UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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Dear Mr. Mullis and Mr. Salyers:

This letter sets forth and serves as my written position in the formal dispute initiated on August 24, 2018, on the *Focused Feasibility Study for Water Management for the Disposal of CERCLA Waste on the Oak Ridge Reservation, Oak Ridge, Tennessee*, regarding the setting of protective and legally sufficient effluent limits for the discharge to surface water of waste water containing Clean Water Act (CWA) pollutants and/or radioactive materials not considered to be CWA pollutants. I write this position pursuant to the Oak Ridge Reservation (ORR) Federal Facility Agreement (FFA) Section XXVI.F, *Resolution of Disputes*, since the ORR FFA Senior Executive Committee (SEC) did not reach unanimous resolution of the matter under dispute.

BACKGROUND

The ORR Site, a U.S. Department of Energy (DOE) facility, covers nearly 35,000 acres within and adjacent to Oak Ridge, Tennessee, approximately 20 miles west of Knoxville. EPA placed the site on the Superfund National Priorities List (NPL) in 1989, and EPA, DOE and the Tennessee Department of Environment and Conservation (TDEC) entered into an FFA pursuant to CERCLA § 120(e)(2) on November 18, 1991. Although much progress has been made by DOE, the scale and complexity of the cleanup presents significant challenges. The ORR Site contains hundreds of contaminated areas, including old burial grounds, waste disposal areas, and contaminated buildings located primarily in three separate large industrial areas: the Y-12 Plant, the Oak Ridge National Laboratory (ORNL), and the East Tennessee Technology Park (ETTP). Surface water and sediments within and outside the ORR boundary, including parts of Poplar Creek, the Clinch River, Bear Creek, and the Lower Watts Bar Reservoir of the Tennessee River, are contaminated from historical releases and activities conducted by DOE. According to the FFA, mercury releases from the Y-12 Plant were estimated to be over 733,000

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pounds, with 238,944 pounds "lost" to East Fork Poplar Creek alone.[1] A 1995 CERCLA Record of Decision (ROD) issued by DOE imposed institutional controls to prevent disturbance of sediments contaminated by mercury and other pollutants from DOE operations that had been deposited in over 35 miles of the Tennessee and Clinch rivers. Poplar Creek and Bear Creek are classified by Tennessee as "impaired" under the Clean Water Act (CWA) due to mercury and polychlorinated biphenyls (PCBs) contamination from DOE's activities.[2]

In order to facilitate cleanup of the ORR Site, an on-site landfill, the Environmental Management Waste Management Facility (EMWMF) was constructed at the Y-12 Plant[3] and is currently discharging waste waters with hazardous substances into Bear Creek. EPA, TDEC and DOE have been in a longstanding disagreement regarding waste water discharges from the EMWMF landfill.[4] Due to DOE's waste production projections over the next decades, DOE has proposed building another on-site landfill for CERCLA remediation wastes, the Environmental Management Disposal Facility (EMDF) which also will discharge waste waters into Bear Creek (and its tributaries), White Oak Creek at ORNL or Upper East Fork Poplar Creek at Y-12.[5] In 2013 DOE proposed to prepare an integrated Feasibility Study on the management of waste waters from EMDF and EMWMF.[6] On April 1, 2016, EPA Region 4 initiated an informal dispute regarding the Focused Feasibility Study (FFS) which resulted in this formal dispute as explained below. Although the FFS has not been completed, DOE, with the agreement of EPA and TDEC, issued a Proposed Plan identifying the location of EMDF as the Preferred Alternative on September 10, 2018. DOE is working on responses to public comments on the Proposed Plan which must be included in the final Record of Decision.

SUMMARY OF THE ISSUES AND POSITION

After unsuccessful informal dispute resolution negotiations among the parties, on August 24, 2018, EPA initiated a formal dispute on the draft *Focused Feasibility Study for Water Management for Disposal of CERCLA Waste on the Oak Ridge Reservation, Oak Ridge, Tennessee*. This dispute concerns two primary issues: 1) how to select protective effluent limits under CERCLA for remedial action discharges of waste water containing hazardous substances, pollutants, or contaminants, including radioactive contaminants, at EMWMF and EMDF; and 2) what authority should govern the selection of protective waste water discharge limits, including radioactive-contaminated waste water, for these CERCLA remedial actions at EMWMF and EMDF.

EPA Region 4's position is that waste waters discharged from the EMWMF and proposed EMDF must meet the CERCLA § 121(d) threshold requirement for ensuring protectiveness of human health and the

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[1] Oak Ridge Federal Facility Agreement, Appendix D, page 15.

[2] See https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/water-quality-reports---publications.html

[3] This landfill was selected under the decision document, *Record of Decision for the Disposal of Oak Ridge Reservation Comprehensive Environmental Response, Compensation, and Liability Act of 1980 Waste, Oak Ridge, Tennessee*, DOE/OR/01-1791&D3, November 2, 1999.

[4] See EPA's 2013 invocation of dispute on the D1 EMDF RI/FS.

[5] The decision regarding where the waste waters will be discharged has not yet been made. The decision will be made under a ROD that follows the Focused Feasibility Study that is the subject of this dispute.

[6] This integrated FS proposal became the FFS that is subject of this dispute.

environment and that there is no exception for discharges of radionuclides.[8] Such discharges, as with any component of a CERCLA remedial action, must also comply with the other threshold requirement of attaining 'applicable requirements'[9] and/or 'relevant and appropriate requirements'[10] (ARARs) identified by EPA. In the event of a dispute among the FFA parties over remedy selection (which includes ARAR determinations),[11] CERCLA § 120(e)(4) is clear that EPA's authority is controlling at this NPL site. In contrast, DOE argues that at DOE facilities (whether or not on the NPL), any authority that DOE has under Executive Order 12580 and the Atomic Energy Act (AEA) trumps EPA's CERCLA authority to select waste water discharge limits, where it involves radionuclide releases at DOE facilities[12] and that DOE Order 458.1, *Radiation and Protection of the Public and the Environment*, sets forth the relevant dose limit for discharges of radionuclides.

I. CERCLA Authorized EPA To Make Remedy Selection Decisions at Federal Facility NPL Sites

Congress enacted CERCLA § 120 to address the remediation of federal facility sites, including those on the NPL. That section directs EPA and the affected federal agency (i.e., DOE) to enter into an interagency agreement[13] that addresses the review of alternative remedial actions and selection of a remedial action by the head of the relevant federal agency and the EPA Administrator. If the parties are "unable to reach agreement" on the selection of the remedy, CERCLA § 120(e)(4) gives the remedy selection authority to the EPA Administrator.[14] Consistent with CERCLA § 120, pursuant to ORR FFA Section XXVI, *Resolution of Disputes*, if the SEC cannot reach unanimous resolution on a dispute, the EPA Regional Administrator issues a written position on the dispute; this position can be elevated to the EPA Administrator who has the final decision-making authority. In addition, per FFA Section XXVI.K, DOE agrees to abide by any final resolution of a dispute under the FFA, whether resolved informally or

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[8] Radionuclides are listed as CERCLA "hazardous substances" in the National Contingency Plan (NCP) at 40 CFR § 302.4 Appendix B and are also carcinogens.

[9] "*Applicable requirements* means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable." [40 CFR § 300.5 Definitions].

[10] "*Relevant and appropriate requirements* means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not 'applicable' to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to particular site. Only those state standards that are identified in a timely manner and are more stringent than federal requirements may be relevant and appropriate." [40 CFR § 300.5 Definitions].

[11] Preamble to Final NCP Rule at 50 Fed. Reg. 8666 at 8782, March 8, 1990. ("ARARs determinations are a significant component of selecting such remedies.")

[12] Email dated October 26, 2018, from Jay Mullis (DOE Oak Ridge EM Manager) to Trey Glenn (Region 4 Regional Administrator). EPA did not raise the "authority" issue. While DOE has informally raised this issue, it has provided Region 4 with no written explanation of this position beyond the October 26 email. Region 4's attempt to summarize DOE's position may need to be refined if DOE puts its position in writing.

[13] The ORR FFA fulfills the statutory requirement of CERCLA § 120(e)(2) to sign an interagency agreement. States also have the opportunity to be a party to the FFA, and Tennessee is a party to the ORR FFA.

[14] See also, the NCP at 40 CFR § 300.430(f)(3)(4)(iii). "The process for selection of a remedial action at a federal facility on the NPL, pursuant to CERCLA section 120, shall entail: (A) Joint selection of remedial action by the head of the relevant department, agency, or instrumentality and EPA; or (B) If mutual agreement on the remedy is not reached, selection of the remedy is made by EPA."

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formally or at the DRC, SEC, or EPA Administrator level, and such resolution shall become a term and condition of the FFA.

In this dispute, DOE takes the position that the Atomic Energy Act (AEA) of 1954 and Executive Order (E.O.) 12580 of January 23, 1987, *Superfund Implementation*, give it final remedy decision making authority over radionuclide contaminated wastes at its facilities. The AEA of 1954 created the Atomic Energy Commission (AEC), whose duties were later distributed among the EPA, DOE, and the Nuclear Regulatory Commission (NRC). In 1970, under Reorganization Plan No. 3, the authority to establish generally applicable standards for protection of the environment from radioactive materials was transferred to EPA, while the responsibility to implement those standards remained with the AEC (and its successors).[15] While the AEA and Reorganization Plan No. 3, give DOE and NRC certain authorities over the utilization of atomic energy and certain types of nuclear wastes, CERCLA contains specific requirements regarding the cleanup of releases of hazardous substances, including radionuclides, at NPL sites. CERCLA did not distinguish response actions addressing releases of radionuclides at federal facilities from other releases at such facilities, and in fact, DOE is carrying out a number of CERCLA cleanups addressing such releases at its various NPL facilities around the country.[16] Congress was aware of the provisions and scope of the AEA and the delegation of responsibilities between the agencies at the time CERCLA was enacted and did not transfer CERCLA authorities to DOE. Thus, it is clear that DOE's authority under the AEA does not supplant the requirements in CERCLA, including remedy selection by EPA at NPL federal facilities in the event of disagreement between the agencies.

E.O. 12580 delegates authorities given to the President under CERCLA. It establishes that, for purposes of response actions at its facilities, DOE is the "President" for CERCLA response actions. However, E.O. 12580 also states that DOE ***must exercise such authorities consistent with CERCLA § 120***. CERCLA § 120(e)(4) requires that cleanup remedies at federal facility NPL sites, such as DOE's ORR, be selected jointly by both EPA and DOE; in the event of disagreement, the EPA Administrator selects the remedy. Moreover, E.O. 12580 does not abrogate DOE's responsibility to comply with CERCLA § 121 *Cleanup standards*. Furthermore, EPA's authority under CERCLA § 120(e)(4) to select remedies at federal facilities cannot by law be transferred, by Executive Order of the President or otherwise, to any officer or employee of the United States or to any other person outside of EPA.[17] Finally, CERCLA § 120(a)[18] states that all guidelines, rules, regulations and criteria which are applicable to remedial actions at facilities at which hazardous substances are located are ***applicable to federal facilities in the same manner and extent as to other facilities*** and that no department, agency, or instrumentality of the United States may adopt or utilize any such guidelines, rules, regulations, or criteria ***which are inconsistent with those established by the Administrator under CERCLA***.

Accordingly, based on the ORR FFA, CERCLA, the NCP, and existing policy and guidance, I conclude that CERCLA § 120(e)(4) provides EPA with the final authority to make remedy selection decisions (including ARARs determinations) at the ORR Superfund Site. Such conclusion is consistent with the plain reading of CERCLA and E.O. 12580.

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[15] Reorganization Plan No. 3 of 1970, P.L. 98–614. Sec. 2. Transfers to Environmental Protection Agency, Paragraph (a)(6).

[16] There are 21 DOE facilities included on the federal NPL, all with FFAs that require DOE under CERCLA to investigate and cleanup the hazardous substances contamination which includes radionuclides.

[17] 42 U.S.C. § 9620(g) *Transfer of authorities.*

[18] 42 U.S.C. § 9620(a) *Application of requirements to Federal facilities.*

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II. CERCLA Remedial Actions Must be Protective and Comply with ARARs

Under CERCLA § 121(d)(1) remedial actions shall attain a degree of cleanup of hazardous substances, pollutants, or contaminants released into the environment that assures protection of human health and the environment. In addition with respect to any release or threatened release of hazardous substances, pollutants, or contaminants, remedial actions shall comply with legally applicable or relevant and appropriate federal or more stringent state environmental or siting laws and/or regulations (ARARs)."[19] The NCP describes these statutory requirements as separate threshold criteria when evaluating and selecting remedies; both of which must be met.[20] The NCP also provides that the "10^{-6} risk level shall be used as the point of departure for determining remediation goals . . .when ARARs are not available or are not sufficiently protective . . ."[21] In addition to these two threshold requirements, CERCLA § 121(b) (and the associated provisions of the NCP) express a preference for treatment "to the maximum extent practicable."[22]

Pursuant to CERCLA and the NCP, on-site discharges of hazardous substances, pollutants and contaminants in waste water to surface waters are required to meet substantive CWA requirements, including National Pollution Discharge Elimination System (NPDES) requirements, and State of Tennessee Water Quality Standards (TNWQS) when those requirements are identified as ARARs. CWA requirements, including NPDES regulations, and the TNWQS are considered by EPA to be "applicable" to discharges of CWA pollutants at ORR.[23] "Pollutant" as defined under the EPA's CWA regulations excludes radioactive materials that are regulated under the AEA.[24] Therefore, CWA requirements are not considered by EPA to be "applicable" to an on-site CERCLA response action that includes discharges of those AEA materials. However, under the plain language of CERCLA § 121(d), a standard need not be both 'applicable' ***and*** 'relevant and appropriate' to be an ARAR. It is enough that a requirement is one ***or*** the other for it to be an ARAR.

DOE has asserted that the exclusion of certain AEA-regulated radionuclides from the CWA definition of "pollutant" means not only that the CWA is not applicable, but also that it is not relevant and appropriate. DOE's analysis is at odds with the plain language of the statute and the NCP description of ARARs as "applicable ***or*** relevant and appropriate requirements."[25] As explained in EPA's ARARs

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[19] 42 U.S.C. § 9621(d)(2) *Degree of cleanup.*

[20] 40 CFR § 300.430(f) *Selection of remedy* (1) *Threshold criteria.* (A) "Overall protection of human health and the environment and compliance with ARARs (unless a specific ARAR is waived) are threshold requirements that each alternative must meet in order to be eligible for selection."

[21] 40 CFR § 300.430(e)(2)(i)(A)(2). *See also Clarification of the Role of Applicable, or Relevant and Appropriate Requirements in Establishing Preliminary Cleanup Goals,* EPA OSWER 9200.4-23, August 22, 1997.

[22] CERCLA Section 121(b)(1) states that, "remedial actions which permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, and contaminants is a principal element, are to be preferred over remedial actions not involving such treatment." This section also requires selection of a remedial action "that utilizes permanent solutions and alternative treatment technologies *to the maximum extent practicable,*" (emphasis added) and requires publication of an explanation if these preferences are not met by the selected remedial action.

[23] There is currently an informal dispute regarding waste water discharges at ETTP Zone 2, and EPA expects that the outcome of this dispute will inform the path forward for resolution at that site as well.

[24] 40 CFR § 122.2.

[25] 40 CFR § 300.400(g). Once it is determined that a requirement is not applicable, the decisionmaker compares the circumstances at the site to the purpose and subject matter addressed by the requirement in question to determine if there is sufficient similarity to find that the requirement is both "relevant and appropriate" at the site. [Preamble to Proposed NCP at 53 Fed. Reg. 51436, Dec. 21, 1988]. *See also* 40 CFR § 300.400(g)(2): "If based upon paragraph (g)(1) of this section,

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guidance "[a] requirement that is relevant and appropriate may 'miss' on one or more jurisdictional prerequisites for applicability but still make sense at the site, given the circumstances of the site and release."[26] Jurisdictional prerequisites, while key in the applicability determination, are not the basis for relevance and appropriateness.[27]

In assessing whether a requirement is relevant and appropriate, EPA evaluates the factors in paragraphs 40 CFR § 300.400 (g)(2)(i) through (viii) of the NCP to the extent such factors are pertinent.[28] The pertinence of each of the factors depends, in part, on whether a requirement addresses a chemical, location, or action.[29] After careful consideration of the 40 CFR § 300.400(g) factors, EPA Region 4 concludes that the CWA's NPDES technology-based and water quality-based effluent limitation regulations, and the TNWQS, as generally described below and as more specifically identified in the table enclosed herein (Enclosure), are both relevant and appropriate to the discharge of radionuclides in waste water associated with these CERCLA actions because: (1) they address "point-source" discharges into surface water; (2) their purpose is to achieve the protection of surface waters; and (3) CERCLA also aims to address and prevent releases of hazardous substances, pollutants, and contaminants into the environment at unacceptable levels in order to ensure protection of human health and the environment.[30] Considering these requirements as relevant and appropriate will help ensure a protective effluent level based upon technologies (including ion exchange, activated carbon and/or reverse osmosis technology)

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it is determined that a requirement is not applicable to a specific release, the requirement may still be relevant and appropriate to the circumstances of the release."

[26] *ARARs Q's &A's: General Policy, RCRA, CWA, SDWA, Post-ROD Information and Contingent Waivers*, EPA Publication No. 9234.2-01/FS-A, July 1991.

[27] Preamble to the Final NCP at 55 Fed. Reg. 8666 at 8743, March 8, 1990. Rather, the evaluation focuses on the purpose of the requirement, the physical characteristics of the site and the waste, and other environmentally- or technically-related factors.

[28] The eight factors are (i) the purpose of the requirement and the purpose of the CERCLA action; (ii) the medium regulated or affected by the requirement and the medium contaminated or affected at the CERCLA site; (iii) the substances regulated by the requirement and the substances regulated at the CERCLA site; (iv) the actions or activities regulated by the requirement and the remedial action contemplated at the CERCLA site; (v) any variances, waivers, or exemptions of the requirement and available for the circumstances at the CERCLA site; (vi) the type of place regulated and the type of place affected by the release or CERCLA action; (vii) the type and size of structure or facility regulated and the type and size of structure or facility affected by the release or contemplated by the CERCLA action; and (viii) any consideration of use or potential use of affected resources in the requirement and the use or potential use of the affected resources at the CERCLA site.

[29] Factors (v), (vi), and (vii) were not considered because they are not "pertinent" to the evaluation of relevance and appropriateness for the CWA NPDES regulations evaluated by EPA considering the scope of the response action. Factor (v) is not pertinent because there are no variances, waivers or exemptions within those regulations to be considered that are relevant for discharges of waste water into surface water. Factor (vi) is generally considered in the context of a legal requirement that is tied to a location, such as a wetland, critical habitat or floodplain, also called a "location-specific" ARAR. Because none of the CWA NPDES ARARs at issue are location-specific, this factor is not pertinent to the evaluation. Factor (vii), which considers the "type and size" of a facility, is not pertinent because the CWA NPDES regulations address waste water discharges and effluent limits for pollutants, not any requirements related to facility type or size. Despite that CERCLA response action contemplates construction and operation of a waste water treatment unit/facility, the CWA NDPES regulations identified by EPA are tied to the CERCLA activity of discharge of hazardous substances in waste water into surface water.

[30] *CERCLA Compliance with Other Laws Manual, Interim Final, Part I*, OSWER Dir. 9234.1-01, EPA/540/G-89/006, August 1988, General Procedure for Determining if a Requirement is Relevant and Appropriate, p. 1-67.

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that are available and achievable and have proven to be effective in controlling the discharge and meeting water quality criteria.[31]

The CWA NPDES Regulations and Tennessee Water Quality Standards are ARARs.

Under CWA § 301, NPDES permits must contain effluent limitations based on the application of statutorily-prescribed levels of technology ("Technology-based effluent limits," or TBELs").[32] Where technology-based effluent limitations are not sufficient to meet applicable state water quality standards, NPDES permits must include effluent limitations that ensure that water quality standards are met ("water quality-based effluent limits," or "WQBELs").[33] In other words, technology-based effluent limits constitute a minimum floor of controls that must be included in a permit, but they are supplemented by more stringent WQBELs whenever necessary to ensure compliance with water quality standards. The obligation that NPDES permits include effluent limitations as stringent as necessary to meet applicable water quality standards is not discretionary; it is inconsistent with the CWA for a permitting authority to issue a permit that does not ensure compliance with water quality standards.[34] Additionally, TNWQS provide that in order to permit the reasonable and necessary uses of the waters of the State, pollution should be prevented through application of the best available technology economically achievable or that greater level of technology necessary to meet water quality standards.[35] Furthermore, discharges from the ORR Site into surface waters must be protective of designated uses as classified by Tennessee. Bear Creek and its tributaries are designated for both "Fish and Aquatic Life"

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[31] In the event that certain CWA requirements are not considered to be relevant and appropriate requirements, EPA is still the final decisionmaker and must still find the remedy to be protective. Cleanup to the dose levels identified in DOE Order 458.1 is not protective. In the absence of an ARAR to determine the discharge limitations, a limit can be developed utilizing CERCLA risk-based calculations and considering the reasonable maximum exposure, the highest exposure that is reasonably expected to occur at a site under both current and future use. *Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A)*, EPA/540/1-89/002, December 1989, p. 6-5. For known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an upper bound lifetime cancer risk to an individual of between 10^{-4} and 10^{-6} using information between dose and response. The 10^{-6} risk level shall be used as the point of departure for determining remediation goals when ARARs are not available or when ARARs are not sufficiently protective because of the presence of multiple contaminants at a site or multiple pathways of exposure. 40 CFR § 300.430(e)(2)(i)(A)(*2*). All radionuclides are carcinogens, thus, in the absence of an ARAR that EPA considers sufficiently protective, any preliminary remediation goals should be initially set at 10^{-6} risk-based concentrations. *See Establishment of Cleanup Levels for CERCLA sites with Radioactive Contamination,* OSWER Dir. 9200.4-18, August 22, 1997, and *Clarification of the Role of Applicable, or Relevant and Appropriate Requirements in Establishing Preliminary Remediation Goals under CERCLA,* OSWER Dir. 9200.4-23, August 22, 1997. Similar to the CWA approach, an instream concentration for the hazardous substance(s) would be derived based upon the exposures contemplated in the identified surface water Use Classifications promulgated by TDEC. This instream AWQC-equivalent concentration would be used to establish an "end-of-pipe" effluent limit(s) and which should generally be attained at the point or points where the release enters the surface water.

[32] CWA §§ 301(b)(1)(A), 301(b)(2)A); 33 U.S.C. §§ 1311(b)(1)(A), §1311(b)(2)(A). *See also* 40 CFR § 125.3 *Technology-based requirements in permits.*

[33] CWA § 301(b)(1)(C); 33 U.S.C. §1311(b)(1)(C). *See also* 40 CFR § 122.44(d) *Water quality standards and State requirements.*

[34] *See* CWA § 401(a)(1), (2); 33 U.S.C. § 1341(a)(1), (2). *See also* 40 CFR § 122.4(d), "No permit may be issued . . . [w]hen the imposition of conditions cannot ensure compliance with the applicable water quality requirements of all affected States."

[35] TDEC 0400-40-03-.02(4).

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and "Recreation" uses.[36] Where streams have multiple use designations, the most stringent water quality criteria will apply.[37]

While CERCLA cleanups are not subject to NPDES administrative permitting requirements for response actions conducted entirely on-site,[38] CERCLA cleanups must meet the substantive requirements of all ARARs (unless one of the waivers provided for in Section 121(d)(4) is justified for a specific requirement and a waiver is supported by data and information in the administrative record). Furthermore, consistent with CERCLA § 121(d)(2) and the NCP at 40 CFR § 300.430(e)(2)(i)(E) water quality criteria are to be attained where relevant and appropriate under the circumstances of the release. EPA guidance on cleanup of radiation at CERCLA sites also recognizes that federal ambient water quality criteria (AWQC) or state water quality standards are potential ARARs for CERCLA discharges to surface water.[39] As stated above, based on an evaluation of the 40 CFR § 300.400(g) factors, EPA Region 4 concludes that the CWA's NPDES technology-based and water quality-based effluent limitation regulations and TWQS are relevant and appropriate requirements to the discharge of radionuclide contaminated waste water at the ORR Site. Waste water discharges from the site should, therefore, comply with these requirements.

To develop TBELs, both the federal and State regulations require application of best professional judgment (BPJ) to identify the best available technology economically achievable.[40] This is consistent with the approach described in the *CERCLA Compliance with Other Laws Manual* which discusses how BPJ analysis is incorporated into cleanup decisions at CERCLA sites. Once the BPJ determination is made, the numerical effluent discharge limits are derived by applying the levels of performance of the selected treatment technology to the wastewater discharge.[41] Because this is a Federal NPL site, any BPJ analysis that is undertaken as part of an ARAR requirement is an enforceable part of a remedy, and as such, is included in a Primary Document that is reviewed and approved by EPA and TDEC.

Rather than relying on the requirements of the CWA's NPDES regulations, DOE developed discharge limits for most toxic pollutants and radionuclides at ORR that appear in part to be based on dilution. This approach ignores the CWA's technology-based standard in section 301(b)(2)(A) that constitutes the

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[36] TDEC 0400-40-04, *Use Classifications for Surface Waters.*

[37] TDEC 0400-40-03-.02(5).

[38] 42 U.S.C. § 9621(e)(1). *See* also 40 CFR § 300.400(e)(1). CERCLA § 121(e)(1) states that "No Federal, State, or local permit shall be required for the portion of any removal or remedial action conducted entirely onsite, so long as the remedial action is selected and carried out in compliance with this section." That is, while this provision of CERCLA relieves the cleanup of the permit approval process, the substantive requirements in CERCLA § 121 of assuring protection of human health and the environment and complying with ARARs, apply.

[39] *Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination,* Attachment A: List of Likely Federal Radiation ARARs, OSWER Dir 9200.4-18, August 22, 1997.

[40] TDEC 0400-40-05-.09(1)(b)(2). *See also* 40 CFR § 125.3(c)(2).

[41] *CERCLA Compliance with Other Laws Manual, pp.* 3-4. "Technology-Based Guidelines and Standards. The standards of control for direct discharges are derived from CWA § 301(b) which requires all direct dischargers to meet technology-based requirements. These requirements include, for conventional pollutants, application of the best conventional pollutant control technology (BCT), and for toxic and nonconventional pollutants, the best available technology economically achievable (BAT). [ ] Where effluent guidelines for a specific industry or industrial category do not exist, e.g., CERCLA sites, BCT/BAT technology-based treatment requirements are determined on a case-by-case basis using best professional judgment (BPJ). Once the BPJ determination is made, the numerical effluent discharge limits are derived by applying the levels of performance of a treatment technology to the wastewater discharge."

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minimum or floor for effluent limitations under the CWA. The CWA requires application of the "best available technology economically achievable" . . . which "shall require the elimination of discharges of all pollutants if the Administrator finds, on the basis of information available to him . . . that such elimination is technologically and economically achievable . . ." 33 U.S.C. § 1311(b)(2)(A). Under 40 C.F.R. § 125.3(a) and (f) (technology-based limits serve as the minimum level of control and technology-based treatment requirements cannot be satisfied through the use of 'non-treatment techniques' such as flow augmentation and instream mechanical aerators). The CWA Legislative History at 1425 (Senate Report) states: "(t)he use of any river, lake, stream or ocean as a waste treatment system is unacceptable" regardless of the measurable impact of the waste on the body of water in question," and the CWA Conference Report states that the Act "specifically bans pollution dilution as an alternative to waste treatment."[42] Here, existing treatment technology clearly is available and achievable under the CWA, and using that treatment technology is consistent with CERCLA section 121(b)'s preference for treatment "to the maximum extent practicable." A non-treatment technology approach (e.g., reliance on dilution) as the methodology for deriving the effluent limitations ignores the technology-based provisions of the CWA and is inconsistent with the statutory preference for treatment under CERCLA § 121(b)(1) and associated provisions in the NCP. Further, water quality-based limits under the CWA are established at levels that are *more – not less – stringent* than technology-based limits, when technology-based limits are not sufficient to ensure compliance with water quality standards. 33 U.S.C. § 1311(b)(1)(C).6 Moreover, although assimilative capacity of the receiving water can be considered in establishing water quality-based limits, Bear Creek and its tributaries have no assimilative capacity for toxics or radionuclides based on flow, thus as a practical matter, there is no available dilution to consider.[43]

DOE Orders and the NRC Dose Limits for Radionuclides Are Not ARARs

At ORR DOE has utilized its Orders to establish limits for waste water discharges from ORR and has identified them as To Be Considered (TBC)[44] in various projects.[45] However, in 1997, EPA issued guidance for CERCLA sites with radioactive contamination which in part addresses cleanups at CERCLA sites where the NRC rule might otherwise be applicable or relevant and appropriate, and discusses how cleanups at these sites "will typically have to be more stringent than required by the NRC dose limits to be protective."[46] This guidance states that cleanup levels outside the CERCLA risk range

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[42] (Conference Report). A Legislative History of the Water Pollution Control Act Amendments of 1972, vol. 1, 93rd Cong., 1st Sess. at 178 (Comm. Print 1973), at p. 284. Cited in *Weyerhaeuser v. Costle*, 590 F.2d 1011, 1043 (D.C. Cir. 1978).

[43] The flow of Bear Creek in this area is estimated to be 0.078 cubic feet/second, which has essentially zero assimilative capacity. Streamflow-Characteristic Estimation Methods for Unregulated Streams of Tennessee, U.S.G.S Scientific Investigations Report 2009-5159. Appendix A, p. 45.

[44] The NCP at 40 CFR § 300.430(e)(9) states that lead and support agencies must identify the ARARs in the FS (the early stages of the comparative analysis) and may also at the same time, as appropriate, identify other pertinent advisories, criteria or guidance (TBCs). *See also* NCP at 40 CFR § 300.400(g)(3). "In addition to applicable or relevant and appropriate requirements, the lead and support agencies may, as appropriate, identify other advisories, criteria or guidance to be considered for a particular release. This "to be considered" (TBC) category consists of advisories, criteria, or guidance that were developed by EPA, other federal agencies, or states that maybe useful in developing CERCLA remedies."

[45] DOE identified dose-based NRC regulations as ARARs in the EMWMF ROD, but not the FFS (e.g., 10 CFR 20.1301(a) and (b)). At Paducah Gaseous Diffusion Plant (PGDP) DOE has identified the NRC 100mrem/yr dose-based limit as an ARAR that would apply to discharges of radionuclides in wastewater and which EPA has stated is not protective. As a result, there is also a current FFA formal dispute at the PGDP facility.

[46] *Establishment of Cleanup Levels for CERCLA Sites with Radioactive contamination*, OSWER Dir. 9200.4-18, August 22, 1997.

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(10^{-4} to 10^{-6} for carcinogens, which includes all radionuclides) generally should not be used to establish cleanup levels. An attachment to the memo states, "EPA has carefully reviewed the basis for the NRC dose levels and does not believe they are generally protective within the framework of CERCLA and the NCP. Simply put, NRC has provided, and EPA is aware of, ***no technical, policy, or legal rationale for treating radiation risks differently from other risks addressed under CERCLA*** and for allowing radiation risks so far beyond the bounds of the CERCLA risk range."[47] EPA's position has not changed since 1997. In 1998, EPA informed the NRC that "radioactive contamination is not singled out in [CERCLA] or in EPA regulations as a privileged pollutant for which EPA should allow exceedances above the carcinogenic risk range that was determined generally to be protective for other carcinogenic contaminants.[48]" In 2014, EPA updated this guidance to incorporate the science on estimating risk levels of radiation dose consistent with Federal Guidance 13 to state that "ARARs that are greater than 12 mrem/yr [equivalent to 3 x 10^{-4} carcinogenic risk] effective dose equivalent . . . are generally not considered sufficiently protective for developing cleanup levels under CERCLA at remedial sites."[49] Accordingly, dose limits of 50 mrem/yr as set by the NRC regulation,[50] and 100 mrem/yr as set by DOE Order,[51] are not considered by EPA to be protective of human health and the environment.[52] Further, since DOE Orders are not promulgated and are not of general applicability, they are not ARARs,[53] and because these dose limits do not provide for a protective level of cleanup, they should not be identified as TBCs for CERCLA response actions.[54]

CONCLUSION

The current D2 FFS cannot be approved by EPA because DOE failed to identify the enclosed CWA NPDES regulations as ARARs for use in the establishment of protective discharge limits for contaminated waste water at the EMWMF and EMDF sites. In contrast, the dose and risk-based effluent limitations identified by DOE are inconsistent with the requirements of CERCLA, the NCP and EPA guidance, and if followed, would not result in a remedial action that is protective of human health and the environment and the receiving waters.

As explained above, the CWA NPDES regulations and State of Tennessee Water Quality Standards are 'relevant and appropriate requirements' to discharges of radionuclides and must be included as ARARs for the EMDF landfill as well as the current effluent discharges from EMWMF. The Enclosure hereto

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[47] *Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination*, OSWER Dir. 9200.4-18, August 22, 1997, Attachment B, *Analysis of what Radiation Dose Limit is Protective of Human Health at CERCLA Sites (Including Review of Dose Limits in NRC Decommissioning Rule)*, August 20, 1977, p.2.

[48] Letter dated February 20, 1998, from Timothy Fields, Jr., EPA, Acting AA of OSWER, to L. Joseph Callan, NRC, Executive Director of Operations.

[49] *Radiation Risk Assessment at CERCLA Sites: Q & A*, Directive 9200.4-40, EPA 540-R-012-13. May 2014.

[50] 10 CFR Part 20 *Standards For Protection Against Radiation*, Appendix B Table 2 Effluent Concentrations.

[51] DOE Order 5400.5 replaced with DOE Order 458.1, *Radiation Protection of the Public and the Environment.*

[52] *See* letter dated December 12, 1997, from James E. Woolford and Stephen D. Luftig, EPA, to Raymond P. Berube, DOE, transmitting EPA comments on DOE Proposed Rule 10 CFR Part 834, *Radiation Protection of the Public and the Environment*. *See also* EPA Region 4 Superfund Division Director Written Position on the establishment of radiological effluent limits issued as part of formal dispute at the Paducah Gaseous Diffusion Plant and provided to DOE ORR on June 16, 2016.

[53] *Compliance With Other Laws Manual Part II*, OSWER Dir. 9234.1-02, EPA/540/G-89/006, August 1989, Section 5.3 DOE PROGRAMS, p. 5-18 and 40 CFR § 300.400(g).

[54] See *Distribution of OSWER Radiation Risk Assessment Q&A Guidance*, December 17, 1999, p. 2, and *Radiation Risk Assessment at CERCLA Sites Q&A*, OSWER Directive 9200.4-40, May 2014, p. 27.

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identifies the specific regulations that EPA considers 'applicable requirements' to discharges of pollutants and those 'relevant and appropriate requirements' for discharge of radioactive contaminants in wastewaters from response actions on the ORR.[55] Inclusion of the ARARs on this list will ensure that the ARARs in the FFS are complete, and consistent with the ORR FFA, CERCLA and the NCP requirements. The D2 FFS must be revised to include these ARARs prior to additional EPA review and approval.

The FFS should not allow for dilution over a large stream volume to inflate the discharge limit and avoid treatment. EPA believes that best available technology, including ion exchange, activated carbon and/or reverse osmosis technology, should be used to develop technology-based effluent limits for radionuclides and pollutant discharges into surface waters. In the event the TBELs are not protective of the receiving water (i.e., do not meet TDEC's Water Quality Standards for pollutants and AWQC-equivalent[56] for radionuclides), then more-stringent WQBELs (including those based on AWQC-equivalent for radionuclides) should be used to ensure protection of human health and the environment.

Finally, CERCLA § 120(e)(4) provides EPA with the final authority to make remedy selection decisions (including protectiveness and ARARs determinations) at the ORR Superfund site, and the FFA memorializes that relationship with EPA's being the final decision-maker in disputes on Primary Documents. Such conclusion is consistent with the plain reading of CERCLA, the NCP and E.O. 12580. Within 21 days of the issuance of this Position, DOE or TDEC may issue a written notice elevating the dispute to the Administrator of EPA for resolution. In the event that neither DOE nor TDEC elect to elevate the dispute to the EPA Administrator within the designated 21-day elevation period, DOE and TDEC shall be deemed to have agreed with this position, and the position will constitute a final resolution of the disputed matter. DOE shall, within 35 days thereafter, incorporate the resolution and final determination into a revised FFS.

I want to thank you for your participation in the dispute resolution process. I hope that the FFA parties will be able to move forward promptly to address the revisions to the FFS as identified in this letter and to move forward on the completion of this remedial action consistent with CERCLA and the NCP.

Sincerely,

Mary S. Walker
Acting Regional Administrator

Enclosure

Additional Clean Water Act ARARs for Inclusion in the Revised D2 FFS

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[55] While DOE has omitted some of these ARARs from the FFS even in the cases where the CWA rules would be considered "applicable", i.e., for discharge of "pollutants", it may just be a function of error by omission.

[56] EPA Region 4 Office of Water derived AWQC-equivalent concentrations for radionuclides identified in the *Focused Feasibility Study for Water Management for Disposal of CERCLA Waste on the Oak Ridge Reservation, Oak Ridge, Tennessee* using the EPA Superfund Preliminary Remediation Goals (PRG) calculator with assumptions consistent with EPA's Office of Water's document, *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health* and TDEC's *Use Classifications for Surface Waters* at Chapter 0400-40-04.

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Supporting Information:

1. D2 *Focused Feasibility Study for Water Management for the Disposal of CERCLA Waste on the Oak Ridge Reservation, Oak Ridge, Tennessee*, February 4, 2016 (D2 FFS).
2. April 1, 2016, letter from EPA to DOE invoking informal dispute on the D2 FFS.
3. March 31, 2016, letter from TDEC to DOE invoking informal dispute on the D2 FFS.
4. June 16, 2016, letter from EPA to DOE forwarding the May 23, 2016, EPA Dispute Resolution Committee position in PGDP formal dispute (WDA RI/FS and BGOU SWMUs 2, 3, 7, and 30 FS on the Conditions Related to Discharges of Radionuclides).
5. May 21, 2018, letter from TDEC to DOE regarding ETTP Zone 2 discharge of wastewater.
6. July 10, 2018, letter from EPA to DOE regarding ETTP Zone 2 discharge of wastewater.
7. August 24, 2018, letter from EPA to DOE, elevating the FFS informal dispute for formal resolution.

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