach showers

Litterbins/trashcans/dumpsters

- Record ID Number
- Location
- Condition (Good, Fair, Poor)
- Distance from Waterline
- Cleaning Frequency

Document Observations & Data Sources

No field data collection is complete without basic information on who collected the data and when.

Sometimes basic field observations that might seem insignificant turn out to be very important, but they won't be useful unless you document them.

Record Data

All field data should be entered onto the paper form and stored electronically. It is important to provide all data to and consult with a sanitarian or public health official when analyzing the data and assessing the effects of a pollutant source on a beach

Data Management and Sharing

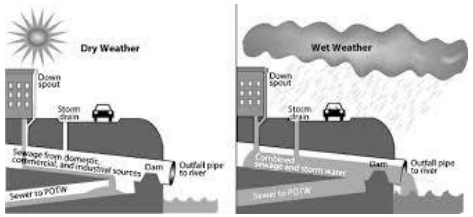
All paper copies of survey forms should be collected and stored together and scanned into an electronic format, if possible, so that electronic files can be stored. EPA suggests recording the survey data in a locally accessible database.

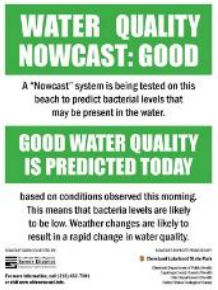
Quality Assurance

- All water quality monitoring is conducted under a Quality Assurance Project Plan (QAPP)
- Outside labs are accredited (It is still ok to apply your own Q/A).
- Field staff are trained (document their training)
- Review field forms as soon as they are turned in.
- Review data entry
- Validate questionable or notable data
- Manage metadata with survey results
- Have a Health and Safety plan in use

Analysis of Survey Results and Trends

- Survey Report
- Reserve Allocation and beach assessments
  - Pollution Source Tracking
    - Personal Care Products
    - Optic Brighteners
    - Microbial Source Tracking
  - Infrastructure Testing
    - Visual/Electronic Pipe Inspections
    - Smoke
    - Dye Tests
    - Canine Detection
- Remediation steps
- Modeling
- Sharing information





Questions ?

Resources:

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