UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101-3188

WATER
DIVISION

SEP 30 2019

Ms. Amber LeBlanc
Acting Director, Division of Water
Alaska Department of Environmental Conservation
P.O. Box 111800
Juneau, Alaska 99811

RE: The EPA's CWA Action on Alaska's New and Revised Water Quality Standards Addressing Mixing Zone Policy, August 14, 2006 Submittal

Dear Ms. LeBlanc:

Pursuant to section 303(c)(3) of the Clean Water Act, 33 U.S.C. § 1313(c)(3), and 40 CFR Part 131, the U.S. Environmental Protection Agency is acting on the new and revised water quality standards addressing mixing zone policy and associated definitions submitted by the Alaska Department of Environmental Conservation on August 14, 2006. The EPA approves all the submitted new and revised water quality standards, except for 18 AAC 70.240(g)(2), (3), and (4) which the EPA disapproves. Details of the submitted water quality standards and the EPA's action are outlined below and in the enclosed Technical Support Document.

We appreciate ADEC's patience over the considerable time it has taken to complete this action. The EPA looks forward to continuing to work with you and your staff as we address the remaining water quality standards actions that are pending for the state of Alaska.

Background

By letter dated August 14, 2006, ADEC submitted new and revised water quality standards at 18 AAC 70.240 and 18 AAC 70.990. The new and revised water quality standards were adopted by ADEC on February 17, 2006; certified by the Alaska Attorney General on February 21, 2006 as being duly adopted pursuant to state law; and became effective under Alaska state law on March 23, 2006. Prior to adoption, ADEC provided an opportunity for public comment, including a public hearing, as described in ADEC's public notice (Notice of Proposed Changes in the Regulations of the Alaska Department of Environmental Conservation, October 17, 2005).

The new and revised water quality standards submitted to the EPA for review and action are identified in an enclosure to ADEC's August 14, 2006 submittal letter (Attachment to Memorandum; Lauren Yocom, Administrative Code Coordinator, to Gary Mendivil, Department of Environmental Conservation; Permanent Filing of Regulation(s) Water Quality and Mixing Zones, February 22, 2006). In revising its mixing zone regulation, ADEC repealed 18 AAC 70 sections 240, 245, 250, 255, 260, and 270 and consolidated the revised regulation in a new section 18 AAC 70.240. ADEC also made accompanying changes to certain associated definitions at 18 AAC 70.990 by revising 18 AAC 70.990(2), repealing 18 AAC 70.990(30), and adding 18 AAC 70.990(72).

The EPA's Action

Pursuant to section 303(c)(3) of the CWA, 33 U.S.C. § 1313(c)(3), and 40 CFR Part 131, the EPA approves the submitted changes at 18 AAC 70.240 and 18 AAC 70.990, with the exception of 18 AAC 70.240(g)(2), (3), and (4). Pursuant to section 303(c)(3) of the CWA, 33 U.S.C. § 1313(c)(3), and 40 CFR Part 131, the EPA disapproves 18 AAC 70.240(g)(2), (3), and (4). The rationale for EPA's action is presented in the enclosed support document.

The effect of the EPA's disapproval is that the provisions at 18 AAC 70.240(g)(2), (3) and (4) do not become applicable water quality standards for CWA purposes. Because the approved provisions at 18 AAC 70.240 provide Alaska with an operative mixing zone policy that is consistent with the CWA, the EPA is not specifying changes that ADEC must adopt that are necessary to meet the requirements of the CWA pursuant to section 303(c)(3), 33 U.S.C. § 1313(c)(3). The EPA recommends, however, that ADEC remove the disapproved provisions from its regulation to avoid confusion. We also understand that ADEC may consider developing and submitting future revisions to its mixing zone rule. My staff remain available to engage with ADEC should you move forward with such an effort.

The EPA's action applies only to waterbodies in the State of Alaska and does not apply to waters that are within Indian Country as defined in 18 U.S.C. § 1151. In addition, nothing in this action shall constitute an approval or disapproval of a water quality standard that applies to waters within Indian Country. The EPA, or authorized Indian Tribes, as appropriate, will retain responsibilities for water quality standards for waters within Indian Country.

Memorandum of Agreement Regarding Steller's Eiders

Pursuant to Section 7(a)(2) of the Endangered Species Act, 16 U.S.C. § 1536(a)(2), the EPA consulted with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service on its proposed action on Alaska's mixing zone policy and received non-jeopardy biological opinions from both Services. As part of the consultation with the FWS, the FWS, EPA, and ADEC entered into a memorandum of agreement regarding mixing zones and the protection of Steller's eiders (Memorandum of Agreement among the Department of Interior U.S Fish and Wildlife Service and the Environmental Protection Agency and the State of Alaska Department of Environmental Conservation Regarding Protecting Threatened Steller's Eiders (*Polysticta Stelleri*) in Five Harbors of Concern in Alaska, December 17, 2010). That memorandum of agreement becomes effective as a result of the EPA's approval action.

Notification of Tribes During the Permitting Process

As you are aware, the EPA conducts consultation and coordination activities with tribal governments on its CWA water quality standards actions. During government-to-government consultation on this particular action, the tribes and the EPA discussed the importance of the opportunity to provide input in the instances where Alaska applies its mixing zone rule. The EPA explained that its memorandum of agreement with Alaska regarding implementation of the National Pollutant Discharge Elimination System permitting program requires ADEC to notify the tribes at several steps in the permitting process (National Pollutant Discharge Elimination System Memorandum of Agreement Between State of Alaska and United States Environmental Protection Agency Region 10, Amended August 11, 2011). The EPA would like to emphasize the importance of the notification requirement to ensure that tribal knowledge

and concerns are considered in decisions regarding mixing zone authorization and the permitting process as a whole. Alaska's mixing zone implementation guidance and response to the EPA's comments during rulemaking recognize the importance of local knowledge and information on traditional subsistence resources (Implementation Guidance: 2006 Mixing Zone Regulation Revisions, February 3, 2009; Response to EPA Comments on Alaska's October 17, 2005 Proposed Revisions to Mixing Zone Policy, included with ADEC's August 14, 2006 submittal). We appreciate ADEC's continued attention to this aspect of our Memorandum of Agreement.

I appreciate the ongoing collaboration between the EPA and ADEC and look forward to future work with Alaska on water quality standards pursuant to our responsibilities under the CWA. If you have any questions regarding this letter, please contact me at (206) 553-1855 or Bill Beckwith of my staff at (206) 553-2495.

Sincerely,

Daniel D. Opalski
Director

Enclosure

cc: Ms. Nancy Sonafrank, ADEC (email only)
Mr. Brock Tabor, ADEC (email only)

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) – REGION 10

Technical Support Document

The EPA's Action on Alaska's New and Revised Water Quality Standards at 18 AAC 70.240 and 18 AAC 70.990 Addressing Mixing Zones, Submitted August 14, 2006

September 30, 2019

Contents

Section I. Background

A. Federal Water Quality Regulation and Guidance for Mixing Zones
B. Alaska's Submittal

Section II. The EPA's Action

A. Introduction to The EPA's Action
B. The EPA's Action
1. Approval
2. Disapproval

Section III. Alaska's Mixing Zone Rule (18 AAC 70.240) - Rationale for The EPA's Action

A. 18 AAC 70.240(a)
B. 18 AAC 70.240(b)
C. 18 AAC 70.240(c)
D. 18 AAC 70.240(d)
E. 18 AAC 70.240(e)
F. 18 AAC 70.240(f)
G. 18 AAC 70.240(g)
1. 18 AAC 70.240(g)(1)
2. 18 AAC 70.240(g)(2), (3), and (4)
H. 18 AAC 70.240(h)
I. 18 AAC 70.240(i)
J. 18 AAC 70.240(j)
K. 18 AAC 70.240(k)
L. 18 AAC 70.240(l)
1. 18 AAC 70.240(l)(1)
2. 18 AAC 70.240(l)(2)
M. 18 AAC 70.240(m)
N. 18 AAC 70.240(n)
O. 18 AAC 70.240(o) and 18 AAC 70.240(p)

Section IV. Definitions (18 AAC 70.990) - Rationale for The EPA's Action

A. 18 AAC 70.990(2)
B. 18 AAC 70.990(30)
C. 18 AAC 70.990(72)

I. Background

A. Federal Water Quality Regulation and Guidance for Mixing Zones

The federal water quality standards regulation at 40 CFR Part 131 requires that states and authorized tribes adopt designated uses for their waters, water quality criteria to protect those designated uses, and an antidegradation policy. States and authorized tribes may, at their discretion, also adopt general policies affecting application and implementation of water quality standards, such as mixing zone policies (40 CFR 131.13). Like other water quality standards, such policies adopted in regulation or statute on or after May 30, 2000 require the Environmental Protection Agency's (EPA) approval before they become applicable water quality standards for purposes of implementing the Clean Water Act (CWA) (40 CFR 131.21(c)).

A regulatory mixing zone is an area where initial mixing and dilution of a discharge with its receiving water occurs and pollutant concentrations are allowed to exceed certain applicable water quality criteria. The allowance for regulatory mixing zones is based on the premise that certain water quality criteria may be exceeded under limited circumstances while still protecting designated uses in the water body as a whole.[1] The federal regulation acknowledging state and tribal discretion to adopt mixing zone policies does not specify content or design requirements for mixing zones. However, mixing zone policies affect the application and implementation of water quality criteria and therefore are to be based on sound scientific rationale and contain sufficient parameters to protect designated uses consistent with 40 CFR 131.11(a)(1). Authorization of mixing zones must also protect existing uses in the waterbody as a whole consistent with 40 CFR 131.12(a)(1) and the CWA.[2]

Guidance provided by the EPA presents a framework for implementing mixing zones so that they are in harmony with uses in the waterbody and do not impede progress towards the CWA objective to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The EPA's guidance addresses factors such as mixing zone location, size, shape, and in-zone water quality, and discharge outfall design, with an emphasis on preventing lethality to organisms passing through a mixing zone, ensuring that mixing zones do not cause significant human health risks, and ensuring that mixing zones do not endanger critical areas such as breeding or spawning grounds, habitat for threatened or endangered species, areas with sensitive biota, shellfish beds, fisheries, drinking water intakes and sources, or recreational areas.

The EPA's guidance for ensuring that mixing zones are consistent with the CWA can be found in the following documents:

- EPA's Water Quality Standards Handbook, Chapter 5 (updated as of September 2014) (https://www.epa.gov/sites/production/files/2014-09/documents/handbook-chapter5.pdf)

[1] "If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of the waterbody in which the mixing zones are located, then mixing zones are likely to have little effect on the designated use of the waterbody as a whole, provided that they do not impinge on unique or critical habitats." Water Quality Standards Handbook, EPA 820-B-14-004, September 2014, Chapter 5, page 4. *Available at*: https://www.epa.gov/wqs-tech/water-quality-standards-handbook (hereinafter, "WQS Handbook")

[2] "Existing uses must be maintained in all parts of the water body segment in question other than in restricted mixing zones." Questions and Answers on Antidegradation, EPA, August 1985, Question 11, page 5. *Available at*: https://www.epa.gov/sites/production/files/2018-10/documents/questions-answers-antidegradation.pdf

- EPA's 1998 Advance Notice of Proposed Rulemaking, 63 FR 36742, 36787-94 (https://www.gpo.gov/fdsys/pkg/FR-1998-07-07/pdf/98-17513.pdf), and

- EPA's 1991 Technical Support Document for Water Quality-based Toxics Control, sections 2.2.2 and 4 (https://www3.epa.gov/npdes/pubs/owm0264.pdf)

B. Alaska's Submittal

By letter dated August 14, 2006, the Alaska Department of Environmental Conservation (ADEC) submitted new and revised water quality standards at 18 AAC 70.240 and 18 AAC 70.990. These new and revised water quality standards were adopted by ADEC on February 17, 2006; certified by the Alaska Attorney General on February 21, 2006 as being duly adopted pursuant to state law; and became effective under Alaska state law on March 23, 2006. Prior to adoption, ADEC provided an opportunity for public comment, including a public hearing, as described in ADEC's public notice ("Notice of Proposed Changes in the Regulations of the Alaska Department of Environmental Conservation," October 17, 2005).

The new and revised water quality standards submitted to the EPA for review and action are identified in an enclosure to ADEC's August 14, 2006 submittal letter (Attachment to Memorandum; Lauren Yocom, Administrative Code Coordinator, to Gary Mendivil, Department of Environmental Conservation; Permanent Filing of Regulation(s) Water Quality and Mixing Zones, February 22, 2006). In revising its mixing zone regulation, ADEC repealed 18 AAC 70 sections 240, 245, 250, 255, 260, and 270 and consolidated the revised regulation in a new section 18 AAC 70.240. ADEC also made accompanying changes to certain associated definitions at 18 AAC 70.990 by revising 18 AAC 70.990(2), repealing 18 AAC 70.990(30), and adding 18 AAC 70.990(72).

18 AAC 70.240 addresses ADEC's authority to authorize or deny mixing zones; factors that ADEC will consider in determining whether to authorize a mixing zone; conditions upon which ADEC's approval of a mixing zone is contingent; certain prohibitions and associated conditions regarding mixing zones in spawning areas; mixing zone size; receiving water flows to be used for determining available dilution and calculating water quality-based effluent limitations; and other information relevant to ADEC's authorization of mixing zones.

II. The EPA's Action

A. Introduction to The EPA's Action

The consolidation of Alaska's mixing zone rule into 18 AAC 70.240 was accompanied by substantial reorganization, reformatting, addition and deletion of provisions, and textual changes. These changes are such that even language that remained essentially the same or identical to that in the mixing zone rule prior to the 2006 adoption is generally presented differently.[3] Therefore, the EPA is generally acting on

[3] The last revisions to Alaska's mixing zone rule prior to the 2006 adoption were submitted by ADEC on August 29, 1997, became effective under Alaska state law on November 1, 1997, and were approved by the EPA on November 17, 1997.

the entirety of the mixing zone rule at 18 AAC 70.240 as being new or revised. In the limited cases where the EPA determined that it was straight forward to explain why the changes did not revise the underlying meaning or scope of a provision, the EPA acted on the changes as non-substantive revisions and did not review the provision's underlying meaning. The EPA's approval of the non-substantive changes to previously approved water quality standards is to ensure public transparency as to which provisions are applicable for purposes of the CWA in accordance with 40 CFR 131.21(c). The scope of the EPA's action in approving such provisions extends only as far as the actual non-substantive changes themselves. The EPA's action on the non-substantive changes does not constitute an action on the underlying previously approved water quality standards because they are not new or revised. The same approach was applied to review and action on the definition changes at 18 AAC 70.990.[4]

The EPA is only acting on the new or revised water quality standards adopted into regulation by ADEC and identified in ADEC's August 14, 2006 submittal. The EPA is not acting on the previously existing sections of Alaska Statute and Alaska Administrative Code which were not part of ADEC's August 14, 2006 submittal, but are referenced in the new 18 AAC 70.240 and revised 18 AAC 70.990. In such cases, the EPA's action does not extend to the content of the referenced Alaska Statute and Alaska Administrative Code sections.[5]

After its August 14, 2006 submittal, ADEC provided mixing zone implementation guidance.[6] The EPA referenced the implementation guidance, where appropriate, to inform its review and understanding of Alaska's revised mixing zone regulation. The EPA is not, however, taking a CWA section 303(c)(3) action on Alaska's mixing zone implementation guidance because it is not binding in regulation or statute and therefore is not a water quality standard that the EPA has the duty or authority to approve or disapprove.[7]

The EPA's action applies only to waterbodies in the State of Alaska and does not apply to waters that are within Indian Country as defined in 18 U.S.C. § 1151. In addition, nothing in this action shall constitute an approval or disapproval of a water quality standard that applies to waters within Indian Country. The EPA, or authorized Indian Tribes, as appropriate, will retain responsibilities for water quality standards for waters within Indian Country.

B. The EPA's Action

1. Approval

Pursuant to section 303(c)(3) of the CWA, 33 U.S.C. § 1313(c)(3), and 40 CFR Part 131, the EPA approves the submitted changes at 18 AAC 70.240 and 18 AAC 70.990, with the exception of the provisions identified below in section II.B.2. Changes that the EPA approves as being non-substantive are identified in the appropriate sections of this support document that explain the EPA's rationale for its action.

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[4] *What is a New or Revised Water Quality Standard under 303(c)(3), Frequently Asked Questions*, October 2012, EPA Publication No. 820F12017. *Available at*: https://www.epa.gov/sites/production/files/2014-11/documents/cwa303faq.pdf (hereinafter, "What is a New or Revise WQS FAQ").

[5] *Id*.

[6] Implementation Guidance: 2006 Mixing Zone Regulation Revisions, February 3, 2009. *Available at:* http://dec.alaska.gov/water/water-quality/mixing-zones (hereinafter, "ADEC Implementation Guidance").

[7] What is a New or Revise WQS FAQ.

2. Disapproval

Pursuant to section 303(c)(3) of the CWA, 33 U.S.C. § 1313(c)(3), and 40 CFR Part 131, the EPA disapproves 18 AAC 70.240(g)(2), (3), and (4). The EPA's rationale for disapproval is presented in section III.G.2 of this support document. The disapproved provisions are not applicable water quality standards for CWA purposes (40 CFR 131.21(c)).

III. Alaska's Mixing Zone Rule (18 AAC 70.240) – Rationale for The EPA's Action

The subsequent sections of this support document contain the EPA's review of Alaska's submittal for consistency with the CWA and 40 CFR Part 131. Section III addresses each provision of Alaska's mixing zone rule as they are ordered in 18 AAC 70.240. Section IV addresses the associated changes to Alaska's definitions at 18 AAC 70.990.

A. 18 AAC 70.240(a)

18 AAC 70.240(a) is a statement that ADEC may authorize mixing zones, that the applicant is responsible for providing information (i.e., "*available evidence*") necessary to demonstrate the appropriateness of a mixing zone, and that ADEC has the authority to condition or deny a mixing zone:

> *(a) Upon application, the department may authorize in a discharge permit or certification, a mixing zone or multiple mixing zones in which the water quality criteria and any limit set under this chapter may be exceeded. The applicant shall provide to the department all available evidence reasonably necessary to demonstrate that a mixing zone will comply with this section. The department will approve, approve with conditions, or deny a mixing zone application.*

The EPA Action and Rationale: The EPA approves 18 AAC 70.240(a) as being consistent with 40 CFR 131.13 which provides that states and tribes have the discretionary authority to include mixing zone policies in their water quality standards.[8] Furthermore, the provision at 18 AAC 70.240(a) which provides that ADEC may condition or deny a mixing zone application is consistent with the EPA's interpretation of the appropriate use of mixing zones in accordance with the CWA. Specifically, in the Water Quality Standards Handbook the EPA recommends that the use of mixing zones in permits "…be carefully evaluated and appropriately limited on a case-by-case basis in light of the overarching requirement to protect the designated use of the waterbody as a whole pursuant to 40 CFR 131.10." WQS Handbook, Ch. 5, p. 4 (emphasis added).

The requirement at 18 AAC 70.240(a) that the applicant provide information (i.e., "*available evidence*") necessary to demonstrate the appropriateness of a mixing zone provides ADEC with a means to address mixing zones on a case-by-case basis to ensure that they protect designated uses and existing uses consistent with 40 CFR 131.11(a)(1) and 131.12(a)(1). Alaska's definition of "*available evidence*" at 18 AAC 70.990(5) is broad and could include information from studies requested by ADEC and local knowledge on issues such as subsistence use of aquatic resources and the use of waters by fish for

[8] "States may, at their discretion, include in their State standards, policies generally affecting their application and implementation such as mixing zones, low flows and variances." 40 CFR 131.13.

spawning. Alaska's implementation guidance recognizes the value of site-specific information and local knowledge (ADEC Implementation Guidance, pp. 5, 7, and 17) and ADEC's response to EPA comments acknowledges the importance of information regarding traditional subsistence resources.[9] The EPA's reference to 18 AAC 70.990(5) is for illustrative purposes only. The EPA is not acting on 18 AAC 70.990(5) because it is not new or revised and therefore not subject to EPA review.

B. 18 AAC 70.240(b)

18 AAC 70.240(b) is a list of factors ADEC will consider in determining whether to authorize a mixing zone, which include characteristics of the receiving water, characteristics of the effluent, cumulative effects of multiple sources on the receiving water's uses, measures that would mitigate potential adverse effects to aquatic resources, and any other factors ADEC finds must be considered to determine whether a mixing zone will comply with the regulation:

> *(b) In determining whether to authorize a mixing zone under this section, the department will consider*
> *(1) the characteristics of the receiving water, including biological, chemical, and physical characteristics such as volume, flow rate, and flushing and mixing characteristics;*
> *(2) the characteristics of the effluent, including volume, flow rate, dispersion, and quality after treatment;*
> *(3) the effects, if any, including cumulative effects of multiple discharges and diffuse, nonpoint source inputs, that the discharge will have on the uses of the receiving water;*
> *(4) any additional measures that would mitigate potential adverse effects to the aquatic resources present; and*
> *(5) any other factors the department finds must be considered to determine whether a mixing zone will comply with this section.*

The EPA Action and Rationale: For the reasons discussed below, the EPA approves the provisions at 18 AAC 70.240(b) as being consistent with 40 CFR 131.11(a)(1) and 131.12(a)(1) because they are appropriate considerations to ensure that decisions regarding mixing zones are based on sound scientific rationale and protective of a water's uses.

18 AAC 70.240(b)(1), (2), and (3) reflect components of the EPA's guidance for implementing mixing zones that are consistent with the CWA. The EPA recommends that specific characteristics of an individual mixing zone be defined on a case-by-case basis. This site-specific assessment would take into consideration the physical, chemical, and biological characteristics of the discharge and receiving waterbody, the life history and behavior of organisms in the receiving waterbody, and the designated uses of the waterbody. The EPA also recommends that permitting authorities evaluate the cumulative effects of multiple mixing zones within the same waterbody. WQS Handbook, Ch. 5, p. 4.

The considerations at 18 AAC 70.240(b)(1), (2), and (3) provide a foundation from which to implement the specific conditions and prohibitions at 18 AAC 70.240(c) and (d), which are targeted at ensuring that

[9] "Comments on effects to traditional subsistence resources are considered as necessary to protect designated uses for state waters and to meet all other requirements of the mixing zone policy in 18 AAC 70.240." Response to EPA Comments on Alaska's October 17, 2005 Proposed Revisions to Mixing Zone Policy, Comment 5, included with ADEC's August 14, 2006 submittal.

mixing zone authorizations will be protective of a water's uses. For example, the combination of 18 AAC 70.240(b)(1) and (2) addresses information that is important in determining the extent to which an effluent will be diluted within a mixing zone and the point within the receiving water where water quality criteria will be met, and 18 AAC 70.240(b)(3) provides for consideration of the effects on a receiving water's uses. Such information provides a basis to determine if the conditions and prohibitions at 18 AAC 70.240(c) and (d) will be satisfied in a given case. The requirement at 18 AAC 70.240(b)(1) to consider the receiving water's flushing and mixing characteristics is complemented by Alaska's mixing zone implementation guidance which references EPA supported models, such as CORMIX, that are used to analyze mixing characteristics and plume travel and geometry in receiving waters. ADEC Implementation Guidance, p. 8-9.

The EPA approves 18 AAC 70.240(b)(4) as being consistent with 40 CFR 131.11(a)(1) and 131.12(a)(1) based on an understanding that the use of the term "mitigate" in this context means avoiding or minimizing potential adverse effects to aquatic resources. This interpretation of the term "mitigate" is consistent with the various conditions and prohibitions at 18 AAC 70.240(c) and (d), which are meant to avoid and minimize impacts as necessary to ensure that mixing zones are implemented in a manner that maintains and protects a water's uses. The provision at 18 AAC 70.240(c)(2), for example, explicitly provides that ADEC will approve a mixing zone only if "*designated and existing uses of the waterbody as a whole will be maintained and protected*" (emphasis added). This provision informs the EPA's interpretation of the term "mitigate" in 18 AAC 70.240(b)(4) because the conditions and prohibitions established in 18 AAC 70.240(c) are requisite preconditions for authorization of a mixing zone. Accordingly, the use of the term mitigate in 18 AAC 70.240(b)(4) can only be consistent with the finding required by 18 AAC 70.240(c)(2) if mitigate is interpreted to mean avoiding or minimizing potential adverse effects to aquatic resources. The general concept of mitigation to avoid or minimize potential adverse effects to aquatic resources is consistent with the EPA's interpretation of conditions that are appropriate to ensure that mixing zones protect uses in the waterbody as a whole and do not impede progress towards the CWA's objective. This is in contrast to mitigation that may be intended to compensate for mixing zone authorizations that are not adequately restricted and conditioned to maintain and protect uses. Such mixing zone authorizations would not be consistent with the CWA and 40 CFR Part 131, as discussed in section III.G.2 below.

Lastly, the EPA approves 18 AAC 70.240(b)(5) as being an appropriate safeguard which provides ADEC the authority to consider factors not otherwise addressed by 18 AAC 70.240(b)(1)-(4) to ensure that a mixing zone will fully comply with 18 AAC 70.240 and protect designated uses and existing uses consistent with 40 CFR 131.11(a)(1) and 131.12(a)(1).

C. 18 AAC 70.240(c)

18 AAC 70.240(c) contains a list of conditions upon which ADEC's approval of a mixing zone is contingent that address minimum effluent treatment requirements that must be met for ADEC to consider a mixing zone; general requirements that a water's designated uses, existing uses, and biological integrity must be protected; and specific prohibitions directed at protecting a water's uses and biological integrity by protecting areas critical to aquatic life and human health uses:

> *(c) The department will approve a mixing zone, as proposed or with conditions, only if the department finds that available evidence reasonably demonstrates that*

(1) an effluent or substance will be treated to remove, reduce, and disperse pollutants, using methods that the department finds to be the most effective, technologically and economically feasible, and at a minimum consistent with statutory and regulatory treatment requirements including (A) any federal technology-based effluent limitation identified in 40 C.F.R. 122.29 and 40 C.F.R. 125.3, as revised as of July 1, 2005 and adopted by reference; (B) minimum treatment standards in 18 AAC 72.050; and (C) any treatment requirement imposed under another state statute or regulation that is more stringent than a requirement of this chapter;

(2) designated and existing uses of the waterbody as a whole will be maintained and protected;

(3) the overall biological integrity of the waterbody will not be impaired; and

(4) the mixing zone will not (A) result in an acute or chronic toxic effect in the water column, sediments, or biota outside the boundaries of the mixing zone; (B) create a public health hazard that would preclude or limit existing uses of the waterbody for water supply or contact recreation; (C) preclude or limit established processing activities or established commercial, sport, personal-use, or subsistence fish and shellfish harvesting; (D) result in a reduction in fish or shellfish population levels; (E) result in permanent or irreparable displacement of indigenous organisms; (F) adversely affect threatened or endangered species except as authorized under 16 U.S.C. 1531-1544 (Endangered Species Act); or (G) form a barrier to migratory species or fish passage.

The EPA Action and Rationale: For the reasons discussed below, the EPA approves the provisions at 18 AAC 70.240(c) as being consistent with the CWA and 40 CFR Part 131.

It is consistent with the CWA to ensure that technology-based effluent limitations are addressed before considering authorization of mixing zones, as is required at 18 AAC 70.240(c)(1). The CWA provides that its technology requirements must be met at a minimum, independent of water quality considerations. As stated in the National Pollutant Discharge Elimination System (NPDES) permit writers' manual "[t]itle 40 of the Code of Federal Regulations (CFR) 125.3(a) require…technology-based treatment requirements, consistent with CWA section 301(b), that represent the minimum level of control that must be imposed in a permit." EPA-833-K-10-001, September 2010, Ch, 5, *available at: https://www.epa.gov/npdes/npdes-permit-writers-manual*.

The EPA notes that the Alaska Pollutant Discharge Elimination System (APDES**)** implementing regulations at 18 AAC 83.430 also address technology-based effluent limitations ("An APDES permit must include conditions meeting the following requirements, if applicable, …(1) technology-based effluent limitations and standards based on effluent limitations and standards promulgated under 33 U.S.C. 1311, new source performance standards promulgated under 33 U.S.C. 1316, case-by-case effluent limitations determined under 33 U.S.C. 1342(a), or a combination of the three authorities in accordance with 40 C.F.R. 125.3"). Therefore, the reference to technology-based effluent limitations "*as of July 1, 2005*" at 18 AAC 70.240(c)(1) of Alaska's mixing zone regulation does not affect ADEC's obligation to use any additional or more stringent CWA technology-based treatment requirements that may have been established after July 1, 2005, where applicable, when addressing effluent limitations and considering whether mixing zones are appropriate in APDES permits. The EPA's reference to 18

AAC 83.430 is for illustrative purposes only. The EPA is not acting on 18 AAC 83.430 because it is not new or revised and therefore not subject to EPA review.

18 AAC 70.240(c)(1) also includes reference to state treatment requirements ("*(B) minimum treatment standards in 18 AAC 72.050; and (C) any treatment requirement imposed under another state statute or regulation that is more stringent than a requirement of this chapter*"). These references to state treatment requirements are consistent with section 510 of the CWA which provides states with the authority to "adopt or enforce…any standard or limitation respecting discharges of pollutants, or…any requirement respecting control or abatement of pollution" that is more stringent than the CWA requirements. 33 U.S.C. § 1370. The EPA's action approves Alaska's references to treatment requirements. The EPA's action does not, however, extend to the content of the referenced administrative code.

Additionally, the EPA notes that Alaska repealed 18 AAC 70.990(30) (the definition of "*highest statutory and regulatory treatment requirements*") as a house keeping change that accompanied repeal of the original 18 AAC 70.240 (where the phrase was used) and the adoption of 18 AAC 70.240(c)(1) which is approved here.

18 AAC 70.240(c)(2) and 18 AAC 70.240(c)(3) provide that when authorizing mixing zones, ADEC must ensure that the designated uses, existing uses, and the biological integrity of the waterbody as a whole will be protected. This is consistent with 40 CFR 131.11(a)(1) which requires that water quality criteria protect designates uses, 40 CFR 131.12(a)(1) which requires that existing uses be maintained and protected, and section 101(a) of the CWA which in part states an objective to restore and maintain the biological integrity of the nation's waters. 18 AAC 70.240(c)(2) and 18 AAC 70.240(c)(3) are also consistent with the EPA's guidance for implementing mixing zones that are consistent with the CWA.[10]

18 AAC 70.240(c)(4)(A) limits any toxic effect to within a mixing zone ("…*a mixing zone will not result in an acute or chronic toxic effect in the water column, sediments, or biota outside of the boundaries of the mixing zone*"), and reflects the EPA's emphasis that criteria exceedances and associated effects are to be limited to within a mixing zone. WQS Handbook, EPA 823-B-12-002, 2012, Ch. 4, p. 8 ("any effect on the existing use must be limited to the area of the regulatory mixing zone"); WQS Handbook Ch. 5, p. 3 ("…where a mixing zone is authorized, water quality criteria are met at the edge of the mixing zone during critical low-flow conditions"). Limiting criteria exceedances and any associated acute or chronic effects to within properly located and sized mixing zones is consistent with requirements at 40 CFR 131.11(a)(1) and 40 CFR 131.12(a)(1) to protect designated uses and existing uses.

18 AAC 70.240(c)(4)(B), (C), (D), (E), and (F) address protection of recreation, other human health related uses, and aquatic life uses ("…*a mixing zone will not preclude or limit existing uses of the waterbody for water supply or contact recreation*;" "*preclude or limit established processing activities or established commercial, sport, personal-use, or subsistence fish and shellfish harvesting*;" "*result in a reduction in fish or shellfish population levels*;" "*result in permanent or irreparable displacement of indigenous organisms*;" or "*adversely affect threatened or endangered species…*," respectively). These

[10] "Mixing zones should be applied carefully so that they do not result in impairment of the designated use of the waterbody as a whole or impede progress toward the CWA goals of restoring and maintaining the physical, chemical, and biological integrity of the Nation's waters." WQS Handbook, Ch. 5, p. 2.

provisions are consistent with the requirement at 40 CFR 131.12(a)(1) that existing uses be maintained and protected, and reflect the EPA's guidance for implementing mixing zones that are consistent with the CWA by ensuring that critical resource areas are not endangered. WQS Handbook Ch. 5, pp. 3-4 ("If a state or tribe chooses to adopt a mixing zone policy, such a policy should ensure…Mixing zones do not endanger critical areas such as breeding or spawning grounds, habitat for threatened or endangered species, areas with sensitive biota, shellfish beds, fisheries, drinking water intakes and sources, or recreational areas").

The provision specific to threatened or endangered species at 18 AAC 70.240(c)(4)(F) provides that a mixing zone will not "…*adversely affect threatened or endangered species except as authorized under 16 U.S.C. 1531-1544 (Endangered Species Act*)." The EPA understands the clause "*except as authorized under 16 U.S.C. 1531-1544 (Endangered Species Act)*" to be a recognition by ADEC that adverse effects to threatened or endangered species can only be permitted in accordance with federal law by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service. This understanding is supported by the ADEC Implementation Guidance (p. 6) and ADEC's response to EPA's comments. Response to EPA Comments on Alaska's October 17, 2005 Proposed Revisions to Mixing Zone Policy, Comment 3, included with ADEC's August 14, 2006 submittal. The EPA consulted with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service on its proposed action on Alaska's mixing zone rule and received biological opinions from both Services (see the biological opinions for information regarding incidental take statements, non-discretionary terms and conditions, and discretionary conservation recommendations).[11]

18 AAC 70.240(c)(4)(G) addresses free movement of organisms within a water ("…*a mixing zone will not form a barrier to migratory species or fish passage*") and reflects the EPA's guidance for implementing mixing zones that are protective of uses consistent with the CWA. WQS Handbook Ch. 5, p. 7 ("mixing zones should be sized and located appropriately within the waterbody to provide a continuous zone of passage that protects migrating, free-swimming, and drifting organisms"). The EPA approves 18 AAC 70.240(c)(4)(G) because it is a condition that protects designated uses and existing uses consistent with 40 CFR 131.11(a)(1) and 40 CFR 131.12(a)(1) by ensuring that mixing zones do not inhibit the movement of aquatic organisms.

Satisfaction of 18 AAC 70.240(c)(2), (3), and (4) necessitates that ADEC appropriately limit the location, size, shape, and in-zone quality of mixing zones to ensure protection of critical aquatic resource areas and uses in the waterbody as a whole.

D. 18 AAC 70.240(d)

18 AAC 70.240(d) contains a list of conditions for the water quality within a mixing zone (i.e., in-zone water quality) upon which ADEC's approval of a mixing zone is contingent:

[11] Endangered Species Act Section 7 Consultation on the U.S. Environmental Protection Agency's Proposed Approval of the State of Alaska's Mixing Zone Regulation Section, National Marine Fisheries Service, Protected Resources Division, Juneau Alaska (Dec. 20, 2010); Biological Opinion on Alaska's Revised Mixing Zone Policy, Fish and Wildlife Service, Anchorage Field Office, consultation number 2008-0070 (Apr. 25, 2011); Biological Opinion on U.S. Environmental Protection Agency's Approval of the State of Alaska's Mixing Zone Regulation, National Marine Fisheries Service, Alaska Region, consultation number AKR-2018-00362 (Jul. 2, 2019).

(d) The department will approve a mixing zone, as proposed or with conditions, only if the department finds that available evidence reasonably demonstrates that within the mixing zone the pollutants discharged will not
(1) bioaccumulate, bioconcentrate, or persist above natural levels in sediments, water, or biota to significantly adverse levels, based on consideration of bioaccumulation and bioconcentration factors, toxicity, and exposure;
(2) present an unacceptable risk to human health from carcinogenic, mutagenic, teratogenic, or other effects as determined using risk assessment methods approved by the department and consistent with 18 AAC 70.025;
(3) settle to form objectionable deposits, except as authorized under 18 AAC 70.210;
(4) produce floating debris, oil, scum and other material in concentrations that form nuisances;
(5) result in undesirable or nuisance aquatic life;
(6) produce objectionable color, taste, or odor in aquatic resources harvested from the area for human consumption;
(7) cause lethality to passing organisms; or
(8) exceed acute aquatic life criteria at and beyond the boundaries of a smaller initial mixing zone surrounding the outfall, the size of which shall be determined using methods approved by the department.

The EPA Action and Rationale: For the reasons discussed below, the EPA approves the provisions at 18 AAC 70.240(d) as being consistent with the CWA and 40 CFR Part 131.

18 AAC 70.240(d)(1) provides protection of uses consistent with 40 CFR 131.11(a)(1) and 40 CFR 131.12(a)(1) because mixing zones are appropriately restricted for bioaccumulative pollutants ("*…within the mixing zone the pollutants discharged will not…bioaccumulate, bioconcentrate, or persist above natural levels in sediments, water, or biota to significantly adverse levels…*"). "*Significantly adverse levels*" is defined at 18 AAC 70.990(54) of Alaska's water quality standards regulation as "concentrations of pollutants that would impair the productivity or biological integrity of the overall waterbody, including reducing or eliminating the viability or sustainability of a given species or community of species in the overall waterbody." 18 AAC 70.240(d)(1) when read with Alaska's definition of "*significantly adverse levels*" addresses appropriate factors to consider when evaluating the discharge of bioaccumulative pollutants (e.g. "*bioaccumulation…factors, toxicity, and exposure*") and prohibits bioaccumulative pollutants in mixing zones at levels that would "*impair the productivity or biological integrity of the overall waterbody.*" The EPA's guidance for implementing mixing zones consistent with the CWA includes a recommendation that mixing zones be prohibited for bioaccumulative pollutants and also addresses an option of restricting mixing zones for bioaccumulative pollutants. WQS Handbook, Ch. 5, p. 9 ("…a state or tribe may find it appropriate to restrict or eliminate mixing zones for bioaccumulative in certain situations…," emphasis added). By restricting mixing zones for bioaccumulative pollutants, 18 AAC 70.240(d)(1) reflects the underlying intent of the EPA's guidance that the discharge of bioaccumulative pollutants be handled carefully to ensure that uses of a waterbody are protected. Alaska's implementation guidance complements the regulation with a list of common bioaccumulative pollutants and recognizes that effluents may contain other bioaccumulative pollutants that should also be considered. ADEC Implementation Guidance, p. 6 and Appendix A/p. 11. The EPA's reference to 18 AAC 70.990(54) is for illustrative purposes only. The EPA is not acting on 18 AAC 70.990(54) because it is not new or revised and therefore not subject to EPA review.

18 AAC 70.240(d)(2) provides protection of uses consistent with 40 CFR 131.11(a)(1) and 40 CFR 131.12(a)(1) by limiting the acceptable risk to human health within a mixing zone ("*within the mixing zone the pollutants discharged will not… present an unacceptable risk to human health from carcinogenic, mutagenic, teratogenic, or other effects as determined using risk assessment methods approved by the department and consistent with 18 AAC 70.025*"). This provision addressing protection of human health related uses reflects the EPA's guidance for implementing mixing zones that are consistent with the CWA. WQS Handbook, Ch. 5, pp. 3-4, 9 ("…a mixing zone policy…should ensure…pollutant concentrations within the mixing zone do not cause significant human health risks considering likely pathways of exposure" and "…states and tribes should carefully consider whether mixing zones are appropriate where a discharge contains… bioaccumulative, pathogenic, persistent, carcinogenic, mutagenic, or teratogenic pollutants").

18 AAC 70.025, which is referenced in 18 AAC 70.240(d)(2), specifies Alaska's human health risk level for carcinogenic substances of "1 in 100,000 for exposed individuals" and Alaska's implementation guidance states that the acceptable risk for non-carcinogens "is based on the reference dose (RfD) obtained from the EPA's Integrated Risk Information System (IRIS) or other DEC-approved toxicological data source developed consistent with EPA's risk assessment hierarchy for selecting data sources." ADEC Implementation Guidance p. 7. The EPA's approval of 18 AAC 70.240(d)(2) includes the reference to 18 AAC 70.025. The EPA's action does not, however, extend to the content of 18 AAC 70.025 which is not new or revised and therefore not subject to EPA review.

18 AAC 70.240(d)(3), (4), (5), and (6) provide protection of uses consistent with 40 CFR 131.11(a)(1) and 40 CFR 131.12(a)(1) by appropriately prohibiting certain nuisance and objectionable conditions within a mixing zone ("*…within the mixing zone the pollutants discharged will not…settle to form objectionable deposits;…produce floating debris, oil, scum and other material in concentrations that form nuisances;…result in undesirable or nuisance aquatic life;…produce objectionable color, taste, or odor in aquatic resources harvested from the area for human consumption*"). These prohibitions reflect the EPA's position that all waters, including water within mixing zones, should attain a minimum level of water quality by meeting certain narrative criteria. WQS Handbook, Ch. 5, p. 8 ("States and authorized tribes should ensure that a minimum level of water quality is maintained within a mixing zone. Mixing zones should attain the "free from" narrative water quality criteria that are applicable to all waters in a state or reservation"). Specifically, 18 AAC 70.240(d)(3), (4), (5), and (6) generally reflect the EPA's recommendation that mixing zones be free from "Materials in concentrations that settle to form objectionable deposits; Floating debris, oil, scum, and other material in concentrations that form nuisances; Substances in concentrations that produce objectionable color, odor, taste, or turbidity; and Substances in concentrations that produce undesirable aquatic life or result in a dominance of nuisance species." *Id*. pp. 8-9. ADEC chose to write 18 AAC 70.240(d)(6) more narrowly, when compared to the EPA's broad recommendation that mixing zones be free from "Substances in concentrations that produce objectionable color, odor, taste, or turbidity," by omitting turbidity and focusing on objectionable color, taste, or odor that could impact human consumption of aquatic resources. Alaska's approach to the prohibition at 18 AAC 70.240(d)(6) provides additional emphasis on limiting mixing zones such that human consumption of aquatic resources is protected, and the EPA believes that Alaska can address other concerns with objectional color, odor, taste, or turbidity, such as aesthetic nuisances, through implementation of 18 AAC 70.240(d)(4) ("…*the pollutants discharged will not…produce floating debris, oil, scum and other material in concentrations that form nuisances*," emphasis added).

18 AAC 70.240(d)(7) and (8) also reflect the EPA's position that all waters, including water within mixing zones, should attain a minimum level of water quality and provide protection of uses consistent with 131.11(a)(1) and 40 CFR 131.12(a)(1) by prohibiting lethality to organisms that pass through a mixing zone. 18 AAC 70.240(d)(7) reflects the EPA's recommendation that mixing zones be free from materials in concentrations that are lethal to aquatic organisms that may pass through the mixing zone (WQS Handbook Ch. 5, p. 8.) and 18 AAC 70.240(d)(8) reflects the EPA's guidance for achieving the goal of 18 AAC 70.240(d)(7) by limiting the size of an acute mixing zone.[12] Alaska's mixing zone implementation guidance complements both 18 AAC 70.240(d)(7) and (8) by including several methods recommended by the EPA for appropriately limiting the size of an initial acute mixing zone to prevent lethality to passing organisms and specifies that if other methods are used, they must be comparable to those in EPA's Technical Support Document for Water Quality-based Toxics Control. ADEC Implementation Guidance, p. 9.

Lastly, 18 AAC 70.240(d)(3), discussed above, includes the clause "*except as authorized under 18 AAC 70.210*" which follows the prohibition on objectionable deposits. 18 AAC 70.210 is a previously existing section of Alaska's water quality standards rule that addresses "zones of deposit" where residues may accumulate on the receiving water bottom. The EPA's approval of 18 AAC 70.240(d)(3) includes the reference to 18 AAC 70.210. The EPA's action does not, however, extend to the content of 18 AAC 70.210 which is not new or revised and therefore not subject to EPA review.

E. 18 AAC 70.240(e)

18 AAC 70.240(e) addresses mixing zones and spawning areas for the five species of anadromous Pacific salmon found in Alaska (defined at 18 AAC 70.240(o) as chinook, coho, sockeye, pink, and chum salmon):

> *(e) In lakes, streams, rivers, or other flowing fresh waters, a mixing zone will not be*
> *(1) authorized in a spawning area of any of the five species of anadromous Pacific salmon found in the state; or*
> *(2) allowed to adversely affect the present and future capability of an area to support spawning, incubation, or rearing of any of the five species of anadromous Pacific salmon found in the state.*

The EPA Action and Rationale: For the reasons discussed below, the EPA approves the provisions at 18 AAC 70.240(e) as being consistent with the CWA and 40 CFR Part 131.

18 AAC 70.240(e)(1) prohibits mixing zones in areas used by Alaska's five species of anadromous Pacific salmon for spawning, during times when spawning adults, incubating eggs, or alevins are present. The temporal aspect of the prohibition is not explicitly stated in Alaska's rule. However, 18 AAC 70.240(j) refers to both the location and time of spawning in determining whether to authorize a mixing zone under 18 AAC 70.240(e), (f), or (g), and Alaska's mixing zone implementation guidance explains ADEC's interpretation of "spawning areas" as the term is used in the rule "…to be areas within lakes, streams, rivers, or other flowing fresh waters that offer suitable habitat for fish spawning and where spawning adults, incubating eggs, or alevins are present" (emphasis added). ADEC Implementation Guidance, p. 7. Thus, Alaska's rule read in conjunction with Alaska's implementation

[12] Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001 (Mar. 1991), pp. 71-72, *available at* https://www3.epa.gov/npdes/pubs/owm0264.pdf

guidance clarifies that "spawning areas" has both a spatial and temporal component, i.e., where and when spawning occurs.

Additionally, 18 AAC 70.240(e)(2) addresses the continued viability of an area to support spawning for Alaska's five species of anadromous Pacific salmon by providing that if mixing zones are authorized in such an area when spawning adults, incubating eggs, or alevins are absent, those mixing zones are not to adversely affect the area's capability to support spawning. Such mixing zones would need to be limited to ensure that they do not adversely affect the capability of an area to support spawning when it does occur. For example, such mixing zones could not alter the benthic habitat or result in residual bioaccumulative pollutants that would adversely impact spawning.

The prohibition at 18 AAC 70.240(e) protects uses consistent with 40 CFR 131.11(a)(1) and 40 CFR 131.12(a)(1) by limiting mixing zones to avoid adverse impacts to spawning areas for Alaska's five species of anadromous Pacific salmon, and is consistent with the EPA's emphasis on the importance of protecting critical resource areas. WQS Handbook, Ch. 5, p. 9 (**"**States and tribes should conclude that mixing zones are not appropriate…where they may endanger critical areas such as breeding and spawning grounds…").

The protection provided by 18 AAC 70.240(e) is in addition to the protection provided for designated uses and existing uses by other provisions in Alaska's mixing zone regulation, such as those at 18 AAC 70.240(c) and (d). Satisfying the provisions at 18 AAC 70.240(c) and (d) necessitates appropriate limits on the location, size, shape, and in-zone quality of mixing zones.

F. <u>18 AAC 70.240(f)</u>

18 AAC 70.240(f) addresses mixing zones and spawning areas for the species listed:

> *(f) In lakes, streams, rivers, or other flowing fresh waters, except as provided in (g) of this section, a mixing zone will not be authorized in a spawning area for*
> *(1) Arctic grayling; (2) northern pike; (3) lake trout; (4) brook trout; (5) sheefish; (6) burbot; (7) landlocked coho salmon, chinook salmon, or sockeye salmon; or (8) anadromous or resident rainbow trout, Arctic char, Dolly Varden, whitefish, or cutthroat trout.*

<u>The EPA Action and Rationale</u>: For the reasons discussed below, the EPA approves the provisions at 18 AAC 70.240(f) as being consistent with the CWA and 40 CFR Part 131.

Except as provided at 18 AAC 70.240(g), 18 AAC 70.240(f) prohibits mixing zones in areas used by the listed species for spawning, during times when spawning adults, incubating eggs, or alevins are present. As discussed in the approval of 18 AAC 70.240(e), the temporal aspect of the prohibition is not explicitly stated in Alaska's rule. However, 18 AAC 70.240(j) refers to both the location and time of spawning in determining whether to authorize a mixing zone under 18 AAC 70.240(e), (f), or (g), and Alaska's mixing zone implementation guidance explains ADEC's interpretation of "spawning areas" as the term is used in the rule "…to be areas within lakes, streams, rivers, or other flowing fresh waters that offer suitable habitat for fish spawning <u>and where spawning adults, incubating eggs, or alevins are present</u>" (emphasis added). ADEC Implementation Guidance, p. 7. Thus, Alaska's rule read in

conjunction with Alaska's implementation guidance clarifies that "spawning areas" has both a spatial and temporal component, i.e., where and when spawning occurs.

18 AAC 70.240(f) provides use protection consistent with 40 CFR 131.11(a)(1) and 40 CFR 131.12(a)(1) because adverse impacts to spawning are avoided by prohibiting mixing zones when spawning adults, incubating eggs, or alevins are present. This is consistent with the EPA's emphasis on protecting critical resource areas. WQS Handbook, Ch. 5, p. 9 ("States and tribes should conclude that mixing zones are not appropriate…where they may endanger critical areas such as breeding and spawning grounds"**)**.

The protection provided by 18 AAC 70.240(f) is in addition to the protection provided for designated uses and existing uses by other provisions in Alaska's mixing zone regulation, such as those at 18 AAC 70.240(c) and (d). Satisfying the provisions at 18 AAC 70.240(c) and (d) necessitates appropriate limits on the location, size, shape, and in-zone quality of mixing zones.

G. <u>18 AAC 70.240(g)</u>

18 AAC 70.240(g)(1) through (4) provide exceptions to the prohibition of mixing zones in spawning areas at 18 AAC 70.240(f), if certain conditions are met. 18 AAC 70.240(g)(1) provides that mixing zones may be authorized in spawning areas if the discharge does not contain pollutants that exceed the criteria in Alaska's water quality standards to protect growth and propagation and will not adversely affect the capability of the area to support future spawning, incubation, and rearing. 18 AAC 70.240(g)(2), (3), and (4) do not include restrictions like those at 18 AAC 70.240(g)(1) specific to protection of growth and propagation in spawning areas. Instead, 18 AAC 70.240(g)(2), (3), and (4) provide that mixing zones may be authorized in spawning areas if the applicant submits an approved mitigation plan:

> *(g) The department may authorize a mixing zone in a spawning area of a lake, stream, river, or other flowing fresh water for the species listed in (f) of this section if*
>
> *(1) after consultation with the Department of Fish and Game, the department finds that the applicant has demonstrated that the discharge*
> *(A) does not contain pollutants at concentrations that exceed the criteria for growth and propagation of fish, shellfish, other aquatic life, and wildlife established in 18 AAC 70.020(b)(1) - (12); and*
> *(B) will not adversely affect the capability of the area to support future spawning, incubation, and rearing activities;*
>
> *(2) the applicant has submitted to the department a mitigation plan approved by the Department of Fish and Game under 5 AAC 95.900 if the spawning area is within a special area;*
>
> *(3) the applicant has submitted to the department a mitigation plan approved by the Department of Fish and Game under AS 16.05.871 – 16.05.901, if the spawning area is within waters included in the Catalog of Waters Important for Spawning, Rearing or Migration of Anadromous Fishes, adopted by reference in 5 AAC 95.011; the department will incorporate the mitigation plan as part of the discharge authorization; or*

(4) the applicant has submitted to the department a mitigation plan approved by the department, after consultation with the Department of Fish and Game, if the spawning area is not within waters described in (2) or (3) of this subsection; the mitigation plan must use measures described in the Catalog of Waters Important for Spawning, Rearing or Migration of Anadromous Fishes, adopted by reference in 5 AAC 95.011; the department will incorporate the mitigation plan as part of the discharge authorization.

(Note: References to Alaska's Department of Natural Resources at 18 AAC 70.240(g) and (j) of the 2006 mixing zone rule as submitted to the EPA were changed by Alaska's regulation attorney (Register 186, July 2008) to reflect Alaska Executive Order 114 (2008). Executive Order 114 transferred functions related to protection of fish habitat in rivers, lakes and streams from the Alaska Department of Natural Resources to the Alaska Department of Fish and Game. The text from 18 AAC 70.240(g) and (j) presented in the EPA's decision document reflects this change. This change did not affect the EPA's review of 18 AAC 70.240(g) and (j) because the assignment of authorities within the state are at the state's discretion under state law and are not subject to the EPA's review.)

The EPA's approval of 18 AAC 70.240(g)(1) and disapproval of 18 AAC 70.240(g)(2), (3), and (4) is discussed below in sections G.1 and G.2, respectively.

1. 18 AAC 70.240(g)(1)

The EPA Action and Rationale: For the reasons discussed below, the EPA approves 18 AAC 70.240(g)(1) as being consistent with the CWA and 40 CFR Part 131.

18 AAC 70.240(g)(1) provides that mixing zones may be authorized in spawning areas where mixing zones are otherwise prohibited for species listed at 18 AAC 70.240(f), if two conditions are met. First, 18 AAC 70.240(g)(1)(A) provides protection for spawning areas by requiring that eligible discharges do not contain pollutants at concentrations that exceed the criteria in Alaska's water quality standards for growth and propagation of fish, shellfish, other aquatic life, and wildlife at 18 AAC 70.020(b)(1)-(12). That is, the pollutant concentrations discharged into the mixing zone must already be below concentrations that are expected to adversely affect growth and propagation, before any dilution in the mixing zone occurs. Second, 18 AAC 70.240(g)(1)(B) provides protection for spawning areas by requiring that eligible discharges do not adversely affect the capability of the area to support future spawning, incubation, and rearing activities. Thus, in accordance with 18 AAC 70.240(g)(1)(B) the discharge and mixing zone would need to be limited to ensure that pollutants (such as toxic pollutants and pollutants that could physically impact benthic substrate in the receiving water) do not accumulate to concentrations that adversely affect spawning, incubation, and rearing.

18 AAC 70.240(g)(1) provides protection of uses consistent with 40 CFR 131.11(a)(1) and 40 CFR 131.12(a)(1) because spawning adults, incubating eggs, and alevins are protected by ensuring that pollutant concentrations in mixing zones are limited such that they will not adversely affect growth and propagation. This is also consistent with the EPA's guidance for ensuring that mixing zones do not impair uses in the waterbody as a whole by protecting critical areas WQS Handbook, Ch. 5, p. 9 ("States and tribes should conclude that mixing zones are not appropriate…where they may endanger critical

areas such as breeding and spawning grounds"). The EPA's approval of 18 AAC 70.240(g)(1) includes the reference to 18 AAC 70.020(b)(1)-(12). The EPA's action does not, however, extend to the content of 18 AAC 70.020(b)(1)-(12).

The protection provided by 18 AAC 70.240(g)(1) is consistent with the protection provided for designated uses and existing uses by other provisions in Alaska's mixing zone regulation, such as those at 18 AAC 70.240(c) and (d) which necessitate that ADEC appropriately limit the location, size, shape, and in-zone quality of mixing zones.

2. 18 AAC 70.240(g)(2), (3), and (4)

The EPA Action and Rationale: For the reasons discussed below, the EPA disapproves 18 AAC 70.240(g)(2), (3), and (4) because they are inconsistent with the CWA and 40 CFR Part 131.

18 AAC 70.240(g)(2), (3), and (4) are inconsistent with 40 CFR 131.11(a)(1), 40 CFR 131.12(a)(1), and the other provisions of Alaska's mixing zone rule because 18 AAC 70.240(g)(2), (3), and (4) could be used to authorize spawning area impacts of a magnitude where subsequent mitigation would be necessary to "restore" or "replace" the use. Allowing mixing zones to cause substantive damage to spawning areas in exchange for mitigation is inconsistent with the CWA and 40 CFR Part 131, which require the protection of uses and do not provide for mitigation as an alternative to use protection in the context of water quality standards and mixing zone authorizations. 18 AAC 70.240(g)(2), (3), and (4) are also inconsistent with the EPA's guidance for ensuring that mixing zones do not impair uses in the waterbody as a whole by protecting critical areas, which include biologically sensitive habitats such as spawning areas. WQS Handbook, Ch. 5, pp. 4 and 9 ("If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of the waterbody in which the mixing zones are located, then mixing zones are likely to have little effect on the designated use of the waterbody as a whole, provided that they do not impinge on unique or critical habitats" and "States and tribes should conclude that mixing zones are not appropriate…where they may endanger critical areas such as breeding and spawning grounds;" emphasis added).

Instead of specifying restrictions like those at 18 AAC 70.240(g)(1) to ensure that growth and propagation are protected in spawning areas where mixing zones are otherwise prohibited for species listed at 18 AAC 70.240(f), 18 AAC 70.240(g)(2), (3), and (4) provide that mixing zones may be authorized in such spawning areas if the applicant submits an approved mitigation plan. 18 AAC 70.240(g)(2), (3), and (4) include reference to other state regulations at 5 AAC 95.900 and 5 AAC 95.900 that address mitigation. Alaska's mixing zone implementation guidance discusses mitigation as it is presented in those regulations and outlines five mitigation steps. ADEC Implementation Guidance, Appendix B:

> Step 1. Avoid the impact altogether by not taking a certain action or parts of action;
> Step 2. Minimize the impact by limiting the degree or magnitude of the action and its implementation;
> Step 3. Rectify the impact by repairing, rehabilitating, or restoring the impacted environment;
> Step 4. Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the proposed use or activity; and

Step 5. Compensate for the impact by replacing or providing substitute resources or environments.

Steps 3-5 raise concern that 18 AAC 70.240(g)(2), (3), and (4) are meant to accommodate spawning area impacts of a magnitude where subsequent mitigation would be necessary to "restore" or "replace" the use. Such adverse impacts would not be consistent with other portions of Alaska's mixing zone rule that are meant to protect critical areas and uses in the waterbody as a whole.

The EPA's reading of 18 AAC 70.240(g)(2), (3), and (4) as establishing a "protect or mitigate" approach that may allow significant adverse effects to spawning areas is supported by various documents related to ADEC's mixing zone rule:

• An ADEC memorandum prior to adoption of a final rule refers to "*no net loss of fish*" and "*measures to offset potential adverse effects to aquatic systems*" (Ernesta Ballard, Commissioner of ADEC to Loren Leman, Lt. Governor of Alaska, June 23, 2004, Subject: Revisions to Water Quality Standards Regulations).

• An ADEC letter explaining its decision to allow the mitigation exception equates impacts of mixing zones to those of other human activities that can cause significant adverse impact on spawning habitat (citing "*dams, water withdrawals, stream diversions, stream crossings, gravel removal, blasting, etc*;" with the statement "*Potential mixing zone impacts are no different than the impacts that can occur from other in-stream activities subject to the mitigation methods applied by DFG and OHMP*;" Kurt Fredriksson, Commissioner of ADEC to Dear Alaskan, January 12, 2006).

• ADEC testimony in opposition to legislation that was proposed in response to the revised mixing zone regulation at 18 AAC 70.240 includes the statement, "*DEC's regulations allow exceptions to the prohibition of a mixing zone in "non-salmon" spawning areas when site specific conditions show that the fish species will be protected or any adverse impacts will be mitigated…*" (Lynn J. Tomich Kent, Director ADEC Division of Water, to Representatives Gabrielle LeDoux and William Thomas, Jr., January 26, 2006; Enclosure: DEC CSHB 328 Testimony, January 27, 2006, point 2, p. 1; emphasis added).

• A document prepared for ADEC describes the use of compensatory mitigation and refers to offsetting unavoidable impacts to spawning habitat ("*…unavoidable impacts to spawning habitat are offset by increasing the quality of remaining spawning habitat within the waterbody or by providing access to additional spawning areas…*;" Mixing Zones in Spawning Areas, Evaluation of Established Criteria for the Protection of Designated Uses," ARRI, October 2007 Draft).

• Other documents support use of the five mitigation steps in the mixing zone context by citing 5 AAC 95.900 ("Mitigation of damages") and the CWA 404(b)(1) guidelines (Carl Reese, ADEC to Lisa McGuire, EPA, January 30, 2008 email, Subject: Unresolved issues on mixing zones) and identify three non-mixing zone mitigation examples that appear to be focused on restoration rather than avoidance and minimization of adverse impacts to aquatic resources (Carl Reese, ADEC to Lisa McGuire, EPA, June 24, 2008 email, Subject: Restoration Projects).

Alaska's mixing zone implementation guidance also supports the concern that 18 AAC 70.240(g)(2), (3), and (4) are meant to accommodate significant adverse effects to spawning areas in exchange for mitigation. The EPA recognizes that Alaska's implementation guidance includes statements that mixing zones authorized on the basis of mitigation plans must meet all other provisions in 18 AAC 70.240. This would include 18 AAC 70.240(c)(2), which provides that "…*designated and existing uses of the waterbody as a whole will be maintained and protected*," and 18 AAC 70.240(c)(4)(D), which provides that mixing zones will not "…*result in a reduction in fish or shellfish population levels*." Alaska's mixing zone implementation guidance also indicates that compensatory mitigation may not be used to address anticipated impacts. However, Alaska's mixing zone implementation guidance includes contradictory statements which imply that mitigation may be used as compensation for anticipated substantive adverse impacts to uses. ADEC Implementation Guidance, Appendix B, pp. 21-22 ("However, for some types of projects, the treatment options and discharge locations are limited and all impacts cannot be avoided…," "Compensatory mitigation options should be described within the mitigation plan, and must be present when there is a risk of substantive adverse impacts," and "Proposed mitigation should address lost spawning and incubation habitat.").

Additionally, 18 AAC 70.240(g)(3) and (4) reference Alaska's Catalog of Waters Important for Spawning, Rearing or Migration of Anadromous Fishes, and Alaska's mixing zone implementation guidance describes that document as it addresses compensatory mitigation: "… In those instances where adverse impact to fish or fish habitat is unavoidable, the department, in its discretion, <u>may</u> withhold permit authorization." ADEC Implementation Guidance, Appendix B, p. 15-16 (emphasis added). The EPA notes that withholding authorization where adverse impact to fish or fish habitat is unavoidable is presented as discretionary, rather than a requirement.

A conclusion that implementation of 18 AAC 70.240(g)(2), (3), and (4) will protect designated uses and existing uses consistent with other provisions at 18 AAC 70.240 and 40 CFR Part 131 is not supported by the mixing zone rule's internal inconsistency (e.g. no reduction in fish populations vs. mitigation for substantive adverse impacts) or Alaska's description of mitigation. A mixing zone causing substantive adverse effects on spawning such that mitigation is necessary to restore or replace the use cannot also assure that there is no reduction of fish populations.

Mitigation authorized by the CWA section 404(b)(1) guidelines at 40 CFR Part 230 is applicable to permits for the disposal of dredged or fill material in surface waters, not mixing zone authorizations in accordance with water quality standards. There is no similar provision in the CWA or 40 CFR Part 131 for mixing zones to allow impacts to designated uses and existing uses in exchange for mitigation. Mixing zone policies are discretionary state or tribal policies and are not a requirement of the CWA. *See* 40 CFR 131.13. Where states and tribes choose to exercise discretion to authorize mixing zones, the EPA has emphasized that decisions concerning mixing zone location, size, shape, in-zone quality, and outfall design should be made such that critical areas and uses in the waterbody as a whole are protected. WQS Handbook, Ch. 5; 63 FR 36742, 36787-93, July 7, 1998. If such use protection cannot be accomplished, a mixing zone should not be authorized.

The EPA's guidance recognizes that there can be some limited impact within a mixing zone. WQS Handbook, EPA 823-B-12-002, 2012, Ch. 4, p. 8 ("The area within a properly designated mixing zone (see section 5.1) may have altered benthic habitat and a subsequent alteration of portions of the aquatic community"). Nevertheless, as discussed previously, any impacts are to be limited such that critical

areas and uses in the waterbody as a whole are protected. In evaluating Alaska's rule, the EPA considered whether 18 AAC 70.240(g)(2), (3), and (4) are meant to first ensure that mixing zones in spawning areas are limited such that uses in the waterbody as a whole would be protected consistent with 18 AAC 70.240(c) and (d) and 40 CFR Part 131, and then mitigate for insignificant effects. The EPA determined that such a conclusion is not supported by either the rule language or Alaska's use of the term "substantive adverse impacts" when describing mitigation for mixing zones in the documents referenced above.

For the above-stated reasons the EPA is disapproving 18 AAC 70.240(g)(2), (3) and (4). Even with the EPA's disapproval, ADEC may authorize mixing zones in spawning areas subject to the restrictions in 18 AAC 70.240(g)(1). The effect of EPA's disapproval is that 18 AAC 70.240(g)(2), (3) and (4) do not become applicable water quality standards for CWA purposes and ADEC may not authorize mixing zones in spawning areas where the impacts are of such magnitude that subsequent mitigation to restore or replace the damaged or lost use would be required. Because the disapproved provisions do not become applicable water quality standards for CWA purposes and the approved provisions of 18 AAC 70.240 provide Alaska with an operative mixing zone policy that is consistent with the CWA, the EPA is not specifying changes that ADEC must adopt that are necessary to meet the requirements of the CWA pursuant to section 303(c)(3), 33 U.S.C. § 1313(c)(3). The EPA recommends, however, that ADEC remove the disapproved provisions from its regulation to avoid confusion.

H. 18 AAC 70.240(h)

18 AAC 70.240(h) provides that ADEC may require both effluent and receiving water monitoring as a check on whether decisions to allow mixing zones in accordance with 18 AAC 70.240(g)(1) result in unanticipated adverse effects (note that the other parts of 18 AAC 70.240(g) are not applicable for CWA purposes because they are disapproved):

> *(h) In a mixing zone authorization under (g) of this section, the department may require the applicant to monitor effluent, ambient water quality, and biological conditions to determine whether unanticipated adverse effects on spawning, incubation, and rearing of species identified in (f) of this section are occurring.*

The EPA Action and Rationale: The EPA approves 18 AAC 70.240(h) as being complementary to the protections for designated uses and existing uses provided at 18 AAC 70.240(g)(1). This authorization to require monitoring provides ADEC with the ability to determine whether the limited allowance at 18 AAC 70.240(g)(1) for mixing zones in spawning areas is ensuring that spawning, incubation, and rearing are protected. The EPA notes that this monitoring is not presented as an alternative to conditioning mixing zones initially to ensure use protection.

I. 18 AAC 70.240(i)

18 AAC 70.240(i) is an exemption to the limitations on mixing zones in spawning areas at 18 AAC 70.240(e), (f), and (g):

> *(i) The provisions of (e), (f), and (g) of this section do not apply to the renewal of a mixing zone authorization where spawning was not occurring at the time of the initial authorization, but*

successful spawning, incubation, and rearing has occurred within the mixing zone after the initial authorization of that mixing zone.

The EPA's Action and Rationale: As discussed below, the EPA approves 18 AAC 70.240(i) because decisions regarding the reauthorization of mixing zones are subject to case-by-case evaluation in accordance with the other provisions at 18 AAC 70.240 which protect the designated uses and existing uses in the waterbody as a whole consistent with 40 CFR 131.11(a)(1) and 131.12(a)(1).

The meaning of 18 AAC 70.240(i) is informed by ADEC's mixing zone implementation guidance which clarifies that the exception at 18 AAC 70.240(i) requires a determination based on knowledge of spawning activity that the area was not previously used for spawning. This is not simply a determination that spawning adults, incubating eggs, and alevins were absent at the time of a mixing zone authorization. Such clarification regarding ADEC's interpretation of 18 AAC 70.240(i) is presented in Alaska's implementation guidance on p. 8 and in Appendix B on p. 17:

> 18 AAC 70.240(i)…allows facilities to continue to operate in places where fish started spawning after a mixing zone was authorized" and "…to qualify for this exemption, the applicant must provide evidence that a thorough search of available knowledge of spawning activity in the waterbody was conducted prior to initial authorization of the mixing zone. This evidence could include the information described in Appendix B under "Information to support spawning area location and time determinations." (p. 8)
>
> Rarely are all spawning locations within a waterbody known to local biologists, and short-term surveys may not be adequate due to variability in population or stock numbers, water clarity, survey timing, or environmental conditions (discharge, water temperature, etc.). Specific spawning locations should be identified using field surveys conducted over multiple years, information obtained from local biologists, consideration of local knowledge, and water temperature data… (Appendix B/p. 17)

The EPA understands 18 AAC 70.240(i) to be applicable to cases such as where the introduction of flow by a permitted discharge helps to create spawning habitat in a water where previous conditions did not support spawning. In such cases, ADEC has chosen to address protection of spawning, incubation, and rearing through case-by-case analysis that must satisfy the other applicable provisions of 18 AAC 70.240, rather than by an explicit predetermined prohibition of mixing zones. ADEC Implementation Guidance, p. 7 ("Mixing zones that are proposed in spawning areas…based on the exemptions in…(i), must also meet all other provisions in 18 AAC 70.240."). For example, ADEC's discretion to approve, approve with conditions, or deny a mixing zone application in accordance with 18 AAC 70.240(a) is still applicable as are the conditions and limitations at 70.240(c) and (d) which must be satisfied for a mixing zone to be authorized. Such provisions necessitate limits on the location, size, shape, and in-zone quality of mixing zones as necessary to protect designated uses and existing uses in the waterbody as a whole. The EPA is not aware of any information, be it in Alaska's mixing zone regulation, implementation guidance, or otherwise, that contradicts DEC's assertion that the other provisions of 18 AAC 70.240 must be satisfied when implementing 18 AAC 70.240(i).

J. 18 AAC 70.240(j)

18 AAC 70.240(j) provides that implementation of 18 AAC 70.240(e), (f), and (g) will utilize the expertise and knowledge of Alaska's Department of Fish and Game regarding the location and time of spawning:

> *(j) When determining whether to authorize a mixing zone under (e), (f), or (g) of this section, the department will make that determination*
> *(1) in conformance with the determination of the Department of Fish and Game, acting under AS 16.20, of the location and time of a spawning area within a special area;*
> *(2) in conformance with the determination of the Department of Fish and Game, acting under AS 16.05.87 - 16.05.901, of the location and time of a spawning area within waters included in the Catalog of Waters Important for Spawning, Rearing or Migration of Anadromous Fishes, adopted by reference in 5 AAC 95.011; or*
> *(3) after consultation with the Department of Fish and Game, as to what the Department of Fish and Game considers the location and time of a spawning area not within waters described in (1) or (2) of this subsection.*

The EPA's Action and Rationale: The EPA approves 18 AAC 70.240(j) because it is appropriate for DEC to seek the expertise of other agencies to ensure sound scientifically based decisions when authorizing mixing zones. Such practices are consistent with the explicit need for sound scientific rationale at 40 CFR 131.11(a)(1) and the requirement to protect existing uses at 40 CFR 131.12(a)(1). The EPA's approval includes the references to AS 16.20, AS 16.05.87-16.05.901, and 5 AAC 95.011. The EPA's action does not, however, extend to the content of AS 16.20, AS 16.05.87-16.05.901, and 5 AAC 95.011, which are not new or revised and therefore not subject to EPA review.

K. 18 AAC 70.240(k)

18 AAC 70.240(k) provides that mixing zones are to be as small as practicable, specifies default upper size restrictions for certain types of waters, and provides that those default size restrictions can be exceeded based on a demonstration that it is safe to do so:

> *(k) The department will approve a mixing zone, as proposed or with conditions, only if it finds that the mixing zone is as small as practicable and will comply with the following size restrictions, unless the department finds that evidence is sufficient to reasonably demonstrate that these size restrictions can be safely increased:*
>
> *(1) for estuarine and marine waters, measured at mean lower low water,*
> *(A) the cumulative linear length of all mixing zones intersected on any given cross section of an estuary, inlet, cove, channel, or other marine water may not exceed 10 percent of the total length of that cross section; and*
> *(B) the total horizontal area allocated to all mixing zones at any depth may not exceed 10 percent of the surface area;*

(2) for lakes, the total horizontal area allocated to all mixing zones at any depth may not exceed 10 percent of the lake's surface area;

(3) for streams, rivers, or other flowing fresh waters, the length of a mixing zone may not extend beyond the computed point of complete mixing, as determined using a standard river flow mixing model or other methods accepted by the department;

(4) for streams, rivers, or other flowing fresh waters, the length of a mixing zone may not extend downstream beyond the location where the department determines that a public health hazard reasonably could be expected to occur.

The EPA's Action and Rationale: As explained below, the EPA approves the non-substantive revisions at 18 AAC 70.240(k) consistent with CWA 303(c)(3) and to ensure public transparency as to which provisions are binding for purposes of the CWA. In approving the non-substantive revisions, the EPA's action extends only to the non-substantive changes and does not constitute an action on the underlying previously approved standards. What is a New or Revised WQS FAQ, p. 4.

Except for several non-substantive changes, 18 AAC 70.240(k) reflects the provisions at 18 AAC 70.255(e) of Alaska's mixing zone rule prior to the 2006 revisions.[13] The non-substantive changes include clarifying language regarding the default size restrictions on mixing zones for estuarine and marine waters and lakes; deletion of a cross-reference in the language addressing streams, rivers, and other flowing waters to conform with the new format of the revised rule; reformatting of the section addressing streams, rivers, and other flowing waters; and the addition of the requirement that mixing zones must be "*as small as practicable*," which was relocated from 18 AAC 70.240(a)(2) of Alaska's previous and repealed mixing zone policy.

The underlying substance of the specified default size restrictions and the allowance for those defaults to be exceeded based on a demonstration that it is safe to do so is unchanged. Furthermore, the upper size restrictions are still appropriately expressed as not to exceed values, rather than mixing zone dimensions that are assumed to be protective of uses. Thus, case-by-case determinations of an appropriate mixing zone size that is as small as practicable and consistent with the other provisions of 18 AAC 70.240 is necessary for each mixing zone authorization (satisfying the provisions of 18 AAC 70.240(c) and (d) necessitates appropriate limits on the location, size, shape, and in-zone quality of mixing zones).

The requirement that mixing zones must be "as small as practicable" is consistent with the EPA's guidance. WQS Handbook, Ch. 5, p. 6 ("The area or volume of an individual mixing zone or group of mixing zones should be as small as practicable so that it does not interfere with the designated uses or with the established community of aquatic life in the segment for which the uses are designated."). The EPA notes that correspondence with ADEC during its regulation revision process confirmed that the phrase "*unless the department finds that evidence is sufficient to reasonably demonstrate that these size restrictions can be safely increased*" refers only to "*the following size restrictions*" (i.e., any size restrictions at 18 AAC 70.240(k)(1) through (4)), and does not modify the "*as small as practicable*" requirement. The language in the adopted regulation at 18 AAC 70.240(k) is based on a suggestion by Alaska's Attorney General to clarify that intent. Email dated May 10, 2005 from Nancy Sonafrank,

[13] The last revisions to Alaska's mixing zone rule prior to the 2006 adoption were submitted by ADEC on August 29, 1997, became effective under Alaska state law on November 1, 1997, and were approved by the EPA on November 17, 1997.

ADEC, to Lisa McGuire, EPA, Subject: Questions on mixing zone reg. Additionally, in summarizing the revised mixing zone rule, Alaska's implementation guidance states without qualification that "…DEC must find that the…mixing zone is as small as practicable." ADEC Implementation Guidance, p. 3.

The EPA approves the non-substantive changes as providing useful clarification regarding the provisions at 18 AAC 70.240(k). The EPA's approval of the non-substantive changes to previously approved water quality standards is to ensure public transparency as to which provisions are applicable for purposes of the CWA in accordance with 40 CFR 131.21(c). The scope of the EPA's action in approving such provisions extends only as far as the actual non-substantive changes themselves. The EPA's action on the non-substantive changes does not constitute an action on the underlying previously approved water quality standards because they are not new or revised. What is a New or Revised WQS FAQ, p. 4.

Although the EPA is not reviewing and acting on the underlying meaning of 18 AAC 70.240(k)(4) ("*for streams, rivers, or other flowing fresh waters, the length of a mixing zone may not extend downstream beyond the location where the department determines that a public health hazard reasonably could be expected to occur*"), the EPA notes that this provision complements 18 AAC 70.240(c)(4)(B) and (C) which address critical resource areas with regard to human health protection. The EPA understands 18 AAC 70.240(k)(4) to mean a mixing zone may not overlap with the location where a public health hazard could reasonably be expected to occur.

The text of 18 AAC 70.240(a)(2) and 18 AAC 70.255(e) from Alaska's mixing zone rule prior to the 2006 revisions is presented below for comparison:

> 18 AAC 70.240(a)(2):
>
> *(a)(2) The department will authorize a mixing zone only if the department finds that available evidence reasonably demonstrates that…the mixing zone will be as small as practicable;*
>
> 18 AAC 70.255(e):
>
> *(e) Unless the department finds that evidence is sufficient to reasonably demonstrate, in accordance with this section, that the size limitations of a mixing zone can be safely increased, a mixing zone must comply with the following size restrictions:*
>
> *(1) for estuarine and marine waters, measured at mean lower low water,*
> *(A) the cumulative linear length of all mixing zones intersected on any given cross section of an estuary, inlet, cove, channel, or other marine water may not exceed 10 percent of the total length of that cross section; and*
> *(B) the total horizontal area allocated to mixing zones may not exceed 10 percent of the surface area;*
>
> *(2) for lakes, the total horizontal area allocated to all mixing zones may not exceed 10 percent of the lake's surface area; and*

(3) for streams, rivers, or other flowing fresh waters, subject to (f), (g), and (h) of this section, the length of a mixing zone may not extend downstream beyond the limits described in (A) or (B) of this paragraph, whichever is closer to the point of discharge, as follows:
(A) beyond the computed point where the variation in the concentration of a water quality parameter across a stream, river, or other flowing fresh water is predicted to be less than five percent, as determined using a standard river flow mixing model accepted by the department; or
(B) beyond the location where the department determines that a public health hazard reasonably could be expected to occur.

L. <u>18 AAC 70.240(l)</u>

18 AAC 70.240(l) specifies receiving water flows that must be used when determining the dilution available for calculating effluent discharge limitations based on water quality criteria:

(l) For streams, rivers, or other flowing fresh waters, in calculating the maximum pollutant discharge limitation, the volume of flow available for dilution must be determined using
(1) the actual flow data collected concurrent with the discharge; or
(2) for conventional and nontoxic substances, the 10-year, 7-day low flow (7Q10) as the criteria design flow; for the protection of aquatic life, the 10-year, 7-day low flow (7Q10) as the chronic criteria design flow and the 10-year, 1-day low flow (1Q10) as the acute criteria design flow; and for the protection of human health, the 5-year, 30-day low flow (30Q5) as the noncarcinogenic criteria design flow and the harmonic mean flow as the carcinogenic criteria design flow; these low flows must be calculated using methods approved by the department.

1. 18 AAC 70.240(l)(1)

<u>The EPA's Action and Rationale</u>: As explained below, the EPA approves the non-substantive changes to 18 AAC 70.240(l)(1).

18 AAC 70.240(l)(1) is an alternative to use of the receiving water design flow statistics at 18 AAC 70.240(l)(2) and is not substantively changed from the provision at 18 AAC 70.255(f)(1) of Alaska's mixing zone rule prior to the 2006 revisions.[14] The non-substantive change involved replacing "*the actual flow as determined by gauging data*" with "*the actual flow data.*" Both versions end with "*collected concurrent with the discharge*." Removing "*as determined by gauging*" simplifies the language because "*the actual flow data collected concurrent with the discharge*" implies a need to appropriately gauge (i.e., measure or determine) the flow. The EPA does not understand the change to in any way affect the quality of the flow data that is necessary to implement 18 AAC 70.240(l)(1). The EPA approves this non-substantive change to the previously approved water quality standard at 18 AAC 70.255(f)(1) to ensure public transparency as to which provision is applicable for purposes of the CWA in accordance with 40 CFR 131.21(c). The scope of the EPA's action in approving such provisions extends only as far as the actual non-substantive changes themselves. The EPA's action on the non-substantive changes does not constitute an action on the underlying previously approved water quality standards because they are not new or revised. What is a New or Revised WQS FAQ, p. 4.

[14] The last revisions to Alaska's mixing zone rule prior to the 2006 adoption were submitted by ADEC on August 29, 1997, became effective under Alaska state law on November 1, 1997, and were approved by the EPA on November 17, 1997.

2. 18 AAC 70.240(l)(2)

The EPA's Action and Rationale: For the reasons discussed below, the EPA approves 18 AAC 70.240(l)(2) because Alaska's adopted flow statistics are protective of designated uses.

ADEC's adoption of 7Q10 low flow for conventional and nontoxic substances, such as biochemical oxygen demand, is consistent with the EPA's guidance for implementing water quality criteria to ensure that uses will be protected. Technical Guidance Manual for Performing Wasteload Allocations, Book II: Streams and Rivers – Part 1: Biochemical Oxygen Demand/Dissolved Oxygen and Nutrients/Eutrophication, EPA-823-B-97-002, March 1997. By letter of April 7, 1997, the EPA disapproved ADEC's adoption of 3Q2 for conventional and nontoxic substances.[15] ADEC's subsequent adoption of 7Q10 low flow to replace 3Q2, and the EPA's approval here, resolves that disapproval.

The low flow values specified at 18 AAC 70.240(l)(2) for chronic aquatic life criteria (7Q10), acute aquatic life criteria (1Q10), and human health criteria for carcinogens (harmonic mean) also reflect the EPA's recommended hydrologically based low flows for applying criteria in a way that protects uses. WQS Handbook, Ch. 5, p. 13.

ADEC chose to adopt 30Q5 low flow for human health criteria for non-carcinogens. The EPA currently generally recommends the harmonic mean flow for application of human health criteria for both carcinogens and non-carcinogens. Nevertheless, the EPA previously recommended 30Q5 low flow for non-carcinogens and expects that flow to provide at least the same protection of uses as the harmonic mean because 30Q5 low flow represents a shorter averaging period than the harmonic mean. 65 FR 66444, 66450, Nov. 3, 2000 (Revisions to the Methodology for Deriving Ambient Quality Criteria for the Protection of Human Health).

18 AAC 70.240(l)(2) also specifies that the low flows must be calculated using methods approved by ADEC. Alaska's implementation guidance provides information on such methods and recognizes that the establishment of a mixing zone "…may require reserving part of the critical design flow for fish passage and not using all of the low flow volume for the mixing zone." ADEC Implementation Guidance, p. 9.

40 CFR 131.13 provides that states and tribes may adopt low flows for the application of water quality criteria, and the EPA approves 18 AAC 70.240(l)(2) because Alaska's adopted flow statistics are protective of designated uses, consistent with 40 CFR 131.11(a)(1), for the reasons discussed in the cited EPA guidance.

M. 18 AAC 70.240(m)

18 AAC 70.240(m) is a recognition that ADEC will take appropriate action to correct a mixing zone authorization that is determined to result in significant unforeseen adverse environmental effect:

> *(m) If the department finds that available evidence reasonably demonstrates that a mixing zone authorized by the department has had or is having a significant unforeseen adverse*

[15] Philip G. Millam, EPA Region 10 Director Office of Water, to Michele Brown, Commissioner ADEC, April 7, 1997.

environmental effect, the department will terminate, modify, or deny renewal of the permit or certification authorizing the mixing zone.

The EPA's Action and Rationale: The EPA approves 18 AAC 70.240(m) as being complementary to the protections for designated uses and existing uses provided by other sections of at 18 AAC 70.240. 18 AAC 70.240(m) is an appropriate recognition of ADEC's authority and intent to act should a mixing zones authorization result in significant unforeseen adverse effects. The EPA notes that this provision is not presented as an alternative to conditioning mixing zones initially to ensure use protection.

N. 18 AAC 70.240(n)

18 AAC 70.240(n) is similar to 18 AAC 70.240(j) in that it addresses ADEC's use of information and expertise from other agencies (e.g. the Alaska Department of Fish and Game):

(n) When consulting with an agency under (g) or (j) of this section, the department will give appropriate weight to any information received from the agency, considering the agency's expertise.

The EPA's Action and Rationale: The EPA approves 18 AAC 70.240(n) because it is appropriate for DEC to seek information and expertise of other agencies to ensure sound scientifically based decisions when authorizing mixing zones. Such practices are consistent with the explicit requirement for sound scientific rationale at 40 CFR 131.11(a)(1) and the requirement to protect existing uses at 40 CFR 131.12(a)(1).

O. 18 AAC 70.240(o) and 18 AAC 70.240(p)

18 AAC 70.240(o) and 18 AAC 70.240(p) define the phrases "*the five species of anadromous Pacific salmon found in the state*" and *"special area*" as they are used in Alaska's mixing zone rule:

(o) For purposes of this section, the five species of anadromous Pacific salmon found in the state are chinook salmon, coho salmon, sockeye salmon, pink salmon, and chum salmon.

(p) In this section, "special area" means a state game refuge, a state game sanctuary, or a state fish and game critical habitat area, established under AS 16.20.

The EPA's Action and Rationale: EPA approves 18 AAC 70.240(o) and 18 AAC 70.240(p) as providing information useful towards understanding other portions of ADEC's mixing zone regulation. The EPA's approval includes the reference to AS 16.20. The EPA's action does not, however, extend to the content of AS 16.20 which is not new or revised and therefore not subject to EPA review.

IV. Definitions (18 AAC 70.990) - Rationale for Today's Action

Alaska revised 18 AAC 70.990(2), repealed 18 AAC 70.990(30), and added 18 AAC 70.990(72). For the reasons discussed below, the EPA approves these changes as being consistent with the CWA and 40 CFR Part 131.

A. 18 AAC 70.990(2)

18 AAC 70.990(2) was revised as shown in Alaska's 2006 submittal:

> *(2)* "anadromous" with respect to fish ["anadromous fish"] has the meaning given in the definition of "anadromous fish" [that term] in the definitions section of the *Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes* [Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes], adopted by reference in 11 AAC 195.010;

The EPA's Action and Rationale: For the reasons discussed below, the EPA approves the non-substantive revisions to 18 AAC 70.990(2).

The definition of "*anadromous fish*" was changed to define the term "*anadromous*;" however, the newly defined term "anadromous" retained the definition of "anadromous fish" from Alaska's *Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes*. Alaska's mixing zone rule prior to the 2006 adoption used the term anadromous fish in a provision prohibiting mixing zones in anadromous fish spawning areas (18 AAC 70.255(h)(1)).[16] The revised rule uses the term anadromous followed by the fish species (i.e. Pacific salmon) to which the revised prohibition applies (18 AAC 70.240(e)). The EPA approves these non-substantive changes to 18 AAC 70.990(2) as providing continuity with language in other provisions of the revised mixing zone rule.

The EPA's approval of the non-substantive changes to previously approved water quality standards at 18 AAC 70.990(2) is to ensure public transparency as to which provisions are applicable for purposes of the CWA in accordance with 40 CFR 131.21(c). The scope of the EPA's action in approving such provisions extends only as far as the actual non-substantive changes themselves. The EPA's action on the non-substantive changes does not constitute an action on the underlying previously approved water quality standards because they are not new or revised. What is a New or Revised WQS FAQ, p. 4.

The EPA's approval includes the references to Alaska's Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes and 11 AAC 195.010. The EPA's action does not, however, extend to the content of Alaska's Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes and 11 AAC 195.010 which are not new or revised and therefore are not subject to EPA review.

B. 18 AAC 70.990(30)

The EPA's Action and Rationale: The EPA approves Alaska's repeal of 18 AAC 70.990(30) (the definition of "*highest statutory and regulatory treatment requirements*") as a house keeping change that accompanied repeal of the original 18 AAC 70.240 (also see the approval of 18 AAC 70.240(c)(1) at section III.C of the EPA's support document).

[16] The last revisions to Alaska's mixing zone rule prior to the 2006 adoption were submitted by ADEC on August 29, 1997, became effective under Alaska state law on November 1, 1997, and were approved by the EPA on November 17, 1997.

C. 18 AAC 70.990(72)

> *(72) "shellfish" means a species of crustacean, mollusk, or other aquatic invertebrate with a shell or shell-like exoskeleton, in any stage of its life cycle*.

The EPA's Action and Rationale: The EPA approves 18 AAC 70.990(72) as providing information useful for understanding Alaska's mixing zone rule and other State water quality standards. Alaska's new definition of "*shellfish*" at 18 AAC 70.990(72) is consistent with the common meaning of the word as defined by the Britannica Online Encyclopedia ("any aquatic invertebrate animal having a shell and belonging to the phylum Mollusca, the class Crustacea (phylum Arthropoda), or the phylum Echinodermata…" July 13, 2018).