

United States Court of Appeals For the First Circuit

No. 22-1398

HOUSATONIC RIVER INITIATIVE;
HOUSATONIC ENVIRONMENTAL ACTION LEAGUE,

Petitioners,

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,
New England Region,

Respondent,

GENERAL ELECTRIC COMPANY;
HOUSATONIC REST OF RIVER MUNICIPAL COMMITTEE,

Intervenors.

PETITION FOR REVIEW OF AGENCY ACTION OF
THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Before

Gelpí, Lynch, and Montecalvo,
Circuit Judges.

Andrew Rainer, Stephanie R. Parker, and Katy T. Garrison,
with whom Brody, Hardoon, Perkins & Kesten, LLP, O'Connor Carnathan
& Mack LLC, and Murphy & Riley, PC were on brief, for petitioners.

Jeffrey Hammons, Trial Attorney, United States Department of
Justice, Environment and Natural Resources Division, with whom
Todd Kim, Assistant Attorney General, United States Department of
Justice, Environment and Natural Resources Division, John Kilborn,
United States Environmental Protection Agency, Region One, Timothy
Conway, United States Environmental Protection Agency, Region One,
and Brian Grant, United States Environmental Protection Agency,

Office of General Counsel, were on brief, for respondent.

Kwaku A. Akowuah, with whom James R. Bieke, Madeleine Joseph, Sidley Austin LLP, Jeffrey R. Porter, Mintz, Levin, Cohn, Ferris, Glovsky & Popeo, P.C., and Andrew J. Thomas were on brief, for General Electric Company.

Matthew Pawa, with whom Seeger Weiss LLP was on brief, for Housatonic Rest of River Municipal Committee.

July 25, 2023

LYNCH, Circuit Judge. Petitioners Housatonic River Initiative ("HRI") and Housatonic Environmental Action League ("HEAL," and collectively with HRI, the "Petitioners") object to a permit, issued in 2020 by the Environmental Protection Agency (the "EPA") and affirmed in 2022 by the Environmental Appeals Board (the "EAB"), that requires General Electric Company ("GE") to clean up polychlorinated biphenyls ("PCBs") from the "Rest of River" reaches of the Housatonic River. The permit is supported by respondent-intervenors GE and the Housatonic Rest of River Municipal Committee (the "Municipal Committee"), an intergovernmental entity comprised of elected officials from the five towns most affected by the PCB contamination in the Rest of River. The permit is also supported by the State of Connecticut, and is not opposed by the Commonwealth of Massachusetts, which helped negotiate its terms. Should GE's cleanup of the Rest of River not achieve the goals set forth in the permit, the permit requires further measures. The task of this court is to evaluate the Petitioners' legal challenges, both procedural and substantive. After careful review, we deny the petition.

I. Background

A. Statutory Background

This petition for review legally involves the intersection of three environmental statutes: (1) the Toxic Substances Control Act ("TSCA"), 15 U.S.C. § 2601 et seq.; (2) the

Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. § 6901 et seq.; and (3) the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), id. § 9601 et seq. We briefly summarize the relevant provisions of each statute.

Congress passed TSCA in 1976 with the purpose of "regulat[ing] chemical substances and mixtures which present an unreasonable risk of injury to health or the environment." 15 U.S.C. § 2601(b)(2). Among other provisions, TSCA requires the EPA to regulate the use and disposal of PCBs. See id. § 2605(e)(1); Town of Westport v. Monsanto Co., 877 F.3d 58, 63 (1st Cir. 2017). Under those regulations, any person disposing of "PCB remediation waste" "shall do so based on the concentration at which the PCBs are found" in that waste. 40 C.F.R. § 761.61. In particular, materials with PCB concentrations of under 50 parts per million ("ppm") can be disposed of in a facility licensed to manage municipal solid waste or non-municipal non-hazardous waste. See id. § 761.61(a)(5)(i)(B)(2)(ii), .61(a)(5)(v)(A)(1)-(2). By contrast, materials with PCB concentrations equal to or exceeding 50 ppm must be disposed of in a more protective facility dedicated to hazardous waste or PCBs. See id. §§ 761.61(a)(5)(i)(B)(2)(iii), .75; 42 U.S.C. §§ 6924, 6926.

Congress enacted RCRA, also in 1976, with the goal of closing "the last remaining loophole in environmental law, that of unregulated land disposal of discarded materials and hazardous

waste." Me. People's All. & Nat. Res. Def. Council v. Mallinckrodt, Inc., 471 F.3d 277, 287 (1st Cir. 2006) (quoting H.R. Rep. No. 94-1491, pt. 1, at 4 (1976)). RCRA generally requires any owner or operator of a facility that "treat[s], stor[es], or dispos[es] of hazardous waste" to acquire a permit. 42 U.S.C. § 6925(a); see W.R. Grace & Co.--Conn. v. U.S. EPA, 959 F.2d 360, 361 (1st Cir. 1992). That permit must require "corrective action for all releases of hazardous waste" from the facility, 42 U.S.C. § 6924(u), and may also include any "terms and conditions as the [permit issuer] determines necessary to protect human health and the environment," id. § 6925(c)(3). Following any administrative appeals to the EAB, see 40 C.F.R. § 124.19(a)(1), "any interested person" may seek immediate review of a RCRA permit in the federal court of appeals, 42 U.S.C. § 6976(b).

Finally, CERCLA, enacted in 1980, empowers the EPA to require remedial action when there is a "release or substantial threat of release" of "any hazardous substance" or of "any pollutant or contaminant which may present an imminent and substantial danger to the public health or welfare." 42 U.S.C. § 9604(a)(1); see Emhart Indus., Inc. v. U.S. Dep't of the Air Force, 988 F.3d 511, 516 & n.3 (1st Cir. 2021). Under CERCLA, the EPA can order "responsible parties" to carry out the chosen response action. Emhart, 988 F.3d at 517 (quoting Key Tronic

Corp. v. United States, 511 U.S. 809, 813-14 (1994)); see 42 U.S.C. § 9607(a). That remedial action must achieve an adequate degree of cleanup, see 42 U.S.C. § 9621(d)(1), and typically must conform to "applicable or relevant and appropriate" state and federal standards, id. § 9621(d)(2)(A), known as "ARARs." Unlike a RCRA permit, a CERCLA remedial action order often cannot be challenged by a responsible party until the EPA has taken action to enforce the order. See id. § 9613(h). Regulations governing CERCLA remedial actions are set forth in the National Oil and Hazardous Substances Pollution Contingency Plan (the "National Contingency Plan"). See 40 C.F.R. § 300.1 et seq.

B. Factual Background

1. The PCB Contamination

The Housatonic River originates in two separate branches several miles north of the City of Pittsfield, Massachusetts. Below the confluence of those two branches, the Housatonic extends south for over 125 miles through western Massachusetts and Connecticut, ultimately emptying into Long Island Sound. The portion of the river downstream from the confluence is known, for purposes of this litigation, as the "Rest of River." The Rest of River comprises twelve segments or "reaches," designated as Reaches 5 through 16. This petition concerns the Rest of River.

For much of the twentieth century, GE operated an electrical transformer manufacturing facility along one of the

branches north of the confluence. The decades-long operation of this facility resulted in extensive contamination of the river with PCBs. The worst of the contamination occurred north of the confluence, but the PCBs also migrated throughout the Rest of River.

2. The Consent Decree

In the 1970s, the EPA and Massachusetts began investigating and implementing remedial actions to address the PCB contamination in the Housatonic. That process culminated in 2000, when GE entered into a Consent Decree with the United States, Massachusetts, Connecticut, the City of Pittsfield, and the Pittsfield Economic Development Authority.¹ The Consent Decree, which was approved by the U.S. District Court for the District of Massachusetts in October 2000, was intended "to resolve the [parties'] claims for response actions, response costs and natural resource damages in connection with" the PCB contamination from GE's manufacturing facility. In particular, under the Consent Decree, GE agreed to conduct remediation of the river, and the various government signatories agreed to resolve GE's liability under RCRA, CERCLA, and other applicable law.

¹ The Consent Decree included, as an attachment, a draft RCRA permit that was to be revised upon the selection of a remedy for the Rest of River. We refer to the Consent Decree and the attached permit collectively as the "Consent Decree."

The Consent Decree laid out a cleanup plan for two different portions of the Housatonic. First, GE was required to remediate the contamination at the facility itself and at nearby areas north of the confluence. That cleanup is not at issue in this case.

Second, the Consent Decree created a process for selecting a remedy for the Rest of River (i.e., Reaches 5 through 16). Under the Consent Decree, that remedy -- which is the subject of the present litigation -- would be embodied in a RCRA corrective action permit, but would also "be considered to be the final remedy selection decision pursuant to Section 121 of CERCLA and Section 300.430 of the [National Contingency Plan]." See 42 U.S.C. § 9621; 40 C.F.R. § 300.430. This unusual remedial structure afforded GE and other interested persons the immediate rights of review associated with a RCRA permit, see 42 U.S.C. § 6976(b), while subjecting the selected response action to the cleanup requirements of CERCLA and the National Contingency Plan. One such CERCLA provision requires conforming to federal and state ARARs,² see id. § 9621(d)(2)(A), including TSCA's PCB disposal restrictions, see 15 U.S.C. § 2605(e)(1); 40 C.F.R. §§ 761.61, .75. Consistent with RCRA regulations, see 40 C.F.R.

² The Consent Decree also expressly required the EPA to identify ARARs and, if the EPA decided to waive any such ARARs, see 42 U.S.C. § 9621(d)(4), to explain the basis for any such waiver.

§ 124.10(a)(1)(ii), the Consent Decree further required that the proposed permit be subject to public comment.

The Consent Decree laid out a phased process for selecting the Rest of River remedy, including the performance of new and various studies and investigations by both GE and the EPA. Of particular importance to this petition for review, the Consent Decree required the consideration of, "[a]t a minimum," nine criteria (the "Selection Criteria") in selecting the remedy. The Selection Criteria are as follows: (1) "Overall Protection of Human Health and the Environment"; (2) "Control of Sources of Releases"; (3) "Compliance with [ARARs]"; (4) "Long-Term Reliability and Effectiveness"; (5) "Attainment of Interim Media Protection Goals"; (6) "Reduction of Toxicity, Mobility, or Volume of Wastes"; (7) "Short-Term Effectiveness"; (8) "Implementability"; and (9) "Cost." The Consent Decree envisioned a remedy that would be "best suited to meet the [first three criteria] . . . in consideration of the [latter six criteria] . . . including a balancing of [the latter six criteria] against one another."³

3. The 2016 Permit Issued After Notice and Comment

In June 2014, after over a decade of further research by GE and the EPA, the EPA issued a draft RCRA permit embodying a

³ The nine Selection Criteria closely resemble analogous factors promulgated in the National Contingency Plan that are used to select a response action under CERCLA. See 40 C.F.R. § 300.430(e)(9)(iii), (f)(1)(i).

proposed remedy for the Rest of River. In conjunction with the draft permit, the EPA published a written analysis (the "2014 Comparative Analysis") comparing various cleanup alternatives under the nine Selection Criteria and explaining the EPA's basis for its proposed choice. Following a public comment period and formal dispute resolution invoked by GE, the EPA issued a final permit in October 2016 (the "2016 Permit").

In designing the 2016 Permit, the EPA faced three major issues that are central to this case: (1) how to remediate the PCB contamination in the Rest of River, including whether and how to remove PCB-contaminated material from that area; (2) whether and how to apply treatment technologies to that removed material in order to reduce its toxicity and the risk of PCB dispersal; and (3) where and how to dispose of the removed material. The EPA resolved those issues as follows in the 2016 Permit.

First, as to remediation, the 2016 Permit required GE to excavate and remove almost one million cubic yards of PCB-contaminated sediment and soil from the Rest of River, its floodplain, and certain surrounding areas. GE would then install engineered caps in many of those areas in order to "physically and chemically isolate the residual PCBs in [the remaining] sediment[,] . . . provide habitat for aquatic plants and animals[,]

and reduce downstream transport of PCBs."⁴ These removal and capping activities -- which generally would aim to reduce the average PCB concentrations in remaining sediment to 1.00 ppm in most areas -- would occur primarily in the upstream areas of the Rest of River, where PCBs are more prevalent; in particular, these activities were required in Reaches 5, 6, and 8, and in the impoundments of Reach 7. For the areas further downstream, the 2016 Permit did not require any removal of sediment or soil; rather, it mandated "monitored natural recovery" ("MNR").⁵ MNR relies on natural processes -- rather than active remediation measures like removal and capping -- to reduce PCB contamination over time.⁶

Second, as to treatment of the excavated and removed material, the EPA considered various forms of treatment technologies and studied two of them in depth. One of those two

⁴ The 2016 Permit further required the placement of backfill material in certain areas following sediment and soil removal.

⁵ MNR was the selected remedy for the flowing subreaches of Reach 7 and for Reaches 9 through 16.

⁶ To be precise, the 2016 Permit defined MNR 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."

treatment technologies was thermal desorption, which "removes contaminants [from sediment and soil] by raising the temperature of the contaminated material to transfer the contaminants from the sediment or soil to a gas stream," which is then separately treated and disposed of.⁷ The EPA ultimately decided not to require any treatment of the removed sediment and soil. The 2016 Permit did, however, require GE to use "activated carbon or [an]other sediment amendment"⁸ in certain areas of the Rest of River to reduce the toxicity of sediment and soil that would not be removed.

Finally, as to disposal, the EPA considered whether to require fully offsite disposal or fully onsite disposal of the removed material. The EPA did not consider or evaluate any other proposal for disposing of untreated material other than fully offsite or fully onsite disposal. Fully offsite disposal "would involve the transportation of removed sediment and floodplain soil to commercial solid waste and/or TSCA-licensed landfill(s) for disposal." Fully onsite disposal, on the other hand, "would

⁷ The other treatment technology considered in depth by the EPA was "chemical extraction," which is the "process of mixing an extraction fluid/solvent with removed sediment and soil, so that PCBs in the sediment or soil are . . . transferred into the extraction fluid."

⁸ Treatment with activated carbon involves "increasing the sediment['s] organic carbon content" in order to "decrease[] contaminant bioavailability," which in turn "allow[s] higher concentrations of contaminants to remain" in the sediment "without adverse biological effects."

involve the permanent disposition of the removed sediment/soil at an [onsite] [f]acility constructed in close proximity to the [r]iver, but outside the 500-year floodplain."⁹ Comparing these two alternatives through the lens of the nine Selection Criteria, the EPA found that both options "would provide protection of human health and the environment," but ultimately concluded that fully offsite disposal was preferable. As between the two, the EPA found that fully offsite disposal would best prevent releases of PCBs, would be more reliable and effective than fully onsite disposal in the long term, and would have various other benefits. Accordingly, the 2016 Permit required GE to transport all removed material to existing licensed offsite facilities.

4. The 2018 EAB Decision

In November 2016, five parties petitioned the EAB for review of the 2016 Permit. Two of those parties -- GE and a local landowner named C. Jeffrey Cook -- argued that the remedy under the 2016 Permit was too extensive. The other three parties -- HRI, the Berkshire Environmental Action Team, and the Municipal Committee -- contended that the cleanup was not extensive enough. The Municipal Committee was formed under an intergovernmental agreement by five towns in Berkshire County, Massachusetts: Great

⁹ The EPA also considered onsite disposal in a "confined disposal facility . . . in a local waterbody," but it ultimately rejected that alternative, and that alternative is not relevant to this case.

Barrington, Lee, Lenox, Sheffield, and Stockbridge. Those five towns, as well as the City of Pittsfield, are apparently the municipalities most affected by the Rest of River cleanup.

Several other entities -- including Massachusetts, Connecticut, the City of Pittsfield, and the Massachusetts Audubon Society -- participated in the proceedings before the EAB by filing either amicus briefs or responses to petitions.

In January 2018, the EAB, finding legal error in part of EPA's selection of the disposal remedy, issued a 152-page opinion remanding the 2016 Permit in part and denying review in part. In re Gen. Elec. Co. (Gen. Elec. I), 17 E.A.D. 434 (EAB 2018). The opinion addressed challenges, raised variously by the five petitioners, to all three major aspects of the 2016 Permit: remediation, treatment, and disposal.

As to the remediation of the Rest of River and the removal of the PCB-contaminated material from that area, the EAB upheld almost all provisions of the 2016 Permit, see id. at 487-519, 523-58, remanding the permit on only one ground that is not relevant here, see id. at 520-23. Of particular relevance to this case, the EAB rejected HRI's challenge to the provisions of the 2016 Permit that selected MNR as the remedy for most of the downstream reaches of the Rest of River. See id. at 536-40. The EAB found that HRI had failed to adequately explain why the EPA's

selection of MNR for those downstream reaches was clearly erroneous. See id.

The EAB also rejected HRI's argument that the 2016 Permit should have required treatment of the excavated and removed material from the upstream reaches. See id. at 577-83. First, addressing HRI's assertion that the EPA should have mandated thermal desorption, the EAB found that HRI had failed to demonstrate that that issue was raised during the public comment period. See id. at 577-81. Next, the EAB rejected HRI's argument that the 2016 Permit should have required "bioremediation," see id. at 581-82, a treatment technology that "would involve introducing microorganisms and/or nutrients into the [sediment and soil] to increase ongoing biodegradation rates of PCBs." Finally, the EAB rejected HRI's contention that the 2016 Permit failed to comply with CERCLA's preference for treatment, see 42 U.S.C. § 9621(b)(1) (generally requiring the EPA to "select a remedial action . . . that utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable"), finding that no individual had raised the issue during the public comment period and that the argument would fail on substantive grounds in any event, see Gen. Elec. I, 17 E.A.D. at 582-83, 583 n.63.

Highly pertinent to this case, the EAB also addressed GE's argument that the EPA erred in selecting fully offsite

disposal. See Gen. Elec. I, 17 E.A.D. at 559-69. On this issue, the EAB remanded the 2016 Permit, finding that the EPA had failed to exercise considered judgment. See id. at 565-69. The EAB noted that the EPA had premised its selection of fully offsite disposal largely on the conclusion that a fully onsite disposal facility would be unable to satisfy TSCA regulations governing the disposal of materials containing PCBs in concentrations of 50 ppm or greater. See id. at 559, 561-65; 40 C.F.R. § 761.75. The EAB held, to the contrary, that the EPA had failed to address GE's arguments that an onsite facility could satisfy those regulations and could qualify for a waiver of certain TSCA requirements. See Gen. Elec. I, 17 E.A.D. at 565-69.

The EAB thus denied HRI's petition in full, including its challenges to the 2016 Permit's provisions regarding MNR and treatment.¹⁰ See id. at 584. In response to GE's petition, the EAB remanded the 2016 Permit for the EPA to reconsider the "provisions of the [2016] Permit pertaining to" disposal. Id. at 584-85.

5. The Settlement

Following the EAB's remand of the permit, the EPA invited various stakeholders to participate in confidential mediated

¹⁰ The EAB also denied the petitions of C. Jeffrey Cook, the Municipal Committee, and the Berkshire Environmental Action Team. See Gen. Elec. I, 17 E.A.D. at 584.

discussions to attempt to agree upon a revised remedy. The EPA invited all five petitioners from the prior EAB proceedings -- GE, HRI, the Municipal Committee, the Berkshire Environmental Action Team, and C. Jeffrey Cook -- as well as HEAL, the State of Connecticut, the Commonwealth of Massachusetts, the City of Pittsfield, and the Massachusetts Audubon Society. Of these parties, all proceeded to participate in mediation except for the Petitioners. HRI attended the discussions initially, but then "declined to participate in any discussions or agreement that involved onsite disposal and from which the general public was excluded." HEAL, similarly, was unwilling to participate in confidential discussions.¹¹

The mediation ultimately concluded in February 2020 with the signing of a settlement agreement (the "Settlement"). The Settlement was signed by almost all of the participants in the mediation: the EPA, GE, the Municipal Committee, the Berkshire Environmental Action Team, C. Jeffrey Cook, the State of Connecticut, the City of Pittsfield, and the Massachusetts Audubon Society. The Municipal Committee joined the Settlement through the signatures of the chairpersons of each of the five member

¹¹ The parties to this case disagree on whether HEAL was "excluded" from the discussions or, like HRI, voluntarily declined to participate. But the Petitioners concede that to the extent HEAL was "excluded," that exclusion was due to its unwillingness to maintain the confidentiality of the mediation.

towns' select boards. The Commonwealth of Massachusetts did not sign the Settlement but also did not oppose it. Neither HRI nor HEAL signed the Settlement.

The Settlement required the EPA to propose a revised permit, which would be "subject to a regulatory public comment process" and which the signatories "agree[d] not to challenge . . . unless it [was] inconsistent with the terms of th[e] Settlement." The revised permit would include revised provisions regarding both the remediation of the Rest of River and the disposal of removed PCB-contaminated material.

As to remediation, the revised proposal would require GE to excavate and remove an increased amount of contaminated sediment and soil from the Rest of River, including from areas not required under the 2016 Permit. In certain areas of the Rest of River, the increased sediment removal would reduce PCB contamination to a sufficiently low level that capping would no longer be necessary. The revised proposal would also impose new and additional requirements on GE to remediate more than twenty additional residential properties; remove two dams; conduct a pilot study on a revised remedial approach for vernal pools; and develop a quality-of-life plan addressing various community impacts such as noise, air pollution, odor, road use, and public safety. Most other remedial measures from the 2016 Permit -- including MNR for the downstream reaches -- would remain unchanged.

Crucially for purposes of this case, as to the disposal of excavated and removed material, the Settlement envisioned a new approach called "hybrid disposal," which utilized both offsite and onsite disposal based on the degree of contamination of the soil and sediment removed from the Rest of River. Under the hybrid disposal approach, floodplain and bank soil with average PCB concentrations equal to or exceeding 50 ppm, and sediment with average PCB concentrations exceeding 25 ppm, would be transported for disposal in a licensed offsite facility. Floodplain and bank soil with average PCB concentrations below 50 ppm, and sediment with average PCB concentrations of 25 ppm or lower, would be disposed of in an onsite facility with the significant protections of a cap, double liner, leachate collection system, groundwater monitoring network, and stormwater management system. The Settlement further provided that GE would be required to dispose of at least 100,000 cubic yards of contaminated material offsite.

In addition to the provisions regarding the revised permit proposal, the Settlement included several other covenants between the signatories. For example, GE "agreed to commence and perform investigation and design work" on the Settlement's effective date, with that obligation to "continue unless and until" the EPA issued a revised permit with terms that were not "substantially similar" to the agreed-upon proposal. GE also agreed to make payments and donate land to the City of Pittsfield,

the Massachusetts Audubon Society, and the five towns represented by the Municipal Committee, and agreed to make aesthetic improvements to various other properties. The EPA agreed to "facilitate opportunities for research and testing of innovative treatment" for "reducing PCB toxicity and/or concentrations" in excavated and removed material.

6. The 2020 Permit Issued After Notice and Comment

In July 2020, the EPA issued a draft revised permit which incorporated the terms of the Settlement. In conjunction with the draft revised permit, the EPA published a written analysis (the "2020 Comparative Analysis") comparing the draft revised permit with the 2016 Permit under the nine Selection Criteria.

The 2020 Comparative Analysis concluded that the remedial portions of the draft revised permit outperformed those of the 2016 Permit because the revised draft would include significant new benefits, including increased removal of contaminated material, reduced need for capping, and enhanced habitat restoration. As to disposal, the 2020 Comparative Analysis found that hybrid disposal better satisfied the nine Selection Criteria than the fully offsite disposal approach embodied in the 2016 Permit. Acknowledging that fully offsite disposal outperformed hybrid disposal with respect to some criteria, the EPA found that hybrid disposal had various benefits, including significantly reduced greenhouse gas emissions from transporting

lesser quantities of contaminated material to an offsite facility (or multiple offsite facilities if one did not meet the needed capacity), decreased number of truck trips and associated injuries and fatalities, approval and cooperation from the affected municipalities, and lower cost. With regard to "Overall Protection of Human Health and the Environment" (i.e., the first of the Selection Criteria), the 2020 Comparative Analysis also noted that the hybrid disposal approach was "part of a Settlement . . . that includes numerous enhancements to the floodplain and sediment remedies, an expedited start to implementation, and community coordination and benefits." Comparing the draft revised permit to the 2016 Permit in their totalities, the EPA concluded that the "combination" of the updated remedial provisions and hybrid disposal approach in the revised draft permit was "best suited" to satisfy the Selection Criteria and "satisfactorily address[ed] the issues raised by the EAB" in its 2018 decision.

The EPA received public comments on the draft revised permit from July to September 2020. Those comments concerned various aspects of the revised draft, including its provisions concerning MNR, treatment, and hybrid disposal. Several commenters also raised questions about the mediations that had produced the Settlement. In December 2020, the EPA issued a lengthy document responding to the various comments. Although the EPA declined to adopt most of the commenters' suggestions, it did

agree to make several minor changes to the permit and summarized those changes in an attachment to the document.

Having considered the comments and the record, the EPA issued a final permit in December 2020 (the "2020 Permit"), incorporating all major terms of the Settlement. The 2020 Permit requires GE to remove over 1.1 million cubic yards of contaminated material from the Rest of River, its floodplain, and certain surrounding areas -- an increase of more than 14 percent from the 2016 Permit. The 2020 Permit also decreases reliance on capping.¹² Like the 2016 Permit, the 2020 Permit requires MNR -- rather than excavation and removal -- for downstream reaches of the Rest of River. Also like the 2016 Permit, the 2020 Permit does not require any treatment of removed material prior to disposal, but does require the application of activated carbon or another sediment amendment in certain areas of the Rest of River.

With respect to disposal, the 2020 Permit incorporates the hybrid disposal approach articulated in the Settlement, such that excavated materials with higher levels of PCB contamination will be transported offsite, while less-contaminated materials will be sent to an onsite facility. The 2020 Permit concludes

¹² Like the 2016 Permit, the 2020 Permit also requires the placement of backfill material in certain areas. The 2020 Permit reduces the amount of capping, backfill, and stabilization material by more than 150,000 cubic yards compared to the 2016 Permit.

that the onsite facility will "not pose an unreasonable risk of injury to health or the environment," thus entitling GE to a waiver of TSCA's requirements for the disposal of PCB remediation waste with PCB concentrations under 50 ppm. 40 C.F.R. § 761.61(c)(2). The facility will be located in a former gravel mining pit near Woods Pond, a small portion of a much greater area that has been designated by Massachusetts regulation as an "Area of Critical Environmental Concern" (an "ACEC"). See 310 Mass. Code Regs. § 16.40(4)(d). This Massachusetts regulation would, unless waived by the EPA, prevent the siting of a solid waste management facility within an ACEC, see id. § 16.40(4)(d)(1), but the 2020 Permit finds that even if the regulation is an ARAR, it can be waived under CERCLA because "compliance [with the regulation] . . . will result in greater risk to human health and the environment than alternative options," 42 U.S.C. § 9621(d)(4)(B).

7. The 2022 EAB Decision

In early 2021, the Petitioners petitioned the EAB for review of the 2020 Permit. The Petitioners challenged two aspects of the 2020 Permit that were unchanged from the 2016 Permit and that had been upheld by the EAB in 2018: first, the EPA's selection of MNR (rather than excavation and removal) for downstream reaches of the Rest of River, and second, the EPA's decision not to require treatment of excavated material prior to disposal. The Petitioners further challenged the 2020 Permit's hybrid disposal provisions,

arguing that the EPA had reversed course and that that alleged reversal of course was unlawfully based on the Settlement rather than on a reasoned comparison of the disposal options.

In February 2022, the EAB issued a 103-page opinion upholding the 2020 Permit in full. In re Gen. Elec. Co. (Gen. Elec. II), 18 E.A.D. 575 (EAB 2022). The EAB rejected the Petitioners' various challenges to the EPA's overall conclusions as to MNR, treatment, and hybrid disposal.

As to MNR and treatment, the EAB held that the Petitioners' arguments were not within the EAB's scope of review, because the EAB had already upheld the MNR and treatment provisions in the 2016 Permit and those provisions had remained unchanged in the 2020 Permit. See id. at 663-77. The EAB further concluded that even if it were to consider the Petitioners' new arguments as to MNR, those arguments would fail on the merits.¹³ See id. at 674-77.

As to hybrid disposal, the EAB rejected the Petitioners' claims that the EPA had reversed its position from the 2016 Permit, finding instead that the EPA had analyzed a new disposal option with different environmental implications. See id. at 619-63.

¹³ Although the EAB did not, in its 2022 decision, discuss the merits of the Petitioners' arguments concerning treatment, those arguments were substantively the same as the ones the Petitioners had unsuccessfully advanced when challenging the 2016 Permit.

The EAB further upheld the EPA's decision to waive Massachusetts' ACEC regulation under CERCLA, see id. at 635-48, and rejected the Petitioners' contention that the Settlement had improperly influenced the EPA's remedy-selection process, see id. at 652-61.

Having been upheld by the EAB, the 2020 Permit became effective in March 2022. We turn to the Petitioners' challenges, both procedural and substantive, to the 2020 Permit.

II. Constitutional Standing

The EPA's issuance of a RCRA permit may be challenged by "any interested person." 42 U.S.C. § 6976(b). The EPA does not dispute that the Petitioners are "interested person[s]" having a right to appeal the 2020 Permit. The EPA does contend, however, that the Petitioners lack constitutional standing to challenge the 2020 Permit. This argument fails.

Because the Petitioners are associations, they must demonstrate their "standing to bring suit on behalf of [their] members" by showing that (1) "[their] members would otherwise have standing to sue in their own right"; (2) "the interests [they] seek[] to protect are germane to the organization[s'] purpose[s]"; and (3) "neither the claim asserted nor the relief requested requires the participation of individual members in the lawsuit." Hunt v. Wash. State Apple Advert. Comm'n, 432 U.S. 333, 343 (1977). The first two prongs of this test have constitutional dimensions; the third prong is prudential. See United Food & Com. Workers

Union Loc. 751 v. Brown Grp., Inc., 517 U.S. 544, 554-58 (1996); see also Back Beach Neighbors Comm. v. Town of Rockport, 63 F.4th 126, 129 n.2 (1st Cir. 2023). The Petitioners have each satisfied all three requirements.

First, each association has adequately shown that "at least one of its members would have standing to sue as an individual." Animal Welfare Inst. v. Martin, 623 F.3d 19, 25 (1st Cir. 2010); see Draper v. Healey, 827 F.3d 1, 3 (1st Cir. 2016) (noting that "the association must, at the very least, 'identify [a] member[] who ha[s] suffered the requisite harm.'" (alterations in original) (quoting Summers v. Earth Island Inst., 555 U.S. 488, 499 (2009))). Both HRI and HEAL identified at least one member who "suffered an injury in fact that [was] concrete, particularized, and actual or imminent," "likely caused by the defendant," and "likely [to] be redressed by judicial relief." Plazzi v. FedEx Ground Package Sys., Inc., 52 F.4th 1, 4 (1st Cir. 2022) (quoting TransUnion LLC v. Ramirez, 141 S. Ct. 2190, 2203 (2021)). For example, affidavits submitted by the Petitioners identify members who live near the proposed onsite disposal site, use that area for recreation and/or commerce, and fear that the disposal facility will negatively impact their use and enjoyment of the area and their property values. Those imminent injuries plainly constitute injuries in fact, see Friends of the Earth, Inc. v. Laidlaw Env't Servs. (TOC), Inc., 528 U.S. 167, 183 (2000)

("[E]nvironmental plaintiffs adequately allege injury in fact when they aver that they use the affected area and are persons 'for whom the aesthetic and recreational values of the area will be lessened' by the challenged activity." (quoting Sierra Club v. Morton, 405 U.S. 727, 735 (1972))); Kathrein v. City of Evanston, 636 F.3d 906, 914 (7th Cir. 2011) ("A demonstrable reduction in the market value of one's property is an injury in fact for standing purposes."), are caused by the EPA's approval of the onsite disposal facility, and would be redressed by the requested reversal of that approval.

Second, the "interests at stake are germane to the [Petitioners'] purpose[s]." Animal Welfare Inst., 623 F.3d at 25 (quoting Friends of the Earth, 528 U.S. at 181). HRI was "formed with the specific mission of cleaning the Housatonic River and surrounding sites of PCB[s] and other chemical contamination." HEAL, in turn, is "dedicated to the protection of the Housatonic River and its watershed" and "ultimate[ly] [aims for] a swimmable and fishable river in both Massachusetts and Connecticut." The "interests at stake" in this litigation are clearly "related to the [Petitioners'] core purposes." Mallinckrodt, 471 F.3d at 283.

Finally, "individual members' participation is not necessary to either the claim asserted or the relief requested." Animal Welfare Ins., 623 F.3d at 25. The Petitioners ask us to vacate the EPA's approval of the 2020 Permit and to order the EPA

to consider changing several permit provisions on remand. That requested "prospective relief" would "inure to the benefit of those members of the [Petitioners] actually injured," supporting a finding of associational standing. Warth v. Seldin, 422 U.S. 490, 515 (1975); see Playboy Enters., Inc. v. Pub. Serv. Comm'n of P.R., 906 F.2d 25, 35-36 (1st Cir. 1990).

The Petitioners thus have satisfied all three requirements of associational standing.¹⁴ We now turn to the merits of the Petitioners' procedural and substantive challenges.

III. Procedural Challenge Regarding the Mediation Process

We first address the Petitioners' procedural challenge to the 2020 Permit. See 5 U.S.C. § 706(2)(D) (requiring a reviewing court to set aside any agency action made "without observance of procedure required by law"). The Petitioners do not dispute that the EPA satisfied RCRA's requirements concerning public notice and comment, see 40 C.F.R. § 124.10; rather, they contend that the mediation process, which took place from 2018 to 2020 and ultimately produced the Settlement, improperly influenced

¹⁴ The EPA argues that because the "Petitioners' brief contains no discussion of their standing . . . [the] Petitioners have not met their burden to establish standing." But no such requirement of explicitly proclaiming to have standing exists. See Fed. R. App. P. 28 (listing requirements for appellate briefs, but not requiring any express statement of standing). Rather, parties seeking to avail themselves of the federal courts simply must plead "facts demonstrating standing," Animal Welfare Inst., 623 F.3d at 25, and the Petitioners have done so.

the remedy selection process and rendered the notice-and-comment process a "façade." They argue that the EPA was required to allow public access to the mediation and maintain an administrative record of the negotiations, and that its failure to do so violated the Consent Decree, CERCLA, and the Administrative Procedure Act ("APA"), 5 U.S.C. § 551 et seq.

We first reject out of hand the Petitioners' argument that the Consent Decree requires notice and comment prior to mediation and provides that mediation must occur on the record. This argument misconstrues the Consent Decree, which in fact requires only that the draft permit for the Rest of River cleanup be subject to RCRA regulations, "including the provisions requiring public notice and an opportunity for public comment," and provides that after the public comment period, GE may invoke an "administrative dispute resolution" process that must be on the record. Outside of that formal dispute resolution process, which is not at issue here, the Consent Decree contains no requirement of public input prior to mediation or of maintaining an administrative record of negotiations. On the contrary, the Consent Decree provides that any "participants in mediated discussions . . . shall execute a confidentiality agreement."

The Petitioners' invocations of CERCLA are similarly unavailing. The Petitioners correctly note that CERCLA requires the EPA to "[p]rovide a reasonable opportunity" for public comment

"[b]efore adoption of any plan for remedial action." 42 U.S.C. § 9617(a)(2). But the notice-and-comment period here did take place before the issuance of the 2020 Permit, and the Petitioners identify no provision in CERCLA prohibiting the EPA from engaging in mediation to investigate potential remedies. In fact, "early settlement[]" of the liability of potentially responsible parties "is an integral part of the statutory plan" under CERCLA. Emhart, 988 F.3d at 517 (alteration in original) (quoting United States v. Cannons Eng'g Corp., 899 F.2d 79, 92 (1st Cir. 1990)).

Beyond these narrow arguments concerning the Consent Decree and CERCLA, the Petitioners contend more broadly that an agency should not be permitted to use mediation to help determine what provisions to include in a draft permit, particularly when that mediation is off the record and closed to the public. This argument fails to account for the Supreme Court's consistent statements that "[b]eyond the APA's minimum requirements, courts lack authority 'to impose upon [an] agency [their] own notion of which procedures are "best" or most likely to further some vague, undefined public good.'" Perez v. Mortg. Bankers Ass'n, 575 U.S. 92, 102 (2015) (second alteration in original) (quoting Vt. Yankee Nuclear Power Corp. v. Nat. Res. Def. Council, Inc., 435 U.S. 519, 549 (1978)); see Vt. Yankee, 435 U.S. at 524 ("Agencies are free to grant additional procedural rights in the exercise of their discretion, but reviewing courts are generally not free to impose

them if the agencies have not chosen to grant them."). And nothing in the APA prohibits mediation prior to issuing a draft permit, requires any such mediation to be on the record, or provides for public access to such mediation. See, e.g., N.Y. State Dep't of L. v. FCC, 984 F.2d 1209, 1218-19 (D.C. Cir. 1993) (rejecting petitioner's argument that the APA "single[s] out settlement discussions and related proposals as requiring public disclosure and opportunity for comment and/or involvement" and noting that even in the context of formal adjudications, "informal settlement" is "authorized . . . before undertaking the more formal hearing procedure" (alteration in original) (quoting S. Doc. No. 248, at 24 (1945))).¹⁵ We thus conclude that no procedural violation has occurred. Cf. City of Taunton v. EPA, 895 F.3d 120, 132 (1st Cir. 2018) (rejecting petitioner's argument that the "EPA repeatedly stymied [the petitioner's] access to the [EPA]'s . . .

¹⁵ The Petitioners cite Home Box Office, Inc. v. FCC, 567 F.2d 9 (D.C. Cir. 1977), for the proposition that "the public record must reflect what representations were made to an agency" and that "communications [cannot be] made to [an] agency in secret." Id. at 54. But that case involved ex parte communications made to an agency after it proposed a rulemaking, see id. at 51-53, and the D.C. Circuit specifically stated that "communications which are received prior to" such a proposal "do not, in general, have to be put in a public file," id. at 57 (emphasis added). And in any event, the holding of Home Box Office has since been limited to ex parte communications occurring in rulemaking proceedings that involve "competing claims to a valuable privilege." Action for Child.'s Television v. FCC, 564 F.2d 458, 477 (D.C. Cir. 1977) (citing Home Box Off., 567 F.2d at 61 (MacKinnon, J., concurring specially)).

documentation" because the petitioner did "not argue that the EPA ran afoul of any applicable legal requirement"); id. ("[B]ecause the [petitioner] fails to show that it was procedurally entitled to anything more than what the EPA afforded it, we do not find the EPA's actions in this respect to have been arbitrary or capricious.").

Nor is there any purchase to the Petitioners' argument that the Settlement rendered the notice-and-comment period a "façade." Importantly, as the Petitioners concede, the Settlement did not legally constrain the EPA in deciding what provisions to include in the final permit. Compare Nat. Res. Def. Council, Inc. v. U.S. EPA, 859 F.2d 156, 194 (D.C. Cir. 1988) (discussing a settlement in which the EPA "bound itself only to propose regulations," but "never bound itself as to the content of the final regulations," thus ameliorating concerns about whether the EPA had a "mind[] open to whatever insights the comments produced"), with Nat'l Audubon Soc., Inc. v. Watt, 678 F.2d 299, 311 (D.C. Cir. 1982) (declining to consider whether the "government may enter into judicially enforceable contracts relinquishing or limiting its policymaking discretion"). On the contrary, the Settlement expressly provided that the proposed remedy would be "subject to a regulatory public comment process," and the signatories reserved the right to challenge the final permit if it was "inconsistent with the terms of th[e] Settlement." Following

the issuance of the draft permit in July 2020, the EPA conducted a 67-day public comment period and then made various changes to the permit based on the comments. The EPA also responded to the comments, articulating its rationales for either implementing or declining to implement the commenters' suggestions. Notably, GE filed a comment requesting revisions to portions of the draft permit that GE believed were inconsistent with the Settlement, but the EPA declined to incorporate various of those revisions.

The Petitioners offer no evidence that the EPA did not follow proper procedures in considering the commenters' various suggestions and selecting which ones to incorporate into the final permit. Cf. U.S. Postal Serv. v. Gregory, 534 U.S. 1, 10 (2001) (noting that courts attach a "presumption of regularity . . . to the actions of [g]overnment agencies" when evaluating the "fairness of [those agencies'] own procedure[s]"). And the fact that the 2020 Permit ultimately included the same major provisions as the draft permit does not support a finding that the 2020 Permit should be set aside. See Biden v. Texas, 142 S. Ct. 2528, 2547 (2022) (rejecting "criticisms of agency closemindedness based on an identity between proposed and final agency action"). We thus see no reason to conclude that the Settlement rendered the notice-and-comment process a "façade."¹⁶ Our conclusion is consistent

¹⁶ Contrary to the Petitioners' intimations, GE's agreement under the Settlement to make payments, donations, and other

with cases confronting agency settlement agreements in roughly similar contexts. See Citizens for a Better Env't v. Gorsuch, 718 F.2d 1117, 1120-21, 1127-30 (D.C. Cir. 1983) (upholding a settlement in which the EPA agreed to promulgate certain regulations, where the settlement "did not specify the substantive result of any regulations [the] EPA was to propose and only required [the] EPA to initiate 'regulatory action'" subject to "full notice and comment"); Save Our Sound OBX, Inc. v. N.C. Dep't of Transp., 914 F.3d 213, 226 (4th Cir. 2019) (upholding a settlement that required an agency to identify a course of action as the "preferred alternative" but did not require selecting that action as the "final approved alternative").¹⁷

concessions to several other stakeholders does not compel such a conclusion. Those covenants of the Settlement -- which largely concerned funding for economic development and aesthetic and recreational improvements -- ran solely between GE and the City of Pittsfield, the Massachusetts Audubon Society, and the five towns comprising the Municipal Committee. They were not embodied in the draft permit or the 2020 Permit, and no payments were made to the EPA. The Petitioners offer no reason to believe that the payments influenced the EPA's decisionmaking.

¹⁷ In support of their argument that the EPA predetermined the provisions of the 2020 Permit based on the Settlement, the Petitioners cite two cases involving the disqualification of an agency commissioner due to that commissioner's prejudging the outcome of a formal administrative hearing. See Cinderella Career and Finishing Schs., Inc. v. FTC, 425 F.2d 583, 589-92 (D.C. Cir. 1970); Texaco, Inc. v. FTC, 336 F.2d 754, 759-60 (D.C. Cir. 1964), vacated on other grounds, 381 U.S. 739 (1965). Those cases' facts bear little resemblance to the development of the 2020 Permit, which was subject to public notice and comment. See Ass'n of Nat'l Advertisers, Inc. v. FTC, 627 F.2d 1151, 1161 (D.C. Cir. 1979) (limiting the application of Cinderella and Texaco to formal "adjudication or quasi-adjudication"). Further, the Settlement

Accordingly, we conclude that the mediation and resulting Settlement were procedurally sound. The EPA invited to the mediation all of the parties that had challenged the 2016 Permit -- GE, HRI, the Municipal Committee, the Berkshire Environmental Action Team, and C. Jeffrey Cook -- as well as Connecticut, Massachusetts, the City of Pittsfield, the Massachusetts Audubon Society, and HEAL. The mediation thus benefited from the interplay of the various and competing interests of environmentalists; landowners; industry representatives; and local, state, and federal government entities. And the mediation resulted in an agreement that was acceptable to all involved parties except for the Petitioners.¹⁸ Our "[r]espect for the [EPA]'s role is heightened in this situation" because a "crew of sophisticated players, with sharply conflicting interests, s[at] at the table" and "hammered out an agreement at arm's length." Cannons Eng'g Corp., 899 F.2d at 84. It bears emphasizing that the Municipal Committee joined the Settlement through the signatures of the elected chairpersons of each of the five member towns' select boards. To the extent the Petitioners argue -- as

here concerned only the EPA's proposed remedy, not the final permit. Cf. id. at 1173 ("The period before the [agency] first decides to take action on a perceived problem is . . . the best time for a rulemaker to engage in dialogue with concerned citizens.").

¹⁸ Although Massachusetts did not sign the Settlement, it did not object to it or to the 2020 Permit.

their counsel did at oral argument -- that the Municipal Committee did not speak for "the people" when signing the Settlement, that rhetorical flourish presents no argument to this court.

IV. Substantive Challenges to the 2020 Permit

We now turn to the Petitioners' three substantive challenges to the 2020 Permit. First, the Petitioners challenge the EPA's decision to require MNR -- rather than excavation and removal of contaminated sediment -- as the remedy for certain downstream reaches of the Rest of River. Second, the Petitioners contend that the EPA should have required GE to treat excavated and removed material with thermal desorption and/or bioremediation. Finally, the Petitioners challenge the 2020 Permit's hybrid disposal approach, arguing that the EPA's selection of hybrid disposal constituted an arbitrary reversal of its previous choice to mandate fully offsite disposal in the 2016 Permit.

Under the APA, we will set aside the EPA's actions only if they were "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A). We leave agency actions undisturbed unless

the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to

a difference in view or the product of agency expertise.

Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983). "This deference goes to the entire agency action, which here includes both the EPA's permitting decision and the EAB's review and affirmance of that decision."¹⁹ Upper Blackstone Water Pollution Abatement Dist. v. U.S. EPA, 690 F.3d 9, 20 (1st Cir. 2012). And "the 'scientific and technical nature of the EPA's decisionmaking' increases our level of deference." City of Taunton, 895 F.3d at 126 (quoting Upper Blackstone, 690 F.3d at 20).

An agency may change its existing position on an issue "as long as [it] provide[s] a reasoned explanation for the change." Encino Motorcars, LLC v. Navarro, 579 U.S. 211, 221 (2016). That requirement "ordinarily demand[s] that [the agency] display awareness that it is changing position," FCC v. Fox Television Stations, Inc., 556 U.S. 502, 515 (2009), but does not constitute a "heightened standard" of review, id. at 514. The agency "need not demonstrate . . . that the reasons for the new policy are

¹⁹ Because no final agency action occurred until after the EAB upheld the 2020 Permit, the Petitioners could not directly appeal the EAB's 2018 decision. See 40 C.F.R. § 124.19(1)(2) (specifying that final agency action does not occur when the EAB remands a permit, but rather only occurs once the EAB denies review or once remand proceedings are completed). Our review thus encompasses the pertinent holdings of both the 2018 and 2022 EAB decisions, as well as the EPA's other actions.

better than the reasons for the old one; it suffices that the new policy is permissible . . . , that there are good reasons for it, and that the agency believes it to be better." Id. at 515. A "more detailed justification" may be required, however, when the agency's new position "rests upon factual findings that contradict those which underlay [the] prior" position or when the agency's prior position "has engendered serious reliance interests." Id.; see NLRB v. Lily Transp. Corp., 853 F.3d 31, 36 (1st Cir. 2017) (Souter, J.) ("[A]n about-face . . . owing to facts changed from those underlying the prior view requires that the new facts be addressed explicitly by reasoned explanation for the change of direction."). Further, "when an agency rescinds a prior [position,] its reasoned analysis must consider the 'alternative[s]' that are 'within the ambit of the existing [position].'" DHS v. Regents of the Univ. of Cal., 140 S. Ct. 1891, 1913 (2020) (second alteration in original) (quoting State Farm, 463 U.S. at 51).

We now consider the Petitioners' three substantive challenges in turn.

**A. Challenge to the 2020 Permit's
Monitored Natural Recovery (MNR) Provisions**

As to the 2020 Permit's provisions concerning remediation, the Petitioners challenge the EPA's decision to require MNR -- rather than excavation, removal, and capping -- for

the downstream reaches of the Rest of River. The 2020 Permit's applicable provisions concerning MNR are unchanged from those in the 2016 Permit; both permits included MNR as the remedy for the flowing subreaches of Reach 7 and for Reaches 9 through 16.

In its response to comments on the draft version of the 2016 Permit, the EPA explained its rationale for selecting MNR as the remedy for the downstream reaches. The EPA noted that "PCB concentrations in these . . . reaches are low and . . . diffuse over large areas"; that the sediment in these reaches "is reasonably stable"; that "[h]uman health and ecological risks" in these reaches "are generally low"; and that "decreasing trends in fish and benthic invertebrate PCB levels . . . have been observed" in Reaches 9 through 16. The EPA concluded that MNR, coupled with "[l]ong-term monitoring," was an appropriate remedy for the downstream reaches. The EPA also noted two examples of sites where MNR had been used to remedy PCB contamination. See, e.g., United States v. P.H. Glatfelter Co., 768 F.3d 662, 666-67 (7th Cir. 2014) (discussing one of these sites).

Notwithstanding this explanation provided by the EPA, the Petitioners now raise four challenges to the 2020 Permit's MNR provisions. They rely on their own purported characterizations of the 2020 Permit to assert that (1) insufficient data concerning PCB concentrations in sediment existed to support the EPA's selection of MNR; (2) the EPA's failure to set a performance

standard for PCB concentrations in sediment renders the MNR remedy ineffectual; (3) the 2020 Permit lacks a reasonable timeframe in which cleanup standards in the downstream reaches must be attained; and (4) the 2020 Permit fails to articulate a contingency plan should MNR fail to achieve adequate remediation.

At the outset, the EPA contends that the Petitioners waived these arguments by failing to demonstrate that the arguments were raised during the public comment period for the draft version of the 2016 Permit, and/or failing to raise them to the EAB when challenging the 2016 Permit. See Upper Blackstone, 690 F.3d at 30 (finding that a petitioner waived an argument "by failing to present it either to the EPA . . . during the permitting process or during the initial round of briefing before the EAB"). As the EPA largely concedes, however, the Petitioners raised the arguments when challenging the 2020 Permit, both in their public comments and to the EAB.²⁰ The EPA's waiver argument thus depends on the proposition that the Petitioners' raising the MNR arguments when challenging the 2020 Permit was insufficient to preserve those

²⁰ The EPA does contend that the Petitioners forfeited their argument concerning inadequate data, asserting that the Petitioners did not raise that argument until their reply brief to the EAB. We disagree. In their initial brief to the EAB when challenging the 2020 Permit, the Petitioners argued that "[i]n Connecticut, PCB sampling has been limited and scattershot," with "only 60 individual samples . . . taken" since the Consent Decree was entered. That statement sufficiently raised the issue to the EAB.

arguments here. Although the EAB found that "[t]he scope of [the EAB's] review of a revised permit following remand is limited to the issues the [EAB] remanded and any other changes to the permit made during the remand period," Gen. Elec. II, 18 E.A.D. at 664, we note that the EPA's regulations do not unambiguously support this finding, see 40 C.F.R. § 124.13 (requiring commenters to "raise all reasonably ascertainable issues . . . by the close of the public comment period"). Given this ambiguity, we choose to bypass the waiver issue and instead resolve the merits of the Petitioners' arguments, which we may do because those arguments fail. We now address, and reject, each of the Petitioners' four arguments in turn.

1. Challenge Regarding Adequacy of Baseline Data

The Petitioners first argue that the EPA analyzed an insufficient amount of baseline data from the Connecticut reaches of the Rest of River to support its selection of MNR as the remedy for those reaches. They contend that the 2020 Permit's MNR provisions thus violate the National Contingency Plan's requirement that the EPA "collect data necessary to adequately characterize the site for the purpose of developing and evaluating effective remedial alternatives." 40 C.F.R. § 300.430(d)(1).

As the EPA explained in its response to comments on the draft version of the 2016 Permit, and as the Petitioners concede, the EPA analyzed data from 540 sediment samples in Connecticut

from 1980 through 2005. The average PCB concentration was 0.79 ppm in samples collected prior to 1998 and 0.18 ppm in samples collected in 1998 or later. PCB concentrations in surface sediment were even lower. Those concentrations were already well below the 1.00 ppm performance standard that the 2020 Permit sets for sediment in most upstream reaches where excavation and removal will occur, supporting the EPA's conclusion that "PCB concentrations are relatively very low (or not detected) and more widely dispersed" in Connecticut and thus that MNR is appropriate for those reaches. Notably, the Petitioners do not challenge the 1.00 ppm performance standard for the upstream reaches in this appeal. Cf. Upper Blackstone, 690 F.3d at 28-29 (noting that when an agency "set[s] a numerical standard, courts will not overturn the agency's choice of a precise figure where it falls within a 'zone of reasonableness'" (quoting Nat'l Mar. Safety Ass'n v. OSHA, 649 F.3d 743, 752 (D.C. Cir. 2011))).

The Petitioners contend that the EPA's reliance on the Connecticut sediment samples is "unreasonable and scientifically invalid" because the samples are outdated and "extremely limited." This argument fails. "Our standard of review . . . does not deputize us to second-guess the EPA's choice of data, so long as the agency acts 'with a reasonable basis' in selecting and applying it." City of Taunton, 895 F.3d at 139 (quoting Upper Blackstone, 690 F.3d at 26). The Petitioners offer no persuasive explanation

for why the 540 existing sediment samples are unreliable, and do not identify any convincing reason to believe that PCB concentrations in the Connecticut reaches have increased since those samples were taken. We have rejected similar arguments concerning the EPA's choice of data in the past. See id. (rejecting petitioner's "challenge[] [to] the facial validity of . . . data [relied upon by the EPA]" based on "the time that had elapsed since its collection," because the EPA "had good reason for relying on the . . . data, which drew from 22 different monitoring stations"); Sur Contra La Contaminación v. EPA, 202 F.3d 443, 449 (1st Cir. 2000) (rejecting petitioner's contention that "the EPA relied on outdated" data and "should have relied on more recent data," because the EPA adequately explained that it had "no reason to question the continuing validity" of the data (internal quotation marks omitted)).

2. Challenge Regarding Adequacy of Performance Standards

Next, the Petitioners assert that the EPA was required to set a performance standard for PCB concentration to be achieved in sediment in the downstream reaches where MNR is the selected remedy. As previously noted, the 2020 Permit sets a sediment performance standard of 1.00 ppm in most of the upstream reaches subject to excavation and removal, but because the data sampled from downstream reaches demonstrated that PCB concentrations in sediment are already below that level, the EPA elected not to

require a sediment performance standard in those reaches. The Petitioners argue that this decision was contrary to the Consent Decree, which requires GE to achieve certain "[p]erformance [s]tandards" in the Rest of River, and to CERCLA, which requires remedial actions to "attain a degree of cleanup," 42 U.S.C. § 9621(d)(1).

Although the 2020 Permit does not include a sediment performance standard for the downstream reaches subject to MNR, it does include two other performance standards applicable to those reaches. First, the 2020 Permit includes a "Downstream Transport Performance Standard" setting limits on the amounts of PCBs crossing certain monitoring areas. One of those monitoring areas is downstream from the flowing subreaches of Reach 7, meaning that the Downstream Transport Performance Standard measures PCB migration from those subreaches (which are subject to MNR) as well as all other upstream reaches.

Second, and more importantly, the 2020 Permit includes a "Short-Term Biota Performance Standard" requiring the cleanup to achieve a PCB concentration of 1.50 ppm in "fish fillet" in all reaches of the Rest of River, including those subject to MNR. The EPA's decision to select this fish tissue performance standard rather than a sediment performance standard is consistent with human health risk assessments conducted by the agency, which revealed that consumption of fish from the Rest of River would

pose both cancer and non-cancer risks outside of an acceptable range, whereas direct contact with sediment did not pose unacceptable cancer risks and posed lesser non-cancer risks than fish consumption. Further, the EPA used a computerized food chain model to analyze the connection between PCB concentrations in sediment and fish tissue, and the Petitioners do not meaningfully contest the validity of that model. Cf. Upper Blackstone, 690 F.3d at 27 ("The EPA is not limited to models which perfectly replicate real world conditions."). It is true, as the Petitioners emphasize, that the 2020 Permit defines MNR as a "remedy for contaminated sediment," but the 2020 Permit then states that MNR "requires monitoring the natural processes and/or concentrations of contaminants in surface water, sediment, or biota." (Emphasis added). The EPA's decision to monitor fish tissue as a proxy for sediment is consistent with this definition.

Petitioners do not identify any legal requirement that the EPA must set performance standards specific to sediment in all reaches of the Rest of River. And the EPA has adequately explained its decision not to do so in the downstream reaches, given that PCB concentrations there are already below the standard set for upstream reaches. The EPA's choice to instead rely on the Downstream Transport Performance Standard and the Short-Term Biota Performance Standard is well-reasoned and consistent with the Consent Decree and CERCLA.

3. Alleged Lack of Timeframes to Achieve Performance Standards

Third, the Petitioners contend that the 2020 Permit does "not establish[] any timeframe for [MNR] to be effective, let alone a reasonable timeframe." They argue that the 2020 Permit thus violates EPA guidance documents that require MNR to attain "remediation objectives in a time period that is reasonable."

This argument is contrary to the record and fails to account for the provisions of the 2020 Permit concerning the Downstream Transport Performance Standard and the Short-Term Biota Performance Standard. As the EPA wrote in its 2014 Comparative Analysis, the MNR provisions of the permit will "include monitoring to confirm progress toward achieving cleanup levels in fish tissue and reducing ecological risk and downstream transport." In particular, the 2020 Permit requires GE to ensure that the Downstream Transport Performance Standard not be exceeded "in any three or more years within any 5-year period," and that the Short-Term Biota Performance Standard "be achieved within 15 years" of the completion of certain construction-related activities and not be "exceeded in any two consecutive monitoring periods after" that 15-year timeframe. The Petitioners fail to address the existence of these timeframes, let alone develop any argument that they are unreasonable.

4. Alleged Lack of Contingency Measures

Finally, the Petitioners argue that the 2020 Permit "lacks any mechanism for a contingent response if MNR is not adequately protective." They posit that by failing to include provisions concerning contingency measures, the EPA violated CERCLA's requirement of considering "the potential for future remedial action costs if the . . . remedial action in question were to fail." 42 U.S.C. § 9621(b)(1)(F).

Once again, this argument is inconsistent with the terms of the 2020 Permit. Those terms do, in fact, contemplate further actions if the performance standards applicable to the downstream reaches are not met. Under the 2020 Permit, if PCB concentrations fail to meet the Downstream Transport Performance Standard or the Short-Term Biota Performance Standard within those standards' respective timeframes described above, GE must "evaluate and identify the potential cause(s) of the exceedance and propose . . . additional actions necessary to achieve and maintain" the standards. The EPA will then "determine any additional actions necessary to achieve and maintain" the standards "in accordance with the [Consent Decree]." Although the EAB's 2018 decision apparently imposed some limits on what "additional actions" the EPA can require under these provisions, see Gen. Elec. I, 17 E.A.D. at 517-19, the Petitioners develop no

argument that those limits render the contingency response provisions inadequate.

Accordingly, we reject the Petitioners' challenges to the MNR provisions of the 2020 Permit.

B. Challenge to the EPA's Rejection of Certain Treatment Technologies as to Excavated Material

In their second substantive challenge to the 2020 Permit, the Petitioners argue that the EPA should have required GE to apply treatment technologies to excavated and removed material prior to disposal, in order to reduce that material's toxicity and lessen the risk of PCB dispersal. Like the provisions concerning MNR, the relevant provisions of the 2020 Permit concerning treatment are unchanged from the 2016 Permit. Both permits required the use of activated carbon or another sediment amendment in certain areas of the Rest of River, but do not require any treatment of removed material.

The Petitioners raise three challenges regarding the application of treatment technologies. They argue that (1) the EPA should have required GE to treat removed material with thermal desorption, (2) the EPA should have required GE to utilize bioremediation to treat the removed material, and (3) the EPA's failure to require treatment of the removed material violates CERCLA.²¹

²¹ The EPA contends that certain of the Petitioners'

1. Challenge to the EPA's Rejection of Thermal Desorption

The Petitioners first challenge the EPA's decision not to require GE to treat removed sediment and soil with thermal desorption. This challenge fails.

The EPA studied thermal desorption in depth prior to issuing the 2016 Permit; in particular, in the 2014 Comparative Analysis, the agency discussed the performance of that treatment approach under the nine Selection Criteria. The 2014 Comparative Analysis concluded that treating removed material with thermal desorption could "potentially result in long-term adverse environmental impacts," would "produce the greatest amount of [greenhouse gas] emissions of any of the alternatives," and would require compliance with additional ARARs. The EPA also noted that there was "limited precedent" supporting the efficacy of using thermal desorption on large volumes of sediment, rendering the "adequacy and reliability of [thermal desorption] . . . uncertain." Further, treating the removed material with thermal desorption was the "most expensive alternative." In its response to comments on

challenges concerning treatment are waived due to the Petitioners' failure to demonstrate that those challenges were raised during the public comment period for the draft version of the 2016 Permit. Like the EPA's waiver argument concerning MNR, the EPA's waiver argument here depends on the proposition that the Petitioners' raising their concerns when challenging the 2020 Permit was insufficient to prevent waiver. We again choose to bypass that question and instead resolve the Petitioners' challenges on the merits.

the draft version of the 2016 Permit, the EPA reiterated that it elected not to require thermal desorption "[d]ue in part to its high cost, and the likelihood that all of the treated material could not be reused" but rather would need to be transported to an offsite landfill.

When developing the 2020 Permit, the EPA again noted that treating removed material with thermal desorption could potentially "present operational challenges and leave treatment residuals that would still require land disposal." In its response to comments on the draft version of the 2020 Permit, the EPA further explained that it had "not typically selected large-scale treatment at large sediment sites" when the "extraordinary size or complexity of a site makes implementation of [such] treatment technologies impracticable." The EPA acknowledged comments identifying an example of the use of thermal desorption at a large sediment site in Vietnam, but explained that that example did "not contradict" the EPA's analysis regarding the downsides of thermal desorption, including the need to landfill treated material. Further, the EPA listed various other drawbacks of thermal desorption, including the "[r]equirement to treat air emissions . . . [and] leachate produced by the process" and the risk of community opposition to the long-term operation of a treatment facility. See 42 U.S.C. § 9621(b)(2) (allowing the EPA

to "take into account the degree of support" for remedial actions involving treatment).

The record thus demonstrates that in evaluating whether to require GE to treat removed material with thermal desorption, "the EPA neither relied on impermissible factors nor failed to consider a crucial aspect of the problem," and that the EPA's explanation for declining to require thermal desorption treatment "neither flouted the evidence in the record nor [was] 'so implausible that it could not be ascribed to a difference in view or the product of agency expertise.'" City of Taunton, 895 F.3d at 141 (quoting State Farm, 463 U.S. at 43).

2. Challenge to the EPA's Rejection of Bioremediation

The Petitioners next argue that the 2020 Permit should have required treatment of removed material with bioremediation. We reject this argument.

The EPA did not include a bioremediation alternative as part of the 2014 Comparative Analysis, because the EPA had previously concluded that there was insufficient evidence demonstrating that bioremediation would be suitable for "applica[tion] to [the Rest of River's] conditions or contaminants." That conclusion was based, in part, on research indicating that "biological treatment processes ha[d] not been successfully demonstrated full-scale for PCBs in soil" and that there were various obstacles to the implementation of

bioremediation, including the "[i]nability [of bioremediation] to achieve low . . . residual PCB concentrations" and the "[o]verall resistance of PCBs to microbial degradation." In its response to comments on the draft version of the 2016 Permit, the EPA again explained that there had "not been to date sufficient demonstration that bioremediation would be effective and meet the project goals." The EPA cited, as an example, the fact that a pilot bioremediation project had been terminated by Massachusetts due in part to evidence that the biological treatment had "dilut[ed] and redistribut[ed]" contaminants rather than reducing them. When responding to comments on the draft version of the 2020 Permit, the EPA declined to further elaborate on its analysis of that project, but the Petitioners develop no argument on appeal that the EPA's initial analysis was incorrect.

The Petitioners do not identify any impermissible factors in the EPA's analysis of bioremediation or point to any additional information about bioremediation that the EPA failed to consider. See State Farm, 463 U.S. at 43. We uphold the EPA's decision not to require GE to treat removed sediment and soil with bioremediation.

3. Alleged Noncompliance With CERCLA's Preference for Treatment

Finally, the Petitioners contend that the EPA's failure to require treatment of removed material was "not in accordance

with law," 5 U.S.C. § 706(2) (A), because it was inconsistent with CERCLA's preference for "alternative treatment technologies," 42 U.S.C. § 9621(b) (1). The relevant provision of CERCLA provides:

The [EPA] shall select a remedial action that is protective of human health and the environment, that is cost effective, and that utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. If the [EPA] selects a remedial action not appropriate for a preference under this subsection, the [EPA] shall publish an explanation as to why a remedial action involving such reductions was not selected.

42 U.S.C. § 9621(b) (1). The Petitioners argue that by declining to require GE to treat removed sediment and soil with thermal desorption, bioremediation, or other treatment technologies, the 2020 Permit violates CERCLA's requirement that the EPA "select a remedial action . . . that utilizes . . . alternative treatment technologies . . . to the maximum extent practicable." Id. We reject this argument for three reasons.

First, the 2020 Permit satisfies § 9621(b) (1)'s requirement that the EPA select a remedy that is both "protective of human health and the environment" and "cost effective." Id.; cf. Ohio v. U.S. EPA, 997 F.2d 1520, 1532 (D.C. Cir. 1993) (noting that the "statutory language [of § 9621(b) (1)] places as much emphasis on the selection of cost-effective remedies as it does on the selection of permanent remedies"). In the 2020 Comparative Analysis, the EPA found that its selected remedy will

"provide . . . high levels of . . . protection" by transporting some contaminated materials to a licensed offsite facility and other contaminated materials to an onsite facility with a cap, double liner, leachate collection system, groundwater monitoring network, and stormwater management system. The EPA also found its selected remedy to be cost-effective relative to several other alternatives. In contrast, although the EPA found that treatment with thermal desorption would provide "human health protection," the EPA noted that such treatment could "potentially result in long-term adverse environmental impacts," would "produce the highest amount of [greenhouse gas] emissions of any of the alternatives," and would be the "most expensive alternative." As for bioremediation, the EPA found that there had "not been to date sufficient demonstration that bioremediation would be effective" and that bioremediation could in fact risk "diluti[ng] and redistributi[ng]" contaminants.

Second, § 9621(b)(1) clearly contemplates that the EPA can select a remedy that does not incorporate all possible treatment techniques. Cf. Ohio, 997 F.2d at 1532 (noting that the fact that § 9621(b)(1) "mandates the achievement of multiple goals" precludes an interpretation requiring the EPA to "select[] . . . permanent remedies whenever possible," because that interpretation would read the "mandate to select cost-effective remedies" out of the statute (emphasis added)). In particular, the statute allows

the EPA to "select[] a remedial action not appropriate for a preference" for treatment if the EPA "publish[es] an explanation" for that decision. 42 U.S.C. § 9621(b)(1). As discussed above, the EPA "publish[ed] . . . explanation[s]" justifying its decisions not to require treatment of removed material with thermal desorption, bioremediation, or other treatment technologies, id., and those explanations were not "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law," 5 U.S.C. § 706(2)(A).

Finally, although the 2020 Permit does not contemplate treatment of removed sediment and soil, it does require the application of alternative treatment technologies in other portions of the Rest of River in lieu of excavation and removal. In particular, the 2020 Permit requires GE to place "activated carbon and/or other comparable amendments" in certain portions of the Rest of River "to reduce the bioavailability of the remaining PCBs" in those areas. We thus are not confronted with a situation in which the EPA has entirely eschewed requiring treatment.

The EPA's choice to require the implementation of certain treatment technologies but not others, coupled with adequate explanations for rejecting certain technologies, is fully consistent with CERCLA's preference for alternative treatment. We reject the Petitioners' challenges concerning the treatment of

contaminated material to be excavated and removed from the Rest of River.

C. Challenge to the 2020 Permit's Hybrid Disposal Provisions

The Petitioners' third and final substantive challenge concerns the 2020 Permit's hybrid disposal provisions. Under those provisions, excavated materials with higher PCB concentrations will be transported to an offsite disposal facility, while less contaminated materials will be disposed of in an onsite facility near Woods Pond. The Petitioners argue that the EPA arbitrarily and capriciously changed course from its previous conclusion, embodied in the 2016 Permit, that all contaminated material should be disposed of offsite.

We first describe our scope of review as to this challenge. Like the EAB, we reject the Petitioners' request to supplement the record before us with stricken materials from a report that was never submitted to the EPA. We then turn to the merits of the Petitioners' arguments.

1. Request for Supplementation of the Record

When seeking review of the 2020 Permit by the EAB, the Petitioners sought to introduce a report written by a geoscientist named David J. DeSimone (the "DeSimone Report"). The DeSimone Report assesses the geological characteristics of the Woods Pond site, concluding that permeable sediments and rock fractures present the risk of PCB migration should the onsite disposal

facility's double liner and leachate collection system fail. The Petitioners conceded to the EAB that the DeSimone Report was not presented to the EPA during the public comment period or otherwise included in the administrative record, but rather was prepared for litigation purposes after the EPA issued the 2020 Permit. See Gen. Elec. II, 18 E.A.D. at 611-12, 612 n.19. The EAB allowed the Petitioners to add a portion of the DeSimone Report to the record, see id. at 613-14, but excluded most of the report, see id. at 614-15. The EAB explained that no basis existed to allow review of the extra-record document, rejecting the Petitioners' argument that the report discussed topics that the EPA had failed to consider. See id.

We reject the Petitioners' contention that the EAB acted arbitrarily and capriciously in striking the bulk of the DeSimone Report from the record. The EAB explained that, with certain exceptions, EPA regulations circumscribe the scope of the EAB's review to the administrative record, see 40 C.F.R. § 124.18(a) (requiring the EPA to "base final permit decisions . . . on the administrative record"); id. § 124.18(b) (defining "administrative record" to include the record for the draft permit, the public comments on the draft permit, the EPA's responses to those comments, the final permit, and several other documents), and that the DeSimone Report was not part of that record because the "record [was] complete on the date the final permit [was] issued," id.

§ 124.18(c). See Gen. Elec. II, 18 E.A.D. at 608-11. The EAB then noted that even if it were to consider the DeSimone Report, the report did not "support[] an argument that the [EPA] did not consider all relevant factors," because the topic of the report -- i.e., soil permeability at the Woods Pond site -- had already been studied extensively by the EPA. Id. at 615; cf. 40 C.F.R. § 300.825(c) (requiring, with respect to CERCLA response actions, agencies to consider "comments submitted . . . after the close of the public comment period only to the extent that the comments contain significant information not contained elsewhere in the administrative record file which could not have been submitted during the public comment period and which substantially support the need to significantly alter the response action" (emphasis added)). The EAB provided adequate reasoning for declining to add most of the DeSimone Report to the record, and the Petitioners have "fail[ed] to convince us that the EAB acted arbitrarily or capriciously in policing its waiver rule." City of Taunton, 895 F.3d at 132; see id. ("We . . . uphold the EAB's decision to strike documents that the [petitioner] attempted to submit for the first time at the administrative appeal stage.").

The Petitioners now entreat this court to consider the stricken content of the DeSimone Report. "[W]hen reviewing an agency's decision under the arbitrary and capricious standard, 'the focal point for judicial review should be the administrative

record already in existence, not some new record made initially in the reviewing court.'" Id. at 127 (quoting Camp v. Pitts, 411 U.S. 138, 142 (1973)). We have, however, recognized several exceptions to the rule against record supplementation. For example, supplementation is permissible where there is a "strong showing of bad faith or improper behavior" by the agency. Town of Winthrop v. FAA, 535 F.3d 1, 14 (1st Cir. 2008) (quoting Olsen v. United States, 414 F.3d 144, 155 (1st Cir. 2005)). We may also supplement the record "to facilitate our comprehension of the record or the agency's decision," particularly when "highly technical, environmental matters" are at issue or when the agency has "fail[ed] to explain administrative action as to frustrate effective judicial review." City of Taunton, 895 F.3d at 127 (first citing Town of Winthrop, 535 F.3d at 14; then quoting Valley Citizens for a Safe Env't v. Aldridge, 886 F.2d 458, 460 (1st Cir. 1989) (Breyer, J.); and then quoting Olsen, 414 F.3d at 155-56). Similarly, we have noted that the Ninth Circuit allows record supplementation "when necessary to determine whether the agency considered all relevant factors in making its decision" or "when the agency has relied on extra-record materials." Ruskai v. Pistole, 775 F.3d 61, 66 (1st Cir. 2014) (quoting WildWest Inst. v. Bull, 547 F.3d 1162, 1176 (9th Cir. 2008)).

Notwithstanding the existence of these exceptions, supplementation of the administrative record is "the exception,

not the rule, and is discretionary with the reviewing court." Town of Winthrop, 535 F.3d at 14. We decline, in our discretion, to allow the Petitioners' request. The topic of soil permeability is well-documented in the existing administrative record, such that the DeSimone Report is not necessary to "facilitate our comprehension" of that issue. City of Taunton, 895 F.3d at 127. Further, the record demonstrates that the EPA has already analyzed the geological conditions of the Woods Pond site and concluded that a low-permeability cap, double liner, leachate collection system, and groundwater monitoring network are sufficient to protect against PCB migration from the onsite disposal facility. Indeed, the Petitioners raised concerns about the "subsurface characteristics" of the site in their public comments, and the EPA directly responded to those comments. The Petitioners thus fail to identify any "relevant factors" raised by the DeSimone Report that the EPA failed to consider. Ruskai, 775 F.3d at 66 (quoting WildWest Inst., 547 F.3d at 1176); see Town of Winthrop, 535 F.3d at 15 (declining to consider a document that "elaborate[d] on concerns already addressed in the record" and thus would not "bear on . . . whether the [agency] adequately considered th[o]se concerns"); cf. United States v. Akzo Coatings of Am., Inc., 949 F.2d 1409, 1429, 1431 (6th Cir. 1991) (finding that an affidavit concerning soil permeability offered "evidence . . . [that was] only 'supplementary' rather than 'new'" and thus that the "EPA

would still have acted as it did even had [it] considered" that affidavit).

Accordingly, we base our review on the existing administrative record when addressing the Petitioners' arguments concerning the 2020 Permit's hybrid disposal provisions. We now turn to those arguments.

2. Challenges Regarding Hybrid Disposal

The Petitioners do not contest that the EPA "display[ed] awareness that it [was] changing position" when it opted to require hybrid disposal, rather than fully offsite disposal, in the 2020 Permit. Fox, 556 U.S. at 515. Nor could they: the EPA expressly and repeatedly acknowledged that it altered the disposal provisions following the EAB's remand of the 2016 Permit, and the EPA directly compared the hybrid disposal approach to the previously selected fully offsite disposal approach in the 2020 Comparative Analysis. The EPA thus "consider[ed] the 'alternative[s]' that [were] 'within the ambit of'" the 2016 Permit when developing the 2020 Permit. Regents, 140 S. Ct. at 1913 (second alteration in original) (quoting State Farm, 463 U.S. at 51).

We note, too, that the EPA "did not merely revert back" to the fully onsite disposal approach it had rejected in the 2014 Comparative Analysis, but rather "devised a new scheme" of hybrid disposal, thus "chang[ing] the factual consequences" of the

selected disposal approach. Lily Transp., 853 F.3d at 38. In particular, by allowing only contaminated materials with average PCB concentrations below 50 ppm to be disposed of in the onsite disposal facility, the 2020 Permit obviates the requirement that the onsite facility satisfy TSCA regulations governing the disposal of more highly contaminated substances. See 40 C.F.R. § 761.75. Indeed, the EPA estimated that the average PCB concentration of material disposed of onsite will be less than 25 ppm. Given that only less contaminated material will be disposed of onsite under the hybrid disposal approach, the EPA concluded that the onsite disposal facility will "not pose an unreasonable risk of injury to health or the environment." Id. § 761.61(c)(2). The EPA has thus explained how "facts changed from those underlying the" 2016 Permit influenced the agency's finding that the onsite disposal facility can attain TSCA's standards. Lily Transp., 853 F.3d at 36; see Fox, 556 U.S. at 515. Notably, this change in disposal provisions responded directly to the EAB's criticism, in remanding the 2016 Permit, that the EPA had previously failed to adequately address whether an onsite disposal approach could satisfy TSCA requirements or qualify for a waiver of those requirements. See Gen. Elec. I, 17 E.A.D. at 561-69.

Nevertheless, the Petitioners maintain that the EPA has failed to "provide a reasoned explanation for the change" in the disposal approach. Encino Motorcars, 579 U.S. at 221. In

particular, the Petitioners mount two challenges to the 2020 Permit's hybrid disposal provisions. First, the Petitioners argue that the EPA's choice of hybrid disposal was improperly based on the agency's commitment to the Settlement, rather than on an objective weighing of the nine Selection Criteria. Second, the Petitioners challenge the EPA's decision to site the onsite disposal facility within an area designated by Massachusetts as an ACEC.

The EPA contends that the Petitioners waived these two arguments by failing to demonstrate that the arguments were raised during the public comment period for the draft version of the 2020 Permit. See Upper Blackstone, 690 F.3d at 30. The Petitioners vigorously dispute this assertion, maintaining that their comments provided sufficient "notice to the EPA" concerning the substance of the Petitioners' challenges to the hybrid disposal provisions, even if the comments "d[id] not present technical or precise scientific or legal challenges." Adams v. U.S. EPA, 38 F.3d 43, 52 (1st Cir. 1994); see 40 C.F.R. § 124.13 (requiring commenters on draft RCRA permits to "raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position[s]"). We note, too, that the EPA's waiver argument depends on the proposition that the Petitioners have failed to identify any other commenters that sufficiently raised the two arguments to the EPA. See Adams, 38 F.3d at 52 n.7 (noting, in

analogous permitting context, that "[t]he person filing the petition for review . . . does not necessarily have to be the individual who raised the issue during the comment period"); Masias v. EPA, 906 F.3d 1069, 1080 (D.C. Cir. 2018) ("Although [the petitioner] need not have personally raised his current objection during the comment period . . . he must point [the court] to a commenter who did."). Given the complexities involved in resolving this waiver question,²² we again elect to bypass the issue and instead address the Petitioners' two challenges on the merits.

a. Alleged Incongruity Between the Hybrid Disposal Provisions and the EPA's Analysis of the Nine Selection Criteria

The Petitioners first argue that the EPA's decision to require hybrid disposal was not a rational extension of its analysis of the nine Selection Criteria. In particular, the Petitioners contend that the EPA "reached the same ultimate conclusion under each of the [Selection Criteria] in [the] 2020 [Comparative Analysis] as it had in [the] 2014 [Comparative Analysis]," yet selected hybrid disposal "despite almost all the [Selection] Criteria pointing to [fully] offsite disposal as the

²² For example, comments filed by Massachusetts discussed the EPA's decision to place the onsite disposal facility in an ACEC, but ultimately did not object to that decision. We need not decide whether those comments sufficed to preserve the Petitioners' argument concerning the siting of the facility in an ACEC.

most favorable option." The Petitioners posit that the EPA, rather than objectively weighing the Selection Criteria, was overly "focused on how its remedy selection decision would affect the continued viability of the Settlement."

It is true that the EPA concluded, in the 2020 Comparative Analysis, that fully offsite disposal would better meet several of the Selection Criteria than hybrid disposal. For example, with respect to "Control of Sources of Releases," the EPA found that unlike fully offsite disposal, the hybrid disposal approach would have a slight "potential for releases [of PCBs] to the Housatonic River watershed if, in the long term, the [onsite disposal] facility . . . is not properly operated." That remote risk of future PCB releases, along with impacts to local habitat from the construction of an onsite disposal facility, also led the EPA to find that fully offsite disposal would outperform hybrid disposal as to "Long-Term Reliability and Effectiveness."²³ Further, the EPA concluded that fully offsite disposal would require compliance with fewer ARARs and would face fewer "regulatory and zoning restrictions" than hybrid disposal.

But even where fully offsite disposal would outperform hybrid disposal, it at best, as to those aspects, would do so by

²³ The impact on local habitat from the onsite facility's "operational footprint" was also considered as part of the EPA's analysis of "Short-Term Effectiveness."

slim margins, and fully offsite disposal would impose detriments which hybrid disposal would avoid. As to "Control of Sources of Releases," for example, the EPA determined that both "alternatives [would] meet the criterion." With respect to "Long-Term Reliability and Effectiveness," the EPA found that the onsite disposal facility would "permanently isolate the [contaminated] materials" and in fact "be designed to be generally equivalent to a facility permitted to accept much higher concentration materials." The EPA further concluded that the short- and long-term impacts on local habitat from the construction of the onsite disposal facility would be minimal because the facility would be built at "an existing sand and gravel facility in close proximity to two other solid waste disposal facilities." In addition, the EPA noted that similar facilities are "routinely constructed and operated" with "techniques [that] are well known and demonstrated as effective." And due to the fact that the most highly contaminated materials would be sent to an offsite facility under the hybrid disposal approach, the EPA found that even where fully offsite disposal was preferable to hybrid disposal, hybrid disposal was preferable to the fully onsite disposal option that was considered in the 2014 Comparative Analysis. Further, as the EPA noted, there was uncertainty as to the future availability of the needed capacity at offsite disposal sites.

Importantly, the EPA also found that hybrid disposal would outperform fully offsite disposal in various metrics. For example, the hybrid disposal approach would result in fewer greenhouse gas emissions, involve fewer truck trips, and risk fewer transportation-related injuries and fatalities than fully offsite disposal. Further, hybrid disposal would be significantly less costly than fully offsite disposal. The EPA also noted that "local governments ha[d] documented their acceptance" of the hybrid disposal approach "through their acceptance of the Settlement."

As to the first of the Selection Criteria -- "Overall Protection of Human Health and the Environment" -- the EPA noted that the hybrid disposal approach was "part of a Settlement . . . that includes numerous enhancements to the floodplain and sediment remedies, an expedited start to implementation, and community coordination and benefits," and thus that hybrid disposal would "provide better short- and long-term protectiveness" than fully offsite disposal. That conclusion comported with the portion of the 2020 Comparative Analysis comparing the remediation provisions of the 2016 Permit with those of the draft version of the 2020 Permit. In that part of the 2020 Comparative Analysis, the EPA concluded that the draft revised permit would outperform the 2016 Permit as to the majority of the Selection Criteria due to the various new remedial measures included in the new permit, such as the requirements that GE excavate additional contaminated sediment

and soil from the Rest of River, remediate more than twenty additional residential properties, remove two dams so as to restore natural habitat, develop a quality-of-life plan addressing community impacts, and begin "investigation and design work" on the Settlement's effective date. The EPA thus concluded that, when scrutinizing the new provisions in the draft version of the 2020 Permit holistically, "the combination of the . . . sediment and floodplain [revisions] and the [h]ybrid [d]isposal approach . . . [would be] best suited to meet the . . . Selection Criteria."

In light of these determinations by the EPA, we disagree with the Petitioners' contention that "almost all the [Selection] Criteria point[ed] to [fully] offsite disposal as the most favorable option." On the contrary, the EPA found that hybrid disposal would outperform fully offsite disposal on "Overall Protection of Human Health and the Environment," "Cost," and certain aspects "Short-Term Effectiveness" and "Implementability." The EPA found that fully offsite disposal would outperform hybrid disposal as to three criteria -- "Control of Sources of Releases," "Compliance with [ARARs]," and "Long-Term Reliability and Effectiveness" -- but only by slim margins.²⁴ Given these findings

²⁴ The remaining two criteria -- "Attainment of Interim Media Protection Goals" and "Reduction of Toxicity, Mobility, or Volume of Wastes" -- were either inapplicable or equally satisfied by hybrid disposal and fully offsite disposal.

and the EPA's explanations for them, we cannot conclude that the EPA acted arbitrarily or capriciously in concluding, as required by the Consent Decree, that the hybrid disposal approach would be "best suited to meet the [first three Selection Criteria] . . . in consideration of the [latter six Selection Criteria] . . . including a balancing of [the latter six Selection Criteria] against one another." And to the extent the 2020 Comparative Analysis involved factual findings that differed from those in the 2016 Comparative Analysis -- such as the finding that the onsite disposal facility no longer needed to satisfy TSCA requirements concerning contaminated materials with PCB concentrations of 50 ppm or greater, and the finding that there was increased community support for disposing of certain materials onsite -- the EPA provided the requisite "detailed justification" for those findings in light of the changed circumstances following the remand of the 2016 Permit. Fox, 556 U.S. at 515.

We reject the Petitioners' contention that it was inappropriate for the EPA to consider the effects of the Settlement in the 2020 Comparative Analysis. The Consent Decree does not limit what the EPA may take into account when evaluating the nine Selection Criteria, and a natural reading of several of those criteria allows consideration of the Settlement. In particular, the Settlement is plainly relevant to the "Implementability" criterion, under which the EPA analyzed various factors bearing on

community and governmental backing for the Rest of River cleanup. It was not arbitrary or capricious for the EPA to conclude that the broad stakeholder support for hybrid disposal would aid the implementation of the 2020 Permit's provisions. Nor was it arbitrary or capricious for the EPA to consider the 2020 Permit's enhanced remediation provisions in conjunction with the hybrid disposal approach. Nothing in the Consent Decree requires the Selection Criteria to be considered in a vacuum for each separate element of the cleanup; on the contrary, the Consent Decree broadly states that the EPA must determine "which corrective measure or combination of corrective measures" will best meet the Selection Criteria, "taking into consideration that the corrective measures ultimately selected will be implemented as a remedial action." (Emphasis added). It thus was not inappropriate for the EPA to consider the terms of the draft version of the 2020 Permit holistically when conducting the 2020 Comparative Analysis. That is especially so because the enhanced remediation provisions were directly tied to the hybrid disposal approach through the Settlement, and would likely not have been added to the revised permit otherwise, given that the EAB had already upheld the prior, less protective remediation provisions of the 2016 Permit against several challenges, including by HRI. See Gen. Elec. I, 17 E.A.D. at 487-519, 523-58.

The Petitioners also argue that it was inappropriate for the EPA to consider the fact that the Settlement expedited the implementation of the Rest of River cleanup, both by requiring GE to begin "investigation and design work" on the Settlement's effective date and by preventing signatories from challenging the 2020 Permit "unless it [was] inconsistent with the terms of th[e] Settlement." But importantly, we are not faced here with a situation where an agency has cited a desire to avoid litigation as the sole basis for its action. Rather, the EPA considered the stakeholder support for the Settlement, and the accelerated start to implementation, as two factors among many in the 2020 Comparative Analysis. That limited consideration of reduced litigation and implementation risk does not involve a "reli[ance] on factors which Congress has not intended [the EPA] to consider." State Farm, 463 U.S. at 43; see, e.g., Regents, 140 S. Ct. at 1908, 1910 n.4 (rejecting an agency's post-hoc claim that its action was based on a desire to "avoid burdensome litigation," but not finding that considering litigation risk would have been inappropriate in the first instance); Omnipoint Corp. v. FCC, 78 F.3d 620, 633 (D.C. Cir. 1996) ("[A]n agency may properly consider the avoidance of litigation-related delay when revising its rules."); cf. Cannons, 899 F.2d at 88 (noting that a "principal end" of CERCLA is the "achievement of prompt settlement and a concomitant head start on response activities"). And GE's agreement to not challenge the

2020 Permit was particularly salient given that it thereby forfeited the immediate appeal rights afforded to it by the Consent Decree's requiring the Rest of River remedy to be embodied in a RCRA permit rather than a CERCLA remedial action order. Compare 42 U.S.C. § 6976(b) (providing generally for immediate appeals of RCRA permits), with id. § 9613(h) (preventing most appeals of CERCLA remedial action orders until after the EPA has acted to enforce those orders).

We conclude that the EPA did not act arbitrarily or capriciously in weighing these various factors in the 2020 Comparative Analysis and concluding that hybrid disposal -- along with the associated benefits by way of the Settlement -- better satisfied the Selection Criteria than fully offsite disposal.

b. Challenge to the Siting of the Onsite Disposal Facility in an Area of Critical Environmental Concern (ACEC)

The Petitioners' final challenge concerns the planned location of the onsite disposal facility. Under the 2020 Permit, that facility will be located in a 20-acre portion of a much larger area designated by Massachusetts as an ACEC. A Massachusetts regulation provides that "[n]o site shall be determined to be suitable or be assigned as a solid waste management facility where such siting . . . would be located within an [ACEC]." 310 Mass. Code Regs. § 16.40(4)(d)(1). The EPA waived the applicability of this Massachusetts regulation, however, through a provision of

CERCLA that allows waiver of ARARs at a facility where "compliance with such [ARARs] at that facility will result in greater risk to human health and the environment than alternative options." 42 U.S.C. § 9621(d)(4)(B). The Petitioners argue that the EPA's waiver of the Massachusetts regulation was arbitrary and capricious.

As we have explained, however, the EPA adequately explained its conclusion that hybrid disposal would better meet the nine Selection Criteria than fully offsite disposal. And in particular, the EPA supportably found that hybrid disposal would outperform fully offsite disposal as to the "Overall Protection of Human Health and the Environment" criterion. The Petitioners offer no reason, and we discern none, why the analysis of that criterion differs from the determination under CERCLA that fully offsite disposal would "result in greater risk to human health and the environment" than hybrid disposal. Id.

In particular, and as previously discussed, the EPA found that fully offsite disposal would result in more greenhouse gas emissions, involve more truck trips, and risk more transportation-related injuries and fatalities than hybrid disposal. The EPA also noted that "the capacity of the [onsite disposal facility] is known and is sufficient to receive [the requisite] volume of material" and that utilizing hybrid disposal would "save capacity" in offsite landfills where there are

"uncertainties about the future availability of necessary capacity." Further, the EPA determined that because the onsite disposal facility would be located at an "industrial and previously disturbed" former gravel mining pit, the facility would "not [cause] significant permanent loss of habitat or displacement of wildlife." The EPA also explained that "[p]rompt implementation of the [hybrid disposal] remedy [would] translate[] directly into reduced risks to human health and the environment, by more quickly addressing the risks associated with PCB contamination," and that the hybrid disposal provisions were associated with enhanced remediation measures by way of the Settlement.

The EPA did not act arbitrarily and capriciously in concluding, based on these myriad considerations, that a waiver of the Massachusetts regulation was appropriate. Notably, Massachusetts itself expressly stated in its public comments that it did "not object to . . . the waiver."

The Petitioners contend that the analysis under § 9621(d)(4)(B) must be confined to local impacts, such that the EPA should not have "focuse[d] on the environmental risks posed to communities away from the [Rest of] River," including the risks related to the "location of the offsite disposal facility . . . [and] by greenhouse gases emitted in the course of offsite transportation." But this argument is at odds with the statutory text, which broadly authorizes the waiver of ARARs at a facility

if "compliance with such [ARARs] at that facility will result in greater risk to human health and the environment than alternative options." Id. Although the statute concerns the compliance with an ARAR at a specific "facility"²⁵ -- here, the onsite disposal facility -- it does not likewise restrict the EPA's assessment of the "risk[s] to human health and the environment" to the risks occurring at that facility. The statutory text thus unambiguously allows the EPA to consider health and environmental impacts resulting from the compliance or noncompliance with ARARs, regardless of where those impacts occur.

We conclude that the 2020 Permit's provisions mandating hybrid disposal are not "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5. U.S.C. § 706(2) (A).

V. Conclusion

The Petitioners' dedication to the remediation of the Housatonic River, and their decades of civic engagement in relation to that process, are commendable. We trust that the EPA will, as its counsel avowed at oral argument, "continue engaging with the communities" affected by the contamination of the Rest of River. We also trust that should GE fail to attain the cleanup standards

²⁵ CERCLA defines "facility" to include, inter alia, "landfill[s]" and "site[s] or area[s] where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located." 42 U.S.C. § 9601(9).

required under the 2020 Permit, the EPA will enforce the permit's various contingency measures to ensure that conditions in the Rest of River continue to improve.

Ultimately, we conclude that the EPA's challenged actions -- both procedural and substantive -- were not arbitrary or capricious. Accordingly, the petition for review is denied.