WQS Triennial Review – Issue Paper:

Performance-based Approach for Temperature Criteria

Introduction

Under section 304(a) of the Clean Water Act, the US Environmental Protection Agency (EPA) is to develop and publish water quality criteria that reflect the latest scientific knowledge on the effects of a constituent concentration on animal and human health. These criteria are published as recommendations to states and authorized tribes for use in setting their water quality standards. While EPA provides scientific recommendations to protect aquatic life and recreation uses, these do not substitute for the Clean Water Act or EPA's regulations, nor are they regulations themselves. As a practical matter, EPA uses recommended §304(a) criteria as one factor for determining whether to approve a state's water quality standards. Revisions to Idaho water quality standards must be approved by EPA before they are applicable for Clean Water Act purposes. States must consider adopting new or updated Clean Water Act §304(a) criteria recommendations as part of their triennial review as described under 40 CFR 131.50(a).

Federal regulations implementing the Clean Water Act call for states to adopt water quality standards that restore and maintain the chemical, physical, and biological integrity of the nation's waters. These standards include criteria to maintain water temperatures that protect aquatic life communities.

In April 2003, The U.S Environmental Protection Agency (EPA) issued temperature guidance to states and tribes in the Pacific Northwest. Although DEQ helped develop the guidance, there were unresolved differences between the two agencies. The primary issue is providing water temperatures that protect the cold water-dependent (stenothermic) species where they exist, where meeting criteria is attainable. In recent years there has been increased interest in expanding the use of performance-based standards in a variety of areas, including health, safety, and environmental regulation (Coglianese et al, 2002). The city of Moscow requested that DEQ evaluate the development of a performance-based approach to derive temperature criteria (DEQ 2017).

This paper examines a performance-based approach for temperature criteria and the advantages and disadvantages of adopting such a method into Idaho code.

History of Temperature Criteria and a Performance-Based Approach

Fresh water temperature criteria development has advanced from the search for a single *magic number* to a protocol for determining mean and maximum numerical criteria based on the protection of important fish species (EPA 1977). The first time a performance-based measurement system (PBMS) was announced via a federal register notice was in September 1997. This announcement has been referred to as the original performance approach and is defined as "A set of processes" where data quality needs and limitations of a program or project

are specified. These processes serve as criteria for selecting the appropriate methods to meet needs in a cost-effective way (EPA 2008).The goals of the original performance approach were to address the lengthy approval process for new methods and method modifications by lowering the barrier to use of innovative technology, improving data quality, and decreasing the number of methods or method modifications requiring EPA review or rulemaking before use (EPA 2008).

Oregon Study Case

The Oregon Department of Environmental Quality (ODEQ) submitted *Natural Conditions Criteria for Temperature* (NCC) to the EPA for review on December 10, 2003 and received approval on March 2, 2004. However, in 2005, a lawsuit was filed by Northwest Environmental Advocates (NWEA) challenging EPA's approvals. The court determined that EPA's approval of the NCC was "arbitrary and capricious" (EPA 2013). Concerns were raised that the ODEQ temperature standard was inadequate to protect salmonid species. Due to these concerns, an agreement was made between EPA, NMFS, FWS, and ODEQ to develop regional water temperature criteria guidance that would be protective of listed salmonids (EPA 2020).

One remedy suggested by EPA was for Oregon to adopt a performance-based approach that relies on the adoption of a systematic process rather than a specific outcome. This approach is presumed to provide a transparent, predictable, repeatable, and scientifically-defensible procedure for the protection of designated uses (EPA 2013). To date, Oregon is still considering options.

Discussion

Performance-based methods are defined as an adopted water quality standard that is a specific process and methodology, leading to and describing implementation of a numeric water quality criterion. It may be used for the derivation of site-specific numeric criteria or for interpreting narrative criteria into quantifiable measures (EPA 1997). The performance-based approach focuses on defined outcomes rather than inputs. It has been shown to be a cost-effective approach to achieving desired environmental outcomes by adopting the least-cost strategy for the socio-economic and biophysical conditions of the water body of concern (Baird, Belcher & Quinn 2014).

This approach is particularly well suited to the development of site-specific numeric criteria and for interpreting narrative criteria into quantifiable measures (EPA 2013). Testing and monitoring can play a critical role in the successful implementation of performance-based standards. Performance-based standards provide flexibility that can allow for innovation because a regulated entity may be able to meet the mandated outcome in any number of ways (Coglianese 2016). This could benefit Idaho by tailoring standards to specific watersheds and ecosystems by streamlining administrative processes associated with refining criteria necessary to protect designated uses.

If Idaho were to adopt a performance-based approach for temperature criteria, we would need to specify implementation procedures, methodologies, minimum data requirements, and decision thresholds in water quality standards (EPA 2000). Special needs of federally-listed threatened or endangered species or their critical habitat would also require consideration (EPA 2000).

Another potential drawback to using a performance-based approach for temperature criteria is that there is little empirical research about how performance standards actually work in practice (Coglianese et al., 2002, Kettl 1998). Additionally, some environmental groups fear performance measurement is an effort to reduce the government's commitment to a clean environment and assert that performance-based regulation is just a tactic to give more decision-making power to private industry (Kettl 1998).

DEQ is requesting comments on whether to prioritize development of a performance based temperature criteria.

References

Baird, J., Belcher, K.W., & Quinn, M. 2014. *Context and Capacity: The Potential for Performance-Based Agricultural Water Quality Policy.* Canadian Water Resources Journal. 39.4, 421-43.

Coglianese, Cary, Jennifer Nash, and Todd Olmstead. 2002. *Performance-Based Regulation: Prospects and Limitations in Health, Safety, and Environmental Protection*. Regulatory Policy Program Report No. RPP-03 (2002).

Coglianese, C. (2016). *Performance-based regulation: concepts and challenges*. In F. Bignami D. Zaring (Eds.), Comparative Law and Regulation: Understanding the Global Regulatory Process, 403-430. Cheltenham: Edward Elgar.

DEQ. 2017. *2017 Triennial Review of Idaho Water Quality Standards*. November 2017. State of Idaho Department of Environmental Quality. Water Quality Division.

EPA. 1997. Memo from Tudor T. Davies. "Establishing Site Specific Aquatic Life Criteria Equal to Natural Background." November 1997.

EPA. 2000. *Federal Register*. April 27, 2000. Volume 65, No. 82. Rules and Regulations.

EPA. 2003. *EPA Region 10 Guidance For Pacific Northwest State and Tribal Temperature Water Quality Standards*. EPA 910-B-03-002. Region 10 Office of Water.

EPA. 2008. *Flexible Approaches to Environmental Measurement*. Webinar Series. Accessed at https://www.epa.gov/sites/production/files/2014-05/documents/faem-webinar-presentation-notes.pdf

EPA. 2013. *Disapproval of Oregon's Water Quality Standards: Natural Conditions Criteria for Temperature OAR 340-041-0028(8); Statewide Narrative Natural Conditions Criteria OAR 340-041-0007(2)*. Letter.

EPA. 2020. *Region 10 Temperature Criteria Guidance Development Project*. Science Inventory. Accessible at https://cfpub.epa.gov/si/si_public_record_report.cfm?Lab=ORA&TIMSType=&count=10000&dirEntryId=73651&searchAll=&showCriteria=2&simpleSearch=0&startIndex=70001

Hadjisophocleous, G.V. & Benichou, N. 2000. *Development of Performance-Based Codes, Performance Criteria and Fire Safety Engineering Methods.* International Journal on Engineering Performance-Based Fire Codes. 2.1.127-142.

Kettl, D.F. 1998. *Environmental Policy: The Next Generation*. Brookings Policy Brief Series. Accessible at https://www.brookings.edu/research/environmental-policy-the-next-generation/

Veale, M. & Seixas, R. 2015. *Moving to Metrics: Opportunities and Challenges of Performance-Based Sustainability Standards.* Survesy and Perspectives Integrating Environment and Society. 8.1.