UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

May 23, 2016

Mr. Robert E. Edwards, III
United States Department of Energy
Portsmouth/Paducah Project Site Office
1017 Majestic Drive, Suite 200
Lexington, KY 40513

Dear Mr. Edwards:

Pursuant to Section XXV.B.3 Resolution of Disputes of the Federal Facility Agreement (FFA) for the Paducah Gaseous Diffusion Plant (PGDP), the U.S. Environmental Protection Agency hereby notifies the Department of Energy (DOE) that the Kentucky Division of Waste Management (KDWM) and the EPA were not able to reach a joint decision within five days of the May 17, 2016, expiration date on the formal dispute on the EPA Additional Condition (November 19, 2015) for approval of the *Remedial Investigation/Feasibility Study Report for the CERCLA Waste Disposal Alternatives Evaluation* (DOE/LX/07-0244&D2) at the Dispute Resolution Committee level.

Notwithstanding, the EPA submits the enclosed position in view of the elevation of this dispute to the Senior Executive Committee (SEC) level. The enclosure consolidates the EPA's position on the issue of establishing discharge limits for radionuclides in wastewaters for both the CERCLA Waste Disposal Alternatives Evaluation project and the *Feasibility Study for the Solid Waste Management Units 2, 3, 7, and 30 of the Burial Grounds Operable Unit at the Paducah Gaseous Diffusion Plan* (DOE/LX/07-1274&D2). Resolution of these two disputes is very important to finalization of the aforementioned Primary Documents as provided in PGDP FFA Section XX. I. Finalization of Documents, and ensuring that any discharges by DOE from a CERCLA response action are protective of human health and the environment. Under the PGDP FFA Section XXV.B.3 Resolution of Disputes, DOE may elevate disputes to the SEC level for resolution within 10 days of receiving this notice.

If you have any questions or require additional information regarding the Agency's position, please contact Arthur Collins, Associate Director, Superfund Division at 404-562-9742.

Sincerely,

Franklin E. Hill, Director
Superfund Division

Enclosure

cc: Jennifer Woodard, DOE-Paducah

Tony Hatton, KDWM
Brian Begley, KDWM
Arthur Collins, EPA R4
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Jon Richards, EPA R4
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Background

In letters dated December 19, 2014, and November 19, 2015, the U. S. Environmental Protection Agency Region 4 (EPA) issued conditions on the Agency's approval of the *Feasibility Study for the Solid Waste Management Units 2, 3, 7, and 30 of the Burial Grounds Operable Unit at the Paducah Gaseous Diffusion Plant* (DOE/LX/07-1274&D2) [hereinafter BGOU FS] and the *Remedial Investigation/Feasibility Study Report for the CERCLA Waste Disposal Alternatives [WDA] Evaluation* (DOE/LX/07-0244&D2) [hereinafter WDA RI/FS] related to the discharge of wastewater and effluent limits for radionuclides from the Burial Grounds Operable Unit (BGOU) response action [EPA Condition #3] and from a potential future on-site waste disposal facility (OSWDF) for CERCLA wastes from the Paducah Gaseous Diffusion Plant (PGDP). The EPA Conditions provided specific revisions that the Department of Energy (DOE) was to undertake to the respective Feasibility Study (FS) and Remedial Investigation/Feasibility Study (RI/FS) documents in order to properly identify requirements for the discharge of radionuclide contaminated wastewaters into surface water(s) and that these discharges, as part of the CERCLA response actions, would include effluent limits that are protective of human health and the environment.

Additionally, EPA Conditions stated that the existing list of applicable or relevant and appropriate requirements (ARARs)[1] or To Be Considered (TBC) guidance[2] in these documents included entries related to discharges of radionuclides that were not sufficiently protective of human health and the environment. In particular, EPA does not consider effluent requirements for radionuclides that are based upon annual dose limits of 50 mrem/yr and 100 mrem/yr, from the Nuclear Regulatory Commission (NRC) regulation [10 CFR Part 20, Appendix B; 902 KAR 100:019 Section 44(7)(a)] and DOE Order 5400.5 (replaced with DOE Order 458.1 *Radiation Protection of the Public and the Environment*) respectively, to be sufficiently protective of human health and the environment. EPA final guidance "Radiation Risk Assessment Guidance for CERCLA Sites: Q&A" (current May 2014 version that superseded 1999 version) on cleanup of radionuclides at Superfund Sites, specifies that dose-based ARARs that do not equate to a 12 mrem/yr dose (or lower) should not be identified in a CERCLA response action as basis for the cleanup level.[3] EPA's September 29, 2014, letter to DOE on the disposition of radionuclide contaminated wastewater in the Building C-410 basement stated that the Agency disagrees that the DOE Order 5400.5 dose limit of 100 mrem/yr is sufficiently protective since it is outside EPA's generally accepted risk range utilized for CERCLA response actions and the use of the dose-based guidance is inconsistent with the NCP's remedy selection criteria. Thus, any derived concentration guidelines or effluent limits under the DOE Order 5400.5 (replaced with DOE O 458.1) will not be recognized by EPA as acceptable effluent limits for discharge of radionuclides from a CERCLA

[1] Reference 42 U.S.C. § 9621(d)(2)(A). ARARs are any promulgated standards, requirements, criteria, or limitations under federal environmental laws, or any promulgated standards, requirements, criteria, or limitations under state environmental or siting laws that are more stringent than federal requirements, that are either legally applicable or relevant and appropriate under the circumstances.

[2] To-be-considered material (TBCs) are non-promulgated advisories or guidance issued by Federal or State governments that are not legally binding and do not have the status of potential ARARs. However, TBCs will be considered along with ARARs as part of the site risk assessment and may be used in determining the necessary level of cleanup for protection of health and the environment.

[3] EPA Office of Solid Waste and Emergency Response (OSWER) Memorandum 9285.6-20, Distribution of the "Radiation Risk Assessment Guidance for CERCLA Sites: Q&A", (June 13, 2014).

response action.

While EPA had previously agreed to include the aforementioned NRC regulation as an ARAR for the Southwest VOC Plumes CERCLA action, the Agency subsequently informed DOE as part of the resolution of the Northeast Plume Explanation of Significant Differences formal dispute that the regulation should not be identified as an ARAR for the reasons provided above. In the dispute resolution agreement for that CERCLA project[4], the DOE agreed with EPA to not include this NRC regulation. Accordingly, EPA contends the NRC regulation and DOE Order should not be cited in the WDA RI/FS and BGOU FS documents ARARs/TBC tables or referenced in the documents text related to discharges of radionuclide contaminated wastewaters.

On March 27, 2015, the DOE invoked informal dispute for the BGOU FS in accordance with PGDP Federal Facility Agreement (FFA) Section XXV. Resolution of Disputes and provided its rationale why it did not agree with EPA's Condition #3. After an eight month period of informal dispute resolution, on December 22, 2015, DOE initiated formal dispute in accordance PGDP FFA Section XXV.B.1 for consideration by the Dispute Resolution Committee (DRC). DOE also indicated in their letter that resolution of EPA Condition #3 should be coordinated with the resolution of the EPA additional Condition for the WDA project. EPA and Kentucky Department for Environmental Protection (KDEP) have also suggested that resolution of the two disputes be combined.

On January 5, 2016, DOE invoked informal dispute on EPA's additional Condition issued in the November 9, 2015, letter related to the *Remedial Investigation/Feasibility Study Report for the CERCLA Waste Disposal Alternatives Evaluation* (DOE/LX/07-0244&D2). One month later, on February 19, 2016, DOE invoked formal dispute in accordance with the PGDP FFA and more specifically described why DOE believed the NRC regulation [10 CFR Part 20, Appendix B; 902 KAR 100:019 Section 44 (7)(a)] and the DOE Order 458.1 should be cited as an ARAR and TBC respectively. DOE also contended that EPA's radiation risk assessment guidance was erroneous and based upon technically unsound application of dose-to-risk conversion factors.

The DRC has engaged in several dispute resolution meetings and exchanged e-mails describing each respective FFA party's positions over the past several months. The FFA parties have not been able to reach unanimous consensus on how to resolve the disputed EPA Conditions. EPA and KDEP were not able to issue a joint decision as provided in PGDP FFA Section XXV.B.3 Resolution of Disputes. However, EPA is issuing a written statement of their position and required revisions to the aforementioned FFA primary documents for consideration in resolving the disputes at the Senior Executive Committee level.

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[4] Reference MEMORANDUM OF AGREEMENT FOR RESOLUTION of Formal Dispute of the *Explanation of Significant Differences to the Record of Decision for the Interim Remedial Action of the Northeast Plume at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/LX/07-1291&D2), and *Remedial Action Work Plan for Optimization of the Northeast Plume Interim Remedial Action at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/LX/07-1280&D2/R1); PPP0-02-3079083-15, August 4, 2015.

Statement of Position

Under the PGDP FFA Section XX.A. Review/Comment of Draft/Final Documents, the DOE is required to issue primary documents (e.g., RI Report and FS) that meet the requirements of CERCLA, the National Oil and Hazardous Substances Contingency Plan (NCP) and be consistent with relevant guidance and policy issued by EPA. Under CERCLA Section 120(a)(2), all EPA guidelines, rules, regulations, and criteria are applicable to federal agencies and departments in the same manner and extent that these apply to other non-federal facilities.[5] Per PGDP FFA Section XII. Feasibility Studies, the FS shall be based on the RI and shall meet the purposes set forth in Section III. (Purposes of Agreement). CERCLA Section 121(a) (*Selection of remedial action*), provides that remedial action under Sections 104 or 106 of CERCLA shall be carried out in accordance with Section 121 (*Cleanup standards*) and, to the extent practicable, the NCP.[6] Pursuant to CERCLA Section 121(d) (*Degree of cleanup)*, any remedial action selected by EPA must meet two threshold requirements. The remedy: (1) must attain a degree of cleanup which, at a minimum, assures protection of human health and the environment; [7] and (2) shall require a level or standard of control, at the completion of the action, which at least attains (or justifies a waiver of) all ARARs with respect to any hazardous substance, pollutant or contaminant that will remain on-site.[8] Remedial alternatives in an FS shall be developed and assessed to ensure that they are protective of human health and the environment and comply with identified ARARs.[9] Accordingly, DOE is required to issue an FS that complies with CERCLA, complies with the NCP, and is consistent with the EPA guidance documents related to ARARs, risk assessment and cleanup of radionuclide contamination at CERCLA sites.

Cleanup Levels

The first step in the FS process involves developing remedial action objectives for protecting human health and the environment that should specify contaminants and media of concern, potential exposure pathways, and preliminary remediation goals.[10] The preliminary remediation goals ("PRGs") are concentrations of contaminants for each exposure route that are believed to provide adequate protection of human health and the environment based on preliminary site information. [11] The PRGs consist of medium-specific or operable unit-specific chemical concentrations that are protective of human health and the environment. [12] Preliminary remediation goals are developed based on readily available information such as chemical-specific ARARs or other information.[13] For all classes of chemicals, EPA uses health-based ARARs to set

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[5] 42 U.S.C. § 9620(a)(2) *Application of requirements to Federal facilities*. Also, "No department, agency, or instrumentality of the United States may adopt or utilize any such guidelines, rules, regulations or criteria which are inconsistent with the guidelines, rules, regulations or criteria established by the Administrator under this chapter."

[6] 42 U.S.C. § 9621(a).

[7] 42 U.S.C. § 9621(d)(1) states, "Remedial actions . . . shall attain a degree of cleanup of hazardous substances, pollutants, and contaminants released into the environment and of control of future release at a minimum which assures protection of human health and the environment. *See also* 40 C.F.R. §§ 300.430(f)(1)(i)(A), 300.430(f)(5)(ii)(A) & (B).

[8] 42 U.S.C. § 9621(d)(2)(A); *see also* 40 C.F.R. §§ 300.430(f)(1)(i)(A), 300.430(f)(5)(ii)(A)&(B); Preamble to Final NCP, 55 Fed. Reg. 8666, 8726 (Mar. 8, 1990).

[9] 40 C.F.R. 300.430(e)(2) and 430(e)(9) *Detailed analysis of alternatives*.

[10] 55 Fed. Reg. 8666, 8712 (Mar. 8, 1990); *see also* 40 C.F.R. § 300.430(e)(2)(i).

[11] *Id.* at 8712.

[12] *Id.* at 8713.

[13] 40 C.F.R. § 300.430(e)(2)(i).

remediation goals, when they are available.[14] However, ARARs do not exist for all exposure media or for all chemicals; and therefore, EPA must use other information to set remediation goals that will ensure protection of human health and the environment.[15] Where ARARs are not available or are not sufficiently protective, EPA generally sets site-specific remediation levels for: (1) carcinogens at a level that represents an excess upper bound lifetime cancer risk to an individual of between 10^{-4} to 10^{-6}; and for (2) non-carcinogens such that the cumulative risks from exposure will not result in adverse effects to human populations (including sensitive sub-populations) that may be exposed during a lifetime or part of a lifetime, incorporating an adequate margin of safety.[16] The 10^{-6} level shall be used as the point-of-departure for determining remediation goals for alternatives when ARARs are not available or are not sufficiently protective because of the presence of multiple contaminants at a site or multiple pathways of exposure.[17] All radionuclides are carcinogens; thus, in the absence of an ARAR that EPA deems sufficiently protective, any PRGs for radionuclides should be initially set at 10^{-6} risk-based concentrations per the NCP.[18]

Dose-based standards

The NCP and the PGDP FFA require the lead and support agencies to identify their ARARs related to specific actions, as well as identify other pertinent advisories, criteria, or guidance in a timely manner.[19] The PGDP FFA recognizes that ARAR identification is necessarily an iterative process and that potential ARARs must be re-examined throughout the RI/FS process until the Record of Decision (ROD) is issued. Very few applicable standards exist for the cleanup of radioactively contaminated sites and buildings. In general, decisions concerning what is an ARAR for a site contaminated with radioactive waste will depend on: (1) what type of site it is (defined by the radioactive constituents present and the functional operations that generated the site); (2) whose regulatory jurisdiction the site falls under; and (3) which regulation is most protective, or if relevant and appropriate, most appropriate given the site conditions.[20] NRC standards for protection against radiation [10 CFR Part 20] may be relevant and appropriate to a CERCLA site that is not NRC-licensed. However, the dose limits that apply to protection of members of the

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[14] 55 Fed. Reg. 8666, 8712 (Mar. 8, 1990).

[15] *Id.* at 8713.

[16] 40 C.F.R. § 300.430(e)(2)(i)(A)(2). *See also* EPA OSWER No. 9200.4-23, *Clarification of the Role of Applicable, or Relevant and Appropriate Requirements in Establishing Preliminary Remediation Goals under CERCLA*, (August 22, 1997) "In the rare circumstances where, based on available information, application of an ARAR would not be protective of human health or the environment, EPA should establish PRGs at levels more protective than required by the ARAR even absent multiple pathways or contaminants."

[17] *Id. See also* 55 Fed. Reg. 8666, 8716 - 8718 (Mar. 8, 1990). While the 10^{-6} starting point expresses EPA's preference for setting cleanup levels at the more protective end of the risk range, it is not a presumption that the final Superfund cleanup will attain that risk level. PRGs for carcinogens are set at a 10^{-6} excess cancer risk as a point of departure, but may be revised to a different risk level within the acceptable risk range based on the consideration of appropriate factors including, but not limited to: exposure factors, uncertainty factors, and technical factors. The final selection of appropriate risk level is made when the remedy is selected based on the balancing of criteria.

[18] See EPA OSWER No. 9200.4-18, *Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination*, (August 22, 1997) and EPA OSWER No. 9200.4-23, *Clarification of the Role of Applicable, or Relevant and Appropriate Requirements in Establishing Preliminary Remediation Goals under CERCLA*, (August 22, 1997.

[19] 40 C.F.R. 300.430(e)(8); *see also* PGDP FFA Section XX. F. Identification and Determination of Potential ARARs.

[20] See EPA OSWER Dir. 9234.1-02 *Compliance with Other Laws Manual Part II: Clean Air Act and Other Environmental Statutes and State Requirements*, Chapter 5 Standards, Advisories, and Guidance for the Management of Radioactive Waste, (August 1989).

public are considered high relative to EPA standards (e.g., 40 CFR Parts 61 and 191) and may, depending on the circumstances at the site, be superseded by more stringent ARARs.[21] EPA has stated that certain NRC rule standards based upon dose limits of 25 mrem/yr (with exemptions allowing dose limits up to 100 mrem/yr) are not protective and should not be used to establish cleanup levels at CERCLA sites.[22] The radionuclide effluent concentrations in Table 2 of 10 CFR Part 20, Appendix B [902 KAR 100:019 Section 44 (7)(a)] are equivalent to the radionuclide concentrations which, if inhaled or ingested continuously over the course of a year, would produce a total effective dose equivalent of 0.05 rem (50 millirem or 0.5 millisieverts). EPA final guidance "Radiation Risk Assessment Guidance for CERCLA Sites: Q&A" (current May 2014 version that superseded 1999 version) on cleanup of radionuclides at Superfund Sites, specifies that dose-based ARARs that do not equate to a 12 mrem/yr dose (or lower) should not be identified in a CERCLA response action as basis for the cleanup level.[23] Thus, EPA does not consider effluent requirements for radionuclides that are based upon annual dose limits of 50 mrem/yr and 100 mrem/yr, from the NRC regulation [10 CFR Part 20, Appendix B, 902 KAR 100:019 Section 44(7)(a)] and DOE Order 5400.5 (replaced with DOE Order 458.1) respectively, to be sufficiently protective of human health and the environment and should therefore not be included in any ARARs/TBC table in the BGOU FS and WDA RI/FS documents. The DOE's use of NRC regulation [10 CFR Part 20, Appendix B, 902 KAR 100:019 Section 44(7)(a)] and DOE Order 5400.5 (replaced with DOE Order 458.1) in establishing limits for radionuclides in discharges from a CERCLA response action is inconsistent with the NCP and EPA's guidance for remedial actions at CERCLA sites and therefore contradicts the CERCLA Section 120(a)(2) requirement for federal agencies to not utilize any such guidelines, rules, regulations or criteria which are inconsistent with the guidelines, rules, regulations or criteria established by the EPA.

Effluent Limitations

On-site[24] discharges of wastewater from a CERCLA site to surface water are required to meet the substantive Clean Water Act (CWA) National Pollutant Discharge Elimination System (NPDES) requirements, including discharge limitations, monitoring requirements, and best management practices.[25] EPA guidance on cleanup of radiation at CERCLA sites has also identified federal ambient water quality criteria (AWQC) or State water quality standards as potential ARARs for CERCLA discharges to surface water.[26] Discharge limitations are either technology-based or ambient water quality-based and often require case-by-case application of best professional

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[21] *Id.*, page 5-14.

[22] See EPA OSWER No. 9200.4-18, *Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination*, (August 22, 1997)) and EPA OSWER No. 9200.4-23, *Clarification of the Role of Applicable, or Relevant and Appropriate Requirements in Establishing Preliminary Remediation Goals under CERCLA*, (August 22, 1997.

[23] Reference EPA OSWER No. 9200.4-40 *Radiation Risk Assessment At CERCLA Sites: Q and A*, (June 2014); *Distribution of OSWER's Radiation Risk Assessment At CERCLA Sites: Q and A Final Guidance*, (December 17, 1999); and EPA OSWER letter to DOE Raymond P. Berube dated Dec. 12, 1997 on the DOE Draft 10 CFR 834 *Radiation Protection of the Public and Environment*.

[24] See 40 C.F.R. 300.5 Definitions. *On-site* means the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action.

[25] See EPA, OSWER Dir. 9234.1-01, *Compliance with Other Laws Manual Part I*, Section 3.2 Guidance for Compliance with Direct Discharge Requirements, (August 8, 1988).

[26] See EPA OSWER No. 9200.4-18, *Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination*, Attachment A: List of Likely Federal Radiation ARARs, (August 22, 1997).

judgment to identify the pollution control technology or effluent concentration of a particular pollutant. State water quality standards (which are usually comprised of use classifications, narrative standards and numerical standards (i.e., ambient water quality criteria)) are also considered potential ARARs for CERCLA wastewater discharges. These substantive requirements must be identified and complied with even though an NPDES permit will not be obtained.[27] For example, the BGOU FS includes specific regulations from the Kentucky water quality standards such the those for establishing effluent limits for TCE based on ambient water quality criteria (AWQC) as well as monitoring requirements and narrative standards to protect the receiving water (designated as *Warm Water Aquatic Life* and *Primary Contact Recreation Water*.)[28] These requirements are generally considered 'applicable' to discharges of 'pollutants' found within wastewaters discharged from a CERCLA site. The CWA definition of 'pollutant' at 40 CFR Part 122.2 excludes certain radioactive materials regulated under the Atomic Energy Act.[29] However, radionuclides are listed hazardous substances[30] and radioactive contamination can be addressed under CERCLA[31] at PGDP regardless of the origin of the release from historical operations involving Atomic Energy Act (AEA) materials. Consequently, the CWA discharge limitations and water quality standards requirements may only be considered 'relevant and appropriate' for radioactively contaminated wastewaters discharged from a CERCLA response action at PGDP.[32]

Wastewater management activities for some of the BGOU remedial alternatives could include removal (via pumping) of radionuclide contaminated groundwater from excavation areas, collection of contaminated water from dewatering excavated soils/wastes or managing stormwater, equipment decontamination water, and treatment of these wastewaters in temporary units prior to discharge into a nearby surface water located on the PGDP. As stated in EPA Condition #3, the entries in BGOU FS ARARs Table F.2 for *Effluent limits for radionuclides in wastewaters* references the NRC regulation and DOE Order that are based upon annual dose limits (50 mrem and 100 mrem, respectively) that can result in levels of radionuclides that EPA does not consider sufficiently protective of human health and the environment. Any discharges to surface water resulting from DOE operations (under AEA authority as opposed to CERCLA) are required under DOE Order 458.1 to use ALARA.[33] Despite not being recognized as an ARAR or TBC, DOE has

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[27] *Id.* CERCLA Section 121(e)(1) states that no Federal, State, or local permit is required for the portion of any removal or remedial action conducted entirely on-site.

[28] Reference 401 KAR 10:31 *Surface water standards* and 401 KAR 10:026 *Designation of uses of surface waters.*

[29] *Pollutant* means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 *et seq.*)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. NOTE: Radioactive materials covered by the Atomic Energy Act are those encompassed in its definition of source, byproduct, or special nuclear materials. Examples of materials not covered include radium and accelerator-produced isotopes. See *Train* v. *Colorado Public Interest Research Group, Inc.*, 426 U.S. 1 (1976).

[30] Reference Appendix B to 40 CFR 302.4 – RADIONUCLIDES.

[31] See EPA letter dated February 20, 1998, from Timothy Fields Jr., Assistant Administrator OSWER and Richard D. Wilson, Assistant Administrator Office of Air and Radiation to Mr. L Joseph Callan, U.S. Nuclear Regulatory Commission.

[32] See 40 C.F.R. 300.400(g)(2) for list of comparison factors to consider for determining relevance and appropriateness. *See also* EPA, OSWER Dir. 9234.1-01, *Compliance with Other Laws Manual Part I*, Section 1.2.4.3 General Procedures for Determination if a Requirement is Relevant and Appropriate, (August 8, 1988).

[33] Reference DOE Order 458.1 Section 4.d. As Low as Reasonably Achievable (ALARA). A documented ALARA

not described how this process would have impacted development of effluent limits for an individual discharge and resulted in radionuclide concentrations well below an annual facility wide dose limit.

Wastewater that is expected to be generated as part of the CERCLA OSWDF operations include leachate from the landfill, contact storm water from within the OSWDF, decontamination wastewater, and possibly other wastewaters associated with managing wastes, much of which could be contaminated with radionuclides. The WDA RI/FS assumes that a Leachate Treatment Facility (equivalent to a CWA NPDES permitted waste water treatment facility) is constructed and operated as part of the remedy to treat these wastewaters and the treated wastewaters discharged into nearby surface water(s) located on the PGDP. As previously mentioned in EPA's Condition, the WDA RI/FS has a very limited description of requirements associated with managing wastewater (including discharges into surface water) and the RI/FS does not describe how radionuclide contaminated wastewater will be managed in order to be protective of human health and the environment. Also, the Appendix G ARARs/TBC table does not include specific requirements for discharges of radionuclide contaminated wastewater from the Leachate Collection Facility.

As result of the deficiencies described in the paragraphs above, the BGOU FS and WDA RI/FS documents do not comply with CERCLA, the NCP and are inconsistent with the EPA guidance documents related to ARARs, risk assessment and cleanup of radionuclide contamination at CERCLA sites as required by the PGDP FFA. The DOE's use of NRC regulation [10 CFR Part 20, Appendix B, 902 KAR 100:019 Section 44(7)(a)] and DOE Order 5400.5 (replaced with DOE Order 458.1) in establishing limits for radionuclides in discharges from a CERCLA response action is inconsistent with the NCP and EPA's guidance for remedial actions at CERCLA sites and therefore contradicts CERCLA Section 120(a)(2) requirement for federal agencies to not utilize any such guidelines, rules, regulations or criteria which are inconsistent with the guidelines, rules, regulations or criteria established by the EPA.

Required Revisions to Primary Documents

In consideration of the EPA's written position provided above and consideration of the Agency's earlier Conditions for approval, the EPA maintains that the BGOU FS and WDA RI/FS should be revised to include language in the appropriate sections of those documents consistent with the requirements/conditions provided below. The EPA reserves its right at the Senior Executive Committee level to require additional or modified language for DOE to include in the WDA RI/FS and BGOU FS documents.

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process must be implemented to optimize control and management of radiological activities so that doses to members of the public (both individual and collective) and releases to the environment are kept as low as reasonably achievable. The process must be applied to the design or modification of facilities and conduct of activities that expose the public or the environment to radiation or radioactive material. Under DOE Order 458.1 Section 4.g. Control and Management of Radionuclides from DOE Activities in Liquid Discharges, DOE facilities discharging or releasing liquids containing radionuclides from DOE activities must comply with the ALARA process requirements in paragraph 4.d. of this Order

WDA RI/FS

A. EPA requires that text in Section 5.4.2.8 *Support Facilities* and text in Appendix G Section G.2.7 *Action-Specific ARARs* be revised by DOE to include:

(i) Additional language to better reflect that any wastewater generated (including, but not limited to, collected leachate, decontamination wastewater and contact water collected from areas within the landfill) may require treatment of any hazardous substance (including radionuclides) prior to discharge into surface water to ensure such discharge(s) are protective of human health and the environment.

(ii) Text stating that the actual effluent limits (including technology-based limits) for any radionuclide(s) discharged into surface water from the Leachate Treatment Facility will be established in accordance with sufficiently protective ARARs, TBC guidance and/or EPA approved risk methodologies and specified in the Proposed Plan (PP) and ROD.

(iii) Text stating that effluent limits for radionuclides must be within EPA's generally accepted risk range under CERCLA, and, in the event a risk-based concentration is calculated, a 10^{-6} concentration will be used as the point of departure consistent with the NCP. Such effluent limits must be derived following an EPA approved methodology and in a manner consistent with the exposure assumptions in the Commonwealth of Kentucky (KY) designated use classifications of the receiving surface water body [*Warm Water Aquatic Life* and *Primary Contact Recreation Water*].[34] Such effluent limits shall consider the minimum surface water standards related to consumption of fish for protection of human health and any ambient water quality equivalent for carcinogens should be set a 10^{-6} concentration.[35]

B. Consistent with a previous EPA Condition on the BGOU Solid Waste Management Units 2, 3, 7, and 30 FS, and as further explained above in the Statement of Position, the EPA does not consider effluent requirements that are based upon annual dose limits of 50 mrem/yr and 100 mrem/yr, from the NRC regulation [10 CFR Part 20, Appendix B, 902 KAR 100:019 Section 44(7)(a)] and DOE Order 458.1, respectively, sufficiently protective of human health and the environment and DOE's proposed use of them is inconsistent with EPA's guidance for CERCLA sites and contradicts CERCLA Section 120(a)(2) requirements. Accordingly, the NRC regulation and DOE Order should not be cited in the Appendix G ARARs/TBC or referenced in the document text as an ARAR or TBC that will be applied to CERCLA discharges of radionuclide contaminated wastewater or be used as the basis for deriving effluent concentrations for radionuclides.

Also, EPA suggests that the Kentucky Pollutant Discharge Elimination System (KPDES) effluent regulations that are currently included in the Appendix G ARARs table for discharge of pollutants could be identified as 'relevant and appropriate' for the radionuclide-contaminated wastewater (despite that these regulations are not 'applicable' due to the definition of 'pollutants') because such regulations are well-suited for this activity considering the factors for determining 'relevance and appropriateness' in 40 CFR 300.400(g)(2).

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[34] See EPA Jennifer Tufts letter to Rachel Blumenfeld (DOE) dated June 6, 2014, explaining EPA's methodology for calculating an ambient water quality equivalent for technetium-99 (Tc-99) that could be used as an effluent limit for discharges of Tc-99 contaminated groundwater for the Northeast Plume Interim Remedial Action treatment units.

[35] Reference 401 KAR 10:031 Section 2. Minimum criteria applicable to all surface waters, Paragraph 3 (b) and 401 KAR 10:031 Section 3. Use Designations and Associated Criteria, Paragraphs 1(a) and 1(b).

BGOU FS

A. EPA requires that text in appropriate sections of the document be revised by DOE to include:

(i) Additional language to better reflect that any wastewater generated (including, but not limited to, contaminated groundwater removed from excavation areas, equipment decontamination wastewater contaminated water, and contaminated water from dewatering excavated soils/wastes or managing stormwater may require treatment of any hazardous substance (including radionuclides) prior to discharge into surface water to ensure such discharge(s) are protective of human health and the environment.

(ii) Text stating that the actual effluent limits (including technology-based limits) for any radionuclide(s) discharged into surface water(s) will be established in accordance with sufficiently protective ARARs, TBC guidance and/or EPA approved risk methodologies and specified in the PP and ROD.

(iii) Text stating that effluent limits for radionuclides must be within EPA's generally accepted risk range under CERCLA and, in the event a risk-based concentration is calculated, a 10^{-6} concentration will be used as the point of departure consistent with the NCP. Such effluent limits must be derived following an EPA approved methodology and in a manner consistent with the exposure assumptions in the KY designated use classifications of the receiving surface water body [*Warm Water Aquatic Life* and *Primary Contact Recreation Water*]. Such effluent limits shall consider the minimum surface water standards related to consumption of fish for protection of human health and any ambient water quality equivalent for carcinogens should be set a 10^{-6} concentration.

(iv) In addition, Section 2.4.1.9.2 and Section F.4.5 *Waste Water Treatment* must be revised to include language consistent with the above conditions.

B. Additionally, EPA requires that DOE delete the ARAR entries from Table F.2 for *Effluent limits for radionuclides in wastewaters*, specifically the aforementioned NRC regulation [10 CFR Part 20, Appendix B, 902 KAR 100:019 Section 44(7)(a)] and DOE Order 458.1 that are based upon annual dose limits (50 mrem and 100mrem, respectively). DOE must also remove any reference to the NRC regulation and DOE Order in the document text that these ARARs/TBC will be applied to CERCLA discharges of radionuclide contaminated wastewater. As stated above in the Statement of Position, EPA does not consider these ARARs/TBC sufficiently protective of human health and the environment, and DOE's proposed use of them is inconsistent with EPA's guidance for CERCLA sites and contradicts CERCLA Section 120(a)(2) requirements.

Also, the EPA suggests that the KPDES effluent regulations that are currently included in the Appendix F ARARs table for discharge of pollutants could be identified as 'relevant and appropriate' for the radionuclide-contaminated wastewater (despite that these regulations are not 'applicable' due to the definition of 'pollutants') because such regulations are well-suited for this activity considering the factors for determining 'relevance and appropriateness' in 40 CFR 300.400(g)(2).

End of File