Comment

USDA United States Department of Agriculture | Forest Service | Pacific Southwest Region

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File Code: 2530
Date: SEP 26 2012

RECEIVED SEP 28 2012 By RWB

Richard Booth
Chief, TMDL/Basin Planning Unit
Lagontan Regional Water Quality Control Board
2501 Lake Tahoe Blvd
South Lake Tahoe, California 96150

Dear Mr. Booth:

The USDA Forest Service, Pacific Southwest Region (USFS), offers the following comments on the Triennial Review of the Lahontan Basin Plan specific to the topic "Revise water quality objectives for bacteria".

1. The current basin plan objective for fecal coliform (FC) is a log mean of 20 colony forming units per 100 milliliters (cfu/100 mL) and is applied to all surface waters within the Lahontan Region because all surface waters have the contact recreation (REC-1) beneficial use designation.

2. The current basin plan objective does not allow any concentrations of coliform bacteria from humans or livestock.

3. Both U.S. Environmental Protection Agency (USEPA) regulations and the State's Porter-Cologne Act require that basin plan objectives be scientifically defensible and based on the protection of identified beneficial uses.

4. The current basin plan objective has no scientific basis linking the objective to protection of the identified REC-1 beneficial use, and is therefore not in compliance with applicable federal regulations and State law. The most recent (1976) USEPA standard for FC for recreational waters was 200 cfu/100 mL. This standard is used currently by the Central Valley Regional Board, which adjoins the Lahontan Region to the west. In 1986, the USEPA shifted to a standard based on E. Coli, and the 2012 draft USEPA water-quality standards uses this same E. Coli standard of a geometric mean of 126 cfu/100mL and a 75th percentile of 235 cfu/100 mL. The USEPA standard was based on extensive scientific studies to establish links between ambient bacterial concentrations and impacts to human health. No such studies have demonstrated a need for a basin plan objective of 20 cfu/100 mL, which is ten times lower than the most recent USEPA FC standard.

5. The Lahontan Board acknowledged in Resolution No. R6T-2007-0019 that a FC standard of 200 cfu/100 mL was protective of beneficial uses, which include REC-1.

6. The current basin plan objective is not consistently achieved even in the absence of livestock. Data provided by Lahontan Board staff (Smith, D.F., Lahontan Regional Water

Response

USFS-1: The comment that "the current basin plan objective has no scientific basis linking the objective to protection of the identified REC-1 beneficial use" is incorrect. The scientific state-of-knowledge demonstrates that the presence of fecal indicator bacteria (FIB) in water (e.g., fecal coliform, enterococci, *E. coli*) indicates a potential threat to beneficial uses of water (including REC uses) due to fecal contamination. The USEPA has long recognized fecal coliform bacteria as a cost-effective and reliable indicator of fecal contamination. (Reference: USEPA, 1976. Quality Criteria for Water, pp. 79-82.) Since that time, the USEPA has continually recommended the use of various FIB to reveal the presence of fecal contamination, and to indicate a risk to human health. For example, in the 2012 EPA Recreational Water Quality Criteria, (November 26, 2012), the USEPA states: *(continued on next page)*

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Response

USFS-1 (*continued from previous page*):

"…The basis for recommending criteria that use bacterial indicators of fecal contamination is that pathogens often co-occur with indicators of fecal contamination…Public health agencies have long used FIB to identify potential for illness resulting from recreational activities in surface waters contaminated by fecal pollution…Although most strains of FIB are not pathogenic, they demonstrate characteristics that make them good indicators of fecal contamination (i.e., often of fecal origin and simple methods of detection) and thus, indirectly indicate the potential presence of fecal pathogens capable of causing GI illnesses. As such, FIB are 'pathogen indicators' as that term is defined by CWA §502(23) –'a substance that indicates the potential for human infectious diseases'…"

Though the USEPA's most current FIB criteria focus on *E. coli* and enterococci (not fecal coliform), the USEPA's FIB criteria are not standards in California. The Lahontan Basin Plan's water quality objectives for fecal coliform bacteria were approved by the USEPA and remain valid. In sum, the available scientific evidence, taken as a whole, demonstrates that the presence of FIB (including fecal coliform bacteria) in water indicates a risk to human health. The existing 20 cfu/100mL standard has a risk to human health of less than one person in 1000 to become ill who contact waters containing fecal contamination. The scientific foundation for the Basin Plan's bacteria objectives is well established.

The comment appears to confuse the interaction between science and policy as they relate to the adoption of water quality standards. While scientists can estimate and quantify the threats posed by various levels of FIB in water, scientists alone do not dictate the numeric standard. *(continued on next page)*

Comment	Response
	USFS-1 (*continued from previous page*): Decision-makers determine the standard, based on societal factors (including local, regional, and/or statewide considerations) and the state-of-knowledge that exists at the time of adoption. Therefore, various numeric standards for FIB are in use throughout America; there is not currently any "one-size-fits-all" bacteria standard used in California, or throughout the United States. (See also Responses USFS-5, USFS-8, and USFS-9, below.) Further, the comment does not cite any regulation(s) or statute(s), or articulate why the "current basin plan objective…is…not in compliance with applicable federal regulations and State law." The Lahontan Water Board, composed of members duly appointed by the Governor, lawfully adopted the Basin Plan's water quality objectives for bacteria in 1974, and those objectives have been approved by both the State Water Resources Control Board and the U.S. Environmental Protection Agency (in 1975 and 1995). The current objectives comply with all relevant State laws and federal regulations. The Water Board acknowledges that new technologies have emerged, and that new information and FIB criteria have become available since the Basin Plan's objectives for bacteria were adopted (in 1975) and amended (in 1995). Water Board staff is currently reviewing the USEPA's latest Recreational Water Quality Criteria (released in November 2012; *ibid*), and conducting FIB monitoring to characterize bacteria concentrations at numerous locations throughout the Region. Unless and until the Lahontan Regional Board considers and adopts amendments to the Basin Plan's bacteria objectives, the current objectives remain valid and must be adhered to by all dischargers in the Region.

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	USFS-2: Finding 4 in Resolution No. R6T-2007-0019 acknowledged that USEPA found that the federal FC criterion of 200 cfu/100mL is sufficiently protective of beneficial uses; the Lahontan Water Board did not explicitly find that 200 cfu/100mL is protective of beneficial uses for the Lahontan Region. Federal (USEPA) criteria are, in general, minimum requirements that USEPA expects the states to follow. The federal criterion for fecal coliform bacteria (200 cfu/100mL, log mean) is therefore the highest concentration that USEPA considers adequate to protect water-contact recreation beneficial uses. Both federal and State laws and regulations provide that the Regional Boards may adopt water quality objectives that are more protective than USEPA's criteria, and the Lahontan Regional Board has lawfully adopted its own objectives. The Lahontan Regional Board has (in Resolution No. R6T-2007-0019, and elsewhere) articulated its rationale for adopting water quality objectives which are more protective than USEPA's FC criterion. Furthermore, Resolution No. R6T-2007-0019 applies only to the Bridgeport Valley and East Walker tributaries.

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Richard Booth 2 Quality Control Board, written communication, March 16, 2012) indicate that FC concentrations exceeded the basin plan objective on numerous occasions on streams on the Inyo National Forest when cattle were not present. A study recently completed by the USFS and UC Davis found that of 743 samples collected across 12 USFS grazing allotments, 50 percent exceeded the 20 cfu/100 mL standard. For 125 samples collected at sites identified as recreational sites without key grazing areas, 46 percent exceeded the 20 cfu/100 mL standard. In contrast, only 10 percent of all samples and 6 percent of samples from recreational sites without key grazing areas exceeded the 200 cfu/100 mL standard advocated by the USEPA. 7. The current basin plan objective, in requiring bacterial concentrations that are too low to be generally achievable and ten times lower than needed to protect identified beneficial uses, and in completely prohibiting coliforms from humans or livestock, does not allow reasonable use of public lands consistent with the Multiple Use Sustained Yield Act. 8. Your staff proposes three options for revising the current basin plan objective, all of which would require at least three years of staff work. We suggest that you immediately shift either to the former USEPA standard of 200 cfu/100 mL, consistent with the neighboring Central Valley Region, or to the proposed USEPA standard for E. Coli. Such a change is supported by credible scientific information, would protect designated beneficial uses, and would require no investment of staff resources. 9. We recommend that a 10 percent subset of any samples collected for the purpose of assessing the basin plan objective for bacteria be analyzed for identification and quantification of pathogens in order to link revised objectives to risks to human health. Thank you for the opportunity to comment on the Triennial Review of the Basin Plan. If you have any questions, please contact Barry Hill, Regional Hydrologist, at (707) 562-5968. for Barrie T. Grant RANDY MOORE Regional Forester cc: Barry Hill	**USFS-3**: The Basin Plan's bacteria objectives are based on 30-day log means (i.e., geometric averages), so it is inappropriate and incorrect to assess water quality conditions solely on individual samples and not on 30-day log means. It has been our experience that, in the vast majority of cases, the 30-day log mean of multiple results comply with the Basin Plan's fecal coliform objective of 20 cfu/100 mL, except in places where livestock are allowed uncontrolled access to surface waters and livestock use is concentrated in and near surface waters. See, for example, Nilson, C., and others, 2012. Bacteria Monitoring in the Eastern Sierra Nevada, Summary of Results for 2011—Staff Report. Lahontan Regional Water Quality Control Board, South Lake Tahoe, CA. March 27, 2012. 34 pp.) **USFS-4**: The available data indicate that the Basin Plan's current water quality objective for fecal coliform bacteria (20 cfu/100 mL, 30-day log mean) is generally achievable. The current objectives were adopted by the Regional Water Board and were approved by the State Water Resources Control Board and the U.S. Environmental Protection Agency.

Comment

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Thank you for the opportunity to comment on the Triennial Review of the Basin Plan. If you have any questions, please contact Barry Hill, Regional Hydrologist, at (707) 562-5968.

for Barrie T. Grant
RANDY MOORE
Regional Forester

cc: Barry Hill

Response

USFS-5: The 2012 Triennial Review Staff Report recommends that Water Board staff continue to work on the water quality bacteria objectives as one of its highest basin planning priorities over the next three years. The Staff Report does not include a recommendation for choosing one of the three options previously listed in a scoping report. Rather, the 2012 Triennial Review Staff Report describes specific tasks that need completion as part of continuing focus on the water quality bacteria objectives project.

Any revision of the Basin Plan's water quality objectives would require staff resources, and the proposals that the Water Board consider less protective FIB objectives for the entire Region represents significant changes that would likely be controversial, hence resource-intensive.

The State's landmark Porter-Cologne Act established nine independent regional water boards, and it authorizes and directs the regional boards to adopt regional water quality objectives based on a host of factors. The nine regional water boards show that California has many geographic differences in water quality, actual and potential beneficial uses, and unique economies throughout the state. Therefore, the regional basin plans are not always consistent, as is necessary to address the regional differences within California.

Comment

Richard Booth 2

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for Barrie T. Grant
RANDY MOORE
Regional Forester

cc: Barry Hill

Response

USFS-6: The linkage between presence of indicator bacteria and human health is established. Further, monitoring for specific pathogens is very costly, the methods for detecting and/or quantifying many waterborne pathogens are not well standardized, the potential for "false negatives" is generally high and/or not precisely quantified for pathogens, the Basin Plan contains no water quality objectives for specific pathogens, and the USEPA has not promulgated criteria for specific waterborne pathogens. In sum, pathogen monitoring is very expensive, and results from pathogen monitoring are very difficult and/or impossible to interpret.

Monitoring for all known waterborne pathogens would be cost prohibitive, and monitoring for a limited suite of waterborne pathogens at 10 percent of sites would be costly while not ruling out risks to human health (and potentially not answering any management question/s at all). This is precisely why the USEPA has long recommended (and continues to recommend) the use of fecal indicator bacteria for assessing microbial water quality. In its most recent criteria document for recreational waters, the USEPA (2012) stated:

> "…EPA is not publishing criteria for 'pathogens' because the state of the science was not sufficient at the time of completion of these RWQC. In addition, there are numerous pathogens that cause the full range of illnesses associated with primary contact recreation. Pathogen-specific enumeration methods for environmental waters were not available at the time of the NEEAR study, and thus health relationships with specific pathogens were not established." USEPA, 2012. Recreational Water Quality Criteria, USEPA Office of Water #820-F-12-058, Washington, D.C.)

For all of the above reasons, routine monitoring for specific pathogens is not warranted at this time.