



ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 131

[EPA-HQ-OW-2015-0804; FRL-9945-03-OW]

RIN 2040-AF59

Proposal of Certain Federal Water Quality Standards Applicable to Maine

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA) proposes federal Clean Water Act (CWA) water quality standards (WQS) that would apply to certain waters under the state of Maine's jurisdiction. EPA proposes human health criteria (HHC) to protect the sustenance fishing use in those waters in Indian lands and for waters subject to sustenance fishing rights under the Maine Implementing Act (MIA) based on a fish consumption rate that represents an unsuppressed level of fish consumption by the four federally recognized tribes. EPA proposes six additional WQS for waters in Indian lands in Maine, two WQS for all waters in Maine including waters in Indian lands, and one WQS for waters in Maine outside of Indian lands. These proposed WQS take into account the best available science, including local and regional information, as well as applicable EPA policies, guidance, and legal requirements, to protect human health and aquatic life. EPA proposes these WQS to address various disapprovals of Maine's standards that EPA issued in February, March, and June 2015, and to address the Administrator's determination that Maine's disapproved HHC are not adequate to protect the designated use of sustenance fishing for certain waters.

DATES: Comments must be received on or before [insert date 60 days after publication in the **Federal Register**].

ADDRESSES: Submit your comments, identified by Docket ID No. **EPA-HQ-OW-2015-0804** at <http://www.regulations.gov>. Follow the online instructions for submitting comments.

Once submitted, comments cannot be edited or removed from Regulations.gov. EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. EPA will generally not consider comments or comment contents located outside of the primary submission (i.e. on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit <http://www.epa.gov/dockets/commenting-epa-dockets>. EPA is offering two virtual public hearings so that interested parties may also provide oral comments on this proposed rule. The first hearing will be on Tuesday, June 7, 2016 from 5:00pm to 7:00pm Eastern Daylight Time. The second hearing will be on Thursday, June 9, 2016 from 9:00am to 11:00am Eastern Daylight Time. For more details on the public hearings and a link to register, please visit <http://www.epa.gov/wqs-tech/proposed-rule-maine-water-quality-standards>.

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I. General Information

Does This Action Apply to Me?

Entities such as industries, stormwater management districts, or publicly owned treatment works (POTWs) that discharge pollutants to waters of the United States in Maine could be indirectly affected by this rulemaking, because federal WQS promulgated by EPA are applicable to CWA regulatory programs, such as National Pollutant Discharge Elimination System (NPDES) permitting. Citizens concerned with water quality in Maine, including members of the federally recognized Indian tribes in Maine, could also be interested in this rulemaking.

Dischargers that could potentially be affected include the following:

TABLE 1 – DISCHARGERS POTENTIALLY AFFECTED BY THIS RULEMAKING

| Category | Examples of potentially affected entities |
|---------------------------------|--|
| Industry | Industries discharging pollutants to waters of the United States in Maine. |
| Municipalities | Publicly owned treatment works or other facilities discharging pollutants to waters of the United States in Maine. |
| Stormwater Management Districts | Entities responsible for managing stormwater runoff in the state of Maine. |

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities that could be indirectly affected by this action. Any parties or entities who depend upon or contribute to the water quality of Maine’s waters could be affected by this proposed rule. To determine whether your facility or activities could be affected by this action, you should carefully examine this proposed rule. If you have questions regarding the applicability of this action to a particular entity, consult the person listed in the FOR FURTHER INFORMATION CONTACT section.

II. Background

A. Statutory and Regulatory Background

1. Clean Water Act (CWA)

CWA section 101(a)(2) establishes as a national goal “water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water, wherever attainable.” These are commonly referred to as the “fishable/swimmable” goals of the CWA. EPA interprets “fishable” uses to include, at a minimum, designated uses providing for the protection of aquatic communities and human health related to consumption of fish and shellfish.¹

CWA section 303(c) (33 U.S.C. 1313(c)) directs states to adopt water quality standards (WQS) for waters under their jurisdiction subject to the CWA. CWA section 303(c)(2)(A) and EPA’s implementing regulations at 40 CFR part 131 require, among other things, that a state’s WQS specify appropriate designated uses of the waters, and water quality criteria to protect those uses that are based on sound scientific rationale. EPA’s regulations at 40 CFR 131.11(a)(1) provide that such criteria “must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use.” In addition, 40 CFR 131.10(b) provides that “[i]n designating uses of a water body and the appropriate criteria for those uses, the state shall take into consideration the water quality standards of downstream waters and ensure that its water quality standards provide for the attainment and maintenance of the water quality standards of downstream waters.”

States are required to review applicable WQS at least once every three years and, if appropriate, revise or adopt new standards (CWA section 303(c)(1)). Any new or revised WQS must be

¹ USEPA. 2000. Memorandum #WQSP-00-03. U.S. Environmental Protection Agency, Office of Water, Washington, DC http://water.epa.gov/scitech/swguidance/standards/upload/2000_10_31_standards_shellfish.pdf.

submitted to EPA for review, to determine whether it meets the CWA's requirements, and for approval or disapproval (CWA section 303(c)(2)(A) and (c)(3)). If EPA disapproves a state's new or revised WQS, the CWA provides the state ninety days to adopt a revised WQS that meets CWA requirements, and if it fails to do so, EPA shall promptly propose and then promulgate such standard unless EPA approves a state replacement WQS first (CWA section 303(c)(3) and (c)(4)(A)). If the state adopts and EPA approves a state replacement WQS after EPA promulgates a standard, EPA then withdraws its promulgation. CWA section 303(c)(4)(B) authorizes the Administrator to determine, even in the absence of a state submission, that a new or revised standard is necessary to meet CWA requirements. Upon making such a determination, EPA shall promptly propose, and then within ninety days promulgate, any such new or revised standard unless prior to such promulgation, the state has adopted a revised or new WQS which EPA determines to be in accordance with the CWA.

Under CWA section 304(a), EPA periodically publishes water quality criteria recommendations for states to consider when adopting water quality criteria for particular pollutants to protect the CWA section 101(a)(2) goal uses. For example, in 2015, EPA updated its 304(a) recommended criteria for human health for 94 pollutants (the 2015 criteria update).² Where EPA has published recommended criteria, states should consider adopting water quality criteria based on EPA's CWA section 304(a) criteria, section 304(a) criteria modified to reflect site-specific conditions, or other scientifically defensible methods (40 CFR 131.11(b)(1)). CWA section 303(c)(2)(B) requires states to adopt numeric criteria for all toxic pollutants listed pursuant to CWA section

² Final Updated Ambient Water Quality Criteria for the Protection of Human Health, (80 FR 36986, June 29, 2015). See also: USEPA. 2015. Final 2015 Updated National Recommended Human Health Criteria. U.S. Environmental Protection Agency, Office of Water, Washington, DC. <http://water.epa.gov/scitech/swguidance/standards/criteria/current/hhfinal.cfm>.

307(a)(1) for which EPA has published 304(a) criteria, as necessary, to support the states' designated uses.

2. Maine Indian Settlement Acts

There are four federally recognized Indian tribes in Maine represented by five governing bodies. The Penobscot Nation and the Passamaquoddy Tribe have reservations and trust land holdings in central and coastal Maine. The Passamaquoddy Tribe has two governing bodies, one on the Pleasant Point Reservation and another on the Indian Township Reservation. The Houlton Band of Maliseet Indians and the Aroostook Band of Micmacs have trust lands further north in the state. To simplify the discussion of the legal framework that applies to each Tribe's territory, EPA will refer to the Penobscot Nation and the Passamaquoddy Tribe together as the "Southern Tribes" and the Houlton Band of Maliseet Indians and Aroostook Band of Micmacs as the "Northern Tribes." EPA acknowledges that these are collective appellations the tribes themselves have not adopted, and the Agency uses them solely to simplify this discussion.

In 1980, Congress passed the Maine Indian Claims Settlement Act (MICSA) that resolved litigation in which the Southern Tribes asserted land claims to a large portion of the state of Maine. 25 U.S.C. 1721, *et seq.* MICSA ratified a state statute passed in 1979, the Maine Implementing Act (MIA, 30 M.R.S. 6201, *et seq.*), which was designed to embody the agreement reached between the state and the Southern Tribes. In 1981, MIA was amended to include provisions for land to be taken into trust for the Houlton Band of Maliseet Indians, as provided for in MICSA. 30 M.R.S. 6205-A; 25 U.S.C. 1724(d)(1). Since it is Congress that has plenary authority as to federally recognized Indian tribes, MIA's provisions concerning jurisdiction and the status of the tribes are effective as a result of, and consistent with, the Congressional ratification in MICSA.

In 1989, the Maine legislature passed the Micmac Settlement Act (MSA) to embody an agreement as to the status of the Aroostook Band of Micmacs. 30 M.R.S. 7201, *et seq.* In 1991, Congress passed the Aroostook Band of Micmacs Settlement Act (ABMSA), which ratified the MSA. 25 U.S.C. 1721, Act Nov. 26, 1991, Pub.L. 102-171, 105 Stat. 1143. One principal purpose of both statutes was to give the Micmacs the same settlement that had been provided to the Maliseets in MICSA. See ABMSA 2(a)(4) and (5). In 2007, the U.S. Court of Appeals for the First Circuit confirmed that the Micmacs and Maliseets are subject to the same jurisdictional provisions in MICSA. *Aroostook Band of Micmacs v. Ryan*, 484 F.3d 41 (1st Cir. 2007). Where appropriate, this preamble discussion will refer to the combination of MICSA, MIA, ABMSA, and MSA as the “settlement acts.”

As discussed in greater detail in EPA’s February 2, 2015, decision disapproving certain Maine WQS in waters in Indian lands, a key purpose of the settlement acts was to confirm and expand the Tribes’ land base, in the form of both reservations and trust lands, so that the Tribes may preserve their culture and sustenance practices, including sustenance fishing. For the Passamaquoddy Tribe and Penobscot Nation, the settlement acts expressly confirmed an aboriginal right to sustenance fishing in their reservations. See 30 M.R.S. 6207(4).

The legislative record of the settlement acts makes clear that Congress also intended to ensure the tribes’ continuing ability to practice their traditional sustenance lifeways, including fishing, from their trust lands. With regard to the Passamaquoddy and Penobscot trust lands, legislative intent to provide for tribal sustenance fishing practices is, for example, reflected in MIA provisions which grant tribal control of fishing in certain trust waters and require the consideration of tribal sustenance practices in the setting of fishing regulations for the remaining trust waters. See 30 M.R.S. 6207(1), (3). As for the Micmacs and Maliseets, the settlement acts

similarly provide for the opportunity to continue their sustenance fishing practices, though subject to more direct state regulation than that of the Passamaquoddy or Penobscot.

In its February 2, 2015, decision, EPA concluded that MICSA directly provides the state with jurisdiction to set WQS in the Northern Tribes' trust lands and that MICSA also ratifies provisions of MIA that provide the state with such authority in the Southern Tribes' territories. That decision provided a detailed explanation of the legal basis for the state's jurisdiction to set WQS in waters in Indian lands in Maine. Because of the unique jurisdictional formula Congress ratified in the settlement acts, EPA is in the unusual position of reviewing state WQS in waters in Indian lands.³

Having disapproved certain state WQS longer than ninety days ago, as explained in section II.B., EPA is required by the CWA to promptly propose and then promulgate federal standards unless, in the meantime, the state adopts and EPA approves state replacement WQS that address EPA's disapproval.

B. EPA's Disapprovals of Portions of Maine Water Quality Standards

On February 2, March 16, and June 5, 2015, EPA disapproved a number of Maine's new and revised WQS. These disapproval letters are available in the docket for this rulemaking. These decisions were prompted by an on-going lawsuit initiated by Maine against EPA. As discussed further below, some of the disapprovals applied only to waters in Indian lands in Maine, while others applied to waters throughout the state or to waters in the state outside of Indian lands.⁴

³ Generally, the norm elsewhere in the country is that EPA has authority to set WQS for Indian country waters, with tribes that have obtained treatment in a manner similar to a state under CWA section 518 gaining authority to set WQS for their reservations.

⁴ As discussed above, unlike in other states, Maine has the authority to promulgate WQS for waters in Indian lands in Maine, as a result of state and federal statutes that resolved the land claims of tribes in Maine.

EPA concluded that the disapproved WQS did not adequately protect designated uses related to the protection of human health and/or aquatic life. EPA requested that the state revise its WQS to address the issues identified in the disapprovals. The statutory 90-day timeframe provided to the state to revise its WQS has passed with respect to all of the disapproved WQS. The state has filed an amended complaint as part of an ongoing lawsuit challenging EPA's February 2, 2015 disapprovals. Discussed below are those disapprovals for which EPA today proposes new and revised WQS.⁵

1. Disapprovals that Apply Only to Waters in Indian Lands in Maine

In its February 2015 decision, EPA concluded that MICSA granted the state authority to set WQS in waters in Indian lands. EPA also concluded that in assessing whether the state's WQS were approvable for waters in Indian lands, EPA must effectuate the CWA requirement that WQS must protect applicable designated uses and be based on sound science in consideration of the fundamental purpose for which land was set aside for the tribes under the Indian settlement acts in Maine. EPA found that those settlement acts, which include MICSA and other state and federal statutes that resolved Indian land claims in the state, provide for land to be set aside as a permanent land base for the Indian tribes in Maine, in order for the tribes to be able to continue their unique cultures, including the ability to exercise sustenance fishing practices. Accordingly, EPA interprets the state's "fishing" designated use, as applied to waters in Indian lands, to mean "sustenance fishing" and approved it as such; and EPA approved a specific sustenance fishing

⁵ EPA's March and June decisions included several disapprovals for which no promulgation is necessary, and therefore those disapprovals are not discussed herein. Those disapprovals related to certain pesticide and chemical discharge provisions, certain exceptions to prohibitions on discharges to Class AA and SA waters, and the reclassification of a 0.3 mile segment of Long Creek that flows through Westbrook, Maine. In addition, EPA is not promulgating WQS related to certain HHC that EPA disapproved for the reasons discussed in section IV.A.1.c.

right reserved in one of the settlement acts as a designated use for certain tribal reservation waters. Against this backdrop, EPA approved or disapproved all of Maine's WQS as applied to waters in Indian lands after evaluating whether they satisfied CWA requirements as informed by the settlement acts.⁶ EPA's disapprovals of WQS for waters in Indian lands in Maine were based on two distinct rationales, depending on the WQS.

First, EPA disapproved Maine's HHC for toxic pollutants based on EPA's conclusion that they do not adequately protect the health of tribal sustenance fishers in waters in Indian lands, because they are not based on the higher fish consumption rates that reflect the tribes' sustenance fishing practices, and, in the case of one HHC, because the cancer risk level was not adequately protective of the sustenance fishing use. These disapprovals, discussed in EPA's February and March decisions, are specifically related to unique aspects of the tribes' use of waters in Indian lands. EPA proposes to promulgate WQS related to the HHC disapprovals as explained in section IV.A.

Second, EPA, in its March and June decisions, disapproved a number of WQS as applied to waters in Indian lands because those standards, although approved for other waters in Maine many years ago, no longer satisfy CWA requirements (*i.e.*, they do not protect designated uses and/or are not based on sound scientific rationale). EPA proposes to promulgate six WQS related to those disapprovals, which include: (1) narrative and numeric bacteria criteria for the protection of primary contact recreation and shellfishing; (2) ammonia criteria for protection of aquatic life in fresh waters; (3) a statutory exception for naturally occurring toxic substances from the

⁶ Because EPA had never previously acted on any Maine WQS for waters in Indian lands, they remained "new or revised" WQS as to those waters, even though EPA had approved many of them for other state waters. They were therefore subject to EPA review and approval or disapproval pursuant to CWA section 303(c).

requirement to regulate toxic substances at the levels recommended by EPA, as it applies to HHC, and a natural conditions clause, as it applies to HHC; (4) the mixing zone policy; (5) the pH criterion for fresh waters; and (6) tidal temperature criteria. Because EPA had previously approved these provisions for other waters in Maine, the disapprovals and corresponding proposed WQS apply to only waters in Indian lands.

2. Disapprovals that Apply to All Waters in Maine, Including Waters in Indian Lands

In its March and June 2015 decisions, EPA disapproved a number of new and revised WQS as applied to all waters throughout Maine, including waters in Indian lands. These are WQS that EPA had not previously acted upon for any waters. EPA proposes two WQS for all waters in Maine related to the disapprovals of (1) a statute allowing the waiver or modification of protection and improvement laws, as it pertains to WQS; and (2) the numeric criteria for dissolved oxygen in Class A waters. EPA proposes one WQS for waters in Maine outside of Indian lands related to the disapproval of the phenol criterion for water plus organisms.⁷

C. Scope of Waters

To address the disapprovals discussed in section II.B.1, EPA proposes HHC for toxic pollutants as well as six other WQS that apply only to waters in Indian lands. For the purpose of this rulemaking, “waters in Indian lands” are those waters in the tribes’ reservations and trust lands as provided for in the settlement acts.

In addition, as described below in section III, EPA proposes the same HHC for toxic pollutants pursuant to a determination of necessity under CWA 303(c)(4)(B) for the following waters: (1) waters in Indian lands in the event that a court determines that EPA’s disapprovals of HHC for

⁷ EPA proposes a separate phenol criterion for water plus organisms for the waters in Indian lands.

such waters were unauthorized and that Maine's existing HHC are in effect; and (2) waters where there is a sustenance fishing designated use outside of waters in Indian lands.⁸

D. Applicability of EPA Promulgated Water Quality Standards When Final

Once finalized, EPA's water quality standards would apply to the relevant waters for CWA purposes. Although EPA proposes WQS to address the standards that it disapproved or for which it has made a determination, Maine continues to have the option to adopt and submit to EPA new or revised WQS that remedy the issues identified in the disapprovals and determination, consistent with CWA section 303(c) and EPA's implementing regulations at 40 CFR part 131. EPA encourages Maine to expeditiously adopt protective WQS that address the changes EPA identified in its disapprovals and determination, discussed in section III, as being necessary to meet CWA requirements. Consistent with CWA section 303(c)(4), if Maine adopts and submits new or revised WQS and EPA approves them before finalizing this proposed rule, EPA would not proceed with the final rulemaking for those waters and/or pollutants for which EPA approves Maine's new or revised standards.

If EPA finalizes this proposed rule, and Maine subsequently adopts and submits new or revised WQS that EPA finds meet CWA requirements, EPA proposes that once EPA approves Maine's WQS, they would become effective for CWA purposes, and EPA's corresponding promulgated WQS would no longer apply. EPA would still undertake a rulemaking to withdraw the federal WQS for those pollutants, but any delay in that process would not delay Maine's approved WQS

⁸ EPA has included in the docket for this rulemaking a Technical Support Document, entitled "Scope of Waters," which provides further information regarding, for purposes of this proposed rulemaking, the waters that are included in the term "waters in Indian lands" and the waters where the designated use of sustenance fishing applies.

from becoming the sole applicable WQS for CWA purposes. EPA solicits comment on this approach.

III. CWA 303(c)(4)(B) Determination of Necessity for HHC That Protect Sustenance Fishing

Per EPA's regulations at 40 CFR 131.11(a), water quality criteria must be sufficient to protect the designated uses. As discussed in section II.A.2. and in EPA's February 2015 disapproval, the settlement acts reflect Congress's intent that the tribes in Maine must be able to engage in sustenance fishing to preserve their culture and lifeways. In waters where the settlement acts provide for the tribes to engage in sustenance fishing, EPA interprets Maine's designated use of "fishing" to include sustenance fishing, and EPA has further approved section 6207(4) and (9) of MIA as the establishment of a sustenance fishing designated use for fresh waters in the Southern Tribes' reservations.

For the reasons discussed in EPA's February and March 2015 disapproval decisions and summarized below in section IV.A.1.b., most of Maine's HHC for toxic pollutants are not adequate to protect the sustenance fishing designated use because they are based on a fish consumption rate that does not reflect the tribes' unsuppressed sustenance fishing level of consumption. Accordingly, for the waters in Maine where there is a sustenance fishing designated use and Maine's existing HHC are in effect, EPA hereby determines under CWA section 303(c)(4)(B) that new or revised WQS for the protection of human health are necessary to meet the requirements of the CWA for such waters. EPA therefore proposes HHC for such waters in this rule in accordance with this section 303(c)(4)(B) determination. The specific HHC to which this determination and corresponding proposal apply are set forth in Table 3. This determination also applies to Maine's HHC for arsenic (including, specifically, Maine's cancer

risk level of 10⁻⁴ for arsenic), thallium, and dioxin. As discussed in section IV.A.1.c., EPA is reserving its proposal for criteria for these three HHC until a later date, pending the outcome of additional scientific assessments.

This determination applies to two groups of waters in Maine:

1. Any waters in Indian lands in Maine for which a court in the future determines that EPA's 2015 disapprovals of HHC for such waters were unauthorized and that Maine's existing HHC are in effect. Maine has challenged EPA's disapprovals in federal district court, asserting that EPA did not have the authority to disapprove the HHC in waters in Indian lands. While EPA's position is that the disapprovals were authorized and Maine's existing HHC are not in effect, this determination ensures that EPA has the authority to promulgate the proposed HHC, and that the tribes' sustenance fishing use would be protected, even if Maine's challenge to EPA's disapproval authority were to prevail.
2. Any water in Maine where sustenance fishing is a designated use but such water is determined not to be a "water in Indian lands."⁹ EPA notes that there may be one or more waters where the sustenance fishing designated use based on MIA section 6207(4) and (9) extends beyond "waters in Indian lands." See "Scope of Waters" Technical Support Document in the docket for this rulemaking. This determination and corresponding rulemaking apply to any water to which the sustenance fishing designated use based on MIA section 6207(4) and (9) applies that is beyond the scope of "waters in Indian lands."

⁹ In its February 2015 Decision, EPA concluded that section 6207(4) and (9) of MIA constituted a new or revised water quality standard and approved the provision as a designated use of sustenance fishing applicable to all inland waters of the Southern Tribes' reservations in which populations of fish are or may be found. Accordingly, EPA's approval of MIA section 6207(4) and (9) as a designated use of sustenance fishing applies to all waters where the Southern Tribes have a right to sustenance fish, irrespective of whether such waters are determined to be outside of the scope of their reservation for purposes other than sustenance fishing.

EPA's determination is not itself a final action, nor part of a final action, at this time. After consideration of comments on the proposed rule, EPA will take final agency action on this rulemaking. It is at that time that any challenge to the determination and/or water quality standards applicable to Maine based on such determination may occur.

IV. Proposed Water Quality Standards

A. Proposed WQS for Waters in Indian Lands in Maine and for Waters outside of Indian Lands in Maine Where the Sustenance Fishing Designated Use Established by 30 M.R.S. 6207(4) and (9) Applies

1. Human Health Criteria for Toxic Pollutants

a. General Recommended Approach for Deriving HHC. HHC for toxic pollutants are designed to minimize the risk of adverse cancer and non-cancer effects occurring from lifetime exposure to pollutants through the ingestion of drinking water and consumption of fish/shellfish obtained from inland and nearshore waters. EPA's practice is to establish 304(a) HHC for the combined activities of drinking water and consuming fish/shellfish obtained from inland and nearshore waters, and separate HHC for consuming only fish/shellfish originating from inland and nearshore waters. The latter criteria apply in cases where the designated uses of a waterbody include supporting fish/shellfish for human consumption but not drinking water supply sources (e.g., in non-potable estuarine waters). The criteria are based on two types of biological endpoints: (1) carcinogenicity and (2) systemic toxicity (i.e., all adverse effects other than cancer). EPA takes an integrated approach and considers both cancer and non-cancer effects when deriving HHC. Where sufficient data are available, EPA derives criteria using both carcinogenic and non-carcinogenic toxicity endpoints and recommends the lower value. HHC for carcinogenic effects are typically calculated using the following input parameters: cancer slope

factor, excess lifetime cancer risk level, body weight, drinking water intake rate, fish consumption rate(s), and bioaccumulation factor(s). HHC for non-carcinogenic and nonlinear carcinogenic effects are typically calculated using reference dose, relative source contribution (RSC), body weight, drinking water intake rate, fish consumption rate(s) and bioaccumulation factor(s). Each of these inputs is discussed in more detail below, in EPA's 2000 Human Health Methodology (the "2000 Methodology"),¹⁰ and in the 2015 criteria update.¹¹

i. Cancer Risk Level. For cancer-causing pollutants where the carcinogenic effects have a linear relationship to exposure, EPA's 304(a) HHC generally assume that carcinogenicity is a "non-threshold phenomenon," which means that there are no "safe" or "no-effect" levels of exposure because even extremely low levels of exposure to most known and suspect carcinogenic compounds are assumed to cause a finite increase in the risk of developing cancer over the course of a lifetime. As a matter of policy, EPA calculates its 304(a) HHC at concentrations corresponding to a 10^{-6} cancer risk level (CRL), meaning that if exposure were to occur as set forth in the 304(a) methodology at the prescribed concentration over the course of one's lifetime, then the risk of developing cancer from the exposure as described would be one in a million on top of the background risk of developing cancer from all other exposures. EPA recommends cancer risk levels of 10^{-6} (one in a million) or 10^{-5} (one in one hundred thousand) for the general population and notes that states and authorized tribes can also choose a more protective risk level, such as 10^{-7} (one in ten million), when deriving HHC.

¹⁰ USEPA. 2000. Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. U.S. Environmental Protection Agency, Office of Water, Washington, DC. EPA- 822-B-00-004. <http://www.epa.gov/waterscience/criteria/humanhealth/method/complete.pdf>.

¹¹ Final Updated Ambient Water Quality Criteria for the Protection of Human Health, 80 FR 36986 (June 29, 2015). See also: USEPA. 2015. Final 2015 Updated National Recommended Human Health Criteria. U.S. Environmental Protection Agency, Office of Water, Washington, DC. <http://water.epa.gov/scitech/swguidance/standards/criteria/current/hhfinal.cfm>.

ii. Cancer Slope Factor and Reference Dose. For noncarcinogenic toxicological effects, EPA uses a chronic-duration oral reference dose (RfD) to derive HHC. An RfD is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure of the human population to a substance that is likely to be without an appreciable risk of deleterious effects during a lifetime. An RfD is typically derived from a laboratory animal dosing study in which a no-observed-adverse-effect level (NOAEL), lowest-observed-adverse-effect level (LOAEL), or benchmark dose can be obtained. Uncertainty factors are applied to reflect the limitations of the data.¹² For carcinogenic toxicological effects, EPA uses an oral cancer slope factor (CSF) to derive HHC. The oral CSF is an upper bound, approximating a 95% confidence limit, on the increased cancer risk from a lifetime oral exposure to a stressor.

iii. Exposure Assumptions. In EPA's 2015 criteria update, EPA used a default drinking water intake rate of 2.4 liters per day (L/day) and a default rate of 22.0 g/day for total consumption of fish and shellfish from inland and nearshore waters. Additionally, pollutant-specific bioaccumulation factors (BAFs) or bioconcentration factors (BCFs) were used to relate aqueous pollutant concentrations to predicted pollutant concentrations in the edible portions of ingested species.

EPA's national default drinking water intake rate of 2.4 L/day represents the per capita estimate of combined direct and indirect community water ingestion at the 90th percentile for adults ages 21 and older.¹³ EPA's national default FCR of 22.0 g/day represents the 90th percentile consumption rate of fish and shellfish from inland and nearshore waters for the U.S. adult

¹² USEPA. 2000. Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. U.S. Environmental Protection Agency, Office of Water, Washington, DC. EPA- 822-B-00-004.

¹³ USEPA. 2011. EPA Exposure Factors Handbook. United States Environmental Protection Agency. Washington, D.C. EPA 600/R-090/052F. <http://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=236252>.

population 21 years of age and older, based on National Health and Nutrient Examination Survey (NHANES) data from 2003 to 2010.¹⁴ EPA calculates HHC using a default body weight of 80.0 kilograms (kg), the average weight of a U.S. adult age 21 and older, based on NHANES data from 1999 to 2006.¹⁵

Although EPA uses these default values to calculate national 304(a) HHC, EPA's 2000 Methodology notes a preference for the use of local data to calculate HHC (*e.g.*, locally derived FCRs, drinking water intake rates and body weights, and waterbody-specific bioaccumulation rates) over national default values, where data are sufficient to do so.¹⁶ EPA also generally recommends, where sufficient data are available, selecting a FCR that reflects consumption that is not suppressed by concerns about the safety of available fish¹⁷ or fish availability. Deriving HHC using an unsuppressed FCR furthers the restoration goals of the CWA, and ensures protection of human health as pollutant levels decrease, fish habitats are restored, and fish availability increases. While EPA encourages doing so in general, where sustenance fishing is a designated use of the waters (due to, for example, tribal treaty or other federal law that provides for a tribe to fish for its sustenance), in EPA's scientific and policy judgment, selecting a FCR that reasonably represents current unsuppressed fish consumption based on the best currently available information is necessary and appropriate to ensure that such sustenance fishing use is

¹⁴ USEPA. 2014. Estimated Fish Consumption Rates for the U.S. Population and Selected Subpopulations (NHANES 2003–2010). United States Environmental Protection Agency, Washington, DC, USA. EPA 820–R–14–002.

¹⁵ USEPA. 2011. EPA Exposure Factors Handbook. United States Environmental Protection Agency. Washington, D.C. EPA 600/R–090/052F. <http://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=236252>.

¹⁶ USEPA. 2000. Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. U.S. Environmental Protection Agency, Office of Water, Washington, DC. EPA–822–B–00–004. <http://www.epa.gov/waterscience/criteria/humanhealth/method/complete.pdf>.

¹⁷ USEPA. January 2013. Human Health Ambient Water Quality Criteria and Fish Consumption Rates: Frequently Asked Questions. <http://water.epa.gov/scitech/swguidance/standards/criteria/health/methodology/upload/hhfaqs.pdf>.

protected. Such FCR must consider suppression and where adequate data are available to clearly demonstrate what that value is for the relevant population, the FCR must reflect that value. If sufficient data regarding unsuppressed fish consumption levels are not readily available, consultation with tribes is important to ensure that all data and information relevant to this issue are considered.

iv. Relative Source Contribution. EPA's 2000 Methodology describes different approaches for addressing water and non-water exposure pathways to derive human health criteria depending on the toxicological endpoint of concern, the toxicological effect (noncarcinogenic or carcinogenic), and whether toxicity is considered a linear or threshold effect. Water sources of exposure include both consuming drinking water and eating fish or shellfish from inland and nearshore waters that have been exposed to pollutants in the water body. For pollutants that exhibit a threshold of exposure before deleterious effects occur, as is the case for noncarcinogens and nonlinear carcinogens, EPA applies a relative source contribution (RSC) to account for other potential human exposures to the pollutant.¹⁸ Other sources of exposure might include, but are not limited to, exposure to a particular pollutant from ocean fish or shellfish consumption (which is not included in the FCR), non-fish food consumption (e.g., consumption of fruits, vegetables, grains, meats, or poultry), dermal exposure, and inhalation exposure.

For substances for which the toxicity endpoint is carcinogenicity based on a linear low-dose extrapolation, only the exposures from drinking water and fish ingestion are reflected in HHC;

¹⁸ USEPA. 2000. Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. U.S. Environmental Protection Agency, Office of Water, Washington, DC. EPA- 822-B-00-004.

that is, non-water sources are not explicitly included and no RSC is applied.¹⁹ In these situations, HHC are derived with respect to the *incremental* lifetime cancer risk posed by the presence of a substance in water, rather than an individual's total risk from all sources of exposure. EPA derived a RSC (ranging from 0.2 to 0.8) for each chemical included in the 2015 criteria update, by using the Exposure Decision Tree approach described in the 2000 Methodology.²⁰

b. What did EPA Disapprove? On February 2, 2015 and March 12, 2015, EPA disapproved Maine's HHC for toxic pollutants for waters in Indian lands because EPA found that they did not meet CWA requirements, i.e., they were not adequate to protect the designated use of sustenance fishing in those waters. EPA reached this conclusion by applying the CWA's requirements that water quality criteria protect designated uses and be based on a sound scientific rationale, in consideration of the purpose of the settlement acts discussed above to preserve the tribes' culture and sustenance practices. EPA determined that in order to protect the function of the waters in Indian lands to preserve the tribes' unique culture and to provide for the safe exercise of their sustenance practices, EPA must interpret Maine's designated use of "fishing" to include sustenance fishing.²¹

EPA's analysis of the settlement acts also led EPA to consider the tribes to be the general target population in their waters. Accordingly, EPA applied the 2000 Methodology's recommendations on exposure and cancer risk for the general target population in its evaluation of whether Maine's HHC protect the sustenance fishing use in waters in Indian lands. In other words, EPA

¹⁹ USEPA. 2000. Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. U.S. Environmental Protection Agency, Office of Water, Washington, DC. EPA- 822-B-00-004.

²⁰ USEPA. 2000. Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. U.S. Environmental Protection Agency, Office of Water, Washington, DC. EPA- 822-B-00-004. <http://www.epa.gov/waterscience/criteria/humanhealth/method/complete.pdf>.

²¹ In addition, for certain waters in the Southern Tribes' reservations, EPA also approved a sustenance fishing designated use specified in MIA.

considered whether the FCR reflected, as accurately as possible, the tribes' sustenance level FCR, and whether the CRL was protective of the sustenance fishers as a general population rather than as a highly exposed subpopulation. As explained in the February 2, 2015 disapproval decision, EPA concluded that the FCRs on which Maine's HHC are based²² do not result in criteria that ensure protection of the sustenance designated use for waters in Indian lands. This is because Maine's FCRs do not reflect the best available information regarding the tribes' sustenance level of consumption unsuppressed by pollutant concerns, which EPA determined in its scientific and policy judgment was necessary and appropriate in developing criteria to protect the sustenance fishing designated use of waters in Indian lands as required by the CWA. EPA also concluded, as explained in the March 16, 2015 decision, that Maine's 10^{-4} CRL for arsenic does not adequately protect the general target population of tribal sustenance fishers in waters in Indian lands. (EPA approved a separate provision in Maine's regulations that requires that HHC be based on a CRL of 10^{-6} , finding that it is consistent with EPA's 2000 Methodology and adequately protects tribal sustenance fishers as a general target population.)

c. Criteria for Which EPA is Reserving Action. Although EPA disapproved Maine's criteria for arsenic, dioxin, and thallium for waters in Indian lands, there is some uncertainty regarding aspects of the science upon which EPA's 304(a) HHC are based such that EPA is deferring proposal of these criteria at this time. EPA did not update the 304(a) HHC for these three pollutants in 2015. For thallium, EPA's IRIS database does not currently contain a quantitative

²² Maine's FCR for all toxic HHC except arsenic is 32.4 g/day, and for arsenic is 138 g/day.

RfD assessment.²³ For dioxin, IRIS does not currently contain a quantitative carcinogenicity assessment.²⁴

While EPA disapproved Maine's arsenic criteria for waters in Indian lands because the cancer risk level and fish consumption rate together did not provide a sufficient level of protection of the sustenance fishing use, EPA recognizes that there is substantial uncertainty surrounding the toxicological assessment of arsenic with respect to human health effects. EPA's current plan for addressing these issues is described in the *Assessment Development Plan for the Integrated Risk Information System (IRIS) Toxicological Review of Inorganic Arsenic* (EPA/630/R-14/101 November 2015). During a similar period of uncertainty surrounding the toxicological assessment of arsenic in 2000, EPA similarly did not promulgate arsenic HHC for the State of California.²⁵

Without specific numeric criteria in place for arsenic, thallium, and dioxin in waters in Indian lands, Maine is in a position to rely on the latest science and policy as it becomes available to interpret the existing narrative water quality criteria for waters in Indian lands. For example, permitting authorities in Maine should rely on existing narrative water quality criteria to establish effluent limitations as necessary for arsenic, thallium, and dioxin. Federal regulations at 40 CFR 122.44(d)(1)(vi) describe options available to the state for this purpose. Unless Maine submits and EPA approves these criteria, EPA plans to propose criteria for thallium, dioxin, and arsenic for waters in Indian lands and any waters that are covered by the determination set forth in section III once it has updated the 304(a) HHC.

²³ http://cfpub.epa.gov/ncea/iris/index.cfm?fuseaction=iris.showQuickView&substance_nmbr=1012#

²⁴ http://cfpub.epa.gov/ncea/iris/index.cfm?fuseaction=iris.showQuickView&substance_nmbr=1024

²⁵ Federal Register Vol. 65, No. 97, Thursday, May 18, 2000, Rules and Regulations

d. What is EPA Proposing? EPA proposes HHC for 96²⁶ of the toxic pollutants applicable to waters in Indian lands that EPA disapproved. Table 3 provides the criteria proposed for each pollutant as well as the HHC inputs used to derive each one, as discussed below. These proposed criteria also apply to any waters that are covered by the determination set forth in section III.

i. Maine-Specific HHC Inputs -- 1. Fish Consumption Rate. In EPA's February 2, 2015 decision and in this proposal, EPA treats the tribes as the target general population for waters in Indian lands. EPA proposes this approach because EPA has determined that sustenance fishing is the applicable designated use for waters in Indian lands based on EPA's interpretation of Maine's designated use of "fishing," and, for fresh waters in the Southern Tribes' reservations, also based on EPA's approval of section 6207(4) and (9) of MIA as a sustenance fishing designated use. Therefore, the criteria must protect that use. As discussed at length in EPA's February 2015 decision on Maine's WQS, these Indian lands and their associated waters have been specifically set aside for the Maine tribes to exercise their sustenance practices. These waters are at the core of the resource base provided for under the settlement acts to support these tribes as sustenance

²⁶ After further consideration, by letter of January 19, 2016, EPA withdrew its February 2, 2015 disapprovals of Maine's HHC for six pollutants (copper, asbestos, barium, iron, manganese and nitrates) and instead approved them. EPA concluded that those criteria were not calculated using a fish consumption rate, and therefore the basis for EPA's disapprovals of the HHC in the February 2, 2015 decision letter did not apply. EPA approved them as being consistent with EPA's recommended 304(a) criteria. In addition, EPA has withdrawn its February 2, 2015 disapprovals of Maine's HHC for the following HHC and instead approved them: 1) for the consumption of water plus organisms for 1,2-dichloropropane, 1,4-dichlorobenzene, dichlorobromomethane, chlorodibromomethane, chrysene, methylene chloride, chlorophenoxy herbicide (2, 4, 5-TP), chlorophenoxy herbicide (2,4-D), and N-nitrosopyrrolidine; 2) for the consumption of organisms alone for acrolein and gamma-BHC (Lindane); and 3) for both the consumption of water plus organisms and for the consumption of organisms alone for 1,2-dichloroethane, acrylonitrile, benzidine, bis(chloromethyl) ether, chloroform, methyl bromide, and tetrachloroethylene. EPA calculated the HHC for these pollutants using the best science reflected in the 2015 criteria updates (which were finalized after the disapprovals), along with a FCR of 286 to protect the sustenance fishing use, and concluded that the resulting HHC were either the same or less stringent than Maine's HHC that EPA had disapproved. Accordingly, EPA withdrew the disapprovals and approved these HHC based on their being adequate to protect the sustenance fishing use.

cultures.²⁷ Having found that sustenance fishing is a designated use in the waters in Indian lands, it is reasonable for EPA to target tribal sustenance fishers as the general population for the purpose of establishing criteria to protect that use. The same analysis applies to waters outside of Indian lands where the sustenance fishing designated use applies.

EPA derived the HHC to protect the sustenance fishing use based on a total fish consumption rate (FCR) of 286 g/day. EPA selected this consumption rate based on information contained in an historical/anthropological study, entitled the Wabanaki Cultural Lifeways Exposure Scenario²⁸ (“Wabanaki Study”), which was completed in 2009. EPA also consulted with the tribes in Maine about the Wabanaki Study and their sustenance fishing uses of the waters in Indian lands. There has been no contemporary local survey of current fish consumption, adjusted to account for suppression, that documents fish consumption rates for sustenance fishing in the waters in Indian lands in Maine. In the absence of such information, EPA concluded that the Wabanaki Study contains the best currently available information for the purpose of deriving an unsuppressed FCR for HHC adequate to protect sustenance fishing for such waters.

The peer-reviewed Wabanaki Study was produced under a Direct Implementation Tribal Cooperative Agreement (DITCA) awarded by EPA to the Aroostook Band of Micmac Indians on behalf of all of the Maine tribes. The purpose of the Study was to use available anthropological and ecological data to develop a description of Maine tribes’ traditional cultural uses of natural resources, and to present the information in a format that could be used by EPA to evaluate whether or not tribal uses are protected when EPA reviews or develops WQS in Indian lands in

²⁷ EPA recognizes that the general public has the right to access some tribal waters and to fish there subject to conditions that do not discriminate between tribal members and non-members. *See* MIA § 6207(1).

²⁸ Harper, B., Ranco, D., et al. 2009. Wabanaki Traditional Cultural Lifeways Exposure Scenario. <http://www.epa.gov/sites/production/files/2015-08/documents/ditca.pdf>.

Maine. It is relevant to contemporary water quality because another purpose of the Study “is to describe the lifestyle that was universal when resources were in better condition and that some tribal members practice today (and many more that are waiting to resume once restoration goals and protective standards are in place).” It provides a numerical representation of the environmental contact, diet, and exposure pathways of the traditional tribal lifestyle, including the use of water resources for food, medicine, cultural and traditional practices, and recreation. The report used anthropological and ecological data to identify major activities that contribute to environmental exposure and then to develop exposure factors related to traditional diet, drinking water, soil and sediment ingestion, inhalation rate and dermal exposure. Credible ethno-historical, ecological, nutritional, archaeological, and biomedical literature was reviewed through the lens of natural resource use and activities necessary to survive in the Maine environment and support tribal traditions. Along with single, best professional judgment estimates for direct exposures (inhalation, soil ingestion, water ingestion) as a reasonable representation (central tendency) of the traditional cultural lifeways, the Wabanaki Study provides an estimated range of diets that reflect three major habitat types.

In developing the dietary component of the exposure scenario, the Wabanaki Study authors assembled information about general foraging, seasonal patterns, dietary breadth, abundance, and food storage. From these they evaluated the relative proportion of major food groups, including fish, as well as nutritional information, total calories and quantities of foods. This resulted in an estimate of a nutritionally complete diet for the area east of the Kennebec River, which is the area most heavily used by tribal members today and where farming is marginal due to climate. With regard to the consumption of fish, the Wabanaki Study identifies three traditional lifestyle models, each with its own diet:

1. Permanent inland residence on a river with anadromous fish runs (“inland anadromous”),
2. Permanent inland residence with resident fish only (“inland non-anadromous”), and
3. Permanent coastal residence (“coastal”).

The study provides estimates of average adult consumption of aquatic resources, game, fowl, and plant-based foods for each lifestyle model based on a 2,000 kcal/day diet. Aquatic resources were divided into two categories: “resident fish and other aquatic resources” and “anadromous and marine fish and shellfish.” Table 2 summarizes the consumption of aquatic resources for each lifestyle model.

TABLE 2 – CONSUMPTION OF AQUATIC RESOURCES BY LIFESTYLE MODEL²⁹

| Lifestyle Model | Resident Fish & Other Aquatic Resources(g/day) | Anadromous & Marine Fish, Shellfish (g/day) ³⁰ | Total |
|-----------------------|--|---|-------|
| Inland Anadromous | 114 | 400 | 514 |
| Inland Non-anadromous | 286 | 0 | 286 |
| Coastal | 57 | 457 | 514 |

The Wabanaki Study provides a range of consumption rates specifically for Maine Indians using natural resources for sustenance living and reduces the uncertainties associated with a lack of knowledge about tribal exposure in Maine Indian waters.

In addition to evaluating the Wabanaki Study, EPA consulted with the four Maine tribes to gather additional information about current practices, present day circumstances related to the species composition of available fish, and any other information that the tribes thought was relevant to EPA’s decision making. EPA also considered the Penobscot Nation’s use of a FCR of

²⁹ Id., pp. 61-66.

³⁰ Includes marine mammals for coastal lifestyle model only.

286 g/day in developing HHC in its 2014 tribal WQS. In its September 23, 2014 responses to comments on the final WQS, the Nation explained that it chose the inland non-anadromous total FCR of 286 g/day because, although the Penobscot lands are in areas that would have historically supported an inland anadromous diet (with a total FCR of 514 g/day), the contemporary populations of anadromous species in Penobscot waters are currently too low to be harvested in significant quantities. The Nation's representative reiterated this rationale in the September 9, 2015 tribal consultation with EPA. The representative of the Aroostook Band of Micmacs also stated during the consultation that the Wabanaki Study's inland non-anadromous lifestyle diet reflects the current Micmac diet, although the tribe has a goal of the return and consumption of anadromous fish.

EPA proposes to use a FCR of 286 g/day to represent present day sustenance-level fish consumption, unsuppressed by pollution concerns, in the waters covered by this action. This value reflects the Wabanaki Study's 286 g/day FCR for the inland non-anadromous lifestyle, which relied on resident fish species only. For tribes that followed the inland anadromous lifestyle, 286 g/day represents all of the resident species fish consumption rate (114 g/day) as well as approximately 43% of the 400 g/day consumption rate for anadromous and other non-resident species (172 g/day). For tribes that followed the coastal lifestyle, 286 g/day represents all of the resident species fish consumption rate (57 g/day) as well as approximately 50% of the 457 g/day consumption rate for anadromous and other non-resident species (229 g/day). It is reasonable to assume that the inland anadromous and coastal lifestyle tribes would have shifted a substantial percentage of the sustenance fishing diet from the formerly widely available but now less available anadromous species (such as salmon) or protected marine mammals to resident fish species, including introduced freshwater species, corresponding to the FCR for the inland

non-anadromous lifestyle. That assumption is consistent with the Penobscot Nation's approach to deriving a current, unsuppressed FCR to protect sustenance fishing.

Since the Wabanaki Study presented estimates of the total amount of fish and aquatic organisms consumed and not the amount consumed of each trophic level, for the purpose of developing HHC for the Maine tribes, EPA assumes that Maine tribes consume the same relative proportion of fish and aquatic organisms from the different trophic levels 2 through 4 as the general U.S. population, as identified in the 2015 criteria update (i.e., 36%, 40%, and 24% of the total amount consumed for trophic levels 2, 3, and 4, respectively). Accordingly, EPA proposes to use trophic-specific fish consumption rates of 103 g/day (trophic level 2), 114 g/day (trophic level 3), and 68.6 g/day (trophic level 4) for the HHC for those compounds which the 2015 criteria update included trophic level specific BAFs.

2. Pollutant Bioaccumulation and Bioconcentration Factors. In order to prevent harmful exposures to waterborne chemicals through the consumption of contaminated fish and shellfish, HHC must address the process of chemical bioaccumulation in aquatic organisms. For the 2015 criteria update, EPA estimated chemical-specific BAFs for three different trophic levels of fish (levels 2 through 4), using a framework for deriving national BAFs described in EPA's 2000 Methodology.³¹ EPA proposes to use those BAFs to calculate the proposed HHC.

Where EPA did not update BAFs for certain pollutants in the 2015 criteria update, and for cyanide, EPA proposes HHC using the BCFs (which are not trophic-level specific) that the

³¹ USEPA. 2000. Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. U.S. Environmental Protection Agency, Office of Water, Washington, DC EPA-822-B-00-004. <http://www.epa.gov/waterscience/criteria/humanhealth/method/complete.pdf>.

Agency used the last time it updated its 304(a) HHC for those pollutants as the best available scientific information.

3. Cancer Risk Level. Maine's water quality regulations, at Maine's Department of Environmental Protection (DEP) Rule Chapter 584 section 4, specify that water quality criteria for carcinogens must be based on a CRL of 10^{-6} (except for a 10^{-4} CRL for arsenic, which EPA disapproved). On February 2, 2015, EPA approved the 10^{-6} CRL for waters in Indian lands, since it is consistent with the range of CRLs that EPA considers to be appropriate for the general population. This is also the risk level that EPA uses when publishing its 304(a) HHC and when promulgating federal criteria.³² As explained above, EPA considers the tribes to be the general target population for waters in Indian lands. For these reasons, EPA proposes to use a 10^{-6} CRL in its criteria for carcinogens for waters covered by this action.

4. Relative Source Contribution. EPA recommends using a RSC for non-carcinogens and nonlinear carcinogens to account for sources of exposure other than drinking water and consumption of inland and nearshore fish and shellfish (see 2015 criteria update, section II.B.d).³³ In 2015, after evaluating information on chemical uses, properties, occurrences, releases to the environment and regulatory restrictions, EPA developed chemical-specific RSCs for non-carcinogens and nonlinear carcinogens ranging from 0.2 (20 %) to 0.8 (80 %) following the Exposure Decision Tree approach described in EPA's 2000 Methodology and used them in

³² USEPA. 2000. Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. US Environmental Protection Agency. pp. 2-6.

³³ Final Updated Ambient Water Quality Criteria for the Protection of Human Health, (80 FR 36986, June 29, 2015). See also: USEPA. 2015. Final 2015 Updated National Recommended Human Health Criteria. U.S. Environmental Protection Agency, Office of Water, Washington, DC <http://water.epa.gov/scitech/swguidance/standards/criteria/current/hhfinal.cfm>.

the 2015 criteria updates.^{34,35} For these pollutants, EPA proposes to use the same RSCs to derive the HHC. For pollutants where EPA did not update the 304(a) HHC in 2015, EPA proposes to use a default RSC of 0.2 to derive HHC following the Exposure Decision Tree approach described in EPA's 2000 Methodology; a RSC of 0.2 is used as a default RSC when EPA has not developed a pollutant-specific RSC based on exposure/occurrence data. In the case of antimony (for which EPA did not update the 304(a) HHC in 2015), EPA proposes to use an RSC of 0.4 consistent with the RSC value used the last time the Agency updated this criterion.³⁶

5. Body Weight. EPA proposes to calculate HHC using a body weight of 80.0 kg, which represents the average weight of a U.S. adult. In 2015, EPA updated its recommended adult body weight to 80.0 kg based on national survey data (see 2015 criteria update, section II.B.c).³⁷ EPA is not aware of any local body weight data applicable to Maine tribes that would suggest a different value.

6. Drinking Water Intake. EPA proposes to calculate HHC using a drinking water intake rate of 2.4 L/day. In 2015, EPA updated its national default drinking water intake rate in the 304(a)

³⁴ USEPA. 2000. Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. U.S. Environmental Protection Agency, Office of Water, Washington, DC. EPA-822-B-00-004. <http://www.epa.gov/waterscience/criteria/humanhealth/method/complete.pdf>.

³⁵ Final Updated Ambient Water Quality Criteria for the Protection of Human Health, (80 FR 36986, June 29, 2015). See also: USEPA. 2015. Final 2015 Updated National Recommended Human Health Criteria. U.S. Environmental Protection Agency, Office of Water, Washington, DC. <http://water.epa.gov/scitech/swguidance/standards/criteria/current/hhfinal.cfm>

³⁶ USEPA. 2002. National Recommended Water Quality Criteria: 2002 Human Health Criteria Calculation Matrix. EPA-822-R-02-012. U.S. Environmental Protection Agency, Office of Water, Washington, DC. http://water.epa.gov/scitech/swguidance/standards/upload/2002_12_30_criteria_wqtable_hh_calc_matrix.pdf.

³⁷ Final Updated Ambient Water Quality Criteria for the Protection of Human Health, (80 FR 36986, June 29, 2015). See also: USEPA. 2015. Final 2015 Updated National Recommended Human Health Criteria. U.S. Environmental Protection Agency, Office of Water, Washington, DC. <http://water.epa.gov/scitech/swguidance/standards/criteria/current/hhfinal.cfm>.

HHC to 2.4 L/day (see 2015 criteria update, section II.B.c).³⁸ This rate is based on the national survey data and represents the per capita estimate of combined direct and indirect community water ingestion at the 90th percentile for adults ages 21 and older. EPA is not aware of any local data applicable to Maine tribes that suggest a different rate.

7. Pollutant-Specific Reference Doses and Cancer Slope Factors. As part of EPA's 2015 criteria update, EPA conducted a systematic search of eight peer-reviewed, publicly available sources to obtain the most current toxicity values for each pollutant (RfDs for non-carcinogenic effects and CSFs for carcinogenic effects).³⁹ EPA proposes to calculate HHC using the same toxicity values that EPA used in its 2015 criteria update, to ensure that the resulting criteria are based on a sound scientific rationale. Where EPA did not update criteria for certain pollutants in 2015, EPA proposes to use the toxicity values that the Agency used the last time it updated its 304(a) HHC for those pollutants.

ii. Proposed Criteria. EPA proposes HHC for 96 different pollutants (93 organism-only criteria, 88 water-plus-organism criteria) to protect the sustenance fishing designated use in the waters covered by this action (see Table 3). In accordance with Maine DEP Rule Chapter 584, paragraph 1, the proposed “Water & Organisms” criteria would apply to all waters except for marine waters, where the proposed “Organisms Only” criteria would apply.

³⁸ Final Updated Ambient Water Quality Criteria for the Protection of Human Health, (80 FR 36986, June 29, 2015). See also: USEPA. 2015. Final 2015 Updated National Recommended Human Health Criteria. U.S. Environmental Protection Agency, Office of Water, Washington, DC

<http://water.epa.gov/scitech/swguidance/standards/criteria/current/hhfinal.cfm>.

³⁹ Final Updated Ambient Water Quality Criteria for the Protection of Human Health, (80 FR 36986, June 29, 2015). See also: USEPA. 2015. Final 2015 Updated National Recommended Human Health Criteria. U.S. Environmental Protection Agency, Office of Water, Washington, DC

<http://water.epa.gov/scitech/swguidance/standards/criteria/current/hhfinal.cfm>.

All of the proposed HHC criteria are proposed in units of micrograms per liter ($\mu\text{g/L}$) except for methylmercury,⁴⁰ which is expressed as mg/kg in the edible portion of fish.

⁴⁰ EPA proposes a fish tissue-based methylmercury criterion rather than a fish tissue-based mercury criterion (which EPA disapproved in Indian waters) because methylmercury is the form of mercury found in fish and to which humans are exposed through eating fish. Human exposure to other forms of mercury is typically not associated with the aquatic environment.

TABLE 3 – PROPOSED HHC AND KEY PARAMETERS USED IN THEIR DERIVATION

| | Chemical Name | CAS Number | Cancer Slope Factor, CSF (per mg/kg·d) | Relative Source Contribution RSC (-) | Reference Dose, RfD (mg/kg·d) | Bioaccumulation Factor for Trophic Level 2 (L/kg tissue) | Bioaccumulation Factor for Trophic Level 3 (L/kg tissue) | Bioaccumulation Factor for Trophic Level 4 (L/kg tissue) | Bioconcentration Factor (L/kg tissue) ^e | Water & Organisms (µg/L) | Organisms Only (µg/L) |
|----|----------------------------|------------|--|--------------------------------------|-------------------------------|--|--|--|--|--------------------------|-----------------------|
| 1 | 1,1,2,2-Tetrachloroethane | 79-34-5 | 0.2 | - | - | 5.7 | 7.4 | 8.4 | - | 0.09 | 0.2 |
| 2 | 1,1,2-Trichloroethane | 79-00-5 | 0.057 | - | - | 6.0 | 7.8 | 8.9 | - | 0.31 | 0.66 |
| 3 | 1,1-Dichloroethylene | 75-35-4 | - | 0.20 | 0.05 | 2.0 | 2.4 | 2.6 | - | 300 | 1000 |
| 4 | 1,2,4,5-Tetrachlorobenzene | 95-94-3 | - | 0.20 | 0.0003 | 17,000 | 2,900 | 1,500 | - | 0.002 | 0.002 |
| 5 | 1,2,4-Trichlorobenzene | 120-82-1 | 0.029 | - | - | 2,800 | 1,500 | 430 | - | 0.0056 | 0.0056 |
| 6 | 1,2-Dichlorobenzene | 95-50-1 | - | 0.20 | 0.3 | 52 | 71 | 82 | - | 200 | 300 |
| 7 | 1,2-Dichloropropane | 78-87-5 | 0.036 | - | - | 2.9 | 3.5 | 3.9 | - | - | 2.3 |
| 8 | 1,2-Diphenylhydrazine | 122-66-7 | 0.8 | - | - | 18 | 24 | 27 | - | 0.01 | 0.02 |
| 9 | 1,2-Trans-Dichloroethylene | 156-60-5 | - | 0.20 | 0.02 | 3.3 | 4.2 | 4.7 | - | 90 | 300 |
| 10 | 1,3-Dichlorobenzene | 541-73-1 | - | 0.20 | 0.002 | 31 | 120 | 190 | - | 1 | 1 |
| 11 | 1,3-Dichloropropene | 542-75-6 | 0.122 | - | - | 2.3 | 2.7 | 3.0 | - | 0.21 | 0.87 |
| 12 | 1,4-Dichlorobenzene | 106-46-7 | - | 0.20 | 0.07 | 28 | 66 | 84 | - | - | 70 |
| 13 | 2,4,5-Trichlorophenol | 95-95-4 | - | 0.20 | 0.1 | 100 | 140 | 160 | - | 40 | 40 |
| 14 | 2,4,6-Trichlorophenol | 88-06-2 | 0.011 | - | - | 94 | 130 | 150 | - | 0.20 | 0.21 |
| 15 | 2,4-Dichlorophenol | 120-83-2 | - | 0.20 | 0.003 | 31 | 42 | 48 | - | 4 | 4 |
| 16 | 2,4-Dimethylphenol | 105-67-9 | - | 0.20 | 0.02 | 4.8 | 6.2 | 7.0 | - | 80 | 200 |
| 17 | 2,4-Dinitrophenol | 51-28-5 | - | 0.20 | 0.002 | 4.4 ^a | 4.4 ^a | 4.4 ^a | - | 9 | 30 |
| 18 | 2,4-Dinitrotoluene | 121-14-2 | 0.667 | - | - | 2.8 | 3.5 | 3.9 | - | 0.036 | 0.13 |
| 19 | 2-Chloronaphthalene | 91-58-7 | - | 0.80 | 0.08 | 150 | 210 | 240 | - | 90 | 90 |
| 20 | 2-Chlorophenol | 95-57-8 | - | 0.20 | 0.005 | 3.8 | 4.8 | 5.4 | - | 20 | 60 |
| 21 | 2-Methyl-4,6-Dinitrophenol | 534-52-1 | - | 0.20 | 0.0003 | 6.8 | 8.9 | 10 | - | 1 | 2 |

TABLE 3 – PROPOSED HHC AND KEY PARAMETERS USED IN THEIR DERIVATION

| | Chemical Name | CAS Number | Cancer Slope Factor, CSF (per mg/kg·d) | Relative Source Contribution RSC (-) | Reference Dose, RfD (mg/kg·d) | Bioaccumulation Factor for Trophic Level 2 (L/kg tissue) | Bioaccumulation Factor for Trophic Level 3 (L/kg tissue) | Bioaccumulation Factor for Trophic Level 4 (L/kg tissue) | Bioconcentration Factor (L/kg tissue) ^e | Water & Organisms (µg/L) | Organisms Only (µg/L) |
|----|-----------------------------------|------------|--|--------------------------------------|-------------------------------|--|--|--|--|--------------------------|-----------------------|
| 22 | 3,3'-Dichlorobenzidine | 91-94-1 | 0.45 | - | - | 44 | 60 | 69 | - | 0.0096 | 0.011 |
| 23 | 4,4'-DDD | 72-54-8 | 0.24 | - | - | 33,000 | 140,000 | 240,000 | - | 9.3E-06 | 9.3E-06 |
| 24 | 4,4'-DDE | 72-55-9 | 0.167 | - | - | 270,000 | 1,100,000 | 3,100,000 | - | 1.3E-06 | 1.3E-06 |
| 25 | 4,4'-DDT | 50-29-3 | 0.34 | - | - | 35,000 | 240,000 | 1,100,000 | - | 2.2E-06 | 2.2E-06 |
| 26 | Acenaphthene | 83-32-9 | - | 0.20 | 0.06 | 510 ^a | 510 ^a | 510 ^a | - | 6 | 7 |
| 27 | Acrolein | 107-02-8 | - | 0.20 | 0.0005 | 1.0 | 1.0 | 1.0 | - | 3 | - |
| 28 | Aldrin | 309-00-2 | 17 | - | - | 18,000 | 310,000 | 650,000 | - | 5.8E-08 | 5.8E-08 |
| 29 | alpha-BHC | 319-84-6 | 6.3 | - | - | 1,700 | 1,400 | 1,500 | - | 2.9E-05 | 2.9E-05 |
| 30 | alpha-Endosulfan | 959-98-8 | - | 0.20 | 0.006 | 130 | 180 | 200 | - | 2 | 2 |
| 31 | Anthracene | 120-12-7 | - | 0.20 | 0.3 | 610 ^a | 610 ^a | 610 ^a | - | 30 | 30 |
| 32 | Antimony | 7440-36-0 | - | 0.40 | 0.0004 | - | - | - | 1 | 4.8 | 45 |
| 33 | Benzene | 71-43-2 | ^b 0.055 | - | - | 3.6 | 4.5 | 5.0 | - | 0.40 | 1.2 |
| 34 | Benzo (a) Anthracene | 56-55-3 | 0.73 | - | - | 3,900 ^a | 3,900 ^a | 3,900 ^a | - | 9.8E-05 | 9.8E-05 |
| 35 | Benzo (a) Pyrene | 50-32-8 | 7.3 | - | - | 3,900 ^a | 3,900 ^a | 3,900 ^a | - | 9.8E-06 | 9.8E-06 |
| 36 | Benzo (b) Fluoranthene | 205-99-2 | 0.73 | - | - | 3,900 ^a | 3,900 ^a | 3,900 ^a | - | 9.8E-05 | 9.8E-05 |
| 37 | Benzo (k) Fluoranthene | 207-08-9 | 0.073 | - | - | 3,900 ^a | 3,900 ^a | 3,900 ^a | - | 0.00098 | 0.00098 |
| 38 | beta-BHC | 319-85-7 | 1.8 | - | - | 110 | 160 | 180 | - | 0.0010 | 0.0011 |
| 39 | beta-Endosulfan | 33213-65-9 | - | 0.20 | 0.006 | 80 | 110 | 130 | - | 3 | 3 |
| 40 | Bis(2-Chloro-1-Methylethyl) Ether | 108-60-1 | - | 0.20 | 0.04 | 6.7 | 8.8 | 10 | - | 100 | 300 |
| 41 | Bis(2-Chloroethyl) Ether | 111-44-4 | 1.1 | - | - | 1.4 | 1.6 | 1.7 | - | 0.026 | 0.16 |
| 42 | Bis(2-Ethylhexyl) Phthalate | 117-81-7 | 0.014 | - | - | 710 ^a | 710 ^a | 710 ^a | - | 0.028 | 0.028 |

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|----|--------------------------|------------|--|--------------------------------------|-------------------------------|--|--|--|--|--------------------------|-----------------------|
| 43 | Bromoform | 75-25-2 | 0.0045 | - | - | 5.8 | 7.5 | 8.5 | - | 4.0 | 8.7 |
| 44 | Butylbenzyl Phthalate | 85-68-7 | 0.0019 | - | - | 19,000 ^a | 19,000 ^a | 19,000 ^a | - | 0.0077 | 0.0077 |
| 45 | Carbon Tetrachloride | 56-23-5 | 0.07 | - | - | 9.3 | 12 | 14 | - | 0.2 | 0.3 |
| 46 | Chlordane | 57-74-9 | 0.35 | - | - | 5,300 | 44,000 | 60,000 | - | 2.4E-05 | 2.4E-05 |
| 47 | Chlorobenzene | 108-90-7 | - | 0.20 | 0.02 | 14 | 19 | 22 | - | 40 | 60 |
| 48 | Chlorodibromomethane | 124-48-1 | 0.040 | - | - | 3.7 | 4.8 | 5.3 | - | - | 1.5 |
| 49 | Chrysene | 218-01-9 | 0.0073 | - | - | 3,900 ^a | 3,900 ^a | 3,900 ^a | - | - | 0.0098 |
| 50 | Cyanide | 57-12-5 | - | 0.20 | 0.0006 | - | - | - | 1 | 4 | 30 |
| 51 | Dibenzo (a,h) Anthracene | 53-70-3 | 7.3 | - | - | 3,900 ^a | 3,900 ^a | 3,900 ^a | - | 9.8E-06 | 9.8E-06 |
| 52 | Dichlorobromomethane | 75-27-4 | 0.034 | - | - | 3.4 | 4.3 | 4.8 | - | - | 2 |
| 53 | Dieldrin | 60-57-1 | 16 | - | - | 14,000 | 210,000 | 410,000 | - | 9.3E-08 | 9.3E-08 |
| 54 | Diethyl Phthalate | 84-66-2 | - | 0.20 | 0.8 | 920 ^a | 920 ^a | 920 ^a | - | 50 | 50 |
| 55 | Dimethyl Phthalate | 131-11-3 | - | 0.20 | 10 | 4,000 ^a | 4,000 ^a | 4,000 ^a | - | 100 | 100 |
| 56 | Di-n-Butyl Phthalate | 84-74-2 | - | 0.20 | 0.1 | 2,900 ^a | 2,900 ^a | 2,900 ^a | - | 2 | 2 |
| 57 | Dinitrophenols | 25550-58-7 | - | 0.20 | 0.002 | - | - | - | 1.51 | 10 | 70 |
| 58 | Endosulfan Sulfate | 1031-07-8 | - | 0.20 | 0.006 | 88 | 120 | 140 | - | 3 | 3 |
| 59 | Endrin | 72-20-8 | - | 0.80 | 0.0003 | 4,600 | 36,000 | 46,000 | - | 0.002 | 0.002 |
| 60 | Endrin Aldehyde | 7421-93-4 | - | 0.80 | 0.0003 | 440 | 920 | 850 | - | 0.09 | 0.09 |
| 61 | Ethylbenzene | 100-41-4 | - | 0.20 | 0.022 | 100 | 140 | 160 | - | 8.9 | 9.5 |
| 62 | Fluoranthene | 206-44-0 | - | 0.20 | 0.04 | 1,500 ^a | 1,500 ^a | 1,500 ^a | - | 1 | 1 |
| 63 | Fluorene | 86-73-7 | - | 0.20 | 0.04 | 230 | 450 | 710 | - | 5 | 5 |
| 64 | gamma-BHC (Lindane) | 58-89-9 | - | 0.50 | 0.0047 | 1,200 | 2,400 | 2,500 | - | 0.33 | - |

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|----|---------------------------------|------------|--|--------------------------------------|-------------------------------|--|--|--|--|--------------------------|---------------------------|
| 65 | Heptachlor | 76-44-8 | 4.1 | - | - | 12,000 | 180,000 | 330,000 | - | 4.4E-07 | 4.4E-07 |
| 66 | Heptachlor Epoxide | 1024-57-3 | 5.5 | - | - | 4,000 | 28,000 | 35,000 | - | 2.4E-06 | 2.4E-06 |
| 67 | Hexachlorobenzene | 118-74-1 | 1.02 | - | - | 18,000 | 46,000 | 90,000 | - | 5.9E-06 | 5.9E-06 |
| 68 | Hexachlorobutadiene | 87-68-3 | 0.04 | - | - | 23,000 | 2,800 | 1,100 | - | 0.0007 | 0.0007 |
| 69 | Hexachlorocyclohexane-Technical | 608-73-1 | 1.8 | - | - | 160 | 220 | 250 | - | 0.00073 | 0.00076 |
| 70 | Hexachlorocyclopentadiene | 77-47-4 | - | 0.20 | 0.006 | 620 | 1,500 | 1,300 | - | 0.3 | 0.3 |
| 71 | Hexachloroethane | 67-72-1 | 0.04 | - | - | 1,200 | 280 | 600 | - | 0.01 | 0.01 |
| 72 | Indeno (1,2,3-cd) Pyrene | 193-39-5 | 0.73 | - | - | 3,900 ^a | 3,900 ^a | 3,900 ^a | - | 9.8E-05 | 9.8E-05 |
| 73 | Isophorone | 78-59-1 | 0.00095 | - | - | 1.9 | 2.2 | 2.4 | - | 28 | 140 |
| 74 | Methoxychlor | 72-43-5 | - | 0.80 | 2.E-05 | 1,400 | 4,800 | 4,400 | - | 0.001 | - |
| 75 | Methylene Chloride | 75-09-2 | 0.002 | - | - | 1.4 | 1.5 | 1.6 | - | - | 90 |
| 76 | Methylmercury | 22967-92-6 | - | 2.70E-05 | 0.0001 | - | - | - | - | - | ^c 0.02 (mg/kg) |
| 77 | Nickel | 7440-02-0 | - | 0.20 | 0.02 | - | - | - | 47 | 20 | 24 |
| 78 | Nitrobenzene | 98-95-3 | - | 0.20 | 0.002 | 2.3 | 2.8 | 3.1 | - | 10 | 40 |
| 79 | Nitrosamines | - | 43.46 | - | - | - | - | - | 0.20 | 0.0007 | 0.0322 |
| 80 | N-Nitrosodibutylamine | 924-16-3 | 5.43 | - | - | - | - | - | 3.38 | 0.0044 | 0.015 |
| 81 | N-Nitrosodiethylamine | 55-18-5 | 43.46 | - | - | - | - | - | 0.20 | 0.0007 | 0.0322 |
| 82 | N-Nitrosodimethylamine | 62-75-9 | 51 | - | - | - | - | - | 0.026 | 0.00065 | 0.21 |
| 83 | N-Nitrosodi-n-propylamine | 621-64-7 | 7.0 | - | - | - | - | - | 1.13 | 0.0042 | 0.035 |
| 84 | N- | 86-30-6 | 0.0049 | - | - | - | - | - | 136 | 0.40 | 0.42 |

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|----|----------------------------------|------------|--|--------------------------------------|-------------------------------|--|--|--|--|--------------------------|-----------------------|
| | Nitrosodiphenylamine | | | | | | | | | | |
| 85 | N-Nitrosopyrrolidine | 930-55-2 | 2.13 | - | - | - | - | - | 0.055 | - | 2.4 |
| 86 | Pentachlorobenzene | 608-93-5 | - | 0.20 | 0.0008 | 3,500 | 4,500 | 10,000 | - | 0.008 | 0.008 |
| 87 | Pentachlorophenol | 87-86-5 | 0.4 | - | - | 44 | 290 | 520 | - | 0.003 | 0.003 |
| 88 | Phenol | 108-95-2 | - | 0.20 | 0.6 | 1.5 | 1.7 | 1.9 | - | 3,000 | 20,000 |
| 89 | Polychlorinated Biphenyls (PCBs) | 1336-36-3 | 2 | - | - | - | - | - | 31,200 | ^d 4.5E-06 | ^d 4.5E-06 |
| 90 | Pyrene | 129-00-0 | - | 0.20 | 0.03 | 860 ^a | 860 ^a | 860 ^a | - | 2 | 2 |
| 91 | Selenium | 7782-49-2 | - | 0.20 | 0.005 | - | - | - | 4.8 | 21 | 58 |
| 92 | Toluene | 108-88-3 | - | 0.20 | 0.0097 | 11 | 15 | 17 | - | 24 | 39 |
| 93 | Toxaphene | 8001-35-2 | 1.1 | - | - | 1,700 | 6,600 | 6,300 | - | 5.3E-05 | 5.3E-05 |
| 94 | Trichloroethylene | 79-01-6 | 0.05 | - | - | 8.7 | 12 | 13 | - | 0.3 | 0.5 |
| 95 | Vinyl Chloride | 75-01-4 | 1.5 | - | - | 1.4 | 1.6 | 1.7 | - | 0.019 | 0.12 |
| 96 | Zinc | 7440-66-6 | - | 0.20 | 0.3 | - | - | - | 47 | 300 | 360 |

^aThis bioaccumulation factor was estimated from laboratory-measured bioconcentration factors; EPA multiplied this bioaccumulation factor by the overall fish consumption rate of 286 g/d to calculate the human health criteria.

^bEPA's 304(a) HHC for benzene use a CSF range of 0.015 to 0.055 per mg/kg-day. EPA proposes to use the higher end of the CSF range (0.055 per mg/kg-day) to derive the proposed benzene criteria.

^cThis criterion is expressed as the fish tissue concentration of methylmercury (mg methylmercury/kg fish) and applies equally to fresh and marine waters. See Water Quality Criterion for the Protection of Human Health: Methylmercury (EPA-823-R-01-001, January 3, 2001) for how this value is calculated using the criterion equation in EPA's 2000 Methodology rearranged to solve for a protective concentration in fish tissue rather than in water.

^dThis criterion applies to total PCBs (e.g., the sum of all congener or isomer or homolog or Aroclor analyses).

^eEPA multiplied this bioconcentration factor by the overall fish consumption rate of 286 g/d to calculate the human health criteria.

B. Proposed WQS for Waters in Indian Lands

1. Bacteria Criteria

a. What Did EPA Disapprove? On March 16, 2015, EPA disapproved Maine's 1985 bacteria criteria for the protection of the designated use of "recreation in and on the water" (recreational criteria), as revised in 2005 and 2008, for Class B, C, GPA, SB and SC waters in Indian lands. This designated use and these criteria are set forth in 38 M.R.S. 465(3.B) and (4.B), 465-A(1.B), and 465-B(2.B) and (3.B), respectively. EPA's disapproval of Maine's recreational criteria for waters in Indian lands was based on a review of whether the criteria, as a whole, protect the applicable designated use. Because Maine's recreational criteria apply only to fecal sources of human and domestic origin and do not include an explicit duration and frequency of exceedance, EPA concluded that Maine's recreational criteria are not fully protective of the recreation designated use in waters in Indian lands.

Maine's recreational bacteria criteria for Class B, C, GPA, SB and SC waters include only fecal sources of "human and domestic origin" and fail to include naturally occurring sources. In the case of bacteria, pathogens that pose human health risks can come from naturally occurring sources such as wildlife as well as from human and domestic sources. Therefore, a potential human health risk from recreational exposure to bacteria exists in wildlife-impacted waters (2012 Recreational Water Quality Criteria, section 3.5.1-2). In addition, EPA published new recommended 304(a) recreational criteria in 2012, which include two numeric thresholds (geometric mean and statistical threshold value, or STV), an averaging duration, and a maximum frequency of exceedance. Maine's recreational criteria do not include an explicit duration and frequency of exceedance or an STV, all of which EPA finds are necessary to protect designated uses.

On June 5, 2015, EPA disapproved the narrative bacteria criteria for Class AA, A and SA waters in Indian lands for the protection of recreation uses and, in the case of SA waters, also for shellfishing uses. These criteria are set forth in 38 M.R.S. 465(1.B and 2.B) and 465-B(1.B), respectively. These criteria specify that the bacteria content of these waters shall be “as naturally occurs.” Although the intent of these criteria is to reflect conditions unaffected by human activity, in the case of bacteria, pathogens that pose human health risks from recreational exposure or shellfish consumption can result from naturally occurring sources such as wildlife. Because these narrative bacteria criteria do not address bacteria from wildlife sources, EPA disapproved them as not adequately protecting recreation in and on the waters in Class AA, A and SA waters, and propagation and harvesting of shellfish in Class SA waters.

b. What Is EPA Proposing? i. Recreational Bacteria Criteria. EPA is proposing recreational criteria for Class AA, A, B, C, GPA, SA, SB and SC waters in Indian lands based on EPA’s 2012 Recreational Water Quality Criteria (RWQC) recommendations (EPA Office of Water 820-F-12-058). The criterion magnitude is expressed in terms of *Escherichia coli* colony forming units per 100 milliliters (cfu/100 ml) for fresh waters and *Enterococcus* spp. colony forming units per 100 milliliters (cfu/100 ml) for marine waters, consistent with Maine’s current criteria expression and EPA’s 2012 recommendations.

The 2012 RWQC recommendations offer two sets of numeric concentration thresholds, either of which would protect the designated use of primary contact recreation and, therefore, would protect the public from exposure to harmful levels of pathogens. The proposed criteria’s magnitude, duration and frequency are based on EPA’s illness rate of 32 NGI per 1,000 primary contact recreators, where NGI represents the gastrointestinal illnesses as measured by EPA’s National Epidemiological and Environmental Assessment of Recreational Water (NEEAR)

study.⁴¹ EPA chose the 32 NGI per 1,000 primary contact recreators illness rate because the resulting geometric mean components of the criteria most closely match the geometric means in Maine's criteria. EPA specifically invites comment on whether instead to base the criteria on EPA's alternative illness threshold of 36 NGI per 1,000 primary contact recreators set forth in the 2012 RWQC.

In addition, for Class AA, A and SA waters in Indian lands, EPA is proposing to include Maine's narrative criteria expression that bacteria content of these waters be no greater than as "naturally occurs." This maintains Maine's intention that the waters be free of human caused pathogens, while the specific numeric criteria EPA proposes also provide protection for designated recreational uses in the event there are wildlife sources.

Finally, in accordance with the recommendation to Maine in EPA's March 16, 2015 letter, EPA is proposing that the criteria apply all year long in all waters in Indian lands. This differs from Maine's disapproved criteria, which do not apply from October 1 through May 14 in Classes B, C, GPA, SB, and SC waters. EPA does not have a record to support a conclusion that no recreation in and on these waters occurs between October 1 and May 14. On the contrary, EPA has found information indicating that white water rafting, paddling, and kayaking occur after October 1,⁴² and during consultation EPA learned from the Penobscot Nation that as long as there is no ice on the Penobscot River, recreators are on the river paddling and fishing. At the same time, EPA recognizes that there may be periods during which recreational activities do not occur in and on these waters. Therefore, EPA specifically invites comment on whether EPA

⁴¹ USEPA. 2010. Report on 2009 National Epidemiologic and Environmental Assessment of Recreational Water Epidemiology Studies. United States Environmental Protection Agency, Washington, D.C. EPA-600-R-10-168.

⁴² <http://www.penobscotadventures.com/online-booking/> (whitewater rafting on Penobscot River Oct. 2-4, 2015); <http://www.paddleandchowder.org/> (paddling/kayaking in October)

should promulgate an alternative seasonal term during which the criteria would not apply that would adequately protect recreational uses, such as, for example, December through February.

ii. Shellfishing Bacteria Criteria. EPA proposes shellfishing criteria for SA waters in Indian lands based on recommendations from the National Shellfish Sanitation Program (NSSP). The criteria magnitude is expressed in terms of total coliform Most Probable Number (MPN)/100 ml.

EPA last provided recommendations for bacteria to protect shellfish harvesting uses in its 1986 304(a) recommendations⁴³, which provided fecal coliform criteria for shellfish harvesting. As described in that document, the basis for the criteria was a study from the NSSP which related an accepted international standard of total coliforms to fecal coliforms. NSSP has published several versions of its guidance which provides recommendations for criteria expressed as fecal coliform or total coliform. EPA proposes to promulgate criteria as total coliform to be consistent with Maine's narrative criteria to protect shellfish harvesting in Class SB and SC waters, which say that the numbers of total coliform bacteria or other specified indicator organisms in samples representative of the waters in Class SB and SC shellfish harvesting areas may not exceed criteria recommended under the National Shellfish Sanitation Program, United States Food and Drug Administration.

EPA proposes that in Class SA shellfish harvesting areas, the number of total coliform bacteria in samples representative of the waters in shellfish harvesting areas shall not exceed a geometric mean for each sampling station of 70 MPN (most probable number) per 100 ml, with not more than 10 % of samples exceeding 230 MPN per 100 ml for the taking of shellfish. The proposal is consistent with the current NSSP recommendations for total coliform included in the "Standard

⁴³ USEPA. 1986. Quality Criteria for Water 1986, United States Environmental Protection Agency, Washington, DC. EPA 440/5-86-001.

for the Approved Growing Area Classification in the Remote Status.”⁴⁴ Therefore, the proposed criteria are protective of shellfish harvesting uses in Class SA waters.

2. Ammonia Criteria for Fresh Waters. a. What Did EPA Disapprove? On March 16, 2015, EPA disapproved the ammonia criteria for protection of aquatic life for fresh waters in Indian lands. The criteria are set forth in DEP Rule Chapter 584, Appendix A. EPA's disapproval was based on a review of whether the criteria protect the applicable designated uses and are based on sound scientific rationale. EPA revised its CWA Section 304(a) recommended ammonia criteria for fresh waters in August 2013 and incorporated the latest science for freshwater mussels and snails, which are sensitive to ammonia toxicity.⁴⁵ This science was not included in EPA's 1999 ammonia criteria recommendations, on which Maine's criteria are based. Therefore, EPA concluded that Maine's criteria are not protective of the designated use because they are not protective of freshwater mussels and snails and, accordingly, disapproved the criteria.

b. What Is EPA Proposing? Ammonia is a constituent of nitrogen pollution. Unlike other forms of nitrogen, which can cause eutrophication of a waterbody at elevated concentrations, the primary concern with ammonia is its direct toxic effects on aquatic life, which are exacerbated by elevated pH and temperature.

EPA proposes ammonia criteria for fresh waters in Indian lands based on the 2013 updated 304(a) recommended ammonia criterion. The acute and chronic criteria concentrations in EPA's 2013 update are expressed as functions of temperature and pH, so the applicable criteria vary by

⁴⁴ USDA. 2013. National Shellfish Sanitation Program (NSSP) Guide for the Control of Molluscan Shellfish: 2013 Revision. United States Food and Drug Administration, Washington, D.C. page 210. posted at <http://www.fda.gov/downloads/Food/GuidanceRegulation/FederalStateFoodPrograms/UCM415522.pdf>

⁴⁵ USEPA. 2013. Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater 2013. United States Environmental Protection Agency, Washington, D.C. EPA 822-R-13-001

waterbody, depending on the temperature and pH of those waters. The criteria document describes the relationship between ammonia and these water quality factors and provides tables showing how the criteria values change with varying pH and temperatures. EPA's proposed criteria include tables that contain Criterion Maximum Concentrations (CMC) and Criterion Continuous Concentrations (CCC) that correspond to a range of temperatures and pH values, and require that the applicable CMCs and CCCs shall not be exceeded. In addition, consistent with EPA's recommended criteria, the proposed criteria include a requirement that the highest four-day average within the same 30-day period used to determine compliance with the CCC shall not exceed 2.5 times the CCC, more than once every three years. For the reasons explained in EPA's 304(a) criteria recommendations for ammonia, EPA's proposed criteria are protective of the designated aquatic life use and based on sound science.

3. pH Criterion for Fresh Waters. a. What Did EPA Disapprove? Maine's freshwater pH criterion in 38 M.R.S. 464(4.A(5)) prohibits discharges from causing the pH of receiving waters to fall outside the range of 6.0 to 8.5. On June 5, 2015, EPA disapproved the pH criterion for fresh waters in Indian lands because the lower end of the range (6.0) is not protective of aquatic life uses.

b. What Is EPA Proposing? EPA proposes a pH criterion with a range of 6.5 to 8.5. The proposal is based on the lower value of EPA's recommended pH criterion (6.5 to 9.0)⁴⁶ to protect freshwater fish and bottom-dwelling invertebrates that provide food for freshwater fish. In waters that are more acidic than 6.5, the likelihood of harm to aquatic species increases when periodic acidic inputs (either natural or anthropogenic in origin) liberate CO₂ from bicarbonate in the

⁴⁶ USEPA. 1986. Quality Criteria for Water 1986, United States Environmental Protection Agency, Washington, DC. EPA 440/5-86-001, pH section.

water leading to direct lethality as a result of lack of oxygen, or causing a further drop in pH into potentially lethal ranges. Fish suffer adverse physiological effects increasing in severity as the degree of acidification increases, until lethal levels are reached. Therefore, EPA proposes that the pH of fresh waters in Indian lands in Maine shall not fall below 6.5. EPA includes in the proposal Maine's existing value of 8.5 for the upper end of the pH range because it is within the range of 6.5 to 9.0 that EPA recommends in order to protect aquatic species from extreme pH conditions.

4. Temperature Criteria for Tidal Waters. a. What Did EPA disapprove? On June 5, 2015, EPA disapproved Maine's tidal temperature criteria in DEP Rule Chapter 582(5), for tidal waters in Indian lands (specifically, the intertidal zone at Pleasant Point), because they are not protective of aquatic life uses. The criteria allow a 4° F monthly average rise in ambient temperatures from individual dischargers from September 2 to May 30, and a 1.5° F monthly average rise from June 1 to September 1, as measured outside of any mixing zone; they also allow a maximum temperature of 85° F as measured outside of any mixing zone. EPA disapproved the 4° F temperature rise provision and the maximum temperature criterion of 85° F as not protective of indigenous species that have been associated with tidal waters in the vicinity of Pleasant Point, where typical temperatures are in the 37°–52° F range based on the nearest NOAA monitoring station at Eastport, Maine.

b. What Is EPA proposing? In order to assure protection of the indigenous marine community characteristic of the intertidal zone at Pleasant Point, EPA proposes criteria consistent with

EPA's 304(a) recommended criteria for tidal waters.⁴⁷ EPA proposes a maximum increase in the weekly average baseline ambient temperature resulting from artificial sources of 1° C (1.8° F) during all seasons of the year, provided that the summer maximum of 18°C (64.4°F) is not exceeded. The proposal specifies that the weekly average baseline thermal condition must be calculated using the daily maxima averaged over a 7-day period, and must be measured at a reference site where there is no unnatural thermal addition from any source, that is in reasonable proximity to the thermal discharge (within five miles), and that has similar hydrography to that of the receiving waters at the discharge. Further, EPA proposes that daily temperature cycles characteristic of the waterbody shall not be altered in either amplitude or frequency.⁴⁸

The natural temperature fluctuation provision in the proposed rule is necessary to induce and protect the reproductive cycles of aquatic organisms and to regulate other life factors. Since aquatic organisms are essentially poikilotherms (cold blooded), the temperature of the water regulates their metabolism and ability to survive and reproduce effectively. In addition, natural temperature fluctuations are essential to maintain the existing community structure and the geographic distribution of species.⁴⁹

In intertidal waters, elevated temperatures affect periphyton, benthic invertebrates, and fish, in addition to causing shifts in the dominant primary producers. Community balance can be influenced strongly by temperature-dependent factors, including: rates of reproduction, recruitment, and growth of each component population — all of which were considered in deriving all components of the temperature criteria in this rule. A few degrees elevation in

⁴⁷ USEPA. 1986. Quality Criteria for Water 1986, U.S. Environmental Protection Agency, Office of Water, Washington, DC. EPA 440/5-86-001. Temperature section.

⁴⁸ Id.

⁴⁹ Id,

average monthly temperature outside of the conditions described in this rule can appreciably alter a community through changes in interspecies relationships.⁵⁰

The intertidal zone at Pleasant Point is home to indigenous species such as pollock, haddock, juvenile flounder, juvenile and adult shad, cod, alewife, blueback herring as well as various species of clams, crabs, urchins and lobsters found in the vicinity of these waters (personal communication Dr. Theo Willis, University of Southern Maine and Dr. Robert Stephenson, St. Andrews Biological Station, St. Andrews NB).

Pollock are indigenous fish that inhabit the subtidal and intertidal zones of the Gulf of Maine.⁵¹

Within the subtidal and intertidal zones, pollock move to different locations depending on the temperature conditions.⁵² Pollock are abundant in the intertidal zone in the summer and fall months, and as such, are an appropriate sensitive, indigenous species by which to set a summer maximum temperature criterion.⁵³ EPA proposes a summer weekly maximum of 18° C (64.4° F), which is consistent with EPA's Gold Book methodology and is the value identified in the scientific literature that is protective of juvenile pollock (*Pollachius virens*).⁵⁴

The summer maximum of 18°C (64.4°F) is a weekly average value and is calculated using the daily maxima averaged over a 7-day period, similar to the calculation of the baseline ambient temperature. EPA uses a weekly average maximum temperature because, as explained in regional guidance, "it describes the maximum temperatures...but is not overly influenced by the

⁵⁰ Id.

⁵¹ Id.

⁵² Id.

⁵³ Id.

⁵⁴ Cargnelli et al. National Oceanic and Atmospheric Administration. NOAA Technical Memorandum NMFS-NE-131. Essential Fish Habitat Source Document: Pollock, *Pollachius virens*, Life History and Habitat Characteristics. September 1999. Pages 1-38.

maximum temperature of a single day. Thus it reflects an average of maximum temperatures that fish are exposed to over a week-long period.”⁵⁵

Collectively, the criteria that EPA proposes will protect aquatic life from the deleterious effects of increased mean water temperature and from alterations in the amplitude and frequency of mean-high and mean-low water temperatures. EPA’s recommended 304(a) criteria, on which this proposal is based, are designed to protect aquatic species from short- and long-term temperature anomalies, resulting in the maintenance of reproductive, recruitment, and growth cycles.

5. Natural Conditions Provisions. a. What Did EPA Disapprove? On June 5, 2015, EPA disapproved, for waters in Indian lands, two natural conditions provisions as they apply to water quality criteria to protect human health. Specifically, EPA disapproved 38 M.R.S. 420(2.A), which states “Except as naturally occurs or as provided in paragraphs B and C, the board shall regulate toxic substances in the surface waters of the State at the levels set forth in federal water quality criteria as established by the United States Environmental Protection Agency pursuant to the Federal Water Pollution Control Act, Public Law 92-500, Section 304(a), as amended”; and 38 M.R.S. 464(4.C), which states: “Where natural conditions, including, but not limited to, marshes, bogs and abnormal concentrations of wildlife cause the dissolved oxygen or other water quality criteria to fall below the minimum standards specified in sections 465, 465-A and 465-B, those waters shall not be considered to be failing to attain their classification because of those natural conditions.”

EPA concluded that to the extent that these provisions would allow an exception from otherwise applicable HHC, they are not consistent with EPA’s interpretation of the relationship between

⁵⁵ Id.

natural conditions and the protection of designated human health uses, which is articulated in EPA's November 5, 1997 guidance entitled "Establishing Site Specific Aquatic Life Criteria Equal to Natural Background."⁵⁶ In contrast with aquatic life uses,⁵⁷ a naturally occurring level of a pollutant does not necessarily protect designated human health uses. Naturally occurring levels of a pollutant are assumed to protect aquatic life species that have naturally developed in the affected waters. However, human health does not adapt to higher ambient pollutant levels, even if they are naturally caused. Consequently, the same assumptions of protectiveness cannot be made with regard to designated uses that affect human health (e.g., people eating fish or shellfish from Maine waters, and recreating in Maine waters). For this reason, EPA's 1997 guidance also states that where the natural background concentration exceeds the state-adopted human health criterion, at a minimum, states should re-evaluate the human health use designation.

EPA disapproved the natural conditions clauses at 38 M.R.S 464(4.C) and 420(2.A) for waters in Indian lands as they apply to criteria that protect human health because the application of these provisions fails to protect designated human health uses as required by the CWA and federal WQS regulations at 40 CFR 131.11(a).

b. What Is EPA Proposing? For each of the disapproved naturally occurring or natural conditions exceptions, EPA proposes a regulation that states that such provision "does not apply to water

⁵⁶ Davies, Tudor T., *Establishing Site Specific Aquatic Life Criteria Equal to Natural Background*, EPA Memorandum to Water Management Division Directors, Regions 1-10, State and Tribal Water Quality Management Program Directors, posted at: <http://www.epa.gov/sites/production/files/2014-08/documents/naturalbackground-memo.pdf>

⁵⁷ EPA approved these natural conditions provisions for waters in Indian lands as they relate to aquatic life, acknowledging that there may be naturally occurring concentrations of pollutants that exceed the national criteria published under section 304(a) of the CWA that are still protective of aquatic life.

quality criteria intended to protect human health.” Under this approach, Maine still could implement the natural conditions provisions for other criteria related to non-human health uses.

6. Mixing Zone Policy. a. What Did EPA Disapprove? On June 5, 2015, EPA disapproved, for waters in Indian lands, Maine’s mixing zone policy set forth in 38 M.R.S. 451. This provision allows the DEP to establish mixing zones that would allow the “reasonable” opportunity for dilution or mixture of pollutants before the receiving waters would be evaluated for WQS compliance.

States are not required to adopt mixing zone policies into their WQS, but if they do, they are subject to EPA review and approval. 40 CFR 131.13. A mixing zone is a limited area or volume of water where initial dilution of a discharge takes place, and where certain numeric criteria may be exceeded, but the designated uses of the waterbody as a whole must still be protected.

EPA’s guidance includes specific recommendations to ensure that mixing zones do not impair the designated uses of the waterbody as a whole. Among other things, a state mixing zone policy must ensure that pollutant concentrations in the mixing zone are not lethal to organisms passing through and do not cause significant human health risks; and that mixing zones do not endanger critical areas such as breeding or spawning grounds, drinking water intakes and sources, shellfish beds, or endangered or threatened species habitat. Maine’s mixing zone law does not contain any of these or other protective safeguards to ensure the protection of designated uses. The only specific limitation on mixing zones in Maine’s mixing zone statute is that they be “reasonable.”

There are also no state regulations that define the boundaries of a “reasonable” mixing zone.

Therefore EPA disapproved Maine’s law for waters in Indian lands as being inadequate to protect designated uses.

b. What Is EPA Proposing? EPA proposes, for waters in Indian lands, a mixing zone policy that retains Maine’s statutory mixing zone language and expands upon it by: 1. including specific information that a request for a mixing zone must contain, and 2. including minimum requirements that any mixing zone must satisfy in order to qualify for approval by DEP.

The proposed information requirements are intended to ensure that any discharger seeking DEP’s approval of a mixing zone provides sufficient information for DEP to determine whether and to what extent a mixing zone may be authorized.

The proposed mixing zone minimum requirements are intended to ensure that any mixing zone approved by DEP will not interfere with or impair the designated uses of the waterbody as a whole. They are consistent with recommendations in EPA’s Water Quality Standards Handbook (2014).⁵⁸ The proposed rule clarifies the extent to which water quality criteria may be exceeded in a mixing zone: chronic water quality criteria for those parameters approved by DEP may be exceeded within the mixing zone; acute water quality criteria may be exceeded for such parameters, but only within the zone of initial dilution inside the mixing zone, and the acute criteria must be met as close to the point of discharge as practicably attainable; and no water quality criteria may be exceeded outside of the boundary of a mixing zone as a result of the discharge for which the mixing zone was authorized. The proposed rule also specifies that a mixing zone must be as small as necessary, and that pollutant concentrations must be minimized and reflect the best practicable engineering design of the outfall to maximize initial mixing.

The proposal includes a requirement that mixing zones be established consistent with the methodologies in Section 4.3 and 4.4 of EPA’s “Technical Support Document for Water Quality-

⁵⁸ USEPA. 2014. Water Quality Standards Handbook, Chapter 5. EPA-820-B-14-004

based Toxics Control” EPA/505/2-90-001, dated March 1991. This requirement is consistent with EPA’s recommendation that mixing zone policies describe the general procedures for defining and implementing mixing zones in terms of location, maximum size, shape, outfall design, and in-zone water quality, at a minimum.⁵⁹ EPA also proposes a requirement that the mixing zone demonstration be based on the assumption that a pollutant does not degrade within the proposed mixing zone, unless a valid scientific study demonstrates otherwise. This assumption provides a conservative estimate of potential pollutant concentrations to be used when calculating allowable mixing zone discharges.

EPA proposes to prohibit the use of a mixing zone for bioaccumulative pollutants and for bacteria, consistent with EPA’s guidance that recommends that mixing zone policies not allow mixing zones for discharges of these pollutants in order to protect the designated uses.⁶⁰ EPA adopted this approach for bioaccumulative pollutants in 2000 when it amended its 1995 Final Water Quality Guidance for the Great Lakes System at 40 CFR part 132 to phase out mixing zones for existing discharges of bioaccumulative pollutants within the Great Lakes Basin and ban such mixing zones for new discharges within the Basin. Because fish tissue contamination tends to be a far-field problem affecting entire or downstream waterbodies rather than a near-field problem being confined to the area within a mixing zone, EPA has emphasized that it may be appropriate to restrict or eliminate mixing zones for bioaccumulative pollutants in certain situations such as where mixing zones may encroach on areas often used for fish harvesting, particularly for stationary species such as shellfish, and where there are uncertainties in the assimilative capacity of the waterbody.

⁵⁹ Id. at p. 4.

⁶⁰ Id. at pp. 9-10.

Similarly, because bacteria mixing zones may cause significant human health risks and endanger critical areas (e.g., recreational areas), EPA recommends that mixing zone policies not allow mixing zones for bacteria in waters designated for primary contact recreation. As explained in EPA's guidance, the presumption in waters designated for primary contact recreation is that primary contact recreation can safely occur throughout the waterbody and, therefore, that bacteria levels will not exceed criteria.⁶¹ People recreating in or through a bacteria mixing zone may be exposed to greater risk of illnesses than would otherwise be allowed by the criteria for protection of the recreation use. Primary contact recreation is a designated use for all waters in Maine, including in Indian lands. EPA is therefore proposing to prohibit mixing zones for bacteria for the waters in Indian lands because they could result in a significant human health risk.

EPA is not aware of instances where DEP has previously authorized mixing zones for bioaccumulative pollutants or bacteria, and therefore EPA does not expect that these prohibitions will pose hardship to existing dischargers.

The proposed rule also establishes a number of restrictions to protect designated uses, such as requirements that the mixing zone be unlikely to jeopardize the continued existence of any endangered or threatened species listed under section 4 of the Endangered Species Act or result in the destruction or adverse modification of such species' critical habitat; not extend to drinking water intakes or sources; not cause significant human health risks; not endanger critical areas such as breeding and spawning grounds, habitat for state-listed threatened or endangered species, areas with sensitive biota, shellfish beds, fisheries, and recreational areas; not result in lethality

⁶¹ Id. at p. 10.

to mobile, migrating, and drifting organisms passing through or within the mixing zone; not overlap with another mixing zone; not attract aquatic life; and not result in any objectionable color, odor, taste, or turbidity.

C. Proposed WQS for all Waters in Maine

1. Dissolved Oxygen Criteria for Class A Waters

a. What Did EPA Disapprove? On June 5, 2015, EPA disapproved Maine’s dissolved oxygen (DO) criteria for Class A fresh waters, set forth in 38 M.R.S. 465(2.B), for all waters in Maine, including waters in Indian lands. Maine’s criteria state that “The dissolved oxygen content of Class A waters shall be not less than 7 parts per million or 75% of saturation, whichever is higher.” Maine’s DO criteria for Class A fresh waters are protective of all life stages of warmwater species and adult coldwater species, but are not high enough to protect the early life stages of coldwater species. Therefore, EPA disapproved the criteria because they do not protect early life stages of coldwater species and, therefore, do not protect the full aquatic life designated use.

b. What Is EPA Proposing? EPA proposes year-round DO criteria for Class A waters that are identical to Maine’s existing criteria (not less than 7 mg/L or 75% of saturation, whichever is higher).⁶²

Maine’s existing year-round criteria are higher, and more protective than, EPA’s minimum DO recommendations for non-early life stages.⁶³ EPA therefore proposes the same year-round

⁶² Dissolved oxygen values expressed as mg/L are equivalent to the same values expressed as ppm.

⁶³ EPA’s recommended criteria for non-early life stages are expressed as 30 day mean (6.5 mg/L in cold water, 5.5 mg/L in warm water), 7 day mean minimum (5.0 mg/L in cold water, 4.0 mg/L in warm water), and 1 day minimum (4.0 mg/L in cold water, 3.0 mg/L in warm water). From USEPA. 1986. Quality Criteria for Water 1986, U.S.

criteria that Maine uses for these waters, in deference to Maine's determination of what is necessary to protect non-early life stages and to be consistent with Maine's criteria for Class B waters.

For fish spawning areas in Class A waters, for the period of October 1 through May 14, EPA proposes a 7-day mean DO concentration of ≥ 9.5 mg/L and a 1-day minimum of ≥ 8 mg/L. These proposed criteria to protect more sensitive early life stages of coldwater species are consistent with EPA's 304(a) criteria recommendations and will protect those stages against potentially damaging and lethal effects. EPA's proposed criteria for fish spawning areas for early life stages are also consistent with Maine's criteria for early life stages in Class B waters.

2. Waiver or Modification of WQS

a. What Did EPA Disapprove? On June 5, 2015, for all waters in Maine, EPA disapproved 38 M.R.S. 363-D as it relates to WQS. Under this law, the DEP Commissioner (or designee) may waive or modify any provision of Maine's Title 38, Chapter 3 (related to the protection and improvement of waters), which includes WQS, to assist in any oil spill response activity conducted in accordance with the national or state contingency plans, or as otherwise directed by the federal on-scene coordinator or the Commissioner (or designee).

EPA disapproved this statute as it relates to WQS, because it is not consistent with the minimum federal requirements that must be satisfied in order for a state to modify or waive a WQS. Specifically, waivers or modifications of WQS that would have the effect of removing a designated use or creating a subcategory of use, including waiving or modifying criteria necessary to support the use, may occur under the CWA only in accordance with 40 CFR

Environmental Protection Agency, Office of Water, Washington, DC. EPA 440/5-86-001. Dissolved Oxygen section.

131.10(g) (which, among other things, requires a use attainability analysis). Before taking such action, states must provide public notice and a public hearing, and revised WQS are subject to EPA review and approval. Because 38 M.R.S. 363-D does not contain any of these requirements, EPA disapproved it – for WQS purposes only – as being inconsistent with federal law.

b. What Is EPA Proposing? EPA proposes a regulation that states that 38 M.R.S. 363-D does not apply to state or federal WQS applicable to waters in Maine, including designated uses, criteria to protect designated uses, and antidegradation requirements. The proposed regulation would not interfere with the Commissioner’s authority to modify applicable WQS through the removal of a use or establishment of a subcategory of a use if justified by a use attainability analysis, consistent with 40 CFR 131.10(g), or to grant a WQS variance, consistent with 40 CFR 131.14. Before taking such actions, the Commissioner must provide for public notice and a public hearing; and revised WQS, including WQS variances, are subject to EPA review and approval. Maine can still get short-term relief from compliance with WQS during oil spills through its permitting program. EPA’s regulations at 40 CFR 122.3(d) provide a limited exception from the need to get an NPDES permit, and indirectly, to comply with WQS, for “any discharge in compliance with the instructions of an On-Scene Coordinator pursuant to 40 CFR part 300 (The National Oil and Hazardous Substances Pollution Contingency Plan) or 33 CFR § 153.10(e) (Pollution by Oil and Hazardous Substances).” Maine has a similar permitting provision at 38 M.R.S. 413(2-G.B) that it can rely on in such circumstances.

D. Proposed WQS for Waters in Maine Outside of Indian Lands

1. HHC for Phenol Consumption of Water Plus Organisms

a. What Did EPA Disapprove? On March 16, 2015, EPA disapproved Maine’s phenol criterion for the protection of human health consumption of water plus organisms, in DEP Rule Chapter

584, Appendix A, submitted to EPA on January 14, 2013, for waters throughout Maine. While DEP had based the criterion on EPA's then-current criterion recommendation, DEP made an inadvertent mathematical error that resulted in a less stringent criterion than EPA's recommendation (10,514 µg/L rather than the correctly computed result of 10,267 µg/L). In the absence of supporting scientific information to justify a finding that the less stringent criterion adequately protects the designated use, EPA disapproved the criterion for all waters in Maine as not being protective of the designated use and based on sound scientific rationale.

b. What Is EPA Proposing? In June 2015, soon after EPA's March 2015 disapproval, EPA updated its section 304(a) recommended criterion for phenol as part of a broader package of 304(a) criteria and identified a recommended criterion of 4000 µg/L. When promulgating federal criteria, EPA bases the criteria on the most up-to-date scientific information. Consistent with the June 2015 recommendation, EPA accordingly proposes a phenol criterion for the protection of human health consumption of water plus organisms of 4000 µg/L for waters in Maine outside of Indian lands. This proposed phenol criterion is based on EPA's default inputs for relative source contribution, body weight, drinking water intake, and pollutant-specific reference doses and cancer slope factors, discussed in more detail in section IV.A.1.a. Since this criterion will apply in state waters outside of Indian lands, EPA used Maine's default fish consumption rate of 32.4 g/day, as well as a cancer risk level of 10^{-6} consistent with DEP Rule Chapter 584. The FCR reflects local survey data, and the CRL is consistent with EPA's recommendation. Therefore, the proposed criterion is protective of human health in waters in Maine outside of Indian lands, for the reasons discussed in EPA's 2015 criteria update.

V. Economic Analysis

These WQS may serve as a basis for development of NPDES permit limits. Maine has NPDES permitting authority, through which it ensures that discharges to waters of the state do not cause or contribute to an exceedance of WQS. EPA evaluated the potential costs to NPDES dischargers associated with state implementation of EPA's proposed WQS. This analysis is documented in the "Economic Analysis for Proposal of Certain Federal Water Quality Standards Applicable to Maine," which can be found in the record for this rulemaking.

Any NPDES-permitted facility that discharges pollutants for which the proposed WQS are more stringent than the WQS on which permit limits are currently based could potentially incur compliance costs. The types of affected facilities could include industrial facilities and POTWs discharging wastewater to surface waters (i.e., point sources). EPA attributed to the proposed rule only those incremental costs that are above the costs associated with compliance with water quality based effluent limits (WQBELs) in current permits. Proposed criteria for pH, temperature, ammonia, and all but one HHC (for waters in Indian lands), proposed criteria for phenol (for state waters outside Indian lands), and proposed criteria for dissolved oxygen (for all state waters) are not expected to result in incremental costs to permitted dischargers. The cost analysis identifies potential costs of compliance with one HHC (bis(2-ethylhexyl)phthalate), bacteria, and the proposed mixing zone policy for waters in Indian lands.

EPA did not fully evaluate the potential for costs to nonpoint sources for this preliminary analysis. Very little data were available to assess the potential for the rule to result in WQS exceedances attributable to nonpoint sources. It is difficult to model and evaluate the potential cost impacts of this proposed rule to nonpoint sources because they are intermittent, variable, and occur under hydrologic or climatic conditions associated with precipitation events. Finally, legacy contamination (e.g., in sediment) may be a source of ongoing loading. Atmospheric

deposition may also contribute loadings of the pollutants of concern (e.g., mercury). EPA did not estimate sediment remediation costs, or air pollution controls costs, for this preliminary analysis.

A. Identifying Affected Entities

EPA identified 33 dischargers to waters in Indian lands and their tributaries, two facilities that discharge phenol to other state waters, and 26 facilities that discharge to Class A waters throughout the state. EPA identified 16 point source facilities that could incur additional costs as a result of this proposed rule. Of these potentially affected facilities, eight are major dischargers and eight are minor dischargers. Two are industrial dischargers and the remaining 14 are publicly owned treatment works (POTWs). EPA did not include general permit facilities in its analysis because data for such facilities are limited. EPA evaluated all of the potentially affected facilities.

B. Method for Estimating Costs

For the 16 facilities that may incur costs, EPA evaluated existing baseline permit conditions and potential to exceed new effluent limits based on the proposed rule. In instances of exceedances of projected effluent limitations under the proposed criteria, EPA determined the likely compliance scenarios and costs. Only compliance actions and costs that would be needed above the baseline level of controls are attributable to the proposed rule.

EPA assumed that dischargers will pursue the least cost means of compliance with WQBELs. Incremental compliance actions attributable to the proposed rule may include pollution prevention, end-of-pipe treatment, and alternative compliance mechanisms (e.g., variances). EPA annualized capital costs, including study (e.g., variance) and program (e.g., pollution prevention) costs, over 20 years using a 3% discount rate to obtain total annual costs per facility.

C. Results

Based on the results for the 16 facilities, EPA estimated a total annual cost of approximately \$213,000 to \$1.0 million. The low end of the range reflects \$28,000 in annual pollution prevention costs for one facility and \$185,300 in incremental annual operating costs for all POTWs to disinfect year-round and for some POTWs to dechlorinate year round. The high end of the cost range reflects incremental annual operating costs of \$705,200 for all POTWs to both disinfect and dechlorinate year-round; the maximum estimated annual cost of \$273,000 to comply with the updated mixing zone policy; and \$43,096 in estimated annual costs for one facility to provide end-of-pipe treatment for bis(2-ethylhexyl)phthalate.

If the proposed criteria result in an incremental increase in impaired waters, resulting in the need for TMDL development, there could also be some costs to nonpoint sources of pollution. EPA had very limited information with which to assess potential impacts of the proposed revisions on ambient water quality. Given the scope of the proposed rule on certain waters and pollutants (notably toxic pollutants) and existing controls on wide-ranging nonpoint source pollution sources including in statewide TMDLs, EPA determined that any incremental costs on nonpoint sources are unlikely to be significant.

VI. Statutory and Executive Order Reviews

A. Executive Order 12866 (Regulatory Planning and Review) and Executive Order 13563

(Improving Regulation and Regulatory Review)

This action is not a significant regulatory action and was, therefore, not submitted to the Office of Management and Budget (OMB) for review. The proposed rule does not establish any requirements directly applicable to regulated entities or other sources of pollutants. However, these WQS may serve as a basis for development of NPDES permit limits. Maine has NPDES permitting authority, through which it ensures that discharges to waters of the state do not cause

or contribute to an exceedance of WQS. In the spirit of Executive Order 12866, EPA evaluated the potential costs to NPDES dischargers associated with state implementation of EPA's proposed criteria. This analysis, *Economic Analysis for Proposal of Certain Federal Water Quality Standards Applicable to Maine*, is summarized in section V of the preamble and is available in the docket.

B. Paperwork Reduction Act

This action does not impose any direct new information collection burden under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.* Actions to implement these WQS could entail additional paperwork burden. Burden is defined at 5 CFR 1320.3(b). This action does not include any information collection, reporting, or record-keeping requirements.

C. Regulatory Flexibility Act

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. This action will not impose any requirements on small entities. Small entities, such as small businesses or small governmental jurisdictions, are not directly regulated by this rule. This proposed rule will thus not impose any requirements on small entities. We continue to be interested, however, in the potential impacts of the proposed rule on small entities and welcome comments on issues related to such impacts.

D. Unfunded Mandates Reform Act

This action contains no federal mandates under the provisions of Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), 2 U.S.C. 1531-1538 for state, local, or tribal governments or the private sector. As these water quality criteria are not self-implementing, EPA's action imposes no enforceable duty on any state, local or tribal governments or the private sector. Therefore, this action is not subject to the requirements of sections 202 or 205 of the UMRA.

This action is also not subject to the requirements of section 203 of UMRA because it contains no regulatory requirements that could significantly or uniquely affect small governments.

E. Executive Order 13132

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

F. Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments)

This action has tribal implications. However, it would neither impose substantial direct compliance costs on federally recognized tribal governments, nor preempt tribal law. In the state of Maine, there are four federally recognized Indian tribes represented by five tribal governments. As a result of the unique jurisdictional provisions of the Maine Indian Claims Settlement Act, as described above, the state has jurisdiction for setting water quality standards for all waters in Indian lands in Maine. This rule would affect federally recognized Indian tribes in Maine because the water quality standards being proposed would apply to all waters in Indian lands and some will also apply to waters outside of Indian lands where the sustenance fishing designated use established by 30 M.R.S. 6207(4) and (9) applies, and because many of the proposed criteria for such waters are protective of the sustenance fishing designated use, which is based in the Indian claims settlement acts in Maine.

The EPA consulted with tribal officials under the EPA Policy on Consultation and Coordination with Indian Tribes early in the process of developing this proposed rule to permit them to have meaningful and timely input into its development. A summary of that consultation is provided in “Summary of Tribal Consultations Regarding Water Quality Standards Applicable to Waters in Indian Lands within the State of Maine,” which is available in the docket for this rulemaking.

G. Executive Order 13045 (Protection of Children From Environmental Health and Safety Risks)

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that the EPA has reason to believe may disproportionately affect children, per the definition of “covered regulatory action” in section 2-202 of the Executive Order. This action is not subject to Executive Order 13045 because it does not concern an environmental health risk or safety risk that may disproportionately affect children.

The public is invited to submit comments or identify peer-reviewed studies and data that assess effects of early life exposure.

H. Executive Order 13211 (Actions That Significantly Affect Energy Supply, Distribution, or Use)

This action is not subject to Executive Order 13211, because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act of 1995

This action does not involve technical standards.

J. Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations)

The EPA believes the human health or environmental risk addressed by this action will not have potential disproportionately high and adverse human health or environmental effects on minority, low-income or indigenous populations.

Conversely, this action would increase protection for indigenous populations in Maine from disproportionately high and adverse human health effects. EPA developed the criteria included in this proposed rule specifically to protect Maine’s designated uses, using the most current science,

including local and regional information on fish consumption. Applying these criteria to waters in the state of Maine will afford a greater level of protection to both human health and the environment.

List of Subjects in 40 CFR Part 131

Environmental protection, Indians-lands, Intergovernmental relations, Reporting and recordkeeping requirements, Water pollution control.

Dated: April 11, 2016.

Gina McCarthy,
Administrator.

For the reasons set forth in the preamble, EPA proposes to amend 40 CFR part 131 as follows:

PART 131—WATER QUALITY STANDARDS

1. The authority citation for part 131 continues to read as follows:

Authority: 33 U.S.C. 1251 *et seq.*

Subpart D—Federally Promulgated Water Quality Standards

2. Add §131.43 to read as follows:

§ 131.43 Maine.

(a) Human health criteria for toxics for waters in Indian lands and for waters outside of Indian lands where the sustenance fishing designated use established by 30 m.r.s. 6207(4) and (9) applies. The criteria for toxic pollutants for the protection of human health are set forth in the following table 1:

TABLE 1 – PROPOSED HUMAN HEALTH CRITERIA

| | Chemical Name | CAS Number | Water & Organisms (µg/L) | Organisms Only (µg/L) |
|----|----------------------------|------------|--------------------------|-----------------------|
| 1 | 1,1,2,2-Tetrachloroethane | 79-34-5 | 0.09 | 0.2 |
| 2 | 2-Trichloroethane | 79-00-5 | 0.31 | 0.66 |
| 3 | 1,1-Dichloroethylene | 75-35-4 | 300 | 1000 |
| 4 | 1,2,4,5-Tetrachlorobenzene | 95-94-3 | 0.002 | 0.002 |
| 5 | 1,2,4-Trichlorobenzene | 120-82-1 | 0.0056 | 0.0056 |
| 6 | 1,2-Dichlorobenzene | 95-50-1 | 200 | 300 |
| 7 | 1,2-Dichloropropane | 78-87-5 | - | 2.3 |
| 8 | 1,2-Diphenylhydrazine | 122-66-7 | 0.01 | 0.02 |
| 9 | 1,2-Trans-Dichloroethylene | 156-60-5 | 90 | 300 |
| 10 | 1,3-Dichlorobenzene | 541-73-1 | 1 | 1 |
| 11 | 1,3-Dichloropropene | 542-75-6 | 0.21 | 0.87 |
| 12 | 1,4-Dichlorobenzene | 106-46-7 | - | 70 |
| 13 | 2,4,5-Trichlorophenol | 95-95-4 | 40 | 40 |
| 14 | 2,4,6-Trichlorophenol | 88-06-2 | 0.20 | 0.21 |
| 15 | 2,4-Dichlorophenol | 120-83-2 | 4 | 4 |
| 16 | 2,4-Dimethylphenol | 105-67-9 | 80 | 200 |
| 17 | 2,4-Dinitrophenol | 51-28-5 | 9 | 30 |
| 18 | 2,4-Dinitrotoluene | 121-14-2 | 0.036 | 0.13 |

TABLE 1 – PROPOSED HUMAN HEALTH CRITERIA

| | Chemical Name | CAS Number | Water & Organisms (µg/L) | Organisms Only (µg/L) |
|----|-----------------------------------|------------|-----------------------------|--------------------------|
| 19 | 2-Chloronaphthalene | 91-58-7 | 90 | 90 |
| 20 | 2-Chlorophenol | 95-57-8 | 20 | 60 |
| 21 | 2-Methyl-4,6-Dinitrophenol | 534-52-1 | 1 | 2 |
| 22 | 3,3'-Dichlorobenzidine | 91-94-1 | 0.0096 | 0.011 |
| 23 | 4,4'-DDD | 72-54-8 | 9.3E-06 | 9.3E-06 |
| 24 | 4,4'-DDE | 72-55-9 | 1.3E-06 | 1.3E-06 |
| 25 | 4,4'-DDT | 50-29-3 | 2.2E-06 | 2.2E-06 |
| 26 | Acenaphthene | 83-32-9 | 6 | 7 |
| 27 | Acrolein | 107-02-8 | 3 | - |
| 28 | Aldrin | 309-00-2 | 5.8E-08 | 5.8E-08 |
| 29 | alpha-BHC | 319-84-6 | 2.9E-05 | 2.9E-05 |
| 30 | alpha-Endosulfan | 959-98-8 | 2 | 2 |
| 31 | Anthracene | 120-12-7 | 30 | 30 |
| 32 | Antimony | 7440-36-0 | 4.8 | 45 |
| 33 | Benzene | 71-43-2 | 0.40 | 1.2 |
| 34 | Benzo (a) Anthracene | 56-55-3 | 9.8E-05 | 9.8E-05 |
| 35 | Benzo (a) Pyrene | 50-32-8 | 9.8E-06 | 9.8E-06 |
| 36 | Benzo (b) Fluoranthene | 205-99-2 | 9.8E-05 | 9.8E-05 |
| 37 | Benzo (k) Fluoranthene | 207-08-9 | 0.00098 | 0.00098 |
| 38 | beta-BHC | 319-85-7 | 0.0010 | 0.0011 |
| 39 | beta-Endosulfan | 33213-65-9 | 3 | 3 |
| 40 | Bis(2-Chloro-1-Methylethyl) Ether | 108-60-1 | 100 | 300 |
| 41 | Bis(2-Chloroethyl) Ether | 111-44-4 | 0.026 | 0.16 |
| 42 | Bis(2-Ethylhexyl) Phthalate | 117-81-7 | 0.028 | 0.028 |
| 43 | Bromoform | 75-25-2 | 4.0 | 8.7 |
| 44 | Butylbenzyl Phthalate | 85-68-7 | 0.0077 | 0.0077 |
| 45 | Carbon Tetrachloride | 56-23-5 | 0.2 | 0.3 |
| 46 | Chlordane | 57-74-9 | 2.4E-05 | 2.4E-05 |
| 47 | Chlorobenzene | 108-90-7 | 40 | 60 |
| 48 | Chlorodibromomethane | 124-48-1 | - | 1.5 |
| 49 | Chrysene | 218-01-9 | - | 0.0098 |
| 50 | Cyanide | 57-12-5 | 4 | 30 |
| 51 | Dibenzo (a,h) Anthracene | 53-70-3 | 9.8E-06 | 9.8E-06 |
| 52 | Dichlorobromomethane | 75-27-4 | - | 2 |
| 53 | Dieldrin | 60-57-1 | 9.3E-08 | 9.3E-08 |
| 54 | Diethyl Phthalate | 84-66-2 | 50 | 50 |
| 55 | Dimethyl Phthalate | 131-11-3 | 100 | 100 |
| 56 | Di-n-Butyl Phthalate | 84-74-2 | 2 | 2 |
| 57 | Dinitrophenols | 25550-58-7 | 10 | 70 |

TABLE 1 – PROPOSED HUMAN HEALTH CRITERIA

| | Chemical Name | CAS Number | Water & Organisms (µg/L) | Organisms Only (µg/L) |
|----|----------------------------------|------------|-----------------------------|---------------------------|
| 58 | Endosulfan Sulfate | 1031-07-8 | 3 | 3 |
| 59 | Endrin | 72-20-8 | 0.002 | 0.002 |
| 60 | Endrin Aldehyde | 7421-93-4 | 0.09 | 0.09 |
| 61 | Ethylbenzene | 100-41-4 | 8.9 | 9.5 |
| 62 | Fluoranthene | 206-44-0 | 1 | 1 |
| 63 | Fluorene | 86-73-7 | 5 | 5 |
| 64 | gamma-BHC (Lindane) | 58-89-9 | 0.33 | - |
| 65 | Heptachlor | 76-44-8 | 4.4E-07 | 4.4E-07 |
| 66 | Heptachlor Epoxide | 1024-57-3 | 2.4E-06 | 2.4E-06 |
| 67 | Hexachlorobenzene | 118-74-1 | 5.9E-06 | 5.9E-06 |
| 68 | Hexachlorobutadiene | 87-68-3 | 0.0007 | 0.0007 |
| 69 | Hexachlorocyclohexane-Technical | 608-73-1 | 0.00073 | 0.00076 |
| 70 | Hexachlorocyclopentadiene | 77-47-4 | 0.3 | 0.3 |
| 71 | Hexachloroethane | 67-72-1 | 0.01 | 0.01 |
| 72 | Indeno (1,2,3-cd) Pyrene | 193-39-5 | 9.8E-05 | 9.8E-05 |
| 73 | Isophorone | 78-59-1 | 28 | 140 |
| 74 | Methoxychlor | 72-43-5 | 0.001 | - |
| 75 | Methylene Chloride | 75-09-2 | - | 90 |
| 76 | Methylmercury | 22967-92-6 | - | ^a 0.02 (mg/kg) |
| 77 | Nickel | 7440-02-0 | 20 | 24 |
| 78 | Nitrobenzene | 98-95-3 | 10 | 40 |
| 79 | Nitrosamines | - | 0.0007 | 0.0322 |
| 80 | N-Nitrosodibutylamine | 924-16-3 | 0.0044 | 0.015 |
| 81 | N-Nitrosodiethylamine | 55-18-5 | 0.0007 | 0.0322 |
| 82 | N-Nitrosodimethylamine | 62-75-9 | 0.00065 | 0.21 |
| 83 | N-Nitrosodi-n-propylamine | 621-64-7 | 0.0042 | 0.035 |
| 84 | N-Nitrosodiphenylamine | 86-30-6 | 0.40 | 0.42 |
| 85 | N-Nitrosopyrrolidine | 930-55-2 | - | 2.4 |
| 86 | Pentachlorobenzene | 608-93-5 | 0.008 | 0.008 |
| 87 | Pentachlorophenol | 87-86-5 | 0.003 | 0.003 |
| 88 | Phenol | 108-95-2 | 3,000 | 20,000 |
| 89 | Polychlorinated Biphenyls (PCBs) | 1336-36-3 | ^b 4.5E-06 | ^b 4.5E-06 |
| 90 | Pyrene | 129-00-0 | 2 | 2 |
| 91 | Selenium | 7782-49-2 | 21 | 58 |
| 92 | Toluene | 108-88-3 | 24 | 39 |
| 93 | Toxaphene | 8001-35-2 | 5.3E-05 | 5.3E-05 |
| 94 | Trichloroethylene | 79-01-6 | 0.3 | 0.5 |
| 95 | Vinyl Chloride | 75-01-4 | 0.019 | 0.12 |
| 96 | Zinc | 7440-66-6 | 300 | 360 |

TABLE 1 – PROPOSED HUMAN HEALTH CRITERIA

| | Chemical Name | CAS Number | Water & Organisms (µg/L) | Organisms Only (µg/L) |
|--|---------------|------------|-----------------------------|--------------------------|
|--|---------------|------------|-----------------------------|--------------------------|

^aThis criterion is expressed as the fish tissue concentration of methylmercury (mg methylmercury/kg fish) and applies equally to fresh and marine waters.

^bThis criterion applies to total PCBs (e.g., the sum of all congener or isomer or homolog or Aroclor analyses).

(b) Bacteria criteria for waters in Indian lands. (1) The bacteria content of Class AA and Class A waters shall be as naturally occurs, and the minimum number of *Escherichia coli* bacteria shall not exceed a geometric mean of 100 colony-forming units per 100 milliliters (cfu/100 ml) in any 30-day interval; nor shall 320 cfu/100 ml be exceeded more than 10% of the time in any 30-day interval.

(2) In Class B, Class C, and Class GPA waters, the number of *Escherichia coli* bacteria shall not exceed a geometric mean of 100 colony forming units per 100 milliliters (cfu/100 ml) in any 30-day interval; nor shall 320 cfu/100 ml be exceeded more than 10% of the time in any 30-day interval.

(3) The bacteria content of Class SA waters shall be as naturally occurs, and the number of *Enterococcus* bacteria shall not exceed a geometric mean of 30 cfu/100 ml in any 30-day interval, nor shall 110 cfu/100 ml be exceeded more than 10% of the time in any 30-day interval.

(4) In Class SA shellfish harvesting areas, the number of total coliform bacteria in samples representative of the waters in shellfish harvesting areas shall not exceed a geometric mean for each sampling station of 70 MPN (most probable number) per 100 ml, with not more than 10% of samples exceeding 230 MPN per 100 ml for the taking of shellfish.

(5) In Class SB and SC waters, the number of *Enterococcus* bacteria shall not exceed a geometric mean of 30 cfu/100 ml in any 30-day interval, nor shall 110 cfu/100 ml be exceeded more than 10 % of the time in any 30-day interval.

(c) Ammonia criteria for fresh waters in Indian lands. (1) The one-hour average concentration of total ammonia nitrogen (in mg TAN/L) shall not exceed, more than once every three years, the criterion maximum concentration (i.e., the “CMC,” or “acute criterion”) set forth in Tables 2 and 3 of this section.

(2) The thirty-day average concentration of total ammonia nitrogen (in mg TAN/L) shall not exceed, more than once every three years, the criterion continuous concentration (i.e., the “CCC,” or “chronic criterion”) set forth in Table 4.

(3) In addition, the highest four-day average within the same 30-day period as in 2 shall not exceed 2.5 times the CCC, more than once every three years.

Table 2. Temperature and pH-Dependent Values of the CMC (Acute Criterion Magnitude)—*Oncorhynchus* spp. Present. (Figure 5a in Aquatic Life Ambient Water Quality Criteria for Ammonia-Freshwater, EPA 822-R-13-001, April 2013.)

| pH | Temperature (°C) | | | | | | | | | | | | | | | | |
|-----|------------------|------|------|------|------|------|-----------|------|------|------|------|------|------|------|------|------|------|
| | 0-14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 6.5 | 33 | 33 | 32 | 29 | 27 | 25 | 23 | 21 | 19 | 18 | 16 | 15 | 14 | 13 | 12 | 11 | 9.9 |
| 6.6 | 31 | 31 | 30 | 28 | 26 | 24 | 22 | 20 | 18 | 17 | 16 | 14 | 13 | 12 | 11 | 10 | 9.5 |
| 6.7 | 30 | 30 | 29 | 27 | 24 | 22 | 21 | 19 | 18 | 16 | 15 | 14 | 13 | 12 | 11 | 9.8 | 9.0 |
| 6.8 | 28 | 28 | 27 | 25 | 23 | 21 | 20 | 18 | 17 | 15 | 14 | 13 | 12 | 11 | 10 | 9.2 | 8.5 |
| 6.9 | 26 | 26 | 25 | 23 | 21 | 20 | 18 | 17 | 15 | 14 | 13 | 12 | 11 | 10 | 9.4 | 8.6 | 7.9 |
| 7.0 | 24 | 24 | 23 | 21 | 20 | 18 | <u>17</u> | 15 | 14 | 13 | 12 | 11 | 10 | 9.4 | 8.6 | 8.0 | 7.3 |
| 7.1 | 22 | 22 | 21 | 20 | 18 | 17 | 15 | 14 | 13 | 12 | 11 | 10 | 9.3 | 8.5 | 7.9 | 7.2 | 6.7 |
| 7.2 | 20 | 20 | 19 | 18 | 16 | 15 | 14 | 13 | 12 | 11 | 9.8 | 9.1 | 8.3 | 7.7 | 7.1 | 6.5 | 6.0 |
| 7.3 | 18 | 18 | 17 | 16 | 14 | 13 | 12 | 11 | 10 | 9.5 | 8.7 | 8.0 | 7.4 | 6.8 | 6.3 | 5.8 | 5.3 |
| 7.4 | 15 | 15 | 15 | 14 | 13 | 12 | 11 | 9.8 | 9.0 | 8.3 | 7.7 | 7.0 | 6.5 | 6.0 | 5.5 | 5.1 | 4.7 |
| 7.5 | 13 | 13 | 13 | 12 | 11 | 10 | 9.2 | 8.5 | 7.8 | 7.2 | 6.6 | 6.1 | 5.6 | 5.2 | 4.8 | 4.4 | 4.0 |
| 7.6 | 11 | 11 | 11 | 10 | 9.3 | 8.6 | 7.9 | 7.3 | 6.7 | 6.2 | 5.7 | 5.2 | 4.8 | 4.4 | 4.1 | 3.8 | 3.5 |
| 7.7 | 9.6 | 9.6 | 9.3 | 8.6 | 7.9 | 7.3 | 6.7 | 6.2 | 5.7 | 5.2 | 4.8 | 4.4 | 4.1 | 3.8 | 3.5 | 3.2 | 3.0 |
| 7.8 | 8.1 | 8.1 | 7.9 | 7.2 | 6.7 | 6.1 | 5.6 | 5.2 | 4.8 | 4.4 | 4.0 | 3.7 | 3.4 | 3.2 | 2.9 | 2.7 | 2.5 |
| 7.9 | 6.8 | 6.8 | 6.6 | 6.0 | 5.6 | 5.1 | 4.7 | 4.3 | 4.0 | 3.7 | 3.4 | 3.1 | 2.9 | 2.6 | 2.4 | 2.2 | 2.1 |
| 8.0 | 5.6 | 5.6 | 5.4 | 5.0 | 4.6 | 4.2 | 3.9 | 3.6 | 3.3 | 3.0 | 2.8 | 2.6 | 2.4 | 2.2 | 2.0 | 1.9 | 1.7 |
| 8.1 | 4.6 | 4.6 | 4.5 | 4.1 | 3.8 | 3.5 | 3.2 | 3.0 | 2.7 | 2.5 | 2.3 | 2.1 | 2.0 | 1.8 | 1.7 | 1.5 | 1.4 |
| 8.2 | 3.8 | 3.8 | 3.7 | 3.5 | 3.1 | 2.9 | 2.7 | 2.4 | 2.3 | 2.1 | 1.9 | 1.8 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 |
| 8.3 | 3.1 | 3.1 | 3.1 | 2.8 | 2.6 | 2.4 | 2.2 | 2.0 | 1.9 | 1.7 | 1.6 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 | 0.96 |
| 8.4 | 2.6 | 2.6 | 2.5 | 2.3 | 2.1 | 2.0 | 1.8 | 1.7 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 | 0.93 | 0.86 | 0.79 |
| 8.5 | 2.1 | 2.1 | 2.1 | 1.9 | 1.8 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 0.98 | 0.90 | 0.83 | 0.77 | 0.71 | 0.65 |
| 8.6 | 1.8 | 1.8 | 1.7 | 1.6 | 1.5 | 1.3 | 1.2 | 1.1 | 1.0 | 0.96 | 0.88 | 0.81 | 0.75 | 0.69 | 0.63 | 0.59 | 0.54 |
| 8.7 | 1.5 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 | 0.94 | 0.87 | 0.80 | 0.74 | 0.68 | 0.62 | 0.57 | 0.53 | 0.49 | 0.45 |
| 8.8 | 1.2 | 1.2 | 1.2 | 1.1 | 1.0 | 0.93 | 0.86 | 0.79 | 0.73 | 0.67 | 0.62 | 0.57 | 0.52 | 0.48 | 0.44 | 0.41 | 0.37 |
| 8.9 | 1.0 | 1.0 | 1.0 | 0.93 | 0.85 | 0.79 | 0.72 | 0.67 | 0.61 | 0.56 | 0.52 | 0.48 | 0.44 | 0.40 | 0.37 | 0.34 | 0.32 |
| 9.0 | 0.88 | 0.88 | 0.86 | 0.79 | 0.73 | 0.67 | 0.62 | 0.57 | 0.52 | 0.48 | 0.44 | 0.41 | 0.37 | 0.34 | 0.32 | 0.29 | 0.27 |

Table 3. Temperature and pH-Dependent Values of the CMC (Acute Criterion Magnitude)—*Oncorhynchus* spp. Absent. (Figure 5b in Aquatic Life Ambient Water Quality Criteria for Ammonia-Freshwater, EPA 822-R-13-001, April 2013.)

| pH | Temperature (°C) | | | | | | | | | | | | | | | | | | | | |
|-----|------------------|-----|-----|-----|-----|------|------|------|------|------|-----------|------|------|------|------|------|------|------|------|------|------|
| | 0-10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 6.5 | 51 | 48 | 44 | 41 | 37 | 34 | 32 | 29 | 27 | 25 | 23 | 21 | 19 | 18 | 16 | 15 | 14 | 13 | 12 | 11 | 9.9 |
| 6.6 | 49 | 46 | 42 | 39 | 36 | 33 | 30 | 28 | 26 | 24 | 22 | 20 | 18 | 17 | 16 | 14 | 13 | 12 | 11 | 10 | 9.5 |
| 6.7 | 46 | 44 | 40 | 37 | 34 | 31 | 29 | 27 | 24 | 22 | 21 | 19 | 18 | 16 | 15 | 14 | 13 | 12 | 11 | 9.8 | 9.0 |
| 6.8 | 44 | 41 | 38 | 35 | 32 | 30 | 27 | 25 | 23 | 21 | 20 | 18 | 17 | 15 | 14 | 13 | 12 | 11 | 10 | 9.2 | 8.5 |
| 6.9 | 41 | 38 | 35 | 32 | 30 | 28 | 25 | 23 | 21 | 20 | 18 | 17 | 15 | 14 | 13 | 12 | 11 | 10 | 9.4 | 8.6 | 7.9 |
| 7.0 | 38 | 35 | 33 | 30 | 28 | 25 | 23 | 21 | 20 | 18 | <u>17</u> | 15 | 14 | 13 | 12 | 11 | 10 | 9.4 | 8.6 | 7.9 | 7.3 |
| 7.1 | 34 | 32 | 30 | 27 | 25 | 23 | 21 | 20 | 18 | 17 | 15 | 14 | 13 | 12 | 11 | 10 | 9.3 | 8.5 | 7.9 | 7.2 | 6.7 |
| 7.2 | 31 | 29 | 27 | 25 | 23 | 21 | 19 | 18 | 16 | 15 | 14 | 13 | 12 | 11 | 9.8 | 9.1 | 8.3 | 7.7 | 7.1 | 6.5 | 6.0 |
| 7.3 | 27 | 26 | 24 | 22 | 20 | 18 | 17 | 16 | 14 | 13 | 12 | 11 | 10 | 9.5 | 8.7 | 8.0 | 7.4 | 6.8 | 6.3 | 5.8 | 5.3 |
| 7.4 | 24 | 22 | 21 | 19 | 18 | 16 | 15 | 14 | 13 | 12 | 11 | 9.8 | 9.0 | 8.3 | 7.7 | 7.0 | 6.5 | 6.0 | 5.5 | 5.1 | 4.7 |
| 7.5 | 21 | 19 | 18 | 17 | 15 | 14 | 13 | 12 | 11 | 10 | 9.2 | 8.5 | 7.8 | 7.2 | 6.6 | 6.1 | 5.6 | 5.2 | 4.8 | 4.4 | 4.0 |
| 7.6 | 18 | 17 | 15 | 14 | 13 | 12 | 11 | 10 | 9.3 | 8.6 | 7.9 | 7.3 | 6.7 | 6.2 | 5.7 | 5.2 | 4.8 | 4.4 | 4.1 | 3.8 | 3.5 |
| 7.7 | 15 | 14 | 13 | 12 | 11 | 10 | 9.3 | 8.6 | 7.9 | 7.3 | 6.7 | 6.2 | 5.7 | 5.2 | 4.8 | 4.4 | 4.1 | 3.8 | 3.5 | 3.2 | 2.9 |
| 7.8 | 13 | 12 | 11 | 10 | 9.3 | 8.5 | 7.9 | 7.2 | 6.7 | 6.1 | 5.6 | 5.2 | 4.8 | 4.4 | 4.0 | 3.7 | 3.4 | 3.2 | 2.9 | 2.7 | 2.5 |
| 7.9 | 11 | 9.9 | 9.1 | 8.4 | 7.7 | 7.1 | 6.6 | 3.0 | 5.6 | 5.1 | 4.7 | 4.3 | 4.0 | 3.7 | 3.4 | 3.1 | 2.9 | 2.6 | 2.4 | 2.2 | 2.1 |
| 8.0 | 8.8 | 8.2 | 7.6 | 7.0 | 6.4 | 5.9 | 5.4 | 5.0 | 4.6 | 4.2 | 3.9 | 3.6 | 3.3 | 3.0 | 2.8 | 2.6 | 2.4 | 2.2 | 2.0 | 1.9 | 1.7 |
| 8.1 | 7.2 | 6.8 | 6.3 | 5.8 | 5.3 | 4.9 | 4.5 | 4.1 | 3.8 | 3.5 | 3.2 | 3.0 | 2.7 | 2.5 | 2.3 | 2.1 | 2.0 | 1.8 | 1.7 | 1.5 | 1.4 |
| 8.2 | 6.0 | 5.6 | 5.2 | 4.8 | 4.4 | 4.0 | 3.7 | 3.4 | 3.1 | 2.9 | 2.7 | 2.4 | 2.3 | 2.1 | 1.9 | 1.8 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 |
| 8.3 | 4.9 | 4.6 | 4.3 | 3.9 | 3.6 | 3.3 | 3.1 | 2.8 | 2.6 | 2.4 | 2.2 | 2.0 | 1.9 | 1.7 | 1.6 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 | 0.96 |
| 8.4 | 4.1 | 3.8 | 3.5 | 3.2 | 3.0 | 2.7 | 2.5 | 2.3 | 2.1 | 2.0 | 1.8 | 1.7 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 | 0.93 | 0.86 | 0.79 |
| 8.5 | 3.3 | 3.1 | 2.9 | 2.7 | 2.4 | 2.3 | 2.1 | 1.9 | 1.8 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 0.98 | 0.90 | 0.83 | 0.77 | 0.71 | 0.65 |
| 8.6 | 2.8 | 2.6 | 2.4 | 2.2 | 2.0 | 1.9 | 1.7 | 1.6 | 1.5 | 1.3 | 1.2 | 1.1 | 1.0 | 0.96 | 0.88 | 0.81 | 0.75 | 0.69 | 0.63 | 0.58 | 0.54 |
| 8.7 | 2.3 | 2.2 | 2.0 | 1.8 | 1.7 | 1.6 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 | 0.94 | 0.87 | 0.80 | 0.74 | 0.68 | 0.62 | 0.57 | 0.53 | 0.49 | 0.45 |
| 8.8 | 1.9 | 1.8 | 1.7 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 | 0.93 | 0.86 | 0.79 | 0.73 | 0.67 | 0.62 | 0.57 | 0.52 | 0.48 | 0.44 | 0.41 | 0.37 |
| 8.9 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 | 0.93 | 0.85 | 0.79 | 0.72 | 0.67 | 0.61 | 0.56 | 0.52 | 0.48 | 0.44 | 0.40 | 0.37 | 0.34 | 0.32 |
| 9.0 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 | 0.93 | 0.86 | 0.79 | 0.73 | 0.67 | 0.62 | 0.57 | 0.52 | 0.48 | 0.44 | 0.41 | 0.37 | 0.34 | 0.32 | 0.29 | 0.27 |

Table 4. Temperature and pH-Dependent Values of the CCC (Chronic Criterion Magnitude). (Figure 6 in Aquatic Life Ambient Water Quality Criteria for Ammonia-Freshwater, EPA 822-R-13-001, April 2013.)

| pH | Temperature (°C) | | | | | | | | | | | | | | | | | | | | | | | |
|-----|------------------|------|------|------|------|------|------|------|------|------|------|------|------|------------|------|------|------|------|------|------|------|------|------|------|
| | 0-7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 6.5 | 4.9 | 4.6 | 4.3 | 4.1 | 3.8 | 3.6 | 3.3 | 3.1 | 2.9 | 2.8 | 2.6 | 2.4 | 2.3 | 2.1 | 2.0 | 1.9 | 1.8 | 1.6 | 1.5 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 |
| 6.6 | 4.8 | 4.5 | 4.3 | 4.0 | 3.8 | 3.5 | 3.3 | 3.1 | 2.9 | 2.7 | 2.5 | 2.4 | 2.2 | 2.1 | 2.0 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.3 | 1.2 | 1.1 |
| 6.7 | 4.8 | 4.5 | 4.2 | 3.9 | 3.7 | 3.5 | 3.2 | 3.0 | 2.8 | 2.7 | 2.5 | 2.3 | 2.2 | 2.1 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.2 | 1.1 |
| 6.8 | 4.6 | 4.4 | 4.1 | 3.8 | 3.6 | 3.4 | 3.2 | 3.0 | 2.8 | 2.6 | 2.4 | 2.3 | 2.1 | 2.0 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.1 |
| 6.9 | 4.5 | 4.2 | 4.0 | 3.7 | 3.5 | 3.3 | 3.1 | 2.9 | 2.7 | 2.5 | 2.4 | 2.2 | 2.1 | 2.0 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.2 | 1.1 | 1.0 |
| 7.0 | 4.4 | 4.1 | 3.8 | 3.6 | 3.4 | 3.2 | 3.0 | 2.8 | 2.6 | 2.4 | 2.3 | 2.2 | 2.0 | <u>1.9</u> | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.1 | 0.99 |
| 7.1 | 4.2 | 3.9 | 3.7 | 3.5 | 3.2 | 3.0 | 2.8 | 2.7 | 2.5 | 2.3 | 2.2 | 2.1 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.2 | 1.1 | 1.0 | 0.95 |
| 7.2 | 4.0 | 3.7 | 3.5 | 3.3 | 3.1 | 2.9 | 2.7 | 2.5 | 2.4 | 2.2 | 2.1 | 2.0 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.3 | 1.2 | 1.1 | 1.0 | 0.96 | 0.90 |
| 7.3 | 3.8 | 3.5 | 3.3 | 3.1 | 2.9 | 2.7 | 2.6 | 2.4 | 2.2 | 2.1 | 2.0 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.3 | 1.2 | 1.1 | 1.0 | 0.97 | 0.91 | 0.85 |
| 7.4 | 3.5 | 3.3 | 3.1 | 2.9 | 2.7 | 2.5 | 2.4 | 2.2 | 2.1 | 2.0 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.3 | 1.2 | 1.1 | 1.0 | 0.96 | 0.90 | 0.85 | 0.79 |
| 7.5 | 3.2 | 3.0 | 2.8 | 2.7 | 2.5 | 2.3 | 2.2 | 2.1 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.2 | 1.1 | 1.0 | 0.95 | 0.89 | 0.83 | 0.78 | 0.73 |
| 7.6 | 2.9 | 2.8 | 2.6 | 2.4 | 2.3 | 2.1 | 2.0 | 1.9 | 1.8 | 1.6 | 1.5 | 1.4 | 1.4 | 1.3 | 1.2 | 1.1 | 1.1 | 0.98 | 0.92 | 0.86 | 0.81 | 0.76 | 0.71 | 0.67 |
| 7.7 | 2.6 | 2.4 | 2.3 | 2.2 | 2.0 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.1 | 1.0 | 0.94 | 0.88 | 0.83 | 0.78 | 0.73 | 0.68 | 0.64 | 0.60 |
| 7.8 | 2.3 | 2.2 | 2.1 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.2 | 1.1 | 1.0 | 0.95 | 0.89 | 0.84 | 0.79 | 0.74 | 0.69 | 0.65 | 0.61 | 0.57 | 0.53 |
| 7.9 | 2.1 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.2 | 1.1 | 1.0 | 0.95 | 0.89 | 0.84 | 0.79 | 0.74 | 0.69 | 0.65 | 0.61 | 0.57 | 0.53 | 0.50 | 0.47 |
| 8.0 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.1 | 1.0 | 0.94 | 0.88 | 0.83 | 0.78 | 0.73 | 0.68 | 0.64 | 0.60 | 0.56 | 0.53 | 0.50 | 0.44 | 0.44 | 0.41 |
| 8.1 | 1.5 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.1 | 0.99 | 0.92 | 0.87 | 0.81 | 0.76 | 0.71 | 0.67 | 0.63 | 0.59 | 0.55 | 0.52 | 0.49 | 0.46 | 0.43 | 0.40 | 0.38 | 0.35 |
| 8.2 | 1.3 | 1.2 | 1.2 | 1.1 | 1.0 | 0.96 | 0.90 | 0.84 | 0.79 | 0.74 | 0.70 | 0.65 | 0.61 | 0.57 | 0.54 | 0.50 | 0.47 | 0.44 | 0.42 | 0.39 | 0.37 | 0.34 | 0.32 | 0.30 |
| 8.3 | 1.1 | 1.1 | 0.99 | 0.93 | 0.87 | 0.82 | 0.76 | 0.72 | 0.67 | 0.63 | 0.59 | 0.55 | 0.52 | 0.49 | 0.46 | 0.43 | 0.40 | 0.38 | 0.35 | 0.33 | 0.31 | 0.29 | 0.27 | 0.26 |
| 8.4 | 0.95 | 0.89 | 0.84 | 0.79 | 0.74 | 0.69 | 0.65 | 0.61 | 0.57 | 0.53 | 0.50 | 0.47 | 0.44 | 0.41 | 0.39 | 0.36 | 0.34 | 0.32 | 0.30 | 0.28 | 0.26 | 0.25 | 0.23 | 0.22 |
| 8.5 | 0.80 | 0.75 | 0.71 | 0.67 | 0.62 | 0.58 | 0.55 | 0.51 | 0.48 | 0.45 | 0.42 | 0.40 | 0.37 | 0.35 | 0.33 | 0.31 | 0.29 | 0.27 | 0.25 | 0.24 | 0.22 | 0.21 | 0.20 | 0.18 |
| 8.6 | 0.68 | 0.64 | 0.60 | 0.56 | 0.53 | 0.49 | 0.46 | 0.43 | 0.41 | 0.38 | 0.36 | 0.33 | 0.31 | 0.29 | 0.28 | 0.26 | 0.24 | 0.23 | 0.21 | 0.20 | 0.19 | 0.18 | 0.16 | 0.15 |
| 8.7 | 0.57 | 0.54 | 0.51 | 0.47 | 0.44 | 0.42 | 0.39 | 0.37 | 0.34 | 0.32 | 0.30 | 0.28 | 0.27 | 0.25 | 0.23 | 0.22 | 0.21 | 0.19 | 0.18 | 0.17 | 0.16 | 0.15 | 0.14 | 0.13 |
| 8.8 | 0.49 | 0.46 | 0.43 | 0.40 | 0.38 | 0.35 | 0.33 | 0.31 | 0.29 | 0.27 | 0.26 | 0.24 | 0.23 | 0.21 | 0.20 | 0.19 | 0.17 | 0.16 | 0.15 | 0.14 | 0.13 | 0.13 | 0.12 | 0.11 |
| 8.9 | 0.42 | 0.39 | 0.37 | 0.34 | 0.32 | 0.30 | 0.28 | 0.27 | 0.25 | 0.23 | 0.22 | 0.21 | 0.19 | 0.18 | 0.17 | 0.16 | 0.15 | 0.14 | 0.13 | 0.12 | 0.12 | 0.11 | 0.10 | 0.09 |
| 9.0 | 0.36 | 0.34 | 0.32 | 0.30 | 0.28 | 0.26 | 0.24 | 0.23 | 0.21 | 0.20 | 0.19 | 0.18 | 0.17 | 0.16 | 0.15 | 0.14 | 0.13 | 0.12 | 0.11 | 0.11 | 0.10 | 0.09 | 0.09 | 0.08 |

(d) pH criteria for fresh waters in Indian lands. The pH of fresh waters shall fall within the range of 6.5 to 8.5.

(e) Temperature criteria for tidal waters in Indian lands. (1) The maximum acceptable cumulative increase in the weekly average temperature resulting from all artificial sources is 1° C (1.8 F) during all seasons of the year, provided that the summer maximum is not exceeded.

(i) Weekly average temperature increase shall be compared to baseline thermal conditions and shall be calculated using the daily maxima averaged over a 7-day period.

(ii) Baseline thermal conditions shall be measured at or modeled from a site where there is no artificial thermal addition from any source, and which is in reasonable proximity to the thermal discharge (within 5 miles), and which has similar hydrography to that of the receiving waters at the discharge.

(2) Natural temperature cycles characteristic of the water body segment shall not be altered in amplitude or frequency.

(3) During the summer months (for the period from May 15 through September 30), water temperatures shall not exceed a weekly average summer maximum threshold of 18°C (64.4°F) (calculated using the daily maxima averaged over a 7-day period).

(f) Natural conditions provisions for waters in Indian lands. (1) The provision in Title 38 of Maine Revised Statutes 464(4.C) which reads: “Where natural conditions, including, but not limited to, marshes, bogs and abnormal concentrations of wildlife cause the dissolved oxygen or other water quality criteria to fall below the minimum standards specified in section 465, 465-A and 465-B, those waters shall not be considered to be failing to attain their classification because of those natural conditions,” does not apply to water quality criteria intended to protect human health.

(2) The provision in Title 38 of Maine Revised Statutes 420(2.A) which reads “Except as naturally occurs or as provided in paragraphs B and C, the board shall regulate toxic substances in the surface waters of the State at the levels set forth in federal water quality criteria as established by the United States Environmental Protection Agency pursuant to the Federal Water Pollution Control Act, Public Law 92-500, Section 304(a), as amended,” does not apply to water quality criteria intended to protect human health.

(g) Mixing zone policy for waters in Indian lands—(1) Establishing a mixing zone. (i) The Department of Environmental Protection (“department”) may establish a mixing zone for any discharge at the time of application for a waste discharge license if all of the requirements set forth in paragraphs (g)(2) and (3) of this section are satisfied. The department shall attach a description of the mixing zone as a condition of a license issued for that discharge. After opportunity for a hearing in accordance with 38 MRS section 345-A, the department may establish by order a mixing zone with respect to any discharge for which a license has been issued pursuant to section 414 or for which an exemption has been granted by virtue of 38 MRS section 413, subsection 2.

(ii) The purpose of a mixing zone is to allow a reasonable opportunity for dilution, diffusion or mixture of pollutants with the receiving waters such that an applicable criterion may be exceeded within a defined area of the waterbody while still protecting the designated use of the waterbody as a whole. In determining the extent of any mixing zone to be established under this section, the department will require from the applicant information concerning the nature and rate of the discharge; the nature and rate of existing discharges to the waterway; the size of the waterway and the rate of flow therein; any relevant seasonal, climatic, tidal and natural variations in such size, flow, nature and rate; the uses of the waterways that could be affected by the discharge, and

such other and further evidence as in the department's judgment will enable it to establish a reasonable mixing zone for such discharge. An order establishing a mixing zone may provide that the extent thereof varies in order to take into account seasonal, climatic, tidal, and natural variations in the size and flow of, and the nature and rate of, discharges to the waterway.

(2) Mixing zone information requirements. At a minimum, any request for a mixing zone must:

(i) Describe the amount of dilution occurring at the boundaries of the proposed mixing zone and the size, shape, and location of the area of mixing, including the manner in which diffusion and dispersion occur;

(ii) Define the location at which discharge-induced mixing ceases;

(iii) Document the substrate character and geomorphology within the mixing zone;

(iv) Document background water quality concentrations;

(v) Address the following factors:

(A) Whether adjacent mixing zones overlap;

(B) Whether organisms would be attracted to the area of mixing as a result of the effluent character; and

(C) Whether the habitat supports endemic or naturally occurring species.

(vi) Provide all information necessary to demonstrate whether the requirements in paragraph

(g)(3) of this section are satisfied.

(3) Mixing zone requirements. (i) Mixing zones shall be established consistent with the methodologies in Sections 4.3 and 4.4 of the "Technical Support Document for Water Quality-based Toxics Control" EPA/505/2-90-001, dated March 1991.

(ii) The mixing zone demonstration shall be based on the assumption that a pollutant does not degrade within the proposed mixing zone, unless:

(A) Scientifically valid field studies or other relevant information demonstrate that degradation of the pollutant is expected to occur under the full range of environmental conditions expected to be encountered; and

(B) Scientifically valid field studies or other relevant information address other factors that affect the level of pollutants in the water column including, but not limited to, resuspension of sediments, chemical speciation, and biological and chemical transformation.

(iii) Water quality within an authorized mixing zone is allowed to exceed chronic water quality criteria for those parameters approved by the department. Acute water quality criteria may be exceeded for such parameters within the zone of initial dilution inside the mixing zone. Acute criteria shall be met as close to the point of discharge as practicably attainable. Water quality criteria shall not be violated outside of the boundary of a mixing zone as a result of the discharge for which the mixing zone was authorized.

(iv) Mixing zones shall be as small as practicable. The concentrations of pollutants present shall be minimized and shall reflect the best practicable engineering design of the outfall to maximize initial mixing. Mixing zones shall not be authorized for bioaccumulative pollutants or bacteria.

(v) In addition to the requirements above, the department may approve a mixing zone only if the mixing zone:

(A) Is sized and located to ensure that there will be a continuous zone of passage that protects migrating, free-swimming, and drifting organisms;

(B) Will not result in thermal shock or loss of cold water habitat or otherwise interfere with biological communities or populations of indigenous species;

(C) Is not likely to jeopardize the continued existence of any endangered or threatened species listed under section 4 of the ESA or result in the destruction or adverse modification of such species' critical habitat;

(D) Will not extend to drinking water intakes and sources;

(E) Will not otherwise interfere with the designated or existing uses of the receiving water or downstream waters;

(F) Will not promote undesirable aquatic life or result in a dominance of nuisance species;

(G) Will not endanger critical areas such as breeding and spawning grounds, habitat for state-listed threatened or endangered species, areas with sensitive biota, shellfish beds, fisheries, and recreational areas;

(H) Will not contain pollutant concentrations that are lethal to mobile, migrating, and drifting organisms passing through the mixing zone;

(I) Will not contain pollutant concentrations that may cause significant human health risks considering likely pathways of exposure;

(J) Will not result in an overlap with another mixing zone;

(K) Will not attract aquatic life;

(L) Will not result in a shore-hugging plume; and

(M) Is free from:

(1) Substances that settle to form objectionable deposits;

(2) Floating debris, oil, scum, and other matter in concentrations that form nuisances; and

(3) Objectionable color, odor, taste, or turbidity.

(h) Dissolved oxygen criteria for class A waters throughout the State of Maine, including in Indian lands. The dissolved oxygen content of Class A waters shall not be less than 7 ppm (7

mg/L) or 75% of saturation, whichever is higher, year-round. For the period from October 1 through May 14, in fish spawning areas, the 7-day mean dissolved oxygen concentration shall not be less than 9.5 ppm (9.5 mg/L), and the 1-day minimum dissolved oxygen concentration shall not be less than 8 ppm (8.0 mg/L).

(i) Waiver or modification of protection and improvement laws for waters throughout the State of Maine, including in Indian lands. For all waters in Maine, the provisions in Title 38 of Maine Revised Statutes 363-D do not apply to state or federal water quality standards applicable to waters in Maine, including designated uses, criteria to protect existing and designated uses, and antidegradation policies.

(j) Phenol criterion for the protection of human health for Maine Waters outside of Indian lands.

The phenol criterion to protect human health for the consumption of water and organisms is 4000 micrograms per liter.

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