Comment Response Document:

Vessel Incidental Discharge National Standards of Performance

U.S. Environmental Protection Agency

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Vessel Incidental Discharge National Standards of Performance – Final Rule
Comment Response Document

This Comment Response Document presents responses of the U.S. Environmental Protection Agency to the comments received on the Vessel Incidental Discharge National Standards of Performance rulemaking. Comments submitted on this rulemaking may be viewed on Regulations.gov in Docket No. **EPA-HQ-OW-2019-0482**.

In this document, "proposed rule" refers to EPA's 2020 notice of proposed rulemaking (85 FR 67818, October 26, 2020), while "supplemental notice" refers to EPA's 2023 supplemental notice of proposed rulemaking (88 FR 71788, October 18, 2023). In many instances, responses presented in this Comment Response Document include cross-references to responses on similar or related issues located in the preamble to the final rule, the Economic Analysis for the final rule, and/or other sections of the Comment Response Document. Accordingly, this document, together with the preamble to the final rule, the Economic Analysis, and the rest of the administrative record, should be considered collectively as EPA's response to comments received on this rulemaking.

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Public participation and comment period

Numerous commenters supported the 30-day comment period and opposed extension of the comment period. These commenters were opposed to the postponement of the final rule that extending the comment period could entail. Additionally, some commenters commended EPA for making a pre-publication version of the proposed rule available prior to its issuance in the *Federal Register*, noting that this gave interested parties additional time (on top of the 30-day comment period) to consider the contents of the proposed rule.

Other commenters, however, objected to the 30-day comment period as an insufficient amount of time and asked EPA to extend the comment period. Commenters stated that EPA failed to meet the suggested 60-day comment period identified by Executive Orders 12866 and 13563. Commenters contended that EPA did not consider the complexity and importance of the rulemaking, allow commenters to review and respond appropriately, or factor in the impacts of COVID-19 regarding the public's ability to respond efficiently. Additionally, some commenters requested that EPA hold public hearings.

The Administrative Procedure Act (APA) requires agencies to "give interested persons an opportunity to participate in the rule making through submission of written data, views, or arguments with or without opportunity for oral presentation." 5 U.S.C. 553(c). The APA does not specify a minimum number of days for accepting comments on a proposed rule. Agencies must, however, provide the public with a "meaningful opportunity" to comment on a proposed rule. *Rural Cellular Ass'n v. FCC*, 588 F.3d 1095, 1101 (D.C. Cir. 2009). EPA satisfied the APA requirement to provide the public with a meaningful opportunity to comment on the proposed rule. As an initial matter, EPA notes that though the length of the comment period may be a factor in determining whether the public was afforded a meaningful opportunity to comment, it is not determinative. Nonetheless, EPA provided a reasonable length of time for interested parties to comment on the proposed rule. The Agency posted the signed, pre-publication version of the proposed rule on its website and notified stakeholders of its availability 20 days before publication in the *Federal Register* – on October 6, 2020 – thereby providing a total of 50 days for review before the close of the comment period on November 25, 2020. Although several commenters cited the recommendation in Executive Orders 12866 and 13563 for a 60-day comment period, EPA finds that this rulemaking's comment period satisfies the APA's requirements. *See, e.g.*, *Conn. Light & Power Co. v. Nuclear Reg. Comm'n*, 673 F.2d 525, 534 (D.C. Cir. 1983); *Nat'l Lifeline Ass'n v. FCC*, 915 F.3d 19, 34 (D.C. Cir. 2019) ("When substantial rule changes are proposed, a 30-day comment period is generally the shortest time period sufficient for interested persons to meaningfully review a proposed rule and provide informed comment."). Additionally, contrary to some commenters' assertions that the proposed rule was complex, the proposed rule did not

warrant a longer public comment period. The issues at stake in this rule are not new. In fact, many aspects of the proposed rule entailed no or only minor revisions to the requirements of the 2013 Vessel General Permit (VGP). Even though the rule covers many issues, these issues have been debated for many years in the VGP permitting process that occurred prior to the VIDA rulemaking and as such the public was able to comment on these issues in the time provided for comment. Following the comment period, EPA reengaged with states across 10 meetings focused on issues of concern, held additional consultations with interested Tribes, and held listening sessions with environmental organizations and the regulated community. In 2023, EPA also published a supplemental notice, which solicited further comment from the public on several of the issues of greatest public interest.

One commenter asserted that EPA did not produce a technical development document addressing reasoning or data supporting statements in the proposed rule, and that presentations and Q&As from the public meetings were not available upon conclusion. EPA is not required to produce a technical development document, but EPA's analyses and supporting documentation were included in the preambles to its *Federal Register* notices and the docket. Additionally, copies of meeting summaries and documents are available in the docket, as well as on EPA's website at https://www.epa.gov/vessels-marinas-and-ports/vessel-incidental-discharge-act-vida-stakeholder-engagement-opportunities.

EPA also received comments regarding public participation in response to EPA's supplemental notice. These included several requests to extend the 60-day comment period for the supplemental notice (with extension requests ranging from an additional 30 to 60 days). Generally, these commenters requested additional time to, among other things, assess technical documentation, parse elements of the supplemental notice, exercise due diligence to determine how the regulated community will implement measures to achieve the objectives of the rulemaking, and conduct necessary consultation to provide effective feedback. One commenter noted that the details of the supplemental notice could only be fully understood after both public meetings had been concluded. Another commenter indicated that the supplemental notice presented novel technical data and made changes to EPA's initial proposed rule that would have significant and complex consequences and posed important federalism implications by amending EPA's interpretation of the extent to which the VIDA preempts existing state laws. The 60-day public comment period for the supplement notice is consistent with the 60-day public comment period recommended in Executive Order 12866. Further, as discussed already in this comment response, courts have routinely found that comment periods of less than 60 days provide a meaningful opportunity to comment. *See, e.g., Conn. Light & Power Co. v. Nuclear Reg. Comm'n*, 673 F.2d 525, 534 (D.C. Cir. 1983); *Nat'l Lifeline Ass'n v. FCC*, 915 F.3d 19, 34 (D.C. Cir. 2019) ("When substantial rule changes are proposed, a 30-day comment period is generally the shortest time period sufficient for interested persons to meaningfully review a proposed rule and provide informed comment."). As

with the 2020 proposed rule, EPA satisfied the APA requirement to provide the public with a meaningful opportunity to comment on the supplemental notice.

Finally, one commenter asked to be considered a "valued stakeholder" by EPA to the same extent as non-vessel operators regarding advance notice of pending EPA VIDA actions and related discussions. EPA recognizes the value of all stakeholder participation and aims for inclusivity of all interested stakeholders, acknowledging that EPA dissemination of information takes many forms and may not be identical in all instances.

Stakeholder engagement

Commenters suggested that EPA should provide additional opportunities for stakeholder engagement and conduct outreach. Commenters also inquired about what EPA has done to involve all stakeholders, including the general public, and noted that the COVID-19 pandemic necessitates additional stakeholder engagement. EPA provided significant opportunities for stakeholder engagement, including after commenters suggested that EPA provide additional opportunities. Prior to publication of the proposed rule, EPA conducted outreach and consultations during the summer of 2019 including hosting public webinars, a two-day public listening session, and consultations with states, both through the Governors' consultation process pursuant to the VIDA and Federalism consultation pursuant to Executive Order 13132. EPA also engaged with Tribes through formal Tribal consultation. Additionally, EPA hosted three public meetings in November 2020, held virtually due to the COVID-19 pandemic, to introduce the proposed rule, highlight changes from existing requirements, and provide information on the public comment submission process. Information on stakeholder engagements held for a general audience, including dates, locations, and general content, are available on EPA's Stakeholder Engagement Opportunities webpage at https://www.epa.gov/vessels-marinas-and-ports/vessel-incidental-discharge-act-vida-stakeholder-engagement-opportunities. Following the comment period on the proposed rule, EPA reengaged with states across a series of meetings held as part of the VIDA Governors' consultation process to discuss issues of concern, held additional consultations with interested Tribes, and hosted listening sessions with environmental organizations and the regulated community. Documentation of all stakeholder engagements are available in the docket.

General support or opposition to the rule

Multiple commenters expressed support for the proposed rule or the VIDA itself, with several commenters supporting the use of uniform national standards as a means of promoting harmonization and clarity, as well as streamlining administrative requirements. Others commended the proposed rule for incorporating the VIDA requirements and maintaining equivalent stringency to the 2013 VGP.

Several other commenters objected to the proposed rule on the basis that the standards were not stringent enough or were less stringent than existing requirements contrary to the VIDA. EPA disagrees. As required by the VIDA, the final discharge standards promulgated by EPA are technology-based, in the form of numeric effluent limits and best management practices (BMPs) and are at least as stringent as the 2013 VGP with limited exceptions as authorized by the VIDA (CWA section 312(p)(4)(D)(ii)(II)).

One commenter suggested that U.S. requirements should be consistent with the International Maritime Organization (IMO). Given the international character of much of the vessel industry, EPA deemed it appropriate to take into account consistency with international, national, and regional requirements as one factor in its review of best available technology economically achievable (BAT) for this rule. However, while EPA agrees that consistency with the IMO and other countries is an important consideration, the VIDA confers discretion on EPA as to whether this factor, as an "other factor the Administrator deems appropriate," should outweigh other factors. W*eyerhaeuser*, 590 F.2d at 1011, 1045 (D.C. Cir. 1978). (Congress intended that EPA have discretion 'to decide how to account for the consideration factors, and how much weight to give each factor: *Texas Oil & Gas Ass'n et al v. EPA*, 161 F.3d 923, 928 (5th Cir. 1998)("The Administrator nonetheless has considerable discretion in evaluating the relevant factors and determining the weight to be accorded to each in reaching its ultimate BAT determination.").

Lastly, a commenter suggested in general terms that the proposed rule provided incomplete information for multiple discharges regarding changes to definitions, changes to existing VGP requirements, and new requirements. EPA is unable to identify, and the commenter did not specify, the specific incomplete information referenced and therefore is unable to respond further, though specific concerns may be addressed in discharge-specific sections of this comment response document, where additional information was otherwise provided by the commenter.

EPA also received comments providing general support for, or opposition to, EPA's supplemental notice. Some commenters voiced support for the supplemental notice. Many commenters that opposed aspects of the supplemental notice requested that the regulations be more protective of particular geographic areas, with specific references to Florida's unique and valuable coral reef resources, Michigan's waters, and the unique ecosystem of the Great Lakes. Some commenters noted that invasive species associated with ballast water discharges have already caused huge economic and ecological problems, while another commenter asserted that the proposed approach for vessel discharges undermines the CWA's purpose of preventing, reducing, and eliminating pollution into the nation's waters. EPA acknowledges the commenters' concerns that EPA's action may not be protective of water quality in all instances. As explained in the final rule preamble (e.g., in Section VIII., *Final Federal Discharge Standards of Performance*) and elsewhere in this comment response document, CWA sections

312(p)(4)(A) through (D) direct EPA to promulgate uniform Federal standards of performance according to the technology-based standards provisions of the Act that are "based on technological feasibility rather than on water quality." *Southwestern Electric Power Company v. EPA*, 920 F.3d 999, 1005 (5th Cir. 2019). Other provisions of the VIDA authorize additional limits on vessel discharges to protect water quality on a case-by-case basis. *See, e.g.,* 33 U.S.C. 1322(p)(4)(E) (authorizing orders to require the use of emergency BMPs for any region or category of vessels to "mitigate the adverse effects of a discharge that contributes to a violation of a water quality requirement"); 33 U.S.C. 1322(p)(10)(D) (authorizing a process for the establishment of "State no-discharge zones" where "any State determines that the protection and enhancement of the quality of some or all of the waters within the State require greater environmental protection"). The VIDA regulatory framework to address specific water quality concerns is detailed further in the final rule at Subpart E – *Procedures for States to Request Changes to Standards, Regulations, or Policy Promulgated by the Administrator.*

State and Tribal consultations

Several state commenters asserted that EPA failed to engage in meaningful consultation with states and state governors. To support this assertion, commenters noted that, in the series of calls/webinars hosted by EPA, the focus was on status updates and requests for input from states on specific topics, rather than answering questions about contemplated approaches and providing draft language for review and comment. One commenter further suggested that interested Governors were only afforded the same opportunity to participate as the general public and advised that EPA withdraw the proposed regulations and engage in additional consultation to avoid violating the VIDA's consultation requirements. One commenter noted that it "stood ready to provide USEPA with scientific evidence and support during the development of the proposed regulations, but USEPA declined to engage in meaningful consultation with State Governors." EPA disagrees with these commenters. The VIDA calls for a process to consult with Governors in the development of this rule but provides little specificity as to what such process or consultation must entail. EPA made a good faith effort to provide states with an enhanced opportunity to participate in this rulemaking relative to other national rules, while trying to observe the best practices of good government including the practical limitations of information sharing during an active rulemaking. Throughout this rulemaking, EPA continually consulted with states, including repeatedly requesting and accepting any information in their possession that they could submit to inform the rulemaking process. EPA hosted nine meetings with states between July 2019 and January 2020 with the express purpose of discussing the proposed rule and soliciting information and data from states. These meetings were coordinated with the Governors' offices of all 50 states and territories by EPA's Office of Intergovernmental Relations. Many of these states also submitted written comments on EPA's proposed rule. While EPA is confident that the Agency's consultation with states is consistent with the requirements of the VIDA, EPA nevertheless hosted ten additional meetings in 2021 as

part of a re-engagement process to discuss issues raised by states and others on the proposed rule. This re-engagement process informed the supplemental notice and was undertaken to ensure that the final rule is as robust as possible. While the same 30-day formal comment period on the proposed rule was available to all commenters, EPA notes that these consultation opportunities were afforded only to interested states and not the general public. Documentation of all meetings with states, and any information submitted by states to EPA, are included in the docket.

EPA understands that the states had an interest in reviewing draft language during the pre-proposal consultations, however, EPA disagrees that sharing pre-decisional draft language is appropriate or consistent with the term "consultation." Government agencies rarely circulate pre-publication draft regulatory language prior to a Notice of Proposed Rulemaking in the *Federal Register*. Among the various reasons for not doing so, sharing pre-publication drafts of proposed rule language with the states would waive any deliberative process protection for that language and could lead to their public release under the Freedom of Information Act. All of the ordinary reasons for the deliberative process protection informed EPA's decision not to share such pre-publication draft language during the engagement meetings and/or webinars, particularly the risk of creating public confusion by forecasting regulatory language and options that ultimately would not be included in the proposed or final rule. Further, commenters have not identified any specific way in which their ability to meaningfully inform the rulemaking process was impaired by not having access to such pre-publication draft language. As such, while EPA did not provide pre-decisional draft language during the foregoing consultations, EPA carefully considered all feedback received from state commenters both during the development of the proposed rule, the supplemental notice, and the final rule.

EPA also received several comments from Tribes and Tribal organizations that EPA failed to adequately consult with Tribes, with some Tribes requesting additional consultation. One Tribe also disagreed with what the Tribe perceived as a lack of transparency by EPA and a quick timeline designed to solicit as little input as possible. EPA respectfully disagrees. On June 18, 2019, EPA sent a "Notice of Consultation and Coordination" letter to all 573 tribes that were federally recognized at the time. EPA held an information webinar on July 11, 2019, to obtain input from Tribal representatives during the development of the proposed rule and presented on the VIDA during an EPA Region 10 Regional Tribal Operations Committee call on July 18, 2019, at the Committee's request. EPA also met with one Tribe in a government-to-government consultation to obtain input and answer questions. During the consultation period between July and September 2019, EPA received only two pre-proposal comment letters from Tribes and Tribal organizations. Records of the Tribal informational webinar and a consultation summary of the written and verbal comments submitted by Tribes are included in the docket.

In comments submitted on the proposed rule during the comment period, several Tribes and Tribal organizations requested additional consultation. As such, EPA contacted these Tribes to arrange additional meetings; however, only the Gun Lake Tribe and Chippewa Ottawa Resource Authority accepted EPA's offer. EPA met with both in September and October 2021, respectively, to inform development of the supplemental notice and final rule. Written comments submitted by Tribes during the public comment periods were also carefully considered during the development of the final rule.

One Tribe also stressed that Tribes have cultural and ancestral connections to waters within the scope of the rule, and that the proposed rule would adversely impact Tribes' ability to protect sacred and significant cultural sites. In a similar vein, another Tribe asked EPA to consider the culture and economic impacts of a new invasive species when developing the rule. EPA appreciates the importance of the Tribal commenters' connections to water resources and sacred and significant cultural sites. The standards and BMPs promulgated in this rule represent the best available technology economically achievable to minimize the discharge of pollutants, including aquatic nuisance species (ANS), into U.S. waters. EPA also notes that the VIDA at CWA section 312(p)(4)(E)(i) authorizes EPA to require, by order, the use of an emergency BMP for any region or category of vessels when necessary to reduce risk of introduction or establishment of an ANS, or if EPA determines that the order will mitigate the adverse effects of a discharge that contributes to a violation of a water quality requirement under CWA section 303. This represents a potential pathway to address specific water quality or invasive species concerns at sacred and significant cultural or ancestral sites.

In the context of consultations, several commenters noted the various requests that were submitted to EPA to extend the comment period and/or the period for Governor objections. EPA's rationale for not extending the comment period is included in the "Public participation and comment period" section of this comment response document. One commenter also raised concerns regarding the Agency not sharing an anticipated timeline for development of final rule language or sharing that language with states for review. As discussed above, EPA determined that it was appropriate to re-engage with states following the closure of the public comment period, despite the delays that would be incurred to the overall rulemaking timeline as a result. As such, EPA did not have a specific timeline to share for development of the final rule, but the Agency was working as expeditiously as possible to finalize the rule while ensuring that the rule would be as robust as possible. As with both the 2020 proposed rule and 2023 supplemental notice, EPA did not share pre-decisional draft language of the final rule with states for review, though the Agency considered all feedback provided by states in previous consultations, written comments, the re-engagement meetings, and Governor letters.

EPA also received comments regarding state and Tribal consultation in response to EPA's supplemental notice. Several commenters stated that EPA failed to adequately consult with underserved communities, with specific references to the Pacific Territories,

Native Hawaiians, and Tribal Nations. The commenters claimed there was a lack of meaningful engagement and consultation that ultimately prevented an adequate level of understanding to facilitate meaningful participation in the two public meetings held on the supplemental notice. Another commenter noted that the VIDA directs EPA to consult with states in the development and application of standards and maintained that the proposed standards bypass more protective state standards and BMPs and are less stringent than the VGP. EPA respectfully disagrees with these commenters, who have not identified any specific way in which their ability to provide meaningful comment was materially impaired. As noted earlier in this section of the comment response document, EPA satisfied all applicable consultation and engagement requirements. The final rule in Section V., *Stakeholder Engagement*, describes EPA's good faith efforts to engage with states, territories, and Tribes to meaningfully consult on this rulemaking, including hosting a significant number of calls and webinars. These consultations included overview presentations by EPA to facilitate an adequate level of understanding for attendees to participate and ultimately provide feedback on the content and direction of the rule. Regarding the comment that the proposed standards bypass more protective state standards and are less stringent than the VGP, EPA notes that, as required by the VIDA, the final discharge standards are technology-based and are to be established independent of any comparison to applicable state water quality standards.

Best Available Technology and the development of federal discharge standards of performance

EPA received several comments related to EPA's general approach for developing technology-based requirements, that are described more simply here as "BAT" (which stands for "best available technology economically achievable").

Several commenters noted the "global" nature of the shipping industry and were supportive of this approach, which is consistent with CWA section 304(b)(2)(B). Given the international character of much of the vessel industry, EPA deemed it appropriate to consider consistency with international, national, and regional requirements as one factor in its review of BAT.

One commenter indicated that they did not identify any unintended consequences associated with changing from the current VGP to the regulatory text. One commenter expressed concerns regarding certain aspects of the harmonization of the rule with existing requirements. Specific concerns raised are addressed in the relevant sections of this comment response document.

One commenter expressed concern with EPA's implementation of the term "economically achievable," stating that the ambiguous description used throughout the proposed rule was to justify a lack of action being taken to protect the waters of the United States. The commenter noted that EPA failed to quantify a dollar amount comparison to the cost of health for humans, wildlife, and agriculture and failed to offer a

cost analysis for those Americans who depend on U.S. waters for their livelihood. EPA disagrees with the commenter. As a threshold matter, a treatment technology must be technologically available for EPA to require it as BAT regardless of any environmental harms caused by the discharge. Further, "economic achievability" is a statutory term whose meaning has been well-developed through years of CWA implementation and caselaw. In determining "economic achievability" under BAT, EPA considers whether the costs of the controls can reasonably be borne by the industry; the term does not mean that EPA must consider costs incurred by society in general. The factors considered in assessing BAT include the cost of achieving BAT effluent reductions, the age of equipment and facilities involved, the process employed, potential process changes, non-water quality environmental impacts, including energy requirements, and other such factors as the Administrator deems appropriate. EPA retains considerable discretion in assigning the weight accorded to these factors. *See Weyerhaeuser Co v. Costle*, 590 F.2d 1011, 1045 (D.C. Cir. 1978). The VIDA establishes different regulatory options for establishing requirements for protections beyond those achieved through application of BAT, notably through the use of emergency orders and no-discharge zones in CWA sections 312(p)(4)(E) and 312(p)(10)(D), respectively.

Another commenter responded to one Governor's input on EPA's proposed rule asserting that the Governor's letter incorrectly stated that EPA's "economically achievable" assessment improperly evaluated only the costs to the regulated community and failed to consider potential future costs on impacted economies or cultural assets degraded by new or enhanced invasive species populations. This commenter stated that there is no indication in the VIDA that Congress meant for EPA to develop a new interpretation of the phrase "economically achievable," as requested in the Governor's letter. EPA agrees with this commenter. The VIDA codified technology-based concepts (BAT, BPT, and BCT) directly from the CWA and established no expectation for EPA to interpret and implement these concepts differently than the Agency's long-established practices, as were used for establishing discharge standards in this rule. *See* Errata to S. Rep. No. 115-89 (2019) [hereinafter VIDA Senate Report], at 11 ("The definitions of these technology-based standards in section 312(p)(1) intentionally cross-reference to other parts of the Clean Water Act to ensure that the Administrator makes identical considerations when setting the standards of performance under section 312(p) as the Administrator was previously required to do when setting technology-based effluent limits for permits under Clean Water Act section 402."), available at https://www.congress.gov/115/crpt/srpt89/CRPT-115srpt89-ERRATA.pdf.

Several commenters expressed that the proposed standards are less stringent than the VGP, which would be inconsistent with the requirements of the VIDA. EPA disagrees that the Agency established discharge standards inconsistent with the VIDA. The VIDA establishes in CWA section 312(p)(4)(B)(iii) that, subject to subparagraph (D)(ii)(II), discharge standards shall not be less stringent than certain provisions of the VGP. However, subparagraph (D)(ii)(II) provides exceptions for when a standard may be less

stringent than an applicable existing requirement, including if new information justifies a less-stringent standard or if EPA determines that a material technical mistake or misinterpretation of law occurred when promulgating the existing standard. Specific instances of when EPA made such a determination are identified in the rule preamble and in this comment response document where a commenter expressed such a claim of EPA's failure to impose a standard at least as stringent as the VGP.

One commenter also asserted that EPA interpreted the "Minimum Requirements" section in CWA section 312(p)(4)(B)(iii) to mean the lowest common denominator that is practicable for industry rather than the best available standards that protect state waters. The commenter referenced Part 6 of the VGP, which contains state-specific requirements imposed through CWA section 401 certification, as an example of a situation when EPA failed to achieve the "stringency" directive in determining BAT. The commenter noted that some of these state requirements had been in effect for decades with demonstrated ability to meet BAT. The commenter noted that there was no evidence that EPA took those into consideration during standards development. EPA disagrees. As part of its BAT evaluation, EPA considered every requirement in Part 6 of the VGP to assess whether the Agency had information demonstrating such a requirement meets the BAT criteria including whether is it technologically available and economically achievable for use as a uniform Federal standard of performance. Throughout this rulemaking process, EPA reached out directly to states for any information regarding the use of any treatment technologies and practices that could achieve additional reductions in the discharge of regulated pollutants. EPA's response to claims when EPA failed to consider a specific requirement in Part 6 are discussed in the comment response specific to that discharge. Additionally, the CWA section 401 certifications included in Part 6 of the VGP include consideration of state water quality standards. As explained in the preamble and elsewhere in this comment response document, however, the adoption of a technology-based BAT standards under the VIDA is made without regard to effects on the receiving waters.

One commenter expressed concern that the potential for exceptions, in addition to the lack of coverage for small vessels, raises concerns about the possibility for increased pollution in the ocean. EPA acknowledges the commenter's concern; however, the final discharge standards are developed consistent with the authority granted to EPA by the VIDA. Congress, not EPA, repealed the Small Vessel General Permit, excluded small vessels from regulation of incidental discharges (other than ballast water), and prohibited states from requiring a permit under CWA section 402 for any incidental discharge from a small vessel. To address increased pollution concerns beyond what can be controlled through these discharge standards, Congress established in the VIDA several other regulatory mechanisms beyond these federal discharge standards. *See* CWA sections 312(p)(4)(E), (p)(7), and (p)(10)(B) & (D).

Two commenters noted that the proposed rule recommended use of BAT but did not identify any preferred single technology or practices and that the standards were vague. While these comments are specific to biofouling, the concept is a more general statement on EPA's approach for establishing the technology-based discharge standards. One of the commenters noted that with such an important goal in mind, there should be a favorable method. EPA disagrees. EPA developed the discharge standards based on the data available to EPA, acknowledging that there may be more than one technology and/or practice available to meet such a discharge standard depending on the specific situation.

Subpart A—Scope

Scope — Waters

Commenters requested that EPA clearly define the extent of the contiguous zone. As explained in the proposed rule, CWA section 502(9) defines "contiguous zone" to mean "the entire zone established or to be established by the United States under article 24 of the Convention of the Territorial Sea and the Contiguous Zone." Article 24 states the contiguous zone may not extend beyond 12 miles from the baseline from which the breadth of the territorial sea is measured. CWA section 502(8) defines "territorial seas" to mean the belt of seas that generally extends three miles seaward from the line of ordinary low water along the portion of the coast in direct contact with the open sea and the line marking the seaward limit of inland waters. Generally, the contiguous zone extends seaward for the next nine miles (i.e., from three to 12 miles from the U.S. coastline). Therefore, the final rule applies to incidental discharges from non-military, non-recreational vessels operating within 12 miles seaward from the line of ordinary low water along the portion of the coast in direct contact with the open sea and the line marking the seaward limit of inland waters. One commenter referenced President Clinton's 1999 Presidential Proclamation (Proclamation 7219), which extended the contiguous zone to 24 miles for most purposes. The proclamation, however, included an important caveat that "[n]othing in this proclamation… amends existing Federal or State law." As such, the existing definitions in the CWA were not altered.

Scope — Vessels

Multiple commenters opposed the exclusion of fishing vessels and permanent floating and moored crafts from meeting the requirements of the non-ballast water discharge standards. These exclusions were specifically identified in the VIDA at CWA section 312(p)(2)(B); therefore, EPA does not have discretion on this matter. One commenter urged EPA to regulate fish hold effluent as part of this rulemaking, especially for small fishing vessels. Apart from ballast water, CWA section 312(p)(2)(B)(i)(III) excludes from regulation the discharges incidental to the normal operation of a fishing vessel; therefore, EPA has not regulated discharges from fish hold effluent in the final rule since

such discharges are not expected from the exclusively non-fishing vessels that are regulated under the VIDA.

One commenter requested that ferry vessels that operate on a limited inland route, do not carry overnight passengers, and navigate in a single COTP Zone be exempt from the VIDA. EPA disagrees. The final standards are designed to reduce the discharge of pollutants from all vessels subject to the VIDA. The commenter does not justify why such an exemption for all discharges from ferry vessels, based on BAT, is appropriate. The final rule does include specific exemptions when justified based on available information (including instances when the VGP exempts certain discharges).

Several commenters requested clarifications regarding the scope of vessels to which the rule applies. First, one commenter inquired if permanently moored work barges and spud barges are excluded from any or all sections of 40 CFR part 139, including Subpart C – *Standards for Specific Discharges Incidental to the Normal Operation of a Vessel* and § 139.10, *Ballast tanks*. Per the VIDA, the final rule does not apply to a floating craft that is permanently moored to a pier. Another commenter suggested the addition of language to explain that floating craft shall be regulated under the VIDA when in transit from one location to another. EPA acknowledges the commenters concerns, however, a floating craft in transit would not qualify for an exclusion from the VIDA because it is not "permanently moored," therefore additional language is not required.

Another commenter inquired about regulations for incidental discharges from military and recreational vessels, while another requested clarification on whether vessels of the Military Sealift Command are considered "public" or "military" vessels for the purposes of the VIDA. The Uniform National Discharge Standards (CWA section 312(n)) applies to discharges incidental to the normal operation of a vessel of the Armed Forces, including Military Sealift Command (MSC) vessels, other than time and voyage MSC commercial charters which are subject to the VIDA national standards of performance. Incidental discharges from recreational vessels are regulated under the Clean Boating Act (CWA section 312(o)).

Finally, commenters asked EPA to clarify whether the VIDA includes vessels operating on all U.S. navigable waters (e.g., rivers), inland vessels, and/or wind farms. The final rule applies to all discharges incidental to the normal operation of vessel into waters of the U.S or waters of the contiguous zone, including such discharges from inland vessels, and includes all navigable waters within those defined areas. The commenter does not provide details about discharges from wind farms; however, to the extent discharges from a wind farm constitute discharges incidental to the normal operation of a vessel as detailed in CWA section 312(p)(2)(A), such discharges are covered. In general, EPA expects wind farms themselves to not be vessels covered under the provisions of the VIDA; however, many types of discharges from support activities involve vessels that

will be subject to these VIDA discharge standards when operating in waters of the United States or waters of the contiguous zone.

Scope — Discharges

One commenter stated that the requirements in the proposed rule related to commingling discharges are technologically infeasible and that alternatively EPA should require those discharges to "meet the more stringent national standard of performance technologically feasible for each of those commingled discharges unless otherwise specified." EPA disagrees. As addressed in the comment response for *Subpart C—Standards for Specific Discharges Incidental to the Normal Operation of a Vessel, Ballast tanks, Definitions*, the commenter misinterpreted the definition of "ballast water" to include water drained to the bilge during routine strainer maintenance and applicability of the ballast water requirements used to justify technological infeasibility. Information in the record indicates that it is feasible for operators to manage commingled discharges such that each individual component of that discharge meets the applicable requirements for that discharge.

Another commenter supported the existing language that commingled sewage must meet both sewage and incidental discharge requirements but proposed that EPA should expand upon the language as other discharges may be mixed. EPA disagrees with the request to change the regulatory language. Clarification of the applicability of the requirements for discharges commingled with sewage is needed to address the unique situation that sewage is regulated under a different section of the CWA than other incidental discharges addressed in this rule. A discharge comprised of two or more regulated incidental discharges must meet the Federal standards of performance established for each of those commingled discharges and EPA need not further clarify that point with additional regulatory language.

Some commenters suggested that EPA should seek out information from vessel operators and others on potential discharges not included in the proposed rule. These commenters also suggested additional discharges such as noise pollution, plastic pollution, wet exhaust, and gas turbine related equipment (cleaning or washing of turbo blowers) be added to the rule. EPA disagrees with the addition of these discharges to the rule. Noise is not recognized as a pollutant under CWA section 502 and is therefore beyond the scope of the VIDA. Further, EPA does not consider spills or transient losses of cargo, such as the discharge of plastics when carried as cargo, to be "incidental" to the normal operation of a vessel. Commenters also requested that EPA not exclude small boat engine wet exhaust from the discharge standard. EPA disagrees with the assertion that this discharge is no longer subject to these regulations. EPA acknowledges that it did not include specific requirements for small boat engine wet exhaust discharges in Subpart C – *Standards for Specific Discharges Incidental to the Normal Operation of a Vessel*

(consistent with how these discharges were regulated in the VGP); however, these discharges are still considered discharges incidental to the normal operation of a vessel and as such are subject to these regulations, notably those in Subpart B – *General Standards for Discharges Incidental to the Normal Operation of a Vessel*. Importantly, small boat engine wet exhaust requirements in these regulations are comparable to the VGP requirements. This includes, among other things, requirements on minimizing discharges, equipment maintenance, and use of environmentally acceptable lubricants for all oil-to-sea interfaces unless technologically infeasible. To the extent that the other equipment referenced by the commenter is a component of a gas turbine, the cleaning of such components is subject to the requirements in § 139.20, *Gas turbines*.

Commenters suggested that information should be provided about standards and requirements for any discharges that are not specifically included in the definition of "discharge incidental to the normal operation of a vessel" provided in § 139.2, *Definitions*. First, EPA notes that terms not defined in this section have the meaning as defined under the CWA and applicable regulations. Furthermore, the discharges to which this rule applies are identified in CWA section 312(p)(2)(A). One commenter requested that EPA clarify whether general discharge standards apply to incidental discharges not explicitly covered with a specific discharge standard. The general discharge standards detailed in subpart B of the regulations apply to all incidental discharges, including those not specifically identified in subpart C.

Definitions

EPA received many comments related to the addition or modification of definitions. Several commenters provided input on definitions related to specific discharges or sections within the rule; further discussion on those definitions can be found in the applicable sections of the comment response document. For example, additional information regarding definitions specific to bilges, bilgewater, and residue can be found in the comment response for § 139.11, *Bilges*; graywater and advanced wastewater treatment systems in the comment response for § 139.21, *Graywater Systems*; ballast water and dedicated vessel combination in the comment response for § 139.10 *Ballast tanks*; federally-protected waters in the comment response for § 139.40, *Federally-protected waters*; fire protection equipment in the comment response for § 139.19, *Fire protection equipment*, seawater piping and fouling rating in the comment response for § 139.28, *Seawater piping*; oil-to-sea interface in the comment response for § 139.6, *Oil management*; and microfouling, macrofouling, anti-fouling coating, anti-fouling system, and active/passive discharge of biofouling in the comment response for § 139.22, *Hulls and associated niche areas*. Other discharge-specific topics related to definitions may also be addressed in the relevant discharge sections.

Similarly, discussion of definitions that apply more generally, such as "as far from shore as practicable," can be found in the comment response for § 139.4, *General operation and maintenance,* and "contiguous zone" in the comment response for Subpart A –

Scope. Additionally, some additions and modifications were requested within the context of a specific discharge (e.g., harmful, technical infeasibility, calculation-based methodology, capacity, kitchen waste, food, oily, oil and grease, and designed to minimize) and additional information can be found in relevant sections. Terms not defined in the final rule have the meaning as defined under the CWA and any applicable regulations.

Commenters requested the addition of definitions for the terms "fire protection equipment," "waters of the United States," "microfouling," "macrofouling," "in-water cleaning with capture (IWCC)," "in-water cleaning without capture," "bilges," "bilgewater," "spa," "sewage," "passenger vessel," "ferry," "new vessel," and "inland vessel."

EPA agrees that definitions for some of these terms, as well as several others, will add clarity to the requirements. As such, EPA added definitions for "fire protection equipment," "macrofouling," "microfouling," "in-water cleaning with capture (IWCC)," "in-water cleaning without capture," "passive discharge of biofouling," "active discharge of biofouling," "anti-fouling system," "anti-fouling coating," "seawater piping system," "passenger vessel," and "ferry." Accordingly, the definition for "Marine Growth Prevention System (MGPS)" was modified to reference the added definition for "seawater piping system."

The substance of some requested definitions is more appropriately addressed through clarifications in the preamble and discussed in the relevant sections of the comment response document (e.g., bilges, bilgewater, and residue are discussed in the comment response for § 139.11, *Bilges*).

EPA disagrees with the addition of a definition for "spa," as this is a common term with an ordinary meaning and as such does not require definition in the final rule. EPA also disagrees with the addition of a definition for "inland vessel." The final rule does not use the term "inland vessel," but the discharge standard applies to any vessel operating on inland waters, the territorial seas, or the contiguous zone (to 12 miles), unless otherwise specified. The final rule defines the term "internal waters" as: "(1) With respect to the United States, the waters shoreward of the territorial sea baseline, including waters of the Great Lakes extending to the maritime boundary with Canada, and (2) With respect to any other nation, the waters shoreward of its territorial sea baseline, as recognized by the United States." This is modified from the definition in 33 CFR 2.24 but, as this provision of the final rule is a successor to that regulation, it is consistent with the VIDA's definition of "internal waters" at CWA section 312(p)(1)(O). This definition of "internal waters" is equivalent to the term "inland waters" with the added clarification for the Great Lakes. The final rule does use the term "internal waters" for purposes of establishing the applicability of certain discharge requirements.

Some definitions requested by commenters are already defined in other statutes or regulations. Commenters requested the inclusion of a definition of "waters of the United States." EPA disagrees with this addition, as "waters of the United States" is used within the CWA section 502(7) and further defined in 40 CFR 120.2. Similarly, "new vessel" and "sewage" are defined in CWA section 312(a)(1) and (a)(10), respectively.

Commenters also requested revisions to certain proposed definitions. Many commenters requested updates to the definition of "organism" for consistency with CWA section 312(p)(1)(R), as referenced; EPA agrees and updated the definitions of "organism" in the final rule to be consistent with CWA section 312(p)(1)(R) by replacing "means" with "includes." Two commenters requested a modification to the definition of "scheduled drydocking" for consistency with the intent of existing USCG regulations in 33 CFR Part 151, Subparts C and D. Specifically, commenters requested the replacement of "an examination of all accessible parts of the vessel's underwater hull and through hull fittings" with "vessel inspection, maintenance, or other purposes." EPA acknowledges commenters' concern about consistency of EPA's use of the term "scheduled drydocking" with USCG regulations; however, the final rule no longer uses that term and as such, the definition of that term is not in the final rule. One commenter requested a change to the definition of "mid-ocean" to remove the hyphenated spelling and to remove the last sentence ("For regular maintenance of ballast tanks to remove sediments, it means outside the water of the U.S. or waters of the contiguous zone"). EPA agrees with the recommended revision because a reference to the location of ballast tank cleaning to remove sediments was not included in the proposed or final rule. As such, EPA revised the definition and removed the hyphen consistent with VIDA's spelling of that term.

Several commenters requested changes to the definition of "broom clean," including the removal of the "one inch in diameter" size limitation; the addition of language referring to "sheen," "garbage, machinery, maintenance, construction, or other spills," and "minimal amounts;" and the addition of language regarding spills and residues. One commenter noted that the size limitation is difficult for ships to achieve. EPA disagrees with the suggested edits to the definition. The size requirement is consistent with the regulatory definition in 33 CFR 151.66. Consistent with the VGP and USCG regulations, EPA clarified in the preamble to the final rule that "broom clean" condition is intended as a BMP to address deck, tank, and cargo residues, and issues such as sheen, spills, and residues may be more appropriately addressed through other BMPs in the rule such as coamings, drip pans, and other control measures.

One commenter requested that the definition of "minimize" reference documentation necessary to establish compliance, while another commenter requested that language be added to identify management practices to be used. EPA disagrees with the addition of compliance information as it is outside the scope of this rule and instead falls under the scope of the USCG's implementing regulations established under CWA section 312(p)(5), which specifies the USCG is to develop requirements to ensure, monitor, and

enforce compliance with the EPA standards, including requirements relating to inspections, monitoring, reporting, and recordkeeping. Many commenters requested clarifying language in the definition of "minimize" regarding what actions operators should take or consider to "minimize" discharges. EPA does not agree that the definition should be modified; however, EPA updated the final rule in both the preamble and regulatory text to include examples of how to minimize discharges through management practices (*See General operation and maintenance* at § 139.4(b)(2)).

Several commenters requested the addition of a minimum speed to the definition of "underway." EPA disagrees, as this term is defined in 33 CFR 83.03 and modifying the definition for this final rule may cause confusion and uncertainty with the regulated community. Also, EPA considers the final rule to address commenters' concerns in the standard for *General operation and maintenance* at § 139.4(b)(2) regarding discharges potentially occurring directly after lifting anchor or otherwise undocking. The final rule requires that every discharge occur while underway when practical and as far from shore as practical (with the understanding that impacts of discharges are lessened when further from shore).

Commenters also requested modifications to the definition of "reception facility" to refer to discharges incidental to the normal operation of vessels and add additional requirements for discharge. EPA disagrees with the addition of a reference to "discharges incidental to the normal operation of a vessel" because, pursuant to CWA section 312(p)(2)(B)(ii)(V), a release to a reception facility is not regulated as a "discharge incidental to the normal operation of a vessel." EPA also disagrees with the addition of language to the definition of "reception facility" that requires the facility to have a National Pollutant Discharge Elimination System (NPDES) permit. While EPA understands the basis for this comment, EPA notes that any given reception facility may have different regulatory options outside of the NPDES program, such as a facility that discharges to a publicly owned treatment works=.

One commenter noted that the 2013 VGP included the test methods in its definitions of "biodegradable," "minimally-toxic," and "not bioaccumulative," and expressed concerns with not including those test methods in the corresponding definitions in this rule. Another commenter questioned specific test methods' applicability. EPA disagrees with the inclusion of the test methods within the definitions listed, as this is more appropriately addressed in USCG's implementing regulations established under CWA section 312(p)(5).

One commenter requested that additional information, such as examples from the preamble, be included in § 139.2, *Definitions*. EPA disagrees with the need to provide specific examples in the definitions, as these are most appropriately placed in the preamble. Additionally, many terms have been defined by other statutes or regulations.

Finally, two commenters supported the proposed definition of "small vessel or fishing vessel" and expressed the importance of the inclusion of "fish processing vessel" as written. The final rule retains this definition as proposed.

Subpart B—General Standards for Discharges Incidental to the Normal Operation of a Vessel

General operation and maintenance

Many commenters requested inclusion of language to clarify what actions operators should take or consider to "minimize" discharges, including one commenter that suggested EPA include measurable parameters to demonstrate that discharges are minimized. Some commenters requested language to be inserted similar to that in the "supplemental information" provided with the proposed regulations, namely that the rule should identify management practices to be considered, including but not limited to storage onboard the vessel, proper storing or transfer of materials, or reduced production of discharge. EPA agrees that further clarification would be helpful, and the final rule includes additional language and clarification in § 139.4(b)(1) that minimization includes actions including but not limited to "storage onboard the vessel, proper storage or transfer of materials, or reduced production of discharge." EPA disagrees with the suggestion to include measurable parameters to demonstrate that discharges are minimized. The final rule defines the term "minimize" with the understanding that this concept applies to discharges from a wide range of vessel types, sizes, classes, etc. and to establish measurable parameters is impractical for purposes of establishing a Federal standard due to this diversity. EPA's standards for specific discharges also include the type of measurable parameters that commenters suggest. Further, compliance with the requirement to "minimize" falls under the scope of the USCG's implementing regulations established under CWA section 312(p)(5).

Several commenters requested clarification of applicability of the rule when pumping water resulting from condensation or precipitation from below deck if it does not contain oil in quantities that may be harmful. Commenters articulated that discharging this water ensures the stability of the vessel is not compromised, particularly for water collected in void spaces and hopper barge cargo holds. Additional clarification was also requested surrounding applicability of condensation or precipitation discharges from hopper barges. EPA added a requirement in § 139.15(h), for *Decks*, consistent with Part 5.4.1. of the 2013 VGP, to clarify that barges which discharge water pumped from below deck must minimize the contact of below deck condensation with oily or toxic materials and any materials containing hydrocarbon. Additionally, these discharges, as with any discharge covered in the final rule, must also comply with the applicable standards contained in § 139.4, *General operation and maintenance*, and § 139.6, *Oil management*.

EPA received numerous comments expressing the need for clarification surrounding requirements in § 139.4(b)(6) to cover cargo and other onboard materials to minimize discharges. Commenters articulated confusion between requirements applicable to all materials and those requirements that are specific to toxic or hazardous substances. Commenters also expressed concern for a proposed requirement to cover hopper barges because many do not have fixed covers and covering hopper barges with a tarp in some instances may endanger the safety of the vessel and crew. While several commenters expressed concerns with this requirement, they requested different clarifications to this section. Some commenters requested clarification that hopper barge cargo does not need to be containerized or covered if the vessel operator determines it is contrary to essential vessel operations or safety. Others requested clarification that hopper barges cargo does not need to be containerized or covered unless the barge is equipped with a cover. EPA acknowledges commenters' concerns, and the final rule in § 139.4(b)(6) now specifies that cargo must be containerized or covered with the exception of hopper barges without a fixed cover or where covering cargo would negatively impact safety of the vessel, risk loss of life at sea, or otherwise interfere with essential vessel operations.

Several commenters articulated support for the operation and maintenance standard in § 139.4(b)(4) prohibiting dilution of discharges to meet standards. However, one commenter noted that the VGP allows dilution for pH buffering of exhaust gas cleaning system washwater and suggested corresponding changes to the dilution prohibition. EPA disagrees with the commenter that dilution of exhaust gas cleaning washwater is allowable under the VGP; rather, EPA describes such practice in section 4.4.26 of the 2013 VGP Fact Sheet to use reaction water not as dilution but to neutralize the washwater. This is an authorized exhaust gas cleaning systems discharge under § 139.18(a). Another commenter noted support for the dilution prohibition but asked that EPA clarify that this prohibition should not prohibit use of water, for example, to convey sewage or to generate chlorine for disinfection. EPA agrees that use of water may be appropriate in certain instances and added language in the preamble of the final rule to clarify such. However, EPA retained the rule language as proposed to any prohibit dilution for the purpose of meeting any standard in this part.

One commenter articulated that clarification was necessary in the standards to ensure that materials (e.g., disinfectants, cleaners, biocides, coatings, sacrificial anodes) are applied according to manufacturer directives. EPA agrees that additional clarification is appropriate and included language in § 139.4(b)(5)(i) requiring that all materials be applied according to manufacturer specifications.

One commenter requested that EPA provide further information about what the Agency considers to be "incompatible materials," as specified in § 139.4(b)(7). The final rule clarifies that "incompatible materials" are substances which, if mixed, will create hazards greater than that posed by the individual substances.

One commenter requested clarification on the general operation and management requirement in § 139.4(b)(13), which requires operators to maintain any equipment that is expected to release, drip, leak, or spill oil or oily mixtures, fuel, or other toxic or hazardous materials. Specifically, the commenter asked if the required measures are similar to Spill Prevention Control and Countermeasure (SPCC) requirements. The SPCC regulations apply to facilities that meet specific criteria and do not typically include oil transported by vessels. The secondary containment measures in SPCC are focused on large scale oil storage and transfer facilities. This provision is for oil or other hazardous substances that may be released from equipment. Additional requirements for oil management are found within § 139.6, *Oil Management*.

Two comments discussed the requirement in § 139.4(b)(2) that vessels discharge while underway and as far from shore as practicable. One commenter requested that vessels also be prohibited from discharging in sensitive marine areas, shallow habitats, or areas associated with critical industries. EPA disagrees with this comment for several reasons, but most notably that this would be impractical to implement as a national technology-based standard and is more appropriately managed via one of the state petition or application options provided for in Subpart E – *Procedures for States to Request Changes to Standards, Regulations, or Policy Promulgated by the Administrator*. Subpart E provides mechanisms for states to petition EPA or the USCG for more stringent discharge requirements in some or all state waters, including providing the opportunity to establish no-discharge zones. Additionally, to the extent these commenters seek to have EPA impose uniform water quality-based effluent limitation in these regulations, EPA lacks the authority to do so under the VIDA.

Another commenter requested additional details and a definition to clarify the meaning of "as far from shore as practical" in § 139.4(b)(2). EPA acknowledges the commenter's concern, but notes that the interpretation of practicability will necessarily be based on case-specific factors such as technical feasibility to hold discharges without comprising essential vessel operations or the safety of life at sea. The USCG implementing regulations, developed pursuant to CWA section 312(p)(5), may provide additional clarification with respect to the compliance requirements as applied to any individual vessel.

One commenter articulated that the requirement to discharge "as far from shore as practicable" in § 139.4(b)(2) is inconsistent with the dry cargo residue distance limitations in 33 CFR 151.66. EPA disagrees. EPA considers dry cargo residues to be a type of garbage. This interpretation is consistent with 33 CFR part 151. As specified in § 139.2, *Definitions*, a "discharge incidental to the normal operation of a vessel" excludes rubbish, trash, garbage, or other such material discharged overboard, and such excluded discharges are not subject to the distance considerations specified in § 139.4, *General operation and maintenance*.

Two commenters expressed concerns that the impacts of broom cleaning have not been adequately evaluated and that the broom cleaning requirements in § 139.4(b)(9) are infeasible and impractical. EPA disagrees. These broom clean conditions (or equivalent) are already required for all cargo residues within the VGP at Part 5.4.1. The VGP states that "[v]essel owners/operators must clean out cargo residues (i.e., broom clean or equivalent) such that any remaining residue is minimized before washing the cargo compartment or tank and discharging washwater overboard." Accordingly, the final rule simply maintains the status quo from the VGP with respect to this requirement. One commenter also requested clarification that broom clean requirements are only applicable to dry cargo. EPA disagrees. Consistent with the VGP at Part 5.4.1, this provision is applicable to all cargo residues. As proposed and finalized in this rule, "broom clean" requires action to prevent or eliminate any visible concentration of surface residues, regardless of form.

One commenter suggested changing "discharges of pollutants" to "discharges incidental to the normal operation of a vessel" in § 139.4(b)(13) to be consistent with the intent of these requirements. EPA disagrees, pointing out that the requirements in § 139.4(b) only apply to discharges incidental to the normal operation of a vessel; however, EPA did modify this provision to simply require actions to minimize or eliminate "the discharges" rather than the "discharge of pollutants."

Finally, one commenter articulated that BMPs are needed for maintenance of topside surfaces and equipment that is expected to release, drip, or leak oil or oily mixtures, fuel, or other hazardous materials. The final rule includes BMPs for surfaces, such as using painting techniques that minimize discharges, prohibiting the discharge of unused paint or coatings, and keeping decks in broom clean condition, as required in § 139.15, *Decks*. Further, § 139.15 includes a requirement for decks to follow BMPs of using coamings or drip pans and collecting accumulated oil. The USCG implementing regulations, developed pursuant to CWA section 312(p)(5), may provide additional clarification or practices to implement these regulations.

Biofouling management

Several commenters noted that the inclusion of biofouling as an incidental discharge in the proposed standards of performance for biofouling management and hulls and associated niche areas exceeds EPA's authority under the VIDA. EPA disagrees. EPA understands the statutory definition of a "discharge incidental to the normal operation of a vessel" to include any incidental discharge (both active and passive discharge) of biofouling organisms from vessel equipment and systems for several reasons. First, passive biofouling releases are an ordinary accompanying circumstance of vessel operation and transit and, based on a plain reading of the defined term, are genuinely incidental to the normal operation of a vessel. Second, CWA section 312(a)(12)(A)

explicitly uses the word "including" before introducing a list of discharges, which indicates that the list is illustrative and not exhaustive. *See, e.g., In re Vill. Apothecary, Inc.*, 45 F.4th 940, 947 (6th Cir. 2022) ("Although context matters, most courts read the word 'include' to introduce a nonexhaustive list."). Third, CWA section 312(a)(12)(A)(i) states that a "discharge incidental to the normal operation of a vessel" includes "any other pollutant discharge from the operation of a marine propulsion system, shipboard maneuvering system, crew habitability system, or installed major equipment…." This language is best read to encompass passive biofouling discharges from the hull of a vessel because all such discharges are connected to operation of the listed equipment. For example, the shipboard maneuvering systems cannot "operate" without the hull.

The CWA section 312(a)(12)(A)(i) definition also includes "any other pollutant discharge . . . from a protective, preservative, or absorptive application to the hull of the vessel." The same definition at subsection (A)(ii) includes "a discharge in connection with the testing, maintenance, and repair of a system described in clause (i) whenever the vessel is waterborne." Read together, these provisions define a "discharge incidental to the normal operation of a vessel," for the purposes of CWA section 312, to include "a discharge in connection with the… maintenance [] and repair" of any "protective, preservative, or absorptive application to the hull." The accumulation, growth, and discharge of biofouling organisms is intimately "connected" to the maintenance of "protective" and "preservative" applications to the hull. Improper or inadequate maintenance of these applications (or coatings) leads to excessive growth of biofouling organisms and the attendant discharge of such organisms. A vessel is more likely to accumulate and discharge biofouling organisms if the hull coatings are not properly maintained and, even in a properly maintained vessel, biofouling organisms are ultimately discharged from the hull coatings as much as the hull itself.

The statutory context and purpose further support the interpretation that passive biofouling is a "discharge incidental to the normal operation of a vessel." The VIDA was enacted to provide "uniform national standards" for vessel discharges, and EPA regulating passive biofouling under the VIDA would further that purpose by avoiding state-by-state variation. This is particularly appropriate for biofouling because EPA and the USCG participated in the Correspondence Group on Review of the Biofouling Guidelines (currently the 2023 Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species (Resolution MEPC.378(80))), and thus possess the expertise to regulate this discharge. Only a handful of states have programs to regulate biofouling, so excluding the passive discharge of biofouling from the rule risks leaving most states without any program to control such discharges. Additionally, the VIDA has a particular focus on ANS, as evidenced by the numerous specific references and provisions relating to ANS in the statutory text. *See, e.g.*, CWA sections 312(p)(1)(A), (2)(B), (4)(B)(i), (4)(E), & 6(E); 33 U.S.C. 1322(p)(1)(A), (2)(B), (4)(B)(i), (4)(E), & 6(E). Because passive biofouling is a

significant vector for the spread of ANS, it is likely that Congress would have expected the VIDA to control this discharge.

EPA also received comments regarding the regulation of active biofouling releases associated with in-water cleaning activities; however, these are addressed in the comment response for § 139.22, *Hulls and associated niche areas*.

Several commenters suggested changing the name of the biofouling management plan to "hull husbandry and associated niche area management plan" and recommended that the rule include language that is mandatory in those plans to address macrofouling rather than just aspirational goals. EPA agrees that the final rule would benefit from greater specificity and revised the language at § 139.5(b) to clarify that the plan must be developed to minimize the discharge of biofouling organisms, prioritize procedures and strategies to prevent macrofouling, thereby minimizing the potential for the introduction and spread of ANS, and describe the vessel-specific anti-fouling systems and biofouling management practices necessary to comply with the requirements in § 139.5, *Biofouling management*. However, EPA disagrees with commenters' suggestion to change the name of the plan to focus on hull husbandry and associated niche areas as the purpose of the plan is to manage biofouling generally, not just biofouling associated with hulls and niche areas.

Several commenters recommended that certain vessels be excluded from the requirement to develop a biofouling management plan, or otherwise be allowed to develop an abbreviated plan because of the reduced likelihood of certain vessels creating a biofouling risk. One commenter requested that further information be provided on the scientific basis, reasoning, and ANS risks for requiring biofouling management plans for vessels that operate exclusively in inland waters. Several commenters questioned the practicability of a biofouling management plan for towing vessels and barges operating on the inland waterways system that share operational profiles (i.e., transiting the same system, traveling at similar speeds, and sharing similar design). The commenters further noted that the inland waterways system is interconnected, and towing vessels and barges have been transiting throughout the system for decades, making them unlikely to contribute to the introduction and spread of ANS. Similarly, several commenters noted that there are numerous U.S.-flagged passenger vessels that confine their operations to a specific body of water or undertake short voyages, thereby posing no risk of introducing or spreading ANS. These commenters therefore suggested that such passenger vessels should not be required to have a biofouling management plan. One commenter noted that they have not seen biofouling as an issue for vessels operating exclusively on the Laurentian Great Lakes. As such, the commenter requested EPA forego the requirement to develop a biofouling management plan for vessels that operate exclusively on the Laurentian Great Lakes or, as an alternative, allow vessels operating exclusively on the Laurentian Great Lakes the opportunity to provide an abbreviated plan or statement attesting to regular visual inspections for biofouling. One commenter suggested that EPA

introduce the concept of risk in its biofouling provision, as it has done with respect to ballast water discharges, and further suggested that the regulations specify that the requirement to develop a plan does not apply to a vessel that operates within a single COTP Zone if the Administrator determines that the vessel cannot contribute to the spread or introduction of ANS. EPA disagrees with these comments. While ANS are often associated with vessels operating in estuarine and marine waters, ANS, including from biofouling, are also an environmental concern in inland waters (including the Laurentian Great Lakes) and from vessels that may be operating on relatively short voyages. The requirement of a biofouling management plan is also consistent with the VGP and existing USCG regulations found at 33 CFR 151.2050(g)(3), which although did not explicitly require the development of a biofouling management plan, required the majority of the components individually. Finally, even if commenters were correct that biofouling on certain vessels presented zero risk of the introduction and spread of ANS from one area to another, it would not follow that such vessels should be exempted from the biofouling management requirement. Biofouling releases that do not result in the introduction of ANS may still be discharges under the CWA, and EPA under the VIDA is charged with regulating all discharges incidental to the normal operation of a vessel and not just those associated with the introduction and spread of ANS. Additional details of the plan would fall under the USCG's implementing regulations established under CWA section 312(p)(5).

One commenter was supportive of the requirement for the development of a biofouling management plan but noted that it was not clear if EPA or the USCG is charged with reviewing, approving, and enforcing the plan. EPA disagrees. Both the proposed and final rule indicate that details of the biofouling management plan would be established as part of the USCG’s implementing regulations.

One commenter noted that most U.S.-flagged passenger vessels do not engage in international voyages and that the Clean Hull Act’s provisions concerning an antifouling system do not apply. The commenter further explained that most of these vessels do not have ballast water tanks, so the National Invasive Species Act and its ballast water management plan requirement (including biofouling maintenance and sediment removal procedures) do not apply. As a result, the commenter contended that a new regulatory requirement is being imposed on approximately 2,074 U.S.-flagged passenger vessels. EPA disagrees with this comment. The VIDA directs EPA to establish uniform Federal standards of performance for discharges incidental to the normal operation of primarily non-military and non-recreational vessels 79 feet in length and above into the waters of the United States or the waters of the contiguous zone. The VIDA’s directive to regulate such vessels does not depend on a vessel’s prior regulation under the Clean Hull Act or National Invasive Species Act. Further, biofouling on vessels’ (including passenger vessels’) various equipment and systems is one of the main vectors for the introduction and spread of ANS (Drake and Lodge, 2007; Gollasch, 2002; Hewitt and Campbell, 2010; Hewitt et al., 2009), and biofouling occurs on equipment and systems

other than ballast water tanks. The requirement of passenger vessels to develop a biofouling management plan is therefore retained in the final rule.

EPA received several comments concerning the contents of and/or lack of details (e.g., development, approval, enforcement) in the standard for the biofouling management plan. One commenter noted that the proposed rule is less detailed for biofouling management than the 2013 VGP and that clarification is needed that a vessel-specific biofouling management plan is required to be developed by each vessel. The commenter also recommended additional detail be provided on both the minimum plan elements required in a vessel-specific biofouling management plan and the requirements for documenting biofouling management plan implementation. One commenter noted that the proposed rule provides only general comments regarding biofouling management and that more specificity should be included regarding the extent of biofouling risks and how they will be managed. The same commenters also contended that it is incorrect that travel within one COTP Zone limits ANS risk and that reports and publications about risks and proposed management tools should be reviewed and included in any regulatory outcomes of biofouling management. The commenters further recommended that the management plan should include more detailed recommendations for biofouling maintenance and sediment removal procedures. Another commenter suggested including in the biofouling management plan an annual inspection of a vessel's hull for any cracks and leaks. Several commenters recommended that the requirements for the biofouling management plan in the implementing regulations should align with international requirements (i.e., the IMO International Convention on the Control of Harmful Anti-Fouling Systems on Ships – hereafter the "BWM Convention" – and the IMO Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Aquatic Species). One commenter expressed concern about the resources needed to develop plans (or even templates) for their fleets, and strongly recommended that the USCG allow the development and use of templates for inland industry segments that share operational characteristics. EPA disagrees with the commenters' request that EPA's rule include more details on the development of a vessel-specific biofouling management plan. While EPA is establishing the basic requirement for a vessel to develop a biofouling management plan, EPA considers details of that plan to be more appropriately left to the USCG implementing regulations established under CWA section 312(p)(5). Also, EPA recognizes that vessels with similar operational profiles, such as vessels that cross the same waterbodies, travel at similar speeds, and share the same design, may employ the same management measures such as selecting the same types of anti-fouling systems and applying the same inspection and cleaning schedules. EPA anticipates that fleet owners may develop a biofouling management plan template that can be readily adapted into a vessel-specific biofouling management plan but acknowledges that details on the implementation of the development and maintenance of biofouling management plans requirement fall under the USCG's implementing regulations established under CWA section 312(p)(5).

Several commenters noted that it would be helpful to reference § 139.22, *Hulls and associated niche areas* and § 139.28, *Seawater piping*, respectively, in § 139.5, *Biofouling management* because biofouling management is also addressed. Similarly, another commenter urged EPA to consider combining biofouling management with similar sections (e.g., § 139.22 and § 139.28) for better consistency, thereby covering all relevant control measures in the required biofouling management plan. EPA agrees it would be helpful to reference associated sections and revised § 139.5 in the final rule to include references to § 139.22 and § 139.28, as well as other specific discharges with biofouling considerations, including § 139.13, *Cathodic protection*, § 139.14, *Chain lockers*, and § 139.22, *Hulls and associated niche areas*, § 139.28 *Seawater piping*, and § 139.29, *Sonar domes*.

One commenter requested that if the California Biofouling Regulations or other state regulations will continue to exist, EPA should include clarifying text in the rule. EPA disagrees that such a clarification is required in the final rule; however, EPA reiterates here that the VIDA directs EPA to establish uniform Federal standards and generally preempts states, with limited exceptions, from establishing more stringent discharge standards once the USCG implementing regulations required under CWA section 312(p)(5)(A) through (C) are final, effective, and enforceable.

Several commenters requested that EPA include language requiring that vessel operators document compliance with the biofouling management plan in shipboard logs and plans and provide rationale if a discharge could not be minimized or eliminated per a BMP.

EPA disagrees that compliance language should be included in the final rule. Details on the compliance with biofouling management plans fall under the USCG's implementing regulations established under CWA section 312(p)(5).

Oil management and environmentally acceptable lubricants

Oil management

Regarding the general discharge standards of performance for oil management, one commenter requested clarification on how EPA determines what is “harmful” without numeric values, and similarly, what are the actual petroleum criteria. The final rule in § 139.2, *Definitions*, defines a “discharge of oil in such quantities as may be harmful” by reference to 40 CFR 110.3, which includes specific criteria describing such discharges. While not a specific numeric value, Part 110, promulgated in 1996, does clarify that a discharge of oil in such quantities as may be “harmful” includes any discharge that causes a film or sheen upon or discoloration of the surface of the water or adjoining shorelines or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

The rule at § 139.3, *Other Federal laws*, references other existing requirements applicable to discharges of oil. For vessels subject to Annex I of the International Convention for the Prevention of Pollution from Ships (as implemented by the Act to Prevent Pollution from Ships (APPS)) and U.S. Coast Guard regulations found in 33 CFR 151.09, discharges of oil greater than 15 parts per million (ppm) are prohibited.

Environmentally acceptable lubricants (EALs)

EPA received numerous comments specific to EALs that discussed the applicability of the standard and several other topics. The final rule in § 139.2, *Definitions*, defines "oil-to-sea interface" to mean "any seal or surface on shipboard equipment where the design is such that oil or oily mixtures can escape directly into surrounding waters. Oil-to-sea interfaces are found on equipment that is subject to submersion as well as equipment above the surface line that extends overboard or is mounted to the exterior of the hull." As such, pursuant to § 139.6, *Oil management*, an EAL must be used in any oil-to-sea interface on the equipment meeting this definition, unless such use is technically infeasible. One commenter noted that the list of oil-to-sea interfaces included in the preamble of the proposed rule would not be readily available for shipowners and that text should be included in the regulatory text for details and consistency and to ensure the basis/history of requirements. EPA provided further clarification and examples of oil-to-sea interfaces in the preamble to this final rule. Commenters did not provide sufficient information to enable EPA to determine whether specific equipment named by commenters fits that definition, largely because of the unique characteristics of every vessel and the vast number/types of equipment that may be onboard a vessel, including any equipment that extends overboard (for which EPA does not maintain such an inventory). Even if EPA provided an exhaustive list of oil-to-sea interfaces, that list would need to change regularly as new equipment was manufactured and installed. The final rule preamble includes the same non-exclusive list of example oil-to-sea interfaces as in the proposed rule preamble, but the Agency opted not to include such a list in the regulatory text to avoid confusion as to whether the list represented the exclusive list oil-to-sea interfaces for which EALs are required. EPA's approach also provides an opportunity for the USCG, should it choose to do so, to identify specific equipment with oil-to-sea interfaces as part of its implementing regulations.

One commenter expressed concern that EPA is proposing to eliminate numerous oil-to-sea interfaces from regulation and has lumped the remaining oil-to-sea interfaces together. EPA disagrees that the final rule exempts categories of oil-to-sea interfaces that were previously regulated under the VGP. The same oil-to-sea interfaces regulated under the VGP were proposed to be subject to the standards and are part of the final standards. EPA did eliminate the list of specific enumerated oil-to-sea interfaces that had been identified in the title of Part 2.2.9 of the VGP because it had the potential to create confusion by implying that only those interfaces were subject to the EAL requirements.

Rather, as proposed and finalized, the standard at § 139.6(e) is written to specify that EALs are required for *any* oil-to-sea interface, unless technically infeasible.

Several commenters questioned whether all deck equipment should be considered an "oil-to-sea interface" subject to the EAL requirement, or whether only certain deck equipment would be subject to the requirement. Several commenters supported EPA's clarification in the proposed rule definition of "oil-to-sea interface" regarding the applicability of EALs to only that deck equipment that extends overboard, with some suggesting that EPA should expand on this requirement to require EALs for all deck equipment. Other commenters requested clarification whether EALs are required for hydraulic equipment, including all hydraulically actuated deck equipment, that may release lubricants/hydraulics to the water or on-deck. Another commenter sought clarification as to whether the new definition of "oil-to-sea interface" includes all on-deck equipment or just such equipment for which existing measures are not in place to prevent oil from going overboard. The same commenter also sought clarification as to whether equipment that can extend overboard includes a lifeboat, pontoon, doors that open over the side, etc. EPA disagrees with commenters requesting that all deck equipment be required to use EALs. EPA's definition for "oil-to-sea interface" in the final rule states that only those portions of deck equipment designed to extend overboard are considered to have an oil-to-sea interface. EPA's final rule is intended to regulate those portions of vessel deck equipment from which lubricant or hydraulic fluid losses cannot otherwise be managed onboard the vessel. Drips or leaks onto the vessel deck from other deck equipment that does not extend overboard are typically captured before or during deck washdown, or otherwise may drain to the bilge, and are treated or managed consistent with the requirements for those incidental discharges. Therefore, EPA is not requiring use of EALs for those uses of lubricants or hydraulic fluids. EPA acknowledges that in certain instances, it may be difficult for a vessel operator to manage releases of oils on-deck; however, the Agency expects vessel operators will take necessary precautions to minimize discharges from such releases and as such is not requiring use of EALs for all deck equipment. The Agency did, however, modify part of the definition for "oil-to-sea interface" to provide greater clarity regarding applicability to deck equipment. As proposed, oil-to-sea interfaces were identified as being "found on equipment that is subject to submersion as well as equipment that can extend overboard." As finalized, oil-to-sea interfaces are "found on equipment that is subject to submersion as well as equipment above the surface line that extends overboard or is mounted to the exterior of the hull."

One commenter noted that the inclusion of deck equipment is a significant expansion of the definition of oil-to-sea interface and that this equipment does not pose the same risk as underwater mechanisms. Further, the commenter noted that equipment extending over the side of a vessel does not pose the same risk as equipment immersed in water and questioned why EPA is treating these two situations the same. EPA disagrees. EPA interprets the existing VGP requirements to apply to vessel equipment with an oil-to-sea

interface when the operation of that equipment precludes the vessel operator from managing the release of oil from such equipment, such as would be the case for the release of oil from equipment extending over the side of the vessel. The Agency acknowledges that the risks and quantities of lubricants/hydraulics that may be released from any piece of equipment are different; however, the EAL requirement is established based on a uniform approach of addressing all equipment deemed to have an oil-to-sea interface identically, including the allowance to not have to use an EAL if determined to be technically infeasible. EPA refers commenters to the EAL technical development document published in connection with the 2013 VGP for additional details (http://www.regulations.gov/document?D=EPA-HQ-OW-2011-0141-0006).

One commenter objected to the expense associated with EALs, including replacement of seals, and indicated a need for a longer compliance timeline (i.e., 15 years) for existing equipment. Similarly, another commenter stated that the EAL requirement should only apply to new equipment, especially larger hydraulic equipment, and that if equipment was not originally tested with EALs, the threshold for leaking was not evaluated. EPA disagrees with these commenters and notes that EPA demonstrated that these requirements were determined to be BAT (and economically achievable because they were of comparable cost) at the time the Agency issued the VGP, and that the Agency is merely carrying forward the existing BAT requirement from the VGP as required under the VIDA (i.e., no less stringent than the VGP). As described below, EPA is retaining the technical infeasibility concept that provides vessel operators with the authority to use non-EALs in certain instances. Notably, this may include instances when no EALs are available for a specific piece of equipment, such as may be the case where a certain type of equipment has not been tested with EALs.

Several commenters expressed concern with removal of the definition of the term "technical infeasibility" upon which a vessel may be able to avoid having to install EALs. Other commenters indicated comparable concerns regarding removal of the requirements defining test methods for biodegradability, ecotoxicity, and bioaccumulation, consideration of the availability of EALs, or the reliance on third party certifications bodies such as Ecolabel. EPA notes that the its rule did not define technical infeasibility, speak to third party certifications, or identify applicable test methods for EAL characteristics because, pursuant to CWA section 312(p)(5), the USCG is charged with establishing implementing regulations for provisions such as monitoring and documentation and the design, construction, testing, approval, installation, and use of marine pollution control devices ("equipment") as necessary to ensure compliance with the EPA standards. So, while EPA retained the technical infeasibility concept for EALs, the Agency is deferring to the USCG to define what constitutes technical infeasibility of the EAL standard; speak to the applicability of third-party labeling programs; and establish any testing or other similar requirements.

Two commenters pointed out that equipment manufacturers are known to delay or deny testing EALs to preserve a technical feasibility determination. The Agency understands the concerns raised by the commenter with regards to equipment manufacturers intentionally delaying or denying testing of EALs in their equipment to preserve a technical infeasibility determination. However, these concerns relate to implementation of the technical infeasibility criteria and therefore may be addressed by the USCG during the development of its implementing regulations pursuant to CWA section 312(p)(5).

Several commenters also noted ongoing concerns regarding the safety and proper functioning of EALs in stern tubes, particularly for older equipment. One commenter noted that the use of EALs for stern tubes remains very much the exception and not the norm. EPA appreciates the observations, and notes that generally, further research into EAL failures in stern tubes has shown this to be a design flaw or selection of an improper EAL, since EALs of comparable operational design characteristics provide less room for forgiveness. EPA points out that various organizations have published information and conducted webinars designed to help operators select and optimize performance of EALs, such as selecting an EAL with a higher viscosity than a traditional oil or optimizing the aft stern tube bearing design. For example, *see* https://www.dnv.com/news/environmentally-acceptable-lubricants-show-reduced-capabilities-under-certain-conditions-158982. Also, the VGP annual reports submitted for calendar year 2020 indicate that more than 70 percent of vessels that report stern tubes as an oil-to-sea interface indicate the use of an EAL for the stern tube. As such, this requirement is retained in the final rule as proposed. The final rule does provide that a vessel operator can determine installation of a stern tube EAL to be technically infeasible to the extent this is demonstrated to be a valid concern.

One of the commenters requested that EPA restore language from the VGP recommending use of seawater-based systems for their stern tube lubrication to eliminate the discharge of oil from these interfaces to the aquatic environment. EPA agrees and has added this VGP language back into the text of the final standard at § 139.6(e).

One commenter expressed concern that the impact of EAL use in other applications now included in these standards (e.g., thrusters, mooring lines, on-deck equipment) is unknown at this time and EAL use in these other applications should be approached with caution to avoid early failures as experienced with stern tube applications. EPA disagrees as the VGP required EALs for the same oil-to-sea interfaces as EPA is requiring in the final rule and, to date, EPA is unaware of and has no information in the record indicating general equipment failures resulting from the use of EALs beyond stern tubes discussed above. Again, a vessel operator may make a technical infeasibility determination if such is the case (in accordance with any relevant provisions of the USCG's implementing regulations developed pursuant to CWA section 312(p)(5) that may speak to technical infeasibility determinations).

One commenter objected to EPA's clarification in the proposed rule preamble that air gap seals are not oil-to-sea interfaces, claiming they can in fact leak. Another commenter pointed out that when damaged, air gap seals can leak with the lubricant ending up back in the ocean. While EPA agrees with the comment that damaged air gap seals can leak, EPA disagrees with the characterization that these are thus oil-to-sea interfaces because their *design* is such that leaks are not expected to occur if they are operated and maintained correctly. *See* § 139.2, *Definitions* ("Oil-to-Sea interface means any seal or surface on shipboard equipment where the *design* is such that oil or oily mixtures can escape directly into surrounding waters.") (emphasis added). While not a requirement in the final standard, EPA agrees with the commenter that for the best protection, an air gap seal should still use an EAL as the lubricant for maximum protection.

One commenter objected to EPA's overly broad characterization in the proposed rule regarding the toxic effect of hydrocarbons. EPA agrees and has revised the associated language in Section IV.C., *Environmental Impacts of Discharges for Which Technology-Based Discharges Standards Are Established by This Rule*.

One commenter also noted that EALs can have adverse impacts on aquatic life and that additional research is needed. The Agency acknowledges that while EALs are generally less toxic to aquatic life, they are not all necessarily considered non-toxic. Based on available research, the product substitution of EALs for other lubricants in oil-to-sea applications (unless technically infeasible) together with the required BMPs for maintenance represents BAT.

One commenter requested clarification as to whether biodegradation testing and measurement of bioaccumulation potential of a lubricant should be carried out at the component level or on a fully formulated product. EPA clarifies here that, for biodegradability, individual components are to be tested, as well as any products that may be formed during reaction of substances within the product. For bioaccumulation and toxicity, the criteria apply to each component of the lubricant.

One commenter noted the need to delete the reference to ASTM D7373 since it is now obsolete. EPA agrees. The reference has been omitted from the final rule because, under the VIDA, identification of appropriate test methods is under the purview of the USCG in its implementing regulations.

Subpart C—Standards for Specific Discharges Incidental to the Normal Operation of a Vessel

Ballast tanks

Definitions

One commenter requested a change to the definition of ballast water in § 139.2 to exclude the clause "or during the cleaning, maintenance, or other operation of a ballast tank or ballast water management system of the vessel," stating that this definition is not consistent with existing international, federal, regional, state, and local definitions and may leave vessels unable to comply with the numeric discharge standards in accordance with § 139.10(d) in certain scenarios. This comment is based on concerns that water used to clean ballast tanks or otherwise drained to the bilge during routine strainer maintenance would be considered ballast water and that it is technologically infeasible to meet the ballast water discharge standards in these instances. EPA acknowledges a deviation of the ballast water definition from previous/other definitions of this term; however, EPA's definition uses the same language as the defined term "ballast water" in the VIDA (CWA section 312(p)(1)(B)). EPA disagrees with the commenter's assertion that it would be technologically infeasible for water used to clean ballast tanks to meet the ballast water discharge standard. EPA expects discharges from ballast tank cleaning operations within waters of the U.S. or waters of the contiguous zone to meet the discharge standard, or otherwise be managed to not violate EPA's standard (e.g., capture this discharge for onshore disposal). The commenter provides no details on why such an approach is technologically infeasible. EPA also disagrees with the commenter that water drained to the bilge during routine strainer maintenance would be considered ballast water, presumably because the commenter believes the strainer would be considered part of the ballast water management system (BWMS). EPA does not consider the sea chest, grates, strainers, etc. to be part of the BWMS; and as such, maintenance of these areas would not be subject to the ballast water discharge standard. Generally, these areas are considered part of the seawater piping system and would be subject to applicable requirements in § 139.28, *Seawater piping*.

Another commenter requested that EPA include a definition of "dedicated vessel combination" as that term is used in § 139.10(d)(3)(ii). The commenter noted that owners/operators may occasionally be required to exchange a vessel that is part of an articulated tug barge (ATB) for maintenance or to meet regulatory, commercial, or operational needs. EPA disagrees that a definition of "dedicated vessel combination" is needed. EPA uses ATBs and integrated tug barges (ITBs) as two examples of combinations that are covered under the exemption, and EPA believes these examples provide sufficient clarity on the term's meaning. For example, the situations provided by the commenter are still considered dedicated vessel combinations and thus would not be exempted from the numeric ballast water discharge standard.

Applicability

One commenter noted that rules are needed for shared systems, such as for large cruise ships that may use shared tanks, pumps, and pipes for ballast water and graywater

systems. Under the final rule, and consistent with the 2013 VGP, discharges from shared ballast water and graywater systems are required to meet the discharge requirements applicable to each of those commingled discharges, unless otherwise noted in the regulations, such as for use of firemain water for deck washdown. Accordingly, EPA concluded that additional regulations are not needed to address the situation the commenter describes.

General exclusions

Several comments included requests for EPA to add or remove exclusions from the rule. EPA received one comment that ferry vessels operating in a single COTP Zone should be exempt from the final rule. EPA interprets this comment to mean ferries should be excluded from ballast tank discharge requirements specified in § 139.10, *Ballast tanks* of the proposed rule. EPA disagrees. The final rule adopts the five exclusions from the ballast tank requirements as mandated by Congress in the VIDA. Ferry vessels that do not meet the exclusions must comply with the ballast tank requirements; however, ferry vessels that take on and discharge ballast water in a single COTP Zone, as described by the commenter, would qualify for the exemption at § 139.10(d)(3)(iii) and would not be required to meet the numeric ballast water discharge standards.

One commenter recommended the removal of any exemption for the discharge of ballast water pollution from the CWA. EPA interprets this comment to mean that all exclusions from ballast tank discharge requirements specified in § 139.10(b) should be removed. EPA disagrees. The final rule adopts the five exclusions from the ballast tank requirements as mandated by Congress in the VIDA. In addition, EPA finalized eight exemptions from the numeric ballast water discharge standards. Please see the responses in the "Ballast water discharge standard exemptions (non-Great Lakes vessels)" subsection of this comment response document and Part 4.4.3.5.6 of the 2013 VGP Fact Sheet for EPA's rationale for these exemptions.

EPA received one comment that the following are not viable options for U.S. Lakers to meet the ballast water discharge standard: receive water meeting Safe Drinking Water Act or Health Canada's Guidelines for Canadian Drinking Water Quality, discharge ballast water to an onshore reception facility for treatment, and design new or retrofit existing U.S. Lakers to continually take on and discharge ballast water in a flow-through system. EPA acknowledges that the exclusions from ballast tank requirements discussed by the commenter are not viable options for all U.S. Lakers. The final rule adopts the five exclusions from the ballast tank requirements as mandated by Congress in the VIDA. While Congress did not exclude U.S. Lakers from ballast tank requirements, EPA included an exemption in § 139.10(d)(3)(vi) for Lakers from meeting the numeric ballast water discharge standards. EPA notes that the final rule requires new Lakers to meet an equipment standard and to install, operate, and maintain a BWMS that has been type-approved by the USCG. A new Laker is defined as a vessel that is 3,000 GT and above and that operates exclusively in the Great Lakes and the St. Lawrence River west of a

rhumb line drawn from Cap des Rosiers to Pointe-de-l'Ouest (West Point), Anticosti Island, and west of a line along 63° W. longitude from Anticosti Island to the north shore of the St. Lawrence River and that is constructed after the effective date of USCG regulations promulgated pursuant to CWA section 312(p)(5)(A)(i).

EPA received one comment that passenger-carrying submersibles operating in one COTP Zone should be excluded from the ballast water tank requirements at § 139.10, *Ballast tanks*. EPA disagrees. The final rule adopts the five exclusions from ballast tank requirements as mandated by Congress in the VIDA. Passenger-carrying submersibles operating in one COTP Zone that do not meet the exclusions must comply with the ballast water tank requirements under the final rule. However, some form of exemption for short distance voyages from the numeric ballast water discharge standards is warranted. Passenger-carrying submersibles (and any other vessels) that take on and discharge ballast water in a single COTP Zone or that do not travel more than 10 NM and pass through no locks qualify for the exemptions identified at § 139.10(d)(3)(iii) through (iv) and are not required to meet the numeric ballast water discharge standards.

Regarding the exclusions dealing with the National Defense Reserve Fleet (NDRF), two commenters requested that EPA revise the ballast tank exclusions to require that any replacement vessels brought into the NDRF must comply with the ballast tank requirements and ballast water discharge standards. EPA disagrees in part. EPA disagrees that all vessels registered in the NDRF should be excluded from ballast tank requirements. The final rule adopts the exclusion for these vessels verbatim as mandated by Congress in the VIDA. Congress specified that only vessels in the NDRF scheduled for disposal and that do not a have an operable BWMS should be excluded from ballast tank requirements. EPA agrees that any replacement vessels brought into the NDRF are required to comply with ballast tank requirements set forth in the final rule (presuming they are not scheduled for disposal without operable BWMS). EPA notes that all replacement vessels brought into the NDRF should already comply with ballast tank requirements as part of their normal operation regardless of their NDRF status.

Several comments addressed the exclusion dealing with water taken onboard from a public or commercial source. First, one commenter supported the approach that the use of U.S. or Canadian potable water for ballast provides more flexibility for operators. Other commenters suggested that EPA should consider allowing vessels to use public or commercial water sources that meet requirements under the World Health Organization or the Maritime Labour Convention, 2006 for drinking water quality. EPA disagrees. The final rule adopts the five exclusions from the ballast tank requirements as mandated by Congress in the VIDA. Under the VIDA, Congress excluded vessels that discharge ballast water consisting solely of water taken onboard from a public or commercial source that, at the time the water is taken onboard, meets the applicable requirements or permit requirements of the Safe Drinking Water Act (42 U.S.C. 300f et seq.). Congress did not expand the exclusion to include any international drinking water quality

standards. That includes not specifically providing for the use of water meeting the Health Canada's Guidelines for Canadian Drinking Water Quality. EPA determined implementation details of this Congressionally-mandated exclusion, such as identification of potable water sources consistent with Safe Drinking Water Act regulations, are more appropriately left to the USCG as part of its implementation, compliance, and enforcement requirements under CWA section 312(p)(5). As a practical matter, EPA would expect that vessels discharging ballast water consisting solely of water taken onboard from public or commercial water sources that meet requirements of Canadian, World Health Organization, or the Maritime Labour Convention, 2006 for drinking water quality are unlikely to contain ANS in excess of the final standards of performance.

EPA received two comments requesting that EPA and the USCG update the Public Water System documentation requirement to allow for a record in the vessel logbook or record book instead. EPA acknowledges this comment but notes that under the VIDA, Congress tasks the USCG, not EPA, to develop corresponding implementing regulations that, among other items, are to include recordkeeping and reporting requirements. As such, changes in documentation requirements specified in the existing USCG regulations (33 CFR 151.2025) are beyond the scope of EPA's rule.

EPA received one comment requesting that vessels using onboard reverse osmosis (RO) systems that meet or exceed the requirements of 40 CFR parts 141 and 143 be eligible for use under the exclusion for water meeting the applicable requirements of the SDWA in § 139.10(b)(3) as long as proper documentation is obtained from the USCG and/or EPA. EPA disagrees. Under the VIDA, Congress is clear that this exclusion applies if the water meets the applicable requirements of the Safe Drinking Water Act at the time it is taken onboard. This does not contemplate onboard treatment as a means for compliance. While onboard RO systems may be capable of producing water that meets the national primary and secondary drinking water standards, the systems do not satisfy the myriad of requirements necessary to be recognized as a public or commercial water source under the Safe Drinking Water Act (42 U.S.C. 300f et seq.) for the use as BWMSs. In EPA's 2015 *Feasibility and Efficacy of Using Potable Water Generators as an Alternative Option for Meeting Ballast Water Discharge Limits* study, EPA considered whether potable water generators such as RO systems could be used onboard vessels that are exempt from the ballast water discharge standard, such as inland and seagoing vessels less than 1,600 Gross Registered Tons, as an alternative measure to reduce the number of living organisms in their ballast water discharges. To date, no onboard potable water system has sought or achieved recognition as a public or commercial water source (as would be necessary for a vessel to qualify for the ballast tank exclusion, or as a USCG type-approved BWMS (as would be necessary to meet the ballast water discharge standard at § 139.10(d)). EPA acknowledges that discharges from onboard RO systems otherwise are subject to the requirements in § 139.16 (Desalination and purification systems).

EPA received two comments regarding permanent ballast water in sealed tanks that requested the removal of the "except under emergency circumstances" language from the ballast water exclusion proposed in § 139.10(b)(4) for a vessel that carries all permanent ballast water in sealed tanks that are not subject to discharge. EPA agrees. EPA elected to add the phrase "except under emergency circumstances" in the proposed rule to ensure the safety of the vessel and crew, and in recognition of other emergency situations not resulting from the negligence or malfeasance of the vessel owner, operator, master, or person in charge. The final rule excludes the phrase "except under emergency circumstances" in recognition that § 139.1(b)(3) provides that a vessel may discharge, including ballast water from a sealed tank, if compliance with this part would compromise the safety of life at sea, including emergency circumstances. As such, clarification about emergency circumstances specific to discharges from sealed tanks is unnecessary.

Finally, one commenter addressed the exclusion dealing with reception facilities, recommending that EPA and the USCG allow vessels to discharge ballast water to commercial wastewater treatment facilities without requiring the use of USCG type-approved equipment to meet the numeric ballast water discharge standards. This comment is outside the scope of this rule because Congress specifically excluded discharges of ballast water into a reception facility from the federal discharge standard. While EPA understands the basis for this comment, EPA notes that any given reception facility may have different regulatory options and may not require the vessel to discharge through a USCG type-approved BWMS.

Ballast water best management practices – Comment response for proposed rule

Multiple commenters opposed EPA's decision to exclude from the proposed rule one ballast water BMP that was included in both the VGP and USCG regulations at 33 CFR part 151 subparts C and D. The proposed rule did not require that vessel operators minimize or avoid uptake of ballast water in the following areas and situations: areas known to have infestations or populations of harmful organisms and pathogens (e.g., toxic algal blooms); areas near sewage outfalls; areas near dredging operations; areas where tidal flushing is known to be poor or times when a tidal stream is known to be turbid; in darkness, when bottom-dwelling organisms may rise in the water column; where propellers may stir up the sediment; and areas with pods of whales, convergence zones, and boundaries of major currents (hereafter referred to as ballast uptake BMP).

Those comments asserted that the ballast uptake BMP included in the VGP and the USCG regulations set proactive requirements and that difficulty in implementation and enforcement is not enough reason for their exclusion. Additionally, some of the commenters stated that these requirements have been in place for many years, and issues have not historically been raised about this BMP being outside the vessel master's control. Although commenters expressed support for inclusion of the uptake BMP, EPA

did not receive any data or comments providing examples or evidence that the ballast uptake BMP is being implemented and enforced in a meaningful way. The final rule excludes this ballast uptake BMP as an individual requirement. However, EPA expects that a vessel operator will incorporate appropriate vessel-specific ballast water BMPs into its ballast water management plan (BWMP) consistent with the final rule requirement to develop such a plan to minimize the uptake and discharge of harmful aquatic organisms and pathogens.

One commenter stated the proposed rule included other similarly challenging implementation and enforcement language (e.g., standards require vessel operators to "minimize" discharges without further clarification). EPA disagrees with this comment; the term minimize is defined as "to reduce or eliminate to the extent achievable using any control measure that is technologically available and economically practicable and achievable and supported by demonstrated best management practices such that compliance can be documented in shipboard logs and plans." This definition provides the necessary clarification for a vessel operator to implement the general standard and, for example, document in the BWMP steps to comply with the requirements, as applicable.

Commenters opposing the exclusion of the ballast uptake BMP also argued that the BMP is a foundational protective measure that has been in practice for many years. EPA received comments that the proposed exclusion of the ballast uptake BMP violated the VIDA provision that EPA's rule must be as stringent as the VGP and that the ballast uptake BMP prevents and minimizes scenarios where water quality conditions can overburden a type-approved BWMS and result in underperformance or damage to the system, creating potential risks to the receiving environment and challenges with meeting the numeric discharge standard. EPA agrees that this ballast uptake BMP could potentially provide additional protections and better prepare water for treatment systems, but many of the scenarios are out of the control of vessel operators and are too vaguely/weakly defined to be uniformly enforced in the waters subject to the final rule. While the exclusion of this BMP could be seen as a reduction in stringency, EPA was not able to identify any information demonstrating that states or other regulatory agencies have adequately monitored and enforced compliance with this requirement. The VIDA allows for a reduction in stringency if new information is available (CWA section 312(p)(4)(D)(ii)(II)(aa)). EPA requested monitoring and enforcement information from states and the USCG and determined that the lack of any information documenting implementation, compliance assessments, or enforcement of this measure supported the removal of this requirement from the regulatory language.

One commenter stated that the ballast uptake BMP should be retained because it provides a "real-time" framework for addressing emergency situations rather than going through the emergency order process (for which VIDA establishes, per state comment, an unacceptable 180-day timeframe for responding to state petitions). EPA disagrees with this statement; vessels can still perform the uptake BMP during emergency situations as

appropriate and EPA would suggest that they include such a provision as part of their development of their BWMP. The 180-day timeframe codified in the final rule is consistent with the timeframe established in the VIDA itself.

Several commenters were concerned that the elimination of the ballast uptake BMP would create a higher risk for ANS invasions. EPA understands the commenters' concerns; however, the VIDA as passed by Congress instructs EPA to develop Federal standards of performance for discharges incidental to the normal operation of a vessel based upon the best available technology. This means the development of these standards is not a risk-based calculation. Additionally, EPA does not have the authority to supersede provisions of the VIDA that Congress passed, especially those related to state and emergency petition procedures and regulations.

EPA received several comments agreeing with EPA's assertion that the uptake BMP is vague and imprecise, with several of those commenters suggesting alternative phrasing and language for the ballast uptake BMP. For instance, several commenters suggested that EPA specify the uptake BMP to be applicable only to untreated ballast water. EPA disagrees that the clarification that the ballast uptake BMP should only apply to untreated ballast water is necessary. Even if ballast water is treated during uptake and/or discharge, the retained BMPs in § 139.10(c) are important for reducing discharges of ANS and thus, are reasonably necessary to achieve the numeric discharge standards for ballast tanks. See 33 U.S.C. 1322(p)(4)(B)(ii)(2). One exception to this is ballast water that consists solely of water meeting the Safe Drinking Water Act requirements per § 139.10(b)(3) of this rule, in which case they are excluded from the standards for ballast water discharges, including the BMP requirements. One commenter suggested target organism monitoring using eDNA to detect harmful aquatic organisms and pathogens to determine if ballast treatment would be needed, such that the corrosion downsides associated with routine chemical treatment could be minimized. EPA disagrees with this commenter and does not believe that eDNA as a water quality threat detection tool is an implementable requirement to include in the ballast uptake BMPs.

Multiple commenters stated that the uptake BMP requirements do not constitute a prohibition and are not overly burdensome to regulated vessels. One commenter suggested that EPA should incorporate the uptake BMPs as guidance for vessel operators to implement "if practical," rather than as mandatory requirements. EPA agrees that incorporating the uptake BMPs as practicable can be helpful and as such encourages vessel operators to include the uptake measures as appropriate in their BWMPs. However, a major implementation and enforcement issue present with the phrasing of the ballast uptake BMPs in the regulatory text was that they were already vague and not well-defined enough to make clear when an action a vessel operator took was or was not compliant. By adding the phrase "if practical," the regulatory text would have been made more ambiguous, making compliance with these regulations even more difficult to identify. EPA did not have information on which to develop a technology-based

definition for words and phrases used in the uptake BMPs like "areas" and "known to [have/be]", and further was unable to find available data that demonstrated the achievability (economic or otherwise) of the application of those standards. Instead, EPA expects that vessel operators will implement situation-specific ballast water BMPs according to their BWMP which the final rule requires to minimize the uptake of harmful aquatic organisms and pathogens.

Multiple commenters supported the removal of the ballast uptake BMP because it is impracticable to implement and enforce. For instance, limiting the ability of a vessel to uptake ballast water at the docks impacts cargo operations and safety; vessels have little room in their schedules to sit at a dock and wait for daylight or for dredging or combined sewer overflow events to abate. One example provided was that of a large Laker having to wait in port for a combined sewer overflow event to abate before they could begin to unload their cargo and take on ballast water. However, the effects of combined sewer overflow events can last for numerous days. An EPA report to Congress (2004)[1] found that approximately 43,000 combined sewer overflow events occur nationwide per year and the frequency with which they occur within a certain port largely depends on weather conditions. Clearly demonstrating compliance with this BMP is difficult for the vessel owner. Additionally, in this circumstance, it is not possible for enforcement agencies to clearly delineate where and when the vessel should/could have taken up ballast water to avoid such a situation. Another example provided by commenters to demonstrate that the ballast uptake BMP is unclear relates to uptake near dredging operations. Sediment accumulation presents an impediment to navigation and is a persistent issue, especially in river ports and marinas. To combat this issue, the U.S. Army Corps of Engineers and privately hired contractors frequently dredge federally designated navigation channels and private docks and marinas, respectively. A vessel waiting to unload their cargo and take on ballast water is not able to control the activities of dredge operations in or near their ports of call. EPA does not have a basis to define the area nor to identify a temporal limit for how long a vessel must wait for a dredging operation to cease without assigning an arbitrary limit, and none was provided by commenters. Without such defined terms, it is difficult for vessel operators to clearly demonstrate compliance with this requirement. Additionally, and again, in this circumstance, it is not possible for enforcement agencies to clearly identify where and when a vessel should/could have taken up ballast water. EPA agrees with these commenters that the requirement for vessel operators to implement this BMP is difficult or impossible in certain circumstances. While the ballast uptake BMPs are not being carried forward in the final rule as independent requirements, EPA expects that vessel operators will implement situation-specific ballast water BMPs according to their BWMP which the final rule requires to minimize the uptake of harmful aquatic organisms and pathogens.

[1] U.S. Environmental Protection Agency. 2004. Report to Congress: Impacts and Control of CSOs and SSOs. EPA 833-R-04-001. Available at https://www.epa.gov/sites/default/files/2015-10/documents/csossortc2004_full.pdf

One commenter identified multiple environmental and health risks associated with various pollutants and contaminants that may be present in wastewater being discharged into areas near ballast water uptake. However, as noted above, the uptake BMP is not practical to implement or enforce. For example, a requirement that vessels minimize ballast uptake in areas near sewage outfalls, but that does not define "areas near" nor provide a thorough map of where every sewage outfall, is very difficult to enforce and does not provide uniform guidance to vessel operators about how to manage ballast water near sewage outfalls. While the Agency may have been able to provide a map or list of many sewage outfalls in ports, EPA did not have a reasonable basis to define the meaningful area "near" an outfall, nor was any such definition provided by commenters. Many commenters disagreed with EPA's explanation that such measures are not practical to implement, stating that vessel operators can be flexible, creative, and, given appropriate and timely knowledge of the problem, can adjust vessel operations to minimize or avoid environmental impacts from ballast water discharges. One example provided in these comments was that while operators cannot control daylight, they are able to plan their ballast water management to avoid or minimize uptake in darkness. Similarly, some commenters stated that although operators cannot control the location of sewage outfalls or dredging operations, operators should be aware and attempt to avoid the outfall locations and dredging operations. Another example provided by commenters to demonstrate that the BMP is implementable was that technology is available to detect benthic depths, which would allow operators to avoid or minimize the uptake of ballast and disruption of sediment in shallow waters. EPA understands that there is some technology that could be helpful with the implementation of the uptake BMP requirements; however, interpretation for enforcement and compliance would be too subjective nationwide.

EPA received comments that supported the retention of the ballast uptake BMP, specifically the provisions related to sediment and turbidity. While EPA encourages vessel operators to minimize and avoid ballast uptake in turbid areas as appropriate, the requirement has been excluded from the final rule. EPA did not have a reasonable basis to define the area and time component of turbid areas, nor was any such definition provided by commenters. This is because while a visual assessment may determine if the water is relatively turbid, this visual assessment is not sufficient to identify and delineate waters that are above or below a certain turbidity standard that is acceptable for continued BWMS operation and/or discharge. Additionally, there are several areas that experience seasonal or year-round extreme turbidity events, which cause this restriction to be impracticable for implementation.

EPA also received comments regarding the BMP to minimize or avoid uptake in darkness, when bottom-dwelling organisms may rise up in the water column and stated that diel migrations on aquatic organisms are predictable and so should be easily avoided during ballast uptake. EPA understands that some migrations of aquatic organisms are predictable; however, many migrations change dramatically with the seasons and latitude.

For instance, there are areas of Alaska that experience a constant state of vertical migration due to near constant darkness during parts of the year. It is unreasonable that enforcement agencies would have to determine if a vessel in those areas had properly and lawfully minimized and avoided the near constant darkness to uptake ballast.

Multiple commenters noted that EPA neglected to consider key research done by the Great Waters Research Collaborative (GWRC) in developing the proposed performance standards. The commenters reference a 2019 GWRC study on Lakers, *Potential Ballast Water Best Management Practices: Risk Reduction, Feasibility, Cost, and Other Significant Impacts*. The commenters did not provide a copy of the report, nor was EPA able to find a copy of a draft or final version of that referenced report. EPA did participate in a roundtable discussion with GWRC and other stakeholders on October 2, 2019, that was related to the report/activities the commenter references. As described in that roundtable discussion, GWRC, through funding provided by the USCG Research and Development Center, was requested to gather information related to BMPs specific to the Great Lakes. The GWRC performed a literature review and qualitative evaluation of BMPs for Lakers with the goal of the project being to identify the frequency of ballast water BMPs being used or that could be used by Lakers. EPA disagrees with the commenters' assertion that preliminary results from the workshop do not support the removal of avoidance uptake BMPs and may indicate the feasibility of other BMPs or technology. As presented, GWRC offered that uptake avoidance was challenging for several reasons, notably that vessel operators cannot control where the dock is located or when dredging occurs and trying to avoid uptake in certain instances can extend a vessel's dockside duration. GWRC also noted that avoiding ballast water uptake often relies on federal, state/provincial, or local (port) agencies communicating to vessel operators the areas where uptake should be avoided; however, this notification has been sporadic and thus making it difficult for the vessel to know when and where such uptake should be avoided. With respect to other BMPs, information provided during that roundtable did not justify inclusion of other BMPs not already included in the rule and in fact some commenters noted that other BMPs, such as open lake exchange, may increase the ANS risk. (GWRC, 2019)

Another commenter suggested that these BMPs be included and addressed within a plan for managing ballast water, in conjunction with ballast water logs for recording where and when ballast water was taken up and discharged. EPA agrees with this comment and included regulatory language in the final rule that ballast water uptake BMPs be included in BWMPs; however, the content and implementing regulations regarding those BWMPs are within the scope of responsibility of the USCG.

EPA also received comments from the Government of Canada in support of the removal of the ballast uptake BMPs in the regulatory text, based on concerns that these BMPs provide negligible levels of environmental protection and seeming lack of science demonstrating a material benefit for EPA's existing BMPs for Great Lakes ships. EPA

agrees with this commenter. While the ballast water BMPs have not been included in the final rule, the Agency continues to encourage and regulate ballast uptake practices via BWMPs for the reasons listed previously.

Ballast water best management practices (excluding new Laker equipment standard) – Comment response for supplemental notice

Numerous commenters voiced support or opposition to the exclusion of the existing ballast water uptake BMPs. Commenters also provided mixed responses regarding the final rule requirement that a vessel-specific BWMP must be developed to minimize the uptake and discharge of harmful aquatic organisms and pathogens. During this time, EPA did not receive new technical data regarding the uptake ballast water BMPs.

Multiple commenters continued to express concerns and provide comments regarding the exclusion of the uptake ballast water BMP as independent requirements. Many commenters reiterated comments already submitted on the proposed rule on such topics including, but not limited to, the reduction in environmental protection and lesser stringency than the VGP. EPA provided responses to these concerns in the preceding comment response section (*Ballast water best management practices – Comment response for proposed rule*); therefore, this section focuses on providing responses specific to EPA's proposal to address the uptake ballast water BMP in the BWMP and new comments associated with the removal of the individual uptake requirements.

Some commenters claimed that requiring vessel operators to address and identify their specific uptake practices as part of BWMPs was too burdensome on vessel operators. They commented that vessel operators do not always have relevant port info (e.g., presence of harmful organisms, tidal flushing, nearby dredging, etc.) available and that the BMPs should only be considered during ballast water uptake when local information on relevant port conditions is available, and it is safe and practical to do so. EPA disagrees that requiring vessel operators to address and identify their specific uptake practices as part of the BWMP is too burdensome on vessel operators, but the Agency agrees that the operators may not always have the relevant port info available to them. The development of the BWMP is a continued requirement from existing USCG regulations. In addition, as one commenter noted, vessels engaged in international trade already need to include these considerations in the BWMP as required by IMO BWM Convention. As described above, the VGP's ballast uptake BMPs are not well defined and typically beyond the control of the vessel operator during the uptake of ballast water and difficult for enforcement agencies to identify noncompliance. The final rule excludes these ballast uptake BMPs as individual requirements. However, EPA expects that appropriate vessel-specific ballast water BMPs will be incorporated into final rule requirement that a BWMP must be developed to minimize the uptake and discharge of harmful aquatic organisms and pathogens.

One commenter pointed out that the information required to comply fully with the uptake BMP largely comes from relevant federal or state-level agencies, and it is important that they proactively identify and communicate to the industry the locations or situations where minimizing or avoiding the uptake of ballast water is identified as necessary. One commenter suggested that EPA should presume that vessel operators will necessarily focus their collective attention towards "local authorities to identify area/situations of concern" in the form of USCG published Notice to Mariners (NTMs), Broadcast Notice to Mariners (BNTMs), Urgent Marine Information Broadcasts (UMIBs), and other EPA, NOAA, or NMFS policy guidance. Regulation of the federal and state agencies that may have access to this information and perform information sharing duties is outside the scope of this rule. EPA expects that vessel operators will perform their due diligence in developing their BWMPs in accordance with USCG implementing regulations required under CWA section 312(p)(5) and seek out the necessary information to demonstrate compliance.

One commenter claimed deletion of the uptake BMP may create a situation where vessel operators have no guidance on situations to avoid. One commenter said that retaining the uptake BMP would provide legal guidance and backing to a decision to minimize or avoid uptake of ballast water and expressed their support for the retention of the ballast uptake BMP. Another commenter stated that without the ballast uptake BMP as guidance, vessel operators may undertake ballast water uptake in situations that should be avoided. Several commenters claimed EPA was proposing to allow industry to develop their own standards with no national regulatory framework and was providing no incentive to develop BMPs that are protective of the nation's waters. One commenter claimed that vessel operators that lack knowledge of local water quality issues would be incapable of implementing protective measures that would address these issues. EPA disagrees with these comments. The final rule requires vessel operators to develop a vessel-specific BWMP that minimizes the uptake and discharges of harmful aquatic organisms and pathogens. Vessel operators may also consider the benefits of uptake practices to minimize impacts to vessel operations such as from loading excess sediment in ballast tanks that decreases cargo carrying capacity or overtaxing a BWMS with excessive pollutant loadings.

Some commenters expressed support for the option presented in the supplemental notice to require a vessel-specific BWMP that minimizes the uptake and discharges of harmful aquatic organisms and pathogens, but does not require the uptake BMPs as individual, enforceable standards. Their reasons included the inability of a vessel operator in most cases to be aware of the conditions and situations listed in the uptake BMPs in each port and the inability of those operators to delay ballast water uptake during normal operations. Several commenters said that due to safety, operators are often unable to delay ballast water uptake in port. Similarly, multiple commenters suggested that BMPs should only be considered during uptake when local information on relevant port conditions is available, and it is safe and practical to do so. One commenter requested the

regulation explicitly set out exemptions including vessel safety and availability of information about water quality conditions. EPA disagrees with the request to exclude uptake considerations as part of the BWMP. EPA did remove the ballast uptake BMPs as specific requirements but does expect vessel operators to plan for the types of situations identified in those uptake BMPs as part of ballast water management planning. Additionally, EPA notes that the requirements do not apply to any part of these regulations if compliance would compromise the safety of life at sea as established in § 139.1(b)(3).

One commenter claimed that the ballast uptake BMPs are proactive, and emergency orders are reactive. EPA agrees that the uptake BMPs are proactive and believes they are best addressed in the BWMP. In lieu of maintaining the ballast uptake BMPs as individual, enforceable standards, EPA notes that the BWMP maintains a proactive approach to considers uptake as a component of that plan and provides a meaningful obligation for those operators to consider uptake practices that will minimize the introduction and spread of ANS. Emergency orders are discussed elsewhere in this comment response document.

EPA received conflicting comments that the ballast uptake BMPs are both practical and impractical to implement and enforce. EPA understands that multiple enforcement agencies have had difficulties in clearly identifying noncompliance. One comment regarding the enforcement abilities of the ballast uptake BMPs stated that EPA did not provide sufficient information to justify deleting the uptake BMPs. EPA disagrees with this commenter as the Agency requested information from states and the USCG about their abilities to enforce those ballast uptake BMPs and were not provided with any examples demonstrating how they have been successfully enforced. Similarly, EPA did not receive any comments that provided examples or evidence of enforcement of these BMPs. As such, the final rule does not include the ballast uptake BMPs as individual, enforceable standards.

One commenter pointed out that vessels engaged in international trade will already need to include these considerations in the BWMP as required by the IMO BWM Convention, so the proposed change to regulatory requirements would not have an impact on those vessels already completing those actions. EPA agrees with this commenter.

One commenter recommended EPA distinguish between BMPs that are continuously mandatory and those only imposed by a directive from the Captain of the Port when a significant issue arises. For example, the commenter suggested that EPA consider splitting ballast water uptake BMPs into parts, whereby avoidance of ballast water uptake in pods of whales would be a general BMP and identification of convergence zones and boundaries of major currents would be addressed in a BWMP. EPA disagrees with retaining the uptake BMP as individual enforceable requirements for the reasons described above. However, the final rule does require that each vessel develop a BWMP

that minimizes the uptake and discharges of harmful aquatic organisms and pathogens, which may contain a mix of continuous and static practices.

One commenter said that BWMPs should require a listing of specific local or regional authorities for contact, like components within the Incident Command System of the U.S. Army Corps of Engineers. Commenters also suggested that the BWMP should be available to both EPA and local or regional authorities and archived for a period of at least 10 years in case a pathogen is introduced, and investigations need more information as to its origin. EPA believes these requests are outside the scope of this rule, as the details of the contents of the BWMP are within the purview of the USCG implementing regulations pursuant to CWA section 312(p)(5).

EPA also received several comments that asked for the Agency to remove requirements that vessel operators address and identify their specific uptake practices as part of BWMPs because it is too burdensome on vessel operators. One comment claimed that adding "uptake" practices to the BWMP incurs a cost and that a new economic assessment of the cost is needed. EPA disagrees with these comments as the requirement to develop and maintain a BWMP is a continuation of a USCG requirement and the individual uptake requirements were required under the VGP and the USCG regulations; therefore, continued incorporation of some or all of these parts in the final rule is negligible compared to the economic baseline.

One commenter said that BWMPs are not currently required to "address and identify their uptake practices" and the supplemental notice would potentially require each vessel's BWMP to list areas where the vessel operates and require vessel operators to contact all possible areas of operation frequently (i.e., at a minimum weekly) to identify dredging operations and tidal shifts and search for possible areas of infestations. The comment suggested that if EPA does not intend that vessel BWMPs incorporate this level of detail, EPA should clarify that vessel BWMPs should only include generic options for addressing a variety of potential uptake issues so that frequent detailed BWMP revisions are not required. One commenter stated that the BWMPs they write already contain the ship's planned routes, expected cargo operations, best practices, and management company's procedures and are immediately available to the operators during all ballast operations and are written based on the specific type of BWMS installed onboard. This commenter said they believed the current level of specificity in BWMPs was optimized and that they did not support a change in specificity ("too specific or too generic"). EPA understands there may be some uncertainty about the level of preparation and detail required in the BWMP; however, the detailed contents for the BWMP are outside the scope of this rule and fall within the purview of the USCG implementing regulations required under CWA section 312(p)(5). Specifically, the USCG is tasked with establishing requirements for inspections, monitoring, reporting, and recordkeeping as necessary to ensure, monitor, and enforce compliance with the EPA discharge standards.

One commenter recommended alternative regulatory text for § 139.10(c)(1): "A BWMP must be developed and followed to minimize the uptake and discharge of harmful aquatic organisms and pathogens *to the extent practicable*." EPA disagrees that the suggested additional concept "to the extent practicable" is necessary as the final rule definition of "minimize" includes the concept of "technologically available and economically practicable and achievable."

On the topic of documenting compliance with ballast water BMPs, one commenter suggested that the following underlined regulatory text be added: "(c) Ballast Water Best Management Practices (BMPs). (1) Any vessel equipped with ballast tanks must minimize the discharge and uptake of ANS by adhering to the following practices such that compliance can be documented in shipboard logs and plans." The commenter stated that this text is required for consistency with the definition of "minimize" in § 139.2. EPA disagrees that it is necessary to repeat this aspect of the definition of minimize as part of this requirement. In addition, any details related to documenting compliance with this requirement would fall under USCG's implementing regulations established under CWA section 312(p)(5).

Several commenters responded to the proposed BMP dealing with the periodic flushing and cleaning of tanks to remove sediment and biofouling organisms. Two commenters expressed their support for this BMP as presented in the proposed rule. One commenter requested clarification of the term "periodically" and suggested revised regulatory language that the ballast tanks are "flushed not less than once per year at midocean distance from any shore or when an accumulation of sediment impacts operations." EPA disagrees with this revision. Any details related to compliance with this requirement, such as the frequency or location, would fall under USCG's implementing regulations established under CWA section 312(p)(5).

Several commenters suggested revised regulatory text to add that the ballast tanks must be cleaned "thoroughly not less frequently than at every scheduled drydock." The commenter stated that clarified text makes the regulatory language accessible to users of the regulations. Another commenter suggested revised text that the ballast tanks must be cleaned "not less than at every scheduled drydock or when an accumulation of biofouling organisms impact operations." The commenter stated that the changes are required to clarify the differences between flushed and cleaned and to provide clear compliance/enforcement thresholds. One commenter requested that EPA specify a timeline of how often ballast tanks must be flushed and cleaned. EPA disagrees with the commenters' request to specify these terms. In the preamble, EPA described the requirement that ballast tanks to be cleaned periodically to remove sediment and biofouling organisms. EPA further clarified in the final rule that the discharge of those residual sediments that are removed from ballast tanks during these cleanings into waters subject to this rule is prohibited. Any details related to compliance with these requirements, such as appropriate frequencies and locations, are more appropriately

addressed in the USCG's implementing regulations established under CWA section 312(p)(5).

In addition, one commenter noted that there was an error in the numbering under § 139.10(c) in that it should start with a (1) as (ii) through (iv) don't appear to be sub paragraphs. EPA disagrees, the numbering is correct in the final rule; however, the formatting of subsection (1) is different than other comparable sections making the numbering less obvious. The final rule corrects this formatting inconsistency.

Several commenters expressed support for the inclusion of certain BMPs, including two for the BMP related to the use of high sea suction, one for the BMP related to the use of ballast water pumps when in port, and two for the BMP related to maintaining sea chest screens. One commenter added that U.S.-flagged Lakers typically use pumps to uptake water for ballast and annually inspect sea chests to ensure integrity. The final rule retains these BMPs.

Several commenters suggested revised regulatory language to add the underlined text in § 139.10(c)(1)(vi): "any sea chest screen must <u>be adequate to prevent the uptake of fish and other living organisms into ballast tanks</u>; be maintained <u>to prevent such uptake</u>; and <u>be</u> fully intact." Another commenter suggested revised regulatory language to add the underlined text in § 139.10(c)(1)(vi): "any sea chest must be "<u>adequate in mesh size to prevent the uptake of larger ANS</u>" and "<u>maintained to prevent macrofouling accumulations on screen or in sea chest area</u>." The commenters explained that these changes are required to clarify intent of the BMP specific to ANS prevention in keeping with other hull husbandry requirements. The commenter stated that the maintenance of sea chests and screens for operational performance is outside the purview of EPA's responsibilities under the VIDA. They pointed out that, consistent with page 67834 of the Supplementary Information, sea chest screens are designed to keep "the largest living organisms, such as fish, as well as bacteria and viruses associated with these organisms, out of ballast tanks." EPA disagrees with the commenters' request to specify these terms. The terms of the suggested revised text including "other living organisms" and "larger ANS" are too broad and do not clarify the intent of this BMP. Any details related to compliance with this standard more appropriately falls under the USCG's purview to develop implementing regulations established under CWA section 312(p)(5).

Regarding the BMP prohibiting ballast tank cleaning discharges in § 139.10(c)(1)(v), one commenter suggested deleting the provision that "discharge of any sediment or water from ballast tank cleaning is prohibited" because it is redundant to the requirement that "(c) Ballast Water Best Management Practices (BMPs). (1) Any vessel equipped with ballast tanks must minimize the discharge and uptake of ANS by adhering to the following practices." EPA disagrees that these two provisions are redundant because a prohibition of the discharge of the waste from ballast tank cleaning is not equivalent to a requirement to always minimize the discharge and uptake of ANS.

Another commenter stated that the requirement finalized in § 139.10(c)(1)(v) shifts the discharge of the required cleaning to a CWA section 402 requirement and the VIDA performance standards may be a better and more inclusive mechanism to manage these discharges. EPA disagrees. Under the final rule, the discharge of sediments from ballast tank cleaning is prohibited into waters of the United States and waters of the contiguous zone, but vessels may make other arrangements to dispose of such waste in other acceptable ways, such as in drydock or to an onshore reception facility. This waste should be disposed of in accordance with any applicable local, state, and federal regulations, which are outside of the scope of this final rule.

Several commenters responded to the ballast water BMP in § 139.10(c)(1)(iv) to avoid discharge or uptake in areas with coral reefs, requesting that EPA revise the requirement to "is prohibited" rather than "must be avoided" because the proposed language is vague and unenforceable. Commenters claimed that the alternative "is prohibited" language will be more enforceable and prevent confusion about the ability of vessels to conduct ballast water operations above or in the vicinity of coral reefs. One commenter added that the need for the prohibition of ballast water activities in areas with coral is illustrated by stony coral tissue loss disease (SCTLD) that extends across 16 countries to St. Lucia and Honduras. They offered that while SCTLD transmission is likely due to a combination of factors, shipping patterns have been correlated with SCTLD spread in the Caribbean region, and therefore ballast water remains a potential vector for the disease. As a result, the USCG released voluntary BMPs with depth and distance from shore limits for ballast operations to maximize distance from coral reefs and minimize potential spread of SCTLD. EPA disagrees with revising the terms of the requirement from "must be avoided" to "is prohibited." EPA and the USCG consider the term "avoid" being an enforceable provision. The term "must be avoided" was used in the VGP and commenter fails to explain why "must avoid" is inadequate to convey that discharge or uptake of ballast water in areas with coral reefs is not allowed.

One commenter requested that a prohibition of the discharge or uptake of ballast water in § 139.10(c)(1)(iv) should not apply to designated ports or harbors with coral. Several commenters further suggested that a prohibition of the discharge or uptake of ballast water in areas with coral should not apply "within a designated port, harbor, or offshore mooring station designated for the transfer of petroleum products or liquid natural gas to a land-based facility." Commenters added that all ports and harbors within the state of Hawaii have various degrees of coral growth; however, there is a dependance on the delivery of petroleum products or liquid natural gas near coral reefs. For example, as described by the commenters, it may not be practical for vessel operators to avoid ballast operations in designated ports or harbors despite the presence of coral. They offer that the suggested language clarifies that vessels can conduct necessary ballast water operations in designated harbors and petroleum moorings despite the presence of coral in ports and harbors. EPA disagrees with the commenters suggesting an exception from the

requirement to avoid discharge or uptake of ballast water in designated ports or harbors with coral reefs, including the more limited request for this exception applying only to one industry (i.e., discharges associated with the transfer of petroleum products or liquid natural gas to a land-based facility). EPA is retaining the requirement to avoid the discharge or uptake of ballast water in coral reefs because it is consistent with longstanding USCG and EPA requirements. EPA acknowledges that avoiding corals in certain ports, harbors, or mooring stations may not be feasible in certain instances and that delays in ballasting to avoid corals in these areas may impact complex port and cargo operations and safety. However, the details of such operations are more appropriately under the purview of the USCG's implementing regulations, including to further define the regulatory terms "areas with coral reefs" or "as far from coral reefs as practicable" or provide other specifications for the implementation and enforcement of this standard, including as it may apply in ports, harbors, and mooring stations.

Several commenters responded to EPA's request for information in the proposed rule for (1) how best to define areas with coral reefs, and (2) the public availability of navigational charts that can be used for identifying areas with coral reefs. Some commenters responded that the issues of defining areas of coral reefs and availability of such navigational charts are issues of implementation, compliance, and enforcement that are intended by statute to be addressed in the regulations issued by the USCG under CWA section 312(p)(5) and should not be addressed in EPA's final rule. Two commenters responded that the definition of coral reefs for purposes of this proposed regulation should mirror the definition adopted by the National Oceanic and Atmospheric Administration (NOAA) in their Coral Reef Conservation Program. They stated that nautical charts include the locations of most major coral reefs in U.S. waters although not all. They recommended that EPA consult with personnel from NOAA's Coral Reef Conservation Program and NOAA's Office of Coast Survey to assess elements of the Coral Reef Conservation Program, assess the issuance of nautical charts by the Office of Coast Survey, determine current identification processes for coral reef designations, and determine how these designations are ultimately incorporated into nautical charts. Another commenter responded that NOAA's U.S. navigational charts feature the nature of the seabed/ground. Specifically, U.S. NOAA chart No.1 shows the symbols and abbreviations used to denote coral reefs on navigational charts. Another commenter responded that NOAA and British Admiralty depict areas related to marine sanctuaries and coral in different ways. While marine sanctuaries are designated on charts, coral structures within marine sanctuaries do not necessarily have the coral reef designation. Another commenter sought clarification as to whether the areas with coral reefs will be marked on NOAA approved nautical charts. EPA has met with NOAA on this topic. EPA agrees that while NOAA's nautical charts include the locations of most major coral reefs in U.S. waters, they do not include all coral areas and more analysis is likely necessary to determine how coral reefs areas are depicted on navigational charts. EPA agrees that it is under the purview of the USCG's implementing regulations to further define the

regulatory terms "areas with coral reefs" or "as far from coral reefs as possible" or provide other specifications for the implementation and enforcement of this standard.

One commenter responded that a prohibition of ballast water activities in areas with coral reefs in § 139.10(c)(1)(iv) must allow for cold water coral, such as those found in Alaska and stated that the Alaska Departments of Fish and Game and Environmental Conservation can consult on cold water coral areas in the Alaska region. EPA confirms that the requirement that the "discharge or uptake of ballast water must be avoided in areas with coral reefs" includes cold water coral reefs, including those found in Alaska.

One commenter responded that the regulatory terms "discharge and uptake should be conducted as far from coral reefs as possible" in § 139.10(c)(1)(iv) should be changed to "outside 24 nautical miles from such coral reefs." The commenter explained that the change is required for consistency with other ANS ballast water discharge protection provisions outside of the contiguous zone. EPA disagrees. The requirement that ballast water discharges should be conducted as far from coral reefs as possible is consistent with a USCG Marine Safety Information Bulletin, *Ballast Water Best Management Practices to Reduce the Likelihood of Transporting Pathogens That May Spread Stony Coral Tissue Loss Disease* (OES-MSIB Number: 07-19, September 6, 2019), regardless of whether the reef is inside or outside of 12 NM from shore (USCG, 2019a). In addition, the commenter fails to justify the basis for why a 24 NM distance from coral reefs is consistent with other ballast water requirements.

One commenter noted that if the water depth is sufficient, the uptake of ballast through any suction should not directly impact or affect a coral reef. They recommended that EPA consider a minimum depth requirement, rather than a prohibition of uptake and discharge in areas with coral reefs. EPA disagrees with this recommendation. The commenter did not provide data or information to support setting a Federal standard for a specific water depth at which ballasting activities could occur but at which coral reefs would not be impacted. As described above, implementation of this standard is more appropriately detailed via the USCG's implementing regulations.

Several commenters supported the requirement to develop and implement vessel-specific BWMPs in § 139.10(c)(1)(i). One commenter suggested revised regulatory text depicted by the following underlined additions and strikethrough deletions: "A vessel-specific ballast water management plan must be developed and followed to ~~minimize the potential for the introduction and spread of ANS~~ meet the ballast water discharge standard and all other best management practices and requirements of this section. ~~A ballast water management plan is a holistic strategy that considers the operational profile of the vessel and the appropriate ballast water management practices and systems.~~ Vessel operators must document compliance with the plan in shipboard logs and plans and provide rationale if a discharge could not be minimized or eliminated per a best management practice." The commenter stated that the revised text clarifies that the management plan

goes beyond ANS to include water quality standards, such as for sediments and treatment residuals. The commenter further explained that the deleted sentence is the purview of the USCG to consider these factors in applying minimum plan component standards, and the addition of the compliance element is consistent with the definition of "minimize." EPA agrees with the commenter's suggestion that the plan must meet the requirements of this section and the concept that the plan must also address sediments and other residuals. EPA's revised regulatory text clarifies that "the plan must describe the vessel-specific BWMSs and practices necessary to comply with requirements in this section." However, EPA disagrees with the assertion that the plan is to also address "water quality standards such as for sediments and treatment residuals." The VIDA required EPA to develop standards based on application of the CWA's technology-based standards. The relationship between technology-based and water-quality based standards is further discussed in the final rule preamble in Section VIII., *Final Federal Discharge Standards of Performance*. EPA also disagrees that it is necessary to repeat the aspect of the definition of minimize specifying that the vessel operator "must document compliance with the plan in shipboard logs and plans." Any details related to compliance with this requirement would fall under USCG's implementing regulations established under CWA section 312(p)(5).

Another commenter suggested introducing a procedure for removing biofouling in ballast tanks within a vessel's sediment management plan as included in the Planned Maintenance Schedule (PMS) and/or BWMP). The commenter added that if this BMP was adequately documented by the vessel and offered as an enforcement option it would avoid unnecessary ballast tank inspections which involve safety risks and the possibility of subjective assessments of biofouling growth in ballast tanks. However, the commenter did not specify a specific practice or technology for removing biofouling from ballast tanks for EPA to consider. As such, EPA disagrees with the suggestion to include as a BMP a procedure for removing biofouling in ballast tanks. In addition, the commenter's suggestion regarding how documentation could relate to enforcement and inspections would fall under USCG's implementing regulations established under CWA section 312(p)(5).

One commenter sought additional clarification for minimum criteria and performance standards for the BWMP are needed. Another commenter added that they assume that the USCG will delineate the contents and format of any BWMP in their implementing regulations. EPA agrees that any details related to compliance with this requirement fall under USCG's implementing regulations established under CWA section 312(p)(5).

One commenter recommended that implementation language regarding the development and maintenance of BWMPs be established consistent with the existing IMO *Guidelines for ballast water management and development of ballast water management plans (G4)* and other relevant IMO Circulars and publications regarding the development of BWMPs. The commenter requested that the plan contain clear and specific guidance on

expectations regarding the incorporation into the BWMP of emergency orders issued in accordance with § 139.50 Petition by a Governor for the Administrator to establish an emergency order or review a standard, regulation, or policy, especially with regards to temporary emergency orders because BWM Convention requires review and approval of BWMPs. EPA agrees that consistency with IMO *Guidelines for ballast water management and development of ballast water management plans (G4)* is important for the international vessel community. The commenters request for guidance on expectations related to the intersection of the BWMP and emergency orders is an implementation issue that more appropriately falls under USCG's implementing regulations established under CWA section 312(p)(5).

One commenter requested that EPA consider ballast water exchange as a BMP for all arrivals to further control and abate ballast water discharges in waters of the United States. The commenter pointed out that EPA already recognizes the value of exchange plus treatment in protecting freshwater environments, as exchange plus treatment is currently a required management practice in the 2013 VGP for vessels entering the Great Lakes via the Saint Lawrence Seaway System. The commenter added that EPA included requirements for exchange or flushing for vessels arriving at ports in the Great Lakes and for certain other vessels with low salinity ballast water arriving at low salinity ports in the Pacific Region. EPA disagrees with the request. The final rule only requires exchange plus treatment where required by the VIDA (including where carried forward from the VGP). The commenter has not identified data showing that exchange plus treatment would consistently achieve a lower standard of pollution than what is achievable with treatment alone. Since the commenter has not shown that a numeric standard of performance is infeasible, or that an exchange plus treatment BMP is reasonably necessary to achieve the standard of performance (or to carry out the purpose and intent of this subsection), we have not included it in the final rule. Any additional requirements applicable to exchange plus treatment that may be necessary to meet the standard of performance are more appropriately addressed in the USCG implementing regulations to be established pursuant to CWA section 312(p)(5).

Numeric ballast water discharge standard

EPA received several comments specific to the numeric ballast water discharge standard, including one commenter that supported the instantaneous maximum discharge requirements for biocides. Several commenters asserted that the proposed rule was inconsistent with the VIDA because it failed to align with international standards, specifically because the proposed rule failed to identify protocols for testing compliance with the discharge standard based on "live" or "living" organisms, pursuant to instructions in the VIDA for a final policy letter from the USCG. One commenter contended that the failure to provide acceptable test methods for testing compliance based on live or living organisms discriminates against ballast water treatment with low energy ultraviolet radiation with significant commercial consequences. Commenters also

requested that the final rule commit explicitly to guidance for the acceptability of testing protocols. EPA disagrees with these commenters' characterization of the proposed rule and the request for testing protocol guidance. As described in the proposed rule, and as finalized, the discharge standard is consistent with the VIDA (CWA section 312(p)(6)(D)) in that standards are expressed as living organisms but that the term "live" or "living" does not: (1) include an organism that has been rendered nonviable; or (2) preclude the consideration of any method of measuring the concentration of organisms in ballast water that are capable of reproduction. After the proposed rule, the USCG published, in coordination with EPA, its final policy letter (CG-OES Policy Letter No. 02-22, February 28, 2022) noting that no testing protocols have been identified, based on best available science, that are available for use to quantify nonviable organisms in ballast water. As such, until the USCG, in coordination with EPA, identifies an acceptable testing protocol, compliance with the discharge standard requires the use of test methods as detailed in the 2010 EPA *Generic Protocol for the Verification of Ballast Water Treatment Technology* that do not consider nonviable organisms as part of the test protocol. Should the USCG identify one or more testing protocols that enumerate nonviable organisms, such methods would be acceptable for demonstrating compliance with the final numeric ballast water discharge standard. The USCG policy letter describes the process (i.e., guidance) for stakeholders to submit proposed methods based on viability on which the USCG will make a decision on acceptability. Comments on the USCG final policy letter are outside the scope of this rule.

With respect to test methods for organism viability, one commenter noted that the IMO sampling protocol for most probable number (MPN) reproductive testing to determine viability is complex and sought clarification as to how this will impact sampling requirements and frequency. EPA acknowledges the commenter's concern; however, this comment is outside the scope of EPA's rule and more appropriately addressed through USCG implementing regulations pursuant to CWA section 312(p)(5).

Several commenters also noted that the proposed rule references testing methods that quantify "nonviable organisms in ballast water" when in fact, consistent with the VIDA, text should refer to methods that quantify "organisms in ballast water that are capable of reproduction." EPA agrees and the preamble to the final rule reflects this more accurate characterization of testing methods consistent with language in the VIDA.

Several commenters noted that the proposed discharge standard for *Escherichia coli* and intestinal enterococci are provided in only colony forming units (cfu) and that limits should also include most probable number (MPN) units since, as provided in the VGP, newer microbiological test methods have MPN outputs. EPA agrees that while the test methods differ, the results from these tests both represent the number of bacteria in the tested sample and as such are comparable to the numeric discharge standard. The final rule now reflects units of both MPN/mL and cfu/mL. EPA disagrees with one commenter's suggestion to also provide for a measure of cells/mL to allow for analytical

advancement of methods that determine the concentrations of viable cells that are reported in units of cells per mL. Advancement of test methods and the relationship and acceptability of those methods to these discharge standards is outside the scope of this rule.

One commenter requested that EPA define "instantaneous maximum" as that term is used for numeric ballast water discharge standards to clarify that the expectation is that a representative sample is required for comparison with the numeric standard. EPA disagrees with the commenter's suggestion to better define the expectation of this standard. As has always been the case under the USCG and EPA requirements, the instantaneous maximum represents the measure that must be attained at all times, regardless of the volume and flow rate of ballast water collected and analyzed. The USCG may provide further clarification of the application of this standard for compliance purposes in its implementing regulations developed pursuant to CWA section 312(p)(5).

One commenter noted that the numeric discharge standards do not meet state water quality standards for all uses, although the commenter did not explain how or why this should affect the standards of performance. As explained in the final rule preamble (e.g., in Section VIII., *Final Federal Discharge Standards of Performance*) and elsewhere in this comment response document (e.g., in the comment response for *Statutory and Executive Order Reviews*), the VIDA requires the Agency to establish technology-based standards that, as defined in the Act, are independent of any comparison to applicable water quality standards. As such, comments that certain parameters are inconsistent with state water quality standards are outside the scope of EPA's establishment of standards in this rule.

Two commenters indicated that text in the preamble should be re-worded to note that while compliance with information related to the operation of a BWMS can be documented by the crew, sampling and analysis of ballast water is necessary to assess compliance with the numeric discharge standard. The commenters elaborated that, contrary to EPA's statement in the proposed rule preamble that there are no means to routinely sample and analyze in real time ballast water for compliance with the discharge standard, such monitoring can be done ("such as using surrogate testing events somehow similar to the VGP monitoring requirements"). Commenters suggested clarifying in the preamble that compliance can be documented in shipboard logs in addition to sampling and analysis of discharges. While EPA agrees conceptually with the statement that demonstrating compliance with the numeric discharge standard requires sampling and analysis of some type, EPA disagrees with commenters' suggestion to expand the statement in the preamble. The use of the term "such that compliance can be documented in shipboard logs and plans" refers to practices taken to "minimize" discharges, not actions taken to meet the numeric standard. The concept of documenting activities in shipboard logs for demonstrating compliance is tied to activities taken to "minimize" the discharge of pollutants by including a written explanation of the basis for why such

practices minimize the discharge. Compliance with a numeric discharge standard provides a clearer endpoint (i.e., the numeric standard) and for which documentation of practices taken to comply with the numeric standard are less relevant than meeting the standard itself.

Two commenters asserted that EPA failed to meet its statutory obligation under the VIDA (CWA section 312(p)(4)(B)(iii)(I)) by not including all requirements contained in Parts 2.1 and 2.2 of the VGP (relating to effluent limits and related requirements). These commenters identified five parts of the VGP ballast water requirements in Parts 2.1 and 2.2, which they contended that EPA incorrectly excluded in the proposed regulations, including monitoring, equipment calibration, effluent limitations, recordkeeping, and reporting requirements. The commenters also asserted that beyond merely including existing requirements from the VGP, the VIDA requires EPA to develop new requirements in these areas, as appropriate. EPA acknowledges the VIDA requires EPA to develop new requirements and, as discussed throughout this rulemaking, the Agency developed new and updated existing requirements where supported by available information. EPA disagrees with the commenters' claim that the VIDA requires the Agency to include monitoring, equipment calibration, recordkeeping, and reporting requirements from Parts 2.1 and 2.2 of the VGP in its federal discharge standard regulations developed pursuant to CWA section 312(p)(4). The VIDA delineates rulemaking responsibilities between CWA section 312(p)(4)(A)(i) for EPA to establish Federal standards of performance for marine pollution control devices and (p)(5)(A)(i) for the USCG to establish implementation, compliance, and enforcement requirements. The VIDA is explicit about this division of responsibility, with CWA section 312(p)(4)(B)(iii)(I) referring to "'[a]ll requirements contained in parts 2.1 and 2.2 (*relating to effluent limits and related requirements*)" (emphasis added) which is necessarily narrower than "all requirements" contained in those parts. Further, the Senate Report explains that the USCG "regulations shall include those [requirements] governing the design, construction, testing, approval, installation, and use of marine pollution control devices as are necessary to ensure that vessels comply with the Administrator's standards of performance, and regulations to ensure inspection, monitoring, reporting, sampling, and record keeping" (*See* Errata to S. Rep. No. 115-89 (2019)). Accordingly, it is EPA's view that the best reading of the statute is for the USCG's rulemaking to address the VGP elements raised by the commenters. As one of the commenters conceded, these requirements are related to ensuring compliance with the standards of performance. Further, CWA section 312(p)(5)(A)(ii)((II) directs the USCG to incorporate provisions of Part 4 of the VGP into its implementing regulations, a section of the VGP that specifically requires monitoring, reporting, and recordkeeping requirements that are interwoven with language in Parts 2.1 and 2.2 of the VGP. Also, CWA section 312(p)(5)(B) establishes that the USCG is to promulgate regulations governing the design, construction, testing, approval, installation, and use of marine pollution control devices as are necessary to ensure compliance with the standards of performance promulgated under (p)(4). As such, monitoring, equipment calibration, reporting, and

recordkeeping requirements for demonstrating compliance with the discharge standard are more appropriately established as part of the USCG's implementing regulations.

These commenters identified one area they assert is not clearly tied to implementation, compliance, and enforcement, namely, effluent limitations for ballast water treatment systems that use active substances (e.g., biocides). The commenter asserted that EPA should insert appropriate requirements and effluent limitation standards per VGP Part 2.2.3.5.1.1.5, including that EPA will develop new standards as appropriate and will publish them in the *Federal Register*. With respect to effluent limitation standards in Part 2.2.3.5.1.1.5, the final rule at § 139.10(d)(2) does include ballast water discharge standards for biocides. The final rule at § 139.4(b)(5)(iii) also addresses the more specific VGP requirement in Part 2.2.3.5.1.1.5.1 that pesticides used in ballast water treatment systems must be used consistent with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). Specifically, that section requires that any material used onboard that will be subsequently discharged must be used according to the FIFRA label, including proper application sites, rates, frequency of application, and methods; maintenance; removal; and storage and disposal of wastes and containers. EPA did not carry forward the provision that other biocides or derivatives may not exceed acute water quality criteria listed in EPA's National Recommended Water Quality Criteria based on the determination that these criteria do not include any pollutants identified as biocides or derivatives of such (except for chlorine, which is specifically limited in EPA's discharge standards). EPA disagrees that the regulations should include language stating that EPA will develop new standards as appropriate and will publish them in the *Federal Register* and that EPA may impose additional requirements on a treatment-specific basis if a BWMS uses biocides or produces derivatives not currently regulated under the final rule. In fact, the VIDA in CWA section 312(p)(4)(D)(i) obligates EPA to review the standards of performance not less frequently than once every 5 years and revise if appropriate, and also provides the Agency with the authority to establish additional requirements as codified in subpart E of this rule.

One commenter noted that monitoring data submitted in the VGP annual reports for biocide derivatives such as trihalomethane (THMs), haloacetic acids, and others may justify removal of compliance monitoring requirements for biocide derivatives in treated ballast water; however, EPA offers no discussion or explanation of the monitoring in the proposed rule preamble. EPA acknowledges the comment but notes that monitoring requirements are to be established pursuant to USCG implementing regulations (CWA section 312(p)(5)) and are outside the scope of EPA's rule.

Commenters suggested that, by limiting regulation of organisms to two size classes and three bacteria, the proposed numeric standards failed to regulate the full range of pollutants of concern. One commenter articulated various concerns with the proposed numeric discharge standards, such as environmental and health impacts from certain organisms less than 10 μm in size and the failure of the rule to address many large diatom

species greater than 50 µm in size that are nonmobile (and unregulated). The second commenter reiterated concerns with smaller organisms and other pollutants found in ballast water, including additional bacteria that are known human and animal pathogens, overall bacterial concentrations, viruses that are pathogens of humans or of animals, and overall viral concentrations. EPA acknowledges the commenters' concerns about the potential risks of additional pollutants not directly addressed by the numeric standards. However, the VIDA directed EPA to promulgate uniform Federal standards based on existing pollution control technology, and neither commenter provided information on the effectiveness of any control measures for these classes of pollutants. EPA's supplemental notice reviewed additional ballast water data in response to comments on the proposed rule that the Agency had failed to adequately establish technology-based numeric discharge limits. A discussion of regulated pollutants is provided in response to all comments received.

BAT rationale – Comment response for proposed rule

General support and opposition for EPA's BAT analysis

Numerous commenters voiced support or opposition to EPA's BAT approach and analysis for ballast water. EPA acknowledges those commenters that agreed with EPA's approach. Commenters that disagreed with EPA's approach and analysis largely raised arguments that the analysis was inadequate, incorrect, and/or should not have considered consistency with the IMO standard. First, several commenters stated generally that EPA did not perform an adequate analysis of BAT for BWMSs. Commenters specified that EPA's BAT analysis failed to review all BWMS data available; and therefore, remains arbitrary and capricious as was determined by the Second Circuit Court decision. Commenters recommended that EPA conduct its own independent review and not defer to the USCG's previous review of BWMS performance data as part of the USCG type-approval process. EPA agrees with the commenters that EPA should have conducted an independent review of additional BWMS data to further support the BAT analysis in its proposed rule. In response to commenter concerns, EPA requested USCG BWMS type-approval data directly from the USCG and revised the BAT analysis to include a transparent and comprehensive assessment of the performance of 37 BWMSs type-approved by the date of the proposed rule (October 26, 2020), as well as 16 sets of amendment test data for those systems. Based on a robust analysis of the data, EPA determined that the numeric ballast water discharge standards established in the VGP, and subsequently proposed by EPA in this rulemaking, represented BAT as defined in the VIDA. (See 88 FR 71788). EPA therefore retained the proposed numeric ballast water standards in the final rule. The USCG type-approval data and EPA's BAT analysis (*EPA's Ballast Water BAT Data Analysis: Analysis of Newly Acquired U.S. Coast Guard Ballast Water Management System Type- Approval Data to Assess System Performance Analysis*) are both available in the docket. The final rule preamble

also describes EPA's rationale for determining BAT as it relates to the numeric ballast water discharge standard.

EPA disagrees with the commenters that the Agency's updated BAT analysis is arbitrary and capricious as determined by the Second Circuit Court decision. The Second Circuit decision does not dictate a particular numeric outcome of the Agency's BAT analysis. Rather, the decision held that EPA failed to adequately explain how it selected the numeric standard, particularly as it relates to certain evidence before the court that the court believed EPA had not adequately considered. Specifically, the Second Circuit decision found that EPA had acted arbitrarily and capriciously in adopting the 2013 VGP standards because there were shipboard treatment systems that could achieve results with lower concentrations of organisms than EPA's standard required, and that EPA failed to show why it had not adopted limits based on these systems that exhibited lower results. EPA believes that its BAT analysis carried out for this rule complies with the Second Circuit's decision. As described above, the decision does not dictate the numeric outcome of the Agency's analysis but instead found EPA's explanation inadequate. In this final rule, EPA has further explained how it selected the numeric standard, including how it considered additional data in reaching its BAT determination. Additionally, the Second Circuit decision does not dictate that EPA set its numeric standard to be equal to the lowest level exhibited in a single test. Rather, a BAT standard is based on consideration of the entirety of factors relevant to BAT under CWA section 304(b). EPA considered these factors in setting the standard, particularly with respect to process considerations and engineering challenges, including differences in voyage patterns (in marine, brackish, or fresh waters), ballasting rates, architectural characteristics of the vessel such as space constraints or the need to locate the BWMS in a hazardous location onboard the vessel, and BWMS vendor support availability at locations around the world where that vessel intends to voyage, as well as technical and operational differences of varying vessel types, sizes, operating profiles, classes and flag states.

Some commenters stated that EPA's analysis of available BWMS data was not comprehensive enough to determine that the current technology cannot meet a more stringent standard. In addition, commenters argued that EPA appears "to have set the standards by working backwards towards the VGP standards." As described in the *Ballast tanks, BAT rationale – Comment response for supplemental notice (Analysis of new data)* section of this comment response document, EPA disagrees with the commenters that EPA structured the BAT analysis to arrive at the same standards listed in the VGP and that the Agency incorrectly determined that current technology cannot meet a more stringent standard.

Several commenters stated that EPA failed to consider separate BAT determinations for different vessel classes. In a similar vein, one commenter disagreed that EPA is required to adopt a single standard that applies to "all vessel

types and situations." EPA disagrees that the BAT analysis did not consider different standards for varying classes, types, and sizes of vessels. Additional discussion is provided in the *BAT rationale - Comment response for proposed rule (Data sources used to assess BAT)* section of this comment response document with respect to availability of data for the BAT analysis. On the second point, the commenter misunderstood EPA's statement regarding "all vessels and situations." As the commenter acknowledges, EPA can adopt different standards that apply to different vessel types and situations. Dividing an industrial category into groups (subcategories) provides a mechanism for addressing variations among BAT factors such as vessels type or operational characteristics (e.g., small vessels and vessels operating exclusively on the Laurentian Great Lakes). EPA considered and rejected the creation of additional subcategories in the final rule.

Two commenters stated that USCG type-approved BWMS do not necessarily represent BAT as several type-approved BWMS do not meet state technology requirements. Commenters noted that state operational requirements exceed the operational requirements for the USCG type-approval BWMSs EPA used as the basis for establishing BAT. One commenter recommended that EPA include the operational requirements for BWMSs specified in Michigan's Ballast Water Control General Permit in the final ballast water discharge standards. As discussed elsewhere in this comment response document, EPA disagrees that the operational requirements provided by the commenter should be included in the discharge standard. As discussed in more detail in the *BAT rationale - Comment response for supplemental notice (Data sources used to assess BAT)* section of this comment response document, commenters failed to describe how such operational requirements would result in achieving a more stringent discharge standard.

One commenter stated that EPA "incorrectly based performance assessment of available technologies on discrete rather than continuous measures of performance potential." The commenter did not define or describe discrete and continuous measures of performance although the discussion implies this to mean EPA failed to consider the continuum of more stringent discharge standards (e.g., as little as 2 but as much as 9 times more stringent) that are less than the discrete order of magnitude (10x, 100x, etc.) threshold. EPA disagrees. A discussion of this is provided in the following section of this document: *BAT rationale – Comment response for supplemental notice (Results of BAT analysis)*.

Regarding consistency with the IMO standards, several commenters asserted that EPA should not consider such consistency in setting ballast water discharges standards and that such an approach is inconsistent with the VIDA, which mandates that EPA independently determine BAT based on technology performance. One commenter elaborated that consistency with the IMO standards should not preclude a more stringent standard, while another commenter requested that EPA identify the documentation used to demonstrate that it was "critical to consider" the Ballast Water Management Convention (BWM

Convention) in developing the standard. First, EPA notes that, as discussed earlier in this comment response, EPA performed an independent review of available BWMS type-approval data and determined that the data do not support a more stringent standard. Second, EPA disagrees with comments that the Agency should disregard consistency with international discharge standards. While the commenters are correct that the VIDA standards are nearly verbatim to the IMO standards drafted in 2003, that does not mean that EPA's Federal standards of performance do not reflect current BAT or are inconsistent with the VIDA. Under the VIDA, EPA's BAT analysis may consider other factors as the Administrator deems appropriate, and EPA retains considerable discretion in assigning the weight to be accorded to these factors. EPA considered the IMO standards as a relevant factor in its analysis for several reasons. EPA's rationale for considering international consistency is discussed in the preamble to the proposed rule beginning at 85 FR 67837 and briefly discussed here. As discussed in the proposed rule (85 FR 67838), 80 percent of the world merchant fleet by tonnage are obligated to comply with the BWM Convention anywhere they operate in the world. Characteristics unique to the vessel community, such as the movement of vessels between U.S. and international waters, variability in vessel voyages, differences in ballast influent water quality, and space and engineering challenges imposed by vessel design, influence the treatment options available for a given vessel. In particular, the physical scale of BWMSs relative to the vessels themselves precludes the installation of redundant systems designed to meet different standards. Therefore, EPA considered the entire universe of vessels that may operate in U.S. waters and waters of the contiguous zone, many of which spend less 25 percent of their time in U.S. waters subject to this final rule. Third, as stated in the proposed rule (85 FR 67843), EPA is committed to protecting U.S. waters from aquatic nuisance species and supporting ballast water treatment solutions that do not disrupt the continuous flow of maritime commerce that drives the U.S. and global economies. Establishing standards in conflict with the IMO standards could result in unintended impacts on the vessel community by limiting vessel voyages and potentially altering shipping routes if vessels are unable to comply with the ballast water regulations required to discharge during their voyage. Therefore, while U.S. requirements do not have to be identical to the IMO standards, it is important that, to the extent possible, U.S. requirements do not conflict with international regulations in the BWM Convention. EPA notes that while it is critical to consider the IMO standards in establishing the ballast water discharge standards, it was not the only consideration or analysis used in the development of the discharge standard. In addition, EPA considered the other BAT factors in establishing the standard. Further discussion of the factors EPA considered in determining BAT for purposes of establishing the numeric ballast water discharge standard is available in the supplemental notice (88 FR 71789). Regarding the comment pertaining to language in the proposed rule regarding international consistency being "critical to consider," EPA notes that the language quoted by the commenter refers to EPA's 2013 VGP and was not made as part of this rulemaking.

One commenter noted that EPA should disregard the IMO standards because they were not based on an assessment of water quality or ballast water treatment technology, but rather on historical circumstances. EPA disagrees that the derivation of the IMO standards is relevant to EPA's consideration of the IMO standards within the Agency's BAT analysis. The relevance of the IMO standards, regardless of their derivation, is described above.

Finally, several commenters stated that the CWA requires that point source discharges meet technology-based requirements and state water quality standards, whichever are more stringent. EPA disagrees that this statement is applicable to the VIDA. Pursuant to CWA section 312(p)(4)(B), the VIDA requires the Agency to establish technology-based standards that, as defined in the Act, are independent of any comparison to applicable water quality standards. As such, comments that certain parameters are inconsistent with state water quality standards criteria are outside the scope of EPA's establishment of standards in this rulemaking, which are to be based on BAT, not water quality.

Data sources used to assess BAT

Commenters provided input regarding the data sources that informed the BAT analysis. First, several commenters recommended that EPA obtain and analyze available USCG type-approval data as part of the ballast water discharge BAT analysis rather than relying on the limited data set provided by the Ballast Water Equipment Manufacturers Association (BEMA). One commenter also disagreed more broadly with EPA's use of BWMS performance data supplied by BEMA, implying that reliance on data from parties with a financial interest in the outcome is problematic. EPA agrees with the commenters regarding the benefit of obtaining and analyzing additional data. As discussed elsewhere in this comment response, for the final rule, EPA analyzed USCG BWMS type-approval data, including test results that exceeded the discharge standard. EPA included all valid results in that analysis as they reflect normal variation in treatment technology performance. A test is considered valid if it met all uptake and testing challenge requirements of the ETV Protocol. While EPA did not rely on the vendor-supplied data for the final rule, as such data was replaced by the USCG-supplied type-approval data, EPA disagrees with certain arguments raised by commenters regarding vendor-supplied data. EPA contacted BEMA to request performance data from their members that operate USCG type-approved BWMSs. BEMA subsequently provided EPA with data from 11 commercially available, USCG type-approved BWMSs. Data requests from vendors and industry self-monitoring are routine for EPA regulatory development; all submitted data are assessed against data quality acceptance criteria to evaluate their fitness for use. EPA disagrees with commenters that data submitted by an industry organization, instead of an independent laboratory, are not acceptable for use. EPA cannot predict the future of BWMS innovation and will not reject data simply because it did not originate from an independent laboratory. BAT is intended to reflect the highest performance in an industry, and it may reflect a higher level of

performance than is currently being achieved based on technology transferred from a different subcategory or category, bench scale or pilot studies, or foreign plants. *See Am. Paper Inst. v. Train*, 543 F.d2 328, 353 (D.C. Cir. 1976); *Am. Frozen Food Inst. v. Train*, 539 F.2d 107, 132 (D.C. Cir. 1976).

Next, commenters stated that EPA should use the most recent data available and not data from the SAB study or National Research Council 2011 study. EPA agrees with the commenters that it should use available recent data to support the BAT analysis. As discussed in this comment response, EPA obtained and analyzed additional BWMS type-approval data to supplement its analysis and to address concerns raised during the comment period. EPA acknowledges that the USCG continues to receive new data packages. However, EPA selected an appropriate cutoff point for USCG data as the date of the proposed rule, balancing the need for recent data with the need to finalize the rule in a timely manner, particularly considering the significant and time-intensive data processing needed by both the USCG and EPA to effectively analyze the new information. Further discussion of EPA's validation, data processing, and analysis of the USCG BWMS type-approval data is available in the supplemental notice (88 FR 71791).

Finally, commenters recommended that EPA should use IMO type-approval data in its BAT analysis, or otherwise suggested that EPA inappropriately rejected data from IMO type-approval testing to support EPA's BAT analysis for ballast water discharges. EPA disagrees. EPA obtained data packages for 63 IMO type-approved BWMSs. Fifty-seven of these data packages were submitted to the USCG for alternate management system (AMS) acceptance, and the remainder were obtained from other online sources. As discussed in the proposed rule (85 FR 67840), EPA rejected those IMO type-approval data due to a lack of information on test-specific Quality Management Plans, Quality Assurance Project Plans, and individual test results. In particular, EPA identified issues with inadequate documentation of sample dates, individual results, flow rates, and field replicate samples necessary for evaluating data quality. Documentation of EPA's review and rating scale of the IMO type-approval data is available in the in the docket (as requested by the commenter) as document numbers EPA-HQ-OW-2019-0482-0828 and EPA-HQ-OW-2019-0482-0829, both of which are titled *EPA QC Review of AMS BWMS Performance Summary*. In addition to the identified data issues, EPA rejected IMO type-approval data generated following the IMO G8 *Guidelines for the Approval of Ballast Water Management Systems* ("G8 Guidelines") due to the inherent unknown quality of the IMO testing procedures. The original G8 Guidelines (MEPC.174(58)) did not mandate specific quality control requirements for IMO type-approval, but instead left it to the responsibility of the Administration or its authorized delegate to determine the acceptability of the test facility's quality assurance/quality control (QA/QC) program. Although the QA/QC program of the IMO independent laboratory may be adequate, EPA has no way to validate the program without reviewing each independent laboratory's Quality Management Plans and Quality Assurance Project Plan, and test plan, which are not provided as part of the data submittal for

IMO type-approval. As such, EPA cannot ensure that the IMO type-approval data are of sufficient quality to support the BAT analysis for ballast water standards development. There are also additional important differences between the IMO and USCG type-approval testing protocols, as detailed in the *BAT rationale - Comment response for proposed rule (Type-approval)* section of this comment response document. The IMO subsequently updated the G8 Guidelines and eventually codified those procedures in the BWM Convention (MEPC.279(70); MEPC.300(72)). These type-approval procedures were updated because they lacked specific guidance, were not robust enough and resulted in some BWMSs approved according to the original G8 Guidelines being unable to meet numeric discharge standards (Alfa Laval, 2020; Alfa Laval, undated; Hellenic Shortsea Shipowners Assn. (2020); ISES (2020)).

In summary, contrary to the commenters' assertions, EPA cannot assess the quality of project planning, sample collection, laboratory analysis, data review, data management, and data analysis for IMO type-approval data based on the information provided to EPA. This IMO type-approval data is therefore not fit for use in a BAT analysis.

In contrast, EPA found that performance data developed consistent with the USCG type-approval procedures and requirements provided at 46 CFR 162.060 are of sufficient quality for use in evaluating the performance of available BWMSs for the purpose of establishing a numeric discharge standard that represents BAT. As such, EPA obtained and analyzed additional USCG BWMS type-approval data in support of this final rule and as described in the supplemental notice. As acknowledged by the commenter, many of these systems (if not all) were previously type-approved under IMO. Accordingly, EPA considers the USCG type-approval data to be a high-quality replacement of the old IMO type-approval data.

Pollution reduction achieved

EPA received comments that spoke to the level of pollution reduction to be achieved by the numeric discharge standard and, more broadly, the stringency of the standard. Several commenters agreed with EPA that the proposed standard provides a high level of pollutant reduction. In addition, commenters agreed with EPA regarding the relative ineffectiveness of stricter discharge standards when the existing numeric standard already represents such an extremely large percentage reduction (>99%) in organism counts. Commenters noted that it is not unusual to encounter far larger numbers of organisms at uptake, making the percentage reductions currently achieved often significantly higher than presented. EPA acknowledges the commenters' support for the Agency's determination that the final numeric ballast water standard provides a high level of pollutant reduction and the data do not support a more stringent standard.

EPA received one comment disagreeing with EPA's discussion that the incremental improvement in treatment that would result from stricter discharge standards is insignificant. The commenter stated that even if numerically the reduction in discharge concentration achieved appears minimal, especially as compared to uptake concentrations, EPA should require a more stringent standard. The commenter noted that even a small initial invasion can multiply and cause enormous damage such that it is worth trying to get the last fraction of removal by a more stringent standard. First, EPA disagrees with the commenter on the basis that the commenter describes water quality-based considerations such as the potential for regulated discharges to negatively impact receiving water bodies. However, the VIDA requires that the discharge standard be technology based alone. Technology based requirements are determined based on technological availability and economic achievability, but not on water quality effects. Second, EPA disagrees with the commenter that a more stringent discharge standard would result in significant differences in treatment performance that warrant a revised standard. EPA acknowledges that some treatment discharge data from USCG type-approved systems demonstrated organism concentrations lower than the final numeric ballast water discharge standard; however, such variability is expected with ballast water treatment. Given this variability, systems may be designed to meet long-term averages that are lower than a regulatory standard so that variability during normal operations does not exceed that regulatory standard. *See* 85 FR 67840. Third, as discussed in the supplemental notice (88 FR 71793), EPA's analysis of data from all USCG type-approved BWMSs available as of the proposed rule did not identify a "best" technology that statistically stood out as representing BAT and able to achieve a lower discharge standard for both large and medium organism classes under all conditions. EPA also notes that the VIDA includes several non-regulatory programs intended to improve understanding of invasive species risks from vessel discharges and establish methods for addressing these risks, including the Intergovernmental Response Framework under CWA section 312(p)(6)(E) of VIDA, the Coastal Aquatic Invasive Species Mitigation Grant Program and Mitigation Fund, and the Great Lakes and Lake Champlain Invasive Species Program.

One commenter noted that EPA incorrectly calculated the percent reduction (treatment efficiency) for the Alfa Laval PureBallast treatment system. In addition, the commenter asserted that the calculations were based on the tests from a single treatment system rather than tests from untreated discharges from real-world ballast discharges. EPA notes that in support of the final rule, this analysis of treatment efficacy by the Alfa Laval system was supplemented by the evaluation of the newly obtained USCG type-approval BWMS data for all systems approved as of the date of the proposed rule. While EPA did not replicate its percentage treatment effectiveness calculations using the updated dataset, EPA affirms that USCG type-approved BWMSs are effective and reliable. EPA also

maintains that achieving a numeric discharge standard more stringent than the final standard would represent an insignificant improvement in treatment system effectiveness for both large and medium organisms for the same reasons as described for the Alfa Laval data. Finally, EPA is unsure what the commenter means by "untreated discharges from real-world ballast discharges," but notes that the source of data used for the analysis of Alfa Laval treatment efficacy was shipboard testing data that represents real world ballast discharges.

The same commenter stated that EPA incorrectly used the term "treatment efficiency" to describe the BEMA (and Alfa Laval) data. The commenter noted that treatment efficiency is the reduction in the organism concentration in treated discharge compared to the concentration in untreated discharge while EPA used the term to mean the reduction in organism concentration prior to treatment compared to after treatment. EPA disagrees that it calculated BWMS percent reduction incorrectly. The commenter recommended a calculation methodology that incorporates control data to isolate the portion of reduction attributed to "treatment efficiency" from non-treatment efficiency. While such a distinction has utility when assessing systems when undergoing type-approval (i.e., assessing that treatment efficacy measurements attributed to the BWMS are not the result of natural or non-treatment system related effects), EPA considers all means of living organism reduction onboard vessels to be relevant, including mortality due to piping, pumps, valves, tankage, etc., as well as targeted treatment. As described in the *BAT rationale - Comment response for proposed rule (General support and opposition for EPA's BAT Analysis)*, EPA did not rely on vendor-supplied data for the final rule, instead using USCG-supplied type-approval data.

The commenter also asserted that the statement in the proposed rule preamble regarding the level of organism reduction by BWMS as compared to drinking water testing, with a citation to Golden Bear (2018), is factually incorrect. EPA agrees with the commenter's assertion that it is inappropriate to infer that meeting the proposed discharge standard would require treatment efficiencies higher than required to meet drinking water standards and this comparison is not used in the preamble to the final rule. EPA believes, however, that the quality of the source data discussed in the Golden Bear (2018) reference is acceptable, as it was collected by a USCG-approved laboratory. This study was published by the Cal Maritime Golden Bear Facility, and the fact that the study was subsequently reported by industry publication has no bearing on the study's quality or reliability.

Finally, a few commenters noted errors in the units reported for both size classes in Table 1 of the proposed rule. EPA agrees with the commenters that it made errors in the units for both size classes and that "/m3" should be updated to "(/m3

or /mL1)" and the smaller size class should be described as "≥10 µm and <50 µm". The final rule reflects the correct units.

Justification of a more stringent standard

Many commenters weighed in on the appropriateness of a more stringent standard. Several commenters expressed support for EPA's BAT rationale, and EPA acknowledges these commenters' support. More specifically, one commenter stated that BWMS commissioning test data submitted by SGS Global Marine Services, as well as ABS data cited in the proposed rule (85 FR 67843), support EPA's findings that current BWMSs are unable to consistently meet a more stringent standard than the current ballast water standard. As discussed in the supplemental notice, EPA agrees with the commenter that BWMSs cannot consistently achieve a standard that is 10 or 100 times more stringent than the current standard based on an instantaneous maximum. In addition, the commenter noted that SGS commissioning data suggest that approximately 20 percent of new installations are not compliant with the discharge standard established under Regulation D-2 of the BWM Convention, which is nominally equivalent to the numeric ballast water discharge standard in the final rule. EPA acknowledges that SGS's assessment data were collected during the startup of BWMSs when the crew may not be familiar with the equipment and the system has not been optimized for the vessel specific ballasting conditions; however, it demonstrates the challenges some vessels experience achieving the current numeric ballast water discharge standard, much less a standard that is 10 or 100 times more stringent. In Attachment 3 to their comments on the proposed rule, SGS noted that in some cases the commissioning itself was the only training given to the crew prior to sailing, and that ballast tanks were not cleaned prior to BWMS installation, which may have contaminated the system. Over time, EPA expects this rate of non-compliance to decrease.

Additionally, one commenter agreed with EPA's determination that the sampling and analysis required to establish a more stringent standard is impracticable. EPA agrees with the commenter that collecting a sufficient sample volume to measure organisms ≥50 µm size is impractical and, in some cases, impossible. As shown in Table 13 of the ETV Protocol, to measure 1 organism/m3 requires a sample volume of 600 m3 but to measure 0.1 organisms/m3 requires a sample volume of 6,000 m3. Some low-ballast vessels, such as feedermax container ships, passenger ships and general cargo ships, have ballast tank capacities less than 6,000 m3. For these vessels, monitoring for organisms ≥50 µm size at a concentration of 0.1/m3 would be impossible, even if all the ballast water from the vessel was collected as a single sample.

On the other hand, several commenters asserted that available BWMS type-approval data support a more stringent standard. Some of these commenters stated that it is untrue that there are no performance data available demonstrating organism concentrations that are 10, 100 or 1,000 times more stringent than the proposed standards. EPA obtained and analyzed USCG type-approval data for all BWMSs type-approved by the date of the proposed rule. The results of the revised BAT analysis confirmed that USCG BWMS type-approval data do not support a more stringent standard, as described in the supplemental notice (88 FR 71794). As discussed in the *BAT rationale – Comment response for supplemental notice (Data validation and processing)* and *(Analysis of new data)* sections of this comment response document, EPA also disagrees with commenters that the mere existence of individual test results showing greater reductions than the discharge standards provide evidence that BWMS type-approval data support a more stringent standard, especially when such assessments separate the performance for large organisms from medium organisms.

One commenter stated that EPA incorrectly constrained its BAT analysis to finding available technology capable of meeting a standard at least an order of magnitude (10 times) stricter than the IMO standards and should have evaluated the potential for incremental improvements in BWMS technology to meet a standard more stringent than the IMO standard by less than an order of magnitude. EPA disagrees with the commenter that it constrained its BAT analysis in this way. As discussed in the supplemental notice (88 FR 71792), EPA performed an independent review of newly obtained USCG type-approval data, including several statistical analyses to examine available BWMS type-approval data from multiple perspectives, including whether BAT should be based on any specific individual BWMS(s) or on any specific treatment technology type(s). EPA also performed a sensitivity analysis to evaluate a range of potential outcomes based on different assumptions and data inputs. EPA acknowledges that the results of the baseline and sensitivity analysis included moderately lower numeric outcomes that are less than an order of magnitude different than the current standard. However, as discussed in the *Ballast tanks, BAT rationale – Comment response for supplemental notice (Analysis of new data)* section of this comment response document, EPA did not find these minor differences in potential discharge standards to be material. EPA mentioned the fact that these potential numeric standards were within an order of magnitude of EPA's standard as one reason that the differences are not material, but EPA did not constrain its analysis to evaluating only order-of-magnitude differences. Also, as discussed in that same section of this comment response document, EPA disagrees with the commenter that it should consider potential modifications to existing BWMS designs.

One commenter also disagreed with EPA's position to not propose a more stringent standard. The commenter stated that it is unclear why monitoring limitations justify EPA not proposing a more stringent standard when EPA does not require compliance monitoring for zooplankton or phytoplankton in the proposed rule. As discussed in the supplemental notice (88 FR 71790), available ballast water test methods (and associated method detection limits) prevent BWMSs from demonstrating achievement of a standard more stringent than the numeric ballast water discharge limit. These ballast water test method limitations and monitoring challenges give EPA low confidence in the ability of vessels to demonstrate compliance with a more stringent numeric discharge standard. EPA generally sets a BAT standard based on data demonstrating the candidate BAT technology's performance, accounting for variability of a properly operating system. Without a way to detect and quantify organisms at lower concentrations, EPA does not have a basis to evaluate the performance of the technology or set limits that represent that higher level of performance. Therefore, these monitoring limitations do not support the selection of more stringent ballast water standard regardless of whether compliance monitoring is required in the final rule.

EPA received one comment that EPA should apply the more stringent Pacific Region ballast water discharge standard everywhere, asserting that if the Pacific Region can have a more stringent standard, then it can and should be applied everywhere. EPA disagrees with the commenter that the ballast water standards of performance for low salinity required in the Pacific Region should be applied everywhere. CWA section 312(p)(10)(C) establishes the more stringent Pacific Region requirements for ballast water exchange. EPA adopted those more stringent Pacific Regions pursuant to that specific statutory directive and not as a part of its technology-based Federal standards of performance for vessel discharges.

Finally, one commenter stated that EPA incorrectly rejected a more stringent discharge standard because of poor implementation of the existing standard. EPA disagrees. The industry has spent many years developing effective and reliable BWMSs and a comparatively short time on optimizing installation, operation, and maintenance. Many vessel operators are just now bringing their BWMSs on-line before the USCG and IMO compliance deadlines (ABS, 2019) and in doing so are discovering and correcting unexpected operational problems. These operational issues are not "poor implementation," but the rather the typical evolution of new technology being commissioned. EPA acknowledges that continued growth in compliance with BWMS installation, operation, and maintenance requirements among the vessel community will result in greater reductions in ANS discharges. EPA rejected a more stringent ballast water standard based on a detailed analysis of BWMS type-approval data to determine BAT, as defined under the VIDA and discussed in the supplemental notice (88 FR 71791). Based on the BAT analysis, EPA determined the current standard continues to be appropriate to significantly

reduce ANS transport given the complexity of the universe of vessels that would be subject to the final rule and the great variation of vessel processes and engineering constraints of ballast water management. EPA also notes that the comment did not provide relevant data or other factual support for its assertion.

Other commenters supported the development of more stringent standards; however, they did not propose a technical approach to identify the supposed best performing technology. EPA disagrees that more stringent standards are appropriate. As discussed elsewhere in the *Ballast tanks, BAT rationale – Comment response for proposed rule (Justification of a more stringent standard)* section of this comment response document, EPA performed an independent review of available BWMS type-approval data and determined that the data do not support a more stringent standard. EPA evaluated the data to identify "best" performing technology types or individual BWMSs, as described in the supplemental notice (88 FR 71792) but determined that more stringent standards were not warranted.

Type-approval

EPA received one comment requesting that EPA point to the evidence and documentation that supports the effectiveness and reliability of the current generation of USGS type-approved BWMS. BWMS must be type-approved by the USCG under 46 CFR 162.060. USCG's BWMS type-approval program tests the performance of BWMS based on the system's ability to meet predetermined standards and discharge limits. The USCG type-approval testing process describes the requirements for BWMS design, installation, operation, and testing procedures to ensure any type-approved system meets both performance and safety standards. BWMS testing protocols require that the source water for testing meets a threshold concentration of organisms to meaningfully challenge the BWMS and determines the concentrations of living organisms in treated and untreated discharge water. As part of its type-approval procedure, the USCG regulations require BWMS land-based testing to be conducted according to the experimental design, sampling and analysis protocols, and reporting requirements included in the ETV Protocol. In addition, USCG regulations require that BWMSs demonstrate five consecutive shipboard testing trials during a minimum six-month operation duration to evaluate performance under real-life operating conditions. USGC shipboard testing protocols require BWMSs to be controlled by the ship crew during testing to verify the operation and maintenance parameters stated in the manufacturer's manual can meet performance standards under varying environmental conditions. The USCG type-approval testing protocol certifies the reliability of a BWMS when operated and maintained to the manufacture's specifications. The USCG BWMS type-approval test data support that USCG type-approved BWMS are effective and reliable at meeting the numeric standards in the final rule. The nonconfidential/non-proprietary BWMS

test data are available in the docket (EPA-HQ-OW-2019-0482-0849), as is EPA's BAT analysis document (EPA-HQ-OW-2019-0482-0850).

EPA considered that some vessels have experienced challenges operating newly installed technologies. This is especially true in situations where there is a lag between when systems are installed and when they need to be fully operational to meet discharge standards. For example, test data described by the commenter SGS Global Marine Services in 2020 (EPA-HQ-OW-2019-0482-0644-A2) show that approximately 80 percent of new installations are compliant with the discharge standard upon commissioning (SGS 2020, Attachment3_SGS BWMS Commissioning 2020). EPA expects that BWMS performance difficulties will diminish as the technology and operational experience mature.

In a similar vein, the commenter stated that EPA's assertion that USCG type-approval testing protocols are more rigorous than IMO type-approval testing protocols is unsupported by evidence and at least partly incorrect. EPA affirms that USCG type-approval testing protocols are more rigorous than the testing protocols outlined in the IMO G8 Guidelines adopted in 2005 and revised in 2008. The IMO G8 Guidelines were the testing protocols in effect when EPA rejected data from IMO type-approval testing as unacceptable for consideration in the BAT analysis supporting the 2013 VGP. Key differences between the two type-approval protocols include: the use of independent labs, the specified discharge standard (i.e., viable organisms vs living organism), number of consecutive shipboard tests required, allowable sample hold times, and component endurance testing requirements. A summary of the differences between the two protocols is provided in the USCG presentation *U.S. Ballast Water Regulations*, which is available in the docket (EPA-HQ-OW-2019-0482-0510).

Unlike the USCG type-approval process, the IMO G8 Guidelines do not require type-approval testing to be conducted by an organization independent of the manufacturer or an independent lab. The use of labs independent from the manufacturer helps ensure an unbiased assessment of BWMS performance. Both protocols set the post treatment discharge limit for type-approval at less than 10 organisms; however, the IMO G8 Guidelines use the term viable organisms and the USGC protocol uses the term living organism. The IMO G8 Guidelines define viable organisms as "organisms and any life stages thereof that are living." Test methods used under the IMO G8 protocol to determine viability include, but are not limited to, morphological changes, mobility, staining using vital dyes or molecular techniques. In contrast, test methods required to determine living organisms under the USGS type-approval protocol measure enzymatic activity and motility. The difference in terminology can result in IMO G8 type-approved BWMSs that discharge living organisms that are unable to reproduce (i.e., non-viable). Independent labs have found that some BWMSs that received IMO G8 type-approval are unable to meet the USCG threshold of less than 10 living organisms.

A minimum of six months of shipboard testing is required under both the IMO G8 and USCG testing protocols to verify operating and maintenance parameters and validate treatment performance under real-life operating conditions. The IMO G8 Guidelines require three consecutive successful tests of the BWMS while the USCG requires five consecutive tests with the added requirement the BWMS is controlled by the crew during the tests. The USCG requires a higher standard of repeatability than the IMO G8 Guidelines and independent labs have reported problems with systems successfully passing three tests, but failing on the 4th or 5th tests, suggesting the higher number of trials is warranted.

Testing protocols under the IMO G8 Guidelines and the USCG also specify required hold times before analysis and duration of component testing of BWMSs. Sample hold times before analysis are required to verify that the treatment system meets the discharge standard after some opportunity for repopulation. Although the IMO G8 test protocols require a longer hold time (i.e., greater than 5 days) than the USCG testing protocols (i.e., greater than 24 hours), independent labs have not seen challenges in meeting either standard. Vibration endurance testing of electrical and electronic components is necessary to ensure long-term performance in the marine environment. The IMO G8 Guidelines requires two hours of endurance testing, which is consistent with other international standards for component testing, and the USCG requires four hours. Independent labs have observed some IMO type-approved systems are unable to pass the four-hour endurance test required under the USCG protocol.

For these reasons, EPA found IMO G8 data to be of inadequate quality for use in the BAT analysis. The IMO has since updated and codified new type-approval test requirements (IMO, 2018a) that entered into effect in 2019 and address many of the quality issues that limited the reliability of the IMO type-approval data for evaluating BWMS performance.

Several commenters argued that type-approval is not enough to ensure BMWSs are working, and that ongoing compliance monitoring is necessary to ensure compliance. EPA acknowledges these comments; however, pursuant to CWA section 312(p)(5), the USCG is charged with developing the implementation, compliance, and enforcement requirements once EPA's standards of performance are promulgated. Those USCG regulations are to include, among other items, monitoring and other regulations governing the design, construction, testing, approval, installation, and use of marine pollution control devices as are necessary to ensure compliance with EPA's standards of performance.

Comments regarding specific statements and aspects of EPA's proposed rule

One commenter provided detailed comments that concerned specific aspects of, or statements made, in EPA's proposed rule. First, the commenter stated that EPA improperly concluded that the Second Circuit Court decision does not dictate the

outcome of the Agency's analysis, and that the process and engineering challenges that EPA considered to support that conclusion are based on hypothetical and illogical circumstances. Specifically, the commenter disagreed with EPA's conclusion that it may be necessary to install multiple treatment systems if EPA adopted a different standard more stringent than the IMO standard. The commenter indicated that any treatment system that met a potentially more stringent U.S. standard would automatically also meet the IMO standard. EPA disagrees with the commenter's characterization of the scenario where a vessel may need to install two different BWMSs to comply with differing international and U.S. requirements as illogical. The final rule establishes a discharge standard but does not identify the technology required to meet such standard. Pursuant to CWA section 312(p)(5), the USCG is responsible for promulgating regulations governing the design, construction, testing, approval, installation, and use of marine pollution control devices (e.g., BWMSs) as necessary to ensure compliance with the EPA standards of performance. It is premature to conclude that future USCG regulations will be written such that equipment installed to comply with those USCG requirements will also be consistent with IMO standards. A somewhat similar situation exists today under the current USCG regulations in that many international vessels have installed BWMS designed to comply with the IMO BWM Convention requirements; however, those BWMS are not type-approved for use in the U.S.

As discussed in the proposed rule (85 FR 67838), a vessel owner/operator must consider a wide range of factors such as space constraints, piping configurations, and environmental conditions of the waters in which the vessel voyages when deciding the most appropriate system to install. In a hypothetical scenario where EPA set the national ballast water discharge standard based on the best performing BWMS which is technology X, a vessel that plans to discharge in U.S. waters would need to install technology X if it was the only technology capable of meeting the more stringent U.S. standards. However, the vessel may find that technology X is not suitable to comply with the IMO standards under all operating conditions when voyaging outside U.S. waters (e.g., source water quality, voyage times, availability of supplies, energy requirements, etc.) and would need to install technology Y to maintain compliance with the IMO standards. In this hypothetical scenario, the vessel would be required to install both technologies X and Y to remain in compliance with all the discharge regulations as it voyages in U.S. and international waters.

As discussed in the supplemental notice (88 FR 71793) and elsewhere in this comment response, the variety of operational and environmental conditions under which BWMSs must operate supports EPA's position that it is critical that a range of BWMS compliance options are available to the vessel community. In addition, EPA notes that the hypothetical scenario presented above is not a concern for the final rule because EPA did not identify statistical differences in the treatment effectiveness of BWMSs that could help identify systems that perform significantly better, such that they could be considered as the basis for BAT (88

FR 71792). See the *BAT rationale - Comment response for proposed rule (Justification of a more stringent standard)* section of this comment response document for further discussion of EPA's rationale that setting BAT based on the performance of the single or top few best performing systems is not scientifically sound.

Next, the commenter stated that EPA's claim that USCG type-approved BWMS are more effective than midocean exchange or no treatment is unsupported by evidence for at least three of the five regulated organism groups. EPA notes that the commenter largely focuses on the effectiveness of BWMSs on the smallest regulated organisms (i.e., *Vibrio cholerae, Escherichia coli*, and Intestinal enterococci) in comparison with midocean exchange or no treatment in their comment. EPA disagrees with the commenter and affirms that that the rulemaking record supports EPA's analysis that USCG type-approved BWMSs can substantially reduce the concentration of living organisms in ballast water discharges when compared to midocean or no treatment. EPA acknowledges that the Agency focused its analysis on the two largest organism size classes (medium and large, as defined on 88 FR 71791) as these are the key parameters EPA uses to assess invasion potential. EPA notes that studies cited by the commenter reporting reductions achieved by midocean exchange all focus on reductions observed for medium and large organism classes (i.e., zooplankton and phytoplankton) and not the bacterial organisms that are the primary subject of the comment. EPA disagrees with the commenter that it can be assumed that bacterial reductions would mimic reductions observed for the medium and large organism classes following midocean exchange. After reviewing numerous studies on ballast water exchange efficacy, Molina and Drake (2016) concluded that organisms are not consistently removed from ballast tanks following exchange, and that the diversity and physiological state of organisms cause differences in measured responses. Studies by Drake et al. (2002), Mimura et al. (2005), and Seiden et al. (2010) reported no significant differences in bacterial concentrations because of exchange, suggesting that bacterial concentrations may not be affected by ballast water exchange alone. Molina and Drake (2106) noted that a decrease in bacteria concentrations may simply reflect lower concentrations of bacteria in midocean water over coastal water and are not necessarily a reflection that ballast water exchange has killed bacteria within ballast tanks.

EPA also notes that the public health incident cited by the commenter involving pathogenic bacteria released in ballast water discharges occurred prior to the installation of BWMSs on vessels. The public health incident involved bacterial strains for which EPA has no data; however, there is likewise no evidence that BWMSs would be ineffective and not protective. In addition, EPA disagrees with the commenter that IMO type-approved BWMSs regularly increase bacteria concentrations. In EPA's analysis of USCG type-approved BWMS of which most have obtained IMO type-approval, very few treated ballast water samples from land-based testing showed an increase in *Escherichia coli* or intestinal enterococci concentrations after treatment. Treatment reduced the concentrations of these

bacteria from that identified in the untreated sample in an overwhelming majority of the cases. EPA disagrees with the commenter that the USCG test protocol is defective in evaluating the ability of BWMSs to remove or kill organisms in the microbe groups. Minimum criteria for organism concentrations in challenge water are provided in Table 4 of the ETV Protocol. For organisms <10µm, challenge water must contain 103/mL as culturable aerobic heterotrophic bacteria. The Protocol assumes that the effects on culturable aerobic heterotrophic bacteria will be indicative of the effects on all bacteria.

EPA agrees with the commenter that while type-approval testing for *E. coli*, enterococci, and *Vibrio cholerae* confirms compliance with the discharge standard, it is not intended to demonstrate the ability of the tested treatment system to remove these microbes. In fact, as stated in the supplemental notice (88 FR 71792), "EPA obtained USCG type-approval data for the three smallest indicator microorganisms tested but did not assess those data as part of this analysis because the data do not provide an appropriate basis for calculating a numeric ballast water discharge standard…"

Finally, EPA disagrees with the commenter that BWMSs are not as effective as midocean exchange in reducing organisms in the medium organism size class (i.e., phytoplankton group). The USCG type-approval data analyzed in support of the final rule demonstrate that BWMSs are highly effective at consistently removing living organisms in the medium and large size classes. These technologies have shown to substantially reduce the concentration of living organisms in ballast water discharges as necessary to consistently meet discharge concentrations at or below the standard, beyond the reduction achieved through midocean exchange or unexchanged ballast water.

The following references are cited in the foregoing paragraphs:

- Molina, V., and Drake, L. (2016). Efficacy of Open-Ocean Ballast Water Exchange: A Review. Management of Biological Invasions, Volume 7, Issue 4, pp 375–388.
- Drake, L. A., Ruiz, G. M., Galil, B. S., Mullady, T. L., Friedman, D. O., and Dobbs, F. C. (2002). Microbial Ecology of Ballast Water During a Transoceanic Voyage and the Effects of Open-Ocean Exchange. Marine Ecology Progress Series, 233, pp. 13-20.
- Seiden J, Way C, Rivkin R (2010) Microbial hitchhikers: dynamics of bacterial populations in ballast water during a trans-Pacific voyage of a bulk carrier. Aquatic Invasions 5: 13–22, http://dx.doi.org/10.3391/ai.2010.5.1.3
- Mimura H, Katakura R, Ishida H (2005) Changes of microbial populations in a ship's ballast water and sediments on a voyage from Japan to Qatar. Marine Pollution Bulletin 50: 751–757, http://dx.doi.org/10.1016/j.marpolbul.2005.02.006

The commenter next asserted that some of EPA's arguments are unclear, including the argument pertaining to "margin of error" and that BWMSs experience greater variability than shoreside facilities. On the first point, EPA agrees that its statement regarding "margin of error" may be confusing to some. EPA's statement, at 85 FR 67839, could have more clearly stated, "The Second Circuit recognized and upheld an EPA rule that considers the margin of error inherent in measuring aquatic organisms. Specifically, the decision allowed for standards that represent the same level of control but are not denoted as 'equivalent to' each other. Instead, the standards may be 'substantially similar to' or 'between the values of A and B.'" On the second point, EPA also agrees that the statement is a run-on sentence has revised the preamble to read: "In the case of ballast water, the operators experience an even greater challenge meeting the numeric discharge standard than would exist at a shoreside facility subject to a typical effluent guideline. Instead of the numeric discharge standard being a long-term or monthly average as it is for most land-based facilities, the VIDA standard is based on an instantaneous maximum standard, never to be exceeded. An instantaneous maximum is the unit of time selected for compliance monitoring because of the challenges associated with monitoring, acknowledging that variations in turbidity, salinity, temperature, and other environmental factors can significantly affect a vessel operator's ability to meet the discharge standard at all times."

The commenter also asserted that EPA mischaracterized the Second Circuit Court's understanding of variability in BWMS data in two specific instances. The first comment addressed variability in test conditions affecting the ability to compare the performance of different treatment systems. EPA affirms that it is inappropriate to compare type-approval data among different treatment systems when there is significant variability in shipboard environmental test conditions. As discussed in the proposed rule (85 FR 67839), comparison of type-approval data from different systems would only be appropriate if all environmental variables (e.g., concentration of living organisms, temperature, turbidity, salinity, etc.) were identical during the test. This is unrealistic given that shipboard testing of type-approved systems occurs over a six-month period during a vessel's voyage and type-approval of different BWMSs occurs among numerous vessels traveling all over the world. Comparison of type-approval data among different BWMSs risks favoring systems treating ballast water under more favorable conditions, regardless of the actual effectiveness of those BWMSs. EPA notes that its BAT analysis for the final rule is based on an analysis of a significant amount of new data from the USCG related to BWMS performance. This robust dataset allowed EPA to statistically assess whether the wastewater characteristic of uptake water organism concentrations affected the resulting treatment discharge concentrations. EPA's *Ballast Water BAT Data Analysis: Analysis of Newly Acquired U.S. Coast Guard Ballast Water Management System Type-*

Approval Data to Assess System Performance is available in the docket (EPA-HQ-OW-2019-0482-0850). EPA found that, for both the large and medium organism classes, the variability in uptake concentrations explained only one percent of the variability in discharge concentrations overall, indicating that the variability in discharge concentrations among trials is due to other wastewater characteristics not defined in the type-approval database. The second comment addressed variability in BWMS performance, and the commenter contended that EPA implied that the Second Circuit Court misunderstood the test data because of a failure to understand that the performance of a treatment system can vary. EPA disagrees with the commenter's characterization. As discussed in proposed rule (85 FR 67838), EPA argued that it does not believe the Second Circuit's decision must dictate the outcome of the Agency's analysis because establishing a discharge standard based on the most stringent of type-approved systems is not required the totality of factors relevant to BAT as defined in the VIDA. EPA does not suggest that the Second Circuit Court failed to understand the performance data correctly; rather EPA argues that there are other process and engineering factors unique to the vessel community that must be considered as required under the CWA section 304(b) when establishing BAT, in addition to evaluating the most stringent type-approved systems. EPA acknowledges that within its variability discussion it notes that BWMSs are specifically designed to achieve levels below the instantaneous maximum to account for the variability in environmental conditions vessels may encounter during a voyage and remain in compliance. EPA offered this as an explanation for some of the test results described by the Second Circuit Court decision.

The commenter also disagreed with EPA's statement that "comparing type-approval data for different systems would only be appropriate if all other variables were held constant or under complete control during the test." EPA agrees with the commenter that statistical tools can consider variables that were not held constant across BWMS tests, and that comparisons among BWMSs are possible despite known differences. In fact, the considerable amount of new type-approval data provided by the USCG for the final rule enabled EPA to perform statistical analyses to test whether differences in uptake concentrations and salinities among tests were associated with differences in treatment discharge concentrations. EPA's BAT analysis discusses the methodology and results in Sections 3.2 and 4.2 and Appendix B. Following these analyses, which showed that the variability among treatment discharge concentrations had no to negligible association with uptake concentrations and salinity categories, EPA compared the treatment discharge concentrations among BWMSs. Additionally, it is relevant to note that various aspects of the tests must be consistent enough to the ETV Protocol to achieve type-approval.

On the topic of the volume of ballast water needed for testing, the commenter stated that EPA's statement that "collecting larger volumes of ballast water becomes impractical" regards only zooplankton and does not regard other organism sizes such as phytoplankton. While EPA agrees with the commenter regarding the differences in required sample volumes for determining concentrations of zooplankton versus phytoplankton in treatment discharge, that was not the point of EPA's statement. EPA's discussion in the proposed rule (85 FR 67842) regarded the overall ability of ballast water test methods to allow for establishing a standard 10 times more stringent for all regulated organisms, which is necessarily driven by ballast water sample volumes for zooplankton. EPA agrees with the commenter that collecting sufficient sample volume to measure organisms in the <50 and ≥10 μm size range (i.e., phytoplankton) at 10 times the current standard could be done and is not a hypothetical assumption. According to Table 14 of the ETV Protocol, measuring 1 organism/mL in the size category <50 and ≥10 μm requires a sample volume of 60-liters when 2 subsamples are analyzed. EPA also agrees with the commenter that collecting a large volume of sample for analysis of microorganisms including heterotrophic bacteria, *E. coli*, enterococci, and *Vibrio cholerae* is not impractical. According to the ETV Protocol, the total volume for these four microbial indicator organisms is one liter; collecting a sufficient sample volume to achieve a limit 10 times the proposed VIDA standard would require less than a 10-liter sample. However, sample volume is only one of several factors that impact the practicality of test methods to assess the ability of BWMSs to achieve more stringent standards. First et al. (2022) describes the difficulties of decreasing the method detection limit (MDL) to detect exceedingly rare individuals, including organism loss, interferences from suspended solids, bottle-effects and mortality, and analytical level of effort. In summary, EPA agrees with the commenter regarding the impracticality of collecting larger volumes of ballast water needed to meet a standard 10 times more stringent for zooplankton. EPA also agrees with the commenter that it may be practical to collect larger volumes of ballast water to meet a standard 10 times more stringent for regulated organisms other than zooplankton; however, sample volume is only one of several factors that impact the practicality of testing.

One commenter provided their interpretation of the following discussion in EPA's proposed rule (85 FR 67842): "The lack of sampling and analysis methods available to monitor ballast water discharges for the two largest organisms size classes at lower concentrations than the current discharge standard with any statistical significance justifies EPA proposed a discharge standard identical to the current standard. Demonstration of a higher level of treatment effectiveness reasonably would require testing of a different parameter for which there is the ability to monitor, which is likely some measure of organisms other than the two organism sizes classes (and bacteria) upon which the current standard is based.

This would require a new type-approval process…" The commenter describes this process as "you need a chicken before you can make an egg, and you need an egg before you can make a chicken, therefore chickens and eggs can't exist." EPA disagrees with the commenter. EPA does not claim that methods to reliably monitor large and medium organisms at lower concentrations cannot exist, but rather that they currently do not exist. EPA does not have sampling and analysis methods to support analysis of large organisms at lower concentrations, and the commenter does not identify such methods. Although sampling and analysis methods could be developed to support analysis of medium organisms, the ETV Protocol, upon which type-approval testing is based, specifies the sample volumes to be collected to confidently detect medium organisms in the range of 1 to 10/mL. To confidently detect medium organisms at levels that are significantly less than stated in the ETV Protocol, sample collection procedures different than those in the protocol would need to be used. EPA also disagrees that the lack of available and sufficiently sensitive analytical methods available today means that methods can never be developed and thus that a more stringent standard could never be required, as the commenter suggests. EPA employs a variety of mechanisms to develop and evaluate new sampling and analytical methodologies, including updating approved CWA methods in 40 CFR Part 136. EPA also does not claim that alternative indicator parameters for large and medium organisms cannot exist, but that currently EPA has not identified any appropriate alternative indicator parameters for the purpose of evaluating treatment effectiveness. EPA is not aware of parameters that would reliably demonstrate a higher level of treatment, and neither does the commenter provide such alternative indicators. EPA's parenthetical reference to bacteria is an acknowledgement that bacteria would not be an appropriate alternative parameter to demonstrate a higher level of treatment for the two largest organism classes. That is, EPA was stating that the 'alternative parameter" would have to be one "other than …bacteria."

Several commenters disagreed with statements in the proposed rule that "it is impractical to conduct routine monitoring and analysis of the discharged ballast water from vessels to assess the ability of an installed BWMS onboard a ship to meet the numerical discharge standard for biological parameters" and "[b]ecause of the challenges with collecting and testing representative samples of ballast water at the time of discharge, regulating discharged ballast water sourced from around the world has required a different approach." A commenter stated that EPA implies that collecting and analyzing samples of ballast water discharge is not merely impractical, but impossible. EPA did not mean to imply that collecting and analyzing samples of ballast water discharge is impossible. In describing "routine monitoring" EPA intended to mean "routine self-monitoring by the vessel crew" that while not impossible, is extremely challenging. For example, direct monitoring of the number of organisms in ballast water discharges requires representative sampling and analyzing large volumes of water for living organisms in each regulated size category. Also, collection of representative

samples requires careful selection of an appropriate sampling location; the design, manufacture, and installation of a specialized sample port; use of appropriate sample collection equipment; and a crew trained and experienced in organism sampling techniques. Sample analysis is also complex and specialized, often requiring a temporary onboard or shore-based laboratory staffed with skilled and experienced biological analysts. EPA acknowledges that self-monitoring conducted by entities other than the vessel crew may provide better opportunities to ensure appropriate sampling and analysis procedures are followed; however, monitoring to assess compliance is outside the scope of this rule. Rather, CWA section 312(p)(5) establishes that the USCG is responsible for developing regulations to ensure, monitor, and enforce compliance with the discharge standards.

Suggested revisions or clarifications

Many commenters offered suggested revisions for statements made in the preamble or requested clarification on certain aspects of the rule. Several commenters noted that the preamble of the proposed rule (85 FR 67836) discusses filtration as a typical component of a BWMS, but the commenters argue that many people incorrectly believe that filters are legally required. One of these commenters requested revision of the text to prevent furtherance of this misconception. EPA acknowledges commenters' statements but notes that the final rule excludes such descriptions of components of a BWMS. The preamble to the proposed rule did state that filtration is most often used as a pretreatment. EPA acknowledges here that filtration is not a required component of a BWMS.

Several commenters also noted that the preamble of the proposed rule (85 FR 67836) incorrectly states that two design options for electrochlorination systems are used in BWMS – in-line and side-stream treatment – when in fact, a third option – internal circulation – also exists and the USCG and IMO have approved such systems. EPA acknowledges the commenters' description of this technology. EPA also acknowledges that additional configurations may become available and type-approved for use in the United States as technological advancements for BWMSs continue.

Some commenters requested that EPA clarify that vessels from IMO member countries that have signed onto the BWM Convention are required to comply with both the BWM Convention and these U.S. ballast water regulations whether they are sailing in national or international waters. The applicability of the BWM Convention is outside the scope of this rule; however, vessels operating in U.S. waters are expected to comply with these U.S. regulations.

One commenter requested confirmation that BAT for ballast water management is ballast water treatment and only allows for exchange prior to a vessel's

implementation date and in special circumstances (e.g., Great Lakes, contingency measures where treatment systems are inoperable).

The final standards establish a numeric discharge standard based on the performance of USCG type-approved BWMSs. The final standards do not dictate the procedures a vessel must take to meet that standard; however, EPA expects the USCG implementing regulations will require any vessel to use a type-approved BWMS as a means of achieving that numeric discharge standard. The final standards, in § 139.10(e), do require, based on BAT and consistent with the VGP and existing USCG regulations, use of ballast water exchange and saltwater flushing prior to a vessel's numeric discharge standard compliance date. The final standards also codify the VIDA requirements for ballast water exchange in specific circumstances, such as vessels entering the Great Lakes or certain vessels voyaging to or between ports within the Pacific Region (CWA sections 312(p)(10)(A) and (C)).

BAT rationale – Comment response for supplemental notice

General support and opposition for EPA's BAT analysis

Several commenters made conclusory statements without specific factual support that opposed aspects of EPA's ballast water regulations. For example, several commenters stated that EPA failed to perform an adequate analysis of BAT for BWMSs and claimed that EPA's ballast water discharge standards are arbitrary and capricious. Some commenters requested that EPA upgrade the standards for ballast water to reflect BAT, and one commenter noted that EPA's proposed standards are factually and legally deficient and insufficient to protect human health and the environment. EPA disagrees. EPA evaluated data from multiple BWMSs and evaluated relevant factors to determine BAT for ballast water discharges. As part of that overall evaluation, EPA evaluated BWMS type-approval data to attempt to identify "best" performing technology types or individual BWMSs as described in the supplemental notice (88 FR 71792). EPA addresses more specific issues regarding the sufficiency of its ballast water BAT analysis throughout the subsections in this section of the comment response document: *BAT rationale – Comment response for supplemental notice.*

Several commenters stated that EPA's standards of performance for ballast water may not adequately protect coral reefs and that the numeric standards are arbitrary. EPA disagrees because the VIDA requires the Agency to establish technology-based standards that, as defined in the Act, are independent of any comparison to applicable water quality standards. EPA also notes that the VIDA provides multiple state provisions and invasive species prevention programs to further protect water quality outside of EPA's standard setting obligation. See response to comments on water quality in: *BAT rationale – Comment response for proposed rule (General support and opposition for EPA's BAT analysis).*

Data sources used to assess BAT

Several commenters said that the EPA should have requested performance data for additional newer USCG type-approved BWMSs. Without this data, commenters asserted that EPA's analysis does not reflect BAT. EPA disagrees because data collection and analysis takes time and cannot be continuously updated, particularly given limited EPA/USCG resources. Where new USCG type-approval data are constantly generated, EPA cannot incorporate all new data that are generated after it begins data analysis or else it would be in an endless loop of updating, but never finalizing, its analysis. Additionally, USCG's collation and standardization of data from type-approval reports was time-intensive and often required finding results among thousands of pages per report in different formats and terminology. As stated in the supplemental notice (88 FR 71791), there was a "significant effort required to extract, transcribe, and validate test data." *See* the supplemental notice (88 FR 71791) for further discussion of EPA's validation, data processing, and analysis of the USCG BWMS type-approval data. EPA acknowledges that the USCG continues to receive new data packages (even to this day). However, EPA selected an appropriate cutoff point for USCG data, balancing the need for recent data with the need for timely finalization of the rule, particularly considering the significant and time-intensive data processing needed by both USCG and EPA to effectively analyze the new information.

Additionally, since October 26, 2020, the last date for which EPA requested data, no new technology has become available that EPA would expect to meaningfully alter the results of the analysis. While some BWMSs were type-approved later than others, and their data were not included in this analysis, they do not necessarily have "more advanced technologies." Type-approval is a long, involved process. The date of type-approval can be affected by many factors and has no obvious ties to improved technology; all technologies are tested against the same discharge standard. Commenters have not provided information that the more recently type-approved BWMSs would contain more advanced technologies or change the performance results.

For the systems included in the analysis, EPA included amendment data, dated more recently than their original system's type-approval submissions. However, even amendments are not necessarily "more advanced" technology, but instead may have had an alternative component or a change in hold time. *See* EPA's final 2024 report, *Ballast Water BAT Data Analysis: Analysis of Newly Acquired U.S. Coast Guard Ballast Water Management System Type-Approval Data to Assess System Performance* – hereinafter "BAT Report" – Table A-1 for a list of amendments and their descriptions). Both new and established BWMS vendors can drive technology improvements over time (efficiency, reliability, consistency). The underlying technologies that comprise BWMSs are not novel and have been used for water/wastewater treatment for decades.

Additionally, the VIDA has a periodic review every five years, which would allow EPA to review new data at that time and potentially change standards of performance, if appropriate.

One commenter differentiated between performance data sources described as "type approval regime" versus "permitting regime," and said that the USCG type-approval data should not be used to assess the numeric discharge standards for BAT and needs justification. The commenter also gave different examples suggesting that different treatment systems do not perform well (data from IMO inspections, and sampling in Alaska), and suggested that numeric performance standards should not be tightened when the technologies cannot consistently meet them.

Neither EPA nor the USCG nor the commenter have identified a practical means of implementing the approach supported by the commenter, which would require compliance monitoring data for all ballast water discharge standards, including the two larger size classes of organisms. Accordingly, EPA developed ballast water discharge standards using the only available source of high-quality BWMS performance data: BWMS type-approval data EPA received from the USCG.

EPA disagrees with the commenter's argument that USCG type-approval data is not fit for use in developing ballast water discharge standards because "technologies are tested under controlled conditions" and are not "determined under real operational conditions." Performance data provided by the USCG included both land-based and shipboard test results. While land-based testing is performed under standardized conditions specified by the ETV Protocol, the requirements specify a minimum threshold concentration of organisms to meaningfully challenge the BWMS. The ETV Protocol does not specify a maximum threshold concentration of organisms, and the provided performance data demonstrate a variety of source water conditions. Shipboard testing requirements are provided at 46 CFR 162.060-28. In particular:

- Shipboard tests must be conducted throughout a period of operation of at least 6 months. (46 CFR 162.060-28 (b))
- The circumstances of the vessel's operation during the period of shipboard testing provide an acceptable range of geographic and seasonal variability conditions. (46 CFR 162.060—28 (e)(2))
- The source water used for testing is representative of harbor or coastal waters. Testing must include temperate, semi-tropical, or tropical locations with ambient organism concentrations that will provide a significant challenge to the efficacy of the BWMS. (46 CFR 162.060-28 (e)(2)(i))

For the VGP, EPA relies on vessels' self-monitoring to demonstrate ongoing compliance with the discharge standards, and independent sampling is not required. This is typical for NPDES permits. Note that under the VIDA, the

USCG is responsible for developing of implementing regulations, including compliance monitoring.

The commenter makes various references to sewage treatment plants (STPs)/marine sanitation devices (MSDs) and advanced wastewater treatment systems (AWTSs); however, EPA considers such comparisons to BWMSs inappropriate for several reasons. First, representative sampling and analysis of vessel sewage is far less complex than that of ballast water. Second, type-approval testing protocols for MSDs provided at 33 CFR Part 159 are far less complex than those for BWMS provided at 46 CFR Subpart 162.060. EPA disagrees that "independent sampling and enforcement are the driving forces that have turned an STP/MSD into an AWTS." AWTSs generally provide improved screening, biological treatment, solids separation (using filtration or flotation), and disinfection (using ultraviolet light) as compared to traditional Type II MSDs. AWTSs were developed to meet the more stringent discharge requirements for continuous discharge in certain Alaskan waters, regardless of ship location or speed (see 33 CFR Part 159 Subpart E – Discharge of Effluents in Certain Alaskan Waters by Cruise Vessel Operations). Note that federal vessel sewage and graywater discharge standards at 33 CFR 159.309 do not include limitations for metals. Finally, EPA agrees that "nearly half of the Alaska-going cruise ships opted not to discharge in Alaska waters, waiving the need for permitting or sampling." However, EPA disagrees that "dread" of sampling and enforcement drives such decisions as compared to vessel operational and economic factors (e.g., operating profile in Alaskan waters, wastewater storage capacity, capital, and annual operating costs of AWTSs).

EPA received several comments suggesting that it should consider additional data for its ballast water BAT analysis. One commenter said that for chlorine-based BWMSs, the chlorine and hold time data exhibit wider discrepancies than should be expected based on established disinfection science. A second commenter said that EPA did not provide support for its statement that it cannot identify the best performing systems and impose their level of performance on the shipping industry without considering what is workable in most vessels. The commenter also stated that the EPA should distinguish some BWMSs as BAT based on disinfectant dosage and other factors. Another commenter stated that the government is withholding relevant information about the type-approval data, and that the analysis was run using "estimates and guesses." Another commenter said that other variables are important to understanding BWMS issues on Lakers, that there are problems with BWMS testing, that EPA should provide BWMS performance information, and that EPA should show variability factors associated with its USCG type-approved BWMS analysis.

Regarding the comment about chlorine disinfection technology, BWMSs undergo testing according to USCG standards to demonstrate system performance meeting USCG type-approval requirements. As discussed in the supplemental notice, EPA does not have access to proprietary or business-confidential information linking

these performance data to design and operating details of each type-approved system. Accordingly, EPA has no basis upon which to support or refute the commenter's analysis regarding BWMS chlorine disinfection technology. Disinfection technology such as chlorine disinfection is a control technology for medium and small organisms, which are present in large numbers in challenge water (land-based testing) and in ballast water uptake (shipboard testing). Gross failure of BWMS disinfection design and operation, as suggested by the commenter, is not borne out by the evidence of USCG type-approval data showing low or non-detected numbers of medium organisms in treated effluent (see BAT Report).

Regarding the comment about identifying the best performing systems and imposing their level of performance on the shipping industry, EPA disagrees both because the data do not allow identification as any single system or subset of systems as "best" and because the commenter's suggested approach does not account for the need to demonstrate that BAT is workable across the category of regulated vessels. *See* also the response to comments regarding best performing systems in: *BAT rationale – Comment response for supplemental notice (Results of BAT analysis)*.

Regarding the comment that purported a correlation between disinfectant dose and effluent quality and further stated that EPA should use such a correlation as the basis for mandating "best performing ballast water treatment methods," EPA disagrees. As discussed in the supplemental notice (88 FR 71792), EPA does not have access to information to assess whether any systems in its analysis used specific disinfectant dose rates. Accordingly, EPA has no basis upon which to support or refute the commenter's statements about disinfectant dosage or other potentially relevant factors. Furthermore, the commenter's statements are not supported with evidence that correlate disinfectant dosage to treatment performance. Pending evidence to the contrary, EPA rejects the assumption that "more is better" with respect to disinfectant dosage. Higher disinfectant doses could, for example, cause greater risk to human health and the environment through greater exposure to those disinfectants. And, even if EPA had data that demonstrate a correlation between disinfectant dose and treatment efficacy, EPA would not have mandated use of a specific "ballast water treatment method" as its effluent limitation. Instead, EPA sets numeric limits based on BAT but allows operators the flexibility to use treatment methods to meet that numeric standard.

Regarding the masked data from the USCG, EPA cannot share the granular data because the USCG did not provide it to EPA. The USCG provided the data to demonstrate that systems passed or failed type-approval, not to make any system appear better than another beyond the binary of type-approval. The USCG considered BWMS technologies as business-sensitive since the data were not available to the public. Masking identifying information prevents the appearance of endorsement of any system. Regardless, the masked data were sufficient to perform the analysis quantifying the ballast water effluent standard: the USCG

grouped systems by treatment technology type, identified the salinity category of each trial, provided and distinguished both land-based and shipboard testing results, provided and distinguished amendments, provided influent and effluent concentrations, identified the validity of each trial to ensure EPA analyzed only valid results, and provided data for the pollutants (organism size classes) for which EPA is establishing the standard, among other information. This enabled the calculation of the necessary parameters to calculate a standard: means and variability factors within sets stratified by multiple relevant variables. Details of the USCG quality assurance procedures for the data provided to EPA are detailed in the March 25, 2024, *USCG Draft Response to US EPA Questions on Type Approval Data* document in the docket (USCG, 2024). Additionally, the type-approval process was not structured to find the lowest-discharging BWMS, but rather, to determine pass/fail. No vendor has come forward claiming superior performance. Finally, as noted in the supplemental notice in Section III.C., *Ballast Water Type-Approval Data Acquired Since the Proposed Rule*, the effort to standardize and compile this information was a highly time-consuming effort beginning from reports with thousands of pages, some in a mix of languages, without standard jargon. EPA had a priority request, focusing on obtaining the most important and relevant data adequate for its purposes. Further information, such as the number and size of subsamples or system operating parameters, would not have changed EPA's ultimate determination.

Regarding that comment that the USCG and EPA made "estimates and guesses" in developing the type-approval dataset and conducting the BAT analyses, see the response to comment in: *BAT rationale – Comment response for supplemental notice (Analysis of new data)*, regarding the commenter's statement about the complexity and explanation of the final rule's BAT analysis.

Regarding the comment that other variables are important to understanding BWMS issues on Lakers, this regulation does not intend to affect shipowners' choices of BWMSs; in contrast, EPA does not endorse any type-approved system(s) above others. With respect to BWMS operational issues on Lakers, EPA acknowledges the technical and operational challenges for existing Lakers. *See* EPA's discussion in the supplemental notice (88 FR 71799). *See* also EPA's discussion of the VIDA's Great Lakes research and other provisions in the supplemental notice (88 FR 71802). For these and other reasons (e.g., disproportionately high costs), EPA is not considering an equipment standard for existing vessels. On the other hand, new Lakers can be designed and constructed to accommodate a USCG type-approved BWMS and overcome certain operational and technical challenges such as corrosions, flow rate capacity, and adequate power. *See* also the response to comment regarding BWMS rated capacity in: *BAT rationale – Comment response for supplemental notice (Analysis of new data)*. As discussed in the supplemental notice (88 FR 71803), an equipment standard for new Lakers will encourage continued development and deployment of new ballast water treatment technologies suitable for use in the

Great Lakes, and EPA expects that technological advancements in the design of BWMSs will continue to improve their availability for use on the Great Lakes.

Further, as specified in CWA section 312(p)(5)(B), the USCG is responsible for promulgating regulations governing the design, construction, testing, approval, installation, and use of BWMSs to ensure compliance with the discharge standards. Accordingly, any adjustments to the USCG's type-approval requirements are outside the scope of this regulation, as is any EPA assessment of BWMS treatment rated capacities. EPA did not independently review the BWMS Test Reports and other performance testing documentation for performance or other parameters the commenter listed (flow rates, disinfectant dosages, or turbidity). Instead, EPA relied upon the USCG to identify valid and invalid trials, then only used results from valid trials. EPA's focus was on treatment discharge concentrations of organisms from BWMSs type-approved by the USCG through the existing ETV protocol. Although the commenter is correct that the variability factors were not included in the supplemental notice for brevity, they were included in the more thorough BAT Report. Table 1 in that report includes the overall median variability factors, and Table C-2 lists individual sets' variability factors. Finally, development of variability factors for challenge water/ballast water uptake (untreated waste) that the commenter mentioned is not relevant since the EPA is establishing performance standards for treatment discharge.

One commenter stated that EPA can never establish more stringent standards, since it is in a tautological loop. EPA acknowledges the commenter's concern that the proposed standard is based on performance data from tests designed to meet the existing standards. However, EPA disagrees that it can "never" establish a different standard. For example, the standard can change if more research results in the development and deployment of new ballast water treatment technologies, driving the concentrations down. EPA is unaware of new technologies demonstrated to achieve more stringent standards, and commenters have not identified such technologies. Moreover, the Clean Water Act does not compel the EPA to conduct original ballast water treatment system research in the course of this rulemaking. Instead, the Clean Water Act directs EPA to develop discharge standards based on the performance of best available technology economically achievable.

Specifically in this field of available ballast water treatment options, there is no market for systems that can consistently achieve less than the current standard of 10 organisms per volume of water (factoring in variability). Adoption of the BWM Convention in 2004 prompted development of BWMSs; however, the USCG did not type-approve its first BWMS demonstrated to achieve the discharge standards until 2016. Some vessels have experienced challenges operating newly installed technologies. This is especially true in situations where there is a lag between when systems are installed and when they need to be fully operational to meet discharge standards. For example, test data described by the commenter SGS Global Marine Services in 2020 (EPA-HQ-OW-2019-0482-

0644-A2) show that approximately 80 percent of new installations are compliant with the discharge standard upon commissioning (SGS 2020, Attachment3_SGS BWMS Commissioning 2020). EPA expects that BWMS performance difficulties will diminish as the technology and operational experience mature. CWA section 312(p)(4)(D) requires the Administrator to review the standards of performance no less frequently than once every 5 years. During the review, if EPA identifies evidence of changes that would impact BAT, EPA will collect, review, and analyze those information/data.

One commenter on the supplemental notice provided a lengthy discussion in disagreement with EPA's determination that the data quality of IMO BWMS type-approval data is inadequate for BAT evaluation. EPA determined that the BWMS type-approval data that EPA obtained from the USCG for the final rule to be high-quality, based on the USCG's review of the BWMS test reports and subsequent award of a type-approval. Accordingly, EPA did not conduct an independent review of the test reports. EPA considers the USCG type-approval data to be a replacement of the old IMO type-approval data, as many of these systems (if not all) were previously type-approved under IMO. For EPA's rationale for excluding the IMO data, see the proposed rule (85 FR 67840) and the following section in this comment response document: *BAT rationale – Comment response for proposed rule (Data sources used to assess BAT)*.

The commenter stated that "test data show that they consistently do a significantly better job of treating ballast water discharges than EPA's proposed standards." EPA disagrees. A discussion of this is provided in the following section of this document: *BAT rationale – Comment response for supplemental notice (Results of BAT analysis)*. Finally, the commenter's statements about the SAB are no longer germane as EPA is no longer relying on this nor other outdated data sources. *See* additional discussion in both the proposed rule and supplemental notice (85 FR 67818, Section VIII.1.v.A.3.i; 88 FR 71788, Section III.A.1, respectively).

Data validation and processing

Several commenters (using the same wording) stated that EPA did not justify standards using best available data, for two reasons. First, EPA substituted non-detects (NDs) with minimum detection limits (MDLs), which artificially inflates the averages. Second, EPA "arbitrarily increased" an MDL range by 10x, even though at least one result was less than the revised value, which also inflated the standards. The commenters recommended EPA instead use methods in a journal article they provided, saying that simple substitution should be avoided. EPA disagrees.

The commenters mischaracterize EPA's handling of non-detectable results as a simple substitution with their MDLs in this analysis. Specifically, for sets with at least two distinct detected organism concentrations in treated discharge, substitution was only the starting point in EPA's analysis. The main portion of the

analysis then applies a left-censored inverse Gaussian distribution by using maximum likelihood estimation (as discussed in Ballast Water BAT Data Analysis Sections 3.4 and 3.5). Maximum likelihood is one of the alternate methods mentioned in the commenters' cited article Helsel and Cohn, 1988, not 1988 as the commenters wrote, as well as more recent sources in the field. In short, EPA methodology already uses one of the commenters' recommended methods. This left-censored method incorporates the range of concentrations less than the MDL for NDs to calculate the mean and sigma parameters for each set (as described in Rigby et al., 2020). This is a comprehensive approach that uses the full range of concentrations less than the MDL, without imputation, and therefore does not inflate the average. Additionally, the methods in the cited article (Helsel and Cohn, 1988) are dependent upon the lognormal distribution; however, EPA determined that the inverse Gaussian distribution more appropriately fit organism concentration data (as described in the Ballast Water BAT Data Analysis, Distribution Shape results section 4.3). In contrast, for sets with fewer than two distinct detected values, there is no method available to estimate mean or sigma parameters, including in Helsel and Cohn, 1988. For these datasets, commenters are correct that the EPA uses the MDLs as a substitute, as is consistent with methods in previous effluent guidelines rulemakings. This is intended to avoid establishing standards too low to be measurable. Using values that are less than the MDL, as commenters suggest, would also be inaccurate in EPA's view because the methods used cannot accurately and reliably detect values at those levels.

EPA disagrees with commenters that increasing the value of MDLs determined by EPA to be unrealistically low (MDLs ranges of "0.01 – 0.02" and "0.01 – 0.3" medium organisms/mL) was "arbitrary." Although some applicants claimed to achieve an MDL this low (by concentrating 60 L to 1 L, then analyzing 2 mL, yielding an MDL that rounds to 0.01 medium organisms/mL), this MDL was determined by USCG from test facility report protocols. See USCG Responses to EPA about QA 03252024 in the rulemaking docket for additional details. Since it is the responsibility of the data user to complete any following checks specific to the analysis, EPA systematically compared detected values with each listed MDL and found that no detected values approached 0.01 for these two MDL ranges only (this analysis has been added as an appendix of the BAT Report). Rather, among detections with these corresponding MDL ranges, EPA identified the lowest detection as being 0.10 medium organisms/mL, ten times greater than the minimum of the MDL ranges. These were the only MDLs with a sizeable gap of a magnitude between the MDL and the lowest detected concentration, a circumstance that does not occur in continuous distributions of concentrations with NDs, so EPA appropriately adjusted these two MDL ranges and no others. The lower concentration the commenters mentioned, 0.08 medium organisms/mL, was not attributed to either of these two MDL ranges, but to the higher level of "0.1 – 0.2" organisms/mL. As noted in the Ballast Water BAT Data Analysis Report, some detected concentrations received were less than their corresponding MDLs.

Further, low MDLs of organism concentrations in ballast water have been shown to be impractical to empirically achieve due to the large volumes of water required to analyze (e.g., Lee et al., 2010; Lemieux et al., 2008; First et al., 2022).

Two commenters had concerns about QA/QC checks. One commenter said that basing standards on averages is not scientifically sound, and it is unclear whether independent labs performed checks or whether EPA reviewed TQAPs (total quality assurance plans) as required. The commenter asserted that data should already be standardized. They had concerns about using MDLs for NDs, which produces a mean that is biased high and not the best statistical analysis. The commenter said that EPA's "inconclusive analysis" and rationale do not provide sufficient evidence that these standards represent BAT. A second commenter said that the MDL of 5/m3 is too high, which "could greatly distort the results." They said that this was not a proper BAT analysis because it did not examine only best-performing systems. They said that it is not possible to assess the transcribers' understanding of the data and independent data checks are not possible.

EPA disagrees that using data reported with different precisions and data that represent means do not provide "a solid foundation to begin an analysis to establish" these national standards. It is typical for analytical data to have varying numbers of digits or significant figures, as laboratories report raw results. Contrary to the commenter's statement, the ETV protocol does not address data standardization (see ETV Protocol, Chapter 6, Reporting Verification Testing Results). Rather, precision of organism concentrations is relative to the observed mean of the number of organisms (e.g., see ETV Protocol, sections 5.4.6.3, Sample Volumes and Data Quality, and A.5.1.3, Precision), and therefore varies in number of digits after the decimal. Further, a mean of replicate samples taken from the same trial run of a BWMS is not an incorrect or erroneous value, but a representative value of that trial. Calculating a mean is standard procedure for aggregating among replicates for statistical analysis in environmental science. These trial means (one value per trial) comprise the input data to EPA's BAT analysis. Neither the use of means nor the use of varying precisions biases results; rather, any error associated with these values goes in both directions (low and high). To employ all available information, EPA used all digits provided throughout the analyses and only rounded to two digits after the decimal in the final step, in keeping with standard mathematical practice.

The USCG data entered results "as-is," followed by quality checks of data entry, cross-table linking, completeness, and logic (for a list of USCG QA/QC steps. See USCG Responses to EPA about QA 03252024 in the rulemaking docket for additional details of the USCG review). It is not the responsibility of the data user, in this case EPA, to develop appropriate data processing procedures. EPA did not independently review the BWMS Test Reports and other performance testing documentation for performance or data quality. Instead, EPA relied upon the QA/QC requirements for independent laboratories at 46 CFR 162.060-36, USCG

approval procedures at 46 CFR 162.060-10, and USCG database quality checks as sufficient to ensure data quality.

EPA disagrees that the analysis of type-approval data was “inconclusive.” Rather, EPA reached a conclusion by calculating standards for large and medium organism concentrations in treated ballast water and provided additional transparency through sensitivity analyses of aspects with inherent uncertainty. Uncertainty is inherent to every analysis and does not negate the conclusiveness of an analysis.

The comment alleging that personnel who prepared USCG type-approval data did not understand the task is a non-specific and unsupported assumption. The method detection limit (MDL) of 5 large organisms/m3 is higher than most test facilities produced but is valid under the ETV protocol. It does not correspond to a total volume of 0.2 m3 of ballast water as the commenter assumed, but 10 m3 concentrated to 1 L, of which 20 mL was analyzed. See USCG Responses to EPA about QA 03252024 in the rulemaking docket for additional details. EPA added the equation used to calculate the MDL to the Ballast Water BAT Data Analysis report, section 2.4 Data Processing. In this instance, the MDL was calculated as 1 organism * concentrated volume / (total volume * analyzed volume); converted to m3, this equals 5 organisms/m3 (1*0.001/(10*0.00002)).

One commenter said that EPA must have written the type-approval test protocol to be incapable of meeting a more stringent standard. They said it is possible to bias a test by restricting the water volume, and gave examples, but then said in footnotes that those examples did not occur in USCG data. The commenter asserts that there are fractional MDLs in the data, so there are "plenty" of data that go "well beyond" the standards. The commenter referenced other text they wrote in their submission and said that some BWMSs can meet more stringent standards. The commenter stated that "EPA must conduct an honest, open-ended, and thorough BAT analysis, and revise the proposed standards."

EPA disagrees that the ETV protocol was written to make type-approval tests “incapable of revealing anything about a BWMS’s ability to meet a more stringent standard.” Rather, from the ETV protocol Chapter 1, “The objective of ETV ballast water treatment technology testing is to evaluate the performance characteristics of commercial-ready treatment technologies with regard to specific verification factors, including biological treatment performance, predictability/reliability, cost, environmental acceptability, and safety.”

EPA does not claim and has not claimed that “USCG type-approval data cannot tell us anything about treating to a more stringent standard.” EPA calculated the standards given the type-approval data and reported the results as they were. The ETV protocol does not restrict the volume of ballast water to a “small volume,” as the commenter implies without providing evidence. The hypothetical high discharge limits of 10 large organisms/m3 and 10 medium organisms/mL that the

commenter described appear to be generalizations, as they do not exist in the data set; the commenter acknowledges this in their footnotes. On the other hand, EPA acknowledges that the objective of the ETV protocol is to verify that a BWMS, when tested under standardized and relatively challenging conditions, is capable of consistently meeting the discharge standard, and not necessarily to test the limits of BWMS performance.

EPA agrees that the type-approval data include treatment discharge results less than 10 organisms per volume of water. However, EPA disagrees that the mere existence of discharge concentrations less than the standard in the data set means that standards should be more stringent. EPA describes the conflicting challenges of continuous compliance and inherent performance variability on BWMS design and operation in 85 FR 67840. "Vendors accomplish this by (1) designing their systems to achieve long-term average discharge concentrations that are lower than the numeric discharge standard, and (2) adequately controlling for variation in BWMS performance." Designing and operating BWMS to consistently achieve levels close to the numeric discharge standard is poor practice because even relatively slight variability would result in a high rate of non-compliance with the instantaneous maximum numeric discharge standard (and would not pass the USCG type-approval testing process).

Discussion of comments about basing standards on fewer BWMSs is discussed in the following section: *BAT rationale – Comment response for supplemental notice (Results of BAT analysis).*

For these and other reasons documented in the rulemaking record, EPA affirms that it conducted a thorough and unbiased analysis, as the commenter requests, and has reported the results in the final rule.

Analysis of new data

EPA acknowledges one commenter's support for EPA's collection and analysis of the additional USCG type-approval data.

One commenter questioned whether it is EPA's intent to invalidate and remove from further consideration the BAT analysis presented in the proposed rule. Following the 2020 proposed rule, EPA obtained a considerable amount of new data from the USCG related to BWMS performance. The Agency used the newly acquired type-approval data to analyze whether a different standard from the proposed rule should be established for medium and large organism sizes. The data analyzed in the proposed rule is a subset of the larger new data set analyzed in the supplemental notice. Therefore, EPA views this new analysis in the supplemental notice as more authoritative and informative.

One commenter said that they had experts try to replicate EPA's BAT analysis. Their results differed from EPA's; therefore, they stated that either EPA performed the analysis incorrectly, or did not provide a sufficiently clear, complete, and accurate description to enable replication.

EPA disagrees that it "did not provide a description of its BAT analysis that was sufficiently clear, complete, and accurate." The Ballast Water BAT Data Analysis methodology sections of the BAT Report, in both the 2023 version that accompanied the supplemental notice (DCN EPA-HQ-OW-2019-0482-0850) and the final 2024 version, comprehensively included and described all steps, cited all functions used, and reported results for all sets in extensive Appendix tables. To further help the commenter, EPA has added a table of code for the programming language "R" that EPA used to analyze the data in the Appendix of the BAT Report. EPA notes that the commenter did not provide the methodology, citations of functions used, or reported results for their purported replicate analyses. The commenter also did not identify any specific errors or inaccuracies in EPA's analysis. Therefore, EPA cannot further respond regarding any differing results.

One commenter said that EPA provided no explanation why it did this new, "massively complicated approach," putting the public at a "deep disadvantage" in trying to assess it. They continued by saying that earlier assessments were simpler, suggesting that its "unduly complex" assessment "can only be justified" if there was a problem or defect in all previous methods. EPA disagrees. The analysis of the large set of newly acquired data described in the supplemental notice was the result of concerns raised during the comment period for the proposed rule.

EPA disagrees that its statistical analysis of treatment system performance was novel or complicated. The analysis followed the methods of EPA's Effluent Limitations Guidelines (ELGs) used for decades (e.g., U.S. EPA, 1995, 2002, 2004, 2015, and 2024) to calculate concentration limitations for pollutants in effluent water. Since this ballast water standard was for organisms rather than chemicals in water, EPA varied two characteristics to more appropriately represent their concentrations: (1) EPA used a better-fitting distribution shape (inverse Gaussian rather than lognormal), and (2) handled non-detects continuously rather than discretely (using a left-censored distribution rather than a modified delta distribution), further explained in the BAT Report, Sections 3.3 Distribution Shape and 3.4 Distribution Parameters. The analysis followed the standard ELG method of multiplying an average effluent concentration by a variability factor, defined by a 99th percentile, to define an upper concentration limit.

EPA also disagrees that a more complex analytical approach is necessarily flawed. EPA's analysis was designed to produce accurate and meaningful results using appropriate analytical tools and was not designed to present any particular level of complexity of analysis. To the extent the commenter is implying that EPA purposefully selected more complex analytical methods for the purpose of obfuscating its analysis, EPA disagrees.

For the additional task of comparing the performance of different BWMSs for the identification of "best," EPA used common and appropriate statistical methods to compare among groups of measurements (Kruskal-Wallis tests and percentiles). EPA included all steps, cited all functions, and provided detailed figures and tables of results in the report to transparently and comprehensively explain the methodology.

U.S. EPA. 1995. Statistical Support Document for Proposed Effluent Limitations Guidelines and Standards for the Centralized Waste Treatment Industry (January). EPA-821-R-95-005. Available online at: https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=200055NA.TXT

U.S. EPA. 2002. Development Document for the Final Effluent Limitations Guidelines and Standards for the Iron and Steel Manufacturing Point Source Category (April). EPA-821-R-02-004. Available online at: https://www.epa.gov/sites/default/files/2015-10/documents/ironsteel_dd_2002.pdf

U.S. EPA. 2004. Technical Development Document for the Final Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category (August). EPA-821-R-04-012. Available online at: https://www.epa.gov/sites/default/files/2015-11/documents/caap-aquaculture_tdd_2004.pdf

U.S. EPA. 2015. Technical Development Document for the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category (September). EPA-821-R-15-007. Available online at: https://www.epa.gov/sites/default/files/2015-10/documents/steam-electric-tdd_10-21-15.pdf

U.S. EPA. 2024. Technical Development Document for Final Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category (April). EPA-821-R-24-004. Available online at: https://www.epa.gov/system/files/documents/2024-04/se11757_steam-electric-elg-tdd_508.pdf

One commenter said EPA did not explain why it performed a new analysis. The commenter further asserted that the supplemental notice did not mention that the commenter met with EPA to show them one BWMS was much better.

The established regulatory development process is that EPA proposes a rule, receives public comment, and addresses those public comments in promulgating the final rule. As explained in the supplemental notice (88 FR 71791), EPA received comments that EPA reviewed insufficient BWMS data. In response to those comments, EPA appropriately requested and received new data, and revised its BAT analyses and development of performance standards. Therefore, EPA disagrees that it does not need to conduct a new analysis on the new data. The analysis of treatment performance data in the final rule is a comprehensive and long-established (not new) approach appropriate to calculating effluent limits in wastewater (as in Effluent Limitations Guidelines).

EPA disagrees that it stated or presumed that USCG type-approval test data were "categorically incapable" of supporting a more stringent standard than the IMO standard, and the commenter did not identify where it believes that EPA made such a statement or presumption. In fact, EPA's BAT analyses for the proposed rule, supplemental notice, and final rule specifically evaluated whether USCG type-approval test data supported a more stringent standard and found that they did not for the reasons described in the preambles.

The final rule reflects the best available data and the corresponding analysis of it. The commenter's reference to prior analyses merely reflects that at various other points in time, EPA has had different data and has other available information. For example, EPA's analysis for the final rule contains different and greater data than in prior analyses and is informed by additional public input from comments. In its supplemental notice, in the final rule preamble, and in this response to comments document, EPA has explained the choices it made that shaped its analysis of BWMS data.

Several commenters said EPA should narrow the BWMSs considered BAT to those EPA calculated as "best." They noted that EPA can do so without limiting which BWMSs vessels have to choose from. The commenters said EPA must consider a provided list of factors in establishing BAT.

EPA disagrees that it should base the final standards on the performance of only the narrowed list of 25 "best" BWMSs identified in the supplemental notice (88 FR 71793). As discussed in the supplemental notice, EPA did not do so in part because the baseline and sensitivity analysis results, as well as the standard in the proposed rule, are all within the same order of magnitude and fall within the margin of error expected due to the variability associated with the characteristics

of ballast water and challenges associated with monitoring, analyzing, and enumerating organisms in the different size classes. As EPA described in its proposed rule preamble (85 FR 67839), the Second Circuit has recognized the margin of error inherent in measuring aquatic organisms to allow for a standard that is not "equivalent to" another, yet also represent the same level of control. EPA also considered several other factors in its decision to promulgate a final standard equivalent to the proposed standard, as discussed in supplemental notice Sections III.D and III.E (88 FR 71793 and 88 FR 71794, respectively).

The commenters also stated that (1) "EPA has data for a number of BWMSs for various vessels operating under various conditions and can reasonably assume that the available data represent workable BWMSs for most vessels" and (2) the "best" BWMSs are "systems that are workable for most vessels," but did offer supporting evidence. The lack of identifying information about the BWMSs does not allow EPA to sufficiently evaluate these claims. And, contrary to these assertions, the majority of the BWMSs are not type-approved for U.S.-flagged vessels, which means they would be unavailable for the many U.S.-flagged vessels subject to VIDA regulation. See supplemental notice Section III.D.("To be installed on any U.S.-flagged vessel, the USCG must verify the system meets certain installation and engineering requirements specified in 46 CFR subchapters F and J. The majority of USCG type-approved BWMSs have not been verified to comply with these requirements, so these systems are not approved for use onboard U.S.-flagged vessels. EPA did not have the information necessary to correlate BWMS test data with onboard acceptance; therefore, some of the systems analyzed may not be approved for use on U.S.-flagged vessels.").

Therefore, while the commenters are correct that EPA does not mandate the use of any specific technology, the standard EPA puts forth cannot be calculated based on the performance of a subset of technologies that potentially include no workable options across the category of regulated vessels. Due to the masking of the data, EPA cannot eliminate this possibility that US-flagged vessels would have no available BWMS choice by which to meet a more stringent standard.

The commenters also asserted that in considering all relevant BAT factors, EPA should consider that vessels with older equipment might need to update their equipment to the "best" systems identified in order to meet EPA's standard. However, EPA has no data to show that purported poor performance would be resolved by vessels updating their equipment. It is also unclear how statements about "technology transferred from a different subcategory or category" and "BAT may be based on process changes or internal controls, even when those technologies are not common industry practice" are relevant for this industry. The commenters have not identified any such technology.

Several commenters, using identical language, made a series of statements of disagreement with EPA's evaluation of BAT. The commenters state: "EPA claims, without justification, that setting BAT using a single technology or top group of technologies would not be scientifically sound or grounded in the statutory considerations of the Clean Water Act." However, the commenters misstate EPA's claim. Per the supplemental notice (88 FR 71794): "Some commenters appeared to suggest that EPA should collect the universe of performance data, identify the perceived single, or top few, best performing system(s), and impose that perceived level of performance on the entirety of the universe of potentially affected entities, without considering whether such a system is workable for most vessels [emphasis added]." Furthermore, the commenters do not address EPA's valid concern that "test results that appear to indicate greater removal of organisms are not an indication that any particular BWMS can achieve a more stringent standard in all conditions." As discussed in the following section: *BAT rationale – Comment response for supplemental notice (Data sources used to assess BAT)*, EPA did not have access to proprietary or business confidential information needed to conduct a detailed engineering analysis of BWMS type-approval data to assess the ability of vessels of all designs and operational characteristics to comply with the commenters' proposed approach. Further, the commenters do not suggest an alternative approach for assessing whether their suggested approach is workable for most vessels.

EPA disagrees with the commenters' statement that EPA's BAT approach "will not drive technological improvements." Additional discussion is provided in this section: *BAT rationale – Comment response for supplemental notice (Data sources used to assess BAT).*

A commenter stated that "EPA ignores the fact that some BWMSs can remove more organisms than others," but did not propose a technical approach to identify the supposed best performers. EPA disagrees that it did not evaluate the BWMS type-approval data for best performers. EPA's statistical analyses and findings regarding the identification of "best" performing technology types or individual BWMSs are described in the supplemental notice (88 FR 71792) and BAT Report.

Several commenters, using the same language, stated that EPA failed to consider separate BATs for different vessel classes, as a means of developing more stringent discharge standards where feasible. EPA agrees that it can subcategorize the industry as the VIDA allows EPA to distinguish among classes, types, and sizes of vessels, and between new vessels and existing vessels. EPA did not ignore subcategorization for the entire rule. For example, in the final rule EPA determined that existing vessels operating exclusively on the Great Lakes should be exempt from the numeric discharge standard. EPA also created a new

subcategory of vessels, New Lakers, to distinguish vessels operating on exclusively on the Great Lakes built after the effective date of the USCG rulemaking. EPA established a separate BAT for New Lakers that includes a ballast water equipment standard. Other examples include EPA's exemption from the numeric discharge standard of vessels less than or equal to 3,000 GT that do not operate outside of the EEZ and for non-seagoing, unmanned, unpowered barges.

For the remaining vessels the commenter is correct that EPA did not identify different conditions that could be used to subcategorize the industry. Available information made it difficult for EPA to analyze how BWMS could vary across other vessel classes, thus making it impracticable to subcategorize and apply different standards to different vessel classes. First, USCG masked BWMS type-approval data to exclude information the USCG deems to be proprietary for each BWMS, such as the vendor, make, and model; the type of treatment technology used; and design and operating details of each. Second, EPA lacks information to link the masked BWMS to vessel classes, types, sizes, operational characteristics, and water quality. Third, even if the Agency obtained such information, remaining challenges to industry subcategorization include the fact that vessels have the unique need to go to more places than the U.S. and often experience changing vessel operating characteristics, voyage characteristics, and water quality, sometimes within the voyage; these factors could render a subcategorization scheme difficult or impossible to implement and enforce.

Also, neither the commenters nor other industry stakeholders (i.e., vessel owners/operators, BWMS vendors, international community) have specific examples and factual support for how vessels should be subcategorized, other than suggesting that conceptually they should be subcategorized.

Adding to the discussion in the *BAT rationale – Comment response for supplemental notice (Data sources used to assess BAT)* section of this comment response document, EPA disagrees that it made a "premise that since USCG type-approval tests were designed to test whether BWMS could meet the existing discharge standards (which were identical to the IMO standards), the data from those tests could be used to assess only whether a BWMS can meet the existing standards, not whether any BWMS could meet any more stringent standard."

EPA disagrees that the final ballast water discharge standards are predetermined by the BAT analysis conducted for the 2013 VGP, or simply adopted from the IMO standards. Discussion of EPA's independent review of newly acquired USCG type-approval data is provided in the preamble of the supplemental notice (88 FR 71788, Section III) throughout this comment response document.

One commenter made a series of statements regarding EPA's evaluation of BAT. The commenter provides a lengthy discussion of their interpretation of EPA's BAT analysis for the proposed rule. The commenter concludes that EPA cannot rely on prior BAT analyses. EPA understands the basis of the commenter's conclusion to be regarding prior BAT analyses and in response, directs the commenter to the BAT Report regarding EPA's independent review of newly acquired USCG type-approval data for the final rule.

To the extent the commenter is addressing EPA's proposed rule in their comments on EPA's supplemental notice, such comments are beyond the scope of the supplemental notice. As EPA stated in its supplemental notice, the Agency "solicits public comment solely about the information presented in this document; the Agency is not soliciting public comment on any other aspects of the proposed rule that are not addressed in this document." Therefore, to the extent the comment is solely addressed towards EPA's analysis in its proposed rule, it is beyond the appropriate scope of comments for the supplemental notice. However, for purposes of explaining EPA's decision in issuing its final rule, EPA assumes that some aspects of the comment may be construed as addressing the supplemental notice and responds to them accordingly.

For example, the commenter states that ballast water discharge standards "should be based on the technology's worst performance, not its average performance." First, EPA does not cherry pick performance data to select a subset of data representing only the lowest or the highest effluent discharge concentrations; EPA evaluated all performance data, including descriptive statistics such as average performance. Second, the commenter's approach would be contrary to engineering concepts associated with well-designed and operated BWMS that are the basis of BAT; see additional discussion in the *BAT rationale – Comment response for supplemental notice (Data validation and processing)* section of this comment response document. Instead, EPA adopted the limitations development approach long used by EPA's Effluent Limitations Guidelines (ELGs) program for BAT that multiplies an average effluent concentration by a variability factor, defined by a 99th percentile, to define an upper concentration limit. See the supplemental rule (88 FR 71792) and the BAT Report for a detailed discussion of EPA's data analyses.

The commenter disagrees with EPA's position in the proposed rule that the incremental improvement in treatment that would result from stricter discharge standards is insignificant. EPA disagrees with the commenter. The commenter's summary of EPA's treatment effectiveness rationale ignores certain key points. First, EPA stated that differences in performance are small and within the margin of error due to the variability in ballast water uptake and testing. Second, EPA stated that small differences in performance do not reflect substantial

improvement in ANS removal that would warrant a revised standard inconsistent with the international standard. *See* also the *BAT rationale – Comment response for proposed rule (Pollution reduction achieved)* section in this comment response document.

One commenter stated that EPA failed to consider additional technologies as BAT, including "reasonable and feasible" modifications to existing BWMS designs, oversized BWMS, and multiple BWMSs in series to improve the treatment of ballast water. EPA disagrees with the commenter that potential modifications to existing BWMS designs to achieve lower discharge levels dictates that EPA set a lower numerical standard. EPA developed the ballast water discharges standards based on a robust performance dataset from demonstrated and available technologies that meet the operational and technical requirements of the vessel industry, and not on speculation or theoretical adjustments to current technologies that have not been demonstrated to be technologically available to vessels regulated under EPA's final rule.

Regarding the commenter's statements on BWMS design and operation, such as filter sizes and biocide dosage, EPA was unable to perform a detailed assessment of BWMS type-approval data to evaluate the effect of such design and operational changes because EPA did not have access to proprietary or business-confidential information linking these data to design and operating details of each type-approved system. A discussion of the USCG's masking of data to exclude information the USCG deems to be proprietary, as well as EPA's focus on obtaining the most important and relevant data to perform its BAT analysis is provided in the *BAT rationale – Comment response for supplemental notice (Data sources used to assess BAT)* section of this comment response document. Additionally, EPA notes that the data cited by the commenter is from "land-based tests" which, on their own, are insufficient to demonstrate the availability of such modified BWMS to meet a certain numeric standard for all VIDA-regulated vessels in non-laboratory conditions.

Regarding the commenter's statements about BWMS flow capacity (oversized BWMS), EPA notes that BWMS rated capacity is the maximum flow rate that the treatment system can physically accommodate. Actual operational flow rates depend on source water conditions which may require reduced flow. Therefore, the conditions described in the comment (for example where a system rated for 1000 m3/hr might only experience 800 m3/hr flow) are already experienced by vessels operating USCG type-approved systems. Additionally, as discussed in the proposed rule (85 FR 67838), vessels must consider a wide range of factors such as space constraints, piping configurations, and environmental conditions of the waters it voyages when deciding the most appropriate system to install. Such engineering assessments would also include the determination of appropriate

excess hydraulic capacity. Finally, there are insufficient data demonstrating both the effectiveness and availability of the theoretical use of oversized BWMS, and the commenter fails to provide additional data supporting a regulatory standard.

Regarding consideration of multiple BWMS in series, notwithstanding the lack of performance data for such combined systems, the commenter contemplates imposing the perceived levels of performance on the entirety of the universe of potentially affected entities, without considering whether such a combined system is workable for most vessels or economically achievable. Further discussion of these issues is provided throughout this comment response document.

One commenter stated that EPA should evaluate ballast water discharge standards independently of existing standards and should adopt even small or incrementally *more stringent standards at each performance standards review cycle.*

EPA agrees with commenters about evaluating ballast water discharge standards independently of existing standards and has done so for the final rule as discussed in the supplemental notice preamble (88 FR 71788, Section III) and throughout this comment response document. However, as described elsewhere, EPA disagrees with commenters that the Agency should disregard consistency with international discharge standards. EPA will continue to evaluate performance standards in future cycles and, if warranted, will make appropriate changes, including changes which are "small or incrementally more stringent" if necessary. However, EPA disagrees that there is a small or incremental change in the ballast water standard it should have adopted in these final rules. As discussed elsewhere in this document with respect to EPA's analysis of ballast water data, small differences in calculated standards are not necessarily reflective of actual differences in levels of performance that would warrant setting a different regulatory standard.

EPA also notes that, in the context of the VIDA, it must justify standards which are less stringent than in the VGP. Therefore, to the extent the commenter is urging EPA to ignore differences between its VIDA standards and those of the VGP, EPA disagrees.

Regulated parameters

One commenter stated that VIDA requires EPA to establish standards for "all pollutants" in ships' incidental discharges, including ballast water discharges. EPA disagrees that it was required to set specific numeric discharge standards for all pollutants present in all discharges. The VIDA requires "with respect to toxic pollutants and nonconventional pollutants (including aquatic nuisance species), the application of the best available technology economically achievable for

categories and classes of vessels." When setting technology-based standards, EPA does not normally set numeric standards for every potential pollutant present in a discharge, and the commenter has not provided any reason to deviate from this approach for technology-based standards under the VIDA.

One commenter provided a lengthy discussion regarding EPA's rationale for discharge standards for the indicator organisms Toxicogenic *Vibrio cholerae*, *Escherichia coli*, and intestinal enterococci.

EPA disagrees with the commenter that the rationale for indicator microorganisms is unclear. VIDA requires the establishment of technology-based standards, and EPA's use of indicator microorganisms is one component to ensure that BWMS control the discharge of living organisms. In contrast to statements by the commenter, detection of the indicator microorganisms *Vibrio cholerae*, *E. coli* or enterococci in ballast water discharges samples at concentrations that exceed the discharge standards would indicate that the BWMS is not operating as designed, for example because of a failure of the disinfection technology. Therefore, the concentrations of indicator microorganisms serve as proxies for concentrations of other living organisms that would ordinarily be controlled by a well-functioning BWMS. Additionally, these microorganisms and numeric limits are consistent with those under the IMO BWM Convention and, as discussed in the preamble to the proposed rule (85 FR 67818, Section VIII.B.1.v.A.2.ii), EPA determined that consistency with international standards was an appropriate factor to determine in setting BAT. Finally, these microorganisms and numeric limits are consistent with those under the VGP, and EPA's standards under the VIDA must be at least as stringent as those under the VGP except in certain circumstances.

The commenter correctly describes EPA's statement in response to comments on the 2013 VGP that an exceedance of an indicator microorganism numeric discharge limit would be an enforceable violation, and indication that the BWMS is inadequately treating for organisms. Similarly, while EPA has not set a numeric limit for total heterotrophic bacteria, VGP monitoring for that parameter provided useful information, when used in combination with other discharge information and functionality monitoring in assessing whether a BWMS is operating as designed.

Section 4.4.3.5.1.1 of the 2013 VGP Fact Sheet provides EPA's rationale for establishing monitoring requirements in three components: (1) BWMS functionality monitoring, (2) discharge monitoring for selected biological indicators, and (3) discharge monitoring for biocides and residuals. Combined, the three monitoring components indicate that the BWMS is controlling the discharge of living organisms. Section 4.4.3.5.1.1 of the 2013 VGP Fact Sheet also provides EPA's rationale for the biological indicators selected for compliance monitoring:

> "EPA has established effluent limits for three pathogen indicators: *Escherichia coli*, enterococci, and *Vibrio cholerae*, consistent with the US.

> Coast Guard Phase I standard. However, EPA notes that the Agency is requiring monitoring for *Escherichia coli* and enterococci but is not requiring monitoring for *Vibrio cholerae*. The Agency is not requiring monitoring for *Vibrio cholerae* because the Agency has found based upon conversations with several ballast water treatment system testing laboratories (e.g., Naval Research Lab, Maryland Environmental Resource Center, the Royal Netherlands Institute for Sea Research) that monitoring of this parameter would generally not result in the detection of the presence of this pathogen, even if the ballast water treatment system were not fully functional. Importantly, EPA also notes that Part 136 methods are not available for detecting *Vibrio cholerae* in wastewater. EPA is also requiring monitoring for total heterotrophic bacteria to establish better information about how bacterial communities respond to ballast water treatment. EPA has found this test to be affordable, and the sample can be collected at the same time other effluent samples are collected."

While EPA agrees with the commenter that the lack of *E. coli* or enterococci detected in ballast water discharges does not demonstrate the absence of fecal contamination of ballast uptake water, the presence of *E. coli* or enterococci in ballast water discharges would indicate possible fecal contamination of ballast uptake water. Epidemiological studies suggest a positive relationship between high concentrations of *E. coli* and enterococci in ambient waters and incidents of gastrointestinal illnesses associated with swimming (U.S. EPA 1983, U.S. EPA 1984). These studies support the use of *E. coli* and enterococci as indicators of microbiological pollution. As discussed in the supplemental notice (88 FR 71794), the potential to transfer of fecal contamination in ballast water, as well as other ballast water uptake concerns, are the basis of EPA's supplemental regulatory option to address and identify ballast water uptake practices as part of BWMPs.

EPA disagrees with the commenter's statement that "Under these protocols, the BWMS was considered to be effective, and was granted type-approval by USCG, if in the tests the concentrations in treated discharges were consistently below the limits for both the three "indicator microorganisms" and the two organism size classes (≥50 μm and 10-50 μm)." The ETV Protocol assesses BWMS performance for treatment of organisms <10 μm using culturable aerobic heterotrophic bacteria, and not the three indicator microorganisms. The protocol assumes that the effects on culturable aerobic heterotrophic bacteria will be indicative of the effects on all bacteria. Type-approval testing for *E. coli*, Enterococci, and *Vibrio cholerae* confirms compliance with the discharge standard and is not intended to demonstrate the ability of the tested treatment system to remove these microbes. The impracticality of identifying and testing for every possible pathogen that may be a concern in ballast water, and worker and aquatic exposure concerns, preclude the use of actual pathogens to assess BWMS performance for type-approval testing. See the *BAT rationale – Comment response for proposed rule (Comments regarding specific statements and aspects*

of EPA's proposed rule) section of this comment response document regarding the comment about USCG type-approved BWMSs are more effective than midocean exchange and more effective than no treatment section of this comment response document.

The commenter is correct that EPA relies on ships' self-monitoring to demonstrate ongoing compliance with the discharge standards under the VGP. The commenter is also correct that self-reported noncompliance can provide a basis for enforcement. This is typical for NPDES permits. The EPA and USCG collaborate on compliance assistance, compliance monitoring, and enforcement of the VGP. See the Memorandum of Understanding between the EPA and USCG: https://homeport.uscg.mil/Lists/Content/Attachments/883/signed%20CG%20EPA%20MOU%20dtd%2011feb11_2.pdf. See also EPA's Enforcement Alert for the VGP: https://www.epa.gov/system/files/documents/2023-01/vgpcwaenfalert11023.pdf, including several enforcement case examples. As discussed in the following article by The National Law Review: https://www.natlawreview.com/article/compliance-enforcement-risks-and-emerging-issues-regarding-epa-s-vessel-general, the commenter is correct that EPA heavily relies on inspection of ships' reports and ships' records; however, such reviews may just serve as a starting point for compliance assessment and enforcement. Details of any EPA or USCG inspection and enforcement of the discharge standard as well as establishment of monitoring, reporting, and recordkeeping requirements are outside the scope of EPA's rulemaking.

EPA also agrees with the commenter that the Agency "sometimes sets limits for certain parameters used as indicators for specific types of pollutants or contaminants, rather than setting limits for the actual pollutant or contaminants of concern." However, EPA disagrees that the approach used for water quality and for drinking water, as suggested by the commenter, is appropriate for ballast water discharges. Instead, the Agency adopted an approach similar to that used to control wastewater discharges under the Effluent Limitations Guidelines program.

EPA generally agrees with the commenter's statement that "ballast water treatments do not remove or kill all types of organisms or viruses at an equal rate: some species, types, life stages or sizes of organisms will be more vulnerable to a given treatment, others less so, and this difference in efficacy will vary with different types of treatment." Specific to medium and large organisms, EPA obtained a robust performance data set for a wide variety of treatment technology types used to treat a wide variety of source water characteristics. Therefore, EPA considers the resulting discharge standards to be achievable by all vessels subject to the standards for the reasons described in the supplemental notice (85 FR 71791). Specific to indicator microorganisms, EPA lacks a robust BWMS performance dataset to perform an independent review of the discharge standard, much less the detailed information required to evaluate the characteristics raised by the commenter. As stated in the supplemental notice (88 FR 71792), "EPA obtained USCG type-approval data for the three smallest indicator

microorganisms tested but did not access those data as part of this analysis because the data do not provide an appropriate basis for calculating a numeric ballast water discharge….” Neither this commenter, nor other commenters, have provided BWMS performance data for EPA’s use in evaluating the discharge standards for indicator microorganisms. Nor did EPA receive any comments that the proposed indicator microorganism standards were not achievable. Therefore, EPA retained the discharge standards consistent with existing requirements, including the IMO. Note also that BWMS numeric discharge standards are not the sole means of control of the discharge of living organisms, including indicator microorganisms. Other ballast water standards of performance include BWMPs, ballast water BMPs, and additional requirements for vessels entering the Great Lakes, operating in Pacific waters, and operating in federally-protected waters.

1. U.S. EPA. 1984. Health Effects Criteria for Fresh Recreational Waters (August). EPA-600/1-84-004. Available online at: https://nepis.epa.gov/Exe/ZyPDF.cgi/300000H7.PDF?Dockey=300000H7.PDF
2. U.S. EPA. 1983. Health Effects Criteria for Marine Recreational Waters (August). EPA-600/1-80-031. Available online at: https://nepis.epa.gov/Exe/ZyPDF.cgi/300000E1.PDF?Dockey=300000E1.PDF

One commenter stated that EPA should conduct a comprehensive evaluation of protists under 10 µm in size, fungi under 10 µm in size, bacteria, and viruses present in ballast water and identify which are human and/or animal pathogens. The commenter states that these would constitute a core group of perhaps a few hundred species that should have individual discharge limits.

EPA disagrees that developing discharge standards for additional individual protists, fungi, bacteria, and viruses is available or economically achievable for ballast water discharges. EPA lacks sufficient information to develop effluent limitations for these pollutants, nor has the commenter provided sufficient information. Additionally, developing standards based on BAT for hundreds of individual protists, fungi, bacteria, and viruses would be impractical or impossible to implement, considering the logistical challenges and expense of such ballast water discharge monitoring, which the commenter does not address. The commenter argues that EPA should conduct a comprehensive ballast water research program to create such standards, which is not compelled by the Clean Water Act. Instead, EPA is focused on developing discharge standards based on the performance of best available technology economically achievable, which is compelled by Clean Water Act.

Additionally, EPA disagrees that it “usually regulates contaminants and pollutants in ambient waters and drinking waters by establishing a limit or standard for each individual pollutant or contaminant” present in such waters. This approach would be impractical because most discharge streams contain multitudes of pollutants in very low concentrations. Instead, the typical NPDES permit directly imposes limits on the subset of pollutants expected to be present in the greatest

concentrations, that may be the most harmful, or that serve as surrogates for other pollutants, among other reasons. Virtually no NPDES permits set numeric effluent limitations for every single chemical constituent in a waste stream, which is what the commenter suggests here.

Regarding the selection of regulated pollutants, EPA continues to rely on an approach similar to that used for the Effluent Limitations Guidelines program, which focuses on regulating pollutants that are present in industrial wastewaters and that are indicators of overall wastewater treatment system performance. Pollutants of concern in ballast water include living organisms, and EPA has developed discharge standards for the following organism sizes:

- Organisms ≥50 μm in minimum dimension
- Organisms ≥10 μm an <50 μm
- Indicator microorganisms toxicogenic *Vibrio cholerae*, *Escherichia coli*, and intestinal enterococci.

Available ballast water treatment technologies typically include a combination of filters and disinfection technologies to remove or kill living organisms. EPA's selection of regulated organisms in these three size categories ensures that the BWMS employed is controlling living organisms in the manner it was designed to do.

EPA disagrees with the commenter's statement that, except for the ballast water discharge standard for the single individual biological pollutant toxicogenic *Vibrio cholerae*, "other ballast biological pollutants <10 μm in size remain unregulated…" Specifically, EPA's use of discharge standards for living organisms, including indicator microorganisms, together with EPA's three-part monitoring program, ensures that BWMSs are controlling the discharge of living organisms. Additionally, that response explains that numeric discharge standards are not the sole means of control of the discharge of living organisms in the final rule.

The commenter pointed to the SAB Report in support of the need to include numeric limits specific to protists and viruses. As reiterated by the commenter, EPA stated in response to comments submitted on the 2013 VGP that it would consider including numeric technology-based limits specific to protists and viruses, as recommended by the SAB, if there is new information to inform development of technology-based effluent limits. EPA has considered developing such limits and has reviewed information to the extent it is available. However, EPA has not identified, and the commenter has not provided, BWMS performance data for use in developing such standards.

Specific to protists <10 μm in size, the commenter has identified studies indicating that some BWMS are able to control the discharge of Phaeocystis globosa. While such studies provide evidence that many of the processes used in

BWMS will remove protists, the relationship to protists <10 µm in size remains generally unquantified. EPA, therefore, lacks information to set a numeric standard for protists <10 µm in size where there is not available information to show the efficacy of BWMS in treating such organisms.

Specific to fungi <10 µm in size, the commenter identified studies indicating the presence of fungi in untreated ballast water. EPA has not identified, and the commenter has not provided, BWMS performance data for use in developing discharge standards for fungi.

Specific to bacteria, the commenter identified studies indicating the presence of bacteria in untreated ballast water. EPA has not identified, and the commenter has not provided, BWMS performance data for use in developing discharge standards for additional individual bacteria. The incident of bacteria released in ballast water sickening cattle cited by the commenter occurred prior to the installation of BWMS on vessels. EPA disagrees that BWMS do not significantly or consistently reduce bacterial concentrations in ballast water discharges. See EPA's discussion of this issue elsewhere in this section of the comment response document. While EPA has not set a limit for total heterotrophic bacteria, monitoring provides useful information, when used in combination with other discharge information and functionality monitoring, in assessing whether a BWMS is operating as designed. See EPA's discussion of indicator microorganisms above.

Finally, in response to this comment EPA notes that the VIDA provides multiple state provisions and invasive species prevention programs to further protect water quality outside of EPA's standard setting obligation. Notably the VIDA:

- Allows Governors to petition EPA and the USCG to establish Emergency Orders for Invasive Species and Water Quality Concerns. CWA section 312(p)(7)(A)(i)
- Allows Governors to petition EPA to modify standards. CWA section 312(p)(7)(A)(ii)
- Allows states to apply for no-discharge zones for any of the applicable VIDA discharges. CWA section 312(p)(10)(D)
- Establishes an enhanced Great Lakes regulatory process for Governors to develop more stringent requirements for discharges in the Lakes. CWA section 312(p)(10)(B)
- Requires EPA and USCG to establish Intergovernmental Response Frameworks to address risks from vessel discharges
- Establishes a Coastal Aquatic Invasive Species Mitigation Grant Program and Mitigation Fund (section 903(f) of the VIDA)
- Requires EPA to establish the Great Lakes and Lake Champlain Invasive Species Program (section 903(g) of the VIDA)

One commenter stated that EPA should develop a zero-discharge limitation for organisms that cannot physically pass through grates on sea chests used to uptake

ballast water, or though screen filters used by BWMS. The commenter states that such size ranges can be determined by "simple experimentation."

While EPA has considered the commenter's concept, EPA disagrees that available information supports imposition of such a standard and the commenter has not provided a sufficient factual basis for regulatory development. For example, the commenter's concept of "squishiness" of organisms is vague and insufficiently developed to support a regulatory standard The commenter's concept also requires answering various issues for which EPA currently lacks sufficient information and which commenter does not provide additional factual support, such as, "What are appropriate grate and screen equipment standards? Is the equipment standard demonstrated and available for all vessels? If not, is there a subset of vessels for which the equipment standard is demonstrated and available? How would this subcategory of vessels be defined? What is the organism size threshold that corresponds to the equipment standard, and how would it be determined? For example, is there an appropriate indicator organism(s) for use in determining appropriate organism size thresholds? What is the estimated compliance cost for the equipment standard, and is it economically achievable for existing vessels? Are compliance costs a barrier to entry for new vessels? How would the equipment standard and corresponding organism size threshold be implemented by the USCG? What are the benefits of developing a zero-discharge standard for the largest organisms, as compared to the current standard for all living organisms ≥50 μm in minimum dimension?" Because there is insufficient information to support development of this standard at this time, EPA disagrees that a zero-discharge standard for large organisms is appropriate or feasible. As discussed elsewhere in this section of the comment response document, the CWA does not compel EPA to conduct new ballast water research to supports standards which are not currently technologically available or economically achievable.

Results of BAT analysis

One commenter said that it was extremely improbable for EPA to have independently calculated standards equal to those of the IMO and said that this demonstrates that EPA did copy them.

EPA disagrees that it did not perform an independent analysis of treated ballast water discharge standards for the final rule. As described and cited in the BAT Report, EPA used the type-approval data made available by USCG between the proposed rule and the supplemental notice to calculate standards for organisms ≥10 μm, using established methods from Effluent Limitations Guidelines. In their claim that the results are improbable, the commenter failed to acknowledge that the aspects they compare (IMO standards, USCG type-approval data, and EPA standards) are not independent: BWMS manufacturers designed systems to meet IMO's D-2 standard and the USCG's ballast water discharge standard, so it is not

improbable that EPA's results based on the USCG type-approval data of these systems representatively approximate the IMO standards.

While the commenter is correct that the standards are highly similar to the IMO standards drafted in 2003, that does not mean that EPA's national standards of performance for the final rule do not reflect current BAT. Contrary to the commenter's statement, EPA did not rely on the IMO's pre-2003 derivation and analysis of its standards in determining current BAT. As the commenter states, USCG type-approval data describes "ballast water treatment systems that did not even exist in 2002-2004." Adoption of the BWM Convention in 2004 prompted development of BWMS; however, the USCG did not type-approve its first BWMS demonstrated to achieve the discharge standards until 2016, well after development of the 2013 VGP and the USCG standards. BWMS and corresponding type-approval testing data of known acceptable quality are only recently available, and these form the basis of EPA's final national standards of performance.

While the international nature of vessel operations dictates consideration of the IMO discharge standard itself (not the derivation of that standard) as discussed in the proposed rule (85 FR 67837), it is one of several factors.

One commenter said that some BWMSs consistently had lower discharges, giving examples split by organism size. The commenter said that EPA should not have used all 49 BWMSs in its analysis, and instead could have identified better performers. The commenter also asserted that something "odd" happened in EPA's sensitivity analysis for those "best" systems.

As explained in more depth below, EPA disagrees with the commenter because the data do not allow EPA to conclude that any individual or subset of the tested systems would allow for a more stringent standard: (1) for the full category of vessels subject to the standard, (2) to be consistently met, (3) in all conditions, and (4) for all organism size classes. While commenter is correct that individual systems can sometimes achieve results that are more stringent than EPA's standard, no system was able to achieve such results consistently for all organism size classes, and EPA further could not determine from available data whether any given system could achieve more stringent results in all conditions or whether it is suitable for operations on the full category of vessels subject to EPA's regulations.

The commenter made a list of statements describing certain BWMSs' type-approval data results, separating organism size classes. Throughout, the commenter mentioned only the lowest results even within the same BWMSs, omitting mention of their higher results. No assessment of BWMS performance can dissociate the two organism size classes because a single BWMS must allow a vessel to meet both organism size class standards. The commenters' statements and EPA's associated responses are listed below.

- "the concentration of ≥50 µm organisms in the discharges from one BWMS was more than 20 times lower than EPA's proposed standard in every one of its 23 tests."
    - This is correct, for large organism results for CCCC. In contrast, medium organism results for CCCC were as high as 9 medium organisms/mL, making this BWMS' performance inconsistent between organism size classes. Additionally, EPA lacks information to show that this single system would be available for use by the full category of vessels required to meet EPA's numerical standard.
- "Another BWMS produced discharge concentrations of ≥50 µm organisms that were more than 35 times lower than EPA's proposed standard in every single test."
    - The commenter does not identify which BWMS purportedly achieved this level. Among the six systems listed in the commenter's footnote 131, none exhibited a maximum at this low a level (10 large organisms/m3 / 35 = 0.28 large organisms/m3).
- "three BWMSs produced discharge concentrations of 10-50 µm organisms that were always at least 100 times lower than EPA's proposed standard."
    - This statement is incorrect. None of the BWMSs listed in the commenter's second table, nor those in footnote 132, had a maximum of 0.1 (since 10 medium organisms/mL / 100 = 0.1 medium organisms/mL). The lowest maximum was 0.2 medium organisms/mL.
- "In all, there were seven data sets in which the discharge concentrations of ≥50 µm organisms were always at least five times lower than EPA's proposed standard,131…"
    - The commenter listed six, not seven BWMSs, in their footnote. Among these six BWMSs, two large-organism results from system HH1 were greater than 2 organisms/m3 (10 organisms/m3 / 5 = 2 organisms/m3), and another seven from system CC2 were non-detected with a method detection limit of 5 organisms/m3, making them possibly greater than 2 organisms/m3; this claim is therefore incorrect. Further, since both organism size classes are relevant, there were also twelve results greater than 2 medium organisms/mL among these six BWMSs. These six BWMSs therefore did not always meet the arbitrary comparison of five times lower than the standard, as the commenter claimed.
- "…and 14 data sets in which the discharge concentrations of 10-50 µm organisms were always at least five times lower than EPA's proposed standard.132"
    - This statement is also incorrect, as five results were not five times lower than EPA's standards (that is, were greater than 2 medium organisms/mL). The statement also exemplifies the consequences of selectively focusing on one organism size: among these 14

BWMSs, 96 large-organism results were greater than 2 large organisms/m3. These comprise 49% of the large-organism results among these 14 BWMSs. In comparing among BWMSs, one cannot ignore one organism size class over another because a single system must ultimately allow a vessel to comply with all aspects of EPA's standard.

- "The BWMS labeled "CC" has an average discharge of 37.25 organisms per m3, compared to 0.15 per m3 for the BWMS labeled "CCCC." … Since system CCCC's performance indicates it would discharge less than 1/250th of the number of organisms that system CC would release, and CCCC's worst performance is more than 1,600 times better than CC's worst performance, system CCCC can apparently meet a meaningfully more stringent standard than EPA's proposed standards, despite EPA's claim to the contrary."
    - Considering large organisms only, the mean among CC's discharge concentrations is 38.74 large organisms/m3; CCCC's mean is correct at 0.15 large organisms/m3. The highest concentration discharged from each system was 762.6 large organisms/m3 from CC and 0.46 large organisms/m3 from CCCC. The 1/250th comparison of means is more accurately 1/258th, and the 1,600 comparison of maximums is more accurately 1,658. Although this approach is an oversimplification since it pools all large organism results together, without consideration of varying salinity classes and test platforms, the relative comparison of large-organism treated concentrations between CC and CCCC is correct. EPA did not claim the contrary. Rather, EPA agreed in that it classified CCCC, but not CC, as "best" (see BAT Report Table A-4) since CCCC results stayed above the worst 10th percentile in all six organism-size and salinity groups. However, for reasons discussed in the BAT Report, the mere fact that the CCCC system exhibited greater performance than another system for a single organism size class does not encompass the entire BAT analysis.
- "the poorer-performing system's (K) average organism concentration in its discharge is more than 250 times the better systems' (J, LLL, and UUU) average discharge concentration. This time the organism concentration in the poorer system's worst discharge is 4,200 times greater than the concentration in the better systems' worst discharge."
    - Although the maximum detected concentration for each of J, LLL/LLLL, and UUU was 0.1 medium organisms/mL, each system also had non-detect results of 0.2 medium organisms/mL or less (due to the shipboard MDL imputation rule described in the BAT Report Section 2.4); this affects the quantitative comparisons they listed. Importantly, the commenter's second table is a good example of what can go wrong when ignoring a size category: these three BWMSs that the commenter said "greatly out-perform" others for medium organisms all ironically had relatively poor

> performance (worst 10%) for large organisms; see BAT Report Table A-4. Each of these three had a 99th percentile exceeding 10 large organisms/m3 (from Table C-1) – beyond the proposed national standard. Both organism size classes and all available salinity classes must be considered in BWMS comparisons.

Elsewhere, the same commenter's submission on the proposed rule criticizes EPA's discussion regarding a scenario under which a vessel would need to install redundant systems or potentially even two different systems as a "hypothetical and illogical circumstance." However, the commenter's suggested approach in this comment, which disassociates treatment performance for medium and large organisms (i.e., base performance standards for organisms ≥50 µm on data from system CCCC and for organisms ≥10-<50 µm on data from systems J, LLL/LLLL, or UUU), would require the installation of two different systems to meet the discharge standards.

The commenter states, "EPA conducted a novel and very complicated analysis that EPA says showed that none of these treatment systems perform significantly better than the proposed standards…. EPA achieved this feat by refusing to assess the performance of individual treatment systems, instead lumping them all together to calculate a sort of average performance, which it found was not much lower than its proposed standards. EPA claimed this analytical maneuver was appropriate because it did not find that any treatment system performed significantly better than another. However, as discussed above, the actual data appear to disprove this." The commenter also states, "EPA must evaluate individual treatment systems or explain why it cannot and set final standards that reflect what these existing BWMSs can achieve or explain why it should not."

For the ELG program, EPA collects all available treatment performance data for technologies assessed for BAT. Next, EPA assesses whether any of the available treatment performance data should be excluded from the calculation of the standard based on a determination that they do not represent BAT. Typically, this assessment would be based on an engineering analysis of treatment system design and operation. For example, consider the following assessment for stream stripping performance data for the Pharmaceutical Manufacturing Point Source Category:

> "The data from these sampling episodes and treatability studies were evaluated against steam stripping treatment performance criteria. (32)
>
> Only those constituents to be regulated were included in the database. All data points that were collected from a flash tank or distillation pot were excluded since these technologies are not considered "equivalent" to the BAT technology. Influent and effluent datasets where the influent concentration was not detected, showed a negative percent removal or that showed no removal after treatment were excluded. Data were excluded if

> collected while a stripper was not at steady state, because these data would not be representative of BAT performance. Steady state for the purpose of this comparison was defined as the point where temperatures and flow rates are constant. All data point pairs with an influent concentration lower than the long-term means shown in Table 8-19 were deleted. All data point pairs collected from a steam stripper with inadequate steam to feed ratios or an inadequate number of equilibrium stages in the stripper were deleted (see Table 10-7). Data which came from a single wastewater stream at one facility that was deemed to have an atypical matrix, i.e., did not lend itself to BAT performance, and were reported at a detection limit an order of magnitude or more than EPA's promulgated method minimum level, were not used.
>
> The Agency received several comments arguing against the use of the distillation performance data collected by the Agency at proposal. The Agency performed an alcohol distillation pilot study at a pharmaceutical facility to represent optimum performance for the removal of alcohols and other compounds with similar strippability. Commenters argued that the wastewater stream evaluated in that study was not representative of "typical" pharmaceutical industry wastewater since it did not contain a mix of organic solvents, rather it was predominantly a methanol and water stream. In response to these comments, the Agency has not used this dataset in the determination of the final limitations and standards."

EPA was unable to perform a similarly detailed assessment of BWMS type-approval data as EPA did not have access to proprietary or business-confidential information linking these data to design and operating details of each type-approved system. Discussion of USCG's masking of data to exclude information the USCG deems to be proprietary, as well as EPA's focus on obtaining the most important and relevant data to perform its BAT analysis is discussed in the *BAT rationale – Comment response for supplemental notice (Data sources used to assess BAT)* section of this comment response document.

Another important aspect of the BAT analysis for the ELG program is whether the resulting standards are appropriate for the range facilities subject to the numeric discharge standard. For example, consider the following assessment for the selection of production-normalized flows (PNFs) used to calculate production-normalized limitations and standards for the Iron and Steel Manufacturing Point Source Category:

> "For each process operation, EPA first performed an engineering assessment of all available wastewater discharge data for all sites in each subcategory or segment and initially determined the model PNFs based on the best performing mills within a given subcategory or segment. EPA generally considered model PNFs that are currently achieved by a minimum of 30 percent of facilities as a reasonable initial assessment of

the best performers. Next, EPA assessed whether all facilities within any given segment can achieve the selected PNFs. For this assessment, EPA considered a variety of factors that may affect the ability of facilities to achieve the model PNFs, such as type of process used, products produced, age of equipment and facilities, geographic location, size, and non-water quality environmental impacts. EPA also considered combinations of these factors and evaluated the pollutant control upgrades that EPA judged would be necessary for facilities to attain the model PNFs. In addition, EPA considered whether any individual facilities achieve the model PNFs and long-term averages (LTAs) simultaneously (development of the model LTAs is described in Section 14), but did not include this factor as a requirement in determining the model LTAs and PNFs. EPA adjusted its initial determination of the model PNFs as necessary based on this assessment.

In response to comments on the proposed rule, EPA also evaluated the effect of seasonal variation on PNFs. Monthly production and daily flow data were available for five sites, including four integrated steelmaking sites and one stand-alone finishing site. EPA did not observe a consistent relationship between season and water use. Although factors such as water system operation and control, product variations, type of product, maintenance schedules, and storm-water volumes may mask any association between season and water use, it is more likely that there is no seasonal variation for these processes."

Again, EPA was unable to perform a similarly detailed assessment of variations among BAT factors such as vessels type or operational characteristics, as EPA did not have access to proprietary or business confidential information linking shipboard type-approval data to details of each type-approved system.

While the lack of treatment system design and operation data precluded a more detailed engineering analysis, EPA was able to adopt a statistical approach that considered data from all systems to provide assurance that the resulting discharge standards would be available in all vessels and situations. See sections III.D. and III.E. of the supplemental notice (88 FR 71793), regarding the use of all BWMSs as BAT and additional discussion throughout the BAT rationale section of this comment response document.

EPA notes that it made no statement that no single BWMS could perform better than the standard; certainly, differences in selective subsets exist. EPA has data for multiple BWMS that ostensibly operate the same technology type. What is the reason that some BWMS had lower effluent concentrations than others? Is it because certain BWMS are better designed/operated than others? Is it because of other factors such to source water characteristics, or inherent variation in treatment technology performance? Lack of data makes the reason impossible to determine; therefore, eliminating systems based solely on effluent concentrations

would not be appropriate. The goal is not, and should not be, to cherry-pick single systems, much less to selectively overlook only some of their results. As pointed out in EPA's responses to previous points in this response, the actual data did not consistently fall beneath the arbitrary lower levels the commenter suggested, due to overlooked high results as well as failing to consider both the evaluated organism size classes. Additional discussion of the commenter's statement about the complexity of the final rule's BAT analysis is discussed elsewhere in this section of the comment response document.

Contrary to commenters claims, EPA never suggested that better-performing systems "could not be selected out." As the commenter mentions later, EPA did identify a set of "best" systems by accounting for both organism size classes and all three salinity classes (6 different groupings; see BAT Report section 4.6 Best Available Technology), unlike the examples the commenter gave using only partial results. To expand upon one of the commenter's oversimplified metaphors, the task was akin to choosing the best among 49 athletes, each competing in six different sports. Some athletes may be good at running, but bad at weight-lifting; an athlete should not be considered "best" overall if they poorly performed in any sport. Similarly, EPA did not classify a BWMS as "best" if it had poor performance in any salinity-size category.

EPA disagrees with the implication that the sensitivity analysis results were incorrect for "best" systems only (as well as no amendments and only for medium organisms). This combination logically produced a greater concentration because the BWMSs that were omitted had both (1) poor removal of large organisms, and (2) good removal of medium organisms. The commenter identified three of these systems (J, LLL/LLLL, and UUU) in a previous section of their submission but failed to recognize these systems' inconsistency in performance between organism size classes. A system was either omitted or retained in its entirety; therefore, though the average decreased for large organisms because BWMSs with high large-organism concentrations were removed, the average simultaneously increased for medium organisms because the same BWMSs had low medium-organism concentrations as well (as explained in the BAT Report Section 4.8 Sensitivity Analyses). Removal of these inconsistent performers omitted low medium-organism concentrations, increasing the medium-organism average.

U.S. EPA. 1998. Development Document for Final Effluent Limitations Guidelines and Standards for the Pharmaceutical Manufacturing Point Source Category (July). EPA-821-R-98-005. Available online at: https://www.epa.gov/sites/default/files/2015-11/documents/pharmaceutical-manufacturing_dd_1998.pdf

U.S. EPA. 2002. Development Document for Final Effluent Limitations Guidelines and Standards for the Iron and Steel Manufacturing Point Source

Category (April). EPA-821-R-02-004. Available online at: https://www.epa.gov/sites/default/files/2015-10/documents/ironsteel_dd_2002.pdf

Several commenters said that the calculated standard presented in Table 1 of the supplemental notice (88 FR 71793) already had built-in variability; therefore, maintaining the originally proposed standard to provide flexibility for shipowners is arbitrary and capricious. The commenters conclude their comment with a summary of their previous points. Therefore, they assert that the supplemental notice's BAT analysis is inadequate and arbitrary and capricious.

EPA disagrees that its own interpretation of the difference between the final standard of 10 organisms/volume and the values derived from EPA's analysis (6.01 large organisms/m3 and 6.66 medium organisms/mL for the supplemental notice analysis) is arbitrary or capricious. First, the commenters somewhat mischaracterize the calculations of the BAT standard. The sensitivity analysis illustrated the variability in the data, including results that approached 10 organisms/volume (up to 9.87 medium organisms/mL in the supplemental notice (88 FR 71793) Table 2, and up to 8.71 large organisms/m3 in the final rule). Therefore, the 6.01 and 6.66 organisms/volume values are not without significant uncertainty and variability. The variability in results among the sensitivity analysis scenarios demonstrates that aspects of the analysis with uncertainty (e.g., lack of complete information associated with sample-specific MDL determination, and inclusion of "best"/all BWMSs) prevent EPA from ruling out the real possibility that the "true" result is actually greater. Therefore, setting a limit of 10 does not necessarily add variability to variability, as the commenters suggested.

Second, the difference between 10 organisms/volume and the calculated standard is not necessarily meaningful. Measuring concentrations of organisms in water is an inexact process. Organisms in ballast water can clump together, also called aggregation, in which case the variability among samples may be large; Lee et al. (2010) stated that "Aggregation may be a significant source of error in many sampling protocols" and described the potential error ranges of results. Different sample collection methods can produce different organism concentrations from the same tank of ballast water, e.g., depending on whether samples were taken from different locations in the tank, or at intervals as the tank is emptied, as an instantaneous sample, or another method. This type of variability is in addition to others such as the variability that occurs during analytical procedures like water concentrating and organism counting, the variability that occurs with turbid water (First et al., 2022), as well as the variability that occurs from one BWMS trial run to the next. The organism concentrations provided in the USCG data are therefore estimates, as they reflect all variables inherent to the type-approval testing process. The standard, calculated from these estimates, thus also reflects these inherent sources of variability. As EPA previously discussed, and as affirmed by the Second Circuit, it is appropriate to consider the margin of error inherent in measuring aquatic organisms such that, when accounting for variability, standards

that are not numerically identical may represent the same level of control (85 FR 67839).

Discussion of available data, how concentrations were represented in the analysis, and the use of some BWMSs over others is provided in *BAT rationale – Comment response for supplemental notice (Data validation and processing)* and elsewhere in this section of the comment response document.

EPA also discussed its overall consideration of factors that went into determining BAT for ballast water in Part VIII.B.1.e.i of the preamble to the final rule.

EPA acknowledges commenters that expressed support for EPA's BAT rationale. Discussion of operational challenges of maintaining continuous compliance with the ballast water discharge standard is provided elsewhere in this comment response document.

EPA acknowledges several commenters that support EPA's decision not to establish more stringent discharge standards and to maintain consistency with international standards.

EPA acknowledges the commenters that expressed support for EPA's rationale in considering multiple BWMS compliance options in the national standards of performance.

Ballast water discharge standard exemptions (non-Great Lakes vessels)

Six commenters suggested revisions to expand the exemption at § 139.10(d)(3)(ii) for unmanned, unpowered barges. Specifically, five commenters requested that EPA also exempt *seagoing*, unmanned, unpowered barges, and one commenter requested that EPA also exempt dedicated vessel combinations. EPA disagrees with commenters that it should exempt all unmanned, unpowered barges from the ballast water discharge standards regardless of whether they are seagoing or part of a dedicated vessel combination. As acknowledged by commenters, many seagoing, unmanned, unpowered barges already comply with ballast water management requirements by using public water for ballasting. The record also indicates that an unmanned, unpowered barge, when part of a dedicated vessel combination, can install a BWMS as may be necessary to meet the discharge standard (ABS, 2022). Finally, in some instances, vessels can transfer ballast water to a dedicated or an attending vessel for management as discussed later in this comment response. If none of these options are feasible for a particular vessel, EPA expects the USCG implementing regulations may continue to provide for compliance date extensions with the ballast water discharge standards and to work with vessel owners/operators to identify appropriate ballast water management activities. Also, EPA agrees with commenters that the exclusion provided in the rule at § 139.1(b)(3) would apply to situations when a vessel operator determines compliance with the rule would compromise the safety of life at sea.

EPA received several comments suggesting that the commonly used terms “contiguous portions” and “contiguous zone” are confusing. EPA disagrees. Furthermore, EPA has not, as some commenters have purported, limited the single COTP Zone exemption to 12 NM offshore. EPA uses the term “contiguous portions of a single COTP” consistent with its use in the VIDA to clarify that vessel ballasting and deballasting operations within a single COTP Zone must span contiguous waters within the EEZ and does not apply in those instances when a COTP Zone includes areas that are not within a single bounded EEZ. For example, in the Pacific Region, Sector Honolulu covers all of the Hawaiian Island chain, American Samoa, Wake Island, and other widely dispersed areas in the Pacific Ocean that in certain instances require vessels to leave the EEZ to travel from one location to another, all within the same COTP Zone. Consistent with the VIDA, EPA limits exemptions to those situations within the contiguous portions of a single COTP Zone.

As noted by one commenter, EPA agrees that the exemptions from ballast water discharge standards, and from ballast water exchange and saltwater flushing requirements, do not preclude a vessel from voluntarily choosing to manage ballast water using a BWMS.

EPA received several comments questioning the exemption's use of the USCG's COTP Zones, arguing that these zones are administrative units and do not have a biological basis, and/or similarly questioned use of a 10-mile limitation or not crossing physical barriers in determining what constitutes a short distance voyage. Some form of exemption for short distance voyages from the ballast water discharge standard is warranted as there are factors unique to short distance voyages that have led EPA to conclude that ballast water treatment to numeric limits does not constitute BAT (see Part 4.4.3.5.6 of the 2013 VGP Fact Sheet). With respect to use of COTP Zones, EPA agrees these are administrative units and not necessarily reflective of biological zones**.** Nonetheless, by limiting distances over which ballast water may be transported, this provision provides a practical approach that helps limit the exemption to vessels that pose less of a risk of spreading ANS into areas where they did not previously exist. In addition, the boundaries of these COTP Zones are well-defined and familiar to mariners**.** The VIDA also creates an exception for certain ballast water requirements if operations are conducted within “contiguous portions of a single Captain of the Port Zone,” (*see* 33 U.S.C. 1322(p)(6)(B)(ii)(II)(bb)) indicating that Congress deemed it reasonable to set less stringent ballast water requirements for ballast water that remained within the same COTP Zone. Furthermore, EPA could not identify any other implementable, preexisting approach that has clearly defined boundaries based on ecological criteria**.** While EPA also agrees that the 10-mile limitation is not necessarily reflective of biological zones, this limitation is coupled to an additional requirement that the vessel also not cross physical barriers such as locks (which can serve as a barrier to movement of ANS). In short, the exemption is tailored to apply to vessels on voyages that pose a lower risk of

spreading ANS while being formulated in objective and clear terms that are measurable and understandable to mariners. This enables clear and consistent implementation by vessels, as well as provides a clear standard for enforcement, if violated. With respect to suggestions to formulate the exemption in terms of "common" waterbodies or ecosystems, there are no clear or objective boundary lines for defining such areas throughout the waters of the United States or the waters of the contiguous zone. Commenters recommending such an approach did not indicate what criteria or system to use to delineate "common waters," nor is it apparent how such boundaries can be set out in a manner that is implementable by mariners. For the foregoing reasons, EPA does not believe believes these approaches are practical for implementation based on existing data sets and declines to make the changes suggested by these comments.

One commenter noted that many of the practical difficulties and environmental risk objectives for exempting vessels from the numeric discharge standard that operate in the contiguous portions of a single COTP Zone also apply to vessels having to undertake ballast water exchange. The commenter suggests that USCG implementing regulations should provide clear guidance to the COTPs to ensure the exemptions are uniformly applied. EPA acknowledges the commenter's suggestion to the USCG.

EPA acknowledges commenters' support of the ballast water discharge standard exemption for vessels less than 1,600 GRT that do not operate outside the EEZ (§ 139.10(d)(3)(i)) and retained the exemption in the final rule. EPA disagrees with a commenter's suggestion to expand the exemption to allow vessels to operate infrequently outside the EEZ. Limiting the exemption to operations within the EEZ ensures that vessels pose less of a risk of spreading ANS into areas where they did not previously exist. However, the commenter is correct that if a vessel less than or equal to 3,000 GT leaves the EEZ, then it is exempt from the ballast water discharge standards if ballast tanks are cleaned prior to reentering the EEZ. The requirements for ballast tank cleaning may be addressed in USCG's implementing regulations pursuant to CWA section 312(p)(5).

Commenters requested that EPA expand the exemption for vessels that take on and discharge ballast water exclusively in the contiguous portions of a single COTP Zone (§ 139.10(d)(3)(iii)) to apply on a tank-by-tank basis rather than on a vessel basis. While EPA understands the commenters' desire for increased operational flexibility, limiting the exemption to apply on a vessel basis ensures that vessels pose less of a risk of spreading ANS. The Agency considers the tank-by-tank management approach to be untenable from an operational perspective because of the increased risk of discharge of non-compliant ballast water due to operator error. EPA also considers the tank-by-tank management approach to be untenable from an enforcement perspective because the exemption would apply temporally and on a tank-by-tank basis. However, the USCG implementing regulations developed pursuant to CWA section 312(p)(5) may include requirements for how a vessel may be able to demonstrate that discharged ballast water is

from a tank containing water solely filled within the same COTP Zone. EPA expects such a demonstration would also have to ensure that piping and pumps used to fill and empty a tank also contain only waters from a single COTP Zone, acknowledging that a single contaminated pipe could contain enough organisms to violate a discharge standard even when the contents of the tank have been adequately treated. So, while EPA is not including such a caveat in it discharge standard, the Agency is not closing the door to the USCG developing procedures under its VIDA authority to allow for such a practice to occur. Also, one commenter noted that many shipowners interpret the single COTP Zone exemption to apply on a single discharge basis only and suggested that EPA modify the exemption to clarify that it applies when a vessel solely takes on and discharges ballast water in the contiguous portions of a single COTP Zone for all ballasting operations. EPA disagrees that further clarification is needed. As proposed and finalized, this exemption applies to vessels that take on and discharge ballast water exclusively in a single COTP Zone, and further clarified in the final regulations and described previously as limited to the *contiguous portions* of a single COTP Zone.

EPA received three comments suggesting that EPA consider new regulatory text that would allow vessels that are fitted with the capability to transfer ballast water to an attending/dedicated vessel for management activities to be exempted. An example is the transference of water from an ATB tug to an ATB barge that would be treated by an USCG type-approved BWMS prior to discharge or vice versa. The commenters' concern regards the implementation of ballast water requirements, which are more appropriately addressed in USCG implementing regulations pursuant to CWA section 312(p)(5).

One commenter supported EPA's decision to not exempt crude oil tankers engaged in coastwise trade from meeting the ballast water and other discharge requirements set forth in the proposed rule and consistent with the final rule. Another commenter noted that some crude oil tankers purchased BWMSs that would not obtain USCG type-approval and these vessels and BWMS manufacturers should not be penalized by being required to change installed BWMS or undergo additional testing that was not anticipated. The commenter is correct that while Section 1101(c)(2)(L) of the National Invasive Species Act of 1996 (16 U.S.C. 4711) generally exempts crude oil tankers engaged in the coastwise trade from ballast water management requirements, there is no counterpart exemption for such vessels in the CWA. Hence, as in the 2008 VGP, the 2013 VGP did not exempt crude oil tankers in the coastwise trade from ballast water management requirements. EPA agrees that these vessels were permitted to install a BWMS that was not USCG type-approved with the expectation that these vessels may instead install a USCG-accepted alternate management system (AMS). Accordingly, EPA's *Economic and Benefits Analysis for the Final 2013 VGP* included estimated costs for tankers engaged in coastwise trade to install USCG-approved BWMS. However, both the 2013 VGP and federal discharge standards developed under the VIDA require these vessels to meet the same numeric discharge standard. Therefore, the BWMS selected to comply with the foregoing 2013 VGP requirement for a crude oil tanker engaged in coastwide

trade would be expected to comply with the numeric discharge standard in this rule. EPA established the numeric discharge standard with information demonstrating that USCG type-approved systems can meet that standard; however, EPA's final rule does not require a vessel operator to select a USCG type-approve system to comply. Any equipment requirements specific to BWMSs are left to the authority of the USCG as established pursuant to CWA section 312(p)(5).

EPA received comments that the exclusions from ballast tank requirements provided at § 139.10(b), the exemptions from the ballast water discharge standard provided at § 139.10(d)(3), and the ballast water exchange and saltwater flushing exceptions at § 139.10(e)(3) should be removed. EPA disagrees with the suggestion to remove these provisions on the basis that the exclusions at § 139.10(b) and the exceptions at § 139.10(e)(3), including the exception for vessels operating exclusively within the internal waters of the United States or Canada, are mandated by Congress directly in the VIDA. Additionally, the commenter provides no technical basis for requesting EPA remove any exemption for the discharge of ballast water, as provided at § 139.10(d)(3). For the most part, these exemptions are carried forward from the 2013 VGP and USCG regulations at 33 CFR part 151. EPA notes these vessels are exempt from meeting the numeric discharge standard based on the finding that ballast water technologies are not available or economically achievable for the universe of smaller vessels and that often operate on shorter voyages.

EPA acknowledges one commenter's recommendation to include additional measures to prevent transportation of ANS via intracoastal travel. The final discharge standard, consistent with the proposed rule and CWA section 312(6)(B), includes a new requirement in § 139.10(e)(2)(ii)(B) for vessels engaged in coastwise voyages within the EEZ and that traverse more than a single COTP Zone outside of internal waters to conduct a saltwater flush of empty ballast tanks no less than 50 NM from any shore before arriving at a U.S. port, regardless of whether they must deviate from their voyage to do so.

EPA received several comments on the proposed rule recommending that EPA add an exclusion or exemption to harmonize with the existing BWM Convention's Regulation A-3.5 Exception, as it could apply to semi-submersible vessels. That IMO exception includes: "the discharge of Ballast Water and Sediments from a ship at the same location where the whole of that Ballast Water and those Sediments originated and provided that no mixing with unmanaged Ballast Water and Sediments from other areas has occurred. If mixing has occurred, the Ballast Water taken from other areas is subject to Ballast Water Management in accordance with this Annex." EPA agrees with the commenter that an additional exclusion is needed to harmonize with the BWM Convention, but notes that this exclusion retains comparable ballast water management as without the exclusion. Rather, this exclusion is largely to allow for the practical reality of the operation of semi-submersible vessels and how ballast water is used on such vessels. As such, a new

exemption in § 139.10(d)(3)(v) allows a vessel to discharge ballast water made up of a combination of managed ballast water from any location with unmanaged ballast water taken up and discharged in a single location. The residual ballast water transported between COTP Zones is subject to the numeric ballast water discharge standards and all ballast tank BMPs will apply. Based on the information referenced by the commenter in MEPC 61, 63, and 64, an internal circulation BWMS is available to fully manage ballast tanks before an in-place flood and discharge ballasting operation on semi-submersible vessels. Specific ballast tank management requirements for vessels traveling between two COTP Zones to quality for this exemption would fall under USCG's implementing regulations established under CWA section 312(p)(5).

Lakers – Comment response for proposed rule

Exemption of vessels operating exclusively on the Laurentian Great Lakes from the numeric discharge standard

Several commenters expressed support for the exemption of vessels operating exclusively on the Laurentian Great Lakes from the numeric discharge standard. Several commenters cited the unique shipboard operations and design limitations of Lakers, as well as the challenging environmental conditions in the Great Lakes as support for the exemption. One commenter recommended that EPA review the BWMS exemption for Lakers on a five-year cycle. In addition, the commenter recommended that EPA amend the rule to reflect the language in the VIDA that requires the eight Great Lakes Governors to approve any additional equipment requirements for Lakers. One commenter expressed support for the inclusion of post-2009 Lakers in the exemption and EPA's authority to change language from the VGP based on new data. The commenter also stated support for EPA's rejection of the evaluated alternative ballast water treatment options for Lakers discussed in the proposed rule. EPA acknowledges these commenters' support for the exemption of Lakers from the numeric discharge standard. EPA disagrees, however, with the suggestion to amend the regulations to reflect language from CWA section (p)(10)(B)(ii)(III)(bb) regarding the approval of any additional equipment requirements for Great Lakes vessels. As acknowledged by the commenter, this language is already identified directly in CWA section (p)(10)(B)(ii)(III)(bb) and need not be repeated in the regulations.

On the other hand, many commenters expressed opposition to the exemption of vessels operating exclusively on the Laurentian Great Lakes from the numeric ballast water standard. Commenters stated that the exemption weakens protections against ANS, are not as stringent as the standards in the VGP and are in violation of the VIDA. One commenter recommended that EPA require new Lakers to install BWMS as an incremental treatment improvement until new technologies are developed. Another commenter recommended that EPA only grant

exemptions for vessels that apply and demonstrate the vessel's inability to identify a suitable BWMS. This commenter also recommended that EPA annually review IMO-approved systems for use on Great Lakes vessels. EPA acknowledges the commenters' opposition but disagrees that available information demonstrates an exemption is not appropriate currently. EPA agrees with the commenters' recommendations that EPA require new Lakers to install BWMS. In the supplemental notice, EPA discussed a supplemental regulatory option under consideration for ballast water discharges that would create a new regulatory subcategory for new Lakers and add an equipment standard – a requirement to install, operate, and maintain a USCG type-approved BWMS, but not to meet a numeric discharge standard – for these vessels. The final rule reflects that approach for new Lakers.

One commenter noted that the fact that the GLLCISP research plan includes a Laker (VanEnkevort's Michigan Trader) with a BWMS does not align with EPA's conclusion that there are no BWMSs available for Lakers. EPA disagrees with the commenter's assertion that the fact that a BWMS is installed on a Laker is inconsistent with EPA's conclusion there are no BWMSs available for Lakers. The USCG granted an extension of the implementation schedule to the Michigan Trader on February 10, 2020, noting that it "recognizes ballast water treatment systems installed on vessels exclusively operating on the Great Lakes are subject to unique challenges affected by vessel operations and system limitations. The USCG granted the extension in accordance with 33 CFR 151.2036 in lieu of practical implementation of the discharge standard requirements of 33 CFR 151.1511." EPA expects the research performed on the Michigan Trader to provide useful information on the design, installation, operation, maintenance, and performance of BWMSs for the purpose of establishing future discharge requirements for existing Lakers.

As provided in the final rule, EPA retained the exemption from the numeric ballast water discharge standard for all vessels that operate exclusively on the Laurentian Great Lakes. EPA acknowledges the commenter's recommendation to review IMO-approved systems for use on the Great Lakes. The Agency did assess the full range of BWMSs; however, the Agency did not identify any technologies capable of operating on existing Lakers. This determination is based on the environmental conditions of the Great Lakes, vessel voyage patterns, and most importantly, that unlike new Lakers, existing Lakers would have to undergo potentially costly retrofits to meet yet undetermined USCG implementing regulation requirements. EPA anticipates, however, that the Great Lakes and Lake Champlain Invasive Species Program will continue to monitor new developments in BWMSs, including new IMO-approved systems to identify solutions for new and existing Lakers. See Section IV.B.5 of the supplemental notice for further

discussion of the new Laker subcategory and EPA's rationale behind the exemption from the numeric ballast water discharge standard for existing Lakers.

Commenters noted that EPA did not provide a timeline for an approach to reconsider this exemption. One commenter recommended that EPA establish a clear timeline for the installation of BWMSs on all ships with specific requirements for the following groups of vessels: newly constructed ships, recently constructed ships, and older ships. The commenter encouraged EPA to adopt an equipment standard or mandate the use of BWMSs as a BMP on an appropriate timeline for each vessel group. EPA declines to establish set timelines for existing Lakers to install BWMSs. EPA is exercising caution considering the VIDA's BWMS legacy provision in CWA section 312(p)(6)(C) because if the equipment standard were applied to the existing Laker fleet, these vessels would be unlikely to benefit from any improved technology from the ballast water research conducted under the VIDA's Great Lakes and Lake Champlain Invasive Species Program. EPA's seven-year Great Lakes Ballast Water Research and Development plan, developed consistent with the Great Lakes and Lake Champlain Invasive Species Program, is targeted to address the complexities, and improve the operation of BWMSs on existing Lakers. It is difficult to predict when new technologies may arise. As directed by the VIDA, EPA will review the discharge standards at least every five years and revise, if appropriate. Also, the USCG is responsible for developing implementing regulations that reasonably may identify the date by which vessels are expected to meet that discharge standard, including any equipment requirements associated with meeting that standard.

EPA defined new Lakers based on the timeframe EPA expects would be necessary for vessel owners to design a vessel that accounts for both EPA and the USCG ballast water regulatory responsibilities under the VIDA. Based on that rationale, the final rule, consistent with the supplemental notice, defines a new Laker as, "a vessel that is 3,000 GT and above and that operates exclusively in the Great Lakes and the St. Lawrence River west of a rhumb line drawn from Cap des Rosiers to Pointe-de-l'Ouest (West Point), Anticosti Island, and west of a line along 63° W. longitude from Anticosti Island to the north shore of the St. Lawrence River and that is constructed after the effective date of USCG regulations promulgated pursuant to CWA section 312(p)(5)(A)(i)."

Another commenter stated that, as written, the rule does not create any incentive for Lakers to use existing technologies or innovate new technologies to control ballast water discharges. EPA disagrees. The VIDA specifically directed EPA to establish the Great Lakes and Lake Champlain Invasive Species Program in part to identify and test new technologies specifically for Lakers. EPA acknowledges that additional research is needed and is actively working to develop practicable

ballast water management solutions for Lakers. In addition, EPA is requiring new Lakers to install BWMSs as an equipment standard to control ballast water discharges in the Great Lakes.

One commenter stated that EPA should not treat the Great Lakes as a singular system in the exemption of Lakers from the numeric discharge standard. EPA disagrees. Under the VIDA, Congress identified the Great Lakes as a single system, as defined in section 118(a)(3) of the Federal Water Pollution Control Act (33 U.S.C. 1268(a)(3)). Additionally, the commenter does not provide details of how such a subcategorization should be designed and EPA does not have information on which to divide the Great Lakes into subcategories for purposes of establishing technology-based requirements.

Another commenter noted that the rule restricts the Great Lakes states from establishing state standards to further protect against ANS. EPA acknowledges that the VIDA preempts states from adopting or enforcing their own laws regulating vessel incidental discharges. Specifically, CWA section 312(p)(9)(A) specifies that no state, political subdivision of a state, or interstate agency may adopt or enforce any law, regulation, or other requirement with respect to an incidental discharge subject to regulation under the VIDA except insofar as such law, regulation, or other requirement is identical to or less stringent than the federal regulations under the VIDA. EPA notes, however, that under CWA section 312(p)(10)(B), Congress enacted a process for the Governors of the Great Lakes states as a group to promulgate an enhanced standard of performance for any incidental discharge subject to the VIDA. Through the other petition processes authorized by the VIDA and detailed in subpart E of the final rule, states may also seek more stringent requirements by petitioning for an emergency order, a review any standard of performance, regulation, or policy (if there exists new information that could reasonably result in a change), or a no-discharge zone.

Other commenters stated that EPA extended its rulemaking into areas that should be addressed by the USCG. The commenters noted that under the VIDA, EPA should propose a standard and it is the USGC's role to determine if Lakers should be exempt. EPA disagrees. The VIDA gives EPA the authority to develop standards of performance based on best available technology economically achievable and that may distinguish among classes, types, and sizes of vessels and between new vessels and existing vessels. EPA considered these in establishing the final rule requiring new Lakers to meet an equipment standard; however, the Agency did not have information demonstrating available and economically achievable technology for the existing Laker fleet.

Several commenters also noted that EPA's economic analysis did not consider the value of the economies or cultural assets impacted by ANS when making the

determination regarding economic achievability. EPA did not consider the value of the economies or cultural assets impacted by ANS in the economic analysis because these factors are not required as part of a best available technology analysis. Under the VIDA, Congress defined best available technology economically achievable as within the meaning of CWA sections 301(b)(2)(A) and 304(b)(2)(B), and in accordance with 40 CFR 125.3(d)(3) (or successor regulations). Factors included in these definitions include: the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, the cost of achieving such effluent reduction, non-water quality environmental impact (including energy requirements), and such other factors as the Administrator deems appropriate.

Exemption of vessels operating primarily, but not exclusively, on the Great Lakes from the numeric discharge standard

Two commenters expressed support for exempting vessels operating primarily, but not exclusively, on the Great Lakes from meeting the numeric discharge standard. The commenters noted that these vessels face similar challenges as those vessels that operate exclusively on the Great Lakes and should therefore also be exempt. While the final rule retains the exemption from the numeric ballast water discharge standard for all existing vessels that operate exclusively on the Laurentian Great Lakes, EPA declined to expand the exemption to vessels that operate primarily, but not exclusively, on the Great Lakes. Vessels capable of sailing east of Anticosti Island must be able to operate in brackish or saltwater. These vessels are designed as oceangoing vessels and have different construction and operational requirements than Lakers. As such, a broader selection of ballast water treatment options, as well as ballast water exchange and saltwater flushing, are available to vessels that voyage east of Anticosti Island and outside of the Great Lakes System.

One commenter encouraged EPA to consider binational compatibility with Canada's "deemed compliance" approach. The commenter recommended that EPA require vessels that primarily, but not exclusively, operate in the Great Lakes to meet the Canadian ballast water standards or otherwise apply standards and timelines that are compatible with Canada's "deemed compliance" standard. EPA disagrees with modifying the discharge requirements, such as to include a "deemed compliance" or equipment standard approach for Canadian vessels that primarily voyage domestically within waters under Canadian jurisdiction, with occasional voyages into the U.S. waters of the Great Lakes, but that also voyage east of Anticosti Island. These vessels are also oceangoing vessels with additional ballast water management options available to them and in fact, many such

Canadian vessels have already installed BWMSs consistent with existing ballast water regulations.

Multiple commenters opposed the exemption of vessels operating primarily, but not exclusively, on the Great Lakes from meeting the numeric discharge standard. One commenter noted that these vessels have different design, construction, equipment, and operational requirements than Lakers and present a different level of risk. Commenters expressed that requiring some level of treatment is preferable to the complete exemption from treatment for non-exclusive Great Lakes vessels. One commenter noted that defining a vessel that predominantly operates in the Great Lakes is complicated as most vessels operate on a charter basis rather than a dedicated trade route. Commenters offered several alternative options for defining the expanded group of vessels covered under the ballast water exemption. One commenter recommended that the exemption be framed in terms of the reason for leaving the Great Lakes, such as repair, rather than the frequency of occurrence. Another commenter noted that EPA's justification for exemption is based on "technical challenges," but exempts all vessels within a geographic area. As such, the commenter recommended that EPA only grant exemptions for vessels that apply and demonstrate the individual ship's inability to identify a suitable BWMS. Another commenter stated that expanding the exemption would create a loophole for vessels to avoid installing a BWMS and conducting self-assessments.

EPA agrees that the final rule should not exempt vessels operating primarily, but not exclusively, on the Great Lakes from meeting the numeric discharge standard for ballast water. In the supplemental notice, EPA presented as an option, and has now finalized, the creation of a new subcategory for new Lakers. In finalizing the creation of this subcategory, the final rule retains from the VGP the definition of Lakers as only those vessels that operate exclusively on the Laurentian Great Lakes. Vessels capable of sailing east of Anticosti Island are necessarily capable of operating in brackish or saltwater. These vessels are designed as oceangoing vessels and have different construction and operational requirements than Lakers. As such, a broader selection of ballast water treatment options is also available to vessels that voyage east of Anticosti Island and outside of the Great Lakes System.

EPA disagrees with the commenter that defining a vessel that primarily operates in the Great Lakes is complicated due to the variability in individual vessel voyage patterns and that EPA should base any exemption in terms of the reason for leaving the Great Lakes System. Like the 2013 VGP, the final rule subcategorizes vessels that operate exclusively in the Great Lakes (Lakers) but does not include other subcategories of vessels that operate in the Great Lakes such as those that operate primarily but not exclusively in the Great Lakes or those that only operate occasionally in the Great Lakes. The VGP and USCG

regulations in 33 CFR part 151 already require such vessels to comply with the numeric discharge requirements.

Self-assessment data submissions by Great Lakes vessels

EPA received several comments regarding whether EPA should require Lakers to perform an annual self-assessment identifying incompatibility issues and the environmental conditions that prevent the installation of USCG type-approved BWMS. Three commenters supported self-assessment but suggested an alternative collection frequency of every five years rather than annually. One commenter stated that the self-assessment should be voluntary and recommended EPA coordinate the data collection under the Great Lakes and Lake Champlain Invasive Species Program. Two commenters objected to the nature of the information EPA proposed and recommended that EPA incentivize BWMS development. The commenters recommended EPA require the industry to take an active role in technology development and install compatible type-approved BWMSs as they become available.

EPA decided not to require Lakers to conduct an annual self-assessment identifying individual vessel impediments to BWMS installation. EPA is conducting research on ballast water management for Lakers consistent with the Great Lakes and Lake Champlain Invasive Species Program described in Section 903(g) of the VIDA. EPA expects the results of this research to form the basis for any future EPA actions to regulate discharges of ballast water from Lakers, including any request for additional information from the Great Lakes vessel industry, as could be done through a CWA section 308 information request. Additionally, any new information can be incorporated into the standards as they are reviewed (and revised, as appropriate) every five years.

Great Lakes and Lake Champlain Invasive Species Program

EPA received three comments in support of the creation of the Great Lakes and Lake Champlain Invasive Species Program. One commenter recommended any funds that involve vessel technology and research be directed toward U.S.-flagged vessels. Another commenter recommended that the program focus its objectives on identifying BWMSs for vessels on the Great Lakes. The commenter stated the program should focus on expanding the selection of BWMSs eligible for use on Lakers and work on identifying and testing strategies to facilitate retrofitting BWMSs on Lakers and improving the performance of already established BWMSs in the environmental conditions found throughout the Great Lakes. EPA acknowledges the commenters' interest and suggestions for the Great Lakes and Lake Champlain Invasive Species Program established under VIDA; however, details of such research are outside the scope of this rule. EPA expects the findings from this research program to inform the Agency for future review and

revision of the discharge standards not less frequently than once every five years, as required under CWA section 312(p)(4)(D).

Equipment standard or alternative standard

EPA received several comments stating that EPA should establish an equipment standard. Commenters disagreed with EPA's arguments against setting a BWMS equipment requirement. Several commenters disagreed with EPA's assessment that BWMSs are inherently incompatible with the Great Lakes environment. In addition, the commenters disagreed with EPA that the exemptions are justified based on the possibility that a better technology may arise in the future. One commenter noted that the CWA allows for installed BWMSs to be "grandfathered" in, removing the risk to vessel operators of continual re-installation of new technologies. The commenter noted this supports the argument that action can occur now while new technologies are researched for future use on newer vessels. Commenters also argued that BWMSs are economically achievable for Lakers when compared to the cost to the Great Lakes recreational and commercial fisheries from ANS invasion. As established in the final rule, EPA agrees with commenters that an equipment standard is appropriate for new Lakers. A comprehensive rationale for including an equipment standard for new Lakers, but not existing Lakers, is provided in Section IV.B of the supplemental notice preamble.

One commenter suggested that EPA should develop an alternative standard for Lakers. The commenter noted that there is a lot of information available on treatment alternatives and disagrees with EPA's assessment of insufficient data to support an alternative. The commenter stated that EPA used non-relevant research studies to assess the availability of treatment options for Lakers. The commenter also noted that EPA's BAT analysis focused on applicability to all voyages and did not explore alternative scenarios such as BAT to address specific holding times or target organisms. The commenter asserted that the all-voyages approach unnecessarily limited EPA's determination of available treatment options. In addition, the commenter stated that the enforcement challenges raised by EPA are either untrue or not relevant, as enforcement is within USCG's purview (not EPA's). The commenter noted that there are several known approaches to choose from such as a Laker-specific alternative standard, that could be applied to address voyage-specific or organism-specific objectives. The commenter disagreed with EPA's exemption of Lakers based on claims that pollution control measures taken now would impede the development of better technologies in the future. In response, the commenter argued that more effective technologies are unlikely to arise without standards to compel them.

The final rule includes an alternative standard for new Lakers although, as described in detail in Section IV.B of the supplemental notice, EPA disagrees that adequate information exists demonstrating the appropriateness of an alternative numeric standard for existing Lakers. In the supplemental notice, EPA outlined

the rationale for exempting existing Lakers that exclusively operate in the Great Lakers from the numeric ballast water standard and the ballast water equipment standard. EPA agrees with the commenter that an alternative standard can be developed for new Lakers, which is what EPA did in establishing the ballast water equipment standard for new Lakers. EPA disagrees with the commenter that more effective technologies are unlikely to arise without numeric standards to compel them. As referenced by the commenter, in 2020, EPA initiated the Great Lakes Ballast Water Research and Development plan, implemented by the Great Waters Research Collaborative, with the expressed goal to address the complexities and improve the operation of BWMSs on Lakers. Additionally, EPA anticipates that implementation of its equipment standard for new Lakers will aid in the development and adoption of BWMS technologies for Lakers. EPA also disagrees with commenter that relevant water quality monitoring data are available throughout the Great Lakes, such as is typically represented in databases like those referenced by the commenter (EPA's Storage and Retrieval (STORET) database and USGS's National Water Information System (NWIS)). Those data are not representative of water quality at the point (e.g., in a slip adjacent to shore) where ballast water uptake most often occurs.

BMPs for BWMS operational issues

EPA received one comment requesting that EPA develop BMPs for vessels that experience operational issues and are unable to meet performance standards. The commenter noted that shipowners continue to receive varied instructions on how to handle operational issues. The commenter stated a need for uniform guidance for BWMS operational issues to allow for even compliance among vessels. EPA disagrees with the commenter's request that EPA develop BMPs for vessels that experience operational issues and are unable to meet performance standards. EPA also notes that there are ballast water BMPs already applicable to vessels in addition to the numeric standards. Pursuant to CWA section 312(p)(5), the USCG is responsible for establishing implementing regulations as necessary to ensure, monitor, and enforce compliance with EPA's standards. Accordingly, the VIDA provides that the USCG will determine which operational practices are necessary to ensure compliance.

One commenter noted that operational requirements are a component of BAT and requested that EPA include operational requirements for BWMSs as specified in Michigan's Ballast Water Control General Permit. The commenter states that permit sets a high level of technology operational requirements that exceed the type-approvals EPA relied on for the discharge standards. EPA agrees with the commenter that the VIDA provides authority for EPA to include operational control requirements as a part of the federal discharge standard. In fact, the BMPs and exchange and flushing requirements proposed in §§ 139.10(c) and (e), respectively, are examples of general operational control requirements. With

respect to additional operational controls specific to ballast water technologies, the commenter neither provides specifics as to the operational requirements that are appropriate as uniform federal standards for the full range of vessels subject to the rule nor provides data demonstrating how the operational requirements in its permit translate to a more effective BAT-based uniform federal standard applicable to all Lakers. EPA points out that Congress tasked the USCG, in CWA section 312(p)(5)(B), to promulgate regulations governing the design, construction, testing, approval, installation, and use of marine pollution control devices as are necessary to ensure compliance with the standards of performance promulgated under (p)(4). As such, equipment operational controls specific to BWMSs would reasonably fall under the USCG authority.

Binational consistency with Canada

EPA received one comment in support for binational consistency between Canada and the U.S. regarding vessel ballast water regulations in the Great Lakes. EPA agrees with the commenter that Canada and the U.S. should continue their long-term binational dialogue regarding ballast water discharge requirements for Lakers. In the supplemental notice, EPA identified binational consistency as one of the "other factors the Administrator deems appropriate" for consideration when establishing BAT standards under CWA section 304(b)(2)(B). EPA acknowledges that the regulated community has expressed that such consistency is important for vessels companies engaged in binational trade and supports better protection of the shared Great Lakes waters. EPA recognizes that movement towards international consistency is desirable and supports regulatory synergy insofar as it does not conflict with other statutory goals and requirements.

Monitoring and analysis

EPA received one comment disagreeing with EPA's statement that it is impractical to conduct routine monitoring and analysis of ballast water discharges. The commenter noted that ongoing monitoring and assessment are an important part of an effective ballast water regime and stated that EPA exaggerates the difficulty of ballast water monitoring and analysis. The commenter recommended that EPA consult with the USCG for guidance on how to conduct ballast water monitoring and analysis. EPA did not mean to imply that collecting and analyzing samples of ballast water discharge is impossible. In describing "routine monitoring," EPA meant "routine self-monitoring by the vessel crew" that, while not impossible, is challenging. For example, direct monitoring of the number of organisms in ballast water discharges requires representative sampling and analyzing large volumes of water for living organisms in each regulated size category. Also, collection of representative samples requires careful selection of an appropriate sampling location; the design,

manufacture, and installation of a specialized sample port; use of appropriate sample collection equipment; and a crew trained and experienced in organism sampling techniques. Sample analysis is also complex and specialized, often requiring a temporary onboard or shore-based laboratory staffed with skilled and experienced biological analysts.

EPA acknowledges that self-monitoring conducted by entities other than the vessel crew may provide better opportunities to ensure appropriate sampling and analysis procedures are followed; however, monitoring to assess compliance is outside the scope of this rule. Rather, CWA section 312(p)(5) establishes that the USCG is responsible for developing regulations to ensure, monitor, and enforce compliance with the EPA discharge standards.

Economic incentives

EPA received one comment stating EPA should provide an economic incentive for newly built Lakers to operate their BWMS. This comment is outside the scope of this rule; however, EPA notes that the VIDA established the Great Lakes and Lake Champlain Invasive Species Program through which EPA is currently funding research on ballast water management practices onboard Great Lakes vessels. At present, the handful of U.S. owned/operated Lakers with an installed BWMS are partnered with EPA's research team.

Corrections

EPA received a few comments offering corrections regarding certain information presented in the proposed rule on BWMSs. Two commenters noted EPA incorrectly referenced the UV Alfa Laval PureBallast® Version 3 BWMS. The correct system tested was a hybrid of PureBallast 1 and the filter in PureBallast 2 with a 40 µm mesh filter. EPA acknowledges the commenters' clarification that the PureBallast Version 3 BWMS was not tested in 2010.

Another commenter noted that EPA did not distinguish chlorine dioxide from other chemicals when discussing that all chemicals cause excessive corrosion in uncoated ballast tanks. The commenter requested that EPA reevaluate the exemption for vessels in the Great Lakes to the extent the exemption was based on all "chemical addition" technologies causing excessive corrosion in uncoated ballast tanks. The commenter noted that chlorine dioxide does not have the same corrosive properties as chlorine and other oxidants. EPA acknowledges commenter's feedback regarding chlorine dioxide; however, EPA did not intend to suggest that every chemical used for ballast water treatment is corrosive. Rather, EPA notes that if corrosive chemicals, particularly oxidants, are used, this would increase the rate of corrosion on the vessel and require the vessel to be

taken out of service. EPA acknowledges chlorine dioxide does not have similar corrosive properties as other commonly used ballast water treatment chemicals. However, while chlorine dioxide may not present the same corrosion challenges as other chemical additives, EPA lacks information to support a numeric standard for Lakers based on chlorine dioxide alone as BAT, For example, chlorine dioxide-based BWMSs have a 48-hour treatment hold time that is incompatible with the large number of shorter Laker voyages.

Another commenter asserted that there are several technical errors in the proposed rule and stated that EPA cites several documents that are no longer relevant because the mentioned technologies are no longer available. The commenter asserted that Table 2 in the proposed rule contains some incorrect information, including the statement that BWMSs have holding times of 72 hours when most USCG type-approved BWMS have holding times of 24 hours. EPA agrees that the USCG has more recently been type-approving BWMSs with shorter hold times. Thus, fewer Great Lakes voyages may be affected by holding times; however, simply having an adequate holding time is not the sole basis for EPA's conclusion in the final rule excluding existing Lakers from the ballast water discharge standard. As described in the proposed rule and supplemental notice, other challenges exist for use of BWMS on Lakers. The commenter also asserted that most BWMSs are type-approved to water temperatures of 0 °C and as such are compatible with Great Lakes environmental conditions. EPA acknowledges many type-approvals provide for system operation down to 0 °C; however, as can be seen in the compilation of USCG land-based type-approval testing in the docket, testing is rarely performed at temperatures this low. Also, as described in the proposed rule at Section VIII.B.1.v.C.2., *Compatibility of BWMS To Meet the Discharge Standard Under Great Lakes Environmental Conditions*, lower temperatures have been shown to cause freezing in Great Lakes operations, even at temperatures above 0 °C. The commenter also stated, without providing specific instances, that EPA cites other documents that are no longer relevant as these technologies are no longer available or have been substantially changed to meet the needs of the shipping industry. Without further information from the commenter, EPA acknowledges some documents or technologies described in the proposed rule may no longer be relevant or available; however, the Agency disagrees with any inference that such documents lead EPA to an incorrect conclusion. EPA agrees with the commenter's statement that testing in freshwater in other locations is dissimilar to the conditions in the Great Lakes, and that the high cost of testing and a low market for BWMS sales are not conducive to increasing testing. The commenter recommended that EPA and the USCG create an incentive such that additional testing occurs, or else the market for BWMSs will not develop and future treatment will not be possible. This comment is outside the scope of this rule; however, EPA notes that the VIDA established the Great Lakes and Lake Champlain Invasive Species Program through which EPA

is currently funding research on ballast water management practices onboard Great Lakes vessels. At present, every U.S.-owned/operated Laker with an installed BWMS is partnered with EPA's research team.

Lakers – Comment response for supplemental notice

Equipment standard authority and rationale for new Lakers

EPA received comments that spoke generally to EPA's authority and rationale for establishing an equipment standard for new Lakers. First, EPA acknowledges the commenter than supported the approach on the basis that it is compatible with Canada's approach.

One commenter disagreed with EPA's authority and rationale for the equipment standard on the basis that it does not meet the requirements of BAT with another comment stating that BAT discharge standards have not been developed elsewhere as an equipment standard under the CWA. The commenter noted that the VIDA specifically defined BAT as the current CWA definition of the term, which does not provide any direction to, or authority for, EPA to create a new, novel interpretation of BAT. EPA disagrees that its interpretation is inconsistent with the definition of BAT. CWA section 312(p)(4)(B)(ii)(I) requires EPA to adopt BMPs "to control or abate any discharge incidental to the normal operation of a vessel if … numeric standards of performance are infeasible.". CWA section 312(p)(1)(H) defines a BMP as "a schedule of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce … pollution.". An equipment standard for the installation, operation, and maintenance of a Laker BWMS is an "other management practice[] to prevent or reduce … pollution," and the record for this rulemaking shows that a numeric ballast water discharge standard for Lakers using currently available technology is infeasible. EPA reads the VIDA to compel the application of the BAT legal standard to standards of performance adopted pursuant to CWA section 312(p)(4), which includes a BMP adopted pursuant to CWA section 312(p)(4)(B)(ii). Because EPA is adopting an equipment standard BMP in lieu of an infeasible numeric standard of performance, that BMP is set to the same statutory level of control as required for numeric standards of performance. In this case, that is BAT.

One commenter noted that requiring the use of BWMSs is not BAT because these systems do not operate consistently and reliably in the Great Lakes environment and impact vessel operations by reducing ballasting flow rates. EPA disagrees that its equipment standard is not technologically available or economically achievable. EPA provides its detailed rationale for considering the equipment standard in section IV.B.2 of the supplemental notice. Since EPA determined that

at this time a numeric discharge standard for new Lakers using current technology is infeasible, BMPs are an appropriate substitute. With respect to flow rates, as documented in VGP's electronic Notice of Intent (eNOI) reporting system, many vessels report discharges of treated ballast water at 6,000 cubic meters per hour or more through a variety of treatment technologies, such as ultraviolet irradiation and chemical addition. EPA acknowledges that Lakers, like other types of vessels, that have a high ballast water discharge rate (e.g., 12,000 cubic meters per hour or more) may require two or more BWMS operating in parallel. Again, as documented in the eNOI system, many vessels report using two or more BWMSs on a single vessel. The equipment standard approach acknowledges that new Lakers may face challenges trying to meet a numeric discharge standard but provides that installation, operation, and maintenance of type-approved BWMSs suffices, thereby ameliorating some concerns with respect to BWMS performance.

EPA acknowledges the one comment that supported an equipment standard in lieu of a numeric standard for vessels that operate in the Great Lakes and St. Lawrence region. The commenter noted that an equipment standard, like the "deemed compliance" approach in the Canadian ballast water regulations, is a practical approach for vessels operating in the Great Lakes region.

One commenter stated that active substance chemical addition-based BWMSs should not be the basis for imposing an equipment standard on new Lakers. The commenter noted that none of the BWMS listed in the supplemental notice used Great Ships Initiative (GSI) data for their USCG type-approval. The commenter reported several issues with the identified systems, including active substance dosages that were above National Association of Corrosion Engineers (NACE) recommendations for application of chlorine substance to steel, discharged TRO levels that were above Great Lakes States Water Quality Standards, and operational issues with neutralization units causing TRO levels to exceed VGP discharge limitations. EPA disagrees with commenter's characterization that the issues described above are reasons why active substance chemical addition-based BMWSs should not be the basis for imposing an equipment standard on new Lakers. EPA did not necessarily rely on use of chemical addition-based BWMS as the basis for the equipment standard. Rather, the final rule provides that vessel operators are free to select the technology from the list of USCG type-approved BWMSs, many of which are not chemical-based.

Finally, one commenter questioned whether U.S. Lakers could be part of the solution by using services provided by Lakers to establish a binational bond to protect the Great Lakes. The commenter suggested this would likely require a large environmental organization to build small business opportunities and create employment, while helping preserve and improve the water quality of the Great

Lakes. EPA acknowledges receipt of this comment; however, it is outside the scope of this rule.

Definition of new Lakers

Several commenters discussed the definition of "new Laker." One commenter supported EPA's creation of a new Laker category but disagreed with the effective date being defined as a build date after the effective date of the USCG implementing regulations. The commenter recommended that after a new technology option is deemed BAT, found to be operational in the Great Lakes, and obtained USCG type-approval, EPA should define the effective date during the required five-year review cycle required by the VIDA. EPA disagrees with the commenter's characterization of the effective date of the USCG rulemaking. As established by the VIDA, following the finalization of EPA's Federal standards of performance, the USCG has two years to develop corresponding implementing, monitoring, and enforcement regulations and *to determine the effective date* for when the EPA and USCG regulations are final, effective, and enforceable. The USCG has discretion in establishing the effective date "tak[ing] into consideration the period of time necessary (I) to communicate to affected persons the applicability of the regulation; and (II) for affected persons reasonably to comply with the regulation." (33 USC 1322(p)(5)(A)(iv)). EPA also disagrees that EPA should define the effective date during the required five-year reviews. Vessel owners planning for construction of a new Laker can take advantage of the engineering flexibility available during the initial design process to incorporate future ballast water treatment capabilities that account for both the EPA and USCG ballast water regulatory responsibilities under the VIDA.

The commenter also recommended that EPA further subcategorize new Lakers to include the five different types of Lakers. The commenter noted that the different types of Lakers may identify different technologies as BAT on varying timelines. EPA disagrees with the commenter's suggestion that the new Laker subcategory should be further subdivided to include the five different types of Lakers. EPA did not have sufficient market forecast data or rationale for the types of Lakers to be built in the future or when they will be built to create additional new Laker subcategories in the determination of BAT. Instead, EPA based its assessment on the types of Lakers that have been constructed most recently. Laker owners planning to construct a new Laker, regardless of size classification, can take advantage of the engineering flexibility during design to incorporate ballast water treatment capabilities. Additionally, the final rule provides that vessel operators are free to select the technology from the list of USCG type-approved BWMSs, which provides further flexibility for different new Lakers to use different BWMS technologies. EPA believes that the new Laker subcategory, as defined in the final

rule, is sufficient to describe the category of vessels exclusively operating in the Great Lakes that are subject to the ballast water equipment standard.

One commenter supported defining a new Laker as a vessel that operates exclusively on the Great Lakes and that is constructed after the effective date of the USCG implementing regulations. The commenter noted that it is unreasonable to expect shipowners to retroactively comply with a previously undefined equipment standard and stated the necessity of setting the implementation date as the future regulatory date. EPA acknowledges the commenter's support for the approach.

On the other hand, one commenter opposed defining a new Laker as a vessel constructed after the effective date of the USCG implementing regulations. The commenter noted that it is preferable for EPA to regulate Lakers built in or after 2009 to keep the implementation timelines in alignment with Canada and support binational consistency in the Great Lakes. EPA disagrees. While there may be administrative advantages to using the same date in both the U.S. and Canadian regulations, the differences between the U.S. and Canadian legal authorities and the physical, operational, and economic conditions of their respective Laker fleets prompted EPA to consider a different build date definition for new Lakers in the final rule. A Canadian vessel with a BWMS installed after September 8, 2024, is required to meet the IMO D–2 numeric standard. Canada's requirements are based on its obligation as a Party to the BWM Convention, to which the U.S. is not a Party, and that differs from the CWA legal framework in several key respects. EPA's final rule directs the USCG to develop corresponding implementing regulations two years after EPA's standards are finalized. This extended period compared to the Canadian implementation timelines provides an opportunity for the Great Lakes and Lake Champlain Invasive Species Program to develop, achieve type-approval for, and pilot shipboard or land-based BWMSs for Lakers.

EPA received one comment requesting that EPA expand the definition of a new Laker to include clarifying language that the regulation includes, but is not limited to, bulk carriers and applies to any vessel meeting the operational conditions of a Laker. EPA agrees with commenter that the definition of new Laker includes, but is not limited to, bulk carriers. However, the Agency disagrees with the commenter that the definition needs to clarify that this one type of vessel is included in this definition.

Equipment standard for new Lakers

Several commenters offered general support for the establishment of an equipment standard for new Lakers. In addition, one commenter suggested that the equipment standard should also apply to vessels that undergo a "major conversion." The commenter asserted that EPA should consider including

language to account for phased conversions to prevent vessels from circumventing the equipment standard by splitting larger conversion projects into a series of incremental projects. EPA acknowledges commenters' support for the new Laker equipment standard, including that the definition of new Laker includes vessels that undergo a "major conversion." EPA disagrees with commenters' suggestion to include language to account for phased conversions to prevent vessels from circumventing the requirements. The final rule defines "constructed" and "major conversion," as referenced in the definition of "constructed," from existing USCG regulations. This commenter does not describe how a phased conversion could circumvent the requirements.

Several other commenters expressed general opposition to setting an equipment standard for new Lakers. One commenter recommended that EPA develop a subcategory of Lakers as "new Lakers" and specify the new Laker implementation timeframe as "reserved" until new BWMS technology for Lakers is determined to be operational in Great Lakes conditions and has obtained USCG type-approval. EPA disagrees as the Agency has considered the BAT factors and reached a conclusion for the final rule, establishing an equipment standard requirement for new Lakers requiring the installation, operation, and maintenance of a type-approved BWMS. Under the VIDA, the USCG may include implementing regulations governing the design, construction, installation, and use of BWMS to meet the new Laker equipment standard. EPA notes that new Lakers have the flexibility to design and construct vessel configurations to account for BWMS requirements and to overcome operational and technical challenges posed by the Great Lakes.

One commenter asserted that an equipment standard is not appropriate because BWMSs have not been determined to reduce ANS concentrations in treated Laker ballast water to any consistent level. EPA disagrees that the equipment standard is inappropriate in light of this assertion. In fact, EPA adopted an equipment standard in lieu of a numeric standard in part *because* BWMSs have not been demonstrated to reduce ANS concentrations to any consistent level. EPA established an equipment standard after considering data presented in the supplemental notice demonstrating that BWMSs provide a substantial reduction in the number of living organisms in the ballast water discharged, including in the Great Lakes. However, that reduction is not to a consistent level for which it would have been appropriate to establish a numeric discharge standard. EPA acknowledges challenges with requiring the existing Laker fleet to install, operate, and maintain a BWMS but as described in the supplemental notice, EPA established an equipment standard acknowledging that newly constructed vessels can be designed such that installation, operation, and maintenance of one of numerous available BWMSs is available and achievable.

A few commenters stated that EPA did not account for the USCG type-approval timeline when making assumptions that a BWMS compatible with Laker operations will be available by the time USCG implementing regulations enter

into force. Commenters noted that due to the type-approval timeline, new BWMS would need to be currently under development to be available at that time. However, commenters noted that no BWMS have demonstrated the ability to operate on Lakers without significant negative impact on vessel operations. In addition, the commenter stated that EPA did not present any evidence that the technological and operational challenges will be resolved within the timeframe allotted by EPA. The commenter asserted that this effectively means the first new Lakers will be required to install current BWMS technologies. In response, one commenter recommended that EPA should allow the Great Lakes and Lake Champlain Invasive Species Program to develop suitable, proven BWMS technology for Lakers before defining new Lakers.

EPA disagrees with the comment that it did not account for the USCG type-approval timeline in establishing an equipment standard for new Lakers. EPA specifically established the effective date as after the effective date of USCG regulations promulgated pursuit to CWA section 312(p)(5)(A)(i) to allow time for new Lakers to select and design the most appropriate BWMS that is consistent with both EPA and USCG requirements. Operators of new Lakers have the ability using currently available technology to design a vessel to accommodate BWMSs and to minimize negative impacts on vessel operations. EPA notes that new Lakers have the flexibility to design and construct vessel configurations to account for BWMS requirements and to overcome operational and technical challenges posed by the Great Lakes. The final rule states that any new Laker being constructed after the effective date of the USCG regulations will be required to install a BWMS; however, EPA disagrees with the commenter's characterization of the effective date of the USCG rulemaking. As established by VIDA, following the finalization of EPA's Federal standards of performance, the USCG has two years to develop corresponding implementing, monitoring, and enforcement regulations and *to establish the compliance date* for when the EPA standards and Coast Guard regulations are final, effective, and enforceable. The Coast Guard has discretion in establishing that compliance date (33 USC 1322(p)(5)(A)(iv)). EPA is funding needed research on ballast water management on Lakers as described in the VIDA's Great Lakes and Lake Champlain Invasive Species Program. One of the main purposes of that program is for EPA to develop, achieve type-approval for, and pilot shipboard or land-based BWMSs for Lakers. In 2020, EPA initiated what is now a seven-year Great Lakes Ballast Water Research and Development plan with the goal of addressing the challenges of ballast water management for the existing Laker fleet. This plan includes, among other activities, exploring pre-filtration and enhanced filter systems, modifying existing type-approved BWMSs, testing improved UV lamps, and assessing the feasibility of mobile or shore-based treatment options as a supplement to onboard BWMSs. EPA anticipates the results of its research will support future regulations addressing Laker management of ballast water.

EPA received one comment recommending EPA pursue remedial actions for controlling ANS in the Great Lakes from other vectors before prematurely

imposing a non-BAT compliant equipment standard on new Lakers. The VIDA directs EPA to establish performance standards for vessel discharges not actions for controlling ANS from other vectors. EPA disagrees with commenter's depiction of the equipment standard as non-BAT. EPA's BAT basis for the equipment standard is described in Section IV.B.2. *Equipment Standard Authority and Rationale* of the supplemental notice. Regulating other vectors that contribute to the establishment and/or spread of ANS in the Great Lakes is outside the scope of this rule.

Existing Lakers

Two commenters asserted that the exclusion of existing Lakers from the numeric ballast water discharge standard is contrary to law, arbitrary and capricious, and an abuse of discretion for several reasons. Commenters note that EPA has not made the case as to why the retrofit costs for the existing Laker fleet are not economically achievable. The commenters claimed that EPA did not provide any analysis of the industry-provided estimate of the cost to retrofit the existing Laker fleet so that a third party could evaluate whether this estimate is accurate or if the retrofit costs could be reasonably borne by any vessel. In addition, the commenters stated that EPA's economic analysis did not present existing Laker operating costs and revenues to determine if the cost of implementing a BWMS can reasonably be borne by the industry or a specific vessel class. The commenters also asserted that EPA only presented one alternative – regulating "new Lakers" – and did not present any other alternatives such as evaluating specific classes of vessels or evaluating how extending the implementation period could affect the cost. EPA agrees that it did not determine the actual costs to the industry of installing and operating a BWMS on annual vessel revenue because revenue information from Laker owners is not available. However, EPA estimated retrofit costs which is sufficient for the purposes of establishing BAT under the CWA. See *CMA v. EPA*, 870 F.2d 177, 237–38 (5th Cir. 1989). EPA disagrees with the commenter that an analysis of the industry-provided estimate of the cost to retrofit the existing Laker fleet was not provided such that a third party could evaluate whether this estimate is accurate or if the retrofit costs could be reasonably borne by any vessel. EPA estimated costs based on data from the USCG's (2013b) *Great Lakes Bulk Carrier Engineering and Cost Study, Volume II: Analysis of On-Board Treatment Methods, Alternative Ballast Water Management Practices, and Implementation Cost*, as specifically cited in the supplemental notice. This document includes detailed costs for installing a BWMS ranging from required structural changes, electrical systems, auxiliary systems, shipyard support services, project management, and administrative costs. This document is publicly available and can be found in the docket. EPA's supplemental notice also cited the Choice Ballast Solution's (2017) study, *Technical Engineering Analysis & Economic Feasibility for Ballast Water Management System (BWMS) Installation and Operation on board U.S. Flag Great Lakes Fleet (Lakers)*, as a source of retrofit costs for Lakers. This study is also available in the docket and provides estimated costs to install BWMSs on six

vessel categories ranging from large capacity 1,000-foot Lakers with independent ballast systems to tugs and miscellaneous vessels not otherwise classified. The study addresses both direct capital cost items including the purchase of the BWMS, shipyard support services, structural modifications, piping system modifications, mechanical system modifications, electrical system upgrades, and preparation and coating of ballast tanks and indirect capital costs for items such as project management, engineering fees, and shipyard handling fees.

Based on these studies, EPA estimated the cost for the existing Laker fleet to install BWMSs at $649 million and an additional $9.7 million in annual operating costs. EPA compared the costs developed by the USCG (USCG, 2013b) with the costs developed by Transport Canada (Transport Canada, 2015) for similar vessels and found that costs are similar for filtration and UV. USCG estimated that the cost to install a filtration and UV system on a Laker having 18 separate ballast tanks and pumps is $12.1 million ($2018) while Transport Canada's cost for a filtration and UV system on a similar vessel is $13.5 million ($2018). As EPA explained in the supplemental notice, expanding the equipment standard to the existing Laker fleet would impose more than $500 million in costs to retrofit vessels but importantly with a technology that has well-known operational challenges and would achieve uncertain pollution reductions. Additionally, EPA lacks the detailed information to determine that these costs can be reasonably borne by the industry. EPA's decision not to promulgate a standard of performance for existing Lakers is also grounded in several statutory considerations, particularly the absence of available treatment technology for existing Lakers and the VIDA's provisions directing EPA to pursue new treatment technologies for Lakers. Under the VIDA, Congress defined BAT as within the meaning of CWA sections 301(b)(2)(A) and 304(b)(2)(B), and in accordance with 40 CFR 125.3(d)(3) (or successor regulations). Factors included in these definitions include: the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, the cost of achieving such effluent reduction, non-water quality environmental impact (including energy requirements), and such other factors as the Administrator deems appropriate. As part of the determination of BAT for existing Lakers, EPA identified operational challenges due to the unique nature of the waters of the Great Lakes (e.g., extremely low salinity, high levels of suspended solids, turbidity, icing, filamentous bacteria, and dissolved organic carbon). In addition, the operational profile (e.g., short voyages) and design of these freshwater vessels (e.g., uncoated ballast tanks and piping systems that cannot withstand corrosive ballast water treatment chemicals) are not conducive to certain BWMSs. Requiring the existing Laker fleet to undergo significant retrofitting to install a technology that has known operational challenges in the Great Lakes, and for which Congress specifically requested EPA to conduct research and develop ballast water management solutions for this fleet of vessels, would not represent BAT as defined in the VIDA.

As explained in the supplemental notice, instituting a performance standard for ballast water discharges from existing Lakers before the results of the Great Lakes and Lakes Champlain Invasive Species Program studies are complete could ultimately impede EPA's ability to require better performance from existing Lakers based on more advanced technology that may result from that research program. That is because EPA expects that the owners/operators of existing vessels compelled to undergo a costly retrofit and reconfiguration to fit a current USCG type-approved system would argue in opposition to any future requirements. Importantly, the VIDA's "period of use" provision (33 U.S.C. 1322(p)(6)(C)) deems those vessels to remain in compliance for the life of that system regardless of any revisions by EPA to the performance standards. Further, retrofitting that same vessel for a newer BWMS may require a different configuration that could be cost-prohibitive, further impeding the deployment of more effective technologies that EPA expects to result from the aforementioned ballast water research. Consequently, requiring Lakers to install a BWMS now risks limiting the results of the VIDA-mandated research to only the small universe of Lakers that would be built after a future revision to any regulations finalized in this rule. EPA is currently implementing its seven-year Great Lakes Ballast Water Research and Development plan that is targeted to address the complexities and improve the operation of BWMSs on existing Lakers. This research may provide a sound basis for proposing a new or updated standard, particularly for existing Lakers and those Lakers built in the future.

EPA agrees that the Economic Analysis accompanying the supplemental notice focused on new Lakers and did not provide operating costs and revenues for existing Lakers. Operating costs for existing Lakers are provided in the Choice Ballast Solutions (2017) study, and EPA believes these operating costs for existing Lakers are comparable to the operating costs for new Lakers outlined in the Economic Analysis. For example, Choice Ballast Solutions estimated the annual recurring costs for operating a filtration and UV BWMS on an existing 500 to 800-foot self-unloading barge to be approximately $166,000 per year (2017$). EPA's Economic Analysis estimated the annual reoccurring cost for operating a filtration and UV BWMS ranged between $90,083 and 197,925 (2022$) for a new articulated tug-barge (ATB) and self-unloading bulker, respectively. EPA was not able to determine the impact of operating a BWMS on annual vessel revenue because revenue information was not available. Additionally, no commenters provided EPA with cost information that could be used to supplement the costs provided by the two primary sources referenced here and in the supplemental notice.

Two commenters stated that the Agency's reliance upon the "period of use" provision in CWA section 312(p)(6)(C) is misplaced because the provision does not prevent EPA from regulating existing Lakers. EPA agrees. EPA referenced this provision as a factor for consideration when assessing the equipment standard, but not as a prohibition preventing the Agency from regulating existing Lakers. A more comprehensive explanation of EPA's rationale for not

establishing an equipment standard for existing Lakers is described in the supplemental notice in Section IV.B.3, *Operational, Technical, and Economic Considerations of an Equipment Standard for New Versus Existing Lakers*. The commenters also indicated that the "period of use" provision only applies to the USCG when EPA has already identified the numeric discharge standard, and since EPA did not establish a numeric standard, the provision is not applicable. EPA disagrees with the commenters' reading of the statute suggesting that the "period of use" provision would only be implicated if EPA adopts a numeric standard and then USCG develops a type-approval process to meet that standard. EPA interprets this provision to illustrate Congress' interest in not requiring vessels to install new, expensive, ballast water treatment equipment every time EPA determines there may be a more effective alternative available, particularly because EPA is obligated to review its standards of performance every five years and ballast water treatment equipment is designed to last far longer than that.

EPA also received multiple comments stating that EPA should require an equipment standard for both existing and new Lakers. Commenters also noted the need to establish a deadline for installing BWMS on existing and new Lakers rather than waiting for new technologies to emerge. EPA disagrees with the commenters that EPA should require that BWMS are installed on existing Lakers. An equipment standard for existing Lakers failed to meet the criteria for BAT as defined in the VIDA due to the identified technical and operational challenges. EPA declines to establish set timelines for existing Lakers to install BWMS. EPA is exercising caution considering the VIDA's BWMS "period of use" provision in CWA section 312(p)(6)(C) because, if the equipment standard were applied to the existing Laker fleet, these vessels would be unlikely to benefit from any improved technology from the ballast water research conducted under the Great Lakes and Lake Champlain Invasive Species Program. Additionally, EPA's seven-year Great Lakes Ballast Water Research and Development plan is targeted to address the complexities and improve the operation of BWMSs on existing Lakers. It is difficult to predict when new technologies may arise. As directed by the VIDA, EPA will review the discharge standards at least every five years and revise, if appropriate. EPA agrees with the commenters that EPA should require that BWMS are installed on new Lakers and established such an equipment standard for new Lakers in the final rule. EPA disagrees, however, with the commenters that EPA should establish a deadline for installing BWSM on new Lakers. As mandated by Congress, the VIDA directs the USCG to develop corresponding implementing, monitoring, and enforcement regulations and *to establish the compliance date* for when the EPA standards of performance and USCG regulations are final, effective, and enforceable.

One commenter stated that by delaying implementation the Agency is sacrificing reasonable progress now in favor of an illusion that it will make progress in the future. EPA disagrees on the basis that, as previously stated, an equipment standard for existing Lakers failed to meet the criteria for BAT as defined in the VIDA and therefore it is unreasonable for EPA to require existing Lakers install

BWMS. EPA acknowledges that an equipment standard for new Lakers would only eliminate a small percentage of total organisms (and potential ANS), discharged within the Great Lakes. However, EPA established an equipment standard for new Lakers as an incremental step in requiring the application of BAT that will "result in reasonable further progress" towards the CWA's goal of eliminating the discharge of untreated ballast water in the Great Lakes (CWA section 301(b)(2)(A)). EPA justified the Agency's approach based on the well-settled principle of administrative law that regulatory agencies may "address [a] problem incrementally" and "need not solve a problem in a single rulemaking." *Nat'l Postal Pol'y Council v. Postal Regul. Comm'n,* 17 F.4th 1184, 1197 (D.C. Cir. 2021) (citing *Mobil Oil Expl. & Producing Se. Inc. v. United Distrib. Cos.*, 498 U.S. 211, 231 (1991)).

Commenters also asserted that EPA is creating a disincentive for the construction of new Lakers and an incentive to maintain older existing vessels that are not required to install BWMS. EPA disagrees. The exemption from the requirement to install a BWMS is only one of many factors that enter the decision-making process of vessel owners/operators when evaluating the need to maintain an existing Laker versus building a new Laker. EPA believes the potential increased revenue from the types of commodities a vessel may transport represents a greater determining factor than the requirement for BWMS installation in determining whether to maintain an existing Laker or build a new Laker. Additionally, EPA disagrees that the VIDA requires it to tailor its standards to incentivize new ship building rather than to meet the requirement of BAT.

BWMS operation on Lakers

One commenter stated that they are not aware of any ongoing testing of BWMS technologies that are compatible with Laker operations in the Great Lakes. One commenter noted that EPA relied on generalized statements about turbidity within the Great Lakes while only referencing a single location (Duluth/Superior) demonstrating filtration and transmissivity issues associated with filtration/UV BWMSs. EPA acknowledges commenters point; however, consistent with the VIDA, EPA developed a Great Lakes Ballast Water Research and Development Plan and is currently in the fourth year of the seven-year plan to evaluate technologies and practices that are compatible with Lakers and waters of the Great Lakes. That plan has as one of its objectives "Characterizing BWMS Challenge Conditions in the Great Lakes System." That research will use available information, such as is available through the National Ballast Information Clearinghouse, to identify the ports where the largest volume of ballast is taken up. The plan establishes procedures to sample these locations in such a way as to identify spatial and temporal conditions in these uptake ports. Samples will be collected and analyzed for zooplankton (organisms $\geq$ 50 µm), protists ($\geq$ 10 µm and <50 µm), temperature, salinity, specific conductivity, dissolved oxygen, pH, turbidity, total suspended solids, particulate organic matter, mineral matter, dissolved organic carbon, and UV transmittance. EPA expects the

findings from this research program to inform the Agency for future review and revision of the discharge standards not less frequently than once every five years, as required under CWA section 312(p)(4)(D). Similarly, Transport Canada launched a new program in 2023, the Ballast Water Innovation Program, with a goal to fund research to optimize BWMSs for use within the Great Lakes. EPA's establishment of an equipment standard for new Lakers acknowledges that challenges remain in providing consistent levels of treatment and provides added flexibility to what other vessels discharging ballast water in waters of the United States and waters of the contiguous zone are required to achieve (i.e., a numeric discharge standard).

EPA received one comment requesting that EPA and the USCG publicly disclose the reported issues with BWMS operations in the Great Lakes, namely, all relevant, non-Confidential Business Information on BWMS performance during type-approval testing in the Great Lakes. EPA acknowledges the commenter's request and notes that all relevant data in the Agency's possession is available in the docket.

Environmental and economic impacts

Several commenters addressed the environmental and economic impacts of EPA's approach to regulating Lakers, largely focusing on ANS impacts. One commenter stated that EPA only compared the cost of retrofitting an existing Laker to the cost of constructing a new Laker with a BWMS and ignored the costs associated with the introduction of invasive species. The commenter asserted that the impact of invasive species on Lake Erie's regional environment, economy, and infrastructure would far exceed the total fleet retrofit cost estimates provided by EPA. Similarly, one commenter recommended that EPA evaluate the economic achievability to retrofit existing Lakers with BWMS against the cost incurred by failing to act to protect fisheries and other industries from ANS impacts in the Great Lakes. One commenter also stated that the non-water quality impact analysis should include explicit statements about the impact of tighter or looser standards on the environment, and the resulting impact on public health.

EPA agrees that the Economic Analysis did not compare the cost of retrofitting the existing Laker fleet to the overall economic impacts of the introduction of invasive species. Similarly, EPA did not weigh the possible costs incurred due to ANS impacts on fisheries or other industries, and more broadly did not include explicit statements about the impact of the standard on the environment or public health. Importantly, however, the BAT standard does not require a comparative assessment of the value of the economies or cultural assets impacted by ANS. Under the VIDA, Congress defined best available technology economically achievable by reference to CWA sections 301(b)(2)(A) and 304(b)(2)(B), and in accordance with 40 CFR 125.3(d)(3) (or successor regulations). Factors included in these definitions include: the age of equipment and facilities involved, the

process employed, the engineering aspects of the application of various types of control techniques, process changes, the cost of achieving such effluent reduction, non-water quality environmental impact (including energy requirements), and such other factors as the Administrator deems appropriate. The BAT standard requires standards of performance "to be based on technological feasibility rather than on water quality." *Southwestern Elec. Power Co.*, 920 F.3d at 1005. It is "technology-based rather than harm based" insofar as it requires EPA to set standards that "reflect the capabilities of available pollution control technologies to prevent or limit different discharges rather than the impact that those discharges have on the waters." *Texas Oil & Gas Ass'n v. EPA*, 161 F.3d 923, 927 (5th Cir. 1998) (citing *E.I. du Pont de Nemours & Co. v. Train*, 430 U.S. 112, 130–31 (1977)). In other words, the VIDA tasks EPA with setting a standard that reduces the discharge of pollutants to the minimum level that existing available and economically achievable technology can support. The VIDA does not direct EPA to consider human health or environmental impacts outside of the BAT framework. A discussion of the impacts, including costs, associated with ANS is provided in the Economic Analysis accompanying this final rule, a copy of which is included in the docket.

One commenter stated that EPA did not consider increased air emissions that would result if installed BWMS decrease ballast flow rates and increase corresponding vessel loading/unloading times by up to 75 percent. EPA disagrees with the commenter's assertion that EPA's equipment standard for new Lakers would increase vessel loading/unloading times by up to 75 percent. New Lakers will be designed with a BWMS(s) having a treatment rated capacity to match the cargo loading and unloading rates of the new Laker, such that loading and unloading should remain at approximately 10 hours, creating no incremental increase in carbon dioxide equivalent (CO_2eq.) emissions due to changes in vessel loading/unloading times. As stated in the supplemental notice, EPA is not considering an equipment standard for existing Lakers due to the technical and operational challenges and anticipated disproportionately high costs to retrofit BWMS onto existing Lakers as compared to new Lakers. Therefore, EPA's equipment standard creates no incremental increase in CO_2eq. emissions from the existing Lakers fleet. Additionally, EPA notes that the comment assumes an increase in loading/unloading time for new Lakers but does not, in EPA's view, provide sufficient information to support that assumption because it only references information relevant to existing Lakers.

More generally, though, EPA does agree with the commenter that an equipment standard for existing Lakers would result in increased air emissions due to increased energy demand to operate the equipment. However, EPA disagrees with the commenter's estimate that air emissions would increase between 13 thousand to 550 thousand tons CO_2eq. from the commenter's fleet. The International

Council on Clean Transportation (ICCT)'s *Great Lakes – St. Lawrence Seaway ship emissions inventory*, *2019* (https://theicct.org/wp-content/uploads/2022/03/Great-Lakes-emissions_final.pdf) estimates that emissions by the U.S. bulk carrier fleet for all phases of operation totaled 499 thousand tons CO_2 (506 thousand tons CO_2eq.) in 2019 (*see* Table 2 and Appendix C in the referenced inventory). The ICCT further estimates that bulk carriers emit 91 percent of these emissions while sailing at cruising speeds. Only 2 percent of these emissions occur while at-berth (*see* Table 3 in the referenced inventory). Using these percentages, the U.S. bulk carrier fleet is estimated to emit 462 thousand tons CO_2eq. in 2019 while cruising and 9 thousand tons CO_2eq. in 2019 while at-berth. A 75 percent increase in emissions at-berth would equate to incremental emissions of 7.1 thousand tons CO_2eq., not 13 thousand to 550 thousand tons CO_2eq. as estimated by the commenter. EPA notes that the commenter did not provide a citation for their ICCT emissions study nor documentation of their estimated emissions calculations for their fleet. Therefore, EPA cannot respond further regarding the discrepancies between EPA's and the commenter's estimates.

Binational consistency with Canada

Two commenters articulated that binational consistency should be a factor in establishing BAT for Lakers. Citing a coordinated approach as the best way to address the environmental and economic risks posed by ANS to the Great Lakes, the government of Canada expressed strong support for EPA's recognition of binational consistency as a stated regulatory objective and relevant factor when establishing BAT. Canada also noted that it has taken opportunities to align with U.S. approaches, such adjusting their definition of a new Laker to match the U.S. definition and allowing U.S. public or commercial potable water to be discharged without further management. Another commenter acknowledged that EPA's equipment standard for new Lakers represents a significant step towards regulatory compatibility between Canada and the United States. Many commenters also requested that all vessels be required to install BWMSs by a set date to harmonize with Canada's approach. One commenter noted that establishing a date for all existing Lakers to be equipped with a BWMS that is reasonably aligned with Canda's 2030 deadline would demonstrate a sincerity by the United States to establish binational harmony with Canada. Commenters also stated an equipment standard for all Lakers with a similar deadline is more consistent with the multiple international treaty obligations between the United States and Canada. Another commenter recommended that vessels wishing to proceed with installing BWMSs should be held to the equipment standard for the life the BWMS. The commenter suggested that any updates resulting from new research could be mandated by EPA and the USCG if they are determined to not be economically overbearing or excessive.

Given the international character of much of the vessel industry, EPA deemed it appropriate to consider consistency with international, national, and regional requirements as one factor in its review of BAT. However, while EPA acknowledges the commenters' interest in a consistent or harmonized approach between the United States and Canada for ballast water management, especially for shared waters such as the Great Lakes, EPA is bound to establish its discharge standard consistent with its legal authority under the CWA. Canada's requirements, on the other hand, are based on its obligation as a Party to the BWM Convention, to which the U.S. is not a Party, and that differs from the CWA legal framework in several key respects. Most importantly, under the CWA's BAT standard, EPA is required to demonstrate that a treatment technology is available and economically achievable before it can be the basis for a discharge standard. EPA also acknowledges Canada's alignment with U.S. approaches (e.g., new Lakers defined to include vessels constructed in 2009 or later). Also, as described in this rulemaking, EPA's development of the BAT discharge standard for ballast water did not support establishing a different effective date than included in the final rule. The USCG will establish the compliance date for the EPA discharge standards pursuant to its regulations developed under CWA section 312(p)(5).

Several commenters stated that there is not regulatory precedent for binational consistency as a factor to consider in establishing BAT and that the Canadian approach may be detrimental to U.S.-flagged Lakers. Commenters also noted that the regulated industry did not request binational consistency be included in EPA's considerations. Commenters stated that the equipment standard in the supplemental notice did not result from negotiations through existing binational agreements and therefore does not satisfy any of the comments on the proposed rule recommending Canada and the United States develop a common ballast water management regulatory framework in the Great Lakes. One commenter offered an alternative that, in the name of binational consistency, the Canadian government could adjust their regulations to match the final U.S. regulation. EPA disagrees with the commenters' request to exclude binational consistency as a factor in establishing BAT. EPA is authorized under CWA section 304(b)(2)(B) to consider "other factors the Administrator deems appropriate." As described in the supplemental notice, although not a dispositive consideration under the VIDA, movement towards international consistency is desirable insofar as it does not conflict with other statutory goals. Indeed, in other contexts courts have affirmed that considering alignment with international standards was appropriate. *See, e.g., California v. EPA*, 72 F.4th 308, 317 (D.C. Cir. 2023) ("EPA reasonably recognized the problems of climate change and explained why it chose to harmonize domestic aircraft emission standards with the ICAO standards.").

Occasional trips outside of the Great Lakes System

One commenter recommended that the equipment standard also be applied to vessels that make occasional trips to ports beyond the mouth of the St. Lawrence River or past Anticosti Island. The commenter noted that Canadian vessels that make occasional trips to ports beyond the mouth of the St. Lawrence River spend most of their time operating in the Great Lakes and experience the same difficulties as vessels operating exclusively within the Great Lakes. As an alternative, the commenter suggested vessels whose voyages occasionally extend beyond the Great Lakes boundaries could be offered "deemed compliance" flexibility when operating in the Great Lakes. EPA disagrees. Vessels operating "primarily, but not exclusively" on the Great Lakes are designed to operate outside the Great Lakes and have more ballast water management options available, such as ballast water exchange. These vessels also typically have more treatment technologies available from which to choose, such as would be expected from a vessel with ballast tanks coated to handle the more corrosive saltwater environment outside of the Great Lakes.

Delay in requiring BWMSs

One commenter stated that EPA's interpretation of the VIDA that allows vessels to wait to install a BWMS until both the EPA regulations and the USCG requirements are final implies that the VIDA legislation is a group of ideas that are not finished or finalized. The commenter noted that this leaves the legislation open to new interpretations or opinions under different administrations for concepts such as economically achievable and the establishment of equipment standard which may further delay ballast water protection in the Great Lakes. EPA disagrees that allowing new Lakers to wait to install BWMS until both the EPA regulations and the USCG requirements are final leaves the legislation open to new interpretations or opinions. EPA established the timeline for new Lakers to install a BWMS if constructed after the effective date of the USCG regulations are promulgated. The VIDA directs the USCG to develop corresponding implementation requirements two years after EPA's standards are finalized. These specific requirements do not leave the legislation open to new interpretations. In the VIDA, Congress defined the term "best available technology economically achievable" and stated the factors EPA must consider when establishing BAT. Specifically, Congress defined best available technology economically achievable as within the meaning of CWA sections 301(b)(2)(A) and 304(b)(2)(B), and in accordance with 40 CFR 125.3(d)(3) (or successor regulations). The final rule is explicit regarding EPA's BAT determination for ballast water discharges from both existing and new Lakers, and with the promulgation of the final rule, EPA's BAT determination of an equipment standard will be required by law on all new Lakers. The VIDA directs the USCG to develop corresponding implementing

requirements two years after EPA's standards are finalized. The VIDA does not grant the USCG the authority to reevaluate what is or is not economically achievable for new Lakers or to reopen EPA's final BAT determination. The USCG must develop corresponding implementing regulations within the context that BWMS are now required by law on new Lakers.

Stringency compared with the VGP

Several commenters noted that the regulation is inconsistent with the statutory requirements of the VIDA, which does not exempt Lakers from regulation and mandates that any Federal standard be at least as stringent as the VGP. One commenter stated that EPA failed to provide adequate rational to support the proposed timeline for implementation of BWMS for newly built Lakers that is less protective than the VGP. One commenter also asserted that the economic analysis in the supplemental notice does not provide adequate justification for the rule to be being less stringent than the VGP. EPA disagrees with these commenters. CWA section 312(p)(4)(D)(ii)(II) identifies specific exceptions for EPA to deviate from the VGP stringency baseline for situations where either new information becomes available that "would have justified the application of a less-stringent standard" or "if the Administrator determines that a material technical mistake or misinterpretation of law occurred when promulgating the existing standard." EPA acknowledges the standard for new Lakers is less stringent than the VGP; however, EPA made such a material technical mistake when it failed to acknowledge that the extreme environmental conditions and operational limitations that prevented pre-2009 Lakers from treating its ballast water also affect the ability of other existing Great Lakes vessels (i.e., post-2009 Lakers) from doing the same. The final rule includes an equipment standard that requires all new Lakers constructed after the compliance date to install and operate a BWMS, albeit achieving a numeric discharge standard is not required at this time. Additionally, new information has become available that "would have justified the application of a less-stringent standard." The exemption of all Lakers (including post-2009 Lakers) in the proposed rule was based on a lack of data demonstrating that any available technology was economically achievable that could consistently meet a numeric discharge standard due to the unique set of circumstances that make ballast water management especially challenging for these vessels. The unique nature of the waters of the Great Lakes present challenges including extremely low salinity and high levels of suspended solids, turbidity, icing, filamentous bacteria, and dissolved organic carbon from tannins and humic acid. These environmental conditions can clog filters and inhibit BWMS treatment effectiveness. In addition, the operational profile (e.g., short voyages) and design of these freshwater vessels (e.g., uncoated ballast tanks and piping systems that cannot withstand corrosive ballast water treatment chemicals) are not conducive to certain BWMSs. The proposed rule noted that the few U.S. Lakers that have been built since 2009 are not operating BWMSs to meet the numeric discharge standard due to these challenges. Section VIII.B.1.v.C.1., *Ballast Water Management of Vessels Operating Exclusively on the Laurentian*

Great Lakes, of the proposed rule provides further discussion of the information demonstrating that post-2009 Lakers are unable to meet the VGP discharge requirements, which is new information not reasonably available to the Administrator when EPA issued the VGP.

One commenter disagreed with other commenters' statements—which EPA references in the supplemental notice in Section IV.B.1, *Summary of Proposed Rule and Relevant Comments Received on Vessels Operating Exclusively in the Great Lakes*)—that the proposed Laker exemption and the proposed rule were "inconsistent with the VIDA requirement that the discharge standards be no less stringent…". EPA acknowledges the commenter but notes that the referenced section of the supplemental notice provided a summary of comments on the proposed rule and did not address the validity of such comments. The final rule reflects the totality of comments received and, consistent with this commenter's concern, does acknowledge that the VIDA provides EPA with the authority to impose less stringent discharge standards in certain instances as detailed in CWA section 312(p)(4)(D)(ii)(II).—

Great Lakes and Lake Champlain Invasive Species Program

Several commenters discussed the Great Lakes and Lake Champlain Invasive Species Program, expressing support or opposition, or otherwise suggesting that the program be refocused. One commenter noted that reliance upon the Great Lakes and Lake Champlain Invasive Species Program is misplaced and is unrealistic to avoid setting a requirement now for existing Lakers in anticipation that the research program will discover a superior ballast water management method in the future. EPA disagrees with the commenters' interpretation of the research. As described in Section IV.B.3, *Operational, Technical, and Economic Considerations of an Equipment Standard for New Versus Existing Lakers*, of the supplemental notice, EPA determined that there is no BWMS technology that is BAT for existing Lakers on which to base a performance standard (either a numeric discharge standard or an equipment standard). The VIDA's instruction at section 903(g) for EPA "to develop, achieve type approval for, and pilot shipboard or land-based ballast water management systems installed on, or available for use by, commercial vessels operating solely within the Great Lakes and Lake Champlain Systems to prevent the spread of aquatic nuisance species populations within the Great Lakes and Lake Champlain Systems" is evidence that Congress did not consider such technologies to be currently available and further supports EPA's conclusion. Also, as discussed elsewhere in this comment response, imposing a weak standard prematurely on existing Lakers now would make it harder to impose a more effective standard based on BAT technology expected to result from the Great Lakes and Lake Champlain Invasive Species Program. This is an "other factor" the EPA considered under the legal standard for BAT. Promulgating a standard prematurely would make it harder to roll out a more stringent standard in the future in at least two ways: (1) retrofitting the same

vessel with a present-day BWMS only to later require the installation of a newer BWMS may require a different configuration that could be cost prohibitive and impede the deployment of more effective technologies that EPA expects to result from the ballast water research program conducted under the VIDA (the "period of use" provision shows that Congress wanted to avoid serial retrofits on the same vessel) and (2) EPA the "period of use" provision limits EPA's authority to impose a new standard on an existing Laker subsequent to any type of performance standard established in this rulemaking.

A few commenters stated that the Great Lakes and Lake Champlain Invasive Species Program needs to refocus the program priorities and offered suggestions for new program objectives. Commenters noted that the structure and focus of the program should be reviewed to link project plans and outcomes more strongly with the objectives of the program to achieve results by the program's scheduled end in 2027. For example, one commenter suggested the program focus on shipboard testing and technology optimization at the ports with the greatest ballast water uptake, rather than characterizing challenges in the region. Another commenter suggested that program work to identify and evaluate alternative solutions beyond continuing to explore filtration and UV-disinfection treatment options. For example, in response to EPA's plans to assess the feasibility of mobile or shore-based treatment options, one commenter wondered if some existing Lakers' cargo holds could be transformed to serve as a mobile option for deballasting for shore-based treatment or serve as a supply vessel for approved ballast water to vessels. One commenter noted that the program has not yet produced any results demonstrating that a BWMS capable of meeting Laker needs will be type-approved and available by the time the VIDA regulations are projected to take effect. The commenter stated that BAT technology for Lakers must align with vessel loading and unloading requirements, include technology service networks and customer agreements that permit Great Lakes commodities to be reliably delivered, and meet vessel manning and labor requirements. The commenter requested that EPA disclose to the public its information on the operational problems with BWMS in the Great Lakes. EPA acknowledges commenters input on the research; however, comments on research being conducted for the development of future standards are outside the scope this rule. EPA does expect to consider these comments though as part of its obligation to review these standards at least every five years and update as necessary. EPA also acknowledges the one commenter that expressed general support for the coordinated work on science and research and development under the Great Lakes and Lake Champlain Invasive Species Program and Great Lakes Water Quality Agreement.

Corrections

One commenter reviewed documents in the docket related to stakeholder meetings and provided several corrections. First, the commenter expressed that they could not identify any Lakers that have used ballast water exchange in the Great Lakes. Second, the commenter noted that not all new Canadian-flagged ships (i.e., post-2008) will be in compliance with the Transport Canada September 8, 2024, deadline for installation of a BWMS. The commenter also articulated that, based on discussions with Canadian ship operators, the commenter believes BWMS are not being continuously operated by Canadian vessels. Finally, the commenter highlighted several issues regarding public comments and reports that cite the *Great Waters Research Collaborative: Great Lakes Ship Ballast Water Monitoring Project Technical Report* by Allegra Cangelosi et al., dated May 31, 2018. EPA acknowledges receipt of this comment and has taken the corrections under consideration for the final rule.

Ballast water exchange and saltwater flushing

Several comments expressed concern that the proposed requirements for ballast water exchange and saltwater flushing in § 139.10(e) will force vessels to discharge untreated or partially treated ballast water in violation of the BWM Convention. Commenters also expressed the belief that treatment is the preferred option, while exchange is becoming an outdated option for the management of ANS, comes with inherent safety risks, and should only be considered for limited and exceptional situations. In addition, commenters expressed concern that the shipping industry is taking considerable efforts to reduce air emissions from shipping, and ballast water exchange is a fuel intensive operation with potential for a considerable increase in a vessel's air emissions. One commenter also expressed concern that the exception for design considerations is limited to existing vessels because new vessels are not being constructed to be capable of performing an exchange due to the BWM Convention's focus on treatment, not exchange.

EPA acknowledges the commenters' concerns but notes that the ballast water exchange and saltwater flushing requirements are incorporated into this rule consistent with statutory language in the VIDA. EPA codified statutory language in these regulation as a convenience for vessel operators to combine applicable requirements in one place. Even if EPA were to exclude these requirements from the final rule, vessel operators would still be subject to the statutory requirement to perform ballast water exchange and saltwater flushing consistent with statutory requirements of the VIDA. EPA notes that performing a midocean exchange would not necessarily preclude a vessel from meeting the exchange requirement and adhering to IMO procedures for not discharging untreated ballast water. Such could be accomplished by treating uptake and/or discharge during the ballast exchange and again when discharging in U.S. waters.

Commenters also expressed concern with the safety of such exchange or flushing operations in certain instances. In response, EPA notes that the final regulation incorporates exceptions when such exchange and flushing practices are not required, such

as if complying would compromise the safety of the vessel (§ 139.10(e)(iii)(A)); or is otherwise prohibited by any Federal, Canadian, or international law (including regulations) pertaining to vessel safety (§ 139.10(e)(iii)(B)); or if design limitations of an existing vessel prevent a ballast water exchange or saltwater flush from being conducted in accordance with the regulations (§ 139.10(e)(iv)).

Commenters also requested that EPA require vessels to perform exchange or flushing if discharge noncompliance is known or suspected because of equipment malfunction or failure. EPA disagrees. EPA established uniform technology-based discharge standards of performance that represent the appropriate level of control with which vessels are expected to comply. The commenters' concern regarding potential noncompliance with the standard is appropriately addressed in the USCG implementing regulations that are to ensure, monitor, and enforce compliance with the discharge requirements.

One commenter requested that EPA include the exchange exemption from the VGP for vessels that would have to deviate or delay a voyage to conduct such exchange because the requirements cause significant costs and exhaust emissions. EPA disagrees. EPA incorporated the exchange requirements directly from the VIDA, including the specific list of exemptions. The removal of the exchange exemption for vessels that would have to deviate or delay a voyage to conduct such exchange is consistent with Congress' omission of this exemption from the VIDA. As such, EPA did not include this exemption in the final rule.

EPA received two comments requesting that EPA exempt lightering vessels from the requirement to conduct flushing of empty tanks from the time this regulation becomes effective until the time the vessel is required to comply with the new ballast water discharge standard regulations. The commenters state that many lightering vessels have installed BWMSs already or will install such soon, and that once these systems are online, the issue of ballast water exchange and saltwater flushing is no longer a concern. Commenters noted this request is only for the lightering vessel, not the mother ship from or to which these lightering operations are conducted. EPA interprets this request as applying generally to lightering operations everywhere, except for those vessels entering the Great Lakes. One commenter suggested that arguably, the exchange and flushing requirements in this section are implicitly exempted based on operations that would compromise the safety of the vessel; however, until such time as these vessels are outfitted with BWMS, the commenter suggested these lightering vessels should be expressly exempted. In general, EPA agrees with the commenters that conducting ballast water exchange and saltwater flushing under the operational conditions as described may be difficult or result in a safety concern; however, EPA believes that few if any lightering vessels will be in this situation once these exchange and flushing requirements are required. As provided in the final rule, the exchange and flushing requirements would not apply to any vessel for which the numeric discharge standard compliance date has passed, operating in a single COTP Zone, or if doing so would compromise the safety of the

vessel. Also, importantly, both the 2013 VGP and 2012 USCG ballast water regulations require these vessels to meet the ballast water management requirements, including use of a BWMS, or alternatively conducting a ballast water exchange. In some circumstances, such vessels may have obtained a compliance date extension for installation of a BWMS; however, that would not have absolved the vessel from the requirement to conduct an exchange prior to that date. Thus, these vessels should already be conducting an exchange if they are using that as their compliance method. For those that do not meet an exemption and do not have an extension letter, they should have an installed BWMS. The final rule also incorporates requirements from CWA section 312(p)(10)(C)(ii)(II) specific to ballast water management requirements applicable to voyage patterns in the Pacific region. Notably, those requirements specifically exclude certain lightering operations from the exchange requirement.

One commenter requested that if an exemption for lightering vessels is not possible, EPA should consider whether there is scientific basis for the potential of discharges of ANS from these lightering operations. EPA disagrees. As discussed elsewhere, the ballast water exchange and saltwater flush components of EPA's final rule simply codify the applicable statutory requirements and are not risk-based regulations based on the quality of the receiving waters.

One commenter expressed the importance of retaining the requirement for ballast water exchange prior to a ballast water discharge compliance date for any vessel subject to the ballast water discharge standard. EPA agrees with the commenter and has retained this requirement in the final rule at § 139.10 (e).

Two commenters requested that EPA revise § 139.10 (e)(2)(ii) to insert the text "a ballast water exchange or" as follows for consistency with CWA section 312(p)(6)(B)(i). EPA agrees and updated the final regulatory text to provide for either a ballast water exchange or saltwater flush. These two commenters also requested that EPA revise § 139.10(e)(3) from "Exceptions: Paragraphs (e)(1) and (2)" to "Exceptions: Paragraph (e)(2)," noting that the exceptions only apply to empty ballast tanks. EPA agrees with the commenters that the exception established in the VIDA only applies to empty ballast tanks; however, the final regulation at § 139.10(e) applies to both ballasted tanks, (e)(1), and empty ballast tanks, (e)(2), and for which EPA is providing comparable exceptions to the requirement to perform a ballast water exchange or saltwater flush for empty ballast tanks.

One commenter noted that the flushing requirements are vague, and EPA should provide additional guidance on the procedures. EPA disagrees and points to: (1) the definition of "saltwater flush" included in § 139.10(b), and (2) the USCG implementing regulations that are to specify requirements applicable notably for equipment and practices, monitoring, reporting, recordkeeping, and inspection as necessary to ensure, monitor, and enforce compliance with EPA's discharge standard.

One commenter requested that the requirement for saltwater flushing not apply to vessels with approved BWMS. EPA agrees with the commenter and notes that the final rule at § 139.10(e)(3)(i), and as proposed, does exempt vessels from the exchange and flushing requirements if the contents of an empty ballast tank are treated through a USCG type-approved BWMSs.

One commenter requested clarification for mixed-use ballast/graywater/treated wastewater tanks that their contents would not be commingled with other types of waste effluents and not subject to several discharge requirements altogether if such a tank has been emptied (pumped out until the pump loses suction) and flushed with sea water (refilled and emptied) before it is put to use for another waste effluent type. EPA notes that commingled discharges are subject to the requirements for each of those discharges; however, the details of this specific request are more appropriately clarified in the USCG's implementing regulations under CWA section 312(p)(5).

One commenter noted that vessels that retain all ballast water but do not discharge that ballast water pose no risk to the surrounding environment and suggest that EPA consider revising the requirements regarding exchange and flushing to clarify that vessels with empty tanks containing unpumpable residual ballast water are permitted to retain all ballast or uptake water into empty tanks without being required to perform saltwater flushing. EPA disagrees with the commenter's suggestion. The final rule codifies this requirement as established in the VIDA (CWA section 312(p)(6)(B)).

One commenter requested that EPA clarify if full ballast water exchange, as defined in Regulation D-1 of the BWM Convention or 33 CFR 151.2005, is the requirement, or if a tank flush is adequate. The commenter noted that saltwater flushing and ballast water exchange are significantly different. EPA disagrees with the commenter's implication that the discharge standard is unclear. The final regulation includes definitions for both "ballast water exchange" and "saltwater flush," with the use of these terms differentiated in the discharge standard and incorporated into the final rule consistent with the VIDA.

One commenter noted that ocean exchange does not meet the standards created for ballast water systems and these exchanges just exchange one potential pathogenic virus for another, thereby bringing new viral pathogens to local harbors. The commenter also noted that hazardous waste, toxic metals, and nuclear wastes transported in ballast water also need to be addressed and every vessel should be monitored for such before entering U.S. waters. EPA acknowledges this commenter's concerns but disagrees that these issues are not addressed appropriately in the final rule. The VIDA authorizes EPA to develop a technology-based discharge standard; the commenter provides no information demonstrating that EPA's technology-based standards are inadequate to address the identified concerns. Notably, ballast water exchange at § 139.10(e) is an interim requirement that generally applies only to the period prior to an applicable ballast water

discharge standard compliance date. After the ballast water discharge standard compliance date, vessels generally must meet the ballast water discharge standard, and in most instances, will do so using a BWMS. As required under the VIDA, EPA is required to review its discharge standards at least every five years and update those standards as appropriate. The VIDA also provides other mechanisms, such as emergency orders, to address site-specific concerns related to ANS or water quality (*see* CWA section 312(p)(4)(E)(i)).

Reception facilities

EPA received several comments requesting that vessels be allowed to use off-vessel BWMS with the ballast water then returned onboard for discharge. Several commenters stated that floating and mobile ballast water treatment options are legitimate treatment technologies that have been developed in response to the regulatory requirements for ballast water treatment and they have proven effective, and further, they offer an economically feasible ballast water management option for certain vessels to employ. Commenters also suggested that EPA should clarify that a barge- or trailer-mounted USCG type-approved BWMS may be used to treat and return ballast to a vessel, provided certain criteria are met. Commenters included a list of several items that should be included in such an allowance. These commenters also suggested that by including floating and mobile treatment technologies in the definition of "reception facility," it precludes this industry sector from being a practical and economically feasible solution for ballast water management within the United States. EPA disagrees. The discharge standard, as proposed and finalized, is consistent with prior regulation of ballast water and importantly does not prohibit vessels from using such floating and mobile ballast water treatment options, or for that matter, any other type of reception facility. EPA believes commenters are conflating the ballast water discharge exclusion provided at § 139.10(a)(5) for a vessel that only discharges ballast water to a reception facility with the definition of reception facility provided at § 139.2. The discharge exclusion applies only to the applicability of the VIDA discharge standards. The exclusion does not prohibit a vessel from discharging ballast water to a reception facility, including any fixed, floating, or mobile facility capable of receiving ballast water from vessels and fit for that purpose. The VIDA simply clarifies that discharges to such reception facilities are not subject to the VIDA discharge standard. Also, those reception facilities may opt to use technologies similar or identical to BWMSs used onboard vessels. However, as the water treated at these facilities is not being used as ballast, discharges from these facilities are no longer considered incidental to the normal operation of a vessel and are excluded from regulation under the VIDA as codified in CWA section 312(p). Instead, discharges from a reception facility to waters of the United States or waters of the contiguous zone would be subject to NPDES permitting requirements under CWA section 402.

Commenters also requested that EPA allow a barge- or trailer-mounted facility with a USCG type-approved BWMS to treat and return ballast water to a vessel. Nothing in this

rule is intended to prohibit the use of a barge- or trailer-mounted BWMS as a means of treatment to achieve the ballast water discharge standard. Water that is discharged to a reception facility, treated, and then returned to the original vessel for use as ballast would then be considered ballast water for purposes of EPA's ballast water discharge standard. Ballast water that is sent to a reception facility, treated, and then returned to the original vessel but not for use as ballast water (e.g., simply for the purpose of discharging to waters of the United States or waters of the contiguous zone), would no longer be considered ballast water and not authorized for discharge under the VIDA discharge standard and otherwise subject to discharge requirements under CWA section 402. Any subsequent discharge of ballast water to waters of the United States or waters of the contiguous zone is expected to meet the applicable requirements in the ballast water discharge standard. It is important to note that these standards will apply in conjunction with future USCG implementing regulations. In addition to monitoring, inspection, reporting, and recordkeeping requirements, the USCG regulations are to include requirements governing the design, construction, testing, approval, installation, and use of marine pollution control devices as are necessary to ensure compliance with the EPA discharge standard (CWA section 312(p)(5)(B)). As such, EPA expects the USCG implementing regulations may provide additional requirements specific to the installation and operation of BWMSs, including the application of the discharge standard to ballast water taken onboard from a reception facility.

Commenters also stated that in the proposed rule, EPA acknowledges and accommodates the difficulties faced by inland barges with an industrywide exemption but leaves unmanned/unpowered seagoing barges in an economically and practically difficult position to comply with the ballast water discharge standard. Commenters further stated that no consideration is given to these vessels or operations in EPA's Regulatory Impact Analysis (RIA). EPA disagrees. The exemption in § 139.10(e)(3)(v) for vessels operating exclusively within "internal waters" comes directly from the VIDA. As to the RIA, the applicability of the requirements to unmanned/unpowered seagoing barges but not inland barges is consistent with existing USCG ballast water discharge requirements in 33 CFR 151 subpart D. As such, the Economic Analysis (EA), which updates and replaces the RIA to accompany the final rule, focuses on the change in burden from the baseline (i.e., pre-VIDA regulation), does not address any change in cost or burden for this class of vessels.

EPA received one comment that EPA failed to adequately consider shore- or barge-based technology as BAT. EPA disagrees. EPA conducted a thorough assessment of ballast water reception facilities, as described in the proposed rule, and determined that reception facilities are not technologically available or economically achievable at this time as the basis for a uniform federal discharge standard for marine pollution control devices. The commenter offered no additional information or solutions to address any of the significant technological and economic barriers identified in EPA's assessment. The commenter cited "ecological consequences" and the "costs and potential damage from

proliferation of known and unknown invasive species" as a rationale for selecting shore-based or barge-based reception facilities as BAT. However, the VIDA requires that the discharge standards be technology-based and not based on environmental risk, meaning that they must be technologically available and economically achievable after consideration of the factors specified in CWA section 304(b). *See Natural Resources Defense Council, Inc. v. EPA*, 859 F.2d 156, 208 (DC Cir. 1988) ("A technology-based standard discards its fundamental premise when it ignores the limits inherent in the technology. By contrast, a water quality-based permit limit begins with the premise that a certain level of water quality will be maintained, come what may, and places upon the permittee the responsibility for realizing that goal."). The VIDA does, however, include several non-regulatory programs intended to improve understanding of invasive species risks from vessel discharges and to establish methods for addressing these risks. These include: (1) an Intergovernmental Response Framework, codified in CWA section 312(p)(6)(E), to respond to ANS risks using emergency BMPs; (2) a grant program established in Section 903(f) to prevent, mitigate, and restore areas affected by aquatic invasive species, and (3) a program in Section 903(g), to be administered by EPA's Great Lakes National Program Office, to monitor ANS and vectors likely to be contributing to the establishment and spread of ANS, to assist with response actions to prevent or stop the establishment or spread of ANS, and to facilitate meaningful federal and state implementation of the regulatory framework including monitoring, shipboard education, inspection, and compliance conducted by the states. EPA acknowledges that while reception facilities are not currently a BAT option for ballast water, the option will continue to be explored at least every five years as required in the VIDA. The commenter also suggested the possibility of using reception facilities as "a limited option for high-risk situations." EPA considered, but ultimately rejected, such an approach because the VIDA calls for applying a technology-based standard, not a risk-based standard, and other provisions of the VIDA contain provisions specifically targeted at geographically or temporally discrete high-risk situations, including the use of orders requiring the use of emergency BMPs for specified regions or categories of vessels (CWA section 312(p)(4)(E)); the establishment of state no-discharge zones (CWA section 312(p)(10)(D)); and the Intergovernmental Response Framework (CWA section 312(p)(6)(E)).

Vessels entering the Great Lakes

One commenter inquired as to the basis for requiring a complete ballast water exchange or saltwater flush for vessels entering the St. Lawrence River, specifically if a vessel's ballast water treatment system is type-approved with no limitations including fresh and/or brackish water. EPA's standard is based on the VIDA, specifically a new CWA subsection 312(p)(10)(A), which requires, with some exceptions, such complete ballast water exchange and flushing. EPA does not have the authority to create further exceptions to that requirement that are not grounded in the statute.

One commenter requested that EPA not require Canadian domestic vessels operating in the Gulf of St. Lawrence to carry out a ballast water exchange 50 NM into the Atlantic Ocean. The commenter noted that such a requirement poses significant operational costs for domestic Canadian vessels, can pose higher safety risks by taking vessels outside of generally more sheltered waters and into the open ocean waters, and adds other environmental impacts in terms of increased air emissions. The commenter suggested EPA consider including area exemptions for regional Canada-United States domestic voyages, similar to the concept used in the VIDA for the Pacific Region, and referenced Transport Canada's original ballast water exchange requirements that provided an alternative exchange zone in the Gulf of St. Lawrence. EPA disagrees with commenter's suggestion that it is appropriate to exempt certain vessels, as was done for the Pacific Region. The requirement in the VIDA is clear, and while exclusion zones are included for the Pacific Region, Congress did not include such areas for the Great Lakes. EPA does not have the authority to create further exceptions to that requirement that are not grounded in the statute. The final rule's exchange and flushing requirement, consistent with the VIDA, provides several flexibilities, some of which address concerns raised by the commenter. For example, a vessel is not required to conduct such an exchange or flushing if complying would compromise the safety of the vessel or design limitations of the vessel prevent such exchange from being conducted. Similarly, a vessel can avoid conducting such an exchange if the USCG certified no residual ballast water or sediments onboard or all ballast water is retained while in waters subject to the discharge standard.

One commenter noted that the requirements in the proposed standards are not strict enough to protect culturally and ecologically significant areas in the Great Lakes. Notably, the commenter suggested EPA should attempt to achieve zero introductions via ballast water discharges and that a maximum limit of 10 living organisms per unit of water does not protect the Great Lakes ecosystems from new invasive species invasions. While EPA views the ultimate goal of the CWA as zero discharge, in the technology-based portions of the Act, the requirements are to be available and economically achievable after consideration of the relevant statutory factors. The final discharge standard represents BAT considering the relevant information in the record of available technology for managing ballast water. EPA points out that the VIDA requires EPA to review its discharge standard regulations at least once every five years and update the standards as appropriate based on available information. As such, as technology improves, EPA expects to update its standards accordingly.

One commenter suggested EPA impose more preventative measures than proposed, including requirements for eDNA monitoring, subsidizing new treatment technologies, increasing early ANS detection efforts, closing and re-engineering the Chicago spillway to avoid ANS in the Great Lakes from migrating to other waterbodies and vice versa, and considering transferring all seafaring vessel cargo to Great Lakes-only vessels or trains for transport. The commenter noted that much money could be saved by improving prevention measures. EPA appreciates commenters suggestions for preventative approaches to consider for addressing ANS; however, EPA disagrees with the

commenter's suggestion that such requirements would be consistent with the authority granted to EPA under the VIDA to establish a uniform technology-based federal discharge standard. Several of the commenters' suggestions are addressed by other programs and provisions of the VIDA. For example, the VIDA established the Great Lakes and Lake Champlain Invasive Species Program and identifies several purposes to address commenter's concerns, such as to monitor ANS and vectors likely to be contributing to the establishment and spread of ANS; to assist with response actions to prevent or stop the establishment or spread of ANS; and to facilitate meaningful federal and state implementation of the regulatory framework including monitoring, shipboard education, inspection, and compliance conducted by the states.

Pacific Region

EPA received several comments on the proposed exemption to Pacific waters ballast water exchange for voyages "between ports or places of destination within the same county of the State of Hawaii." Commenters suggested removal of the limitation that the exemption only applies "if the vessel does not transit outside of state marine waters during the voyage," as there are counties in the state of Hawaii that are comprised of multiple islands separated by non-state marine waters. This results in a situation where a voyage can be intra-county but traverse outside state waters. Commenters point out that the current language would require a vessel that is on an intra-county voyage, which may traverse a mile or two outside state waters, to then travel another 50 NM from shore to conduct a complete ballast water exchange. EPA disagrees with this request to remove the limitation of the exemption. As noted by commenters, this specific language of this exemption is mandated by Congress directly in the VIDA. EPA considered whether the prohibition could be applied only to voyages from outside state waters into state waters, but the plain language of CWA section 312(p)(10)(ii)(II)(bb)(GG) clearly contemplates voyages with the same county. By its terms, this provision only allows the exemption "if the vessel does not transit outside State marine waters during the voyage." Thus, EPA does not have authority to expand this exemption further. As such, EPA retained the exemption in the final rule as it was proposed.

EPA received several comments on the proposed exemption to Pacific waters ballast water exchange for ballast water exchange in Pacific waters with low-salinity ballast water by meeting the numeric discharge limit for "[o]rganisms less than 50 micrometers and greater than or equal to 10 micrometers: Less than 1 living organisms per 100 milliliters (mL)." Commenters noted that the limit of 1 living organism per 100 mL is an error and should be revised to 1 living organism per 10 mL. EPA acknowledges a transcription error in the low salinity ballast water standard and the final rule reflects the correct standard of "less than 1 living organism per 10 milliliters (mL)" as mandated by Congress directly in the VIDA (*see* CWA section 312(p)(10)(C)(iii)(II)(bb)).

With respect to this portion of the rule that essentially copies additional VIDA statutory provisions (CWA section 312(p)(10)(C)(iii)), EPA received several comments requesting clarification on the requirement for conducting a complete ballast water exchange for any "commercial vessel that transports ballast water sourced from waters with a measured salinity of less than 18 parts per thousand and voyages to a Pacific Region port or place of destination with a measured salinity of less than 18 parts per thousand." The commenters requested that EPA clarify how salinity is to be measured/sampled, including incorporating spatial and temporal variation. Commenters also requested that EPA identify the locations of areas of low salinity on "live" nautical maps. EPA believes that these comments are outside the scope of this rule because the commenters' concerns are associated with the implementation of these ballast water requirements, which are to be addressed in USCG's promulgation of implementation, compliance, and enforcement regulations.

EPA received several comments stating that standards of performance for the ballast water treatment compliance alternative for low salinity ballast water are not currently measurable or achievable (i.e., standards up to 100 times more stringent than the existing discharge standards). EPA agrees with commenters as stated in the proposed rule: "[c]urrently, there is not a USCG type-approval process for BWMS to demonstrate the ability to achieve this more stringent standard. Therefore, vessels from low salinity waters would need to continue to conduct exchange until such a process is developed and BWMS are approved to meet that more stringent standard." As noted by commenters, the more stringent standard for low salinity ballast water is mandated by Congress directly in CWA section 402(p)(10)(C)(iii); these standards are not subject to substantive revision by EPA. As such, final rule retains this requirement.

Commenters requested clarifications and revisions to the ballast water exchange requirements and exemptions. One commenter requested that EPA expand the ballast water exchange requirement for Pacific waters to include all areas of the Arctic, from the Bering Strait north. EPA interprets this comment to mean extending the requirement to vessels operating in a port or place of destination within the Pacific Region and a port or place of destination in the Arctic (i.e., not limited to the Pacific Coast of Canada or Mexico north of parallel 20 degrees north latitude, inclusive of the Gulf of California). Two commenters requested that the exemption for ballast water exchange for voyages within the same COTP Zone in the state of Alaska be removed. EPA notes that the ballast water exchange and exemption requirements at § 139.10(g) are mandated by Congress directly in the VIDA (*see* CWA section 312(p)(10)(C)(ii)(II)(bb)(EE)). As such, EPA retained the requirement in the final rule, in accordance with the statute.

Commenters requested that EPA clarify the application of the exemptions and identify the exempted areas for transparency purposes. Commenters also requested that EPA clarify how the ballast water exchange and ballast water treatment procedures are to occur, including safety and vessel design exceptions to exchange. The commenters'

request for clarity regarding the implementation of these ballast water requirements is outside the scope of this rule. The USCG is responsible for promulgation of implementation, compliance, and enforcement requirements pursuant to CWA section 312(p)(5).

One commenter expressed concern that the ballast water requirements are confusing and potentially contradictory. EPA acknowledges that the VIDA is complex legislation which unavoidably results in complex regulatory language. EPA is receptive to recommendations to simplify the regulatory language, while also meeting the requirements of the VIDA; however, the commenter did not provide alternative language for EPA's consideration.

One commenter stated that EPA used the term "exchange or saltwater flushing plus treatment" in the preamble but not in the regulatory text. A search of the proposed rule preamble for the term "exchange or saltwater flushing plus treatment" reveals only one occurrence in the text on page 67856. This text regards vessels entering the Great Lakes through the St. Lawrence River (§ 139.10(f)), and not § 139.10(e) or § 139.10(g) as stated by the commenter. EPA disagrees with the commenter that use of the term in the preamble is confusing; exchange or saltwater flushing plus treatment is a long-standing and commonly used abbreviated name for ballast water management requirements for vessel entering the Great Lakes.

Bilges

Numerous commenters requested additional information or clarification on terminology and definitions used for bilges. First, one commenter suggested that EPA define "bilge" and "bilgewater" to improve clarity, while another requested that EPA define the term "residue." While EPA did not define "bilge" or "bilgewater" in § 139.2, *Definitions*, EPA notes that the regulatory text at § 139.11(a) specifies what is meant by the terms ("The requirements in paragraphs (b) through (d) of this section applies to bilgewater, which is the discharge of wastewater from the bilge consisting of water and residue that accumulates in a lower compartment of the vessel's hull below the waterline. This includes, but is not limited to, any water and residue from a cargo area that comes into contact with oily materials or a below-deck parking area or other storage area for motor vehicles or other motorized equipment.") EPA also updated the introductory sentence of the bilges preamble to clarify that residue may include materials such as oil, grease, and metals. Another commenter requested that EPA remedy inconsistent terminology used for measurements of bilge discharges, including "oil," "oily," and "oil and grease." EPA notes that "oil" and "oily mixture" are defined in the rule, while the topic of "oil and grease" is addressed in its own section of the preamble as a designated conventional pollutant under 40 CFR 401.16. The standards for bilges include a reference only to "oily materials" where EPA uses "oily" with its commonplace meaning – "of, relating to, or consisting of oil" and/or "covered or impregnated with oil." Two commenters submitted

comments about the federally-protected waters provisions, requesting an explanation as well as inquiring whether there is evidence demonstrating that properly treated bilgewater has a negative impact on such waters. Per the requirement of the VIDA for EPA generally to adopt standards that are no less stringent than the 2013 VGP, EPA is prohibiting or limiting discharges in federally-protected waters consistent with the 2013 VGP requirements established for "waters federally-protected for conservation purposes." EPA determined that the requirement is consistent with the VIDA, environmentally protective of waters that are likely to be of high quality and/or consist of unique ecosystems, and an achievable standard that was already in place under the VGP. Commenters provided no information to justify revising this standard to be less stringent than the existing VGP requirement.

Some commenters requested clarification or consideration from EPA regarding certain bilge operations and discharges. One commenter noted that bilges from small craft carried by or operated from vessels subject to the VIDA may contain antifreeze or seawater and asked for EPA to consider such discharges in the rule. EPA agrees with the commenter that antifreeze may accumulate in the bilge of vessels operating in cold climates, for example, due to leaks from engine and machinery operation and maintenance. However, the small vessels identified in the comment are not covered by the VIDA rulemaking if less than 79 feet in length. Similarly, if the contents of the bilge of a small vessel was pumped out and subsequently discharged by the vessel carrying the small vessel, such a discharge would no longer be incidental to the normal operation of the vessel and therefore also not covered by this rule. Intentional addition of antifreeze to the bilge or failure to properly maintain vessel equipment would produce a discharge that is not incidental to the normal operation of the vessel.

Another commenter requested clarity on handling non-machinery bilges, as operational questions arise in dealing with container vessel cargo hold bilges and occasional flooding, and how and where the vessel can discharge this water. Discharges from non-machinery bilges that may contain oil must meet the oil-related discharge requirements set forth in the general discharge standards detailed in subpart B as well as other relevant laws (*see* Section VIII.A.3., *Oil Management*, and § 139.6, *Oil management*). Per the 2012 Guidelines for the Implementation of MARPOL Annex V, cargo material contained in the bilgewater of the cargo hold should not be treated as cargo residues (i.e., garbage) provided that the cargo material is not harmful to the marine environment and the bilgewater is discharged from a loaded hold through the vessel's fixed piping bilge drainage system.

EPA solicited information from commenters regarding the feasibility of requiring type-approved systems capable of meeting a 5 ppm numeric discharge standard, as well as the cost and availability of oil content monitors (OCMs) capable of consistently and accurately determining oil content at these low detection levels when considering margin for error. The majority of commenters indicated that EPA should not establish a new

standard more stringent than the existing 15 ppm standard under other applicable authorities. Three commenters explained that they are not aware of treatment systems that can reliably meet a numeric discharge limit of 5 ppm on an ongoing basis, while an additional commenter mentioned the effectiveness and reliability of the equipment used to achieve the existing 15 ppm level. Two commenters opined that a 5 ppm standard may be achievable on a small proportion of the first commenter's member vessels (U.S.-flagged Great Lakes fleet) or the second commenter's new member vessels (tankers) but would require replacement of existing oily water separators and recalibration or replacement of existing OCMs. However, one of these commenters further explained that, while modern OCMs may be capable of measuring to 5 ppm, OCM functionality can be disrupted by a small amount of sediment or other contaminants. In a similar vein, one commenter noted that OCM measurements frequently differ from analytical results, but that OCMs are available employing UV technology for detection. The commenter did not provide further detail documenting the effectiveness or cost of these UV technology OCMs. EPA received one comment recommending that a 5 ppm discharge limit be adopted. The commenter asserted that there are available systems that can achieve a 5 ppm discharge and cites a 2011 EPA report; however, the comment did not include any supporting information regarding feasibility of such a Federal standard, including whether OCMs can accurately detect at this level. Based on the information already considered by EPA and discussed in the preamble of the proposed rule (Section VIII.B.2., *Bilges*), as well as the information provided by commenters and described above, EPA determined that it will not impose a different discharge standard in place of the 15 ppm limit already established under existing regulations. Additionally, as discussed below, EPA has codified the 15 ppm requirement in its these regulations at 139.11(c) for clarity.

Expanding on the discussion noted above, several commenters encouraged EPA to coordinate with the IMO in advance of any changes to the discharge limit. While EPA agrees that coordination with the IMO and other countries is important, the VIDA requires EPA to develop Federal standards of performance that are technology-based (BPT, BCT, and BAT) independently of requirements in place under the IMO. Given the international character of much of the vessel industry, however, EPA deemed it appropriate to take into account consistency with international, national, and regional requirements as one factor in its review of BAT for all discharge standards promulgated in this rule.

Another commenter recommended the use of total aqueous hydrocarbons (TAqH) or total aromatic hydrocarbons (TAH) in lieu of a ppm oil standard. EPA disagrees. Because oily water separators and OCMs are type-approved based on a ppm standard, EPA's technology-based standards for discharges containing oil, such as those from the bilge, use this metric. The commenter did not supply any reasoning for why TAqH or TAH is preferred over ppm of oil, nor provide examples of technologies that have been tested and approved to a particular TAqH or TAH standard. Another commenter recommended that EPA and the USCG review the availability of adequate port reception facilities if

discharge standards are made more stringent. EPA did not make the limits more stringent for the technology-based reasons described above, namely the feasibility (technical availability) of such a Federal standard, including whether OCMs can accurately detect at this level.

One commenter agreed with the prohibition of the discharge of flocculants or additives outside the use of an oily water separator, the use of additives to remove sheening in discharges, and discharges in federally-protected waters. The commenter also agreed that discharges of bilgewater should occur only while a vessel is underway. EPA acknowledges the commenter's support for the proposed standards.

One commenter indicated that the bilge discharge limits are missing from the proposed standards. EPA notes that while bilge-specific provisions did not contain a ppm discharge standard, EPA more broadly addressed oily discharges, including those originating from bilges, in the general standards section of the proposed and final rules. Section VIII.A.3., *Oil Management*, and the regulatory text at § 139.6, *Oil management*, not only contain general standards of performance that apply to all vessels and incidental discharges covered by the rule, as appropriate, but also explains the applicability of other pertinent provisions of Federal law, such as CWA section 311 and the Act to Prevent Pollution from Ships (APPS, as implemented at 33 CFR part 151) that address discharges of oil from vessels, including the 15 ppm oil content limit. However, in light of this expressed confusion and for consistency with the VGP, EPA determined that it is appropriate and clearer to include the 15 ppm oil content limit directly in the bilges regulatory standard. The preambles for the proposed and final rules discuss at length the availability of systems capable of meeting the 15 ppm limit and the relevant existing requirements for vessels pursuant to APPS. In the interest of clarity, consistency with the VGP, and the fact that this numeric limit represents BAT for discharges from the bilge, § 139.11(c) requires that bilgewater discharges from any vessel of 400 GT and above must not have an oil content that exceeds 15 ppm.

Another commenter opposed the removal of the VGP BMP on minimizing production of bilgewater. The general standards in both the proposed and final rules address the commenter's concerns. Section VIII.A.1., *General Operation and Maintenance*, discusses the overarching requirement to minimize discharges, which includes discharges from bilges. The requirement to generally minimize discharges necessarily includes minimizing production of bilgewater or retaining bilgewater in onboard storage.

EPA notes that a number of commenters provided recommendations on the proposed bilges standards that are outside the scope of EPA's rule and largely relate to the USCG's responsibilities under the VIDA (e.g., implementation and enforcement). Briefly, these include a request that OCM discharge data be submitted and compared to the oil record book prior to a vessel calling on a U.S. port, a request that the USCG review the scope and frequency of all oily water discharge reporting to streamline administrative

requirements, a request to require a flow switch on the OCM inlet to ensure that there is a sample through the measuring cell, and the addition of a requirement that vessel operators document compliance in shipboard logs and plans and provide rationale if a discharge from the bilge could not be minimized or eliminated. As stated above, these requests relate to USCG's implementation responsibilities under the VIDA and are outside the scope of EPA's rulemaking.

One commenter requested that EPA include for bilges, as well as all other incidental discharge sections, the ballast water discharge standard for organisms found at CWA section 312(p)(10)(C)(iii)(II)(bb). The provision referenced by the commenter is an exception to the low-salinity ballast water requirements for commercial vessels voyaging to a port or place of destination in the Pacific Region that is operating a type-approved BWMS capable of achieving certain standards or performance specific to organisms. EPA disagrees with the commenter's request since the identified provision relates to ballast water, which is different in meaningful ways from bilgewater. EPA has not identified organisms as a pollutant of concern requiring control in discharges from the bilge and EPA is not aware of any technology designed to specifically treat organisms in bilgewater. Additionally, EPA is not aware of any vessel that is piped to perform sequential treatment of bilgewater by an oily water separator and BWMS, nor does EPA have information demonstrating the effectiveness of this manner of treatment. As such, EPA determined that neither an exception related to ballast water requirements nor the application of an organism limit of less than one per 10 mL is appropriate for inclusion in the bilges standard.

One commenter noted that the proposed rule did not identify a preferred technology for bilge cleaning. EPA disagrees with the need to prescribe how to clean the bilge, as the standards instead relate to discharges from the bilge.

Finally, several commenters opposed the change to allow all vessels, including vessels of 400 GT and above, to discharge treated bilgewater while underway anywhere, except in federally-protected waters. Upon review, EPA agrees with the commenters that the proposal was less stringent than the VGP by removing the requirement that discharges not occur within 1 NM, if technologically feasible. The proposed rule discussed how the VGP requirement for discharging while underway, which was triggered if vessels operate outside of waters subject to the VGP at least monthly, was difficult to implement and led to confusion about whether and when a vessel may be authorized to discharge bilgewater when not underway. The proposed rule did not, however, justify the removal of the 1 NM requirement. Several of the VGP's and this rule's requirements are based on a vessel's distance from shore, and vessels have the capability to adjust the timing and location of bilgewater discharges. EPA does not have a basis for being less stringent that would be consistent with the exceptions laid out in CWA section 312(p)(4)(D)(ii)(II). As such, EPA updated § 139.11(c) to require that bilgewater discharges from any vessel of 400 GT

and above occur when the vessel is underway *and, if technologically feasible, at least 1 NM from shore* (emphasis added).

Boilers

EPA received one comment articulating support for the proposed standards for boilers. EPA acknowledges the commenters' support.

Cathodic protection

EPA received several comments on the proposed cathodic protection standard suggesting revision or clarification of the standard. One commenter suggested that EPA could encourage as a BMP the selection of anodes based on toxicity. EPA agrees. The final standard, in § 139.13(c), now specifies, generally consistent with the 2013 VGP, that operators consider using less-toxic metals when selecting sacrificial anodes. The Agency acknowledges that consideration of anode materials may require a more thorough assessment of potential practical challenges based on vessel voyage destinations. For example, when in harbors or estuaries with high pollutant loads, zinc is the preferred anode material for vessels that spend time in those waters because of concerns with pollutants causing aluminum anodes to passivate and lose effectiveness.

One commenter requested that EPA revise the standard to exempt vessels operating in a single COTP Zone on an inland route but did not provide an explanation or data to justify such a change. Presumably, this request is akin to the exemptions from the numeric ballast water discharge standards for any vessel that takes on and discharges ballast water exclusively in the contiguous portions of a single COTP Zone or that does not travel more than 10 NM and passes through no locks. EPA disagrees with the requested revision. For ballast water, this exemption is designed to control the transfer of ANS because the distance between uptake and discharge locations is an important consideration, as discussed in greater detail in the comment response for § 139.10, *Ballast tanks*. Conversely, the cathodic protection standard is designed to control not only the transfer of ANS but also the discharge of toxic metals. A vessel's limited operating range is not a valid basis for exempting such vessels from a requirement to control the discharge of toxic metals.

One commenter requested that EPA revise the cathodic protection standard to only apply to new or replacement flush-fit anodes and then only during periods of maintenance such as drydocking. EPA disagrees. The final standard is a continuation of a requirement from the VGP that did not limit the flush-fit requirement to only new or replacement anodes during periods of maintenance. The commenter suggested that the flush-fit requirement was "infeasible," but the commenter did not address that the standard has already been implemented for years under the VGP or otherwise provide a rationale for the requested modification. One commenter also requested that EPA clarify the space measurement

between the anode and hull to be considered flush-fit. EPA disagrees that further clarification is required in the standard. Notably, when anodes are mounted consistent with manufacturers' specifications and in such a way as to prevent or significantly minimize the potential for hotspots for fouling organisms, a management practice recommended by IMO in MEPC.207(62), the vessel would be expected to be compliant with the cathodic protection requirements. For example, anodes can be made to be flush-fit by mounting the anode flush to the hull, adding a rubber backing pad between the anode and the hull, or caulking the gap.

EPA also received one comment on the supplemental notice indicating that EPA did not define the term "hotspots" in § 139.13(b) and suggested that the final rule instead use the term "niche areas" when defining the spaces between any flush-fit anode and backing. EPA disagrees with the commenter's suggestion. Use of the concept "hotspots" is consistent with the VGP. The entire anode area, not just the space between the anode and backing, is considered a niche area. The final rule requires additional measures to address those spaces in the areas of the anode particularly susceptible to biofouling.

Chain lockers

Many commenters expressed concern regarding the rinsing of anchors and anchor chains prior to entering the waters of the contiguous zone and suggested EPA instead consider requiring the BMP of rinsing during hoisting. The final standard requires anchors and anchor chains to be rinsed prior to entering the waters of the contiguous zone and after the last use of the anchor outside of the contiguous zone. The BMP suggested by commenters – to rinse anchors and anchor chains during hoisting – is one method to potentially comply with the foregoing standard. However, EPA does not agree with the need to modify the standard to require that the rinsing occur during hoisting specifically. One commenter suggested revising the standard language to include "[r]insing of the anchor and chain may occur when the anchor is retrieved at the commencement of the voyage or when the anchor was last retrieved on a previous voyage." EPA agrees and included the following language in § 139.14(d) "…rinsing when the anchor is retrieved at the commencement of the voyage or when the anchor was last retrieved on a previous voyage, so long as the rinsing occurs after the last use of the anchor beyond waters of the contiguous zone." One commenter requested clarification as to whether the retrieval and required rinsing during hoisting is considered "rinsing" for purposes of fulfilling this requirement. EPA considers this to be adequate in meeting requirements before entering the contiguous zone so long as such rinsing occurs after the last use of the anchor outside of the contiguous zone. One commenter sought clarification regarding whether there is an established time limit between rinsing and entering waters subject to the rule. EPA does not specify any timeframe between rinsing and entering the contiguous zone but does require that the rinsing occur after the last use outside of the contiguous zone. Another commenter suggested that rinsing of anchors and anchor chains is unenforceable, and that proof of compliance is impractical, as it requires vessels to conduct actions outside the

boundaries of the waters subject to the rule. EPA disagrees. EPA can require actions be taken (e.g., rinsing of anchor chains or midocean exchange of ballast water) outside of waters of the U.S. and waters of the contiguous zone acknowledging that a vessel operator's failure to take such action would cause a vessel to be violation of these standards if, in this case, the vessel dropped that unrinsed anchor in waters of the U.S. or waters of the contiguous zone. Also, EPA's regulation of chain rinsing is consistent with the VGP. One of the legislative purposes of the VIDA is to establish uniform national incidental discharge regulations that are as stringent as the VGP, except in those circumstances specified in CWA section 312(p)(4)(D)(ii)(II). In Part 2.2.8 of the VGP vessel operators are required, when technically feasible, to periodically clean, rinse, and/or pump out of the space beneath the chain locker (preferably midocean) prior to entering waters of the United States if the anchor had been lowered into any nearshore waters. The requirements in the final rule are consistent with those in Part 2.2.8 of the VGP.

One commenter requested that EPA clarify that requirements in this section apply to accumulated biological organisms and sediment in addition to precipitation and seawater. EPA agrees and revised the language in § 139.14(a) and (c) to that effect.

One commenter requested that EPA clarify that the prohibition on discharging accumulated water and sediment from any chain locker into federally-protected waters does not include rinsing anchors and anchor chains in federally-protected waters as they are being raised after anchoring in those same waters. EPA acknowledges that discharges from the rinsing of anchors and anchor chains in federally-protected waters is authorized when raised after being anchored in those same waters.

Decks

Several commenters requested clarification regarding discharges of precipitation and sea water from decks, well decks and bulkhead areas, and suggested that runoff from rain, other precipitation, and seawater should be treated differently than washdown as it is infeasible to collect. One commenter requested verification that vessels will not be responsible for rainwater runoff if decks are in "broom clean" condition, well-maintained, and protected from oil and other leaks. In the preamble to the final rule, EPA clarified that precipitation, flooding, and water that otherwise washes overboard are all included in the standard and are authorized for discharge provided the requirements (e.g., BMPs) in the standard are followed. EPA disagrees that runoff from rain, other precipitation, and seawater should be treated differently, as the BMPs included in the rule can also assist with minimizing constituents in discharges from these sources.

One commenter provided revised text related to the definition of broom clean conditions including the addition of spills and residues; this is addressed in the comment response for § 139.2, *Definitions*. Several commenters also advocated for the removal of §

139.15(d) in the proposed rule ("Control measures must be used to minimize the introduction of on-deck debris, garbage, residue, and spill into deck washdown and runoff") on the basis that it is repetitive with the broom clean definition. EPA clarified in the preamble to the final rule that, consistent with the VGP and USCG regulations, "broom clean" condition is intended as a BMP to address tank and cargo residues and that spills may be more appropriately addressed through other BMPs in the rule such as using coamings, drip pans, and other control measures. EPA disagrees with the removal of control measures in § 139.15(d), as these relate to pollutants not directly targeted by the broom clean requirement in § 139.15(e). To further clarify, the final standard at § 139.15(d) also includes "floating solids, visible foam, halogenated compounds, dispersants, and surfactants."

One commenter requested revisions to the proposed rule, consistent with Part 5.4.1 of the VGP, to include barge pump out of condensation or precipitation from below deck as an authorized discharge provided that the discharge does not contain oil in quantities that may be harmful and that the discharge of cargo residues is minimized. EPA agrees with the commenter and clarified in § 139.15 that discharges of condensation or precipitation pumped from below deck on barges are authorized. To address the commenter's requested clarification for water pumped from below deck, EPA added § 139.15(h) requiring barges that discharge water pumped from below deck to minimize the contact of below deck condensation with oily or toxic materials and any materials containing hydrocarbon. Similarly, § 139.15(a) was revised to reference applicability of the requirements to include waters pumped from below decks on barges. As with all specific discharges covered under these regulations, water pumped from below deck on barges must also comply with the general discharge standards detailed in subpart B.

One commenter requested clarification regarding whether pumping of washwater overboard after washing below-deck areas such cargo compartments, or tanks is authorized as an incidental discharge. To address commenter concerns, EPA modified § 139.4(b)(9), *General operation and maintenance*, to clarify that discharges of washwater overboard after washing *any* compartment, tank, cargo, or other space is an incidental discharge. In such a case, the discharge must meet other provisions applicable to the discharge (e.g., broom clean and no discharge of oil in such quantities as may be harmful). EPA further clarifies here that pumping of washwater overboard, would still constitute a discharge.

One commenter noted the absence of specific standards for ferries that may transport pets and horses, or welldecks that may have different considerations. EPA disagrees with the commenter that the proposed standard does not include requirements for ferries that may transport animals or for welldecks. Although the VGP contained a specific set of requirements for large ferry deck water, EPA included substantively those same requirements within the broader set of requirements applicable to deck discharges in § 139.15 from all types of vessels. Also, EPA acknowledges the comment that large ferry

decks may have specific concerns different from other decks, but the Agency considers the requirements in § 139.15 as sufficient to manage concerns related to these discharges (e.g., broom clean prior to any washdown).

One commenter asserted that the standards for decks and chain lockers would result in extensive releases of ANS and water pollution to state waters unless the definitions for "broom clean," "minimize," and "reception facility" are revised. EPA's response regarding suggested revisions to the definitions for "broom clean," "minimize," and "reception facility" are discussed in the § 139.2, *Definitions* section of this comment response document.

Two commenters requested that § 139.15(a) reference the general operation and maintenance requirements in § 139.4(b)(6) through (10) to provide a full spectrum of requirements. EPA disagrees that it is necessary to duplicate the general operation and maintenance requirements in the regulatory text specific to decks. The general discharge requirements detailed in subpart B apply to all discharges in subpart C, including discharges from decks.

Commenters requested clarification on deck discharges in federally-protected waters, specifically if discharges from rainwater would be allowed in these areas. One commenter also articulated potential maintenance issues with the prohibition of deck discharges within federally-protected waters for vessels that operate only in these areas. Another stated that as more federally-protected waters are added to the list of waters identified in Appendix A of the rule, it may become increasingly difficult to comply with the washdown prohibition. EPA clarified in the preamble that the prohibition of deck washdown into federally-protected waters does not include discharges from deck runoff from other sources such as from precipitation or condensation. Also, for vessels that operate only within federally-protected waters, EPA added language at § 139.40(f) clarifying that these vessels are authorized to discharge deck washdown in such waters provided the discharge is compliant with all other requirements in § 139.15.

Several commenters requested edits to § 139.15(c), referencing requirements of applicable international treaties or conventions to use physical barriers during washdown. Commenters wanted to modify the intention of this provision "to meet broom clean conditions" instead of "to collect runoff for treatment" during any washdown. EPA disagrees, as physical barriers do not meet the intent of broom clean condition as defined in § 139.2, *Definitions*, which is to prevent or eliminate surface residues. The final regulatory language is modified from the proposed rule to remove redundant and confusing language that specified the purpose of the physical barriers (i.e., to collect runoff for treatment).

Desalination and purification systems

EPA received one comment articulating support for the proposed standards for desalination and purification systems. EPA acknowledges the commenters' support.

Elevator pits

EPA received one comment articulating support for the proposed standards for elevator pits. EPA acknowledges the commenter's support.

Exhaust gas emission control systems and exhaust gas recirculation

Exhaust gas emission control systems

EPA received several comments on the discharge standard for exhaust gas cleaning systems (EGCS) proposed in § 139.18, *Exhaust gas emission control systems*. EPA acknowledges the many commenters that supported the proposed standard, particularly with respect to the EGCS standard being revised to harmonize more closely with the IMO EGCS Guidelines.

EPA also received comments requesting that EPA ban the discharge of scrubber washwater, even if just in ecologically sensitive areas or for vessels that travel out to 3 NM from shore and have the holding capacity for scrubber washwater. These commenters pointed out that scrubbers in open-loop mode emit various pollutants that are harmful to the marine environment and referenced several studies demonstrating such. Commenters also noted that this approach is consistent with numerous ports and jurisdictions around the world that have banned the use of, or discharge from, such scrubbers. Additionally, several other commenters highlighted that there is a growing number of local authorities that are prohibiting the discharge of EGCS washwater without providing evidence or public participation for their decision-making.

EPA disagrees with commenters' suggestion to ban scrubber discharges, noting that the Agency received no information demonstrating that such a ban is technically feasible as a uniform Federal standard. For example, EPA did not receive information demonstrating that there is adequate compliant fuel available (i.e., MARPOL Annex VI low sulfur fuel), or alternatively, for vessels opting to continue to use scrubbers, that there are available means for disposal of scrubber washwater and residues. With respect to impacts on the marine environment, the EGCS discharge standard closely mirrors the IMO EGCS Guidelines established using data-based studies that, among other aspects, considered long-term effects of multiple vessels using EGCS in a port over extended periods. Additionally, the VIDA called on EPA to develop performance standards based on the technology-based BAT framework, while commenters appear to suggest a standard based on water-quality considerations. The Agency also notes that although other governmental entities elsewhere in the world have banned scrubber discharges, those bans are precautionary rather than based on detailed, peer-reviewed scientific modeling or

measurement. EPA notes further that, while the VIDA directs the Agency to establish uniform federal discharge standards, it gives states the ability to petition EPA for emergency orders and no-discharge zones to set more stringent discharge limits within defined geographic areas.

On a related issue, one commenter specifically requested that EPA add a section clarifying that any local or state-specific requirements will cease to exist once the VIDA regulations are finalized, consistent with CWA section 312(p)(9)(A)). The statute's preemption provisions speak for themselves, and EPA is not, through this rulemaking, taking any steps to interpret or apply those provisions. While EPA did codify certain statutory provisions in these regulations, it did so to consolidate the regulatory requirements for vessels in a single place. The preemption provisions apply to state and local lawmaking bodies rather than to vessels themselves. EPA also notes here that the VIDA generally preempts states from establishing more stringent discharge standards once the USCG implementing regulations required under CWA section 312(p)(5)(A) through (C) are final, effective, and enforceable. While the VIDA includes several exceptions to this expressed preemption (see CWA section 312(p)(9)(A)(ii) through (vi) and CWA section 312(p)(10)(D)), CWA section 312(p)(9)(A)(i) prohibits states, political subdivisions of states, and interstate agencies from imposing additional requirements through other means not explicitly identified in the VIDA. EPA notes that the VIDA does establish procedures for a state to apply for a formal designation of a "no-discharge zone" in some or all waters of the state where such a state identifies the need for further protections. Procedures for doing so are detailed in § 139.52 of this final rule.

Several commenters requested that EPA further limit the discharge of pollutants from EGCS systems. Commenters suggested treatment should be required to match the IMO EGCS Guidelines, that such treatment is economically feasible, and that EPA should review VGP data to establish more stringent standards. One commenter asserted that treatment is needed to reduce, for example, the discharge of hydrocarbons and metals; however, no new information was provided demonstrating such technology represents BAT for the industry. Also, EPA did review VGP annual reports, but those reports do not contain adequate information and associated quality assurance needed for EPA to perform a comprehensive BAT analysis of those data for purposes of establishing a technology-based discharge standard. The submission of monitoring data in those annual reports was primarily for vessel operators to demonstrate compliance with the discharge standards irrespective of other considerations and for general collection of discharge information. While informative, it is inadequate for purposes of standard setting. As such, EPA disagrees with commenters suggesting that BAT requires further limiting the discharge of pollutants.

The discharge standards, consistent with the VIDA, are technology-based. With the few exceptions described in the preamble to the final rule, the final discharge standards and associated BAT analysis are similar to those in the VGP and 2013 VGP Fact Sheet,

which had as a basis, the IMO EGCS Guidelines. As noted above, those guidelines were established using data-based studies that, among other aspects, considered multiple vessels using EGCS in a port over extended periods to prevent long-term effect.

Technical committees at the IMO continue to evaluate EGCS discharges. At MEPC 79, in the Report of the Marine Environmental Protection Committee on its Seventy-Ninth Session (MEPC 79/15, February 8, 2023) the Committee agreed that review of IMO EGCS Guidelines would be kept under review considering experience gained and confirmed that the target completion year for "Evaluation and harmonization of rules and guidance on the discharge of discharge water from EGCS into the aquatic environment, including conditions and areas" had been extended to 2025. EPA believes it is appropriate to wait until these IMO assessments are complete to gain a better understanding of EGCS operation. The Agency will continue to monitor the availability of research findings compiled in connection with these discussions as it may pertain to future updates of these discharge standards.

One commenter noted that scrubber cost information provided in the proposed rule is based on estimates provided by cruise ship operators and that the information presented cannot be verified, and information such as when the estimate was produced is not provided. The commenter also pointed out that the cost difference for other types of vessels is likely lower when in port because these vessels would not have the large hotel loads of passenger vessels and that EPA should provide a full analysis of fuel and operational costs. EPA agrees with the commenter that cost estimates are based on information provided by cruise ship operators; however, cost savings associated with exhaust gas scrubber usage are well-documented (U.S. EPA, *Exhaust Gas Scrubber Washwater Effluent*, EPA-800-R-11-006, November 2011; American Bureau of Shipping (ABS), *ABS Advisory on Exhaust Gas Scrubber Systems*, July 2018). To elaborate further on the cost estimate in the proposed rule, EPA received as part of a 2019 enforcement action an estimate indicating that the difference in fuel costs between using high- and low-sulfur fuel would exceed $2,500,000 per week for the one company's 16 vessels operating in Alaska (Carnival, Report Evaluating Alternatives, Submitted in response to U.S. EPA Administrative Order on Consent of May 7, 2019). This commenter is also correct that the cost difference for in-port use of low sulfur fuel for other types of vessels is likely lower than for cruise ships, although EPA does not have data to perform such an analysis of fuel and operational costs as would be required for a different BAT determination.

One commenter opposed the reduction of the numeric discharge standard for pH included in the 2013 VGP and indicated that a review of available technology must be completed before relaxing that standard. The commenter asserted that relaxing this standard creates an economic advantage for some vessels compared with those who installed systems or operated systems in a manner to meet the 2013 VGP standards. EPA disagrees. The commenter did not provide any additional information or data to support the claims. As

EPA acknowledged in the factsheet accompanying the 2013 VGP, the reason the VGP established a different pH limit for EGCS discharges from the IMO was that the NPDES permitting framework requires discharge limits to be set at the point of discharge. At the time, EPA determined that the 6.0 limit applied at the point of discharge maximized consistency with the IMO guideline for a pH of 6.5 four meters from the hull by accounting for the buffering "likely to occur within the 4-meter range." Under the VIDA, in contrast, EPA no longer needs to account for the buffering because EPA is now proposing a standard of performance rather than a limit for a permit.

Several commenters expressed concern that the proposed standards are less protective than state water quality standards and indicated that EPA should have used data received from the VGP and compared that data to state water quality standards criteria. EPA disagrees with the request to establish numeric standards based on state water quality standards. The VIDA requires the Agency to establish technology-based standards that, as defined in the Act, are independent of any comparison to applicable water quality standards. As such, comments that certain parameters are inconsistent with state water quality standards criteria are outside the scope of EPA's establishment of standards in this rulemaking, which are to be based on BAT, not water quality.

One commenter stated that the 15-minute allowance for exceedances in a 12-hour period for the numeric pH standard in § 139.18(b)(1)(iii) should be removed since it was not included in the VGP. EPA disagrees, and notes that this change was made to reflect the understanding that the nature of operations of vessel engines and managing emissions will result in short-term periodic deviations in the discharge resulting from activities such as the start-up and shut down of engines, conversion of fuel types, equipment calibration, and various other temporary and quick fluctuations in vessel operations. While this requirement is technically less stringent than the VGP, this approach acknowledges the limitations of continuous emission monitoring equipment and is consistent with EPA's regulation of continuous pH monitoring under the NPDES permitting program as established in 40 CFR 401.15. It is also consistent with the continuous monitoring of other parameters in the IMO EGCS Guidelines.

One commenter noted that the standard in § 139.18(b)(3)(i) requires washwater treatment systems to be designed to minimize suspended particulate matter but that without a definition of "designed to minimize" this provision is not enforceable. Washwater is treated to reduce the suspended solids that are attributable to particulate matter removed by the scrubbers. The EGCS standard includes a numeric limitation for turbidity that is used as an indicator parameter for, among other things, captured suspended particulate matter. As such, for these standards, a system "designed to minimize" suspended particulate matter is equivalent to a system that is designed to meet the numeric discharge limit for turbidity, acknowledging that § 139.4(b)(1) also requires vessels to minimize discharges. EPA disagrees with the commenter that this concept, as explained above, is

unenforceable without further definition. Additionally, the USCG's separate rulemaking will address enforcement and is the proper forum in which to raise enforcement concerns.

One commenter specifically requested that EPA clarify whether the VIDA standard is intended to align with the type-approval or monitoring part of IMO EGCS Guidelines and suggested that EPA add a note indicating that the standard applies to all discharges (upon commissioning and ongoing discharges). EPA agrees and clarified in the preamble that the standard applies to all discharges, upon commissioning and any subsequent/ongoing discharges.

Several commenters requested that EPA include Table 8: Nitrates + Nitrites Permit Limits from the 2013 VGP in the standards for EGCS discharges. The Agency notes that to align the VIDA EGCS standard as much as possible with the IMO EGCS Guidelines, the proposed standard for this discharge category omitted the table specifying the nitrate limits at different flow rates that was originally included in the 2013 VGP. Table 8 in the VGP was intended to clarify how the nitrate limit varies depending on the discharge rates; however, the limit itself was already fully expressed in the text of Part 2.2.26.1.4 of the VGP. More specifically, the table demonstrated how the limit prohibiting discharges beyond levels "associated with a 12% removal of NO_x from the exhaust, or beyond 60 mg/L normalized for a discharge rate of 45 tons/MWh" translated into numeric concentration limits for a set of flow rates by showing, for example, that the limit for a flow rate of 90 tons/MWH would translate into a maximum allowable discharge of 30 mg/L. The Agency opted for a simpler explanation of the requirement in the proposed rule: based on flow rates, the limit is adjusted either upward or downward as necessary to achieve a discharge concentration not to exceed 2,700 mg/L per ton/MWH. Based on comments seeking clarity of the requirements, however, EPA added the requested table to the final rule, consistent with the VGP.

Several commenters suggested that EPA provide additional detail on how the pH limit applies under the two different options in the standard. EPA agrees and expanded the discussion in the preamble. The first option is direct measurement-based. Under this option, the vessel's washwater discharge must have a pH of no less than 6.5 at overboard discharge except during maneuvering and transit, when a maximum difference of two pH units is allowed between inlet water and overboard discharge. In that scenario, the following requirements would apply:

- When stationary in port or anchored, the pH limit is 6.5 at all times.
- During maneuvering and transit:
    - If the pH of ambient (intake) water is above 8.5, the pH limit would be above 6.5 so that, for example, a pH of 8.7 for the intake water would result in a pH limit of 6.7.
    - If the pH of ambient (intake) water is below 8.5, the pH limit would be below 6.5 so that, for example, a pH of 8.2 for the intake water would result in a pH limit of 6.2.

The second option is calculation-based. Under this option, the vessel conducts monitoring or modeling to determine the pH at the overboard discharge point that will not cause the ambient water four meters from the hull to fall below a pH value of 6.5. Practically, EPA expects that this option will demonstrate that washwater with a pH below 6.5 can be discharged without resulting in an exceedance of the pH limit of 6.5 four meters from the hull. For vessels that choose this option, the calculated value for pH of the overboard discharge then becomes the pH discharge limit for the overboard discharge at all times in all locations so that, for example, a modeled pH limit of 5.8 becomes the overboard discharge limit in port as well as during maneuvering and transit.

One commenter questioned whether EPA would allow the use of either data or modeling results to demonstrate compliance with the pH discharge standard. EPA notes that the USCG implementing regulations will establish procedures for how vessels are to demonstrate compliance with the EPA discharge standards; however, the final discharge standards do include the option of establishing the applicable washwater numeric discharge limit for pH by using a calculation-based methodology (e.g., modeling), as provided for in the IMO EGCS Guidelines, to determine the vessel-specific numeric discharge standard. Once that pH limit is established through modeling, that limit applies for all EGCS discharges from that vessel whether it be stationary in port, while maneuvering or in transit, and any other times.

Another commenter noted that the undefined "calculation-based methodology" could potentially result in each vessel operator using a different methodology, thereby making it difficult for the USCG to enforce. The commenter further explained that measuring and monitoring these discharges is the preferred way to determine pH. The Agency disagrees with the commenter's position that such discharges would be more difficult to assess for compliance and would not be monitored. In fact, EPA expects compliance would be demonstrated through monitoring the pH discharge, but that the applicable discharge limit would be as determined through the calculation-based methodology (based on computational fluid dynamics or other equally scientifically established formulas). EPA has not provided details of that implementation methodology but expects operators will follow procedures described in the IMO EGCS Guidelines or as otherwise clarified in the USCG implementing regulations.

Several commenters interpreted the proposed standard as allowing for dilution to meet the numeric pH discharge standard. One commenter suggested keeping the limit at the point of discharge rather than four meters from the hull to eliminate the dilution allowance. In contrast, one commenter requested that EPA clarify that intake seawater is used for neutralizing EGCS washwater, not dilution. EPA agrees with the commenter that seawater is not used for dilution and notes that the 2013 VGP references such "reaction water" as providing "buffering" in the final standard based on the capacity of seawater to neutralize, not dilute, scrubber washwater. Vessels use seawater intake to scrub the

exhaust and then to neutralize the scrubber washwater prior to discharge. Pumping seawater from outside the hull to inside the hull simply to neutralize washwater provides limited, if any, environmental benefit over discharging the washwater directly where it is then quickly neutralized by the ambient seawater. Avoiding that internal neutralization provides an added non-water quality environmental benefit of avoiding significant fuel usage and air emissions associated with pumping that seawater in and out of the vessel to perform essentially the same function (neutralization) as occurs upon discharge. The discharge standard at § 139.4(b)(4) prohibits dilution of any discharge for the purposes of meeting any standard in this part.

Commenters indicated that EPA should require EGCS and EGR residues to be disposed of onshore and that standards for the shoreside disposal of these residues are needed. Another comment requested that EPA prohibit the discharge of these residues in waters covered by the rule. EPA disagrees with the comment that this rule should establish standards for shoreside disposal. Standards for waste disposal already exist under the Resource Conservation and Recovery Act (RCRA), with the content of those standards beyond the scope of this rule. EPA also disagrees with the suggestion that this rule should require that residues be disposed of onshore. While EPA acknowledges onshore disposal reasonably is the best solution, establishing where and how a vessel may dispose of such wastes is outside the scope of this rule. However, EPA agrees with commenters suggesting that a standard be included that prohibits discharges of residues within the regulated waters of this rule. As such, the final rule prohibits the discharge of sludge or residues generated from the treatment of EGCS or EGR washwater or bleed-off water within waters subject to the rule.

Another commenter stated that EPA should have included use of shore power as an alternative to use of scrubbers. EPA disagrees. The use of shore power has many considerations and barriers (U.S. EPA, 2022 Update of Shore Power Technology Assessment at U.S. Ports, EPA-420-R-22-037, December 2022). EPA recommended, but did not require, its use in the VGP. Currently, vessels use shore power when available, in part because that allows them to avoid the turbidity issues associated with use of the EGCSs. However, shore power is often not an option in smaller ports due to load issues. EPA continues to recommend, but not require, the use of shore power when available and feasible for vessel use.

One commenter indicated that vessels continue to have challenges meeting the discharge limit, including ongoing violations, and are not necessarily treating discharges as required (whether it be from lack of treatment system or failure to use the system). Another commenter noted that residents of coastal Alaska have reported sheens and potential water quality concerns that may be associated with EGCS discharge. Another commenter indicated that use of scrubber systems in freshwater, where alkalinity of ambient water is lower, will impair EGCS performance and could cause exceedances of effluent standards. The EGCS discharge standard, as with all the discharge standards, is based on EPA's

technology-based assessment, which for EGCS is based largely on the technology assessment performed for the VGP. Whether or not a vessel installs and operates technologies necessary to meet the standard is a compliance issue and outside the scope of this rule. The VIDA authorizes EPA to develop technology-based standards only; state-specific water quality concerns can be addressed through one of the available state petition options established by the VIDA but is outside the scope of EPA's standard setting in this rule.

One commenter requested information supporting EPA's statement that open-loop scrubbers are commonly being used in the U.S. for land-based applications. The statement in the preamble referenced by the commenter is referring to the use of scrubbers more generally and does not differentiate between the use, frequency of use, or acceptability of open- or closed-loop systems. Details on the use of open-loop systems in land-based systems is outside of the scope of this rule.

One commenter asked for clarification about a statement in the preamble that some vessels use low sulfur fuels to minimize seawater agitation. EPA included this statement to highlight that, under the VGP, vessel operators were having to use significant quantities of seawater to neutralize scrubber washwater before discharge. Increased discharge flows resulted in increased agitation in surface waters. EPA acknowledges commenter's statement that other discharges would likely cause agitation as well; however, the commenter provided neither which other discharges may cause such agitation nor technologies and practices that could be required of those other discharges.

Exhaust gas recirculation

EPA received several comments disagreeing with the proposed exclusion in § 139.18(c) and prohibition in § 139.18(d) that limits the applicability of the discharge requirements in § 139.18(b). One commenter opposed the proposed § 139.18(c) waiver (exclusion) of EGR discharges when operating with low sulfur fuel noting that low sulfur fuel will still contain particles, nitrates, and other pollutants. That same commenter also requested that EPA prohibit EGR discharges in polar waters and other areas similar to the IMO EGR Guidelines (i.e., polar waters, ports, harbors, and estuaries) unless the discharge is in compliance with the discharge requirements in § 139.18(b). Two commenters requested that EPA modify § 139.18(d) to prohibit all EGR bleed-off water that does not meet the discharge requirements in § 139.18(b), rather than just discharges of EGR water retained onboard in a holding tank.

With the one exception described below, EPA disagrees with these commenters. EPA is finalizing this standard consistent with the approach in the IMO EGR Guidelines to the extent practicable, which provides a waiver from the numeric discharge standard for vessels meeting certain criteria including operating on low sulfur fuel. EPA does not have data demonstrating imposing a similar requirement on vessels using low sulfur fuel or not

retaining EGR bleed-off in holding tanks is BAT. EPA notes that while certain EGR discharges are excluded from meeting the exhaust gas emission control system requirements in § 139.18(b), the general discharge standards detailed in subpart B of the final rule do apply to these EGR discharges, including requirements applicable to the discharge of oil.

EPA partially agrees with the comment regarding where EGR discharges should be excluded. As described in the preamble to the proposed rule, EPA proposed to apply this standard consistent with how the Agency assessed and applied other requirements in the rule; namely, the standard considers whether a vessel is in port, underway, or outside of the waters of the United States and the waters of the contiguous zone. However, the proposed rule inadvertently excluded the discharge prohibition in the regulatory text for certain situations when a vessel is in port; although, EPA did describe this prohibition in the proposed rule preamble. Thus, to be consistent with EPA's intended approach and with the IMO EGR Guidelines, the final rule specifies that discharges of EGR bleed-off retained onboard in a holding tank are prohibited in port unless discharged in compliance with the § 139.18(b) requirements. EPA disagrees with commenter's suggestion to prohibit discharges in other areas prohibited in the IMO EGR Guidelines as EPA has no information demonstrating that such an approach represents BAT and also is inconsistent with how EPA applied the standard for other discharges.

Comments on the proposed EGR requirements highlighted confusion with interpreting the applicability of § 139.18(c), which identifies when EGR discharges are excluded from the requirements in paragraph § 139.18(b). For clarity, EPA retitled § 139.18(c) from "Applicability" to "Exclusion." Then, EPA specified that the exclusion only applies to a vessel that uses fuel that meets the emissions requirements for sulfur starting in 2020, as specified in MARPOL Annex VI (i.e., low sulfur fuel) and that also meets three additional criteria: (1) the vessel does not retain EGR bleed-off onboard in a holding tank prior to discharge, (2) the vessel is underway, and (3) the vessel is not in port. EPA also revised the structure of the § 139.18(d) prohibition to be consistent with paragraph (c), which is based foremost on the use of fuel that does not meet the emission requirements for sulfur starting in 2020 as specified in MARPOL Annex VI.

EPA acknowledges the several comments supporting EPA's decision to harmonize requirements to a great extent with the EGR (and EGCS) discharge guidelines developed at the IMO, including the decision to not require vessels underway and operating on low sulfur fuels to be subject to the EGR numeric discharge standards if discharging directly without retaining bleed-off water in a holding tank prior to discharge. EPA also acknowledges the one commenter that agreed with EPA's conclusion that there is insufficient evidence to warrant prohibiting these discharges under the CWA and supported EPA's decision to monitor the availability of research findings by technical committees at the IMO.

Fire protection equipment

Several commenters supported the prohibition of discharges of fluorinated foam except as directed by the USCG in § 139.19(b). Commenters confirmed that in many instances testing, training, and maintenance can be performed using only water, except where regulations require that foam be used.

EPA solicited additional information on the technical availability and economic achievability of using non-fluorinated foams, training foams, or surrogate test liquids that do not contain bioaccumulative, toxic, or hazardous materials that can satisfy firefighting testing, training, and maintenance needs. EPA also solicited additional information on considerations associated with expanding the prohibition to include non-fluorinated foams that contain bioaccumulative, toxic, or hazardous materials. In response, EPA received information describing limited availability and engineering and process challenges associated with using non-fluorinated foams that do not contain bioaccumulative, toxic, or hazardous materials, such as the need for additional piping and onboard storage of multiple foam types. EPA also deems it appropriate to consider whether alternatives are readily available which meet requirements (i.e. consistently available on the market). See CWA 304(b)(2)(B) (authorizing EPA to consider "such other factors as the Administrator deems appropriate"). Since the information does not support a finding that these products are readily available, EPA is not requiring zero discharge of non-fluorinated foams that contain bioaccumulative or toxic or hazardous materials. As such, the final rule does not prohibit use of alternative foams containing bioaccumulative or toxic or hazardous materials. EPA may revisit this issue to determine whether blanket prohibition of certain types of discharge has become justified as BAT.

EPA also received a comment requesting further constraints on fluorinated foam for emergencies as well as requesting BMPs for emergency foam usage. EPA agrees with concerns regarding per- and poly-fluoroalkyl substances (PFAS) and has maintained the prohibition of the discharge of fluorinated foam from the proposed rule and added specificity to the USCG exclusion in § 139.19(b) of the final rule. Further clarification on how this will be implemented may be addressed by the USCG in the implementing regulations. However, EPA disagrees with the addition of further constraints for emergencies, as the VIDA recognizes that safety of life at sea and other emergency situations not resulting from negligence may arise, and that the prevention of loss of life or serious injury may require operations that would not otherwise be consistent with the applicable standards. To the extent commenters suggested further regulatory actions such as education of first responders, working with manufactures to develop alternative products, and developing programs for the disposal of fluorinated foams, such actions are beyond the scope of EPA's rule.

Several commenters expressed concern over the lack of reference to secondary uses of firemain systems in the regulatory text. Some commenters interpreted the proposed

regulations to prohibit secondary uses of firemain systems, such as deck washdown, anchor chain rinsing, and machinery cooling water. Commenters articulated that, as proposed, this would contradict the requirements in § 139.14 requiring anchor and anchor chain washdown, as well as prevent vessel and deck washdown and necessary machinery cooling. Many commenters requested the addition of language similar to the VGP to permit discharges from fire protection equipment for secondary purposes provided that the intake comes directly from the surrounding waters or potable water supplies, there are no additions to the water, and that the discharges meet the applicable standards for that secondary use. EPA agrees that clarification in the final rule surrounding secondary uses is appropriate. The final rule at § 139.19(a) clarifies that requirements also apply to discharges for secondary uses of the firemain. To address requests to clarify requirements for secondary uses, the final rule at § 139.19(d), consistent with Part 2.2.12 of the VGP, prohibits discharges from fire protection equipment in port for secondary uses unless the intake is from surrounding water or a potable water source, does not contain additives, and the discharge meets requirements for the specific secondary use. One commenter inquired about secondary uses and the potential for aerosolization of pressurized water, as well as uptake in hot spots; however, the commenter provides no additional information on the potential contribution of pollutants from these activities or practices that can be implemented to reduce the discharge of pollutants. Because water for secondary uses is generally obtained and discharged in the same location and that discharges of this water must comply with the requirements for that secondary use (e.g., water used for cleaning the deck must comply with the requirements for deck cleaning in § 139.15), EPA did not identify any additional management practices for discharges of firemain water when used for secondary purposes.

Several commenters articulated potential regulatory and safety concerns with the proposed rule. These concerns included inconsistencies with existing regulatory requirements, such as 46 CFR 199.180, to discharge water for fire drills or training in port, as well as the inability to defer drills to outside of port in all instances. Multiple commenters requested language similar to the VGP that allows discharges in port if intake is from surrounding waters or potable water supplies and does not contain any additives or fluorinated firefighting foam. EPA agrees that additional clarity is appropriate. To address these concerns, the final rule at § 139.19(c) prohibits discharges from fire protection equipment in port during testing, training, maintenance, inspection, or certification except when a discharge is required in port by the Secretary to ensure vessel safety and seaworthiness, or if the intake is drawn from surrounding water or a potable water supply and does not contain additives (e.g., firefighting foam). Commenter inquiries related to whether the USCG will need to be present during these drills are outside the scope of EPA's rule but may be relevant to the USCG implementing regulations.

Several commenters expressed concerns related to fire protection equipment discharges in federally-protected waters, stating that vessels that operate exclusively in these waters

would not be able to conduct fire drills or test the fire equipment, which could result in safety issues. EPA agrees that clarification on this issue is appropriate, and the final rule at § 139.40(g) prohibits the discharge from fire protection equipment into federally-protected water except to comply with USCG fire drill requirements or anchor chain requirements in § 139.14. Commenters also requested clarification on wording related to federally-protected waters, and vessels owned or under contract with the United States, state, or local government to do business exclusively in federally-protected waters. The final rule at § 139.40(g) also clarifies that, with respect to this requirement for vessels owned by government entities when USCG fire drills are required, only vessels owned or under contract with the United States, state, or local government to do business exclusively in any federally-protected waters are allowed to discharge any firefighting foam into federally-protected waters. Additionally, commenters expressed concern that under the proposed standards, vessel washdowns would not be otherwise allowed in federally-protected waters. Vessel washdowns in federally-protected waters are already prohibited under the VGP, and the final rule does not alter this existing requirement.

Several commenters referenced activities performed in response to requests by third parties (e.g., classification societies and flag states) that involve the demonstration of system operability, including verification of compliance with inspection, testing and maintenance requirements, and the observation of drills. Two commenters noted that these types of activities only use surrounding waters and include no additives. EPA disagrees with commenters' suggestions that the regulations should provide specific exclusions or accommodations for third-party requirements, as these are subject to change beyond the control of EPA and without an opportunity for public comment. As discussed above, the final rule clarifies that discharges from fire protection equipment are authorized in port if the intake is drawn from surrounding waters or a potable water supply and contains no additives. As such, the final rule allows for the types of third-party activities described by commenters. Further considerations for third-party activities may be addressed in the USCG implementing regulations.

Several commenters inquired about flushing the firemain system prior to entering the contiguous zone as an alternative to prohibiting firemain system discharges in port, as well as flushing after instances where fluorinated foam has been discharged. EPA addressed the concerns with prohibiting firemain system discharge in port as noted above and mirrored the VGP for regulating the discharge of foam itself and not residuals. The USCG is responsible for developing implementing regulations and may evaluate the option to include flushing of fire protection equipment. Similarly, commenters suggested inclusion of recordkeeping in the final standards; however, these requests are more appropriately addressed by the USCG implementing regulations.

Several commenters requested a definition for "fire protection equipment" to be added; EPA agrees and included a definition in the final rule.

Gas turbines

EPA received one comment articulating support for the proposed standards for gas turbines. EPA acknowledges the commenter's support.

Graywater systems

Several commenters discussed the definition of "graywater." One commenter requested that the definition in the proposed rule be expanded to expressly include galley floor drains, while another commenter noted that the definition may not include galley graywater other than dishwater and recommended that the definition include all graywater sources. Another commenter noted that there was a change in the definition of graywater from the 2013 VGP to the proposed rule and that the reason for the change, as well as any possible changes to the types of wastewaters included under the definition, should be included. The commenter also noted that the definition in the proposed rule differs from the definition in CWA section 312(a), and more generally noted that there are multiple different definitions under existing federal regulations, which may cause confusion. The same commenter expressed that the term "hospitals" in the proposed rule definition should be changed to refer to medical and healthcare spaces and equipment, since "hospital" implies an institution, and a vessel may not have dedicated space for medical uses. The commenter also suggested that the term "washbasins" in the proposed rule definition implies hand or face washing facilities, whereas sinks may be a preferred term to include additional uses. Finally, the commenter noted that the proposed rule definition removed water fountains and suggested the definition could be expanded to include water from drink vending equipment, icemakers, and ice dispensers.

These comments prompted EPA to reevaluate and update the definition for graywater in the final rule to increase clarity and, in some respects, consistency with the VGP. EPA agrees with the commenters that the final rule definition should include galley sources, and as such, the definition now broadly refers to galley drains (to include sinks and galley floor drains). EPA also agrees that "sinks" is a more representative term for those graywater sources than "washbasins," and the preamble to the proposed rule in fact referred to "sinks." As such, the final rule at § 139.2, *Definitions*, defines "graywater" to mean "drainage from galley, shower, laundry, bath, water fountain, and sink drains, and other similar sources." EPA removed from the final rule definition the examples of wastewater sources that were not graywater (drainage from toilets, urinals, hospitals, animal spaces, and cargo spaces), and instead discussed these in the preamble of this rule. The preamble to the proposed rule discussed hospitals, and EPA has clarified in the final rule that this term more broadly includes medical spaces and equipment. Finally, the definition was updated to include water fountains for consistency with the VGP. EPA acknowledges that there are multiple different definitions for "graywater" under various statutes, regulations, and the VGP. EPA notes that the definition for "graywater" in the final rule does not match these definitions because EPA believes the final rule definition

provides better clarity regarding the sources of graywater. While the definition in the final rule differs from the definition in the VGP, the change does not alter the types of wastewaters that were covered by the VGP and now regulated under this final rule.

One commenter provided several recommendations regarding the bacterial measurements identified in the numeric discharge standards for graywater systems. The commenter suggested the use of *E. coli* or enterococci instead of fecal coliforms, and further suggested the use of "organism" or "count" for the unit of measurement instead of colony forming unit (CFU). Fecal/thermotolerant coliforms are used in the type-approval of sewage and graywater treatment systems in both the United States and under the IMO internationally. EPA considers a change in constituent to be overly disruptive for the increased benefit of greater specificity regarding fecal and nonfecal origin. A change in constituent would require new testing of all current USCG-approved systems and may preclude systems approved internationally from continued use in the U.S. waters. In addition to ensuring that systems, under specified test conditions, produce an effluent that meets the prescribed standards, a type-approval regime can also ensure the safety of the system, the operability of the system in representative conditions, and that manufacturers provide adequate installation, operation, and maintenance instructions. Systems currently type-approved to treat sewage and graywater are done so on the basis of fecal/thermotolerant coliforms and EPA does not have data demonstrating the ability of these systems to meet specific *E. coli* or enterococci limits. EPA does agree with the commenter's recommendation to revise the bacterial measurement units because, as noted by the commenter, bacterial analysis test result can be reported as most probable number (MPN) or colony forming units (cfu) per 100 milliliters, depending on the test method used by a laboratory. To avoid prescribing a specific analytical test method, EPA updated the regulations accordingly to reflect units of both MPN and cfu per 100 milliliters. Another commenter stated that § 139.21(f) does not provide a time limit for the percentage of fecal coliform results and that a time limit is needed to determine compliance and clarify standards for AWTS manufacturers. EPA agrees and the final rule clarifies, consistent with the VGP, that the percentage of samples required to comply is tied to the same 30-day period as the geometric mean standard. Procedures for demonstrating compliance with these requirements will be based on any monitoring or type-approval requirements developed by the USCG in the implementing regulations.

For the numeric discharge standards, several commenters raised concerns regarding the use of 7-day and 30-day averages, noting feasibility issues for sampling onboard and hold times, as well as the possibility of such averages being overly restrictive if used as pseudo-maximum limits (based on infrequent sampling). One commenter recommended a type-approval regime similar to BWMSs, while another recommended the retention of the current VGP monitoring requirements. EPA notes that the identified limits are comparable to those in Part 5.1.1.1.2 of the 2013 VGP that requires the discharge to satisfy the minimum level of effluent quality specified in 40 CFR 133.102 for secondary treatment. This is in line with the VIDA's requirement that the standards ordinarily be at

least as stringent as the VGP requirements (33 U.S.C. 1322(p)(4)(B)(iii)). Additionally, it is common for EPA to establish numeric effluent discharge limits based on a daily maximum and long-term (e.g., monthly) average for pollution control that reflects BAT. This allows for some variability in performance, which is expected even in well-operated systems. Similar wastewater frameworks also use averages, including MARPOL Annex IV (sewage), the Alaska Cruise Ship General Permit, and land-based secondary treatment standards. EPA expects compliance with a 7-day or 30-day average to be assessed based on the average of all sample results over a 7-day or 30-day timeframe and is not intended to imply that samples are to be collected continuously over that 7-day or 30-day timeframe. However, the concerns and recommendations raised by commenters on this topic largely pertain to implementation of the standard, which are within the USCG's scope of responsibilities under the VIDA. The USCG, in its implementing regulations, can identify the best approach to verify compliance with the averages identified in EPA's numeric discharge standards.

Two state commenters indicated that the graywater treatment standards do not conform with state water quality standards and that EPA must update the standards to be comparable. In a similar vein, one commenter asserted that the VGP "fails to address the fact that many pollutants…cannot be removed from graywater using either Marine Sanitation Devices or Advanced Wastewater Treatment Systems (AWTS)." The commenter added that AWTSs may not remove all viruses or all pollutants during treatment, and that AWTSs can fail when discharging near sensitive areas. The commenter concluded that, if EPA allows treated graywater discharges, then water quality-based limits are needed for the range of pollutants found in graywater. EPA disagrees with the comments on the basis that the VIDA requires the Agency to establish technology-based standards that, as defined in statute, are independent of any comparison to applicable water quality standards. As such, comments that certain parameters are inconsistent with state water quality standards criteria are outside the scope of EPA's establishment of standards in this rule, which are to be technology-based, not water quality-based. The commenter that discussed MSDs and AWTSs does not identify a suitable technological alternative for treating graywater and does not provide any information or data to provide a basis for EPA to establish a limit for any other specific pollutant(s) in graywater.

Several commenters requested that the rule explicitly acknowledge the VIDA provisions at CWA section 312(p)(9)(A)(v) related to graywater from passenger vessels operating in Alaska. EPA agrees and updated the preamble to the final rule. One of those commenters also asked for clarification as to whether treated graywater used as "technical water" must meet the graywater requirements if discharged or added to other discharged wastewaters. Graywater used as technical water is still considered graywater for purposes of these regulations and must meet the applicable requirements if discharged or combined with other discharges. Another commenter noted that it is not feasible for a vessel to monitor personal care products that guests bring on board, such that the requirement that

any soaps, cleaners, and detergents discharged in graywater by minimally-toxic, phosphate-free, and biodegradable is overly broad. EPA agrees and modified the requirement to specify that products used by vessel owner/operators (in this case, persons onboard in the employ of the vessel) in connection with vessel operations, or otherwise provided by the vessel operators to persons onboard (e.g., passengers), must meet the foregoing criteria.

Two commenters emphasized the need to ensure the provision by ports and terminals of adequate shore reception facilities. EPA understand the commenters' concern; however, EPA does not have the authority to require waterfront facilities to provide pumpout facilities. In the proposed rule, EPA requested data and comments on the availability of pumpout facilities for graywater. Many commenters provided their insights into availability, and largely agreed that facilities are not always adequate or available, that few locations are available to accept large volumes of graywater from vessels, and that EPA should assess adequacy of facilities. EPA expects that the demand for graywater pump out services from non-recreational, non-military vessels may lead to increased supply of such services. In the meantime, the regulations provide flexibility to vessels that cannot store and offload to facilities, including investment in treatment systems to meet the numeric discharge standard. Additionally, vessels of most classes that travel offshore can discharge untreated graywater if holding capacity is exhausted. Finally, on the topic of shoreside disposal, one commenter stated that shoreside disposal should be utilized if available, as required in the VGP. EPA agrees, but notes that vessels are already required to use available facilities as a means of minimizing discharges, per the general standards detailed in subpart B.

Two commenters discussed intersections with sewage discharges, including commentary on MARPOL Annex IV and marine sanitation device performance, as well as a suggestion that sewage and graywater should be regulated together. While sewage and graywater are frequently commingled, sewage is regulated under distinct CWA provisions, not through the VIDA. When commingled, both requirements apply to the resulting discharge, as laid out in § 139.1(a). Comments on topics including device certification, operation, and maintenance are outside the scope of EPA's responsibility and fall under the purview of the USCG. Additionally, the U.S. is not party to MARPOL Annex IV and instead regulates both sewage and graywater nationally through the CWA.

A few commenters discussed disinfection. One commenter suggested that the provision relating to soaps, cleaners, and detergents in § 139.21(c) be expanded to address the proper disposal of disinfection products. The commenter explained that non-chlorine-based products can interfere with biological treatment and provided the example of barbicide used in beauty care facilities and the potential for interference with treatment as well as toxicity to marine life if discharged incorrectly. EPA agrees that products such as cleaners and disinfectants, especially when improperly introduced to toilets or graywater sources, may disrupt biological treatment systems. However, EPA disagrees with the need to add additional requirements. The graywater systems standard already require that

soaps, cleaners, and detergents discharged in graywater be minimally-toxic, phosphate-free, and biodegradable. Additionally, the General Operation and Maintenance standards detailed in subpart B prohibit the addition of any materials to an incidental discharge, other than for treatment of the discharge. The example provided by the commenter – barbicide used in beauty care facilities – is an example of a material that would not be considered by EPA to be incidentally produced in the graywater system and instead would be a prohibited addition of a material that is not for the treatment of the discharge. Further, any material used onboard that will be subsequently discharged, including disinfectants, must be used only in the amount necessary to perform the intended function of that material, not contain any materials banned for use in the United States, and, if subject to FIFRA registration, be used according to the FIFRA label. Otherwise, the operation and maintenance of such systems generally falls within the scope of the USCG responsibilities under the VIDA. EPA also agrees with the commenter that bacterial levels may rebound when wastewater is stored, even if treated beforehand. However, EPA's numeric discharge standard identifies the constituent limits at the point of discharge, regardless of whether the graywater has previously been stored. As such, an additional requirement to disinfect stored treated graywater is not required.

Two additional commenters indicated that the total residual oxidant (TRO) limit of 10.0 µg/L in § 139.21(f)(5)(i) is beyond the detection limit for portable sensors and therefore not measurable onboard vessels. Commenters further noted that the limit is not likely to be achieved in smaller discharge volumes, as the TRO sensors take time to adjust dosage. As a result, the commenters suggested relaxing the limit for TRO in graywater. Additionally, one commenter noted that vessels may use other sanitizing/biocide agents than chlorine. The numeric limit in the rule is consistent with the existing VGP standard of 10.0 µg/L total residual chlorine. As explained in Parts 5.1.2.2.1 and 5.2.2.2.1 of the VGP, "[a]nalytical results for total residual chlorine below the method detection limit shall be deemed compliant with the effluent limits, provided the permittee uses a testing method with a detection limit no higher than 10.0 µg/L under ideal conditions. EPA recommends Method SM4500-CL G (DPD Colorimetric Method) for these purposes as it is able to reach 10 µg/L under ideal conditions and so meets these requirements. SM4500-Cl G is typically the method that Alaska Department of Environmental Conservation (ADEC)/U.S. Coast Guard uses for compliance monitoring." The final rule retains the 10.0 µg/L numeric standard, in line with the VIDA's requirement that the standards ordinarily be at least as stringent as the VGP requirements (33 U.S.C. 1322(p)(4)(B)(iii)), with the assumption that the USCG can specify in its implementing regulations how vessels may demonstrate compliance with the standard. However, EPA agrees with the commenter that the standard should be worded in a similar manner to other discharges that address a TRO limit. As such, EPA revised the standard to read: "Total residual oxidizers. (i) For any discharge from a graywater system using chlorine, total residual oxidizers must not exceed 10.0 µg/L."

On the topic of storage capacity, one commenter noted that EPA does not define the term "capacity" and asserted that EPA does not require vessels to use all tanks available for storage capacity prior to discharge. Per § 139.21(d), discharge is prohibited from vessels within 1 NM or 3 NM from shore if the vessel voyages at least 1 NM or 3 NM from shore, respectively, and has remaining available graywater storage capacity, unless the discharge meets the standards. As such, available capacity must be used by these vessels before discharge (unless the discharge is adequately treated). EPA disagrees with the need to define "capacity" but updated the preamble to clarify that, if a vessel is configured such as to be able to divert graywater to tanks typically used for other purposes, and it is safe and permissible to do so, then such tanks are considered by EPA to be available capacity. Another commenter stated that allowing discharge if no remaining capacity is available disincentivizes the installation of holding tanks and that a minimum capacity for storage should be adopted. The commenter also stated that EPA should not allow this option for new build vessels and vessels over 400 tons. EPA disagrees that a minimum capacity for storage should be adopted. Many new build vessels and passenger vessels with overnight accommodations are already required to treat any discharge of graywater, which EPA determined to be an appropriate level of control for graywater discharges from these vessels based on available treatment technology, the marginal pollution reductions that would be achieved by a minimum storage capacity requirement, and the cost associated with such a requirement. As noted in several other comments on graywater systems, many existing vessels are not equipped with storage capacity, and the installation of storage capacity may adversely affect vessel stability. Retrofitting to include a minimum storage capacity would be costly for existing vessels, assuming accommodation of a holding tank is even feasible due to space or stability considerations. Additionally, EPA does not require minimum storage capacity for any other incidental discharges covered by this rule. It is infeasible to require minimum storage capacity for all incidental discharges generated onboard vessels, and EPA has not determined that graywater uniquely requires such a restriction.

Several commenters suggested additional standards and/or restrictions. First, one commenter suggested that standards be created for smaller and older vessels not included in § 139.21(e) that focus on bacteria and reduced use of chlorine. The commenter does not suggest a technology or BMP that could be employed by such vessels to achieve target bacteria and chlorine reductions. EPA does not expect that smaller and older vessels would be operating AWTSs, as the VGP did not require that these vessels meet the numeric discharge standard. While vessels operating Type II marine sanitation devices for sewage treatment could commingle the sewage with graywater, it is not clear to EPA how this would affect overall performance of the device. For example, another commenter noted that current MSDs installed on the state's Ferry Division vessels would not be able to accept and process graywater. Further, these devices have not been type-approved for commingling of sewage and graywater. As such, EPA does not have a basis upon which to develop a bacteria and chlorine standard tailored to smaller and older vessels that are not, and would not, be operating AWTSs.

Another commenter requested that EPA ban graywater discharges from all vessels within 3 NM that voyage at least 3 NM from shore and have available storage capacity. For large passenger vessels, the commenter suggested this restriction be extended to 12 NM. The graywater system requirements are technology-based standards resulting from EPA's analysis of BAT. EPA considered whether additional restrictions such as these should be included in this rule. But EPA is not aware of, and the commenter does not identify, technology is that is available and economically achievable that would support an outright ban on all graywater discharges (treated or not) within waters covered by the rule. The numeric discharge standard and geographic-based restrictions represent, in EPA's judgment, what is appropriate given the best available technology that is economically achievable to reduce the discharge of pollutants most associated with graywater. EPA acknowledges that not all vessels, particularly existing ones, can install additional storage capacity or treatment systems adequate to meet the rule's numeric discharge standards. The rule does, however, include general discharge requirements for graywater systems that apply to these vessels (e.g., requirements for soaps, cleaners, and detergents). The VIDA tasks EPA with setting uniform federal discharge standards based on best available technology. The statute establishes that, in waterbodies where a state determines that applicable graywater handling requirements are not suitably protective, the state can apply for designation of a graywater no-discharge zone or emergency order requiring further BMPs. Many commenters also opposed the establishment of more stringent requirements, or otherwise contended that the proposed standards were overly stringent. Commenters pointed to the operational and logistical challenges associated with the installation of treatment systems and/or storage capacity, such as space and stability concerns. Commenters noted a lack of pumpout infrastructure to support offloading of stored graywater and suggested that the cost of either adding treatment systems or offloading stored graywater could be prohibitive. Other commenters maintained that the proposed requirement for discharges from all vessels of 400 GT and above to meet the numeric discharge standard was not appropriate for vessels with smaller crews, as discussed in the supplemental notice. Finally, another commenter generally noted that the ability to discharge graywater is essential, especially for vessels that operate on inland waters or close to shore. These comments in opposition to more stringent requirements are addressed elsewhere in this section of the comment response document but are summarized here to note that EPA received opposing viewpoints regarding the appropriate stringency of the requirements.

Some commenters asserted that the rule does not address a vessel that operates within 1 NM but does not voyage beyond either 1 NM or 3 NM and asked that EPA close what the commenter referred to as a "loophole." EPA notes that the requirements for such vessels are consistent with those in place under the VGP. The VGP requires such vessels to minimize the discharge of graywater and, if the vessel has available storage capacity, to dispose of graywater onshore if facilities were available and their use was economically practicable and achievable, unless the vessel meets the specified treatment standards. The

General Operation and Maintenance standard at § 139.4(b)(1) requires that vessels "[m]inimize discharges through management practices including, but not limited to storage onboard the vessel, proper storage or transfer of materials, or reduced production of discharge." As such, consistent with the VGP, it is EPA's expectation that vessels operating solely within 1 NM use available storage capacity, available facilities, or onboard treatment systems to minimize discharges of graywater.

One commenter stated that requirements that were included in the VGP do not appear in the rule and requested their incorporation. The first requirement from the VGP that the commenter asserts is not present in the final rule addresses additional materials on some vessels, for example photo waste and dry cleaning. EPA notes that while these materials are not explicitly mentioned in the graywater systems standard or otherwise, they are captured within the General Operation and Maintenance standards detailed in subpart B that prohibit the addition of any materials to a discharge, other than for treatment of the discharge, that is not incidental to the normal operation of the vessel. The second requirement from the VGP that the commenter alleges is not present in the final rule addresses discharges in nutrient impaired waters. EPA disagrees on the inclusion of this requirement on the basis that discharge requirements based on nutrient impairments would be a water quality-based determination, rather than a technology-based standard. Instead, local water quality concerns can be appropriately managed via one of the state petition or application options provided for in subpart E of the final rule.

The commenter also suggested expanding the provision dealing with soaps, cleaners, and detergents to also include "other substances" to require non-cleaning products and other potentially toxic sources to adhere to the minimally toxic requirements for addition to graywater systems. EPA agrees that this is an appropriate addition to expand upon the General Operation and Maintenance requirements detailed in subpart B that prohibit the addition of any materials, other than for treatment, to a discharge, as well as the requirements to store toxic or hazardous materials and not discharge the containerized materials. Additionally, the commenter raised the issue of fibers and microplastics in laundry water, noting that some AWTSs may capture these particles but screening at the source (laundry equipment) will reduce the particles discharged by vessels not required to treat graywater. EPA notes that this is an area of interest, but the Agency does not have sufficient information or research upon which to base a requirement in this rulemaking.

Finally, one commenter suggested that EPA should require all vessels to meet the numeric discharge standards, and that the requirement should be based on holding capacity rather than size or distance traveled from shore. EPA disagrees. The requirements put forth by EPA represent the best judgment of the Agency regarding what technology is available and economically achievable. EPA has set differing requirements for classes of vessels based on their differing characteristics, such as size, in acknowledgement of the operational differences and technology limitations that may prevent a vessel from treating or storing all of the vessel's graywater within waters

subject to this rule. For example, AWTSs may not be available to certain vessels and thus it would not be possible for them to achieve a particular level of pollution reduction. As explained in the earlier discussion on storage, vessels are not required to have storage capacity, so by extension EPA disagrees that the applicability of the numeric discharge standard to a vessel's discharge should be based on the holding capacity of that vessel.

Commenters also raised concerns regarding kitchen waste and food. More specifically, commenters asserted that food waste must be prohibited in line with other regulatory requirements and suggested that the definitions of "kitchen waste" and "food" should be modified to include food pulper washwater/food waste reject water and food digester waste. EPA agrees that, as the commenter noted, food waste is already regulated as garbage and is not considered graywater for purposes of this rule. There is a distinction between, for example, filtered dishwater produced in the galley (graywater) and wastewater containing food/food derivatives (garbage). EPA acknowledges, however, that minimal amounts of food debris may unavoidably enter the graywater system during dishwashing. As such, the final rule retains the relevant provision, but the preamble clarifies that garbage is regulated outside of the VIDA and is excepted from the definition of discharges incidental to the normal operation of a vessel at CWA section 312(a)(12)(B)(i). One commenter also proposed that dairy products be added to the list of substances that must be minimized in the graywater system. As discussed above, food waste (including dairy) is already regulated as garbage and is not considered graywater for purposes of this rule.

Two commenters had specific concerns related to the graywater standard requirements in § 139.40(h), *Federally-protected waters,* as it applies to ferries. The first commenter explained that ferries operating on inland routes within the same COTP Zone within federally-protected waters are not constructed to store graywater and adding a tank could result in stability issues. As such, the commenter requested that vessels on limited routes without overnight passengers be exempt from the requirement in § 139.40(h). The federally-protected waters requirements for graywater specify that "the discharge of graywater into federally-protected waters is prohibited from any vessel with remaining available graywater storage capacity (emphasis added)." This provision does not require vessels to install storage capacity, but rather to use available capacity when operating in federally-protected waters. Therefore, EPA disagrees that an exemption is needed. The commenter also requested an exemption for vessels that operate on a limited inland ferry route from the distance-related discharge prohibition described in § 139.21(d) of the proposed rule because these vessels may not transit beyond the specified range. In the same vein, EPA disagrees that an exemption is needed because the referenced provision would only apply to vessels that voyage the specified distance from shore. Finally, the commenter also explained that septic systems in rural areas are not designed to process large volumes of graywater and that there are funding and space constraints associated with replacing onboard systems and/or expanding shoreside facilities. EPA notes that for ferries operating on inland routes, only new build ferries that are greater than 400 gross

tons and certificated to carry 15 or more persons with overnight accommodations for those persons, or carrying 250 or more passengers, are required to treat graywater prior to discharge. EPA has determined it is reasonable to require new build vessels equipped with overnight accommodations or carrying many persons to be designed with holding capacity or, including for those areas without adequate pumpout infrastructure (e.g., septic systems in a rural area) to operate a treatment system. Another commenter recommended the removal of the treatment requirement for new ferries authorized to carry 250 or more people, explaining that it is unnecessary given that most voyages are short and produce a minimal amount of graywater (largely from handwashing), that storage is costly, and few vessels are produced annually in this category nationwide. EPA believes that, because the requirement applies to new ferries, the vessels can reasonably be designed during the planning stages to incorporate an appropriately sized holding tank for, as commenter noted, the potentially small volume of graywater produced onboard such vessels. EPA specifically limited the applicability to new ferries in acknowledgement of the costs associated with retrofitting to include storage capacity. While the volume generated may be limited, ferry operators also have limited control over the use of graywater-generating facilities, such as handwashing sinks, by passengers who may put any number of products in the drain. As such, treatment or storage represents an appropriate control for graywater discharges from new ferries carrying 250 or more passengers.

Commenters requested clarification and/or confirmation on many issues. First, EPA was asked to confirm that, with respect to existing vessels, the rule prohibits the discharge of graywater within 3 NM for vessels that voyage at least 3 NM from shore and that have remaining available graywater storage capacity (and do not meet the numeric discharge standard). EPA confirms that this is correct. Next, EPA was asked to clarify the requirements for overnight passenger vessels whether this includes ferries with overnight accommodations. Yes, the requirements for passenger vessels with overnight accommodations apply to ferries. More generally, commenters also requested additional clarification on the requirements for discharges certain distances from shore described in § 139.21(d), including the applicability of the prohibition and the management options for new and existing vessels. EPA provided additional narrative explanation of this provision in the preamble of this final rule. One commenter asked that EPA clarify the use of the term “voyage(s)” in the context of the graywater systems requirements. The requirements that use the term “voyage(s)” apply based on whether the vessel operates beyond 1 NM or 3 NM. A vessel would be prohibited from discharging graywater until beyond the applicable distance from shore unless it no longer has available storage capacity or otherwise treats the discharge according to the numeric standard. This is the case even if the vessel has been in port for a few weeks or months. EPA notes that the vessel would also be expected to comply with the General Operation and Maintenance requirements detailed in subpart B during the duration of its time in port, including the need to minimize discharges. Many commenters also requested clarifications or provided requests that were outside the scope of EPA’s responsibility under the VIDA. In short,

these included requests to identify the process the USCG will use to review and approve treatment systems and clarify how the use of monthly averages in the discharge standard will affect sampling and monitoring requirements. While one commenter recommended the removal of testing requirements, others endorsed the inclusion of monitoring requirements and the documentation of compliance in shipboard logs. The USCG may address the other issues in forthcoming regulations addressing implementation, compliance, and enforcement.

One commenter provided several comments specific to U.S.-flagged passenger vessels. First, the commenter explained that the RIA accompanying the proposed rule overestimates the number of new ferry vessels authorized to carry 250 or more persons that are constructed annually. EPA acknowledges the commenter's recommendation, and the final Economic Analysis (EA), which updates and replaces the RIA for the final rule, includes updated estimates based on a revised analysis incorporating the source referenced by the commenter, as well as information available from EPA's 2013 VGP electronic reporting system. The commenter further explained that existing U.S.-flagged passenger vessels on the Great Lakes are not configured to store or treat graywater and, due to cost and difficulty, the numeric discharge standard should not apply to these vessels. EPA disagrees. The requirements for Great Lakes vessels identified in the proposed rule align with those already in place under the 2013 VGP. These include the operational limits imposed on medium and large cruise ships to meet the numeric discharge standard when discharging within 3 NM of shore. Otherwise, any vessel operating on the Great Lakes that is not a "commercial vessel" as defined in CWA section 312(a)(10) was and is required to either hold all graywater or discharge treated graywater to the specified fecal coliform and suspended solids limits. As such, these vessels should already be configured to store or treat graywater in accordance with the applicable requirements under the 2013 VGP.

Several commenters provided recommendations for terms that should be defined or other language modifications. One commenter requested that EPA define "AWTS." EPA disagrees with the need to establish a prescriptive definition for an advanced wastewater treatment system (AWTS). For purposes of this standard, an AWTS is any system capable of meeting the numeric discharge standard for graywater. As noted in the preamble, AWTSs typically feature enhanced methods for treatment, solids separation, and disinfection, such as using membrane technologies and UV disinfection. This means that such systems can achieve higher levels of treatment, solids removal, and disinfection than is typically achieved by traditional marine sanitation devices type-approved by the USCG according to the requirements of 33 CFR part 159. However, EPA does not see the benefit in being prescriptive in the definition of an AWTS at the risk of unintentionally blocking the deployment of novel technologies for graywater treatment that may be developed in the future. This commenter also recommended changing the title of the section from "graywater systems" to "graywater" because some vessels do not have a system and "systems" implies organization or interconnectivity with other

elements. The commenter further explained that some older vessels do not have a system, but direct drainage pipes from graywater sources. In a similar vein, the commenter requested that EPA provide a full list of equipment and other sources of graywater. EPA disagrees with the need to change the title of the section. "Graywater systems" is intended to speak broadly to the management of graywater onboard, rather than only to a specific treatment system, and as such is broadly defined to include drainage from a range of sources. The regulations establish requirements for discharges of graywater, regardless of the source, from the graywater system, which would include treatment systems, tanks, piping that conveys graywater, or any other relevant source or conveyance of graywater, as defined. The commenter also recommended changing "discharged in graywater" to a term such as "introduced to graywater" in § 139.21(c) to clarify the use rather than just a direct discharge. EPA disagrees because the term "discharged in graywater" accurately conveys that EPA regulates those pollutants that are discharged as part of a graywater wastestream (that it, "in" means "as part of" in this context). The VIDA directs EPA to establish Federal standards of performance for discharges incidental to the normal operation of a vessel. As such, EPA did not establish requirements for products introduced to graywater when graywater is not being discharged. Finally, one commenter requested that EPA define "new ferry." EPA agrees and added the following definition: "*New ferry* means a ferry that is constructed after the effective date of USCG regulations promulgated pursuant to CWA section 312(p)(5)(A)(i)."

EPA also received comments regarding graywater systems in response to EPA's supplemental notice. Several commenters on this topic supported the proposed supplemental regulatory option. One of these commenters generally agreed with the reasoning provided by EPA, including the apparent unavailability of treatment options, the challenges associated with installing onboard storage, a lack of adequate pumpout facility availability, and the costs associated with installation and use of holding tanks. The commenter further noted that some vessels may require a larger tank than EPA estimated, depending on operational profile or to ensure a conservative buffer. Two commenters supported the overall concept of the proposed exemption but sought a more expansive one. One of the commenters requested that the cut-off for number of persons be raised to 25 persons, while the other requested that EPA exclude certain vessel types to capture vessels with working crew of 20 to 30 persons. EPA disagrees on the need to expand the exemption further. Commenters' recommendations represent as much as double the number of persons onboard and would be accompanied by a similar increase in graywater volume produced and potentially discharged. It is EPA's position that 15 persons is an appropriate cut-off point for this graywater requirement. The figure was requested by several commenters on the proposed rule, and it also represents consistency with the established VGP cut-off for vessels required to perform monitoring. As noted by EPA in the 2013 VGP Fact Sheet, EPA did not require vessels with fewer than 15 crew and overnight accommodation to monitor because these vessels tend to produce less graywater and these vessels tend to have lower revenues than larger vessels and the costs

imposed might be more burdensome for these vessel owner/operators at this time. The same factors are relevant to EPA's determination in the final rule. Based on information available to EPA in the 2011 *Graywater Discharges from Vessels* report, several systems are reported as being suitable for vessels with 20 to 30 persons. EPA also disagrees that the exemption should be based on vessel types instead of number of persons onboard. As discussed earlier in the proposed rule and in greater detail in the supplemental notice, EPA has established that graywater volume produced and potentially discharged is tied to the number of persons onboard and believes this to be an appropriate metric. A shift toward an exemption based on vessel type may lead to a more expansive exemption than anticipated or appropriate.

Several commenters also raised concerns regarding the supplemental regulatory option. One such commenter strongly urged EPA to revert to the previously proposed standards and more broadly opposed not requiring treatment of graywater by any vessel covered by the VIDA. One commenter stated that the graywater requirements should be based on discharge characteristics and volume rather than what the commenter referred to as an "arbitrary" number of sleeping birds and/or crew onboard. EPA disagrees that sleeping births and/or crew onboard are arbitrary in the context of graywater discharges. As stated above, the generation rate of graywater is closely tied to the number of persons and types of activities occurring onboard. Requirements based on number of persons are more practical than those that would be based on graywater volume, which vessels operators and the USCG may have difficulty determining. The volume of graywater produced by a vessel can also vary across individual voyages, which may lead to confusion in how and when a requirement based on volume applies. As such, number of persons onboard is used as a proxy for volume generated and potentially discharged. Additionally, EPA considered overnight accommodations in setting the standard because vessels with such accommodations are more likely to produce graywater at higher rates from sources such as showers, laundry, and galleys. The commenter also recommended that, in the absence of numeric standards, EPA should set restrictions such as the maximum amount of graywater that can be discharged in a day and minimum distance offshore or from a sensitive area. EPA disagrees that the Agency should identify a maximum volume of graywater that can be discharged over a 24-hour period. Vessels are required to minimize discharges, including graywater, regardless of whether a maximum discharge volume is established. Such a restriction would also require vessels to install holding capacity to control the daily discharge volume or otherwise ensure that infrequent instances where the vessel may produce graywater over the volume limit do not result in a non-compliance event. Additionally, for vessels with available storage capacity, the regulations already identify discharge restrictions nearshore and in federally-protected waters.

Several commenters raised concerns regarding the water quality impacts of the supplemental regulatory option. One commenter explained that the supplemental regulatory option was not consistent with state law, which prohibits certain discharges

from watercraft, including graywater. EPA acknowledges that the state law identified by the commenter may be more stringent than the graywater provisions of the final rule, but the commenter has provided no specific information regarding whether vessels are able to comply with these state law requirements on a consistent, uniform, nationwide basis. As required by the VIDA, the final discharge standards are technology-based and at least as stringent as the 2013 VGP with limited exceptions as authorized by the VIDA (CWA section 312(p)(4)(D)(ii)(II)). These technology-based standards are to be established independent of any comparison to applicable state water quality standards or other requirements except insofar as compliance with such requirements provides a basis to conclude that treatment technologies are available and economically achievable per the applicable statutory standards for technology-based standards. Because the commenter is a Great Lakes state, EPA notes that 33 U.S.C. 1322(a)(6) defines "sewage" to include "human body wastes and the wastes from toilets and other receptacles intended to receive or retain body wastes except that, *with respect to commercial vessels on the Great Lakes, such term shall include graywater*" (emphasis added). Thus, as noted in the 2020 proposed rule, EPA is not imposing graywater discharge standards for commercial vessels in the Great Lakes under the VIDA and those discharges are instead subject to the requirements in CWA sections 312(a)–(l) and the implementing regulations at 40 CFR part 140 and 33 CFR part 159. Further, the rule at § 139.21(g) establishes a numeric discharge standard for graywater for fecal coliform and suspended solids from any vessel operating on the Great Lakes that is not a commercial vessel, as defined, but is subject to this rule. In reviewing this provision, EPA determined that it was unclear which provision a vessel must comply with when potentially subject to both § 139.21(e) and (g). As such, EPA updated § 139.21(g) to clarify that the paragraph applies only when the discharge is from a vessel not subject to § 139.21(e). The commenter also stated that the projected cost savings to the vessel community fails to account for the cost of degraded drinking water. Another commenter highlighted the environmental and human impacts of graywater discharges. EPA notes that the projected cost savings to the vessel community identified by the commenter and described in the supplemental notice was in the context of comparing the anticipated costs to those estimated in the Regulatory Impact Analysis accompanying the proposed rule. CWA section 304(b) specifies the factors to be considered in setting technology-based limits, which include "the costs of achieving such effluent reduction," but do not include effects on receiving waters or consideration of water quality. A detailed discussion of the limits of EPA's authority to establish the requirements of this regulation based on the performance of available and economically achievable technologies, but without regard to effects on receiving water quality, is provided in the comment response for *Statutory and Executive Order Reviews*.

Two commenters addressed the issue of commingled discharges. One of these commenters suggested that EPA investigate the feasibility of commingling graywater and sewage for processing through a marine sanitation device (MSD). The other suggested that there may be unanticipated impacts associated with mixed wastewaters and that the supplemental regulatory option would "remove any performance-based standards for

sewage for these ships if it is mixed with graywater." The commenter further asserted that there will be a cumulative impact of wastewaters discharged. EPA notes that the commingling of graywater and sewage is an existing practice by some vessels. Consistent with Part 2.2.25 of the VGP ("Graywater Mixed with Sewage from Vessels"), the final rule requires that any discharge incidental to the normal operation of a vessel, including graywater, that is commingled with sewage must comply with all applicable requirements of this rule and any law applicable to the discharge of sewage. The USCG implementing regulations may address how such commingled discharges would be demonstrated to comply with EPA's standards.

One commenter raised concerns regarding the use of overnight accommodations as a determining factor for applicability of § 139.21(e), noting that it may exclude day-only vessels with larger numbers of persons onboard or vessels that do not provide overnight accommodations for crew from having to meet the numeric standard established in § 139.21(f). EPA notes that the graywater standard at §§ 139.21(b) through (d) & (h) includes requirements applicable to all vessels subject to the VIDA, including restrictions related to the discharge of kitchen waste, food, oils, and oily residues, as well as soaps, cleaners, and detergents that are not minimally-toxic, phosphate-free, and biodegradable. Additionally, the discharge of graywater is prohibited from any vessel operating within 3 NM that voyages at least 3 NM from shore and has available storage capacity, unless the discharge meets the numeric standard. The same prohibition applies to any vessel within 1 NM from shore that voyages at least 1 NM from shore but not beyond 3 NM from shore and has available storage capacity. New ferries carrying 250 or more persons are also prohibited from discharging unless meeting the numeric standard, regardless of the number of overnight guests. The commenter provides a general statement regarding vessels that may be excluded from coverage by the proposed exemption; however, the commenter does not provide data or information to justify the imposition of additional requirements, such as the specific vessels excluded, the volume of graywater generated by these vessels, or the technology-based options for managing that volume of discharge.

Regarding definitions, one commenter stated that the term "new vessels" needs to be defined to clearly delineate the applicability of the graywater requirements. As discussed in the comment response for § 139.2, *Definitions*, "new vessel" is defined at CWA section 312(a)(1). Terms not specifically defined in the final rule may be defined under the CWA and any applicable regulations. Another commenter suggested there may be a regulatory gap if vessels such as ferries are not operated strictly under the USCG definition of "ferry." The EPA final rule defines "ferry" in § 139.2, *Definitions* ("*Ferry* means a vessel that is used on a regular schedule to: (1) Provide transportation only between places than are not more than 300 miles apart; and (2) Transport only: (i) Passengers; or (ii) Vehicles or railroad cars that are being used, or have been used, in transporting passengers or goods.") Vessels that do not fall under this definition are subject to any other applicable requirements of the graywater systems standard.

Some commenters provided more general comments regarding the contents of the supplemental notice related to graywater systems. One commenter stressed the importance of exempting existing vessels from the numeric discharge standard where there exist certain challenges. EPA notes that the Agency considered factors including stability, space limitations, and other challenges in the development of the graywater system standards; however, the commenter did not provide any specifics regarding how the standards might better account for these factors. Another commenter disagreed with EPA's use of the word "current" to describe the information contained in EPA's 2011 "Graywater Discharges from Vessels" report. EPA acknowledges that years have passed since the publication of the referenced report and therefore use of the word "current" may not be appropriate; however, EPA further notes that commenters did not identify any specific deficiencies with the information in the report that would render it unfit for use. Additionally, as discussed below, EPA considered the more recent publications identified by commenters. The commenter also cautioned against the use of assumptions present in the supplemental notice's discussion of graywater volume estimates, noting by way of example that cruise ships may have significant water conservation practices. EPA agrees that caution should be used in employing assumptions; however, EPA must determine the appropriate standards based on the data and information available and often must make regulatory decisions where complete information is unavailable. EPA's intent was to clearly communicate the basis for the supplemental regulatory option to provide an opportunity for specific public comments on the matter. Some commenters provided general feedback but otherwise did not provide specific data or information to better characterize graywater volume estimates.

One commenter requested that EPA evaluate other treatment options described in the 2011 *Graywater Discharges from Vessels* report; review VGP data and other sources regarding treatment, sampling data, information on graywater operations, and holding capabilities; and evaluate alternatives to treatment by AWTSs or MSDs as has been deployed by small passenger vessels in Alaska (e.g., treatment using chlorination and dichlorination in tanks). The commenter also invited EPA to review reports cited in the reference section of the comment. Information available in EPA's 2011 "Graywater Discharges from Vessels" report and VGP data were reviewed by EPA during the development of the proposed standards.

EPA also reviewed the report titled "Bilateral Workshop Grey Water Discharges from Vessels Summary Report" and found that the information contained within aligns closely with the information presented by EPA in the proposed rule and supplemental notice. The summary report includes information based on the discussions at the workshop of four "general mitigation approaches" that the host organizations identified for the group's consideration — "(1) waste minimization, (2) treatment standards and technologies, (3) location of discharges, and (4) monitoring and oversight." While monitoring and oversight are within the scope of USCG's implementing regulations, EPA's rule specifically describes requirements for waste minimization for all vessels subject to the

VIDA, as well as treatment standards and location of discharges for vessels where EPA determined it was an appropriate control for graywater discharges from those vessels. The report also highlights the limited availability of graywater volume estimates and points to the complexities associated with AWTS installation and operation. For example, the report states: "Treating black water and grey water together requires a larger capacity system since the volume of grey water generated is many times that of black water alone (especially because onboard toilets typically use a vacuum system and very little water as compared to toilets in buildings), takes more space on the ship, costs more in maintenance and capital and operating costs, and can be impacted by fluctuations in the loading of different compounds. (While black water generation is fairly constant if the vessel is used to capacity, the volume of grey water generated and its components can vary throughout a voyage.)" Regarding installation and drydock times, the report also indicates that application of new standards to newly built vessels first is "more feasible."

The report "Graywater from Passenger Vessels in Alaska," which is based on sampling conducted by Alaska Department of Environmental Conservation on passenger vessels in Alaska, describes the difference between graywater treatment with an AWTS versus a Type II marine sanitation device, specifically noting that the inclusion of graywater in the waste stream can interfere with sewage treatment. The report does note the treatment option of chlorine injection but does not provide details regarding the efficacy of this treatment option in achieving meaningful reductions in pollutant loads. In fact, the results section of the report explains that graywater treated by non-AWTSs had results showing toxicity to marine life, which was suspected to be due to levels of chlorine. Later, in the recommendations section, the report states, "[u]se of chlorine as a disinfectant should be discouraged, especially when there is a high organic load in the wastewater." Finally, the report explains that non-AWTSs (i.e., MSDs) were not effective at treating sewage and graywater, while AWTSs are "very effective."

The "National Vessel Dumping Assessment: Quantifying the threat of ship waste to Canada's marine protected areas" report highlights how "a small number of passenger ships is capable of generating the bulk of greywater and sewage in Canadian waters each year." This is in line with EPA's establishment of the strictest standards for these vessels that are capable of operating advanced treatment systems. EPA has not determined that requiring the use of non-AWTSs for treatment is appropriate for all other vessel types as available information suggests that these devices do not consistently achieve the desired reductions in pollutants, and a requirement to commingle sewage and graywater may actually prevent attainment of the sewage standards through interference with device operation.

In a similar vein, one commenter stated that EPA should, in situations where it finds that the proposed numeric limits are not feasible, create an effluent treatment standard based on effluent limits that would be practicable. As EPA explained in the preamble of the proposed rule, the proposed numeric discharge standard is based on the performance of

AWTSs, which, as described above, are demonstrated to achieve significant pollutant reductions. EPA considered a standard based on the use of traditional Type II marine sanitation devices to treat commingled sewage and graywater but rejected it because of questions about the efficacy of the systems at treating the commingled discharge, also discussed above. EPA is not clear on what other basis might exist for an additional numeric standard and the commenter has not identified one. The commenter also suggested that EPA should consider the feasibility of holding tanks and onshore treatment options and also discuss the issue with equipment vendors and experts. EPA considered the feasibility of holding tanks and discussed it in the preamble of the supplemental notice in the context of the proposed exemption. Equipment vendors and experts did not provide any new information in the public comment period for the supplemental notice for EPA to evaluate. EPA also considered the availability of onshore treatment options (i.e., pumpout facilities). In the proposed rule, EPA requested data and comments on the availability of pumpout facilities for graywater. While few specifics were provided, commenters identified general deficiencies in the availability of suitable facilities for non-recreational vessels.

The commenter also recommended that EPA provide information and review data from VGP NOI and annual reports and use sample data from non-cruise ships to provide information on discharge quality as the basis for any proposed changes. EPA's website has a public search tool that allows queries of all submitted Notices of Intent (NOI), Notices of Termination (NOT), and annual reports under EPA's 2013 VGP. EPA notes, however, that the VGP only required graywater monitoring by: (1) new build vessels that provide overnight accommodation to at least 15 crew, and (2) vessels that were subject to Part 2.2.15.1, "Additional Graywater Requirements for Certain VGP Vessels Operating in the Great Lakes." The latter are required to meet a different numeric discharge standard based on the performance standards for Type II marine sanitation devices for sewage discharges in the Great Lakes by commercial vessels. As such, the vessels covered by the proposed exemption in the supplemental regulatory option were not required to monitor or otherwise not required to meet the numeric discharge standard identified in § 139.21(f).

Several commenters asked that EPA clarify certain aspects of the graywater standard. First, one commenter requested that EPA clarify whether installation of storage capacity is acceptable in lieu of treatment equipment. EPA's requirements for graywater systems apply to the discharge of graywater. As such, storage that prevents the overboard discharge of graywater that is not compliant with the other requirements of § 139.21 is an acceptable means of complying with the graywater systems standards. Another commenter asked that EPA and/or USCG ensure that the regulations are clear as to whether Convention (ITC) or Regulatory tonnage should be considered when determining applicability of a standard, such as the one in the graywater systems standard. For graywater systems, EPA erred in removing "(400 GRT if GT is not assigned)" from the regulatory text associated with the supplemental regulatory option.

As such, the final rule at § 139.21(e)(1) specifies that the requirement applies to any new vessel of "400 GT (400 GRT if GT is not assigned)," as it did in the proposed rule. The rule defines both "gross register tonnage" and "gross tonnage" in § 139.2, *Definitions*.

Finally, a few comments were outside the scope of EPA's rule. One commenter stated that the ideal approach to graywater regulation rests with the IMO. While EPA agrees that coordination with the IMO and other countries is important, as the commenter noted, the comment is outside of the scope of this rule as the VIDA requires EPA to develop Federal standards of performance independent of requirements in place under the IMO. EPA received two comments that addressed monitoring or enforcement. The first recommended that EPA and USCG consider exempting vessels that exceed storage capacity due to factors outside the vessel operators' control, such as port congestion. The second stated that monitoring and enforcement are needed to verify that standards are being met and that performance and indicative monitoring are needed to achieve success. EPA acknowledges receipt of these comments; however, CWA section 312(p)(5) specifies that the USCG is to develop requirements to ensure, monitor, and enforce compliance with the EPA standards, including requirements relating to inspections, monitoring, reporting, and recordkeeping. As such, comments related to implementation and enforcement are in the purview of USCG's implementing regulations.

Hulls and associated niche areas

Coatings

One commenter suggested that EPA modify language in the preamble to clarify that microfouling is significantly less likely to release than macrofouling, even for vessels that travel at high speeds, and especially after an anti-fouling coating has been in service for a couple of years. EPA agrees and clarified in the preamble that macrofouling may be effectively managed with non-biocidal anti-fouling coatings for vessels that typically operate at high speeds. Additionally, those vessels operating in waters with lower biofouling pressure and those that spend less time at a dock are expected to have a lower biofouling rate and should select either non-biocidal anti-fouling coatings or anti-fouling coatings with low biocide discharge rates. In the preamble, EPA acknowledges that certain coatings, such as non-biocidal anti-fouling coatings, may not be suitable for all operational profiles (e.g., vessels that occasionally endure extended idling).

One commenter stated that the regulation of biofouling, including selection and use of anti-fouling coatings for purposes of minimizing biofouling, is outside the scope of EPA's authority under the VIDA. EPA disagrees. A discussion of EPA's authority to regulate biofouling is included in EPA's comment response for § 139.5, *Biofouling management*.

One commenter requested that EPA clarify in the regulations that state biofouling requirements will be superseded by the Federal standard. The statute's preemption provisions speak for themselves, and EPA is not, through this rulemaking, taking any steps to interpret or apply those provisions. EPA simply notes here that the VIDA generally preempts states from establishing more stringent discharge standards once the USCG implementing regulations required under CWA section 312(p)(5)(A) through (C) are final, effective, and enforceable. While the VIDA includes several exceptions to this expressed preemption (see CWA section 312(p)(9)(A)(ii) through (vi) and CWA section 312(p)(10)(D)), CWA section 312(p)(9)(A)(i) prohibits states, political subdivisions of states, and interstate agencies from imposing additional requirements through other means not explicitly identified in the VIDA.

In response to EPA's request for information on the maximum leaching rates necessary to sufficiently prevent biofouling while restricting the discharge of copper into the aquatic environment, one commenter identified NACE (now the Association of Material Protection and Performance), as a good source of information on coatings. Another commenter noted that one manufacturer has a technology that uses a combination of a silicone binder, biocide, and hydrogel with increased hydrophilicity. Another commenter mentioned the lack of specificity on copper leachate and acknowledged tradeoffs made by operators until better information, alternatives, and technology are available. EPA considered these comments but concluded that inadequate information is available to justify more specific requirements on leaching rates for the wide range of vessels subject to these regulations. As such, EPA opted not to include more specific coating requirements beyond those in existing regulations developed under the FIFRA.

One commenter suggested that there are challenges with the term "copper-impaired waters" which, as defined, are waters where the dissolved copper concentration exceeds the CWA standards for chronic and acute criteria. The commenter suggested that those fixed concentration levels have been shown to be well below the concentration at which copper is bioavailable and therefore where toxicity exists. Given that anti-fouling coatings protect from invasive species and reduce carbon dioxide emissions, the commenter suggested that the expression "copper-impaired waters" be defined under the VIDA as "water bodies where copper toxicity is verified by appropriate tools." EPA disagrees with this rationale for changing terminology used to identify waterbodies with concerns for copper. The Agency has long used the "impaired waters" concept to identify areas of concern for certain pollutants. Additionally, the lists of impaired waters that are developed by states pursuant to CWA section 303(d) are publicly available and identify their location, leading to clearer implementation.

Several commenters provided specific language modifications to align the cybutryne requirements with a recent 2020 MEPC amendment to the International Convention on the Control of Harmful Anti-fouling Systems in Ships (AFS Convention). EPA agrees and revised § 139.22(c)(5) to align more closely with the amendment. One commentor

suggested that the VIDA is not the appropriate pathway to prohibit cybutryne and instead should be regulated through FIFRA. EPA disagrees because the two statutory authorities regulate different aspects of cybutryne. While the FIFRA governs the registration, distribution, sale, and use of pesticides, the final rule specifies requirements to prevent the discharge of cybutryne to waters.

Cleaning

One commenter stated that in-water cleaning between drydocking is not necessary for the majority of commercial vessels during normal operation and therefore should not be classified as an incidental discharge or regulated under the VIDA. EPA acknowledges that not every vessel covered by these discharge standards will have to be cleaned in-water in order to minimize macrofouling; however, classifying a discharge as incidental is not based on the number of vessels that have such a discharge but rather on the nature of that discharge as it relates to the operation of the vessel. For example, not all vessels have an exhaust gas cleaning system, but for those that do, the discharge from such a system is incidental to the normal operation of that vessel and regulated by this rule.

Several commenters expressed concerned regarding the term "cleaned regularly" in § 139.22(c)(1) of the proposed rule and requested that EPA either define what "regular" means and provide thresholds for actions (e.g., the presence of microfouling), or change the term to "managed." EPA agrees that the provision could be clearer and modified the text in the final rule at § 139.22(d)(2) to the following: "Hulls and niche areas must be managed to minimize biofouling such as through preventative cleaning of microfouling." Another commenter suggested modifying the statement in the preamble from "[r]egular cleaning to minimize biofouling is considered an industry best practice, in large part due to the economic incentive involved" to "EPA is proposing that the condition of vessel hulls and niche areas must be constantly monitored (i.e., through frequent inspections or advanced data analytics) and that any biofouling is immediately removed once identified (i.e., through grooming or preventative cleaning). Continuous monitoring of the condition of a vessel's hull and niche areas and immediate removal of any fouling identified is considered an industry best practice…" EPA disagrees with the concept of requiring "continuous monitoring (i.e., through frequent inspections or advanced data analytics)" to manage hull and niche areas to minimize biofouling. Performance monitoring systems are mainly used for hull monitoring (not niche areas). They are also often a lagging indicator and data from these systems may depend on many factors other than biofouling accumulation.

One commenter noted that in-water assessment and cleaning of some niche areas and internal piping is impractical and can present significant safety hazards for divers. The commenter recommended that the standards call for inspection and cleaning of niche areas and piping during out-of-water inspections because no safe and practical methods have been identified to assess or clean these areas in-water. EPA disagrees with this

comment on the basis that most commercial vessels are required to undertake periodic hull surveys as part of International Association of Classification Societies rules and in accordance with IMO conventions. Section 139.22(d)(1) of the rule specifies that "[c]leanings should take place in drydock when practicable." However, EPA recognizes that in many instances it is not technologically available or economically achievable for a vessel to be drydocked outside of the regular schedule to clean biofouling from the hull or niche areas, and that repairs or maintenance required on the hull or niche areas must occur while the vessel is pierside between drydocks. Therefore, EPA believes the CWA authorizes the regulation of in-water cleaning when conducted as a preventive measure, acknowledging that maintaining the vessel hull helps to minimize fouling, thereby reducing vessel drag and improving vessel energy efficiency.

Several commenters noted that the terms "frequent," "gentle," "minimal," "local in origin," "plume or cloud of paint," and "minimize release of biocides" with regards to cleaning are not defined and open for broad interpretation. Along these same lines, commenters noted that the standards for cleaning are vague, and as such, do not protect against ANS introduction and/or water quality impacts (e.g., discharges of copper and zinc), and do not meet the technology-based requirements of the VIDA. EPA disagrees in part with these comments. The approach described in the final rule (i.e., any hull and niche area cleaning must minimize damage to the anti-fouling coating, minimize release of biocides, and follow applicable cleaning requirements found on the coating manufacturers' instructions and any applicable FIFRA label) is consistent with how cleaning was regulated in the VGP and described in the 2013 VGP Fact Sheet. These requirements are considered best practice, ensure the longevity and effectiveness of the coating, and minimize the pollutant loading into the surrounding environment. With EPA clarifying that these standards apply to discharges from the cleaning of microfouling but not macrofouling, there is a significant operational and financial incentive for vessel owner/operators to minimize biofouling accumulation on the hull and associated niche areas and minimize any damage to the coating when cleaning. EPA agrees with the commenters that use of the terms "local in origin" and "plume or cloud of paint" are too broad to be implemented and enforced. As such, these concepts are not included in the final rule.

Several commenters encouraged EPA to provide standards on biofouling that are as specific as possible, to improve implementation and enforceability. Commenters also requested that a distinction be made between macrofouling and microfouling, with clear definitions based on scientific literature. One commenter suggested that EPA consider using existing technical standards developed by voluntary consensus bodies, such as use of NACE's Pictorial Standard for Underwater Evaluation of Fouling Degree on Ship Hulls. Several commenters also indicated that EPA's use of the U.S. Navy's fouling rating (FR) scale was not appropriate for assessing risk of introducing ANS and suggested using the terms "macrofouling" and "microfouling," using a size threshold to differentiate between the two. Specifically, categorizing organisms > 0.5 cm as

macrofouling (as indicated in Morrisey et al., 2015). Similarly, several commenters noted that there is not enough data to show that in-water cleaning of biofouling at FR-20 or below poses low risk to the environment and noted that studies by the San Francisco Bay Regional Water Board on IWCC systems have found in-water cleaning releases significant and harmful levels of copper and zinc to the aquatic environment. Thus, these commenters contended that, even though cleaning of biofouling that is "local in origin" may pose a small risk of ANS introduction, such cleaning activities pose other water quality concerns. EPA disagrees with the commenters who stated that the U.S. Navy's fouling rating (FR) scale is used inappropriately in the proposed rule, but the Agency has opted to simplify the classification of biofouling by replacing the FR scale with the terms "macrofouling" and "microfouling," as suggested, thereby making use of the FR system unnecessary. EPA also disagrees that using a size threshold as the sole basis to differentiate between macrofouling and microfouling is necessary. The final rule includes definitions for "microfouling" and "macrofouling" that are consistent with the IMO's *2023 Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species* (MEPC.378(80)).

Several commenters noted that there are many different types of vessel hull coatings currently in use by the commercial vessel industry, which makes developing regulations for the myriad systems infeasible, but that most (if not all) systems come with specific guidelines from the manufacturer and a FIFRA label. The commenters maintained that addition of FIFRA label guidelines to the final standards would ensure that BMPs for the safe and effective cleaning for each type of hull coating are followed to extend the life of the hull coating and better protect receiving waters from the introduction of ANS. EPA agrees that the addition of language in the rule to follow cleaning requirements found on the coating manufacturers' instructions and any applicable FIFRA label would aid in ensuring safe and effective cleaning of vessel hulls. In consideration of this comment, § 139.22(d)(3) includes the following provision: "Hull and niche area cleanings must minimize damage to the anti-fouling coating, minimize release of biocides, and follow applicable cleaning requirements found on the coating manufacturers' instructions and any applicable FIFRA label."

Several commenters stated that the standards should only allow for discharges from preventative cleaning of microfouling on biocide-free and non-ablative coatings. In other words, the commenters requested that EPA prohibit discharges from cleaning of macrofouling or microfouling on biocidal or ablative coatings. EPA disagrees with this comment. EPA is aware that biocide-free and non-ablative anti-fouling coatings are available; however, such coatings may not be suitable for all operational profiles for the universe of vessels subject to these standards. The final rule at § 139.22 (c)(1) specifies that the selection of an anti-fouling coating for the hull and associated equipment must be specific to the vessel's operational profile, including for biocidal coatings to have appropriate biocide release rates and components that are biodegradable once separated from the vessel surface. The final rule therefore recommends, but does not require, the

use of non-ablative and biocide-free anti-fouling coatings and requires that anti-fouling coatings be applied, maintained, and reapplied consistent with manufacturer instructions, that reasonably includes the thickness, the method of application, and the lifespan of the anti-fouling coating. Additionally, § 139.22 (d)(4) of the final rule prohibits any discharge from in-water cleaning without capture of macrofouling.

One commenter stated that there was no justification provided for the selection of 365 days as the cut-off point for cleaning of hulls coated with copper-based anti-fouling paints in copper-impaired waters, and further explained that other biocides (not just copper) may also be of concern. EPA disagrees with this comment. EPA understands that biocidal coatings are generally designed to remain free of fouling for the 365 days after application, prior to requiring in-water hull cleaning. This requirement is also consistent with requirements for the Uniform National Discharge Standards for Vessels of the Armed Forces for underwater ship husbandry in 40 CFR 1700.3(b)(1) and is retained in the final rule.

Several commenters contended that EPA lacks the authority to regulate effluents from IWCC systems under the VIDA. The commenters suggested that discharge of effluent from IWCC should instead be regulated through appropriate NPDES permitting authorities for the following reasons: (1) the discharges occur shoreside, and (2) while cleaning may be incidental, any discharges from these activities cease to be incidental once delivered to an onshore facility for further processing and disposal/discharge. Several commenters remarked that, if IWCC is regulated under the VIDA, IWCC systems should capture as close to 100 percent of all material removed from the vessel as possible (capture percentage) and that the separation and/or treatment of captured materials during in-water cleaning must remove as close to 100 percent of material greater than 10 μm as possible (removal/treatment percentage). Another commenter recommended that if IWCC discharges are regulated under the VIDA, then EPA should adopt specific technology-based standards and include specifics of those standards. EPA agrees that discharges from barges and shoreside IWCC facilities are not incidental to the normal operation of a vessel. As with shoreside ballast water reception facilities, a waste stream transported to a land-based facility is not an incidental discharge. As such, in the preamble at Section VIII.B.13.e., *Cleaning*, EPA discusses the differences between in-water cleaning without capture and IWCC as it relates to the standards for the discharge of biofouling from vessels. Specifically, § 139.22(d)(4) prohibits any discharge from in-water cleaning without capture of macrofouling.

One commenter noted that the primary challenge to the use of in-water cleaning systems (IWCC and proactive in-water cleaning) is the level of maturity of first-generation technologies currently available and a lack of independent, rigorous data on in-water cleaning efficacy, impacts, and environmental safety. In contrast, two state commenters noted that IWCC technologies are available, economically achievable, and more protective than the proposed regulation. For example, several commenters noted that

currently available technology has demonstrated 100 percent capture is achievable by maintaining suction pump flow to ensure that at a minimum of 350 gallons per minute (gpm; 400 gpm is optimal) of process water is recovered from the unit head. EPA acknowledges the commenters' suggested discharge limitations; however, adequate data was not provided to support these as numeric discharge standards. Also, as discussed in the supplemental notice and in the preamble at Section VIII.B.13.e., *Cleaning*, EPA determined that discharge of effluent from IWCC systems is not incidental to the normal operation of a vessel.

One commenter suggested adding language that prohibits in-water hull and niche area cleaning in state-protected waters and in impaired waters (as prescribed in CWA section 303(d)), for constituents associated with cleaning activities. EPA disagrees with this comment on the basis that the VIDA authorized EPA to establish technology-based uniform federal discharge standards. Location-specific discharge requirements are appropriately addressed through one of several mechanisms for states to petition EPA or the USCG for more stringent discharge requirements in some or all state waters, including the establishment of no-discharge zones (§ 139.52) or issuance of emergency orders (§ 139.50).

One commenter questioned how conditions of coatings will be assessed and how "significant deterioration" will be quantified. EPA considers significant deterioration to be a level of deterioration that indicates failure at the anticorrosive/anti-fouling interface that can result in a soft blister that is more likely to be broken by cleaning. Cleaning of paint that has reached this level may cause rupturing of paint blisters, which not only results in discharges of anti-fouling coating particles, but also increases the rate of damage to the anti-fouling system more generally.

One commenter noted that a BMP is needed to cover small craft carried by larger vessels, as these small craft could carry invasive species on the hull or in bilgewater. EPA disagrees. The standards at § 139.5(b) require vessel owners/operators to develop a biofouling management plan to minimize the discharge of biofouling organisms. EPA expects such a plan to address all operations of the larger vessel that could carry invasives species acknowledging that VIDA excludes vessels less than 79 feet in length from these regulations.

Several commenters suggested refinements of the rule text to better align with the Uniform National Discharge Standards for Vessels of the Armed Forces— Phase II Batch Two final rule (40 CFR 1700.37). These included requests to distinguish microfouling from macrofouling, define IWCC systems as reception facilities and therefore not covered under the VIDA, clarify different hull type coatings, and incorporate FIFRA guidelines. EPA partially agrees. The final rule defines "microfouling" and "macrofouling," clarifies that IWCC discharges are excluded from regulation under the VIDA, and specifies that cleanings of hulls and niche areas must follow applicable

cleaning requirements on any FIFRA label. EPA disagrees, however, with the commenter's assertion that the rule must be entirely consistent with the Uniform National Discharge Standards. The VIDA standards are developed based on BAT pursuant to CWA section 312(p)(4), while the Uniform National Discharge Standards requirements are based on a different standard as established in CWA section 312(n). While the requirements may be similar, the approach for evaluating and establishing requirements for the two rules are not identical.

EPA also received comments regarding hull and niche area cleaning in response to EPA's supplemental notice. Several commenters supported EPA's assertion that the VIDA gives the Agency the legal authority to regulate both the passive and active discharge of biofouling. On the other hand, several commenters questioned EPA's interpretation of the VIDA and the proposed biofouling regulations for the following reasons: (1) the presence of biofouling is a not a "discharge incidental to the normal operation of a vessel," as found in CWA section 312(a)(12)(A)(i), because it is not a discharge that is "in connection with the…maintenance[ ] and repair" of any "protective, preservative, or absorptive application to the hull;" (2) Congress did not intend EPA to regulate the presence of biofouling under the VIDA; (3) the regulation of biofouling is not consistent with the delineation of responsibilities between EPA and the USCG; and, (4) the need to provide biofouling prevention requirements for states that do not have existing programs can be addressed through existing CWA authority and is not justification for exceeding Congressional authority. EPA disagrees. EPA's interpretation of biofouling as a "discharge incidental to the normal operation of a vessel" is consistent with the regulatory history, the plain language of the statute, and the statutory context, and is therefore subject to EPA's standards under the VIDA. A detailed justification for this determination was provided in the supplemental notice at Section IV.C.1., *Biofouling as a Discharge Incidental to the Normal Operation of a Vessel.*

One commenter asserted that IWCC discharges should be included as an incidental discharge in the final rule. The commenter noted that EPA should not exclude one half of a vessel's discharge activities within the VIDA, nor has any case been made for why certain types of discharges should be regulated by the VIDA while other discharges would be regulated through NPDES permits. EPA disagrees. Many comments were received on both the proposed rule and supplemental notice regarding the interpretation of whether IWCC discharges are discharges incidental to the normal operation of a vessel. As discussed in the supplemental notice, EPA interprets the discharge of a treated effluent from IWCC systems as analogous to the approach used for ballast water discharges to a reception facility, which are explicitly excluded from regulation under the VIDA.

Other commenters noted that the concept of passive discharge of biofouling is an unnecessary duplication of effort and intent. These commenters offered that use of proper vessel maintenance that is routinely performed would entirely account for EPA's

concerns as expressed related to passive biofouling. Similarly, another commenter noted that effective "passive" biofouling management, as EPA discusses in the supplemental notice, is directly contingent upon "active" hull maintenance plans that stipulate specific procedures and conditions under which hull cleaning activities may be conducted. EPA disagrees. The terms "passive" and "active" in reference to biofouling discharges were not defined in the proposed rule. During the public comment period for the proposed rule, EPA received comments questioning the Agency's legal authority to regulate the passive discharge of biofouling as an incidental discharge under the VIDA. Commenters on the proposed rule did not question EPA's authority to regulate discharges from active hull cleaning events. Clarification of these different biofouling discharges is necessary because the final rule stipulates different requirements that apply to passive and active discharges of biofouling. The terms are therefore retained in the final rule.

Several commenters opposed the designations of "passive discharge of biofouling" and "active discharge of biofouling" to describe in-water cleaning discharges and other biofouling discharges, noting that these terms are typically used in reference to coatings (not biofouling). EPA disagrees. The final rule clearly defines each term. The commenters did not offer alternative terminology to distinguish between the two types of biofouling discharges, nor did the commenters provide references to support their assertion. As such, these terms are retained in the final rule.

One commenter opposed the concept of "passive discharge of biofouling" on the basis that use of this term insinuates that biofouling discharges are within the active control of the vessel. The commenter further noted that the proposed language could put vessel operators in a vulnerable position due to the possibility of differing interpretations of the EPA requirements. EPA disagrees. The final rule's regulation of "passive discharge of biofouling" is consistent with the VGP and the VIDA. The VGP drew no distinction between active and passive discharges of biofouling. Thus, EPA regulated biofouling under the VGP by including management requirements to minimize the transport of biofouling organisms from vessel equipment and systems, primarily by requiring use and maintenance of an appropriate anti-fouling management system, including inspection, cleaning, and maintenance of the hull and associated niche areas. As required by the VIDA, the final discharge standards are technology-based and at least as stringent as the 2013 VGP with limited exceptions as authorized by the VIDA (CWA section 312(p)(4)(D)(ii)(II)). Additionally, in-water cleaning that is conducted as a preventative measure can be an important component of biofouling management and is considered an industry best practice. EPA's regulations also describe measures within the control of the owner/operator that can be taken to minimize passive discharge of biofouling. As such, EPA disagrees that those discharges should not be regulated for a lack of owner/operator control. EPA also disagrees that the concept of "passive discharge of biofouling" could put vessel operators in a vulnerable position due to differing interpretation of the EPA requirements. The final rule defines and discusses in detail the differences between

passive and active discharges of biofouling, as well as the different types of discharges associated with cleaning.

Several commenters offered that EPA's proposal to regulate biofouling is not consistent with the delineation of responsibilities between EPA and the USCG under the VIDA. These commenters noted that a management plan, whether a BWMP or a biofouling management plan, is not a standard of performance, but rather an implementation tool and therefore should be within the purview of the USCG's implementing regulations. Similarly, several commenters noted that the standards are not clear on the frequency and location of inspections. Some commenters offered that hull and niche area inspection and cleaning requirements should be aligned to the extent possible with the current class survey inspection schedules with a particular focus on when vessels will be in drydock, except for special circumstances where an in-water inspection identifies significant accumulation of macro fouling. EPA disagrees. One of the legislative purposes of the VIDA is to establish uniform Federal standards that are as stringent as the VGP, except in those circumstances specified by the VIDA in CWA section 312(p)(4)(D)(ii)(II). While the VGP did not explicitly require a biofouling management plan, it required the majority of the components of the biofouling management plan individually. The requirement to develop a biofouling management plan is consistent with the VGP and is intended to provide a holistic strategy that describes the vessel-specific anti-fouling systems and biofouling management practices, including the prioritization of procedures and strategies to prevent macrofouling. EPA recognizes that vessels with similar operational profiles, such as vessels that cross the same waterbodies, travel at similar speeds, and share the same design, may employ the same management measures. EPA anticipates that vessel owners/operators may develop a biofouling management plan template that can be readily adapted into a vessel-specific biofouling management plan. As indicated in the final rule, the details on the implementation of the development and maintenance of biofouling management plans will be identified as part of the USCG implementing regulations.

Most commenters expressed support for removing the US Navy's fouling rating (FR) scale as a metric for biofouling and instead adopting the terms "microfouling" and "macrofouling," as used in the IMO's 2023 *Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species (MEPC.378(80))*. Some commenters, however, expressed concern with removal of the FR scale as a metric for biofouling, noting that it has been widely used by government entities, mariners, and industry for many years. EPA disagrees with the need to retain the FR scale as a metric for biofouling. This determination was based on consideration of information in numerous comments received on the proposed rule and the supplemental notice indicating that the FR scale was not appropriate for assessing the risk of ANS introduction, is overly complex, and is not well-defined for commercial shipping. Furthermore, during the proposed rule public comment period, several commenters encouraged EPA to provide standards on biofouling that are as specific as possible and

recommended that a distinction be made between macrofouling and microfouling with clear definitions based on scientific literature. In consideration of these comments, the final rule simplifies the delineation of biofouling by replacing the FR scale with the terms "macrofouling" and "microfouling."

Several commenters asserted that the proposed regulations fail to protect U.S. waters from, and instead will result in an increase in, chemical contamination from copper, biocides, and other anti-fouling coatings and paints, and from potentially harmful pathogens and microbes. The commenters base this assertion on the rule's allowance of in-water cleaning of microfouling on vessel hulls and niche areas, without the capture and mitigation of effluent to any numerical standard. The commenters referenced Scianni et al. (2023), which showed elevated copper discharges resulting from proactive in-water cleaning of microfouling. The commenters recommended that EPA prohibit in-water cleaning without capture of microfouling of all biocide-containing coatings under the VIDA. The commenters offered that, instead, cleaning of microfouling on biocide-containing coatings should be restricted to IWCC and should be covered under the NPDES program, similar to in-water cleaning with capture of macrofouling. EPA disagrees. EPA is aware that biocide-free and non-ablative anti-fouling coatings are available; however, such coatings may not be suitable for all operational profiles for the universe of vessels subject to these standards. The final rule specifies that the selection of an anti-fouling coating for the hull and associated equipment must be specific to the vessel's operational profile, including biocidal coatings that have effective biocide release rates and components that are biodegradable once separated from the vessel surface. Furthermore, given that most anti-fouling coatings currently available contain biocidal elements, prohibiting in-water cleaning of microfouling on biocidal coatings would prevent a significant number of vessel operators from taking proactive steps to manage hull and niche area fouling, which is critical for minimizing macrofouling growth. The final rule therefore recommends, but does not require, the use of non-ablative and biocide-free anti-fouling coatings and requires that anti-fouling coatings be applied, maintained, and reapplied consistent with manufacturer instructions, that reasonably includes the thickness, the method of application, and the lifespan of the anti-fouling coating. However, the final rule prohibits in-water cleaning of any section of an anti-fouling coating that shows excessive cleaning actions (e.g., brush marks) and requires that the cleaning methods minimize damage to the anti-fouling coating, minimize release of biocides, and follow applicable cleaning requirements found on the coating manufacturers' instructions and any applicable FIFRA label.

Several comments included support for EPA's proposal to prohibit in-water cleaning of macrofouling under the VIDA and continue the practice of managing these discharges under the NPDES program. EPA acknowledges this support.

One commenter encouraged EPA to require proactive cleaning of microfouling prior to macrofouling growth, onboard documentation of the location and frequency of this

cleaning, and documentation of the degree of fouling prior to cleaning. EPA partially agrees. As required by § 139.22(d)(2), hulls and niche areas must be managed to minimize biofouling such as through preventative cleaning of microfouling. The final rule does not require onboard documentation of the location and frequency of this cleaning or the degree of fouling prior to cleaning, but these could reasonably be included in the USCG's implementing regulations.

One commenter questioned the inclusion of proposed text in § 139.22(c)(7) of the proposed rule that prohibits in-water cleaning on any section of an anti-fouling coating that shows excessive cleaning actions (e.g., brush marks) or blistering due to the internal failure of the paint system. The commenter suggested that the text should be modified to prohibit cleaning only when this condition is observable prior to the in-water cleaning. EPA disagrees. If excessive cleaning action (e.g., brush marks) or blistering is observed then cleaning is not allowed, regardless of when it is observed (i.e., prior to or after cleaning has already begun). If brush marks or blistering is observed during the process of in-water cleaning, the in-water cleaning operation in that area should be terminated. The commenter also explained that where macrofouling occurs, such marks or damages will only be visible after the area has been cleaned, further noting that cleaning of macrofouling should only be permitted if the waste material is being captured by the in-water cleaning system. The rule does not consider IWCC discharges as being under the purview of the VIDA, and therefore such discharges not addressed in the final rule.

One commenter suggested that the discharge of microfouling as part of hull grooming processes should be considered in the same way as the incidental discharge of microfouling because of the vessel moving through the water. EPA disagrees. The final rule differentiates between active and passive discharge of biofouling. The specific requirements for active discharge of biofouling in the final rule would not be applicable to many aspects of the passive discharge of biofouling, nor would requirements for passive discharges necessarily be applicable to active discharges.

Several commenters supported EPA's interpretation that discharges associated with in-water cleaning and capture fall outside of the VIDA authority. The same commenters supported EPA's proposal to prohibit in-water cleaning without capture of macrofouling under the VIDA and continue the practice of managing discharges from shoreside in-water cleaning with capture under the NPDES program. EPA acknowledges this support. One commenter clarified that if IWCC equipment is owned and operated by the vessel owner/operator then the IWCC systems would be similar to BWMSs, oily water separators, or any piece of equipment required for management of a discharge. The commenter recommended EPA develop standards or "reserve" that standards are to be developed for IWCC systems that are owned and operated by the vessel owner/operator. EPA disagrees. The VIDA requires that the Federal standards of performance be based on best available technology economically achievable. EPA is unaware of any existing IWCC systems meet this criterion. Additionally, EPA would need to evaluate the specific

circumstances of any IWCC systems owned and operated by a vessel owner/operator to determine if discharges from those systems meet the definition of a "discharge incidental to the normal operation of a vessel." Therefore, standards of performance for this type of discharge are not included in the final rule. As noted above, CWA section 312(p)(4)(D)(i) requires EPA to review the discharge standards at least every five years and update those standards as appropriate. If during this review process such technology is deemed to be available and economically achievable, EPA could consider developing Federal standards of performance for IWCC that is owned and operated by vessel owner/operators.

Several commenters recommended that EPA support state actions to implement NPDES permitting programs related to IWCC. EPA acknowledges receipt of these comments; however, they are outside the scope of EPA's rule.

Several commenters explained that leaving the regulation of IWCC discharges to state authorities could result in the establishment of inconsistent state requirements, leading to potentially significant administrative burdens and compliance difficulties for vessels operating in multiple states. Commenters further noted that this would contravene the intention of the VIDA to create uniform national standards. Similarly, commenters expressed that the need to obtain local permits for each cleaning operation will decrease the frequency of routine cleanings of hulls and therefore result in increased air emissions and fuel consumption in U.S. coastal waters. EPA disagrees that individual vessels will need to obtain local permits for IWCC discharges. The supplemental notice details EPA's justification for excluding IWCC discharges from the Agency's interpretation of a "discharge incidental to the normal operation of a vessel." EPA is unaware of any IWCC devices that are owned and operated by a vessel owner/operator. Rather, this service is provided by third party IWCC system operators who would be responsible for capturing, treating, and properly disposing of effluent associated with IWCC systems in compliance with applicable regulations. These discharges from barge or shoreside IWCC facilities are not incidental to the normal operation of the vessel. As with barge and shoreside ballast water reception facilities, a waste stream transported to a third-party facility is no longer considered incidental.

One commenter noted that there are in-water cleaning systems stored onboard and operated by the vessel's crew being tested at this time and most certainly will be available by the time the EPA and USCG regulations enter into force. The commenter suggested that EPA should encourage use of onboard in-water cleaning systems as they become commercially available so that timely and effective management of hull and niche areas to minimize macrofouling via aggressive management of microfouling can be realized. EPA acknowledges this comment and notes that CWA section 312(p)(4)(D)(i) requires EPA to review the discharge standards at least every five years and update those standards as appropriate. Additionally, CWA section 312(p)(7)(A) authorizes states to petition EPA to review any standard of performance, regulation, or policy if there exists

new information that could reasonably result in a change. As such, as technology improves, EPA expects to update the standards accordingly.

Similarly, one commenter suggested that the rule consider robotic, semi-autonomous, and autonomous hull cleaning technologies, including systems installed as ship's equipment, and not limit the scope to legacy technologies. EPA disagrees on the basis that the VIDA requires that the Federal standards of performance developed by EPA be based on best available technology economically achievable. EPA notes that the rule does not contemplate technologies or BMPs that are not currently available but may do so in the future should such new technologies or BMPs become available. CWA section 312(p)(4)(D)(i) requires EPA to review the discharge standards at least every five years and update the standards as appropriate. If during this review process a technology is deemed to be available and economically achievable, EPA could consider developing Federal standards of performance that address in-water cleaning systems stored onboard and operated by the vessel's crew, or robotic, semi-autonomous, and autonomous cleaning technologies.

One commenter offered that prior to the implementation of discharge requirements for in-water cleaning of microfouling, justification for any requirements should be fully supported by conclusive scientific data, and any required measures should be assessed for economic feasibility in the marine industry. Similarly, one commenter recommended that EPA assess the cost for regular hull inspections for macrofouling and microfouling because this has not been previously done. The commenter also suggested that drydocking be used to assess and respond to hull fouling because this would limit the cost impacts of inspections and cleanings, noting that in-water inspections during the operating year for macrofouling and microfouling would be a new cost. The commenter provided estimated costs for additional out of water drydockings for biofouling related hull inspections. EPA disagrees that there is a need to further assess the cost for regular hull inspections for biofouling. The general requirement to maintain the hull is not a new requirement and costs for hull inspection and cleaning activities were considered as part of the VGP. Additionally, monitoring the condition of hull and niche areas and removal of any biofouling identified is considered an industry best practice, in large part due to the economic incentive of the fuel savings that results from managing vessel biofouling at or below the microfouling level.

Two states provided feedback regarding state-level technical, administrative, and resource capacity to implement NPDES coverage of IWCC discharges. One state commenter noted that they did not have adequate capacity or time to comment on a request of that magnitude. The other state commenter requested additional engagement with EPA to better determine the scope of the NPDES permitting program for IWCC discharges before providing feedback regarding capacity to implement such a program. EPA acknowledges receipt of these comments; however, the Agency's determination that an IWCC discharge is not a "discharge incidental to the normal operation of a vessel"

means that such discharges are outside the scope of this rule. By extension, the implementation of a NPDES permitting program for IWCC discharges is also outside the scope of this rule.

Several commenters suggested that EPA incorrectly references the FIFRA when describing in-water cleaning. The commenters offered that EPA's pesticide regulations do not necessarily take CWA water quality standards into account, and many waterbodies in the U.S. are now considered impaired by FIFRA-registered pesticides, resulting in costly cleanup programs that the states and regulated community must implement. EPA disagrees that reference to FIFRA is inappropriate as a uniform federal technology-based requirement. As described in EPA's fact sheets for its Pesticide General Permit, most recently in the *Draft 2026 Pesticide General Permit Fact Sheet* (EPA-HQ-OW-2023-0268-0033), under FIFRA, EPA evaluates risks associated with pesticides and considers mitigation measures to address risks that exceed levels of concern. Thus, following instructions on an applicable FIFRA label is an appropriate practice to control the discharge of pollutants Additionally, to the extent these commenters contended that EPA must base its standards in this rule on CWA water quality standards, EPA disagrees as the VIDA requires EPA to establish federal technology-based standards independent of consideration of water quality standards.

One commenter noted that the definition of proactive cleaning is too broad and suggested the addition of the following definition to the final rule: "hull grooming" or "clean hull measures" means the process of periodic cleaning of a vessel's hull to remove microfouling to maintain the cleanliness of the hull with as close to no biofouling as possible and reduce the ship's drag to improve the environmental performance of the ship. EPA disagrees. The preamble to the final rule articulates a different definition: "Preventative in-water cleaning, also referred to as proactive cleaning, is the frequent, gentle cleaning of the vessel hull and appendages to prevent or reduce the attachment and growth of macrofouling with minimal impacts to the anti-fouling system." This definition is consistent IMO *2023 Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species* (MEPC.378(80)) and EPA believes it to be appropriately specific.

Several commenters requested clarification regarding the language in the supplemental notice excluding from regulation under the VIDA all discharges associated with IWCC, prohibiting all in-water cleaning without capture of macrofouling, and identifying what discharges are associated with IWCC. Commenters recommended definitions for "in-water cleaning with capture (IWCC)" and "in-water cleaning without capture" to be added to the final rule to clarify EPA's intent. The final rule includes these definitions.

Inert gas systems

EPA received one comment articulating support for the proposed standards for inert gas systems. EPA acknowledges the commenter's support.

Motor gasoline and compensating systems

EPA received one comment articulating support for the proposed standards for motor gasoline and compensating systems. EPA acknowledges the commenter's support.

Non-oily machinery

EPA received one comment articulating support for the proposed standards for non-oily machinery. EPA acknowledges the commenter's support.

Pools and spas

EPA received one comment articulating support for the proposed standards for pools and spas, and one comment requesting modification of the standard. EPA acknowledges the first commenter's support. The second commenter requested that discharges from pools and spas be prohibited within 1 NM of shore and occur at a minimum vessel speed due to concerns about human waste. EPA disagrees. Vessels disinfect pool water and the numeric discharge standard in § 139.26(b)(2) allows for the proper dosage to achieve disinfection while limiting the discharge of residual disinfectants. The numeric limits are also consistent with common dechlorination limits from shore-based sewage treatment facilities. When sewage is commingled with an incidental discharge regulated under this rule, such as pool and spa discharges, the resulting commingled discharge must meet both the sewage requirements in CWA section 312(b) and the requirements for that incidental discharge. Based on these facts, EPA determined that the discharge standards in § 139.26, *Pools and spas,* sufficiently address the discharge of bacteria through this pathway. Further, the commenter provided no data or other documentation of untreated human waste in discharges from pools and spas or such discharges introducing bacteria or viruses to nearshore waters to justify such a change. Additionally, no data were provided to justify prohibiting discharges within 1 NM of shore or at an unspecified minimum speed as a means to prevent bacteria or viruses from reaching nearshore waters.

The same commenter also specified that such discharges should be minimized. EPA agrees. The general standards in the final rule, as described in subpart B, require all incidental discharges subject to this rule to be minimized.

Refrigeration and air conditioning

EPA received one comment articulating support for the VIDA standards and several comments requesting modification of the standards. EPA acknowledges the commenter's support for the VIDA standards.

One commenter requested clarification on the definition of an indirect discharge from refrigeration and air conditioning equipment and to provide an example. The commenter further requested that if the meaning of the term "indirect discharges" is not clarified, that the standard specify that discharges should be retained onboard. EPA agrees with one of the commenter's suggested options to provide an example of an indirect discharge and has clarified in the preamble to the final rule that condensation is generally directed [directly] overboard, but in some instances may be collected for temporary holding until onshore disposal or otherwise drained to the bilge.

One commenter requested that EPA study this discharge to determine if air conditioning condensate may be a potential source of disease, bacteria, or viruses. The commenter also requested a prohibition on these discharges in port and elsewhere until further information is available. EPA disagrees because, as stated on EPA's *Legionella* webpage, bacteria such as these are found naturally in ambient surface water. Disease outbreaks are more common from aerosolization and subsequent inhalation from potable water sources or recreation in pools and spas (which are outside the scope of this rule), rather than the discharge of air conditioning and refrigeration condensate into surface water. Based on these facts, EPA determined that the discharge standards in § 139.27, *Refrigeration and air conditioning*, sufficiently address the discharge of pollutants through this pathway. EPA notes that the commenter provided no data or other documentation demonstrating that a complete prohibition of these discharge is warranted in lieu of the general standards that apply to this discharge. Most importantly, the commenter did not provide any information on new technology or BMPs that could be used to reduce such discharges beyond the standard that EPA is finalizing.

Seawater piping

Several commenters mentioned the impracticality and difficulty in safely accessing sea chests, seawater piping, and grates to control biofouling, noting that the only safe and reliable way to remove macrofouling from a sea chest is to remove the grate when in drydock and then clean. Another commenter voiced concern with the proposed requirement that "reactive measures" must be used upon identification of biofouling in seawater piping systems that exceeds FR-20, noting that vessel sea chests and grates, regardless of coatings and/or MGPS treatments, will likely exceed FR-20. Several commenters recommended that until such time as new technologies permit practical and safe cleaning of sea chests while in-water, the requirement for reactive measures to be taken when fouling exceeds FR-20 should be deleted or timed for the vessel's next scheduled out-of-water inspection. EPA acknowledges safety concerns with physically removing a grate and cleaning a sea chest while a vessel is waterborne. However, EPA disagrees with the commenter's implication that this is the only feasible method to address the biofouling. Most commercial vessels are required to undertake periodic hull surveys as part of International Association of Classification Societies rules and in

accordance with IMO conventions. The final rule at § 139.22 (d)(1) specifies that when practicable, cleanings should take place in drydock. However, EPA recognizes that in many instances it is not technologically available or economically achievable for a vessel to be drydocked outside of the regular schedule to clean biofouling from the hull or niche areas and that some repairs/maintenance required on the hull or niche areas, including seawater piping system components, must occur while the vessel is pierside between drydockings. Therefore, EPA's regulations do not require that reactive measures be conducted at drydock, and EPA understands there to be reactive measures that that do not require drydocking (e.g., freshwater flushing; chemical dosing). For example, vessels that use seawater cooling systems to condense low pressure steam from propulsion plants or generator turbines already practice freshwater flushing as a means of removing biofouling. Note that the final rule dispenses with the use of the U.S. Navy's fouling rating scale, and notably reference to FR-20, in favor of the term "macrofouling" to describe instances when reactive measures are to be taken.

Several commenters expressed concern with the requirement to install an MGPS. These commenters noted that some of the technologies listed in the proposed rule to control biofouling in seawater piping, sea chests, grates, and similar areas have not proven to be effective at preventing biofouling outside of the small area in the immediate vicinity of where the MGPS treatment occurs. Commenters noted that the most effective available means for addressing biofouling in these areas is the use of appropriate anti-fouling coatings and regular drydockings, during which the areas can be safely cleaned, and new anti-fouling coatings applied (or other appropriate and effective MGPS used). One commenter noted that glass reinforced/filament wound epoxy based composite piping (commonly referred to in industry by the abbreviation GRE piping or by the brand name of a prominent provider, Bondstrand) is highly resistant to corrosion caused by saltwater, chemicals, residues and bacteria, does not rust or scale, and is resistant to marine fouling due to the smooth interior surface. As such, the commenter recommended it be considered for inclusion in § 139.28(b)(2), as proposed (now § 139.28(c)(2), as finalized). Several commenters noted that beyond using available anti-fouling coatings and cleaning during drydocking, the best management strategy for reducing the likelihood of fouling in seawater piping is to focus on improvements in sea chest and hull design. EPA disagrees with the commenters' concerns regarding the requirement to install an MGPS. The most common MGPS for seawater includes sacrificial anodic copper systems and chlorine-based dosing systems. Such systems are already widely in use and available. EPA recognizes that there may be a variety of systems capable of addressing biofouling in seawater systems, and an effective, preventative biofouling management strategy may include a combination of different techniques, a list of which are identified in the final regulations. EPA agrees with the commenters' assertion that efforts to improve sea chest and hull design is an appropriate strategy for reducing the likelihood of hull and niche area fouling. EPA's regulations do not prevent such design improvements, but such improvements may not be technologically available or economically achievable for older vessels or vessels with design limitations. EPA agrees

with the comment regarding inclusion of glass-reinforced/filament-wound epoxy based composite piping as an acceptable component of MGPS and included this as an option in the final rule at § 139.28(c)(2)(v).

One commenter recommended that rule text be amended to allow for alternative types of MGPS and for future technological advancements and suggested that the text could state that alternatives could be requested for approval. EPA disagrees with the commenter suggesting EPA develop a process for review and approval of alternative types of MGPS and for future technological advancements. The VIDA provides several opportunities to modify standards to incorporate any newly identified practices (e.g., the 5-year review specified in CWA section 312(p)(4)(D)(i) or the state petition process to modify the regulations specified in CWA section 312(p)(7)(A)(ii)). EPA can modify the standards at that time should other types of MGPS be determined to be BAT.

Several commenters were concerned that the rule does not specify when such a required MGPS should be fitted, while one commenter noted that the proposed effective date for installation of a MGPS is not a suitable timeframe for most operators and requested the option to have vessels grandfathered into the program with proposed rule changes only applying to new vessels with construction start dates that begin after January 1, 2022. EPA disagrees with the comments regarding MGPS installation timing. EPA's standards identify the need for installing and operating an MGPS but not the timing for completion of such activities. EPA expects that an effective date may be established as part of the USCG implementing regulations, considering such factors including vessel logistics, equipment, drydocking, and inspection frequencies. EPA disagrees with the commenter's suggestion that installation of a MGPS should only apply to new vessels with construction start dates after January 1, 2022, as installation of MGPS and implementation of practices necessary to remove macrofouling from seawater piping systems can be performed by both existing and new vessels.

One commenter recommended that EPA develop a timed-maintenance or condition-based system for any biofouling controls for seawater piping systems on commercial vessels. The commenter noted that biofouling control performance monitors could be readily incorporated into biofouling maintenance plans and may have minimal impact. EPA partially agrees with this comment, as EPA's standards already have condition-based triggers (i.e., when a certain level of biofouling is achieved). EPA disagrees that it is necessary that the standard also be time-based because EPA's condition-based system is sufficient. EPA also notes that the USCG implementing regulations may establish a timeframe for when actions must be taken once a certain condition (i.e., macrofouling growth) is identified.

One commenter noted that the use of chemicals creates further risks and safety issues, the use of UV for sea chests and piping may be susceptible to the same issues as ballast water, and that restrictions on certain types of practices are already in place in marine

sanctuaries, which would limit the options available to some vessels. EPA disagrees with this comment. EPA acknowledges that not all MGPS options may be available to every vessel and in every environment, and therefore the rule allows vessels to choose from different MGPS options.

One commenter supported an addition to the proposed rule of a prohibition on the discharge of materials collected in seawater inlet screening or filters due to their potential to contain biological material. A definition of "seawater piping system" is included in the final rule. The definition indicates that strainers and filters are part of the seawater piping system and are therefore covered under the final standards for seawater piping.

Several commenters were concerned with the lack of language in the rule regarding management of cooling water, with a primary concern being impact on marine life in harbors. These commenters noted that the temperature impacts on receiving water can be substantial, that power plants of several megawatts are common on larger vessels, and that the combination of thermal input from engines with exhaust gas cleaning might raise temperatures to a level that would impact marine life. One commenter suggested that an evaluation of the thermal impacts from large engines and other ship sources is needed. EPA disagrees with this comment that cooling water requires additional specific regulatory text. While cooling water is interpreted to be an incidental discharge, EPA is not including any specific requirements for cooling water in the final rule. Instead, EPA discharges of cooling water are subject to the requirements in the general standards for discharges detailed in subpart B of the regulations. To the extent a specific discharge includes cooling water in the effluent—for example discharges from seawater piping—the commingled discharge would also need to comply with the standard for the specific discharge.

Several commenters suggested specific regulatory text revisions. First, one commenter suggested the following regulatory text: "…minimize the accumulation of biofouling in seawater piping, including sea chests, grates and similar areas, by inspecting and cleaning these areas during regularly scheduled drydockings and by the use of antifouling coatings or other appropriate and effective marine growth prevention systems." Another commenter suggested identical language, except "appurtenances" was used in place of "areas." Other commenters suggested that "…biofouling that exceeds a fouling rating of FR-20…" should be replaced with "macrofouling." Commenters also suggested that the following provision be modified to include the italicized text: "Discharges resulting from reactive measures to remove macrofouling are prohibited in port *unless an in-water cleaning and capture system as provided in § 139.22(d) is used*." EPA partially agrees with these comments and, in the final rule, included a new definition for "seawater piping system" in § 139.2, *Definitions* and added the following language at § 139.28(b): "Seawater piping systems must be inspected, maintained, and cleaned as necessary to minimize the accumulation and discharge of biofouling organisms." This added language aligns closely with the 2013 VGP which states that "[v]essel owner/operators must use

the minimum amount of biofouling chemicals needed to keep fouling under control" and "[v]essel owner/operators must remove fouling organisms from seawater piping on a regular basis…"

One commenter noted that the definition of "niche areas" includes sea chests and inlet gratings and recommend removing the language, "including sea chests, grates, and other similar appurtenances" contained in the proposed rule at § 139.28(b). EPA partially agrees with this comment. A definition for "seawater piping system" that is illustrative and specific has been added to the final rule and the definition of "niche areas" has been revised in the final rule. Per the new definitions, niche areas that are part of the seawater piping system will be subject to § 139.28, *Seawater piping*, while all other niche areas will be covered under § 139.22, *Hulls and associated niche areas*. Further discussion of the definition of "niche areas" can be found in the comment response for § 139.22, *Hulls and associated niche areas*.

Sonar domes

EPA received one comment articulating support for the proposed standards for sonar domes. EPA acknowledges the commenter's support.

Subpart D—Special Area Requirements and Appendix A to Part 139—Federally-Protected Waters

EPA received comments on federally-protected waters regarding both the list of waters in Appendix A, as well as the specific discharge requirements for vessels operating within these waters. Many commenters focused on the selection of federally-protected waters in Appendix A. To clarify, the EPA included additional explanatory information throughout the final rule.

Several commenters requested that the list of federally-protected waters only include waters relevant for commercial vessels, with one commenter noting that that some National Parks, Monuments, and Wilderness Areas only extend to the high tide line and therefore do not include waters subject to this rule. EPA agrees in part with these commenters. EPA disagrees with the implication that the VIDA directs EPA to designate federally-protected waters, or that EPA may exclude areas based on whether they are ordinarily transited by commercial vessels. Rather, the VIDA directs EPA to consider whether certain waters are "subject to Federal protection, in whole or in part, for conservation purposes." In response to these commenter concerns, as well as additional comments related to the usability and enforceability of the list, EPA included additional information in the final Appendix A to assist the regulated community. EPA added a "*" modifier to denote those federally-protected waters that may be most relevant to vessels subject to this rule. This modifier does not affect the applicability of the requirements outlined in § 139.40 to all federally-protected waters listed in Appendix A. Specific areas

in Appendix A were marked with the "*" modifier if they were within 0.1 mile of the coast or Great Lakes, or within 0.5 miles of National Waterway Network lines (DOT, 2023). The underlying methodology for this analysis is available in the docket. While this approach may still include/exclude some areas where vessels do not/do transit, it can assist the regulated community to identify federally-protected waters that may be most relevant, while maintaining the stringency of the VGP requirements.

Further, commenters requested that Appendix A include only those federally-protected waters that are protected for conservation purposes, and by extension exclude those protected solely for cultural or historical purposes. Similarly, EPA received comments from NOAA recommending the removal of specific National Marine Sanctuaries (NMS) where the regulations are narrowly tailored to protect shipwrecks and other resources (e.g., Thunder Bay NMS, Mallows Bay, Potomac River NMS, Monitor NMS, and Lake Ontario NMS). NOAA specifically chose not to regulate vessel discharge in those areas after going through the public process to create regulations for those sanctuaries because it found no evidence that discharges would threaten cultural or historical resources. EPA partially disagrees that all federally-protected waters that were created solely for cultural or historical resources should be removed from Appendix A. EPA considers federally-protected waters listed for cultural or historical purposes to be listed for conservation purposes, consistent with EPA's understanding that the term "conservation purpose" in CWA section 312(p)(4)(B)(iii) is not limited to solely ecological reasons. However, EPA agrees with NOAA that NMS waters designated solely for cultural/historical purposes, and for which there is no evidence that discharges would threaten these resources, be removed from Appendix A. While less stringent than the VGP, the change is based on new information provided by NOAA, the agency that has the authority and responsibility to manage these sanctuaries. EPA modified Appendix A accordingly in the final rule.

The city of New York also asked for review and clarification of 11 National Monuments in the city and its harbor, because some have no connection to marine resources, and some are only adjacent to water. Based on the analysis described above to streamline the list of Appendix A, all of these areas were included in the final list of federally-protected waters (Ellis Island is included as part of Statue of Liberty National Monument). However, only Castle Clinton National Monument, Gateway National Recreation Area, Governors Island National Monument, and the Statue of Liberty National Monument, are demarcated with the "*" modifier, as they were found in the analysis to be in areas more likely to be applicable to regulated vessels. While this approach may still include areas not relevant to vessels subject to this rule, it helps to address commenter concerns about list utility using a consistent approach while maintaining the level of stringency from the VGP.

One commenter asked how the rule would be applied in federally-protected waters beyond 12 NM from shore, while another commented requested that EPA include all federally-protected waters even if the waters extend beyond 12 NM. EPA clarified in the

final rule that the VIDA is only applicable within waters of the United States or waters of the contiguous zone (out to 12 NM from shore under Article 24 of the Convention of the Territorial Sea and the Contiguous Zone). In the final rule, therefore, EPA removed locations from Appendix A that are located fully outside of waters subject to the rule (e.g., Flower Garden Banks NMS, Grey's Reef NMS, and Monitor NMS). EPA further clarified that for federally-protected waters that extend beyond the 12 NM line (e.g., Stellwagen Bank NMS, Florida Keys NMS, and Papahānaumokuākea Marine National Monument), the rule applies only to the portion of waters within 12 NM.

Several commenters requested inclusion or removal of specific waters to Appendix A. Waters recommended for inclusion were the South Slough National Estuarine Research Reserve, as well as National Fish Hatcheries and National Monuments managed by the U.S. Forest Service and federal agencies other than the National Park Service (e.g., Admiralty Island National Monument and Misty Fjords National Monument). EPA disagrees with the inclusion of additional waters in Appendix A. CWA section 312(p)(4)(B)(iii) does not authorize EPA to designate areas as "federally-protected." Instead, EPA's authority is specifically tied to requirements in Parts 2.1 and 2.2 of the VGP. Regardless, National Estuarine Research Reserves are not "federally-protected." The reserve system is a partnership between NOAA and coastal states, and reserves are initiated, controlled, and managed by the state (15 CFR part 921). The designation of a National Estuarine Research Reserve by NOAA does not impose any new federal regulations; therefore, such a designation does not constitute federal protection. EPA notes, however, that the VIDA provides several mechanisms for states, working through EPA and/or the USCG, to pursue more stringent requirements within state waters, including the issuance of emergency orders (§ 139.50) and establishment of no-discharge zones (§ 139.52) for one or more incidental discharges.

One commenter requested that Appendix A be expanded to include waters for indigenous subsistence fishing, ancestral waters, traditional use and cultural heritage areas, and areas of high ecological value (e.g., whale feeding areas; areas critical to fish). EPA disagrees. Appendix A is limited to those waters that are federally-protected, in whole or in part, for conservation purposes. Except where CWA section 312(p) specifically directs EPA to establish discharge requirements for vessels operating in certain bodies of water (namely, for the Great Lakes, Pacific Region, and waters subject to Federal protection), EPA is generally tasked with establishing uniform Federal standards. EPA notes, however, that the VIDA provides several mechanisms for states, working through EPA and/or the USCG, to pursue more stringent requirements within state waters, including the issuance of emergency orders (§ 139.50) and establishment of no-discharge zones (§ 139.52) for one or more incidental discharges.

One commenter requested the establishment of a no-discharge zone in waters adjacent to federally-protected waters. EPA is unable to accommodate this request. For EPA to consider such a designation, the interested state must submit an application with the

required application elements identified in the final rule at § 139.52, *Application by a state for the Administrator to establish a state no-discharge zone*.

Many commenters described the difficulty associated with identifying federally-protected waters in the absence of a map or coordinates and requested identification of these waters on NOAA navigational charts or through specific boundary coordinates. Commenters indicated that EPA should identify/define the waters on the map instead of placing the responsibility on vessel operators. EPA notes that the VIDA carries forward the approach used in both the 2008 and 2013 VGPs of including a list, but not a map or chart, of federally-protected waters and requiring the vessel operator to determine the applicability of federally-protected water requirements to vessel operations. Based on its experience implementing the VGP, EPA does not see a need to alter this approach, though this does not preclude EPA from doing so in the future.

Commenters also questioned how Appendix A will be updated when new federally-protected waters are established and suggested Appendix A be available through a frequently updated live web link. Any revisions to Appendix A will be made in future EPA proceedings, with EPA potentially coordinating with NOAA and other agencies as necessary. Similarly, one commenter requested clarification on if omissions of federally-protected waters from Appendix A constitute lack of protection under this rule. EPA clarifies that only those waters listed under Appendix A are subject to the additional federally-protected waters requirements in this rule.

EPA received comments on the discharge-specific provisions applicable in federally-protected waters. Many commenters expressed that these provisions are achievable, except for certain discharges for vessels operating exclusively in federally-protected waters. Several commenters requested either exemptions or an altered approach for such vessels, but some did not include information or rationale for which discharges are of concern. To address these comments, in the final rule EPA added exclusions for vessels operating exclusively within federally-protected waters for discharges from ballast tanks, decks, fire protection equipment, as well as hulls and associated niche areas in § 139.40(b), (f), (g), and (i), respectively.

Several commenters requested clarification on the prohibition of discharges in federally-protected waters as it relates to specific discharges. One commenter asked whether the prohibition of pool and spa water discharges into federally-protected waters (§ 139.40(k)) only applies to pool and spa water dosed with chemicals and if the prohibition applies to sea-to-sea circulation pools. EPA clarified in the preamble that the prohibition also applies to seawater pools and those kept in sea-to-sea circulation, regardless of whether these waters are dosed with chemicals.

Another commenter asked about automatic discharges from boiler blowdown and maintenance of life at sea. Consistent with § 139.1(b)(3), EPA clarified that small

volumes of routine blowdown may be discharged because of design and operational considerations of the boiler if compliance with this part would compromise the safety of life at sea.

One commenter articulated that the prohibition on the discharge of treated wastes in federally-protected waters should take into account available treatment and noted that vessels cannot be designed to hold all wastes. EPA notes that, in establishing requirements in federally-protected waters, the Agency did take into account available treatment and the ability of vessels to hold wastes.

EPA received several comments on requirements for ballast water applicable in federally-protected waters. Several commenters requested that EPA revise the ballast water requirement applicable in federally-protected waters to "prohibit" discharges rather than specify such discharges "must be avoided." EPA disagrees. The term "must be avoided" was used in the VGP and is adequate to convey that discharge or uptake of ballast water in the specified areas are not allowed, which is effectively synonymous with "prohibit." Commenters did not explain why the suggested change is necessary or why the current VGP approach has been insufficient.

One commenter noted that the proposed ballast water prohibition is not absolute as it is subject to the safety exception in § 139.1(b)(3). EPA agrees. The VIDA recognizes that safety of life at sea and other emergency situations not resulting from the negligence or malfeasance of the vessel owner, operator, master, or person in charge may arise, and that the prevention of loss of life or serious injury may require operations that would not otherwise be consistent with these standards, for ballast water and other incidental discharges.

One commenter expressed support for EPA's inclusion of the reference to the Howard Coble Coast Guard and Maritime Transportation Act of 2014, as amended by the Coast Guard Authorization Act of 2015. Several commenters requested that EPA correct and clarify the citation to the authority. EPA agrees and modified the citation as follows: "pursuant to 16 U.S.C. 1431 note (Pub. L. 113–281, title VI, § 610, Dec. 18, 2014, 128 Stat. 3064, as amended by Pub. L. 114–120, title VI, § 602(1), Feb. 8, 2016, 130 Stat. 79)."

One commenter recommended that the prohibition against the uptake or discharge of ballast water within the boundaries of federally-protected waters be applicable only in those areas and not in other waters that may directly affect such waters. The proposed rule already reflected the commenter's recommendation, and the language is retained in the final rule at § 139.40(b) requiring that the discharge or uptake of ballast water be avoided in federally-protected waters with some specified exceptions.

Several commenters requested that EPA add language from the VGP that specifies vessel operators must avoid discharging ballast water in waters that may directly affect federally-protected waters. Another commenter stated that this requirement was feasible because vessel operators can and should know exactly where they plan to exchange ballast water and there should be no ambiguity as to whether they are in a location that would impact federally- (or state-) protected waters. Another commenter, however, stated that the lack of specificity of the language "may directly affect" is capricious and leaves operators vulnerable to prosecution by federal, state, or local authorities. EPA disagrees with the inclusion of language related to discharges that "may indirectly affect" federally-protected waters. As described in the preamble to the final rule, EPA determined that the information needed by a vessel operator to make a "may directly affect" determination is highly dependent on the specific instant at which a ballast water uptake or discharge event is to occur and that the necessary information to make that determination is not readily available and not easily characterized.

One commenter recommended establishing a distance from protected waters where ballast water discharges are to be avoided. EPA disagrees and the commenter failed to describe the technical basis for such a distance or information demonstrating that vessels would be capable of operating while not discharging in those extended areas. One commenter indicated that the concept of recommending that discharge or uptake of ballast be as far from federally-protected waters is unenforceable and should be explained. EPA acknowledges that the recommendation is not an enforceable provision of the standard. Rather, EPA included it as practical guidance for vessel operators that can delay a ballast water discharge (e.g., an exchange) until the vessel is farther away from federally-protected waters.

Several commenters stated that the Hawaii Humpback Whale National Marine Sanctuary and Papahānaumokuākea Marine National Monument are important resources for the state of Hawaii with documented increasing impacts from ANS, and that having a standard that protects these areas from new ANS introductions is critical for natural and cultural resources. EPA agrees; however, the commenters failed to describe how protections within the federally-protected waters for these areas are inadequate.

Another commenter indicated that there should be listings of protected state marine sanctuaries and other areas established within each state's jurisdiction and that states must be allowed to establish this right within these regulations without having to petition. EPA acknowledges the commenter's concern but notes that CWA section 312(p)(4)(B)(iii) only applies for areas under Federal protection, not those protected under state law. As such, EPA is not authorized to include state-protected areas in the rule.

One commenter requested that ferries that operate only in federally-protected waters in a single COTP Zone be exempted from the prohibition applicable to ballast water

discharges in federally-protected waters. The commenter noted that these vessels do not have the ability to conduct ballast exchanges or to take on freshwater ballast in between loads. EPA agrees and added this exception in the final rule for discharges in federally-protected waters from any vessel that operates solely in federally-protected waters within a single COTP Zone, consistent with a comparable ballast water exception applicable in other waters.

One commenter noted the requirements for ballast tanks (and bilges) appear overly restrictive and questioned whether there is any evidence that properly treated ballast water (or bilgewater) has a negative impact on federally-protected waters. The commenter provided no information to demonstrate why such requirements are inappropriate. EPA retained requirements for additional controls on discharges in federally-protected waters consistent with the VIDA provisions codified in CWA section 312(p)(4)(B)(iii) that requires EPA to establish discharge standards no less stringent than the VGP, including with respect to waters subject to Federal protection, in whole or in part, for conservation purposes. As discussed in Section 4.2.3 of the 2013 VGP Fact Sheet, EPA found that the prescribed limits are technologically available and economically practicable and achievable. Because it is possible to limit discharges to certain times and locations, but not to limit those discharges indefinitely, EPA focused on imposing these limitations for federally-protected waters. To develop this list of waters, EPA reviewed several federal authorities that protect waters that are known to be of particularly high value or sensitive to environmental impacts.

Subpart E—Procedures for States to Request Changes to Standards, Regulations, or Policy Promulgated by the Administrator

Petition by a Governor for the Administrator to establish an emergency order; review a standard, regulation, or policy; or establish enhanced Great Lakes System requirements

Numerous commenters raised concerns about the process for a governor (or governor's designee) to petition EPA under CWA section 312(p)(7) for emergency orders pursuant to section 312(p)(4)(E). Most of these comments asserted that the 180-day period under § 139.50(c)(1) during which EPA or the USCG must grant or deny a petition for an emergency order is too long. Several of these commenters requested a shorter timeline, either through imposition of a specific deadline, general commitment to timeliness in the regulations, or, more generally, issuance of an order within days rather than weeks or months. One commenter contended that the USCG should have the ability to respond to infestation risk instead of leaving the responsibility to states to address the risk through a petition process. EPA understands the commenters' concerns regarding the risks posed by an invasive species outbreak and the importance of a rapid response. EPA does not, however, agree with the appropriateness of imposing additional deadlines in the regulations that do not exist in the statute. The VIDA establishes the 180-day timeline for

a response to a governor's petition for an emergency order and EPA's proposed rule was written in accordance with the VIDA's requirements. *See* 33 U.S.C. 1322(p)(7)(C)(i)(I)("The Administrator or the Secretary, as applicable, shall grant or deny . . . a petition under subparagraph (A)(i) [to issue an order under paragraph (4)(E)] by not later than the date that is 180 days after the date on which the petition is submitted"). Depending on the circumstances of any petition, EPA may grant or deny a petition more quickly. A one size fits all approach would be inappropriate given the high degree of variability between different petitions. EPA notes that it has the authority under CWA section 312(p)(4)(E) to issue an emergency order of its own initiative without waiting for a formal petition. Additionally, the statute's emergency order provision at CWA section 312(p)(4)(E) is not the only avenue for addressing emergency outbreaks. The statute at CWA section 312(p)(6)(E)) directs the USCG, in consultation with EPA and acting in coordination with the Aquatic Nuisance Species Task Force, to establish an Intergovernmental Response Framework for Federal and intergovernmental response to ANS risks from vessel discharges. Under this framework, EPA is tasked with establishing a risk assessment and response framework using ballast water discharge data and ANS monitoring data to identify and track populations of aquatic invasive species, to evaluate the risk of these populations establishing and spreading, and to establish emergency BMPs to rapidly respond to emerging threats.

Commenters also suggested changes to streamline the petition process and provided several recommendations to improve efficiency. These included delegating the determination to the appropriate EPA regional office, modeling the program after oil spill response, and developing a form for states to submit through a portal or other similar mechanism. EPA has considered the commenters' suggestions for increased efficiency, but EPA is not incorporating them into the final rule at this time because these recommendations relate to program implementation that can be addressed without any change to the regulatory language. Similarly, one commenter was concerned that EPA does not identify a mechanism to notify vessels of areas with an ANS infestation. EPA agrees that this will be a critical component of issuing an emergency order; however, this issue relates to the implementation of the program and will likely vary based on the waterbody, affected vessel population characteristics, and available communication methods. As such, a particular mechanism has not been identified in the rule.

Some commenters contended that the emergency order petition process is an added bureaucratic step that should be avoided and that it places the onus on states to identify areas of risk and submit a petition. EPA notes that the construct of state petitions is laid out in the VIDA itself. 33 U.S.C. 1322(p)(7)(A). Additionally, EPA requires certain information to be able to fulfill the Agency's responsibilities under the VIDA to respond to state petitions. In a similar vein, a commenter stated that the exclusion of small fishing and recreational vessels from the regulations makes it more challenging to identify pollution sources and take effective emergency actions. EPA notes that the VIDA identifies the vessels to which the standards apply, and EPA does not have discretion to

expand the scope of the rule to include small fishing and recreational vessels. Finally, commenters suggested that the emergency order petition process is not as protective as continuing to require BMPs for uptake of ballast water, such that EPA must retain the existing protective measures or develop new protective measures that are no less stringent. EPA notes that the emergency order petition process is a separate element of the VIDA than standards of performance such as ballast water BMPs, and as such the emergency order process is not intended to be a direct replacement for ballast water BMPs. EPA has simply noted that both ballast water BMPs and the emergency order process in these final rules serve to minimize the uptake and discharge of harmful aquatic organisms and pathogens in ballast water. Additionally, in lieu of specified BMPs, the final rule requires vessel operators to develop a BWMP to minimize the uptake and discharge of harmful aquatic organisms and pathogens; the plan must describe the vessel-specific BWMSs and practices. EPA's rationale for requiring a BWMP is discussed elsewhere in this document and in the accompanying federal register notice.

Multiple commenters requested clarifications on various aspects of the rule. One commenter asked that EPA confirm whether states can impose other requirements through CWA section 401 State Water Quality Certifications and/or commercial agreements (e.g., tariffs). The statute's preemption provisions speak for themselves, and EPA is not, through this rulemaking, taking any steps to interpret or apply those provisions. EPA simply notes here that the VIDA generally preempts states from establishing more stringent discharge standards once the USCG implementing regulations required under CWA section 312(p)(5)(A) through (C) are final, effective, and enforceable. While the VIDA includes several exceptions to this expressed preemption (*see* CWA section 312(p)(9)(A)(ii) through (vi) and CWA section 312(p)(10)(D)), CWA section 312(p)(9)(A)(i) prohibits states, political subdivisions of states, and interstate agencies from imposing additional requirements through other means not explicitly identified in the VIDA. The commenter also inquired whether local governments or ports would be permitted to petition for review of any standard of performance, regulation, or policy. Per CWA section 312(p)(7)(A), only the Governor of a state (or a designee) may submit such a petition. Another commenter requested clarification as to whether EPA or the USCG is responsible for emergency response to control an outbreak in the Great Lakes, while another stated that guidelines as to what constitutes an emergency must be quickly developed based upon local conditions and species characteristics. As noted earlier in this comment response section, the statute at CWA section 312(p)(6)(E)) identifies responsibilities for both EPA and the USCG under the Intergovernmental Response Framework to address the introduction, spread, and establishment of ANS populations, including emerging threats. The framework includes development of a risk assessment and response framework based on identifying and tracking populations, with the goal of deploying appropriate emergency BMPs (locally or regionally).

Several commenters recommended additional requirements for the contents of state petitions under CWA section 312(p)(7) and factors for EPA to consider during petition

review. First, a few commenters requested that EPA require the state to provide detailed scientific, technical, and environmental information – akin to the information requirements for no-discharge zone applications in § 139.52(c)(1) through (7) of the proposed rule – to support a petition for an emergency order, review of standard, regulation, or policy, or an enhanced Great Lakes system requirement. EPA disagrees with the need to specify additional information requirements for what may constitute appropriate scientific or technical information to support a petition. For an emergency order or review of standard, regulation, or policy, the VIDA requires at CWA section 312(p)(7)(B) "a description of any applicable scientific or technical information that forms the basis of the petition." EPA does not see a benefit in further prescribing or limiting what a state may identify as critical factors to pursuing a petition. Additionally, in the case of petitions for enhanced Great Lakes system requirements, the VIDA identifies a limited role for EPA and the USCG. Per CWA section 312(p)(10)(B)(iii)(III), EPA is directed to review whether each proposed standard or performance or other requirement is at least as stringent as comparable standards and requirements. Similarly, the USCG is directed to review whether the standard or requirement is in accordance with maritime safety and applicable maritime and navigation laws and regulations. EPA was not directed to determine whether the petition is justifiable, and therefore EPA need not require additional scientific, technical, or environmental information in a petition for an enhanced Great Lakes system requirement.

Another commenter stated that the scientific evidence required to pursue enhanced Great Lakes system requirement is not generally available or producible by states, and that a stronger federal role needs to be identified in the final rule. EPA disagrees that petitioning for an enhanced Great Lakes system requirement requires unproducible scientific evidence. CWA section 312(p)(10)(B)(iii)(III)(aa)(AA) and EPA's rule only require that the petition demonstrate that the applicable standard of performance or other requirement is at least as stringent as a comparable standard or requirement in the final rule and is in accordance with maritime safety and applicable maritime and navigation laws and regulations. As for the federal role, the VIDA establishes several programs, such as the Great Lakes and Lake Champlain Invasive Species Program, the Coastal Aquatic Invasive Species Mitigation Grant Program, and the Intergovernmental Response Framework, to ensure federal support and cooperation with states, Tribes, other Federal agencies, and research entities. Per CWA section 312(p)(4)(D)(i), the VIDA also requires EPA to review (and revise, as needed) the standards at least every five years. As such, EPA's role of ensuring that appropriate standards are in place is a continuing one. One commenter supported the inclusion of all VIDA statutory requirements for petitions for enhanced Great Lakes system requirement, and another noted that the processes proposed for each petition were balanced and fair.

Other comments addressed EPA's review of a petition. One comment included a request for a requirement that EPA consult with affected vessel operators prior to issuing an emergency order. Another comment included a request that, during review of petitions

for changes to standards, regulations, or policies, EPA ensure reception facilities are adequately available, as well as consider BMP, BAT, and Net Environmental Benefit Analysis. EPA acknowledges the commenters' concerns regarding the implementation and feasibility of any restrictions or changes imposed by the issuance of an emergency order or change of standard. EPA disagrees with the appropriateness of including such provisions expressly in the final rule. In issuing an emergency order under CWA section 312(p)(4)(E), the statute directs EPA to consider the risk of introduction or establishment of an ANS or the adverse effects of a discharge that contributes to a violation of a water quality requirement. Unlike for applications for no-discharge zones, the VIDA does not direct EPA to make a determination on a state's petition based on certain identified cost and feasibility criteria, such as the reasonable availability of facilities. EPA does, however, explain in the preamble of the final rule that EPA will consider cost and feasibility of potential emergency BMPs or revised standards as appropriate. EPA further notes here that it possesses the authority under CWA section 312(p)(4)(E) to replace or modify emergency orders should circumstances warrant a change. Regarding changes to standards, regulations, or policies, EPA will propose any such change for public comment and must adhere to the relevant statutory factors in establishing performance standards under the VIDA. The VIDA does not require the use of Net Environmental Benefit Analysis in the development of the Federal standards of performance.

Many commenters provided specific in-text edits to the proposed rule. First, commenters identified an error in the CWA reference present in § 139.50(a)(1), as proposed (i.e., CWA section 312(p)(4)(e) to (E)). For § 139.50(d)(2) and (e), as proposed, commenters changed "submit" to "publish" and added text regarding the 30-day deadlines for EPA action. These suggested changes are in line with the text of the VIDA and have been incorporated into the final rule; however, EPA is not responsible for the timing of publication in the *Federal Register*, and so has modified the language to indicate that EPA shall "sign" the relevant notices instead. Commenters recommended the addition of a new paragraph to emphasize that time is of the essence in addressing emergencies and EPA should endeavor to expedite issuance of an emergency order. While EPA disagrees with the inclusion of this language in the final regulatory text, EPA updated the preamble to reflect agreement with the expressed sentiment.

One commenter requested the addition of several new paragraphs for petitions submitted under § 139.50, *Petition by a Governor for the Administrator to establish an emergency order or review a standard, regulation, or policy*. First, the commenter suggested a new paragraph (b)(4), adding that a petition must include the direct and indirect costs if the requested petition were granted. EPA agrees with requiring a petition submitted for a review of a standard or regulation to include costs to the classes, types, and/or sizes of vessels that would be affected if the petition were approved, because the Federal standards of performance developed under the VIDA requires the application of BPT, BCT, and BAT—legal standards under which EPA considers appropriate costs. The same standard is not applied to EPA's issuance of an emergency order under CWA section

312(p)(4)(E). The commenter also suggested a new paragraph (c) to explain that a review of a standard or regulation must comply with all other applicable provisions of CWA section 312(p). EPA agrees in principle and added language to this effect in the preamble. EPA does not agree with the need to add this clarifying paragraph to the regulations, as it is sufficiently clear that any standard or regulation promulgated pursuant to the authority of CWA section 312(p) must also comply with the applicable provisions of section 312(p). The commenter suggested another new paragraph to indicate that, upon receipt of a petition, EPA will publish a notice in the *Federal Register* that explains the proposal, provides supporting documentation, and provides an opportunity for public comment. EPA disagrees with the need to add this paragraph, since paragraph (d)(2) explains that EPA will issue a Notice of Proposed Rulemaking, a feature of which is an explanation of the proposed rule and the solicitation of public comments. Finally, the commenter suggested that EPA include a new paragraph to reflect the contents of CWA section 312(p)(7)(C)(iv) regarding judicial review and create consistency with a similar provision in § 139.51, *Petition by a Governor for the Administrator to establish enhanced Great Lakes System requirements*. Upon reexamination of this particular provision based on the comment received, EPA determined that it is unnecessary to repeat the statutory text in either § 139.50 or § 139.51 because the statute speaks for itself and does not require repetition in the regulations. As such, the provision in § 139.51(i) of the proposed rule describing implications of a disapproval of a proposed standard or requirement by the Administrator was removed from the final rule.

Commenters also suggested additional textual edits and new paragraphs for § 139.51, *Petition by a Governor for the Administrator to establish enhanced Great Lakes System requirements*. First, one commenter identified a reference error in paragraph (a). EPA agrees and changed "CWA section 312(p)(10)(ii)(III)(bb)" and "CWA section 312(p)(10)(ii)" to "CWA section 312(p)(10)(B)(ii)(III)(bb)" and "CWA section 312(p)(10)(B)(ii)," respectively. Another commenter requested the insertion of a description of the responsibilities of U.S. EPA's Great Lakes National Program Office under CWA section 312(p)(10)(B)(ii) into the regulations. EPA disagrees with the need to add such a description, since the VIDA establishes a clear statutory obligation for the Great Lakes National Program Office, at the request of a Governor of a Great Lakes State, to publish for public comment a copy of the petition and any preliminary assessment of the Great Lakes Commission. For paragraph (b), a commenter requested that both appearances of "information indicating that" be replaced with "an explanation regarding why" to be consistent with the language in the VIDA. EPA agrees and made the requested change. The commenter recommended that paragraph (c)(2) include the 90-day timeframe specified in the VIDA. EPA agrees and added language regarding the timeframe. The commenter suggested, and EPA accepted, a new paragraph (f) that describes the timeframe during which a Great Lakes Governor can withdraw endorsement of a proposed standard or requirement and the potential effect of such a withdrawal. The added paragraph conforms to the process described in CWA section 312(p)(10)(B)(iii)(I)(cc). For paragraph (f), the commenter suggested that the provision

note that the approval is also contingent on the Secretary's determinations regarding maritime safety and maritime and navigation laws and regulations. For both paragraphs (g) and (h) of the proposed rule, the commenter recommended inserting references to concurrence by the Secretary and fixing some language inconsistencies between the two related paragraphs. EPA agrees that the regulations should reflect the USCG's role as identified by the VIDA and ensure consistency. As such, the regulations were updated to include references to the Secretary where joint actions are taken. In paragraph (h)(2), the commenter recommended striking the reference to paragraph (b) as it is overly limiting based on the language used in CWA section 312(p)(10)(B)(iii)(V)(aa)(BB), which refers to the entire subsection. EPA agrees with commenters' rationale and made the change. The commenter suggested insertion of a new paragraph (j) that identifies the 180-day timeframe for EPA and the USCG to approve or disapprove a proposed standard or requirement after receipt of the proposal. EPA agrees with the addition as specified in CWA section 312(p)(1)(B)(iii)(IV). Finally, the commenter suggested insertion of language explaining that a complete prohibition on one or more discharges shall not apply outside the water of Great Lakes states of the Governors that endorsed the requirement. EPA agrees with the addition as specified in CWA section 312(p)(10)(B)(ii)(III)(cc) and amended paragraph (j).

Application by a state for the Administrator to establish a state no-discharge zone

EPA received several comments requesting clarification on, or suggesting revision of, the proposed regulations at § 139.52 for application by a state for the Administrator to establish a state no-discharge zone (NDZ). Numerous commenters sought clarification generally on the applicability of the NDZ program, including comments related to the types of vessels and discharges to which an NDZ may apply, the acceptable geographic extent of an NDZ, and how the NDZ program affects existing sewage NDZs. Under the VIDA, states may apply to EPA for the establishment of an NDZ for one or more incidental discharges covered by the VIDA from all vessels or a subset of vessels (for example, based on type or size). The VIDA does not impose a limitation on the acceptable geographic extent of an NDZ, except that a state may only apply for a designation for a state's own waters. The Submerged Lands Act defines the extent of state waters as 3 NM seaward from the baseline for most states. Based on the criteria present in the VIDA and as detailed in the rule, EPA will determine whether to approve an NDZ application. Vessel sewage NDZs are established pursuant to CWA section 312(f) and are not affected by this action. As such, existing sewage NDZs and the process for states to apply for a sewage NDZ remain unchanged. One commenter requested that EPA clarify that protecting sources of drinking water qualifies as a "need" for establishing an NDZ. EPA agrees that protecting sources of drinking water may be a basis for a state application but did not include all possible justifications for pursuit of an NDZ in the final rule.

Several commenters provided recommendations related to overarching procedural elements of the NDZ program. For example, commenters asked that EPA develop a standardized form for NDZ applications that states could submit to a central portal to increase process efficiency. In a similar vein, one commenter suggested that EPA develop guidance to assist states in preparing applications for NDZs and that such guidance should include a sample application. EPA acknowledges that a standardized form, guidance, and/or sample applications may be useful to state officials interested in pursuing NDZ designations. EPA will further consider commenters' suggestions separately from this rulemaking through program implementation. Another commenter requested that EPA add to the rule a requirement for a public comment period, as well as recommended that EPA provide early notification to the public of a submitted application so that the public may provide information at the time of EPA's review. EPA does not agree that it is necessary to add such a specific requirement for a comment period for this process because general requirements for EPA to provide for notice and comments for rulemakings already exist. Under the process outlined in this rule, EPA will not issue an NDZ regulation in response to an application until the Agency has considered all submitted comments on the proposed rule, such that early notification is not necessary. In implementing the NDZ application program, however, EPA will consider whether early notification of receipt of an NDZ application would assist in EPA's review or otherwise serve the public interest.

One commenter indicated that the process for establishing an NDZ is too onerous, and that there should be a "simpler, more responsive mechanism" to modify NDZs in response to potential invasive species outbreaks. The VIDA itself lays out the process for establishing an NDZ in CWA section 312(p)(10)(D) and directs EPA to implement the process. The application process and information requirements as described in the rule are appropriate within the constructs and criteria established by the VIDA to fulfill EPA's responsibility of determining and establishing the NDZ "by regulation." 33 U.S.C. 1322(p)(10)(D)(iii). The VIDA also contains additional mechanisms for addressing potential invasive species outbreaks and water quality concerns with more expediency. As provided for in § 139.50, *Petition by a Governor for the Administrator to establish an emergency order or review a standard, regulation, or policy*, the Governor of a state (or designee) may submit a petition to EPA for issuance of an emergency order when a water quality or invasive species issue is identified in a geographic area. Should such an order be warranted, EPA will identify appropriate BMPs to address the identified concern and impose specific requirements on the universe of vessels (and potentially others) as necessary. EPA also has the authority under CWA section 312(p)(4)(E) to issue an emergency order of its own initiative without waiting for a formal petition. Additionally, the VIDA directs the USCG, in consultation with EPA and acting in coordination with the Aquatic Nuisance Species Task Force, to establish the Intergovernmental Response Framework for Federal and intergovernmental response to ANS risks from vessel discharges. Under this framework, EPA is tasked with establishing a risk assessment and response framework using ballast water discharge data and ANS monitoring data to

identify and track populations of aquatic invasive species, to evaluate the risk of these populations establishing and spreading, and to establish emergency BMPs to rapidly respond to emerging threats.

Other comments were submitted that bear on how EPA reviews applications and makes determinations. One commenter recommended that EPA's assessment of the extent to which retrofitting will be required by vessels consider potential conflicts with existing and relevant federal requirements or international treaties. Another commenter suggested that EPA require an assessment of the economic impact to each port area and community served by affected vessels. EPA has not added these requirements since they could represent complex secondary analyses that are not directly related to the three determination factors specified in the VIDA (CWA section 312(p)(10)(D)(iii)): protecting and enhancing state water quality, adequate facilities for removal and treatment are reasonably available for all the vessels to which the prohibition would apply, and the discharge can be safely collected and stored until a vessel reaches a discharge facility or other location. That said, EPA could consider public comments related to these issues in making its decision on the application. Other commenters stated that the inclusion of cost considerations is an overreach by EPA as cost is not explicitly identified in the VIDA. EPA disagrees with the commenters' position. The vessel sewage NDZ statutory language in CWA section 312(f) is substantively similar to that of the VIDA, requiring EPA to determine whether "adequate facilities for the safe and sanitary removal and treatment of [(sewage)(the prohibited discharge)] are *reasonably available*…" (emphasis added). Considering the Supreme Court's decision in *Michigan v. EPA*, 576 U.S. 743 (2015), the Agency interprets the statutory language here (namely, the reference to "reasonably available") to require analysis of all relevant factors, including cost. This interpretation was affirmed with respect to CWA section 312(f) by the U.S. District Court for the District of Columbia in recent litigation to which EPA was a party, *American Waterways Operators v. EPA*, where the court explained that "reasonably" provides the "textual hook" requiring EPA to contemplate cost in its determinations for vessel sewage NDZs. *See* 507 F. Supp. 3d 47, 60-61 (D.D.C. 2020) ("The question before the court is whether EPA's mandate to determine whether adequate facilities are 'reasonably available' is a textual direction from Congress to EPA to consider costs. It is.")

The same commenters also recommended that the rule be updated to reflect timing requirements for each action EPA would take to issue a determination in the *Federal Register*. EPA disagrees with commenters on the need to include additional time-based benchmarks, as the VIDA already requires EPA to approve or disapprove an application within 90 days. 33 U.S.C. 1322(p)(10)(D)(iii)(III). A determination letter with a tentative approval or disapproval will be sent to the applicant. Following a tentative approval, EPA will proceed through the rulemaking process as expeditiously as possible, including issuance of a Notice of Proposed Rulemaking in the *Federal Register* for public comment. After consideration of comments received, EPA will determine the appropriate

final action on the NDZ application. EPA will also notify the public of a denial in the *Federal Register* and include an explanation of EPA's decision-making. EPA updated the preamble to clearly articulate this process. Other commenters recommended the inclusion of new language for instances when an NDZ is proposed for designation in waters contiguous to, or otherwise shared or affected by, another state's or nation's waters. In such cases, the commenters asked that EPA consult with the Governors of affected states (or that a Governor receive endorsement from affected states' Governors) and/or representatives from other affected nations. EPA recognizes that waterbodies may be proposed for an NDZ designation that cross state boundaries or otherwise have interconnectivity with other waters. The VIDA, however, allows a state to pursue an NDZ designation for some or all state waters and does not identify a mechanism by which another state or nation may prevent the application process from proceeding. EPA notes that affected entities do have the opportunity to provide input to EPA during the required public comment period for any proposed designation. Some commenters suggested that EPA allow for operational changes as an alternative to pumpout facilities to accommodate some types of discharges that do not lend themselves to being pumped out. EPA agrees that vessels affected by an NDZ may elect to pursue operational changes to comply with the discharge prohibition. As such, EPA added "the availability of operational changes as a means to reduce the discharge" in § 139.52(d)(2) as a factor considered for a determination of adequacy. While the VIDA in CWA section 312(p)(10)(D)(iii)(I)(bb) requires EPA to determine whether "adequate facilities for the safe and sanitary removal and treatment of the prohibited discharge are reasonably available," a state, in its application to EPA, may provide information indicating the extent of the vessel population that will require pumpout services versus those confirmed to pursue operational changes such that they would not require access to pumpout facilities. Finally, one commenter requested that EPA assess adequacy of facilities for all types of vessels, including consideration of vessel operational needs relative to size, draft, and volumes, and that EPA not consider facilities that are planned but not yet operational. Regarding the first request, EPA determined that the information requirements in the proposed rule adequately capture the information needed by EPA to characterize differing operational needs relative to size, draft, and volumes of discharge. Regarding the second request, EPA agrees with the commenter that EPA's analysis is limited to existing facilities, per the VIDA's use of the present tense (i.e., "adequate facilities for the safe and sanitary removal and treatment of the discharge *are* reasonably available" (CWA section 312(p)(10)(D)(iii)(I)(bb)), emphasis added). EPA added this clarifying information in the preamble.

Several commenters recommended modifications to the required application elements. One commenter wanted EPA to identify an acceptable threshold for the ratio of vessels to pumpout facilities for an NDZ to be approved. Along similar lines, the same commenter indicated that EPA should limit the consideration of ratio of pumpout facilities to only those vessels that require use of pumpout facilities to comply with the NDZ. EPA does not agree that a one size fits all approach is appropriate for evaluating NDZ applications

that cover diverse discharge types, waterbodies, and vessel population profiles. Further, such a specific ratio could become outdated in the future as technology develops and may unnecessarily constrain EPA decision-making. In its application, a state may provide information to EPA indicating the extent of the vessel population that will require pumpout services. EPA will consider all provided information and, if EPA determines to tentatively approve an application, will issue a Notice of Proposed Rulemaking, in which EPA will provide justification for its determination and invite public comment on the matter. Informed by the information contained in the application and shared through public comments, EPA will then make a final determination on whether adequate facilities are reasonably available.

One commenter asked that EPA allow the required table identifying the types and numbers of vessels to be an estimate and the table of pumpout facility information and the map of facility locations to include, for mobile pumpout facilities, a description of the coverage area and ranges (in lieu of specific location and draft). Another commenter would like to see the requirement for types and numbers of vessels eliminated or changed, explaining that states may not have access to this information. To fulfill its obligation under the VIDA, EPA must be able to determine whether adequate facilities are available for the vessel population. Understanding the potentially affected vessel population is crucial to an accurate assessment. EPA recognizes, however, that the exact number of vessels is a moving target, and therefore expects that the numbers provided to EPA will be well-founded and explained estimates. EPA also agrees that the location of mobile facilities may not be static, and in such cases coverage area is a suitable proxy for location to evaluate the availability of mobile facilities to vessels. As such, EPA updated the rule preamble to discuss the use of projections or estimates, as well as coverage areas, and adjusted the standards to address coverage areas for mobile facilities.

Next, one commenter suggested that the application requirements identified for CWA section 312(f)(4)(A) vessel sewage NDZs are already sufficient. As such, at minimum, the commenter recommended removal of the language "a detailed analysis of how the vessels subject to the prohibition may be impacted with regards to collection capability, storage capability, need for retrofitting, travel time to facility, and safety concerns," as the commenter says it is not indicated in the VIDA legislation. EPA disagrees with the commenter. While parallels can be drawn between the sewage NDZ program and the VIDA NDZ program, the VIDA provisions are more expansive (e.g., EPA must determine whether "the discharge can be safely collected and stored until a vessel reaches a discharge facility or other location"). The identified language pertains to EPA's obligations under CWA section 312(p), not the sewage program under CWA section 312(f).

Lastly on this topic, commenters explained that the regulatory text should include additional details, including a list of pumpout or off-site treatment facilities that includes capacity, connections, and transport applicable to all ships impacted by the request; a

detailed explanation of the environmental impact of the discharge in impacted waters; and a detailed explanation of the impact if treatment of the discharge is possible. In § 139.52(c), EPA already requires pumpout capacity of each facility to be provided and a detailed analysis of impacts to the vessels subject to the prohibition. However, regarding connections and transport, EPA added in § 139.52(c)(5) a reference to connections and added in § 139.52(c)(6) a requirement to provide a description of the wastewater handling procedures of receiving facilities. These changes are necessary to ensure that connections are not a limiting factor for vessels' access to facilities, and that facilities are adequate for both removal and treatment. On the issues of environmental impact of the discharge and impact if treatment is possible, EPA requires the state to certify that the prohibition is necessary to "protect and enhance the quality of the specific waters within the state *to a greater extent than the applicable Federal standard provides*" (emphasis added)(§ 139.52(c)(2)), as well as a detailed analysis of benefits (§ 139.52(c)(3)). The state's application is therefore already required to include information on impacts and benefits, including reference to the applicable standards (i.e., treatment, if relevant to the discharge for which a prohibition is sought).

A number of comments included recommendations for minor textual edits or clarifications. In one such comment, commenters requested that EPA explicitly acknowledge the Alaska passenger vessel graywater regulatory allowance (CWA section 312(p)(9)(A)(v)) and clarify applicability. EPA agrees and updated the rule preamble to clarify this allowance. A few commenters also pointed out that the proposed standards used both "petition" and "application," and consistent with the VIDA, should use the term "application." EPA agrees and updated the rule to use "application" in reference to NDZs, in line with the VIDA.

Two commenters supported the required application elements for the NDZ program. EPA acknowledges the commenters' support. Another commenter requested that EPA designate the U.S. coastal waters of Northern Alaska as an NDZ for all discharges. EPA is unable to accommodate this request. For EPA to consider such a designation, the state of Alaska must submit an application with the required application elements identified in the rule.

Statutory and Executive Order Reviews

One commenter asserted that EPA has a procedural duty to consult with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service ("the Services") under Section 7 of the Endangered Species Act (ESA). The commenter stated that the rule may affect numerous threatened and endangered species and their critical habitats and attached the 2013 VGP biological opinion to support the commenter's position. EPA disagrees that the Agency was required by section 7(a)(2) of the ESA to consult with the Services prior to promulgating this rule. EPA is not required to consult on this action

because, unlike when it issued the VGP, the Agency lacks discretion here to account for effects on species. *See* 50 CFR 402.03.

The CWA establishes a two-pronged approach for accomplishing its ambitious goals. First, the Act requires application of effluent limitations for point source dischargers based on technology-based effluent limitations and standards. CWA section 301(b)(1)(A) (BPT); 301(b)(2)(A) (BAT); 301(b)(2)(E) and 40 CFR 122.44(a)(1). Second, where those technology-based effluent limitations are not sufficient to meet applicable water quality standards, the Act requires any more stringent effluent limitations required to attain applicable water quality standards under CWA section 301(b)(1)(C) and 40 CFR 122.44(d).

The commenters ignore the fact that the VIDA removed the vessel incidental discharge standards from a CWA section 402 NPDES permitting framework and instead placed it firmly within the Act's technology-based limitations and standards framework. The language and legislative history of the Act's technology-based provisions make clear that the limitations and standards in this rule must be set independently of what they achieve in terms of water quality or other benefits (including benefits to protected species or critical habitat). Instead, these limitations and standards are established based upon the performance of specified levels of pollution control technology and economic achievability of that technology after consideration of several factors specified in CWA section 304(b) related to best available technology economically achievable. These factors are limited to "the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, the costs of achieving such effluent reduction, non-water quality environmental impact (including energy impacts), and such other factors as the Administrator deems appropriate." This means that even if a particular discharge limit were absolutely necessary to protect a listed species or designated critical habitat, if a technology were technologically unavailable, or economically unachievable (or has unacceptable non-water quality environmental impacts), EPA would not have discretion to promulgate that limit under these provisions of the Act, because it would not meet the statutorily prescribed preconditions to representing best available technology economically achievable.

In directing EPA to promulgate these standards, Congress at CWA section 312(p)(1)(F) explicitly invoked the Act's technology-based standards at CWA section 304(b)(2)(B).[2] Section 304(b) does not provide the sort of discretion to consider listed species and critical habitat that the commenters suggest is required. Section 304(b) states that factors to be considered include "other such factors as the Administrator deems appropriate;" however, that language must be read within the context of the section and cannot override

[2] The VIDA also references CWA section 301(b)(2)(A) and EPA's regulations at 40 CFR 125.3(d)(3), which are substantively similar to Section 304(b) in all relevant aspects.

the technological availability and economic achievability factors. Congress intended EPA to establish the requirements of this regulation based on the performance of available and economically achievable technologies without regard to effects on receiving water quality (or those attended effects on species). *American Frozen Food lnst. v. Train*, 539 F.2d 107,121 (D.C. Cir. 1976) (The determination of BPT is not to be based upon the quality of the receiving waters.). *Assn of Pacific Fisheries v. EPA*, 615 F.2d 794 (9th Cir. 1980) (EPA is not supposed to demonstrate the incremental effect on receiving water quality). *Consolidated Coal Co. v. Costle*, 604 F.2d 239, 245 (4th Cir. 1979) (Receiving water quality is not a basis for settling BPT effluent or FDF). *Weyerhaeuser Co. v. Costle*, 590 F.2d 1011, 1042 (D.C. Cir. 1978) (Impact on receiving water quality not a factor.) This means that if a technology-based effluent limitation or standard was not technologically available or economically achievable, EPA would not have authority to issue it even if it were thought to be necessary to protect listed species. To read CWA section 304(b)'s "other factors" language to include water quality and listed species impacts would swallow the technology factors and render the section meaningless.

In *National Ass'n of Homebuilders v. EPA*, 551 U.S. 665 (2007), the Supreme Court stated (when discussing the CWA section 402(b) NPDES permitting transfer requirements): “While the EPA may exercise some judgment in determining whether a State has demonstrated that it has the authority to carry out §402(b)'s enumerated statutory criteria, the statute clearly does not grant it the discretion to add another entirely separate prerequisite to that list. Nothing in the text of §402(b) authorizes the EPA to consider the protection of threatened or endangered species as an end in itself when evaluating a transfer application.” 551 U.S. at 672. As the cases above demonstrate, Congress did not intend for impacts to listed species to be an end in itself in the establishment of technology-based regulations. Impacts to species would be related to water quality impacts, which Congress did not intend EPA to consider in this analysis. These water quality impacts are considered at the water quality-based effluent limitation stage, not when establishing technology guidelines.

Relatedly, the BAT/Pretreatment Standards for Existing Sources (PSES)/New Source Performance Standard (NSPS)/Pretreatment Standards for New Sources (PSNS) statutory provisions are similarly not based on cost-benefit analysis, but rather on technology. *See e.g., EPA v. National Crushed Ston*e, 449 U.S. 64, 70-71 (1980). There the Supreme Court was considering whether dischargers could receive variances under section 301(c) from the BPT requirements (the first level of control) and stated that BAT (the higher level of control) is similar to BPT “except that in assessing BAT total cost is no longer to be considered in comparison to effluent reduction benefits.” In *American Iron and Steel*, 526 F.2d 1027, 1051 (3rd Cir. 1975), the court reviewed the legislative history explaining, in comparing the assessment for BAT to BPT, “that the type of assessment should be basically the same, except that there should be no cost-benefit analysis.” And in *Association of Pacific Fisheries v. EPA*, 615 F.2d 794, 818 (9th Cir. 1980), Judge, and later Justice Kennedy, held "The conspicuous absence of the comparative language

contained in section 304(b)(1)(B) leads us to the conclusion that Congress did not intend the Agency or this court to engage in marginal costs-benefit comparisons…. So long as the required technology reduces the discharge of pollutants, our inquiry will be limited to whether the Agency considered the cost of the technology, along with other statutory factors, and whether its conclusion is reasonable."

Under the ESA, an Agency is not required to consult where there is no discretion to act to benefit the species at issue. Under *Karuk Tribe of Cal. v. U.S. Forest Service*, 681 F.3d 1006 (9th Cir. 2012), a federal agency has a duty to consult under the ESA Section 7 only when (1) the "federal agency affirmatively authorized, funded, or carried out" an activity; and (2) in affirmatively authorizing, funding, or carrying out the activity, the federal agency "has some discretion to influence or change the activity for the benefit of a protected species." *Karuk Tribe*, 681 F.3d at 1021; see also *Turtle lsland Restoration Network v. Nat'l Marine Fisheries Serv.*, 340 F.3d 969, 974-75 (9th Cir. 2003); *Ground Zero Ctr. for Nonviolent Action v. U.S. Dep't of the Navy*, 383 F.3d 1082, 1092 (9th Cir. 2004) (no duty to consult where Navy lacked discretion to cease missile operations for the protection of listed species). If an agency cannot influence a private activity to benefit a listed species, there is no duty to consult because "consultation would be a meaningless exercise." *Sierra Club v. Babbitt*, 65 F.3d 1502, 1508-09 (9th 1995) (no duty to consult for approval of logging roads where, pursuant to a prior right-of-way agreement, BLM retained discretion over only three specified criteria, none of which related to protecting listed species); *Envtl. Prot. lnfo. Ctr. v. Simpson Timber Co*., 255 F.3d 1073, 1081-82 (9th Cir. 2001) (no duty to reinitiate consultation for previously issued permits where Fish and Wildlife Service lacked discretion to add protections for newly listed species). The relevant question is whether the agency could influence a private activity to benefit a listed species, not whether it must do so. *Turtle lsland*, 340 F.3d at 977. As stated above, even if a particular effluent limitation or standard were thought to be absolutely necessary to protect species, EPA could not promulgate it under the statute if it were not available and economically achievable.

The Supreme Court's decision in *National Ass'n of Homebuilders v. EPA*, 551 U.S. 665 (2007) is instructive. There, the U.S. Supreme Court held that the no-jeopardy duty under the ESA only applied to discretionary actions and did not apply to the permitting transfer approval which was mandatory under the CWA once the specified triggering criteria were met. Although the duties under the CWA and the ESA were both stated in mandatory terms, 50 CFR 402.03 appropriately construed the ESA to require the no-jeopardy assessment only if the agency action was discretionary, and there was no basis for an implicit repeal of the permitting transfer approval requirement by imposing the additional requirement of a no-jeopardy duty to obtain such approval. By analogy to these CWA provisions, the ESA provisions do not repeal the CWA provisions requiring EPA to look at the technology-based factors specified in the CWA, and not to look at effects on receiving waters or consider benefits in establishing BAT/PSES.

Indeed, if EPA were to establish technology-based requirements based upon water quality-related environmental impacts, Congress would not have needed to create provisions, such as Sections 312(p)(4)(E) (emergency orders) and 312(p)(10)(D) (state no-discharge zones) that authorize case-specific requirements that dischargers meet any more stringent limitations necessary to protect water quality. The structure of the Act indicates that Congress viewed the establishment of water quality-based controls as being appropriate on a case-by-case basis, taking into account the particular nature of the discharge and the water quality standards for the receiving waterbody. It is unambiguous that one of Congress's chief goals in adopting the VIDA was to establish, through this rulemaking, uniform federal discharge standards for vessels while preserving the ability of states and EPA to pursue more specific waterbody protections in subsequent, case-specific legal actions. The commenters' view would turn this approach on its head, effectively mandating the establishment of water quality-based requirements on a national basis, without regard to site-specific considerations viewed by Congress as integral to establishing appropriate water quality-based controls. Such an approach would, therefore, fundamentally transform the structure and operation of the CWA and contradict Congress' attempt through the VIDA to establish a technology-based floor for incidental discharges from vessels, to be supplemented by imposition of water quality-based emergency orders and no-discharge zones where necessary.

EPA also received comments regarding Statutory and Executive Order Reviews in response to EPA's supplemental notice. One commenter noted that Executive Order 13751 was not addressed in the VIDA legislation nor by EPA in its rule. The commenter further stated that, in the spirit of the Executive Order that emphasizes combating invasive species, EPA should set a date for mandatory installation of a BWMS on all Great Lakes vessels. While neither the VIDA itself nor EPA's regulations speak specifically to Executive Order 13751, both directly address the issue of invasive species. The VIDA includes several non-regulatory programs intended to improve understanding of invasive species risks from vessel discharges and to establish methods for addressing these risks. These include: (1) an Intergovernmental Response Framework, codified in CWA section 312(p)(6)(E), to respond to ANS risks using emergency BMPs; (2) a grant program established in section 903(f) of the VIDA to prevent, mitigate, and restore areas affected by ANS, and (3) a program in section 903(g) of the VIDA to be administered by EPA's Great Lakes National Program Office to monitor ANS and vectors likely to be contributing to the establishment and spread of ANS, to assist with response actions to prevent or stop the establishment or spread of ANS, and to facilitate meaningful Federal and State implementation of the regulatory framework including monitoring, shipboard education, inspection, and compliance conducted by the States. EPA's final rule addresses the issue of invasive species by establishing Federal standards of performance for discharges from systems and equipment that include ANS as a pollutant of concern (e.g., ballast tanks). EPA disagrees that the Agency must set a date for mandatory installation of BWMS on all Great Lakes vessels on the basis that, while preventing or reducing the discharge of ANS and other pollutants is the intent of the VIDA, the VIDA

calls EPA to apply a technology-based standard, not a risk-based standard. The final standards for ballast water reflect BAT considering the specified statutory factors for BAT under CWA section 304(b), as well as the previous requirements established in the 2013 VGP and 33 CFR part 151 subparts C and D, and the new requirements established in the VIDA.

Another commenter disagreed with EPA's determination that this action is not a "significant energy action" in the context of Executive Order 13211. The commenter explained that future Lakers would incur energy impacts to operate a BWMS and urged EPA to estimate the associated increase in greenhouse gas emissions. EPA disagrees that the energy impacts associated with the operation of BWMSs by new Lakers necessitates a determination under Executive Order 13211 that this action is a "significant energy action." To be considered a "significant energy action," the action must be "likely to have a significant adverse effect on the supply, distribution, or use of energy…" The "Memoranda 01-27 (Guidance for Implementing E.O. 13211)" explains what is meant by a "significant adverse effect" and lists representative examples of adverse effects. The expected impact on the energy sector resulting from this action does not equate to any of these examples. In assessing BAT, EPA considers a number of factors, including non-water quality environmental impacts such as energy usage. As articulated in the supplemental notice, while the impacts of the operation of BWMSs on new Lakers include increased energy demand, such impacts are expected to be limited when considering the number of vessels that would be affected in a 20-year period. Due to the small number of affected vessels, EPA disagrees with the need to estimate the increase in associated greenhouse gas emissions. BWMSs employ different treatment technologies with varying energy demand, and Laker operators can choose the appropriate system for the vessel. While certain technologies, such as UV treatment, have higher energy usage, these systems are already in use by vessels globally. EPA contends that the benefits of operating BWMSs on new Lakers to reduce discharges of organisms outweighs the non-water quality environmental impacts of increased energy usage and associated emissions. As such, and as articulated in the proposed rule and supplemental notice, EPA believes that any additional energy usage would be insignificant compared to the total energy usage of vessels and the total annual U.S. energy consumption.

Regulatory Impact Analysis

Note: An Economic Analysis (EA) was prepared for the final rule in place of the Regulatory Impact Analysis (RIA) that accompanied the proposed rule.

EPA received several comments on the RIA prepared for the proposed rule. One commenter noted that EPA identified a net reduction associated with the VIDA of approximately $12.4 million in annual compliance costs to the industry with much of this reduction attributable to the cost savings associated with excluding small vessels and fishing vessels from regulation. The commenter noted that Congress never allowed the

Small Vessel General Permit (sVGP) to come into force, thus industry never incurred any expense to implement sVGP requirements. EPA disagrees. Public law 115-100 extended the permitting moratorium for discharges incidental to the normal operation of commercial fishing vessels and other non-recreational vessels less than 79 feet, other than for ballast water, until January 19, 2018. Congress did not extend the moratorium after that, and it was not until December 4, 2018, that the VIDA repealed the sVGP and prohibited EPA and states from regulating discharges from these vessels under CWA section 402. Thus, small vessels and fishing vessels were subject to CWA section 402 for the majority of calendar year 2018.

One commenter noted that the proposed rule did not account for costs associated with petitions for a review of standards, regulations, or policy promulgated by the Administrator under the VIDA. EPA disagrees. Section 4.9.3 of the EA (formerly the RIA) provides an explanation of EPA's cost assessment for these types of activities, referencing the Agency's Information Collection Request (ICR) document that EPA prepared (EPA ICR number 2605.01), a copy of which is available in the docket. The commenter also noted that the number and frequency of petition submissions is unknown and could be costly to the United States, in addition to Tribes that would be reviewing these petitions for potential impacts to cultural resources. In the ICR, EPA fulfilled its obligation to estimate the burden associated with the petition activities for state respondents and the Agency. It is unclear exactly what the commenter meant when suggesting that EPA consider costs to Tribes, but EPA interprets the commenter to mean that EPA should consider the cost to Tribes to review the petitions submitted to EPA and/or the *Federal Register* Notices that the Agency would publish to solicit public input on said petitions. EPA does not, however, contemplate or calculate costs for rulemaking consultations or for interested parties to review, and potentially comment on, *Federal Register* Notices that solicit public input on an action.

One commenter noted that invasive species can cause treatment issues and biofouling at water treatment facilities, but the RIA does not specifically mention drinking water or source waters, and it is unclear if the economic damage estimates cited include impacts to drinking water. The commenter asserted that EPA should consider these impacts as they have the potential to disrupt and/or increase the cost of drinking water to millions of Americans. EPA acknowledges the commenter's concern with impacts to water treatment facilities and notes that the economic damage estimates cited in the RIA and EA (USCG, 2012) do consider impacts to water treatment facilities for areas such as storage facilities, water intake pipes, drinking water treatment plants, and water distribution systems.

One commenter asserted that the RIA drastically overestimates the number of U.S. ferry vessels with a capacity of 250 or more that are built each year and references the National Census of Ferry Operators compiled every two years by the Bureau of Transportation Statistics of the U.S. Department of Transportation as a useful source of information (https://www.bts.gov/NCFO) that could supplement the two data sources noted in the

RIA. EPA acknowledges the commenter's recommendation, and the final EA includes updated estimates based on a revised analysis incorporating the source referenced by the commenter, as well as information available from EPA's 2013 VGP electronic reporting system.

One commenter noted that the RIA excludes costs that would be incurred by Canadian vessels on domestic voyages within the Gulf of St. Lawrence or Canadian coastal waters and the Great Lakes that would have to significantly change routing to go out 50 NM to re-enter the Great Lakes. EPA acknowledges the commenter's concern but disagrees that the RIA (and now EA) should be updated to reflect these costs. The RIA and EA do not include costs to foreign-owned vessels as part of the analysis, as the RIA and EA are meant to examine the economic impacts to local, state, and Tribal governments and American businesses as a result of the rule.

One commenter identified several sections of the RIA pertinent to the projected environmental outcome of the proposed rule as a means to further support other comments provided, notably referring to statements in the RIA about the economic and ecological impacts from ANS resulting from discharges of ballast water and biofouling to U.S. waters. This commenter asserted that, while the RIA acknowledges reduction in environmental benefits created by deregulation of small vessels and fishing vessels, the document fails to discuss the reduction in environmental benefits resulting from deregulation (exemption) of Lakers for ballast water in high-risk areas and treatment. EPA disagrees with the assertion that the proposed rule reduces environmental benefits by exempting (post-2009) Lakers from the numeric ballast water discharge standard. As discussed in the preamble of the supplemental notice, the few post-2009 Lakers that have been built are not operating BWMSs because they received USCG extensions (33 CFR 151.1513 and 151.2036) to the compliance schedule of the numeric discharge standard based on the determination that no options are available for these vessels to meet the standard. Thus, the proposed exclusion of post-2009 Lakers from the numeric ballast water discharge standard would have no practical reduction in environmental benefit as compared to a baseline without this rule. This commenter also suggested the RIA should compare: (1) the cost of treatment for Lakers, and (2) the cost to implement the "minimize or avoid" BMPs with the costs to repair environmental harm caused by ANS introduction and spread. EPA disagrees such an analysis is required or appropriate. The VIDA tasks EPA with developing technology-based standards to reduce the discharge of ANS and other pollutants which, per the applicable statutory standard, is an action independent of any risk-based analysis (or environmental cost impact). Details of EPA's rationale for the regulation of Lakers and implementation of the ballast water BMPs are provided in the final rule preamble.

EPA acknowledges the commenter that supported the RIA in that the exclusion for fishing vessels will result in cost savings and the commenter that supported the regulatory

flexibility provided by requiring operators to minimize discharges with caveats such as "when achievable."

Out of Scope

Many commenters articulated issues that are outside the scope of the rule. The recurring themes included the USCG implementing regulations, actions related to implementing EPA's rule after promulgation, enforcement authority, state authority, and the presumed water quality impacts of the proposed rule, among others.

Implementation

Many commenters focused on inspection, monitoring, reporting, and recordkeeping requirements. One commenter suggested that the proposed standards of performance should include monitoring and that monitoring is within EPA's purview to ensure compliance, including monitoring for treatment system functionality, equipment calibration, biological organism, biocides, and related requirements for recordkeeping and reporting. Similarly, another commenter discussed the logistical challenges associated with wastewater sampling for monitoring and asserted that the USCG and the state of Alaska have improved the quality and representativeness of samples by using sampling plans and quality control measures. Another commenter requested that the implementing regulations reaffirm the exclusion for emergency and safety concerns. Another commenter questioned if EPA would continue to publish NOIs like the VGP.

Commenters also asked questions related to how the rule would be implemented. One commenter requested clarification on whether the USCG plans to take the same approach on implementing the ballast water requirements as the VGP, specifically the approach to the Alternate Management System (AMS) and the USCG extension program. Another commenter requested additional information about public access to compliance and enforcement documents and advocated for increased public transparency and accountability. Similarly, several commenters articulated concerns with how the proposed regulations would be implemented as they relate to international standards. Commenters asserted that the separate USCG and foreign type-approval regime has created a complicated system for BWMS type-approval and shipowner compliance. One commenter articulated a need to align any implementing regulations with the Act to Prevent Pollution from Ships (APPS) and MARPOL Annex I. Similarly, another commenter suggested that all sewage treatment plants (marine sanitation devices) should be equipped with a turbidity meter for monitoring and compliance, in line with proposals being considered by the Correspondence Group on Amendments to MARPOL Annex IV and Associated Guidelines, convened by the IMO's Marine Environment Protection Committee's Sub-Committee on Pollution Prevention and Response.

Several commenters asserted that the proposed regulations would be unenforceable and requested the addition of specific language that is the same or similar to the administrative requirements in the VGP such as documenting compliance in shipboard logs and plans. Commenters also focused on general requests for compliance and

implementation information in the standards of performance. Several commenters requested that compliance information be provided for each discharge. One commenter expressed support for strong implementing regulations and provided an example of using technology to track implementation and reporting.

Conversely, several commenters requested that EPA reduce regulatory burdens on vessel operators by reducing reporting and recordkeeping requirements, eliminating low-value reporting, decreasing reporting frequency, and ensuring reporting criteria are clear and practicable. Several commenters specifically articulated challenges with meeting reporting requirements under the VGP, such as obtaining receipts or invoices for potable water for ballast or other uses. Commenters requested that shipboard records serve as allowable documentation. Several commenters specifically requested streamlining implementing regulations by promulgating distinct implementing regulations for unmanned, unpowered barges as a vessel class.

EPA also received comments regarding implementation in response to EPA's supplemental notice. One commenter maintained that standards and implementation should be developed together and that in some instances vessel operators may have opportunities to manipulate tests. Another commenter asserted that the USCG should engage with stakeholders on implementation. Commenters also expressed concern with a lack of information regarding enforcement and compliance testing, with some requesting more frequent testing and others requesting a reduction in the frequency of inspection compared to the VGP.

Commenters also provided more specific comments on implementation. One commenter provided information regarding measurement technologies that are currently available for vessel inspections. Another commenter requested specific measurements of biocides in water discharges. One commenter also claimed limited availability at specific ports for sampling.

Several commenters discussed the type-approval process. One commenter articulated that the USCG implementing regulations should address the deficiency in BWMS type-approval as it relates to flow rate. Similarly, another commenter requested the inclusion of more rigorous type-approval for BWMSs.

EPA acknowledges receipt of these comments; however, these are outside the scope of this rule. CWA section 312(p)(5) specifies that the USCG is to develop requirements to ensure, monitor, and enforce compliance with the EPA standards, including subsection (A) requirements relating to inspections, monitoring, reporting, and recordkeeping and subsection (B) requirements governing the design, construction, testing, approval, installation, and use of marine pollution control devices as are necessary to ensure compliance with the standards of performance promulgated under paragraph (4). As such, comments related to implementation, including type-approval of equipment, are in the purview of USCG implementing regulations and are outside the scope of this rule. EPA notes that type-approval is one means of demonstrating the efficacy of a treatment

standard through equipment requirements. Any equipment requirements are left to the authority of the USCG as established pursuant to CWA section 312(p)(5).

Enforcement authority

Many commenters expressed concerns regarding states' and/or the USCG's ability to effectively enforce the standards. Specifically, commenters asserted that the USCG is limited by funds and will be burdened by additional enforcement responsibilities. Commenters further asserted that the USCG is not equipped to assume enforcement responsibility and that there is currently inadequate funding for inspections. On both the proposed rule and supplemental notice, EPA received comments requesting that EPA retain the authority to enforce CWA ballast water pollution controls and other shipping pollution waste streams. Similarly, commenters also requested to maintain the right of citizens to petition courts if ballast water and other shipping pollution protections are too weak or not enforced. EPA acknowledges receipt of these comments; however, the delineation of authorities is specifically laid out in the VIDA. More specifically, CWA section 312(k) defines the entities with enforcement authority and the scope of that authority. CWA section 505(a) and (f) address the ability of citizens to commence civil actions on their own behalf against any person who is alleged to be in violation of an effluent standard or limitation including a standard of performance or requirement under CWA section 312(p) EPA lacks authority to modify statutory authorities in duly enacted legislation through this rulemaking. As such, these comments are outside the scope of this rule. Further, to the extent that commenters have expressed concern about the efficacy of the EPA or USCG enforcement programs, those comments are also outside the scope of this rule.

State authority

Many commenters focused on the effect of the VIDA on state regulation of vessel discharges. Some commenters expressed concern that the VIDA preempts states from adopting or enforcing more stringent requirements once the USCG implementing regulations are final, effective, and enforceable. Commenters were also concerned that states will not be able to add more stringent requirements based on water quality standards, as has been done in the past via CWA section 401 certifications associated with the VGP. Conversely, many commenters expressed support for state preemption and requested that the preemption be reiterated explicitly in the rule. These comments are outside the scope of the rule. The preemption discussed by commenters is included in the VIDA legislation and EPA lacks authority to modify duly enacted legislation through this rulemaking. As discussed elsewhere in response to comments, EPA disagrees that further clarification or reiteration regarding the scope of preemption is required or appropriate in the final rule. EPA notes, however, that the VIDA provides several mechanisms for states, working through EPA and/or the USCG, to pursue more stringent requirements within state waters, including the issuance of emergency orders and establishment of no-discharge zones for one or more incidental discharges.

EPA also received comments regarding state authority in response to EPA's supplemental notice. Commenters focused on the effect of the VIDA on state regulation of vessel discharges and expressed concern that the VIDA preempts states from adopting or enforcing more stringent requirements once the USCG implementing regulations are final, effective, and enforceable. One commenter expressed concern that states will not be able to control vessel discharge requirements, particularly as it relates to invasive species. Another commenter requested the ability of states to enact and enforce their own ballast water rules. As explained earlier in this comment response section, the preemptive effect discussed by the commenters is included in the VIDA itself and EPA lacks authority to modify duly enacted legislation through this rulemaking. States may instead pursue more stringent requirements within state waters via the petition processes detailed in subpart E of the rule.

Several commenters included discussions of federal consistency through 15 CFR part 930, including specifics on EPA's approach and the content within conditional concurrences/objections sent by state coastal management programs. Several commenters requested that EPA submit a new or supplemental National Consistency Determination under 15 CFR part 930. These comments are outside the scope of the supplemental notice and are more appropriately addressed through the federal consistency process.

Basis for discharge standard

Several commenters expressed concern regarding impacts to human health and the environment, including protection of drinking water and impaired waters. Several commenters noted that the VIDA discharge standards were unlikely to result in attainment of water quality standards that are applicable under the CWA. One commenter also noted that EPA must consider the combined effect of discharges as well as discharges from multiple vessels. These comments are outside the scope of EPA's rule because the VIDA directs EPA to develop technology-based standards of performance to reduce the discharge of pollutants and does not direct EPA to consider human health, environmental impacts on receiving waters, or state water quality standards as a basis for establishing the discharge standards. EPA's standards of performance are, however, intended to reduce the discharge of pollutants and, by extension, reduce the environmental impact of discharges incidental to the normal operation of a vessel.

Commenters also requested that EPA consider unique geographical/place-based circumstances. Several commenters focused on the unique characteristics of the Arctic, such as the disproportionate effect of climate change and the presence of subsistence fishing, as well as specific requirements for states such as Alaska. EPA acknowledges receipt of these comments; however, these comments are outside the scope of EPA's rule. Except where the VIDA directs EPA to establish discharge requirements for vessels operating in certain bodies of water (namely, for the Great Lakes, Pacific Region, and waters subject to Federal protection), EPA is tasked with developing uniform Federal (i.e., national) standards. However, EPA notes that the VIDA provides several mechanisms for states, working through EPA and/or the USCG, to pursue more stringent requirements within state waters to address unique place-based circumstances.

Additional discussion of the basis for these discharge standards as it relates to CWA technology-based requirements of the VIDA is provided in the preamble of the final rule at Section VIII., *Final Federal Discharge Standards of Performance*.

Other topics

One commenter suggested that EPA and the USCG develop a national response system for ballast water discharges during emergency situations that is akin to the national oil spill response system. EPA acknowledges receipt of this comment; however, it is outside the scope of this rule. Instead, the VIDA tasks EPA and the USCG to establish an Intergovernmental Response Framework under CWA section 312(p)(6), independent of the requirement for EPA to establish the federal discharge standards included in this rule.

Several commenters asked questions regarding the effective date, potential timelines to comply with the regulations, and grandfathering clauses. The VIDA establishes that the new regulations will be effective once both EPA and USCG implementing regulations required under the VIDA are final, effective, and enforceable with respect to every discharge incidental to the normal operation of a vessel that is subject to the VIDA regulations. However, specifics on timelines to comply and grandfathering clauses is within the purview of the USCG's implementing regulations and thus outside the scope of EPA's rule.

Commenters also focused on activities that will occur after, or concurrently with, the promulgation of implementing regulations. First, commenters articulated the need for training, guidance, and definitions associated with the implementing regulations, once established. One commenter also recommended more broadly that EPA develop a guidance manual that would be useful for domestic and international vessels to comply with the VIDA. EPA acknowledges that training and a guidance document may be useful; however, any future training or guidance will be reliant on the implementing regulations promulgated by the USCG and therefore these comments are outside the scope of EPA's rule. Additionally, several commenters articulated support for EPA to continue annual vessel reporting requirements to assist in five-year reviews and maintained that excluding these annual reporting requirements violated the CWA. The authority to develop corresponding implementing regulations, including vessel reporting requirements, is provided to the USCG by the VIDA and therefore these comments are outside the scope of EPA's rule. One commenter requested that EPA define a process for developing new standards. The VIDA already requires that the standards be revisited every five years and provides a mechanism for states to petition EPA to review any standard of performance, regulation, or policy. Procedural requirements for states to petition for such a review have been finalized in this rule.

Finally, commenters questioned what, if any, process EPA used to consult with the USCG to ensure that the final regulations are enforceable by the USCG. EPA worked closely with the USCG throughout the rulemaking process, both inside and outside of

interagency review pursuant to Executive Order 12866. Additionally, EPA obtained concurrence from the USCG on the proposed standards, as required by the VIDA.