BEACH POSTINGS AND CLOSURES

Issue 1: Is the number of beach postings and closures the appropriate criteria for placing a beach on the 303(d) list?

Background

The southern California Regional Water Quality Control Boards (Regions 4, 8, and 9)[1] were surveyed to determine their methodology in placing beaches on the 303(d) list due to bacterial impairment or loss of use due to exceedances of the California bacterial standards for ocean water established by the California Department of Health Services (DHS)[2]. There are both single sample and 30-day standards[3]. Local environmental health agencies must post a beach when the single sample standards are exceeded[4], but may use their own discretion whether to post when the 30-day standards are exceeded[5].

State law[6] requires the local environmental health agency to close a beach in the event of any sewage overflow/spill until the ocean water at the beach meets the established bacterial standards. Closures usually represent an acute event/infrastructure failure and a given location and are not indicative of chronic water quality impairment.

Results of survey:

303(d) listing guidelines currently used				
	Region 4	Region 8	Region 9	AB 538
Closures	> 1 /year	Not used for listing	>10days/year P + C	Std. exceeded any 3 wks. of 4 or if >weekly sampling, >75%days in any month
Postings	>10% days/year	Duration of ≥7 days		
Standards	20%>1,000 TC 10%>10,000TC 10%>400FC geo.mean>200FC			
Beach listed as:	Beach name	Stretch of beach associated with sampling point	0.2 miles up and down coast of sampling point	

[1] All the coastal RWQCBs were invited to participate in these discussions. Only the 3 southern California RWQCBs sent representatives to participate in the Monitoring and Reporting Subcommittee discussions.
[2] Title 17, California Code of Regulations, effective July 1999.
[3] Title 17, California Code of Regulations, effective July 1999.
[4] Health & Safety Code (AB 411, statutes of 1997)
[5] Title 17, California Code of Regulations, effective July 1999.

Survey Results:

1. It is clear from the above table, the RWQCBs surveyed do not use the same criteria for determining beaches or portion of beaches placed on 303(d) lists.
2. Only Region 4 uses bacterial standards and they are those established in the "Ocean Plan", not the standards established by DHS.
3. All 3 RWQCBs use postings/closures for determining impairment/loss of use and placing a beach on 303(d) list.
4. The source of the postings/closures data used by the RWQCBs is collected and compiled by the SWRCB from local environmental health agencies pursuant to its statutory authority.

Available Alternatives:

1. RWQCBs continue to interpret available data on a case-by-case basis and each region establishes its own criteria for listing.
2. RWQCBs should not use the number of postings/closures as criteria for listing.
3. A consistent value for the number of postings/closures should be established and consistently applied by all coastal RWQCBs.
4. A consistent value for only the number of postings should be established as the criteria for listing.
5. A consistent value for only the number of closures should be established as the criteria for listing.

Discussion:

Postings occur when bacterial standards established by DHS at a beach monitoring station are exceeded. Postings are indicative of impaired water quality and the number of postings measures loss of beneficial use.

Environmental health agencies may also permanently post a beach at storm drain outlets either because they know, based on water quality monitoring, that the ocean water at the discharge will exceed bacterial standards or as a precautionary measure because the ocean water at the discharge may exceed bacterial standards. The latter action may not be based on water quality monitoring data.

The focus of 303(d) listing should be on chronic multi-source problems rather than event driven or single source problems. An excessive number of postings at storm drain discharges represent such a multi-source problem and the development of a TMDL is required to mitigate/abate the problem.

Closures due to sewage overflows/spills should not be a basis for listing because they are better addressed through other mechanisms, e.g., enforcement. In most instances, sewage overflows spills do not require the establishment of a TMDL to abate the problem.

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[6] Health & Safety Code (AB 411, statutes of 1997)

RECOMMENDATION:

The Beach Water Quality Workgroup recommends that a consistent value for only the number postings should be established and consistently applied by all coastal RWQCBs.

BEACH POSTINGS AND CLOSURES

Issue 2: What numerical criteria should be applied to postings when used for determining beach impairment?

Background

See Beach Postings and Closures, Issue 1.

Available Alternatives

1. The Los Angeles Regional Water Quality Control Board sets the postings threshold for listing at >10% of the days/year, i.e., if a beach is posted more than 36 times in a year it is listed.

2. The Santa Ana RWQCB sets the postings threshold for listing at >6 days duration.

3. The San Diego RWQCB sets the postings threshold for listing at >10 days/year.

4. List the beach if the number of postings exceeds 4% of the days per year.

5. AB 538 uses a threshold of standards being exceeded any 3 weeks during a 4 week period, or if greater than weekly sampling, greater than 75% of the days in any month.

6. Do not use the frequency/duration of postings as listing criteria

Discussion

Beach closures are almost always due to sewage spills (required by AB 411). Since closures result from a single, known source event, they should not be used as a basis for listing because they can be more efficiently addressed through other mechanisms, e.g., enforcement. These events do not require a TMDL in order to address them in a regulatory manner.

The focus of 303(d) listing should be on chronic multi-source contamination problems rather than event driven or single source problems. The most efficient regulatory means available is through the development/establishment of a TMDL.

The frequency of the postings, i.e., the number of days a beach is posted is the preferred metric for establishing the threshold for 303(d) listing. Duration of a posting or closure is event orientated and reflects the magnitude of the episode. A single event may last for many days, but this duration may not signify a chronic problem. Frequency provides the basis for establishing a chronic problem.

The frequency's threshold for 303(d) listing should occur when the frequency of postings exceed that in areas minimally affect by human activities in wet years. The Los Angeles RWQCB and the Southern California Coastal Waters Research Project[1] reviewed and analyzed water quality monitoring data from Santa Monica Bay when the RWQCB was developing the pathogen TMDL for the bay. Through modeling and empirical data analysis at Leo Corrillo State Beach, a watershed that is 98% undeveloped land (devoid of human activity), exceeded the AB 411 bacterial standards from 5 to 30 days during the year[2]. The number of days of exceedances in an undeveloped area is due to:

- What is naturally running off of land and the amount of wet weather during the given period.
- Random events, e.g., a bird dropping "floats by" as the sample is taken.
- Measurement and laboratory variations of results (documented by SCCWRP in bight 98 studies[3]).

Consequently, approximately 10% of the bacterial standard exceedances may constitute an expected background rate for exceedances of the established standards. The data included all samples collected at least weekly in both AB411 and non-AB 411 time periods and in both wet and dry weather. The United States Environmental Protection Agency recommends a threshold of 10% when no site-specific data is available.[4]

AB 411 requires ocean water monitoring by local environmental health agencies from April 1 through October 31 each year. Although many counties continue to monitor at their own expense during the non AB 411 period, some do not. Consequently, monitoring and beach posting activities may not be conducted during this wet weather period. Since the 10% threshold is based on year-round monitoring and posting, an adjustment in the threshold number of posting days is not only warranted but required.

Monitoring data measuring ocean water quality in areas least impacted by human activity is lacking in most counties. The best available data to establish a background number for bacterial exceedances in ocean water during dry weather is found in the Bight '98 study. The study revealed that ocean water bacterial standards were exceeded in 4% of the samples collected on sandy, open beaches least affected by urban runoff discharges, etc[5].

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[1] Weisberg, Steve, Executive Director, Southern California Coastal Waters Research Project; DeShazo, Renee, Los Angeles Regional Water Quality Control Board.

[2] The available data for this location however, are based on weekly monitoring conducted by the County of Los Angeles. Daily monitoring data are needed to truly justify this finding. The Los Angeles RWQCB plans to conduct daily monitoring to determine if this finding is valid. Background data in other locals are lacking and a standard for the number of exceedances based on some background percentage cannot be developed or justified on a local basis

[3] Noble, Rachel, et al., Southern California Bight 1998 Regional Monitoring Program: I. Summer Shoreline Microbiology, Southern California Coastal Waters Research Project.

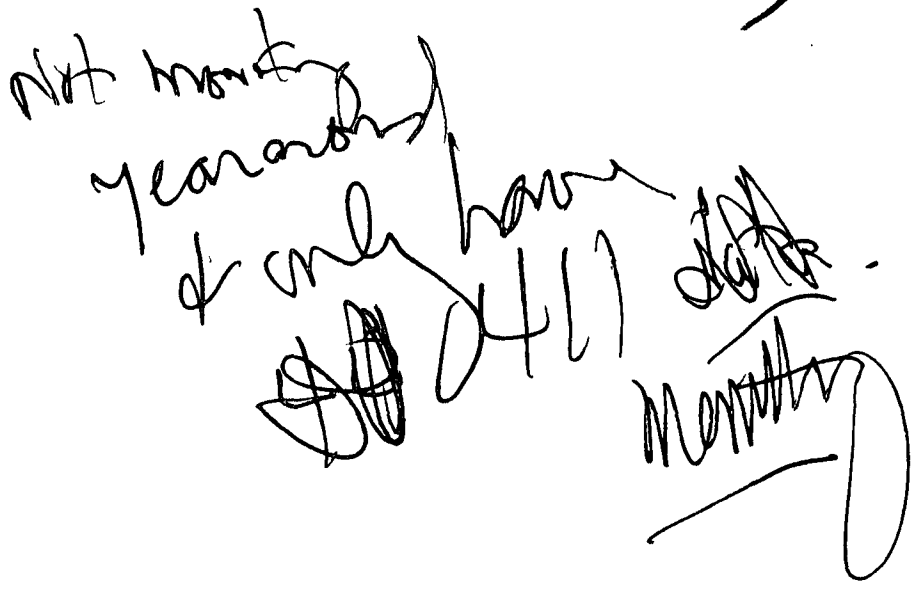
[4] United States Clean Water Act, Section 305(b).

[5] Noble, Rachel, et al., Ibid.

RECOMMENDATION:

The Beach Water Quality Workgroup recommends that a consistent value of 10% or 36.5 postings per year be the threshold for 303(d) listing and consistently applied by all coastal RWQCBs.

Furthermore, the BWQW recommends that when monitoring is not conducted during the winter/wet weather months (non AB 411 periods), postings should not exceed 4% of the time period or 8.4 posting days during the AB 411 period[6].



[6] The AB 411 period is approximately 210 days, and 4% of this number is 8.4 days.

BEACH POSTINGS AND CLOSURES

Issue 3: Some county environmental health agencies permanently post the beach with warning signs where storm drains discharge. Some also post the channel or creek with warning signs. How should these permanent postings be used?

How should permanent postings be calculated in determining ocean water impairment for 303(d) listing.

BACKGROUND

Local environmental health agencies post warning signs at the surf-zone area adjacent to stormdrain discharges permanently. This is done usually because the health agencies knows from monitoring data that when the drain discharges, the surf-zone bacterial levels will exceed AB 411 standards. The postings may occur automatically whenever the drain discharges (ephemeral flowing creeks and stormdrains) or the signs may be permanently posted at the discharge point of dry-weather flowing stormdrains. In some cases, warning signs remain posted at the discharge whether the drain is discharging or not. In many instances, the signs may be posted at the drains' discharges at a considerable distance from the surf-zone.

There is no provision in the AB 411 statute or regulations for "permanent" postings. The practice/policy of "permanent" posting was developed by some local health agencies prior to AB 411 and has remained a practice/policy of those agencies since the implementation of AB 411. In other instances, local health agencies that did not have ocean water monitoring and regulatory programs prior to AB 411 adopted the practice as part of their AB 411 program. Consequently, there is no standard or consistent approach used for "permanent" postings by local health agencies.

The Monitoring & Reporting Subcommittee of the Beach Water Quality Workgroup recommends that "permanent" postings should be based on monitoring data that shows the surf-zone bacterial levels exceeding AB 411 standards. If monitoring data is not available, but the warning signs are posted continuously because the local health agency believes the discharge into the surf-zone may cause the surf-zone ocean waters to exceed bacterial standards, then these postings should be called "precautionary".

The postings of signs along a creek or stormdrain channel are not indicative of ocean water quality impairment or loss of ocean water beneficial uses. These postings may have an appropriate use for 303(d) listing a creek.

Available Alternatives:

1. Count "permanent" and "precautionary" postings as a loss of beneficial use for the entire year or posting period.

2. Count "permanent" postings only since they are based on monitoring data showing ocean water quality impairment. "Precautionary" postings would not be counted.

3. Base the posting count only on routine (AB 411) monitoring data and other monitoring data when incorporated into a health agencies AB 411 program, and disregard the practice of permanent/precautionary postings by local health agencies.

Discussion:

The permanent posting of a warning sign at the discharge of a creek or stormdrain into the surf-zone constitutes a loss of beneficial use, and if it is based on monitoring data, indicates water quality impairment. When the posting is precautionary in nature, i.e., warning signs are posted based on professional judgments of the local health agency that a discharge is contaminated. Precautionary postings may not necessarily constitute water quality impairment.

"Permanent postings", i.e., the permanent posting of warning signs at the point of a storm drain discharge regardless of any monitoring results, are defined generally as points where flowing creeks or storm drains are known to exceed bacterial standards and routine monitoring at or in close proximity to the discharge is maintained. "Precautionary postings" are defined as points where flowing creeks or storm drains are not considered to be a threat to public health but are posted with warning signs as a precaution to warn the public to avoid water contact in these areas.

There is no provision for permanent postings or precautionary postings in AB411. This is a practice that has been developed by local environmental health agencies each using their own criteria for their actions. Additionally, the SWRCB did not obtain said data from local health agencies and has not been incorporated into the SWRCB's data base[1].

Recommendation:

The Beach Water Quality Workgroup recommends that permanent postings, i.e., those based on water quality data, constitute both a loss of beneficial use and signify water quality impairment and should be counted as posting days when determining 303(d) listings.

Since the practice is not standardized or consistent among local health agencies, the local health agencies should assist in the determination of which "permanent" postings are truly contamination problems and deserving of TMDLs by differentiating between permanent and precautionary postings.

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[1] An effort is currently underway by the SWRCB staff to obtain this data from local health agencies back to 1999.

BEACH POSTINGS AND CLOSURES

Issue 4: Should "rain advisories" be used in determining posting days for a beach?

Background

County environmental health agencies issue rain advisories when rain is predicted or occurs. These are general press releases advising beach goers that ocean water may be contaminated as a result of the rainfall, and water contact should be avoided for 72 after the rainfall has ended, especially adjacent to storm drain discharges. There is no standard for local health agencies to use in the issuance of these advisories and AB411 regulations do not recognize them as a regulatory tool. During non-AB411 periods, most environmental health agencies either do not monitor during rain events or do not post during this period. During AB411 periods, state law requires the beach to be posted when weekly monitoring reveals the ocean water does not meet bacterial standards regardless of the reason, and regardless of the fact that a "rain" advisory may have been issued.

Protocols developed by local health agencies for issuing "rain" advisories are not consistent from county to county, and there is a significant difference in even the amount of rainfall during a period of time that causes a "rain" advisory to be issued. Consequently, there is no consistency among counties with respect to issuing advisories and the number of "rain" advisories in the SWRCB data base do not have the same meaning from jurisdiction to jurisdiction. Additionally, weekly monitoring or the lack of monitoring during the "rainy" season results in an insufficient database on water quality for periods affected by rain.

The RWQCBs represented at the discussions reported that they do not currently utilize "rain advisories" when considering 303(d) listing.

Available Alternatives:

1. RWQCBs should not use the number of "rain" advisories issued by local health agencies in determining 303(d) listings.

2. RWQCBs should use the number of "rain" advisories issued by local health agencies in determining 303(d) listings.

3. RWQCBs should use the number of "rain" advisories issued by local health agencies if water quality data is available during the rain event to support water quality impairment in determining 303(d) listings.

Discussion:

Storm water runoff in urban areas degrades ocean water quality. In large rainstorms, the magnitude of ocean water affected by runoff is quite extensive. Bacterial levels in

ocean waters become significantly elevated during these time periods[1]. If water quality data during rain advisories are not used, RWQCBs may be missing water quality impairments that really exist.

Weekly monitoring is required from April 1 through October 31 by AB 411. The local health agency cannot waive the collection of samples due to rainstorms. If conditions warrant, e.g., dangerous surf conditions, some agencies may change the collection day. If water quality does not meet DHS bacterial standards, the beach must be posted whether a rain advisory has been issued or not. As a result, these postings are as valid as postings during dry-weather periods. They constitute a failure to attain water quality objectives and loss ob beneficial use.

During the non-AB 411 period, when "rain" advisories are issued and no water monitoring occurs, water quality is unknown and cannot necessarily be considered impaired. In most of these cases, signs are not posted on the beach unless they are part of the permanent/precautionary posting protocol of the local jurisdiction (See permanent/precautionary postings.) The loss of beneficial use is probably not measurable with the issuance of a "rain" advisory alone.

Recommendation:

The BWQW recommends that "rain advisory" days should not be counted towards the threshold of bacterial standard exceedances/posting days. However, any routine monitoring results of samples taken during the time period whether or not they are collected during the AB 411 period should be used.

Regional Boards may have to use the raw data and will also have to eliminate non-routine aspects of the sampling data during the non-AB 411 time period.

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[1] Noble, Rachel,

BACTERIAL STANDARDS

Issue: Should actual bacterial levels at any given beach be the criteria for the 303(d) listing of any ocean water beach?

Background

Two sets of bacterial standards for ocean water have been adopted. The SWRCB has adopted bacterial standards in the "Ocean Plan". These standards are water quality objectives or attainment goals. Although these standards have been linked to health standards in the past, the Ocean Plan bacterial standards are no longer considered protective of public health.

As a result of the passage of AB 411[1], the legislature instructed the Department of Health Services (DHS) to establish bacterial standards that have been scientifically shown to be protective of public health. The DHS bacterial standards are used by local environmental health agencies in exercising their responsibility under the statute to post the beaches with warning signs or to close them due to water quality impairments.

The most public health protective standard for a single bacterial group is for enterococcus bacteria[2]. The SWRCB has not adopted an enterococcus standard into the Ocean Plan, and the standards for total and fecal coliform bacterial also differ from the standards for these bacteria adopted by DHS. The most protective bacterial standard uses the ratio between total and fecal coliform bacteria[3], but the SWRCB has not adopted this standard into the Ocean Plan.

Of the three RWQCBs participating in the Beach Water Quality Workgroup's discussions, only the Los Angeles RWQCB reported using bacterial standards as criteria for 303(d) listing, and these were the Ocean Plan standards (see chart below).

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[1] AB 411, Statutes of 1997.

[2] Haile, Robert W. etal., An Epidemiological Study of Possible Adverse Health Effects of Swimming in Santa Monica Bay, 1996, Study sponsored by the Santa Monica Bay Restoration Project.

[3] Haile, Robert W., et.al. Ibid.

303(d) listing guidelines currently used				
	Region 4	Region 8	Region 9	AB 538
Closures	> 1 /year	Not used for listing	>10days/year P + C	Std. exceeded any 3 wks. of 4 or if >weekly sampling, >75%days in any month
Postings	>10% days/year	Duration of ≥7 days		
Standards	20%>1,000 TC 10%>10,000TC 10%>400FC geo.mean>200FC			
Beach listed as:	Beach name	Stretch of beach associated with sampling point	0.2 miles up and down coast of sampling point	

Alternatives:

1. Use the Ocean Plan's bacterial standards as a factor in 303(d) listing.

2. Use the bacterial standards established by DHS, pursuant to AB 411, as a factor in 303(d) listing.

3. Do not use bacterial standards as a factor in 303(d) listing.

Discussion:

The bacterial standards are the basis for regulatory actions taken by local health agencies. Posting beaches with warning signs (postings) occurs when ocean waters do not meet the established bacterial standards. Postings, for even 1 day, constitute a loss of beneficial use (REC I). The number of postings also signifies the failure to attain water quality objectives.

Meeting the Ocean Plan bacterial standards signifies the attainment of adopted water quality objectives for bacteria. Meeting these standards however, does not measure loss of use since beaches may be posted by local health agencies even though the ocean waters meet the Ocean Plan bacterial standards.

Bacterial levels as currently measured vary considerably over short periods of time and distances. The magnitude of bacterial levels usually vary by source, the concentration of the source contaminate and the volume of discharge. The magnitude of bacteria does not justify the use of bacterial levels for 303(d) listing since they measure neither loss of beneficial use nor a failure to attain water quality objectives.

A TMDL is required when a beach is listed. Listings should be based on the lack or failure to attain/meet water quality criteria and when beneficial use is lost. Anti-degradation policy must also be a factor. The number of postings in a given period of time measures these parameters.

Recommendation:

The Beach Water Quality Workgroup recommends that the bacterial standards not be used as a factor in 303(d) listing since they do not measure all the parameters required.