

Narrative Justification for Longer Duration Period for Recreational Water Quality Criteria

It is important for states to adopt magnitude, duration, and frequency components of criteria to protect designated uses. Therefore, in EPA's *Recreational Water Quality Criteria* document (820-F-12-058) EPA recommended a duration of 30 days for fecal indicator bacteria, which "allows for the detection of transient fluctuations in water quality in a timely manner." The Agency also recommended that, for any 30 day duration period, the geometric mean (GM) criterion magnitude should not be exceeded at all nor should the "statistical threshold value" (or "STV") be exceeded more than ten percent of the time.

The duration component of the criterion represents a critical exposure period during which the distribution of fecal indicator bacteria values should provide adequate protection for a population of recreational water users. During this critical exposure period, there should not be numerous events or lengthy periods of time where very high levels of fecal indicator bacteria occur, as this could lead to unacceptably high risk of illnesses. The Agency is concerned that a very long critical exposure period could allow an excessive number of high exposure events over a shorter term to be "averaged out" over the long-term. As expressed in the criteria document, EPA considers 30 days to be an optimal duration period to capture both short-term and long-term variability of exposure conditions to protect recreational uses. Based on factors described below, the Agency also considers a duration of up to 90 days acceptable.

EPA considers a duration of up to 90 days to represent an acceptable critical exposure period to protect recreational uses for the following reasons. The epidemiological studies used to develop the 2012 criteria recommendations were conducted over exposure periods of up to 90 days, thus making durations up to 90 days scientifically defensible. In addition, analysis of data from waters that experience short-term variability, or "transient fluctuations," from periodic high concentration releases exhibit very similar criteria attainment assessment outcomes using a 30 day or 90 day assessment period, when both the GM and STV criteria components are evaluated. As an example, EPA analyzed monitoring data from locations in New Jersey impacted by CSO discharges (an example of a "transient fluctuation"). EPA reviewed 17,538 records from 703 monitoring stations collected from 1996-2011. EPA combined the data into 2,890 monitoring station and year sets and assessed those combinations for attainment of the GM and STV over fixed 30 day periods and fixed 90 day periods. The STV criterion component appears to be a significant factor in preventing significant levels of FIB to be "averaged out" over a 90 day assessment period. Although using the GM alone resulted in an additional 106 station-years in non-attainment, when the STV was factored in, the number of station-years in non-attainment decreased to 62. Looking at station-year combinations (representing assessment in a "timely manner"), there is an overall 98% rate of agreement between results using 30 day and 90 day assessment periods, and most cases of disagreement are the result of a single measurement exceeding a 30-day GM but not exceeding a 30-day STV. The small percentage of outcomes where only a 30 day assessment period indicate non-attainment are predominantly a result of a single monthly measurement that lie between the GM and STV over the period of record, and may thus have a low probability of reflecting excessive risk of illness. On a station level (considering multiple years of data), 75% are in non-attainment using a

90-day assessment period and 76% are in non-attainment using a 30-day assessment period, representing a 99% rate of agreement.

It is this combination of field study duration and subsequent data analysis that makes up to 90 days an acceptable duration period. EPA does not have a basis to support adoption of a duration period that exceeds 90 days.

Adoption of EPA's recommended criteria with a 30 day duration period, combined with frequent monitoring (e.g., more than once a month), provides the best means of providing protection and ensuring that assessment results accurately reflect attainment status.