IN RE GENERAL ELECTRIC COMPANY

RCRA Appeal Nos. 16-01 to 16-05

ORDER REMANDING IN PART AND DENYING REVIEW IN PART

Decided January 26, 2018

Syllabus

The U.S. Environmental Protection Agency Region 1 ("Region") issued a corrective action permit under the Resource Conservation and Recovery Act ("RCRA") to the General Electric Company ("GE") establishing the remedy for addressing the polychlorinated biphenyl ("PCB") contamination in a major portion of the Housatonic River in Massachusetts and Connecticut. The permit requires GE to excavate nearly one million cubic yards of contaminated sediment and soil from the River and its floodplain, place a cap over much of the remaining PCB contamination, restore the River and its environs, and dispose of the excavated material in a properly-authorized off-site landfill.

This permit arises out of a Consent Decree entered by a federal district court in 2000 resolving claims under, among other statutes, RCRA and the Comprehensive Environmental Response, Compensation and Liability Act. The Consent Decree established a process for selecting a remedy for the PCB contamination in the Housatonic River that GE would implement. In the Consent Decree, the Region and GE agreed that the final product of this process would be a RCRA corrective action permit delineating the terms of the remedial action. That permit, which the Region issued in October 2016, is being challenged in this proceeding.

GE and four other parties filed petitions for review with the Board. GE contests both the scope of the cleanup and the requirement to dispose of the excavated materials at an off-site landfill. The other four petitioners are: (1) a private citizen, Mr. C. Jeffrey Cook, who also claims that the cleanup goes too far; (2) the Berkshire Environmental Action Team, a citizens' group that argues that the cleanup does not go far enough; (3) the Housatonic River Initiative, Inc., another citizens' group that also asserts that the cleanup should be more extensive and further claims that the excavated material should be treated to remove the PCBs before being disposed; and (4) a group of five Massachusetts communities that contend that the permit should have required GE to comply with the Massachusetts Hazardous Waste Facility Siting Act and to be responsible for the response action "in perpetuity." The states of Massachusetts and Connecticut each filed a response

brief opposing GE's petition and supporting the Region's choice of remedy. Amicus briefs expressing support for various aspects of the Region's permitting decision and opposing other aspects were filed by the Massachusetts Audubon Society, the City of Pittsfield, Green Berkshires, Inc., and the Housatonic Rest of River Municipal Committee. After requesting and receiving several extensions of time, the parties completed briefing in May 2017, and the Board held an all-day oral argument in June 2017.

Held: In brief, the Environmental Appeals Board (1) upholds, with one exception, the Region's decisions on the scope of the cleanup against both the claims that it goes too far and the claims that it does not go far enough; (2) remands for further consideration the permit requirements on additional response actions required for future work projects in the River by third parties; (3) upholds the Region's decision not to require treatment of the excavated sediment and soil prior to disposal; and (4) remands for further consideration the permit condition requiring GE to dispose of the excavated material off-site rather than on-site.

The Board's major holdings, by petition, are as follows:

GE Petition (RCRA Appeal No. 16-01)

1. Extent of the Cleanup. The Region did not clearly err in choosing a cleanup remedy for the Housatonic River that is more extensive than GE's preferred alternative.

- GE has not demonstrated that the Region clearly erred in rejecting GE's claim that a less-extensive remedial alternative would reduce PCB levels in fish tissue to an equivalent degree as the remedy selected by the Region. GE does not address the Region's argument that GE had relied on modeling results that do not provide an accurate point of comparison for evaluating the alternatives.
- GE has not shown that the Region clearly erred in choosing a cleanup plan for Woods Pond that requires deep-dredging of the Pond before placement of a cap. GE's narrow focus on the increased number of truck trips and the cost associated with deep-dredging ignores the broad range of factors relevant to remedy selection that the Region considered.
- GE has not shown that the Region clearly erred in choosing a cleanup plan for Rising Pond. GE has not demonstrated that its data concerning the amount of dredging necessary to maintain the Pond's flood storage capacity are relevant to the circumstances at Rising Pond.
- GE has not demonstrated that the Region clearly erred in choosing a cleanup plan for the Housatonic River floodplain based on the Region's estimate of human exposure to PCBs in the floodplain. The Region's estimate of PCB exposure was reviewed by an independent scientific peer review panel, and the Region took GE's data into account in estimating exposure.
- GE has not supported its claim that the selected remedy will have a long-term negative impact on the Housatonic River ecosystem. Specifically, GE has not

shown that the Region did not identify and evaluate the feasibility of measures for restoring that ecosystem. The Region did not clearly err in considering the extent to which adverse environmental impacts from remediation activities could be mitigated by environmental restoration techniques.

2. Additional Work Provisions. The Region did not clearly err in providing for additional work if performance standards based on levels of PCBs in the water and fish tissue are exceeded. These performance standards are not facially inconsistent with the Consent Decree because they require that any additional work be consistent with the scope of the response action. The Region did clearly err, however, in requiring additional response actions to address future work projects in the River by third parties. Unlike the performance standards for PCBs in water and fish tissue, the provisions concerning additional response actions to address future work by third parties do not appear to require that the Region's choice of additional work be consistent with the scope of the response action. Because these latter provisions, as currently drafted, appear to facially conflict with the Consent Decree, they are remanded for further consideration by the Region.

3. Dams Not Owned by GE. The Region did not clearly err in imposing inspection and maintenance requirements on GE as to certain dams that GE does not own. GE is mistaken that the Region did not properly evaluate this provision before including it in the Final Permit and that the provision conflicts with other federal requirements pertaining to dams.

4. The Massachusetts Endangered Species Act ("Massachusetts ESA"). The Region did not clearly err in requiring GE to comply with the regulatory requirements of the Massachusetts ESA. Because the permit directs the Region to follow the Massachusetts ESA's regulatory requirements in implementing the remedy, there is nothing in the permit that, on its face, contradicts the Massachusetts ESA. The requirement to comply with the Massachusetts ESA also does not conflict with the portion of the Consent Decree's covenant not to sue for Natural Resource Damages claims against GE because that covenant does not attach until GE has complied with applicable or relevant and appropriate requirements such as the Massachusetts ESA.

5. Off-site Disposal. The Region failed to exercise considered judgment in deciding that the contaminated materials excavated during the cleanup should be disposed off-site. The Region rejected on-site disposal based largely on its finding that on-site disposal would not comply with a Toxic Substances Control Act landfill regulation, but the Region failed to explain why a waiver of the landfill regulation was not appropriate for GE's proposed on-site disposal locations, particularly in light of GE's contention that the Agency routinely grants such waivers, and the Region failed to reconcile seemingly inconsistent statements in the record. This lack of considered judgment necessitates a remand of the Permit decision to the Region to reconsider selection of the disposal location. The Board offers its observations on several other issues raised by the parties concerning

the disposal location issue to aid in the Region's reconsideration. The Board takes no position on the ultimate resolution of this question.

Housatonic River Initiative Petition (RCRA Appeal No. 16-02)

1. Extent of the Cleanup. The Region did not clearly err in choosing a cleanup remedy for the Housatonic River that is less extensive than the Housatonic River Initiative's preferred alternative.

- The Housatonic River Initiative has not shown that the Region clearly erred in the manner in which it took into account risks from exposure to volatilized PCBs in choosing the remedial action. The Region considered the risks of volatilized PCBs to be low, as measured at relevant Housatonic River locations.
- The Housatonic River Initiative has not explained why the reasons the Region gave for selecting monitored natural recovery for certain portions of the River were clearly erroneous. Instead, the Housatonic River Initiative's arguments are based on information from other portions of the River where the Region also determined that monitored natural recovery is not appropriate.
- The Region did not clearly err in choosing a remedy less extensive than the one preferred by the Housatonic River Initiative. The Region concluded that any marginal additional protectiveness that the Housatonic River Initiative's preferred remedy would provide in the long-term was outweighed by the amount of time it would take to complete the remedy, as well as by the significantly higher adverse impacts the remedy would have on local communities in the short-term and the remedy's significantly higher cost.

2. Treatment of Excavated Materials. The Region did not clearly err in deciding that treatment of excavated material to remove PCBs was not required before disposal.

- The Housatonic River Initiative did not properly preserve its claim that the contaminated materials should be treated by thermal desorption because the Housatonic River Initiative did not present this issue to the Region during the public comment process. Absent a showing that the issue was not required to have been raised previously, a party may not raise an issue for the first time on appeal to the Board.
- The Region did not clearly err in declining to require bioremediation of sediment and soils containing PCBs. Information presented by the Housatonic River Initiative does not show that this treatment method is appropriate for the Housatonic River cleanup.

C. Jeffrey Cook Petition (RCRA Appeal No. 16-03)

The Region did not clearly err in selecting a remedy that Mr. Cook claims is too extensive. Mr. Cook raises a number of issues that the Region addressed in its response to

public comments, and his Petition fails to explain why those responses are clearly erroneous. Regarding Mr. Cook's argument that the Region overestimated human exposure to PCBs, we conclude that Mr. Cook has not shown clear error because the Region's exposure assessment was based on multiple sources of data and was favorably reviewed by an independent scientific peer-review panel.

Housatonic Rest of River Municipal Committee Petition (RCRA Appeal No. 16-04)

1. Massachusetts Hazardous Waste Facility Siting Act. The Region did not clearly err by failing to include a provision in the permit requiring GE to comply with the Massachusetts Hazardous Waste Facility Siting Act. The Region has clarified that it does not interpret the permit to foreclose the pursuit of any potential remedies under that state law. In addition, given the procedural nature of that law and based on the facts and circumstances of this case, the Housatonic Rest of River Municipal Committee has not demonstrated that the Region erred by failing to identify the law as an applicable or relevant and appropriate requirement.

2. Maintain Remedy in Perpetuity. The Region did not clearly err or abuse its discretion in not explicitly requiring GE to be responsible for inspection and maintenance of the remedy in perpetuity. The permit imposes broad operation and maintenance requirements on GE and dictates that a detailed operation and maintenance plan be established to govern GE's performance of its obligations.

Berkshire Environmental Action Team Petition (RCRA Appeal No. 16-05)

The Region did not clearly err by rejecting the Berkshire Environmental Action Team's request that the Region (1) require use of activated carbon filtration as a first option for cleaning up vernal pools in the Housatonic River floodplain; (2) allow the use of engineered capping in some areas of contamination rather than removing all PCBs; and (3) require a monitoring program for the Connecticut portion of the River rather than requiring removal of contaminated sediments trapped behind dams in Connecticut. The Region addressed all of these issues in its response to public comments on the draft permit, and the Berkshire Environmental Action Team has failed to explain why the Region's responses were clearly erroneous.

Before Environmental Appeals Judges Aaron P. Avila, Kathie A. Stein, and Mary Beth Ward.

Opinion of the Board by Judge Stein:

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I. *STATEMENT OF THE CASE*

In this proceeding, we consider five petitions challenging a corrective action permit the U.S. Environmental Protection Agency, Region 1, issued under the Resource Conservation and Recovery Act to the General Electric Company ("GE"). For a good portion of the 20th century, GE disposed of polychlorinated biphenyls, commonly referred to as "PCBs," from its manufacturing operations in Pittsfield, Massachusetts, into the Housatonic River. PCBs now contaminate the River and its sediments, banks, backwaters, and floodplains. This contamination stretches from Pittsfield in western Massachusetts through Connecticut to Long Island Sound. The challenged permit specifies the remedial action GE must undertake to clean up a major portion of the River and its environs.

The permit has its genesis in a judicial consent decree entered in the year 2000. Consent Decree in *U.S. et al. v. General Electric Co.*, Civ. Act. No. 99-0225 through 30227-MAPS (entered Oct. 27, 2000), AR9420 ("Consent Decree" or "CD").[1] That Consent Decree settled claims by the United States and others against GE under a number of federal and state authorities, including the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), 42 U.S.C §§ 9601-9675, and the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. §§ 6901-6992k. Under the Consent Decree, GE is required to conduct several cleanup actions to remove contaminants in and around a portion of the Housatonic River located near GE's former Pittsfield manufacturing facility. The Consent Decree also directed GE to participate in a process for selecting a remedy for the remainder of the River downstream from Pittsfield – an area designated as

[1] In citing documents in the Region's administrative record for the Final Permit, we reference the "AR" number. Documents in the administrative record are accessible in the Region's online file of publicly-available documents for the GE-Housatonic River site at https://semspub.epa.gov/src/collection/01/SC31186. We have abridged the names of documents in some instances for the sake of brevity.

the "Rest of the River" – and to implement the selected remedy pursuant to a RCRA corrective action permit. This remedy selection and execution process is spelled out in the Consent Decree and in a pre-existing RCRA corrective action permit that was modified and reissued in connection with the Consent Decree. U.S. EPA, General Electric Co. – Pittsfield, MA RCRA Corrective Action Permit (July 18, 2000), AR6839 ("2000 Permit").[2] We refer to that pre-existing RCRA corrective action permit as the "2000 Permit."

In October 2016, EPA Region 1 ("Region") modified the 2000 Permit to specify the remedy that GE is obligated to implement for the Rest of the River. U.S. EPA, General Electric Co. – Pittsfield, MA RCRA Corrective Action Permit (Dec. 5, 2007), AR280170 ("Permit"). We refer to this permit modification in the text as the "Final Permit" or "Permit." The Final Permit is the subject of this proceeding.

GE petitions for review of the Final Permit, contesting both the scope of the cleanup and the requirement that GE must dispose of PCB-contaminated sediment and soil in an off-site landfill. GE maintains that the Permit requires excavation of too much PCB-contaminated sediment and soil. Further, GE argues that rather than ship the excavated material to an off-site landfill, it should be allowed to dispose of the excavated material "on-site," in a new landfill to be created for that purpose near the Housatonic River.

In addition to GE, four other parties also challenge the Permit. Five Massachusetts communities located downriver from Pittsfield jointly seek review, arguing that the Region erred by not explicitly requiring GE to comply with the Massachusetts Hazardous Waste Facility Siting Act and to be responsible for the response action "in perpetuity." A private citizen, Mr. C. Jeffrey Cook, challenges the Permit claiming that the cleanup goes too far, requiring the removal of more

[2] The Region issued an initial RCRA corrective action permit to GE addressing its Pittsfield manufacturing facility in 1993. U.S. EPA, General Electric Company Permit Under the Hazardous and Solid Waste Amendments of 1984 (Dec. 21, 1993), AR6838. That 1993 permit was substantially revised as part of the 2000 settlement, and the revised permit was incorporated as Appendix G to the Consent Decree. The 2000 Permit was reissued by the Region on December 5, 2007, with very minor revisions. U.S. EPA, General Electric Co. – Pittsfield, MA RCRA Corrective Action Permit (Dec. 5, 2007), AR280170. Because the permit reissued in 2007 is substantively the same as the 2000 Permit, we will continue to refer herein to the 2000 Permit.

PCB-contaminated sediment and soil than is warranted given the level of risk to human health and the environment. Finally, two citizen groups – the Housatonic River Initiative and the Berkshire Environmental Action Team – each seek review, asserting that the cleanup does not go far enough and that the excavated sediment and soil should be treated prior to disposal.

The states of Massachusetts and Connecticut filed response briefs in opposition to GE's Petition, supporting the Region's choice of remedy in the Final Permit. Amicus briefs supporting various aspects of the Region's permitting decision and opposing other aspects were filed by the Massachusetts Audubon Society, the City of Pittsfield, Green Berkshires, Inc., and the Housatonic Rest of River Municipal Committee.

In brief, the Environmental Appeals Board (1) upholds, with one exception, the Region's decisions on the scope of the cleanup against the claims both that the cleanup goes too far and that it does not go far enough; (2) remands for further consideration the Permit provisions concerning additional response actions required for future work by third parties; (3) upholds the Region's decision not to require treatment of the excavated sediment and soil prior to disposal; and (4) remands for further consideration the Permit provision requiring GE to dispose of the excavated material off-site rather than on-site. We take no position on the ultimate resolution of the question of where the excavated material should be disposed. For the Region's consideration on remand, the Board also offers several observations on other disputed issues related to the choice of off-site or on-site disposal.

Before turning to a detailed consideration of the issues, the Board commends all of the parties and amicus curiae for their sustained efforts in this proceeding. The Petitions raise multiple and complex issues, and the administrative record is voluminous. All participants have provided important assistance to the Board through their briefs and their participation in an all-day oral argument.

II. *PRINCIPLES GOVERNING BOARD REVIEW*

A. *Threshold Requirements*

The Code of Federal Regulations, section 124.19 of Title 40, governs Board review of a RCRA permit modification. 40 C.F.R. § 124.19.[3] In considering a petition filed under section 124.19, the Board first evaluates whether petitioner has met threshold procedural requirements, including issue preservation and specificity. *See id.* § 124.19(a); *In re Indeck-Elwood, LLC*, 13 E.A.D. 126, 143 (EAB 2006). If petitioner has satisfied all threshold procedural obligations, the Board evaluates the petition on its merits to determine if it warrants review. *Indeck-Elwood*, 13 E.A.D. at 143.

A petitioner satisfies the issue preservation requirement by demonstrating that the issues and arguments it raises on appeal were raised previously – either during the public comment period on the draft permit or during a public hearing – unless the issue was not "reasonably ascertainable" or the argument was not "reasonably available" at the time. 40 C.F.R. §§ 124.13, 124.19(a)(4)(ii); *see, e.g.*, *In re City of Attleboro*, 14 E.A.D. 398, 405, 431 (EAB 2009); *In re City of Moscow*, 10 E.A.D. 135, 141, 149-50 (EAB 2001). Petitioner bears the burden of demonstrating that the issue was raised previously, as "[i]t is not incumbent upon the Board to scour the record to determine whether an issue was properly raised below." *In re Encogen Cogeneration Facility*, 8 E.A.D. 244, 250 n.10 (EAB 1999). The Board has explained that "[t]he regulatory requirement that a petitioner must raise issues during the public comment period 'is not an arbitrary hurdle, placed in the path of potential petitioners simply to make the process of review more difficult; rather, it serves an important function related to the efficiency and integrity of the overall administrative scheme.'" *In re Christian Cnty. Generation, LLC*, 13 E.A.D.

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[3] EPA revised the rules governing appeals from permit decisions effective May 22, 2017, after the Petitions for Review in this matter were filed. *See* Procedures for Decisionmaking, 82 Fed. Reg. 2230, 2230-37 (Jan. 9, 2017) (revising 40 C.F.R. §§ 124.19, .20); *see also* Further Delay of Effective Dates for Five Final Regulations Published by the Environmental Protection Agency Between December 12, 2016, and January 17, 2017, 82 Fed. Reg. 14,324 (Mar. 20, 2017) (extending effective date of rule revision to May 22, 2017). Although applicable to all filings submitted after the effective date, these amendments are procedural in nature and do not substantively alter the Agency's review of permit appeals. *See* 82 Fed. Reg. at 2231.

449, 459 (EAB 2008) (quoting *In re BP Cherry Point*, 12 E.A.D. 209, 219 (EAB 2005)).

A petitioner satisfies the specificity requirement by identifying each permit condition or other issue being contested and clearly setting forth, with legal and factual support, its arguments as to why the Board should grant review. 40 C.F.R. § 124.19(a)(4). The specificity requirement ensures that the Board will have "certain fundamental information" that it needs to consider the petition on its merits, *In re Envotech, L.P.*, 6 E.A.D. 260, 267 (EAB 1996), and the Board "will not entertain vague or unsubstantiated claims." *Attleboro*, 14 E.A.D. at 406, 443.

B. *Standard of Review*

Under section 124.19, the Board has discretion to grant or deny review of a permit decision. 40 C.F.R. § 124.19(a); *see In re Avenal Power Ctr., LLC*, 15 E.A.D. 384, 394-95 (EAB 2011) (citing Consolidated Permit Regulations, 45 Fed. Reg. 33,290, 33,412 (May 19, 1980)), *remanded on other grounds sub nom. Sierra Club v. EPA*, 762 F.3d 971 (9th Cir. 2014). Ordinarily, the Board will deny review of a RCRA permit decision, and thus not remand it, unless the decision either (1) is based on a clearly erroneous finding of fact or conclusion of law, or (2) involves a matter of policy or exercise of discretion that warrants review. 40 C.F.R. § 124.19(a)(4)(i)(A)-(B); *accord, e.g.*, *In re ESSROC Cement Co.*, 16 E.A.D. 433, 435 (EAB 2014)*; In re Rohm & Haas Co.*, 9 E.A.D. 499, 503 (EAB 2000)*; In re Caribe Gen. Elec. Prods., Inc.*, 8 E.A.D. 696, 701 (EAB 2000), *review dismissed per stip.*, No. 00-1580 (1st Cir. Dec. 6, 2001); *In re Austin Powder Co.*, 6 E.A.D. 713, 715 (EAB 1997); *In re Johnson Atoll Chem. Agent Disposal Sys.*, 6 E.A.D. 174, 178 (EAB 1995); *In re Allied-Signal, Inc.*, 5 E.A.D. 291, 292 (EAB 1994); *see also* Revisions to Procedural Rules Applicable in Permit Appeals, 78 Fed. Reg. 5281, 5282, 5284 (Jan. 25, 2013). In considering whether to grant or deny review of a permit decision, the Board is guided by the preamble to the part 124 permitting regulations, which states that the Board's power to grant review should be exercised "only sparingly" and that "most permit conditions should be finally determined at the [permit issuer's] level." Consolidated Permit Regulations, 45 Fed. Reg. 33,290, 33,412 (May 19, 1980).

When evaluating a permit decision for clear error, the Board examines the administrative record that serves as the basis for the permit to determine whether the permit issuer exercised "considered judgment" in rendering its decision. *See, e.g.*, *In re Steel Dynamics, Inc.*, 9 E.A.D. 165, 191, 224-25 (EAB 2000); *In re Ash Grove Cement Co.*, 7 E.A.D. 387, 417-18 (EAB 1997). The Board does not find clear error simply because petitioner presents a difference of opinion or alternative

theory regarding a technical matter. *See In re Town of Ashland Wastewater Treatment Facility*, 9 E.A.D. 661, 667 (EAB 2001); *In re NE Hub Partners, L.P.*, 7 E.A.D. 561, 567-68 (EAB 1998), *review denied sub nom. Penn Fuel Gas, Inc. v. EPA*, 185 F.3d 862 (3d Cir. 1999). On matters that are fundamentally technical or scientific in nature, the Board typically defers to a permit issuer's technical expertise and experience, as long as the permit issuer has adequately explained its rationale and supported its reasoning in the administrative record. *See, e.g.*, *In re FutureGen Indus. All., Inc.*, 16 E.A.D. 717, 733-35 (EAB 2015), *review dismissed as moot sub nom. DJL Farm LLC v. EPA*, 813 F.3d 1048 (7th Cir. 2016); *In re Energy Answers Arecibo, LLC*, 16 E.A.D. 294, 365 (EAB 2014), *review dismissed sub nom. Sierra Club de P.R. v. EPA*, 815 F.3d 22 (D.C. Cir. 2016); *NE Hub Partners*, 7 E.A.D. at 570.

When reviewing a permit issuer's exercise of discretion, the Board applies an abuse of discretion standard. *See In re Guam Waterworks Auth.*, 15 E.A.D. 437, 443 n.7 (EAB 2011). The Board will uphold a permit issuer's reasonable exercise of discretion if the decision is cogently explained and supported in the administrative record. *See Ash Grove*, 7 E.A.D. at 397 ("[A]cts of discretion must be adequately explained and justified."); *see also Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto Ins. Co.*, 463 U.S. 29, 48 (1983) ("We have frequently reiterated that an agency must cogently explain why it has exercised its discretion in a given manner * * *.").

C. *Burden on Appeal*

The burden of demonstrating that review of a RCRA permit decision is warranted rests with petitioner. 40 C.F.R. § 124.19(a)(4); *accord Austin Powder*, 6 E.A.D. at 715; *Johnston Atoll*, 6 E.A.D. at 178; *Allied-Signal*, 5 E.A.D. at 292. To the extent petitioner challenges an issue the permit issuer addressed in its response to comments, petitioner must explain why the permit issuer's previous response to those comments was clearly erroneous or otherwise warrants review. 40 C.F.R. § 124.19(a)(4)(ii); *see, e.g.*, *In re Beeland Group, LLC*, 14 E.A.D 189, 200 (EAB 2008); *In re Teck Cominco Alaska, Inc.*, 11 E.A.D. 457, 494-95 (EAB 2004); *In re Westborough & Westborough Treatment Plant Bd.*, 10 E.A.D. 297, 305, 311-12 (EAB 2002); *In re City of Irving*, 10 E.A.D. 111, 129-30 (EAB 2001), *review denied sub nom. City of Abilene v. EPA*, 325 F.3d 657 (5th Cir. 2003).

When a petition is filed by a person who is unrepresented by legal counsel – such as the petitions filed by the Housatonic River Initiative, Mr. Cook, and the Berkshire Environmental Action Team – the Board endeavors to construe the petition liberally so as to fairly identify the substance of the arguments being raised.

In re Sutter Power Plant, 8 E.A.D. 680, 687 (EAB 1999); *see also In re Envtl. Disposal Sys., Inc.*, 12 E.A.D. 254, 292 n.26 (EAB 2005); *Envotech*, 6 E.A.D. at 268. While the Board "does not expect such petitions to contain sophisticated legal arguments or to employ precise technical or legal terms," the Board nevertheless "does expect such petitions to provide sufficient specificity to apprise the Board of the issues being raised." *Sutter*, 8 E.A.D. at 687-88; *accord In re Puerto Rico Elec. Power Auth.*, 6 E.A.D. 253, 255 (EAB 1995). "The Board also expects the petitions to articulate some supportable reason or reasons as to why the permitting authority erred or why review is otherwise warranted." *Sutter*, 8 E.A.D. at 688; *accord In re Beckman Prod. Servs.*, 5 E.A.D. 10, 19 (EAB 1994).

III. *STATUTORY AND REGULATORY HISTORY*

A. *The Relevant Statutes, Regulations, and Guidance*

We summarize below the two key statutes at issue in this case: RCRA and CERCLA. RCRA authorizes the EPA to regulate the management of hazardous and non-hazardous solid waste. 42 U.S.C. §§ 6901-6992k. Section 3005 provides for the permitting of new and existing facilities that treat, store, or dispose of hazardous waste, known as "TSD Facilities." 42 U.S.C. § 6925. In its 1984 amendments to RCRA, Congress directed EPA to require corrective action for all releases of hazardous waste from each TSD Facility as part of its permit. Hazardous and Solid Waste Amendments of 1984, Pub. L. No. 98-616, RCRA § 3004(u), 98 Stat. 3221, (codified at 42 U.S.C. § 6924(u)). Congress also directed EPA to require corrective action for releases that migrate beyond the facility boundary "where necessary to protect human health and the environment." RCRA § 3004(v), 42 U.S.C. § 9624(v). In addition, Congress added a provision known as the "omnibus permitting authority" that allows a permit issuer to include "such terms and conditions * * * determine[d] necessary to protect human health and the environment." RCRA § 3005(c)(3), 42 U.S.C. § 6925(c)(3).

Regulations governing the RCRA hazardous waste permit program in general are found at 40 C.F.R. part 270, but EPA has not promulgated comprehensive regulations pertaining to corrective action. In 1990, EPA proposed regulations that would have established procedures and technical requirements for implementing corrective action under RCRA, sometimes referred to as the "1990 Subpart S Proposal." *See* Corrective Action for Solid Waste Management Units (SWMUs) at Hazardous Waste Management Facilities, 55 Fed. Reg. 30,798 (proposed July 27, 1990) ("1990 Subpart S Proposal"). EPA never finalized the 1990 Subpart S Proposal, however, and in 1996, the Agency issued an advance notice of proposed rulemaking to update the Agency's position on corrective action

and "introduce EPA's strategy for promulgation of corrective action regulations and request public input on a variety of issues and concepts associated with corrective action." Corrective Action for Releases From Solid Waste Management Units at Hazardous Waste Management Facilities, 61 Fed. Reg. 19,432, 19,434 (proposed May 1, 1996) ("1996 ANPR"). And in 1999, the Agency announced its decision not to institute "a comprehensive regulatory scheme for RCRA corrective action" and withdrew most of the 1990 Subpart S Proposal. Corrective Action for Solid Waste Management Units at Hazardous Waste Management Facilities, 64 Fed. Reg. 54,604, 54,606 (Oct. 7, 1999). The Agency attributed the decision to withdraw the 1990 Subpart S Proposal to its goal of taking a more flexible approach to RCRA corrective action, recognizing that "no one approach to corrective action is likely to be appropriate for all sites." *Id*. at 54,605; *see also id.* at 54,606 ("We have become increasingly aware that corrective action sites differ in significant respects and that consistent application of rules and standards at all sites is not always appropriate.").

Nevertheless, EPA has indicated that its earlier proposals serve as guidance for the corrective action program, noting that the 1990 Subpart S Proposal "continue[s] to provide useful information and guidance for corrective action implementation" and that the 1996 Advanced Notice of Proposed Rulemaking "should be considered the primary corrective action implementation guidance." *Id*. at 54,607; *see also* Memorandum from Elliott P. Laws, Assistant Administrator, Office of Solid Waste and Emergency Response, and Steven A. Herman, Assistant Administrator, Office of Enforcement and Compliance Assurance, EPA, to RCRA/CERCLA Senior Policy Managers (Jan. 17, 1997) (emphasizing the expectation that the 1996 Advanced Notice of Proposed Rulemaking will be used as guidance).

CERCLA, popularly called "Superfund," provides EPA with broad authority to respond to threats to human health and the environment caused by hazardous substances. 42 U.S.C. §§ 9601-9675. When a hazardous substance has been released to the environment, section 104 of CERCLA authorizes EPA to provide for remedial action deemed necessary to protect human health and the environment. *Id*. § 9604(a)(1). Section 121 establishes general rules for CERCLA remedial actions, including provisions regarding the degree of cleanup, *id*. § 9621(d), and a permitting exemption for any portion of a remedial action conducted entirely on-site. *Id*. § 9621(e)(1). In addition, section 121(d)(2)(A) mandates that on-site cleanup actions must meet applicable or relevant and appropriate federal standards and more stringent state standards, known by the acronym "ARARs." *Id*. § 9621(d)(2)(A). Regulations governing CERCLA

remedial actions are set forth in the National Oil and Hazardous Substances Pollution Contingency Plan, more commonly known as the "National Contingency Plan," codified at 40 C.F.R. part 300.

B. *Criteria for Remedy Selection*

The 1990 Subpart S Proposal identifies nine criteria for evaluating alternatives under consideration for RCRA corrective action, including four threshold "General Standards for Remedies" that all corrective action measures must meet and five "Remedy Selection Decision Factors" that EPA should consider when selecting among corrective action alternatives that meet the threshold standards. 1990 Subpart S Proposal, 55 Fed. Reg. at 30,823-25.

The four threshold "General Standards" specify that all RCRA corrective actions must:

> [1] Be protective of human health and the environment;
>
> [2] Attain [applicable] media cleanup standards * * *;
>
> [3] Control the sources of releases so as to reduce or eliminate, to the extent practicable, further releases that may pose a threat to human health and the environment; and
>
> [4] Comply with [applicable] standards for management of wastes * * *.

Id. at 30,823; *see also* 1996 ANPR, 61 Fed. Reg. at 19,449.

The five "Remedy Selection Decision Factors" that EPA should consider "as appropriate" when selecting amongst alternatives for RCRA corrective action are as follows:

> [1] Long-term reliability and effectiveness;
>
> [2] Reduction of toxicity, mobility, or volume of wastes;
>
> [3] Short-term effectiveness;
>
> [4] Implementability; and
>
> [5] Cost.

1990 Subpart S Proposal, 55 Fed. Reg. at 30,824; *see also* 1996 ANPR, 61 Fed. Reg. at 19,449.

EPA has explained that the threshold criteria and selection decision factors should be applied in a two-step process:

> During the first phase, potential remedies are screened to see if they meet "threshold criteria"; remedies [that] meet the threshold criteria are then evaluated using various "balancing criteria" to identify the remedy that provides the best relative combination of attributes.

1996 ANPR, 61 Fed. Reg. at 19,449.

With respect to CERCLA, the National Contingency Plan similarly identifies nine criteria for evaluating alternatives for remedial action:

> [1] Overall protection of human health and the environment;
>
> [2] Compliance with applicable or relevant and appropriate requirements under federal environmental laws and state environmental or facility siting laws;
>
> [3] Long-term effectiveness and permanence;
>
> [4] Reduction of toxicity, mobility, or volume through treatment;
>
> [5] Short-term effectiveness;
>
> [6] Implementability;
>
> [7] Cost;
>
> [8] State acceptance; and
>
> [9] Community acceptance.

See 40 C.F.R. § 300.430(f)(1)(i) (referencing criteria listed in section 300.430(e)(9)(iii)). The first two criteria are threshold requirements that must be met and the other seven criteria are balancing or modifying factors to be considered in selecting a remedy. *Id*. § 300.430(f)(1)(i) & (ii).

EPA has noted that "[w]hile the CERCLA remedy selection criteria are not identical to the RCRA corrective action criteria proposed in 1990, they address the same types of considerations and should generally result in similar remedies when applied to similar site-specific conditions." 1996 ANPR, 61 Fed. Reg. at 19,449; *see also id.* at 19,441 ("EPA's position is that any procedural differences

between RCRA and CERCLA should not substantively affect the outcome of remediation.").

IV. *FACTUAL HISTORY*

A. *The Housatonic River and Polychlorinated Biphenyls*

The Housatonic River originates as two separate tributaries or branches a few miles north of the Town of Pittsfield, Massachusetts. The two branches – called the East and West Branches – converge at the southern end of Pittsfield. *See* Figure 1.[4] Below the confluence, the main stem of the Housatonic River meanders south through western Massachusetts and Connecticut for over 125 miles until it reaches Long Island Sound. The entire stretch of the River south of the confluence is referred to in this proceeding as the "Rest of the River." Of particular interest here are Reaches 5 and 6 of the River that run for approximately ten and a half miles from the confluence of the East and West Branches to Woods Pond in the Town of Lenox, Massachusetts. *See* Figure 2. Much of the designated cleanup is directed at Reach 5 and Woods Pond in Reach 6, along with the dam impoundments in Reaches 7 and 8.

[4] Figure 1 appears in the National Remedy Review Board Site Information Package for the Housatonic River, Rest of River (June 2011), AR487318, as Figure 3-2 GE Plant Area: Removal Action Areas, at page 3-3. Figure 2 appears at page 1-13 in the Ecological Risk Assessment for General Electric (GE)/Housatonic River Site, Rest of River (Nov. 12, 2004), AR 215498, 580279, 580280, 580281, as Figure 1.4-1 Housatonic River, Reach 5.

FIGURE 1 – East Branch of the Housatonic River in Pittsfield, Massachusetts

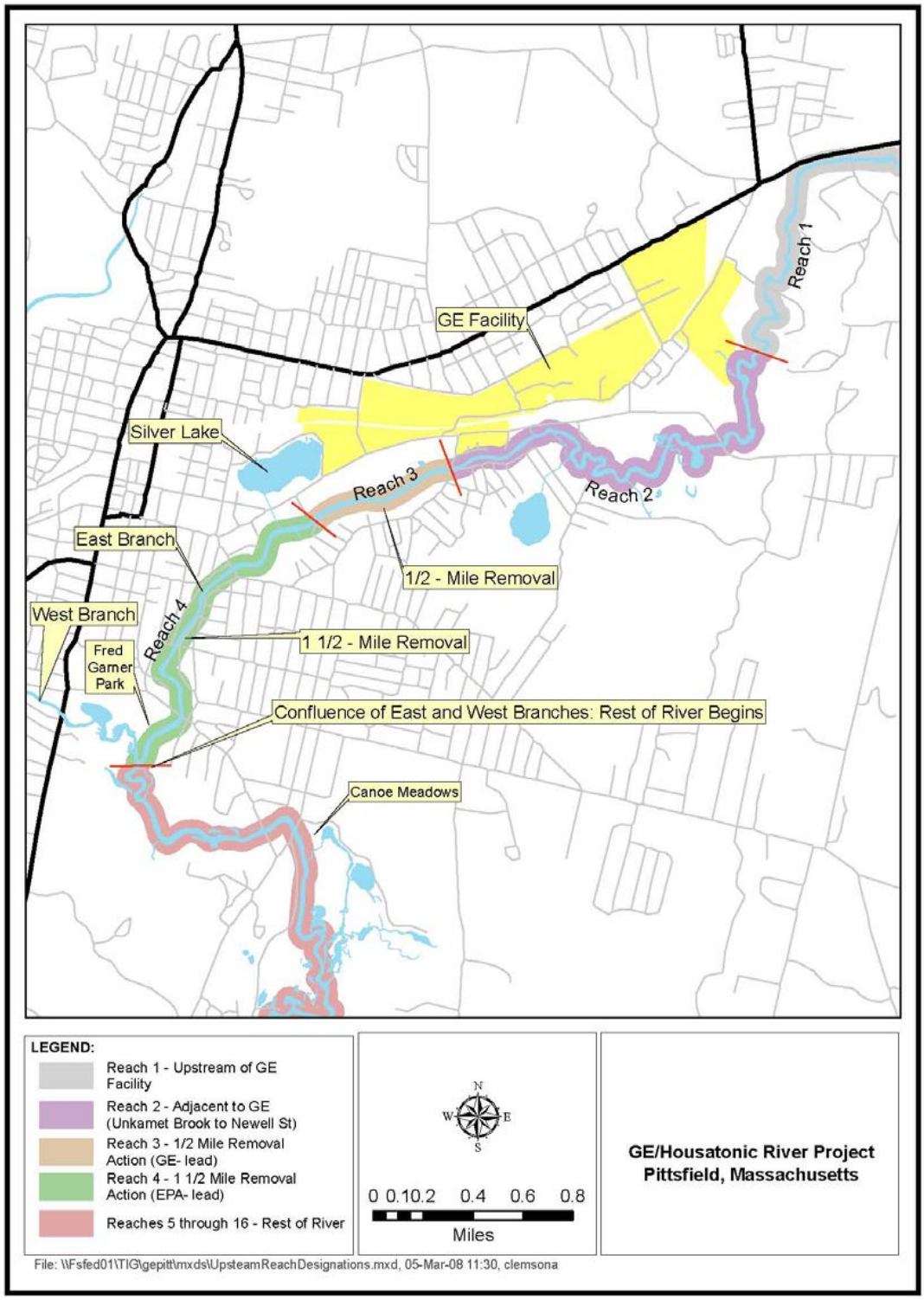
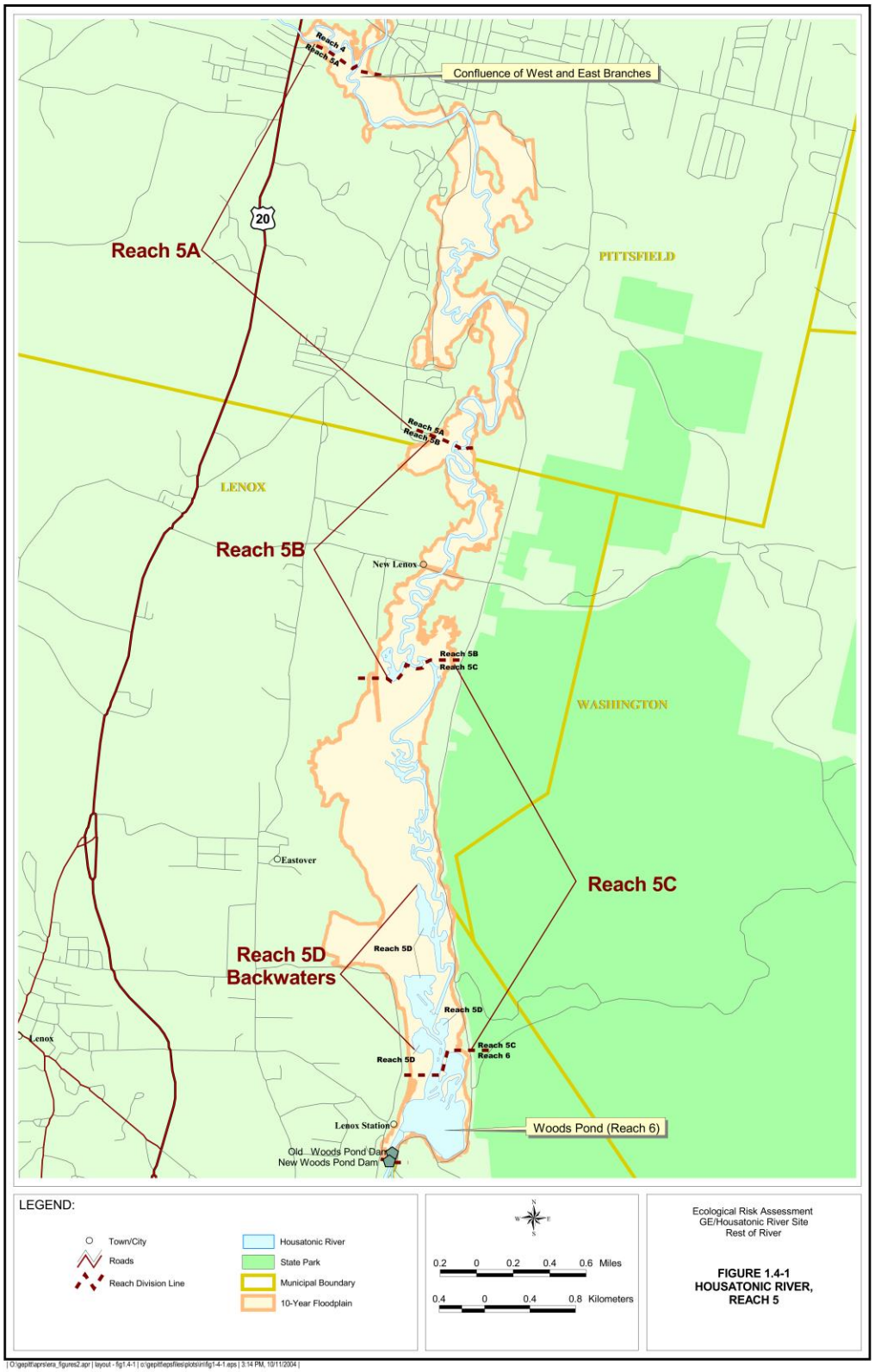


FIGURE 2 – Reaches 5 and 6 of the Housatonic River



The Housatonic River "flows through one of the most biologically diverse regions of Massachusetts and Connecticut." [Revised] Human Health Risk Assessment GE/Housatonic River Site Rest of River, Vol. I, at 1-12 (Feb. 11, 2005), AR219190 ("Rev. HHRA") (citation omitted). Massachusetts describes the River as "an ecologically unique resource among all the major rivers in the Commonwealth," and notes that "[t]he Housatonic River watershed supports one of the greatest concentrations of plant and animal species listed for protection under [the Massachusetts Endangered Species Act]." Massachusetts Comments on Revised Corrective Measures Study Report at 4 (Jan. 31, 2011), AR477441 ("Mass. Comments on Rev. CMSR"). The River also serves as a major recreational draw; popular activities include "hunting, fishing, trapping, hiking, canoeing, kayaking, bird watching, and wildlife viewing." *Id*. at 4; *accord* Rev. HHRA, Vol. I, at 1-12.

But the Housatonic River ecosystem is not untouched wilderness. As noted by an expert for the Region, "while appearing to be a natural pristine environment, [the Housatonic River] is actually a disturbed river system trying to naturally restore itself." Report on the 2010-2011 Situation Assessment, Mini Workshops, and Charrette, AR508641 ("Charrette Report"), Mini Workshop One: "Why Working with River Processes Matters – *History, Ecology, and PCBs*" at 6 (May 2012). Starting in the 1800s, industrialization in the area brought paper mills, blast furnaces, tanneries, lime kilns, and railroads. Tree harvesting to support these operations as well as land-clearing for expanded agriculture deforested much of the Housatonic River watershed. National Remedy Review Board Site Information Package for the Housatonic River, Rest of River at 2-1 (June 2011), AR487318 ("NRRB Package"); Charrette Report, Mini Workshop One at 5. At this same time, much of the Housatonic River was straightened and channelized, with "as much as 90%" of Reaches 5 and 6 modified in this manner as "the river was entirely relocated to the eastern edge of the valley to make room for the installation of railroad lines." NRRB Package at 2-2; *accord id.* at 4-8, 4-9 fig.4-9; Charrette Report, Mini Workshop One at 8.

The River is also contaminated with PCBs. Much of that contamination comes from GE's Pittsfield facility. For approximately fifty years during the 20th century, GE used PCBs at the facility, and these PCBs migrated to the Housatonic River through various pathways, including "via storm discharges, direct discharges, surface runoff, riverbank and soil erosion, and [nonaqueous phase liquid] plumes." Rev. HHRA, Vol. I, at ES-6. The worst PCB contamination occurred in Reach 3 of the East Branch of the Housatonic River adjoining the GE facility; high levels of PCB contamination were also present in Reach 4 immediately downstream. NRRB Package at 4-5, 4-7 fig.4-5. Reach 3 and Reach 4 were remediated between

1999 and 2007 under the Consent Decree; the Reach 3 removal action was designated as the "½ Mile Removal" and the Reach 4 removal action was designated as the "1 ½ Mile Removal."[5] *See* Response to Comments on Draft Permit Modification and Statement of Basis for EPA's Proposed Remedial Action for the Housatonic River "Rest of River" GE-Pittsfield/Housatonic River Site at 165 (Oct. 2016), AR593922 ("RTC"). An estimated ninety percent of the remaining PCB contamination of River sediment and floodplain soil lies in Reaches 5 and 6 immediately below where the ½ Mile and 1 ½ Mile Removals were conducted. NRRB Package at 2-3; Rev. HHRA, Vol. I, at ES-5. However, PCB contamination from the GE facility has been detected further south in Massachusetts and Connecticut, extending as far south as the Derby Dam near Long Island Sound. Rev. HHRA, Vol. I, at ES-4 and ES-5. Massachusetts and Connecticut have imposed consumption limits on fish and wildlife due to PCB contamination from the continuing release of PCBs from sediment and soil in Reaches 5 and 6. NRRB Package at 2-3.

B. *Regulatory Response to PCB Contamination*

1. *Initial Regulatory Actions*

EPA and Massachusetts began investigating PCB contamination in and near the River in the 1970s. Cleanup activities began in the 1980s and 1990s pursuant to state and federal orders issued under Massachusetts law and CERCLA, and a RCRA corrective action permit issued by the Region. NRRB Package at 2-3. The Region also proposed listing GE's Pittsfield facility and the Housatonic River on

[5] The record contains differing names for these stretches of the River and the removal actions that took place there. For example, the record sometimes refers to stretches of the River itself using nomenclature borrowed from the removal actions, referring to Reach 3 as the "½ Mile Reach" and to Reach 4 as the "1 ½ Mile Reach." *See, e.g.*, NRRB Package at 4-5. There are also various designations for the removal actions, such as the "½ Mile Removal" and the "1 ½ Mile Removal;" the "½ Mile and 1 ½ Mile Removal Reaches;" and the "½ Mile Removal Action" and the "1 ½ Mile Removal Action." *See e.g.*, *id.* at 3-2 fig.3-1; RTC at 105-07, 378; Rev. HHRA, Vol I, at 1-6, 1-8. For consistency, we refer to the removal action that took place in Reach 3 as the "½ Mile Removal" and to the removal action that took place in Reach 4 as the "1 ½ Mile Removal." We refer to the two removal actions collectively as "the ½ Mile and 1 ½ Mile Removals."

CERCLA's National Priority List.[6] *See* National Priorities List for Uncontrolled Hazardous Waste Sites, Proposed Rule No. 23, 62 Fed. Reg. 50,450 (Sept. 25, 1997). These actions resulted in the investigation and cleanup of a portion of the GE facility and adjoining area. However, the earlier actions were just a prelude to the 2000 Consent Decree, which took a more global approach to cleaning up PCB contamination in the Housatonic River.

2. *The Consent Decree and the RCRA Corrective Action Permit*

a. *The Structure of the Consent Decree*

The Consent Decree memorializes a comprehensive agreement between GE and the United States, Massachusetts, Connecticut, the City of Pittsfield, and the Pittsfield Economic Development Authority to address PCB and other contamination at the GE-Pittsfield/Housatonic River Site ("Site"). Petition of General Electric Company for Review of Final Modification of RCRA Corrective Permit Issued by EPA Region 1, RCRA Appeal No. 16-01, at 3 (Nov. 23, 2016) ("GE Pet."); Region 1's Response to General Electric Company's Petition for Review of Final RCRA Corrective Action Permit Modification Issued by Region 1, RCRA Appeal No. 16-01, at 5 (Feb. 14, 2017) ("Region Resp. to GE Pet."). Under the terms of the Consent Decree, GE agrees to conduct or pay for this cleanup, and the federal government and the other signatories agree to resolve GE's liability under CERCLA, RCRA, and other applicable law. CD ¶ 161.

In broad terms, the Consent Decree divides the cleanup plan for the Site into two components. Under the first component, GE agreed to implement the response actions that the Region had already selected to address contamination at the former manufacturing facility itself and at nearby river and floodplain areas in Pittsfield. *See id*. ¶ 4 (definition of "Removal Actions Outside of the River"); *id.* ¶¶ 20, 21 (½ Mile and 1 ½ Mile Removals). Those response actions included the ½ Mile Removal to be undertaken by GE and the 1 ½ Mile Removal to be managed by EPA under a cost-sharing agreement with GE. Statement of Basis for EPA's Proposed Remedial Action for the Housatonic River "Rest of River" at 3 (June 2014), AR558621 ("Stmt. of Basis").

The second component addresses cleanup of the Rest of the River, including remediating contaminated sediments in the riverbed and backwaters, and

[6] Pursuant to the Consent Decree, the Region has deferred a final decision on listing the Site and has not taken any further action to do so. CD ¶ 200.

contaminated soils in the riverbanks and nearby floodplains. At the time the Consent Decree was entered, the Region had not yet decided how to address contamination in the Rest of the River, which the Consent Decree defines as the stretch of the Housatonic River (including floodplain areas) that begins at the confluence of the East and West Branches (immediately below the 1 ½ Mile Removal, in Reach 4 on the East Branch) and runs as far downriver as PCBs from the GE facility have migrated. CD ¶ 4 (definition of "Rest of the River"). Instead of identifying the specific cleanup actions for the Rest of the River and directing GE to either undertake the cleanup or pay for it, the Consent Decree created a process for choosing a remedy for this area and required GE to implement, operate, and maintain the chosen remedy. *Id*. ¶ 22. The specifics of the remedy-selection process are spelled out in the Consent Decree and in the attached 2000 Permit. Pursuant to that process, the Region selected a remedy for the Rest of the River and modified the 2000 Permit, replacing it with a Final Permit that describes the remedy and requires GE to execute it.

The Consent Decree provisions that concern the choice and implementation of the remedy for the Rest of the River invoke the statutory schemes of both RCRA and CERCLA. The Consent Decree provides that the remedy will be selected under RCRA pursuant to a modification to the 2000 Permit and that the selected remedy "shall be considered to be the final remedy selection decision pursuant to Section 121 of CERCLA." *Id*. ¶ 22(n), (z). The Consent Decree allows for review of the RCRA corrective action permit by the Environmental Appeals Board, *id*. ¶ 22(q), and provides for federal district court review of determinations the Region makes during the course of remedy implementation. *Id*. ¶ 211.

b. *The Terms of the Consent Decree and the 2000 Permit Pertaining to Remedy Selection*

The Consent Decree and the 2000 Permit establish a phased process for choosing a remedy for the Rest of the River. 2000 Permit § II; CD ¶ 22. Briefly, the provisions of the Consent Decree and the 2000 Permit pertinent to remedy selection are as follows:

1) *RCRA Facility Investigation*. GE is required to complete its investigation of the Rest of the River and submit a report to the Region for its review and approval. The report must document existing environmental conditions and characterize contamination in the area's surface water, sediment, floodplain soil, biota, and air. CD ¶ 22(a); 2000 Permit § II.A and B.

2) *Human Health and Ecological Risk Assessments*. The Region is required to conduct human health and ecological risk assessments for the Rest of the River. The risk assessments are subject to peer review by a panel of independent experts. CD ¶ 22(b), (c), & (d); 2000 Permit § II.C.

3) *Interim Media Protection Goals*. GE is required to propose interim environmental media protection goals, taking into account the Region's risk assessments. The proposal is subject to the Region's approval. CD ¶ 22(f); 2000 Permit § II.C.

4) *Corrective Measures Study Proposal and Report*. GE is required to submit to the Region for its approval a proposal identifying potential corrective measures for remedying the contamination of the Rest of the River. Upon approval of the list of potential corrective measures, GE is required to carry out an evaluation of the corrective measure alternatives and submit a report documenting its findings and recommendations. At a minimum, the report must provide information about each alternative regarding a set of enumerated criteria, which we discuss further below. The Corrective Measures Study Report is subject to approval by the Region. CD ¶ 22(j), (k); 2000 Permit § II.F, G, and H.

5) *Draft Modification of the Permit*. The Region is required to issue a draft modification of the 2000 Permit together with a Statement of Basis for the draft modification. CD ¶ 22(n); 2000 Permit § II.J.

6) *Final Permit Modification*. Following public comment on the draft permit modification and any dispute resolution that is invoked under the terms of the Consent Decree, the Region is required to issue a final permit modification obligating GE to perform the specified remedy for the Rest of the River. GE's performance of the remedy is to be "pursuant to CERCLA and [the] Consent Decree." CD ¶ 22(p); *see* 2000 Permit § II.J.

Of particular significance for the issues before us are the detailed provisions in the 2000 Permit pertaining to GE's preparation of the Corrective Measures Study Report. *See* 2000 Permit ¶¶ II.F, .G, & .H. Those provisions require GE to secure the Region's approval for the corrective measure alternatives to be evaluated and the methodology to be used in that evaluation. *See id.* § II.E. The 2000 Permit specifies that the Corrective Measures Study Report must address "[a]t a minimum" how each potential corrective measure meets three threshold "General Standards for Corrective Measures" and six balancing "Selection Decision Factors." *Id.* §§ II.G(1), G(2).

The three threshold "General Standards" identified in the 2000 Permit are

[1] Overall Protection of Human Health and the Environment;

[2] Control of Sources of Releases; and

[3] Compliance with Applicable or Relevant and Appropriate Federal and State Requirements.

Id. § II.G(1) (descriptive text omitted).

The six balancing "Selection Decision Factors" identified in the 2000 Permit are

[1] Long-term Reliability and Effectiveness;

[2] Attainment of Interim Media Protection Goals;

[3] Reduction of Toxicity, Mobility, or Volume of Wastes;

[4] Short-term Effectiveness;

[5] Implementability; and

[7] Cost.

Id. § II.G(2) (descriptive text omitted).

The 2000 Permit requires GE to make a recommendation "as to which corrective measure or combination of corrective measures * * * is best suited to meet the general standards * * * in consideration of the decision factors * * * including a balancing of those factors against one another." *Id.* § II.G(3). Throughout this decision, we refer collectively to the three threshold standards and the six balancing factors as the "Nine Evaluation Criteria." For ease of recognition and consistency, we capitalize the name of each of the individual threshold criteria and balancing factors.

The Region is required to approve, conditionally approve, or disapprove the Corrective Measures Study Report. *Id.* § II.H. If the Region either conditionally approves or disapproves the report, it has the discretion to require GE to conduct additional investigations. *Id.* And, if the Region disapproves the report, the Region can either point out the report's deficiencies and allow GE to submit a modified report, or the Region can, itself, modify the report. *Id.* Notably, while the 2000 Permit requires the Region to approve, conditionally approve, or disapprove the

Corrective Measures Study Report, the 2000 Permit does *not* require the Region to concur with recommendations made by GE in the report. *See id*.

The Consent Decree requires the Region to issue a draft permit modification to "set forth" the proposed remedy for the Rest of the River pursuant to EPA regulations on RCRA permit modifications but otherwise says little about how the Region should make its selection decision. *See* CD ¶ 22(n). The 2000 Permit goes into further detail. *First*, the Region must propose performance standards and "appropriate corrective measures" to meet those standards "[b]ased on the information that [GE] submits pursuant to [the 2000 Permit] and any other relevant information in the Administrative Record for the modification of [the 2000] Permit." 2000 Permit § II.J. *Second*, the Region is required to identify any federal and state requirements it determines to be "applicable or relevant and appropriate," known by the acronym "ARARs." *Id*. If the Region proposes to waive any of the identified ARARs, under CERCLA and the National Contingency Plan, it must state the basis for any such waiver. *Id*.; *see* 42 U.S.C. § 9621(d)(4); 40 C.F.R. § 300(f)(1)(ii)(C). *Third*, the Region must make available for public comment the proposed performance standards, corrective measures, and ARARs through a draft modification of the 2000 Permit "in accordance with 40 C.F.R. §§ 124.5-124.12 and 270.41 and Paragraph 22(n) of the Consent Decree." 2000 Permit § II.J.

c. *The Steps Taken by the Region to Select the Remedy and Issue the Final Permit*

(i) *Human Health and Ecological Risk Assessments*

Pursuant to the Consent Decree and the 2000 Permit, the Region conducted human health and ecological risk assessments. *See* Rev. HHRA; Ecological Risk Assessment for General Electric (GE)/Housatonic River Site, Rest of River (Nov. 12, 2004), AR 215498, 580279, 580280, 580281. Both the seven-volume Human Health Risk Assessment and the six-volume Ecological Risk Assessment were peer-reviewed by independent scientists in accordance with the Consent Decree's procedures. *See generally* Responsiveness Summary to the Peer Review of the 2003 HHRA 1-2 (March 2004), AR204922 ("Resp. Summary to Peer Review"); Responsiveness Summary to Public Comments on New Information Ecological Risk Assessment for the GE/Housatonic River Site Rest of River 1-3 (March 2005), AR222402.

The Region assessed risks to human health from direct contact with PCBs in sediment and soil, and from oral exposure to PCBs due to consumption of fish, waterfowl, and agricultural products. NRRB Package at 6-4. The Region

considered human exposure to reasonably maximally exposed individuals and individuals exposed at the central tendency under four different categories of exposure scenarios: residential, recreational, agricultural, and commercial/industrial.[7] Rev. HHRA, Vol. I, at ES-13 to ES-14. Exposures for these scenarios were calculated based on examining ninety separate exposure areas. *Id*.

Based on the risk assessment, the Region concluded that PCB exposure causes both cancer and non-cancer effects in humans. Cancer risks were evaluated by calculating the increased probability of developing cancer from PCB exposure and comparing that value to an increased cancer risk range of between one additional cancer case per every 10,000 persons and one additional cancer case per every 1,000,000 persons (generally referred to as a risk range of 1 in 10,000 to 1 in 1,000,000). *Id*. Vol. I at 4-3, 7-17. Non-cancer effects identified for PCBs included toxic effects on the immune, gastrointestinal, and endocrine systems, and on the skin, eyes, and blood. *Id*. Vol. I at 4-24. Non-cancer risks were evaluated by comparing PCB exposure to a benchmark level calculated based on what is termed a "chronic reference dose." *Id*. Vol. 1 at 7-17 to 7-18. A chronic reference dose "represents an estimate (with uncertainty spanning perhaps an order of magnitude or greater) of a daily exposure level for the human population, including sensitive subpopulations, that is likely to be without an appreciable risk of deleterious effects during a lifetime." *Id*. Vol. I at 4-3.

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[7] The Region explained the purpose of exposure assessment as follows:

> The purpose of the exposure assessment is to estimate the nature, extent, and magnitude of potential exposure of adults and children to [contaminants of potential concern]. To provide a range of exposure estimates from the point estimate approach, both the reasonable maximum exposure (RME) and central tendency exposure (CTE) scenarios are presented. The RME, an estimate of the upper range of exposure in a population, is based on a combination of the upper and central estimates of exposure parameters representing the 90th percentile or greater of actual expected exposure. The CTE is the central tendency (i.e., average) exposure, which uses average exposure parameters to calculate an average exposure to an individual. Both the RME and CTE analyses are presented for each exposure scenario.

Rev. HHRA, Vol. I, at ES-12.

The Region drew three major conclusions regarding risks to human health, which we summarize below.

1) *Direct Contact Risk*. The risk of developing cancer due to direct contact with PCB-contaminated water, sediment, or soil in the Rest of the River was determined to fall within the acceptable risk range of 1 in 10,000 to 1 in 1,000,000. The risk of exhibiting other toxic effects due to direct contact exceeds the benchmark level in some exposure areas for reasonably maximally exposed individuals in approximately half of the exposure scenarios.
2) *Fish and Wildlife Consumption Risk*. The risk of developing cancer due to consuming fish or other wildlife was determined to exceed the risk range of 1 in 10,000 to 1 in 1,000,000 in all exposure scenarios. The risk of exhibiting other toxic effects based on fish consumption exceeds the benchmark level for adults and children by factors between 22 and 550 in Massachusetts and by factors between 2 and 43 in Connecticut. For consumption of other wildlife, the risk of exhibiting non-cancerous toxic effects exceeds the benchmark level for adults and children by factors between 7 and 80.
3) *Agricultural Product Consumption Risk*. The Region did not identify cancer or non-cancer risks of concern based on consumption of garden produce and commercial dairy products. On the other hand, cancer and non-cancer risks from consumption of backyard and commercial beef and poultry and backyard dairy products exceeded the cancer risk range and benchmark level in some circumstances.

See NRRB Package at 6-15.

As to ecological risks, the Region assessed risk to three aquatic and five wildlife groups: benthic invertebrates (e.g., insect larvae of mayflies and caddisflies[8]), amphibians (e.g., frogs, salamanders), fish (e.g., largemouth bass,

[8] Insect larvae are benthic macroinvertebrates. Benthic macroinvertebrates are "small aquatic animals and the aquatic larval stages of insects" that lack backbones and spend at least part of their lives dwelling in aquatic sediments. US EPA, Indicators: Benthic Macroinvertebrates, https://www.epa.gov/national-aquatic-resource-surveys/indicators-benthic-macroinvertebrates (last visited Jan. 23, 2018). They are "commonly used as indicators of the biological condition of waterbodies * * * because

perch), insectivorous birds (e.g., tree swallow, American robin, wood duck), piscivorous birds (e.g., belted kingfisher, osprey), piscivorous mammals (e.g., mink, river otter), omnivorous and carnivorous mammals (e.g., red fox, northern short-tailed shrew), and endangered and threatened species (e.g., American bittern). *Id*. at 6-19 to 6-25. To evaluate the toxicity of PCBs to these groups, the Region considered field surveys and studies, laboratory toxicity tests, and comparison of effects in the literature to a site-specific exposure model. *Id*. at 6-16. Exposure was assessed by measuring PCBs in sediment, soil, water, and prey tissue across multiple locations. *Id*. at 6-19. The Region concluded that in Reaches 5 and 6 there is an intermediate to high level of risk of harm from PCBs to all of the assessed groups except for fish and some insectivorous birds (tree swallow and American robin), with those groups facing a low to intermediate risk. *Id*. at 6-31.

(ii) *Corrective Measures Study*

GE conducted the Corrective Measures Study for the Rest of the River and submitted a report to the Region in 2008. Housatonic River – Rest of River Corrective Measures Study Report (Mar. 2008), AR283374, 580283 through 580285 ("CMSR"). The purpose of the study was to evaluate corrective measure alternatives – including both cleanup alternatives and alternatives for treatment or disposition of waste – that could be taken to remediate the Rest of the River. *Id*. at 1. GE evaluated various corrective measure alternatives using the Nine Evaluation Criteria identified in the 2000 Permit. *See* 2000 Permit § II.G.

After receiving feedback from the Region on the initial version of the report, GE submitted a Revised Corrective Measures Study Report in 2010. Housatonic River – Rest of River Revised Corrective Measures Study Report (Oct. 2010), AR472605, 580275, 580282 ("Rev. CMSR"). The Revised Corrective Measures Study Report separately examined alternatives for cleaning up the Rest of the River watershed and alternatives for treating and disposing of the contaminated sediment and soil excavated as part of the cleanup. *Id*. at 1-22 to 1-23. The Region approved the revised version but made clear that the Report "includes multiple assertions, characterizations, conclusions and recommendations with which EPA does not necessarily agree." Letter from Susan C. Svirsky, US EPA, to Andrew T. Silfer, General Electric Co., at 1-2 (Jan. 17, 2014), AR551393. The Region included in the letter a long list of assertions that GE had made in the Report but that the Region

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they spend all or most of their lives in water, are easy to collect and differ in their tolerance to pollution." *Id.*

rejected, ranging from GE's characterization of "risk to humans and ecological receptors from exposure to PCBs" to GE's view on "the degree of harm to the ecosystem from remediation." *Id*. at 1.

(a) *Cleanup Alternatives*

In the Revised Corrective Measures Study Report, GE delineated ten alternatives for addressing contaminated sediment in the river and soil in the riverbanks, designating these as "Sediment Alternatives" 1 through 10, abbreviated SED 1 through SED 10. Other than the no-action and the Monitored Natural Recovery alternatives, the Sediment Alternatives involve a range of options for excavating contaminated sediment from portions of the river channel and backwaters, installing a cap over areas of remaining contamination, and excavating and stabilizing the riverbanks. *See* Rev. CMSR at ES-7, ES-8, 1-17 to 1-19. GE separately identified nine alternatives for addressing contaminated soil in the nearby floodplain, designating these as "Floodplain Alternatives" 1 through 9, abbreviated FP 1 through FP 9. Except for the no-action alternative, the Floodplain Alternatives involve a range of options for excavating contaminated soil, replacing it with clean fill, and revegetating the remediated areas. *See* Rev. CMSR at 1-19 to 1-20. Because the final remedy will involve both a sediment and a floodplain component, GE paired certain Sediment Alternatives with roughly comparable Floodplain Alternatives, creating seven "Combination Alternatives" for evaluation. *See* Rev. CMSR at 1-25.

(1) *Sediment Alternatives*

The Sediment Alternatives vary in the extent of cleanup required. At the lower end of the spectrum, SED 1 requires no action and SED 2 requires only minimal action in the form of Monitored Natural Recovery.[9] The other eight

[9] The Final Permit defines "Monitored Natural Recovery" as:

> a remedy for contaminated sediment that typically uses ongoing, naturally occurring processes to contain, destroy, or reduce the bioavailability or toxicity of contaminants in sediment, and requires monitoring the natural processes and/or concentrations of contaminants in surface water, sediment, or biota to see if recovery is occurring at the expected rate, and the maintenance of institutional controls until the necessary reductions in risk have occurred.

Sediment Alternatives call for varying levels and types of sediment excavation, riverbed capping, and riverbank excavation and stabilization. *See* Rev. CMSR at ES-9 tbl.ES-1. We focus our discussion on the four Sediment Alternatives invoked in the Petitions. In order from least to most extensive, those alternatives are SED 10, SED 5, SED 9, and SED 8. We briefly summarize these four alternatives below, concentrating on the work that each would require in the active remediation areas, including the river channel and backwaters in Reach 5, Woods Pond in Reach 6, the impoundments in Reach 7, and Rising Pond in Reach 8.[10]

1) SED 10 – The most modest of the four relevant Sediment Alternatives, SED 10 calls for removing two feet of contaminated sediment from selected areas of the Reach 5A riverbed and installing an engineered cap over remaining contamination in the riverbed and backwaters of Reach 5A. It also calls for conducting Monitored Natural Recovery in the remainder of Reach 5 and removing some of the contaminated sediment from Woods Pond. It requires excavating and stabilizing selected river banks in Reach 5. The total amount of sediment to be removed from the river channel and backwaters under this alternative is 235,000 cubic yards, and the total amount of soil to be removed from the river banks is 6,700 cubic yards. GE identified SED 10 as the Sediment Alternative "best suited" to meet the Nine Evaluation Criteria.

2) SED 5 – A somewhat more extensive Sediment Alternative, SED 5 calls for removing two feet of contaminated sediment and installing an engineered cap in much of the Reach 5 river channel. It also calls for conducting Monitored Natural Recovery and installing thin-layer caps in some areas of the Reach 5 backwaters and in Woods Pond, the Reach 7 impoundments, and Rising Pond. It requires excavating and stabilizing all erodible river banks in Reach 5. Under this alternative, the total amount of sediment to be removed from the river channel and backwaters is 377,000 cubic yards,

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Permit at 3 (Definitions).

[10] None of the alternatives calls for active remediation in Reaches 9 through 16, which are located further downstream in southern Massachusetts and Connecticut.

and the total amount of soil to be removed from the river banks is 35,000 cubic yards.[11]

3) SED 9 – A more extensive Sediment Alternative, SED 9 calls for removing two feet of contaminated sediment from the river channel and installing an engineered cap in much of Reach 5. It also calls for removing contaminated sediment from some of the backwaters within Reach 5 and installing an engineered cap. The alternative requires removing contaminated sediment and installing an engineered cap in Woods Pond, the Reach 7 impoundments, and Rising Pond, with greater amounts of removal required in Woods Pond and lesser amounts in the Reach 7 impoundments and Rising Pond. It requires excavating and stabilizing all erodible banks in Reach 5. Under this alternative, the total amount of sediment to be removed from the river channel and backwaters is 886,000 cubic yards, and the total amount of soil to be removed from the river banks is 35,000 cubic yards. The Region chose a modified version of SED 9 as the Sediment Alternative in the Final Permit.

4) SED 8 – The most extensive of the four Sediment Alternatives, SED 8 calls for removing PCBs from much of the river channel and backwaters of Reach 5, Woods Pond, the Reach 7 impoundments and Rising Pond until the remaining concentration of PCBs is no greater than 1 mg/kg – or, expressed another way, until the PCB concentration does not exceed one part per million. In order to achieve this cleanup level, soil and sediment will need to be excavated to a depth of three to four feet in Reach 5 and six to seven feet in the other areas. The alternative requires excavating and stabilizing all erodible banks in Reach 5. Under this alternative, the total amount of sediment to be removed from the river channel and backwaters is 2,252,000 cubic yards, and the total amount of soil to be removed from the river banks is 35,000 cubic yards. SED 8 is the Housatonic River Initiative's preferred alternative.

See Stmt. of Basis at 20-21 tbls.1 & 2, 23; Rev. CMSR at ES-9 to ES-11 tbls.ES-1, ES-2, ES-3, ES-4, & ES-15, tbl.1-1, 3-77 tbl.3-1; Housatonic River Initiative Reply

[11] We have included a description of SED 5 because GE refers to this Sediment Alternative in its Petition when challenging the Sediment Alternative chosen by the Region. GE Pet. at 41.

to Region 1's Response to HRI Petition, RCRA Appeal No. 16-02, at 14 (Mar. 24, 2017) ("HRI Reply").

(2) *Floodplain Alternatives*

Similar to the Sediment Alternatives, the Floodplain Alternatives vary in the extent of cleanup required. Other than FP 1, which is the no-action alternative, all of the Floodplain Alternatives require removal of contaminated soil from selected floodplain areas followed by replacement with clean soil and revegetation. The four Floodplain Alternatives relevant to our analysis are, in order of least to most extensive, FP 9, FP 3, FP 4, and FP 7. Brief summaries of these four alternatives follow.

1) FP 9 – The most modest of the four relevant Floodplain Alternatives, FP 9 calls for removing contaminated floodplain soil to a level that will reduce the increased cancer risk to humans from PCB exposure in the floodplain to 1 in 10,000. This alternative does not require remediation of vernal pools. The total amount of soil to be removed under this alternative is 26,000 cubic yards. GE identified FP 9 as the Floodplain Alternative "best suited" to meet the Nine Evaluation Criteria.

2) FP 3 – This Floodplain Alternative also calls for removing contaminated floodplain soil to a level that will reduce the increased cancer risk to humans to 1 in 10,000. In contrast to FP 9, though, it also requires the removal of contaminated soil from vernal pools where the PCB concentration is greater than 5.6 mg/kg. The total amount of soil to be removed under this alternative is 74,000 cubic yards. The Region, in 2011, initially designated FP 3 as its preferred Floodplain Alternative.

3) FP 4 – This more extensive Floodplain Alternative calls for removing contaminated floodplain soil to a level that will provide a greater reduction in increased cancer risk to humans to 1 in 100,000. As with FP 3, this alternative requires removing contaminated soil from vernal pools where the PCB concentration is greater than 5.6 mg/kg. The total amount of soil to be removed under this alternative is 121,000 cubic yards. The Region chose a modified version of FP 4 as the Floodplain Alternative in the Final Permit.

4) FP 7 – The most extensive of the four relevant Floodplain Alternatives, FP 7 calls for removing contaminated floodplain soil in order to reduce the increased cancer risk to humans to 1 in 1,000,000. It also requires removing

contaminated soil from vernal pools where the PCB concentration is greater than 3.3 mg/kg. The total amount of soil to be removed under this alternative is 615,000 cubic yards. FP 7 is the Housatonic River Initiative's preferred Floodplain Alternative.

See Stmt. of Basis at 20-21 tbls.1 & 2; Rev. CMSR at ES-10 tbls.ES-4 & ES-5; NRRB Package at ES-19; HRI Reply at 14.

(3) *Combination Alternatives*

In its Revised Corrective Measures Study Report, GE compared and evaluated seven Combination Alternatives using the 2000 Permit's Nine Evaluation Criteria. Rev. CMSR at 8-1 to 8-9; *see* Part IV.B.2.c(ii)(a), above. GE described the challenge of cleaning up the Rest of the River as presenting a "basic problem" because, according to GE, in its current state the Rest of the River is a "flourishing ecosystem" and the more aggressive the cleanup, the more damage the ecosystem will sustain. Rev. CMSR at ES-1. Accordingly, GE maintained that Monitored Natural Recovery is the best approach because it is the least intrusive one, and, when it comes to cleaning up the Rest of the River, "less really is more." *Id*. at ES-2.

Nevertheless, GE evaluated all seven Combination Alternatives using assumptions from the Region's risk assessments to forecast future PCB levels in the river sediment, water column, and fish tissue. *Id.* at ES-2. GE indicated that it relied on these assumptions even though it "strongly disagree[d]" with several of them. *Id*. Based on its evaluation, GE identified SED 10/FP 9 as the Combination Alternative "best suited" to meet the Nine Evaluation Criteria, concluding that SED 10/FP 9 would "provide the greatest benefit with the least ecological harm." *Id*. at ES-3, ES-15.

GE offered three main justifications for recommending SED 10/FP 9:

1) All of the cleanup alternatives analyzed by GE that would require any amount of PCB removal would "adequately protect human health according to standards developed by EPA." *Id*. at ES-2.

2) None of the cleanup alternatives would reduce PCBs to a level safe enough to allow unrestricted consumption of fish from the Housatonic River. *Id*.

3) The incremental reductions in PCB levels that would result from the more-extensive cleanup alternatives would be "outweighed by the serious and certain ecological damage that would result from those approaches." *Id*.

The following table was prepared with data from the Revised Corrective Measures Study Report to highlight the differences between the Combination Alternatives. It shows that SED 10/FP 9 requires less sediment and soil excavation than all the Combination Alternatives evaluated except for SED 3/FP 3, it impacts the smallest surface area of all the active alternatives, and it can be implemented much more quickly than all but SED 2/FP 1 (the Monitored Natural Recovery alternative). Table 1 does not include the alternative ultimately selected by the Region because that Combination Alternative did not exist at the time the Revised Corrective Measures Study Report was issued.

TABLE 1: SCOPE OF REMEDIAL ALTERNATIVES						
Remedial Components	**SED 3/ FP 3**	**SED 5/ FP 4**	**SED 6/ FP 4**	**SED 8/ FP 7**	**SED 9/ FP 8**	**SED 10/ FP 9**
Removal of Volume (cubic yards)						
Sediment	134,000	377,000	521,000	2,252,000	886,000	235,000
Riverbank soil	35,000	35,000	35,000	35,000	35,000	6,700
Floodplain soil	74,000	121,000	121,000	615,000	177,000	26,000
Total	243,000	533,000	677,000	2,902,000	1,098,000	267,700
Riverbank Subject to Stabilization/Bank Soil Removal (linear miles, both banks)						
Riverbank	14	14	14	14	14	1.6
Total Surface Area Impacted (acres)						
Area Impacted by Remediation	183	360	407	728	444	76
Area Impacted by Access Roads/ Staging Areas	94	97	106	97	80	36
Construction Duration						
Years required	10	18	21	52	14	5

See Rev. CMSR at ES-12 tbl.ES-5 ("Overview of Combinations of Sediment and Floodplain Alternatives") (column for SED 2/FP 1, abbreviations, and footnotes omitted).

(b) *Treatment and Disposition Alternatives*

In addition to evaluating cleanup alternatives, GE also studied options for what to do with the contaminated sediment and soil once it is removed from the

Rest of the River. The alternatives GE considered include disposing of the material off-site, disposing of it on-site in either a confined aquatic disposal facility constructed within the River or in an upland disposal facility constructed near the River, or treating it using one of two processes before disposition of the material through disposal or reuse. GE referred to these alternatives as "Treatment/ Disposition Alternatives" 1 through 5, abbreviated as TD 1 through TD 5. GE summarized these alternatives as follows:

- TD 1 – Off-Site Disposal: Sediments and soils would be transported for disposal in permitted off-site landfills.

- TD 2 – Confined Disposal Facility * * *: Sediments that are hydraulically dredged from certain river reaches would be pumped into on-site [confined disposal facilities] that would be built within a local waterbody.

- TD 3 – Upland Disposal Facility: Sediments and soils would be placed in an Upland Disposal Facility constructed in an area near the River (but outside the 500-year floodplain), with an engineered cover, impermeable liners, and monitoring systems.

- TD 4 – Chemical Extraction: Sediments and soils would be treated using a chemical extraction process, in which an extraction fluid is mixed with those materials to remove some of the PCBs from solids into the fluid. For purposes of the Revised CMS, it has been assumed that the treated solids would be disposed of off-site and that the fluid would be subject to wastewater treatment.

- TD 5 – Thermal Desorption: Sediments and soils would be treated using a thermal desorption process, in which most of the PCBs are removed from those materials through application of heat to volatize the PCBs and the volatized PCBs are then condensed into a liquid, which would be sent off-site for incineration. This alternative has been evaluated under two assumptions: (a) that a portion of the thermally treated solids would be reused on-site as backfill in the floodplain (after mixing with organic material to promote plant growth and sampling to ensure that the concentrations are sufficiently low to allow reuse) and that the remainder of the treated materials

> would be sent off-site for disposal; and (b) that all treated sediments and soils would be sent off-site for disposal.

Rev. CMSR at ES-13 (footnotes omitted).

After applying the Nine Evaluation Criteria to the four Treatment/Disposition Alternatives that it determined to be viable,[12] GE identified disposal in an upland disposal facility (TD 3) as the "best suited" alternative because:

> [On-site disposal] would permanently isolate the PCB-containing sediments and soils from human and ecological receptors, would have a high degree of reliability, would not cause widespread long-term adverse environmental impacts in the Rest of River, would have substantially lower [greenhouse gas] emissions and lower traffic accident risks from off-site truck traffic (for the range of volumes) than any of the other alternatives * * *, would be fully implementable, and would have the lowest cost. Indeed, the [National Contingency Plan] requires that when more than one alternative would achieve the threshold criteria, the most cost-effective alternative must be selected (see 40 CFR § 300.430(f)(1)(ii)(D)). Standing alone (i.e., without considering the costs of the sediment and floodplain soil removal alternatives), [on-site disposal] is clearly the most cost-effective of the treatment/disposition alternatives.

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[12] GE did not fully evaluate TD 2, disposal of the excavated material in a confined disposal facility in a local water body, under the Nine Evaluation Criteria because it determined that TD 2 would not provide overall protection of the environment for three reasons: (1) a confined disposal facility could handle hydraulically-dredged sediment from Reaches 5C and 6 of the River but could not handle material excavated from other areas of the River or floodplain or riverbanks; (2) use of a confined disposal facility would not satisfy a number of ARARs; and (3) constructing a confined disposal facility would result in a permanent loss of aquatic habitat in a large portion of the area where it is constructed and would also result in a loss of flood-storage capacity. Rev. CMSR at ES-24 & n.18, 9-153.

Id. at 9-155; *see id.* at ES-24. However, GE noted that on-site disposal would require "ARAR waivers [to be] obtained for any requirements that could not practicably be met." *Id*. at 9-155.

GE identified three possible locations where an on-site landfill could be constructed: (1) a 75-acre parcel near Woods Pond; (2) a 195-acre parcel on Forest Street in the Township of Lee, Massachusetts; and (3) a 106-acre parcel near Rising Pond. *Id*. at 9-40 to 9-41. The Woods Pond site consists of an inactive sand and gravel quarry, a construction area, and woodlands. The Forest Street and Rising Pond sites consist mostly of woodlands. GE noted that each of these sites "is relatively close to the River (to facilitate transfer of sediments to it), but is situated outside the 500-year floodplain." *Id*. at 9-42. At the time of the Revised Corrective Measures Study, GE proposed to establish landfills at one or more of these parcels because the projected amount of excavation for the cleanup alternatives was as great as 3 million cubic yards, and landfills that could accept that much material were not feasible at the Woods Pond or Forest Street sites alone. *Id*. at 9-40 to 9-41. Ultimately, the Region selected a cleanup requiring a less-extensive excavation of 990,000 cubic yards, and each of GE's proposed sites can support a landfill of one million cubic yards or more. *Id*.

GE identified a number of specifications for an on-site landfill. *First*, the landfill would have a double liner and double leachate-collection system. *Id*. at 9-44. *Second*, it would have an impermeable cover that would be planted with herbaceous vegetation. *Id*. at 9-46 to 9-47. *Third*, the landfill would provide for air and groundwater monitoring, with groundwater monitoring to include from between ten to twenty upgradient and downgradient wells. *Id*. *Fourth*, the facility would be fenced to restrict access, and deed restrictions would be needed to prevent interference with the landfill. *Id*. at 9-46.

In contrast to on-site disposal, implementing off-site disposal (TD 1) would involve transporting the excavated material either to an existing solid waste landfill or to an existing landfill that is permitted to accept PCB-contaminated waste, depending on the concentration of PCBs in the material. *Id*. at 9-1 to 9-2. The excavated sediments and soils would be dewatered, where necessary, and then loaded onto trucks and transported to an appropriate off-site landfill.[13] GE

[13] GE also concluded that transportation of the excavated material via rail would technically be feasible but, for purposes of evaluating the alternatives, selected truck

concluded that both off-site and on-site disposal would meet the 2000 Permit's three threshold evaluation criteria of Overall Protection, Control of Sources of Releases, and Compliance with ARARs. However, GE identified several downsides to the use of off-site disposal compared to on-site disposal, including the short-term impacts from increased truck traffic (including increased noise and the risk of accidents), uncertainty regarding the long-term availability of off-site landfill capacity, and greater cost. *Id*. at ES-26 to ES-28. And, as described above, GE thus concluded that on-site disposal (TD2) is "best suited" to meet the three threshold standards and that it is the most cost-effective of the Treatment/ Disposition Alternatives. *Id*. at 9-155.

GE also evaluated but ruled out TD 4 (chemical extraction) and TD 5 (thermal desorption) due to significant problems and uncertainties it identified with each treatment method. GE conducted a pilot study of chemical extraction, and the results indicated that the concentration of PCBs in treated soil and sediment could not be reduced to a level low enough to allow reuse, so the treated material would still need to be transported to an off-site landfill. *Id*. at 9-154. GE determined that treatment of excavated material by thermal desorption could reduce PCB concentrations to levels low enough not to cause adverse impacts to human health but that on-site reuse of the treated material in the floodplain would cause adverse environmental impacts because the treated soil would not match the characteristics of existing soils in wetland areas. *Id*. GE also noted that, of the five Treatment/ Disposition Alternatives, thermal desorption would produce the highest level of greenhouse gas emissions. *Id*. GE questioned the long-term reliability and effectiveness of both chemical extraction and thermal desorption for treating soil and sediment at the scale required for cleaning up the Rest of the River. *Id*. at 9-154 to 9-155. Finally, GE's cost analysis showed that chemical extraction and thermal desorption were the two most expensive Treatment/Disposition Alternatives, with thermal desorption being significantly more costly than the other four alternatives. *Id*. at tbl.10-1 to 10-6.

(iii) *The Region Identifies its Preferred Alternative*

Before proposing a draft permit containing a remedy for the Rest of the River, the Region sought the advice of EPA's National Remedy Review Board on

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transportation because it "would be more straightforward and present fewer logistical issues." *Id*. at 9-2.

the Region's preferred remedy.[14] To aid the National Remedy Review Board, the Region submitted a lengthy analysis of the Sediment, Floodplain, and Treatment/Disposition alternatives in GE's Revised Corrective Measures Study, applying the 2000 Permit's Nine Evaluation Criteria. NRRB Package at ES-18 to ES-20. The Region also sought public comment on its preferred remedy for the National Remedy Review Board's consideration. *See id.* at ES-21.

The Region initially identified SED 9/FP 3 as its preferred Combination Alternative for addressing contamination in the River and floodplain.[15] SED 9/FP 3 requires more excavation of sediment and soil than all but one of the other alternatives evaluated (SED 8/FP 7). *Id.* at 11-9. The Region gave several reasons for choosing SED 9/FP 3 over the other alternatives:

1) It achieves comparable or better human health risk reduction levels;
2) It achieves this human health risk reduction in a significantly shorter timeframe;
3) It achieves comparable or better ecological risk reduction levels while excavating less floodplain soil thus minimizing short-term impacts;
4) It achieves these risk reductions "at a lower overall cost, in terms of the cost per cubic yard removed and the cost per pound of PCBs removed;" and
5) It has lower overall impact in terms of acres of floodplain affected because fewer acres are devoted to staging areas and access roads compared to alternatives requiring similar levels of excavation.

See NRRB Package at 11-11. The Region disapproved of SED 10/FP 9, which GE had identified as "best suited," due to its poor overall protectiveness of human

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[14] EPA established the National Remedy Review Board in 1995 in order to "control remedy costs and promote both consistent and cost-effective Superfund remedial decisions." U.S. EPA, OSWER Directive 9285.6-21, at 1 (Sept. 4, 2014), https://semspub.epa.gov/work/HQ/176423.pdf. It is an internal body, staffed by senior EPA personnel from EPA regional offices and headquarters. *Id*.

[15] GE did not evaluate Combination Alternative SED 9/FP 3 in the Revised Corrective Measures Study Report. The Region stated that it favored pairing SED 9 with FP 3 – rather than with FP 8, as GE had done in the Revised Corrective Measures Study Report – because FP 3 better balances the tradeoff between risk reduction and decreasing adverse environmental impacts due to excavation in the floodplain. NRRB Package at 11-6 to 11-7. FP 3 requires removal of only 74,000 cubic yards of soil compared to 177,000 cubic yards for FP 8. *See id*. at 8-14 tbl.8-5.

health and the environment, calling it only a "slight improvement over [Monitored Natural Recovery] with selective removal of sediment in Reach 5A and some bank stabilization and limited floodplain soil removal." *Id*. at 9-2. The Region concluded that SED 10/FP 9 and several other alternatives "do not begin to achieve human health fish consumption levels or meet the ecological [Interim Media Protection Goals] [and] would not meet the standard of protection of human health and the environment." *Id*. at 9-4.

As to the Treatment/Disposition Alternatives, the Region expressed concerns similar to those expressed by GE regarding the use of a confined disposal facility, chemical extraction, or thermal desorption. *Id*. at 9-54. However, while GE had recommended disposing of the excavated material on-site, the Region instead selected off-site disposal. The Region explained its decision as follows:

> [Off-site disposal] would permanently isolate the PCB-containing sediment and soil from human and ecological receptors, would have a high degree of reliability, would not cause widespread long-term adverse environmental impacts in the Rest of River, would comply with ARARs, and would be the most implementable from an administrative and technical feasibility perspective.

Id. at 9-61. Even though the projected costs of off-site disposal are significantly higher than those of on-site disposal, the Region determined that the benefits of off-site disposal outweigh any cost differential, characterizing off-site disposal as "being readily implementable, [achieving] compliance with ARARs, and having a lower impact on the local community." *Id*. at 9-61 to 9-62 & tbl.9-29.

In response to the Region's announcement of its initial preferred alternative, Massachusetts submitted comments to the Region, objecting not only to the Region's preferred alternative but also to each alternative delineated by GE in the Revised Corrective Measures Study. *See* Letter Regarding Massachusetts' Position on the Proper Remedial Approach for Rest of River to EPA National Remedy Review Board (July 23, 2011), AR487356 ("Mass. Comments to NRRB"). In Massachusetts' view, "none of the existing remedy alternatives strike the right ecological balance and [they] will cause substantially more ecological harm than benefit to this unique ecosystem." *Id*. at 1. Massachusetts was particularly concerned with the effects the proposed remediation might have on "many plant and animal species and their associated habitats protected under the [Massachusetts] Endangered Species Act" in the Housatonic River watershed. *Id*. at 2. Instead of the existing cleanup alternatives, Massachusetts proposed an approach that would (1) excavate soil in the floodplain only where necessary to

reduce direct human contact risk to acceptable levels; (2) excavate no sediment or soil from the riverbed or riverbanks other than at Woods Pond; and (3) remove 300,000 cubic yards of sediment from Woods Pond, which is not a habitat for any rare, threatened, or endangered species or species of special concern listed under the Massachusetts Endangered Species Act, Mass. Gen. Laws ch. 131A. *Id*. at 4. Massachusetts reasoned that this approach would protect humans while also protecting the existing ecosystem and state-listed species. *Id*.

The National Remedy Review Board recommended that the Region should take additional steps before selecting a remedy, including: (1) collect more current data on PCB levels in fish tissue to aid in evaluating the effectiveness of the Rest of the River cleanup; (2) evaluate further, in consultation with the Army Corps of Engineers, whether the incremental trapping efficiency of Woods Pond could be improved to reduce downstream transport of PCBs; and (3) consider use of an adaptive management framework to implement cleanup of the floodplain in case further response actions are deemed necessary there in the future. National Remedy Review Board Recommendations for the Housatonic River, Rest of River Site at 3, 5, and 6 (Oct. 20, 2011), AR519404 ("NRRB Report"). In particular, the National Remedy Review Board noted the "fundamental disagreements" between the Region and Massachusetts on "the balancing of short-term and potential long-term environmental impacts from remedy implementation." *Id*. at 4. As to this issue, the National Remedy Review Board first recommended that the Region evaluate ecological impacts in the context of RCRA and CERCLA requirements to facilitate "a direct comparison of short-term and long-term risks and impacts and how these risks are balanced, justified and consistent with remedy selection criteria." *Id*. Second, it recommended that the Region provide additional information on the effectiveness of the stabilization of riverbanks with bioengineered techniques to preserve the meandering quality of the River and avoid long-term impacts. *Id*. at 6.

The Region responded to the National Remedy Review Board's comments regarding Massachusetts' concerns by noting that following the release of the National Remedy Review Board's recommendations it had been working with Massachusetts and Connecticut on "the need to address the risks from polychlorinated biphenyls (PCBs) to humans, fish, wildlife, and other organisms while avoiding, mitigating, or minimizing the impacts of the cleanup on the unique ecological character of the Housatonic River." Regional Response to the National Remedy Review Board Comments on the Site Information Package for the General Electric (GE) Pittsfield/Housatonic River Project, Rest of River at 7 (Aug. 3, 2012), AR518898. The Region's discussions with the states focused on ways to avoid and mitigate effects on "the meandering nature of the river and contaminated eroding

banks, and habitat areas for state-listed species of concern in floodplain areas." *Id.*; *see* RTC at 215-16. Eventually, the Region and the states agreed on a conceptual framework to accomplish these goals and then released a description of that framework to the public. U.S. EPA, Housatonic River Status Report: Potential Remediation Approaches to the GE-Pittsfield-Housatonic River Site "Rest of River" PCB Contamination (May 2012), AR508662.

(iv) *Draft Permit*

In 2014, the Region issued a draft permit that set forth the Region's proposed plan for cleaning up the Rest of the River and disposing of the excavated soil and sediment off-site. Draft Modification to the Reissued RCRA Permit for Public Comment (June 2014), AR558619 ("Draft Permit"). The Region accepted public comments on the Draft Permit for a period of four months and held two public information sessions and one public hearing. RTC at 3-4.

Leading up to and in conjunction with issuing the Draft Permit, the Region issued two public documents that describe the proposed remedy and how it was developed: (1) Comparative Analysis of Remedial Alternatives for the General Electric (GE)-Pittsfield/Housatonic River Project, Rest of River (May 2014) ("Comparative Analysis" or "Comp. Analysis"), and (2) Statement of Basis for EPA's Proposed Remedial Action for the Housatonic Rest of River (June 2014) ("Statement of Basis" or "Stmt. of Basis"). The Comparative Analysis provides a detailed discussion of the various alternatives the Region considered for addressing PCB contamination in the Rest of the River and analyzes the alternatives under the 2000 Permit's Nine Evaluation Criteria. The Statement of Basis explains why cleanup of the Rest of the River is needed, summarizes the risks that PCBs pose to human health and the environment, describes the cleanup plan and its objectives, discusses the expected outcome, and explains why the Region chose the proposed remedy.

The remedy the Region proposed in the Draft Permit was similar to the preferred alternative the Region had submitted to the National Remedy Review Board in 2011, but it differed in a few key respects. Notably, following technical discussions with Massachusetts and Connecticut, the Region modified its preferred alternative to address Massachusetts' concerns regarding adverse impacts on state-listed species and habitat. Comp. Analysis at 1-9.

As to cleanup, the Region proposed in the Draft Permit a modified version of Combination Alternative SED 9/FP 4. Because the remedy proposed in the Draft Permit modified the specifications for SED 9 and FP 4 from those set out in the

Revised Corrective Measures Study Report, the Region attached the descriptor "MOD" to each and referred to the combination collectively as "SED 9/FP 4 MOD." *See* Comp. Analysis at 1; Stmt. of Basis at 23-24.

The modifications reduced the amount of bank excavation and stabilization required, primarily by limiting the extent of riverbank excavation and stabilization in Reach 5B to areas with a PCB concentration greater than 50 mg/kg. Comp. Analysis. at 7. They also reduced the amount of sediment to be removed from the River (primarily within Reach 5B), reduced the amount of sediment to be removed from the backwaters, and increased the amount of sediment to be removed from Woods Pond. *Id*.

To address PCB contamination in floodplain areas near the River, the Region shifted from its earlier preference for Floodplain Alternative 3 and proposed a modified version of Floodplain Alternative 4 in the Draft Permit. As originally designed, FP 4 had required more-extensive excavation in the floodplain areas than FP 3. *See* Rev. CMSR at ES-11, 7-1, 7-70. However, the Region subsequently modified FP 4 to reduce the amount of excavation required, focusing on eliminating intrusive work in locations that the Massachusetts Department of Fish and Game identified as "priority habitat areas for state-listed species under the Massachusetts Endangered Species Act." RTC at 216; *see* Comp. Analysis at 8-9. These areas are labeled by Massachusetts and the Region as "Core Areas." RTC at 216.

Overall, compared to the Region's 2011 preferred alternative, the cleanup proposed in the Draft Permit (1) *reduced* the linear extent of riverbank excavation and stabilization, from 14 linear miles down to 3 ½ linear miles; (2) *maintained* the amount of floodplain excavation at roughly 75,000 cubic yards, with a focus on mitigating adverse impacts on Core Areas; and (3) *reduced* slightly the total amount of sediment and soil to be excavated, from 1,098,000 cubic yards to 990,000 cubic yards. *See* Rev. CMSR at ES-12 tbl.ES-5; RTC at 104; Comp. Analysis at 8-9, 46, tbl.15; Stmt. of Basis at 21 tbl.2, 24.

As for the ultimate disposition of the excavated soil and sediment, the Region maintained its preference for off-site disposal with no prior treatment of the excavated material (TD 1), mirroring the preferred alternative that it had submitted to the National Remedy Review Board.

The Region estimated that its proposed remedy in the Draft Permit would cost $613 million – with $326 million needed to complete its chosen cleanup alternative (SED 9/FP 4 MOD) and $287 million required for off-site disposal. Stmt. of Basis at 36 tbl.6 & 39 tbl.7. For comparison, the Region estimated that

GE's preferred cleanup alternative (SED 10/FP 9) and the Housatonic River Initiative's preferred cleanup alternative (SED 8/FP 7) would cost $94 million and $917 million, respectively. *Id*. at 36, tbl.6. As to Treatment/Disposition alternatives, the Region estimated that on-site disposal, preferred by GE, would cost $100 million, and thermal desorption, recommended by the Housatonic River Initiative, would cost between $515 and $540 million. *Id*. at 39 tbl. 7.

(v) *Dispute Resolution*

After the public comment period on the Draft Permit had closed, and after GE had received notice of the Region's intended final decision on the remedy, GE invoked the formal dispute resolution process provided for in the Consent Decree by serving on the Region a written statement of position in which GE presented its objections to the selected remedy. Statement of Position of GE in Support of Dispute of EPA's Notification of Intended Final Decision on Rest of River Remedy (Jan. 19, 2016), AR586218; *see* CD ¶¶ 22(o), 135. The Region responded with its own statement of position, to which GE replied. Statement of Position of the U.S. EPA in Support of Intended Final Decision on the Modification to the Reissued RCRA Permit and Selection of CERCLA Response Action (Feb. 29, 2016), AR586286 ("Region Stmt. of Position"); GE Reply to EPA's Statement of Position in Dispute of EPA's Notification of Intended Final Decision on Rest of River Remedy (Mar. 15, 2016), AR587218. Many of the issues raised by GE during the dispute resolution process are similar to the issues it presents to the Board in its Petition for Review.

In accordance with procedures specified in the Consent Decree, the Regional Administrator designated the Regional Counsel for Region 1 as the official responsible for issuing an administrative decision to resolve the dispute. Memorandum from Curt Spalding, Regional Administrator, EPA Region 1, to Carl Dierker, Regional Counsel, EPA Region 1 (Jan. 21, 2016), AR586221; *see* CD ¶ 136(b). In October 2016, the Regional Counsel issued a Final Administrative Decision denying GE's challenge to the intended final remedy, finding that "overall[,] EPA's reasoning, rationale and analysis are sound and adequately supported by the data and information it has carefully considered." Final Administrative Decision, In Re GE's Dispute of EPA's Intended Final Decision on Rest of Housatonic River Remedy at 10 (Oct. 13, 2016), AR593967. Prior to issuing the decision, the Regional Administrator provided Massachusetts and Connecticut with a reasonable opportunity to review and comment on a draft of the decision; he considered their comments and made changes that he deemed appropriate. *Id*. at 1.

(vi) *Final Permit and the Region's Response to Comments*

After the Regional Counsel's decision in the dispute resolution proceeding, the Region issued the Final Permit. The Final Permit retained the SED 9/FP 4 MOD alternative coupled with off-site disposal (TD 1), but the Permit also included a number of "relatively minor" changes made in response to public comments. RTC at 9. When it issued the Permit, the Region released a 463-page Response to Comments, including attachments, that addressed comments from 141 entities, including GE, Massachusetts, Connecticut, the U.S. Fish and Wildlife Service, several local municipalities and non-governmental organizations, and many citizens. *Id*. at 4.

(vii) *Proceedings Before the Board*

In November 2016, five parties filed petitions for review of the Final Permit with the Board: GE (RCRA Appeal No. 16-01), the Housatonic River Initiative (RCRA Appeal No. 16-02), Mr. C. Jeffrey Cook (RCRA Appeal No. 16-03), the Housatonic Rest of River Municipal Committee[16] (RCRA Appeal No. 16-04), and the Berkshire Environmental Action Team, Inc. (RCRA Appeal No. 16-05). The Region responded to each Petition. The states of Massachusetts and Connecticut each filed a response to GE's Petition in which they support the Region's permitting decision. The Massachusetts Audubon Society, the City of Pittsfield, Green Berkshires, Inc., and the Housatonic Rest of River Municipal Committee (on behalf of itself and the Berkshire County League of Sportsmen, the Berkshire Environmental Action Team, the Berkshire Natural Resources Council, the Berkshire Regional Planning Commission, the Housatonic Valley Association and the Massachusetts Audubon Society) filed amicus curiae briefs expressing support for various aspects of the permitting decision and opposing other aspects.

In February 2017, the Region filed with the Board the certified index to the administrative record for the permit modification. Certified Index to the Administrative Record for the GE/Pittsfield Housatonic River Site (October 2016), AR593923. The Administrative Record is extensive; the index alone consists of over 1000 pages.

[16] The Housatonic Rest of River Municipal Committee consists of five communities in Berkshire County, Massachusetts: Great Barrington, Lee, Lenox, Sheffield, and Stockbridge.

Briefing took place over a period of six months. Based on the complexity of the matter, the lengthy record, and the distinct issues raised in each Petition, the Board granted requests by several parties for expansion of word limits and extensions of filing deadlines, but the Board denied the Region's motion to file a consolidated response. *See* Orders of the Board dated Nov. 8, 2016; Nov. 22, 2016; Dec. 8, 2016; Dec. 15, 2016; Dec. 22, 2016; Jan. 24, 2017; & Feb. 17, 2017. Collectively, the parties filed over two hundred briefs, motions, and exhibits for review by the Board. Briefing was completed in May 2017.

The Board granted requests by two parties for oral argument. *See* Order of the Board dated Feb. 23, 2017. To facilitate argument and for the convenience of all involved, the Board established a framework for the oral argument organized by topic and allowed all parties (including amicus curiae) the opportunity to participate either in person or by teleconference. *See* Orders of the Board dated Apr. 13, 2017 & May 10, 2017. Nine parties elected to participate, all in person: the Region, Massachusetts and Connecticut, GE, the Housatonic River Initiative, Mr. Cook, the Housatonic Rest of River Municipal Committee, the City of Pittsfield, and Green Berkshires, Inc.

Oral argument took place in the Board's administrative courtroom during morning and afternoon sessions on June 8, 2017. Afterwards, the Board gave the parties the opportunity to submit a list of materials they had cited during the argument. A transcript of the argument was prepared and is available on the Board's docket, as are copies of materials presented to the Board during and following argument.

V. *ANALYSIS*

We divide our analysis of the arguments presented into three sections. *First*, we examine how the existence of the Consent Decree impacts our review of the Final Permit. *Second*, we evaluate the arguments that pertain to the scope of the cleanup of the Rest of the River, including arguments by GE and Mr. Cook that the cleanup is too extensive and arguments by the Housatonic River Initiative, the Berkshire Environmental Action Team, and the Housatonic Rest of River Municipal Committee that the cleanup is not extensive enough. *Finally*, we analyze the issues surrounding the method of disposal, and possible treatment, of excavated sediment and soil, including GE's argument that the Region erred when it selected off-site disposal, and the Housatonic River Initiative's argument that the Region should have required the treatment of excavated material prior to any disposal or re-use.

A. *Nature and Effect of the Consent Decree*

Throughout these proceedings, the parties have disputed the extent to which the Consent Decree, including the 2000 Permit, controls the Region's final permitting decision. Before we turn to the Petitioners' specific challenges to the Final Permit, we step back to examine the nature and effect of the Consent Decree as a whole, focusing our attention on two issues in particular. *First*, we address GE's argument that the Board should interpret the terms of the 2000 Permit – particularly application of the Nine Evaluation Criteria – using principles of contract law. *Second*, we address GE's argument that the Consent Decree establishes a source of independent authority – or "private law" – that constrains the discretion the Region would otherwise possess to include permit conditions in a RCRA corrective action permit.

1. *The Terms of the Consent Decree, Including the 2000 Permit, Should Be Interpreted in a Manner Consistent with RCRA*

GE contends that the court-approved Consent Decree, including the 2000 Permit attached as Appendix G, governs its dispute with the Region and that "the Board must interpret the [Consent Decree] according to its plain terms in order to honor the manifest intent of the parties and the court." General Electric Company's Reply to EPA Region 1's Response to General Electric's Petition for Review, RCRA Appeal No. 16-01, at 1 (Mar. 24, 2017) ("GE Reply to Region"). In presenting its argument, GE relies on the federal District Court's decision resolving an earlier dispute between the parties regarding cost reimbursement under the Consent Decree. *See United States v. GE*, 986 F. Supp. 2d 79, 86 (D. Mass. 2013). In that opinion, the District Court concluded that the Region's construction of the pertinent Consent Decree terms, including the terms of the 2000 Permit, was not entitled to deference, applying First Circuit precedent that interpreting a consent decree is analogous to interpreting a contract. *Id.* at 87 (*citing AMF Inc. v. Jewett*, 711 F.2d 1096, 1100 (1st Cir. 1983)). From there, GE argues that the Consent Decree terms – and in particular the language of the Nine Evaluation Criteria – should be interpreted in accord with principles of contract law and that the Region is owed no deference on this point.

While GE makes much of its argument emphasizing the contractual aspects of consent decrees, in the end GE's view that the Consent Decree is a contract does not change the way the Board reviews the remedy selected in the Final Permit under RCRA. Regardless of whether all aspects of the Consent Decree are to be

interpreted according to principles of contract law,[17] the Board will interpret the Consent Decree to fulfill the parties' intent as reflected in its terms. And under the terms of the Consent Decree, as approved and ordered by the District Court, the Region has a binding obligation to issue a modified corrective action permit selecting a Rest of the River remedy pursuant to RCRA. Consequently, with respect to remedy selection, the terms of the Consent Decree and the attached 2000 Permit, and in particular those provisions that pertain to the Nine Evaluation Criteria, should be interpreted in a way that is consistent with RCRA and its implementing guidance. Further, the Board conducts its own independent review of the terms of the Consent Decree and does so without deferring to the Region or any other party. We discuss briefly the points in support of these conclusions below.

The Consent Decree plainly manifests an intent by its signatories to create binding obligations following applicable federal law – specifically, to select a remedy pursuant to RCRA, which will be implemented under CERCLA. If the signatories had intended to agree to select a remedy to address contamination in the Rest of the River using an authority other than RCRA, it seems logical that the Consent Decree would say so. However, our close reading of the Consent Decree reveals no language that demonstrates such an intent. To the contrary, Paragraph 22 requires the Region to issue a draft permit modification to set forth the proposed remedy for the Rest of the River area in accordance with EPA regulations on RCRA permit modifications and the 2000 Permit – which itself was issued pursuant to EPA's RCRA authority. *Id.* ¶ 22(n), (q). The Consent Decree also confirms that the Region's permitting decision can be reviewed by the Board pursuant to the

[17] Contrary to GE's suggestion, in a long line of cases, the Supreme Court has noted that consent decrees bear elements of both contracts and judicial decrees. *See Frew v. Hawkins*, 540 U.S. 431, 437 (2004) ("Consent decrees have elements of both contracts and judicial decrees."); *Rufo v. Inmates of Suffolk Cnty. Jail*, 502 U.S. 367, 378 (1992) ("A consent decree no doubt embodies an agreement of the parties and thus in some respects is contractual in nature. But it is an agreement that the parties desire and expect will be reflected in, and enforceable as, a judicial decree."); *Firefighters v. Cleveland*, 478 U.S. 501, 519 (1986) (observing that consent decrees "bear some of the earmarks of judgments entered after litigation" but also "closely resemble contracts"); *United States v. ITT Cont'l Baking Co*., 420 U.S. 223, 236 n.10 (1975) ("Consent decrees * * * have attributes both of contracts and of judicial decrees * * * .").

Board's authority to review RCRA permits under 40 C.F.R. § 124.19. *Id*. ¶ 22(q). The Consent Decree further requires the remedy specified in the Final Permit to be implemented as a CERCLA remedial action. *Id*. ¶ 22(p). And the definitions section of the Consent Decree states that unless otherwise provided, terms used "shall have the meaning assigned to them" in these federal pollution control statutes, i.e. "CERCLA, RCRA or in [implementing] regulations," and not contract law. CD ¶ 4.

Both the government's motion for entry and the District Court's order entering the Consent Decree confirm this reading of the Consent Decree. The government expressly stated that the remedy selected and implemented under the Decree "will meet the applicable requirements of both RCRA and CERCLA."[18] United States' Memorandum in Support of Motion to Enter Consent Decree, Civ. Action Nos. 99-30225 through 30227-MAP, at 21 (D. Mass. Oct. 7, 1999). And in its order entering the Decree, the District Court found that the decree promotes the public interest because it "promptly and effectively protects human health and the environment by providing a comprehensive and expeditious cleanup of the contamination at issue," language echoing RCRA's and CERCLA's overarching standards for selecting and implementing remedial actions. *U.S. v. GE*, No. 99-30225 through 27-MAP, slip op. at 2, 4 (D. Mass. Oct. 31, 2000) (Memorandum and Order Re Entry of Consent Decree). Neither the government's motion nor the Court's order entering the Decree suggest that the Consent Decree would supplant the Region's RCRA authority to select a remedy in the Final Permit.

GE also premises its contractual argument on the erroneous assumption that the Board would otherwise defer to the Region's legal interpretation of the Consent Decree's terms. That is not how the Board operates. While the Board carefully considers the arguments of all parties, it decides each case before it "based on the applicable statute and regulations," 40 C.F.R. § 1.25(e), and applies the standard of review set forth in 40 C.F.R. § 124.19(a). *See* Changes to Regulations to Reflect the Role of the New Environmental Appeals Board in Agency Adjudications, 57 Fed. Reg. 5320, 5320-22 (Feb. 13, 1992); *In re Lazarus, Inc.*, 7 E.A.D. 318, 351 n.55 (EAB 1997) ("Parties in cases before the Board may not ordinarily raise the doctrine of administrative deference as grounds for requiring the Board to defer to an interpretation of statutory or regulatory requirements advanced by any individual component of the EPA."); *In re Mobil Oil Corp*., 5 E.A.D. 490, 508-09 & n.30 (EAB 1994) (noting that while the Board's determination regarding the scope of a

[18] GE did not oppose the government's motion and filed nothing to the contrary.

regulatory exemption was consistent with the position taken by the Agency, the Board reached its determination based on its own "independent review and analysis of the issue"). Thus, GE's concerns that the Board will automatically defer to the Region's legal interpretation with respect to the meaning of terms in the Consent Decree are unwarranted. The Board conducts its own analysis of any legally applicable documents – including the Consent Decree and 2000 Permit – to determine their meanings and how to interpret them.

2. *The Consent Decree Does Not Constrain the Region's Discretion to Select a Remedy under RCRA*

We turn next to GE's overlapping argument that the Consent Decree – and not RCRA – sets the parameters governing the terms of the Final Permit, arguing that "the Consent Decree is the applicable law" and that the decree "create[s] a kind of private law that the parties have to operate under." EAB Hearing Transcript at 18-19 ("Transcript"); *see also id.* at 30 ("A consent decree creates * * * a universe of law that is applicable to the relationship between the parties.").

GE's argument goes too far. If the parties had intended for the Consent Decree to serve as a private law that would operate outside of – or supplant – the Agency's statutory authority, it seems logical that the Consent Decree would say so. However, as discussed above, the Consent Decree reveals a contrary intent.

And because the Final Permit serves as the mechanism that allows GE to seek review by the Board to challenge the Region's remedy selection – and, potentially, before the First Circuit under RCRA 7006(b) – we have difficulty grasping how the Board would have jurisdiction over this dispute if the Region were to have proceeded to specify a remedy under some other law, rather than under its RCRA corrective action permitting authority.[19] To the contrary, the

[19] Under RCRA, an interested person with standing may appeal the Agency's final corrective action permitting decision to a federal court of appeals, whereas under CERCLA a responsible party is generally prohibited from challenging a remedial action order until after the Agency has taken action to enforce the order. *Compare* RCRA § 7006(b), 42 U.S.C. § 6976 (b) (conferring jurisdiction on Circuit Courts of Appeal to hear appeals of permits issued under 42 U.S.C. § 6925) *with* CERCLA § 113(h), 42 U.S.C. § 9613(h) (limiting federal court jurisdiction over CERCLA removal or remedial action appeals to five specific circumstances, including an action to enforce a CERCLA § 106(a) order); *see also* 40 C.F.R. § 124.19(a) (setting forth requirements for the administrative appeal of a RCRA permit). As the Housatonic Rest of River Municipal Committee has pointed out,

circumstances surrounding entry of the Consent Decree demonstrate that the Consent Decree must be understood as a commitment by the Region to select the remedy by proceeding under its RCRA corrective action authority and not as an agreement that the Region would select a remedy under a different rubric unique to the circumstances of the Site.

At the same time, the Consent Decree is a binding court order. Therefore, while we reject the general proposition that the Consent Decree created a private law that constrains the Region's exercise of its RCRA authority, we nonetheless consider – in the context of particular challenged Permit provisions – whether or not there is any facial conflict between provisions of the Final Permit and the Consent Decree.

B. *The Cleanup of the Housatonic River, Riverbanks, and Floodplain*

Petitioners challenge the Permit's cleanup plan on myriad grounds. We separate these challenges into two categories for analysis: (1) arguments by GE and Mr. Cook that the cleanup is too extensive, and (2) arguments by the Housatonic River Initiative, the Municipal Committee, and Berkshire Environmental Action Team that the cleanup is not extensive enough.

1. *Arguments That the Cleanup is Too Extensive*

Two Petitioners, GE and Mr. C. Jeffrey Cook, argue that the corrective action required in the Final Permit for the Rest of the River goes farther than needed to protect human health and the environment.

a. *GE's Arguments*

GE makes a series of challenges to the extensiveness of the required cleanup. *First*, GE contends that "less extensive, disruptive, and costly remedies would fully protect human health." GE Pet. at 40. GE argues both that there is a less costly *overall* cleanup alternative that would be equally protective as the remedy selected by the Region (SED 9/FP 4 MOD), *id.* at 40-43, and that "substantially smaller remedies" for *specific* areas covered by the Permit – Woods

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had the Region selected the remedy for the Rest of the River under CERCLA, the Board would have lacked jurisdiction to hear the Petitions and GE would have had no recourse for challenging the selected remedy in federal court at this time. S*ee* Petition for Review Submitted by the Housatonic Rest of River Municipal Committee, RCRA Appeal No. 16-04, at 6-7 & n.3 (Nov. 23, 2016) ("Municipal Comm. Pet.").

Pond, Rising Pond, and the River's floodplains – would also achieve equivalent human health protection, *id.* at 25-32, 41-43. *Second*, GE claims that SED 9/FP 4 MOD will have "significant negative impacts" on the Housatonic River ecosystem that are not offset by the "putative benefits of the selected remedy." *Id*. at 33-34. *Finally*, GE challenges four more narrow aspects of the Final Permit: (1) the Downstream Transport and Biota performance standards; (2) provisions for additional response actions required for third-party projects; (3) inspection and maintenance of dams requirements; and (4) requirements pertaining to compliance with the Massachusetts Endangered Species Act. We address each of these arguments in turn.

(i) *Extent of Sediment and Soil Removal Generally and In Specific Locations*

GE argues that the Final Permit cleanup is more extensive than necessary to protect human health and the environment. GE first asserts that the Region has overstated the potential harm from the levels of PCBs found in the Rest of the River. *Id*. at 40. GE also claims that the Region required more removal of soil and sediment than is necessary, because removing lower amounts would achieve the same or greater level of reductions in PCBs. *Id*. at 41. GE makes this assertion both generally as to the overall remedial plan and more specifically as to the remedial requirements for Woods Pond and Rising Pond. *Id*. at 25-32. Similarly, GE maintains that a floodplain cleanup involving far less removal of contaminated soil would adequately protect human health and the environment. *Id*. at 42-43.

(a) *PCB Toxicity*

GE argues that the Region erroneously concluded that the level of PCBs found in the Rest of the River poses adverse effects to human health and therefore "EPA's remedy is larger, more damaging, and more costly than necessary." *Id*. at 40. GE states that it "has disputed" the "toxicity values that [the Region] has adopted" and "continues to do so." *Id*. In its Petition, however, GE provides no further information or argument in support of its claim that the Region erred in assessing PCB toxicity.

Under the Board's regulations governing appeal, a petitioner must satisfy the threshold specificity requirement by "clearly set[ting] forth, with legal and factual support," its arguments as to why the Board should grant review. 40 C.F.R. § 124.19(a)(4)(i). GE's blanket assertion that it has disputed and continues to dispute the Region's assessment of PCB toxicity does not meet this specificity requirement because it is too general. GE's Petition does not set forth any factual

or legal support for its argument that the Board should grant review of the Region's findings on PCB toxicity.

GE also has not met its burden of explaining why the Region's response to GE's comments on the toxicity issue "was clearly erroneous or otherwise warrants review." 40 C.F.R. § 124.19(4). GE's "failure to rebut the Region's technical conclusions leaves a record supportive of the Region's permitting decision," and therefore GE's contention fails. *In re Windfall Oil & Gas, Inc.*, 16 E.A.D. 769, 785 (EAB 2014); *see, e.g.*, *In re Sammy-Mar, LLC*, 17 E.A.D. 88, 96 (EAB 2016) (dismissing petition because petitioner "[s]imply repeat[ed] concerns * * * that ha[d] been previously presented to and answered by the permit issuer").[20]

In the Response to Comments, the Region discussed the source of its toxicity assessment values for PCBs, how those values were derived, and the extensive independent peer review process followed in drafting the Human Health Risk Assessment. RTC at 39-42. The Region specifically relied on the seven-volume Human Health Risk Assessment and the independent peer review of that document as supporting its conclusions on toxicity values. *Id*. at 40. GE's Petition provides no factual or legal argument supporting its challenge to the Region's assessment of toxicity values. Hence, GE fails to demonstrate that review is warranted on this ground.

(b) *Sediment Removal Generally*

As to sediment removal generally, GE contends that Sediment Alternative SED 5 would protect human health just as well as the alternative that the Region selected, SED 9 MOD. GE makes this contention despite the fact that SED 5 calls for removing only 377,000 cubic yards of contaminated sediment, compared to the 890,000 cubic yards that SED 9 MOD would remove.[21] GE Pet. at 40-41. In

[20] Federal courts of appeal have consistently upheld the Board's requirement that a petitioner substantively confront the permit issuer's response to the petitioner's previous objections. *See, e.g.*, *City of Pittsfield v. EPA*, 614 F.3d 7, 11-13 (1st Cir. 2010), *aff'g In re City of Pittsfield*, NPDES Appeal No. 08-19 (EAB Mar. 4, 2009) (Order Denying Review); *see also Windfall*, 16 E.A.D. at 795 (collecting federal cases).

[21] The difference in the amount of sediment to be removed under the two alternatives is driven primarily by the more-extensive removal called for under SED 9 MOD in the backwaters, Woods Pond, and Rising Pond. Stmt. of Basis at 20 tbl.1.

support, GE asserts that its modeling results – using a model developed by the Region – show that PCB levels in fish tissue would be similar under either alternative. *Id*. at 41.

The Region responds that GE fails to explain how the Region erred in addressing this question in the Response to Comments. In that document, the Region disputed GE's contention that SED 5 and SED 9 MOD would, in fact, achieve equivalent reductions in PCB levels. RTC at 80. The Region explained that GE modeled PCB reductions under the two cleanup alternatives using a faulty assumption: that thin-layer capping specified for SED 5 would reduce PCB levels at the same rate as sediment removal followed by an engineered capping, which is used much more extensively in SED 9 MOD.[22] RTC at 80, 172-74. And, as the Region emphasized in the Response to Comments, engineered capping and thin-layer capping are "two very different remedies." RTC at 173.

Specifically, an engineered cap is made up of six different layers, including several isolation layers. *Id*. at 197-98. And it contains contaminants in three distinct ways:

> by *physically* isolating the contaminated sediments from human or animal exposure, by *chemically* isolating the contaminated sediments from being transported up into the water column, and by *stabilizing* contaminated sediment to protect it from erosion, particularly in high-flow situations.

Id. at 173 (emphasis added). In contrast, the Region explained, a thin-layer cap is not designed to isolate contaminants, "but rather is a form of Enhanced Monitored Natural Recovery * * * in which a thin layer of clean material mixes with or dilutes the existing contaminated sediments to help the natural sedimentation processes." *Id*.

Despite the significant differences between an engineered cap and thin-layer capping, GE treated them as equivalent for the purpose of modeling PCB levels that would be released from the riverbed. *Id*. at 174 ("GE essentially modeled [thin-layer capping] under the assumption that it would effectively isolate

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[22] As the Statement of Basis documented, SED 5 would require 102 acres of thin-layering capping and 186 acres of engineered capping, while SED 9 MOD would require 298 acres of engineered capping and no thin-layer capping. Stmt. of Basis at 21, tbl 2.

and contain PCBs, when in reality and by definition, [thin-layer capping] is akin to Enhanced [Monitored Natural Recovery] or dilution."). Thus, the Region concluded that GE produced similar modeling results on predicted PCB levels in fish tissue from SED 9 MOD and SED 5 only by using this incorrect assumption. The Region found that "[i]f GE modeled [thin-layer capping] as dilution, the results would be significantly different and would likely not show nearly as much reduction in fish PCB concentrations." *Id*.

In addition, the Region determined that the model used by GE, which the Region had developed, could not accurately model thin-layer capping because, among other things, the model does not consider that (1) the thin-layer cap could mix with the underlying sediment; (2) unlike an engineered cap, a thin-layer cap would not be inspected and maintained to ensure its long-term effectiveness; and (3) thin-layer capping under SED 5 would be applied without first removing contaminated sediments and, thus, could affect flood storage capacity in the River's impoundments. *Id*.

GE addresses none of the Region's explanations as to why GE's modeling results for PCB levels in fish tissue under SED 5 and SED 9 MOD do not provide an accurate point of comparison for evaluating these two alternatives. The Region's conclusion stands unrebutted. Thus, GE has not supported its claim that remedial alternatives involving less-extensive soil removal and thin-layer capping would reduce PCB levels in fish tissue to an equivalent degree as SED 9 MOD.

(c) *Woods Pond*

The Permit requires GE to install an engineered cap in Woods Pond following sufficient dredging and excavation to achieve "a post-capping minimum water depth of 6 feet." Permit § II.B.2.e(1)(a). GE disputes the need for deep-dredging, arguing that installing an engineered cap after the minimum level of dredging and excavation it contends is needed for such a cap would result in equivalent protection of human health. GE Pet. at 28. In addition, GE claims that its preferred shallow-dredging approach would decrease short-term impacts on the local community and the environment (due to fewer truck trips to haul away excavated sediment) and would cost significantly less. *Id*. at 26-27.

The Region responds that GE's focus on the short-term impacts and cost of the Permit's deep-dredging remedy for Woods Pond is too narrow. Region Resp. to GE Pet. at 25-26. GE, the Region claims, has failed to consider all of the 2000 Permit's Nine Evaluation Criteria and the ramifications for the Rest of the River remedy from the decision to deep-dredge Woods Pond. The record shows that the

Region's more global assessment of the deep-dredging of Woods Pond identified several benefits of that approach, including enhanced Control of the Sources of Releases, increased Long-Term Effectiveness and Reliability of the remedy, increased Overall Protection of Human Health and the Environment due to reduced downstream transport of PCBs, decreased Short- and Long-term Impacts on habitats other than Woods Pond, and decreased Costs for other aspects of the remedy.

A primary benefit of the deep-dredging approach, according to the Region, is that it greatly increases the selected remedy's Control of the Sources of Releases, which is one of the three threshold standards both under the 2000 Permit and under RCRA guidance. The deep-dredging of Woods Pond will significantly reduce the *source* of PCBs remaining in the Rest of the River because, as GE's site investigation showed, "Woods Pond sediment contains approximately 25% of the mass of PCBs present in the Housatonic River." RTC at 162; Mass. Comments to NRRB at 11. Further, the Region emphasized that the high concentration of PCBs in Woods Pond presents an opportunity to remove significant amounts of contaminated materials (more than 1/4 of the total cubic yards of contaminated sediment to be removed under the selected remedy) from a single location using relatively straightforward open-water dredging technologies. Region Stmt. of Position at 28. The Region correctly points out that "[b]y permanently *removing* pollutants from [the] Rest of River, EPA's approach is more protective than GE's, which entails *leaving* pollutants in Rest of River, where they could be released." Region Resp. to GE Pet. at 28. Given the importance of the Control of the Sources of Releases both under the RCRA guidance and under the 2000 Permit, GE is mistaken in claiming that the Region's focus on the mass removal of PCBs from Woods Pond is irrelevant under the Nine Evaluation Criteria. *See* GE Pet. at 27.

Further, given the large amount of PCBs that would remain in Woods Pond under GE's shallow-dredging approach, the Region appropriately took into account the serious risks that a failure of the Woods Pond cap due to flooding, ice scour, or the breaching of Woods Pond dam would pose to the Long-Term Effectiveness of the remedy. *See* RTC at 162. GE discounts the likelihood that a breach of Woods Pond dam would occur given that GE owns and operates the dam, but we find no clear error by the Region here. Evidence in the record shows that the release of water from the Rising Pond dam in 1992 resulted in significantly higher levels of PCBs downstream. RTC at 186-87. The possibility of dam failure and the release of impounded water at Woods Pond is not so remote that it would be purely speculative to place any weight on such a consideration. As the Region noted, "[g]iven the catastrophic and unexpected infrastructure failures observed during

Hurricanes Katrina and Sandy * * *, dam failure or breach is not the unrealistic concern that GE claims." RTC at 187. Additionally, as the Region noted in the Response to Comments, the integrity of a cap in an impoundment is related to the integrity of the dam. The Region explained that "[w]ere there to be a significant dam breach or failure, the Engineered Cap would also fail to be effective in isolating the PCBs" because "the dams are part of the Engineered Cap." RTC at 170-71. Thus, it was not inconsistent, as GE argues, for the Region to raise the possibility of cap failure in conjunction with a dam breach as a distinct risk separate and apart from cap failure in other reaches of the River.

The Region also concluded that deep-dredging of Woods Pond would increase the Woods Pond Dam's efficiency in trapping PCBs. As noted by the Region, "Woods Pond has historically been an effective trap as demonstrated by the significant amount of PCB mass that has been retained in the pond." RTC at 163; *see* NRRB Report at 3 (the National Remedy Review Board recommends that the Region consider the incremental trapping efficiency of a modified Woods Pond given the historical sedimentation data). GE argues that no weight should be attached to the increased trapping efficiency of the deep-dredging approach, noting that PCB transport in water over the dam is projected to decrease only minimally from 2.6 kilograms per year to 2.5 kilograms per year and that model projections do not show that such a decrease will result in "any reduction in risk due to fish consumption." Comments of GE on the Region's Draft RCRA Permit Modification and Statement of Basis for Proposed Remedial Action for the Housatonic River – Rest of River, at 42 (Oct. 27, 2014) AR568410 & 579608 through 579621 ("GE Comments on Draft Permit"). However, the Region asserts that such reductions in downstream transport "are significant relative to the Downstream Transport Performance Standards" – a critical measure for the success of the Rest of the River remedy. RTC at 162-63. In the end, while the increased trapping efficiency of deep-dredging may not by itself result in significant risk reductions, that does not mean that its consideration as one of several contributing factors to risk reduction is irrelevant.

Finally, the Region has pointed out that its deep-dredging remedy for Woods Pond was adopted as part of a "holistic" approach that resulted in (1) an overall reduction of short- and long-term impacts on more sensitive habitat than Woods Pond, and (2) an overall reduction in excavation amounts, which lowers both the cost of the remedy and the number of truck trips required to haul away the dredged material. The Region explained that unlike other contaminated areas in the Rest of the River, Woods Pond "does not provide priority habitat for state-listed

species." RTC at 162. This factor was critical to the Region's decisionmaking because Woods Pond

> represents the opportunity to remove a significant mass of PCBs from the river system, thereby reducing the potential for downstream transport of PCBs, and significantly reducing the bioavailability and exposure of PCBs to human and ecological receptors (including but not limited to the consumption of contaminated fish) *with minimal short- or long-term impacts to the environment from the remediation itself*.[23]

Id. (emphasis added); Region Stmt. of Position at 28 ("[T]here is an opportunity at Woods Pond to remove a significant source of PCBs without impacting the state Core Habitats * * *"). The Region noted that an earlier proposal had called for removing more PCBs from more environmentally sensitive areas of the River in Reach 5B and the River's floodplain, but that a "holistic" evaluation of the proposed remedy led to the decision to remove fewer PCBs from Reach 5B and the floodplain in favor of removing more from Woods Pond in Reach 6. RTC at 164. Additionally, the switch to deep-dredging of Woods Pond led to a reduction of overall excavation amounts in the Rest of the River as a whole. While the amount of the reduction is smaller than the difference between the excavation amounts for deep-dredging and shallow dredging of Woods Pond, the reduction attributable to the Region's choice of deep-dredging for Woods Pond as part of a global approach to the overall remedy still significantly tempers the extent of the short-term impacts on the local community and the environment from truck trips to remove excavated sediment.[24]

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[23] In the Response to Comments, the Region acknowledged that the Massachusetts Fisheries and Wildlife Board supports the Region's decision on Woods Pond as critical to balancing human health and environmental concerns. RTC at 27. In its comments on the Draft Permit, the Fisheries and Wildlife Board stated: "[t]he remediation plan, including mass removal of PCBs from Woods Pond, presented by EPA, has been crafted to responsibly address public health risks while at the same time responsibly maintaining as much as possible of the natural and recreational values of this section of the Housatonic. It's been a difficult balancing act, but it is a Housatonic plan, and it has our full support." *Id*.

[24] GE and the Region dispute what the difference in excavation amounts would be between deep- and shallow-dredging of Woods Pond, with GE contending that the

In sum, we conclude that GE has not shown that the Region clearly erred by taking into account a broad range of considerations relevant to remedy selection when choosing deep-dredging for Woods Pond. To the contrary, by focusing more narrowly on the higher number of truck-trips required and the higher costs associated with deep-dredging, GE fails to fully consider the other evaluation criteria enumerated in the 2000 Permit. Thus, GE's claim regarding the remediation of Woods Pond is denied.

(d) *Rising Pond*

GE makes a similar argument about the selected remedy for Rising Pond: that a cleanup involving significantly less sediment removal would be as protective as the remedy in the Final Permit but would cost substantially less. The Final Permit requires GE to remove enough sediment from Rising Pond to achieve a specified average PCB contamination in the remaining sediment and to replace the excavated sediment with an engineered cap. Permit § II.B.2.g(1)(a) and (b). The thickness of the cap is to be determined during the remedial design phase based on design and performance standards in the Permit. *Id*. § II.B.2.i; RTC at 208-10. Further, the Permit requires that the engineered cap "shall result in a final grade generally consistent with the original grade" and "shall result in no net loss of [flood storage capacity] and no increase of water surface elevation in this Reach." Permit § II.B.2.g(1)(c) and (g).

GE estimates that the selected remedy will require removing 50,000 cubic yards of sediment. GE Comments on Draft Permit at 50. In its comments, GE proposed placing a six-inch engineered cap in Rising Pond and removing sediment in the shallow areas only to the extent necessary to install the cap. *Id*. at 51. GE's proposal would remove only 15,300 cubic yards of sediment. *Id*. In the Response to Comments, the Region rejected this proposal, spelling out both its reasons for postponing the choice of cap thickness until the design phase, RTC at 208-10, and its concerns, as confirmed by outside technical advisors, regarding GE's proposal for an engineered cap only six-inches thick. RTC at 209-10. Further, the Region explained that placing an engineered cap on top of the existing sediment bed in the

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difference could be as great as 340,000 cubic yards and the Region arguing that it could be as low as 285,000 cubic yards. *Compare* GE Comments on the Draft Permit at 41 *with* RTC at 161-64. The reduced excavation amount associated with the remedy modifications, including the deep-dredging of Woods Pond, was approximately 90,000 cubic yards. RTC at 164.

deeper areas of the Pond "could change the hydrodynamics of the system and would decrease flood storage capacity." RTC at 185.

On appeal, GE states that the ultimate thickness of the cap "is beside the point." GE Reply to Region at 25. GE argues that even with a "somewhat thicker cap" placed on top of the sediment in the deeper areas of the Pond, its alternative remedy would cost less, be just as protective, and not affect the Pond's flood storage capacity. *Id*. On the final point, GE explains that there will be no impact on "flood storage capacity or * * * in flood stage on the River because the backwater effects in Rising Pond are controlled by the dam, and the extra caps would be placed only in areas that are already over three feet deep." *Id*. As support for this assertion, GE cites a letter it sent the Region that discusses an analysis GE did on the flooding potential of Rising Pond if a six-inch cap were to be used. GE Pet. at 31-32; *see* Letter from Andrew T. Silfer, Senior Technical Manager, GE, to Robert Cianciarulo, US EPA (May 24, 2013), contained in Memo to GE Housatonic Site File Regarding EPA/GE Discussions: August 2012 – December 2013, AR 558617, at pdf 32-34. The Region disputes the relevance of this analysis, noting that "[i]f the cap thickness has not been determined, the final bathymetry[25] cannot be determined, and thus the increase in flood stage cannot be properly modeled." Region Resp. to GE Pet. at 31. GE's only response is to reassert the points it made in its earlier letter and argue, without providing any basis, that a "somewhat thicker cap" would not change its prior analysis. GE Reply to Region at 25.

GE has not satisfied its burden to demonstrate clear error here. The central issue that appears to be in dispute is whether a cap that is placed on top of the existing sediment in deeper areas of the Pond would affect flood storage capacity or flood stage. The data that GE relies upon can only be regarded as speculative given that these data are expressly based on the assumption that an engineered cap no more than six-inches thick will be installed in the manner proposed by GE (i.e., without sediment removal in the deeper area of the Pond).[26] But no cap thickness

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[25] Bathymetry is the depth of a body of water relative to the water surface. *See* Nat'l Oceanic & Atmospheric Admin., *What is bathymetry?*, https://oceanservice.noaa.gov/facts/bathymetry.html (last visited Nov. 29, 2017).

[26] The cited letter concludes that after modeling the issue of flood storage and flood stage "with a 6-inch cap in the deeper portion of the Pond[, a]s expected, the results indicate that there would be no appreciable change in water surface elevation as a result of placing

has yet been chosen, and the Region has documented its significant concerns that a six-inch cap would not be thick enough, and that with a thicker cap, more sediment would need to be removed to maintain flood storage capacity. RTC at 208-10. In its Petition, GE does not dispute the concerns the Region raised in the Response to Comments that a six-inch cap would not likely be thick enough. And with respect to GE's claim that ultimate cap thickness is "beside the point," GE has failed to rebut the Region's explanation that without knowing the cap thickness, the effect on flood storage capacity or flood stage cannot be determined. In these circumstances, we find no clear error on the Region's part with respect to its remedy for Rising Pond.

(e) *Floodplain*

GE also argues that a less-extensive remedy in the floodplain would be equally protective of human health. GE Pet. at 42. GE offers two contentions as to why removing 26,000 cubic yards of soil – as opposed to the 80,000 cubic yards required by the Permit – would be sufficiently protective. *First*, GE contends that the Region's assessment of the risk to human health from direct exposure to PCBs in the soil overstates the amount of human exposure that occurs. *Id*. at 42-43. According to GE, an assessment of risk based on more realistic exposure scenarios shows that a 26,000 cubic-yard removal would meet risk-reduction goals. *Id*. *Second*, GE maintains that even accepting the Region's exposure assessment, a 26,000 cubic-yard removal would still meet the minimum risk-reduction level acceptable to the Region. *Id*. at 42-43.

GE claims that data from a survey of floodplain users conducted in 2003 show that the Region overestimated the level of direct human exposure to PCB-contaminated soil. *See* Housatonic River Floodplain User Survey Summary Report (Jan. 20, 2003), AR41711 ("User Survey"). According to GE, the User Survey, "collect[ed] site-specific data on recreational use within the Housatonic River floodplain between the Confluence [of the East and West Branches] and Woods Pond Dam" through "intensive observations of most of the recreational [Exposure Areas] in this stretch (nearly daily for many)." Comments of GE on the U.S. EPA's Human Health Risk Assessment for the Housatonic River Site – Rest of River at 3-7 (July 28, 2003), AR45319 ("GE Comments on the 2003 HHRA"). Specifically, GE contends that the User Survey documents that human use of many of the

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the cap." Letter from Andrew T. Silfer, GE, to Robert Cianciarulo, US EPA, at 2, AR558617, at pdf 33.

designated areas in the River's floodplain occurs much less frequently than the Region presumed when estimating exposure and risk. The Region maintains that it "responded to GE's comments on the floodplain exposure assumptions in the [Response to Comments]" and that GE has "recycled" its exposure comments on the Draft Permit without confronting the Region's explanation in the Response to Comments. Region Resp. to GE Pet. at 43. Further, the Region argues that it addressed GE's floodplain exposure arguments in several other places in the record, including through an independent peer-review process. *Id*. at 43-44.

The Response to Comments responds to GE's arguments on human exposure assumptions in general terms, but it does not specifically discuss the User Survey. That said, the documents cited in the Response to Comments concerning development of the Human Health Risk Assessment,[27] including the independent peer review of the draft Assessment released in April 2003 and the Region's Responsiveness Summaries to the peer review and to public comment, provide further detail as to the User Survey. *See, e.g.*, RTC at 51. What these documents show is that the Region closely considered the User Survey on two separate occasions and that the User Survey was also submitted to and considered by the independent peer review committee for the Human Health Risk Assessment.

GE submitted the User Survey to the Region in January 2003. Given the timing, the Region did not have the opportunity to incorporate the information from the User Survey into the version of the seven-volume Human Health Risk Assessment that was released in June 2003. Human Health Risk Assessment for Rest of the River, Vol. IIIA, Appendix B at 4-9, (June 6, 2003), AR44019 ("2003 Human Health Risk Assessment" or "2003 HHRA").

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[27] The Region released three iterations of the Human Health Risk Assessment for comment. In April 2003, the Region released a draft version of the Assessment on which GE commented. *See* [Draft] Human Health Risk Assessment GE/Housatonic River Site Rest of the River (Apr. 11, 2003) AR 43065, 43067, 43071, 43075, 43077. In June 2003, the Region issued a revised version for peer review and additional public comment. [2003] Human Health Risk Assessment GE/Housatonic River Site Rest of the River (June 6, 2003), AR44019. In February 2005, the Region released another revision. [Revised] Human Health Risk Assessment GE/Housatonic River Site Rest of River (Feb. 11, 2005), AR219190. It sought public comment on the new information in this second revision. *See* Responsiveness Summary to Public Comments On New Information Human Health Risk Assessment for the GE/Housatonic River Site Rest of River at 2 (June 2005), AR225585.

In its comments on the 2003 Human Health Risk Assessment, GE argued that the Region should revise the Assessment to take into account the User Survey. GE Comments on the 2003 HHRA at 3-7 to 3-8. GE relied upon the User Survey to critique the Region's assessment of, among other things, the frequency of recreational use of the ninety "Exposure Areas" in the floodplain that the Region examined in conducting the Human Health Risk Assessment. According to GE, the User Survey showed major discrepancies between the estimated frequency of use and actual use of many of the Exposure Areas. GE specifically emphasized that as to twenty-seven of the ninety Exposure Areas, the User Survey data contradicted the Region's conclusion that the reasonable maximum exposure frequency for individuals in these areas is ninety days per year. *Id*. at 3-7. GE pointed out that in these twenty-seven Exposure Areas, "the survey showed either no recreational users or six or fewer total recreational visits over the season," and argued that "if the frequency of usage envisioned by EPA in those [Exposure Areas] were occurring, the survey would have observed more usage." *Id*. GE submitted these comments to the Region as well as to the independent peer review committee, and the record shows that the committee discussed the survey at its public meeting. *Id*. at i; Peer Review Comments of Stephen T. Washburn on EPA Human Health Risk Assessment GE/Housatonic River Site Rest of River at 9 (Dec. 17, 2003), AR200651 ("Washburn Comments on 2003 HHRA").

Despite GE's arguments, five of the seven peer reviewers of the 2003 Human Health Risk Assessment concluded that the Region's exposure "approach, including the selection of exposure scenarios, receptors, exposure parameters, and risk estimates used to estimate risk from direct contact, was reasonable and consistent with EPA policy." Responsiveness Summary to Peer Review of the 2003 HHRA at 16 (March 2004) AR204922 ("Resp. Summary to Peer Review of 2003 HHRA"). The two dissenters on this point cited the results of the User Survey to conclude that the Region had overestimated exposure frequency by recreational users. Peer Review Comments of Roger O. McClellan on the 2003 HHRA at 11, 15 (submitted Dec. 17, 2003) AR200648; Washburn Comments on 2003 HHRA at 9. In response to the dissenting views, the Region indicated it would review "[t]he exposure frequencies for individual exposure areas for the general recreation scenario" and that "[o]bservations provided in the Housatonic River Floodplain User Survey will be considered in the development of the exposure frequencies for the current use scenarios." Resp. Summary to Peer Review of 2003 HHRA at 19.

In 2005, the Region revised the 2003 Human Health Risk Assessment in light of peer review and public comments and then reissued it. The Region added detail "on the strategies for selecting exposure frequencies," and expanded the

evaluation of exposure frequency in recreation areas as well as current and future uses in each of the ninety exposure areas. Changes/Additions to the Revised HHRA at 2, 5-6 (Feb. 2, 2005), AR220704. These changes included adjustments to exposure assumptions for some of the exposure areas. Responsiveness Summary to Public Comments on New Information in Revised HHRA at 24-30 (June 2005), AR225585 ("Resp. Summary to Public Comments on Revised HHRA"). The Region explicitly noted that the specific Exposure Area frequency-of-use estimates "were based on field observations by EPA, the results of the GE Housatonic River Floodplain User Survey, nonresidential wildlife watching frequencies and/or professional judgment." Rev. HHRA, Vol. IIIA, at 6-22 (citations omitted). The Region also sought public comment on this revised 2005 Human Health Risk Assessment.

GE submitted comments on the revised Human Health Risk Assessment, again contesting the Region's conclusions on the frequency of use of certain recreational areas. While acknowledging that the Region had now taken the Floodplain User Survey data into account, GE claimed that the Region had been "selective" in how it relied on these data, "us[ing] the [User Survey] data when they support more conservative assumptions about the frequency of use of individual [Exposure Areas], but * * * not [when they support] reduc[ing] the exposure frequencies for some [Exposure Areas] for which the [User Survey] data clearly indicate little to no use." GE Comments on Revised HHRA at 7 (Apr. 1, 2005), AR223749. GE therefore requested that the Region "revisit" its exposure frequency estimate for nine of the ninety Exposure Areas. *Id.*

In responding to these comments, the Region first explained that it had used multiple lines of evidence in addition to the User Survey in estimating exposure frequency. Resp. Summary to Public Comments on Revised HHRA at 24. The Region explained that this other evidence "included the presence of trails or other evidence of use patterns (e.g., campfire ring), observations of use by individuals associated with the project other than those conducting the [User Survey], relative size of the parcel, and proximity to and accessibility from nearby current or future residential properties and/or established recreational areas (e.g., Canoe Meadows Audubon Sanctuary)." *Id.* The Region also noted certain limitations in the User Survey and how the other data complemented the Survey:

> It should be recognized that in a survey of the type and duration of the [User Survey], while observation of use is definitive, the lack of observation of use is not; therefore, information from such a survey should not be used while ignoring other information. In addition, such a survey cannot reflect the use that would occur in the absence

> of PCB contamination. That is why EPA and [Massachusetts Department of Environmental Protection] used other information and criteria, along with the information from the [User Survey], to assign exposure frequencies for individual parcels.

Id. at 24-25. The Region then turned to each of the nine Exposure Areas as to which GE had provided area-specific comments and addressed GE's comments on each Exposure Area in detail, discussing the characteristics of each Exposure Area, including the size of the parcel, the portion of the parcel that contains riverbank or floodplain, and the proximity of the parcel to recreational areas and attractions, trails, residences, and roads frequently used by runners, hikers, and dog walkers. *Id*. at 25-30. The Region agreed to reduce the frequency exposure estimate for one of the nine Exposure Areas contested by GE but left the frequency exposure estimates for the other eight unchanged. *Id*. at 24-30.

In summary, the record shows thorough consideration by the Region of the User Survey and GE's views on how that data should be incorporated into the exposure assessment. An independent peer-review committee reviewed this same material and, by majority vote (5-2), approved the Region's approach. The Region took the views of both GE and the dissenting peer reviewers into account, making revisions based on their comments and explaining why it did not make other proposed revisions. GE first protested the Region's frequency-of-use conclusions as to twenty-seven of ninety Exposure Areas, but after two rounds of comments, the scope of the disagreement was reduced to just eight Exposure Areas. Rather than challenging the Region's detailed analysis of the eight disputed Exposure Areas that is documented in the record, GE, in its Petition, reverts to the broad assertion that the Region's "exposure assumptions * * * are unrealistic and unsupported," citing the User Survey generally. GE Pet. at 42. Given that the Region's Human Health Risk Assessment Responsiveness Survey responded to both GE's generic and specific comments on reliance on the User Survey and that GE has offered no reason in its Petition as to why these record explanations are incorrect, GE fails to show any clear error by the Region.

Finally, GE argues that even if the Region's exposure assumptions were to be followed, the Region's choice of the floodplain alternative requiring removal of 80,000 cubic yards of contaminated material would be clearly erroneous because an alternative requiring significantly less removal would meet EPA's minimal standard for human cancer risk. The Region's chosen floodplain alternative requires remediation to meet a 1 in 100,000 cancer risk standard in floodplain areas, with the exception of Core Areas where a 1 in 10,000 standard is imposed. Comp. Analysis at 10 tbl.1. GE claims that the alternative it identified as "best suited"

would meet the 1 in 10,000 standard in all of the floodplain areas and 1 in 100,000 standard in most of the direct-contact floodplain areas. GE Pet. at 42-43. Although SED 10/FP 9 does not meet the 1 in 100,000 standard in all instances required under SED 9/FP 4 MOD, GE argues that because the Region "already accepts a [1 in 10,000] cancer risk as protective both for fish consumption and for direct-contact exposure in a portion of the floodplain (i.e., Core Areas), such an alternative would be fully protective under EPA's own benchmarks." *Id*. at 43.

But the Region did not choose a 1 in 10,000 standard as the sole dividing line between acceptable and unacceptable cancer risks. Rather, the Region relied on CERCLA's National Contingency Plan, which establishes a cancer risk range of 1 in 10,000 to 1 in 1,000,000 for cleanup-level standards. RTC at 46; *see* 40 C.F.R. § 300.430(e)(2)(i)(A)(2). The Region chose a 1 in 100,000 cancer risk standard for floodplain areas in general, taking into account the full range of remedy evaluation criteria. Only in the Core Areas – where there was a high concern for damage to habitat of Massachusetts-listed species – did the Region conclude that a lesser standard for protection against cancer risk, 1 in 10,000, was justified. RTC at 216. GE's argument is overly simplistic and ignores how the Region addressed concerns regarding the harm that remediation will cause to sensitive habitats. GE does not grapple with the fact that the Region approached the choice of a cancer risk standard as a standard that could fall within a defined range based on a number of different criteria and that the Region chose the 1 in 10,000 standard for only a few areas that were selected based on extraordinary ecological concerns. Because GE does not challenge the conceptual approach the Region followed or explain how the Region clearly erred in how it applied its conceptual scheme to the facts, GE has not shown clear error by the Region.

(ii) *Restoration of Environment Following Cleanup*

GE claims that the Region did not "properly" balance "the selected remedy's benefits against its adverse environmental impacts." GE Pet. at 33. According to GE, there is no dispute that the selected remedy "will have significant negative impacts" on the Housatonic River environment, and GE argues that the Region has not substantiated its claim that restoration measures will ameliorate these impacts. *Id*. at 33-34. GE specifically argues that the Region "has never identified these [restoration] measures, or assessed the likelihood of their success," and thus lacked the necessary knowledge to properly balance environmental harms from the remedy with environmental restoration benefits. *Id*. at 34-35. GE also asserts that "the record contains substantial evidence indicating that a restoration program cannot and will not prevent the long-term impacts of the selected remedy."

Id. at 37. As examples, GE cites the Final Permit's requirements for stabilizing eroding banks in Reach 5 and removing and replacing "as many as 36 acres of mature trees in floodplain wetland forested habitats." *Id*. at 37-38. Further, GE rejects the Region's assertion that prior river restoration projects have been successful, arguing that those other projects are not comparable to the scope or conditions of the Rest of the River cleanup. *Id*. at 38-39. Finally, GE claims that the Region, "face[d] [with] overwhelming evidence" that its restoration plan will not succeed, has put forward an "entirely new justification" for the Permit's selected remedy: that the Rest of the River will be restored only to the "extent feasible," and the restored River will not mirror pre-existing conditions but will instead be a "novel ecosystem." *Id*. at 39-40.

As to the substantive merit of GE's claims,[28] the Region argues that "specific potential restoration approaches" are identified throughout the record, pointing to the Revised Corrective Measures Study and the Comparative Analysis as well as the Permit. Region Resp. to GE Pet. at 39. The Permit does not describe all details of restoration techniques, the Region explains, so that the specifics of the cleanup can be adapted to the varied conditions and habitats in the River and floodplain during the remedial design process. *Id*. at 40. The Region notes that the Comparative Analysis as well as reports presented in an all-day public meeting in 2011 include evaluations of the feasibility of restoration measures, and emphasizes the success of prior restoration projects, including the earlier restoration of Reaches 3 and 4 on the Housatonic River by the ½ Mile and 1 ½ Mile Removals. *Id*. at 33-37. Finally, the Region denies it has defended the feasibility of restoration based on new arguments.

(a) *Identification of Restoration Measures*

GE argues that the Region "never identified" the specific restoration measures required by the Final Permit for mitigating environmental harm from cleanup actions in and around the Housatonic River. GE Pet. at 35-37. GE lists the excavation and stabilization of river banks and the removal of mature trees as

[28] The Region contends that GE's claims on restoration should be denied because GE has simply reiterated its comments on the 2014 Draft Permit without explaining "why EPA's response to [those] comment[s] was clearly erroneous." Region Resp. to GE Pet. at 32. To a degree, the Region's contention is accurate, but GE has specifically challenged some aspects of the Response to Comments, including, for example, the Region's reliance on the success of the ½ Mile and 1 ½ Mile Removals. *See* GE Pet. at 38-39.

primary examples of cleanup measures for which restoration techniques are "unspecified." *Id*. at 37-38. GE also claims that the Region has not defined what is meant by an "active restoration program" for buffer zones around vernal pools. *Id*. at 36.

The record contradicts GE's assertions. The Final Permit identifies a number of specific restoration measures. S*ee, e.g.*, Permit § II.B.2.a. (describing measures for restoration of river banks including the principles of Natural Channel Design and bioengineering); Comp. Analysis Attachments 1, 11, & 12 (discussing channel realignment for restoration, bank restoration, and floodplain restoration); RTC at 119-20 (discussing restoration of floodplain after removal of mature trees).[29] These sources contain detailed discussions of bank restoration and restoration of woodland floodplain, the primary restoration measures GE characterizes in its Petition as "unspecified."

GE's assertion that the "active restoration program" for buffer zones around vernal pools is undefined also lacks merit. *See* GE Pet. at 36. GE commented extensively on the Draft Permit regarding the lack of defined remediation and restoration of the vernal pools. GE Comments on Draft Permit at 57-59. The Region responded by adding further detail on vernal pools to the Permit. RTC at 218-20. In addition, the Region discussed "active restoration measures" for floodplains, including those around vernal pools, in the Response to Comments and the Final Permit. *Id*. at 119-20, 128-29; *accord* Permit § II.B.3.a(e) n.11. These measures include use of best construction practices to minimize soil compaction; scale of staging areas and access roads; time-of-year restrictions; reuse of felled tree trunks to replace coarse woody debris; installation of various temporary ground covers and barriers to flow; and active planting, transplanting, and seeding of native species. RTC at 119-20; Permit II.B.3.a(e) n.11. The Board concludes that GE failed to establish clear error on this ground.

[29] GE-produced documents such as the Revised Corrective Measures Study Report and the 2010 Corrective Measures Study Supplement also contain detailed discussions of restoration measures for remedial alternatives at a level of specificity consistent with the Final Permit. *See* Rev. CMSR at 5-1 to 5-106; GE Supplement to Response to EPA's Interim Comments on CMS Report: Evaluation of Examples Areas (Feb. 2010), AR461087.

(b) *Restoration of Riverbanks*

GE argues that excavation and stabilization measures required by the Region for portions of the riverbank in Reach 5 will result in "a long-term negative change in the character of the banks." GE Pet. at 38. GE states that these changes will be permanent and that "[r]egardless of the technique used, such stabilization will necessarily be designed to prevent the natural processes of bank erosion and lateral channel movement, which result in vertical and/or undercut banks that also provide critical habitat for birds and animals." *Id*. at 37-38.

In the Response to Comments, the Region made several points to rebut these assertions. *First*, the Region emphasized that riverbed capping and bank excavation and stabilization are required only for areas with a concentration of PCBs high enough to harm various species or contaminate downstream waters as determined by the Human Health and Ecological Risk Assessments and confirmed by independent peer reviews. RTC at 104. Disagreeing with GE's contention that the remedy included in the Final Permit "would destroy 126 acres of aquatic riverine habitat," the Region countered that the cleanup "will restore approximately 126 acres of currently contaminated aquatic riverine habitat." RTC at 104. For example, the Region explained that:

> benthic invertebrate populations in the Rest of River are demonstrably compromised by the high concentrations of PCBs in riverine sediments, * * * and fish tissue is highly contaminated. Removal and capping of these contaminated sediments will allow benthic invertebrates to re-colonize the area and establish robust populations uncontaminated by PCBs, and will result in decreases in fish tissue concentrations, thus decreasing risks to human health and the environment.

Id. Specific to riverbank excavation and stabilization, the Region explained why it decided to require this work where soils are highly contaminated:

> EPA recognizes the value of undisturbed river banks and their role in providing habitat for some species of mammals, birds, and other taxonomic groups as well as in providing stability against erosional forces. However, EPA also recognizes, and has demonstrated via direct observations, data, and the Housatonic River Modeling Study, that many areas of river bank in Reach 5A are highly contaminated with PCBs originating from the GE facility in Pittsfield, MA and that eroding PCB-contaminated banks contribute significantly to PCB contamination that is transported downstream.

Id. at 107.

Second, the Region called attention to the fact that SED 9 MOD restricted riverbank excavation and stabilization primarily to Reach 5A with only "selected areas" in Reach 5B and "no significant length" of Reach 5C affected. *See* RTC at 104, 150; Permit §§ II.B.2.a, .b, & .c. Taking this into account, the Region concluded that in light of the fact that "bank remediation/restoration will affect only a limited amount of the nearly 20 miles of river bank in Reach 5, EPA considers the short-term effects of bank remediation/restoration to be acceptable considering the long-term benefits of PCB removal and associated reduction in risk and downstream transport." RTC at 107. Specifically, as to effects on animal habitat, the Region noted that because the extent of bank excavation and stabilization is limited, "disruption of wildlife use, including slides and burrows of mammals and access routes for reptiles, amphibians, and smaller mammals between the River and the floodplain, will also be limited." *Id*. For the same reason, the Region concluded the effect on the reduction of mature trees would be minimized. *Id*.

Third, the Region considered but rejected GE's view that stabilizing excavated banks would have a negative impact on the character of the River. The Region emphasized that the Housatonic River is not a pristine environment unaffected by human activity. To the contrary, the Region noted that the River is in an unstable pattern due to human impacts "over the past two centuries." *Id*. at 148 (quoting (Comp. Analysis, Attachment 11 at 9)). The Region noted that "[a]rtificial straightening predominantly associated with railroad construction and agricultural practices likely occurred between the 1850s and 1886, resulting in 'large-scale manipulation of the river channel * * * that would have shifted the channel away from the quasi-equilibrium condition existing at the time of the straightening.'" *Id*. (quoting Comp. Analysis, Attachment 2 at 9). Since those human interventions, the Region explained, "the Housatonic River has been undergoing a period of channel adjustment that has resulted in the current planform[30] and formation of the existing meanders along much of its length." *Id*. In fact, the Region pointed out that the River's natural process of recovery has resulted in some of the same negative effects that GE argues will result from the

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[30] A river's planform is the shape of the river channel viewed from above. *See* Federal Interagency Stream Restoration Working Group, *Stream Corridor Restoration: Principles, Processes, and Practices* 1-25, 1-26 fig.1.29, 7-47 to 7-48 (08/2001 rev.), https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/water/manage/restoration/?cid=stelprdb1043448.

cleanup. For example, the Region explained that the River is not "a predominantly closed-canopy system in its present state" because "[o]ngoing pre-remediation river processes have regularly resulted in bank erosion and loss of mature riparian trees over past decades since revegetation following the historic clearing of the adjacent floodplain." *Id*. at 108-09.

The Region further observed that the banks in Reaches 5A and 5B currently are eroding at a rate that "is significantly higher than rates for stable reference streams, and is contributing a significant portion of the PCB load to the river." *Id*. at 149. Taking this into account, the Final Permit requires excavated banks to be reconstructed using the principles of Natural Channel Design[31] combined with a priority on using bioengineering restoration techniques over more rigid structures (e.g., rip rap or hard armoring). *Id*. at 149-50. The Region noted that use of Natural Channel Design principles "will enhance overall stability of the river and reduce the risk of shifting erosion potential to areas where bank remediation is not conducted." *Id*. at 149. Use of bioengineering reconstruction techniques for banks as part of the Natural Channel Design process will not only create habitat for species but will allow for a degree of channel adjustment not possible with hard armoring of banks.[32] *Id*.; Comp. Analysis, Attachment 11 at 5. The Region concluded that the Permit's requirement for use of Natural Channel Design as well as its priority for use of bioengineered restoration of banks "will reduce the risk of PCBs eroding into the river from unremediated bank and floodplain soils while still maintaining the meandering and dynamic nature of the river." RTC at 150.

Fourth, the Region relied on the successful restoration of Reaches 3 and 4, which are located immediately above Reach 5, as part of the ½ Mile and 1 ½ Mile

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[31] Natural Channel Design is "a method of stream restoration that attempts to create a stable stream channel that is capable of balancing flows and sediment loads by accelerating the trajectory towards a sustainable, dynamic equilibrium by working with the stream processes. Stmt. of Basis at 5; *see Chapter 11 Rosgen Geomorphic Channel Design*, *in* Part 654 Stream Restoration Design, National Engineering Handbook (U.S. Dep't of Agric., Nat. Res. Conservation Serv. 2007), https://directives.sc.egov.usda.gov /OpenNonWebContent.aspx?content=17771.wba.

[32] The administrative record contains extensive discussion of various bioengineering techniques for stabilizing banks, including the use of woody debris toe protection, soil bioengineering, and log and rock structures such as j-hooks/log vanes and riffle habitat. Comp. Analysis, Attachment 11 at 5-8; RTC at 107, 119, 149; Rev. CMSR at 3-16 to 3-19, tbl.3-22.

Removals to support the Permit's restoration plan for the banks of Reach 5. Due to greater contamination and greater urban and residential development in Reaches 3 and 4, these cleanup actions used much more-extensive bank stabilization and much more hard-armoring of stabilized banks than the selected remedial approach for Reach 5. *Id.* at 105, 107, 150-51. Despite the extensive use of hard-armoring, the area of the 1 ½ Mile Removal has seen a successful rebound in habitat for small mammals. *Id*. at 106, 107. The Region noted that:

> local observations from the 1 ½ Mile [Removal] Reach * * * show the existence of a robust beaver population a few years following bank stabilization. The beaver population rebounded so successfully in this area that additional plantings, herbivore control measures, and continued maintenance of protective tree cages were necessary to help ensure successful revegetation as documented in the Annual Monitoring Reports.

Id. at 107-08. Vegetation has also quickly returned with high survival rates for planted specimens and "timely establishment of canopy trees on restored river banks." *Id*. at 107, 151.

GE does not address the Region's detailed rebuttal in the Response to Comments of GE's claim that the Permit's restoration plan for the Rest of the River's riverbanks will cause permanent damage. Hence, as to riverbank restoration, GE has not supported its claims that the Permit's restoration program will result in a long-term negative change in the character of the riverbanks and that the Region lacked the necessary knowledge to properly balance environmental harms from the remedy with environmental restoration benefits.

(c) *Restoration of Floodplain Woodlands*

GE argues that the Region does not address significant issues with restoration of floodplain woodlands from which mature trees have been removed. GE Pet. at 38. GE asserts that its experts provided evidence that a mature forest would take 50 to 100 years to grow back and, even then, "'restoration efforts' are not likely to be successful in returning the affected habitats to their pre-remediation conditions." *Id*.

The Response to Comments showed that, as with bank restoration, the predictions of GE's experts concerning the length of time to restore mature trees in the floodplain were overstated. The Region pointed to numerous factors indicating these woodland areas could recover quickly and that the negative impact of tree removal would be minimal. *First*, the Region again noted that the Housatonic River

area is not a pristine, mature environment that has "evolved over millennia." RTC at 120. Although some trees are as old as 100 years, the floodplain woodlands "consist primarily of much younger trees" due to human impacts that have included "clearing and deforestation of nearly the entire watershed." *Id*. at 119. In fact, the current floodplain woodlands have grown back in just the last 60 to 100 years, even though these woodlands were "not aided by active restoration activities and without careful monitoring and adaptive management." *Id*. at 120. This recovery process, the Region concluded, can be accelerated with restoration steps such as "active planting, transplanting, and seeding of native species occurring in undisturbed floodplain and riparian forest." *Id*. Further, the Region noted that the recovery process will be aided by post-construction monitoring of "[t]he survivorship, health, and growth of planted trees" and by "vegetation management * * * to promote optimal growth rates of forest tree species." *Id*.

Second, the Region emphasized that the portion of the Housatonic River floodplain woodlands planned for remediation is only "an estimated 36 of the 1000 acres of the total floodplain area, with some additional disturbance required for supporting infrastructure." *Id*. The negative impacts of remediating this relatively small acreage will be further mitigated by dispersing the work over time and location, the introduction of "coarse woody debris * * * through the reuse of tree trunks that were removed during remediation," and use of construction methods that avoid excess soil compaction. *Id*. at 119.

Third, according to the Region, the Housatonic River floodplain woodlands are dominated by fast-growing deciduous trees, including silver and red maples and cottonwood. *Id.* at 120. Silver maples "can grow 3-7 feet per year achieving a mature height of 90 feet, and [are] a source of fast shade, large woody debris, and litter in streams." *Id*. Red maples can grow 2 to 5 feet per year and cottonwood up to 6 feet per year. *Id*. The Region concluded that "the dominance of these species in the natural communities and conditions of the Rest of the River supports EPA's position that restoration of forested floodplain in these areas is feasible in a reasonable time frame following remediation." *Id*.

Fourth, the Region noted that the likely success of the restoration of the floodplain woodlands in the Rest of the River is supported by the successful restoration of similar areas as part of the 1 ½ Mile Removal in Reach 4. That restoration project lost very few transplanted trees, and within a few years a high percentage of the trees had exceeded 25 feet in height. *Id*. at 121. For example, GE planted over 650 trees and shrubs as part of that cleanup and "achieved a near 100% survival rate." *Id*.

As with its claims about riverbank restoration, GE does not address the Region's detailed rebuttal in the Response to Comments of GE's contention that the floodplain woodlands restoration effort will be unsuccessful. Accordingly, GE's argument on floodplain woodlands restoration also does not support its claims that the Permit's restoration program will not likely be successful in returning the affected habitats to their pre-remediation conditions and that the Region lacked the necessary knowledge to properly balance environmental harms from the remedy with environmental restoration benefits.

(d) *The Relevance of the ½ Mile and 1 ½ Mile Removals*

GE objects to the Region's conclusion that the restoration of Reaches 3 and 4 in the Housatonic River by the ½ Mile and 1 ½ Mile Removals reinforces its view that the Rest of the River restoration efforts will succeed. GE argues that those two Reaches are not comparable to the Rest of the River, particularly Reaches 5 and 6 where most of the remediation will occur. GE Pet. at 38-39.

In the Response to Comments, the Region explained why the ½ Mile and 1 ½ Mile Removals in Reaches 3 and 4 are relevant examples of how a remediation and restoration plan for the Rest of the River can convert a chemically-damaged river into a healthier ecosystem. The Region described the restoration of Reaches 3 and 4 as more challenging than the restoration of the Rest of the River because "[d]ense urban and residential development immediately adjacent to the river in the upstream reaches precluded significant reshaping of the banks or implementing the principles of [Natural Channel Design], which may have allowed less armor, or use of bioengineering, or just revegetation to stabilize the slopes." RTC at 150. The opposite approach is called for in the Final Permit for the Rest of the River, with hard-armoring allowed only as a last resort to protect fixed structures such as bridges and culverts. Permit § II.B.2.a(1)(e); RTC at 150-51. Further, bank excavation and stabilization was conducted on "all banks" in Reaches 3 and 4 as part of the ½ Mile and 1 ½ Mile Removals compared to the more limited plan for Reaches 5 and 6, leaving little of the existing environment in place to aid in recovery. *See* RTC at 105, 107. As the Region noted, with respect to riverbank habitat, the more limited extent of riverbank excavation and stabilization in Reach 5 compared to the ½ Mile and 1 ½ Mile Removals means that "the disruption of wildlife use, including slides and burrows of mammals and access routes for reptiles, amphibians, and smaller mammals between the River and the floodplain, will also be limited." *Id*. at 107.

Despite challenges the Region faced in restoring the area of the ½ Mile and 1 ½ Mile Removals, the record indicates that remediation and restoration measures

there have been remarkably successful. As described in Part IV.A.1.c(iii)(a)(1) above, beavers thrive on the hard-armored banks, replanted floodplain woodlands have lost very few trees, and many replanted trees have quickly achieved heights of 25 feet and above. The Region also documented improved benthic invertebrate and fish populations as well as significant reductions in PCB concentrations in the benthic invertebrates. The Region explained that as soon as one year after completion of the ½ Mile and 1 ½ Mile Removals "benthic invertebrate populations had recolonized the sediment bed as measured by species richness, density, and diversity, and * * * the benthic community had higher diversity, increased abundance, and increased presence of pollution-intolerant taxa than before the remediation occurred." RTC at 105. Further, the Region noted that within the same time period, "[t]he fish species composition and numbers also were observed to meet expected conditions." RTC at 105. Importantly, "tissue PCB concentrations in the invertebrates, which form the base of the aquatic food chain, were reduced by over 99% as compared with pre-remediation levels." *Id*. A survey GE conducted five years later "obtained substantially the same results, with even further reductions in tissue PCB concentrations observed." *Id*. The Region concluded that "[t]here is no reason to believe that recovery in Reaches 5A and 5C, following sediment remediation, will be any less rapid or complete, particularly considering that recovery will be enhanced by placement of a habitat layer as part of the Engineered Cap." *Id*.

GE takes the opposite position, claiming that the restoration challenges in Reaches 5 and 6 are "far more extreme" than in Reaches 3 and 4 and thus the successful restoration of Reaches 3 and 4 is irrelevant to the prospects for restoring the Rest of the River, particularly Reaches 5 and 6. According to GE, Reaches 3 and 4 "are located in a largely urban area, * * * are relatively straight, and have a generally narrow floodplain with steep banks." GE Pet. at 39. In contrast, GE describes Reaches 5 and 6 as:

> [C]onsist[ing] of a largely undeveloped and unfragmented forested riverine corridor that winds in a sinuous fashion for more than 10 miles through a diverse ecosystem. This area includes an extensive complex of riverbed, riverbank, wetland, floodplain, and backwater habitats and a network of vernal pools, and thus provides exceptional and unique habitats for many wildlife and plant species, including numerous state-listed rare species.

Id. These characteristics, GE argues, make restoration of Reaches 5 and 6 more difficult than restoring Reaches 3 and 4. *Id*.

As support for this argument, GE cites a report prepared by its experts and submitted as an attachment to GE's comments on the Draft Permit. *Id*. (citing GE Comments on Draft Permit, Attachment D, "A Scientific Response to EPA's Conclusion that Restoration of the Housatonic Rest of River Will Be Fully Effective and Reliable" at 19-20). However, that report did not address or evaluate the success of the ½ Mile and 1 ½ Mile Removals in restoring Reaches 3 and 4. Instead, GE's experts addressed the Region's reliance on several prior river restoration projects *outside of the Housatonic River* to demonstrate that the Region's proposed remediation and restoration plan for the Rest of the River could be accomplished. GE Comments on Draft Permit, Attachment D at 17-20.

While GE asserts that this report calls into question the Region's reliance on the success of the ½ Mile and 1 ½ Mile Removals, GE does not explain exactly why that is so. And upon careful review of the record, we find GE's reliance upon that report misplaced. In that report, GE's experts opine that the other restoration projects were not comparable to the Rest of the River because while the Rest of the River is an "ecologically vibrant reach of river," these other projects involved "river sections [that] had been channelized, dammed, or otherwise physically and/or chemically compromised and restoration efforts consisted of removing point and non-point source pollutants and restoration or complete creation of the physical structure of the systems." *Id*. at 17-18. In fact, the experts emphasized these projects were addressing "biologically dead" streams, in contrast to "the thriving ecosystem of the Rest of River." *Id*. at 19-20. The experts explained that demonstrating successful restoration of a biologically dead stream does not provide a useful comparison to restoring a thriving ecosystem because with a dead stream "anything is better than its prior condition." *Id*. at 19. The experts suggested that this low bar for judging the success of restoration of a dead stream could be met simply by "reduc[ing] source pollutants, re-introduc[ing] structure into the stream, and * * * stabiliz[ing] the highly eroded and degraded banks," without considering biological indicators. *Id*.

The difficulty with GE's argument based on this report is that it rests on three premises, none of which is supported by the record: (1) that Reaches 5 and 6 of the Housatonic, unlike the other projects, comprise a thriving ecosystem not impaired by chemical pollution or physical channelization; (2) that Reaches 3 and 4, where the ½ Mile and 1 ½ Mile Removals were conducted, were, similar to the other projects, biologically dead prior to remediation and restoration; and (3) that the success criteria for the ½ Mile and 1 ½ Mile Removals, as with the other projects, focused solely on non-biological criteria.

First, as the Region noted in the Response to Comments, GE's description of the Rest of the River as ecologically vibrant overlooks the fact that both "the Housatonic River and its floodplain are chemically and biologically degraded by the PCB contamination present," and the River and surrounding area have been "physically degraded through historical alteration of the river channel and floodplain." RTC at 93. The independently peer-reviewed Ecological Risk Assessment confirmed that several animal groups, including benthic invertebrates, amphibians, and piscivorous birds, are highly threatened by the current levels of PCBs in at least some portions of Reaches 5 and 6. NRRB Package at 6-31.

Second, the record does not support GE's implication that Reaches 3 and 4 were previously biologically dead. A 1994 study prepared by a GE contractor examined fish and benthic invertebrate populations at ten sites above and below the GE facility in Pittsfield. Chadwick & Associates, Inc., Aquatic Ecology Assessment of the Housatonic River, Massachusetts (May 1994), AR42482. One of the sites was located in Pittsfield below the GE facility but above the confluence of the East and West Branches of the Housatonic (i.e. above Reach 5). *Id*. at 2-3 and fig.1. The study concluded that "[f]ish population parameters were generally similar at comparable sites upstream and downstream of the GE facility" and that "fish species diversity and richness at the ten study sites compare very well to the results of previous studies on the Housatonic River and studies on other Northeastern rivers." *Id*. at i. The study also concluded that "[b]enthic invertebrate populations were healthy and diverse both upstream and downstream of the GE facility." *Id*. In particular, in assessing the shallow water sampling sites downstream from the GE facility, including the site in Pittsfield, the study showed "[s]pecies composition included balanced communities with numerous orders of insects." *Id*. at 53. A 2007 post-remediation assessment of 1 ½ Mile Removal presented a more qualified picture of the abundance and diversity of benthic invertebrates in this area of Reach 4 prior to its remediation but certainly did not indicate this stretch of the River was biologically dead.[33] 2007 Post-Remediation

[33] This study included three sampling sites in the 1 ½ Mile Removal. Aquatic Community Assessment at 4-6. In a qualitative ranking of the three sampling sites as of 2000, the report categorized one of the sampling sites as having at least "[g]ood quality[,] no detrimental changes to the biological community" on each of the three evaluation criteria in the study; the second site as meeting the good quality standard on one of the criteria but falling below the lowest standard of "[l]owest quality, some changes to aquatic life," on the other two criteria; and the third site as falling below the lowest quality standard

Aquatic Community Assessment 1 ½ Mile Removal Reach (Dec. 2007), AR283300 ("Aquatic Community Assessment"). The lack of a sharp distinction between the Rest of the River and Reaches 3 and 4 where the ½ Mile and 1 ½ Mile Removals were conducted (i.e. ecologically vibrant versus biologically dead) is not surprising given that the end of the 1 ½ Mile Removal in Reach 4 is the starting point for Reach 5 and the Rest of the River.

Third, the record shows that the success criteria for the ½ Mile and 1 ½ Mile Removals encompassed more than just judging whether the restoration accomplished physical goals, such as reducing pollution, adding structure, and stabilizing banks. In fact, the 2007 and 2012 Post-Remediation Assessments focused on biological parameters, including reducing PCBs in benthic invertebrates as well as measures of the abundance and diversity of benthic invertebrate and fish populations. RTC at 105; U.S. EPA, *2007 Post-Remediation Aquatic Community Assessment 1 ½ Mile Removal Reach* at 1 (Dec. 2007). As recounted above, those assessments found thriving populations of benthic invertebrates and fish as well as greatly reduced PCB levels in benthic invertebrates.

In sum, GE has not demonstrated that the Region clearly erred in relying on successful restoration of Reaches 3 and 4 as supporting its conclusion regarding the prospect for a successful restoration of the Rest of the River. The failure of GE's experts to evaluate whether the ½ Mile and 1 ½ Mile Removals in Reaches 3 and 4 are potentially relevant to the cleanup and restoration of Reaches 5 and 6 leaves a significant gap in their analysis, and GE's attempt to bridge that gap in its Petition is unsuccessful. GE's argument, in reliance on its experts' report, overstates the ecological vibrancy of the Rest of the River. And in attempting to analogize the ½ Mile and 1 ½ Mile Removals to other stream restorations, GE overstates the biological impairment of Reaches 3 and 4, where the ½ Mile and 1 ½ Mile Removals were conducted, and understates the goal for measuring success of the ½ Mile and 1 ½ Mile Removals, which examined biological criteria as well as more structural considerations.

Generally, on matters that are fundamentally technical or scientific in nature, the Board defers to a permit issuer's technical expertise and experience, as long as the permit issuer has adequately explained its rationale and supported its reasoning in the administrative record. *FutureGen*, 16 E.A.D. at 733-35. Here, the

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on all three criteria. Despite the low ratings at the second and third sampling sites, benthic invertebrates were found at all three sites. *Id.*

Region thoroughly explained its reasoning and cited to the considerable evidence in the record supporting its conclusion on the technical issues regarding the relevance of the ½ Mile and 1 ½ Mile Removals to the restoration of the Rest of the River. As explained above, GE's challenge to the relevance of the ½ Mile and 1 ½ Mile Removals is unconvincing. Accordingly, we find that there was no clear error in the Region's reliance on the successful restoration of Reaches 3 and 4 through the ½ Mile and 1 ½ Mile Removals as evidence supporting the likely success of the restoration of the Rest of the River under the Final Permit.

(e) *Restoration to the Extent Feasible*

The record also does not support GE's argument that the Region's statements that restoration is to be accomplished to the "extent feasible" and that restoration will create a "novel ecosystem" represent an "entirely new justification" that shows "the arbitrary nature of the [Final] Permit." GE Pet. at 39-40.

According to GE, the Statement of Basis "described restoration as something that will 'return * * * the functions, values, characteristics, species use, and other ecological attributes existing prior to remediation,'" GE Pet. at 39 (quoting the Stmt. of Basis at 10), but that the Region "changed its tune" in the Response to Comments by describing the Rest of the River remedy as restoring the environment to the "extent feasible." *Id*. However, GE is simply wrong to claim this language represented a shift in the Region's position.

The Region makes clear in the Statement of Basis that restoration was expected only "to the extent feasible." Stmt. of Basis at 10. Below we quote the full sentence from the Statement of Basis describing the proposed restoration program, including the language (here italicized) that GE excised with an ellipsis:

> A restoration program will be required to address the impacts of the cleanup on state-listed species and their habitats and on the floodplain, river bottom and banks, impoundments, and vernal pools with the broad objective to return, *to the extent feasible* and consistent with remediation requirements, the functions, values, characteristics, species use, and other ecological attributes existing prior to remediation.

Id. (emphasis added).

GE's claim that the Region only recently adopted the term "novel ecosystem" language is also without merit. The term "novel ecosystem" is not a concept that the Region raised for the first time in the Response to Comments.

Rather, the Region had used the term "novel ecosystem" in the Response to Comments because GE itself used that term in its comments on the Draft Permit. RTC at 91. In its comments on the Draft Permit, GE had argued that a reference to the term "novel ecosystem" by one of the Region's experts in a report appended to the Region's Comparative Analysis indicated that the Region recognized that restoration was not possible. GE Comments on Draft Permit at 34 (citing Comp. Analysis, Attachment 12 at 1). Thus, not only did the Region not rely on the term "novel ecosystem" as a new justification for its remedy selection, it did not specifically advance the term in the Response to Comments as a justification for remedy selection either. Moreover, the contractor's use of that term did not signal something different than the type of restoration described in the Statement of Basis, and quoted above; rather, it simply recognized that any restoration would be affected by other factors, such as nitrification and human population, and thus remediation and restoration would create an environment that was in this sense "novel" to what predated the beginning of the remediation. *Id*.

(f) *Conclusion on GE's Restoration Argument*

We reject GE's claim that the Region did not properly take into account the potential adverse environmental impacts of the selected remedial action. As explained above, GE has not supported its claims that the Region did not identify restoration measures for the selected remedy, that the riverbank and floodplain woodlands remediation and restoration approach for the selected remedy will be unsuccessful, that it was inappropriate for the Region to regard the successful remediation and restoration of Reaches 3 and 4 as evidence that the selected remedy for the Rest of the River will be successful, and that the Region, in the Response to Comments, relied on new positions in support of the selected remedy. Therefore, GE has not shown that the Region clearly erred.

(iii) *Additional Work*

GE challenges three provisions in the Final Permit that compel, or allow the Region to compel, GE to do additional work related to PCB contamination of the Housatonic River beyond the Permit requirements directly pertaining to the cleanup alternative chosen, SED 9/FP 4 Mod. GE argues that each of these provisions is inconsistent with the terms of the Consent Decree. *First*, GE challenges provisions authorizing the Region to require GE to perform "additional actions" if certain performance standards are exceeded. GE Pet. at 43. *Second*, GE challenges a Permit provision requiring GE to perform additional "response actions" related to "Legally Permissible Future Project or Work" by third parties in or along the River or in its floodplain, such as construction or repair of structures. *Id*. at 48. *Third*,

GE challenges the Permit requirement making GE responsible for the inspection and maintenance of dams that are not owned by GE. *Id*. at 51.

(a) *Additional Work to Meet Downstream Transport and Biota Performance Standards*

The Final Permit contains performance standards for the design, execution, and monitoring of the cleanup. *See* Permit at 3 (defining "performance standards" at definition 21). GE contests two of these performance standards: the Downstream Transport performance standard and the Biota performance standard. The Downstream Transport performance standard sets maximum average annual values for PCBs in water crossing over the Woods Pond and Rising Pond dams. *Id*. § II.B.1.a(1). The Biota performance standard establishes a maximum average total PCB concentration in fish tissue in each Reach of the River. *Id*. § II.B.1.b(1). The Permit specifies that if a numerical performance standard is exceeded after the completion of construction-related activities (for the Downstream Transport performance standard) or fifteen years after the completion of construction-related activities (for the Biota performance standard), GE must "evaluate and identify the potential cause(s) of the exceedance and propose * * * additional actions necessary to achieve and maintain" the performance standards. *Id*. §§ II.B.1.a(1), II.B.1.b(a). Thereafter, the Region "will determine any additional actions necessary to achieve and maintain the Performance Standard in accordance with the [Consent Decree]." *Id*. §§ II.B.1.a(1), II.B.1.b(1)(a).

GE argues that under the Consent Decree the Region does not have "open-ended authority" to require "additional actions" to meet the Downstream Transport and Biota performance standards. GE Pet. at 44. Rather, GE maintains, the Consent Decree mandates that the Final Permit must specify the terms of any required response action. *Id*. at 45. In support, GE cites to the Consent Decree provision that the Region's proposal to modify the 2000 permit "will set forth the proposed Remedial Action for the Rest of the River," CD ¶ 22(n), and to the 2000 Permit's language requiring the Region to identify in the modified permit "the appropriate corrective measures necessary to meet the Performance Standards." 2000 Permit § II.J. According to GE, the Consent Decree limits the Region's ability to require additional work to two narrowly-defined situations. *First*, the Consent Decree reserves the Region's ability to compel additional response actions to address "previously unknown conditions or information" that indicate that the cleanup is "no longer protective of human health or the environment" (known as the "reopener provision"). CD ¶¶ 162, 163. *Second*, the Region may, under paragraph 39(a), require modification of the Statement of Work for the remedial action provided "that a modification may only be required pursuant to [Paragraph

39] to the extent that it is consistent with the scope of the response action for which the modification is required and does not modify the Performance Standards." *Id*. ¶ 39(a). The Statement of Work is the operative document for implementing the remedial action contained in the Final Permit. CD ¶ 22(x). The Statement of Work must include a "Remedial Design Work Plan," a "Remedial Action Work Plan," and a plan "to achieve the Performance Standards" in the Final Permit. *Id*.

GE asserts that neither the reopener provision nor the Statement of Work modification provision authorize additional actions to meet the Downstream Transport and Biota performance standards. The reopener provision does not support these Permit requirements, GE contends, because the Downstream Transport and Biota performance standards do not require a showing of "previously-unknown conditions * * * or previously-unknown information" or any finding related to human health or the environment as a pre-condition for "additional actions." GE Pet. at 46-47. GE further argues that the requirement to take "additional actions" to meet the Downstream Transport and Biota performance standards does not comply with the Paragraph 39(a) limitation for two reasons. First, GE contends that these performance standards do not require the "additional actions" to be "consistent with the scope" of the response action, as required by Paragraph 39(a). *Id*. at 45. Second, GE argues that Paragraph 39 limits additional work requirements to situations where the Statement of Work can be modified, and, therefore, the two challenged performance standards are invalid because they could require GE to perform additional work after the construction-related activities described in the Statement of Work have been completed. *Id*. at 45-46. GE further asserts that Downstream Transport and Biota performance standards cannot be used to compel additional work under the Permit's Operation and Maintenance requirements, which constitute part of the remedial work under the Decree and Permit, because these performance standards do not cross-reference the Permit's Operation and Maintenance requirements. GE Reply at 19.

GE is mistaken. The Downstream Transport and Biota performance standards do not, as GE contends, "purport[] to give [the Region] the ability to require *any* 'additional actions' it deems necessary to achieve and maintain the Performance Standards." GE Pet. at 45. The Permit specifies that any additional work required under these performance standards must be determined "in accordance with the [Consent Decree]." Permit §§ II.B.1.a(l), II.B.1.b(1)(a). Under Paragraph 39, modifications of the Statement of Work to require additional work, such as work to address exceedances of the Downstream Transport and Biota performance standards, would need to be done in compliance with the requirements of that paragraph. One of those requirements is that modifications of the Statement

of Work must be "consistent with the scope of the response action." CD ¶ 39(a). Thus, the Region cannot in the future rely on these performance standards to require work that is inconsistent with scope of the response action. At oral argument, the Region admitted as much. Transcript at 265-69.

Further, the Downstream Transport and Biota performance standards do not authorize additional work outside of the activities or time period covered by Paragraph 39 for modifications of the Statement of Work. As the Region notes, additional work required under these performance standards would address construction-related remedial action or operation and maintenance requirements. Region Resp. to GE at 47. And the terms of both construction-related work and inspection, maintenance, monitoring, and operation activities are to be spelled out in the Statement of Work. *See* Permit § II.H. Thus, modification of the requirements as to any of these activities would necessitate a modification of the Statement of Work and have to meet the requirements of Paragraph 39. The fact that the Downstream Transport and Biota performance standards do not cross-reference the Permit's Operation and Maintenance requirements does not mean that any additional operations and maintenance work needed to address an exceedance of the Downstream Transport or Biota performance standards would be exempt from the Paragraph 39 requirements. Rather, any authority the Region has to require additional work to meet the Downstream Transport and Biota performance standards arises from these performance standards themselves, not independently from the Operation and Maintenance provisions. Thus, any requirement for additional work, whether it pertains to construction-related activities or operation and maintenance, must necessarily be determined in accordance with the Consent Decree, including paragraph 39(a), as expressly prescribed by the Downstream Transport and Biota performance standards.

Accordingly, we conclude that the additional action requirement in the Downstream Transport and Biota performance standards does not, on its face, conflict with the Consent Decree. If, in the future, GE considers a directive by the Region to perform additional work under the Permit's Downstream Transport and Biota performance standards to be inconsistent with the scope of the response action, it can then invoke the dispute resolution provision in the Consent Decree. That dispute resolution process includes review before the federal District Court. CD ¶¶ 39(b), 136, 137, 141(c). At that time, there would be a concrete issue to dispute instead of speculation by GE as to what the Region *might* require to achieve compliance with these performance standards.

(b) *Additional Response Actions Required for Third-Party Projects*

The Final Permit contains several provisions titled "additional response actions" that concern GE's obligations to perform additional work in the event that specified third parties undertake certain projects or work in the future. *See, e.g.*, Permit §§ II.B.2.j, k, & *.l*, II.B.6.b(1) & (2)(b) & (c), II.B.6.c. The relevant Permit provisions require GE to conduct additional response actions:

- "to be protective of any Legally Permissible Future Project or Work;" and

- "to allow such Legally Permissible Future Project or Work to be conducted in a manner that maintains Performance Standards and/or maintains the effectiveness of the Rest of River Remedial Action."

Id. §§ II.B.2.j(1)(c), (2)(e) (Additional Response Actions and/or Inspection, Monitoring and Maintenance for Dams and Impoundments in Reaches 5 through 9); *Id.* §§ II.B.2.k(1), (2)(a) (Additional Response Actions for Sediment, Riverbanks, Backwaters, Impoundments in Reaches 5 through 9); *Id.* §§ II.B.2.*l*(1)(a), (2)(a) (Additional Response Actions for Dams and Impoundments and Sediment, Riverbanks, and Backwaters in Reaches 10 through 16); §§ II.B.6.b(1) & (2)(b) & (c) (Floodplain Soils (inclusive of Vernal Pools and Backwaters) in Exposure Areas in Reaches 5 through 8); § II.B.6.c (Floodplain Soils outside Exposure Areas in Reaches 5-16).

"Legally Permissible Future Project or Work" covers a project or work for which a specified third party has obtained governmental approvals and has submitted plans of the project to the Region and GE. Permit at 2 (Definitions). Such project or work may include, but is not limited to "construction and repair of structures; utility work; flood management activities; road and infrastructure projects; dam removal, maintenance, repair, upgrades, and enhancement activities; and activities such as the installation of canoe/boat launches and docks." *Id*.

GE objects to these additional response action provisions on grounds that are similar to the objections it raises to the Downstream Transport and Biota performance standards – that such open-ended requirements conflict with the Consent Decree and 2000 Permit's requirements that the Final Permit set forth the remedial action as well as the appropriate corrective measures to meet the Permit's performance standards. GE Pet. at 44; *see also id*. at 48-49 (*citing* CD ¶ 22(n); 2000 Permit § II.J). According to GE, the additional response action provisions give the Region "unfettered discretion to impose whatever response action it

eventually decides to require * * * without giving this Board * * * any present basis on which to review the [Region's] decision."[34] GE Pet. at 49.

The Permit provisions that require GE to conduct additional response actions for third-party projects are worded very broadly. Although the Permit provides examples of additional response actions that the Region could require GE to perform if needed "to be protective" of a third-party project or "maintain[] the effectiveness" of the remedy in the event of third-party projects, the Permit language states that the examples are provided "without limitation," indicating that other types of additional response actions could be required as well if so needed. *See, e.g.*, Permit §§ II.B.2.j(1)(c), k(2), & .*l*(2), II.B.6.b(1) & (2)(b) & (c), II.B.6.c. And the Permit provisions for additional response actions for third-party projects do not appear to be otherwise limited. Two key points follow.

First, unlike the provisions relating to Downstream Transport and Biota performance standards, the provisions relating to additional response actions for third-party projects do not explicitly require the additional response actions to be determined "in accordance with the Consent Decree," including the requirement in paragraph 39(a) that modifications to the Statement of Work must be "consistent with the scope of the response action." *Compare* Permit §§ II.B.1.a(1), II.B.1.b(1)(a) *with* Permit § II.B.2.k. To the extent legally permissible future work by third parties occurs after the Statement of Work has been approved, presumably paragraph 39(a) of the Consent Decree would apply to any additional response

[34] Connecticut asserts that the Board lacks jurisdiction to hear GE's challenge to the Permit provision addressing the need for additional response actions in the Connecticut portion of the Rest of the River because GE's Petition cites only paragraphs II.B.2.j and II.B.2.k of the Final Permit, which pertain to additional response actions in the event of future work by third parties in Massachusetts, and not paragraph II.B.2.*l*, which pertains to additional response actions in the event of future work by third parties in Connecticut. Connecticut Response to GE Pet. at 13-14. However, as GE notes, its Petition describes the Permit provision it challenges in terms that explicitly reference the contingency requirements in Connecticut: "The Modified Permit requires that, for any such future project or work in Massachusetts, or for any such project or work in Connecticut that would require handling of sediment containing more than 1 mg/kg of PCBs, GE must conduct 'response actions to be protective' of the work." GE Pet. at 48. Given that GE's Petition includes a detailed description of the relevant Permit provision and that no party has claimed to have been misled because the Petition does not cite to that provision, we conclude that GE has fulfilled the regulatory requirement that a petition "must identify the contested permit condition." 40 C.F.R. § 124.19(a)(4)(i).

actions needed to ensure that future work maintains applicable performance standards and the effectiveness of the remedial action. Yet, because the "in accordance with the Consent Decree" language was included in the Downstream Transport and Biota performance standards, but not in the additional response action provisions for third-party projects, the Permit is ambiguous on this point.

Second, unlike additional work that GE might need to undertake to address exceedances of the Downstream Transport and Biota performance standards, additional response actions needed in the event of third-party projects could be required at any time, even before approval of the Statement of Work. In that circumstance, Paragraph 39(a) would appear not to apply because it applies to the modification of a Statement of Work, and a non-existent Statement of Work cannot be modified. In the absence of the limitation under Paragraph 39(a) – that additional work may be required only if it is "consistent with the scope of the response action" – the only potential limitation on such requirements for additional response actions appears to be the language in the Final Permit. And, as discussed above, the Final Permit language on response actions in the event of a third-party project could be read to give the Region broad discretion to devise any response actions needed – in the Region's view – "to be protective" of a third-party project or "maintain[] the effectiveness" of the remedy.

The Region defends the provisions concerning additional response actions required for third-party projects in two ways. *First*, the Region asserts that these provisions "are a logical and common approach to ensure that the residual PCB contamination will not impede future protectiveness" given that the chosen remedy allows "a significant amount of PCB contamination [to] remain in [the] Rest of [the] River." Region Resp. to GE Pet. at 50. However, the Region's assertion that these provisions are justified because they are grounded in a sound policy – that is, that they are a logical and commonly-used method of implementing remedies where hazardous wastes will be left in place – does not show that they are facially consistent with the Consent Decree, including the requirements of the 2000 Permit.

Second, the Region argues that the additional response actions are both authorized by the Consent Decree and constrained by the terms of the Final Permit. The Region contends that the Consent Decree contemplates that "Conditional Solutions" – a procedure for addressing PCB contamination on privately-owned property where GE cannot gain present access or rights – are authorized for use in the Rest of the River remedial action and that additional response actions needed to protect third-party actions qualify as Conditional Solutions. *Id*. at 52-53. Further, the Region argues that the Final Permit imposes significant constraints on requiring

additional response actions by limiting what third-party projects are covered. *Id*. at 50-51.

That the Consent Decree may authorize Conditional Solutions in the Rest of the River, however, is not an answer to the Consent Decree and 2000 Permit requirements that the Final Permit set forth the proposed Remedial Action for the Rest of the River. CD ¶ 22(n), (p). Additionally, although the Final Permit does impose limits both on what qualifies as "Legally Permissible Future Work" and on where within the Rest of the River additional response actions may be required, it is unclear whether the Permit provides any meaningful limitation on the extent to which additional response actions may be required for properly-qualified Legally Permissible Future Work.

Accordingly, because it is unclear whether the additional response action provisions limit the Region's choice of response actions to only those actions that are consistent with the scope of the response action defined in the Permit, we remand these Final Permit provisions because, as currently drafted, they appear to facially conflict with the Consent Decree, including the requirements in the 2000 Permit.

(c) *Inspection and Maintenance of Dams Not Owned by GE*

GE challenges a requirement in the Final Permit that makes GE responsible for inspection and maintenance of dams it does not own in Reach 7 of the Housatonic River. That section of the River is located entirely within Massachusetts. GE argues that it was clear error for the Region to include an inspection and maintenance requirement for these dams because the requirement was added to the Final Permit without being specifically evaluated under the Nine Evaluation Criteria in the 2000 Permit. GE Pet. at 52. GE does not argue that the expanded inspection and maintenance requirements are so consequential that these changes alone indicate that the Region committed clear error in its use of the Nine Evaluation Criteria to select a cleanup alternative; rather, GE makes the narrow argument that any change between the Draft and Final Permit must be evaluated individually under those criteria. GE Pet. at 52.

As discussed above, however, the Nine Evaluation Criteria should be interpreted in a way that is consistent with RCRA and its implementing guidance. That guidance includes comparable criteria – four General Standards for Remedies and five Remedy Selection Decision Factors – that are "general requirements for selection of remedies at RCRA facilities." 1990 Subpart S Proposal, 55 Fed. Reg. at 30,823. And we interpret the Nine Evaluation Criteria as similarly focused on

evaluating alternative potential remedies. But we disagree that every change between a draft and final permit, no matter how incremental and insignificant, requires a repeat of the full analysis used to select the overall remedy. That is not to say that a change between a draft and final permit would never require a re-analysis of the underlying remedy-selection decision. For example, if in this matter the Region had decided at the Final Permit stage to double the amount of PCB-contaminated material to be excavated, such a dramatic change in the selected remedy would, in all likelihood, need to be justified following the same analysis used to select the remedy. However, GE has offered nothing in its Petition to suggest that the fundamental choice of the remedy was put at issue by the inspection and maintenance of dams requirement in the Final Permit. Moreover, our analysis of the Permit indicates that the substance of GE's obligation as to the inspection and maintenance of dams not owned by GE is essentially unchanged from the Draft to Final Permit. The only thing that changed between the Draft and Final Permit on this point was that in the Draft Permit, GE was required to pay a third party to inspect and maintain the dams, but in the Final Permit GE was charged directly with performing that work. This modification was made in response to a comment from GE.

The Draft Permit contained a provision imposing requirements on GE as to the operation and removal of dams in Reach 7 not owned by GE. Draft Permit § II.B.1.g(2). Pertinent to GE's obligation for dam maintenance and inspection, that provision specified that GE "[c]oordinate with any entity planning to use, *maintain*, or remove" one of these dams and (1) use "good-faith efforts to reach agreement with those entity(ies) on the scope and extent of costs attributable to the presence of PCBs in sediment" behind the dam, and (2) make "prompt payment * * * of these costs in advance of implementation of the necessary work." *Id.* (emphasis added). "[S]ediment-related costs attributable to the presence of PCBs" were defined by the Draft Permit as including, but not limited to, "increased costs of sediment sampling and analysis to assess the presence of PCBs, materials handling, engineering controls, disposal, or compliance with other regulatory obligations related to PCBs in sediment."[35] *Id.*

[35] The Draft Permit also included other requirements concerning dams in Reach 7 not owned by GE. Concerning dam removal, the Draft Permit included language requiring GE to remove "soil or sediment that could be mobilized downstream as part of dam removal or maintenance activities and sediments greater than 1 mg/kg total PCBs in the riverbed." Draft Permit § II.B.1.g(2). Concerning dams that are not slated for removal,

In its public comments on the Draft Permit, GE objected to this provision because it could be read as requiring GE to "pay the PCB-related costs incurred by a project proponent in using, maintaining, or removing a Reach 7 dam or impoundment," rather than negotiate over such payment. GE Comments on Draft Permit at 44. GE argued that "[s]uch a requirement would exceed EPA's remedial authority and represent an impermissible effort to dictate the outcome of the project proponent's claim against GE." *Id*. at 45. The Region's response to this comment was to modify the permit language "to require GE to implement response actions related to inspecting, monitoring and maintaining the Reach 7 dams * * *, as opposed to mandating cash payments." RTC at 169; *see* Permit § II.B.2.j(2)(b).

Accordingly, the substantive requirements on GE in the Final Permit pertaining to inspection and maintenance of dams not owned by GE are essentially unchanged from those in the Draft Permit. The main modification concerns the manner in which obligations to inspect and maintain dams are imposed on GE: either directly by requiring GE to undertake the work itself or indirectly by requiring GE to reimburse third parties for the work. GE has thus failed to carry its burden of showing the Region clearly erred by making the identified changes to the dam provisions in the Final Permit.

GE also argues that the requirement to inspect dams it does not own is invalid because the Permit provision "could interfere" with other requirements for dam inspection imposed on dam owners by the Federal Energy Regulatory Commission or the Massachusetts Department of Conservation and Recreation. GE Pet. at 52. However, after GE raised this issue during the public comment period, the Region amended the Draft Permit to give GE the flexibility to seek approval for another party, such as the dam owner, "to implement some or all of [GE's] inspection, monitoring and maintenance activities." Alternatively, if GE cannot fulfill these obligations despite its "best efforts," the Final Permit authorizes GE to propose a different means of addressing concerns about PCB contamination behind the dam. Permit § II.B.2.j(2)(b); s*ee* RTC at 170. GE's Petition does not

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the Draft Permit required GE to remove sediments based on specified PCB concentrations and then install an engineered cap. *Id*. § II.B.1.g(3). In lieu of the engineered cap requirement, GE could opt for a significantly more-extensive sediment removal. *Id*. § II.B.1.g(4). These provisions were retained unchanged in the Final Permit. Permit § II.B.2.f(1)(a)-(d).

explain why the Permit provisions, as modified, pose a potential regulatory conflict. Hence, GE has not met its burden to show this Permit provision is clearly erroneous.

(d) *Massachusetts Endangered Species Act*

GE challenges language in an attachment to the Final Permit that addresses GE's obligations under the Massachusetts Endangered Species Act, Mass. Gen. Law ch. 131A, ("Massachusetts ESA"), arguing that the Permit language conflicts with the state statute and the covenant in the Consent Decree pertaining to Natural Resource Damages. The Consent Decree specifies that "[GE] must also comply with any ARARs of federal and state environmental laws set forth in the documents selecting the Rest of the River Remedial Action." CD ¶ 8. The Massachusetts ESA is identified in Attachment C to the Final Permit as an ARAR. Permit, Attachment C at C-16. With respect to the Massachusetts ESA, this Attachment states

> To the extent that unavoidable impacts result in a take of state-listed species [under the Massachusetts ESA], EPA would follow the regulatory requirements with respect to implementing a conservation and management plan providing for a long-term net benefit to the affected state-listed species.

Id.

GE argues that the language on the Massachusetts ESA is inconsistent with that state law because the Massachusetts ESA authorizes the state to allow a "take" only where impacts are limited to "[a]n insignificant portion of the local population," and the record shows that the Rest of the River cleanup will have a significant impact on "at least nine state-listed species." GE Pet. at 53-54. GE concludes that, as to these nine species, the Region cannot follow "regulatory requirements" to implement "a conservation and management plan providing for a long-term net benefit to the affected state-listed species," and thus the Attachment language is clearly erroneous. *Id.* (quoting Permit, Attachment C at C-16).

The Region disputes GE's factual claims about the significance of any takes associated with the Rest of the River cleanup, *see* RTC at 141, and both the Region and Massachusetts dispute GE's construction of the Massachusetts ESA. *See* RTC at 142-43; Massachusetts Response to GE Petition at 31-34 (Feb. 13, 2017) ("Mass. Resp. to GE Pet."). Further, the Region concedes that if, in the future, GE disagrees with the Region's application of the Massachusetts ESA during implementation of the cleanup, GE may challenge the Region's action under the administrative and judicial dispute resolution provision of the Consent Decree. Region Resp. to GE Pet. at 57; RTC at 141.

Because the Attachment language directs the Region to "follow regulatory requirements," there is nothing in it that, on its face, contradicts the Massachusetts ESA. Accordingly, we find nothing clearly erroneous in including the language in the Permit. Any disputes arising in the future involving the actual application of the Massachusetts ESA should be raised through the established dispute resolution procedures in the Consent Decree.

GE also claims that requiring it "to conduct unspecified conservation measures in order to provide a '[n]et [b]enefit' to the conservation of the affected species" would amount to requiring compensation for Natural Resource Damages and thus conflicts with the Consent Decree's covenant not to sue for Natural Resource Damages. GE Pet. at 54. GE's argument lacks merit. The covenant not to sue for Natural Resource Damages is conditioned upon GE's completion of the "Work" under the Consent Decree, defined as "all activities [GE] is required to perform under this Consent Decree." *See* CD ¶¶ 4, 161(d)(i). Those "activities" include "implement[ing]" the Rest of the River remedy in the Final Permit. *Id*. ¶ 22(z). The Final Permit requires compliance with ARARs, Permit § II.E, and GE does not contest that the Region has identified the Massachusetts ESA as an ARAR in the Final Permit. Thus, the Natural Resource Damages covenant not to sue does not attach until GE has complied with all identified ARARs, including the Massachusetts ESA.

b. *Mr. Cook's Claims*

Mr. Cook is a resident of Pittsfield, Massachusetts, where his home abuts Reach 5A of the Housatonic River. C. Jeffrey Cook Petition for Review, RCRA Appeal No. 16-03, at 2 (Nov. 18, 2016) ("Cook Pet."). Mr. Cook hikes, bikes, and kayaks along the River and has expressed concerns that the selected remedy will be too "damaging to the River and Floodplain" and will be overly disruptive to local residents. *Id*. at 3.

Mr. Cook challenges the Final Permit on the following grounds: (1) the Final Permit fails to mention the findings and recommendations of three Massachusetts state agencies that proposed the River and its banks should not be excavated and the banks should not be stabilized out of concern for the ecosystem and human health; (2) the cleanup standard is "completely inappropriate" based on existing background risks to human health given that "there is still no scientific evidence that PCBs cause cancer in humans;" (3) the Region's exposure scenarios are "arbitrary" and "patently ridiculous;" (4) the Region has not justified why it selected "different standards for contamination for different portions of the River;" (5) the Region failed to consider the risks from "possible volatilization of PCBs in

the remediation process;" (6) the Region failed to disclose the location of staging areas and access roads; and (7) the Region disbursed Technical Assistance Grants[36] to the Housatonic River Initiative but overlooked concerns of families living along Reach 5 of the River. *Id*. at 4-5.

Each of Mr. Cook's arguments was raised during the comment period on the Draft Permit, either by Mr. Cook or by another commenter,[37] and the Region addressed each of his arguments in detail in its Response to Comments. Where, as here, the Region has responded to a comment submitted during the comment period, the federal rules governing the appeal of a RCRA permit require a petitioner to "explain why the * * * response to the comment was clearly erroneous or otherwise warrants review." 40 C.F.R. § 124.19(a)(4)(ii); *see* Part II.C, above. In his Petition, Mr. Cook repeats arguments made during the comment period but, with the exception of his third claim, that the Region's exposure scenarios are unrealistic, Mr. Cook fails to explain why the Region's response to those arguments was clearly erroneous. We first discuss Mr. Cook's failure to address the Response to Comments as to all of his claims except the third one, and then we turn to the merits of that claim.

(i) *Failure to Explain Why the Response to Comments Was Clearly Erroneous*

In his *first* claim, Mr. Cook points out that during the National Remedy Review Board's 2011 examination of the Region's preferred alternative, several Massachusetts officials expressed the view that all of the alternatives being considered at that time would cause irreparable harm to the Housatonic River ecosystem. Cook Pet. at 4. Mr. Cook made a similar comment during the Draft Permit comment period. C. Jeffrey Cook Comments on Draft Permit at 3 (Oct. 7, 2014), AR567454 ("Cook Comments"). In the Response to Comments, the Region explained that after Massachusetts had criticized the Region's preferred alternative

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[36] CERCLA authorizes EPA to provide Technical Assistance Grants to community groups to help them participate in decisionmaking at eligible sites by making funding available to pay for a technical advisor to assist with interpreting technical documents, site conditions, and cleanup proposals. CERCLA § 117(e), 42 U.S.C. § 9617(e); *see also* 40 C.F.R. § 35 Subpart M – Grants for Technical Assistance.

[37] A petitioner may seek Board review of any issue raised during the public comment period, regardless whether it was petitioner or someone else who previously raised the issue. *See* 40 C.F.R. § 124.19(a)(2).

in 2011, the Region met with Massachusetts to better understand its concerns and subsequently modified the proposed cleanup. RTC at 34. The Region included these changes in the Draft Permit, and, as described in the Response to Comments, Massachusetts subsequently endorsed the modified cleanup approach:

> [I]n its 2014 comments on the Draft Permit Modification, the Commonwealth [of Massachusetts] – specifically the Executive Office of Energy and Environmental Affairs and its Department of Environmental Protection ("MassDEP") and Department of Fish and Game – expressly stated its support for the proposed remedy, which is "protective of human health while employing a remediation framework developed in consultation with the Commonwealth [of Massachusetts] and the State of Connecticut that is directed at preserving the dynamic character of the river ecosystem and avoiding, minimizing and mitigating remedy impacts to the affected wildlife and their habitats, with a particular focus on protecting state listed species."

Id. The Region also noted that the Massachusetts Fisheries and Wildlife Board explicitly endorsed the remedy proposed in the Draft Permit. In its comments, the Fisheries and Wildlife Board acknowledged that the choice of remedy had been a "difficult balancing act," but concluded that the proposed remedy "has been crafted to responsibly address the public health risks while responsibly maintaining the natural and recreational values of this section of the Housatonic." *Id*. at 35 (quoting Massachusetts Fisheries and Wildlife Board comments on the Draft Permit). Mr. Cook's Petition fails to acknowledge the Region's response to Massachusetts' comments and Massachusetts' subsequent endorsement of the Draft Permit as revised. His Petition also fails to explain why the Region's failure to cite to Massachusetts' opposition to a cleanup alternative that was *not* proposed by the Region in the Draft Permit warrants review. *See* 40 C.F.R. § 124.19(a)(4)(ii).

In his *second* claim, Mr. Cook objects to the cleanup standard and argues that "there is still no scientific evidence that PCBs cause cancer in humans." Cook Pet. at 4. Mr. Cook made similar arguments in his comments on the Draft Permit. Cook Comments at 4. In the Response to Comments, the Region stated "the overall scientific consensus remains: PCBs can cause cancer and many other health impacts." RTC at 42. As support, the Region relied on the peer-reviewed Human Health Risk Assessment performed pursuant to the Consent Decree. *Id*. The Region also noted that in 2013 "the World Health Organization officially reclassified PCBs in general as a known human carcinogen as opposed to a probable human carcinogen." *Id*. at 43. In his Petition, Mr. Cook does not explain why it was clear error for the Region to rely on the cancer findings in the peer-reviewed

Human Health Risk Assessment and on findings of the World Health Organization. Thus, Mr. Cook does not satisfy the burden of demonstrating that review is warranted. *See* 40 C.F.R. § 124.19(a)(4)(ii).

Further, Mr. Cook repeats in his Petition his comment that the cancer risk range of 1 in 10,000 to 1 in 1,000,000 that the Region considered in selecting the cleanup alternative "is completely inappropriate when compared to the background risk of cancer in the general population." Cook Pet. at 4. In the Response to Comments, the Region responded that it used the 1 in 10,000 to 1 in 1,000,000 risk range based on the National Contingency Plan, which is the regulation governing the cleanup of CERCLA sites. RTC at 46. In his Petition, Mr. Cook does not acknowledge the Region's response to his comment and offers no reason as to why it was clear error for the Region to rely on the National Contingency Plan in choosing a risk range for evaluating cleanup alternatives.

Setting aside, for the moment, Mr. Cook's *third* claim and moving to his *fourth* one, Mr. Cook objects to what he perceives to be a "political decision" to require inconsistent cleanup levels for different segments of the River. Cook Pet. at 4. In the Response to Comments, the Region explained that although "[t]he primary rationale for remediation of riverbanks [generally] is to prevent PCB-contaminated bank material from eroding into the river," the different characteristics of the three subreaches of Reach 5 (Subreaches A, B, and C) led the Region to select different cleanup standards for each of these sections:

> As articulated in the Statement of Basis, the 5 mg/kg erodible bank standard was used for Reach 5A because it best balances the objective of minimizing erosion of PCB-contaminated banks and subsequent redistribution of the PCBs with the desire to maintain the dynamic nature of the River. A similar standard is not appropriate for Reach 5B, given the importance of minimizing the disturbance to the habitat in that Reach and the lower concentrations [of PCBs] present. * * * Due to the limited amount of riverbank soil in Reach 5C (banks generally less than one foot in height), EPA determined that applying a bank standard in Reach 5C was unnecessary.

RTC at 145 (citation omitted). The Region further noted that "although several other alternatives achieve slightly greater reduction[s] in downstream transport of PCBs[,] * * * [t]he alternatives that would also have been protective but that were not selected would have had greater negative short term impacts." *Id*. at 145-46. Again, Mr. Cook's Petition does not explain why the Region's fact-based

justification for different approaches to different sections of the River is clearly erroneous. *See* 40 C.F.R. § 124.19(a)(4)(ii).

Mr. Cook's *fifth* argument is that the Region failed to take into account the risks posed to the residents of Pittsfield from PCBs that are volatilized during the remedial work. Cook Pet. at 4. In the Response to Comments, the Region explained that it had sampled the air for PCBs before and during the 1 ½ Mile Removal action that took place within Reach 4 and that this sampling had not demonstrated that volatilization was occurring during remediation at levels requiring action to protect human health. RTC at 339. The Region further explained that given that sediments excavated in the 1 ½ Mile Removal action area contained higher initial levels of PCB contamination than the Rest of the River, the Region expected to find similar or lower concentrations of PCBs in the air in connection with remediation of the Rest of the River. *Id*. Nonetheless, the Region noted that it expected that in implementing the remedy, GE would be required to monitor air levels of PCBs and to address any exceedances of PCB air action levels should they occur. *Id*. Mr. Cook does not explain why the Region has clearly erred in its approach to protecting the community from volatilized PCBs. *See* 40 C.F.R. § 124.19(a)(4)(ii).

Sixth, Mr. Cook argues that the Region "deliberately omitted" from the Permit maps of the locations where staging areas and access roads necessary for the cleanup would be constructed. Cook Pet. at 4. Mr. Cook made this same claim in his comments, arguing that the Region knows where the staging areas and access roads will be established and that it was "disingenuous" for EPA not to include this information in the record. *Id*.; Cook Comments at 6-7. The Region responded that it would designate staging areas and access roads following remedial design coupled with significant public participation:

> EPA has not made determinations on any specific access roads or staging areas. The location of access roads and staging areas will be determined during the remedial design process following issuance of the Final Permit Modification, and completion of any petitions for review of the Final Permit Modification. GE's Revised CMS, which is in the Administrative Record for the Rest of River, did include estimates of potential access roads and staging areas, but for purposes of comparison of different alternatives and to estimate costs and project durations not for purposes making a definitive determination of where access roads and staging areas will be located. * * * EPA plans to have significant community and stakeholder involvement during the process of EPA's review of GE

> remedial design submittals dealing with access roads and staging areas.

RTC at 330. Mr. Cook includes nothing in his Petition that acknowledges this response or explains why the Region's approach is clearly erroneous. 40 C.F.R. § 124.19(a)(4)(ii).

Finally, Mr. Cook's *seventh* claim makes what amounts to a generalized argument that the Region overlooked his concerns and those of other families living within the Reach 5 area. Cook Pet. at 4-5. As an example, Mr. Cook notes that EPA awarded a Technical Assistance Grant solely to the Housatonic River Initiative. Mr. Cook first raised this issue in comments on the Draft Permit. The Region responded that it had provided numerous opportunities for Mr. Cook and others to participate in the remedy-selection process and that it had responded to concerns from local residents. Again, Mr. Cook's Petition fails to acknowledge the Region's response or to explain how the Region's response is clearly erroneous. 40 C.F.R. § 124.19(a)(4)(ii); *see also* Region 1's Response to Cook Petition, RCRA Appeal No. 16-03, at 22-23 (Feb. 14, 2017); RTC at 2-4. In any event, this claim fails to satisfy the requirement that challenges to permitting decisions must be made with specificity because Mr. Cook fails to offer any factual or legal support for his contention that the Region should have funded studies addressing his concerns. *See* 40 C.F.R. § 124.19(a)(4)(i). Moreover, a permit appeal is not the proper forum for Mr. Cook to object to the awarding of a Technical Assistance Grant.

(ii) *Estimates of Human Exposure to PCBs*

Turning to Mr. Cook's *third* claim, we consider whether the Region over-estimated human exposure to PCBs in assessing the risk posed by the PCBs in the Rest of the River. Mr. Cook's Petition identifies three human exposure estimates that he claims are overstated or unsupported: (1) young children come into contact with floodplain soil 90 days per year; (2) marathon canoeists come into contact with floodplain soil 150 days per year; and (3) young children come into contact with floodplain soil in only three of the ninety areas studied. Cook Pet. at 6. Mr. Cook disputes these estimates based on "his personal use and observation of the River and Floodplain adjoining [his own] residential neighborhood." *Id*. Because the Region's response to Mr. Cook's comments on this issue refers to the Human Health Risk Assessment, we begin by looking at that document to determine whether Mr. Cook has demonstrated clear error.

As noted above, the Human Health Risk Assessment was subject to independent peer review, and five of the seven peer reviewers found the Region's

exposure assessment to be "reasonable and consistent with EPA policy." Resp. Summary to Peer Review of 2003 HHRA at 16. The Region accepted public comment on the 2003 Human Health Risk Assessment and the peer review process, addressed the comments received in the final version of the assessment, and re-examined concerns raised by the two peer reviewers who dissented on the initial assessment. *See* Part V.B.1.a(i)(e), above.

The Region has explained that the exposure estimates in the Human Health Risk Assessment were based both on long-standing EPA guidance on exposure assessment as well as on site-specific information. *See* Rev. HHRA, Vol. I, at ES-12, ES-36. As to site-specific information, the Region referenced:

- Aerial photographs and maps.
- Field notes and observations of EPA and contractor field personnel who were on site over the course of several years.
- Representatives of local recreational activities (marathon canoers), conservation groups (e.g., Massachusetts Audubon), school-based educational programs (St. Joseph's High School, Berkshire Community College), school-based outing clubs, and community organizations (e.g., the Boy Scouts) that sponsor programs that use the river.
- Sportsmen's club leaders and members who hunt and/or fish along the Housatonic River, including the Lenox Sportsmen's Club, the Lee Sportsmen's Club, and Berkshire League of Sportsmen—an umbrella group of local sportsmen's clubs.
- Owners/operators of sporting goods stores, summer camps, and resort hotels in the Housatonic River area.
- Regional representatives of [Massachusetts Department of Environmental Protection], Massachusetts Department of Environmental Management * * *, and the Massachusetts Division of Fisheries and Wildlife.
- Farmers, the U.S. Department of Agriculture Farm Services Agency, the Massachusetts Department of Food and Agriculture, regional agricultural groups (e.g., Berkshire Grown), and grocery stores that sell animal products and produce from area farms.
- Websites with information on uses of the Housatonic River and floodplain, including local farms advertising the sale of produce,

> marathon canoe sites listing races, Massachusetts and Connecticut fish and wildlife sites with fishery information and angling and hunting regulations, and sites maintained by local environmental and conservation organizations.
>
> - Housatonic River Floodplain User Survey, a report prepared by consultants to GE.

Id. Vol. I at 1-11 to 1-12.

Mr. Cook first challenges the Region's estimate that high use by young children of recreational areas would constitute ninety days per year. Cook Pet. at 6; *see* Permit at tbl.1. The Region has explained the recreational use scenario as follows:

> The general recreation exposure scenario consists of children (both the young and older groups) and adults who might come into contact with soil during general recreational activities such as walking, hiking, running, horseback riding, bird watching, upland hunting (not including waterfowl), wild crop gathering, camping, educational field trips, ball playing, and other activities in the floodplain (e.g., adolescent gatherings).

Rev. HHRA, Vol. IIIA, at 4-51.[38] Data on the frequency of use of recreational areas by various age groups were gathered from:

> Observations by EPA field personnel while conducting the site investigation beginning in 1998.
>
> Observations reported in the GE Housatonic River Floodplain User Survey.
>
> Survey of wildlife-associated recreation conducted by the U.S. Fish and Wildlife Service.
>
> Exposure area-specific characteristics such as the presence of access points (e.g., roads and trails) and terrain.

Id. (citations omitted).

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[38] The Region separately investigated other, more-specialized recreational activities, including canoe and boat launching, fishing from the riverbank, and riding all terrain vehicles or mountain bikes. Rev. HHRA, Vol. III.A, at 4-51.

In general, the Region assigned each area examined a value of high-, medium-, or low-use per age group, although for young children only the high- and low- use categories were used. *Id*. Vol. IIIA, at 4-52. An area was categorized as high-use based on various criteria, including whether existing trails or easements are present, whether the area is accessible from nearby homes and roads, or whether the area is a well-known recreation area. *Id*. Vol. IIIA, at 4-53. For high-use areas, "[a reasonable maximum exposure] exposure frequency of 90 days/year and a [central tendency exposure] exposure frequency of 30 days/year were used." *Id*. Vol. IIIA, at 4-52. The Region explained that "[t]he [reasonable maximum exposure] value of 90 days/year represents exposure three days a week over the 30 weeks of the year when the ground is typically not frozen or snow-covered." *Id*. Vol. IIIA, at 4-52 to 4-53. For young children, areas categorized as high-use were "popular, high use recreational areas with well-defined trails such as nature areas and parks (e.g., Canoe Meadows)." *Id*. Vol. IIIA at 4-54. If young children were observed in areas other than high-use recreation areas by Regional or GE personnel, those areas were treated as low-use and "an exposure frequency of 15 days [per] year was used in these areas for both the [reasonable maximum exposure] and [central tendency exposure]." *Id*. As to all other areas, the Region assumed "that young children visit these areas at a lower frequency than older children and adults." *Id*. Mr. Cook's non-specific personal observations about general recreational use of the Rest of the River do not show that the Region committed clear error in its data-based inquiry into the frequency of recreational use by young children.

Secondly, Mr. Cook challenges the exposure assumption that marathon canoeists would average 150 days of exposure per year on the Rest of the River. The Region's estimate here is based on a communication with a very active set of canoeists who provided fact-specific information on their use of the River. The Region explained that:

> The marathon canoeist exposure scenario consists of adults who use the John Decker Canoe Launch as a launching area for training for competitive canoe races. Members of the Berkshire Paddlers paddle the 9-mile round trip to Woods Pond and back daily or nearly daily from spring to fall. Approximately 12 members of the group perform the round trip three to four times a day in preparation for a 70-mile marathon race.

Id. Vol. IIIA, at 4-21. The information gathered by the Region also showed that this marathon training had been ongoing for several years. *Id*. Because Mr. Cook

has provided no information to dispute these facts, he has not shown clear error in the Region's exposure estimate for marathon canoers.

Thirdly, Mr. Cook asserts that the Region mistakenly concluded that "recreational uses by young children are likely to be limited to exposure areas 10 (where Petitioner lives), 70, and 87." Cook Pet. at 6 (citing Table 1 in the Permit). According to Mr. Cook, this conclusion shows that the Region did not perform an adequate investigation. Mr. Cook, however, is misreading Table 1. *See* Permit at tbl.1. Table 1 does not list all areas in which recreational activity is undertaken by small children; rather, it identifies only the three areas that the Region concluded had high recreational use by young children. As the Region explained:

> Given the nature of the areas, the types of recreational activities, and the location of many of the exposure areas, the young child [category] was included only at those areas where there were well-defined trails that are frequently used, such as designated nature areas and parks, or where young children were observed by EPA and/or GE personnel.

Rev. HHRA, Vol. IIIA, at 4-20. Further, given the multiple activities that could occur in each area, the Region focused "only [on] the exposure scenario(s) and receptor(s) that would result in the greatest exposure and resulting risk at the particular exposure area." *Id*. Vol. IIIA, at 4-23. Thus, Mr. Cook's citation to Table 1 does not show that the Region failed to adequately investigate recreational use by young children, nor does it demonstrate the Region clearly erred in its exposure assumptions for this age group.

2. *Claims That the Cleanup is Not Extensive Enough*

a. *Housatonic River Initiative's Arguments*

The Housatonic River Initiative, Inc. states that it is a non-profit coalition of Berkshire County residents that was created "to work to reclaim the Housatonic River system from years of neglect and decades of toxic PCB contamination." Housatonic Riverkeeper, http://housatonic-river.com/about-hri/ (last visited Jan. 11, 2018). In its Petition, the Housatonic River Initiative raises several different claims challenging the adequacy of the cleanup required by the Final Permit. *First*, like Mr. Cook, the Housatonic River Initiative argues that the Region did not adequately consider the risk from volatilized PCBs in choosing a cleanup alternative. Petition of Housatonic River Initiative, Inc. for Review of Permit Under RCRA, Appeal No. 16-02, at 18 (Nov. 7, 2016) ("HRI Pet."). *Second*, the Housatonic River Initiative argues that the Region erred in including Monitored

Natural Recovery as the remedial approach for several sections of the Rest of the River. According to the Housatonic River Initiative, Monitored Natural Recovery does not work, and the Region should have required the contaminated sediment in those sections of the River to be excavated and removed. *Id*. at 20. *Third*, the Housatonic River Initiative asserts that the Region should have selected SED 8/FP 7, which requires more-extensive excavation and removal of PCB-contaminated sediment and soil, because the Housatonic ecosystem can be successfully restored following removal of the PCBs. *Id*. at 7-8, 41.

(i) *PCB Volatilization and Monitored Natural Recovery*

The Housatonic River Initiative fails to explain why the Region's conclusions in the Response to Comments on PCB volatilization and Monitored Natural Recovery are clearly erroneous. As to both of these issues, the Housatonic River Initiative's Petition consists largely of quotes from comments it submitted on the Draft Permit. *See, e.g.*, *id*. at 18-19, 21-22. Because the Petition neither acknowledges nor addresses the Region's discussion of these issues in the Response to Comments, the Housatonic River Initiative has not met its burden to show that the Region clearly erred.

In its comments and again in its Petition, the Housatonic River Initiative has expressed concern that the Region "inadequately accounted for the effect of volatilized PCBs in the Housatonic River ecosystem." *Id*. at 18; *accord* Housatonic River Initiative Comments on Draft Permit at 3 (Oct. 23, 2014), AR568046 ("HRI Comments"). The Housatonic River Initiative presents various scientific articles that describe how humans and the environment may be exposed to PCBs through the volatilization of PCBs and their transport through the air. HRI Pet. at 18.

In the Response to Comments, the Region responded to the Housatonic River Initiative's comments on PCB volatilization not by disputing its point that PCB volatilization *could* occur, but rather by relying on site-specific data showing that PCB volatilization either was *not* occurring or was occurring only at insignificant levels in the Housatonic River area. RTC at 339. The Region cited air sampling data from locations both near the River and near contaminated areas in the River's watershed. *Id*. Most importantly, the Region referenced air sampling conducted during the 1 ½ Mile Removal, an area of the River directly adjacent and downstream from GE's Pittsfield facility that was heavily contaminated with PCBs. As discussed above in response to Mr. Cook's Petition, *see* Part V.B.1.b(i), that air sampling showed minimal to no concerns. *Id*. The Housatonic River Initiative continues to rely on theoretical arguments about risks from exposure to volatilized PCBs without addressing the Region's response that PCB volatilization levels, as

measured at relevant Housatonic River sites, are not of concern, even during remediation. Thus, the Housatonic River Initiative's challenge falls short of showing clear error.

Similarly, the Housatonic River Initiative does not explain why the Region's response to its comments on Monitored Natural Recovery were clearly erroneous. Repeating its comments, the Housatonic River Initiative broadly labels Monitored Natural Recovery as "unscientific" and "unproven" and thus an inappropriate technique for remediating the Rest of the River. HRI Pet. at 20; *see* HRI Comments at 3. Additionally, the Housatonic River Initiative now claims that evidence in the record from two of the Region's experts shows that using Monitored Natural Recovery results in "incontrovertible and unnecessary risks to human health and the environment incurred by leaving significant levels of PCB contamination in this ever-changing river system." HRI Pet. at 20, 23. In support, the Housatonic River Initiative quotes statements made by the Region's experts describing high levels of PCB contamination and the dynamic quality of the River in Reaches 5 and 6 between the confluence of the East and West Branches of the Housatonic River and Woods Pond. *Id*. at 22-23.[39]

The Region responded to the Housatonic River Initiative's comments by first discussing examples of where Monitored Natural Recovery has been used as "a component of a large sediment remedy." RTC at 190. Next, the Region discussed its reasoning for selecting Monitored Natural Recovery for a subset of the Rest of the River – the flowing portions of Reach 7 and Reaches 9-16. The Region identified four key factors that made Monitored Natural Recovery appropriate for these downstream sections of the River:

> [1] PCB concentrations in these flowing sections or reaches are low and are diffuse over large areas;
>
> [2] The sediment is reasonably stable;

[39] In particular, the Housatonic River Initiative cites to a statement of Ed Garland, an expert retained by the Region, at a 2011 public information session noting that "some riverbanks upstream of Woods Pond are not stable and are eroding," and a statement by another of the Region's retained experts, Mark Velleux, at the same information session explaining that "there are no hotspots (small areas that have much higher PCBs [sic] levels relative to other areas) in the first 10 ½ miles of the Rest of the River." HRI Pet. at 22-23.

> [3] Human health and ecological risks are generally low; and
>
> [4] The effects of [Monitored Natural Recovery] are exhibited in decreasing trends in fish and benthic invertebrate PCB levels that have been observed in * * * Reaches 9-16 during the last 25 years.

Id. (citation omitted). The Region clarified that "the rate of decrease in PCB concentrations via [Monitored Natural Recovery] is unacceptably slow for the highly elevated PCB concentrations in upstream reaches and in the Reach 7 and 8 impoundments." *Id*. at 192. But the Region concluded the situation was different in the flowing reaches below Woods Pond where "the lower concentrations * * * make [Monitored Natural Recovery] the best suited approach to remediation in these reaches." *Id*.

In its Petition, however, the Housatonic River Initiative does not address the Region's explanation as to why Monitored Natural Recovery was chosen for the flowing portions of Reach 7 and Reaches 9-16. Rather, the Housatonic River Initiative presents data bearing on whether Monitored Natural Recovery is appropriate for Reaches 5 and 6. The Housatonic River Initiative does not explain the relevance of these data to the flowing portions of Reach 7 and Reaches 9-16 nor otherwise address the Region's conclusion that the conditions bearing on the appropriateness of Monitored Natural Recovery differ significantly between (1) the upstream reaches and the Reach 7 and 8 impoundments, and (2) the flowing portions of Reach 7 and Reaches 9-16. Because the Housatonic River Initiative has not explained why the Region's reasons for choosing Monitored Natural Recovery in the flowing portions of Reach 7 and Reaches 9-16 were not appropriate, the Housatonic River Initiative has not carried its burden of showing the Region's decision on this point was clearly erroneous.

The Housatonic River Initiative offers several generic arguments as to why it should be excused for not addressing the Region's conclusions in the Response to Comments. *First*, it faults the Region for not separately responding to each commenter by name and, instead, grouping similar comments together in responding to them. HRI Reply at 9-10. However, the Board has frequently approved this practice. *See, e.g.*, *In re NE Hub Partners, L.P.*, 7 E.A.D. 561, 581 (EAB 1998), *review denied sub nom. Penn Fuel Gas, Inc. v. EPA*, 185 F.3d 862 (3d Cir. 1999) (holding that "the Region is not required to respond to comments in precisely the form presented"). Moreover, as the Housatonic River Initiative acknowledges, the Region prepared a chart listing all commenters by name with a

reference to where individual comments were addressed in the Response to Comments. *See* RTC, Attachment C.

Second, the Housatonic River Initiative appears to argue that the Region's consolidated responses to multiple comments were so general as to be almost meaningless. HRI Pet. at 4, 8; Housatonic River Initiative Reply to Region 1's Response to HRI Petition at 10-11 ("HRI Reply"). But that is not accurate as to the Region's responses addressing Monitored Natural Recovery and PCB volatilization. The Region's responses on those points provided very fact-specific explanations as to why the Region disagreed with the Housatonic River Initiative's comments. RTC at 191-92, 339.

Third, the Housatonic River Initiative claims that because it commented frequently to the Region at various points in the process other than during the comment period on the Draft Permit, "[i]t strains credulity to imagine that Region 1 is not thoroughly familiar with our response to [the Region's] claims." HRI Reply at 12. The question, however, is not whether the Region was aware of the Housatonic River Initiative's position, but whether the Housatonic River Initiative has explained on appeal to the Board why the Region's decision is clearly erroneous. Such an explanation cannot be provided without the Housatonic River Initiative addressing the Region's reasoning for its Permit decision, as expressed in the Response to Comments, in the Housatonic River Initiative's Petition.

Fourth, the Housatonic River Initiative asserts that it was not obligated to address the Response to Comments because it was "never informed by Region 1 that our ability to petition EAB was dependent upon a timely response to EPA's Response to Comments." *Id*. at 13. The Region, however, was not required to notify the Housatonic River Initiative of the requirements regarding permit appeals; the requirement to explain why the Region's response to its comments is clearly erroneous is explicitly set forth in the EPA regulations governing permit appeals, and the Board's guidance documents highlight this requirement. 40 C.F.R. § 124.19(a)(4)(ii); *see* EAB, The Environmental Appeals Board: Practice Manual 44-45 (Aug. 2013); EAB, A Citizens' Guide to EPA's Environmental Appeals Board 29-30, 44 (Jan. 2013).[40]

[40] The Housatonic River Initiative additionally argues that it did not run afoul of the requirement to explain the clear error in how the Region addressed its comments because the Housatonic River Initiative "correctly anticipated Region 1's criticisms of our

(ii) *The Remedial Alternative SED 8/FP 7*

The Housatonic River Initiative argues that the Region clearly erred by selecting Combination Alternative SED 9/FP 4 MOD instead of the most extensive cleanup Combination Alternative considered, SED 8/FP 7.[41] The Housatonic River Initiative asserts that SED 8/FP 7 is "the remedy most protective of public health and the environment" because it would require the removal of almost three times as many cubic yards of contaminated sediment and soil than any other Combination Alternative, and that the Region only chose the less-extensive Combination Alternative, SED 9/FP 4 MOD, based on the mistaken conclusion that SED 8/FP 7 would have long-term adverse impacts on the Rest of the River ecosystem. HRI Pet. at 7, 41. Contrary to GE's claim that the difficulty of restoration militates in favor of a minimalist remedy, the Housatonic River Initiative takes the diametrically opposite position that the efficacy of restoration mandates adopting the most extensive Combination Alternative under consideration, SED 8/FP 7.

The Region contends that the Housatonic River Initiative's argument fails to account for all of the 2000 Permit's Nine Evaluation Criteria and that, by considering all the criteria, the Region selected a Combination Alternative that is "a reasonable, balanced approach that is rational in light of all information in the Record." Region 1's Response to HRI Petition, RCRA Appeal No. 16-02, at 16 (Feb. 14, 2017) ("Region Resp. to HRI Pet."). After closely reviewing the Region's Comparative Analysis and Response to Comments, we agree that the Housatonic

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2014 comments" in comments submitted to the Region in 2015, after the comment period had closed but before the Response to Comments was released. HRI Reply at 13. A portion of these comments was referenced in the Housatonic River Initiative's Petition. HRI Pet. at 40. The 2015 comments in general, and the portion cited in the Housatonic River Initiative's Petition in particular, provide factual information that purportedly supports its argument that restoration of the Rest of the River will be successful but not its arguments regarding PCB volatility and Monitored Natural Recovery. HRI Reply at 13-14; HRI Pet. at 40.

[41] Unlike it did in arguing the issues related to PCB volatilization and Monitored Natural Recovery, the Housatonic River Initiative does not ignore the Response to Comments in arguing that the Region should have chosen a much more-extensive remedy. Rather, the Housatonic River Initiative relies on the Region's rationale in responding to GE's comments. *See* HRI Reply at 7 (citing RTC at 88-89).

River Initiative has not shown that the Region clearly erred in selecting SED 9/FP 4 MOD.

The Region emphasizes that it thoroughly considered all of the Combination Alternatives, including the Housatonic River Initiative's favored alternative, pointing out that the Comparative Analysis specifically evaluated SED 8/FP 7 against the Nine Evaluation Criteria. Region Resp. to HRI Pet. at 15-16 (citing Comp. Analysis at 11-59). As the Comparative Analysis indicates, three of the criteria were instrumental in the Region's decision to select SED 9/FP 4 MOD: Overall Protection of Human Health and the Environment, Short-term Effectiveness, and Cost. *See* Comp. Analysis at 9-59.

On the threshold criterion of Overall Protection of Human Health and the Environment, the Region examined the degree to which the various Combination Alternatives would reduce both long-term and short-term risk to humans and to environmental receptors. *Id.* at 11-12. For reducing risk long-term, the Region concluded that all of the Combination Alternatives that involve significant amounts of excavation and capping – including SED 8/FP 7 and SED 9/FP 4 MOD – would achieve similar results for reducing PCB levels in the River and in fish tissue, which are two important measures of risk to human health and the environment. *Id.* at 12 ("Model predictions for the annual mass of PCBs transported through the system are similar for all of these alternatives, as are the predicted fish tissue concentrations."). Although noting that SED 8/FP 7 scored slightly better on these long-term measures, the Region explained that one drawback to SED 8/FP 7 is its long timeframe: "it is projected to take approximately 50 years to implement, thus the improvements are not realized as rapidly as with the other alternatives." *Id.* In comparison, the Region estimated that SED 9/FP 4 MOD would take thirteen years to implement – a period of time considerably shorter than half a century. *See id.* at 47 tbl.16; *id.*, Attachment 14 at 7.

On the Short-term Effectiveness criterion, the Region identified significant differences between SED 9/FP 4 MOD and SED 8/FP 7. The Short-term Effectiveness criterion focuses on the short-term "impacts" of implementing a remedy "on the environment (considering both ecological effects and increases in greenhouse gas emissions), on local communities (including communities along transport routes), and on the workers involved in the remedial activities." Comp. Analysis at 47. These impacts, the Region noted, are a function of the time needed to implement the Combination Alternative and the extent of activity involved. On the time to implement, as noted above, SED 8/FP 7 is estimated to take approximately fifty years, whereas SED 9/FP 4 MOD is estimated to require

thirteen years. Thus, with SED 8/FP 7 the local community is anticipated to face an additional thirty-seven years of construction-related impacts associated with implementing the remedy compared to SED 9/FP 4 MOD. In judging the extent of short-term impacts on the various habitats remediated, the Region compared the number of acres or linear miles affected by the Combination Alternatives. Using this metric, the Region concluded that SED 8/FP 7 would have greater, and in some instances significantly greater, impact on all affected habitats other than impoundments. These differences in the scope of the remediation, broken down by habitat type,[42] are summarized in Table 2 below.

Table 2: Habitat Areas in Reaches 5 and 6 Affected		
Habitat	**SED 8 / FP 7 [Housatonic River Initiative preferred alternative]**	**SED 9 / FP 4 MOD [The Selected Alternative]**
Aquatic Riverine	127 acres	99 acres
Riverbank	14 linear miles	3.5 linear miles
Impoundment	139 acres	139 acres
Backwater	86 acres	59 acres
Combined floodplains and uplands	301 acres	45 acres
Total	**653 acres**	**343 acres**

Id. at 29 tbl.6. Further, the Region concluded that compared to the selected Combination Alternative, SED 8/FP 7 would have significantly greater short-term impacts due to: (1) increased emissions from trucks (520,000 tonnes vs. 171,000 tonnes), *id*. at 52 tbl.17; (2) more truck trips (515,300 trips vs. 150,000 trips), *id.* at 53 tbl.18; (3) greater incidence of injuries and fatalities due to truck accidents, (approximately twice as many injuries and fatalities for SED8/FP7) i*d*. at 54 tbl.19; and (4) higher risks to remediation workers (approximately three times as many fatal and non-fatal injuries for SED 8/FP 7), *id*. at 55 tbl.20.

[42] The projected short-term impacts vary depending on the habitat remediated. For example, capping of the riverine aquatic habitat would involve "removal or burial of most, if not all, vegetation, benthic invertebrates, and other organisms present in the sediment; disruption and displacement of fish; alteration of habitat for birds and mammals living adjacent to the river * * *; and possible colonization by invasive species." *Id*. at 48.

The Region also identified a significant cost difference between SED 8/FP 7 and SED 9/FP 4 Mod. The cost of SED 8/FP 7 ($917 million) was projected to be almost triple that of SED 9/FP 4 MOD ($326 million). *Id*. at 59 tbl.22.

In sum, although both of these Combination Alternatives would reduce risks to humans and ecological receptors to a roughly similar degree, the Region selected SED 9/FP 4 MOD over SED 8/FP 7 primarily because SED 9/FP 4 MOD would reduce risk much more quickly, would result in significantly fewer short-term impacts, and could be implemented for approximately a third the cost of SED 8/FP 7.

Notably, the Housatonic River Initiative does not dispute the Region's specific calculations of the long-term risk reductions that would be achieved by SED 8/FP 7 and SED 9/FP 4 MOD. Instead, the Housatonic River Initiative simply assumes that a more-extensive removal of contaminated material would result in a greater risk reduction. Similarly, the Housatonic River Initiative does not argue that the Region calculated inaccurately the length of time required for each alternative to achieve these reductions in risk. Further, the Housatonic River Initiative does not contest the Region's finding that there will be significantly greater short-term impacts on the environment, the local community, and remediation workers due to the significantly larger scope and longer time needed to implement SED 8/FP 7. And finally, the Housatonic River Initiative does not claim that the Region has inaccurately estimated the costs of SED 8/FP 7 and SED 9/FP 4 MOD.

Rather, the principal argument that the Housatonic River Initiative advances is that the Region's remedy-selection decision is flawed because the Region overstated the long-term adverse environmental impacts of SED 8/FP 7. HRI Pet. at 7, 41. The Housatonic River Initiative contends that no matter how extensive a remediation is conducted, "a well-planned, rigorous and sensitive restoration plan can mitigate the short-term dislocation and disruption of sensitive habitats." *Id*. at 25. As authority for this proposition, the Housatonic River Initiative quotes the Region's statements in the Response to Comments that "restoration activities will mitigate impacts caused by the remediation" and that "[o]ver the long-term, restoration activities will return the processes sustaining diverse river and floodplain communities." HRI Reply at 7 (quoting RTC at 88-89). Additionally, the Housatonic River Initiative points to the success of the remediation and restoration of Reaches 3 and 4 by the ½ Mile and 1 ½ Mile Removals. *Id*. at 6; HRI Pet. at 12-15.

The Housatonic River Initiative correctly asserts that the Region's concern about the long-term adverse impacts of many of the more-extensive Combination Alternatives played a role in the Region's selection of SED 9/FP 4 MOD. *See* Stmt. of Basis at 30-31; Comp. Analysis at 27-35. However, the Housatonic River Initiative incorrectly asserts that (1) such a conclusion was inconsistent with the Region's general view that restoration mitigates long-term adverse impacts, HRI Pet. at 24-25, and (2) the Region's driving factor in rejecting SED 8/FP 7 was its concern that extensive remediation of the Rest of the River would destroy the River's ecosystem in the long-run. *Id*. at 8, 11-15.

In a number of instances, the Region has stated that restoration efforts can be effective. Comp. Analysis at 16 ("[r]estoration of the riverbed, riverbanks, and floodplain can be achieved and maintained"); *see also* Stmt. of Basis at 31. Nonetheless, the Region has also recognized that remediation and restoration pose risks to the environment. For example, the Region has acknowledged uncertainties and challenges in the restoration process. *See, e.g.*, Comp. Analysis, Attachment 11 at 9-10 (noting uncertainties in long-term effectiveness of riverbank restoration and stability techniques). Further, the National Remedy Review Board specifically directed the Region to consider the "short-term and potential long-term environmental impacts from remedy implementation." NRRB Report at 4.

Following the National Remedy Review Board's recommendation, the Region carefully evaluated potential long-term adverse impacts on a habitat-by-habitat basis. For most habitats, including aquatic riverine, backwater, impoundment, and recreational use, the Region concluded that long-term adverse impacts would not be expected. Comp. Analysis at 28-31, 34. However, it also acknowledged that the possibility of long-term adverse impacts was greater for riverbank and floodplain habitat. As to riverbanks, the Region noted that "stabilized riverbanks would not immediately return to their current condition or level of function; however, over time they are expected to do so." *Id*. at 30. The Region expressed particular concern about long-term adverse impacts in Core Areas in the floodplain, including vernal pools. *Id*. at 32-33. The Region determined that SED 9/FP 4 MOD would be superior to the other alternatives as to Core Areas because it would result in fewer adverse effects on state-listed endangered species in these areas, pointing to mitigation "options" such as requiring Core Areas to be cleaned up to meet "the least stringent, but still protective, standard for [protecting] human health," RTC at 117, and allowing the use of activated carbon, rather than excavation, to address PCB contamination in vernal pools, *id.* at 19, 127, 221. Given the Region's acknowledgement that uncertainties exist regarding restoration techniques and the National Remedy

Review Board's explicit instruction to the Region to investigate potential long-term impacts, the Region's habitat-by-habitat inquiry into the possibility of potential long-term adverse impacts was reasonable even though it held the general view that restoration techniques can be successful. Thus, the Housatonic River Initiative is incorrect when it asserts that the Region acted inconsistently in generally concluding that long-term impacts could be avoided by restoration techniques but recognizing that such impacts could potentially occur in environmentally-sensitive areas.[43]

Finally, when the Region was selecting its preferred alternative for review by the National Remedy Review Board, concern with long-term impacts was not a major factor in deciding against SED 8/FP 7. As recounted in Part IV.B.2.c(iii) above, in 2011, the Region presented its preferred remedial alternative for the Rest of the River to EPA's National Remedy Review Board for its review and comment. At that time, the Region designated Combination Alternative SED 9/FP 3 as its preferred alternative. SED 9/FP 3 differs from the alternative that the Region ultimately selected – SED 9/FP 4 MOD – in relatively minor ways, mostly having to do with the manner of floodplain cleanup and the extent of riverbank excavation and stabilization. *See* Comp. Analysis at 7. The supporting document the Region presented to the National Remedy Review Board analyzed all of the then-existing Combination Alternatives under the 2000 Permit's Nine Evaluation Criteria. The reasons the Region gave for selecting SED 9/FP 3 are similar to those it gave for ultimately selecting SED 9/FP 4 MOD. According to the Region, SED 9/FP 3 will achieve greater or comparable risk reduction than the other alternatives and will accomplish it more quickly, with fewer short-term impacts, and at a lower cost. NRRB Package at 11-11 to 11-12. Missing from the justification for choosing SED 9/FP 3 was a concern that other alternatives, such as SED 8/FP 7, would cause greater long-term adverse impacts on the environment due to the inability to successfully restore remediated riverbanks or floodplains. In fact, the Region rated

[43] Similarly, although in Part V.B.1.a(ii)(d) we concluded that the Region had not clearly erred in relying on the ½ Mile and 1 ½ Mile Removals to support the likelihood of successful restoration of the Rest of the River, the success of those cleanup actions does not assure there will be no long-term impacts from a remedial action on the Rest of the River, no matter what its size and scope.

SED 8/FP 7 and SED 9/FP 3 as equivalent under the Long-term Reliability and Effectiveness criterion, the criterion under which long-term impacts are assessed.[44]

After the Region announced its preferred alternative in 2011, Massachusetts filed comments critical of the Region's 2011 preferred cleanup alternative (SED 9/FP 3), arguing that it would cause lasting damage to the Rest of the River environment. Mass. Comments to NRRB at 2. In response, the Region met with Massachusetts and Connecticut and revised the 2011 preferred alternative and then proposed that revised alternative, SED 9/FP 4 MOD, in the Draft Permit. RTC at 215-16. The revised alternative differs from SED 9/FP 3 primarily by introducing measures designed to lessen the adverse impact on particularly environmentally-sensitive areas that are priority habitat for state-listed endangered species, based on the concerns Massachusetts identified regarding potential long-term adverse impacts on these areas. Comp. Analysis at 6-9. Although Massachusetts' concerns may have added to the Region's reasons for rejecting SED 8/FP 7, the Region had previously articulated substantial grounds for deciding against that alternative – independent of any long-term adverse impacts it may cause to sensitive areas – and nothing in the Region's rationale for its Draft or Final Permit decision suggests that the Region no longer adhered to its earlier rationale under the Nine Evaluation Criteria.

For all of the reasons given above, the Housatonic River Initiative has not shown clear error in the Region's decision to select SED 9/FP 4 MOD over SED 8/FP 7.

b. *Berkshire Environmental Action Team's Arguments*

The Berkshire Environmental Action Team, Inc. describes itself as "an environmental organization whose mission is to protect the environment for wildlife." Letter from Bruce Winn, President, Berkshire Environmental Action Team, to National Remedy Review Board, U.S. EPA at 1 (July 27, 2011), AR487367. The organization, which has been participating in the Region's Citizen Coordinating Council meetings regarding the Housatonic River since 2003,

[44]This conclusion is captured by Figure ES-10 in the Region's National Remedy Review Board Package. In that figure, the Region rated SED 9/FP 3 and SED 8/FP 7 equally on Overall Protection and Long-term Reliability and Effectiveness but rated SED 9/FP 3 slightly better on Short-term Effectiveness, Implementability, and Cost. SED 8/FP 7 was rated higher on Reduction of Toxicity, Mobility, or Volume. NRRB Package at ES-18 fig.ES-10.

challenges the Final Permit on three grounds: (1) floodplain Core Areas and vernal pools should be remediated using excavation instead of activated carbon; (2) engineered caps will not protect human health and the environment; and (3) GE should be required to sample sediment behind dams in Connecticut. Berkshire Environmental Action Team, Inc.'s Notice of Appeal, RCRA Appeal No. 16-05, at 2-5 (Nov. 23, 2016) ("BEAT Pet.") However, as to each of these arguments, the Berkshire Environmental Action Team fails to explain why the Region's response to its comments was clearly erroneous. *See* 40 C.F.R. § 124.19(a)(4)(ii). Therefore, we deny review of its Petition.

The Berkshire Environmental Action Team first argues that the Region erred by opting to use activated carbon as the preferred technique for remedying PCB contamination in vernal pools. BEAT Pet. at 3-4. It asserts that this technology is untested and the Region should have required careful excavation of the vernal pools, an approach that had proven successful in the 1 ½ Mile Removal action. *Id*.

In the Response to Comments, the Region addressed the remediation of vernal pools at length. *See* RTC at 217-226. Based in part on comments received on the Draft Permit, the Region revised the performance standard for vernal pools in the Final Permit. *Id*. at 218. Although the Region acknowledged that the technique of using sediment amendments such as activated carbon had not specifically been tested in vernal pools, it cited to literature evidencing the successful use of sediment amendments for remediation in similar aquatic habitats. *Id*. at 221; *see id.* at 126-27, 129-130. The Region specifically noted that "although one study showed impacts to the benthic organisms in one-fifth of 82 tests, community effects have been observed more rarely in field pilot demonstrations and effects often diminish within 1 or 2 years following placement." *Id*. at 221. Additionally, the Region noted that in this study "[t]he authors further conclude that the potential negative ecological effects can be minimized by maintaining finer-grained [activated carbon] doses below approximately 5% (on a dry weight basis)." *Id*. After reviewing the scientific literature, the Region concluded that "there is a large body of work supporting the full scale field application of [activated carbon], with known cautions as to circumstances that result in adverse effects versus successful outcomes." *Id*. at 130. Finally, the Region noted that the Final Permit provides for the use of a sediment amendment, such as activated carbon, as a "first option" for remediating the vernal pools. RTC at 17. If the use of a sediment amendment proves unsuccessful at meeting the relevant performance standard, the contaminated sediment in the vernal pools will be excavated. *Id*. at 17, 221.

The Berkshire Environmental Action Team does not explain why the Region erred in relying on this scientific research on the use of activated carbon. Nor does the Berkshire Environmental Action Team explain why it was clear error for the Region to require GE to attempt a less intrusive remedy first before resorting to excavation of the vernal pools only if needed. Because the Berkshire Environmental Action Team has failed to address the scientific evidence relied upon by the Region in support of the use of activated carbon and the Region's reasons for following a staggered approach to vernal pool remediation – use activated carbon first, and excavate only if that does not succeed – its challenge to the Final Permit's requirement as to the remediation of vernal pools fails. *See* 40 C.F.R. § 124.19(4)(ii).

The Berkshire Environmental Action Team's second argument is that the Region should have required the removal of all PCBs, instead of allowing some to remain in place covered by an engineered cap. BEAT Pet. at 4-5. The Berkshire Environmental Action Team expresses concern that large objects discarded in the River could cause the cap to fail, noting that during trash cleanup events, objects such as "refrigerators, water heaters, 6-foot diameter tires, stoves, couches, shopping carts, and more" have been found buried deep in the sediment. *Id*. Moreover, it argues, even if the cap could be constructed in a manner strong enough to withstand the force of these "insults," it would be so impervious that it would not support "the wildlife, including benthic invertebrates, that should thrive in our river." *Id*. at 4.

Again, the Region's Response to Comments addressed issues related to engineered capping in depth. *See* RTC at 197-210. There, the Region described how the engineered caps would be designed and constructed to isolate the contaminated sediments chemically and physically while also allowing for suitable habitat "to provide functions and values equivalent to the pre-existing surface sediment." *Id*. at 197-98. The Region pointed to numerous examples where engineered capping has been used successfully at other sites with differing sediments and hydrological conditions. *Id*. at 198-99. The Region also noted that excavation of contaminated sediments followed by installation of engineered capping has proven successful at the ½ Mile and 1 ½ Mile Removals, both in restoring benthic invertebrate populations and in protecting the capped PCBs against "two of the highest flow events on record." *Id*. at 198-99. Finally, the Region explained the multiple Permit requirements for inspecting and monitoring each engineered cap are designed "to ensure long-term protectiveness and to ensure that they continue to function as designed." *Id*. at 201 (quoting Permit § II.B.2.i(1)(c)). The Region emphasized that inspection and monitoring

requirements apply not just during the active remediation period but also during operation and maintenance of the completed remedy. *Id*. at 201. As the Region pointed out, "[t]here is no termination date for these requirements in the Final Permit Modification." *Id*.

The Berkshire Environmental Action Team does not explain how any of the Region's conclusions were clearly erroneous. The Berkshire Environmental Action Team asserts that the PCBs should be removed but does not explain how the Region clearly erred in deciding upon the extent of the excavation. Further, the Berkshire Environmental Action Team does not address the specifications for constructing the caps, the examples the Region cites as showing the success of the use of engineered caps in other locations, or the inspection and monitoring requirements designed to ensure that each cap continues to contain PCB sediments and restore the environmental quality of the River. Thus, the Berkshire Environmental Action Team has not met its obligation to explain why the Region's response is clearly erroneous. *See* 40 C.F.R. § 124.19(a)(4)(i).

Finally, the Berkshire Environmental Action Team states that GE should be required to sample sediments behind the Connecticut dams and remove contaminated sediment. BEAT Pet. at 5. In the Response to Comments, the Region described the monitoring program for the Connecticut portion of the River and its reasons for not selecting an active sediment-removal remedy in this part of the Rest of the River. According to the Region, the Monitored Natural Recovery requirements for the Connecticut reaches (Reaches 10-16) "include[] a continued robust monitoring program to ensure that PCB concentrations in affected media (including surface water, sediment, and biota) are occurring at the expected rate." RTC at 195. As described in more detail in response to the Housatonic River Initiative's Petition, in Part V.B.2.a.(i) above, the Region selected Monitored Natural Recovery for this portion of the Rest of the River because "sediment data collected in Connecticut show[] that, in comparison to other portions of [the] Rest of the River, PCB concentrations are relatively very low (or not detected) and more widely dispersed including behind the dams." *Id*. The Berkshire Environmental Action Team offers no rationale as to why the Region's explanation in the Response to Comments for its choice of Monitored Natural Recovery instead of excavation of the Connecticut reaches was clearly erroneous, and similarly provides no reasoning as to why the required monitoring is insufficient.

Because the Berkshire Environmental Action Team fails to explain why the Region's justification in the Response to Comments is clearly erroneous, its Petition is denied. *See* 40 C.F.R. § 124.19(a)(4)(i).

c. *The Municipal Committee's Claims*

The Housatonic Rest of River Municipal Committee ("Municipal Committee") is a committee formed under an intergovernmental agreement by five towns located in Berkshire County, Massachusetts: Great Barrington, Lee, Lenox, Sheffield, and Stockbridge. Housatonic Rest of River Municipal Committee Petition, RCRA Appeal No. 16-04, at 1-2, (Nov. 23, 2016) ("Municipal Comm. Pet."). It contends that these five tourism-dependent communities have been damaged and will continue to be damaged by the Housatonic River cleanup "over and above the damage caused by the contamination." *Id*. at 1. Nevertheless, the Municipal Committee generally supports the remedy selected by the Region but petitions for review of the Final Permit on two grounds. *Id*. *First*, the Municipal Committee contends that the Region committed clear error by failing to require GE to comply with a state law that enables the siting of hazardous waste facilities in Massachusetts. *Id*. at 18-30. *Second*, the Municipal Committee argues that the Region abused its discretion by failing to include language in the Permit that explicitly requires GE to maintain the remedy in perpetuity. *Id*. at 30-32. We address each of these arguments in turn.

(i) *Massachusetts Hazardous Waste Facility Siting Act*

The Municipal Committee alleges that the Region clearly erred by failing to require GE to comply with the Massachusetts Hazardous Waste Facility Siting Act, Mass. Gen. Laws ch. 21D ("Siting Act") in connection with the siting of temporary hazardous waste storage facilities during the cleanup. Municipal Comm. Pet. at 1. *First*, the Municipal Committee contends that the Siting Act is applicable, both because it does not constitute a permitting program that would fall within the CERCLA section 121(e)(1) permit exemption and because the Constitutional principles of general conflict preemption do not apply. *See* 42 U.S.C. § 9621(e)(1). *Second*, the Committee argues that the Region clearly erred by failing to identify the Siting Act as an ARAR. For the reasons explained below, we find it unnecessary to reach the issue of whether the Siting Act is preempted, and we find that the Region's failure to identify the Siting Act as an ARAR was not clearly erroneous.

The Massachusetts Legislature enacted the Siting Act in 1980 in order to encourage the expeditious and safe siting of hazardous waste treatment and disposal facilities within the Commonwealth. *See Warren v. Hazardous Waste Facility Site Safety Council*, 466 N.E.2d 102, 105 (Mass. 1984) (citing preamble to Mass G.L.

ch. 508). The Siting Act requires a would-be-developer of a facility[45] to submit a notice of intent to an entity known as the Hazardous Waste Facility Site Safety Council ("Safety Council"). Siting Act §§ 2, 7, 12. If the Safety Council deems the proposal to be "feasible and deserving of state assistance," it facilitates negotiations between the developer and the prospective host community or communities with the goal of establishing a binding siting agreement that will specify the terms and conditions under which the facility will be constructed and operated. *Id*. §§ 7, 12, 13. Those terms *must* include "compensation, services, and special benefits that will be provided to the community by the developer" and *may* include "direct monetary payments from the developer to the host community." *Id*. § 12. The Siting Act prohibits the construction of a hazardous waste facility unless a siting agreement is operative. *Id*.

The Municipal Committee contends that the Siting Act applies here because the Act does not constitute a permitting program that would fall within CERCLA's permit exemption for on-site work.[46] The Municipal Committee also argues that principles of conflict preemption are inapplicable. *See* Municipal Comm. Pet. at 18-24; Housatonic Rest of River Municipal Committee Reply, RCRA Appeal No. 16-04, at 4-8, 12-15 (Mar. 27, 2017) ("Municipal Comm. Reply"). In so arguing, the Committee points out that the record does not disclose the intended location(s) of the temporary storage and dewatering facilities, making it impossible to determine in advance whether such facilities would be located entirely on-site and thus subject to the CERCLA section 121(e)(1) permitting exemption. Municipal Comm. Pet. at 30.

At oral argument, the Municipal Committee clarified that it seeks assurance that the Final Permit does not serve to "preempt" the Siting Act. *See* Transcript at 308-09. The Committee indicated that it is specifically concerned about a

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[45] The Siting Act defines "facility" broadly to include "a site or works for the storage, treatment, dewatering, refining, incinerating, reclamation, stabilization, solidification, disposal or other processes where hazardous wastes can be stored, treated or disposed of; however, not including a municipal or industrial waste water treatment facility if permitted under section forty-three of chapter twenty-one." Siting Act § 2.

[46] The CERCLA permit exemption states that where a "remedial action is selected and carried out in compliance" with CERCLA, "[n]o Federal, State, or local permit shall be required for the portion of any removal or remedial action conducted entirely onsite." 42 U.S.C. § 9621(e)(1).

provision in the Final Permit that imposes deadlines for submitting certain plans to the Region for its review and approval, expressing concern that those deadlines conflict with the procedures required under the Siting Act. *Id.* at 307-10. The Permit provision in question requires GE to submit plans for certain "expedited deliverables" within thirty days after submitting its Statement of Work. Permit § II.H.1. Included in the list of expedited deliverables is the "Work plan for the siting of Temporary Centralized Contaminated Materials Processing/Transfer Location(s)." *Id*. Based on the thirty-day deadline for deliverables, the Municipal Committee expressed concern that the provision could be construed "as a directive to GE not to comply with the Siting Act." Transcript at 308.

When asked to address the Municipal Committee's concerns, the Region indicated that it does not intend for the provision at issue to affect compliance with the Siting Act, stating "[t]he language on page 65 of the permit modification has no – there was no intent to have any effect one way or the other on the Siting Act."[47] *Id*. at 338. On follow up, the Region clarified its position that the Final Permit does not speak to any broader legal questions concerning the potential applicability of the Siting Act. *Id*. at 339. Therefore, in light of the Region's representations that the Final Permit does not foreclose the Committee's pursuit of any other remedies

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[47] At oral argument, the colloquy with counsel for the Region on this point was as follows:

> Q. And would a decision in your favor on [whether the Siting Act is an ARAR] foreclose the municipal committee from thereafter pursuing whatever remedies they have under state law to enforce the Siting Act?
>
> A. * * * * [A]s far as whether it would foreclose it, our point today is that the Board can determine that the permit was validly issued based in part on the Siting Act not being an ARAR.
>
> Q. So to come full circle on that point in response to the argument by the municipal committee where they were reading, I believe, the permit to foreclose them from pursuing other remedies, your point is the only determination that you've made is that it's not an ARAR and that the region interprets that language not to foreclose them from additional remedies. Is that correct?
>
> A. The language on page 65 of the permit modification has no – there was no intent to have any effect one way or the other on the Siting Act.

Transcript at 337-38.

it may have to enforce compliance with the Siting Act, we find it unnecessary to reach the question of whether the Siting Act is preempted. *See In re Amoco Oil Co.*, 4 E.A.D. 954, 959-60 (EAB 1993) (deeming the Region's representations concerning its interpretation of permit language to be binding).

Second, the Committee argues that the Region should have included the Siting Act as an ARAR. Under CERCLA, an ARAR includes

> [A]ny promulgated standard, requirement, criteria, or limitation under a State environmental or facility siting law that is more stringent than any Federal standard, requirement, criteria, or limitation * * * [and that is] legally applicable to the hazardous substance or pollutant or contaminant concerned or is relevant and appropriate under the circumstances of the release or threatened release of such hazardous substance or pollutant or contaminant * * *.

42 U.S.C. § 9621(d)(2)(A). Any remedial action selected or secured under CERCLA must achieve "a level or standard of control * * * which at least attains such legally applicable or relevant and appropriate standard, requirement, criteria, or limitation." *Id.* The Municipal Committee maintains that the Siting Act is an ARAR that the Region should have included because the Act is a "facility siting law" and it imposes "requirements." Municipal Comm. Pet. at 23; *see also* Municipal Comm. Reply at 15-17.

In Response, the Region provides several reasons why it did not identify the Siting Act as an ARAR. *See* Region Response to Municipal Committee Petition, RCRA Appeal No. 16-04, at 16-21 (Feb. 14, 2017) ("Region Resp. to Municipal Comm. Pet."). Among other arguments, the Region contends that the Siting Act is procedural rather than substantive in nature and thus does not qualify as an ARAR. The Region further points to EPA regulations and supporting case law as making it clear that in order for a "requirement" to be an ARAR, it must be a "substantive requirement." *See* 40 C.F.R. § 300.5 (defining "applicable" and "relevant and appropriate" requirements to include "substantive requirements"); *Ohio v. United States EPA*, 997 F.2d 1520, 1527 (D.C. Cir. 1993) (upholding EPA's definition of ARARs as "EPA [has] reasonably interpret[ed] CERCLA's reference to 'a level or standard of control' to be directed at those environmental laws governing 'how clean is clean' – that is, the level or degree of cleanup required to remedy various types of toxic contamination"); *see also* RTC at 297 (explaining that the Siting Act is not an ARAR because its provisions "do not include substantive standards of control").

The Municipal Committee nevertheless asserts that the Siting Act's requirement that developers compensate host communities for potential socioeconomic harms is enough to make it substantive and, therefore, a candidate for inclusion on the ARARs list. Municipal Comm. Reply at 17. Our review of the Siting Act, however, reveals that it establishes only a *process* to facilitate the siting of hazardous waste facilities within Massachusetts by requiring would-be developers to enter into structured negotiations with potential host communities. And even if the Act does encompass a duty to compensate host communities for accepting a hazardous waste facility,[48] the duty to compensate for perceived or actual socioeconomic harms is not a "requirement" that establishes "a level or standard of control" to be met in cleaning up a hazardous substance or its threatened release. 42 U.S.C. § 9621(d)(2)(A). Therefore, based on the facts and circumstances of this case, we conclude that the Municipal Committee has not met its burden to establish clear error by the Region in not identifying the Siting Act as an ARAR.

(ii) *Maintaining the Remedy in Perpetuity*

The Municipal Committee next contends that the Final Permit should have expressly required GE to maintain the effectiveness of the remedy for the Rest of the River "on a permanent basis." Municipal Comm. Pet. at 31. Section II.B.4 of the Final Permit requires GE to institute an inspection, monitoring, and maintenance program "to evaluate the effectiveness of the Corrective Measures in achieving Performance Standards, * * * and to conduct maintenance, repair, or other response actions necessary to achieve and maintain compliance with Performance Standards." Permit § II.B.4.b(2). Upon the completion of the remedial action, section II.C. of the Final Permit mandates that GE implement an operation and maintenance program "to maintain the effectiveness of the Corrective Measures, to evaluate [Monitored Natural Recovery], and to conduct inspection, maintenance, repair, or other response actions necessary to achieve and maintain

[48] The Municipal Committee concedes that while siting agreements negotiated under the Siting Act must specify the "compensation, services and special benefits" to be provided to host communities, the Act does not require developers to make monetary payments to host communities, noting that "the siting agreement 'may' include 'provisions for direct monetary payments from the developer to the host community,' over and above those required for 'demonstrable adverse impacts.'" Municipal Comm. Pet. at 15 (quoting Siting Act § 12).

compliance with Performance Standards." *Id.* § II.C. The provision contains no termination date.

The Region's position is that these provisions make GE "responsible for conducting monitoring for a very long period of time, if not in perpetuity." RTC at 233. In fact, the Region interprets the Permit's designation of 40 C.F.R. § 761.61 as an ARAR as imposing an obligation on GE to "maintain[] the caps 'in perpetuity.'" Region Resp. to Municipal Comm. Pet. at 34. We consider such a statement of interpretation binding on the Region. *See In re Amoco Oil Co.*, 4 E.A.D. at 959-60. Similarly, GE has conceded that its operation and maintenance obligations – including its obligation to monitor and maintain the caps in the River – continue until they have been "fully performed.'" General Electric Company Response to Municipal Committee Petition, RCRA Appeal No. 16-04, at 13 (Feb. 14, 2017) ("GE Resp. to Municipal Comm. Pet.") (quoting CD ¶ 89).

Despite these provisions, interpretations, and concessions, the Municipal Committee argues that section II.C of the Permit on the operation and maintenance program is too vague to provide any assurance that GE will be required to maintain the remedy for as long as needed "to ensure long-term protectiveness." Municipal Comm. Pet. at 2. In particular, the Committee is concerned that GE can avoid its responsibility under the Permit "to maintain caps over highly contaminated sediment, and to ensure that these caps are not covered by soil carried from exposed sediments in upstream areas that are also highly contaminated." *Id.* at 30. The Municipal Committee contends that "there is nothing in the [Final Permit] or the [Consent Decree] to prevent the Region in the future from" "terminat[ing] [operation and maintenance] obligations" and there is "no clear remedy for the public were the Region to do so." Municipal Comm. Reply at 24. The Committee suggests that the Final Permit should be modified to require GE to maintain the operation and maintenance program "in perpetuity" as was required elsewhere by another EPA regional office in a CERCLA consent decree. Municipal Comm. Pet. at 31.

We find no clear error or abuse of discretion by the Region on this point. 40 C.F.R. § 124.19(a)(4). The operation and maintenance provision in the Permit is not vague and it does not give GE an "open-ended" escape hatch from its requirements under the Permit. *See* Municipal Comm. Pet. at 32. In broad terms and without limitation, the operation and maintenance provision requires GE "to maintain the effectiveness of the Corrective Measures," and "to conduct inspection, maintenance, repair, or other response actions necessary to achieve and maintain compliance with Performance Standards." Permit § II.C. Although the Permit does

not contain a specific operation and maintenance plan, it does require that GE draft such a plan for approval by the Region as part of its report on the completion of the remedial action. Importantly, the Permit contains detailed directions to GE as to what must be included in the operation and maintenance plan:

> 1. Monitoring of PCBs in surface water, sediment, and biota.
>
> 2. Inspection and maintenance of Engineered Caps.
>
> 3. Maintenance/implementation of Institutional Controls and Related Requirements * * *.
>
> 4. Inspection and maintenance of restoration activities, including invasive species control.
>
> 5. Inspection and maintenance of other Corrective Measures to ensure that Performance Standards are maintained.

Id. The Region explained that "it is not feasible or appropriate to delineate the exact and specific details of the monitoring program in the Final Permit Modification (e.g., sample locations, frequencies, analytical methods, etc.)." RTC at 231. The Region noted that GE is required to perform "detailed design work for the cleanup" and it would be premature to specify an operation and maintenance plan until after the remedial design work and Statement of Work are complete. *Id*.

Such a detailed operation and maintenance plan will provide an appropriate level of guidance to the Region concerning whether to conclude at some date in the future, that GE has satisfied its operation and maintenance obligations under the Permit. That another EPA regional office negotiated in a CERCLA consent decree an obligation for operation and maintenance to continue in perpetuity does not foreclose the Region from structuring the operation and maintenance requirements in a RCRA permit to continue only until detailed criteria are met.

Nonetheless, the Municipal Committee is concerned that the Region can grant GE a Certification of Completion of the Work for the Site under paragraph 89 of the Consent Decree for operation and maintenance requirements, allowing GE to "walk away from the Site forever." Municipal Comm. Pet. at 31; *see* CD ¶ 89(b). The Municipal Committee's concern is unwarranted. Under paragraph 89, the Region may certify that the required remedial action for the Rest of the River, including operation and maintenance requirements, is complete if the Region determines that such requirements "[h]ave been performed in accordance with th[e] Consent Decree." *Id*. Because the Consent Decree requires GE to implement the Rest of the River remedial action, including its operation and maintenance

obligations, "in accordance with EPA's final RCRA permit modification," *id*. ¶ 22(z), the Region may grant a paragraph 89 certification of completion only once the operation and maintenance requirements in the Final Permit have been fully performed. Paragraph 89 also specifies that such a certification may not be approved prior to the Region providing a "reasonable opportunity for review and comment by the State and the Trustees," which would include Massachusetts and representatives of the Secretary or Commissioner of the U.S. Department of the Interior, the U.S. Department of Commerce, the Massachusetts Executive Office of Environmental Affairs, and the Connecticut Department of Environmental Protection. *Id*. ¶ 89(b).

Given that the Permit imposes broad operation and maintenance requirements on GE and dictates that a detailed operation and maintenance plan be established to govern GE's performance of its obligations, the Municipal Committee has not demonstrated that the Region erred or abused its discretion by failing to expressly require GE to maintain the remedy permanently. Accordingly, we deny the Municipal Committee's Petition on this issue.

C. *Treatment and Disposal*

Petitioners seek review of two aspects of the Region's remedial determination on the treatment and disposition of sediment and soil to be excavated in the cleanup of the Rest of the River. As explained in Parts IV.B.2.c(ii)(b) & (iii), the Region considered five alternatives for disposal, including two that required treatment of the excavated material before disposal. In the end, the Region chose not to require treatment prior to disposal and specified that all of the excavated material be disposed of at an off-site landfill licensed to accept PCBs. GE challenges the Region's selection of off-site over on-site disposal,[49] while the Housatonic River Initiative argues that the Region should have required GE to separate the PCBs from the contaminated sediment and soil before disposal by

[49] Massachusetts, the Housatonic River Initiative, the Municipal Committee, and the City of Pittsfield oppose GE's preference for on-site disposal. Joining the Municipal Committee in its amicus brief addressing this question are the Berkshire County League of Sportsmen, Berkshire Environmental Action Team, Berkshire Natural Resources Council, Berkshire Regional Planning Commission, Housatonic Valley Association, and Massachusetts Audubon Society, Inc. *See* Amicus Brief in Support of Off-Site Disposal, Submitted by the Housatonic Rest of River Municipal Committee, Joined by Six Other Amici, RCRA Appeal No. 16-01, at 1, Ex.1 at 1-2 (Mar. 27, 2017).

using either thermal desorption or one of several other treatment technologies. We address these two issues separately.

1. *Off-site vs On-site Disposal*

GE asserts that the Region made several errors in selecting off-site disposal. For the reasons given below, we are remanding the Permit for further consideration of the off-site versus on-site disposal question because the Region failed to exercise considered judgment in how it analyzed and relied upon a federal regulation under the Toxic Substances and Control Act ("TSCA"), 15 U.S.C. §§ 2602-2697, that applies to chemical waste landfills ("TSCA Landfill regulation").[50] *See* 40 C.F.R. § 761.75. Because we are remanding this portion of the Permit, we also consider and provide observations on other arguments raised in the Petitions bearing on the Region's selection of off-site disposal, with the goal of aiding the Region's reexamination of the remanded Permit in order to speed up the cleanup of the Rest of the River. *See* Part V.C.1.b.

a. *The Region Failed to Exercise Considered Judgment in Relying on the TSCA Landfill Regulation to Select Off-site Disposal*

According to its Response to Comments, the Region selected off-site over on-site disposal based on its conclusions that off-site disposal would be more protective of human health and the environment and better satisfy several other criteria – in particular Control of the Sources of Releases, Long-term Reliability and Effectiveness, and Implementability. RTC at 238-39, 244, 251, 262. These determinations were predicated in large part on the Region's conclusion that on-site disposal would not satisfy the requirements of the TSCA Landfill regulation or qualify for a waiver of those requirements. *Id*.

The TSCA Landfill regulation establishes requirements for chemical waste landfills used to dispose of PCBs. 40 C.F.R. § 761.75(a). The regulation covers, among other things, requirements for soil thickness and permeability, the use of synthetic membrane liners, necessary hydrologic conditions, flood protection measures, topography, and monitoring and leachate collection systems. *Id*. § 761.75(b). The regulation authorizes an EPA Regional Administrator to waive

[50] TSCA authorizes EPA to regulate the production, use and disposal of certain chemicals, including PCBs. The Agency has promulgated regulations at Part 761 of Title 40 of the Code of Federal Regulations that cover the management and disposal of PCBs, including PCB remediation waste. 40 C.F.R. § 761.

"one or more of the requirements" if the owner or operator of the landfill can show that failure to meet the requirement or requirements "will not present an unreasonable risk of injury to health or the environment from PCBs." *Id.* § 761.75(c)(4).

GE dismisses the Region's determination that the TSCA Landfill regulation precludes on-site disposal, characterizing the Region's reasoning as an inconsistent "make-weight" justification added only at the end of the permitting process. GE Pet. at 12-13. According to GE, the Region "conjured" up this justification in the Response to Comments in an attempt (1) to avoid its prior conclusions in the Comparative Analysis and Statement of Basis documents that off-site and on-site disposal would be equally protective for the Rest of the River cleanup, and (2) to avoid recognition that EPA has previously endorsed on-site disposal at multiple CERCLA and RCRA sites. *Id.* at 13. The Region's determination that on-site disposal was not appropriate under TSCA is erroneous, GE argues, because in so determining, the Region "[c]ontradict[ed] its own prior statements and past practices," and did so "without any justification whatsoever." *Id.* at 13-14. GE asserts that the Region "has not responded to GE's demonstration" that the proposed on-site locations qualify for a waiver of any TSCA Landfill regulation requirements not met. GE Reply at 13; s*ee* 40 C.F.R. § 761.75(c)(4). Citing to numerous prior EPA CERCLA cleanup and RCRA corrective action decisions, GE contends that a waiver is appropriate here because EPA has "waived or avoided [these TSCA requirements] through risk-based approvals at numerous sites when equivalent protections are provided."[51] GE Reply at 14. GE claims that this alleged differential treatment of GE's proposed on-site disposal locations for the Rest of the River remedy is "arbitrary and capricious." GE Pet. at 14.

As we stated in Part II.B above, when evaluating a substantive challenge to the merits of a permit decision for clear error, the Board examines the administrative record that serves as the basis for the permit to determine whether the permit issuer exercised his or her "considered judgment." *See, e.g.*, *In re Steel Dynamics, Inc.*, 9 E.A.D. 165, 191, 224-25 (EAB 2000); *In re Ash Grove Cement Co.*, 7 E.A.D. 387, 417-18 (EAB 1997). The permit issuer must articulate with reasonable clarity the reasons supporting its conclusion and the significance of the crucial facts it relied upon when reaching its conclusion. *See, e.g.*, *In re Shell Offshore, Inc.*, 13 E.A.D. 357, 386 (EAB 2007). In addition, the decisionmaker

[51] GE also contends that there are "at least three licensed commercial disposal facilities where EPA has waived at least one of the TSCA siting criteria." GE Pet. at 15.

must "duly consider[] the issues raised in the comments" as well as other relevant information in the record, *In re Pio Pico Energy Center*, 16 E.A.D. 56, 131-34 (EAB 2013), *review voluntarily dismissed sub nom. Helping Hand Tools v. EPA*, No. 14-71267 (9th Cir. June 17, 2014), and its considered judgment must be "documented in the record." *In re Russell Energy Ctr., LLC*, 15 E.A.D. 1, 44 (EAB 2010). Finally, as a whole, the record must demonstrate that the permit issuer ultimately adopted an approach that "is rational in light of all information in the record." *In re Gov't of D.C. Mun. Separate Storm Sewer Sys.*, 10 E.A.D. 323, 342 (EAB 2002); *accord In re City of Moscow*, 10 E.A.D. 135, 142 (EAB 2001); *In re NE Hub Partners, LP*, 7 E.A.D. 561, 567-68 (EAB 1998), *review denied sub nom. Penn Fuel Gas, Inc. v. EPA*, 185 F.3d 862 (3d Cir. 1999).

Where the administrative record fails to demonstrate that a permit issuer has exercised "considered judgment," the Board typically remands the permit. For example, the Board has remanded a permit where the permit issuer was "unsure" of the governing statutory and regulatory provisions and therefore failed to provide a "cogent and complete analysis" of these provisions' applicability to the permit at hand. *In re San Jacinto River Auth.*, 14 E.A.D. 688, 701 (EAB 2010). Additionally, the Board has frequently remanded permits where discrepancies or inconsistencies exist between a permit issuer's conclusion and the administrative record. *See, e.g.*, *In re W. Bay Explor. Co.*, 17 E.A.D. 204, 220-21 (EAB 2016) (remanding permit when conclusions on presence of confining layers at underground injection well site were inconsistent with record information).

As further explained below, the Board cannot conclude from the record that the Region exercised considered judgment in relying on the TSCA Landfill regulation to select off-site disposal. Specifically, the Region failed to explain why a waiver of the TSCA Landfill regulation was not appropriate for GE's proposed on-site disposal locations, particularly in light of GE's contention that the Agency routinely grants such waivers, and the Region failed to reconcile seemingly inconsistent statements in the record. This lack of considered judgment necessitates a remand of the Permit decision to the Region to reconsider selection of the disposal location.

(i) *The Region's Consideration of the TSCA Landfill Regulation*

To best understand GE's arguments on this issue, we begin by reviewing the positions taken by GE and the Region regarding the TSCA Landfill regulation at several key stages during the permitting process. For each of these stages, we present, as appropriate, the Region or GE's recommended disposal option (off-site

or on-site), the justification given for that choice, and the position taken on whether the TSCA Landfill regulation applied and was relevant to the determination.

1) *2010 – GE's Revised Corrective Measures Study Report.* In the Revised Corrective Measures Study Report, which is the most pertinent document GE submitted to the Region bearing on remedy selection, GE concluded that an on-site landfill was "best suited" to meet the Nine Evaluation Criteria because it would permanently isolate the PCB-containing sediments, be reliable, not cause widespread long-term adverse environmental impacts, be fully implementable, and have the lowest cost. Rev. CMSR at 9-155. In evaluating on-site disposal under the Nine Evaluation Criteria, GE identified the TSCA Landfill regulation as a potential ARAR. While GE acknowledged in the Report that its proposed disposal sites would not conform with certain of the TSCA Landfill regulation's requirements on soil permeability, hydrologic conditions, and site topography, GE argued that all of the disposal sites could either meet those requirements through an alternate compliance mechanism in the regulation or qualify for a waiver under the regulation's express waiver provision. *Id*. at 9-49.[52] GE also asserted that EPA had granted TSCA

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[52] In particular, GE presented the following three points on this issue.

First, while GE admitted that none of the sites would satisfy the soil permeability requirements in section 175.75(b)(1), Rev. CMSR at 9-49; *see* 40 C.F.R. § 761.75(b)(1), it explained that it planned to install a synthetic membrane liner at each site and that under paragraph (b)(2) such a liner can be used to achieve a "permeability equivalent to the soil [permeability requirements] in paragraph (b)(1) of this section." 40 C.F.R. § 761.75(b)(2); *see* Rev. CMSR at 9-49.

Second, while GE acknowledged that the sites "would likely not meet one or more of the [hydrological] requirements of § 761.75(b)(3) (e.g., the requirements that the bottom of the liner be at least 50 feet from the historical high water table, that groundwater recharge areas should be avoided, and that there be no hydraulic connection between the site and a surface waterbody)," it argued that either section 761.75(c)(4) or section 761.61(c) authorized a waiver of some of the TSCA Landfill regulation's hydrologic conditions requirements based on the fact that the proposed landfills "would have a double liner and leachate collection * * * to prevent impacts to groundwater (and ultimately to surface water), as well as a groundwater monitoring network to ensure that groundwater is not impacted during or after operations." Rev. CMSR at 9-49-50.

Landfill regulation waivers in analogous circumstances on multiple occasions. *Id*. at 9-49 to 9-50 & n.500.

2) *2011 – Announcement of the Region's Preferred Alternative.* After reviewing the Revised Corrective Measures Study Report, the Region identified off-site disposal as its preferred Treatment/Disposition Alternative in a proposed remedy package submitted to the National Remedy Review Board for review. The Region explained that it chose off-site disposal because off-site disposal would permanently isolate the contaminated material, is reliable, would comply with ARARs, "would not cause widespread long-term adverse environmental impacts in the Rest of River, * * * and would be the most implementable from an administrative and technical feasibility perspective." NRRB Package at 9-61. In the document, the Region also stated that if on-site disposal were selected, it "would be subject to substantive TSCA requirements." *Id*. at 8-26. The Region did not, however, state that it was basing its off-site disposal decision on the inability of on-site disposal sites to comply with TSCA requirements.

3) *2014 – Draft Permit.* In the Draft Permit, the Region proposed off-site disposal, and in supporting documents gave similar reasons to those in its submission to the National Remedy Review Board. Stmt. of Basis at 35-38. In so doing, the Region did not note any concern with the protectiveness of on-site disposal, concluding that both off-site and on-site disposal "would * * * provide high levels of protection to human health and the environment because all excavated contaminated material would either be removed from the site (TD1 [off-site disposal]), [or] contained in an upland disposal facility (TD3 [on-site disposal])." *Id*. at 35. The Region did not discuss GE's identification of the TSCA Landfill regulation as an ARAR for on-site disposal or GE's argument that that regulation did not preclude on-site disposal, including GE's identification of prior examples where EPA had

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Third, GE noted that although the proposed Forest Street site would not meet the topographic requirement of the TSCA Landfill regulation that "[t]he landfill site shall be located in an area of low to moderate relief to minimize erosion and to help prevent landslides or slumping," concerns with erosion, landslides or slumping could be addressed by "engineered measures" such as "slope benching or terracing, berm buttressing and intermittent erosion breaks/sediment traps." *Id*. at 9-49 (referring to 40 C.F.R. § 761.75(b)(5)).

granted a waiver of the TSCA Landfill regulation requirements. The only concern regarding compliance with ARARs that the Region raised with on-site disposal involved *state* regulations applicable to hazardous or solid waste facilities, not the *federal* TSCA Landfill regulation. Comp. Analysis at 63.

4) *2015 – Dispute Resolution on the Region's Proposed Permit*. In defending its choice of off-site disposal in the Draft Permit during the Consent Decree's dispute resolution process, the Region stated for the first time that it had concerns regarding on-site disposal's compliance with the TSCA Landfill regulation and that those concerns weigh against selecting that disposal alternative. Asserting that "GE has not been able to identify any on-site locations that would meet the TSCA PCB landfill siting requirements," the Region expressed concern that failure to meet these requirements showed that, over the long term, on-site disposal "may be less effective at containing waste than an off-site facility." Region Stmt. of Position at 51. The Region's Statement of Position did not address GE's arguments in the Revised Corrective Measures Study Report as to why its proposed on-site disposal locations could either meet the TSCA Landfill regulation requirements or were entitled to a waiver of those requirements. The Region also did not respond to GE's assertions that EPA had routinely granted such waivers at comparable sites in the past. In reply, GE reiterated the arguments it had presented in the Revised Corrective Measures Study Report as to why the proposed on-site locations meet the TSCA Landfill regulation or otherwise qualify for a waiver. GE Stmt. of Position Reply at 12-13. GE also repeated its contention that EPA routinely grants such waivers, submitting a table listing thirteen cleanup sites where a TSCA Landfill regulation waiver had been granted for on-site disposal. *Id*. at 11-12 & n.11, tbl.1.

5) *2016 – Final Permit and Response to Comments*. The Region selected off-site disposal in the Final Permit. In the Response to Comments, the Region stated that there are "clear distinctions" between off-site and on-site disposal. RTC at 269. As it did in the dispute resolution proceeding, the Region explained that at GE's proposed locations, "on-site disposal facilities may be less effective at containing waste than an off-site disposal facility" because on-site locations "do not meet TSCA's siting requirements for PCB landfills." *Id*. at 238-39. This reasoning was a significant factor in the Region's conclusion that off-site disposal should be judged more favorably than on-site disposal under the threshold factors of Overall

Protection of Human Health and the Environment and Control of the Sources of Releases, and the balancing factors of Long-term Reliability and Effectiveness and Implementability. *Id*. at 238-39, 244, 251, 262. [53] The Region did not explicitly discuss GE's assertions in the Revised Corrective Measures Study Report regarding on-site disposal and compliance with the TSCA Landfill regulation. Although it did state that a waiver of the TSCA Landfill regulation's requirements "[w]as not appropriate" for GE's proposed landfill locations, the Region did not explain why it reached this conclusion. *Id*. at 239.

(ii) *The Region Failed to Explain Why a Waiver of the Relevant TSCA Landfill Regulation Requirements Would Be Inappropriate*

Taking into account the history of the permit proceedings, we consider GE's argument that the Region's application of the TSCA Landfill regulation to the proposed on-site disposal locations in the Response to Comments contradicts prior EPA decisions under that regulation and is inconsistent with the Region's prior conclusions in this permit proceeding. As explained above, in evaluating such an argument the Board focuses on whether the basis the Region set forth in the administrative record for the Final Permit shows that the Region exercised considered judgment.

The Region's rationale for why the TSCA Landfill regulation poses an impediment to siting a disposal facility at any of GE's proposed landfill locations was that (1) "GE acknowledges that none of the three proposed landfill sites" meet the TSCA Landfill regulation's requirements on soil permeability or hydrologic conditions and that one of the sites does not meet the regulation's topographic requirement; and (2) a waiver of any of these requirements under the TSCA Landfill regulation's express waiver provision "is not appropriate * * * here." [54] RTC at

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[53] In response to GE's Petition, the Region puts increased emphasis on its reliance on non-compliance with TSCA, Region Resp. to GE Pet. at 16, 21, including arguing that TSCA compliance gives credence to the expressed community opposition to the implementability of the on-site landfills: "[i]t is not reasonable that GE could ignore a community's views when siting a new permanent PCB disposal facility at a location that does not meet the relevant PCB landfilling requirements [i.e., the TSCA Landfill regulation]." *Id*. at 21.

[54] Despite the Region's reliance on the TSCA Landfill regulation as the basis for excluding on-site disposal options, at no point did the Region explain why it had not

239. As explained below, we have two overarching concerns with the Region's rationale.

First, notwithstanding its reliance on the Revised Corrective Measure Study Report to determine that GE's proposed on-site locations would not comply with the TSCA Landfill regulation, the Region did not address the arguments GE advanced in that Report as to how the TSCA Landfill regulation requirements could be satisfied, or if not, why they should be waived.[55] Specifically, although GE had asserted that the regulation allows the use of synthetic liners to compensate for soil permeability concerns in some circumstances, s*ee* 40 C.F.R. § 761.75(b)(2), the Region did not acknowledge either GE's assertion or its proposal to use a synthetic liner. *See* RTC at 239. Similarly, GE pointed out in the Revised Corrective Measures Study Report and in its Statement of Position from the Consent Decree dispute resolution process that the Agency has granted waivers for on-site disposal where appropriate at other contaminated sites, and GE argued that such waivers can and should be granted for GE's proposed on-site disposal locations here. Nowhere in the Response to Comments, however, did the Region explain why it believes a TSCA waiver for on-site disposal at any of the locations suggested by GE would be inappropriate or attempt to distinguish the cited waiver decisions. The Region's only acknowledgement in the Response to Comments that the TSCA Landfill

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identified the TSCA Landfill regulation as an ARAR or otherwise considered its application prior to the 2015 dispute resolution process. As noted in Part V.C.1.a.(i) above, GE identified the TSCA Landfill regulation as a potential ARAR in its Revised Corrective Measures Study Report. *See* Rev. CMS at 9-49. When asked at oral argument why it had not identified the TSCA Landfill regulation as an ARAR, the Region did not offer a satisfactory reason. Transcript at 102-14. Because, as explained further below, we are remanding this Permit for further consideration of the selection of off-site versus on-site disposal, the Region should explicitly resolve whether the TSCA Landfill regulation is an ARAR for on-site disposal and analyze on-site disposal accordingly.

[55] The Region correctly does not argue to us that GE failed to include its TSCA Landfill regulation waiver arguments in its comments on the Draft Permit and therefore GE is precluded from raising this issue here. The Region did not base its selection of off-site disposal in the Draft Permit on a conclusion that on-site disposal does not comply with the TSCA Landfill regulation. GE had no obligation to foresee and submit comments during the public comment period on a rationale for the Region's decision that the Region raised for the first time in its Response to Comments.

regulation even contains a waiver provision occurs in a conclusory parenthetical which reads, in its entirety, as follows:

> Although it is possible for TSCA siting requirements to be waived, doing so would have to be based upon a determination by EPA that it is appropriate to do so, and EPA believes that it is not appropriate to do so here.

Id. at 239.[56]

Second, the Region did not reconcile seemingly inconsistent statements on the protectiveness of on-site disposal in the Statement of Basis and Response to Comments. At the Draft Permit stage, the Region did not assert that on-site disposal posed a TSCA Landfill regulation compliance issue, and instead asserted that on-site and off-site disposal both provide high levels of protection. *See* Stmt. of Basis at 35. That view appears to shift in the Response to Comments where the Region states that TSCA compliance concerns with on-site disposal demonstrate "clear distinctions" between off-site and on-site disposal as to the overall protectiveness of these alternatives. *See* RTC at 269. Further, the Region's unexplained conclusion that waiver of the TSCA Landfill regulation would be inappropriate for the proposed on-site disposal locations potentially raises yet more questions. As noted above, a permit issuer may, in its discretion, grant a waiver of one or more of

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[56] The Region did briefly address TSCA regulation of PCB remediation wastes in the context of off-site disposal. In Attachment D to the 2014 Draft Permit, the Region proposed granting a risk-based waiver for "the manner of sampling, storage, cleanup, and disposal of PCB-contaminated sediment and soil as set out in this Permit" "as long as * * * [a]ll contaminated sediment and Floodplain soil that is removed will be disposed of off-site at an existing TSCA-approved disposal facility." Final Permit, Att. D. Citing comments it had made supporting the safety of on-site disposal, GE argued that the risk-based waiver the Region proposed should also apply to on-site disposal because "even with upland on-site disposal, the PCB handling and disposal activities would not result in an unreasonable risk of injury to human health or the environment." GE Comments on Draft Permit at 88. The Region rejected GE's comment, reasoning that it had no obligation to consider whether section 761.61(c) waivers were appropriate for all remedial alternatives. RTC at 270. This response seems to focus solely on the abstract legal question of whether the Region has an obligation to consider whether all remedial alternatives were entitled to a section 761.61(c) waiver. GE's comment, however, sought only to establish that such a risk-based waiver was appropriate for one specific rejected alternative that GE preferred. Thus, the Region's response failed to meaningfully address GE's argument.

the TSCA Landfill regulation's requirements if the permit issuer concludes that the requirements are "not necessary to protect against * * * an unreasonable risk of injury to human health and the environment." 40 C.F.R. § 761.75(c)(4). By rejecting such a waiver, however, the Region could be seen as concluding – particularly in the absence of providing any other explanation – that an on-site landfill may present an unreasonable risk to human health or the environment. At no point in the Response to Comments did the Region explain how its seemingly disparate statements about the protectiveness of on-site disposal are consistent with the Region's decision to select off-site disposal.

The Region's failure to adequately explain its TSCA waiver determination and its failure to reconcile seemingly inconsistent statements on the protectiveness of on-site disposal do not reflect considered judgment, and, therefore, we remand this aspect of the Permit. Although the Region has the regulatory authority to grant waivers of the TSCA Landfill regulation, it justified its decision to decline a waiver here with a single, conclusory sentence. And it did so without addressing prior EPA decisions granting waivers cited by GE. The Board consistently remands permits in circumstances where the permit issuer has not adequately explained its reasoning on a critical aspect of its decision. *See Pio Pico*, 16 E.A.D. at 136 (where a permit issuer merely states that it "used its best professional judgment to select [a permit term], without an articulation of what went into that judgment, [that] is insufficient and requires a remand"); *Shell Offshore*, 13 E.A.D. at 391 (remanding permit for failing to adequately explain its decision where the permit issuer responded to comments with a "cryptic and conclusory explanation"). So, too, has the Board remanded permit decisions where the permit issuer has not taken into account potentially conflicting precedents. *See Pio Pico*, 16 E.A.D. at 131 (remanding permit because the permit issuer failed to exercise considered judgment when it "overlooked highly relevant information in the record * * * that appear[ed] to directly conflict with part of the Region's underlying rationale for selecting the permit's emission limit for particulate matter"); *Steel Dynamics*, 9 E.A.D. at 223-25 (remanding a permit due to a lack of considered judgment where the permit issuer did not explain why it wrote emission limits in a form that appeared to be inconsistent with emission limits for comparable facilities). Additionally, the Region's failure to reconcile seemingly inconsistent statements in the record arising from its application of the TSCA Landfill regulation reinforces our conclusion that the Region failed to exercise considered judgment. *See In re ArcelorMittal Cleveland, Inc.*, 15 E.A.D. 611, 623 (EAB 2012) (inconsistent positions taken by the Region in interpreting the governing statute are "not reasonable" and require remand of the Region's decision on a permit modification application).

In sum, taking into account the whole of the record, the Board concludes that the Region committed clear error by failing to exercise considered judgment on the question of the TSCA Landfill regulation's application to GE's proposed on-site landfill locations. Given the central role the TSCA Landfill regulation played in the Region's decisions – influencing how the Region viewed four of the Nine Evaluation Criteria – it is unclear how the Region would have resolved the disposal location question absent this error. Accordingly, we remand the Permit for further consideration of whether off-site or on-site disposal is appropriate. We take no position on the ultimate resolution of that issue.

b. *Other Considerations Bearing on Whether Excavated Material Should Be Disposed of at an Off-site or an On-site Location*

Because we are remanding the Permit to the Region for further consideration of the method of disposal of excavated material, we provide the following observations on other disputed issues related to the choice of off-site disposal to aid the Region on remand. Each of these issues was raised in this proceeding, and the Region considered all of them in making its decision.

(i) *Compliance with Identified ARARs*

On appeal, the Region objects to each of the three possible locations identified by GE for on-site disposal because none complies with the identified ARARs. Region Resp. to GE Pet. at 19-20. For the Woods Pond location, the Region argues that an on-site landfill would violate Massachusetts regulations on disposal of solid or hazardous waste. *Id.* at 19; *see* 310 Mass. Code Regs. 16.40, 30.708. Specifically, these regulations prohibit construction of a landfill in a location designated an Area of Critical Environmental Concern under state law, and the Woods Pond location is in such an Area. As to the Forest Street site, the Region contends that a landfill "potentially implicat[es]" federal and state wetlands regulations. Region Resp. to GE Pet. at 19. Finally, as to the Rising Pond location, the Region argues that a landfill located there would "potentially implicat[e]" the Massachusetts Endangered Species Act. *Id*. at 20.

GE counters that the regulatory bars on waste disposal facilities in an Area of Critical Environmental Concern are "pretextual" as to the Woods Pond site in that an on-site landfill at Woods Pond would primarily be located on the grounds of a former sand/gravel quarry, rather than a valuable environmental resource. GE Pet. at 18-20. Alternatively, GE claims that the Region should waive this ARAR for disposal at Woods Pond under CERCLA because the Region has already waived this ARAR for cleanup actions within the Housatonic Area of Critical

Environmental Concern. As to the Forest Street and Rising Pond sites, GE argues that the Region's non-compliance claims are "speculative." *Id*. at 19.

GE's first argument on the Woods Pond site appears to be a collateral attack on the Massachusetts designation of that area of the Housatonic watershed as an Area of Critical Environmental Concern, rather than a cognizable argument under RCRA or CERCLA, or EPA policies. GE has not alleged that it had an inadequate opportunity under Massachusetts law to challenge the designation of this environmental status, nor offered any plausible basis for how its disagreement with the Massachusetts designation is reviewable by this Board. As to GE's alternative argument, the Region adequately distinguished its waiver of Area of Critical Environmental Concern restrictions on temporary storage of excavated sediment and soil because completion of the cleanup is technically infeasible without some type of temporary storage on-site as the cleanup proceeds. Region Resp. to GE Pet. at 19.

For both the Forest Street and Rising Pond locations, the Region at most asserts that ARARs are "potentially implicat[ed]" by the proposed landfill. *See* GE Pet. at 19. Yet, the applicable criterion is *Compliance* with ARARs, not *potential implications* under ARARs. For example, the National Contingency Plan explains that the Compliance with ARARs criterion requires that "[t]he alternatives shall be assessed to determine whether they attain applicable or relevant and appropriate requirements under federal environmental laws." 40 C.F.R. § 300.430(e)(9)(iii)(B). The Region has not explained in the record the relevance of potential implications. By concluding only that the Forest Road and Rising Pond sites "potentially implicat[e]" ARARs without explaining the significance of this categorization, the Region appears to have neither adequately "assessed" the sites nor "determined" whether they "attain" or do not "attain" ARARs. If the Region, on remand, continues to assert that there are issues concerning compliance with ARARs for the Forest Street and Rising Pond locations, it should either explain why "potential" compliance issues merit consideration under the Compliance with ARARs criterion or identify actual compliance issues. Without appropriate consideration of this criterion, it is difficult for any party to meaningfully understand the basis for the Region's determination.

(ii) *The Proximity of the On-site Locations to the River*

In the Response to Comments, the Region stated that "it is fair to distinguish * * * the disposal of PCBs at a landfill in close proximity to the Housatonic River and its watershed from the disposal off-site far from the Housatonic River watershed." RTC at 244. The Region was concerned that "there remains a non-

zero potential" for releases to the Housatonic River over the long-term with on-site disposal. *Id*. at 244-45. Massachusetts reiterates these points in supporting the Region's choice of off-site disposal. Mass. Response to GE Pet. at 22-23. Similarly, the Municipal Committee argues that "GE wants to put a PCB landfill where it would otherwise *never* be considered." Amicus Brief in Support of Off-Site Disposal, Submitted by the Housatonic Rest of River Municipal Committee, Joined by Six Other Amici, RCRA Appeal No. 16-01 at 21 (Mar. 27, 2017) ("Municipal Comm. Amicus Brief"). The Municipal Committee cites to the TSCA Landfill regulation as evidence that a landfill in close proximity to the River is riskier than one elsewhere. *Id*. at 15-16. Further, the Municipal Committee stresses the difficulties in remediating a spill if it were to reach the River and the "high recreational/aesthetic values" of the River. *Id*. at 16-17.

GE disputes whether considering the region surrounding a landfill is appropriate under the Nine Evaluation Criteria in the 2000 Permit. Specifically, GE notes that the applicable criterion is designated as "Control of Sources of Releases," rather than "Control of Sources of Releases to the Housatonic River." GE Reply to Massachusetts Response to GE Petition at 10-11 ("GE Reply to Mass. Resp."). Under this criterion, GE argues that there is no distinction between off-site and on-site disposal because "[o]n-site and out-of-state facilities are equally protective, and that is certainly true with respect to their ability to control sources of releases." *Id*. at 10. GE accuses Massachusetts of preferring to "pass the theoretical risk of a release from a disposal facility on to another state while adding the risks of long-distance transportation." *Id*. In responding to the Municipal Committee, GE asserts that the risk of release from any PCB landfill "is highly remote" because "PCBs bind to organic matter and are unlikely to move and because PCB disposal facilities, whether out-of-state or on-site, are created and managed in accordance with EPA-approved standards and are subject to detailed Agency oversight." GE Response to Amicus Curiae Briefs at 5-6.

The record would benefit from further development of this issue. Although the Control of Sources of Releases criterion does not specifically direct the Region to consider the location of the landfill under this criterion, the location of the landfill might provide information relevant to examination of other criteria such as Long-term Reliability and Effectiveness and Short-term Effectiveness. For example, because the Region failed to exercise considered judgment in evaluating on-site versus off-site disposal, the record does not include information sufficient to evaluate the significance of the concern raised by placing an on-site landfill outside the 500-year flood zone but still in close proximity to the River. Additionally, the way in which EPA has applied the TSCA Landfill regulation to PCB landfills, or

other chemical waste landfills, proposed to be placed near a river would appear to be relevant to determining the risks of such a facility. No party, however, has cited to relevant EPA decisions on such landfills.

Further record development may also be useful on the potential impacts of a spill on environmental resources, businesses, and residences near the proposed on-site disposal locations. Additionally, GE has argued that the uniqueness of an on-site location cannot be determined in a vacuum, but only in comparison to specific off-site disposal locations. Although the Region has indicated that a particular off-site disposal facility would not generally be named in a permit, in relying on the purported uniqueness of resources surrounding an on-site disposal location it may be necessary to establish a record concerning the environmental or human impacts associated with likely off-site disposal locations so that a reasonable comparison may be made. The burden of producing such an analysis would not appear to be great, as EPA guidance documents indicate that there are currently only ten commercial landfills in the United States that are approved under TSCA to accept PCB waste. US EPA, Technology Alternatives for the Remediation of PCB Contaminated Soils and Sediments at 13, tbl.5 EPA/600/2-13/079 (2013).

(iii) *Destruction of Valuable and Uncontaminated Habitat*

In the Response to Comments, the Region stated that habitat impacts could occur as forested land at the proposed on-site locations is converted over a period of 15 years to grassland. RTC at 241. Similarly, Massachusetts argues that construction of an on-site landfill would "cause adverse long-term environmental impacts" resulting from "permanent alteration of the existing habitat within the landfill area itself and any access roads that would remain after closure of the facility." Mass. Resp. to GE Pet. at 16-17. Like the Region, the principal negative impacts that Massachusetts cites are the loss of "prime forest land" at the Forest Street and Rising Pond sites, and the disruption of wetlands at the Forest Street site. *Id*. at 17. Massachusetts further notes that the on-site locations proposed for the construction of a disposal facility are currently not contaminated, unlike pre-existing facilities located off-site. *Id*. The Municipal Committee also protests GE's attempt to construct "a PCB landfill in the middle of a New England forest, the greenest of 'greenfields.'" Municipal Comm. Amicus Brief at 15.

Although GE acknowledges that the Forest Street and Rising Pond sites are primarily forested, it has noted that "the trees [on these sites] could be cut without regulatory approval." GE Comments on Draft Permit at 12. As to the uncontaminated nature of the on-site locations, GE argues that Massachusetts "does not and cannot explain why this difference [between on-site and off-site locations]

would make the on-site disposal facilities unprotective." GE Reply to Mass. Resp. at 6. GE claims that shipping roughly one million cubic yards of contaminated materials to an off-site landfill is likely to require the expansion of the landfill into previously uncontaminated land or at least hasten the necessity for such an expansion. *Id*.

As with the proximity issue, the record could benefit from further development of the potential significance of any habitat impacts at the proposed sites. The parties here have argued at length in their briefs about whether on-site or off-site disposal would cause more uncontaminated land to be devoted to a PCB landfill. However, evidence on that point should presented to and considered by the Region in the first instance, not the Board.

(iv) *Zoning*

GE argues that the Region erred in concluding that the substance of local zoning restrictions should be considered under the Implementability criterion. CERCLA, GE argues, exempts on-site remedial actions from having to meet local permit requirements. Thus, because the Consent Decree states that the Rest of the River remedy will be implemented under CERCLA, by definition zoning restrictions cannot impact implementation of on-site disposal.[57] GE Pet. at 22.

In response, both the Region and the Municipal Committee argue that even if CERCLA preempts the need to obtain local zoning permits, the substance of zoning requirements can be considered under the Nine Evaluation Criteria in the 2000 Permit. Region Resp. to GE Pet. at 22; Municipal Comm. Amicus Brief at 18-19. Along these lines, Massachusetts maintains that local zoning restrictions at the three sites support the Region's determination that it would be difficult to implement on-site disposal. Massachusetts states that the Forest Street site is "zoned primarily as Conservation – Residential," the Rising Pond site is "zoned as residential property with [lot] size of at least 1 acre," and "a significant portion of the operational area of the proposed Woods Pond disposal location is zoned as Conservation – Residential." Mass. Resp. to GE Pet. at 25. Supporting the nature

[57] GE also argues that language in the 2000 Permit requiring consideration of zoning restrictions applies only to off-site disposal given that CERCLA preempts permit requirements for on-site locations. GE Pet. at 22. But Massachusetts disputes the applicability of CERCLA's preemption to the proposed landfill sites, noting that it does not concede that these sites are "on-site" within the meaning of the National Contingency Plan. Mass. Resp. to GE Pet. at 25-26.

of these zoning restrictions, the Municipal Committee claims that "all three [sites] have homes nearby, and all are located near beautiful conservation/recreation areas." Municipal Comm. Amicus Brief at 17. In particular, the Municipal Committee argues that the Forest Street and Rising Pond sites "are about as far from a typical industrial landfill site as can possibly be imagined." *Id*. at 19.

On remand, the Region should explain how consideration of such zoning concerns is consistent with RCRA's standard for corrective action permits and to provide record evidence on the content of zoning requirements and their application in practice.

(v) *State and Community Views*

GE contends that the Region improperly relied on state and community opposition to on-site disposal when deciding that the excavated waste should be sent off-site. GE Pet. at 20-23. GE argues that the 2000 Permit does not identify state and community acceptance as one of the Nine Evaluation Criteria. *Id*. at 22-23. On the other hand, the Region claims that state and community opposition to on-site disposal falls within the more general criterion of "Implementability" identified in the 2000 Permit. *See* Region Resp. to GE Pet. at 21. GE disagrees, pointing out that "implementability" and "state and community acceptance" are defined separately in the National Contingency Plan. *See* GE Reply to Region at 7-9. On remand, we suggest that the Region consider the following two points.

First, the Consent Decree does not explicitly require the Region to select the remedy on the basis of the Nine Evaluation Criteria alone. The 2000 Permit, which is attached as an appendix to the Consent Decree, provides that the Region must select corrective measures for the Rest of the River area "[b]ased on the information that [GE] submits pursuant to [the 2000 Permit] *and any other relevant information* in the Administrative Record for the modification of [the 2000 Permit]." 2000 Permit § II.J (emphasis added). Thus, on its face, the 2000 Permit allows the Region to consider "any other relevant information" in addition to information submitted by GE. In addition, while the 2000 Permit requires GE, in the Corrective Measures Study Report, to "[a]t a minimum" provide information concerning the extent to which each corrective measure being evaluated satisfies the Nine Evaluation Criteria, it contains no language requiring the Region to select the remedy on the basis of these nine criteria. *Id.* § II.G. Further, while the 2000 Permit requires GE to conclude the Corrective Measures Study Report with a recommendation as to which corrective measure, or combination thereof, is, in GE's opinion, "best suited to meet the general standards * * * in consideration of the decision factors * * * including a balancing of those factors against one

another," *id*. § II.G.3, and requires the Region to either approve, conditionally approve, or disapprove the report, *id*. § II.H, the 2000 Permit does not require the Region to concur with GE's recommendation. Thus, we interpret the Consent Decree, together with the 2000 Permit, to require GE to *address* the Nine Evaluation Criteria, and the Region to *consider* the information provided by GE concerning those criteria, but we do not interpret them to require the Region to select a remedy based on the Nine Evaluation Criteria alone. Instead, we interpret the Consent Decree and the 2000 Permit to require the Region to issue a permit consistent with RCRA and its implementing guidance.

Second, even though the 2000 Permit did not require the Region to select a remedy based on the Nine Evaluation Criteria alone, one issue the Region may wish to consider further on remand is the extent to which state and community acceptance of a proposed corrective action is permissible under the Implementability criterion specifically. As the Agency has pointed out, some aspects of state and community acceptance are permissibly considered under RCRA within the scope of the RCRA guidance "Implementability" Remedy Selection Decision Factor.

> Implementability will often be a determining variable in shaping remedies. Some technologies will require state or local approvals prior to construction, which may increase the time necessary to implement the remedy. *In some cases, state or local restrictions or concerns may necessitate eliminating or deferring certain technologies or remedial approaches from consideration in remedy selection.* Information to consider when assessing implementatability may include:
>
> 1. The administrative activities needed to implement the corrective measure alternative (e.g. permits, rights of way, off-site approvals, etc.) and the length of time these activities will take;
>
> 2. The constructability, time for implementation, and time for beneficial results;
>
> 3. The availability of adequate off-site treatment, storage capacity, disposal services, needed technical services and materials; and
>
> 4. The availability of prospective technologies for each corrective measure alternative.

EPA, Office of Waste Programs Enforcement, Office of Solid Waste, RCRA Corrective Action Plan, OSWER Directive 9902.3-2A, at 55-56 (May 1994)

(emphasis added). Moreover, the Region may wish to consider the extent to which state and community acceptance of a proposed corrective action is permissible under RCRA generally. For example, factoring in state and community views that directly address any of the four General Standards for Remedies or any of the five Remedy Selection Decision Factors, as outlined in RCRA guidance – and that are documented in the record – would seem more likely to be permissible. *See* 1990 Subpart S Proposal, 55 Fed. Reg. at 30,823-25. At the other extreme, factoring in state and community views that have no relevance to the RCRA criteria for remedy selection, or that are unduly vague or speculative, might not be permissible. The Region may also wish to consider the extent to which factoring state and community acceptance into a permitting decision is consistent with the Agency's omnibus permitting authority under RCRA. *See* 42 U.S.C. § 6925(c)(3) (authorizing a permit issuer to include "such terms and conditions * * * determine[d] necessary to protect human health and the environment").

(vi) *Cost*

GE has argued that the only distinction between off-site and on-site disposal under the Nine Evaluation Criteria is that off-site disposal is "massively" more costly, and that this factor should be decisive on the selection of a disposal alternative. Transcript at 59, 74-75. However, the parties have characterized the cost difference between off-site and on-site disposal quite differently in contending how much weight cost should play in selecting the remedy for the Rest of the River. In CERCLA actions, the role of cost in remedy selection has been the subject of litigation in federal court. *See, e.g.*, *Franklin Cnty. Convention Facilities Auth. v. Am. Premier Underwriters, Inc.*, 240 F.3d 534, 546 (6th Cir. 2001); *U.S. v. Sterling Centrecorp Inc.*, 208 F. Supp. 3d 1126, 1137-38 (E.D. Cal. 2016); *see Pentair Thermal Mgmt., LLC v. Rowe Indus.*, 2013 U.S. Dist. LEXIS 47390, at *39-44 (N.D. Cal. Mar. 31, 2013). These decisions are relevant to RCRA both because EPA based the RCRA criteria on its CERCLA experience, and because EPA explicitly noted that remedial decisions under CERCLA and the RCRA corrective action program "should generally result in similar remedies when applied to similar site-specific conditions." 1996 ANPR, 61 Fed. Reg. at 19,449. To the extent cost is an issue on remand, these cases may aid the Region in articulating a rationale on how costs should be weighed in choosing a RCRA remedy.

Prior to oral argument, the Board also asked the parties to be prepared to present examples of other EPA remedial decisions in which cost played a significant role in the choice of remedy. As with federal case law, prior Agency

precedent may be a helpful guide to the Region in evaluating what is a consistent, reasoned approach to consideration of costs in choosing a RCRA remedy.

2. *Treatment of the PCB-contaminated Material Prior to Disposal*

The Housatonic River Initiative does not quarrel with the Region's decision to ship excavated material off-site, but it does contend that the PCB-contaminated material should be treated to remove the PCBs before being placed in a landfill. The Housatonic River Initiative primarily advocates that the Region should have required that the contaminated sediment and soil be treated using the process of thermal desorption to remove the PCBs. HRI Pet. at 28. Alternatively, the Housatonic River Initiative argues that bioremediation is a viable alternative for treating the excavated material. *Id*. at 33. The Housatonic River Initiative cites to various examples that it claims show that both thermal desorption and bioremediation would be efficacious for the Rest of the River cleanup. *Id*. at 28-30, 33-38. Further, the Housatonic River Initiative argues that the Region, by failing to require treatment of the remediation wastes from the Housatonic River, has not heeded the CERCLA preference for permanent solutions and alternative treatment technologies. *Id*. at 27.

The Region argues that the Housatonic River Initiative's claims regarding thermal desorption and CERCLA's preference for permanent solutions and alternative treatment technologies should be dismissed because the Housatonic River Initiative failed to include these claims in its comments on the Draft Permit. Region Resp. to HRI Pet. at 27. On the merits of these claims, the Region contends that it adequately considered and rejected thermal desorption, *id.* at 29-30, 34, and *did* consider permanent solutions and alternative treatment technologies as part of its remedial decisionmaking consistent with CERCLA requirements. *Id.* at 31. On bioremediation, the Region asserts that the Housatonic River Initiative's Petition fails to respond to or identify any flaw in the Region's explanation in the Response to Comments for not choosing this treatment technology. *Id*. at 29.

a. *Thermal Desorption*

The Housatonic River Initiative argues that the Region erred by not requiring GE to treat excavated sediment and soil using thermal desorption before disposal or reuse of the material. Thermal desorption was one of the Treatment/Disposition alternatives considered by the Region but the Region rejected this alternative under the Nine Evaluation Criteria, expressing concerns about, among other things, thermal desorption's effectiveness and cost. As to effectiveness, the Region explained that thermal desorption had been used at sites

only where "the volumes of materials that were treated were substantially smaller and the duration of the treatment operations was substantially shorter than the volumes and duration that could be required at the Rest of River." Comp. Analysis at 65; *see* Rev. CMSR at 9-115 to 9-116. On cost, the Region pointed out that thermal desorption was "the most expensive alternative," costing approximately double the second most expensive alternative, off-site disposal without treatment. Comp. Analysis at 76, 78 tbl.27.

In its Petition, the Housatonic River Initiative argues that the thermal desorption is the Treatment/Disposition alternative that best meets the Nine Evaluation Criteria and stresses that thermal desorption has been effectively used at numerous sites to clean up contaminated soil. HRI Pet. at 28-30. To support its claim on effectiveness, the Housatonic River Initiative cites to three EPA reports, published between 1996 and 2012, describing various treatment technologies,[58] and two specific cleanup actions. The first cleanup action cited by the Housatonic River Initiative involves the Rose Disposal Pit, located in Lanesborough, Massachusetts, and the second is an ongoing action at Danang Airport in Vietnam conducted jointly by the U.S. Agency for International Development and the Vietnamese government. The soil cleanup at the Rose Disposal Pit was completed in 1994[59] and the Danang Airport cleanup is ongoing, having begun in 2008.[60]

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[58] John Blanchard & Robert Stamnes, Office of Solid Waste & Emergency Response, U.S. EPA, EPA 540/F-95/031, *Engineering Forum Issue Paper: Thermal Desorption Implementation Issues* (Jan. 1997); Office of Solid Waste & Emergency Response, U.S. EPA, EPA-542-R-96-010, *Innovative Treatment Technologies: Annual Status Report* (8th ed. Nov. 1996); Office of Solid Waste & Emergency Response, U.S. EPA, EPA 542-F-12-020, *A Citizen's Guide to Thermal Desorption* (Sept. 2012).

[59] Information about the Rose Disposal Pit site is available on EPA's website. U.S. EPA, Superfund Site: Rose Disposal Pit, Lanesboro, MA, https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.topics&id=0100721#Status (last visited on Jan. 23, 2018).

[60] The Housatonic River Initiative cites to the following webpage for information on the Danang Airport cleanup: USAID, Environmental Remediation of Dioxin Contamination at Danang Airport Project, https://www.usaid.gov/vietnam/environmental-remediation-dioxin-contamination-danang-airport-project-frequently-asked-questions (last visited Jan. 23, 2018). Information on the timeline for this project can be found on an associated web page. USAID, Environmental Remediation: Project Timeline,

The Housatonic River Initiative's thermal desorption argument fails on procedural grounds. The Housatonic River Initiative has not, as required by EPA's permit regulations, demonstrated that the issue of whether the thermal desorption alternative should have been part of the Rest of the River remedy "was raised during the public comment period." 40 C.F.R. § 124.19(a)(4)(ii). Specifically, section 124.19 of EPA' regulation on permit appeals states:

> Petitioners must demonstrate, by providing specific citation or other appropriate reference to the administrative record * * *, that each issue being raised in the petition was raised during the public comment period (including any public hearing) to the extent required by § 124.13.

Id. In turn, section 124.13 commands that "[a]ll persons * * * who believe any condition of a draft permit is inappropriate * * * must raise all reasonably ascertainable issues * * * by the close of the public comment period." *Id*. § 124.13. The Housatonic River Initiative admits that it did not raise its dispute with the Region's rejection of the thermal desorption alternative in its comments, HRI Reply at 16, and has not cited any comments by other parties that raise the issue. Further, the issue that the Housatonic River Initiative now raises in its Petition – should the Region have required thermal desorption as part of the remedy for the Rest of the River – was reasonably ascertainable during the 2014 public comment period on the Draft Permit. The Region's decision to reject the thermal desorption alternative and the Region's detailed rationale supporting that determination were discussed in the Statement of Basis and Comparative Analysis, which were released contemporaneously with the Draft Permit at the start of the public comment period.

Despite its failure to comment on the thermal desorption issue during the 2014 public comment period, the Housatonic River Initiative argues in its Reply Brief that it should be allowed to raise this issue in its appeal because there have been "recent breakthroughs" in thermal desorption technology. HRI Reply at 16. The "recent breakthrough" that Housatonic River Initiative cites is the success of the cleanup action at the Danang Airport, which the Housatonic River Initiative claims shows that thermal desorption has "new found practical capacities to

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https://www.usaid.gov/vietnam/environmental-remediation-project-timeline (last visited Jan. 23, 2018).

effectively treat much larger amounts of contaminated soils and sediments."[61] *Id.* We do not find the Housatonic River Initiative's argument persuasive.

The alleged "breakthrough" that the Housatonic River Initiative relies upon does not identify an issue that was not reasonably ascertainable during the 2014 comment period; rather, the breakthrough is simply additional evidence that is potentially relevant to the reasonably ascertainable issue of whether GE should have been required to use thermal desorption to treat contaminated material in the Rest of the River cleanup. With any treatment technology, there may often be one more study or one more cleanup that bears on the technology's effectiveness. To excuse a petitioner from the obligation to raise a reasonably ascertainable issue during the public comment period on the basis of such new information "would be to invite unlimited attempts by [petitioners] to reopen and supplement the administrative record after the period for submission of comments has expired." *In re General Motors Corp.*, 5 E.A.D. 400, 405 (EAB 1994) (barring petitioner from raising a claim in its petition based on soil sampling measurements collected after the permit was approved). Further, to allow such new technical claims to be presented to the Board on appeal upends EPA's administrative review structure for permits that is based on the principle that "the locus of responsibility for important technical decisionmaking rests primarily with the permitting authority, which has the relevant specialized expertise and experience." *In re Peabody W. Coal Co.*, 12 E.A.D. 22, 33 (EAB 2005), *review dismissed for lack of venue*, No. 12-1423 (D.C. Cir. Mar. 12, 2013), *review voluntarily dismissed*, No. 12-73395 (9th Cir. June 6, 2013); *accord BP Cherry Point*, 12 E.A.D. at 219-20 (permitting conditions should be determined at the permit authority level). The Board's role is to review the administrative record to determine whether the Region's decision was clearly erroneous or constituted an abuse of discretion, not to resolve technical issues that are best resolved by the permit issuer. *In re W. Bay Explor. Co.*, 17 E.A.D. 204, 222 (EAB 2016). Further, as the Board has frequently noted, procedural rules such as this add a needed finality to the permit process. *See, e.g., Shell Offshore, Inc.*, 13 E.A.D. at 394 n.55 (quoting *In re New Eng. Plating Co.*, 9 E.A.D. 726, 732

[61] Information available online indicates that the Danang Airport project has removed dioxin from 45,000 cubic meters (58,875 cubic yards) of soil and sediment by thermal desorption to date and that another 45,000 cubic meters is expected to be treated. USAID, Environmental Remediation: Project Timeline, https://www.usaid.gov/vietnam/environmental-remediation-project-timelineprocess (last visited Jan. 23, 2018).

(EAB 2001)); *In re Sutter Power Plant*, 8 E.A.D. 680, 687 (EAB 1999*); Christian Cnty.*, 13 E.A.D. at 449.

Accordingly, the Housatonic River Initiative's challenge to the Region's decision not to select the thermal desorption alternative is denied because the Housatonic River Initiative fails to demonstrate that the issue was raised in the public comment period on the Draft Permit.

b. *Bioremediation*

In its comments, the Housatonic River Initiative stated that "emerging technologies * * * are providing a number of viable alternatives to incineration and landfilling." Housatonic River Initiative Comments on Draft Permit at 21 (Oct. 23, 2014), AR568046. The Housatonic River Initiative called particular attention to bioremediation as an alternative to physical containment of PCB-contaminated soils, citing several articles that contain generalized comments supporting the efficacy of bioremediation. *Id.* at 22-25. In responding to the Housatonic River Initiative, the Region noted that "there has not been to date sufficient demonstration that bioremediation would be effective and meet the project goals." RTC at 272. Further, the Region pointed out that one of the bioremediation projects relied on by the Housatonic River Initiative – a cleanup at the New England Log Homes factory – had been terminated by the Massachusetts Department of the Environment based on its conclusion that the bioremediation showed no reduction of contaminants but only served to dilute and redistribute contaminants across the site. *Id.*

In its Petition, the Housatonic River Initiative renews its request that the Region "expand its consideration of * * * alternative remedial technologies like Bioremediation for the Rest of the River." HRI Pet. at 38. However, the Housatonic River Initiative fails to explain how the Region erred in concluding that bioremediation of PCBs had not been shown to be "effective" and able "to meet the project goals." The Housatonic River Initiative fails to address the Region's conclusion in the Response to Comments that the Massachusetts Department of the Environment had found bioremediation had been unsuccessful in the New England Log Factory cleanup. *See id.* at 37-38 (discussing the New England Log Factory cleanup without acknowledging the Region's conclusion in the Response to Comments). The Housatonic River Initiative also fails to rebut the Region's concerns about bioremediation's effectiveness and ability to meet project goals by merely quoting its descriptions of various studies from its 2014 comments. *See id.* at 34-37 (quoting its prior comments on unfinished phytoremediation studies in

East Chicago, Illinois, and Altavista, Virginia, and several studies of in situ ozone treatment). *See* HRI Comments at 22-23; HRI Pet. at 34.[62]

Accordingly, we reject the Housatonic River Initiative's claim because the Housatonic River Initiative fails to show that the Region clearly erred in determining in the Response to Comments that bioremediation had not been shown to be effective remedy for the Rest of the River cleanup.

c. *CERCLA Preference for Permanent Solutions*

In general support of its arguments concerning thermal desorption and bioremediation, the Housatonic River Initiative claims that "the Final Remedy fails to satisfy a key component of CERCLA," namely, "by failing to adequately explain why the preference for treatment will not be met, and barring that, by failing to implement permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable." HRI Pet. at 26. We deny the Housatonic River Initiative's argument on this point on procedural grounds.

As with its thermal desorption claim, the Housatonic River Initiative did not include this argument in its comments on the Draft Permit or show that some other party raised it. As noted above, to obtain Board review, petitioners "must demonstrate * * * that each issue being raised in the petition was raised during the public comment period." 40 C.F.R. § 124.19(a)(4)(ii). The Housatonic River Initiative does not deny that it did not raise this issue in its comments, but counters that this is irrelevant because "Region 1 is well aware that [the Housatonic River Initiative] has raised the issue of CERCLA's preference for treatment year after year, meeting after meeting." HRI Reply at 15. However, the issue is not whether the Region was "aware" of Housatonic River Initiative's concern. The issue is whether the Housatonic River Initiative or another party filed a comment on the

[62] Additionally, the Housatonic River Initiative cites short summaries of several other articles that the Housatonic River Initiative claims show the effectiveness of bioremediation. HRI Pet. at 34-37. But these studies are not in the administrative record and the Board will not consider studies presented for the first time on appeal. *See In re W. Bay Explor. Co.*, UIC Appeal No. 14-66, at 11-13 (Sept. 22, 2014) (refusing to consider scientific articles presented for the first time on appeal) (Order Denying Review). As noted above in regard to the Housatonic River Initiative's thermal desorption argument, "the locus of responsibility for technical decisionmaking" in the first instance rests with the permit issuer not the Board. *Peabody W. Coal*, 12 E.A.D. at 33.

Draft Permit arguing that the proposed remedy failed to satisfy CERCLA's preference for treatment. In that way, the comment and the Region's response could be included in the administrative record for Board review.

The Board's regulations specify that comments must be submitted "by the close of the public comment period," 40 C.F.R. § 123.13, and that petitioners must demonstrate that someone raised each issue presented in the petition "during the comment period." 40 C.F.R. § 124.19(a)(4)(ii). The Board has construed these regulations to mean that all reasonably ascertainable issues must be raised during the comment period. *See, e.g.*, *In re City of Phoenix, Ariz. Squaw Peak & Deer Valley Water Treatment Plants*, 9 E.A.D. 515, 524 (EAB 2000), *appeal dismissed per stipulation*, Doc. No. 01-70263 (9th Cir. Mar. 21, 2002). Raising an issue prior to the public comment period does not suffice. *See In re Kawaihae Cogeneration Project*, 7 E.A.D. 107, 119 (EAB 1997). As the Board has previously noted, the requirement that comments to be raised during the comment period "is not an arbitrary hurdle, placed in the path of potential petitioners simply to make the process of review more difficult" but instead "serves an important function related to the efficiency and integrity of the overall administrative scheme." *BP Cherry Point*, 12 E.A.D. at 219. Enforcing this requirement not only ensures that the permit issuer has the first opportunity to correct any potential problems in the draft permit, it also ensures that the permit process itself will have finality. *Sutter*, 8 E.A.D. at 687. To require the Region to respond to all comments it "knew" about – whenever they were filed – would be especially harsh in the present case given the Region's extensive efforts at outreach to the public over the fourteen years between entry of the Consent Decree and release of the Draft Permit. Moreover, it would discourage permit issuers from in the future providing extra public participation opportunities in the permitting process.

Accordingly, the Housatonic River Initiative's argument that the Region failed comply with CERCLA's preference for permanent solutions and alternative treatment technologies is denied because the Housatonic River Initiative fails to demonstrate that the issue was raised in the public comment period on the Draft Permit.[63]

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[63] Putting aside HRI's failure to comment, if we were to find that this CERCLA requirement applies to the selection of a RCRA corrective action, the Housatonic River Initiative would still fail to demonstrate that the Region acted inconsistently with CERCLA by selecting a remedy that does not require treatment. CERCLA requires only that EPA

VI. *CONCLUSION AND ORDER*

We deny the Petitions of the following parties in their entirety: the Housatonic River Initiative, Mr. C. Jeffrey Cook, the Housatonic Rest of the River Municipal Committee, and the Berkshire Environmental Action Team. We grant two aspects of GE's Petition: (1) its challenge to the Final Permit provisions addressing additional response actions for Legally Permissible Future Work or Projects in Permit §§ II.B.2.j(1)(c), 2(e); II.B.2.k(1), 2(a); II.B.2.*l*(1)(a), 2(a); II.B.6.b(1) & (2)(b) & (c); & II.B.6.c; and (2) its challenge to the choice of off-site over on-site disposal for contaminated sediment and soil excavated from the Rest of the River. [64] The provisions of the Final Permit pertaining to these issues are

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use "permanent solutions and alternative treatment technologies * * * to the maximum extent practicable," and publish an "explanation" if it does not choose such a technology in its remedial decision. 42 U.S.C. § 9621(b)(1). Here, the administrative record documents the extensive examinations undertaken by the Region and GE of possible corrective measures that involve alternative treatment technologies and result in permanent solutions. *See* Stmt. of Basis at 11 (explaining that the Region evaluated all alternatives under the criterion of whether they "utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable"); RTC at 270-72 (describing how GE screened multiple treatment technologies, including incineration, thermal desorption, chemical dehalogenation, solvent extraction, soil washing in the Corrective Measures Study and Corrective Measures Study Proposal, and conducted a detailed analysis of chemical extraction and thermal desorption). The Region closely examined chemical extraction and thermal desorption in the Comparative Analysis and explained why these alternative were not chosen in that document and the Statement of Basis. Comp. Analysis at 61-62, 65, 71; Stmt. of Basis at 35-38. The Housatonic River Initiative has presented no specific argument challenging this record of consistency with CERCLA requirements.

[64] Remaining before the Board are three pending motions: Region 1's Motion for Leave to File a Sur-reply, Massachusetts' Motion to Strike, and Massachusetts' Motion for Leave to File a Surreply. We dispense with those motions as follows.

We GRANT the Region's Motion for Leave to File a Sur-reply. GE filed a response indicating that it does not oppose the Region's motion, and no other party or interested person has filed a response with the Board indicating support or opposition. Therefore, we grant the Region's motion and have taken the Sur-reply and GE's response under consideration.

remanded to the Region for further consideration consistent with this opinion, including the observations delineated in Part V.C.1.b. On remand, the Region may reopen the record for additional public comment as necessary, in accordance with 40 C.F.R. § 124.14(b).[65]

So ordered.

We DENY AS MOOT the Massachusetts' Motion to Strike and its Motion to File a Surreply. Both of Massachusetts' motions concern GE's challenges to the Region's selection of off-site disposal for the excavated material. Massachusetts contends that GE, in its Reply to Massachusetts' Response to GE's Petition for Review, wrongfully relies upon and quotes from documents that do not appear in the administrative record and that it raises new issues for the first time on appeal. Because we are remanding the disposal question to the Region for further consideration consistent with this decision, Massachusetts' motions are moot.

[65] Anyone dissatisfied with the Region's decision on remand must file a petition seeking Board review in order to exhaust administrative remedies under 40 C.F.R. § 124.19(*l*).