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**Document: Revising Water Quality Assessment Policy 1-11**

March 29, 2018

Dear Mr. Patrick Lizon,

IDEXX commends the Washington Department of Ecology (Ecology) on developing the proposed changes to the Water Quality Policy 1-11 and appreciates the opportunity to participate in the public comment period.

At this time, IDEXX requests Ecology to consider amending the recreation bacteria indicators for contact waters, changing the fresh recreational water bacteria indicator, for both primary and secondary contact waters, from fecal coliform to *Escherichia coli* (*E. coli*) and also changing marine recreational water, primary contact, to enterococci, applied Statewide.

1. Within Part 2, Section 2A. Bacteria, Assessment Information and Data Requirements, on page 30 within the 4<sup>th</sup> paragraph, the Water Quality Policy states, "In some cases, Ecology will allow alternate indicators of bacteria in fresh water when the data submitter is able to demonstrate that the indicator is an appropriate surrogate. For example, *E. coli* bacteria values can be used to determine non-compliance with the fecal coliform criteria because *E. coli* is a subset of the group of bacteria referred to as fecal coliforms. For the same reason, however, *E. coli* values cannot be used to show compliance with the fecal coliform criteria."

Rationale for bacteria indicator change: *E. coli* (and enterococci) are better indicators for fecal contamination versus fecal coliforms.

Fecal coliform bacteria are commonly identified as being thermotolerant bacteria (able to grow at 44.5°C) [1]. Thermotolerant bacteria consists of *E. coli*, Klebsiella, Enterobacter, and Citrobacter species [1,2]. When testing for fecal coliforms, the population of the bacteria present can affect the fecal coliform results, for example: Klebsiella, Enterobacter, & Citrobacter species are false-positive indicators of fecal contamination as they are from nonfecal origin [2]. It has been found, up to 15% of Klebsiella (nonfecal origin) are thermotolerant and up to 10% of *E. coli* are not thermotolerant, thus potentially causing an error rate of 25% when testing for fecal coliforms [3]. *E. coli* is the only bacteria of the coliform bacteria group that comes from the intestinal tract and found to be more specific to the detection of fecal contamination, so much so, that *E. coli* is the definitive indicator of fecal contamination in US drinking water regulations [3,4] and is the recommended bacterial indicator for fecal contamination in recreational fresh water, as part of the 2012 US EPA Recreational Water Quality Criteria recommendations [5].

Within marine waters, studies show enterococci as compared to other fecal contamination indicators, have a higher survival rate and enterococci show a direct association with risk of swimmer's illness [6,7].

The European Union (EU), uses enterococci as an indicator of fecal contamination for recreational waters, as well as in drinking water, and additionally enterococci are part of the US EPA 2012 Recreational Water Quality Criteria and included by the World Health Organization as recommended bacteria indicator for fecal contamination for recreational water [5,7].

IDEXX strongly encourages Ecology to consider amending the bacteria indicators for contact recreation waters, changing from fecal coliforms to *E. coli*, for all fresh recreational waters, and enterococci, for all marine recreational waters. We understand the FDA regulations still require fecal coliforms as the bacteria indicator for shellfish beds, however, for the protection of human health in contact waters, changing the bacteria indicators would not only be adhering to the US EPA 2012 recommend criteria for Recreational Water Quality, but using the bacteria indicators *E. coli* and enterococci would provide continuity of data with surrounding state shared waters and state BEACH programs. We appreciate the opportunity to provide these comments and look forward to the finalization of the Water Quality Assessment & Policy 1-11.

Respectfully submitted,



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#### References

1. Warden, Paul; DeSarno, Monique; Volk, Sarah; and Eldred, Bradley. Analytical Services. Evaluation of Colilert-18 for Detection and Enumeration of Fecal Coliform Bacteria in Wastewater Using the U.S. Environmental Protection Agency Alternative Test Procedure Protocol. *Microbiological Methods, Journal of AOAC International*. Volume 94, Number 5: 2011
2. Doyle, Michael. Erickson, Mary. Closing the Door on the Fecal Coliform Assay. *Microbe*, Volume 1, Number 4, page 162: 2006
3. Allen, Martin; Edberg, Stephen; Clancy, Jennifer; Hrudey, Steve. Drinking water microbial myths. *Critical Reviews in Microbiology*; ISSN: 1040-841X (print), 1549-7828 (electronic): 2013:  
<http://informahealthcare.com/mb>
4. Cummings, Dennis. The Fecal Coliform Test Method Compared to Specific Tests for *Escherichia coli*. IDEXX: <https://www.idexx.com/resource-library/water/water-reg-article9B.pdf>

5. US Environmental Protection Agency. Recreational Water Quality Criteria. Office of Water 820-F-12-058. <https://www.epa.gov/sites/production/files/2015-10/documents/rwqc2012.pdf>
6. Hussain M, Rasool SA, MT Khan, A Wajid. "Enterococci vs coliform as a possible fecal contamination indicator. Baseline data for Karachi." Pak J Pharm Science. 20(2): 107-111; 2007: <https://www.ncbi.nlm.nih.gov/pubmed/17416563>
7. Boehm, Alexandria and Sassoubre, Lauren. Enterococci as Indicators of Environmental Fecal Contamination. *Enterococci: From Commensals to Leading Causes of Drug Resistant Infection*. 2014: <https://www.ncbi.nlm.nih.gov/books/NBK190421/>