Marine Annual Sanitary Survey for Recreational Waters

EPA 820-F-20-006
March 2021

PART 1: BASIC INFORMATION

Name of beach:	Date(s) of survey:
Beach ID:	Time(s) of survey:
City/County/State:	Name of waterbody:
Sampling station(s)/ID:	Number of routine surveys used:
WQX organizational ID:	Name(s) of surveyor(s):
Surveyor affiliation:	
Sampling location Latitude:	Longitude:
Dates of swim season Start:	End:

PART 2: QUALITY ASSURANCE

Will the data collected use an approved Quality Assurance Project Plan (QAPP)? yes no

PART 3: DESCRIPTION OF LAND USE IN THE WATERSHED

Current Land Use in the Watershed

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

Development	% Undeveloped:	Describe:
	% Developed:	Describe:

How was land use measured:

Beach uses: (circle all that apply) Swimming Boating Fishing Surfing Windsurfing Diving 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 the following key features: (circle yes/no) We recommend taking photographs to document structures.

Sample points	yes	no	Describe:
Weather stations, 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:
Hydrometric network*	yes	no	Describe:

Do the maps include locations of the following bounding structures (circle yes/no):

Jetty	yes	no	Describe:
Groin	yes	no	Describe:
Seawall/bulkhead	yes	no	Describe:
Other bounding structure	yes	no	Describe:
Sanitary facilities	yes	no	Describe:
Restaurants/bars	yes	no	Describe:
Playgrounds	yes	no	Describe:
Parking lots	yes	no	Describe:
Shellfish-growing areas	yes	no	Describe:
Other relevant locations	yes	no	Describe:

*This is a network of monitoring stations that collect data such as rainfall and stream flow

Erosion/Accretion Measurements (as needed)

Is there erosion/accretion at the beach? yes no | Are the high watermark location measurements needed? yes no

High Watermark Location Identification	Fixed Object Description (e.g., tree, building)	GPS Reading	Distance from Fixed Object to High Watermark (ft/m)	Distance between High Watermark Locations (ft/m)
A				A↔B:
B				B↔C:
C				C↔D:
D (optional)				D↔E:
E (optional)				

Shoreline Hardening and Circulation Control Structures (as needed)

Are there shoreline hardening and circulation control structures? yes no If yes, describe below:

Structure	Number	Description or Comment (include linear extent and width)
Jetty		
Groin		
Seawall		
Natural formation		
Pier		
Other (specify): _____		

Discuss whether shoreline hardening or circulation control structures are likely to affect water quality circulation and thus bacteria concentrations at the beach (include relevant studies and their sources, if available):

Beach Materials/Sediments

Beach materials that apply or report beach materials/sediment lab analysis conducted below: (check all that apply).

□ Sugar sand □ Coarse sand □ Sand/Shell mix □ Pebbles □ Shell
□ Fine sand □ Wet sand □ Mucky □ Rocky □ Other (specify): _____

Additional description of beach materials/sediment, if needed:

OR Beach Materials/Sediments Lab Analysis (use a map or photographs to document plot locations)

Were beach materials/sediments sampled and analyzed? yes no If yes, detail here:

Name of lab used: | Date of sample collection:

Plot ID	Mean Grain Size Diameter** (mm/in)	Uniformity Coefficient**	Description of Plot Location
Average			Total number of samples:

**Report results from the lab analysis

Describe the results and conclusion of the sediment analysis and potential effects of the sediment distribution at this beach:

Shellfish Growing Area

Describe any shellfish-growing areas near the beach, including size, distance from the swimming area, condition, issues, and results of any recent shellfish sanitary surveys (include any relevant data or reports and cite sources):

Photos Taken in the Beach Area or Surrounding Watershed (attach copies of photos)

Image Number	Date/Time	File Name	Description of Photo (e.g., Land Use, High Watermark, Fixed Objects, Pollution Sources, Tide Pools)

Habitat around the beach: (check all that apply)

□ Dunes □ River/Stream □ Urban/Boardwalk □ Park □ Other: _____
□ Wetlands □ Forest □ Protected habitat or reserve □ Parking

PART 4: WEATHER CONDITIONS AND PHYSICAL CHARACTERISTICS

Weather Conditions

Examine the weather data (at the beach) collected over the prior beach season(s) along with bacteria sampling results. Do the bacteria concentrations at this beach appear to correlate with any of the following? (circle yes/no and include the r value if calculated)

Rainfall	yes	no	Describe:
Air temperature	yes	no	Describe:
Water temperature	yes	no	Describe:
Cloud cover	yes	no	Describe:
Wind speed	yes	no	Describe:
Wind direction	yes	no	Describe:
Other weather condition	yes	no	Describe:

Physical Characteristics

Do the bacteria concentrations at this beach appear to correlate with any of the following? (circle yes/no and include the r value if calculated)

Wave height or intensity	yes	no	Describe:
Tide stage	yes	no	Describe:
Longshore current	yes	no	Describe:
Other physical characteristics	yes	no	Describe:

Have any statistical analyses been done to calculate the degree of correlation? yes no If yes, describe:

Average air temperature during beach season: ____ °C or °F		Average water temperature during beach season: ____ °C or °F		
Average air temperature in the following seasons (for beaches open more than 3–4 months):	Spring °C or °F _____	Summer °C or °F _____	Fall °C or °F _____	Winter °C or °F _____
Average water temperature in the following seasons (for beaches open more than 3–4 months):	Spring °C or °F _____	Summer °C or °F _____	Fall °C or °F _____	Winter or °F _____
Average wind speed during beach season (mph or km/h): _____		Average wind direction during beach season: _____		

Typical weather condition (circle one):							Total rainfall (in/cm)
Spring:	Sunny	Mostly Sunny	Partly Cloudy	Mostly Cloudy	Overcast	Rainy	
Summer:	Sunny	Mostly Sunny	Partly Cloudy	Mostly Cloudy	Overcast	Rainy	
Fall:	Sunny	Mostly Sunny	Partly Cloudy	Mostly Cloudy	Overcast	Rainy	
Winter:	Sunny	Mostly Sunny	Partly Cloudy	Mostly Cloudy	Overcast	Rainy	

Average rainfall for all beach seasons (in/cm):

Number of significant rain events during beach season:

What constitutes "significant?" (significant may include intensity and duration; e.g., 1 inch in 6 or fewer hours):

Significant Events: Describe any tropical storms or hurricanes that occurred (dates, magnitude, storm surge height, proximity to beach) and their effects on the beach:

Trend Analysis: Describe any analyses done and any trends or correlations found (add lines if needed to describe in detail):

Winds

What is the prevailing wind speed (mph or km/hr): _____ | What is the prevailing wind direction:_____

How does the prevailing wind blow (circle one): from beach to water from water to beach across beach-sand interface (sideways)

Describe any effects the prevailing winds have on bacteria concentrations at the beach:

Waves

Describe the typical wave conditions during the beach season and how those conditions affect bacteria concentrations:

Tides

Tidal extent: Mean high: Mean low:

How does tidal flow manifest itself?

Do the tides create a cross-current?

Do tidal rivers or streams discharge near the beach? yes no If yes, describe flow, tidal influence, salinity, proximity to swimming area, and so forth?

Describe the relationship of tidal flow to known point or nonpoint pollution sources:

Tidal Pools

Describe the type of tide pools, if found, at this beach:

Are tide pools common at this beach? yes no | How many pools are typically seen?

Enter the average size of the tide pool: _____ ft/m | Duration pools remained filled: _____ units: _____

Are samples collected from tide pools? yes no If yes, describe:

Do children frequently play in the tide pools? yes no If yes, describe:

Longshore and Nearshore Currents

What is the highest speed of longshore or nearshore currents? (mph or km/hr)

What is the typical direction of longshore or nearshore currents (circle one)? N NE E SE S SW W NW

Do currents change with tidal phases? yes no Describe:

Do the currents carry effluents from wastewater treatment plants, combined sewer overflows, or other dischargers? yes no

Provide any additional characterization of longshore or nearshore currents, including modeling results if available (cite any relevant reports):

We recommend documenting conditions with photographs wherever possible.
Additional comments or observations about weather conditions & physical characteristics:

PART 5: BEACH DIMENSIONS

Beach length or dimensions (indicate Z1, Z2, and Z3 on a map for each beach area)

Total beach length (ft/m):	Average beach width (average setback, ft/m):	
Width Z1 (ft/m):	Width Z2 (ft/m):	Width Z3 (ft/m):

Which direction does the beach face (circle one)? N NE E SE S SW W NW

Describe the splash zone at the beach (include sediment makeup, rate of erosion, presence of seaweed wrack):

Description and date of last beach rehabilitation (example: new sand, nourishment, dredging, etc. physical structures will be described in Parts 13 and 14)

Additional comments or observations:

PART 6: PEOPLE (NUMBER OF BEACH USERS)

Is the number of people measured? yes no If yes, describe how beachgoer numbers are calculated (e.g., turnstile, counting at noon, photographs):

Beach Use

Beachgoer Category	Number of People Per Day Using the Beach (Daily use)					
	Peak Use for the Season	Seasonal Average	Holiday Average	Weekend Average	Weekday Average	Off-Season Average (if applicable)
Total people in the water						
Total people out of the water						
Total people						

Breakdown of Activities (if activities were broken down on the Routine-Onsite Sanitary Survey, summarize them here)

Activity 1:						
Activity 2:						
Activity 3:						
Activity 4:						
Activity 5:						
Activity 6:						

Frequency of measurements (e.g., daily, weekly, monthly):

Examine people data along with sampling results for the past beach season(s). Look at each sampling point or different area of the beach (light use versus heavy use). Does the number of people appear to correlate with bacteria concentrations at any of these areas? Does the number of people in the water or out of the water correlate with bacteria concentrations? Describe statistical analysis that has been done.
(add additional pages as needed, or attach a separate report if available):

We recommend taking photographs and provide descriptions
Additional comments or observations:

PART 7: BEACH CLEANING

Description of Cleanup Activities (circle activities that were done, specify frequency and equipment used)

Activity	Frequency	Equipment Used
Leveling sand		
Removing debris		
Trimming or removing vegetation		

Activity	Frequency	Equipment Used
Removing trash		
Other: _____		
Construct/Maintain a temporary pathway directly to open water		

Floatables

How often are floatables found in the water? (circle one) Never Sometimes Frequently Very frequently

Describe known sources of floatables:

Select all types of floatables found: (check all that apply)

- □ Street litter (e.g., cigarette filters)
- □ Food-related litter (e.g., packaging/containers)
- □ Medical items (e.g., syringes)
- □ Sewage-related (e.g., tampons, condoms)
- □ Building materials (e.g., wood/siding)
- □ Fishing-related (e.g., fishing line, nets, lures)
- □ Household waste (e.g., household trash, plastic bags)
- □ Other: _____

Debris

How often is beach debris/litter found on the beach? (circle one) Never Sometimes Frequently Very Frequently

Describe known sources of debris:

Select all types of debris found: (check all that apply)

- □ Street litter (e.g cigarette filters)
- □ Food-related litter (e.g., packaging/containers)
- □ Medical items (e.g., syringes)
- □ Sewage-related (e.g., tampons, condoms)
- □ Natural debris (e.g driftwood, algae)
- □ Building materials (e.g., wood/siding)
- □ Fishing-related (e.g., fishing line, nets, lures)
- □ Household waste (e.g., household trash, plastic bags)
- □ Tar/Oil (e.g., tar balls)
- □ Oil/Grease (e.g., oil slick)
- □ Other: _____

Additional comments or observations:

PART 8: INFORMATION ON SAMPLING LOCATION

Description of Sample Points (include beach water and potential pollution sources and take photos when possible):

Sample Point Name/ID	Location (include lat/long)	Description	Sample Frequency (daily, weekly, monthly)	Time of Day of Sample Collection	Tidal Stage during Sample Collection (high, ebb, low, flood, etc)

Are any of the sample locations near a possible pollution source? yes no If yes, describe:

Description of hydrometric network (note that this is a network of monitoring stations that collect data such as rainfall and stream flow):

Additional comments or observations:

PART 9: WATER QUALITY SAMPLING

Name of laboratory: | Distance to laboratory: _____ mi/km

Sample travel time: _____ minutes (What is the time between sample collection and sample arrival at the lab?)

Is there a sampling and analysis plan? yes no Is it adequate? yes no If no, explain

Are the sampling staff property trained on sampling techniques, equipment maintenance, and calibration procedures? yes no

Algae

Have algae been observed on the beach? yes no If yes, take photographs to document algae presence.

Percent of beach season when macroalgae were present in significant amounts in the nearshore water: (circle one)

None Low (1%–20%) Moderate (21%–50%) High (> 50%)

Percent of beach season where macroalgae was present in significant amounts on the beach: (circle one)

None Low (1%–20%) Moderate (21%–50%) High (> 50%)

Identify the types of algae found: (check all that apply) □ Periphyton (attached to rocks, stringy) □ Globular (blobs of floating material)
□ Free floating (no obvious mass of materials) □ Other: _____

Algae colors: (circle all that apply) Light Green Bright Green Dark Green Yellow Brown Other:_____

Are microalgae commonly found at this beach? yes no If yes, describe occurrences:

Harmful Algae Blooms

Harmful Algal Bloom Observations (include beach water and potential pollution sources and take photographs to document HABS):

HABs Date	HABs Duration (in days, weeks, etc.)	HABs Species	Effects

Were any dangerous aquatic organisms found at the beach? yes no If yes, describe:

Presence of Wildlife and Domestic Animals

Type	Degree of Presence (high medium low)	Does this presence appear to correlate with bacterial results? (yes/no)	Do people feed waterfowl? Is there any management of pet waste? Are fecal droppings frequently seen? Are there ways to reduce the presence or effects of these wild and domestic animals?
Geese			
Gulls			
Shorebirds			
Ducks			
Pigeons			
Turtles			
Dogs			
Horses			
Rodents (specify)			
Other (specify)			

Describe any wildlife management areas near the beach:

Were significant numbers of dead birds found on the beach during beach season? yes no
Describe types, numbers found, and possible causes (take photos):

Were significant numbers of dead fish found on the beach during beach season? yes no
Describe types, numbers found, and possible causes (take photos):

Beach Samples Collected

Sampling collector (job title, agency):	Sampling frequency (daily, weekly, monthly):
Sampling time:	Is the sampling time tide-dependent? yes no
What year did you begin monitoring:	Explain:

Did you test for: (circle yes/no)

Enterococcus ?	yes	no	Analytical method used:
Escherichia coli ?	yes	no	Analytical method used:
Fecal coliform?	yes	no	Analytical method used:
Additional bacteria?	yes	no	List names and analytical method used:

Do you composite any bacteria samples? yes no If yes, explain:

How do this past season's bacteria results compare to those of previous years?

Do the bacteria results correlate to other parameters, such as water quality, weather, flow, tidal stage, wind, longshore currents, people load, or algae? yes no

Describe in detail analyses that were performed on the water quality data (add additional lines/pages as needed or attach separate report):

Did you collect bacteria samples from any potential pollution sources (streams or outfalls?) yes no

Water Quality

Check all that are measured regularly: □ Temperature □ Rainfall □ Conductivity □ TSS □ Other (specify): _____ □ pH □ Turbidity □ Salinity □ DO

Describe where water quality measurements are taken:

What is the trend in water quality data—improving, deteriorating, or about the same?

Examine the water quality data collected over the prior beach season. Do the bacteria concentrations at this beach appear to correlate with any of the following? (Circle yes/no and include the r value if calculated)

Temperature	yes	no	Describe:
pH	yes	no	Describe:
Rainfall	yes	no	Describe:
Turbidity	yes	no	Describe:
Conductivity	yes	no	Describe:
Salinity	yes	no	Describe:
DO	yes	no	Describe:
TSS	yes	no	Describe:
Other: _____	yes	no	Describe:

What factor (from list above) appears to have the greatest effect on bacteria levels in the water? Describe effect. (add lines or pages as needed or attach a separate report if available)

Are there any unusual results such as extremely high or low values detected, or unusual trends? yes no
If yes, explain:

Are water quality annual trend data attached? yes no

Do you sample during adverse (e.g., wet-weather) conditions? yes no

Additional comments or observations:

PART 10: MODELING AND OTHER STUDIES

Are models being used? yes no
If yes, list types of models being used and briefly describe the models:

Have you tested for stormwater cross-connections in the sanitary sewer? yes no
If yes, describe results:

Have you tested for human sources of contamination? yes no
If yes, describe the results:

Have you performed visual screening to isolate discharge areas during dry and wet weather? yes no
If yes, describe the results:

Has microbial source tracking been done at this beach? yes no
If yes, describe the results and cite any reports:

Additional comments or observations:

PART 11: ADVISORIES/CLOSINGS

List any advisories and closings that occurred, whether bacteria levels were high, and any possible reasons for the advisory or closing or high bacteria level, such as stormwater runoff, sewage spill, or wildlife.

Advisory or Closing (specify one)	Start and End Dates	Length of Advisory or Closing (Days)	Did Bacteria Concentrations Exceed Statistical Threshold Value (STV) or Beach Action Value (BAV)?	Reason for Advisory or Closing or Possible Contributing Factors

Totals for Advisories and Closings

Total number of closings issued: _____
Total number of advisories issued: _____
Total number of days under an advisory: _____
Total number of days beach was closed: _____

Criteria used to issue advisory or close beach:

Additional comments or observations:

PART 12: POTENTIAL POLLUTION SOURCES (take photographs to document pollution sources)

Type of Source	Level of Concern (H, M, L, or NA)	Distance to Beach (mi or km)	Latitude/ Longitude*	Does this source directly affect beach water quality (Y or N)?	Describe how this source might contribute to water pollution and frequency of contribution
Wastewater discharges					
POTW outfalls					
Overboard discharges					
Other: _____					
Other: _____					
Sewage overflows					
Septic systems					
Cesspools					
Stormwater outfalls					
Drains and pipes nearby					
Stream or wetland drainage					
Urban runoff, industrial waste					
Natural outfalls					
CAFOs or AFOs					
Wildlife (general)					
Wildlife (significant areas)					

table continued

Type of Source	Level of Concern (H, M, L, or NA)	Distance to Beach (mi or km)	Latitude/ Longitude*	Does this source directly affect beach water quality (Y or N)?	Describe how this source might contribute to beach pollution and frequency of contribution
Agriculture runoff					
Land application of biosolids and manure					
Marinas/Harbors					
Mooring boats					
Domestic animals					
Unsewered areas					
Erosion-prone areas					
Landfills/Open dumps					
Groundwater seepage					
Bathhouse leakage					
Wetland drainage					
Vacant areas					
Homeless encampment					
Other (specify): _____					
Other (specify): _____					
Other (specify): _____					

*If latitude and longitude are unknown, show the location on the detailed map and describe in the additional comments or observations section below.

Have potential pollution sources identified above been included on the detailed map? yes no
If yes, describe:

Given your understanding of the beach, which fecal pollution sources are most likely to affect the levels of bacteria in the water? If you have specific concerns about any of the fecal pollution sources as sources of specific pathogens, please describe.

Has this beach been associated with the following? (check all that apply)

□ Cases of swimmer's itch □ Outbreaks of diarrheal diseases □ High incidence of skin infection
□ Other adverse health outcomes □ Other:_____

If any are checked above, please describe:

Has a TMDL for bacteria been done on this waterbody or on any that discharge to it? yes no
If yes, summarize the results and attach report:

Are there any discharge reports available for dischargers near this beach? yes no
If yes, attach report or pertinent sections and summarize here, including permit limits for bacteria:

Have any sources been remediated or have steps been taken to remediate sources? yes no
If yes, describe:

Additional comments or observations:

PART 13: DESCRIPTION OF SANITARY FACILITIES

Bathhouses and Bathrooms

Total number of bathhouses and portable sanitation units (PSUs) at the beach:

Number or ID	Type (bathhouse or PSU)	Location	Condition (good, fair, poor)	Distance from Waterline (ft/m)	Frequency of Cleaning (Daily, weekly, monthly)

How are the sanitary wastes handled? (check all that apply) □ Public sewers □ On-site treatment □ Septic field □ Pump-out
□ Other: _____

Detail the number of toilets, showers, sinks, etc., and whether these facilities are adequate to support beach use.

Trash Cans

Total number of trash cans at the beach:

Bin Number or ID	Location	Condition (good, fair, or poor)	Distance from Waterline (ft/m)	Frequency of Emptying (daily, weekly, monthly)

Describe further, including whether number and location of trash cans are adequate to support beach use:

PART 14: DESCRIPTION OF OTHER FACILITIES

List and, if possible, photograph facilities in the beach area, such as marinas, restaurants, bars, playgrounds, parking lots, and dog parks:

Facility Name/Type	Location	Condition (good, fair, poor)	Distance from Beach (ft/m)	What is the sewage disposal method used (if applicable)?	How might this facility contribute to water quality problems?

Are there boat pump-outs nearby? yes no If yes, describe:

Additional comments or observations: